

**MECHANICAL SYSTEMS ENERGY CODE COMPLIANCE**

PRESCRIPTIVE:  ENERGY COST BUDGET:

THERMAL ZONE: **4A**

EXTERIOR DESIGN CONDITIONS:

WINTER DRY BULB: **14°F**  
SUMMER DRY BULB: **94°F**  
SUMMER WET BULB: **76°F**

INTERIOR DESIGN CONDITIONS:

WINTER DRY BULB: **70°F**  
SUMMER DRY BULB: **75°F**

AREA HEAT LOAD: **EXISTING**

AREA COOLING LOAD: **EXISTING**

MECHANICAL CONDITIONING SYSTEM:

DESCRIPTION OF UNIT: **CENTRAL STATION AHU W/ TERMINAL REHEAT & FCUs**

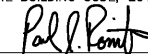
HEATING EFFICIENCY: **N/A**  
COOLING EFFICIENCY: **N/A**  
HEATING OUTPUT: **EXISTING + 80MBH ADDED**  
COOLING OUTPUT: **EXISTING + 45MBH ADDED**

BOILER OUTPUT: **EXISTING**

CHILLER TOTAL CAPACITY: **EXISTING**

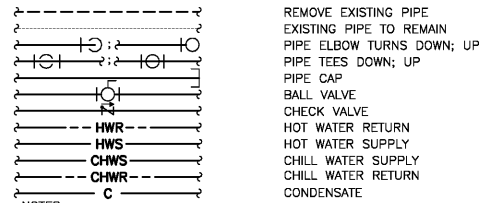
DESIGNER STATEMENT:

TO THE BEST OF MY KNOWLEDGE AND BELIEF, THE DESIGN OF THIS BUILDING COMPLIES WITH THE MECHANICAL SYSTEMS, SERVICE SYSTEMS AND EQUIPMENT REQUIREMENTS OF THE NORTH CAROLINA STATE BUILDING CODE, 2018 ENERGY CONSERVATION CODE.

SIGNED:   
NAME: **PAUL J. ROMITI, PE**  
TITLE: **MECHANICAL ENGINEER**

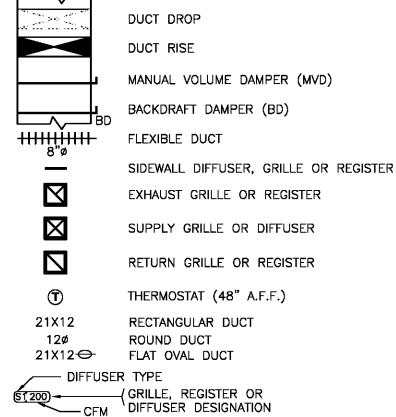
**MECHANICAL LEGEND**

**PIPING SYMBOLS**



NOTES:  
ALL DUCT DIMENSIONS SHOWN ARE IN INCHES AND ARE SHEET METAL SIZES UNLESS OTHERWISE SHOWN.

**DUCTWORK SYMBOLS**



**MISCELLANEOUS SYMBOLS AND ABBREVIATIONS**

- CONNECT TO EXISTING
- POINT OF DEMOLITION
- AAV AUTOMATIC AIR VENT
- AFF ABOVE FINISH FLOOR
- B.D. BACKDRAFT DAMPER
- BFF BELOW FINISHED FLOOR
- L CENTER LINE
- CFM CUBIC FEET PER MINUTE
- COP CLEAN OUT PLUG
- CR CONDENSATE RETURN
- CTRL CONTROL
- CHWR CHILLED WATER RETURN
- CHWS CHILLED WATER SUPPLY
- DB DRY BULB
- DN DOWN
- ΔT DELTA T
- EA EXHAUST AIR
- EB EXHAUST BOX
- EC ELECTRICAL CONTRACTOR
- ESP EXTERNAL STATIC PRESSURE
- (ETR) EXISTING TO REMAIN
- EWI ENTERING WATER TEMPERATURE
- (E) EXISTING
- FLA FULL LOAD AMPS
- FPM FEET PER MINUTE
- GA GAUGE
- GC GENERAL CONTRACTOR
- GPM GALLONS PER MINUTE
- GRD GROUND
- HP HORSEPOWER
- HPS HIGH PRESSURE STEAM
- HWR HOT WATER RETURN
- HWS HOT WATER SUPPLY
- LAT LEAVING AIR TEMPERATURE
- LPS LOW PRESSURE STEAM
- LWT LEAVING WATER TEMPERATURE
- MVD MANUAL VOLUME CONTROL DAMPER
- MB MIXING BOX
- MC MECHANICAL CONTRACTOR
- MPS MEDIUM PRESSURE STEAM
- MTD MOUNTED
- N/A NOT APPLICABLE
- OA OUTSIDE AIR
- OC ON CENTER
- OP OPERATED
- PC PLUMBING CONTRACTOR
- PHC PREHEAT COIL
- QTY QUANTITY
- RA RETURN AIR
- RAF RETURN AIR FAN
- REF REFRIGERANT
- RF RELIEF AIR
- RHC REHEAT COIL ROOM
- RM ROOM
- RPM REVISIONS PER MINUTE
- RTU ROOF TOP UNIT
- (RX) REMOVE EXISTING
- SA SUPPLY AIR
- SAP SUPPLY AIR FAN
- TSP TOTAL STATIC PRESSURE
- TRM THERMOSTAT
- TRT TRIP
- TRF TRIP
- UCD UNDERCUT DOOR
- UFAD UNDER FLOOR AIR DISTRIBUTION
- VAV VARIABLE AIR VOLUME
- VFD VARIABLE FREQUENCY DRIVE
- VP VELOCITY PRESSURE
- WB WET BULB
- XFER TRANSFER
- ⚠ REVISION NOTES
- ① SPECIFIC OR NEW WORK NOTES

