

ABBREVIATIONS

A/C	ABOVE CEILING ACCESS DOOR	ID	INSIDE DIMENSION IN INCHES
ADJ	ADJUSTABLE	KW	KILOWATTS
AFF	ABOVE FINISHED FLOOR	LAT	LEAVING AIR TEMPERATURE POUNDS
AUTO	AUTOMATIC	LG	LINEAR GRILLE
AC	AIR CONDITIONING	LRG	LINEAR RETURN GRILLE
AHU	AIR HANDLING UNIT	LWR	LOOP WATER RETURN
BAL	BALANCING	LWS	LOOP WATER SUPPLY
BDD	BACKDRAFT DAMPER	MIN	MINIMUM
B/F	BELOW FLOOR	MAX	MAXIMUM
B/G	BELOW GRADE	MD	MANUAL DAMPER
BTL	BUTTERFLY	MOD	MOTOR OPERATED DAMPER
BHP	BRAKE HORSEPOWER	MFR	MANUFACTURER
BCO	BASE CLEANOUT	NC	NORMALLY CLOSED
CFM	CUBIC FEET PER MINUTE	NG	NATURAL GAS
CBDR	CURVED BLADE CEILING REGISTER	NH	NON-FREEZE WALL HYDRANT
CD	CEILING DIFFUSER	NF	NORMALLY OPEN
CJ	CONDENSING UNIT	NOM	NOMINAL
CW	COLD WATER (DOMESTIC)	OA	OUTSIDE AIR
CHWS	CHILLED WATER SUPPLY	OD	OUTSIDE DIMENSION
CHWR	CHILLED WATER RETURN	OSD	OPPOSED BLADE DAMPER
CWS	CONDENSER WATER SUPPLY	PIU	POWERED INDUCTION UNIT
CWR	CONDENSER WATER RETURN	PSI	POUNDS PER SQUARE INCH
CON	CONCENTRIC CLEANOUT	RA	RETURN AIR
COND	CONDENSATE	RAD	RADIUS
db	DRY BULB	RAG	RETURN AIR GRILLE
DN	DOWN	RED	REDUCER
DR	DRAIN	RL	REFRIGERANT LIQUID
DD	DITTO	RS	REFRIGERANT SUCTION
db	DECIBELS	RTU	ROOFTOP UNIT
DWG	DRAWING	RAR	RETURN AIR REGISTER
EA	ENTERING AIR TEMPERATURE	RA	RETURN AIR
ECC	ELECTRICAL	RAC	RETURN AIR GRILLE
EF	EXHAUST FAN	RED	REDUCER
EDD	EMERGENCY OVERFLOW DRAIN	RL	REFRIGERANT LIQUID
ER	EXHAUST REGISTER	RS	REFRIGERANT SUCTION
ESP	EXTERNAL STATIC PRESSURE	RTU	ROOFTOP UNIT
EWI	ENTERING WATER TEMPERATURE	RAR	RETURN AIR REGISTER
EXH	EXHAUST	SA	SANITARY
EFF	EFFICIENCY	SD	SMOKE DAMPER
F	FAHRENHEIT	SEN	SENSIBLE
FCO	FLOOR CLEANOUT	SO	SQUARE
FCU	FAN COIL UNIT	SR	SUPPLY REGISTER
FSD	FIRE/SMOKE DAMPER	ST	STORM
FD	FIRE DAMPER OR FLOOR DRAIN	SS	SPLIT SYSTEM
FL DR	FLOOR DRAIN (only)	TEMP	TEMPERATURE
FLR	FLOOR	TYP	TYPICAL
FOB	FLAT ON BOTTOM	UON	UNLESS OTHERWISE NOTED
FOR	FUEL OIL RETURN	V	VENT
FOS	FUEL OIL SUPPLY	VA	VALVE
FT	FEET	VTR	VENT THRU ROOF
FPM	FEET PER MINUTE	VAV	VARIABLE AIR VOLUME
FPS	FEET PER SECOND	WB	WET BULB
FT	FEET	WB	WATER COLUMN
G	GAUGE	WHA	WATER HAMMER ARRESTOR
GPM	GALLONS PER MINUTE	WT	WEIGHT
GL	GLOBE	W	WASTE
GCO	GRADE CLEANOUT		
HD	HUB DRAIN		
HP	HORSEPOWER		
HIG	HEATING		
HW	HOT WATER (DOMESTIC)		
HWR	HOT WATER RETURN		
HWRR	HOT WATER REVERSE RETURN		
HWS	HOT WATER SUPPLY		
HZ	HERTZ		

