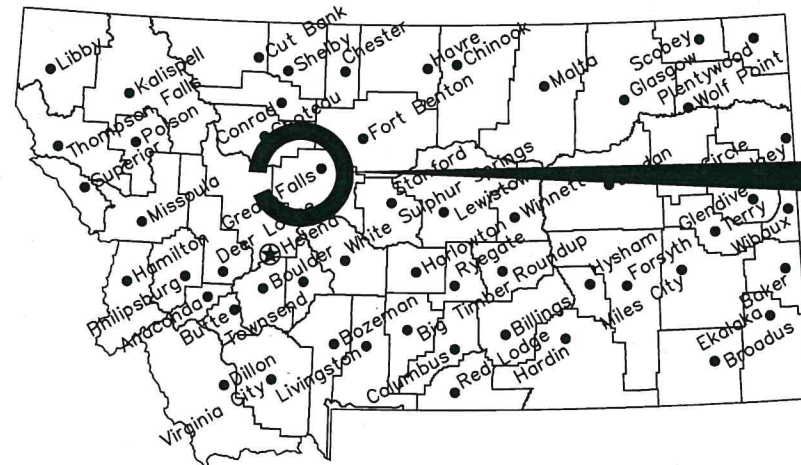


MONTANA FISH, WILDLIFE & PARKS

# First Peoples Buffalo Jump State Park Visitors Center HVAC Upgrades

Cascade County, Montana

FWP Project # 7216307

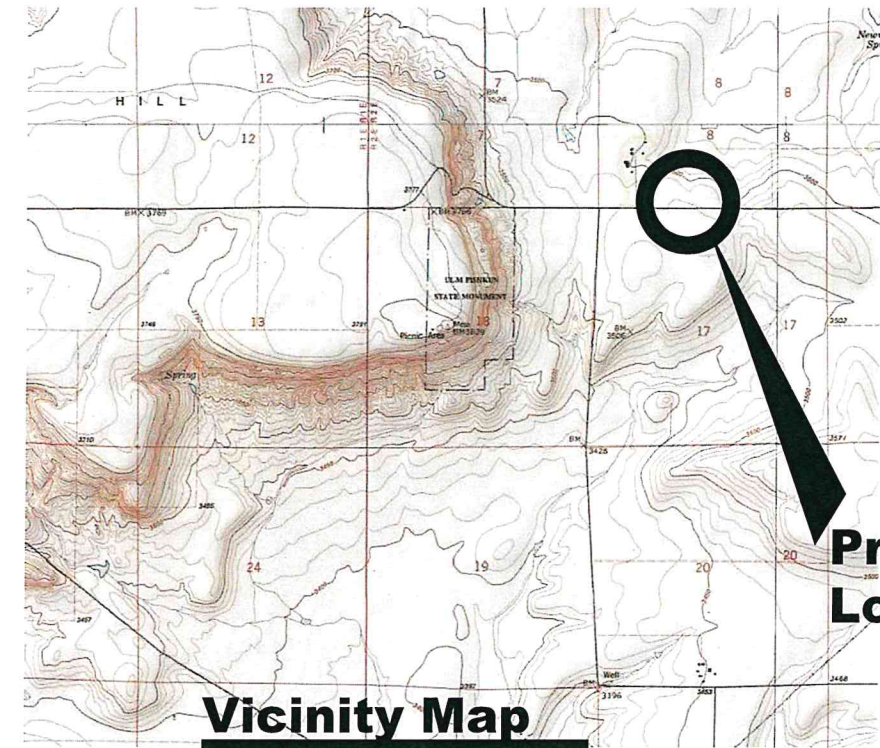


**Location Map**

No Scale

**Project  
Location**

**North**



**Vicinity Map**

No Scale

**Project  
Location**

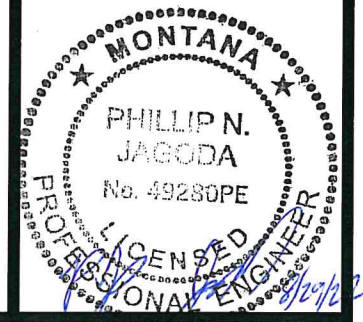
MONTANA FISH, WILDLIFE AND PARKS  
DESIGN AND CONSTRUCTION

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PHYSICAL ADDRESS: 1522 9th AVENUE  
HELENA, MT 59601

