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DUCTLESS SPLIT INDOOR UNIT SCHEDULE														
PLAN ID	MANUF.	MODEL	NOMINAL TONS	TYPE	MATCHED OUTDOOR UNIT	FAN DATA		FAN ELECTRICAL		SINGLE POINT CONNECTION		OUTSIDE AIR CFM	WEIGHT LBS	REMARKS
						CFM		VOLTS	MCA	VOLTS	MCA			
DS-1	DAIKIN	FFQ12Q2VJU	1	HEAT PUMP	DCU-1	268 - 406 (COOLING) 282 - 427 (HEATING)		208/1	0.28			40	36	1 THRU 6

- AUTO CHANGEOVER WALL MOUNTED THERMOSTAT
- DO NOT PROVIDE REMOTE CONTROL THERMOSTAT
- WASHABLE FILTER

- FRESH AIR INTAKE KIT
- WHITE DECORATION PANEL
- DRAIN HOSE ACCESSORY

DUCTLESS SPLIT SYSTEM CONDENSING UNIT SCHEDULE													
PLAN ID	MANUF.	MODEL	TYPE	MATCHED INDOOR UNIT	COOLING MBH @ 95 F	SEER	HEATING MBH (17 F AMB)	HSPF	ELECTRICAL			UNIT WEIGHT	REMARKS
									MCA	MOC	VOLTAGE		
DCU-1	DAIKIN	RX12QMJVJU	HEAT PUMP	DS-1	10.8	20.20	8.3	11.20	8.6	15	208/1	60	1.2

- ISOLATION KIT
- REFRIGERANT LINESET (VERIFY SIZE REQUIRED BY MANUF. BASED ON LENGTH OF RUN)

FAN SCHEDULE											
PLAN ID	MANUFACTURER	MODEL	TYPE	CFM	ESP	RPM	HP OR WATTS	VOLTAGE	SERVING	CONTROL	REMARKS
EF-1	GREENHECK	SP-B70	EXHAUST	50	0.25	675	16 W	115/1	RESTROOM 102	MOTION SENSOR	1,2,3,5,6
EF-2	GREENHECK	SP-B70	EXHAUST	50	0.25	675	16 W	115/1	RESTROOM 103	MOTION SENSOR	1,2,5,6
VF-1	GREENHECK	SQ-120-B	VENTILATION	1,025	0.25	1,140	1/6 HP	115/1	SERVICE BAYS 105, 106 & 107	TIMECLOCK SCHEDULE	1,2,3,4
VF-2	FANTECH	FR-140	VENTILATION	150	0.4	2,850	61 W	115/1	SERVICE BAY PITS	CONTINUOUS ON 24/7	7

- BACKDRAFT DAMPER
- PLUG TYPE DISCONNECT
- ROOF CAP GREENHECK RJ-6x9
- TIMECLOCK
- MOTION SENSOR (MAY BE LINKED TO LIGHT MOTION SENSOR)
- STANDARD GRILLE

- WALL MOUNTING BRACKET

ELECTRIC UNIT HEATER SCHEDULE									
PLAN ID	MANUFACTURER	MODEL	KW	VOLTAGE	AMPS	SERVING	CONTROL	SETPOINT	REMARKS
UH-1	MARKEL	E3322TD-RP	1.5	120	12.5	STORAGE/OFFICE 104	BUILT IN	50 F	1,2

- HEATER SHALL BE CONTROLLED BY A BUILT IN THERMOSTAT SET PER SCHEDULE.
- WALL RECESSED FRAME

LOUVER SCHEDULE														
PLAN IDENTITY	TYPE	MANUFACTURER	MODEL	SIZE		FRAME DEPTH	BLADE SPACING	BLADE ANGLE	FRAME	CFM	FREE AREA (SF)	VELOCITY (FPM)	SERVES	REMARKS
				WIDTH	HEIGHT									
EAL-1	EXHAUST	RUSKIN	ELF375DXH	24	24	4"	5-3/32"	37.5°	1" FLANGE	1,025	1.92	533	VF-1	1,2,3,4,5,6
OAL-1	INTAKE	RUSKIN	ELF375DXH	24	24	4"	5-3/32"	37.5°	1" FLANGE	1,175	1.92	612	VF-1	1,2,3,4,5,7,8