GENERAL NOTES

- THESE DRAWINGS ARE SCHEMATIC IN NATURE AND ARE NOT INTENDED TO SHOW ALL POSSIBLE CONDITIONS. IT IS INTENDED THAT A COMPLETE TENANT MECHANICAL SYSTEM BE PROVIDED WITH ALL NECESSARY EQUIPMENT, ACCESSORIES, OPTIONS AND CONTROLS, COMPLETELY COORDINATED WITH ALL DISCIPLINES. ALL ITEMS AND LABOR REQUIRED FOR A COMPLETE TENANT MECHANICAL SYSTEM IN ACCORDANCE WITH ALL APPLICABLE CODES, STANDARDS AND THE BASE BUILDING CONTRACT DOCUMENTS SHALL BE FURNISHED WITHOUT INCURRING ADDITIONS TO THE CONTRACT.
- REFER TO THE ARCHITECTURAL DRAWINGS FOR EXACT PARTITION LAYOUTS, REFLECTED CEILING PLANS, DIMENSIONS, ETC.
- EXISTING MECHANICAL EQUIPMENT AND DUCTWORK ARE SHOWN BY DASHED LINES. NEW WORK AND RELOCATED WORK ARE SHOWN BY SOLID LINES. EXISTING WORK TO BE REMOVED IS SHOWN CROSSHATCHED. WHEN ANY DUCTWORK OR AIR DISTRIBUTION DEVICE IS REMOVED, THE ASSOCIATED TRUNK DUCT SHALL BE SEALED AIRTIGHT WITH A SHEET METAL PATCH OR CAP.
- VISIT SITE AND CAREFULLY EXAMINE EXISTING CONDITIONS PRIOR TO SUBMITTING BID. THE EXISTING CONDITIONS SHOWN ARE BASED ON DOCUMENTS PROVIDED BY OTHERS AND HAVE NOT BEEN VERIFIED BY THE ENGINEER. IF EXISTING CONDITIONS DIFFER FROM DRAWINGS IN SUCH A MANNER THAT WILL AFFECT PRICING, (I.E., DUCTWORK, VAV OR PIU ARE NOT IN THE SHOWN LOCATION) CONTRACTOR WILL NOTIFY OWNER SO THAT A RESOLUTION CAN BE MADE PRIOR TO SUBMITTING BIDS. NO ALLOWANCE WILL BE MADE FOR LACK OF KNOWLEDGE OF EXISTING CONDITIONS.
- REFER TO THE ARCHITECTURAL REFLECTED CEILING PLANS FOR EXACT LOCATIONS OF ALL CEILING MOUNTED AIR DISTRIBUTION DEVICES. IF ANY ITEMS ARE NOT SHOWN ON THE REFLECTED CEILING PLANS, PREPARE A DRAWING OF THE PROPOSED LOCATION AND PRESENT IT TO THE ARCHITECT FOR APPROVAL PRIOR TO INSTALLATION.
- ALL ROUND AND FLEXIBLE DUCTWORK EXTENDING TO DIFFUSERS SHALL BE SIZED FULL SIZE OF DISTRIBUTION DEVICE INLET, AND TAPS TO THE EXISTING LOW-PRESSURE DUCTWORK SHALL BE MADE WITH SPIN-IN FITTINGS HAVING INTEGRAL SCOPES AND VOLUME DAMPERS. ALL NEW RECTANGULAR DUCTWORK SHALL BE MADE WITH SPLITTERS OR EXTRACTORS. ALL DUCTWORK SHALL BE CONSTRUCTED AND INSTALLED IN ACCORDANCE WITH SMACNA DUCT STANDARDS. (NEW LOW PRESSURE SPIN-IN FITTINGS AND TAPS SHALL NOT BE MADE WITHIN 5 FT. OF OUTLET OF HEAT PUMP. NEW LOW PRESSURE SPIN-IN FITTINGS SHALL BE MADE NO CLOSER THAN 2'-6" ON CENTER.
- ALL CEILING SUPPLY DIFFUSERS SHALL BE PERFORATED FACE. BASE BUILDING STANDARD TYPE. FACE AREA SHALL BE APPROXIMATELY 20" x 20" EXCEPT AS OTHERWISE NOTED. FINISH SHALL BE BAKED ENAMEL IN A COLOR TO MATCH THE CEILING GRID. FRAME SHALL BE SUITABLE FOR THE CEILING TYPE IN WHICH IT IS INSTALLED. NEW DIFFUSERS ARE SHOWN WITH NECK SIZE AND AIRFLOW ON DRAWINGS. EACH DIFFUSER SHALL HAVE ADJUSTABLE AIRFLOW PATTERNS CONTROLLERS. SEE 1/0003 FOR TYPICAL CD CONNECTION DETAIL.