**GENERAL NOTES:**

- THE DRAWINGS SHOW THE GENERAL ARRANGEMENT AND LOCATION OF EQUIPMENT, DUCTWORK, PIPING, ETC. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING THE MECHANICAL INSTALLATION WITH THE STRUCTURE AND OTHER TRADES AND SHALL PROVIDE ADDITIONAL OFFSETS AND FITTINGS AS NECESSARY.
- PRIOR TO BIDDING, THE CONTRACTOR AND HIS SUBCONTRACTORS SHALL VISIT THE JOB SITE AND SHALL FAMILIARIZE THEMSELVES WITH ALL CONDITIONS UNDER WHICH WORK IS TO BE PERFORMED AND SHALL INCLUDE IN THE BID ALL WORK REQUIRED FOR A COMPLETE JOB. THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY DISCREPANCIES BETWEEN THE DRAWINGS AND EXISTING FIELD CONDITIONS A MINIMUM OF FIVE DAYS PRIOR TO BID.
- THE HEATING, VENTILATING AND AIR CONDITIONING SYSTEMS SHALL COMPLY WITH THE 2018 NORTH CAROLINA MECHANICAL CODE AND NFPA 90A.
- DUCT DIMENSIONS ON DRAWINGS ARE CLEAR INSIDE DIMENSIONS.
- THE CONTRACTOR SHALL CHECK AND VERIFY ALL CLEARANCES PRIOR TO FABRICATION OR INSTALLATION OF EQUIPMENT, DUCTWORK, AND PIPING SYSTEMS. WHERE CONDITIONS REQUIRE A CHANGE IN DUCT OR PIPE ROUTING, NOTIFY THE ENGINEER FOR AN ACCEPTABLE ALTERNATIVE METHOD. AVOID ROUTING DUCTWORK DIRECTLY OVER LIGHT FIXTURES, DIFFUSERS, AND OTHER CEILING MTD. DEVICES. PROVIDE ALL MECHANICAL EQUIPMENT SO THAT FILTERS AND COMPONENTS REQUIRING ACCESS (SERVICE AND MAINTENANCE) ARE FULLY ACCESSIBLE.
- PROVIDE CURVED RADIUS ELBOW AT FIRST SUPPLY & RETURN FITTING FOR ALL HVAC UNITS. PROVIDE TURN VANES ON ALL 90 DEGREE ELBOWS IN ALL RECTANGULAR SUPPLY/RETURN/EXHAUST DUCT SYSTEMS. ANY OFFSETS REQUIRED IN DUCT SYSTEMS SHALL BE INSTALLED PER SMACNA STANDARDS. SHARP ANGLED TRANSITIONS OR OFFSETS WILL NOT BE ALLOWED. PROVIDE DOOR ACCESS DOORS AT LOCATIONS SPECIFIED.
- INSTALL ALL DUCT MOUNTED DEVICES (DAMPERS, ACCESS DOORS, ETC.) AND PIPING SPECIALTIES IN EASILY ACCESSIBLE LOCATIONS. ADVISE THE ENGINEER IN ADVANCE OF INSTALLATION IF ACCESS WILL BE HINDERED SO AN ALTERNATE LOCATION CAN BE SELECTED.
- ALL MECHANICAL EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION INSTRUCTIONS WITH PRESCRIBED CLEARANCES FOR SERVICE AND MAINTENANCE. THE CONTRACTOR SHALL NOTIFY THE CONTRACTING OFFICER IF RECOMMENDED CLEARANCES ARE NOT POSSIBLE BEFORE INSTALLING EQUIPMENT.
- ALL ROTATING MECHANICAL EQUIPMENT SHALL BE PROVIDED WITH VIBRATION ISOLATION. PROVIDE FLEXIBLE NEOPRENE DUCT CONNECTORS BETWEEN DUCTWORK AND ISOLATED MECHANICAL EQUIPMENT.
- THE CONTRACTOR SHALL FIRESTOP ALL PENETRATIONS OF THE RATED WALLS/FLOORS/CEILINGS BY DUCTWORK PIPING, ETC., WITH U.L. LISTED FIRE STOPPING MATERIAL TO MAINTAIN FIRE RATING OF THE BARRIER.
- BALANCE ALL AIR DISTRIBUTION DEVICES, EXHAUST FANS, AND OUTSIDE AIR QUANTITIES AS SCHEDULED OR SHOWN ON THE DRAWINGS. PROVIDE MARKERS AT ALL DAMPER LOCATION SHOWING FULL OPEN AND CLOSED POSITIONS AND DAMPER SETTING FOR REQUIRED AIRFLOW. PROVIDE FINAL TEST AND BALANCE REPORT ALONG WITH SCHEMATIC DRAWINGS SHOWING DIFFUSER LOCATION W/ DESIGN AND ACTUAL CFM. THE DIFFUSER TAGS ON THE DRAWINGS SHALL CORRESPOND TO THE DIFFUSER TAGS ON THE REPORT. THIS REPORT SHALL BE SUBMITTED BEFORE THE FINAL INSPECTION IS PERFORMED. SEE SPECIFICATION SECTIONS FOR FURTHER INFORMATION. DO NOT BALANCE FOR DIVERSITY.
- WHERE ROOMS CONTAINING FLAMMABLE AND COMBUSTIBLE GAS IS TO BE REMOVED, PROCEDURE OF NCGC 406.7.1.1 ALONG WITH NFPA 54 7.2.7 AND 8.3.7 SHALL BE OBSERVED. GAS LINE SHALL BE FIRST DISCONNECTED FROM ALL SOURCES OF GAS PRESSURE, VENTED TO THE OUTDOORS, AND THEN THOROUGHLY PURGED WITH AIR, WATER, OR INERT GAS BEFORE ANY CUTTING OR WELDING IS DONE.
- THERMOSTATS AND SENSORS CONTAINING MERCURY SHALL BE DISPOSED IN ACCORDANCE WITH EPA RESOURCE CONSERVATION AND RECOVERY ACT (RCRA). CONTRACTOR SHALL REFER TO EPA WEBSITE FOR HANDLING PROCEDURES FOR DISPOSAL AND SPILL MANAGEMENT OF PRODUCTS CONTAINING MERCURY.
- IN THE AREA OF WORK, ANY "OPEN" DUCTWORK INCLUDING INLET AND OUTLET REGISTERS AND DIFFUSERS SHALL BE COVERED WITH FILTRATING MATERIAL OR VISQUEINE TO PROTECT INSIDE OF THE SYSTEM AGAINST DUST AND DEBRIS.
- ANY DAMAGE OF EXTERIOR PIPE AND DUCT INSULATION CAUSED BY CONSTRUCTION ACTIVITIES SHALL BE REPAIRED AND RESTORED AT NO EXTRA COST TO THE OWNER.

