

MECHANICAL SYSTEMS, SERVICE SYSTEMS AND EQUIPMENT METHOD OF COMPLIANCE

Prescriptive Energy Cost Budget

Thermal Zone: Mecklenburg County (3A)

Exterior Design Conditions

Winter Dry Bulb: 18
Summer Dry Bulb: 91

Interior Design Conditions

Winter Dry Bulb: 70
Summer Dry Bulb: 75
Relative Humidity: 50%

Building Heating Load: Existing
Building Cooling Load: Existing

Mechanical Space Conditioning System

Unitary:

Description of Unit: N/A - Existing Base Building HVAC

Heating Efficiency: N/A - Existing Base Building HVAC
Cooling Efficiency: N/A - Existing Base Building HVAC
Heat Output of Unit: N/A - Existing Base Building HVAC
Cooling Output of Unit: N/A - Existing Base Building HVAC

List Equipment Efficiencies:

Equipment Schedules with Motors (Mechanical Systems)

Motor Horsepower: N/A - Existing Base Building HVAC
Number of Phases: N/A - Existing Base Building HVAC
Minimum Efficiency: N/A - Existing Base Building HVAC
Motor Type: N/A - Existing Base Building HVAC
Number of Poles: N/A - Existing Base Building HVAC

Designer Statement:

To the best of my knowledge and belief, the design of this building complies with the 2018 North Carolina Energy Code. The requirements of Section C406 is met through the Subsection C406.3 (Reduced Lighting Power Density).

OUTSIDE AIR CALCULATION EXISTING UNIT VENTILATOR

ROOM NAME	AREA TYPE	FLOOR AREA (SQ. FT)	CFM/SQFT	DEFAULT OCCUPANT DENSITY #/1000 SQ. FT	# OF PEOPLE PER SPACE	PEOPLE OUTDOOR AIRFLOW RATE IN BREATHING ZONE (CFM/PERSON)	OUTSIDE AIR PER SPACE (CFM)
WELLNESS ROOM	OFFICE SPACES	400	0.06	10	4	5	40

TOTAL OUTSIDE AIR CALCULATION (V_{oa}) = 40
ZONE DISTRIBUTION EFFECTIVENESS (E_z) = 0.8
ZONE OUTDOOR AIRFLOW RATE (V_{oz}) = 50

APPROVED MANUFACTURER LISTING - MECHANICAL

THE FOLLOWING MANUFACTURER'S LISTING (ALPHABETICALLY ORDERED) IS PROVIDED FOR BIDDING PURPOSES AND DOES NOT IMPLY OR PROVIDE A GUARANTEE OF SUBMITTAL APPROVAL. ALL ITEMS SUBMITTED SHALL MEET OR EXCEED THE MINIMUM SPECIFIED DESIGN AND QUALITY CRITERIA IN THIS SET OF CONSTRUCTION DOCUMENTS. ANY BIDDER THAT INTENDS TO SUBMIT USING A MANUFACTURER NOT LISTED BELOW MAY REQUEST A PRIOR APPROVAL IN ACCORDANCE WITH THE ENTIRETY OF THE PROJECT BID DOCUMENTS, REFER TO THE ARCHITECT'S GENERAL CONDITIONS AND BIDDING REQUIREMENTS.

THE BIDDER IS RESPONSIBLE FOR INCLUDING ALL COSTS ASSOCIATED WITH SUBSTITUTED EQUIPMENT, INCLUDING BUT NOT LIMITED TO, CODE AND MANUFACTURER'S REQUIRED MAINTENANCE AND ACCESS CLEARANCE, COORDINATION WITH ALL OTHER BUILDING TRADES, AND INSTALLATION OF DUCTWORK, PIPING, ETC. BIDDER SHALL BEAR RESPONSIBILITY FOR ALL ASSOCIATED COSTS AND ADDITIONAL COSTS RESULTING FROM SUBSTITUTED ITEMS SHALL NOT BE CONSIDERED FOR APPROVAL AFTER BIDS ARE AWARDED.

ITEM	MANUFACTURER'S
AIR DISTRIBUTION	CARNES, METAL*AIRE, NAILOR, PRICE, TITUS, TUTTLE & BAILEY

EXISTING UNIT VENTILATOR SCHEDULE (2-PIPE SYSTEM)

Unit Tag	Area Served	CFM		ESP	Motor			Cooling Performance					Pipe Sizes (in)		Trane Model	Remarks	
		Unit	Min. OA		HP	Volts	Phs	EAT DB/WB	MBH DB/WB	MBH Total	GPM	EWT (F)	Max. Water PD (ft.)	DTS/R			CD w/Trap
UV-1	WELLNESS 301	750	50	.2"	1/6	115	1	80/67	27.9	19.1	5.7	45	16	1.0"	3/4"	TUVA 07	1-11

DUAL TEMP FAN COIL UNIT SCHEDULE

Unit Tag	Supply Air CFM	ESP (in.)	Motor				Cooling Performance						Construction			Pipe Sizes (in)		Trane Model No.	Remarks				
			Qty	MCA	HP	Volts	EAT DB/WB	LAT DB/WB	MBH Total	MBH Sens.	GPM	EWT (F)	Fluid Δ T (F)	Max. Water PD (ft.)	Arr.	In-let	Out-let			DTS/R	CD w/Trap		
FC-1	130	0.02	1	2.75	.13	22.0	115	1	80/67	58.75/57.12	4.03	3.01	0.8	45	10	10.0	HC	BSL	FBG	5/8"	3/4"	FCDB020	1-9

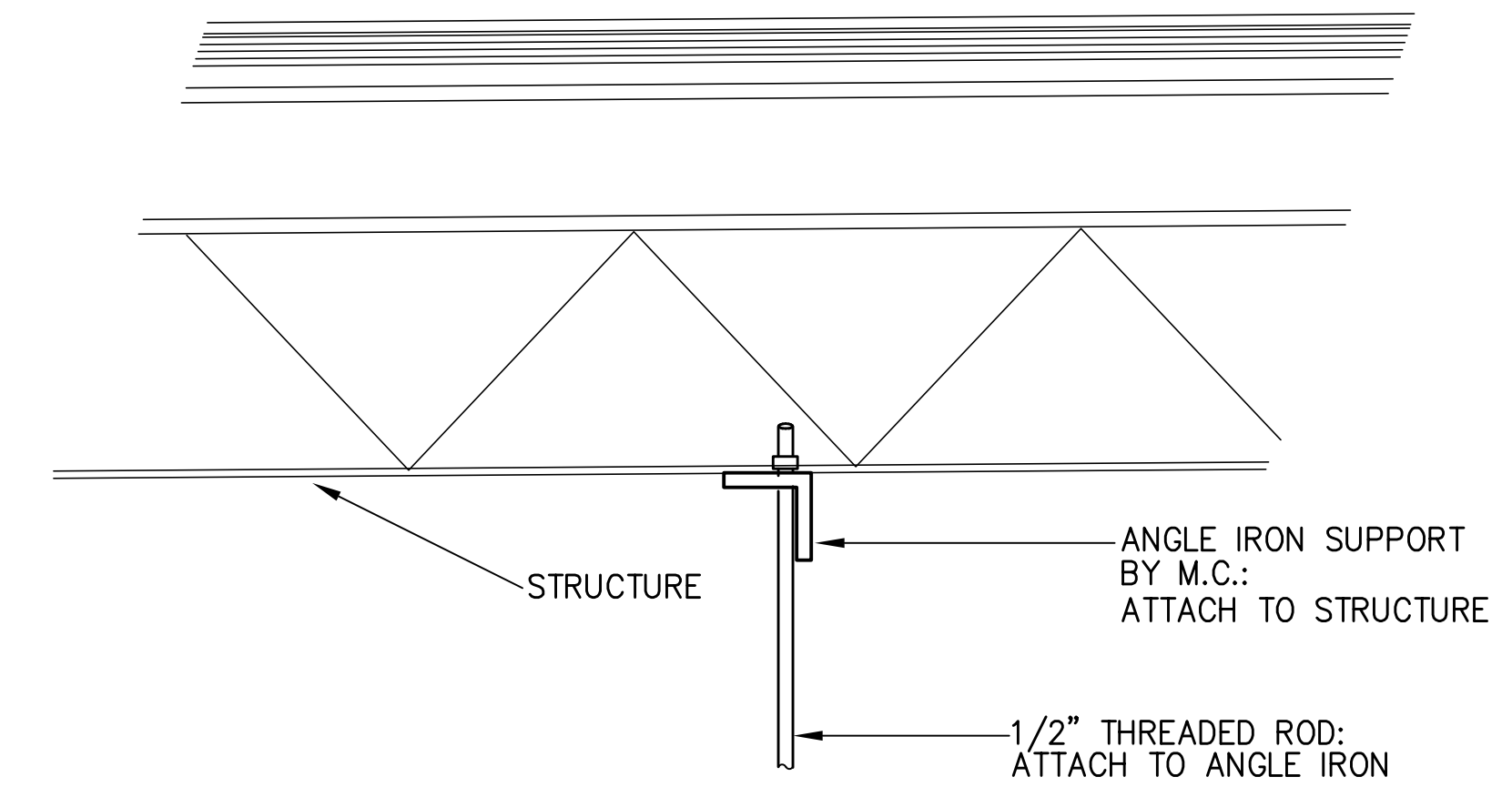
- REFER TO APPROVED MANUFACTURER LIST FOR ACCEPTABLE EQUAL MANUFACTURERS. COORDINATE POWER REQUIREMENTS FOR ALL SUBSTITUTIONS.
ARR. ABRV.: VFC = VERTICAL FAN COIL, VC = VERTICAL CABINET
LVC = LOW VERTICAL CABINET, HC = HORIZONTAL CABINET
OUTLET ABRV.: FBG = FRONT BAR GRILLE, FQG = FRONT QUAD GRILLE
TBG = TOP BAR GRILLE
INLET ABRV.: BSL = BOTTOM STAMPED LOUVER
FTS = FRONT TOE SPACE
- CONTROL VALVE MAX. PD = 10'. CONTROL VALVE TO SEAT AGAINST THE MAXIMUM SYSTEM PRESSURE.
- ENSURE NEW THERMOSTAT IS COMPATIBLE WITH NEW CONTROL VALVE.
- MBG'S FAN DATA INCLUDES UNIT CASING, WET COIL & NO FILTER. ESP IN SCHEDULE INCLUDES ALL OTHER PRESSURE DROPS.
- PROVIDE CONTROL VALVE SETUP (2- OR 3-WAY) THAT MATCHES EXISTING FOR EACH UNIT.
- PROVIDE WITH ECM MOTOR.
- PROVIDE 3-SPEED CONTROL SWITCH. COORDINATE FAN SPEED CONTROL SWITCH STYLE WITH OWNER PRIOR TO ORDERING.
- SURFACE MOUNTED CABINETS SHALL BE PROVIDED WITH ENAMEL FINISH. COLOR TO BE SELECTED BY OWNER.
- PROVIDE WITH SIDE CONVERTIBLE DRAIN PAN CONNECTIONS. ROUTE CD TO LAVATORY TAIL PIPE.

