LARGE HIGH SCHOOL ELECTRIFICATION STUDY

October 14, 2022

THE NEW YORK CITY
SCHOOL CONSTRUCTION AUTHORITY
Long Island City, NY

Report Prepared by

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1.0 Executive Summary

The intent of this study is to further verify the feasibility of electrification of HVAC systems for the typical large High School. NYC SCA has previously analyzed several electrification options for new school designs for PS/IS sized schools. This study has the following specific goals/objectives:

1. To further verify electrification HVAC Options feasibility by studying a larger project.
2. Determine potential energy and carbon emission savings associated with removing the use of fossil fuels from the large High School design by energy modeling proposed options. The underlying factor in this study is to reduce the greenhouse gas emissions associated with the use of the building.
3. Develop the incremental cost for the electrification options vs. the base case associated with this Large HS example.

For this electrification study, two (2) HVAC electrification system types were analyzed, developed, and compared to the Base Case model. Detailed electrification design drawings for both options were developed by the design team (Lilker Associates and DiDomenico). The options are summarized below. Detailed descriptions of these options can be found in section 3.0 of this report.

Option 1: Custom Heat Pump AHUs/RTUs, with electric resistance perimeter heat.

Option 2: Vertical Packaged Heating/Cooling/Ventilation (HCV) Units serving classrooms, custom heat pump AHUs/RTUs serving interior and public assembly spaces, VRF units coupled with a DOAS unit serving small offices and miscellaneous spaces, and electric resistance perimeter heat.

The partial table below (full table can be found in Section 4.0) shows that both options studied indicate comparable site and source EUIs as well as carbon and cost reductions, when compared to the SCA current standard design (i.e. Base Case).

Model Description	Electricity (kWh)	Natural Gas (therms)	GHG Emissions (tCO_2e)	Site Energy Use Index ($kBtu/ft^2$)	Source Energy Use Index ($kBtu/ft^2$)	Net Incremental Construction Cost Savings (%)
Large High School Base Case	608,340	9,978	209	23.8	49.0	
Large High School Option 1: Heat Pump AHU's/RTU's w/ Electric Resistance Perimeter Heat	723,349	0	186	19.1	48.7	3%
Large High School Option 2: Packaged HCV Units (Classrooms), Heat Pump AHU's/RTU's (Interior and PA Spaces), w/ Electric Resistance Perimeter Heat	761,989	0	196	20.1	51.3	3%

The following is the summary of the findings.

- Two (2) Electrification Options are feasible
- Electrification options well below 70 source EUI
- All options offer annual GHG reductions
- Electrification options less costly than the current SCA standard system
- All options meet SCA design objectives

A detailed summary of the electrification option results can be found in section 4.0, Table 4, of this report. This report discusses additional pros and cons of the options.

2.0 Project Approach

SCA has previously analyzed several electrification options for new school designs for PS/IS sized schools. The goal of this study is to further validate electrification design strategies for a large high school. As the power grid gets closer to 100% carbon neutral, the greenhouse gas usage of electrified buildings will also eventually become carbon neutral. New York State is expected to support this direction with various initiatives, which will accelerate the investment in renewables for the grid and in turn will make all electric buildings carbon neutral.

For this project, a large high school was selected as a prototype and the project team used the 60% architectural design of the building as a starting point.

The study approach was to select two (2) electrification design options from previous studies and engage the MEP Engineer (Lilker Associates) and Architectural design consultant (DiDomenico and Partners) to develop a full electrification design up to the "60% Design" level of detail. The designs were then energy modeled by OLA and the performance results compared with the Base Case. The design drawings were given to a cost estimating consultant (Ellana) to establish the total cost of each electrification option, as well as determine an incremental cost relative to the Base Case.

To establish the Base Case energy performance, the PS in Queens 60% energy model was used as a starting point. Basic building parameters such as size, geometry, spatial programming, etc. were established based on this prototype building. The prototype school is a 5 story, 130,000 ft^2 high school which includes classrooms, offices, cafeteria, kitchen, multi-purpose room (gymatorium), and support spaces. The baseline design HVAC system consists of the current SCA standard systems utilizing variable-air-volume (VAV) air handling units, air-cooled chiller, and condensing gas-fired boilers with hydronic perimeter heating system.

A computer simulation tool was used to assist in performing calculations for energy savings. The modeling software used was Department of Energy (DOE)-developed. DOE2 is a detailed, hourly, whole building energy analysis tool that can simulate multiple HVAC and lighting zones for complex buildings. For every hour of the year, DOE2 takes into account the many variables including: schedules for building occupancy (lights, people and equipment); climate (temperature, humidity, solar radiation, etc.) and HVAC equipment and system performance under actual operating conditions. A "three-dimensional" view of the building construction is generated to ensure accuracy. The DOE2-based simulation tool used for the modeling of the building is eQuest.

DOE2 provides a structured method to describe the building and its operations in detail. The model is capable of adjusting many parameters included but not limited to the following:

- Envelope components (U-factors, areas, etc.).
- Interior partitions.
- Occupancy by people.
- Plug loads such as office equipment, computers, etc.
- Other electricity using apparatus.
- Fuel oil, hot water and other process uses within the building.
- HVAC terminals and distribution.
- Primary heating equipment
- Mechanical cooling and heat rejection equipment.
- Cost structures including utility rates.

The baseline energy model or "Base Case" was updated to include six (6) energy conservation measures (ECMs) which are currently part of SCA standard designs going forward. A list of the specific ECMs added to the Base Case are detailed below.

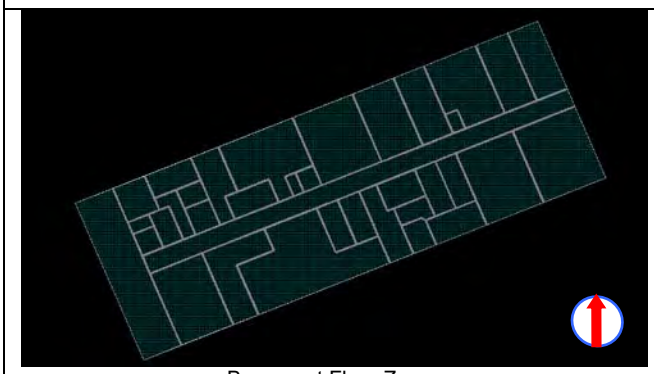
The Base Case energy model also includes June 2020 SCA input standards for modeling of proposed school designs. It should be noted that certain model inputs for the HVAC systems in the Base Case such as ventilation, fan power, and zoning of systems were taken from the original Large High School prototype design. The following ECMs listed below were taken from the NYC SCA's Local Law 31 Low Energy Intensity Building Feasibility Study and are included in the two (2) electrification energy models.

1) Elevator ECM: Gearless Elevators with Regenerative Drives
2) Enclosure ECM: Wall Thermal Upgrades (R-30 Wall Insulation)
3) Enclosure ECM: Glazing Lower U-Value (U-0.25)
4) Enclosure ECM: Insulated Light Dispersion Panels (R-13)
5) HVAC System ECM: Oversized Ductwork and Piping
6) DHW System ECM: Low Flow Aerators

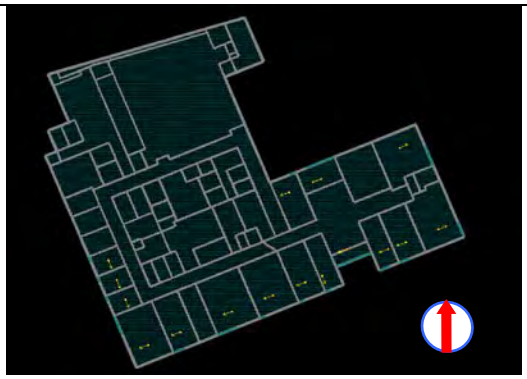
Detailed energy model inputs for the two (2) electrification options were based on design drawings provided by MEP Engineer, Lilker Associates, as well as Architect di Domenico and Partners. Inputs such as system zoning, fan power, equipment sizing, and performance data were taken from the design drawings and are different than the Base Case. The overall building architecture was not re-designed for this study. However, minor architectural modifications to the prototype building were required for Option 2. The changes consisted of modifications to the classroom window assemblies to accommodate the packaged HCV units. Refer to the architectural impact sections for each option under section 3.0 of this report.

Table 1 shows the floor plan and typical zoning as constructed in the energy model. Table 2 shows some of the 3D views of the energy model building. Table 3 shows a basic building metrics summary.

Table 1. Floor Plans Generated in the Energy Modeling Program

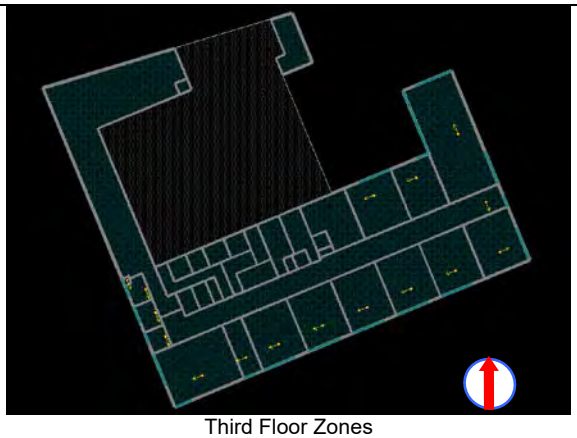


Basement Floor Zones

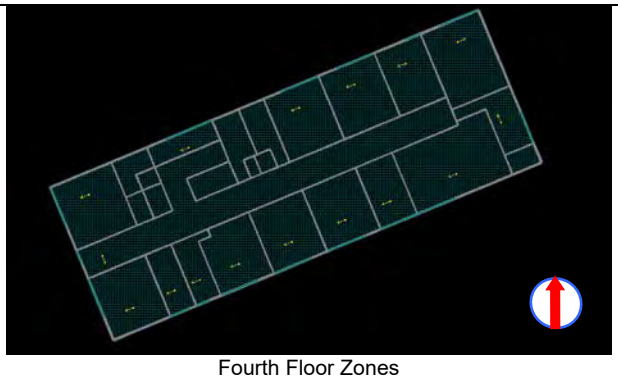


First Floor Zones

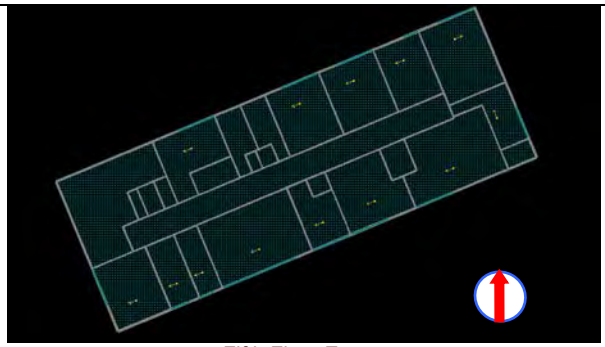
Second Floor Zones



Third Floor Zones

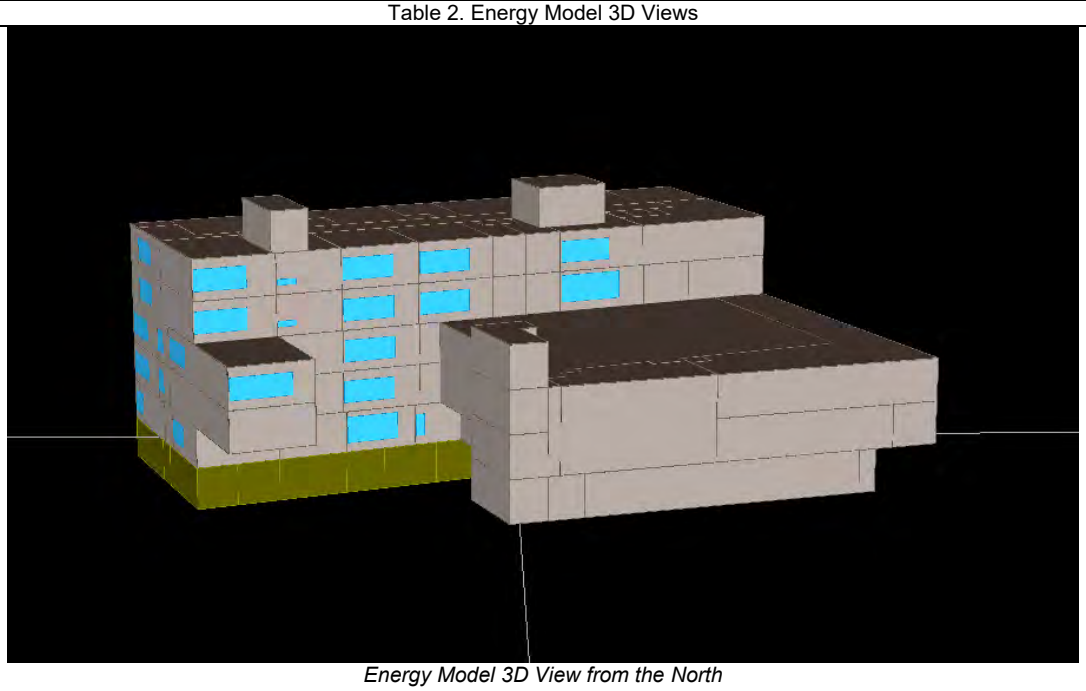


Fourth Floor Zones

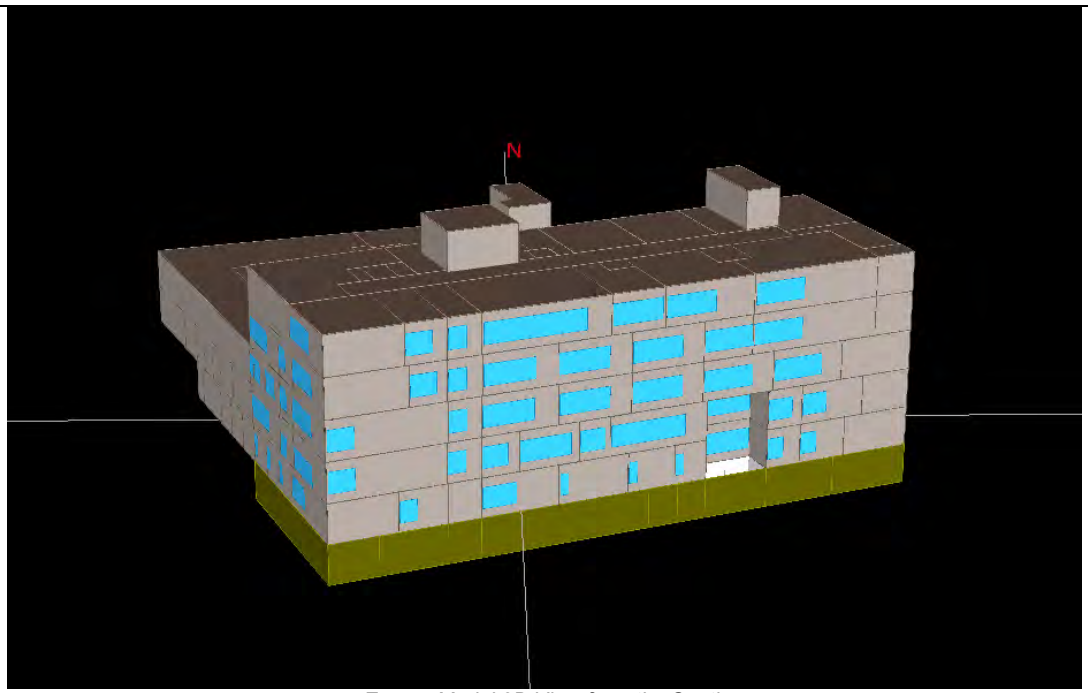


Fifth Floor Zones

Table 2. Energy Model 3D Views



Energy Model 3D View from the North



Energy Model 3D View from the South

Table 3. Basic Metrics Summary Table	
Gross Floor Area	130,000 ft^2
Floors Above Grade	5
Floors Below Grade	1
Classrooms	39
Calculated # Occupants	975

3.0 Electrification Designs

3.1 Base Case Design

OLA utilized the proposed Large High School design from SCA as the Base Case design. The Base Case incorporates the energy savings associated with the proposed ECMs mentioned in section 2.0 of the report in the energy model. The Base Case energy model was developed for this project to reflect specific energy conservation measures (ECMs) that are already part of the SCA school design standards going forward.

The Base Case model for this study was based on the original 60% design drawings provided by SCA for the prototype building, which follows typical SCA HVAC design standards. The systems in the Base Case include a hot water heating plant, chilled water plant, four (4) rooftop air-handling units with variable air volume (VAV) boxes serving individual zones with perimeter finned tube radiation (FTR), and several cabinet unit heaters, unit heaters, air curtains, etc. serving miscellaneous heated only spaces.

3.2 Option 1: Custom Heat Pump AHUs / RTUs, with Electric Resistance Perimeter Heat

This option analyzes removing the hot / chilled water systems from the Base Case and utilizing custom heat pump air-handling units (AHUs) / rooftop units (RTUs) (Figure 1) to handle the building heating and cooling loads. Electrification design drawings for this option, including floor plans, mechanical schedules, and equipment cutsheets, were developed by Lilker Associates and then modeled by OLA. The systems featured in this design include four (4) classroom rooftop units selected as heat pump units. The design team selected four (4) classroom RTUs rather than the two (2) in the prototype building design. This was done to limit the size of units to 60 tons which allowed for a manufacturer installed hot gas reheat option to be provided for dehumidification. The classroom units are packaged with built-in condensing units. Some of the units would require several remote condensing units to be installed on the roof as part of this design. The RTUs would be custom built to maintain the SCA design standards and include the integration of VRF condensing units with the AHUs (Figure 2).

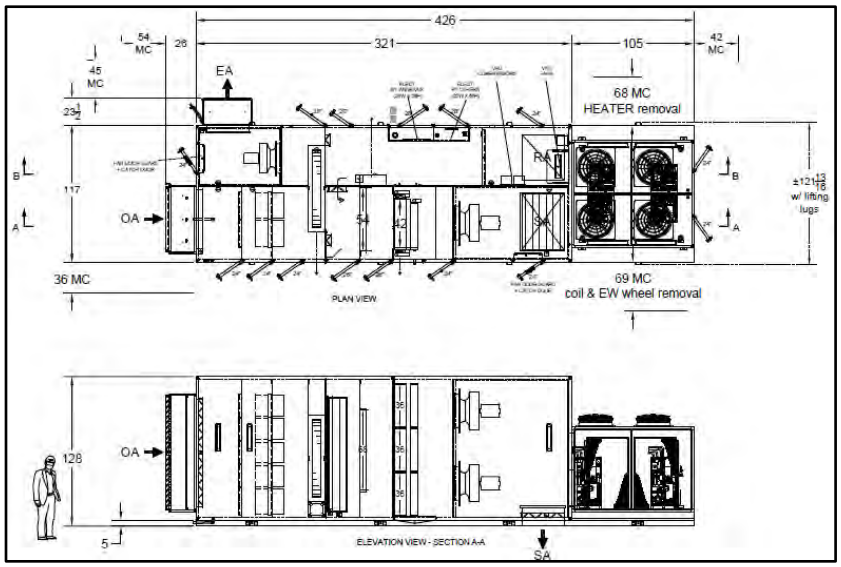


Figure 1. Typical Heat Pump RTU Diagram

Figure 2. Typical condensing unit used for split AHUs

The unit selections would include an energy recovery wheel as per SCA design standards. The units proposed under this study were selected with hot gas reheat coils for dehumidification, in lieu of the SCA previous standard sensible wheel. The custom RTUs selected are rated to provide a maximum 95°F supply air at a 13°F outside air temperature, although the units may operate a lower discharge air temperature in occupied heating mode relying on electric baseboard to trim spaces to final temperature. A typical mechanical room plan of the split type heat pump AHUs is shown in Figure 3 below. A typical roof plan of the units is shown in Figure 4. For AHUs located indoors, remote condensing units would be installed on the roof above (Figure 5).

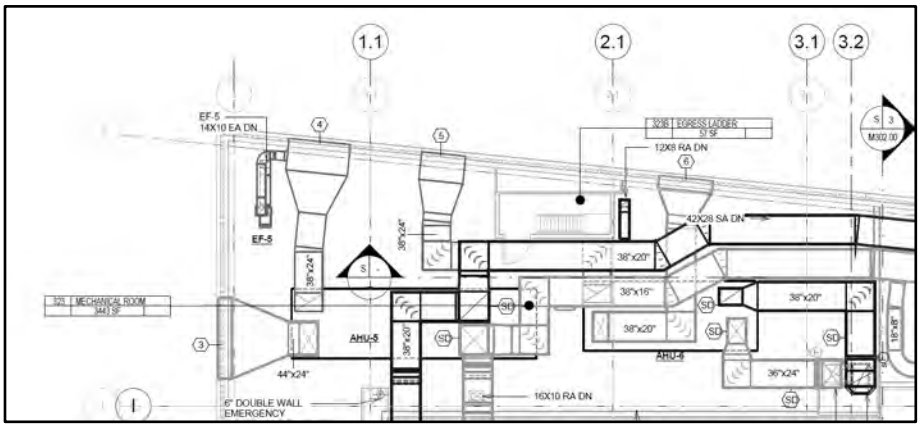


Figure 3. Typical heat pump AHU mechanical room plan

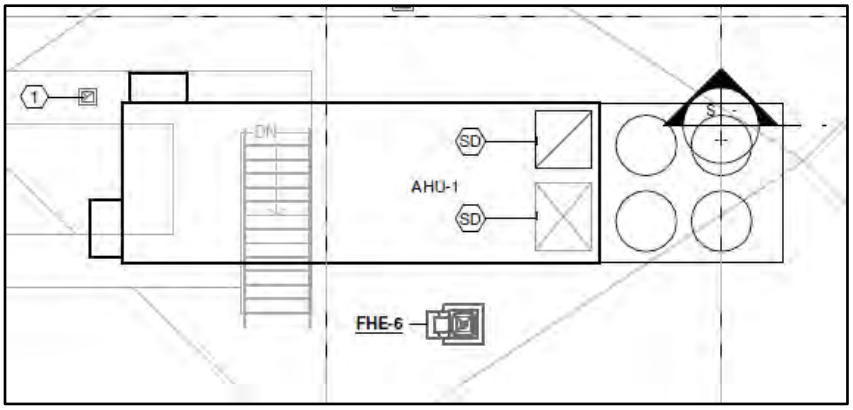


Figure 4. Typical heat pump RTU layout

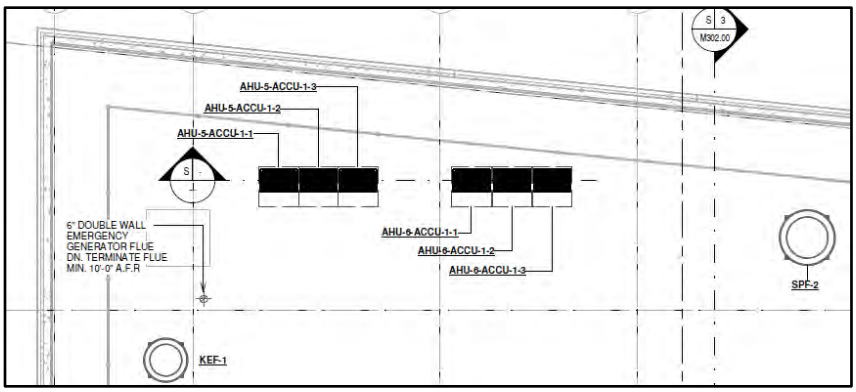


Figure 5. Typical heat pump AHU remote condensing units on roof

VAV boxes serving individual zones remain as in the Base Case, with the perimeter hot water FTR converted to electric. The electric resistance perimeter heat is intended to act as supplemental heat only. All “heat only” systems in the Base Case were also converted to electric and serve the same spaces as in the original design. Refer to Appendix A for the electrification design drawings for this option.

Option 1 Pros:

- High cooling and heating efficiencies for Heat Pump RTUs
- Has lower incremental cost than Base Case
- Has GHG Emissions savings compared to Base Case
- Lower source EUI than Base Case
- Does not require significant architectural changes to the prototype building.

Option 1 Cons:

- Probable need for second electric service
- Potential for longer refrigerant runs between AHU evaporator and condensing units, must be handled by design team

Architectural Impacts

Option 1 does not require significant architectural changes to the prototype building. One potential impact would be a reduction in the overall size of the rooftop playground area due to the installation of remote rooftop condensing units serving the indoor AHUs (see Figure 5 above). The outdoor condensing units associated with the RTUs would require additional dunnage area compared to the original design RTUs to accommodate the installation of condensing units (see Figure 4 above). However, there would be some dunnage decrease due to elimination of the air-cooled chiller. For the prototype building analyzed, the dunnage changes appeared to result in a net deduct in cost.

Electrical Service Analysis

A 4000A, 208Y/120 Volt, 3-Phase, 4-Wire electrical service as indicated in the SCA 60% design document will not be adequate for the building with electrification because of the increased electrical heating equipment loads. Cabinet unit heaters, convectors, hot water coils, and air curtains throughout the building would be changed from hot water to electric, VRF heat pumps were added in some spaces, and the electrical demand of the air handling units were increased. After adding these loads with appropriate demand factors and the lowest of all non-coincidental loads dropped, Lilker arrived at a total of 1764KVA which is equivalent to 4896Amps (5875 Amps with 20%

spare capacity) 208 Volt 3-phase. Therefore, the team proposes two (2) 3000 Amps electric services be used for the electrification design, each rated at 208Y/120V, 3-Phase, 4-Wire system.

The service feeders would enter the building through the foundation wall and terminate in the main switchboard room located on the 165th street side of the prototype building in the cellar. One service will energize a 3000 Amp switchboard in the same room and the other service will energize a 3000 Amp switchboard in the boiler room located on the 5th floor. See Electrical drawing E201.00 and E207.00 for location and drawing E501.00 for one-line diagram.

This option does not involve the construction of a new room since the switchboard room and the boiler room are sized adequate to house this equipment.

480V Service Considerations

As an alternative, we proposed a 480Y/277 Volt 3-Phase, 4-Wire electric service from Con Edison to energize the mechanical and lighting loads and 208Y/120 Volt feeders through a customer step-down transformer for the fire alarm system, power receptacle and low voltage system loads. Per our calculation, this would require only one (1) 3000Amp service and service equipment. The customer transformers would be installed inside the switchboard room, so there would be no need for a separate transformer room.

Since the prototype building is not in a flood zone, Con Edison would be responsible for installing an underground network protector, and network protector compartment at the transformer vault for the service feeders. The customer is not responsible for constructing a separate network protector room.

Per the SCA In-House design Engineer, Con Edison does not have 480Y/277 Volts system available on the street at the prototype building, so this was not a feasible option. A 480V service may be available for other buildings, if justification can be provided to Con Edison based on the demand load projected for the building. However, this option was not considered further for this study due to spatial and costing impacts that would result from adding this service and the network protector room that is required along with it.

Costing Analysis

Cost estimates for the two electrification options were provided by a cost consultant. Construction costs were developed for the base case and both options. Net incremental costs were developed for each electrification option by comparison with the base case building. The term “net” is used to include both the added costs of an electrified building, including new HVAC equipment, electrical upgrades, etc. and the deductions from removal of the HVAC equipment in the original design. An estimated 3% cost savings is associated with option 1.

3.3 Option 2: Vertical Packaged Heating Cooling Ventilation (HCV) Units, Custom Heat Pump AHUs / RTUs Serving Interior and PA Spaces, VRF Units Coupled With DOAS Unit Serving Small Classrooms, Offices, and Miscellaneous Spaces, w/ Electric Resistance Perimeter Heat

This option analyzes replacing the standard variable air volume (VAV) air-handling unit design with packaged HCV units equipped with high efficiency heat pump and cooling capability to serve most perimeter spaces (classrooms, offices, etc.) in the building (Figure 6). Electrification design drawings for this option, including floor plans, mechanical schedules, and equipment cutsheets, were provided by Lilker Associates and then modeled by OLA. A typical floor plan layout of an HCV system is shown below in Figure 7.

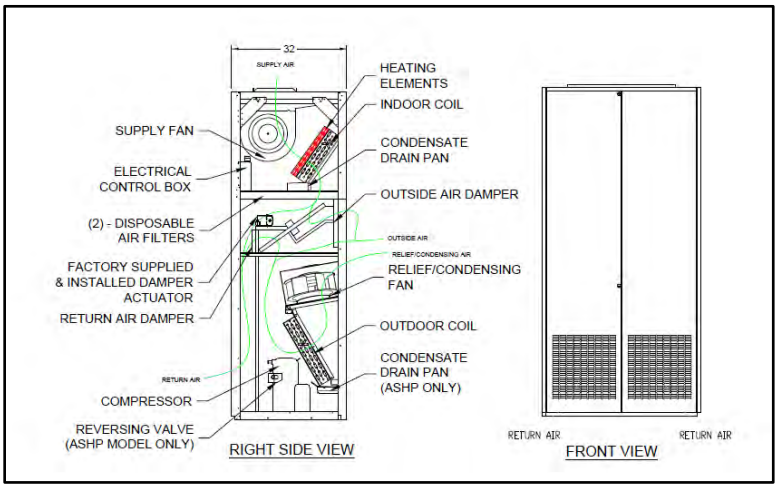


Figure 6. Typical Packaged HCV Diagram

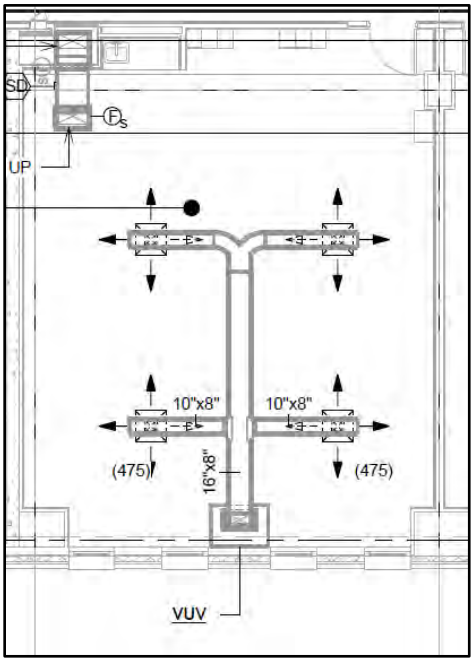


Figure 7. Typical HCV floor plan for classroom

The HCV units are supplied with an energy recovery wheel to preheat the outdoor air entering each space and include a backup electric heater (Figure 6) that is sized to handle the full heating load of a typical classroom. The electric heater would be sequenced to enable as required during extreme weather conditions to account for derating of the heat pump capacity, and as backup if compressors fail. The HCV's can also be installed with MERV-13 filtration, and the added fan power associated with these filters was included in the energy model.

Public assembly spaces (cafeteria, gymatorium), and interior spaces would still be served by heat pump AHUs/RTUs as described in Option 1. In addition, a variable refrigerant flow (VRF) system with indoor ceiling mounted fan coil units (Figure 8) would be installed to serve smaller perimeter classrooms, offices, and other miscellaneous spaces (Figure 9) that are considered impractical to accommodate HCV units. Since maintenance at the ceiling level is a concern, the number of spaces requiring such units would be kept within DSF's current limit on ceiling mounted units. These spaces would be coupled with a Dedicated Outdoor Air System (DOAS) (Figure 10) to provide ventilation, installed on the roof of the building.

Figure 8. Typical indoor VRF cassette serving small classrooms / offices

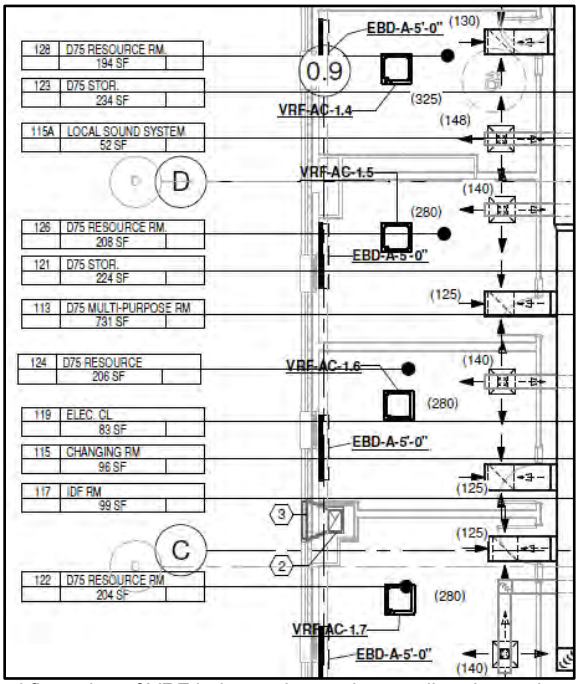


Figure 9. Typical floor plan of VRF indoor units serving small perimter classrooms / offices

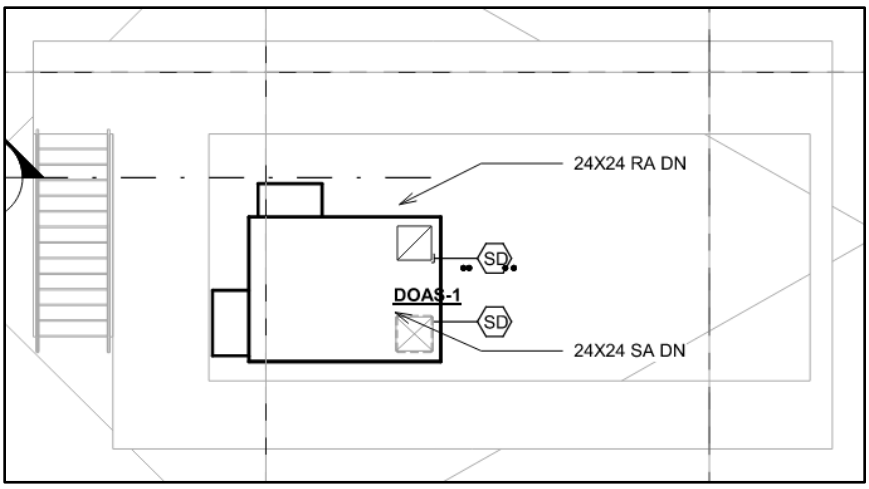


Figure 10. Roof plan layout of DOAS-1

This option utilizes electrical resistance perimeter heat but is only intended to operate as supplemental heat for spaces that are not served by HCV's (classrooms). All heat only systems in the Base Case were also converted to electric and serve the same spaces as in the original design. Refer to Appendix A for the electrification design drawings for this option.

Option 2 Pros:

- Individual zone control for classrooms
- Less ductwork, VAV boxes, etc.
- Lower fan power for classroom systems
- Has lower incremental cost than Base Case
- Has GHG Emissions savings compared to Base Case
- Potential cost savings from lower floor-to-floor ceiling height due to less ductwork
- Ability to stay in heat pump mode for full heating requirements
- For new addition projects with existing low floor-to-floor heights, allows addition floor elevations to be at the same elevation as the existing building

Option 2 Cons:

- Probable need for second electric service
- Potential to compromise building envelope performance by adding an intake louver in every classroom
- Less available interior space
- Unit ventilator air source heat pumps require auxiliary electric heat for extreme ambient conditions
- Large number of compressors throughout building will likely have higher maintenance costs than centralized equipment
- Additional Filter maintenance required
- Greater architectural impact compared to Option 1
- Potential for increased thermal bridging
- While still better than the base case for carbon emissions, the source EUI is higher than Base Case and Option 1
- Acoustic impact requires further analysis to understand if additional sound attenuation needs to be provided.

Architectural Impacts

The architectural impact for this option is greater than Option 1, primarily due to the work associated with installation of the packaged HCV unit exterior louvers. Design of the classroom windows would need to be modified in order to accommodate the unit outdoor air louver through the building wall. Several HCV arrangements were considered by the Architectural consultant for this option. For the purposes of this study, it was determined to locate the HCV units in the middle of the exterior classroom wall, where there was no window in the base case (Figure 11). As a result, the quantity of windows per classroom is not affected. Future building designs can further optimize the placement of the HCV's. For example, a corner installation if desired by project designers could be employed.

Figure 11. Typical Option 2 window elevation view

The overall shaft area required for ductwork routing through the building would also decrease as a result of this option, due to the individual HCV systems serving classrooms in lieu of the current SCA design. Similar to Option 1 above, a potential impact on the size of the rooftop playground area exists in this option as well. This is due to the installation of remote rooftop condensing units serving the indoor AHUs (see Figure 5 above).

Electrical Service Analysis

As mentioned in Option #1 above, 4000A, 208Y/120 Volt, 3-Phase, 4-Wire system electrical service as indicated in the SCA 60% design documents will not be adequate for the building with electrification because of the increased electrical heating equipment loads. Cabinet unit heaters, convectors, hot water coils, and air curtains throughout the building would be changed from hot water to electric, HCV heat pumps were added throughout the building to serve classrooms, and the electrical demand of the public assembly space air handling units were increased. After all loads have been added with appropriate demand factors and the lowest of all non-coincidental loads dropped, Lilker arrived at a total of 1550 KVA which is equivalent to 4303 Amps (5164 Amps with 20% spare capacity) 208 Volt 3-phase system. Therefore, the team

proposes two (2) 3000 Amps electric services be used for the electrification design, each rated at 208Y/120V 3 Phase 4-Wire system.

Similar to option 1 above, the service feeders will enter the building through the foundation wall and terminate in the main switchboard room located on the 165th street side of the prototype building in the cellar. One service will energize a 3000 Amp switchboard in the same room and the other service will energize a 3000 Amp switchboard in the boiler room located on the 5th floor. See Electrical drawing E201.00 and E207.00 for location and drawing E501.00 for one-line diagram.

This option does not involve the construction of a new room since the switchboard room and the boiler room is sized adequate to house this equipment.

480V Service Considerations

As an alternative, we proposed a 480Y/277 Volt 3-Phase, 4-Wire electric service from Con Edison to energize the mechanical and lighting loads and 208Y/120 Volt feeders through a customer step-down transformer for the fire alarm system, receptacle and low voltage system loads. Per our calculation, this would have required only one (1) 3000Amp service and service equipment. The customer transformers will be installed inside the switchboard room, so there would be no need for a separate transformer room.

Since the prototype building is not in a flood zone, Con Edison would be responsible for installing an underground network protector, and network protector compartment at the transformer vault for the service feeders. The customer is not responsible for constructing a separate network protector room.

As mentioned in option 1 above, Con Edison does not have 480Y/277 Volts system available on the street at the protype building, so this may not be a feasible option. A 480V service may be available for other buildings, if justification can be provided to Con Edison based on the demand load projected for the building. However, this option was not considered further for this study due to spatial and costing impacts that would result from adding this service and the network protector room that is required along with it.

Costing Analysis

Cost estimates for the two electrification options were provided by a cost consultant. Construction costs were developed for the base case and both options. Net incremental costs were developed for each electrification option by comparison with the base case building. The term “net” is used to include both the added costs of an electrified building, including new HVAC equipment, electrical upgrades, etc. and the deductions from removal of the HVAC equipment in the original design. An estimated 3% cost savings is expected with option 2.

4.0 Results

Table 4. Electrification Options Annual Energy Usage Summary

Model Description	Electricity (kWh)	Natural Gas (therms)	GHG Emissions (tCO_2e)	Site Energy Use Index ($kBtu/ft^2$)	Source Energy Use Index ($kBtu/ft^2$)	Peak Demand (kW)	Electricity Saved (kWh)	Natural Gas Saved (therms)	GHG Emissions Saved (tCO_2e)	Site Energy Saved ($kBtu/ft^2$)	Source Energy Saved ($kBtu/ft^2$)	Demand Saved (kW)	Annual Energy Cost ($/year)	Effective Blended Electricity Rate ($/kWh)	Energy Cost Index ($/SF/yr)	Annual Energy Cost Increase ($/yr)	Net Incremental Construction Cost Savings (%)
Large High School Base Case	608,340	9,978	209	23.8	49.0	355							$132,272	$ 0.223	$1.02		
Large High School Option 1: Heat Pump AHU's/RTU's w/ Electric Resistance Perimeter Heat	723,349	0	186	19.1	48.7	561	-115,010	9,978	24	4.7	0.4	-207	$211,355	$ 0.292	$1.63	$79,083	3%
Large High School Option 2: Packaged HCV Units (Classrooms), Heat Pump AHU's/RTU's (Interior and PA Spaces), w/ Electric Resistance Perimeter Heat	761,989	0	196	20.1	51.3	460	-153,650	9,978	14	3.7	-2.2	-105	$184,666	$ 0.242	$1.43	$52,394	3%

REFERENCED NOTES:

(1) The "Base Case" Designs represent the design based on current SCA standards.
(2) Each electrification option is compared to the respective "Base Case" Design.
(3) An electricity site to source conversion factor of 2.55 was used, per NYSERDA NYS data.
(4) GHG Emissions use data per "Inventory of New York City Greenhouse Gas Emissions in 2016."
(5) Energy model massing based on school Q497 60% Design.
(6) Option 2 includes a VRF / DOAS system serving small classrooms, offices and miscellaneous spaces.
(7) Construction Costs provided by construction cost consultant.
(8) tCO_2e is metric tons of carbon dioxide equivalent.

4.1 Electrification End Use Summaries

Figure 12 shows the annual site energy intensity by end use (kBtu/ft^2) for the Large High School Base Case compared with the electrification options developed for this study. The figure indicates that gas heating and kitchen equipment accounts for most of the Base Case energy consumption.

As seen in the figure below, both electrification options have a lower site EUI than the Base Case. This is primarily due to the removal of the gas-fired heating plant, which is relatively inefficient compared to the heating and cooling efficiencies (COP's) of the electric heat pump units. This can be seen when comparing the gas heating energy of the Base Case (7.7 kBtu/ft^2) to the electric space heating energy of the two electrification options (4.8 and 3.7 kBtu/ft^2 respectively). The best EUI from the model results is Option 1 (Heat Pump AHUs/RTUs). This option has a total site EUI of 19.1 kBtu/ft^2 and benefits from having the lowest overall fan energy and space cooling energy out of the options.

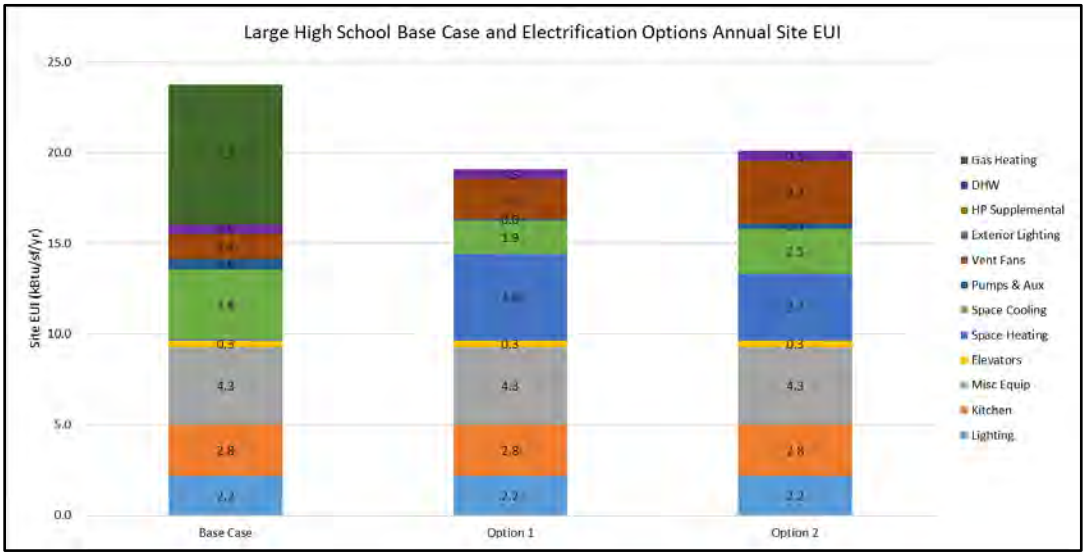


Figure 12. Large High School Base Case and Electrification Options Annual Site EUI

Figure 13 shows the annual source energy intensity by end use (kBtu/ft^2) for the Base Case compared with the electrification options. Due to the source EUI conversion factors for electricity (2.55) both options have a higher source EUI than the Base Case. It was noted that Option 2 (Packaged HCV's) has the highest source EUI primarily due to having the higher fan energy and space cooling energy compared to Option 1.

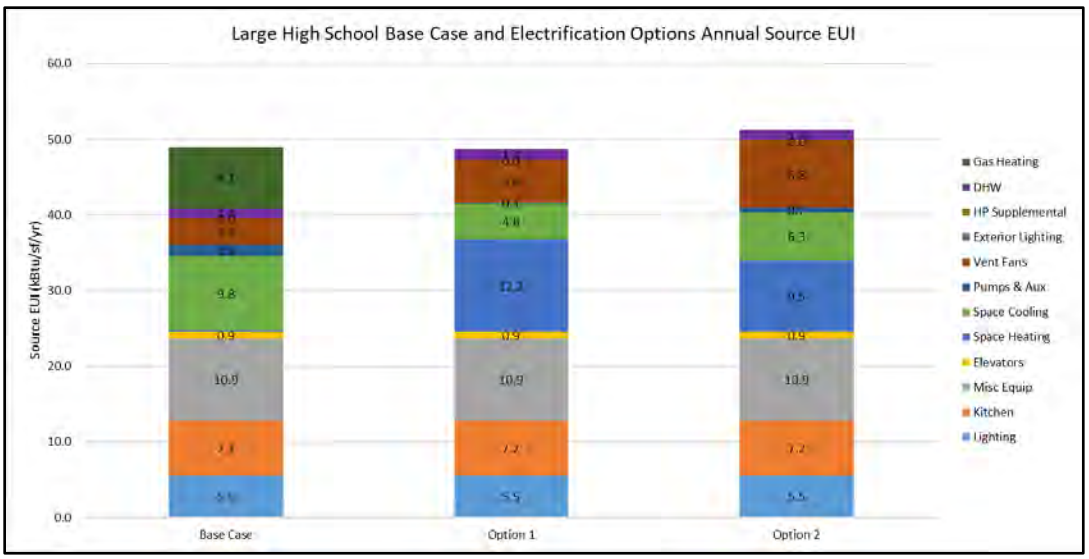


Figure 13. Large High School Base Case and Electrification Options Annual Source EUI

Figure 14 shows the annual cost breakdown by end use for the Base Case and the electrification options. It was noted that both the options have higher annual utility costs than the Base Case, due to higher electric demand and energy rates. Option 1 has the highest annual cost, due mainly to the large demand penalty associated with the large sized heat pump units and large quantity of electric resistance perimeter heat compared to Option 2.

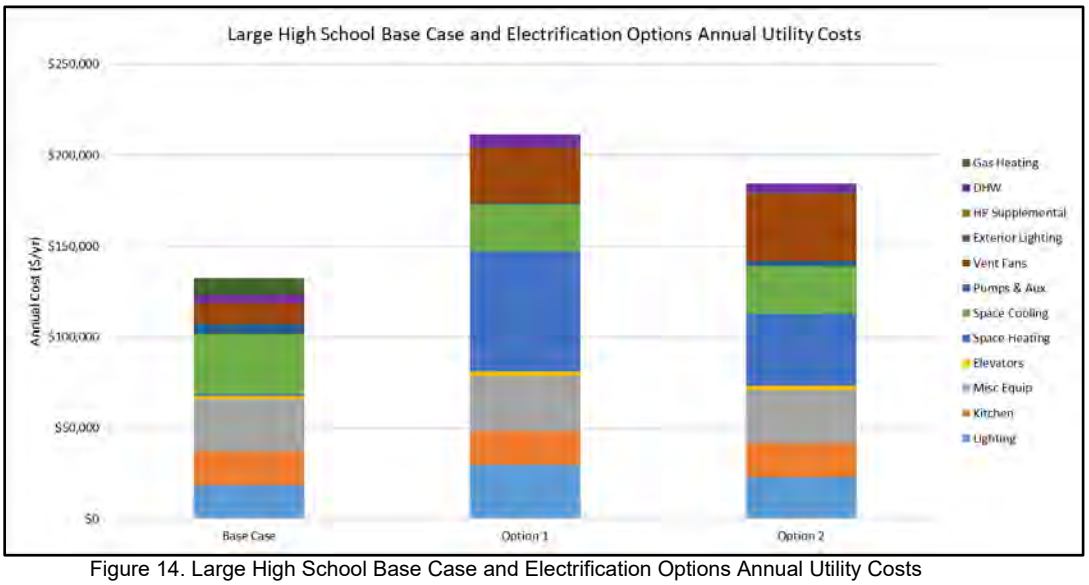


Figure 14. Large High School Base Case and Electrification Options Annual Utility Costs

5.0 Conclusions

The difference in carbon emissions between electric systems and standard gas systems is significant today and will be greater in the future. The electrification options presented in this study show a significant reduction in greenhouse gas emissions over the base case and would meet current requirements of Local Law 31 2016.

The electrification site EUI is improved over the SCA base case option but is not always an improvement in source EUI. Over time, improvements will be made in the regional grid, and the source EUI differences will be further improved over the present SCA baseline. New York State has made commitments to achieving sustainable energy goals statewide, which will continue to reduce carbon emissions associated with the electrical grid.

It should be noted that as the site and source energy results approach lower values, the differences between options may be considered small enough to be within the potential error of an energy modeling process.

6.0 Appendices

Appendix A:

Electrification MEP Design Drawings

AIR HANDLING UNITS *

UNIT NO	LOCATION	SERVICE	S.A. CFM	O.A. %	R.A. CFM	SUPPLY AIR FAN DATA								EXHAUST AIR FAN DATA							
						QTY	CFM	E.S.P. IN INCHES OF W.G	TOTAL S.P. IN INCHES OF W.G	RPM	HP	BHP	FAN TYPE	QTY	CFM	E.S.P. IN INCHES OF W.G	TOTAL S.P. IN INCHES OF W.G	RPM	HP	BHP	FAN TYPE/ RPM
AHU-1	ROOF	CLASSROOMS	15,825	7,440	13650	2	12,075	3.5	7.68	1678	20	14.50	PLUG	2	6825	1.5	3.48	1696	7.50	5.23	PLUG
AHU-2	ROOF	CLASSROOMS	15,015	7,060	13,515	2	15,775	3.5	7.68	1669	20	13.99	PLUG	2	6757	1.5	3.48	1689	7.50	5.17	PLUG
AHU-3	ROOF	CLASSROOMS	15455	7265	13300	2	15,775	3.5	7.68	1674	20	14.27	PLUG	2	6650	1.5	3.48	1678	7.50	5.08	PLUG
AHU-4	ROOF	CLASSROOMS	15180	7135	13215	2	15,775	3.5	7.68	1671	20	14.10	PLUG	2	6607	1.5	3.48	1674	7.50	5.04	PLUG
AHU-5	MECH. ROOM 3RD FLOOR	GYMATORIUM	8,950	67%	7,425	2	4,475	2.5	6.57	1950	10	7.08	PLUG	2	3715	1	2.65	1827	3	2.16	PLUG
AHU-6	MECH. ROOM 3RD FLOOR	CAFE/KITCHEN	6,825	57%	5,580	1	6,825	2.0	6.07	2030	15	9.04	PLUG	1	5580	1	2.65	1757	5	3.36	PLUG

UNIT NO	ENTHALPY WHEEL										RETURN AIR (MIXING)				MIXING POINT				HOT GAS REHEAT COIL				DUAL MODE DX COIL- COOLING MODE							
	QTY	SIZE IN	(SUMMER) EAT	LAT (SUMMER)		(WINTER) EAT	LAT (WINTER)		HP	FROST CONTROL	SUMMER		WINTER		SUMMER		WINTER		CFM	EAT	LAT	CAPACITY (MBH)	CFM	EAT		LAT		SENSIBLE [MBH]	TOTAL [MBH]	TON
			DB F°	DB F°	WB F°	DB F°	DB F°	WB F°			CFM	MIX. TEMP. (DB/WB)	CFM	MIX. TEMP. (DB/WB)	CFM	MIX. TEMP. (DB/WB)	CFM	MIX. TEMP. (DB/WB)						DB F°	WB F°	DB F°	WB F°			
AHU-1	1	12	89	82.1	68.7	13	50.9	41.6	0.50	VFD	8385	78.0/65.0	8385	72/54.36	15825	80.0/66.81	15825	62.1/48.9	15825	55.0	65.0	175	15825	80.0	66.81	55	55	436	578	48.2
AHU-2	1	12	89	81.6	68.4	13	53.7	43.2	0.50	VFD	7956	78/65.0	7956	72/54.36	15016	79.80/66.68	15016	63.4/49.4	15016	55.0	65.0	166	15016	79.8	66.68	55	55	410	542	45.2
AHU-3	1	12	89	82.1	68.7	13	50.5	41.3	0.50	VFD	8192	78/65.0	8192	72/54.36	15455	80.0/66.81	15455	62.0/48.7	15455	55.0	65.0	171	15455	80.0	66.81	55	55	426	565	47.1
AHU-4	1	12	89	81.9	68.6	13	51.5	41.9	0.50	VFD	8046	78/65.0	8046	72/54.36	15180	79.90/66.81	15180	62.4/48.9	15180	55.0	65.0	167	15180	79.9	66.81	55	55	416	555	46.3
AHU-5	1	04	89	82.1	68.9	13	50.8	41.1	0.25	VFD	2980	78/65.0	2980	72/54.36	8,950	80.80/67.68	8,950	57.9/46.0	8,950	55.0	65.0	99	8,950	80.8	67.69	55	55	255	356	29.7
AHU-6	1										2960	78/65.0	2960	72/54.36	6,825	84.30/69.77	6,825	38.6/33.6	6,825	55.0	65.0	76	6,825	84.3	69.77	55	55	220	323	27

AIR HANDLING UNITS (CONTINUATION)

DUAL MODE DX COIL- HEATING MODE					ELECTRIC HEATER- SIZED FOR MIN OA			AIR SOURCE HEAT PUMP							PRE FILTERS	FINAL FILTERS	ELECTRICAL			ESTIMATED ELECTRICAL DATA						MODEL NO.	REMARKS
CFM	EAT DB F°	LAT DB F°	AMBIENT TEMP [F°]	TOTAL [MBH]	EAT	LAT	KW	MODEL	QUANTITY	NOMINAL TONNAGE	CIRCUIT QUANTITY	DESIGN AMBIENT TEM. COOLING	DESIGN AMBIENT TEM. HEATING	COMPRESSOR MODULATION	SA & EA	SA	GFI	LIGHTS	POWERED BY	V/PH/HZ	FLA	MCA	MOP	COOLING IEER (SEER)	HEATING COP (HSPF		
15825	62	85.0	15	392	62.1	85.0	117	ASTP48.4	1	48	4	89	15	YES	2"-30%	2"-MERV13	1	8		208/3/60	681	694	700	15.9	4.13	[redacted]	SEE NOTES
15016	63	85.0	15	351	63.4	85.0	105	ASTP48.4	1	48	4	89	15	YES	2"-30%	2"-MERV13	1	8		208/3/60	646	659	700	15.9	4.13	[redacted]	SEE NOTES
15455	62	85.0	15	384	62.0	85.0	115	ASTP48.4	1	48	4	89	15	YES	2"-30%	2"-MERV13	1	8		208/3/60	675	688	700	15.9	4.13	[redacted]	SEE NOTES
15180	62	85.0	15	371	62.4	85.0	111	ASTP48.4	1	48	4	89	15	YES	2"-30%	2"-MERV13	1	8		208/3/60	664	677	700	15.9	4.13	[redacted]	SEE NOTES
8,950	58	85.0	15	262	57.9	85.0	78	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2"-30%	2"-MERV13	1	8		208/3/60	307	329	350	N/A	N/A	[redacted]	SEE NOTES
6,825	39	85.0	15	343	38.6	85.0	102	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2"-30%	2"-MERV13	1	8		208/3/60	355	373	400	N/A	N/A		SEE NOTES

NOTES:
1. ALL AHU FAN MOTORS SHALL COMPLY WITH THE ASHRAE 90.1 2013 EFFICIENCIES REQUIREMENT.
2. COILS SHALL HAVE COPPER TUBES WITH ALUMINUM FINS (MAX. 14 FINS/IN.)
3. UNITS SHALL BE PROVIDED WITH 2" PLEATED PRE FILTER MERV 8 AND 12" MERV-13 PLEATED FINAL FILTER FOR SUPPLY AIR STREAM AND 2" PLEATED PRE FILTER MERV 8 UPSTREAM OF THE ENERGY WHEEL.
4. PROVIDE SEAMLESS STAINLESS STEEL DRAIN PANS.
5. SPECS AND DRAWINGS FOR ADDITIONAL INFORMATION.
6. UNITS SHALL BE PROVIDED WITH SINGLE POINT POWER SUPPLY CONNECTION WITH UNIT MOUNTED MAIN ,SAFETY DISCONNECT SWITCH, CONTROL PANEL, GFI RECEPTACLES AND LAMPS. DISCONNECT SWITCH MAX. HEIGHT IS 79" TO ITS CENTER LINE.
7. ALL AHUS (SUPPLY & EXHAUST SECTIONS) SHALL BE PROVIDED WITH SMOKE DETECTORS
8. SMOKE DETECTORS FOR SUPPLY AND EXHAUST SECTIONS SHALL BE FURNISHED BY ELECTRICAL CONTRACTOR FOR FACTORY INSTALLATION AND WIRING.
9. ALL AHU FANS (SUPPLY & RETURN) SHALL BE PROVIDED WITH VARIABLE FREQUENCY DRIVE.
10. ACOUSTICAL PERFORMANCE FOR ALL THE UNITS SHALL BE AS INDICATED IN SPECIFICATION #15852 & 15935
11. OVERALL DIMENSIONS DO NOT INCLUDE OA INLET & SPILL AIR HOODS.
12. ALL TOTAL STATIC PRESSURES SHALL INCLUDE DX COIL, HOT GAS REHEAT COIL & DIRTY FILTER (ALL FILTERS) ALLOWANCES.
13. MANUFACTURER SHALL PROVIDE AHUs WITH KNOCK-OUTS AT BOTTOM OF UNITS TO ALLOW FOR POWER FEED FROM THE BOTTOM.
14. PROVIDE SMOKE DAMPERS FOR SUPPLY AND RETURN SECTIONS OF AHU-1, AHU-2 & AHU-3
15. PROVIDE VIBRATION ISOLATORS ON THE EXTERIOR OF ALL UNITS.
16. PROVIDE RUBBER ISOLATORS FOR ALL FANS AND COMPRESSORS.
17. REFRIGERANT SHALL BE 410A.
18. UNITS SHALL BE PROVIDED WITH OEM CONTROLS.

FAN SCHEDULE *

UNIT NO.	SERVICE	LOCATION	TOTAL AIR CAP. CFM	EXTERNAL S.P. IN INCHES OF W.G.	MOTOR HP	BHP	RPM	TYPE OF FAN	TYPE OF DRIVE	INTERLOCK WITH	DAMPER TYPE	V/PH/HZ	MANUFACTURER	MODEL No	REMARKS
KEF-1	136-KITCHEN HOOD	GYM ROOF	3,650	2.0	3	2.0	1,212	CENTRIFUGAL UPBLAST	BELT	DIETICIAN'S SWITCH	N/A	208/60/3	[redacted]	[redacted]	SEE NOTES
KEF-2	136, 136B - KITCHEN GENERAL EXHAUST	MECH. ROOM 3RD FLOOR	1,650	1.25	3/4	0.59	1,386	UTILITY	BELT	SCHEDULED VIA BMS	MOTORIZED	208/60/3		[redacted]	
KEF-3	136G-CAN WASH ROOM	MECH. ROOM 3RD FLOOR	125	0.75	1/4	0.09	1,518	UTILITY	BELT	SCHEDULED VIA BMS	BACKDRAFT	208/60/3		[redacted]	
KEF-4	C21D, C21D-FOOD & NON-FOOD STORAGE	CELLAR	300	1.0	1/4	–	1,521	INLINE	DIRECT	SCHEDULED VIA BMS	MOTORIZED	208/60/1		[redacted]	
														[redacted]	
EF-1	134-REFUSE./RECYCLE RM.	CELLAR	475	0.75	1/4	–	1,480	INLINE	DIRECT	24/7 OPERATION	MOTORIZED	208/60/1		[redacted]	
EF-2	C22-ELECTRICAL METER RM.	CELLAR	525	0.75	1/4	–	1,547	INLINE	DIRECT	TEMPERATURE SENSOR	MOTORIZED	208/60/1		[redacted]	
EF-3	C02-WATER METER/PUMP RM.	CELLAR	475	1.0	1/3	–	1,630	CEILING	DIRECT	SCHEDULED VIA BMS	MOTORIZED	208/60/1		[redacted]	
EF-4	102-ACID WASTE ROOM	1ST FLOOR	475	1.0	1/3	–	1,630	CEILING	DIRECT	24/7 OPERATION	MOTORIZED	208/60/1		[redacted]	
EF-5	205B, 205C-LOCKER ROOMS	MECH. ROOM 3RD FLOOR	770	1.0	1/3	0.23	1,565	UTILITY	BELT	SCHEDULED VIA BMS	MOTORIZED	208/60/3		[redacted]	
EF-6	205I-VISITING TEAM LOCKER RM.	MECH. ROOM 3RD FLOOR	225	0.75	1/4	0.12	1,692	UTILITY	BELT	SCHEDULED VIA BMS	BACKDRAFT	208/60/3		[redacted]	
EF-7	140-GROUND EQUIP. RM.	1ST FLOOR	150	0.5	1/15	–	1,218	CEILING	DIRECT	SCHEDULED VIA BMS	BACKDRAFT	208/60/1		[redacted]	
EF-8	519-BOILER ROOM	ROOF	1,400	0.375	1/3	0.21	1,175	CENTRIFUGAL DOWNBLAST	BELT	TEMPERATURE SENSOR	MOTORIZED	208/60/3		[redacted]	
EF-9	402A, 502A-ACID STOR. RM.	ROOF	200	0.5	1/3	0.09	1,395	CENTRIFUGAL DOWNBLAST	BELT	24/7 OPERATION	BACKDRAFT	208/60/3		[redacted]	
EF-10	510A-ACID STOR. RM.	MECH. ROOM 3RD FLOOR	100	0.04	1/3	0.04	999	CENTRIFUGAL DOWNBLAST	BELT	24/7 OPERATION	BACKDRAFT	208/60/3		[redacted]	
														[redacted]	
TEF-1	TOILETS	ROOF	4,150	1.5	2	1.89	1,025	CENTRIFUGAL DOWNBLAST	BELT	SCHEDULED VIA BMS	MOTORIZED	208/60/3		[redacted]	
TEF-2	136C-KITCHEN STAFF TOILET	MECH. ROOM 3RD FLOOR	75	0.75	1/15	–	1,455	INLINE	BELT	SCHEDULED VIA BMS	BACKDRAFT	208/60/1		[redacted]	
TEF-3	202A, 204-TOILETS	ROOF	150	0.75	1/6	0.1	1,433	CENTRIFUGAL DOWNBLAST	BELT	SCHEDULED VIA BMS	BACKDRAFT	208/60/1		[redacted]	
														[redacted]	
SPF-1	CELLAR SMOKE PURGE FAN	CELLAR	20,250	1.5	15	8.92	1,770	INLINE	DIRECT	SMOKE PURGE	SEE PLANS	208/60/3		[redacted]	
SPF-2	GYM SMOKE PURGE FAN	GYM ROOF	26,000	1.0	15	12.33	1,770	ROOF	DIRECT	SMOKE PURGE	SEE PLANS	208/60/3		[redacted]	
														[redacted]	
FHE-1	404-SCIENCE LAB	ROOF	1,150	1.25	1 1/2	1.06	3,034	LAB	BELT	SCHEDULED VIA BMS (AHU-2)	MOTORIZED	208/60/3		[redacted]	
FHE-2	402-SCIENCE PREP	ROOF	750	1.25	1	0.75	2,746	LAB	BELT		MOTORIZED	208/60/3		[redacted]	
FHE-3	502-SCIENCE PREP	ROOF	750	1.25	1	0.75	2,746	LAB	BELT		MOTORIZED	208/60/3		[redacted]	
FHE-4	504-SCIENCE LAB	ROOF	1,150	1.25	1 1/2	1.06	3,034	LAB	BELT		MOTORIZED	208/60/3		[redacted]	
FHE-5	512-SCIENCE LAB	ROOF	1,150	1.25	1 1/2	1.06	3,034	LAB	BELT		MOTORIZED	208/60/3		[redacted]	
FHE-6	510-SCIENCE PREP	ROOF	750	1.25	1	0.75	2,746	LAB	BELT		MOTORIZED	208/60/3		[redacted]	

NOTES:
1. ALL ROOF MOUNTED FANS TO BE PROVIDED WITH 24" HEIGHT PREFABRICATED ROOF CURB AND 12" HIGH EXTENSION CURB WITH GASKETED ACCESS DOOR.
2. KEF-1 SHALL BE "UL" LISTED FOR GREASE REMOVAL AND PROVIDED WITH GREASE TROUGH, HEAVY DUTY REGREASABLE BEARINGS IN CAST IRON PILLOWBLOCK HOUSINGS.
3. ALL INLINE FANS SHALL BE PROVIDED WITH BELT GUARD, INLET GUARD, VIBRATION ISOLATORS.
4. KEF-2 SHALL RUN WHEN AHU-4 IS RUNNING AND WHILE KEF-1 IS OFF.
5. ALL FANS SHALL BE PROVIDED WITH DISCONNECT SWITCH.
6. FANS SHALL BE PROVIDED WITH HIGH EFFICIENCY MOTOR THAT MEET THE REQUIREMENTS OF THE 2016 NYCECC SECTION C403.4.4.4 AND ASHRAE 90.1-2013. FAN MOTORS LESS THAN 1 HP MUST BE AT LEAST 70% EFFICIENT.
7. FANS SF-1 & SF-2 SHOWN ON DWGS. M107.00 & M207.00 ARE PROVIDED BY OTHERS. PLEASE SEE DWGS. H201.00-H208.00 FOR DETAILED INFORMATION.
8. ALL MOTORIZED DAMPERS SHALL MATCH THE MOTOR VOLTAGE OR BE THE TYPE THAT IS CAPABLE OF DIRECT WIRING FROM THE FAN MOTOR NO MATTER WHAT THE VOLTAGE OF THE FAN MOTOR. THE MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE WIRING OF THIS DAMPER MOTOR FROM THE FAN MOTOR. NO SEPARATE CIRCUIT SHALL BE REQUIRED TO WIRE THE MOTORIZED DAMPER.
9. SPF-1, SPF-2, SPF-3 & SPF-4 SHALL BE UL LISTED FOR POWER VENTS FOR SMOKE CONTROL SYSTEMS.
10. SEE SPECS FOR ADDITIONAL INFORMATION.
11. FAN SHALL HAVE A MOTORIZED DAMPER (EXCEPT KEF-1). ALL MOTORIZED DAMPER FOR EXHAUST FANS SHALL BE PROVIDED BY THE FAN MANUFACTURER AND POWER FEED THE DAMPER MOTOR FROM THE FAN.
12. ALL FANS WITH MOTORS IN EXCESS OF $\frac{1}{2}$ HP LOCATED ON THE ROOF SHALL BE PROVIDED WITH ROOF CURB ISOLATION RAILS BETWEEN THE FAN CURB AND FAN'S CURB CAP. ISOLATORS SHALL PROVIDE A MINIMUM EFFICIENCY OF 90% WITH MAXIMUM DEFLECTION OF 2 INCHES.
13. FANS WITH AN AIR FLOW RATE LESS THAN 300 CFM SHALL HAVE A GRAVITY TYPE DAMPER. FAN WITH AN AIR FLOW RATE 300 CFM AND GREATER SHALL HAVE A MOTORIZED DAMPER. MOTORIZED DAMPER SHALL HAVE THE POWER FROM ELECTRICAL FEED FOR RESPECTIVE FAN. (TYPICAL ALL FANS)

APPLICATIONS FOR SERVICE EQUIPMENT PERMITS:

CONTRACTOR SHALL FILE FOR AND OBTAIN SERVICE EQUIPMENT PERMITS FOR ALL EQUIPMENT NOTED WITH ASTERISK (*) IN ACCORDANCE WITH TITLE 28, SECTION MC 105 OF THE NEW YORK CITY BUILDING CODE.

COMPLIANCE WITH ASHRAE 90.1 2013

NOTE:

TO THE BEST OF MY KNOWLEDGE, BELIEF AND PROFESSIONAL JUDGMENT, THESE PLANS AND SPECIFICATIONS ARE IN COMPLIANCE WITH THE ASHRAE 90.1 2013

REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION

AIR HANDLING UNITS CONDENSING UNITS *

TAG	LOCATION	SERVICE	TOTAL CAPACITY (BTU/H)		CORRECTED CAPACITY (BTU/H)		CORRECTED POWER INPUT (KW)		OUTDOOR TEMPERATURE (F)			EFFICIENCY		REFRIGERANT
			COOLING	HEATING	COOLING	HEATING	COOLING	HEATING	COOLING DBT	COOLING WBT	HEATING DBT	COOLING IEER (SEER)	HEATING COP (HSPF)	
AHU-5-ACCU-1-1	ROOF	AHU-5	119700	135000	130007	148571	8.4	13.6	91.9	73.9	10.9	29.6	3.97	R410A
AHU-5-ACCU-1-2	ROOF	AHU-5	119700	135000	130007	148571	8.4	13.6	91.9	73.9	10.9	29.6	3.97	R410A
AHU-5-ACCU-1-3	ROOF	AHU-5	119700	135000	130007	148571	8.4	13.6	91.9	73.9	10.9	29.6	3.97	R410A
AHU-6-ACCU-1-1	ROOF	AHU-6	119700	135000	127822	147974	8.2	13.8	91.9	73.9	10.9	29.6	3.97	R410A
AHU-6-ACCU-1-2	ROOF	AHU-6	119700	135000	127822	147974	8.2	13.8	91.9	73.9	10.9	29.6	3.97	R410A
AHU-6-ACCU-1-3	ROOF	AHU-6	119700	135000	127822	147974	8.2	13.8	91.9	73.9	10.9	29.6	3.97	R410A

AIR HANDLING UNITS CONDENSING UNITS

PIPING CONNECTIONS (INCH)		POWER						SOUND POWER	MODEL NAME	TYPE	MANUFACTURER
LIQUID	LP GAS	HP GAS	VOLTS	PHASE	HEATINGHZ	MCA (A)	MOP (A)				
1/2	1+1/8	3/4	208	3	60	30.9	40	79	[redacted]	MULTIV 5	[redacted]
1/2	1+1/8	3/4	208	3	60	30.9	40	79	[redacted]	MULTIV 5	[redacted]
1/2	1+1/8	3/4	208	3	60	30.9	40	79	[redacted]	MULTIV 5	[redacted]
1/2	1+1/8	3/4	208	3	60	30.9	40	79	[redacted]	MULTIV 5	[redacted]
1/2	1+1/8	3/4	208	3	60	30.9	40	79	[redacted]	MULTIV 5	[redacted]
1/2	1+1/8	3/4	208	3	60	30.9	40	79	[redacted]	MULTIV 5	[redacted]

Multi V HR Boxes

Location	Tag	Model Number	Quantity	Power			
				Volts	Phase	Hz	RLA
ACCU-1-1_AHU-5	HR-BOX-ACCU-1-1_AHU-5	[redacted]	1	208 / 230V	1Ph	60Hz	0.1
ACCU-1-1_AHU-5	HR-BOX-ACCU-1-1_AHU-5	[redacted]	1	208 / 230V	1Ph	60Hz	0.1
ACCU-1-2_AHU-5	HR-BOX-ACCU-1-1_AHU-5	[redacted]	1	208 / 230V	1Ph	60Hz	0.1
ACCU-1-2_AHU-5	HR-BOX-ACCU-1-1_AHU-5	[redacted]	1	208 / 230V	1Ph	60Hz	0.1
ACCU-1-3_AHU-5	HR-BOX-ACCU-1-1_AHU-5	[redacted]	1	208 / 230V	1Ph	60Hz	0.1
ACCU-1-3_AHU-5	HR-BOX-ACCU-1-1_AHU-5	[redacted]	1	208 / 230V	1Ph	60Hz	0.1
ACCU-1-1_AHU-6	HR-BOX-ACCU-1-1_AHU-6	[redacted]	1	208 / 230V	1Ph	60Hz	0.1
ACCU-1-1_AHU-6	HR-BOX-ACCU-1-1_AHU-6	[redacted]	1	208 / 230V	1Ph	60Hz	0.1
ACCU-1-2_AHU-6	HR-BOX-ACCU-1-1_AHU-6	[redacted]	1	208 / 230V	1Ph	60Hz	0.1
ACCU-1-2_AHU-6	HR-BOX-ACCU-1-1_AHU-6	[redacted]	1	208 / 230V	1Ph	60Hz	0.1
ACCU-1-3_AHU-6	HR-BOX-ACCU-1-1_AHU-6	[redacted]	1	208 / 230V	1Ph	60Hz	0.1
ACCU-1-3_AHU-6	HR-BOX-ACCU-1-1_AHU-6	[redacted]	1	208 / 230V	1Ph	60Hz	0.1

DUCT SILENCER SCHEDULE

UNIT NO	SERVICE	LOCATION	OCTAVE BAND								UNIT DIMENSIONS W x H x L INCHES	CFM	MAX. FACE VELOCITY FPM	MAX. S.P.D. IN.W.G.	MANUFACTURER BASED ON	MODEL NO
			1	2	3	4	5	6	7							
			CENTER FREQUENCY - HZ													
			63	125	250	500	1000	2000	4000							
ST-1S	AHU-1 SUPPLY	5TH FLOOR													[redacted]	[redacted]
ST-2S	AHU-2 SUPPLY	5TH FLOOR													[redacted]	[redacted]
ST-3S	AHU-3 SUPPLY	3RD FLOOR													[redacted]	[redacted]
ST-4S	AHU-4 SUPPLY	3RD FLOOR													[redacted]	[redacted]
ST-1R	AHU-1 RETUNR	5TH FLOOR													[redacted]	[redacted]
ST-2R	AHU-2 RETURN	5TH FLOOR													[redacted]	[redacted]
ST-3R	AHU-3 RETURN	3RD FLOOR													[redacted]	[redacted]
ST-4R	AHU-4 RETURN	3RD FLOOR														

NOTES:
1. ALL SILENCERS SHALL HAVE INERT AND VERMIN-PROOF FIBROUS FILL MATERIAL.
2. ALL SILENCERS SHALL BE CONSTRUCTED OF 18 GA. OR HEAVIER SHEET STEEL.
3. FOR NON BASIS OF DESIGN PRODUCTS PROVIDED, CONTRACTOR IS RESPONSIBLE TO ENSURE THE REQUIRED NOISE CONTROL SOLUTION IS DELIVERED TO MEET SPACE NC CRITERIA.
4. SUBMIT A FABRICATION DRAWING SHOWING THE ACTUAL SHAPE AND DIMENSION OF THE CUSTOM MADE SILENCER THAT WAS APPROVED BY THE SILENCER MANUFACTURER. SILENCER SOUND DATA SHALL BE APPROVED BY THE ACOUSTICAL CONSULTANT BEFORE FABRICATION. FOR ADDITIONAL DETAILS OF THE SILENCERS, REFER TO SPECIFICATION 15891.

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

LLW No.: [redacted]
Facility Code: [redacted]
Date: [redacted]

Proj [redacted]
Address: [redacted]

Drawing Title:
HVAC EQUIPMENT SCHEDULE
SHEET #1

Drawing No.:
M003.00

[redacted]

Sheets in DOB Set: [redacted]

ELECTRICAL CABINET UNIT HEATERS SCHEDULE

UNIT NO.	MANUFACTURER	MODEL NO.	SERVICE	LOCATION	CATALOG TOTAL HEAT CAPACITY LOW FAN SPEED (MBH)	CORRECTION FACTOR	ACTUAL TOTAL HEAT CAPACITY (MBH)	LOW FAN SPEED CFM	FAN ELECTRICAL DATA V/PH/HZ	AMPS	FAN HP	RPM	WATTAGE (KW)	LENGTH x HEIGHT x DEPTH	REMARKS
CUH-C.1			C13 STAFF TOILER	CELLAR	12.9	.571	7.3	185	208/1/60	15.4	1/15	1050 (HIGH)	3	33"x25"x9"	CEILING MOUNTED
CUH-C.2			C16 SHOWER ROOM	CELLAR	12.9	.571	7.3	185	208/1/60	15.4	1/15	1050 (HIGH)	3	33"x25"x9"	CEILING MOUNTED
CUH-C.3			C14 SHOWER ROOM	CELLAR	12.9	.571	7.3	185	208/1/60	15.4	1/15	1050 (HIGH)	3	33"x25"x9"	CEILING MOUNTED
CUH-C.4			CORRIDOR	CELLAR	25.8	.571	14.7	230	208/1/60	25	1/15	1050 (HIGH)	5	33"x25"x9"	CEILING MOUNTED
CUH-C.5			CORRIDOR/STAIR A	CELLAR	25.8	.571	14.7	230	208/1/60	25	1/15	1050 (HIGH)	5	33"x25"x9"	CEILING MOUNTED
CUH-1.1			VESTIBULE/CAFETERIA	CELLAR	25.8	.571	14.7	230	208/1/60	25	1/15	1050 (HIGH)	5	33"x25"x9"	CEILING MOUNTED
CUH-1.2			CORRIDOR/STAIR A	CELLAR	25.8	.571	14.7	230	208/1/60	25	1/15	1050 (HIGH)	5	33"x25"x9"	CEILING MOUNTED
CUH-1.3			STAIR B	CELLAR	12.9	.571	7.3	185	208/1/60	15.4	1/15	1050 (HIGH)	3	33"x25"x9"	CEILING MOUNTED
CUH-1.4			118 GIRL'S TOILET	CELLAR	12.9	.571	7.3	185	208/1/60	15.4	1/15	1050 (HIGH)	3	33"x25"x9"	CEILING MOUNTED
CUH-1.5			116 BOY'S TOILET	CELLAR	12.9	.571	7.3	185	208/1/60	15.4	1/15	1050 (HIGH)	3	33"x25"x9"	CEILING MOUNTED
CUH-1.6			CORRIDOR	CELLAR	12.9	.571	7.3	185	208/1/60	15.4	1/15	1050 (HIGH)	3	33"x25"x9"	CEILING MOUNTED
CUH-1.7			STAIR C	CELLAR	12.9	.571	7.3	185	208/1/60	15.4	1/15	1050 (HIGH)	3	33"x25"x9"	CEILING MOUNTED
CUH-1.8			115 VESTIBULE	CELLAR	12.9	.571	7.3	185	208/1/60	15.4	1/15	1050 (HIGH)	3	33"x25"x9"	CEILING MOUNTED
CUH-1.9			111 VESTIBULE	CELLAR	12.9	.571	7.3	185	208/1/60	15.4	1/15	1050 (HIGH)	3	33"x25"x9"	CEILING MOUNTED
CUH-2.1			STAIR A	SECOND FLOOR	25.8	.571	14.7	230	208/1/60	25	1/15	1050 (HIGH)	5	33"x25"x9"	CEILING MOUNTED
CUH-2.2			214B BOY'S TOILET	SECOND FLOOR	25.8	.571	14.7	230	208/1/60	25	1/15	1050 (HIGH)	5	33"x25"x9"	CEILING MOUNTED
CUH-2.3			213 STAFF TOILET	SECOND FLOOR	12.9	.571	7.3	185	208/1/60	15.4	1/15	1050 (HIGH)	3	33"x25"x9"	CEILING MOUNTED
CUH-2.4			210G GIRL'S TOILET	SECOND FLOOR	12.9	.571	7.3	185	208/1/60	15.4	1/15	1050 (HIGH)	3	33"x25"x9"	CEILING MOUNTED
CUH-2.5			STAIR B	SECOND FLOOR	25.8	.571	14.7	230	208/1/60	25	1/15	1050 (HIGH)	5	33"x25"x9"	CEILING MOUNTED
CUH-2.6			CORRIDOR	SECOND FLOOR	25.8	.571	14.7	230	208/1/60	25	1/15	1050 (HIGH)	5	33"x25"x9"	CEILING MOUNTED
CUH-2.7			STAIR C	SECOND FLOOR	25.8	.571	14.7	230	208/1/60	25	1/15	1050 (HIGH)	5	33"x25"x9"	CEILING MOUNTED
CUH-2.8			205C GIRLS LOCKER	SECOND FLOOR	25.8	.571	14.7	230	208/1/60	25	1/15	1050 (HIGH)	5	33"x25"x9"	CEILING MOUNTED
CUH-2.9			205C GIRLS LOCKER	SECOND FLOOR	25.8	.571	14.7	230	208/1/60	25	1/15	1050 (HIGH)	5	33"x25"x9"	CEILING MOUNTED
CUH-2.10			205B BOYS LOCKER	SECOND FLOOR	25.8	.571	14.7	230	208/1/60	25	1/15	1050 (HIGH)	5	33"x25"x9"	CEILING MOUNTED
CUH-2.11			205B BOYS LOCKER	SECOND FLOOR	25.8	.571	14.7	230	208/1/60	25	1/15	1050 (HIGH)	5	33"x25"x9"	CEILING MOUNTED
CUH-2.12			205B BOYS LOCKER	SECOND FLOOR	25.8	.571	14.7	230	208/1/60	25	1/15	1050 (HIGH)	5	33"x25"x9"	CEILING MOUNTED
CUH-2.13			205I VISITING TEAM LOCKER	SECOND FLOOR	25.8	.571	14.7	230	208/1/60	25	1/15	1050 (HIGH)	5	33"x25"x9"	CEILING MOUNTED
CUH-2.14			CORRIDOR	SECOND FLOOR	25.8	.571	14.7	230	208/1/60	25	1/15	1050 (HIGH)	5	33"x25"x9"	CEILING MOUNTED
CUH-3.1			STAIR B	THIRD FLOOR	25.8	.571	14.7	230	208/1/60	25	1/15	1050 (HIGH)	5	33"x25"x9"	CEILING MOUNTED
CUH-3.2			STAIR A	THIRD FLOOR	25.8	.571	14.7	230	208/1/60	25	1/15	1050 (HIGH)	5	33"x25"x9"	CEILING MOUNTED
CUH-3.3			CORRIDOR	THIRD FLOOR	12.9	.571	7.3	185	208/1/60	15.4	1/15	1050 (HIGH)	3	33"x25"x9"	CEILING MOUNTED
CUH-3.4			314B BOY'S TOILET	THIRD FLOOR	12.9	.571	7.3	185	208/1/60	15.4	1/15	1050 (HIGH)	3	33"x25"x9"	CEILING MOUNTED
CUH-3.5			310G GIRL'S TOILET	THIRD FLOOR	25.8	.571	14.7	230	208/1/60	25	1/15	1050 (HIGH)	5	33"x25"x9"	CEILING MOUNTED
CUH-3.6			STAIR A	THIRD FLOOR	12.9	.571	7.3	185	208/1/60	15.4	1/15	1050 (HIGH)	5	33"x25"x9"	CEILING MOUNTED
CUH-3.7			STAIR C	THIRD FLOOR	12.9	.571	7.3	185	208/1/60	15.4	1/15	1050 (HIGH)	5	33"x25"x9"	CEILING MOUNTED
CUH-3.8			CORRIDOR	THIRD FLOOR	12.9	.571	7.3	185	208/1/60	15.4	1/15	1050 (HIGH)	3	33"x25"x9"	CEILING MOUNTED
CUH-3.9			CORRIDOR	THIRD FLOOR	12.9	.571	7.3	185	208/1/60	15.4	1/15	1050 (HIGH)	3	33"x25"x9"	CEILING MOUNTED
CUH-4.1			CORRIDOR	FOURTH FLOOR	25.8	.571	14.7	230	208/1/60	25	1/15	1050 (HIGH)	5	33"x25"x9"	CEILING MOUNTED
CUH-4.2			STAIR A	FOURTH FLOOR	25.8	.571	14.7	230	208/1/60	25	1/15	1050 (HIGH)	5	33"x25"x9"	CEILING MOUNTED
CUH-4.3			STAIR B	FOURTH FLOOR	12.9	.571	7.3	185	208/1/60	15.4	1/15	1050 (HIGH)	5	33"x25"x9"	CEILING MOUNTED
CUH-4.4			414B BOY'S TOILET	FOURTH FLOOR	12.9	.571	7.3	185	208/1/60	15.4	1/15	1050 (HIGH)	3	33"x25"x9"	CEILING MOUNTED
CUH-4.5			410G GIRL'S TOILET	FOURTH FLOOR	25.8	.571	14.7	230	208/1/60	25	1/15	1050 (HIGH)	5	33"x25"x9"	CEILING MOUNTED
CUH-4.6			CORRIDOR	FOURTH FLOOR	12.9	.571	7.3	185	208/1/60	15.4	1/15	1050 (HIGH)	3	33"x25"x9"	CEILING MOUNTED
CUH-4.7			STAIR C	FOURTH FLOOR	12.9	.571	7.3	185	208/1/60	15.4	1/15	1050 (HIGH)	5	33"x25"x9"	CEILING MOUNTED
CUH-5.1			STAIR B	FIFTH FLOOR	12.9	.571	7.3	185	208/1/60	15.4	1/15	1050 (HIGH)	5	33"x25"x9"	CEILING MOUNTED
CUH-5.2			513 BOY'S TOILET	FIFTH FLOOR	12.9	.571	7.3	185	208/1/60	15.4	1/15	1050 (HIGH)	3	33"x25"x9"	CEILING MOUNTED
CUH-5.3			507 GIRL'S TOILET	FIFTH FLOOR	12.9	.571	7.3	185	208/1/60	15.4	1/15	1050 (HIGH)	3	33"x25"x9"	CEILING MOUNTED
CUH-5.4			509 STAFF TOILET	FIFTH FLOOR	12.9	.571	7.3	185	208/1/60	15.4	1/15	1050 (HIGH)	3	33"x25"x9"	CEILING MOUNTED
CUH-5.5			STAIR A	FIFTH FLOOR	12.9	.571	7.3	185	208/1/60	15.4	1/15	1050 (HIGH)	5	33"x25"x9"	CEILING MOUNTED

NOTES:
1. ALL CABINET UNIT HEATERS TO BE PROVIDED WITH ALUMINUM GRILLE, AQUASTAT CONTROL, DISCONNECT SWITCHES, EXTRA SET OF FILTERS, LIMITED ACCESS FASTENERS.
2. HOT WATER CABINET UNIT HEATERS SHALL BE CONTROLLED BY BACnet THERMOSTATS AS PER SPECIFICATION SECTION 15836.
3. PROVIDE COLOR CHART. COLOR TO BE SELECTED BY ARCHITECT.
4. PROVIDE MOTOR STARTER AND DISCONNECT SWITCH WITH THERMAL OVERLOAD.
5. PROVIDE (1) EXTRA THROWAWAY FILTER FOR ALL CUH.

ELECTRICAL BASEBOARD HEATER

UNIT NO.	MODEL	WATTAGE (KW)	VOLTS	PHASE	AMPS	BTU	SIZE LENGTH x HEIGHT x DEPTH	FINISH	ACCESSORIES	WEIGHT (LB)	LOCATION	MANUFACTURER	REMARKS
EBD-A		1250	120	1	10.4	4250	60"x6"x2 1/2"	IVORY	DS	12	REFER TO PLANS		SEE NOTES
EBD-B		2500	208	1	12	8532	120"x6"x2 1/2"	IVORY	DS	22	REFER TO PLANS		SEE NOTES
EBD-C		600	120	1	5	2040	36"x6"x2 1/2"	IVORY	DS	7	REFER TO PLANS		SEE NOTES

NOTES:
1. PROVIDE FIN-TUBE RADIATION ELEMENT SUPPORT BRACKETS, SADDLE, HANGERS, CONTINUOUS BAFFLE AS REQUIRED TO INSTALL UNITS.
2. BTU/FT WAS CALCULATED CONSIDERING BOTH FACTORS IN SCHEDULE ABOVE.
3. PROVIDE WALL-TO-WALL FIN-TUBE RADIATION 14 GAUGE ENCLOSURE, PROVIDE END ENCLOSURE. CONTRACTOR SHALL COORDINATE IN THE FIELD.
4. FTR'S SHALL BE PROVIDED WITH MINIMUM 14 GAUGE ENCLOSURES. ALL ENCLOSURES SHALL BE COORDINATED WITH THE ARCHITECTURAL DRAWINGS.
5. PROVIDE HINGED ACCESS DOORS AT CONTROL VALVE & BALANCING VALVE LOCATIONS.
6. LENGTHS OF EACH ROW OF HEATING ELEMENT ARE SHOWN ON M200 SERIES DRAWINGS.
7. SEE SPECS & DRAWINGS FOR ADDITIONAL INFORMATION.

ELECTRICAL COIL

UNIT NO.	SERVICE	LOCATION	CFM	CAPACITY (MBH)	EAT/LAT (°F)	WATTAGE (KW)	VOLT	PHASE	LENGTH x HEIGHT x DEPTH (IN)	MANUFACTURER	MODEL NO.
RHC-1.1	KITCHEN	1ST FLOOR	1800	40	65/85	12.00	208	1	22 x 18 x 5		

NOTE: 1. SEE SPECS FOR ADDITIONAL INFORMATION.

*APPLICATIONS FOR SERVICE EQUIPMENT PERMITS:

CONTRACTOR SHALL FILE FOR AND OBTAIN SERVICE EQUIPMENT PERMITS FOR ALL EQUIPMENT NOTED WITH ASTERISK (*) IN ACCORDANCE WITH TITLE 28, SECTION MC 105 OF THE NEW YORK CITY BUILDING CODE.

COMPLIANCE WITH ASHRAE 90.1 2013 NOTE:

TO THE BEST OF MY KNOWLEDGE, BELIEF AND PROFESSIONAL JUDGMENT, THESE PLANS AND SPECIFICATIONS ARE IN COMPLIANCE WITH ASHRAE 90.1 2013.

REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION

SCHEDULE OF ELECTRIC UNIT HEATERS

UNIT NO.	SERVICE LOCATION	WATTS	LENGTH x HEIGHT x DEPTH	CFM	O.T. (°F)	VOLTS/PH/HZ	MANUFACTURER	MODEL No.	REMARKS
EUH-C.1	ELECTRICAL ROOM	5 KW	14⅜"x17⅝"x6⅛"	350	45	208/3/60			SEE NOTES 1, 2,
EUH-C.2	WATER METER ROOM	5 KW	14⅜"x17⅝"x6⅛"	350	45	208/3/60			SEE NOTES 1, 2,
EUH-1.1	WATER METER ROOM	5 KW	14⅜"x17⅝"x6⅛"	350	45	208/3/60			SEE NOTES 1, 2,
EUH-1.2	GRND EQUIP. STO.	5 KW	14⅜"x17⅝"x6⅛"	350	45	208/3/60			SEE NOTES 1, 2,
EUH-1.3	ELECTRICAL ROOM	5 KW	14⅜"x17⅝"x6⅛"	350	45	208/3/60			SEE NOTES 1, 2,
EUH-3.1	MECHANICAL ROOM	5 KW	14⅜"x17⅝"x6⅛"	350	45	208/3/60			SEE NOTES 1, 2,
EUH-3.2	MECHANICAL ROOM	5 KW	14⅜"x17⅝"x6⅛"	350	45	208/3/60			SEE NOTES 1, 2,
EUH-3.3	MECHANICAL ROOM	5 KW	14⅜"x17⅝"x6⅛"	350	45	208/3/60			SEE NOTES 1, 2,
EUH-4.1	BOILER ROOM	7.5 KW	21⅝"x24 ⅜"x6⅛"	350	45	208/3/60			SEE NOTES 1, 2,

NOTES:
1. UNIT HEATERS SHALL BE PROVIDED WITH 24V CONTROL TRANSFORMER, BACnet WALL MOUNTED THERMOSTATS OR SENSORS. (SEE FLOOR PLANS).
2. ALL ELECTRIC UNIT HEATERS TO BE PROVIDED WITH DISCONNECT SWITCHES, AND MOUNTING BRACKETS.
3. SEE SPECS & DRAWINGS FOR ADDITIONAL INFORMATION.

ELECTRICAL CONVECTOR SCHEDULE

UNIT NO.	SERVICE	EAT (°F)	ACTUAL HEATING CAPACITY (MBH)	WATTAGE (KW)	VOLT	PHASE	AMP	CONTROL	HEIGHT+DEPTH (IN.)	LENGTH (IN.)	MODEL NO.	MANUFACTURER	REMARKS SEE NOTES
CONV-1.1	1ST FLOOR 107C STUDENTS TOILET	65	7.25	2500	208	1	12.02	R9	20"x5"	60"			FULLY RECESSED
CONV-1.2	1ST FLOOR 131 KITCHEN	65	7.25	2500	208	1	12.02	R9	20"x5"	60"			FULLY RECESSED
CONV-1.3	1ST FLOOR 131 KITCHEN	65	3.9	1250	208	1	6.01	R9	20"x5"	60"			FULLY RECESSED
CONV-1.4	1ST FLOOR 131 KITCHEN	65	7.25	2500	208	1	12.02	R9	20"x5"	60"			FULLY RECESSED
CONV-1.5	1ST FLOOR 131 KITCHEN	65	7.25	2500	208	1	12.02	R9	20"x5"	60"			FULLY RECESSED
CONV-2.1	2ND FLOOR 202 GYMATORIUM	65	2.8	1250	208	1	6.01	R9	20"x5"	60"			FULLY RECESSED
CONV-2.2	2ND FLOOR 202 GYMATORIUM	65	7.4	2500	208	1	12.02	R9	20"x5"	60"			FULLY RECESSED
CONV-2.3	2ND FLOOR 202 GYMATORIUM	65	7.4	2500	208	1	12.02	R9	20"x5"	60"			FULLY RECESSED
CONV-2.4	2ND FLOOR 218 CHAIR STORAGE	65	7.4	2500	208	1	12.02	R9	20"x5"	60"			FULLY RECESSED
CONV-2.5	2ND FLOOR 202 GYMATORIUM	65	7.4	2500	208	1	12.02	R9	20"x5"	60"			FULLY RECESSED
CONV-2.6	2ND FLOOR 202 GYMATORIUM	65	7.4	2500	208	1	12.02	R9	20"x5"	60"			FULLY RECESSED
CONV-2.7	2ND FLOOR 202 GYMATORIUM	65	7.4	2500	208	1	12.02	R9	20"x5"	60"			FULLY RECESSED
CONV-2.8	2ND FLOOR 202 GYMATORIUM	65	7.4	2500	208	1	12.02	R9	20"x5"	60"			FULLY RECESSED
CONV-2.9	2ND FLOOR 202 GYMATORIUM	65	7.4	2500	208	1	12.02	R9	20"x5"	60"			FULLY RECESSED
CONV-2.10	2ND FLOOR 202 GYMATORIUM	65	7.4	2500	208	1	12.02	R9	20"x5"	60"			FULLY RECESSED
CONV-2.11	2ND FLOOR 202 GYMATORIUM	65	7.4	2500	208	1	12.02	R9	20"x5"	60"			FULLY RECESSED
CONV-2.12	2ND FLOOR 202 GYMATORIUM	65	7.4	2500	208	1	12.02	R9	20"x5"	60"			FULLY RECESSED
CONV-2.13	2ND FLOOR 202 GYMATORIUM	65	7.4	2500	208	1	12.02	R9	20"x5"	60"			FULLY RECESSED

NOTES:
1. LOCATION OF CONVECTOR'S ACCESS DOOR SHALL BE COORDINATED WITH APPROVED PIPING LAYOUT.
2. SEE SPECS & DRAWINGS FOR ADDITIONAL INFORMATION.
3. PROVIDE 14 GAUGE FRONTS AND 14 GAUGE LINER.
4. ACTUAL MBH WAS CALCULATED USING A CORRECTION FACTOR OF 0.33.
5. PROVIDE HINGED ACCESS DOORS AT CONTROL VALVE & BALANCING VALVE LOCATIONS.
6. PROVIDE SIDE KNOCK-OUTS FOR ALL CONVECTORS.
7. CONVECTORS THAT ARE TO BE WALL RECESSED TYPE-COORDINATE WITH GC FOR WALL OPENINGS.

SCHEDULE OF ELECTRICAL AIR CURTAINS

UNIT NO.	LOCATION	EWT (°F)	AIR RISE (°F)	HEATING CAPACITY MBH	CFM	MAX VEL AT NOZZLE FPM	AVG OUTLET VEL FPM	OUTLET VEL UNIFORMITY	ELECTRICAL DATA VOLTS/PH/Hz	FAN HP	POWER FACTOR	MAX ELECTRIC CAPACITY (KW)	MANUFACTURER	MODEL NO.	WEIGHT LBS
ARC-1.1	ENTRANCE	155	30	95.6	2,964	5202	1674	91%	120/1/60	2Ø 1/2	0.94	28.0			179
ARC-1.2	ENTRANCE	155	30	95.6	2,964	5202	1674	91%	120/1/60	2Ø 1/2	0.94	28.0			179
ARC-1.3	ENTRANCE	155	30	95.6	2,964	5202	1674	91%	120/1/60	2Ø 1/2	0.94	28.0			179
ARC-1.4	ENTRANCE	155	30	95.6	2,964	5202	1674	91%	120/1/60	2Ø 1/2	0.94	28.0			179
ARC-4.1	ENTRANCE	155	30	95.6	2,964	5202	1674	91%	120/1/60	2Ø 1/2	0.94	28.0			179

NOTES:
1. SEE SPEC SECTION 15839 AND DRAWINGS FOR ADDITIONAL INFORMATION.
2. SOUND LEVEL MEASURED AT 10' FROM UNIT : 2 MOTORS, LOW/MEDIUM/ HIGH SPEED: 63/64/65 dBA.
3. SEE FLOOR PLANS FOR LOCATION OF PIPING CONNECTIONS.
4. ALL AIR CURTAINS TO BE PROVIDED WITH DISCONNECT SWITCHES, MOUNTING BRACKETS AND DOOR SWITCHES (2 PER UNIT). SEE SPECS FOR ADDITIONAL INFORMATION.

Drawing Title:
HVAC EQUIPMENT SCHEDULE SHEET #2

Drawing No.:
M004.00

Sheets in Contract Set:
OF

Sheets in DOB Set:
OF

CAD

SPLIT–TYPE HEAT PUMP UNITS SCHEDULE (INDOOR EVAPORATOR / OUTDOOR CONDENSING UNIT) *

UNIT NO	SERVICE	TOTAL COOLING CAPACITY MBH	TOTAL HEATING CAPACITY MBH	E.A.T. (COOLING) DB/WB	REFRIG.	ELECTRICAL DATA		INDOOR EVAPORATOR					OUTDOOR CONDENSING UNIT					SEER	MIN. SEER PER APPENDIX–A OF 2014 NYCECC TABLE 6.8.1B	HSPF	MIN. HSPF PER APPENDIX–A OF 2014 NYCECC TABLE 6.8.1B	MEA NUMBER	MANUFACTURER	REMARKS
						TOTAL POWER INPUT W	V/PH/HZ	LOCATION	AIR FLOW CFM LO/HI	FAN MOTOR MOTOR OUTPUT W	FAN MOTOR MCA AMPS	MODEL NO BASED ON	LOCATION	NO OF COMP.	SOUND LEVEL (dBA)	MCA AMPS	MODEL NO BASED ON							
AC–C.1 / ACCU–C.1	IDF/C23	24	26	80/67	410A	1960	208/1/60	CELLAR TELECOM CLOSET	635/775	56	1.0		ROOF	1	48	19		17	14	10.8	8.2			COOLING & HEATING
AC–C.2 / ACCU–C.2	FOOD STORAGE/ C11D	24	26	80/67	410A	1960	208/1/60	CELLAR FOOD STORAGE	635/775	56	1.0		1ST FL	1	48	19		17	14	10.8	8.2			COOLING & HEATING
AC–1.1 / ACCU–1.1	IDF/117	24	26	80/67	410A	1960	208/1/60	1ST FL. TELECOM CLOSET	635/775	56	1.0		ROOF	1	48	19		17	14	10.8	8.2			COOLING & HEATING
AC–1.2 / ACCU–1.2	FOOD & NON FOOD STORAGE/136B	24	26	80/67	410A	1960	208/1/60	KITCHEN FOOD STORAGE	635/775	56	1.0		ROOF	1	48	19		17	14	10.8	8.2			COOLING & HEATING
AC–2.1 / ACCU–2.1	MDF/227	36	40	80/67	410A	3330	208/1/60	MAIN TELECOM CLOSET	635/775	56	1.0		ROOF	1	48	25		17	14	10.8	8.2			COOLING & HEATING
AC–3.1 / ACCU–3.1	IDF/317	24	26	80/67	410A	1960	208/1/60	3RD FL. TELECOM CLOSET	705/920	56	1.0		ROOF	1	48	19		14	14	9.3	8.2			COOLING & HEATING
AC–4.1 / ACCU–4.1	IDF/419	24	26	80/67	410A	1960	208/1/60	4TH FL. TELECOM. CLOSET	635/775	56	1.0		ROOF	1	48	19		17	14	10.8	8.2			COOLING & HEATING
AC–R.1 / ACCU–R.1	ELEVATOR MACHINE ROOM/R01	36	40	80/67	410A	3330	208/1/60	ELEVATOR MACHINE ROOM	705/920	56	1.0		ROOF	1	48	25		14	14	9.3	8.2			COOLING & HEATING

NOTES:
1. ALL CONTROL AND POWER WIRING BETWEEN INDOOR AND OUTDOOR UNITS TO BE PROVIDED BY THE MECHANICAL CONTRACTOR.
2. ALL AIR CONDITIONING UNITS TO BE PROVIDED WITH WIRED PROGRAMMABLE THERMOSTAT AND LOW AMBIENT CONTROL.
3. TCC TO PROVIDE SPACE TEMPERATURE AND HUMIDITY SENSOR FOR ALARM ONLY.
4. ALL UNITS TO BE PROVIDED WITH CONDENSATE PUMPS.
5. ALL UNITS TO BE PROVIDED WITH TIME–DELAY, FILTER–DRIER, COMPRESSOR SHORT CYCLE PROTECTOR, HIGH AND LOW PRESSURE KIT.
6. ALL UNITS TO BE PROVIDED LOW–AMBIENT CONTROLLER (FLOODED CONDENSER), WINTER START CONTROL, EVAPORATOR FREEZE THERMOSTAT.
7. SEE SPECS AND DRAWINGS FOR MORE INFORMATION.
8. ALL OUTDOOR CONDENSING UNITS SHALL BE PROVIDED WITH A WIND BAFFLE.

SCHEDULE OF CONDENSATE DRAIN PUMPS

UNIT NO.	SERVICE LOCATION	FLOW RATE @ 15' GPH	SHUT OFF FT	ELECTRICAL DATA				MANUFACTURER	MODEL NO.	REMARKS
				WATT	MOTOR H.P.	AMP	VOLT/PH/HZ			
CP–C.1	AC–C.1	33	20	85	1/30	1.5	120/1/60			SEE NOTE #1
CP–C.2	AC–C.2	33	20	85	1/30	1.5	120/1/60			SEE NOTE #1
CP–1.1	AC–1.1	33	20	85	1/30	1.5	120/1/60			SEE NOTE #1
CP–1.2	AC–1.2	33	20	85	1/30	1.5	120/1/60			SEE NOTE #1
CP–2.1	AC–2.1	33	20	85	1/30	1.5	120/1/60			SEE NOTE #1
CP–3.1	AC–3.1	33	20	85	1/30	1.5	120/1/60			SEE NOTE #1
CP–4.1	AC–4.1	33	20	85	1/30	1.5	120/1/60			SEE NOTE #1
CP–R.1	AC–R.1	33	20	85	1/30	1.5	120/1/60			SEE NOTE #1

NOTE:
1. ALL CONDENSATE PUMPS SHALL BE INSTALLED OUTSIDE OF THE UNIT

SCHEDULE FOR CEILING MOUNTED SUPPLY AIR DIFFUSERS

LOCATION	CFM RANGE	NECK SIZE INCHES	MAX. DUCT VELOCITY FPM	NOMINAL LOUVERED AREA SIZE W X H INCHES	MAX. NOISE RATING. NC	MANUFACTURER	MODEL NO.	REMARKS
ALL AREAS WITH NO HUNG CEILING	0–100	6ø	500	12X12	20			SEE NOTES 1 TO 6
ALL AREAS WITH NO HUNG CEILING	101–200	8ø		12X12				SEE NOTES 1 TO 6
ALL AREAS WITH NO HUNG CEILING	201–400	10ø		24X24				SEE NOTES 1 TO 6
SEE NOTE 1	0–250	8ø		24X24				SEE NOTES 1 TO 6
SEE NOTE 1	251–375	10ø		24X24				SEE NOTES 1 TO 6
SEE NOTE 1	376–470	12ø		24X24				SEE NOTES 1 TO 6
SEE NOTE 1	471–550	15ø		24X24				SEE NOTES 1 TO 6
LIBRARY	350	12X12		24X24	20			SEE NOTES 1 TO 6
GYMNATORIUM	750–800	15x15		24X24	20			SEE NOTES 1 TO 6
CAFETERIA	200	4" LINEAR GRILLE		4" LINEAR GRILLE	20			SEE NOTES 1 TO 7
CAFETERIA	250–550	15x15		24X24	20			SEE NOTES 1 TO 6
KITCHEN COMPLEX	550	15X15		24X24	20			SEE NOTES 1 TO 6
KITCHEN COMPLEX	50–300	9X9		24X24	20			SEE NOTES 1 TO 6
CORRIDOR	750	18X18		24X24	20			SEE NOTES 1 TO 6
CORRIDOR	750	18X18		24X24	20			SEE NOTES 1 TO 6
CORRIDOR	500	15X15		24X24	20			SEE NOTES 1 TO 6
CORRIDOR	50–300	9X9		24X24	20			SEE NOTES 1 TO 6

NOTES:
1. FOR ALL OTHER AREAS (INCLUDING TRANSFER DUCTS) NOT MENTIONED IN ABOVE SCHEDULE.
2. KITCHEN AREA, SERVING AREA, TOILETS, LOCKER ROOMS DIFFUSERS SHALL BE ALUMINUM CONSTRUCTION WITH CLEAR ALUMINUM ANODIZE FINISH.
3. CONTRACTOR SHALL COORDINATE DIFFUSER'S FRAME TYPE WITH APPROVED CEILING TYPE.
4. GYMNATORIUM, CAFETERIA, LIBRARY, KITCHEN & CORRIDOR DIFFUSERS SHALL BE PROVIDED WITH PATTERN FLAPS FOR THE D DIFFUSERS.
5. CAFERRIA SHALL BE PROVIDED WITH FOUR ADJUSTABLE LINER SLOT DIFFUSERS WITH 1/2" SLOT WIDTH, 2 SLOTS, MODEL SLAD, VERTICAL PATTERN WITH T–BAR PLASTER FRAME.
6. TYPE E (EPL–D & E1–D) DIFFUSERS SHALL BE PROVIDED WITH 4TH CONE.
7. GRILLE LAYOUT IS FOR CONTINUOUS RUN (APPEARANCE), PROVIDE GRILLES WITH CONCEALED KEY–WAYS AND ALIGNMENT STRIPS FOR EXACT ALIGNMENT AND CLEAN, NEAT APPEARANCE.

SCHEDULE FOR WALL & CEILING MOUNTED RETURN/EXHAUST AIR GRILLES

LOCATION	CFM RANGE	NECK SIZE W X H INCHES	MAXIMUM DUCT VELOCITY FPM	MAX. NOISE RATING. NC	MANUFACTURER ANEMOSTAT	MODEL NO.	REMARKS
SEE NOTE 1	0–100	8X8	300	20			SEE NOTES 1 TO 6
	101–200	10X10	300	20			SEE NOTES 1 TO 6
	201–300	12X12	300	20			SEE NOTES 1 TO 6
	301–400	14X14	300	20			SEE NOTES 1 TO 6
	401–501	16X16	300	20			SEE NOTES 1 TO 6
	501–650	20X20	300	20			SEE NOTES 1 TO 6
	651–800	22X22	300	20			SEE NOTES 1 TO 6
	801–1000	24X24	300	20			SEE NOTES 1 TO 6
CAFETERIA	801–1000	24X24	300	20			SEE NOTES 1 TO 6
CAFETERIA	600	4" LINEAR GRILLE	–	20			SEE NOTES 1 TO 6, 7
KITCHEN/CAFE TRANSFER GRILLE	2800	48X24	300	20			SEE NOTES 1 TO 6
GYMATORIUM WALL RETURN GRILLE	3880	48X40	300	20			SEE NOTES 1 TO 6
GYMATORIUM	2000	6" LINEAR GRILLE	–	20			SEE NOTES 1 TO 6, 7

NOTES:
1. FOR ALL OTHER AREAS (INCLUDING TRANSFER DUCTS) NOT MENTIONED IN ABOVE SCHEDULE.
2. CONTRACTOR SHALL COORDINATE REGISTER'S/GRILLES COLOR WITH ARCHITECT.
3. CONTRACTOR SHALL COORDINATE REGISTER'S/GRILLES BORDER TYPE WITH APPROVED CEILING TYPE.
4. ALL NON–DUCTED GRILLES AND ALL TRANSFER GRILLES SHALL BE SIZE 24X24.
5. ALL KITCHEN AREA COMPLEX , CAN WASH RM , TOILETS, JANITORS CLOSETS, SHOWERS, LOCKER ROOMS GRILLES & REGISTERS SHALL BE . ALUMINUM CONSTRUCTION WITH CLEAR ALUMINUM ANODIZE FINISH.
6. SEE SIZES OF DUCTED TRANSFER GRILLES ON PLANS.
7. GRILLE LAYOUT IS FOR CONTINUOUS RUN (APPEARANCE), PROVIDE GRILLES WITH CONCEALED KEY–WAYS AND ALIGNMENT STRIPS FOR EXACT ALIGNMENT AND CLEAN, NEAT APPEARANCE.

COMPLIANCE WITH ECCCNYS NOTE:

TO THE BEST OF MY KNOWLEDGE, BELIEF AND PROFESSIONAL JUDGMENT, THESE PLANS AND SPECIFICATIONS ARE IN COMPLIANCE WITH THE ENERGY CONSERVATION CONSTRUCTION CODE OF NEW YORK STATE.

APPLICATIONS FOR SERVICE EQUIPMENT PERMITS:

CONTRACTOR SHALL FILE FOR AND OBTAIN SERVICE EQUIPMENT PERMITS FOR ALL EQUIPMENT NOTED WITH ASTERISK (*) IN ACCORDANCE WITH TITLE 28, SECTION MC 105 OF THE NEW YORK CITY MECHANICAL CODE.

Drawing Title:
HVAC EQUIPMENT SCHEDULE SHEET #3

Drawing No.:
M005.00

Sheets in Contract Set:
OF

Sheets in DOB Set:
OF

CAD

VAV/CAV BOX SCHEDULE

BASIS OF DESIGN: ANEMOSTAT

UNIT NO.	SERVICE	MODEL	MANUFACTURER	PAIRING AHU	INLET (IN.)	AIR CFM MAX.	COOLING AIR CFM MIN. (OCCUPIED)	COOLING AIR CFM MIN. (UN-OCCUPIED)	HEATING AIR CFM MIN. (OCCUPIED)	HEATING AIR CFM MIN. (UN-OCCUPIED)	DISCHARGE NC (@ 1.5 WGSP)	RADIATED NC (@ 1.5 WGSP)	ELECTRIC POWER REQUIRED Vl/Ph/Hz	REMARKS
CAV-C.1	C27, C21 & C19			AHU-1	10	991	705	215	991	215	23	25	120/1/60	SEE NOTES
CAV-C.2	CORRIDOR			AHU-1	12	1500	450	155	1500	155	27	29	120/1/60	SEE NOTES
VAV-C.3	C03, C04, C09, C11			AHU-1	12	1800	1140	215	1800	215	24	26	120/1/60	SEE NOTES
CAV-C.4	SCHOOL SAFETY OFFICE C12			AHU-1	6	355	300	75	355	75	20	<20	120/1/60	SEE NOTES
VAV-1.1	D75 CLASSROOM 101			AHU-4	8	620	620	135	420	135			120/1/60	SEE NOTES
VAV-1.2	PHYSICAL THERAPY 104			AHU-2	10	950	650	215	950	215	25	27	120/1/60	SEE NOTES
VAV-1.3	D75 CLASSROOM 106			AHU-2	8	550	400	135	550	135	23	24	120/1/60	SEE NOTES
VAV-1.4	PARENT COMMUNITY RM 108			AHU-2	6	415	225	75	415	75			120/1/60	SEE NOTES
VAV-1.5	D75 MAIN OFFICE 110			AHU-2	8	400	210	135	400	135	<20	<20	120/1/60	SEE NOTES
VAV-1.6	D75 CALSSROOM 112			AHU-2	8	600	450	135	600	135	23	24	120/1/60	SEE NOTES
CAV-1.7	LOBBY 100			AHU-4	8	600	450	135	600	135			120/1/60	SEE NOTES
VAV-1.8	D75 CLASSROOM 103			AHU-4	6	350	350	75	225	75	21	23	120/1/60	SEE NOTES
VAV-1.9	D75 CLASSROOM 114			AHU-1	8	900	550	135	900	135			120/1/60	SEE NOTES
VAV-1.10	D75 CLASSROOM 116			AHU-1	10	950	560	215	950	215			120/1/60	SEE NOTES
VAV-1.11	D75 CLASSROOM 118			AHU-3	8	515	375	135	515	135			120/1/60	SEE NOTES
VAV-1.12	D75 CLASSROOM 120			AHU-3	8	900	600	135	900	135			120/1/60	SEE NOTES
CAV-1.13	CORRIDOR 100S			AHU-3	10	1050	800	215	1050	215	22	23	120/1/60	SEE NOTES
VAV-1.14	122 , 124			AHU-3	8	560	560	135	340	135	<20	21	120/1/60	SEE NOTES
VAV-1.15	D75 MULTI-PURPOSE RM 113			AHU-3	8	815	815	135	275	135			120/1/60	SEE NOTES
VAV-1.16	D75 RESOURCE RM 126			AHU-3	6	275	275	75	120	75	<20	<20	120/1/60	SEE NOTES
VAV-1.17	D75 RESOURCE RM 128			AHU-3	6	325	325	75	125	75			120/1/60	SEE NOTES
VAV-1.18	D75 SPEECH RM 130			AHU-3	6	350	350	75	150	75			120/1/60	SEE NOTES
VAV-1.19	D75 SPEECH RM 132			AHU-3	6	250	140	75	250	75	<20	<20	120/1/60	SEE NOTES
VAV-1.20	125, 127 & 129			AHU-3	6	300	300	75	300	75	21	20	120/1/60	SEE NOTES
VAV-1.21	OCCUTHERAPY 131			AHU-3	8	440	440	135	200	135			120/1/60	SEE NOTES
VAV-1.22	135, A, B, C, D, E			AHU-4	6	400	210	75	515	75			120/1/60	SEE NOTES
CAV-1.23	CORRIDOR			AHU-4	10	1050	800	215	1050	215	23	25	120/1/60	SEE NOTES
VAV-1.24	DIETITIANS OFFICE 136F			AHU-6	5	100	60	45			<20	<20	120/1/60	SEE NOTES
VAV-1.25	D75 RESOURCE RM 122			AHU-4	6	275	275	75	120	75	<20	<20	120/1/60	SEE NOTES
VAV-2.1	EXERCISE RM 201			AHU-4	12	1800	1800	285	1300	285			120/1/60	SEE NOTES
VAV-2.2	PRINCIPAL'S OFFICE 202			AHU-2	8	650	480	135	650	135	27	29	120/1/60	SEE NOTES
VAV-2.3	206, 206A, 206B			AHU-2	10	1216	685	215	1216	215	27	29	120/1/60	SEE NOTES
VAV-2.4	CLASSROOM 203			AHU-4	8	780	780	135	435	135	27	29	120/1/60	SEE NOTES
VAV-2.5	MUSICAL CHORAL ROOM 208			AHU-2	10	1300	1050	215	1300	215	27	29	120/1/60	SEE NOTES
VAV-2.6	212, 212A, 212B, 212C & 212D			AHU-1	12	1965	1800	285	1965	285	27	29	120/1/60	SEE NOTES
VAV-2.7	RESOURCE ROOM 219			AHU-3	8	540	540	135	215	135	23	25	120/1/60	SEE NOTES
VAV-2.8	ART CLASSROOM 214			AHU-1	12	1500	1200	285	1500	285	27	28	120/1/60	SEE NOTES
VAV-2.9	SP. ED. CLASSROOM 229			AHU-3	8	800	800	135	300	135	27	29	120/1/60	SEE NOTES
VAV-2.10	VISITING LOCKER RM 205I			AHU-5	6	200	200	75	200	75	<20	<20	120/1/60	SEE NOTES
VAV-2.11	205E, 205F			AHU-5	5	140	140	45	140	45	<20	<20	120/1/60	SEE NOTES
VAV-2.12	LOCKER ROOM GIRLS 205C			AHU-5	6	300	300	75	300	75	22	20	120/1/60	SEE NOTES
VAV-2.13	LOCKER ROOM BOYS 205B			AHU-5	6	300	300	75	300	75	22	20	120/1/60	SEE NOTES
CAV-2-14	CORRIDOR 200			AHU-3	8	800	800	135	800	135	27	29	120/1/60	SEE NOTES
VAV-3.1	LIBRARY 301			AHU-4	12	1720	1720	285	1400	285	27	29	120/1/60	SEE NOTES
VAV-3.2	CLASSROOM 302			AHU-4	10	1000	925	215	1000	215	25	26	120/1/60	SEE NOTES
VAV-3.3	CLASSROOM 304			AHU-2	10	925	925	215	900	215	25	26	120/1/60	SEE NOTES
VAV-3.4	CLASSROOM 306			AHU-4	10	925	925	215	900	215	25	26	120/1/60	SEE NOTES
VAV-3.5	CLASSROOM 308			AHU-2	10	925	925	215	900	215	25	26	120/1/60	SEE NOTES
VAV-3.6	CLASSROOM 303			AHU-4	10	780	780	215	405	215	27	29	120/1/60	SEE NOTES
VAV-3.7	STAFF DEVELOPMENT RM 305			AHU-4	6	300	300	75	250	75	22	20	120/1/60	SEE NOTES
VAV-3.8	CLASSROOM 310			AHU-1	10	925	925	215	900	215	25	26	120/1/60	SEE NOTES
VAV-3.9	CLASSROOM 312			AHU-1	10	925	925	215	900	215	25	26	120/1/60	SEE NOTES
VAV-3.10	ART CLASSROOM 314			AHU-3	12	1500	1200	285	1500	285	27	28	120/1/60	SEE NOTES
CAV-3.11	CORRIDOR 300			AHU-3	10	1000	890	215	1000	215	27	29	120/1/60	SEE NOTES
VAV-3.12	315 & 315A			AHU-3	5	150	85	45	85	45	<20	<20	120/1/60	SEE NOTES
VAV-3.13	OFFICE 315B			AHU-3	5	75	75	45	75	45	<20	<20	120/1/60	SEE NOTES
VAV-3.14	OFFICE 315C			AHU-3	5	150	150	45	150	45	<20	<20	120/1/60	SEE NOTES
VAV-3.15	OFFICE 315D			AHU-3	5	75	75	45	75	45	<20	<20	120/1/60	SEE NOTES
VAV-3.16	OFFICE 315E			AHU-3	5	75	75	45	75	45	27	28	120/1/60	SEE NOTES
VAV-3.17	PROGRAM OFFICE 323			AHU-3	5	150	150	45	150	45	27	28	120/1/60	SEE NOTES
VAV-3.18	GYMATORIUM			AHU-5	10	1200	805	215	1200	215	23	27	120/1/60	SEE NOTES
VAV-3.19	GYMATORIUM			AHU-5	10	1200	805	215	1200	215	23	27	120/1/60	SEE NOTES
VAV-3.20	GYMATORIUM			AHU-5	12	1225	820	285	1225	285	27	28	120/1/60	SEE NOTES
VAV-3.21	GYMATORIUM			AHU-5	12	1225	820	285	1225	285	22	23	120/1/60	SEE NOTES
VAV-3.22	GYMATORIUM			AHU-5	10	1200	805	215	1200	215	27	28	120/1/60	SEE NOTES
VAV-3.23	GYMATORIUM			AHU-5	10	1200	805	215	1200	215	27	28	120/1/60	SEE NOTES
VAV-3.24	STAGE			AHU-5	8	750	505	135	750	135	26	28	120/1/60	SEE NOTES

VAV/CAV BOX SCHEDULE

BASIS OF DESIGN: ANEMOSTAT

UNIT NO.	SERVICE	MODEL	MANUFACTURER	PAIRING AHU	INLET (IN.)	AIR CFM MAX.	COOLING AIR CFM MIN. (OCCUPIED)	COOLING AIR CFM MIN. (UN-OCCUPIED)	HEATING AIR CFM MIN. (OCCUPIED)	HEATING AIR CFM MIN. (UN-OCCUPIED)	DISCHARGE NC (@ 1.5 WGSP)	RADIATED NC (@ 1.5 WGSP)	ELECTRIC POWER REQUIRED Vl/Ph/Hz	REMARKS
VAV-4.1	SCIENCE DEMO 401			AHU-4	10	790	790	215	540	215	24	26	120/1/60	SEE NOTES
VAV-4.2	SP. ED. CLASSROOM			AHU-2	8	700	700	135	600	135	26	28	120/1/60	SEE NOTES
VAV-4.3	CLASSROOM 408			AHU-2	10	930	930	215	900	215	25	26	120/1/60	SEE NOTES
VAV-4.4	CLASSROOM 403			AHU-4	8	780	780	135	400	135	27	29	120/1/60	SEE NOTES
VAV-4.5	CLASSROOM 405			AHU-4	8	780	780	135	400	135	27	29	120/1/60	SEE NOTES
VAV-4.6	CLASSROOM 410			AHU-1	10	930	930	215	900	215	25	26	120/1/60	SEE NOTES
VAV-4.7	CLASSROOM 412			AHU-1	10	930	930	215	900	215	25	26	120/1/60	SEE NOTES
CAV-4.8	CORRIDOR 400			AHU-3	8	850	750	135	850	135	26	28	120/1/60	SEE NOTES
VAV-4.9	SUPERVISOR OFFICE 414			AHU-3	6	450	300	75	450	75	21	23	120/1/60	SEE NOTES
VAV-4.10	CLASSROOM 416			AHU-3	10	1200	970	215	1200	215	25	26	120/1/60	SEE NOTES
VAV-4.11	CLASSROOM 421			AHU-3	10	1000	1000	215	500	215	25	26	120/1/60	SEE NOTES
VAV-5.1	SCIENCE DEMO 501			AHU-4	10	1300	830	215	1300	215	25	27	120/1/60	SEE NOTES
VAV-5.2	SCIENCE DEMO 508			AHU-2	10	1300	1000	215	1300	215	25	27	120/1/60	SEE NOTES
VAV-5.3	CLASSROOM 503			AHU-4	8	740	740	135	470	135	27	29	120/1/60	SEE NOTES
VAV-5.4	CLASSROOM 505			AHU-4	8	740	740	135	470	135	27	29	120/1/60	SEE NOTES
CAV-5.5	CORRIDOR 500			AHU-3	10	1000	700	215	1000	215	26	28	120/1/60	SEE NOTES
VAV-5.6	RESOURCE RM2 515			AHU-3	8	760	760	135	500	135	27	28	120/1/60	SEE NOTES
VAV-5.7	RESOURCE RM1 514			AHU-1	8	600	600	135	500	135	27	29	120/1/60	SEE NOTES
VAV-5.8	CLASSROOM 516			AHU-1	10	1155	460	215	1155	215	25	27	120/1/60	SEE NOTES
VAV-5.9	SUPERVISORY 506			AHU-2	5	150	150	45	140	45	<20	<20	120/1/60	SEE NOTES

VAV BOX NOTES:

1. BOXES SHALL BE MANUFACTURED BY ANEMOSTAT AS STANDARD.
2. BOXES SHALL BE DIRECT DIGITAL CONTROL (DDC).
3. DIRECT DIGITAL CONTROL SHALL BE SUPPLIED BY TCC CONTRACTOR.
4. TCC SHALL FURNISH BACNET CONTROLLERS TO THE UNIT MANUFACTURER. ALL UNITS SHALL BE 120 VOLTS. PROVIDE 120 VOLTS/24 VOLTS STEP DOWN TRANSFORMER.
5. ALL MAXIMUM AND MINIMUM CFM CALIBRATION AND BALANCING TO BE DONE BY TCC CONTRACTOR.
6. HVAC CONTRACTOR TO COORDINATE INSTALLATION OF DIRECT DIGITAL CONTROL.
7. CASING SHALL BE INTERNALLY LINED WITH 1" THICK CLOSED CELL INSULATION.
8. FURNISH ALL VAV BOXES WITH 3 FT SOUND TRAPS AND FOR GREATER THAN 1000cfm PROVIDE 5FT VIBRO ACOUSTICS SOUND TRAP (MODEL RFL-MV) ON THE DISCHARGE.
9. ALL VAV BOXES SERVING THE CORRIDOR, LOCKER ROOMS, AND VESTIBULE SHALL BE SET TO CONSTANT VOLUME.
10. ALL VAV BOXES SHALL BE PROVIDED WITH DISCONNECT SWITCH.
11. REFER TO SPECIFICATIONS FOR MORE INFORMATION.

VAV FAN POWERED BOX SCHEDULE

BASIS OF DESIGN: ANEMOSTAT

UNIT NO.	SERVICE	MODEL	MANUFACTURER	INLET (IN.)	AIR CFM MAX.	AIR CFM MIN. (OCCUPIED)	AIR CFM MIN. (UN-OCCUPIED)	DISCHARGE NC (@ 1.5 WGSP)	RADIATED NC (@ 1.5 WGSP)	ELECTRIC HEATING COIL					FAN			ELECTRICAL		REMARKS
										STEPS	KW	Vl/Ph/Hz	PRI. EAT	LAT	CFM	ESP	HP	MCA	MOP	
FPB-4.1	SCIENCE LAB 404			12	1250	1250	285	29	38	SCR	5.0	208/3/60	55	83.0	1250	0.25	1/2	27.6	30	SEE NOTES
FPB-4.2	SCIENCE PREP 402			8	550	550	135	21	23	SCR	2.0	208/3/60	55	81.6	550	0.25	1/3	13	15	SEE NOTES
FPB-5.1	SCIENCE PREP 502			8	600	600	135	21	29	SCR	2.5	208/3/60	55	83.7	600	0.25	1/3	14.6	15	SEE NOTES
FPB-5.2	SCIENCE LAB 504			10	1200	1200	215	28	37	SCR	4.5	208/3/60	55	83.2	1200	0.25	1/2	25.9	30	SEE NOTES
FPB-5.3	SCIENCE PREP 510			8	550	550	135	21	23	SCR	2.0	208/3/60	55	81.6	550	0.25	1/3	13	15	SEE NOTES
FPB-5.4	SCIENCE LAB 512			12	1250	1250	285	29	38	SCR	5.0	208/3/60	55	83.0	1250	0.25	1/2	27.6	30	SEE NOTES

COMPLIANCE WITH ASHRAR 90.1 2013 NOTE:

TO THE BEST OF MY KNOWLEDGE, BELIEF AND PROFESSIONAL JUDGMENT, THESE PLANS AND SPECIFICATIONS ARE IN COMPLIANCE WITH THE ENERGY CONSERVATION CONSTRUCTION CODE OF NEW YORK STATE.

*APPLICATIONS FOR SERVICE EQUIPMENT PERMITS:

CONTRACTOR SHALL FILE FOR AND OBTAIN SERVICE EQUIPMENT PERMITS FOR ALL EQUIPMENT NOTED WITH ASTERISK (*) IN ACCORDANCE WITH TITLE 28, SECTION MC 105 OF THE NEW YORK CITY MECHANICAL CODE.

Drawing Title:

HVAC EQUIPMENT SCHEDULE SHEET #4

Drawing No.:

M006.00

Sheets in Contract Set:

OF

Sheets in DOB Set:

OF

CAD

AHU-1 OUTDOOR AIR REQUIREMENT

ROOM NAME/ ROOM NUMBER	AREA (FT2)	NYC BC TABLE 1004.1.1		# OF OCCU. PER P.O.R	NYC MCC TABLE 403.3					OA CALC. PER NYC MC 403.3 (Eqn. 4-1, Table 403.3.1.2, Eqn 4-2)	EXH. CALC. PER NYC MC 403.5	DESIGN VALUES			
	(Az)	SPACE FUNCTION	SQ.FT PER OCCUPANT	(Pz)	OCCUPANCY CLASS	# OF OCCU.	BREATHING ZONE OA/PERSON (Rp)	BREATHING ZONE OA/FT^2 (Ra)	EXHAUST RATE CFM/FT^2	BREATHING ZONE OA FLOW CFM (Vbz=RpPz+RaAz)	ZONE EXHAUST CFM	SUPPLY AIR CFM	OUTSIDE AIR CFM	EXHAUST AIR CFM	NOTES (at bottom)
5TH FLOOR															
519B Boiler Room	1383								6 ACH		1383			1425	Note 1
519A Elec. Cl.	62							0.12		7	0			50	Note 1
517 Supervisory	62	Storage			Storage			0.12		7		75	42		
515 Resource RM2	663	Classroom	20	34	Classrooms		10	0.12		420		750	420		
513 Boys Toilet	272	Toilet	3 Fixtures		Toilet Rooms				70/fixture		210			225	Note 1
511 JC	37								1		37			50	
509 Staff Toilet	53	Toilet	1 Fixture		Toilet Rooms				70/fixture						
507 Girls Toilet	256	Toilet	3 Fixtures		Toilet Rooms				70/fixture		70			75	Note 1
505 Classroom	700	Classroom	20	34	Classrooms		10			340		750	420		
503 Classroom	711	Classroom	20	34	Classrooms		10			340		750	420		
500 Corridor	2131				Corridors			0.06		128		700	392		
4TH FLOOR															
423 Storage	221	Storage			Storage				2 ACH		88			125	Note 1
421 Classroom	760	Classroom	20	34	Classroom		10	0.12		431		1000	560		
417 ED. Cl.	99	Storage			Storage			0.12		12				50	Note 1
415Staff Toilet	59	Toilet	1 Fixture		Toilet Rooms				70/fixture	0	70			75	Note 1
413 Boys Toilet	272	Toilet	3 Fixtures		Toilet Rooms				70/fixture	0	210			225	Note 1
411 JC	37								1.0	0	37			50	Note 1
409 Staff Toilet	53	Toilet	1 Fixture		Toilet Rooms				70/fixture	0	70			75	Note 1
407 Girls Toilet	268	Toilet	3 Fixtures		Toilet Rooms				70/fixture	0	210			225	Note 1
405 Classroom	687	Classroom	20	34	Classrooms		10	0.12		422		780	437		
403 Classroom	689	Classroom	20	34	Classrooms		10	0.12		423		780	437		
401 Science Demo	955	Classroom	20	34	Classrooms		10	0.12		455		820	459		
400 Corridor	2805	n/a	na		Corridors			0.06		168		750	420		Note1
3RD FLOOR															
323 Program Office	149	Office	100	4	Office Spaces		5	0.06		29		150	84		
323A Elec. Cl.	99							0.12		12				75	Note 1
315F Records/Stor. RM	144	Storage			Storage			0.12		17				75	Note 1
315E Office	108	Office	20	2	Office Spaces		5	0.06		16		75	42		
315D Office	110	Office	20	6	Conference Rooms		5	0.06		34		75	42		
315C Office	119	Office	20	2	Office Spaces		5	0.06		17		75	42		
315 Guide Suite	491	Office	20	4	Office Spaces		5	0.06		49		125	70		
315A Conference RM	159	Office	20	8	Conference Rooms		5	0.06		49		100	56		
315B Office	118	Office	20	2	Office Spaces		5	0.06		17		75	42		
313 Boys Toilet	246	Toilet	3 Fixtures		Toilet Rooms				70/fixture	0	210			225	Note 1
311 JC	37								1.0	0	37			50	Note 1
309 Staff Toilet	53	Toilet	1 Fixture		Toilet Rooms				70/fixture	0	70			75	Note 1
307 Girls	256	Toilet	3 Fixtures		Toilet Rooms				70/fixture	0	210			225	Note 1
305A Staff Toilet	63	Toilet	1 Fixture		Toilet Rooms				70/fixture	0	70			75	Note 1
305 Staff Development RM	665	Office	20	8	Conference Rooms		5	0.06		80		300	168		
303 Classroom	716	Classroom	20	34	Classrooms		10	0.12		426		780	437		
301 Library	1742	Library	50	35	Libraries		5	0.12		384		1700	952		
300 Corridor	2697	na	na		Corridors			0.06		162		800	448		Note1
2ND FLOOR															
229 SP. ED. Classroom	445	Classroom	20	26	Classroom		10	0.12		313		800	448		
225 Elect Cl	70							0.12		8				70	Note 1
223 ED Storage	129	Storage			Storage			0.12		15				50	Note 1
221 Gender Neut. Toilet	67	Toilet	1 Fixture		Toilet Rooms				70/fixture	0	70			75	Note 1
219 Resource Room	558	Assembly	50	20	Classroom		10	0.12		267		480	269		
217 Boys Toilet	278	Toilet	3 Fixtures		Toilet Rooms				70/fixture	0	210			225	Note 1
215 JC	38								1	0	38			50	Note 1
213 Staff Toilet	58	Toilet	1 Fixture		Toilet Rooms				70/fixture	0	70			75	Note 1
211 Girls Toilet	263	Toilet	3 Fixtures		Toilet Rooms				70/fixture	0	210			225	Note 1
209 Staff Toilet	69	Toilet	1 Fixture		Toilet Rooms				70/fixture	0	70			75	Note 1
207 Staff Toilet	69	Toilet	1 Fixture		Toilet Rooms				70/fixture	0	70			75	Note 1
203 Classroom	721	Classroom	20	34	Classrooms		10	0.12		427		780	437		
201 Excersice RM	1751	Excersice Rooms	50	35	Multiuse - Assembly		7.5	0.06		368		1800	1008		
200 Corridor	3133	na	na		Corridors			0.06		188		800	448		Note1
1ST FLOOR															
135F Student Toilet	61	Toilet	1 Fixture		Toilet Rooms				70/fixture	0	70			75	Note 1
135 (A, B, C, D & E) Medical Suite	645	Office	20	7	Office		5	0.06		74		375	210		
134 Refuse/Recycle Room	462	Trash/Recycle			Recycle Room			1.0			462			475	
133 Staff Toilet	65	Toilet	1 Fixture		Toilet Rooms				70/fixture	0	70			75	Note 1
132 D75 Speech RM	195	Classroom	12	11	Classrooms		10	0.12		133		250	140		
131 Occutherapy	512	Office	20	25	Office		5	0.06		156		300	168		
130 D75 Speech RM	205	Classroom	12	11	Classrooms		10	0.12		135		275	154		
129 D75 Supervisory Off	250	Office	20	2	Office		5	0.06		25		140	78		
128 D75 Resource Room	191	Classroom	12	11	Classrooms		10	0.12		133		275	154		
127 D75 Guidance Off	157	Office	20	2	Office		5	0.06		19		75	42		
126 D75 Rersource RM	205	Classroom	12	11	Classrooms		10	0.12		135		250	140		
125 D75 Guidance Off.	157	Office	20	2	Office		5	0.06		19		75	42		
124 D75 Resource RM	184	Classroom	12	11	Classrooms		10	0.12		132		250	140		
123 D75 Storage	234	Storage			Storage			0.12		28				50	Note 1
122 D75 resource Room	201	Classroom	20	11	Classrooms		10	0.12		134		250	140		
121 D75 Storage	224	Storage			Storage			0.12		27				75	Note 1
119 Elec. Cl	84							0.12		10				50	Note 1
115 Changing RM	96	Toilet	1 Fixture		Toilet Rooms				70/fixture	0	70			75	Note 1
113A Local Sound System	52							0.12		6				50	Note 1
113 D75 Multi Purpose RM	753	Multiuse Assembly	30	50	Multiuse Assembly		7.5	0.06		420		815	456		
111 Boys Toilet	283	Toilet	3 Fixtures		Toilet Rooms				70/fixture	0	210			225	Note 1
109 JC	40	Toilet			Janitor Closet				1	0	40			50	Note 1
107 Staff Toilet	65	Toilet	1 Fixture		Toilet Rooms				70/fixture	0	70			75	Note 1
105 Girls Toilet	277	Toilet	3 Fixtures		Toilet Rooms				70/fixture	0	210			225	Note 1
103 D75 Classroom	487	Office	20	15	Classroom		10	0.12		208		380	213		
102 Acid Waste	166							1			166			175	Note 1
101 D75 Classroom CW10-14	755	Classroom	20	15	Office		10	0.12		241		625	350		
100 Corridor	2616	na	na		Corridors		0.06			169		850	476		
100 Lobby	1578				Lobby			0.06		95		400	224		Note 1
CELLAR FLOOR															
C27 General Storage	1108	Storage			Storage			1.5 ACH			374	340	190	375	
C21 Bike Storage	771	Storage			Storage			1.5 ACH	0		193	180	101	200	
C19 Storage	451	Storage			Storage			1.5 ACH	0		113			125	
C18A Storage	210	Storage			Storage			1.5 ACH	0		53			70	
C18 Excersice RM	1409	Excersice Rooms	50	35	Multiuse Assembly	7.5	0.06		351	351		800	448		
C17 Staff Lunch	584	Assembly	15	25	Cafeteria	7.5	0.18		293	293		550	308		
C12 School Safety Office	280	Office	20	5	Office	5	0.06		42	42		150	84		
C11D Food Storage	227	Storage			Storage			4 ACH			151	150	84	175	
C11C Non Food Storage	173	Storage			Storage			4ACH			115	115	64	130	
C00 Corridor	1769				Corridors		0.06		106	106		900	504		Note1
Summation	41458			541						6,826		24840	13,010	7,120	

Note1: Corridor supply air from AHU-1&2 jointly provides make up air to all toilet exhausts and closet exhausts.
Note: Room SQ.FT. may have slightly reduced on arch plans due to closets and pipe chases added inside classrooms. These will be coordinated in 100% submission.

Selection AHU-1			
Supply (CFM)	OA (CFM)	OA%	Return (CFM)
24,840	13,910	56%	16,310

AHU-2 OUTDOOR AIR REQUIREMENT

ROOM NAME/ ROOM NUMBER	AREA (FT2)	NYC BC TABLE 1004.1.1		# OF OCCU. PER P.O.R	NYC MCC TABLE 403.3				OA CALC. PER NYC MC 403.3 (Eqn. 4-1, Table 403.3.1.2, Eqn 4-2)	EXH. CALC. PER NYC MC 403.5	DESIGN VALUES			
	(Az)	SPACE FUNCTION	SQ.FT PER OCCUPANT	(Pz)	OCCUPANCY CLASS	BREATHING ZONE OA/PERSON (Rp)	BREATHING ZONE OA/FT^2 (Ra)	EXHAUST RATE CFM/FT^2	BREATHING ZONE OA FLOW CFM (Vbz=RpPz+RaAz)	ZONE EXHAUST CFM	SUPPLY AIR	OUTSIDE AIR CFM	EXHAUST AIR CFM	NOTES (at bottom)
5TH FLOOR														
516 Classroom	701	Classroom	20	34	Classrooms	10	0.12		424		1000	460		
514 Resource RM1	320	Classroom	20	20	Classrooms	10	0.12		238		525	242		
512 Science Lab	1249	Classroom	20	34	Classrooms	10	0.12		490		1250	575	750	
510B Acid Storage Room	60	Storage			Science Labs			1	0	60			100	
510 Science Prep	455	Classroom	20	10	Classrooms	10	0.12		155		550	253	750	
508 Science Demo	851	Classroom	20	34	Classrooms	10	0.12		442		1000	460		
506 Edu. Storage	48	Storage			Storage		0.12		6				65	
504 Science Lab	1193	Classroom	20	34	Science Labs	10	0.18		555		1200	552	750	
502B Acid Storage Room	92	Storage			Science Labs			1	0	92			100	
502 Science Prep	376	Classroom	20	10	Science Labs	10	0.18		168		600	276	750	
501 Science Demo	952	Classroom	20	34	Classrooms	10	0.12		454		1000	460		
4TH FLOOR														
416 Classroom	736	Classroom	20	34	Classrooms	10	0.12		428		950	437		
414 Supervisor Office	328	Office	20	2	Office	5	0.06		28		250	115		
412 Classroom	682	Classroom	20	34	Classrooms	10	0.12		422		930	428		
410 Classroom	699	Classroom	20	34	Classrooms	10	0.12		424		930	428		
408 Classroom	693	Classroom	20	34	Classrooms	10	0.12		423		930	428		
406 SP. ED. Classroom	459	Classroom	20	26	Classrooms	10	0.12		315		700	322		
404 Science Lab	1279	Classroom	30	34	Science Labs	10	0.18		570		1250	575	1150	
402A Acid Storage Room	92	Storage			Science Labs			1	0	92			100	
402 Science Prep	405	Classroom	20	10	Science Labs	10	0.18		173		550	253	750	
3RD FLOOR														
314B Art Storage	114	Storage			Storage			4 ACH		76			100	
314 Art Classroom	1093	Classroom	20	34	Classroom	10	0.18		537		1200	552		
312 Classroom	689	Classroom	20	34	Classrooms	10	0.12		423		925	426		
310 Classroom	697	Classroom	20	34	Classrooms	10	0.12		424		925	426		
308 Classroom	693	Classroom	20	34	Classrooms	10	0.12		423		925	426		
306 Classroom	691	Classroom	20	34	Classrooms	10	0.12		423		925	426		
304 Classroom	692	Classroom	20	34	Classrooms	10	0.12		423		925	426		
302 Classroom	697	Classroom	20	34	Classrooms	10	0.12		424		925	426		
2ND FLOOR														
214A Art Storage	106	Storage			Storage			4 ACH		71			100	
214 Art Classroom	1083	Classroom	20	34	Classroom	10	0.18		535		1200	552		
212D Practice Room	97	Classroom	20	4	Music Classroom	10	0.12		52		150	69		
212C Practice Room	97	Classroom	20	4	Music Classroom	10	0.12		52		125	58		
212B Practice Room	111	Classroom	20	4	Music Classroom	10	0.12		53		125	58		
212A Practice Room	63	Classroom	20	4	Music Classroom	10	0.12		48		125	58		
212 Inst. Musict. Rm	485	Classroom	20	34	Music Classroom	10	0.12		398		875	403		
210 Music Storage Room	302	Storage	20		Storage			1.5 ACH		76			100	
208 Music Choral Room	948	Classroom	20	34	Music Classroom	10	0.06		397		1000	460		
206B Dup. RM/Guid. Suite	148	Office	20	4	Office	5	0.06		29		225	104		
206A Rec. Rm/Guide Suite	143	Office	20	4	Office	5	0.06		29		90	41		
206 General Office	641	Office	20	6	Office	5	0.06		68	80	370	170		
204 Staff Toilet	57	Toilet		1 Fixture	Toilet Rooms			70/fixture		70			75	
202A Principal Toilet	54	Toilet		1 Fixture	Toilet Rooms			70/fixture		70			75	
202 Principal's Office	344	Office	20	4	Office	5	0.06		41	80	450	207		
1ST FLOOR														
120 D75 Classroom	713	Classroom	20	15	Classrooms	10	0.12		236		600	276		
118 D75 Classroom	477	Classroom	20	15	Classrooms	10	0.12		207		450	207		
116 D75 Classroom	849	Classroom	20	15	Classrooms	10	0.12		252		570	262		
114 D75 Classroom	800	Classroom	20	15	Classrooms	10	0.12		246		550	253		
112 D75 Classroom	524	Classroom	20	15	Classrooms	10	0.12		213		475	219		
110 D75 Main Office	352	Office	20	3	Office	5	0.06		36		240	110		
108 Parent Community RM	370	Office	20	4	Conference Rooms	5	0.06		42		250	115		
106 D75 Classroom CW10-12	494	Classroom	20	15	Classrooms	10	0.12		209		475	219		
104 Physical Therapy	731	Classroom	20	21	Classrooms	10	0.12		298		650	299		Note1
CELLAR FLOOR														
C25 ATS RM	141							2 ACH		47			75	
C22 Electrical Meter Room	760							4 ACH	0	507			75	
C20 Storage	246	Storage			Storage			1.5 ACH	0	62			75	
C16 Shower	193	Toilet		1 Shoer Head/ 1 Fixture	Shower /Toilet Room			50/shower head 70/fixture		120			75	
C15 JC	41							1		41			75	
C14 Shower	187	Toilet		1 Shoer Head/ 1 Fixture	Shower /Toilet Room			50/shower head 70/fixture		120			75	
C13 Staff Toilet	65	Toilet		1 Fixture	Toilet			70/fixture		70			75	
C12B Locker	102	Locker Rooms	50	1	Locker Rooms			0.25		26			75	
C12A Locker	115	Locker Rooms	50	1	Locker Rooms			0.25		29			75	
C11B Kit. Locker Male	110	Locker Rooms	50	2	Locker Rooms			0.25		28			75	
C11A Kit. Locker Female	132	Locker Rooms	50	2	Locker Rooms			0.25		33			75	
C10 Storage	143	Storage			Storage		0.12		17				75	
C09 Cust. Workshop/Stor.	562	Workshop	50	11	Workshop			1.5 ACH		141			75	
C08 Custdodians Locker F	186	Locker Rooms	50	4	Locker Rooms			0.25		47			75	
C07 Vault	408	Storage			Storage			1.5 ACH		102	100	46	75	
C06 Custodians Locker M	182	Locker Rooms	50	4	Locker Rooms			0.25	0	46			75	
C05 Storage	435	Storage	50		Storage			1.5 ACH		109	110	51	75	
C04 General Storage	700	Storage	50		Storage			1.5 ACH		175	150	69	75	
C03 Custodian Office	423	Office	20	4	Office	5	0.06		45		150	69	75	
C02 Water Meter/Pump RM	1048							2 ACH		472			75	
C01 Storage	367	Storage			Storage			1.5 ACH		121			75	
C00 Corridor	1769				Corridors		0.06		106		900	414		Note1
Summation	29063			700					9299		30770	14,154	7,290	

Note1: Corridor supply air from AHU-1&2 jointly provides make up air to all toilet exhausts and closet exhausts.
Note: Room SQ.FT. may have slightly reduced on arch plans due to closets and pipe chases added inside classrooms. These will be coordinated in 100% submission.

Selection AHU-2			
Supply (CFM)	OA (CFM)	OA%	Return (CFM)
30,770	14,155	46%	22,895

ROOM NAME/ ROOM NUMBER	AREA (FT2)	NYC BC TABLE 1004.1.1		# OF OCCU. PER P.O.R	NYC MCC TABLE 403.3					OA CALC. PER NYC MC 403.3 (Eqn. 4-1, Table 403.3.1.2, Eqn 4-2)	EXH. CALC. PER NYC MC 403.5	DESIGN VALUES			
	(Az)	SPACE FUNCTION	SQ.FT PER OCCUPANT	(Pz)	OCCUPANCY CLASS	# OF OCCU.	BREATHING ZONE OA/PERSON (Rp)	BREATHING ZONE OA/FT^2 (Ra)	EXHAUST RATE CFM/FT^2	BREATHING ZONE OA FLOW CFM (Vbz=RpPz+RaAz)	ZONE EXHAUST CFM	SUPPLY AIR CFM	OUTSIDE AIR CFM	EXHAUST AIR CFM	NOTES (at bottom)
2ND FLOOR															
205K Local Sound System RM	31							0.12		4				50	
205J Gym Storage	72	Storage			storage			0.12		9				50	
205I Visiting Team Locker	367	Locker Rooms			Locker Rooms				0.25		92	210	130	225	
205G Gym Storage	221	Storage			storage				1.5 ACH		55			75	
205F Health Inst.	159	Office	20	2	Office		5	0.06		20		75	47		
205E Health Inst.	146	Office	20	2	Office		5	0.06		19		75	47		
205D Chair Storage	129	Storage			storage				1.5 ACH		32			75	
205C Locker Room Boys	812	Locker Rooms	50						0.25		203	325	202	380	
205B Locker Room Girls	812	Locker Rooms	50						0.25		203	325	202	390	
205A Stage	839	Stage	15	45	Stage		10	0.06		500		810	502		
205 Gymatorium	9021	Gymnasium	8	571	Multiuse Assembly		7.5	0.06		4824		7800	4836		
Summation	12609			620						5375		9,620	5,964	1245	

Selection			
Supply (CFM)	OA (CFM)	OA%	Return (CFM)
9,650	5,970	62%	7,880

AHU-4 OUTDOOR AIR REQUIREMENT

ROOM NAME/ ROOM NUMBER	AREA (FT2)	NYC BC TABLE 1004.1.1		# OF OCCU. PER P.O.R.	NYC MCC TABLE 403.3				OA CALC. PER NYC MC 403.3 (Eqn. 4-1, Table 403.3.1.2, Eqn 4-2)	EXH. CALC. PER NYC MC 403.5	DESIGN VALUES			
	(Az)	SPACE FUNCTION	SQ.FT PER OCCUPANT	(Pz)	OCCUPANCY CLASS	BREATHING ZONE OA/PERSON (Rp)	BREATHING ZONE OA/FT^2 (Ra)	EXHAUST RATE CFM/FT^2	BREATHING ZONE OA FLOW CFM (Vbz=RpPz+RaAz)	ZONE EXHAUST CFM	SUPPLY AIR CFM	OUTSIDE AIR CFM	EXHAUST AIR CFM	NOTES (at bottom)
1ST FLOOR														
140 Ground Equipment RM	130	Storage			Storage			1		130			150	
138 Cafeteria	4040	Assembly	15	267	Cafeteria	7.5	0.18		2730		4900	2773		
136F Deiticians Office	98	Office	20	5	Office	5	0.06		31		100	56		
136G Can Wash	91							6 ACH		91			125	
136C Kitchen Staff Toilet	77	Toilet		1 Fixture	Toilet Rooms			70/fixture		70			75	
136B Food & Non-Food Stor.	91	Kitchen						0.7		63.7			75	
136A Servery	518	Business	100	6	Kitchen	7.5	0.18		138		375	210		
Kitchen Hood													3850	
136 Kitchen	1179	Kitchen	200	6	Kitchen			0.7		825	1450	825	1500	
Summation	6224			284					2899		6,825	3,864	5775 1925	

Selection			
Supply (CFM)	OA (CFM)	OA%	Return (CFM)
6,825	3,865	57%	5,550

Drawing Title:

HVAC VENTILATION
INDEX SCHEDULE

Drawing No.:
M007.00

Sheets in Contract Set:
OF

Sheets in DOB Set:
OF

CAD

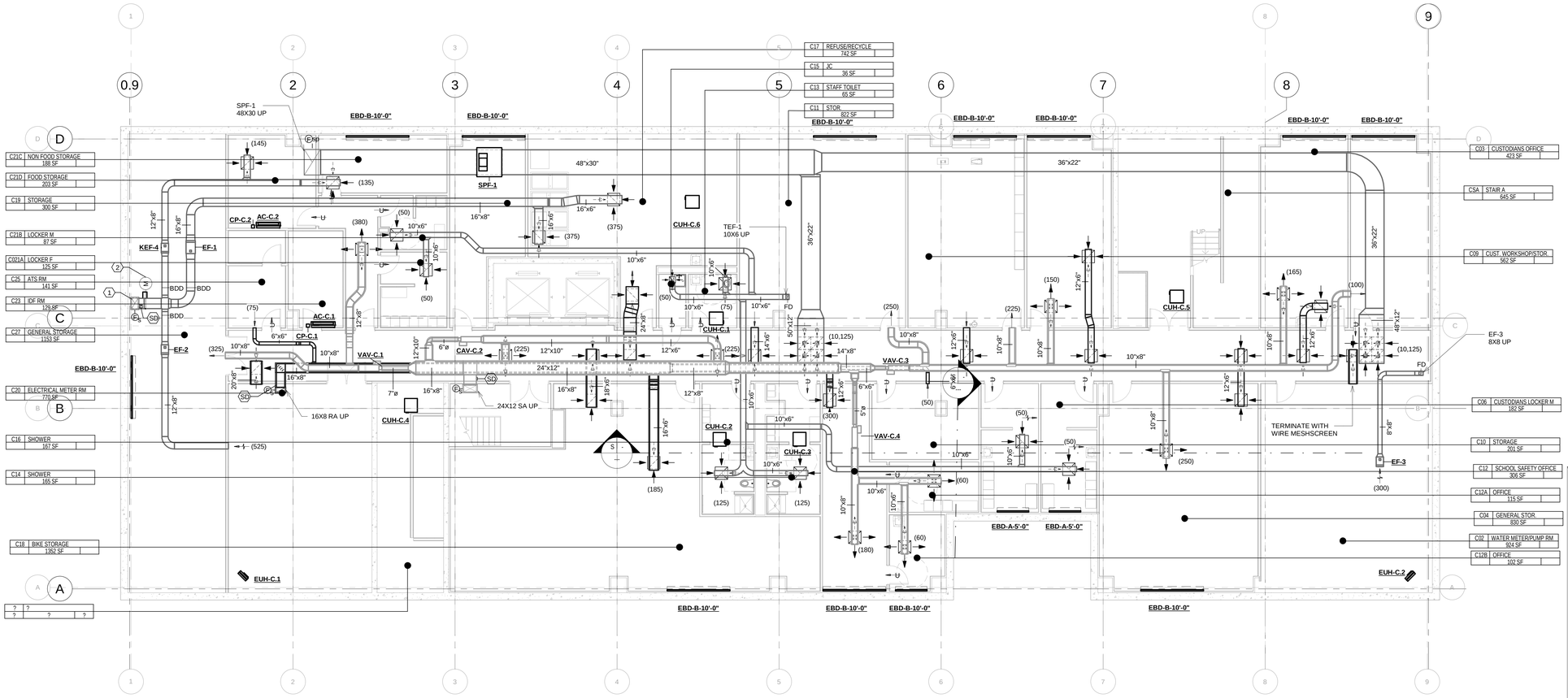
NOTES:

1. SEE HVAC PIPING PLANS FOR THERMOSTATS, TEMPERATURE SENSORS, HUMIDITY SENSORS, DDC ROUTERS AND DDC POWER PANEL.
2. ALL DUCT TAKE-OFF SHALL BE PROVIDED WITH 45 DEGREE CLINCH WITH COLLAR AND VOLUME DAMPERS AS PER DETAIL ON M501.00.
3. ALL DUCT TEES AND MITERED ELBOWS SHALL BE PROVIDED WITH SPLITTER TEE WITH DIRECTIONAL VANES.
4. DUCT SMOKE DETECTOR MUST BE INSTALLED WITHIN 5 FT OF FIRE SMOKE DAMPER AS SHOWN ON PLAN.
5. PROVIDE YOUNG REGULATOR TYPE VOLUME DAMPER FOR INACCESSIBLE CONCEALED DUCTWORK.
6. PROVIDE ARCHITECTURAL CEILING ACCESS DOOR FOR INACCESSIBLE CONCEALED CEILING MOUNTED EQUIPMENT, FIRE DAMPER, SMOKE DAMPER AND FIRE SMOKE DAMPER. SEE M502.00 FOR DUCT ACCESS DOOR SIZE.
7. ALL LOCKER / SHOWER AND MOP / CAN WASH ROOM EXHAUST DUCTWORK AND GRILLES SHALL BE ALUMINUM. REFER TO SPECICIATIONS FOR FURTHER DETAILS
8. COORDINATE WITH ARCHITECTURAL DRAWINGS FOR CEILING AND WALL ACCESS DOORS FOR EQUIPMENT, VOLUME DAMPERS, FIRE DAMPERS, SD, FSD ETC.
9. PROVIDE 1" DUCT LINER FROM DISCHARGE OF ALL VAV BOXES UP TO ALL OUTLETS

KEYED NOTES:

(1) 20X12 EXHAUST AIR UP F.S.D AT SLAB 2HR RATED FIRE WRAP FOR DUCTWORK WITHIN ENLCOSURE FROM MOTORIZED DAMPER UP TO LOUVER LOCATED ON 2ND LFOOR

(2) INTERLOCK DAMPER OPERATION WITH KEF-4, EF-1 &EF-2.



1 FP00_CELLAR FLOOR DUCTWORK
M101.00 SCALE: 1/8" = 1'-0"

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Drawing Title:
HVAC DUCTWORK -CELLAR FLOOR PLAN

Reserved For DOB NOW Job#

Drawing No.:
M101.00

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Sheets in DOB Set:
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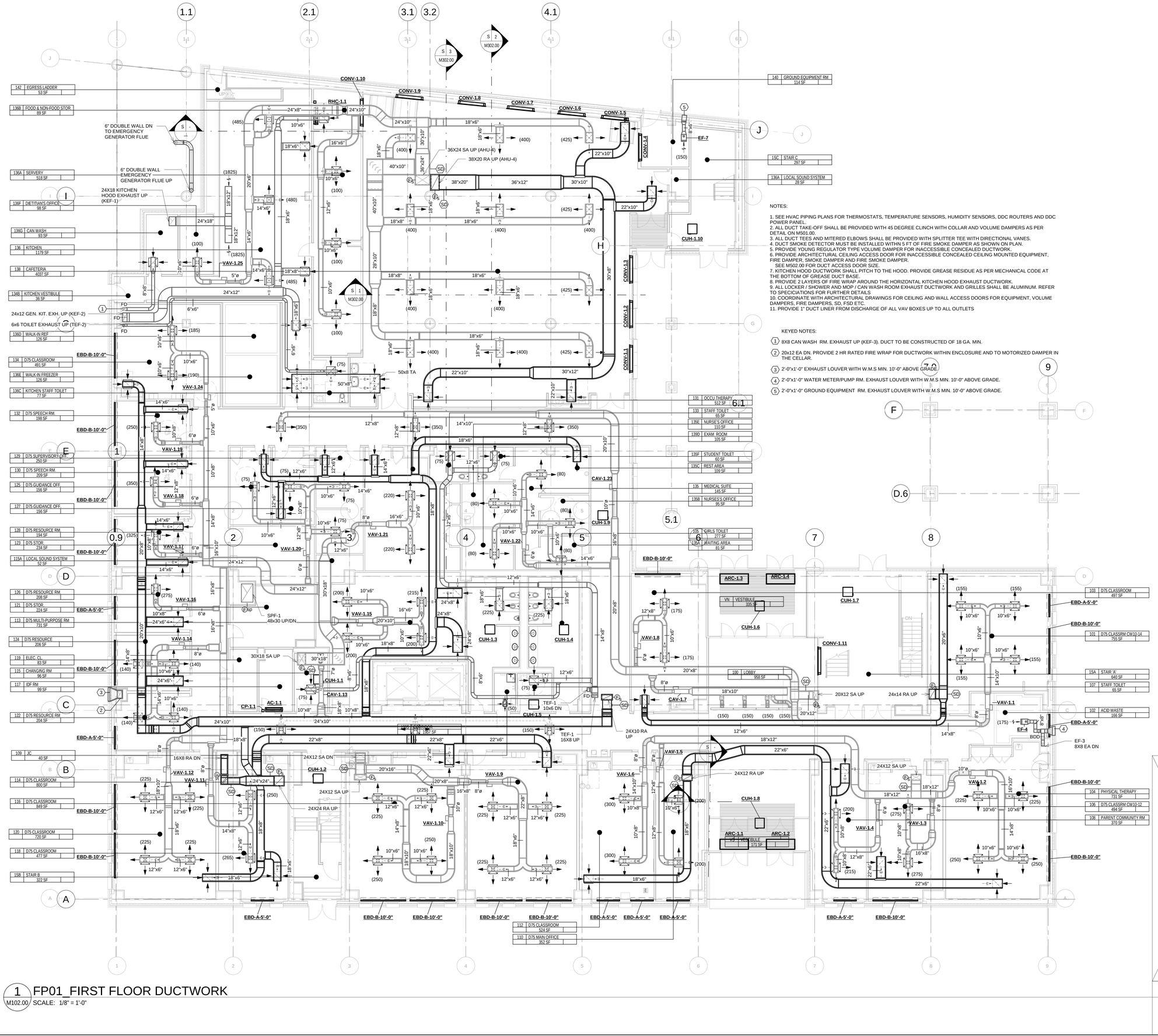

NOTES:

1. SEE HVAC PIPING PLANS FOR THERMOSTATS, TEMPERATURE SENSORS, HUMIDITY SENSORS, DDC ROUTERS AND DDC POWER PANEL.
2. ALL DUCT TAKE-OFF SHALL BE PROVIDED WITH 45 DEGREE CLINCH WITH COLLAR AND VOLUME DAMPERS AS PER DETAIL ON M501.00.
3. ALL DUCT TEES AND MITERED ELBOWS SHALL BE PROVIDED WITH SPLITTER TEE WITH DIRECTIONAL VANES.
4. DUCT SMOKE DETECTOR MUST BE INSTALLED WITHIN 5 FT OF FIRE SMOKE DAMPER AS SHOWN ON PLAN.
5. PROVIDE YOUNG REGULATOR TYPE VOLUME DAMPER FOR INACCESSIBLE CONCEALED DUCTWORK.
6. PROVIDE ARCHITECTURAL CEILING ACCESS DOOR FOR INACCESSIBLE CONCEALED CEILING MOUNTED EQUIPMENT, FIRE DAMPER, SMOKE DAMPER AND FIRE SMOKE DAMPER.
   SEE M502.00 FOR DUCT ACCESS DOOR SIZE.
7. KITCHEN HOOD DUCTWORK SHALL PITCH TO THE HOOD. PROVIDE GREASE RESIDUE AS PER MECHANICAL CODE AT THE BOTTOM OF GREASE DUCT BASE.
8. PROVIDE 2 LAYERS OF FIRE WRAP AROUND THE HORIZONTAL KITCHEN HOOD EXHAUST DUCTWORK.
9. ALL LOCKER / SHOWER AND MOP / CAN WASH ROOM EXHAUST DUCTWORK AND GRILLES SHALL BE ALUMINUM. REFER TO SPECICIATIONS FOR FURTHER DETAILS
10. COORDINATE WITH ARCHITECTURAL DRAWINGS FOR CEILING AND WALL ACCESS DOORS FOR EQUIPMENT, VOLUME DAMPERS, FIRE DAMPERS, SD, FSD ETC.
11. PROVIDE 1" DUCT LINER FROM DISCHARGE OF ALL VAV BOXES UP TO ALL OUTLETS

KEYED NOTES:

1. 8X8 CAN WASH RM. EXHAUST UP (KEF-3). DUCT TO BE CONSTRUCTED OF 18 GA. MIN.
2. 20x12 EA DN. PROVIDE 2 HR RATED FIRE WRAP FOR DUCTWORK WITHIN ENCLOSURE AND TO MOTORIZED DAMPER IN THE CELLAR.
3. 2'-0"x1'-0" EXHAUST LOUVER WITH W.M.S MIN. 10'-0" ABOVE GRADE.
4. 2'-0"x1'-0" WATER METER/PUMP RM. EXHAUST LOUVER WITH W.M.S MIN. 10'-0" ABOVE GRADE.
5. 2'-0"x1'-0" GROUND EQUIPMENT RM. EXHAUST LOUVER WITH W.M.S MIN. 10'-0" ABOVE GRADE.

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1 FP01_FIRST FLOOR DUCTWORK
M102.00 SCALE: 1/8" = 1'-0"

Drawing Title:
HVAC DUCTWORK - FIRST FLOOR PLAN

Reserved For DOB NOW Job#

Drawing No.:
M102.00

Sheets in Contract Set: OF 0

Sheets in DOB Set: OF 0

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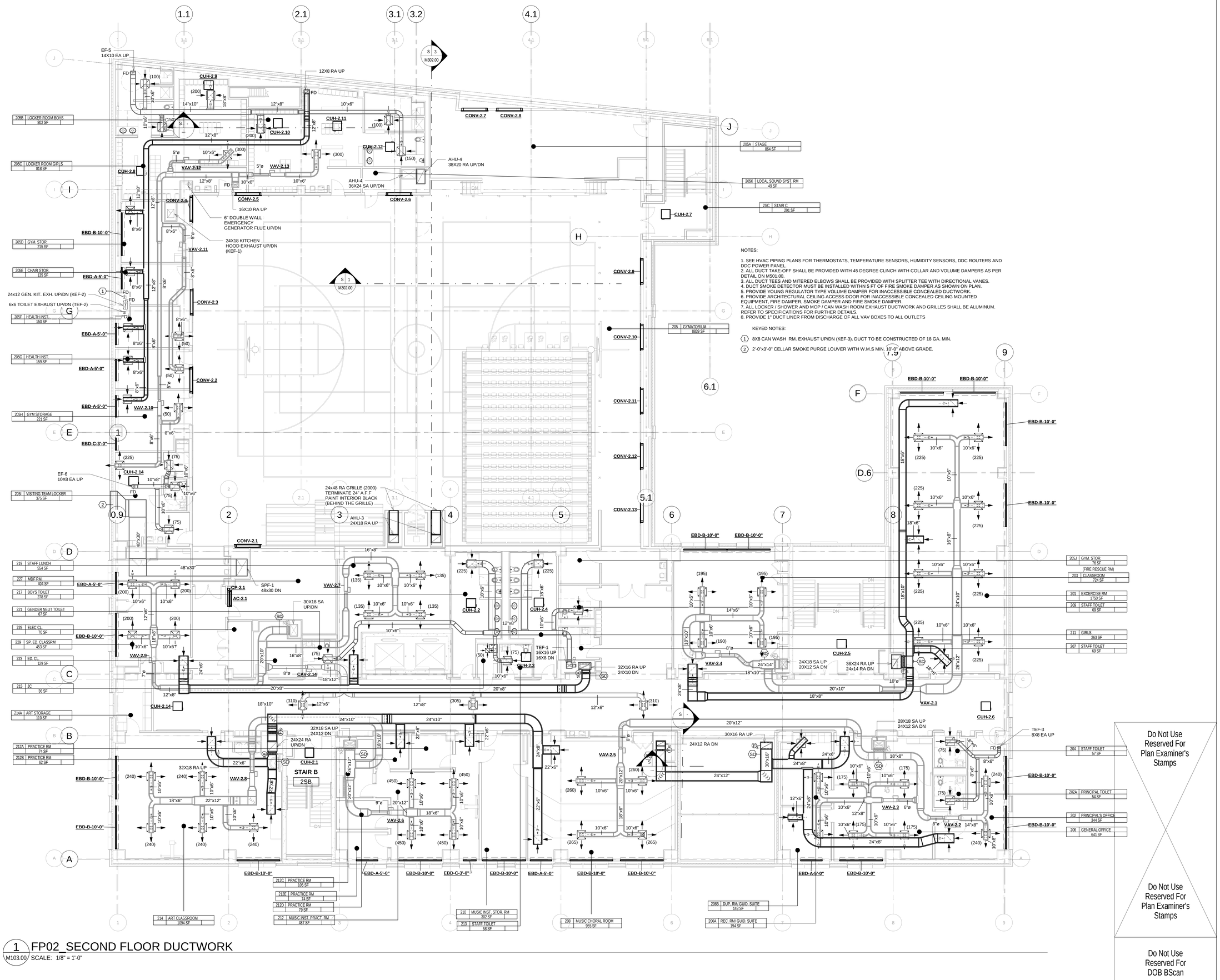

NOTES:

1. SEE HVAC PIPING PLANS FOR THERMOSTATS, TEMPERATURE SENSORS, HUMIDITY SENSORS, DDC ROUTERS AND DDC POWER PANEL.
2. ALL DUCT TAKE-OFF SHALL BE PROVIDED WITH 45 DEGREE CLINCH WITH COLLAR AND VOLUME DAMPERS AS PER DETAIL ON M501.00.
3. ALL DUCT TEES AND MITERED ELBOWS SHALL BE PROVIDED WITH SPLITTER TEE WITH DIRECTIONAL VANES.
4. DUCT SMOKE DETECTOR MUST BE INSTALLED WITHIN 5 FT OF FIRE SMOKE DAMPER AS SHOWN ON PLAN.
5. PROVIDE YOUNG REGULATOR TYPE VOLUME DAMPER FOR INACCESSIBLE CONCEALED DUCTWORK.
6. PROVIDE ARCHITECTURAL CEILING ACCESS DOOR FOR INACCESSIBLE CONCEALED CEILING MOUNTED EQUIPMENT, FIRE DAMPER, SMOKE DAMPER AND FIRE SMOKE DAMPER.
7. ALL LOCKER / SHOWER AND MOP / CAN WASH ROOM EXHAUST DUCTWORK AND GRILLES SHALL BE ALUMINUM. REFER TO SPECIFICATIONS FOR FURTHER DETAILS.
8. PROVIDE 1" DUCT LINER FROM DISCHARGE OF ALL VAV BOXES TO ALL OUTLETS

KEYED NOTES:

1. 8X8 CAN WASH RM. EXHAUST UP/DN (KEF-3). DUCT TO BE CONSTRUCTED OF 18 GA. MIN.
2. 2'-0"x3'-0" CELLAR SMOKE PURGE LOUVER WITH W.M.S MIN. 10'-0" ABOVE GRADE.

