

	SYMBOLS AND ABBREVIATIONS			SYMBOLS AND ABBREVIATIONS			GENERAL NOTES	<div>STREAM Center for Experiential Learning</div> <div>SCHOOL OF THE HOLY CHILD</div> <div>2225 WESTCHESTER AVE, RYE, NY</div> <div><div>KG+Dlisten imagine build</div><div>KG+D . ARCHITECTS PC</div><div>285 MAIN STREET MOUNT KISCO . NEW YORK . 10549</div><div>P:914.666.5900KGDARCHITECTS.COM</div></div>
	SYMBOL	ABBREVIATION	DESCRIPTION	SYMBOL	ABBREVIATION	DESCRIPTION		
	-	AC-	AIR CONDITIONING UNIT		-	RETURN DUCT UP	1. CONTRACT DRAWINGS, AS FAR AS THEY RELATE TO THE GENERAL ARRANGEMENT AND LOCATION OF EQUIPMENT, SHEET METAL, AND PIPING, SHALL BE UNDERSTOOD AS DIAGRAMMATIC. ANY CHANGES TO EQUIPMENT, SHEET METAL, AND PIPING LOCATIONS NECESSARY TO AVOID INTERFERENCE WITH OTHER TRADES SHALL BE MADE AT NO EXTRA COST, AND MUST BE APPROVED BY THE ENGINEER.	2. THE MECHANICAL CONTRACTOR SHALL INSTALL FIRE DAMPERS WITH ACCESS DOORS IN ALL DUCTS PENETRATING FIRE RATED WALLS, WHETHER SPECIFICALLY SHOWN ON THE DRAWINGS OR NOT.
	-	AD	ACCESS DOOR		-	RETURN DUCT DOWN		
	-	AFF	ABOVE FINISHED FLOOR		-	TRANSITION FROM SQUARE TO ROUND DUCT	3. THE MECHANICAL CONTRACTOR SHALL FURNISH AND INSTALL VOLUME DAMPERS IN DUCTWORK AS REQUIRED TO BALANCE THE AIRFLOW AT ALL REGISTERS AND DIFFUSERS TO THE CFM'S INDICATED ON PLAN, WHETHER SPECIFICALLY SHOWN ON THE DRAWINGS OR NOT.	4. PROVIDE ALL PIPE OPENINGS THROUGH PARTITIONS WITH PIPE SLEEVES. FOR PIPES PENETRATING FIRE RATED PARTITIONS, THE SPACE BETWEEN THE PIPE AND THE SLEEVE SHALL BE SEALED WITH FIRE STOPPING MATERIAL. PENETRATIONS FOR PIPING SHALL BE MADE BY CORE DRILLING WHENEVER POSSIBLE.
	-	AHC	ABOVE HUNG CEILING		-	TRANSITION		
	-	AP	ACCESS PANEL		-	DUCT DROP	5. ACOUSTICALLY LINE ALL TRANSFER DUCTS. ACOUSTIC LINING SHALL BE 1" THICK. PROVIDE RETURN REGISTERS AT TRANSFER DUCT INLETS & OUTLETS LOCATED BELOW THE CEILING, OR IN AREAS WITH NO CEILING.	6. DUCT-MOUNTED SMOKE DETECTORS AND SAMPLING TUBES SHALL BE FURNISHED BY THE ELECTRICAL CONTRACTOR. THE MECHANICAL CONTRACTOR SHALL INSTALL EACH SAMPLING TUBE IN THE DUCTWORK. THE ELECTRICAL CONTRACTOR SHALL INSTALL AND WIRE EACH SMOKE DETECTOR. THE MECHANICAL CONTRACTOR SHALL NOT BRANCH OFF ANY DUCT REQUIRING A DUCT SMOKE DETECTOR BEFORE THE DUCT SMOKE DETECTOR. LOCATE SMOKE DETECTORS IN SERVICEABLE AREAS, NOT IN SHAFTS.
	-	BHP	BRAKE HORSEPOWER		-	DUCT RISE		
	-	BTU	BRITISH THERMAL UNIT		-	SQUARE VANED ELBOW	7. ALL MOTOR STARTERS AND DISCONNECT SWITCHES FOR HVAC EQUIPMENT SHALL BE FURNISHED BY THE MECHANICAL CONTRACTOR AND INSTALLED BY THE ELECTRICAL CONTRACTOR, UNLESS OTHERWISE NOTED. DISCONNECT SWITCHES FURNISHED BY THE MECHANICAL CONTRACTOR FOR HVAC EQUIPMENT SHALL BE HEAVY DUTY TYPE.	8. THE MECHANICAL CONTRACTOR SHALL NOTE THAT, IN ADDITION TO THE SPECIFICATIONS AND DETAILS GIVEN IN THESE PLANS FOR PIPE HANGERS AND SUPPORTS, ALL HANGERS AND SUPPORTS SHALL BE DESIGNED AND INSTALLED IN COMPLIANCE WITH APPLICABLE SEISMIC CODES.
	-	CFM	CUBIC FEET PER MINUTE		-	DUCT RISE		
	-	COD	CABLE OPERATED DAMPER		-	DUCT DROP	9. DUCT DIMENSIONS SHOWN ON MECHANICAL DRAWINGS REFER TO INSIDE CLEAR DUCT DIMENSIONS. WHERE DUCTWORK IS LINED, THE MECHANICAL CONTRACTOR SHALL INCREASE THE SIZE OF DUCT TO COMPENSATE FOR LINING.	10. LOCATE THERMOSTATS AND TEMPERATURE SENSORS 5'-6" ABOVE FINISHED FLOOR UNLESS OTHERWISE NOTED. COORDINATE LOCATION WITH FURNITURE, CABINETS, ETC. FURNISH LOCKING TAMPERPROOF COVER FOR ALL NEW THERMOSTATS IN PUBLIC AREAS.
	-	DB	DRY BULB TEMPERATURE		-	DUCT TRANSITION		
	-	DIA. OR Ø	DIAMETER		-	ALUMINUM DUCT	11. COORDINATE DUCTWORK, GRILLE, DIFFUSER AND REGISTER LOCATIONS WITH LIGHTS, SPRINKLER HEADS, SMOKE DETECTORS, AND THE ARCHITECTURAL PLANS.	12. THE MECHANICAL CONTRACTOR SHALL SUBMIT FOR REVIEW A COMPOSITE SHOP DRAWING, FULLY COORDINATED WITH ALL OTHER TRADES, INDICATING DUCTWORK, PLUMBING, SPRINKLER PIPING, STRUCTURAL, LIGHTS, CONDUITS, SMOKE DETECTORS, DIFFUSERS, GRILLES, ETC.
	-	DX	DIRECT EXPANSION		AL	ACOUSTIC LINING		
	-	EA	EXHAUST AIR		FD/AD	FIRE DAMPER W/ ACCESS DOOR	13. THE MECHANICAL CONTRACTOR SHALL SUBMIT FOR REVIEW A COMPOSITE SHOP DRAWING, FULLY COORDINATED WITH ALL OTHER TRADES, INDICATING DUCTWORK, PLUMBING, SPRINKLER PIPING, STRUCTURAL, LIGHTS, CONDUITS, SMOKE DETECTORS, DIFFUSERS, GRILLES, ETC.	14. ALL WORK SHALL COMPLY WITH STATE BUILDING CODE, LOCAL BUILDING CODE, AND ENERGY CODE REQUIREMENTS. IN CASE OF CONFLICT BETWEEN THE CONTRACT DOCUMENTS AND A GOVERNING CODE OR ORDINANCE, THE MORE STRINGENT STANDARD SHALL APPLY.
	-	EAT	ENTERING AIR TEMPERATURE		SD/AD	SMOKE DAMPER W/ ACCESS DOOR		
	-	ER	EXHAUST REGISTER		CFSD	COMBINATION FIRE/SMOKE DAMPER W/ ACCESS DOOR	15. DURING CONSTRUCTION, ALL OPEN OR INCOMPLETE DUCTWORK SHALL BE CAPPED AIRTIGHT WITH WITH HEAVY POLYETHYLENE PLASTIC. AFTER THE INSTALLATION OF DUCTWORK, REGISTERS, GRILLES, AND DIFFUSERS, THE CONTRACTOR SHALL BLANK OFF ALL REGISTERS, GRILLES, AND DIFFUSERS WITH HEAVY POLYETHYLENE PLASTIC AND TAPE AIR TIGHT, IN AREAS THAT ARE UNDER CONSTRUCTION, UNTIL WORK IS COMPLETE IN THOSE AREAS. FLOOR REGISTERS AND GRILLES SHALL ALSO BE COVERED WITH 1/8" MASONITE.	16. WHEN GENERAL CONSTRUCTION IS COMPLETE, VACUUM CLEAN ALL DIFFUSERS, REGISTERS, GRILLES, AND HVAC EQUIPMENT IN THE PROJECT AREA OR SERVING THE PROJECT AREA. REMOVE ANY CONSTRUCTION DEBRIS. REPLACE ALL AIR FILTERS WITH NEW.
	-	ESP	EXTERNAL STATIC PRESSURE		VD	VOLUME DAMPER		
	-	EWI	ENTERING WATER TEMPERATURE		AL	ACOUSTIC LINING	17. THE OWNER'S PERMANENT HVAC EQUIPMENT SHALL NOT BE USED BY ANY CONTRACTOR DURING CONSTRUCTION FOR TEMPORARY HEATING, COOLING, OR VENTILATION. IF TEMPORARY HEATING, COOLING, OR VENTILATION IS REQUIRED AT ANY POINT DURING CONSTRUCTION, THE CONTRACTOR SHALL PROVIDE TEMPORARY HEATING, COOLING, OR VENTILATION EQUIPMENT, DUCTWORK, CONTROLS, AND POWER AT HIS OWN EXPENSE.	18. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING TEMPORARY VENTILATION AND EXHAUST AIR WHEN WELDING OR SOLDERING OPERATIONS ARE PERFORMED, AS REQUIRED BY OSHA.
	-	FCU	FAN COIL UNIT		-	DUCT SIZE - 1ST FIGURE IS SIDE SHOWN		
	-	FPM	FEET PER MINUTE		FC	FLEXIBLE CONNECTION	19. WHERE BUILDING STRUCTURAL COMPONENTS HAVE FIREPROOF MATERIAL, ANY AREA THAT IS DISTURBED OR DAMAGED AS A RESULT OF MECHANICAL WORK, INCLUDING THE INSTALLATION OF HANGERS FOR PIPING, DUCTWORK, OR EQUIPMENT, SHALL BE PATCHED WITH UL AND FM APPROVED FIREPROOFING TO MATCH EXISTING.	20. THE MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING AND PAYING FOR ALL NECESSARY PERMITS AND FOR PAYING RELATED FEES.
	-	FPS	FEET PER SECOND		-	ALUMINUM DUCT		
	-	GPM	GALLONS PER MINUTE		-	EXHAUST REGISTER	21. ALL DUCTWORK SHALL BE PRESSURE TESTED AND INSPECTED PRIOR TO CONCEALMENT IN GENERAL CONSTRUCTION OR INSTALLATION OF HUNG CEILINGS.	22. COORDINATE DUCTWORK AND PIPING PENETRATIONS THRU FLOORS/SLABS, WALLS, AND ROOF WITH ARCHITECTURAL AND STRUCTURAL DRAWINGS.
	-	HP	HORSE POWER		-	NEW CEILING DIFFUSER		
	-	LAT	LEAVING AIR TEMPERATURE					
	-	LF	LINEAR FEET					
	-	LWT	LEAVING WATER TEMPERATURE					
	-	MBH	1000 BRITISH THERMAL UNITS PER HOUR					
	-	MER	MECHANICAL EQUIPMENT ROOM					
	-	NIC	NOT IN CONTRACT					
	-	OAI	OUTSIDE AIR INTAKE					
	-	PSI	POUNDS PER SQUARE INCH					
	-	RA	RETURN AIR					
	-	RF-	RETURN FAN					
	-	RPM	REVOLUTIONS PER MINUTE					
	-	SA	SUPPLY AIR					
	-	SP	STATIC PRESSURE					
	-	TD	TRANSFER DUCT					
	-	TF-	TRANSFER FAN					
	-	TSP	TOTAL STATIC PRESSURE					
	-	TYP.	TYPICAL					
	-	U.O.N.	UNLESS OTHERWISE NOTED					
	-	WB	WET BULB TEMPERATURE					
	-	WG	INCHES OF WATER GAUGE					
	EX.		EXISTING TO REMAIN					
	----	REL.	REMOVE AND RELOCATE					
		NEW	NEW WORK					
	-----	DEM.	EXISTING TO BE REMOVED					
	Ⓢ	-	THERMOSTAT					
	↗	-	AIR INTO REGISTER					
	⊗	-	POINT OF CONNECTION DISCONNECTION					
	↗	SR	SUPPLY REGISTER					
	⊗	CD	1-WAY					
	⊗CD		2-WAY					
	⊗CD		2-WAY					
	⊗CD		3-WAY					
	⊗CD		4-WAY					
	⊗RR/RG/ER		RETURN REGISTER/GRILLE/EXHAUST REGISTER					
	⊗	-	SUPPLY DUCT UP					
	⊗	-	SUPPLY DUCT DOWN					

