- DRAWINGS ARE DIAGRAMMATIC AND INDICATE GENERAL ARRANGEMENT OF SYSTEMS AND WORK INCLUDED IN THE CONTRACT. IT IS NOT INTENDED TO SPECIFY OR SHOW EVERY OFFSET, FITTING OR COMPONENT; HOWEVER, CONTRACT DOCUMENTS REQUIRE COMPONENTS AND MATERIALS WHETHER OR NOT INDICATED OR SPECIFICALLY SPECIFIED TO MAKE THE SYSTEMS BEING INSTALLED COMPLETE, CODE COMPLIANT, TESTED AND OPERATIONAL.
- CONTRACTOR SHALL FIELD VERIFY ALL LOCATIONS, DIMENSIONS AND ELEVATIONS PRIOR TO CONSTRUCTION.
- . ALL MATERIALS, EQUIPMENT, METHODS OF INSTALLATION, REMOVALS AND DISPOSAL SHALL BE IN ACCORDANCE WITH THE STANDARDS, REGULATIONS, CODES, ORDINANCES, AND LAWS OF LOCAL, STATE, AND FEDERAL GOVERNMENTS, AND OTHER AUTHORITIES THAT HAVE LAWFUL JURISDICTION.
- . PERFORM WORK, PROVIDE MATERIALS AND EQUIPMENT FOR SYSTEMS SHOWN, SPECIFIED AND DESCRIBED ON DRAWINGS. COMPLETELY COORDINATE ALL TRADES OF THIS CONTRACT AND PROVIDE COMPLETE AND FULLY FUNCTIONAL INSTALLATION. ALL WORK IN THIS SET TO BE COMPLETED UNDER THIS CONTRACT, UNLESS OTHERWISE INDICATED.
- . PROTECT ALL EXISTING AND NEW BUILDING ELEMENTS (INSTALLED BY OTHER CONTRACTS) FROM DAMAGE. CONTRACTOR SHALL RESTORE ALL DAMAGED ELEMENTS TO ORIGINAL OR BETTER CONDITION.
- 6. WORK SHALL BE EXECUTED IN A WORKMANLIKE MANNER AND SHALL PRESENT NEAT, RECTILINEAR APPEARANCE WHEN COMPLETED. MAINTAIN MAXIMUM HEAD ROOM AT ALL TIMES. DO NOT RUN PIPES, DUCTS, AND CONDUIT EXPOSED UNLESS SHOWN AND NOTED TO BE EXPOSED ON DRAWINGS.
- MATERIALS AND EQUIPMENT SHALL BE NEW AND INSTALLED ACCORDING TO MANUFACTURER'S INSTRUCTIONS AND RECOMMENDATIONS. MAINTAIN MANUFACTURER'S EQUIPMENT CLEARANCES.
- . CONTRACTOR IS RESPONSIBLE FOR ALL WORK RELATED TO ISOLATING, SHUTTING DOWN, DRAINING, FILLING AND TESTING SYSTEMS TO ALLOW FOR COMPLETION OF WORK. INTERRUPTIONS TO EXISTING SERVICES AND SYSTEMS SHALL BE AS SHORT AS POSSIBLE AND AT A TIME AND DURATION APPROVED BY THE OWNER AND UTILITY AS APPLICABLE. INCLUDE ALL PREMIUM TIME ASSOCIATED WITH INTERRUPTIONS. ALL SYSTEM INTERRUPTIONS SHALL BE SCHEDULED WITH OWNER, UTILITY AND COORDINATED WITH OTHER TRADE WORK.
- D. ALL EQUIPMENT PIPING, WIRING, INSULATION ETC. INSTALLED IN HVAC AIR PLENUM SPACES SHALL MEET CODE REQUIREMENTS FOR SMOKE AND COMBUSTIBILITY.
- 10. SEAL ALL PENETRATIONS THROUGH FIRE RATED WALLS, PARTITIONS AND FLOORS WITH UL RATED MATERIALS/METHODS EQUIVALENT TO FIRE RATING OF ASSEMBLY.
- 11. COORDINATE ALL WALL/FOUNDATION PENETRATIONS WITH GENERAL CONTRACT AND SEAL WEATHERTIGHT. PROVIDE STAINLESS STEEL ESCUTCHEON PLATE/TRIM RING FOR EACH ABOVE GRADE PENETRATION (BOTH SIDES).
- 12. PROVIDE PROPER ACCESS TO EQUIPMENT THAT REQUIRES INSPECTION, REPLACEMENT OR REPAIR. ACCESS PANELS/DOORS SHALL BE A MINIMUM OF 12"x12", UNLESS OTHERWISE NOTED.
- 13. DO NOT SUPPORT EQUIPMENT FROM SUSPENDED CEILINGS. ALL SUPPORT SHALL BE FROM BUILDING STRUCTURE OR FROM CEILING SUSPENSION SYSTEM WHICH HAS BEEN REINFORCED. SUPPORTS SHALL BE SELECTED AND INSTALLED TO PROVIDE A VIBRATION FREE INSTALLATION.
- 14. CLEANING DURING MECHANICAL WORK: THE MECHANICAL ROOM AND ROOMS WHERE WORK WILL BE DONE TO MINIMIZE DISTURBANCE IN THE BUILDINGS. WORKERS ARE TO USE PATHWAYS AND FACILITIES AGREED UPON WITH THE DISTRICT DESIGNEE IN WRITING. THE AREA OUTSIDE THE BUILDING WHERE CUTTING WELDING OR STORAGE IS ALLOWED IS TO BE FENCED AT ALL TIMES. THE CONTRACTOR WILL ON A DAILY BASIS CLEAN THE GROUNDS AND THE BUILDING OF ANY DEBRIS OR GARBAGE GENERATED BY THEIR WORK.
- 15. PROTECT EXISTING SURFACES AND EQUIPMENT NOT MARKED FOR REMOVAL OR MODIFICATION. CONTRACTOR RESPONSIBLE FOR REPAIR OF EXISTING SURFACES AND/OR EQUIPMENT TO THE APPROVAL OF THE OWNER.
- 16. EACH CONTRACTOR RESPONSIBLE FOR RETURNING WALLS, CEILINGS AND SURFACES THEY DISTURB THAT ARE NOT SCHEDULED FOR REPLACEMENT BACK TO ORIGINAL CONDITIONS.

HVAC REMOVAL NOTES:

- THE SCOPE OF REMOVAL SHOWN ON "REMOVALS" DRAWING IS DIAGRAMMATIC ONLY AND INDICATES THE INTENT OF THE WORK TO BE PERFORMED AND NOT THE COMPLETE SCOPE OF DEMOLITION AND/OR REMOVAL WORK. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO REMOVE OR RELOCATE ANY RELATED MECHANICAL DEVICES/ITEMS EVEN IF NOT SPECIFICALLY INDICATED TO BE REMOVED ON THESE DRAWINGS IN ORDER TO ACCOMODATE NEW WORK.
- EQUIPMENT/ITEMS SHOWN CROSS HATCHED ON DRAWINGS ARE ITEMS TO BE REMOVED. ANY DEVICES/ITEMS REMOVED SHALL INCLUDE (BUT SHALL NOT BE LIMITED TO) THE REMOVAL OF ALL ASSOCIATED PIPING, CONTROLS, ETC. THAT ARE NOT INCORPORATED IN THE NEW LAYOUT. THE CONTRACTOR SHALL PERFORM ALL WORK REQUIRED TO INSURE CONTINUITY OF SERVICE TO EXISTING REMAINING EQUIPMENT. NO EXTRAS RELATING TO THE SCOPE OF WORK DESCRIBED WILL BE ALLOWED.
- EQUIPMENT, PIPING, ETC. REQUIRED TO RECONNECT SHALL BE INSTALLED CONCEALED WITHIN THE SUSPENDED CEILINGS, PARTITIONS AND/OR WALLS, FLOORS. NO SURFACE MOUNTED OR EXPOSED EQUIPMENT, PIPING, ETC., SHALL BE PERMITTED, UNLESS SPECIFICALLY INDICATED.
- ALL ITEMS TO BE REMOVED SHALL BE REVIEWED WITH THE OWNER PRIOR TO REMOVAL. OWNER SHALL HAVE FIRST SALVAGE RIGHTS. ITEMS THE OWNER WISHES TO KEEP SHALL BE REMOVED WITH CARE AND STORED AS DIRECTED BY OWNER. ITEMS THE OWNER DOES NOT WISH TO KEEP SHALL BE REMOVED FROM THE SITE AND DISPOSED OF PROPERLY.

		<u>ME</u>	CHANICAL SYMBOLS		
T	 THERMOSTAT — ARROW INDICATES DEVICE/ZONE CONTROL 	\	 NEW PIPING, DUCTWORK, AND EQUIPMENT 	├	- PIPE ELBOW UP
F	- FREEZESTAT	\	 EXISTING TO REMAIN PIPING, DUCTWORK, AND EQUIPMENT 	\longleftarrow	- GAUGE WITH BALL VALVE
P	- STATIC PRESSURE SENSOR	\ //////	 PIPING, DUCTWORK, AND EQUIPMENT FOR REMOVAL 	¿	- AUTOMATIC AIR VENT
T	 TEMPERATURE SENSOR W/CONTROL WIRING AND 1/2" CONDUIT WITH CLEAR PLASTIC GUARD(LOCKABLE) 	——	- BALL VALVE	<u></u>	- MANUAL AIR VENT
H	WITH CLEAR PLASTIC GUARD(LOCKABLE) — HUMIDITY SENSOR	├──│	- CIRCUIT SETTER	Ľ	– PIPE CAP
$\langle F \rangle$	- FLOW SENSOR	\leftarrow	- CHECK VALVE	\longmapsto	– PIPE BREAK
DSD	- DUCT SMOKE DETECTOR	$\longleftarrow \overline{\mathbb{X}} \longrightarrow$	- CONTROL VALVE - 2 WAY	├	- PIPE FLOW ARROW
VFD	– VARIABLE FREQUENCY DRIVE	\leftarrow	- DRAIN VALVE WITH HOSE BIB	/ #\	– REVISION NOTE
Ø	- ROUND DUCTWORK	\ \\	UNIONSTRAINER WITH BLOWDOWN	#)	- KEYED NOTE
		\\\ \\\			
	- 4- WAY CEILING SUPPLY DIFFUSER		- REDUCER OR INCREASER		- POINT OF NEW CONNECTI
	- CEILING EXHAUST/RETURN REGISTER	}	- BRANCH FROM BOTTOM OF PIPE		- LIMIT OF REMOVAL
→	- FLOW ARROW	├ ── ∀	- BRANCH FROM TOP OF PIPE	CD-1 200	- DIFFUSER/GRILLE LABEL
}——₩	- CIRCUIT SETTER	\longleftarrow	- PIPE ELBOW DN	CFM BDD	– BACK DRAFT DAMPER
SINGLE LINE		DOUBLE LINE	SINGLE LINE		DOUBLE LINE
├	- MANUAL VOLUME DAMPER			TURN/EXHAUST AIR CTANGULAR ELBOW DN	
AAD D	 AUTOMATIC AIR DAMPER INTERLOCKED WITH EQUIPMENT 	AAD	- RC	DUND ELBOW UP	
) DSD	- DUCT SMOKE DETECTOR	DSD	- R0	DUND ELBOW DN	
├	- FLEXIBLE CONNECTION		├──	ENTERED TRANSITION	
——	SUPPLY/OUTSIDE AIR RECTANGULAR ELBOW UP		→ OF	FFSET TRANSITION	
<u> </u>	SUPPLY/OUTSIDE AIRRECTANGULAR ELBOW DN		<u></u> − S0	QUARE TO ROUND TRANSITION	
	 RETURN/EXHAUST AIR RECTANGULAR ELBOW UP 		- RA	ADIUS ELBOW	
\		A	\sim		

HVAC NEW WORK NOTES

- 1. CONTROL WORK COORDINATED THROUGH ITC NORTH USING NEW BMS SYSTEM: JCI FACILITATOR.
- CONTRACTOR RESPONSIBLE TO MAINTAIN A SEALED INSULATED BARRIER FOR DUCTWORK AND ASSOCIATED TO PREVENT FORMATION OF CONDENSATION. PROVIDE NEW INSULATION ON NEW DUCTWORK INSTALLATIONS. DAMAGED AREAS OF EXISTING DUCTWORK INSULATION SHALL BE RECORDED BY THE CONTRACTOR AND BE SUBMITTED TO THE ENGINEER. CONTRACTOR TO REPAIR/REPLACE AND SEAL WITH ADHESIVE ALUMINUM TAPE. REPAIR OR REPLACEMENT OF EXISTING DUCTWORK INSULATION THAT IS NOT ALREADY NOTED ON THE DRAWINGS SHALL BE PROVIDED ON T&M BASIS AGAINST THE CONTRACT ALLOWANCE - REFER TO SPECIFICATIONS.



AMPERAGE BACKDRAFT DAMPER BRAKE HORSEPOWER BUILDING MANAGEMENT SYSTEM

ACCESS DOOR

AIR HANDLING UNIT

BRITISH THERMAL UNIT CUBIC FEET PER MINUTE CFM CABINET HEATER

HVAC ABBREVIATIONS

AUTOMATIC AIR DAMPER

CONDENSATE DRYBULB TEMPERATURE DIRECT DIGITAL CONTROL (SYSTEM)

DEWPOINT TEMPERATURE

CEILING

DEG DEGREE DIAMETER DN DOWN

CLG

DIRECT EXPANSION EXHAUST AIR

ENTERING AIR TEMPERATURE EXHAUST FAN EFFICIENCY EFF

EXHAUST GRILLE ESP EXTERNAL STATIC PRESSURE EXH EXHAUST

FAHRENHEIT FIRE DAMPER FINAL FILTER

FLR FLOOR FEET PER MINUTE FSTAT FREEZESTAT FEET

FT HD FEET OF HEAD FT WG FEET OF WATER GAUGE FACE VELOCITY

GAS GAL GALLON GALLONS PER MINUTE HEAD

HP

LOUVER MIXED AIR TEMPERATURE MAKE-UP AIR UNIT MAU

HORSEPOWER

1,000 BTU/HR MCA MINIMUM BRANCH CIRCUIT AMPACITY MOTORIZED DAMPER

OUTSIDE AIR OUTSIDE AIR INTAKE

PRESSURE DROP REMOVE RETURN AIR

REFRIGERANT LIQUID RPM REVOLUTIONS PER MINUTE REFRIGERANT SUCTION SATISFACTORY

SAT SUPPLY AIR TEMPERATURE SEN SENSIBLE HEAT SPECIFIC GRAVITY

STATIC PRESSURE TAB TESTING, ADJUSTING, BALANCE

TSTAT THERMOSTAT TYPICAL

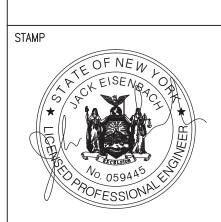
UNDER CUT VOLUME DAMPER WETBULB WATER GAUGE

TEMPERATURE DIFFERENCE IRRIGATION CONTRACTOR

ENGINEER: CONSULTANT(S):

FULLER D'ANGELO ARCHITECTS PLANNERS

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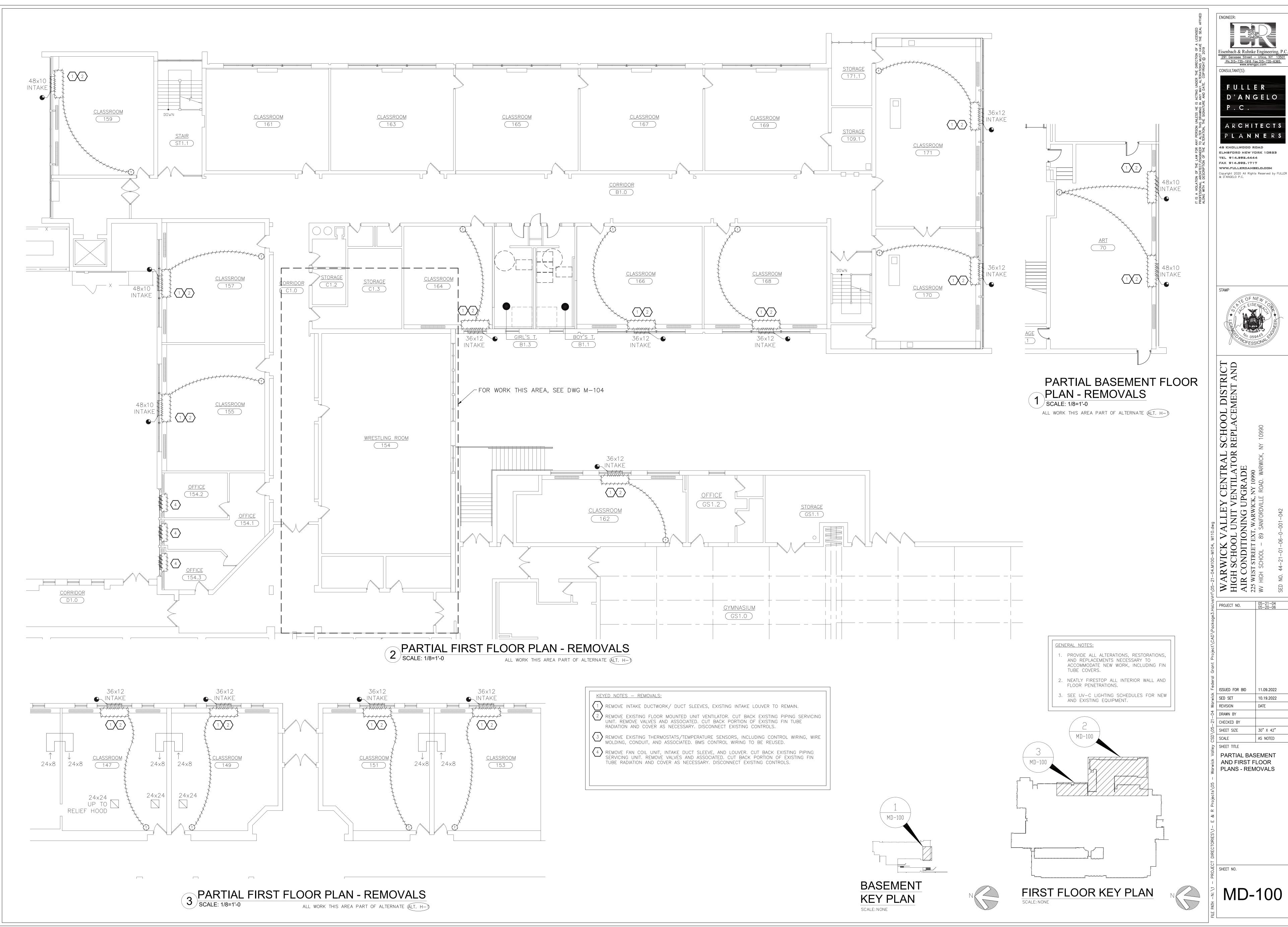
PROJECT NO. - ISSUED FOR BID 11.09.2022 SED SET 10.19.2022 ≥ REVISION DATE DRAWN BY

30" X 42"

AS NOTED SCALE SHEET TITLE **ABBREVIATIONS** AND SYMBOLS

CHECKED BY

SHEET SIZE



D'ANGELO

11.09.2022 10.19.2022 30" X 42" AS NOTED

PARTIAL FIRST FLOOR PLAN - REMOVALS SCALE: 1/8=1'-0

KEYED NOTES - REMOVALS:

- REMOVE INTAKE DUCTWORK/ DUCT SLEEVES, EXISTING INTAKE LOUVER TO REMAIN.
- REMOVE EXISTING FLOOR MOUNTED UNIT VENTILATOR. CUT BACK EXISTING PIPING SERVICING UNIT. REMOVE VALVES AND ASSOCIATED. CUT BACK PORTION OF EXISTING FIN TUBE RADIATION AND COVER AS NECESSARY. DISCONNECT EXISTING CONTROLS.

 REMOVE EXISTING THERMOSTATS/TEMPERATURE SENSORS, INCLUDING CONTROL WIRING, WIRE
- REMOVE EXISTING THERMOSTATS/TEMPERATURE SENSORS, INCLUDING CONTROL WIRING, WIRE MOLDING, CONDUIT, AND ASSOCIATED. BMS CONTROL WIRING TO BE REUSED.

5 CUT AND MODIFY RADIANT PIPING AND COVER TO PREPARE FOR NEW WORK. CUT HOLE IN MASONRY FOR NEW SLEEVE AND LINTEL.

CAREFULLY REMOVE EXISTING WINDOW AIR CONDITIONER AND INSULATED PANEL AND TURN OVER TO DISTRICT.

GENERAL NOTES:

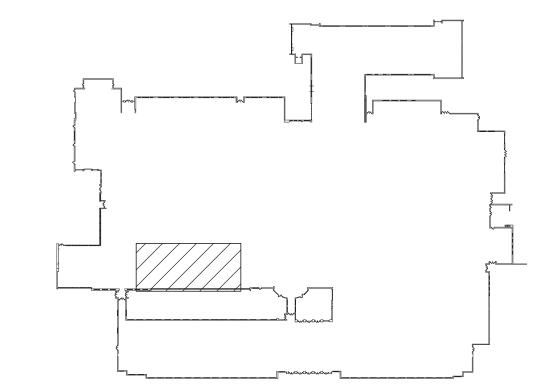
1. PROVIDE ALL ALTERATIONS, RESTORATIONS, AND REPLACEMENTS NECESSARY TO ACCOMMODATE NEW WORK, INCLUDING FIN

3. SEE UV-C LIGHTING SCHEDULES FOR NEW

TUBE COVERS.

2. PROVIDE FIRESTOP AT ALL INTERIOR WALL AND FLOOR PENETRATIONS.

AND EXISTING EQUIPMENT.



FIRST FLOOR KEY PLAN
SCALE: NONE



Eisenbach & Ruhnke Engineering, P.C.

291 Genesee Street – Utica, NY 13501

Ph: 315-735-1916 Fax: 315-735-6365

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CONSULTANT(S):

FULLER

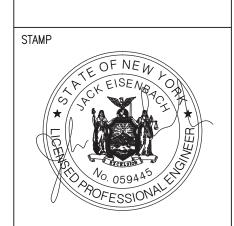
D'ANGELO

P.C.

