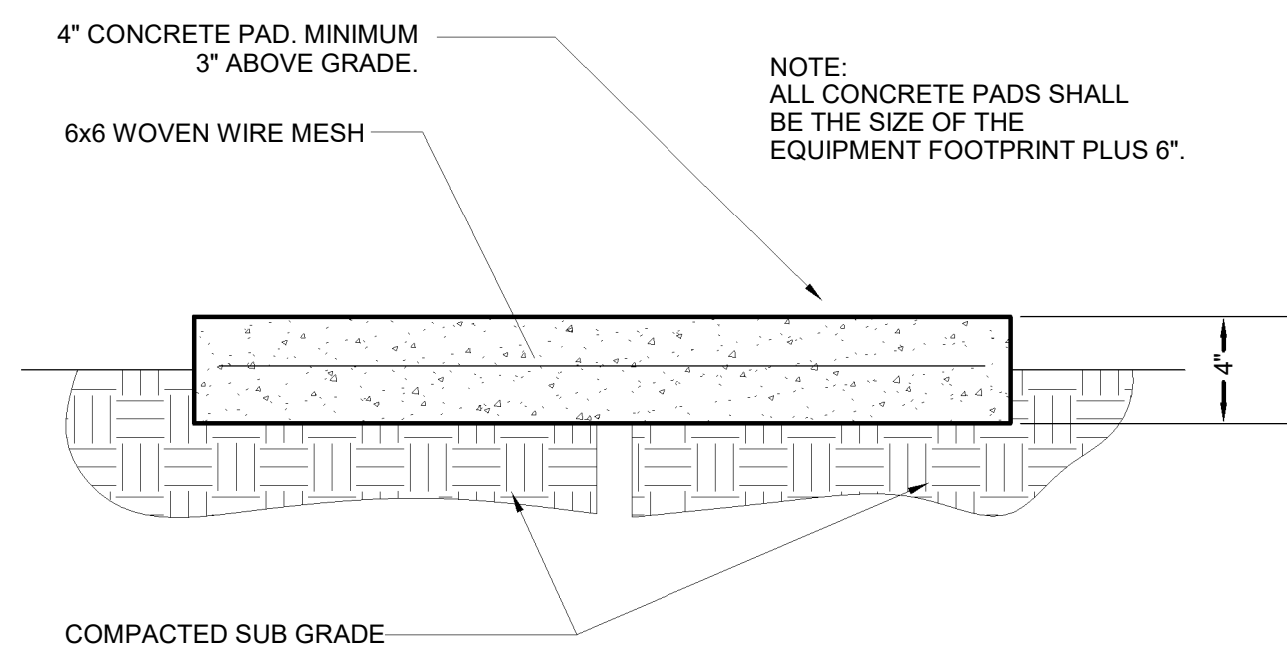


- NOTES:
- ALL DUCT CONNECTIONS SHALL BE MADE AND SEALED IN ACCORDANCE WITH MECHANICAL CODE AND MANUFACTURES INSTRUCTIONS.
 - FAN SHALL BEAR UL LABEL.
 - FACTORY MOUNTED AND WIRED DISCONNECT SWITCH.
 - FACTORY MOTOR GUARD AS REQUIRED FOR BELT DRIVE UNITS
 - TWO ACCESS DOORS FOR SERVICEABILITY OF FAN AND MOTOR.
 - FLEXIBLE CONNECTION SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURES INSTRUCTIONS AND SHALL NOT BE USED AS A TRANSITION, OFFSET, OR OTHER SIMILAR FITTING.