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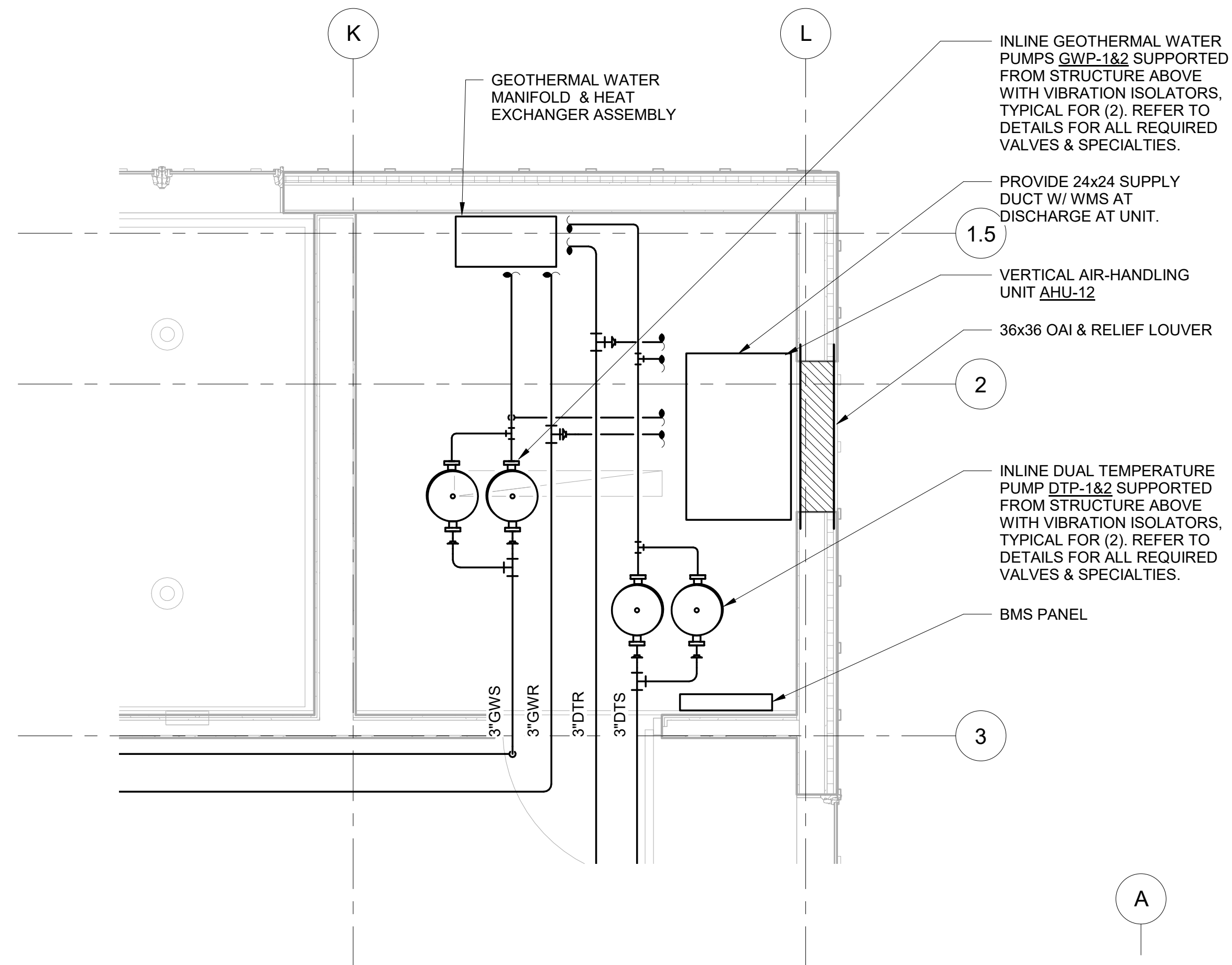


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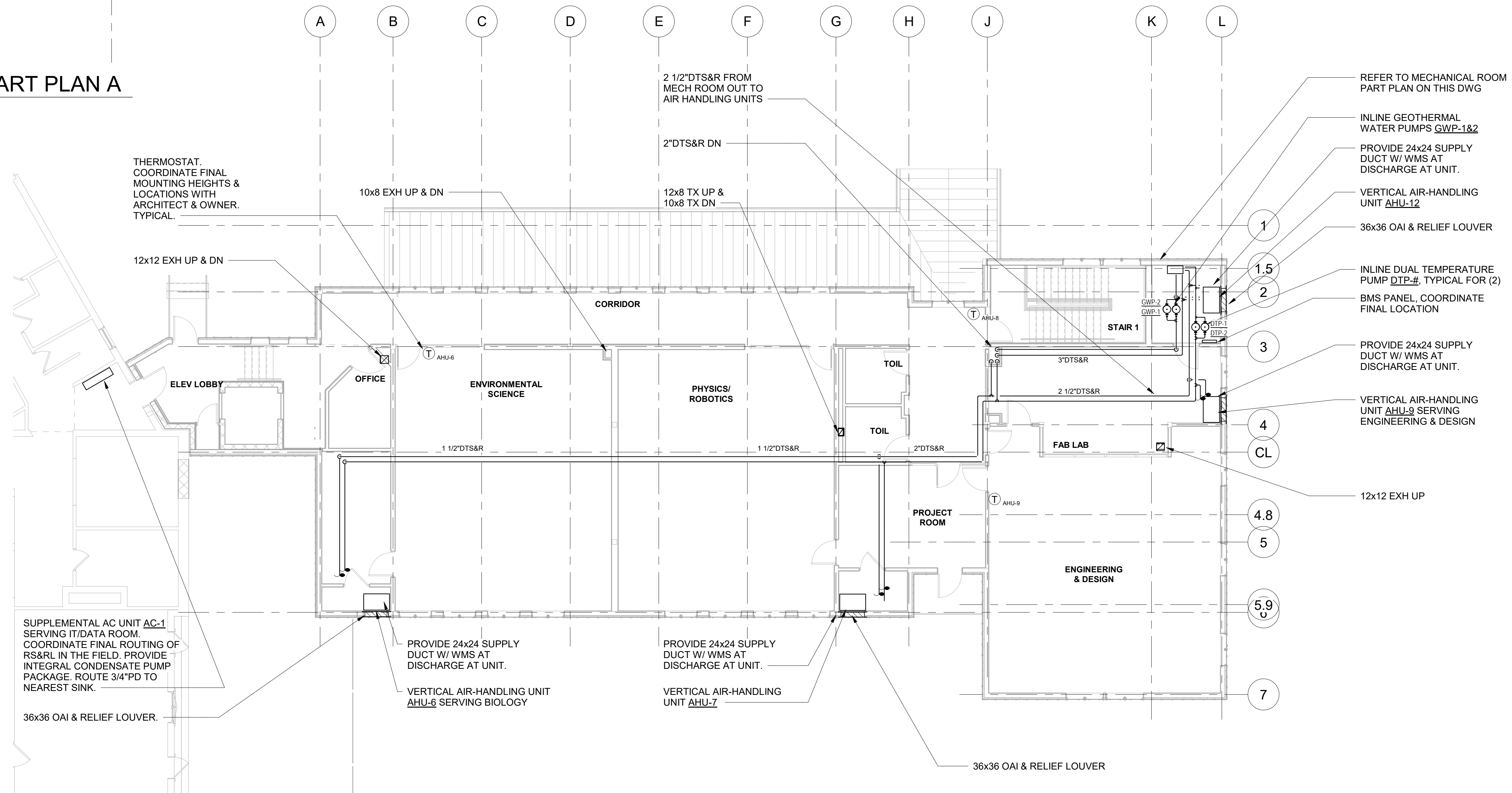
MECHANICAL 1ST FLOOR PLAN

Sheet Number	
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M201



MECHANICAL ROOM PART PLAN A
SCALE: 1/2" = 1'-0"
NORTH



MECHANICAL 2ND FLOOR NEW WORK PLAN BASE BID
SCALE: 1/8" = 1'-0"
NORTH

2ND FLOOR NOTES:

1. REFER TO DRAWING M-202B FOR ADD ALTERNATE 1: FULL 2ND FLOOR BUILD-OUT.
2. PROVIDE ALL AHU'S, PUMPS, MANIFOLDS, CONTROLS, AND PIPING AS REQUIRED FOR FULLY FUNCTIONING SYSTEMS UNDER THE BASE BID.
3. ROUTE ALL PIPING AS HIGH AS POSSIBLE TO ACCOMMODATE FUTURE CEILING INSTALLATION. PROVIDE HORIZONTAL SUPPLY DUCT TAP W/ WMS AT DISCHARGE OF EACH AHU AS INDICATED ON PLANS. REFER TO ARCHITECTURAL DRAWINGS FOR INFORMATION.

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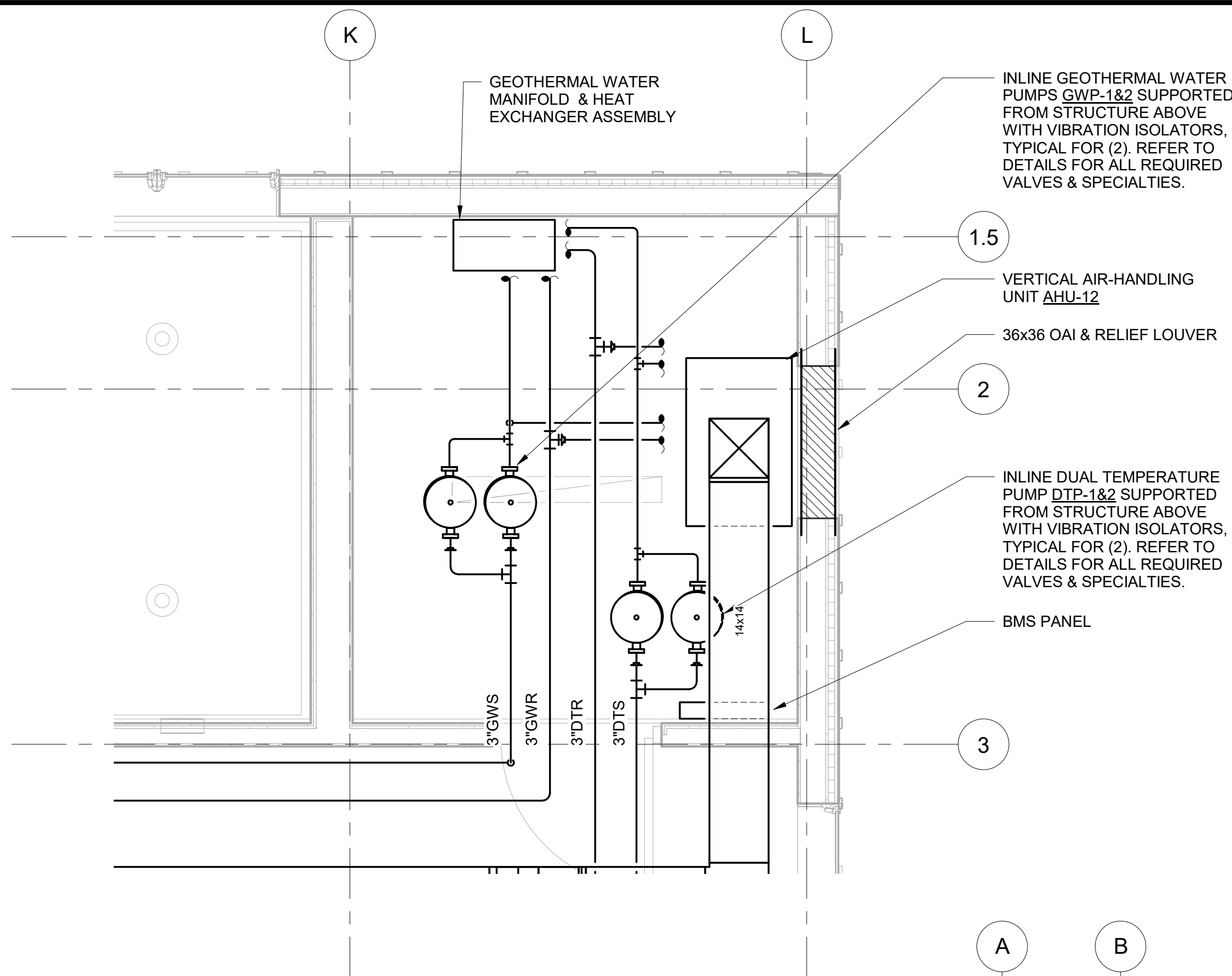
MECHANICAL 2ND FLOOR NEW WORK PLAN BASE BID