ARCHITECTS

PLANNERS

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WARWICK VALLEY CENTRAL SCHOOL DISTRICT
HIGH SCHOOL UNIT VENTILATOR REPLACEMENT AND
AIR CONDITIONING UPGRADE

225 WEST STREET EXT, WARWICK, NY 10990
WV HIGH SCHOOL - 89 SANFORDVILLE ROAD. WARWICK, NY 10990

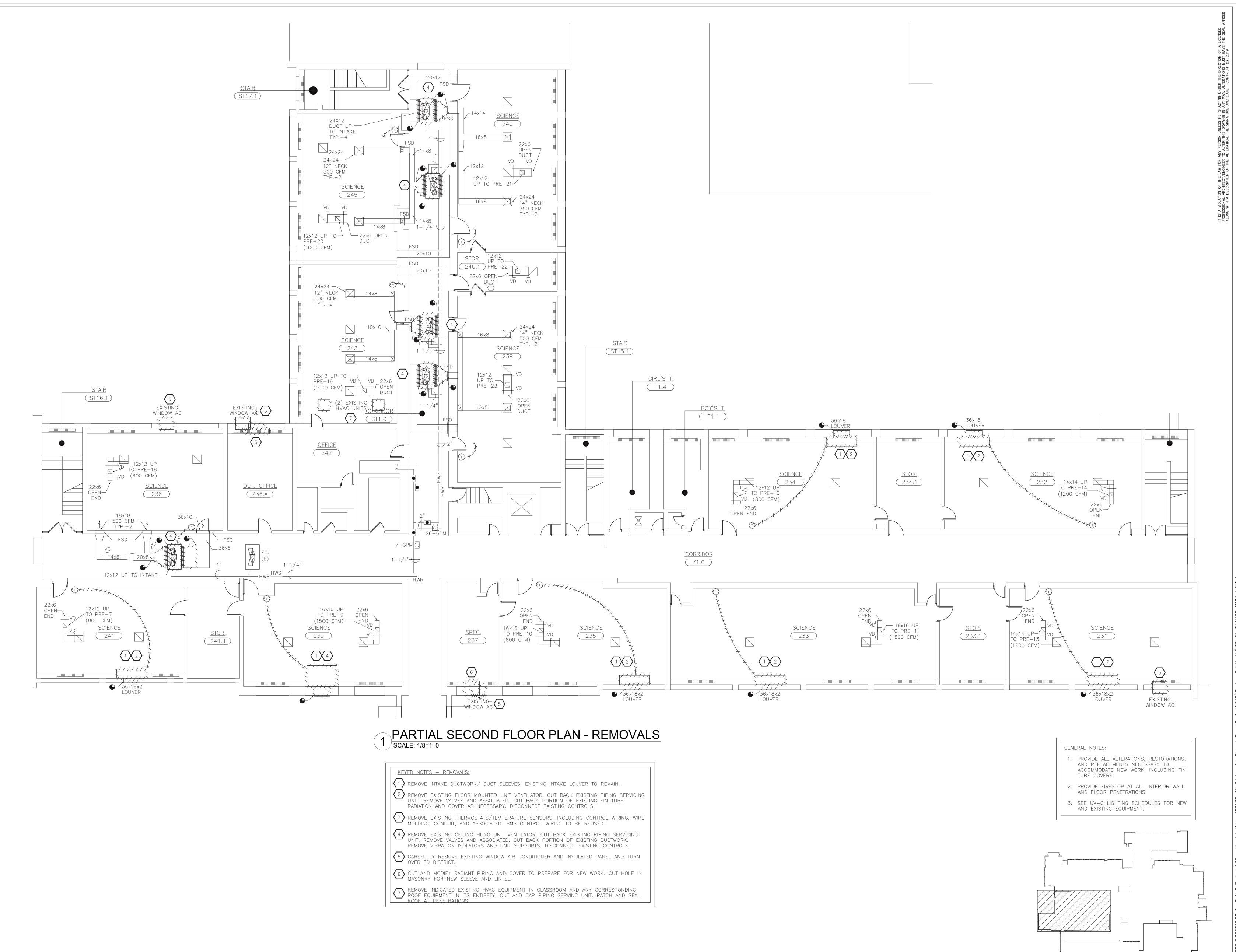
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-21-	CHECKED BY	
02	SHEET SIZE	30" X 42"
CSD	SCALE	AS NOTED
-		

SHEET TITLE

PARTIAL FIRST FLOOR

PLAN - REMOVALS

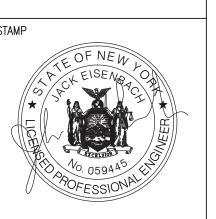
- PROJECT DIRECTORIES/1- E & R F



CONSULTANT(S): D'ANGELO ARCHITECTS

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PLANNERS



SCHOOL DISTIRE REPLACEMENT WARWICK VALLEY CENTRAL S
HIGH SCHOOL UNIT VENTILATOR R
AIR CONDITIONING UPGRADE

225 WEST STREET EXT, WARWICK, NY 10990
WV HIGH SCHOOL - 89 SANFORDVILLE ROAD. WARWICK, NY

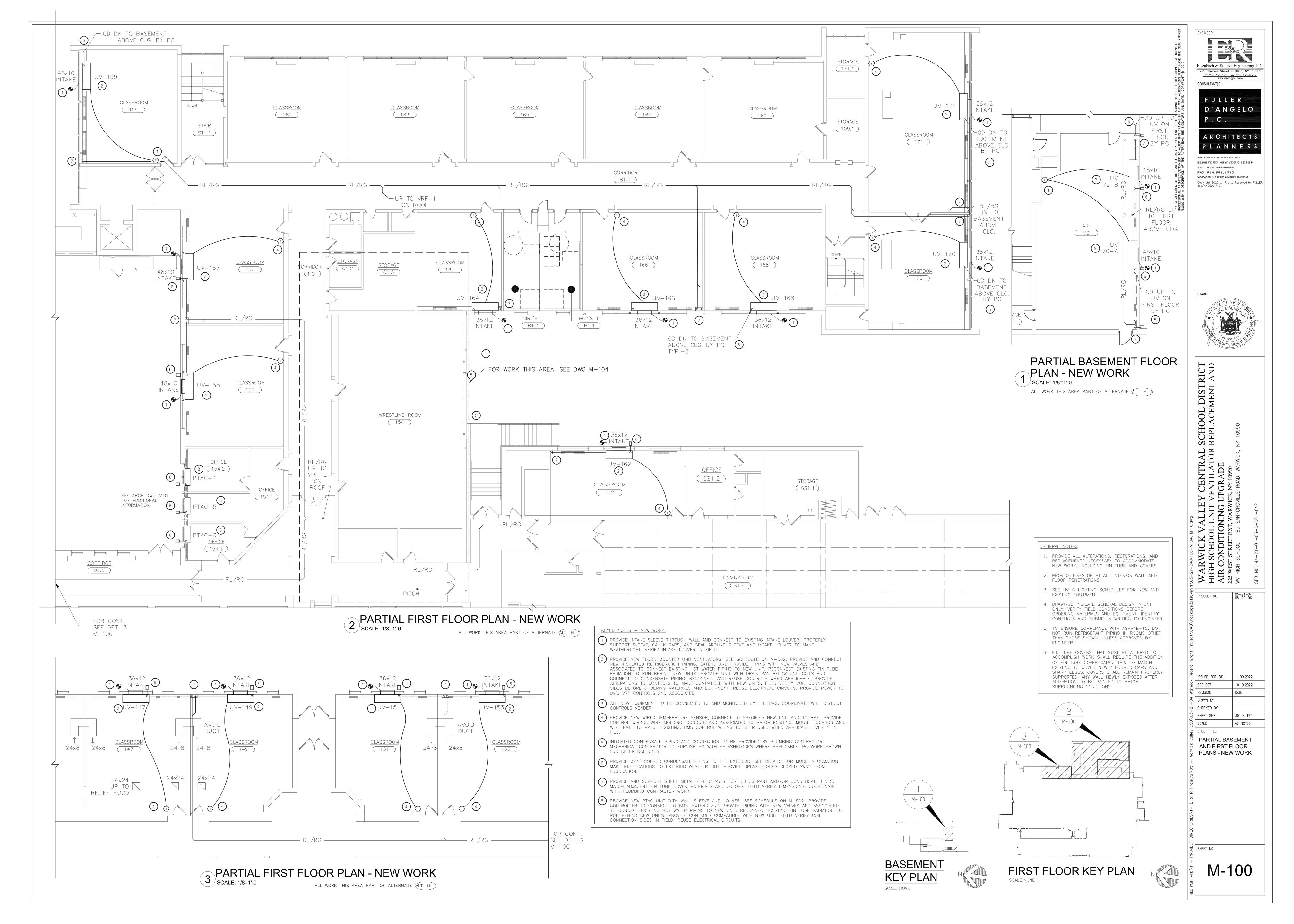
ISSUED FOR BID 11.09.2022 § SED SET 10.19.2022 REVISION ■ DATE DRAWN BY CHECKED BY 30" X 42" SHEET SIZE

PROJECT NO.

SCALE AS NOTED SHEET TITLE

PARTIAL SECOND FLOOR PLAN -REMOVALS

SECOND FLOOR KEY PLAN



KEYED NOTES - NEW WORK:

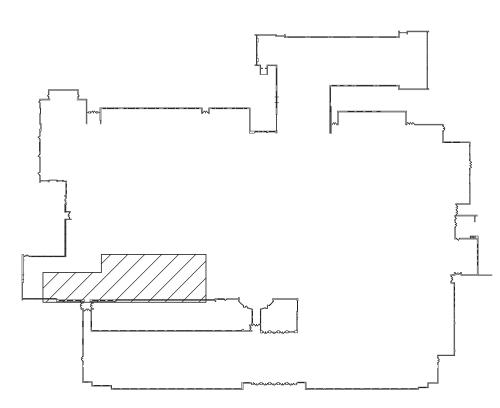
- PROVIDE INTAKE SLEEVE THROUGH WALL AND CONNECT TO NEW INTAKE LOUVER. PROPERLY SUPPORT SLEEVE CALLER GAPS AND SEAL AROUND SLEEVE AND INTAKE LOUVER TO MAKE SUPPORT SLEEVE, CAULK GAPS, AND SEAL AROUND SLEEVE AND INTAKE LOUVER TO MAKE WEATHERTIGHT. PROVIDE LINTEL.
- 2 PROVIDE NEW FLOOR MOUNTED UNIT VENTILATORS. SEE SCHEDULE ON M-502. PROVIDE AND CONNECT NEW INSULATED REFRIGERATION PIPING. EXTEND AND PROVIDE PIPING WITH NEW VALVES AND ASSOCIATED TO CONNECT EXISTING HOT WATER PIPING TO NEW UNIT. RECONNECT EXISTING FIN TUBE RADIATION TO RUN BEHIND NEW UNITS. PROVIDE UNIT WITH DRAIN PAN BELOW UNIT COILS AND CONNECT TO CONDENSATE PIPING. RECONNECT AND REUSE CONTROLS WHEN APPLICABLE. PROVIDE ALTERATIONS TO CONTROLS TO MAKE COMPATIBLE WITH NEW UNITS. FIELD VERIFY COIL CONNECTION SIDES BEFORE ORDERING MATERIALS AND EQUIPMENT. REUSE ELECTRICAL CIRCUITS. PROVIDE POWER TO UV'S VRF CONTROLS AND ASSOCIATED.
- 3 ALL NEW EQUIPMENT TO BE CONNECTED TO AND MONITORED BY THE BMS. COORDINATE WITH DISTRICT CONTROLS VENDER.
- PROVIDE NEW WIRED TEMPERATURE SENSOR, CONNECT TO SPECIFIED NEW UNIT AND TO BMS. PROVIDE CONTROL WIRING, WIRE MOLDING, CONDUIT, AND ASSOCIATED TO MATCH EXISTING. PROVIDE BMS CONTROL WIRING, VERIFY IN FIELD.
- 5 INDICATED CONDENSATE PIPING AND CONNECTION TO BE PROVIDED BY PLUMBING CONTRACTOR. MECHANICAL CONTRACTOR TO FURNISH PC WITH SPLASHBLOCKS WHERE APPLICABLE. PC WORK SHOWN FOR REFERENCE ONLY.
- 6 PROVIDE 3/4" COPPER CONDENSATE PIPING TO THE EXTERIOR. SEE DETAILS FOR MORE INFORMATION. MAKE PENETRATIONS TO EXTERIOR WEATHERTIGHT. PROVIDE SPLASHBLOCKS
- SLOPED AWAY FROM FOUNDATION. 7 PROVIDE AND SUPPORT SHEET METAL PIPE CHASES FOR REFRIGERANT AND/OR CONDENSATE LINES. MATCH ADJACENT FIN TUBE COVER MATERIALS AND COLORS. FIELD VERIFY DIMENSIONS. COORDINATE WITH PLUMBING CONTRACTOR WORK.
- 8 EXTEND UNIT VENTILATOR HYDRONIC HEATING CIRCUIT TO NEW UNIT VENTILATOR FROM NEAREST MAIN. VERIFY IN FIELD PRIOR TO BID.

GENERAL NOTES:

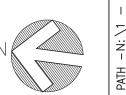
. PROVIDE ALL ALTERATIONS, RESTORATIONS, AND REPLACEMENTS NECESSARY TO ACCOMMODATE

NEW WORK, INCLUDING FIN TUBE AND COVERS.

- . PROVIDE FIRESTOP AT ALL INTERIOR WALL AND FLOOR PENETRATIONS.
- 3. SEE UV-C LIGHTING SCHEDULES FOR NEW AND
- EXISTING EQUIPMENT. 4. DRAWINGS INDICATE GENERAL DESIGN INTENT
- ONLY. VERIFY FIELD CONDITIONS BEFORE ORDERING MATERIALS AND EQUIPMENT. IDENTIFY CONFLICTS AND SUBMIT IN WRITING TO ENGINEER.
- 5. TO ENSURE COMPLIANCE WITH ASHRAE-15, DO NOT RUN REFRIGERANT PIPING IN ROOMS OTHER THAN THOSE SHOWN UNLESS APPROVED BY
- 6. FIN TUBE COVERS THAT MUST BE ALTERED TO ACCOMPLISH WORK SHALL REQUIRE THE ADDITION OF FIN TUBE COVER CAPS/ TRIM TO MATCH EXISTING TO COVER NEWLY FORMED GAPS AND SHARP EDGES. COVERS SHALL REMAIN PROPERLY SUPPORTED. ANY WALL NEWLY EXPOSED AFTER ALTERATION TO BE PAINTED TO MATCH SURROUNDING CONDITIONS.

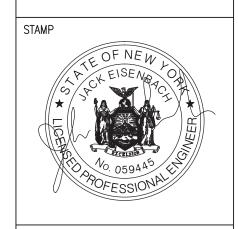


FIRST FLOOR KEY PLAN



CONSULTANT(S):

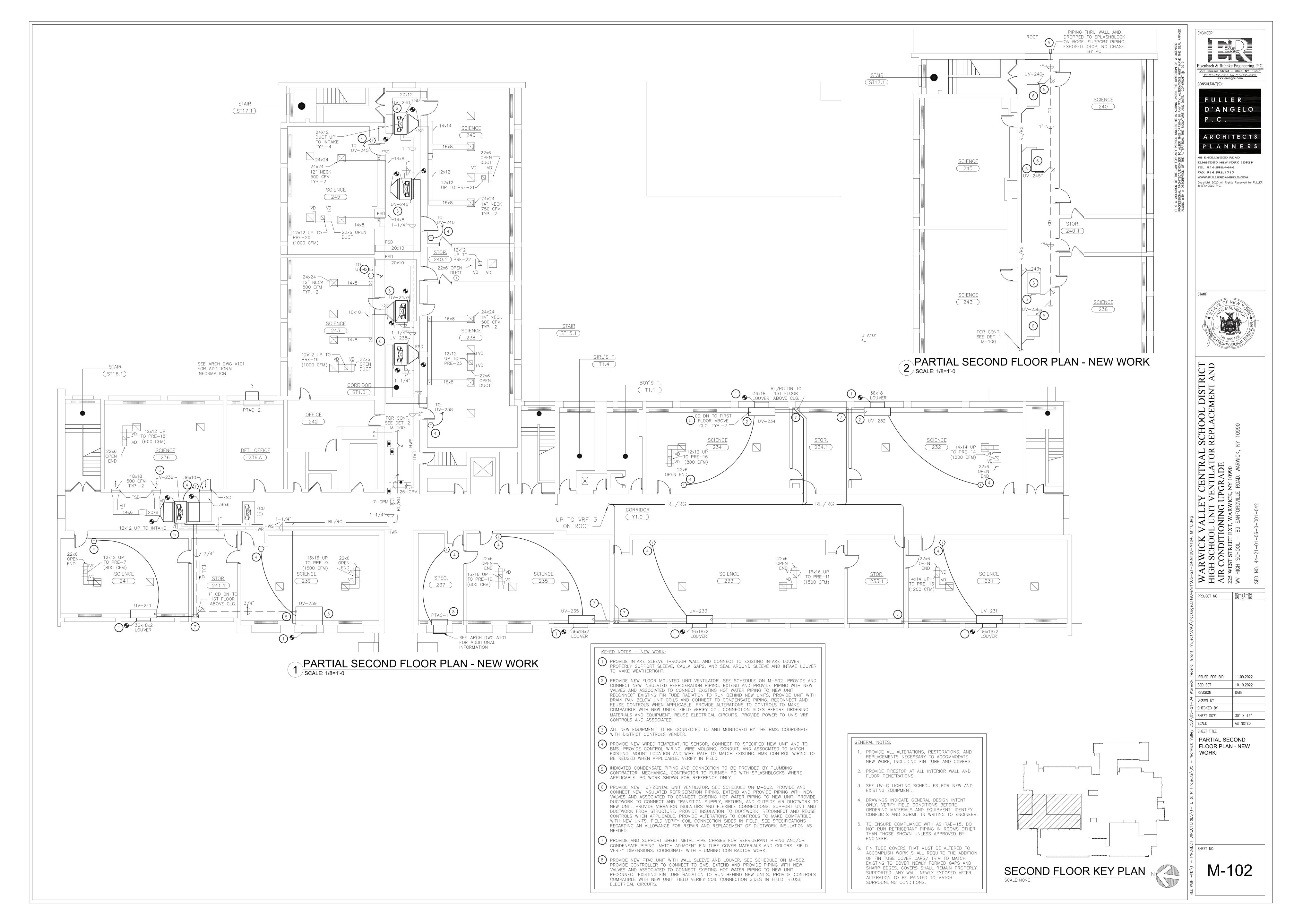
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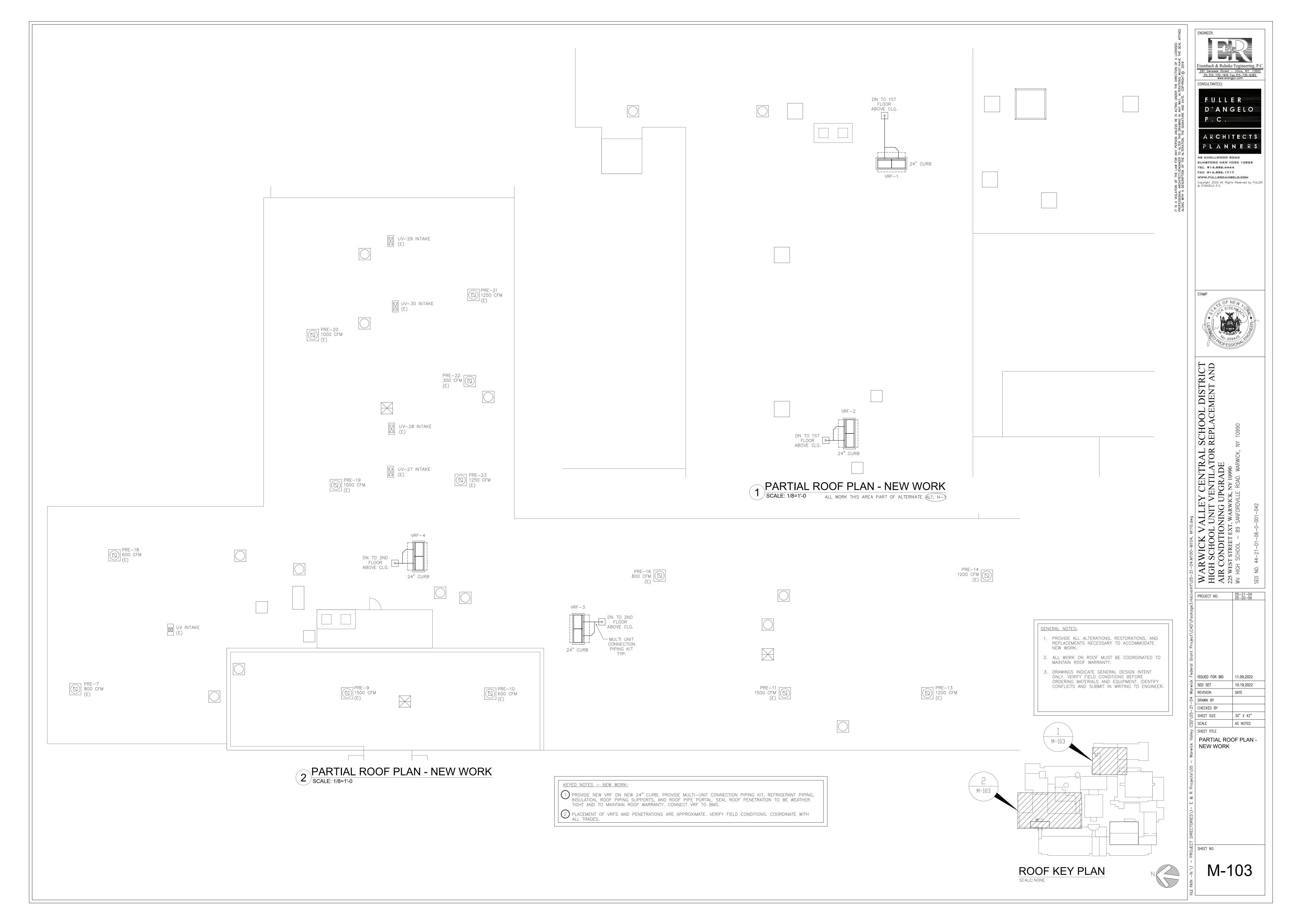