1
M001 IN-LINE EXHAUST FAN
NOT TO SCALE



2
M001 EXTERIOR EQUIPMENT PAD
NOT TO SCALE

MECHANICAL LEGEND

- DS - DUCTLESS SPLIT SYSTEM (INDOOR UNIT)
- DHP - DUCTLESS SPLIT SYSTEM (OUTDOOR UNIT)
- EF - EXHAUST FAN
- EA - EXHAUST AIR
- CFM - CUBIC FEET PER MINUTE
- BTU - BRITISH THERMAL UNIT
- MBH - BTU x 1000
- 12x12 - RECTANGULAR DUCT NOTATION
- 12Ø - ROUND DUCT NOTATION
- T THERMOSTAT
- S MOTION SENSOR
- (E1,12x12,210) DIFFUSER TAG (ID,SIZE,CFM)

MECHANICAL SYSTEMS, SERVICE SYSTEMS AND EQUIPMENT METHOD OF COMPLIANCE:

Prescriptive Energy Cost Budget

Climate Zone	4A
Exterior design conditions	(HARNETT COUNTY NC, USA)
winter dry bulb	26.5°F
summer dry bulb	98.5°F
summer wet bulb	75.9°F
Interior design conditions	
winter dry bulb	72°F
summer dry bulb	75°F
relative humidity	50%
Building heating load	9.2 MBH
Building cooling load	11.6 MBH

Mechanical Spacing Conditioning System

Unitary	
description of unit	
heating efficiency	SEE EQUIPMENT SCHEDULES
cooling efficiency	
heat output of unit	
cooling output of unit	
Boiler	
total boiler output. If oversized, state reason.	N/A
Chiller	
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	SEE EQUIPMENT SCHEDULES
number of phases	

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

MECHANICAL SPECIFICATIONS

- 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.
- DUCT INSULATION: NOT REQUIRED ON EXHAUST DUCT.
- PIPE INSULATION: 1/2" ARMAFLEX INTERIOR TO THE BUILDING & 1-1/2" ARMAFLEX WITH ALUMINUM JACKET EXTERIOR TO THE BUILDING.
- 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 ALL BUILDING PENETRATIONS.
- MECHANICAL CONTRACTOR SHALL TEST AND BALANCE ALL SYSTEMS TO COMPLY WITH PLANS.
- OUTSIDE AIR IS BEING PROVIDED TO THE CONCESSION BUILDING VIA NATURAL VENTILATION. SEE NOTE THIS SHEET.

EXHAUST FAN SCHEDULE										
PLAN TAG	MANUFACTURER	MODEL	TYPE	SERVING	CFM	ESP	RPM	HP OR WATTS	VOLTAGE	REMARKS
EF-1	GREENHECK	SQ-80	INLINE	WOMEN 105	210	0.25	1,300	1/20 HP	115/1	1,2,3,4,5,6,7,8,9,10
EF-2	GREENHECK	SQ-80	INLINE	MEN 103	210	0.25	1,300	1/20 HP	115/1	1,2,3,4,5,6,7,8,9,10
EF-3	GREENHECK	SQ-60	INLINE	JANITOR 104	40	0.25	1,300	1/80 HP	115/1	1,2,3,4,5,6,7,8,10

- WALL DISCHARGE CAP WITH BACKDRAFT DAMPER
- STANDARD 1 YEAR WARRANTY
- FAN BACKDRAFT DAMPER
- DUCTED INLET AND OUTLET
- CORROSION RESISTANT FASTNERS
- NEMA 1 TOGGLE SWITCH
- INSULATED HOUSING
- SWITCHED WITH LIGHT
- ADDITIONAL CONTROL OF SPACE THERMOSTAT
- POWER ROUTED THROUGH TIME CLOCK (BY E.C.)

DUCTLESS SPLIT INDOOR UNIT SCHEDULE													
PLAN TAG	MANUF.	MODEL	TYPE	MATCHED OUTDOOR UNIT	FAN DATA		FAN ELECTRICAL		SINGLE POINT CONNECTION			WEIGHT LBS	REMARKS
					CFM (HIGH/LOW)	VOLTS	MCA	VOLTS	MCA	MOC			
DS-1	TRANE	NTXCKS12A112AA	CEILING CASSETTE	DHP-1	230/260/335	208/1	0.30	POWER SUPPLIED FROM DHP-1			37	1,2,3,4,5	