EXISTING FAN SCHEDULE

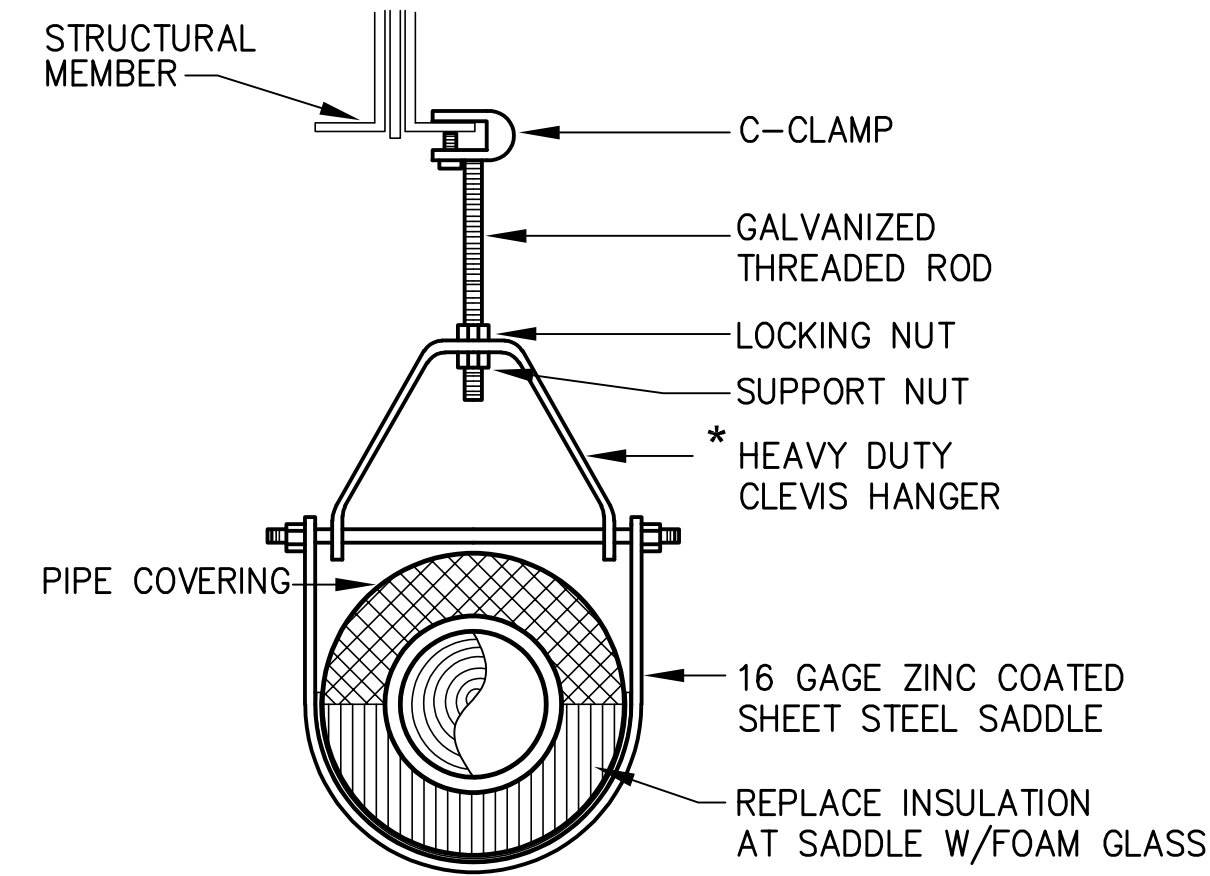
Unit Tag	Area Served	CFM	ESP (IN.)	Drive	HP (Watts)	Volts	Phase	Type	Model	Remarks
F-12	RESTROOM	780	.375	BELT	1/4	115	1	INLINE	BSQ-90-4	1

1. ADJUST FAN AIRFLOW TO CFM SHOWN.

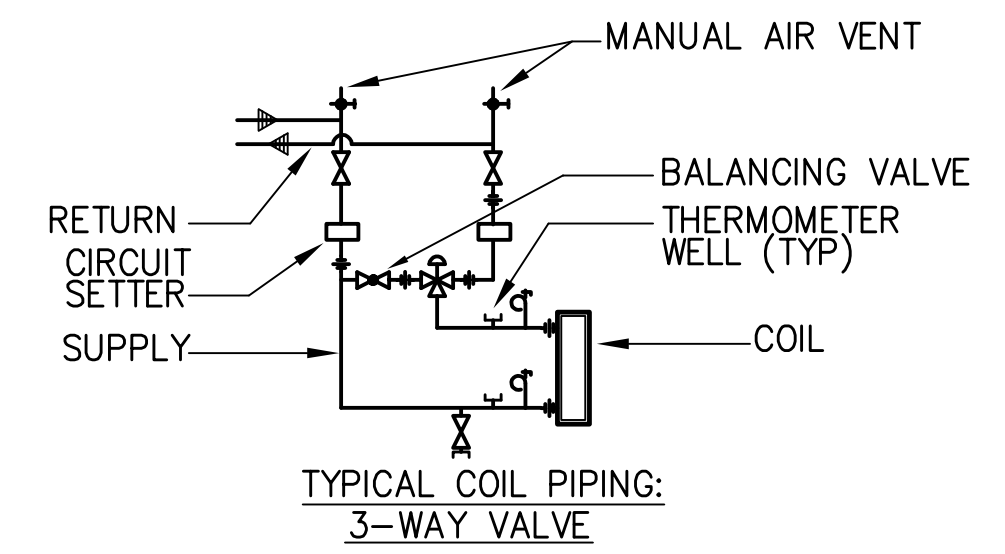
- Floor or Wall Assembly - Min 5-1/2 in. thick reinforced lightweight or normal weight (100-150 pcf) concrete. Wall may also be constructed of any UL Classified Concrete Blocks*. Diam of opening to be 1-1/4 in. to 1-3/4 in. larger than outside diam of insulated pipe. Max diam of opening is 12 in.
See Concrete Blocks (CAZT) category in the Fire Resistance Directory for names of manufacturers.
- Pipe - Nom 4 in. diam (or smaller) Type L (or heavier) copper pipe or nom 6 in. diam (or smaller) Schedule 10 (or heavier) steel pipe centered in the opening and rigidly supported on both sides of the floor or wall assembly.
See Pipe and Equipment Covering - Materials* (BRGU) category in Building Materials Directory for names of manufacturers. Any pipe covering material meeting the above specifications and bearing the UL Classification Marking with a Flame Spread Index of 25 or less and a Smoke Developed Index of 50 or less may be used.
- Pipe Covering* - Nom 1 or 2 in. thick hollow cylindrical heavy density (min. 3.5 pcf) glass fiber units jacketed on the outside with an all service jacket. Longitudinal joints sealed with metal fasteners or factory-applied self-sealing lap tape. Transverse joints secured with metal fasteners or with butt strip tape supplied with the product.
See Fire Rated Concrete Floor Slab category in the Fire Resistance Directory for details.
- Firestop System - The details of the firestop system shall be as follows:
A. Packing Material - Min 1 in. thickness of tightly-packed mineral wool batt insulation firmly packed into opening as a permanent form on both sides of floor or wall assembly. Packing material to be recessed min 1 in. from both surfaces of floor or wall assembly.
B. Fill, Void or Cavity Materials* - Caulk - Applied to fill the annular space to a min depth of 1 in., flush with both surfaces of floor or wall assembly.
Minnesota Mining & Mfg. Co. - CP 25WB+
*Bearing the UL Classified Marking