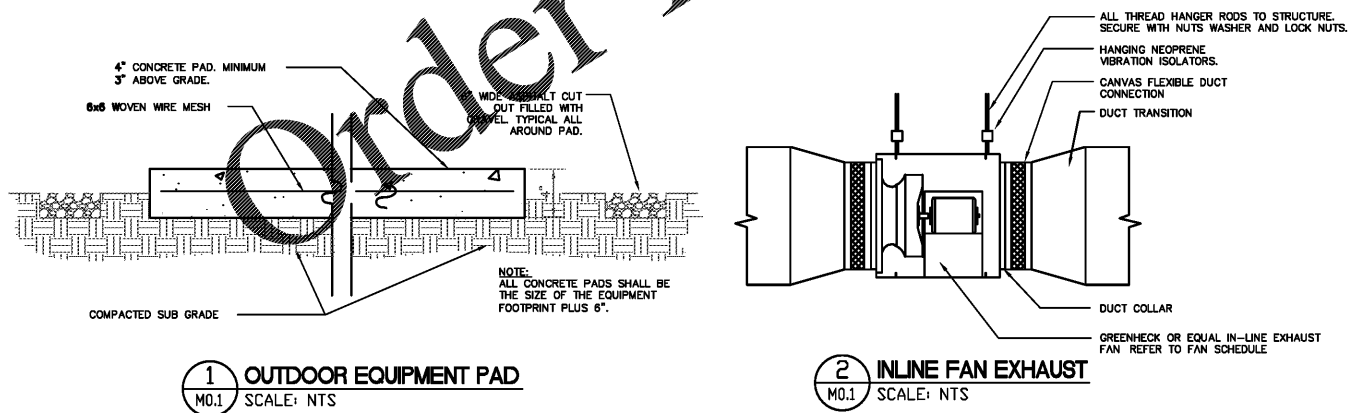
- FIXED BLADE, DRAINABLE LOUVER
- PROVIDE INSECT SCREEN
- RUSKIN COLOR CODE 19, "ASCOT WHITE"

- REMOVABLE FRAME
- KYNAR FINISH
- FREE AREA VELOCITY SHALL BE LESS THAN 1000 FPM

- FREE AIR VELOCITY SHOULD BE LESS THAN 750 FPM
- GRAVITY BACKDRAFT DAMPER INSIDE BUILDING.

OUTDOOR AIR CALCULATIONS												
Category	Occupancy	403.3 CFM/PP	403.3 CFM/SF	403.3 PPL/1000SF	Project Specific Room Number	Design Area SF	Design No. of People	Adjusted number of People	Design CFM for People	Design CFM for Area	Total OA Required	
Offices	Main Entry Lobbies	5	0.06	10	Lobby 101	109	1	3.0	1230	6.5	0.0	21.5
					Outside Air Required							22
					Outside Air Provided							40

- Adjusted number of people based on available seating in lobby.
- The lobby exterior doorway is of adequate size to be used as a means of Natural Ventilation.



MECHANICAL SPECIFICATION:

- ALL WORK SHALL BE PERFORMED IN STRICT ACCORDANCE WITH THE LOCAL STATE BUILDING CODE MECHANICAL, ENERGY, AND LOCAL CODES.
- THE WORD "PROVIDE" AS USED ON THESE DRAWINGS AND IN THESE SPECIFICATIONS SHALL MEAN TO FURNISH AND INSTALL.
- THE MECHANICAL CONTRACTOR SHALL COORDINATE HIS WORK WITH THAT OF THE OTHER TRADES PRIOR TO THE INSTALLATION OF ANY OF HIS EQUIPMENT, PIPING OR CONTROL WIRING.
- MEASUREMENTS: BEFORE ORDERING ANY MATERIAL OR DOING ANY WORK, THE MECHANICAL CONTRACTOR SHALL VERIFY ALL MEASUREMENTS AND SHALL BE RESPONSIBLE FOR THE CORRECTNESS OF THE SAME.
- STANDARDS OF MATERIALS: ALL MATERIALS USED SHALL BE NEW UNLESS OTHERWISE SHOWN OR CALLED FOR, AND SHALL BE FURNISHED IN ACCORDANCE WITH STANDARD SPECIFICATION OF THE AMERICAN SOCIETY FOR TESTING MATERIALS, THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS, ASHRAE, AND OTHER GUIDE SPECIFICATIONS.
- DIAGRAMS AND COORDINATION: THE DRAWINGS ARE DIAGRAMMATIC AND SHALL BE FOLLOWED AS CLOSELY AS POSSIBLE. THE DRAWINGS INDICATE OFFSETS REQUIRED, BUT BY NO MEANS INDICATE ALL SUCH SITUATIONS.
- INSULATION: NO INSULATION IS REQUIRED ON ANY NEW DUCTWORK.
- MAINTAIN ALL FIRE RATINGS WHERE APPLICABLE. SUBMIT UL ASSEMBLY TO LOCAL FIRE MARSHAL FOR APPROVAL.
- DO NOT SCALE THESE DRAWINGS.
- ALL EQUIPMENT SHALL BE LOCATED AND INSTALLED TO PROVIDE MAXIMUM SPACE FOR MAINTENANCE AND SERVICE. ALL SERVICE CLEARANCES AS SHOWN IN THE MANUFACTURER'S INSTRUCTIONS MUST BE MAINTAINED.
- THE MECHANICAL CONTRACTOR SHALL COORDINATE SIZE AND LOCATION OF BUILDING PENETRATIONS.
- MECHANICAL CONTRACTOR SHALL TEST AND BALANCE ALL SYSTEMS TO COMPLY WITH PLANS.