- RETURN AIR GRILLES (R.A.G.) SHALL BE PERFORATED FACE TO MATCH EXISTING BASE BUILDING DIFFUSERS. FACE AREA SHALL BE APPROXIMATELY 24" x 24". FINISH SHALL BE BAKED ENAMEL IN A COLOR TO MATCH CEILING GRID. FRAME SHALL BE SUITABLE FOR THE CEILING TYPE IN WHICH IT IS INSTALLED.
- FLEXIBLE DUCTS SHALL BE INSTALLED FREE OF SAGS AND KINKS; SUPPORTED AT NOT MORE THAN 48" O.C.
- TEST AND BALANCE ALL DIFFUSERS, BOXES, FANS, ETC. TO THE AIRFLOWS AND CONDITIONS INDICATED. ALL EXISTING DIFFUSERS, BOXES, FANS, ETC. WHICH ARE NOT NOTED OTHERWISE SHALL BE BALANCED TO THEIR PRIOR DESIGN AIRFLOWS. REFERENCE THE EXISTING RECORD DRAWING AVAILABLE FROM THE OWNER. TESTING AND BALANCING OF HVAC SYSTEM SHALL BE PERFORMED IN ACCORDANCE WITH THE STANDARDS OF ASHRAE OR NEBS AND SHALL BE PERFORMED UNDER THE DIRECT SUPERVISION OF AN ASHRAE OR NEBS CERTIFIED TEST AND BALANCE ENGINEER. SUBMIT 4 COPIES OF THE REPORT TO THE OWNER.
- NEW PERIMETER SLOT DIFFUSERS SHALL BE PROVIDED AS REQUIRED, AND SELECTED IN ACCORDANCE WITH BASE BUILDING STANDARD.
- PORTIONS OF DUCTWORK VISIBLE THROUGH GRILLES AND REGISTERS IN FINISHED AREA SHALL BE PAINTED FLAT BLACK.
- ALL CONTROL WIRING AND TUBING INSTALLED ABOVE THE CEILING SHALL BE LOCATED AS HIGH ABOVE THE CEILING AS POSSIBLE AND SHALL FOLLOW THE DESIGNATED GENERAL ROUTING OF THE DUCTWORK. DO NOT HANG WIRING OR TUBING FROM DUCTWORK; RATHER, SUSPEND FROM THE STRUCTURE. ALL NEW TERMINAL UNITS SHALL BE TIED INTO THE BASE BUILDING CONTROL SYSTEM. SEE BASE BUILDING SPECIFICATIONS FOR REQUIREMENTS.
- SPRINKLER HEADS AND ASSOCIATED BRANCH PIPING SHALL BE PROVIDED AND RELOCATED IN ACCORDANCE WITH NFPA 13 AND ALL PREVAILING LOCAL CODES AS REQUIRED TO PROTECT ALL SPACES IN THIS TENANT AREA. SPRINKLER HEADS SHALL BE SEMI-RECESSED SPRINKLER HEADS IN TENANT AREAS AND CONCEALED FULLY RECESSED TYPE IN PUBLIC CORRIDORS.
- COORDINATE ALL WORK IN OCCUPIED AREAS WITH THE TENANT IN THAT AREA. COORDINATE ALL WORK IN UNOCCUPIED AREAS AND COMMON AREAS WITH LANDLORD.
- ALL MATERIALS IN PLENUM SHALL BE PLENUM-RATED.
- THERMOSTATS SHALL BE LOCATED IN EACH ZONE AS SHOWN. THE EXACT LOCATION ON THE WALL INDICATED SHALL BE AS DIRECTED BY THE ARCHITECT. NEW THERMOSTATS SHALL BE SELECTED TO MATCH EXISTING BASE BUILDING THERMOSTATS AND SHALL BE COMPATIBLE WITH EQUIPMENT SERVED.
- ADJUST ALL DIFFUSERS IN CORRIDORS OR WITHIN 3 FEET OF A WALL TO PROVIDE 2-WAY OR 3-WAY BLOW AWAY FROM OR PARALLEL TO WALLS. ALL IN-CEILING DIFFUSERS SHALL HAVE 4-WAY BLOW UNLESS NOTED OTHERWISE.
- REFERENCE BASE BUILDING SPECIFICATIONS FOR EQUIPMENT AND MATERIAL REQUIREMENTS. ALL NEW WORK SHALL CONFORM TO BASE BUILDING STANDARD AS MINIMUM.
- ALL PLUMBING FIXTURES SHALL BE PROVIDED AS COMPLETE PACKAGES PROVIDING ALL RELATED ACCESSORIES SUCH AS TAIL PIECES, SUPPLY STOPS, TRAPETSIC, ETC. AS TO FURNISH A COMPLETE JOB. SEE ARCHITECTURAL DRAWINGS FOR SCHEDULES.