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1 FP02_SECOND FLOOR DUCTWORK
M103.00 SCALE: 1/8" = 1'-0"

Drawing Title:
HVAC DUCTWORK - SECOND FLOOR PLAN

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Drawing No.:
M103.00

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EF-5
14X10 EA DN

EF-5

323 MECHANICAL ROOM
3443 SF

AHU-5

44"x24"

6" DOUBLE WALL
EMERGENCY
GENERATOR FLUE UP/DN

24X18 KITCHEN
HOOD EXHAUST UP/DN
(KEF-1)

KEF-3

24x12 GEN. KIT. EXH. DN (KEF-2)

6x6 TOILET EXHAUST DN (TEF-2)

EUH-3.3

KEF-2

TEF-2

EUH-3.2

EF-6

EF-6

317A ATTENDNT
119 SF

10X8 EA UP

317B CONFERENCE
100 SF

317C OFFICE
108 SF

317D 8-44 RECORD/STOR. RM
144 SF

EUH-3.1

317 8-21.47 REC RM/ GUID STE
199 SF

323A ELEC. CL
104 SF

321 IDF RM
100 SF

325 PROGRAM OFFICE
282 SF

319 ED. CL
53 SF

EBD-B-10'-0"

323B EGRESS LADDER
57 SF

12X8 RA DN

42X28 SA DN

AHU-6

16X10 RA DN

24X12 SA
DN

AHU-4
36X24 SA DN

AHU-4
38X20 RA UP/DN

SPF-2
48x48 UP. PROVIDE 48x48
EXHAUST GRILLE

VAV-3.24

CUH-3.7

VAV-3.22

VAV-3.23

VAV-3.20

VAV-3.21

VAV-3.18

VAV-3.19

AHU-3
24X18 RA DN

VAV-3.16

VAV-3.15

VAV-3.14

VAV-3.13

VAV-3.12

VAV-3.17

36X24 RA UP
32X18 DN

CUH-3.2

AC-3.1

CP-3.1

CUH-3.3

CUH-3.4

CUH-3.5

36X18 RA UP
32X16 RA DN

VAV-3.7

32X24 SA UP
24X18 SA DN

36X24 RA
UP/DN

CUH-3.6

VAV-3.6

VAV-3.1

CUH-3.8

CAV-3.11

TEF-1
16X16 UP/DN

36X28 RA UP
24X24 RA DN

34X24 SA UP
32X18 SA DN

CUH-3.1

VAV-3.10

VAV-3.9

VAV-3.8

36X28 RA UP
30X16 RA DN

VAV-3.5

VAV-3.4

VAV-3.3

VAV-3.2

CUH-3.9

TEF-3
8X8 EA UP/DN

315 SAT. HS COLL/VOC SUITE
205 SF

315A OFFICE
118 SF

315B CONFERENCE RM
148 SF

313 BOYS TOILET
274 SF

311 JC
36 SF

309 STAFF TOILET
59 SF

307 GIRLS
258 SF

301 LIBRARY
1742 SF

305A STAIR A
688 SF

(FIRE RESCUE RM)

303 CLASSROOM
716 SF

305 STAFF DEVELOPMENT RM
666 SF

302 CLASSROOM
724 SF

314 ART CLASSROOM
1093 SF

305B STAIR B
284 SF

312 CLASSROOM
688 SF

310 CLASSROOM
697 SF

308 CLASSROOM
692 SF

306 CLASSROOM
712 SF

304 CLASSROOM
717 SF

NOTES:

1. SEE HVAC PIPING PLANS FOR THERMOSTATS, TEMPERATURE SENSORS, HUMIDITY SENSORS, DDC ROUTERS AND DDC POWER PANEL.
2. ALL DUCT TAKE-OFF SHALL BE PROVIDED WITH 45 DEGREE CLINCH WITH COLLAR AND VOLUME DAMPERS AS PER DETAIL ON M501.00.
3. ALL DUCT TEES AND MITERED ELBOWS SHALL BE PROVIDED WITH SPLITTER TEE WITH DIRECTIONAL VANES.
4. DUCT SMOKE DETECTOR MUST BE INSTALLED WITHN 5 FT OF FIRE SMOKE DAMPER AS SHOWN ON PLAN.
5. PROVIDE YOUNG REGULATOR TYPE VOLUME DAMPER FOR INACCESSIBLE CONCEALED DUCTWORK.
6. PROVIDE ARCHITECTURAL CEILING ACCESS DOOR FOR INACCESSIBLE CONCEALED CEILING MOUNTED EQUIPMENT, FIRE DAMPER, SMOKE DAMPER AND FIRE SMOKE DAMPER.
7. ALL LOCKER / SHOWER AND MOP / CAN WASH ROOM EXHAUST DUCTWORK AND GRILLES SHALL BE ALUMINUM. REFER TO SPECIFICATIONS FOR FURTHER DETAILS.
8. PROVIDE 1" DUCT LINER FROM DISCHARGE OF ALL VAV BOXES TO ALL OUTLETS
9. PROVIDE REFRIGERANT PIPING FORM AHU-5 AND AHU-6 TO OUT CONDENSING UNITS. PROVIDE MULTI V HR BOXES AS PER SCHEDULE SHEET M003.00.

KEYED NOTES:

1. 8X8 CAN WASH RM. EXHAUST DN (KEF-3). DUCT TO BE CONSTRUCTED OF 18 GA. MIN.
2. 12X12 SHAFT VENT UP. PROVIDE 2HR RATED DUCT WRAP FOR ENTIRE LENGTH OF DUCTWORK.
3. 9'-0"x5'-0" OA INTAKE LOUVER WITH W.M.S.
4. 7'-0"x5'-0" EA IDISCHARGE LOUVER WITH W.M.S.
5. 5'-0"x5'-0" EA IDISCHARGE LOUVER WITH W.M.S.
6. 6'-0"x5'-0" OA INTAKE LOUVER WITH W.M.S.

EBD-B-10'-0"

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1 FP03_THIRD FLOOR DUCTWORK
M104.00 SCALE: 1/8" = 1'-0"

Drawing Title:
HVAC DUCTWORK - THIRD FLOOR PLAN

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DOB NOW Job#

Drawing No.:
M104.00

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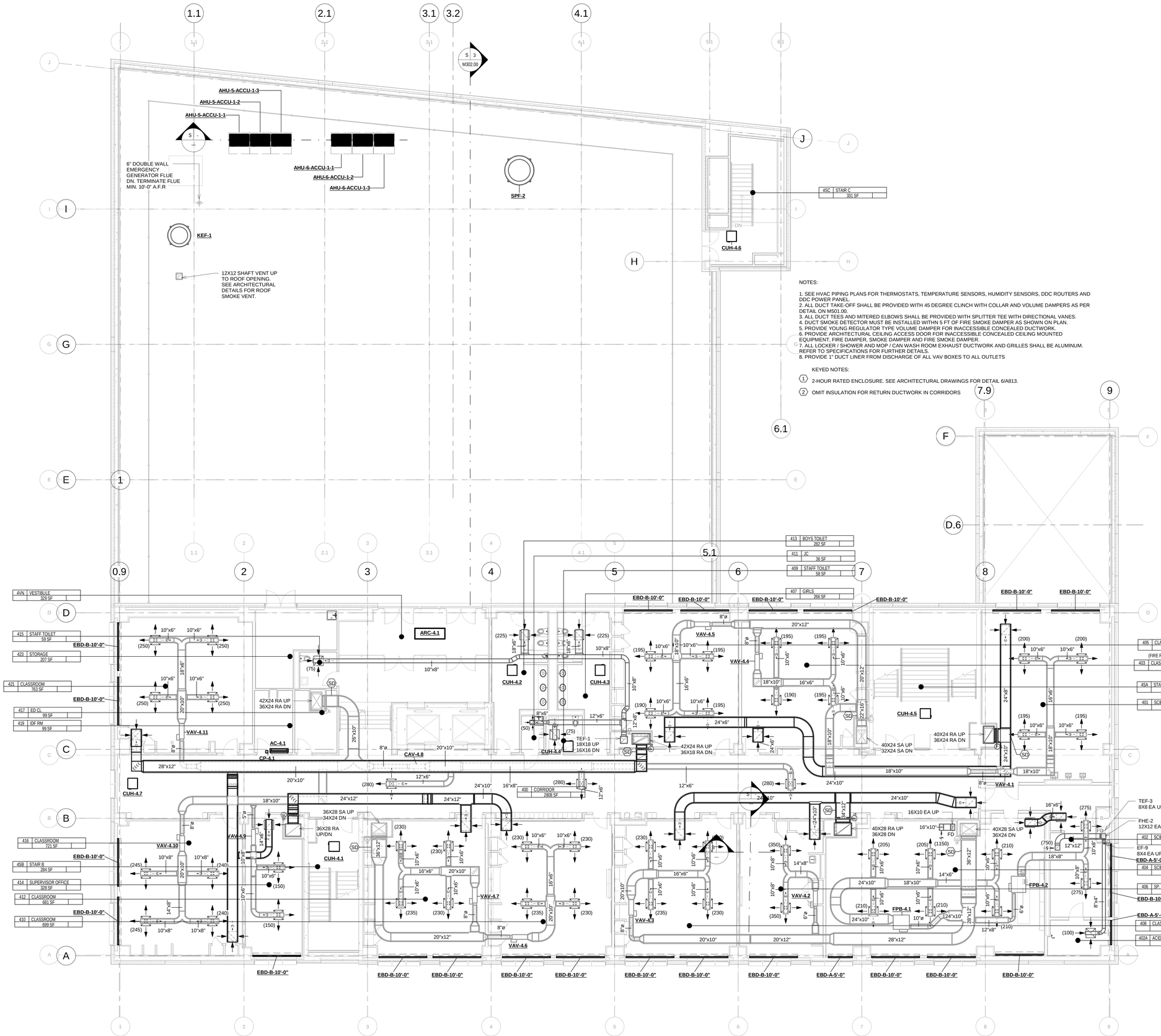

1 FP04_FOURTH FLOOR DUCTWORK
M105.00 SCALE: 1/8" = 1'-0"

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Drawing Title:
HVAC DUCTWORK - FOURTH FLOOR PLAN

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Drawing No.:
M105.00

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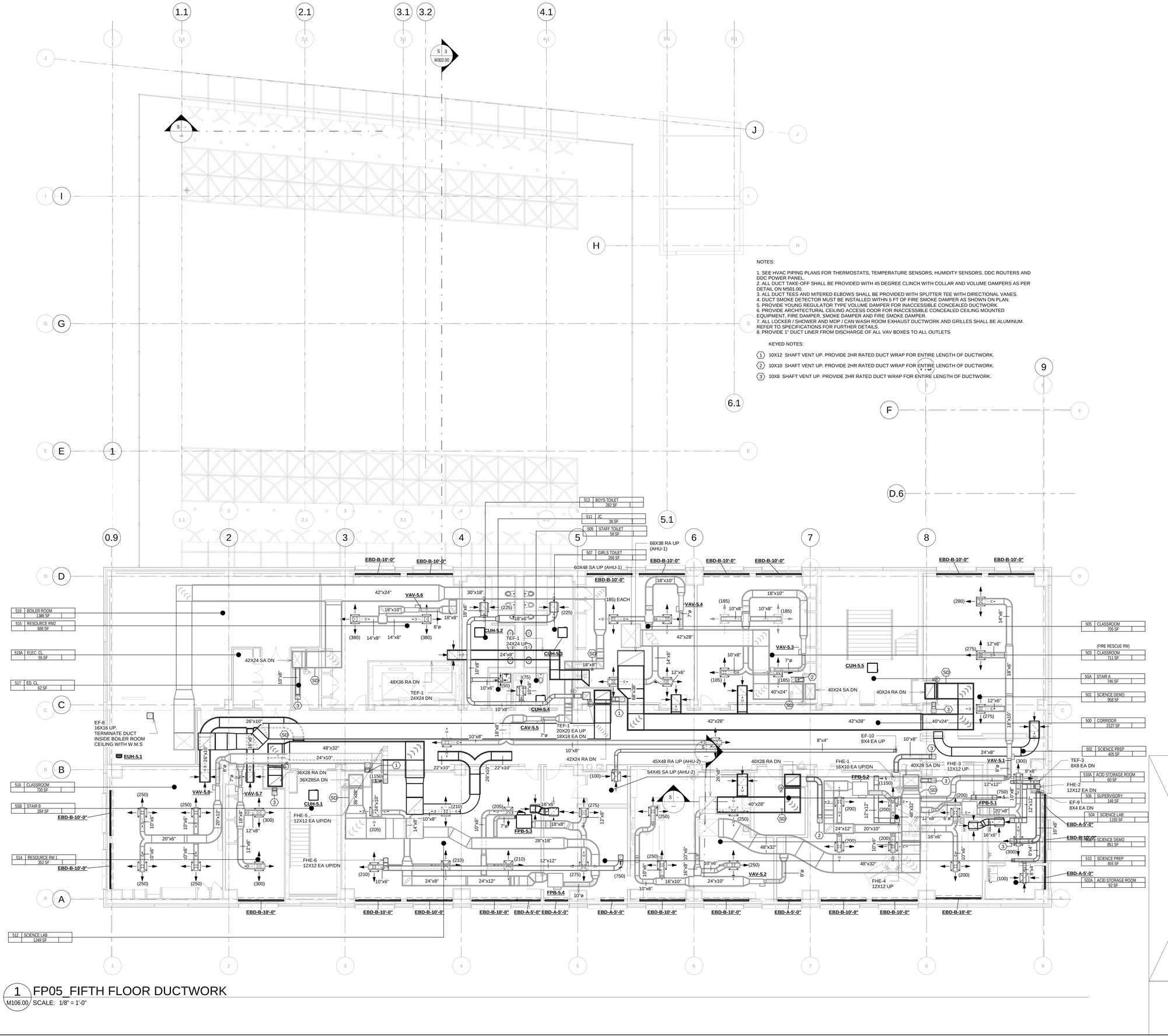

NOTES:

1. SEE HVAC PIPING PLANS FOR THERMOSTATS, TEMPERATURE SENSORS, HUMIDITY SENSORS, DDC ROUTERS AND DDC POWER PANEL.
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6. PROVIDE ARCHITECTURAL CEILING ACCESS DOOR FOR INACCESSIBLE CONCEALED CEILING MOUNTED EQUIPMENT. FIRE DAMPER, SMOKE DAMPER AND FIRE SMOKE DAMPER.
7. ALL LOCKER / SHOWER AND MOP / CAN WASH ROOM EXHAUST DUCTWORK AND GRILLES SHALL BE ALUMINUM. REFER TO SPECIFICATIONS FOR FURTHER DETAILS.
8. PROVIDE 1" DUCT LINER FROM DISCHARGE OF ALL VAV BOXES TO ALL OUTLETS

KEYED NOTES:

1. 10X12 SHAFT VENT UP. PROVIDE 2HR RATED DUCT WRAP FOR ENTIRE LENGTH OF DUCTWORK.
2. 10X10 SHAFT VENT UP. PROVIDE 2HR RATED DUCT WRAP FOR ENTIRE LENGTH OF DUCTWORK.
3. 10X8 SHAFT VENT UP. PROVIDE 2HR RATED DUCT WRAP FOR ENTIRE LENGTH OF DUCTWORK.

1 FP05_FIFTH FLOOR DUCTWORK
M106.00 SCALE: 1/8" = 1'-0"

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Drawing Title:
HVAC DUCTWORK - FIFTH FLOOR PLAN

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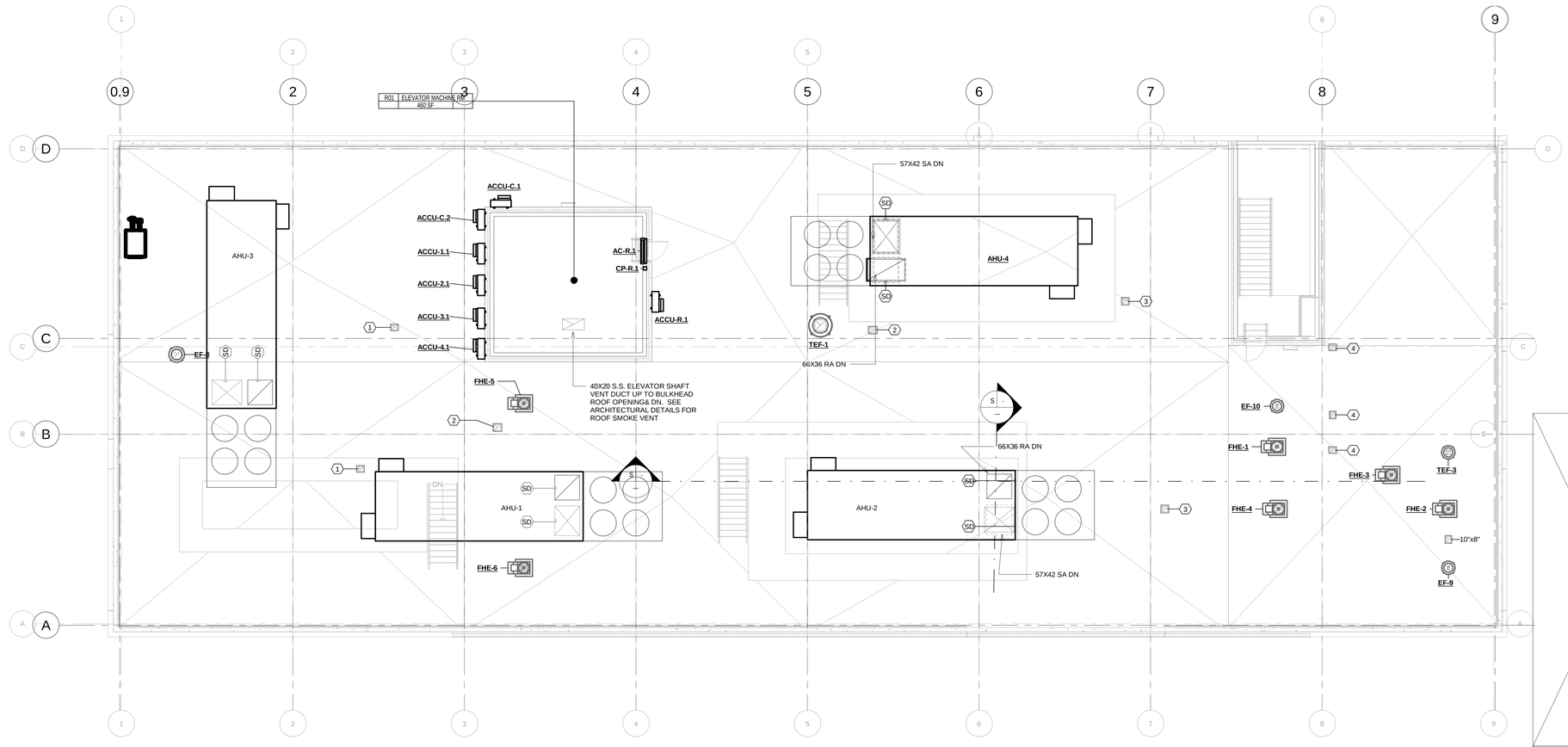
NOTES:

1. LOCATION AND SIZES OF ROOF OPENINGS SHALL BE COORDINATED WITH APPROVED EQUIPMENT AND APPROVED SHEET METAL SHOP DRAWINGS.
2. ALL AHUs AND CHILLER SHALL BE MOUNTED ON STRUCTURAL STEEL DUNNAGE. SEE STRUCTURAL DRAWING FOR DETAILS. SIZE OF DUNNAGE SHALL BE COORDINATED WITH APPROVED EQUIPMENT AND STRUCTURAL ENGINEER.
3. ENTIRE LENGTH OF ALL SHAFT VENTS SHALL BE WRAPPED AROUND WITH 2-HR RATED UL LISTED DUCT INSULATION ("3M" OR EQUAL).
4. SMOKE DAMPERS ASSOCIATED WITH THE SHAFT VENT SYSTEM SHALL BE NORMALLY CLOSED AND OPEN UPON FIRE ALARM ACTIVATION ONLY.

KEYED NOTES:

1. 10X8 SHAFT VENT UP TO ROOF OPENING. SEE ARCHITECTURAL DETAILS FOR ROOF SMOKE VENT.
2. 12X10 SHAFT VENT UP TO ROOF OPENING. SEE ARCHITECTURAL DETAILS FOR ROOF SMOKE VENT.
3. 10X10 SHAFT VENT UP TO ROOF OPENING. SEE ARCHITECTURAL DETAILS FOR ROOF SMOKE VENT.
4. 10X8 SHAFT VENT UP TO ROOF OPENING. SEE ARCHITECTURAL DETAILS FOR ROOF SMOKE VENT.



1 FP06_ROOF DUCTWORK
M107.00 SCALE: 1/8" = 1'-0"

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Drawing Title:
HVAC DUCTWORK - ROOF PLAN

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Drawing No.:
M107.00

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POWER

SYMBOL	DESCRIPTION
2,4	CONDUIT AND WIRE RUN CONCEALED IN FLOOR, CEILING OR WALL. HASH MARKS DENOTE NUMBER OF WIRES IF MORE THAN TWO ARE REQUIRED. ARROWS DENOTE HOMERUNS OF PARTICULAR CIRCUITS, MINIMUM 2#12 THHN/THWN IN 3/4" CONDUIT. ALL BRANCH CIRCUITS FOR 120V IF GREATER THAN 100 FEET SHALL BE ONE SIZE LARGER MINIMUM, AND FOR 277V IF MORE THAN 200 FEET ONE SIZE LARGER MINIMUM (BOTH TO MEET VOLTAGE DROP REQUIREMENTS) " " DENOTES GROUND CONDUCTOR TO MATCH CIRCUIT WIRES
	CONDUIT , WITH WIRING.
	RISER CONDUIT , WITH WIRING.
J	JUNCTION/SPLICE BOX, SIZE AS REQUIRED. SUBSCRIPT 'F' INDICATES FLOOR MOUNTED.
	WIRE TROUGH/SPLICE BOX. SIZE AS REQUIRED.
PNL#1	"PNL" INDICATES PANEL DESIGNATION AND "1" INDICATES CIRCUIT NUMBER. CIRCUIT WIRE SHALL BE MINIMUM 2#12 THHN/THWN IN 3/4" CONDUIT, U.O.I. ALL COMPUTER CIRCUIT SHALL ALSO BE PROVIDED WITH A SEPARATE NEUTRAL.
	LIGHTING AND POWER PANELBOARD, FLUSH MOUNTED IN WALL WITH COVER INDICATED.
	LIGHTING AND POWER PANELBOARD, SURFACE MOUNTED ON WALL.
ASCP-X	AUTOMATIC SHADE POWER AND CONTROL MODULE. CONTROLS UP TO TEN (10) SHADES. WALL MOUNTED ABOVE FINISH CEILING. 'X' DENOTES THE FLOOR LEVEL.
	GROUND
S	QUAD. THREE WIRE GROUNDED RECEPTACLE, 20A, 125V. (NEMA 5-20R) MOUNTED 18" A.F.F. U.O.I. SUBSCRIPTS "F" INDICATES FURNITURE MOUNTED, "S" INDICATES SURGE SUPPRESSOR, "SW" INDICATES SWITCHED V/A RECEPTACLE RELAY CONTROL PANEL 'IG' INDICATES WITH ISOLATED GROUND. 'GFCI' INDICATES WITH GROUND FAULT INTERRUPTER.
	MOTOR STARTER W/ PUSH BUTTON STATIONS AND H-O-A. NOTED STARTER RATING AS PER HORSEPOWER INDICATED.
? / ? / ?	SWITCH RATING / FUSE SIZE ("U" IF UNFUSED) / POLES — DISCONNECT SWITCH, RATING AND FUSING NOTED. HORSEPOWER RATING AS REQUIRED BY MOTOR LOAD. 'WP' INDICATES WEATHERPROOF NEMA 4X ENCLOSURE, OTHERWISE NEMA-1. SUBSCRIPT "L" INDICATES LOCKABLE TYPE.
	COMBINATION MOTOR STARTER AND DISCONNECT SWITCH.
S	MOTOR. HORSEPOWER INSCRIBED. 'NP' INDICATES NON FUSE 'F' DENOTES FRACTIONAL HORSEPOWER LESS THAN 1/2HP
	GROUND BUS BAR
C	CONTACTOR FOR KITCHEN EQUIPMENT, 120V, 30A.
R	REMOTE CONTROL SWITCH/RELAY RATING AS REQUIRED OR INDICATED
	FUSED SWITCH, RATING AND FUSING INDICATED.
	UNFUSED SWITCH.
M C	CURRENT TRANSFORMER AND METER.
M	MOTORIZED DAMPER (BY MECHANICAL)
CP	CONTROL PANEL (PROVIDED BY OTHERS) 'CP' INCLUDES STARTER AND DISCONNECT
C RC	ASCO REMOTE CONTROL SWITCH
UV-X-X	UNIT VENTILATOR (BY MECHANICAL)
CUH	CABINET UNIT HEATER (BY MECHANICAL)
	ELECTRICAL UNIT HEATER (BY MECHANICAL)
F s	FIRE SMOKE DAMPER (BY MECHANICAL)
F sp	FIRE-SMOKE DAMPER AND ACCESS DOOR INTERLOCKED WITH SMOKE PURGE SYSTEM
S	SMOKE DAMPER (BY MECHANICAL)
S sp	SMOKE DAMPER AND ACCESS DOOR INTERLOCKED WITH SMOKE PURGE SYSTEM
SPD	TRANSIENT VOLTAGE SURGE SUPPRESSION DEVICE

GENERAL NOTES

1. FOR AN EXPLANATION OF ABBREVIATIONS AND SYMBOLS USED ON THESE DRAWINGS, SEE THE ABBREVIATION LIST AND SYMBOLS LIST ON THIS SHEET AND SHEET E001, RESPECTIVELY.
2. THE CONTRACTOR SHALL CHECK THE LOCATION, NUMBER AND SIZE OF ALL CHASES PROVIDED ON THE CONSTRUCTION PLANS AND ARRANGE FOR ANY CHASES REQUIRED FOR CABINET OR BOXES.
3. CONTRACTOR SHALL FIELD VERIFY DIMENSIONS OF FINISHED CONSTRUCTION PRIOR TO FABRICATION AND INSTALLATION OF FIXTURES AND EQUIPMENT.
4. MOUNTING HEIGHTS OF EQUIPMENT AND DEVICES SHALL BE AS INDICATED ON THE SPECIFICATION 16130-(3-04). UTILIZE THE FOLLOWING MOUNTING HEIGHTS UNLESS OTHERWISE NOTED (ALL DIMENSIONS TO CENTERLINE OF BOX):
   - A. RECEPTACLES (WALL MOUNTED) - 18" A.F.F. UOI
   - B. COMMUNICATIONS OUTLETS - SAME HEIGHT AS RECEPTACLES
   - C. LIGHTING SWITCHES AND CONTROLS - 48" A.F.F.
   - D. LIGHTING FIXTURES (AREAS WITHOUT CEILINGS) - 9'-6" A.F.F. UOI.
   - E. PANELBOARDS AND CABINETS - 78" TO TOP OF ENCLOSURE
5. FINAL LOCATION OF LIGHTING FIXTURES, OCCUPANCY/VACANCY SENSOR, DAY-LIGHT SENSOR, SMOKE DETECTORS AND OTHER CEILING MOUNTED ELECTRICAL EQUIPMENT SHALL BE IN ACCORDANCE WITH ARCHITECTURAL REFLECTED CEILING PLANS.
6. WHERE MULTIPLE SWITCHES AND RECEPTACLES ARE INDICATED AT THE SAME LOCATION, THEY SHALL BE MOUNTED BEHIND A COMMON FACEPLATE.
7. WHERE EQUIPMENT, LIGHTING FIXTURES AND WIRING DEVICES ARE SHOWN WITH CIRCUIT NUMBERS ONLY, THE MINIMUM BRANCH CIRCUITING REQUIREMENTS SHALL BE AS FOLLOWS:
   - A. LIGHTING FIXTURES - 2#12 & 1#12G - 3/4" C.
   - B. RECEPTACLES - 2#12 & 1#12G - 3/4" C.
   - C. BRANCH CIRCUIT BREAKERS (120 VOLT) - 1P, 20A
   - D. HOMERUNS TO PANELBOARDS SHALL CONTAIN NO MORE THAN (3) CIRCUITS.
   - E. WHERE LIGHTING SWITCH INDICATIONS ARE NOT SHOWN, SWITCHES SHALL BE CONNECTED TO CONTROL ALL SWITCHED FIXTURES WITHIN THE CORRESPONDING SPACE.
8. WIRE SIZES SHALL BE INCREASED TO COMPENSATE FOR VOLTAGE DROP AS FOLLOWS: 120V AND 208V CIRCUITS LONGER THAN 100' SHALL UTILIZE MIN. #10 AWG.
9. NUMBER SHOWN AT LIGHTING FIXTURES, DEVICES AND EQUIPMENT INDICATES CIRCUIT NUMBER IN PANEL. PROVIDE WIRE AND CONDUIT TO INTERCONNECT THE AFOREMENTIONED AND ASSOCIATED SWITCHES AND CONTROL DEVICES WITH SAME CIRCUIT NUMBERS AND RUN TO PANEL VIA CIRCUIT HOMERUN SHOWN.
10. CONDUIT RUNS SHALL BE NEATLY INSTALLED. WHERE MULTIPLE RUNS FROM THE SAME PANEL ARE MADE, THE RUNS SHALL BE PARALLEL WITH EACH OTHER AND FASTENED WITH A COMMON SUPPORT, SPACED AND SECURED AT THE REQUIRED INTERVALS. BRANCHES SHALL TURN OFF TO THEIR OUTLETS IN AN ORGANIZED MANNER WITHOUT CROSSING EACH OTHER.
11. WIRING IN AIR PLENUM HUNG CEILINGS WHEN INDICATED TO BE INSTALLED WITHOUT CONDUIT OR EMT SHALL BE TEFLON JACKETED.
12. LIGHTING FIXTURES IN ACCESSIBLE CEILINGS SHALL BE FURNISHED WITH FLEXIBLE CONDUIT CONNECTIONS TO SEPARATELY MOUNTED JUNCTION BOXES. ONE JUNCTION BOX SHALL SERVE A MAXIMUM OF FOUR (4) FIXTURES. MAXIMUM LENGTH OF FLEXIBLE CONNECTION SHALL BE 6'-0".
13. PULL AND JUNCTION BOXES SHALL BE SURFACE MOUNTED TYPE IN UNFINISHED AREAS UNLESS OTHERWISE NOTED. LOCATE APPROXIMATELY WHERE INDICATED, ON WALLS, CEILINGS, BEAMS OR SUSPENDED FROM CEILINGS, TO SUIT CONDUIT ENTRANCE, TO AVOID INTERFERENCE WITH EQUIPMENT OF OTHER TRADES AND TO LEAVE COVERS READILY ACCESSIBLE.
14. PULL BOXES WHETHER SIZED OR NOT SHALL BE MODIFIED BY THIS CONTRACTOR TO MEET FIELD CONDITIONS AND CODE REQUIREMENTS. ADDITIONAL PULL BOXES, IF REQUIRED TO SATISFY FIELD CONDITIONS AND CODE REQUIREMENTS, SHALL BE SUPPLIED AND INSTALLED BY THIS CONTRACTOR AT NO EXTRA COST.
15. PANELBOARDS LOCATED ON OTHER THAN MASONRY WALLS SHALL BE MOUNTED WITH MODULAR CHANNEL SUPPORTS SECURED TO THE BUILDING STRUCTURE.
16. CIRCUIT BREAKER HANDLE LOCKS SHALL BE PROVIDED FOR ALL BRANCH CIRCUITS SERVING EMERGENCY LIGHTING, EXIT LIGHTING, FIRE ALARM AND SECURITY EQUIPMENT.
17. ALL BRANCH CIRCUITS SHALL BE CLEARLY MARKED IN THE PANEL AS TO LOCATION AND PURPOSE.
18. GROUND FAULT INTERRUPTER (GFI) RECEPTACLES OR CIRCUIT BREAKERS SHALL BE PROVIDED FOR EQUIPMENT DISPENSING OR OTHERWISE IN CONTACT WITH LIQUIDS.
19. ALL NOTATIONS OF "SCALE" ARE INTENDED AS APPROXIMATIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ASCERTAINING THE EXACT LOCATIONS OF ALL EQUIPMENT AND CHECKING THE REQUIRED CLEARANCES.
20. ALL CIRCUITS CONTAINING GFI OUTLETS, CKT CONTAINING SOLID STATE DIMMERS, CKTS FOR COMPUTERS AND/OR PERIPHERALS AND RELATED EQUIPMENT AND CIRCUITS RECOMMENDED BY THE MANUFACTURERS SHALL HAVE A SEPARATE DEDICATED NEUTRAL.
21. CONTRACTOR SHALL PROVIDE THERMAL OVERLOAD AND PROPER PROTECTIVE DEVICE FOR THE EQUIPMENT AS PER MANUFACTURERS REQUIREMENTS.
22. THIS CONTRACTOR SHALL PROVIDE SEPARATE RACEWAYS FOR CONDUCTORS ON NORMAL AND EMERGENCY CIRCUITS.
23. ELECTRICAL PENETRATIONS (CONDUITS, WIRING ETC.) THOUGHT WALL(S), PARTITION(S), AND/OR. FLOOR CONSTRUCTION SHALL HAVE THE ANNULAR SPACE AROUND PENETRATION SEALED AND/OR FIRE STOPPED WITH UL APPROVED SYSTEM TO MATCH RATING OF ASSEMBLY. PATCH ALL DISTURBED SURFACES TO MATCH ADJACENT SURFACES.
24. THE CONTRACTOR SHALL COORDINATE WITH THE HVAC, P&D AND STRUCTURAL TRADES FOR EXACT LOCATIONS OF MOTORS AND EQUIPMENT, IN ORDER TO AVOID INTERFERENCE.
25. IN THE BOILER ROOM, SYSTEM CONDUITS, SUCH AS FOR LIGHTING AND POWER FEEDERS, LOW VOLTAGE, FIRE SIGNAL, ETC., SHALL NOT BE RUN OVER BOILERS.
26. NO CONDUIT SHALL BE RUN IN ANY FLOOR IN CONTACT WITH THE EARTH UNLESS OTHERWISE DIRECTED ON THE PLAN. IN SUCH AREAS, CONDUIT FOR MOTORS AND STARTERS SHALL BE RUN OVERHEAD, SUPPORTED AS REQUIRED.
27. WHERE RECESSED FIXTURES ARE INDICATED ON THESE PLANS AND WET PLASTER CEILING CONSTRUCTION IS USED, PLASTER FRAMES SHALL BE PROVIDED BY THE ELECTRICAL CONTRACTOR AND INSTALLED BY THE GENERAL CONTRACTOR. WITH OTHER TYPES OF HUNG CEILING CONSTRUCTION, LIGHTING FIXTURES SHALL BE APPROPRIATE TO MEET THE REQUIREMENTS OF THAT CEILING CONSTRUCTION.
28. CONTRACTOR SHALL PROVIDE SEPARATE RACEWAYS FOR CONDUCTORS ON NORMAL AND EMERGENCY CIRCUITS.
29. ANY DEVICE EXCEEDS 16 SQ INCHES INSTALLED IN FIRE RATED WALL SHALL BE PROVIDE WITH 2 HOURS FIRED RATED WRAPPING MATERIAL.

ABBREVIATIONS

A	AMPERE
AC	ALTERNATING CURRENT
AFC	ABOVE FINISHED CEILING
AFF	ABOVE FINISHED FLOOR
ARCH	ARCHITECTURAL
ATS	AUTOMATIC TRANSFER SWITCH
A/C	AIR CONDITIONING
C	CONDUIT
CAB	CABINET
CAT	CATEGORY
CLG	CEILING
CB	CIRCUIT BREAKER
CKT(S)	CIRCUIT(S)
CM	CONTROL MODULE
COL	COLUMN
DWG	DRAWING
DP-	DISTRIBUTION PANEL (208/120V)
E	EXISTING TO REMAIN
EC	EMPTY CONDUIT
ELEC	ELECTRIC
EM	EMERGENCY
EMR	ELEVATOR MECHANICAL ROOM
EXH	EXHAUST
EXIST	EXISTING
EWC	ELECTRIC WATER COOLER
FL	FLOOR
FO	FIBER OPTIC
FOPP	FIBER OPTIC PATCH PANEL
FP	FIRE PUMP
G	GUARD
GND	GROUND
GFI	GROUND FAULT INTERRUPTER
GRC	GALVANIZED RIGID CONDUIT
IDF	INTERMEDIATE DISTRIBUTION FRAME
IG	ISOLATED GROUND
JB	JUNCTION BOX
KVA	KILOVOLT AMPERE
KW	KILOWATT
KWH	KILOWATT HOUR
LDF	LOCAL DISTRIBUTION FRAME
LP	LIGHTING PANEL
LS	LOUDSPEAKER
LTG	LIGHTING
LVRC	LOW VOLTAGE RELAY CONTROL
MATV	MASTER TELEVISION
MCC	MOTOR CONTROL CENTER
MDF	MAIN DISTRIBUTION FRAME
MECH	MECHANICAL
MER	MECHANICAL EQUIPMENT ROOM
MIC	MICROPHONE
MSB	MAIN SWITCHBOARD
MTD	MOUNTED
MDR	MAIN DISTRIBUTION ROOM
N	NEUTRAL
NIC	NOT IN CONTRACT
NC	NORMALLY CLOSED
NL	NIGHT LIGHT
N.O.	NORMALLY OPEN
P	POLE(S)
PB	PULL BOX
P&D	PLUMBING AND DRAINAGE
PNL	PANEL
PP	POWER PANEL
PR	PAIR
R	TO BE REMOVED
REL	RELOCATE
RC	REMOTE CONTROL
RP	RECEPTACLE PANEL
SOC	SCHOOL OPERATING CONSOLE
SP	SPARE
SSB	SOLID STATE BALLAST
STD	STANDARD
SW	SWITCH
SWBD	SWITCHBOARD
TC	TELECOMMUNICATION CLOSET
TEL	TELEPHONE
TV	TELEVISION
TYP	TYPICAL
UON	UNLESS OTHERWISE NOTED
UTP	UNSHIELDED TWISTED-PAIR
V	VOLT
W	WATT
WP	WEATHERPROOF

ELECTRICAL CONDUIT INSTALLATION

(IN CONCRETE SLAB AND STEEL DECK CONSTRUCTION)

1. CONTRACTOR SHALL COORDINATE THE LOCATION AND EXTENT OF STEEL DECK AREA WITH ELECTRICAL TRADES.
2. CONDUIT PLACED IN SLAB SHALL BE PLACED ON TOP OF STEEL DECK AND BELOW TOP REINFORCEMENT.
3. CONDUITS SHALL HAVE A MINIMUM COVER OF 1" OF CONCRETE.
4. MAXIMUM SIZE OF CONDUIT IN CONCRETE SLAB AND STEEL DECK CONSTRUCTION SHALL NOT BE LARGER THAN 1" OUTSIDE DIAMETER.
5. PLACEMENT OF CONDUIT IN DECK RIBS SHALL BE AS PER DETAIL.
6. ALL CONDUITS PARALLEL TO DECK OR SLAB SPAN SHALL HAVE A MINIMUM SPACING OF SIX INCHES (6") ON CENTER. ALL ADDITIONAL CONDUITS, IF REQUIRED, ARE TO BE RUN CONCEALED WITHIN THE HUNG CEILING.|
7. ALL CONDUITS PERPENDICULAR TO THE DECK OR SLAB SPAN SHALL HAVE A MINIMUM SPACING OF SIXTEEN INCHES. ALL ADDITIONAL CONDUITS, IF REQUIRED, ARE TO BE RUN CONCEALED WITHIN THE HUNG CEILING.
8. PROVIDE ADDITIONAL W.W.F. OVER CONDUIT OF SAME SIZE AS TOP W.W.F. WITH AN OVERHANG OF NOT LESS THAN 12 INCHES ON BOTH SIDES OF EACH CONDUIT.
9. JUNCTION BOXES MAY BE PLACED IN CONCRETE BUT SHALL NOT EXCEED 6"x 6" x 3-1/2" IN DEPTH AND SHALL BE SEPARATED FROM OTHER JUNCTION BOXES BY NOT LESS THAN 18" OF CONCRETE.

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Drawing Title:
ELECTRICAL SYMBOLS, ABBREVIATIONS, AND NOTES

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Drawing No.:
E001.00

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PLAN NOTES:

1. FOR GENERAL NOTES, SYMBOL LIST, DRAWING LIST AND ABBREVIATIONS REFER TO DWGS E001
2. FOR EXACT LOCATION AND MOUNTING HEIGHTS FOR PLUMBING AND MECHANICAL EQUIPMENT AND DEVICES REFER TO PLUMBING AND MECHANICAL DWGS.
3. ALL CONDUIT PENETRATIONS THROUGH FIRE RATED PARTITIONS ARE TO BE PROVIDED WITH FIRE STOP SEALS AS REQUIRED BY CODE TO MAINTAIN FIRE RATING OF PARTITIONS.
4. UNLESS OTHERWISE NOTED ON FURNITURE AND ELECTRICAL DRAWINGS, MOUNTING HEIGHT OF OUTLETS AND EQUIPMENT SHALL BE AS INDICATED ON SYMBOL LIST & SPECIFICATIONS.
5. ALL POWER CIRCUITS SHALL BE PROVIDED WITH THEIR OWN SEPARATE NEUTRAL.
6. FSD DAMPERS ON THIS FLOOR SHALL BE WIRED TO PANEL 'EPP-C' CKT #15. PROVIDE ADDITIONAL CKTS AS REQUIRED.
7. FOR COMPUTER OUTLETS CIRCUITING (WIRING) REFER TO "RECEPTACLES & DATA LAYOUT" DETAIL NO. 4 IN DWG E707.
8. FINAL COLOR SELECTIONS FOR EQUIPMENT & DEVICES SHALL BE BY ARCHITECT.
9. ALL GROUNDING SHALL BE AS PER CODE AND SPECIFICATION SECTION 16450.
10. ALL SPECIFIED HVAC EQUIPMENT (ALL ELECTRIC UNIT HEATER, ELECTRIC WATER UNIT HEATER, ELECTRIC WATER CABINET UNIT HEATER: EUH, WUH, WCUH & ETC.) SHALL BE PROVIDED WITH DISCONNECT SWITCHES (BUILT-IN OR SEPARATE). COORDINATE WITH MECHANICAL CONTRACTOR AND DWGS.
11. ALL PENETRATIONS TO THE BUILDING FOUNDATION WALLS SHALL BE MADE WITH WATERTIGHT SEAL.
12. INTERACTIVE WHITEBOARD AND RECEPTACLE/DATA RACEWAY CIRCUITS TO BE POWERED THROUGH THE LOAD CONTROL PANEL "CP-C" LOCATED IN THE ELECTRICAL ROOM. REFER TO CONTROL PANELS SCHEDULE DRAWING E508.00.
13. POWER TO THE SPLIT TYPE AC SYSTEM INDOOR UNIT SHALL BE FED FROM THE CORRESPONDING OUTDOOR UNIT. REFER TO THE WIRING DIAGRAM DETAIL NO. 5 IN DRAWING E704.00.
14. PROVIDE CIRCUIT AND CONNECT ALL PLUMBING FIXTURES ON THIS FLOOR TO PANEL 'PP-C' CKTS AS SHOWN ON THE DWG.
15. ALL OUTDOOR DEVICES INCLUDING BUT NOT LIMITED TO SWITCHES, OUTLETS AND DISCONNECT SWITCHES FOR EXTERIOR UNITS HAS TO BE WEATHER PROOF AND SHALL BE INSTALLED PROPERLY WITH WEATHER PROOF ACCESSORIES.
16. LOCATION OF WALL ART. NO M/E/P FIXTURES, DEVICES OR OUTLETS SHALL BE LOCATED IN THIS AREA WITHOUT APPROVAL FROM THE PUBLIC ARTS FOR PUBLIC SCHOOLS (PAPS) REPRESENTATIVE AND ARCHITECT.
17. ALL RECEPTACLES LOCATED IN PRE-KINDERGARDEN, KINDERGARDEN, AND D75 CLASSROOMS SHALL BE TAMPER PROOF "K" TYPE.
18. GENERATOR MAINTENANCE RECEPTACLES SHALL BE POWERED BY CIRCUIT ON PANEL PP-GEN LOCATED INSIDE GENRATOR ENCLOSURE. SEE PANEL SCHEDULE ON DWG E605.
19. ALL WIRING AND CONDUIT ARE ASSUMED TO BE #12AWG & 3/4" CONDUIT U.O.N. ON PLANS/PANEL SCHEDULE.
20. FOLLOWING MOUNTING HEIGHTS UNLESS OTHERWISE NOTED (ALL DIMENSIONS TO CENTERLINE OF BOX):
    - A. RECEPTACLES (WALL MOUNTED) - 18" A.F.F. U.O.N.
    - B. RECEPTACLES AT FIN-TUBE WALL - 36" A.F.F. U.O.N.
    - C. RECEPTACLES FOR INTERACTIVE WHITEBOARD - 42" A.F.F. U.O.N. (INSTALLED ON THE LEFT SIDE OF BOARD).
    - D. RECEPTACLES ON COUNTER WALL - 48" A.F.F. U.O.N.

1 E201.00 PP00_CELLAR FLOOR - MECH
SCALE: 1/8" = 1'-0"

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Drawing Title:
CELLAR FLOOR PLAN - POWER SYTEMS

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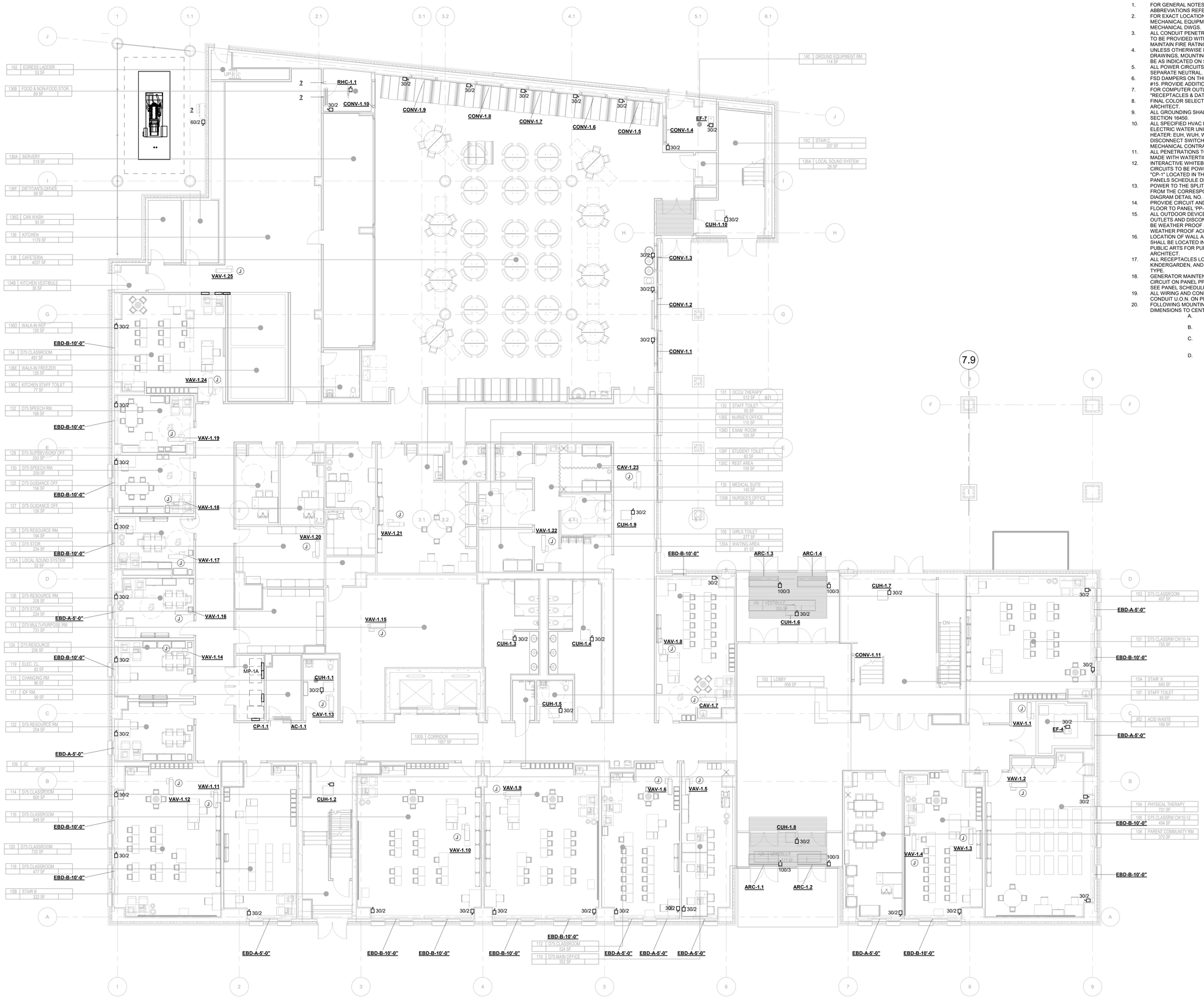

PLAN NOTES:

1. FOR GENERAL NOTES, SYMBOL LIST, DRAWING LIST AND ABBREVIATIONS REFER TO DWGS E001
2. FOR EXACT LOCATION AND MOUNTING HEIGHTS FOR PLUMBING AND MECHANICAL EQUIPMENT AND DEVICES REFER TO PLUMBING AND MECHANICAL DWGS.
3. ALL CONDUIT PENETRATIONS THROUGH FIRE RATED PARTITIONS ARE TO BE PROVIDED WITH FIRE STOP SEALS AS REQUIRED BY CODE TO MAINTAIN FIRE RATING OF PARTITIONS.
4. UNLESS OTHERWISE NOTED ON FURNITURE AND ELECTRICAL DRAWINGS, MOUNTING HEIGHT OF OUTLETS AND EQUIPMENT SHALL BE AS INDICATED ON SYMBOL LIST & SPECIFICATIONS.
5. ALL POWER CIRCUITS SHALL BE PROVIDED WITH THEIR OWN SEPARATE NEUTRAL.
6. FSD DAMPERS ON THIS FLOOR SHALL BE WIRED TO PANEL 'EPP-C' CKT #15. PROVIDE ADDITIONAL CKTS AS REQUIRED.
7. FOR COMPUTER OUTLETS CIRCUITING (WIRING) REFER TO "RECEPTACLES & DATA LAYOUT" DETAIL NO. 4 IN DWG E707.
8. FINAL COLOR SELECTIONS FOR EQUIPMENT & DEVICES SHALL BE BY ARCHITECT
9. ALL GROUNDING SHALL BE AS PER CODE AND SPECIFICATION SECTION 16450.
10. ALL SPECIFIED HVAC EQUIPMENT (ALL ELECTRIC UNIT HEATER, ELECTRIC WATER UNIT HEATER, ELECTRIC WATER CABINET UNIT HEATER: EUH, WUH, WCUH & ETC.) SHALL BE PROVIDED WITH DISCONNECT SWITCHES (BUILT-IN OR SEPARATE). COORDINATE WITH MECHANICAL CONTRACTOR AND DWGS.
11. ALL PENETRATIONS TO THE BUILDING FOUNDATION WALLS SHALL BE MADE WITH WATERTIGHT SEAL.
12. INTERACTIVE WHITEBOARD AND RECEPTACLE/DATA RACEWAY CIRCUITS TO BE POWERED THROUGH THE LOAD CONTROL PANEL "CP-1" LOCATED IN THE ELECTRICAL CLOSET. REFER TO CONTROL PANELS SCHEDULE DRAWING E508.00.
13. POWER TO THE SPLIT TYPE AC SYSTEM INDOOR UNIT SHALL BE FED FROM THE CORRESPONDING OUTDOOR UNIT. REFER TO THE WIRING DIAGRAM DETAIL NO. 5 IN DRAWING E704.00.
14. PROVIDE CIRCUIT AND CONNECT ALL PLUMBING FIXTURES ON THIS FLOOR TO PANEL 'PP-C' CKTS AS SHOWN ON THE DWG.
15. ALL OUTDOOR DEVICES INCLUDING BUT NOT LIMITED TO SWITCHES, OUTLETS AND DISCONNECT SWITCHES FOR EXTERIOR UNITS HAS TO BE WEATHER PROOF AND SHALL BE INSTALLED PROPERLY WITH WEATHER PROOF ACCESSORIES.
16. LOCATION OF WALL ART. NO M/E/P FIXTURES, DEVICES OR OUTLETS SHALL BE LOCATED IN THIS AREA WITHOUT APPROVAL FROM THE PUBLIC ARTS FOR PUBLIC SCHOOLS (PAPS) REPRESENTATIVE AND ARCHITECT.
17. ALL RECEPTACLES LOCATED IN PRE-KINDERGARDEN, KINDERGARDEN, AND D75 CLASSROOMS SHALL BE TAMPER PROOF "K" TYPE.
18. GENERATOR MAINTENANCE RECEPTACLES SHALL BE POWERED BY CIRCUIT ON PANEL PP-GEN LOCATED INSIDE GENRATOR ENCLOSURE. SEE PANEL SCHEDULE ON DWG E605.
19. ALL WIRING AND CONDUIT ARE ASSUMED TO BE #12AWG & 3/4" CONDUIT U.O.N. ON PLANS/PANEL SCHEDULE.
20. FOLLOWING MOUNTING HEIGHTS UNLESS OTHERWISE NOTED (ALL DIMENSIONS TO CENTERLINE OF BOX):
    - A. RECEPTACLES (WALL MOUNTED) - 18" A.F.F. U.O.N.
    - B. RECEPTACLES AT FIN-TUBE WALL - 36" A.F.F. U.O.N.
    - C. RECEPTACLES FOR INTERACTIVE WHITEBOARD - 42" A.F.F. U.O.N. (INSTALLED ON THE LEFT SIDE OF BOARD)
    - D. RECEPTACLES ON COUNTER WALL - 48" A.F.F. U.O.N.

1 E202.00 PP01_FIRST FLOOR - MECH
SCALE: 1/8" = 1'-0"

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FIRST FLOOR PLAN - POWER SYSTEMS

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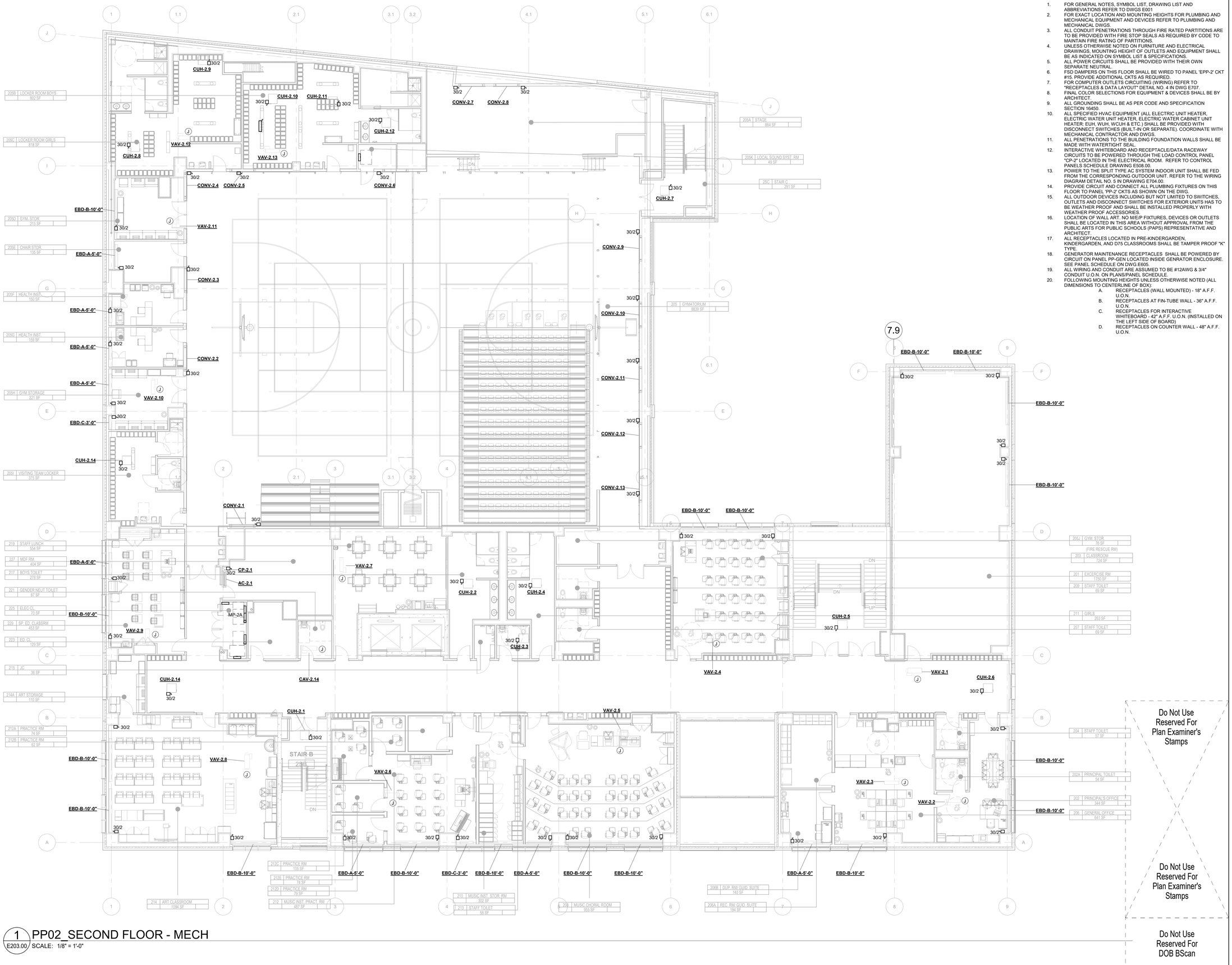

PLAN NOTES:

1. FOR GENERAL NOTES, SYMBOL LIST, DRAWING LIST AND ABBREVIATIONS REFER TO DWGS E001
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5. ALL POWER CIRCUITS SHALL BE PROVIDED WITH THEIR OWN SEPARATE NEUTRAL.
6. FSD DAMPERS ON THIS FLOOR SHALL BE WIRED TO PANEL 'EPP-2' CKT #15. PROVIDE ADDITIONAL CKTS AS REQUIRED.
7. FOR COMPUTER OUTLETS CIRCUITING (WIRING) REFER TO "RECEPTACLES & DATA LAYOUT" DETAIL NO. 4 IN DWG E707.
8. FINAL COLOR SELECTIONS FOR EQUIPMENT & DEVICES SHALL BE BY ARCHITECT.
9. ALL GROUNDING SHALL BE AS PER CODE AND SPECIFICATION SECTION 16450.
10. ALL SPECIFIED HVAC EQUIPMENT (ALL ELECTRIC UNIT HEATER, ELECTRIC WATER UNIT HEATER, ELECTRIC WATER CABINET UNIT HEATER: EUH, WUH, WCUH & ETC.) SHALL BE PROVIDED WITH DISCONNECT SWITCHES (BUILT-IN OR SEPARATE). COORDINATE WITH MECHANICAL CONTRACTOR AND DWGS.
11. ALL PENETRATIONS TO THE BUILDING FOUNDATION WALLS SHALL BE MADE WITH WATERTIGHT SEAL.
12. INTERACTIVE WHITEBOARD AND RECEPTACLE/DATA RACEWAY CIRCUITS TO BE POWERED THROUGH THE LOAD CONTROL PANEL "CP-2" LOCATED IN THE ELECTRICAL ROOM. REFER TO CONTROL PANELS SCHEDULE DRAWING E508.00.
13. POWER TO THE SPLIT TYPE AC SYSTEM INDOOR UNIT SHALL BE FED FROM THE CORRESPONDING OUTDOOR UNIT. REFER TO THE WIRING DIAGRAM DETAIL NO. 5 IN DRAWING E704.00.
14. PROVIDE CIRCUIT AND CONNECT ALL PLUMBING FIXTURES ON THIS FLOOR TO PANEL 'PP-2' CKTS AS SHOWN ON THE DWG.
15. ALL OUTDOOR DEVICES INCLUDING BUT NOT LIMITED TO SWITCHES, OUTLETS AND DISCONNECT SWITCHES FOR EXTERIOR UNITS HAS TO BE WEATHER PROOF AND SHALL BE INSTALLED PROPERLY WITH WEATHER PROOF ACCESSORIES.
16. LOCATION OF WALL ART. NO M/E/P FIXTURES, DEVICES OR OUTLETS SHALL BE LOCATED IN THIS AREA WITHOUT APPROVAL FROM THE PUBLIC ARTS FOR PUBLIC SCHOOLS (PAPS) REPRESENTATIVE AND ARCHITECT.
17. ALL RECEPTACLES LOCATED IN PRE-KINDERGARDEN, KINDERGARDEN, AND D75 CLASSROOMS SHALL BE TAMPER PROOF "K" TYPE.
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    - B. RECEPTACLES AT FIN-TUBE WALL - 36" A.F.F. U.O.N.
    - C. RECEPTACLES FOR INTERACTIVE WHITEBOARD - 42" A.F.F. U.O.N. (INSTALLED ON THE LEFT SIDE OF BOARD)
    - D. RECEPTACLES ON COUNTER WALL - 48" A.F.F. U.O.N.

1 PP02_SECOND FLOOR - MECH
E203.00 SCALE: 1/8" = 1'-0"

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Drawing Title:
SECOND FLOOR PLAN - POWER SYSTEMS

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Drawing No.:
E203.00

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PLAN NOTES:

1. FOR GENERAL NOTES, SYMBOL LIST, DRAWING LIST AND ABBREVIATIONS REFER TO DWGS E001
2. FOR EXACT LOCATION AND MOUNTING HEIGHTS FOR PLUMBING AND MECHANICAL EQUIPMENT AND DEVICES REFER TO PLUMBING AND MECHANICAL DWGS.
3. ALL CONDUIT PENETRATIONS THROUGH FIRE RATED PARTITIONS ARE TO BE PROVIDED WITH FIRE STOP SEALS AS REQUIRED BY CODE TO MAINTAIN FIRE RATING OF PARTITIONS.
4. UNLESS OTHERWISE NOTED ON FURNITURE AND ELECTRICAL DRAWINGS, MOUNTING HEIGHT OF OUTLETS AND EQUIPMENT SHALL BE AS INDICATED ON SYMBOL LIST & SPECIFICATIONS.
5. ALL POWER CIRCUITS SHALL BE PROVIDED WITH THEIR OWN SEPARATE NEUTRAL.
6. FSD DAMPERS ON THIS FLOOR SHALL BE WIRED TO PANEL 'EPP-3' CKT #15. PROVIDE ADDITIONAL CKTS AS REQUIRED.
7. FOR COMPUTER OUTLETS CIRCUITING (WIRING) REFER TO "RECEPTACLES & DATA LAYOUT" DETAIL NO. 4 IN DWG E707.
8. FINAL COLOR SELECTIONS FOR EQUIPMENT & DEVICES SHALL BE BY ARCHITECT.
9. ALL GROUNDING SHALL BE AS PER CODE AND SPECIFICATION SECTION 16450.
10. ALL SPECIFIED HVAC EQUIPMENT (ALL ELECTRIC UNIT HEATER, ELECTRIC WATER UNIT HEATER, ELECTRIC WATER CABINET UNIT HEATER: EUH, WUH, WCUH & ETC.) SHALL BE PROVIDED WITH DISCONNECT SWITCHES (BUILT-IN OR SEPARATE). COORDINATE WITH MECHANICAL CONTRACTOR AND DWGS.
11. ALL PENETRATIONS TO THE BUILDING FOUNDATION WALLS SHALL BE MADE WITH WATERTIGHT SEAL.
12. INTERACTIVE WHITEBOARD AND RECEPTACLE/DATA RACEWAY CIRCUITS TO BE POWERED THROUGH THE LOAD CONTROL PANEL "CP-3" LOCATED IN THE ELECTRICAL ROOM. REFER TO CONTROL PANELS SCHEDULE DRAWING E508.00.
13. POWER TO THE SPLIT TYPE AC SYSTEM INDOOR UNIT SHALL BE FED FROM THE CORRESPONDING OUTDOOR UNIT. REFER TO THE WIRING DIAGRAM DETAIL NO. 5 IN DRAWING E704.00.
14. PROVIDE CIRCUIT AND CONNECT ALL PLUMBING FIXTURES ON THIS FLOOR TO PANEL 'PP-2' CKTS AS SHOWN ON THE DWG.
15. ALL OUTDOOR DEVICES INCLUDING BUT NOT LIMITED TO SWITCHES, OUTLETS AND DISCONNECT SWITCHES FOR EXTERIOR UNITS HAS TO BE WEATHER PROOF AND SHALL BE INSTALLED PROPERLY WITH WEATHER PROOF ACCESSORIES.
16. LOCATION OF WALL ART. NO M/E/P FIXTURES, DEVICES OR OUTLETS SHALL BE LOCATED IN THIS AREA WITHOUT APPROVAL FROM THE PUBLIC ARTS FOR PUBLIC SCHOOLS (PAPS) REPRESENTATIVE AND ARCHITECT.
17. ALL RECEPTACLES LOCATED IN PRE-KINDERGARDEN, KINDERGARDEN, AND D75 CLASSROOMS SHALL BE TAMPER PROOF "K" TYPE.
18. GENERATOR MAINTENANCE RECEPTACLES SHALL BE POWERED BY CIRCUIT ON PANEL PP-GEN LOCATED INSIDE GENRATOR ENCLOSURE. SEE PANEL SCHEDULE ON DWG E605.
19. ALL WIRING AND CONDUIT ARE ASSUMED TO BE #12AWG & 3/4" CONDUIT U.O.N. ON PLANS/PANEL SCHEDULE.
20. FOLLOWING MOUNTING HEIGHTS UNLESS OTHERWISE NOTED (ALL DIMENSIONS TO CENTERLINE OF BOX):
    - A. RECEPTACLES (WALL MOUNTED) - 18" A.F.F. U.O.N.
    - B. RECEPTACLES AT FIN-TUBE WALL - 36" A.F.F. U.O.N.
    - C. RECEPTACLES FOR INTERACTIVE WHITEBOARD - 42" A.F.F. U.O.N. (INSTALLED ON THE LEFT SIDE OF BOARD).
    - D. RECEPTACLES ON COUNTER WALL - 48" A.F.F. U.O.N.

1 PP03_THIRD FLOOR PLAN - MECH
E204.00 SCALE: 1/8" = 1'-0"

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Drawing Title: THIRD FLOOR PLAN - POWER SYSTEMS

Reserved For DOB NOW Job#

Drawing No.: E204.00

Sheets in Contract Set: OF 0

Sheets in DOB Set: OF 0

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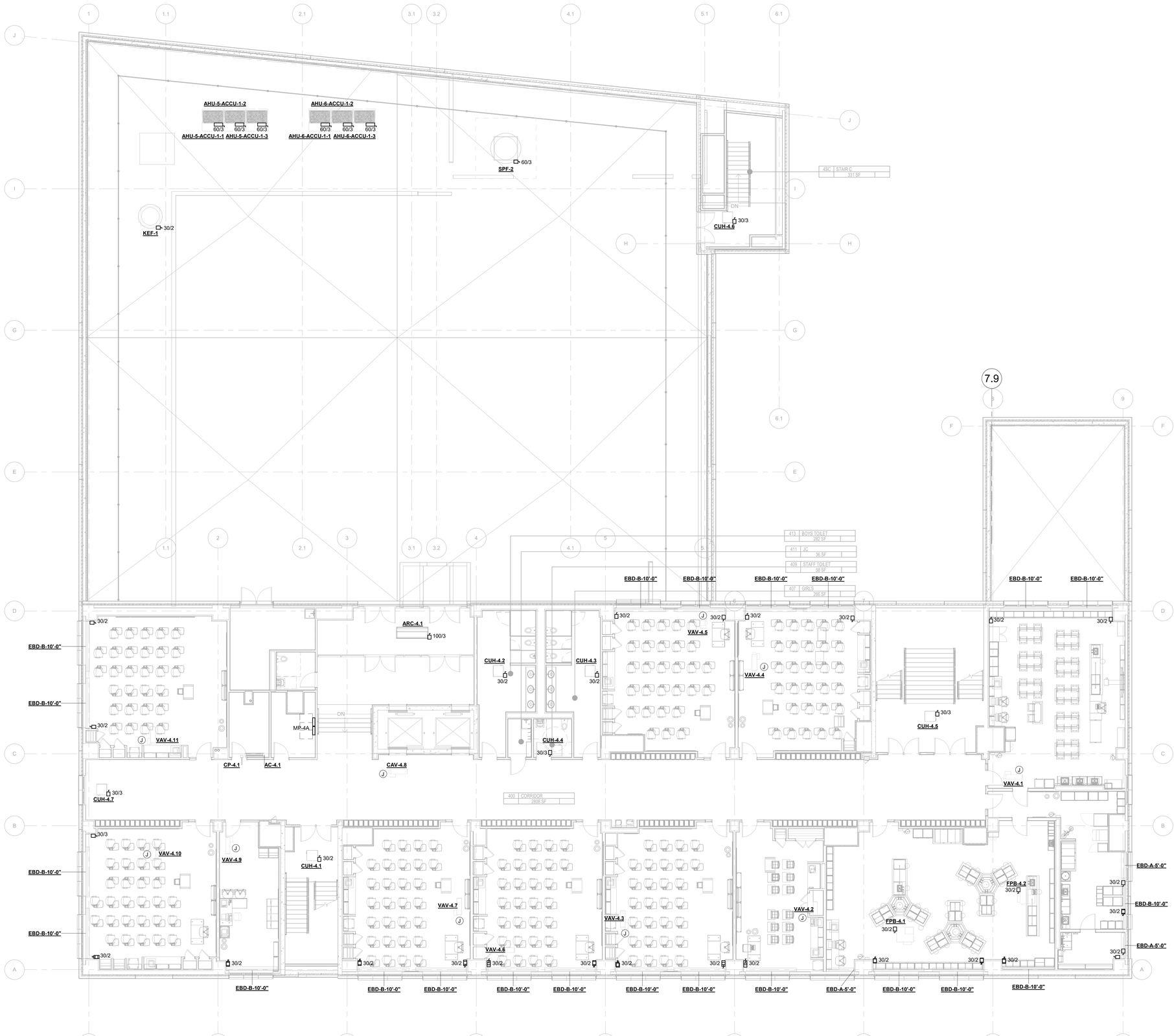

PLAN NOTES:

1. FOR GENERAL NOTES, SYMBOL LIST, DRAWING LIST AND ABBREVIATIONS REFER TO DWGS E001
2. FOR EXACT LOCATION AND MOUNTING HEIGHTS FOR PLUMBING AND MECHANICAL EQUIPMENT AND DEVICES REFER TO PLUMBING AND MECHANICAL DWGS.
3. ALL CONDUIT PENETRATIONS THROUGH FIRE RATED PARTITIONS ARE TO BE PROVIDED WITH FIRE STOP SEALS AS REQUIRED BY CODE TO MAINTAIN FIRE RATING OF PARTITIONS.
4. UNLESS OTHERWISE NOTED ON FURNITURE AND ELECTRICAL DRAWINGS, MOUNTING HEIGHT OF OUTLETS AND EQUIPMENT SHALL BE AS INDICATED ON SYMBOL LIST & SPECIFICATIONS.
5. ALL POWER CIRCUITS SHALL BE PROVIDED WITH THEIR OWN SEPARATE NEUTRAL.
6. FSD DAMPERS ON THIS FLOOR SHALL BE WIRED TO PANEL 'EPP-5' CKT #15. PROVIDE ADDITIONAL CKTS AS REQUIRED.
7. FOR COMPUTER OUTLETS CIRCUITING (WIRING) REFER TO "RECEPTACLES & DATA LAYOUT" DETAIL NO. 4 IN DWG E707.
8. FINAL COLOR SELECTIONS FOR EQUIPMENT & DEVICES SHALL BE BY ARCHITECT.
9. ALL GROUNDING SHALL BE AS PER CODE AND SPECIFICATION SECTION 16450.
10. ALL SPECIFIED HVAC EQUIPMENT (ALL ELECTRIC UNIT HEATER, ELECTRIC WATER UNIT HEATER, ELECTRIC WATER CABINET UNIT HEATER: EUH, WUH, WCUH & ETC.) SHALL BE PROVIDED WITH DISCONNECT SWITCHES (BUILT-IN OR SEPARATE). COORDINATE WITH MECHANICAL CONTRACTOR AND DWGS.
11. ALL PENETRATIONS TO THE BUILDING FOUNDATION WALLS SHALL BE MADE WITH WATERTIGHT SEAL.
12. INTERACTIVE WHITEBOARD AND RECEPTACLE/DATA RACEWAY CIRCUITS TO BE POWERED THROUGH THE LOAD CONTROL PANEL "CP-5" LOCATED IN THE ELECTRICAL ROOM. REFER TO CONTROL PANELS SCHEDULE DRAWING E508.00.
13. POWER TO THE SPLIT TYPE AC SYSTEM INDOOR UNIT SHALL BE FED FROM THE CORRESPONDING OUTDOOR UNIT. REFER TO THE WIRING DIAGRAM DETAIL NO. 5 IN DRAWING E704.00.
14. PROVIDE CIRCUIT AND CONNECT ALL PLUMBING FIXTURES ON THIS FLOOR TO PANEL 'PP-5' CKTS AS SHOWN ON THE DWG.
15. ALL OUTDOOR DEVICES INCLUDING BUT NOT LIMITED TO SWITCHES, OUTLETS AND DISCONNECT SWITCHES FOR EXTERIOR UNITS HAS TO BE WEATHER PROOF AND SHALL BE INSTALLED PROPERLY WITH WEATHER PROOF ACCESSORIES.
16. LOCATION OF WALL ART. NO M/E/P FIXTURES, DEVICES OR OUTLETS SHALL BE LOCATED IN THIS AREA WITHOUT APPROVAL FROM THE PUBLIC ARTS FOR PUBLIC SCHOOLS (PAPS) REPRESENTATIVE AND ARCHITECT.
17. ALL RECEPTACLES LOCATED IN PRE-KINDERGARDEN, KINDERGARDEN, AND D75 CLASSROOMS SHALL BE TAMPER PROOF "K" TYPE.
18. GENERATOR MAINTENANCE RECEPTACLES SHALL BE POWERED BY CIRCUIT ON PANEL PP-GEN LOCATED INSIDE GENRATOR ENCLOSURE. SEE PANEL SCHEDULE ON DWG E605.
19. ALL WIRING AND CONDUIT ARE ASSUMED TO BE #12AWG & 3/4" CONDUIT U.O.N. ON PLANS/PANEL SCHEDULE.
20. FOLLOWING MOUNTING HEIGHTS UNLESS OTHERWISE NOTED (ALL DIMENSIONS TO CENTERLINE OF BOX):
    - A. RECEPTACLES (WALL MOUNTED) - 18" A.F.F. U.O.N.
    - B. RECEPTACLES AT FIN-TUBE WALL - 36" A.F.F. U.O.N.
    - C. RECEPTACLES FOR INTERACTIVE WHITEBOARD - 42" A.F.F. U.O.N. (INSTALLED ON THE LEFT SIDE OF BOARD).
    - D. RECEPTACLES ON COUNTER WALL - 48" A.F.F. U.O.N.

1 PP04_FOURTH FLOOR - MECH
E205.00 SCALE: 1/8" = 1'-0"

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Drawing Title:
FOURTH FLOOR PLAN - POWER SYSTEMS

Reserved For DOB NOW Job#

Drawing No.:
E205.00

Sheets in Contract Set:
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Sheets in DOB Set:
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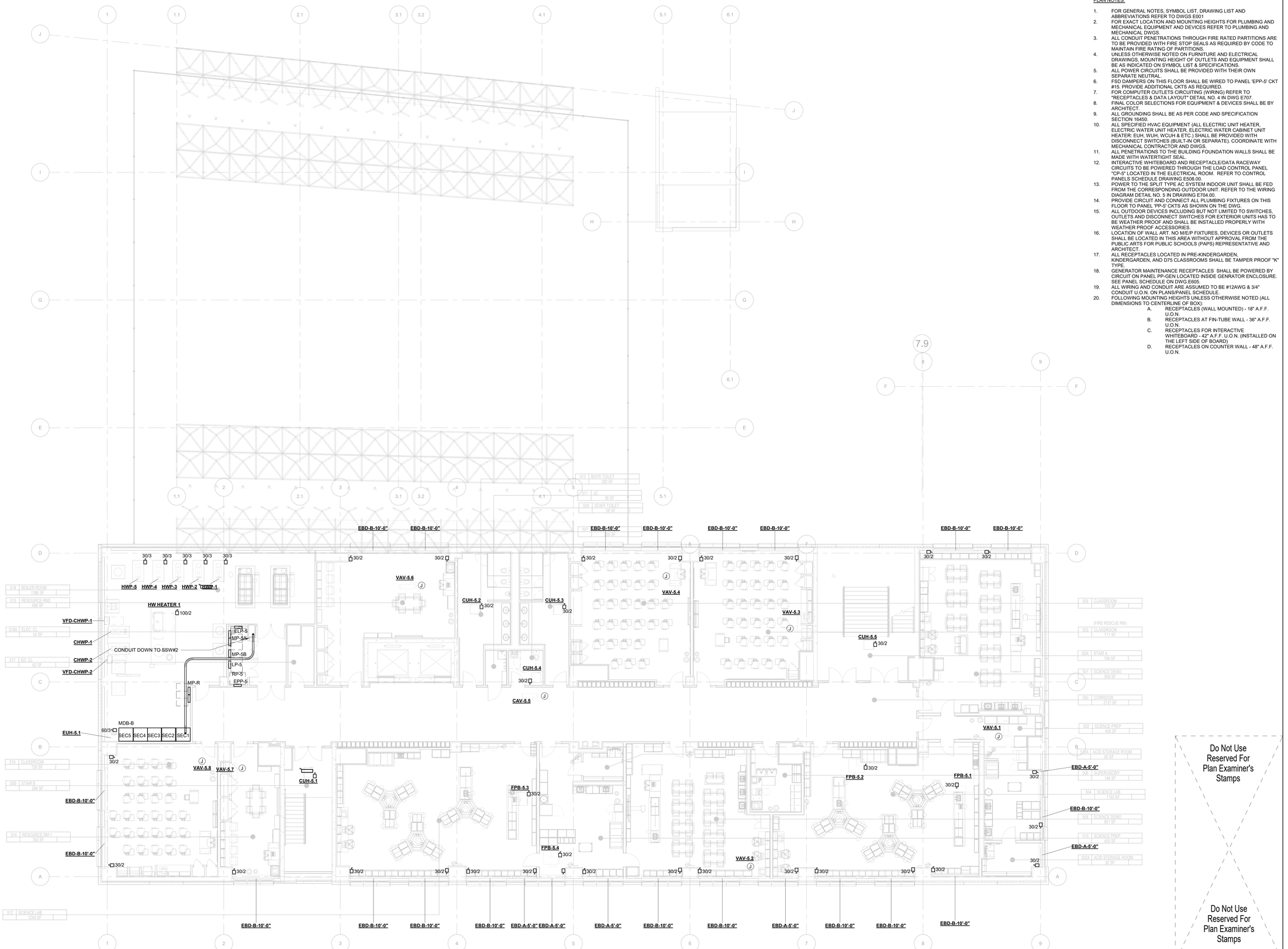

PLAN NOTES:

1. FOR GENERAL NOTES, SYMBOL LIST, DRAWING LIST AND ABBREVIATIONS REFER TO DWGS E001
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3. ALL CONDUIT PENETRATIONS THROUGH FIRE RATED PARTITIONS ARE TO BE PROVIDED WITH FIRE STOP SEALS AS REQUIRED BY CODE TO MAINTAIN FIRE RATING OF PARTITIONS.
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5. ALL POWER CIRCUITS SHALL BE PROVIDED WITH THEIR OWN SEPARATE NEUTRAL.
6. FSD DAMPERS ON THIS FLOOR SHALL BE WIRED TO PANEL 'EPP-5' CKT #15. PROVIDE ADDITIONAL CKTS AS REQUIRED.
7. FOR COMPUTER OUTLETS CIRCUITING (WIRING) REFER TO "RECEPTACLES & DATA LAYOUT" DETAIL NO. 4 IN DWG E707.
8. FINAL COLOR SELECTIONS FOR EQUIPMENT & DEVICES SHALL BE BY ARCHITECT.
9. ALL GROUNDING SHALL BE AS PER CODE AND SPECIFICATION SECTION 16450.
10. ALL SPECIFIED HVAC EQUIPMENT (ALL ELECTRIC UNIT HEATER, ELECTRIC WATER UNIT HEATER, ELECTRIC WATER CABINET UNIT HEATER: EUH, WUH, WCUH & ETC.) SHALL BE PROVIDED WITH DISCONNECT SWITCHES (BUILT-IN OR SEPARATE). COORDINATE WITH MECHANICAL CONTRACTOR AND DWGS.
11. ALL PENETRATIONS TO THE BUILDING FOUNDATION WALLS SHALL BE MADE WITH WATERTIGHT SEAL.
12. INTERACTIVE WHITEBOARD AND RECEPTACLE/DATA RACEWAY CIRCUITS TO BE POWERED THROUGH THE LOAD CONTROL PANEL "CP-5" LOCATED IN THE ELECTRICAL ROOM. REFER TO CONTROL PANELS SCHEDULE DRAWING E508.00.
13. POWER TO THE SPLIT TYPE AC SYSTEM INDOOR UNIT SHALL BE FED FROM THE CORRESPONDING OUTDOOR UNIT. REFER TO THE WIRING DIAGRAM DETAIL NO. 5 IN DRAWING E704.00.
14. PROVIDE CIRCUIT AND CONNECT ALL PLUMBING FIXTURES ON THIS FLOOR TO PANEL 'PP-5' CKTS AS SHOWN ON THE DWG.
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    - B. RECEPTACLES AT FIN-TUBE WALL - 36" A.F.F. U.O.N.
    - C. RECEPTACLES FOR INTERACTIVE WHITEBOARD - 42" A.F.F. U.O.N. (INSTALLED ON THE LEFT SIDE OF BOARD).
    - D. RECEPTACLES ON COUNTER WALL - 48" A.F.F. U.O.N.

1 PP05_FIFTH FLOOR - MECH
E206.00 SCALE: 1/8" = 1'-0"

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Drawing Title:
FIFTH FLOOR PLAN - POWER SYSTEMS

Reserved For DOB NOW Job#

Drawing No.:
E206.00

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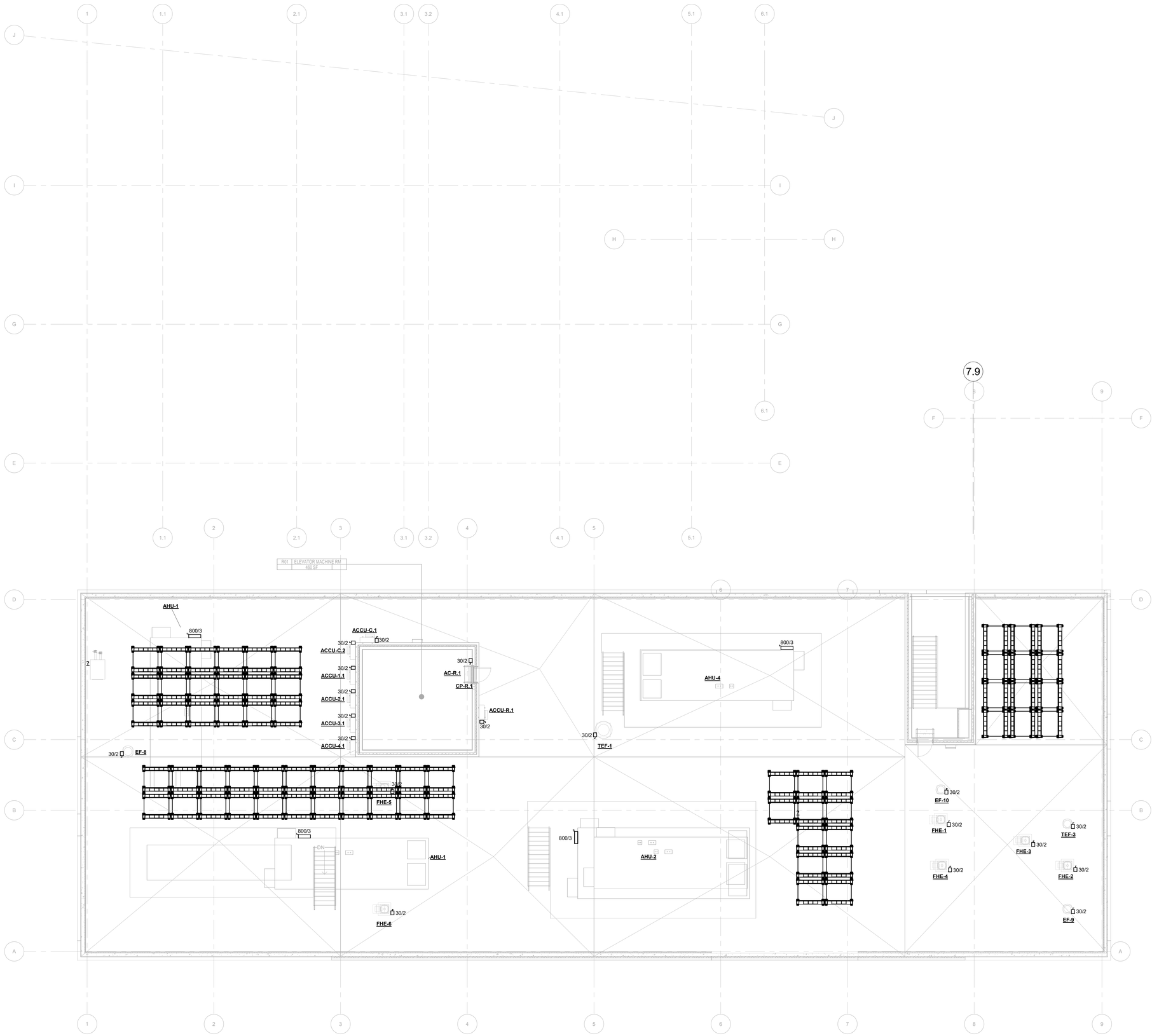

1 PP06_ROOF - MECH
E207.00 SCALE: 1/8" = 1'-0"

PLAN NOTES:

1. FOR GENERAL NOTES, SYMBOL LIST, DRAWING LIST AND ABBREVIATIONS REFER TO DWGS E001
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11. ALL PENETRATIONS TO THE BUILDING FOUNDATION WALLS SHALL BE MADE WITH WATERTIGHT SEAL.
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14. PROVIDE CIRCUIT AND CONNECT ALL PLUMBING FIXTURES ON THIS FLOOR TO PANEL 'PP-5' CKTS AS SHOWN ON THE DWG.
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    - C. RECEPTACLES FOR INTERACTIVE WHITEBOARD - 42" A.F.F. U.O.N. (INSTALLED ON THE LEFT SIDE OF BOARD).
    - D. RECEPTACLES ON COUNTER WALL - 48" A.F.F. U.O.N.

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Drawing Title:
ROOF PLAN - POWER SYSTEMS

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DOB NOW Job#

Drawing No.:
E207.00

Sheets in Contract Set:
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Sheets in DOB Set:
OF 0

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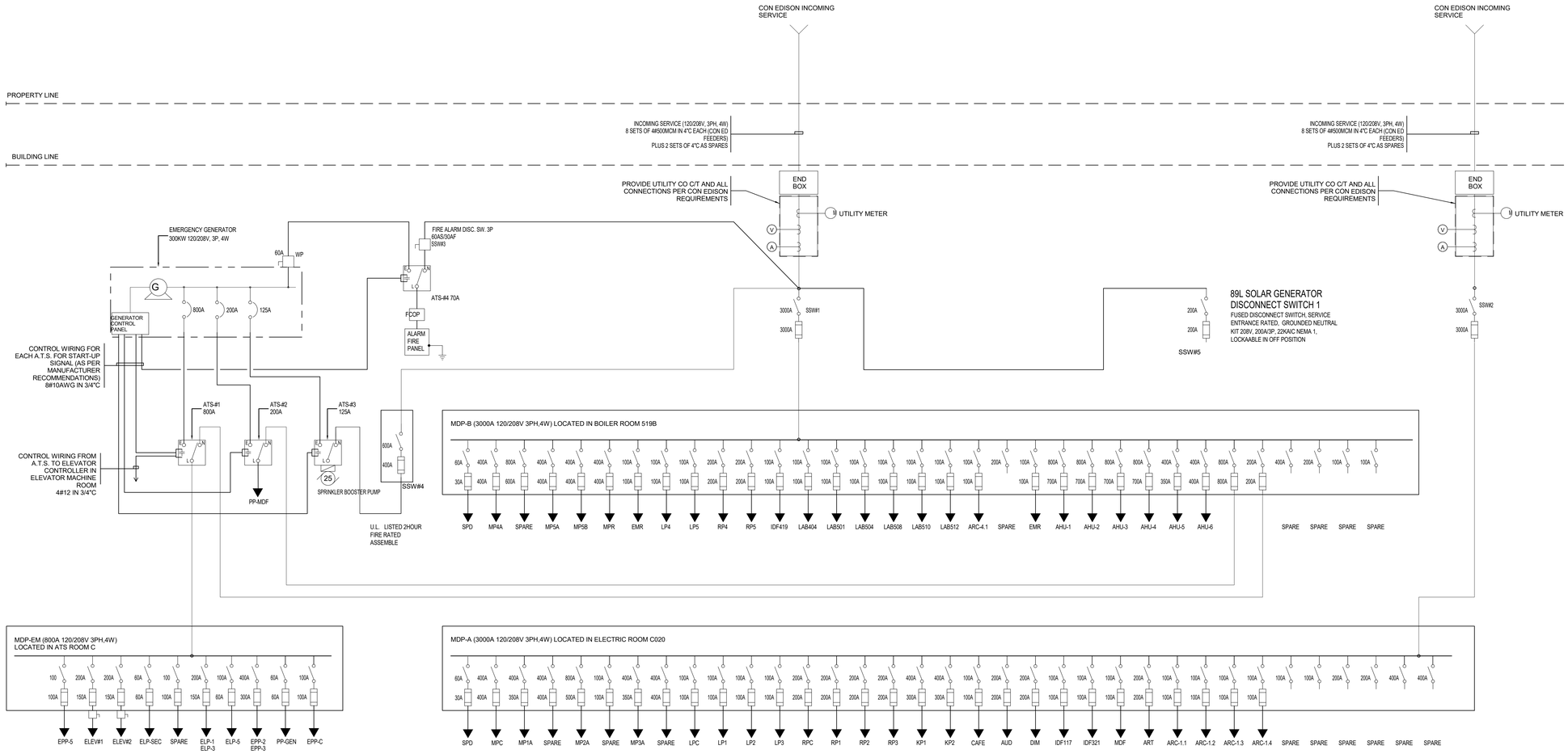

1 E501.00 E501_SINGLE LINE DIAGRAM

SCALE: 3/32" = 1'-0"

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Drawing Title:
ONE LINE DIAGRAMS

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DOB NOW Job#

Drawing No.:
E501.00

Sheets in Contract Set:
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7/6/2022 11:42:33 AM

PANELBOARD: MDP-A

SERVICE VOLTAGE: 208/120V, 3□, 4W+G
MAIN BUS RATING: 3000A
AIC RATING: 65,000 AIC
FEEDER: 8 SETS OF 4#500MCM + 1#2(G) IN 3"C EACH

ENCLOSURE: NEMA-1
MOUNTING: SURFACE
LOCATION: ELECTRICAL ROOM

MAIN RATING:

[X] MFS: 800A
[ ] MLO:

OPTIONS:

[X] BONDED GROUND BUS
[ ] ISOLATED GROUND BUS
[ ] 200% NEUTRAL BUS
[ ] INTEGRAL TVSS DEVICE
[ ] C/T TRANSFORMER
[ ] GROUND FAULT PROTECTION

FULLY RATED DISTRIBUTION SECTION

CKT.	FEEDER DEVICE POLE (No)	SWITCH (AMP)	FUSE (AMP)	LOAD DESCRIPTION	LOAD (VA)	FEEDER
1	3	400	400	MPC	---	4#500MCM + 1#2(G) IN 3"C
2	3	400	350	MP1A	---	4#500MCM + 1#2(G) IN 3"C
3	3	400	400	SPARE	---	SPARE
4	3	800	500	MP2A	---	2 SETS OF 4#250MCM + 1#2(G) IN 2-1/2"C EACH
5	3	100	100	SPARE	---	SPARE
6	3	400	350	MP3A	---	4#500MCM + 1#2(G) IN 3"C
7	3	400	400	SPARE	---	SPARE
8	3	100	100	LPC	---	4#2 + 1#8(G) IN 1-1/4"C
9	3	100	100	LP1	---	4#2 + 1#8(G) IN 1-1/4"C
10	3	100	100	LP2	---	4#2 + 1#8(G) IN 1-1/4"C
11	3	100	100	LP3	---	4#2 + 1#8(G) IN 1-1/4"C
12	3	200	200	RPC	---	4#3/0 + 1#6(G) IN 2"C
13	3	200	200	RP1	---	4#3/0 + 1#6(G) IN 2"C
14	3	200	200	RP2	---	4#3/0 + 1#6(G) IN 2"C
15	3	200	200	RP3	---	4#3/0 + 1#6(G) IN 2"C
16	3	400	300	KP1	---	4#350MCM + 1#4(G) IN 3"C
17	3	400	300	KP2	---	4#350MCM + 1#4(G) IN 3"C
18	3	100	100	CAFE	---	4#2 + 1#8(G) IN 1-1/4"C
19	3	200	200	AUD	---	4#3/0 + 1#6(G) IN 2"C
20	3	200	200	DIM	---	4#3/0 + 1#6(G) IN 2"C
21	3	100	100	IDF117	---	4#2 + 1#8(G) IN 1-1/4"C
22	3	100	100	IDF321	---	4#2 + 1#8(G) IN 1-1/4"C
23	3	100	100	MDF	---	4#2 + 1#8(G) IN 1-1/4"C
24	3	200	200	ART	---	4#3/0 + 1#6(G) IN 2"C
25	3	100	100	ARC-1.1	---	3#2 + 1#8(G) IN 1-1/4"C
26	3	100	100	ARC-1.2	---	3#2 + 1#8(G) IN 1-1/4"C
27	3	100	100	ARC-1.3	---	3#2 + 1#8(G) IN 1-1/4"C
28	3	100	100	ARC-1.4	---	3#2 + 1#8(G) IN 1-1/4"C
29	3	100	100	SPARE	---	-
30	3	100	100	SPARE	---	-
31	3	200	200	SPARE	---	-
32	3	200	200	SPARE	---	-
33	3	400	400	SPARE	---	-
34	3	400	400	SPARE	---	-

REMARKS:

TOTAL CONNECTED LOAD:
TOTAL DEMAND LOAD:
TOTAL DEMAND LOAD + SPARE:

TOTAL AMPS:

PANELBOARD: MDP-B

SERVICE VOLTAGE: 208/120V, 3□, 4W+G
MAIN BUS RATING: 3000A
AIC RATING: 65,000 AIC
FEEDER: 8 SETS OF 4#500MCM + 1#2(G) IN 3"C EACH

ENCLOSURE: NEMA-1
MOUNTING: SURFACE
LOCATION: ELECTRICAL ROOM

MAIN RATING:

[X] MFS: 800A
[ ] MLO:

OPTIONS:

[X] BONDED GROUND BUS
[ ] ISOLATED GROUND BUS
[ ] 200% NEUTRAL BUS
[ ] INTEGRAL TVSS DEVICE
[ ] C/T TRANSFORMER
[ ] GROUND FAULT PROTECTION

FULLY RATED DISTRIBUTION SECTION

CKT.	FEEDER DEVICE POLE (No)	SWITCH (AMP)	FUSE (AMP)	LOAD DESCRIPTION	LOAD (VA)	FEEDER
1	3	400	400	MP4A	---	4#500MCM + 1#2(G) IN 3"C
2	3	800	600	SPARE	---	SPARE
3	3	400	400	MP5A	---	4#500MCM + 1#2(G) IN 3"C
4	3	400	400	MP5B	---	4#500MCM + 1#2(G) IN 3"C
5	3	400	400	MPR	---	4#500MCM + 1#2(G) IN 3"C
6	3	100	100	EMR	---	4#2 + 1#8(G) IN 1-1/4"C
7	3	100	100	LP4	---	4#2 + 1#8(G) IN 1-1/4"C
8	3	100	100	LP5	---	4#2 + 1#8(G) IN 1-1/4"C
9	3	200	200	RP4	---	4#3/0 + 1#6(G) IN 2"C
10	3	200	200	RP5	---	4#3/0 + 1#6(G) IN 2"C
11	3	100	100	IDF419	---	4#2 + 1#8(G) IN 1-1/4"C
12	3	100	100	LAB404	---	4#2 + 1#8(G) IN 1-1/4"C
13	3	100	100	LAB501	---	4#2 + 1#8(G) IN 1-1/4"C
14	3	100	100	LAB504	---	4#2 + 1#8(G) IN 1-1/4"C
15	3	100	100	LAB508	---	4#2 + 1#8(G) IN 1-1/4"C
16	3	100	100	LAB510	---	4#2 + 1#8(G) IN 1-1/4"C
17	3	100	100	LAB512	---	4#2 + 1#8(G) IN 1-1/4"C
18	3	100	100	ARC-4.1	---	4#2 + 1#8(G) IN 1-1/4"C
19	3	100	--	SPARE	---	-
20	3	100	100	EMR	---	4#2 + 1#8(G) IN 1-1/4"C
21	3	800	700	AHU-1	---	2 SETS OF 4#500MCM + 1#2(G) IN 3"C
22	3	800	700	AHU-2	---	2 SETS OF 4#500MCM + 1#2(G) IN 3"C
23	3	800	700	AHU-3	---	2 SETS OF 4#500MCM + 1#2(G) IN 3"C
24	3	800	700	AHU-4	---	2 SETS OF 4#500MCM + 1#2(G) IN 3"C
25	3	400	350	AHU-5		4#500MCM + 1#2(G) IN 3"C
26	3	400	400	AHU-6		4#500MCM + 1#2(G) IN 3"C
27	3	100	100	ATS#2		4#2 + 1#8(G) IN 1-1/4"C
28	3	800	800	ATS#1		2 SETS OF 4#500MCM + 1#10(G) IN 3"C EACH
29	3	60	--	SPARE		-
30	3	60	--	SPARE		-
31		100	--	SPARE		-
32		100	--	SPARE		-

REMARKS:

TOTAL CONNECTED LOAD:
TOTAL DEMAND LOAD:
TOTAL DEMAND LOAD + SPARE:

TOTAL AMPS:

1 E607 E607_PANEL SCHEDULE1
SCALE: 1/8" = 1'-0"

Do Not Use
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Do Not Use
Reserved For
DOB BScan

Drawing Title:
PANEL SCHEDULE

Reserved For
DOB NOW Job#

Drawing No.:
E607

Sheets in Contract Set:
OF 0

Sheets in DOB Set:
OF 0

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PANEL: MPC

SERVICE VOLTAGE: 208/120V, 3□, 4W+G
MAIN BUS RATING: 400A
AIC RATING: 65,000A
PANEL FEEDER: (REFER TO ONE LINE DIAGRAM)

ENCLOSURE: NEMA-1
MOUNTING: SURFACE
LOCATION: CELLAR ELECTRIC CLOSET

MAIN RATING:
- [ ] MCB:
- [X] MLO:

OPTIONS:
- [X] BONDED GROUND BUS
- [ ] ISOLATED GROUND BUS
- [ ] 200% NEUTRAL BUS
- [ ] FEED THROUGH LUGS
- [ ] SUB FEED LUGS
- [X] DOOR-IN-DOOR TRIM
- [ ] INTEGRAL TVSS DEVICE
- [ ] INTEGRAL RC SWITCH
- [ ] INTEGRAL METERING DEVICE

BRANCH FEEDER	LOAD DESCRIPTION	LOAD (VA)	BRANCH DEVICE POLE (No)	BRANCH DEVICE FRAME (AMP)	BRANCH DEVICE TRIP (AMP)	CKT.	CKT.	BRANCH DEVICE POLE (No)	BRANCH DEVICE FRAME (AMP)	BRANCH DEVICE TRIP (AMP)	LOAD (VA)	LOAD DESCRIPTION	BRANCH FEEDER
2#12, 1#12G IN 3/4"C	KEF-4, EF-1	3600	2	100	20	1	2	2	100	20	2700	EF-2, EF-3	2#12, 1#12G IN 3/4"C
						3	4						
2#12, 1#12G IN 3/4"C	EF-15, EF-16	2420	2	100	20	5	6	2	100	20	700	AC-C.1, AC-C.2,CP-C.1,CP-C.2	2#12, 1#12G IN 3/4"C
						7	8						
3#4, 1#10G IN 1"C	SPF-1	16640	3	100	60	9	10	1	100	20	90	VAV-C.1,2,3,4,5,6,7,8,9	2#12, 1#12G IN 3/4"C
						11	12	2	100	20	3200	CUH-C.1	2#12, 1#12G IN 3/4"C
						13	14						
2#12, 1#12G IN 3/4"C	CUH-C.4	5200	2	100	20	15	16	2	100	20	3200	CUH.C.2	2#12, 1#12G IN 3/4"C
						17	18						
2#12, 1#12G IN 3/4"C	CUH-C.5	5200	2	100	20	19	20	2	100	20	3200	CUH-C.3	2#12, 1#12G IN 3/4"C
						21	22						
3#12, 1#12G IN 3/4"C	EUH-C.1	4970	3	100	20	23	24	3	100	20	4970	EUH-C.2	3#12, 1#12G IN 3/4"C
						25	26						
						27	28						
2#12, 1#12G IN 3/4"C	EVP#1	1180	1	100	20	29	30	1	100	20	5400	SEP#1&2	3#12, 1#12G IN 3/4"C
2#12, 1#12G IN 3/4"C	EVP#2	1180	1	100	20	31	32						
	SPARE		1	100	20	33	34						
	SPARE		1	100	20	35	36	3	100	60	17580	WBP#1&2	3#4, 1#8G IN 1"C
	SPARE		1	100	20	37	38						
	SPARE		3	100	20	39	40						
						41	42	3	100	20		SPARE	

REMARKS:

TOTAL CONNECTED LOAD: 80250 VA
TOTAL DEMAND LOAD: 66988 VA
TOTAL DEMAND LOAD + SPARE: 80386 VA
TOTAL AMPS: 224 AMPS

PANEL: MP1A

SERVICE VOLTAGE: 208/120V, 3□, 4W+G
MAIN BUS RATING: 400A
AIC RATING: 65,000A
PANEL FEEDER: (REFER TO ONE LINE DIAGRAM)

ENCLOSURE: NEMA-1
MOUNTING: SURFACE
LOCATION: 1ST FL ELECTRIC CLOSET

MAIN RATING:
- [ ] MCB:
- [X] MLO:

OPTIONS:
- [X] BONDED GROUND BUS
- [ ] ISOLATED GROUND BUS
- [ ] 200% NEUTRAL BUS
- [ ] FEED THROUGH LUGS
- [ ] SUB FEED LUGS
- [X] DOOR-IN-DOOR TRIM
- [ ] INTEGRAL TVSS DEVICE
- [ ] INTEGRAL RC SWITCH
- [ ] INTEGRAL METERING DEVICE

BRANCH FEEDER	LOAD DESCRIPTION	LOAD (VA)	BRANCH DEVICE POLE (No)	BRANCH DEVICE FRAME (AMP)	BRANCH DEVICE TRIP (AMP)	CKT.	CKT.	BRANCH DEVICE POLE (No)	BRANCH DEVICE FRAME (AMP)	BRANCH DEVICE TRIP (AMP)	LOAD (VA)	LOAD DESCRIPTION	BRANCH FEEDER
2#12, 1#12G IN 3/4"C	CAV-1,1,1,2,1,3,1,4,1,5,1,6,1.7	90	1	100	20	1	2	1	100	20	440	VRF-AC1.1,2,3,4,5,6,7,8,9,10,11	2#12, 1#12G IN 3/4"C
2#12, 1#12G IN 3/4"C	CUH-1.1	5200	2	100	20	3	4	1	100	20	700	AC-1.1, AC-1.2,CP-1.1,CP-1.2	2#12, 1#12G IN 3/4"C
						5	6						
2#12, 1#12G IN 3/4"C	CUH-1.2	5200	2	100	20	7	8	2	100	20	3200	CUH.1.6	2#12, 1#12G IN 3/4"C
						9	10						
2#12, 1#12G IN 3/4"C	CUH-1.3	5200	2	100	20	11	12	2	100	20	3200	CUH.1.7	2#12, 1#12G IN 3/4"C
						13	14						
2#12, 1#12G IN 3/4"C	CUH-1.4	3200	2	100	20	15	16	2	100	20	3200	CUH.1.8	2#12, 1#12G IN 3/4"C
						17	18						
2#12, 1#12G IN 3/4"C	CUH-1.5	3200	2	100	20	19	20	2	100	20	3200	CUH.1.9	2#12, 1#12G IN 3/4"C
						21	22						
2#12, 1#12G IN 3/4"C	CONV-1.1	2500	2	100	20	23	24	2	100	20	2500	CONV-1.6	2#12, 1#12G IN 3/4"C
						25	26						
2#12, 1#12G IN 3/4"C	CONV-1.2	2500	2	100	20	27	28	2	100	20	2500	CONV-1.7	2#12, 1#12G IN 3/4"C
						29	30						
2#12, 1#12G IN 3/4"C	CONV-1.3	1250	2	100	20	31	32	2	100	20	2500	CONV-1.8	2#12, 1#12G IN 3/4"C
						33	34						
2#12, 1#12G IN 3/4"C	CONV-1.4	2500	2	100	20	35	36	2	100	20	2500	CONV-1.9	2#12, 1#12G IN 3/4"C
						37	38						
2#12, 1#12G IN 3/4"C	CONV-1.5	2500	2	100	20	39	40	2	100	20	2500	RHC-1.1	2#12, 1#12G IN 3/4"C
						41	42						
2#12, 1#12G IN 3/4"C	(2) EDB-A	2500	2	100	20	43	44	2	100	20	2500	(2) EDB-A	2#12, 1#12G IN 3/4"C
						45	46						
2#12, 1#12G IN 3/4"C	(2) EDB-A	2500	2	100	20	47	48	2	100	20	2500	(1) EDB-B	2#12, 1#12G IN 3/4"C
						49	50						
2#12, 1#12G IN 3/4"C	(2) EDB-A	2500	2	100	20	51	52	2	100	20	1200	(2) EDB-C	2#12, 1#12G IN 3/4"C
						53	54						
2#12, 1#12G IN 3/4"C	(2) EDB-A	2500	2	100	20	55	56	2	100	20		SPARE	3#8, 1#10G IN 1"C
						57	58						
2#12, 1#12G IN 3/4"C	(2) EDB-A	2500	2	100	20	59	60	2	100	20		SPARE	3#8, 1#10G IN 1"C
						61	62						
2#12, 1#12G IN 3/4"C	(2) EDB-A	2500	2	100	20	63	64	2	100	20		SPARE	3#8, 1#10G IN 1"C
						65	66						
2#12, 1#12G IN 3/4"C	(2) EDB-A	2500	2	100	20	67	68	2	100	20		SPARE	3#8, 1#10G IN 1"C
						69	70						
2#12, 1#12G IN 3/4"C	(2) EDB-A	2500	2	100	20	71	72	2	100	20		SPARE	3#8, 1#10G IN 1"C
						73	74						
	SPARE		2	100	20	75	76	2	100	20		SPARE	3#8, 1#10G IN 1"C
						77	78						
	SPARE		1	100	20	79	80	2	100	20		SPARE	3#8, 1#10G IN 1"C
	SPARE		1	100	20	81	82						
	SPARE		1	100	20	83	84	1	100	20		SPARE	

REMARKS:

TOTAL CONNECTED LOAD: 85,980 VA
TOTAL DEMAND LOAD: 85,980 VA
TOTAL DEMAND LOAD + SPARE: 103,176 VA
TOTAL AMPS: 287 A

1 E608_PANEL SCHEDULE2
E608 SCALE: 1/8" = 1'-0"

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Drawing Title:
PANEL SCHEDULE

Reserved For
DOB NOW Job#

Drawing No.:
E608

Sheets in Contract Set:
OF 0

Sheets in DOB Set:
OF 0

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PANEL: MP2A

SERVICE VOLTAGE: 208/120V, 3□, 4W+G
MAIN BUS RATING: 600A
AIC RATING: 65,000A
PANEL FEEDER: (REFER TO ONE LINE DIAGRAM)

ENCLOSURE: NEMA-1
MOUNTING: SURFACE
LOCATION: 2ND FL ELECTRIC CLOSET

MAIN RATING:
- [ ] MCB:
- [X] MLO:

OPTIONS:
- [X] BONDED GROUND BUS
- [ ] ISOLATED GROUND BUS
- [ ] 200% NEUTRAL BUS
- [ ] FEED THROUGH LUGS
- [ ] SUB FEED LUGS
- [X] DOOR-IN-DOOR TRIM
- [ ] INTEGRAL TVSS DEVICE
- [ ] INTEGRAL RC SWITCH
- [ ] INTEGRAL METERING DEVICE

BRANCH FEEDER	LOAD DESCRIPTION	LOAD (VA)	BRANCH DEVICE POLE (No)	FRAME (AMP)	TRIP (AMP)	CKT.	N	PHASE A	PHASE B	PHASE C	G	CKT.	BRANCH DEVICE POLE (No)	FRAME (AMP)	TRIP (AMP)	LOAD (VA)	LOAD DESCRIPTION	BRANCH FEEDER
2#12, 1#12G IN 3/4"C	VAV-2.1,CAV-2.2	90	1	100	20	1						2	1	100	20	440	VRF-AC1.1,2,3,4,5,6,7,8,9,10,11	2#12, 1#12G IN 3/4"C
2#12, 1#12G IN 3/4"C	CUH-2.1	5200	2	100	20	3						4	1	100	20		SPARE	
						5						6						
2#12, 1#12G IN 3/4"C	CUH-2.2	5200	2	100	20	7						8	2	100	20	5200	CUH.2.6	2#12, 1#12G IN 3/4"C
						9						10						
2#12, 1#12G IN 3/4"C	CUH-2.3	5200	2	100	20	11						12	2	100	20	5200	CUH.2.7	2#12, 1#12G IN 3/4"C
						13						14						
2#12, 1#12G IN 3/4"C	CUH-2.4	3200	2	100	20	15						16	2	100	20	5200	CUH.2.8	2#12, 1#12G IN 3/4"C
						17						18						
2#12, 1#12G IN 3/4"C	CUH-2.5	3200	2	100	20	19						20	2	100	20	5200	CUH.2.9	2#12, 1#12G IN 3/4"C
						21						22						
2#12, 1#12G IN 3/4"C	CONV-2.1	1300	2	100	20	23						24	2	100	20	5200	CUH.2.10	2#12, 1#12G IN 3/4"C
						25						26						
2#12, 1#12G IN 3/4"C	CONV-2.2	2500	2	100	20	27						28	2	100	20	2500	CONV-2.6	2#12, 1#12G IN 3/4"C
						29						30						
2#12, 1#12G IN 3/4"C	CONV-2.3	2500	2	100	20	31						32	2	100	20	2500	CONV-2.7	2#12, 1#12G IN 3/4"C
						33						34						
2#12, 1#12G IN 3/4"C	CONV-2.4	2500	2	100	20	35						36	2	100	20	2500	CONV-2.8	2#12, 1#12G IN 3/4"C
						37						38						
2#12, 1#12G IN 3/4"C	CONV-2.5	2500	2	100	20	39						40	2	100	20	2500	CONV-2.9	2#12, 1#12G IN 3/4"C
						41						42						
2#12, 1#12G IN 3/4"C	(2) EDB-A	2500	2	100	20	43						44	2	100	20	2500	(2) EDB-A	2#12, 1#12G IN 3/4"C
						45						46						
2#12, 1#12G IN 3/4"C	(2) EDB-A	2500	2	100	20	47						48	2	100	20	2500	(1) EDB-B	2#12, 1#12G IN 3/4"C
						49						50						
2#12, 1#12G IN 3/4"C	(2) EDB-A	2500	2	100	20	51						52	2	100	20	1200	(2) EDB-C	2#12, 1#12G IN 3/4"C
						53						54						
2#12, 1#12G IN 3/4"C	(2) EDB-A	2500	2	100	20	55						56	2	100	20	5200	CUH.2.11	2#12, 1#12G IN 3/4"C
						57						58						
2#12, 1#12G IN 3/4"C	(2) EDB-A	2500	2	100	20	59						60	2	100	20	5200	CUH.2.12	2#12, 1#12G IN 3/4"C
						61						62						
2#12, 1#12G IN 3/4"C	(2) EDB-A	2500	2	100	20	63						64	2	100	20	5200	CUH.2.13	2#12, 1#12G IN 3/4"C
						65						66						
2#12, 1#12G IN 3/4"C	(2) EDB-A	2500	2	100	20	67						68	2	100	20	5200	CUH.2.14	2#12, 1#12G IN 3/4"C
						69						70						
2#12, 1#12G IN 3/4"C	(2) EDB-A	2500	2	100	20	71						72	2	100	20	5200	CUH.2.15	2#12, 1#12G IN 3/4"C
						73						74						
	SPARE		2	100	20	75						76	2	100	20	5200	CUH.2.16	2#12, 1#12G IN 3/4"C
						77						78						
	SPARE		1	100	20	79						80	2	100	20		SPARE	
	SPARE		1	100	20	81						82						
	SPARE		1	100	20	83						84	1	100	20		SPARE	

REMARKS:

TOTAL CONNECTED LOAD: 127,230 VA
TOTAL DEMAND LOAD: 127,124 VA
TOTAL DEMAND LOAD + SPARE: 152,549 VA

TOTAL AMPS: 423.8 A

PANEL: MP3A

SERVICE VOLTAGE: 208/120V, 3□, 4W+G
MAIN BUS RATING: 400A
AIC RATING: 65,000A
PANEL FEEDER: (REFER TO ONE LINE DIAGRAM)

ENCLOSURE: NEMA-1
MOUNTING: SURFACE
LOCATION: 3RD FL ELECTRIC CLOSET

MAIN RATING:
- [ ] MCB:
- [X] MLO:

OPTIONS:
- [X] BONDED GROUND BUS
- [ ] ISOLATED GROUND BUS
- [ ] 200% NEUTRAL BUS
- [ ] FEED THROUGH LUGS
- [ ] SUB FEED LUGS
- [X] DOOR-IN-DOOR TRIM
- [ ] INTEGRAL TVSS DEVICE
- [ ] INTEGRAL RC SWITCH
- [ ] INTEGRAL METERING DEVICE

BRANCH FEEDER	LOAD DESCRIPTION	LOAD (VA)	BRANCH DEVICE POLE (No)	FRAME (AMP)	TRIP (AMP)	CKT.	N	PHASE A	PHASE B	PHASE C	G	CKT.	BRANCH DEVICE POLE (No)	FRAME (AMP)	TRIP (AMP)	LOAD (VA)	LOAD DESCRIPTION	BRANCH FEEDER
2#12, 1#12G IN 3/4"C	CAV-3.1,3.2,3.3,3.4,3.5,3.6,3.7	90	1	100	20	1						2	1	100	20	440	KEF-2,3	2#12, 1#12G IN 3/4"C
2#12, 1#12G IN 3/4"C	CUH-3.1	5200	2	100	20	3						4	1	100	20	700	AC-3.1, CP-3.1	2#12, 1#12G IN 3/4"C
						5						6						
2#12, 1#12G IN 3/4"C	CUH-3.2	5200	2	100	20	7						8	2	100	20	3200	CUH.3.6	2#12, 1#12G IN 3/4"C
						9						10						
2#12, 1#12G IN 3/4"C	CUH-3.3	3200	2	100	20	11						12	2	100	20	3200	CUH.3.7	2#12, 1#12G IN 3/4"C
						13						14						
2#12, 1#12G IN 3/4"C	CUH-3.4	3200	2	100	20	15						16	2	100	20	3200	CUH.3.8	2#12, 1#12G IN 3/4"C
						17						18						
2#12, 1#12G IN 3/4"C	CUH-3.5	5200	2	100	20	19						20	2	100	20	3200	CUH.3.9	2#12, 1#12G IN 3/4"C
						21						22						
	SPARE		2	100	20	23						24	3	100	20	4970	EUH-3.1	3#12, 1#12G IN 3/4"C
						25						26						
	SPARE		2	100	20	27						28						
						29						30	3	100	20	4970	EUH-3.2	3#12, 1#12G IN 3/4"C
	SPARE		2	100	20	31						32						
						33						34						
	SPARE		2	100	20	35						36	3	100	20	4970	EUH-3.3	3#12, 1#12G IN 3/4"C
						37						38						
	SPARE		2	100	20	39						40						
						41						42	1	100	20	440	EF4,5	2#12, 1#12G IN 3/4"C
2#12, 1#12G IN 3/4"C	(2) EDB-A	2500	2	100	20	43						44	2	100	20	1250	(1) EDB-A	2#12, 1#12G IN 3/4"C
						45						46						
2#12, 1#12G IN 3/4"C	(2) EDB-A	2500	2	100	20	47						48	2	100	20	2500	(1) EDB-B	2#12, 1#12G IN 3/4"C
						49						50						
2#12, 1#12G IN 3/4"C	(2) EDB-A	2500	2	100	20	51						52	2	100	20	2500	(1) EDB-B	2#12, 1#12G IN 3/4"C
						53						54						
2#12, 1#12G IN 3/4"C	(2) EDB-A	2500	2	100	20	55						56	2	100	20	2500	(1) EDB-B	2#12, 1#12G IN 3/4"C
						57						58						
2#12, 1#12G IN 3/4"C	(2) EDB-A	2500	2	100	20	59						60	2	100	20		SPARE	
						61						62						
2#12, 1#12G IN 3/4"C	(2) EDB-A	2500	2	100	20	63						64	2	100	20		SPARE	
						65						66						
2#12, 1#12G IN 3/4"C	(2) EDB-A	2500	2	100	20	67						68	2	100	20		SPARE	
						69						70						
2#12, 1#12G IN 3/4"C	(2) EDB-A	2500	2	100	20	71						72	2	100	20		SPARE	
						73						74						
	SPARE		2	100	20	75						76	2	100	20		SPARE	
						77						78						
	SPARE		1	100	20	79						80	2	100	20		SPARE	
2#12, 1#12G IN 3/4"C	EF-14,TEF-2	440	1	100	20	81						82						
2#12, 1#12G IN 3/4"C	EF-12,EF-13,	440	1	100	20	83						84	1	100	20	440	EF6,7	2#12, 1#12G IN 3/4"C

REMARKS:

TOTAL CONNECTED LOAD: 81,010 VA
TOTAL DEMAND LOAD: 80,412 VA
TOTAL DEMAND LOAD + SPARE: 96,494 VA

TOTAL AMPS: 268 A

1 E609 E609_PANEL SCHEDULE3
SCALE: 1/8" = 1'-0"

Do Not Use
Reserved For
Plan Examiner's
Stamps

Do Not Use
Reserved For
Plan Examiner's
Stamps

Do Not Use
Reserved For
DOB BScan

Drawing Title:
PANEL SCHEDULE

Reserved For
DOB NOW Job#

Drawing No.:
E609

Sheets in Contract Set:
OF 0

Sheets in DOB Set:
OF 0

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PANEL: MP4A

SERVICE VOLTAGE: 208/120V, 3□, 4W+G
MAIN BUS RATING: 400A
AIC RATING: 65,000A
PANEL FEEDER: (REFER TO ONE LINE DIAGRAM)

ENCLOSURE:
MOUNTING: SURFACE
LOCATION: 4TH FL ELECTRIC CLOSET

MAIN RATING:
- [ ] MCB:
- [X] MLO:

OPTIONS:
- [X] BONDED GROUND BUS
- [ ] ISOLATED GROUND BUS
- [ ] 200% NEUTRAL BUS
- [ ] FEED THROUGH LUGS
- [ ] SUB FEED LUGS
- [X] DOOR-IN-DOOR TRIM
- [ ] INTEGRAL TVSS DEVICE
- [ ] INTEGRAL RC SWITCH
- [ ] INTEGRAL METERING DEVICE

BRANCH FEEDER	LOAD DESCRIPTION	LOAD (VA)	BRANCH DEVICE POLE (No)	FRAME (AMP)	TRIP (AMP)	CKT.	N	PHASE A	B	C	G	CKT.	BRANCH DEVICE POLE (No)	FRAME (AMP)	TRIP (AMP)	LOAD (VA)	LOAD DESCRIPTION	BRANCH FEEDER
2#12, 1#12G IN 3/4"C	CAV-4.1,4.2	90	1	100	20	1						2	1	100	20		SPARE	
2#12, 1#12G IN 3/4"C	CUH-4.1	5200	2	100	20	3						4	1	100	20	700	AC-4.1, CP-4.1	2#12, 1#12G IN 3/4"C
						5						6						
2#12, 1#12G IN 3/4"C	CUH-4.2	5200	2	100	20	7						8	2	100	20	3200	CUH.4.6	2#12, 1#12G IN 3/4"C
						9						10						
2#12, 1#12G IN 3/4"C	CUH-4.3	3200	2	100	20	11						12	2	100	20	3200	CUH.4.7	2#12, 1#12G IN 3/4"C
						13						14						
2#12, 1#12G IN 3/4"C	CUH-4.4	3200	2	100	20	15						16	2	100	20		SPARE	
						17						18						
2#12, 1#12G IN 3/4"C	CUH-4.5	5200	2	100	20	19						20	2	100	20	2500	(1) EDB-B	2#12, 1#12G IN 3/4"C
						21						22						
	SPARE		2	100	20	23						24	3	100	60	16640	SPF-2	3#4, 1#8G IN 1"C
						25						26						
	SPARE		2	100	20	27						28						
						29						30	3	100	60		SPARE	
	SPARE		2	100	20	31						32						
						33						34						
	SPARE		2	100	20	35						36	3	100	60		SPARE	
						37						38						
2#12, 1#12G IN 3/4"C	(2) EDB-A	2500	2	100	20	39						40						
						41						42	1	100	20		SPARE	
2#12, 1#12G IN 3/4"C	(2) EDB-A	2500	2	100	20	43						44	2	100	20	2500	(2) EDB-A	2#12, 1#12G IN 3/4"C
						45						46						
2#12, 1#12G IN 3/4"C	(2) EDB-A	2500	2	100	20	47						48	2	100	20	2500	(1) EDB-B	2#12, 1#12G IN 3/4"C
						49						50						
2#12, 1#12G IN 3/4"C	(2) EDB-A	2500	2	100	20	51						52	2	100	20	1200	(1) EDB-B	2#12, 1#12G IN 3/4"C
						53						54						
2#12, 1#12G IN 3/4"C	(2) EDB-A	2500	2	100	20	55						56	3	100	60		SPARE	
						57						58						
2#12, 1#12G IN 3/4"C	(2) EDB-A	2500	2	100	20	59						60						
						61						62	3	100	60		SPARE	
2#12, 1#12G IN 3/4"C	(2) EDB-A	2500	2	100	20	63						64						
						65						66						
2#12, 1#12G IN 3/4"C	(2) EDB-A	2500	2	100	20	67						68	3	100	60		SPARE	
						69						70						
2#12, 1#12G IN 3/4"C	(2) EDB-A	2500	2	100	20	71						72						
						73						74	3	100	60		SPARE	
	SPARE		2	100	20	75						76						
						77						78						
	SPARE		1	100	20	79						80	2	100	20		SPARE	
	SPARE		1	100	20	81						82						
	SPARE		1	100	20	83						84	1	100	20		SPARE	

REMARKS:

TOTAL CONNECTED LOAD:	77,030 VA
TOTAL DEMAND LOAD:	74,416 VA
TOTAL DEMAND LOAD + SPARE:	89,300 VA
TOTAL AMPS:	248 A

PANEL: MP5A

SERVICE VOLTAGE: 208/120V, 3□, 4W+G
MAIN BUS RATING: 400A
AIC RATING: 65,000A
PANEL FEEDER: (REFER TO ONE LINE DIAGRAM)

ENCLOSURE:
MOUNTING: SURFACE
LOCATION: 5TH FL ELECTRIC CLOSET

MAIN RATING:
- [ ] MCB:
- [X] MLO:

OPTIONS:
- [X] BONDED GROUND BUS
- [ ] ISOLATED GROUND BUS
- [ ] 200% NEUTRAL BUS
- [ ] FEED THROUGH LUGS
- [ ] SUB FEED LUGS
- [X] DOOR-IN-DOOR TRIM
- [ ] INTEGRAL TVSS DEVICE
- [ ] INTEGRAL RC SWITCH
- [ ] INTEGRAL METERING DEVICE

BRANCH FEEDER	LOAD DESCRIPTION	LOAD (VA)	BRANCH DEVICE POLE (No)	FRAME (AMP)	TRIP (AMP)	CKT.	N	PHASE A	B	C	G	CKT.	BRANCH DEVICE POLE (No)	FRAME (AMP)	TRIP (AMP)	LOAD (VA)	LOAD DESCRIPTION	BRANCH FEEDER
2#12, 1#12G IN 3/4"C	CAV-5.1	90	1	100	20	1						2	1	100	20	440	HWCP#1	2#12, 1#12G IN 3/4"C
2#12, 1#12G IN 3/4"C	CUH-5.1	5200	2	100	20	3						4	1	100	20	700	AC-1.1, AC-1.2,CP-1.1,CP-1.2	2#12, 1#12G IN 3/4"C
						5						6						
2#12, 1#12G IN 3/4"C	CUH-5.2	5200	2	100	20	7						8	2	100	70	13940	HWH#1	2#4, 1#8G IN 1"C
						9						10						
2#12, 1#12G IN 3/4"C	CUH-5.3	5200	2	100	20	11						12	2	100	70	13940	HWH#1	2#4, 1#8G IN 1"C
						13						14						
2#12, 1#12G IN 3/4"C	CUH-5.4	3200	2	100	20	15						16	1	100	20	440	HWCP#2	2#12, 1#12G IN 3/4"C
						17						18						
2#12, 1#12G IN 3/4"C	CUH-5.5	3200	2	100	20	19						20	2	100	20		SPARE	
						21						22						
	SPARE		2	100	20	23						24	2	100	20		SPARE	
						25						26						
	SPARE		2	100	20	27						28	2	100	20		SPARE	
						29						30						
	SPARE		2	100	20	31						32	2	100	20		SPARE	
						33						34						
	SPARE		2	100	20	35						36	2	100	20		SPARE	
						37						38						
	SPARE		2	100	20	39						40	2	100	20		SPARE	
						41						42						
2#12, 1#12G IN 3/4"C	(2) EDB-A	2500	2	100	20	43						44	2	100	20	2500	(2) EDB-A	2#12, 1#12G IN 3/4"C
						45						46						
2#12, 1#12G IN 3/4"C	(2) EDB-A	2500	2	100	20	47						48	2	100	20	2500	(1) EDB-B	2#12, 1#12G IN 3/4"C
						49						50						
2#12, 1#12G IN 3/4"C	(2) EDB-A	2500	2	100	20	51						52	2	100	20	1200	(2) EDB-C	2#12, 1#12G IN 3/4"C
						53						54						
2#12, 1#12G IN 3/4"C	(2) EDB-A	2500	2	100	20	55						56	2	100	20	2500	(1) EDB-B	2#12, 1#12G IN 3/4"C
						57						58						
2#12, 1#12G IN 3/4"C	(2) EDB-A	2500	2	100	20	59						60	2	100	20		SPARE	
						61						62						
2#12, 1#12G IN 3/4"C	(2) EDB-A	2500	2	100	20	63						64	2	100	20		SPARE	
						65						66						
2#12, 1#12G IN 3/4"C	(2) EDB-A	2500	2	100	20	67						68	2	100	20		SPARE	
						69						70						
2#12, 1#12G IN 3/4"C	(2) EDB-A	2500	2	100	20	71						72	2	100	20		SPARE	
						73						74						
	SPARE		2	100	20	75						76	2	100	20		SPARE	
						77						78						
	SPARE		1	100	20	79						80	2	100	20		SPARE	
	SPARE		1	100	20	81						82						
	SPARE		1	100	20	83						84	1	100	20		SPARE	

REMARKS:

TOTAL CONNECTED LOAD:	75,050 VA
TOTAL DEMAND LOAD:	74,892 VA
TOTAL DEMAND LOAD + SPARE:	89,870 VA
TOTAL AMPS:	250 A

1 E610_PANEL SCHEDULE4
E610 SCALE: 1/8" = 1'-0"

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PANEL: MP5B

SERVICE VOLTAGE: 208/120V, 3□, 4W+G
MAIN BUS RATING: 400A
AIC RATING: 65,000A
PANEL FEEDER: (REFER TO ONE LINE DIAGRAM)

ENCLOSURE: 1
MOUNTING: SURFACE
LOCATION: 5TH FL ELECTRIC CLOSET

MAIN RATING:
- [ ] MCB:
- [X] MLO:

OPTIONS:
- [X] BONDED GROUND BUS
- [ ] ISOLATED GROUND BUS
- [ ] 200% NEUTRAL BUS
- [ ] FEED THROUGH LUGS
- [ ] SUB FEED LUGS
- [X] DOOR-IN-DOOR TRIM
- [ ] INTEGRAL TVSS DEVICE
- [ ] INTEGRAL RC SWITCH
- [ ] INTEGRAL METERING DEVICE

BRANCH FEEDER	LOAD DESCRIPTION	LOAD (VA)	BRANCH DEVICE POLE (No)	FRAME (AMP)	TRIP (AMP)	CKT.	PHASE A	PHASE B	PHASE C	CKT.	BRANCH DEVICE POLE (No)	FRAME (AMP)	TRIP (AMP)	LOAD (VA)	LOAD DESCRIPTION	BRANCH FEEDER
	SPARE		1	100	20	1				2	1	100	20		SPARE	
3#4, 1#8G IN 1"C	ACCU-1-1_AHU-6	17290	3	100	60	3				4	3	100	60	17290	ACCU-1-2_AHU-6	3#4, 1#8G IN 1"C
						5				6						
						7				8						
	SPARE		3	100	40	9				10	3	100	60	17290	ACCU-1-3_AHU-6	3#4, 1#8G IN 1"C
						11				12						
						13				14						
	SPARE		3	100	20	15				16	3	100	60		SPARE	
						17				18						
						19				20						
	SPARE		3	100	20	21				22	3	100	60		SPARE	
						23				24						
						25				26						
	SPARE		3	100	20	27				28	3	100	20		SPARE	
						29				30						
						31				32						
	SPARE		1	100	20	33				34	3	100	20		SPARE	
	SPARE		2	100	20	35				36						
						37				38						
	SPARE		2	100	20	39				40	2	100	20		SPARE	
						41				42						

REMARKS:

TOTAL CONNECTED LOAD: 86,450 VA
TOTAL DEMAND LOAD: 73,483 VA
TOTAL DEMAND LOAD + SPARE: 88,179 VA
TOTAL AMPS: 245 A

PANEL: MPR

SERVICE VOLTAGE: 208/120V, 3□, 4W+G
MAIN BUS RATING: 400A
AIC RATING: 65,000A
PANEL FEEDER: (REFER TO ONE LINE DIAGRAM)

ENCLOSURE:
MOUNTING: SURFACE
LOCATION: 5TH FL BOILER ROOM

MAIN RATING:
- [ ] MCB:
- [X] MLO:

OPTIONS:
- [X] BONDED GROUND BUS
- [ ] ISOLATED GROUND BUS
- [ ] 200% NEUTRAL BUS
- [ ] FEED THROUGH LUGS
- [ ] SUB FEED LUGS
- [X] DOOR-IN-DOOR TRIM
- [ ] INTEGRAL TVSS DEVICE
- [ ] INTEGRAL RC SWITCH
- [ ] INTEGRAL METERING DEVICE

BRANCH FEEDER	LOAD DESCRIPTION	LOAD (VA)	BRANCH DEVICE POLE (No)	FRAME (AMP)	TRIP (AMP)	CKT.	PHASE A	PHASE B	PHASE C	CKT.	BRANCH DEVICE POLE (No)	FRAME (AMP)	TRIP (AMP)	LOAD (VA)	LOAD DESCRIPTION	BRANCH FEEDER
	SPARE		1	100	20	1				2	1	100	20		SPARE	
2#12, 1#12G IN 3/4"C	EF-8, EF-9	2700	2	100	20	3				4	3	100	60	17290	ACCU-1-2_AHU-6	3#4, 1#8G IN 1"C
						5				6						
2#12, 1#12G IN 3/4"C	EF-10, EF-17	2700	2	100	20	7				8						
						9				10	3	100	60	17290	ACCU-1-3_AHU-6	3#4, 1#8G IN 1"C
2#12, 1#12G IN 3/4"C	EF-18, EF-19	2700	2	100	20	11				12						
						13				14						
2#12, 1#12G IN 3/4"C	TEF-1, TEF-3	2700	2	100	20	15				16	3	100	60		SPARE	
						17				18						
2#12, 1#12G IN 3/4"C	FHE-1	2380	2	100	20	19				20						
						21				22	3	100	60		SPARE	
2#12, 1#12G IN 3/4"C	FHE-2	2380	2	100	20	23				24						
						25				26						
2#12, 1#12G IN 3/4"C	FHE-3	2380	2	100	20	27				28	3	100	20		SPARE	
						29				30						
2#12, 1#12G IN 3/4"C	FHE-4	2380	2	100	20	31				32						
						33				34	3	100	20		SPARE	
2#12, 1#12G IN 3/4"C	FHE-5	2380	2	100	20	35				36						
						37				38						
2#12, 1#12G IN 3/4"C	FHE-6	2380	2	100	20	39				40	2	100	20		SPARE	
						41				42						
	SPARE		2	100	30	43				44	2	100	20		SPARE	
						45				46						
2#12, 1#12G IN 3/4"C	ACCU-R-1	3160	2	100	30	47				48	2	100	20		SPARE	
						49				50						
2#12, 1#12G IN 3/4"C	ACCU-C-1	3160	2	100	20	51				52	2	100	20		SPARE	
						53				54						
2#12, 1#12G IN 3/4"C	ACCU-C-2	3160	2	100	20	55				56	2	100	20		SPARE	
						57				58						
2#12, 1#12G IN 3/4"C	ACCU-1-1	3160	2	100	20	59				60	2	100	20		SPARE	
						61				62						
2#12, 1#12G IN 3/4"C	ACCU-1-2	3160	2	100	20	63				64	2	100	20		SPARE	
						65				66						
2#12, 1#12G IN 3/4"C	ACCU-2-1	3160	2	100	20	67				68	2	100	20		SPARE	
						69				70						
2#12, 1#12G IN 3/4"C	ACCU-3-1	3160	2	100	20	71				72	2	100	20		SPARE	
						73				74						
2#12, 1#12G IN 3/4"C	ACCU-4-1	3160	2	100	20	75				76	2	100	20		SPARE	
						77				78						
	SPARE		1	100	20	79				80	2	100	20		SPARE	
	SPARE		1	100	20	81				82						
	SPARE		1	100	20	83				84	1	100	20		SPARE	

REMARKS:

TOTAL CONNECTED LOAD: 84,940 VA
TOTAL DEMAND LOAD: 75,961 VA
TOTAL DEMAND LOAD + SPARE: 91,154 VA
TOTAL AMPS: 254 A

1 E611 E612_PANEL SCHEDULE6
SCALE: 1/8" = 1'-0"

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FIRE DETECTION & ALARM SYSTEM

SYMBOL	DESCRIPTION
FACP	FIRE ALARM SYSTEM CONTROL PANEL. WITH INTEGRATED DACT & INTEGRATED POST FIRE PURGE PANEL
FASP	FIRE SYSTEM SMOKE PURGE CONTROL PANEL
DACT	DIGITAL ALARM COMMUNICATOR TRANSMITTER
FARA	FIRE ALARM REMOTE ANNUNCIATOR
FAPR	FIRE ALARM PRINTER
F	FIRE SYSTEM PULL STATION WITH FALSE ALARM STOPPER, FLUSH MTD AT 4'-0" AFF.
30 G	FIRE SIGNAL STROBE MTD. AT 8'-0"AFF TO DEVICE BOTTOM OR 6" MIN. BELOW CEILING SUBSCRIPT 'G' DENOTES WITH GUARD. NUMERICAL DENOTES CANDELA RATING.
30 G	FIRE SIGNAL HORN/STROBE, FLUSH MTD. AT 8'-0"AFF TO DEVICE BOTTOM OR 6" MIN. BELOW CEILING. SUBSCRIPT 'G' DENOTES WITH GUARD NUMERICAL DENOTES CANDELA RATING IN DB.
F 30 G	FIRE ALARM PULL STATION AND HORN/STROBE WITH FALSE ALARM STOPPER ASSEMBLY MOUNTED 8'-0" AFF TO DEVICE BOTTOM OR 6" MIN. BELOW CEILING SUBSCRIPT 'G' DENOTES WITH GUARD NUMERICAL DENOTES CANDELA RATING IN DB.
LSS	GYMATORIUM LOCAL SOUND SYSTEM CABINET.
DB	GYMATORIUM DIMMER PANEL BOARD.
FDS	LOCKABLE FUSE DISCONNECT SWITCH WITH SOLID NEUTRAL BAR
FCO	FUSE CUTOUT PANEL.
ATS	AUTOMATIC TRANSFER SWITCH (ATS)
S EX	SMOKE DETECTOR. 'EX' DENOTES EXPLOSION PROOF,' ER' INDICATES ELEVATOR RECALL
H	HEAT DETECTOR (194 F FIXED TEMPERATURE)
SD	SMOKE DETECTOR DUCT MOUNTED
C	CARBON MONOXIDE SENSOR
F S	MOTORIZED FIRE AND SMOKE DAMPER (BY HVAC)
F SP	MOTORIZED FIRE SMOKE PURGE DAMPER (BY HVAC)
S SP	MOTORIZED SMOKE PURGE DAMPER (BY HVAC)
S	MOTORIZED SMOKE DAMPER (BY HVAC)
ER	ELEVATOR RECALL
TS	FIRE ALARM TAMPER SWITCH (BY PLUMBING).
WF	FIRE ALARM FLOW SWITCH (BY PLUMBING).
MM	INDIVIDUALLY ADDRESSABLE MONITOR MODULE
CM	CONTACT INTERFACE MODULE
R	RELAY MODULE
BP	BOOSTER POWER SUPPLY
SH	ELEVATOR SHAFT VENTILATION LOUVER
ϕ^L OR ϕ^T	TWIST LOCK RECEPTACLE MOUNTED AT 18" AFF.
SHA	SMOKE HATCH

LIST OF DRAWINGS	
DRAWING NAME	DRAWING TITLE
FA001.00	FIRE ALARM SYMBOLS & LEGENDS, ABBREVIATIONS, AND NOTES
FA201.00	FIRE ALARM SYSTEM RISER DIAGRAM
FA102.00	FIRST FLOOR PLAN - FIRE ALARM SYTEMS
FA101.00	CELLAR FLOOR PLAN - FIRE ALARM SYTEMS
FA103.00	SECOND FLOOR PLAN - FIRE ALARM SYTEMS
FA104.00	THIRD FLOOR PLAN - FIRE ALARM SYTEMS
FA105.00	FOURTH FLOOR PLAN - FIRE ALARM SYTEMS
FA106.00	FIFTH FLOOR PLAN - FIRE ALARM SYTEMS
FA107.00	ROOF PLAN - FIRE ALARM SYTEMS
FA202.00	FIRE ALARM SYSTEM INPUT_OUTPUT MATRIX

SPECIAL INSPECTION NOTES

SPECIAL INSPECTIONS REQUIRED IN ACCORDANCE WITH CHAPTER 17 AND THE APPLICABLE SECTIONS OF THE 2014 NYC CONSTRUCTION CODE ARE LISTED IN THE FOLLOWING TABLES. THE CONTRACTOR MUST NOTIFY THE ARCHITECT OR ENGINEER FOR SPECIAL INSPECTIONS AT LEAST 72 HOURS BEFORE THE SPECIFIC WORK COMMENCES.

THE "AUTHORITY" SHALL BE RESPONSIBLE FOR THE FOLLOWING SPECIAL INSPECTIONS:
THE "CONTRACTOR" SHALL BE RESPONSIBLE FOR THE FOLLOWING SPECIAL INSPECTIONS:

- FIRE-RESISTANT PENETRATION AND JOINTS - BC 1704.27

REQUIRED INSPECTIONS AND TESTS OF MATERIALS DESIGNATED FOR "SPECIAL INSPECTION" BY THE CONTRACTOR SHALL BE MADE UNDER THE DIRECT SUPERVISION OF A LICENSED ARCHITECT OR ENGINEER RETAINED BY OR ON THE BEHALF OF THE CONTRACTOR WHO SHALL BE ACCEPTABLE TO THE ARCHITECT OR ENGINEER WHO SUPERVISED THE PREPARATION OF THE PLANS.

FIRE ALARM SYSTEM GENERAL NOTES:

1. THE FIRE ALARM SYSTEM SHOWN ON THE RISER DIAGRAM, FLOOR PLANS AND SPECIFICATIONS IS ENTIRELY NEW. UPON COMPLETION OF THIS WORK AND OF ALL TESTS AND AFTER OBTAINING THE AUTHORITY'S AND THE FIRE DEPARTMENT'S APPROVALS, THE NEW FIRE ALARM SYSTEM SHALL BECOME IN USE.
2. ALL CONDUITS AND CONTROL PANELS SHALL BE GROUNDED TO THE WATER MAIN WITH A MINIMUM #8 CONDUCTOR.
3. SMOKE PURGE DAMPERS SHALL BE ZONED PER FLOOR.
4. VISUAL DEVICES SHALL NOT HAVE ANY APPURTENANCES WITHIN 5 FEET RADIUS.
5. PROVIDE FIRE STOP SEAL AT ALL PENETRATIONS OF FIRE RATED PARTITIONS.
6. ALL COMPONENTS SHOWN ON RISER DIAGRAMS, BUT NOT ON THE PLAN OR VICE VERSA, SHALL BE INCLUDED AS IF SHOWN ON BOTH.
7. THE INSPECTION, TESTING, AND MAINTENANCE OF SYSTEMS, THEIR INITIATING DEVICES, AND NOTIFICATION APPLIANCES SHALL COMPLY WITH THE REQUIREMENTS OF CHAPTER 14 NFPA CODE.
8. ALL MATERIAL/DEVICES SHALL BE IN COMPLIANCE WITH F.D STANDARDS AND UL LISTED.
9. CO DETECTION SHALL BE LISTED IN ACCORDANCE WITH UL 2075.
10. CONTRACTOR TO PROVIDE BATTERY CALCULATION SHOWING 20 PERCENT SAFETY MARGIN TO THE CALCULATED AMP-RATING.
11. ALL EQUIPMENT AND COMPONENTS SHALL BE LISTED FOR THE PURPOSE FOR WHICH THEY ARE INSTALLED.

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Drawing Title:
FIRE ALARM SYMBOLS & LEGENDS, ABBREVIATIONS, AND NOTES

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Drawing No.:
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PLAN NOTES:

1. FOR GENERAL NOTES, SYMBOL LIST, ABBREVIATIONS AND FIRE ALARM SYSTEM DRAWING LIST REFER TO DWG FA001.00
2. FOR EXACT LOCATION AND QUANTITIES OF MECHANICAL AND PLUMBING EQUIPMENT AND DEVICES REFER TO MECHANICAL AND PLUMBING DWGS.
3. ALL CONDUIT PENETRATIONS THROUGH FIRE RATED PARTITIONS ARE TO BE PROVIDED WITH FIRE STOP SEALS AS REQUIRED BY CODE TO MAINTAIN FIRE RATING OF PARTITIONS.
4. UNLESS OTHERWISE NOTED ON DRAWING MOUNTING HEIGHTS OUTLETS AND EQUIPMENT SHALL BE AS INDICATED ON SYMBOL LIST & SPECIFICATIONS.
5. FOR FIRE SMOKE DAMPER CIRCUITS REFER TO FLOOR POWER PLAN DWGS.
6. WALL MOUNTED HORNS AND VISUAL FIRE ALARMS (STROBES) SHALL BE MOUNTED SUCH THAT THE ENTIRE STROBE LENS IS LOCATED NOT GREATER THAN 96" ABOVE THE FINISHED FLOOR OR 6" BELOW THE CEILING, WHICHEVER IS LOWER.
7. FIRE ALARM PULL STATIONS SHALL BE MOUNTED MIN 3'-6" AND MAX 4'-0" FROM THE FLOOR LEVEL TO THE ACTIVATING HANDLE.
8. ACCESS SHALL BE PROVIDE TO EACH DETECTOR FOR PERIODIC INSPECTION, MAINTENANCE AND TESTING AS PER SECTION 907.12 OF N.Y.C. BUILDING CODE.
9. ARTWORK: NO M/E/P, FIXTURES, DEVICES OR OUTLETS MAY BE LOCATED IN THIS AREA WITHOUT APPROVAL FROM PUBLIC ART FOR PUBLIC SCHOOLS (PAPS) AND ARCHITECT.
10. SEE TYPICAL DETAILS #10 ON DRAWING E710.00 FOR APPROXIMATE LOCATION OF CO DETECTOR INSTALLED INSIDE GENERATOR ENCLOSURE AND OTHER COMPONENTS TO BE TIED INTO FIRE ALARM SYSTEM.
11. FIRE ALARM AUTOMATIC TRANSFER SWITCH (FA-ATS) IS LOCATED IN A 2-HR RATED ROOM.

C17 REFUSE/RECYCLE 742 SF
C15 JC 36 SF
C13 STAFF TOILET 65 SF
C11 STOR 822 SF
C21C NON FOOD STORAGE 188 SF
C21D FOOD STORAGE 203 SF
C19 STORAGE 300 SF
C21B LOCKER M 87 SF
C21A LOCKER F 125 SF
C25 ATS RM 141 SF
C23 IDF RM 122 SF
C27 GENERAL STORAGE 1153 SF
C20 ELECTRICAL METER RM 720 SF
C16 SHOWER 167 SF
C14 SHOWER 165 SF
C18 BIKE STORAGE 1392 SF
C03 CUSTODIANS OFFICE 422 SF
C5A STAIR A 645 SF
C09 CUST. WORKSHOP/STOR. 562 SF
C08 CUSTODIANS LOCKER M 182 SF
C10 STORAGE 201 SF
C12 SCHOOL SAFETY OFFICE 306 SF
C12A OFFICE 115 SF
C04 GENERAL STOR. 830 SF
C02 WATER METER/PUMP RM 924 SF
C12B OFFICE 107 SF
FIRE PUMP DISC. SWITCH
FDS
ER
FA/ATS
WP TS
FACP
KC CM MM
KC CM
TS MM/MM/MM
TS TS TS TS TS TS TS TS TS MM/MM/MM/MM/MM/MM/MM/MM/MM

1 FA00_CELLAR FLOOR
FA101.00 SCALE: 1/8" = 1'-0"

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Drawing Title:
CELLAR FLOOR PLAN - FIRE ALARM SYTEMS

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Drawing No.:
FA101.00

Sheets in Contract Set:
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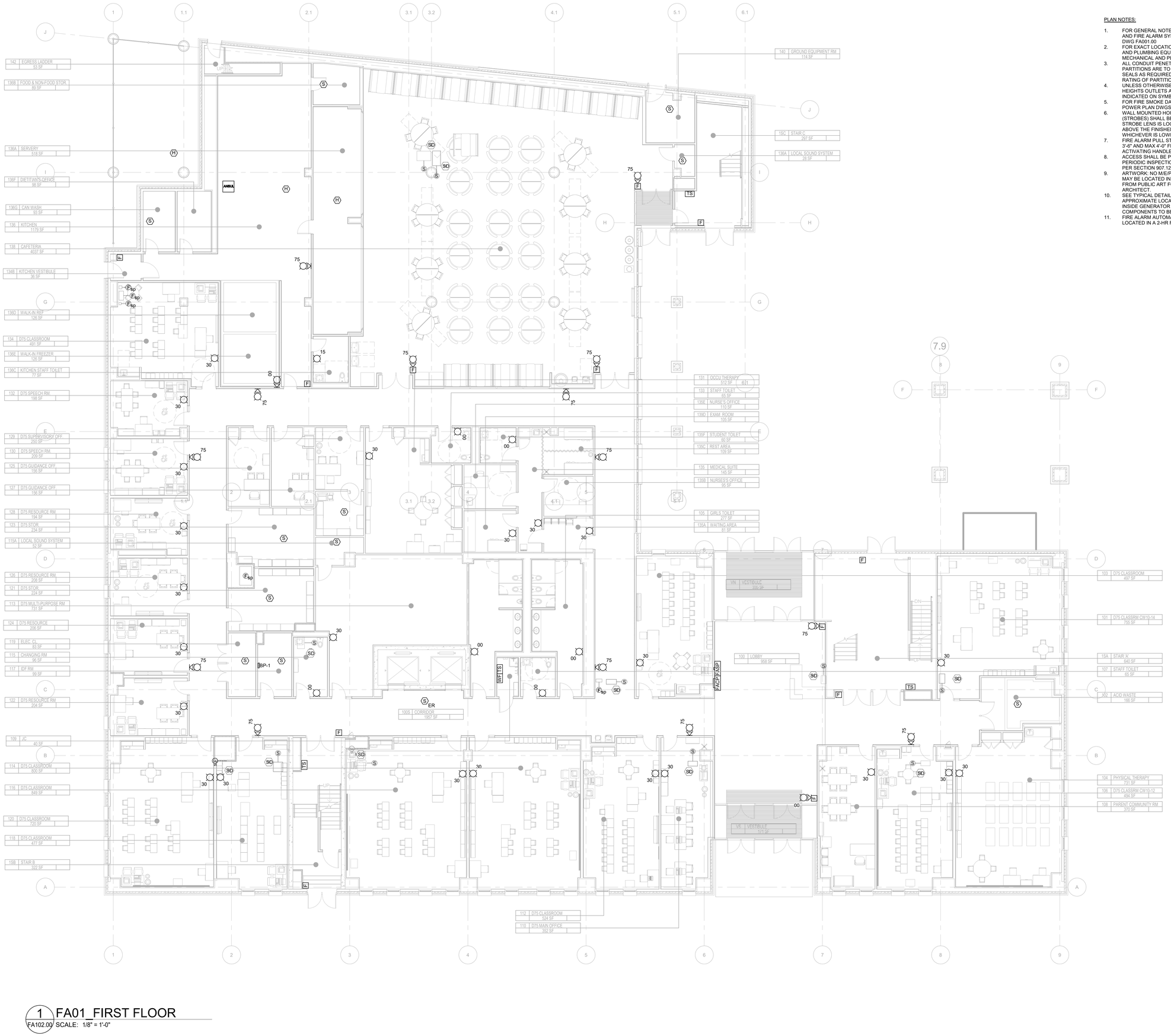

1 FA01_FIRST FLOOR
FA102.00 SCALE: 1/8" = 1'-0"

PLAN NOTES:

1. FOR GENERAL NOTES, SYMBOL LIST, ABBREVIATIONS AND FIRE ALARM SYSTEM DRAWING LIST REFER TO DWG FA001.00
2. FOR EXACT LOCATION AND QUANTITIES OF MECHANICAL AND PLUMBING EQUIPMENT AND DEVICES REFER TO MECHANICAL AND PLUMBING DWGS.
3. ALL CONDUIT PENETRATIONS THROUGH FIRE RATED PARTITIONS ARE TO BE PROVIDED WITH FIRE STOP SEALS AS REQUIRED BY CODE TO MAINTAIN FIRE RATING OF PARTITIONS.
4. UNLESS OTHERWISE NOTED ON DRAWING MOUNTING HEIGHTS OUTLETS AND EQUIPMENT SHALL BE AS INDICATED ON SYMBOL LIST & SPECIFICATIONS.
5. FOR FIRE SMOKE DAMPER CIRCUITS REFER TO FLOOR POWER PLAN DWGS.
6. WALL MOUNTED HORNS AND VISUAL FIRE ALARMS (STROBES) SHALL BE MOUNTED SUCH THAT THE ENTIRE STROBE LENS IS LOCATED NOT GREATER THAN 96" ABOVE THE FINISHED FLOOR OR 6" BELOW THE CEILING, WHICHEVER IS LOWER.
7. FIRE ALARM PULL STATIONS SHALL BE MOUNTED MIN 3'-6" AND MAX 4'-0" FROM THE FLOOR LEVEL TO THE ACTIVATING HANDLE.
8. ACCESS SHALL BE PROVIDE TO EACH DETECTOR FOR PERIODIC INSPECTION, MAINTENANCE AND TESTING AS PER SECTION 907.12 OF N.Y.C. BUILDING CODE.
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11. FIRE ALARM AUTOMATIC TRANSFER SWITCH (FA-ATS) IS LOCATED IN A 2-HR RATED ROOM.

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Drawing Title:
FIRST FLOOR PLAN - FIRE ALARM SYTEMS

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DOB NOW Job#

Drawing No.:
FA102.00

Sheets in Contract Set:
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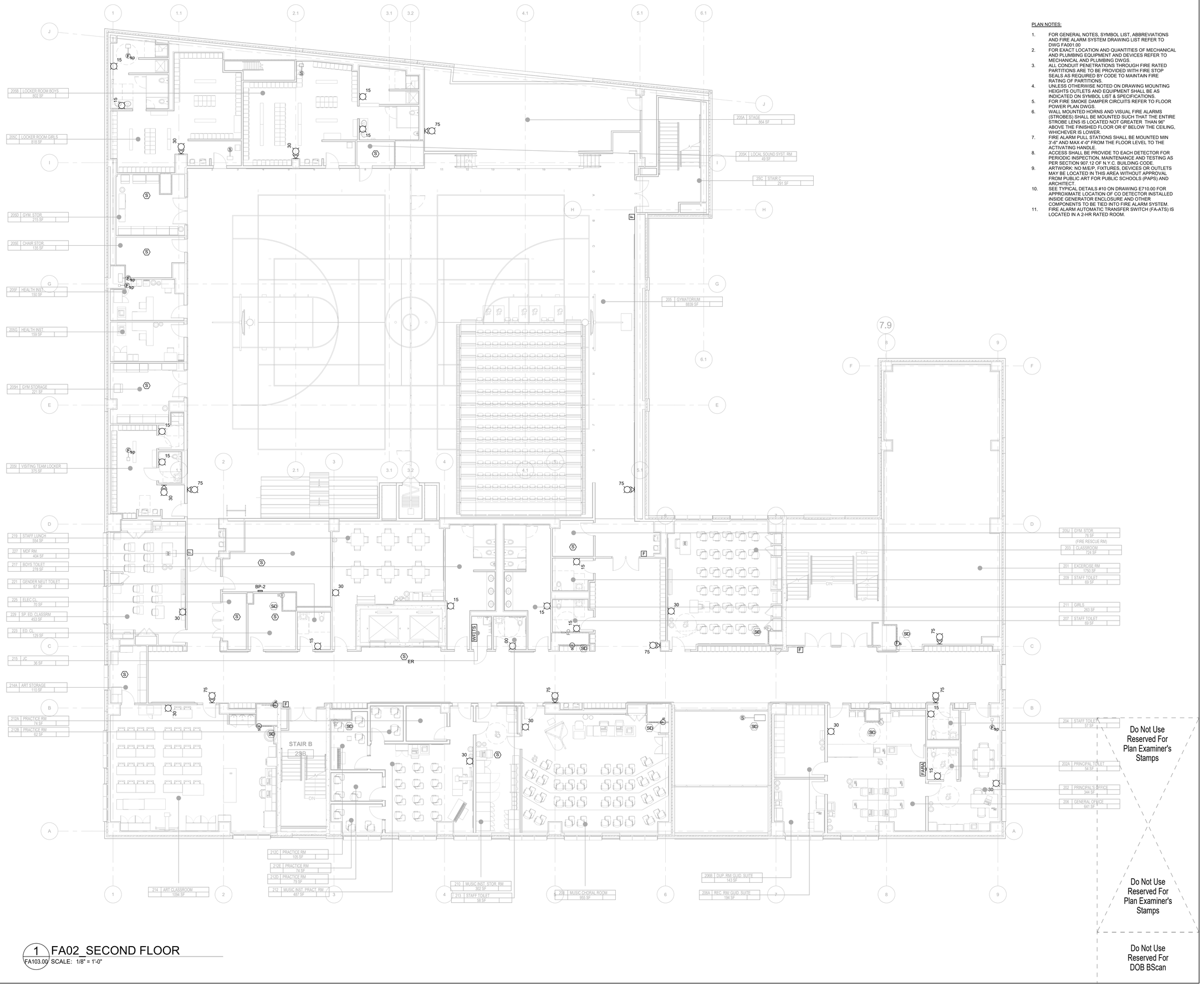

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1 FA02_SECOND FLOOR
FA103.00 SCALE: 1/8" = 1'-0"

Drawing Title:
SECOND FLOOR PLAN - FIRE ALARM SYTEMS

Reserved For
DOB NOW Job#

Drawing No.:
FA103.00

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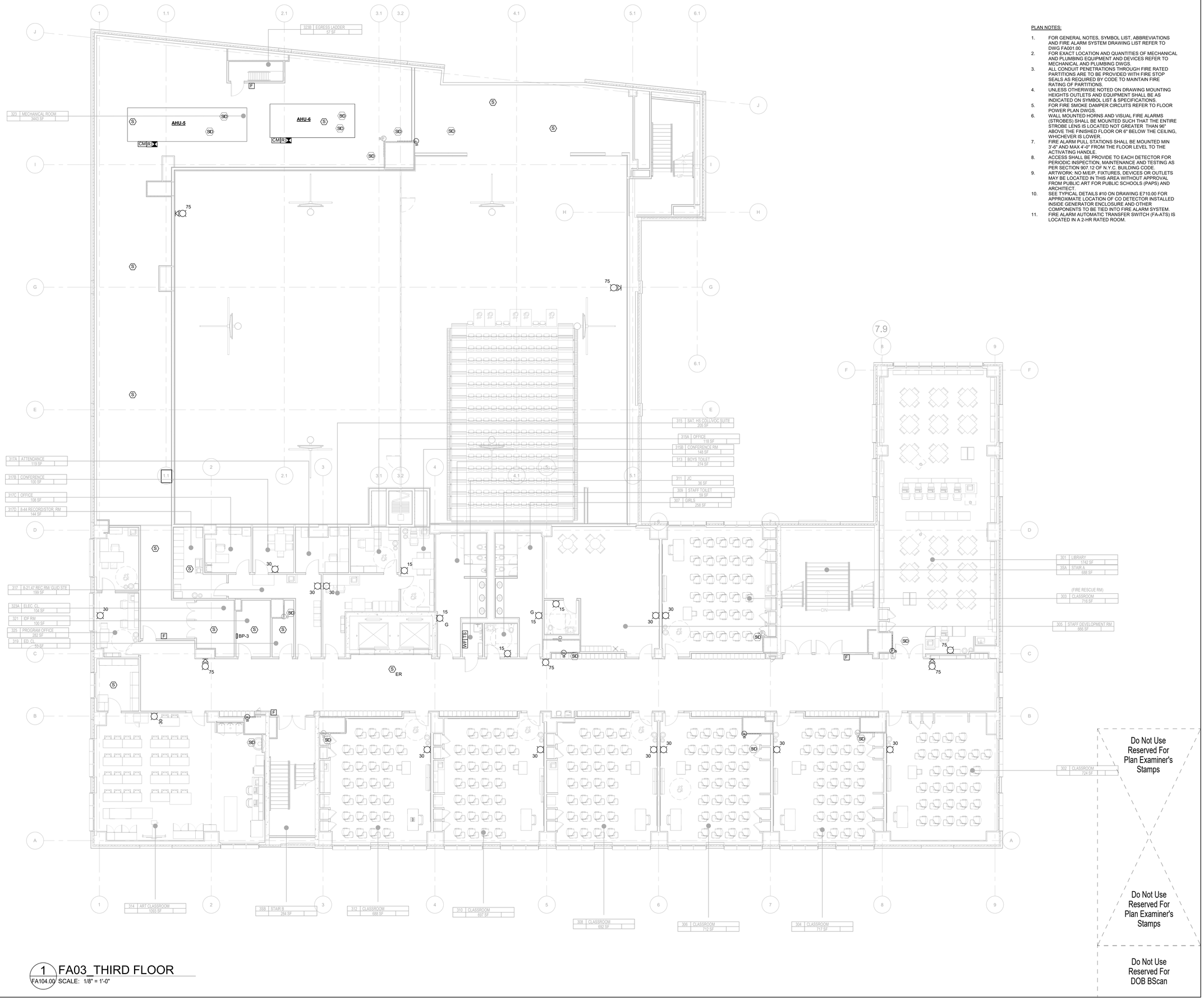

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1 FA03_THIRD FLOOR
FA104.00 SCALE: 1/8" = 1'-0"

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Drawing Title:
THIRD FLOOR PLAN - FIRE ALARM SYTEMS

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Drawing No.:
FA104.00

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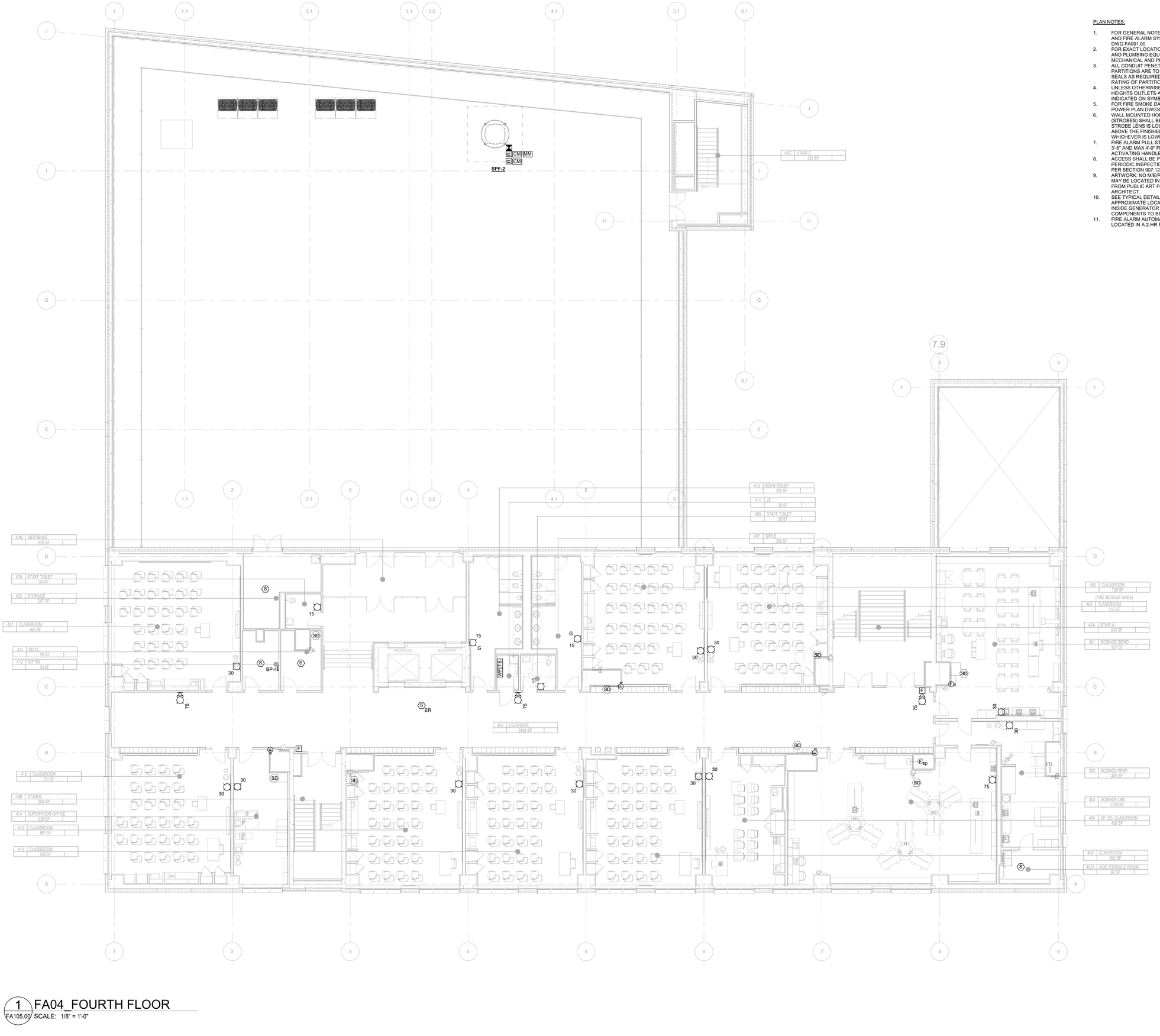

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1 FA04_FOURTH FLOOR
FA105.00 SCALE: 1/8" = 1'-0"

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Drawing Title:
FOURTH FLOOR PLAN - FIRE ALARM SYTEMS

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Drawing No.:
FA105.00

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PLAN NOTES:

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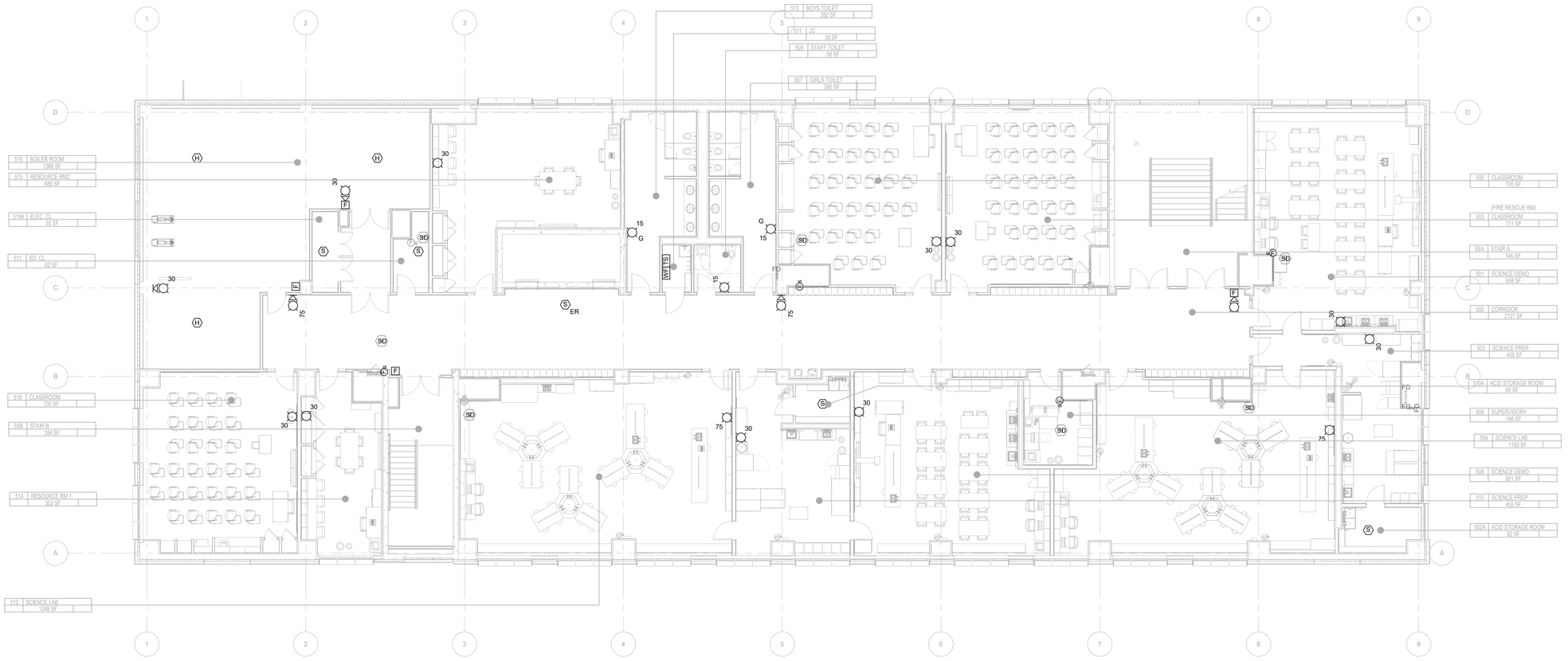

1 FA05_FIFTH FLOOR
FA106.00 SCALE: 1/8" = 1'-0"

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Drawing Title:
FIFTH FLOOR PLAN - FIRE ALARM SYTEMS

Reserved For
DOB NOW Job#

Drawing No.:
FA106.00

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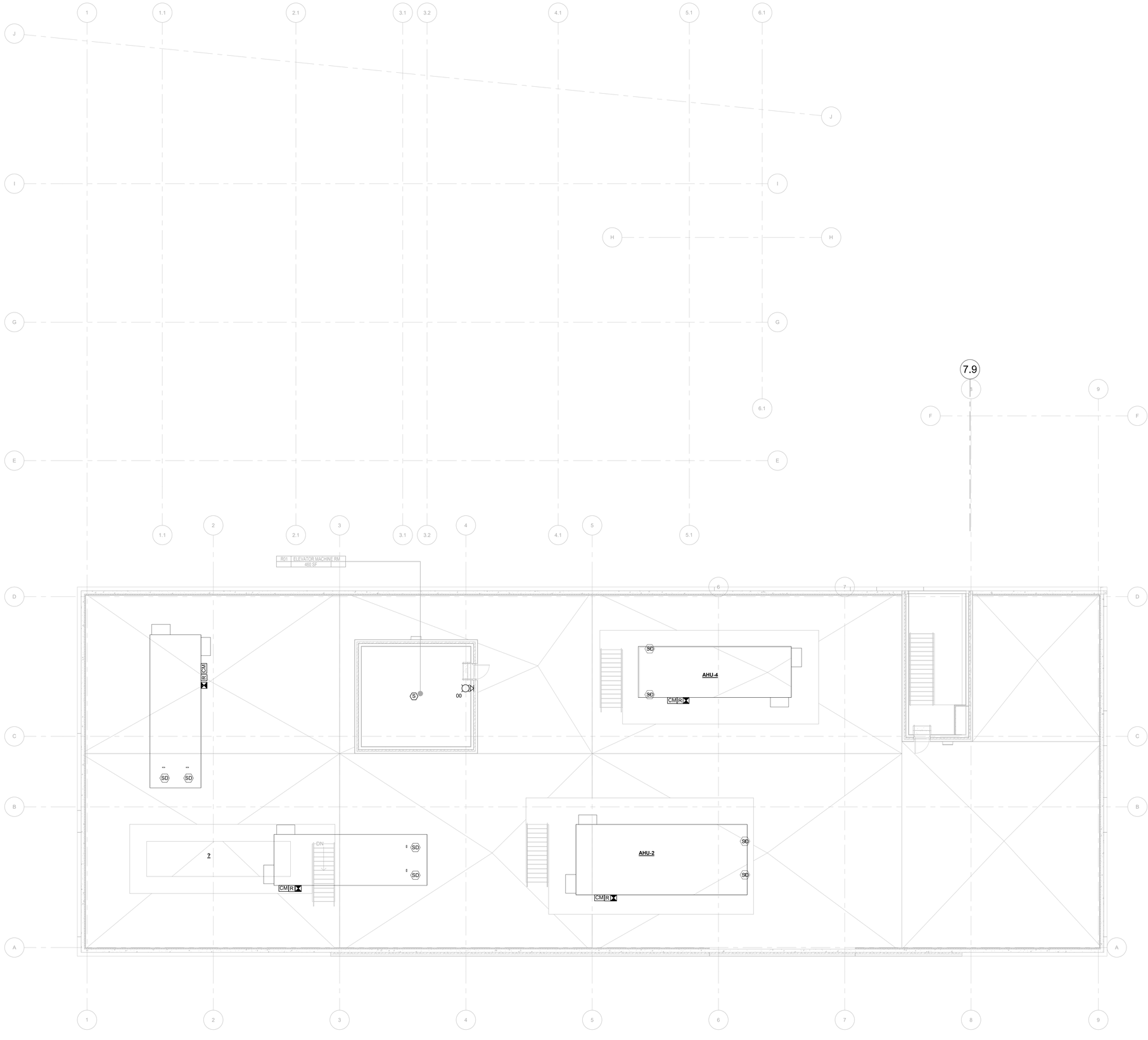

1 FA06_ROOF
FA107.00 SCALE: 1/8" = 1'-0"

PLAN NOTES:

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11. FIRE ALARM AUTOMATIC TRANSFER SWITCH (FA-ATS) IS LOCATED IN A 2-HR RATED ROOM.