**OUTSIDE AIR SUMMARY:**

WEIGHT ROOM IS VENTILATED BY EXISTING AHU-8 WITH A 2000CFM OF OA. 3912SF @ 20CFM/PERSON & 0.06CFM/SF EQUALS 835CFM REQUIRED. 960CFM MINIMUM AIRFLOW HAS BEEN PROVIDED TO MATCH EXISTING.

NEW OFFICE & BREAK AREA 123 IN ALTERNATE BELOW MEZZANINE HAS BEEN PROVIDED WITH NEW OA CONNECTION. 410SF @ 5CFM/PERSON & 0.06CFM/SF EQUALS 35CFM REQUIRED. 35CFM HAS BEEN PROVIDED.

**AIR DISTRIBUTION SCHEDULE**

TAG	MANUFACTURER/MODEL	FACE SIZE	MOUNT	MATERIAL	FINISH	DAMPER	TYPE	NC	NOTES
S1	TITUS DL-SV	24X4	DUCT	ALUMINUM	ALUMINUM	OB	SPIRAL DRUM	< 20	
S2	TITUS DL-SV	12X4	DUCT	ALUMINUM	ALUMINUM	OB	SPIRAL DRUM	< 20	
S3	TITUS OMNI-AA	24X24	ACT	ALUMINUM	WHITE	NECK	PLAQUE	< 20	2
S4	TITUS DL-SV	12X6	DUCT	ALUMINUM	ALUMINUM	OB	RECT DRUM	< 20	
R1	TITUS 8F	48X18	DUCT	ALUMINUM	ANODIZE	NONE	SPIRAL	< 20	1
R2	TITUS 3FL	32X10	WALL	ALUMINUM	WHITE	NONE	LOUVERED	< 20	
T1	TITUS PAR-AA	24X24	ACT	ALUMINUM	WHITE	NONE	PERFORATED	< 20	
T2	TITUS 350FL	8X8	WALL	ALUMINUM	WHITE	NONE	LOUVERED	< 20	
T3	TITUS 3FL	46X22	WALL	ALUMINUM	WHITE	NONE	LOUVERED	< 20	

\*PROVIDE EQUAL PRODUCTS BY PRICE, TITUS, NAILOR, OR METALAIR.