Job No. NKGD0214.00 Date 02/24/2021

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Sheet Number

M202A



2ND FLOOR NOTES:

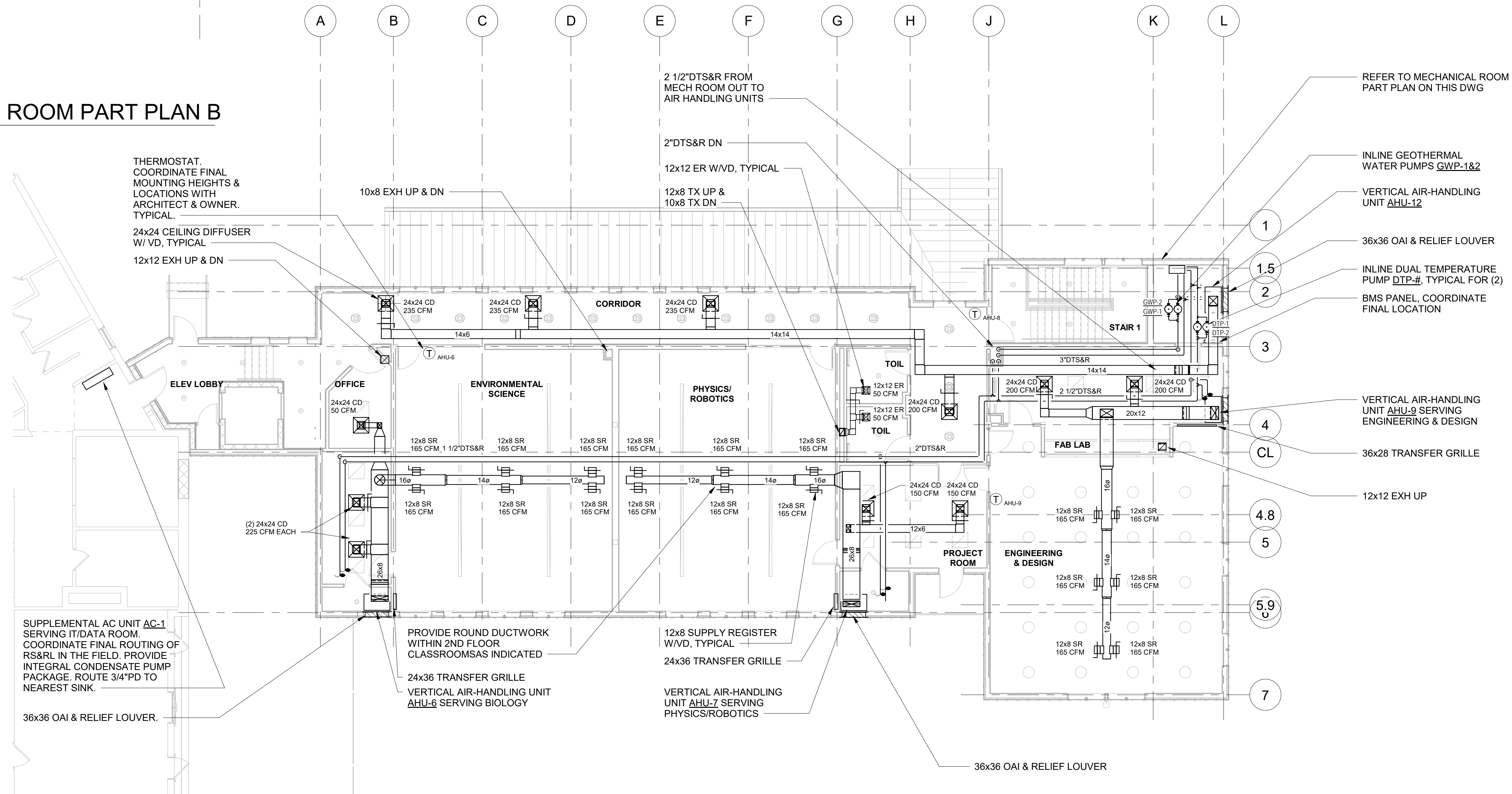
- COORDINATE FINAL CEILING DIFFUSER LOCATIONS & ACCESS PANELS WITH ARCHITECTURAL RCP AND ALL OTHER TRADES.



2

MECHANICAL ROOM PART PLAN B

SCALE: 1/2" = 1'-0"



1

MECHANICAL 2ND FLOOR NEW WORK PLAN - ADD ALT

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

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MECHANICAL 2ND FLOOR NEW WORK PLAN

Job No.	NKGD0214.00	Date	02/24/2021
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1

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

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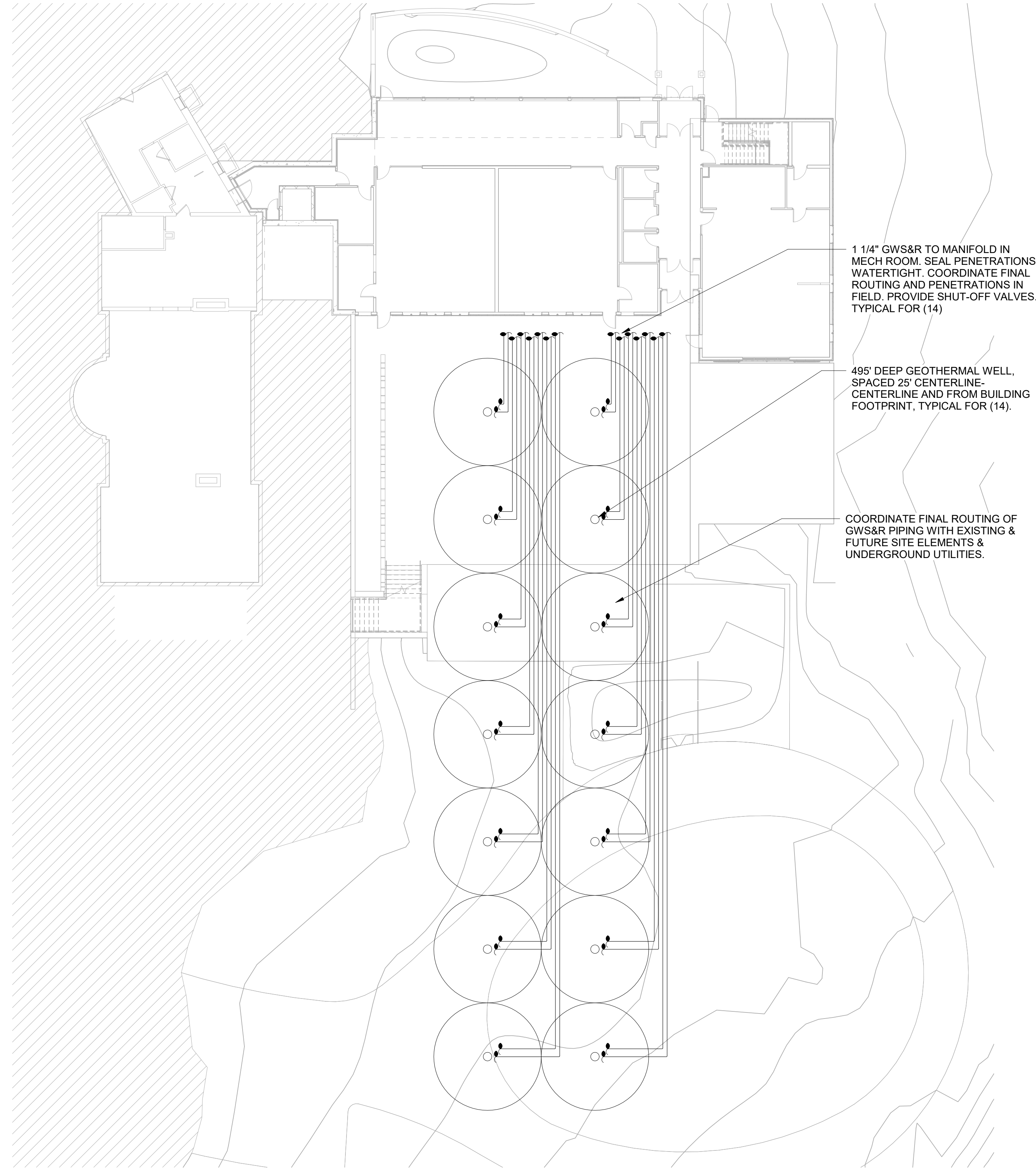
MECHANICAL ATTIC NEW WORK
PLAN

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Sheet Number

M203



1

MECHANICAL SITE NEW WORK PLAN

SCALE: 1/16" = 1'-0"

GEOTHERMAL SPECIFICATIONS

SUMMARY
A. THIS SECTION INCLUDES PIPING FOR VERTICAL, DIRECT-BURIED, GROUND-LOOP, HEAT-PUMP SYSTEMS THAT OPERATE BETWEEN 23 AND 104 DEG F (MINUS 5 AND PLUS 40 DEG C).

PERFORMANCE REQUIREMENTS
A. COMPONENTS AND INSTALLATION SHALL BE CAPABLE OF WITHSTANDING THE FOLLOWING MINIMUM WORKING PRESSURE, UNLESS OTHERWISE INDICATED:
A.1. GROUND-LOOP, HEAT-PUMP PIPING: 200 PSIG.

SUBMITTALS
A. PRODUCT DATA: FOR THE FOLLOWING:
A.1. PIPE AND FITTINGS.
A.2. JOINING METHOD AND EQUIPMENT.
A.3. PROPYLENE GLYCOL SOLUTION.
B. FIELD QUALITY-CONTROL TEST REPORTS.

PRODUCTS
PIPES AND FITTINGS
A. PIPE: SDR-11
B. U-BEND ASSEMBLY: FACTORY FABRICATED WITH EMBOSSED DEPTH STAMP EVERY 24 INCHES.

BOREHOLE BACKFILL
A. SURFACE SEAL: BENTONITE OR CEMENT WITH THERMAL CONDUCTIVITY GREATER THAN 1.2 BTU/H X SQ. FT. X DEG F (0.7 W/SQ. M X K).
B. BACKFILL BELOW SURFACE SEAL: NATURAL OR MANUFACTURED SAND.

ANTIFREEZE SOLUTION
A. PROPYLENE GLYCOL: MINIMUM 25 PERCENT FOOD GRADE PROPYLENE GLYCOL WITH CORROSION INHIBITORS AND ENVIRONMENTAL STABILIZER ADDITIVES TO BE MIXED WITH WATER TO PROTECT THE PIPING CIRCUIT AND CONNECTED EQUIPMENT FROM PHYSICAL DAMAGE FROM FREEZING OR CORROSION.
B. QUANTITY: SUFFICIENT SOLUTION FOR INITIAL SYSTEM STARTUP AND FOR PREVENTIVE MAINTENANCE FOR ONE YEAR FROM DATE OF SUBSTANTIAL COMPLETION.
C. DILUTION WATER: CHLORIDE CONTENT SHALL BE LESS THAN 25 PPM, SULFATE LESS THAN 25 PPM, AND HARDNESS LESS THAN 100 PPM.

HORIZONTAL PIPING INSTALLATION
A. SEPARATE TRENCHES BY 10 FEET MINIMUM, UNLESS OTHERWISE INDICATED. REMOVE ROCKS IN TRENCHES THAT COULD CONTACT PIPE.
B. BACKFILL TO 24 INCHES ABOVE PIPE WITH MUD DEVELOPED FROM EXCAVATED ROCK-FREE SOIL OR WITH SAND, PEA GRAVEL, OR FLY ASH. BACKFILL FROM SLURRY LEVEL TO GRADE WITH EXCAVATED SOIL, COMPACTING AS REQUIRED FOR PIPE BURIAL.
C. INSTALL PE PIPING IN TRENCHES ACCORDING TO ASTM D 2774 OR ASTM F 645.
C.1. CLEAN PE PIPE AND FITTINGS AND MAKE HEAT-FUSION JOINTS ACCORDING TO ASTM D 2657. MINIMIZE NUMBER OF JOINTS.
D. PURGE, FLUSH, AND PRESSURE TEST PIPING BEFORE BACKFILLING TRENCHES.
E. INSTALL CONTINUOUS DETECTABLE WARNING TAPE FOR UNDERGROUND PIPING. LOCATE TAPE A MINIMUM OF 24 INCHES BELOW FINISHED GRADE, DIRECTLY OVER PIPING.