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Drawing Title:
ROOF PLAN - FIRE ALARM SYTEMS

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DOB NOW Job#

Drawing No.:
FA107.00

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AIR HANDLING UNITS *

UNIT NO	LOCATION	SERVICE	S.A. CFM	O.A. %	R.A. CFM	SUPPLY AIR FAN DATA								EXHAUST AIR FAN DATA							
						QTY	CFM	E.S.P. IN INCHES OF W.G	TOTAL S.P. IN INCHES OF W.G	RPM	HP	BHP	FAN TYPE	QTY	CFM	E.S.P. IN INCHES OF W.G	TOTAL S.P. IN INCHES OF W.G	RPM	HP	BHP	FAN TYPE/ RPM
AHU–1	ROOF	CLASSROOMS	9,700	3,800	8,800	2	4850	2.85	7.03	2013	10	7.95	PLUG	2	4400	1.5	3.48	2064	5	3.08	PLUG
AHU–2	MECH. ROOM 3RD FLOOR	GYMATORIUM	8,950	67%	7,425	2	4,475	2.5	6.57	1950	10	7.08	PLUG	2	3715	1	2.65	1827	3	2.16	PLUG
AHU–3	MECH. ROOM 3RD FLOOR	CAFE/KITCHEN	6,825	57%	5,580	1	6,825	2.0	6.07	2030	15	9.04	PLUG	1	5580	1	2.65	1757	5	3.36	PLUG

UNIT NO	ENTHALPY WHEEL										RETURN AIR (MIXING)				MIXING POINT				HOT GAS REHEAT COIL				DUAL MODE DX COIL– COOLING MODE							
			(SUMMER) EAT	LAT (SUMMER)		(WINTER) EAT	LAT (WINTER)				SUMMER		WINTER		SUMMER		WINTER							EAT		LAT				
	QTY	SIZE IN	DB F°	DB F°	WB F°	DB F°	DB F°	WB F°	HP	FROST CONTROL	CFM	MIX. TEMP. (DB/WB)	CFM	MIX. TEMP. (DB/WB)	CFM	MIX. TEMP. (DB/WB)	CFM	MIX. TEMP. (DB/WB)	CFM	EAT	LAT	CAPACITY (MBH)	CFM	DB F°	WB F°	DB F°	WB F°	SENSIBLE [MBH]	TOTAL [MBH]	TON
AHU–1	1	04	89	81.6	68.3	13	52.9	43.0	0.50	VFD	5900	78.0/65.0	5900	72/54.36	9700	79.50/66.43	9,700	64.6/50.3	9700	55.0	65.0	107	9700	79.5	66.43	55	55	262	342	28.5
AHU–2	1	04	89	82.1	68.9	13	50.8	41.1	0.25	VFD	2980	78/65.0	2980	72/54.36	8,950	80.80/67.69	8,950	57.9/46.0	8,950	55.0	65.0	99	8,950	80.8	67.69	55	55	255	356	29.7
AHU–3	1										2960	78/65.0	2960	72/54.36	6,825	84.30/69.77	6,825	38.6/33.6	6,825	55.0	65.0	76	6,825	84.3	69.77	55	55	220	323	27

AIR HANDLING UNITS (CONTINUATION)

DUAL MODE DX COIL– HEATING MODE					ELECTRIC HEATER– SIZED FOR MIN OA			AIR SOURCE HEAT PUMP							PRE FILTERS	FINAL FILTERS	ELECTRICAL			ESTIMATED ELECTRICAL DATA						MODEL NO.	REMARKS
CFM	EAT DB F°	LAT DB F°	AMBIENT TEMP [F°]	TOTAL [MBH]	EAT	LAT	KW	MODEL	QUANTITY	NOMINAL TONNAGE	CIRCUIT QUANTITY	DESIGN AMBIENT TEM. COOLING	DESIGN AMBIENT TEM. HEATING	COMPRESSOR MODULATION	SA & EA	SA	GFI	LIGHTS	POWERED BY	V/PH/HZ	FLA	MCA	MOP	COOLING IEER (SEER)	HEATING COP (HSPF		
9700	65	85.0	15	214	64.6	85.0	64		1	40	4	89	15	YES	2"–30%	2"–MERV13	2	4		208/3/60	457	511	600	16.2	4.26		SEE NOTES
8,950	58	85.0	15	262	57.9	85.0	78	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2"–30%	2"–MERV13	2	8		208/3/60	307	329	350	N/A	N/A		SEE NOTES
6,825	39	85.0	15	343	38.6	85.0	102	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2"–30%	2"–MERV13	2	8		208/3/60	355	373	400	N/A	N/A		SEE NOTES

NOTES:
1. ALL AHU FAN MOTORS SHALL COMPLY WITH THE ASHRAE 90.1 2013 EFFICIENCIES REQUIREMENT.
2. COILS SHALL HAVE COPPER TUBES WITH ALUMINUM FINS (MAX. 14 FINS/IN.)
3. UNITS SHALL BE PROVIDED WITH 2" PLEATED PRE FILTER MERV 8 AND 12" MERV–13 PLEATED FINAL FILTER FOR SUPPLY AIR STREAM AND 2" PLEATED PRE FILTER MERV 8 UPSTREAM OF THE ENERGY WHEEL.
4. PROVIDE SEAMLESS STAINLESS STEEL DRAIN PANS.
5. SPECS AND DRAWINGS FOR ADDITIONAL INFORMATION.
6. UNITS SHALL BE PROVIDED WITH SINGLE POINT POWER SUPPLY CONNECTION WITH UNIT MOUNTED MAIN ,SAFETY DISCONNECT SWITCH, CONTROL PANEL, GFI RECEPTACLES AND LAMPS. DISCONNECT SWITCH MAX. HEIGHT IS 79" TO ITS CENTER LINE.
7. ALL AHUS (SUPPLY & EXHAUST SECTIONS) SHALL BE PROVIDED WITH SMOKE DETECTORS
8. SMOKE DETECTORS FOR SUPPLY AND EXHAUST SECTIONS SHALL BE FURNISHED BY ELECTRICAL CONTRACTOR FOR FACTORY INSTALLATION AND WIRING.
9. ALL AHU FANS (SUPPLY & RETURN) SHALL BE PROVIDED WITH VARIABLE FREQUENCY DRIVE.
10. ACOUSTICAL PERFORMANCE FOR ALL THE UNITS SHALL BE AS INDICATED IN SPECIFICATION #15852 & 15935
11. OVERALL DIMENSIONS DO NOT INCLUDE OA INLET & SPILL AIR HOODS.
12. ALL TOTAL STATIC PRESSURES SHALL INCLUDE DX COIL, HOT GAS REHEAT COIL & DIRTY FILTER (ALL FILTERS) ALLOWANCES.
13. MANUFACTURER SHALL PROVIDE AHUs WITH KNOCK–OUTS AT BOTTOM OF UNITS TO ALLOW FOR POWER FEED FROM THE BOTTOM.
14. PROVIDE SMOKE DAMPERS FOR SUPPLY AND RETURN SECTIONS OF AHU–1, AHU–2 & AHU–3
15. PROVIDE VIBRATION ISOLATORS ON THE EXTERIOR OF ALL UNITS.
16. PROVIDE RUBBER ISOLATORS FOR ALL FANS AND COMPRESSORS.
17. REFRIGERANT SHALL BE 410A.
18. UNITS SHALL BE PROVIDED WITH OEM CONTROLS.

FAN SCHEDULE *

UNIT NO.	SERVICE	LOCATION	TOTAL AIR CAP. CFM	EXTERNAL S.P. IN INCHES OF W.G.	MOTOR HP	BHP	RPM	TYPE OF FAN	TYPE OF DRIVE	INTERLOCK WITH	DAMPER TYPE	V/PH/HZ	MANUFACTURER	MODEL No	REMARKS
KEF–1	136–KITCHEN HOOD	GYM ROOF	3,650	2.0	3	2.0	1,212	CENTRIFUGAL UPBLAST	BELT	DIETICIAN'S SWITCH	N/A	208/60/3	[redacted]	[redacted]	SEE NOTES
KEF–2	136, 136B – KITCHEN GENERAL EXHAUST	MECH. ROOM 3RD FLOOR	1,650	1.25	3/4	0.59	1,386	UTILITY	BELT	SCHEDULED VIA BMS	MOTORIZED	208/60/3		[redacted]	
KEF–3	136G–CAN WASH ROOM	MECH. ROOM 3RD FLOOR	125	0.75	1/4	0.09	1,518	UTILITY	BELT	SCHEDULED VIA BMS	BACKDRAFT	208/60/3		[redacted]	
KEF–4	C21D, C21D–FOOD & NON–FOOD STORAGE	CELLAR	300	1.0	1/4	–	1,521	INLINE	DIRECT	SCHEDULED VIA BMS	MOTORIZED	208/60/1		[redacted]	
EF–1	134–REFUSE./RECYCLE RM.	CELLAR	475	0.75	1/4	–	1,480	INLINE	DIRECT	24/7 OPERATION	MOTORIZED	208/60/1		[redacted]	
EF–2	C22–ELECTRICAL METER RM.	CELLAR	525	0.75	1/4	–	1,547	INLINE	DIRECT	TEMPERATURE SENSOR	MOTORIZED	208/60/1		[redacted]	
EF–3	C02–WATER METER/PUMP RM.	CELLAR	475	1.0	1/3	–	1,630	CEILING	DIRECT	SCHEDULED VIA BMS	MOTORIZED	208/60/1		[redacted]	
EF–4	102–ACID WASTE ROOM	1ST FLOOR	475	1.0	1/3	–	1,630	CEILING	DIRECT	24/7 OPERATION	MOTORIZED	208/60/1		[redacted]	
EF–5	205B, 205C–LOCKER ROOMS	MECH. ROOM 3RD FLOOR	770	1.0	1/3	0.23	1,565	UTILITY	BELT	SCHEDULED VIA BMS	MOTORIZED	208/60/3		[redacted]	
EF–6	205I–VISITING TEAM LOCKER RM.	MECH. ROOM 3RD FLOOR	225	0.75	1/4	0.12	1,692	UTILITY	BELT	SCHEDULED VIA BMS	BACKDRAFT	208/60/3		[redacted]	
EF–7	140–GROUND EQUIP. RM.	1ST FLOOR	150	0.5	1/15	–	1,218	CEILING	DIRECT	SCHEDULED VIA BMS	BACKDRAFT	208/60/1		[redacted]	
EF–8	519–BOILER ROOM	ROOF	1,400	0.375	1/3	0.21	1,175	CENTRIFUGAL DOWNBLAST	BELT	TEMPERATURE SENSOR	MOTORIZED	208/60/3		[redacted]	
EF–9	402A, 502A–ACID STOR. RM.	ROOF	200	0.5	1/3	0.09	1,395	CENTRIFUGAL DOWNBLAST	BELT	24/7 OPERATION	BACKDRAFT	208/60/3		[redacted]	
EF–10	510A–ACID STOR. RM.	MECH. ROOM 3RD FLOOR	100	0.04	1/3	0.04	999	CENTRIFUGAL DOWNBLAST	BELT	24/7 OPERATION	BACKDRAFT	208/60/3		[redacted]	
TEF–1	TOILETS	ROOF	4,150	1.5	2	1.89	1,025	CENTRIFUGAL DOWNBLAST	BELT	SCHEDULED VIA BMS	MOTORIZED	208/60/3		[redacted]	
TEF–2	136C–KITCHEN STAFF TOILET	MECH. ROOM 3RD FLOOR	75	0.75	1/15	–	1,455	INLINE	BELT	SCHEDULED VIA BMS	BACKDRAFT	208/60/1		[redacted]	
TEF–3	202A, 204–TOILETS	ROOF	150	0.75	1/6	0.1	1,433	CENTRIFUGAL DOWNBLAST	BELT	SCHEDULED VIA BMS	BACKDRAFT	208/60/1		[redacted]	
SPF–1	CELLAR SMOKE PURGE FAN	CELLAR	20,250	1.5	15	8.92	1,770	INLINE	DIRECT	SMOKE PURGE	SEE PLANS	208/60/3		[redacted]	
SPF–2	GYM SMOKE PURGE FAN	GYM ROOF	26,000	1.0	15	12.33	1,770	ROOF	DIRECT	SMOKE PURGE	SEE PLANS	208/60/3		[redacted]	
FHE–1	404–SCIENCE LAB	ROOF	1,150	1.25	1 1/2	1.06	3,034	LAB	BELT	SCHEDULED VIA BMS (AHU–2)	MOTORIZED	208/60/3		[redacted]	
FHE–2	402–SCIENCE PREP	ROOF	750	1.25	1	0.75	2,746	LAB	BELT		MOTORIZED	208/60/3		[redacted]	
FHE–3	502–SCIENCE PREP	ROOF	750	1.25	1	0.75	2,746	LAB	BELT		MOTORIZED	208/60/3		[redacted]	
FHE–4	504–SCIENCE LAB	ROOF	1,150	1.25	1 1/2	1.06	3,034	LAB	BELT		MOTORIZED	208/60/3		[redacted]	
FHE–5	512–SCIENCE LAB	ROOF	1,150	1.25	1 1/2	1.06	3,034	LAB	BELT		MOTORIZED	208/60/3		[redacted]	
FHE–6	510–SCIENCE PREP	ROOF	750	1.25	1	0.75	2,746	LAB	BELT		MOTORIZED	208/60/3		[redacted]	

NOTES:
1. ALL ROOF MOUNTED FANS TO BE PROVIDED WITH 24" HEIGHT PREFABRICATED ROOF CURB AND 12" HIGH EXTENSION CURB WITH GASKETED ACCESS DOOR.
2. KEF–1 SHALL BE "UL" LISTED FOR GREASE REMOVAL AND PROVIDED WITH GREASE TROUGH, HEAVY DUTY REGREASABLE BEARINGS IN CAST IRON PILLOWBLOCK HOUSINGS.
3. ALL INLINE FANS SHALL BE PROVIDED WITH BELT GUARD, INLET GUARD, VIBRATION ISOLATORS.
4. KEF–2 SHALL RUN WHEN AHU–4 IS RUNNING AND WHILE KEF–1 IS OFF.
5. ALL FANS SHALL BE PROVIDED WITH DISCONNECT SWITCH.
6. FANS SHALL BE PROVIDED WITH HIGH EFFICIENCY MOTOR THAT MEET THE REQUIREMENTS OF THE 2016 NYCECC SECTION C403.4.4.4 AND ASHRAE 90.1–2013. FAN MOTORS LESS THAN 1 HP MUST BE AT LEAST 70% EFFICIENT.
7. FANS SF–1 & SF–2 SHOWN ON DWGS. M107.00 & M207.00 ARE PROVIDED BY OTHERS. PLEASE SEE DWGS. H201.00–H208.00 FOR DETAILED INFORMATION.
8. ALL MOTORIZED DAMPERS SHALL MATCH THE MOTOR VOLTAGE OR BE THE TYPE THAT IS CAPABLE OF DIRECT WIRING FROM THE FAN MOTOR NO MATTER WHAT THE VOLTAGE OF THE FAN MOTOR. THE MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE WIRING OF THIS DAMPER MOTOR FROM THE FAN MOTOR. NO SEPARATE CIRCUIT SHALL BE REQUIRED TO WIRE THE MOTORIZED DAMPER.
9. SPF–1, SPF–2, SPF–3 & SPF–4 SHALL BE UL LISTED FOR POWER VENTS FOR SMOKE CONTROL SYSTEMS.
10. SEE SPECS FOR ADDITIONAL INFORMATION.
11. FAN SHALL HAVE A MOTORIZED DAMPER (EXCEPT KEF–1). ALL MOTORIZED DAMPER FOR EXHAUST FANS SHALL BE PROVIDED BY THE FAN MANUFACTURER AND POWER FEED THE DAMPER MOTOR FROM THE FAN.
12. ALL FANS WITH MOTORS IN EXCESS OF $\frac{1}{2}$ HP LOCATED ON THE ROOF SHALL BE PROVIDED WITH ROOF CURB ISOLATION RAILS BETWEEN THE FAN CURB AND FAN'S CURB CAP. ISOLATORS SHALL PROVIDE A MINIMUM EFFICIENCY OF 90% WITH MAXIMUM DEFLECTION OF 2 INCHES.
13. FANS WITH AN AIR FLOW RATE LESS THAN 300 CFM SHALL HAVE A GRAVITY TYPE DAMPER. FAN WITH AN AIR FLOW RATE 300 CFM AND GREATER SHALL HAVE A MOTORIZED DAMPER. MOTORIZED DAMPER SHALL HAVE THE POWER FROM ELECTRICAL FEED FOR RESPECTIVE FAN. (TYPICAL ALL FANS)

AIR HANDLING UNITS CONDENSING UNITS *

TAG	LOCATION	SERVICE	TOTAL CAPACITY (BTU/H)		CORRECTED CAPACITY (BTU/H)		CORRECTED POWER INPUT (KW)		OUTDOOR TEMPERATURE (F)			EFFICIENCY		REFRIGERANT
			COOLING	HEATING	COOLING	HEATING	COOLING	HEATING	COOLING DBT	COOLING WBT	HEATING DBT	COOLING IEER (SEER)	HEATING COP (HSPF)	
AHU–5–ACCU–1–1	ROOF	AHU–5	119700	135000	130007	148571	8.4	13.6	91.9	73.9	10.9	29.6	3.97	R410A
AHU–5–ACCU–1–2	ROOF	AHU–5	119700	135000	130007	148571	8.4	13.6	91.9	73.9	10.9	29.6	3.97	R410A
AHU–5–ACCU–1–3	ROOF	AHU–5	119700	135000	130007	148571	8.4	13.6	91.9	73.9	10.9	29.6	3.97	R410A
AHU–6–ACCU–1–1	ROOF	AHU–6	119700	135000	127822	147974	8.2	13.8	91.9	73.9	10.9	29.6	3.97	R410A
AHU–6–ACCU–1–2	ROOF	AHU–6	119700	135000	127822	147974	8.2	13.8	91.9	73.9	10.9	29.6	3.97	R410A
AHU–6–ACCU–1–3	ROOF	AHU–6	119700	135000	127822	147974	8.2	13.8	91.9	73.9	10.9	29.6	3.97	R410A

AIR HANDLING UNITS CONDENSING UNITS

PIPING CONNECTIONS (INCH)		POWER						SOUND POWER	MODEL NAME	TYPE	MANUFACTURER
LIQUID	LP GAS	HP GAS	VOLTS	PHASE	HEATINGHZ	MCA (A)	MOP (A)				
1/2	1+1/8	3/4	208	3	60	30.9	40	79	[redacted]	MULTIV 5	[redacted]
1/2	1+1/8	3/4	208	3	60	30.9	40	79	[redacted]	MULTIV 5	[redacted]
1/2	1+1/8	3/4	208	3	60	30.9	40	79	[redacted]	MULTIV 5	[redacted]
1/2	1+1/8	3/4	208	3	60	30.9	40	79	[redacted]	MULTIV 5	[redacted]
1/2	1+1/8	3/4	208	3	60	30.9	40	79	[redacted]	MULTIV 5	[redacted]
1/2	1+1/8	3/4	208	3	60	30.9	40	79	[redacted]	MULTIV 5	[redacted]

Multi V HR Boxes

Location	Tag	Model Number	Quantity	Power			
				Volts	Phase	Hz	RLA
ACCU-1-1_AHU-2	HR-BOX-ACCU-1-1_AHU-2	[redacted]	1	208 / 230V	1Ph	60Hz	0.1
ACCU-1-1_AHU-2	HR-BOX-ACCU-1-1_AHU-2	[redacted]	1	208 / 230V	1Ph	60Hz	0.1
ACCU-1-2_AHU-2	HR-BOX-ACCU-1-1_AHU-2	[redacted]	1	208 / 230V	1Ph	60Hz	0.1
ACCU-1-2_AHU-2	HR-BOX-ACCU-1-1_AHU-2	[redacted]	1	208 / 230V	1Ph	60Hz	0.1
ACCU-1-3_AHU-2	HR-BOX-ACCU-1-1_AHU-2	[redacted]	1	208 / 230V	1Ph	60Hz	0.1
ACCU-1-3_AHU-2	HR-BOX-ACCU-1-1_AHU-2	[redacted]	1	208 / 230V	1Ph	60Hz	0.1
ACCU-1-1_AHU-3	HR-BOX-ACCU-1-1_AHU-3	[redacted]	1	208 / 230V	1Ph	60Hz	0.1
ACCU-1-1_AHU-3	HR-BOX-ACCU-1-1_AHU-3	[redacted]	1	208 / 230V	1Ph	60Hz	0.1
ACCU-1-2_AHU-3	HR-BOX-ACCU-1-1_AHU-3	[redacted]	1	208 / 230V	1Ph	60Hz	0.1
ACCU-1-2_AHU-3	HR-BOX-ACCU-1-1_AHU-3	[redacted]	1	208 / 230V	1Ph	60Hz	0.1
ACCU-1-3_AHU-3	HR-BOX-ACCU-1-1_AHU-3	[redacted]	1	208 / 230V	1Ph	60Hz	0.1
ACCU-1-3_AHU-3	HR-BOX-ACCU-1-1_AHU-3	[redacted]	1	208 / 230V	1Ph	60Hz	0.1

DUCT SILENCER SCHEDULE

UNIT NO	SERVICE	LOCATION	OCTAVE BAND								UNIT DIMENSIONS W x H x L INCHES	CFM	MAX. FACE VELOCITY FPM	MAX. S.P.D. IN.W.G.	MANUFACTURER BASED ON	MODEL NO
			1	2	3	4	5	6	7							
			CENTER FREQUENCY – HZ													
			63	125	250	500	1000	2000	4000							
ST–1S	AHU–1 SUPPLY	5TH FLOOR													[redacted]	[redacted]
ST–2S	AHU–2 SUPPLY	3RD FLOOR													[redacted]	[redacted]
ST–3S	AHU–3 SUPPLY	3RD FLOOR													[redacted]	[redacted]
ST–1R	AHU–1 RETUNR	5TH FLOOR													[redacted]	[redacted]
ST–2R	AHU–2 RETURN	3RD FLOOR													[redacted]	[redacted]
ST–3R	AHU–3 RETURN	3RD FLOOR														

NOTES:
1. ALL SILENCERS SHALL HAVE INERT AND VERMIN–PROOF FIBROUS FILL MATERIAL.
2. ALL SILENCERS SHALL BE CONSTRUCTED OF 18 GA. OR HEAVIER SHEET STEEL.
3. FOR NON BASIS OF DESIGN PRODUCTS PROVIDED, CONTRACTOR IS RESPONSIBLE TO ENSURE THE REQUIRED NOISE CONTROL SOLUTION IS DELIVERED TO MEET SPACE NC CRITERIA.
4. SUBMIT A FABRICATION DRAWING SHOWING THE ACTUAL SHAPE AND DIMENSION OF THE CUSTOM MADE SILENCER THAT WAS APPROVED BY THE SILENCER MANUFACTURER. SILENCER SOUND DATA SHALL BE APPROVED BY THE ACOUSTICAL CONSULTANT BEFORE FABRICATION. FOR ADDITIONAL DETAILS OF THE SILENCERS, REFER TO SPECIFICATION 15891.

APPLICATIONS FOR SERVICE EQUIPMENT PERMITS:

CONTRACTOR SHALL FILE FOR AND OBTAIN SERVICE EQUIPMENT PERMITS FOR ALL EQUIPMENT NOTED WITH ASTERISK (*) IN ACCORDANCE WITH TITLE 28, SECTION MC 105 OF THE NEW YORK CITY BUILDING CODE.

COMPLIANCE WITH ASHRAE 90.1 2013 NOTE:

TO THE BEST OF MY KNOWLEDGE, BELIEF AND PROFESSIONAL JUDGMENT, THESE PLANS AND SPECIFICATIONS ARE IN COMPLIANCE WITH THE ASHRAE 90.1 2013

REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION

[redacted]

Drawing Title:
HVAC EQUIPMENT SCHEDULE
SHEET #1

Drawing No.:
M003.00

Sheets in Contract Set:
OF

Sheets in DOB Set:
OF

CAD

ELECTRICAL CABINET UNIT HEATERS SCHEDULE

UNIT NO.	MANUFACTURER	MODEL NO.	SERVICE	LOCATION	CATALOG TOTAL HEAT CAPACITY LOW FAN SPEED (MBH)	CORRECTION FACTOR	ACTUAL TOTAL HEAT CAPACITY (MBH)	LOW FAN SPEED CFM	FAN ELECTRICAL DATA					LENGTH x HEIGHT x DEPTH	REMARKS
									V/PH/HZ	AMPS	FAN HP	RPM	WATTAGE (KW)		
CUH-C.1			C13 STAFF TOILER	CELLAR	12.9	.571	7.3	185	208/1/60	15.4	1/15	1050 (HIGH)	3	33"x25"x9"	CEILING MOUNTED
CUH-C.2			C16 SHOWER ROOM	CELLAR	12.9	.571	7.3	185	208/1/60	15.4	1/15	1050 (HIGH)	3	33"x25"x9"	CEILING MOUNTED
CUH-C.3			C14 SHOWER ROOM	CELLAR	12.9	.571	7.3	185	208/1/60	15.4	1/15	1050 (HIGH)	3	33"x25"x9"	CEILING MOUNTED
CUH-C.4			CORRIDOR	CELLAR	25.8	.571	14.7	230	208/1/60	25	1/15	1050 (HIGH)	5	33"x25"x9"	CEILING MOUNTED
CUH-C.5			CORRIDOR/STAIR A	CELLAR	25.8	.571	14.7	230	208/1/60	25	1/15	1050 (HIGH)	5	33"x25"x9"	CEILING MOUNTED
CUH-C.6			C17 REFUSE	CELLAR	25.8	.571	14.7	230	208/1/60	25	1/15	1050 (HIGH)	5	33"x25"x9"	CEILING MOUNTED
CUH-1.1			VESTIBULE/CAFETERIA	CELLAR	25.8	.571	14.7	230	208/1/60	25	1/15	1050 (HIGH)	5	33"x25"x9"	CEILING MOUNTED
CUH-1.2			CORRIDOR/STAIR A	CELLAR	25.8	.571	14.7	230	208/1/60	25	1/15	1050 (HIGH)	5	33"x25"x9"	CEILING MOUNTED
CUH-1.3			STAIR B	CELLAR	12.9	.571	7.3	185	208/1/60	15.4	1/15	1050 (HIGH)	3	33"x25"x9"	CEILING MOUNTED
CUH-1.4			118 GIRL'S TOILET	CELLAR	12.9	.571	7.3	185	208/1/60	15.4	1/15	1050 (HIGH)	3	33"x25"x9"	CEILING MOUNTED
CUH-1.5			116 BOY'S TOILET	CELLAR	12.9	.571	7.3	185	208/1/60	15.4	1/15	1050 (HIGH)	3	33"x25"x9"	CEILING MOUNTED
CUH-1.6			CORRIDOR	CELLAR	12.9	.571	7.3	185	208/1/60	15.4	1/15	1050 (HIGH)	3	33"x25"x9"	CEILING MOUNTED
CUH-1.7			STAIR C	CELLAR	12.9	.571	7.3	185	208/1/60	15.4	1/15	1050 (HIGH)	3	33"x25"x9"	CEILING MOUNTED
CUH-1.8			115 VESTIBULE	CELLAR	12.9	.571	7.3	185	208/1/60	15.4	1/15	1050 (HIGH)	3	33"x25"x9"	CEILING MOUNTED
CUH-1.9			111 VESTIBULE	CELLAR	12.9	.571	7.3	185	208/1/60	15.4	1/15	1050 (HIGH)	3	33"x25"x9"	CEILING MOUNTED
CUH-2.1			STAIR A	SECOND FLOOR	25.8	.571	14.7	230	208/1/60	25	1/15	1050 (HIGH)	5	33"x25"x9"	CEILING MOUNTED
CUH-2.2			214B BOY'S TOILET	SECOND FLOOR	25.8	.571	14.7	230	208/1/60	25	1/15	1050 (HIGH)	5	33"x25"x9"	CEILING MOUNTED
CUH-2.3			213 STAFF TOILET	SECOND FLOOR	12.9	.571	7.3	185	208/1/60	15.4	1/15	1050 (HIGH)	3	33"x25"x9"	CEILING MOUNTED
CUH-2.4			210G GIRL'S TOILET	SECOND FLOOR	12.9	.571	7.3	185	208/1/60	15.4	1/15	1050 (HIGH)	3	33"x25"x9"	CEILING MOUNTED
CUH-2.5			STAIR B	SECOND FLOOR	25.8	.571	14.7	230	208/1/60	25	1/15	1050 (HIGH)	5	33"x25"x9"	CEILING MOUNTED
CUH-2.6			CORRIDOR	SECOND FLOOR	25.8	.571	14.7	230	208/1/60	25	1/15	1050 (HIGH)	5	33"x25"x9"	CEILING MOUNTED
CUH-2.7			STAIR C	SECOND FLOOR	25.8	.571	14.7	230	208/1/60	25	1/15	1050 (HIGH)	5	33"x25"x9"	CEILING MOUNTED
CUH-2.8			205C GIRLS LOCKER	SECOND FLOOR	25.8	.571	14.7	230	208/1/60	25	1/15	1050 (HIGH)	5	33"x25"x9"	CEILING MOUNTED
CUH-2.9			205C GIRLS LOCKER	SECOND FLOOR	25.8	.571	14.7	230	208/1/60	25	1/15	1050 (HIGH)	5	33"x25"x9"	CEILING MOUNTED
CUH-2.10			205B BOYS LOCKER	SECOND FLOOR	25.8	.571	14.7	230	208/1/60	25	1/15	1050 (HIGH)	5	33"x25"x9"	CEILING MOUNTED
CUH-2.11			205B BOYS LOCKER	SECOND FLOOR	25.8	.571	14.7	230	208/1/60	25	1/15	1050 (HIGH)	5	33"x25"x9"	CEILING MOUNTED
CUH-2.12			205B BOYS LOCKER	SECOND FLOOR	25.8	.571	14.7	230	208/1/60	25	1/15	1050 (HIGH)	5	33"x25"x9"	CEILING MOUNTED
CUH-2.13			205I VISITING TEAM LOCKER	SECOND FLOOR	25.8	.571	14.7	230	208/1/60	25	1/15	1050 (HIGH)	5	33"x25"x9"	CEILING MOUNTED
CUH-2.14			CORRIDOR	SECOND FLOOR	25.8	.571	14.7	230	208/1/60	25	1/15	1050 (HIGH)	5	33"x25"x9"	CEILING MOUNTED
CUH-3.1			STAIR B	THIRD FLOOR	25.8	.571	14.7	230	208/1/60	25	1/15	1050 (HIGH)	5	33"x25"x9"	CEILING MOUNTED
CUH-3.2			STAIR A	THIRD FLOOR	25.8	.571	14.7	230	208/1/60	25	1/15	1050 (HIGH)	5	33"x25"x9"	CEILING MOUNTED
CUH-3.3			CORRIDOR	THIRD FLOOR	12.9	.571	7.3	185	208/1/60	15.4	1/15	1050 (HIGH)	3	33"x25"x9"	CEILING MOUNTED
CUH-3.4			314B BOY'S TOILET	THIRD FLOOR	12.9	.571	7.3	185	208/1/60	15.4	1/15	1050 (HIGH)	3	33"x25"x9"	CEILING MOUNTED
CUH-3.5			310G GIRL'S TOILET	THIRD FLOOR	25.8	.571	14.7	230	208/1/60	25	1/15	1050 (HIGH)	5	33"x25"x9"	CEILING MOUNTED
CUH-3.6			STAIR A	THIRD FLOOR	12.9	.571	7.3	185	208/1/60	15.4	1/15	1050 (HIGH)	5	33"x25"x9"	CEILING MOUNTED
CUH-3.7			STAIR C	THIRD FLOOR	12.9	.571	7.3	185	208/1/60	15.4	1/15	1050 (HIGH)	5	33"x25"x9"	CEILING MOUNTED
CUH-3.8			CORRIDOR	THIRD FLOOR	12.9	.571	7.3	185	208/1/60	15.4	1/15	1050 (HIGH)	3	33"x25"x9"	CEILING MOUNTED
CUH-3.9			CORRIDOR	THIRD FLOOR	12.9	.571	7.3	185	208/1/60	15.4	1/15	1050 (HIGH)	3	33"x25"x9"	CEILING MOUNTED
CUH-4.1			CORRIDOR	FOURTH FLOOR	25.8	.571	14.7	230	208/1/60	25	1/15	1050 (HIGH)	5	33"x25"x9"	CEILING MOUNTED
CUH-4.2			STAIR A	FOURTH FLOOR	25.8	.571	14.7	230	208/1/60	25	1/15	1050 (HIGH)	5	33"x25"x9"	CEILING MOUNTED
CUH-4.3			STAIR B	FOURTH FLOOR	12.9	.571	7.3	185	208/1/60	15.4	1/15	1050 (HIGH)	5	33"x25"x9"	CEILING MOUNTED
CUH-4.4			414B BOY'S TOILET	FOURTH FLOOR	12.9	.571	7.3	185	208/1/60	15.4	1/15	1050 (HIGH)	3	33"x25"x9"	CEILING MOUNTED
CUH-4.5			410G GIRL'S TOILET	FOURTH FLOOR	25.8	.571	14.7	230	208/1/60	25	1/15	1050 (HIGH)	5	33"x25"x9"	CEILING MOUNTED
CUH-4.6			CORRIDOR	FOURTH FLOOR	12.9	.571	7.3	185	208/1/60	15.4	1/15	1050 (HIGH)	3	33"x25"x9"	CEILING MOUNTED
CUH-4.7			STAIR C	FOURTH FLOOR	12.9	.571	7.3	185	208/1/60	15.4	1/15	1050 (HIGH)	5	33"x25"x9"	CEILING MOUNTED
CUH-5.1			STAIR B	FIFTH FLOOR	12.9	.571	7.3	185	208/1/60	15.4	1/15	1050 (HIGH)	5	33"x25"x9"	CEILING MOUNTED
CUH-5.2			513 BOY'S TOILET	FIFTH FLOOR	12.9	.571	7.3	185	208/1/60	15.4	1/15	1050 (HIGH)	3	33"x25"x9"	CEILING MOUNTED
CUH-5.3			507 GIRL'S TOILET	FIFTH FLOOR	12.9	.571	7.3	185	208/1/60	15.4	1/15	1050 (HIGH)	3	33"x25"x9"	CEILING MOUNTED
CUH-5.4			509 STAFF TOILET	FIFTH FLOOR	12.9	.571	7.3	185	208/1/60	15.4	1/15	1050 (HIGH)	3	33"x25"x9"	CEILING MOUNTED
CUH-5.5			STAIR A	FIFTH FLOOR	12.9	.571	7.3	185	208/1/60	15.4	1/15	1050 (HIGH)	5	33"x25"x9"	CEILING MOUNTED

NOTES:
1. ALL CABINET UNIT HEATERS TO BE PROVIDED WITH ALUMINUM GRILLE, AQUASTAT CONTROL, DISCONNECT SWITCHES, EXTRA SET OF FILTERS, LIMITED ACCESS FASTENERS.
2. HOT WATER CABINET UNIT HEATERS SHALL BE CONTROLLED BY BACnet THERMOSTATS AS PER SPECIFICATION SECTION 15836.
3. PROVIDE COLOR CHART. COLOR TO BE SELECTED BY ARCHITECT.
4. PROVIDE MOTOR STARTER AND DISCONNECT SWITCH WITH THERMAL OVERLOAD.
5. PROVIDE (1) EXTRA THROWAWAY FILTER FOR ALL CUH.

SCHEDULE OF ELECTRIC UNIT HEATERS

UNIT NO.	SERVICE LOCATION	WATTS	LENGTH x HEIGHT x DEPTH	CFM	D.T. (°F)	VOLTS/PH/HZ	MANUFACTURER	MODEL No.	REMARKS
EUH-C.1	ELECTRICAL ROOM	5 KW	14 9/32"x17 5/8"x9 5/8"	350	45	208/3/60			SEE NOTES 1, 2,
EUH-C.2	WATER METER ROOM	5 KW	14 9/32"x17 5/8"x9 5/8"	350	45	208/3/60			SEE NOTES 1, 2,
EUH-1.1	WATER METER ROOM	5 KW	14 9/32"x17 5/8"x9 5/8"	350	45	208/3/60			SEE NOTES 1, 2,
EUH-1.2	GRND EQUIP. STO.	5 KW	14 9/32"x17 5/8"x9 5/8"	350	45	208/3/60			SEE NOTES 1, 2,
EUH-1.3	ELECTRICAL ROOM	5 KW	14 9/32"x17 5/8"x9 5/8"	350	45	208/3/60			SEE NOTES 1, 2,
EUH-3.1	MECHANICAL ROOM	5 KW	14 9/32"x17 5/8"x9 5/8"	350	45	208/3/60			SEE NOTES 1, 2,
EUH-3.2	MECHANICAL ROOM	5 KW	14 9/32"x17 5/8"x9 5/8"	350	45	208/3/60			SEE NOTES 1, 2,
EUH-3.3	MECHANICAL ROOM	5 KW	14 9/32"x17 5/8"x9 5/8"	350	45	208/3/60			SEE NOTES 1, 2,
EUH-4.1	BOILER ROOM	7.5 KW	21 5/8"x24 3/8"x9 5/8"	350	45	208/3/60			SEE NOTES 1, 2,

NOTES:
1. UNIT HEATERS SHALL BE PROVIDED WITH 24V CONTROL TRANSFORMER, BACnet WALL MOUNTED THERMOSTATS OR SENSORS. (SEE FLOOR PLANS).
2. ALL ELECTRIC UNIT HEATERS TO BE PROVIDED WITH DISCONNECT SWITCHES, AND MOUNTING BRACKETS.
3. SEE SPECS & DRAWINGS FOR ADDITIONAL INFORMATION.

ELECTRICAL CONVECTOR SCHEDULE

UNIT NO.	SERVICE	EAT (°F)	ACTUAL HEATING CAPACITY (MBH)	WATTAGE (KW)	VOLT	PHASE	AMP	CONTROL	HEIGHTxDEPTH (IN.)	LENGTH (IN.)	MODEL NO.	MANUFACTURER	REMARKS SEE NOTES
CONV-1.1	1ST FLOOR 107C STUDENTS TOILET	65	7.25	2500	208	1	12.02	R9	20"x5"	60"			FULLY RECESSED
CONV-1.2	1ST FLOOR 131 KITCHEN	65	7.25	2500	208	1	12.02	R9	20"x5"	60"			FULLY RECESSED
CONV-1.3	1ST FLOOR 131 KITCHEN	65	3.9	1250	208	1	6.01	R9	20"x5"	60"			FULLY RECESSED
CONV-1.4	1ST FLOOR 131 KITCHEN	65	7.25	2500	208	1	12.02	R9	20"x5"	60"			FULLY RECESSED
CONV-1.5	1ST FLOOR 131 KITCHEN	65	7.25	2500	208	1	12.02	R9	20"x5"	60"			FULLY RECESSED
CONV-2.1	2ND FLOOR 202 GYMATORIUM	65	2.8	1250	208	1	6.01	R9	20"x5"	60"			FULLY RECESSED
CONV-2.2	2ND FLOOR 202 GYMATORIUM	65	7.4	2500	208	1	12.02	R9	20"x5"	60"			FULLY RECESSED
CONV-2.3	2ND FLOOR 202 GYMATORIUM	65	7.4	2500	208	1	12.02	R9	20"x5"	60"			FULLY RECESSED
CONV-2.4	2ND FLOOR 218 CHAIR STORAGE	65	7.4	2500	208	1	12.02	R9	20"x5"	60"			FULLY RECESSED
CONV-2.5	2ND FLOOR 202 GYMATORIUM	65	7.4	2500	208	1	12.02	R9	20"x5"	60"			FULLY RECESSED
CONV-2.6	2ND FLOOR 202 GYMATORIUM	65	7.4	2500	208	1	12.02	R9	20"x5"	60"			FULLY RECESSED
CONV-2.7	2ND FLOOR 202 GYMATORIUM	65	7.4	2500	208	1	12.02	R9	20"x5"	60"			FULLY RECESSED
CONV-2.8	2ND FLOOR 202 GYMATORIUM	65	7.4	2500	208	1	12.02	R9	20"x5"	60"			FULLY RECESSED
CONV-2.9	2ND FLOOR 202 GYMATORIUM	65	7.4	2500	208	1	12.02	R9	20"x5"	60"			FULLY RECESSED
CONV-2.10	2ND FLOOR 202 GYMATORIUM	65	7.4	2500	208	1	12.02	R9	20"x5"	60"			FULLY RECESSED
CONV-2.11	2ND FLOOR 202 GYMATORIUM	65	7.4	2500	208	1	12.02	R9	20"x5"	60"			FULLY RECESSED
CONV-2.12	2ND FLOOR 202 GYMATORIUM	65	7.4	2500	208	1	12.02	R9	20"x5"	60"			FULLY RECESSED
CONV-2.13	2ND FLOOR 202 GYMATORIUM	65	7.4	2500	208	1	12.02	R9	20"x5"	60"			FULLY RECESSED

NOTES:
1. LOCATION OF CONVECTOR'S ACCESS DOOR SHALL BE COORDINATED WITH APPROVED PIPING LAYOUT.
2. SEE SPECS & DRAWINGS FOR ADDITIONAL INFORMATION.
3. PROVIDE 14 GAUGE FRONTS AND 14 GAUGE LINER.
4. ACTUAL MBH WAS CALCULATED USING A CORRECTION FACTOR OF 0.33.
5. PROVIDE HINGED ACCESS DOORS AT CONTROL VALVE & BALANCING VALVE LOCATIONS.
6. PROVIDE SIDE KNOCK-OUTS FOR ALL CONVECTORS.
7. CONVECTORS THAT ARE TO BE WALL RECESSED TYPE-COORDINATE WITH GC FOR WALL OPENINGS.

SCHEDULE OF ELECTRICAL AIR CURTAINS

UNIT NO.	LOCATION	EWT (°F)	AIR RISE (°F)	HEATING CAPACITY MBH	CFM	MAX. VEL AT NOZZLE FPM	AVG OUTLET VEL FPM	OUTLET VEL UNIFORMITY	ELECTRICAL DATA			MAX ELECTRIC CAPACITY (KW)	MANUFACTURER	MODEL NO.	WEIGHT LBS
									VOLTS/PH/Hz	FAN HP	POWER RATING KW				
ARC-1.1	ENTRANCE	155	30	95.6	2,964	5202	1674	91%	120/1/60	2Ø 1/2	0.94	28.0			179
ARC-1.2	ENTRANCE	155	30	95.6	2,964	5202	1674	91%	120/1/60	2Ø 1/2	0.94	28.0			179
ARC-1.3	ENTRANCE	155	30	95.6	2,964	5202	1674	91%	120/1/60	2Ø 1/2	0.94	28.0			179
ARC-1.4	ENTRANCE	155	30	95.6	2,964	5202	1674	91%	120/1/60	2Ø 1/2	0.94	28.0			179
ARC-4.1	ENTRANCE	155	30	95.6	2,964	5202	1674	91%	120/1/60	2Ø 1/2	0.94	28.0			179

NOTES:
1. SEE SPEC SECTION 15839 AND DRAWINGS FOR ADDITIONAL INFORMATION.
2. SOUND LEVEL MEASURED AT 10' FROM UNIT : 2 MOTORS, LOW/MEDIUM/ HIGH SPEED: 63/64/65 dBA.
3. SEE FLOOR PLANS FOR LOCATION OF PIPING CONNECTIONS.
4. ALL AIR CURTAINS TO BE PROVIDED WITH DISCONNECT SWITCHES, MOUNTING BRACKETS AND DOOR SWITCHES (2 PER UNIT). SEE SPECS FOR ADDITIONAL INFORMATION.

ELECTRICAL BASEBOARD HEATER

UNIT NO.	MODEL	WATTAGE (KW)	VOLTS	PHASE	AMPS	BTU	SIZE LENGTH x HEIGHT x DEPTH	FINISH	ACCESSORIES	WEIGHT (LB)	LOCATION	MANUFACTURER	REMARKS
EBD-A		1250	120	1	10.4	4250	60"x6"x2 1/2"	IVORY	DS	12	REFER TO PLANS		SEE NOTES
EBD-B		2500	208	1	12	8532	120"x6"x2 1/2"	IVORY	DS	22	REFER TO PLANS		SEE NOTES
EBD-C		600	120	1	5	2040	36"x6"x2 1/2"	IVORY	DS	7	REFER TO PLANS		SEE NOTES

NOTES:
1. PROVIDE FIN-TUBE RADIATION ELEMENT SUPPORT BRACKETS, SADDLE, HANGERS, CONTINUOUS BAFFLE AS REQUIRED TO INSTALL UNITS.
2. BTU/FT WAS CALCULATED CONSIDERING BOTH FACTORS IN SCHEDULE ABOVE.
3. PROVIDE WALL-TO-WALL FIN-TUBE RADIATION 14 GAUGE ENCLOSURE, PROVIDE END ENCLOSURE. CONTRACTOR SHALL COORDINATE IN THE FIELD.
4. FTR'S SHALL BE PROVIDED WITH MINIMUM 14 GAUGE ENCLOSURES. ALL ENCLOSURES SHALL BE COORDINATED WITH THE ARCHITECTURAL DRAWINGS.
5. PROVIDE HINGED ACCESS DOORS AT CONTROL VALVE & BALANCING VALVE LOCATIONS.
6. LENGTHS OF EACH ROW OF HEATING ELEMENT ARE SHOWN ON M200 SERIES DRAWINGS.
7. SEE SPECS & DRAWINGS FOR ADDITIONAL INFORMATION.

ELECTRICAL COIL

UNIT NO.	SERVICE	LOCATION	CFM	CAPACITY (MBH)	EAT/LAT (°F)	WATTAGE (KW)	VOLT	PHASE	LENGTH x HEIGHT x DEPTH (IN)	MANUFACTURER	MODEL NO.
RHC-1.1	KITCHEN	1ST FLOOR	1800	40	65/85	12.00	208	1	22 x 18 x 5		

NOTE: 1. SEE SPECS FOR ADDITIONAL INFORMATION.

*APPLICATIONS FOR SERVICE EQUIPMENT PERMITS:

CONTRACTOR SHALL FILE FOR AND OBTAIN SERVICE EQUIPMENT PERMITS FOR ALL EQUIPMENT NOTED WITH ASTERISK (*) IN ACCORDANCE WITH TITLE 28, SECTION MC 105 OF THE NEW YORK CITY BUILDING CODE.

COMPLIANCE WITH ASHRAE 90.1 2013 NOTE:

TO THE BEST OF MY KNOWLEDGE, BELIEF AND PROFESSIONAL JUDGMENT, THESE PLANS AND SPECIFICATIONS ARE IN COMPLIANCE WITH ASHRAE 90.1 2013.

REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION

SCHEDULE FOR VERTICAL UNIT VENTILATOR (VUV)

MANUFACTURER BASED ON:

MATCH LINE

GENERAL UNIT INFORMATION								SUPPLY & OUTSIDE AIR AIRFLOW					COND FAN	ELECTRIC HEAT				AIR SOURCE HEAT PUMP							ASHP-PART LOAD COOLING							
								TOTAL	FAN MOTOR		MIN O.A.	ESP						E.A.T	L.A.T	TOTAL	E.A.T	COOLING	TOTAL	SENSIBLE		HEAT PUMP		COMP	AIRFLOW	E.A.T	COOLING	TOTAL	SENSIBLE			HEAT PUMP	
CAH	NAME	TAG	MODEL	CABINET SIZE	TYPE	FILTER		CFM	HP	F.L.A	CFM	(IN. WC)	F.L.A	KW	STAGES	DB°F	DB°F	MBH	DB°F/WB°F	AMBIENT DB°F	MBH	MBH	EER	MBH	COP	F.L.A	CFM	DB°F/WB°F	AMBIENT DB°F	MBH	MBH	EER	IPLV	MBH	COP
VUV				32" D x 44" W x 91" H	HP W/ ERW	2"-MERV 11		1200	3/4	7.3	480	0.25	4.3	10.0	2	64.2	90.4	34.1	80.0/67.0	95.0	34.0	23.2	10.9	34.0	3.5	11.6	1,200	80/67	80	27.0	21.6	13.6	13.5	29.5	4.2

MATCH LINE

ENERGY RECOVERY (ER) SECTION (SUMMER/WINTER) SCHEDULE

MATCH LINE

	ENERGY RECOVERY WHEEL – HEATING (WINTER)						ENERGY RECOVERY WHEEL – COOLING (WINTER)						ELECTRICAL			
CAH	O.A. (CFM)	EXH. (CFM)	O.A. DB°F	ROOM AIR DB°F	L.A.T DB°F	CAP MBH	O.A. (CFM)	EXH. (CFM)	O.A. DB°F/WB°F	ROOM AIR DB°F/WB°F	L.A.T DB°F/WB°F	CAP MBH	VOLTAGE	MCA	MOP	REMARKS
CAH-1	480	480	13.0	72.0	51.09	24.3	480	480	89.0/75.0	75.0/63.0	79.4/68.15	11.21	208/3/60	49.5	50.0	–

NOTES:
1. ALL AHU FAN MOTORS SHALL COMPLY WITH THE ASHRAE 90.1 2013 EFFICIENCIES REQUIREMENT.
2. COILS SHALL HAVE COPPER TUBES WITH ALUMINUM FINS (MAX. 14 FINS/IN.)
3. UNITS SHALL BE PROVIDED WITH 2" MERV-13 FINAL FILTER FOR SUPPLY AIR STREAM AND 2" PLEATED PRE FILTER MERV 8 UPSTREAM OF THE ENERGY WHEEL.
4. PROVIDE SEAMLESS STAINLESS STEEL DRAIN PANS.
5. SPECS AND DRAWINGS FOR ADDITIONAL INFORMATION.
6. UNITS SHALL BE PROVIDED WITH SINGLE POINT POWER SUPPLY CONNECTION WITH UNIT MOUNTED MAIN ,SAFETY DISCONNECT SWITCH, CONTROL PANEL, GFI RECEPTACLES AND LAMPS. DISCONNECT SWITCH MAX. HEIGHT IS 79" TO ITS CENTER LINE.
7. PROVIDE VIBRATION ISOLATORS FOR ALL FANS.
8. PROVIDE CONDENSATE PUMP AND BOTH DRAIN PAN SHALL BE CONNECTED TO THE CONDENSATE PUMP.

Drawing Title:
HVAC EQUIPMENT SCHEDULE SHEET #2

Drawing No:
M004.00

Sheets in Contract Set:
OF

Sheets in DOB Set:
OF

CAD

SPLIT–TYPE HEAT PUMP UNITS SCHEDULE (INDOOR EVAPORATOR / OUTDOOR CONDENSING UNIT) *

UNIT NO	SERVICE	TOTAL COOLING CAPACITY MBH	TOTAL HEATING CAPACITY MBH	E.A.T. (COOLING) DB/WB	REFRIG.	ELECTRICAL DATA		INDOOR EVAPORATOR					OUTDOOR CONDENSING UNIT					SEER	MIN. SEER PER APPENDIX–A OF 2014 NYCECC TABLE 6.8.1B	HSPF	MIN. HSPF PER APPENDIX–A OF 2014 NYCECC TABLE 6.8.1B	MEA NUMBER	MANUFACTURER	REMARKS
						TOTAL POWER INPUT W	V/PH/HZ	LOCATION	AIR FLOW CFM LO/HI	FAN MOTOR MOTOR OUTPUT W	FAN MOTOR MCA AMPS	MODEL NO BASED ON	LOCATION	NO OF COMP.	SOUND LEVEL (dBA)	MCA AMPS	MODEL NO BASED ON							
AC–C.1 / ACCU–C.1	IDF/C23	24	26	80/67	410A	1960	208/1/60	CELLAR TELECOM CLOSET	635/775	56	1.0		ROOF	1	48	19		17	14	10.8	8.2			COOLING & HEATING
AC–C.2 / ACCU–C.2	FOOD STORAGE/ C11D	24	26	80/67	410A	1960	208/1/60	CELLAR FOOD STORAGE	635/775	56	1.0		1ST FL	1	48	19		17	14	10.8	8.2			COOLING & HEATING
AC–1.1 / ACCU–1.1	IDF/117	24	26	80/67	410A	1960	208/1/60	1ST FL. TELECOM CLOSET	635/775	56	1.0		ROOF	1	48	19		17	14	10.8	8.2			COOLING & HEATING
AC–1.2 / ACCU–1.2	FOOD & NON FOOD STORAGE/136B	24	26	80/67	410A	1960	208/1/60	KITCHEN FOOD STORAGE	635/775	56	1.0		ROOF	1	48	19		17	14	10.8	8.2			COOLING & HEATING
AC–2.1 / ACCU–2.1	MDF/227	36	40	80/67	410A	3330	208/1/60	MAIN TELECOM CLOSET	635/775	56	1.0		ROOF	1	48	25		17	14	10.8	8.2			COOLING & HEATING
AC–3.1 / ACCU–3.1	IDF/317	24	26	80/67	410A	1960	208/1/60	3RD FL. TELECOM CLOSET	705/920	56	1.0		ROOF	1	48	19		14	14	9.3	8.2			COOLING & HEATING
AC–4.1 / ACCU–4.1	IDF/419	24	26	80/67	410A	1960	208/1/60	4TH FL. TELECOM. CLOSET	635/775	56	1.0		ROOF	1	48	19		17	14	10.8	8.2			COOLING & HEATING
AC–R.1 / ACCU–R.1	ELEVATOR MACHINE ROOM/R01	36	40	80/67	410A	3330	208/1/60	ELEVATOR MACHINE ROOM	705/920	56	1.0		ROOF	1	48	25		14	14	9.3	8.2			COOLING & HEATING

NOTES:
1. ALL CONTROL AND POWER WIRING BETWEEN INDOOR AND OUTDOOR UNITS TO BE PROVIDED BY THE MECHANICAL CONTRACTOR.
2. ALL AIR CONDITIONING UNITS TO BE PROVIDED WITH WIRED PROGRAMMABLE THERMOSTAT AND LOW AMBIENT CONTROL.
3. TCC TO PROVIDE SPACE TEMPERATURE AND HUMIDITY SENSOR FOR ALARM ONLY.
4. ALL UNITS TO BE PROVIDED WITH CONDENSATE PUMPS.
5. ALL UNITS TO BE PROVIDED WITH TIME–DELAY, FILTER–DRIER, COMPRESSOR SHORT CYCLE PROTECTOR, HIGH AND LOW PRESSURE KIT.
6. ALL UNITS TO BE PROVIDED LOW–AMBIENT CONTROLLER (FLOODED CONDENSER), WINTER START CONTROL, EVAPORATOR FREEZE THERMOSTAT.
7. SEE SPECS AND DRAWINGS FOR MORE INFORMATION.
8. ALL OUTDOOR CONDENSING UNITS SHALL BE PROVIDED WITH A WIND BAFFLE.

SCHEDULE OF CONDENSATE DRAIN PUMPS

UNIT NO.	SERVICE LOCATION	FLOW RATE @ 15' GPH	SHUT OFF FT	ELECTRICAL DATA WATT	MOTOR H.P.	AMP	VOLT/PH/HZ	MANUFACTURER	MODEL NO.	REMARKS
CP–C.1	AC–C.1	33	20	85	1/30	1.5	120/1/60			SEE NOTE #1
CP–C.2	AC–C.2	33	20	85	1/30	1.5	120/1/60			SEE NOTE #1
CP–1.1	AC–1.1	33	20	85	1/30	1.5	120/1/60			SEE NOTE #1
CP–1.2	AC–1.2	33	20	85	1/30	1.5	120/1/60			SEE NOTE #1
CP–2.1	AC–2.1	33	20	85	1/30	1.5	120/1/60			SEE NOTE #1
CP–3.1	AC–3.1	33	20	85	1/30	1.5	120/1/60			SEE NOTE #1
CP–4.1	AC–4.1	33	20	85	1/30	1.5	120/1/60			SEE NOTE #1
CP–R.1	AC–R.1	33	20	85	1/30	1.5	120/1/60			SEE NOTE #1

NOTE:
1. ALL CONDENSATE PUMPS SHALL BE INSTALLED OUTSIDE OF THE UNIT

SCHEDULE FOR CEILING MOUNTED SUPPLY AIR DIFFUSERS

LOCATION	CFM RANGE	NECK SIZE INCHES	MAX. DUCT VELOCITY FPM	NOMINAL LOUVERED AREA SIZE W X H INCHES	MAX. NOISE RATING. NC	MANUFACTURER	MODEL NO.	REMARKS
ALL AREAS WITH NO HUNG CEILING	0–100	6ø	500	12X12	20			SEE NOTES 1 TO 6
ALL AREAS WITH NO HUNG CEILING	101–200	8ø		12X12				SEE NOTES 1 TO 6
ALL AREAS WITH NO HUNG CEILING	201–400	10ø		24X24				SEE NOTES 1 TO 6
SEE NOTE 1	0–250	8ø		24X24				SEE NOTES 1 TO 6
SEE NOTE 1	251–375	10ø		24X24				SEE NOTES 1 TO 6
SEE NOTE 1	376–470	12ø		24X24				SEE NOTES 1 TO 6
SEE NOTE 1	471–550	15ø		24X24				SEE NOTES 1 TO 6
LIBRARY	350	12X12		24X24	20			SEE NOTES 1 TO 6
GYMNATORIUM	750–800	15x15		24X24	20			SEE NOTES 1 TO 6
CAFETERIA	200	4" LINEAR GRILLE		4" LINEAR GRILLE	20			SEE NOTES 1 TO 7
CAFETERIA	250–550	15x15		24X24	20			SEE NOTES 1 TO 6
KITCHEN COMPLEX	550	15X15		24X24	20			SEE NOTES 1 TO 6
KITCHEN COMPLEX	50–300	9X9		24X24	20			SEE NOTES 1 TO 6
CORRIDOR	750	18X18		24X24	20			SEE NOTES 1 TO 6
CORRIDOR	750	18X18		24X24	20			SEE NOTES 1 TO 6
CORRIDOR	500	15X15		24X24	20			SEE NOTES 1 TO 6
CORRIDOR	50–300	9X9		24X24	20			SEE NOTES 1 TO 6

NOTES:
1. FOR ALL OTHER AREAS (INCLUDING TRANSFER DUCTS) NOT MENTIONED IN ABOVE SCHEDULE.
2. KITCHEN AREA, SERVING AREA, TOILETS, LOCKER ROOMS DIFFUSERS SHALL BE ALUMINUM CONSTRUCTION WITH CLEAR ALUMINUM ANODIZE FINISH.
3. CONTRACTOR SHALL COORDINATE DIFFUSER'S FRAME TYPE WITH APPROVED CEILING TYPE.
4. GYMNATORIUM, CAFETERIA, LIBRARY, KITCHEN & CORRIDOR DIFFUSERS SHALL BE PROVIDED WITH PATTERN FLAPS FOR THE D DIFFUSERS.
5. CAFERRIA SHALL BE PROVIDED WITH FOUR ADJUSTABLE LINER SLOT DIFFUSERS WITH 1/2" SLOT WIDTH, 2 SLOTS, MODEL SLAD, VERTICAL PATTERN WITH T–BAR PLASTER FRAME.
6. TYPE E (EPL–D & E1–D) DIFFUSERS SHALL BE PROVIDED WITH 4TH CONE.
7. GRILLE LAYOUT IS FOR CONTINUOUS RUN (APPEARANCE), PROVIDE GRILLES WITH CONCEALED KEY–WAYS AND ALIGNMENT STRIPS FOR EXACT ALIGNMENT AND CLEAN, NEAT APPEARANCE.

SCHEDULE FOR WALL & CEILING MOUNTED RETURN/EXHAUST AIR GRILLES

LOCATION	CFM RANGE	NECK SIZE W X H INCHES	MAXIMUM DUCT VELOCITY FPM	MAX. NOISE RATING. NC	MANUFACTURER	MODEL NO.	REMARKS
SEE NOTE 1	0–100	8X8	300	20			SEE NOTES 1 TO 6
	101–200	10X10	300	20			SEE NOTES 1 TO 6
	201–300	12X12	300	20			SEE NOTES 1 TO 6
	301–400	14X14	300	20			SEE NOTES 1 TO 6
	401–501	16X16	300	20			SEE NOTES 1 TO 6
	501–650	20X20	300	20			SEE NOTES 1 TO 6
	651–800	22X22	300	20			SEE NOTES 1 TO 6
	801–1000	24X24	300	20			SEE NOTES 1 TO 6
CAFETERIA	801–1000	24X24	300	20			SEE NOTES 1 TO 6
CAFETERIA	600	4" LINEAR GRILLE	–	20			SEE NOTES 1 TO 6, 7
KITCHEN/CAFE TRANSFER GRILLE	2800	48X24	300	20			SEE NOTES 1 TO 6
GYMATORIUM WALL RETURN GRILLE	3880	48X40	300	20			SEE NOTES 1 TO 6
GYMATORIUM	2000	6" LINEAR GRILLE	–	20			SEE NOTES 1 TO 6, 7

NOTES:
1. FOR ALL OTHER AREAS (INCLUDING TRANSFER DUCTS) NOT MENTIONED IN ABOVE SCHEDULE.
2. CONTRACTOR SHALL COORDINATE REGISTER'S/GRILLES COLOR WITH ARCHITECT.
3. CONTRACTOR SHALL COORDINATE REGISTER'S/GRILLES BORDER TYPE WITH APPROVED CEILING TYPE.
4. ALL NON–DUCTED GRILLES AND ALL TRANSFER GRILLES SHALL BE SIZE 24X24.
5. ALL KITCHEN AREA COMPLEX , CAN WASH RM , TOILETS, JANITORS CLOSETS, SHOWERS, LOCKER ROOMS GRILLES & REGISTERS SHALL BE . ALUMINUM CONSTRUCTION WITH CLEAR ALUMINUM ANODIZE FINISH.
6. SEE SIZES OF DUCTED TRANSFER GRILLES ON PLANS.
7. GRILLE LAYOUT IS FOR CONTINUOUS RUN (APPEARANCE), PROVIDE GRILLES WITH CONCEALED KEY–WAYS AND ALIGNMENT STRIPS FOR EXACT ALIGNMENT AND CLEAN, NEAT APPEARANCE.

COMPLIANCE WITH ECCCNYS NOTE:

TO THE BEST OF MY KNOWLEDGE, BELIEF AND PROFESSIONAL JUDGMENT, THESE PLANS AND SPECIFICATIONS ARE IN COMPLIANCE WITH THE ENERGY CONSERVATION CONSTRUCTION CODE OF NEW YORK STATE.

APPLICATIONS FOR SERVICE EQUIPMENT PERMITS:

CONTRACTOR SHALL FILE FOR AND OBTAIN SERVICE EQUIPMENT PERMITS FOR ALL EQUIPMENT NOTED WITH ASTERISK (*) IN ACCORDANCE WITH TITLE 28, SECTION MC 105 OF THE NEW YORK CITY MECHANICAL CODE.

Drawing Title:
HVAC EQUIPMENT SCHEDULE SHEET #3

Drawing No.:
M005.00

Sheets in Contract Set:
OF

Sheets in DOB Set:
OF

CAD

VAV/CAV BOX SCHEDULE

BASIS OF DESIGN: ANEMOSTAT

UNIT NO.	SERVICE	MODEL	MANUFACTURER	PAIRING AHU	INLET (IN.)	AIR CFM MAX.	COOLING AIR CFM MIN. (OCCUPIED)	COOLING AIR CFM MIN. (UN-OCCUPIED)	HEATING AIR CFM MIN. (OCCUPIED)	HEATING AIR CFM MIN. (UN-OCCUPIED)	DISCHARGE NC (@ 1.5 WGSP)	RADIATED NC (@ 1.5 WGSP)	ELECTRIC POWER REQUIRED Vl/Ph/Hz	REMARKS
CAV-C.1	C27, C21 & C19			AHU-1	10	991	705	215	991	215	23	25	120/1/60	SEE NOTES
CAV-C.2	CORRIDOR			AHU-1	12	1500	450	155	1500	155	27	29	120/1/60	SEE NOTES
VAV-C.3	C03, C04, C09, C11			AHU-1	12	1800	1140	215	1800	215	24	26	120/1/60	SEE NOTES
CAV-C.4	SCHOOL SAFETY OFFICE C12			AHU-1	6	355	300	75	355	75	20	<20	120/1/60	SEE NOTES
CAV-1.1	LOBBY 100			AHU-1	8	580	435	135	580	135	22	23	120/1/60	SEE NOTES
CAV-1.2	CORRIDOR 100S			AHU-1	8	700	450	135	700	175	22	23	120/1/60	SEE NOTES
VAV-1.3	125, 127 & 129			AHU-1	6	230	230	45	205	45	21	20	120/1/60	SEE NOTES
VAV-1.4	OCCUTHERAPY 131			AHU-1	6	430	430	75	170	75	20	<20	120/1/60	SEE NOTES
VAV-1.5	135, A, B, C, D, E			AHU-1	6	265	265	75	240	75	20	<20	120/1/60	SEE NOTES
CAV-1.6	CORRIDOR			AHU-1	6	400	300	135	400	135	23	25	120/1/60	SEE NOTES
VAV-1.7	D75 MULTI-PURPOSE RM 113			AHU-1	8	805	805	135	270	135	23	25	120/1/60	SEE NOTES
VAV-2.1	RESOURCE ROOM 219			AHU-1	8	540	540	135	215	135	23	25	120/1/60	SEE NOTES
CAV-2.2	CORRIDOR 200			AHU-1	9	1200	925	135	1200	135	27	29	120/1/60	SEE NOTES
VAV-3.1	STAFF DEVELOPMENT RM 305			AHU-1	6	315	315	75	250	75	20	<20	120/1/60	SEE NOTES
CAV-3.2	CORRIDOR 300			AHU-1	9	1000	890	175	1000	175	27	29	120/1/60	SEE NOTES
VAV-3.3	315 & 315B			AHU-1	6	285	285	75	225	75	<20	<20	120/1/60	SEE NOTES
VAV-3.4	OFFICE 315A			AHU-1	5	140	140	45	60	45	<20	<20	120/1/60	SEE NOTES
VAV-3.5	OFFICE 317A			AHU-1	5	140	140	45	60	45	<20	<20	120/1/60	SEE NOTES
VAV-3.6	OFFICE 317B			AHU-1	5	140	140	45	60	45	<20	<20	120/1/60	SEE NOTES
VAV-3.7	OFFICE 317C			AHU-1	5	140	140	45	60	45	<20	<20	120/1/60	SEE NOTES
VAV-4.1	CLASSROOM 405			AHU-1	8	780	780	135	480	135	27	29	120/1/60	SEE NOTES
CAV-4.2	CORRIDOR 400			AHU-1	8	880	840	135	880	135	26	28	120/1/60	SEE NOTES
CAV-5.1	CORRIDOR 500			AHU-1	8	1000	840	175	1000	175	26	28	120/1/60	SEE NOTES

VAV BOX NOTES:

1. BOXES SHALL BE MANUFACTURED BY ANEMOSTAT AS STANDARD.
2. BOXES SHALL BE DIRECT DIGITAL CONTROL (DDC).
3. DIRECT DIGITAL CONTROL SHALL BE SUPPLIED BY TCC CONTRACTOR.
4. TCC SHALL FURNISH BACNET CONTROLLERS TO THE UNIT MANUFACTURER. ALL UNITS SHALL BE 120 VOLTS. PROVIDE 120 VOLTS/24 VOLTS STEP DOWN TRANSFORMER.
5. ALL MAXIMUM AND MINIMUM CFM CALIBRATION AND BALANCING TO BE DONE BY TCC CONTRACTOR.
6. HVAC CONTRACTOR TO COORDINATE INSTALLATION OF DIRECT DIGITAL CONTROL.
7. CASING SHALL BE INTERNALLY LINED WITH 1" THICK CLOSED CELL INSULATION.
8. FURNISH ALL VAV BOXES WITH 3 FT SOUND TRAPS AND FOR GREATER THAN 1000cfm PROVIDE 5FT VIBRO ACOUSTICS SOUND TRAP (MODEL RFL-MV) ON THE DISCHARGE.
9. ALL VAV BOXES SERVING THE CORRIDOR, LOCKER ROOMS, AND VESTIBULE SHALL BE SET TO CONSTANT VOLUME.
10. ALL VAV BOXES SHALL BE PROVIDED WITH DISCONNECT SWITCH.
11. REFER TO SPECIFICATIONS FOR MORE INFORMATION.

COMPLIANCE WITH ASHRAR 90.1 2013 NOTE:

TO THE BEST OF MY KNOWLEDGE, BELIEF AND PROFESSIONAL JUDGMENT, THESE PLANS AND SPECIFICATIONS ARE IN COMPLIANCE WITH THE ENERGY CONSERVATION CONSTRUCTION CODE OF NEW YORK STATE.

*APPLICATIONS FOR SERVICE EQUIPMENT PERMITS:

CONTRACTOR SHALL FILE FOR AND OBTAIN SERVICE EQUIPMENT PERMITS FOR ALL EQUIPMENT NOTED WITH ASTERISK (*) IN ACCORDANCE WITH TITLE 28, SECTION MC 105 OF THE NEW YORK CITY MECHANICAL CODE.

Drawing Title:

HVAC EQUIPMENT SCHEDULE
SHEET #4

Drawing No.:

M006.00

Sheets in Contract Set:

OF

Sheets in DOB Set:

OF

CAD

AHU 1 OUTDOOR AIR REQUIREMENT

ROOM NAME/ ROOM NUMBER	AREA (FT2)	NYC BC TABLE 1004.1.1		# OF OCCU. PER P.O.R	NYC MCC TABLE 403.3					OA CALC. PER NYC MC 403.3 (Eqn. 4-1, Table 403.3.1.2, Eqn 4-2)	EXH. CALC. PER NYC MC 403.5	DESIGN VALUES			
	(Az)	SPACE FUNCTION	SQ.FT PER OCCUPANT	(Pz)	OCCUPANCY CLASS	# OF OCCU.	BREATHING ZONE OA/PERSON (Rp)	BREATHING ZONE OA/FT^2 (Ra)	EXHAUST RATE CFM/FT^2	BREATHING ZONE OA FLOW CFM (Vbz=RpPz+RaAz)	ZONE EXHAUST CFM	SUPPLY AIR CFM	OUTSIDE AIR CFM	EXHAUST AIR CFM	NOTES (at bottom)
5TH FLOOR															
519B Boiler Room	1383								6 ACH		1383			1425	Note 1
519A Elec. Cl.	62							0.12		7	0			50	Note 1
517 Supervisory	62	Storage			Storage			0.12		7		75	42		
515 Resource RM2	663	Classroom	20	34	Classrooms		10	0.12		420		750	420		
513 Boys Toilet	272	Toilet	3 Fixtures		Toilet Rooms				70/fixture		210			225	Note 1
511 JC	37								1		37			50	
509 Staff Toilet	53	Toilet	1 Fixture		Toilet Rooms				70/fixture						
507 Girls Toilet	256	Toilet	3 Fixtures		Toilet Rooms				70/fixture		70			75	Note 1
505 Classroom	700	Classroom	20	34	Classrooms		10			340		750	420		
503 Classroom	711	Classroom	20	34	Classrooms		10			340		750	420		
500 Corridor	2131				Corridors			0.06		128		700	392		
4TH FLOOR															
423 Storage	221	Storage			Storage				2 ACH		88			125	Note 1
421 Classroom	760	Classroom	20	34	Classroom		10	0.12		431		1000	560		
417 ED. Cl.	99	Storage			Storage			0.12		12				50	Note 1
415Staff Toilet	59	Toilet	1 Fixture		Toilet Rooms				70/fixture	0	70			75	Note 1
413 Boys Toilet	272	Toilet	3 Fixtures		Toilet Rooms				70/fixture	0	210			225	Note 1
411 JC	37								1.0	0	37			50	Note 1
409 Staff Toilet	53	Toilet	1 Fixture		Toilet Rooms				70/fixture	0	70			75	Note 1
407 Girls Toilet	283	Toilet	3 Fixtures		Toilet Rooms				70/fixture	0	210			225	Note 1
405 Classroom	687	Classroom	20	34	Classrooms		10	0.12		422		780	437		
403 Classroom	689	Classroom	20	34	Classrooms		10	0.12		423		780	437		
401 Science Demo	955	Classroom	20	34	Classrooms		10	0.12		455		820	459		
400 Corridor	2805	n/a	na		Corridors			0.06		168		750	420		Note1
3RD FLOOR															
323 Program Office	149	Office	100	4	Office Spaces		5	0.06		29		150	84		
323A Elec. Cl.	99							0.12		12				75	Note 1
315F Records/Stor. RM	144	Storage			Storage			0.12		17				75	Note 1
315E Office	108	Office	20	2	Office Spaces		5	0.06		16		75	42		
315D Office	110	Office	20	6	Conference Rooms		5	0.06		34		75	42		
315C Office	119	Office	20	2	Office Spaces		5	0.06		17		75	42		
315 Guide Suite	401	Office	20	4	Office Spaces		5	0.06		49		125	70		
315A Conference RM	159	Office	20	8	Conference Rooms		5	0.06		49		100	56		
315B Office	118	Office	20	2	Office Spaces		5	0.06		17		75	42		
313 Boys Toilet	246	Toilet	3 Fixtures		Toilet Rooms				70/fixture	0	210			225	Note 1
311 JC	37								1.0	0	37			50	Note 1
309 Staff Toilet	53	Toilet	1 Fixture		Toilet Rooms				70/fixture	0	70			75	Note 1
307 Girls	256	Toilet	3 Fixtures		Toilet Rooms				70/fixture	0	210			225	Note 1
305A Staff Toilet	63	Toilet	1 Fixture		Toilet Rooms				70/fixture	0	70			75	Note 1
305 Staff Development RM	665	Office	20	8	Conference Rooms		5	0.06		80		300	168		
303 Classroom	716	Classroom	20	34	Classrooms		10	0.12		426		780	437		
301 Library	1742	Library	50	35	Libraries		5	0.12		384		1700	952		
300 Corridor	2697	na	na		Corridors			0.06		162		800	448		Note1
2ND FLOOR															
229 SP. ED. Classroom	445	Classroom	20	26	Classroom		10	0.12		313		800	448		
225 Elect Cl	70							0.12		8				70	Note 1
223 ED Storage	129	Storage			Storage			0.12		15				50	Note 1
221 Gender Neut. Toilet	67	Toilet	1 Fixture		Toilet Rooms				70/fixture	0	70			75	Note 1
219 Resource Room	556	Assembly	50	20	Classroom		10	0.12		267		480	269		
217 Boys Toilet	278	Toilet	3 Fixtures		Toilet Rooms				70/fixture	0	210			225	Note 1
215 JC	38								1	0	38			50	Note 1
213 Staff Toilet	58	Toilet	1 Fixture		Toilet Rooms				70/fixture	0	70			75	Note 1
211 Girls Toilet	263	Toilet	3 Fixtures		Toilet Rooms				70/fixture	0	210			225	Note 1
209 Staff Toilet	69	Toilet	1 Fixture		Toilet Rooms				70/fixture	0	70			75	Note 1
207 Staff Toilet	69	Toilet	1 Fixture		Toilet Rooms				70/fixture	0	70			75	Note 1
203 Classroom	721	Classroom	20	34	Classrooms		10	0.12		427		780	437		
201 Excersice RM	1751	Excersice Rooms	50	35	Multiuse - Assembly		7.5	0.06		368		1800	1008		
200 Corridor	3133	na	na		Corridors			0.06		188		800	448		Note1
1ST FLOOR															
135F Student Toilet	61	Toilet	1 Fixture		Toilet Rooms				70/fixture	0	70			75	Note 1
135 (A, B, C, D & E) Medical Suite	645	Office	20	7	Office		5	0.06		74		375	210		
134 Refuse/Recycle Room	462	Trash/Recycle			Recycle Room			1.0			462			475	
133 Staff Toilet	65	Toilet	1 Fixture		Toilet Rooms				70/fixture	0	70			75	Note 1
132 D75 Speech RM	195	Classroom	12	11	Classrooms		10	0.12		133		250	140		
131 Occutherapy	512	Office	20	25	Office		5	0.06		156		300	168		
130 D75 Speech RM	205	Classroom	12	11	Classrooms		10	0.12		135		275	154		
129 D75 Supervisory Off	250	Office	20	2	Office		5	0.06		25		140	78		
128 D75 Resource Room	191	Classroom	12	11	Classrooms		10	0.12		133		275	154		
127 D75 Guidance Off	157	Office	20	2	Office		5	0.06		19		75	42		
126 D75 Rersource RM	205	Classroom	12	11	Classrooms		10	0.12		135		250	140		
125 D75 Guidance Off.	157	Office	20	2	Office		5	0.06		19		75	42		
124 D75 Resource RM	184	Classroom	12	11	Classrooms		10	0.12		132		250	140		
123 D75 Storage	234	Storage			Storage			0.12		28				50	Note 1
122 D75 resource Room	201	Classroom	20	11	Classrooms		10	0.12		134		250	140		
121 D75 Storage	224	Storage			Storage			0.12		27				75	Note 1
119 Elec. Cl	84							0.12		10				50	Note 1
115 Changing RM	96	Toilet	1 Fixture		Toilet Rooms				70/fixture	0	70			75	Note 1
113A Local Sound System	52							0.12		6				50	Note 1
113 D75 Multi Purpose RM	753	Multiuse Assembly	50	50	Multiuse Assembly		7.5	0.06		420		815	456		
111 Boys Toilet	283	Toilet	3 Fixtures		Toilet Rooms				70/fixture	0	210			225	Note 1
109 JC	40	Toilet			Janitor Closet				1	0	40			50	Note 1
107 Staff Toilet	65	Toilet	1 Fixture		Toilet Rooms				70/fixture	0	70			75	Note 1
105 Girls Toilet	277	Toilet	3 Fixtures		Toilet Rooms				70/fixture	0	210			225	Note 1
103 D75 Classroom	487	Office	20	15	Classroom		10	0.12		208		380	213		
102 Acid Waste	166							1			166			175	Note 1
101 D75 Classroom CW10-14	755	Classroom	20	15	Office		10	0.12		241		625	350		
100 Corridor	2816	na	na		Corridors		0.06			169		850	476		
100 Lobby	1578				Lobby			0.06		95		400	224		Note 1
CELLAR FLOOR															
C27 General Storage	1108	Storage			Storage			1.5 ACH			374	340	190	375	
C21 Bike Storage	771	Storage			Storage			1.5 ACH	0		193	180	101	200	
C19 Storage	451	Storage			Storage			1.5 ACH	0		113			125	
C18A Storage	210	Storage			Storage			1.5 ACH	0		53			70	
C18 Excersice RM	1469	Excersice Rooms	50	35	Multiuse Assembly	7.5	0.06		351	351		800	448		
C17 Staff Lunch	584	Assembly	15	25	Cafeteria	7.5	0.18		293	293		550	308		
C12 School Safety Office	286	Office	20	5	Office	5	0.06		42	42		150	84		
C11D Food Storage	227	Storage			Storage			4 ACH			151	150	84	175	
C11C Non Food Storage	173	Storage			Storage			4ACH			115	115	64	130	
C00 Corridor	1769				Corridors		0.06		106	106		900	504		Note1
	41458			541											
Summation										6,826		24840	13,910	7,120	

Note1: Corridor supply air from AHU-1&2 jointly provides make up air to all toilet exhausts and closet exhausts.
Note: Room SQ.FT. may have slightly reduced on arch plans due to closets and pipe chases added inside classrooms. These will be coordinated in 100% submission.

Selection AHU-1			
Supply (CFM)	OA (CFM)	OA%	Return (CFM)
24,840	13,910	56%	16,310

AHU-2 OUTDOOR AIR REQUIREMENT

ROOM NAME/ ROOM NUMBER	AREA (FT2)	NYC BC TABLE 1004.1.1		# OF OCCU. PER P.O.R	NYC MCC TABLE 403.3				OA CALC. PER NYC MC 403.3 (Eqn. 4-1, Table 403.3.1.2, Eqn 4-2)	EXH. CALC. PER NYC MC 403.5	DESIGN VALUES			
	(Az)	SPACE FUNCTION	SQ.FT PER OCCUPANT	(Pz)	OCCUPANCY CLASS	BREATHING ZONE OA/PERSON (Rp)	BREATHING ZONE OA/FT^2 (Ra)	EXHAUST RATE CFM/FT^2	BREATHING ZONE OA FLOW CFM (Vbz=RpPz+RaAz)	ZONE EXHAUST CFM	SUPPLY AIR	OUTSIDE AIR CFM	EXHAUST AIR CFM	NOTES (at bottom)
5TH FLOOR														
516 Classroom	701	Classroom	20	34	Classrooms	10	0.12		424		1000	460		
514 Resource RM1	320	Classroom	20	20	Classrooms	10	0.12		238		525	242		
512 Science Lab	1249	Classroom	20	34	Classrooms	10	0.12		490		1250	575	750	
510B Acid Storage Room	60	Storage			Science Labs			1	0	60			100	
510 Science Prep	455	Classroom	20	10	Classrooms	10	0.12		155		550	253	750	
508 Science Demo	851	Classroom	20	34	Classrooms	10	0.12		442		1000	460		
506 Edu. Storage	48	Storage			Storage		0.12		6				65	
504 Science Lab	1193	Classroom	20	34	Science Labs	10	0.18		555		1200	552	750	
502B Acid Storage Room	92	Storage			Science Labs			1	0	92			100	
502 Science Prep	376	Classroom	20	10	Science Labs	10	0.18		168		600	276	750	
501 Science Demo	952	Classroom	20	34	Classrooms	10	0.12		454		1000	460		
4TH FLOOR														
416 Classroom	736	Classroom	20	34	Classrooms	10	0.12		428		950	437		
414 Supervisor Office	328	Office	20	2	Office	5	0.06		28		250	115		
412 Classroom	682	Classroom	20	34	Classrooms	10	0.12		422		930	428		
410 Classroom	699	Classroom	20	34	Classrooms	10	0.12		424		930	428		
408 Classroom	693	Classroom	20	34	Classrooms	10	0.12		423		930	428		
406 SP. ED. Classroom	459	Classroom	20	26	Classrooms	10	0.12		315		700	322		
404 Science Lab	1279	Classroom	30	34	Science Labs	10	0.18		570		1250	575	1150	
402A Acid Storage Room	92	Storage			Science Labs			1	0	92			100	
402 Science Prep	405	Classroom	20	10	Science Labs	10	0.18		173		550	253	750	
3RD FLOOR														
314B Art Storage	114	Storage			Storage			4 ACH		76			100	
314 Art Classroom	1093	Classroom	20	34	Classroom	10	0.18		537		1200	552		
312 Classroom	689	Classroom	20	34	Classrooms	10	0.12		423		925	426		
310 Classroom	697	Classroom	20	34	Classrooms	10	0.12		424		925	426		
308 Classroom	693	Classroom	20	34	Classrooms	10	0.12		423		925	426		
306 Classroom	691	Classroom	20	34	Classrooms	10	0.12		423		925	426		
304 Classroom	692	Classroom	20	34	Classrooms	10	0.12		423		925	426		
302 Classroom	697	Classroom	20	34	Classrooms	10	0.12		424		925	426		
2ND FLOOR														
214A Art Storage	106	Storage			Storage			4 ACH		71			100	
214 Art Classroom	1083	Classroom	20	34	Classroom	10	0.18		535		1200	552		
212D Practice Room	97	Classroom	20	4	Music Classroom	10	0.12		52		150	69		
212C Practice Room	97	Classroom	20	4	Music Classroom	10	0.12		52		125	58		
212B Practice Room	111	Classroom	20	4	Music Classroom	10	0.12		53		125	58		
212A Practice Room	83	Classroom	20	4	Music Classroom	10	0.12		48		125	58		
212 Inst. Musict. Rm	485	Classroom	20	34	Music Classroom	10	0.12		398		875	403		
210 Music Storage Room	302	Storage	20		Storage			1.5 ACH		76			100	
208 Music Choral Room	948	Classroom	20	34	Music Classroom	10	0.06		397		1000	460		
206B Dup. RM/Guid. Suite	148	Office	20	4	Office	5	0.06		29		225	104		
206A Rec. Rm/Guide Suite	143	Office	20	4	Office	5	0.06		29		90	41		
206 General Office	641	Office	20	6	Office	5	0.06		68	80	370	170		
204 Staff Toilet	57	Toilet		1 Fixture	Toilet Rooms			70/fixture		70			75	
202A Principal Toilet	54	Toilet		1 Fixture	Toilet Rooms			70/fixture		70			75	
202 Principal's Office	344	Office	20	4	Office	5	0.06		41	80	450	207		
1ST FLOOR														
120 D75 Classroom	713	Classroom	20	15	Classrooms	10	0.12		236		600	276		
118 D75 Classroom	477	Classroom	20	15	Classrooms	10	0.12		207		450	207		
116 D75 Classroom	849	Classroom	20	15	Classrooms	10	0.12		252		570	262		
114 D75 Classroom	800	Classroom	20	15	Classrooms	10	0.12		246		550	253		
112 D75 Classroom	524	Classroom	20	15	Classrooms	10	0.12		213		475	219		
110 D75 Main Office	352	Office	20	3	Office	5	0.06		36		240	110		
108 Parent Community RM	370	Office	20	4	Conference Rooms	5	0.06		42		250	115		
106 D75 Classroom CW10-12	494	Classroom	20	15	Classrooms	10	0.12		209		475	219		
104 Physical Therapy	731	Classroom	20	21	Classrooms	10	0.12		298		650	299		Note1
CELLAR FLOOR														
C25 ATS RM	141							2 ACH		47			75	
C22 Electrical Meter Room	760							4 ACH	0	507			75	
C20 Storage	246	Storage			Storage			1.5 ACH	0	62			75	
C16 Shower	193	Toilet		1 Shoer Head/ 1 Fixture	Shower /Toilet Room			50/shower head 70/fixture		120			75	
C15 JC	41							1		41			75	
C14 Shower	187	Toilet		1 Shoer Head/ 1 Fixture	Shower /Toilet Room			50/shower head 70/fixture		120			75	
C13 Staff Toilet	65	Toilet		1 Fixture	Toilet			70/fixture		70			75	
C12B Locker	102	Locker Rooms	50	1	Locker Rooms			0.25		26			75	
C12A Locker	115	Locker Rooms	50	1	Locker Rooms			0.25		29			75	
C11B Kit. Locker Male	110	Locker Rooms	50	2	Locker Rooms			0.25		28			75	
C11A Kit. Locker Female	132	Locker Rooms	50	2	Locker Rooms			0.25		33			75	
C10 Storage	143	Storage			Storage		0.12		17				75	
C09 Cust. Workshop/Stor.	562	Workshop	50	11	Workshop			1.5 ACH		141			75	
C08 Custdodians Locker F	186	Locker Rooms	50	4	Locker Rooms			0.25		47			75	
C07 Vault	408	Storage			Storage			1.5 ACH		102	100	46	75	
C06 Custodians Locker M	182	Locker Rooms	50	4	Locker Rooms			0.25	0	46			75	
C05 Storage	435	Storage	50		Storage			1.5 ACH		109	110	51	75	
C04 General Storage	700	Storage	50		Storage			1.5 ACH		175	150	69	75	
C03 Custodian Office	423	Office	20	4	Office	5	0.06		45		150	69	75	
C02 Water Meter/Pump RM	1048							2 ACH		472			75	
C01 Storage	387	Storage			Storage			1.5 ACH		121			75	
C00 Corridor	1769				Corridors		0.06		106		900	414		Note1
	29063			700										
Summation									9299		30770	14,154	7,290	

Note1: Corridor supply air from AHU-1&2 jointly provides make up air to all toilet exhausts and closet exhausts.
Note: Room SQ.FT. may have slightly reduced on arch plans due to closets and pipe chases added inside classrooms. These will be coordinated in 100% submission.

Selection AHU-2			
Supply (CFM)	OA (CFM)	OA%	Return (CFM)
30,770	14,155	46%	22,895

ROOM NAME/ ROOM NUMBER	AREA (FT2)	NYC BC TABLE 1004.1.1		# OF OCCU. PER P.O.R	NYC MCC TABLE 403.3					OA CALC. PER NYC MC 403.3 (Eqn. 4-1, Table 403.3.1.2, Eqn 4-2)	EXH. CALC. PER NYC MC 403.5	DESIGN VALUES			
	(Az)	SPACE FUNCTION	SQ.FT PER OCCUPANT	(Pz)	OCCUPANCY CLASS	# OF OCCU.	BREATHING ZONE OA/PERSON (Rp)	BREATHING ZONE OA/FT^2 (Ra)	EXHAUST RATE CFM/FT^2	BREATHING ZONE OA FLOW CFM (Vbz=RpPz+RaAz)	ZONE EXHAUST CFM	SUPPLY AIR CFM	OUTSIDE AIR CFM	EXHAUST AIR CFM	NOTES (at bottom)
2ND FLOOR															
205K Local Sound System RM	31							0.12		4				50	
205J Gym Storage	72	Storage			storage			0.12		9				50	
205I Visiting Team Locker	367	Locker Rooms			Locker Rooms				0.25		92	210	130	225	
205G Gym Storage	221	Storage			storage				1.5 ACH		55			75	
205F Health Inst.	159	Office	20	2	Office		5	0.06		20		75	47		
205E Health Inst.	146	Office	20	2	Office		5	0.06		19		75	47		
205D Chair Storage	129	Storage			storage				1.5 ACH		32			75	
205C Locker Room Boys	812	Locker Rooms	50						0.25		203	325	202	380	
205B Locker Room Girls	812	Locker Rooms	50						0.25		203	325	202	390	
205A Stage	839	Stage	15	45	Stage		10	0.06		500		810	502		
205 Gymatorium	9021	Gymnasium	8	571	Multiuse Assembly		7.5	0.06		4824		7800	4836		
Summation	12609			620						5375		9,620	5,964	1245	

Selection			
Supply (CFM)	OA (CFM)	OA%	Return (CFM)
9,650	5,970	62%	7,880

AHU-4 OUTDOOR AIR REQUIREMENT

ROOM NAME/ ROOM NUMBER	AREA (FT2)	NYC BC TABLE 1004.1.1		# OF OCCU. PER P.O.R.	NYC MCC TABLE 403.3				OA CALC. PER NYC MC 403.3 (Eqn. 4-1, Table 403.3.1.2, Eqn 4-2)	EXH. CALC. PER NYC MC 403.5	DESIGN VALUES			
	(Az)	SPACE FUNCTION	SQ.FT PER OCCUPANT	(Pz)	OCCUPANCY CLASS	BREATHING ZONE OA/PERSON (Rp)	BREATHING ZONE OA/FT^2 (Ra)	EXHAUST RATE CFM/FT^2	BREATHING ZONE OA FLOW CFM (Vbz=RpPz+RaAz)	ZONE EXHAUST CFM	SUPPLY AIR CFM	OUTSIDE AIR CFM	EXHAUST AIR CFM	NOTES (at bottom)
1ST FLOOR														
140 Ground Equipment RM	130	Storage			Storage			1		130			150	
138 Cafeteria	4040	Assembly	15	267	Cafeteria	7.5	0.18		2730		4900	2773		
136F Deiticians Office	98	Office	20	5	Office	5	0.06		31		100	56		
136G Can Wash	91							6 ACH		91			125	
136C Kitchen Staff Toilet	77	Toilet		1 Fixture	Toilet Rooms			70/fixture		70			75	
136B Food & Non-Food Stor.	91	Kitchen						0.7		63.7			75	
136A Servery	518	Business	100	6	Kitchen	7.5	0.18		138		375	210		
Kitchen Hood													3850	
136 Kitchen	1179	Kitchen	200	6	Kitchen			0.7		825	1450	825	1500	
Summation	6224			284					2899		6,825	3,864	5775	
													1925	

Selection			
Supply (CFM)	OA (CFM)	OA%	Return (CFM)
6,825	3,865	57%	5,550

Drawing Title:

HVAC VENTILATION INDEX SCHEDULE

Drawing No.:
M007.00

Sheets in Contract Set:
OF

Sheets in DOB Set:
OF

CAD

VARIABLE REFRIGERANT VOLUME – AIR-COOLED CONDENSING UNIT SCHEDULE

TAG: ROOM	BASIS OF DESIGN	NOMINAL TONNAGE	DESCRIPTION	COOLING CAPACITY		HEATING CAPACITY		REFRIGERANT CHARGE		CONNECTION RATIO (%)	ELECTRICAL				DIMENSIONS		EFFICIENCY (Ducted)					REMARKS
				BTU/h	AMBIENT DESIGN (°F DB)	BTU/h	AMBIENT DESIGN (°F DB / WB)	FACTORY CHARGE (LBS)	ADD'L REFRIGERANT (LBS)		"VOLTAGE-PHASE"	MCA	MOP	"RUNNING CURRENT(A)"	(W)X(D) (INCH)	WEIGHT (lbs)	EER	IEER	COP 47	COP17	SCHE	
VRF-ACCU-1		6	AIR COOLED HEAT PUMP	72,000	95.0	81,000	0.0 / -0.4	26.5	–	105.0	208V/3PH/60HZ	22.6	35	19.1	36.6x66.5x29.2	430	13.40	28.50	3.83	2.66	28.50	
VRF-ACCU-2		8	AIR COOLED HEAT PUMP	92,000	95.0	103,000	0.0 / -0.4	7.7	–	–	208V/3PH/60HZ	25.7	40	–	37.4x53.4x13	260	13.95	29.05	3.99	2.79	29.50	

NOTES:

1. SYSTEM SHALL BE PROVIDED WITH I – TOUCH MANAGER CONTROLLER WITH WEB BASED SOFTWARE FOR DISPLAYING UP TO 8 DIII – NET SYSTEMS WITH 128 INDOOR UNITS PER SYSTEM.
2. MANUFACTURERS SUBMITTAL MUST INCLUDE REFRIGERANT PIPING DIAGRAM WITH PIPE DIAMETERS, LENGTHS, AND REFRIGERANT VOLUME.
3. SUBSTITUTE MANUFACTURER SHALL BE RESPONSIBLE FOR ADDITIONAL PIPING AND REFRIGERANT.
4. CONTRACTOR TO VERIFY PIPING DIMENSIONS.
5. INSTALLING CONTRACTOR MUST HAVE SUCCESSFULLY COMPLETED MANUFACTURERS CERTIFIED INSTALLATION CLASS WITHIN PAST 36 MONTHS.
6. CONTRACTOR TO FURNISH AND INSTALL INSULATION ON REFRIGERANT PIPING.
7. MANUFACTURERS REPRESENTATIVE MUST HAVE LOCAL STOCK OF PARTS AND FACTORY CERTIFIED TECHNICIAN ON STAFF.
8. MANUFACTURERS REPRESENTATIVE SHALL PROVIDE PROOF OF ONGOING INSTALLATION TRAINING AT THEIR LOCAL FACILITY FOR AT LEAST THE PAST 5 YEARS.
9. MANUFACTURERS REPRESENTATIVE SHALL PROVIDE PROOF OF CONTINUOUS SALES AND SUPPORT OF THEIR PRODUCTS FOR AT LEAST 15 YEARS.
10. MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DIRECT COSTS AND OPERATING COSTS INCREASES FOR 20 YEARS ASSOCIATED WITH ANY DEVIATIONS RESULTING FROM CHANGES IN DESIGN.
11. CONDENSING UNIT SHALL PROVIDE AUTO CHARGING AND INDOOR UNIT AUTO ADDRESSING CAPABILITY.
12. MANUFACTURER MUST PROVIDE 10 YEARS PARTS WARRANTY ON ALL FCUS, CONDENSING UNITS, MODE CHANGEOVER DEVICES AND ZONE CONTROLS. WARRANTY CONDITIONS MUST BE CLARIFIED DURING SUBMITTAL PHASE.
13. ALL AIR CONDITIONING UNITS TO BE PROVIDED WITH WIRED PROGRAMMABLE THERMOSTAT AND LOW AMBIENT CONTROL.
14. CONDENSER SHALL BE PROVIDED WITH LOW AMBIENT BAFFLE.

VARIABLE REFRIGERANT VOLUME – FAN COIL UNIT SCHEDULE

UNIT TAG	BASIS OF DESIGN	NOMINAL TONNAGE	TYPE	CONNECTED TO:		SUPPLY FAN	COOLING CAPACITY			HEATING CAPACITY		ELECTRICAL			DIMENSIONS	WEIGHT	OPTIONS AND ACCESSORIES	REMARKS
				CONDENSING UNIT	ZONE CHANGEOVER DEVICE	AIR FLOW RATE CFM	TOTAL BTU/h	SENSIBLE BTU/h	ENTERING AIR °F DB	TOTAL BTU/h	ENTERING AIR °F db	VOLTAGE/ PHASE	MCA	MOP	WxHxD INCH	NET LBS		
VRF-AC-1.1		1.5	CEILING MOUNTED CASSETTE 4WAY	ACCU-1	YES	396	19,100	–	80.0	20,500	70.0	230V 1PH	0.2	15A	23.6 X 9.7 X 23.6	35.0		
VRF-AC-1.2		0.75	CEILING MOUNTED CASSETTE 4WAY	ACCU-1	YES	265	7,500	–	80.0	8,500	70.0	230V 1PH	0.2	15A	23.6 X 9.7 X 23.6	32.0		
VRF-AC-1.3		1.0	CEILING MOUNTED CASSETTE 4WAY	ACCU-1	YES	350	12,300	–	80.0	13,600	70.0	230V 1PH	0.2	15A	23.6 X 9.7 X 23.6	32.0		
VRF-AC-1.4		1.0	CEILING MOUNTED CASSETTE 4WAY	ACCU-1	YES	325	12,300	–	80.0	13,600	70.0	230V 1PH	0.2	15A	23.6 X 9.7 X 23.6	32.0		
VRF-AC-1.5		0.9	CEILING MOUNTED CASSETTE 4WAY	ACCU-1	YES	283	9,600	–	80.0	10,900	70.0	230V 1PH	0.2	15A	23.6 X 9.7 X 23.6	32.0		
VRF-AC-1.6		0.9	CEILING MOUNTED CASSETTE 4WAY	ACCU-1	YES	283	9,600	–	80.0	10,900	70.0	230V 1PH	0.2	15A	23.6 X 9.7 X 23.6	32.0		
VRF-AC-1.7		0.9	CEILING MOUNTED CASSETTE 4WAY	ACCU-1	YES	283	9,600	–	80.0	10,900	70.0	230V 1PH	0.2	15A	23.6 X 9.7 X 23.6	32.0		
VRF-AC-1.8		1.5	CEILING MOUNTED CASSETTE 4WAY	ACCU-2	YES	353	15,400	–	80.0	17,100	70.0	230V 1PH	0.2	15A	23.6 X 9.7 X 23.6	32.0		
VRF-AC-1.9		1.0	CEILING MOUNTED CASSETTE 4WAY	ACCU-2	YES	307	12,300	–	80.0	13,600	70.0	230V 1PH	0.2	15A	23.6 X 9.7 X 23.6	32.0		
VRF-AC-1.10		1.0	CEILING MOUNTED CASSETTE 4WAY	ACCU-2	YES	307	12,300	–	80.0	13,600	70.0	230V 1PH	0.2	15A	23.6 X 9.7 X 23.6	32.0		
VRF-AC-1.11		1.0	CEILING MOUNTED CASSETTE 4WAY	ACCU-2	YES	307	12,300	–	80.0	13,600	70.0	230V 1PH	0.2	15A	23.6 X 9.7 X 23.6	32.0		
VRF-AC-2.1		1.5	CEILING MOUNTED CASSETTE 4WAY	ACCU-2	YES	590	15,400	–	80.0	17,100	70.0	230V 1PH	0.2	15A	23.6 X 9.7 X 23.6	32.0		
VRF-AC-5.1		1.0	CEILING MOUNTED CASSETTE 4WAY	ACCU-2	YES	307	12,300	–	80.0	13,600	70.0	230V 1PH	0.2	15A	23.6 X 9.7 X 23.6	32.0		

NOTES:

1. PROVIDE MAINTENANCE WITH SERVICE ACCESS FROM BELOW.
2. AIR HANDLING UNITS SHALL BE PROVIDED WITH CONDENSATE PUMP.
3. BUILT-IN CONDENSATE PUMP AND SECONDARY FACTORY MOUNTED OVERFLOW SWITCH.
4. PROVIDE MERV 13 FILTERS,OPTIONAL ECONOMIZER KIT
5. PROVIDE 10-YEAR WARRANTY ON COMPRESSOR AND ALL PARTS
6. ALL CONTROL AND POWER WIRING BETWEEN INDOOR AND OUTDOOR UNITS TO BE PROVIDED BY THE MECHANICAL CONTRACTOR.
7. AC UNIT SHALL BE PROVIDED WITH WIRED THERMOSTAT.
8. PROVIDE DISCONNECT SWITCH & REMOTE 7 DAY PROGRAMMABLE THERMOSTAT.

DEDICATED OUTSIDE AIR ENERGY RECOVERY WHEEL HOT WATER HEATING AIR HANDLING UNIT (100% OUTSIDE AIR UNIT) *

MANUFACTURER BASED ON: DAIKIN

MATCH LINE

UNIT No.	SERVICE	MODEL NO.	O.A. CFM	SUPPLY FAN DATA								RETURN/EXHAUST FAN DATA							DX COOLING COIL PERFORMANCE					ELECTRICAL DATA				ELECTRICAL HEAT SECTION					WEIGHT LBS	REFRIGERANT	SIZE (L" x W" x H")	REMARKS
				CFM	ESP (IN. W.G)	TSP (IN. W.G)	NO. OF FANS	WHEEL DIAMETER (INCHES)	RPM	BHP	HP	CFM	ESP	NO. OF FANS	WHEEL DIAMETER (INCHES)	RPM	BHP	HP	E.A.T. DB°F/WB°F	L.A.T. DB°F/WB°F	TOTAL (BTU/HR)	SENSIBLE (BTU/HR)	FACE AREA SQ. FT.	FACE VEL. FPM	VOLTAGE/ PHASE	MCA	FLA	MOP	TOTAL CAPACITY	EAT	LAT	KW	AIR PRESSURE DROP				
DOAS-1	SEE PLANS		1800	1800	2.0	2.9	1	12.0	2,344	0.70	1.3	1800	1.5	1	14.0	1945	0.86	2.3	89.0/73.0	51.0/51.0	82,866	55722	–	–	208/3	191.2	188.2	200	18,4502	12.8	72.8	54.0	0.06	–	R-410A	132.7"x96.5"x56.8"	

MATCH LINE

NOTES:

1. ALL UNITS SHALL HAVE INSULATED BASE PAN AND 24 VOLT CONTROL CIRCUIT TERMINAL STRIP.
2. REFRIGERANT SHALL BE R-410A OR EQUIVALENT.
3. ALL UNITS SHALL BE PROVIDED WITH SINGLE POINT POWER SUPPLY CONNECTION WITH UNIT MOUNTED MAIN DISCONNECT SWITCH.
4. ALL RTU'S SHALL HAVE A COMPLETE FACTORY INSTALLED DDC MICROPROCESSOR BASED CONTROL SYSTEM AND REMOTE CONTROLLER LOCATED IN THE FILE STORAGE ROOM.
5. ALL UNITS SHALL COMPLY WITH REQUIREMENT OF THE NYCSCA SPECIFICATIONS §15971 AND 15855.
6. ALL UNITS SHALL BE PROVIDED WITH ECM MOTORS FOR BOTH SUPPLY AND RETURN/EXHAUST FANS FOR AIRFLOW BALANCING ONLY.
7. UNITS SHALL BE PROVIDED WITH AIRFLOW MEASURING STATION, RECOVERY WHEEL AND MOTORIZED OUTDOOR AND EXHAUST AIR DAMPERS.
8. UNIT INTERNAL STATIC PRESSURE SHALL INCLUDE DIRTY FILTER ALLOWANCE AS SHOWN

ENERGY RECOVERY (ER) SECTION (SUMMER/WINTER) SCHEDULE

MANUFACTURER BASED ON: DAIKIN

MATCH LINE

MATCH LINE

SYSTEM	GENERAL: SUPPLY (CFM)	GENERAL: EXH. (CFM)	SUMMER OUTSIDE AIR STREAM: OUTSIDE AIR D.B. (F°)	OUTSIDE AIR W.B. (F°)	RETURN AIR D.B. (F°)	RETURN AIR W.B. (F°)	WHEEL (LEAVING) D.B. (F°)	WHEEL (LEAVING) W.B. (F°)	WHEEL P.D. (IN. W.G)	RECOVERED CAPACITY (BTU/HR)	EFFECTIVENESS TOTAL	EFFECTIVENESS SENSIBLE	WINTER OUTSIDE AIR STREAM: OUTSIDE AIR D.B. (F°)	OUTSIDE AIR W.B. (F°)	RETURN AIR D.B. (F°)	RETURN AIR W.B. (F°)	WHEEL (LEAVING) D.B. (F°)	WHEEL (LEAVING) W.B. (F°)	WHEEL P.D. (IN. W.G)	RECOVERED CAPACITY (BTU/HR)	EFFECTIVENESS TOTAL	EFFECTIVENESS SENSIBLE	ELECTRICAL DATA (WHEEL): MOTOR (HP)	MOTOR (FLA)	FILTER DATA: RETURN MERV THICK (IN)	OUTSIDE AIR MERV/ THICK (IN)	OUTSIDE AIR MERV/ THICK (IN)	PRESSURE DROP (EACH, IN. W.G) MERV10 CLEAN/DIRTY	PRESSURE DROP (EACH, IN. W.G) MERV13 CLEAN/DIRTY	EFFICIENCY EER	EFFICIENCY IEER	REMARKS
DOAS-1	1,800	1,800	88.0	73.0	75.0	62.0	79.3	66.5	0.32	43,601	63.59	69.00	12.8.0	10.0	70.0	50.0	53.5	40.6	0.32	94,055	70.77	71.16	0.17	0.7	MERV 8 2"	MERV 8 2"	MERV 13 2"	–	–	12.6	N/A	SEE NOTES BELOW & SPECIFICATION FOR ADDITIONAL INFORMATION.

NOTE: ENERGY RECOVERY SECTION SHALL BE AN INTEGRAL PART OF THE ROOF TOP UNIT. TOTAL STATIC PRESSURE SHALL INCLUDE DIRTY FILTER ALLOWANCE AS SHOWN.

Drawing Title:

HVAC EQUIPMENT SCHEDULE SHEET #2

Drawing No.:

M008.00

Sheets in Contract Set:

OF

Sheets in DOB Set:

OF

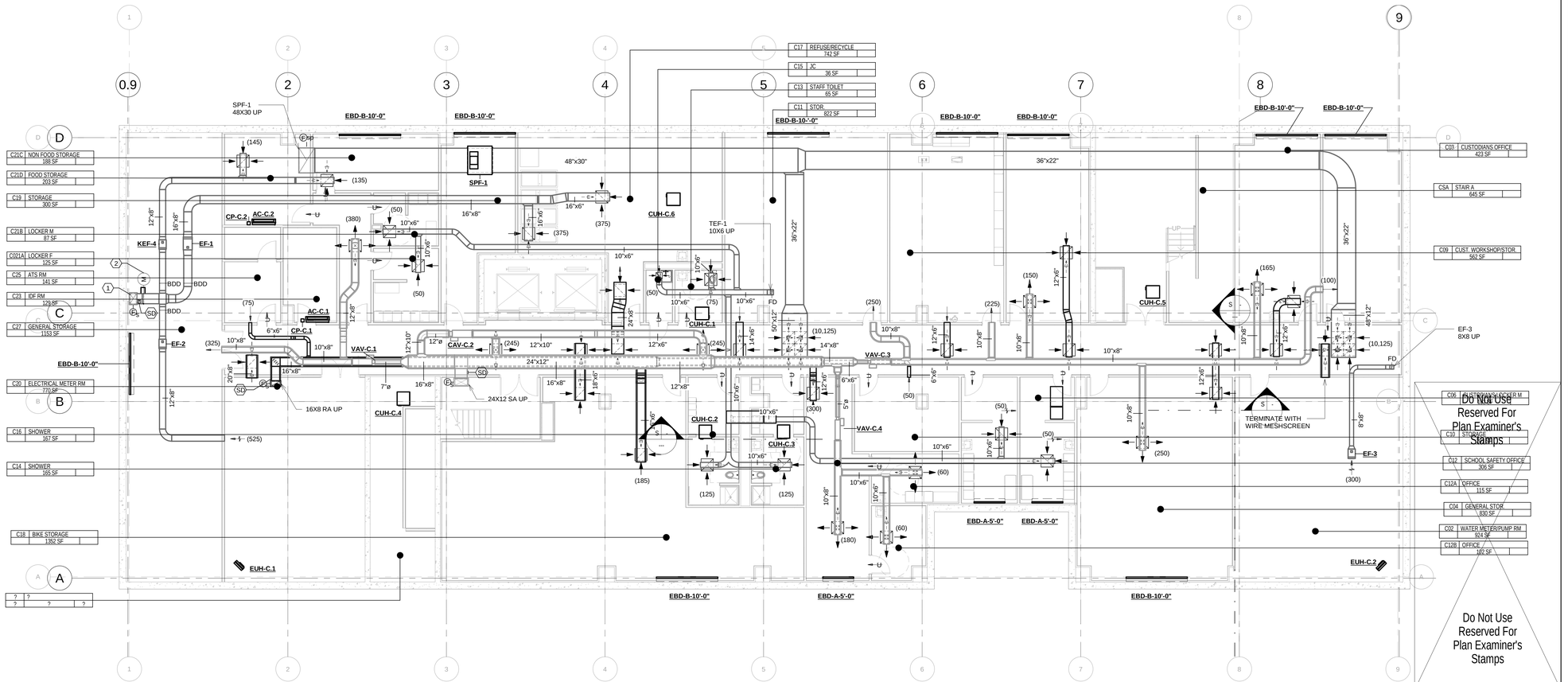
CAD

NOTES:

1. SEE HVAC PIPING PLANS FOR THERMOSTATS, TEMPERATURE SENSORS, HUMIDITY SENSORS, DDC ROUTERS AND DDC POWER PANEL.
2. ALL DUCT TAKE-OFF SHALL BE PROVIDED WITH 45 DEGREE CLINCH WITH COLLAR AND VOLUME DAMPERS AS PER DETAIL ON M501.00.
3. ALL DUCT TEES AND MITERED ELBOWS SHALL BE PROVIDED WITH SPLITTER TEE WITH DIRECTIONAL VANES.
4. DUCT SMOKE DETECTOR MUST BE INSTALLED WITHIN 5 FT OF FIRE SMOKE DAMPER AS SHOWN ON PLAN.
5. PROVIDE YOUNG REGULATOR TYPE VOLUME DAMPER FOR INACCESSIBLE CONCEALED DUCTWORK.
6. PROVIDE ARCHITECTURAL CEILING ACCESS DOOR FOR INACCESSIBLE CONCEALED CEILING MOUNTED EQUIPMENT, FIRE DAMPER, SMOKE DAMPER AND FIRE SMOKE DAMPER. SEE M502.00 FOR DUCT ACCESS DOOR SIZE.
7. ALL LOCKER / SHOWER AND MOP / CAN WASH ROOM EXHAUST DUCTWORK AND GRILLES SHALL BE ALUMINUM. REFER TO SPECICIATIONS FOR FURTHER DETAILS
8. COORDINATE WITH ARCHITECTURAL DRAWINGS FOR CEILING AND WALL ACCESS DOORS FOR EQUIPMENT, VOLUME DAMPERS, FIRE DAMPERS, SD, FSD ETC.
9. PROVIDE 1" DUCT LINER FROM DISCHARGE OF ALL VAV BOXES UP TO ALL OUTLETS

KEYED NOTES:

1. 20X12 EXHAUST AIR UP F.S.D AT SLAB 2HR RATED FIRE WRAP FOR DUCTWORK WITHIN ENLCOSURE FROM MOTORIZED DAMPER UP TO LOUVER LOCATED ON 2ND LFOOR
2. INTERLOCK DAMPER OPERATION WITH KEF-4, EF-1 &EF-2.



1 FP00_CELLAR FLOOR DUCTWORK
M101.00 SCALE: 1/8" = 1'-0"

Drawing Title:
HVAC DUCTWORK -CELLAR FLOOR PLAN

Reserved For
DOB NOW Job#

Drawing No.:
M101.00

Sheets in Contract Set:
OF 0

Sheets in DOB Set:
OF 0

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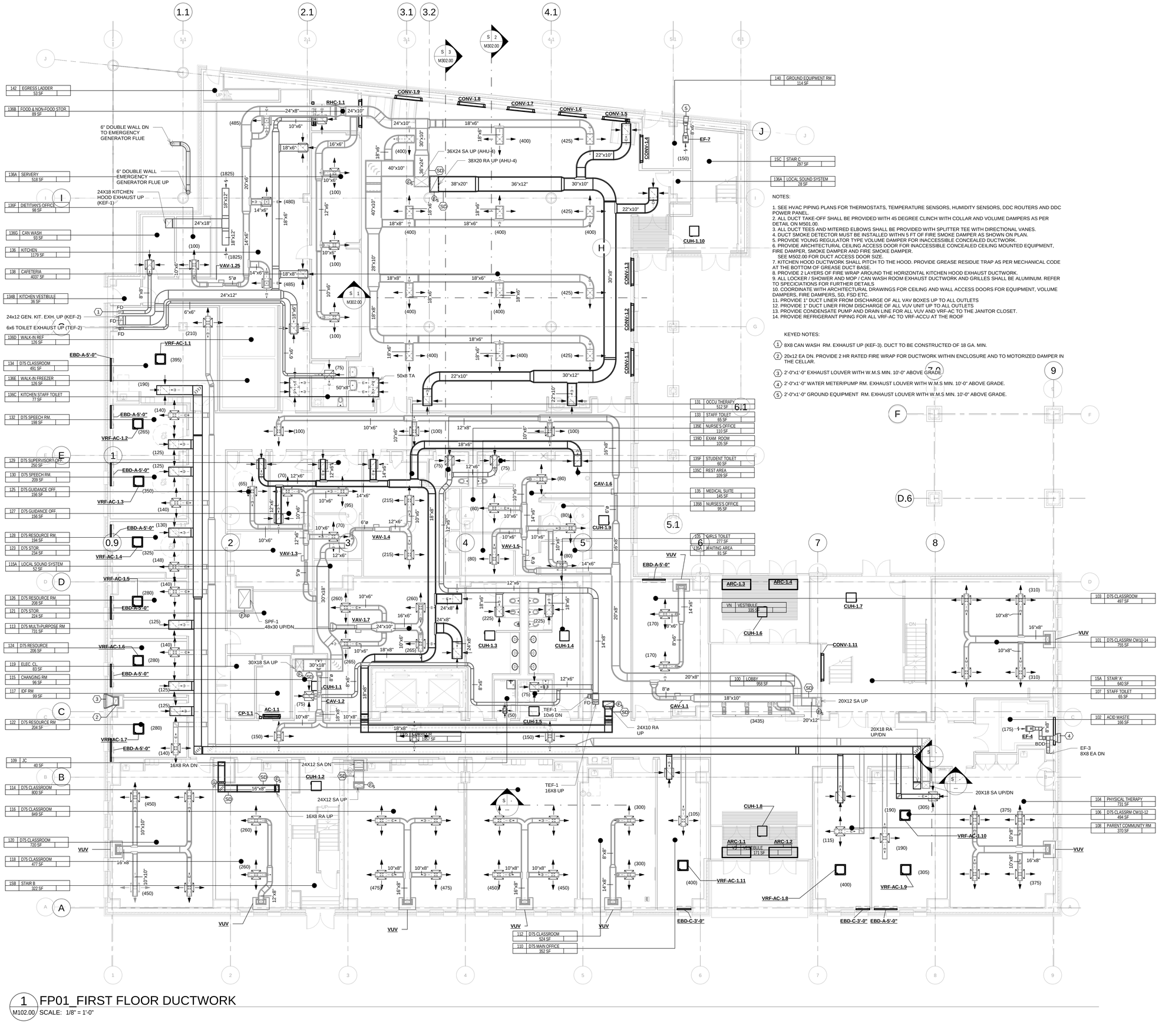

NOTES:

1. SEE HVAC PIPING PLANS FOR THERMOSTATS, TEMPERATURE SENSORS, HUMIDITY SENSORS, DDC ROUTERS AND DDC POWER PANEL.
2. ALL DUCT TAKE-OFF SHALL BE PROVIDED WITH 45 DEGREE CLINCH WITH COLLAR AND VOLUME DAMPERS AS PER DETAIL ON M501.00.
3. ALL DUCT TEES AND MITERED ELBOWS SHALL BE PROVIDED WITH SPLITTER TEE WITH DIRECTIONAL VANES.
4. DUCT SMOKE DETECTOR MUST BE INSTALLED WITHIN 5 FT OF FIRE SMOKE DAMPER AS SHOWN ON PLAN.
5. PROVIDE YOUNG REGULATOR TYPE VOLUME DAMPER FOR INACCESSIBLE CONCEALED DUCTWORK.
6. PROVIDE ARCHITECTURAL CEILING ACCESS DOOR FOR INACCESSIBLE CONCEALED CEILING MOUNTED EQUIPMENT, FIRE DAMPER, SMOKE DAMPER AND FIRE SMOKE DAMPER.
   SEE M502.00 FOR DUCT ACCESS DOOR SIZE.
7. KITCHEN HOOD DUCTWORK SHALL PITCH TO THE HOOD. PROVIDE GREASE RESIDUE TRAP AS PER MECHANICAL CODE AT THE BOTTOM OF GREASE DUCT BASE.
8. PROVIDE 2 LAYERS OF FIRE WRAP AROUND THE HORIZONTAL KITCHEN HOOD EXHAUST DUCTWORK.
9. ALL LOCKER / SHOWER AND MOP / CAN WASH ROOM EXHAUST DUCTWORK AND GRILLES SHALL BE ALUMINUM. REFER TO SPECIACATIONS FOR FURTHER DETAILS
10. COORDINATE WITH ARCHITECTURAL DRAWINGS FOR CEILING AND WALL ACCESS DOORS FOR EQUIPMENT, VOLUME DAMPERS, FIRE DAMPERS, SD, FSD ETC.
11. PROVIDE 1" DUCT LINER FROM DISCHARGE OF ALL VAV BOXES UP TO ALL OUTLETS
12. PROVIDE 1" DUCT LINER FROM DISCHARGE OF ALL VUV UNIT UP TO ALL OUTLETS
13. PROVIDE CONDENSATE PUMP AND DRAIN LINE FOR ALL VUV AND VRF-AC TO THE JANITOR CLOSET.
14. PROVIDE REFRIGERANT PIPING FOR ALL VRF-AC TO VRF-ACCU AT THE ROOF

KEYED NOTES:

1. 8X8 CAN WASH RM. EXHAUST UP (KEF-3). DUCT TO BE CONSTRUCTED OF 18 GA. MIN.
2. 20x12 EA DN. PROVIDE 2 HR RATED FIRE WRAP FOR DUCTWORK WITHIN ENCLOSURE AND TO MOTORIZED DAMPER IN THE CELLAR.
3. 2'-0"x1'-0" EXHAUST LOUVER WITH W.M.S MIN. 10'-0" ABOVE GRADE.
4. 2'-0"x1'-0" WATER METER/PUMP RM. EXHAUST LOUVER WITH W.M.S MIN. 10'-0" ABOVE GRADE.
5. 2'-0"x1'-0" GROUND EQUIPMENT RM. EXHAUST LOUVER WITH W.M.S MIN. 10'-0" ABOVE GRADE.

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Drawing Title:
HVAC DUCTWORK - FIRST FLOOR PLAN

Reserved For DOB NOW Job#

Drawing No.:
M102.00

Sheets in Contract Set: OF 0

Sheets in DOB Set: OF 0

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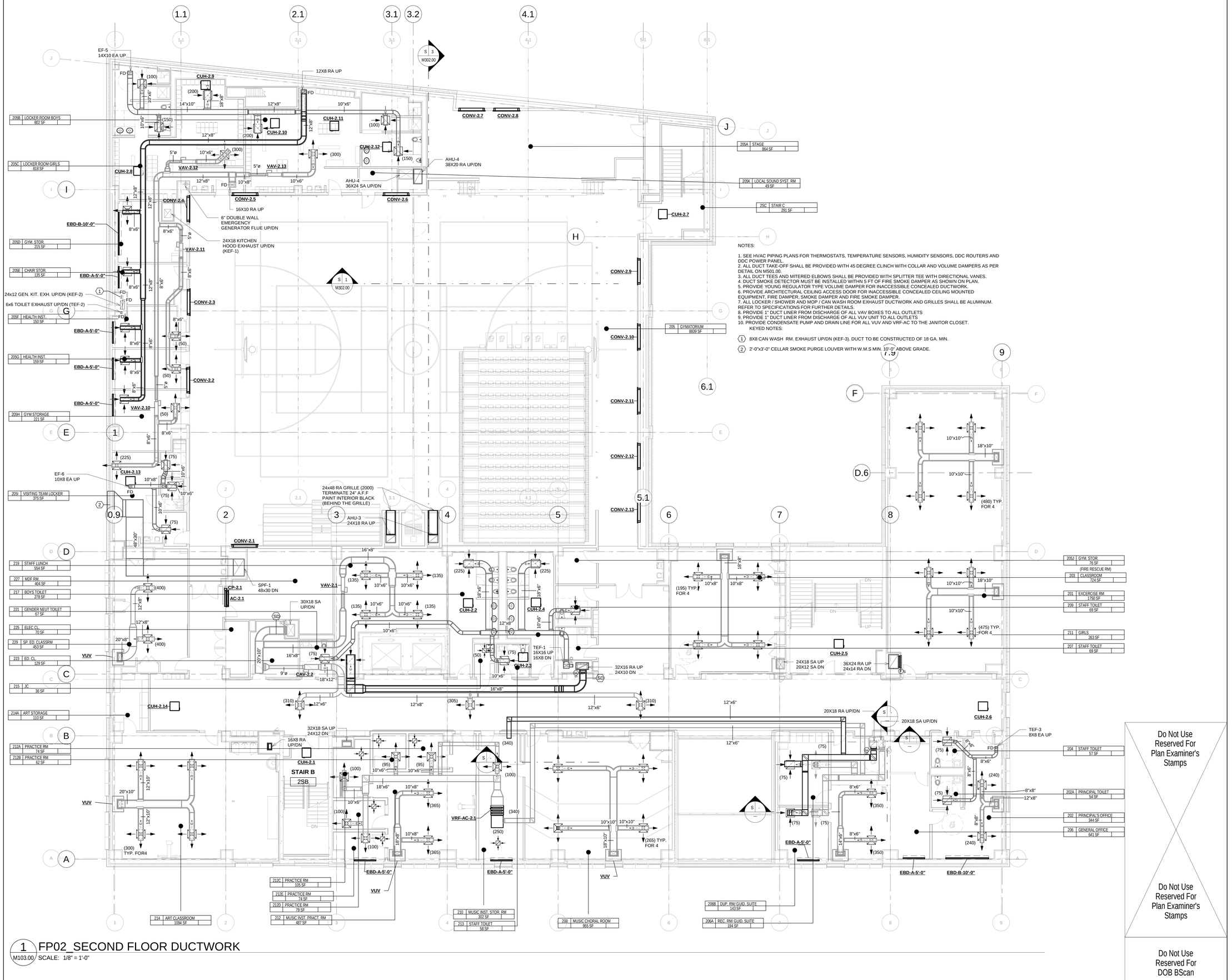

1 FP02_SECOND FLOOR DUCTWORK
M103.00 SCALE: 1/8" = 1'-0"

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Drawing Title:
HVAC DUCTWORK - SECOND FLOOR PLAN

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Drawing No.:
M103.00

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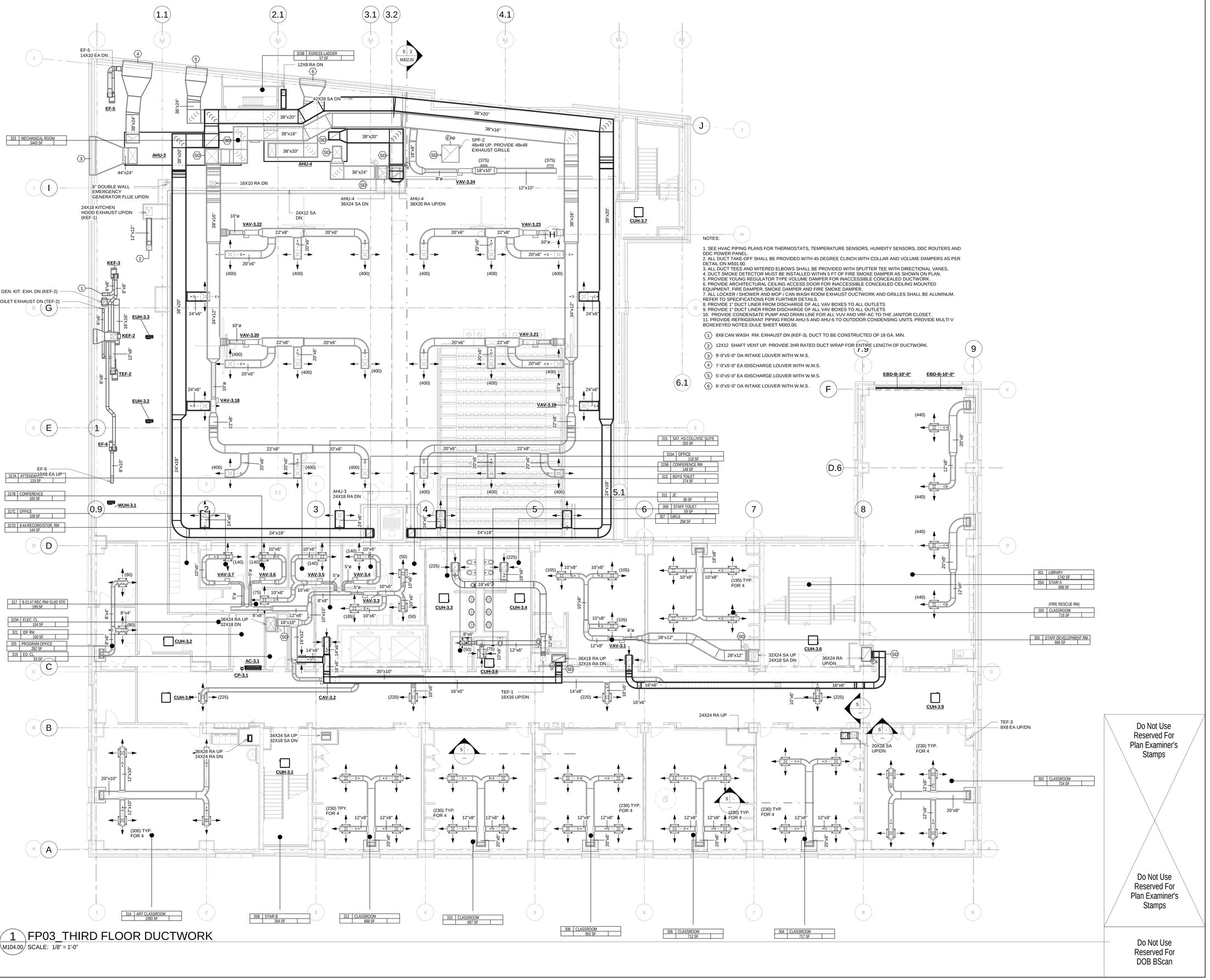

NOTES:

1. SEE HVAC PIPING PLANS FOR THERMOSTATS, TEMPERATURE SENSORS, HUMIDITY SENSORS, DDC ROUTERS AND DDC POWER PANEL.
2. ALL DUCT TAKE-OFF SHALL BE PROVIDED WITH 45 DEGREE CLINCH WITH COLLAR AND VOLUME DAMPERS AS PER DETAIL ON M501.00.
3. ALL DUCT TEES AND MITERED ELBOWS SHALL BE PROVIDED WITH SPLITTER TEE WITH DIRECTIONAL VANES.
4. DUCT SMOKE DETECTOR MUST BE INSTALLED WITHN 5 FT OF FIRE SMOKE DAMPER AS SHOWN ON PLAN.
5. PROVIDE YOUNG REGULATOR TYPE VOLUME DAMPER FOR INACCESSIBLE CONCEALED DUCTWORK.
6. PROVIDE ARCHITECTURAL CEILING ACCESS DOOR FOR INACCESSIBLE CONCEALED CEILING MOUNTED EQUIPMENT, FIRE DAMPER, SMOKE DAMPER AND FIRE SMOKE DAMPER.
7. ALL LOCKER / SHOWER AND MOP / CAN WASH ROOM EXHAUST DUCTWORK AND GRILLES SHALL BE ALUMINUM. REFER TO SPECIFICATIONS FOR FURTHER DETAILS.
8. PROVIDE 1" DUCT LINER FROM DISCHARGE OF ALL VAV BOXES TO ALL OUTLETS
9. PROVIDE 1" DUCT LINER FROM DISCHARGE OF ALL VAV BOXES TO ALL OUTLETS
10. PROVIDE CONDENSATE PUMP AND DRAIN LINE FOR ALL VUV AND VRF-AC TO THE JANITOR CLOSET.
11: PROVIDE REFRIGERANT PIPING FROM AHU-5 AND AHU-6 TO OUTDOOR CONDENSING UNITS. PROVIDE MULTI V BOXEKEYED NOTES::DULE SHEET M003.00.

1. 8X8 CAN WASH RM. EXHAUST DN (KEF-3). DUCT TO BE CONSTRUCTED OF 18 GA. MIN.
2. 12X12 SHAFT VENT UP. PROVIDE 2HR RATED DUCT WRAP FOR ENTIRE LENGTH OF DUCTWORK.
3. 9'-0"x5'-0" OA INTAKE LOUVER WITH W.M.S.
4. 7'-0"x5'-0" EA IDISCHARGE LOUVER WITH W.M.S.
5. 5'-0"x5'-0" EA IDISCHARGE LOUVER WITH W.M.S.
6. 6'-0"x5'-0" OA INTAKE LOUVER WITH W.M.S.

1 FP03_THIRD FLOOR DUCTWORK
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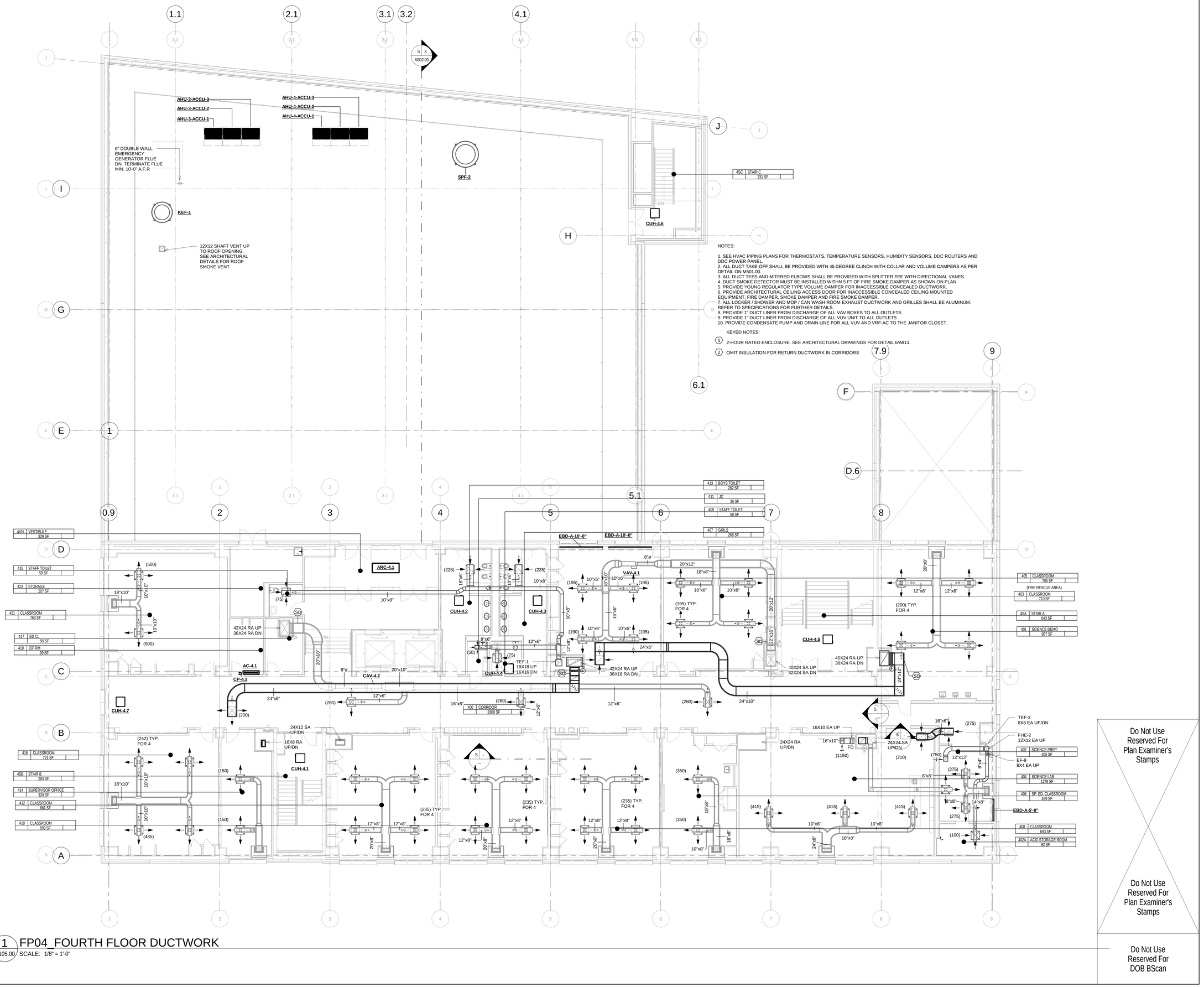

1 FP04_FOURTH FLOOR DUCTWORK
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HVAC DUCTWORK - FOURTH FLOOR PLAN

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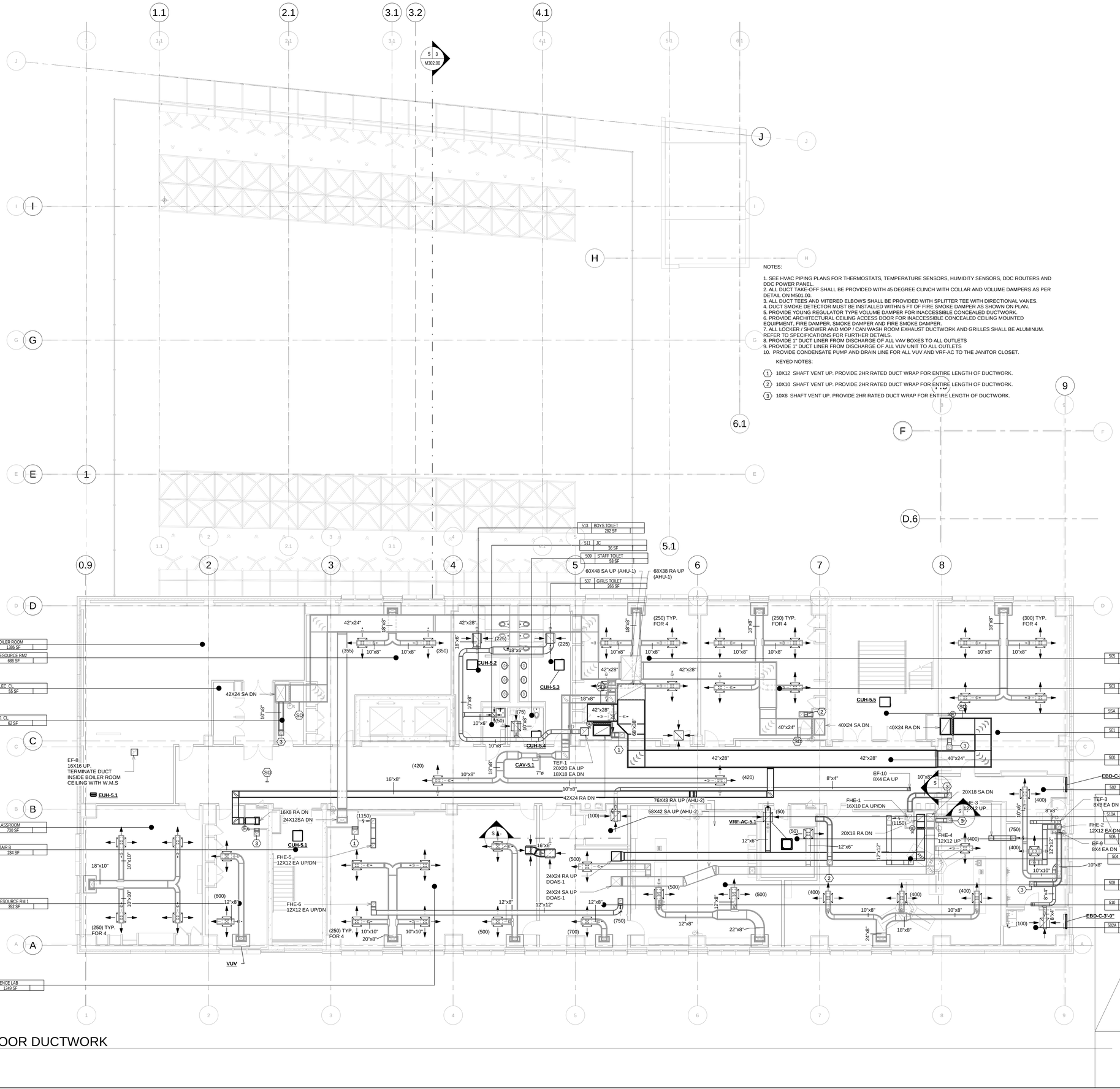

1 FP05_FIFTH FLOOR DUCTWORK
M106.00 SCALE: 1/8" = 1'-0"

Drawing Title:
HVAC DUCTWORK - FIFTH FLOOR PLAN

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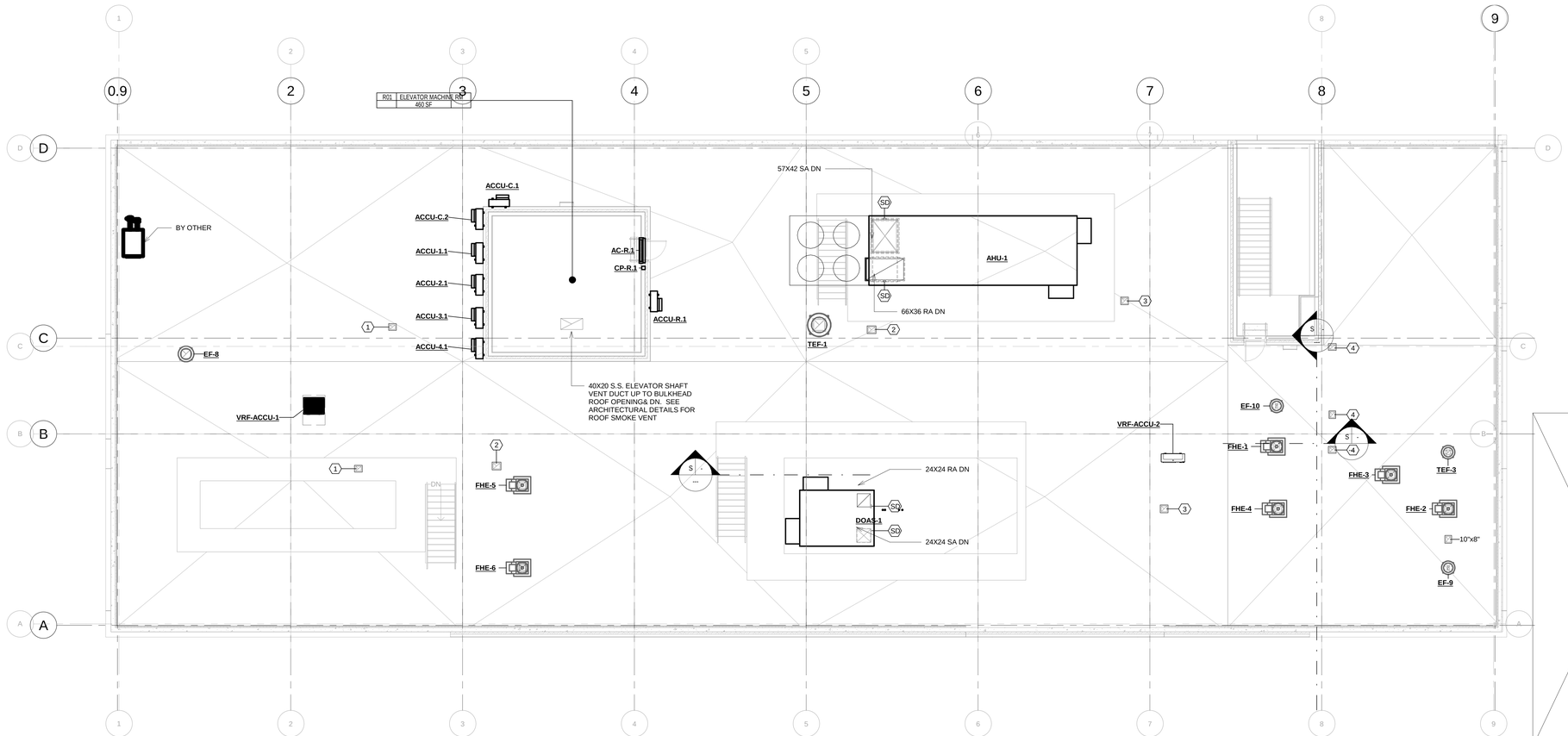
NOTES:

1. LOCATION AND SIZES OF ROOF OPENINGS SHALL BE COORDINATED WITH APPROVED EQUIPMENT AND APPROVED SHEET METAL SHOP DRAWINGS.
2. ALL AHUs AND CHILLER SHALL BE MOUNTED ON STRUCTURAL STEEL DUNNAGE. SEE STRUCTURAL DRAWING FOR DETAILS. SIZE OF DUNNAGE SHALL BE COORDINATED WITH APPROVED EQUIPMENT AND STRUCTURAL ENGINEER.
3. ENTIRE LENGTH OF ALL SHAFT VENTS SHALL BE WRAPPED AROUND WITH 2-HR RATED UL LISTED DUCT INSULATION ("3M" OR EQUAL).
4. SMOKE DAMPERS ASSOCIATED WITH THE SHAFT VENT SYSTEM SHALL BE NORMALLY CLOSED AND OPEN UPON FIRE ALARM ACTIVATION ONLY.

KEYED NOTES:

1. 10X8 SHAFT VENT UP TO ROOF OPENING. SEE ARCHITECTURAL DETAILS FOR ROOF SMOKE VENT.
2. 12X10 SHAFT VENT UP TO ROOF OPENING. SEE ARCHITECTURAL DETAILS FOR ROOF SMOKE VENT.
3. 10X10 SHAFT VENT UP TO ROOF OPENING. SEE ARCHITECTURAL DETAILS FOR ROOF SMOKE VENT.
4. 10X8 SHAFT VENT UP TO ROOF OPENING. SEE ARCHITECTURAL DETAILS FOR ROOF SMOKE VENT.



1 FP06_ROOF DUCTWORK
M107.00 SCALE: 1/8" = 1'-0"

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HVAC DUCTWORK - ROOF PLAN

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POWER

SYMBOL	DESCRIPTION
2,4	CONDUIT AND WIRE RUN CONCEALED IN FLOOR, CEILING OR WALL. HASH MARKS DENOTE NUMBER OF WIRES IF MORE THAN TWO ARE REQUIRED. ARROWS DENOTE HOMERUNS OF PARTICULAR CIRCUITS, MINIMUM 2#12 THHN/THWN IN 3/4" CONDUIT, ALL BRANCH CIRCUITS FOR 120V IF GREATER THAN 100 FEET SHALL BE ONE SIZE LARGER MINIMUM, AND FOR 277V IF MORE THAN 200 FEET ONE SIZE LARGER MINIMUM (BOTH TO MEET VOLTAGE DROP REQUIREMENTS) " " DENOTES GROUND CONDUCTOR TO MATCH CIRCUIT WIRES
	CONDUIT , WITH WIRING.
	RISER CONDUIT , WITH WIRING.
J	JUNCTION/SPLICE BOX, SIZE AS REQUIRED. SUBSCRIPT 'F' INDICATES FLOOR MOUNTED.
	WIRE TROUGH/SPLICE BOX. SIZE AS REQUIRED.
PNL#1	"PNL" INDICATES PANEL DESIGNATION AND "1" INDICATES CIRCUIT NUMBER. CIRCUIT WIRE SHALL BE MINIMUM 2#12 THHN/THWN IN 3/4" CONDUIT, U.O.I. ALL COMPUTER CIRCUIT SHALL ALSO BE PROVIDED WITH A SEPARATE NEUTRAL
	LIGHTING AND POWER PANELBOARD, FLUSH MOUNTED IN WALL WITH COVER INDICATED.
	LIGHTING AND POWER PANELBOARD, SURFACE MOUNTED ON WALL.
ASCP-X	AUTOMATIC SHADE POWER AND CONTROL MODULE. CONTROLS UP TO TEN (10) SHADES. WALL MOUNTED ABOVE FINISH CEILING. 'X' DENOTES THE FLOOR LEVEL.
	GROUND
S	DUPLEX THREE WIRE GROUNDED RECEPTACLE, 20A, 125V. (NEMA 5-20R) MOUNTED 18" A.F.F. U.O.I. SUBSCRIPTS "F" INDICATES FURNITURE MOUNTED, "S" INDICATES SURGE SUPPRESSOR, "SW" INDICATES SWITCHED VIA RECEPTACLE RELAY CONTROL PANEL, "G" INDICATES WITH ISOLATED GROUND. 'GFCI' INDICATES WITH GROUND FAULT INTERRUPTER.
	MOTOR STARTER W/ PUSH BUTTON STATIONS AND H-O-A. NOTED STARTER RATING AS PER HORSEPOWER INDICATED.
SWITCH RATING / FUSE SIZE ("U" IF UNFUSED) / POLES	DISCONNECT SWITCH, RATING AND FUSING NOTED. HORSEPOWER RATING AS REQUIRED BY MOTOR LOAD. 'WP' INDICATES WEATHERPROOF NEMA 4X ENCLOSURE, OTHERWISE NEMA-1. SUBSCRIPT "L" INDICATES LOCKABLE TYPE.
	COMBINATION MOTOR STARTER AND DISCONNECT SWITCH.
S	MOTOR. HORSEPOWER INSCRIBED. 'NP' INDICATES NON FUSE 'F' DENOTES FRACTIONAL HORSEPOWER LESS THAN 1/2HP
	GROUND BUS BAR
	FUSED SWITCH, RATING AND FUSING INDICATED.
	UNFUSED SWITCH.
M	CURRENT TRANSFORMER AND METER.
M	MOTORIZED DAMPER (BY MECHANICAL)
UV-X-X	UNIT VENTILATOR (BY MECHANICAL)
CUH	CABINET UNIT HEATER (BY MECHANICAL)
	ELECTRICAL UNIT HEATER (BY MECHANICAL)
F s	FIRE SMOKE DAMPER (BY MECHANICAL)
F sp	FIRE-SMOKE DAMPER AND ACCESS DOOR INTERLOCKED WITH SMOKE PURGE SYSTEM
S	SMOKE DAMPER (BY MECHANICAL)
S sp	SMOKE DAMPER AND ACCESS DOOR INTERLOCKED WITH SMOKE PURGE SYSTEM
SPD	TRANSIENT VOLTAGE SURGE SUPPRESSION DEVICE

GENERAL NOTES

1. FOR AN EXPLANATION OF ABBREVIATIONS AND SYMBOLS USED ON THESE DRAWINGS, SEE THE ABBREVIATION LIST AND SYMBOLS LIST ON THIS SHEET AND SHEET E001, RESPECTIVELY.
2. THE CONTRACTOR SHALL CHECK THE LOCATION, NUMBER AND SIZE OF ALL CHASES PROVIDED ON THE CONSTRUCTION PLANS AND ARRANGE FOR ANY CHASES REQUIRED FOR CABINET OR BOXES.
3. CONTRACTOR SHALL FIELD VERIFY DIMENSIONS OF FINISHED CONSTRUCTION PRIOR TO FABRICATION AND INSTALLATION OF FIXTURES AND EQUIPMENT.
4. MOUNTING HEIGHTS OF EQUIPMENT AND DEVICES SHALL BE AS INDICATED ON THE SPECIFICATION 16130-(3-04). UTILIZE THE FOLLOWING MOUNTING HEIGHTS UNLESS OTHERWISE NOTED (ALL DIMENSIONS TO CENTERLINE OF BOX):
   A. RECEPTACLES (WALL MOUNTED) - 18" A.F.F. UOI
   B. COMMUNICATIONS OUTLETS - SAME HEIGHT AS RECEPTACLES
   C. LIGHTING SWITCHES AND CONTROLS - 48" A.F.F.
   D. LIGHTING FIXTURES (AREAS WITHOUT CEILINGS) - 9'-6" A.F.F. UOI.
   E. PANELBOARDS AND CABINETS - 78" TO TOP OF ENCLOSURE
5. FINAL LOCATION OF LIGHTING FIXTURES, OCCUPANCY/VACANCY SENSOR, DAY-LIGHT SENSOR, SMOKE DETECTORS AND OTHER CEILING MOUNTED ELECTRICAL EQUIPMENT SHALL BE IN ACCORDANCE WITH ARCHITECTURAL REFLECTED CEILING PLANS.
6. WHERE MULTIPLE SWITCHES AND RECEPTACLES ARE INDICATED AT THE SAME LOCATION, THEY SHALL BE MOUNTED BEHIND A COMMON FACEPLATE.
7. WHERE EQUIPMENT, LIGHTING FIXTURES AND WIRING DEVICES ARE SHOWN WITH CIRCUIT NUMBERS ONLY, THE MINIMUM BRANCH CIRCUITING REQUIREMENTS SHALL BE AS FOLLOWS:
   A. LIGHTING FIXTURES - 2#12 & 1#12G - 3/4" C.
   B. RECEPTACLES - 2#12 & 1#12G - 3/4" C.
   C. BRANCH CIRCUIT BREAKERS (120 VOLT) - 1P, 20A
   D. HOMERUNS TO PANELBOARDS SHALL CONTAIN NO MORE THAN (3) CIRCUITS.
   E. WHERE LIGHTING SWITCH INDICATIONS ARE NOT SHOWN, SWITCHES SHALL BE CONNECTED TO CONTROL ALL SWITCHED FIXTURES WITHIN THE CORRESPONDING SPACE.
8. WIRE SIZES SHALL BE INCREASED TO COMPENSATE FOR VOLTAGE DROP AS FOLLOWS: 120V AND 208V CIRCUITS LONGER THAN 100' SHALL UTILIZE MIN. #10 AWG.
9. NUMBER SHOWN AT LIGHTING FIXTURES, DEVICES AND EQUIPMENT INDICATES CIRCUIT NUMBER IN PANEL. PROVIDE WIRE AND CONDUIT TO INTERCONNECT THE AFOREMENTIONED AND ASSOCIATED SWITCHES AND CONTROL DEVICES WITH SAME CIRCUIT NUMBERS AND RUN TO PANEL VIA CIRCUIT HOMERUN SHOWN.
10. CONDUIT RUNS SHALL BE NEATLY INSTALLED. WHERE MULTIPLE RUNS FROM THE SAME PANEL ARE MADE, THE RUNS SHALL BE PARALLEL WITH EACH OTHER AND FASTENED WITH A COMMON SUPPORT, SPACED AND SECURED AT THE REQUIRED INTERVALS. BRANCHES SHALL TURN OFF TO THEIR OUTLETS IN AN ORGANIZED MANNER WITHOUT CROSSING EACH OTHER.
11. WIRING IN AIR PLENUM HUNG CEILINGS WHEN INDICATED TO BE INSTALLED WITHOUT CONDUIT OR EMT SHALL BE TEFLON JACKETED.
12. LIGHTING FIXTURES IN ACCESSIBLE CEILINGS SHALL BE FURNISHED WITH FLEXIBLE CONDUIT CONNECTIONS TO SEPARATELY MOUNTED JUNCTION BOXES. ONE JUNCTION BOX SHALL SERVE A MAXIMUM OF FOUR (4) FIXTURES. MAXIMUM LENGTH OF FLEXIBLE CONNECTION SHALL BE 6'-0".
13. PULL AND JUNCTION BOXES SHALL BE SURFACE MOUNTED TYPE IN UNFINISHED AREAS UNLESS OTHERWISE NOTED. LOCATE APPROXIMATELY WHERE INDICATED, ON WALLS, CEILING BEAMS OR SUSPENDED FROM CEILINGS, TO SUIT CONDUIT ENTRANCE, TO AVOID INTERFERENCE WITH EQUIPMENT OF OTHER TRADES AND TO LEAVE COVERS READILY ACCESSIBLE.
14. PULL BOXES WHETHER SIZED OR NOT SHALL BE MODIFIED BY THIS CONTRACTOR TO MEET FIELD CONDITIONS AND CODE REQUIREMENTS. ADDITIONAL PULL BOXES, IF REQUIRED TO SATISFY FIELD CONDITIONS AND CODE REQUIREMENTS, SHALL BE SUPPLIED AND INSTALLED BY THIS CONTRACTOR AT NO EXTRA COST.
15. PANELBOARDS LOCATED ON OTHER THAN MASONRY WALLS SHALL BE MOUNTED WITH MODULAR CHANNEL SUPPORTS SECURED TO THE BUILDING STRUCTURE.
16. CIRCUIT BREAKER HANDLE LOCKS SHALL BE PROVIDED FOR ALL BRANCH CIRCUITS SERVING EMERGENCY LIGHTING, EXIT LIGHTING, FIRE ALARM AND SECURITY EQUIPMENT.
17. ALL BRANCH CIRCUITS SHALL BE CLEARLY MARKED IN THE PANEL AS TO LOCATION AND PURPOSE.
18. GROUND FAULT INTERRUPTER (GFI) RECEPTACLES OR CIRCUIT BREAKERS SHALL BE PROVIDED FOR EQUIPMENT DISPENSING OR OTHERWISE IN CONTACT WITH LIQUIDS.
19. ALL NOTATIONS OF "SCALE" ARE INTENDED AS APPROXIMATIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ASCERTAINING THE EXACT LOCATIONS OF ALL EQUIPMENT AND CHECKING THE REQUIRED CLEARANCES.
20. ALL CIRCUITS CONTAINING GFI OUTLETS, CKT CONTAINING SOLID STATE DIMMERS, CKTS FOR COMPUTERS AND/OR PERIPHERALS AND RELATED EQUIPMENT AND CIRCUITS RECOMMENDED BY THE MANUFACTURERS SHALL HAVE A SEPARATE DEDICATED NEUTRAL.
21. CONTRACTOR SHALL PROVIDE THERMAL OVERLOAD AND PROPER PROTECTIVE DEVICE FOR THE EQUIPMENT AS PER MANUFACTURERS REQUIREMENTS.
22. THIS CONTRACTOR SHALL PROVIDE SEPARATE RACEWAYS FOR CONDUCTORS ON NORMAL AND EMERGENCY CIRCUITS.
23. ELECTRICAL PENETRATIONS (CONDUITS, WIRING ETC.) THOUGHT WALL(S), PARTITION(S), AND/OR FLOOR CONSTRUCTION SHALL HAVE THE ANNULAR SPACE AROUND PENETRATION SEALED AND/OR FIRE STOPPED WITH UL APPROVED SYSTEM TO MATCH RATING OF ASSEMBLY. PATCH ALL DISTURBED SURFACES TO MATCH ADJACENT SURFACES.
24. THE CONTRACTOR SHALL COORDINATE WITH THE HVAC, P&D AND STRUCTURAL TRADES FOR EXACT LOCATIONS OF MOTORS AND EQUIPMENT, IN ORDER TO AVOID INTERFERENCE.
25. IN THE BOILER ROOM, SYSTEM CONDUITS, SUCH AS FOR LIGHTING AND POWER FEEDERS, LOW VOLTAGE, FIRE SIGNAL, ETC., SHALL NOT BE RUN OVER BOILERS.
26. NO CONDUIT SHALL BE RUN IN ANY FLOOR IN CONTACT WITH THE EARTH UNLESS OTHERWISE DIRECTED ON THE PLAN. IN SUCH AREAS, CONDUIT FOR MOTORS AND STARTERS SHALL BE RUN OVERHEAD, SUPPORTED AS REQUIRED.
27. WHERE RECESSED FIXTURES ARE INDICATED ON THESE PLANS AND WET PLASTER CEILING CONSTRUCTION IS USED, PLASTER FRAMES SHALL BE PROVIDED BY THE ELECTRICAL CONTRACTOR AND INSTALLED BY THE GENERAL CONTRACTOR. WITH OTHER TYPES OF HUNG CEILING CONSTRUCTION, LIGHTING FIXTURES SHALL BE APPROPRIATE TO MEET THE REQUIREMENTS OF THAT CEILING CONSTRUCTION.
28. CONTRACTOR SHALL PROVIDE SEPARATE RACEWAYS FOR CONDUCTORS ON NORMAL AND EMERGENCY CIRCUITS.
29. ANY DEVICE EXCEEDS 16 SQ INCHES INSTALLED IN FIRE RATED WALL SHALL BE PROVIDE WITH 2 HOURS FIRED RATED WRAPPING MATERIAL.

ABBREVIATIONS

A	AMPERE
AC	ALTERNATING CURRENT
AFC	ABOVE FINISHED CEILING
AFF	ABOVE FINISHED FLOOR
ARCH	ARCHITECTURAL
ATS	AUTOMATIC TRANSFER SWITCH
A/C	AIR CONDITIONING
C	CONDUIT
CAB	CABINET
CAT	CATEGORY
CLG	CEILING
CB	CIRCUIT BREAKER
CKT(S)	CIRCUIT(S)
CM	CONTROL MODULE
COL	COLUMN
DWG	DRAWING
DP-	DISTRIBUTION PANEL (208/120V)
E	EXISTING TO REMAIN
EC	EMPTY CONDUIT
ELEC	ELECTRIC
EM	EMERGENCY
EMR	ELEVATOR MECHANICAL ROOM
EXH	EXHAUST
EXIST	EXISTING
EWC	ELECTRIC WATER COOLER
FL	FLOOR
FO	FIBER OPTIC
FOPP	FIBER OPTIC PATCH PANEL
FP	FIRE PUMP
G	GUARD
GND	GROUND
GFI	GROUND FAULT INTERRUPTER
GRC	GALVANIZED RIGID CONDUIT
IDF	INTERMEDIATE DISTRIBUTION FRAME
IG	ISOLATED GROUND
JB	JUNCTION BOX
KVA	KILOVOLT AMPERE
KW	KILOWATT
KWH	KILOWATT HOUR
LDF	LOCAL DISTRIBUTION FRAME
LP	LIGHTING PANEL
LS	LOUDSPEAKER
LTG	LIGHTING
LVRC	LOW VOLTAGE RELAY CONTROL
MATV	MASTER TELEVISION
MCC	MOTOR CONTROL CENTER
MDF	MAIN DISTRIBUTION FRAME
MECH	MECHANICAL
MER	MECHANICAL EQUIPMENT ROOM
MIC	MICROPHONE
MSB	MAIN SWITCHBOARD
MTD	MOUNTED
MDR	MAIN DISTRIBUTION ROOM
N	NEUTRAL
NIC	NOT IN CONTRACT
NC	NORMALLY CLOSED
NL	NIGHT LIGHT
N.O.	NORMALLY OPEN
P	POLE(S)
PB	PULL BOX
P&D	PLUMBING AND DRAINAGE
PNL	PANEL
PP	POWER PANEL
PR	PAIR
R	TO BE REMOVED
REL	RELOCATE
RC	REMOTE CONTROL
RP	RECEPTACLE PANEL
SOC	SCHOOL OPERATING CONSOLE
SP	SPARE
SSB	SOLID STATE BALLAST
STD	STANDARD
SW	SWITCH
SWBD	SWITCHBOARD
TC	TELECOMMUNICATION CLOSET
TEL	TELEPHONE
TV	TELEVISION
TYP	TYPICAL
UON	UNLESS OTHERWISE NOTED
UTP	UNSHIELDED TWISTED-PAIR
V	VOLT
W	WATT
WP	WEATHERPROOF

ELECTRICAL CONDUIT INSTALLATION

(IN CONCRETE SLAB AND STEEL DECK CONSTRUCTION)

1. CONTRACTOR SHALL COORDINATE THE LOCATION AND EXTENT OF STEEL DECK AREA WITH ELECTRICAL TRADES.
2. CONDUIT PLACED IN SLAB SHALL BE PLACED ON TOP OF STEEL DECK AND BELOW TOP REINFORCEMENT.
3. CONDUITS SHALL HAVE A MINIMUM COVER OF 1" OF CONCRETE.
4. MAXIMUM SIZE OF CONDUIT IN CONCRETE SLAB AND STEEL DECK CONSTRUCTION SHALL NOT BE LARGER THAN 1" OUTSIDE DIAMETER.
5. PLACEMENT OF CONDUIT IN DECK RIBS SHALL BE AS PER DETAIL.
6. ALL CONDUITS PARALLEL TO DECK OR SLAB SPAN SHALL HAVE A MINIMUM SPACING OF SIX INCHES (6") ON CENTER. ALL ADDITIONAL CONDUITS, IF REQUIRED, ARE TO BE RUN CONCEALED WITHIN THE HUNG CEILING.|
7. ALL CONDUITS PERPENDICULAR TO THE DECK OR SLAB SPAN SHALL HAVE A MINIMUM SPACING OF SIXTEEN INCHES. ALL ADDITIONAL CONDUITS, IF REQUIRED, ARE TO BE RUN CONCEALED WITHIN THE HUNG CEILING.
8. PROVIDE ADDITIONAL W.W.F. OVER CONDUIT OF SAME SIZE AS TOP W.W.F. WITH AN OVERHANG OF NOT LESS THAN 12 INCHES ON BOTH SIDES OF EACH CONDUIT.
9. JUNCTION BOXES MAY BE PLACED IN CONCRETE BUT SHALL NOT EXCEED 6"x 6" x 3-1/2" IN DEPTH AND SHALL BE SEPARATED FROM OTHER JUNCTION BOXES BY NOT LESS THAN 18" OF CONCRETE.

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Drawing Title:
ELECTRICAL SYMBOLS, ABBREVIATIONS, AND NOTES

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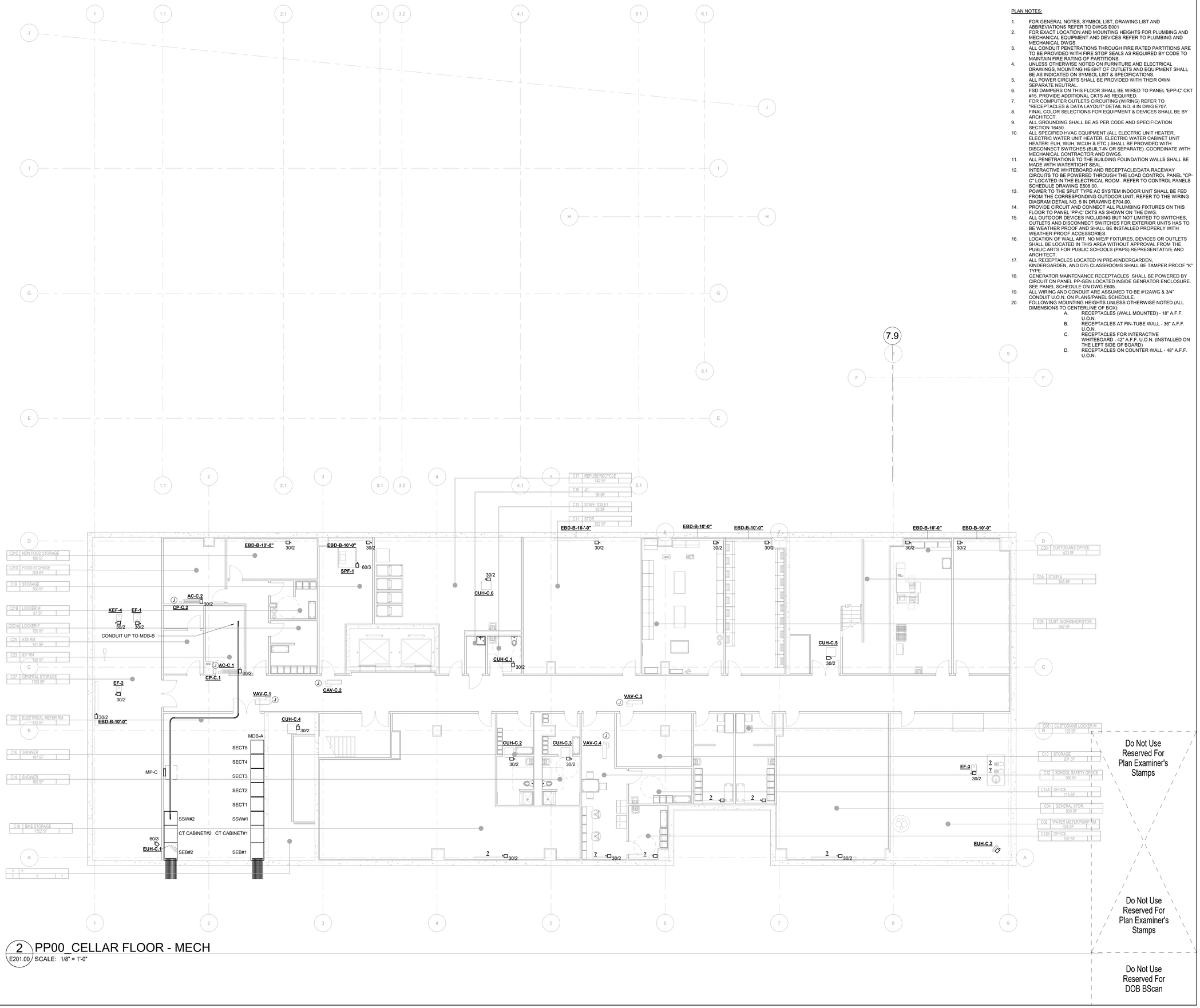
PLAN NOTES:

1. FOR GENERAL NOTES, SYMBOL LIST, DRAWING LIST AND ABBREVIATIONS REFER TO DWGS E001
2. FOR EXACT LOCATION AND MOUNTING HEIGHTS FOR PLUMBING AND MECHANICAL EQUIPMENT AND DEVICES REFER TO PLUMBING AND MECHANICAL DWGS.
3. ALL CONDUIT PENETRATIONS THROUGH FIRE RATED PARTITIONS ARE TO BE PROVIDED WITH FIRE STOP SEALS AS REQUIRED BY CODE TO MAINTAIN FIRE RATING OF PARTITIONS.
4. UNLESS OTHERWISE NOTED ON FURNITURE AND ELECTRICAL DRAWINGS, MOUNTING HEIGHT OF OUTLETS AND EQUIPMENT SHALL BE AS INDICATED ON SYMBOL LIST & SPECIFICATIONS.
5. ALL POWER CIRCUITS SHALL BE PROVIDED WITH THEIR OWN SEPARATE NEUTRAL.
6. FSD DAMPERS ON THIS FLOOR SHALL BE WIRED TO PANEL 'EPP-C' CKT #15. PROVIDE ADDITIONAL CKTS AS REQUIRED.
7. FOR COMPUTER OUTLETS CIRCUITING (WIRING) REFER TO "RECEPTACLES & DATA LAYOUT" DETAIL NO. 4 IN DWG E707.
8. FINAL COLOR SELECTIONS FOR EQUIPMENT & DEVICES SHALL BE BY ARCHITECT.
9. ALL GROUNDING SHALL BE AS PER CODE AND SPECIFICATION SECTION 16450.
10. ALL SPECIFIED HVAC EQUIPMENT (ALL ELECTRIC UNIT HEATER, ELECTRIC WATER UNIT HEATER, ELECTRIC WATER CABINET UNIT HEATER: EUH, WUH, WCUH & ETC.) SHALL BE PROVIDED WITH DISCONNECT SWITCHES (BUILT-IN OR SEPARATE). COORDINATE WITH MECHANICAL CONTRACTOR AND DWGS.
11. ALL PENETRATIONS TO THE BUILDING FOUNDATION WALLS SHALL BE MADE WITH WATERTIGHT SEAL.
12. INTERACTIVE WHITEBOARD AND RECEPTACLE/DATA RACEWAY CIRCUITS TO BE POWERED THROUGH THE LOAD CONTROL PANEL "CP-C" LOCATED IN THE ELECTRICAL ROOM. REFER TO CONTROL PANELS SCHEDULE DRAWING E508.00.
13. POWER TO THE SPLIT TYPE AC SYSTEM INDOOR UNIT SHALL BE FED FROM THE CORRESPONDING OUTDOOR UNIT. REFER TO THE WIRING DIAGRAM DETAIL NO. 5 IN DRAWING E704.00.
14. PROVIDE CIRCUIT AND CONNECT ALL PLUMBING FIXTURES ON THIS FLOOR TO PANEL 'PP-C' CKTS AS SHOWN ON THE DWG.
15. ALL OUTDOOR DEVICES INCLUDING BUT NOT LIMITED TO SWITCHES, OUTLETS AND DISCONNECT SWITCHES FOR EXTERIOR UNITS HAS TO BE WEATHER PROOF AND SHALL BE INSTALLED PROPERLY WITH WEATHER PROOF ACCESSORIES.
16. LOCATION OF WALL ART. NO M/E/P FIXTURES, DEVICES OR OUTLETS SHALL BE LOCATED IN THIS AREA WITHOUT APPROVAL FROM THE PUBLIC ARTS FOR PUBLIC SCHOOLS (PAPS) REPRESENTATIVE AND ARCHITECT.
17. ALL RECEPTACLES LOCATED IN PRE-KINDERGARDEN, KINDERGARDEN, AND D75 CLASSROOMS SHALL BE TAMPER PROOF "K" TYPE.
18. GENERATOR MAINTENANCE RECEPTACLES SHALL BE POWERED BY CIRCUIT ON PANEL PP-GEN LOCATED INSIDE GENRATOR ENCLOSURE. SEE PANEL SCHEDULE ON DWG E605.
19. ALL WIRING AND CONDUIT ARE ASSUMED TO BE #12AWG & 3/4" CONDUIT U.O.N. ON PLANS/PANEL SCHEDULE.
20. FOLLOWING MOUNTING HEIGHTS UNLESS OTHERWISE NOTED (ALL DIMENSIONS TO CENTERLINE OF BOX):
    - A. RECEPTACLES (WALL MOUNTED) - 18" A.F.F. U.O.N.
    - B. RECEPTACLES AT FIN-TUBE WALL - 36" A.F.F. U.O.N.
    - C. RECEPTACLES FOR INTERACTIVE WHITEBOARD - 42" A.F.F. U.O.N. (INSTALLED ON THE LEFT SIDE OF BOARD)
    - D. RECEPTACLES ON COUNTER WALL - 48" A.F.F. U.O.N.