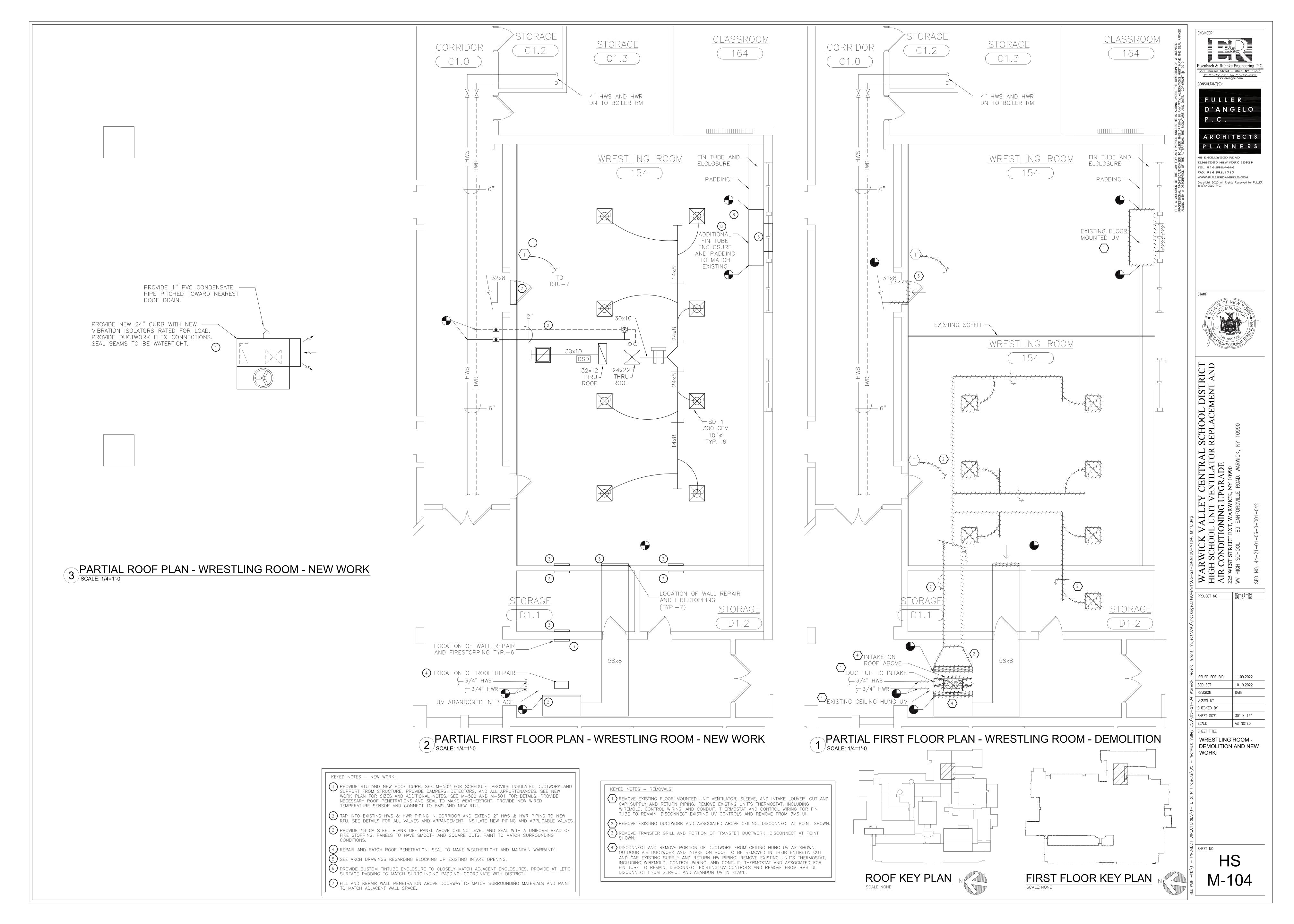
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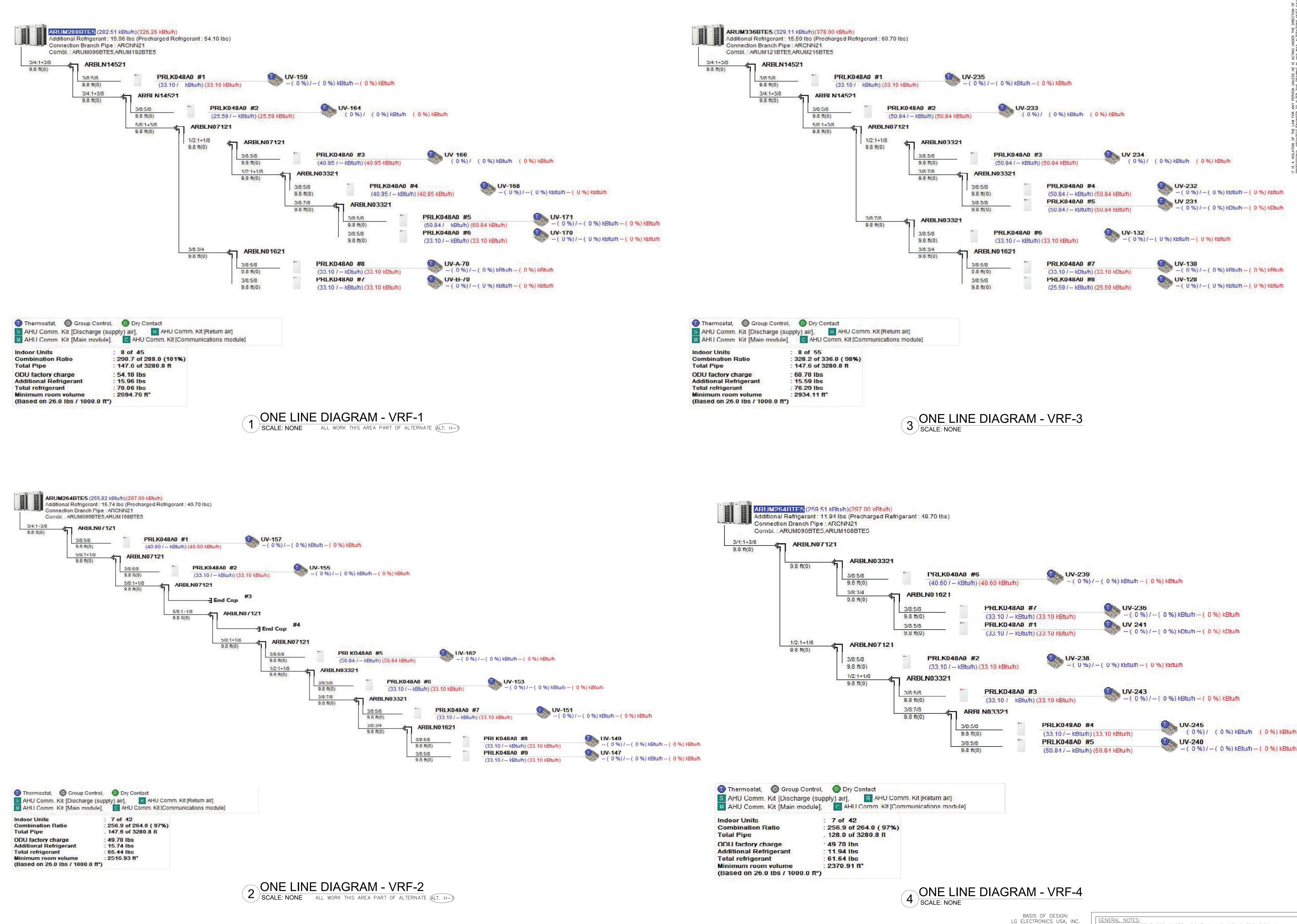
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SED SET	10.19.2022	
REVISION	DATE	
DRAWN BY		
CHECKED BY		
SHEET SIZE	30" X 42"	
SCALE	AS NOTED	
SHEET TITLE		

PARTIAL FIRST FLOOR PLAN - NEW WORK









EISENDACH & RUHNKE Engineering, P.C.

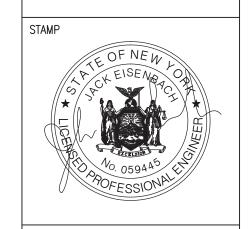
291 Genesee Street - Utica, NY 13501

Ph: 315-735-1916 Fax: 315-735-6365

WWW.erengoc.com

CONSULTANT(S):

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WARWICK VALLEY CENTRAL SCHOOL DISTRICT HIGH SCHOOL UNIT VENTILATOR REPLACEMENT AND AIR CONDITIONING UPGRADE

225 WEST STREET EXT, WARWICK, NY 10990

WY HIGH SCHOOL - 89 SANFORDVILLE ROAD. WARWICK, NY 10990

PROJECT NO. 05-21-04 05-20-06

ISSUED FOR BID 11.09.2022

SED SET 10.19.2022

REVISION DATE

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SCALE AS NOTED

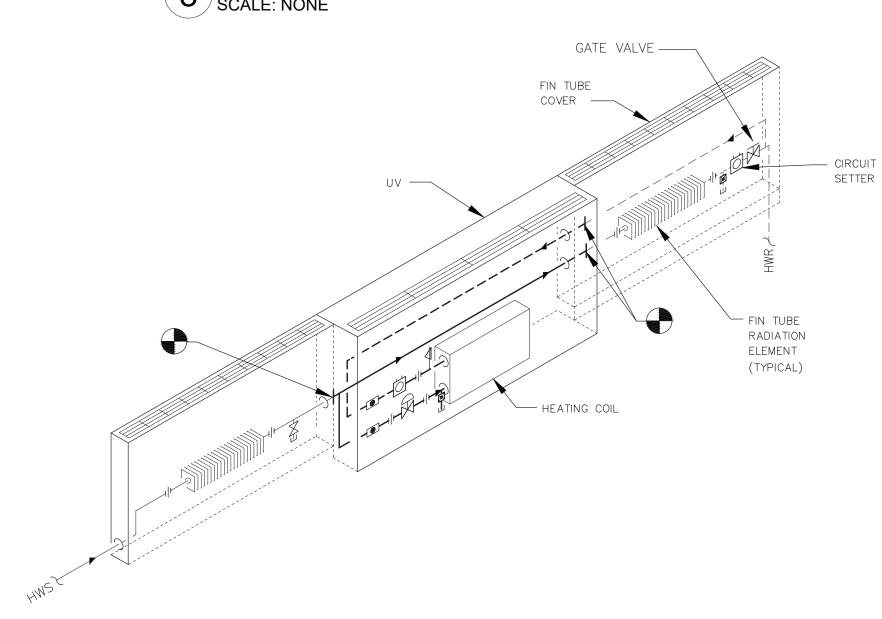
SHEET TITLE

VRF SYSTEM TREES

SHEET NO.

GENERAL INTENT FOR SYSTEM ROUTING AND SIZING FOR BIDDING PURPOSES ONLY. PIPE SIZING AND ROUTING SHALL BE VERIFIED WITH MANUFACTURER AND BE BASED ON FINAL LOCATIONS OF EQUIPMENT. INSTALL AND CHARGE SYSTEM PER MANUFACTURER RECOMMENDATIONS.

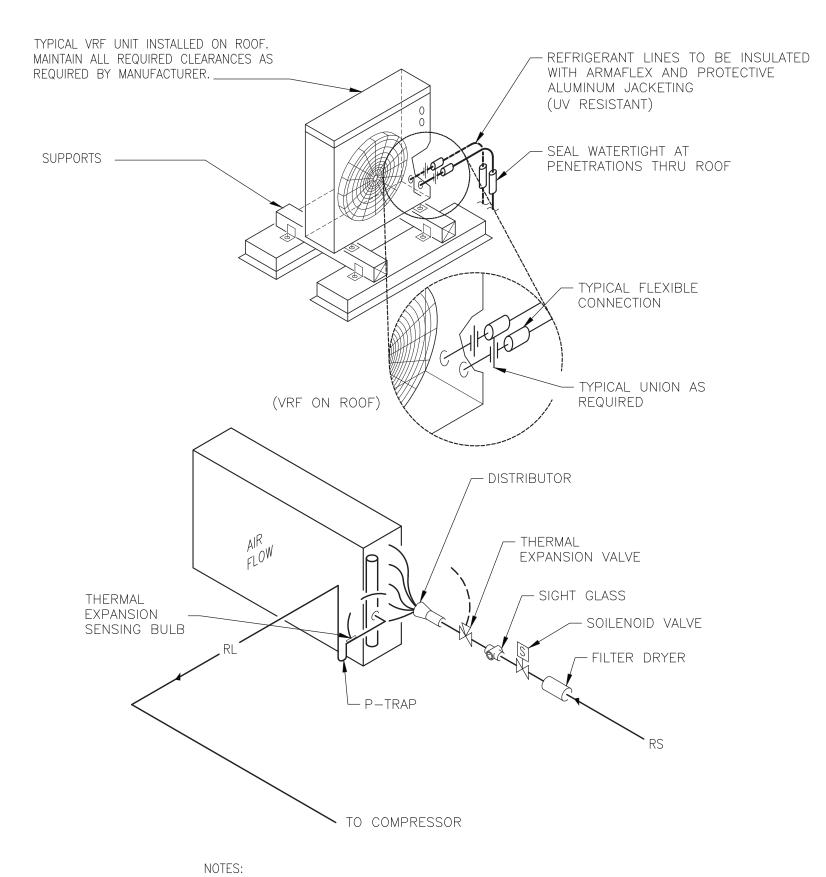
8 VERTICAL UNIT VENTILATOR DETAIL SCALE: NONE



- 1. LOCATE CONTROL VALVES, SHUTOFF VALVES, AND CIRCUIT SETTERS SO THAT THEY ARE EASILY ACCESSIBLE FOR INSPECTION AND MAINTENANCE. PROVIDE ACCESS DOORS IN APPROPRIATE LOCATIONS WHERE INSTALLATION REQUIRES VALVES AND/OR CIRCUIT SETTERS TO BE CONCEALED.
- 2. WHEN FIN RADIATION IS INSTALLED IN CLASSROOMS WITH UNIT VENTILATORS, VALVES ARE LOCATED BEHIND OPEN SHELVING OR FIN TUBE ENCLOSURE AS APPLICABLE.
- 3. PROVIDE ENCLOSURES AS REQUIRED TO CONCEAL REFRIGERANT LINES.
- 4. MODIFY FIN-TUBE ENCLOSERS AS REQUIRED TO PERMIT NEW UV INSTALLATIONS.
- REUSE/MODIFY END CAPS AS APPLICABLE.

 5. PNEUMATIC LINES FEEDING EXISTING WALL HUNG THERMOSTAT MUST BE PLUGGED AND

TYPICAL CLASSROOM UNIT VENT W/FTR PIPING DETAIL SCALE: NONE

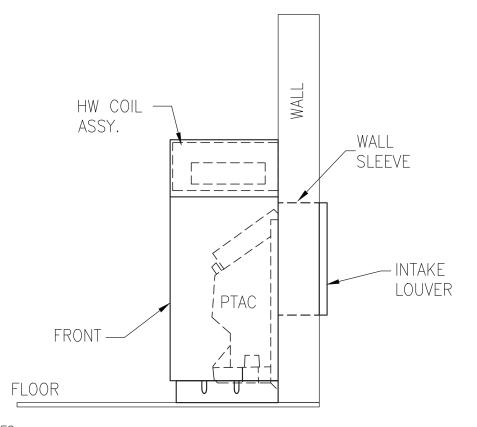


INSTALL PER MANUFACTURERS RECOMMENDATIONS.
 PROVIDE ENCLOSURES AS REQUIRED TO CONCEAL REFRIGERANT LINES

PIPING CONNECTIONS AT DIRECT

EXPANSION COOLING COIL

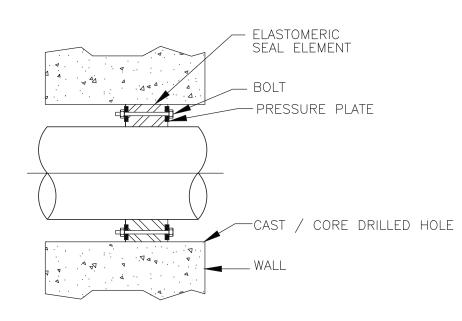
SCALE: NONE



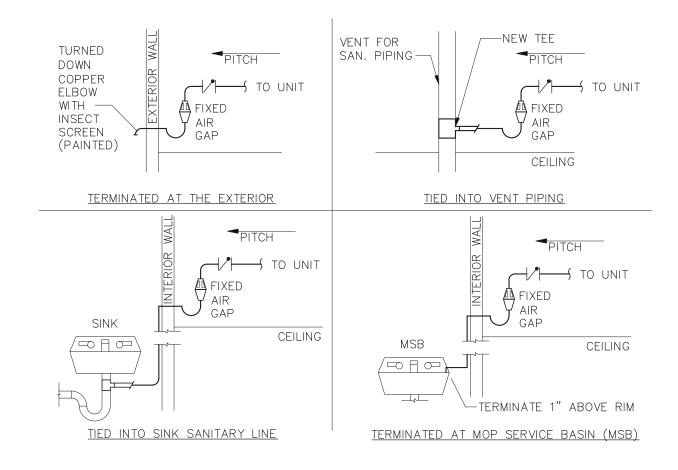
- NOTES:

 1. LOCATE CONTROL VALVES, SHUTOFF VALVES, AND CIRCUIT SETTERS SO THAT THEY ARE EASILY ACCESSIBLE FOR INSPECTION AND MAINTENANCE. PROVIDE ACCESS DOORS IN APPROPRIATE LOCATIONS WHERE INSTALLATION REQUIRES VALVES AND/OR CIRCUIT SETTERS TO BE CONCEALED. CONSULT MANUFACTURER DATA FOR BRANDS AND TYPES.
- 2. WHEN FIN RADIATION IS INSTALLED IN CLASSROOMS WITH UNIT VENTILATORS, VALVES ARE LOCATED BEHIND OPEN SHELVING OR FIN TUBE ENCLOSURE AS APPLICABLE.
- PROVIDE ENCLOSURES AS REQUIRED TO CONCEAL REFRIGERANT LINES.
 MODIFY FIN-TUBE ENCLOSERS AS REQUIRED TO PERMIT NEW INSTALLATIONS. REUSE/MODIFY END CAPS AS APPLICABLE.

4 PTAC HYDRONIC CABINET SCALE: NONE



PIPE SLEEVE AT WALL PENETRATION SCALE: NONE



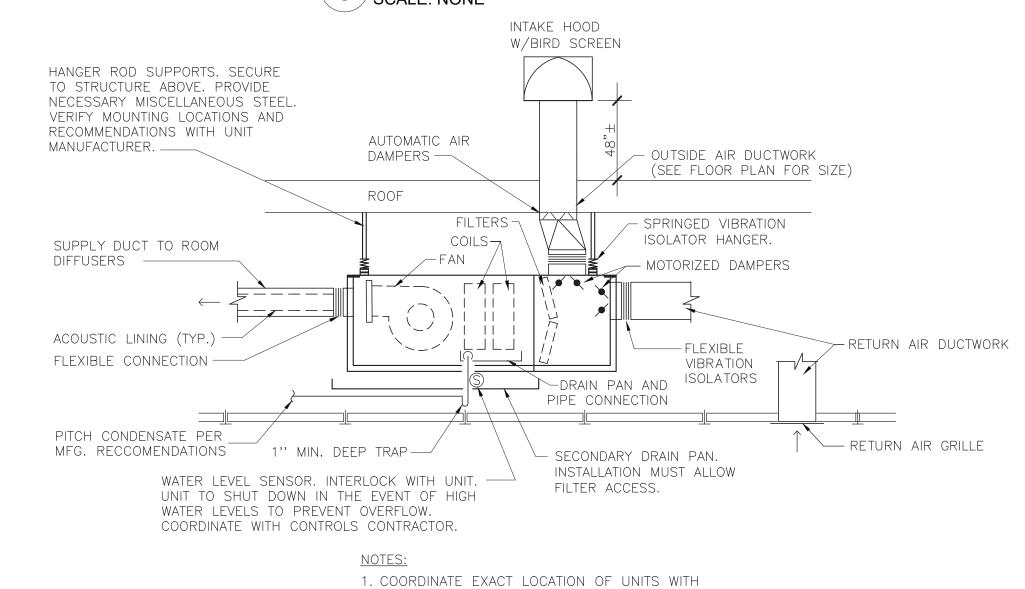
NOTE:
RUN CONDENSATE PIPING WITH TRAP AND VENT FROM ALL EVAPORATOR
COILS TO LOCATION SPECIFIED. PROVIDE INSULATION AND SUPPORT. SIZE TO
BE 3/4" UNLESS OTHERWISE SPECIFIED.

PIPING AT WALL PENETRATIONS TO BE SLEEVED. CHANGEOVER FROM PVC TO COPPER FOR EXTERIOR TERMINATION TO BEGIN BEFORE EXTERIOR WALL PENETRATION.