VERTICAL PIPING INSTALLATION
A. INSTALL PE PIPING IN BOREHOLES ACCORDING TO ASTM D 2774 OR ASTM F 645.
A.1. CLEAN PE PIPE AND FITTINGS AND MAKE HEAT-FUSION JOINTS ACCORDING TO ASTM D 2657. MINIMIZE NUMBER OF JOINTS.
B. PURGE, FLUSH, AND PRESSURE TEST PIPING BEFORE BACKFILLING BOREHOLES.
C. AFTER INSTALLATION OF LOOP PIPE IN BOREHOLE, FILL PIPING LOOP WITH WATER OR ANTIFREEZE SOLUTION, AND PUMP BACKFILL INTO BOREHOLE TO DISCHARGE AT BASE OF BOREHOLE.
D. FILL BOREHOLE WITH BACKFILL TO A POINT AT LEAST 60 INCHES BELOW GRADE AND BACKFILL REMAINDER WITH SURFACE SEAL MATERIAL.
E. EXTEND PIPING AND CONNECT TO WATER-SOURCE, GROUND-LOOP, HEAT-PUMP PIPING SYSTEMS AT OUTSIDE FACE OF BUILDING WALL IN LOCATIONS AND PIPE SIZES INDICATED.
E.1. TERMINATE WATER-SERVICE PIPING AT BUILDING WALL UNTIL BUILDING WATER-SOURCE, GROUND-LOOP, HEAT-PUMP PIPING SYSTEMS ARE INSTALLED. TERMINATE PIPING WITH CAPS. MAKE CONNECTIONS TO BUILDING WATER-SOURCE, GROUND-LOOP, HEAT-PUMP PIPING SYSTEMS WHEN THOSE SYSTEMS ARE INSTALLED.

ANTIFREEZE SOLUTION FILL
A. FILL SYSTEM WITH REQUIRED QUANTITY OF PROPYLENE GLYCOL AND WATER AS INDICATED ON DRAWINGS.
B. TEST THE DILUTE SOLUTION USING GAS CHROMATOGRAPHY TO VERIFY CONCENTRATION OF PROPYLENE GLYCOL AND FORWARD REPORT TO ARCHITECT AND ENGINEER.
CONNECTIONS
A. DRAWINGS INDICATE GENERAL ARRANGEMENT OF PIPING, FITTINGS, AND SPECIALTIES.

FIELD QUALITY CONTROL
A. PIPING TESTS: FILL PIPING 24 HOURS BEFORE TESTING AND APPLY TEST PRESSURE TO STABILIZE PIPING. USE POTABLE WATER ONLY.
B. HYDROSTATIC TESTS: TEST AT NOT LESS THAN 1-1/2 TIMES THE PIPE WORKING-PRESSURE RATING ALLOWING FOR STATIC PRESSURE OF BOREHOLE DEPTH.
B.1. INCREASE PRESSURE IN 50-PSIG INCREMENTS AND INSPECT EACH JOINT BETWEEN INCREMENTS. HOLD AT TEST PRESSURE FOR 30 MINUTES. SLOWLY INCREASE TO NEXT TEST PRESSURE INCREMENT AND HOLD FOR 30 MINUTES. AFTER TESTING AT MAXIMUM TEST PRESSURE, REDUCE PRESSURE TO 30 PSIG. HOLD FOR 90 MINUTES, AND MEASURE PRESSURE AT 30-MINUTE INTERVALS. REPAIR LEAKS AND RETEST UNTIL NO LEAKS EXIST.
C. PREPARE REPORTS OF TESTING ACTIVITY

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5	06/25/2021	Issued for Permit
4	02/24/2021	Issued for Bid
3	02/10/2021	Issued for Review
2	05/14/2020	90% Construction Documents
1	02/21/2020	Design Development

Sheet Title

MECHANICAL SITE PLAN

Job No.	Date
NKGD0214.00	02/24/2021
Scale	Drawn / Checked
AS NOTED	TV / RG

Sheet Number

M401

WATER SOURCE HEAT PUMP AIR HANDLER UNIT SCHEDULE								
DESIGNATION	AHU 1	AHU-2	AHU-3	AHU-4	AHU-6	AHU-7	AHU-9	AHU-12
LOCATION	1ST FLOOR	1ST FLOOR	1ST FLOOR	1ST FLOOR	2ND FLOOR	2ND FLOOR	2ND FLOOR	2ND FLOOR
SERVES	CHEMISTRY	BIOLOGY	CREATIVE COMMONS	ART STUDIO	ENVIRONMENT SCIENCE	PHYSICS/ROBOTICS	ENG DESIGN	2ND FL CORRIDOR
MANUFACTURER	SYSTEMAIR	SYSTEMAIR	SYSTEMAIR	SYSTEMAIR	SYSTEMAIR	SYSTEMAIR	SYSTEMAIR	SYSTEMAIR
MODEL	EWHP30	EWHP30	WHP48	WHP48	WHP30	WHP30	EWHP30	WHP30
CFM	1000	1000	1400	1400	950	950	950	700
MIN OA CFM	450	450	250	450	250	250	350	250
FAN HP	½	½	½	½	½	½	½	¼
ESP (IN H ₂ O)	0.45"	0.45"	0.55"	0.58"	0.45"	0.45"	0.45"	0.53
COOLING COIL:								
E.A.T. (°F) DB/WB	80 / 67	80 / 67	77.5 / 65	80 / 67	80 / 67	80 / 67	80 / 67	80 / 67
L.A.T. (°F) DB/WB	59 / 56.5	59 / 56.5	58.5 / 55.8	55 / 54	55 / 54	55 / 54	55 / 54	55 / 54
GPM	9.5	9.5	8.8	10.0	9.5	9.5	9.5	6
EWT/LWT (°F)	90 / 97.8	90 / 97.8	90 / 97.8	90 / 97.8	90 / 97.8	90 / 97.8	90 / 97.8	90 / 97.8
W.P.D. (FT H ₂ O)	11	11	7.5	10.3	11	11	11	4.4
SENS. CAP. (MBH)	22.9	22.9	27	27.3	24.2	24.2	24.2	21.4
TOTAL CAP. (MBH)	32.5	32.5	36.2	34.9	32.6	32.6	32.6	21.4
HEATING COIL:								
E.A.T./L.A.T. (°F)	50 / 104	50 / 104	55 / 104	50 / 95	50 / 95	50 / 95	50 / 95	50 / 95
GPM	8	8	8	10	8	8	8	8
EWT/LWT (°F)	120 / 100	120 / 100	120 / 100	120 / 100	120 / 100	120 / 100	120 / 100	120 / 100
W.P.D. (FT H ₂ O)	8.2	8.2	7.5	10.3	8.2	8.2	8.2	7.5
CAPACITY (MBH)	37.1	37.1	59	73.1	37.1	37.1	37.1	28.3
SUPPLEMENTAL ELECTRIC HEAT COIL:								
FLA	16.7	16.7	-	-	-	-	13.9	-
FILTERS DATA:								
TYPE	-	-	-	-	-	-	-	-
No./SIZE	18X18	18X18	18X18	18X18	18X18	18X18	18X18	18X18
ELECTRICAL DATA:								
VOLTS/Ø/Hz	208/3/60	208/3/60	208/1/60	208/1/60	208/1/60	208/1/60	208/1/60	208/1/60
MCA	29.75	29.75	6.8	6.8	6.8	6.8	6.8	4.0
MAX FUSE SIZE	30	30	15	15	15	15	15	15
NOTES: 1. BASED ON 2. FURNISH THE FOLLOWING OPTIONAL EQUIPMENT: • SINGLE POINT POWER CONNECTION. • ALL UNITS SHALL BE HIGH EFFICIENCY. • HIGH STATIC DRIVE MOTOR • DISCONNECT SWITCH. • SPARE SET OF FILTERS AND BELTS. • CONDENSATE PUMP PACKAGE • SHEETMETAL DRIP PAIN WITH LEAK DETECTION 3. MOTOR STARTER WITH PHASE LOSS PROTECTION & DISCONNECT SWITCH FOR EACH UNIT SHALL BE FURNISHED BY THE MECHANICAL CONTRACTOR & INSTALLED BY THE ELECTRICAL CONTRACTOR. EACH UNIT SHALL BE FURNISHED WITH UNIT-MOUNTED LOCAL DISCONNECT SWITCH. 4. COORDINATE SIDE OR END SUPPLY/RETURN AIR CONFIGURATION.								

FAN SCHEDULE			
DESIGNATION	TX-1	EF-1	EF-2
LOCATION	ATTIC	ATTIC	ATTIC
AREA SERVED	BATHROOMS	SEE PLANS	SEE PLANS
MODEL	SQ-75 (VARI-GREEN)	SQ-85 (VARI-GREEN)	SQ-100 (VARI-GREEN)
CFM	250	430	1200
BHP	.04	.08	.24
HP	⅓	¼	¼
FAN RPM	1725	1725	1725
SP (IN H ₂ O)	.3	.375	.5
VOLTS/Ø/Hz	115/1/60	115/1/60	115/1/60
INTERLOCK	-	-	-
NOTES: 1. FANS BASED ON GREENHECK. 2. FURNISH MOTOR STARTERS AND DISCONNECT SWITCHES FOR EACH FAN. 3. FURNISH RUBBER IN SHEAR OR SPRING VIBRATION ISOLATORS. SEE PLAN FOR INLET AND DISCHARGE ORIENTATION.			

PUMP SCHEDULE			
DESIGNATION	GWP-1&2	DTP-1&2	
LOCATION	MECH ROOM	MECH ROOM	
SYSTEM SERVED	GEO THERMAL	AHU'S	
ARRANGEMENT	INLINE	INLINE	
MANUFACTURER	BELL & GOSSET	BELL & GOSSET	
TYPE	INLINE	INLINE	
MODEL	E-80	E-80	
IMPELLER DIA. (IN.)	6.625	6.625	
GPM	120	120	
TOTAL DYNAMIC HEAD (FT H ₂ O)	100	135	
RPM	3600	3600	
NPSH (FT. H ₂ O)	18.3	18.3	
MOTOR BHP	2.75	2.75	
MOTOR HP	3	3	
VOLTAGE/Ø/Hz	208/3/60	208/3/60	
STARTER TYPE			
STARTER LOCATION	MECH ROOM	MECH ROOM	
DISCONNECT SWITCH AT PUMP (Y/N)	Y	Y	
INTERLOCK	WSHP-1,2,3,4	WSHP-1,2,3,4	
NOTES: 1. ALL PUMPS SHALL BE CAST IRON BODY, BRONZE FITTED, BRONZE IMPELLER. REFER TO SPECIFICATION FOR PUMP CONSTRUCTION. 2. ALL MOTORS 1 HP OR GREATER SHALL BE PREMIUM EFFICIENCY. 3. ALL MOTORS FURNISHED WITH VARIABLE FREQUENCY DRIVES SHALL BE INVERTER DUTY RATED & APPROVED FOR VARIABLE SPEED AND TORQUE APPLICATIONS. 4. MOTOR STARTERS AND DISCONNECT SWITCHES SHALL BE FURNISHED BY THE MECHANICAL CONTRACTOR AND INSTALLED BY THE ELECTRICAL CONTRACTOR.			