## DRAWING INDEX

- Sheet 1). Cover Sheet
- Sheet 2). Existing HVAC Layout and Site Plan
- Sheet 3). Existing HVAC Layout and Site Plan
- Sheet 4). Existing HVAC Layout and Site Plan



K.HARRINGTON 8/16/22  
DRAWN BY: DATE:

K.HARRINGTON 8/16/22  
CHECKED BY: DATE:

APPROVED BY: DATE:

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**MONTANA FISH,  
WILDLIFE & PARKS**

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**Cover Sheet**  
First Peoples Buffalo Jump State Park HVAC

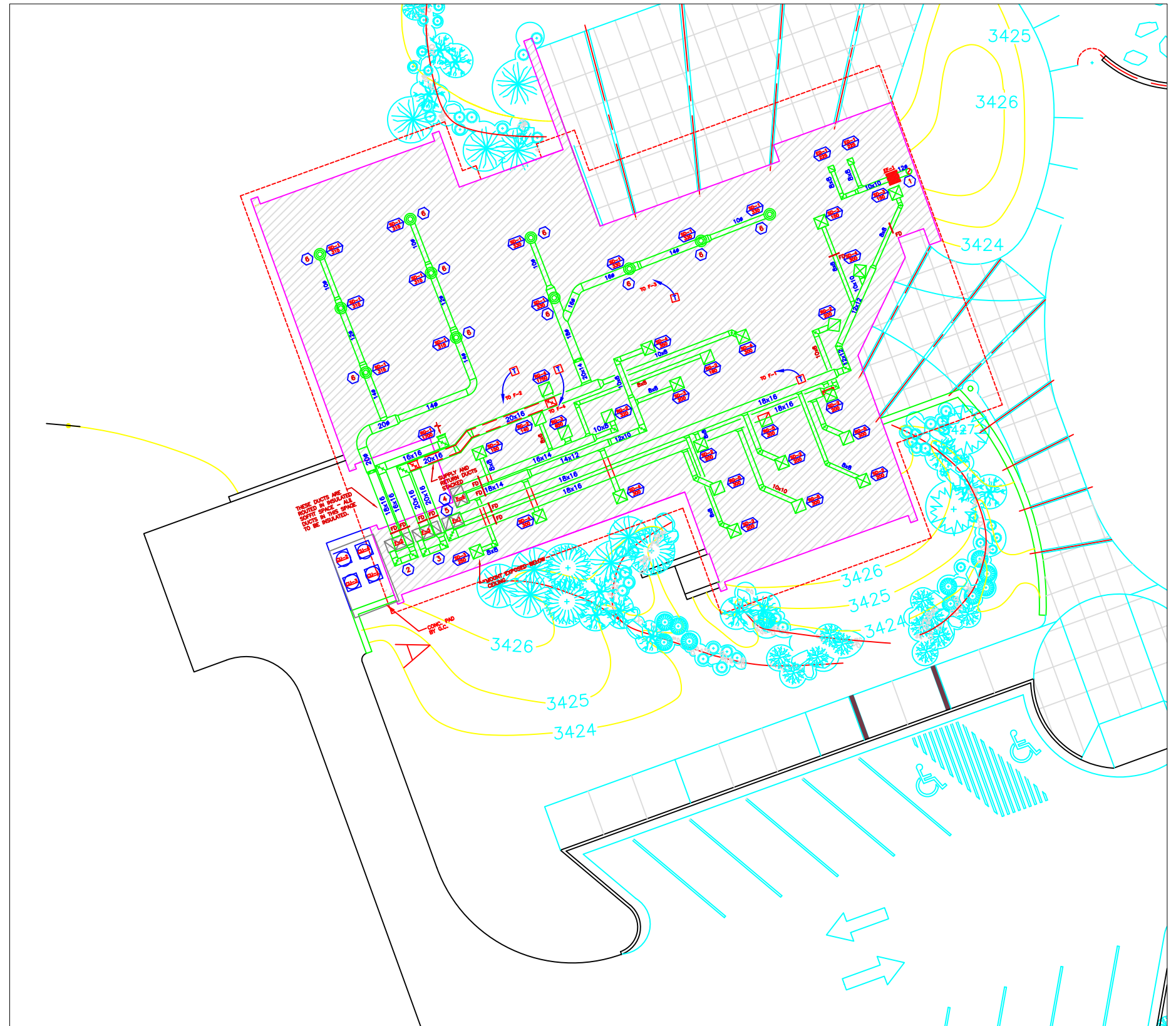


SHEET: 1 of 4



GENERAL NOTES:

1. CONFIRM EXISTING AC AND HEATING UNITS TO EXISTING DRAWINGS.
2. PROVIDE SUBMITTAL FOR ALL MATERIALS TO OWNER FOR APPROVAL PRIOR TO PROCUREMENT.
3. OBTAIN ALL PERMITS NECESSARY FOR WORK.
4. CONDUCT WORK MONDAY THROUGH FRIDAY, 8:00AM TO 5:00 PM. ADDITIONAL HOURS AND WEEKEND WORK IS SUBJECT TO OWNER APPROVAL.
5. STAGING OF ALL EQUIPMENT AND MATERIALS MUST BE ON STATE PROPERTY OR OTHERWISE ARRANGED BY CONTRACTOR PRIVATELY. MATERIALS STORAGE LOCATION MUST BE APPROVED BY PROJECT MANAGER FOR PAYMENT APPROVAL.
6. PROVIDE DUMPSTERS AND PORTABLE BATHROOM FACILITIES FOR CONTRACTOR USE. REMOVE ALL REFUSE, AND NEW UNITS ARE SUBJECT TO OWNER APPROVAL PRIOR TO FINAL PAYMENT.
7. SURROUNDINGS MUST BE LEFT IN PRE-CONSTRUCTION CONDITION.



K.HARRINGTON	8/16/22
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K.HARRINGTON	8/16/22
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APPROVED BY:	DATE:



**MONTANA FISH,  
WILDLIFE & PARKS**

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# Site Plan, Existing System

## First Peoples Buffalo Jump State HVAC



SHEET: 2 of 4

### HVAC LEGEND

SYMBOL	DESCRIPTION
12/12	RECTANGULAR DUCT (FIRST DIMENSION IS SIDE SHOWN)
	SQUARE ELBOWS
	SQUARE ELBOWS WITH TURNING VANES
	RADIUS ELBOWS
	SQUARE ELBOW UP SUPPLY/RETURN
	SQUARE ELBOW DOWN SUPPLY/RETURN
	SQUARE-SQUARE REDUCER CONCENTRIC/ECCENTRIC
	ROUND-SQUARE REDUCER CONCENTRIC/ECCENTRIC
	SQUARE-ROUND REDUCER CONCENTRIC/ECCENTRIC
	ROUND DUCT
	FLEX DUCT
	ROUND ELBOW UP/DOWN
	AIR FLOW SUPPLY/RETURN
	RECTANGULAR GRILLE/REGISTER/DIFFUSER
	THERMOSTAT - ELECTRIC
	VOLUME DAMPER
	FIRE DAMPER
	COMBINATION FIRE/SMOKE DAMPER
	LINEAR SLOT DIFFUSER

### DUCT CONST. SCHED.

**INSULATED DUCTWORK INCLUDES:**

- ALL EXHAUST DUCTWORK
- ALL OUTDOOR AIR DUCTWORK
- ALL SUPPLY AIR DUCTWORK, EXCEPT EXPOSED SPIRAL SUPPLY AIR DUCTWORK
- ALL SUPPLY AND RETURN AIR DUCTWORK ROUTED IN INSULATED SOFFIT SPACE NORTH OF MECH. ROOM