- INTEGRAL CONDENSATE PUMP
- SIMPLE WALL MOUNTED THERMOSTAT WITH PLASTIC COVER
- CEILING MOUNTING KIT
- LONG LIFE AIR FILTER
- STANDARD WARRANTY

DUCTLESS SPLIT SYSTEM OUTDOOR UNIT SCHEDULE														
PLAN TAG	MANUF.	MODEL	NOMINAL TONS	TYPE	MATCHED INDOOR UNIT	RATED COOLING MBH @ 95F	SEER	RATED HEATING MBH @ 17 F	HSPF	ELECTRICAL			UNIT WEIGHT	REMARKS
										MCA	MOC	VOLTAGE		
DHP-1	TRANE	NTXSKS12A112AA	1.0	SINGLE ZONE	DS-1	12.0	22.0	8.9	11.4	9	16	208/1	81	1,2,3,4

- REFRIGERANT LINESETS (FIELD SIZED)
- DISCONNECT
- STANDARD PARTS AND COMPRESSOR WARRANTY
- HOUSEKEEPING PAD

OUTSIDE AIR (VENTILATION NOTES)

VENTILATION AND EXHAUST MAKE UP AIR IS BEING PROVIDED TO THE RESTROOMS VIA A DOOR GRILLE, PROVIDED BY THE GENERAL CONTRACTOR.

VENTILATION FOR THE OCCUPIED SPACE OF CONCESSION 101 IS PROVIDED VIA NATURAL VENTILATION AS ALLOWED BY NCMC 402.1 AND IN COMPLIANCE WITH NCMC 402.2 WHICH REQUIRES WINDOW OR DOOR OPENINGS TO BE AT LEAST 4% OF THE ROOM AREA.

CONCESSION 101 = 160 SF
 REQUIRED OPENING AREA = 6.4 SF (4%)
 THE COMBINED CONCESSION WINDOW AND OPERABLE DOOR AREA = 51SF (32%)

ELECTRICAL DISCONNECT NOTE

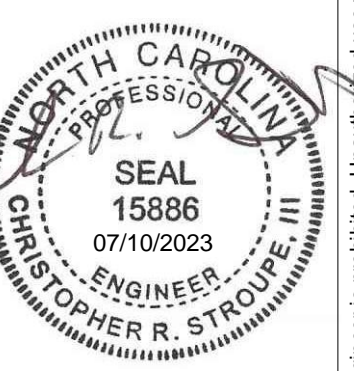
ALL HVAC DISCONNECTS PROVIDED BY M.C AND INSTALLED BY E.C. SHALL CONNECT BOTH LINE AND LOAD SIDE WIRING.