(TYPICAL FROM ALL EVAPOARTOR/ DX COILS)

SEE M DWGS FOR LOCATIONS

6 CONDENSATE LINE CONNECTION DETAIL SCALE: NONE

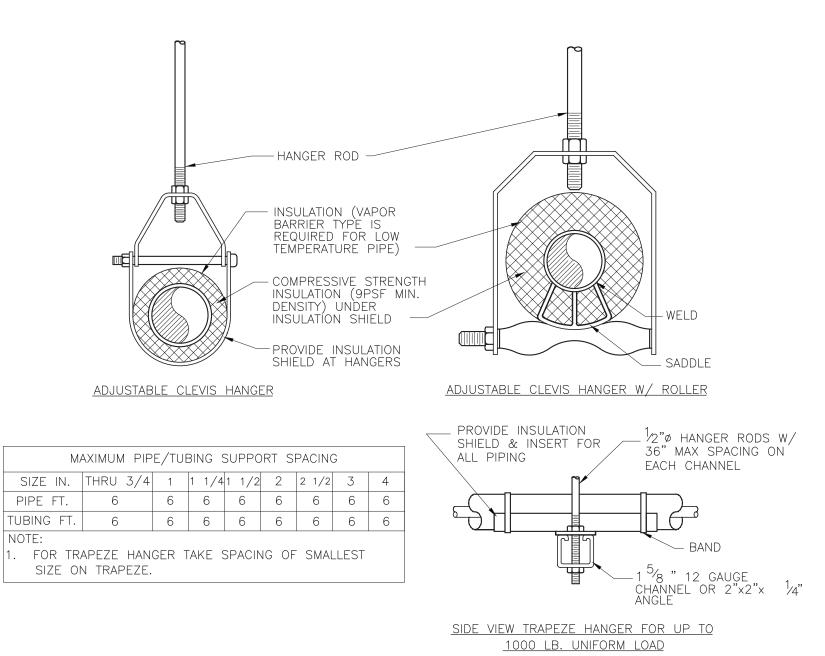


7 CEILING HUNG (HORIZONTAL) UNIT VENTILATOR DETAIL

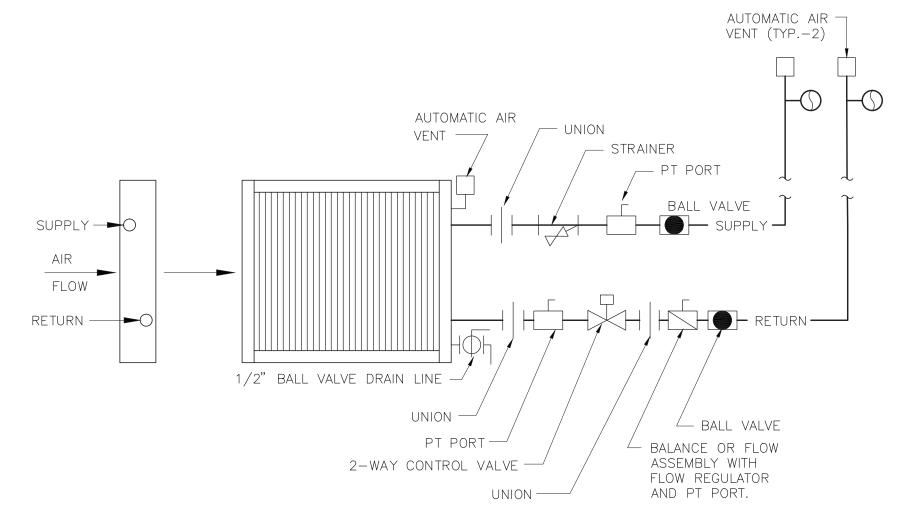
EXISTING AND NEW BUILDING COMPONENTS TO

ALLOW PROPER UNIT CONNECTIONS AND

MAINTENANCE.



1 PIPE SUPPORT DETAIL SCALE: NONE

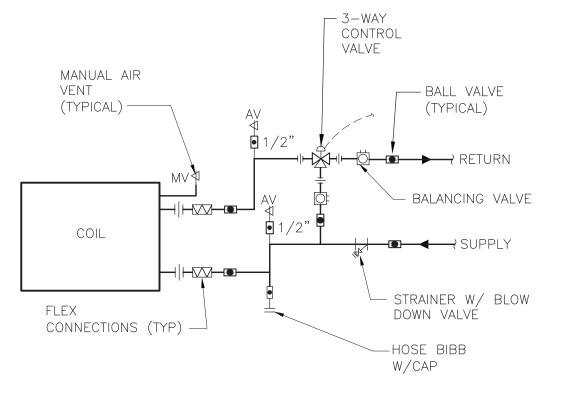


- NOTES:

 1. LOCATE CONTROL VALVES, SHUTOFF VALVES, AND CIRCUIT SETTERS SO THAT THEY ARE EASILY ACCESSIBLE FOR INSPECTION AND MAINTENANCE. PROVIDE ACCESS DOORS IN APPROPRIATE LOCATIONS WHERE INSTALLATION REQUIRES VALVES AND/OR CIRCUIT SETTERS TO BE CONCEALED.
- 2. WHEN FIN RADIATION IS INSTALLED IN CLASSROOMS WITH UNIT VENTILATORS, VALVES ARE LOCATED BEHIND OPEN SHELVING, UV CABINET, OR FIN TUBE ENCLOSURE AS APPLICABLE.
- 3. PROVIDE ENCLOSURES AS REQUIRED TO CONCEAL REFRIGERANT LINES.

 4. PROVIDE AIR VENTS AT ALL HIGH POINTS IN PIPING SYSTEM
- 4. PROVIDE AIR VENTS AT ALL HIGH POINTS IN PIPING SYSTEM
- 5. PROVIDE ALL VALVES AND ASSOCIATED SHOWN.6. INSULATE SUPPLY AND RETURN.

UNIT VENTILATOR, FAN COIL UNIT, HYDRONIC PTAC HOT WATER COIL DETAIL SCALE: NONE



NOTES:

1. SUPPORT PIPES FROM STRUCTURE OR FLOOR STANCHEON AS APPLICABLE.

2. COILS MOUNTED IN DUCTS TO BE PROVIDE WITH ACCESS PANELS UPSTREAM OF THE COIL.

3. PIPE COIL TO ALLOW REMOVAL OF COIL WITHOUT REMOVING PIPING BEYOND UNIONS OR FLANGES.

4. FOR UNITS PROVIDED WITH OTHER THAN ONE COIL, PROVIDE FLOW BALANCER, FLANGES, FLEXIBLE CONNECTOR, DRAINS, AND AIR VENTS FOR EACH COIL.

5. COOLING COIL SIMILAR

3 WAY VALVE
SCALE: NONE

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AMP

OF NEW

OS SEISENBROTH

NO. 059445

POFESSIONALE

HIGH SCHOOL UNIT VENTILATOR REPLACEMENTAIR CONDITIONING UPGRADE

25 WEST STREET EXT, WARWICK, NY 10990

N HIGH SCHOOL – 89 SANFORDVILLE ROAD. WARWICK, NY 10990

PROJECT NO. 05-21-04 05-20-06

PROJECT NO. 05-21-04 05-20-06

ISSUED FOR BID 11.09.2022

SED SET 10.19.2022

REVISION DATE

DRAWN BY

CHECKED BY

SHEET SIZE 30" X 42"

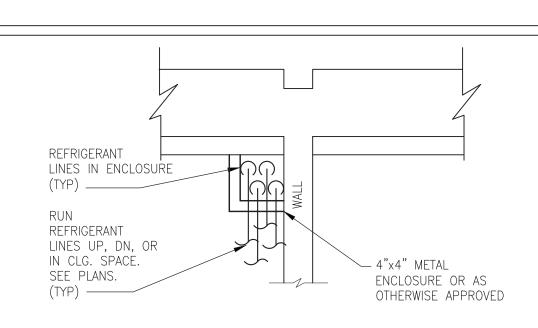
AS NOTED

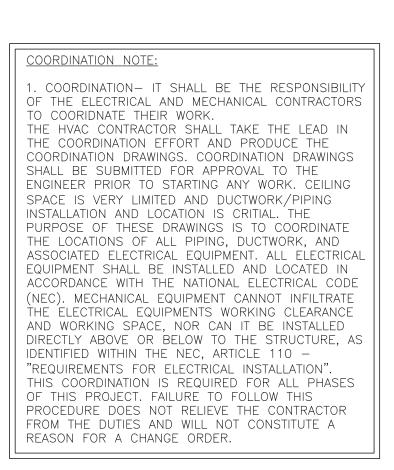
SHEET NO.

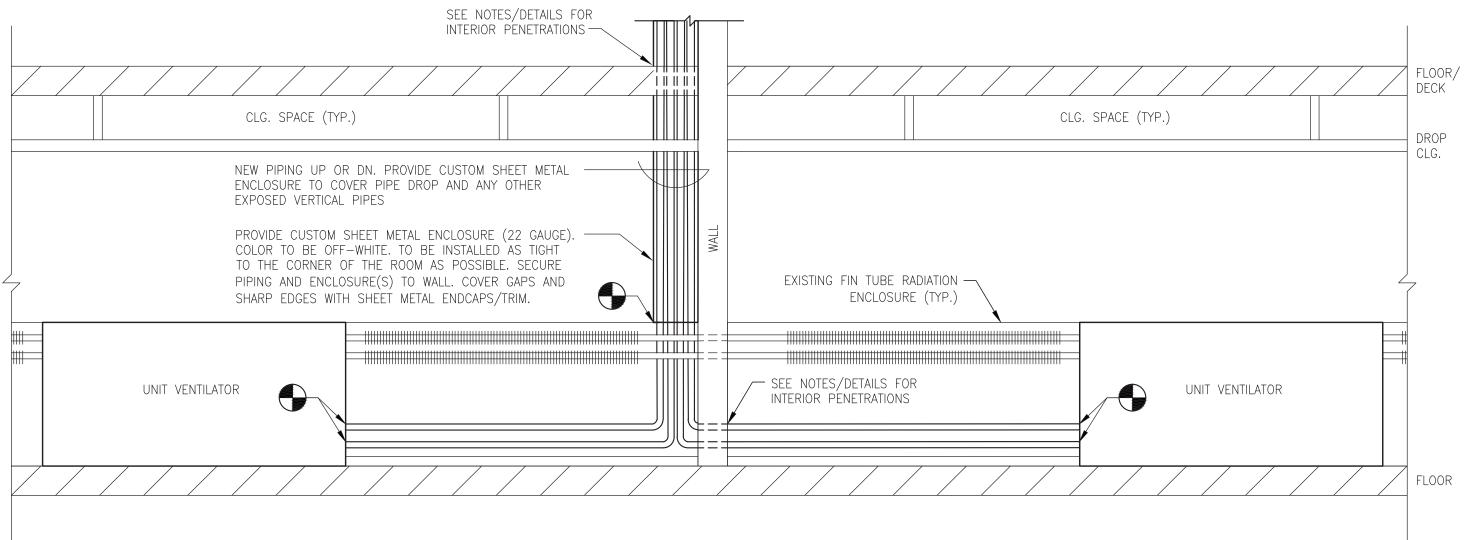
SCALE

SHEET TITLE

DETAILS





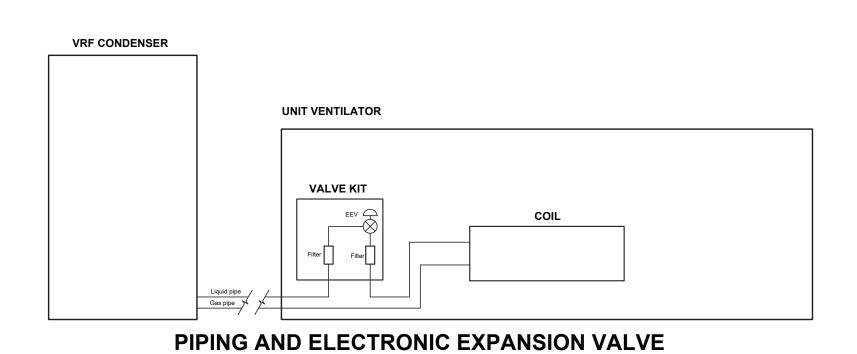


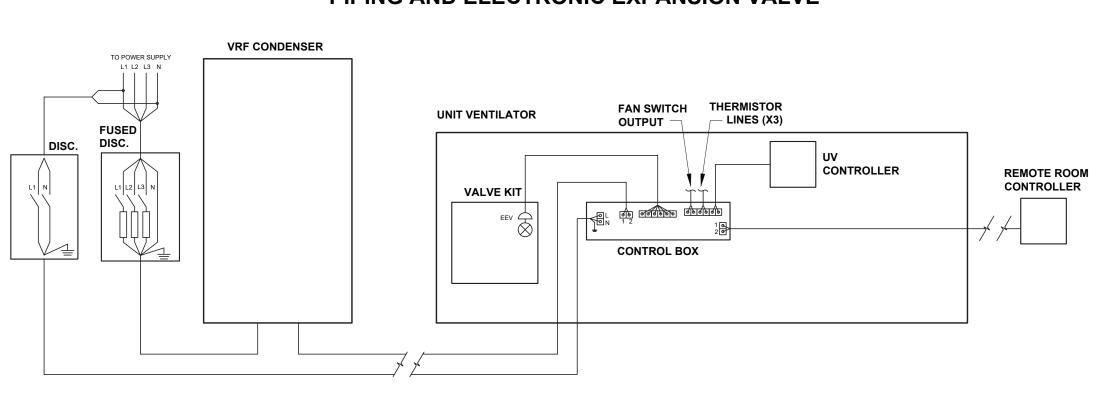
1 CUSTOM PIPING ENCLOSURE DETAIL (TYPICAL)

SCALE: NONE

<u>NEW WORK NOTES:</u>

SEE MANUFACTURER INSTALLATION RECOMMENDATIONS. ACTUAL PIPING PATHS WILL VARY. SEE DRAWINGS FOR INTENT. VERIFY COIL CONNECTION SIDES BEFORE ORDERING EQUIPMENT.



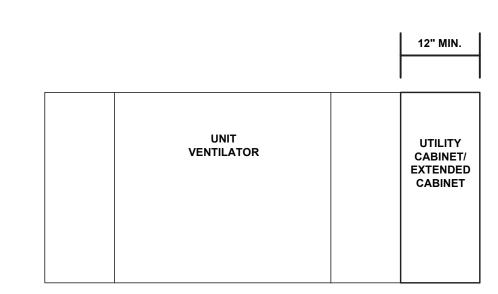


POWER AND CONTROLS

2 VRF-UNIT VENTILATOR PIPING AND ELECTRICAL DETAILS SCALE: NONE

NEW WORK NOTES:

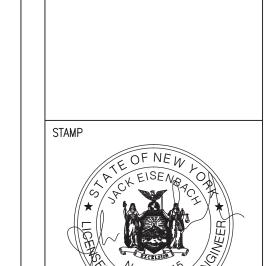
SEE MANUFACTURER RECOMMENDATIONS REGARDING THERMISTOR PLACEMENT. MULTI UNIT POWER OPTION NOT SHOWN BUT IS TO BE INCLUDED. EEV TO BE POWERED PER MANUFACTURER RECOMMENDATIONS.



3 UNIT VENTILATOR EXTENDED CABINET SCALE: NONE

<u>NEW WORK NOTES</u>:

UTILITY/ EXTENDED CABINET TO MATCH UNIT VENTILATOR CABINET HEIGHT, DEPTH, COLOR, APPEARANCE AND MANUFACTURER. COIL CONNECTION SIDE TO BE VERIFIED IN FIELD BEFORE ORDERING EQUIPMENT. MAKE ALL ALTERATIONS TO FIN TUBE AND COVERS AS NECESSARY. UTILITY CABINET TO HOUSE VRF CONTROL BOX AND VRF ELECTRONIC EXPANSION VALVE.



ENGINEER:

CONSULTANT(S):

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VARWICK VALLEY CENTRAL SCHOOL DISTRIC IIGH SCHOOL UNIT VENTILATOR REPLACEMENT ANI IR CONDITIONING UPGRADE

S WEST STREET EXT, WARWICK, NY 10990

V HIGH SCHOOL - 89 SANFORDVILLE ROAD. WARWICK, NY 10990

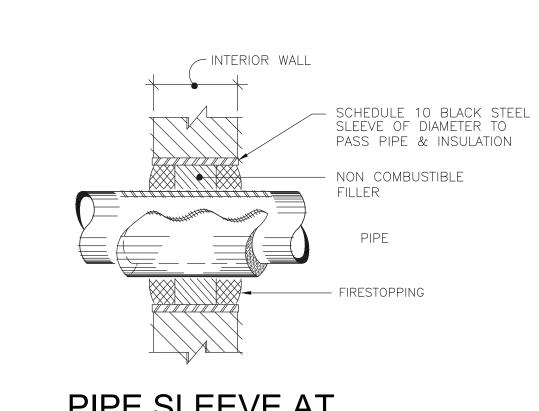
ISSUED FOR BID	11.09.2022
SED SET	10.19.2022
REVISION	DATE
DRAWN BY	
CHECKED BY	
SHEET SIZE	30" X 42"
SCALE	AS NOTED

PROJECT NO.

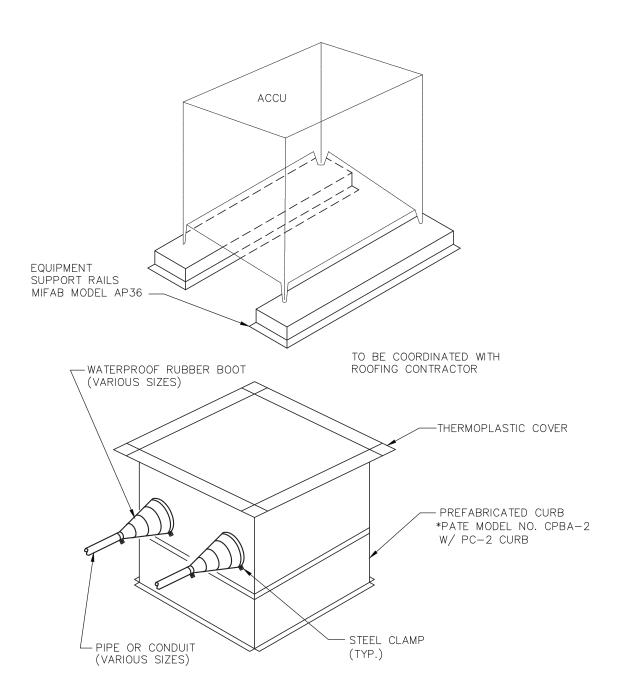
SHEET NO

SHEET TITLE

DETAILS









NOTE 1: PROVIDE DAMPERS SHOWN ON THE DRAWINGS AND ADDITIONAL DAMPERS AS NECESSARY FOR AIR BALANCING OR AS NEEDED TO COMPLY WITH ECCCNYS C403.7.7 REQUIREMENTS FOR INTAKES AND EXHAUST OPENINGS.

NOTE 2: OBSERVE REQUIRED AND RECOMMENDED CLEARANCES FOR UNIT DURING PLACEMENT. INSTALL UNIT ACCORDING TO MANUFACTURER RECOMMENDATIONS.

NOTE 3: MAINTAIN MINIMUM OF 10' FROM ROOF EDGE WHEN PLACING UNIT.