**UNINSULATED/UNLINED DUCTWORK INCLUDES:**

- ALL RETURN AIR DUCTWORK
- ALL EXPOSED SPIRAL PAINTLOCK SUPPLY AIR DUCTWORK

### DRAWING LIST

M0.1 MECHANICAL LEGEND, SCHEDULES, DRAWING LIST, AND DETAILS  
M2.1 HVAC PLAN

### CONTROL EQUIP./SEQUENCE

**GENERAL NOTES:**

- MOUNT THERMOSTATS AT FIVE (5) FEET ABOVE FINISHED FLOOR, AND PROVIDE ALL THERMOSTATS WITH A LOCKABLE COVER/GUARD. THERMOSTATS (SUPPLIED WITH FURNACES) TO BE PROGRAMMABLE, 7-DAY, ON-OFF-FAN-HEAT-COOL ELECTRIC THERMOSTATS.
- ALL WIRING, CONDUIT, AND ELEC. ACCESSORIES FOR OPERATION/CONTROL OF FURNACES/CONDENSING UNITS TO BE PROVIDED AND INSTALLED BY ELECTRICAL CONTRACTOR. MOUNTING OF THERMOSTATS TO BE BY ELECTRICAL CONTRACTOR.
- MECHANICAL CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR THE INSTALLATION, ADJUSTING, AND TESTING OF A COMPLETE AND OPERABLE TEMPERATURE CONTROL SYSTEM.

**SEQUENCE OF OPERATION:**

- OCCUPIED MODE -** FAN SHALL RUN CONTINUOUSLY. ON A CALL FOR HEAT, THE GAS HEAT SHALL BE ENERGIZED. ON A CALL FOR COOLING, THE CONDENSING UNIT SHALL BE ENERGIZED.
- UNOCCUPIED MODE -** THE FAN SHALL BE OFF. ON A CALL FOR HEAT, THE FAN SHALL RUN, AND THE GAS HEAT SHALL BE ENERGIZED. ON A CALL FOR COOLING, THE FAN SHALL RUN AND THE CONDENSING UNIT SHALL BE ENERGIZED.

### GRILLE - REGISTER - DIFFUSER SCHEDULE

PLAN CODE	MANUFACTURER	MODEL NUMBER	FUNCTION	NECK SIZE	MATERIAL	FINISH	CFM	VOLUME DAMPER	REMARKS
SD-1	KRUEGER	RA2 PR12	SUPPLY AIR	10"ø	STEEL	SEE REMARKS	SEE PLANS	YES	ADJUSTABLE, 360° DISCHARGE, 4 CONES, EXPOSED MOUNTING. VERIFY COLOR WITH ARCHITECT.
SD-2	KRUEGER	1240 F23	SUPPLY AIR	6/6	STEEL	WHITE	SEE PLANS	NO	24/24 LAY-IN PANEL, 4-WAY AIR THROW
SD-3	KRUEGER	1240 F22	SUPPLY AIR	6/6	STEEL	WHITE	SEE PLANS	YES	SURFACE MTD., 4-WAY AIR THROW
SD-4	KRUEGER	1240 F22	SUPPLY AIR	10/10	STEEL	WHITE	SEE PLANS	YES	SURFACE MTD., 4-WAY AIR THROW
RG-1	KRUEGER	S80H	RETURN AIR	36/30	STEEL	SEE REMARKS	SEE PLANS	YES	SIDEWALL MTD., HORIZONTAL BLADES. VERIFY COLOR WITH ARCHITECT.
RG-2	KRUEGER	6290 F20	RETURN AIR	6/6	STEEL	WHITE	SEE PLANS	YES	24/24 PANEL, SURFACE MTD., PERFORATED FACE
RG-3	KRUEGER	6290 F20	RETURN AIR	8/8	STEEL	WHITE	SEE PLANS	YES	24/24 PANEL, SURFACE MTD., PERFORATED FACE
RG-4	KRUEGER	6290 F20	RETURN AIR	18/18	STEEL	WHITE	SEE PLANS	YES	24/24 PANEL, SURFACE MTD., PERFORATED FACE
RG-5	KRUEGER	6290 F23	RETURN AIR	6/6	STEEL	WHITE	SEE PLANS	NO	24/24 LAY-IN PANEL, PERFORATED FACE
EG-1	KRUEGER	EGC-5	EXHAUST AIR	8/8	ALUMINUM	WHITE	SEE PLANS	NO	SURFACE MTD. FRAME, EGGRATE CORE.