EQUIPMENT NOTES

1. FIRE DAMPERS: SHALL BE RUSKIN MODEL DIBD-2, 1-1/2 HOUR UL555 RATED, SUITABLE FOR INSTALLATION IN WALL AND FLOOR PARTITIONS WITH FIRE RATINGS OF LESS THAN 3 HOURS. DAMPER SHALL BE A COMPLETE FACTORY PACKAGE INCLUDING U.L. APPROVED ANGLES, WALL SLEEVE, AND BREAKAWAY CONNECTIONS. DAMPER SHALL BE RATED FOR DYNAMIC AIRFLOW CONDITIONS OF 2,000 FPM AND 4.0" SP.
2. SMOKE DAMPERS: SHALL BE POTTORFF MODEL SD-141, CLASS 1 UL555S RATED, SUITABLE FOR INSTALLATION IN RATED WALL AND FLOOR PARTITIONS. DAMPER SHALL BE A COMPLETE FACTORY PACKAGE INCLUDING U.L. APPROVED ANGLES, WALL SLEEVE, AND BREAKAWAY CONNECTIONS. 120V POWER OPEN SPRING CLOSED ACTUATOR. PROVIDE CLOSURE DEVICE WITH MANUAL RESET (PROVIDE INDICATOR SWITCH PACKAGE). DAMPER SHALL BE RATED FOR DYNAMIC AIRFLOW CONDITIONS OF 2,000 FPM AND 4.0" SP. INSTALL DUCT SMOKE DETECTOR WITHIN 5' OF DAMPER. DUCT SMOKE DETECTOR SHALL BE PURCHASED BY THE ELECTRICAL CONTRACTOR AND INSTALLED BY THE MECHANICAL CONTRACTOR. DUCT SMOKE DETECTOR SHALL BE WIRED BY THE ELECTRICAL CONTRACTOR.
3. COMBINATION FIRE SMOKE DAMPERS: SHALL BE POTTORFF MODEL FSD-151, UL 555 CLASS I, WITH AIRFOIL BLADES. ACTUATOR AND CONTROLS SHALL BE SIDE MOUNT, 120V POWERED OPEN SPRING CLOSED, HORIZONTAL OR VERTICAL MOUNT, COORDINATE APPLICATION IN FIELD. OPTIONAL DRS-30 CLOSURE DEVICE WITH PI 50 INDICATOR SWITCH PACKAGE. OPTIONAL 18 GAGE SLEEVE COORDINATE LENGTH REQUIRED IN FIELD. (1) SIDE OR (2) SIDE RETAINING ANGLES. INSTALL DUCT SMOKE DETECTOR WITHIN 5' OF DAMPER. DUCT SMOKE DETECTOR SHALL BE PURCHASED BY THE ELECTRICAL CONTRACTOR AND INSTALLED BY THE MECHANICAL CONTRACTOR. DUCT SMOKE DETECTOR SHALL BE WIRED BY THE ELECTRICAL CONTRACTOR.
4. VOLUME CONTROL DAMPERS: FOR ALL ROUND & RECTANGULAR VOLUME CONTROL DAMPERS THAT ARE LOCATED ABOVE INACCESSIBLE CEILINGS, PROVIDE CABLE OPERATED DAMPERS. ROUND DAMPERS SHALL BE YOUNG BOWDEN MODEL 5020-CC. RECTANGULAR DAMPERS SHALL BE MODEL 830-CC2. CABLE CONTROLS SHALL BE MODEL 270-275 FOR CONCEALED LOCATIONS & MODEL 270-896C FOR LOCATIONS WHERE CABLES TERMINATE IN FINISHED SPACES. COORDINATE LOCATIONS IN THE FIELD.
5. MOTORIZED DAMPERS: SHALL BE RUSKIN MODEL CD40, 4" DEEP EXTRUDED ALUMINUM AIRFOIL DAMPER. DAMPER SHALL HAVE OPPOSED BLADES, MOTOR AND LINKAGE. DAMPERS SHALL BE 120V/1Ø/60Hz, 3 AMPS MAX. FURNISH DISCONNECT SWITCH.

5.1. OUTSIDE AIR INTAKE & EXHAUST DAMPERS SHALL BE CLASS I MOTORIZED DAMPERS WITH MAXIMUM LEAKAGE RATE OF 4 CFM/FT2 @ 1.0" W.G.; TESTED IN ACCORDANCE WITH AMCA 500D & IN COMPLIANCE WITH SECTION C403.2.4.3 OF THE 2015 IECC. DAMPERS SHALL BE CONFIGURED TO CLOSE AUTOMATICALLY WHEN THE SYSTEMS OF SPACE SERVED ARE NOT IN USE.
- FURNISH ALL REQUIRED PIPE AND ENCLOSURE SUPPORTS, BRACKETS, AND FASTENERS ETC. FURNISH VALVE ACCESS DOORS AND KNOCK OUT FOR ELECTRICAL RECEPTACLES. FURNISH END CAPS AND CORNER ANGLES. RUN ENCLOSURES CONTINUOUS WALL TO WALL. FINISH SHALL BE BAKED ON ENAMEL, SUBMIT COLOR CHART FOR REVIEW AND APPROVAL.
6. EXPANSION TANKS EXP-1&2: TO BE AMTROL MODEL AX-120V, 68 GALLON TANK AND 34 GALLON ACCEPTANCE VOLUME, 48" HIGH, 24" DIAMETER AND WEIGH APPROXIMATELY 515 POUNDS AT FULL CAPACITY.
7. AIR SEPARATOR AS-1: SHALL BE BELL & GOSSETT MODEL R-5F, 700 GPM MAXIMUM CAPACITY, 5" FLANGED INLET AND OUTLET, CV OF 398, REMOVABLE GALVANIZED STEEL SYSTEM STRAINER, INTERNAL STAINLESS STEEL AIR COLLECTOR TUBE WITH NPT CONNECTION AND BLOWDOWN CONNECTION. THE AIR SEPARATOR MUST BE DESIGNED, CONSTRUCTED, AND STAMPED FOR 125 PSIG @ 350°F IN ACCORDANCE WITH SECTION VIII, DIVISION I OF THE ASME BOILER AND PRESSURE VESSEL CODE, AND REGISTERED WITH THE NATIONAL BOARD OF BOILER AND PRESSURE VESSEL INSPECTORS. THE AIR SEPARATOR SHALL BE PAINTED WITH ONE SHOP COAT OF LIGHT GRAY AIR DRY ENAMEL.
8. PIPE INSULATION JACKETING: SHALL BE WHITE ZESTON 2000 PVC COVERS FOR PIPING AND FITTINGS. JACKET ALL PIPING AND FITTING THAT ARE EXPOSED IN ANY ROOM.
9. PIPE LABELS: SHALL BE SETON ULTRA-MARK WEATHER RESISTANT FOR OUTDOOR APPLICATION AND OPTI-CODE FOR INDOOR APPLICATION. LETTERS AND ARROWS SHALL BE 2 1/2" HIGH AND SHALL BE WHITE ON A GREEN BACKGROUND AND SHALL CONFORM TO ANSI AND OSHA STANDARDS. APPLY OVER INSULATION ONLY.
10. ALL HVAC EQUIPMENT SHALL HAVE 3" HIGH BLACK LAMACOID NAME PLATES WITH WHITE ENGRAVED LETTERS PERMANENTLY FASTENED TO EQUIPMENT. TYPICAL FOR All BOILERS, PUMPS, AIR HANDLERS, AC UNITS AND CONDENSERS.
11. REFRIGERANT PIPE INSULATION: SHALL BE AP ARMAFLEX PIPE INSULATION. 1" THICK UNSLIT, TO BE INSTALLED BEFORE FINAL CONNECTION. FIELD FABRICATE FITTING INSULATION WITH MITER-CUTS. ALL BUTT JOINTS AND SEAMS ARE TO BE SEALED WITH ARMSTRONG 520 ADHESIVE. ALL INSULATION INSTALLED OUTDOORS SHALL BE COATED WITH ARMSTRONG ARMAFLEX FINISH, AS PER THE MANUFACTURERS RECOMMENDATIONS.
12. ELECTRIC UNIT HEATERS: SHALL BE INDEECO COMMERCIAL UNIT HEATER, RATED FOR 300 CFM, 3 kW, 208/1/60, 12 AMPS. PROVIDE THE FOLLOWING OPTIONS: FAN GUARD, AIR DEFLECTION LOUVER, SUMMER FAN SWITCH, HEAT PURGE FAN DELAY SWITCH, DISCONNECT SWITCH & WALL THERMOSTAT.

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2	2/21/2020	Design Development
1	12/18/2019	Schematic Design
No.	Date	Issue

Sheet Title

MECHANICAL EQUIPMENT NOTES & SCHEDULES

Job No.	Date
NKGD0214.00	06/25/2021
Scale	Drawn / Checked
AS NOTED	TV / RG
Sheet Number	

M601

SUPPLY REGISTER SCHEDULE

DESIGNATION	SR-1	
MODEL	300RL	
MAX NK VEL (FT/MIN)	550	
MAX NC	25	
CONSTRUCTION	ALUMINUM	
BORDER/FRAME	SURFACE MOUNTED	
DEFLECTION	DOUBLE	
SPACING	3⁄4"	
	CFM RANGE	NOMINAL NECK SIZE
	0-200	8x8
	201-300	10x10
	301-500	12x12
	501-850	16x16
	851-1100	18x18
	1101-1700	22x22
	1701-2000	24x24

NOTES:
1. SUPPLY REGISTERS BASED ON TITUS.
2. THE ABOVE SCHEDULE INDICATES NOMINAL REGISTER NECK SIZES. THE CONTRACTOR SHALL COORDINATE THE REGISTER SIZE IN THE FIELD ACCORDING TO THE ACTUAL DUCT DIMENSIONS AND MAINTAIN EQUIVALENT CORE AREA.
3. ALL REGISTERS SHALL BE EQUIPPED WITH AN OPPOSED BLADE VOLUME DAMPER.
4. SUBMIT COLOR CHART FOR REVIEW AND APPROVAL BY ARCHITECT.
5. SUPPLY REGISTERS SHALL HAVE FRAMES AND BORDERS SUITABLE FOR THE CONSTRUCTION IN WHICH THEY WILL BE INSTALLED. CONTRACTOR TO COORDINATE.

DUCTLESS SPLIT-SYSTEM AC UNIT SCHEDULE

INDOOR/OUTDOOR UNIT DESIGNATION	AC-1/ACC-1	
MANUFACTURER	DAIKIN	
MODEL	FTXB12AXVJU	
NOMINAL COOLING CAPACITY (TONS)	1	
COOLING CAPACITY (BTU/HR)	11,000	
HEATING CAPACITY (BTU/HR)	11,300	
CFM (H/M/L)	360/282/232	
SEER	17	
RS PIPE SIZE (IN)	3⁄8	
RL PIPE SIZE (IN)	1⁄4	
CONDENSATE DRAIN PIPE SIZE (IN)	3⁄4	

ELECTRICAL DATA:		
MCA / MOCP	7.95 / 15	
COMPRESSOR RLA	7.75	
VOLTS/Ø/Hz	208/1/60	

INDOOR EVAPORATOR UNIT DATA		
LOCATION	IT/DATA ROOM	
MODEL	FTXB12AXVJU	
HEIGHT x WIDTH x DEPTH (IN)	11.8x35x8.2	
WEIGHT (LBS)	20	

OUTDOOR CONDENSING UNIT DATA:		
LOCATION	ROOF	
MODEL	RXB12AXVJU	
HEIGHT x WIDTH x DEPTH (IN)	21.6x25.9x10.8	
WEIGHT (LBS)	57	
REFRIGERANT TYPE	R-410A	

NOTES:
1. PROVIDE THE FOLLOWING OPTIONS FOR EACH UNIT:
· 0° LOW AMBIENT CONTROLS.
· 7-DAY PROGRAMMABLE SYSTEM CONTROLLER.
2. FIELD SUPPLIED LOCAL DISCONNECT SWITCH AT EACH INDOOR UNIT SHALL BE FURNISHED BY THE MECHANICAL CONTRACTOR & INSTALLED BY THE ELECTRICAL CONTRACTOR.
3. FIELD SUPPLIED WEATHERPROOF LOCAL DISCONNECT SWITCH AT EACH OUTDOOR UNIT SHALL BE FURNISHED BY THE MECHANICAL CONTRACTOR & INSTALLED BY THE ELECTRICAL CONTRACTOR.
4. SINGLE POINT EXTERNAL POWER CONNECTION FOR EACH INDOOR/OUTDOOR SET OF UNITS SHALL BE AT THE OUTDOOR UNIT. THE ELECTRICAL CONTRACTOR SHALL PROVIDE POWER WIRING FROM THE OUTDOOR UNIT TO THE INDOOR UNIT.
5. THE AUTOMATIC TEMPERATURE CONTROLS CONTRACTOR SHALL PROVIDE CONTROL WIRING BETWEEN THE OUTDOOR UNIT AND INDOOR UNIT.
6. CONDENSATE PUMP PACKAGE ACCESSORY.

RETURN REGISTER / TRANSFER GRILLE SCHEDULE

DESIGNATION	RR / TG	
MODEL	3 FS	
MAX NK VEL (FT/MIN)	500	
MAX NC	25	
CONSTRUCTION	ALUMINUM	
BORDER/FRAME	SURFACE MOUNTED	
DEFLECTION	45° FIXED	
SPACING	3⁄4"	
	CFM RANGE	NOMINAL NECK SIZE
	0-150	8x8
	151-250	10x10
	251-350	12x12
	351-725	18x18
	726-950	22x22
	951-1100	24x24
	1101-1400	24x30

NOTES:
1. RETURN REGISTERS ARE BASED ON TITUS.
2. THE ABOVE SCHEDULE INDICATES NOMINAL REGISTER NECK SIZES. THE CONTRACTOR SHALL COORDINATE THE REGISTER SIZE IN THE FIELD ACCORDING TO THE ACTUAL DUCT DIMENSIONS AND MAINTAIN AN EQUIVALENT CORE AREA.
3. ALL REGISTERS SHALL BE EQUIPPED WITH AN OPPOSED BLADE VOLUME DAMPER.
4. SUBMIT COLOR CHART FOR REVIEW AND APPROVAL BY ARCHITECT.
5. RETURN REGISTERS SHALL HAVE FRAMES AND BORDERS SUITABLE FOR THE CONSTRUCTION IN WHICH THEY WILL BE INSTALLED. CONTRACTOR TO COORDINATE.