							UNIT	VENT	ILATO	R SC	HEDUL	E (3	0)							
					- /:		X COOLING COIL			ŀ	HEATING COI	IL		MOTOR (ECM)	EL	ECTRICAL	_		LOUVER	
MARK	SERVICE	MFR / MODEL	TYPE	TOTAL CFM	O/A MIN	тот. мвн	SENS. MBH	ROWS	MBH	ROWS	FLUID	EWT	LWT	QTY HP	VOLTAGE	FLA	MCA	MOP	SIZE	REMARKS
BASEMENT									l			·			I	l				
UV-70-A	ADT OLACC 70	MAUVF3-P1FFB223	VERTICAL	1000	282	32.9	21.5	4	54.6	2	WATER	180	150	1 1/3	115/60/1		6.30	20	NOTE 3	SEE NOTES 1,2,3,6,8,9 (ALT. H-
UV-70-B	ART CLASS. 70	MAUVF3-P1FFB223	VERTICAL	1000	282	32.9	21.5	4	54.6	2	WATER	180	150	1 1/3	115/60/1		6.30	20	NOTE 3	SEE NOTES 1,2,3,6,8,9 (ALT. H-
FIRST FLOOR																				
UV-128	CLASSROOM 128	MAUVF2-P1FFB223	VERTICAL	750	283	23.4	15.6	4	47.2	2	WATER	180	150	1 1/3	115/60/1		6.30	20	NOTE 3	SEE NOTES 1,2,3,6,8,9
UV-130	CLASSROOM 130	MAUVF3-P1FFB223	VERTICAL	1000	297	32.9	21.5	4	54.6	2	WATER	180	150	1 1/3	115/60/1		6.30	20	NOTE 3	SEE NOTES 1,2,3,6,8,9
UV-132	CLASSROOM 132	MAUVF3-P1FFB223	VERTICAL	1000	310	32.9	21.5	4	54.6	2	WATER	180	150	1 1/3	115/60/1		6.30	20		SEE NOTES 1,2,3,6,8,9
UV-147	CLASSROOM 147	MAUVF3-P1FFB223	VERTICAL	1000	417	32.9	21.5	4	54.6	2	WATER	180	150	1 1/3	115/60/1		6.30	20	NOTE 3	SEE NOTES 1,2,3,6,8,9 (ALT. H-
UV-149	CLASSROOM 149	MAUVF3-P1FFB223	VERTICAL	1000	414	32.9	21.5	4	54.6	2	WATER	180	150	1 1/3	115/60/1		6.30	20	NOTE 3	SEE NOTES 1,2,3,6,8,9 (ALT. H-
UV-151	CLASSROOM 151	MAUVF3-P1FFB223	VERTICAL	1000	415	32.9	21.5	4	54.6	2	WATER	180	150	1 1/3	115/60/1		6.30	20	NOTE 3	SEE NOTES 1,2,3,6,8,9 (ALT. H-
UV-153	CLASSROOM 153	MAUVF3-P1FFB223	VERTICAL	1000	430	32.9	21.5	4	54.6	2	WATER	180	150	1 1/3	115/60/1		6.30	20	NOTE 3	SEE NOTES 1,2,3,6,8,9 (ALT. H-
UV-155	CLASSROOM 155	MAUVF3-P1FFB223	VERTICAL	1000	429	32.9	21.5	4	54.6	2	WATER	180	150	1 1/3	115/60/1		6.30	20	NOTE 3	SEE NOTES 1,2,3,6,8,9 (ALT. H-
UV-157	CLASSROOM 157	MAUVF3-P1FFB223	VERTICAL	1000	402	32.9	21.5	4	54.6	2	WATER	180	150	1 1/3	115/60/1		6.30	20	NOTE 3	SEE NOTES 1,2,3,6,8,9 (ALT. H-
UV-159	CLASSROOM 159	MAUVF3-P1FFB223	VERTICAL	1000	401	32.9	21.5	4	54.6	2	WATER	180	150	1 1/3	115/60/1		6.30	20	NOTE 3	SEE NOTES 1,2,3,6,8,9 (ALT. H-
UV-162	CLASSROOM 162	MAUVF5-P1FFB223	VERTICAL	1500	356	49.3	31.7	4	62.9	2	WATER	180	150	1 1/3	115/60/1		6.30	20	NOTE 3	SEE NOTES 1,2,3,6,8,9 (ALT. H-
UV-164	CLASSROOM 164	MAUVF2-P1FFB223	VERTICAL	750	297	23.4	15.6	4	47.2	2	WATER	180	150	1 1/3	115/60/1		6.30	20	NOTE 3	SEE NOTES 1,2,3,6,8,9 (ALT. H-
UV-166	CLASSROOM 166	MAUVF4-P1FFB223	VERTICAL	1250	417	37.3	24.3	4	58.9	2	WATER	180	150	1 1/3	115/60/1		6.30	20	NOTE 3	SEE NOTES 1,2,3,6,8,9 (ALT. H-
UV-168	CLASSROOM 168	MAUVF4-P1FFB223	VERTICAL	1250	415	37.3	24.3	4	58.9	2	WATER	180	150	1 1/3	115/60/1		6.30	20	NOTE 3	SEE NOTES 1,2,3,6,8,9 (ALT. H-
UV-170	CLASSROOM 170	MAUVF4-P1FFB223	VERTICAL	1250	415	37.3	24.3	4	54.6	2	WATER	180	150	1 1/3	115/60/1		6.30	20	NOTE 3	SEE NOTES 1,2,3,6,8,9 (ALT. H-
UV-171	CLASSROOM 171	MAUVF5-P1FFB223	VERTICAL	1500	653	49.3	31.7	4	62.9	2	WATER	180	150	1 1/3	115/60/1		6.30	20	NOTE 3	SEE NOTES 1,2,3,6,8,9 (ALT. H-
SECOND FLOO	DR				1			'	•	<u>'</u>		<u>'</u>	1			'	•			
UV-231	SCI. LAB 231	MAUVF5-P1FFB223	VERTICAL	1500	434	49.3	31.7	4	62.9	2	WATER	180	150	1 1/3	115/60/1		6.30	20	NOTE 3	SEE NOTES 1,2,3,6,8,9
UV-232	SCI. LAB 232	MAUVF5-P1FFB223	VERTICAL	1500	520	49.3	31.7	4	62.9	2	WATER	180	150	1 1/3	115/60/1		6.30	20	NOTE 3	SEE NOTES 1,2,3,6,8,9
UV-233	SCI. LAB 233	MAUVF5-P1FFB223	VERTICAL	1500	609	49.3	31.7	4	62.9	2	WATER	180	150	1 1/3	115/60/1		6.30	20	NOTE 3	SEE NOTES 1,2,3,6,8,9
UV-234	SCI. LAB 234	MAUVF5-P1FFB223	VERTICAL	1500	377	49.3	31.7	4	62.9	2	WATER	180	150	1 1/3	115/60/1		6.30	20	NOTE 3	SEE NOTES 1,2,3,6,8,9
UV-235	SCI. LAB 235	MAUVF3-P1FFB223	VERTICAL	1000	499	32.9	21.5	4	54.6	2	WATER	180	150	1 1/3	115/60/1		6.30	20	NOTE 3	SEE NOTES 1,2,3,6,8,9
UV-236	SCI. LAB 236	MAUHF3-PAADD223	HORIZONTAL	1000	342	32.9	21.5	4	46.7	2	WATER	180	150	1 1/3	115/60/1		6.30	20	NOTE 3	SEE NOTES 1,2,3,4,6,8,9
UV-238	SCI. LAB 238	MAUHF3-PAADD223	HORIZONTAL	1000	459	32.9	21.5	4	46.7	2	WATER	180	150	1 1/3	115/60/1		6.30	20	NOTE 3	SEE NOTES 1,2,3,4,6,8,9
UV-239	SCI. LAB 239	MAUHF4-PAA-D223	HORIZONTAL	1250	397	37.3	24.3	4	58.9	2	WATER	180	150	1 1/3	115/60/1		6.30	20	NOTE 3	SEE NOTES 1,2,3,6,8,9,10
UV-240	SCI. LAB 240	MAUHF5-PAADD223	HORIZONTAL	1500	438	49.3	31.7	4	64.3	2	WATER	180	150	1 3/4	115/60/1		12.00	20	NOTE 3	SEE NOTES 1,2,3,4,6,8,9
UV-241	SCI. LAB 241	MAUVF3-P1FFB223	VERTICAL	1000	337	32.9	21.5	4	54.6	2	WATER	180	150	1 1/3	115/60/1		6.30	20	NOTE 3	SEE NOTES 1,2,3,6,8,9
UV-243	SCI. LAB 243	MAUHF3-PAADD223	HORIZONTAL	1000	396	32.9	21.5	4	46.7	2	WATER	180	150	1 1/3	115/60/1		6.30	20	NOTE 3	SEE NOTES 1,2,3,4,6,8,9
UV-245	SCI. LAB 245	MAUHF3-PAADD223	HORIZONTAL	1000	375	32.9	21.5	4	46.7	2	WATER	180	150	1 1/3			6.30	20	NOTE 3	SEE NOTES 1,2,3,4,6,8,9

NOTE 1: PROVIDE ADDITIONAL DAMPERS AS NECESSARY TO AID IN AIR BALANCING. NOTE 2: DAMPERS CONTROLLING OUTDOOR AIR INTAKE VOLUME TO BE MOTORIZED.

NOTE 3: CONNECT NEW UNIT VENTILATOR TO EXISTING LOUVER/INTAKE. PROVIDE NEW SLEEVE AND SEAL CONNECTIONS TO BE WEATHER TIGHT. PROVIDE NECESSARY MODIFICATIONS NEEDED FOR NEW CONNECTION.

NOTE 4: SECURELY HANG FROM STRUCTURE USING STEEL THREADED RODS AND FRAMING. MUST INSTALL UNIT TO ALLOW FOR MAINTENANCE CLEARANCES AND FILTER CHANGES. REFER TO MANUFACTURER'S RECCOMENDATIONS.

NOTE 6: PROVIDE CONDENSATE PAN. PITCH DRAIN LINE WITH MINIMUM 1/8" PER 12" SLOPE. PROVIDE CONDENSATE PUMP WHEN MINIMUM PITCH CANNOT BE MET. DISCHARGE TO A NEARBY VENT LINE OR TO EXTERIOR WHEN POSSIBLE. SEE DETAIL.

NOTE 8: PROVIDE VRF COMPATIBLE UNITS, WHICH INCLUDE VRF ELECTRONIC EXPANSION VALVE KITS, VRF COMMUNICATION BOXES, ETC. PROVIDE 12" MINIMUM EXTENDED UTILITY CABINET.

NOTE 9: SEE PLANS FOR CONDENSATE PIPING AND ASSOCIATED. COORDINATE WITH PLUMBING CONTRACTOR.

NOTE 10: BOTTOM RETURN, BOTTOM SUPPLY, REAR OA CONFIGURATION.

						PTA	C SC	HED	ULE												
								COOLIN	IG COIL			HEATIN	G COIL			ELECTRI	CAL		LINIT		
MARK	SERVICE	BRAND/MODEL NO.	TYPE	MAX CFM	MIN OA CFM	MAX OA CFM	2711		JTPUT MBH)	EER	EAT DB (°F)	OUTPUT (MBH)	GPM	EWT	V/PH/HZ	MCA (A)	MOP FA	CTORY SC.	UNIT WEIGHT (LB)	LOUVER SIZE	REMARKS
PTAC-1	CLASSROOM 237	AMANA/PTC092G00H	THRU WALL PACKAGE TERMINAL AC W/HYDRONIC HEAT	310	60	65	78.0	35.0	9.0	11.3	42.0	16.9	1	180	115/1/60	8.3	15	YES	102	16"x42"	SEE NOTES 1-7
PTAC-2	DET. OFFICE 236.A	AMANA/PTC092G00H	THRU WALL PACKAGE TERMINAL AC W/HYDRONIC HEAT	310	55	65	78.0 8	35.0	9.0	11.3	42.0	16.9	1	180	115/1/60	8.3	15	YES	102	16"x42"	SEE NOTES 1-7
PTAC-5	OFFICE 154.1	AMANA/PTC092G00H	THRU WALL PACKAGE TERMINAL AC W/HYDRONIC HEAT	310	35	65	78.0	35.0	9.0	11.3	42.0	16.9	1	180	115/1/60	8.3	15	YES	102	16"x42"	SEE NOTES 1-7 (ALT. H-1)
PTAC-4	OFFICE 154.2	AMANA/PTC072G00H	THRU WALL PACKAGE TERMINAL AC W/HYDRONIC HEAT	310	25	65	78.0	35.0	7.0	11.9	42.0	14.9	1	180	115/1/60	6.9	15	YES	98	16"x42"	SEE NOTES 1-7 (ALT. H-1)
PTAC-3	OFFICE 154.3	AMANA/PTC072G00H	THRU WALL PACKAGE TERMINAL AC W/HYDRONIC HEAT	310	25	65	78.0	35.0	7.0	11.9	42.0	14.9	1	180	115/1/60	6.9	15	YES	98	16"x42"	SEE NOTES 1-7 (ALT. H-1)

NOTE 1: PROVIDE NEW WALL SLEEVE (WS900E). REPAIR OR ALTER EXISTING WALL PENETRATION AS NEEDED. MAINTAIN STRUCTURAL INTEGRITY. SEAL CONNECTIONS TO BE WEATHER TIGHT.

NOTE 2: PROVIDE REQUIRED AND RECOMMENDED CLEARANCES FOR UNIT BEFORE CUTTING OR INSTALLING. INSTALL UNIT ACCORDING TO MANUFACTURER RECOMMENDATIONS.

NOTE 3: PROVIDE DRAIN KIT (DK900D). DRAIN ALL CONDENSATE TO EXTERIOR.

NOTE 4: PROVIDE HYDRONIC WATER KIT (HWKO3E) WITH 1/2" I.D. (5/8" O.D.) CONNECTIONS. NOTE 5: PROVIDE HARD WIRE KIT AND TIE INTO EXISTING CIRCUIT.

NOTE 6: PROVIDE EXTRUDED ALUMINUM AMANA PTAC LOUVER (AGK01). COLOR TO MATCH NEAREST ADJACENT LOUVER COLORS OR AS SELECTED BY DISTRICT.

NOTE 7: DAMPER THAT MODULATES OA MUST BE MOTORIZED AND CONTROLLED TO AUTOMATICALLY CLOSE WHEN THE UNIT FAN IS DE-ENERGIZED.

					VRF	SCHEDUL	E								
MADIC	CEDVICE			CAPACITY	AMBIENT	TOTAL UNIT POWER (KW)	EER	DEEDIO	CONN	ECTIONS	UNIT ELEC	TRICAL DATA	4	WEIGHT	DEMINIO
MARK	SERVICE	BRAND/MODEL NO.	TYPE	(TONS)	TEMP. (°F)	COOLING/HEATING	AHRI	REFRIG.	L	G	VOLTAGE	MOPD	MCA	LBS.	REMARKS
VRF-1	SEE DWG M-111	LG ARUM288BTE5	AIR SOURCE HEAT PUMP	24	95	18.94 / 22.20	12.2	R410A	3/4"	1-3/8"	208/3PH	40+80	29+58	534+694	SEE NOTES 1,2,3,4,5,6 (ALT. H-1)
VRF-2	SEE DWG M-111	LG ARUM264BTE5	AIR SOURCE HEAT PUMP	22	95	17.56 / 20.72	12.5	R410A	3/4"	1-3/8"	208/3PH	40+70	29+54	534+666	SEE NOTES 1,2,3,4,5,6 (ALT. H-1)
VRF-3	SEE DWG M-111	LG ARUM336BTE5	AIR SOURCE HEAT PUMP	28	95	23.09 / 26.95	10.8	R410A	3/4"	1-3/8"	208/3PH	40+80	31+61	534+688	SEE NOTES 1,2,3,4,5,6
VRF-4	SEE DWG M-111	LG ARUM264BTE5	AIR SOURCE HEAT PUMP	22	95	17.56 / 20.72	11.5	R410A	3/4"	1-3/8"	208/3PH	40+70	29+54	534+666	SEE NOTES 1,2,3,4,5,6

NOTE 1: MAINTAIN REQUIRED AND RECOMMENDED CLEARANCES FOR UNIT DURING PLACEMENT. INSTALL AND CHARGE UNIT ACCORDING TO MANUFACTURER RECOMMENDATIONS.

NOTE 2: PROVIDE WEATHERPROOF PAD FOR UNIT AND 24" CURB.

NOTE 3: PROVIDE APPLICABLE SUCTION AND LIQUID LINES. PROVIDE INSULATION, SUPPORT, AND ENCLOSURES AS NOTED. PROVIDE ALL PIPING ENCLOSURES, WIRING ENCLOSURES, AND PENETRATIONS.

NOTE 4: MAINTAIN MINIMUM OF 10'-0" FROM ROOF EDGE AND AIR INTAKES WHEN PLACING UNIT. COORDINATE ALL TRADES BEFORE PLACEMENT.

NOTE 5: COORDINATE TRADES TO MINIMIZE NUMBER OF ROOF PENETRATIONS. PROVIDE ONE PIPING PORTAL TO HOUSE ALL PENETRATIONS ASSOCIATED WITH UNIT.

NOTE 6: UNIT TO BE EITHER IN ALL COOLING OR ALL HEATING MODE. COOLING SEASON: UNIT IN USE. HEATING SEASON: UNIT IN USE UNTIL CHANGEOVER TO CENTRAL BOILER HYDRONIC HEAT. REFER TO MANUFACTURER FOR SEASONAL DEACTIVATION AND PROTECTION.

		GRIL	LES A	ND SU	PPLY	DIFFUSER SO	CHEDULE		
MARK	TYPE	MODEL	GRILLE/ DIFFUSER FACE SIZE	MODULE SIZE	NECK SIZE	FRAME TYPE	MATERIAL	FINISH	REMARKS
SD-1	SUPPLY	TITUS TMS	24"x24"	24"x24"	10"ø	FULL FACE, 1" LAY—IN	STEEL	WHITE	SEE NOTES 1,2
RG-1	RETURN	TITUS 50R	24"x24"	24"x24"	20"x20"	FULL FACE, 1" LAY—IN	STEEL/ALUMINUM	WHITE/ALUM.	SEE NOTE 1
						IAL DAMPERS AS NECESSAND TOP INSULATION.	ARY FOR AIR BALA	ANCING.	

ALTERNATE NOTE

(ALT. H-1); EQUIPMENT AND ASSOCIATED WORK WITH THIS MARK TO BE PROVIDED AS PART OF ALTERNATE H-1 ONLY. ALL OTHER UNMARKED WORK TO BE PROVIDED AS PART OF BASE BID.

		INIC	ULATION CLA	SS (a)		JACKETING C	11 VCC (P)				THICKNES	SS (IN)	
TYPE	EQUIPMENT OR	11/0	OLATION CLA	.33 (u)		JACKLIING C	LASS (D)		NOMIN	AL PIPE SIZE	(IN)		DUC'
	SYSTEM SERVED	INTERIOR CONCEALED	INTERIOR EXPOSED	EXTERIOR	INTERIOR GENERAL	EQUIPMENT ROOMS	EXTERIOR	<1"	$1" - < 1\frac{1}{2}"$	$1\frac{1}{2}$ " <4 "	4 "- <8"	≥8" & UP	
А	RS, RL	FE	FE	FE	0	0	4	0.5	1.5	1.5	1.5	1.5	
В	DCW, COOLING	FE			0			0.5	0.5	1.0	1.0	1.0	
В	COIL CONDENSATE		FE			4		0.5	0.5	1.0	1.0	1.0	
		FG			1			1.5	1.5	2	2	2	
С	HWS, HWR		FG		1	1		1.5	1.5	2	2	2	
				UR			6	1.5	1.5	2	2	2	
		FG (d)			2								1
D	DUCTWORK		FG (e)		2	2							2
				UR(e) R-12			3						1

(g) INSULATE EXHAUST AIR 15'-0" FROM EXTERIOR PENETRATION 4 - - POLYVINYL CHLORIDE 5 - - STAINLESS STEEL MIXED AIR UR — — URETHANE (i) TWO LAYERS, 3 IN TOTAL RETURN AIR CS - - CALCIUM SILICATE 6 - - ALUMINUM 7 - - EPDM FR — — FIRE RATED

ALL INSULATION TO COMPLY WITH 2020 NYS ENERGY CONSERVATION CONSTRUCTION CODE

		AS	SHRAE-15	CONFORMANCE	CALCULATIONS	5	
				HIGH SCHOOL			
	HOLDING	EST. ADDITIONAL		A		В	
EQUIPMENT	REFRIGERANT	REFRIG. CHARGE	EST. TOTAL	CALCULATED MIN.	SMALLEST OCCUPIED	APPROX. FLOOR	NOTES
MARK(S)	CHARGE (LBS)	(LBS)	REFRIG. (LBS)	FLOOR AREA (FT2)	ROOM IN SYSTEM	AREA (FT2)	
VRF-1	54.10	15.96	70.06	317	CLASSROOM 164	561	8'-6" C.H., R-410A, NON-INST
VRF-2	49.70	15.74	65.44	296	CLASSROOM 162	673	8'-6" C.H., R-410A, NON-INST
VRF-3	60.70	15.59	76.29	345	CLASSROOM 130	550	8'-6" C.H., R-410A, NON-INS
VRF-4	49.70	11.94	61.64	224	SCIENCE LAB 241	678	8'-6" C.H., R-410A, NON-INST
MINIMUM ALL	LOWED FLOOR AREA			EFRIGERANT CHARGE (LE BS/1000 FT3) x CEILII	X 1000		A ST RM. > CALCULATED MIN. SQFT. ALLOWABLE RM. SQFT.
RCL FOR	R NON-INSTITUTIONA	TRATION LIMIT (RCL) AL OCCUPANCY APPL CUPANCY APPLICATIO	ICATIONS = 26 LE	,	10 ADDENDUM L.	PROCEDURES FOR AND SYSTEM. DO	MFR. SPECIFICATIONS AND PROPER CHARGING OF EQUIPMENT NOT INSTALL REFRIGERATION PIPING IN IOLATE ASHRAE—15 REQUIREMENTS.

					HIGH	SCHOOL	_				
EQUIPMENT MARK(S)	ROOM	ROOM TYPE	OCCUPANTS /1000 FT2	RP	APPROX. PZ	RA	APPROX.	VBZ	EZ	MIN. O.A. (CFM) VOZ	NOTE:
UV-70A UV-70B	70	ART	20	10	27	0.18	1317	507.1	0.9	563	
UV-128	128	CLASSROOM	35	10	19	0.12	542	255.0	0.9	283	
UV-130	130	CLASSROOM	35	10	20	0.12	561	267.3	0.9	297	
UV-132	132	CLASSROOM	35	10	21	0.12	577	279.2	0.9	310	
UV-147	147	CLASSROOM	35	10	28	0.12	793	375.2	0.9	417	
UV-149	149	CLASSROOM	35	10	28	0.12	772	372.6	0.9	414	
UV-151	151	CLASSROOM	35	10	28	0.12	778	373.4	0.9	415	
UV-153	153	CLASSROOM	35	10	29	0.12	809	387.1	0.9	430	
RTU-7	154	WEIGHT ROOM	10	20	18	0.06	1752	465.1	0.9	517	
PTAC-5	154.1	OFFICE	5	5	2	0.06	304	28.2	0.9	31	
PTAC-4	154.2	OFFICE	5	5	1	0.06	186	16.2	0.9	18	
PTAC-3	154.3	OFFICE	5	5	1	0.06	160	14.6	0.9	16	
UV-155	155	CLASSROOM	35	10	29	0.12	801	386.1	0.9	429	
UV-157	157	CLASSROOM	35	10	27	0.12	764	361.7	0.9	402	
UV-159	159	CLASSROOM	35	10	27	0.12	754	360.5	0.9	401	
UV-162	162	CLASSROOM	35	10	24	0.12	673	320.8	0.9	356	
UV-164	164	CLASSROOM	35	10	20	0.12	561	267.3	0.9	297	
UV-166	166	CLASSROOM	35	10	28	0.12	795	375.4	0.9	417	
UV-168	168	CLASSROOM	35	10	28	0.12	778	373.4	0.9	415	
UV-170	170	CLASSROOM	35	10	28	0.12	780	373.6	0.9	415	
UV-171	171	CLASSROOM	35	10	44	0.12	1234	588.1	0.9	653	
UV-231	231	SCI. LAB	25	10	23	0.18	894	390.9	0.9	434	
UV-232	232	SCI. LAB	25	10	24	0.18	928	467.9	0.9	520	
UV-233	233	SCI. LAB	25	10	32	0.18	1266	547.9	0.9	609	
UV-234	234	SCI. LAB	25	10	20	0.18	775	339.5	0.9	377	
UV-235	235	SCI. LAB	25	10	29	0.18	1159	498.6	0.9	554	
UV-236	236	SCI. LAB	25	10	18	0.18	712	308.2	0.9	342	
PTAC-1	237	SCI. LAB	25	10	7	0.18	249	114.8	0.9	60	
UV-238	238	SCI. LAB	25	10	24	0.18	960	412.8	0.9	459	
UV-239	239	SCI. LAB	25	10	21	0.18	818	357.2	0.9	397	
UV-240	240	SCI. LAB	25	10	23	0.18	911	394.0	0.9	438	
UV-241	241	SCI. LAB	25	10	18	0.18	686	303.5	0.9	337	
UV-243	243	SCI. LAB	25	10	21	0.18	814	356.5	0.9	396	
UV-245	245	SCI. LAB	25	10	20	0.18	766	337.9	0.9	375	
PTAC-2	236.A	DET. OFFICE	5	5	6	0.06	320	49.2	0.9	55	PZ UPPED FROM TO HANDLE EXP SHORT TERM LO

NYSMC TABLE 403.3.1.1.1.2 ZONE AIR DISTRIBUTION EFFECTIVENESS a,b,c,d AIR DISTRIBUTION CONFIGURATION CEILING OR FLOOR SUPPLY OF COOL AIR
CEILING OR FLOOR SUPPLY OF WARM AIR AND FLOOR RETURN
CEILING SUPPLY OF WARM AIR AND CEILING RETURN LOOR SUPPLY OF WARM AIR AND CEILING RETURN MAKEUP AIR DRAWN IN ON THE OPPOSITE SIDE OF THE ROOM FROM THE EXHAUST OR RETURN MAKEUP AIR DRAWN IN NEAR TO THE EXHAUST OR RETURN LOCATION 0.5

a. "COOL AIR" IS AIR COOLER THAN SPACE TEMPERATURE. b. "WARM AIR" IS AIR WARMER THAN SPACE TEMPERATURE.

c. "CEILING" INCLUDES ANY POINT ABOVE THE BREATHING ZONE. d. "FLOOR" INCLUDES ANY POINT BELOW THE BREATHING ZONE. e. ZONE AIR DISTRIBUTION EFFECTIVENESS OF 1.2 SHALL BE PERMITTED FOR SYSTEMS WITH A FLOOR SUPPLY OF COOL AIR AND CEILING RETURN, PROVIDED THAT LOW-VELOCITY DISPLACEMENT VENTILATION ACHIEVES UNIDIRECTIONAL FLOW AND THERMAL STRATIFICATION.

f. ZONE AIR DISTRIBUTION EFFECTIVENESS OF 1.0 SHALL BE PERMITTED FOR SYSTEMS WITH A CEILING SUPPLY OF WARM AIR, PROVIDED THAT SUPPLY AIR TEMPERATURE IS LESS THAN 15°F ABOVE SPACE TEMPERATURE AND PROVIDED THAT THE 150-FOOT-PER-MINUTE SUPPLY AIR JET REACHES TO WITHIN 4-1/2 FEET OF FLOOR LEVEL.