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2 E201.00 PP00_CELLAR FLOOR - MECH

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

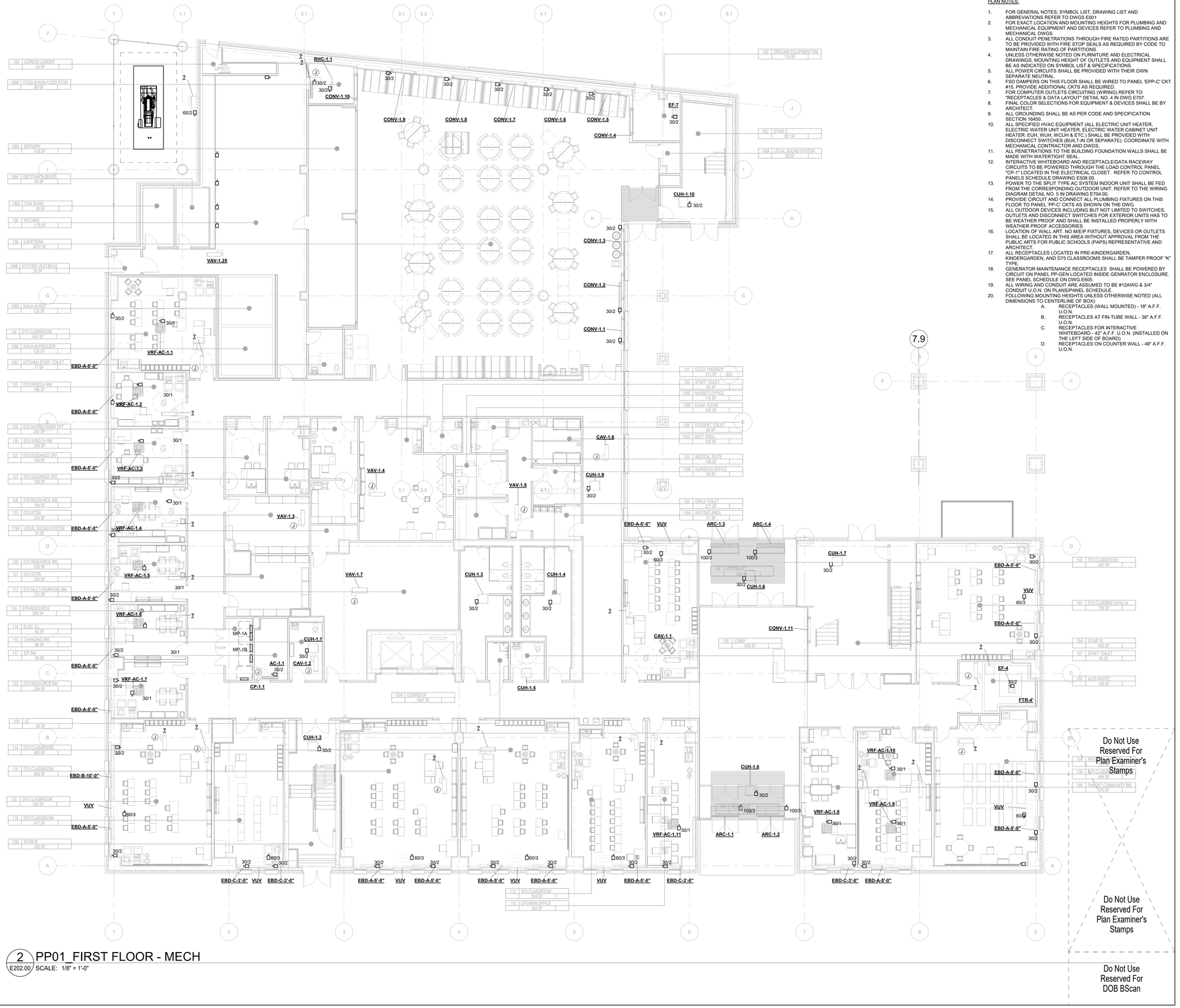
Drawing No.: E201.00

Sheets in Contract Set: OF 0

Sheets in DOB Set: OF 0

C:\Revit_Projects\ELEV\21999_JU_CEN HVAC_Option Z_DJONG600.rvt

7/8/2022 12:15:33 PM



PLAN NOTES:

1. FOR GENERAL NOTES, SYMBOL LIST, DRAWING LIST AND ABBREVIATIONS REFER TO DWGS E001
2. FOR EXACT LOCATION AND MOUNTING HEIGHTS FOR PLUMBING AND MECHANICAL EQUIPMENT AND DEVICES REFER TO PLUMBING AND MECHANICAL DWGS.
3. ALL CONDUIT PENETRATIONS THROUGH FIRE RATED PARTITIONS ARE TO BE PROVIDED WITH FIRE STOP SEALS AS REQUIRED BY CODE TO MAINTAIN FIRE RATING OF PARTITIONS.
4. UNLESS OTHERWISE NOTED ON FURNITURE AND ELECTRICAL DRAWINGS, MOUNTING HEIGHT OF OUTLETS AND EQUIPMENT SHALL BE AS INDICATED ON SYMBOL LIST & SPECIFICATIONS.
5. ALL POWER CIRCUITS SHALL BE PROVIDED WITH THEIR OWN SEPARATE NEUTRAL.
6. FSD DAMPERS ON THIS FLOOR SHALL BE WIRED TO PANEL 'EPP-C' CKT #15. PROVIDE ADDITIONAL CKTS AS REQUIRED.
7. FOR COMPUTER OUTLETS CIRCUITING (WIRING) REFER TO "RECEPTACLES & DATA LAYOUT" DETAIL NO. 4 IN DWG E707.
8. FINAL COLOR SELECTIONS FOR EQUIPMENT & DEVICES SHALL BE BY ARCHITECT
9. ALL GROUNDING SHALL BE AS PER CODE AND SPECIFICATION SECTION 16450.
10. ALL SPECIFIED HVAC EQUIPMENT (ALL ELECTRIC UNIT HEATER, ELECTRIC WATER UNIT HEATER, ELECTRIC WATER CABINET UNIT HEATER: EUH, WUH, WCUH & ETC.) SHALL BE PROVIDED WITH DISCONNECT SWITCHES (BUILT-IN OR SEPARATE). COORDINATE WITH MECHANICAL CONTRACTOR AND DWGS.
11. ALL PENETRATIONS TO THE BUILDING FOUNDATION WALLS SHALL BE MADE WITH WATERTIGHT SEAL.
12. INTERACTIVE WHITEBOARD AND RECEPTACLE/DATA RACEWAY CIRCUITS TO BE POWERED THROUGH THE LOAD CONTROL PANEL "CP-1" LOCATED IN THE ELECTRICAL CLOSET. REFER TO CONTROL PANELS SCHEDULE DRAWING E508.00.
13. POWER TO THE SPLIT TYPE AC SYSTEM INDOOR UNIT SHALL BE FED FROM THE CORRESPONDING OUTDOOR UNIT. REFER TO THE WIRING DIAGRAM DETAIL NO. 5 IN DRAWING E704.00.
14. PROVIDE CIRCUIT AND CONNECT ALL PLUMBING FIXTURES ON THIS FLOOR TO PANEL 'PP-C' CKTS AS SHOWN ON THE DWG.
15. ALL OUTDOOR DEVICES INCLUDING BUT NOT LIMITED TO SWITCHES, OUTLETS AND DISCONNECT SWITCHES FOR EXTERIOR UNITS HAS TO BE WEATHER PROOF AND SHALL BE INSTALLED PROPERLY WITH WEATHER PROOF ACCESSORIES.
16. LOCATION OF WALL ART. NO M/E/P FIXTURES, DEVICES OR OUTLETS SHALL BE LOCATED IN THIS AREA WITHOUT APPROVAL FROM THE PUBLIC ARTS FOR PUBLIC SCHOOLS (PAPS) REPRESENTATIVE AND ARCHITECT.
17. ALL RECEPTACLES LOCATED IN PRE-KINDERGARDEN, KINDERGARDEN, AND D75 CLASSROOMS SHALL BE TAMPER PROOF "K" TYPE.
18. GENERATOR MAINTENANCE RECEPTACLES SHALL BE POWERED BY CIRCUIT ON PANEL PP-GEN LOCATED INSIDE GENRATOR ENCLOSURE. SEE PANEL SCHEDULE ON DWG E605.
19. ALL WIRING AND CONDUIT ARE ASSUMED TO BE #12AWG & 3/4" CONDUIT U.O.N. ON PLANS/PANEL SCHEDULE.
20. FOLLOWING MOUNTING HEIGHTS UNLESS OTHERWISE NOTED (ALL DIMENSIONS TO CENTERLINE OF BOX):
    - A. RECEPTACLES (WALL MOUNTED) - 18" A.F.F. U.O.N.
    - B. RECEPTACLES AT FIN-TUBE WALL - 36" A.F.F. U.O.N.
    - C. RECEPTACLES FOR INTERACTIVE WHITEBOARD - 42" A.F.F. U.O.N. (INSTALLED ON THE LEFT SIDE OF BOARD).
    - D. RECEPTACLES ON COUNTER WALL - 48" A.F.F. U.O.N.

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2 PP01_FIRST FLOOR - MECH
E202.00 SCALE: 1/8" = 1'-0"

Drawing Title:
FIRST FLOOR PLAN - POWER SYSTEMS

Reserved For DOB NOW Job#

Drawing No.:
E202.00

Sheets in Contract Set: OF 0

Sheets in DOB Set: OF 0

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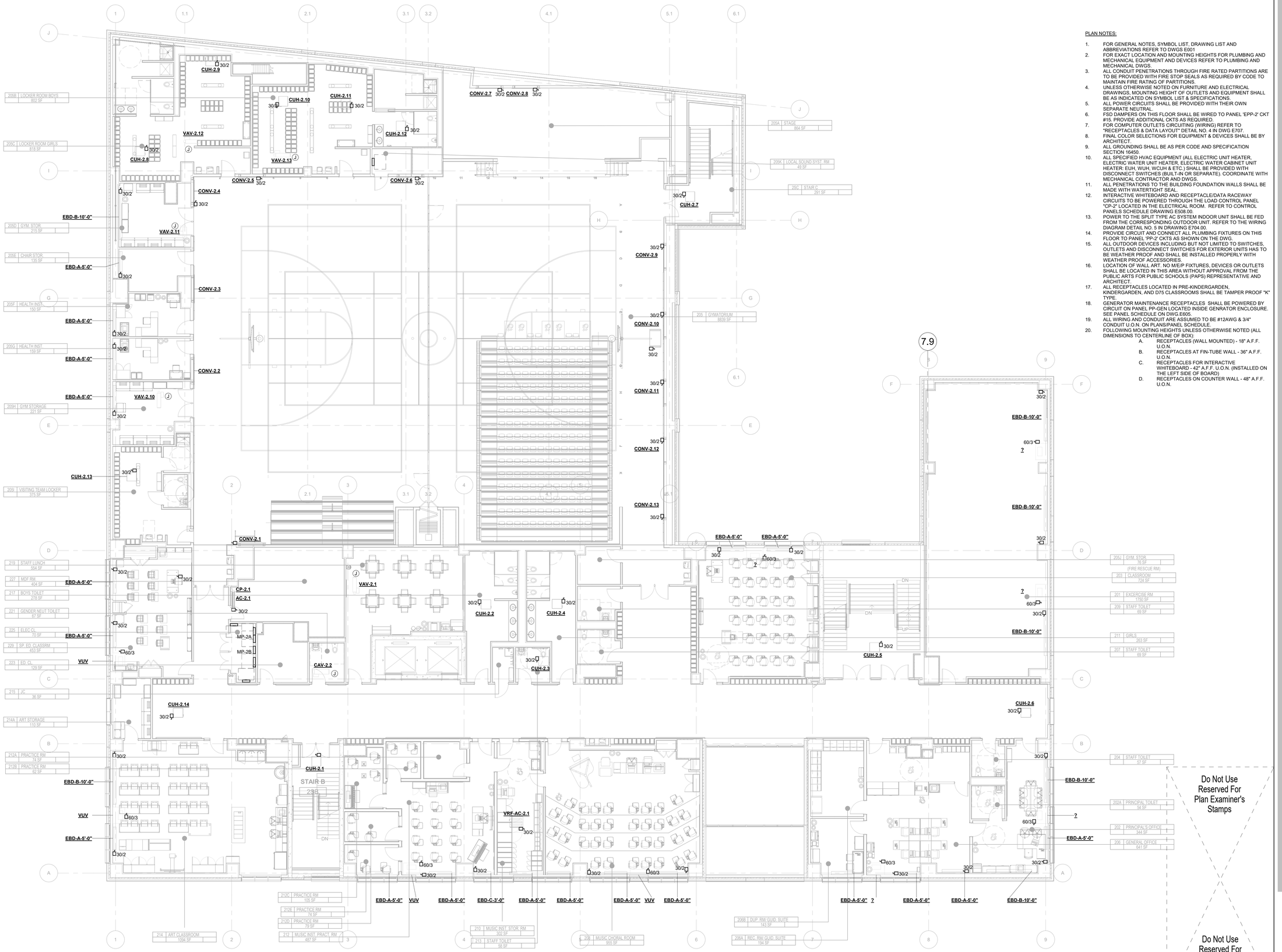

PLAN NOTES:

1. FOR GENERAL NOTES, SYMBOL LIST, DRAWING LIST AND ABBREVIATIONS REFER TO DWGS E001
2. FOR EXACT LOCATION AND MOUNTING HEIGHTS FOR PLUMBING AND MECHANICAL EQUIPMENT AND DEVICES REFER TO PLUMBING AND MECHANICAL DWGS.
3. ALL CONDUIT PENETRATIONS THROUGH FIRE RATED PARTITIONS ARE TO BE PROVIDED WITH FIRE STOP SEALS AS REQUIRED BY CODE TO MAINTAIN FIRE RATING OF PARTITIONS.
4. UNLESS OTHERWISE NOTED ON FURNITURE AND ELECTRICAL DRAWINGS, MOUNTING HEIGHT OF OUTLETS AND EQUIPMENT SHALL BE AS INDICATED ON SYMBOL LIST & SPECIFICATIONS.
5. ALL POWER CIRCUITS SHALL BE PROVIDED WITH THEIR OWN SEPARATE NEUTRAL.
6. FSD DAMPERS ON THIS FLOOR SHALL BE WIRED TO PANEL 'EPP-2' CKT #15. PROVIDE ADDITIONAL CKTS AS REQUIRED.
7. FOR COMPUTER OUTLETS CIRCUITING (WIRING) REFER TO "RECEPTACLES & DATA LAYOUT" DETAIL NO. 4 IN DWG E707.
8. FINAL COLOR SELECTIONS FOR EQUIPMENT & DEVICES SHALL BE BY ARCHITECT.
9. ALL GROUNDING SHALL BE AS PER CODE AND SPECIFICATION SECTION 16450.
10. ALL SPECIFIED HVAC EQUIPMENT (ALL ELECTRIC UNIT HEATER, ELECTRIC WATER UNIT HEATER, ELECTRIC WATER CABINET UNIT HEATER: EUH, WUH, WCUH & ETC.) SHALL BE PROVIDED WITH DISCONNECT SWITCHES (BUILT-IN OR SEPARATE). COORDINATE WITH MECHANICAL CONTRACTOR AND DWGS.
11. ALL PENETRATIONS TO THE BUILDING FOUNDATION WALLS SHALL BE MADE WITH WATERTIGHT SEAL.
12. INTERACTIVE WHITEBOARD AND RECEPTACLE/DATA RACEWAY CIRCUITS TO BE POWERED THROUGH THE LOAD CONTROL PANEL "CP-2" LOCATED IN THE ELECTRICAL ROOM. REFER TO CONTROL PANELS SCHEDULE DRAWING E508.00.
13. POWER TO THE SPLIT TYPE AC SYSTEM INDOOR UNIT SHALL BE FED FROM THE CORRESPONDING OUTDOOR UNIT. REFER TO THE WIRING DIAGRAM DETAIL NO. 5 IN DRAWING E704.00.
14. PROVIDE CIRCUIT AND CONNECT ALL PLUMBING FIXTURES ON THIS FLOOR TO PANEL 'PP-2' CKTS AS SHOWN ON THE DWG.
15. ALL OUTDOOR DEVICES INCLUDING BUT NOT LIMITED TO SWITCHES, OUTLETS AND DISCONNECT SWITCHES FOR EXTERIOR UNITS HAS TO BE WEATHER PROOF AND SHALL BE INSTALLED PROPERLY WITH WEATHER PROOF ACCESSORIES.
16. LOCATION OF WALL ART. NO M/E/P FIXTURES, DEVICES OR OUTLETS SHALL BE LOCATED IN THIS AREA WITHOUT APPROVAL FROM THE PUBLIC ARTS FOR PUBLIC SCHOOLS (PAPS) REPRESENTATIVE AND ARCHITECT.
17. ALL RECEPTACLES LOCATED IN PRE-KINDERGARDEN, KINDERGARDEN, AND D75 CLASSROOMS SHALL BE TAMPER PROOF "K" TYPE.
18. GENERATOR MAINTENANCE RECEPTACLES SHALL BE POWERED BY CIRCUIT ON PANEL PP-GEN LOCATED INSIDE GENRATOR ENCLOSURE. SEE PANEL SCHEDULE ON DWG E605.
19. ALL WIRING AND CONDUIT ARE ASSUMED TO BE #12AWG & 3/4" CONDUIT U.O.N. ON PLANS/PANEL SCHEDULE.
20. FOLLOWING MOUNTING HEIGHTS UNLESS OTHERWISE NOTED (ALL DIMENSIONS TO CENTERLINE OF BOX):
    - A. RECEPTACLES (WALL MOUNTED) - 18" A.F.F. U.O.N.
    - B. RECEPTACLES AT FIN-TUBE WALL - 36" A.F.F. U.O.N.
    - C. RECEPTACLES FOR INTERACTIVE WHITEBOARD - 42" A.F.F. U.O.N. (INSTALLED ON THE LEFT SIDE OF BOARD).
    - D. RECEPTACLES ON COUNTER WALL - 48" A.F.F. U.O.N.

2 PP02_SECOND FLOOR - MECH
E203.00 SCALE: 1/8" = 1'-0"

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Drawing Title
SECOND FLOOR PLAN - POWER SYSTEMS

Reserved For DOB NOW Job#

Drawing No.:
E203.00

Sheets in Contract Set: OF 0

Sheets in DOB Set: OF 0

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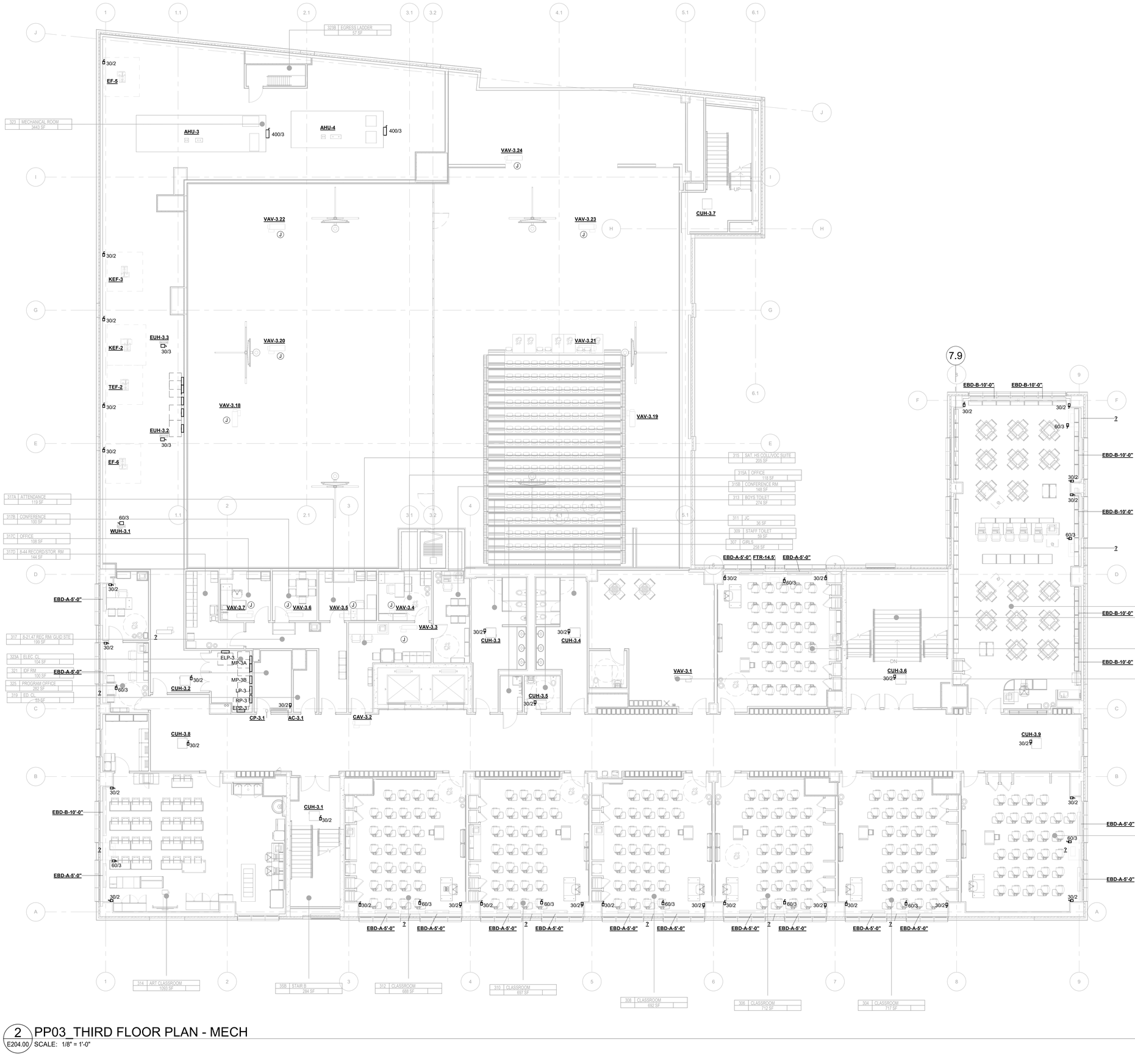

2 PP03_THIRD FLOOR PLAN - MECH
E204.00 SCALE: 1/8" = 1'-0"

PLAN NOTES:

1. FOR GENERAL NOTES, SYMBOL LIST, DRAWING LIST AND ABBREVIATIONS REFER TO DWGS E001
2. FOR EXACT LOCATION AND MOUNTING HEIGHTS FOR PLUMBING AND MECHANICAL EQUIPMENT AND DEVICES REFER TO PLUMBING AND MECHANICAL DWGS.
3. ALL CONDUIT PENETRATIONS THROUGH FIRE RATED PARTITIONS ARE TO BE PROVIDED WITH FIRE STOP SEALS AS REQUIRED BY CODE TO MAINTAIN FIRE RATING OF PARTITIONS.
4. UNLESS OTHERWISE NOTED ON FURNITURE AND ELECTRICAL DRAWINGS, MOUNTING HEIGHT OF OUTLETS AND EQUIPMENT SHALL BE AS INDICATED ON SYMBOL LIST & SPECIFICATIONS.
5. ALL POWER CIRCUITS SHALL BE PROVIDED WITH THEIR OWN SEPARATE NEUTRAL.
6. FSD DAMPERS ON THIS FLOOR SHALL BE WIRED TO PANEL 'EPP-3' CKT #15. PROVIDE ADDITIONAL CKTS AS REQUIRED.
7. FOR COMPUTER OUTLETS CIRCUITING (WIRING) REFER TO "RECEPTACLES & DATA LAYOUT" DETAIL NO. 4 IN DWG E707.
8. FINAL COLOR SELECTIONS FOR EQUIPMENT & DEVICES SHALL BE BY ARCHITECT.
9. ALL GROUNDING SHALL BE AS PER CODE AND SPECIFICATION SECTION 16450.
10. ALL SPECIFIED HVAC EQUIPMENT (ALL ELECTRIC UNIT HEATER, ELECTRIC WATER UNIT HEATER, ELECTRIC WATER CABINET UNIT HEATER: EUH, WUH, WCUH & ETC.) SHALL BE PROVIDED WITH DISCONNECT SWITCHES (BUILT-IN OR SEPARATE). COORDINATE WITH MECHANICAL CONTRACTOR AND DWGS.
11. ALL PENETRATIONS TO THE BUILDING FOUNDATION WALLS SHALL BE MADE WITH WATERTIGHT SEAL.
12. INTERACTIVE WHITEBOARD AND RECEPTACLE/DATA RACEWAY CIRCUITS TO BE POWERED THROUGH THE LOAD CONTROL PANEL "CP-3" LOCATED IN THE ELECTRICAL ROOM. REFER TO CONTROL PANELS SCHEDULE DRAWING E508.00.
13. POWER TO THE SPLIT TYPE AC SYSTEM INDOOR UNIT SHALL BE FED FROM THE CORRESPONDING OUTDOOR UNIT. REFER TO THE WIRING DIAGRAM DETAIL NO. 5 IN DRAWING E704.00.
14. PROVIDE CIRCUIT AND CONNECT ALL PLUMBING FIXTURES ON THIS FLOOR TO PANEL 'PP-2' CKTS AS SHOWN ON THE DWG.
15. ALL OUTDOOR DEVICES INCLUDING BUT NOT LIMITED TO SWITCHES, OUTLETS AND DISCONNECT SWITCHES FOR EXTERIOR UNITS HAS TO BE WEATHER PROOF AND SHALL BE INSTALLED PROPERLY WITH WEATHER PROOF ACCESSORIES.
16. LOCATION OF WALL ART. NO M/E/P FIXTURES, DEVICES OR OUTLETS SHALL BE LOCATED IN THIS AREA WITHOUT APPROVAL FROM THE PUBLIC ARTS FOR PUBLIC SCHOOLS (PAPS) REPRESENTATIVE AND ARCHITECT.
17. ALL RECEPTACLES LOCATED IN PRE-KINDERGARDEN, KINDERGARDEN, AND D75 CLASSROOMS SHALL BE TAMPER PROOF "K" TYPE.
18. GENERATOR MAINTENANCE RECEPTACLES SHALL BE POWERED BY CIRCUIT ON PANEL PP-GEN LOCATED INSIDE GENRATOR ENCLOSURE. SEE PANEL SCHEDULE ON DWG E605.
19. ALL WIRING AND CONDUIT ARE ASSUMED TO BE #12AWG & 3/4" CONDUIT U.O.N. ON PLANS/PANEL SCHEDULE.
20. FOLLOWING MOUNTING HEIGHTS UNLESS OTHERWISE NOTED (ALL DIMENSIONS TO CENTERLINE OF BOX):
    - A. RECEPTACLES (WALL MOUNTED) - 18" A.F.F. U.O.N.
    - B. RECEPTACLES AT FIN-TUBE WALL - 36" A.F.F. U.O.N.
    - C. RECEPTACLES FOR INTERACTIVE WHITEBOARD - 42" A.F.F. U.O.N. (INSTALLED ON THE LEFT SIDE OF BOARD).
    - D. RECEPTACLES ON COUNTER WALL - 48" A.F.F. U.O.N.

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Drawing Title:
THIRD FLOOR PLAN - POWER SYSTEMS

Reserved For
DOB NOW Job#

Drawing No.:
E204.00

Sheets in Contract Set:
OF 0

Sheets in DOB Set:
OF 0

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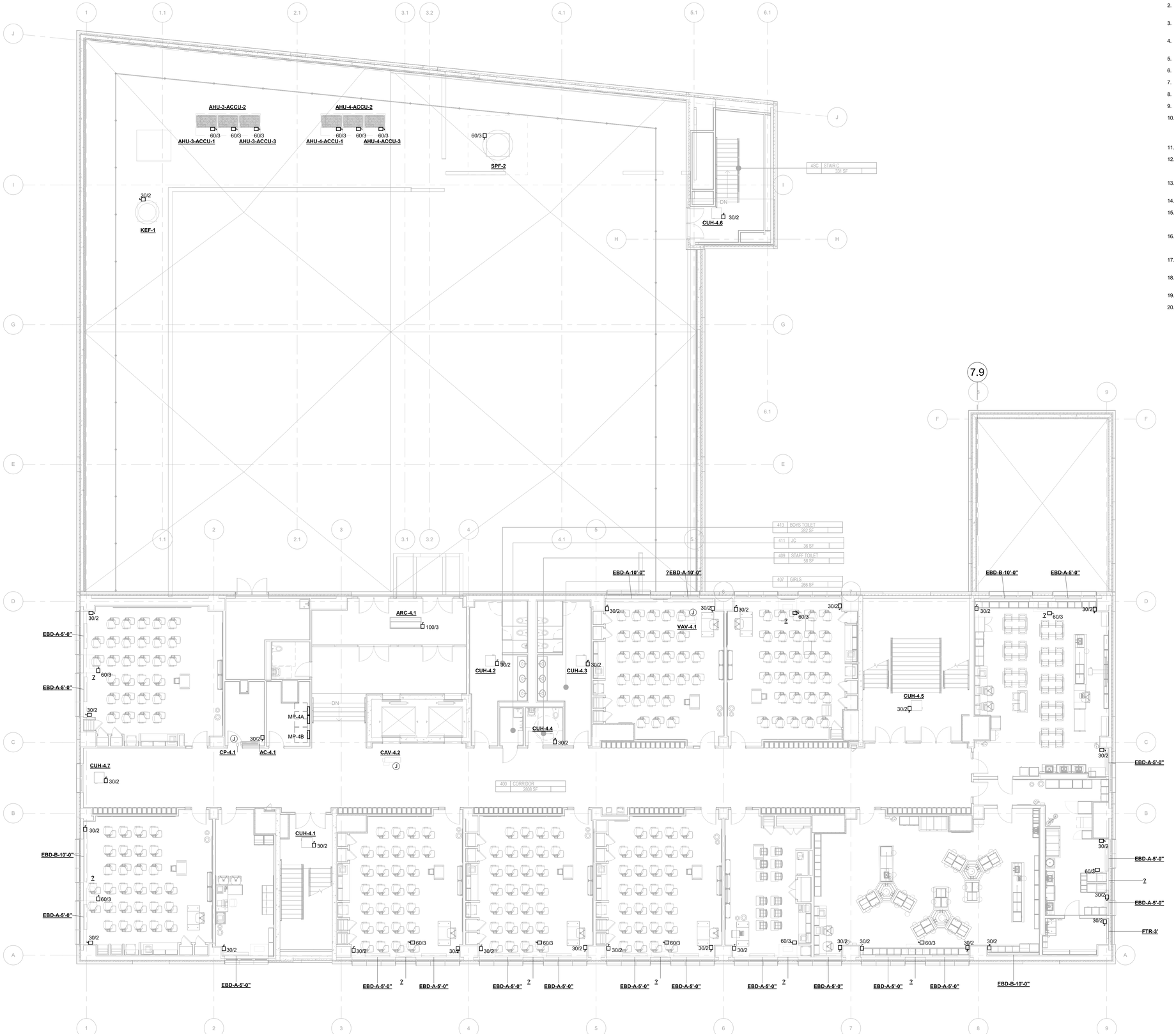

PLAN NOTES:

1. FOR GENERAL NOTES, SYMBOL LIST, DRAWING LIST AND ABBREVIATIONS REFER TO DWGS E001
2. FOR EXACT LOCATION AND MOUNTING HEIGHTS FOR PLUMBING AND MECHANICAL EQUIPMENT AND DEVICES REFER TO PLUMBING AND MECHANICAL DWGS.
3. ALL CONDUIT PENETRATIONS THROUGH FIRE RATED PARTITIONS ARE TO BE PROVIDED WITH FIRE STOP SEALS AS REQUIRED BY CODE TO MAINTAIN FIRE RATING OF PARTITIONS.
4. UNLESS OTHERWISE NOTED ON FURNITURE AND ELECTRICAL DRAWINGS, MOUNTING HEIGHT OF OUTLETS AND EQUIPMENT SHALL BE AS INDICATED ON SYMBOL LIST & SPECIFICATIONS.
5. ALL POWER CIRCUITS SHALL BE PROVIDED WITH THEIR OWN SEPARATE NEUTRAL.
6. FSD DAMPERS ON THIS FLOOR SHALL BE WIRED TO PANEL 'EPP-5' CKT #15. PROVIDE ADDITIONAL CKTS AS REQUIRED.
7. FOR COMPUTER OUTLETS CIRCUITING (WIRING) REFER TO "RECEPTACLES & DATA LAYOUT" DETAIL NO. 4 IN DWG E707.
8. FINAL COLOR SELECTIONS FOR EQUIPMENT & DEVICES SHALL BE BY ARCHITECT.
9. ALL GROUNDING SHALL BE AS PER CODE AND SPECIFICATION SECTION 16450.
10. ALL SPECIFIED HVAC EQUIPMENT (ALL ELECTRIC UNIT HEATER, ELECTRIC WATER UNIT HEATER, ELECTRIC WATER CABINET UNIT HEATER: EUH, WUH, WCUH & ETC.) SHALL BE PROVIDED WITH DISCONNECT SWITCHES (BUILT-IN OR SEPARATE). COORDINATE WITH MECHANICAL CONTRACTOR AND DWGS.
11. ALL PENETRATIONS TO THE BUILDING FOUNDATION WALLS SHALL BE MADE WITH WATERTIGHT SEAL.
12. INTERACTIVE WHITEBOARD AND RECEPTACLE/DATA RACEWAY CIRCUITS TO BE POWERED THROUGH THE LOAD CONTROL PANEL "CP-5" LOCATED IN THE ELECTRICAL ROOM. REFER TO CONTROL PANELS SCHEDULE DRAWING E508.00.
13. POWER TO THE SPLIT TYPE AC SYSTEM INDOOR UNIT SHALL BE FED FROM THE CORRESPONDING OUTDOOR UNIT. REFER TO THE WIRING DIAGRAM DETAIL NO. 5 IN DRAWING E704.00.
14. PROVIDE CIRCUIT AND CONNECT ALL PLUMBING FIXTURES ON THIS FLOOR TO PANEL 'PP-5' CKTS AS SHOWN ON THE DWG.
15. ALL OUTDOOR DEVICES INCLUDING BUT NOT LIMITED TO SWITCHES, OUTLETS AND DISCONNECT SWITCHES FOR EXTERIOR UNITS HAS TO BE WEATHER PROOF AND SHALL BE INSTALLED PROPERLY WITH WEATHER PROOF ACCESSORIES.
16. LOCATION OF WALL ART. NO M/E/P FIXTURES, DEVICES OR OUTLETS SHALL BE LOCATED IN THIS AREA WITHOUT APPROVAL FROM THE PUBLIC ARTS FOR PUBLIC SCHOOLS (PAPS) REPRESENTATIVE AND ARCHITECT.
17. ALL RECEPTACLES LOCATED IN PRE-KINDERGARDEN, KINDERGARDEN, AND D75 CLASSROOMS SHALL BE TAMPER PROOF "K" TYPE.
18. GENERATOR MAINTENANCE RECEPTACLES SHALL BE POWERED BY CIRCUIT ON PANEL PP-GEN LOCATED INSIDE GENRATOR ENCLOSURE. SEE PANEL SCHEDULE ON DWG E605.
19. ALL WIRING AND CONDUIT ARE ASSUMED TO BE #12AWG & 3/4" CONDUIT U.O.N. ON PLANS/PANEL SCHEDULE.
20. FOLLOWING MOUNTING HEIGHTS UNLESS OTHERWISE NOTED (ALL DIMENSIONS TO CENTERLINE OF BOX):
    - A. RECEPTACLES (WALL MOUNTED) - 18" A.F.F. U.O.N.
    - B. RECEPTACLES AT FIN-TUBE WALL - 36" A.F.F. U.O.N.
    - C. RECEPTACLES FOR INTERACTIVE WHITEBOARD - 42" A.F.F. U.O.N. (INSTALLED ON THE LEFT SIDE OF BOARD).
    - D. RECEPTACLES ON COUNTER WALL - 48" A.F.F. U.O.N.

2 PP04_FOURTH FLOOR - MECH
E205.00 SCALE: 1/8" = 1'-0"

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Drawing Title:
FOURTH FLOOR PLAN - POWER SYSTEMS

Reserved For DOB NOW Job#

Drawing No.:
E205.00

Sheets in Contract Set:
OF 0

Sheets in DOB Set:
OF 0

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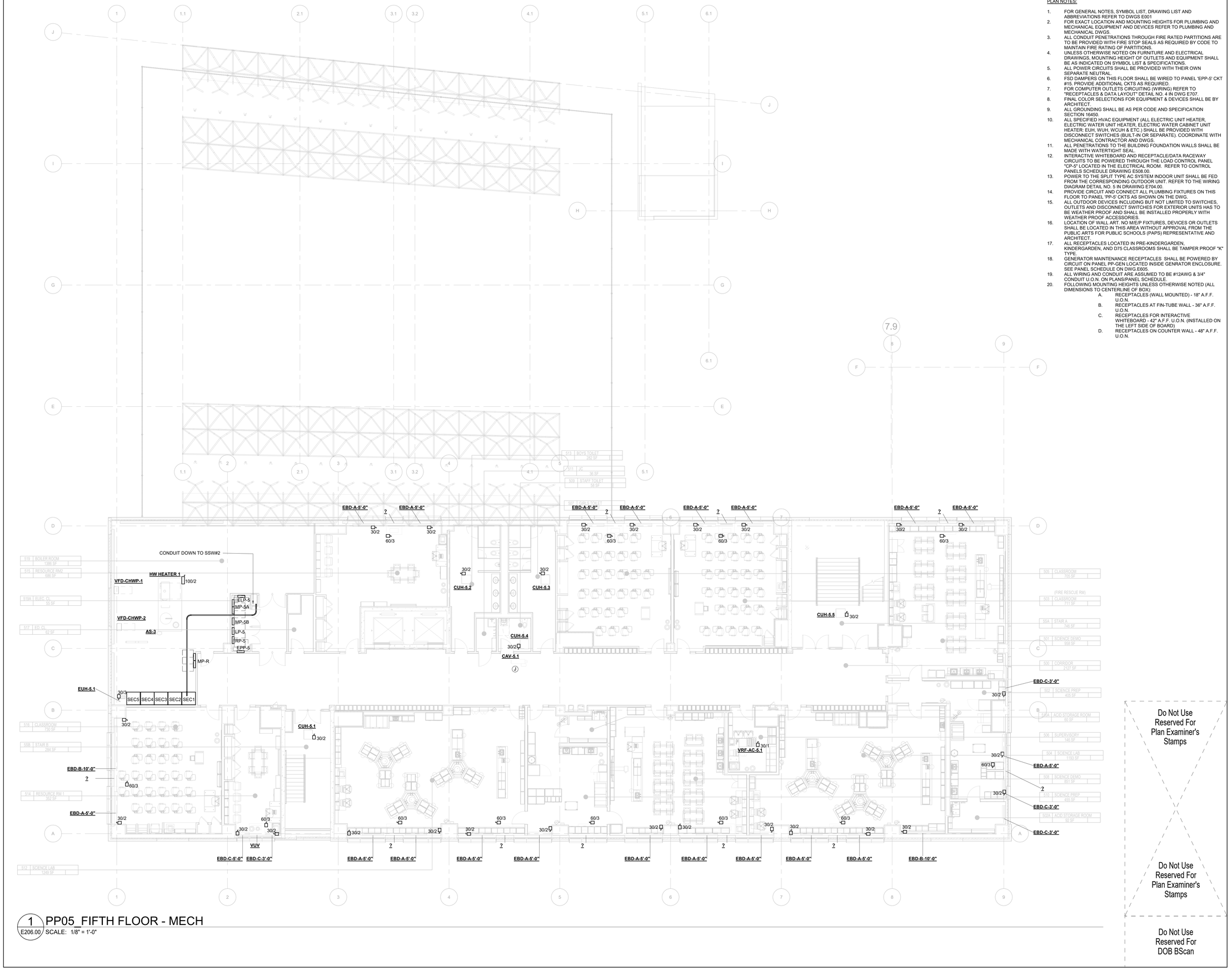

PLAN NOTES:

1. FOR GENERAL NOTES, SYMBOL LIST, DRAWING LIST AND ABBREVIATIONS REFER TO DWGS E001
2. FOR EXACT LOCATION AND MOUNTING HEIGHTS FOR PLUMBING AND MECHANICAL EQUIPMENT AND DEVICES REFER TO PLUMBING AND MECHANICAL DWGS.
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4. UNLESS OTHERWISE NOTED ON FURNITURE AND ELECTRICAL DRAWINGS, MOUNTING HEIGHT OF OUTLETS AND EQUIPMENT SHALL BE AS INDICATED ON SYMBOL LIST & SPECIFICATIONS.
5. ALL POWER CIRCUITS SHALL BE PROVIDED WITH THEIR OWN SEPARATE NEUTRAL.
6. FSD DAMPERS ON THIS FLOOR SHALL BE WIRED TO PANEL 'EPP-5' CKT #15. PROVIDE ADDITIONAL CKTS AS REQUIRED.
7. FOR COMPUTER OUTLETS CIRCUITING (WIRING) REFER TO "RECEPTACLES & DATA LAYOUT" DETAIL NO. 4 IN DWG E707.
8. FINAL COLOR SELECTIONS FOR EQUIPMENT & DEVICES SHALL BE BY ARCHITECT.
9. ALL GROUNDING SHALL BE AS PER CODE AND SPECIFICATION SECTION 16450.
10. ALL SPECIFIED HVAC EQUIPMENT (ALL ELECTRIC UNIT HEATER, ELECTRIC WATER UNIT HEATER, ELECTRIC WATER CABINET UNIT HEATER: EUH, WUH, WCUH & ETC.) SHALL BE PROVIDED WITH DISCONNECT SWITCHES (BUILT-IN OR SEPARATE). COORDINATE WITH MECHANICAL CONTRACTOR AND DWGS.
11. ALL PENETRATIONS TO THE BUILDING FOUNDATION WALLS SHALL BE MADE WITH WATERTIGHT SEAL.
12. INTERACTIVE WHITEBOARD AND RECEPTACLE/DATA RACEWAY CIRCUITS TO BE POWERED THROUGH THE LOAD CONTROL PANEL "CP-5" LOCATED IN THE ELECTRICAL ROOM. REFER TO CONTROL PANELS SCHEDULE DRAWING E508.00.
13. POWER TO THE SPLIT TYPE AC SYSTEM INDOOR UNIT SHALL BE FED FROM THE CORRESPONDING OUTDOOR UNIT. REFER TO THE WIRING DIAGRAM DETAIL NO. 5 IN DRAWING E704.00.
14. PROVIDE CIRCUIT AND CONNECT ALL PLUMBING FIXTURES ON THIS FLOOR TO PANEL 'PP-5' CKTS AS SHOWN ON THE DWG.
15. ALL OUTDOOR DEVICES INCLUDING BUT NOT LIMITED TO SWITCHES, OUTLETS AND DISCONNECT SWITCHES FOR EXTERIOR UNITS HAS TO BE WEATHER PROOF AND SHALL BE INSTALLED PROPERLY WITH WEATHER PROOF ACCESSORIES.
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    - C. RECEPTACLES FOR INTERACTIVE WHITEBOARD - 42" A.F.F. U.O.N. (INSTALLED ON THE LEFT SIDE OF BOARD).
    - D. RECEPTACLES ON COUNTER WALL - 48" A.F.F. U.O.N.

1 PP05_FIFTH FLOOR - MECH
E206.00 SCALE: 1/8" = 1'-0"

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Do Not Use Reserved For DOB BScan

Drawing Title:
FIFTH FLOOR PLAN - POWER SYSTEMS

Reserved For DOB NOW Job#

Drawing No.:
E206.00

Sheets in Contract Set:
OF 0

Sheets in DOB Set:
OF 0

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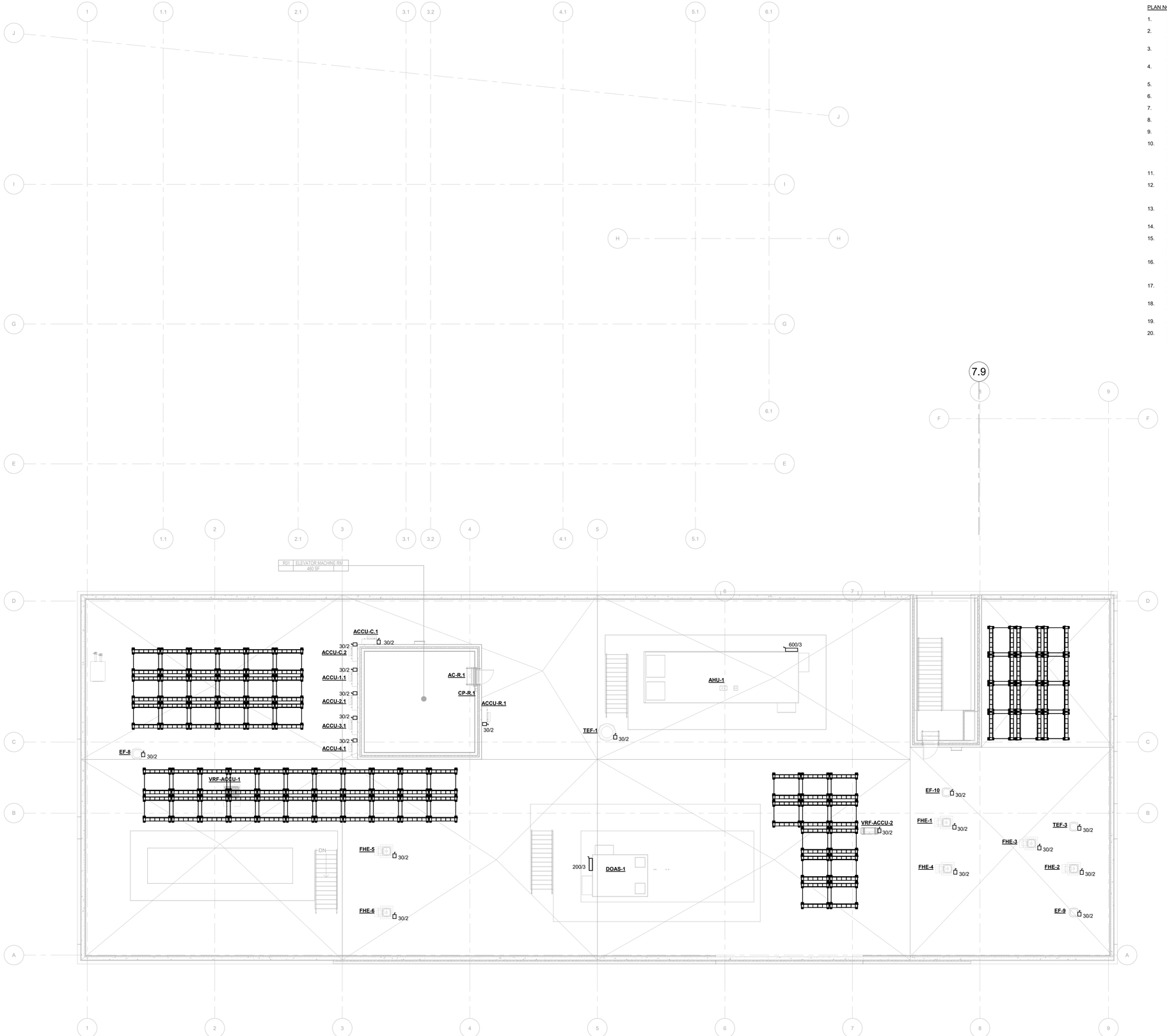

1 E207.00 PP06_ROOF - MECH

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

PLAN NOTES:

1. FOR GENERAL NOTES, SYMBOL LIST, DRAWING LIST AND ABBREVIATIONS REFER TO DWGS E001
2. FOR EXACT LOCATION AND MOUNTING HEIGHTS FOR PLUMBING AND MECHANICAL EQUIPMENT AND DEVICES REFER TO PLUMBING AND MECHANICAL DWGS.
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6. FSD DAMPERS ON THIS FLOOR SHALL BE WIRED TO PANEL 'EPP-5' CKT #15. PROVIDE ADDITIONAL CKTS AS REQUIRED.
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11. ALL PENETRATIONS TO THE BUILDING FOUNDATION WALLS SHALL BE MADE WITH WATERTIGHT SEAL.
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14. PROVIDE CIRCUIT AND CONNECT ALL PLUMBING FIXTURES ON THIS FLOOR TO PANEL 'PP-5' CKTS AS SHOWN ON THE DWG.
15. ALL OUTDOOR DEVICES INCLUDING BUT NOT LIMITED TO SWITCHES, OUTLETS AND DISCONNECT SWITCHES FOR EXTERIOR UNITS HAS TO BE WEATHER PROOF AND SHALL BE INSTALLED PROPERLY WITH WEATHER PROOF ACCESSORIES.
16. LOCATION OF WALL ART. NO M/E/P FIXTURES, DEVICES OR OUTLETS SHALL BE LOCATED IN THIS AREA WITHOUT APPROVAL FROM THE PUBLIC ARTS FOR PUBLIC SCHOOLS (PAPS) REPRESENTATIVE AND ARCHITECT.
17. ALL RECEPTACLES LOCATED IN PRE-KINDERGARDEN, KINDERGARDEN, AND D75 CLASSROOMS SHALL BE TAMPER PROOF "K" TYPE.
18. GENERATOR MAINTENANCE RECEPTACLES SHALL BE POWERED BY CIRCUIT ON PANEL PP-GEN LOCATED INSIDE GENRATOR ENCLOSURE. SEE PANEL SCHEDULE ON DWG E605.
19. ALL WIRING AND CONDUIT ARE ASSUMED TO BE #12AWG & 3/4" CONDUIT U.O.N. ON PLANS/PANEL SCHEDULE.
20. FOLLOWING MOUNTING HEIGHTS UNLESS OTHERWISE NOTED (ALL DIMENSIONS TO CENTERLINE OF BOX):
    - A. RECEPTACLES (WALL MOUNTED) - 18" A.F.F. U.O.N.
    - B. RECEPTACLES AT FIN-TUBE WALL - 36" A.F.F. U.O.N.
    - C. RECEPTACLES FOR INTERACTIVE WHITEBOARD - 42" A.F.F. U.O.N. (INSTALLED ON THE LEFT SIDE OF BOARD).
    - D. RECEPTACLES ON COUNTER WALL - 48" A.F.F. U.O.N.

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Drawing Title:
ROOF PLAN - POWER SYSTEMS

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Drawing No.:
E207.00

Sheets in Contract Set:
OF 0

Sheets in DOB Set:
OF 0

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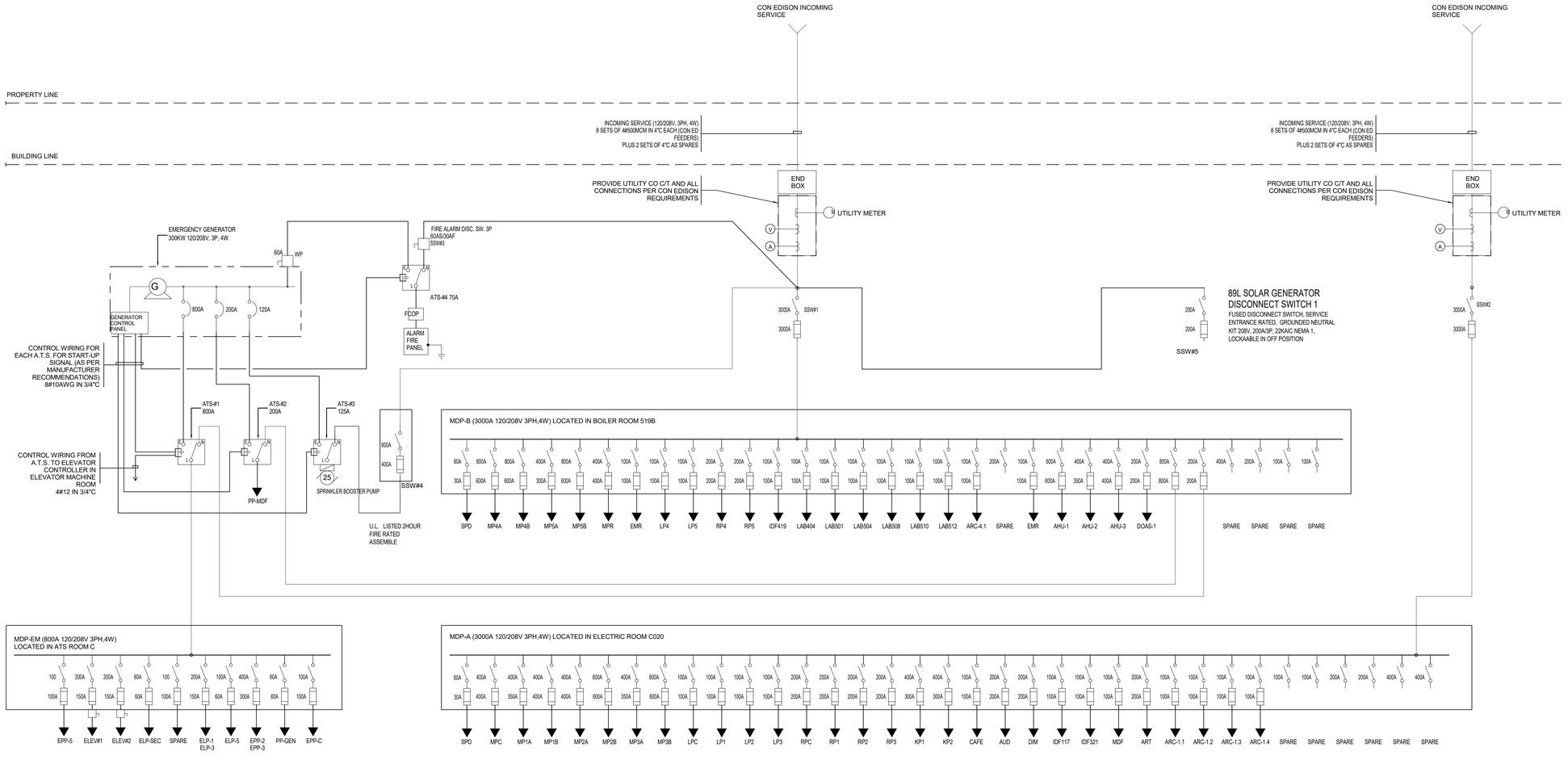

1 E501_SINGLE LINE DIAGRAM

E501.00 SCALE: 3/32" = 1'-0"

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Drawing Title: ONE LINE DIAGRAMS

Reserved For DOB NOW Job#

Drawing No.: E501.00

Sheets in Contract Set: OF 0

Sheets in DOB Set: OF 0

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PANELBOARD: MDP-A

SERVICE VOLTAGE: 208/120V, 3□, 4W+G
MAIN BUS RATING: 3000A
AIC RATING: 65,000 AIC
FEEDER: 7 SETS OF 4#500MCM + 1#2(G) IN 3"C EACH

ENCLOSURE: NEMA-1
MOUNTING: SURFACE
LOCATION: ELECTRICAL ROOM

MAIN RATING:

[X] MFS: 800A
[ ] MLO:

OPTIONS:

[X] BONDED GROUND BUS
[ ] ISOLATED GROUND BUS
[ ] 200% NEUTRAL BUS
[ ] INTEGRAL TVSS DEVICE
[ ] C/T TRANSFORMER
[ ] GROUND FAULT PROTECTION

FULLY RATED DISTRIBUTION SECTION

CKT.	FEEDER DEVICE			LOAD DESCRIPTION	LOAD (VA)	FEEDER
	POLE (No)	SWITCH (AMP)	FUSE (AMP)			
1	3	400	400	MPC	---	4#500MCM + 1#2(G) IN 3"C
2	3	400	350	MP1A	---	4#500MCM + 1#2(G) IN 3"C
3	3	400	400	MP1B	---	4#500MCM + 1#2(G) IN 3"C
4	3	400	400	MP2A	---	4#500MCM + 1#2(G) IN 3"C
5	3	600	600	MP2B	---	2 SETS OF 4#350MCM + 1#1(G) IN 3"C
6	3	400	350	MP3A	---	4#500MCM + 1#2(G) IN 3"C
7	3	600	600	MP3B	---	2 SETS OF 4#350MCM + 1#1(G) IN 3"C
8	3	100	100	LPC	---	4#2 + 1#8(G) IN 1-1/4"C
9	3	100	100	LP1	---	4#2 + 1#8(G) IN 1-1/4"C
10	3	100	100	LP2	---	4#2 + 1#8(G) IN 1-1/4"C
11	3	100	100	LP3	---	4#2 + 1#8(G) IN 1-1/4"C
12	3	200	200	RPC	---	4#3/0 + 1#6(G) IN 2"C
13	3	200	200	RP1	---	4#3/0 + 1#6(G) IN 2"C
14	3	200	200	RP2	---	4#3/0 + 1#6(G) IN 2"C
15	3	200	200	RP3	---	4#3/0 + 1#6(G) IN 2"C
16	3	400	300	KP1	---	4#350MCM + 1#4(G) IN 3"C
17	3	400	300	KP2	---	4#350MCM + 1#4(G) IN 3"C
18	3	100	100	CAFE	---	4#2 + 1#8(G) IN 1-1/4"C
19	3	200	200	AUD	---	4#3/0 + 1#6(G) IN 2"C
20	3	200	200	DIM	---	4#3/0 + 1#6(G) IN 2"C
21	3	100	100	IDF117	---	4#2 + 1#8(G) IN 1-1/4"C
22	3	100	100	IDF321	---	4#2 + 1#8(G) IN 1-1/4"C
23	3	100	100	MDF	---	4#2 + 1#8(G) IN 1-1/4"C
24	3	200	200	ART	---	4#3/0 + 1#6(G) IN 2"C
25	3	100	100	ARC-1.1	---	3#2 + 1#8(G) IN 1-1/4"C
26	3	100	100	ARC-1.2	---	3#2 + 1#8(G) IN 1-1/4"C
27	3	100	100	ARC-1.3	---	3#2 + 1#8(G) IN 1-1/4"C
28	3	100	100	ARC-1.4	---	3#2 + 1#8(G) IN 1-1/4"C
29	3	100	100	SPARE	---	-
30	3	100	100	SPARE	---	-
31	3	200	200	SPARE	---	-
32	3	200	200	SPARE	---	-
33	3	400	400	SPARE	---	-
34	3	400	400	SPARE	---	-

REMARKS:

TOTAL CONNECTED LOAD:
TOTAL DEMAND LOAD:
TOTAL DEMAND LOAD + SPARE:

TOTAL AMPS:

PANELBOARD: MDP-B

SERVICE VOLTAGE: 208/120V, 3□, 4W+G
MAIN BUS RATING: 3000A
AIC RATING: 65,000 AIC
FEEDER: 8 SETS OF 4#500MCM + 1#2(G) IN 3"C EACH

ENCLOSURE: NEMA-1
MOUNTING: SURFACE
LOCATION: ELECTRICAL ROOM

MAIN RATING:

[X] MFS: 800A
[ ] MLO:

OPTIONS:

[X] BONDED GROUND BUS
[ ] ISOLATED GROUND BUS
[ ] 200% NEUTRAL BUS
[ ] INTEGRAL TVSS DEVICE
[ ] C/T TRANSFORMER
[ ] GROUND FAULT PROTECTION

FULLY RATED DISTRIBUTION SECTION

CKT.	FEEDER DEVICE			LOAD DESCRIPTION	LOAD (VA)	FEEDER
	POLE (No)	SWITCH (AMP)	FUSE (AMP)			
1	3	800	600	MP4A	---	2 SETS OF 4#350MCM + 1#1(G) IN 3"C EACH
2	3	800	600	MP4B	---	2 SETS OF 4#350MCM + 1#1(G) IN 3"C EACH
3	3	400	300	MP5A	---	4#350MCM + 1#4(G) IN 3"C
4	3	800	600	MP5B	---	2 SETS OF 4#350MCM + 1#1(G) IN 3"C EACH
5	3	400	400	MPR	---	4#500MCM + 1#2(G) IN 3"C
6	3	100	100	EMR	---	4#2 + 1#8(G) IN 1-1/4"C
7	3	100	100	LP4	---	4#2 + 1#8(G) IN 1-1/4"C
8	3	100	100	LP5	---	4#2 + 1#8(G) IN 1-1/4"C
9	3	200	200	RP4	---	4#3/0 + 1#6(G) IN 2"C
10	3	200	200	RP5	---	4#3/0 + 1#6(G) IN 2"C
11	3	100	100	IDF419	---	4#2 + 1#8(G) IN 1-1/4"C
12	3	100	100	LAB404	---	4#2 + 1#8(G) IN 1-1/4"C
13	3	100	100	LAB501	---	4#2 + 1#8(G) IN 1-1/4"C
14	3	100	100	LAB504	---	4#2 + 1#8(G) IN 1-1/4"C
15	3	100	100	LAB508	---	4#2 + 1#8(G) IN 1-1/4"C
16	3	100	100	LAB510	---	4#2 + 1#8(G) IN 1-1/4"C
17	3	100	100	LAB512	---	4#2 + 1#8(G) IN 1-1/4"C
18	3	100	--	SPARE	---	-
19	3	100	--	SPARE	---	-
20	3	100	100	EMR	---	4#2 + 1#8(G) IN 1-1/4"C
21	3	600	600	AHU-1	---	2 SETS OF 3#350MCM + 1#1(G) IN 3"C
22	3	400	350	AHU-2	---	3#500MCM + 1#2(G) IN 3"C
23	3	400	400	AHU-3	---	3#500MCM + 1#2(G) IN 3"C
24	3	200	200	DOAS-1	---	4#3/0 + 1#6(G) IN 2"C
25	3	100	100	ATS#2	---	4#2 + 1#8(G) IN 1-1/4"C
26	3	800	800	ATS#1	---	2 SETS OF 4#500MCM + 1#1/0(G) IN 3"C EACH
27	3	60	--	SPARE	---	-
28	3	60	--	SPARE	---	-
29	3	100	--	SPARE	---	-
30	3	100	--	SPARE	---	-

REMARKS:

TOTAL CONNECTED LOAD:
TOTAL DEMAND LOAD:
TOTAL DEMAND LOAD + SPARE:

TOTAL AMPS:

1 E607.00 E607_PANEL SCHEDULE1
SCALE: 1/8" = 1'-0"

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Drawing Title:
PANEL SCHEDULE

Reserved For
DOB NOW Job#

Drawing No.:
E607.00

Sheets in Contract Set:
OF 0

Sheets in DOB Set:
OF 0

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PANEL: MPC

SERVICE VOLTAGE: 208/120V, 3□, 4W+G
MAIN BUS RATING: 400A
AIC RATING: 65,000A
PANEL FEEDER: (REFER TO ONE LINE DIAGRAM)

ENCLOSURE: NEMA-1
MOUNTING: SURFACE
LOCATION: 2ND FL ELECTRIC CLOSET

MAIN RATING:

[ ] MCB:
[X] MLO:

OPTIONS:

[X] BONDED GROUND BUS
[ ] ISOLATED GROUND BUS
[ ] 200% NEUTRAL BUS
[ ] FEED THROUGH LUGS
[ ] SUB FEED LUGS
[X] DOOR-IN-DOOR TRIM
[ ] INTEGRAL TVSS DEVICE
[ ] INTEGRAL RC SWITCH
[ ] INTEGRAL METERING DEVICE

BRANCH FEEDER	LOAD DESCRIPTION	LOAD (VA)	BRANCH DEVICE POLE (No)	FRAME (AMP)	TRIP (AMP)	CKT.	CKT.	BRANCH DEVICE POLE (No)	FRAME (AMP)	TRIP (AMP)	LOAD (VA)	LOAD DESCRIPTION	BRANCH FEEDER
2#12, 1#12G IN 3/4"C	KEF-4, EF-1	2420	2	100	20	1	2	2	100	20	2700	EF-2, EF-3	2#12, 1#12G IN 3/4"C
						3	4						
2#12, 1#12G IN 3/4"C	EF-15, EF-16	2420	2	100	20	5	6	2	100	20	700	AC-C.1, AC-C.2,CP-C.1,CP-C.2	2#12, 1#12G IN 3/4"C
						7	8						
3#4, 1#10G IN 1"C	SPF-1	16640	3	100	60	9	10	1	100	20	90	VAV-C.1,2,3,4,5,6,7,8,9	2#12, 1#12G IN 3/4"C
2#12, 1#12G IN 3/4"C	CUH-C.4	5200	2	100	20	11	12	2	100	20	3200	CUH-C.1	2#12, 1#12G IN 3/4"C
						13	14						
2#12, 1#12G IN 3/4"C	CUH-C.5	5200	2	100	20	15	16	2	100	20	3200	CUH-C.2	2#12, 1#12G IN 3/4"C
						17	18						
2#12, 1#12G IN 3/4"C	EUH-C.1	4970	3	100	20	19	20	2	100	20	3200	CUH-C.3	2#12, 1#12G IN 3/4"C
						21	22						
3#12, 1#12G IN 3/4"C	EUH-C.2	4970	3	100	20	23	24	3	100	20	4970	EUH-C.1	3#12, 1#12G IN 3/4"C
						25	26						
						27	28						
2#12, 1#12G IN 3/4"C	EVP#1	1180	1	100	20	29	30	1	100	20	5400	SEP#1&2	3#12, 1#12G IN 3/4"C
2#12, 1#12G IN 3/4"C	EVP#2	1180	1	100	20	31	32						
	SPARE		1	100	20	33	34						
	SPARE		1	100	20	35	36	3	100	60	17580	WBP#1&2	3#4, 1#8G IN 1"C
	SPARE		1	100	20	37	38						
	SPARE		3	100	20	39	40						
						41	42	3	100	20		SPARE	

REMARKS:

TOTAL CONNECTED LOAD: 80250 VA
TOTAL DEMAND LOAD: 66988 VA
TOTAL DEMAND LOAD + SPARE: 80386 VA
TOTAL AMPS: 224 AMPS

PANEL: MP1A

SERVICE VOLTAGE: 208/120V, 3□, 4W+G
MAIN BUS RATING: 400A
AIC RATING: 65,000A
PANEL FEEDER: (REFER TO ONE LINE DIAGRAM)

ENCLOSURE: NEMA-1
MOUNTING: SURFACE
LOCATION: 2ND FL ELECTRIC CLOSET

MAIN RATING:

[ ] MCB:
[X] MLO:

OPTIONS:

[X] BONDED GROUND BUS
[ ] ISOLATED GROUND BUS
[ ] 200% NEUTRAL BUS
[ ] FEED THROUGH LUGS
[ ] SUB FEED LUGS
[X] DOOR-IN-DOOR TRIM
[ ] INTEGRAL TVSS DEVICE
[ ] INTEGRAL RC SWITCH
[ ] INTEGRAL METERING DEVICE

BRANCH FEEDER	LOAD DESCRIPTION	LOAD (VA)	BRANCH DEVICE POLE (No)	FRAME (AMP)	TRIP (AMP)	CKT.	CKT.	BRANCH DEVICE POLE (No)	FRAME (AMP)	TRIP (AMP)	LOAD (VA)	LOAD DESCRIPTION	BRANCH FEEDER
2#12, 1#12G IN 3/4"C	CAV-1.1,1.2,1.3,1.4,1.5,1.6,1.7	90	1	100	20	1	2	1	100	20	440	VRF-AC1.1,2,3,4,5,6,7,8,9,10,11	2#12, 1#12G IN 3/4"C
2#12, 1#12G IN 3/4"C	CUH-1.1	5200	2	100	20	3	4	1	100	20	700	AC-1.1, AC-1.2,CP-1.1,CP-1.2	2#12, 1#12G IN 3/4"C
						5	6						
2#12, 1#12G IN 3/4"C	CUH-1.2	5200	2	100	20	7	8	2	100	20	3200	CUH.1.6	2#12, 1#12G IN 3/4"C
						9	10						
2#12, 1#12G IN 3/4"C	CUH-1.3	5200	2	100	20	11	12	2	100	20	3200	CUH.1.7	2#12, 1#12G IN 3/4"C
						13	14						
2#12, 1#12G IN 3/4"C	CUH-1.4	3200	2	100	20	15	16	2	100	20	3200	CUH.1.8	2#12, 1#12G IN 3/4"C
						17	18						
2#12, 1#12G IN 3/4"C	CUH-1.5	3200	2	100	20	19	20	2	100	20	3200	CUH.1.9	2#12, 1#12G IN 3/4"C
						21	22						
2#12, 1#12G IN 3/4"C	CONV-1.1	2500	2	100	20	23	24	2	100	20	2500	CONV-1.6	2#12, 1#12G IN 3/4"C
						25	26						
2#12, 1#12G IN 3/4"C	CONV-1.2	2500	2	100	20	27	28	2	100	20	2500	CONV-1.7	2#12, 1#12G IN 3/4"C
						29	30						
2#12, 1#12G IN 3/4"C	CONV-1.3	1250	2	100	20	31	32	2	100	20	2500	CONV-1.8	2#12, 1#12G IN 3/4"C
						33	34						
2#12, 1#12G IN 3/4"C	CONV-1.4	2500	2	100	20	35	36	2	100	20	2500	CONV-1.9	2#12, 1#12G IN 3/4"C
						37	38						
2#12, 1#12G IN 3/4"C	CONV-1.5	2500	2	100	20	39	40	2	100	20	2500	RHC-1.1	2#12, 1#12G IN 3/4"C
						41	42						
2#12, 1#12G IN 3/4"C	(2) EDB-A	2500	2	100	20	43	44	2	100	20	2500	(2) EDB-A	2#12, 1#12G IN 3/4"C
						45	46						
2#12, 1#12G IN 3/4"C	(2) EDB-A	2500	2	100	20	47	48	2	100	20	2500	(1) EDB-B	2#12, 1#12G IN 3/4"C
						49	50						
2#12, 1#12G IN 3/4"C	(2) EDB-A	2500	2	100	20	51	52	2	100	20	1200	(2) EDB-C	2#12, 1#12G IN 3/4"C
						53	54						
2#12, 1#12G IN 3/4"C	(2) EDB-A	2500	2	100	20	55	56	2	100	20		SPARE	3#8, 1#10G IN 1"C
						57	58						
2#12, 1#12G IN 3/4"C	(2) EDB-A	2500	2	100	20	59	60	2	100	20		SPARE	3#8, 1#10G IN 1"C
						61	62						
2#12, 1#12G IN 3/4"C	(2) EDB-A	2500	2	100	20	63	64	2	100	20		SPARE	3#8, 1#10G IN 1"C
						65	66						
2#12, 1#12G IN 3/4"C	(2) EDB-A	2500	2	100	20	67	68	2	100	20		SPARE	3#8, 1#10G IN 1"C
						69	70						
2#12, 1#12G IN 3/4"C	(2) EDB-A	2500	2	100	20	71	72	2	100	20		SPARE	3#8, 1#10G IN 1"C
						73	74						
	SPARE		2	100	20	75	76	2	100	20		SPARE	3#8, 1#10G IN 1"C
						77	78						
	SPARE		1	100	20	79	80	2	100	20		SPARE	3#8, 1#10G IN 1"C
	SPARE		1	100	20	81	82						
	SPARE		1	100	20	83	84	1	100	20		SPARE	

REMARKS:

TOTAL CONNECTED LOAD: 85,980 VA
TOTAL DEMAND LOAD: 85,791 VA
TOTAL DEMAND LOAD + SPARE: 102,950 VA
TOTAL AMPS: 286 A

1 E608_PANEL SCHEDULE2
E608.00 SCALE: 1/8" = 1'-0"

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DOB BScan

Drawing Title:
PANEL SCHEDULE

Reserved For
DOB NOW Job#

Drawing No.:
E608.00

Sheets in Contract Set:
OF 0

Sheets in DOB Set:
OF 0

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PANEL: MP2A

SERVICE VOLTAGE: 208/120V, 3□, 4W+G
MAIN BUS RATING: 400A
AIC RATING: 65,000A
PANEL FEEDER: (REFER TO ONE LINE DIAGRAM)

ENCLOSURE: NEMA-1
MOUNTING: SURFACE
LOCATION: 2ND FL ELECTRIC CLOSET

MAIN RATING:
- [ ] MCB:
- [X] MLO:

OPTIONS:
- [X] BONDED GROUND BUS
- [ ] ISOLATED GROUND BUS
- [ ] 200% NEUTRAL BUS
- [ ] FEED THROUGH LUGS
- [ ] SUB FEED LUGS
- [X] DOOR-IN-DOOR TRIM
- [ ] INTEGRAL TVSS DEVICE
- [ ] INTEGRAL RC SWITCH
- [ ] INTEGRAL METERING DEVICE

BRANCH FEEDER	LOAD DESCRIPTION	LOAD (VA)	BRANCH DEVICE POLE (No)	FRAME (AMP)	TRIP (AMP)	CKT.
2#12, 1#12G IN 3/4"C	VAV-2.1,CAV-2.2	90	1	100	20	1
2#12, 1#12G IN 3/4"C	CUH-2.1	5200	2	100	20	3
						5
2#12, 1#12G IN 3/4"C	CUH-2.2	5200	2	100	20	7
						9
2#12, 1#12G IN 3/4"C	CUH-2.3	5200	2	100	20	11
						13
2#12, 1#12G IN 3/4"C	CUH-2.4	3200	2	100	20	15
						17
2#12, 1#12G IN 3/4"C	CUH-2.5	3200	2	100	20	19
						21
2#12, 1#12G IN 3/4"C	CONV-2.1	2500	2	100	20	23
						25
2#12, 1#12G IN 3/4"C	CONV-2.2	2500	2	100	20	27
						29
2#12, 1#12G IN 3/4"C	CONV-2.3	1250	2	100	20	31
						33
2#12, 1#12G IN 3/4"C	CONV-2.4	2500	2	100	20	35
						37
2#12, 1#12G IN 3/4"C	CONV-2.5	2500	2	100	20	39
						41
2#12, 1#12G IN 3/4"C	(2) EDB-A	2500	2	100	20	43
						45
2#12, 1#12G IN 3/4"C	(2) EDB-A	2500	2	100	20	47
						49
2#12, 1#12G IN 3/4"C	(2) EDB-A	2500	2	100	20	51
						53
2#12, 1#12G IN 3/4"C	(2) EDB-A	2500	2	100	20	55
						57
2#12, 1#12G IN 3/4"C	(2) EDB-A	2500	2	100	20	59
						61
2#12, 1#12G IN 3/4"C	(2) EDB-A	2500	2	100	20	63
						65
2#12, 1#12G IN 3/4"C	(2) EDB-A	2500	2	100	20	67
						69
2#12, 1#12G IN 3/4"C	(2) EDB-A	2500	2	100	20	71
						73
	SPARE		2	100	20	75
						77
	SPARE		1	100	20	79
	SPARE		1	100	20	81
	SPARE		1	100	20	83

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CKT.	BRANCH DEVICE POLE (No)	FRAME (AMP)	TRIP (AMP)	LOAD (VA)	LOAD DESCRIPTION	BRANCH FEEDER
2	1	100	20	440	VRF-AC1.1,2,3,4,5,6,7,8,9,10,11	2#12, 1#12G IN 3/4"C
4	1	100	20		SPARE	
6						
8	2	100	20	3200	CUH.2.6	2#12, 1#12G IN 3/4"C
10						
12	2	100	20	3200	CUH.2.7	2#12, 1#12G IN 3/4"C
14						
16	2	100	20	3200	CUH.2.8	2#12, 1#12G IN 3/4"C
18						
20	2	100	20	3200	CUH.2.9	2#12, 1#12G IN 3/4"C
22						
24	2	100	20	2500	CUH.2.10	2#12, 1#12G IN 3/4"C
26						
28	2	100	20	2500	CONV-2.6	2#12, 1#12G IN 3/4"C
30						
32	2	100	20	2500	CONV-2.7	2#12, 1#12G IN 3/4"C
34						
36	2	100	20	2500	CONV-2.8	2#12, 1#12G IN 3/4"C
38						
40	2	100	20	2500	CONV-2.9	2#12, 1#12G IN 3/4"C
42						
44	2	100	20	2500	(2) EDB-A	2#12, 1#12G IN 3/4"C
46						
48	2	100	20	2500	(1) EDB-B	2#12, 1#12G IN 3/4"C
50						
52	2	100	20	1200	(2) EDB-C	2#12, 1#12G IN 3/4"C
54						
56	2	100	20	2500	CUH.2.11	2#12, 1#12G IN 3/4"C
58						
60	2	100	20	2500	CUH.2.12	2#12, 1#12G IN 3/4"C
62						
64	2	100	20	2500	CUH.2.13	2#12, 1#12G IN 3/4"C
66						
68	2	100	20	2500	CUH.2.14	2#12, 1#12G IN 3/4"C
70						
72	2	100	20	2500	CUH.2.15	2#12, 1#12G IN 3/4"C
74						
76	2	100	20	2500	CUH.2.16	2#12, 1#12G IN 3/4"C
78						
80	2	100	20		SPARE	
82						
84	1	100	20		SPARE	

REMARKS:

TOTAL CONNECTED LOAD:	84,680 VA
TOTAL DEMAND LOAD:	84,596 VA
TOTAL DEMAND LOAD + SPARE:	101,515 VA
TOTAL AMPS:	282 A

PANEL: MP3A

SERVICE VOLTAGE: 208/120V, 3□, 4W+G
MAIN BUS RATING: 400A
AIC RATING: 65,000A
PANEL FEEDER: (REFER TO ONE LINE DIAGRAM)

ENCLOSURE: NEMA-1
MOUNTING: SURFACE
LOCATION: 2ND FL ELECTRIC CLOSET

MAIN RATING:
- [ ] MCB:
- [X] MLO:

OPTIONS:
- [X] BONDED GROUND BUS
- [ ] ISOLATED GROUND BUS
- [ ] 200% NEUTRAL BUS
- [ ] FEED THROUGH LUGS
- [ ] SUB FEED LUGS
- [X] DOOR-IN-DOOR TRIM
- [ ] INTEGRAL TVSS DEVICE
- [ ] INTEGRAL RC SWITCH
- [ ] INTEGRAL METERING DEVICE

BRANCH FEEDER	LOAD DESCRIPTION	LOAD (VA)	BRANCH DEVICE POLE (No)	FRAME (AMP)	TRIP (AMP)	CKT.
2#12, 1#12G IN 3/4"C	CAV-3.1,3,2,3,3,4,3,5,3.6,3.7	90	1	100	20	1
2#12, 1#12G IN 3/4"C	CUH-3.1	5200	2	100	20	3
						5
2#12, 1#12G IN 3/4"C	CUH-3.2	5200	2	100	20	7
						9
2#12, 1#12G IN 3/4"C	CUH-3.3	5200	2	100	20	11
						13
2#12, 1#12G IN 3/4"C	CUH-3.4	3200	2	100	20	15
						17
2#12, 1#12G IN 3/4"C	CUH-3.5	3200	2	100	20	19
						21
2#12, 1#12G IN 3/4"C	CONV-1.1	2500	2	100	20	23
						25
2#12, 1#12G IN 3/4"C	CONV-1.2	2500	2	100	20	27
						29
2#12, 1#12G IN 3/4"C	CONV-1.3	1250	2	100	20	31
						33
2#12, 1#12G IN 3/4"C	CONV-1.4	2500	2	100	20	35
						37
2#12, 1#12G IN 3/4"C	CONV-1.5	2500	2	100	20	39
						41
2#12, 1#12G IN 3/4"C	(2) EDB-A	2500	2	100	20	43
						45
2#12, 1#12G IN 3/4"C	(2) EDB-A	2500	2	100	20	47
						49
2#12, 1#12G IN 3/4"C	(2) EDB-A	2500	2	100	20	51
						53
2#12, 1#12G IN 3/4"C	(2) EDB-A	2500	2	100	20	55
						57
2#12, 1#12G IN 3/4"C	(2) EDB-A	2500	2	100	20	59
						61
2#12, 1#12G IN 3/4"C	(2) EDB-A	2500	2	100	20	63
						65
2#12, 1#12G IN 3/4"C	(2) EDB-A	2500	2	100	20	67
						69
2#12, 1#12G IN 3/4"C	(2) EDB-A	2500	2	100	20	71
						73
	SPARE		2	100	20	75
						77
	SPARE		1	100	20	79
2#12, 1#12G IN 3/4"C	EF-14,TEF-2	440	1	100	20	81
2#12, 1#12G IN 3/4"C	EF-12,EF-13,	440	1	100	20	83

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CKT.	BRANCH DEVICE POLE (No)	FRAME (AMP)	TRIP (AMP)	LOAD (VA)	LOAD DESCRIPTION	BRANCH FEEDER
2	1	100	20	440	KEF-2,3	2#12, 1#12G IN 3/4"C
4	1	100	20	700	AC-3.1, CP-3.1	2#12, 1#12G IN 3/4"C
6						
8	2	100	20	3200	CUH.3.6	2#12, 1#12G IN 3/4"C
10						
12	2	100	20	3200	CUH.3.7	2#12, 1#12G IN 3/4"C
14						
16	2	100	20	3200	CUH.3.8	2#12, 1#12G IN 3/4"C
18						
20	2	100	20	3200	CUH.3.9	2#12, 1#12G IN 3/4"C
22						
24	3	100	20	4970	EUH-3.1	3#12, 1#12G IN 3/4"C
26						
28						
30	3	100	20	4970	EUH-3.2	3#12, 1#12G IN 3/4"C
32						
34						
36	3	100	20	4970	EUH-3.3	3#12, 1#12G IN 3/4"C
38						
40						
42	1	100	20	440	EF5,6	2#12, 1#12G IN 3/4"C
44	2	100	20	1250	(1) EDB-A	2#12, 1#12G IN 3/4"C
46						
48	2	100	20	2500	(1) EDB-B	2#12, 1#12G IN 3/4"C
50						
52	2	100	20	2500	(1) EDB-B	2#12, 1#12G IN 3/4"C
54						
56	2	100	20	2500	(1) EDB-B	2#12, 1#12G IN 3/4"C
58						
60	2	100	20		SPARE	
62						
64	2	100	20		SPARE	
66						
68	2	100	20		SPARE	
70						
72	2	100	20		SPARE	
74						
76	2	100	20		SPARE	
78						
80	2	100	20		SPARE	
82						
84	1	100	20	440	EF5,6	2#12, 1#12G IN 3/4"C

REMARKS:

TOTAL CONNECTED LOAD:	92,260 VA
TOTAL DEMAND LOAD:	91,697 VA
TOTAL DEMAND LOAD + SPARE:	110,036 VA
TOTAL AMPS:	305 A

1 E609_PANEL SCHEDULE3
E609.00 SCALE: 1/8" = 1'-0"

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Drawing Title:
PANEL SCHEDULE

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Drawing No.:
E609.00

Sheets in Contract Set:
OF 0

Sheets in DOB Set:
OF 0

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PANEL: MP4A

SERVICE VOLTAGE: 208/120V, 3□, 4W+G
MAIN BUS RATING: 600A
AIC RATING: 65,000A
PANEL FEEDER: (REFER TO ONE LINE DIAGRAM)

ENCLOSURE: NEMA-1
MOUNTING: SURFACE
LOCATION: 2ND FL ELECTRIC CLOSET

MAIN RATING:
- [ ] MCB:
- [X] MLO:

OPTIONS:
- [X] BONDED GROUND BUS
- [ ] ISOLATED GROUND BUS
- [ ] 200% NEUTRAL BUS
- [ ] FEED THROUGH LUGS
- [ ] SUB FEED LUGS
- [X] DOOR-IN-DOOR TRIM
- [ ] INTEGRAL TVSS DEVICE
- [ ] INTEGRAL RC SWITCH
- [ ] INTEGRAL METERING DEVICE

BRANCH FEEDER	LOAD DESCRIPTION	LOAD (VA)	BRANCH DEVICE POLE (No)	BRANCH DEVICE FRAME (AMP)	BRANCH DEVICE TRIP (AMP)	CKT.	CKT.	BRANCH DEVICE POLE (No)	BRANCH DEVICE FRAME (AMP)	BRANCH DEVICE TRIP (AMP)	LOAD (VA)	LOAD DESCRIPTION	BRANCH FEEDER
2#12, 1#12G IN 3/4"C	CAV-4.1,4.2	90	1	100	20	1	2	1	100	20		SPARE	
2#12, 1#12G IN 3/4"C	CUH-4.1	5200	2	100	20	3	4	1	100	20	700	AC-4.1, CP-4.1	2#12, 1#12G IN 3/4"C
						5	6						
2#12, 1#12G IN 3/4"C	CUH-4.2	5200	2	100	20	7	8	2	100	20	3200	CUH.4.6	2#12, 1#12G IN 3/4"C
						9	10						
2#12, 1#12G IN 3/4"C	CUH-4.3	5200	2	100	20	11	12	2	100	20	3200	CUH.4.7	2#12, 1#12G IN 3/4"C
						13	14						
2#12, 1#12G IN 3/4"C	CUH-4.4	3200	2	100	20	15	16	2	100	20		SPARE	
						17	18						
2#12, 1#12G IN 3/4"C	CUH-4.5	3200	2	100	20	19	20	2	100	20	2500	(1) EDB-B	2#12, 1#12G IN 3/4"C
						21	22						
	SPARE		2	100	20	23	24	3	100	60	16640	SPF-2	3#4, 1#8G IN 1"C
						25	26						
	SPARE		2	100	20	27	28						
						29	30	3	100	60	17290	AHU-2_ACCU-1-1	3#4, 1#8G IN 1"C
	SPARE		2	100	20	31	32						
						33	34						
	SPARE		2	100	20	35	36	3	100	60	17290	AHU-2_ACCU-1-2	3#4, 1#8G IN 1"C
						37	38						
2#12, 1#12G IN 3/4"C	(2) EDB-A	2500	2	100	20	39	40						
						41	42	1	100	20		SPARE	
2#12, 1#12G IN 3/4"C	(2) EDB-A	2500	2	100	20	43	44	2	100	20	2500	(2) EDB-A	2#12, 1#12G IN 3/4"C
						45	46						
2#12, 1#12G IN 3/4"C	(2) EDB-A	2500	2	100	20	47	48	2	100	20	2500	(1) EDB-B	2#12, 1#12G IN 3/4"C
						49	50						
2#12, 1#12G IN 3/4"C	(2) EDB-A	2500	2	100	20	51	52	2	100	20	1200	(1) EDB-B	2#12, 1#12G IN 3/4"C
						53	54						
2#12, 1#12G IN 3/4"C	(2) EDB-A	2500	2	100	20	55	56	3	100	60	17290	AHU-2_ACCU-1-3	3#4, 1#8G IN 1"C
						57	58						
2#12, 1#12G IN 3/4"C	(2) EDB-A	2500	2	100	20	59	60						
						61	62	3	100	60	17290	AHU-3_ACCU-1-1	3#4, 1#8G IN 1"C
2#12, 1#12G IN 3/4"C	(2) EDB-A	2500	2	100	20	63	64						
						65	66						
2#12, 1#12G IN 3/4"C	(2) EDB-A	2500	2	100	20	67	68	3	100	60	17290	AHU-3_ACCU-1-2	3#4, 1#8G IN 1"C
						69	70						
2#12, 1#12G IN 3/4"C	(2) EDB-A	2500	2	100	20	71	72						
						73	74	3	100	60	17290	AHU-3_ACCU-1-3	3#4, 1#8G IN 1"C
	SPARE		2	100	20	75	76						
						77	78						
	SPARE		1	100	20	79	80	2	100	20		SPARE	
	SPARE		1	100	20	81	82						
	SPARE		1	100	20	83	84	1	100	20		SPARE	

REMARKS:

TOTAL CONNECTED LOAD: 180,770 VA
TOTAL DEMAND LOAD: 161,742 VA
TOTAL DEMAND LOAD + SPARE: 194,090 VA
TOTAL AMPS: 539 A

PANEL: MP5A

SERVICE VOLTAGE: 208/120V, 3□, 4W+G
MAIN BUS RATING: 400A
AIC RATING: 65,000A
PANEL FEEDER: (REFER TO ONE LINE DIAGRAM)

ENCLOSURE: NEMA-1
MOUNTING: SURFACE
LOCATION: 2ND FL ELECTRIC CLOSET

MAIN RATING:
- [ ] MCB:
- [X] MLO:

OPTIONS:
- [X] BONDED GROUND BUS
- [ ] ISOLATED GROUND BUS
- [ ] 200% NEUTRAL BUS
- [ ] FEED THROUGH LUGS
- [ ] SUB FEED LUGS
- [X] DOOR-IN-DOOR TRIM
- [ ] INTEGRAL TVSS DEVICE
- [ ] INTEGRAL RC SWITCH
- [ ] INTEGRAL METERING DEVICE

BRANCH FEEDER	LOAD DESCRIPTION	LOAD (VA)	BRANCH DEVICE POLE (No)	BRANCH DEVICE FRAME (AMP)	BRANCH DEVICE TRIP (AMP)	CKT.	CKT.	BRANCH DEVICE POLE (No)	BRANCH DEVICE FRAME (AMP)	BRANCH DEVICE TRIP (AMP)	LOAD (VA)	LOAD DESCRIPTION	BRANCH FEEDER
2#12, 1#12G IN 3/4"C	CAV-5.1	90	1	100	20	1	2	1	100	20	700	HWCP#1	2#12, 1#12G IN 3/4"C
2#12, 1#12G IN 3/4"C	CUH-5.1	5200	2	100	20	3	4	1	100	20	700	AC-1.1, AC-1.2,CP-1.1,CP-1.2	2#12, 1#12G IN 3/4"C
						5	6						
2#12, 1#12G IN 3/4"C	CUH-5.2	5200	2	100	20	7	8	2	100	70	13940	HWH#1	2#4, 1#8G IN 1"C
						9	10						
2#12, 1#12G IN 3/4"C	CUH-5.3	5200	2	100	20	11	12	2	100	70	13940	HWH#1	2#4, 1#8G IN 1"C
						13	14						
2#12, 1#12G IN 3/4"C	CUH-5.4	3200	2	100	20	15	16	1	100	20	500	HWCP#2	2#12, 1#12G IN 3/4"C
						17	18						
2#12, 1#12G IN 3/4"C	CUH-5.5	3200	2	100	20	19	20	2	100	20		SPARE	
						21	22						
	SPARE		2	100	20	23	24	2	100	20		SPARE	
						25	26						
	SPARE		2	100	20	27	28	2	100	20		SPARE	
						29	30						
	SPARE		2	100	20	31	32	2	100	20		SPARE	
						33	34						
	SPARE		2	100	20	35	36	2	100	20		SPARE	
						37	38						
	SPARE		2	100	20	39	40	2	100	20		SPARE	
						41	42						
2#12, 1#12G IN 3/4"C	(2) EDB-A	2500	2	100	20	43	44	2	100	20	2500	(2) EDB-A	2#12, 1#12G IN 3/4"C
						45	46						
2#12, 1#12G IN 3/4"C	(2) EDB-A	2500	2	100	20	47	48	2	100	20	2500	(1) EDB-B	2#12, 1#12G IN 3/4"C
						49	50						
2#12, 1#12G IN 3/4"C	(2) EDB-A	2500	2	100	20	51	52	2	100	20	1200	(2) EDB-C	2#12, 1#12G IN 3/4"C
						53	54						
2#12, 1#12G IN 3/4"C	(2) EDB-A	2500	2	100	20	55	56	2	100	20	2500	(1) EDB-B	2#12, 1#12G IN 3/4"C
						57	58						
2#12, 1#12G IN 3/4"C	(2) EDB-A	2500	2	100	20	59	60	2	100	20		SPARE	
						61	62						
2#12, 1#12G IN 3/4"C	(2) EDB-A	2500	2	100	20	63	64	2	100	20		SPARE	
						65	66						
2#12, 1#12G IN 3/4"C	(2) EDB-A	2500	2	100	20	67	68	2	100	20		SPARE	
						69	70						
2#12, 1#12G IN 3/4"C	(2) EDB-A	2500	2	100	20	71	72	2	100	20		SPARE	
						73	74						
	SPARE		2	100	20	75	76	2	100	20		SPARE	
						77	78						
	SPARE		1	100	20	79	80	2	100	20		SPARE	
	SPARE		1	100	20	81	82						
	SPARE		1	100	20	83	84	1	100	20		SPARE	

REMARKS:

TOTAL CONNECTED LOAD: 80,570 VA
TOTAL DEMAND LOAD: 80,312 VA
TOTAL DEMAND LOAD + SPARE: 96,375 VA
TOTAL AMPS: 268 A

1 E610.00 E610_PANEL SCHEDULE4
SCALE: 1/8" = 1'-0"

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PANEL SCHEDULE

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Drawing No.:
E610.00

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Sheets in DOB Set:
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PANEL: MP1B

SERVICE VOLTAGE: 208/120V, 3□, 4W+G
MAIN BUS RATING: 400A
AIC RATING: 65,000A
PANEL FEEDER: (REFER TO ONE LINE DIAGRAM)

ENCLOSURE: NEMA-1
MOUNTING: SURFACE
LOCATION: 2ND FL ELECTRIC CLOSET

MAIN RATING:
- [ ] MCB:
- [X] MLO:

OPTIONS:
- [X] BONDED GROUND BUS
- [ ] ISOLATED GROUND BUS
- [ ] 200% NEUTRAL BUS
- [ ] FEED THROUGH LUGS
- [ ] SUB FEED LUGS
- [X] DOOR-IN-DOOR TRIM
- [ ] INTEGRAL TVSS DEVICE
- [ ] INTEGRAL RC SWITCH
- [ ] INTEGRAL METERING DEVICE

BRANCH FEEDER	LOAD DESCRIPTION	LOAD (VA)	BRANCH DEVICE POLE (No)	FRAME (AMP)	TRIP (AMP)	CKT.	N	PHASE A	B	C	G	CKT.	BRANCH DEVICE POLE (No)	FRAME (AMP)	TRIP (AMP)	LOAD (VA)	LOAD DESCRIPTION	BRANCH FEEDER
	SPARE		1	100	20	1						2	1	100	20		SPARE	
3#8, 1#10G IN 3/4"C	VUV	11950	3	100	40	3						4	3	100	40	11950	VUV	3#8, 1#10G IN 3/4"C
						5						6						
						7						8						
3#8, 1#10G IN 3/4"C	VUV	11950	3	100	40	9						10	3	100	40	11950	VUV	3#8, 1#10G IN 3/4"C
						11						12						
						13						14						
3#8, 1#10G IN 3/4"C	VUV	11950	3	100	20	15						16	3	100	40	11950	VUV	3#8, 1#10G IN 3/4"C
						17						18						
						19						20						
	SPARE		3	100	20	21						22	3	100	40	11950	VUV	3#8, 1#10G IN 3/4"C
						23						24						
						25						26						
	SPARE		3	100	20	27						28	3	100	40		SPARE	
						29						30						
						31						32						
	SPARE		1	100	20	33						34	1	100	40		SPARE	
	SPARE		2	100	20	35						36	2	100	40		SPARE	
						37						38						
	SPARE		2	100	20	39						40	2	100	40		SPARE	
						41						42						

REMARKS:

TOTAL CONNECTED LOAD:	83,650 VA
TOTAL DEMAND LOAD:	83,650 VA
TOTAL DEMAND LOAD + SPARE:	100,380 VA
TOTAL AMPS:	279 A

PANEL: MP2B

SERVICE VOLTAGE: 208/120V, 3□, 4W+G
MAIN BUS RATING: 400A
AIC RATING: 65,000A
PANEL FEEDER: (REFER TO ONE LINE DIAGRAM)

ENCLOSURE: NEMA-1
MOUNTING: SURFACE
LOCATION: 2ND FL ELECTRIC CLOSET

MAIN RATING:
- [ ] MCB:
- [X] MLO:

OPTIONS:
- [X] BONDED GROUND BUS
- [ ] ISOLATED GROUND BUS
- [ ] 200% NEUTRAL BUS
- [ ] FEED THROUGH LUGS
- [ ] SUB FEED LUGS
- [X] DOOR-IN-DOOR TRIM
- [ ] INTEGRAL TVSS DEVICE
- [ ] INTEGRAL RC SWITCH
- [ ] INTEGRAL METERING DEVICE

BRANCH FEEDER	LOAD DESCRIPTION	LOAD (VA)	BRANCH DEVICE POLE (No)	FRAME (AMP)	TRIP (AMP)	CKT.	N	PHASE A	B	C	G	CKT.	BRANCH DEVICE POLE (No)	FRAME (AMP)	TRIP (AMP)	LOAD (VA)	LOAD DESCRIPTION	BRANCH FEEDER
	SPARE		1	100	20	1						2	1	100	20		SPARE	
3#8, 1#10G IN 3/4"C	VUV	11950	3	100	40	3						4	3	100	40	11950	VUV	3#8, 1#10G IN 3/4"C
						5						6						
						7						8						
3#8, 1#10G IN 3/4"C	VUV	11950	3	100	40	9						10	3	100	40	11950	VUV	3#8, 1#10G IN 3/4"C
						11						12						
						13						14						
3#8, 1#10G IN 3/4"C	VUV	11950	3	100	20	15						16	3	100	40	11950	VUV	3#8, 1#10G IN 3/4"C
						17						18						
						19						20						
3#8, 1#10G IN 3/4"C	VUV	11950	3	100	20	21						22	3	100	40	11950	VUV	3#8, 1#10G IN 3/4"C
						23						24						
						25						26						
3#8, 1#10G IN 3/4"C	VUV	11950	3	100	20	27						28	3	100	40	11950	VUV	3#8, 1#10G IN 3/4"C
						29						30						
						31						32						
	SPARE		1	100	20	33						34	1	100	40		SPARE	
	SPARE		2	100	20	35						36	2	100	40		SPARE	
						37						38						
	SPARE		2	100	20	39						40	2	100	40		SPARE	
						41						42						

REMARKS:

TOTAL CONNECTED LOAD:	119,500 VA
TOTAL DEMAND LOAD:	119,500 VA
TOTAL DEMAND LOAD + SPARE:	143,400 VA
TOTAL AMPS:	398 A

PANEL: MP3B

SERVICE VOLTAGE: 208/120V, 3□, 4W+G
MAIN BUS RATING: 400A
AIC RATING: 65,000A
PANEL FEEDER: (REFER TO ONE LINE DIAGRAM)

ENCLOSURE: NEMA-1
MOUNTING: SURFACE
LOCATION: 2ND FL ELECTRIC CLOSET

MAIN RATING:
- [ ] MCB:
- [X] MLO:

OPTIONS:
- [X] BONDED GROUND BUS
- [ ] ISOLATED GROUND BUS
- [ ] 200% NEUTRAL BUS
- [ ] FEED THROUGH LUGS
- [ ] SUB FEED LUGS
- [X] DOOR-IN-DOOR TRIM
- [ ] INTEGRAL TVSS DEVICE
- [ ] INTEGRAL RC SWITCH
- [ ] INTEGRAL METERING DEVICE

BRANCH FEEDER	LOAD DESCRIPTION	LOAD (VA)	BRANCH DEVICE POLE (No)	FRAME (AMP)	TRIP (AMP)	CKT.	N	PHASE A	B	C	G	CKT.	BRANCH DEVICE POLE (No)	FRAME (AMP)	TRIP (AMP)	LOAD (VA)	LOAD DESCRIPTION	BRANCH FEEDER
	SPARE		1	100	20	1						2	1	100	20		SPARE	
3#8, 1#10G IN 3/4"C	VUV	11950	3	100	40	3						4	3	100	40	11950	VUV	3#8, 1#10G IN 3/4"C
						5						6						
						7						8						
3#8, 1#10G IN 3/4"C	VUV	11950	3	100	40	9						10	3	100	40	11950	VUV	3#8, 1#10G IN 3/4"C
						11						12						
						13						14						
3#8, 1#10G IN 3/4"C	VUV	11950	3	100	20	15						16	3	100	40	11950	VUV	3#8, 1#10G IN 3/4"C
						17						18						
						19						20						
3#8, 1#10G IN 3/4"C	VUV	11950	3	100	20	21						22	3	100	40	11950	VUV	3#8, 1#10G IN 3/4"C
						23						24						
						25						26						
3#8, 1#10G IN 3/4"C	VUV	11950	3	100	20	27						28	3	100	40	11950	VUV	3#8, 1#10G IN 3/4"C
						29						30						
						31						32						
	SPARE		1	100	20	33						34	1	100	40		SPARE	
	SPARE		2	100	20	35						36	2	100	40		SPARE	
						37						38						
	SPARE		2	100	20	39						40	2	100	40		SPARE	
						41						42						

REMARKS:

TOTAL CONNECTED LOAD:	119,500 VA
TOTAL DEMAND LOAD:	119,500 VA
TOTAL DEMAND LOAD + SPARE:	143,400 VA
TOTAL AMPS:	398 A

PANEL: MP4B

SERVICE VOLTAGE: 208/120V, 3□, 4W+G
MAIN BUS RATING: 400A
AIC RATING: 65,000A
PANEL FEEDER: (REFER TO ONE LINE DIAGRAM)

ENCLOSURE: NEMA-1
MOUNTING: SURFACE
LOCATION: 2ND FL ELECTRIC CLOSET

MAIN RATING:
- [ ] MCB:
- [X] MLO:

OPTIONS:
- [X] BONDED GROUND BUS
- [ ] ISOLATED GROUND BUS
- [ ] 200% NEUTRAL BUS
- [ ] FEED THROUGH LUGS
- [ ] SUB FEED LUGS
- [X] DOOR-IN-DOOR TRIM
- [ ] INTEGRAL TVSS DEVICE
- [ ] INTEGRAL RC SWITCH
- [ ] INTEGRAL METERING DEVICE

BRANCH FEEDER	LOAD DESCRIPTION	LOAD (VA)	BRANCH DEVICE POLE (No)	FRAME (AMP)	TRIP (AMP)	CKT.	N	PHASE A	B	C	G	CKT.	BRANCH DEVICE POLE (No)	FRAME (AMP)	TRIP (AMP)	LOAD (VA)	LOAD DESCRIPTION	BRANCH FEEDER
	SPARE		1	100	20	1						2	1	100	20		SPARE	
3#8, 1#10G IN 3/4"C	VUV	11950	3	100	40	3						4	3	100	40	11950	VUV	3#8, 1#10G IN 3/4"C
						5						6						
						7						8						
3#8, 1#10G IN 3/4"C	VUV	11950	3	100	40	9						10	3	100	40	11950	VUV	3#8, 1#10G IN 3/4"C
						11						12						
						13						14						
3#8, 1#10G IN 3/4"C	VUV	11950	3	100	20	15						16	3	100	40	11950	VUV	3#8, 1#10G IN 3/4"C
						17						18						
						19						20						
3#8, 1#10G IN 3/4"C	VUV	11950	3	100	20	21						22	3	100	40	11950	VUV	3#8, 1#10G IN 3/4"C
						23						24						
						25						26						
3#8, 1#10G IN 3/4"C	VUV	11950	3	100	20	27						28	3	100	40	11950	VUV	3#8, 1#10G IN 3/4"C
						29						30						
						31						32						
	SPARE		1	100	20	33						34	1	100	40		SPARE	
	SPARE		2	100	20	35						36	2	100	40		SPARE	
						37						38						
	SPARE		2	100	20	39						40	2	100	40		SPARE	
						41						42						

REMARKS:

TOTAL CONNECTED LOAD:	119,500 VA
TOTAL DEMAND LOAD:	119,500 VA
TOTAL DEMAND LOAD + SPARE:	143,400 VA
TOTAL AMPS:	398 A

1 E611.00 E611_PANEL SCHEDULE5
SCALE: 1/8" = 1'-0"

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PANEL SCHEDULE

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Drawing No.:
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PANEL: MP5B

SERVICE VOLTAGE: 208/120V, 3□, 4W+G
MAIN BUS RATING: 400A
AIC RATING: 65,000A
PANEL FEEDER: (REFER TO ONE LINE DIAGRAM)

ENCLOSURE: NEMA-1
MOUNTING: SURFACE
LOCATION: 2ND FL ELECTRIC CLOSET

MAIN RATING:
- [ ] MCB:
- [X] MLO:

OPTIONS:
- [X] BONDED GROUND BUS
- [ ] ISOLATED GROUND BUS
- [ ] 200% NEUTRAL BUS
- [ ] FEED THROUGH LUGS
- [ ] SUB FEED LUGS
- [X] DOOR-IN-DOOR TRIM
- [ ] INTEGRAL TVSS DEVICE
- [ ] INTEGRAL RC SWITCH
- [ ] INTEGRAL METERING DEVICE

BRANCH FEEDER	LOAD DESCRIPTION	LOAD (VA)	BRANCH DEVICE POLE (No)	FRAME (AMP)	TRIP (AMP)	CKT.	N	PHASE A	PHASE B	PHASE C	G	CKT.	BRANCH DEVICE POLE (No)	FRAME (AMP)	TRIP (AMP)	LOAD (VA)	LOAD DESCRIPTION	BRANCH FEEDER
	SPARE		1	100	20	1						2	1	100	20		SPARE	
3#8, 1#10G IN 3/4"C	VUV	11950	3	100	40	3						4	3	100	40	11950	VUV	3#8, 1#10G IN 3/4"C
						5						6						
						7						8						
3#8, 1#10G IN 3/4"C	VUV	11950	3	100	40	9						10	3	100	40	11950	VUV	3#8, 1#10G IN 3/4"C
						11						12						
						13						14						
3#8, 1#10G IN 3/4"C	VUV	11950	3	100	20	15						16	3	100	40	11950	VUV	3#8, 1#10G IN 3/4"C
						17						18						
						19						20						
3#8, 1#10G IN 3/4"C	VUV	11950	3	100	20	21						22	3	100	40	11950	VUV	3#8, 1#10G IN 3/4"C
						23						24						
						25						26						
3#8, 1#10G IN 3/4"C	VUV	11950	3	100	20	27						28	3	100	40	11950	VUV	3#8, 1#10G IN 3/4"C
						29						30						
						31						32						
	SPARE		1	100	20	33						34	1	100	40		SPARE	
	SPARE		2	100	20	35						36	2	100	40		SPARE	
						37						38						
	SPARE		2	100	20	39						40	2	100	40		SPARE	
						41						42						

REMARKS:

TOTAL CONNECTED LOAD:	119,500 VA
TOTAL DEMAND LOAD:	119,500 VA
TOTAL DEMAND LOAD + SPARE:	143,400 VA
TOTAL AMPS:	398 A

PANEL: MPR

SERVICE VOLTAGE: 208/120V, 3□, 4W+G
MAIN BUS RATING: 400A
AIC RATING: 65,000A
PANEL FEEDER: (REFER TO ONE LINE DIAGRAM)

ENCLOSURE: NEMA-1
MOUNTING: SURFACE
LOCATION: 2ND FL ELECTRIC CLOSET

MAIN RATING:
- [ ] MCB:
- [X] MLO:

OPTIONS:
- [X] BONDED GROUND BUS
- [ ] ISOLATED GROUND BUS
- [ ] 200% NEUTRAL BUS
- [ ] FEED THROUGH LUGS
- [ ] SUB FEED LUGS
- [X] DOOR-IN-DOOR TRIM
- [ ] INTEGRAL TVSS DEVICE
- [ ] INTEGRAL RC SWITCH
- [ ] INTEGRAL METERING DEVICE

BRANCH FEEDER	LOAD DESCRIPTION	LOAD (VA)	BRANCH DEVICE POLE (No)	FRAME (AMP)	TRIP (AMP)	CKT.	N	PHASE A	PHASE B	PHASE C	G	CKT.	BRANCH DEVICE POLE (No)	FRAME (AMP)	TRIP (AMP)	LOAD (VA)	LOAD DESCRIPTION	BRANCH FEEDER
	SPARE		1	100	20	1						2	1	100	20		SPARE	
2#12, 1#12G IN 3/4"C	EF-8, EF-9	2700	2	100	20	3						4	3	100	60		SPARE	
						5						6						
2#12, 1#12G IN 3/4"C	EF-10, EF-17	2700	2	100	20	7						8						
						9						10	3	100	60		SPARE	
2#12, 1#12G IN 3/4"C	EF-18, EF-19	2700	2	100	20	11						12						
						13						14						
2#12, 1#12G IN 3/4"C	TEF-1, TEF-3	2700	2	100	20	15						16	3	100	60		SPARE	
						17						18						
2#12, 1#12G IN 3/4"C	FHE-1	2380	2	100	20	19						20						
						21						22	3	100	60		SPARE	
2#12, 1#12G IN 3/4"C	FHE-2	2380	2	100	20	23						24						
						25						26						
2#12, 1#12G IN 3/4"C	FHE-3	2380	2	100	20	27						28	2	100	20		SPARE	
						29						30						
2#12, 1#12G IN 3/4"C	FHE-3	2380	2	100	20	31						32	2	100	20		SPARE	
						33						34						
2#12, 1#12G IN 3/4"C	FHE-4	2380	2	100	20	35						36	2	100	20		SPARE	
						37						38						
2#12, 1#12G IN 3/4"C	FHE-5	2380	2	100	20	39						40	2	100	20		SPARE	
						41						42						
2#10, 1#10G IN 3/4"C	VRF-ACCU.1	3970	2	100	30	43						44	2	100	20		SPARE	
						45						46						
2#10, 1#10G IN 3/4"C	VRF-ACCU.2	3970	2	100	30	47						48	2	100	20		SPARE	
						49						50						
2#12, 1#12G IN 3/4"C	ACCU-C-1	3160	2	100	20	51						52	2	100	20		SPARE	
						53						54						
2#12, 1#12G IN 3/4"C	ACCU-C-2	3160	2	100	20	55						56	2	100	20		SPARE	
						57						58						
2#12, 1#12G IN 3/4"C	ACCU-1-1	3160	2	100	20	59						60	2	100	20		SPARE	
						61						62						
2#12, 1#12G IN 3/4"C	ACCU-1-2	3160	2	100	20	63						64	2	100	20		SPARE	
						65						66						
2#12, 1#12G IN 3/4"C	ACCU-2-1	3160	2	100	20	67						68	2	100	20		SPARE	
						69						70						
2#12, 1#12G IN 3/4"C	ACCU-3-1	3160	2	100	20	71						72	2	100	20		SPARE	
						73						74						
2#12, 1#12G IN 3/4"C	ACCU-4-1	3160	2	100	20	75						76	2	100	20		SPARE	
						77						78						
	SPARE		1	100	20	79						80	2	100	20		SPARE	
	SPARE		1	100	20	81						82						
	SPARE		1	100	20	83						84	1	100	20		SPARE	

REMARKS:

TOTAL CONNECTED LOAD:	124,300 VA
TOTAL DEMAND LOAD:	119,791 VA
TOTAL DEMAND LOAD + SPARE:	143,749 VA
TOTAL AMPS:	400 A

1 E612_PANEL SCHEDULE6
E612.00 SCALE: 1/8" = 1'-0"

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FIRE DETECTION & ALARM SYSTEM

SYMBOL	DESCRIPTION
FACP	FIRE ALARM SYSTEM CONTROL PANEL. WITH INTEGRATED DACT & INTEGRATED POST FIRE PURGE PANEL
FASP	FIRE SYSTEM SMOKE PURGE CONTROL PANEL
DACT	DIGITAL ALARM COMMUNICATOR TRANSMITTER
FARA	FIRE ALARM REMOTE ANNUNCIATOR
FAPR	FIRE ALARM PRINTER
F	FIRE SYSTEM PULL STATION WITH FALSE ALARM STOPPER, FLUSH MTD AT 4'-0" AFF.
30 G	FIRE SIGNAL STROBE MTD. AT 8'-0"AFF TO DEVICE BOTTOM OR 6" MIN. BELOW CEILING SUBSCRIPT 'G' DENOTES WITH GUARD. NUMERICAL DENOTES CANDELA RATING.
30 G	FIRE SIGNAL HORN/STROBE, FLUSH MTD. AT 8'-0"AFF TO DEVICE BOTTOM OR 6" MIN. BELOW CEILING. SUBSCRIPT 'G' DENOTES WITH GUARD NUMERICAL DENOTES CANDELA RATING IN DB.
F 30 G	FIRE ALARM PULL STATION AND HORN/STROBE WITH FALSE ALARM STOPPER ASSEMBLY MOUNTED 8'-0" AFF TO DEVICE BOTTOM OR 6" MIN. BELOW CEILING SUBSCRIPT 'G' DENOTES WITH GUARD NUMERICAL DENOTES CANDELA RATING IN DB.
LSS	GYMATORIUM LOCAL SOUND SYSTEM CABINET.
DB	GYMATORIUM DIMMER PANEL BOARD.
FDS	LOCKABLE FUSE DISCONNECT SWITCH WITH SOLID NEUTRAL BAR
FCO	FUSE CUTOUT PANEL.
ATS	AUTOMATIC TRANSFER SWITCH (ATS)
S EX	SMOKE DETECTOR. 'EX' DENOTES EXPLOSION PROOF,' ER' INDICATES ELEVATOR RECALL
H	HEAT DETECTOR (194 F FIXED TEMPERATURE)
SD	SMOKE DETECTOR DUCT MOUNTED
C	CARBON MONOXIDE SENSOR
F S	MOTORIZED FIRE AND SMOKE DAMPER (BY HVAC)
F SP	MOTORIZED FIRE SMOKE PURGE DAMPER (BY HVAC)
S SP	MOTORIZED SMOKE PURGE DAMPER (BY HVAC)
S	MOTORIZED SMOKE DAMPER (BY HVAC)
ER	ELEVATOR RECALL
TS	FIRE ALARM TAMPER SWITCH (BY PLUMBING).
WF	FIRE ALARM FLOW SWITCH (BY PLUMBING).
MM	INDIVIDUALLY ADDRESSABLE MONITOR MODULE
CM	CONTACT INTERFACE MODULE
R	RELAY MODULE
BP	BOOSTER POWER SUPPLY
SH	ELEVATOR SHAFT VENTILATION LOUVER
ϕ^L OR ϕ^T	TWIST LOCK RECEPTACLE MOUNTED AT 18" AFF.
SHA	SMOKE HATCH

LIST OF DRAWINGS	
DRAWING NAME	DRAWING TITLE
FA001.00	FIRE ALARM SYMBOLS & LEGENDS, ABBREVIATIONS, AND NOTES
FA201.00	FIRE ALARM SYSTEM RISER DIAGRAM
FA102.00	FIRST FLOOR PLAN - FIRE ALARM SYTEMS
FA101.00	CELLAR FLOOR PLAN - FIRE ALARM SYTEMS
FA103.00	SECOND FLOOR PLAN - FIRE ALARM SYTEMS
FA104.00	THIRD FLOOR PLAN - FIRE ALARM SYTEMS
FA105.00	FOURTH FLOOR PLAN - FIRE ALARM SYTEMS
FA106.00	FIFTH FLOOR PLAN - FIRE ALARM SYTEMS
FA107.00	ROOF PLAN - FIRE ALARM SYTEMS
FA202.00	FIRE ALARM SYSTEM INPUT_OUTPUT MATRIX

SPECIAL INSPECTION NOTES

SPECIAL INSPECTIONS REQUIRED IN ACCORDANCE WITH CHAPTER 17 AND THE APPLICABLE SECTIONS OF THE 2014 NYC CONSTRUCTION CODE ARE LISTED IN THE FOLLOWING TABLES. THE CONTRACTOR MUST NOTIFY THE ARCHITECT OR ENGINEER FOR SPECIAL INSPECTIONS AT LEAST 72 HOURS BEFORE THE SPECIFIC WORK COMMENCES.

THE "AUTHORITY" SHALL BE RESPONSIBLE FOR THE FOLLOWING SPECIAL INSPECTIONS:
THE "CONTRACTOR" SHALL BE RESPONSIBLE FOR THE FOLLOWING SPECIAL INSPECTIONS:

- FIRE-RESISTANT PENETRATION AND JOINTS - BC 1704.27

REQUIRED INSPECTIONS AND TESTS OF MATERIALS DESIGNATED FOR "SPECIAL INSPECTION" BY THE CONTRACTOR SHALL BE MADE UNDER THE DIRECT SUPERVISION OF A LICENSED ARCHITECT OR ENGINEER RETAINED BY OR ON THE BEHALF OF THE CONTRACTOR WHO SHALL BE ACCEPTABLE TO THE ARCHITECT OR ENGINEER WHO SUPERVISED THE PREPARATION OF THE PLANS.

FIRE ALARM SYSTEM GENERAL NOTES:

1. THE FIRE ALARM SYSTEM SHOWN ON THE RISER DIAGRAM, FLOOR PLANS AND SPECIFICATIONS IS ENTIRELY NEW. UPON COMPLETION OF THIS WORK AND OF ALL TESTS AND AFTER OBTAINING THE AUTHORITY'S AND THE FIRE DEPARTMENT'S APPROVALS, THE NEW FIRE ALARM SYSTEM SHALL BECOME IN USE.
2. ALL CONDUITS AND CONTROL PANELS SHALL BE GROUNDED TO THE WATER MAIN WITH A MINIMUM #8 CONDUCTOR.
3. SMOKE PURGE DAMPERS SHALL BE ZONED PER FLOOR.
4. VISUAL DEVICES SHALL NOT HAVE ANY APPURTENANCES WITHIN 5 FEET RADIUS.
5. PROVIDE FIRE STOP SEAL AT ALL PENETRATIONS OF FIRE RATED PARTITIONS.
6. ALL COMPONENTS SHOWN ON RISER DIAGRAMS, BUT NOT ON THE PLAN OR VICE VERSA, SHALL BE INCLUDED AS IF SHOWN ON BOTH.
7. THE INSPECTION, TESTING, AND MAINTENANCE OF SYSTEMS, THEIR INITIATING DEVICES, AND NOTIFICATION APPLIANCES SHALL COMPLY WITH THE REQUIREMENTS OF CHAPTER 14 NFPA CODE.
8. ALL MATERIAL/DEVICES SHALL BE IN COMPLIANCE WITH F.D STANDARDS AND UL LISTED.
9. CO DETECTION SHALL BE LISTED IN ACCORDANCE WITH UL 2075.
10. CONTRACTOR TO PROVIDE BATTERY CALCULATION SHOWING 20 PERCENT SAFETY MARGIN TO THE CALCULATED AMP-RATING.
11. ALL EQUIPMENT AND COMPONENTS SHALL BE LISTED FOR THE PURPOSE FOR WHICH THEY ARE INSTALLED.

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Drawing Title:
FIRE ALARM SYMBOLS & LEGENDS, ABBREVIATIONS, AND NOTES

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Drawing No.:
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PLAN NOTES:

1. FOR GENERAL NOTES, SYMBOL LIST, ABBREVIATIONS AND FIRE ALARM SYSTEM DRAWING LIST REFER TO DWG FA001.00
2. FOR EXACT LOCATION AND QUANTITIES OF MECHANICAL AND PLUMBING EQUIPMENT AND DEVICES REFER TO MECHANICAL AND PLUMBING DWGS.
3. ALL CONDUIT PENETRATIONS THROUGH FIRE RATED PARTITIONS ARE TO BE PROVIDED WITH FIRE STOP SEALS AS REQUIRED BY CODE TO MAINTAIN FIRE RATING OF PARTITIONS.
4. UNLESS OTHERWISE NOTED ON DRAWING MOUNTING HEIGHTS OUTLETS AND EQUIPMENT SHALL BE AS INDICATED ON SYMBOL LIST & SPECIFICATIONS.
5. FOR FIRE SMOKE DAMPER CIRCUITS REFER TO FLOOR POWER PLAN DWGS.
6. WALL MOUNTED HORNS AND VISUAL FIRE ALARMS (STROBES) SHALL BE MOUNTED SUCH THAT THE ENTIRE STROBE LENS IS LOCATED NOT GREATER THAN 96" ABOVE THE FINISHED FLOOR OR 6" BELOW THE CEILING, WHICHEVER IS LOWER.
7. FIRE ALARM PULL STATIONS SHALL BE MOUNTED MIN 3'-6" AND MAX 4'-0" FROM THE FLOOR LEVEL TO THE ACTIVATING HANDLE.
8. ACCESS SHALL BE PROVIDE TO EACH DETECTOR FOR PERIODIC INSPECTION, MAINTENANCE AND TESTING AS PER SECTION 907.12 OF N.Y.C. BUILDING CODE.
9. ARTWORK: NO M/E/P, FIXTURES, DEVICES OR OUTLETS MAY BE LOCATED IN THIS AREA WITHOUT APPROVAL FROM PUBLIC ART FOR PUBLIC SCHOOLS (PAPS) AND ARCHITECT.
10. SEE TYPICAL DETAILS #10 ON DRAWING E710.00 FOR APPROXIMATE LOCATION OF CO DETECTOR INSTALLED INSIDE GENERATOR ENCLOSURE AND OTHER COMPONENTS TO BE TIED INTO FIRE ALARM SYSTEM.
11. FIRE ALARM AUTOMATIC TRANSFER SWITCH (FA-ATS) IS LOCATED IN A 2-HR RATED ROOM.

C17 REFUSE/RECYCLE 742 SF
C15 JC 36 SF
C13 STAFF TOILET 65 SF
C11 STOR 822 SF
C21C NON FOOD STORAGE 188 SF
C21D FOOD STORAGE 203 SF
C19 STORAGE 300 SF
C21B LOCKER M 87 SF
C21A LOCKER F 125 SF
C25 ATS RM 141 SF
C23 IDF RM 122 SF
C27 GENERAL STORAGE 1153 SF
C20 ELECTRICAL METER RM 720 SF
C16 SHOWER 167 SF
C14 SHOWER 165 SF
C18 BIKE STORAGE 1392 SF
C03 CUSTODIANS OFFICE 422 SF
C5A STAIR A 645 SF
C09 CUST. WORKSHOP/STOR. 562 SF
C08 CUSTODIANS LOCKER M 182 SF
C10 STORAGE 201 SF
C12 SCHOOL SAFETY OFFICE 306 SF
C12A OFFICE 115 SF
C04 GENERAL STOR. 830 SF
C02 WATER METER/PUMP RM 924 SF
C12B OFFICE 107 SF

SPF-1
FIRE PUMP DISC. SWITCH
FDS
BP-C
ER
WP TS
FA-ATS
UP
DN

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1 FA00_CELLAR FLOOR
FA101.00 SCALE: 1/8" = 1'-0"

Drawing Title:
CELLAR FLOOR PLAN - FIRE ALARM SYTEMS

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Drawing No.:
FA101.00

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Sheets in DOB Set:
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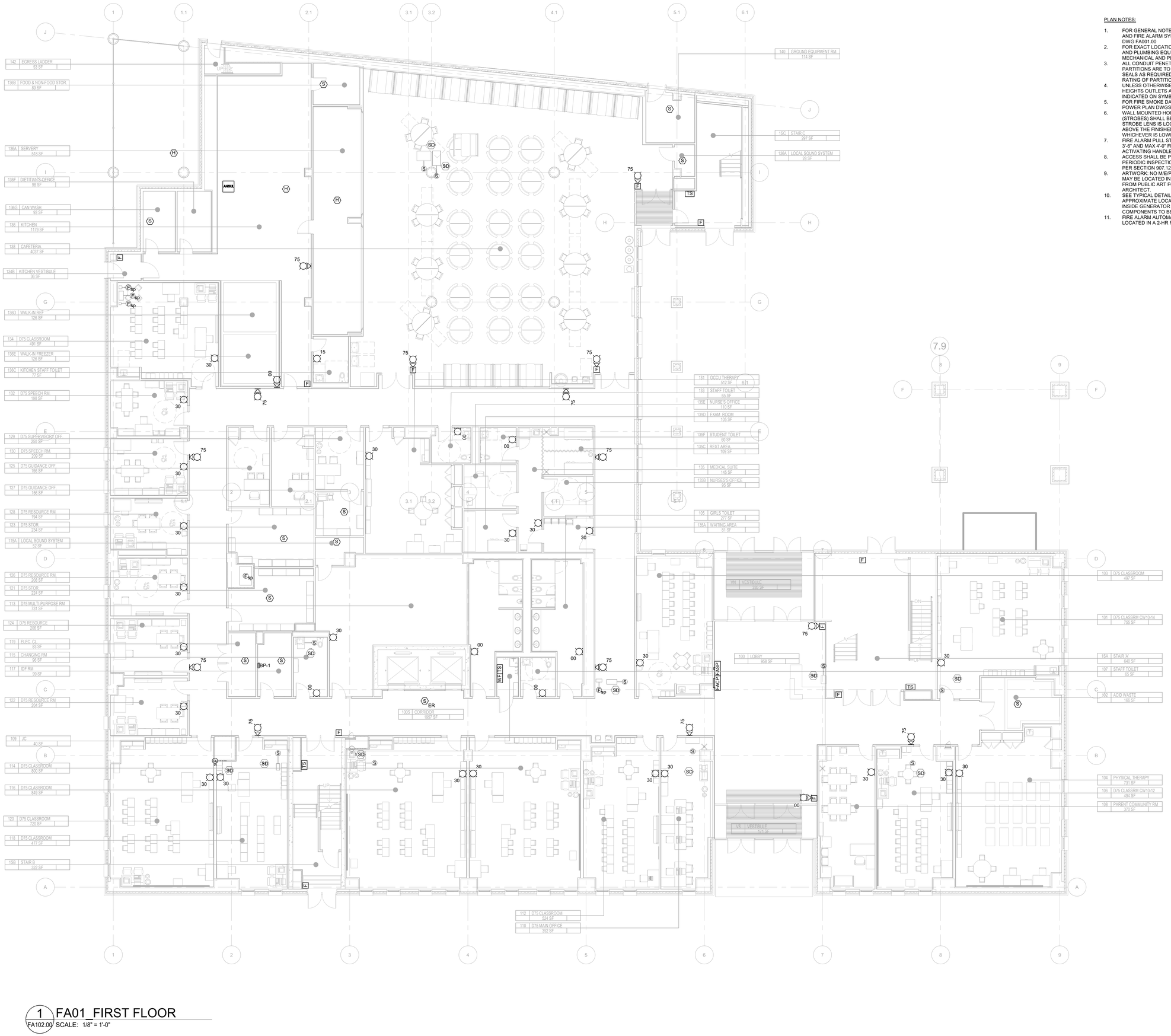

PLAN NOTES:

1. FOR GENERAL NOTES, SYMBOL LIST, ABBREVIATIONS AND FIRE ALARM SYSTEM DRAWING LIST REFER TO DWG FA001.00
2. FOR EXACT LOCATION AND QUANTITIES OF MECHANICAL AND PLUMBING EQUIPMENT AND DEVICES REFER TO MECHANICAL AND PLUMBING DWGS.
3. ALL CONDUIT PENETRATIONS THROUGH FIRE RATED PARTITIONS ARE TO BE PROVIDED WITH FIRE STOP SEALS AS REQUIRED BY CODE TO MAINTAIN FIRE RATING OF PARTITIONS.
4. UNLESS OTHERWISE NOTED ON DRAWING MOUNTING HEIGHTS OUTLETS AND EQUIPMENT SHALL BE AS INDICATED ON SYMBOL LIST & SPECIFICATIONS.
5. FOR FIRE SMOKE DAMPER CIRCUITS REFER TO FLOOR POWER PLAN DWGS.
6. WALL MOUNTED HORNS AND VISUAL FIRE ALARMS (STROBES) SHALL BE MOUNTED SUCH THAT THE ENTIRE STROBE LENS IS LOCATED NOT GREATER THAN 96" ABOVE THE FINISHED FLOOR OR 6" BELOW THE CEILING, WHICHEVER IS LOWER.
7. FIRE ALARM PULL STATIONS SHALL BE MOUNTED MIN 3'-6" AND MAX 4'-0" FROM THE FLOOR LEVEL TO THE ACTIVATING HANDLE.
8. ACCESS SHALL BE PROVIDE TO EACH DETECTOR FOR PERIODIC INSPECTION, MAINTENANCE AND TESTING AS PER SECTION 907.12 OF N.Y.C. BUILDING CODE.
9. ARTWORK: NO M/E/P, FIXTURES, DEVICES OR OUTLETS MAY BE LOCATED IN THIS AREA WITHOUT APPROVAL FROM PUBLIC ART FOR PUBLIC SCHOOLS (PAPS) AND ARCHITECT.
10. SEE TYPICAL DETAILS #10 ON DRAWING E710.00 FOR APPROXIMATE LOCATION OF CO DETECTOR INSTALLED INSIDE GENERATOR ENCLOSURE AND OTHER COMPONENTS TO BE TIED INTO FIRE ALARM SYSTEM.
11. FIRE ALARM AUTOMATIC TRANSFER SWITCH (FA-ATS) IS LOCATED IN A 2-HR RATED ROOM.

1 FA01_FIRST FLOOR
FA102.00 SCALE: 1/8" = 1'-0"

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Drawing Title:
FIRST FLOOR PLAN - FIRE ALARM SYTEMS

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DOB NOW Job#

Drawing No.:
FA102.00

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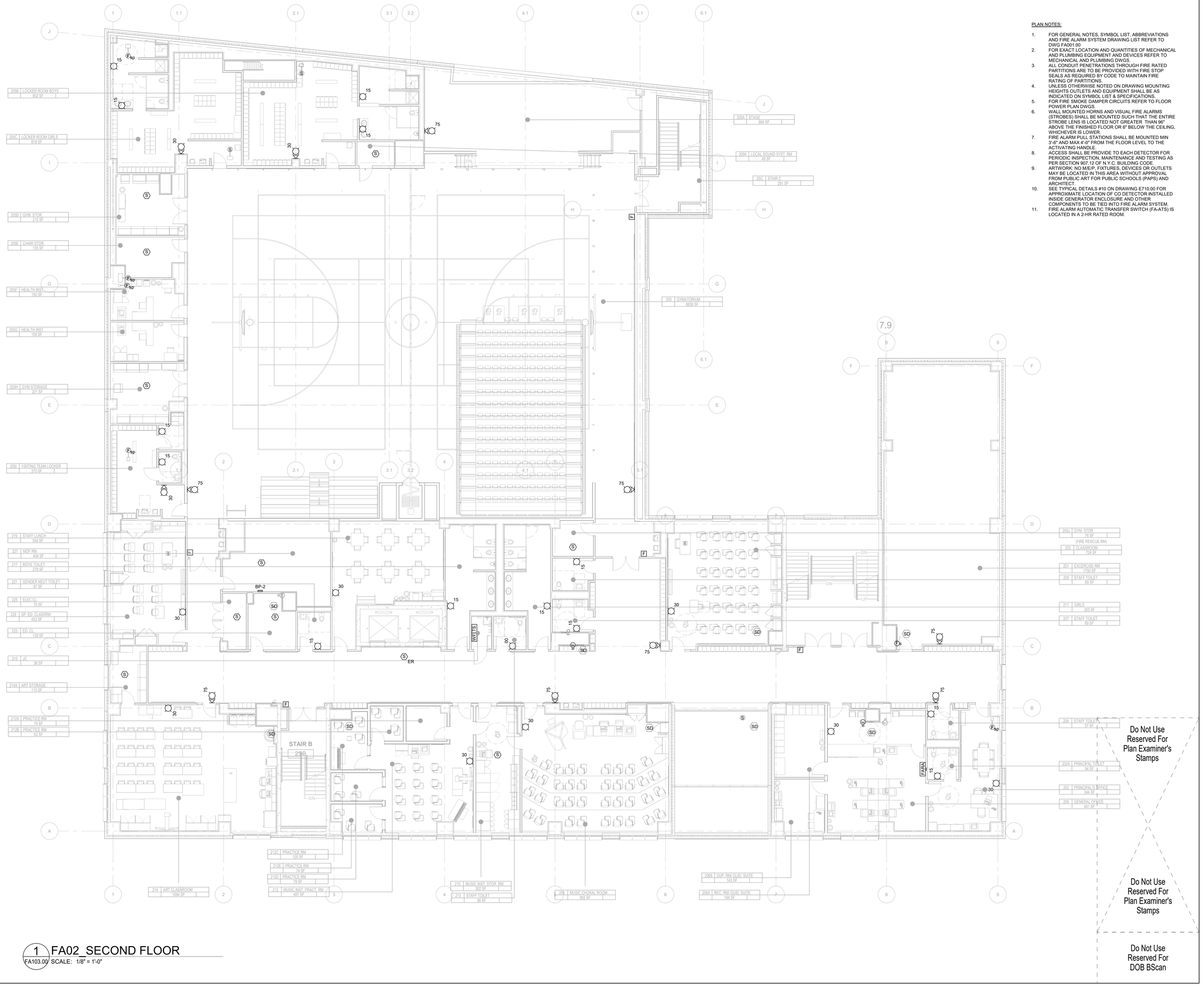

PLAN NOTES:

1. FOR GENERAL NOTES, SYMBOL LIST, ABBREVIATIONS AND FIRE ALARM SYSTEM DRAWING LIST REFER TO DWG FA001.00
2. FOR EXACT LOCATION AND QUANTITIES OF MECHANICAL AND PLUMBING EQUIPMENT AND DEVICES REFER TO MECHANICAL AND PLUMBING DWGS.
3. ALL CONDUIT PENETRATIONS THROUGH FIRE RATED PARTITIONS ARE TO BE PROVIDED WITH FIRE STOP SEALS AS REQUIRED BY CODE TO MAINTAIN FIRE RATING OF PARTITIONS.
4. UNLESS OTHERWISE NOTED ON DRAWING MOUNTING HEIGHTS OUTLETS AND EQUIPMENT SHALL BE AS INDICATED ON SYMBOL LIST & SPECIFICATIONS.
5. FOR FIRE SMOKE DAMPER CIRCUITS REFER TO FLOOR POWER PLAN DWGS.
6. WALL MOUNTED HORNS AND VISUAL FIRE ALARMS (STROBES) SHALL BE MOUNTED SUCH THAT THE ENTIRE STROBE LENS IS LOCATED NOT GREATER THAN 96" ABOVE THE FINISHED FLOOR OR 6" BELOW THE CEILING, WHICHEVER IS LOWER.
7. FIRE ALARM PULL STATIONS SHALL BE MOUNTED MIN 3'-6" AND MAX 4'-0" FROM THE FLOOR LEVEL TO THE ACTIVATING HANDLE.
8. ACCESS SHALL BE PROVIDE TO EACH DETECTOR FOR PERIODIC INSPECTION, MAINTENANCE AND TESTING AS PER SECTION 907.12 OF N.Y.C. BUILDING CODE.
9. ARTWORK: NO M/E/P, FIXTURES, DEVICES OR OUTLETS MAY BE LOCATED IN THIS AREA WITHOUT APPROVAL FROM PUBLIC ART FOR PUBLIC SCHOOLS (PAPS) AND ARCHITECT.
10. SEE TYPICAL DETAILS #10 ON DRAWING E710.00 FOR APPROXIMATE LOCATION OF CO DETECTOR INSTALLED INSIDE GENERATOR ENCLOSURE AND OTHER COMPONENTS TO BE TIED INTO FIRE ALARM SYSTEM.
11. FIRE ALARM AUTOMATIC TRANSFER SWITCH (FA-ATS) IS LOCATED IN A 2-HR RATED ROOM.

1 FA02_SECOND FLOOR
FA103.00 SCALE: 1/8" = 1'-0"

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Stamps

Do Not Use
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Drawing Title:
SECOND FLOOR PLAN - FIRE ALARM SYTEMS

Reserved For
DOB NOW Job#

Drawing No.:
FA103.00

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Sheets in DOB Set:
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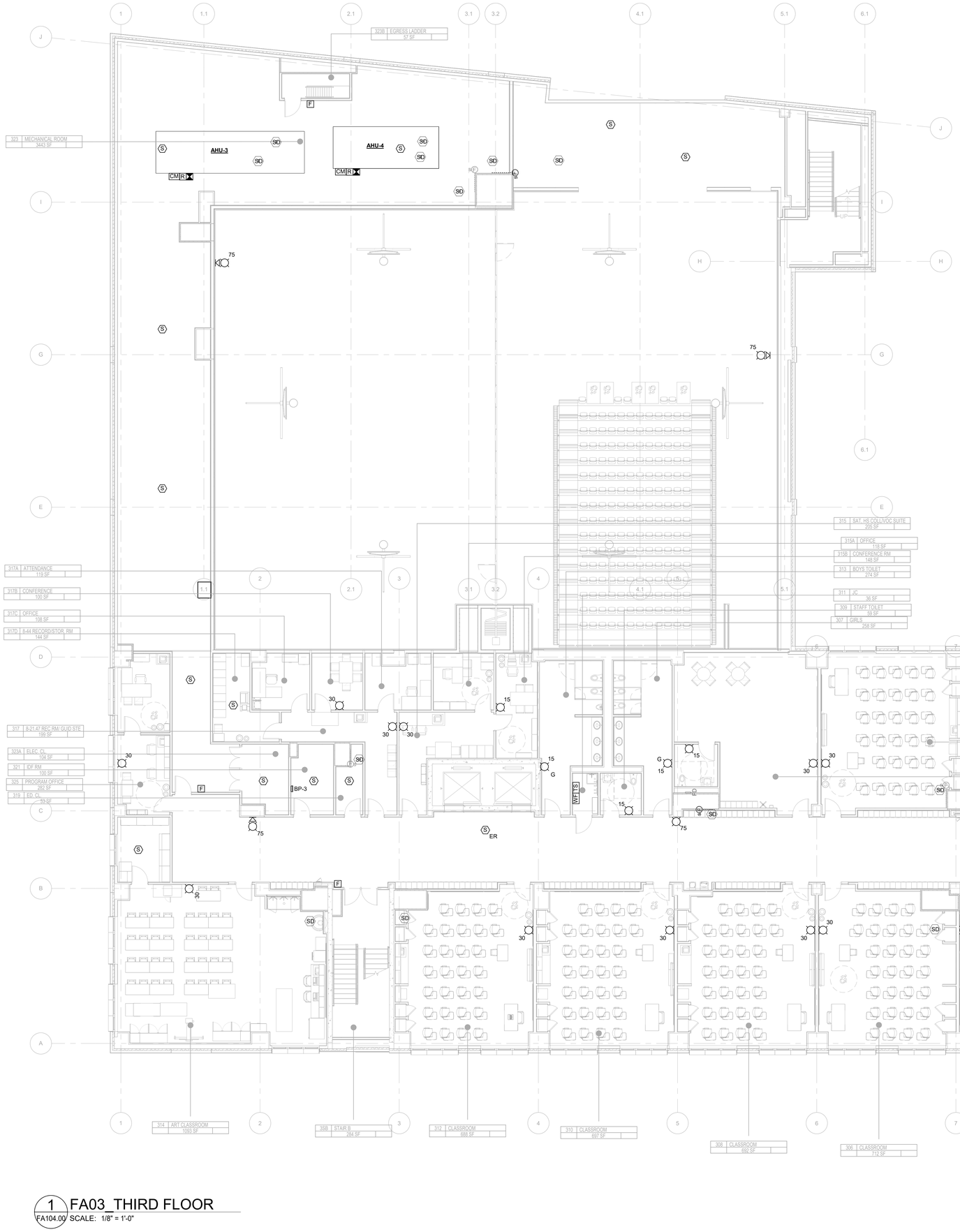

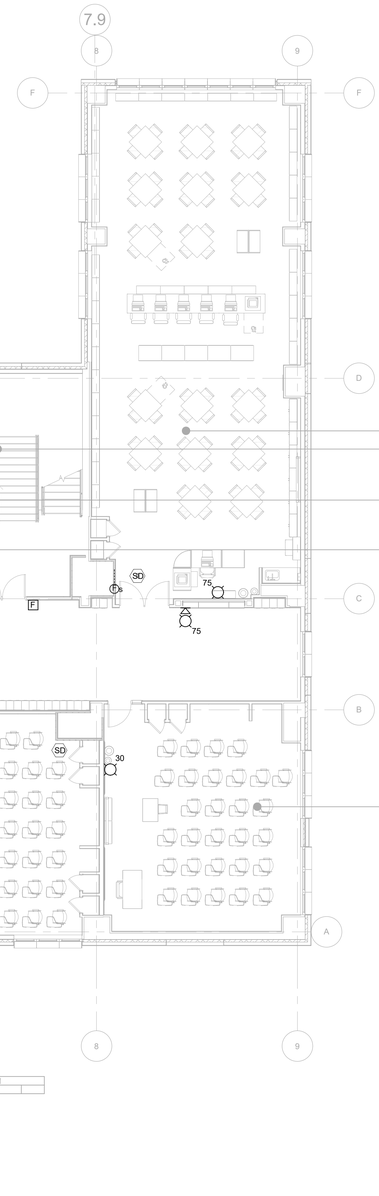

PLAN NOTES:

1. FOR GENERAL NOTES, SYMBOL LIST, ABBREVIATIONS AND FIRE ALARM SYSTEM DRAWING LIST REFER TO DWG FA001.00
2. FOR EXACT LOCATION AND QUANTITIES OF MECHANICAL AND PLUMBING EQUIPMENT AND DEVICES REFER TO MECHANICAL AND PLUMBING DWGS.
3. ALL CONDUIT PENETRATIONS THROUGH FIRE RATED PARTITIONS ARE TO BE PROVIDED WITH FIRE STOP SEALS AS REQUIRED BY CODE TO MAINTAIN FIRE RATING OF PARTITIONS.
4. UNLESS OTHERWISE NOTED ON DRAWING MOUNTING HEIGHTS OUTLETS AND EQUIPMENT SHALL BE AS INDICATED ON SYMBOL LIST & SPECIFICATIONS.
5. FOR FIRE SMOKE DAMPER CIRCUITS REFER TO FLOOR POWER PLAN DWGS.
6. WALL MOUNTED HORNS AND VISUAL FIRE ALARMS (STROBES) SHALL BE MOUNTED SUCH THAT THE ENTIRE STROBE LENS IS LOCATED NOT GREATER THAN 96" ABOVE THE FINISHED FLOOR OR 6" BELOW THE CEILING, WHICHEVER IS LOWER.
7. FIRE ALARM PULL STATIONS SHALL BE MOUNTED MIN 3'-6" AND MAX 4'-0" FROM THE FLOOR LEVEL TO THE ACTIVATING HANDLE.
8. ACCESS SHALL BE PROVIDE TO EACH DETECTOR FOR PERIODIC INSPECTION, MAINTENANCE AND TESTING AS PER SECTION 907.12 OF N.Y.C. BUILDING CODE.
9. ARTWORK: NO M/E/P, FIXTURES, DEVICES OR OUTLETS MAY BE LOCATED IN THIS AREA WITHOUT APPROVAL FROM PUBLIC ART FOR PUBLIC SCHOOLS (PAPS) AND ARCHITECT.
10. SEE TYPICAL DETAILS #10 ON DRAWING E710.00 FOR APPROXIMATE LOCATION OF CO DETECTOR INSTALLED INSIDE GENERATOR ENCLOSURE AND OTHER COMPONENTS TO BE TIED INTO FIRE ALARM SYSTEM.
11. FIRE ALARM AUTOMATIC TRANSFER SWITCH (FA-ATS) IS LOCATED IN A 2-HR RATED ROOM.

1 FA03_THIRD FLOOR
FA104.00 SCALE: 1/8" = 1'-0"

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Drawing Title:
THIRD FLOOR PLAN - FIRE ALARM SYTEMS

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DOB NOW Job#

Drawing No.:
FA104.00

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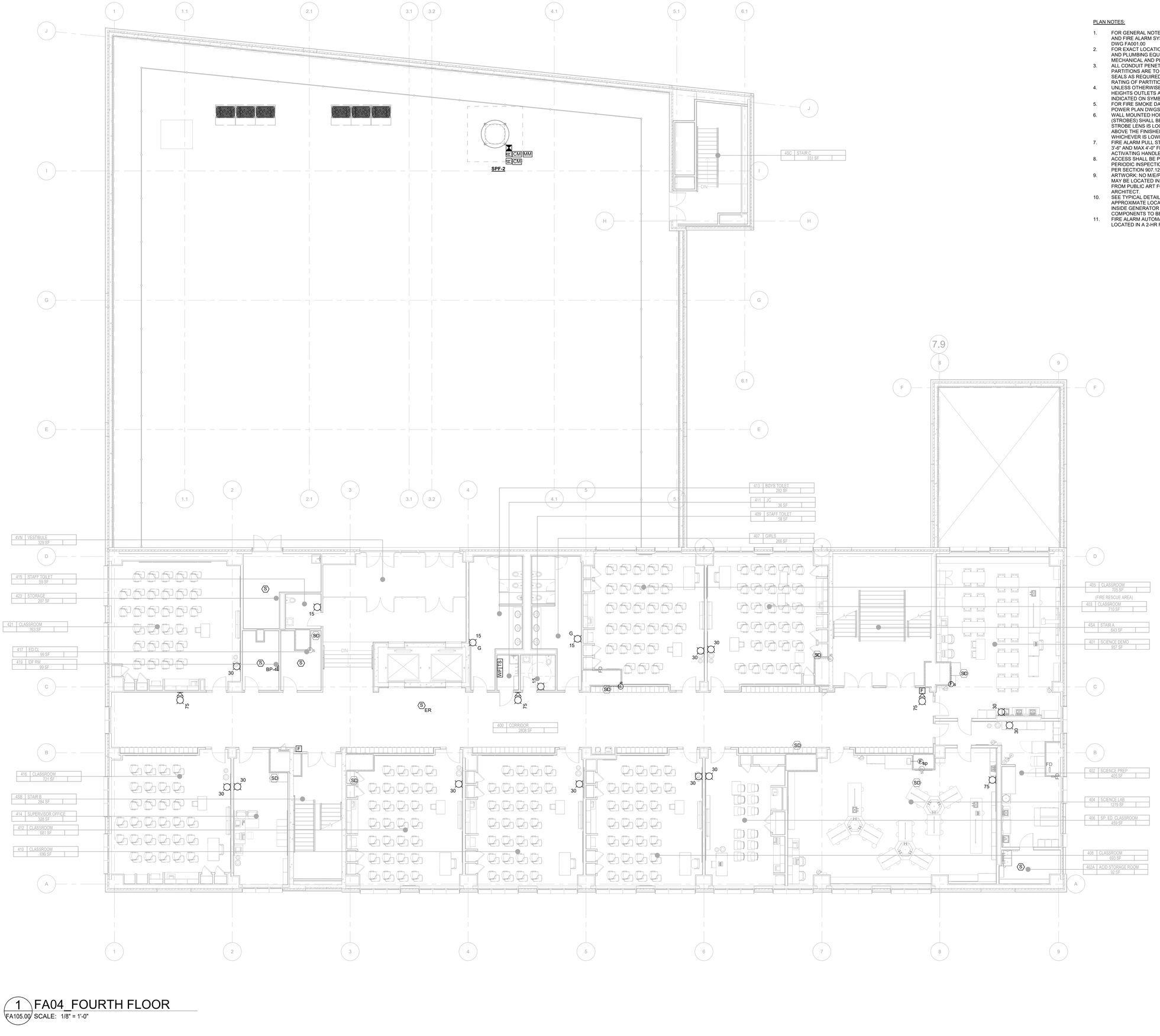

PLAN NOTES:

1. FOR GENERAL NOTES, SYMBOL LIST, ABBREVIATIONS AND FIRE ALARM SYSTEM DRAWING LIST REFER TO DWG FA001.00
2. FOR EXACT LOCATION AND QUANTITIES OF MECHANICAL AND PLUMBING EQUIPMENT AND DEVICES REFER TO MECHANICAL AND PLUMBING DWGS.
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4. UNLESS OTHERWISE NOTED ON DRAWING MOUNTING HEIGHTS OUTLETS AND EQUIPMENT SHALL BE AS INDICATED ON SYMBOL LIST & SPECIFICATIONS.
5. FOR FIRE SMOKE DAMPER CIRCUITS REFER TO FLOOR POWER PLAN DWGS.
6. WALL MOUNTED HORNS AND VISUAL FIRE ALARMS (STROBES) SHALL BE MOUNTED SUCH THAT THE ENTIRE STROBE LENS IS LOCATED NOT GREATER THAN 96" ABOVE THE FINISHED FLOOR OR 6" BELOW THE CEILING, WHICHEVER IS LOWER.
7. FIRE ALARM PULL STATIONS SHALL BE MOUNTED MIN 3'-6" AND MAX 4'-0" FROM THE FLOOR LEVEL TO THE ACTIVATING HANDLE.
8. ACCESS SHALL BE PROVIDE TO EACH DETECTOR FOR PERIODIC INSPECTION, MAINTENANCE AND TESTING AS PER SECTION 907.12 OF N.Y.C. BUILDING CODE.
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10. SEE TYPICAL DETAILS #10 ON DRAWING E710.00 FOR APPROXIMATE LOCATION OF CO DETECTOR INSTALLED INSIDE GENERATOR ENCLOSURE AND OTHER COMPONENTS TO BE TIED INTO FIRE ALARM SYSTEM.
11. FIRE ALARM AUTOMATIC TRANSFER SWITCH (FA-ATS) IS LOCATED IN A 2-HR RATED ROOM.

1 FA04_FOURTH FLOOR
FA105.00 SCALE: 1/8" = 1'-0"

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Drawing Title:
FOURTH FLOOR PLAN - FIRE ALARM SYTEMS

Reserved For
DOB NOW Job#

Drawing No.:
FA105.00

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Sheets in DOB Set:
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PLAN NOTES:

1. FOR GENERAL NOTES, SYMBOL LIST, ABBREVIATIONS AND FIRE ALARM SYSTEM DRAWING LIST REFER TO DWG FA001.00
2. FOR EXACT LOCATION AND QUANTITIES OF MECHANICAL AND PLUMBING EQUIPMENT AND DEVICES REFER TO MECHANICAL AND PLUMBING DWGS.
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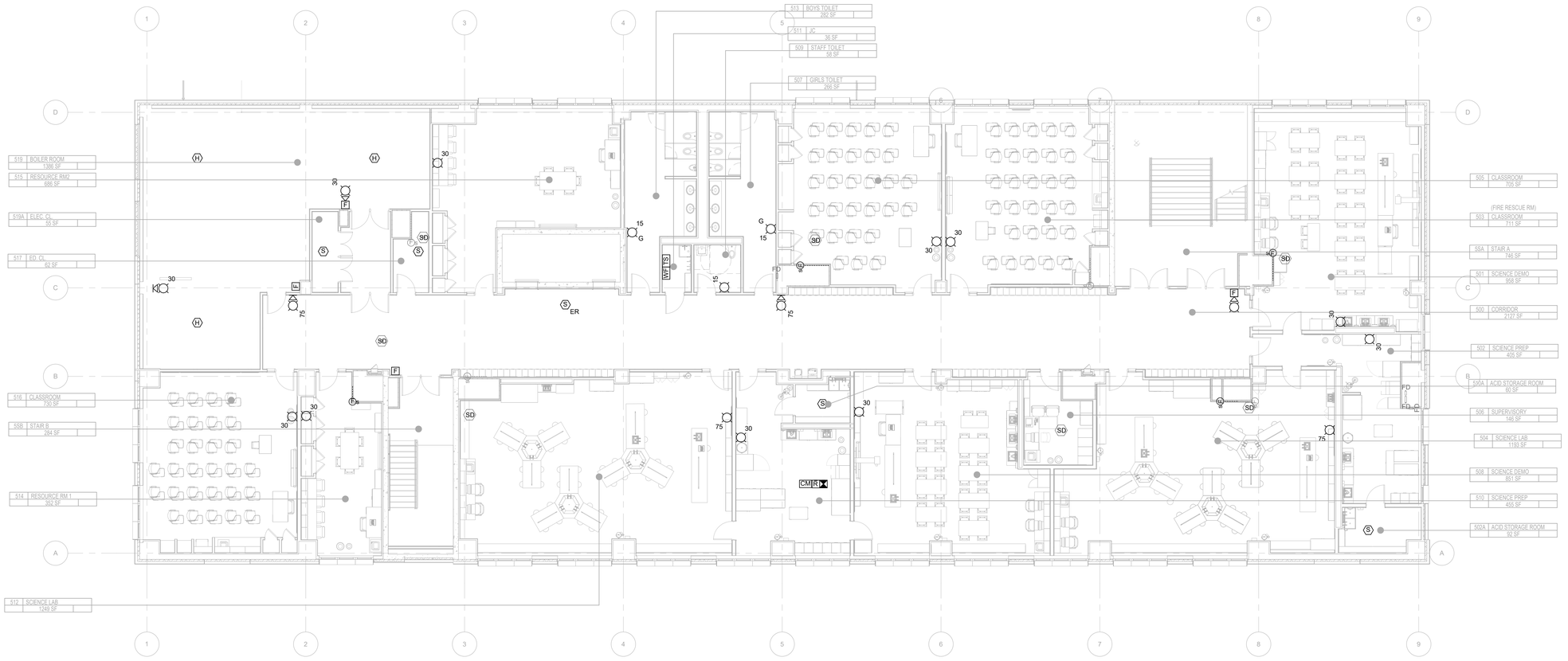
11. FIRE ALARM AUTOMATIC TRANSFER SWITCH (FA-ATS) IS LOCATED IN A 2-HR RATED ROOM.



1 FA05_FIFTH FLOOR
FA106.00 SCALE: 1/8" = 1'-0"

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Stamps

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Drawing Title:
FIFTH FLOOR PLAN - FIRE ALARM SYTEMS

Reserved For
DOB NOW Job#

Drawing No.:
FA106.00

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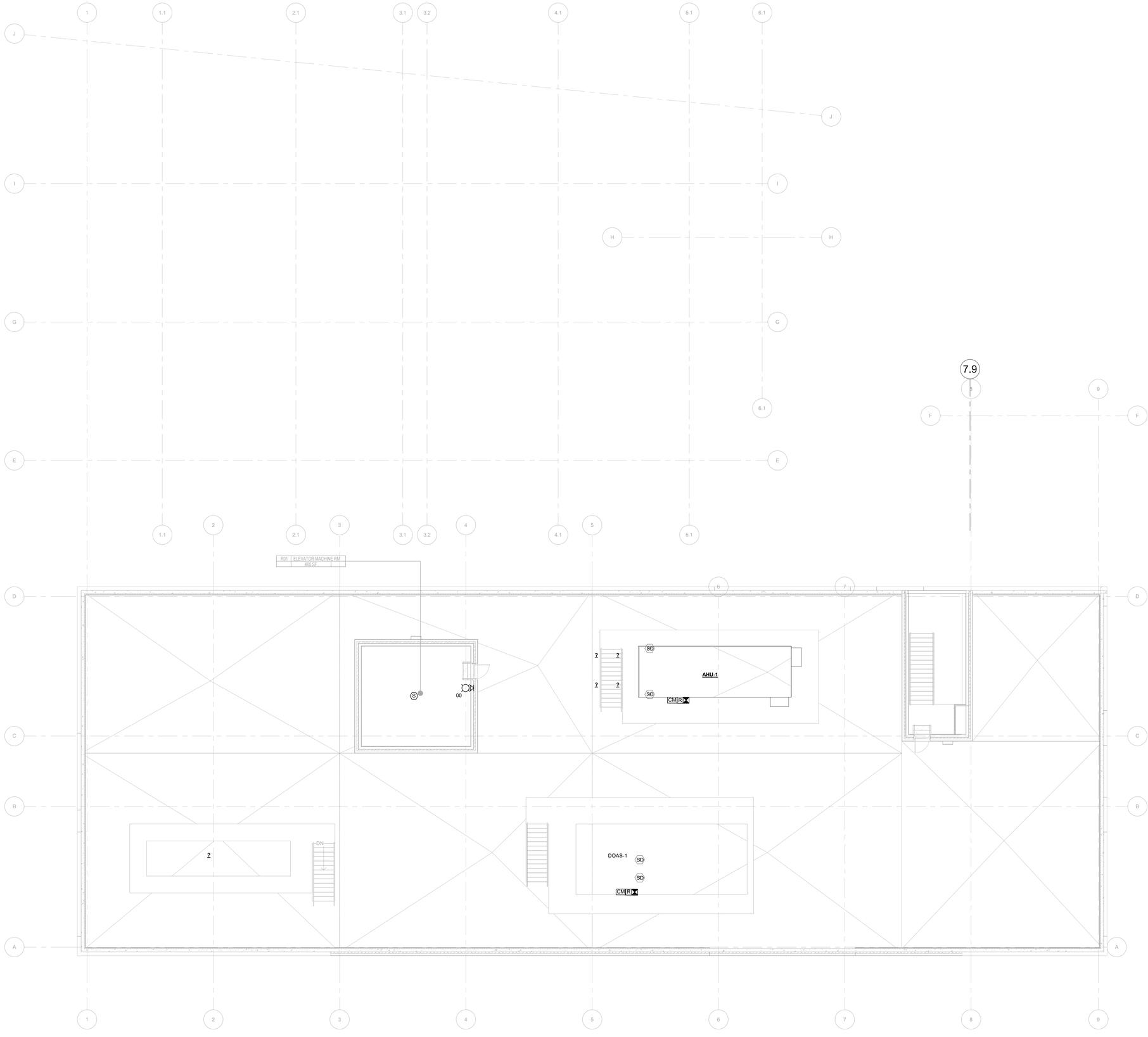

PLAN NOTES:

1. FOR GENERAL NOTES, SYMBOL LIST, ABBREVIATIONS AND FIRE ALARM SYSTEM DRAWING LIST REFER TO DWG FA001.00
2. FOR EXACT LOCATION AND QUANTITIES OF MECHANICAL AND PLUMBING EQUIPMENT AND DEVICES REFER TO MECHANICAL AND PLUMBING DWGS.
3. ALL CONDUIT PENETRATIONS THROUGH FIRE RATED PARTITIONS ARE TO BE PROVIDED WITH FIRE STOP SEALS AS REQUIRED BY CODE TO MAINTAIN FIRE RATING OF PARTITIONS.
4. UNLESS OTHERWISE NOTED ON DRAWING MOUNTING HEIGHTS OUTLETS AND EQUIPMENT SHALL BE AS INDICATED ON SYMBOL LIST & SPECIFICATIONS.
5. FOR FIRE SMOKE DAMPER CIRCUITS REFER TO FLOOR POWER PLAN DWGS.
6. WALL MOUNTED HORNS AND VISUAL FIRE ALARMS (STROBES) SHALL BE MOUNTED SUCH THAT THE ENTIRE STROBE LENS IS LOCATED NOT GREATER THAN 96" ABOVE THE FINISHED FLOOR OR 6" BELOW THE CEILING, WHICHEVER IS LOWER.
7. FIRE ALARM PULL STATIONS SHALL BE MOUNTED MIN 3'-6" AND MAX 4'-0" FROM THE FLOOR LEVEL TO THE ACTIVATING HANDLE.
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9. ARTWORK: NO M/E/P, FIXTURES, DEVICES OR OUTLETS MAY BE LOCATED IN THIS AREA WITHOUT APPROVAL FROM PUBLIC ART FOR PUBLIC SCHOOLS (PAPS) AND ARCHITECT.
10. SEE TYPICAL DETAILS #10 ON DRAWING E710.00 FOR APPROXIMATE LOCATION OF CO DETECTOR INSTALLED INSIDE GENERATOR ENCLOSURE AND OTHER COMPONENTS TO BE TIED INTO FIRE ALARM SYSTEM.
11. FIRE ALARM AUTOMATIC TRANSFER SWITCH (FA-ATS) IS LOCATED IN A 2-HR RATED ROOM.

1 FA06_ROOF
FA107.00 SCALE: 1/8" = 1'-0"

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Stamps

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Drawing Title:
ROOF PLAN - FIRE ALARM SYTEMS

Reserved For
DOB NOW Job#

Drawing No.:
FA107.00

Sheets in Contract Set:
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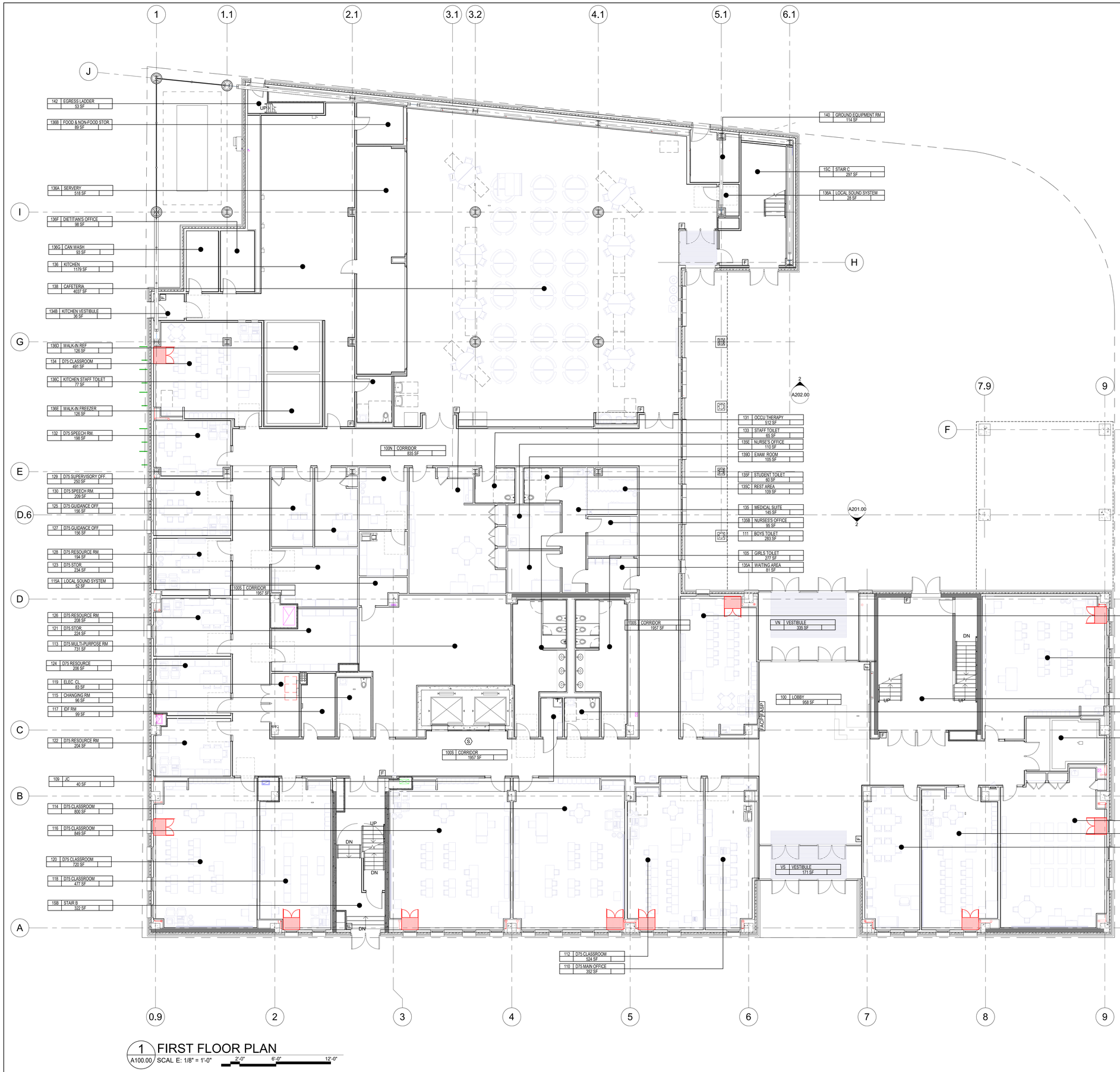
Appendix B:

Electrification Architectural Design Drawings



LEGEND:

F.E.C.	FIRE EXTINGUISHER & CABINET; SEE DETAIL ON A606. CONTRACTOR TO COORDINATE R.O. W/ MANUFACTURER; REFER TO SPECIFICATION FOR ADDITIONAL INFORMATION.
F.E.	FIRE EXTINGUISHER; REFER TO SPECIFICATION FOR ADDITIONAL INFORMATION.
F.B.C.	FIRE BLANKET CABINET, CONTRACTOR TO COORDINATE R.O. W/ MANUFACTURER; REFER TO SPECIFICATION FOR ADDITIONAL INFORMATION.
D.F.	DRINKING FOUNTAIN; SEE DETAIL ON A606
	CONCRETE PAD; SEE PLUMBING, FIRE PROTECTION, MECHANICAL DWGS. FOR LOCATION AND SIZES AND STRUCTURE DWGS FOR DETAILS. - TYP.
A.D.	20"x20"ACCESS DOORS FOR FIRE DAMPER. FIRE SMOKE DAMPER; SEE MECH. DWGS.
B.B.	CMU BOND BEAM (SEE STRUCTURAL DWG'S)

GENERAL NOTES:

1. REFER TO DRAWING T004 FOR DEFINITION OF SYMBOLS AND ABBREVIATIONS.

2. REFER TO A500 SERIES FOR STAIRS ENLARGED PLAND AND SECTIONS.

3. REFER TO A600 SERIES FOR TOILET ROOM ENLARGED PLAN & ELEVATIONS.

4. REFER TO A920 SERIES FOR WINDOW TYPE, GLAZING, INTERIOR VISION PANEL (VP) AND WINDOW SHADES INFORMATION.

5. REFER TO A940 SERIES FOR KITCHEN.

6. REFER TO FF SERIES FOR FURNITURE LAYOUTS AND SCHEDULES.

7. ALL DOORS ARE 6 INCHES FROM FINISH FACE OF WALL TO DOOR JAMB U.O.N. ALL DOORS MUST BE PROVIDED WITH REQUIRED ADA CLEARANCE PLUS ADDITIONAL 1 INCH. REFER TO T005.00.

8. ALL DIMENSIONS ARE GIVEN TO WALL SURFACE EXCLUDING FINISHES U.O.N.

9. MINERAL WOOL INSULATION W/ TOTAL R VALUE 10 OR GREATER TO BE USED IN ALL PERIMETER FURRING PARTITIONS & GWB COL. ENCLOSURES @ EXTERIOR PRECAST PANELS, TYP. ALSO REFER TO PARTITION SCHEDULES & SPECIFICATION.

10. ANY DEVICE EXCEEDS 16 SQ INCHES INSTALLED IN FIRE RATED WALL SHALL BE PROVIDED W/ 2 HOURS FIRED RATED WRAPPING MATERIAL.

11. REFER TO A030-A050 SERIES SITE DRAWINGS FOR PLAYGROUND, AND SITE INFORMATION.

12. ALL GLAZING IN WINDOWS AND STOREFRONT THAT ARE LOCATED WITHIN 75' ABOVE GRADE SHALL BE BIRD FRIENDLY PROTECTION GLAZING. SEE SEE SPEC SECTION 08524.

13. FOR INTERIOR VISION PANEL REFER TO SHEET A926.

1 A100.00 FIRST FLOOR PLAN
SCAL E: 1/8" = 1'-0"
2'-0" 6'-0" 12'-0"

OPTION 1 - FIRST FLOOR PLAN

Drawing No.: A100.00

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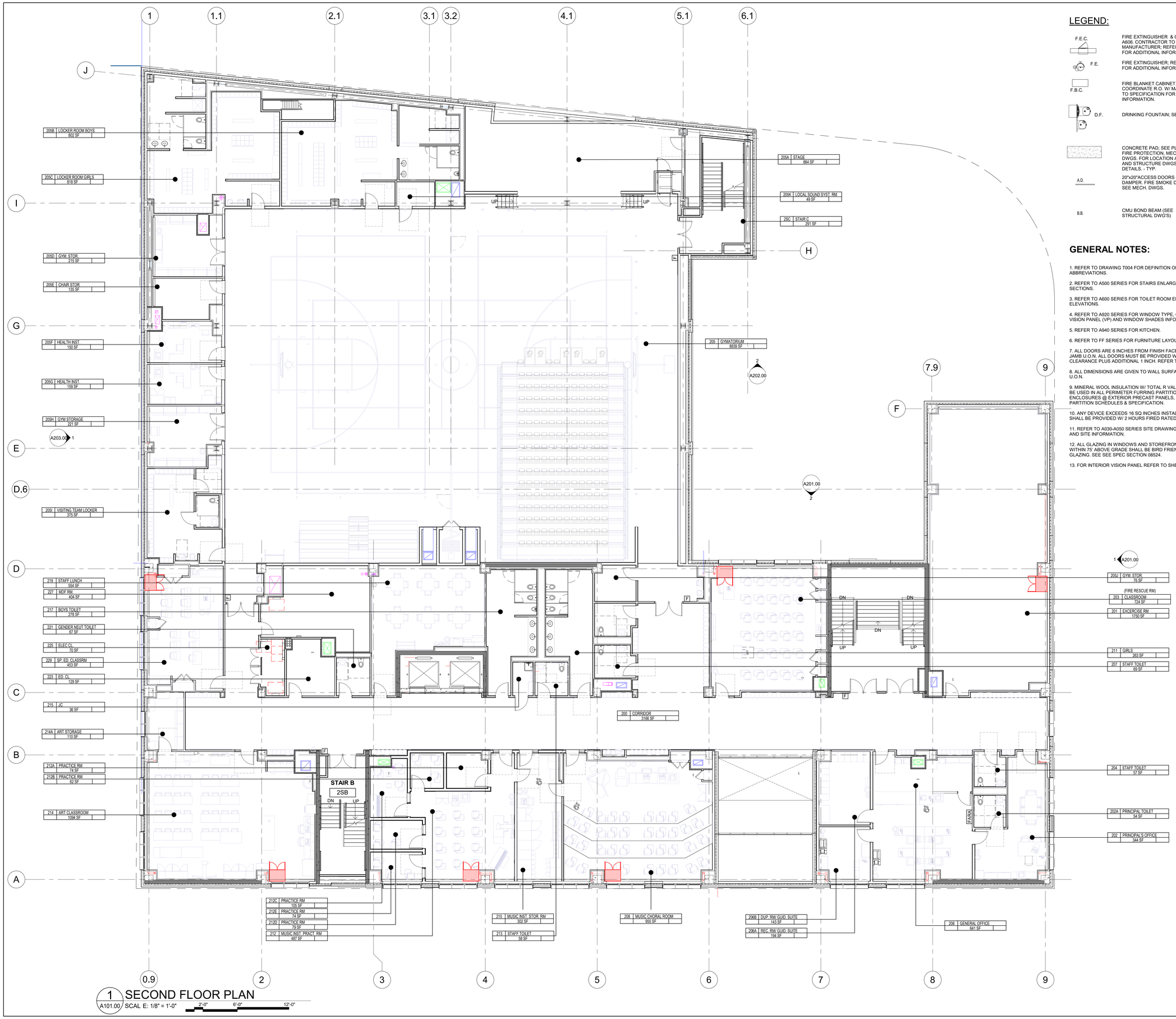

LEGEND:

F.E.C.	FIRE EXTINGUISHER & CABINET; SEE DETAIL ON A606. CONTRACTOR TO COORDINATE R.O. W/ MANUFACTURER; REFER TO SPECIFICATION FOR ADDITIONAL INFORMATION.
F.E.	FIRE EXTINGUISHER; REFER TO SPECIFICATION FOR ADDITIONAL INFORMATION.
F.B.C.	FIRE BLANKET CABINET. CONTRACTOR TO COORDINATE R.O. W/ MANUFACTURER; REFER TO SPECIFICATION FOR ADDITIONAL INFORMATION.
D.F.	DRINKING FOUNTAIN; SEE DETAIL ON A606
	CONCRETE PAD; SEE PLUMBING, FIRE PROTECTION, MECHANICAL DWGS. FOR LOCATION AND SIZES AND STRUCTURE DWGS FOR DETAILS. - TYP.
A.D.	20"x20"ACCESS DOORS FOR FIRE DAMPER. FIRE SMOKE DAMPER; SEE MECH. DWGS.
B.B.	CMU BOND BEAM (SEE STRUCTURAL DWG'S)

GENERAL NOTES:

1. REFER TO DRAWING T004 FOR DEFINITION OF SYMBOLS AND ABBREVIATIONS.

2. REFER TO A500 SERIES FOR STAIRS ENLARGED PLAND AND SECTIONS.

3. REFER TO A600 SERIES FOR TOILET ROOM ENLARGED PLAN & ELEVATIONS.

4. REFER TO A920 SERIES FOR WINDOW TYPE, GLAZING, INTERIOR VISION PANEL (VP) AND WINDOW SHADES INFORMATION.

5. REFER TO A940 SERIES FOR KITCHEN.

6. REFER TO FF SERIES FOR FURNITURE LAYOUTS AND SCHEDULES.

7. ALL DOORS ARE 6 INCHES FROM FINISH FACE OF WALL TO DOOR JAMB U.O.N. ALL DOORS MUST BE PROVIDED WITH REQUIRED ADA CLEARANCE PLUS ADDITIONAL 1 INCH. REFER TO T005.00.