CEILING DIFFUSER SCHEDULE

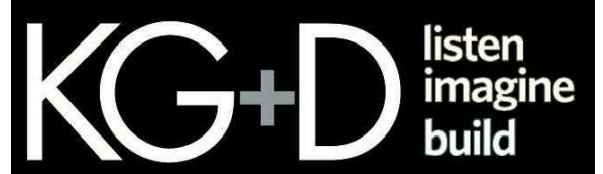
DESIGNATION	CD-1			
MODEL	OMNI			
MAX CORE VEL (FT/MIN)	550			
MAX NC	25			
CONSTRUCTION	STEEL			
FRAME	LAY-IN			
DEFLECTION	4 WAY			
FACE SIZE	24x24 / 12x12			
	CFM RANGE	NECK SIZE Ø	CFM RANGE	NECK SIZE Ø
	0-100	6"	0-100	6"
	101-200	8"	101-200	8"
	201-350	10"	201-350	10"
	351-450	12"	351-450	12"
	451-600	14"	451-600	14"
	601-700	15"	601-700	15"

NOTES:
1. CEILING SUPPLY DIFFUSERS ARE BASED ON TITUS.
2. ALL DIFFUSERS SHALL BE EQUIPPED WITH AN OPPOSED BLADE VOLUME DAMPER.
3. COORDINATE COLOR SELECTION WITH ARCH PLANS.
4. SUPPLY DIFFUSERS SHALL HAVE FRAMES AND BORDERS SUITABLE FOR THE CONSTRUCTION IN WHICH THEY WILL BE INSTALLED. CONTRACTOR TO COORDINATE.
5. ALL LAY-IN DIFFUSERS SHALL HAVE A MODULE SIZE OF 24x24. FACE SIZES SHOWN IN SCHEDULE ARE FOR SURFACE MOUNT DIFFUSERS. NECK SIZES VARY ACCORDING TO THE SCHEDULE.
6. DIFFUSER BLOW PATTERN IS AS SHOWN ON DRAWINGS.