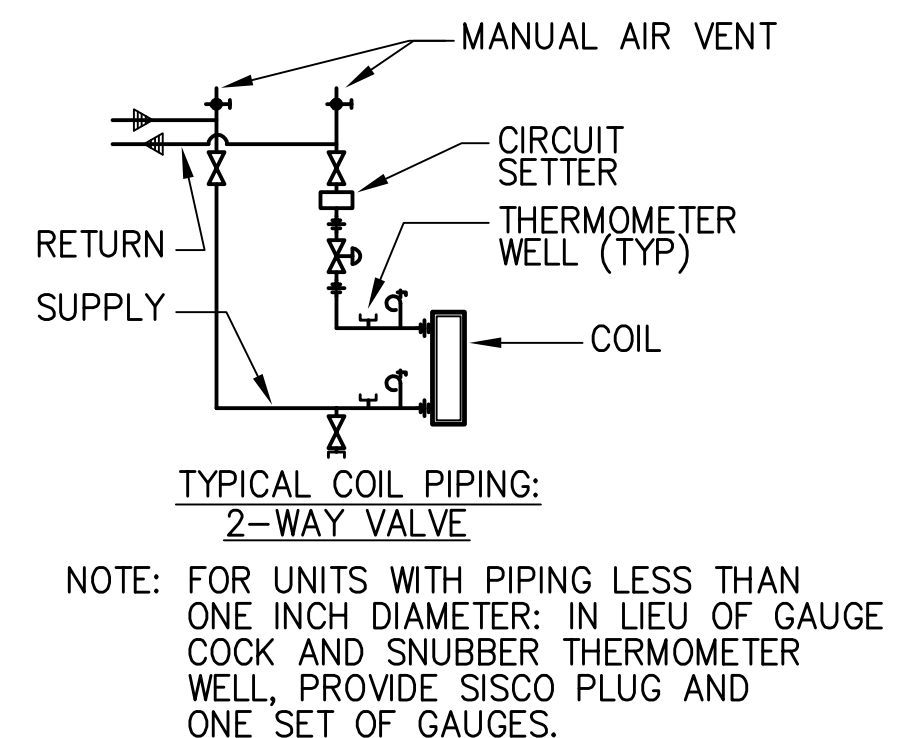
2 SUPPORT DETAIL NTS



4 PIPE HANGER DETAIL NTS
*CONTRACTOR OPTION: MICHIGAN HANGER #403



5 COIL PIPING DETAIL NTS



3 COIL PIPING DETAIL NTS

MISCELLANEOUS

SYMBOL		DESCRIPTION
SINGLE LINE	DOUBLE LINE	
S	S	TWO POSITION FAN SWITCH
---	---	DAMPER
⊙	⊙	TIE INTO EXISTING AT THIS POINT

PIPING & VALVE LEGEND

SYMBOL	DESCRIPTION
⊘	GATE VALVE
⊘	GLOBE VALVE
⊘	BALL VALVE
⊘	TRIPLE DUTY VALVE
⊘	Multipurpose Valve
⊘	PRESSURE REDUCING VALVE
⊘	CHECK VALVE
⊘	BUTTERFLY VALVE
⊘	BALANCING BUTTERFLY VALVE W/100% SHUTOFF & MEMORY STOP
⊘	HOSE END DRAIN VALVE
⊘	REDUCED PRESSURE BACKFLOW PREVENTER
⊘	TEMPERATURE & PRESSURE RELIEF VALVE
⊘	THERMOMETER
⊘	WATER FLOW INDICATOR
⊘	GAUGE COCK AND SNUBBER
⊘	PRESSURE GAUGE
⊘	PIPE UNION
⊘	STRAINER
-CHWS-	CHILLED WATER SUPPLY
-CHWR-	CHILLED WATER RETURN
A.F.F.	ABOVE FINISHED FLOOR
⊘	TIE INTO EXISTING AT THIS POINT
C.I.	CAST IRON
U.N.O.	UNLESS NOTED OTHERWISE

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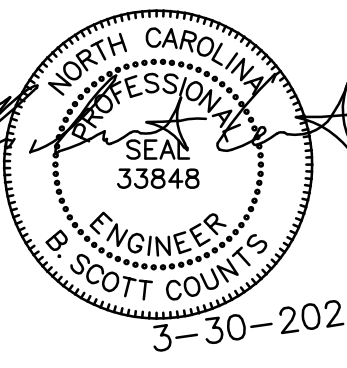
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Revisions

No.	Date	Descrip.



CROWN POINT ES MODIFICATIONS
3335 SAM NEWELL RD.
MATTHEWS, NC 28105



McKNIGHT-SMITH WARD & GRIFFIN ENGINEERS, INCORPORATED
4223 South Boulevard
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F-0595
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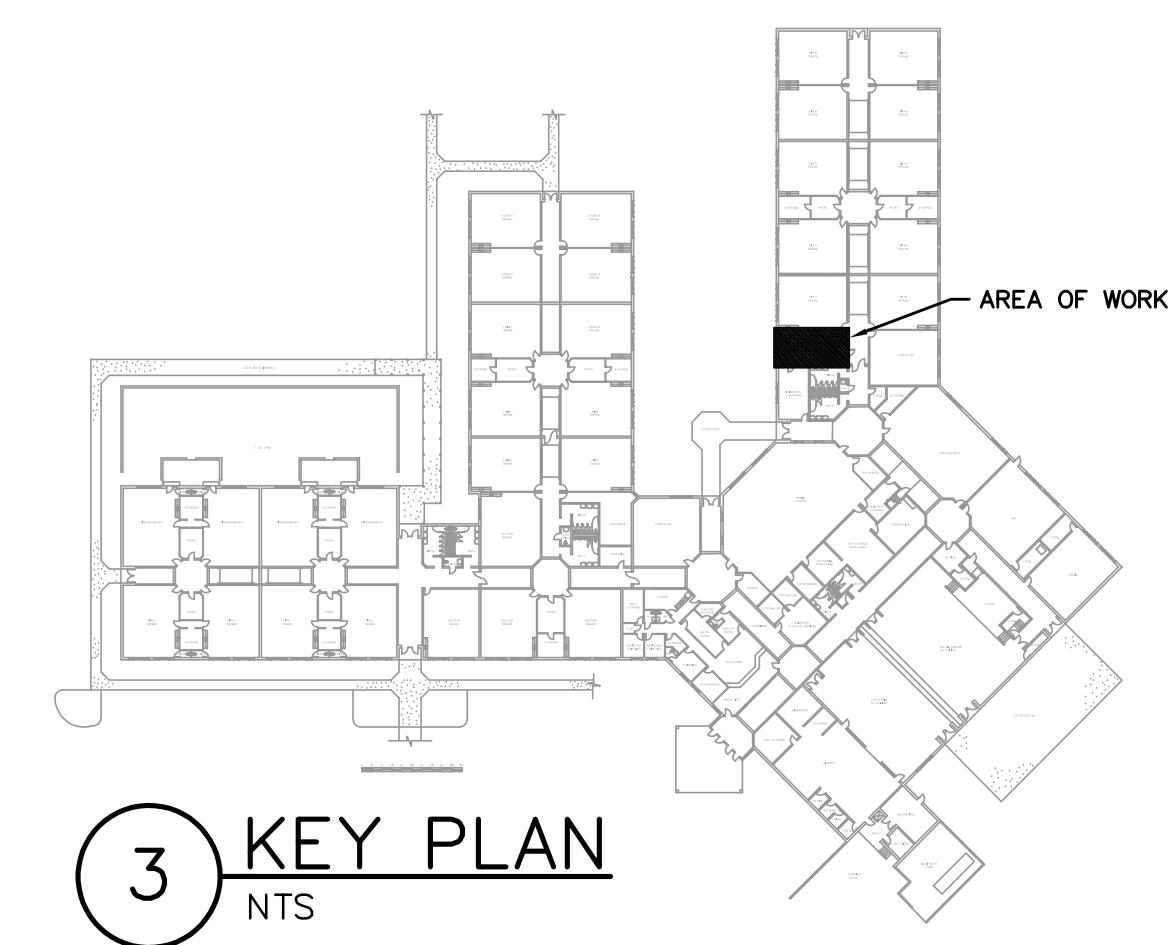
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MECHANICAL SCHEDULES, DETAILS, AND LEGENDS
SHEET TITLE:

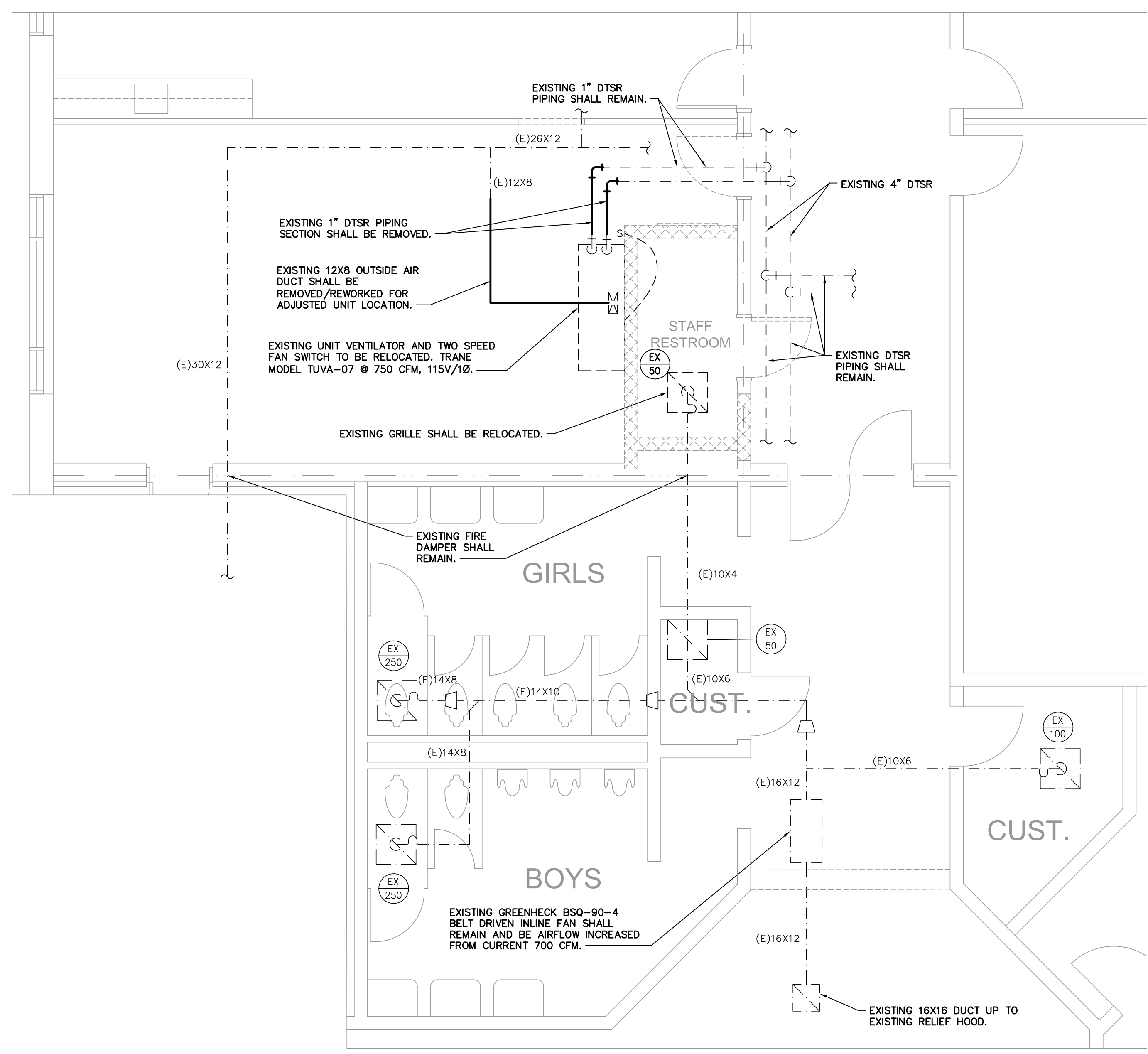
M.I.O
SHEET NUMBER:
PROJECT# 2106
DATE: 3/30/2022

DEMOLITION NOTES

- A. THIS CONTRACTOR SHALL PROVIDE ALL CUTTING AND PATCHING NECESSARY TO INSTALL HIS EQUIPMENT. THIS CONTRACTOR SHALL RESTORE AREAS UNCOVERED BY REMOVAL OF EXISTING EQUIPMENT WHICH WILL REMAIN EXPOSED. PATCHING SHALL MATCH ADJACENT SURFACES. FINAL PAINTING SHALL BE PROVIDED IN THIS CONTRACT AND COORDINATED WITH OWNER.
- B. NO STRUCTURAL MEMBERS SHALL BE CUT WITHOUT THE APPROVAL OF THE OWNER AND LICENSED DESIGN PROFESSIONAL.
- C. CONTRACTOR SHALL BE RESPONSIBLE FOR PROPER OPENINGS INTO BUILDING TO ADMIT EQUIPMENT. IF IT BECOMES NECESSARY TO CUT ANY PORTION OF THE BUILDING TO ADMIT EQUIPMENT, PORTIONS CUT MUST BE RESTORED TO THEIR FORMER CONDITION BY THIS CONTRACTOR.
- D. EXISTING EQUIPMENT REMOVED SHALL BE STORED ON SITE BY THIS CONTRACTOR. EXISTING EQUIPMENT TO BE RETURNED TO OWNER (IDENTIFIED BY OWNER) SHALL BE KEPT IN ORIGINAL CONDITION, PROTECTED FROM WEATHER BY THIS CONTRACTOR AND REMOVED FROM SITE STORAGE BY OWNER. EXISTING EQUIPMENT NOT RETURNED TO OWNER SHALL BE REMOVED FROM SITE STORAGE & DISPOSED OF BY THE CONTRACTOR.
- E. EQUIPMENT REMOVED CONTAINING REFRIGERANTS (COILS, REFRIGERANT LINES, CONDENSING UNITS, CHILLERS, ETC.):
 EVACUATE AND DISPOSE OF REFRIGERANT PER ALL APPLICABLE CODES. RETURN REFRIGERANT TO OWNER.
- F. EQUIPMENT REMOVED WITH PIPING CONNECTIONS: REMOVE EQUIPMENT, EXPOSED PIPING, AND PIPING SPECIALTIES. CAP PIPES BELOW FLOOR, IN WALL, OR ABOVE CEILING AS REQUIRED. REPAIR WALLS, FLOORS, AND CEILINGS TO ORIGINAL CONDITION. FINAL PAINTING BY THIS CONTRACTOR UNLESS NOTED OTHERWISE.
- G. REMOVE LAY-IN CEILING AS REQUIRED FOR WORK ABOVE CEILING. REINSTALL CEILING WHEN WORK IS COMPLETE. REPLACE DAMAGED CEILING TILES. CEILING REMOVAL AND REPLACEMENT SHALL BE PERFORMED BY A SUBCONTRACTOR REGULARLY EMPLOYED FOR INSTALLATION OF CEILING SYSTEMS, SUBJECT TO APPROVAL BY OWNER AND LICENSED DESIGN PROFESSIONAL.
- H. REMOVE PLASTER CEILING AS REQUIRED FOR PIPE, OR UNIT HANGER ATTACHMENT TO JOIST. REINSTALL CEILING WHEN WORK IS COMPLETE. REPLACE DAMAGED PORTIONS OF CEILING. CEILING REMOVAL & REPLACEMENT SHALL BE PERFORMED BY A SUBCONTRACTOR REGULARLY EMPLOYED FOR INSTALLATION OF CEILING SYSTEMS, SUBJECT TO APPROVAL BY OWNER AND LICENSED DESIGN PROFESSIONAL.