8. ALL DIMENSIONS ARE GIVEN TO WALL SURFACE EXCLUDING FINISHES U.O.N.

9. MINERAL WOOL INSULATION W/ TOTAL R VALUE 10 OR GREATER TO BE USED IN ALL PERIMETER FURRING PARTITIONS & GWB COL. ENCLOSURES @ EXTERIOR PRECAST PANELS, TYP. ALSO REFER TO PARTITION SCHEDULES & SPECIFICATION.

10. ANY DEVICE EXCEEDS 16 SQ INCHES INSTALLED IN FIRE RATED WALL SHALL BE PROVIDED W/ 2 HOURS FIRED RATED WRAPPING MATERIAL.

11. REFER TO A030-A050 SERIES SITE DRAWINGS FOR PLAYGROUND, AND SITE INFORMATION.

12. ALL GLAZING IN WINDOWS AND STOREFRONT THAT ARE LOCATED WITHIN 75' ABOVE GRADE SHALL BE BIRD FRIENDLY PROTECTION GLAZING. SEE SEE SPEC SECTION 08524.

13. FOR INTERIOR VISION PANEL REFER TO SHEET A926.

1 SECOND FLOOR PLAN
A101.00 SCAL E: 1/8" = 1'-0"
2'-0" 6'-0" 12'-0"

Drawing Title:
OPTION 2 - SECOND FLOOR PLAN

Drawing No.:
A101.00

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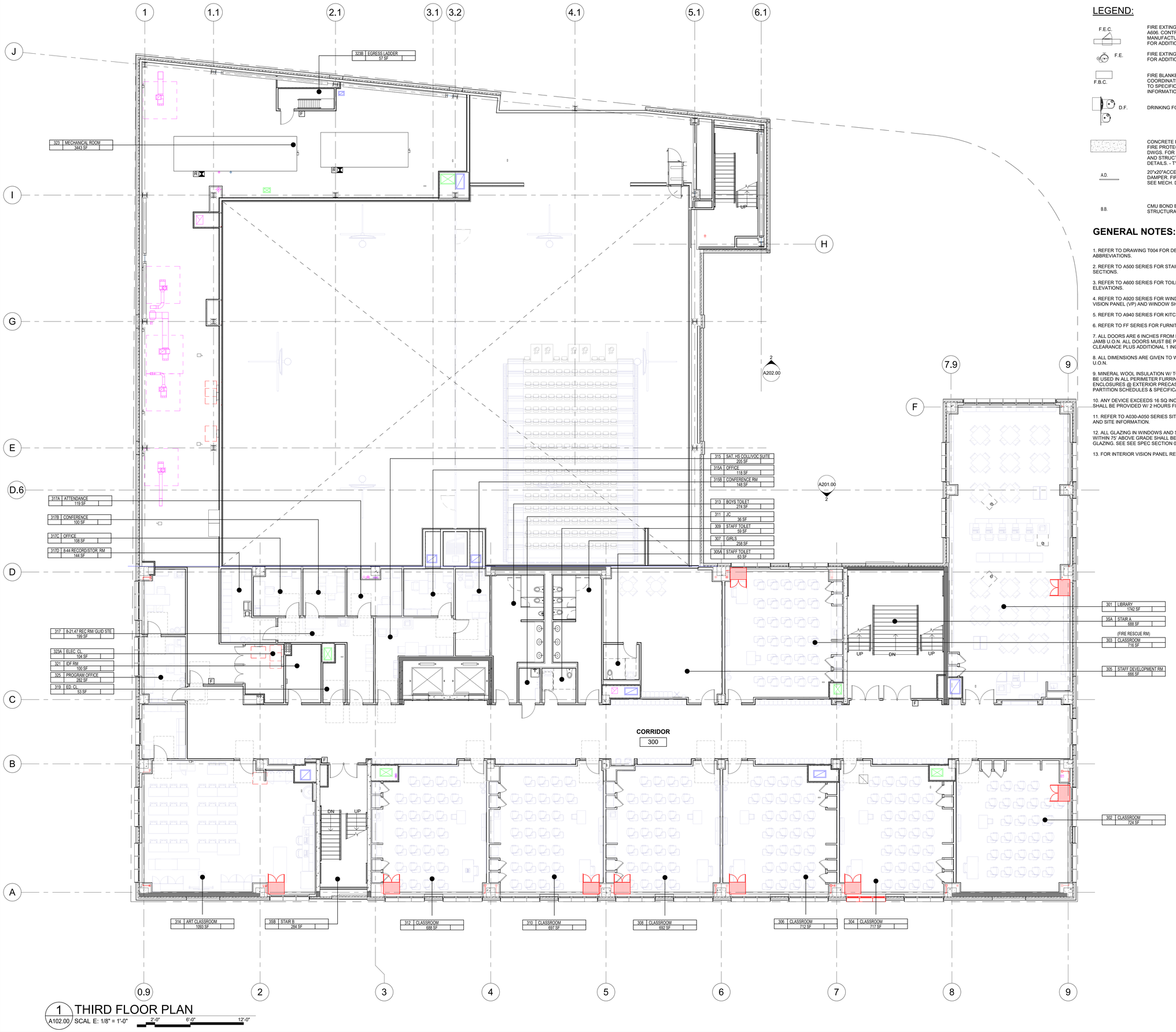

1 THIRD FLOOR PLAN
A102.00 SCAL E: 1/8" = 1'-0"

2'-0" 6'-0" 12'-0"

LEGEND:

F.E.C.	FIRE EXTINGUISHER & CABINET; SEE DETAIL ON A606. CONTRACTOR TO COORDINATE R.O. W/ MANUFACTURER; REFER TO SPECIFICATION FOR ADDITIONAL INFORMATION.
F.E.	FIRE EXTINGUISHER; REFER TO SPECIFICATION FOR ADDITIONAL INFORMATION.
F.B.C.	FIRE BLANKET CABINET. CONTRACTOR TO COORDINATE R.O. W/ MANUFACTURER; REFER TO SPECIFICATION FOR ADDITIONAL INFORMATION.
D.F.	DRINKING FOUNTAIN; SEE DETAIL ON A606
	CONCRETE PAD; SEE PLUMBING, FIRE PROTECTION, MECHANICAL DWGS. FOR LOCATION AND SIZES AND STRUCTURE DWGS FOR DETAILS. - TYP.
A.D.	20"x20"ACCESS DOORS FOR FIRE DAMPER. FIRE SMOKE DAMPER; SEE MECH. DWGS.
B.B.	CMU BOND BEAM (SEE STRUCTURAL DWG'S)

GENERAL NOTES:

1. REFER TO DRAWING T004 FOR DEFINITION OF SYMBOLS AND ABBREVIATIONS.

2. REFER TO A500 SERIES FOR STAIRS ENLARGED PLAND AND SECTIONS.

3. REFER TO A600 SERIES FOR TOILET ROOM ENLARGED PLAN & ELEVATIONS.

4. REFER TO A920 SERIES FOR WINDOW TYPE, GLAZING, INTERIOR VISION PANEL (VP) AND WINDOW SHADES INFORMATION.

5. REFER TO A940 SERIES FOR KITCHEN.

6. REFER TO FF SERIES FOR FURNITURE LAYOUTS AND SCHEDULES.

7. ALL DOORS ARE 6 INCHES FROM FINISH FACE OF WALL TO DOOR JAMB U.O.N. ALL DOORS MUST BE PROVIDED WITH REQUIRED ADA CLEARANCE PLUS ADDITIONAL 1 INCH. REFER TO T005.00.

8. ALL DIMENSIONS ARE GIVEN TO WALL SURFACE EXCLUDING FINISHES U.O.N.

9. MINERAL WOOL INSULATION W/ TOTAL R VALUE 10 OR GREATER TO BE USED IN ALL PERIMETER FURRING PARTITIONS & GWB COL. ENCLOSURES @ EXTERIOR PRECAST PANELS, TYP. ALSO REFER TO PARTITION SCHEDULES & SPECIFICATION.

10. ANY DEVICE EXCEEDS 16 SQ INCHES INSTALLED IN FIRE RATED WALL SHALL BE PROVIDED W/ 2 HOURS FIRED RATED WRAPPING MATERIAL.

11. REFER TO A030-A050 SERIES SITE DRAWINGS FOR PLAYGROUND, AND SITE INFORMATION.

12. ALL GLAZING IN WINDOWS AND STOREFRONT THAT ARE LOCATED WITHIN 75' ABOVE GRADE SHALL BE BIRD FRIENDLY PROTECTION GLAZING. SEE SEE SPEC SECTION 08524.

13. FOR INTERIOR VISION PANEL REFER TO SHEET A926.

Drawing Title:
OPTION 1 - THIRD FLOOR PLAN

Drawing No.:
A102.00

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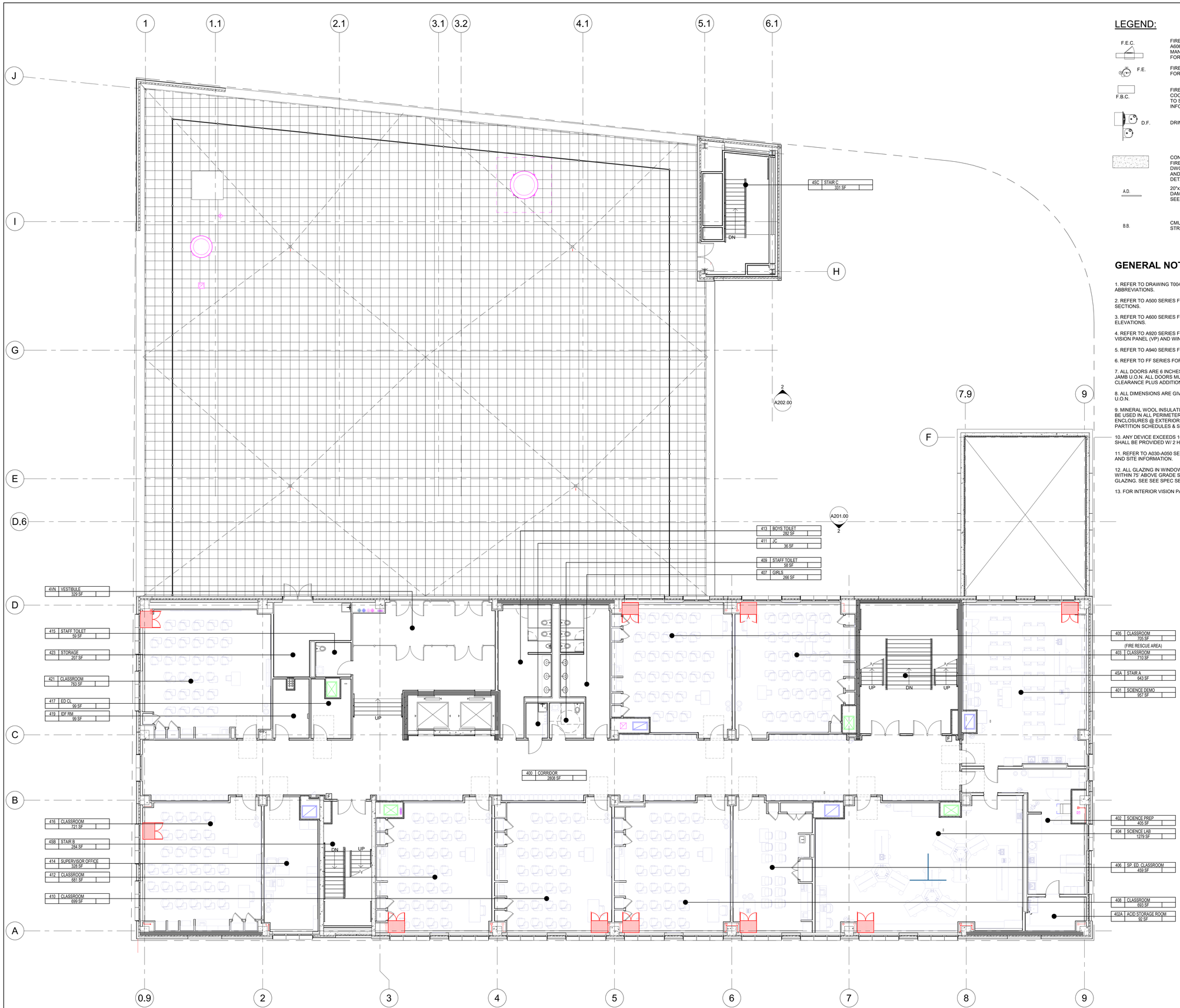

LEGEND:

F.E.C.	FIRE EXTINGUISHER & CABINET; SEE DETAIL ON A606. CONTRACTOR TO COORDINATE R.O. W/ MANUFACTURER; REFER TO SPECIFICATION FOR ADDITIONAL INFORMATION.
F.E.	FIRE EXTINGUISHER; REFER TO SPECIFICATION FOR ADDITIONAL INFORMATION.
F.B.C.	FIRE BLANKET CABINET. CONTRACTOR TO COORDINATE R.O. W/ MANUFACTURER; REFER TO SPECIFICATION FOR ADDITIONAL INFORMATION.
D.F.	DRINKING FOUNTAIN; SEE DETAIL ON A606
	CONCRETE PAD; SEE PLUMBING, FIRE PROTECTION, MECHANICAL DWGS. FOR LOCATION AND SIZES AND STRUCTURE DWGS FOR DETAILS. - TYP.
A.D.	20"x20"ACCESS DOORS FOR FIRE DAMPER. FIRE SMOKE DAMPER; SEE MECH. DWGS.
B.B.	CMU BOND BEAM (SEE STRUCTURAL DWG'S)

GENERAL NOTES:

1. REFER TO DRAWING T004 FOR DEFINITION OF SYMBOLS AND ABBREVIATIONS.

2. REFER TO A500 SERIES FOR STAIRS ENLARGED PLAND AND SECTIONS.

3. REFER TO A600 SERIES FOR TOILET ROOM ENLARGED PLAN & ELEVATIONS.

4. REFER TO A920 SERIES FOR WINDOW TYPE, GLAZING, INTERIOR VISION PANEL (VP) AND WINDOW SHADES INFORMATION.

5. REFER TO A940 SERIES FOR KITCHEN.

6. REFER TO FF SERIES FOR FURNITURE LAYOUTS AND SCHEDULES.

7. ALL DOORS ARE 6 INCHES FROM FINISH FACE OF WALL TO DOOR JAMB U.O.N. ALL DOORS MUST BE PROVIDED WITH REQUIRED ADA CLEARANCE PLUS ADDITIONAL 1 INCH. REFER TO T005.00.

8. ALL DIMENSIONS ARE GIVEN TO WALL SURFACE EXCLUDING FINISHES U.O.N.

9. MINERAL WOOL INSULATION W/ TOTAL R VALUE 10 OR GREATER TO BE USED IN ALL PERIMETER FURRING PARTITIONS & GWB COL. ENCLOSURES @ EXTERIOR PRECAST PANELS, TYP. ALSO REFER TO PARTITION SCHEDULES & SPECIFICATION.

10. ANY DEVICE EXCEEDS 16 SQ INCHES INSTALLED IN FIRE RATED WALL SHALL BE PROVIDED W/ 2 HOURS FIRED RATED WRAPPING MATERIAL.

11. REFER TO A030-A050 SERIES SITE DRAWINGS FOR PLAYGROUND, AND SITE INFORMATION.

12. ALL GLAZING IN WINDOWS AND STOREFRONT THAT ARE LOCATED WITHIN 75' ABOVE GRADE SHALL BE BIRD FRIENDLY PROTECTION GLAZING. SEE SEE SPEC SECTION 08524.

13. FOR INTERIOR VISION PANEL REFER TO SHEET A926.

1 FOURTH FLOOR PLAN
A103.00 SCAL E: 1/8" = 1'-0"
2'-0" 6'-0" 12'-0"

Drawing Title:
OPTION 1 - FOURTH FLOOR PLAN

Drawing No.:
A103.00

Sheets in Contract Set:
OF

Sheets in DOB Set:
OF

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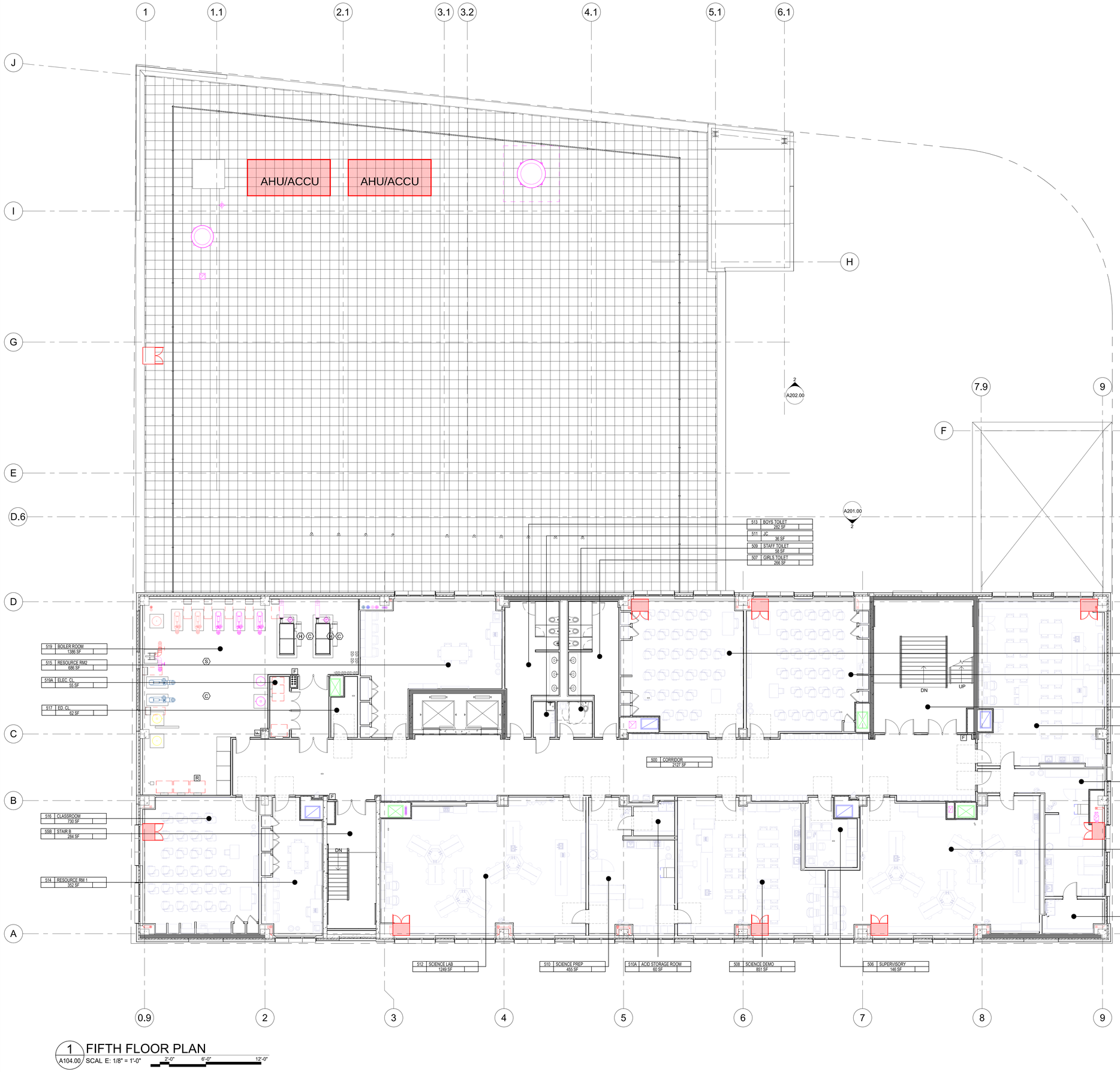

LEGEND:

F.E.C.	FIRE EXTINGUISHER & CABINET; SEE DETAIL ON A606. CONTRACTOR TO COORDINATE R.O. W/ MANUFACTURER; REFER TO SPECIFICATION FOR ADDITIONAL INFORMATION.
F.E.	FIRE EXTINGUISHER; REFER TO SPECIFICATION FOR ADDITIONAL INFORMATION.
F.B.C.	FIRE BLANKET CABINET. CONTRACTOR TO COORDINATE R.O. W/ MANUFACTURER; REFER TO SPECIFICATION FOR ADDITIONAL INFORMATION.
D.F.	DRINKING FOUNTAIN; SEE DETAIL ON A606
	CONCRETE PAD; SEE PLUMBING, FIRE PROTECTION, MECHANICAL DWGS. FOR LOCATION AND SIZES AND STRUCTURE DWGS FOR DETAILS. - TYP.
A.D.	20"x20"ACCESS DOORS FOR FIRE DAMPER, FIRE SMOKE DAMPER; SEE MECH. DWGS.
B.B.	CMU BOND BEAM (SEE STRUCTURAL DWG'S)

GENERAL NOTES:

1. REFER TO DRAWING T004 FOR DEFINITION OF SYMBOLS AND ABBREVIATIONS.

2. REFER TO A500 SERIES FOR STAIRS ENLARGED PLAND AND SECTIONS.

3. REFER TO A600 SERIES FOR TOILET ROOM ENLARGED PLAN & ELEVATIONS.

4. REFER TO A920 SERIES FOR WINDOW TYPE, GLAZING, INTERIOR VISION PANEL (VP) AND WINDOW SHADES INFORMATION.

5. REFER TO A940 SERIES FOR KITCHEN.

6. REFER TO FF SERIES FOR FURNITURE LAYOUTS AND SCHEDULES.

7. ALL DOORS ARE 6 INCHES FROM FINISH FACE OF WALL TO DOOR JAMB U.O.N. ALL DOORS MUST BE PROVIDED WITH REQUIRED ADA CLEARANCE PLUS ADDITIONAL 1 INCH. REFER TO T005.00.

8. ALL DIMENSIONS ARE GIVEN TO WALL SURFACE EXCLUDING FINISHES U.O.N.

9. MINERAL WOOL INSULATION W/ TOTAL R VALUE 10 OR GREATER TO BE USED IN ALL PERIMETER FURRING PARTITIONS & GWB COL. ENCLOSURES @ EXTERIOR PRECAST PANELS, TYP. ALSO REFER TO PARTITION SCHEDULES & SPECIFICATION.

10. ANY DEVICE EXCEEDS 16 SQ INCHES INSTALLED IN FIRE RATED WALL SHALL BE PROVIDED W/ 2 HOURS FIRED RATED WRAPPING MATERIAL.

11. REFER TO A030-A050 SERIES SITE DRAWINGS FOR PLAYGROUND, AND SITE INFORMATION.

12. ALL GLAZING IN WINDOWS AND STOREFRONT THAT ARE LOCATED WITHIN 75' ABOVE GRADE SHALL BE BIRD FRIENDLY PROTECTION GLAZING. SEE SEE SPEC SECTION 08524.

13. FOR INTERIOR VISION PANEL REFER TO SHEET A926.

1 A104.00 FIFTH FLOOR PLAN
SCAL E: 1/8" = 1'-0"
2'-0" 6'-0" 12'-0"

Drawing Title:
OPTION 1 - FIFTH FLOOR PLAN

Drawing No.:
A104.00

Sheets in Contract Set:
OF

Sheets in DOB Set:
OF

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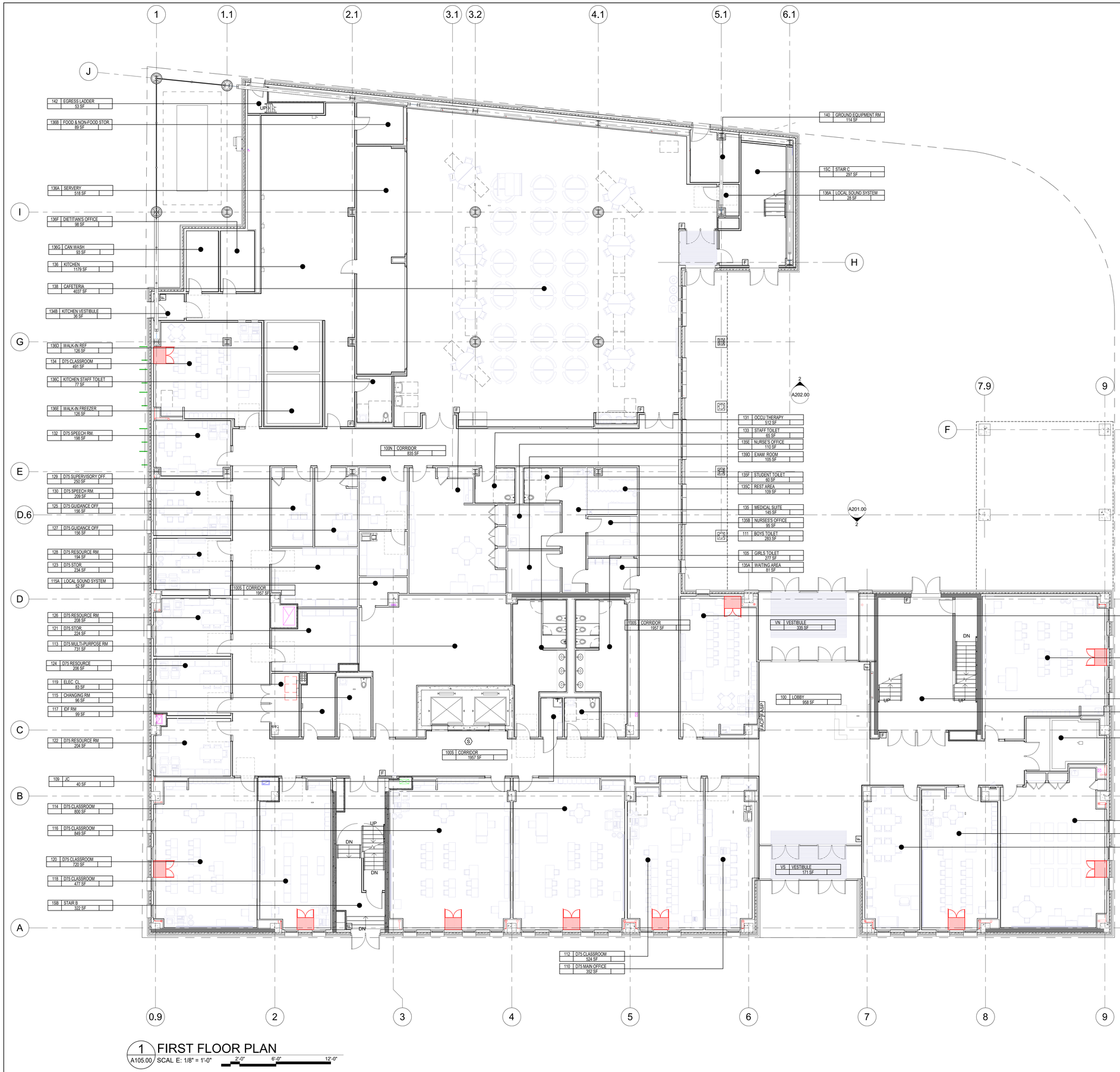

1 FIRST FLOOR PLAN
A105.00 SCAL E: 1/8" = 1'-0"
2'-0" 6'-0" 12'-0"

LEGEND:

F.E.C.	FIRE EXTINGUISHER & CABINET; SEE DETAIL ON A606. CONTRACTOR TO COORDINATE R.O. W/ MANUFACTURER; REFER TO SPECIFICATION FOR ADDITIONAL INFORMATION.
F.E.	FIRE EXTINGUISHER; REFER TO SPECIFICATION FOR ADDITIONAL INFORMATION.
F.B.C.	FIRE BLANKET CABINET, CONTRACTOR TO COORDINATE R.O. W/ MANUFACTURER; REFER TO SPECIFICATION FOR ADDITIONAL INFORMATION.
D.F.	DRINKING FOUNTAIN; SEE DETAIL ON A606
	CONCRETE PAD; SEE PLUMBING, FIRE PROTECTION, MECHANICAL DWGS. FOR LOCATION AND SIZES AND STRUCTURE DWGS FOR DETAILS, - TYP.
A.D.	20"x20"ACCESS DOORS FOR FIRE DAMPER. FIRE SMOKE DAMPER; SEE MECH. DWGS.
B.B.	CMU BOND BEAM (SEE STRUCTURAL DWG'S)

GENERAL NOTES:

1. REFER TO DRAWING T004 FOR DEFINITION OF SYMBOLS AND ABBREVIATIONS.

2. REFER TO A500 SERIES FOR STAIRS ENLARGED PLAND AND SECTIONS.

3. REFER TO A600 SERIES FOR TOILET ROOM ENLARGED PLAN & ELEVATIONS.

4. REFER TO A920 SERIES FOR WINDOW TYPE, GLAZING, INTERIOR VISION PANEL (VP) AND WINDOW SHADES INFORMATION.

5. REFER TO A940 SERIES FOR KITCHEN.

6. REFER TO FF SERIES FOR FURNITURE LAYOUTS AND SCHEDULES.

7. ALL DOORS ARE 6 INCHES FROM FINISH FACE OF WALL TO DOOR JAMB U.O.N. ALL DOORS MUST BE PROVIDED WITH REQUIRED ADA CLEARANCE PLUS ADDITIONAL 1 INCH. REFER TO T005.00.

8. ALL DIMENSIONS ARE GIVEN TO WALL SURFACE EXCLUDING FINISHES U.O.N.

9. MINERAL WOOL INSULATION W/ TOTAL R VALUE 10 OR GREATER TO BE USED IN ALL PERIMETER FURRING PARTITIONS & GWB COL. ENCLOSURES @ EXTERIOR PRECAST PANELS, TYP. ALSO REFER TO PARTITION SCHEDULES & SPECIFICATION.

10. ANY DEVICE EXCEEDS 16 SQ INCHES INSTALLED IN FIRE RATED WALL SHALL BE PROVIDED W/ 2 HOURS FIRED RATED WRAPPING MATERIAL.

11. REFER TO A030-A050 SERIES SITE DRAWINGS FOR PLAYGROUND, AND SITE INFORMATION.

12. ALL GLAZING IN WINDOWS AND STOREFRONT THAT ARE LOCATED WITHIN 75' ABOVE GRADE SHALL BE BIRD FRIENDLY PROTECTION GLAZING. SEE SEE SPEC SECTION 08524.

13. FOR INTERIOR VISION PANEL REFER TO SHEET A926.

Drawing Title:
OPTION 2 & 3 - FIRST FLOOR PLAN

Drawing No.:
A105.00

Sheets in Contract Set:
OF

Sheets in DOB Set:
OF

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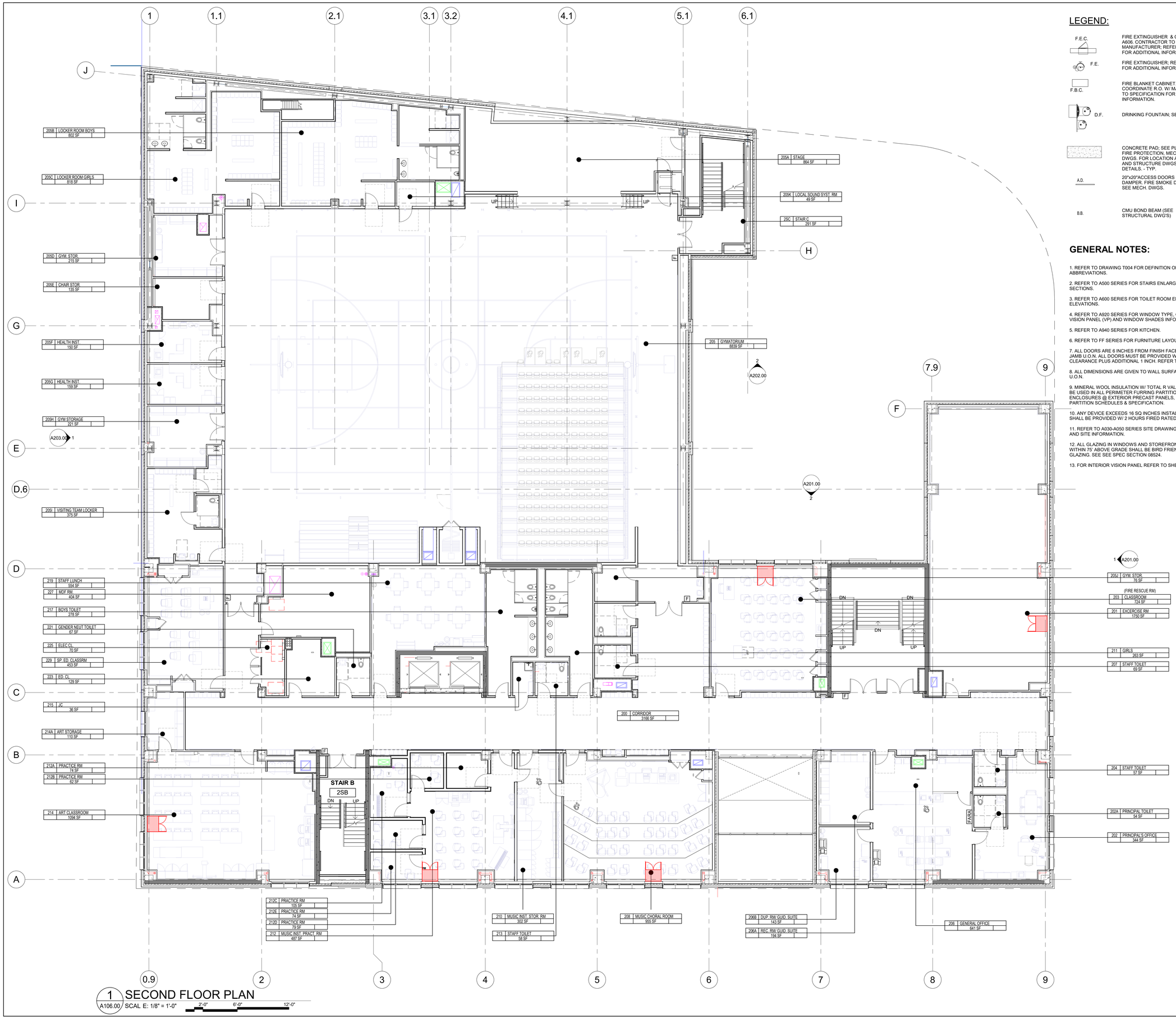

1 SECOND FLOOR PLAN
A106.00 SCAL E: 1/8" = 1'-0"
2'-0" 6'-0" 12'-0"

LEGEND:

F.E.C.	FIRE EXTINGUISHER & CABINET; SEE DETAIL ON A606. CONTRACTOR TO COORDINATE R.O. W/ MANUFACTURER; REFER TO SPECIFICATION FOR ADDITIONAL INFORMATION.
F.E.	FIRE EXTINGUISHER; REFER TO SPECIFICATION FOR ADDITIONAL INFORMATION.
F.B.C.	FIRE BLANKET CABINET. CONTRACTOR TO COORDINATE R.O. W/ MANUFACTURER; REFER TO SPECIFICATION FOR ADDITIONAL INFORMATION.
D.F.	DRINKING FOUNTAIN; SEE DETAIL ON A606
	CONCRETE PAD; SEE PLUMBING, FIRE PROTECTION, MECHANICAL DWGS. FOR LOCATION AND SIZES AND STRUCTURE DWGS FOR DETAILS. - TYP.
A.D.	20"x20"ACCESS DOORS FOR FIRE DAMPER. FIRE SMOKE DAMPER; SEE MECH. DWGS.
B.B.	CMU BOND BEAM (SEE STRUCTURAL DWG'S)

GENERAL NOTES:

1. REFER TO DRAWING T004 FOR DEFINITION OF SYMBOLS AND ABBREVIATIONS.

2. REFER TO A500 SERIES FOR STAIRS ENLARGED PLAND AND SECTIONS.

3. REFER TO A600 SERIES FOR TOILET ROOM ENLARGED PLAN & ELEVATIONS.

4. REFER TO A920 SERIES FOR WINDOW TYPE, GLAZING, INTERIOR VISION PANEL (VP) AND WINDOW SHADES INFORMATION.

5. REFER TO A940 SERIES FOR KITCHEN.

6. REFER TO FF SERIES FOR FURNITURE LAYOUTS AND SCHEDULES.

7. ALL DOORS ARE 6 INCHES FROM FINISH FACE OF WALL TO DOOR JAMB U.O.N. ALL DOORS MUST BE PROVIDED WITH REQUIRED ADA CLEARANCE PLUS ADDITIONAL 1 INCH. REFER TO T005.00.

8. ALL DIMENSIONS ARE GIVEN TO WALL SURFACE EXCLUDING FINISHES U.O.N.

9. MINERAL WOOL INSULATION W/ TOTAL R VALUE 10 OR GREATER TO BE USED IN ALL PERIMETER FURRING PARTITIONS & GWB COL. ENCLOSURES @ EXTERIOR PRECAST PANELS, TYP. ALSO REFER TO PARTITION SCHEDULES & SPECIFICATION.

10. ANY DEVICE EXCEEDS 16 SQ INCHES INSTALLED IN FIRE RATED WALL SHALL BE PROVIDED W/ 2 HOURS FIRED RATED WRAPPING MATERIAL.

11. REFER TO A030-A050 SERIES SITE DRAWINGS FOR PLAYGROUND, AND SITE INFORMATION.

12. ALL GLAZING IN WINDOWS AND STOREFRONT THAT ARE LOCATED WITHIN 75' ABOVE GRADE SHALL BE BIRD FRIENDLY PROTECTION GLAZING. SEE SEE SPEC SECTION 08524.

13. FOR INTERIOR VISION PANEL REFER TO SHEET A926.

Drawing Title:
OPTION 2 & 3 - SECOND FLOOR PLAN

Drawing No.:
A106.00

Sheets in Contract Set:
OF

Sheets in DOB Set:
OF

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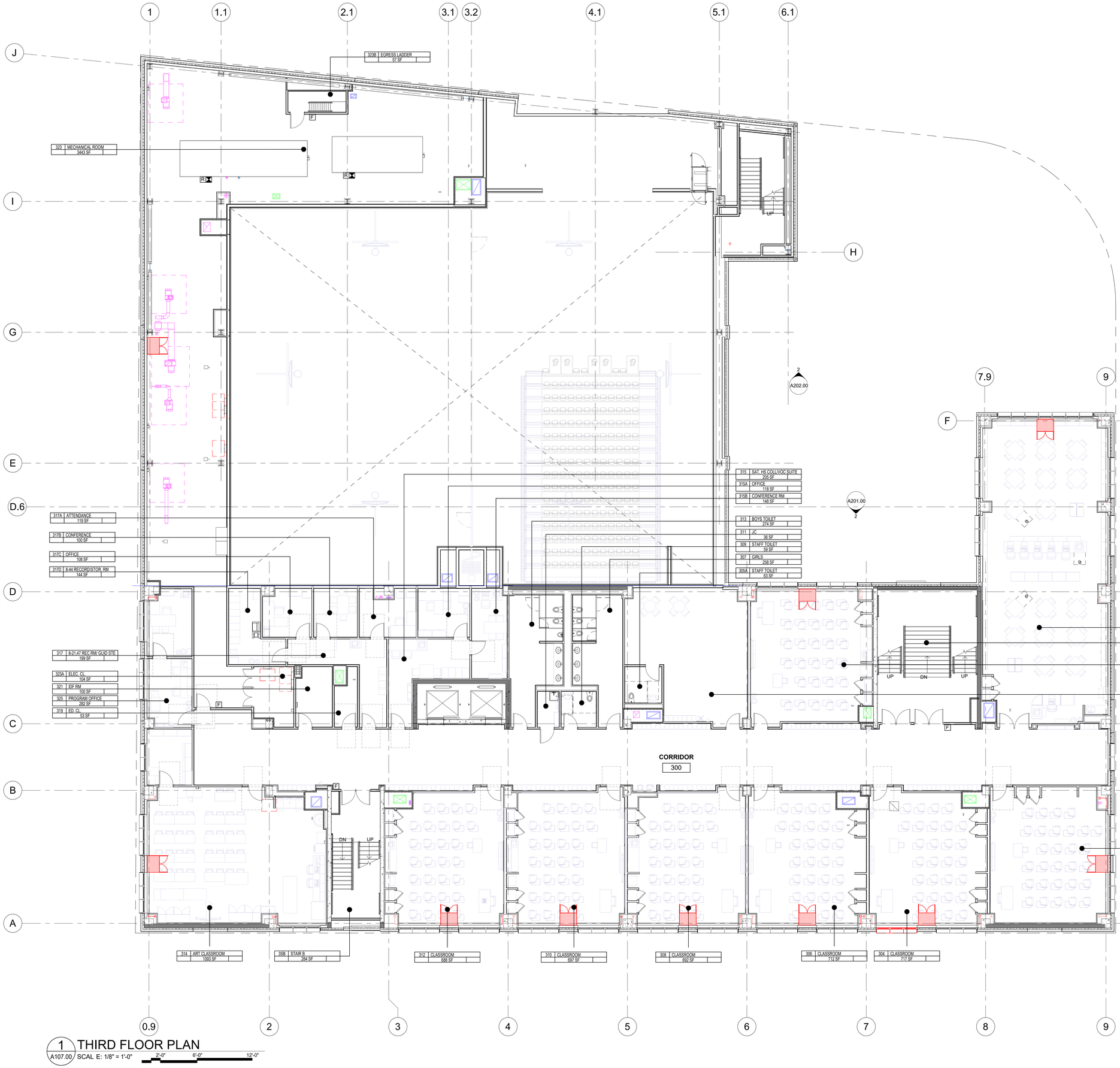


1 THIRD FLOOR PLAN
A107.00 SCALE: 1/8" = 1'-0"

2'-0" 6'-0" 12'-0"

LEGEND:

F.E.C.	FIRE EXTINGUISHER & CABINET; SEE DETAIL ON A606. CONTRACTOR TO COORDINATE R.O. W/ MANUFACTURER; REFER TO SPECIFICATION FOR ADDITIONAL INFORMATION.
F.E.	FIRE EXTINGUISHER; REFER TO SPECIFICATION FOR ADDITIONAL INFORMATION.
F.B.C.	FIRE BLANKET CABINET. CONTRACTOR TO COORDINATE R.O. W/ MANUFACTURER; REFER TO SPECIFICATION FOR ADDITIONAL INFORMATION.
D.F.	DRINKING FOUNTAIN; SEE DETAIL ON A606
	CONCRETE PAD; SEE PLUMBING, FIRE PROTECTION, MECHANICAL DWGS. FOR LOCATION AND SIZES AND STRUCTURE DWGS FOR DETAILS. - TYP.
A.D.	20"x20"ACCESS DOORS FOR FIRE DAMPER. FIRE SMOKE DAMPER; SEE MECH. DWGS.
B.B.	CMU BOND BEAM (SEE STRUCTURAL DWG'S)

GENERAL NOTES:

1. REFER TO DRAWING T004 FOR DEFINITION OF SYMBOLS AND ABBREVIATIONS.

2. REFER TO A500 SERIES FOR STAIRS ENLARGED PLAND AND SECTIONS.

3. REFER TO A600 SERIES FOR TOILET ROOM ENLARGED PLAN & ELEVATIONS.

4. REFER TO A920 SERIES FOR WINDOW TYPE, GLAZING, INTERIOR VISION PANEL (VP) AND WINDOW SHADES INFORMATION.

5. REFER TO A940 SERIES FOR KITCHEN.

6. REFER TO FF SERIES FOR FURNITURE LAYOUTS AND SCHEDULES.

7. ALL DOORS ARE 6 INCHES FROM FINISH FACE OF WALL TO DOOR JAMB U.O.N. ALL DOORS MUST BE PROVIDED WITH REQUIRED ADA CLEARANCE PLUS ADDITIONAL 1 INCH. REFER TO T005.00.

8. ALL DIMENSIONS ARE GIVEN TO WALL SURFACE EXCLUDING FINISHES U.O.N.

9. MINERAL WOOL INSULATION W/ TOTAL R VALUE 10 OR GREATER TO BE USED IN ALL PERIMETER FURRING PARTITIONS & GWB COL. ENCLOSURES @ EXTERIOR PRECAST PANELS, TYP. ALSO REFER TO PARTITION SCHEDULES & SPECIFICATION.

10. ANY DEVICE EXCEEDS 16 SQ INCHES INSTALLED IN FIRE RATED WALL SHALL BE PROVIDED W/ 2 HOURS FIRED RATED WRAPPING MATERIAL.

11. REFER TO A030-A050 SERIES SITE DRAWINGS FOR PLAYGROUND, AND SITE INFORMATION.

12. ALL GLAZING IN WINDOWS AND STOREFRONT THAT ARE LOCATED WITHIN 75' ABOVE GRADE SHALL BE BIRD FRIENDLY PROTECTION GLAZING. SEE SEE SPEC SECTION 08524.

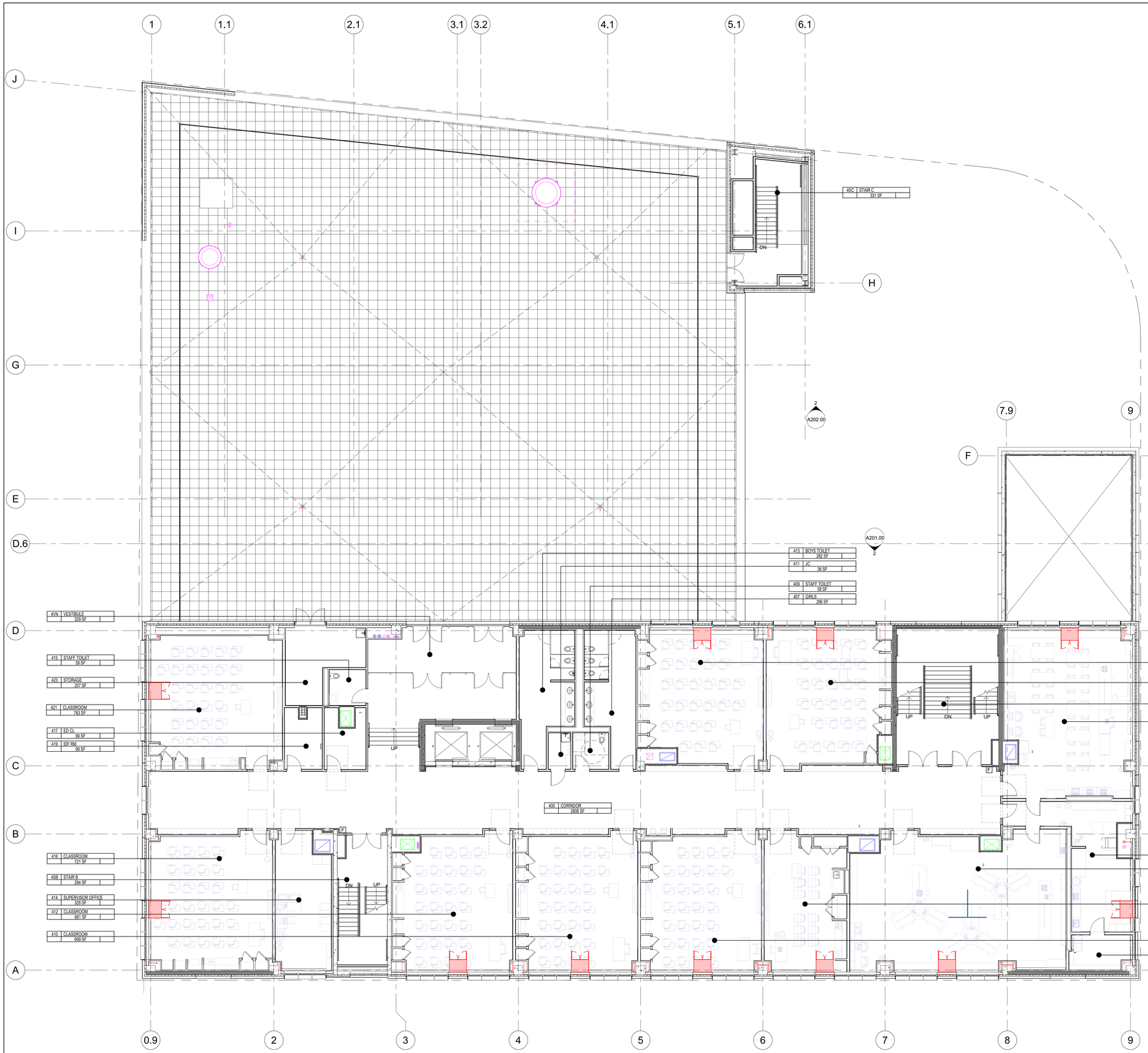
13. FOR INTERIOR VISION PANEL REFER TO SHEET A926.

Drawing Title:
OPTION 2 & 3 - THIRD FLOOR PLAN

Drawing No.:
A107.00

Sheets in Contract Set:
OF

Sheets in DOB Set:
OF



1 A108.00 FOURTH FLOOR PLAN

SCAL E: 1/8" = 1'-0"

2'-0" 6'-0" 12'-0"

LEGEND:

F.E.C.	FIRE EXTINGUISHER & CABINET; SEE DETAIL ON A606. CONTRACTOR TO COORDINATE R.O. W/ MANUFACTURER; REFER TO SPECIFICATION FOR ADDITIONAL INFORMATION.
F.E.	FIRE EXTINGUISHER; REFER TO SPECIFICATION FOR ADDITIONAL INFORMATION.
F.B.C.	FIRE BLANKET CABINET. CONTRACTOR TO COORDINATE R.O. W/ MANUFACTURER; REFER TO SPECIFICATION FOR ADDITIONAL INFORMATION.
D.F.	DRINKING FOUNTAIN; SEE DETAIL ON A606
	CONCRETE PAD; SEE PLUMBING, FIRE PROTECTION, MECHANICAL DWGS. FOR LOCATION AND SIZES AND STRUCTURE DWGS FOR DETAILS. - TYP.
A.D.	20"x20"ACCESS DOORS FOR FIRE DAMPER. FIRE SMOKE DAMPER; SEE MECH. DWGS.
B.B.	CMU BOND BEAM (SEE STRUCTURAL DWG'S)

GENERAL NOTES:

1. REFER TO DRAWING T004 FOR DEFINITION OF SYMBOLS AND ABBREVIATIONS.

2. REFER TO A500 SERIES FOR STAIRS ENLARGED PLAND AND SECTIONS.

3. REFER TO A600 SERIES FOR TOILET ROOM ENLARGED PLAN & ELEVATIONS.

4. REFER TO A920 SERIES FOR WINDOW TYPE, GLAZING, INTERIOR VISION PANEL (VP) AND WINDOW SHADES INFORMATION.

5. REFER TO A940 SERIES FOR KITCHEN.

6. REFER TO FF SERIES FOR FURNITURE LAYOUTS AND SCHEDULES.

7. ALL DOORS ARE 6 INCHES FROM FINISH FACE OF WALL TO DOOR JAMB U.O.N. ALL DOORS MUST BE PROVIDED WITH REQUIRED ADA CLEARANCE PLUS ADDITIONAL 1 INCH. REFER TO T005.00.

8. ALL DIMENSIONS ARE GIVEN TO WALL SURFACE EXCLUDING FINISHES U.O.N.

9. MINERAL WOOL INSULATION W/ TOTAL R VALUE 10 OR GREATER TO BE USED IN ALL PERIMETER FURRING PARTITIONS & GWB COL. ENCLOSURES @ EXTERIOR PRECAST PANELS, TYP. ALSO REFER TO PARTITION SCHEDULES & SPECIFICATION.

10. ANY DEVICE EXCEEDS 16 SQ INCHES INSTALLED IN FIRE RATED WALL SHALL BE PROVIDED W/ 2 HOURS FIRED RATED WRAPPING MATERIAL.

11. REFER TO A030-A050 SERIES SITE DRAWINGS FOR PLAYGROUND, AND SITE INFORMATION.

12. ALL GLAZING IN WINDOWS AND STOREFRONT THAT ARE LOCATED WITHIN 75' ABOVE GRADE SHALL BE BIRD FRIENDLY PROTECTION GLAZING. SEE SEE SPEC SECTION 08524.

13. FOR INTERIOR VISION PANEL REFER TO SHEET A926.

Drawing Title:
OPTION 2 & 3 - FOURTH FLOOR PLAN

Drawing No.:
A108.00

Sheets in Contract Set:
OF

Sheets in DOB Set:
OF

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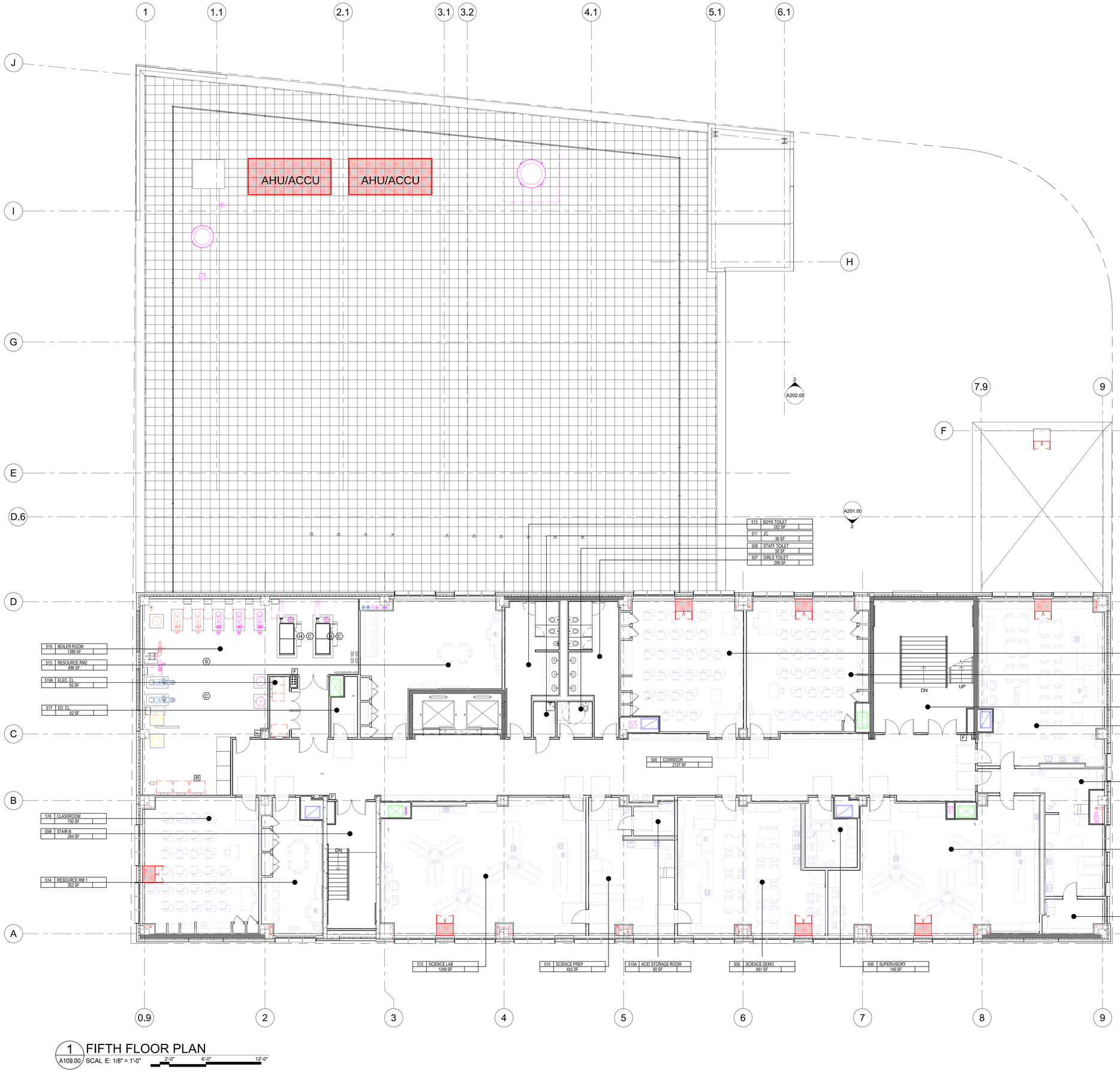

1 FIFTH FLOOR PLAN
A109.00 SCALE: 1/8" = 1'-0"
2'-0" 6'-0" 12'-0"

LEGEND:

F.E.C.	FIRE EXTINGUISHER & CABINET; SEE DETAIL ON A606. CONTRACTOR TO COORDINATE R.O. W/ MANUFACTURER; REFER TO SPECIFICATION FOR ADDITIONAL INFORMATION.
F.E.	FIRE EXTINGUISHER; REFER TO SPECIFICATION FOR ADDITIONAL INFORMATION.
F.B.C.	FIRE BLANKET CABINET. CONTRACTOR TO COORDINATE R.O. W/ MANUFACTURER; REFER TO SPECIFICATION FOR ADDITIONAL INFORMATION.
D.F.	DRINKING FOUNTAIN; SEE DETAIL ON A606
	CONCRETE PAD; SEE PLUMBING, FIRE PROTECTION, MECHANICAL DWGS. FOR LOCATION AND SIZES AND STRUCTURE DWGS FOR DETAILS. - TYP.
A.D.	20"x20"ACCESS DOORS FOR FIRE DAMPER, FIRE SMOKE DAMPER; SEE MECH. DWGS.
B.B.	CMU BOND BEAM (SEE STRUCTURAL DWG'S)

GENERAL NOTES:

1. REFER TO DRAWING T004 FOR DEFINITION OF SYMBOLS AND ABBREVIATIONS.

2. REFER TO A500 SERIES FOR STAIRS ENLARGED PLAND AND SECTIONS.

3. REFER TO A600 SERIES FOR TOILET ROOM ENLARGED PLAN & ELEVATIONS.

4. REFER TO A920 SERIES FOR WINDOW TYPE, GLAZING, INTERIOR VISION PANEL (VP) AND WINDOW SHADES INFORMATION.

5. REFER TO A940 SERIES FOR KITCHEN.

6. REFER TO FF SERIES FOR FURNITURE LAYOUTS AND SCHEDULES.

7. ALL DOORS ARE 6 INCHES FROM FINISH FACE OF WALL TO DOOR JAMB U.O.N. ALL DOORS MUST BE PROVIDED WITH REQUIRED ADA CLEARANCE PLUS ADDITIONAL 1 INCH. REFER TO T005.00.

8. ALL DIMENSIONS ARE GIVEN TO WALL SURFACE EXCLUDING FINISHES U.O.N.

9. MINERAL WOOL INSULATION W/ TOTAL R VALUE 10 OR GREATER TO BE USED IN ALL PERIMETER FURRING PARTITIONS & GWB COL. ENCLOSURES @ EXTERIOR PRECAST PANELS, TYP. ALSO REFER TO PARTITION SCHEDULES & SPECIFICATION.

10. ANY DEVICE EXCEEDS 16 SQ INCHES INSTALLED IN FIRE RATED WALL SHALL BE PROVIDED W/ 2 HOURS FIRED RATED WRAPPING MATERIAL.

11. REFER TO A030-A050 SERIES SITE DRAWINGS FOR PLAYGROUND, AND SITE INFORMATION.

12. ALL GLAZING IN WINDOWS AND STOREFRONT THAT ARE LOCATED WITHIN 75' ABOVE GRADE SHALL BE BIRD FRIENDLY PROTECTION GLAZING. SEE SEE SPEC SECTION 08524.

13. FOR INTERIOR VISION PANEL REFER TO SHEET A926.

Drawing Title:
OPTION 2 & 3 - FIFTH FLOOR PLAN

Drawing No.:
A109.00

Sheets in Contract Set:
OF

Sheets in DOB Set:
OF

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1 A200.00 OPTION 1 - OVERALL EAST ELEVATION
SCALE: 1/8" = 1'-0"

2 A200.00 OPTION 1 - OVERALL NORTH ELEVATION
SCALE: 1/8" = 1'-0"

Drawing Title:
OPTION 1 - EAST AND NORTH EXTERIOR ELEVATION

Drawing No.:
A200.00

Sheets in Contract Set:
OF

Sheets in DOB Set:
OF

1 A201.00 OPTION 1 - OVERALL WEST ELEVATION

SCALE: 1/8" = 1'-0" 2'-0" 6'-0" 12'-0"

Drawing Title:
OPTION 1 - WEST EXTERIOR ELEVATION

Drawing No.:
A201.00

Sheets in Contract Set:
OF

Sheets in DOB Set:
OF

1 / A202.00 OPTION 1 - OVERALL SOUTH ELEVATION

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

2'-0" 6'-0" 12'-0"

Drawing Title:
OPTION 1 - SOUTH EXTERIOR ELEVATION

Drawing No.:
A202.00

Sheets in Contract Set:
OF

Sheets in DOB Set:
OF

1 A203.00 OPTION 2 - OVERALL EAST ELEVATION
SCALE: 1/8" = 1'-0"

2 A203.00 OPTION 2 - OVERALL NORTH ELEVATION
SCALE: 1/8" = 1'-0"

Drawing Title:
OPTION 2 - EAST AND NORTH EXTERIOR ELEVATION

Drawing No.:
A203.00

Sheets in Contract Set:
OF

Sheets in DOB Set:
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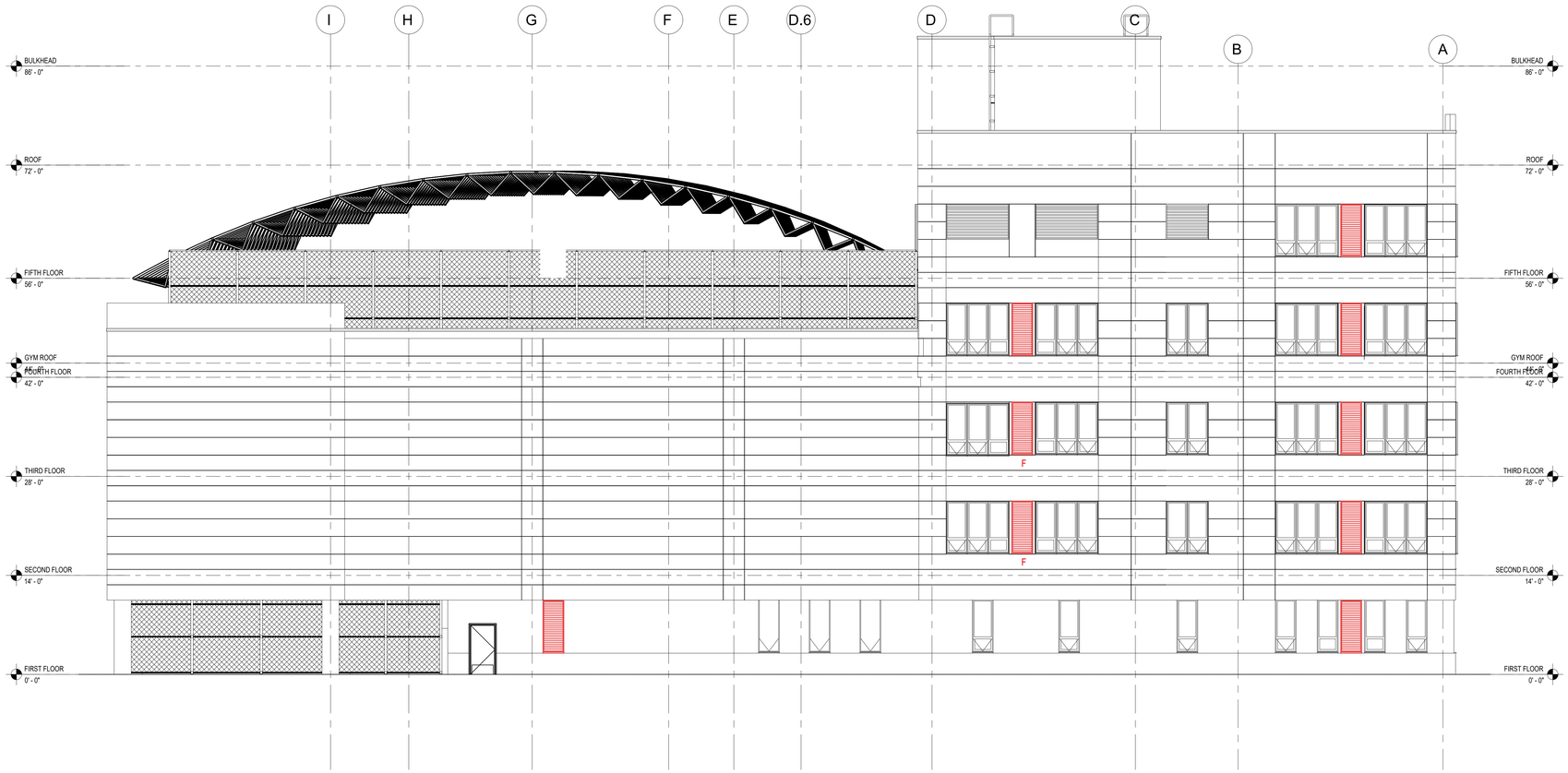

1 OPTION 2 - OVERALL WEST ELEVATION
A204.00 SCALE: 1/8" = 1'-0" 2'-0" 6'-0" 12'-0"

Drawing Title:
OPTION 2 - WEST EXTERIOR ELEVATION

Drawing No.:
A204.00

Sheets in Contract Set:
OF

Sheets in DOB Set:
OF

1 A205.00 OPTION 2 - OVERALL WEST ELEVATION

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

2'-0" 6'-0" 12'-0"

Drawing Title:
OPTION 2 - SOUTH EXTERIOR ELEVATION

Drawing No.:
A205.00

Sheets in Contract Set:
OF

Sheets in DOB Set:
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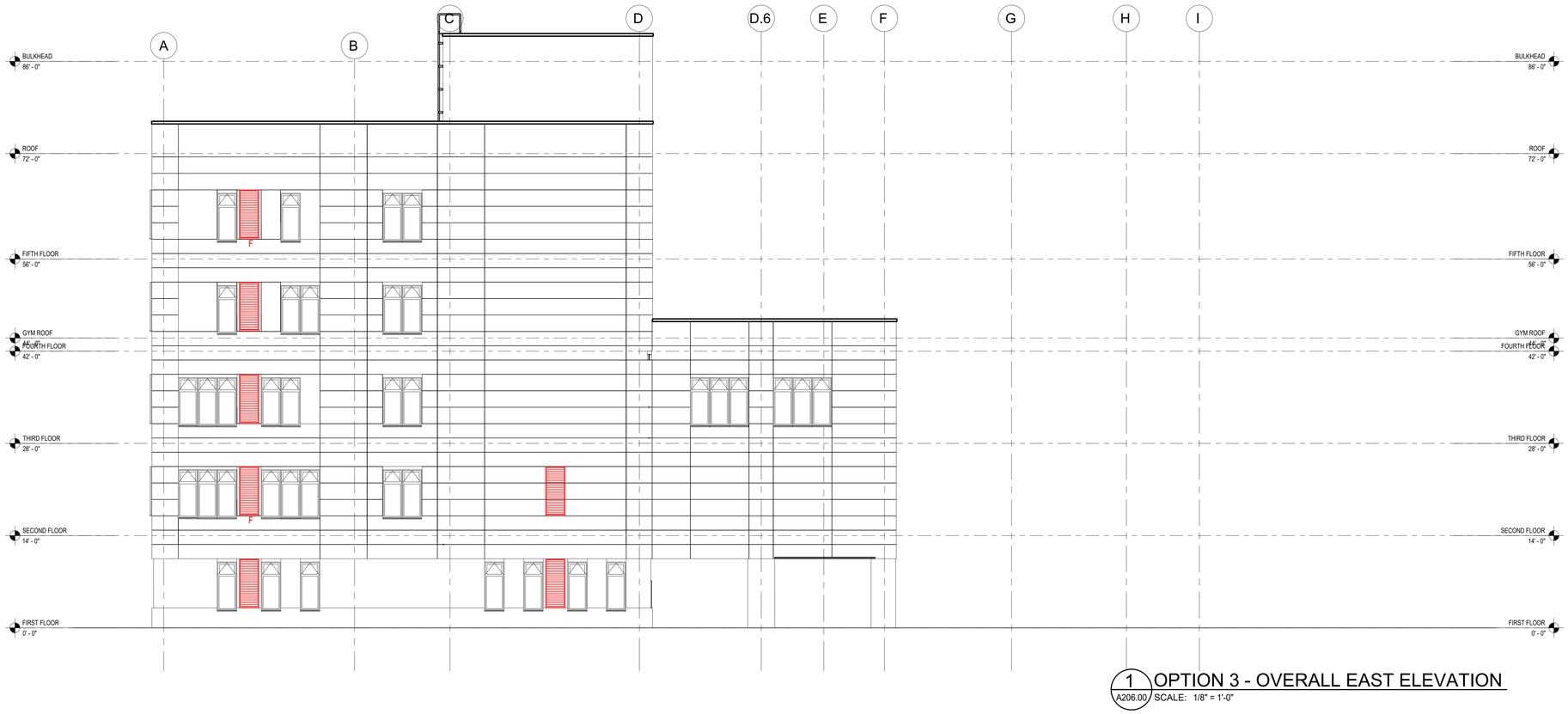


1 OPTION 3 - OVERALL EAST ELEVATION
A206.00 SCALE: 1/8" = 1'-0"

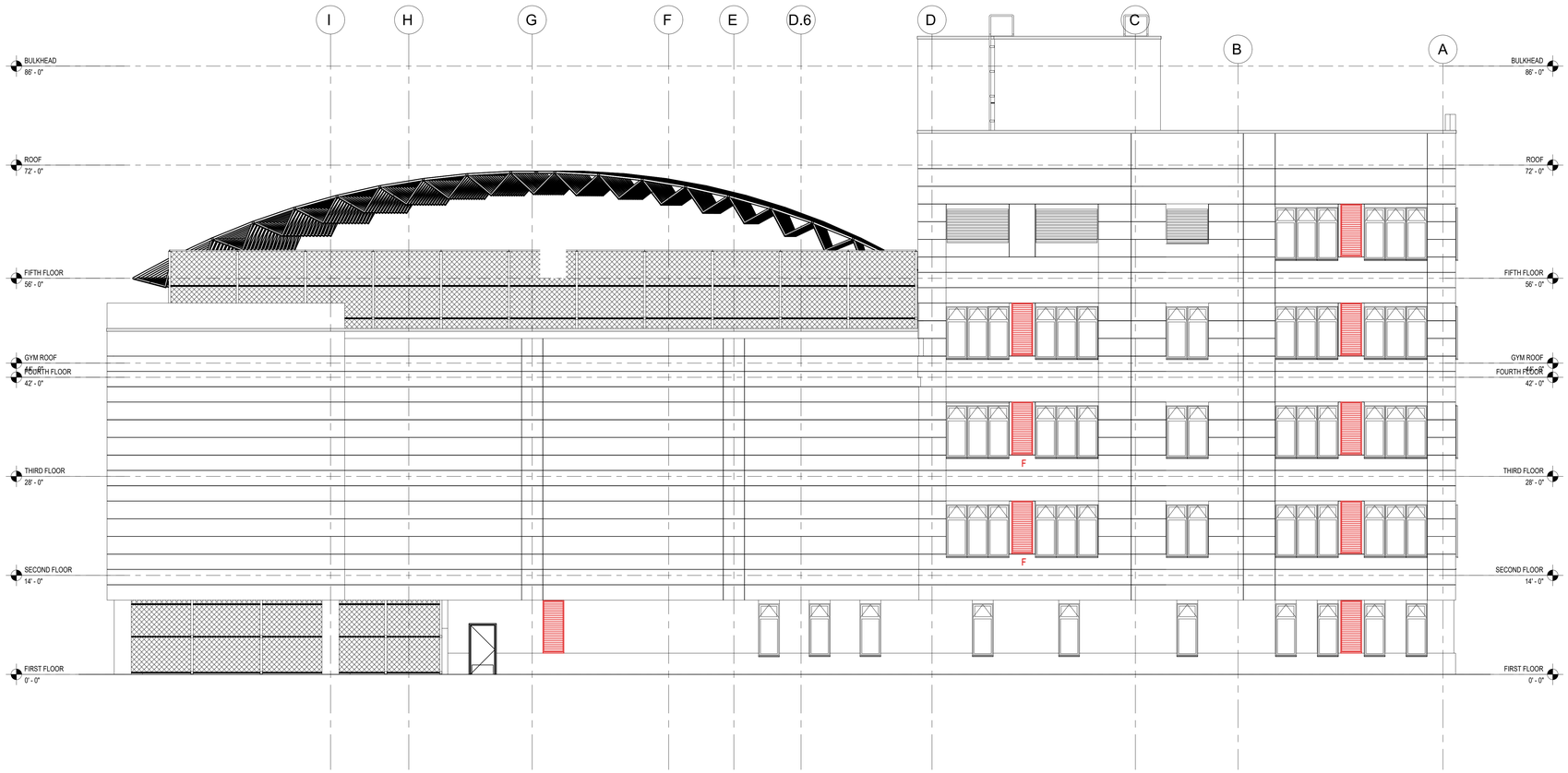
2 OPTION 3 - OVERALL NORTH ELEVATION
A206.00 SCALE: 1/8" = 1'-0"

Drawing Title:
OPTION 3 - EAST AND NORTH EXTERIOR ELEVATION

Drawing No.:
A206.00

Sheets in Contract Set:
OF

Sheets in DOB Set:
OF



1 OPTION 3 - OVERALL WEST ELEVATION
A207.00 SCALE: 1/8" = 1'-0" 2'-0" 6'-0" 12'-0"

Drawing Title:
OPTION 3 - WEST EXTERIOR ELEVATION

Drawing No.:
A207.00

Sheets in Contract Set:
OF

Sheets in DOB Set:
OF

1 A208.00 OPTION 3 - OVERALL WEST ELEVATION

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

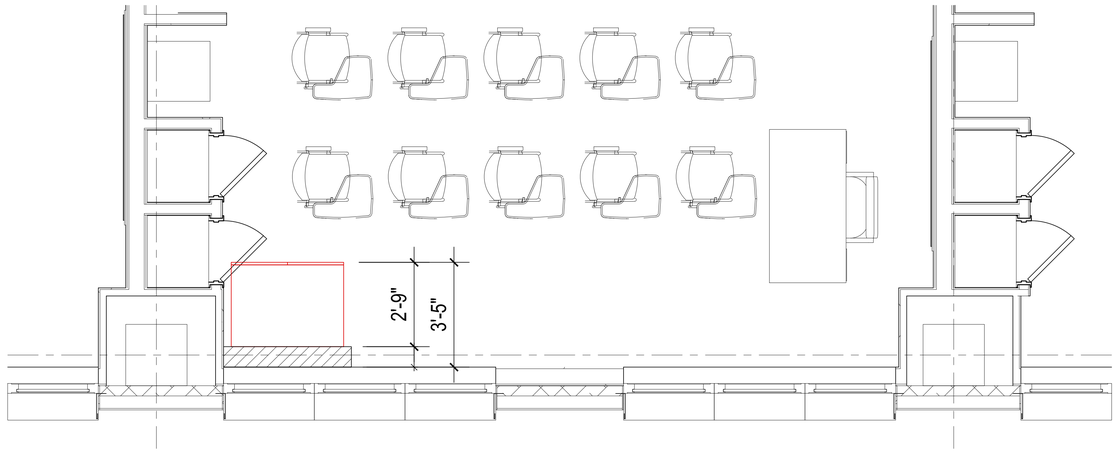
2'-0" 6'-0" 12'-0"

Drawing Title:
OPTION 3 - SOUTH EXTERIOR ELEVATION

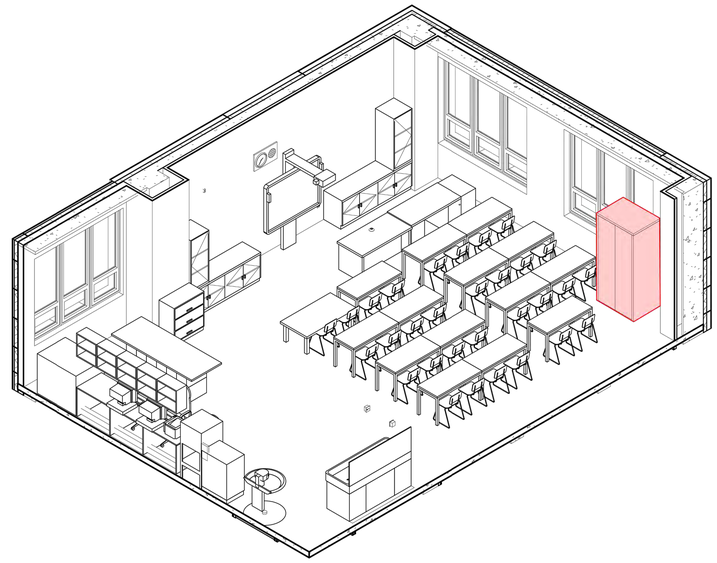
Drawing No.:
A208.00

Sheets in Contract Set:
OF

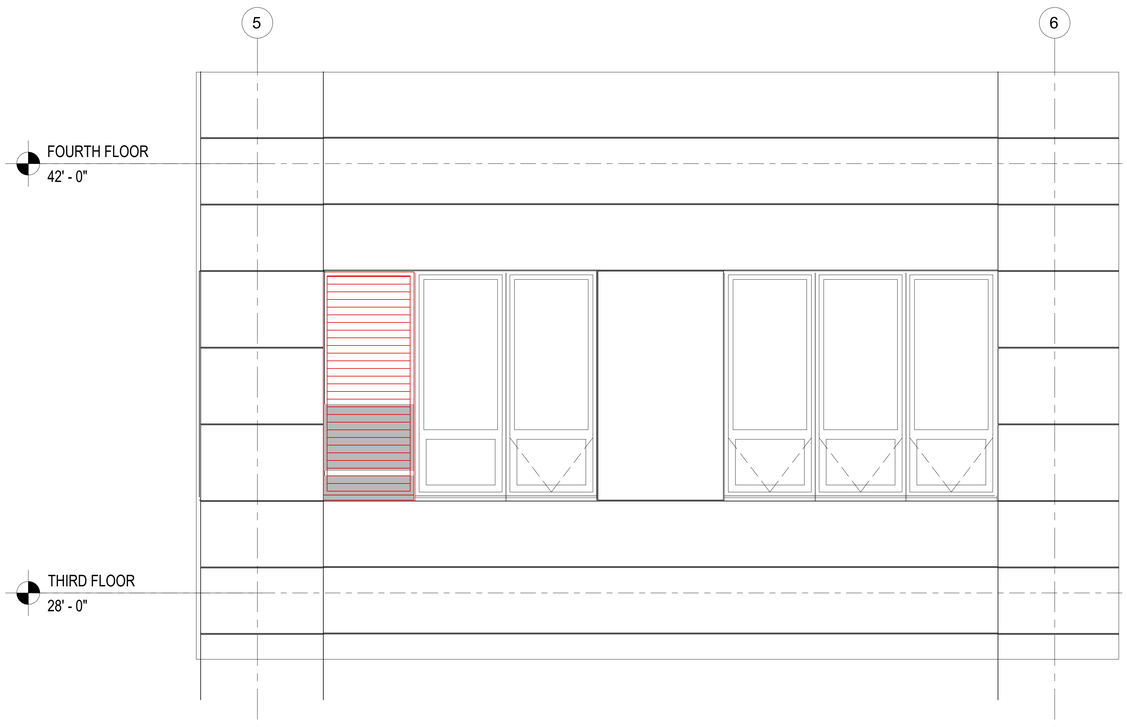
Sheets in DOB Set:
OF



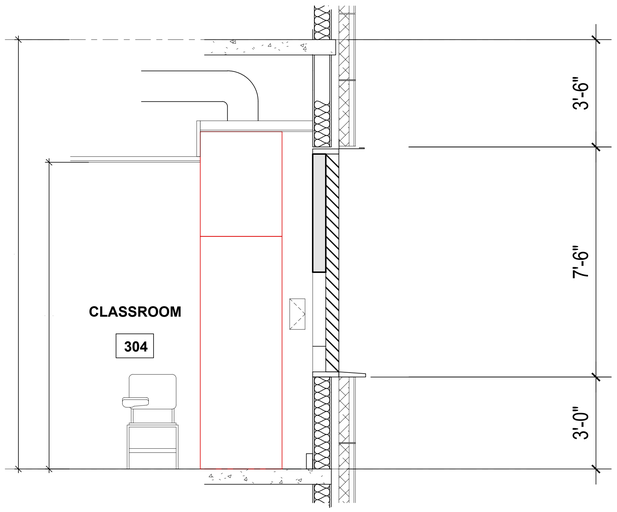
1 A400.00 OPTION 1 CLASSROOM PLAN DETAIL
SCALE: 1/8" = 1'-0" 2'-0" 6'-0" 12'-0"



2 A400.00 OPTION 1 CLASSROOM AXONOMETRIC DETAIL
SCALE: 3/16" = 1'-0" 2'-0" 6'-0" 12'-0"



3 A400.00 OPTION 1 ELEVATION DETAIL
SCALE: 1/8" = 1'-0" 2'-0" 6'-0" 12'-0"



4 A400.00 OPTION 1 SECTION DETAIL
SCALE: 1/8" = 1'-0" 2'-0" 6'-0" 12'-0"

OPTION 1 - MINIMAL CHANGES

PROS:

-NO CHANGES TO WINDOW CONFIGURATION

CONS:

-WINDOWS WITHIN 3' OF EXHAUST MUST BE FIXED, WHICH RESULTS IN LESS NATURAL VENTILATION

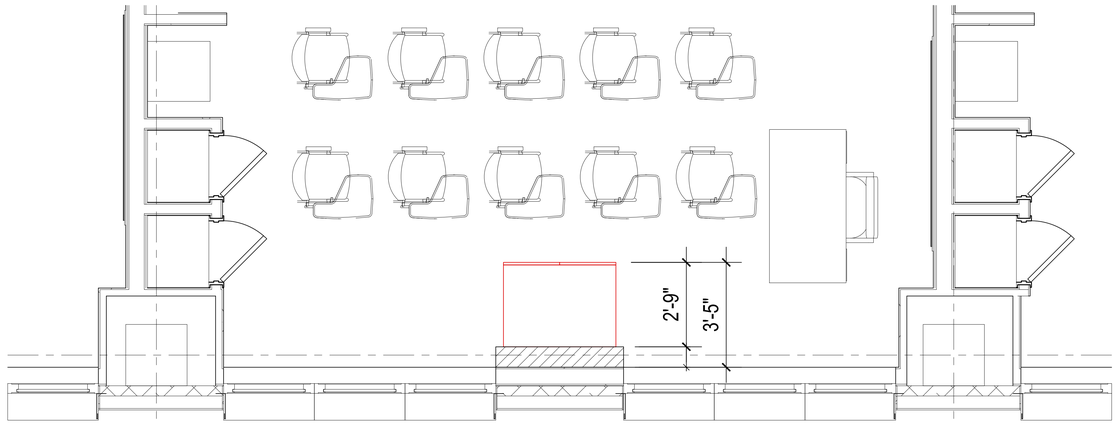
TO KEEP EXISTING WINDOW HEIGHT A SOFFIT RETURN IS REQUIRED AT THE WINDOW

Drawing Title:
OPTION 1 DETAILS

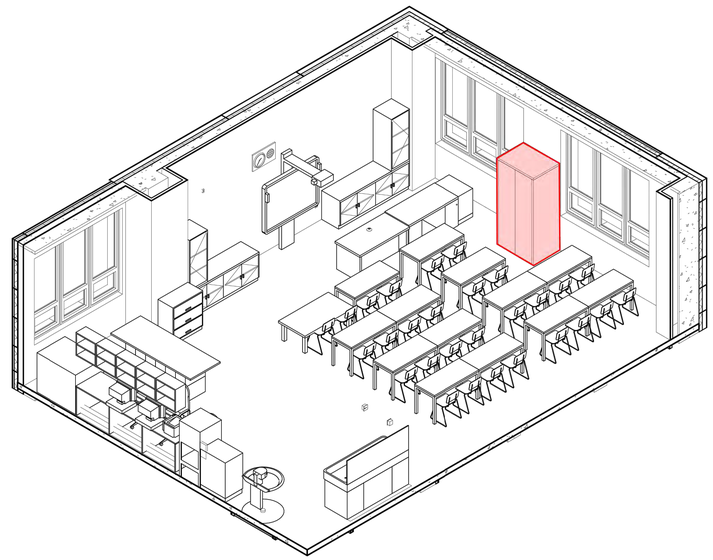
Drawing No.:
A400.00

Sheets in Contract Set:
OF

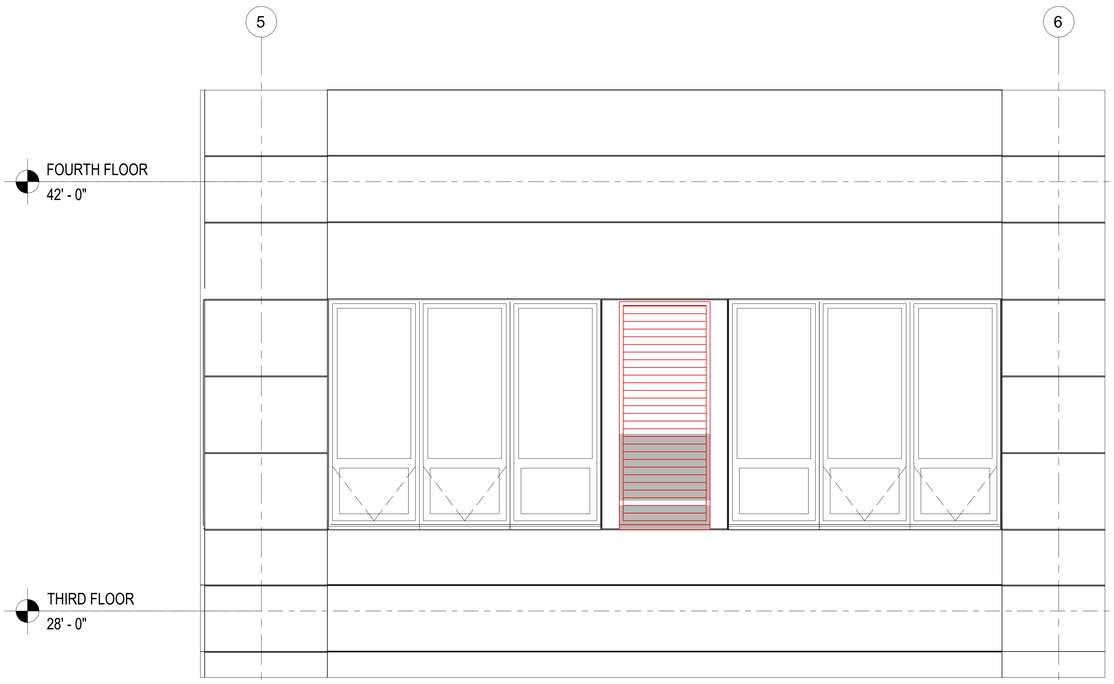
Sheets in DOB Set:
OF



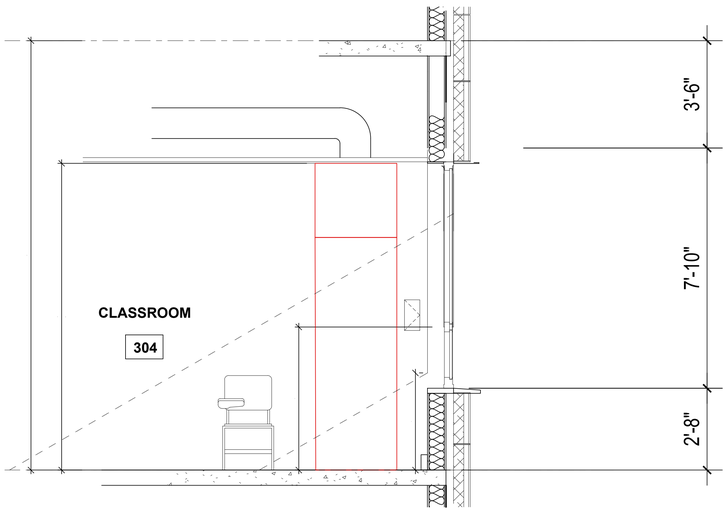
1 A401.00 OPTION 2 CLASSROOM PLAN DETAIL
SCALE: 1/8" = 1'-0" 2'-0" 6'-0" 12'-0"



2 A401.00 OPTION 2 CLASSROOM AXONOMETRIC VIEW
SCALE: 3/16" = 1'-0" 2'-0" 6'-0" 12'-0"



3 A401.00 OPTION 2 ELEVATION DETAIL
SCALE: 1/8" = 1'-0" 2'-0" 6'-0" 12'-0"



4 A401.00 OPTION 2 SECTION DETAIL
SCALE: 1/8" = 1'-0" 2'-0" 6'-0" 12'-0"

OPTION 2

PROS:

-NO REDUCTION IN DAYLIGHTING

-WINDOW SHIFTS DOWN 6" TO ELIMINATE COMPLICATED SOFFIT

CONS:

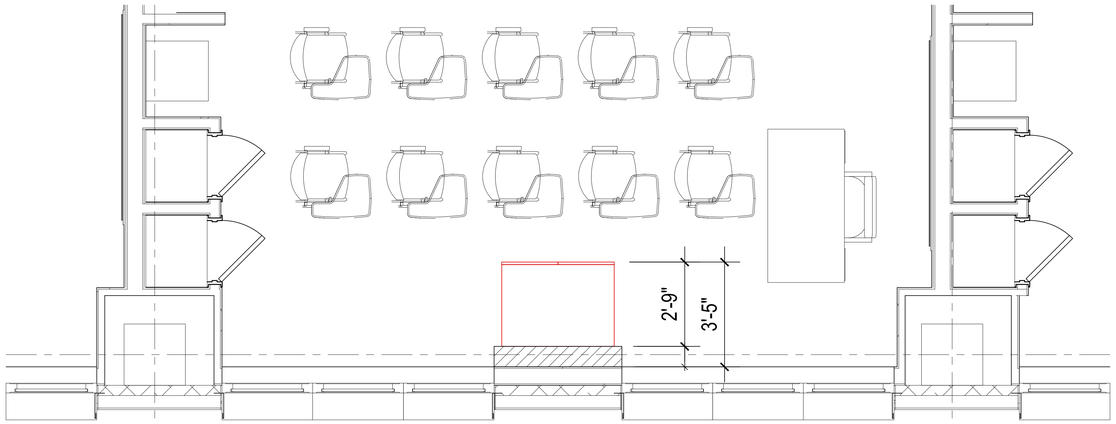
-WINDOWS NEXT TO UNIT MUST REMAIN FIXED, RESULTING IN LESS NATURAL VENTILATION

Drawing Title:
OPTION 2 DETAILS

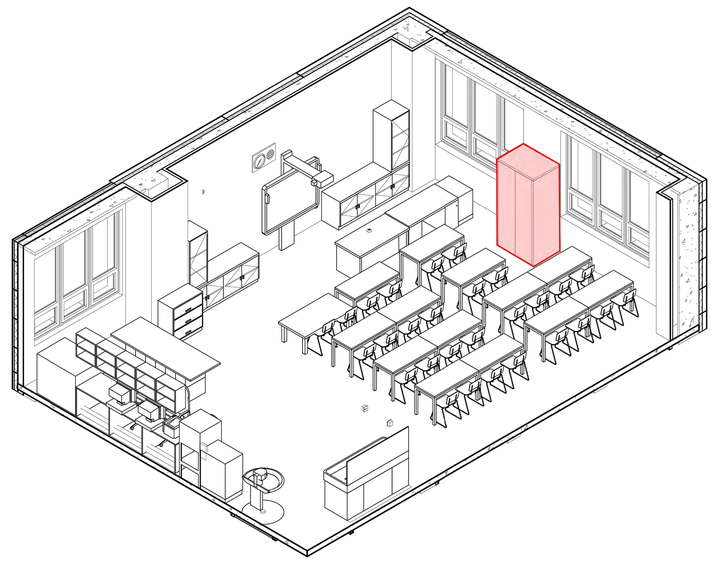
Drawing No.:
A401.00

Sheets in Contract Set:
OF

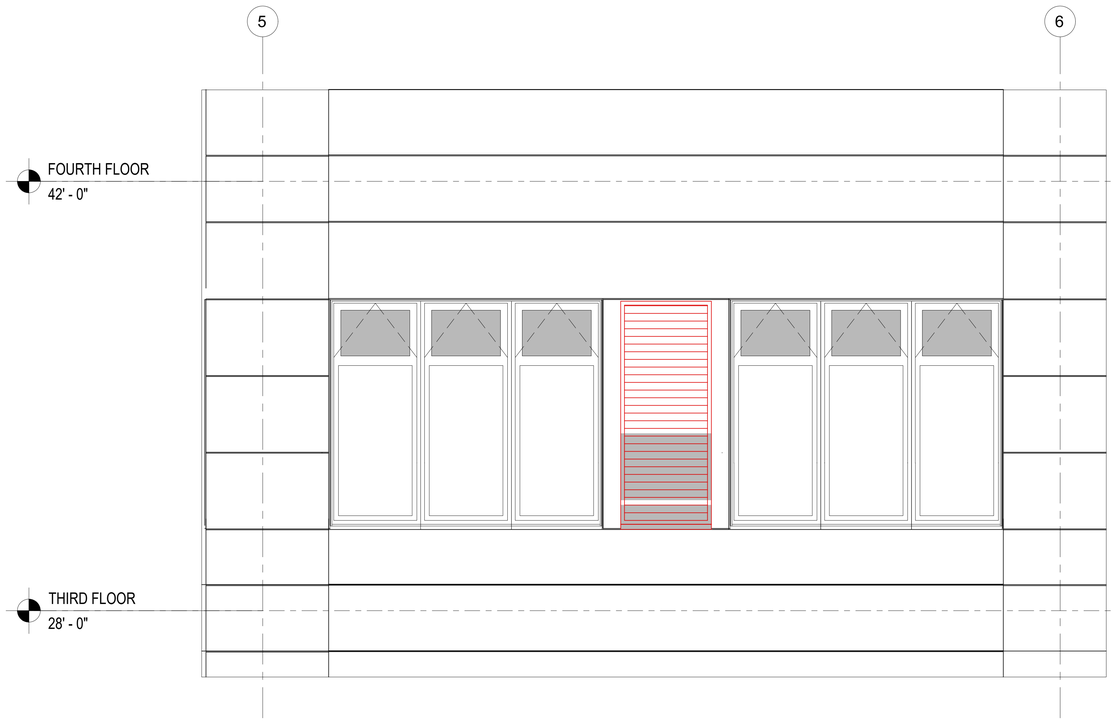
Sheets in DOB Set:
OF



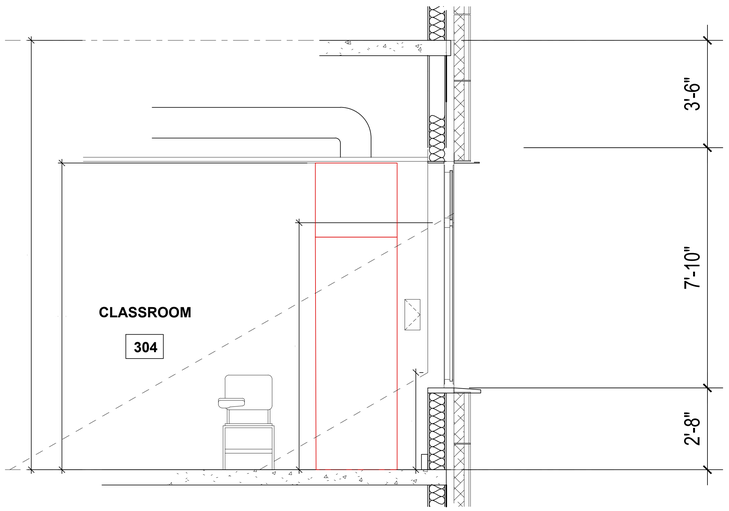
1 A402.00 OPTION 3 CLASSROOM PLAN DETAIL
SCALE: 1/8" = 1'-0" 2'-0" 6'-0" 12'-0"



2 A401.00 OPTION 3 CLASSROOM AXONOMETRIC VIEW
SCALE: 3/16" = 1'-0" 2'-0" 6'-0" 12'-0"



3 A402.00 OPTION 3 ELEVATION DETAIL
SCALE: 1/8" = 1'-0" 2'-0" 6'-0" 12'-0"



4 A402.00 OPTION 3 SECTION DETAIL
SCALE: 1/8" = 1'-0" 2'-0" 6'-0" 12'-0"

OPTION 3

PROS:

-OPERABLE WINDOW PANEL MOVES TO TOP AND BECOMES ENERGY EFFICIENT GLAZING

-WINDOW SHIFTS DOWN 6" TO ELIMINATE COMPLICATED SOFFIT

CONS:

-REQUIRES ALTERATION OF FACADE PANELING AND WINDOW DESIGN

Drawing Title:
OPTION 3 DETAILS

Drawing No.:
A402.00

Sheets in Contract Set:
OF

Sheets in DOB Set:
OF

Appendix C:

Equipment Cutsheets

Option 1: RTU’s with integral heat pumps and electric resistance baseboards

Option # 1

VV19.3

# of Units	7			AIRFLOW CONDITIONS							SUPPLY FAN								EXHAUST FAN[4]								ENTHALPY WHEEL									MIXING	Part of RA			OA from the wheel			Mixing Point		
TAG	LOCATION	MODEL	UNIT MODEL	Density of Air (lbs/ft³)	SA (CFM)	SA ESP ("wc)	OA (%)	RA (CFM)	RA ESP ("wc)	Application	QTY.	TYPE	CFM	TSP ("wc)	RPM	HP	BHP	Speed Controller [3]	QTY.	TYPE	CFM	TSP ("wc)	RPM	HP	BHP	Speed Controller [3]	QTY.	SIZE	LAT summer (db°F / wb°F)	[5]LAT winter (db°F / wb°F)	HP	FROST CONTROL			CFM	EAT (db°F / wb°F)		CFM	EAT (db°F / wb°F)		CFM	Mixing temp (db°F / wb°F)	
AHU-1	Exterior	[redacted]	Wheel	0.075	15825	3.5	47%	13650	1.5	VAV	2	Plug	7912.5	7.68	1678	20.00	14.50	Yes	2	Plug	6825	3.48	1696	7.50	5.23	Yes	1	07	82.1	68.7	50.9	41.6	0.50	VFD	Summer	8385	78	65	7440	82.07	68.69	15825	80.00	66.81
					7440					50%																							Winter		72	54.36		50.85	41.6		62.1	48.9
AHU-2	Exterior	[redacted]	Wheel	0.075	15016	3.5	47%	13515	1.5	VAV	2	Plug	7508	7.68	1669	20.00	13.99	Yes	2	Plug	6757.5	3.48	1689	7.50	5.17	Yes	1	07	81.6	68.4	53.7	43.2	0.50	VFD	Summer	7956	78	65	7060	81.62	68.37	15016	79.80	66.68
					7060					50%																							Winter		72	54.36		53.65	43.23		63.4	49.4
AHU-3	Exterior	[redacted]	Wheel	0.075	15455	3.5	47%	13300	1.5	VAV	2	Plug	7727.5	7.68	1674	20.00	14.27	Yes	2	Plug	6650	3.48	1678	7.50	5.08	Yes	1	07	82.1	68.7	50.5	41.3	0.50	VFD	Summer	8192	78	65	7263	82.1	68.7	15455	80.00	66.81
					7263					50%																							Winter		72	54.36		50.52	41.3		62	48.7
AHU-4	Exterior	[redacted]	Wheel	0.075	15180	3.5	47%	13215	1.5	VAV	2	Plug	7590	7.68	1671	20.00	14.10	Yes	2	Plug	6607.5	3.48	1674	7.50	5.04	Yes	1	07	81.9	68.6	51.5	41.9	0.50	VFD	Summer	8046	78	65	7134	81.94	68.59	15180	79.90	66.81
					7134					50%																							Winter		72	54.36		51.48	41.91		62.4	48.9
AHU-5	Interior	[redacted]	Wheel	0.075	8950	2.5	67%	7425	1	VAV	2	Plug	4475	6.57	1950	10.00	7.08	Yes	2	Plug	3712.5	2.65	1827	3.00	2.16	Yes	1	04	82.1	68.9	50.8	41.1	0.25	VFD	Summer	2980	78	65	5970	82.06	68.85	8950	80.80	67.69
					5970					50%																							Winter		72	54.36		50.79	41.11		57.9	46.0
AHU-6	Interior	[redacted]	Wheel	0.075	6825	2	57%	5580	1	VAV	1	Plug	6825	6.07	2030	15.00	9.04	Yes	1	Plug	5580	2.65	1757	5.00	3.36	Yes									Summer	2960	78	65	3865	89	73	6825	84.30	69.77
					3865					50%																							Winter		72	54.36		13	12		38.6	33.6

1 - Type of construction: ALUMINUM
2 - Direct Drive fans provided.
3 - One Speed Controller provided per fan bank.
4 - Winter LAT is based on frost control by VFD
5 - During Defrost cycle, Electric heater shall be energized and used to reach the required LAT
6 - For AHU-1 to 4 & 7, ASHP HEATING capacity shown below does not consider the available capacity in defrost mode- in defrost mode, only 1/3 of this capacity is available

Altitude	Press.	Summer				Winter			
		OA conditions		RA conditions		OA conditions		RA conditions	
ft	inHg	db	wb	db	wb	db	wb	db	wb
0	29.92	89	73	78	65	13	12	72	54.36

# of Units	DX COOLING COIL							HOT GAS REHEAT COIL				DX COIL (ASHP - HEATING MODE)6					ELECTRIC HEATER sized for full SA CFM	AIR SOURCED HEAT PUMP							PRE FILTERS	FINAL FILTERS	FILTERS RA	Electrical			ESTIMATED ELECTRICAL DATA			
TAG	CFM	EAT (db°F / wb°F)		LAT (db°F / wb°F)		SENSIBLE [MBH]	TOTAL [MBH]	TON	CFM	EAT	LAT	CAPACITY [MBH]	CFM	EAT (db°F)	LAT (db°F)	Ambient temp. (°F)	TOTAL [MBH]	Included	EAT	LAT	KW	MODEL	QUANTITY	NOMINAL TONNAGE	CIRCUIT QUANTITY PER KIT	DESIGN AMBIENT TEMP. (COOLING)	DESIGN AMBIENT TEMP. (HEATING)	COMPRESSOR MODULATION	PRE FILTERS SA	FINAL FILTERS SA	FILTERS RA	GFI	Lights	Powered by	VOLTAGE	FLA	MCA	MOP
AHU-1	15825	80.0	66.81	55	55	436	578	48.2	15825	55.0	65	175	15825	62	85	15	392	Yes	62.1	85	117	[redacted]	1	48	4	89	15	Yes	2"-MERV10	12"-MERV13	2"-MERV13	2	4	By Annexair	208/3/60	681	694	700
AHU-2	15016	79.8	66.68	55	55	410	542	45.2	15016	55.0	65	166	15016	63	85	15	351	Yes	63.4	85	105	[redacted]	1	48	4	89	15	Yes	2"-MERV10	12"-MERV13	2"-MERV13	2	4	By Annexair	208/3/60	646	659	700
AHU-3	15455	80.0	66.81	55	55	426	565	47.1	15455	55.0	65	171	15455	62	85	15	384	Yes	62.0	85	115	[redacted]	1	48	4	89	15	Yes	2"-MERV10	12"-MERV13	2"-MERV13	2	4	By Annexair	208/3/60	675	688	700
AHU-4	15180	79.9	66.81	55	55	416	555	46.3	15180	55.0	65	167	15180	62	85	15	371	Yes	62.4	85	111	[redacted]	1	48	4	89	15	Yes	2"-MERV10	12"-MERV13	2"-MERV13	2	4	By Annexair	208/3/60	664	677	700
AHU-5	8950	80.8	67.69	55	55	255	356	29.7	8950	55.0	65	99	8950	58	85	15	262	Yes	57.9	85	78								2"-MERV10	12"-MERV13	2"-MERV13	2	4	By Annexair	208/3/60	307	329	350
AHU-6	6825	84.3	69.77	55	55	220	323	27	6825	55.0	65	76	6825	39	85	15	343	Yes	38.6	85	102								2"-MERV10	12"-MERV13	2"-MERV13	2	4	By Annexair	208/3/60	355	373	400

IEER/COP IS BASED ON AHRI STANDARD.

48 NORMINAL TONS SYSTEM (AHU-1, 2, 3 AND 4)

IEER-15.9
COP-4.13

HEAT WHEEL PERFORMANCE

Project name
Reference
Unit tag AHU-1

Date 5/25/2022

v 1.0

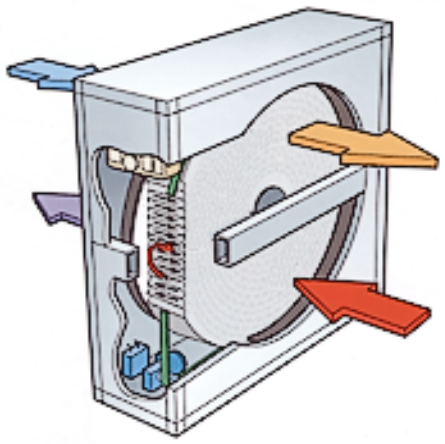
SUMMER

OUTSIDE AIR

Outside air Volume CFM	7917
Summer Outside air DB	**89.0**
Summer Outside air WB	**73.0**
Grains	96.9
Summer Outside air enthalpy	36.5
Outside Air S.P.	-0.50

EXHAUST AIR

Exhaust Volume CFM	5742
Summer Exhaust air DB	**87.0**
Summer Exhaust air WB	**71.0**
Grains	88.5
Summer Exhaust enthalpy	34.7
Exhaust Air S.P.	-2.28



SUPPLY AIR

7440	Supply Volume CFM
82.1	Summer Supply air DB.
68.7	Summer Supply air WB.
84.1	Grains
32.8	Summer Supply air enthalpy
-1.18	Supply Air S.P.

RETURN AIR

5265	Return Volume CFM
78.0	Summer Return air DB.
65.0	Summer Return air WB.
71.8	Grains
29.9	Summer Return air Enthalpy
-1.80	Return Air S.P.

Purge & Leak CFM **477**

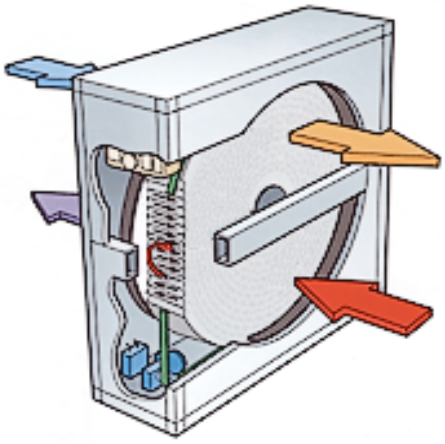
WINTER

OUTSIDE AIR

Outside air Volume CFM	7917
Winter Outside air DB	**13.0**
Winter Outside air WB	**12.0**
Grains	8.8
Winter Outside air enthalpy	4.5
Outside Air S.P.	-0.50

EXHAUST AIR*

Exhaust Volume CFM	5742
Winter Exhaust air DB	22.7 (22.3)
Winter Exhaust air WB	22.2 (21.7)
Grains	16.0 (15.6)
Winter Exhaust enthalpy	8.0 (7.8)
Exhaust Air S.P.	-2.28



SUPPLY AIR*

7440	Supply Volume CFM
50.9 (51.1)	Winter Supply air DB
41.5 (43.0)	Winter Supply air WB
23.6 (23.6)	Grains
15.8 (15.9)	Winter Supply air enthalpy
-1.18	Supply Air S.P.

RETURN AIR

5265	Return Volume CFM
72.0	Winter Return air DB.
54.4	Winter Return air WB.
34.8	Grains
22.7	Winter Return air Enthalpy
-1.80	Return Air S.P.

*** Actual conditions in frost control. Data in () are without frost control**

GENERAL DATA

Wheel Size	07
Wheel Type	Enthalpy
Total Effectiveness	88.0 %

	Total	Sensible
Saving summer, TON	10.35	4.64
Saving winter, MBH	377.99	304.13

Pressure Drop Through the Wheel			Face velocity (FPM)
Supply side	in w.g.	0.68	661
Exhaust side	in w.g.	0.48	468

Wheel RPM		Drive	Frost Control
Normal	20	VFD	Required
Minimum	15		

Ratings have been tested in accordance to ASHRAE 84 and ARI 1060

HEAT WHEEL PERFORMANCE

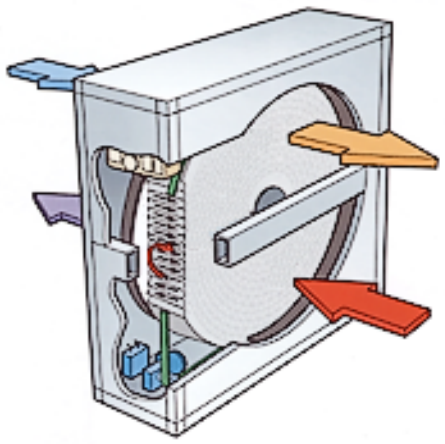
Project name
Reference
Unit tag AHU-2

Date 5/25/2022

v 1.0

SUMMER

OUTSIDE AIR			SUPPLY AIR
Outside air Volume CFM	7526	**7060**	Supply Volume CFM
Summer Outside air DB	**89.0**	81.6	Summer Supply air DB.
Summer Outside air WB	**73.0**	68.4	Summer Supply air WB.
Grains	96.9	83.1	Grains
Summer Outside air enthalpy	36.5	32.6	Summer Supply air enthalpy
Outside Air S.P.	-0.50	-1.15	Supply Air S.P.

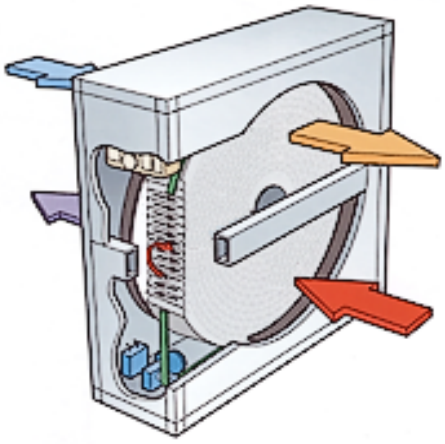


EXHAUST AIR			RETURN AIR
Exhaust Volume CFM	6025	**5559**	Return Volume CFM
Summer Exhaust air DB	**86.8**	**78.0**	Summer Return air DB.
Summer Exhaust air WB	**70.9**	**65.0**	Summer Return air WB.
Grains	88.3	71.8	Grains
Summer Exhaust enthalpy	34.7	29.9	Summer Return air Enthalpy
Exhaust Air S.P.	-2.31	-1.80	Return Air S.P.

Purge & Leak CFM **466**

WINTER

OUTSIDE AIR			SUPPLY AIR
Outside air Volume CFM	7526	**7060**	Supply Volume CFM
Winter Outside air DB	**13.0**	53.6	Winter Supply air DB
Winter Outside air WB	**12.0**	43.2	Winter Supply air WB
Grains	8.8	24.7	Grains
Winter Outside air enthalpy	4.5	16.7	Winter Supply air enthalpy
Outside Air S.P.	-0.50	-1.15	Supply Air S.P.



EXHAUST AIR			RETURN AIR
Exhaust Volume CFM	6025	**5559**	Return Volume CFM
Winter Exhaust air DB	23.3	**72.0**	Winter Return air DB.
Winter Exhaust air WB	22.5	**54.4**	Winter Return air WB.
Grains	15.8	34.8	Grains
Winter Exhaust enthalpy	8.1	22.7	Winter Return air Enthalpy
Exhaust Air S.P.	-2.31	-1.80	Return Air S.P.

GENERAL DATA

Wheel Size	07			Total	Sensible
Wheel Type	Enthalpy	Saving summer, TON		10.51	4.69
Total Effectiveness	85.0 %	Saving winter, MBH		385.37	309.95

Pressure Drop Through the Wheel			Face velocity (FPM)	Wheel RPM		Drive	Frost Control
Supply side	in w.g.	0.65	627	Normal	20	Constant	Not required
Exhaust side	in w.g.	0.51	494				

Ratings have been tested in accordance to ASHRAE 84 and ARI 1060

HEAT WHEEL PERFORMANCE

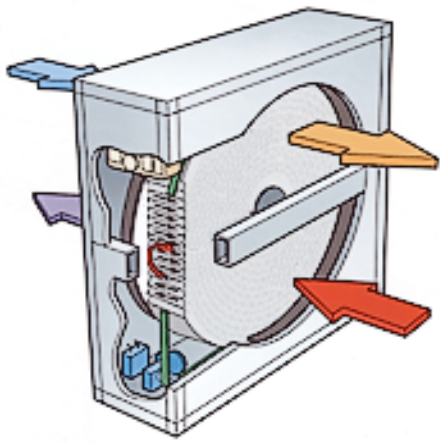
Project name
Reference
Unit tag AHU-3

Date 5/25/2022

v 1.0

SUMMER

OUTSIDE AIR			SUPPLY AIR
Outside air Volume CFM	7740	**7268**	Supply Volume CFM
Summer Outside air DB	**89.0**	82.1	Summer Supply air DB.
Summer Outside air WB	**73.0**	68.7	Summer Supply air WB.
Grains	96.9	84.1	Grains
Summer Outside air enthalpy	36.5	32.8	Summer Supply air enthalpy
Outside Air S.P.	-0.50	-1.17	Supply Air S.P.

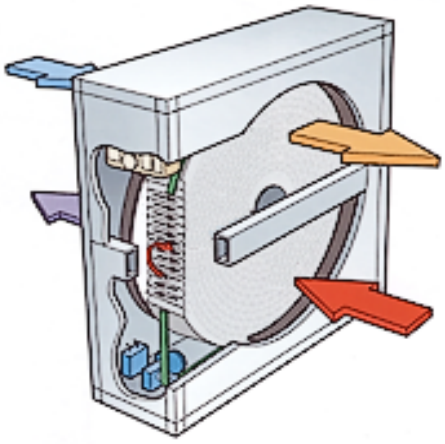


EXHAUST AIR			RETURN AIR
Exhaust Volume CFM	5580	**5108**	Return Volume CFM
Summer Exhaust air DB	**87.1**	**78.0**	Summer Return air DB.
Summer Exhaust air WB	**71.0**	**65.0**	Summer Return air WB.
Grains	88.7	71.8	Grains
Summer Exhaust enthalpy	34.8	29.9	Summer Return air Enthalpy
Exhaust Air S.P.	-2.27	-1.80	Return Air S.P.

Purge & Leak CFM **472**

WINTER

OUTSIDE AIR			SUPPLY AIR*
Outside air Volume CFM	7740	**7268**	Supply Volume CFM
Winter Outside air DB	**13.0**	50.5 (51.0)	Winter Supply air DB
Winter Outside air WB	**12.0**	41.3 (43.0)	Winter Supply air WB
Grains	8.8	23.6 (23.6)	Grains
Winter Outside air enthalpy	4.5	15.8 (15.9)	Winter Supply air enthalpy
Outside Air S.P.	-0.50	-1.17	Supply Air S.P.



EXHAUST AIR*			RETURN AIR
Exhaust Volume CFM	5580	**5108**	Return Volume CFM
Winter Exhaust air DB	22.6 (22.0)	**72.0**	Winter Return air DB.
Winter Exhaust air WB	22.2 (21.4)	**54.4**	Winter Return air WB.
Grains	16.0 (15.4)	34.8	Grains
Winter Exhaust enthalpy	8.0 (7.7)	22.7	Winter Return air Enthalpy
Exhaust Air S.P.	-2.27	-1.80	Return Air S.P.

*** Actual conditions in frost control. Data in () are without frost control**

GENERAL DATA

Wheel Size	07			Total	Sensible
Wheel Type	Enthalpy	Saving summer, TON		10.11	4.51
Total Effectiveness	89.0 %	Saving winter, MBH		366.63	294.51

Pressure Drop Through the Wheel			Face velocity (FPM)	Wheel RPM		Drive	Frost Control
Supply side	in w.g.	0.67	646	Normal	20	VFD	Required
Exhaust side	in w.g.	0.47	454	Minimum	13		

Ratings have been tested in accordance to ASHRAE 84 and ARI 1060

HEAT WHEEL PERFORMANCE

Project name
Reference
Unit tag AHU-4

Date 5/25/2022

v 1.0

SUMMER

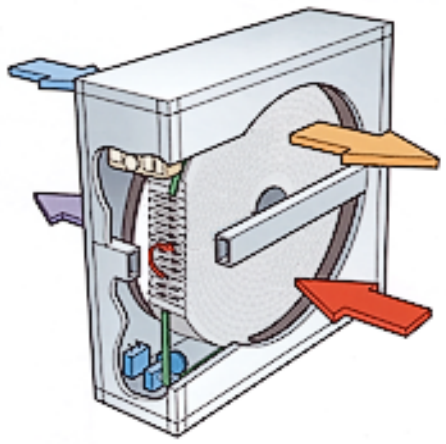
OUTSIDE AIR

Outside air Volume CFM	7602
Summer Outside air DB	**89.0**
Summer Outside air WB	**73.0**
Grains	96.9
Summer Outside air enthalpy	36.5
Outside Air S.P.	-0.50

EXHAUST AIR

Exhaust Volume CFM	5637
Summer Exhaust air DB	**87.0**
Summer Exhaust air WB	**71.0**
Grains	88.7
Summer Exhaust enthalpy	34.8
Exhaust Air S.P.	-2.27

Purge & Leak CFM **468**



SUPPLY AIR

7134	Supply Volume CFM
81.9	Summer Supply air DB.
68.6	Summer Supply air WB.
83.8	Grains
32.8	Summer Supply air enthalpy
-1.15	Supply Air S.P.

RETURN AIR

5169	Return Volume CFM
78.0	Summer Return air DB.
65.0	Summer Return air WB.
71.8	Grains
29.9	Summer Return air Enthalpy
-1.80	Return Air S.P.

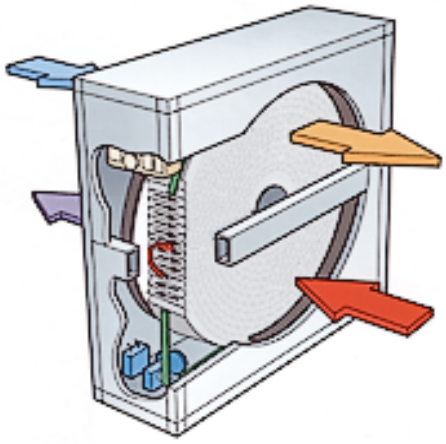
WINTER

OUTSIDE AIR

Outside air Volume CFM	7602
Winter Outside air DB	**13.0**
Winter Outside air WB	**12.0**
Grains	8.8
Winter Outside air enthalpy	4.5
Outside Air S.P.	-0.50

EXHAUST AIR*

Exhaust Volume CFM	5637
Winter Exhaust air DB	22.7 (22.2)
Winter Exhaust air WB	22.2 (21.6)
Grains	15.9 (15.4)
Winter Exhaust enthalpy	8.0 (7.8)
Exhaust Air S.P.	-2.27



SUPPLY AIR*

7134	Supply Volume CFM
51.5 (51.9)	Winter Supply air DB
41.9 (43.5)	Winter Supply air WB
23.9 (23.9)	Grains
16.1 (16.1)	Winter Supply air enthalpy
-1.15	Supply Air S.P.

RETURN AIR

5169	Return Volume CFM
72.0	Winter Return air DB.
54.4	Winter Return air WB.
34.8	Grains
22.7	Winter Return air Enthalpy
-1.80	Return Air S.P.

*** Actual conditions in frost control. Data in () are without frost control**

GENERAL DATA

Wheel Size	07
Wheel Type	Enthalpy
Total Effectiveness	88.0 %

	Total	Sensible
Saving summer, TON	10.16	4.53
Saving winter, MBH	369.18	296.48

Pressure Drop Through the Wheel			Face velocity (FPM)
Supply side	in w.g.	0.65	634
Exhaust side	in w.g.	0.47	459

Wheel RPM		Drive	Frost Control
Normal	20	VFD	Required
Minimum	14		

Ratings have been tested in accordance to ASHRAE 84 and ARI 1060

HEAT WHEEL PERFORMANCE

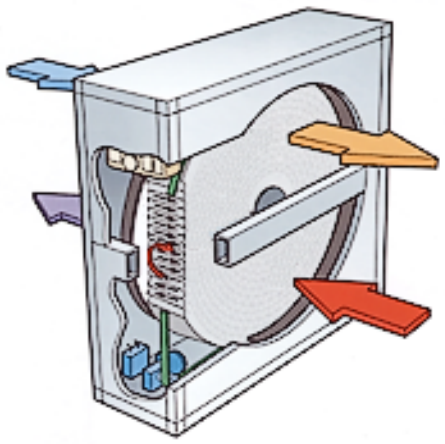
Project name
Reference
Unit tag AHU-5

Date 5/25/2022

v 1.0

SUMMER

OUTSIDE AIR			SUPPLY AIR
Outside air Volume CFM	6261	**5970**	Supply Volume CFM
Summer Outside air DB	**89.0**	82.1	Summer Supply air DB.
Summer Outside air WB	**73.0**	68.9	Summer Supply air WB.
Grains	96.9	85.0	Grains
Summer Outside air enthalpy	36.5	33.0	Summer Supply air enthalpy
Outside Air S.P.	-0.50	-1.39	Supply Air S.P.

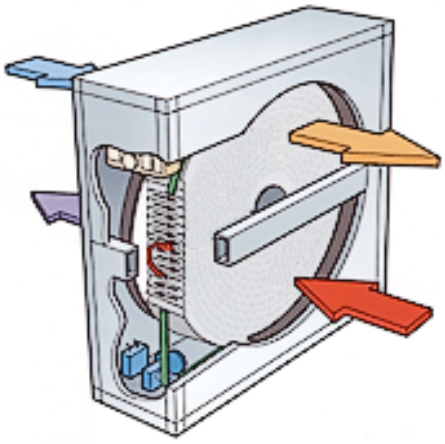


EXHAUST AIR			RETURN AIR
Exhaust Volume CFM	4736	**4445**	Return Volume CFM
Summer Exhaust air DB	**86.5**	**78.0**	Summer Return air DB.
Summer Exhaust air WB	**70.5**	**65.0**	Summer Return air WB.
Grains	86.5	71.8	Grains
Summer Exhaust enthalpy	34.3	29.9	Summer Return air Enthalpy
Exhaust Air S.P.	-2.46	-1.80	Return Air S.P.

Purge & Leak CFM **291**

WINTER

OUTSIDE AIR			SUPPLY AIR
Outside air Volume CFM	6261	**5970**	Supply Volume CFM
Winter Outside air DB	**13.0**	50.8	Winter Supply air DB
Winter Outside air WB	**12.0**	41.1	Winter Supply air WB
Grains	8.8	22.6	Grains
Winter Outside air enthalpy	4.5	15.7	Winter Supply air enthalpy
Outside Air S.P.	-0.50	-1.39	Supply Air S.P.



EXHAUST AIR			RETURN AIR
Exhaust Volume CFM	4736	**4445**	Return Volume CFM
Winter Exhaust air DB	25.6	**72.0**	Winter Return air DB.
Winter Exhaust air WB	24.8	**54.4**	Winter Return air WB.
Grains	17.9	34.8	Grains
Winter Exhaust enthalpy	8.9	22.7	Winter Return air Enthalpy
Exhaust Air S.P.	-2.46	-1.80	Return Air S.P.

GENERAL DATA

Wheel Size	04			Total	Sensible
Wheel Type	Enthalpy	Saving summer, TON		8.01	3.73
Total Effectiveness	82.0 %	Saving winter, MBH		298.74	243.65

Pressure Drop Through the Wheel			Face velocity (FPM)	Wheel RPM		Drive	Frost Control
Supply side	in w.g.	0.89	861	Normal	20	Constant	Not required
Exhaust side	in w.g.	0.66	641				

Ratings have been tested in accordance to ASHRAE 84 and ARI 1060

Multi V Outdoor Unit Equipment Schedule - Air												
Location	Mark	Model Number	Type	Quantity	Total Capacity (BTU/h)		Corrected Capacity (BTU/h)		Corrected Power Input (kW)		Fan	
					Total Cooling	Total Heating	Total Cooling	Total Heating	Cooling	Heating	Airflow (CFM)	Quantity
ACCU-1-1_AHU-5				1	119700	135000	130007	148571	8.4	13.6		
ACCU-1-2_AHU-5				1	119700	135000	130007	148571	8.4	13.6		
ACCU-1-3_AHU-5				1	119700	135000	130007	148571	8.4	13.6		
ACCU-1-1_AHU-6				1	119700	135000	127882	147974	8.2	13.8		
ACCU-1-2_AHU-6				1	119700	135000	127882	147974	8.2	13.8		
ACCU-1-3_AHU-6				1	119700	135000	127882	147974	8.2	13.8		

Multi V HR Boxes							
Location	Tag	Model Number	Quantity	Power			
				Volts	Phase	Hz	RLA
ACCU-1-1_AHU-5			1	208 / 230V	1Ph	60Hz	0.1
ACCU-1-1_AHU-5			1	208 / 230V	1Ph	60Hz	0.1
ACCU-1-2_AHU-5			1	208 / 230V	1Ph	60Hz	0.1
ACCU-1-2_AHU-5			1	208 / 230V	1Ph	60Hz	0.1
ACCU-1-3_AHU-5			1	208 / 230V	1Ph	60Hz	0.1
ACCU-1-3_AHU-5			1	208 / 230V	1Ph	60Hz	0.1
ACCU-1-1_AHU-6			1	208 / 230V	1Ph	60Hz	0.1
ACCU-1-1_AHU-6			1	208 / 230V	1Ph	60Hz	0.1
ACCU-1-2_AHU-6			1	208 / 230V	1Ph	60Hz	0.1
ACCU-1-2_AHU-6			1	208 / 230V	1Ph	60Hz	0.1
ACCU-1-3_AHU-6			1	208 / 230V	1Ph	60Hz	0.1
ACCU-1-3_AHU-6			1	208 / 230V	1Ph	60Hz	0.1

*IEER/COP is based on Non-Ducted, AHRI 1230 Standard.

Multi V Outdoor Unit Equipment Schedule - Air														
Outdoor Temperature (°F)			Efficiency		Refrigerant	Piping Connections (inch)			Power					Sound
Cooling DB	Cooling WB	Heating DB	Cooling IEER (SEER)	Heating COP (HSPF)		Liquid	LP Gas	HP Gas	Volts	Phase	Hz	MCA	MOP	Power
91.9	73.9	10.9	29.6	3.97	R410A	1/2	1+1/8	3/4	208~230V	3Ph	60Hz	30.9	40	79
91.9	73.9	10.9	29.6	3.97	R410A	1/2	1+1/8	3/4	208~230V	3Ph	60Hz	30.9	40	79
91.9	73.9	10.9	29.6	3.97	R410A	1/2	1+1/8	3/4	208~230V	3Ph	60Hz	30.9	40	79
91.9	73.9	10.9	29.6	3.97	R410A	1/2	1+1/8	3/4	208~230V	3Ph	60Hz	30.9	40	79
91.9	73.9	10.9	29.6	3.97	R410A	1/2	1+1/8	3/4	208~230V	3Ph	60Hz	30.9	40	79
91.9	73.9	10.9	29.6	3.97	R410A	1/2	1+1/8	3/4	208~230V	3Ph	60Hz	30.9	40	79

Abbreviations

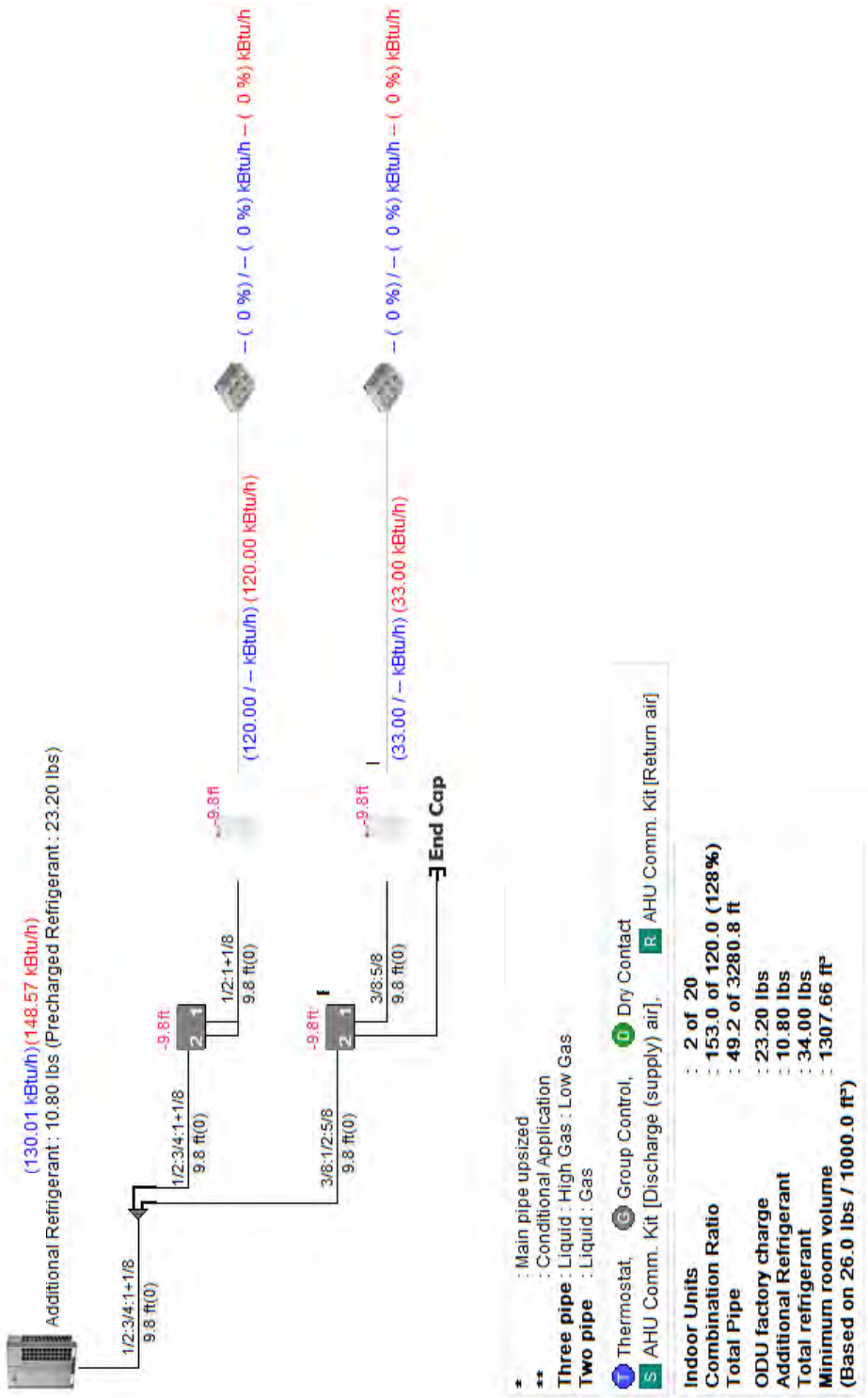
Abbreviations	Description
TC	Total Cooling Capacity
SC	Sensible Cooling Capacity
HC	Heating Capacity
Capacity Ratio(%)	Corrected Capacity / Room Load
PI	Power Input
IDU	Indoor Unit
ODU	Outdoor Unit
DBT	Dry Bulb Temperature
WBT	Wet Bulb Temperature
IAT	Indoor Air Temperature
OAT	Outdoor Air Temperature
EWT	Entering Water Temperature
LWT	Leaving Water Temperature
RH	Relative Humidity
OA	Outdoor Air
RA	Return Air
SA	Supply Air
EA	Exhaust Air
MCA	Minimum Circuit Ampere
MFA	Maximum Fuse Ampere
MOP	Maximum rating of Overcurrent Protective device
FLA	Full Load Ampere
RLA	Rated Load Ampere
EER	Energy Efficiency Ratio
COP	Coefficient of Performance
ESP	External Static Pressure
AFR	Air Flow Rate
EDT	Estimated Discharge Temperature
Qty	Quantity
Liq	Liquid
WxHxD	Width x Height x Depth
H / M / L	High / Middle / Low
CR	Combination Ratio
Freq.	Frequency
Volt	Voltage
CF(%)	Correction Factor (Total Cooling Capacity / Total Rated Cooling Capacity)

System Tree Diagram

System Name: ACCU-1-1_AHU-5

Date: 05/25/2022

System No : 1/9

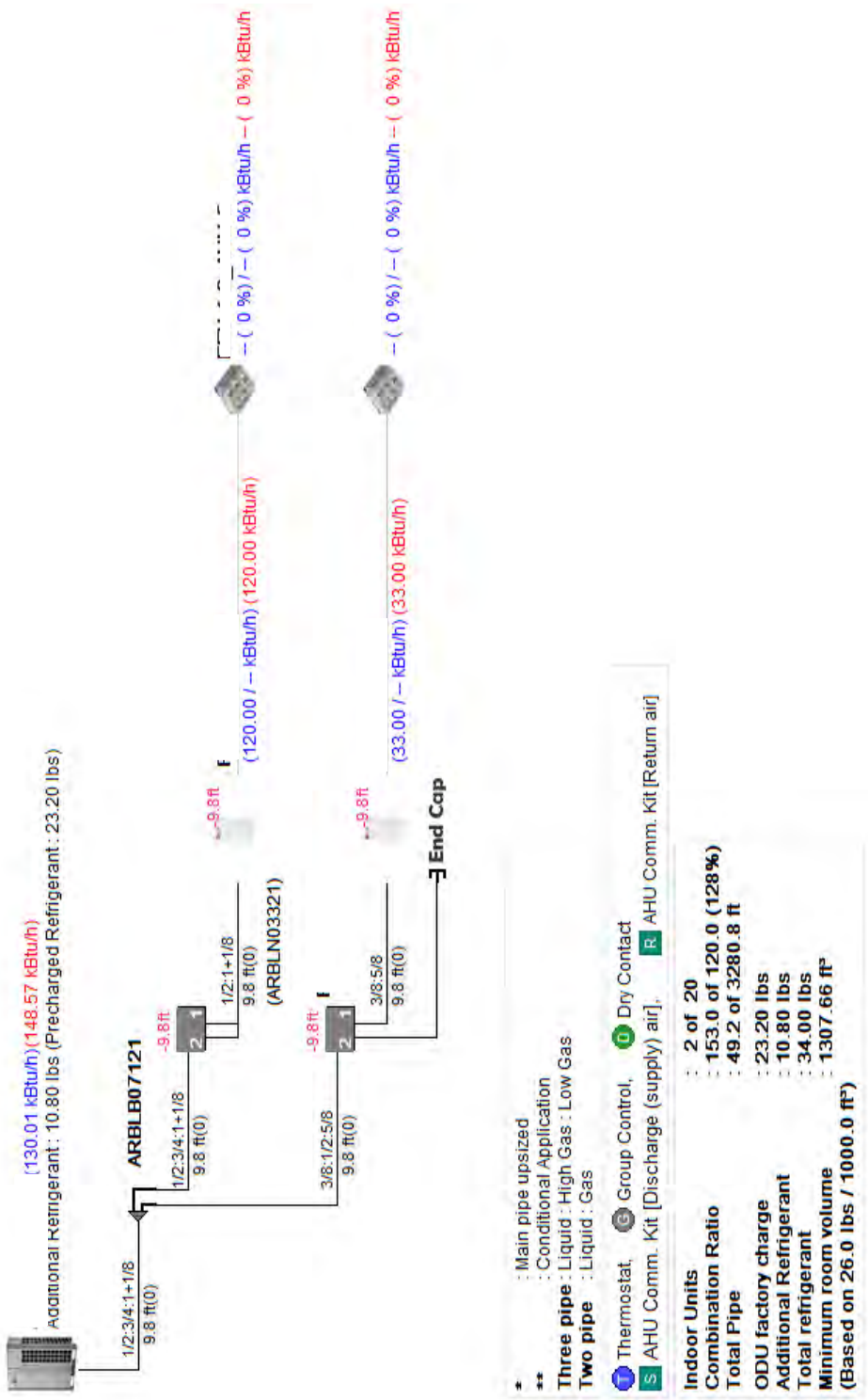


System Tree Diagram

System Name: ACCU-1-2_AHU-5

Date: 05/25/2022

System No : 2/9

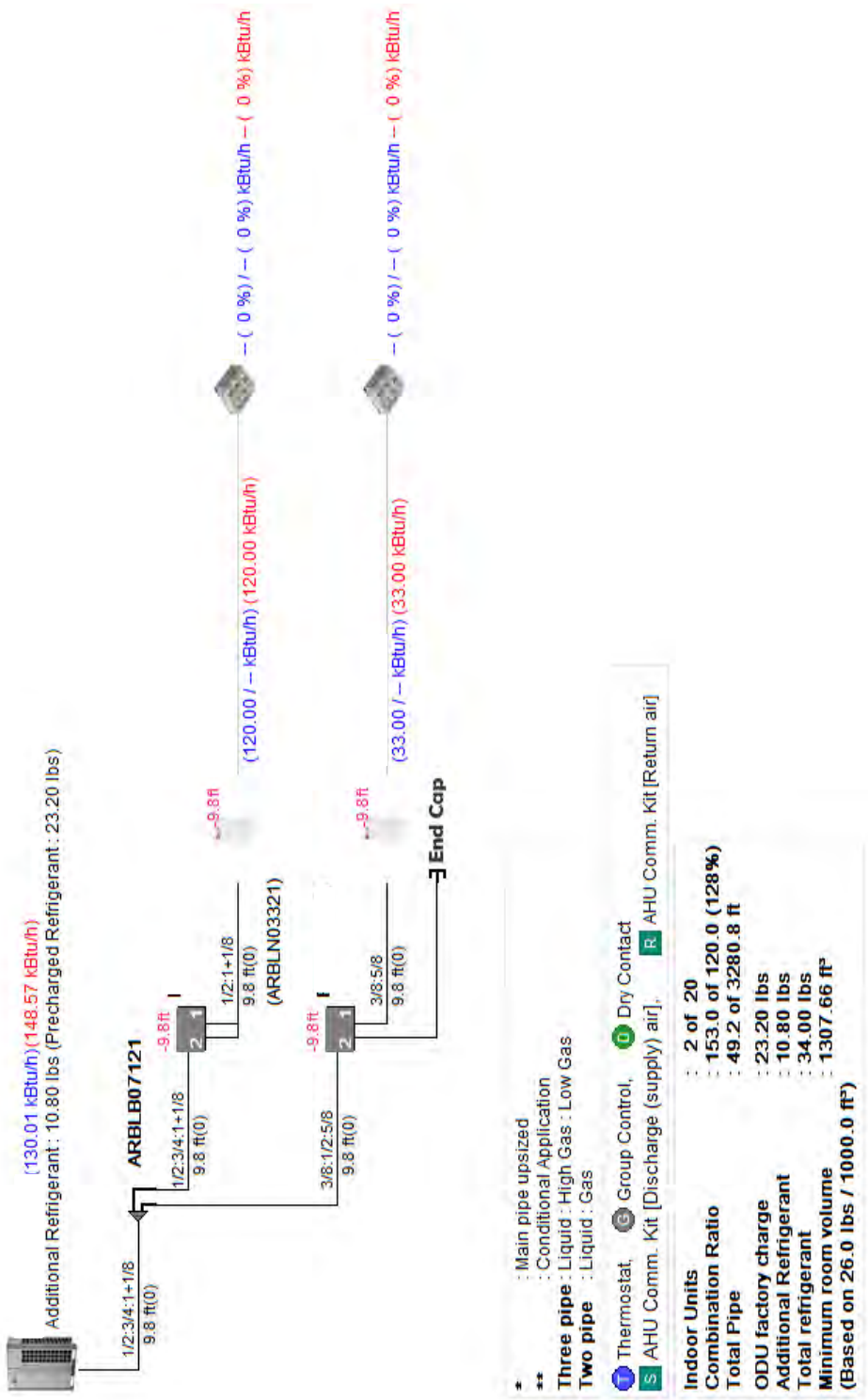


System Tree Diagram

System Name: ACCU-1-3_AHU-5

Date: 05/25/2022

System No : 3/9

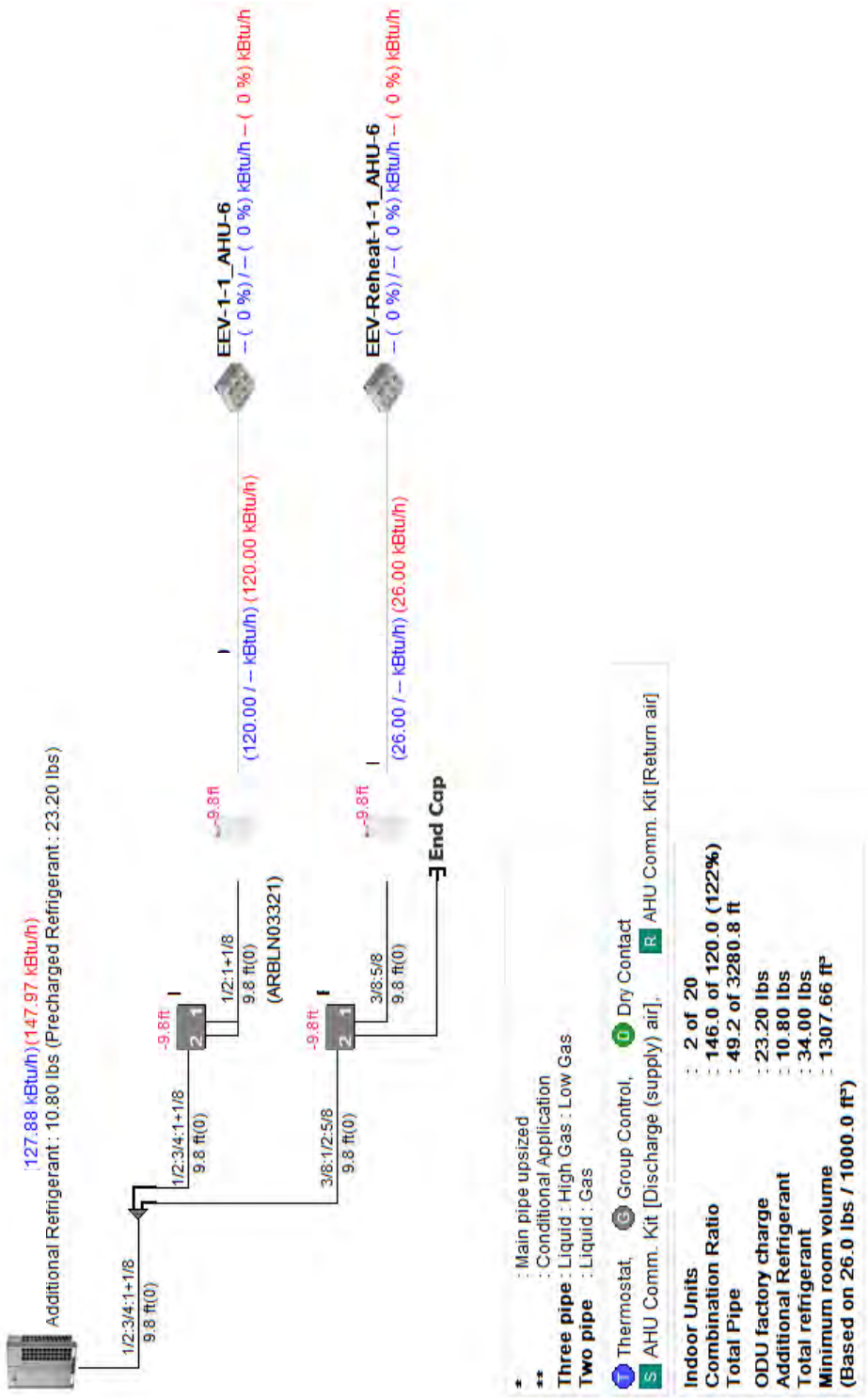


System Tree Diagram

System Name: ACCU-1-1_AHU-6

Date: 05/25/2022

System No : 4/9

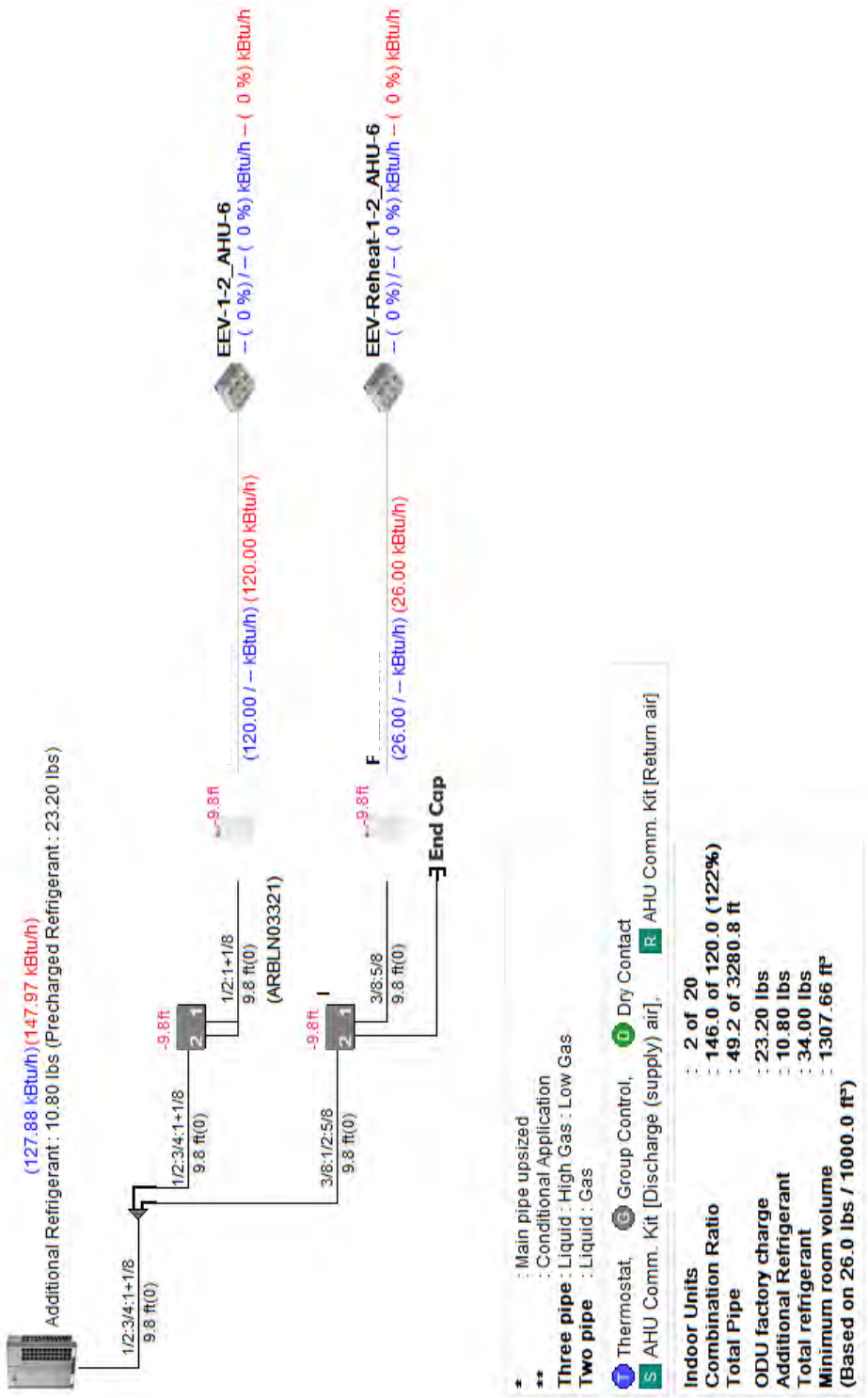


System Tree Diagram

System Name: ACCU-1-2_AHU-6

Date: 05/25/2022

System No : 5/9

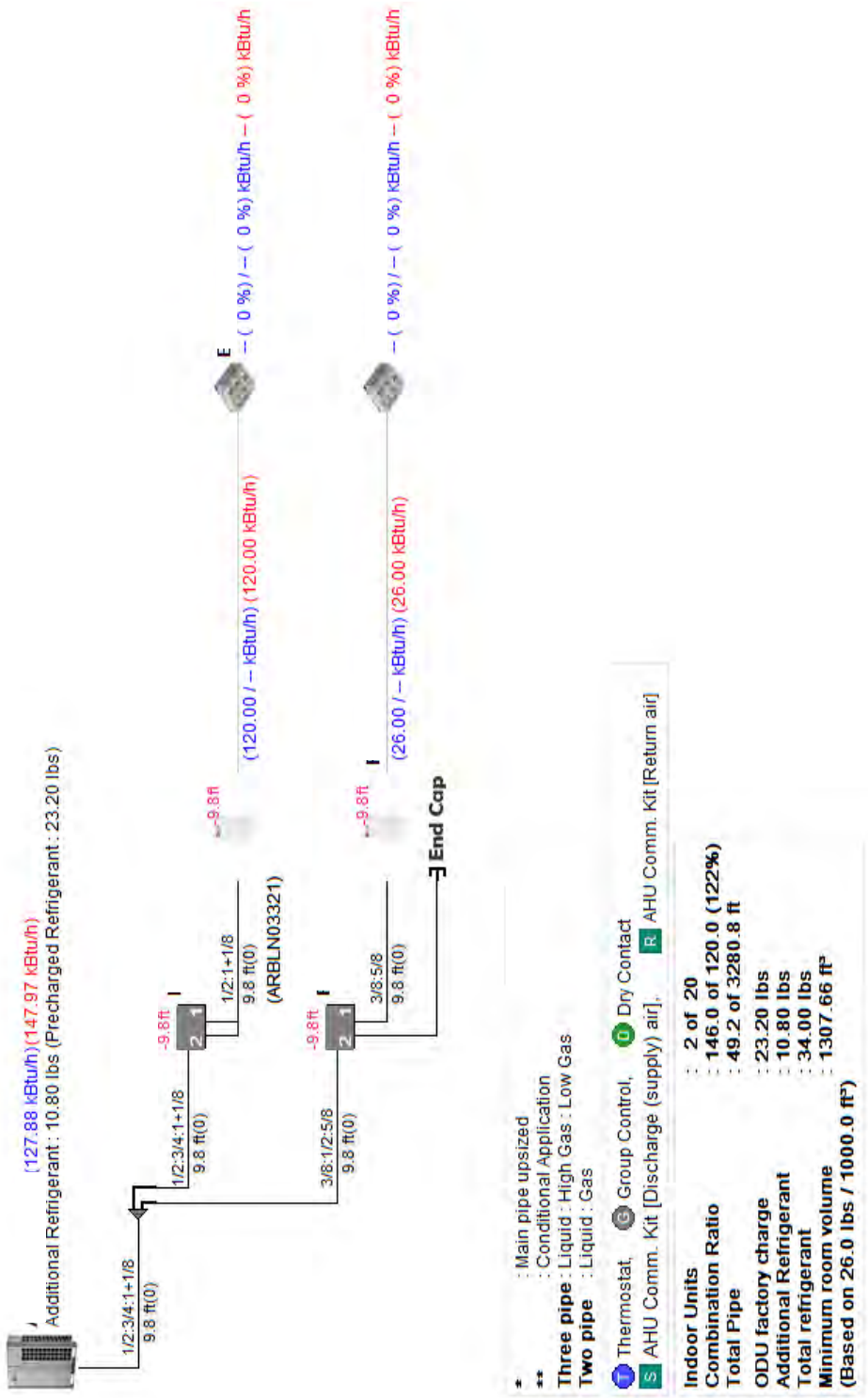


System Tree Diagram

System Name: ACCU-1-3_AHU-6

Date: 05/25/2022

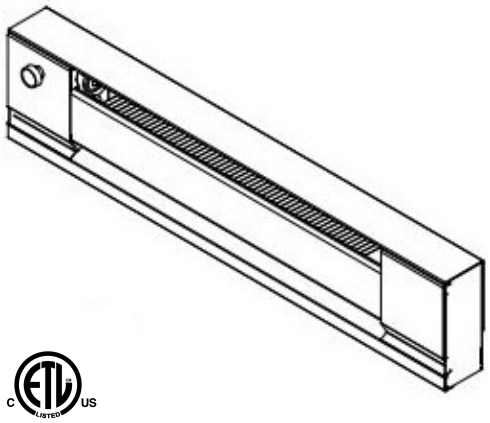
System No : 6/9



MADE IN
THE U.S.A.

SERIES
ELECTRIC BASEBOARD HEATER

SALES ORDER NO.		**QUOTE**	J8H6T
CUSTOMER		**DATE:**	02/10/2022
PROJECT			
SALES REP			
ENGINEER			
CONTRACTOR			
SUBMITTED BY			
APPROVED BY			
APPROVED BY			

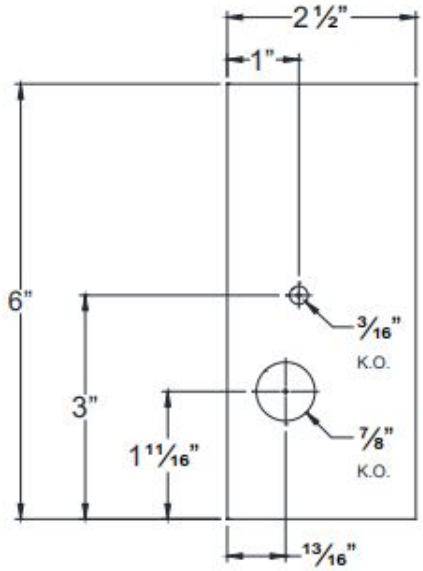


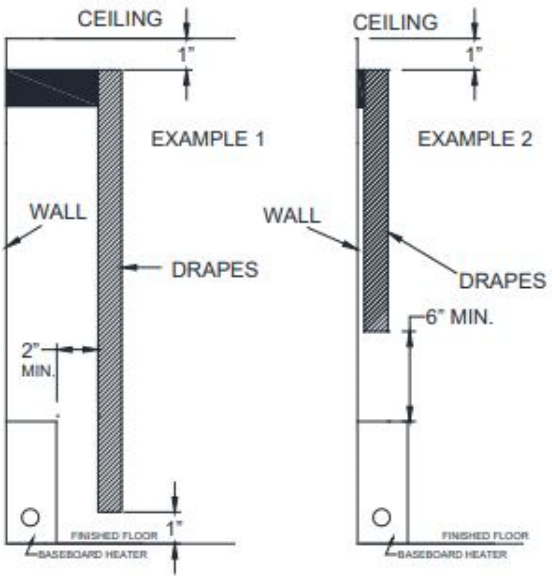
Intertek

SUBMITTAL DATA SHEET

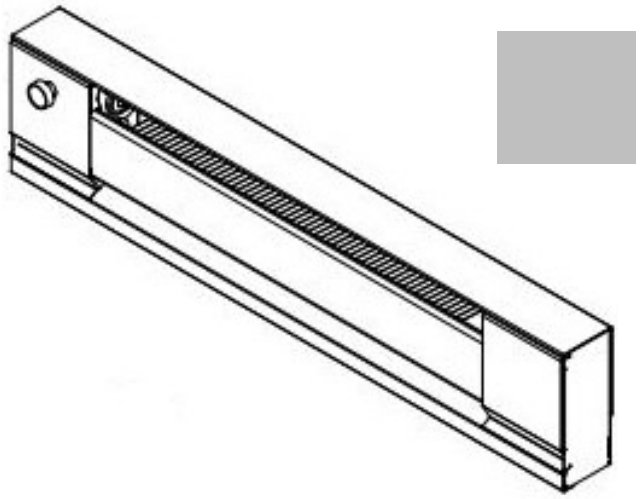
QTY	MODEL	TAG	WATTAGE	VOLTS	PHASE	AMPS	FINISH	ACCESSORIES	THERMOSTAT	OPTIONS
1		BB-5	1250	120	1	10.4	Ivory	DS	None	WWA06
1		BB-10	2500	208	1	12	Ivory	DS	None	NOVALUE

NOTES/SPECIAL INSTRUCTIONS:





- Available in white or ivory with stainless steel heating element and aluminum fins
- Painted 22 gauge steel front with 20 gauge junction boxes located on each end of the heater - juction boxes contain quick connect cable clamps and 6" ground lead wires
- Over-temperature thermal limit extends entire length of heated area
- A full length wireway provided along the back of the heater - enclosed conduit available
- Heater can be mounted to the wall by using the key hole knocouts every 4" at the back of the heater
- Optional in-built thermostats field installed in the junction box
- For high altitude applications, delete the SW in the model number and add HAW
- Height: 6" Depth: 2½"



Accessories

Field Installed Accessories				
Description	MFG MODEL NUMBER			WT. (LBS)
	Ivory	White	Bankers Bronze	
Disconneact Switch, 20 Amp, 120-277V				1
Corner Sections				
1" Joiner Kits				¼
6" Blank Relay Section (Relay Not Included)**				1 ½
Receptacle Section (Baseboard Mounted) 15 Amp 120 VAC				¼
Receptacle Section (Mounted in 6" Blank) 15 Amp 120 VAC				2
Transfer Switch (Mounted in 6" Blank) 16 Amp 120 VAC				
Transfer Switch (Mounted in 6" Blank) 16 Amp 240 VAC				

**Not for use with 24A06-G relay

BLANK SECTIONS				
Length	MFG MODEL NUMBER			WT. (LBS)
	Ivory	White	Bankers Bronze	
24"				5
28"				5 ½
36"				6
40"				7
48"				8
60"				10
72"				12
84"				15
96"				17
120"				20

OPTIONAL WIREWAY COVERS			
MFG MODEL NUMBER	Length	Cover Length	WT. (LBS)
	24"	20"	1
	28"	24"	1.5
	36"	32"	2
	40"	36"	2.5
	48"	44"	3
	60"	56"	4
	72"	68"	5
	84"	80"	6
	96"	92"	7
	120"	116"	8

IN-BUILT THERMOSTAT KITS		
MFG MODEL NUMBER	DESCRIPTION	WT. (LBS)
	SPST-In-Built 22A @ 120-240V 18A @ 277V (0°-110°F)	½
	DPST-In-Built 22A @ 120-240V 18A @ 277V (0°-110°F)	½

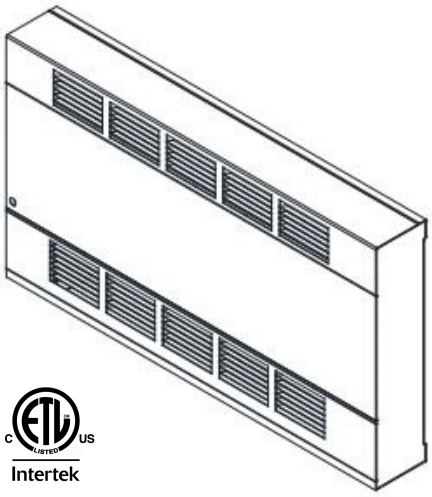
Standard Models

MFG MODEL NUMBER		WATTS	BTUs	VOLTS	AMPS	HEATER LENGTH (IN)	WT. (LBS)
IVORY	WHITE						
		375	1275	120	3.1	24	5
		375	1275	208	1.8		
		375 / 281	1275 / 955	240 / 208	1.6/1.4		
		375 / 281	1275 / 955	277 / 240	1.6/1.2		
		500	1706	120	4.2	28	6
		500	1706	208	2.4		
		500 / 375	1706 / 1275	240 / 208	2.1/1.8		
		500 / 375	1706 / 1275	277 / 240	1.8/1.6		
		600	2040	120	5	36	7
		600	2040	208	2.9		
		600 / 450	2040 / 1530	240 / 208	2.5/2.2		
		600 / 450	2040 / 1530	277 / 240	2.2/1.9		
		750	2550	120	6.3	40	8
		750	2550	208	3.6		
		750 / 563	2550 / 1914	240 / 208	3.1/2.7		
		750 / 563	2550 / 1914	277 / 240	2.7.2.6		
		1000	3413	120	8.3	48	10
		1000	3413	208	4.8		
		1000 / 750	3413 / 2550	240 / 208	4.2/3.6		
		1000 / 750	3413 / 2550	277 / 240	3.6/3.1		
		750	2550	277	3.4		
		1250	4250	120	10.4	60	12
		1250	4250	208	6		
		1250 / 938	4250 / 3189	240 / 208	5.2/4.5		
		1250 / 938	4250 / 3189	277 / 240	4.5/3.9		
		938	3189	277	3.4		
		1500	5100	120	12.5	72	14
		1500	5100	208	7.2		
		1500 / 1125	5100 / 3825	240 / 208	6.3/4.7		
		1500 / 1125	5100 / 3825	277 / 240	5.4/4.7		
		1125	3825	277	4.1		
		1750	5950	208	8.4	84	16
		1750 / 1313	5950 / 4464	240 / 208	7.3/6.3		
		1750 / 1313	5950 / 4464	277 / 240	6.3/5.5		
		1313	4464	277	4.7		
		2000	6826	208	9.6	96	18
		2000 / 1500	6826 / 5100	240 / 208	8.3/7.2		
		2000 / 1500	6826 / 5100	277 / 240	7.2/6.3		
		1500	5100	277	5.4		
		2500	8532	208	12	120	22
		2500 / 1875	8532 / 6375	240 / 208	10.4/9.0		
		2500 / 1875	8532 / 6375	277 / 240	9.0/7.8		
		1875	6375	277	6.8		

MADE IN
THE U.S.A.

RECESSED COMMERCIAL WALL CONVECTOR

SALES ORDER NO.		**QUOTE**	
CUSTOMER		**DATE:**	02/10/2022
PROJECT			
SALES REP			
ENGINEER			
CONTRACTOR			
SUBMITTED BY			
APPROVED BY			
APPROVED BY			

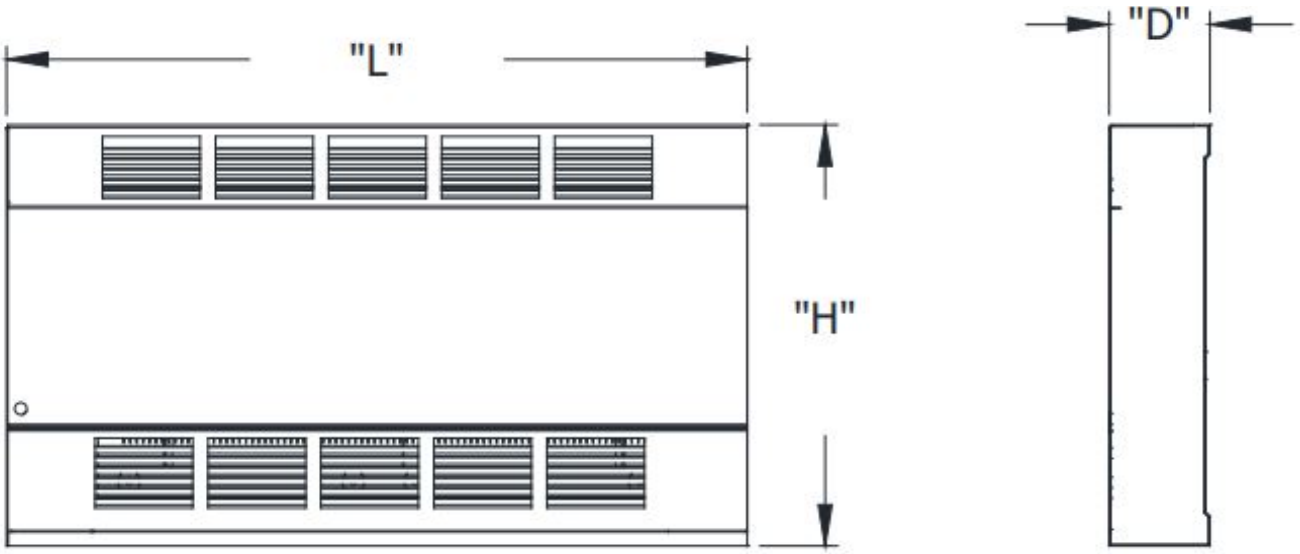


Intertek

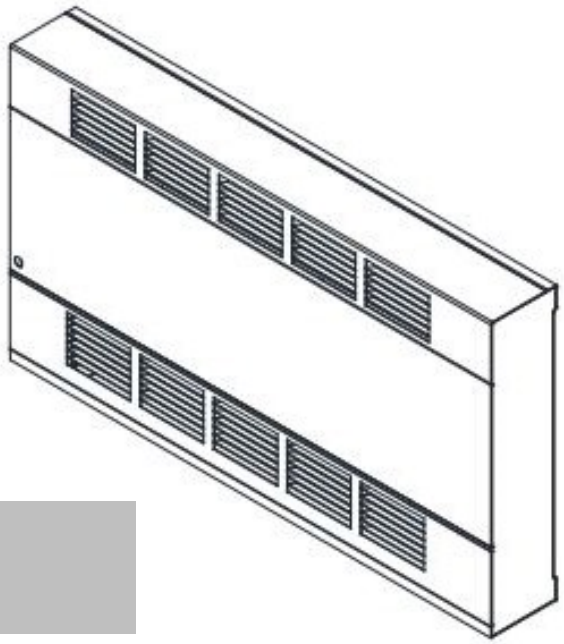
SUBMITTAL DATA SHEET

QTY	MODEL	TAG	WATTAGE	VOLTS	PH	AMPS	CONTROL	THERMOSTAT	OPTIONS
1		CONV-2.5 KW	2500	208	1	12.02	R9	None	
1		CONV-1.25 KV	1250	208	1	6.01	R9	None	

NOTES/SPECIAL INSTRUCTIONS:



- Front In / Front Out air pattern
- 16 Gauge steel housing
- Powder coated with textured beige finish
- Tubular pre-wired wireway with 40 Amp capacity
- Connection boxes for right or left hand wiring with combinations ½" - ¾" knockouts at back and bottom
- Steel Heating element with steel fins
- Linear limit thermal overload with automatic reset
- Recess trim frame included
- Custom colors available, contact factory
- Not for residential applications



HOW TO DESIGNATE A MODEL:

M41	25	F	48	1000	T
Series Number	Cabinet Size 45=20"H x 5"D 25=11"H x 4"D	Voltage/Phase G=277V, 1 Phase J=208V, 3 Phase K=240V, 3 Phase F=208V, 1 Phase H=240V, 1 Phase	Unit Length (Inches) 24, 36, 48, 60, or 72	Total Wattage	Control Option Blank=None R, R2, or R9=Relay T or T2=Thermostat (See control option chart)

Product Specifications

CABINET:
4100 series casing shall be of square design with front inlet and outlet grills suitable for recess installation. The cabinet is fabricated from 16 gauge cold rolled steel and finished with powder coated baked enamel. Junction boxes are available for left or right wiring and connected by pre-wired 40 Amp capacity wireway.

ELEMENT:
All steel high mass element construction with Nickel-Chromium resistance wire embedded in compacted efficient dielectric to ensure proper heat transfer. Aluminum fins mechanically bonded to steel tube allows for increased surface area and even heat transfer.

LIMIT CONTROLS:
Automatic reset hydraulic thermal overload covers full length of heating element and shuts down heater when safe operating temperatures are exceeded.

WIRING:
Wiring connections shall be made in left end of cabinet enclosure. Wiring must enter into control enclosure behind perforated steel grill.

CONTROLS:
All controls are accessible only through control enclosure door. Security type fasteners restrict access to controls. Built in thermostat with manual adjustment are located in control enclosure.

Dimensions - Cabinet Sizes 4" Deep x 11" High

LENGTH (IN.)	WT. (LBS)	WATTS per FOOT AVAILABLE	VOLTS AVAILABLE	PH
24	20	187 250 333	208 240 277	1
36	33			
48	39			
60	49			
72	56			

Dimensions - Cabinet Sizes 5" Deep x 20" High

LENGTH (IN.)	WT. (LBS)	WATTS per FOOT AVAILABLE	VOLTS AVAILABLE	PH
24	45	187 250 333	208 240 277	1
36	53			
48	63			
60	77			
72	92			
24	47	500 666	208 240 277	1
36	57			
48	67			
60	82			
72	100			

LENGTH (IN.)	WT. (LBS)	WATTS per FOOT AVAILABLE	VOLTS AVAILABLE	PH
24	49	750	208 240 277	1
36	60			
48	71			
60	87			
72	106			
24	49	500 666 750	208 240	3
36	60			
48	71			
60	87			
72	106			

In-Built Control Options for Single Phase Units

SUFFIX	DESCRIPTION
T	In-Built Tamper Proof, Single Pole, Hydraulic Thermostat - 40°- 100°F temp. range, 25 Amps
T2	In-Built Tamper Proof, Double Pole, Hydraulic Thermostat - 40°- 100°F temp. range, 25 Amps
R	DPST Relay, 30 Amps, up to 277V, 120V coil
R2	SPST Relay, 18 Amps @ 277V (max), 24V coil
R9	24V Transformer and SPST Relay, 22 Amps @24V, 18 Amps @ 277V (max) 24V coil

12" Control Section

UNIT LENGTH	MFG MODEL	MFG MODEL
12"		

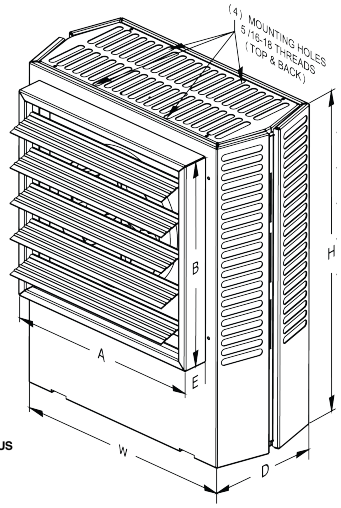
Solid Back Panel

UNIT LENGTH	MFG MODEL	MFG MODEL
24"		
36"		
48"		
72"		

MADE IN
THE U.S.A.