NYSED EZ CLASSIFICATION NOTE: "FLOOR" REFERS TO THE AREA LOCATED 0-3 INCHES AFF. "CEILING" REFERS TO THE AREA LOCATED 72 INCHES AFF AND ABOVE. THOSE LOCATED BETWEEN 3 INCHES AND 72 INCHES AFF ARE NOTED ABOVE.

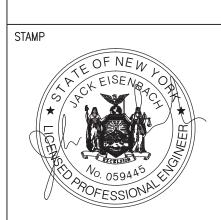
OCCUPANCY CLASSIFICATION DERIVED FROM NYSMC TABLE 403.3.1.1 RP=OUTDOOR AIRFLOW RATE PER PERSON (NYSMC TABLE 403.3.1.1) PZ=QTY. OF OCCUPANTS IN SPACE RA=OUTDOOR AIRFLOW RATE PER UNIT AREA (NYSMC TABLE 403.3.1.1) AZ=OCCUPIABLE FLOOR AREA VBZ=REQUIRED OUTDOOR AIRFLOW RATE IN BREATHING ZONE EZ=ZONE AIR DISTRIBUTION EFFECTIVENESS (NYSMC TABLE 403.3.1.1.1.2) VOZ=ZONE OUTDOOR AIRFLOW RATE

 $VBZ=(RP\times PZ)+(RA\times AZ)$ VOZ=VBZ/EZ

CONSULTANT(S): FULLER D'ANGELO ARCHITECTS

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PLANNERS



issued for bid | 11.09.2022 10.19.2022 ≷ REVISION DRAWN BY CHECKED BY 30" X 42" AS NOTED

SHEET TITLE SCHEDULES

를 SHEET NO.

NEW UVC CIRCUIT MARK	LOCATION/SERVICE	HVAC UNIT TYPE	HVAC UNIT NOMINAL AIR FLOW (CFM)	UV-C INSTALL LOCATION	UV-C FIXTURE MODEL NO.	UV-C FIXTURE VOLTAGE/PH	QTY.	HVAC UNIT VOLTAGE/PH
FIRST FLOOR			()					
UVC-HS-79	128	UV *	750	115/1	IN CABINET	UV-FCU-CL 90H-P-B-VENT	1	110-240/1
UVC-HS-80	130	UV *	1000	115/1	IN CABINET	UV-FCU-CL 90H-P-B-VENT	1	110-240/1
UVC-HS-81	132	UV *	1000	115/1	IN CABINET	UV-FCU-CL 90H-P-B-VENT	1	110-240/1
UVC-HS-82	154 Wrestling Rm	RTU *	2400	208/3		UV-FCU-CL 90H-P-B-VENT	1	110-240/1
SECOND FLOOR								
UVC-HS-83	231	UV *	1500	115/1	IN CABINET	UV-FCU-CL 90H-P-B-VENT	1	110-240/1
UVC-HS-84	232	UV *	1500			UV-FCU-CL 90H-P-B-VENT	1	1
UVC-HS-85	233	UV *	1500			UV-FCU-CL 90H-P-B-VENT	1	
UVC-HS-86	234	UV *	1500			UV-FCU-CL 90H-P-B-VENT	1	
UVC-HS-87	235	UV *	1000			UV-FCU-CL 90H-P-B-VENT	1	
UVC-HS-88	236	HORIZ. UV *	1000			UV-FCU-CL 90H-P-B-VENT	1	
UVC-HS-89	238	HORIZ. UV *	1000			UV-FCU-CL 90H-P-B-VENT	1	
UVC-HS-90	239	UV *	1250			UV-FCU-CL 90H-P-B-VENT	1	
UVC-HS-91	240	HORIZ. UV *	1500			UV-FCU-CL 90H-P-B-VENT	1	
UVC-HS-92	241	UV *	1000			UV-FCU-CL 90H-P-B-VENT	1	
UVC-HS-93	243	HORIZ. UV *	1000			UV-FCU-CL 90H-P-B-VENT	1	
UVC-HS-94	245	HORIZ. UV *	1000			UV-FCU-CL 90H-P-B-VENT	1	
UVC-HS-94	243	HORIZ. UV	1000			UV-FCU-CL 9UH-P-B-VENT	I	

*) INDICATES UNIT IS PROVIDED NEW AS PART OF CURRENT PROJECT. REFER TO M DRAWINGS FOR MORE INFORMATION. DO NOT PROVIDE UV-C FIXTURES TO EXISTING TO BE REMOVED EQUIPMENT.

		HIGH SCHOOL UV—C LIGHTING SCHEDULE				ALL WORK THIS AREA PART OF ALTERNATE (ALT. H-		
NEW UVC CIRCUIT MARK	LOCATION/SERVICE	HVAC UNIT TYPE	HVAC UNIT NOMINAL AIR FLOW (CFM)	UV-C INSTALL LOCATION	UV-C FIXTURE MODEL NO.	UV-C FIXTURE VOLTAGE/PH	QTY.	HVAC UNIT VOLTAGE/PH
BASEMENT		·						
UVC-HS-95	70	UV *	1500	115/1	IN CABINET	UV-FCU-CL 90H-P-B-VENT	1	110-240/1
UVC-HS-96		UV *	1500	115/1	IN CABINET	UV-FCU-CL 90H-P-B-VENT	1	110-240/1
FIRST FLOOR								
UVC-HS-97	Main Office Conference Rm.	UV	1000	115/1	IN CABINET	UV-FCU-CL 90H-P-B-VENT	1	110-240/1
UVC-HS-98	Main Office	HORIZ. UV	1000		IN CABINET	UV-FCU-CL 90H-P-B-VENT	1	
UVC-HS-99	147	UV *	1000		IN CABINET	UV-FCU-CL 90H-P-B-VENT	1	
UVC-HS-100	149	UV *	1000		IN CABINET	UV-FCU-CL 90H-P-B-VENT	1	
UVC-HS-101	151	UV *	1000		IN CABINET	UV-FCU-CL 90H-P-B-VENT	1	
UVC-HS-102	153	UV *	1000		IN CABINET	UV-FCU-CL 90H-P-B-VENT	1	
UVC-HS-103	155	UV *	1000		IN CABINET	UV-FCU-CL 90H-P-B-VENT	11	
UVC-HS-104	157	UV *	1000		IN CABINET	UV-FCU-CL 90H-P-B-VENT	1	
UVC-HS-105	159	UV *	1000		IN CABINET	UV-FCU-CL 90H-P-B-VENT	1	
UVC-HS-106	162	UV *	1500		IN CABINET	UV-FCU-CL 90H-P-B-VENT	1	
UVC-HS-107	164	UV *	750		IN CABINET	UV-FCU-CL 90H-P-B-VENT	1	
UVC-HS-108	166	UV *	1250		IN CABINET	UV-FCU-CL 90H-P-B-VENT	1	
UVC-HS-109	168	UV *	1250		IN CABINET	UV-FCU-CL 90H-P-B-VENT	1	
UVC-HS-110	170	UV *	1250		IN CABINET	UV-FCU-CL 90H-P-B-VENT	1	
UVC-HS-111	171	UV *	1500		IN CABINET	UV-FCU-CL 90H-P-B-VENT	1	
				·				

ALTERNATE NOTE (ALT. H-): EQUIPMENT AND ASSOCIATED WORK WITH THIS MARK TO BE PROVIDED AS PART OF ALTERNATE H-1 ONLY. ALL OTHER UNMARKED WORK TO BE PROVIDED AS PART OF BASE BID.

UV-C LIGHT FIXTURE SPECIFICATION AND INSTALLATION NOTES

- NOTE 1: PROVIDE UV-C LIGHT FIXTURES AND BULBS FROM COGNITUV BRAND, NO SUBSTITUTION, AND ANY HARDWARE, SHIELDING, WIRING, DRIVERS, RELAYS, TRANSFORMERS, AND ALL APPURTENANCES NECESSARY FOR INSTALLATION.
- NOTE 2: PROVIDE POWER TO LIGHT FIXTURES USING 2#12 -W1#12 GRD WIRING. PROVIDE 3/4" CONDUIT OR METAL CLADDING TO POWER AND CONTROL WIRING. POWER AND CONTROL WIRING TO BE IN SEPARATE CONDUIT/MC TO AVOID INTERFEREANCE.
- NOTE 3: UV-C CONTRACTOR TO PROVIDE AND COORDINATE CUTTING, PATCHING, SEALING, AND REINSULATING OF DISTURBED DUCTWORK. REINFORCE DUCTWORK TO MAINTAIN RIGIDITY AND PROVIDE SUPPORT TO PREVENT DUCTWORK SAGGING, DEFORMATION, OR VIBRATION. TEST AND SEAL ALL PENETRATIONS TO BE AIRTIGHT.
- NOTE 4: EACH UV-C LIGHTING CIRCUIT MUST INCLUDE AN INDIVIDUAL SERVICE SWITCH. ONE SERVICE SWITCH MUST DISCONNECT POWER TO THE HVAC UNIT, CONTROLLER, OR FAN. THE SERVICE SWITCH FACE PLATES MUST INDICATE ON AND OFF DIRECTIONS.
- NOTE 5: THE SERVICE SWITCH SHALL HAVE A STATUS INDICATING LED, EITHER INCORPORATED INTO THE SWITCH OR OTHERWISE ADDED. THE SERVICE SWITCH LED SHALL ILLUMINATE ONLY IF THE UV-C FIXTURE(S) ARE ON AND ILLUMINATED. IF THERE ARE FACTORY-MOUNTED STATUS LEDS ON THE UV-C FIXTURES AND THEY ARE VISIBLE FROM THE OUTSIDE OF THE FIXTURE, THE SWITCH STATUS LED MAY BE OMITTED.
- NOTE 6: UV-C LIGHTING AND ALL APPURTENANCES MUST BE POSITIONED TO BE ACCESSIBLE WITHIN REASON TO ALLOW FOR CLEANING, MAINTENANCE, AND REPLACEMENT OF BULB(S). VERIFY PLACEMENT BASED ON FIELD CONDITIONS. PROVIDE PAINTED ACCESS PANELS AS NEEDED. NOTE 7: TIE INTO SPECIFIED HVAC EQUIPMENT CONTROLS. REFER TO THE UV-C ACTIVATION CONDITIONS DETAIL REGARDING WHEN THE UV-C FIXTURE(S) SHALL BE ACTIVATED.
- NOTE 8: CONNECT TO BMS CONTROLS AND INTEGRATE TO TRIP TROUBLE CODES FOR MALFUNCTIONS, SUCH AS A NON-FUNCTIONAL BALLAST OR BULB. PROVIDE UV-C FIXTURE WITH OPTIONS AND EQUIPMENT TO COMMUNICATE WITH EXISTING BMS. VERIFY IN FIELD.
- NOTE 9: AFFIX 1" PLASTIC OR VINYL LABELS TO EACH UV-C LIGHT FIXTURE AND SERVICE SWITCH WITH THE CORRESPONDING UV-C FIXTURE TO BE MARKED WITH AN APPROPRIATE WARNING LABEL. PROVIDE PLASTIC OR VINYL PURPLE MARKERS TO APPROXIMATELY MARK LOCATIONS OF UV-C FIXTURES ABOVE CEILINGS. AFFIX TO T-BAR FOR DROP CEILINGS. AFFIX A LABEL READING "UV-C ON" NEAR ALL STATUS INDICATING LEDS, WHETHER FACTORY-MOUNTED OR OTHERWISE. FOR CIRCUITS THAT REQUIRE POWER TO COME

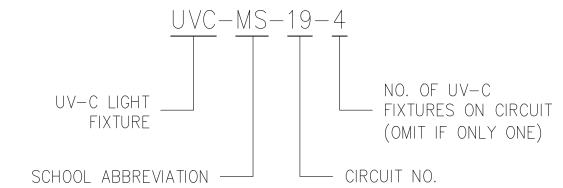
FROM A NEARBY AVAILABLE POWER PANEL, AFFIX LABEL TO CIRCUIT SWITCH INDICATING PANEL'S ROOM NUMBER, PANEL NAME, AND BREAKER NUMBER.

- NOTE 10: CONTROLS TO BE COORDINATED WITH DISTRICT CONTROLS VENDER.
- NOTE 11: ALL LOCATIONS, ORIENTATIONS, AND TYPES OF UV-C LIGHT FIXTURES ARE APPROXIMATE. DETERMINE FINAL LOCATION/ORIENTATION BASED ON MANUFACTURER'S RECOMMENDATIONS AND FIELD CONDITIONS.
- NOTE 12: FOR UNITS WITH FIXTURES INDICATED TO BE MOUNTED "IN CABINET", PROVIDE AT LEAST ONE (1) SNAP-ACTION TYPE SWITCH TO EACH OF THE SCHEDULED HVAC UNITS' (UV, AHU, RTU, ETC.) ACCESS DOORS/PANELS AND/OR ADJACENT DUCTWORK ACCESS DOORS/PANELS.

HARDWIRE POWER TO SWITCHES TO AUTOMATICALLY TURN OFF ALL UV-C LIGHTS ON THE APPLICABLE UV-C CIRCUIT IF ANY PANELS ARE OPENED. PROVIDE ALL WIRING AND APPURTENANCES. SEE SCHEDULE FOR UNIT TYPES. VERIFY ACCESS DOORS/PANELS IN FIELD. NOTE 13: "IN CABINET" INSTALLATIONS SHALL MAKE USE OF LIGHT SHIELDING AND REQUIRE PROPER AIMING DURING INSTALLATION. REFER TO MANUFACTURER'S RECOMMENDATIONS.

- HVAC UNIT LEGEND
- RTU ROOF TOP UNIT AHU — AIR HANDLING UNIT
- UV VERTICAL UNIT VENTILATOR FLOOR MOUNTED
- HORIZ. UV HORIZONTAL UNIT VENTILATOR CEILING HUNG FCU - VERTICAL FAN COIL UNIT - FLOOR MOUNTED
- HORIZ. FCU HORIZONTAL FAN COIL UNIT CEILING HUNG VRF - VARIABLE REFRIGERANT FLOW SYSTEM
 - HRU HEAT RECOVERY UNIT
 - mau make-up air unit

CIRCUIT NAMING CONVENTION

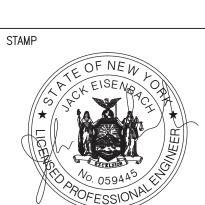


SEE NOTES AND SCHEDULES REGARDING LABELING EQUIPMENT WITH INDICATED CIRCUIT MARK

ENGINEER:

CONSULTANT(S): FULLER D'ANGELO ARCHITECTS

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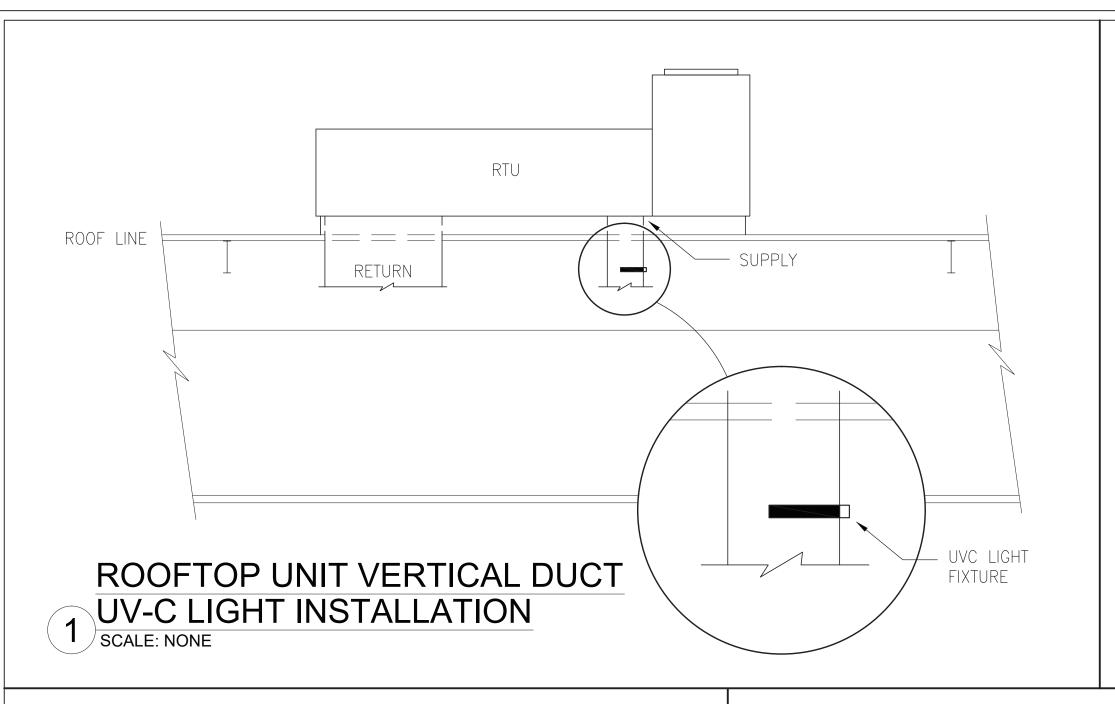


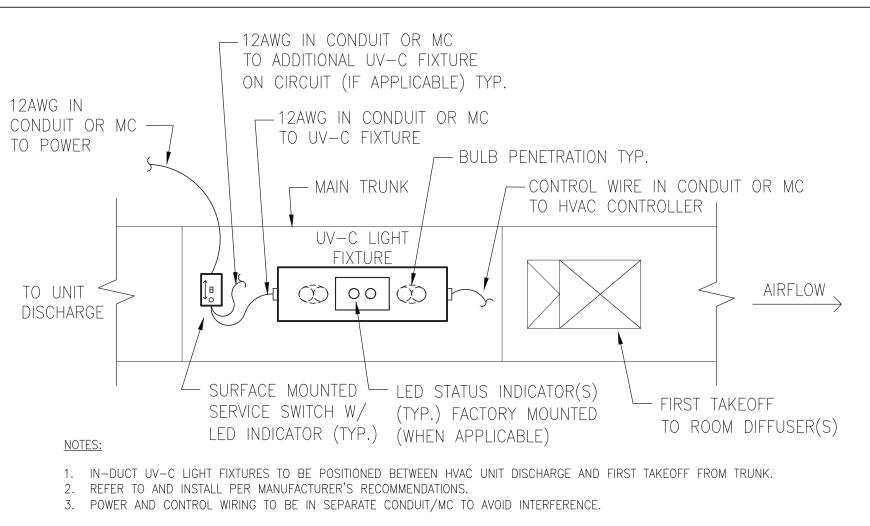
ISSUED FOR BID 11.09.2022 10.19.2022 ≷ REVISION DRAWN BY CHECKED BY SHEET SIZE 30" X 42"

SCALE AS NOTED SHEET TITLE HIGH SCHOOL UV-C LIGHT FIXTURE

SCHEDULE

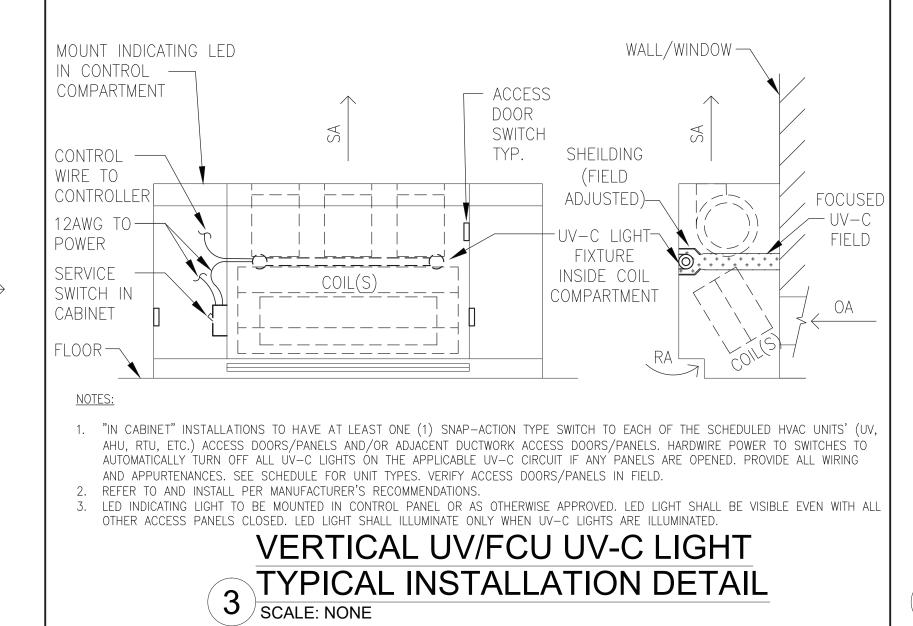
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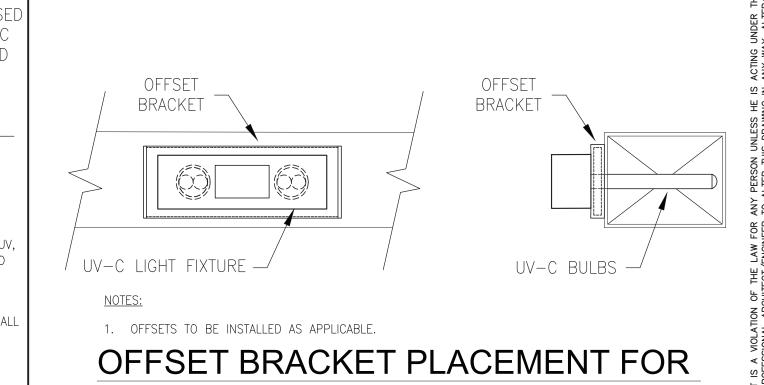


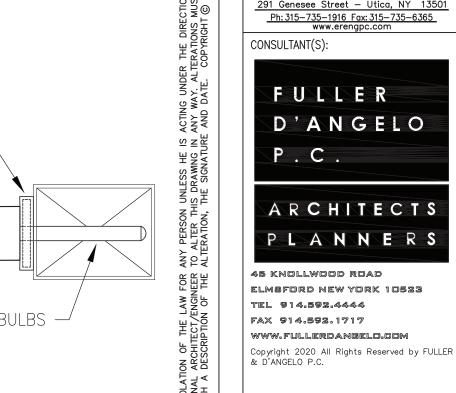


DUCTWORK UV-C LIGHT TYPICAL INSTALLATION DETAIL

"ON" CONDITIONS







► FOCUSED UV-C

FIELD

HIGH WATTAGE BULB IN SMALL DUCT 4 SCALE: NONE

SHEILDING

FIXTURE

INSIDE COIL

| COMPARTMENT

WAR HIGH SAIR CO

PROJECT NO.