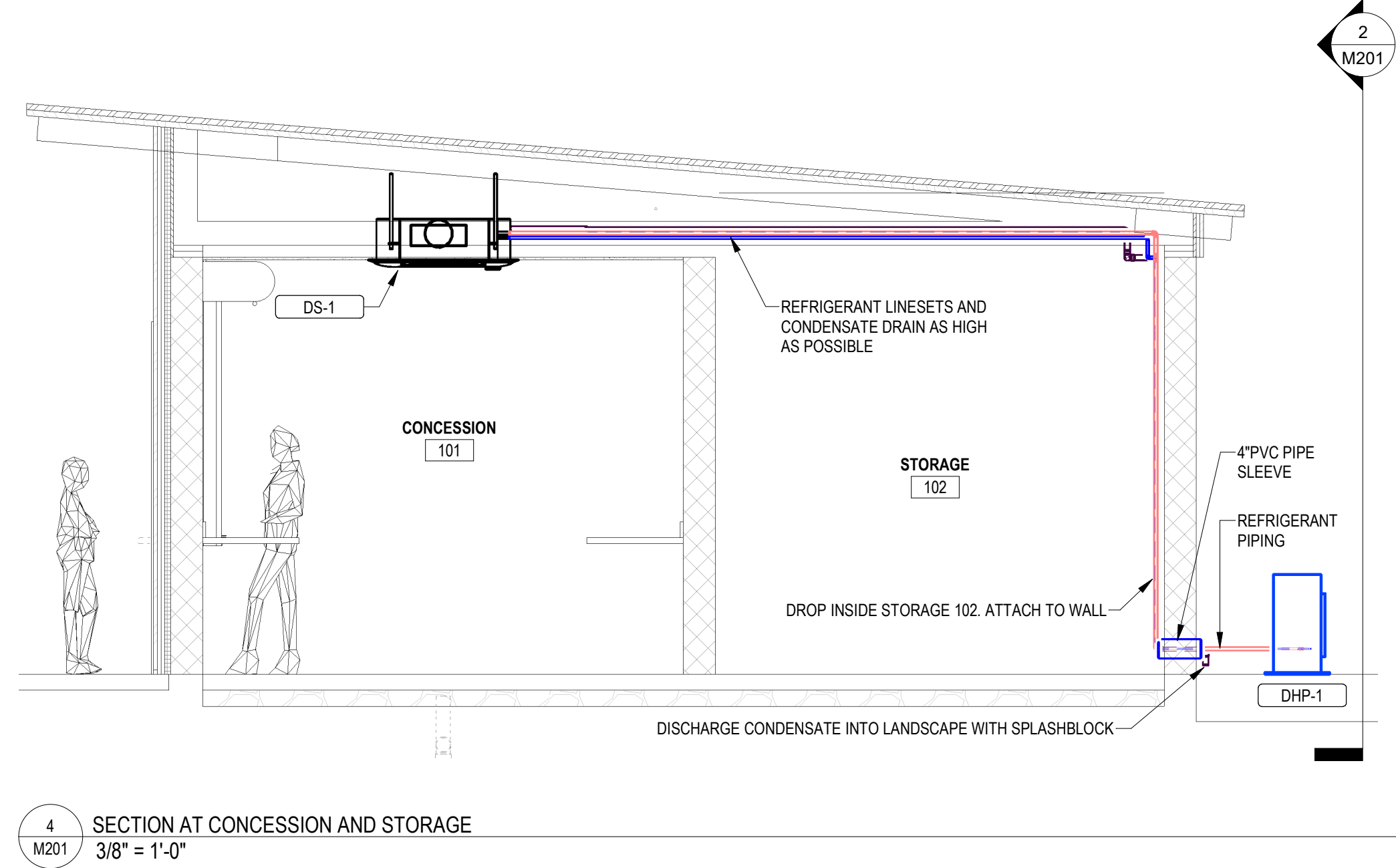
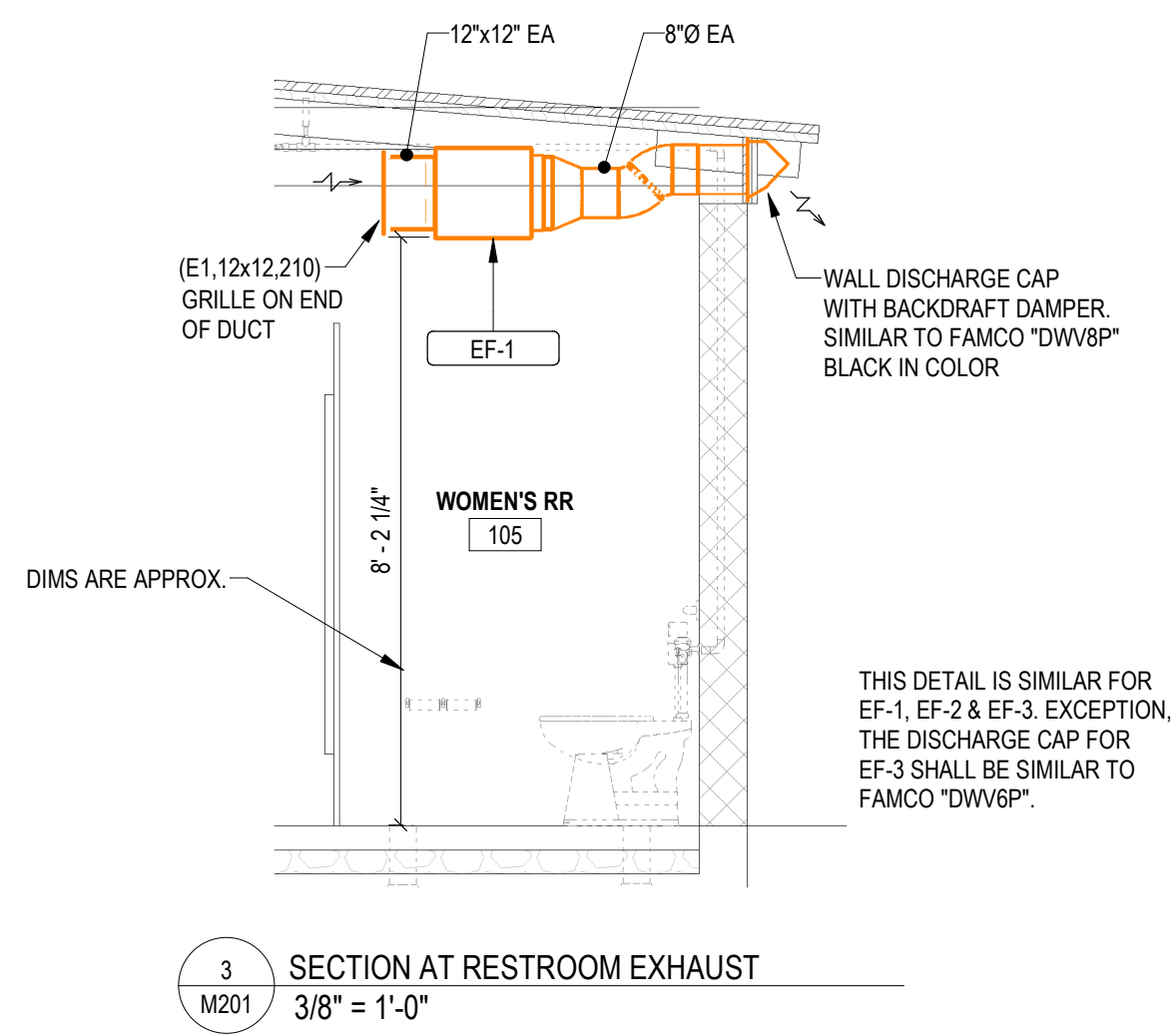