SEQUENCE OF OPERATION

DUCTLESS SPLIT SYSTEM: (DS-1/DCU-1)
THE UNIT SHALL CYCLE ON AND OFF AS REQUIRED TO MAINTAIN SPACE TEMPERATURE AS SET BY WALL MOUNTED AUTO CHANGEOVER THERMOSTAT. DEFAULT SET POINTS SHALL BE:
72 DEG F (COOLING)
68 DEG F (HEATING)

EXHAUST FAN: (EF-1 & EF-2)
FANS SHALL TURN OFF VIA OCCUPANCY SENSOR. THIS SENSOR MAY BE TIED TO LIGHT OCCUPANCY SENSOR.

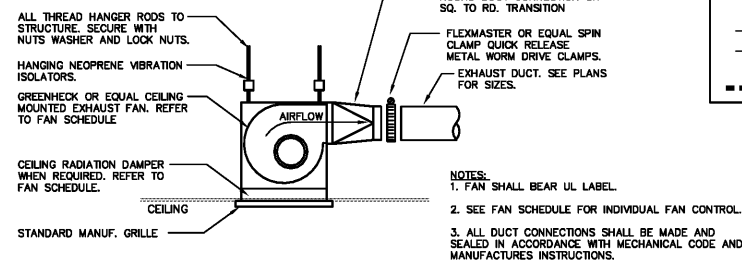
VENTILATION FAN (SERVICE BAY): (VF-1)
THIS FAN SHALL OPERATE CONTINUOUSLY DURING OCCUPIED HOURS AND SHALL BE TURNED ON AND OFF VIA A TIMECLOCK. THE FAN SHOULD BE COORDINATED WITH THE SPECIFIC STORE HOURS TO TURN ON AT THE START OF BUSINESS AND TURN OFF 15 MINUTES AFTER CLOSING TIME. COORDINATE SETPOINTS WITH OWNER.

VENTILATION FAN (OIL CHANGE PITS): (VF-2)
THIS FAN SHALL OPERATE 24/7/365 AS IT IS INSTALLED AS A SAFETY MEASURE AS RELATED TO THE ELECTRICAL CODE REQUIREMENTS OF THE PIT LIGHTING AND RECEPTACLES.

UNIT HEATER: (UH-1)
HEATER SHALL HAVE INTEGRAL THERMOSTAT TO MAINTAIN TEMPERATURE SETPOINT. THE SETPOINT SHALL BE ADJUSTABLE BY OWNER. DEFAULT TSTAT SETTING IS 50 DEG F

VEHICLE EXHAUST FAN CALCULATIONS:

THIS SERVICE BAY AREA IS BEING CONSIDERED AS A "VEHICLE REPAIR GARAGE" AND IS 1,342 SF.
PER TABLE 403.3.1.1 OF THE NC MECHANICAL CODE, A VEHICLE REPAIR GARAGE REQUIRES 0.75 CFM/SF OF EXHAUST.
THEREFORE: (1,342 SF) x (0.75 CFM/SF) = 1006.5 CFM EXHAUST REQUIRED.
1,025 CFM EXHAUST IS BEING PROVIDED BY THE NEW VENTILATION FAN (VF-1).
THIS FAN SHALL BE CONFIGURED TO BE OPERATIONAL 100% OF THE TIME THE BUILDING IS OCCUPIED AS NOTED BY OWNER BUSINESS HOURS.
THE MAKE-UP AIR FOR THIS FAN IS VIA THE OUTDOOR AIR LOUVER (OAL- AS SCHEDULED AND SHOWN ON THR FLOOR PLAN.
THE OWNER PREFERS THE MAKE UP AIR TO BE VIA THE SERVICE BAY DOOP THAT SHALL BE OPEN AT ALL TIMES DURING BUSINESS HOURS, WITH A SIG PLACED AT ONE DOOR STATING "DOOR TO REMAIN OPEN AT ALL TIMES DURING BUSINESS HOURS". IF THE AHJ ALLOWS THIS METHOD OF PROVIDING THE MAKE-UP AIR, THE OUTDOOR AIR LOUVER MAY BE OMITTED. M.C. MUST GET AHJ APPROVAL BEFORE PROCEEDING WITH THIS METHOD.