COMMISSIONING NOTES:

- THE 2018 NC ENERGY CODE REQUIRES THE MECHANICAL AND SERVICE WATER HEATING SYSTEMS IN BUILDINGS WITH A FLOOR AREA IN EXCESS OF 10,000 SQ. FT. TO BE COMMISSIONED BY A REGISTERED DESIGN PROFESSIONAL.
- THE CONTRACTOR SHALL OBTAIN THE SERVICES OF A NC LICENSED ENGINEERING PROFESSIONAL TO PERFORM ALL REQUIRED COMMISSIONING. PRIOR TO ISSUANCE OF CERTIFICATE OF OCCUPANCY A SIGNED STATEMENT OF SYSTEM COMMISSIONING (SEE APPENDIX C1) SHALL BE PROVIDED TO CODE OFFICIAL AND FACILITY OWNER.
- COMMISSIONING HAS BEEN EXCLUDED FROM BARRETT, WOODYARD DESIGN SCOPE. HOWEVER, WE CAN PERFORM SAID SERVICES UNDER THE CONTRACTORS SCOPE.
- COMMISSIONING SHALL BE DONE IN ACCORDANCE WITH SECTION C408 OF THE 2018 NC ENERGY CODE. COMMISSIONING SHALL INCLUDE:
 - A COMMISSIONING PLAN WITH:
 - A NARRATIVE OF THE ACTIVITIES TO BE PERFORMED AND BY WHOM.
 - A LIST OF EQUIPMENT TO BE COMMISSIONED.
 - FUNCTIONS TO BE TESTED.
 - CONDITIONS UNDER WHICH TESTS SHALL BE PERFORMED.
 - MEASURABLE CRITERIA FOR PERFORMANCE.
 - HVAC SYSTEMS SHALL BE TESTED AND BALANCED. REFER TO SPEC SECTION 23043 FOR TEST AND BALANCE REQUIREMENTS.
 - HYDRONIC SYSTEMS SHALL BE BALANCED ACCORDING TO THE REQUIREMENTS SET FORTH IN C408.2.2.2 OF THE NC ENERGY CODE.
 - ALL CONTROLS SHALL BE COMMISSIONED TO ENSURE ALL SYSTEM ARE OPERATING IN ACCORDANCE WITH APPROVED PLANS AND SPECIFICATIONS.
 - FUNCTIONAL TESTING TO ENSURE SYSTEMS ARE OPERATING IN ACCORDANCE WITH APPROVED PLANS AND SPECIFICATIONS.
- CONTRACTOR SHALL PROVIDE TO THE OWNER AND SYSTEM COMMISSIONING AGENT, ALL INSTRUCTIONS ON MAINTENANCE AND OPERATION OF ALL SYSTEMS AND EQUIPMENT. THE DOCUMENTATION SHALL INCLUDE THE FOLLOWING, AT A MINIMUM:
 - SUBMITTAL DATA
 - OPERATION AND MAINTENANCE MANUALS FROM MANUFACTURER.
 - NAME AND ADDRESS OF AT LEAST ONE SERVICE AGENCY.
 - CONTROL SYSTEM MAINTENANCE AND CALIBRATION INFORMATION.
 - TEST & BALANCE REPORT
- CONTRACTOR TO PROVIDE AT PROJECT COMPLETION, PRIOR TO OBTAINING CERTIFICATE OF OCCUPANCY, PRESENT AT FINAL INSPECTION TO THE JURISDICTION'S AHJ A SIGNED AND DATED STATEMENT OF SYSTEM COMMISSIONING FOR ALL MECHANICAL & HYDRONIC SYSTEMS. THE FORMAT OF THE STATEMENT OF SYSTEMS COMMISSIONING SHALL BE IN THE FORM REQUIRED BY THE STATE'S ENERGY CONSERVATION CODES AND/OR AHJ REQUIREMENTS. THE DOCUMENT SHALL BE SIGNED BY THE CONTRACTOR'S LICENSED PROFESSIONAL ENGINEER REPRESENTATIVE.