HORIZONTAL/VERTICAL
UNIT HEATER

SALES ORDER NO.		**QUOTE**	J8H6T
CUSTOMER		**DATE:**	02/10/2022
PROJECT			
SALES REP			
ENGINEER			
CONTRACTOR			
SUBMITTED BY			
APPROVED BY			
APPROVED BY			



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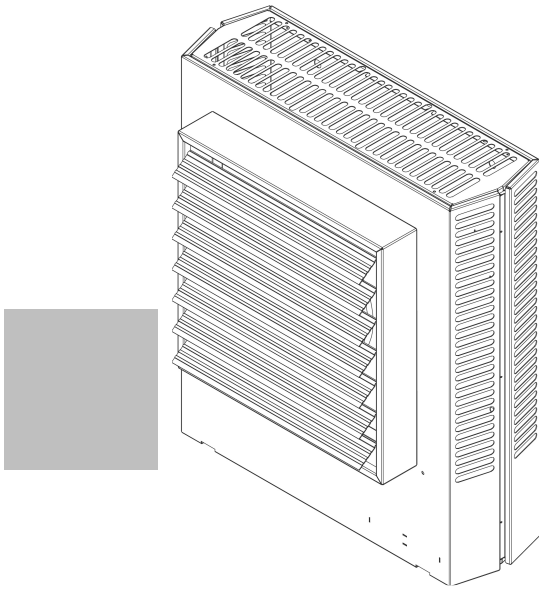
SUBMITTAL DATA SHEET

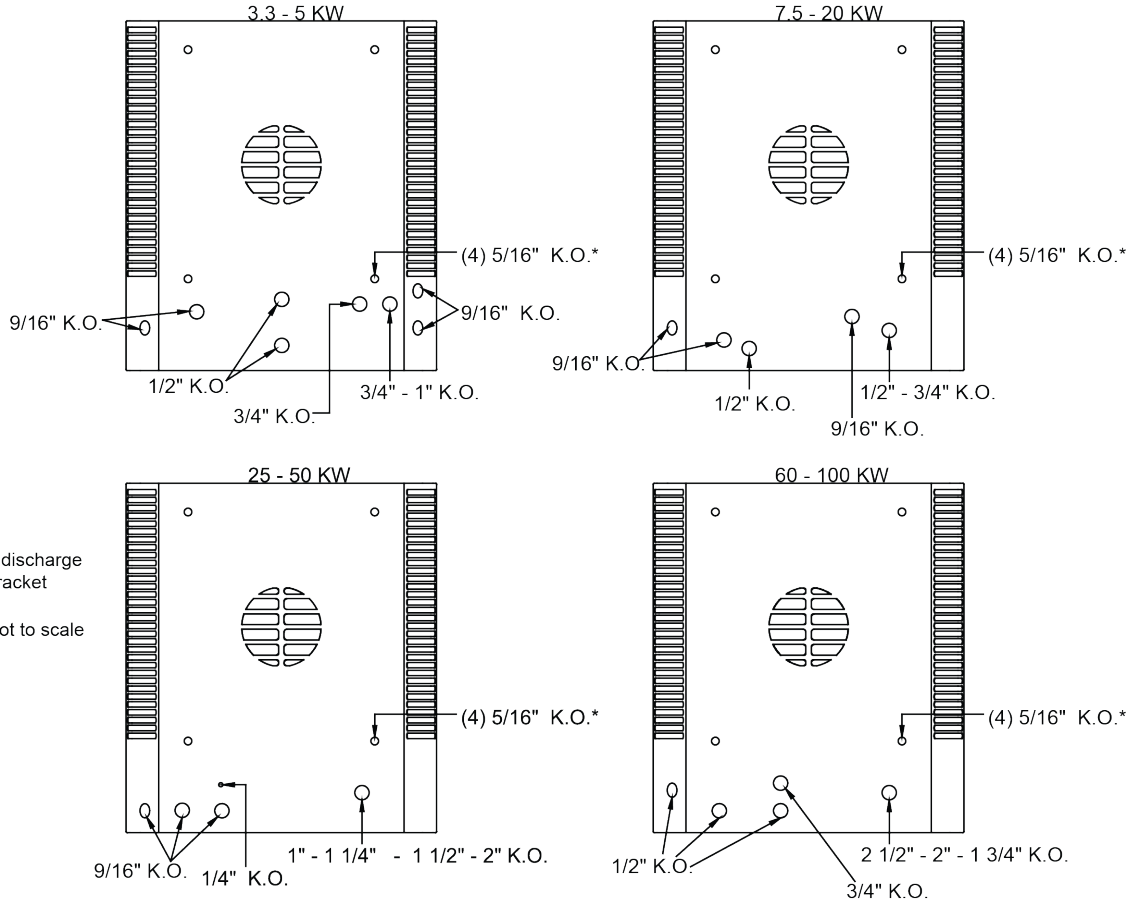
QTY	MODEL	TAG	WATTAGE	VOLTS	PHASE	AMPS	DISCONNECT	THERMOSTAT	BRACKET	OPTIONS
1		EUH	5.0 KW	208	1 / 3	24.1 / 13.9	DCS403	None	A5105	OFG5101
1		EUH-7.5	7.5 KW	208	1 / 3	36.1 / 20.8	DCS603	None	A5120	OFG5102

Product Dimensions

UNIT SIZE (KW)	DIMENSION (INCHES)						WEIGHT (LBS)
	H	W	D	E	A	B	
3.3 & 5	17 ¾	14 15/32	6 ½	1 ⅝	11 ½	11 ½	25
7.5 & 10	24 5/16	21 ½	6 ½	2 7/32	15 ¼	15 ¼	54
15 & 20	28 11/16	21 ½	6 ½	2 7/32	15 ¼	15 ¼	65
25 THRU 50	34	29 ¼	10 1/16	2 ⅝	20 ¼	20 ¼	120
60 & 70	35 ½	30 ½	14 ½	5	23 ½	23 ½	141
80 - 90 - 100	39 ½	37 ⅝	18 ½	5	27 ½	27 ½	202

- Heavy 18 gauge steel construction
- Powder coated paint finish
- Copper clad steel sheath element with brazed fins and Nichrome elment wire
- Totally enclosed fan motors
- Louvers are individually adjustable for directional air flow
- Optional remote and unit mounted controls include thermostats, disconnects, and fan swithces
- Optional accessories include mounting brackets, louvers, fan guards, and dust shields





* For vertical discharge mounting bracket

Diagrams not to scale

HOW TO DETERMINE A MODEL:

HF	2	B	51	10	C	A	1

Element Volts	Phase	Motor Voltage	Model Series	Element KW	Control System	Transformer	Control Volts
F = 208	1 = 1-Phase	F = 208	51		Blank = None	Blank = None	1 = 24
H = 240	2 = 1 or 3-Ph.	H = 240			C = Contactor	A = Included	2 = 120
HF = 240/208	3 = 3-Phase	B = 240 / 208					(with CA option)
G = 277		G = 277					
P = 480		P = 480					

* 600 Volt units 5KW - 50KW available on special order, consult factory for pricing & availability

Product Specifications

CONSTRUCTION:
Heavy 18 gauge welded steel cabinet with powder coated finish and control compartmen thousing a master terminal board with a hinged and latched access door, simplifying wiring, installation & maintenance.

HEATING ELEMENT:
Copper clad steel sheath element with continuously brazed steel fins formed to allow side draw through air flow.

OVERHEAT PROTECTION:
All units come equipped with automatic reset type limit controls to de-energize the heater should an over-temperature situation occur.

FAN and MOTOR:
Totally enclosed, 1-speed, 1-phase, permanently lubricated, thermally protected motors with unit bearings on 3 KW - 20 KW models. Totally enclosed, 2-speed, 1-phase, permanently lubricated, thermally protected motors with sleeve bearings on 25 KW - 50 KW models. All motors mounted with rubber insulators to minimize vibration & noise. Fan over-ride purges unit of residual heat at shutdown.

LOUVER ASSEMBLY:
Louvers are individually adjustable for directional control of air flow up to 15° from straight horizontal. Optional diffusers available for down flow (vertical discharge) applications

TEMPERATURE CONTROLS:
Optional low voltage and line voltage thermostats available with an adjustable temperature range of 40°F to 110° F. Units with model numbers ending in CA1 are factory wired for low voltage controls. 25 KW through 50 KW units are designed for two stage heating operation.

INSTALLATION:
Unit Heaters can be mounted for horizontal or vertical discharge. Applications up to 6000 Ft. See UH Series above 6000 Ft

FEATURES:
- Made in U.S.A.

FIELD INSTALLED OPTIONS:
- In-unit or wall mounted temperature control thermostats low or line voltage.
- Summer fan switch to operate the fan only.
- Power disconnect switch.
- Heat stratification thermostat.

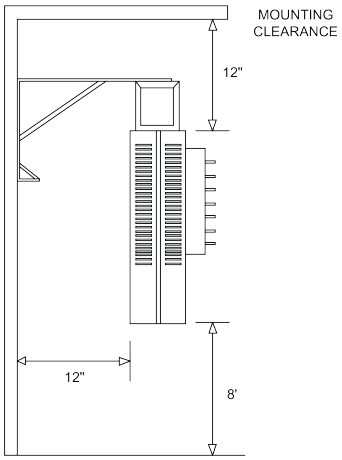


FIG. 1
HORIZONTAL DISCHARGE

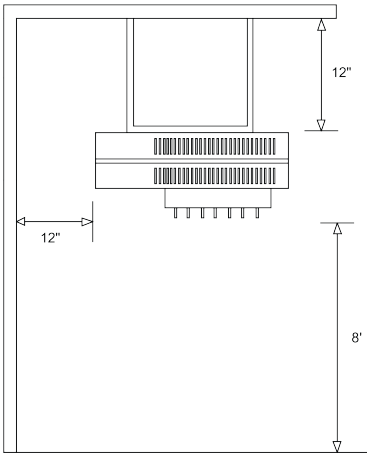
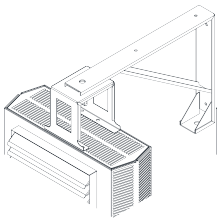
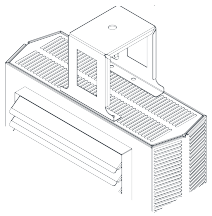


FIG. 2
VERTICAL DISCHARGE

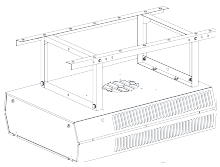
Accessories & Options



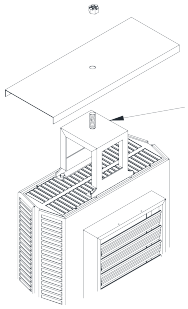
BRACKET			
WALL BRACKET & HEATER BRACKET	HEATER KW	BRACKET	WT (LBS)
	3.3 - 5	A5105	9
	7.5 - 20	A5120	13
	25 - 50	A5150	16
	60 - 70	A5175	25
	80 - 100	A51100	36



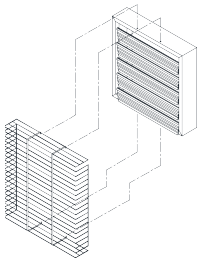
BRACKET			
HEATER BRACKET	HEATER KW	BRACKET	WT (LBS)
	3.3 - 5	B5105	2
	25 - 50	B5150	3
	60 - 70	B5170	5
	80 - 100	B51100	12



BRACKET			
VERTICAL MOUNT BRACKET	HEATER KW	BRACKET	WT (LBS)
	3.3 - 5	V5105	9
	7.5 - 20	V5120	13
	25 - 50	V5150	16
	60 - 70	V5175	19
	80 - 100	V51100	22



DUST SHIELD			
DUST SHIELD	HEATER KW	BRACKET	WT (LBS)
	3.3 - 5	DS5105	3
	7.5 - 20	DS5120	4
	25 - 50	DS5150	5
	60 - 70	DS5175	10
	80 - 100	DS51100	17



FAN GUARD			
FAN GUARD	HEATER KW	BRACKET	WT (LBS)
	3.3 - 5	OFG5101	1
	7.5 - 20	OFG5102	1
	25 - 50	OFG5103	2
	60 - 70	OFG5175	4
	80 - 100	OFG51100	5

DISCONNECT SWITCH	DISCONNECT SWITCH MUST BE DERATED FOR USE AT MAX 80% OF TOTAL HEATER RATED AMPERAGE

THERMOSTATS		(BUILT IN) FACTORY SUPPLIED AND FIELD INSTALLED (EXCEPT SD MODEL THERMOSTAT)
T5100	40°-100°F	SINGLE POLE SINGLE STAGE FIELD MOUNTED IN CONTROL SECTION KNOCKOUT PROVIDED
T5102	60°-120°F	DPST FIELD INSTALLED - USED WITH 3.3 AND 5 KW UNITS LINE VOLTAGE WITH THREE PHASE POWER
T5122	45°-90°F	LOW VOLTAGE TWO STAGE FIELD iNSTALLED FOR USE WITH UNITS 25 TO 50 KW
RK120EAA	50°-90°F	WALL MOUNTED SINGLE STAGE LOW VOLTAGE
TW123	40°-90°F	WALL MOUNTED TWO STAGE LOW VOLTAGE (25 TO 50 KW UNITS)
ET9SS	50°-90°F	WALL MOUNTED LINE VOLTAGE SINGLE POLL 22 AMP 120-277 VOLT
TW1512	50°-90°F	DPST WALL MOUNTED LINE VOLTAGE 25 AMP 120-277 VOLT (303-5 KW ON THREE PHASE POWER)
SD	50°-90°F	SETACK SONTROL WITH OCCUPANCY SENSOR AND DIGITAL DISPLAY

STEP CONTROLLER	60 TO 100 KW UNITS ONLY
SEQUENCES ON THE STAGING IN THE 60 TO 100 KW HEATERS USING FIELD SUPPLIED SIGNAL OR C1025 WALL THERMOSTAT	
C1025 THERMOSTAT	WALL THERMOSTAT WITH 0-10 VDC PULSING SIGNAL FOR STEP CONTROLLER

FAN CONTROL	(BUILT IN) FACTORY INSTALLED OR FIELD INSTALLED
FS	SUMMER FAN SWITCH FACTORY INSTALLED IN HEATER
TFS	SUMMER FAN SWITCH REMOTE WALL MOUNTED
TC5102 OR TC5103	STRATIFICATION THERMOSTAT FACTORY INSTALLED IN HEATER
TC1602	STRATIFICATION THERMOSTAT REMOTE WALL MOUNTED

Standard Models

MFG CATALOG NUMBER	MFG MODEL NUMBER	KW	BTUs/H	VOLTS	PH	AMPS	CONTROL VOLTAGE	TEMP RISE	AIR THROW	CFM	RECOMMENDED MOUNTING HT.		WT. (LBS)
											Horizontal	Vertical	
06450802		3.3	11.2	208	1	15.9 / 9.17	208	26° F	12'	400	9'	9'	25
06451002		3.3/2.5	11.2 / 8.5	240/208	1	13.7 / 11.9	240 / 208						
06456802		3.3	11.2	208	1/3	15.9	9.17						
06457002		3.3/2.5	11.2 / 8.5	240/208	1/3	13.7 / 11.9	240 / 208						
					3	7.9/6.9							
06457202		3.3	11.2	277	1	11.9	277						
06451202				480	3	4.0	24						
06455402		5.0	17.1	208	1	24.1	208	40° F	12'	400	9'	9'	25
06455602		5.0/3.7	17.1 / 12.8	240/208	1	20.9 / 18.1	240 / 208						
06451402		5.0	17.1	208	1/3	24.1	208						
					3	13.9							
06451602		5.0	17.1	240	1/3	20.8 / 18.1	240						27
		3.7	12.8	208	1/3	17.1 / 10.4	208						
06458402		5.0	17.1	277	1	18.1	277						
06451802		5.0	17.1	480	3	6.1	24						
06452002		7.5	25.6	208	1/3	36.1 / 20.8	24	34° F	22'	700	10'	12'	54
06452202		7.5	25.6	240	1/3	27.1 / 31.3							
		5.6	19.2	208	1/3	31.3 / 27.1							
06459202		7.5	25.6	277	1	27.1							
06452402		7.5	25.6	480	3	9.1							
06452602		9.9	33.8	208	1/3	47.8 / 27.4		45° F	22'	700	10'	14'	55
06452802	*	10.0	34.1	240	1/3	41.2 / 24.0							
		7.5	25.6	208	1/3	36.1 / 20.8							
06456402		10.0	34.1	277	1	36.1							
06453002		10.0	34.1	480	3	12.4							
06453202		15.0	51.2	208	3	41.7		43° F	32'	1100	11'	20'	64
06453402	*	15.0/11	51.2 / 38.4	240/208	3	36.1 / 31.3							
06453602		15.0	51.2	480	3	18.1							
06453802	*	19.7/14	67.2 / 50.5	240/208	3	47.8 / 41.1		57° F	32'	1100	12'	18'	65
06454002		20.0	68.3	480	3	4124.1.7							
06458802		25.0	85.3	208	3	69.5		40/44° F	45'	2000/180(	12'	22'	120
06459402	*	25.0/18	85.3 / 64.0	240/208	3	60.2 / 52.1							
06459802		25.0	85.3	480	3	30.1							
06454202		30.0	102.4	208	3	83.4		47/53° F	40'	2000/180(	12'	20'	120
06454402	*	30.0/22	102.4 / 76.8	240/208	3	72.3 / 62.5							
06454602		30.0	102.4	480	3	36.2							
06440402		40.0	136.5	208	3	111.2		40/45° F	55'	3100/280(	15'	24'	120
06440602		40.0/30	136.5 / 102.4	240/208	3	96.4 / 83.4							
06440802		39.0	133.1	480	3	47.0							
06454802		49.6	169.3	208	3	139.0		51/56° F	50'	3100/280(	15'	22'	120
06455002	*	50.0/37	170.6 / 128.(	240/208	3	120.5 / 104.3							
06455202		50.0	170.6	480	3	60.3							

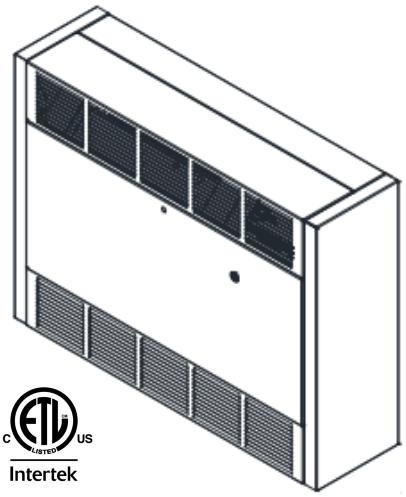
Recommended Control Options, Control Accessory Options, & Control Accessories

MFG MODEL NUMBER	DISCONNECT SWITCH		THERMOSTAT		SUMMER FAN SWITCH		THERMOSTAT & SUMMER FAN SWITCH WALL MOUNTED	STRATIFICATION THERMOSTAT	
	1 Ø	3 Ø	IN-BUILT	WALL MOUNTED	IN-BUILT	WALL MOUNTED		IN-BUILT	WALL MOUNTED
	DCS 202	NA	T5100	ET9STS	FS5101	FSW51111	NA	TC5103	TC1602
	NA	DCS 403	T5102	TW 1512					
	DCS 202	NA	T5100	ET5SS					
	NA	DCS 403	T5102	TW 1512					
	DCS 202	NA	T5100	ET5SS				NA	
	NA	DCS 403		RK120EAA	FS5102	FSW5112	TFS5101	TC5102	NA
	DCS 403	NA		S2025	FS5101	FSW5111	NA	TC5103	TC1602
				ET5SS					
				S2025					
	NA	DCS 403	T5102	TW 1512					
	DCS 403	NA	T5100	ET5SS					
	NA	DCS 403	T5102	TW 1512					
	DCS 403	NA	T5100	S2025				NA	
	NA	DCS 403		RK120EAA	FS5102	FSW5112	TFS5101	TC5102	NA
	DCS 403	NA			FS5101	FSW5111		TC5103	TC1602
	NA	DCS 403							
	DCS 403	NA							
	NA	DCS 403							
	DCS 403	NA						NA	
	NA	DCS 403			FS5102	FSW5112		TC5102	NA
	DCS 603	NA			FS5101	FSW5111		TC5103	TC1602
	NA	DCS 403							
	DCS 603	NA							
	NA	DCS 403							
	DCS 603	NA						NA	
	NA	DCS 403			FS5102	FSW5112		TC5103	NA
		DCS 603			FS5101	FSW5111			TC1602
		DCS 603							
		DCS 403			FS5102	FSW5112			NA
		DCS 603			FS5101	FSW5111			TC1602
		DCS 403			FS5102	FSW5112			NA
		DCS 1003	T5100	TW123	FS5101	FSW5111	TFS5101		TC1602
		DCS 403			FS5102	FSW5112			NA
		NA			FS5101	FSW5111			TC1602
		DCS 1003							
		DCS 603			FS5102	FSW5112			NA
		NA			FS5101	FSW5111			TC1602
		DCS 603			FS5102	FSW5112			NA
		NA			FS5101	FSW5111			TC1602
		DCS 1003			FS5102	FSW5112			NA

MADE IN
THE U.S.A.

SERIES
FAN FORCED WALL HEATER

SALES ORDER NO.		**QUOTE**	J8H6T
CUSTOMER		**DATE:**	02/10/2022
PROJECT	Hillside Ave School		
SALES REP			
ENGINEER	Lilker		
CONTRACTOR	Lilker		
SUBMITTED BY	Srsmiddleton		
APPROVED BY			
APPROVED BY			

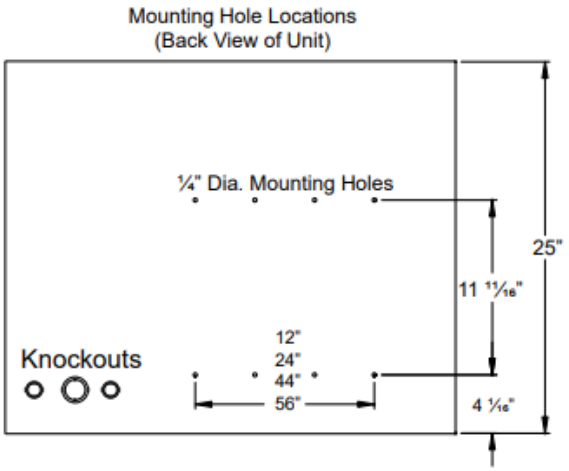


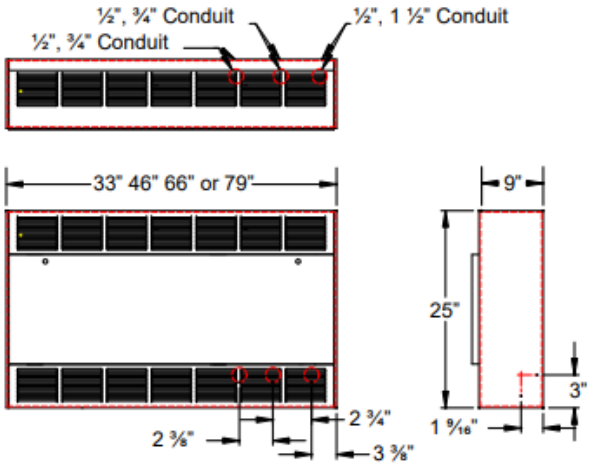
Intertek

SUBMITTAL DATA SHEET

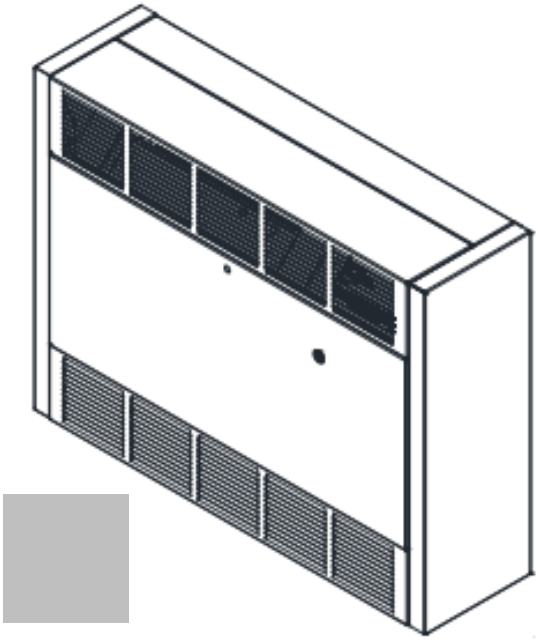
QTY	MODEL	TAG	WATTAGE	VOLTS	PH	AMPS	DISCONNECT	THERMOSTAT	OPTIONS
1		CUH-5KW	5 KW	208V	1	25	Disconnect Switch		KB33
1		CUH-3KW	3 KW	208V	1	15.4	Disconnect Switch		KB33
1		CUH-2KW	2 KW	208V	1	10.6	Disconnect Switch		KB33

NOTES/SPECIAL INSTRUCTIONS:





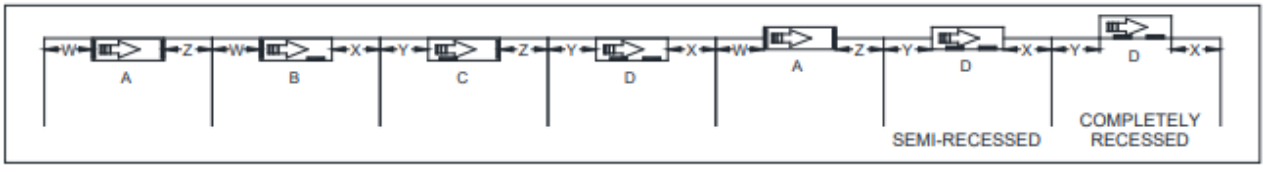
- Heavy 16 gague steel construction
- Fin-Tubular heating elements
- Single or two stage operation
- Automatic and Manual overheat protection
- Centrifugal fan blower with two speed motors
- Multiple intake and exhaust configurations
- Recessed or surface mount in wall or ceiling
- Powder coat paint finish
- Options conist of:
    - Single and two stage thermostats
    - Disconnect
    - Summer fan switch
    - Motor fusing
    - Replacable or washable filters
    - Single and two stage thermostats
    - Duct collars
    - Locking front cover
    - Trim frames for recess mounting
    - Fresh air make-up and kick base



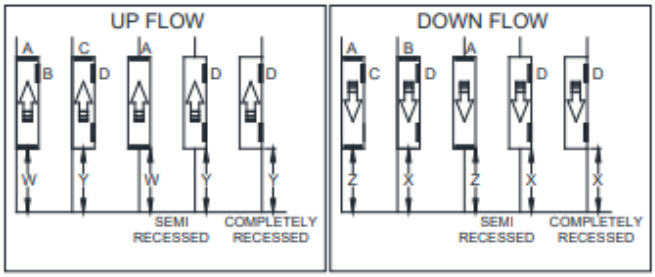
Product Features (2-24KW; All Voltages)

- For commercial and institutional application such as stores, schools, offices, transportation terminals, churches, entrancways.
- Wall or ceiling mount; surface, semi-recessed or fully recessed.
- (8) air inlet and outlet configurations.
- Capacities from 2-24 KW with 230 to 1,000 CFM
- Motors are two speed, shaded pole, resilient mounted, direct drive. High/low heat and blower speed offer versatility.
- ETL Listed.
- Beige powder coated finish
- Choice of eight standard control options include unit or wall mounted 120 or 24V thermostats, with or without built-in control transformers, setback thermostat option
- Industrial type finned tubular elements.
- Easily removable fan and element decks for simplified maintenance.
- Full length thermal protection.
- Limited warranty-one year
- Optional locking front cover.

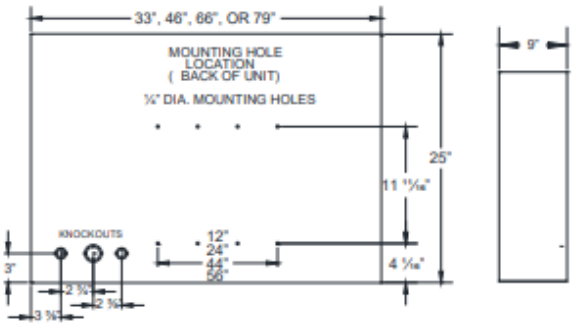
Mounting Configurations



CEILING MOUNTED



WALL MOUNTED



NOTE: Semi-recessed units are to be recessed at a maximum of 3 ½" unless grille configuration is front in and front out.

MOUNTING CLEARANCES: Proper clearances are indicated for each mounting configuration on all positions. Minimum clearance from side of unit to wall is zero inches. Mounting inches are provided in the back of the cabinet, accessible through the blower compartment, if necessary, remove blower deck if additional mounting screws or bolts are desired. Blower deck may be slipped forward by loosening four screws ath the front to provide access to mounting holes.

Standard Models & Features

HEATER LENGTH	MFG CATALOG NUMBER	MFG MODEL NUMBER	HIGH				LOW				VOLTS	PHASE	WT. (LBS)
			KW	BTU's	AMPS	CFM	KW	BTU's	AMPS	CFM			
33"			5	17065	25.0 / 17.6	250	3	10239	15.4 / 9.2	230	208	1-3*	99
					21.8 / 15.4				13.5 / 18.2		240	1-3*	
					7.8				4.6		480	3	
46"			10	34130	43.6 / 30.7	500	6	20478	26.9 / 16.2	460	240	1-3*	130
					15.4				8.1		480	3	

- 1 / 3 phase field convertible with 24 volt control circuit
- Disconnect switch, dust filter & high low operation
- Built-in thermostat and field convertible for remote thermostat

*Factory wired for 3-phase, field convertible to 1-phase.

Accessories

MFG CATALOG NUMBER	MFG MODEL NUMBER	SIZE	DESCRIPTION
DUCT COLLAR			
		33"	The same model is used for the inlet or outlet If duct collars are required for both inlet & outlet then 2 must be ordered
		46"	
		66"	
		79"	
RECESSING TRIM FRAMES			
		33"	Recessing Trim Frames should be ordered to "trim-out" any recessed or semi-recessed installation.
		46"	
		66"	
		79"	

MFG CATALOG NUMBER	MFG MODEL NUMBER	SIZE
Fresh Air Make-Up Intake Flange & Kickbase		
		33"
		46"
		66"
		79"
Kickbase (Pedestal) ONLY		
		33"
		46"
		66"
		79"

Product Specifications

The electric cabinet unit heater is designed for mounting in any position, fully recessed, semi-recessed or surface mounted. All capacities, voltages, physical sizes, grille arrangements and options shall be as specified on the plans. All units must be field convertible to the following:

1. For control by a field supplied remote thermostat.
2. Load management control with an external dry switch. When closed unit operates under control of either the internal or the external thermostat. When open, unit turns off.
3. Any grille arrangement.

CABINET & CONSTRUCTION: The cabinet shall be constructed of heavy duty 16 gauge Zinc coated steel. The heater shall have a removable front door for easy access to the control panel, elements, motor-blower assembly, filters and all internal components. The grill configuration must be easily field convertible to any air flow configuration (by removal of no more than four fasteners). The cabinet shall have a textured finish of two coats of powder coat epoxy and be suitable for use with optional kick space base. Made in U.S.A.

HEATING ELEMENTS: The heating elements shall be warranted for 1 year and shall be non-glowing design consisting of special high temperature resistance wire enclosed in an incoloy sheath to which steel fins are furnace brazed. The heating elements shall be located directly in front of the blower discharge air for uniform heating. They shall be mounted with a single anchor at one end to minimize effects of thermal expansion and contraction.

SAFETY CUTOUT: Thermal safety limits shall be built into the system to automatically shut off heater in event of overheating due to any cause. The safety cutouts shall be of two types:

A. The primary limit shall be an automatic capillary type to sense the heat along the full length of the heating elements. It shall deenergize the heaters by opening the coil circuit on the heating contactors.
B. The secondary limit shall be a manual reset thermal device to interrupt power to the heating elements.

MOTOR AND BLOWER ASSEMBLY: The motors and blowers shall be direct drive and resiliently mounted on rigid heavy gauge frame for quiet operation and long life. The motor shall be two-speed, shaded pole type, rated for the voltage (480 to 600 Volts are single speed only). Each shall have built-in automatic reset overload protection and are life time lubricated. The motor shall be vented and mounted in the air stream to provide maximum cooling of the motor.

HIGH AND LOW HEAT RANGES: All units will be supplied as standard with a switch for selecting full heat at high fan speed or reduced heat at low fan speed (On 480 & 600 Volt units the switch changes the heat but not the fan speed). OVER CURRENT PROTECTION: Circuit breakers shall be provided for branch circuit protection where required by NEC. Circuit breakers are optional on all other heaters.

TEMPERATURE CONTROL: Integral factory installed thermostat shall be tamper resistant, linear capillary type. Optional setback thermostat available.

ARCHITECTURAL RECESSED 12
Electric Heated Air Curtain
Data Sheet

For Mounting Heights To 12' (environmental separation)

STANDARD CONSTRUCTION

- 15" high x 26" deep
- ½ hp motor(s) - ten speeds
- Factory installed Intelliswitch digital controller
- White aluminum exterior panel
  (Optional: Custom Color or Stainless)
- Top Mounting only
- High efficiency, low noise Pro-V Nozzle
- Filter (washable)
- Patented venturi open helical element with point suspension
- Alternate kW: see sheet EP-242
- Optional: Berner AIR™ (smart controller & app), includes BACnet

Berner International certifies that the air curtains shown herein are licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and comply with the requirements of the AMCA Certified Ratings Program. Rated data shown is for base (electric heated) units. The AMCA Certified Ratings Seal applies to airflow rate, average outlet velocity, outlet velocity uniformity, velocity projection and power rating at free delivery only.

2 Year Limited Warranty | Made in USA | c UL us *indoor use* | FDA RECOMMENDED | USDA COMPLIANCE

MODEL	Nozzle Width (in)	Max Vel. at Nozzle (fpm)	Avg. Outlet Vel. (fpm)	Air Volume (cfm)	Outlet Vel. Uniformity	Power Rating (kW)	Motor(s) @ hp	Max Electric Capacity (kW)	Heater Output (MBH)	Air Temp. Rise (°F)	Net Wt. (lbs)
	36.00	6,500	1,814	1,587	83%	0.49	1 @ 1/2	14.0	47.8	28°	105
	42.00	7,091	1,621	1,655	71%	0.53	1 @ 1/2	14.0	47.8	27°	112
	48.00	7,300	1,468	1,713	75%	0.54	1 @ 1/2	14.0	47.8	26°	118
	66.00	*4,828*	*1,027*	*1,647*	*83%*	*0.52*	*1 @ 1/2*	*14.0*	*47.8*	*27°*	*138*
	66.00	5,202	1,848	2,964	95%	0.94	2 @ 1/2	28.0	95.6	30°	179
	72.00	6,500	1,814	3,174	83%	0.98	2 @ 1/2	28.0	95.6	28°	190
	84.00	7,091	1,621	3,310	71%	1.06	2 @ 1/2	28.0	95.6	27°	202
	99.00	7,300	1,424	3,426	75%	1.08	2 @ 1/2	28.0	95.6	26°	213
	99.00	5,202	1,891	4,551	83%	1.43	3 @ 1/2	42.0	143.3	29°	257
	108.00	*4,828*	*1,280*	*3,360*	*83%*	*1.06*	*2 @ 1/2*	*28.0*	*95.6*	*26°*	*231*
	108.00	6,500	1,814	4,761	83%	1.47	3 @ 1/2	42.0	143.3	28°	285
	117.00	*4,828*	*1,158*	*3,294*	*83%*	*1.04*	*2 @ 1/2*	*28.0*	*95.6*	*27°*	*249*
	117.00	6,500	1,722	4,897	71%	1.55	3 @ 1/2	42.0	143.3	27°	297
	132.00	7,091	1,566	5,023	71%	1.60	3 @ 1/2	42.0	143.3	26°	309
	144.00	7,300	1,468	5,139	75%	1.62	3 @ 1/2	42.0	143.3	26°	320
	144.00	6,500	1,814	6,348	83%	1.96	4 @ 1/2	56.0	191.1	28°	380

NOTES:
1. Operation at 50 Hz will generate approximately a 17% reduction in air performance.
2. Single Point Power Connection – consult factory

Berner does not recommend ARD12-1060E, ARD12-2108E and ARD12-2120E, exists only as an equivalent to competitors' models.

See sheet EP-242 for amp draws/total load requirements and alternate kW.

Distance from Nozzle (in)	40	80	120	160	200
Core Velocity (fpm)	2310	1550	1190	1120	1090
Uniformity (%)	89	89	88	91	95

MODEL NUMBER CONFIGURATION

[ ]-1 036 E B-140 -R-WCA-SS

Series	# of Motors	Opening Width	Heat	Voltage	kW	Opt. Display	Opt. Control	Opt. Cabinet Finish
	1, 2, 3, 4	036" - 144"	E=Electric Heated	*B=208/1/60 *J=240/1/60 *V=220/1/50 X=208/3/60 Y=240/3/60 Z=480/3/60 Q=600/3/60 O=380/3/50	14.0 - 56.0 (140 - 560)	R=Remote Display *Intelliswitch*	WCA= Berner AIR™ *smart control*	SS=Stainless Steel CC=Custom Color

*Max 16kW
See sheet EP-242 for available lengths and voltages

See sheet EP-242 for alternate kW code

for Standard offering, leave options (Opt.) blank

Sound level measured 10' (3m) from the unit in free field:

1 motor:	Min./Max. Speed:	59/62 dBA
2 motors:	Min./Max. Speed:	62/65 dBA
3 motors:	Min./Max. Speed:	64/67 dBA
4 motors:	Min./Max. Speed:	65/68 dBA

Sound data is not AMCA certified.

Berner reserves the right to alter specifications without prior notice.

ARCHITECTURAL RECESSED 12
Electric Heated Air Curtain
Electrical Performance Sheet

MODEL	kW (code)	Temp Rise °F	208/1/60 (voltage code B) MOTOR AMP DRAW = 4.3 each		240/1/60 (voltage code J) or 220/1/50 (voltage code V) MOTOR AMP DRAW = 4.3 each		208/3/60 (voltage code X) MOTOR AMP DRAW = 4.3 each		240/3/60 (voltage code Y) MOTOR AMP DRAW = 4.3 each	
			# CKTS	AMPS PER CIRCUIT (including motor) / BREAKER RATING PER CIRCUIT	# CKTS	AMPS PER CIRCUIT (including motor) / BREAKER RATING PER CIRCUIT	# CKTS	AMPS PER CIRCUIT (including motor) / BREAKER RATING PER CIRCUIT	# CKTS	AMPS PER CIRCUIT (including motor) / BREAKER RATING PER CIRCUIT
	14 (140)	28	2	26.8/44.9 / 35/60	2	23.8/38.9 / 30/50	1	43.2 / 60	1	38.0 / 50
	10 (100)	20	2	20.3/32.0 / 30/40	1	46.0 / 60	1	32.1 / 45	1	28.4 / 40
	8 (080)	16	1	42.8 / 60	1	37.6 / 50	1	26.5 / 35	1	23.5 / 30
	6 (060)	12	1	33.1 / 45	1	29.3 / 40	1	21.0 / 30	1	18.7 / 25
	28 (280)	28	-	N/A / N/A	-	N/A / N/A	2	47.5/38.9 / 60/50	2	42.3/33.7 / 60/45
	20 (200)	20	-	N/A / N/A	-	N/A / N/A	2	36.4/27.8 / 45/35	2	32.7/24.1 / 40/35
	16 (160)	16	2	47.1/38.5 / 60/50	2	41.9/33.3 / 60/45	2	30.8/22.2 / 40/30	1	47.1 / 60
	12 (120)	12	2	37.4/28.8 / 50/40	2	33.6/25.0 / 45/35	1	41.9 / 60	1	37.5 / 50
	42 (420)	28	-	N/A / N/A	-	N/A / N/A	3	51.8/38.9/38.9 / 60/50/50	3	46.6/33.7/33.7 / 60/45/45
	30 (300)	20	-	N/A / N/A	-	N/A / N/A	3	40.7/27.8/27.8 / 50/35/35	2	37.0/48.1 / 45/60
	24 (240)	16	-	N/A / N/A	-	N/A / N/A	2	35.1/44.4 / 45/60	2	32.1/38.5 / 40/50
	18 (180)	12	-	N/A / N/A	-	N/A / N/A	2	29.6/33.3 / 35/45	2	27.3/28.9 / 35/40
	56 (560)	28	-	N/A / N/A	-	N/A / N/A	4	47.5/38.9/47.5/38.9 / 60/50/60/50	4	42.3/33.7/42.3/33.7 / 60/45/60/45
	40 (400)	20	-	N/A / N/A	-	N/A / N/A	4	36.4/27.8/36.4/27.8 / 45/35/45/35	3	32.7/32.7/48.1 / 40/40/60
	32 (320)	16	-	N/A / N/A	-	N/A / N/A	3	30.8/30.8/44.4 / 40/40/60	2	47.1/47.1 / 60/60
	24 (240)	12	-	N/A / N/A	-	N/A / N/A	2	41.9/41.9 / 60/60	2	37.5/37.5 / 50/50

Berner reserves the right to alter specifications without prior notice.

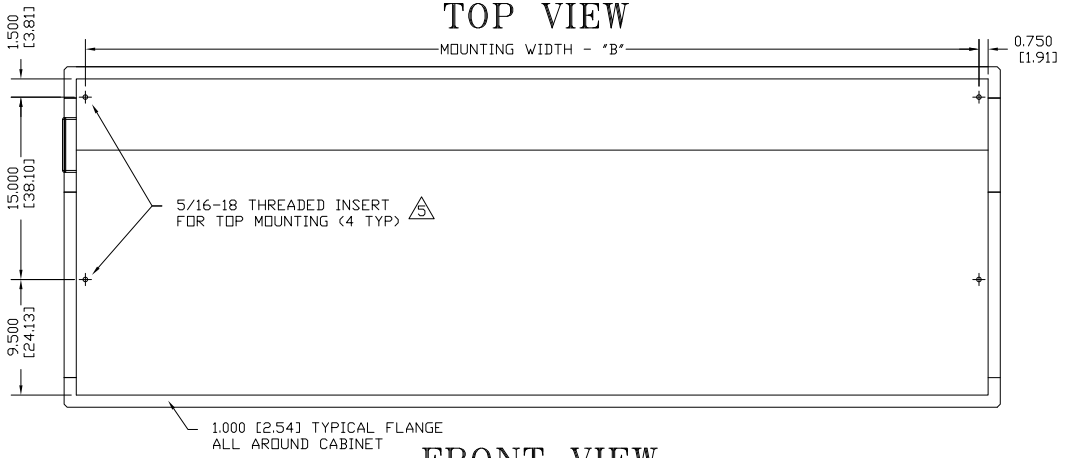
ARCHITECTURAL RECESSED 12
Electric Heated Air Curtain
Electrical Performance Sheet

			480/3/60 (voltage code Z) MOTOR XFMR AMP DRAW = 2.1 per kva				600/3/60 (voltage code Q) MOTOR XFMR AMP DRAW = 1.7 per kva				380/3/50 (voltage code O) MOTOR AMP DRAW = 4.3 each		
MODEL	kW (code)	Temp Rise °F	# CKTS	KVA	AMPS PER CIRCUIT	BREAKER RATING PER CIRCUIT	# CKTS	KVA	AMPS PER CIRCUIT	BREAKER RATING PER CIRCUIT	# CKTS	AMPS PER CIRCUIT (including motor)	BREAKER RATING PER CIRCUIT
	14 (140)	28	1	1	18.9	25	1	1	15.2	20	1	25.6	35
	10 (100)	20	1	1	14.1	20	1	1	11.3	15	1	19.5	25
	8 (080)	16	1	1	11.7	15	1	1	9.4	15	1	16.5	25
	6 (060)	12	1	1	9.3	15	1	1	7.5	15	1	13.4	20
	28 (280)	28	1	2	37.9	50	1	2	30.3	40	2	29.9/21.3	40/30
	20 (200)	20	1	2	28.3	40	1	2	22.6	30	1	39.0	50
	16 (160)	16	1	2	23.4	30	1	2	18.8	25	1	32.9	45
	12 (120)	12	1	2	18.6	25	1	2	14.9	20	1	26.8	35
	42 (420)	28	2	3	23.1/33.7	30/45	1	3	45.5	60	2	34.2/42.5	45/60
	30 (300)	20	1	3	42.4	60	1	3	34.0	45	2	43.3/15.2	60/20
	24 (240)	16	1	3	35.2	45	1	3	28.2	40	2	37.2/12.2	45/20
	18 (180)	12	1	3	28.0	35	1	3	22.4	30	1	40.2	50
	56 (560)	28	2	5	44.2/33.7	60/45	2	5	35.4/26.9	45/35	3	38.5/42.5/21.3	45/60/30
	40 (400)	20	2	5	34.6/24.1	45/35	1	5	47.0	60	2	47.6/30.4	60/40
	32 (320)	16	1	5	49.0	60	1	5	39.3	50	2	41.5/24.3	50/35
	24 (240)	12	1	5	39.4	50	1	5	31.6	40	2	44.5/9.1	60/15

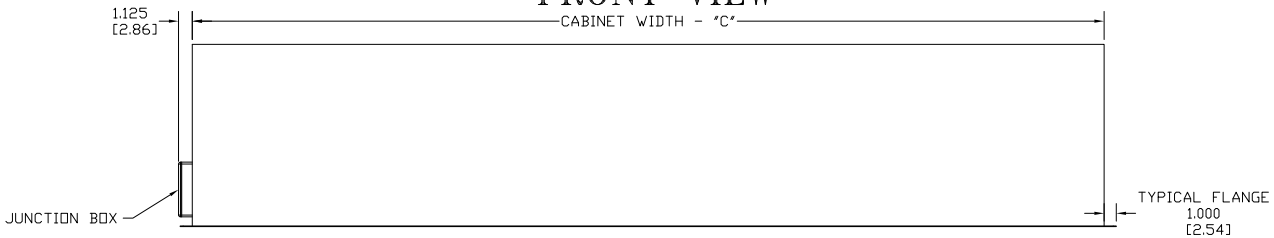
Berner reserves the right to alter specifications without prior notice.

ARCHITECTURAL RECESSED ELECTRIC HEATED

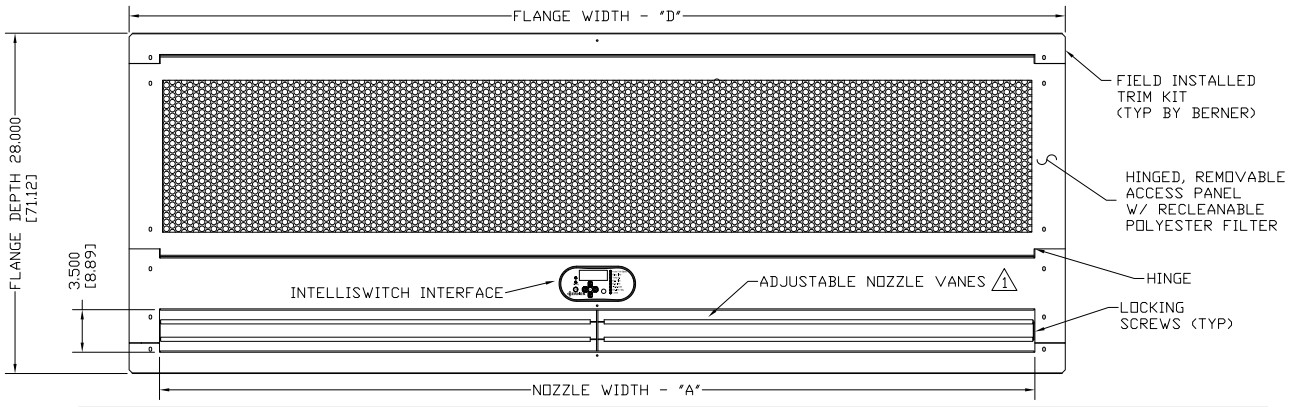
TOP VIEW



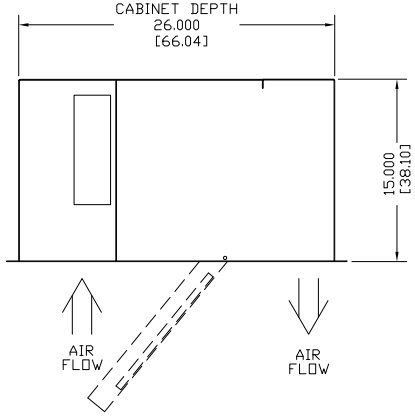
FRONT VIEW



BOTTOM VIEW



END VIEW



MODEL 6	NOZZLE WIDTH "A"	MOUNTING WIDTH "B"	CABINET WIDTH "C"	FLANGE WIDTH "D"	RECOMMENDED ROUGH OPENING DEPTH x WIDTH
	36.00 [91.44]	37.50 [95.25]	39.00 [99.06]	41.00 [104.14]	27.00 x 40.00 [68.58 x 101.60]
	42.00 [106.68]	43.50 [110.49]	45.00 [114.30]	47.00 [119.38]	27.00 x 46.00 [68.58 x 116.84]
	48.00 [121.92]	49.50 [125.73]	51.00 [129.54]	53.00 [134.62]	27.00 x 52.00 [68.58 x 132.08]
	66.00 [167.64]	67.50 [171.45]	69.00 [175.26]	71.00 [180.34]	27.00 x 70.00 [68.58 x 177.80]
	72.00 [182.88]	73.50 [186.69]	75.00 [190.50]	77.00 [195.58]	27.00 x 76.00 [68.58 x 193.04]
	84.00 [213.36]	85.50 [217.17]	87.00 [220.98]	89.00 [226.06]	27.00 x 88.00 [68.58 x 223.52]
	99.00 [251.46]	100.50 [255.27]	102.00 [259.08]	104.00 [264.16]	27.00 x 103.00 [68.58 x 261.62]
	108.00 [274.32]	109.50 [278.13]	111.00 [281.94]	113.00 [287.02]	27.00 x 112.00 [68.58 x 284.48]
	117.00 [297.18]	118.50 [300.99]	120.00 [304.80]	122.00 [309.88]	27.00 x 121.00 [68.58 x 307.34]
	132.00 [335.28]	133.50 [339.09]	135.00 [342.90]	137.00 [347.98]	27.00 x 136.00 [68.58 x 345.44]
	144.00 [365.76]	145.50 [369.57]	147.00 [373.38]	149.00 [378.46]	27.00 x 148.00 [68.58 x 375.92]

NOTES:

1. AIR CURTAIN MUST BE INSTALLED SO AIR STREAM IS NOT OBSTRUCTED WHEN DEFLECTED 20° TO EITHER SIDE OF ℄.
2. ELECTRICAL CONNECTIONS TO BE FLEXIBLE.
3. FIELD VERIFY DIMENSIONS.
4. ANCHORS TO SUPPORTING STRUCTURE BY OTHERS.
5. ADEQUACY OF SUPPORTING STRUCTURE IS TO BE VERIFIED BY A PROFESSIONAL STRUCTURAL ENGINEER.
6. LETTER "E" IN MODEL NUMBER DESIGNATES ELECTRIC HEATED UNIT.
7. DIMENSIONS IN INCHES [CENTIMETERS].

PROJECT			
LOCATION			
ARCHITECT			
ENGINEER		REV.	-
DWG. NO.	-ELE	TITLE:	
DATE	31MAR2017		
BY			
REPLACES	-		
BY	-		

[redacted]

APPROVAL DRAWINGS

CUSTOMER NAME : [redacted]
CONSULTING ENG. :
PROJECT :
CONTRACTOR :

[X] IMPERIAL SYSTEM
[ ] METRIC SYSTEM

COPIES: FM

CSA - NRTL/C
APPROVED # LR-30551

DATE (Y M D) 22/02/10

P.O. NUMBER DRAWINGS

QUOTE # 768879

ELECTRICAL HEATER			DIMENSIONS SEE ATTACHED MECHANICAL DRAWING				ELECTRICAL DATA					BUILT-IN CONTROLS
ITEM	TAG	QUANTITY	W	H	D		KW	VOLT / PH	AMPS	ST / KW		OPTIONS SYMBOLS ARE EXPLAINED BELOW
MECHANICAL DRAWING #			TYPE	T	X	C	ELECTRICAL DRAWING #		CFM · l/s	FPM · m/s	CONTR VOLTS	
1		1		22.00	18.00	5	12.00	208/1	57.72	1/ 12.00		C1CACNT0P1X6ULB1AYIC
			SC	22.00	18.00	5.00	2B12-712V-5200-0000		1800	655	24	U2SC

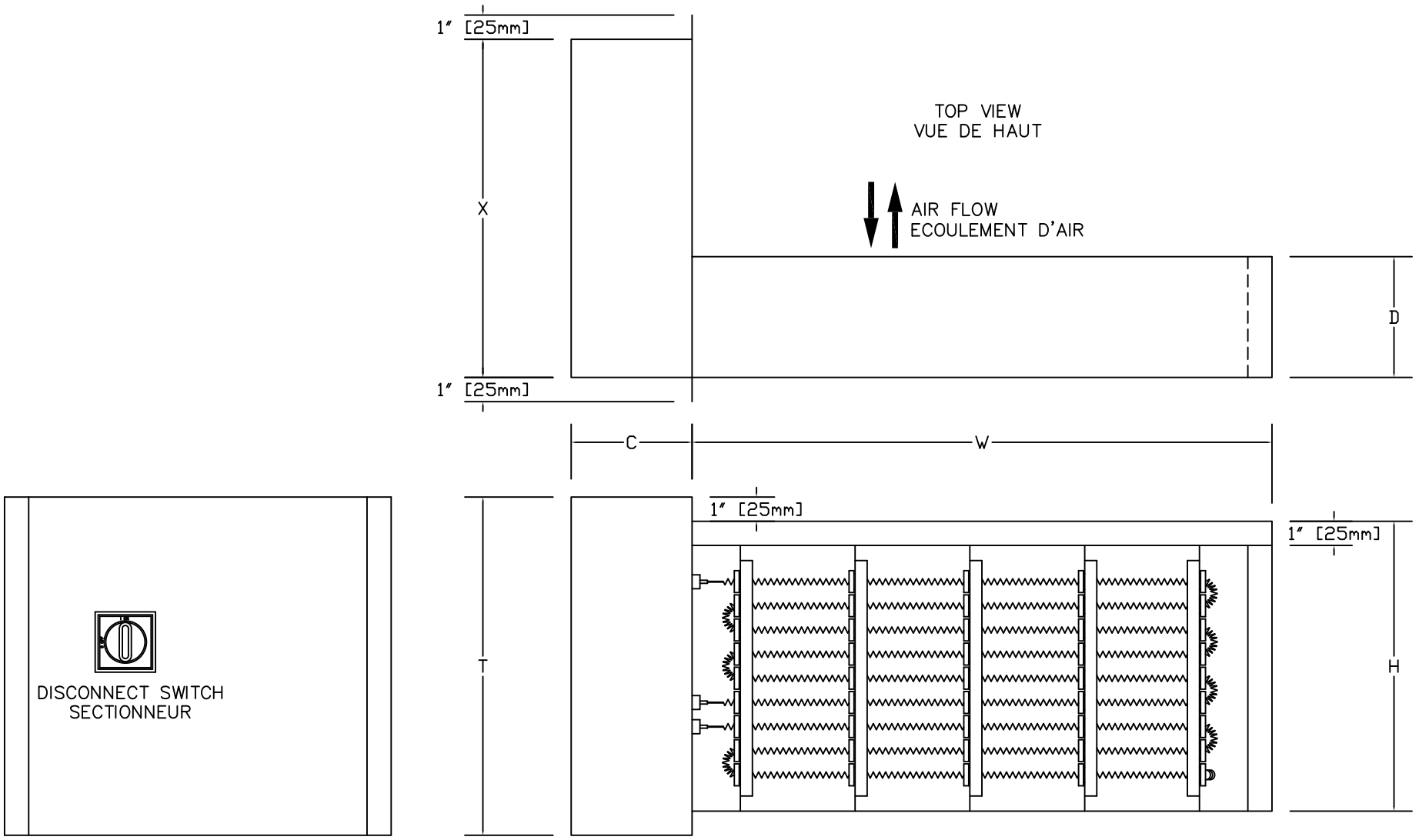
REMARKS :

10 DAY BUILD

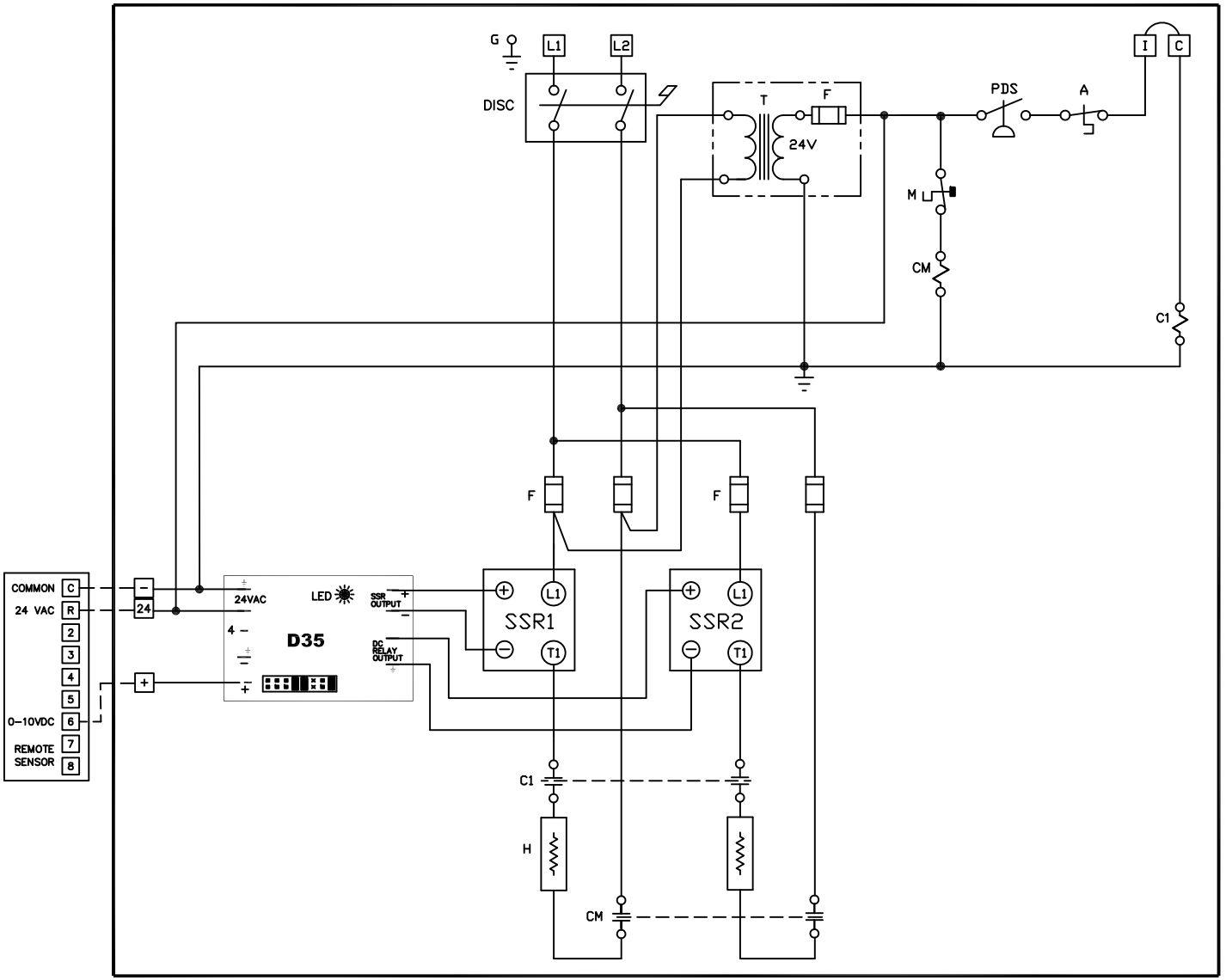
[redacted]

C1 MAGN.CONTACTOR PARTIAL BREAK
CA AUTOMATIC CUT-OUT
CN MANUAL CUT-OUT
T0 TRANSF.C/W FUSIBLE LINK
P1 PDS FIXED, C/W PITOT TUBE
X6 DOOR INTERLOCK DISC. SWITCH
UL UL APPROVED
B1 S.C.R. BY THERMOLEC
AY ROOM THERMOSTAT 0-10VDC
IC INTERLOCK TERMINAL STRIP
U2 HRC LOAD FUSES
SC SLIP-IN DUCT HEATER

[redacted]



TITLE/TITRE		LTEE LTD	DRAWING NO. MSC0-10LS-1002-0000		
TYPICAL SLIP-IN TYPE HEATER SERPENTIN A INSERTION TYPIQUE			DATE	PER	



LEGENDE

A	Sonde Thermique à Réenclenchement Automatique
M	Sonde Thermique à Réenclenchement Manuel
C1	Contacteur de Contrôle
CM	Contacteur Secondaire
DISC	Sectionneur
D35	Contrôleur Electronique
F	Fusible
SSR	Relais Electronique
T	Transformateur
PDS	Interrupteur à différentiel de pression

LEGEND

A	Automatic Reset Cut Out
M	Manual Reset Cut Out
C1	Operating Contactors
CM	Backup Contactors
DISC	Disconnect Switch
D35	Solid State Controller
F	Fuse Or Fuse Link
SSR	Solid State Relay
T	Control Circuit Transformer
PDS	Pressure differential switch

IMPORTANT

Enlever le pont entre les bornes "I" & "C" avant de connecter l'entrebarrage, si applicable.
Suivre les codes électriques nationaux et locaux ainsi que les instructions contenues dans l'appareil.
Le serpentin électrique Thermolec est representé par un cadre en gros traits. Tout ce qui est en dehors du cadre est un "filage typique externe fait par d'autres".

IMPORTANT

Remove the jumper between "I" & "C" before connecting interlocks, if applicable.
Wire in accordance with Local Electrical codes. Read instructions carefully before wiring and operating.
Frame shown in heavy line represents Thermolec Electric Coil. All wiring outside this frame are "typical external wiring by others".

Title / Titre

Drawing number / Numéro de dessin

2B12 - 712V - 5200 - 0000

Option 2: Packaged HCV Units, DOAS with VRF units, RTU’s with integral heat pumps and electric resistance baseboards.

VV19.3

24819 - [redacted]

# of Units	7			AIRFLOW CONDITIONS							SUPPLY FAN								EXHAUST FAN[4]								ENTHALPY WHEEL									Part of RA		OA from the wheel		Mixing Point	
TAG	LOCATION	MODEL	UNIT MODEL	Density of Air (lbs/ft³)	SA (CFM)	SA ESP ("wc)	OA (%)	RA (CFM)	RA ESP ("wc)	Application	QTY.	TYPE	CFM	TSP ("wc)	RPM	HP	BHP	Speed Controller [3]	QTY.	TYPE	CFM	TSP ("wc)	RPM	HP	BHP	Speed Controller [3]	QTY.	SIZE	LAT summer (db°F / wb°F)	[5]LAT winter (db°F / wb°F)	HP	FROST CONTROL	MIXING	CFM	EAT (db°F / wb°F)	CFM	EAT (db°F / wb°F)	CFM	Mixing temp (db°F / wb°F)
AHU-2	Interior	[redacted]	Wheel	0.075	8950	2.5	67%	7425	1	VAV	2	Plug	4475	6.57	1950	10.00	7.08	Yes	2	Plug	3712.5	2.65	1827	3.00	2.16	Yes	1	04	82.1	68.9	50.8	41.1	0.25	VFD	Summer	2980	78	65	5970	82.06	68.85	8950	80.80	67.69
							5970			50%																							Winter		72	54.36		50.79	41.11		57.9	48.0
AHU-3	Interior	[redacted]	Wheel	0.075	6825	2	57%	5580	1	VAV	1	Plug	6825	6.07	2030	15.00	9.04	Yes	1	Plug	5580	2.65	1757	5.00	3.36	Yes								Summer	2960	78	65	3865	89	73	6825	84.30	69.77
							3865			50%																							Winter		72	54.36		13	12		38.6	33.6
AHU-1	Exterior	[redacted]	Wheel	0.075	9700	2.85	39%	8800	1.5	VAV	2	Plug	4850	7.03	2013	10.00	7.95	Yes	2	Plug	4400	3.48	2064	5.00	3.08	Yes	1	04	81.6	68.3	52.9	43.0	0.25	VFD	Summer	5900	78	65	3800	81.62	68.32	9700	79.50	66.43
							3800			50%																							Winter		72	54.36		52.89	42.95		64.6	50.3

1 - Type of construction: ALUMINUM
2 - Direct Drive fans provided.
3 - One Speed Controller provided per fan bank.
4 - Winter LAT is based on frost control by VFD
5 - During Defrost cycle, Electric heater shall be energized and used to reach the required LAT
6 - For AHU-1 to 4 & 7, ASHP HEATING capacity shown below does not consider the available capacity in defrost mode- in defrost mode, only 1/3 of this capacity is available

Altitude	Press.	Summer				Winter			
		OA conditions		RA conditions		OA conditions		RA conditions	
ft	inHg	db	wb	db	wb	db	wb	db	wb
0	29.92	89	73	78	65	13	12	72	54.36

# of Units	DX COOLING COIL						HOT GAS REHEAT COIL				DX COIL (ASHP - HEATING MODE)6					ELECTRIC HEATER sized for full SA CFM	AIR SOURCED HEAT PUMP							PRE FILTERS	FINAL FILTERS	FILTERS RA	Electrical			ESTIMATED ELECTRICAL DATA			
TAG	CFM	EAT (db°F / wb°F)	LAT (db°F / wb°F)	SENSIBLE [MBH]	TOTAL [MBH]	TON	CFM	EAT	LAT	CAPACITY [MBH]	CFM	EAT (db°F)	LAT (db°F)	Ambient temp. (°F)	TOTAL [MBH]	Included	EAT	LAT	KW	MODEL	QUANTITY	NOMINAL TONNAGE	CIRCUIT QUANTITY PER KIT	DESIGN AMBIENT TEMP. (COOLING)	DESIGN AMBIENT TEMP. (HEATING)	COMPRESSOR MODULATION	PRE FILTERS SA	FINAL FILTERS SA	FILTERS RA	GFI	Lights	Powered by	VOLTAGE	FLA	MCA	MOP
AHU-2	8950	80.8	67.69	55	55	255	356	29.7	8950	55.0	65	99	8950	58	85	15	262	Yes	57.9	85	78								2"-MERV10	12"-MERV13	2"-MERV13	2	4	By Annexair	208/3/60	307	329	350
AHU-3	6825	84.3	69.77	55	55	220	323	27	6825	55.0	65	76	6825	39	85	15	343	Yes	38.6	85	102								2"-MERV10	12"-MERV13	2"-MERV13	2	4	By Annexair	208/3/60	355	373	400
AHU-1	9700	79.5	66.43	55	55	262	342	28.5	9700	55.0	65	107	9700	65	85	15	214	Yes	64.6	85	64	ASTP40.4	1	40	4	89	15	Yes	2"-MERV10	12"-MERV13	2"-MERV13	2	4	By Annexair	208/3/60	457	511	600

IEER/COP IS BASED ON AHRI STANDARD.

40 NORMINAL TONS SYSTEM (AHU-1)

IEER-16.2
COP-4.26

HEAT WHEEL PERFORMANCE

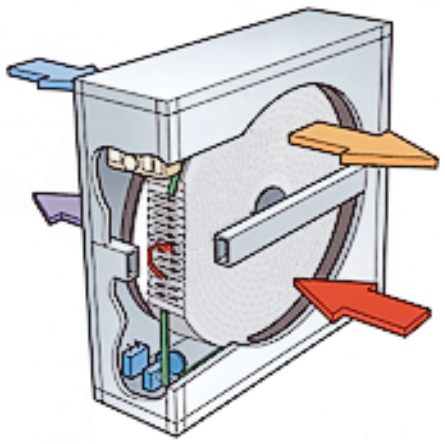
Project name
Reference
Unit tag AHU-2

Date 5/25/2022

v 1.0

SUMMER

OUTSIDE AIR			SUPPLY AIR
Outside air Volume CFM	6261	**5970**	Supply Volume CFM
Summer Outside air DB	**89.0**	82.1	Summer Supply air DB.
Summer Outside air WB	**73.0**	68.9	Summer Supply air WB.
Grains	96.9	85.0	Grains
Summer Outside air enthalpy	36.5	33.0	Summer Supply air enthalpy
Outside Air S.P.	-0.50	-1.39	Supply Air S.P.

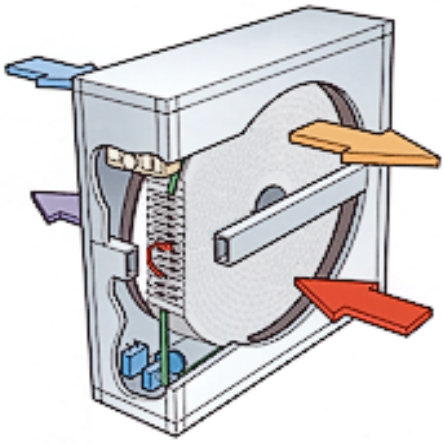


EXHAUST AIR			RETURN AIR
Exhaust Volume CFM	4736	**4445**	Return Volume CFM
Summer Exhaust air DB	**86.5**	**78.0**	Summer Return air DB.
Summer Exhaust air WB	**70.5**	**65.0**	Summer Return air WB.
Grains	86.5	71.8	Grains
Summer Exhaust enthalpy	34.3	29.9	Summer Return air Enthalpy
Exhaust Air S.P.	-2.46	-1.80	Return Air S.P.

Purge & Leak CFM **291**

WINTER

OUTSIDE AIR			SUPPLY AIR
Outside air Volume CFM	6261	**5970**	Supply Volume CFM
Winter Outside air DB	**13.0**	50.8	Winter Supply air DB
Winter Outside air WB	**12.0**	41.1	Winter Supply air WB
Grains	8.8	22.6	Grains
Winter Outside air enthalpy	4.5	15.7	Winter Supply air enthalpy
Outside Air S.P.	-0.50	-1.39	Supply Air S.P.



EXHAUST AIR			RETURN AIR
Exhaust Volume CFM	4736	**4445**	Return Volume CFM
Winter Exhaust air DB	25.6	**72.0**	Winter Return air DB.
Winter Exhaust air WB	24.8	**54.4**	Winter Return air WB.
Grains	17.9	34.8	Grains
Winter Exhaust enthalpy	8.9	22.7	Winter Return air Enthalpy
Exhaust Air S.P.	-2.46	-1.80	Return Air S.P.

GENERAL DATA

Wheel Size	04			Total	Sensible
Wheel Type	Enthalpy	Saving summer, TON		8.01	3.73
Total Effectiveness	82.0 %	Saving winter, MBH		298.74	243.65

Pressure Drop Through the Wheel			Face velocity (FPM)	Wheel RPM		Drive	Frost Control
Supply side	in w.g.	0.89	861	Normal	20	Constant	Not required
Exhaust side	in w.g.	0.66	641				

Ratings have been tested in accordance to ASHRAE 84 and ARI 1060

HEAT WHEEL PERFORMANCE

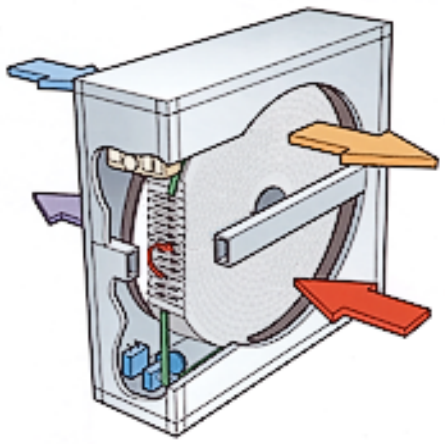
Project name
Reference
Unit tag AHU-1

Date 5/25/2022

v 1.0

SUMMER

OUTSIDE AIR			SUPPLY AIR
Outside air Volume CFM	4115	**3800**	Supply Volume CFM
Summer Outside air DB	**89.0**	81.6	Summer Supply air DB.
Summer Outside air WB	**73.0**	68.3	Summer Supply air WB.
Grains	96.9	82.8	Grains
Summer Outside air enthalpy	36.5	32.5	Summer Supply air enthalpy
Outside Air S.P.	-0.50	-1.07	Supply Air S.P.

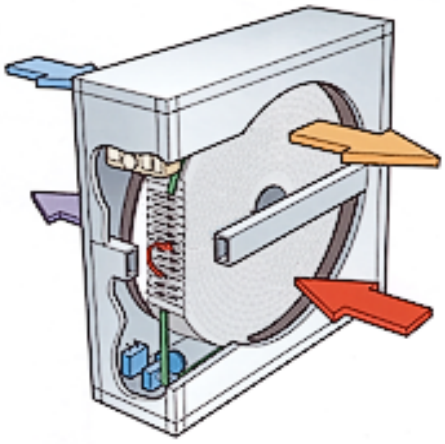


EXHAUST AIR			RETURN AIR
Exhaust Volume CFM	3215	**2900**	Return Volume CFM
Summer Exhaust air DB	**87.1**	**78.0**	Summer Return air DB.
Summer Exhaust air WB	**71.1**	**65.0**	Summer Return air WB.
Grains	89.2	71.8	Grains
Summer Exhaust enthalpy	34.9	29.9	Summer Return air Enthalpy
Exhaust Air S.P.	-2.23	-1.80	Return Air S.P.

Purge & Leak CFM **315**

WINTER

OUTSIDE AIR			SUPPLY AIR*
Outside air Volume CFM	4115	**3800**	Supply Volume CFM
Winter Outside air DB	**13.0**	52.9 (53.7)	Winter Supply air DB
Winter Outside air WB	**12.0**	43.0 (44.5)	Winter Supply air WB
Grains	8.8	25.0 (25.0)	Grains
Winter Outside air enthalpy	4.5	16.6 (16.7)	Winter Supply air enthalpy
Outside Air S.P.	-0.50	-1.07	Supply Air S.P.



EXHAUST AIR*			RETURN AIR
Exhaust Volume CFM	3215	**2900**	Return Volume CFM
Winter Exhaust air DB	22.7 (21.7)	**72.0**	Winter Return air DB.
Winter Exhaust air WB	22.2 (21.0)	**54.4**	Winter Return air WB.
Grains	15.9 (14.8)	34.8	Grains
Winter Exhaust enthalpy	8.0 (7.6)	22.7	Winter Return air Enthalpy
Exhaust Air S.P.	-2.23	-1.80	Return Air S.P.

*** Actual conditions in frost control. Data in () are without frost control**

GENERAL DATA

Wheel Size	04			Total	Sensible
Wheel Type	Enthalpy	Saving summer, TON		5.73	2.52
Total Effectiveness	88.0 %	Saving winter, MBH		205.20	163.71

Pressure Drop Through the Wheel			Face velocity (FPM)	Wheel RPM		Drive	Frost Control
Supply side	in w.g.	0.57	548	Normal	20	VFD	Required
Exhaust side	in w.g.	0.43	418	Minimum	11		

Ratings have been tested in accordance to ASHRAE 84 and ARI 1060

Multi V Outdoor Unit Equipment Schedule - Air												
Location	Mark	Model Number	Type	Quantity	Total Capacity (BTU/h)		Corrected Capacity (BTU/h)		Corrected Power Input (kW)		Fan	
					Total Cooling	Total Heating	Total Cooling	Total Heating	Cooling	Heating	Airflow (CFM)	Quantity
ACCU-1-1_AHU-2			HR_MULTI V 5	1	119700	135000	130007	148571	8.4	13.6		
ACCU-1-2_AHU-2			HR_MULTI V 5	1	119700	135000	130007	148571	8.4	13.6		
ACCU-1-3_AHU-2			HR_MULTI V 5	1	119700	135000	130007	148571	8.4	13.6		
ACCU-1-1_AHU-3			HR_MULTI V 5	1	119700	135000	127882	147974	8.2	13.8		
ACCU-1-2_AHU-3			HR_MULTI V 5	1	119700	135000	127882	147974	8.2	13.8		
ACCU-1-3_AHU-3			HR_MULTI V 5	1	119700	135000	127882	147974	8.2	13.8		

Multi V HR Boxes							
Location	Tag	Model Number	Quantity	Power			
				Volts	Phase	Hz	RLA
ACCU-1-1_AHU-2			1	208 / 230V	1Ph	60Hz	0.1
ACCU-1-1_AHU-2			1	208 / 230V	1Ph	60Hz	0.1
ACCU-1-2_AHU-2			1	208 / 230V	1Ph	60Hz	0.1
ACCU-1-2_AHU-2			1	208 / 230V	1Ph	60Hz	0.1
ACCU-1-3_AHU-2			1	208 / 230V	1Ph	60Hz	0.1
ACCU-1-3_AHU-2			1	208 / 230V	1Ph	60Hz	0.1
ACCU-1-1_AHU-3			1	208 / 230V	1Ph	60Hz	0.1
ACCU-1-1_AHU-3			1	208 / 230V	1Ph	60Hz	0.1
ACCU-1-2_AHU-3			1	208 / 230V	1Ph	60Hz	0.1
ACCU-1-2_AHU-3			1	208 / 230V	1Ph	60Hz	0.1
ACCU-1-3_AHU-3			1	208 / 230V	1Ph	60Hz	0.1
ACCU-1-3_AHU-3			1	208 / 230V	1Ph	60Hz	0.1

*IEER/COP is based on Non-Ducted, AHRI 1230 Standard.

Outdoor Unit Equipment Schedule - Air

Outdoor Temperature (°F)			Efficiency		Refrigerant	Piping Connections (inch)			Power					Sound
Cooling DB	Cooling WB	Heating DB	Cooling IEER (SEER)	Heating COP (HSPF)		Liquid	LP Gas	HP Gas	Volts	Phase	Hz	MCA	MOP	Power
91.9	73.9	10.9	29.6	3.97	R410A	1/2	1+1/8	3/4	208~230V	3Ph	60Hz	30.9	40	79
91.9	73.9	10.9	29.6	3.97	R410A	1/2	1+1/8	3/4	208~230V	3Ph	60Hz	30.9	40	79
91.9	73.9	10.9	29.6	3.97	R410A	1/2	1+1/8	3/4	208~230V	3Ph	60Hz	30.9	40	79
91.9	73.9	10.9	29.6	3.97	R410A	1/2	1+1/8	3/4	208~230V	3Ph	60Hz	30.9	40	79
91.9	73.9	10.9	29.6	3.97	R410A	1/2	1+1/8	3/4	208~230V	3Ph	60Hz	30.9	40	79
91.9	73.9	10.9	29.6	3.97	R410A	1/2	1+1/8	3/4	208~230V	3Ph	60Hz	30.9	40	79

Abbreviations

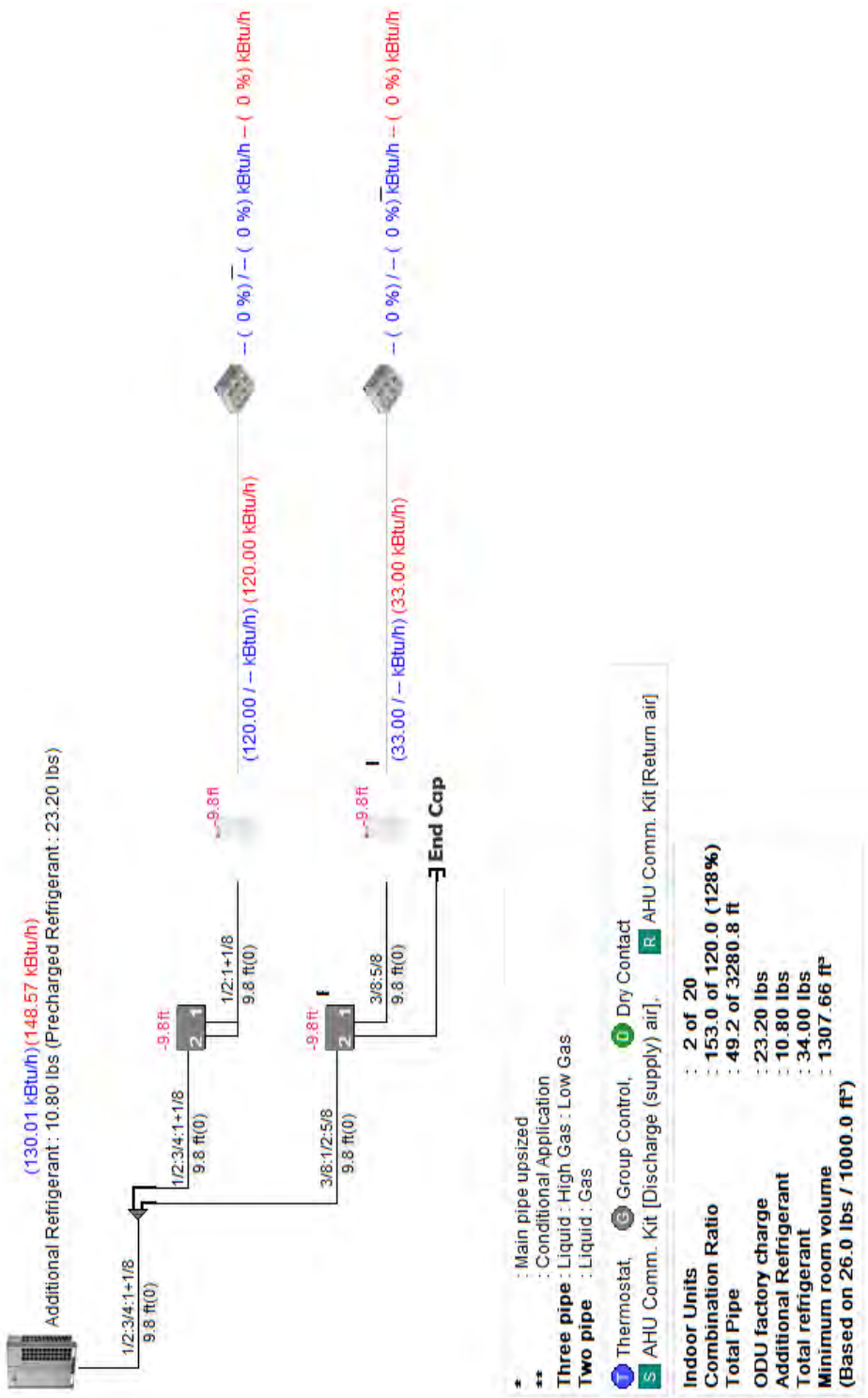
Abbreviations	Description
TC	Total Cooling Capacity
SC	Sensible Cooling Capacity
HC	Heating Capacity
Capacity Ratio(%)	Corrected Capacity / Room Load
PI	Power Input
IDU	Indoor Unit
ODU	Outdoor Unit
DBT	Dry Bulb Temperature
WBT	Wet Bulb Temperature
IAT	Indoor Air Temperature
OAT	Outdoor Air Temperature
EWT	Entering Water Temperature
LWT	Leaving Water Temperature
RH	Relative Humidity
OA	Outdoor Air
RA	Return Air
SA	Supply Air
EA	Exhaust Air
MCA	Minimum Circuit Ampere
MFA	Maximum Fuse Ampere
MOP	Maximum rating of Overcurrent Protective device
FLA	Full Load Ampere
RLA	Rated Load Ampere
EER	Energy Efficiency Ratio
COP	Coefficient of Performance
ESP	External Static Pressure
AFR	Air Flow Rate
EDT	Estimated Discharge Temperature
Qty	Quantity
Liq	Liquid
WxHxD	Width x Height x Depth
H / M / L	High / Middle / Low
CR	Combination Ratio
Freq.	Frequency
Volt	Voltage
CF(%)	Correction Factor (Total Cooling Capacity / Total Rated Cooling Capacity)

System Tree Diagram

System Name: ACCU-1-1_AHU- 2

Date: 05/25/2022

System No : 1/9

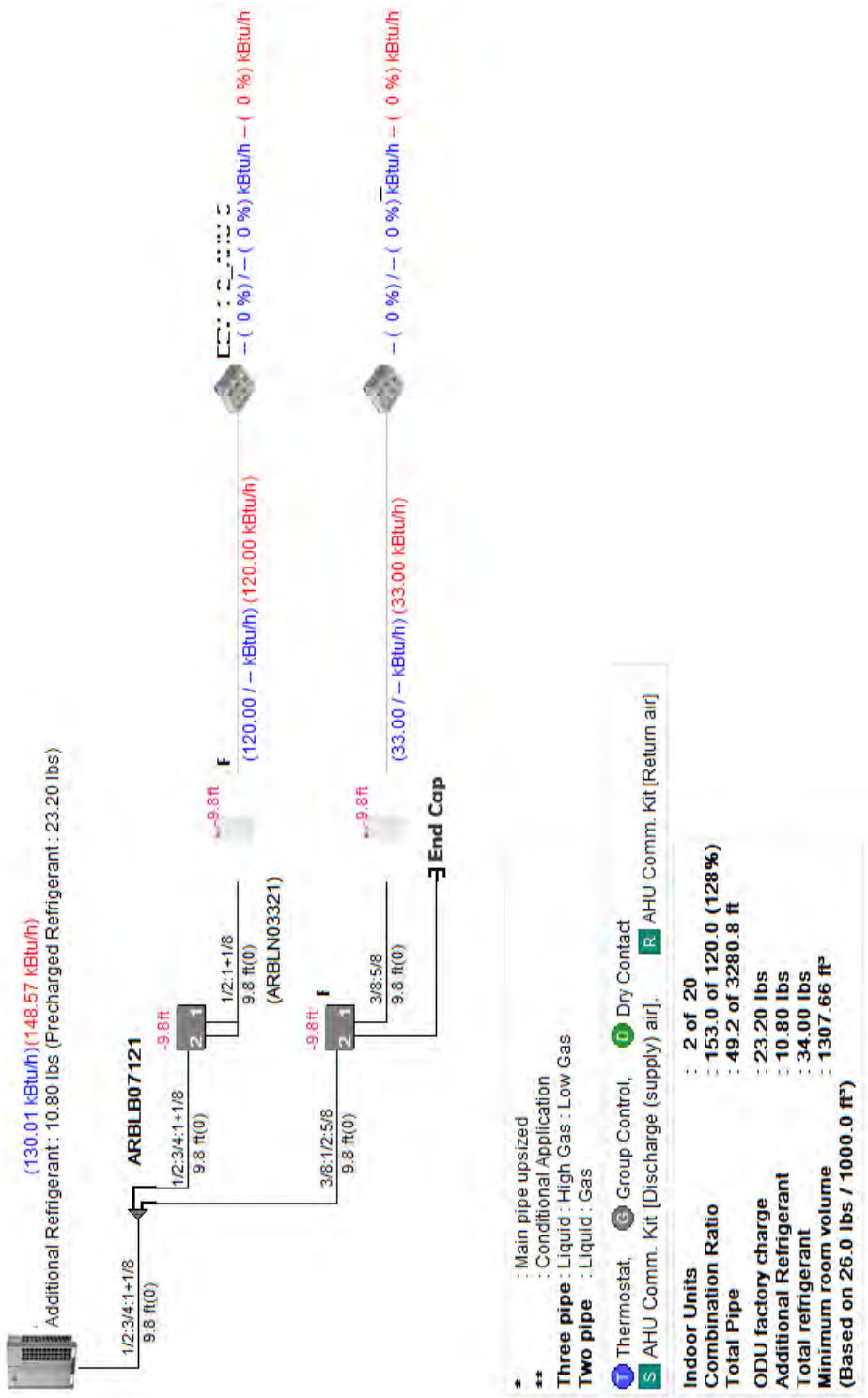


System Tree Diagram

System Name: ACCU-1-2_AHU- 2

Date: 05/25/2022

System No : 2/9

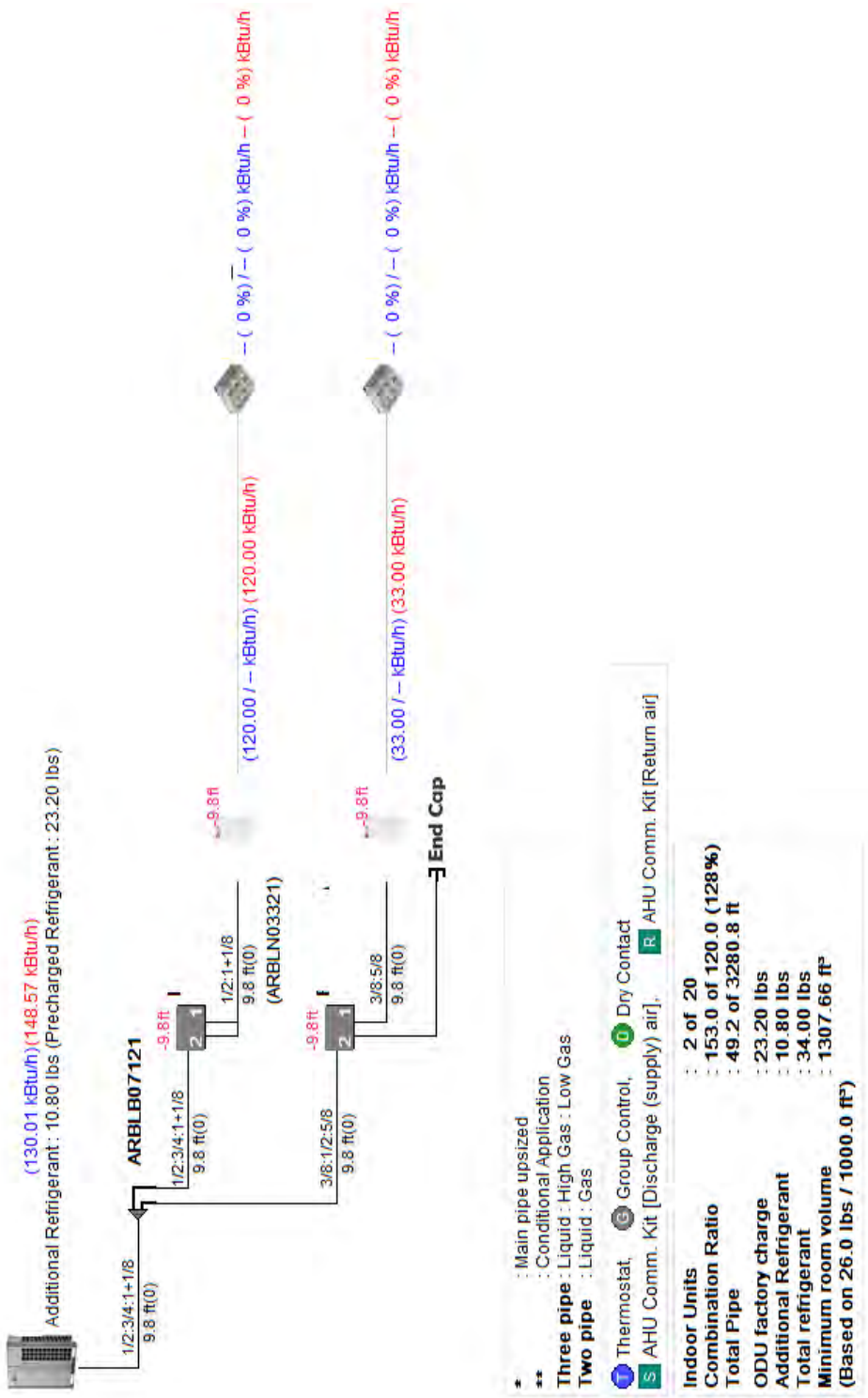


System Tree Diagram

System Name: ACCU-1-3_AHU- 2

Date: 05/25/2022

System No : 3/9

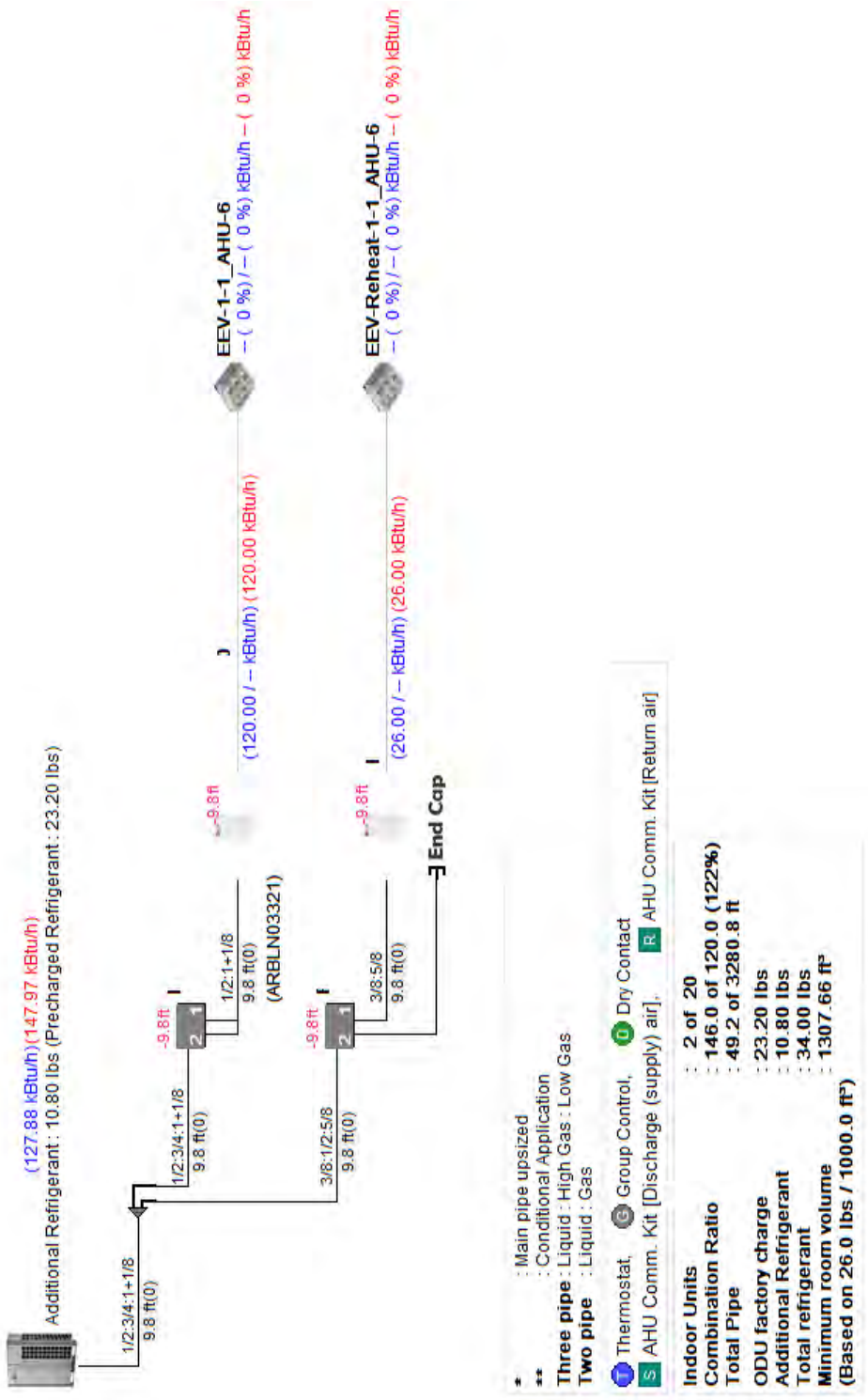


System Tree Diagram

System Name: ACCU-1-1_AHU- 3

Date: 05/25/2022

System No : 4/9

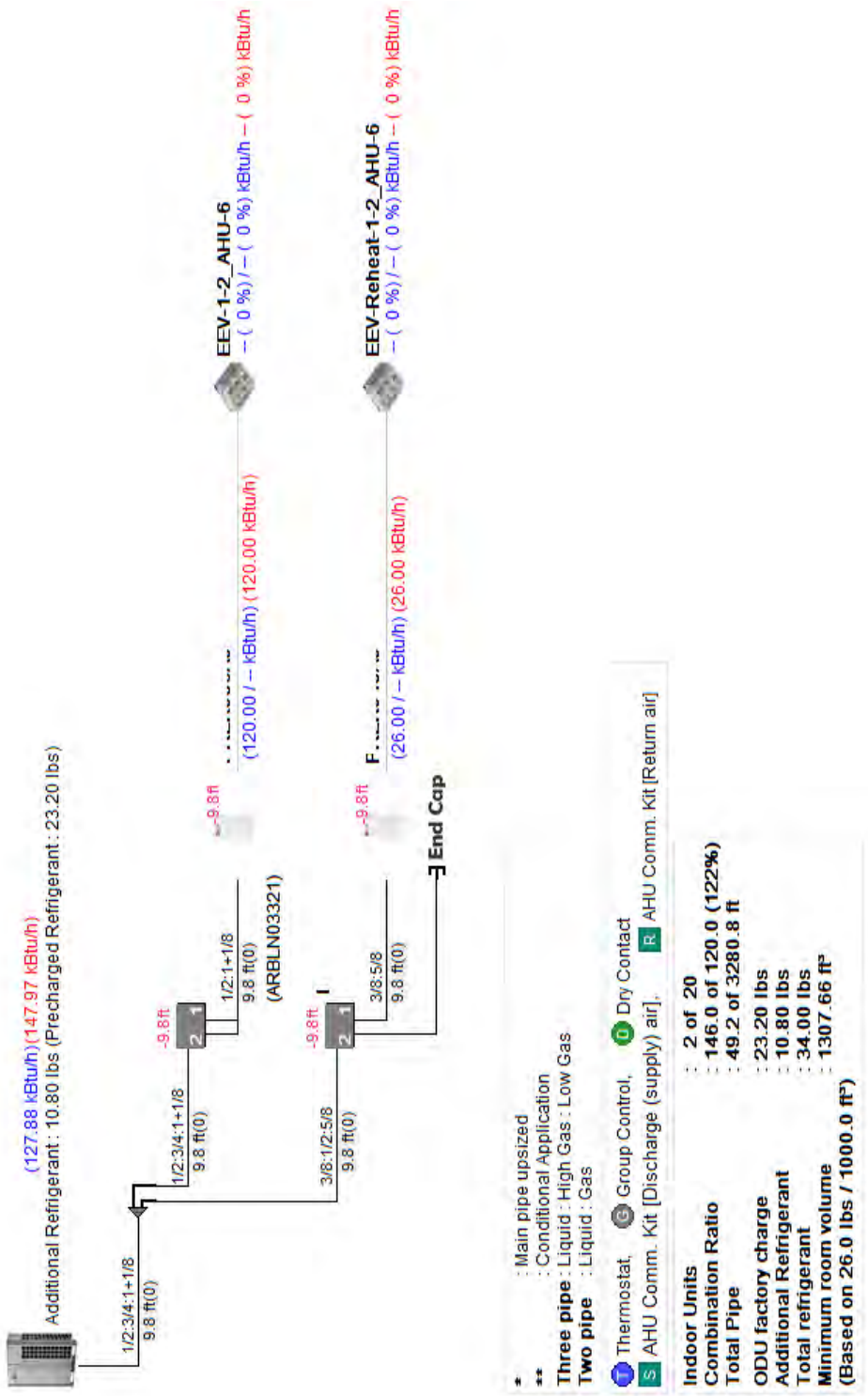


System Tree Diagram

System Name: ACCU-1-2_AHU- 3

Date: 05/25/2022

System No : 5/9

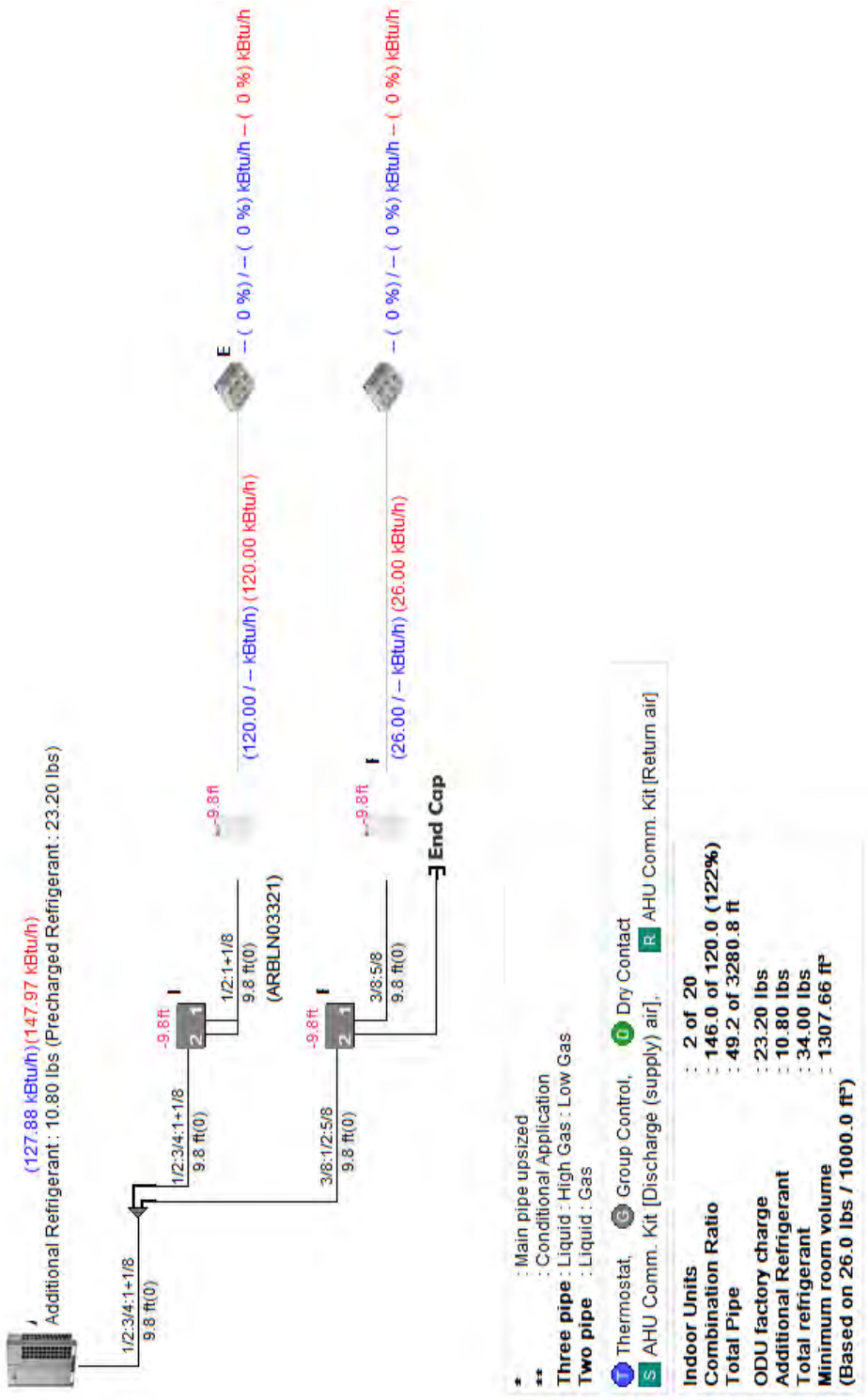


System Tree Diagram

System Name: ACCU-1-3_AHU- 3

Date: 05/25/2022

System No : 6/9



Job Name/Location: **Tag No.:**

Date: **For:** ☐ File ☐ Resubmit ☐ Approval ☐ Other

PO No.:

Architect: **GC:**

Engr: **Mech:**

Rep:
(Company) (Project Manager)

[redacted] 5 with LGRED° 208-230V ODU

10 Ton Single Frame Heat Pump and Heat Recovery

Performance:

Cooling Mode:

Nominal Capacity (Btu/h)	119,700
Power Input (kW)	7.72

Heating Mode:

Nominal Capacity (Btu/h)	135,000
Power Input (kW)	9.20

Rated capacity is certified under AHRI Standard 1230. Ratings are subject to change without notice. Current certified ratings are available at www.ahridirectory.org.

Electrical:

Frame	ARUM121BTE5
Power Supply (V/Hz/Ø)[1]	208-230/60/3
MOP (A)	40
MCA (A)	30.9
Rated Amps (A)	26.3
Compressor A (A)	18.3
Compressor B (B)	-
Fan (A)	8.0

Piping:[2]

Frame	ARUM121BTE5
Refrigerant Charge (lbs.)	23.2
Liquid (in., O.D.)	1/2 Braze
High Pressure Vapor (Heat Recov only; in, O.D.)	3/4 Braze
Low Pressure Vapor (in., O.D.)	1-1/8 Braze

Standard Features:

- Advanced Smart Load Control
- Intelligent Heating
- HiPOR (High Pressure Oil Return)
- Smart Oil Control
- Night Quiet Operation
- Fault Detection and Diagnosis
- Active Refrigerant Control
- Variable Heat Path Exchanger
- Subcooling and Vapor Injection Control
- Liquid Cooled Inverter Controller
- Advanced Comfort Cooling

Optional Accessories:

☐ Air Guide - ZAGDKA52A
☐ Hail Guard Kit - ZHGDKA52A
☐ Low Ambient Baffle Kit - ZLABKA52A, Control Kit - PRVC2 (1 per system)
☐ Base Pan Heater - ZPLT1A52A

**Cooling range with the Low Ambient Baffle Kit (sold separately) is -9.9°F to +122°F and is achieved only when all indoor units are operating in cooling mode. Does not impact heat recovery system synchronous operating range.

Operating Range:

Cooling (°F DB)**	5 - 122
Heating (°F WB)	-22 - 61
Synchronous	
Cooling Based (°F DB)	14 - 81
Heating Based (°F WB)	14 - 61

Unit Data:

Refrigerant Type	R410A
Refrigerant Control	EEV
Max. Number of Indoor Units[3]	20
Sound Pressure[4] dB(A)	59.0
Weight	
Frame	ARUM121BTE5
Net (lbs.)	507
Shipping (lbs.)	534
Communication Cable (No x AWG)[5]	2 x 18
Heat Exchanger Coating	Black Coated Fin™

Compressor:

Type	HSS DC Scroll
Quantity	1
Oil / Type	PVE / FVC68D

Fan:

Type	Propeller
Quantity	2
Motor Drive	Brushless Digitally Controlled Direct
Air Flow Rate (CFM)	11,300

Notes:

1. Power wiring cable size must comply with the applicable local and national codes. Cables terminate at each frame.
2. For main pipe segment size, refer to the LATS Multi V tree diagram.
3. The combination ratio must be between 50-130%.
4. Sound pressure levels are tested in an anechoic chamber under ISO Standard 3745 for the combination of outdoor units.
5. Communication cable between ODU and IDUs must be 2-conductor, 18 AWG, twisted, stranded, and shielded. Ensure the communication cable shield is properly grounded to the Master ODU chassis only. Do not ground the communication cable at any other point. Wiring must comply with all applicable local and national codes.
6. Acceptable operating voltage: 187V - 253V
7. Low ambient performance with LGRED° heat technology is included in Multi V 5 units produced after February 2019.

Inverter

AHRI CERTIFIED™ www.ahridirectory.org
Variable Refrigerant Flow (VRF) Multi-Split AC and HP
AHRI Standard 1230

Job Name/Location: _____

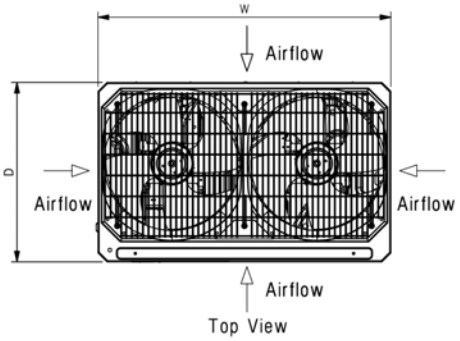
[redacted]5 with LGRED° 208-230V ODU

10 Ton Single Frame Heat Pump and Heat Recovery

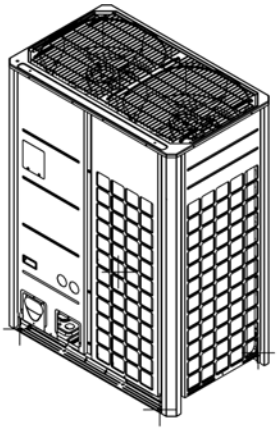
Tag No.: _____

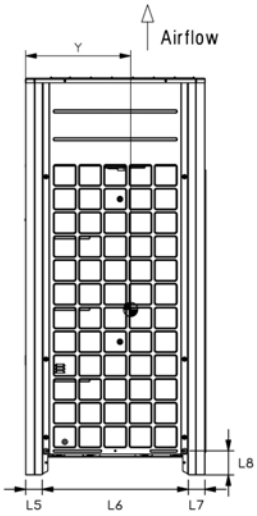
Date: _____

PO No.: _____

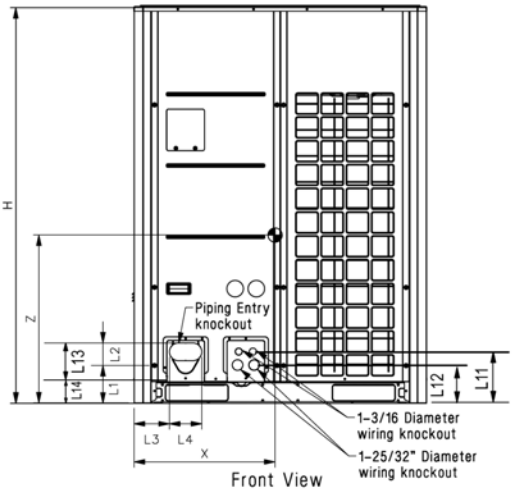


Top View

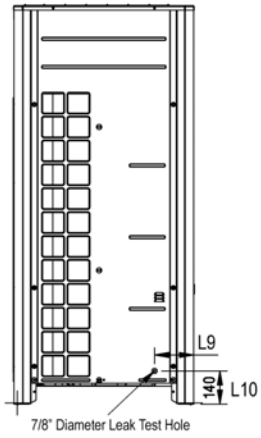




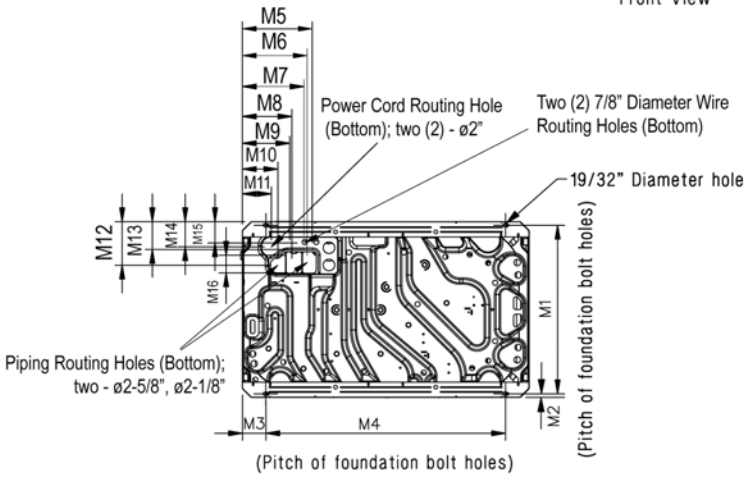
Right Side View



Front View



Left Side View



Bottom Mounting Holes

M1	28-25/32"
M2	5/8"
M3	3-15/16"
M4	40-15/16"
M5	11 – 15/16"
M6	11 – 1/16"
M7	10 – 1/2"
M8	8 – 7/16"
M9	8 – 1/8"
M10	6 – 1/16"
M11	4 – 15/16"
M12	7 – 1/2"
M13	4 – 13/16"
M14	4 – 5/16"
M15	3 – 5/8"
M16	3"

W	48-13/16"
H	66-17/32"
D	29-29/32"
L1	6-5/16"
L2	3-3/4"
L3	5-29/32"
L4	5-13/32"
L5	2-25/32"
L6	24-9/32"
L7	2-25/32"
L8	4-1/32"
L9	6 – 1/2"
L10	5 – 9/16"
L11	8 – 5/8"
L12	6 – 7/16"
L13	9 – 15/16"
L14	3 – 5/8"

Center of Gravity

X	23-7/32"
Y	15-5/8"
Z	25-9/16"

All dimensions have a tolerance of ±0.25 in.

[Unit: inch]

= Center of Gravity

Abbreviations

Abbreviations	Description
TC	Total Cooling Capacity
SC	Sensible Cooling Capacity
HC	Heating Capacity
Capacity Ratio(%)	Corrected Capacity / Room Load
PI	Power Input
IDU	Indoor Unit
ODU	Outdoor Unit
DBT	Dry Bulb Temperature
WBT	Wet Bulb Temperature
IAT	Indoor Air Temperature
OAT	Outdoor Air Temperature
EWT	Entering Water Temperature
LWT	Leaving Water Temperature
RH	Relative Humidity
OA	Outdoor Air
RA	Return Air
SA	Supply Air
EA	Exhaust Air
MCA	Minimum Circuit Ampere
MFA	Maximum Fuse Ampere
MOP	Maximum rating of Overcurrent Protective device
FLA	Full Load Ampere
RLA	Rated Load Ampere
EER	Energy Efficiency Ratio
COP	Coefficient of Performance
ESP	External Static Pressure
AFR	Air Flow Rate
EDT	Estimated Discharge Temperature
Qty	Quantity
Liq	Liquid
WxHxD	Width x Height x Depth
H / M / L	High / Middle / Low
CR	Combination Ratio
Freq.	Frequency
Volt	Voltage
CF(%)	Correction Factor (Total Cooling Capacity / Total Rated Cooling Capacity)

Model Selection - Summary

Date: 03/26/2022

1. Outdoor Units

No.	Model Name	Quantity	Description
1		1	MULTI V 5/50,60Hz/R410A/Heat Pump/MULTI V 5/N.America
2		1	MULTI V 5/50,60Hz/R410A/Heat Pump/MULTI V 5/N.America
Total		2	

2. Indoor Units

No.	Model Name	Quantity	Description
1		1	CEILING CASSETTE - 4WAY
2		3	CEILING CASSETTE - 4WAY
3		6	CEILING CASSETTE - 4WAY
4		1	CEILING CASSETTE - 4WAY
5		1	CEILING CASSETTE - 4WAY
6		1	CEILING CONCEALED DUCT - MID STATIC
Total		13	

3. Branch/Header

No.	Model Name	Quantity
1		8
2		3

4. Pipes

No.	Diameter(Liq:Gas,inch)	Length(ft)
1	1/4 : 1/2	170.8
2	3/8 : 5/8	153.8
3	3/8 : 3/4	94.0
4	3/8 : 7/8	65.0

5. Accessories

Index	Model Name	Quantity	Description
IDU		12	2x2 Grille for TR, TQ Chassis

System Model Selection - ODU

System Name: VRF-ACCU-1 **Date: 03/26/2022**

System No : 1/2

1. Design conditions - Outdoor

	Cooling			Heating		
	DBT(°F)	WBT(°F)	RH(%)	DBT(°F)	WBT(°F)	RH(%)
OAT	91.9	73.9	43.3	10.9	10.2	86.0
IAT	80.0	67.0	51.2	70.0	58.4	50.0

2. Outdoor Units

Model Name	Maximum Indoor Units	Maximum CR (kBtu/h(%))	Combination Ratio	Precharged Refrigerant (lbs)	Additional Refrigerant (lbs)	Fluid Type / Concentration (%)
	13	93.6(130%)	105.6 %	14.30	9.88	

Nominal/Corrected Capa. (kBtu/h)		Nominal/Corrected PI (kW)	
Cooling	Heating	Cooling	Heating
72.0/70.6	81.0/84.3	4.3/4.2	5.4/8.5

Efficiency(Btu/h/W)		Weight(lbs)	Dimension (WxHxD) (inch)	Electrical Characteristics				
Cooling	Heating			Volt	Phase	Hz	MCA (A)	MOP (A)
16.7	9.9	430x1	36-5/8x66-17/32x29-29/32	208~230	3	60	22.6	35

3. Pipes

Diameter(Liq:Gas,inch)	Length(ft)
1/4 : 1/2	47.0
3/8 : 5/8	36.0
3/8 : 3/4	94.0

4. Branch/Header

Model Name	Quantity
ARBLN01621	4
ARBLN03321	2
-	-

#Notes: Correction factor is corrected by such as, but not limited to, indoor unit combination, temperature, and pipe length.
The result can be slightly different from Product Data Book due to simulation.
Pipe lengths are estimations only.
Contractor is responsible for piping take-off and verification of actual pipe routing and pipe lengths.

System Model Section - IDU

System Name: VRF-ACCU-1 **Date: 03/26/2022**

System No : 1/2

5. Indoor Units(1)

Room	Room Load(kBtu/h)			Room Design Temp.(Return Air Temp.)(°F)				Model Name	Rated TC/Corrected TC(kBtu/h)			Corrected Capa/Room Load(%)		
	TC	SC	HC	Cooling		Heating			TC	SC	HC	TC	SC	HC
				DBT	WBT	DBT	WBT							
VRF-AC-1.1	-	-	-	80.0	67.0	70.0	58.4		19.1/19.1	13.8/13.8	21.5/21.5	-	-	-
VRF-AC-1.2	-	-	-	80.0	67.0	70.0	58.4		7.5/7.5	5.4/5.4	8.5/8.5	-	-	-
VRF-AC-1.3	-	-	-	80.0	67.0	70.0	58.4		12.3/12.3	8.9/8.9	13.6/13.6	-	-	-
VRF-AC-1.4	-	-	-	80.0	67.0	70.0	58.4		12.3/12.3	8.9/8.9	13.6/13.6	-	-	-
VRF-AC-1.5	-	-	-	80.0	67.0	70.0	58.4		9.6/9.6	6.9/6.9	10.9/10.9	-	-	-
VRF-AC-1.6	-	-	-	80.0	67.0	70.0	58.4		9.6/9.6	6.9/6.9	10.9/10.9	-	-	-
VRF-AC-1.7	-	-	-	80.0	67.0	70.0	58.4		9.6/9.6	6.9/6.9	10.9/10.9	-	-	-

#Notes: Correction factor is corrected by such as, but not limited to, indoor unit combination, temperature, and pipe length.

The result can be slightly different from Product Data Book due to simulation.

Pipe lengths are estimations only.

Contractor is responsible for piping take-off and verification of actual pipe routing and pipe lengths.

EWT=Entering Water Temperature / LWT=Leaving Water Temperature.

System Model Section - IDU

System Name: VRF-ACCU-1 **Date: 03/26/2022**

System No : 1/2

6. Indoor Units(2)

Tag	Model Name	Type	Est. Discharge Temp.(°F)		Air flow rate (CFM)	Remark
			Cooling	Heating		
7		CASSETTE 4WAY	47.8	120.2	395.5	NA
6		CASSETTE 4WAY	61.2	99.6	264.9	NA
5		CASSETTE 4WAY	53.3	110.9	307.3	NA
4		CASSETTE 4WAY	53.3	110.9	307.3	NA
3		CASSETTE 4WAY	57.5	105.6	283.0	NA
2		CASSETTE 4WAY	57.5	105.6	283.0	NA
1		CASSETTE 4WAY	57.5	105.6	283.0	NA

#Notes: Correction factor is corrected by such as, but not limited to, indoor unit combination, temperature, and pipe length.

The result can be slightly different from Product Data Book due to simulation.

Pipe lengths are estimations only.

Contractor is responsible for piping take-off and verification of actual pipe routing and pipe lengths.

EWT=Entering Water Temperature / LWT=Leaving Water Temperature.

System Model Section - IDU

System Name: VRF-ACCU-1 **Date: 03/26/2022**

System No : 1/2

7. Indoor Units(3)

Tag	Model Name	Weight	Dimension (WxHxD)	Electrical Characteristics				
				Volt	Phase	Hz	MCA (A)	RLA (A)
7		35 lbs	22-7/16x10x22-7/16 inch	208~230	1	60	0.25	0.2
6		29 lbs	22-7/16x8-7/16x22-7/16 inch	208~230	1	60	0.25	0.2
5		32 lbs	22-7/16x8-7/16x22-7/16 inch	208~230	1	60	0.25	0.2
4		32 lbs	22-7/16x8-7/16x22-7/16 inch	208~230	1	60	0.25	0.2
3		32 lbs	22-7/16x8-7/16x22-7/16 inch	208~230	1	60	0.25	0.2
2		32 lbs	22-7/16x8-7/16x22-7/16 inch	208~230	1	60	0.25	0.2
1		32 lbs	22-7/16x8-7/16x22-7/16 inch	208~230	1	60	0.25	0.2

#Notes: Correction factor is corrected by such as, but not limited to, indoor unit combination, temperature, and pipe length.

The result can be slightly different from Product Data Book due to simulation.

Pipe lengths are estimations only.

Contractor is responsible for piping take-off and verification of actual pipe routing and pipe lengths.

EWT=Entering Water Temperature / LWT=Leaving Water Temperature.

System Validation Check

System Name: VRF-ACCU-1 **Date: 03/26/2022**

System No : 1/2

8. System Validation Check - General Condition

Contents	Limit	Current(Max value : connected unit)
Total pipe length	3280.8 ft	177.0 ft
Longest equivalent pipe length	574.1 ft	156.8 ft : ARNU183TQD4[7]
Longest pipe length after 1st branch	131.2 ft	77.0 ft : ARNU183TQD4[7]
Height difference [Above: IDU, Below: ODU]	360.9 ft	0.0 ft
Height difference [Above: ODU, Below: IDU]	360.9 ft	9.8 ft : ARNU183TQD4[7]
Height difference [IDU to IDU]	131.2 ft	0.0 ft : ARNU093TRD4[1]-ARNU093TRD4[1]
Longest actual pipe length	492.1 ft	147.0 ft : ARNU183TQD4[7]

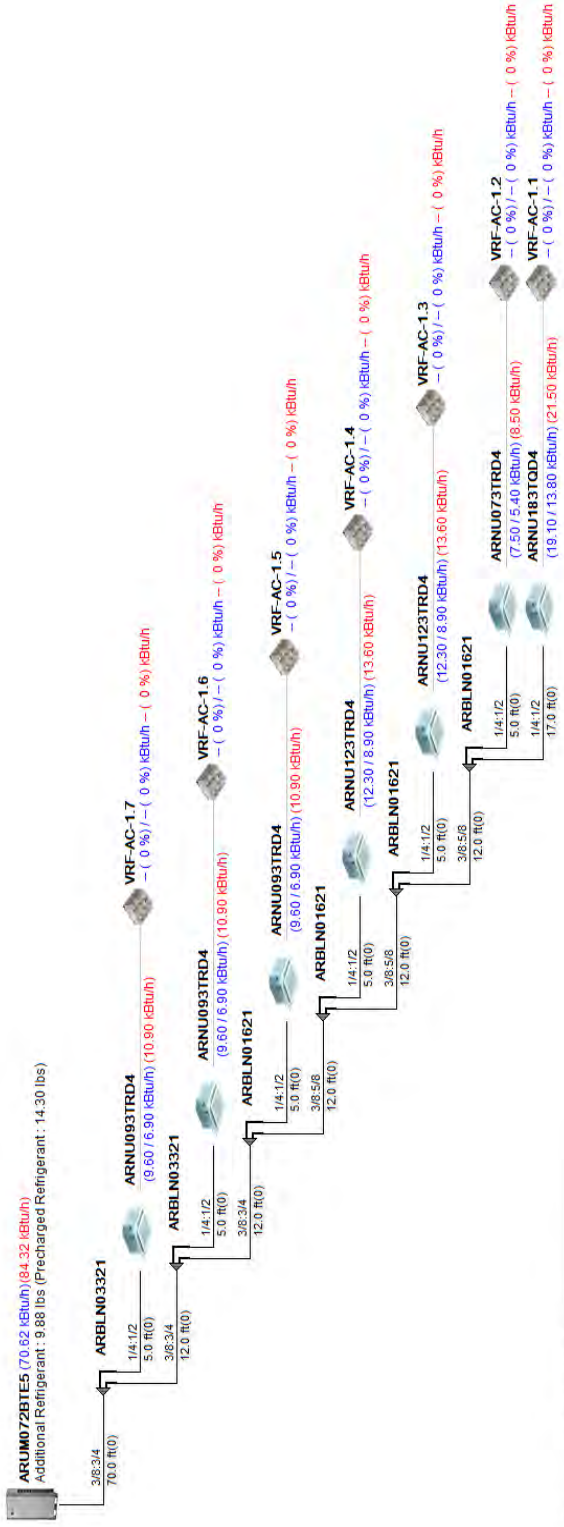
Note : Except "Longest equivalent pipe length", the other pipe length limitations are actual length.

System Tree Diagram

System Name: VRF-ACCU-1

Date: 03/26/2022

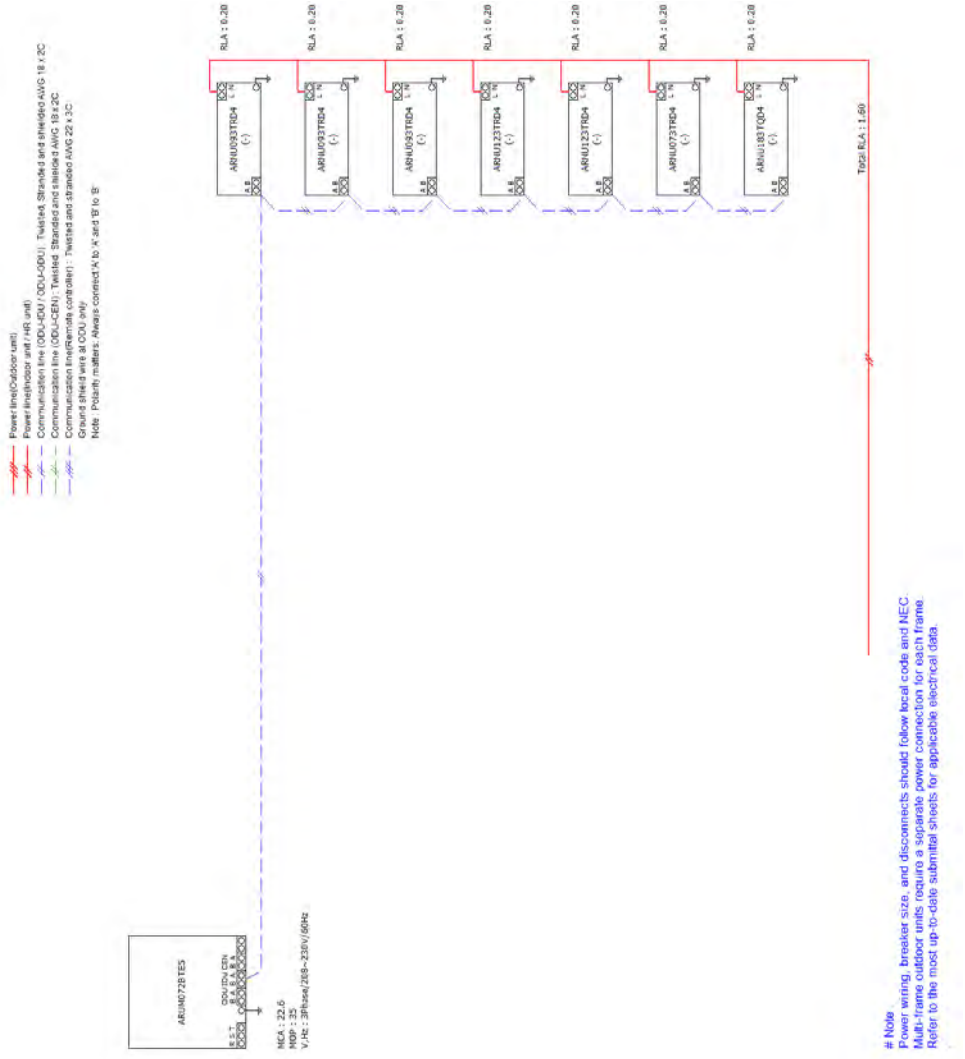
System No : 1/2



System Schematic Diagram

System Name: VRF-ACCU-1 **Date: 03/26/2022**

System No : 1/2



System Model Selection - ODU

System Name: VRF-ACCU-2 **Date: 03/26/2022**

System No : 2/2

1. Design conditions - Outdoor

	Cooling			Heating		
	DBT(°F)	WBT(°F)	RH(%)	DBT(°F)	WBT(°F)	RH(%)
OAT	91.9	73.9	43.3	10.9	10.2	86.0
IAT	80.0	67.0	51.2	70.0	58.4	50.0

2. Outdoor Units

Model Name	Maximum Indoor Units	Maximum CR (kBtu/h(%))	Combination Ratio	Precharged Refrigerant (lbs)	Additional Refrigerant (lbs)	Fluid Type / Concentration (%)
ARUM096BTE5	16	124.8(130%)	81.3 %	23.20	12.76	

Nominal/Corrected Capa. (kBtu/h)		Nominal/Corrected PI (kW)	
Cooling	Heating	Cooling	Heating
96.0/91.3	108.0/108.0	5.3/3.8	6.7/8.6

Efficiency(Btu/h/W)		Weight(lbs)	Dimension (WxHxD) (inch)	Electrical Characteristics				
Cooling	Heating			Volt	Phase	Hz	MCA (A)	MOP (A)
24.1	12.5	507x1	48-13/16x66-17/32x29-29/32	208~230	3	60	28.5	40

3. Pipes

Diameter(Liq:Gas,inch)	Length(ft)
1/4 : 1/2	123.8
3/8 : 5/8	117.8
3/8 : 7/8	65.0

4. Branch/Header

Model Name	Quantity
ARBLN01621	4
ARBLN03321	1
-	-

#Notes: Correction factor is corrected by such as, but not limited to, indoor unit combination, temperature, and pipe length.
The result can be slightly different from Product Data Book due to simulation.
Pipe lengths are estimations only.
Contractor is responsible for piping take-off and verification of actual pipe routing and pipe lengths.

System Model Section - IDU

System Name: VRF-ACCU-2 **Date: 03/26/2022**

System No : 2/2

5. Indoor Units(1)

Room	Room Load(kBtu/h)			Room Design Temp.(Return Air Temp.)(°F)				Model Name	Rated TC/Corrected TC(kBtu/h)			Corrected Capa/Room Load(%)		
	TC	SC	HC	Cooling		Heating			TC	SC	HC	TC	SC	HC
				DBT	WBT	DBT	WBT							
VRF-AC-1.10	-	-	-	80.0	67.0	70.0	58.4	ARNU123TRD4	12.3/12.3	8.9/8.9	13.6/13.6	-	-	-
VRF-AC-1.11	-	-	-	80.0	67.0	70.0	58.4	ARNU123TRD4	12.3/12.3	8.9/8.9	13.6/13.6	-	-	-
VRF-AC-1.12	-	-	-	80.0	67.0	70.0	58.4	ARNU153M1A4	15.4/15.4	12.0/12.0	17.1/17.1	-	-	-
VRF-AC-1.8	-	-	-	80.0	67.0	70.0	58.4	ARNU153TQD4	15.4/15.4	11.1/11.1	17.1/17.1	-	-	-
VRF-AC-1.9	-	-	-	80.0	67.0	70.0	58.4	ARNU123TRD4	12.3/12.3	8.9/8.9	13.6/13.6	-	-	-
VRF-AC-5.1	-	-	-	80.0	67.0	70.0	58.4	ARNU123TRD4	12.3/12.3	8.9/8.9	13.6/13.6	-	-	-

#Notes: Correction factor is corrected by such as, but not limited to, indoor unit combination, temperature, and pipe length.

The result can be slightly different from Product Data Book due to simulation.

Pipe lengths are estimations only.

Contractor is responsible for piping take-off and verification of actual pipe routing and pipe lengths.

EWT=Entering Water Temperature / LWT=Leaving Water Temperature.

System Model Section - IDU

System Name: VRF-ACCU-2 **Date: 03/26/2022**

System No : 2/2

6. Indoor Units(2)

Tag	Model Name	Type	Est. Discharge Temp.(°F)		Air flow rate (CFM)	Remark
			Cooling	Heating		
3		CASSETTE 4WAY	53.3	110.9	307.3	NA
4		CASSETTE 4WAY	53.3	110.9	307.3	NA
5		DUCT MIDDLE STATIC	60.6	97.7	570.0	Setting Value: 98 / E.S.P: 0.2400 inchAq
1		CASSETTE 4WAY	53.6	110.7	388.0	NA
2		CASSETTE 4WAY	53.3	110.9	307.3	NA
6		CASSETTE 4WAY	53.3	110.9	307.3	NA

#Notes: Correction factor is corrected by such as, but not limited to, indoor unit combination, temperature, and pipe length.

The result can be slightly different from Product Data Book due to simulation.

Pipe lengths are estimations only.

Contractor is responsible for piping take-off and verification of actual pipe routing and pipe lengths.

EWT=Entering Water Temperature / LWT=Leaving Water Temperature.

System Model Section - IDU

System Name: VRF-ACCU-2 **Date: 03/26/2022**

System No : 2/2

7. Indoor Units(3)

Tag	Model Name	Weight	Dimension (WxHxD)	Electrical Characteristics				
				Volt	Phase	Hz	MCA (A)	RLA (A)
3		32 lbs	22-7/16x8-7/16x22-7/16 inch	208~230	1	60	0.25	0.2
4		32 lbs	22-7/16x8-7/16x22-7/16 inch	208~230	1	60	0.25	0.2
5		58.4 lbs	35-7/16x10-5/8x27-9/16 inch	208~230	1	60	2.00	0.19
1		35 lbs	22-7/16x10x22-7/16 inch	208~230	1	60	0.25	0.2
2		32 lbs	22-7/16x8-7/16x22-7/16 inch	208~230	1	60	0.25	0.2
6		32 lbs	22-7/16x8-7/16x22-7/16 inch	208~230	1	60	0.25	0.2

#Notes: Correction factor is corrected by such as, but not limited to, indoor unit combination, temperature, and pipe length.

The result can be slightly different from Product Data Book due to simulation.

Pipe lengths are estimations only.

Contractor is responsible for piping take-off and verification of actual pipe routing and pipe lengths.

EWT=Entering Water Temperature / LWT=Leaving Water Temperature.

System Validation Check

System Name: VRF-ACCU-2 **Date: 03/26/2022**

System No : 2/2

8. System Validation Check - General Condition

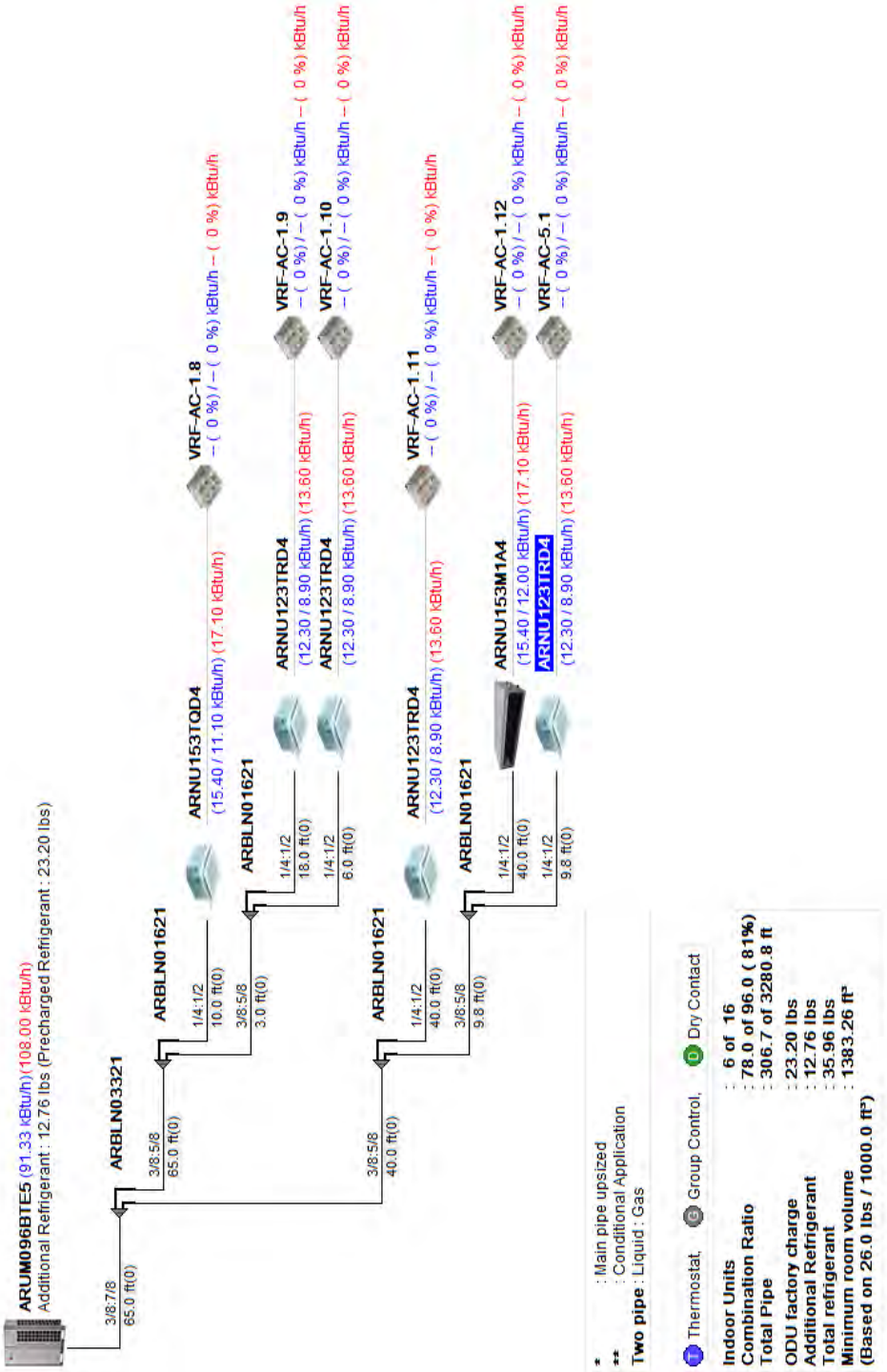
Contents	Limit	Current(Max value : connected unit)
Total pipe length	3280.8 ft	306.7 ft
Longest equivalent pipe length	574.1 ft	159.8 ft : ARNU153M1A4[5]
Longest pipe length after 1st branch	131.2 ft	89.8 ft : ARNU153M1A4[5]
Height difference [Above: IDU, Below: ODU]	360.9 ft	0.0 ft
Height difference [Above: ODU, Below: IDU]	360.9 ft	9.8 ft : ARNU123TRD4[6]
Height difference [IDU to IDU]	131.2 ft	0.0 ft : ARNU153TQD4[1]-ARNU153TQD4[1]
Longest actual pipe length	492.1 ft	154.8 ft : ARNU153M1A4[5]

Note : Except "Longest equivalent pipe length", the other pipe length limitations are actual length.

System Tree Diagram

System Name: VRF-ACCU-2 **Date: 03/26/2022**

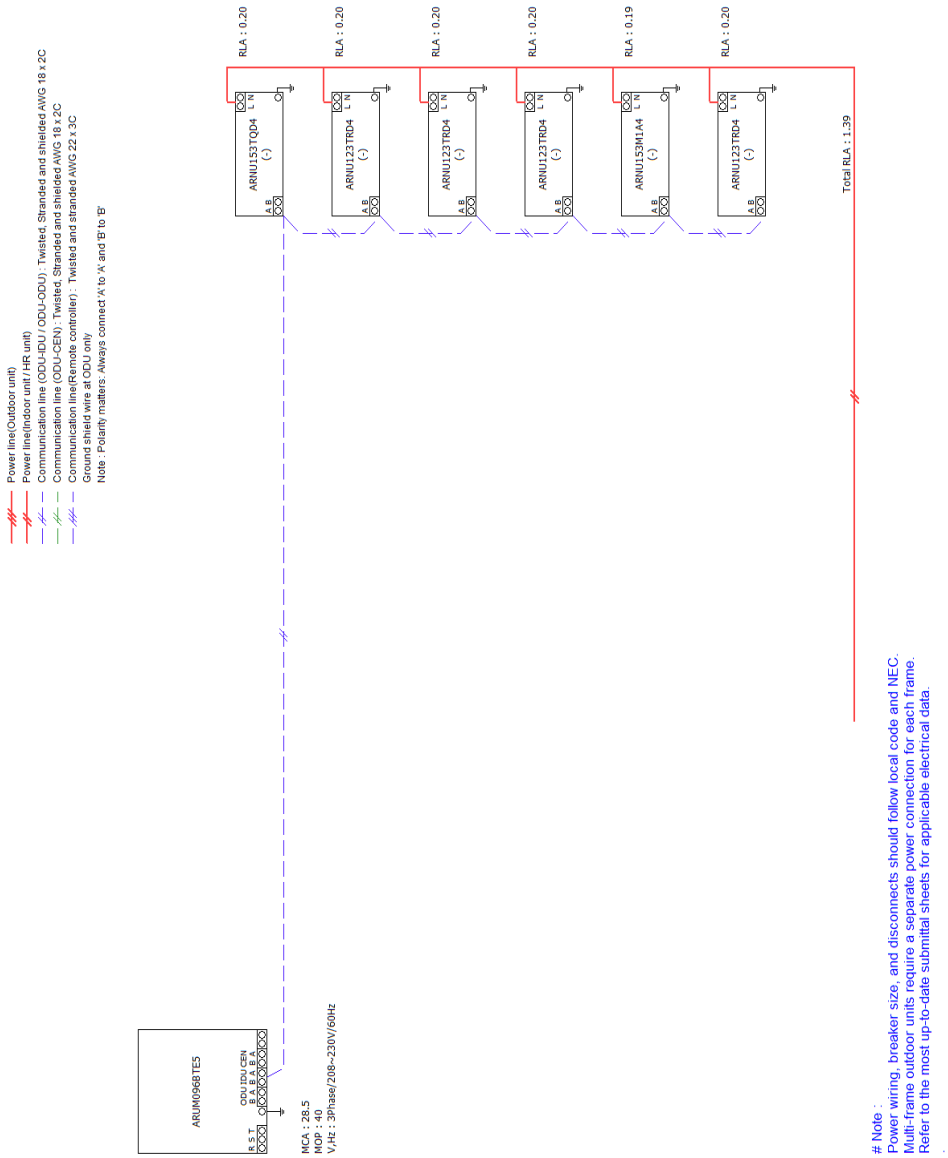
System No : 2/2



System Schematic Diagram

System Name: VRF-ACCU-2 **Date: 03/26/2022**

System No : 2/2



Job Name/Location: **Tag No.:**

Date: **For:** ☐ File ☐ Resubmit ☐ Approval ☐ Other

PO No.:

Architect: **GC:**

Engr: **Mech:**

Rep:
(Company) (Project Manager)

[redacted]5 with LGRED° 208-230V ODU

8 Ton Single Frame Heat Pump and Heat Recovery

Performance:

Cooling Mode:

Nominal Capacity (Btu/h)	96,000
Power Input (kW)	5.33

Heating Mode:

Nominal Capacity (Btu/h)	108,000
Power Input (kW)	6.74

Rated capacity is certified under AHRI Standard 1230. Ratings are subject to change without notice. Current certified ratings are available at www.ahridirectory.org.

Electrical:

Frame	ARUM096BTE5
Power Supply (V/Hz/Ø)[1]	208-230/60/3
MOP (A)	40
MCA (A)	28.5
Rated Amps (A)	24.4
Compressor A (A)	16.4
Compressor B (B)	-
Fan (A)	8.0

Piping:[2]

Frame	ARUM096BTE5
Refrigerant Charge (lbs.)	23.2
Liquid (in., O.D.)	3/8 Braze
High Pressure Vapor (Heat Recov only; in, O.D.)	3/4 Braze
Low Pressure Vapor (in., O.D.)	7/8 Braze

Standard Features:

- Advanced Smart Load Control
- Intelligent Heating
- HiPOR (High Pressure Oil Return)
- Smart Oil Control
- Night Quiet Operation
- Fault Detection and Diagnosis
- Active Refrigerant Control
- Variable Heat Path Exchanger
- Subcooling and Vapor Injection Control
- Liquid Cooled Inverter Controller
- Advanced Comfort Cooling

Optional Accessories:

☐ Air Guide - ZAGDKA52A
☐ Hail Guard Kit - ZHGDKA52A
☐ Low Ambient Baffle Kit - ZLABKA52A, Control Kit - PRVC2 (1 per system)
☐ Base Pan Heater - ZPLT1A52A

**Cooling range with the Low Ambient Baffle Kit (sold separately) is -9.9°F to +122°F and is achieved only when all indoor units are operating in cooling mode. Does not impact heat recovery system synchronous operating range.

Operating Range:

Cooling (°F DB)**	5 - 122
Heating (°F WB)	-22 - 61
Synchronous	
Cooling Based (°F DB)	14 - 81
Heating Based (°F WB)	14 - 61

Unit Data:

Refrigerant Type	R410A
Refrigerant Control	EEV
Max. Number of Indoor Units[3]	16
Sound Pressure[4] dB(A)	58.0
Weight	
Frame	ARUM096BTE5
Net (lbs.)	507
Shipping (lbs.)	534
Communication Cable (No x AWG)[5]	2 x 18
Heat Exchanger Coating	Black Coated Fin™

Compressor:

Type	HSS DC Scroll
Quantity	1
Oil / Type	PVE / FVC68D

Fan:

Type	Propeller
Quantity	2
Motor Drive	Brushless Digitally Controlled Direct
Air Flow Rate (CFM)	11,300

Notes:

1. Power wiring cable size must comply with the applicable local and national codes. Cables terminate at each frame.
2. For main pipe segment size, refer to the LATS Multi V tree diagram.
3. The combination ratio must be between 50-130%.
4. Sound pressure levels are tested in an anechoic chamber under ISO Standard 3745 for the combination of outdoor units.
5. Communication cable between ODU and IDUs must be 2-conductor, 18 AWG, twisted, stranded, and shielded. Ensure the communication cable shield is properly grounded to the Master ODU chassis only. Do not ground the communication cable at any other point. Wiring must comply with all applicable local and national codes.
6. Acceptable operating voltage: 187V - 253V
7. Low ambient performance with LGRED° heat technology is included in Multi V 5 units produced after February 2019.

AHRI CERTIFIED™ www.ahridirectory.org
Variable Refrigerant Flow (VRF) Multi-Split AC and HP
AHRI Standard 1230

Inverter

Job Name/Location: _____

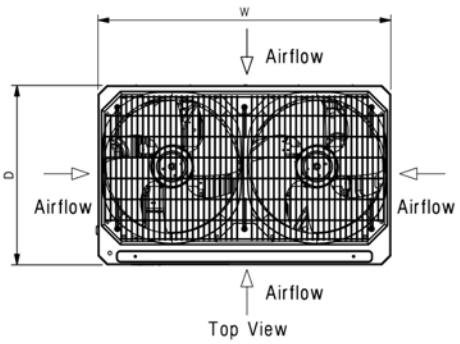
Tag No.: _____

Date: _____

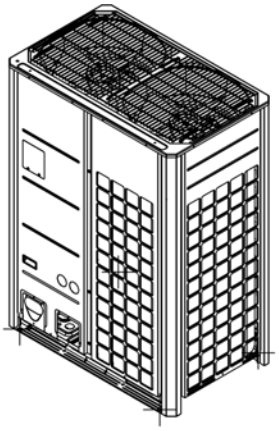
PO No.: _____

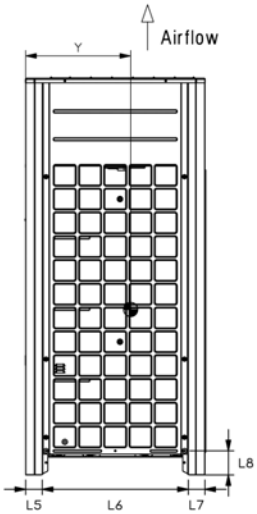
[redacted]5 with LGRED° 208-230V ODU

8 Ton Single Frame Heat Pump and Heat Recovery

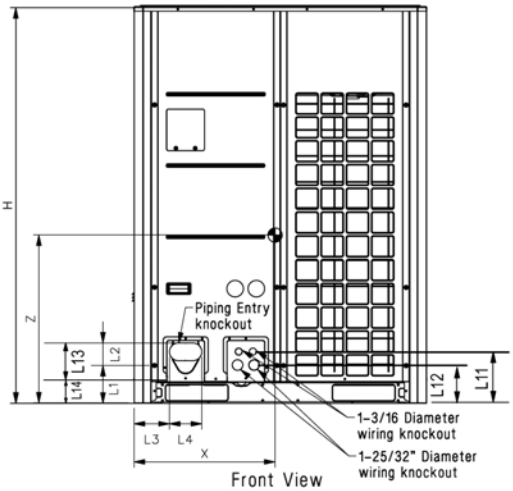


Top View

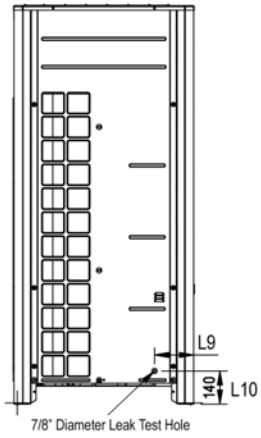




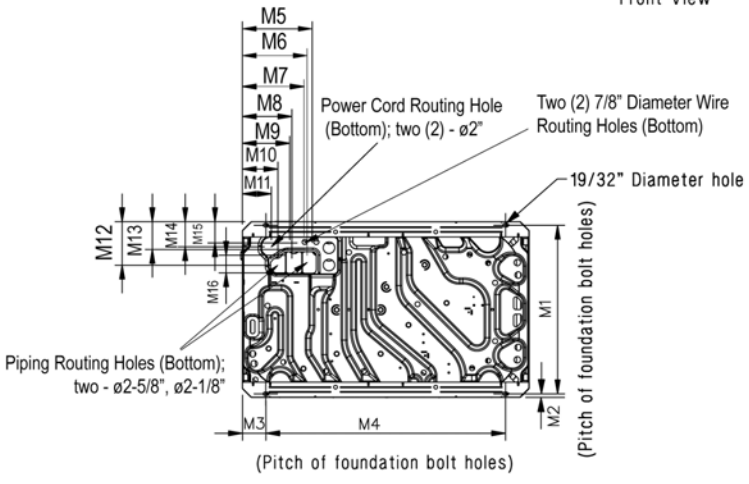
Right Side View



Front View



Left Side View



Bottom Mounting Holes

M1	28-25/32"
M2	5/8"
M3	3-15/16"
M4	40-15/16"
M5	11 – 15/16"
M6	11 – 1/16"
M7	10 – 1/2"
M8	8 – 7/16"
M9	8 – 1/8"
M10	6 – 1/16"
M11	4 – 15/16"
M12	7 – 1/2"
M13	4 – 13/16"
M14	4 – 5/16"
M15	3 – 5/8"
M16	3"

W	48-13/16"
H	66-17/32"
D	29-29/32"
L1	6-5/16"
L2	3-3/4"
L3	5-29/32"
L4	5-13/32"
L5	2-25/32"
L6	24-9/32"
L7	2-25/32"
L8	4-1/32"
L9	6 – 1/2"
L10	5 – 9/16"
L11	8 – 5/8"
L12	6 – 7/16"
L13	9 – 15/16"
L14	3 – 5/8"

Center of Gravity

X	23-7/32"
Y	15-5/8"
Z	25-9/16"

All dimensions have a tolerance of ±0.25 in.
[Unit: inch]

= Center of Gravity

AHRI CERTIFIED®
www.ahridirectory.org

Certificate of Product Ratings

AHRI Certified Reference Number : 202515434 Date : 01-16-2020 Model Status : Active

Brand Name :

AHRI Type : HMSR-A-CB

Indoor Type : Non-Ducted Indoor Units

System Model Number :

Module Model Number 1 :

Rated as follows in accordance with the latest edition of AHRI Standard 1230 for VRF Air-Conditioning and Heat Pump Equipment and subject to rating accuracy by AHRI-sponsored, independent, third party testing:

Cooling Capacity (95F) : 69000

EER (95F) : 13.40

IEER : 28.40

SCHE : 28.50

High Heating Capacity (47F) : 77000

High COP (47F) : 3.83

Low Heating Capacity (17F) : 51000

Low COP (17F) : 2.66

†"Active" Model Status are those that an AHRI Certification Program Participant is currently producing AND selling or offering for sale; OR new models that are being marketed but are not yet being produced."Production Stopped" Model Status are those that an AHRI Certification Program Participant is no longer producing BUT is still selling or offering for sale.
Ratings that are accompanied by WAS indicate an involuntary re-rate. The new published rating is shown along with the previous (i.e. WAS) rating.

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CERTIFICATE NO.:

AHRI CERTIFIED®
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Certificate of Product Ratings

AHRI Certified Reference Number : 206453540 Date : 07-29-2021 Model Status : Active

Brand Name :

AHRI Type : I

Indoor Type : Mixed Ducted and Non-Ducted Indoor Units

System Model Number :

Module Model Number 1 :

Rated as follows in accordance with the latest edition of AHRI Standard 1230 for VRF Air-Conditioning and Heat Pump Equipment and subject to rating accuracy by AHRI-sponsored, independent, third party testing:

Cooling Capacity (95F) : 92000

EER (95F) : 13.95

IEER : 29.05

SCHE : 29.50

High Heating Capacity (47F) : 103000

High COP (47F) : 3.99

Low Heating Capacity (17F) : 67000

Low COP (17F) : 2.79

Mixed systems ratings are a calculated average of the non-ducted and ducted system ratings [I.e. (Ducted System Efficiency Rating + Non-ducted System Efficiency Rating)/2]. For additional information on determination of ratings, please refer to the latest version of AHRI Standard 1230.

†"Active" Model Status are those that an AHRI Certification Program Participant is currently producing AND selling or offering for sale; OR new models that are being marketed but are not yet being produced."Production Stopped" Model Status are those that an AHRI Certification Program Participant is no longer producing BUT is still selling or offering for sale.
Ratings that are accompanied by WAS indicate an involuntary re-rate. The new published rating is shown along with the previous (i.e. WAS) rating.

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CERTIFICATE NO.:

ALL UNIT OPTION SUMMARY

Project Name:
Engineering Sales Office:
Lead Sales Engineer:
City:

CLASS Indentification #: 22020042
Project Status: Draft
Project Last Modified: 2/10/2022
Initial Firm-Quote Date: 0
Revision Number: 0
Total Units: 1

	CAH-1
NAME	**EAHP 36 1200 O B**
TAG	**3 Ton**
# of Units	**1**
	Description
DESIGN	
Unit Series	Select
Unit Category	Self Contained Air to Air - VCU
Unit Design	Heat Pump with Energy Recovery Wheel
Sound Package	Full IQ Sound Package
Heating Type	Electric Elements
Cooling Type	Self Contained - Nominal 36 MBtu (3 ton)
Cabinet	O-Cabinet
UNIT	S26126O
PERFORMANCE	
Supply Voltage	208/3/60
Unit Disconnect	Internal Disconnect
Energy Recovery Wheel	1" x 21" ERW
Heating - Electric Elements	10 KW 208V 3PH
Heating - Electric Element Control	10 KW Staged Control
Heat Pump - Air to Air - Compressor	Nominal 3 ton Heat Pump
Primary Filter	2" MERV 8 (18" x 18")
Heat Pump - Air to Air - Condensing Fan	ECM Condensing Fan
Supply Fan	3/4 hp ECM Supply Fan (DFB)
Condensate Pump	Condensate Pump
CABINET OPTIONS	
Unit & Accessory Color	TBD
Unit Doors	Double Tall Doors Punched Grilles
Unit Airflow	Top ducted
Unit Insulation	Non Fibrous insulation
ERW Extra Filters	Extra Filter - ERW intake
	Extra Filter - ERW relief
HEATING OPTIONS	
COOLING OPTIONS	
Cooling Upgrades	Hot Gas Reheat
	Insulated drain pans
Condensate Drain Pan	Stainless Steel sloped drain pans
ELECTRICAL	

CONTROLS	
Controller & Communication	BACnet large DDC Controller networked
Controller Room Interface	Room Interface with MS, RH & CO2 (mtd)
Heat Pump Valve Control	HP Default to Heating
ACCESSORIES	
Exterior Louvers	None (Approval req)
Louver Wall Sleeve	None
Louver Color	Not Required
Top Plenum/Duct Cover	24" Top Plenum
Rear Plenum	10" Rear Plenum
	Filler Panels
WARRANTIES	
Warranty Type	2 yr Parts & Labor
Warranty Options	5 yr Compressor Parts Only
CAH Notes	-Louver supplied by others. Systemair approval required for warranty and performance -Wall sleeves supplied by others

Compressorized Units

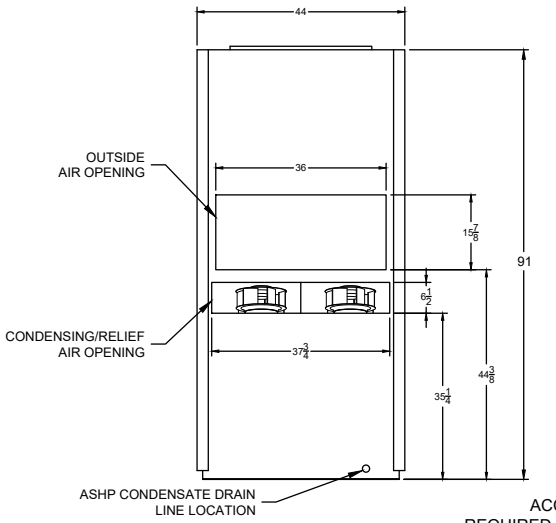
General Unit Information							Supply & Outside Air Airflow					Condenser Fan	Condensate Pump	ERW	Electric Heat	Electrical		
CAH	Name	Tag	Model	Cabinet Size	Type	Filter	Total	Fan Motor		Min O.A.	ESP					Voltage	M.C.A	M.O.P
							CFM	HP	F.L.A	CFM	in. wc	F.L.A	F.L.A	F.L.A	F.L.A			
CAH-1	[redacted]36 1200 O B	3 Ton		32" D x 44" W x 91" H	Heat Pump with Energy Recovery Wheel	2" disposable filters MERV 8(18" x 18")	1200	0.75	5.90	450	0.25	4.60	0.50	0.30	27.76	208/3/60	48.83	50

	Electric Heat					Air Source Heat Pump								ASHP - Part Load Cooling									
CAH			EAT	LAT	Total	EAT		Cooling ambient	Total	Sensible	EER	Heat Pump	COP	Compressor	Airflow	EAT		Cooling ambient	Total	Sensible	EER	IPLV	Heat Pump	COP
	KW	Stages	db°F	db°F	MBH	db°F	wb°F	db°F	mbh	mbh		mbh		FLA	CFM	db°F	wb°F	db°F	mbh	mbh			mbh	
CAH-1	10	2	64.27	90.48	34.12	80	67	95	34	23.2	10.9	34	3.5	11.6	1200	80	67	80	27	21.6	13.6	13.5	29.5	4.2

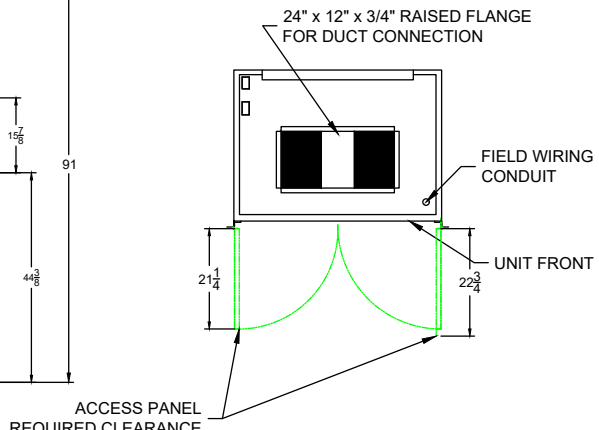
	Energy Recovery Wheel - Heating (Winter)							Energy Recovery Wheel - Cooling (Summer)									
CAH	O.A.	EXH	O.A.	Room Air	LAT	Capacity	Total	O.A.	EXH	O.A.		Room Air		LAT		Capacity	Total
	CFM	CFM	db°F	db°F	db°F	mbh	%	CFM	CFM	db°F	wb°F	db°F	wb°F	db°F	wb°F	mbh	%
CAH-1	450	450	11	72	51.33	25.43	65.64	450	450	89	75	75	63	79.41	68.05	11.92	60.77

For external duct static 0.25” and below, certified AMCA sound data is available.
Manufacturer’s shall provide sound data in accordance to AHRI Standard 260 “Sound Rating of Ducted Air Moving and Conditioning Equipment”.
Data to be collected in an AMCA accredited reverberant Laboratory.

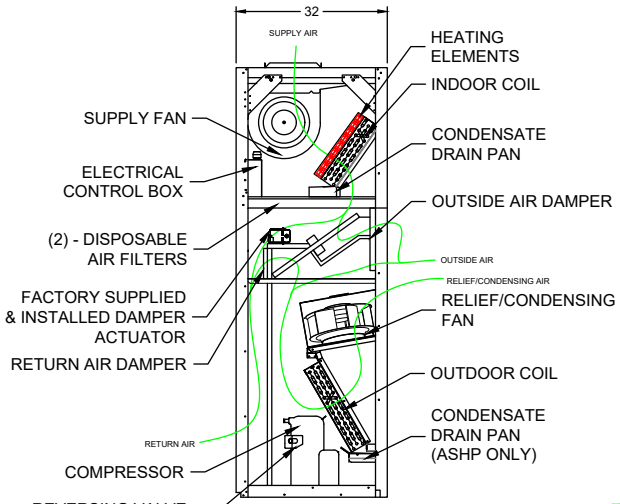
Please note, certified AMCA sound data is available only with 2” MERV 8 filters selected.
Sound data is unavailable when any other type of filter is selected.



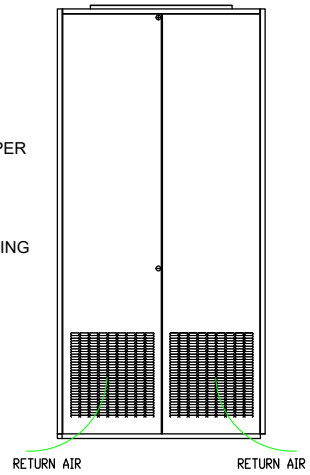
BACK VIEW



TOP VIEW



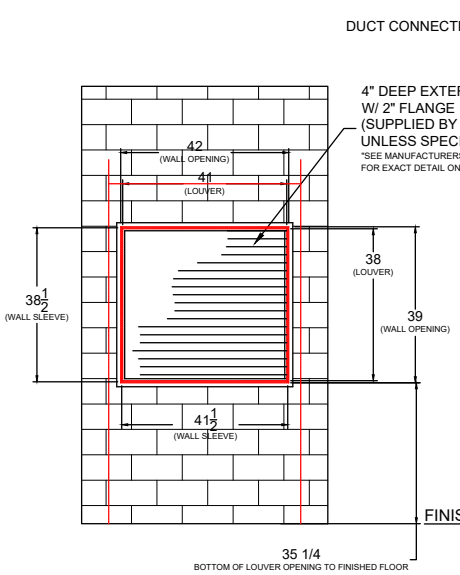
RIGHT SIDE VIEW



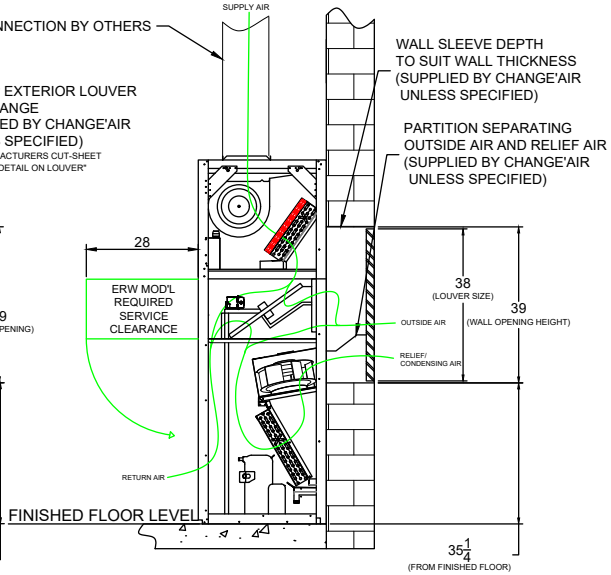
FRONT VIEW

ATTENTION:

1. THE UNIT MUST BE INSTALLED PROPERLY ON LEVEL FLOOR SURFACE
2. THE UNIT MUST BE LAGGED TO THE FLOOR
3. IMPROPER STATIC PRESSURE CONTROL OF THE VENTILATED SPACE WILL AFFECT VENTILATION CAPACITY
4. SEE OWNER'S MANUAL-INSTALLATION, OPERATING & SERVICE INSTRUCTIONS (IN UNIT) FOR MORE DETAILS



REAR VIEW

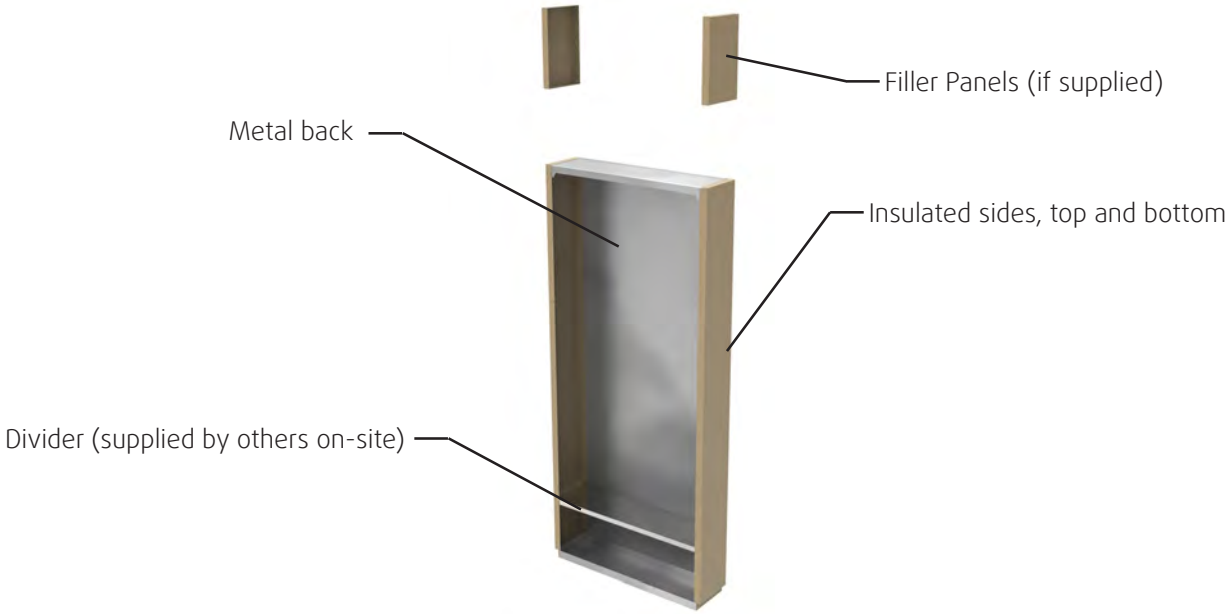


RIGHT SIDE VIEW

CLASS DRAWING NUMBER | *D-26226O*

Rear Plenum

[redacted] Series Accessory



Standard Features	Options
Width and Height to match unit dimensions	Available Depths - **10" and 14" (6" based on approval)**
Finish will be the same as the unit	Available Colors - **Sand or Grey**
Sides, top and bottom are covered with 1" fiberglass insulation	1" non-fibrous hushcloth insulation
Divider (supplied by others)	
Metal back supplied uninsulated	Same as unit insulation

Design Consideration:

· Rear Plenum Depth will vary depending on unit type, louver size, site conditions and options selected.
· The divider (supplied by others) can take on several design options depending on site conditions.
· The divider in the rear plenum should align perfectly with the divider in the wall sleeve, this must be done on-site making sure that both ends are perfectly aligned to avoid leakage or crossover.
· Filler panels can be supplied if a standard size top duct cover or top plenum are supplied with the unit.
· The openings for the exterior louvers must be cut by others on site.

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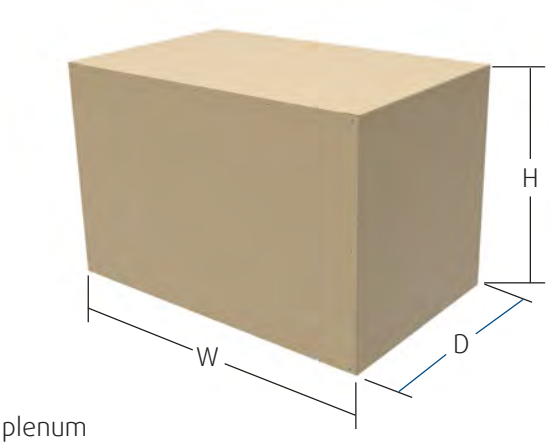
[redacted]

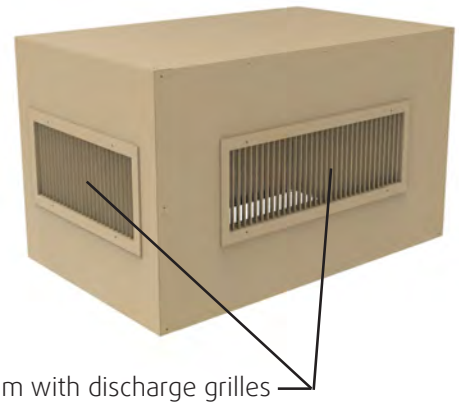
[redacted]

Top Plenum

Series Accessory



Top plenum



Top plenum with discharge grilles

Standard Features	Options
Width and depth to match unit dimensions	Available heights - **16" high or 24" high** (When face discharge grilles are included, the minimum recommended height is 16")
Finish will be the same as the unit	Available Colors - **Sand or Grey**
All 5 walls are covered with 1" fiberglass insulation, to achieve sound deadening and thermal efficiency	1" non-fibrous hushcloth insulation.
If supplied: 3 Double deflective discharge grilles (Painted) Standard sizes: 24" x 8" Front, 18" x 8" Sides	Number of grilles can be (if supplied): Total 3 (1x Front and 2 x Sides) OR Total 2 (1x Front and 1x either Side) OR Total 2 (2x both Sides) *Refer to the CFM limit table for sound implications
Removable front panel for easy access to piping connection and the electrical conduit	

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Top Plenum

Series Accessory

Design Consideration:
Standard top plenum:
· Openings for discharge plenum cut on-site by others.

Double Deflective discharge grilles (if supplied):
· Minimum 16" overall height recommended (If possible increase the height to help minimize the discharge air sound).
· Placement of the unit centered in the room with front, left and right discharge is preferred for optimal performance.
· A single discharge grille (front or side) is not a recommended option.
· Ensure there are no obstructions that will interfere with the placement of the accessory.
· Special considerations should be given to site conditions.