**NOTE:** PROVIDE ALL FINAL DUCT TRANSITIONS TO ALL DIFFUSERS/GRILLES/REGISTERS AS REQUIRED FOR A COMPLETE INSTALLATION.

### FURNACE SCHEDULE

PLAN CODE	MANUF.	MODEL NUMBER	A.F.U.E.	MBH INPUT	MBH OUTPUT	CFM	S.P. IN WG.	VENT PIPE INTAKE AIR SIZE	FUEL TYPE	MOTOR H.P.	RPM	ELECTRICAL UNIT AMPS	VOLTS	PH	REMARKS
F-1	CARRIER	58MXA120-20	92%	120.0	111.6	1600	.7	3"	LP	3/4	MED-LO	19.1	120	1	UP-FLOW FURNACE - ONE SIDE RETURN SEE NOTE BELOW
F-2	CARRIER	58MXA120-20	92%	120.0	111.6	1890	.5	3"	LP	3/4	MED-HI	19.1	120	1	UP-FLOW FURNACE - TWO SIDE RETURN SEE NOTE BELOW
F-3	CARRIER	58MXA120-20	92%	120.0	111.6	1950	.6	3"	LP	3/4	HIGH	19.1	120	1	UP-FLOW FURNACE - TWO SIDE RETURN SEE NOTE BELOW
F-4	CARRIER	58MXA120-20	92%	120.0	111.6	1550	.5	3"	LP	3/4	MED-LO	19.1	120	1	UP-FLOW FURNACE - ONE SIDE RETURN SEE NOTE BELOW

**GEN. NOTE:** PROVIDE FURNACE WITH 7 DAY PROGRAMMABLE HEATING/COOLING T-STAT AND CONDENSATE TRAP. INSTALL INTAKE/EXHAUST AIR ASSEMBLIES FOR A COMPLETE AND FUNCTIONAL SYSTEM PER MANUF. RECOMMENDATIONS. SEE DET. 1/M1. PROVIDE W/ ANY NECESSARY RETURN AIR PLENUMS, FILTERS, ADAPTOR SEALS, ETC. AS REQUIRED FOR A COMPLETE, SIDE RETURN AIR INSTALLATION. PROVIDE (2) PLENUMS FOR FURNACES REQUIRING TWO-SIDED RETURN.

### CONDENSING UNIT & COOLING COIL SCHEDULE

PLAN CODE	MANUF.	MODEL NO.	CORRESP. FURNACE	COOLING CAPACITY	TOT. CAP. MBH	AMB. TEMP.	CON. FAN HP	VOLTS	PH.	M.C.A. (AMPS)	EVAPORATOR COIL	REMARKS
C-1	CARRIER	38CKC060-301	F-1	5 TONS	54.5	95°F	---	208/230	1	37.4	CDSA-060	SEE NOTE BELOW
C-2	CARRIER	38CKC060-301	F-2	5 TONS	54.5	95°F	---	208/230	1	37.4	CDSA-060	SEE NOTE BELOW
C-3	CARRIER	38CKC060-301	F-3	5 TONS	54.5	95°F	---	208/230	1	37.4	CDSA-060	SEE NOTE BELOW
C-4	CARRIER	38CKC060-301	F-4	5 TONS	54.5	95°F	---	208/230	1	37.4	CDSA-060	SEE NOTE BELOW

**NOTE:** PROVIDE EACH EVAP. COIL WITH COIL CABINET AND ADJUSTABLE COIL-TO-FURNACE ADAPTOR SEAL AND ANY NECESSARY TRANSITIONS. PROVIDE EACH CONDENSING UNIT WITH THERMOSTATIC EXPANSION VALVE KIT, LOW-AMBIENT OPERATION TO 30°F, CRANKCASE HEATER, AND HCFC-22 REFRIGERANT.

### EXHAUST FAN SCHEDULE

PLAN CODE	MANUF.	MODEL NUMBER	CFM	ESP (IN.)	RPM	DRIVE TYPE	ELEC. DATA			REMARKS
							AMPS	VOLT	PH	
EF-1	CARNES	VCDB045	450	.125	1050	DIRECT	3.0	120	1	SEE NOTE BELOW

**NOTE:** PROVIDE ALL FINAL DUCT TRANSITIONS TO AND FROM FAN AS REQUIRED. PROVIDE FAN W/ IN-LINE ADAPTOR KIT, BACKDRAFT DAMPER, BIRDSCREEN, AND TERMINATION CAP. FAN TO BE TIED INTO ASSOCIATED ROOM LIGHT SWITCHES.