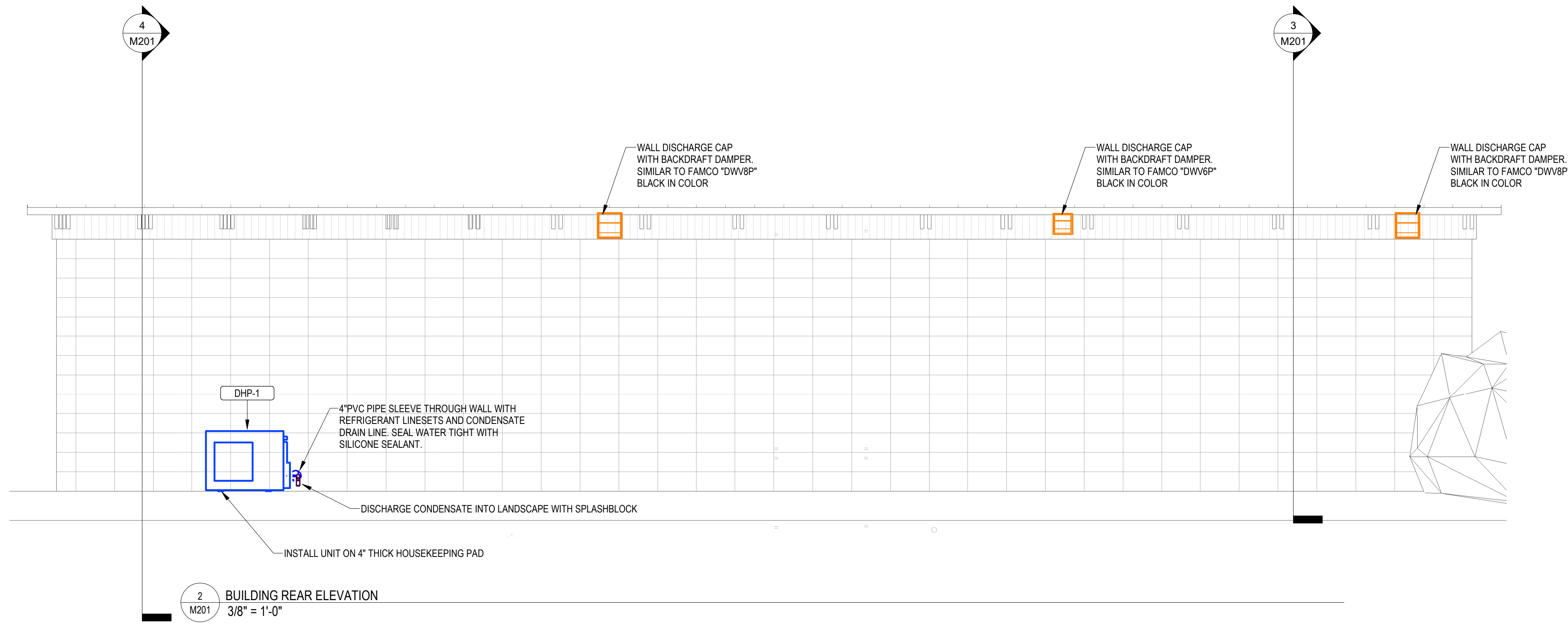
SEQUENCE OF OPERATION