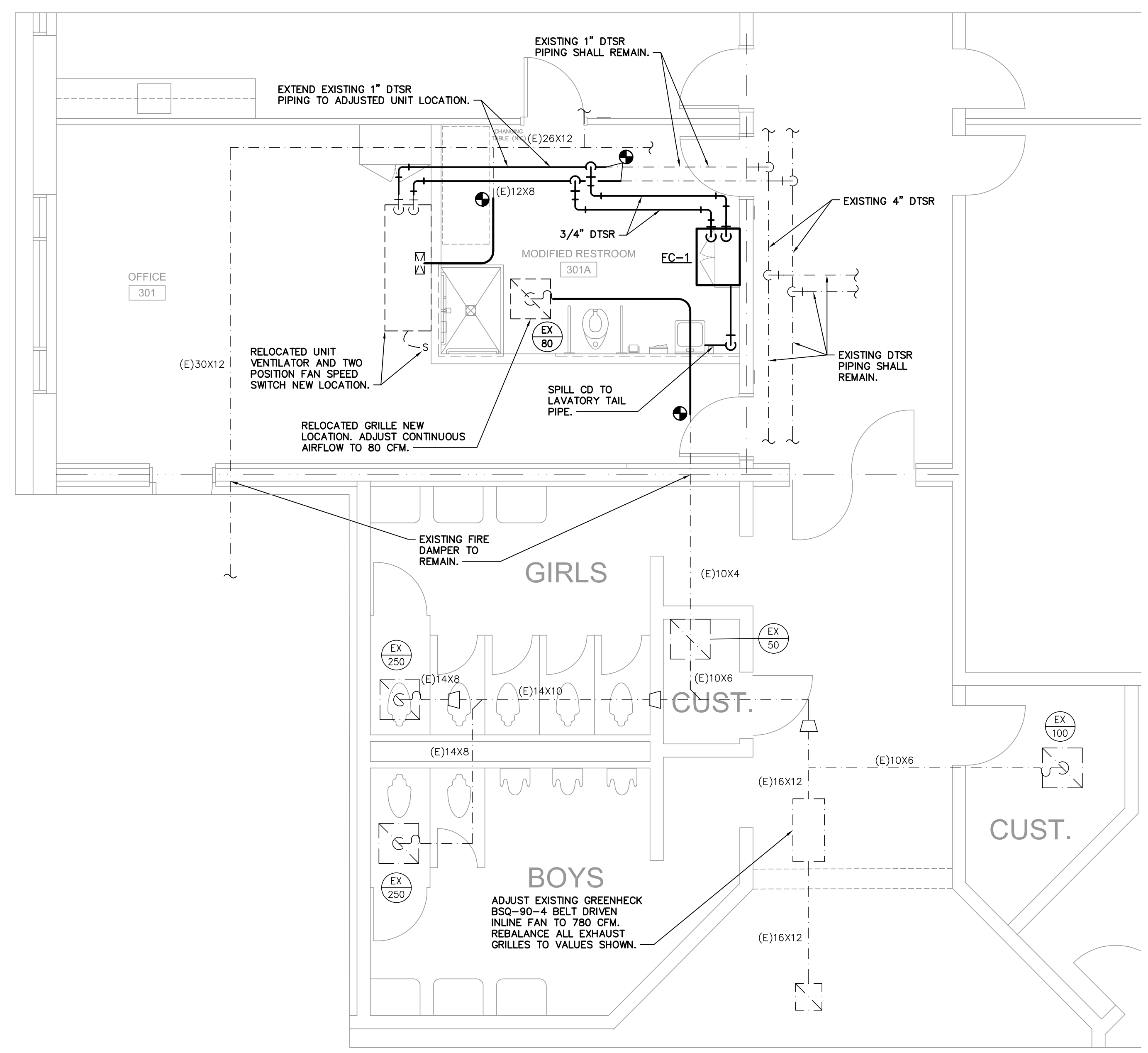


3 KEY PLAN
NTS



1 MECHANICAL FLOOR PLAN - DEMOLITION
SCALE: 1/4" = 1'-0"

DEMOLITION LEGEND	
---	EXISTING TO REMAIN
---	EXISTING TO BE REMOVED



2 MECHANICAL FLOOR PLAN - NEW WORK
SCALE: 1/4" = 1'-0"

FIRE RATED WALLS	
---	1 HOUR WALL
---	4 HOUR WALL

NOTE: THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL EXISTING CONDITIONS. SUBMISSION OF BIDS IS CONSIDERED VERIFICATION THAT THE CONTRACTOR HAS VISITED THE SITE. NO EXTRAS WILL BE ALLOWED DUE TO LACK OF KNOWLEDGE OF THE EXISTING CONDITIONS.

IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO APPLY THE PROPER FIRE-SAFING DETAIL FOR ALL DUCT AND PIPE PENETRATIONS THRU RATED & NON-RATED WALL AND FLOOR/CEILING ASSEMBLIES.

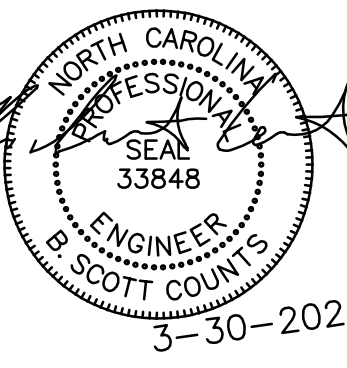
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MECHANICAL FLOOR PLANS