- NOTES:
- PROVIDED EQUAL PRODUCTS SHALL MEET THE PERFORMANCE OF BASIS OF DESIGN AT 2900CFM, HOWEVER THE GRILLE SHALL BE A FREE RETURN WITHOUT ANY DAMPER.
  - REFER TO FLOOR PLANS FOR NECK SIZE.

**VAV BOX SCHEDULE**

TAG	SERVICE	SYSTEM	MANUF/ MODEL*	SIZE	COOLING				HEATING				SOUND RATING	NOTES		
					MAX AIRFLOW	AHU SA TEMP	COOLING MIN	HEATING MIN	HEATING MAX	TEMPERATURE RISE	COIL LOAD	HEATER				
VAV-2-1	WEIGHT ROOM UPPER	EX AHU-8	ENVIRO-TEC / SDR	14	2000	55	60	90	55	95	41,664 BTUH	4.10	1"	40	NC20	ALL
VAV-2-11	CORRIDOR	EX AHU-8	ENVIRO-TEC / SDR	6	300						3,906 BTUH	0.38	3/4"	40	NC20	ALL

\*PROVIDE EQUAL PRODUCTS BY PRICE, TRANE, OR NAILOR.

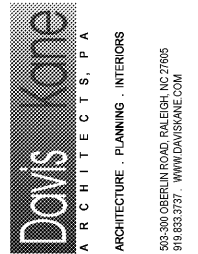
- NOTES:
- PROVIDE MANUFACTURER COIL ACCESS DOOR ON BOTTOM OF TERMINAL BOX.
  - CONTROLS ON NEW VAV BOXES SHALL BE FULLY COMPATIBLE AND INTEGRATED INTO EXISTING BUILDING CONTROLS SYSTEM.

**FAN COIL UNIT SCHEDULE**

TAG	MFR.	MODEL	TYPE	AIR FLOW	OUTSIDE AIR FLOW	COOLING CAPACITY		COOLING FLOW	HEATING CAPACITY	POSITION	HEATING FLOW	HW ΔT	V/PHz	MOTOR POWER	POWER INPUT	NOTES
						TOTAL	SENSIBLE									
FCU-1	ENVIRO-TEC	HLP	HORIZ. HIDEAWAY	1300	23 CFM	11,427 BTUH	8,927 BTUH	2.3 GPM	21,853 BTUH	REHEAT	2.2 GPM	20°F	115V/1P/60Hz	1/20 HP	67 W	1,3,4,5,6,7
FCU-2	ENVIRO-TEC	HLF	HORIZ. PLENUM	1300	NOTE 5	33,444 BTUH	27,934 BTUH	6.9 GPM	57,406 BTUH	REHEAT	5.8 GPM	20°F	115V/1P/60Hz	1/10 HP (2)	237 W	1,3,4,5,7

PROVIDE ENVIRO-TEC, TRANE, OR AIRTHERM

- NOTES:
- PROVIDE AUXILIARY DRAIN PAN WITH FLOOR SWITCH, CHECKED WITH FAN.
  - UNUSED.
  - PROVIDE FACTORY MOUNTED DISCONNECT SWITCH.
  - PAIR WITH CONDENSATE PUMP AND ROUTE CONDENSATE PER DETAIL SHEETS AND FLOOR PLANS.
  - SPACES ARE VENTILATED BY AHU-8(E).
  - FCU-1 IS TO BE PROVIDED IN ALTERNATE ONLY.
  - PROVIDE COMPLETE WITH CONDENSATE PUMP ROUTED PER FLOOR PLANS.



**UNCG ATHLETICS COLEMAN BUILDING WEIGHT ROOM**  
SCO ID No. 19-20597-01A | Code: 41825 | Item: 304  
1408 Walker Ave. Greensboro, NC 27402



REVISIONS

PE: PAUL J. ROMITI  
PM: PJR  
Drawn By: JRE  
Plot Date: 10/18/2019 10:00:00 PM



BID DOCUMENTS  
10/22/2019



MECHANICAL COVER  
**M-0.1**