- EXHAUST FANS (EF-1 & EF-2):
 THESE FANS SHALL BE ON A TIMECLOCK TO ONLY OPERATE DURING HOURS SPECIFIED BY THE OWNER. WHEN IN OCCUPIED MODE, THE FANS SHALL TYPICALLY TURN ON AND OFF WITH THE RESTROOM LIGHT AND SHALL BE TIED TO THE LIGHT MOTION SENSOR. ADDITIONALLY, THESE FANS SHALL BE LINKED TO A SPACE THERMOSTAT SUCH THAT THEY WILL TURN ON IF THE SPACE TEMPERATURE EXCEEDS THE THERMOSTAT SETPOINT. SETPOINT SHALL BE 85 DEG F (ADJ).
- EXHAUST FAN (EF-3):
 THIS FAN SHALL BE ON A TIMECLOCK TO ONLY OPERATE DURING HOURS SPECIFIED BY THE OWNER. WHEN IN OCCUPIED MODE, THE FAN SHALL TURN ON AND OFF WITH THE JANITOR CLOSET LIGHT AND SHALL BE TIED TO THE LIGHT MOTION SENSOR.
- DUCTLESS SPLIT SYSTEM HEAT PUMP (DS-1 & DHP-1):
 THIS UNIT SHALL BE CONTROLLED VIA A STAND ALONE WALL THERMOSTAT WITH AUTO-CHANGOVER CAPABILITIES AND A MINIMUM 2 DEGREE DEADBAND BETWEEN HEATING AND COOLING.
 ON A CALL FOR COOLING THE COMPRESSORS SHALL INITIATE ON TO COOL THE SPACE TO BELOW SETPOINT. ON A CALL FOR HEATING, THE REVERSING VALVE SHALL SWITCH TO HEATING MODE TO MAINTAIN TEMPERATURE. ALL SETPOINTS ARE ADJUSTABLE, BUT FOR AN INITIAL SETPOINT USE 72 DEG F FOR COOLING AND 68 DEGREE F FOR HEATING (ADJ).