SHEET TITLE:	
M2.0	
SHEET NUMBER:	
PROJECT#	2106
DATE:	3/30/2022

	1	2	3	4	5	6	7	8						
A	<p><u>SCOPE</u></p> <p>THE CONTRACTOR SHALL COORDINATE THE WORK AND EQUIPMENT OF THIS DIVISION WITH THE WORK AND EQUIPMENT SPECIFIED ELSEWHERE IN ORDER TO ASSURE A COMPLETE AND SATISFACTORY INSTALLATION. WORK SUCH AS EXCAVATION, BACKFILL, CONCRETE, FLASHING, WIRING, ETC., WHICH IS REQUIRED BY THE WORK OF THIS SECTION SHALL BE PERFORMED IN ACCORDANCE WITH THE REQUIREMENTS OF THE APPLICABLE SECTION OF THE SPECIFICATIONS.</p> <p>IT IS THE INTENTION OF THESE SPECIFICATIONS AND DRAWINGS TO CALL FOR FINISHED WORK, TESTED AND READY FOR OPERATION. WHENEVER THE WORD "PROVIDE" IS USED, IT SHALL MEAN "FURNISH AND INSTALL COMPLETE AND READY FOR USE".</p> <p>THE WORD "PROVIDE" MEANS FURNISH, FABRICATED, COMPLETE, INSTALL, ERECT, INCLUDING LABOR AND INCIDENTAL MATERIALS NECESSARY TO COMPLETE IN PLACE AND READY FOR OPERATION OR USE THE ITEM REFERRED TO OR DESCRIBED HEREIN AND/OR SHOWN OR REFERRED TO ON THE CONTRACT DRAWINGS.</p> <p><u>EQUIPMENT APPLICATION AND PERFORMANCE</u></p> <p>THE CONTRACTOR AND/OR EQUIPMENT SUPPLIER SHALL BE RESPONSIBLE TO SEE THAT EQUIPMENT SUPPLIED IS CORRECT FOR THE INTENDED APPLICATION AND WILL PERFORM WITHIN THE LIMITS OF CAPACITY, NOISE, LIFE EXPECTANCY, PRESSURE DROP AND SPACE LIMITATIONS INTENDED FOR THAT EQUIPMENT AS SHOWN ON THE PLANS OR DESCRIBED IN THE SPECIFICATIONS. THE SHOP DRAWINGS SHALL SHOW THE CAPACITY AND OPERATING CHARACTERISTICS OF THE EQUIPMENT.</p> <p>WHERE THE CONTRACTOR PROPOSES TO USE AN ITEM OF EQUIPMENT OTHER THAN THAT SPECIFIED OR DETAILED ON THE DRAWINGS, WHICH REQUIRES ANY REDESIGN OF THE STRUCTURE, PARTITIONS, FOUNDATIONS, PIPING, WIRING OR ANY OTHER PART OF THE MECHANICAL, ELECTRICAL, OR ARCHITECTURAL LAYOUT, ALL SUCH REDESIGN, AND ALL NEW DRAWINGS AND DETAILING REQUIRED THEREFORE, SHALL BE PREPARED BY THE SUBCONTRACTOR AT HIS OWN EXPENSE AND SUBMITTED FOR APPROVAL BY THE ARCHITECT.</p> <p>WHERE SUCH APPROVED DEVIATION REQUIRES A DIFFERENT QUANTITY AND ARRANGEMENT OF DUCTWORK, PIPING, WIRING, CONDUIT, AND EQUIPMENT FROM THAT SPECIFIED OR INDICATED ON THE DRAWINGS, THE CONTRACTOR SHALL FURNISH AND INSTALL ANY SUCH DUCTWORK, PIPING, STRUCTURAL SUPPORTS, INSULATION, CONTROLLERS, MOTORS, STARTERS, ELECTRICAL WIRING AND CONDUIT, AND ANY OTHER ADDITIONAL EQUIPMENT REQUIRED BY THE SYSTEM, AT NO ADDITIONAL COST TO THE OWNER.</p> <p><u>DUTIES OF CONTRACTOR</u></p> <p>CONTRACTOR SHALL FURNISH AND INSTALL ALL MATERIALS CALLED FOR IN THESE SPECIFICATIONS AND ACCOMPANYING DRAWINGS, AND MUST FURNISH THE APPARATUS COMPLETE IN EVERY RESPECT. ANYTHING CALLED FOR IN THE SPECIFICATIONS AND NOT SHOWN ON THE DRAWINGS OR SHOWN ON THE DRAWINGS AND NOT CALLED FOR IN THE SPECIFICATIONS MUST BE FURNISHED BY THE CONTRACTOR.</p> <p>CONTRACTOR IS RESPONSIBLE FOR FAMILIARIZING HIMSELF WITH THE DETAILS OF THE CONSTRUCTION OF THE BUILDING. WORK UNDER THESE SPECIFICATIONS INSTALLED IMPROPERLY OR WHICH REQUIRES CHANGING DUE TO IMPROPER READING OR INTERPRETATION OF BUILDING PLANS SHALL BE CORRECTED AND CHANGED AS DIRECTED BY THE ARCHITECT WITHOUT ADDITIONAL COST TO THE OWNER.</p> <p>CONDITIONS SOMETIMES OCCUR WHICH REQUIRE CERTAIN CHANGES IN DRAWINGS AND SPECIFICATIONS. IN THE EVENT THAT SUCH CHANGES IN DRAWINGS AND SPECIFICATIONS ARE NECESSARY, THE SAME ARE TO BE MADE BY THE CONTRACTOR WITHOUT EXPENSE TO THE OWNER, PROVIDING SUCH CHANGES DO NOT REQUIRE FURNISHING MORE MATERIALS, OR PERFORMING MORE LABOR THAN THE TRUE INTENT OF THE DRAWINGS AND SPECIFICATIONS DEMANDS. IT IS UNDERSTOOD THAT WHILE THE DRAWINGS ARE TO BE FOLLOWED AS CLOSELY AS CIRCUMSTANCES WILL PERMIT, THE CONTRACTOR IS HELD RESPONSIBLE FOR THE INSTALLATION OF THE SYSTEM ACCORDING TO THE TRUE INTENT AND MEANING OF THE DRAWINGS. ANYTHING NOT ENTIRELY CLEAR IN THE DRAWINGS AND SPECIFICATION WILL BE FULLY EXPLAINED IF APPLICATION IS MADE TO THE ARCHITECT. SHOULD, HOWEVER, CONDITIONS ARISE WHERE IN THE JUDGMENT OF THE CONTRACTOR CERTAIN CHANGES WILL BE ADVISABLE, THE CONTRACTOR WILL COMMUNICATE WITH THE ARCHITECT AND SECURE HIS APPROVAL OF THESE CHANGES BEFORE GOING AHEAD WITH THE WORK.</p> <p>THE RIGHT TO MAKE ANY RESPONSIBLE CHANGE IN LOCATION OF APPARATUS, EQUIPMENT, ROUTING OF PIPING UP TO THE TIME OF ROUGHING IN, IS RESERVED BY THE ARCHITECT WITHOUT INVOLVING ANY ADDITIONAL EXPENSE TO THE OWNER.</p> <p>IT SHALL BE THE DUTY OF PROSPECTIVE CONTRACTORS TO VISIT THE JOB SITE AND FAMILIARIZE THEMSELVES WITH JOB CONDITIONS. NO EXTRAS WILL BE ALLOWED BECAUSE OF ADDITIONAL WORK NECESSITATED BY, OR CHANGES IN PLANS REQUIRED BECAUSE OF EVIDENT JOB CONDITIONS, THAT ARE NOT INDICATED ON THE DRAWINGS.</p> <p><u>CODES, RULES, PERMITS AND FEES</u></p> <p>ALL MATERIALS FURNISHED AND ALL WORK INSTALLED SHALL COMPLY WITH THE NATIONAL FIRE CODES OF THE NATIONAL FIRE PROTECTION ASSOCIATION, AND WITH THE REQUIREMENTS OF ALL GOVERNMENTAL DEPARTMENTS HAVING JURISDICTION.</p> <p>ALL MATERIALS AND EQUIPMENT FOR THE ELECTRICAL PORTION OF THE MECHANICAL SYSTEM SHALL BEAR THE APPROVAL LABEL, AND SHALL BE LISTED BY THE UNDERWRITERS' LABORATORIES, INC.</p> <p>ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE NORTH CAROLINA STATE BUILDING CODE, AND REQUIREMENTS OF GOVERNMENTAL AGENCIES HAVING JURISDICTION.</p> <p><u>COOPERATION WITH OTHER TRADES</u></p> <p>THIS CONTRACTOR SHALL GIVE FULL COOPERATION TO OTHER TRADES AND SHALL FURNISH ANY INFORMATION NECESSARY TO PERMIT THE WORK OF ALL TRADES TO BE INSTALLED SATISFACTORILY AND WITH THE LEAST POSSIBLE INTERFERENCE OR DELAY.</p> <p>WHERE THE WORK OF THE CONTRACTOR WILL BE INSTALLED IN CLOSE PROXIMITY TO, OR MAY INTERFERE WITH THE WORK OF OTHER TRADES, HE SHALL ASSIST IN WORKING OUT SPACE CONDITIONS TO MAKE A SATISFACTORY ADJUSTMENT. IF SO DIRECTED BY THE ARCHITECT, THE CONTRACTOR SHALL PREPARE COMPOSITE WORKING DRAWINGS AND SECTIONS AT A</p>													