THE ARCHITECT/ENGINEER DOES NOT DEFINE THE SCOPE OF INDIVIDUAL TRADES, SUBCONTRACTORS, MATERIAL SUPPLIERS, OR VENDORS. ANY SHEET NUMBERING SYSTEM USED WHICH IDENTIFIES DISCIPLINES IS SOLELY TO SEPARATE ARCHITECT'S AND ENGINEER'S SCOPE. IT DOES NOT DEFINE A SUBCONTRACTOR'S SCOPE OF WORK. ANY DISCREPANCIES BETWEEN DRAWINGS, SPECIFICATIONS, CODES OR CONSTRUCTION SEQUENCING SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT PRIOR TO PROCEEDING. NO CONSIDERATION WILL BE GIVEN TO REQUESTS FOR CHANGE ORDERS FOR FAILURE TO OBTAIN AND REVIEW THE COMPLETE SET OF CONSTRUCTION DOCUMENTS, OR FOR FAILURE TO SEEK INTERPRETATION FROM ARCHITECT FOR DISCREPANCIES.

MECHANICAL SYSTEMS, SERVICE SYSTEMS AND EQUIPMENT

METHOD OF COMPLIANCE:

Prescriptive Energy Cost Budget

Climate Zone 4A

Exterior design conditions (SMITH REYNOLDS NC, USA)
winter dry bulb 23.3°F
summer dry bulb 92.9°F
summer wet bulb 73.6°F

Interior design conditions
winter dry bulb 72°F
summer dry bulb 75°F
relative humidity 50%

Building heating load 8.4 MBH

Building cooling load 9.6 MBH

Mechanical Spacing Conditioning System
Unitary
description of unit
cooling efficiency
heating efficiency
heat output (unit)
cooling output of unit
Boiler/Chiller output. If oversized, state reason. N/A
total chiller capacity. If oversized, state reason. N/A

List equipment efficiencies Refer to drawings and specifications.

Equipment schedules with motors (mechanical systems)
description of unit
motor power
number of phases
SEE EQUIPMENT SCHEDULES

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 International Building code, Volume X-Energy.

SIGNED: Christopher R. Stroupe
NAME: Christopher R. Stroupe, PE
TITLE: Engineer

DUCTWORK NOTATION:

OUTSIDE/FRESH AIR (FA) DUCT. NO INSULATION REQUIRED.

GENERAL EXHAUST FAN (EA) DUCT. NO INSULATION.

- RECTANGULAR & ROUND DUCT DUCTS: DIMENSIONS LISTED ARE ACTUAL DUCT SIZES. ADD INSULATION PER SPECS.
- ALL DUCTWORK SHALL FOLLOW THIS CHART BY DEFAULT UNLESS SPECIFICALLY NOTED OTHERWISE IN PLAN KEYNOTES. IF THIS OCCURS, IT APPLIES ONLY TO THE DUCT NOTED.

LEGEND

EA - EXHAUST AIR
FA - OUTSIDE (FRESH) AIR
DS - DUCTLESS SPLIT SYSTEM INDOOR UNIT
DCU - DUCTLESS SPLIT SYSTEM OUTDOOR UNIT
EF - EXHAUST FAN
VF - VENTILATION FAN
OAL - OUTSIDE AIR LOUVER
EAL - EXHAUST AIR LOUVER
CD - CONDENSATE DRAIN
UH - UNIT HEATER
CFM - CUBIC FEET PER MINUTE
MBH - BTU x 1000
BTU - BRITISH THERMAL UNIT
ESP - EXTERNAL STATIC PRESSURE

THERMOSTAT

DENOTES DIRECTION OF AIRFLOW

PIPE TURNED UP
 PIPE TURNED DOWN

REFRIGERANT LINESETS

MECHANICAL DRAWING LIST.

M0.1 - COVER SHEET
M1.0 - NEW WORK PLAN

ENGINEERING SOLUTIONS
1401 CENTRAL AVE., SUITE 200
J CHARLOTTE, NC 28205
704.266.0942
CERTIFICATE NO. P1340

ESD
421 Penman Street, Suite 200, Charlotte, NC 28203
Email: esd@esdarch.com • Phone: 704-373-1900

SEAL
6/5/2020

STRICKLAND BROTHERS
10 MINUTE OIL CHANGE
810 SOUTH MAIN STREET
GRAHAM, NC

SS

MECHANICAL COVER SHEET

ISSUE DATE: 6/5/20
REVISION 1:
REVISION 2:
REVISION 3:
REVISION 4:
PROJECT #: 20-127
CONTENT:

PROJECT ARCHITECT: ECE
DRAWN BY: VW
CADD FILE NAME:
20-127

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M0.1