*** Note: Face discharge grilles shall be selected as recommended in the CFM vs number of grilles table for better sound results. Discharging air into a duct system will reduce air sound transmission on higher volume units.**

	*Sound Implications - CFM vs Number of Grilles in Top Plenum															
CFM	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200
# of Grilles																
3 (1x Front + 2x Sides)																
2 (1x Front + 1x Either Side)																
2 (2x Both Sides)																

Reasonable Sound

Sound Caution

Sound Issues Expected

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Vertical Classroom Air Handler
Sound Analysis

Sophmore
O Cabinet

Sound Package
2 x 12-6 Supply Fan
ERW

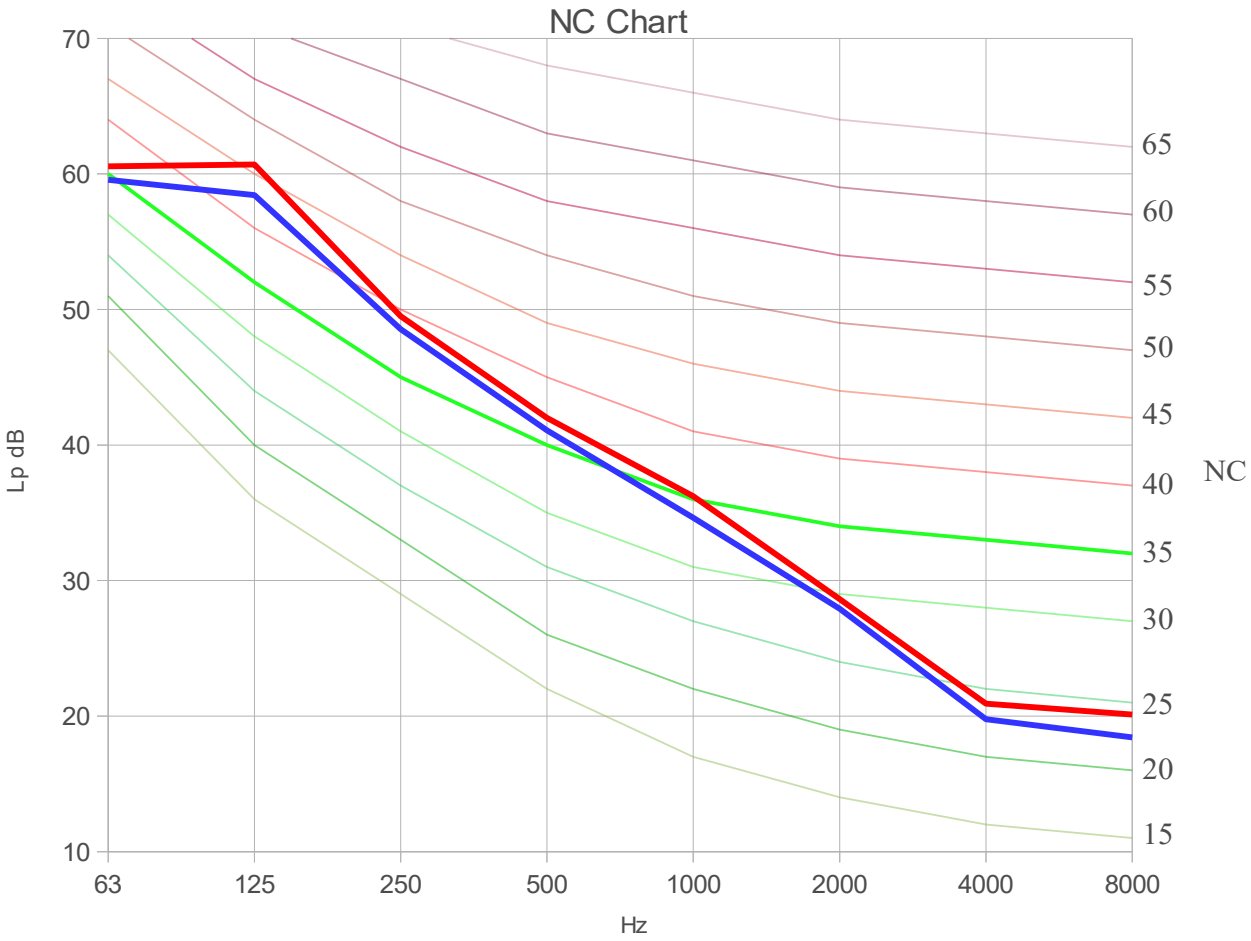
This report uses data derived from accredited reverberant laboratory results tested in accordance to AHRI Standard 260 "Sound rating of ducted air moving and air conditioning equipment"

a systemair company

Classroom Units Sound Report

Lab	**Accredited reverberant**	**Sound Package**	**Compressor Stage 2**
Standard	**AHRI 260**	**2 x 12-6 Supply Fan**	**450 CFM Recovery**
Series	**Sophmore** **O Cabinet**		
CFM	**1200**		

Type	ESP	63	125	250	500	1000	2000	4000	8000	Lw	LwA	dBA	NC
$Lw_{radiated}$	0.00	69.6	68.4	58.6	51.1	44.6	37.9	29.8	28.4	72.3	55.9	45.9	43
	0.25	70.6	70.7	59.5	52.0	46.2	38.6	30.9	30.1	73.8	57.5	47.5	46
$Lw_{discharge}$	0.00	74.7	71.3	67.1	64.5	62.8	60.2	55.3	47.3	77.4	67.8	57.8	
	0.25	75.7	74.4	66.3	66.9	64.3	62.3	58.7	51.5	79.0	69.7	59.7	



This report uses data derived from accredited reverberant laboratory results tested in accordance to AHRI Standard 260 "Sound rating of ducted air moving and air conditioning equipment"

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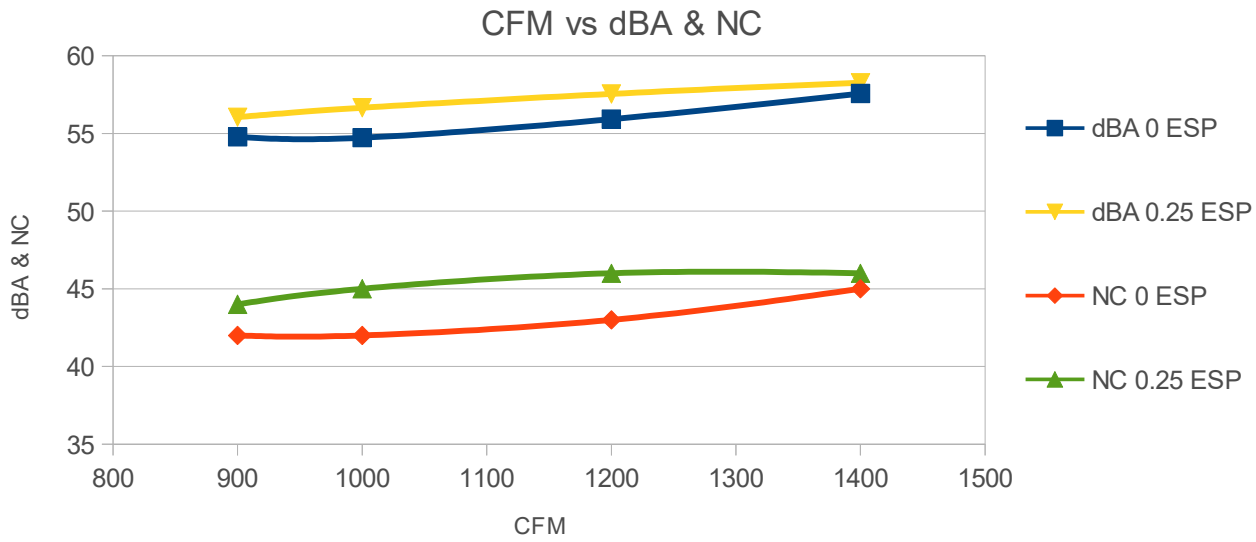
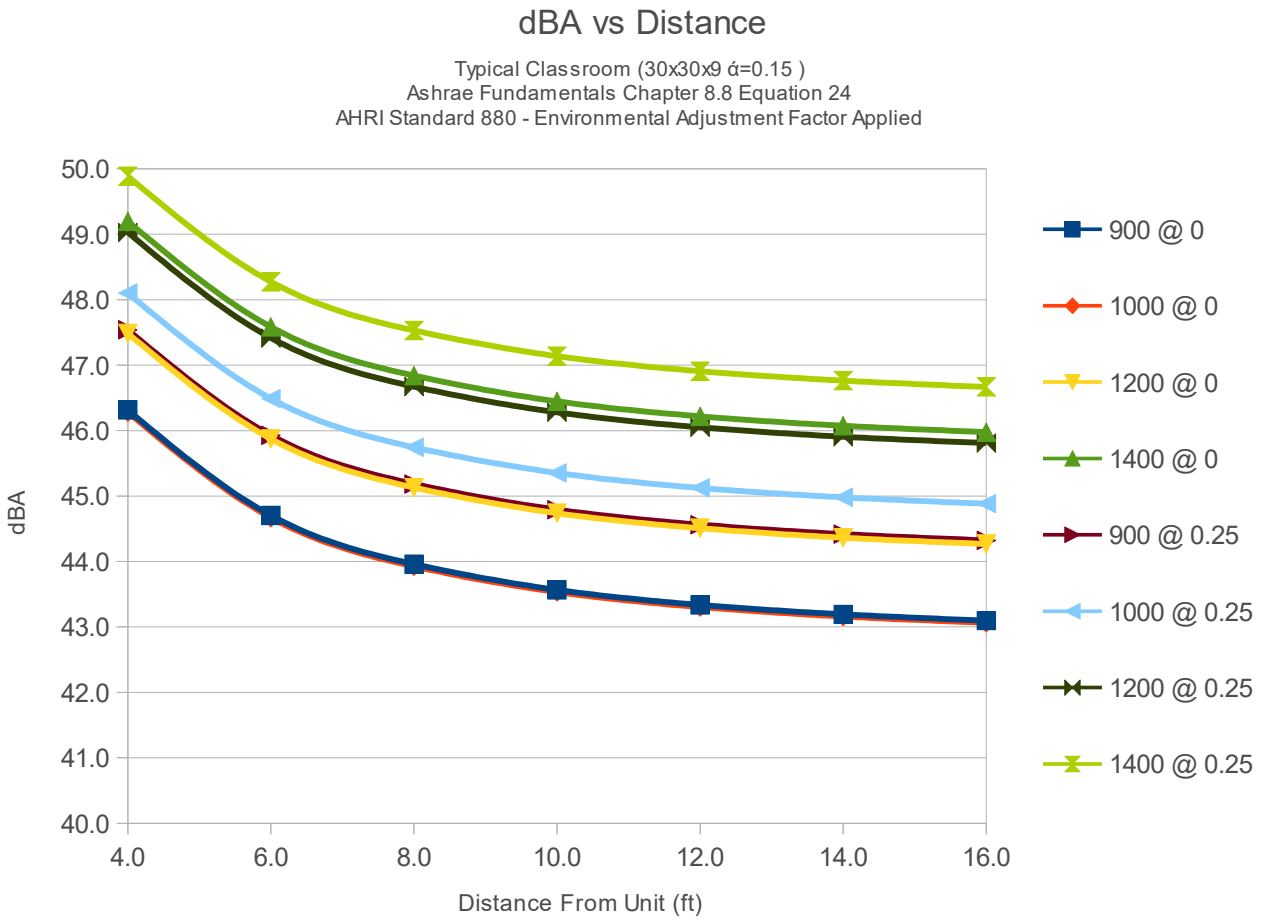
Classroom Units Performance





This report uses data derived from accredited reverberant laboratory results tested in accordance to AHRI Standard 260 "Sound rating of ducted air moving and air conditioning equipment"

[redacted]

APPROVAL DRAWINGS

CUSTOMER NAME : [redacted]
CONSULTING ENG. :
PROJECT :
CONTRACTOR :

[X] IMPERIAL SYSTEM
[ ] METRIC SYSTEM

COPIES: FM

CSA - NRTL/C
APPROVED # LR-30551

DATE (Y M D) 22/02/10

P.O. NUMBER DRAWINGS

QUOTE # 768879

ELECTRICAL HEATER			DIMENSIONS SEE ATTACHED MECHANICAL DRAWING			ELECTRICAL DATA				BUILT-IN CONTROLS
ITEM	TAG	QUANTITY	W	H	D	KW	VOLT / PH	AMPS	ST / KW	OPTIONS SYMBOLS ARE EXPLAINED BELOW
MECHANICAL DRAWING #			TYPE	T	X	C	ELECTRICAL DRAWING #	CFM · l/s	FPM · m/s	CONTR VOLTS
1		1	22.00	18.00		5	12.00	208/1	57.72	1/ 12.00	C1CACNT0P1X6ULB1AYIC
			SC	22.00	18.00	5.00	2B12-712V-5200-0000	1800	655	24	U2SC

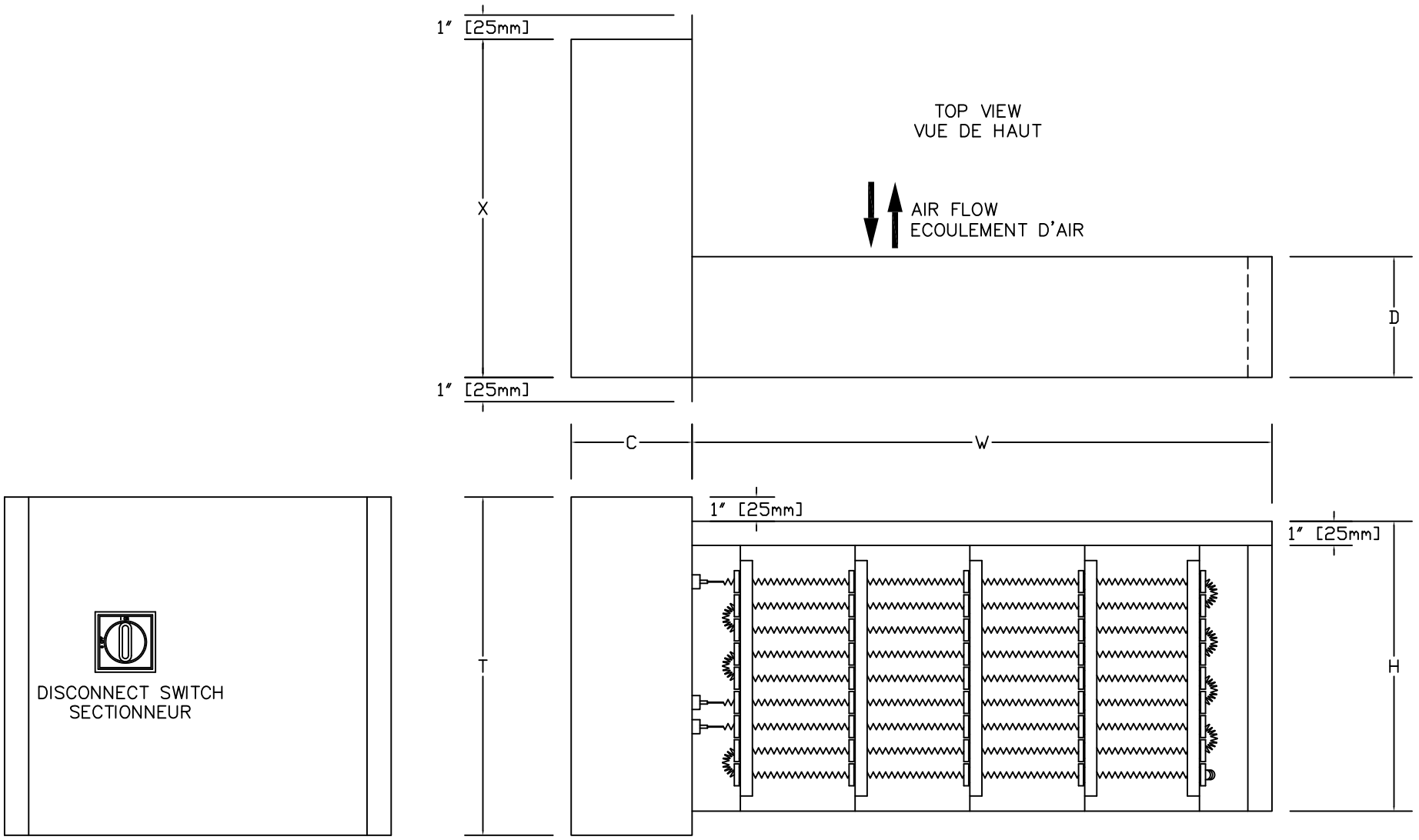
REMARKS :

10 DAY BUILD

[redacted]

C1 MAGN.CONTACTOR PARTIAL BREAK
CA AUTOMATIC CUT-OUT
CN MANUAL CUT-OUT
T0 TRANSF.C/W FUSIBLE LINK
P1 PDS FIXED, C/W PITOT TUBE
X6 DOOR INTERLOCK DISC. SWITCH
UL UL APPROVED
B1 S.C.R. BY THERMOLEC
AY ROOM THERMOSTAT 0-10VDC
IC INTERLOCK TERMINAL STRIP
U2 HRC LOAD FUSES
SC SLIP-IN DUCT HEATER

[redacted]



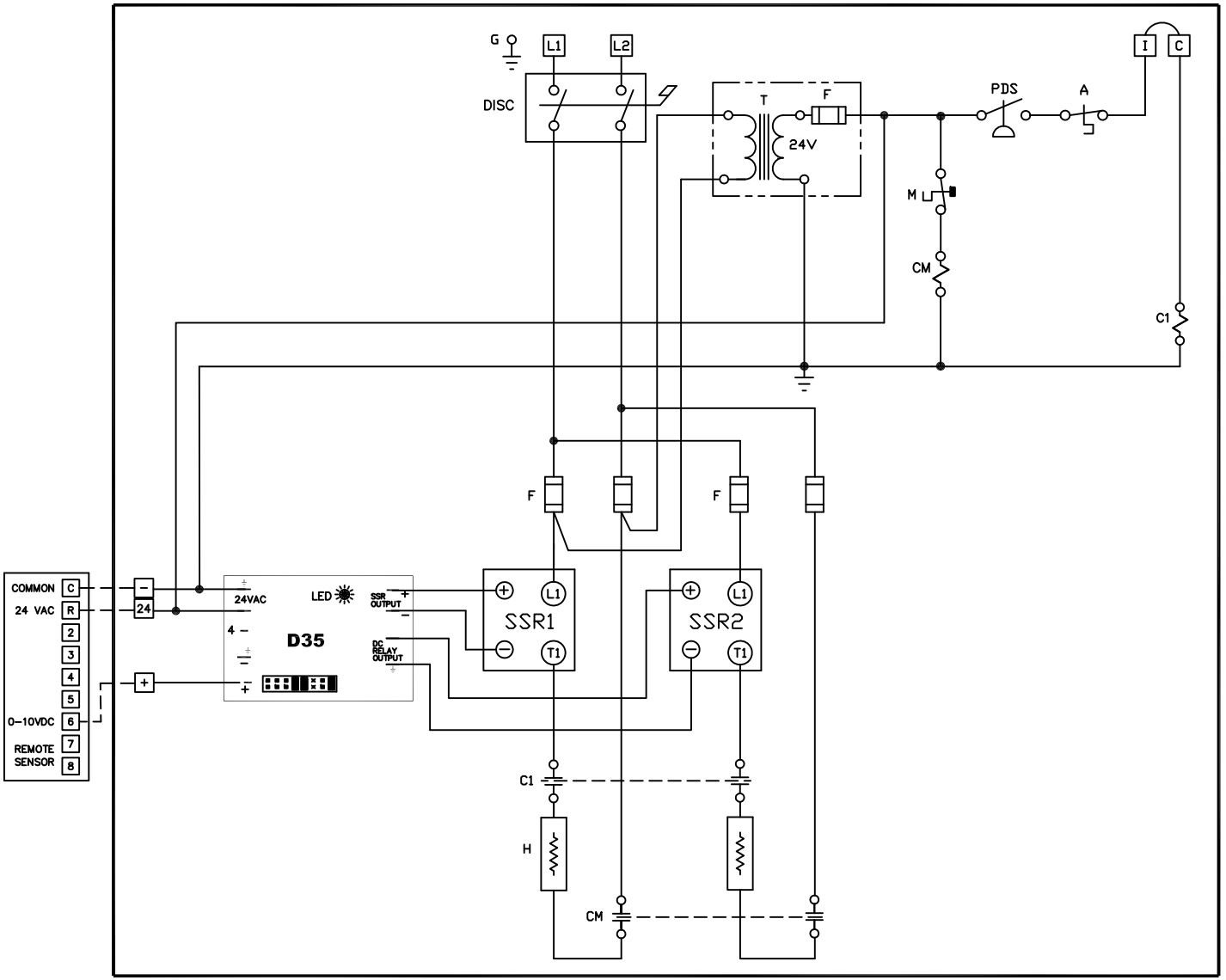
TITLE/TITRE

TYPICAL SLIP-IN TYPE HEATER
SERPENTIN A INSERTION TYPIQUE

DRAWING NO.

DATE

PER



LEGENDE

A	Sonde Thermique à Réenclenchement Automatique
M	Sonde Thermique à Réenclenchement Manuel
C1	Contacteur de Contrôle
CM	Contacteur Secondaire
DISC	Sectionneur
D35	Contrôleur Electronique
F	Fusible
SSR	Relais Electronique
T	Transformateur
PDS	Interrupteur à différentiel de pression

LEGEND

A	Automatic Reset Cut Out
M	Manual Reset Cut Out
C1	Operating Contactors
CM	Backup Contactors
DISC	Disconnect Switch
D35	Solid State Controller
F	Fuse Or Fuse Link
SSR	Solid State Relay
T	Control Circuit Transformer
PDS	Pressure differential switch

IMPORTANT

Enlever le pont entre les bornes "I" & "C" avant de connecter l'entrebarrage, si applicable.
Suivre les codes électriques nationaux et locaux ainsi que les instructions contenues dans l'appareil.
Le serpentin électrique Thermolec est representé par un cadre en gros traits. Tout ce qui est en dehors du cadre est un "filage typique externe fait par d'autres".

IMPORTANT

Remove the jumper between "I" & "C" before connecting interlocks, if applicable.
Wire in accordance with Local Electrical codes. Read instructions carefully before wiring and operating.
Frame shown in heavy line represents Thermolec Electric Coil. All wiring outside this frame are "typical external wiring by others".

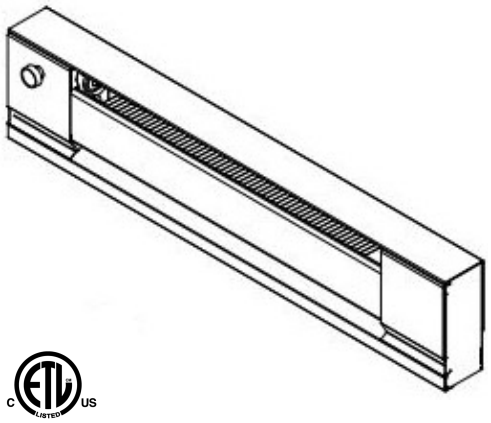
Title / Titre

Drawing number / Numéro de dessin

MADE IN
THE U.S.A.

SERIES
ELECTRIC BASEBOARD HEATER

SALES ORDER NO.		**QUOTE**	J8H6T
CUSTOMER		**DATE:**	02/10/2022
PROJECT			
SALES REP			
ENGINEER			
CONTRACTOR			
SUBMITTED BY			
APPROVED BY			
APPROVED BY			

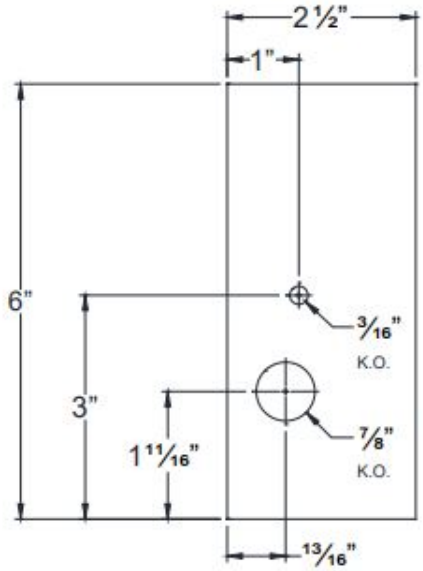


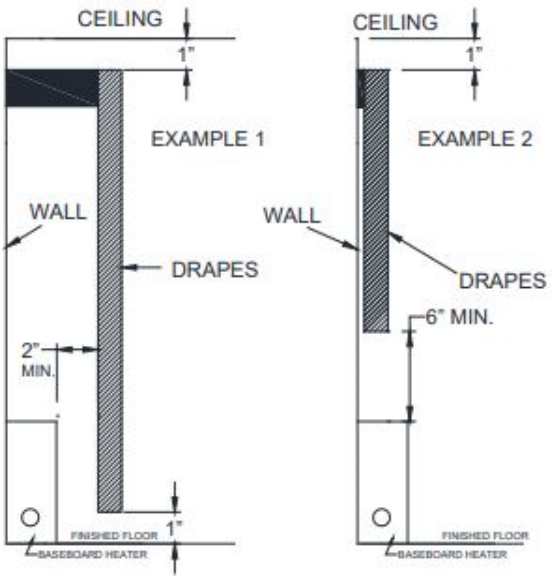
Intertek

SUBMITTAL DATA SHEET

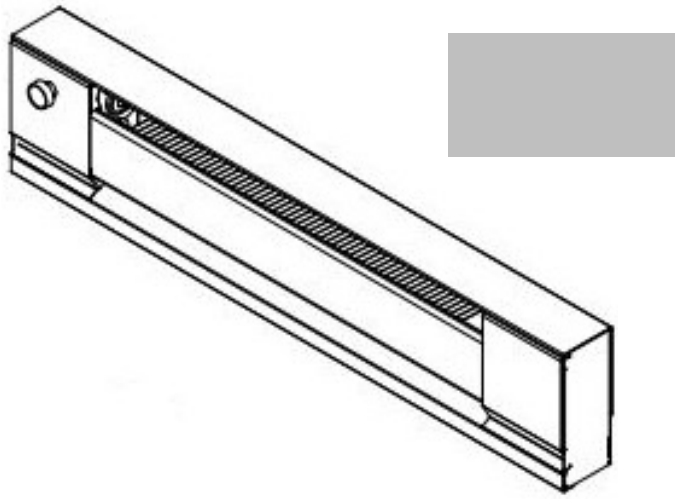
QTY	MODEL	TAG	WATTAGE	VOLTS	PHASE	AMPS	FINISH	ACCESSORIES	THERMOSTAT	OPTIONS
1		BB-5	1250	120	1	10.4	Ivory	DS	None	WWA06
1		BB-10	2500	208	1	12	Ivory	DS	None	NOVALUE

NOTES/SPECIAL INSTRUCTIONS:





- Available in white or ivory with stainless steel heating element and aluminum fins
- Painted 22 gauge steel front with 20 gauge junction boxes located on each end of the heater - juction boxes contain quick connect cable clamps and 6" ground lead wires
- Over-temperature thermal limit extends entire length of heated area
- A full length wireway provided along the back of the heater - enclosed conduit available
- Heater can be mounted to the wall by using the key hole knocouts every 4" at the back of the heater
- Optional in-built thermostats field installed in the junction box
- For high altitude applications, delete the SW in the model number and add HAW
- Height: 6" Depth: 2½"



Accessories

Field Installed Accessories				
Description	MFG MODEL NUMBER			WT. (LBS)
	Ivory	White	Bankers Bronze	
Disconneact Switch, 20 Amp, 120-277V	DS	DSW	DSB	1
Corner Sections	CS	CSW	CSB	
1" Joiner Kits	JK	JKW	JKB	¼
6" Blank Relay Section (Relay Not Included)**	LVRS	LVRSW	LVRSB	1 ½
Receptacle Section (Baseboard Mounted) 15 Amp 120 VAC	BDR115	BDR115W	BDR115B	¼
Receptacle Section (Mounted in 6" Blank) 15 Amp 120 VAC	DR115	DR115W	DR115B	2
Transfer Switch (Mounted in 6" Blank) 16 Amp 120 VAC	SR120	SR120W	SR120B	
Transfer Switch (Mounted in 6" Blank) 16 Amp 240 VAC	SR220	SR220W	SR220B	

**Not for use with 24A06-G relay

BLANK SECTIONS				
Length	MFG MODEL NUMBER			WT. (LBS)
	Ivory	White	Bankers Bronze	
24"				5
28"				5 ½
36"				6
40"				7
48"				8
60"				10
72"				12
84"				15
96"				17
120"				20

OPTIONAL WIREWAY COVERS			
MFG MODEL NUMBER	Length	Cover Length	WT. (LBS)
	24"	20"	1
	28"	24"	1.5
	36"	32"	2
	40"	36"	2.5
	48"	44"	3
	60"	56"	4
	72"	68"	5
	84"	80"	6
	96"	92"	7
	120"	116"	8

IN-BUILT THERMOSTAT KITS		
MFG MODEL NUMBER	DESCRIPTION	WT. (LBS)
	SPST-In-Built 22A @ 120-240V 18A @ 277V (0°-110°F)	½
	DPST-In-Built 22A @ 120-240V 18A @ 277V (0°-110°F)	½

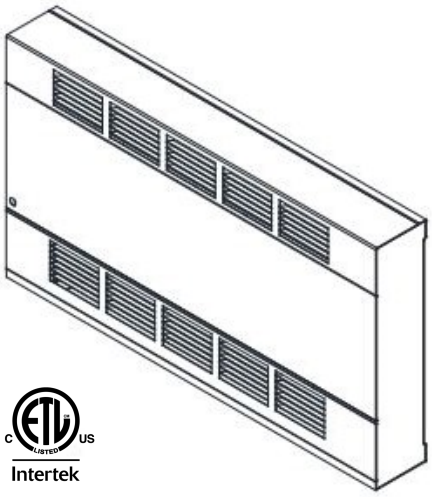
Standard Models

MFG MODEL NUMBER		WATTS	BTUs	VOLTS	AMPS	HEATER LENGTH (IN)	WT. (LBS)
IVORY	WHITE						
		375	1275	120	3.1	24	5
		375	1275	208	1.8		
		375 / 281	1275 / 955	240 / 208	1.6/1.4		
		375 / 281	1275 / 955	277 / 240	1.6/1.2		
		500	1706	120	4.2	28	6
		500	1706	208	2.4		
		500 / 375	1706 / 1275	240 / 208	2.1/1.8		
		500 / 375	1706 / 1275	277 / 240	1.8/1.6		
		600	2040	120	5	36	7
		600	2040	208	2.9		
		600 / 450	2040 / 1530	240 / 208	2.5/2.2		
		600 / 450	2040 / 1530	277 / 240	2.2/1.9		
		750	2550	120	6.3	40	8
		750	2550	208	3.6		
		750 / 563	2550 / 1914	240 / 208	3.1/2.7		
		750 / 563	2550 / 1914	277 / 240	2.7.2.6		
		1000	3413	120	8.3	48	10
		1000	3413	208	4.8		
		1000 / 750	3413 / 2550	240 / 208	4.2/3.6		
		1000 / 750	3413 / 2550	277 / 240	3.6/3.1		
		750	2550	277	3.4		
		1250	4250	120	10.4	60	12
		1250	4250	208	6		
		1250 / 938	4250 / 3189	240 / 208	5.2/4.5		
		1250 / 938	4250 / 3189	277 / 240	4.5/3.9		
		938	3189	277	3.4		
		1500	5100	120	12.5	72	14
		1500	5100	208	7.2		
		1500 / 1125	5100 / 3825	240 / 208	6.3/4.7		
		1500 / 1125	5100 / 3825	277 / 240	5.4/4.7		
		1125	3825	277	4.1		
		1750	5950	208	8.4	84	16
		1750 / 1313	5950 / 4464	240 / 208	7.3/6.3		
		1750 / 1313	5950 / 4464	277 / 240	6.3/5.5		
		1313	4464	277	4.7		
		2000	6826	208	9.6	96	18
		2000 / 1500	6826 / 5100	240 / 208	8.3/7.2		
		2000 / 1500	6826 / 5100	277 / 240	7.2/6.3		
		1500	5100	277	5.4		
		2500	8532	208	12	120	22
		2500 / 1875	8532 / 6375	240 / 208	10.4/9.0		
		2500 / 1875	8532 / 6375	277 / 240	9.0/7.8		
		1875	6375	277	6.8		

MADE IN
THE U.S.A.

SERIES
RECESSED COMMERCIAL WALL CONVECTOR

SALES ORDER NO.		**QUOTE**	J8H6T
CUSTOMER		**DATE:**	02/10/2022
PROJECT			
SALES REP			
ENGINEER			
CONTRACTOR			
SUBMITTED BY			
APPROVED BY			

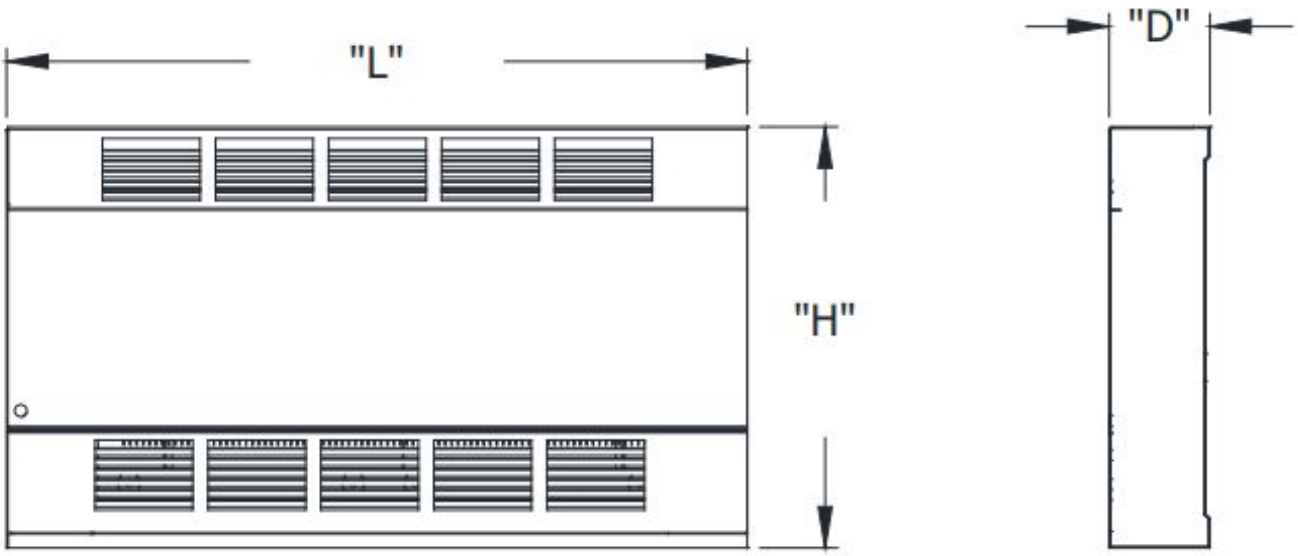


Intertek

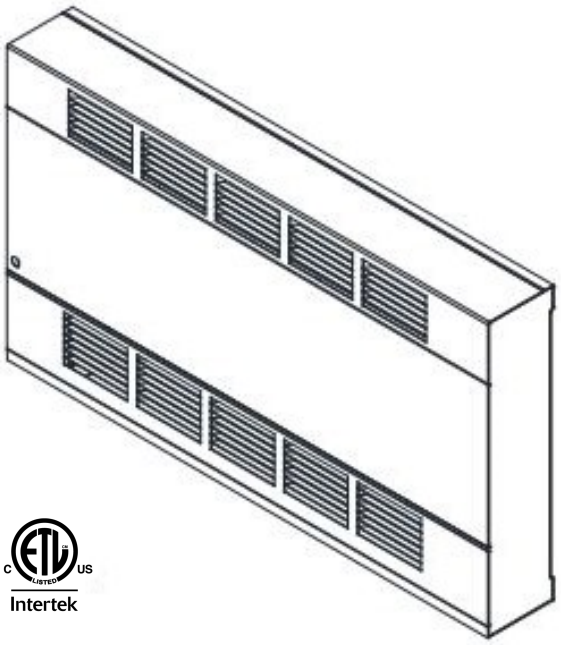
SUBMITTAL DATA SHEET

QTY	MODEL	TAG	WATTAGE	VOLTS	PH	AMPS	CONTROL	THERMOSTAT	OPTIONS
1		CONV-2.5 KW	2500	208	1	12.02	R9	None	MSE4140-12
1		CONV-1.25 KV	1250	208	1	6.01	R9	None	MSE4140-12

NOTES/SPECIAL INSTRUCTIONS:



- Front In / Front Out air pattern
- 16 Gauge steel housing
- Powder coated with textured beige finish
- Tubular pre-wired wireway with 40 Amp capacity
- Connection boxes for right or left hand wiring with combinations ½" - ¾" knockouts at back and bottom
- Steel Heating element with steel fins
- Linear limit thermal overload with automatic reset
- Recess trim frame included
- Custom colors available, contact factory
- Not for residential applications



Intertek

HOW TO DESIGNATE A MODEL:

M41	25	F	48	1000	T
Series Number	Cabinet Size 45=20"H x 5"D 25=11"H x 4"D	Voltage/Phase G=277V, 1 Phase J=208V, 3 Phase K=240V, 3 Phase F=208V, 1 Phase H=240V, 1 Phase	Unit Length (Inches) 24, 36, 48, 60, or 72	Total Wattage	Control Option Blank=None R, R2, or R9=Relay (See control option chart) T or T2=Thermostat

Product Specifications

CABINET:
4100 series casing shall be of square design with front inlet and outlet grills suitable for recess installation. The cabinet is fabricated from 16 gauge cold rolled steel and finished with powder coated baked enamel. Junction boxes are available for left or right wiring and connected by pre-wired 40 Amp capacity wireway.

ELEMENT:
All steel high mass element construction with Nickel-Chromium resistance wire embedded in compacted efficient dielectric to ensure proper heat transfer. Aluminum fins mechanically bonded to steel tube allows for increased surface area and even heat transfer.

LIMIT CONTROLS:
Automatic reset hydraulic thermal overload covers full length of heating element and shuts down heater when safe operating temperatures are exceeded.

WIRING:
Wiring connections shall be made in left end of cabinet enclosure. Wiring must enter into control enclosure behind perforated steel grill.

CONTROLS:
All controls are accessible only through control enclosure door. Security type fasteners restrict access to controls. Built in thermostat with manual adjustment are located in control enclosure.

M4125 Dimensions - Cabinet Sizes 4" Deep x 11" High

LENGTH (IN.)	WT. (LBS)	WATTS per FOOT AVAILABLE	VOLTS AVAILABLE	PH
24	20	187 250 333	208 240 277	1
36	33			
48	39			
60	49			
72	56			

M4145 Dimensions - Cabinet Sizes 5" Deep x 20" High

LENGTH (IN.)	WT. (LBS)	WATTS per FOOT AVAILABLE	VOLTS AVAILABLE	PH
24	45	187 250 333	208 240 277	1
36	53			
48	63			
60	77			
72	92			
24	47	500 666	208 240 277	1
36	57			
48	67			
60	82			
72	100			

LENGTH (IN.)	WT. (LBS)	WATTS per FOOT AVAILABLE	VOLTS AVAILABLE	PH
24	49	750	208 240 277	1
36	60			
48	71			
60	87			
72	106			
24	49	500 666 750	208 240	3
36	60			
48	71			
60	87			
72	106			

In-Built Control Options for Single Phase Units

SUFFIX	DESCRIPTION
T	In-Built Tamper Proof, Single Pole, Hydraulic Thermostat - 40°- 100°F temp. range, 25 Amps
T2	In-Built Tamper Proof, Double Pole, Hydraulic Thermostat - 40°- 100°F temp. range, 25 Amps
R	DPST Relay, 30 Amps, up to 277V, 120V coil
R2	SPST Relay, 18 Amps @ 277V (max), 24V coil
R9	24V Transformer and SPST Relay, 22 Amps @24V, 18 Amps @ 277V (max) 24V coil

12" Control Section

UNIT LENGTH	MFG MODEL 4125	MFG MODEL 4145
12"		

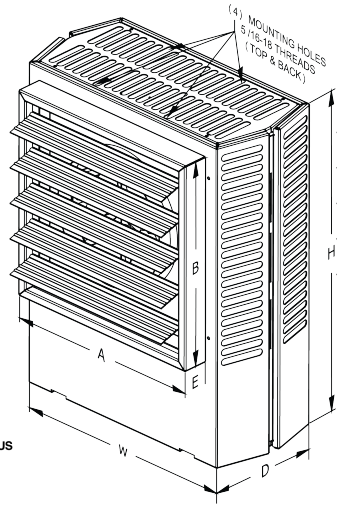
Solid Back Panel

UNIT LENGTH	MFG MODEL 4125	MFG MODEL 4145
24"		
36"		
48"		
60"		
72"		

MADE IN
THE U.S.A.

SERIES
HORIZONTAL/VERTICAL
UNIT HEATER

SALES ORDER NO.		**QUOTE**	J8H6T
CUSTOMER		**DATE:**	02/10/2022
PROJECT			
SALES REP			
ENGINEER			
CONTRACTOR			
SUBMITTED BY			
APPROVED BY			
APPROVED BY			



Intertek

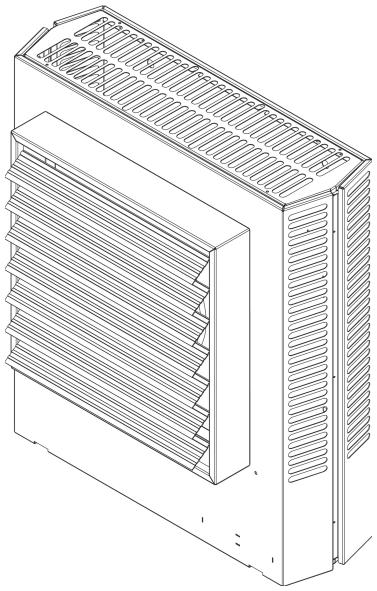
SUBMITTAL DATA SHEET

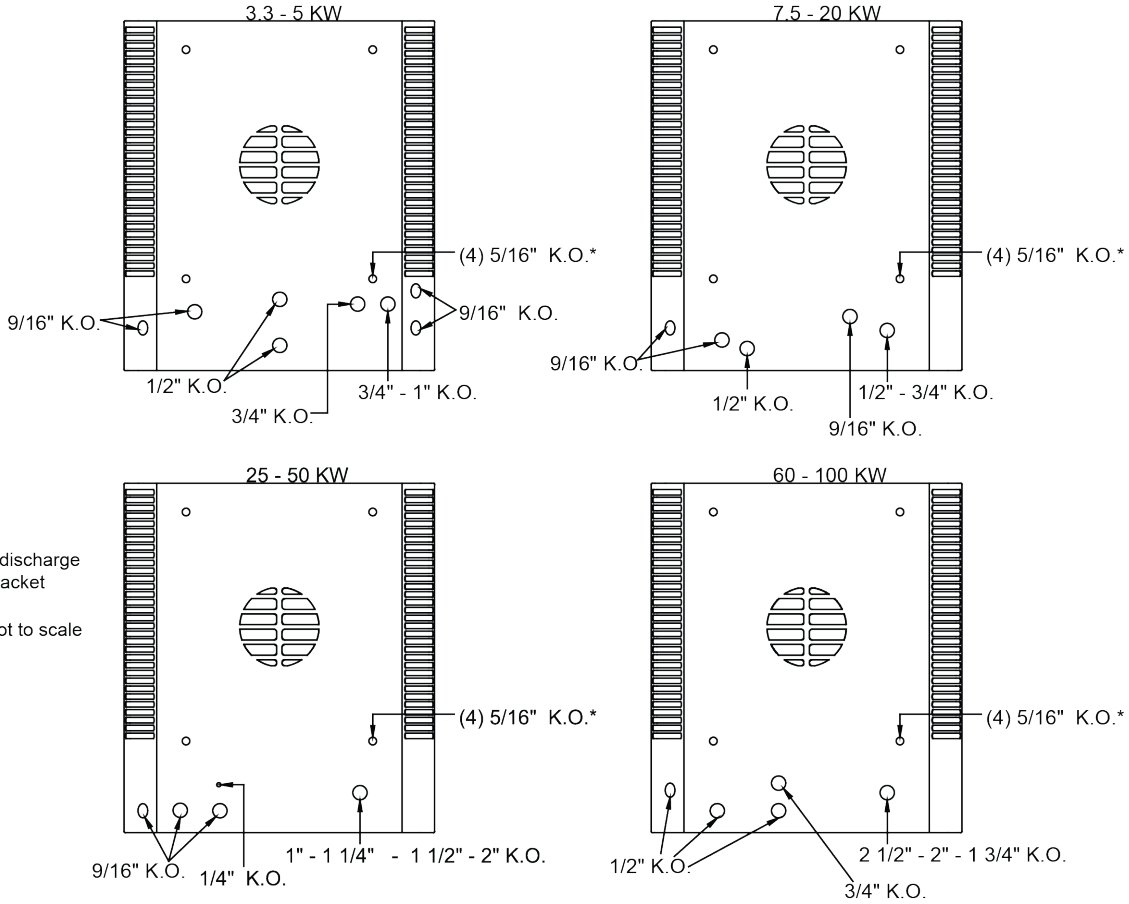
QTY	MODEL	TAG	WATTAGE	VOLTS	PHASE	AMPS	DISCONNECT	THERMOSTAT	BRACKET	OPTIONS
1		EUH	5.0 KW	208	1 / 3	24.1 / 13.9	DCS403	None	A5105	OFG5101
1		EUH-7.5	7.5 KW	208	1 / 3	36.1 / 20.8	DCS603	None	A5120	OFG5102

Product Dimensions

UNIT SIZE (KW)	DIMENSION (INCHES)						WEIGHT (LBS)
	H	W	D	E	A	B	
3.3 & 5	17 ¾	14 15/32	6 ½	1 ⅝	11 ½	11 ½	25
7.5 & 10	24 5/16	21 ½	6 ½	2 7/32	15 ¼	15 ¼	54
15 & 20	28 11/16	21 ½	6 ½	2 7/32	15 ¼	15 ¼	65
25 THRU 50	34	29 ¼	10 1/16	2 ⅝	20 ¼	20 ¼	120
60 & 70	35 ½	30 ½	14 ½	5	23 ½	23 ½	141
80 - 90 - 100	39 ½	37 ⅝	18 ½	5	27 ½	27 ½	202

- Heavy 18 gauge steel construction
- Powder coated paint finish
- Copper clad steel sheath element with brazed fins and Nichrome elment wire
- Totally enclosed fan motors
- Louvers are individually adjustable for directional air flow
- Optional remote and unit mounted controls include thermostats, disconnects, and fan swithces
- Optional accessories include mounting brackets, louvers, fan guards, and dust shields





* For vertical discharge mounting bracket

Diagrams not to scale

HOW TO DETERMINE A MODEL:

HF	2	B	51	10	C	A	1

Element Volts	Phase	Motor Voltage	Model Series	Element KW	Control System	Transformer	Control Volts
F = 208	1 = 1-Phase	F = 208	51		Blank = None	Blank = None	1 = 24
H = 240	2 = 1 or 3-Ph.	H = 240			C = Contactor	A = Included	2 = 120
HF = 240/208	3 = 3-Phase	B = 240 / 208					(with CA option)
G = 277		G = 277					
P = 480		P = 480					

* 600 Volt units 5KW - 50KW available on special order, consult factory for pricing & availability

Product Specifications

CONSTRUCTION:
Heavy 18 gauge welded steel cabinet with powder coated finish and control compartmen thousing a master terminal board with a hinged and latched access door, simplifying wiring, installation & maintenance.

HEATING ELEMENT:
Copper clad steel sheath element with continuously brazed steel fins formed to allow side draw through air flow.

OVERHEAT PROTECTION:
All units come equipped with automatic reset type limit controls to de-energize the heater should an over-temperature situation occur.

FAN and MOTOR:
Totally enclosed, 1-speed, 1-phase, permanently lubricated, thermally protected motors with unit bearings on 3 KW - 20 KW models. Totally enclosed, 2-speed, 1-phase, permanently lubricated, thermally protected motors with sleeve bearings on 25 KW - 50 KW models. All motors mounted with rubber insulators to minimize vibration & noise. Fan over-ride purges unit of residual heat at shutdown.

LOUVER ASSEMBLY:
Louvers are individually adjustable for directional control of air flow up to 15° from straight horizontal. Optional diffusers available for down flow (vertical discharge) applications

TEMPERATURE CONTROLS:
Optional low voltage and line voltage thermostats available with an adjustable temperature range of 40°F to 110° F. Units with model numbers ending in CA1 are factory wired for low voltage controls. 25 KW through 50 KW units are designed for two stage heating operation.

INSTALLATION:
Unit Heaters can be mounted for horizontal or vertical discharge. Applications up to 6000 Ft. See UH Series above 6000 Ft

FEATURES:
- Made in U.S.A.

FIELD INSTALLED OPTIONS:
- In-unit or wall mounted temperature control thermostats low or line voltage.
- Summer fan switch to operate the fan only.
- Power disconnect switch.
- Heat stratification thermostat.

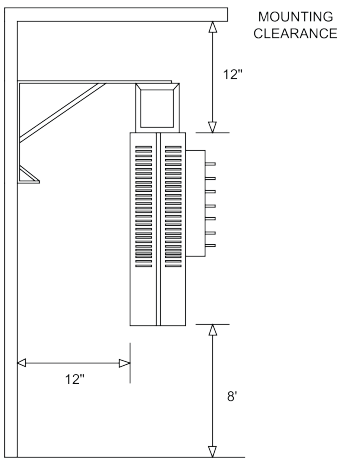


FIG. 1
HORIZONTAL DISCHARGE

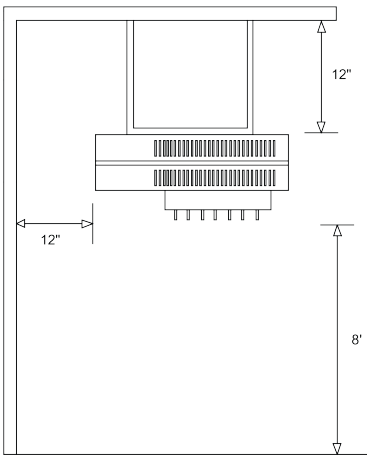
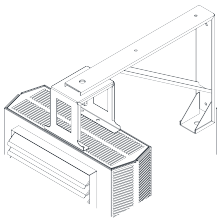
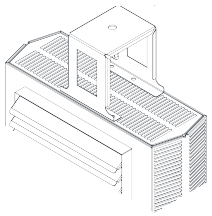


FIG. 2
VERTICAL DISCHARGE

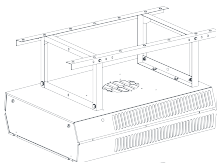
Accessories & Options



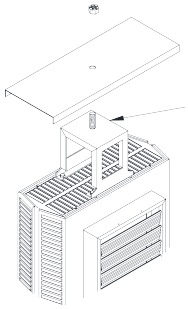
A5100 BRACKET			
WALL BRACKET & HEATER BRACKET	HEATER KW	BRACKET	WT (LBS)
	3.3 - 5	A5105	9
	7.5 - 20	A5120	13
	25 - 50	A5150	16
	60 - 70	A5175	25
	80 - 100	A51100	36



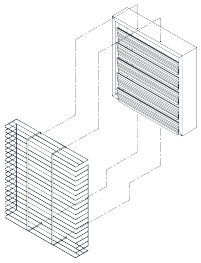
B5100 BRACKET			
HEATER BRACKET	HEATER KW	BRACKET	WT (LBS)
	3.3 - 5	B5105	2
	25 - 50	B5150	3
	60 - 70	B5170	5
	80 - 100	B51100	12



V5100 BRACKET			
VERTICAL MOUNT BRACKET	HEATER KW	BRACKET	WT (LBS)
	3.3 - 5	V5105	9
	7.5 - 20	V5120	13
	25 - 50	V5150	16
	60 - 70	V5175	19
	80 - 100	V51100	22



DS5100 DUST SHIELD			
DUST SHIELD	HEATER KW	BRACKET	WT (LBS)
	3.3 - 5	DS5105	3
	7.5 - 20	DS5120	4
	25 - 50	DS5150	5
	60 - 70	DS5175	10
	80 - 100	DS51100	17



OFG5100 FAN GUARD			
FAN GUARD	HEATER KW	BRACKET	WT (LBS)
	3.3 - 5	OFG5101	1
	7.5 - 20	OFG5102	1
	25 - 50	OFG5103	2
	60 - 70	OFG5175	4
	80 - 100	OFG51100	5

DISCONNECT SWITCH	DISCONNECT SWITCH MUST BE DERATED FOR USE AT MAX 80% OF TOTAL HEATER RATED AMPERAGE

THERMOSTATS		(BUILT IN) FACTORY SUPPLIED AND FIELD INSTALLED (EXCEPT SD MODEL THERMOSTAT)
T5100	40°-100°F	SINGLE POLE SINGLE STAGE FIELD MOUNTED IN CONTROL SECTION KNOCKOUT PROVIDED
T5102	60°-120°F	DPST FIELD INSTALLED - USED WITH 3.3 AND 5 KW UNITS LINE VOLTAGE WITH THREE PHASE POWER
T5122	45°-90°F	LOW VOLTAGE TWO STAGE FIELD iNSTALLED FOR USE WITH UNITS 25 TO 50 KW
RK120EAA	50°-90°F	WALL MOUNTED SINGLE STAGE LOW VOLTAGE
TW123	40°-90°F	WALL MOUNTED TWO STAGE LOW VOLTAGE (25 TO 50 KW UNITS)
ET9SS	50°-90°F	WALL MOUNTED LINE VOLTAGE SINGLE POLL 22 AMP 120-277 VOLT
TW1512	50°-90°F	DPST WALL MOUNTED LINE VOLTAGE 25 AMP 120-277 VOLT (303-5 KW ON THREE PHASE POWER)
SD	50°-90°F	SETACK SONTROL WITH OCCUPANCY SENSOR AND DIGITAL DISPLAY

STEP CONTROLLER	60 TO 100 KW UNITS ONLY
SEQUENCES ON THE STAGING IN THE 60 TO 100 KW HEATERS USING FIELD SUPPLIED SIGNAL OR C1025 WALL THERMOSTAT	
C1025 THERMOSTAT	WALL THERMOSTAT WITH 0-10 VDC PULSING SIGNAL FOR STEP CONTROLLER

FAN CONTROL	(BUILT IN) FACTORY INSTALLED OR FIELD INSTALLED
FS	SUMMER FAN SWITCH FACTORY INSTALLED IN HEATER
TFS	SUMMER FAN SWITCH REMOTE WALL MOUNTED
TC5102 OR TC5103	STRATIFICATION THERMOSTAT FACTORY INSTALLED IN HEATER
TC1602	STRATIFICATION THERMOSTAT REMOTE WALL MOUNTED

Standard Models

MFG CATALOG NUMBER	MFG MODEL NUMBER	KW	BTUs/H	VOLTS	PH	AMPS	CONTROL VOLTAGE	TEMP RISE	AIR THROW	CFM	RECOMMENDED MOUNTING HT.		WT. (LBS)
											Horizontal	Vertical	
		3.3	11.2	208	1	15.9 / 9.17	208	26° F	12'	400	9'	9'	25
		3.3/2.5	11.2 / 8.5	240/208	1	13.7 / 11.9	240 / 208						
		3.3	11.2	208	1/3	15.9	9.17						
		3.3/2.5	11.2 / 8.5	240/208	1/3	13.7 / 11.9	240 / 208						
					3	7.9/6.9							
		3.3	11.2	277	1	11.9	277						
				480	3	4.0	24						
		5.0	17.1	208	1	24.1	208	40° F	12'	400	9'	9'	25
		5.0/3.7	17.1 / 12.8	240/208	1	20.9 / 18.1	240 / 208						
		5.0	17.1	208	1/3	24.1	208						
					3	13.9							
		5.0	17.1	240	1/3	20.8 / 18.1	240						27
		3.7	12.8	208	1/3	17.1 / 10.4	208						
		5.0	17.1	277	1	18.1	277						
	*	5.0	17.1	480	3	6.1	24						
	*	7.5	25.6	208	1/3	36.1 / 20.8	24	34° F	22'	700	10'	12'	54
	*	7.5	25.6	240	1/3	27.1 / 31.3							
		5.6	19.2	208	1/3	31.3 / 27.1							
		7.5	25.6	277	1	27.1							
		7.5	25.6	480	3	9.1							
		9.9	33.8	208	1/3	47.8 / 27.4		45° F	22'	700	10'	14'	55
	*	10.0	34.1	240	1/3	41.2 / 24.0							
		7.5	25.6	208	1/3	36.1 / 20.8							
		10.0	34.1	277	1	36.1							
		10.0	34.1	480	3	12.4							
		15.0	51.2	208	3	41.7		43° F	32'	1100	11'	20'	64
	*	15.0/11	51.2 / 38.4	240/208	3	36.1 / 31.3							
	*	15.0	51.2	480	3	18.1							
	*	19.7/14	67.2 / 50.5	240/208	3	47.8 / 41.1		57° F	32'	1100	12'	18'	65
		20.0	68.3	480	3	4124.1.7							
		25.0	85.3	208	3	69.5		40/44° F	45'	2000/180(	12'	22'	120
	*	25.0/18	85.3 / 64.0	240/208	3	60.2 / 52.1							
		25.0	85.3	480	3	30.1							
		30.0	102.4	208	3	83.4		47/53° F	40'	2000/180(	12'	20'	120
		30.0/22	102.4 / 76.8	240/208	3	72.3 / 62.5							
		30.0	102.4	480	3	36.2							
		40.0	136.5	208	3	111.2		40/45° F	55'	3100/280(	15'	24'	120
	*	40.0/30	136.5 / 102.4	240/208	3	96.4 / 83.4							
		39.0	133.1	480	3	47.0							
		49.6	169.3	208	3	139.0		51/56° F	50'	3100/280(	15'	22'	120
	*	50.0/37	170.6 / 128.(	240/208	3	120.5 / 104.3							
		50.0	170.6	480	3	60.3							

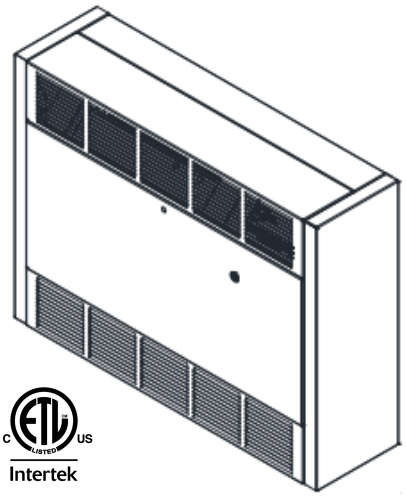
Recommended Control Options, Control Accessory Options, & Control Accessories

MFG MODEL NUMBER	DISCONNECT SWITCH		THERMOSTAT		SUMMER FAN SWITCH		THERMOSTAT & SUMMER FAN SWITCH WALL MOUNTED	STRATIFICATION THERMOSTAT	
	1 Ø	3 Ø	IN-BUILT	WALL MOUNTED	IN-BUILT	WALL MOUNTED		IN-BUILT	WALL MOUNTED
	DCS 202	NA	T5100	ET9STS	FS5101	FSW51111	NA	TC5103	TC1602
	NA	DCS 403	T5102	TW 1512					
	DCS 202	NA	T5100	ET5SS					
	NA	DCS 403	T5102	TW 1512					
	DCS 202	NA	T5100	ET5SS				NA	
	NA	DCS 403		RK120EAA	FS5102	FSW5112	TFS5101	TC5102	NA
	DCS 403	NA		S2025	FS5101	FSW5111	NA	TC5103	TC1602
				ET5SS					
				S2025					
	NA	DCS 403	T5102	TW 1512					
	DCS 403	NA	T5100	ET5SS					
	NA	DCS 403	T5102	TW 1512					
	DCS 403	NA	T5100	S2025				NA	
	NA	DCS 403		RK120EAA	FS5102	FSW5112	TFS5101	TC5102	NA
	DCS 403	NA			FS5101	FSW5111		TC5103	TC1602
	NA	DCS 403							
	DCS 403	NA							
	NA	DCS 403							
	DCS 403	NA						NA	
	NA	DCS 403			FS5102	FSW5112		TC5102	NA
	DCS 603	NA			FS5101	FSW5111		TC5103	TC1602
	NA	DCS 403							
	DCS 603	NA							
	NA	DCS 403							
	DCS 603	NA						NA	
	NA	DCS 403			FS5102	FSW5112		TC5103	NA
		DCS 603			FS5101	FSW5111			TC1602
		DCS 603							
		DCS 403			FS5102	FSW5112			NA
		DCS 603			FS5101	FSW5111			TC1602
		DCS 403			FS5102	FSW5112			NA
		DCS 1003	T5100	TW123	FS5101	FSW5111	TFS5101		TC1602
		DCS 403			FS5102	FSW5112			NA
		NA			FS5101	FSW5111			TC1602
		DCS 1003							
		DCS 603			FS5102	FSW5112			NA
		NA			FS5101	FSW5111			TC1602
		DCS 603			FS5102	FSW5112			NA
		NA			FS5101	FSW5111			TC1602
		DCS 1003			FS5102	FSW5112			NA

MADE IN
THE U.S.A.

SERIES
FAN FORCED WALL HEATER

SALES ORDER NO.		**QUOTE**	J8H6T
CUSTOMER		**DATE:**	02/10/2022
PROJECT			
SALES REP			
ENGINEER			
CONTRACTOR			
SUBMITTED BY			
APPROVED BY			
APPROVED BY			

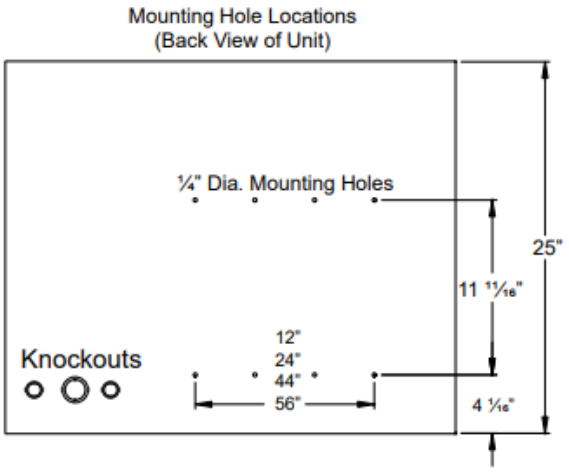


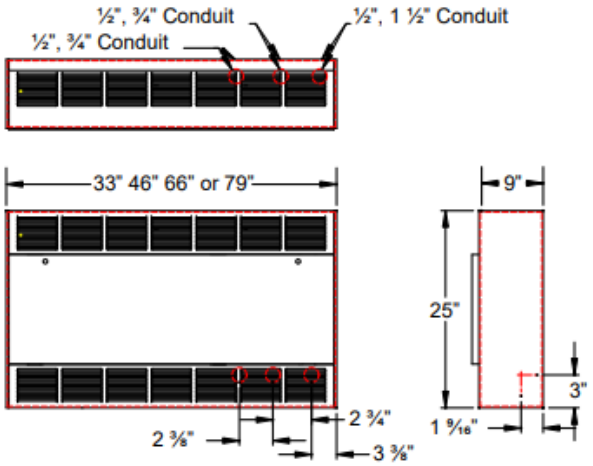
Intertek

SUBMITTAL DATA SHEET

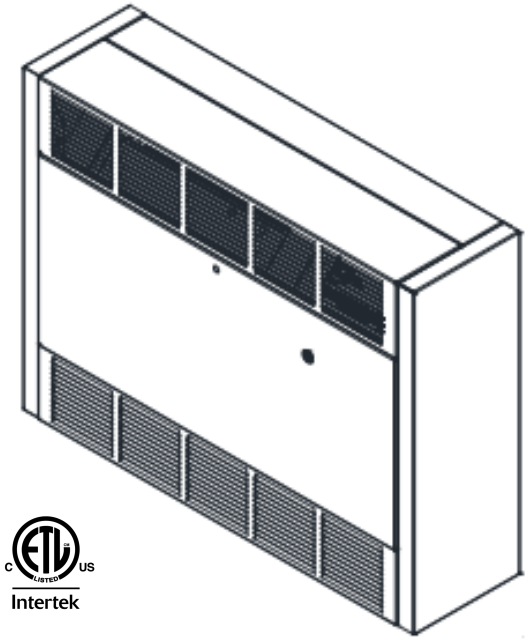
QTY	MODEL	TAG	WATTAGE	VOLTS	PH	AMPS	DISCONNECT	THERMOSTAT	OPTIONS
1		CUH-5KW	5 KW	208V	1	25	Disconnect Switch		KB33
1		CUH-3KW	3 KW	208V	1	15.4	Disconnect Switch		KB33
1		CUH-2KW	2 KW	208V	1	10.6	Disconnect Switch		KB33

NOTES/SPECIAL INSTRUCTIONS:





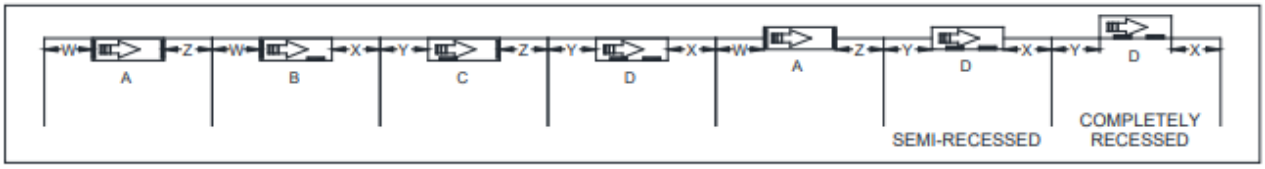
- Heavy 16 gague steel construction
- Fin-Tubular heating elements
- Single or two stage operation
- Automatic and Manual overheat protection
- Centrifugal fan blower with two speed motors
- Multiple intake and exhaust configurations
- Recessed or surface mount in wall or ceiling
- Powder coat paint finish
- Options conist of:
    - Single and two stage thermostats
    - Disconnect
    - Summer fan switch
    - Motor fusing
    - Replacable or washable filters
    - Single and two stage thermostats
    - Duct collars
    - Locking front cover
    - Trim frames for recess mounting
    - Fresh air make-up and kick base



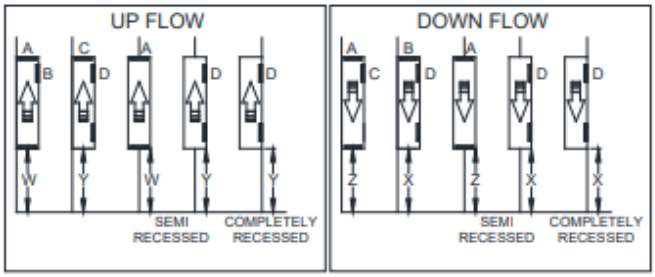
Product Features (2-24KW; All Voltages)

- For commercial and institutional application such as stores, schools, offices, transportation terminals, churches, entrancways.
- Wall or ceiling mount; surface, semi-recessed or fully recessed.
- (8) air inlet and outlet configurations.
- Capacities from 2-24 KW with 230 to 1,000 CFM
- Motors are two speed, shaded pole, resilient mounted, direct drive. High/low heat and blower speed offer versatility.
- ETL Listed.
- Beige powder coated finish
- Choice of eight standard control options include unit or wall mounted 120 or 24V thermostats, with or without built-in control transformers, setback thermostat option
- Industrial type finned tubular elements.
- Easily removable fan and element decks for simplified maintenance.
- Full length thermal protection.
- Limited warranty-one year
- Optional locking front cover.

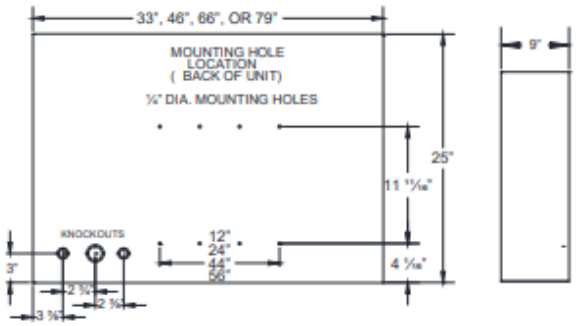
Mounting Configurations



CEILING MOUNTED



WALL MOUNTED



NOTE: Semi-recessed units are to be recessed at a maximum of 3 ½" unless grille configuration is front in and front out.

MOUNTING CLEARANCES: Proper clearances are indicated for each mounting configuration on all positions. Minimum clearance from side of unit to wall is zero inches. Mounting inches are provided in the back of the cabinet, accessible through the blower compartment, if necessary, remove blower deck if additional mounting screws or bolts are desired. Blower deck may be slipped forward by loosening four screws ath the front to provide access to mounting holes.

Standard Models & Features

HEATER LENGTH	MFG CATALOG NUMBER	MFG MODEL NUMBER	HIGH				LOW				VOLTS	PHASE	WT. (LBS)
			KW	BTU's	AMPS	CFM	KW	BTU's	AMPS	CFM			
33"			5	17065	25.0 / 17.6	250	3	10239	15.4 / 9.2	230	208	1-3*	99
					21.8 / 15.4				13.5 / 18.2		240	1-3*	
					7.8				4.6		480	3	
46"			10	34130	43.6 / 30.7	500	6	20478	26.9 / 16.2	460	240	1-3*	130
					15.4				8.1		480	3	

- 1 / 3 phase field convertible with 24 volt control circuit
- Disconnect switch, dust filter & high low operation
- Built-in thermostat and field convertible for remote thermostat

*Factory wired for 3-phase, field convertible to 1-phase.

Accessories

MFG CATALOG NUMBER	MFG MODEL NUMBER	SIZE	DESCRIPTION
DUCT COLLAR			
		33"	The same model is used for the inlet or outlet If duct collars are required for both inlet & outlet then 2 must be ordered
		46"	
		66"	
		79"	
RECESSING TRIM FRAMES			
		33"	Recessing Trim Frames should be ordered to "trim-out" any recessed or semi-recessed installation.
		46"	
		66"	
		79"	

MFG CATALOG NUMBER	MFG MODEL NUMBER	SIZE
Fresh Air Make-Up Intake Flange & Kickbase		
		33"
		46"
		66"
		79"
Kickbase (Pedestal) ONLY		
		33"
		46"
		66"
		79"

Product Specifications

The electric cabinet unit heater is designed for mounting in any position, fully recessed, semi-recessed or surface mounted. All capacities, voltages, physical sizes, grille arrangements and options shall be as specified on the plans. All units must be field convertible to the following:

1. For control by a field supplied remote thermostat.
2. Load management control with an external dry switch. When closed unit operates under control of either the internal or the external thermostat. When open, unit turns off.
3. Any grille arrangement.

CABINET & CONSTRUCTION: The cabinet shall be constructed of heavy duty 16 gauge Zinc coated steel. The heater shall have a removable front door for easy access to the control panel, elements, motor-blower assembly, filters and all internal components. The grill configuration must be easily field convertible to any air flow configuration (by removal of no more than four fasteners). The cabinet shall have a textured finish of two coats of powder coat epoxy and be suitable for use with optional kick space base. Made in U.S.A.

HEATING ELEMENTS: The heating elements shall be warranted for 1 year and shall be non-glowing design consisting of special high temperature resistance wire enclosed in an incoloy sheath to which steel fins are furnace brazed. The heating elements shall be located directly in front of the blower discharge air for uniform heating. They shall be mounted with a single anchor at one end to minimize effects of thermal expansion and contraction.

SAFETY CUTOUT: Thermal safety limits shall be built into the system to automatically shut off heater in event of overheating due to any cause. The safety cutouts shall be of two types:

A. The primary limit shall be an automatic capillary type to sense the heat along the full length of the heating elements. It shall deenergize the heaters by opening the coil circuit on the heating contactors.
B. The secondary limit shall be a manual reset thermal device to interrupt power to the heating elements.

MOTOR AND BLOWER ASSEMBLY: The motors and blowers shall be direct drive and resiliently mounted on rigid heavy gauge frame for quiet operation and long life. The motor shall be two-speed, shaded pole type, rated for the voltage (480 to 600 Volts are single speed only). Each shall have built-in automatic reset overload protection and are life time lubricated. The motor shall be vented and mounted in the air stream to provide maximum cooling of the motor.

HIGH AND LOW HEAT RANGES: All units will be supplied as standard with a switch for selecting full heat at high fan speed or reduced heat at low fan speed (On 480 & 600 Volt units the switch changes the heat but not the fan speed). OVER CURRENT PROTECTION: Circuit breakers shall be provided for branch circuit protection where required by NEC. Circuit breakers are optional on all other heaters.

TEMPERATURE CONTROL: Integral factory installed thermostat shall be tamper resistant, linear capillary type. Optional setback thermostat available.

ARCHITECTURAL RECESSED 12
Electric Heated Air Curtain
Data Sheet

For Mounting Heights To 12' (environmental separation)

STANDARD CONSTRUCTION

- 15" high x 26" deep
- ½ hp motor(s) - ten speeds
- Factory installed Intelliswitch digital controller
- White aluminum exterior panel
  (Optional: Custom Color or Stainless)
- Top Mounting only
- High efficiency, low noise Pro-V Nozzle
- Filter (washable)
- Patented venturi open helical element with point suspension
- Alternate kW: see sheet EP-242
- Optional: Berner AIR™ (smart controller & app), includes BACnet

Berner International certifies that the air curtains shown herein are licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and comply with the requirements of the AMCA Certified Ratings Program. Rated data shown is for base (electric heated) units. The AMCA Certified Ratings Seal applies to airflow rate, average outlet velocity, outlet velocity uniformity, velocity projection and power rating at free delivery only.

Models ARD12-1060E, ARD12-2108E and ARD12-2120E are not licensed to bear the AMCA seal.

2 Year Limited Warranty | Made in USA | c UL us *indoor use* | FDA RECOMMENDED | USDA COMPLIANCE

MODEL	Nozzle Width (in)	Max Vel. at Nozzle (fpm)	Avg. Outlet Vel. (fpm)	Air Volume (cfm)	Outlet Vel. Uniformity	Power Rating (kW)	Motor(s) @ hp	Max Electric Capacity (kW)	Heater Output (MBH)	Air Temp. Rise (°F)	Net Wt. (lbs)
	36.00	6,500	1,814	1,587	83%	0.49	1 @ 1/2	14.0	47.8	28°	105
	42.00	7,091	1,621	1,655	71%	0.53	1 @ 1/2	14.0	47.8	27°	112
	48.00	7,300	1,468	1,713	75%	0.54	1 @ 1/2	14.0	47.8	26°	118
A	*66.00*	*4,828*	*1,027*	*1,647*	*83%*	*0.52*	*1 @ 1/2*	*14.0*	*47.8*	*27°*	*138*
	66.00	5,202	1,848	2,964	95%	0.94	2 @ 1/2	28.0	95.6	30°	179
	72.00	6,500	1,814	3,174	83%	0.98	2 @ 1/2	28.0	95.6	28°	190
	84.00	7,091	1,621	3,310	71%	1.06	2 @ 1/2	28.0	95.6	27°	202
	99.00	7,300	1,424	3,426	75%	1.08	2 @ 1/2	28.0	95.6	26°	213
	99.00	5,202	1,891	4,551	83%	1.43	3 @ 1/2	42.0	143.3	29°	257
	108.00	*4,828*	*1,280*	*3,360*	*83%*	*1.06*	*2 @ 1/2*	*28.0*	*95.6*	*26°*	*231*
	108.00	6,500	1,814	4,761	83%	1.47	3 @ 1/2	42.0	143.3	28°	285
	117.00	*4,828*	*1,158*	*3,294*	*83%*	*1.04*	*2 @ 1/2*	*28.0*	*95.6*	*27°*	*249*
	117.00	6,500	1,722	4,897	71%	1.55	3 @ 1/2	42.0	143.3	27°	297
	132.00	7,091	1,566	5,023	71%	1.60	3 @ 1/2	42.0	143.3	26°	309
	144.00	7,300	1,468	5,139	75%	1.62	3 @ 1/2	42.0	143.3	26°	320
	144.00	6,500	1,814	6,348	83%	1.96	4 @ 1/2	56.0	191.1	28°	380

NOTES:
1. Operation at 50 Hz will generate approximately a 17% reduction in air performance.
2. Single Point Power Connection – consult factory

Berner does not recommend ARD12-1060E, ARD12-2108E and ARD12-2120E, exists only as an equivalent to competitors' models.

See sheet EP-242 for amp draws/total load requirements and alternate kW.

VELOCITY PROJECTION: *Model ARD12-1036E*

Distance from Nozzle (in)	40	80	120	160	200
Core Velocity (fpm)	2310	1550	1190	1120	1090
Uniformity (%)	89	89	88	91	95

MODEL NUMBER CONFIGURATION

[ ]-1 036 E B-140 -R-WCA-SS

Series	# of Motors	Opening Width	Heat	Voltage	kW	Opt. Display	Opt. Control	Opt. Cabinet Finish
ARD12	1, 2, 3, 4	036" - 144"	E=Electric Heated	*B=208/1/60 *J=240/1/60 *V=220/1/50 X=208/3/60 Y=240/3/60 Z=480/3/60 Q=600/3/60 O=380/3/50	14.0 - 56.0 (140 - 560)	R=Remote Display *Intelliswitch*	WCA= Berner AIR™ *smart control*	SS=Stainless Steel CC=Custom Color
				*Max 16kW *See sheet EP-242 for available lengths and voltages*	*See sheet EP-242 for alternate kW code*	*for Standard offering, leave options (Opt.) blank*		

Sound level measured 10' (3m) from the unit in free field:

1 motor:	Min./Max. Speed:	59/62 dBA
2 motors:	Min./Max. Speed:	62/65 dBA
3 motors:	Min./Max. Speed:	64/67 dBA
4 motors:	Min./Max. Speed:	65/68 dBA

Sound data is not AMCA certified.

Berner reserves the right to alter specifications without prior notice.

ARCHITECTURAL RECESSED 12
Electric Heated Air Curtain
Electrical Performance Sheet

MODEL	kW (code)	Temp Rise °F	208/1/60 (voltage code B) MOTOR AMP DRAW = 4.3 each		240/1/60 (voltage code J) or 220/1/50 (voltage code V) MOTOR AMP DRAW = 4.3 each		208/3/60 (voltage code X) MOTOR AMP DRAW = 4.3 each		240/3/60 (voltage code Y) MOTOR AMP DRAW = 4.3 each	
			# CKTS	AMPS PER CIRCUIT (including motor) / BREAKER RATING PER CIRCUIT	# CKTS	AMPS PER CIRCUIT (including motor) / BREAKER RATING PER CIRCUIT	# CKTS	AMPS PER CIRCUIT (including motor) / BREAKER RATING PER CIRCUIT	# CKTS	AMPS PER CIRCUIT (including motor) / BREAKER RATING PER CIRCUIT
	14 (140)	28	2	26.8/44.9 / 35/60	2	23.8/38.9 / 30/50	1	43.2 / 60	1	38.0 / 50
	10 (100)	20	2	20.3/32.0 / 30/40	1	46.0 / 60	1	32.1 / 45	1	28.4 / 40
	8 (080)	16	1	42.8 / 60	1	37.6 / 50	1	26.5 / 35	1	23.5 / 30
	6 (060)	12	1	33.1 / 45	1	29.3 / 40	1	21.0 / 30	1	18.7 / 25
	28 (280)	28	-	N/A / N/A	-	N/A / N/A	2	47.5/38.9 / 60/50	2	42.3/33.7 / 60/45
	20 (200)	20	-	N/A / N/A	-	N/A / N/A	2	36.4/27.8 / 45/35	2	32.7/24.1 / 40/35
	16 (160)	16	2	47.1/38.5 / 60/50	2	41.9/33.3 / 60/45	2	30.8/22.2 / 40/30	1	47.1 / 60
	12 (120)	12	2	37.4/28.8 / 50/40	2	33.6/25.0 / 45/35	1	41.9 / 60	1	37.5 / 50
	42 (420)	28	-	N/A / N/A	-	N/A / N/A	3	51.8/38.9/38.9 / 60/50/50	3	46.6/33.7/33.7 / 60/45/45
	30 (300)	20	-	N/A / N/A	-	N/A / N/A	3	40.7/27.8/27.8 / 50/35/35	2	37.0/48.1 / 45/60
	24 (240)	16	-	N/A / N/A	-	N/A / N/A	2	35.1/44.4 / 45/60	2	32.1/38.5 / 40/50
	18 (180)	12	-	N/A / N/A	-	N/A / N/A	2	29.6/33.3 / 35/45	2	27.3/28.9 / 35/40
	56 (560)	28	-	N/A / N/A	-	N/A / N/A	4	47.5/38.9/47.5/38.9 / 60/50/60/50	4	42.3/33.7/42.3/33.7 / 60/45/60/45
	40 (400)	20	-	N/A / N/A	-	N/A / N/A	4	36.4/27.8/36.4/27.8 / 45/35/45/35	3	32.7/32.7/48.1 / 40/40/60
	32 (320)	16	-	N/A / N/A	-	N/A / N/A	3	30.8/30.8/44.4 / 40/40/60	2	47.1/47.1 / 60/60
	24 (240)	12	-	N/A / N/A	-	N/A / N/A	2	41.9/41.9 / 60/60	2	37.5/37.5 / 50/50

Berner reserves the right to alter specifications without prior notice.

EP-242
December, 2017

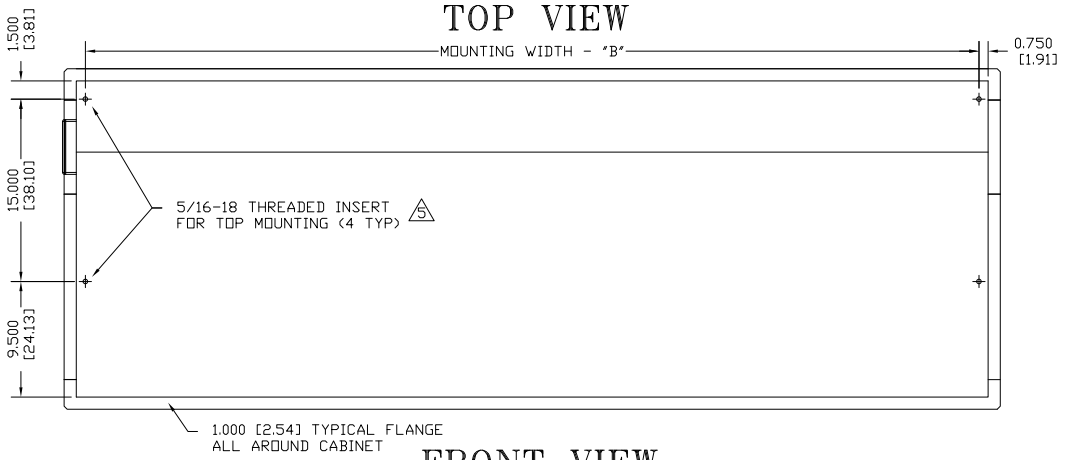
ARCHITECTURAL RECESSED 12
Electric Heated Air Curtain
Electrical Performance Sheet

			480/3/60 (voltage code Z) MOTOR XFMR AMP DRAW = 2.1 per kva				600/3/60 (voltage code Q) MOTOR XFMR AMP DRAW = 1.7 per kva				380/3/50 (voltage code O) MOTOR AMP DRAW = 4.3 each		
MODEL	kW (code)	Temp Rise °F	# CKTS	KVA	AMPS PER CIRCUIT	BREAKER RATING PER CIRCUIT	# CKTS	KVA	AMPS PER CIRCUIT	BREAKER RATING PER CIRCUIT	# CKTS	AMPS PER CIRCUIT (including motor)	BREAKER RATING PER CIRCUIT
	14 (140)	28	1	1	18.9	25	1	1	15.2	20	1	25.6	35
	10 (100)	20	1	1	14.1	20	1	1	11.3	15	1	19.5	25
	8 (080)	16	1	1	11.7	15	1	1	9.4	15	1	16.5	25
	6 (060)	12	1	1	9.3	15	1	1	7.5	15	1	13.4	20
	28 (280)	28	1	2	37.9	50	1	2	30.3	40	2	29.9/21.3	40/30
	20 (200)	20	1	2	28.3	40	1	2	22.6	30	1	39.0	50
	16 (160)	16	1	2	23.4	30	1	2	18.8	25	1	32.9	45
	12 (120)	12	1	2	18.6	25	1	2	14.9	20	1	26.8	35
	42 (420)	28	2	3	23.1/33.7	30/45	1	3	45.5	60	2	34.2/42.5	45/60
	30 (300)	20	1	3	42.4	60	1	3	34.0	45	2	43.3/15.2	60/20
	24 (240)	16	1	3	35.2	45	1	3	28.2	40	2	37.2/12.2	45/20
	18 (180)	12	1	3	28.0	35	1	3	22.4	30	1	40.2	50
	56 (560)	28	2	5	44.2/33.7	60/45	2	5	35.4/26.9	45/35	3	38.5/42.5/21.3	45/60/30
	40 (400)	20	2	5	34.6/24.1	45/35	1	5	47.0	60	2	47.6/30.4	60/40
	32 (320)	16	1	5	49.0	60	1	5	39.3	50	2	41.5/24.3	50/35
	24 (240)	12	1	5	39.4	50	1	5	31.6	40	2	44.5/9.1	60/15

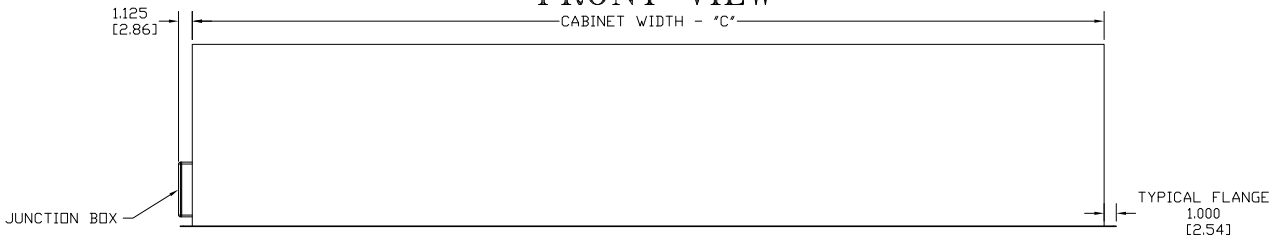
Berner reserves the right to alter specifications without prior notice.

ARCHITECTURAL RECESSED ELECTRIC HEATED

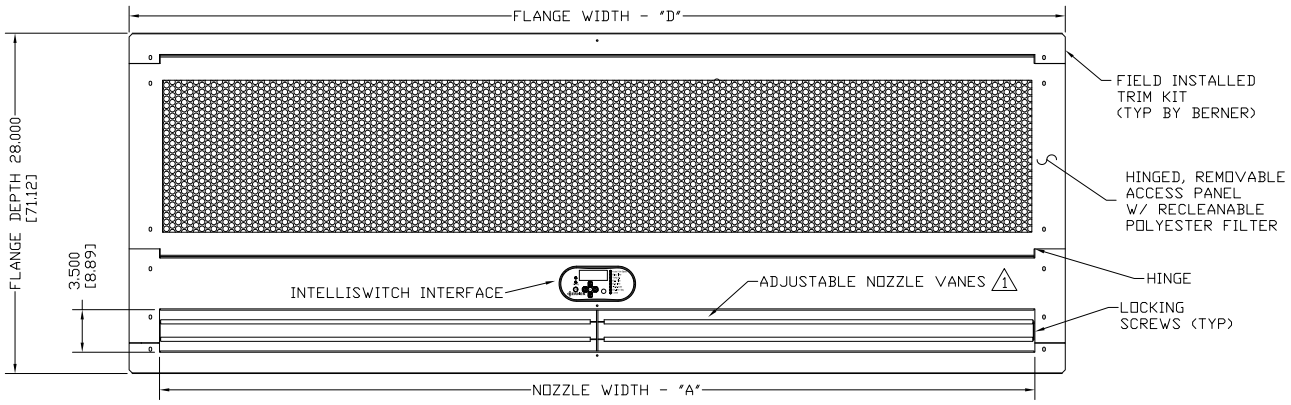
TOP VIEW



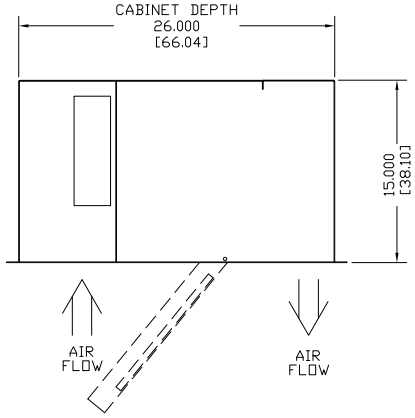
FRONT VIEW



BOTTOM VIEW



END VIEW



MODEL 6	NOZZLE WIDTH "A"	MOUNTING WIDTH "B"	CABINET WIDTH "C"	FLANGE WIDTH "D"	RECOMMENDED ROUGH OPENING DEPTH x WIDTH
	36.00 [91.44]	37.50 [95.25]	39.00 [99.06]	41.00 [104.14]	27.00 x 40.00 [68.58 x 101.60]
	42.00 [106.68]	43.50 [110.49]	45.00 [114.30]	47.00 [119.38]	27.00 x 46.00 [68.58 x 116.84]
	48.00 [121.92]	49.50 [125.73]	51.00 [129.54]	53.00 [134.62]	27.00 x 52.00 [68.58 x 132.08]
	66.00 [167.64]	67.50 [171.45]	69.00 [175.26]	71.00 [180.34]	27.00 x 70.00 [68.58 x 177.80]
	72.00 [182.88]	73.50 [186.69]	75.00 [190.50]	77.00 [195.58]	27.00 x 76.00 [68.58 x 193.04]
	84.00 [213.36]	85.50 [217.17]	87.00 [220.98]	89.00 [226.06]	27.00 x 88.00 [68.58 x 223.52]
	99.00 [251.46]	100.50 [255.27]	102.00 [259.08]	104.00 [264.16]	27.00 x 103.00 [68.58 x 261.62]
	108.00 [274.32]	109.50 [278.13]	111.00 [281.94]	113.00 [287.02]	27.00 x 112.00 [68.58 x 284.48]
	117.00 [297.18]	118.50 [300.99]	120.00 [304.80]	122.00 [309.88]	27.00 x 121.00 [68.58 x 307.34]
	132.00 [335.28]	133.50 [339.09]	135.00 [342.90]	137.00 [347.98]	27.00 x 136.00 [68.58 x 345.44]
	144.00 [365.76]	145.50 [369.57]	147.00 [373.38]	149.00 [378.46]	27.00 x 148.00 [68.58 x 375.92]

NOTES:

1. AIR CURTAIN MUST BE INSTALLED SO AIR STREAM IS NOT OBSTRUCTED WHEN DEFLECTED 20° TO EITHER SIDE OF ℄.
2. ELECTRICAL CONNECTIONS TO BE FLEXIBLE.
3. FIELD VERIFY DIMENSIONS.
4. ANCHORS TO SUPPORTING STRUCTURE BY OTHERS.
5. ADEQUACY OF SUPPORTING STRUCTURE IS TO BE VERIFIED BY A PROFESSIONAL STRUCTURAL ENGINEER.
6. LETTER "E" IN MODEL NUMBER DESIGNATES ELECTRIC HEATED UNIT.
7. DIMENSIONS IN INCHES [CENTIMETERS].

PROJECT		
LOCATION		
ARCHITECT		
ENGINEER		REV. –
DWG. NO.	ARD12-ELE	TITLE: [redacted]
DATE	31MAR2017	MODEL [redacted] AIR CURTAIN ELECTRIC HEATED SYSTEM
BY	S. Beil	
REPLACES	–	BERNER INTERNATIONAL CORP. NEW CASTLE,PA.
BY	–	

SUBMITTAL DATA

for

3/8/2022

Table of Contents

Technical Data Sheet for Rebel 001

Job Information	*Technical Data Sheet*
Job Name	
Date	3/8/2022
Submitted By	
Software Version	09.80
Unit Tag	Rebel 001

Unit Overview

Model Number	Voltage V/Hz/Phase	Design Cooling Capacity Btu/hr	EER@95/75 EAT & 200 CFM/ton		ISMRE Per AHRI 920-2016
			EER	IEER	
	208/60/3	82866	12.6	Not Available	ASHRAE 90.1-2016 compliant

Unit

Model Number:	
Model Type:	Heat Pump
Heat Type:	Electric
Hot Gas Reheat:	MHGRH with Combination Space Temperature and Humidity Sensor
Energy Recovery:	ERW-Med Cab-Econ: 2835 cfm max, 100% OA: 5145 cfm max
Application:	Variable Air Volume, Single Zone (Mixed Air or 100% OA)
Controls:	Microtech III
Outside Air:	100% Outside Air
Altitude:	0 ft
Approval	cETLus

Physical

Dimensions and Weight

Length	Height	Width	Weight
111.0 in	in	96.5 in	2479 lb

Corner Weights

L1	L2	L3	L4
456 lb	420 lb	769 lb	834 lb

Construction

Exterior	Insulation and Liners	Air Opening Location	
		Return	Supply
Painted Galvanized Steel	1" Injected Foam, R-7, Galvanized Steel Liner	Bottom	Bottom

Electrical

Unit FLA	MCA	MROPD	SCCR
188.2 A	191.2 A	200 A	5 kAIC

Note: Use only copper supply wires with ampacity based on 75° C conductor rating. Connections to terminals must be made with copper lugs and copper wire.

Technical Data Sheet for Rebel 001

Return/Outside/Exhaust Air

Outside Air Option

Type	Damper Pressure Drop	Exhaust Air Type
None	0.04 inH_2O	Powered, Modulating with Building Pressure Control

Exhaust Fan

Type	Drive Type	Wheel Diameter
SWSI AF	Direct Drive	14 in

Motor

(Qty) Horsepower	Type	Efficiency	Full Load Current (Each)
(1) 2.3 HP	ECM - Series A	Premium	5.0 A

Performance

Air Flow CFM	External Static Pressure inH_2O	Fan Speed RPM	Brake Horsepower HP
1800	1.50	1945	0.86

Energy Recovery

Design OA Volume	Design Exhaust Volume	Wheel Pressure Drop	Motor HP	Motor FLA
1800 CFM	1800 CFM	0.32 inH_2O	0.17 HP	0.7 A

Summer Conditions

Temperature								Recovered Capacity Btu/hr	Effectiveness	
Outside Air		Return Air		Wheel Leaving		Mixed Air			Total	Sensible
Dry Bulb °F	Wet Bulb °F	Dry Bulb °F	Wet Bulb °F	Dry Bulb °F	Wet Bulb °F	Dry Bulb °F	Wet Bulb °F			
89.0	73.0	75.0	62.0	79.3	66.5	79.3	66.5	43601	63.59	69.00

Winter Conditions

Temperature								Recovered Capacity Btu/hr	Effectiveness	
Outside Air		Return Air		Wheel Leaving		Mixed Air			Total	Sensible
Dry Bulb °F	Wet Bulb °F	Dry Bulb °F	Wet Bulb °F	Dry Bulb °F	Wet Bulb °F	Dry Bulb °F	Wet Bulb °F			
12.8	10.0	70.0	50.0	53.5	40.6	53.5	40.6	94055	70.77	71.16

Bypass Damper: No

Energy Recovery Filters

Efficiency	Quantity/Size		Face Area		Face Velocity		Air Pressure Drop	
	Outdoor	Exhaust	Outdoor ft^2	Exhaust ft^2	Outdoor ft/min	Exhaust ft/min	Outdoor inH_2O	Exhaust inH_2O
2 in. MERV 8	(3) 18 in. X 24 in.	(3) 18 in. X 24 in.	9.0	9.0	200.0	200.0	0.05	0.05

Combined Efficiency Factor

Application Specific CEF: 11.9

Filter Section

Physical

Type	Quantity / Size	Face Area	Face Velocity	Air Pressure Drop
2" MERV 8 & 4" MERV 14 Filters	6 / 18 in x 24 in x 2 in & 6 / 18 in x 24 in x 4 in	18.0 ft^2	100.0 ft/min	0.13

Technical Data Sheet for Rebel 001

DX Cooling Coil

Physical

Coil Type	Refrigerant Type	Fins per Inch	Rows	Face Area	Face Velocity	Air Pressure drop	Drain Pan Material
Cu Tube/ Al Fin	R410A	15	3	14.0 ft²	128.4 ft/min	0.07 inH_2O	Stainless Steel

Cooling Performance

Capacity			Indoor Air Temperature					Ambient air Temperature
			Entering		Leaving			
Total Btu/hr	Sensible Btu/hr	Moisture Removal lb/h	Dry Bulb °F	Wet Bulb °F	Dry Bulb °F	Wet Bulb °F	Dewpoint °F	°F
82866	55722	23.6	79.3	66.5	51.0	51.0	51.0	95.0

Condensate Connection Size:	3/4 in. Male NPT

Heating Performance

Total Capacity Btu/hr	Refrigerant Type	Indoor Air Temperature Dry Bulb		Ambient Air Temperature °F
		Entering °F	Leaving °F	
74405	R410A	70.0	107.8	47.0

Hot Gas Reheat Coil Section

Type	Face Area	Air Pressure Drop	Total Capacity	Leaving Air Temperature	
				Dry Bulb	Wet Bulb
Aluminum Tube Micro-Channel	13.2 ft²	0.02 inH_2O	37049 Btu/hr	70.0 °F	58.4 °F

Fan Section

Fan

Type	Fan Wheel Diameter	Fan Isolation
SWSI AF	16 in	None

Performance

Airflow	Total Static Pressure	Fan Speed	Brake Horsepower	Altitude
1800 CFM	3.2 inH_2O	2031 rpm	1.56 HP	0 ft

Motor | **Drive**

Type	Horsepower	Efficiency	FLA	Type
ECM Motor	4.0	Premium	8.8 A	Direct Drive

Electric Heat Section

Physical | **Electrical**

Airflow	Size	Control	FLA A
1800 CFM	54 kW	SCR control	149.9

Performance

Capacity Btu/hr	Air Temperature		Air Pressure Drop
	Entering °F	Leaving °F	inH_2O
184302	12.8	72.8	0.06

Technical Data Sheet for Rebel 001

Unit Discharge Conditions

AirTemperature				
Motor Heat Btu/hr	**Moisture Removal** lb/h	**Unit Leaving Dry Bulb** °F	**Unit Leaving Wet Bulb** °F	**Unit Leaving Dewpoint** °F
4984	23.6	53.6	51.9	51.0

Minimum Airflows		
Fan Only Minimum Airflow	**Cooling Minimum Airflow**	**Heating Minimum Airflow**
594 CFM	1052 CFM	2831 CFM

Notes: Refer to fan curve for applicability of approximate airflows

Condensing Section

Compressor

Type	Quantity	Refrigerant Charge lb	Total Power	Capacity Control	Compressor Isolation
Inverter Scroll	2	31.2	5.78 kW	Mod Control with Inverter Compressor	Rubber in Shear

Compressor Amps:	
Compressor 1	11.9 A
Compressor 2	8.6 A

Condenser Coil

Type	Fins per Inch	Fin Material
Copper Tube	16	Aluminum

Condenser Fan Motors

Number of Motors	Full Load Current (Total)
2	4.0 A

Internal Pressure Drop Calculation

External Static Pressure:	2.50 inH_2O
Filter:	0.13 inH_2O
Outside Air:	0.04 inH_2O
Energy Recovery:	0.36 inH_2O
DX Coil:	0.07 inH_2O
Hot Gas Reheat:	0.02 inH_2O
Electric Heat:	0.06 inH_2O
Total Static Pressure:	3.19 inH_2O

Sound

	Sound Power (db)							
Frequency	**63 Hz**	**125 Hz**	**250 Hz**	**500 Hz**	**1 kHz**	**2 kHz**	**4 kHz**	**8 kHz**
Inlet	78	76	84	79	81	75	70	64
Discharge	78	79	87	84	87	81	78	72
Radiated	85	85	81	78	76	71	64	57

Options

Electrical

Field Connection:	Power Block
Power Options:	Phase Failure Monitor

Technical Data Sheet for Rebel 001

Factory Installed Sensors
Leaving Coil/Entering Fan Temperature Sensor
Duct High Limit Switch
Return Air Temperature Sensor
Discharge Air Temperature sensor – Wired in unit, mounted in supply duct
Outside Air Temperature Sensor
Dirty Filter On/Off Switch
Supply Fan Air Proving Via Modbus
Building Static Pressure Sensor
Supply Leaving Wheel Temperature Sensor
Exhaust Leaving Wheel Temperature Sensor

Warranty	
Parts:	Standard One Year
Compressor:	Additional Four Year, Five Year Total

Notes

Accessories

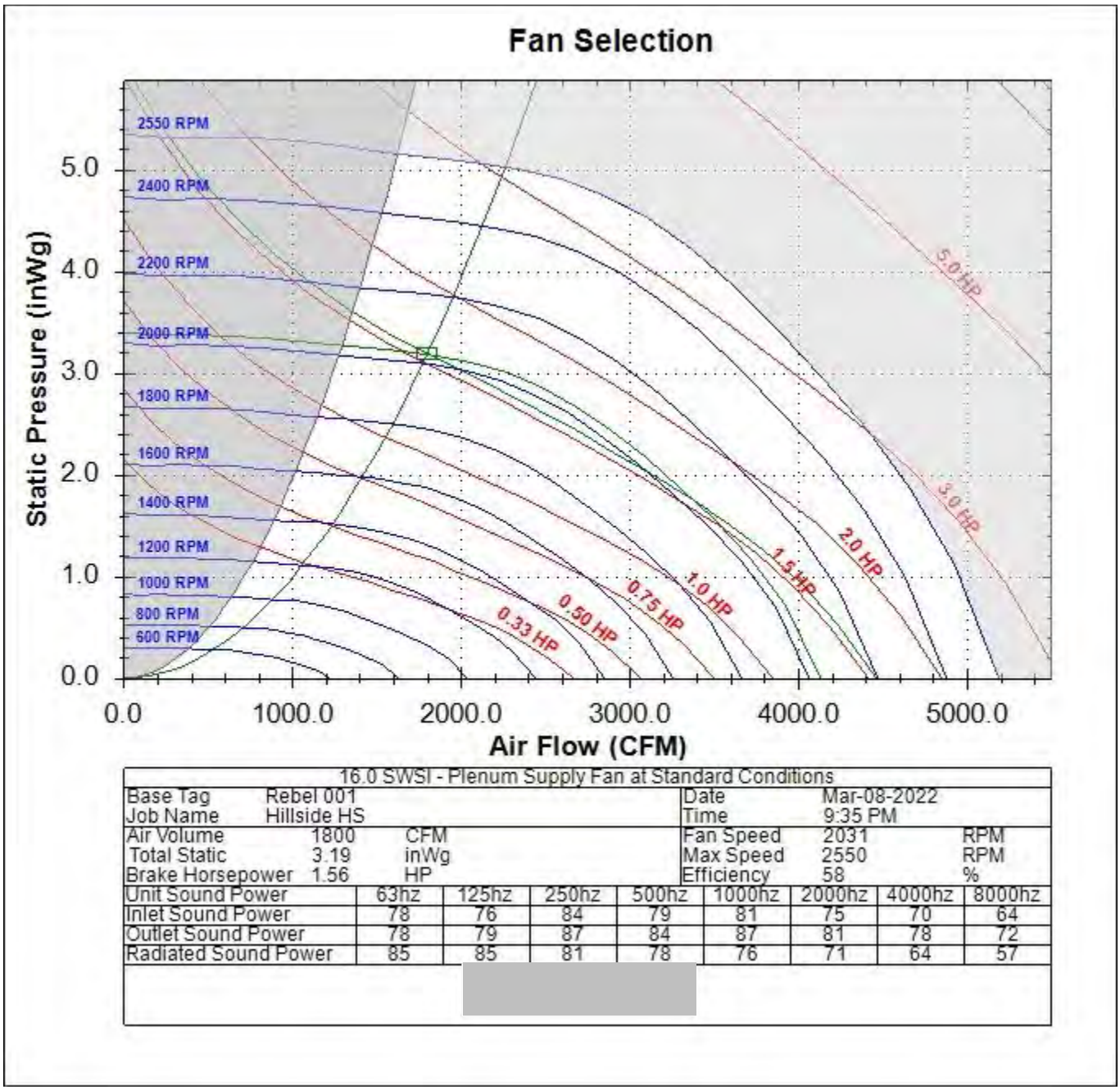
Mandatory

Part Number	Description
910191961	Combo Digital Temp and Humidity Sensor w/Adj setpoint and tenent override

Optional

Part Number	Description
910143408	DDC Space Sensor with Setpoint Adj and Tenant Over
910134604	24" Roof Curb, W/ERW, Size 007-015

Fan Curve - Supply for Rebel 001

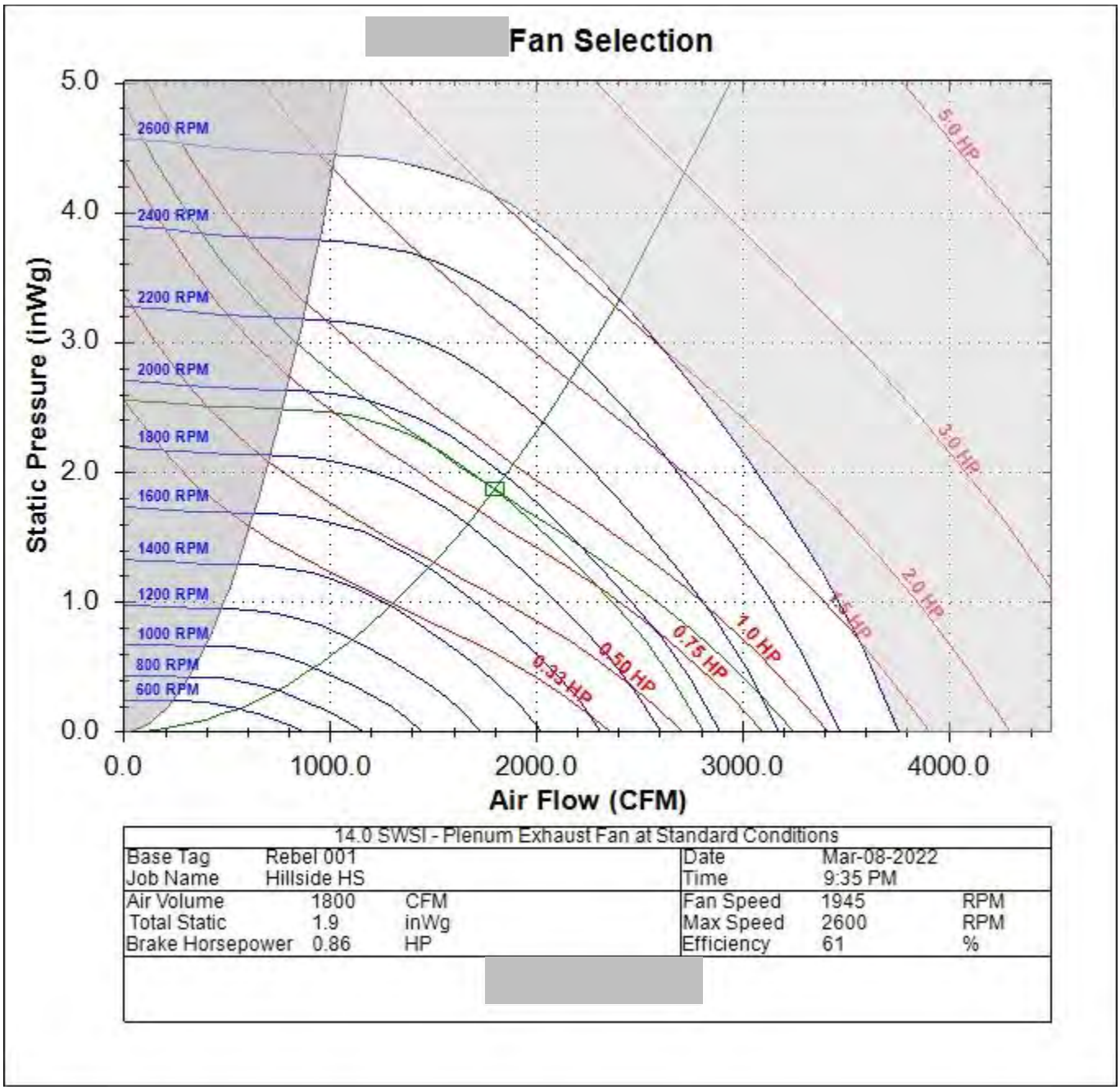


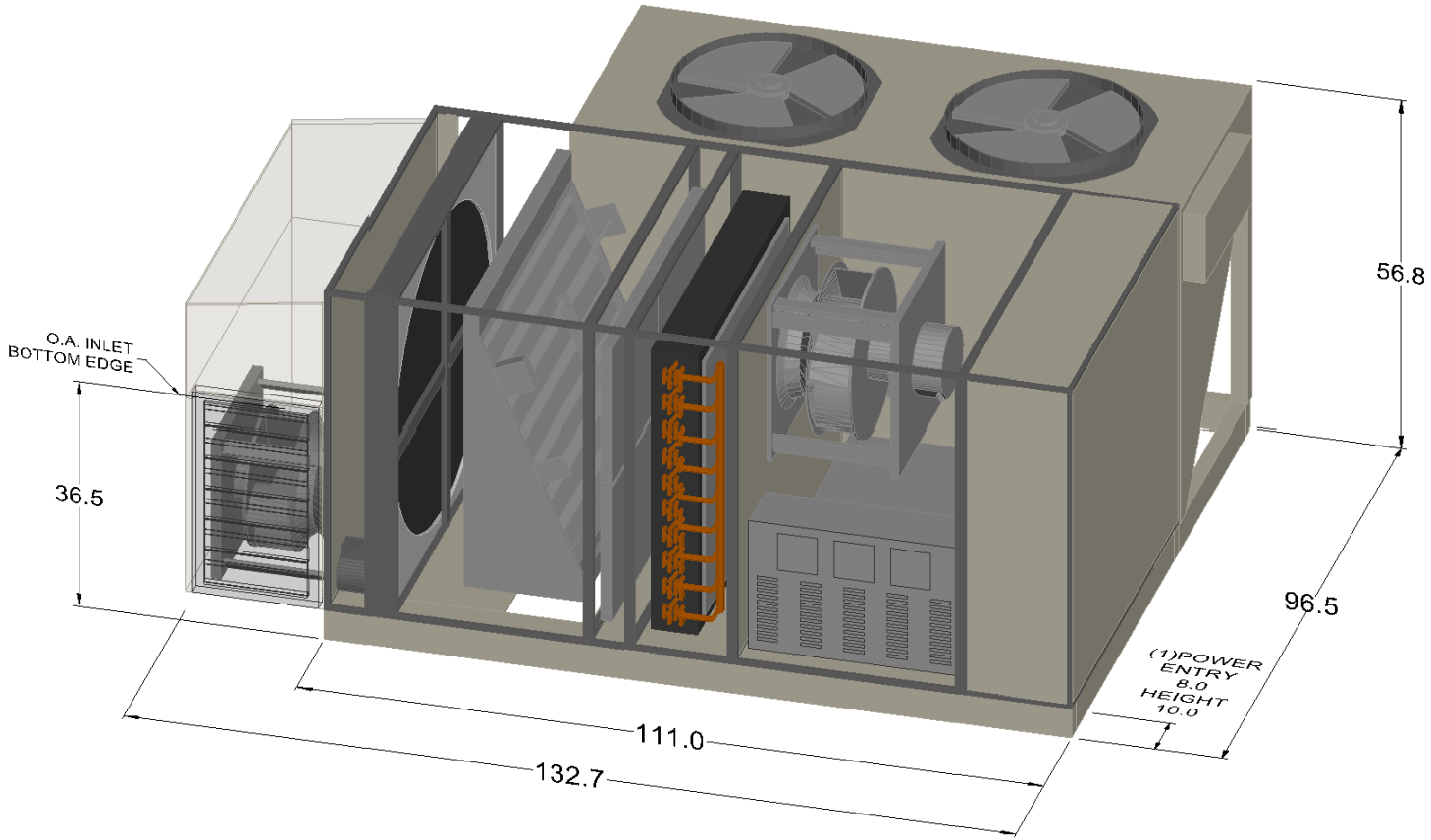
16.0 SWSI - Plenum Supply Fan at Standard Conditions

Base Tag	Rebel 001		Date	Mar-08-2022
Job Name	Hillside HS		Time	9:35 PM
Air Volume	1800	CFM	Fan Speed	2031 RPM
Total Static	3.19	inWg	Max Speed	2550 RPM
Brake Horsepower	1.56	HP	Efficiency	58 %

Unit Sound Power	63hz	125hz	250hz	500hz	1000hz	2000hz	4000hz	8000hz
Inlet Sound Power	78	76	84	79	81	75	70	64
Outlet Sound Power	78	79	87	84	87	81	78	72
Radiated Sound Power	85	85	81	78	76	71	64	57

Fan Curve - Exhaust for Rebel 001



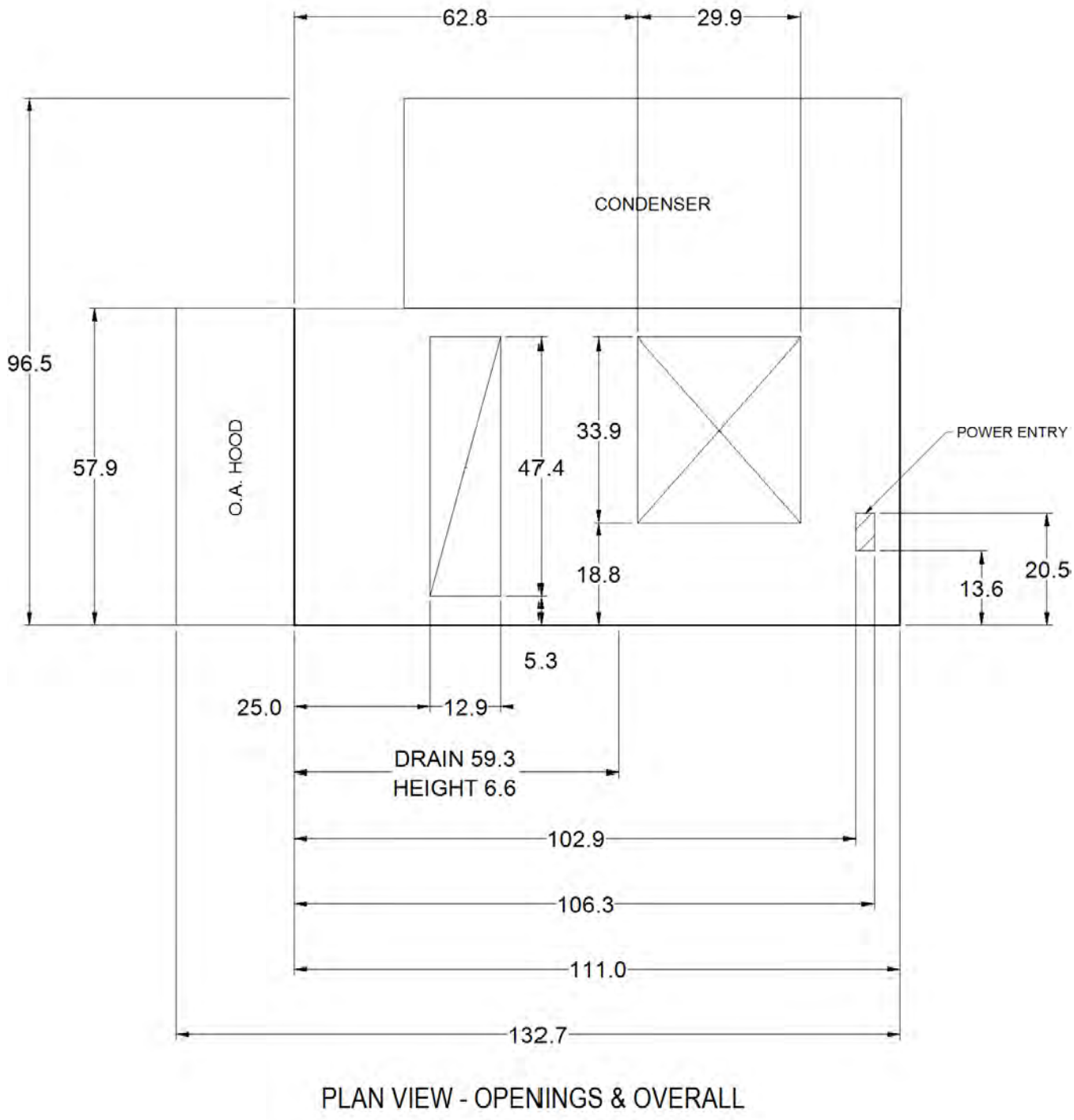


Notes:
(1) Recommended location for optional field cut side power connection.

Product Drawing	Unit Tag:			Sales Office:			
Product:	Project Name:			Sales Engineer: SalesEngineer			
Model:	Mar. 08, 2022	Ver/Rev:	Sheet: 1 of 1	Scale: NTS	Tolerance: +/- 0.25”	Dwg Units: in [mm]	

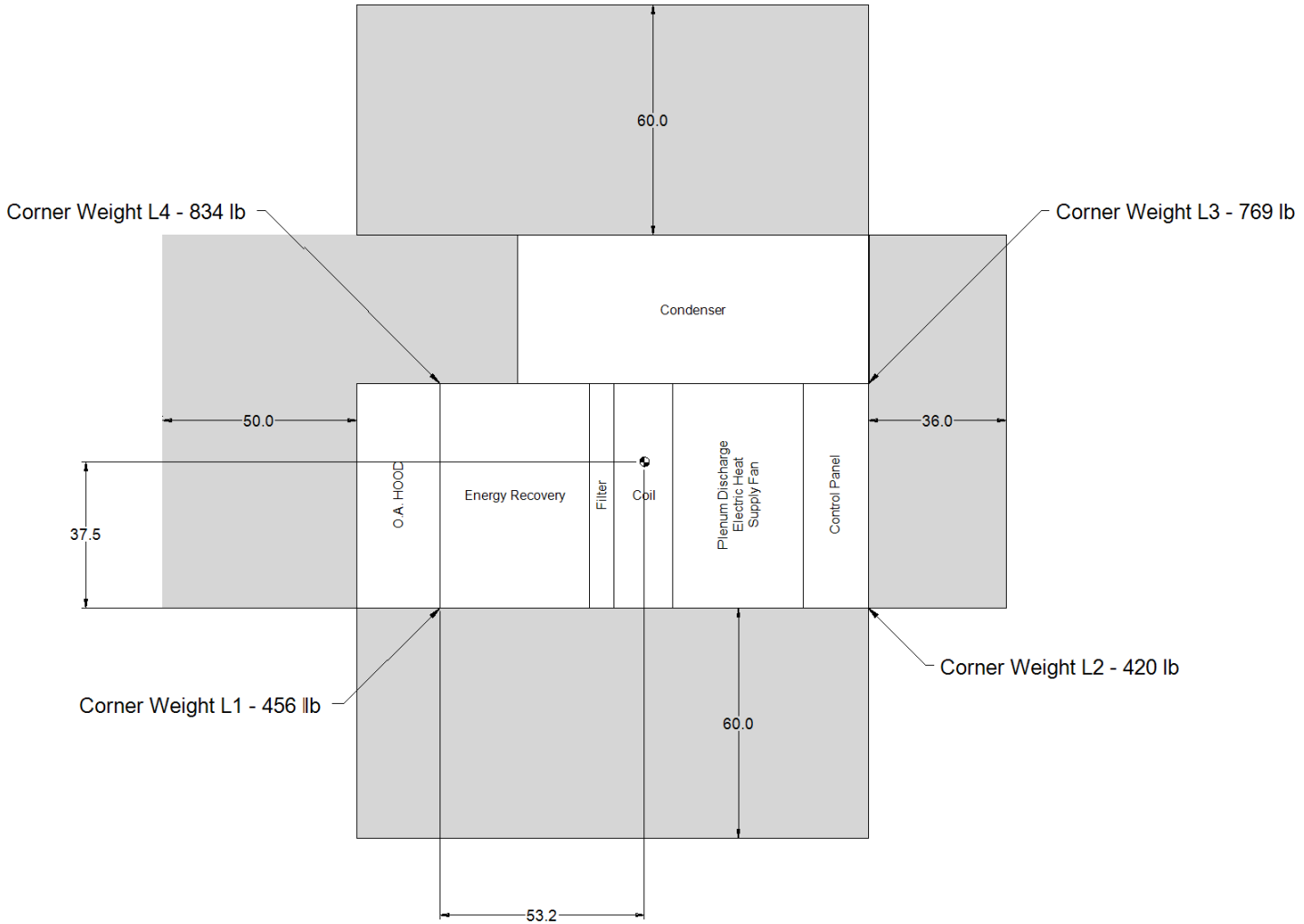
Software Version: 09.80

Drawings(2)



PLAN VIEW - OPENINGS & OVERALL

Product Drawing	Unit Tag:					
Product:	Project Name: Hillside HS					
Model:	Sales Office: Daikin Applied New York					
Sales Engineer: SalesEngineer	Mar. 08, 2022	Ver/Rev:	Sheet 1 of 1	Scale: NTS	Tolerance: +/-0.25"	Dwg Units: in [mm]



PLAN VIEW - CG, CORNER WEIGHTS, SERVICE CLEARANCE

Notes:
(1) Center of Gravity Height = 25.9
(2) Total Weight = 2479 lb

Product Drawing	Unit Tag:			Sales Office:			
Product:	Project Name:			Sales Engineer:			
Model:	Mar. 08, 2022	Ver/Rev:	Sheet: 1 of 1	Scale: NTS	Tolerance: +/- 0.25"	Dwg Units: in [mm]	Software Version: 09.80

[redacted]

Combination Relative Humidity and Temperature Sensor

Part Number: [redacted]

Description

The space temperature and humidity sensor is designed to work with the MicroTech® III unit controller to measure the space conditions. This device is not a traditional 7-day programmable thermostat. *It does not provide a scheduling function*. However, it does have a tenant override button to force the unit occupied outside of normal scheduled operation.

Application

- **On constant air volume (CAV) and single zone variable air volume (VAV) systems**, acts as control device for heating and cooling operations during occupied and unoccupied times
- **On duct pressure control VAV systems**, acts as control device for unoccupied times but *not* occupied operations

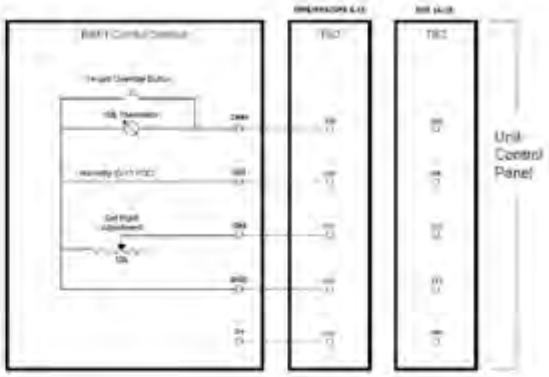
The humidity sensing element is used to enable the dehumidification sequence in the rooftop unit (RTU). This sequence overcools the air to remove moisture and then reheats it to avoid overcooling the space. The RTU must have a valid source of reheat for this feature to be useful. Valid reheat sources include hot gas reheat, liquid subcooling, modulating natural gas heat, or modulating hot water/steam heat. **Staged heating options are not functional in the MicroTech® III for use in dehumidification.**

[redacted]

[redacted]

Instructions

The sensor features a large format LCD display that shows the space temperature and humidity. The display alternates between showing humidity and temperature on a timed interval. Also included are setpoint adjustment keys to increase or decrease the temperature setpoint. Humidity setpoint is not adjustable through this device. Humidity setpoint must be changed through the MicroTech® III. When the adjustment keys are first pressed, the display will show the current reading for the temperature setpoint. Further pressing of these keys will change the setpoint value.



Power	18 to 30 VAC
Power Consumption	50 mA. Max. DC, 1.5 VA max. AC
Ambient	32˚F to 122˚F (1˚C to 50˚C)
	0% to 95% RH, non-cond.
Button Options	Setpoint Up/Down buttons
	Tenant Override button
Wiring	16-22 AWG shielded, 5 wire, stranded

Rebel Rooftop Dehumidification and Hot Gas Reheat

Hot Gas Reheat

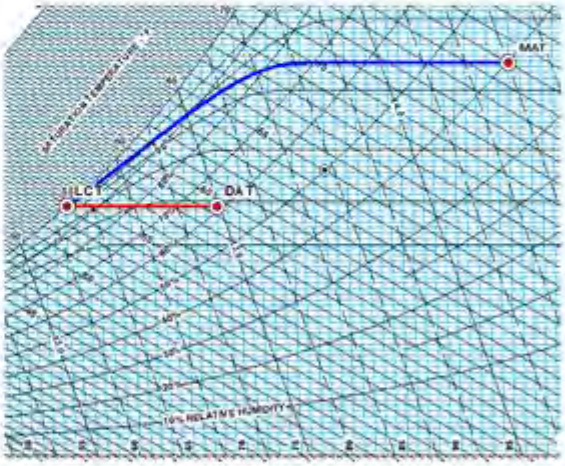
Description

Hot gas reheat is a typical feature used to provide dehumidification in many packaged rooftop units. However, the control strategy from one manufacturer to another may differ greatly. The sophisticated controls available with a Microtech® III controlled rooftop unit (Rebel®/Maverick® II/RoofPak®) provides the most effective hot gas reheat control in industry. This control is referred to as "Two Point Dehumidification Control". The two points of control are the Leaving Cooling Coil Temperature Sensor (LCT) and the unit Discharge Air Temperature sensor (DAT). When a call for dehumidification is made the rooftop unit begins to control the compressors to a temperature setpoint for the LCT and the modulating hot gas reheat coil begins controlling to the DAT setpoint. This is illustrated in Figure 1.

Figure 1: Two point dehumidification

Table 1 is a psychrometric chart of two point dehumidification. During the dehumidification process the cooling coil will be saturated with water. This means the air leaving the coil is also very close to its saturation point. Therefore, the LCT control point for compressors brings the air to desired humidity ratio, and the sensible reheat from the reheat coil brings the air to the desired temperature. The precise control of both temperature and humidity make this the most effective method of hot gas reheat control.

Table 1: Psychometric chart of two point dehumidification



CSD-00115-00 (Feb-18)

[redacted]

Space Sensor with Tenant Override & Setpoint Adjustment

Part Number: [redacted]

Description

The space temperature sensor is designed to work with the MicroTech® III unit controller and is a Type 2, 10k Ohm thermistor used to measure the space conditions. This device does not have scheduling capability. The sensor can be used on either constant air volume (CAV) or variable air volume (VAV) applications.

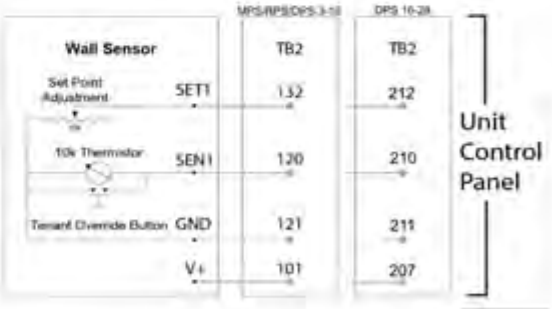
Application

- **On CAV systems**, acts as the control device for the heating and cooling operations for occupied and unoccupied time periods
- **On VAV systems**, not traditionally used as control device but used for unoccupied heating and cooling space sensor

Instructions

The sensor features a large format LCD display that senses the space temperature and shows the space temperature. It also has the setpoint adjustment keys to increase or decrease the setpoint. When the adjustment keys are first pressed, the display will show the current reading for the setpoint. Further pressing of these keys will change the setpoint value. The sensor also has a tenant override button. Pressing this will initiate the tenant override sequence at the MicroTech III controller, placing the unit into occupied mode for a preset (adjustable) amount of time.

Note: Shield wire is grounded at MicroTech III only



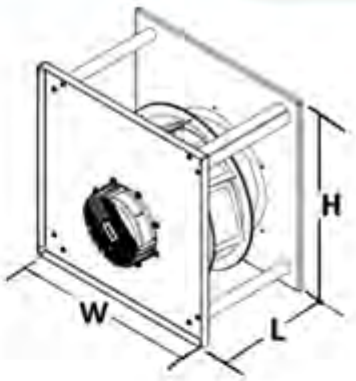
Specifications

Power	15 to 28 VAC [924 VAC nominal]
Power consumption	0.17 VA maximum AC
Wiring	18-22 AWG, shielded, stranded, 4 wire
Display	LCD – 3.5 digits @ 0.6 inch H
	Temperature display units – 0.1°F/C increments
	Set points in 0.5° steps
Button options	Set points up/down buttons
	Tenant override buttons
Environmental ambient	Temperature 32° to 122°F (0-50°)
	Humidity 0 to 95% RH, non-condensing
Material	ABS plastic, UL94V-0

[redacted]

[redacted]

[redacted] Electronically Commutated Motor (ECM) Fan



Description

[redacted] Supply and Exhaust fans utilize a direct drive Electronically Commutated Motor (ECM) fans.

Features

The ECM fans have low vibration, low noise, and have the same if not higher efficiency than motors with Variable Frequency Drives (VFDs). Direct drive design means no belt maintenance.

Dimensions

Fan Size	(L)	(W)	(H)	Motor HP
12"	11.12	16.54	16.54	1.3
14"	12.86	16.54	16.54	2.3
16"	14.27	18.12	18.12	4.0
18"	15.5	25.2	25.2	4.0
22"	18.03	25.2	25.2	4.0 or 8.0

For further information, visit [redacted]

[redacted]

Energy Wheel Filtration

Description

All [redacted] rooftop units with energy recovery wheels are factory provided with 2" MERV 8 filters on entering exhaust to the wheel and entering outside air to the wheel. An example of this is shown in the image below.

CSD-00179-00 (Jun-18)

[redacted]

VFD MD4

Description

The MD4 family of drives was designed to meet variable torque applications (pump & fan application) requirements. The MD4 AC Drive features a control panel that can be mounted on the cover of the drive or remotely. The control panel has capabilities to upload and download drive configuration parameters as well as an optional real-time clock, startup, maintenance and diagnostic assistants. The MD4 is also programmable in English & 14 other languages.

Each MD4 drive comes equipped with an extensive library of pre-programmed HVAC application macros which, at a touch of a button, allow rapid configuration of inputs, outputs, and performance parameters for specific HVAC applications to maximize convenience and minimize startup time. The MD4 series can handle the most demanding commercial applications in an efficient, dependable, and economic manner.

Features

- UL, cUL labeled and CE marked
- EMI/RFI Filter (2nd Environment, Restricted Distribution)
- Start-up assistants
- Maintenance assistants
- Diagnostic assistants
- Real time clock
  - Includes day, date and time
- Operator panel parameter backup (read/write)
- Full graphic and multilingual display
- Two (2) programmable analog inputs
- Five (5) programmable digital inputs
- One (1) programmable analog output
- One (1) programmable relay output
  - 3 more relay outputs available as an option (mrel-01)
- Adjustable filters on analog inputs and outputs
- Mathematical functions on analog reference signals
- All control inputs isolated from ground and power
- Input speed signals
  - Current 0 (4) to 20 ma
  - Voltage 0 (2) to 10 vdc

Input Connection	
Input voltage (U1, V1, W1)	208/220/230/240Vac 1-phase +/-10%, (2.4 to 9.8 A)
	208/220/230/240Vac 3-phase +/-10%, (2.6 to 50.8 A)
	380/400/415/440/460/480Vac 3-phase +/-10% (1.2 to 44 A)
Output Connection	
Output voltage	0 to U1, 3-phase symmetrical, Umax at the field weakening point
Output frequency	0 to 500 Hz
Frequency resolution	0.01 Hz
Continuous current	I_{IN} Continuous rms input current (for dimensioning cables and fuses) at ambient temperature of +40°C
	I_{LD} Continuous output current at maximum ambient temperature of +50°C. 10% overloadability for one minute every ten minutes
	I_{2N} Maximum continuous output current at ambient temperature of +40°C. No overloadability, derating 1% for every additional 1°C up to +50°C
	I_{2MAX} Maximum instantaneous output current. Available two seconds every ten minute at start up or as long as allowed by the drive temperature
	P_N Typical motor power. The kilowatt ratings apply to most IEC 4-pole motors. The horsepower ratings apply to most NEMA 4-pole motors
	R0...R4 ACS310 is manufactured in frame sizes R0…R4. Some instructions and other information that only concern certain frame sizes are marked with the symbol of the frame size (R0…R4)
Ambient Conditions, Operation	
Air temperature:	Indoor Vision®, Destiny® and SWT—5.0°F to 104°F (-15°C to 40°C), above 40°C the maximum output current is derated 1% for every additional 1°C (up to 50°C (122°F)) maximum limit.
Relative humidity:	Indoor Vision, Destiny and SWT—5 to 95%, no condensation allowed, maximum relative humidity is 60% in the presence of corrosive gasses
Temperature and Relative Humidity on RoofPak®, Maverick®, Rebel® and Skyline® Outdoor units	The VFD is mounted in a ventilated enclosure and will operate within the units submitted operating envelope.
Analog Inputs	
Two (2) programmable analog inputs	
Current reference	
Unipolar	0 (4) to 20 mA, Rin= 100 Ohm
Bipolar	-20 mA to 20 mA, Rin= 100 Ohm
Voltage reference	
Unipolar	0 (2) to 10 V, Rin > 312 kOhm
Bipolar	-10 V to 10 V, Rin > 312 kOhm
Resolution	0.1%
Accuracy	+/-1%

Reference Power Supply	
Voltage	+10 VDC, +/-1% at 25oC (77°F)
Maximum load	10 mA
Applicable potentiometer	1 kOhm to 10 kOhm
Analog Outputs	
One (1) Programmable Current Output	
Signal Level	0 (4) to 20 mA
Accuracy	+/-3% Full Scale Range at 25°C (77°F)
Maximum load impedance	500 Ohms
Digital Inputs	
Five (5) programmable digital inputs	
Signal level	12-24 VDC, with internal or external supply
Type	PNP and NPN
Input current	15 mA at 24 VDC
Input update time	8 ms, +/- 1ms
Frequency input	Pulse Train 0 to 16 KHz (X1A:16 only)
Internal 24 VDC supply for digital inputs	
Voltage	24 VDC, +/- 10%
Maximum current	200 mA
Relay Outputs	
One (1) programmable relay output	
Digital Outputs	
One (1) programmable digital output	
EIA-485 Interface (Embedded Fieldbus)	
Embedded fieldbus protocol	Modbus RTU EIA-485
	Johnson Controls N2
	Siemens Building Technology FLN (P1)
	BACnet (MS/TP)
Protections	
Single phase	Input protected
Overvoltage trip limit	1.3 * Input voltage
Undervoltage trip limit	0.65 * Input voltage
Overtemperature	Protected
Auxiliary voltage	Short circuit protected
Microprocessor fault	Protected
Motor stall protection	Protected
Motor overtemperature	Protected (I^2t)

[redacted]

Outside Air Mist Eliminator

Description

This is the first item in the outdoor airstream in the [redacted] and [redacted] units. The main functions of this component are to prevent moisture infiltration from the outdoor airstream as well as prevent entrance into the unit by foreign objects and animals.

Media Construction

The filter media element consists of two layers of corrugated aluminum screen mesh and an expanded aluminum retainer/faceguard. The filter media is completely enclosed in a durable, one-piece aluminum U-channel frame, closed at one corner with pop rivets.

[redacted]

[redacted] DDC Controller

Description

[redacted] DDC control systems provide constant volume, variable air volume, 100% outside air, and/or dehumidification control flexibility. In addition to providing stable, efficient temperature, and static pressure control, the controller is capable of providing comprehensive diagnostics, alarm monitoring, and alarm specific component shutdown if critical equipment conditions occur. The unit controllers are factory mounted and configured for stand-alone operation or integration with a building automation system (BAS) through an optional communication module with our Open Choices® feature.

Benefits

The MicroTech III provides easy, low-cost integration into most building automation systems without costly gateway panels.

- Flexibility to select either BACnet® or LONWORKS® communication. Units are LonMark® 3.4 certified with the appropriate communications module for LONWORKS networks.
- Comprehensive unit control and status information is available at the BAS regardless of communication protocol.
- Long-term choices for equipment additions or replacements, and for service support.
- Flexible alarm notification and prioritization with Intrinsic Alarm Management (BACnet).
- Simplified BAS integration with the ability to set network parameters at the unit controller, reducing installation time and costs.
- Easy monitoring and troubleshooting of communication status from the unit controller to the BAS.

Control Board (MCB)

The main control board (MCB) contains a microprocessor that is preprogrammed with the software necessary to control the unit. This ensures that schedules, setpoints, and parameters are not lost, even during a long-term power outage. The microprocessor board processes system input data and then determines and controls output responses. An RS-232 communication port is provided as standard to allow for direct or modem access with a PC-based service tool.

Features

Each system is equipped with a complete MicroTech III unit control system that is pre-engineered, pre-programmed, and factory tested prior to shipment. Each MicroTech III unit control system is composed of several components that are individually replaceable for ease of service. These components include:

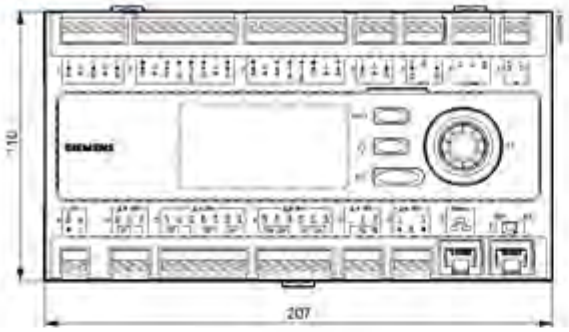
- Unit controller with user interface display and navigation wheel
- Optional expansion modules
- Communication module (optional)
- Pressure transducers (optional)
- Unit-mounted temperature sensors
- Zone temperature sensor packages (optional)
- Humidity sensor (optional)
- SD card interface for application and operating system upgrade

Expansion Modules

These boards are used to expand the input and output capability of the unit controller. Each board communicates via serial data communications. These microprocessor-based boards provide independent operation and alarm response even if communication is lost with the unit controller.

[redacted]

Dimensions



Specifications

Operating voltage	AC 24 V ±20%; DC 24 V ±10%
Frequency	45 – 65 Hz
Power consumption	Approximately 15 VA (without extension modules)
Max. AC current without extension modules	1.8 A @ AC 24 V
Max. DC current without extension modules	1.0 A @ DC 24 V
Max. current for extension modules	2.2 A @ AC 24 V 3.0 A @ DC 24 V
Max. external supply line fusing	10 A slow wire fuse or circuit breaker
Environmental Conditions	
Operation	IES 60721-3-3 class 3K5
Temperature	-40 to 70°C
Restriction LCD	-20 to 60°C
Restriction process bus	-25 to 70°C
Humidity	<90% r.h. (non-condensing)
Atmospheric pressure	Min. 700 hPa, corresponding to max. 3,000 m above sea level
Transport	IEC 60721-3-2 class 2K3/2K4
Temperature	-40 to 70°C
Humidity	<95% r.h. (non-condensing)
Mechanical conditions	IEC 60721-3-2 class 2M2

[redacted]

Phase Voltage Monitor for [redacted]

Description

Phase Voltage Monitors used in Rooftop equipment are safety devices to protect your unit from harmful Voltage Variations. In the event of a phase failure, the phase voltage monitor will not only cut the power to the unit, but will also indicate what type of failure it was to assist in diagnosing the problem. A phase voltage monitor comes standard with any DPS with energy recovery, and is selectable for a unit without.

Applications

Works with any voltage on any DPS, regardless of the field connection.

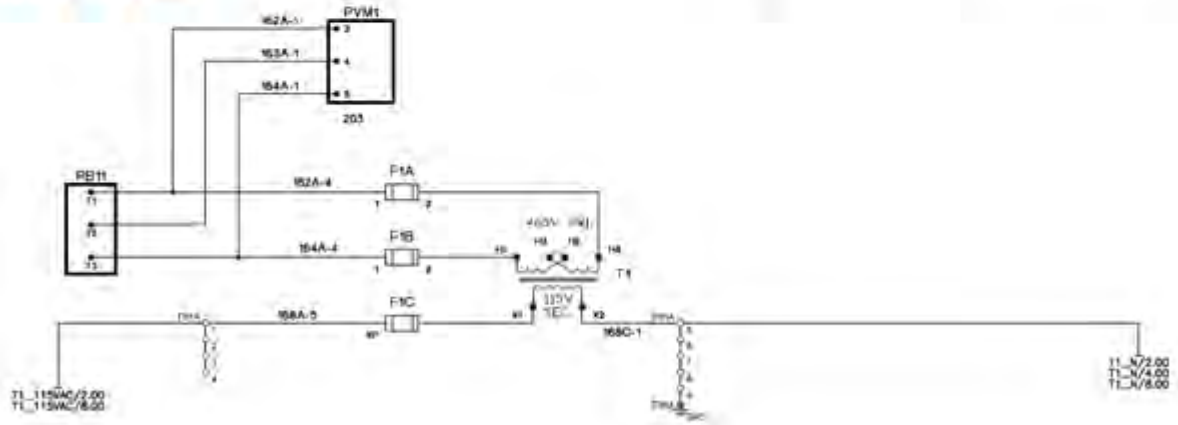
Comes factory mounted and configured for your unit

	LED STATUS	STATUS
GREEN		NORMAL/ RELAY ON
GREEN		RESTART DELAY
RED		REVERSAL
RED		LOSS/ UNBALANCE
RED		UNDERVOLTAGE
RED		OVERVOLTAGE

Specifications

- Protection against phase loss, phase reversal, phase unbalance, undervoltage, overvoltage, and rapid cycling
- Retains fault indication and continues monitoring all voltage even with a lost phase
- Full fault indication on top of unit for easy troubleshooting

Wiring Diagram



CSD-00181-00 (Apr-18)

1 of 1

[redacted]

Four-year Compressor Parts Extended Warranty Coverage

Selected Optional Coverage

The units have been selected with the additional warranty coverage noted below:

Four-year extended (five-year total) compressor parts-only warranty for the unit.

Document Summary Page

END USES IN kWh & THERMS	Lights	Misc Equip	Electric Space Heating	Electric Space Cooling	Pumps & Aux	Vent Fans	Site Lighting	HP Supplemental	DHW	Regulated Electricity (kWh)	Unregulated Electricity (kWh)	Total Electricity (kWh)	Peak Electricity Demand (kW)	Gas Heating (therm)	DHW (therm)	Kitchen Misc. Equip (therm)	Regulated Fuel (therms)	Unregulated Fuel (therms)	Total Fuel (therms)	Site Energy (kBtu/ft^2)	Source Energy (kBtu/ft^2)	Regulated Electricity Cost	Unregulated Electricity Cost	Regulated Fuel Cost	Total Regulated Cost	Total Unregulated Cost	Total Cost
Q497 Base Case (6 ECM's)	82,113	276,711	3,117	145,740	21,789	58,331	0	76	20,463	331,629	276,711	608,340	355	9,978	0	0	9,978	0	9,978	23.8	49.0	$77,170	$46,194	$8,908	$86,078	$46,194	$132,272
Q497 Option 1: Heat Pump RTU's w/ Electric Resistance Perimeter Heat	82,113	276,711	181,732	70,652	1,881	89,439	0	357	20,463	446,639	276,711	723,349	561	0	0	0	0	0	0	19.1	48.7	$165,161	$46,194	$0	$165,161	$46,194	$211,355
Q497 Option 2: Packaged HCV Units and DOAS w/ Electric Resistance Perimeter Heat	82,113	276,711	140,710	93,628	10,178	136,426	0	1,762	20,463	485,279	276,711	761,989	460	0	0	0	0	0	0	20.1	51.3	$138,472	$46,194	$0	$138,472	$46,194	$184,666

Appendix E:

Electrical Service Calculations

April 11, 2022

Re: [redacted] – Electrification Study

To whomever it may concern:

We considered the option of using a 480/277V electric service. This scheme will be as follows:

- Electric service will be rated for 3000Amps 480/277V 3-phase using eight (8) sets of 4#500MCM conductors in 3' conduit
- Electric service will terminate on a 3000Amp 480/277V service end box/CT cabinet
- This will feed a 3000Amp main service switch
- A 15KVA 480V-208/120V delta wye step down transformer will also be tapped from the CT cabinet to energize the fire alarm system.
- Fire pump will be tapped from the C/T cabinet
- A 3000Amp 480/277V 3 phase 4-wire main switchboard will be energized from the main service switch mentioned above.
- A 500KVA 480V-208/120V delta wye step down transformer will be energized from a 600Amp switch in the main switchboard above.
- A 1600Amp 208/120V 3 phase 4-wire low voltage distribution board will be energized from the secondary side of the step down transformer mentioned above.
- All major mechanical loads and lighting loads will be energized from the main switchboard mentioned above.
- All receptacle and low voltage system loads such as PA, intrusion alarm, auxiliary bell system, fire rescue intercom system, and small exhaust fans will be energized from the low voltage switchboard mentioned above.

The Pros of using a 480/277V over a 208/120V service will include the following:

- Fewer set of incoming service conductors due to higher voltage and lower current
- Lower ampere rating for all service equipment
- Smaller feeders for Mechanical units due to higher voltage and lower current.
- Fewer number of circuits for lighting, since each 20 Amp circuit can accommodate more lighting load at 277V.
- Switchboard with less ampere rating

- Less space usage for physically smaller switchboard
- Less space usage for physically smaller mechanical unit feeders

The Cons of using a 480/277V over a 208/120V service will include the following:

- Addition of Two (2) transformers: One rated for 15KVA to step down the voltage to 120/208V for fire alarm system tap and another rated for 500KVA to step down the voltage for the proposed low voltage switchboard energizing receptacles, low voltage system and small mechanical loads.
- Extra space requirement for transformers: A typical Square D 500KVA transformer dimension is 6.25' H X 3.15'W X 4.17' L and the typical Square D 15KVA transformer dimension is 2.25'H X 1.71' W X 1.44'L. This space is available in the electrical room per the SCA 60% design drawings.
- Cooling requirement for transformers: The room containing the transformers will require supplemental cooling to keep the transformer in good working condition.
- Extra point of failure: If the transformer fails, it will take out all building loads connected to it.

According to the design engineer, Con Edison has ruled that 480/277V is not available on the street, therefore we are basing our design on a 208/120V service.