	B	<p>SUITABLE SCALE NOT LESS THAN 3/8" = 1'-0", CLEARLY SHOWING HOW HIS WORK IS TO BE INSTALLED IN RELATION TO THE WORK OF OTHER TRADES. IF THE CONTRACTOR INSTALLS HIS WORK BEFORE COORDINATION WITH OTHER TRADES, OR SO AS TO CAUSE ANY INTERFERENCE WITH WORK OF OTHER TRADES, HE SHALL MAKE THE NECESSARY CHANGES IN HIS WORK TO CORRECT THE CONDITION WITHOUT EXTRA CHARGE.</p> <p>THE CONTRACTOR SHALL FURNISH TO OTHER TRADES, AS REQUIRED, ALL NECESSARY TEMPLATES, PATTERNS, SETTING PLANS, AND SHOP DETAILS FOR THE PROPER INSTALLATION OF WORK AND FOR THE PURPOSE OF COORDINATING ADJACENT WORK.</p> <p><u>SAFETY REQUIREMENTS</u></p> <p>ALL SYSTEMS SHALL BE INSTALLED SO AS TO BE SAFE OPERATING AND ALL MOVING PARTS SHALL BE COVERED WHERE SUBJECT TO HUMAN CONTACT. ALL ROUGH EDGES OF EQUIPMENT AND MATERIALS SHALL BE MADE SMOOTH.</p> <p>ALL SAFETY CONTROLS SHALL BE CHECKED UNDER THE SUPERVISION OF THE ARCHITECT'S REPRESENTATIVE AND EIGHT (8) COPIES OF TEST DATE SHOWING SETTING AND PERFORMANCE OF SAFETY CONTROLS SHALL BE SUBMITTED TO THE ARCHITECT.</p> <p><u>PROTECTION</u></p> <p>THE CONTRACTOR SHALL PROTECT ALL WORK AND MATERIAL FROM DAMAGE AND SHALL BE LIABLE FOR ALL DAMAGE DURING CONSTRUCTION.</p> <p>THE CONTRACTOR SHALL BE RESPONSIBLE FOR WORK AND EQUIPMENT UNTIL ALL CONSTRUCTION IS FINALLY INSPECTED, TESTED AND ACCEPTED. HE SHALL PROTECT WORK AGAINST THEFT, INJURY OR DAMAGE; AND SHALL CAREFULLY STORE MATERIAL AND EQUIPMENT RECEIVED ON SITE WHICH IS NOT IMMEDIATELY INSTALLED. HE SHALL CLOSE OPEN ENDS OF WORK INCLUDING PIPE, DUCT, OR EQUIPMENT WITH TEMPORARY COVERS OR PLUGS DURING STORAGE AND CONSTRUCTION TO PREVENT ENTRY OF OBSTRUCTING MATERIALS OR DUST AND DEBRIS.</p> <p>PROVIDE A PROTECTIVE COVERING OF NOT LESS THAN 0.004" THICK VINYL SHEETING (OR A SIMILAR APPROVED MATERIAL) TO BE USED IN COVERING ALL ITEMS OF EQUIPMENT, IMMEDIATELY AFTER THE EQUIPMENT HAS BEEN SET IN PLACE, (OR IF IN A PLACE OF STORAGE WITHIN THE BUILDING UNDER CONSTRUCTION) TO PREVENT THE ACCUMULATION OF DIRT, SAND, CEMENT, PLASTER, PAINT OR OTHER FOREIGN MATERIALS FROM COLLECTING ON THE EQUIPMENT AND/OR FOULING WORKING PARTS.</p> <p><u>CLEANING</u></p> <p>CLEAN FROM ALL EXPOSED INSULATION AND METAL SURFACES GREASE, DEBRIS OR OTHER FOREIGN MATERIAL.</p> <p><u>EQUIPMENT SERVICEABILITY</u></p> <p>ALL EQUIPMENT SHALL BE SERVICEABLE. ALL EQUIPMENT SHALL BE INSTALLED SO THAT IT CAN BE REMOVED. ALL EQUIPMENT IN OR CONNECTED TO PIPING SYSTEMS SHALL HAVE VALVES TO ISOLATE THIS EQUIPMENT FROM THE PIPING SYSTEM. THIS INCLUDES, BUT NOT NECESSARILY LIMITED TO SENSORS AND SWITCHES. UNIONS (SCREWED OR FLANGED) SHALL BE PROVIDED SO THAT ALL EQUIPMENT IS REMOVABLE.</p> <p><u>ACCEPTANCE OF EQUIPMENT</u></p> <p>CONTRACTOR SHALL MAKE ALL NECESSARY TESTS, TRIAL OPERATION BALANCING AND BALANCE TESTS, ETC., AS MAY BE REQUIRED AS DIRECTED BY THE ENGINEER TO PROVE THAT ALL WORK UNDER THESE PLANS AND SPECIFICATION IS IN COMPLETE SERVICEABLE CONDITION AND WILL FUNCTION AS INTENDED.</p> <p>UPON COMPLETION OF ALL WORK THE SYSTEM SHALL BE TESTED TO DETERMINE IF ANY EXCESS NOISE OR VIBRATION IS APPARENT DURING OPERATION OF THE SYSTEM. IF ANY SUCH OBJECTIONS ARE DETECTED IN THE SYSTEM OR NOISY EQUIPMENT FOUND, THE CONTRACTOR SHALL BE RESPONSIBLE FOR CORRECTING SAME. DUCTS, PLENUMS AND CASINGS SHALL BE CLEANED OF ALL DEBRIS AND BLOWN FREE OF ALL PARTICLES OF RUBBISH AND DUST BEFORE INSTALLING OUTLET FACES. EQUIPMENT SHALL BE WIPED CLEAN WITH ALL TRACES OF OIL, DUST, DIRT AND PAINT SPOTS REMOVED. TEMPORARY FILTERS SHALL BE PROVIDED FOR ALL FANS THAT ARE OPERATED DURING CONSTRUCTION AND AFTER ALL CONSTRUCTION DIRT HAS BEEN REMOVED FROM THE BUILDING, NEW FILTERS SHALL BE INSTALLED. BEARINGS SHALL BE LUBRICATED AS RECOMMENDED BY THE EQUIPMENT MANUFACTURER. ALL CONTROL VALVES AND EQUIPMENTS SHALL BE ADJUSTED TO SETTING INDICATED. FANS SHALL BE ADJUSTED TO THE SPEED INDICATED BY THE MANUFACTURER TO MEET SPECIFIED CONDITIONS.</p> <p><u>GUARANTEE</u></p> <p>THE CONTRACTOR SHALL GUARANTEE THE COMPLETE MECHANICAL SYSTEM AGAINST DEFECT DUE TO FAULTY MATERIALS, FAULTY WORKMANSHIP OR FAILURE DUE TO NEGLIGENCE OF THE CONTRACTOR. THIS GUARANTEE WILL EXCLUDE NORMAL WEAR AND TEAR, MAINTENANCE LUBRICATION, REPLACEMENT OF EXPENDABLE COMPONENTS, OR ABUSE. THE GUARANTEE PERIOD SHALL BEGIN ON THE DATE OF THE FINAL ACCEPTANCE AND SHALL CONTINUE FOR A PERIOD OF 12 MONTHS DURING WHICH TIME THE CONTRACTOR SHALL MAKE GOOD SUCH DEFECTIVE WORKMANSHIP AND MATERIALS AND ANY DAMAGE RESULTING THERE FROM, WITHIN A REASONABLE TIME OF NOTICE GIVEN BY THE OWNER.</p> <p><u>DUCTWORK</u></p> <p>DUCTWORK SHALL BE CONSTRUCTED OF ZINC COATED SHEET STEEL AND SHALL CONFORM TO THE 1ST EDITION OF SMACNA HVAC DUCT CONSTRUCTION STANDARDS -METAL AND FLEXIBLE, 1985 AS FOLLOWS:</p> <p style="padding-left: 40px;">RECTANGULAR DUCT: 1" W.G. PRESSURE CLASS - TABLE 1-4.</p> <p style="padding-left: 40px;">ROUND DUCT: 2" W.G. PRESSURE CLASS - TABLE 3-2.</p> <p>ALL DUCTWORK MUST BE SEALED IN ACCORDANCE WITH SEAL CLASS C AS DEFINED IN SMACNA HVAC DUCT CONSTRUCTION STANDARDS-METAL AND FLEXIBLE, 1985.</p> <p>DUCT HANGERS AND SUPPORTS SHALL CONFORM TO THOSE SHOWN IN TABLES 4-1 AND 4-2 OF SMACNA HVAC DUCTWORK 1985, 1ST EDITION.</p> <p><u>DUCT INSULATION</u></p>												