ISSUED FOR BID

SED SET

REVISION

DRAWN BY

CHECKED BY

SHEET SIZE

SHEET TITLE

DETAILS

UV-C LIGHT FIXTURE

SCALE

11.09.2022

10.19.2022

30" X 42"

AS NOTED

DATE

DOOR -

SWITCH

1. ARRANGEMENTS OF HVAC COMPONENTS AND UV-C LIGHT FIXTURE INSTALLATION LOCATIONS AND QUANTITIES MAY VARY. INSTALL PER SCHEDULE AND MANUFACTURER RECOMMENDATIONS. 2. ALL ACCESS DOORS TO BE OUTFITTED WITH SENSOR SWITCHES TO AUTOMATICALLY DISCONNECT POWER TO UV-C

IN-CABINET FLOOR MOUNTED UV/FCU APPLICATION

SWITCH CONCEALED INSIDE SIDE COMPARTMENT

FIXTURES WHEN ACCESS DOORS ARE REMOVED FROM UNITS WITH UV-C INSTALLATIONS INSIDE THE CABINET. ALL SWITCHES AND FIXTURES TO BE INSTALLED AWAY FROM SOURCES OF CONDENSATION OR OTHER MOISTURE. 4. FOR IN-DUCTWORK APPLICATIONS, MOUNT DISCONNECT SWITCH AT OR NEAR THE UV-C LIGHT INSTALLATION. FOR IN-CABINET APPLICATIONS FOR EXPOSED UVS OR FCUS, MOUNT DISCONNECT SWITCH INSIDE THE SIDE CABINET OR CONTROL AREA OF THE CABINET. FOR IN-CABINET APPLICATIONS FOR UNITS THAT ARE LOCATED ABOVE CEILINGS OR ARE OTHERWISE CONCEALED, DISCONNECT SWITCH TO BE MOUNTED DIRECTLY TO THE OUTSIDE OF

LABELS REQUIRED: **EQUIPMENT:** • UV-C CIRCUIT MARK • "UV-C ON" AT INDICATING LEDS • WARNING LABEL (BY MANUFACTURER) UV-C LIGHT FIXTURES BLANK LABEL ON CEILINGS FOR QUICK LOCATION (WHEN APPLICABLE) • UV-C CIRCUIT MARK • "UV-C ON" AT INDICATING LEDS (WHEN APPLICABLE) SERVICE SWITCH PANEL LOCATION, NAME, BREAKER # (WHEN APPLICABLE)

NOTE: LABEL COLOR TO BE PURPLE, OR AS SELECTED BY DISTRICT

LABELING REQUIREMENTS 5 AND LOCATIONS SCALE: NONE

"UNOCCUPIED MODE" 'OCCUPIED MODE" "OCCUPIED MODE" 'OCCUPIED MODE' UNIT/ FAN (ON) UNIT/ FAN (ON) UNIT/ FAN (ON) UNIT/ FAN (ON) DISC. SWITCH (OFF) SWITCH (ON) SWITCH (ON) SWITCH (ON) SWITCH SWITCH LED (OFF) ANY ACCESS ALL ACCESS DOC DOOR SNAP (CLOSED) SWITCH (OPEN) (CLOSED) TOO UV-C (OFF) HOO UV-C (OFF) HOO UV-C (OFF) UV-C (ON) UV-C (OFF) UV-C (OFF) UV-C (OFF) UV-C (ON) NOTE 3 NOTE 2 NOTE 4 NOTE 1 NOTES:

UV-C & LED "OFF" CONDITIONS (REASONS IN BOLD)

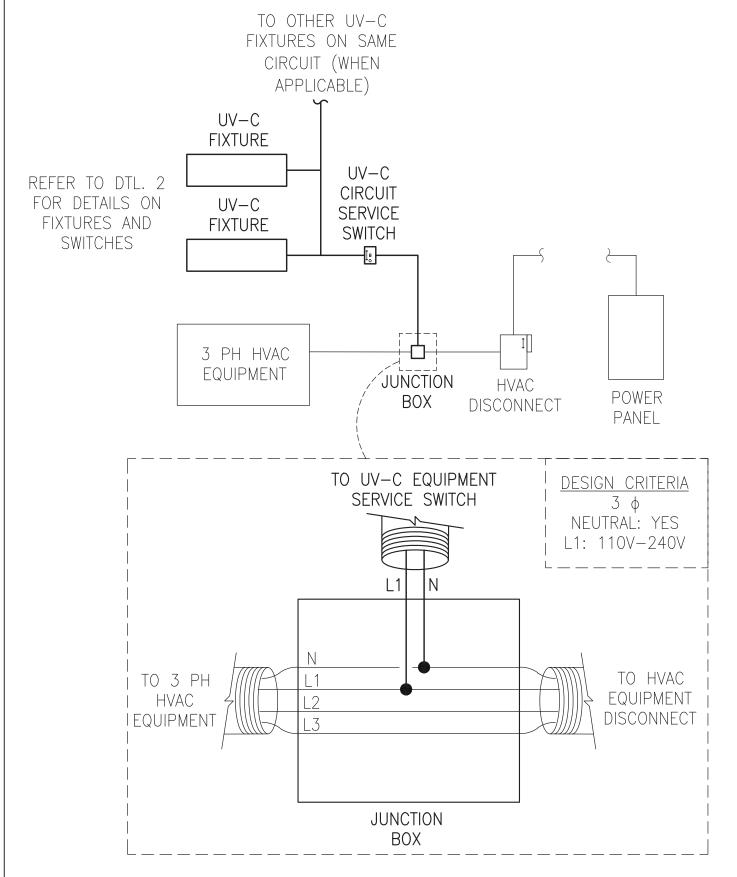
1. UV—C FIXTURES SHALL NOT ENGAGE DURING "UNOCCUPIED" MODE. "OCCUPIED MODE" TO BE ACTIVE WITHIN THE TIME FRAME FROM ONE HOUR BEFORE SCHOOL UNTIL ONE HOUR AFTER SCHOOL "UNOCCUPIED MODE" TO BE ACTIVE OUTSIDE OF THAT TIME FRAME (COORDINATE TIME-FRAME SETTING WITH DISTRICT REPRESENTATIVE), OR AS DEFINED BY THE HVAC EQUIPMENT 2. THE DISCONNECTING SWITCH IN THE "OFF" POSITION SHALL NOT ILLUMINATE THE LED AND SHALL DISCONNECT ALL UV-C LIGHTS ON THE CIRCUIT. UV-C FIXTURES SHALL NOT ENGAGE IF 3. HVAC UNITS WITH UV-C LIGHT FIXTURES INSTALLED INSIDE OF THE UNIT'S CABINET (WHEN APPLICABLE) SHALL HAVE SNAP SWITCH SENSORS INSTALLED TO ALL ACCESS DOORS. IF ANY ACCESS DOOR SNAP SWITCH SENSORS ARE OPEN THE UV-C FIXTURES SHALL NOT ENGAGE.

4. THE UV-C LIGHT FIXTURES AND DISCONNECTING SWITCH LED SHALL ENGAGE AND ILLUMINATE ONLY WHEN: DURING "OCCUPIED MODE", WHEN THE HVAC UNIT IS "ON", ALL SNAP SWITCH

SENSORS ARE CLOSED, AND DISCONNECTING SWITCH IS "ON".

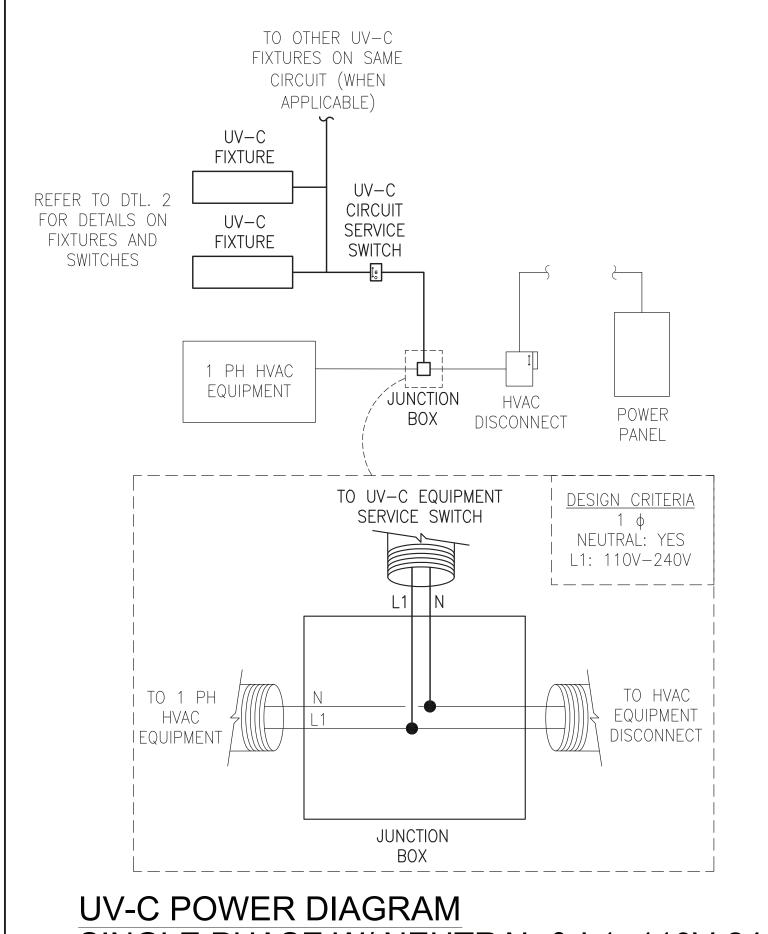
6 UV-C LIGHT FIXTURE ACTIVATION CONDITIONS SCALE: NONE





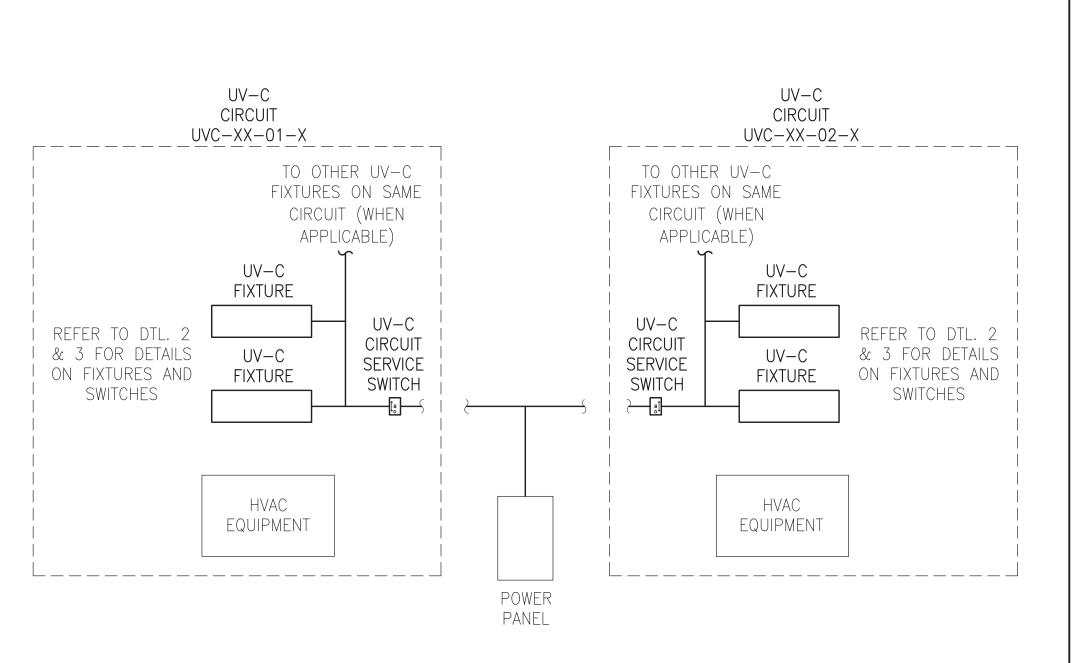
UV-C POWER DIAGRAM THREE PHASE W/ NEUTRAL & L1=110V-240V

CIRCUIT MAY BE POWERED FROM HVAC EQUIPMENT'S POWER CIRCUIT WHEN A NEUTRAL WIRE IS PRESENT. BEFORE TAPPING, ONE LEG'S CIRCUIT VOLTAGE MUST TEST TO THE SPECIFIED VOLTAGE RANGE ABOVE. INSTALL 4"x4"x2" JUNCTION BOX BETWEEN HVAC DISCONNECT AND HVAC EQUIPMENT AS SHOWN.



SINGLE PHASE W/ NEUTRAL & L1=110V-240V

CIRCUIT MAY BE POWERED FROM HVAC EQUIPMENT'S POWER CIRCUIT WHEN A NEUTRAL WIRE IS PRESENT. BEFORE TAPPING, CIRCUIT VOLTAGE MUST TEST TO THE SPECIFIED VOLTAGE RANGE ABOVE. INSTALL 4"x4"x2" JUNCTION BOX BETWEEN HVAC DISCONNECT AND HVAC EQUIPMENT AS SHOWN.



REFER TO DTL. 2

FOR DETAILS

uv—c light fixture

IN-DUCT APPLICATION

SWITCH AT/NEAR FIXTURE

IN-CABINET HORIZONTAL AHU/UV/FCU APPLICATION

SWITCH ON EXTERIOR OF HVAC UNIT

UV-C LIGHT FIXTURE(S)

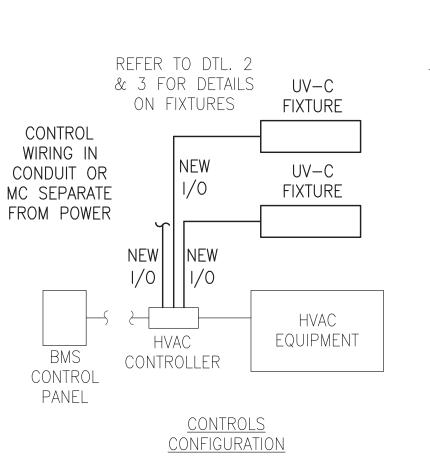
ALTERNATE LOCATIONS OF

- UV-C LIGHT FIXTURE(S)

ACCESS DOOR

UV-C POWER DIAGRAM THREE PHASE W/O NEUTRAL AND/OR 240V-480V

1. UV-C CIRCUIT MUST BE POWERED FROM AN AVAILABLE NEARBY PANEL IF NEUTRAL IS NOT PRESENT IN HVAC EQUIPMENT POWER CIRCUIT, OR EXCEEDS THE VOLTAGE RANGE NOTED ABOVE. SEE UV-C SCHEDULES FOR PROPOSED POWER SOURCES. DO NOT TAP INTO OTHER UNSPECIFIED EXISTING CIRCUITS. UV-C CIRCUITS TO BE GROUPED TOGETHER WHENEVER FEASIBLE. PROVIDE NEW BREAKER. CLEARLY IDENTIFY ROOM NUMBER, PANEL NAME, AND BREAKER NUMBER AT UV-C FIXTURE SERVICE SWITCH. IDENTIFY NEW CIRCUIT AT PANEL.



BMS USER INTERFACE: EACH UV—C FIXTURE TO INCORPORATE THE FOLLOWING: 1. ITEM: "UV-C-C" VALUE: ON/OFF DESCRIPTION: "UV-C LIGHT COMMAND"

PROMPT FOR UV-C LIGHT ACTIVATION BASED ON HVAC OCCUPANCY STATUS PROTOCOL. ON=OCCUPIED MODE AS DEFINED BY HVAC EQUIPMENT OFF=UNOCCUPIED MODE AS DEFINED BY HVAC EQUIPMENT CONTROLLER

2. ITEM: "UV-C-S" VALUE: ON/OFF DESCRIPTION: "UV-C LIGHT STATUS"

ON=UV-C IS ON OFF=UV-C IS OFF SIGNAL ALARMS FOR: UV-C COMMAND "ON" BUT UV-C STATUS "OFF"

ACTUAL STATUS OF UV-C LIGHT

UV-C COMMAND "OFF" BUT UV-C STATUS "ON" MONITOR AND ALARM FOR EQUIPMENT FAILURE AND/OR BULB FAILURE

JUV-C CONTROLS DIAGRAM

1. UV-C EQUIPMENT SHALL BE INTEGRATED INTO THE EXISTING BMS AS SHOWN. ACTIVATION PROTOCAL SHALL BE BASED UPON THE "UV-C FIXTURE ACTIVATION CONDITIONS" DETAIL.

ROOF TOP UNIT W/ DX COOLING - RTU

RUN CONDITIONS — SCHEDULED THE UNIT SHALL RUN ACCORDING TO A USER DEFINABLE TIME SCHEDULE IN THE FOLLOWING MODES: • OCCUPIED MODE: THE UNIT SHALL MAINTAIN o A 74°F (ADJ.) COOLING SETPOINT

o A 70°F (ADJ.) HEATING SETPOINT • UNOCCUPIED MODE (NIGHT SETBACK): THE UNIT SHALL MAINTAIN

o A 85°F (ADJ.) COOLING SETPOINT.

o A 55°F (ADJ.) HEATING SETPOINT. ALARMS SHALL BE PROVIDED AS FOLLOWS • HIGH ZONE TEMP: IF THE ZONE TEMPERATURE IS GREATER THAN THE COOLING SETPOINT BY A USER DEFINABLE AMOUNT (ADJ.). • LOW ZONE TEMP: IF THE ZONE TEMPERATURE IS LESS THAN THE HEATING SETPOINT BY A USER DEFINABLE AMOUNT (ADJ.).

ZONE OPTIMAL START: THE UNIT SHALL USE AN OPTIMAL START ALGORITHM FOR MORNING START—UP. THIS ALGORITHM SHALL MINIMIZE THE UNOCCUPIED WARM-UP OR COOL-DOWN PERIOD WHILE STILL ACHIEVING

COMFORT CONDITIONS BY THE START OF SCHEDULED OCCUPIED PERIOD. THE UNIT SHALL SHUT DOWN AND GENERATE AN ALARM UPON RECEIVING A SMOKE DETECTOR

THE FAN SHALL RUN ANYTIME THE UNIT IS COMMANDED TO RUN, UNLESS SHUTDOWN ON SAFETIES. THE CONTROLLER SHALL MEASURE THE ZONE TEMPERATURE AND STAGE THE COOLING TO MAINTAIN ITS COOLING SETPOINT. TO PREVENT SHORT CYCLING, THE STAGE SHALL HAVE A USER DEFINABLE (ADJ.) MINIMUM RUNTIME. THE COOLING SHALL BE ENABLED WHENEVER:

• OUTSIDE AIR TEMPERATURE IS GREATER THAN 60°F (ADJ.) AND THE ZONE TEMPERATURE IS ABOVE COOLING SETPOINT. AND THE FAN IS ON.

HEATING COIL VALVE: THE CONTROLLER SHALL MEASURE THE ZONE TEMPERATURE AND OPEN THE HEATING COIL VALVE TO MAINTAIN ITS HEATING SETPOINT

THE HEATING SHALL BE ENABLED WHENEVER: • OUTSIDE AIR TEMPERATURE IS LESS THAN 65°F (ADJ.). • AND THE ZONE TEMPERATURE IS BELOW HEATING SETPOINT.

 AND THE FAN IS ON. THE HEATING COIL VALVE SHALL OPEN WHENEVER THE FREEZESTAT (IF PRESENT) IS ON.