HVAC SHEET INDEX

M001	MECHANICAL COVER SHEET
M201	MECHANICAL FLOOR PLAN





KEYNOTES 1/M201	
1	1-TON DUCTLESS SPLIT CEILING CASSETTE TO PROVIDE BOTH HEATING AND COOLING TO CONCESSION STAND. COORDINATE WITH E.C. TO INSTALL UNIT CENTERED BETWEEN LIGHTS.
2	ROUTE REFRIGERANT LINES OVERHEAD AS HIGH AS POSSIBLE BETWEEN INDOOR AND OUTDOOR UNIT. PROVIDE 1/2" ARMAFLEX ON INTERIOR PIPING.
3	ROUTE FULL SIZE CONDENSATE DRAIN FROM UNIT TO DISCHARGE TO LANDSCAPE AT REAR OF BUILDING. GRAVITY DRAINAGE IS PREFERRED, BUT IF CONDITIONS REQUIRE A PUMP, PROVIDE SMALL PUMP AT UNIT.
4	WALL MOUNTED, AUTO-CHANGEOVER THERMOSTAT FOR DS-1. DO NOT PROVIDE UNIT WITH THE REMOTE CONTROL TYPE THERMOSTAT.
5	DUCTLESS SPLIT SYSTEM HEAT PUMP IN LANDSCAPED AREA ON 4" THICK HOUSEKEEPING PAD. ORIENT SUCH THAT THE CONDENSER FAN IS BLOWING AWAY FROM THE BUILDING.
6	PROVIDE A 4" PVC PIPE SLEEVE THROUGH BLOCK WALL TO ROUTE REFRIGERANT LINESETS AND CONDENSATE DRAIN. SEAL AROUND SLEEVE AND AROUND PIPING AIR AND WATER TIGHT. PIPE TO EXTEND AT LEAST 1" BEYOND WALL ON BOTH SIDES.
7	EXTERIOR REFRIGERANT PIPING TO HAVE 1-1/2" ARMAFLEX INSULATION AND ALUMINUM JACKET.
8	TYPICAL INLINE EXHAUST FAN WITH EXHAUST GRILLE ON THE END OF THE INLET DUCT. THE FANS SHALL BE INSTALLED AS HIGH AS POSSIBLE IN THE SPACE. TYPICAL FOR EF-1 THRU EF-3.
9	HOODED WALL CAP WITH BACKDRAFT DAMPER INSTALLED JUST ABOVE THE TOP BLOCK COURSE AT EACH LOCATION. CAP SHALL BE BLACK WITH 8" INLET DUCT FOR EF-1 & EF-2 AND 6" INLET DUCT FOR EF-3.
10	EACH FAN (EF-1 THRU EF-3) SHALL BE LINKED TO THE LIGHT SWITCH CONTROL MOTION SENSOR SO THAT THE FAN OPERATES WHENEVER SOMEONE ENTERS THE RESTROOM. THIS SENSOR SHALL BE PROVIDED BY THE E.C. IT IS SHOWN ON THIS PLAN FOR CLARITY AS TO THE FAN OPERATION. ADDITIONALLY, THE CIRCUITS FOR EF-1 THRU EF-3 SHALL BE ON A TIME CLOCK SUCH THAT THEY ONLY OPERATE DURING HOURS SPECIFIED BY THE OWNER. E.C. TO PROVIDE THE 7 DAY, 24 HOUR TIME CLOCK AND TIME SETTINGS SHOULD BE COORDINATED WITH THE OWNER.
11	EF-1 & EF-3 SHALL ALSO BE TIED INTO A SPACE THERMOSTAT WHICH SHALL BE MOUNTED TO THE SIDE OF THE EXHAUST FAN OR FAN SUPPORT. THIS SHALL BE SET AT 85 DEG F (ADJ) AND SHALL OVER-RIDE THE MOTION SENSOR AND TURN THE FAN ON WHEN THE SPACE TEMPERATURE EXCEEDS SETPOINT. THE FAN SHALL TURN OFF WHEN THE SET POINT IS SATISFIED.
12	EACH RESTROOM DOOR SHALL BE PROVIDED WITH A DOOR LOUVER TO ALLOW AIRFLOW MAKE-UP INTO THE RESTROOM WHEN THE FAN IS ON. THESE LOUVERS WILL BE PROVIDED BY G.C. WITH THE DOORS.