C		<p>INSULATION SHALL BE OWENS-CORNING, CERTAIN-TEED/ST. GOBAIN, MANVILLE OR APPROVED EQUIVALENT. ADHESIVES SHALL BE AS MANUFACTURED BY 3-M FOSTER OR INSULATION MANUFACTURER. INSULATION SHALL HAVE COMPOSITE (INSULATION, JACKET AND ADHESIVE) FIRE AND SMOKE HAZARD RATING AS TESTED BY ASTM E-84, NOT EXCEEDING FLAME SPREAD -25 AND SMOKE DEVELOPED -50.</p> <p>ALL VAPOR BARRIERS AND JOINTS SHALL BE SEALED TO PREVENT CONDENSATION. CLEAN AND DRY ALL DUCTWORK BEFORE INSTALLING INSULATION. ALL WELD JOINTS SHALL BE WIRE BRUSHED AND GIVE ONE (1) COAT OF RED LEAD BEFORE INSULATING. STAPLES WILL NOT BE PERMITTED IN INSULATION.</p> <p>ALL SUPPLY AIR DUCTS UNLESS NOTED OTHERWISE ON PLANS SHALL BE INSULATED BY WRAPPING WITH 2" THICK, 3/4 LB. DENSITY FIBERGLASS WITH VAPOR BARRIER JACKET WITH JOINTS OVERLAPPED A MINIMUM OF TWO INCHES. INSULATION SHALL BE ADHERED TO DUCT WITH NON-COMBUSTIBLE INSULATION BONDING ADHESIVE APPLIED IN 4" STRIPS, 8" ON CENTER. ALL JOINTS SHALL BE SECURED WITH FLARE DOOR STAPLES ON 3" CENTERS THROUGH ALL LAPS OVER DUCT TAPE.</p> <p><u>CONTROLS</u></p> <p>RELOCATED UNIT VENTILATOR TO BE CONTROLLED BY EXISTING, RELOCATED TWO POSITION FAN SWITCH. SEE PLANS FOR NEW LOCATION.</p> <p>FAN COIL UNIT SHALL BE CONTROLLED BY 3-SPEED CONTROL SWITCH.</p> <p>EXISTING INLINE EXHAUST FAN CONTROLS ARE SHALL REMAIN.</p> <p><u>TESTING AND BALANCING</u></p> <p>WORK SHALL BE PERFORMED BY TECHNICIANS COMPETENT IN THE TRADE OF TESTING AND BALANCING ENVIRONMENTAL SYSTEMS AND SHALL BE DONE IN AN ORGANIZED MANNER UTILIZING APPROPRIATE TEST AND BALANCE FORMS. ALL EQUIPMENT SHALL BE BALANCED TO WITHIN +/- 10% OF THE SCHEDULED VALUE.</p> <p>INSTRUMENTS FOR USE IN THE TEST AND BALANCING PROCEDURES SHALL BE OF FIRST QUALITY AND BE ACCURATELY CALIBRATED AT THE TIME OF USE. ALL FIELD INSTRUMENTS USED IN THE BALANCE SHOULD HAVE BEEN CALIBRATED AT LEAST WITHIN THE PREVIOUS THREE MONTHS.</p> <p>STARTING DATE FOR MECHANICAL SYSTEM SHALL BE SCHEDULED WELL IN ADVANCE OF EXPECTED COMPLETION DATE AND SHALL BE ESTABLISHED A MINIMUM OF TWO WEEKS PRIOR TO ACCEPTANCE DATE. THE SYSTEM SHALL BE IN FULL OPERATION WITH ALL EQUIPMENT FUNCTIONAL PRIOR TO ACCEPTANCE DATE.</p> <p>PERFORMANCE READINGS SHALL BE TAKEN AND RECORDED ON ALL AIR DISTRIBUTION DEVICES AND THE SYSTEM SHALL BE BALANCED OUT PRIOR TO ACCEPTANCE. BALANCING OF THE SYSTEM SHALL BE ACCOMPLISHED WITH DUCT DAMPERS AND ONLY MINOR ADJUSTMENTS MADE WITH GRILLE DAMPERS. RECORD AND SUBMIT RESULTS IN TABLE FORM ALONG SIDE OF SCHEDULED QUANTITIES.</p> <p>ALL UNITS SHALL BE CHECKED OUT THOROUGHLY AND THE INFORMATION RECORDED ON EACH MACHINE. CHECK SHEETS SHALL BE INCLUDED IN OPERATING AND MAINTENANCE INSTRUCTIONAL MANUAL.</p> <p><u>CONDENSATE DRAIN PIPING</u></p> <p>ALL DRAIN LINES SHALL BE TYPE K COPPER CONFORMING TO ASTM D 2665. DRAINS SHALL BE RUN IN A NEAT MANNER AS SHOWN.</p> <p><u>FAN COIL UNIT SEQUENCE OF OPERATION</u></p> <p>A PROGRAMMABLE CONTROLLER CAPABLE OF STAND-ALONE OPERATION WILL CONTROL THE UNIT. THE UNIT WILL BE STARTED VIA PRE-DETERMINED OPTIMUM START THROUGH THE BUILDING AUTOMATION SYSTEM (BAS). THE UNIT WILL BE DE-ENERGIZED IN ACCORDANCE WITH TIME SCHEDULES THROUGH THE BAS. INTEGRATE NEW CONTROLLER INTO THE EXISTING AUTOMATION SYSTEM, INCLUDING UPDATING GRAPHICS AS REQUIRED.</p> <p>OCCUPIED MODE: IN OCCUPIED MODE, THE SUPPLY FAN WILL BE INDEXED ON AND WILL RUN CONTINUOUSLY. IN UNOCCUPIED MODE, THE FAN SHALL CYCLE ON AS REQUIRED TO MAINTAIN SPACE SET POINTS.</p> <p>TEMPERATURE CONTROL: THE UNIT SHALL INDEX MODE BASED ON DUAL TEMPERATURE SYSTEM SETTING. IN COOLING MODE, ON A RISE IN SPACE TEMPERATURE ABOVE THE SETPOINT, THE CONTROLLER WILL MODULATE THE CHILLED WATER VALVE OPEN TO THE COIL. ON A DROP IN SPACE TEMPERATURE, THE CHILLED WATER VALVE WILL MODULATE CLOSED. IN HEATING MODE, ON A DROP IN SPACE TEMPERATURE BELOW THE HEATING SET POINT, THE CONTROLLER WILL MODULATE THE VALVE OPEN TO THE COIL. ON A RISE IN SPACE TEMPERATURE, THE REVERSE WILL OCCUR. UNIQUE TEMPERATURE SET POINTS SHALL BE PROVIDED FOR OCCUPIED AND UNOCCUPIED MODE.</p> <p>FAN COIL POINT LIST.</p> <p style="padding-left: 40px;">FAN START/STOP/STATUS. DISCHARGE AIR TEMPERATURE. CONTROL VALVE OUTPUTS. SPACE TEMPERATURE</p> <p><u>DUAL TEMPERATURE WATER PIPING</u></p> <p>A. ALL NEW PIPE USED IN ENTIRE SYSTEM EXCEPT WHERE OTHERWISE SHOWN OR SPECIFIED, SHALL BE STANDARD WEIGHT SCHEDULE 40 BLACK STEEL PIPE WITH WEIGHTS AND DIMENSIONS IN ACCORDANCE WITH AMERICAN STANDARD ASSOCIATION B36-10 AS MANUFACTURED BY NATIONAL TUBE COMPANY, BIRMINGHAM TANK COMPANY, BETHLEHEM STEEL COMPANY OR APPROVED EQUAL.</p> <p>B. AT THE CONTRACTOR'S OPTION, PIPING 2" AND SMALLER MAY BE HARD DRAWN COPPER TUBING ASTM B 88 TYPE "L". FITTINGS FOR COPPER TUBING SHALL BE ANSI B16.18 OR B16.22 SOLDER JOINT FITTINGS. ENDS OF PIPE SHALL BE REAMED, PIPE AND FITTINGS CLEANED. USE ONLY 95-5 (95% TIN AND 5% ANTIMONY) SOLDER WITH NON-CORROSIVE FLUX ON 1-1/4" AND SMALLER AND ON 1-1/2" AND LARGER USE SILVER SOLDER (MINIMUM 12% SILVER), WITH A MELTING POINT GREATER THAN 1000°F. SUBMIT SOLDER FOR APPROVAL.</p>												
	D	<p>1. THIS DRAWING IS THE PROPERTY OF ALLR ARCHITECTURE, P.A. AND IS NOT TO BE REPRODUCED OR COPIED IN WHOLE OR IN PART. IT IS NOT TO BE USED ON ANY OTHER PROJECT AND IS TO BE RETURNED ON REQUEST.</p> <p>2. MATERIALS, DIMENSIONS AND ALL OTHER CONDITIONS WHICH ARE NOT OTHERWISE DEFINED ON THIS DRAWING SHALL BE CONSIDERED AS HAVING THE SAME MEANING AS SIMILARLY INDICATED CONDITIONS WHICH ARE MORE FULLY DEFINED ELSEWHERE ON THIS PROJECT OR OTHER DRAWINGS FOR THIS PROJECT.</p>												
E		<p style="text-align: right;">Revisions</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 5%;">No.</th> <th style="width: 15%;">Date</th> <th style="width: 80%;">Descrip.</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table> <p style="text-align: center;">cms Charlotte-Mecklenburg Schools</p> <p style="text-align: center;">CROWN POINT ES MODIFICATIONS</p> <p style="text-align: center;">3335 SAM NEWELL RD. MATTHEWS, NC 28105</p>								No.	Date	Descrip.		
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F	<p style="text-align: center;">McKNIGHT-SMITH WARD • GRIFFIN ENGINEERS, INCORPORATED 4223 South Boulevard Charlotte, NC 28209 F-6995 704/527-2112 22-041</p> <p style="text-align: center;">ALR architecture www.alr-arch.com</p> <p style="text-align: center;">9401 SOUTHERN PINE BLVD. SUITE 110 CHARLOTTE, NC 28273 PHONE: 704.348.2899 FAX: 704.348.3399</p> <p style="text-align: center;">MECHANICAL SPECIFICATIONS</p> <p style="text-align: center;">SHEET TITLE:</p> <p style="text-align: center;">M3.0</p> <p style="text-align: center;">SHEET NUMBER:</p> <p style="text-align: center;">PROJECT# 2106</p> <p style="text-align: center;">DATE: 3/30/2022</p>													
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