LEGEND

☒	CEILING DIFFUSER
☑	CEILING RETURN AIR GRILLE OR EXHAUST GRILLE
+	SIDE WALL OR DUCT MOUNTED REGISTER
—	SLOT DIFFUSER
→	MANUAL VOLUME DAMPER
→	FIRE DAMPER, FIRE SMOKE DAMPER
⊙	THERMOSTAT
⊙	CO2 MONITOR
⊙	MOTOR OPERATED DAMPER
⊙	EXISTING WORK
—	NEW WORK
—	WORK TO BE REMOVED
⊙	SMOKE DETECTOR
⊙	PRESSURE REGULATOR VALVE 5 PSI TO 7" WATER GAUGE

LEGEND

—	COLD WATER
—	HOT WATER
—	HOT WATER RETURN
—	VENT
—	SANITARY WASTE
—	GAS
—	WORK TO BE REMOVED
⊙	FLOOR DRAIN
⊙	HOSE BIBB
⊙	FLOOR CLEAN-OUT
⊙	WALL CLEAN-OUT

Ventilation Sizing Summary for OUTSIDE AIR

Zone Name / Space Name	Supply Air (CFM)	Supply Air (m³/s)	Outside Air Rate (CFM)	Outside Air Rate (m³/s)	Outside Air Rate (CFM)	Outside Air Rate (m³/s)	Outside Air Rate (CFM)	Outside Air Rate (m³/s)	Outside Air Rate (CFM)	Outside Air Rate (m³/s)	Outside Air Rate (CFM)	Outside Air Rate (m³/s)
Zone 1	1138	0.32	0.0	0.00	1.00	0.28	0.78	0.22	0.61	0.17	0.47	0.13
200-201	418	0.12	0.06	0.02	0.50	0.14	0.39	0.11	0.30	0.08	0.22	0.06
201-202	1081	0.30	0.06	0.02	0.50	0.14	0.39	0.11	0.30	0.08	0.22	0.06
202-203	1081	0.30	0.06	0.02	0.50	0.14	0.39	0.11	0.30	0.08	0.22	0.06
203-204	1081	0.30	0.06	0.02	0.50	0.14	0.39	0.11	0.30	0.08	0.22	0.06
204-205	1081	0.30	0.06	0.02	0.50	0.14	0.39	0.11	0.30	0.08	0.22	0.06
205-206	1081	0.30	0.06	0.02	0.50	0.14	0.39	0.11	0.30	0.08	0.22	0.06
206-207	1081	0.30	0.06	0.02	0.50	0.14	0.39	0.11	0.30	0.08	0.22	0.06
207-208	1081	0.30	0.06	0.02	0.50	0.14	0.39	0.11	0.30	0.08	0.22	0.06
208-209	1081	0.30	0.06	0.02	0.50	0.14	0.39	0.11	0.30	0.08	0.22	0.06
209-210	1081	0.30	0.06	0.02	0.50	0.14	0.39	0.11	0.30	0.08	0.22	0.06
210-211	1081	0.30	0.06	0.02	0.50	0.14	0.39	0.11	0.30	0.08	0.22	0.06
211-212	1081	0.30	0.06	0.02	0.50	0.14	0.39	0.11	0.30	0.08	0.22	0.06
212-213	1081	0.30	0.06	0.02	0.50	0.14	0.39	0.11	0.30	0.08	0.22	0.06
213-214	1081	0.30	0.06	0.02	0.50	0.14	0.39	0.11	0.30	0.08	0.22	0.06