Thanks

ELECTRICAL SERVICE CALCULATION SHEET

Base Building

PROJECT NAME:		**PROJECT No.:**	
CALCULATED BY:	O.O.	**DATE:**	2/16/2022
CHECKED BY:	K.P.	**No. of PAGES:**	3

2. LOAD CALCULATION

a. Lighting and Receptacles

		LOAD DESCRIPTION							CONNECTED LOAD		
	AREA	UNIT LOAD	AMPS (A)	VOLT (V)	PHASE (Ø)	PF (%)	KW	KVA	TOTAL KW	TOTAL KVA	NET DEMAND LOAD KVA
Lighting			388 A	120 V	1Ø	90 %			41.9 KW	46.6 KVA	46.6 KVA
Convenience Receptales			1,121 A	120 V	1Ø	90 %			121.1 KW	134.5 KVA	134.5 KVA
Computer Receptacles			780 A	120 V	1Ø	90 %			84.2 KW	93.6 KVA	93.6 KVA
Net Total			762 A	208 V	3Ø				247 KW	275 KVA	275 KVA

b. Miscelaneous Equipment

		LOAD DESCRIPTION							CONNECTED LOAD		
EQUIPMENT	QUANTITY	UNIT LOAD	AMPS (A)	VOLT (V)	PHASE (Ø)	PF (%)	KW	KVA	TOTAL KW	TOTAL KVA	NET DEMAND LOAD KVA
Telecom System	1	11,400.0 VA	76 A	120 V	1Ø	90 %	10.26 KW	11.40 KVA	10.3 KW	11.4 KVA	9.1 KVA
Public Address System	1	2,000.0 VA	13 A	120 V	1Ø	90 %	1.80 KW	2.00 KVA	1.8 KW	2.0 KVA	1.6 KVA
Kitchen Equipment (ELEC)	1	6,867.0 VA	37 A	120 V	1Ø	90 %	6.18 KW	6.87 KVA	6.2 KW	6.9 KVA	4.5 KVA
Net Total	.		42 A	208 V	3Ø				18 KW	20 KVA	15 KVA

c. Mechanical Equipment

		LOAD DESCRIPTION							CONNECTED LOAD		
EQUIPMENT	QUANTITY	UNIT LOAD	AMPS (A)	VOLT (V)	PHASE (Ø)	PF (%)	KW	KVA	TOTAL KW	TOTAL KVA	NET DEMAND LOAD KVA
Ventilation Loads											
AHU-1	1		681.0 A	208 V	3Ø	85 %	208.54 KW	245.34 KVA	208.5 KW	245.3 KVA	171.7 KVA
AHU-2	1		646.0 A	208 V	3Ø	85 %	197.82 KW	232.73 KVA	197.8 KW	232.7 KVA	162.9 KVA
AHU-3	1		675.0 A	208 V	3Ø	85 %	206.70 KW	243.18 KVA	206.7 KW	243.2 KVA	170.2 KVA
AHU-4	1		664.0 A	208 V	3Ø	85 %	203.33 KW	239.22 KVA	203.3 KW	239.2 KVA	167.5 KVA
AHU-5	1		307.0 A	208 V	3Ø	85 %	94.01 KW	110.60 KVA	94.0 KW	110.6 KVA	77.4 KVA
AHU-6	1		355.0 A	208 V	3Ø	85 %	108.71 KW	127.89 KVA	108.7 KW	127.9 KVA	89.5 KVA
KEF-1	1	3.00 HP	10.6 A	208 V	3Ø	85 %	3.25 KW	3.82 KVA	3.2 KW	3.8 KVA	2.7 KVA
KEF-2	1	0.75 HP	3.5 A	208 V	3Ø	85 %	1.07 KW	1.26 KVA	1.1 KW	1.3 KVA	0.9 KVA

ELECTRICAL SERVICE CALCULATION SHEET

Base Building

PROJECT NAME: [redacted] **PROJECT No.:** [redacted]

CALCULATED BY: O.O. **DATE:** 2/16/2022

CHECKED BY: K.P. **No. of PAGES:** 3

KEF-3	1	0.25 HP	2.4 A	208 V	3Ø	85 %	0.73 KW	0.86 KVA	0.7 KW	0.9 KVA	0.6 KVA
KEF-4	1	0.25 HP	5.8 A	208 V	1Ø	85 %	1.03 KW	1.21 KVA	1.0 KW	1.2 KVA	0.8 KVA
EF-1	1	0.25 HP	5.8 A	208 V	1Ø	85 %	1.03 KW	1.21 KVA	1.0 KW	1.2 KVA	0.8 KVA
EF-2	1	0.25 HP	5.8 A	208 V	1Ø	85 %	1.03 KW	1.21 KVA	1.0 KW	1.2 KVA	0.8 KVA
EF-3	1	0.33 HP	7.2 A	208 V	1Ø	85 %	1.27 KW	1.50 KVA	1.3 KW	1.5 KVA	1.0 KVA
EF-4	1	0.33 HP	7.2 A	208 V	1Ø	85 %	1.27 KW	1.50 KVA	1.3 KW	1.5 KVA	1.0 KVA
EF-5	1	0.33 HP	2.4 A	208 V	3Ø	85 %	0.73 KW	0.86 KVA	0.7 KW	0.9 KVA	0.6 KVA
EF-6	1	0.25 HP	2.4 A	208 V	3Ø	85 %	0.73 KW	0.86 KVA	0.7 KW	0.9 KVA	0.6 KVA
EF-7	1	0.07 HP	4.4 A	208 V	1Ø	85 %	0.78 KW	0.92 KVA	0.8 KW	0.9 KVA	0.6 KVA
EF-8	1	0.33 HP	2.4 A	208 V	3Ø	85 %	0.73 KW	0.86 KVA	0.7 KW	0.9 KVA	0.6 KVA
EF-9	1	0.33 HP	2.4 A	208 V	3Ø	85 %	0.73 KW	0.86 KVA	0.7 KW	0.9 KVA	0.6 KVA
EF-10	1	0.33 HP	2.4 A	208 V	3Ø	85 %	0.73 KW	0.86 KVA	0.7 KW	0.9 KVA	0.6 KVA
TEF-1	1	2.00 HP	7.5 A	208 V	3Ø	85 %	2.30 KW	2.70 KVA	2.3 KW	2.7 KVA	1.9 KVA
TEF-2	1	0.07 HP	4.4 A	208 V	1Ø	85 %	0.78 KW	0.92 KVA	0.8 KW	0.9 KVA	0.6 KVA
TEF-3	1	0.17 HP	4.4 A	208 V	1Ø	85 %	0.78 KW	0.92 KVA	0.8 KW	0.9 KVA	0.6 KVA
SPF-1	1	15.00 HP	46.2 A	208 V	3Ø	85 %	14.15 KW	16.64 KVA	14.1 KW	16.6 KVA	11.7 KVA
SPF-2	1	15.00 HP	46.2 A	208 V	3Ø	85 %	14.15 KW	16.64 KVA	14.1 KW	16.6 KVA	11.7 KVA
FHE-1	1	1.50 HP	6.6 A	208 V	3Ø	85 %	2.02 KW	2.38 KVA	2.0 KW	2.4 KVA	1.7 KVA
FHE-2	1	1.00 HP	4.6 A	208 V	3Ø	85 %	1.41 KW	1.66 KVA	1.4 KW	1.7 KVA	1.2 KVA
FHE-3	1	1.00 HP	4.6 A	208 V	3Ø	85 %	1.41 KW	1.66 KVA	1.4 KW	1.7 KVA	1.2 KVA
FHE-4	1	1.50 HP	6.6 A	208 V	3Ø	85 %	2.02 KW	2.38 KVA	2.0 KW	2.4 KVA	1.7 KVA
FHE-5	1	1.50 HP	6.6 A	208 V	3Ø	85 %	2.02 KW	2.38 KVA	2.0 KW	2.4 KVA	1.7 KVA
FHE-6	1	1.00 HP	4.6 A	208 V	3Ø	85 %	1.41 KW	1.66 KVA	1.4 KW	1.7 KVA	1.2 KVA
CAV-C.1	1		0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
CAV-C.2	1		0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
VAV-C.3	1		0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
CAV-C.4	1		0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
VAV-1.1	1		0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
VAV-1.2	1		0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
VAV-1.3	1		0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
VAV-1.4	1		0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
VAV-1.5	1		0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
VAV-1.6	1		0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
VAV-1.7	1		0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
VAV-1.8	1		0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
VAV-1.9	1		0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
VAV-1.10	1		0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
VAV-1.11	1		0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
VAV-1.12	1		0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
VAV-1.13	1		0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
VAV-1.14	1		0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
VAV-1.15	1		0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA

ELECTRICAL SERVICE CALCULATION SHEET

Base Building

PROJECT NAME: [redacted] **PROJECT No.:** [redacted]

CALCULATED BY: O.O. **DATE:** 2/16/2022

CHECKED BY: K.P. **No. of PAGES:** 3

VAV-1.16	1	0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
VAV-1.17	1	0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
VAV-1.18	1	0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
VAV-1.19	1	0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
VAV-1.20	1	0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
VAV-1.21	1	0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
VAV-1.22	1	0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
VAV-1.23	1	0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
VAV-1.24	1	0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
VAV-1.25	1	0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
VAV-2.1	1	0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
VAV-2.2	1	0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
VAV-2.3	1	0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
VAV-2.4	1	0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
VAV-2.5	1	0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
VAV-2.6	1	0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
VAV-2.7	1	0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
VAV-2.8	1	0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
VAV-2.9	1	0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
VAV-2.10	1	0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
VAV-2.11	1	0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
VAV-2.12	1	0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
VAV-2.13	1	0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
VAV-2.14	1	0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
VAV-3.1	1	0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
VAV-3.2	1	0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
VAV-3.3	1	0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
VAV-3.4	1	0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
VAV-3.5	1	0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
VAV-3.6	1	0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
VAV-3.7	1	0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
VAV-3.8	1	0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
VAV-3.9	1	0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
VAV-3.10	1	0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
VAV-3.11	1	0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
VAV-3.12	1	0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
VAV-3.13	1	0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
VAV-3.14	1	0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
VAV-3.15	1	0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
VAV-3.16	1	0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
VAV-3.17	1	0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
VAV-3.18	1	0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA

ELECTRICAL SERVICE CALCULATION SHEET

Base Building

PROJECT NAME: [redacted] **PROJECT No.:** [redacted]

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VAV-3.19	1	0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
VAV-3.20	1	0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
VAV-3.21	1	0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
VAV-3.22	1	0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
VAV-3.23	1	0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
VAV-3.24	1	0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
VAV-4.1	1	0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
VAV-4.2	1	0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
VAV-4.3	1	0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
VAV-4.4	1	0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
VAV-4.5	1	0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
VAV-4.6	1	0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
VAV-4.7	1	0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
VAV-4.8	1	0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
VAV-4.9	1	0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
VAV-4.10	1	0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
VAV-4.11	1	0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
VAV-5.1	1	0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
VAV-5.2	1	0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
VAV-5.3	1	0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
VAV-5.4	1	0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
VAV-5.5	1	0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
VAV-5.6	1	0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
VAV-5.7	1	0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
VAV-5.8	1	0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
VAV-5.9	1	0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
Cooling Loads										
ACCU-1-1_AHU-5	1	26.3 A	208 V	3Ø	85 %	8.05 KW	9.48 KVA	8.1 KW	9.5 KVA	7.6 KVA
ACCU-1-2_AHU-5	1	26.3 A	208 V	3Ø	85 %	8.05 KW	9.48 KVA	8.1 KW	9.5 KVA	7.6 KVA
ACCU-1-3_AHU-5	1	26.3 A	208 V	3Ø	85 %	8.05 KW	9.48 KVA	8.1 KW	9.5 KVA	7.6 KVA
ACCU-1-1_AHU-6	1	26.3 A	208 V	3Ø	85 %	8.05 KW	9.48 KVA	8.1 KW	9.5 KVA	7.6 KVA
ACCU-1-2_AHU-6	1	26.3 A	208 V	3Ø	85 %	8.05 KW	9.48 KVA	8.1 KW	9.5 KVA	7.6 KVA
ACCU-1-3_AHU-6	1	26.3 A	208 V	3Ø	85 %	8.05 KW	9.48 KVA	8.1 KW	9.5 KVA	7.6 KVA
AC-C.1/ACCU-C.1	1	15.2 A	208 V	1Ø	85 %	2.69 KW	3.16 KVA	2.7 KW	3.2 KVA	2.5 KVA
AC-C.2/ACCU-C.2	1	15.2 A	208 V	1Ø	85 %	2.69 KW	3.16 KVA	2.7 KW	3.2 KVA	2.5 KVA
AC-1.1/ACCU-1.1	1	15.2 A	208 V	1Ø	85 %	2.69 KW	3.16 KVA	2.7 KW	3.2 KVA	2.5 KVA
AC-1.2/ACCU-1.2	1	15.2 A	208 V	1Ø	85 %	2.69 KW	3.16 KVA	2.7 KW	3.2 KVA	2.5 KVA
AC-2.1/ACCU-2.1	1	20.0 A	208 V	1Ø	85 %	3.54 KW	4.16 KVA	3.5 KW	4.2 KVA	3.3 KVA
AC-3.1/ACCU-3.1	1	15.2 A	208 V	1Ø	85 %	2.69 KW	3.16 KVA	2.7 KW	3.2 KVA	2.5 KVA
AC-4.1/ACCU-4.1	1	15.2 A	208 V	1Ø	85 %	2.69 KW	3.16 KVA	2.7 KW	3.2 KVA	2.5 KVA
AC-R.1/ACCU-R.1	1	20.0 A	208 V	1Ø	85 %	3.54 KW	4.16 KVA	3.5 KW	4.2 KVA	3.3 KVA

ELECTRICAL SERVICE CALCULATION SHEET

Base Building

PROJECT NAME: [redacted] **PROJECT No.:** [redacted]
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CP-C.1	1	1.5 A	120 V	1Ø	85 %	0.15 KW	0.18 KVA	0.2 KW	0.2 KVA	0.1 KVA
CP-C.2	1	1.5 A	120 V	1Ø	85 %	0.15 KW	0.18 KVA	0.2 KW	0.2 KVA	0.1 KVA
CP-1.1	1	1.5 A	120 V	1Ø	85 %	0.15 KW	0.18 KVA	0.2 KW	0.2 KVA	0.1 KVA
CP-1.2	1	1.5 A	120 V	1Ø	85 %	0.15 KW	0.18 KVA	0.2 KW	0.2 KVA	0.1 KVA
CP-2.1	1	1.5 A	120 V	1Ø	85 %	0.15 KW	0.18 KVA	0.2 KW	0.2 KVA	0.1 KVA
CP-3.1	1	1.5 A	120 V	1Ø	85 %	0.15 KW	0.18 KVA	0.2 KW	0.2 KVA	0.1 KVA
CP-4.1	1	1.5 A	120 V	1Ø	85 %	0.15 KW	0.18 KVA	0.2 KW	0.2 KVA	0.1 KVA
CP-R.1	1	1.5 A	120 V	1Ø	85 %	0.15 KW	0.18 KVA	0.2 KW	0.2 KVA	0.1 KVA
Electric Heating										
CUH-C.1	1	15.4 A	208 V	1Ø	100 %	3.20 KW	3.20 KVA	3.2 KW	3.2 KVA	2.9 KVA
CUH-C.2	1	15.4 A	208 V	1Ø	100 %	3.20 KW	3.20 KVA	3.2 KW	3.2 KVA	2.9 KVA
CUH-C.3	1	15.4 A	208 V	1Ø	100 %	3.20 KW	3.20 KVA	3.2 KW	3.2 KVA	2.9 KVA
CUH-C.4	1	25.0 A	208 V	1Ø	100 %	5.20 KW	5.20 KVA	5.2 KW	5.2 KVA	4.7 KVA
CUH-C.5	1	25.0 A	208 V	1Ø	100 %	5.20 KW	5.20 KVA	5.2 KW	5.2 KVA	4.7 KVA
CUH-1.1	1	25.0 A	208 V	1Ø	100 %	5.20 KW	5.20 KVA	5.2 KW	5.2 KVA	4.7 KVA
CUH-1.2	1	25.0 A	208 V	1Ø	100 %	5.20 KW	5.20 KVA	5.2 KW	5.2 KVA	4.7 KVA
CUH-1.3	1	15.4 A	208 V	1Ø	100 %	3.20 KW	3.20 KVA	3.2 KW	3.2 KVA	2.9 KVA
CUH-1.4	1	15.4 A	208 V	1Ø	100 %	3.20 KW	3.20 KVA	3.2 KW	3.2 KVA	2.9 KVA
CUH-1.5	1	15.4 A	208 V	1Ø	100 %	3.20 KW	3.20 KVA	3.2 KW	3.2 KVA	2.9 KVA
CUH-1.6	1	15.4 A	208 V	1Ø	100 %	3.20 KW	3.20 KVA	3.2 KW	3.2 KVA	2.9 KVA
CUH-1.7	1	15.4 A	208 V	1Ø	100 %	3.20 KW	3.20 KVA	3.2 KW	3.2 KVA	2.9 KVA
CUH-1.8	1	15.4 A	208 V	1Ø	100 %	3.20 KW	3.20 KVA	3.2 KW	3.2 KVA	2.9 KVA
CUH-1.9	1	15.4 A	208 V	1Ø	100 %	3.20 KW	3.20 KVA	3.2 KW	3.2 KVA	2.9 KVA
CUH-2.1	1	25.0 A	208 V	1Ø	100 %	5.20 KW	5.20 KVA	5.2 KW	5.2 KVA	4.7 KVA
CUH-2.2	1	25.0 A	208 V	1Ø	100 %	5.20 KW	5.20 KVA	5.2 KW	5.2 KVA	4.7 KVA
CUH-2.3	1	15.4 A	208 V	1Ø	100 %	3.20 KW	3.20 KVA	3.2 KW	3.2 KVA	2.9 KVA
CUH-2.4	1	15.4 A	208 V	1Ø	100 %	3.20 KW	3.20 KVA	3.2 KW	3.2 KVA	2.9 KVA
CUH-2.5	1	25.0 A	208 V	1Ø	100 %	5.20 KW	5.20 KVA	5.2 KW	5.2 KVA	4.7 KVA
CUH-2.6	1	25.0 A	208 V	1Ø	100 %	5.20 KW	5.20 KVA	5.2 KW	5.2 KVA	4.7 KVA
CUH-2.7	1	25.0 A	208 V	1Ø	100 %	5.20 KW	5.20 KVA	5.2 KW	5.2 KVA	4.7 KVA
CUH-2.8	1	25.0 A	208 V	1Ø	100 %	5.20 KW	5.20 KVA	5.2 KW	5.2 KVA	4.7 KVA
CUH-2.9	1	25.0 A	208 V	1Ø	100 %	5.20 KW	5.20 KVA	5.2 KW	5.2 KVA	4.7 KVA
CUH-2.10	1	25.0 A	208 V	1Ø	100 %	5.20 KW	5.20 KVA	5.2 KW	5.2 KVA	4.7 KVA
CUH-2.11	1	25.0 A	208 V	1Ø	100 %	5.20 KW	5.20 KVA	5.2 KW	5.2 KVA	4.7 KVA
CUH-2.12	1	25.0 A	208 V	1Ø	100 %	5.20 KW	5.20 KVA	5.2 KW	5.2 KVA	4.7 KVA
CUH-2.13	1	25.0 A	208 V	1Ø	100 %	5.20 KW	5.20 KVA	5.2 KW	5.2 KVA	4.7 KVA
CUH-2.14	1	25.0 A	208 V	1Ø	100 %	5.20 KW	5.20 KVA	5.2 KW	5.2 KVA	4.7 KVA
CUH-3.1	1	25.0 A	208 V	1Ø	100 %	5.20 KW	5.20 KVA	5.2 KW	5.2 KVA	4.7 KVA
CUH-3.2	1	25.0 A	208 V	1Ø	100 %	5.20 KW	5.20 KVA	5.2 KW	5.2 KVA	4.7 KVA
CUH-3.3	1	15.4 A	208 V	1Ø	100 %	3.20 KW	3.20 KVA	3.2 KW	3.2 KVA	2.9 KVA

ELECTRICAL SERVICE CALCULATION SHEET

Base Building

PROJECT NAME: [redacted] **PROJECT No.:** [redacted]

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CUH-3.4	1	15.4 A	208 V	1Ø	100 %	3.20 KW	3.20 KVA	3.2 KW	3.2 KVA	2.9 KVA
CUH-3.5	1	25.0 A	208 V	1Ø	100 %	5.20 KW	5.20 KVA	5.2 KW	5.2 KVA	4.7 KVA
CUH-3.6	1	15.4 A	208 V	1Ø	100 %	3.20 KW	3.20 KVA	3.2 KW	3.2 KVA	2.9 KVA
CUH-3.7	1	15.4 A	208 V	1Ø	100 %	3.20 KW	3.20 KVA	3.2 KW	3.2 KVA	2.9 KVA
CUH-3.8	1	15.4 A	208 V	1Ø	100 %	3.20 KW	3.20 KVA	3.2 KW	3.2 KVA	2.9 KVA
CUH-3.9	1	15.4 A	208 V	1Ø	100 %	3.20 KW	3.20 KVA	3.2 KW	3.2 KVA	2.9 KVA
CUH-4.1	1	25.0 A	208 V	1Ø	100 %	5.20 KW	5.20 KVA	5.2 KW	5.2 KVA	4.7 KVA
CUH-4.2	1	25.0 A	208 V	1Ø	100 %	5.20 KW	5.20 KVA	5.2 KW	5.2 KVA	4.7 KVA
CUH-4.3	1	15.4 A	208 V	1Ø	100 %	3.20 KW	3.20 KVA	3.2 KW	3.2 KVA	2.9 KVA
CUH-4.4	1	15.4 A	208 V	1Ø	100 %	3.20 KW	3.20 KVA	3.2 KW	3.2 KVA	2.9 KVA
CUH-4.5	1	25.0 A	208 V	1Ø	100 %	5.20 KW	5.20 KVA	5.2 KW	5.2 KVA	4.7 KVA
CUH-4.6	1	15.4 A	208 V	1Ø	100 %	3.20 KW	3.20 KVA	3.2 KW	3.2 KVA	2.9 KVA
CUH-4.7	1	15.4 A	208 V	1Ø	100 %	3.20 KW	3.20 KVA	3.2 KW	3.2 KVA	2.9 KVA
CUH-5.1	1	15.4 A	208 V	1Ø	100 %	3.20 KW	3.20 KVA	3.2 KW	3.2 KVA	2.9 KVA
CUH-5.2	1	15.4 A	208 V	1Ø	100 %	3.20 KW	3.20 KVA	3.2 KW	3.2 KVA	2.9 KVA
CUH-5.3	1	15.4 A	208 V	1Ø	100 %	3.20 KW	3.20 KVA	3.2 KW	3.2 KVA	2.9 KVA
CUH-5.4	1	15.4 A	208 V	1Ø	100 %	3.20 KW	3.20 KVA	3.2 KW	3.2 KVA	2.9 KVA
CUH-5.5	1	15.4 A	208 V	1Ø	100 %	3.20 KW	3.20 KVA	3.2 KW	3.2 KVA	2.9 KVA
EBD-A	24	10.4 A	120 V	1Ø	100 %	1.25 KW	1.25 KVA	30.0 KW	30.0 KVA	27.0 KVA
EBD-B	101	12.0 A	208 V	1Ø	100 %	2.50 KW	2.50 KVA	252.1 KW	252.1 KVA	226.9 KVA
RHC-1.1	1	57.7 A	208 V	1Ø	100 %	12.00 KW	12.00 KVA	12.0 KW	12.0 KVA	10.8 KVA
EUH-C.1	1	13.8 A	208 V	3Ø	100 %	4.97 KW	4.97 KVA	5.0 KW	5.0 KVA	4.5 KVA
EUH-C.2	1	13.8 A	208 V	3Ø	100 %	4.97 KW	4.97 KVA	5.0 KW	5.0 KVA	4.5 KVA
EUH-1.1	1	13.8 A	208 V	3Ø	100 %	4.97 KW	4.97 KVA	5.0 KW	5.0 KVA	4.5 KVA
EUH-1.2	1	13.8 A	208 V	3Ø	100 %	4.97 KW	4.97 KVA	5.0 KW	5.0 KVA	4.5 KVA
EUH-1.3	1	13.8 A	208 V	3Ø	100 %	4.97 KW	4.97 KVA	5.0 KW	5.0 KVA	4.5 KVA
EUH-3.1	1	13.8 A	208 V	3Ø	100 %	4.97 KW	4.97 KVA	5.0 KW	5.0 KVA	4.5 KVA
EUH-3.2	1	13.8 A	208 V	3Ø	100 %	4.97 KW	4.97 KVA	5.0 KW	5.0 KVA	4.5 KVA
EUH-3.3	1	13.8 A	208 V	3Ø	100 %	4.97 KW	4.97 KVA	5.0 KW	5.0 KVA	4.5 KVA
EUH-4.1	1	20.8 A	208 V	3Ø	100 %	7.49 KW	7.49 KVA	7.5 KW	7.5 KVA	6.7 KVA
CONV-1.1	1	12.0 A	208 V	1Ø	100 %	2.50 KW	2.50 KVA	2.5 KW	2.5 KVA	2.0 KVA
CONV-1.2	1	12.0 A	208 V	1Ø	100 %	2.50 KW	2.50 KVA	2.5 KW	2.5 KVA	2.0 KVA
CONV-1.3	1	6.0 A	208 V	1Ø	100 %	1.25 KW	1.25 KVA	1.3 KW	1.3 KVA	1.0 KVA
CONV-1.4	1	12.0 A	208 V	1Ø	100 %	2.50 KW	2.50 KVA	2.5 KW	2.5 KVA	2.0 KVA
CONV-1.5	1	12.0 A	208 V	1Ø	100 %	2.50 KW	2.50 KVA	2.5 KW	2.5 KVA	2.0 KVA
CONV-2.1	1	6.0 A	208 V	1Ø	100 %	1.25 KW	1.25 KVA	1.3 KW	1.3 KVA	1.0 KVA
CONV-2.2	1	12.0 A	208 V	1Ø	100 %	2.50 KW	2.50 KVA	2.5 KW	2.5 KVA	2.0 KVA
CONV-2.3	1	12.0 A	208 V	1Ø	100 %	2.50 KW	2.50 KVA	2.5 KW	2.5 KVA	2.0 KVA
CONV-2.4	1	12.0 A	208 V	1Ø	100 %	2.50 KW	2.50 KVA	2.5 KW	2.5 KVA	2.0 KVA
CONV-2.5	1	12.0 A	208 V	1Ø	100 %	2.50 KW	2.50 KVA	2.5 KW	2.5 KVA	2.0 KVA
CONV-2.6	1	12.0 A	208 V	1Ø	100 %	2.50 KW	2.50 KVA	2.5 KW	2.5 KVA	2.0 KVA
CONV-2.7	1	12.0 A	208 V	1Ø	100 %	2.50 KW	2.50 KVA	2.5 KW	2.5 KVA	2.0 KVA

ELECTRICAL SERVICE CALCULATION SHEET

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CONV-2.8	1		12.0 A	208 V	1Ø	100 %	2.50 KW	2.50 KVA	2.5 KW	2.5 KVA	2.0 KVA
CONV-2.9	1		12.0 A	208 V	1Ø	100 %	2.50 KW	2.50 KVA	2.5 KW	2.5 KVA	2.0 KVA
CONV-2.10	1		12.0 A	208 V	1Ø	100 %	2.50 KW	2.50 KVA	2.5 KW	2.5 KVA	2.0 KVA
CONV-2.11	1		12.0 A	208 V	1Ø	100 %	2.50 KW	2.50 KVA	2.5 KW	2.5 KVA	2.0 KVA
CONV-2.12	1		12.0 A	208 V	1Ø	100 %	2.50 KW	2.50 KVA	2.5 KW	2.5 KVA	2.0 KVA
CONV-2.13	1		12.0 A	208 V	1Ø	100 %	2.50 KW	2.50 KVA	2.5 KW	2.5 KVA	2.0 KVA
ARC-1.1	1		77.7 A	208 V	3Ø	100 %	27.99 KW	27.99 KVA	28.0 KW	28.0 KVA	22.4 KVA
ARC-1.2	1		77.7 A	208 V	3Ø	100 %	27.99 KW	27.99 KVA	28.0 KW	28.0 KVA	22.4 KVA
ARC-1.3	1		77.7 A	208 V	3Ø	100 %	27.99 KW	27.99 KVA	28.0 KW	28.0 KVA	22.4 KVA
ARC-1.4	1		77.7 A	208 V	3Ø	100 %	27.99 KW	27.99 KVA	28.0 KW	28.0 KVA	22.4 KVA
ARC-4.1	1		77.7 A	208 V	3Ø	100 %	27.99 KW	27.99 KVA	28.0 KW	28.0 KVA	22.4 KVA
FPB-4.1	1		13.9 A	208 V	3Ø	100 %	5.00 KW	5.00 KVA	5.0 KW	5.0 KVA	4.0 KVA
FPB-4.2	1		5.6 A	208 V	3Ø	100 %	2.00 KW	2.00 KVA	2.0 KW	2.0 KVA	1.6 KVA
FPB-5.1	1		6.9 A	208 V	3Ø	100 %	2.50 KW	2.50 KVA	2.5 KW	2.5 KVA	2.0 KVA
FPB-5.2	1		12.5 A	208 V	3Ø	100 %	4.50 KW	4.50 KVA	4.5 KW	4.5 KVA	3.6 KVA
FPB-5.3	1		5.6 A	208 V	3Ø	100 %	2.00 KW	2.00 KVA	2.0 KW	2.0 KVA	1.6 KVA
FPB-5.4	1		13.9 A	208 V	3Ø	100 %	5.00 KW	5.00 KVA	5.0 KW	5.0 KVA	4.0 KVA
Plumbing Loads											
Sprinkler Booster Pump	1	25.00 HP	78.2 A	208 V	3Ø	85 %	23.95 KW	28.17 KVA	23.9 KW	28.2 KVA	19.7 KVA
Jockey Pump	1	1.00 HP	4.8 A	208 V	3Ø	85 %	1.47 KW	1.73 KVA	1.5 KW	1.7 KVA	1.2 KVA
EVP#1	1	0.50 HP	9.8 A	120 V	1Ø	85 %	1.00 KW	1.18 KVA	1.0 KW	1.2 KVA	0.8 KVA
EVP#2	1	0.50 HP	9.8 A	120 V	1Ø	85 %	1.00 KW	1.18 KVA	1.0 KW	1.2 KVA	0.8 KVA
WBP#1 & 2	2	7.50 HP	24.2 A	208 V	3Ø	85 %	7.41 KW	8.72 KVA	14.8 KW	17.4 KVA	12.2 KVA
SEP#1 & 2	2	2.00 HP	7.5 A	208 V	3Ø	85 %	2.30 KW	2.70 KVA	4.6 KW	5.4 KVA	3.8 KVA
HWCP#1	1	0.25 HP	5.8 A	120 V	1Ø	85 %	0.59 KW	0.70 KVA	0.6 KW	0.7 KVA	0.6 KVA
HWCP#2	1	0.17 HP	4.4 A	120 V	1Ø	85 %	0.45 KW	0.53 KVA	0.4 KW	0.5 KVA	0.5 KVA
HWH#1, #2	2		67.0 A	208 V	1Ø	85 %	11.85 KW	13.94 KVA	23.7 KW	27.9 KVA	25.1 KVA
Elevator Loads											
Elevators	2	25.00 HP	78.2 A	208 V	3Ø	85 %	23.95 KW	28.17 KVA	47.9 KW	56.3 KVA	53.5 KVA
EMR Auxilairy Equipment	1		25.0 A	120 V	1Ø	85 %	2.55 KW	3.00 KVA	2.6 KW	3.0 KVA	2.9 KVA

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Elevator Cab Lighting	1	1.0 A	120 V	1Ø	85 %	0.10 KW	0.12 KVA	0.1 KW	0.1 KVA	0.1 KVA
Other Loads										
-										
Net Total		4,092 A	208 V	3Ø				2,018 KW	2,243 KVA	1,474.0 KVA
d. Total Loads Distribution										
Lighting and Receptacles		762 A	208 V	3Ø	90 %			247 KW	275 KVA	274.7 KVA
Miscelleanous Loads		42 A	208 V	3Ø	85 %			18 KW	20 KVA	15.2 KVA
Mechanical Equipment Loads		4,092 A	208 V	3Ø	85 %			2,018 KW	2,243 KVA	1,474 KVA
Total Load		4,896 A	208 V	3Ø	85 %			2,284 KW	2,538 KVA	1,764 KVA
Total after Diversity		4,896 A	208 V	3Ø						1,764 KVA
TOTAL AMP PLUS SPARE CAPACITY		**5875.3894**								

ELECTRICAL SERVICE CALCULATION SHEET

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2. LOAD CALCULATION

a. Lighting and Receptacles

		LOAD DESCRIPTION							CONNECTED LOAD		
	AREA	UNIT LOAD	AMPS (A)	VOLT (V)	PHASE (Ø)	PF (%)	KW	KVA	TOTAL KW	TOTAL KVA	NET DEMAND LOAD KVA
Lighting			``	120 V	1Ø	90 %			41.9 KW	46.6 KVA	46.6 KVA
Convenience Receptales			602 A	120 V	1Ø	90 %			121.0 KW	134.5 KVA	72.2 KVA
Computer Receptacles			624 A	120 V	1Ø	90 %			84.2 KW	93.6 KVA	74.9 KVA
Net Total			538 A	208 V	3Ø				247 KW	275 KVA	194 KVA

b. Miscelaneous Equipment

		LOAD DESCRIPTION							CONNECTED LOAD		
EQUIPMENT	QUANTITY	UNIT LOAD	AMPS (A)	VOLT (V)	PHASE (Ø)	PF (%)	KW	KVA	TOTAL KW	TOTAL KVA	NET DEMAND LOAD KVA
Telecom System	1	11,400.0 VA	76 A	120 V	1Ø	90 %	10.26 KW	11.40 KVA	10.3 KW	11.4 KVA	9.1 KVA
Public Address System	1	2,000.0 VA	13 A	120 V	1Ø	90 %	1.80 KW	2.00 KVA	1.8 KW	2.0 KVA	1.6 KVA
Kitchen Equipment (ELEC)	1	6,867.0 VA	37 A	120 V	1Ø	90 %	6.18 KW	6.87 KVA	6.2 KW	6.9 KVA	4.5 KVA
Net Total	.		42 A	208 V	3Ø				18 KW	20 KVA	15 KVA

c. Mechanical Equipment

		LOAD DESCRIPTION							CONNECTED LOAD		
EQUIPMENT	QUANTITY	UNIT LOAD	AMPS (A)	VOLT (V)	PHASE (Ø)	PF (%)	KW	KVA	TOTAL KW	TOTAL KVA	NET DEMAND LOAD KVA
Ventilation Loads											
AHU-1	1		457.0 A	208 V	3Ø	85 %	139.95 KW	164.64 KVA	139.9 KW	164.6 KVA	115.2 KVA
AHU-2	1		307.0 A	208 V	3Ø	85 %	94.01 KW	110.60 KVA	94.0 KW	110.6 KVA	77.4 KVA
AHU-3	1		355.0 A	208 V	3Ø	85 %	108.71 KW	127.89 KVA	108.7 KW	127.9 KVA	89.5 KVA
KEF-1	1	3.00 HP	10.6 A	208 V	3Ø	85 %	3.25 KW	3.82 KVA	3.2 KW	3.8 KVA	2.7 KVA
KEF-2	1	0.75 HP	3.5 A	208 V	3Ø	85 %	1.07 KW	1.26 KVA	1.1 KW	1.3 KVA	0.9 KVA
KEF-3	1	0.25 HP	2.4 A	208 V	3Ø	85 %	0.73 KW	0.86 KVA	0.7 KW	0.9 KVA	0.6 KVA

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KEF-4	1	0.25 HP	5.8 A	208 V	1Ø	85 %	1.03 KW	1.21 KVA	1.0 KW	1.2 KVA	0.8 KVA
EF-1	1	0.25 HP	5.8 A	208 V	1Ø	85 %	1.03 KW	1.21 KVA	1.0 KW	1.2 KVA	0.8 KVA
EF-2	1	0.25 HP	5.8 A	208 V	1Ø	85 %	1.03 KW	1.21 KVA	1.0 KW	1.2 KVA	0.8 KVA
EF-3	1	0.33 HP	7.2 A	208 V	1Ø	85 %	1.27 KW	1.50 KVA	1.3 KW	1.5 KVA	1.0 KVA
EF-4	1	0.33 HP	7.2 A	208 V	1Ø	85 %	1.27 KW	1.50 KVA	1.3 KW	1.5 KVA	1.0 KVA
EF-5	1	0.33 HP	2.4 A	208 V	3Ø	85 %	0.73 KW	0.86 KVA	0.7 KW	0.9 KVA	0.6 KVA
EF-6	1	0.25 HP	2.4 A	208 V	3Ø	85 %	0.73 KW	0.86 KVA	0.7 KW	0.9 KVA	0.6 KVA
EF-7	1	0.07 HP	4.4 A	208 V	1Ø	85 %	0.78 KW	0.92 KVA	0.8 KW	0.9 KVA	0.6 KVA
EF-8	1	0.33 HP	2.4 A	208 V	3Ø	85 %	0.73 KW	0.86 KVA	0.7 KW	0.9 KVA	0.6 KVA
EF-9	1	0.33 HP	2.4 A	208 V	3Ø	85 %	0.73 KW	0.86 KVA	0.7 KW	0.9 KVA	0.6 KVA
EF-10	1	0.33 HP	2.4 A	208 V	3Ø	85 %	0.73 KW	0.86 KVA	0.7 KW	0.9 KVA	0.6 KVA
EF-11	1	0.07 HP	2.4 A	208 V	1Ø	85 %	0.42 KW	0.50 KVA	0.4 KW	0.5 KVA	0.3 KVA
EF-12	1	0.33 HP	2.4 A	208 V	1Ø	85 %	0.42 KW	0.50 KVA	0.4 KW	0.5 KVA	0.3 KVA
EF-13	1	0.25 HP	2.4 A	208 V	1Ø	85 %	0.42 KW	0.50 KVA	0.4 KW	0.5 KVA	0.3 KVA
EF-14	1	0.07 HP	2.4 A	208 V	1Ø	85 %	0.42 KW	0.50 KVA	0.4 KW	0.5 KVA	0.3 KVA
EF-15	1	0.25 HP	2.4 A	208 V	1Ø	85 %	0.42 KW	0.50 KVA	0.4 KW	0.5 KVA	0.3 KVA
EF-16	1	0.75 HP	2.4 A	208 V	1Ø	85 %	0.42 KW	0.50 KVA	0.4 KW	0.5 KVA	0.3 KVA
EF-17	1	0.25 HP	2.4 A	208 V	1Ø	85 %	0.42 KW	0.50 KVA	0.4 KW	0.5 KVA	0.3 KVA
EF-18	1	0.25 HP	2.4 A	208 V	1Ø	85 %	0.42 KW	0.50 KVA	0.4 KW	0.5 KVA	0.3 KVA
EF-19	1	0.25 HP	2.4 A	208 V	1Ø	85 %	0.42 KW	0.50 KVA	0.4 KW	0.5 KVA	0.3 KVA
TEF-1	1	2.00 HP	7.5 A	208 V	3Ø	85 %	2.30 KW	2.70 KVA	2.3 KW	2.7 KVA	1.9 KVA
TEF-2	1	0.07 HP	4.4 A	208 V	1Ø	85 %	0.78 KW	0.92 KVA	0.8 KW	0.9 KVA	0.6 KVA
TEF-3	1	0.17 HP	4.4 A	208 V	1Ø	85 %	0.78 KW	0.92 KVA	0.8 KW	0.9 KVA	0.6 KVA
SPF-1	1	15.00 HP	46.2 A	208 V	3Ø	85 %	14.15 KW	16.64 KVA	14.1 KW	16.6 KVA	11.7 KVA
SPF-2	1	15.00 HP	46.2 A	208 V	3Ø	85 %	14.15 KW	16.64 KVA	14.1 KW	16.6 KVA	11.7 KVA
FHE-1	1	1.50 HP	6.6 A	208 V	3Ø	85 %	2.02 KW	2.38 KVA	2.0 KW	2.4 KVA	1.7 KVA
FHE-2	1	1.00 HP	4.6 A	208 V	3Ø	85 %	1.41 KW	1.66 KVA	1.4 KW	1.7 KVA	1.2 KVA
FHE-3	1	1.00 HP	4.6 A	208 V	3Ø	85 %	1.41 KW	1.66 KVA	1.4 KW	1.7 KVA	1.2 KVA
FHE-4	1	1.50 HP	6.6 A	208 V	3Ø	85 %	2.02 KW	2.38 KVA	2.0 KW	2.4 KVA	1.7 KVA
FHE-5	1	1.50 HP	6.6 A	208 V	3Ø	85 %	2.02 KW	2.38 KVA	2.0 KW	2.4 KVA	1.7 KVA
FHE-6	1	1.00 HP	4.6 A	208 V	3Ø	85 %	1.41 KW	1.66 KVA	1.4 KW	1.7 KVA	1.2 KVA
CAV-C.1	1		0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
CAV-C.2	1		0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
VAV-C.3	1		0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
CAV-C.4	1		0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
VAV-C.5	1		0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
VAV-C.6	1		0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
CAV-C.7	1		0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
CAV-C.8	1		0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
VAV-C.9	1		0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
CAV-1.1	1		0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
CAV-1.2	1		0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA

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VAV-1.3	1	0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
VAV-1.4	1	0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
VAV-1.5	1	0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
CAV-1.6	1	0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
VAV-1.7	1	0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
VAV-2.1	1	0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
CAV-2.2	1	0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
VAV-3.1	1	0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
CAV-3.2	1	0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
VAV-3.3	1	0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
VAV-3.4	1	0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
VAV-3.5	1	0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
VAV-3.6	1	0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
VAV-3.7	1	0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
VAV-4.1	1	0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
CAV-4.2	1	0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
CAV-5.1	1	0.1 A	120 V	1Ø	85 %	0.01 KW	0.01 KVA	0.0 KW	0.0 KVA	0.0 KVA
DOAS-1	1	188.2 A	208 V	3Ø	85 %	57.63 KW	67.80 KVA	57.6 KW	67.8 KVA	47.5 KVA
VUV 1ST	7	33.2 A	208 V	3Ø	85 %	10.15 KW	11.95 KVA	71.1 KW	83.6 KVA	58.5 KVA
VUV 2ND	9	33.2 A	208 V	3Ø	85 %	10.15 KW	11.95 KVA	91.4 KW	107.5 KVA	75.3 KVA
VUV 3RD	10	33.2 A	208 V	3Ø	85 %	10.15 KW	11.95 KVA	101.5 KW	119.5 KVA	83.6 KVA
VUV 4TH	10	33.2 A	208 V	3Ø	85 %	10.15 KW	11.95 KVA	101.5 KW	119.5 KVA	83.6 KVA
VUV 5TH	10	33.2 A	208 V	3Ø	85 %	10.15 KW	11.95 KVA	101.5 KW	119.5 KVA	83.6 KVA
Cooling Loads										
ACCU-1-1_AHU-2	1	26.3 A	208 V	3Ø	85 %	8.05 KW	9.48 KVA	8.1 KW	9.5 KVA	7.6 KVA
ACCU-1-2_AHU-2	1	26.3 A	208 V	3Ø	85 %	8.05 KW	9.48 KVA	8.1 KW	9.5 KVA	7.6 KVA
ACCU-1-3_AHU-2	1	26.3 A	208 V	3Ø	85 %	8.05 KW	9.48 KVA	8.1 KW	9.5 KVA	7.6 KVA
ACCU-1-1_AHU-3	1	26.3 A	208 V	3Ø	85 %	8.05 KW	9.48 KVA	8.1 KW	9.5 KVA	7.6 KVA
ACCU-1-2_AHU-3	1	26.3 A	208 V	3Ø	85 %	8.05 KW	9.48 KVA	8.1 KW	9.5 KVA	7.6 KVA
ACCU-1-3_AHU-3	1	26.3 A	208 V	3Ø	85 %	8.05 KW	9.48 KVA	8.1 KW	9.5 KVA	7.6 KVA
AC-C.1	1	0.8 A	208 V	1Ø	85 %	0.14 KW	0.17 KVA	0.1 KW	0.2 KVA	0.1 KVA
AC-C.2	1	0.8 A	208 V	1Ø	85 %	0.14 KW	0.17 KVA	0.1 KW	0.2 KVA	0.1 KVA
AC-1.1	1	0.8 A	208 V	1Ø	85 %	0.14 KW	0.17 KVA	0.1 KW	0.2 KVA	0.1 KVA
AC-1.2	1	0.8 A	208 V	1Ø	85 %	0.14 KW	0.17 KVA	0.1 KW	0.2 KVA	0.1 KVA
AC-2.1	1	0.8 A	208 V	1Ø	85 %	0.14 KW	0.17 KVA	0.1 KW	0.2 KVA	0.1 KVA
AC-3.1	1	0.8 A	208 V	1Ø	85 %	0.14 KW	0.17 KVA	0.1 KW	0.2 KVA	0.1 KVA
AC-4.1	1	0.8 A	208 V	1Ø	85 %	0.14 KW	0.17 KVA	0.1 KW	0.2 KVA	0.1 KVA
AC-R.1	1	0.8 A	208 V	1Ø	85 %	0.14 KW	0.17 KVA	0.1 KW	0.2 KVA	0.1 KVA

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CP-C.1	1	1.5 A	120 V	1Ø	85 %	0.15 KW	0.18 KVA	0.2 KW	0.2 KVA	0.1 KVA
CP-C.2	1	1.5 A	120 V	1Ø	85 %	0.15 KW	0.18 KVA	0.2 KW	0.2 KVA	0.1 KVA
CP-1.1	1	1.5 A	120 V	1Ø	85 %	0.15 KW	0.18 KVA	0.2 KW	0.2 KVA	0.1 KVA
CP-1.2	1	1.5 A	120 V	1Ø	85 %	0.15 KW	0.18 KVA	0.2 KW	0.2 KVA	0.1 KVA
CP-2.1	1	1.5 A	120 V	1Ø	85 %	0.15 KW	0.18 KVA	0.2 KW	0.2 KVA	0.1 KVA
CP-3.1	1	1.5 A	120 V	1Ø	85 %	0.15 KW	0.18 KVA	0.2 KW	0.2 KVA	0.1 KVA
CP-4.1	1	1.5 A	120 V	1Ø	85 %	0.15 KW	0.18 KVA	0.2 KW	0.2 KVA	0.1 KVA
CP-R.1	1	1.5 A	120 V	1Ø	85 %	0.15 KW	0.18 KVA	0.2 KW	0.2 KVA	0.1 KVA
VRF-AC-1.1	1	0.2 A	208 V	1Ø	85 %	0.04 KW	0.04 KVA	0.0 KW	0.0 KVA	0.0 KVA
VRF-AC-1.2	1	0.2 A	208 V	1Ø	85 %	0.04 KW	0.04 KVA	0.0 KW	0.0 KVA	0.0 KVA
VRF-AC-1.3	1	0.2 A	208 V	1Ø	85 %	0.04 KW	0.04 KVA	0.0 KW	0.0 KVA	0.0 KVA
VRF-AC-1.4	1	0.2 A	208 V	1Ø	85 %	0.04 KW	0.04 KVA	0.0 KW	0.0 KVA	0.0 KVA
VRF-AC-1.5	1	0.2 A	208 V	1Ø	85 %	0.04 KW	0.04 KVA	0.0 KW	0.0 KVA	0.0 KVA
VRF-AC-1.6	1	0.2 A	208 V	1Ø	85 %	0.04 KW	0.04 KVA	0.0 KW	0.0 KVA	0.0 KVA
VRF-AC-1.7	1	0.2 A	208 V	1Ø	85 %	0.04 KW	0.04 KVA	0.0 KW	0.0 KVA	0.0 KVA
VRF-AC-1.8	1	0.2 A	208 V	1Ø	85 %	0.04 KW	0.04 KVA	0.0 KW	0.0 KVA	0.0 KVA
VRF-AC-1.9	1	0.2 A	208 V	1Ø	85 %	0.04 KW	0.04 KVA	0.0 KW	0.0 KVA	0.0 KVA
VRF-AC-1.10	1	0.2 A	208 V	1Ø	85 %	0.04 KW	0.04 KVA	0.0 KW	0.0 KVA	0.0 KVA
VRF-AC-1.11	1	0.2 A	208 V	1Ø	85 %	0.04 KW	0.04 KVA	0.0 KW	0.0 KVA	0.0 KVA
VRF-ACCU.1	1	19.1 A	208 V	1Ø	85 %	3.38 KW	3.97 KVA	3.4 KW	4.0 KVA	3.2 KVA
VRF-ACCU.2	1	19.1 A	208 V	1Ø	85 %	3.38 KW	3.97 KVA	3.4 KW	4.0 KVA	3.2 KVA
ACCU-C.1	1	15.2 A	208 V	1Ø	85 %	2.69 KW	3.16 KVA	2.7 KW	3.2 KVA	2.5 KVA
ACCU-C.2	1	15.2 A	208 V	1Ø	85 %	2.69 KW	3.16 KVA	2.7 KW	3.2 KVA	2.5 KVA
ACCU-1.1	1	15.2 A	208 V	1Ø	85 %	2.69 KW	3.16 KVA	2.7 KW	3.2 KVA	2.5 KVA
ACCU-1.2	1	15.2 A	208 V	1Ø	85 %	2.69 KW	3.16 KVA	2.7 KW	3.2 KVA	2.5 KVA
ACCU-2.1	1	20.5 A	208 V	1Ø	85 %	3.62 KW	4.26 KVA	3.6 KW	4.3 KVA	3.4 KVA
ACCU-3.1	1	15.2 A	208 V	1Ø	85 %	2.69 KW	3.16 KVA	2.7 KW	3.2 KVA	2.5 KVA
ACCU-4.1	1	15.2 A	208 V	1Ø	85 %	2.69 KW	3.16 KVA	2.7 KW	3.2 KVA	2.5 KVA
ACCU-R.1	1	20.5 A	208 V	1Ø	85 %	3.62 KW	4.26 KVA	3.6 KW	4.3 KVA	3.4 KVA

Electric Heating

CUH-C.1	1	15.4 A	208 V	1Ø	100 %	3.20 KW	3.20 KVA	3.2 KW	3.2 KVA	2.9 KVA
CUH-C.2	1	15.4 A	208 V	1Ø	100 %	3.20 KW	3.20 KVA	3.2 KW	3.2 KVA	2.9 KVA
CUH-C.3	1	15.4 A	208 V	1Ø	100 %	3.20 KW	3.20 KVA	3.2 KW	3.2 KVA	2.9 KVA
CUH-C.4	1	25.0 A	208 V	1Ø	100 %	5.20 KW	5.20 KVA	5.2 KW	5.2 KVA	4.7 KVA
CUH-C.5	1	25.0 A	208 V	1Ø	100 %	5.20 KW	5.20 KVA	5.2 KW	5.2 KVA	4.7 KVA
CUH-1.1	1	25.0 A	208 V	1Ø	100 %	5.20 KW	5.20 KVA	5.2 KW	5.2 KVA	4.7 KVA
CUH-1.2	1	25.0 A	208 V	1Ø	100 %	5.20 KW	5.20 KVA	5.2 KW	5.2 KVA	4.7 KVA
CUH-1.3	1	15.4 A	208 V	1Ø	100 %	3.20 KW	3.20 KVA	3.2 KW	3.2 KVA	2.9 KVA
CUH-1.4	1	15.4 A	208 V	1Ø	100 %	3.20 KW	3.20 KVA	3.2 KW	3.2 KVA	2.9 KVA

ELECTRICAL SERVICE CALCULATION SHEET

Base Building

PROJECT NAME: [redacted] **PROJECT No.:** [redacted]

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CUH-1.5	1	15.4 A	208 V	1Ø	100 %	3.20 KW	3.20 KVA	3.2 KW	3.2 KVA	2.9 KVA
CUH-1.6	1	15.4 A	208 V	1Ø	100 %	3.20 KW	3.20 KVA	3.2 KW	3.2 KVA	2.9 KVA
CUH-1.7	1	15.4 A	208 V	1Ø	100 %	3.20 KW	3.20 KVA	3.2 KW	3.2 KVA	2.9 KVA
CUH-1.8	1	15.4 A	208 V	1Ø	100 %	3.20 KW	3.20 KVA	3.2 KW	3.2 KVA	2.9 KVA
CUH-1.9	1	15.4 A	208 V	1Ø	100 %	3.20 KW	3.20 KVA	3.2 KW	3.2 KVA	2.9 KVA
CUH-2.1	1	25.0 A	208 V	1Ø	100 %	5.20 KW	5.20 KVA	5.2 KW	5.2 KVA	4.7 KVA
CUH-2.2	1	25.0 A	208 V	1Ø	100 %	5.20 KW	5.20 KVA	5.2 KW	5.2 KVA	4.7 KVA
CUH-2.3	1	15.4 A	208 V	1Ø	100 %	3.20 KW	3.20 KVA	3.2 KW	3.2 KVA	2.9 KVA
CUH-2.4	1	15.4 A	208 V	1Ø	100 %	3.20 KW	3.20 KVA	3.2 KW	3.2 KVA	2.9 KVA
CUH-2.5	1	25.0 A	208 V	1Ø	100 %	5.20 KW	5.20 KVA	5.2 KW	5.2 KVA	4.7 KVA
CUH-2.8	1	25.0 A	208 V	1Ø	100 %	5.20 KW	5.20 KVA	5.2 KW	5.2 KVA	4.7 KVA
CUH-2.9	1	25.0 A	208 V	1Ø	100 %	5.20 KW	5.20 KVA	5.2 KW	5.2 KVA	4.7 KVA
CUH-2.10	1	25.0 A	208 V	1Ø	100 %	5.20 KW	5.20 KVA	5.2 KW	5.2 KVA	4.7 KVA
CUH-2.11	1	25.0 A	208 V	1Ø	100 %	5.20 KW	5.20 KVA	5.2 KW	5.2 KVA	4.7 KVA
CUH-2.12	1	25.0 A	208 V	1Ø	100 %	5.20 KW	5.20 KVA	5.2 KW	5.2 KVA	4.7 KVA
CUH-2.13	1	25.0 A	208 V	1Ø	100 %	5.20 KW	5.20 KVA	5.2 KW	5.2 KVA	4.7 KVA
CUH-2.14	1	25.0 A	208 V	1Ø	100 %	5.20 KW	5.20 KVA	5.2 KW	5.2 KVA	4.7 KVA
CUH-2.15	1	25.0 A	208 V	1Ø	100 %	5.20 KW	5.20 KVA	5.2 KW	5.2 KVA	4.7 KVA
CUH-2.16	1	25.0 A	208 V	1Ø	100 %	5.20 KW	5.20 KVA	5.2 KW	5.2 KVA	4.7 KVA
CUH-3.1	1	25.0 A	208 V	1Ø	100 %	5.20 KW	5.20 KVA	5.2 KW	5.2 KVA	4.7 KVA
CUH-3.2	1	25.0 A	208 V	1Ø	100 %	5.20 KW	5.20 KVA	5.2 KW	5.2 KVA	4.7 KVA
CUH-3.3	1	15.4 A	208 V	1Ø	100 %	3.20 KW	3.20 KVA	3.2 KW	3.2 KVA	2.9 KVA
CUH-3.4	1	15.4 A	208 V	1Ø	100 %	3.20 KW	3.20 KVA	3.2 KW	3.2 KVA	2.9 KVA
CUH-3.5	1	25.0 A	208 V	1Ø	100 %	5.20 KW	5.20 KVA	5.2 KW	5.2 KVA	4.7 KVA
CUH-3.6	1	15.4 A	208 V	1Ø	100 %	3.20 KW	3.20 KVA	3.2 KW	3.2 KVA	2.9 KVA
CUH-3.7	1	15.4 A	208 V	1Ø	100 %	3.20 KW	3.20 KVA	3.2 KW	3.2 KVA	2.9 KVA
CUH-3.8	1	15.4 A	208 V	1Ø	100 %	3.20 KW	3.20 KVA	3.2 KW	3.2 KVA	2.9 KVA
CUH-3.9	1	15.4 A	208 V	1Ø	100 %	3.20 KW	3.20 KVA	3.2 KW	3.2 KVA	2.9 KVA
CUH-4.1	1	25.0 A	208 V	1Ø	100 %	5.20 KW	5.20 KVA	5.2 KW	5.2 KVA	4.7 KVA
CUH-4.2	1	25.0 A	208 V	1Ø	100 %	5.20 KW	5.20 KVA	5.2 KW	5.2 KVA	4.7 KVA
CUH-4.3	1	15.4 A	208 V	1Ø	100 %	3.20 KW	3.20 KVA	3.2 KW	3.2 KVA	2.9 KVA
CUH-4.4	1	15.4 A	208 V	1Ø	100 %	3.20 KW	3.20 KVA	3.2 KW	3.2 KVA	2.9 KVA
CUH-4.5	1	25.0 A	208 V	1Ø	100 %	5.20 KW	5.20 KVA	5.2 KW	5.2 KVA	4.7 KVA
CUH-4.6	1	15.4 A	208 V	1Ø	100 %	3.20 KW	3.20 KVA	3.2 KW	3.2 KVA	2.9 KVA
CUH-4.7	1	15.4 A	208 V	1Ø	100 %	3.20 KW	3.20 KVA	3.2 KW	3.2 KVA	2.9 KVA
CUH-5.1	1	15.4 A	208 V	1Ø	100 %	3.20 KW	3.20 KVA	3.2 KW	3.2 KVA	2.9 KVA
CUH-5.2	1	15.4 A	208 V	1Ø	100 %	3.20 KW	3.20 KVA	3.2 KW	3.2 KVA	2.9 KVA
CUH-5.3	1	15.4 A	208 V	1Ø	100 %	3.20 KW	3.20 KVA	3.2 KW	3.2 KVA	2.9 KVA
CUH-5.4	1	15.4 A	208 V	1Ø	100 %	3.20 KW	3.20 KVA	3.2 KW	3.2 KVA	2.9 KVA
CUH-5.5	1	15.4 A	208 V	1Ø	100 %	3.20 KW	3.20 KVA	3.2 KW	3.2 KVA	2.9 KVA
EBD-A	89	10.4 A	120 V	1Ø	100 %	1.25 KW	1.25 KVA	111.1 KW	111.1 KVA	100.0 KVA
EBD-B	19	12.0 A	208 V	1Ø	100 %	2.50 KW	2.50 KVA	47.4 KW	47.4 KVA	42.7 KVA

ELECTRICAL SERVICE CALCULATION SHEET

Base Building

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EBD-C	5		5.0 A	120 V	1Ø	100 %	0.60 KW	0.60 KVA	3.0 KW	3.0 KVA	2.7 KVA
RHC-1.1	1		57.7 A	208 V	1Ø	100 %	12.00 KW	12.00 KVA	12.0 KW	12.0 KVA	10.8 KVA
EUH-C.1	1		13.8 A	208 V	3Ø	100 %	4.97 KW	4.97 KVA	5.0 KW	5.0 KVA	4.5 KVA
EUH-C.2	1		13.8 A	208 V	3Ø	100 %	4.97 KW	4.97 KVA	5.0 KW	5.0 KVA	4.5 KVA
EUH-3.1	1		13.8 A	208 V	3Ø	100 %	4.97 KW	4.97 KVA	5.0 KW	5.0 KVA	4.5 KVA
EUH-3.2	1		13.8 A	208 V	3Ø	100 %	4.97 KW	4.97 KVA	5.0 KW	5.0 KVA	4.5 KVA
EUH-3.3	1		13.8 A	208 V	3Ø	100 %	4.97 KW	4.97 KVA	5.0 KW	5.0 KVA	4.5 KVA
EUH-4.1	1		20.8 A	208 V	3Ø	100 %	7.49 KW	7.49 KVA	7.5 KW	7.5 KVA	6.7 KVA
CONV-1.1	1		12.0 A	208 V	1Ø	100 %	2.50 KW	2.50 KVA	2.5 KW	2.5 KVA	2.0 KVA
CONV-1.2	1		12.0 A	208 V	1Ø	100 %	2.50 KW	2.50 KVA	2.5 KW	2.5 KVA	2.0 KVA
CONV-1.3	1		6.0 A	208 V	1Ø	100 %	1.25 KW	1.25 KVA	1.3 KW	1.3 KVA	1.0 KVA
CONV-1.4	1		12.0 A	208 V	1Ø	100 %	2.50 KW	2.50 KVA	2.5 KW	2.5 KVA	2.0 KVA
CONV-1.5	1		12.0 A	208 V	1Ø	100 %	2.50 KW	2.50 KVA	2.5 KW	2.5 KVA	2.0 KVA
CONV-1.6	1		12.0 A	208 V	1Ø	100 %	2.50 KW	2.50 KVA	2.5 KW	2.5 KVA	2.0 KVA
CONV-1.7	1		12.0 A	208 V	1Ø	100 %	2.50 KW	2.50 KVA	2.5 KW	2.5 KVA	2.0 KVA
CONV-1.8	1		12.0 A	208 V	1Ø	100 %	2.50 KW	2.50 KVA	2.5 KW	2.5 KVA	2.0 KVA
CONV-1.9	1		12.0 A	208 V	1Ø	100 %	2.50 KW	2.50 KVA	2.5 KW	2.5 KVA	2.0 KVA
CONV-1.?	1		12.0 A	208 V	1Ø	100 %	2.50 KW	2.50 KVA	2.5 KW	2.5 KVA	2.0 KVA
CONV-1.?	1		12.0 A	208 V	1Ø	100 %	2.50 KW	2.50 KVA	2.5 KW	2.5 KVA	2.0 KVA
CONV-2.1	1		6.0 A	208 V	1Ø	100 %	1.25 KW	1.25 KVA	1.3 KW	1.3 KVA	1.0 KVA
CONV-2.2	1		12.0 A	208 V	1Ø	100 %	2.50 KW	2.50 KVA	2.5 KW	2.5 KVA	2.0 KVA
CONV-2.3	1		12.0 A	208 V	1Ø	100 %	2.50 KW	2.50 KVA	2.5 KW	2.5 KVA	2.0 KVA
CONV-2.4	1		12.0 A	208 V	1Ø	100 %	2.50 KW	2.50 KVA	2.5 KW	2.5 KVA	2.0 KVA
CONV-2.5	1		12.0 A	208 V	1Ø	100 %	2.50 KW	2.50 KVA	2.5 KW	2.5 KVA	2.0 KVA
CONV-2.6	1		12.0 A	208 V	1Ø	100 %	2.50 KW	2.50 KVA	2.5 KW	2.5 KVA	2.0 KVA
CONV-2.7	1		12.0 A	208 V	1Ø	100 %	2.50 KW	2.50 KVA	2.5 KW	2.5 KVA	2.0 KVA
CONV-2.8	1		12.0 A	208 V	1Ø	100 %	2.50 KW	2.50 KVA	2.5 KW	2.5 KVA	2.0 KVA
CONV-2.9	1		12.0 A	208 V	1Ø	100 %	2.50 KW	2.50 KVA	2.5 KW	2.5 KVA	2.0 KVA
CONV-2.10	1		12.0 A	208 V	1Ø	100 %	2.50 KW	2.50 KVA	2.5 KW	2.5 KVA	2.0 KVA
CONV-2.11	1		12.0 A	208 V	1Ø	100 %	2.50 KW	2.50 KVA	2.5 KW	2.5 KVA	2.0 KVA
CONV-2.12	1		12.0 A	208 V	1Ø	100 %	2.50 KW	2.50 KVA	2.5 KW	2.5 KVA	2.0 KVA
CONV-2.13	1		12.0 A	208 V	1Ø	100 %	2.50 KW	2.50 KVA	2.5 KW	2.5 KVA	2.0 KVA
ARC-1.1	1		77.7 A	208 V	3Ø	100 %	27.99 KW	27.99 KVA	28.0 KW	28.0 KVA	22.4 KVA
ARC-1.2	1		77.7 A	208 V	3Ø	100 %	27.99 KW	27.99 KVA	28.0 KW	28.0 KVA	22.4 KVA
ARC-1.3	1		77.7 A	208 V	3Ø	100 %	27.99 KW	27.99 KVA	28.0 KW	28.0 KVA	22.4 KVA
ARC-1.4	1		77.7 A	208 V	3Ø	100 %	27.99 KW	27.99 KVA	28.0 KW	28.0 KVA	22.4 KVA
ARC-4.1	1		77.7 A	208 V	3Ø	100 %	27.99 KW	27.99 KVA	28.0 KW	28.0 KVA	22.4 KVA
Plumbing Loads											
Sprinkler Booster Pump	1	25.00 HP	78.2 A	208 V	3Ø	85 %	23.95 KW	28.17 KVA	23.9 KW	28.2 KVA	19.7 KVA

ELECTRICAL SERVICE CALCULATION SHEET

Base Building

PROJECT NAME: [redacted] **PROJECT No.:** [redacted]
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Jockey Pump	1	1.00 HP	4.8 A	208 V	3Ø	85 %	1.47 KW	1.73 KVA	1.5 KW	1.7 KVA	1.2 KVA
EVP#1 (Single Submersible)	1	0.50 HP	9.8 A	120 V	1Ø	85 %	1.00 KW	1.18 KVA	1.0 KW	1.2 KVA	0.8 KVA
EVP#2 (Sump Pump)	1	0.50 HP	9.8 A	120 V	1Ø	85 %	1.00 KW	1.18 KVA	1.0 KW	1.2 KVA	0.8 KVA
WBP#1 & 2 (Water Booster)	2	7.50 HP	24.2 A	208 V	3Ø	85 %	7.41 KW	8.72 KVA	14.8 KW	17.4 KVA	12.2 KVA
SEP#1 & 2 (Sewage Ejector)	2	2.00 HP	7.5 A	208 V	3Ø	85 %	2.30 KW	2.70 KVA	4.6 KW	5.4 KVA	3.8 KVA
HWCP#1 (Inline Circulation Pump)	1	0.25 HP	5.8 A	120 V	1Ø	85 %	0.59 KW	0.70 KVA	0.6 KW	0.7 KVA	0.6 KVA
HWCP#2 (Inline Circulation Pump)	1	0.17 HP	4.4 A	120 V	1Ø	85 %	0.45 KW	0.53 KVA	0.4 KW	0.5 KVA	0.5 KVA
HWH#1, #2 (Hot Water Heater)	2		67.0 A	208 V	1Ø	85 %	11.85 KW	13.94 KVA	23.7 KW	27.9 KVA	25.1 KVA
Elevator Loads											
Elevators	2	25.00 HP	78.2 A	208 V	3Ø	85 %	23.95 KW	28.17 KVA	47.9 KW	56.3 KVA	53.5 KVA
EMR Auxilairy Equipment	1		25.0 A	120 V	1Ø	85 %	2.55 KW	3.00 KVA	2.6 KW	3.0 KVA	2.9 KVA
Elevator Cab Lighting	1		1.0 A	120 V	1Ø	85 %	0.10 KW	0.12 KVA	0.1 KW	0.1 KVA	0.1 KVA
Other Loads											
Net Total			3,724 A	208 V	3Ø				1,597 KW	1,772 KVA	1,341 KVA
d. Total Loads Distribution											
Lighting and Receptacles			538 A	208 V	3Ø	90 %			247 KW	275 KVA	193.7 KVA
Miscelleanous Loads			42 A	208 V	3Ø	85 %			18 KW	20 KVA	15.2 KVA
Mechanical Equipment Loads			3,724 A	208 V	3Ø	85 %			1,597 KW	1,772 KVA	1,341 KVA
Total Load			4,303 A	208 V	3Ø	85 %			1,862 KW	2,067 KVA	1,550 KVA
Total after Diversity			4,303 A	208 V	3Ø						1,550 KVA
TOTAL AMPS PLUS SPARE CAPACITY			**5,164 A**	208 V	3Ø						1,860 KVA

Detail by Trade

			Study Basecase			Option 1			Option 2		
Code	Description	Unit Cost	Quantity	Unit	Amount	Quantity	Unit	Amount	Quanitity	Unit	Amount
	GENERAL AND SUPPLEMENTARY REQUIREMENTS										
	Construction Entrance Pad		1,800			1,800			1,800		
	Construction fence, 8' high chain link fencing		770			770			770		
	Construction gates		1			1			1		
	Erect and dismantle pipe frame scaffolding		58,704			58,704			58,704		
	Material and personnel lift		100			100			100		
	Sidewalk bridge		650			650			650		
	SITE WORK										
	6" dia drill to existing 12" dia combined sewer		1			1			1		
	Additional excavation of footings, pits		2,936			2,936			2,936		
	Backfill		3,636			3,636			3,636		
	Backyard: 1/4" diam painted Steel guard and handrail at radial concrete seats		44			44			44		
	Backyard: Bike rack disclaimer sign		1			1			1		
	Backyard: Colored limestone texture concrete pavement		2,984			2,984			2,984		
	Backyard: Concrete paving		1,438			1,438			1,438		
	Backyard: Concrete radial sitting steps and stairs		576			576			576		
	Backyard: Concrete ramp railing		54			54			54		
	Backyard: Concrete retaining wall as per det 6,7,8/A039		123			123			123		
	Backyard: Concrete surface with ADA accessible ramp		222			222			222		
	Backyard: Heavy duty bike rack		4			4			4		
	Backyard: Install 32 gal trash receptacle		6			6			6		
	Backyard: Iron double gate		1			1			1		
	Backyard: Iron picket fence as per det A,B/A039		128			128			128		
	Backyard: Radial benches with wood seat planks as per det 6/A052		26			26			26		
	Clean/flashing test piping system		1			1			1		
	Clean/flashing test piping system		1			1			1		
	Cleaning and grabbing		37,300			37,300			37,300		
	Concrete thrust block on water line		1			1			1		
	Connection to street domestic water/sprinkler		2			2			2		
	Demolish (2-1/2) story existing building and foundation in its entirety		366,235			366,235			366,235		
	Demolish (3-1/2) story existing building and foundation in its entirety		147,000			147,000			147,000		
	Demolition, protection		1			1			1		
	Designation mark up lines		12			12			12		
	Dewatering/pumping		1			1			1		
	Disconnect all existing services		1			1			1		
	Disposal of site		8,772			8,772			8,772		
	Earth ramp to cellar		1			1			1		
	Excavation at demolished buildings and footings		1			1			1		
	Excavation/backfill/concrete encasement		1			1			1		
	Excavation: Hay Bale		730			730			730		
	Excavation: Sheet pile as per SOE102 assumed 40' long		6,000			6,000			6,000		
	Excavation: Silt fence		730			730			730		

Detail by Trade

			Study Basecase			Option 1			Option 2		
Code	Description	Unit Cost	Quantity	Unit	Amount	Quantity	Unit	Amount	Quanitity	Unit	Amount
	Exercise equipment (at roof)		1			1			1		
	Fence at backyard		250			250			250		
	Footings as per schedules on page FO302		888			888			888		
	Game lines at soccer field, walking track on low roof		400			400			400		
	Gas curb valve		1								
	Gas rig enclosure		1								
	Gas rig enclosure gate		1								
	Gas shut-off valve		1								
	Gate at backyard		1			1			1		
	Landscaping: New trees		50			50			50		
	Landscaping: Protect existing street tree and tree pit		12			12			12		
	Landscaping: Remove existing street tree		1			1			1		
	Mass excavation for building cellar		9,472			9,472			9,472		
	Movable mini PVC soccer goal gate		2			2			2		
	New cleanout at sanitary line		1			1			1		
	New concrete pavement, 4" (building) at front yard		2,078			2,078			2,078		
	New concrete sidewalk, NYDOT Standard (street paving)		10,240			10,240			10,240		
	New soft surfaces planting with shrubs and mulch		50			50			50		
	New steel faced concrete curb		770			770			770		
	Paint graphic lines at backyard playground assumed		120			120			120		
	Pipe 4" dia domestic water		40			40			40		
	Pipe 6" dia DIP sanitary sewer		40			40			40		
	Pipe 6" dia domestic/sprinkler		40			40			40		
	Piping system identification		1			1			1		
	Playground equipment/ ECC playyard (at backyard)		1			1			1		
	Premium cost for floodproofed utilities and adequate drainage		1			1			1		
	Protect existing street tree and tree pit		13			13			13		
	Protect existing utility grating		2			2			2		
	Remove all existing asphaltic paving and sub-base material in its entirety		15,600			15,600			15,600		
	Remove all exterior concrete steps and foundations in its entirety. 5 locations		5			5			5		
	Remove existing 6'-0" wrought iron fence, gates and footings		553			553			553		
	Remove existing concrete pads/slabs, pavements and footings		1,600			1,600			1,600		
	Remove existing steel guard rail		400			400			400		
	Remove existing street tree		5			5			5		
	Remove flag pole and foundations		1			1			1		
	Remove grass down to subgrade		2,200			2,200			2,200		
	Remove light pole and foundations		6			6			6		
	Remove signage pole and foundations		1			1			1		
	Remove stone and gravel		2,300			2,300			2,300		
	Remove underground oil storage tank and all related environmental work		1			1			1		
	Restore roadway (asphalt)		19,500			19,500			19,500		
	Roof playyard: Install concrete pads above composite structural slab		1			1			1		
	Rough Grading		37,300			37,300			37,300		
	Safety pads at column enclosure		2			2			2		
	Sanitary house trap		1			1			1		

Detail by Trade

			Study Basecase			Option 1			Option 2		
Code	Description	Unit Cost	Quantity	Unit	Amount	Quantity	Unit	Amount	Quanitity	Unit	Amount
	Sheathing		8,084			8,084			8,084		
	Stairs, ramps		1			1			1		
	Storm management system		1			1			1		
	Trench for gas pipe(gas service pipe by national grid)		50								
	Utility removals		1			1			1		
	Water curb valve		2			2			2		
	Wearing surface at playyard on Low Roof		13,300			12,100			13,300		
	CONCRETE										
	12" Crushed stone		3			3			3		
	6" pad on grade (gas meter rig)		80								
	Concrete fill on metal deck - gymnasium structure		30,982			30,982			30,982		
	Concrete pads, curbs, secondary pours		130,893			130,893			130,893		
	Concrete piers		48			48			48		
	Concrete stairs: Landing		1,584			1,584			1,584		
	Concrete stairs: Risers		454			454			454		
	Concrete stairs: Risers at Stair A Bulkhead, Elev. Mech.rm		16			16			16		
	Concrete stairs: Risers at Stair B LVL 0, 1		63			63			63		
	Concrete stairs: Risers at Vestidule 4th floor		57			57			57		
	Depressed slab		1,252			1,252			1,252		
	Elevator divider beam and HSS post		1			1			1		
	Elevator pit assembly: 12" Crushed stone		12			12			12		
	Elevator pit assembly: 12" pit slab		384			384			384		
	Elevator pit assembly: Concrete walls at elevator pit		320			320			320		
	Foundation Concrete: 12" Crushed stone		1,006			1,006			1,006		
	Foundation Concrete: Concrete slab- on-grade, 6"th, wwf		27,156			27,156			27,156		
	Foundation for columns		1,197			1,197			1,197		
	Foundation walls 1'2" thick.		6,776			6,776			6,776		
	Grade beams		520			520			520		
	L. W. concrete roof topping slope to drain		31,330			31,330			31,330		
	Parapet wall		4,603			4,603			4,603		
	Perimeter drainage		868			868			868		
	Raised slab/Raised platform at Gymatorium		900			900			900		
	Slab edge at perimeter		4,694			4,694			4,694		
	Step in slab		1			1			1		
	Superstructure concrete frame		98,120			96,560			96,560		
	Tie beam		48			48			48		
	MASONRY										
	Granite stone veneer ST-1		2,820			2,820			2,820		
	Stone countertop w/ backsplash and Sidesplash		148			148			148		
	METALS										
	3'-0" x 7'-0" New gates at mesh enclosure at roof playyard		6			6			6		
	6x6x5/8 Steel posts for mesh enclosure at roof top playyard		10			10			10		

Detail by Trade

			Study Basecase			Option 1			Option 2		
Code	Description	Unit Cost	Quantity	Unit	Amount	Quantity	Unit	Amount	Quanitity	Unit	Amount
	Access Ladder at roof w access platform & 3'6h railing on both sides		2			2			2		
	Diamond mesh enclosure at roof playyard as per det 1,6/A054		3,506			3,506			3,506		
	Exterior metal column cover , 14'h, 2'4" diam.		4			4			4		
	'Fence at Roof, 14'h		312			312			312		
	Increase in size of roof dunnage for custom AHUs					300					
	Interior metal egress ladder		2			2			2		
	Ladder at elevator pit		1			1			1		
	Mesh above entire roof top at playyard		9,855			9,855			9,855		
	Metal frame for mesh installation above playyard on roof		32			32			32		
	Metal grating		1,320			945			1,320		
	Metals, supports and lintels		130,893			130,893			130,893		
	'Metal structure/bridge above gym roof		13,300			13,300			13,300		
	Ornamental metal: Freestanding 'Railings at fire stairs A, B & C		407			407			407		
	Ornamental metal: Handrails at Charal rm		30			30			30		
	Ornamental metal: Security barrier (Wire mesh) at Stairs A		215			215			215		
	Ornamental metal: Wall mounted Railings at fire stairs A, B & C		357			357			357		
	Ornamental metal: Wall railings at Corridors		202			202			202		
	Ornamental metal: Wall railings at Stair A Bulkhead, Elev. Mech.rm		9			9			9		
	Ornamental metal: Wall railings at Vestidule		22			22			22		
	Provide 3" thick 16 ga galvanized composite metal deck at GYM		30,982			30,982			30,982		
	Roof top dunnage frame		18			11			18		
	Shear studs		3,873			3,873			3,873		
	Steel rod bracing as per det 3,4/S203		1,584			1,584			1,584		
	Storefront support		46			46			46		
	Structural steel, including beams, columns at GYM floors and roof		313			313			313		
	WOOD & PLASTICS										
	Cafeteria		1			1			1		
	Free standing wood stair handrail at stage		12			12			12		
	Interior wood stool & apron at windows		990			990			990		
	Maple wood treads and risers at stage		49			49			49		
	Millwork in Art & Music rooms: ADJ. HEIGHT INTERACTIVE MONITOR (75") - PROMETHEAN IWB 71" x 43"		3			3			3		
	Millwork in Art & Music rooms: COUNTERTOP/COMPUTER 8' X 30"		8			8			8		
	Millwork in Art & Music rooms: OPEN SHELF W/ LAMINATED TOP 36"W 12"D 24"H		12			12			12		
	Millwork in Art & Music rooms: STORAGE UNIT WITH WORK SURFACE 84"x22"x84"		4			4			4		
	Millwork in Art & Music rooms: TEACHERS/STUDENTS WARDROBE/CLOSET 2' 4"x 2'		1			1			1		
	Millwork in Art & Music rooms: WALL HUNG SHELVES		28			28			28		
	Millwork in Art & Music rooms: WOODWORKER'S VISE		8			8			8		

Detail by Trade

			Study Basecase			Option 1			Option 2		
Code	Description	Unit Cost	Quantity	Unit	Amount	Quantity	Unit	Amount	Quanitity	Unit	Amount
	Millwork in Classrooms, Kindergarten & Resource rooms: ADJ. HEIGHT INTERACTIVE MONITOR (75") - PROMETHEAN IWB 71" x 43" - Install only		33			33			33		
	Millwork in Classrooms, Kindergarten & Resource rooms: COUNTERTOP/COMPUTER 7'-6" X 30"		165			165			165		
	Millwork in Classrooms, Kindergarten & Resource rooms: OPEN SHELF W/ LAMINATED TOP 36"W 12"D 24"H		102			102			102		
	Millwork in Classrooms, Kindergarten & Resource rooms: OPEN SHELF W/ TOP 36"W 12"D 30"H		144			144			144		
	Millwork in Classrooms, Kindergarten & Resource rooms: TEACHERS/STUDENTS WARDROBE/CLOSET 2' 4"x 2'		38			38			38		
	Millwork in Classrooms, Kindergarten & Resource rooms: TEACHERS/STUDENTS WARDROBE/CLOSET 2' 8"x 2'		2			2			2		
	Millwork in Classrooms, Kindergarten & Resource rooms: TEACHERS/STUDENTS WARDROBE/CLOSET 4' 10"x 2'		1			1			1		
	Millwork in Classrooms, Kindergarten & Resource rooms: TEACHERS/STUDENTS WARDROBE/CLOSET 7'x 2'		2			2			2		
	Millwork in Classrooms, Kindergarten & Resource rooms: WALL HUNG SHELVES		414			414			414		
	Millwork in Library: ADJ. HEIGHT INTERACTIVE MONITOR (75") - PROMETHEAN IWB 71" x 43"		1			1			1		
	Millwork in Library: COUNTERTOP		23			23			23		
	Millwork in Library: OPEN SHELF W/ EPOXY RESIN TOP 36"W 12"D 28"H		18			18			18		
	Millwork in Library: TEACHERS/STUDENTS WARDROBE/CLOSET 2' 4"x 2'		1			1			1		
	Millwork in Library: WALL HUNG SHELVES 30"x12"x24"		8			8			8		
	Millwork in Locker rooms, Health Instructor room, Gym storage, Exercise room, Custodian locker room, Shower rooms: INTEGRAL COUNTERTOP W/ BACKSPLASH		2			2			2		
	Millwork in Medical Suites: BASE CABINET & 'SINK BASE CABINET (ADA) 36" x 24" x 34"		12			12			12		
	Millwork in Medical Suites: COUNTERTOP/COMPUTER		23			23			23		
	Millwork in Medical Suites: WALL CABINET-UPPER CASES 36" x 12" x 15 3/4"		12			12			12		
	Millwork in Offices, Stuff lunch, Changing room, Community room: ADJ. HEIGHT INTERACTIVE MONITOR (75") - PROMETHEAN IWB 71" x 43"		3			3			3		
	Millwork in Offices, Stuff lunch, Changing room, Community room: COUNTERTOP/BUILT-IN @ Admin suite 206. 14'-6"L x 2'-6" W + 5' L x 2'-6" H low wall		1			1			1		
	Millwork in Offices, Stuff lunch, Changing room, Community room: COUNTERTOP / COMPUTER 8'-0" X 30"		30			30			30		
	Millwork in Offices, Stuff lunch, Changing room, Community room: OPEN SHELF W / TOP 36" x 12" x 30"		36			36			36		

Detail by Trade

			Study Basecase			Option 1			Option 2		
Code	Description	Unit Cost	Quantity	Unit	Amount	Quantity	Unit	Amount	Quanitity	Unit	Amount
	Millwork in Offices, Stuff lunch, Changing room, Community room: TEACHERS/STUDENTS WARDROBE/CLOSET 2' 4"x 2'		4			4			4		
	Millwork in Offices, Stuff lunch, Changing room, Community room: WALL HUNG SHELVES		44			44			44		
	Millwork in Science rooms: ADJ. HEIGHT INTERACTIVE MONITOR (80") - PROMETHEAN IWB 73" x 45"		6			6			6		
	Millwork in Science rooms: BASE CABINET - SHALLOW DEPTH		242			242			242		
	Millwork in Science rooms: CABINET/FLAMMABLE STORAGE/NON-VENTED 36"x 24"x 65"		9			9			9		
	Millwork in Science rooms: COUNTERTOP/COMPUTER 7' 6"X 30"		53			53			53		
	Millwork in Science rooms: EPOXY RESIN COUNTERTOP W/ 4" BSPLASH L		180			180			180		
	Millwork in Science rooms: MICROSCOPE STORAGE CABINET 24" x 15 3/4" x 84"		27			27			27		
	Millwork in Science rooms: MOBILE LABORATORY CART 36"x24"x36"		3			3			3		
	Millwork in Science rooms: MOBILE PLANT STUDY CENTER WITH LIGHT FIXTURE 56"x 28"x 71"		2			2			2		
	Millwork in Science rooms: OPEN SHELF W EPOXY RESIN TOP 36" x 12" x 28"		90			90			90		
	Millwork in Science rooms: SAFTEY GOOGLE STORAGE UNIT - WALL MTD. 25"x 12"x 25"		9			9			9		
	Millwork in Science rooms: SINK BASE CABINET (ADA) 36" x 21 1/4" x 32 1/4"		18			18			18		
	Millwork in Science rooms: SINK BASE CABINET - SHALLOW DEPTH 36" x 15 3/4" x 34 3/4"		9			9			9		
	Millwork in Science rooms: SINK BASE CABINET - STANDARD DEPTH 36" x 15 3/4" x 27 3/4"		27			27			27		
	Millwork in Science rooms: STORAGE CABINET		30			30			30		
	Millwork in Science rooms: TEACHERS DEMONSTRATION TABLE 10-2" x 2'-7" x 2'-10"		3			3			3		
	Millwork in Science rooms: TEACHERS DEMONSTRATION TABLE 12'-2" x 2'-7" x 2'-10"		3			3			3		
	Millwork in Science rooms: TEACHERS/STUDENTS WARDROBE/CLOSET 24"x22"x84"		3			3			3		
	Millwork in Science rooms: WALL HUNG SHELVES 24"x12"x24"		60			60			60		
	Security desk		19			19			19		
	Trim at stage		34			34			34		
	Wall wounted wood stair handrail at stage\		24			24			24		
	Wood blocking and protection		130,893			130,893			130,893		
	THERMAL AND MOISTURE PROTECTION										
	Caulking and sealants at exterior wall		58,452			58,452			58,452		
	Crystalline Waterproofing at elevator pit		704			704			704		
	Fireproofing steel members/metal deck		30,982			30,982			30,982		
	Interior Caulking		130,893			130,893			130,893		
	Intumescent matte black paint at stage		3,934			3,934			3,934		

Detail by Trade

			Study Basecase			Option 1			Option 2		
Code	Description	Unit Cost	Quantity	Unit	Amount	Quantity	Unit	Amount	Quanitity	Unit	Amount
	IRMA roof assembly, including flushing and specialties: 2" th. roof pavers, assume 15%		12,290			12,290			12,290		
	IRMA roof assembly, including flushing and specialties: Interlocking rubber roof pavers		1,710			1,710			1,710		
	IRMA roof assembly, including flushing and specialties: Sloped concrete roof slab, fluid-applied protected membrane roofing system, 6" th. Continuous insulation R-30 (2 layers, staggered), 2"th Cementitious - topped roof insulation R-10		31,330			31,330			31,330		
	Metal coping		1,244			1,244			1,244		
	Perimeter wall 3" foundation insulation, drainage board		6,776			6,776			6,776		
	Roof accessories: smoke hatches, vent hatches, etc..		130,893			130,893			130,893		
	Slab waterproofing, vapor barrier (liquid boot ultrashield G-1000, 60 dry mils liquid boot, VI-20 geomembrane)		17,954			17,954			17,954		
	UHPC (Ultra high performance concrete panels) panel: Exterior concrete columns		840			840			840		
	UHPC (Ultra high performance concrete panels) panel: Exterior walls		48,823			48,823			48,534		
	UHPC (Ultra high performance concrete panels) panel: Overhang		2,922			2,922			2,922		
	'UHPC (Ultra high performance concrete panels) panel : Parapet		4,603			4,603			4,603		
	Wall waterproofing, vapor barrier (60 dry mils liquid boot, VI-20 geomembrane)		6,776			6,776			6,776		
	DOORS & WINDOWS										
	6"x12" access door for fire damper								43		
	Aluminum doors, frames, and hardware: Exterior: Interior: Pair Alum/glass doors and alum. frame (6'x7'-6")		6			6			6		
	Aluminum doors, frames, and hardware: Exterior: Pair Alum/glass doors and alum. frame (6'x7'-6")		5			5			5		
	Aluminum Projected Windows: Aluminum Windows		5,890			5,890			5,890		
	Aluminum storefront: Exterior		702			702			702		
	Aluminum storefront: Interior		899			899			899		
	Exterior doors with frame and hardware: Double: Type E: Hollow metal double door		5			5			5		
	Exterior doors with frame and hardware:Type A: Type A: Hollow metal single door		7			7			7		
	Exterior metal infill panel		1,930			1,930			854		
	Exterior security barrier at all windows on first floor		748			748			748		
	Faux louvers - 3'6" x 7'6". No plenum or access door required								236		
	Interior doors with frame and hardware: Double: Type E/H/M: Hollow metal double		26			26			26		
	Interior doors with frame and hardware: Single half ht wood door (3'x2'6")		1			1			1		
	Interior doors with frame and hardware: Single: Type A, B2: Solid wood single door		91			91			91		
	Interior doors with frame and hardware: Single: Type A, C,D: Hollow metal single door		118			118			118		
	Interior doors with frame and hardware:Type A: Galvanized hollow metal single door		9			9			9		

Detail by Trade

			Study Basecase			Option 1			Option 2		
Code	Description	Unit Cost	Quantity	Unit	Amount	Quantity	Unit	Amount	Quanitity	Unit	Amount
	Interior windows		164			164			164		
	Louver, 0'9"x1'0" in door		123			123			123		
	Metal wall louver		540			540			540		
	Premium cost for Solera glazing at the top of exterior windows					2,070			2,060		
	Premium for: Fire rating stairs doors 1- 1/2 HR Rating		48			48			48		
	Premium for: Fire rating stairs doors 45 HR Rating		13			13			13		
	Roll-down grille at Student Dining / Kitchen		472			472			472		
	ROLLING ALUMINUM SHUTTER		56			56			56		
	Side light: 1'6" wide x 7'0"		50			50			50		
	Type J: Solid wood closet door, single		81			81			81		
	Type K: Solid wood closet door, double		21			21			21		
	Vision panel 1'0"x2'6"		74			74			74		
	Vision panel, 3-1/4"x2'6"		55			55			55		
	VUV - 3'6" x 7'6" louvers (43 ea) w 4' x 8" plenum and 6"x12" access door for fire damper								1,129		
	FINISHES										
	Base: Ceramic tile base at Restrooms and Kitchen vestibule		1,432			1,432			1,432		
	Base: FAEC - Fluid applied epoxy coating at Mechanical Spaces and Acid Waste room (elec closet, boiler, IDF, MDF, etc)		1,474			1,474			1,474		
	Base: Glazed ceramic tile base		4,031			4,031			4,031		
	Base: IE - Integral Epoxy at Science rooms and Acid storage rooms		1,384			1,384			1,384		
	Base: Porcelain tile		1,800			1,800			1,800		
	Base: Quarry tile base at Bike Storage, Kitchen, Servery, Can Wash and Recycle room		620			620			620		
	Base: RB - rubber base		11,460			11,460			11,460		
	Ceiling Finishes: 2 hour rated horizontal shaft wall assembly		371			371			371		
	Ceiling Finishes: Soffit/fascia		3,165			3,165			1,691		
	Ceiling Finishes: Type A2 - 2'x4' Tectum (wood fiber composition) Lay- in acoustical tile		6,133			6,133			6,133		
	Ceiling Finishes: Type A - '2'x4' ACT		42,571			41,011			41,011		
	Ceiling Finishes: Type B - 1 layer of 5/8" GWB Ceiling		22,660			22,660			22,660		
	Ceiling Finishes: Type C - Painted concrete (exposed surface)		15,464			15,464			15,464		
	Ceiling Finishes: Type D - 2'x2' Tectum (wood fiber composition) Lay-in acoustical tile		13,218			13,218			13,218		
	Ceiling Finishes: Type E - 2'x2' ACT		6,079			6,079			6,079		
	Ceiling Finishes: Type F - 2 layers of 5/8" GWB with 1'x1' acoustical tile at Music Suite		1,757			1,757			1,757		
	Ceiling Finishes: Type G - 2'x2' Non perforated aluminum metal pan snap in laquered mill		1,737			1,737			1,737		
	FGRG columns enclosure, Circle, 10'h at Cafeteria		314			314			314		
	Flooring: Ceramic Tile at Changing room, Lockers & Janitors		2,343			2,343			2,343		
	Flooring: Fluid applied epoxy coating at Mechanical Spaces and Acid Waste room (elec closet, boiler, IDF, MDF, etc)		8,007			8,007			8,007		

Detail by Trade

			Study Basecase			Option 1			Option 2		
Code	Description	Unit Cost	Quantity	Unit	Amount	Quantity	Unit	Amount	Quanitity	Unit	Amount
	Flooring: Isolated floating floor on rim system at Exercise Room, Music Room (VCT incl. above)		4,851			4,851			4,851		
	Flooring: Jackup wood floor at gym , 9" h		9,020			9,020			9,020		
	Flooring: Non-anchored Wood floor at Stage		887			887			887		
	Flooring: PM (Porcelain Mosaic Tile) at Restrooms		3,972			3,972			3,972		
	Flooring: Porcelain Tile at 4th floor Vestibule		177			177			177		
	Flooring: Porcelain Tile at lobby		972			972			972		
	Flooring: Porcelain tile at Stairs treads		3,366			3,366			3,366		
	Flooring: Poured epoxy at Science rooms and Acid storage rooms		8,068			8,068			8,068		
	Flooring: Quarry tile at Kitchen, Servery, Can wash, Refrigerator, Freeze room, Recycle room		3,345			3,345			3,345		
	Flooring: Resilient Athletic flooring at Exercise room		3,034			3,034			3,034		
	Flooring: SC sealed concrete at Ground Equipment room		128			128			128		
	Flooring: Sealed Concrete at stairs and Elevator machine room		6,986			6,986			6,986		
	Flooring: Stainless steel walk-off grille in Vestibule		501			501			501		
	Flooring: VCT Flooring		68,890			67,330			67,330		
	Interior partitions: Type 01 Non-Rated Partition: (1) layer of 5/8" thk abuse resistant gyp (2) sides, fire blanket insulation, 3-5/8" mtl studs (20 GA)		12,806			12,806			12,806		
	Interior partitions: Type 02 Non-Rated Partition: (1) layer of 5/8" thk abuse resistant gyp (2) sides, (1) layer of 5/8" thk mold & moisture resistant gyp (1) side, fire blanket insulation, 3-5/8" mtl studs (20 GA)		28,096			28,096			28,096		
	Interior partitions: Type 03 1HR-Rated Partition: (1) layer of 5/8" thk abuse resistant gyp (2) sides, (1) layer of 5/8" thk mold & moisture resistant gyp (1) side, fire blanket insulation, 3-5/8" mtl studs (20 GA)		3,864			3,864			3,864		
	Interior partitions: Type 04 Non-Rated Partition: (1) layer of 5/8" thk abuse resistant gyp (2) sides, (1) layer of 5/8" thk mold & moisture resistant gyp (2) sides, fire blanket insulation, 3-5/8" mtl studs (20 GA)		13,754			13,754			13,754		
	Interior partitions: Type 05 2HR-Rated Partition: (1) layer of 5/8" thk abuse resistant gyp (2) sides, (1) layer of 5/8" thk mold & moisture resistant gyp (2) sides, fire blanket insulation, 3-5/8" mtl studs (20 GA)		21,736			21,736			21,736		
	Interior partitions: Type 06 2HR-Rated Shaft Wall: (1) layer of 5/8" thk abuse resistant gyp (1) side, (1) layer of 5/8" thk mold & moisture resistant gyp (1) side, (1) layer of 1" thk mold & moisture resistant gyp (1) side, fire blanket insulation, 2-1/2" mtl studs (18 GA)		18,114			18,114			14,826		
	Interior partitions: Type 06A 2HR- Rated Shaft Wall: (1) layer of 5/8" thk abuse resistant gyp (1) side, (1) layer of 5/8" thk mold & moisture resistant gyp (1) side, (1) layer of 1" thk mold & moisture resistant gyp (1) side, fire blanket insulation, 6" mtl studs (20 GA)		1,176			1,176			1,176		
	Interior partitions: Type 06B 1HR- Rated Shaft Wall: (1) layer of 5/8" thk abuse resistant gyp (1) side, (1) layer of 1" thk mold & moisture resistant gyp (1) side, fire blanket insulation, 6" mtl studs (20 GA)		294			294			294		

Detail by Trade

			Study Basecase			Option 1			Option 2		
Code	Description	Unit Cost	Quantity	Unit	Amount	Quantity	Unit	Amount	Quanitity	Unit	Amount
	Interior partitions: Type 09A 2HR- Rated Dividing Partition: (1) layer of 5/8" thk abuse resistant gyp type "X" (2) sides, (1) layer of 5/8" thk mold & moisture resistant gyp type "X" (2) sides, fire blanket insulation, stagger 3-5/8" mtl studs (20 GA)		1,640			1,640			1,640		
	Interior partitions: Type 09 Non-Rated Dividing Partition: (1) layer of 5/8" thk abuse resistant gyp (2) sides, (1) layer of 5/8" thk mold & moisture resistant gyp (2) sides, fire blanket insulation, 3-5/8" mtl studs (20 GA)		10,170			10,170			10,170		
	Interior partitions: Type 10 Furring wall: (1) layer of 5/8" thk abuse resistant gyp (1) side, fire blanket insulation, 2-1/2" mtl studs (20 GA)		3,370			3,370			3,370		
	Interior partitions: Type 11A Furring wall: (1) layer of 5/8" thk abuse resistant gyp (1) side, (1) layer of 5/8" thk mold & moisture resistant gyp (1) side, fire blanket insulation, 7/8" mtl studs (20 GA)		786			786			786		
	Interior partitions: Type 11 Furring wall: (1) layer of 5/8" thk mold & moisture resistant gyp (1) side, fire blanket insulation, 2-1/2" mtl studs (20 GA)		34,524			34,524			27,370		
	Interior partitions: Type 12 Non-Rated Furing Wall: (1) layer of 5/8" thk abuse resistant gyp (1) side, (1) layer of 5/8" thk mold & moisture resistant gyp (1) side, fire blanket insulation, 2-1/2" mtl studs (20 GA)		22,728			22,728			22,728		
	Interior partitions: Type 13 Non-Rated Chase Wall: (1) layer of 5/8" thk abuse resistant gyp (2) sides, (1) layer of 5/8" thk mold & moisture resistant gyp (2) sides, fire blanket insulation (2-layers), 2-1/2" mtl studs (20 GA), 1-5/8" channel braces (48" O.C.)		4,932			4,932			4,932		
	Interior partitions: Type 14 2HR-Rated Chase Wall: (1) layer of 5/8" thk abuse resistant gyp (2) sides, (1) layer of 5/8" thk mold & moisture resistant gyp (2) sides, fire blanket insulation (2-layers), 2-1/2" mtl studs (20 GA), 1-5/8" channel braces (48" O.C.)		658			658			658		
	Interior partitions: Type 16 Non-Rated Partition STC 60: (1) layer of 5/8" thk abuse resistant gyp (2) sides, (2) layers of 5/8" thk mold & moisture resistant gyp (2) sides, 5" sound attenuation blanket, 6" mtl studs (25 GA)		4,718			4,718			4,718		
	Interior partitions: Type 20A 2HR- Rated Partition: (1) layer of 5/8" thk abuse resistant gyp (2) sides, (1) layer of 5/8" thk mold & moisture resistant gyp (2) sides, 5" sound attenuation blanket, 6" mtl studs (20 GA)		616			616					
	Interior partitions: Type 20B 2HR- Rated Partition: (1) layer of 5/8" thk abuse resistant gyp (2) sides, (1) layer of 5/8" thk mold & moisture resistant gyp (2) sides, 5" sound attenuation blanket, 6" mtl studs (20 GA)		196			196					
	Interior partitions: Type 20 Non-Rated Partition: (1) layer of 5/8" thk abuse resistant gyp (2) sides, (1) layer of 5/8" thk mold & moisture resistant gyp (2) sides, 5" sound attenuation blanket, 6" mtl studs (20 GA)		3,304			3,304			3,304		
	Interior partitions: Type 21 Non-Rated Partition: (1) layer of 5/8" thk abuse resistant gyp (1) side, (1) layer of 5/8" thk mold & moisture resistant gyp (1) side, 5" sound attenuation blanket, 6" mtl studs (20 GA)		2,254			2,254			2,254		

Detail by Trade

			Study Basecase			Option 1			Option 2		
Code	Description	Unit Cost	Quantity	Unit	Amount	Quantity	Unit	Amount	Quanitity	Unit	Amount
	Interior partitions: Type 22A 1HR- Rated Partition: (1) layer of 5/8" thk abuse resistant gyp (2) sides, (1) layer of 5/8" thk mold & moisture resistant gyp (1) side, 5" sound attenuation blanket, 6" mtl studs (20 GA)		84			84			84		
	Interior partitions: Type 22 Non-Rated Partition: (1) layer of 5/8" thk abuse resistant gyp (2) sides, (1) layer of 5/8" thk mold & moisture resistant gyp (1) side, 5" sound attenuation blanket, 6" mtl studs (20 GA)		532			532			532		
	Interior partitions: Type 25A 1HR- Rated Partition: (1) layer of 5/8" thk abuse resistant gyp (2) sides, (1) layer of 5/8" thk mold & moisture resistant gyp (1) side, 5" sound attenuation blanket, 8" mtl studs (20 GA)		224			224			224		
	Interior partitions: Type 25 Non-Rated Partition: (1) layer of 5/8" thk abuse resistant gyp (2) sides, (1) layer of 5/8" thk mold & moisture resistant gyp (1) side, 5" sound attenuation blanket, 8" mtl studs (20 GA)		588			588			588		
	Interior partitions: Type 26A 2HR- Rated Partition: (1) layer of 5/8" thk abuse resistant gyp (2) sides, (1) layer of 5/8" thk mold & moisture resistant gyp (2) sides, 5" sound attenuation blanket, 8" mtl studs (20 GA)		490			490			490		
	Interior partitions: Type 26 Non-Rated Partition: (1) layer of 5/8" thk abuse resistant gyp (2) sides, (1) layer of 5/8" thk mold & moisture resistant gyp (2) sides, 5" sound attenuation blanket, 8" mtl studs (20 GA)		868			868			868		
	Interior partitions: Type EX2 Exterior back-up wall: (1) layer of 5/8" thk abuse resistant gyp (1) side, (1) layer of 5/8" thk exterior sheathing (1) side, 5" sound attenuation blanket, 6" mtl studs (16 GA)		34,858			34,858			34,858		
	Premium cost for drywall/greenboards, impact resistant drywall, mep enclosures		130,893			130,893			130,893		
	Premium for cement backing board at tiled walls		52,920			52,920			52,920		
	Wall Finishes and Painting: 2" thick fabric wrapped panels affixed between 3' & 8" AFF at music coral room and practice rooms		1,485			1,485			1,485		
	Wall Finishes and Painting: Acoustical wood panel at gym		7,960			7,960			7,960		
	Wall Finishes and Painting: GCT - Glazed Ceramic Tiled walls at corridors, toilets, lockers		48,664			48,664			48,664		
	Wall Finishes and Painting: Paint GWB ceiling/soffit/fascia		25,825			25,825			25,825		
	Wall Finishes and Painting: Paint Metal Doors and Frames: Double		53			53			53		
	Wall Finishes and Painting: Paint Metal Doors and Frames: Single		306			306			306		
	Wall Finishes and Painting: PT - Porcelain Tile Wall		4,256			4,256			4,256		
	Wall Finishes and Painting: Semi- Gloss paint partition		128,176			128,176			128,176		
	Waterproofing under Restroom tile		3,972			3,972			3,972		
	SPECIALTIES										
	ADJUSTABLE SHELVES 5'2"L x18" D x 84"H		5			5			5		
	AUDIO-VISUAL SOUND RACK 24"x34"x78"		1			1			1		
	Bench w locker (64"x28"x34")		11			11			11		
	Boys/Girls Restroom Accessories: ADA Grab bars (3 ea)		12			12			12		

Detail by Trade

			Study Basecase			Option 1			Option 2		
Code	Description	Unit Cost	Quantity	Unit	Amount	Quantity	Unit	Amount	Quanitity	Unit	Amount
	Boys/Girls Restroom Accessories: ADA toilet partitions		12			12			12		
	Boys/Girls Restroom Accessories: Liquid soap Dispenser @ Boys Restroom Accessories		36			36			36		
	Boys/Girls Restroom Accessories: Mirror (18"x36")		36			36			36		
	Boys/Girls Restroom Accessories: Paper towel dispenser/waste dispenser		28			28			28		
	Boys/Girls Restroom Accessories: Sanitary napkin and tampon vendor @ Girls Restroom Accessories		17			17			17		
	Boys/Girls Restroom Accessories: Sanitary napkin disposal @ Girls Restroom Accessories		18			18			18		
	Boys/Girls Restroom Accessories: Shower Seat		9			9			9		
	Boys/Girls Restroom Accessories: Standard toilet partitions		16			16			16		
	Boys/Girls Restroom Accessories: Toilet paper dispenser		28			28			28		
	Boys/Girls Restroom Accessories: Urinal partitions		6			6			6		
	CHALKBOARD 4'x 4'		3			3			3		
	CHALKBOARD 5'-2"x 3'-8"		4			4			4		
	CHALKBOARD 5'x 4'		14			14			14		
	CHALKBOARD/MUSIC STAFFS 16'x4'		1			1			1		
	CHART & FLAT STOCK STORAGE 36" x 22" x 82 3/4"		9			9			9		
	Classroom and wayfinding signage, typical throughout		130,893			130,893			130,893		
	CofO Signage at new building		130,893			130,893			130,893		
	Corridor Display Cases & Display Boards: Chalkboard (10'x4')		19			19			19		
	Corridor Display Cases & Display Boards: Chalkboard (3'x4')		7			7			7		
	Corridor Display Cases & Display Boards: Chalkboard (6'x4')		8			8			8		
	Corridor Display Cases & Display Boards: Chalkboard (7'6'x4')		6			6			6		
	Corridor Display Cases & Display Boards: Display board (3'x0'8")		4			4			4		
	Corridor Display Cases & Display Boards: Display board (3'x4')		34			34			34		
	Corridor Display Cases & Display Boards: Display board (6'x0'8")		7			7			7		
	Corridor Display Cases & Display Boards: Display board (7'6"x2'9")		18			18			18		
	Corridor Display Cases & Display Boards: Display board (7'x0'8")		31			31			31		
	Corridor Display Cases & Display Boards: Markerboard (7'x4')		36			36			36		
	Corridor Display Cases & Display Boards: Tackboard (4'x2')		1			1			1		
	Corridor Display Cases & Display Boards: Tackboard (5'x2')		13			13			13		
	Corridor Display Cases & Display Boards: Tackboard (7'-6"x8")		2			2			2		
	DISPLAY BOARD 10'x 0'-8"		1			1			1		
	DISPLAY BOARD 10'x 2'-8"		10			10			10		
	DISPLAY BOARD 10'x 4'		6			6			6		
	DISPLAY BOARD 12'x 1'		1			1			1		
	DISPLAY BOARD 12'x 2'-9"		2			2			2		
	DISPLAY BOARD 12'x 4'		7			7			7		
	DISPLAY BOARD 3'x 3'-8"		6			6			6		
	DISPLAY BOARD 4'x 4'		21			21			21		

Detail by Trade

			Study Basecase			Option 1			Option 2		
Code	Description	Unit Cost	Quantity	Unit	Amount	Quantity	Unit	Amount	Quanitity	Unit	Amount
	DISPLAY BOARD 5'-2"x 0'-8"		4			4			4		
	DISPLAY BOARD 5'x 0'-8"		2			2			2		
	DISPLAY BOARD 5'x 4'		9			9			9		
	DISPLAY BOARD 6'x 3'		5			5			5		
	DISPLAY BOARD 6'x 4'		13			13			13		
	DISPLAY BOARD 7'-6"x 0'-8"		4			4			4		
	DISPLAY BOARD 7'x 4'		6			6			6		
	DISPLAY BOARD 8'x 0'-8"		2			2			2		
	DISPLAY BOARD 8'x 2'-8"		2			2			2		
	DISPLAY BOARD 8'x 4'		9			9			9		
	Fire extinguisher and fire extinguisher cabinets		14			14			14		
	FUME HOOD DUCTED W/ STORAGE CABINET-ADA W/ MOBILE FLAMMABLE STORAGE CABINET 72"x36"x81" (fume Hood w mep)		36			36			36		
	GLASSWARE DRYING RACK 20"x30"		21			21			21		
	GLAZED DISPLAY CABINET 4'x4'-8"		1			1			1		
	Glazed display cabinet 8' x 4'-6"		4			4			4		
	Glazed display case 4' x 4'-6"		3			3			3		
	HAT/COAT RACK 48"x12"x12"		2			2			2		
	Janitor's closet accessories: Mop and Broom rack (34"x8"x15")		6			6			6		
	Janitor's closet accessories: Paper towel dispenser		6			6			6		
	LOCKER FURN/BENCH		21			21			21		
	LOCKER W MIRROR 18"x21"x72"		21			21			21		
	MARKERBOARD 10'-0" x 4'-0"		1			1			1		
	MARKERBOARD 12'x 4'		1			1			1		
	MARKERBOARD 4'-0" x 4'-0"		2			2			2		
	MARKERBOARD 5'x 4'		2			2			2		
	MARKERBOARD 6'-0" x 4'-0"		4			4			4		
	MARKERBOARD 8'-0" x 4'-0"		5			5			5		
	METAL LOCKER (FOUR TIER) 12"x15"x72"		8			8			8		
	Metal locker/single tier (12"x21"x72")		97			97			97		
	METAL LOCKER (SIX STACKED) 12"x15"x72"		143			143			143		
	Metal locker (two-tier) (15"x18"x78") at corridor		124			124			124		
	METAL SHELVING (TYPE A) 12"x 12"x 87"		6			6			6		
	METAL SHELVING (TYPE B1 & B2) 18"x 12"x 87"		8			8			8		
	METAL SHELVING (TYPE B, H) 36"x 18"x 87"		70			70			70		
	Metal shelving Type D 24x12x87		46			46			46		
	METAL SHELVING (TYPE E) 30"x 12"x 87"		137			137			137		
	Miscellaneous Accessories at classrooms, art room, Library: Liquid soap dispenser - countertop mounted		35			35			35		
	Miscellaneous Accessories at classrooms, art room, Library: Paper Towel Dispenser Surface Mtd		35			35			35		
	MUSIC EQPT. / CELLO STORAGE RACK 49 3/4"x24"x47"		1			1			1		
	MUSIC EQPT. / INSTRUMENT STORAGE 27"x40"x84"		14			14			14		
	MUSIC EQPT. / STRING BASS RACK 80 5/8"x26"x60"		1			1			1		
	RFP wall panels at kitchen		1,971			1,971			1,971		
	SHELF 48"x12"		16			16			16		

Detail by Trade

			Study Basecase			Option 1			Option 2		
Code	Description	Unit Cost	Quantity	Unit	Amount	Quantity	Unit	Amount	Quanitity	Unit	Amount
	Single Restroom Accessories: ADA \Grab bars (3 ea) @ Kindergarten classrooms Restroom Accessories		19			19			19		
	Single Restroom Accessories: Mirror (18"x36") @ Kindergarten classrooms Restroom Accessories		19			19			19		
	Single Restroom Accessories: Paper towel dispenser/waste dispenser @ Kindergarten classrooms Restroom Accessories		19			19			19		
	Single Restroom Accessories: Soap Dispenser @ Kindergarten classrooms Restroom Accessories		19			19			19		
	Single Restroom Accessories: Toilet paper dispenser @ Kindergarten classrooms Restroom Accessories		19			19			19		
	'Steel Storage cabinet (24"x15"x72")		8			8			8		
	STORAGE CABINET 36" x 24" x 78"		8			8			8		
	Storage closet - shelving (2'-4"x2')		19			19			19		
	STORAGE CLOSET - SHELVING 2' 8"x 2'		18			18			18		
	Storage closet - shelving (4'-4"x2')		1			1			1		
	STORAGE CLOSET - SHELVING 5'x 2'		13			13			13		
	STORAGE UNIT-DISPLAY CABINET 36" x 22" x 82 3/4"		9			9			9		
	STORAGE UNIT-DISPLAY CABINET 48" x 22" x 82 3/4"		36			36			36		
	TACKBOARD 2'6"x4'		1			1			1		
	Wall Protection Mat/Wall pads (2'x2"x6'8") in Gym		534			534			534		
	Wall Protection Mat/Wall pads (2'x2"x6') in Exercise room		504			504			504		
	WOODWORKER'S VISE		1			1			1		
	WORKBENCH CABINET BASE 60"x30"		10			10			10		
	Work bench w locker base		16			16			16		
	EQUIPMENT										
	Bike storage - storage equipment		1			1			1		
	Exercise room/gym equipment (Backstop stationery type, ceiling suspended, wall braced main court goal - (Basketball), Dance barre, Proscenium balance, Rear cyclorama curtain, Border, etc)		1			1			1		
	Kitchen/food service equipment (Reach-in freezer,Reach-in refregerator, dbl. deck combi oven, steamer, water dispenser, self server salad bar, etc)		1			1			1		
	Microwave (17"x22"x13")		1			1			1		
	Refrigerator (34"x30"24")		1			1			1		
	Refuse/recycling Room (waste handling equipment)		1			1			1		
	FURNISHINGS										
	Curtain and track in Medical suite		21			21			21		
	Five (5) tier bleachers (27'x10') at Gym		1			1			1		
	Folding partition w/ 2 electrical pocket doors at Gymnasium, 78lf		1			1			1		
	Manually operated window shades		7,820			7,820			7,820		
	Telescoping seatings at the gym		185			185			185		
	CONVEYING SYSTEMS										
	Cab fit-out		2			2			2		

Detail by Trade

			Study Basecase			Option 1			Option 2		
Code	Description	Unit Cost	Quantity	Unit	Amount	Quantity	Unit	Amount	Quanitity	Unit	Amount
	Hydraulic vertical wheelchair lift at gym, 2 stops		1			1			1		
	Passenger elevators w/ 2 cabs - 6- stops		1			1			1		
	MECHANICAL - FIRE PROTECTION										
	Equipment: Sprinkler booster pump - 25 hp, 500 gpm		1			1			1		
	Other: Clean, flush and test		1			1			1		
	Other: Commissioning		1			1			1		
	Other: Core drill, patching, fire stopping					1					
	Other: Core drill, patching, fire stopping		1						1		
	Other: Design calculations		1			1			1		
	Other: Equipment handling and material distribution		1			1			1		
	Other: Painting standpipe and sprinkler pipe					1					
	Other: Painting standpipe and sprinkler pipe		1						1		
	Other: Remove temporary standpipe and loop					1					
	Other: Remove temporary standpipe and loop		1						1		
	Other: Shop co-ordination drawings		1			1			1		
	Other: Supports		1			1			1		
	Other: System ID, labels and color coding		1			1			1		
	Other: Temporary standpipe and loop					1					
	Other: Temporary standpipe and loop		1						1		
	Wet Sprinkler System: 1-1/2" dia pipe (Black steel, Sch-40) / fittings / supports		2,330			2,330			2,330		
	Wet Sprinkler System: 1-1/4" Check valve		1			1			1		
	Wet Sprinkler System: 1-1/4" dia pipe (Black steel, Sch-40) / fittings / supports		10			10			10		
	Wet Sprinkler System: 1-1/4" OS&Y gate valve with tamper switch		1			1			1		
	Wet Sprinkler System: 1" dia pipe (Black steel, Sch-40) / fittings / supports		9,440			9,440			9,440		
	Wet Sprinkler System: 2-1/2" dia fire hose valve		1			1			1		
	Wet Sprinkler System: 2-1/2" dia fire hose valve in cabinet		16			16			16		
	Wet Sprinkler System: 2-1/2" dia pipe (Black steel, Sch-40) / fittings / supports		70			70			70		
	Wet Sprinkler System: 2" dia drain pipe (Black steel, Sch-40) / fittings / supports		60			60			60		
	Wet Sprinkler System: 2" dia pipe (Black steel, Sch-40) / fittings / supports		2,240			2,240			2,240		
	Wet Sprinkler System: 3" dia pipe (Black steel, Sch-40) / fittings / supports		90			90			90		
	Wet Sprinkler System: 4" Check valve		1			1			1		
	Wet Sprinkler System: 4" dia pipe (Black steel, Sch-40) / fittings / supports		3,000			3,000			3,000		
	Wet Sprinkler System: 4" Floor control valve assembly with tamper switch					6					
	Wet Sprinkler System: 4" Floor control valve assembly with tamper switch		6						6		

Detail by Trade

			Study Basecase			Option 1			Option 2		
Code	Description	Unit Cost	Quantity	Unit	Amount	Quantity	Unit	Amount	Quanitity	Unit	Amount
	Wet Sprinkler System: 4" Post indicator valve		1			1			1		
	Wet Sprinkler System: 4" Riser control valve with tamper switch		4			4			4		
	Wet Sprinkler System: 6" Alarm check valve assembly		1			1			1		
	Wet Sprinkler System: 6" Check valve		3			3			3		
	Wet Sprinkler System: 6" Check valve with automatic ball drip		4			4			4		
	Wet Sprinkler System: 6" dia pipe (Black steel, Sch-40) / fittings / supports		930			930			930		
	Wet Sprinkler System: 6" Flow meter		1			1			1		
	Wet Sprinkler System: 6" OS&Y gate valve with tamper switch		8			8			8		
	Wet Sprinkler System: 6"x3"x3" Siamese connection					4					
	Wet Sprinkler System: 6"x3"x3" Siamese connection		4						4		
	Wet Sprinkler System: Concealed sprinkler head		939			939			939		
	Wet Sprinkler System: Dry semi- recessed sprinkler head		2			2			2		
	Wet Sprinkler System: Dry sidewall sprinkler head		5			5			5		
	Wet Sprinkler System: Locked storage fire department cabinet		1			1			1		
	Wet Sprinkler System: Other valves and specialties (small size)					1					
	Wet Sprinkler System: Other valves and specialties (small size)		1						1		
	Wet Sprinkler System: Pressure gauge		7			7			7		
	Wet Sprinkler System: Pump test header		1			1			1		
	Wet Sprinkler System: Roof manifold		1			1			1		
	Wet Sprinkler System: Sprinkler guards		1			1			1		
	Wet Sprinkler System: Upright sprinkler head		183			183			183		
	MECHANICAL - PLUMBING & DRAINAGE										
	Acid Waste and Vent: 2" dia pipe (Polypropylene, acid resistan, sch-40) / fittings / supports		1,920			1,920			1,920		
	Acid Waste and Vent: 3" dia pipe (Polypropylene, acid resistan, sch-40) / fittings / supports		580			580			580		
	Acid Waste and Vent: 4" AVTR		4			4			4		
	Acid Waste and Vent: 4" dia pipe (Polypropylene, acid resistan, sch-40) / fittings / supports		460			460			460		
	Acid Waste and Vent: Clean out		30			30			30		
	Domestic Water: 1-1/4" - 1-1/2" dia pipe (Copper-L) / fittings / supports		2,480			2,480			2,480		
	Domestic Water: 1/2" - 3/4" dia pipe (Copper-L) / fittings / supports		6,540			6,540			6,540		
	Domestic Water: 1" dia pipe (Copper-L) / fittings / supports		2,230			2,230			2,230		
	Domestic Water: 2-1/2" dia pipe (Copper-L) / fittings / supports		420			420			420		
	Domestic Water: 2" dia pipe (Copper-L) / fittings / supports		2,640			2,640			2,640		
	Domestic Water: 2" Sub-meter		1			1			1		
	Domestic Water: 3" dia pipe (Copper-L) / fittings / supports		580			580			580		
	Domestic Water: 4" dia Incoming water service requirements		1			1			1		

Detail by Trade

			Study Basecase			Option 1			Option 2		
Code	Description	Unit Cost	Quantity	Unit	Amount	Quantity	Unit	Amount	Quanitity	Unit	Amount
	Domestic Water: 4" dia pipe (Copper-L) / fittings / supports		160			160			160		
	Domestic Water: 4" dia RPZ		2			2			2		
	Domestic Water: 6" dia DCDA		1			1			1		
	Domestic Water: 6" dia Incoming water service requirements		1			1			1		
	Domestic Water: 6" dia pipe (Black steel, Sch-40) / fittings / supports		40			40			40		
	Domestic Water: Domestic water pipe insulation		15,090			15,090			15,090		
	Domestic Water: Hose bibb		24			24			24		
	Domestic Water: Wall hydrant (frost proof)		2			2			2		
	Domestic Water: Water hammer arrestor		214			214			214		
	Domestic Water: Water meter 4" dia		1			1			1		
	Equipment: Boiler condensate neutralization tubes		4								
	Equipment: Centralized acid neutralization system (incl. pH monitoring and alarm system)					1					
	Equipment: Centralized acid neutralization system (incl. pH monitoring and alarm system)		1						1		
	Equipment: Circulation pump (Bell and Gossett, series 60) - 12 gpm, 1/4 hp		1			1			1		
	Equipment: Circulation pump (Bell and Gossett, series PR) - 7 gpm, 1/6 hp		1			1			1		
	Equipment: Domestic water filtration system		1			1			1		
	Equipment: Duplex domestic water booster pump - (2) 200 gpm, 7.5 hp		1			1			1		
	Equipment: Duplex gas booster - 7000 cfh		1								
	Equipment: Duplex sewage ejector - 100 gpm, 2 hp					1			1		
	Equipment: Duplex sewage ejector - 150 gpm, 2 hp		1								
	Equipment: Electric hot water heat pump (Lochinvar CHPA120PD) - 120 gal, 11.13 kw		3			2			2		
	Equipment: Expansion tank		1			1			1		
	Equipment: Grease interceptor - 150 gpm, 300 lbs		1			1			1		
	Equipment: Grease interceptor - 15 gpm, 30 lbs		1			1			1		
	Equipment: Grease interceptor - 20 gpm, 40 lbs		1			1			1		
	Equipment: Grease interceptor - 35 gpm, 70 lbs		2			2			2		
	Equipment: Hook-up equipment		1			1			1		
	Equipment: Submersible elevator sump pump - 50 gpm, 1/2 hp		1			1			1		
	Ice maker - plumbing connections only		3			3			3		
	Kitchen Plumbing and Connections: Direct drain connection		4			4			4		
	Kitchen Plumbing and Connections: Fixtures rough-In		4			4			4		
	Kitchen Plumbing and Connections: Floor sink		5			5			5		
	Kitchen Plumbing and Connections: H/C water connection		29			29			29		
	Kitchen Plumbing and Connections: Indirect drain connection		17			17			17		
	Kitchen Plumbing and Connections: Kitchen hand sink		5			5			5		
	Kitchen Plumbing and Connections: Wall carrier @ Kitchen hand sink		5			5			5		

Detail by Trade

			Study Basecase			Option 1			Option 2		
Code	Description	Unit Cost	Quantity	Unit	Amount	Quantity	Unit	Amount	Quanitity	Unit	Amount
	Natural Gas: 2" dia vent pipe (Black steel, sch-40) / fittings / supports		40								
	Natural Gas: 4" dia pipe (Black steel, Sch-40) / fittings / supports		40								
	Natural Gas: 6" dia pipe (Black steel, Sch-40) / fittings / supports		240								
	Natural Gas: Connection to boiler with pressure regulator and shut-off valve		2								
	Natural Gas: Gas meter / Regulator - furnish only		1								
	Natural Gas: Maxon valve		1								
	Natural Gas: Painting piping		280								
	Natural Gas: Shaft vent 6" dia cast iron gooseneck		1								
	Natural Gas: X-ray testing for 3" dia and large gas welding pipe		1								
	Other: Access door		1			1			1		
	Other: Clean, flush and test					1			1		
	Other: Clean, flush and test		1								
	Other: Core drill, patching, fire stopping		1			1			1		
	Other: Disinfection		1			1			1		
	Other: Equipment and pipe supports		1			1			1		
	Other: Equipment handling and material distribution		1			1			1		
	Other: Make-up water requirements (Mechanical room)		1			1			1		
	Other: Penetrations and sleeves		1			1			1		
	Other: Seismic restraints and pipe seismic joints					1			1		
	Other: Seismic restraints and pipe seismic joints		1								
	Other: Shop co-ordination drawings		1			1			1		
	Other: System ID / Valve tags		1			1			1		
	Other: System validate / Certification		1			1			1		
	Other: Vibration isolation		1			1			1		
	Plumbing Fixtures: Acid room sink					3			3		
	Plumbing Fixtures: Art room sink, with sediment trap					2			2		
	Plumbing Fixtures: Classroom sink					9			9		
	Plumbing Fixtures: Drinking fountain - wall mounted, barrier free					11			11		
	Plumbing Fixtures: Drinking fountain, wall mounted, with bottle filler, barrier free					11			11		
	Plumbing Fixtures: Emergency shower					3			3		
	Plumbing Fixtures: Fixtures rough-In					224			224		
	Plumbing Fixtures: Fixtures rough-In		224								
	Plumbing Fixtures: Lab fixed fume hood sink trim					5			5		
	Plumbing Fixtures: Lavatory (counter mounted)					34			34		
	Plumbing Fixtures: Lavatory (wall hung)					27			27		
	Plumbing Fixtures: Library room sink - barrier free					2			2		
	Plumbing Fixtures: Milk disposal sink					2			2		
	Plumbing Fixtures: Mop sink					6			6		
	Plumbing Fixtures: Music storage room sink					1			1		
	Plumbing Fixtures: P-10 - Wash fountain 3-station - barrier free		3								
	Plumbing Fixtures: P-11 - Art room sink, with sediment trap		2								

Detail by Trade

			Study Basecase			Option 1			Option 2		
Code	Description	Unit Cost	Quantity	Unit	Amount	Quantity	Unit	Amount	Quanitity	Unit	Amount
	Plumbing Fixtures: P-12 / P-12A - Milk disposal sink		2								
	Plumbing Fixtures: P-13A - Science prep room & sciencedemo room sink - barrier free		7								
	Plumbing Fixtures: P-13 - Science prep room & sciencedemo room sink		9								
	Plumbing Fixtures: P-14 - Library room sink - barrier free		2								
	Plumbing Fixtures: P-15 - Science teacher's demo table sink		2								
	Plumbing Fixtures: P-16 - Science teacher's table sink		4								
	Plumbing Fixtures: P-17A - Science student sink - barrier free		3								
	Plumbing Fixtures: P-17 - Science student sink		9								
	Plumbing Fixtures: P-18 - Emergency shower wash trim		3								
	Plumbing Fixtures: P-19 - Acid room sink		3								
	Plumbing Fixtures: P-1A - Water closet (wall hung) - barrier free		32								
	Plumbing Fixtures: P-1 - Water closet (wall hung)		16								
	Plumbing Fixtures: P-20 - Lab fixed fume hood sink trim		5								
	Plumbing Fixtures: P-21 - Trifacial lab table - plumbing connection only		9								
	Plumbing Fixtures: P-22 - Refuse / Recycle room sink		1								
	Plumbing Fixtures: P-2A - Urinal (wall hung) - barrier free		6								
	Plumbing Fixtures: P-3A - Lavatory (counter mounted)		34								
	Plumbing Fixtures: P-4A - Lavatory (wall hung)		27								
	Plumbing Fixtures: P-5A - Drinking fountain, wall mounted, with bottle filler, barrier free		11								
	Plumbing Fixtures: P-5 - Drinking fountain - wall mounted, barrier free		11								
	Plumbing Fixtures: P-6 - Mop sink		6								
	Plumbing Fixtures: P-7 - Classroom sink		9								
	Plumbing Fixtures: P-8 / P-8A - Shower - trim only		7								
	Plumbing Fixtures: P-9 - Music storage room sink		1								
	Plumbing Fixtures: Refuse / Recycle room sink					1			1		
	Plumbing Fixtures: Science prep room & science demo room sink					9			9		
	Plumbing Fixtures: Science prep room & science demo room sink - barrier free					7			7		
	Plumbing Fixtures: Science student sink					9			9		
	Plumbing Fixtures: Science student sink - barrier free					3			3		
	Plumbing Fixtures: Science teacher's demo table sink					5			5		
	Plumbing Fixtures: Science teacher's table sink					4			4		
	Plumbing Fixtures: Shower - trim only					7			7		
	Plumbing Fixtures: Trifacial lab table - plumbing connection only					9			9		
	Plumbing Fixtures: Urinal (wall hung) - barrier free					6			6		
	Plumbing Fixtures: Wall carrier		103			103			103		

Detail by Trade

			Study Basecase			Option 1			Option 2		
Code	Description	Unit Cost	Quantity	Unit	Amount	Quantity	Unit	Amount	Quanitity	Unit	Amount
	Plumbing Fixtures: Wash fountain 3- station - barrier free					3			3		
	Plumbing Fixtures: Water closet (wall hung)					16			16		
	Plumbing Fixtures: Water closet (wall hung) - barrier free					32			32		
	Sanitary Waste and Vent: 2" dia pipe (Cast iron, B&S) / fittings / supports		340			340			340		
	Sanitary Waste and Vent: 2" dia pipe (Cast iron, no hub) / fittings / supports		5,720			5,720			5,720		
	Sanitary Waste and Vent: 3" CODP		19			19			19		
	Sanitary Waste and Vent: 3" dia PD pipe (Black steel, sch-40) / fittings / supports		60			60			60		
	Sanitary Waste and Vent: 3" dia pipe (Cast iron, B&S) / fittings / supports		580			580			580		
	Sanitary Waste and Vent: 3" dia pipe (Cast iron, no hub) / fittings / supports		1,640			1,640			1,640		
	Sanitary Waste and Vent: 3" FAI		2			2			2		
	Sanitary Waste and Vent: 4" CODP		10			10			10		
	Sanitary Waste and Vent: 4" dia pipe (Cast iron, B&S) / fittings / supports		620			620			620		
	Sanitary Waste and Vent: 4" dia pipe (Cast iron, no hub) / fittings / supports		1,280			1,280			1,280		
	Sanitary Waste and Vent: 4" VTR		7			7			7		
	Sanitary Waste and Vent: 6" dia pipe (Cast iron, no hub) / fittings / supports		140			140			140		
	Sanitary Waste and Vent: Clean out		44			44			44		
	Sanitary Waste and Vent: Excavation and backfill @ Undergroung pipe		1,540			1,540			1,540		
	Sanitary Waste and Vent: Floor drain 3" dia - toilets, janitor closets		45			45			45		
	Sanitary Waste and Vent: Floor drain 4" dia - mech. room		12			12			12		
	Sanitary Waste and Vent: House trap - 6" dia		1			1			1		
	Storm Water: 4" clean out (tee and plug)		18			18			18		
	Storm Water: 4" dia pipe (Cast iron, no hub) / fittings / supports		570			570			570		
	Storm Water: 4" Roof drain		15			15			15		
	Storm Water: 6" clean out (tee and plug)		7			7			7		
	Storm Water: 6" dia pipe (Cast iron, no hub) / fittings / supports		620			620			620		
	Storm Water: 8" clean out (tee and plug)		7			7			7		
	Storm Water: 8" CODP		2			2			2		
	Storm Water: 8" dia pipe (Cast iron, no hub) / fittings / supports		240			240			240		
	Storm Water: Storm water pipe insulation		1,430			1,430			1,430		
	Trap primer valve		13			13			13		
	Valves and specialties (incl. TMV)					1			1		
	Valves and specialties (incl. TMV)		1								
	MECHANICAL - HEATING, VENTILATING AND AIR CONDITIONING										
	Air-cooled package modular chiller: CH-1 236.8 tons		237								
	Air handling units: AHU-1 (Classrooms) - 12420 cfm with energy recovery wheel and sensible reheat wheel		1								

Detail by Trade

			Study Basecase			Option 1			Option 2		
Code	Description	Unit Cost	Quantity	Unit	Amount	Quantity	Unit	Amount	Quanitity	Unit	Amount
	Air handling units: AHU-1 (Classrooms) - 15825 cfm, with enthalpy wheel, sensible wheel, 578 mbh DX cooling, electric heater					1					
	Air handling units: AHU-1 (Classrooms) - 9700 cfm, with enthalpy wheel, sensible wheel, 342 mbh DX cooling, electric heater								1		
	Air handling units: AHU-2 (Classrooms) - 15015 cfm, with enthalpy wheel, sensible wheel, 542 mbh DX cooling, electric heater					1					
	Air handling units: AHU-2 (Classrooms) - 15385 cfm with energy recovery wheel and sensible reheat wheel		1								
	Air handling units: AHU-2 (Gymatorium) - 8950 cfm, with enthalpy wheel, sensible wheel, 356 mbh DX cooling,electric heater								1		
	Air handling units: AHU-3 (Café / Kitchen) - 6825 cfm, with 323 mbh DX cooling, electric heater								1		
	Air handling units: AHU-3 (Classrooms) - 15455 cfm, with enthalpy wheel, sensible wheel, 565 mbh DX cooling, electric heater					1					
	Air handling units: AHU-3 (Gymatorium) - 4825 cfm with energy recovery wheel and sensible reheat wheel		1								
	Air handling units: AHU-4 (Café / Kitchen) 6825 cfm		1								
	Air handling units: AHU-4 (Classrooms) - 15180 cfm, with enthalpy wheel, sensible wheel, 555 mbh DX cooling, electric heater					1					
	Air handling units: AHU-5 (Gymatorium) - 8950 cfm, with enthalpy wheel, sensible wheel, 356 mbh DX cooling,electric heater					1					
	Air handling units: AHU-6 (Café / Kitchen) - 6825 cfm, with 323 mbh DX cooling, electric heater					1					
	Air handling units condensing units: AHU-ACCU - 119700 btu/h cooling, 135000 btu/h heating					6			6		
	Air handling units: VFD (12 ea) @ AHUs - furnish only								77		
	Air handling units: VFD (28 ea) @ AHUs - furnish only					269					
	Air handling units: VFD @ AHUs - furnish only		230								
	Air separators with strainer: AS-1 - 4" dia pipe		1								
	Air separators with strainer: AS-2 - 3" dia pipe		1								
	Air separators with strainer: AS-3 - 6" dia pipe		1								
	Air Side System: 12" dia combustion air intake		40								
	Air Side System: 12" dia stainless steel double wall boiler flue with insulation		36								
	Air Side System: 48x24" exhaust grille		2			2			2		
	Air Side System: 48x48" exhaust grille		1			1			1		
	Air Side System: 6" dia double wall emergency generator flue with insulation		60			60			60		
	Air Side System: Air devices		548			510			442		
	Air Side System: Backdraft damper					6			6		
	Air Side System: Barometric damper		2								
	Air Side System: Black iron 12 ga duct @ Kitchen exhaust hood		2,380			2,380			2,380		

Detail by Trade

			Study Basecase			Option 1			Option 2		
Code	Description	Unit Cost	Quantity	Unit	Amount	Quantity	Unit	Amount	Quanitity	Unit	Amount
	Air Side System, CAV box: CAV box - 1500 cfm					1					
	Air Side System, CAV box: CAV box - 1500 cfm								1		
	Air Side System, CAV box: CAV box - 265 cfm		1								
	Air Side System: CAV box: CAV box - 355 - 580 cfm								3		
	Air Side System, CAV box: CAV box - 355 cfm					1					
	Air Side System, CAV box: CAV box - 360 - 520 cfm		5								
	Air Side System, CAV box: CAV box - 600 cfm					1					
	Air Side System, CAV box: CAV box - 700 - 1200 cfm								6		
	Air Side System, CAV box: CAV box - 750 - 800 cfm		6								
	Air Side System: CAV box: CAV box - 800 - 1050 cfm					7					
	Air Side System, CAV box: Sound trap @ CAV box		12			10			10		
	Air Side System: Clean out doors		6						6		
	Air Side System: Duct connection @ Lab hoods		6			6			6		
	Air Side System: Duct mounted silencer		131,270			154,500			47,280		
	Air Side System: Duct smoke detector housing - install only		75			62			36		
	Air Side System, Fan powered box: FPB box with electric heating coil - 1200 - 1250 cfm		3								
	Air Side System: Fan powered box: FPB box with electric heating coil - 1200 - 1250 cfm					3					
	Air Side System, Fan powered box: FPB box with electric heating coil - 550 - 600 cfm		3								
	Air Side System: Fan powered box: FPB box with electric heating coil - 550 - 600 cfm					3					
	Air Side System, Fan powered box: Sound trap @ VAV fan powered box		6								
	Air Side System: Fan powered box: Sound trap @ VAV fan powered box					6					
	Air Side System: Fire damper (21 ea)								16		
	Air Side System: Fire damper (22 ea)					20					
	Air Side System: Fire damper (94 ea)		130								
	Air Side System: Fire smoke damper (38 ea)								133		
	Air Side System: Fire smoke damper (55 ea)					212					
	Air Side System: Fire smoke damper (71 ea)		226								
	Air Side System: Flexible connections @ Equipment					1					
	Air Side System: Flexible connections @ Equipment		1						1		
	Air Side System: Galvanized steel duct		140,840			138,440			98,130		
	Air Side System: Gravity damper (10 ea)		9								
	Air Side System: Kitchen hood with fire suppression		1			1			1		
	Air Side System: Linear diffuser with plenum		12			20			20		
	Air Side System: Motorized damper (17 ea)					48			48		
	Air Side System: Motorized damper (22 ea)		126								

Detail by Trade

			Study Basecase			Option 1			Option 2		
Code	Description	Unit Cost	Quantity	Unit	Amount	Quantity	Unit	Amount	Quanitity	Unit	Amount
	Air Side System: Smoke damper (2 ea)		28								
	Air Side System: Smoke damper (6 ea)					79					
	Air Side System: VAV box: Sound trap @ VAV box					77			13		
	Air Side System: VAV box: VAV box - 1300 - 1400 cfm		7								
	Air Side System: VAV box: VAV box - 1300 - 1500 cfm					5					
	Air Side System: VAV box: VAV box - 140 - 315 cfm								8		
	Air Side System: VAV box: VAV box - 1700 - 1800 cfm		2								
	Air Side System: VAV box: VAV box - 1720 - 1965 cfm					4					
	Air Side System: VAV box: VAV box - 1800 cfm								1		
	Air Side System: VAV box: VAV box - 350 - 650 cfm					14					
	Air Side System: VAV box: VAV box - 360 - 685 cfm		15								
	Air Side System: VAV box: VAV box - 430 - 540 cfm								2		
	Air Side System: VAV box: VAV box - 700 - 1200 cfm		30								
	Air Side System: VAV box: VAV box - 700 - 1225 cfm					36					
	Air Side System: VAV box: VAV box - 75 - 300 cfm		26								
	Air Side System: VAV box: VAV box - 75 - 325 cfm					18					
	Air Side System: VAV box: VAV box - 780 - 805 cfm								2		
	Air Side System: Volume damper		496			460			386		
	Air Side System: WMS - Wire mesh screen		6								
	Condensate drain pipe @ Split-type heat pump unit: 1" dia pipe (Copper-L) / fittings / supports		550								
	Condensate drain pipe with insulation @ RTU unit		4								
	Dedicated outdoor air energy recovery unit (manufacturer Daikin): DOAS-1 - 1800 cfm								1		
	Electrical air curtain: ARC - 2964 cfm, 28 kw					5			5		
	Electrical baseboard heater with enclosure: EBD-A - 60"x6"x2-1/2"					31			99		
	Electrical baseboard heater with enclosure: EBD-B - 120"x6"x2-1/2"					112			29		
	Electrical baseboard heater with enclosure: EBD-C - 36"x6"x2-1/2"					3			9		
	Electrical cabinet unit heaters: CUH - 185 cfm, 3 kw, ceiling recessed					21			21		
	Electrical cabinet unit heaters: CUH - 230 cfm, 5 kw, ceiling recessed					28			29		
	Electrical convectors: CONV - 60" length, wall recessed type					18			18		
	Electrical unit heaters: CUH - 350 cfm, 7.5 kw					1			1		
	Electrical unit heaters: EUH - 350 cfm, 5 kw					8			8		
	Electric unit heaters: EUH - 5.0 kw (Qmark MUH-05)		4								
	Exhaust fans: 24" high prefabricated roof curb @ Roof mounted fans		16			12			12		
	Exhaust fans: EF-10 - 100 cfm (Greenheck GB-097-3)		1			1			1		

Detail by Trade

			Study Basecase			Option 1			Option 2		
Code	Description	Unit Cost	Quantity	Unit	Amount	Quantity	Unit	Amount	Quanitity	Unit	Amount
	Exhaust fans: EF-11 - 125 cfm (Greenheck SP-A390-VG)		1								
	Exhaust fans: EF-12 - 950 cfm (Greenheck SP-A1050-VG)		1								
	Exhaust fans: EF-13 - 150 cfm (Greenheck USF-06)		1								
	Exhaust fans: EF-14 - 200 cfm (Greenheck SP-A390-VG)		1								
	Exhaust fans: EF-1 - 475 cfm (Greenheck CSP-A710-VG)		1								
	Exhaust fans: EF-1 - 475 cfm (Greenheck CSP-A710-VG)					1			1		
	Exhaust fans: EF-15 - 400 cfm (Greenheck CSP-A710-VG)		1								
	Exhaust fans: EF-16 - 735 cfm (Greenheck SQ-120HP-VG)		1								
	Exhaust fans: EF-17 - 50 cfm (Greenheck G-098-VG)		1								
	Exhaust fans: EF-18 - 50 cfm (Greenheck G-098-VG)		1								
	Exhaust fans: EF-19 - 50 cfm (Greenheck G-098-VG)		1								
	Exhaust fans: EF-2 - 525 cfm (Greenheck CSP-A710-VG)		1								
	Exhaust fans: EF-2 - 525 cfm (Greenheck CSP-A710-VG)					1			1		
	Exhaust fans: EF-3 - 475 cfm (Greenheck SP-A700-VG)		1								
	Exhaust fans: EF-3 - 475 cfm (Greenheck SP-A700-VG)					1			1		
	Exhaust fans: EF-4 - 175 cfm (Greenheck SP-A700-VG)		1								
	Exhaust fans: EF-4 - 475 cfm (Greenheck SP-A700-VG)					1			1		
	Exhaust fans: EF-5 - 770 cfm (Greenheck USF-10)		1								
	Exhaust fans: EF-5 - 770 cfm (Greenheck USF-10)					1			1		
	Exhaust fans: EF-6 - 225 cfm (Greenheck USF-06)		1								
	Exhaust fans: EF-6 - 225 cfm (Greenheck USF-06)					1			1		
	Exhaust fans: EF-7 - 150 cfm (Greenheck SP-A390-VG)		1			1			1		
	Exhaust fans: EF-8 - 1400 cfm (Greenheck GB-130-3)		1			1			1		
	Exhaust fans: EF-9 - 200 cfm (Greenheck GB-097-3)		1			1			1		
	Exhaust fans: FHE-1 - 1150 cfm (Greenheck Vektor H-10)		1								
	Exhaust fans: FHE-1 - 1150 cfm (Greenheck Vektor H-10)					1			1		
	Exhaust fans: FHE-2 - 750 cfm (Greenheck Vektor H-10)		1								
	Exhaust fans: FHE-2 - 750 cfm (Greenheck Vektor H-10)					1			1		
	Exhaust fans: FHE-3 - 750 cfm (Greenheck Vektor H-10)		1								
	Exhaust fans: FHE-3 - 750 cfm (Greenheck Vektor H-10)					1			1		
	Exhaust fans: FHE-4 - 1150 cfm (Greenheck Vektor H-10)		1								
	Exhaust fans: FHE-4 - 1150 cfm (Greenheck Vektor H-10)					1			1		
	Exhaust fans: FHE-5 - 1150 cfm (Greenheck Vektor H-10)		1								
	Exhaust fans: FHE-5 - 1150 cfm (Greenheck Vektor H-10)					1			1		
	Exhaust fans: FHE-6 - 750 cfm (Greenheck Vektor H-10)		1								

Detail by Trade

			Study Basecase			Option 1			Option 2		
Code	Description	Unit Cost	Quantity	Unit	Amount	Quantity	Unit	Amount	Quanitity	Unit	Amount
	Exhaust fans: FHE-6 - 750 cfm (Greenheck Vektor H-10)					1			1		
	Exhaust fans: KEF-1 - 3650 cfm (Greenheck CUBE-300XP-30)		1								
	Exhaust fans: KEF-1 - 3650 cfm (Greenheck CUBE-300XP-30)					1			1		
	Exhaust fans: KEF-2 - 1650 cfm (Greenheck USF-15)		1								
	Exhaust fans: KEF-2 - 1650 cfm (Greenheck USF-15)					1			1		
	Exhaust fans: KEF-3 - 125 cfm (Greenheck USF-04)		1								
	Exhaust fans: KEF-3 - 125 cfm (Greenheck USF-04)					1			1		
	Exhaust fans: KEF-4 - 300 cfm (Greenheck CSP-A710-VG)		1			1			1		
	Exhaust fans: SPF-1 - 20250 cfm		1								
	Exhaust fans: SPF-1 - 20250 cfm					1			1		
	Exhaust fans: SPF-2 - 26000 cfm		1								
	Exhaust fans: SPF-2 - 26000 cfm					1			1		
	Exhaust fans: TEF-1 - 4150 cfm (Greenheck GB-220HP-30)		1								
	Exhaust fans: TEF-1 - 4150 cfm (Greenheck GB-220HP-30)					1			1		
	Exhaust fans: TEF-2 - 75 cfm (Greenheck SP-A390-VG)		1								
	Exhaust fans: TEF-2 - 75 cfm (Greenheck SP-A390-VG)					1			1		
	Exhaust fans: TEF-3 - 150 cfm (Greenheck GB-097-3)					1			1		
	Expansion tanks: ET-1 (hot water system - primary) - 53 gal		1								
	Expansion tanks: ET-2 (hot water loop - secondary) - 53 gal		1								
	Expansion tanks: ET-3 (chilled water loop) - 53 gal		1								
	Fin-tube radiators: FTR element		873								
	Fin-tube radiators: FTR enclosure		1,584								
	Gas fired hot water condensing boilers: B-1 - 3185 mbh output		1								
	Gas fired hot water condensing boilers: B-2 - 3185 mbh output		1								
	Glycol make-up unit: Chemical shot feeder		3								
	Glycol make-up unit: Emergency generator requirements - duplex pump, fuel oil tank, filtration system, leak detection system, piping, etc.		1								
	Glycol make-up unit: GF-1, GF-2		2								
	Heat exchanger (Plate and frame): HX-1 - 130 gpm cold side, 106.2 gpm hot side		1								
	Hook-up Equipment: AHU-1 with energy recovery wheel and sensible reheat wheel		1								
	Hook-up Equipment: AHU-1 with enthalpy wheel, sensible wheel, DX cooling, electric heater					1					
	Hook-up Equipment: AHU-1 with enthalpy wheel, sensible wheel, DX cooling, electric heater								1		
	Hook-up Equipment: AHU-2 with energy recovery wheel and sensible reheat wheel		1								
	Hook-up Equipment: AHU-2 with enthalpy wheel, sensible wheel, DX cooling, electric heater					1					
	Hook-up Equipment: AHU-2 with enthalpy wheel, sensible wheel, DX cooling, electric heater								1		

Detail by Trade

			Study Basecase			Option 1			Option 2		
Code	Description	Unit Cost	Quantity	Unit	Amount	Quantity	Unit	Amount	Quanitity	Unit	Amount
	Hook-up Equipment: AHU-3 with energy recovery wheel and sensible reheat wheel		1								
	Hook-up Equipment: AHU-3 with enthalpy wheel, sensible wheel, DX cooling, electric heater								1		
	Hook-up Equipment: AHU-3 with enthalpy wheel, sensible wheel, DX cooling, electric heater					1					
	Hook-up Equipment: AHU-4		1								
	Hook-up Equipment: AHU-4 with enthalpy wheel, sensible wheel, DX cooling, electric heater					1					
	Hook-up Equipment: AHU-5 with enthalpy wheel, sensible wheel, DX cooling, electric heater					1					
	Hook-up Equipment: AHU-6 with DX cooling, electric heater					1					
	Hook-up Equipment: Air-cooled package modular chiller		1								
	Hook-up Equipment: Air handling units condensing unit					6			6		
	Hook-up Equipment: Chemical feeder		3								
	Hook-up Equipment: Condensate pump		8			8			58		
	Hook-up Equipment: Expansion tanks and Air separators		1								
	Hook-up Equipment: Fin-tube radiator		88								
	Hook-up Equipment: Fuel oil pump (duplex)		1			1			1		
	Hook-up Equipment: Fuel oil tank		1			1			1		
	Hook-up Equipment: Gas fired hot water condensing boiler		2								
	Hook-up Equipment: Glycol make-up unit		2								
	Hook-up Equipment: Heat exchanger (Plate and Frame)		1								
	Hook-up Equipment: Hot glycol air curtain		5								
	Hook-up Equipment: Hot glycol cabinet unit heaters		1								
	Hook-up Equipment: Hot glycol convector		1								
	Hook-up Equipment: Hot glycol unit heaters		4								
	Hook-up Equipment: Hot water cabinet unit heater		46								
	Hook-up Equipment: Hot water convector		24								
	Hook-up Equipment: Hot water heating coil		1								
	Hook-up Equipment: Hot water unit heater		9								
	Hook-up Equipment: Multi V Heat Recovery Unit					12			12		
	Hook-up Equipment: Pump - 4" dia pipe		5								
	Hook-up Equipment: Pump - 5" dia pipe		2								
	Hook-up Equipment: Split-type heat pump unit		8			8			8		
	Hook-up Equipment: Variable refrigerant volume - Air-cooled condensing unit								2		
	Hook-up Equipment: Variable refrigerant volume - Fan coil unit								13		
	Hot glycol air curtains: ARC-1.1 - 71.6 mbh heating, 2686 cfm		1								
	Hot glycol air curtains: ARC-1.2 - 71.6 mbh heating, 2686 cfm		1								

Detail by Trade

			Study Basecase			Option 1			Option 2		
Code	Description	Unit Cost	Quantity	Unit	Amount	Quantity	Unit	Amount	Quanitity	Unit	Amount
	Hot glycol air curtains: ARC-1.3 - 71.6 mbh heating, 2686 cfm		1								
	Hot glycol air curtains: ARC-1.4 - 71.6 mbh heating, 2686 cfm		1								
	Hot glycol air curtains: ARC-4.1 - 71.6 mbh heating, 2686 cfm		1								
	Hot glycol cabinet unit heaters: CUH - 12.9 mbh, ceiling recessed		1								
	Hot glycol convector - 64"x36"		1								
	Hot glycol unit heaters: HWUH - 26.1 mbh, horizontal		1								
	Hot glycol unit heaters: HWUH - 78.4 mbh, horizontal		3								
	Hot water cabinet unit heaters: CUH - 12.9 mbh, ceiling recessed		46								
	Hot water convector - 64"x26"		9								
	Hot water convector - 64"x32"		15								
	Hot water heating coil - 22"x18", 1800 cfm, 40 mbh		1								
	Hot water unit heaters: HWUH - 8 mbh, horizontal		9								
	Insulation @ Equipment, pipe, duct: 2hr rated duct insulation		420			380			380		
	Insulation @ Equipment, pipe, duct: Condensate drain pipe insulation		550			550			550		
	Insulation @ Equipment, pipe, duct: Duct insulation / Acoustical lining		102,460			100,740			71,720		
	Insulation @ Equipment, pipe, duct: Duct insulation @ Kitchen exhaust		490			470			470		
	Insulation @ Equipment, pipe, duct: Equipment insulation								1		
	Insulation @ Equipment, pipe, duct: Equipment insulation					1					
	Insulation @ Equipment, pipe, duct: Equipment insulation		1								
	Insulation @ Equipment, pipe, duct, Pipe insulation (CHGS/R, HGWS/R, HWS/R): 1-1/4" - 1-1/2" dia pipe insulation		1,820								
	Insulation @ Equipment, pipe, duct, Pipe insulation (CHGS/R, HGWS/R, HWS/R): 2" - 2-1/2" dia pipe insulation		1,170								
	Insulation @ Equipment, pipe, duct, Pipe insulation (CHGS/R, HGWS/R, HWS/R): 3/4" - 1" dia pipe insulation		8,390								
	Insulation @ Equipment, pipe, duct, Pipe insulation (CHGS/R, HGWS/R, HWS/R): 3" - 4" dia pipe insulation		1,840								
	Insulation @ Equipment, pipe, duct, Pipe insulation (CHGS/R, HGWS/R, HWS/R): 6" dia pipe insulation		460								
	Insulation @ Equipment, pipe, duct: Refrigerant pipe insulation		2,400			2,400			2,400		
	Insulation @ Equipment, pipe, duct: Weather proof jacket @ Outside piping - assume		1			1			1		
	Multi V Heat Recovery Unit - 2 ports (LG PRHR023A)					12			12		
	Other: Access doors					1					
	Other: Access doors								1		
	Other: Access doors		1								
	Other: Clean, flush and test (piping system)					1					
	Other: Clean, flush and test (piping system)								1		
	Other: Clean, flush and test (piping system)		1								
	Other: Core drill, patching, fire stopping					1			1		

Detail by Trade

			Study Basecase			Option 1			Option 2		
Code	Description	Unit Cost	Quantity	Unit	Amount	Quantity	Unit	Amount	Quanitity	Unit	Amount
	Other: Core drill, patching, fire stopping		1								
	Other: Equipment, duct and pipe supports					1			1		
	Other: Equipment, duct and pipe supports		1								
	Other: Equipment handling and material distribution		1			1			1		
	Other: O&M manuals					1			1		
	Other: O&M manuals		1								
	Other: Penetrations and sleeves		1			1			1		
	Other: Rigging		1			1			1		
	Other: Shop co-ordination drawings					1			1		
	Other: Shop co-ordination drawings		1								
	Other: System ID / Valve tags		1			1			1		
	Other: System start-up / Commissioning		1			1			1		
	Other: Temporary HVAC		1			1			1		
	Other: Test and balance								1		
	Other: Test and balance					1					
	Other: Test and balance		1								
	Other: Vibration isolation					1			1		
	Other: Vibration isolation		1								
	Piping System (incl. valves and specialties): 1-1/4" - 1-1/2" dia pipe (Copper-L) / fittings / supports		1,820								
	Piping System (incl. valves and specialties): 1" dia pipe (Copper-L) / fittings / supports		1,630								
	Piping System (incl. valves and specialties): 2-1/2" dia pipe (Copper-L) / fittings / supports		450								
	Piping System (incl. valves and specialties): 2" dia pipe (Copper-L) / fittings / supports		720								
	Piping System (incl. valves and specialties): 3/4" dia pipe (Copper-L) / fittings / supports		6,760								
	Piping System (incl. valves and specialties): 3" dia pipe (Black steel, Sch-40) / fittings / supports		1,140								
	Piping System (incl. valves and specialties): 4" dia pipe (Black steel, Sch-40) / fittings / supports		700								
	Piping System (incl. valves and specialties): 6" dia pipe (Black steel, Sch-40) / fittings / supports		460								
	Piping System (incl. valves and specialties): Condensate drain pipe @ Split-type heat pump unit: 1" dia pipe (Copper-L) / fittings / supports					550			550		
	Piping System (incl. valves and specialties): Condensate drain pipe with insulation @AHU unit					4			3		
	Piping System (incl. valves and specialties): Condensate drain pipe with insulation @ Rackaged HCV unit								50		
	Piping System (incl. valves and specialties): Condensate drain pipe with insulation @ VRF indoor unit								13		
	Piping System (incl. valves and specialties): Refrigerant pipe: 3/8" dia refrigerant pipe / fittings / supports					1,200			1,200		
	Piping System (incl. valves and specialties): Refrigerant pipe: 5/8" dia refrigerant pipe / fittings / supports					1,200			1,200		
	Piping System (incl. valves and specialties): Refrigerant pipe with insulation @ AHU-ACCU unit					24			9		

Detail by Trade

			Study Basecase			Option 1			Option 2		
Code	Description	Unit Cost	Quantity	Unit	Amount	Quantity	Unit	Amount	Quanitity	Unit	Amount
	Piping System (incl. valves and specialties): Refrigerant pipe with insulation @ VRF units								1		
	Piping System (incl. valves and specialties): Valves and specialties					1					
	Piping System (incl. valves and specialties): Valves and specialties								1		
	Pumps (Base mounted end suction): CHWP -1, 2 - (Chilled water loop) - 25 hp (Bell & Gossett E-1510)		2								
	Pumps (Base mounted end suction): HWP-1, 2, 3 - (Boiler primary hot water loop) - 7.5 hp (Bell & Gossett E- 1510)		3								
	Pumps (Base mounted end suction): HWP-4, 5 - (Perimeter heating secondary hot water loop) - 10 hp (Bell & Gossett E-1510)		2								
	Pumps (Base mounted end suction): Inertia base @ Pumps		7								
	Pumps (Base mounted end suction): VFD @ Pumps - furnish only		93								
	Rackaged HCV unit: CAH - 1200 cfm, 34 mbh air source heat pump, 10 kw electric heat, energy recovery wheel, MERV 8 filter (18"x18")								50		
	Rackaged HCV unit: Condensate pump								50		
	Rackaged HCV unit: Heat tracing								1		
	Refrigerant pipe: 3/8" dia refrigerant pipe / fittings / supports		1,200								
	Refrigerant pipe: 5/8" dia refrigerant pipe / fittings / supports		1,200								
	Split-type heat pump units: AC-1.1 / ACCU-1.1 - 24 mbh cooling, 26 mbh heating (PKA-A24KA7 / PUZ-A24NKA7)		1			1			1		
	Split-type heat pump units: AC-1.2 / ACCU-1.2 - 24 mbh cooling, 26 mbh heating (PKA-A24KA7 / PUZ-A24NKA7)		1			1			1		
	Split-type heat pump units: AC-2.1 / ACCU-2.1 - 36 mbh cooling, 40 mbh heating (PKA-A36KA7 / PUZ-A36NKA7)		1			1			1		
	Split-type heat pump units: AC-3.1 / ACCU-3.1 - 24 mbh cooling, 26 mbh heating (PKA-A24KA7 / PUZ-A24NKA7)		1			1			1		
	Split-type heat pump units: AC-4.1 / ACCU-4.1 - 24 mbh cooling, 26 mbh heating (PKA-A24KA7 / PUZ-A24NKA7)		1			1			1		
	Split-type heat pump units: AC-C.1 / ACCU-C.1 - 24 mbh cooling, 26 mbh heating (PKA-A24KA7 / PUZ- A24NKA7)		1			1			1		
	Split-type heat pump units: AC-C.2 / ACCU-C.2 - 24 mbh cooling, 26 mbh heating (PKA-A24KA7 / PUZ- A24NKA7)		1			1			1		
	Split-type heat pump units: AC-R.1 / ACCU-R.1 - 36 mbh cooling, 40 mbh heating (PKA-A36KA7 / PUZ- A36NKA7)		1			1			1		
	Split-type heat pump units: Condensate pump (Becket CB201TUL)		8			8			8		
	Split-type heat pump units: Drain pan with drain pan level sensors		8			8			8		
	Split-type heat pump units: Electrical coil - 22"x18", 1800 cfm, 12 kw					1					
	Split-type heat pump units: Electrical coil - 22"x18", 1800 cfm, 12 kw								1		

Detail by Trade

			Study Basecase			Option 1			Option 2		
Code	Description	Unit Cost	Quantity	Unit	Amount	Quantity	Unit	Amount	Quanitity	Unit	Amount
	Split-type heat pump units: Emergency generator requirements - duplex pump, fuel oil tank, filtration system, leak detection system, piping, etc.					1			1		
	System Controls		1								
	System Controls (749 points)								1		
	System Controls (789 points)					1					
	TEF-3 - 150 cfm (Greenheck GB-097- 3)		1								
	Valves and specialties (all systems)		1								
	Variable refrigerant volume - Air- cooled condensing unit (Daikin): VRF- ACCU-1 - 72000 btu/h coolinh, 81000 btu/h heating								1		
	Variable refrigerant volume - Air- cooled condensing unit (Daikin): VRF- ACCU-2 - 92000 btu/h coolinh, 103000 btu/h heating								1		
	Variable refrigerant volume - Fan coil unit (Daikin): VRF-AC-1.10 - Ceiling mounted cassette 4-way - 12300 btuh cooling, 13600 btuh heating, with built-in condensate pump, secondary overflow switch, MERV13 filters								1		
	Variable refrigerant volume - Fan coil unit (Daikin): VRF-AC-1.11 - Ceiling mounted cassette 4-way - 12300 btuh cooling, 13600 btuh heating, with built-in condensate pump, secondary overflow switch, MERV13 filters								1		
	Variable refrigerant volume - Fan coil unit (Daikin): VRF-AC-1.1 - Ceiling mounted cassette 4-way - 19100 btuh cooling, 20500 btuh heating, with built-in condensate pump, secondary overflow switch, MERV13 filters								1		
	Variable refrigerant volume - Fan coil unit (Daikin): VRF-AC-1.2 - Ceiling mounted cassette 4-way - 7500 btuh cooling, 8500 btuh heating, with built- in condensate pump, secondary overflow switch, MERV13 filters								1		
	Variable refrigerant volume - Fan coil unit (Daikin): VRF-AC-1.3 - Ceiling mounted cassette 4-way - 12300 btuh cooling, 13600 btuh heating, with built-in condensate pump, secondary overflow switch, MERV13 filters								1		
	Variable refrigerant volume - Fan coil unit (Daikin): VRF-AC-1.4 - Ceiling mounted cassette 4-way - 12300 btuh cooling, 13600 btuh heating, with built-in condensate pump, secondary overflow switch, MERV13 filters								1		
	Variable refrigerant volume - Fan coil unit (Daikin): VRF-AC-1.5 - Ceiling mounted cassette 4-way - 9600 btuh cooling, 10900 btuh heating, with built-in condensate pump, secondary overflow switch, MERV13 filters								1		
	Variable refrigerant volume - Fan coil unit (Daikin): VRF-AC-1.6 - Ceiling mounted cassette 4-way - 9600 btuh cooling, 10900 btuh heating, with built-in condensate pump, secondary overflow switch, MERV13 filters								1		
	Variable refrigerant volume - Fan coil unit (Daikin): VRF-AC-1.7 - Ceiling mounted cassette 4-way - 9600 btuh cooling, 10900 btuh heating, with built-in condensate pump, secondary overflow switch, MERV13 filters								1		
	Variable refrigerant volume - Fan coil unit (Daikin): VRF-AC-1.8 - Ceiling mounted cassette 4-way - 15400 btuh cooling, 17100 btuh heating, with built-in condensate pump, secondary overflow switch, MERV13 filters								1		

Detail by Trade

			Study Basecase			Option 1			Option 2		
Code	Description	Unit Cost	Quantity	Unit	Amount	Quantity	Unit	Amount	Quanitity	Unit	Amount
	Variable refrigerant volume - Fan coil unit (Daikin): VRF-AC-1.9 - Ceiling mounted cassette 4-way - 12300 btuh cooling, 13600 btuh heating, with built-in condensate pump, secondary overflow switch, MERV13 filters								1		
	Variable refrigerant volume - Fan coil unit (Daikin): VRF-AC-2.1 - Ceiling mounted cassette 4-way - 15400 btuh cooling, 17100 btuh heating, with built-in condensate pump, secondary overflow switch, MERV13 filters								1		
	Variable refrigerant volume - Fan coil unit (Daikin): VRF-AC-5.1 - Ceiling mounted cassette 4-way - 12300 btuh cooling, 13600 btuh heating, with built-in condensate pump, secondary overflow switch, MERV13 filters								1		
	VAV box: Sound trap @ VAV box		80								
	ELECTRICAL										
	100 Amp panel		3								
	100 Amp panel, 42-poles		17								
	100 Amp panel, 60-poles		1								
	100 Amp panel, 84-poles		3								
	100 Amp panel, 96-poles		1								
	125 Amp ATS		1								
	2000 Amp distribution panel "MDP-A"		1								
	200 Amp ATS		1								
	200 Amp NEMA 1 disconnect switch		1								
	225 Amp panel		1								
	3000 Amp distribution panel "MDP-B"		1								
	400 Amp panel		10								
	400 Amp panel, 72-poles		1								
	600 Amp panel		2								
	60 Amp NEMA 3R disconnect switch		1								
	60 Amp panel		2								
	70 Amp ATS		1								
	800 Amp ATS		1								
	800 Amp panel "MDP-EM"		1								
	ASCO Switch		2								
	Audio Frequency Induction Loop (Cafeteria)		1			1			1		
	Audio Frequency Induction Loop System (Security/Reception Desk)		1			1			1		
	Auxiliary Signal System: Auxiliary bell		16			16			16		
	Auxiliary Signal System: Bell transformer		1			1			1		
	Auxiliary Signal System: Conduit and wire		1			1			1		
	Auxiliary Signal System: Connect to level alarm and gas leak detection system		1								
	Auxiliary Signal System: Indicator control panel		1			1			1		
	Auxiliary Signal System: Momentary program signal		2			2			2		
	Auxiliary Signal System: Power supply		1			1			1		
	Auxiliary Signal System: Pull box		6			6			6		
	Auxiliary Signal System: Push button		2			2			2		
	Auxiliary Signal System: Push button station		1			1			1		
	Auxiliary Signal System: Testing/fees		1			1			1		
	Branch Power: # 12 wire		85,985			85,985			85,985		

Detail by Trade

			Study Basecase			Option 1			Option 2		
Code	Description	Unit Cost	Quantity	Unit	Amount	Quantity	Unit	Amount	Quanitity	Unit	Amount
	Branch Power: # 12 wire (wiremold)		610			610			610		
	Branch Power: 3/4" conduit		25,606			25,606			25,606		
	Branch Power: 3/4" RGS		450			450			450		
	Branch Power: Duplex receptacle		309			309			309		
	Branch Power: Duplex receptacle, ceiling mounted		10			10			10		
	Branch Power: Duplex receptacle, surge suppressed		28			28			28		
	Branch Power: Duplex receptacle, switched		112			112			112		
	Branch Power: Duplex receptacle, WP		5			5			5		
	Branch Power: Emergency push button		5			5			5		
	Branch Power: Emergency switch		5			5			5		
	Branch Power: GFI duplex receptacle		180			180			180		
	Branch Power: GFI duplex receptacle, WP		9			9			9		
	Branch Power: Poke-thru (6")		9			9			9		
	Branch Power: Quad receptacle		2			2			2		
	Branch Power: Quad receptacle, Surge suppressed		96			96			96		
	Branch Power: Quad receptacle, surge suppressor, rack mounted		47			47			47		
	Branch Power: Quad receptacle, switched		17			17			17		
	Branch Power: Quad receptacle,switched, surge suppressed		118								
	Branch Power: Quad receptacle,switched, surge suppressor					118			118		
	Branch Power: Raise and lower control switch		3			3			3		
	Branch Power: Simplex receptacle, rack mounted		23			23			23		
	Branch Power: Wiremold		122			122			122		
	Branch Power: Wiremold duplex receptacle		122			122			122		
	Branch Power: Wiremold duplex receptacle, surge supressed		26			26			26		
	Branch Power: Wiremold end fitting		13			13			13		
	CT cabinet and utility meter		1								
	Electrical Service Entrance: Power: 4" RGS					230			230		
	Electrical Service Entrance: Power: 500 MCM					720			720		
	Electrical Service Entrance: Power: Excavation/backfill/concrete encasement					10			10		
	Electrical Service Entrance: Power: Work in ConEd transformer vault					1			1		
	End Box		1								
	Feeders: # 1/0 wire					720			720		
	Feeders: # 10 wire					1,560			1,560		
	Feeders: #1/0 WIRE		720								
	Feeders: #10 WIRE		1,560								
	Feeders: 1 1/2" EMT		490			490			490		
	Feeders: 1 1/2" RGS		120			120			120		
	Feeders: 1 1/4" EMT		200			200			200		
	Feeders: # 12 wire					400			400		
	Feeders: #12 WIRE		400								
	Feeders: 1" EMT		480			480			480		
	Feeders: 1" RGS		480			480			480		
	Feeders: # 1 wire					1,640			1,640		
	Feeders: #1 WIRE		1,680								

Detail by Trade

			Study Basecase			Option 1			Option 2		
Code	Description	Unit Cost	Quantity	Unit	Amount	Quantity	Unit	Amount	Quanitity	Unit	Amount
	Feeders: 2 1/2" EMT		900			1,140			1,140		
	Feeders: 2 1/2" RGS		120			120			120		
	Feeders: 225 Amp panel, 84-poles		2								
	Feeders: 250 MCM					1,440			1,440		
	Feeders: 2" RGS		360			360			360		
	Feeders: # 2 wire					600			240		
	Feeders: 3/4" EMT		270			270			270		
	Feeders: 350 MCM		960			2,720			4,160		
	Feeders: 3" EMT		240			1,160			1,160		
	Feeders: # 4/0 wire		1,680			1,680			1,680		
	Feeders: 4" EMT		1,560			1,560			1,560		
	Feeders: 4" RGS		240			240			240		
	Feeders: # 4 wire					1,640			2,000		
	Feeders: #4 WIRE		800								
	Feeders: 500 MCM		4,320			5,760			4,320		
	Feeders: 600 MCM		1,920			1,920			1,920		
	Feeders: # 6 wire					1,140			1,140		
	Feeders: #6 WIRE		1,140								
	Feeders: # 8 wire					480			480		
	Feeders: #8 WIRE		480								
	Feeders: Excavation/backfill/concrete encasement		120			120			120		
	Feeders: Feeders not shown		130,893			130,893			130,893		
	Fire Alarm System: # 12 wire		54,758			54,098			52,228		
	Fire Alarm System: 3/4" conduit		23,750			23,450			22,600		
	Fire Alarm System: 3/4" RGS		240			240			240		
	Fire Alarm System: 60 Amp NEMA 1 disconnect switch		2			2			2		
	Fire Alarm System: Booster panel		6			6			6		
	Fire Alarm System: Cable cat.6		100			100			100		
	Fire Alarm System: Carbon monoxide detector		11			10			10		
	Fire Alarm System: Combination horn/strobe		34			34			34		
	Fire Alarm System: Combination horn/strobe, WP		4			4			4		
	Fire Alarm System: Control module		14			18			18		
	Fire Alarm System: Digital alarm communication transmitter		1			1			1		
	Fire Alarm System: Fire alarm control panel		1			1			1		
	Fire Alarm System: Fire alarm FCO		1			1			1		
	Fire Alarm System: Fire alarm remote annunciator		1			1			1		
	Fire Alarm System: Fire smoke damper		71			55			38		
	Fire Alarm System: Heat detector		5			7			7		
	Fire Alarm System: Manual pull station		42			42			42		
	Fire Alarm System: Manual pull station, WP		2			2			2		
	Fire Alarm System: Miscellaneous FA work (hangers, support, signage, etc.)		1			1			1		
	Fire Alarm System: Monitoring module		4			6			6		
	Fire Alarm System: Printer		1			1			1		
	Fire Alarm System: Programming/testing/fees		1								
	Fire Alarm System: Programming/testing/fees					1			1		
	Fire Alarm System: Pull box		5			5			5		
	Fire Alarm System: Relay		14			18			18		
	Fire Alarm System: Smoke detector		84			83			83		

Detail by Trade

			Study Basecase			Option 1			Option 2		
Code	Description	Unit Cost	Quantity	Unit	Amount	Quantity	Unit	Amount	Quanitity	Unit	Amount
	Fire Alarm System: Smoke detector, duct mounted		75			75			75		
	Fire Alarm System: Smoke purge control panel		1			1			1		
	Fire Alarm System: Strobe light		112			112			112		
	Fire Alarm System: Strobe light, WP		2			2			2		
	Fire Alarm System: Tamper and waterflow switches		19			19			19		
	Fire Rescue Intercom System: # 12 wire		150			150			150		
	Fire Rescue Intercom System: # 18 wire, 1-pair		100			100			100		
	Fire Rescue Intercom System: # 20 wire, solid shielded		3,000			3,000			3,000		
	Fire Rescue Intercom System: 3/4" RGS		450			450			450		
	Fire Rescue Intercom System: Intercom control panel		1			1			1		
	Fire Rescue Intercom System: Master station		2			2			2		
	Fire Rescue Intercom System: Remote audible/visual signaling device		1			1			1		
	Fire Rescue Intercom System: Staff station		5			5			5		
	Fire Rescue Intercom System: Testing		1			1			1		
	Food Service: 100 Amp NEMA 1 disconnecrt switch		1			1			1		
	Food Service: # 12 wire		11,913			11,913			11,913		
	Food Service: 3/4" conduit		3,690			3,690			3,690		
	Food Service: 60 Amp NEMA 1 disconnecrt switch		6			6			6		
	Food Service: Direct connection		23			23			23		
	Food Service: Duplex receptacle		3			3			3		
	Food Service: Duplex receptacle, GFI		11			11			11		
	Food Service: Emergency button		1			1			1		
	Food Service: Emergency switch		1			1			1		
	Food Service: Plug-in connection		29			29			29		
	Food Service: Power to motorized gate (F & I B.O.)		1			1			1		
	Food Service: Work in walk-in cooler/freezer		1								
	Food Service: Work in Walk-in Cooler/Freezer					1			1		
	Gymatorium Lighting and Dimming Control: # 12 wire		3,960			3,960			3,960		
	Gymatorium Lighting and Dimming Control: 3/4" conduit		1,200			1,200			1,200		
	Gymatorium Lighting and Dimming Control: AA - LED Border light Fixtures in Gymatorium 2'		15			15			15		
	Gymatorium Lighting and Dimming Control: AB - LED Spotlight Fixtures inside ceiling pocket		8			8			8		
	Gymatorium Lighting and Dimming Control: Clamps, connectors, plug boxes, flex cable		1			1			1		
	Gymatorium Lighting and Dimming Control: DMX gateway and cable		1			1			1		
	Gymatorium Lighting and Dimming Control: DMX input receptacle		5			5			5		
	Gymatorium Lighting and Dimming Control: Floor junction box		4			4			4		
	Gymatorium Lighting and Dimming Control: Gridiron box		5			5			5		
	Gymatorium Lighting and Dimming Control: Plug-in box (6"H x 12"W x 4"D)		2								

Detail by Trade

			Study Basecase			Option 1			Option 2		
Code	Description	Unit Cost	Quantity	Unit	Amount	Quantity	Unit	Amount	Quanitity	Unit	Amount
	Gymatorium Lighting and Dimming Control: Plug-in box (6"H x 12"W x 4"D)					2			2		
	Gymatorium Lighting and Dimming Control: Portable control console, microprocessor based		1			1			1		
	Gymatorium Lighting and Dimming Control: Raceway		340			340			340		
	Gymatorium Lighting and Dimming Control: Rigging		1			1			1		
	Gymatorium Lighting and Dimming Control: Stage manager panel		1			1			1		
	Gymatorium Lighting and Dimming Control: Theatrical lighting dimmer rack		1			1			1		
	Gymatorium Lighting and Dimming Control: V1 - 36" recessed light fixture		30								
	Gymatorium Lighting and Dimming Control: V1 - 36" recessed light fixture					30			30		
	Intrusion System: # 16 wire, 2-pair		2,700			2,700			2,700		
	Intrusion System: # 16 wire, 3-pair		650			650			650		
	Intrusion System: 3/4" conduit		3,450			3,450			3,450		
	Intrusion System: Cable cat.5e					100			100		
	Intrusion System: Cable cat.6		100								
	Intrusion System: Intrusion alarm panic switch		4			4			4		
	Intrusion System: Intrusion alarm siren		14			14			14		
	Intrusion System: Intrusion alarm system control panel		1			1			1		
	Intrusion System: Long range passive infrared motion detector		15			15			15		
	Intrusion System: Magnetic door contact		17			17			17		
	Intrusion System: Remote digipad in lockable metal enclosure		3			3			3		
	Intrusion System: Testing		1			1			1		
	Intrusion System: Wide angle passive infrared motion detector		14			14			14		
	LAN / LONWorks System		130,893			130,893			130,893		
	Lighting Control: # 12 wire		17,420			17,420			17,420		
	Lighting Control: 3/4" conduit		5,280			5,280			5,280		
	Lighting Control: 3/4" RGS		20			20			20		
	Lighting Control: 3-way switch					20			20		
	Lighting Control: 3 Way switch		20								
	Lighting Control: 4-way switch		3			3			3		
	Lighting Control: 5-button dimmer switch		87			87			87		
	Lighting Control: Cable cat.5e		5,040			5,040			5,040		
	Lighting Control: Daylight sensor		63			63			63		
	Lighting Control: Exterior photocell		1			1			1		
	Lighting Control: Lighting control panel		5			5			5		
	Lighting Control: Low voltage Wall switch		42			42			42		
	Lighting Control: Occupancy sensor, ceiling mounted		51			51			51		
	Lighting Control: Occupancy sensor, wall mounted		24			24			24		
	Lighting Control: Room controller		58			58			58		
	Lighting Control: Single pole switch		10			10			10		
	Lighting Control: Single pole switch, keyed		24			24			24		
	Lighting Control: Vacancy sensor, ceiling mounted		99			99			99		
	Lighting Control: Vacancy sensor, wall mounted		41			41			41		

Detail by Trade

			Study Basecase			Option 1			Option 2		
Code	Description	Unit Cost	Quantity	Unit	Amount	Quantity	Unit	Amount	Quanitity	Unit	Amount
	Lighting Fixtures, Install Only: # 12 wire		57,850			57,850			57,850		
	Lighting Fixtures, Install Only: 3/4" conduit		15,000			15,000			15,000		
	Lighting Fixtures, Install Only: 3/4" conduit EM Riser		1,850			1,850			1,850		
	Lighting Fixtures, Install Only: 3/4" RGS		680			680			680		
	Lighting Fixtures, Install Only: A1 - Pendant mtd light fixture, 4'		126			126			126		
	Lighting Fixtures, Install Only: A2 - recessed light fixture		16			16			16		
	Lighting Fixtures, Install Only: A - Pendant mtd light fixture, 4'		390			390			390		
	Lighting Fixtures, Install Only: B1 - 2x2 LED light fixture		59			59			59		
	Lighting Fixtures, Install Only: B2 - 2x2 LED light fixture sheet rock ceiling		2			2			2		
	Lighting Fixtures, Install Only: B - 2x4 LED light fixture		48			48			48		
	Lighting Fixtures, Install Only: C - 2x2 LED light fixture with curved acrylic panel lens		136			136			136		
	Lighting Fixtures, Install Only: CS - 2x2 indigo-clean LED light fixture		2			2			2		
	Lighting Fixtures, Install Only: D1 - 2x2 reccsed LED sheet rock ceiling		22			22			22		
	Lighting Fixtures, Install Only: D2 - 2x2 reccsed LED sheet rock ceiling w/built in Occupancy sensor		62			62			62		
	Lighting Fixtures, Install Only: D - 2x2 reccsed LED		7			7			7		
	Lighting Fixtures, Install Only: D3 - 2x4 Recessed LED		29			29			29		
	Lighting Fixtures, Install Only: E - wall mtd LED for damp location		2			2			2		
	Lighting Fixtures, Install Only: Exit sign		68			68			68		
	Lighting Fixtures, Install Only: Exit sign, WP		1			1			1		
	Lighting Fixtures, Install Only: FN_12 - Decorative LED Recessed Light fixture, 12'		30			30			30		
	Lighting Fixtures, Install Only: Furnish only		130,893			130,893			130,893		
	Lighting Fixtures, Install Only: J1 - Pendant LED Light fixture, 4'		23			23			23		
	Lighting Fixtures, Install Only: J2 - Pendant LED Light fixture, 4'		1			1			1		
	Lighting Fixtures, Install Only: J - Pendant LED Light fixture, 4'		142			142			142		
	Lighting Fixtures, Install Only: K - Recessed 2x2		34			34			34		
	Lighting Fixtures, Install Only: L - recessed trimless LED fixture		2			2			2		
	Lighting Fixtures, Install Only: M1 - Exterior Wall Scone		8			8			8		
	Lighting Fixtures, Install Only: M - downlight		15			15			15		
	Lighting Fixtures, Install Only: N2 - Decorative LED Recessed Light fixture		210			210			210		
	Lighting Fixtures, Install Only: Q1 - Surface mtd LED to Light walkways		14			14			14		
	Lighting Fixtures, Install Only: S1 - High Abuse corner mtd fixture, 4'		7			7			7		
	Lighting Fixtures, Install Only: S3 - Wall mtd light fixture with built in vacancy sensor, 4'		9			9			9		
	Lighting Fixtures, Install Only: S - High Abuse corner mtd fixture by the stairs, 4'		68			68			68		

Detail by Trade

			Study Basecase			Option 1			Option 2		
Code	Description	Unit Cost	Quantity	Unit	Amount	Quantity	Unit	Amount	Quanitity	Unit	Amount
	Lighting Fixtures, Install Only: T1 - Recessed round downlight		33			33			33		
	Lighting Fixtures, Install Only: T2 - recessed 4" round LED		15			15			15		
	Lighting Fixtures, Install Only: TR - Track Light		60			60			60		
	Lighting Fixtures, Install Only: TR - track light (head)		30			30			30		
	Lighting Fixtures, Install Only: W1 - wall mounted		2			2			2		
	Lighting Fixtures, Install Only: Z - Exterior surface mtd wall scone		25			25			25		
	Lightning protection/grounding system		1						1		
	Lightning protection/grounding system1					1					
	Low Voltage Systems Grounding		1			1			1		
	Mechanical Requirements: 1000A NEMA 3R disconnect switch					2					
	Mechanical Requirements: 100A NEMA 1 Disconnect switch		1								
	Mechanical Requirements: 100A NEMA 1 Disconnect switch					6			7		
	Mechanical Requirements: 100A NEMA 3R disconnect switch		1						2		
	Mechanical Requirements: # 1/0 wire					200					
	Mechanical Requirements: 1 1/4" EMT					910			910		
	Mechanical Requirements: # 12 wire					62,660			53,160		
	Mechanical Requirements: 1" EMT					1,600					
	Mechanical Requirements: 1" RGS								1,000		
	Mechanical Requirements: 200A NEMA 1 Disconnect switch		3								
	Mechanical Requirements: 200A NEMA 3R Disconnect switch					1			1		
	Mechanical Requirements: # 2/0 wire					660					
	Mechanical Requirements: 2 1/2" EMT					200			200		
	Mechanical Requirements: 2 1/2" RGS					500			100		
	Mechanical Requirements: 2" RGS					580			220		
	Mechanical Requirements: # 2 wire					3,310			3,210		
	Mechanical Requirements: 30A NEMA 1 Disconnect switch		36			240			224		
	Mechanical Requirements: 30A NEMA 3R Disconnect switch		21			19			20		
	Mechanical Requirements: # 3/0 wire								880		
	Mechanical Requirements: 3/4" EMT					22,260			24,600		
	Mechanical Requirements: 3/4" RGS					960			960		
	Mechanical Requirements: 350 MCM					1,260			900		
	Mechanical Requirements: 3" RGS					860			780		
	Mechanical Requirements: 400A NEMA 1 disconnect switch								1		
	Mechanical Requirements: 400A NEMA 3R Disconnect switch		2								
	Mechanical Requirements: 400A NEMA 3R Disconnect switch					1			1		
	Mechanical Requirements: 400 MCM					1,980					
	Mechanical Requirements: # 4/0 wire					2,060			3,120		
	Mechanical Requirements: # 4 wire					5,300			4,300		
	Mechanical Requirements: 500 MCM					600					
	Mechanical Requirements: 600A NEMA 1 disconnect switch		1								
	Mechanical Requirements: 600A NEMA 3R disconnect switch		1								
	Mechanical Requirements: 60A NEMA 1 Disconnect switch		3			50			45		

Detail by Trade

			Study Basecase			Option 1			Option 2		
Code	Description	Unit Cost	Quantity	Unit	Amount	Quantity	Unit	Amount	Quanitity	Unit	Amount
	Mechanical Requirements: 60A NEMA 3R disconnect switch					11			19		
	Mechanical Requirements: # 6 wire					200			520		
	Mechanical Requirements: 800A NEMA 3R Disconnect switch		1			1			1		
	Mechanical Requirements: # 8 wire					2,510			1,910		
	Mechanical Requirements: Air handling unit AHU-1, -2								2		
	Mechanical Requirements: Air handling unit AHU-1 thru AHU-4					4					
	Mechanical Requirements: Air handling unit AHU-3								1		
	Mechanical Requirements: Air handling unit AHU-5					1					
	Mechanical Requirements: Air handling unit AHU-6					1					
	Mechanical Requirements: Air handling units		4								
	Mechanical Requirements: Air handling units condensing units					6			6		
	Mechanical Requirements: Cabinet unit heater		46								
	Mechanical Requirements: Chemical feed		3								
	Mechanical Requirements: Chilled water pump - 30HP		2								
	Mechanical Requirements: Chiller		1								
	Mechanical Requirements: Circulation pump		2			2			2		
	Mechanical Requirements: Condensate pump		8			8			58		
	Mechanical Requirements: Conduit and wire		1								
	Mechanical Requirements: Dedicated outdoor air energy recovery unit								1		
	Mechanical Requirements: Drill Press 2P 30A		1			1			1		
	Mechanical Requirements: Duplex domestic water booster pump		1			1			1		
	Mechanical Requirements: Duplex gas booster pump		1								
	Mechanical Requirements: Duplex oil fuel pump		1			1			1		
	Mechanical Requirements: Duplex sewage ejector		1			1			1		
	Mechanical Requirements: Electrical air curtain								5		
	Mechanical Requirements: Electrical air curtain ARC-1.1, -1.2, 1-3, -1.4, -4.1					5					
	Mechanical Requirements: Electrical baseboard heater					146			137		
	Mechanical Requirements: Electrical coil					1			1		
	Mechanical Requirements: Electrical convectors					18			18		
	Mechanical Requirements: Electric cabinet unit heater					49			50		
	Mechanical Requirements: Electric hot water heat pump		3			3			3		
	Mechanical Requirements: Electric unit heater		4			9			9		
	Mechanical Requirements: Elevator - 25HP		2			2			2		
	Mechanical Requirements: Exhaust fans		34			25			25		
	Mechanical Requirements: Fan Powered Box		6			6					

Detail by Trade

			Study Basecase			Option 1			Option 2		
Code	Description	Unit Cost	Quantity	Unit	Amount	Quantity	Unit	Amount	Quanitity	Unit	Amount
	Mechanical Requirements: Gas fired hot water condensing boiler		2								
	Mechanical Requirements: Glycol make-up unit		2								
	Mechanical Requirements: Hot glycol air curtain		5								
	Mechanical Requirements: Hot glycol cabinet unit heaters		1								
	Mechanical Requirements: Hot glycol unit heaters		4								
	Mechanical Requirements: Hot water pump - 20HP		2								
	Mechanical Requirements: Hot water pump - 30HP		4								
	Mechanical Requirements: Hot water unit heaters		9								
	Mechanical Requirements: Hydralic Lift 2P 30A		1			1			1		
	Mechanical Requirements: Jockey pump		1			1			1		
	Mechanical Requirements: Kilin, Etching press 3P 60A		4			4			4		
	Mechanical Requirements: Miscellaneous work		1			1					
	Mechanical Requirements: Miscellaneous work								1		
	Mechanical Requirements: Motorized dampers		22			17			17		
	Mechanical Requirements: Multi V heat recovery unit					12			12		
	Mechanical Requirements: Split-type heat pump unit		8			8			8		
	Mechanical Requirements: Sprinkler booster pump - 25HP		1			1			1		
	Mechanical Requirements: Submersible elevator sump pump		1			1			1		
	Mechanical Requirements: Toggle switches		1						1		
	Mechanical Requirements: Toggle switches					1					
	Mechanical Requirements: Tool Grinder 2P 30A		1			1			1		
	Mechanical Requirements: Variable refrigerant volume - Air-cooled condensing unit								2		
	Mechanical Requirements: Variable refrigerant volume - Fan coil unit								13		
	Mechanical Requirements: VAV and CAV box					87					
	Mechanical Requirements: VAV and CAV boxes								36		
	Mechanical Requirements: VAV box		82								
	Mechanical Requirements: VFD (F.B.O.)		9								
	Mechanical Requirements: VFD (F.B.O.)								15		
	Mechanical Requirements: VFD (F.B.O.) - 60HP					4					
	Mechanical Requirements: VFD (F.B.O.) - uo to 20HP					17					
	Mounting assemblies		38								
	Other		130,893			130,893			130,893		
	Photovoltaic System		24,840			24,840			24,840		
	Power: 4" RGS		160								
	Power: 500 MCM		640								
	Power: 600 MCM		160								
	Power Distribution: 300 KW emergency generator		1								

Detail by Trade

			Study Basecase			Option 1			Option 2		
Code	Description	Unit Cost	Quantity	Unit	Amount	Quantity	Unit	Amount	Quanitity	Unit	Amount
	Power Distribution - Emergency Power: 300 KW emergency generator					1			1		
	Power Distribution - Emergency Power: Rigging					1			1		
	Power Distribution - Emergency Power: Testing/commissioning					1			1		
	Power Distribution - Normal Power: 100 Amp panel					3			3		
	Power Distribution - Normal Power: 100 Amp panel, 42-poles					17			17		
	Power Distribution - Normal Power: 100 Amp panel, 60-poles					1			1		
	Power Distribution - Normal Power: 100 Amp panel, 84-poles					3			3		
	Power Distribution - Normal Power: 100 Amp panel, 96-poles					1			1		
	Power Distribution - Normal Power: 125 Amp ATS					1			1		
	Power Distribution - Normal Power: 200 Amp ATS					1			1		
	Power Distribution - Normal Power: 225 Amp panel					1			1		
	Power Distribution - Normal Power: 225 Amp panel, 84-poles					2			2		
	Power Distribution - Normal Power: 3000 Amp distribution panel "MDP-A"					1			1		
	Power Distribution - Normal Power: 3000 Amp distribution panel "MDP-B"					1			1		
	Power Distribution - Normal Power: 400 Amp panel, 42-poles					6			6		
	Power Distribution - Normal Power: 400 Amp panel, 84-poles					6			6		
	Power Distribution - Normal Power: 6000 Amp main switchboard "SWB-A"					1			1		
	Power Distribution - Normal Power: 600 Amp panel					1			1		
	Power Distribution - Normal Power: 60 Amp NEMA 3R disconnect switch					1			1		
	Power Distribution - Normal Power: 60 Amp panel					2			2		
	Power Distribution - Normal Power: 70 Amp ATS					1			1		
	Power Distribution - Normal Power: 800 Amp ATS					1			1		
	Power Distribution - Normal Power: 800 Amp panel "MDP-EM"					1			1		
	Power Distribution - Normal Power: CT cabinet and utility meter					1			1		
	Power Distribution - Normal Power: Mounting assemblies					38			38		
	Power Distribution - Normal Power: Pull box					2			2		
	Power Distribution - Normal Power: Service end box					1			1		
	Power Distribution - Normal Power: Surge protective device (SPD)					1			1		
	Power Distribution: Rigging		1								
	Power Distribution: Testing/commissioning		1								
	Power: Excavation/backfill/concrete encasement		10								
	Power to equipment and devices (F.B.O.)		1			1			1		
	Power: Work in ConEd transformer vault		1								
	Projection and Interactive Whiteboard Systems		1			1			1		
	Pull box		2								
	Service end box		1								

Detail by Trade

			Study Basecase			Option 1			Option 2		
Code	Description	Unit Cost	Quantity	Unit	Amount	Quantity	Unit	Amount	Quanitity	Unit	Amount
	Site/Security Lighting (During Construction)		1			1			1		
	Sound/Clock System: # 12 wire		720			720			720		
	Sound/Clock System: 24-port FO patch panel		5								
	Sound/Clock System: 24-port FO termination cabinet					5			5		
	Sound/Clock System: 3/4" conduit		5,490			5,490			5,490		
	Sound/Clock System: 48-port cat.6 patch panel		6			6			6		
	Sound/Clock System: 48-port PoE switch		5			5			5		
	Sound/Clock System: 4" conduit		40			40			40		
	Sound/Clock System: Administrative control station outlet		7			7			7		
	Sound/Clock System: Analog clock, double faced		15			15			15		
	Sound/Clock System: Analog clock, single faced		7			7			7		
	Sound/Clock System: Bi-directional speaker		15			15			15		
	Sound/Clock System: Combination speaker/clock		75			75			75		
	Sound/Clock System: Equipment cabinet		1			1			1		
	Sound/Clock System: Fiber optic cable		200			200			200		
	Sound/Clock System: Local sound system w/transmitter for hearing impaired		4			4			4		
	Sound/Clock System: LV wire		10,260			10,260			10,260		
	Sound/Clock System: Main sound rack/master program clock		1			1			1		
	Sound/Clock System: Microphone		25			25			25		
	Sound/Clock System: PA quarter- cabinet		4			4			4		
	Sound/Clock System: Privacy switch		70			70			70		
	Sound/Clock System: Speaker		104			104			104		
	Sound/Clock System: Speaker, WP		4			4			4		
	Sound/Clock System: Testing		1			1			1		
	Sound/Clock System: Time recorder		3			3			3		
	Sound/Clock System: Volume control		17			17			17		
	Sound/Clock System: Wire guard		2			2			2		
	Surge protective device (SPD)		1			1					
	Tel/Com System: 12" cable tray		1,510			1,510			1,510		
	Tel/Com System: 14" ladder rack		120			120			120		
	Tel/Com System: 18" ladder rack		62			62			62		
	Tel/Com System: 1" conduit		6,900			6,900			6,900		
	Tel/Com System: 24-port fiber patch panel		9			9			9		
	Tel/Com System: 48-port patch panel		25			25			25		
	Tel/Com System: 4" sleeves (horizontal) - allow		10			10			10		
	Tel/Com System: Cable cat.6		88,920			88,920			88,920		
	Tel/Com System: Data/data outlet		92			92			92		
	Tel/Com System: Data outlet		125			125			125		
	Tel/Com System: Equipment rack		10			10			10		
	Tel/Com System: Fiber optic cable		1			1			1		
	Tel/Com System: FO outlet		4			4			4		
	Tel/Com System: Grounging bus bar		5			5			5		
	Tel/Com System: Horizontal wire manager		18			18			18		
	Tel/Com System: Loud bell for telephone		7			7			7		

Detail by Trade

			Study Basecase			Option 1			Option 2		
Code	Description	Unit Cost	Quantity	Unit	Amount	Quantity	Unit	Amount	Quanitity	Unit	Amount
	Tel/Com System: Plywood backboard		5			5			5		
	Tel/Com System: Tel/data duplex receptacle, surge supressed		26			26			26		
	Tel/Com System: Tel/data outlet		35			35			35		
	Tel/Com System: Telephone outlet		98			98			98		
	Tel/Com System: Termination		1,482			1,482			1,482		
	Tel/Com System: Testing/labeling		1			1			1		
	Tel/Com System: Vertical wire manager		8			8			8		
	Tel/Com System: Wireless access point		106			106			106		
	Tel/Com System: Work in MDF and IDF rooms		1			1			1		
	Telecommunications: 4" RGS		170			170			170		
	Telecommunications: Excavation/backfill/concrete encasement		85			85			85		
	Telecommunications: Pull box		1			1			1		
	Temporary power and light		130,893			130,893			130,893		
	Two-way Voice Communication System		1			1			1		
	Video Surveillance System: 3/4" conduit		1,000			1,000			1,000		
	Video Surveillance System: # 6 wire		100			100			100		
	Video Surveillance System: Cable cat.6		5,400			5,400			5,400		
	Video Surveillance System: Camera (180 degree)		10			10			10		
	Video Surveillance System: Camera (4 lens)		17			17			17		
	Video Surveillance System: Camera (corner mounted)		6			6			6		
	Video Surveillance System: Camera (fixed)		11			11			11		
	Video Surveillance System: IPDVS half-cabinet		3			3			3		
	Video Surveillance System: Main video surveillance equipment cabinet		1			1			1		
	Video Surveillance System: Main viewing station		1			1			1		
	Video Surveillance System: Monitoring/recording equipment		1			1			1		
	Video Surveillance System: Software, camera license, training		1			1			1		
	Video Surveillance System: Testing/fees		1			1			1		
	SCHEMATIC										