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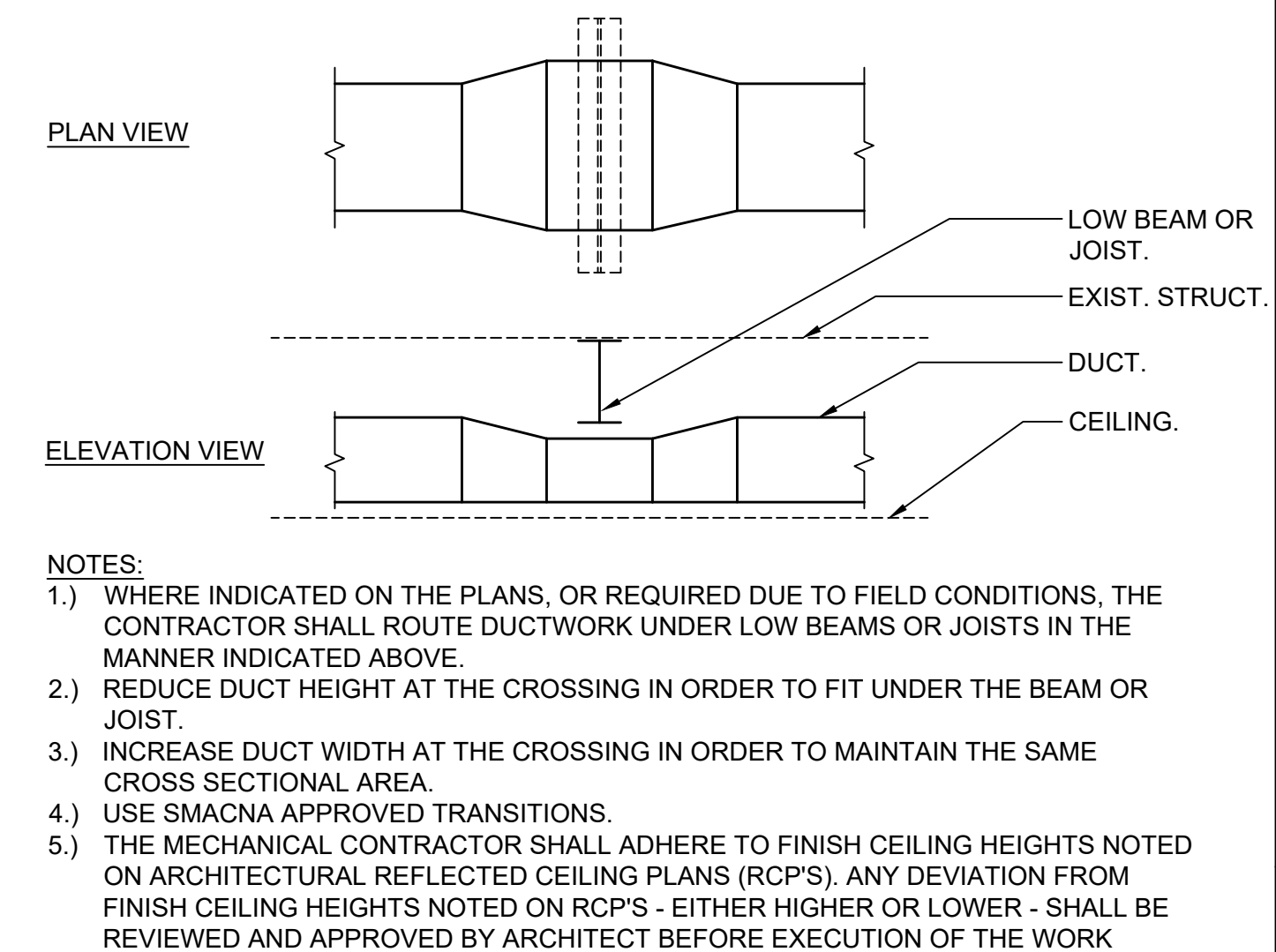
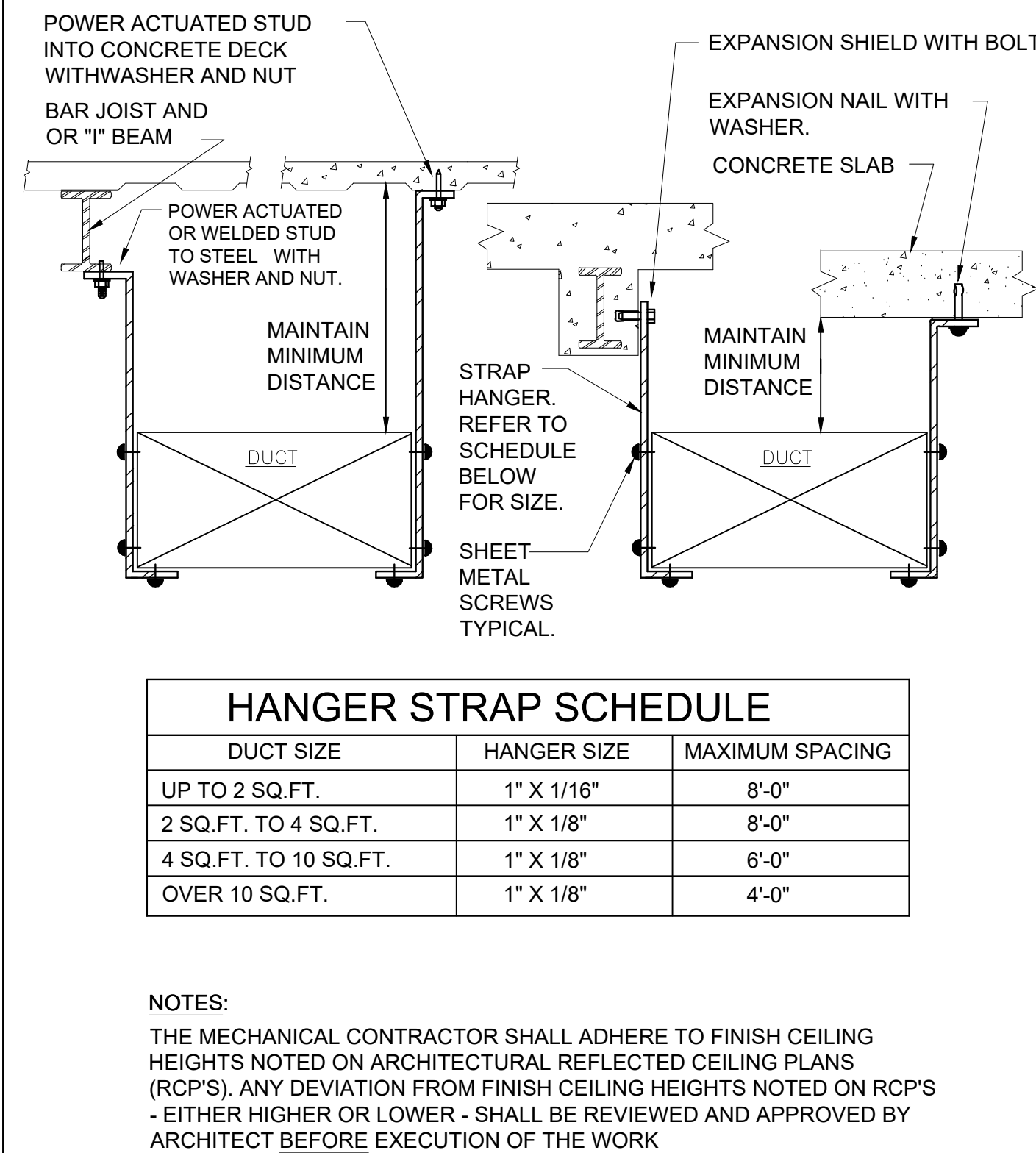
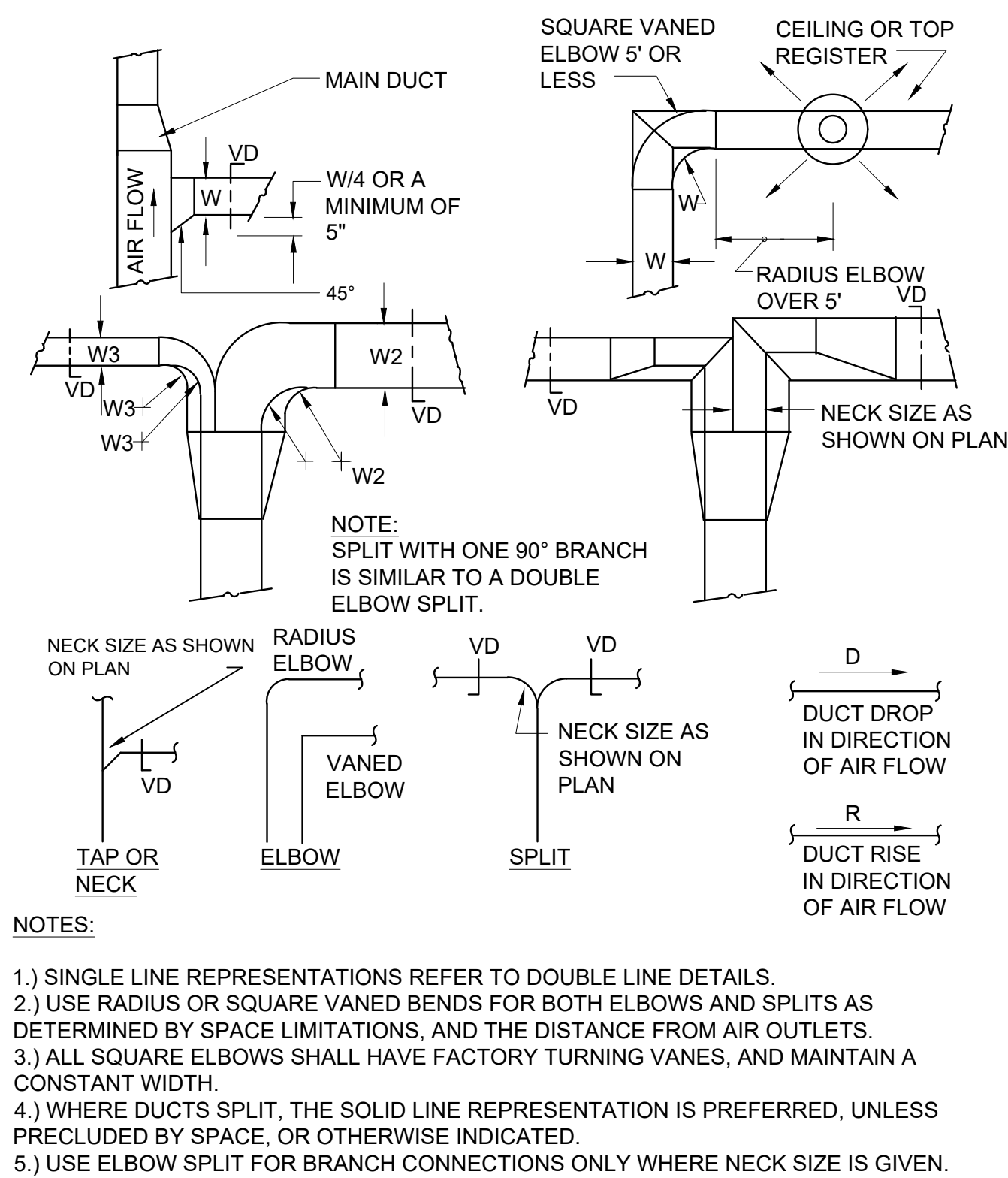
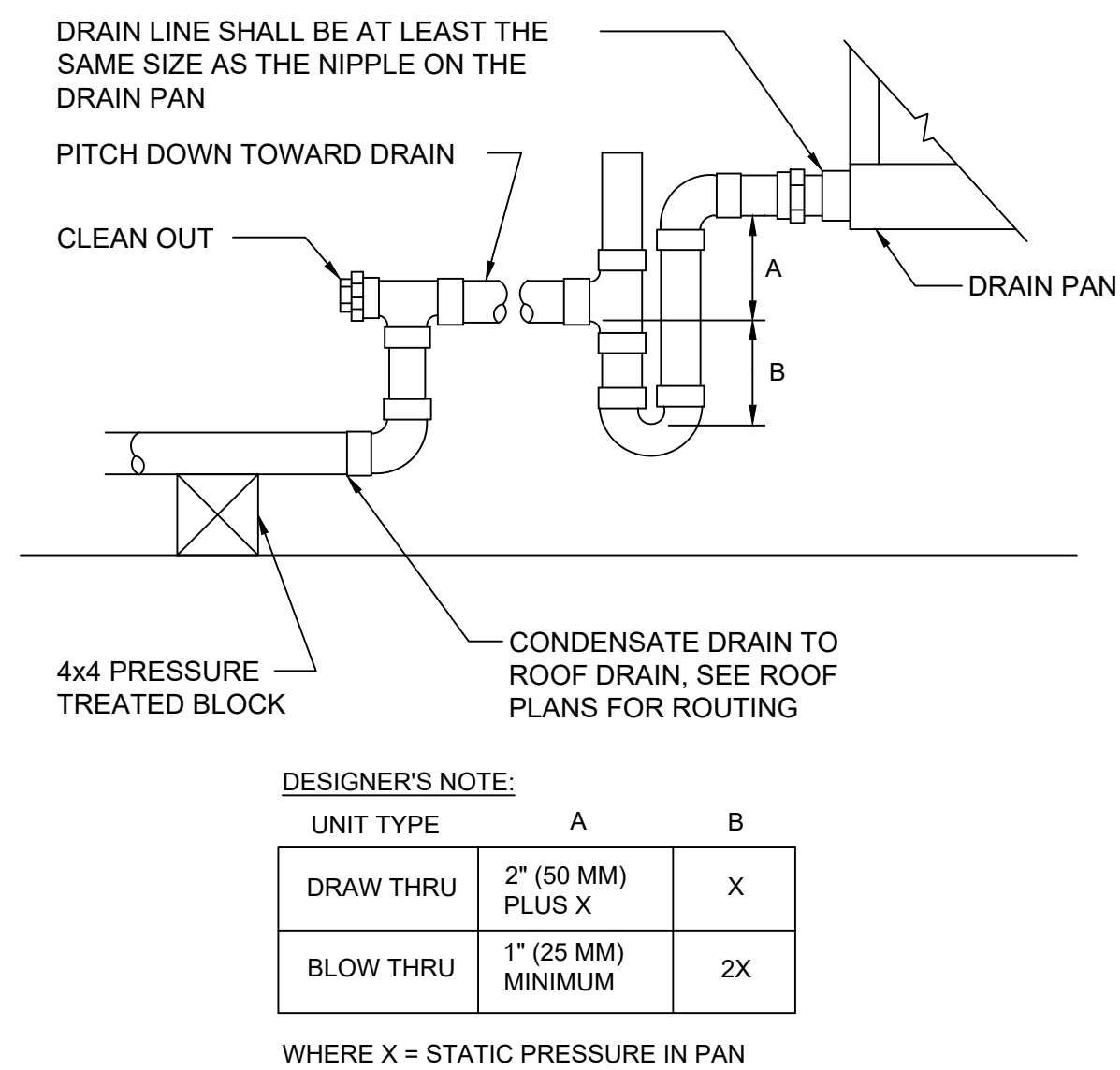
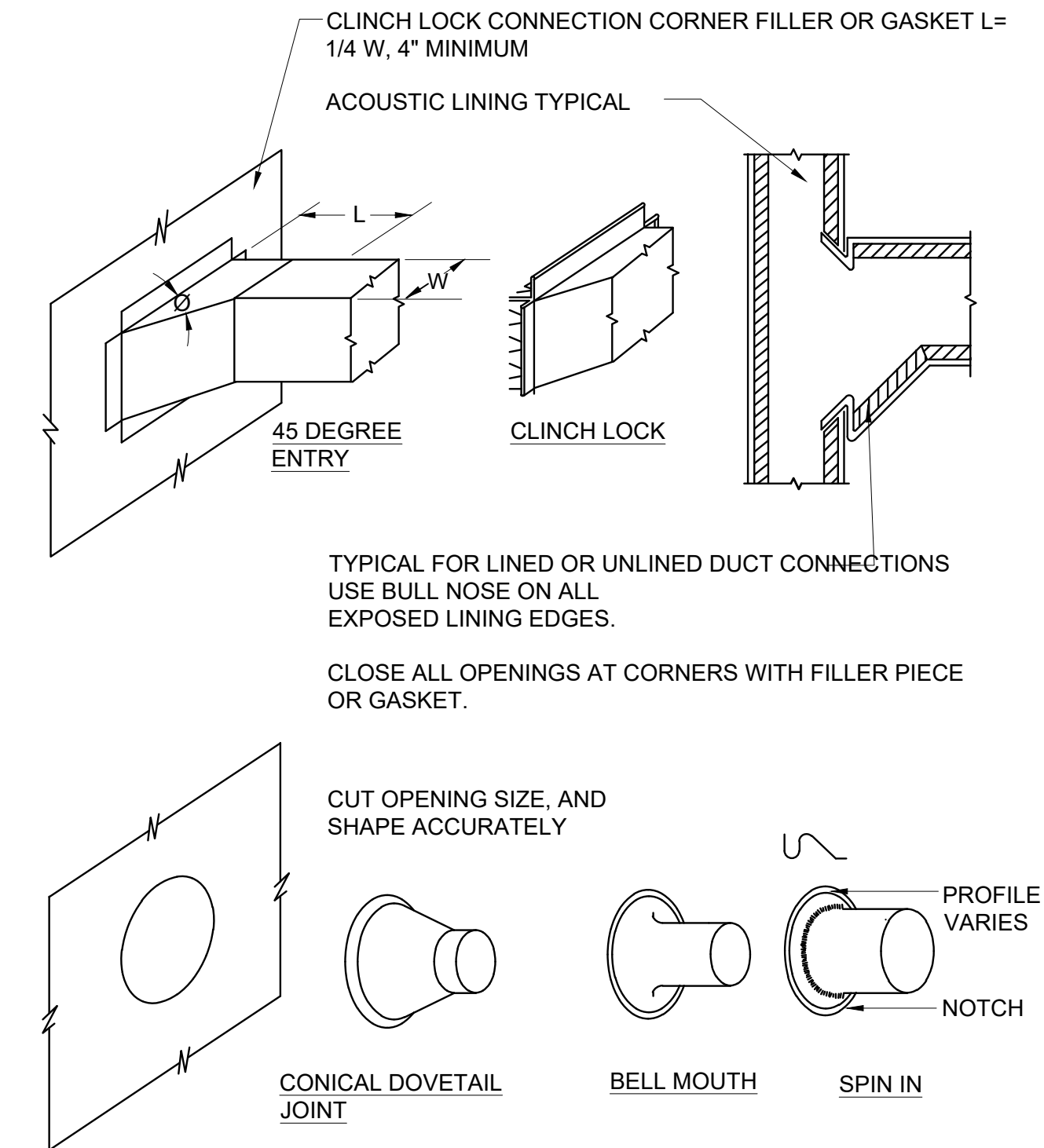
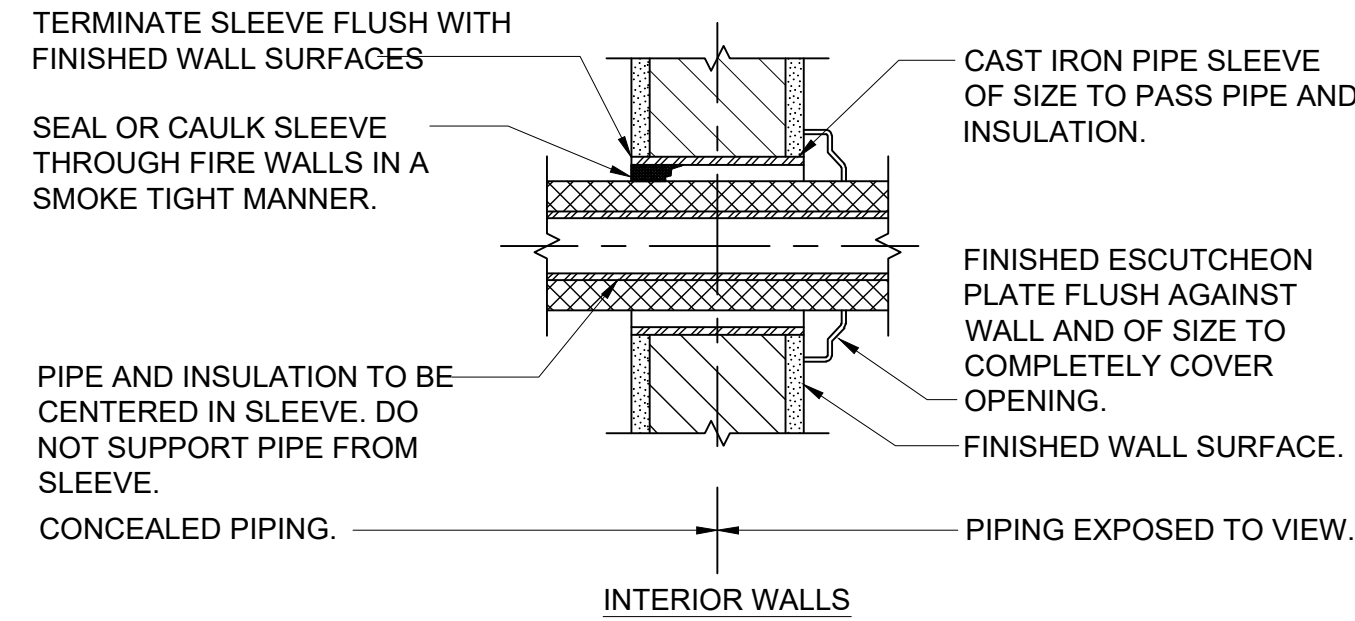
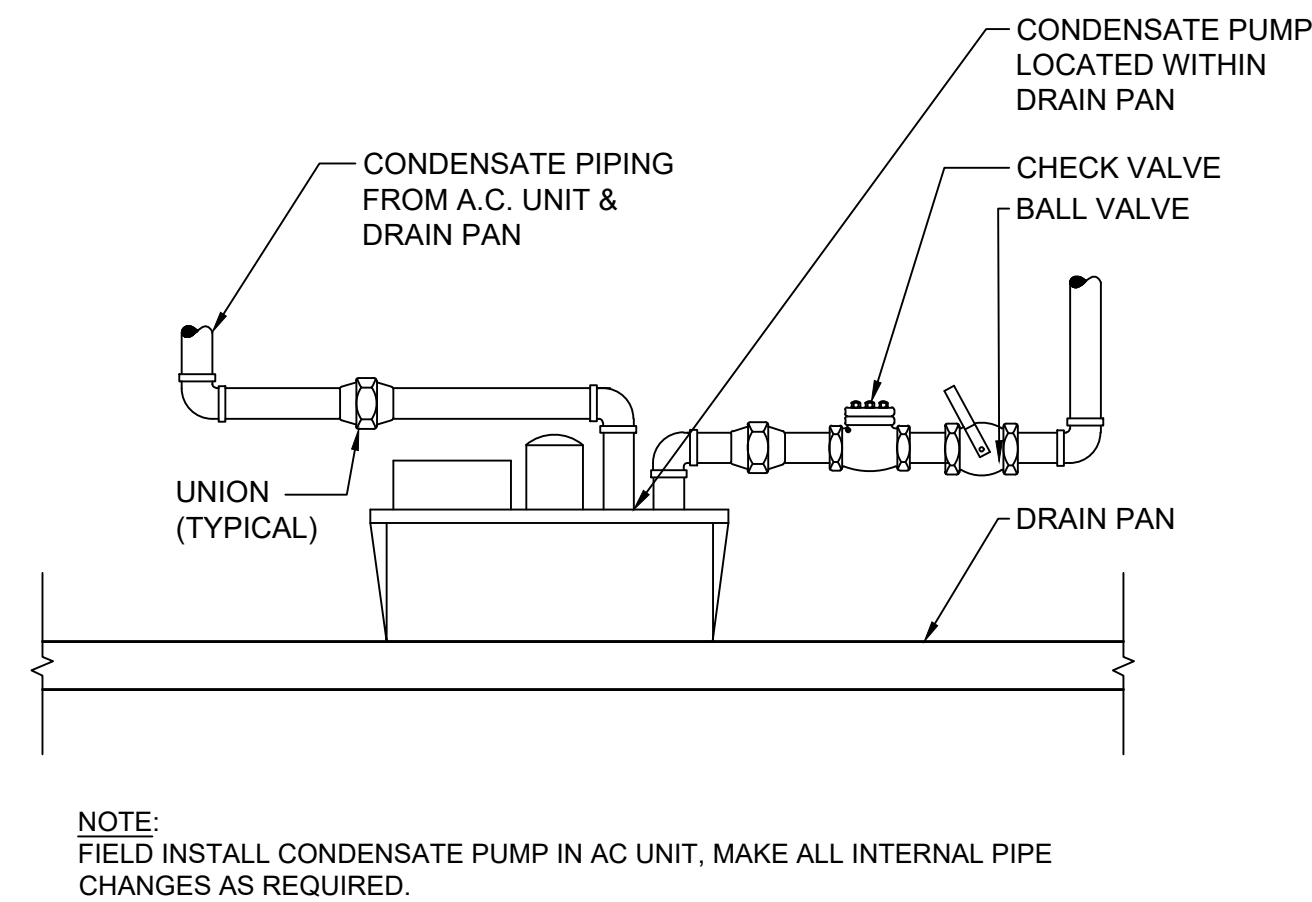
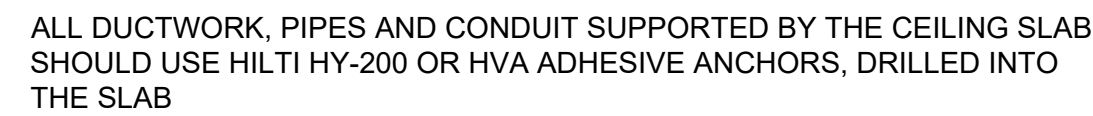
Sheet Title