214-215	1081	0.30	0.06	0.02	0.50	0.14	0.39	0.11	0.30	0.08	0.22	0.06
215-216	1081	0.30	0.06	0.02	0.50	0.14	0.39	0.11	0.30	0.08	0.22	0.06
216-217	1081	0.30	0.06	0.02	0.50	0.14	0.39	0.11	0.30	0.08	0.22	0.06
217-218	1081	0.30	0.06	0.02	0.50	0.14	0.39	0.11	0.30	0.08	0.22	0.06
218-219	1081	0.30	0.06	0.02	0.50	0.14	0.39	0.11	0.30	0.08	0.22	0.06
219-220	1081	0.30	0.06	0.02	0.50	0.14	0.39	0.11	0.30	0.08	0.22	0.06
220-221	1081	0.30	0.06	0.02	0.50	0.14	0.39	0.11	0.30	0.08	0.22	0.06
221-222	1081	0.30	0.06	0.02	0.50	0.14	0.39	0.11	0.30	0.08	0.22	0.06
222-223	1081	0.30	0.06	0.02	0.50	0.14	0.39	0.11	0.30	0.08	0.22	0.06
223-224	1081	0.30	0.06	0.02	0.50	0.14	0.39	0.11	0.30	0.08	0.22	0.06
224-225	1081	0.30	0.06	0.02	0.50	0.14	0.39	0.11	0.30	0.08	0.22	0.06
225-226	1081	0.30	0.06	0.02	0.50	0.14	0.39	0.11	0.30	0.08	0.22	0.06
226-227	1081	0.30	0.06	0.02	0.50	0.14	0.39	0.11	0.30	0.08	0.22	0.06
227-228	1081	0.30	0.06	0.02	0.50	0.14	0.39	0.11	0.30	0.08	0.22	0.06
228-229	1081	0.30	0.06	0.02	0.50	0.14	0.39	0.11	0.30	0.08	0.22	0.06
229-230	1081	0.30	0.06	0.02	0.50	0.14	0.39	0.11	0.30	0.08	0.22	0.06
230-231	1081	0.30	0.06	0.02	0.50	0.14	0.39	0.11	0.30	0.08	0.22	0.06
231-232	1081	0.30	0.06	0.02	0.50	0.14	0.39	0.11	0.30	0.08	0.22	0.06
232-233	1081	0.30	0.06	0.02	0.50	0.14	0.39	0.11	0.30	0.08	0.22	0.06
233-234	1081	0.30	0.06	0.02	0.50	0.14	0.39	0.11	0.30	0.08	0.22	0.06
234-235	1081	0.30	0.06	0.02	0.50	0.14	0.39	0.11	0.30	0.08	0.22	0.06
235-236	1081	0.30	0.06	0.02	0.50	0.14	0.39	0.11	0.30	0.08	0.22	0.06
236-237	1081	0.30	0.06	0.02	0.50	0.14	0.39	0.11	0.30	0.08	0.22	0.06
237-238	1081	0.30	0.06	0.02	0.50	0.14	0.39	0.11	0.30	0.08	0.22	0.06
238-239	1081	0.30	0.06	0.02	0.50	0.14	0.39	0.11	0.30	0.08	0.22	0.06
239-240	1081	0.30	0.06	0.02	0.50	0.14	0.39	0.11	0.30	0.08	0.22	0.06
240-241	1081	0.30	0.06	0.02	0.50	0.14	0.39	0.11	0.30	0.08	0.22	0.06
241-242	1081	0.30	0.06	0.02	0.50	0.14	0.39	0.11	0.30	0.08	0.22	0.06
242-243	1081</											