HEATING - HIGH DISCHARGE AIR TEMPERATURE LIMIT: THE CONTROLLER SHALL MEASURE THE DISCHARGE AIR TEMPERATURE AND, ON RISING

TEMPERATURE, LIMIT THE HEATING AS FOLLOWS: • AS THE DISCHARGE AIR TEMPERATURE RISES FROM 90°F TO 120°F (ADJ.), • THE CONTROLLER SHALL LIMIT THE HEATING OUTPUT FROM 100% TO 0% (ADJ.).

THE OUTSIDE AIR DAMPER SHALL OPEN TO PROVIDE A FIXED PERCENTAGE OUTSIDE AIR VENTILATION

ANYTIME THE UNIT IS OCCUPIED AND SHALL CLOSE ANYTIME THE UNIT STOPS. THE DAMPER OPEN POSITION SHALL BE SET DURING TESTING AND BALANCING. THE MIXED AIR DAMPERS SHALL CLOSE 1 SEC (ADJ.) AFTER THE FAN STOPS.

IF OPTIMAL START UP IS AVAILABLE THE OUTSIDE AIR DAMPER SHALL CLOSE AND THE RETURN AIR MINIMUM OUTSIDE AIR VENTILATION — FIXED PERCENTAGE: THE OUTSIDE AIR DAMPERS SHALL MAINTAIN A MINIMUM POSITION (ADJ.) DURING BUILDING OCCUPIED

HOURS AND BE CLOSED DURING UNOCCUPIED HOURS.

THE CONTROLLER SHALL MONITOR THE FAN RUNTIME.

ALARMS SHALL BE PROVIDED AS FOLLOWS: CHANGE REQUIRED: FILTER HAS BEEN IN USE FOR MORE THAN 2200 DISCHARGE AIR TEMPERATURE:

FAN FAILURE: COMMANDED ON, BUT THE STATUS IS OFF.

THE CONTROLLER SHALL MONITOR THE DISCHARGE AIR ALARMS SHALL BE PROVIDED AS FOLLOWS:

HIGH DISCHARGE AIR TEMP: IF THE DISCHARGE AIR TEMPERATURE IS GREATER THAN 120°F (ADJ.). LOW DISCHARGE AIR TEMP: IF THE DISCHARGE AIR TEMPERATURE IS LESS THAN 40°F (ADJ.).

FAN STATUS: THE CONTROLLER SHALL MONITOR THE FAN STATUS. ALARMS SHALL BE PROVIDED AS FOLLOWS:

FAN IN HAND: CÔMMANDED OFF, BUT THE STATUS IS ON. FAN RUNTIME EXCEEDED: FAN STATUS RUNTIME EXCEEDS A USER DEFINABLE LIMIT (ADJ.).

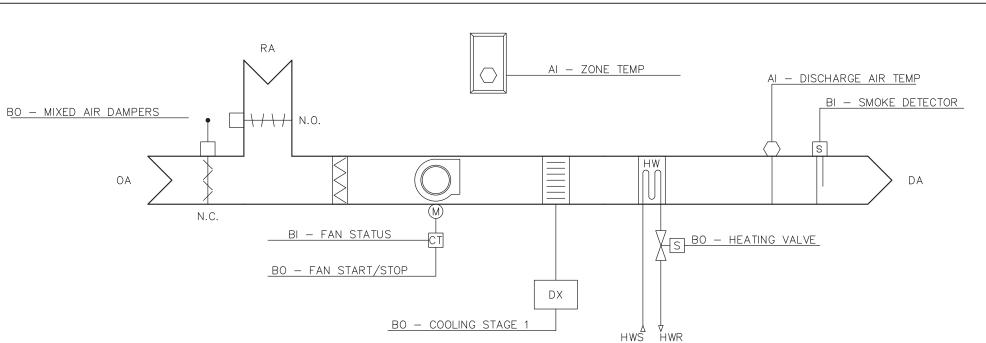
WHEN THE ZONE IS OCCUPIED, THE CONTROLLER WILL MONITOR THE DEVIATION OF THE ZONE TEMPERATURE FROM THE HEATING OR COOLING SETPOINT AND CALCULATE A 0 - 100% ENVIRONMENTAL INDEX WHICH GIVES AN INDICATION OF HOW WELL THE ZONE IS MAINTAINING COMFORT. PERCENTAGE OF TIME SINCE OCCUPANCY BEGAN THAT THE ENVIRONMENTAL INDEX WAS 70% OR HIGHER.

ROOFTOP UNIT (HW HEATING AND DX COOLING) CONTROL SCHEMATIC SCALE: NONE

CONTROL DIAGRAMS LEGEND

- AI = ANALOG INPUT. A PHYSICAL INPUT TO THE CONTROL MODULE. AO = ANALOG OUTPUT. A PHYSICAL OUTPUT FROM THE CONTROL MODULE.
- AV = ANALOG VALUE. AN INTERMEDIATE (SOFTWARE) POINT THAT MAY BE
- EDITABLE OR READ-ONLY. EDITABLE AVS ARE TYPICALLY USED TO ALLOW THE USER TO SET A FIXED CONTROL PARAMETER, SUCH AS A SETPOINT. READ ONLY AVS ARE TYPICALLY USED TO DISPLAY THE STATUS OF A CONTROL OPERATION.
- BI = BINARY INPUT. A PHYSICAL INPUT TO THE CONTROL MODULE.
- BO = BINARY OUTPUT. A PHYSICAL OUTPUT FROM THE CONTROL MODULE.
- SET A FIXED CONTROL PARAMETER, SUCH AS A SETPOINT. READ ONLY BVS ARE TYPICALLY USED TO DISPLAY THE STATUS OF A CONTROL OPERATION.

BV = BINARY VALUE. AN INTERMEDIATE (SOFTWARE) POINT THAT MAY BE EDITABLE OR READ-ONLY. EDITABLE BVS ARE TYPICALLY USED TO ALLOW THE USER TO



UNIT VENTILATOR

RUN CONDITIONS - SCHEDULED: THE UNIT SHALL RUN ACCORDING TO A USER DEFINABLE TIME SCHEDULE

OCCUPIED MODE: THE UNIT SHALL MAINTAIN 74 DEG F (ADJ.) COOLING SETPOINT 70 DEG F (ADJ.) HEATING SETPOINT. UNOCCUPIED MODE (NIGHT SETBACK): THE UNIT SHALL MAINTAIN 85 DEG F (ADJ.) COOLING SETPOINT.

55 DEG F (ADJ.) HEATING SETPOINT. ALARMS SHALL BE PROVIDED AS FOLLOWS:

COOLING SETPOINT BY A USER DEFINABLE AMOUNT (ADJ.). LOW ZONE TEMP: IF THE ZONE TEMPERATURE IS LESS THAN THE HEATING SETPOINT BY A USER DEFINABLE AMOUNT (ADJ.). ZONE OPTIMAL START: THE UNIT SHALL USE AN OPTIMAL START ALGORITHM FOR MORNING

HIGH ZONE TEMP: IF THE ZONE TEMPERATURE IS GREATER THAN THE

START-UP. THIS ALGORITHM SHALL MINIMIZE THE UNOCCUPIED WARM-UP OR COOL-DOWN PERIOD WHILE STILL ACHIEVING COMFORT CONDITIONS BY THE START OF SCHEDULED OCCUPIED PERIOD.

THE UNIT SHALL SHUT DOWN AND GENERATE AN ALARM UPON RECEIVING A SMOKE DETECTOR STATUS.

THE FAN SHALL RUN ANYTIME THE UNIT IS COMMANDED TO RUN, UNLESS SHUTDOWN ON SAFETIES. THE CONTROLLER SHALL MEASURE THE ZONE TEMPERATURE AND STAGE

THE COOLING TO MAINTAIN ITS COOLING SETPOINT. TO PREVENT SHORT CYCLING, THE STAGE SHALL HAVE A USER DEFINABLE (ADJ.) MINIMUM THE COOLING SHALL BE ENABLED WHENEVER: OUTSIDE AIR TEMPERATURE IS GREATER THAN 60 DEG F (ADJ.).

AND THE ZONE TEMPERATURE IS ABOVE COOLING SETPOINT. AND THE FAN IS ON. THE CONTROLLER SHALL MEASURE THE ZONE TEMPERATURE AND OPEN THE HEATING COIL VALVE TO MAINTAIN ITS HEATING SETPOINT.

THE HEATING SHALL BE ENABLED WHENEVER: OUTSIDE AIR TEMPERATURE IS LESS THAN 65 DEG F (ADJ.). AND THE ZONE TEMPERATURE IS BELOW HEATING SETPOINT. AND THE FAN IS ON.

THE HEATING COIL VALVE SHALL OPEN WHENEVER THE FREEZESTAT (IF PRESENT) IS ON. HEATING - HIGH DISCHARGE AIR TEMPERATURE LIMIT:

THE CONTROLLER SHALL MEASURE THE DISCHARGE AIR TEMPERATURE AND, ON RISING TEMPERATURE, LIMIT THE HEATING AS FOLLOWS: AS THE DISCHARGE AIR TEMPERATURE RISES FROM 90 DEG F TO 120 THE CONTROLLER SHALL LIMIT THE HEATING OUTPUT FROM 100% TO

THE OUTSIDE AIR DAMPER SHALL OPEN TO PROVIDE A FIXED PERCENTAGE OUTSIDE AIR VENTILATION ANYTIME THE UNIT IS OCCUPIED AND SHALL CLOSE ANYTIME THE UNIT STOPS. THE DAMPER OPEN POSITION SHALL BE SET DURING TESTING AND BALANCING. THE MIXED AIR DAMPERS SHALL CLOSE 1 SEC (ADJ.) AFTER THE FAN STOPS. IF OPTIMAL START UP IS AVAILABLE THE OUTSIDE AIR DAMPER SHALL CLOSE AND THE RETURN AIR DAMPER SHALL OPEN.

MINIMUM OUTSIDE AIR VENTILATION - FIXED PERCENTAGE: THE OUTSIDE AIR DAMPERS SHALL MAINTAIN A MINIMUM POSITION (ADJ.) DURING BUILDING OCCUPIED HOURS AND BE CLOSED DURING UNOCCUPIED

THE CONTROLLER SHALL MONITOR THE FAN RUNTIME. ALARMS SHALL BE PROVIDED AS FOLLOWS:

0% (ADJ.).

FILTER CHANGE REQUIRED: FILTER HAS BEEN IN USE FOR MORE THAN 2200 HRS (ADJ.). DISCHARGE AIR TEMPERATURE:

THE CONTROLLER SHALL MONITOR THE DISCHARGE AIR TEMPERATURE. ALARMS SHALL BE PROVIDED AS FOLLOWS: HIGH DISCHARGE AIR TEMP: IF THE DISCHARGE AIR TEMPERATURE IS GREATER THAN 120 DEG F (ADJ.)

LOW DISCHARGE AIR TEMP: ÌF THE DISCHARGE AIR TEMPERATURE IS LESS THAN 40 DEG F (ADJ.).

THE CONTROLLER SHALL MONITOR THE FAN STATUS. ALARMS SHALL BE PROVIDED AS FOLLOWS: FAN FAILURE: COMMANDED ON, BUT THE STATUS IS OFF.

FAN IN HAND: COMMANDED OFF, BUT THE STATUS IS ON FAN RUNTIME EXCEEDED: FAN STATUS RUNTIME EXCEEDS A USER DEFINABLE LIMIT (ADJ.).

A FLOAT SWITCH TO DEACTIVATE THE UNIT WHEN READING HIGH LEVELS OF CONDENSATE IN THE DRAIN PAN.

TYPICAL UNIT VENTILATOR CONTROL SCHEMATIC

ELECTRONIC EXPANSION VALVE (EEV)

VALVE SHALL PULSE TO MODULATE FLOW OF REFRIGERANT INTO THE CONDENSER/EVAPORATOR BY RECEIVING DIRECTION FROM THE CONTROL BOX, WHICH CONTROLS THE EEV BY MONITORING SENSOR VALUES AND INITIATING RESPONSES TO ACQUIRE DESIRED ROOM TEMPERATURE VALUES.

INDOOR SENSORSGAS THERMISTOR — MOUNTED ON SUCTION SIDE OF INDOOR

EVAPORATOR COIL. SATURATED LIQUID THERMISTER — MOUNTED ON LIQUID SIDE OF INDOOR

EVAPORATOR COIL, AFTER THE EEV. RETURN AIR THERMISTOR - LOCATED IN RETURN AIR STREAM REMOTE CONTROLLER W/ TEMPERATURE SENSOR - LOCATED AS SHOWN

ON DRAWINGS.

CONTROL OF OUTDOOR ELECTRONIC EXPANSION VALVE

1. IN COOLING OPERATION, THE OUTDOOR UNIT'S ELECTRONIC EXPANSION VALVE IS IN THE FULLY OPEN POSITION.

2. IN HEATING OPERATION - SUPERHEATED DEGREE CONTROL SUPERHEATED DEGREE [SH] IS CALCULATED FROM THE LOW-PRESSURE EQUIVALENT SATURATION TEMPERATURE (TE) CONVERTED FROM THE PRESSURE DETECTED BY THE LOW PRESSURE SENSOR OF THE OUTDOOR UNIT (PE) AND TEMPERATURE DETECTED BY THE SUCTION PIPE THERMISTOR (TS). THE ELECTRONIC EXPANSION VALVE OPENING DEGREE IS REGULATED SO THAT THE SUPERHEATED DEGREE [SH] BECOMES CLOSE TO TARGET SUPERHEATED DEGREE [SHS].

WHEN SH > SHS, ADJUST TO MAKE OPENING DEGREE OF THE ELECTRONIC EXPANSION VALVE LARGER THAN THE PRESENT ONE. WHEN SH< SHS, ADJUST TO MAKE OPENING DEGREE OF THE ELECTRONIC EXPANSION VALVE SMALLER THAN THE PRESENT ONE.

 SH : SUPERHEATED DEGREE (TS - TE) SHS : TARGET SUPERHEATED DEGREÉ R410A EEV PULSE RANGE: 0-2000

CONTROL OF INDOOR ELECTRONIC EXPANSION VALVE

DEGREE [SHS].

1. IN COOLING OPERATION - SUPERHEATED DEGREE CONTROL SUPERHEATED DEGREE [SH] IS CALCULATED FROM TEMPERATURE DETECTED BY THE GAS PIPE THERMISTOR OF INDOOR UNIT (TG) AND THE TEMPERATURE DETECTED BY THE INDOOR LIQUID PIPE THERMISTOR (TL). THE ELECTRONIC EXPANSION VALVE OPENING DEGREE IS CONTROLLED SO THAT THE SUPERHEATED DEGREE [SH] IS CLOSE TO THE TARGETED SUPERHEATED

THE COMPENSATION IS MADE BASED ON THE TEMPERATURE DIFFERENCE BETWEEN SET-POINT TEMPERATURE AND THE RETURN-AIR THERMISTOR TEMPERATURE (Δ T).

WHEN SH > SHS, ADJUST TO MAKE OPENING DEGREE OF THE ELECTRONIC EXPANSION VALVE LARGER THAN THE PRESENT ONE. WHEN SH< SHS, ADJUST TO MAKE OPENING DEGREE OF THE ELECTRONIC EXPANSION VALVE SMALLER THAN THE PRESENT ONE.

 SH : SUPERHEATED DEGREE (TG-TL) • SHS : TARGET SUPERHEATED DEGRÉE • (ΔT): [(REMOTE CONTROLLER SET-POINT TEMPERATURE) - (RETURN-AIR

THERMISTOR DETECTION VALUE) 2. SUBCOOLED DEGREE CONTROL IN HEATING OPERATION SUBCOOLED DEGREE [SC] IS CALCULATED FROM THE HIGH PRESSURE EQUIVALENT SATURATION TEMPERATURE (TC) CONVERTED FROM THE PRESSURE DETECTED BY HIGH PRESSURE SENSOR OF THE OUTDOOR UNIT AND THE TEMPERATURE DETECTED BY THE LIQUID PIPE THERMISTOR OF THE

INDOOR UNIT (TL). ELECTRONIC EXPANSION VALVE OPENING DEGREE IS REGULATED SO THAT THE SUBCOOLED DEGREE [SC] IS CLOSE TO TARGET SUBCOOLED DEGREE [SCS].

THE COMPENSATION IS MADE BASED ON THE TEMPERATURE DIFFERENCE BETWEEN SET-POINT TEMPERATURE AND THE RETURN-AIR THERMISTOR

TEMPERATURE (Δ T). WHEN SC > SCS, ADJUST TO MAKE OPENING DEGREE OF THE ELECTRONIC EXPANSION VALVE LARGER THAN THE PRESENT ONE. WHEN SC< SCS, ADJUST TO MAKE OPENING DEGREE OF THE ELECTRONIC EXPANSION VALVE SMALLER THAN THE PRESENT ONE. • SC : SUBCOOLED DEGREE (TC-TL)

 SCS : TARGET SUBCOOLED DEGRÉE • (ΔT): [(REMOTE CONTROLLER SET-POINT TEMPERATURE)] - [(RETURN-AIR THERMISTOR DETECTION.)]

2 INDOOR/OUTDOOR ELECTRONIC EXPANSION VALVES SCALE: NONE

COMPRESSOR CAPACITY CONTROL

OUTDOOR UNIT TO MONITOR SENSORS ON SYSTEM TO MAINTAIN STABLE CAPACITY REGARDLESS OF VARYING LOADS AS FOLLOWS:

THE LOW PRESSURE EQUIVALENT SATURATION TEMPERATURES (EVAPORATION TEMPERATURE = TE) CLOSE TO TARGET VALUE BASED ON THE PRESSURE DETECTED BY LOW PRESSURE SENSOR OF THE OUTDOOR UNIT (PE). TARGET INDOOR EVAPORATING/ LO PRESSURE ABOUT 43°F @ 139 PSI

PRESSURE DETECTED BY HIGH-PRESSURE SENSOR CONTROL (PC), COMPRESSOR CAPACITY IS CONTROLLED TO PUT THE HIGH PRESSURE EQUIVALENT SATURATION TEMPERATURE (CONDENSING TEMPERATURE = TC) CLOSE TO TARGET VALUE. TARGET INDOOR CONDENSING/ HI PRESSURE ABOUT 115°F @ 406 PSI OUTDOOR FAN CONTROL (DAIKIN BASED)

 OUTDOOR FAN CONTROL ADJUST AIR FLOW RATE TO KEEP CONDENSING TEMPERATURE AT OR ABOVE 34°C. COMPRESSOR OFF: FAN OFF = STEP 0 COMPRESSOR ON: PRESSURE-EQUALIZATION = 60 SECONDS. PRIOR TO COMPRESSOR

OPERATION, OUTDOOR CONTROL SET FAN SPEED AT STEP 4 SO THAT REFRIGERANT SATURATION TEMPERATURE IN OUTDOOR UNIT BECOMES AROUND ACTUAL AMBIENT. NORMAL OPERATION: CONDENSING TEMPERATURE CONTROL CAN ADJUST FAN SPEED EVERY 20 SECONDS BETWEEN STEP 0 (OFF) AND STEP 8. DURING COMPRESSOR OPERATION, OUTDOOR FAN CONTROL SET DEFAULT

NOMINAL AIR FLOW RATE = STEP 7. COMPRESSOR OFF: OUTDOOR AIR TEMPERATURE BELOW 25°C: FAN OFF = STEP O. OUTDOOR AIR TEMPERATURE ABOVE 27°C: FAN STEP 1 = HEATING MODE IS DISABLED, LOW AIR FLOW RATE TO ENABLE TO

> CONTROL SET FAN SPEED AT STEP 4. NORMAL OPERATION: WHEN SUCTION AND DISCHARGE PRESSURE ARE IN NORMAL RANGE, NOMINAL AIR FLOW RATE IS STEP 7. WHEN SUCTION PRESSURE AND DISCHARGE DROP WHILE MAIN EXPANSION VALVE OPENS GRADUALLY, HIGH AIR FLOW RATE IS DEFROST: OUTDOOR FAN STOPS DURING DEFROST CYCLE OF OUTDOOR HEAT-EXCHANGER.

MEASURE CORRECT OUTDOOR AIR TEMPERATURE (EFFECT SUNSHINE).

PRESSURE-EQUALIZATION. PRIOR TO COMPRESSOR OPERATION, OUTDOOR

MULTI VRF UNIT OPERATION SEQUENCE

AT STARTING CONTROL.

MASTER-SLAVE: SET 1: "MASTER UNIT". THIS SYSTEM WILL SWITCH SEVERAL SYSTEMS BETWEEN COOLING/HEATING/FAN-ONLY. SET 2: "SLAVE UNIT". THE SYSTEM WILL RECEIVE THE OPERATION FROM A

LEAD LAG AND LEAD ROTATION: OUTDOOR UNIT ROTATION CHANGES THE OPERATING PRIORITY OF OUTDOOR UNITS. THE ROTATION FUNCTION TO KEEP COMPRESSOR(S) FROM BEING STOPPED

SYSTEM SET AS "MASTER COOL/HEAT" WITH SAME "COOL/HEAT ADDRESS" (SET

FOR AN EXTENDED PERIOD OR AT CONSTANT LOADING, AND PREVENTING UNBALANCED OIL LEVEL. TIMING OF OUTDOOR UNIT ROTATION: AFTER OIL RETURN OPERATION. AFTER DEFROSTING OPERATION (HEATING ONLY).

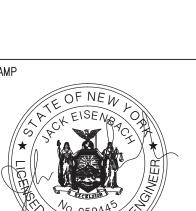
 WHEN ANY OF OUTDOOR UNIT STOPS FOR A PERIOD OF 20 MINUTES OR MORE. OUTOOR VRF UNIT CONTROLS

CONSULTANT(S):

FULLER D'ANGELO ARCHITECTS

ENGINEER:

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WAR HIGH SAIR CO PROJECT NO. 11.09.2022 10.19.2022

ISSUED FOR BID SED SET REVISION DATE DRAWN BY CHECKED BY 30" X 42" SHEET SIZE SCALE AS NOTED SHEET TITLE

CONTROL SCHEMATICS

SHEET NO.