MECHANICAL SCHEDULES

Job No. NKGD0214.00	Date 06/25/2021
Scale AS NOTED	Drawn / Checked TV / RG

Sheet Number

M602



2-WAY CONTROL VALVE
CONCENTRIC REDUCER
THERMOMETER
MANUAL AIR VENT (TYPICAL)
COIL
PRESSURE GAUGE (TYPICAL)
1/4 TURN BALL VALVE (TYPICAL)
UNION (TYPICAL)
RETURN MAIN
SUPPLY MAIN
BALANCING SHUT OFF VALVE
ECCENTRIC REDUCER
HOSE END DRAIN VALVE
STRAINER

NOTES:
1.) LOCATE ALL COIL UNIONS CLOSE TO, AND CLEAR OF, COIL. ARRANGE PIPING SO AS NOT TO NOT INTERFERE WITH COIL REMOVAL.
2.) DETAIL IS TYPICAL FOR UNIT VENTILATORS, CABINET UNIT HEATERS, FAN COIL UNITS, AND AIR HANDLING UNITS.
3.) PROVIDE FLEXIBLE CONNECTION FOR THOSE COILS MOUNTED IN UNITS ON VIBRATION ISOLATORS.

PIPE SIZE SCHEDULE											
PIPE SIZE	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	4	5	6
MAX. GPM	2	3.5	7	13	22	45	70	130	260	480	750

8

HYDRONIC COIL WITH 2-WAY VALVE PIPING SCHEMATIC
SCALE: NONE

GRADE
18"
6"
18"
495'
EARTH BACKFILL, COMPACT AS SPECIFIED.
SAND BACKFILL
GEOTHERMAL WATER CIRCUIT HEADER, REFER TO PLANS FOR PIPE SIZES.
MAINTAIN MINIMUM PIP BENDING RADIUS OF 25 TIMES THE PIPE DIAMETER.
T.E. BENTONITE GROUT 50:200 BENTONITE/SILICA SAND (K = 0.90 BTU/HR FT °F)
1" HDPW PIPE DR11 PE3408 CC 345464C
PREMANUFACTURED U-BEND
FOILED BACK WARNING TAPE ALONG ENTIRE LENGTH OF HEADER PIPING
TRACER WIRE ALONG ENTIRE LENGTH OF HEADER PIPING

6

GEOTHERMAL WELL DETAIL
SCALE: NTS

CONCRETE ANCHOR HILTI-KWICK BOLT, SERIES HDI, OR APPROVED EQUAL. INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATION.
BEAM CLAMP AS MANUFACTURED BY UNISTRUT.
STEEL RESTRAINING STRAP.
THREADED HANGER ROD, REFER TO SCHEDULE BELOW FOR SIZE.
CLEVIS HANGER TYPICAL
CARRIER PIPE
INSULATION SHALL RUN CONTINUOUSLY BETWEEN PIPE AND SHIELD.
PIPE INSULATION.
WELDED PIPE INSULATION SHIELD.

PIPE HANGER SCHEDULE					
PIPE DIA.	3/4"-2"	2 1/2"-3"	4"-5"	6"	8"-12"
HANGER DIA.	3/8"	1/2"	5/8"	3/4"	7/8"

NOTES:
1.) CLEVIS HANGERS WITH WELDED INSULATION SHIELDS SIMILAR TO RAUCH FIG. 100SH ON ALL PIPES LARGER THAN 1".
2.) FOR PIPES 1" OR SMALLER, A BAND HANGER WITH INSULATION SHIELD MAY BE USED SIMILAR TO RAUCH FIG. NO. 1ASH.
3.) FOR NON-INSULATED PIPE, INSULATION SHIELDS MAY BE OMITTED.
4.) ALL PIPE HANGERS SHALL BE GALVANIZED STEEL OR FACTORY PAINTED BLACK WITH ENAMEL.
5.) FOR NON FERROUS PIPING WITHOUT INSULATION, ALL HANGERS SHALL BE COPPER PLATED OR FURNISHED WITH A DI-ELECTRIC BETWEEN PIPE AND HANGERS.
6.) WHERE EXISTING BUILDING STRUCTURAL COMPONENTS HAVE FIREPROOF MATERIAL, ANY AREA THAT IS DISTURBED OR DAMAGED AS A RESULT OF HANGER INSTALLATION SHALL BE PATCHED WITH UL AND FM APPROVED FIREPROOFING TO MATCH EXISTING.
7.) ALL ANCHORS AND INSERTS SHALL HAVE NEW YORK CITY BOARD OF STANDARD AND APPEALS, (BSA) APPROVAL.

4

PIPE HANGER DETAIL
SCALE: NONE

SCH. 80 PIPE SLEEVE
LINK SEAL ASSEMBLY
SERVICE PIPE
CORE DRILL NEW OPENING
EXTERIOR
EXISTING WALL
INTERIOR
LINK SEAL
SERVICE PIPING
CORE DRILLED OPENING
SCH. 80 PIPE SLEEVE
SECTION A-A
N.T.S.

NOTES:
1.) SEAL ASSEMBLY BASED ON THUNDERLINE MODEL "C" LINK-SEAL MODULAR SEAL, WITH EPDM SEAL ELEMENT, COMPOSITE PRESSURE PLATES, STEEL WITH 2-PART ZINC DICHROMATE & ORGANIC COATED NUTS AND BOLTS RATED FOR AN OPERATING TEMPERATURE RANGE OF -40°F TO +250°F.
2.) USE LINK SEAL AT ALL LOCATIONS WHERE PIPES PENETRATE EXTERIOR WALLS, ABOVE GRADE OR BELOW GRADE.

2

PIPE LINK SEAL DETAIL FOR EXTERIOR WALLS
SCALE: NONE

REFRIGERANT LIQUID LINE
REFRIGERANT SUCTION LINE
INSULATION AROUND SUCTION LINE
UNICUSHION PIPE INSULATION SHIELD AS MANUFACTURED BY UNISTRUT
UNISTRUT PIPE CLAMP
REFRIGERANT SUCTION AND LIQUID LINES ALONG WITH PUMP DISCHARGE LINES
3/8"THREADED HANGER ROD UNICUSHION AS MANUFACTURED BY UNISTRUT.
UNISTRUT PIPE CLAMP, TYPICAL
GALVANIZED SELF TAPPING SCREWS TYPICAL.
DOUBLE NUT AND WASHER, TYPICAL

NOTES:
1.) LIQUID AND SUCTION LINES MAY BE ROUTED TOGETHER FOR CONVENIENCE, BUT MUST BE COMPLETELY INSULATED FROM EACH OTHER. DO NOT SOLDER LIQUID AND SUCTION LINES TOGETHER. DO NOT ALLOW METAL TO METAL CONTACT.
2.) LINES SHOULD BE INSTALLED WITH AS FEW BENDS AS POSSIBLE, ALLOWING SERVICE ACCESS TO THE INDOOR COIL.
3.) USE LONG RADIUS ELBOWS WHEREVER POSSIBLE, EXCEPT IN OIL RETURN TRAPS, WHERE SHORT RADIUS ELBOWS SHOULD BE USED.
4.) SLOPE HORIZONTAL SUCTION LINES 1 INCH EVERY 20 FEET TOWARD THE OUTDOOR UNIT.

7

REFRIGERANT PIPE SUPPORT DETAIL
SCALE: NONE

SHUT-OFF VALVE
STRAINER
REDUCER
SPRING ISOLATOR
PRIMARY PUMP
REDUCER
TRIPLE DUTY VALVE
45° LATERAL
WALL BRACKET
SPRING ISOLATOR
STAND-BY PUMP

NOTES:
1.) HANG PRIMARY PUMP FROM BUILDING STRUCTURE WITH SPRING-TYPE VIBRATION ISOLATORS.
2.) HANG STAND-BY PUMP FROM BUILDING STRUCTURE OR SUPPORT FROM WALL BRACKETS SIMILAR TO F&M FIGURE #151.

5

IN-LINE PUMP DETAIL
SCALE: NONE

HARD ROUND SUPPLY DUCT
AIR FLOW
FLEX HANGER
DUCT HANGER (TYP.)
FLEXIBLE DUCT UP TO 4' MAX. LENGTH
HARD SUPPLY COLLAR
ROUND NECK, D
ROUND NECK DIFFUSER
HARD ELBOW

3

ROUND CONNECTION TO ROUND NECK DIFFUSER
SCALE: NONE

SQUARE HEAD BOLT WITH SLOTTED HEX NUT.
RISER CLAMP SIMILAR TO PHD MANUFACTURING INC. MODEL 550/551 AND 553
FLOOR SLAB
PIPE SLEEVE
FIRE STOPPING INSULATION SIMILAR TO 3M CP-25 OR FS-195
FIRE BARRIER CAULK AND STRIPS.
RISER PIPE

1

VERTICAL PIPE SUPPORT DETAIL
SCALE: NONE

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KEY PLAN

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Professional Seal

No.	Date	Issue
7	08/12/2021	Issued for Construction
6	06/25/2021	Issued for Permit
5	02/24/2021	Issued for Bid
4	02/10/2021	Issued for Review
3	5/14/2020	90% Construction Documents
2	2/21/2020	Design Development
1	12/18/2019	Schematic Design

Sheet Title

MECHANICAL DETAILS

Job No.	Date
NKGD0214.00	06/25/2021
Scale	Drawn / Checked
AS NOTED	TV / RG

Sheet Number

M702



CHILLED WATER AND HOT WATER
PIPE SIZE SCHEDULE
SCALE: NONE

M703