### LOUVER SCHEDULE

PLAN CODE	MANUF.	MODEL NO.	FUNCTION	SIZE (WxH)	MATERIAL	COLOR	CFM	DAMPER	REMARKS
L-1	AIROLITE	K805	OUTSIDE AIR INTAKE	24/24	EXTRUDED ALUMINUM	PER ARCH.	---	NO	PROVIDE WITH BAKED ENAMEL FINISH AND BIRDSCREEN. PROVIDE COLOR CHART TO ARCH. FOR COLOR SELECTION.

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AGE 08/17/2009

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REVISIONS  
DATE: 8/2/99  
BY: JAS-MLK

CAD: JAS-MLK  
DRAWN BY: JAS-MLK  
CHK'D: KC  
DATE: 8/2/99  
PROJECT:

MECHANICAL COVER SHEET

ULM PISHKUN

DATE: 8/2/99  
SHEET NO.

M0.1

1 NOT USED  
M0.1 NO SCALE

2 FIRE DAMPER DETAIL  
M0.1 NO SCALE

3 TYPICAL UPFLOW FURNACE DETAIL  
M0.1 NO SCALE

4 NOT USED  
M0.1 NO SCALE

AS-BUILT  
8/2/99

K.HARRINGTON 8/16/22  
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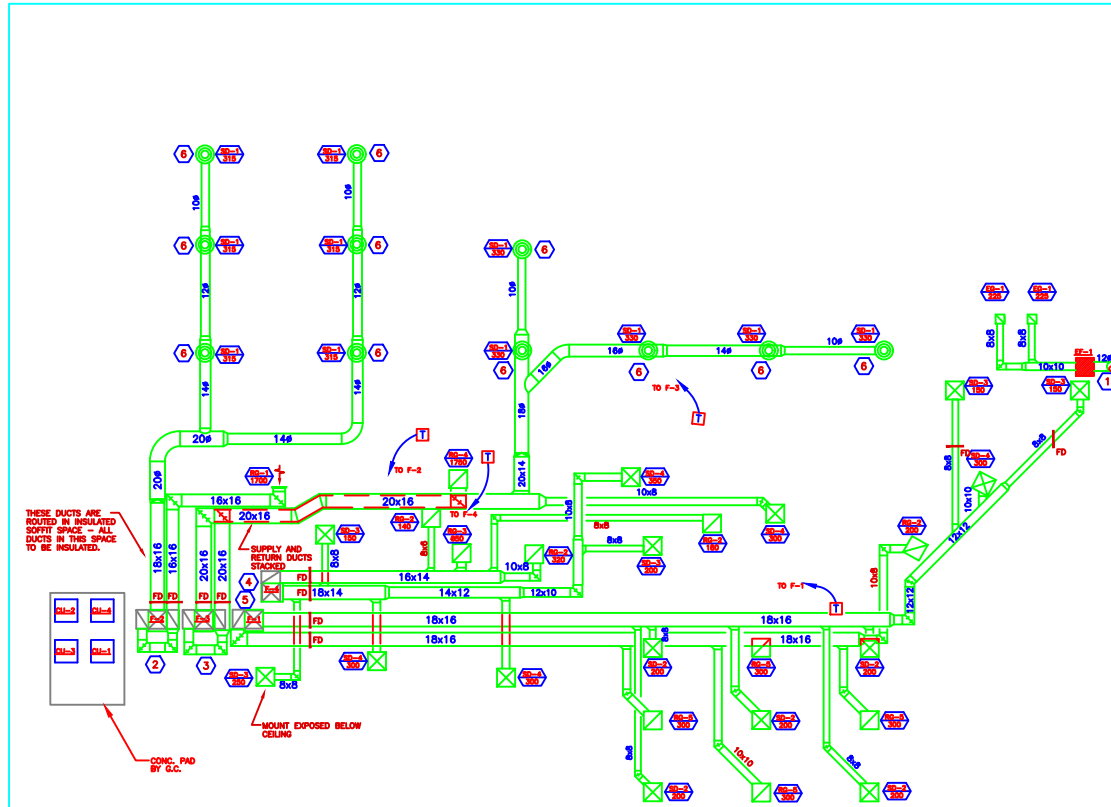


**MONTANA FISH,  
WILDLIFE & PARKS**

**Site Plan, Notes, Existing System**  
First Peoples Buffalo Jump State HVAC



SHEET: 3 of 4



**MECHANICAL FLOOR PLAN**

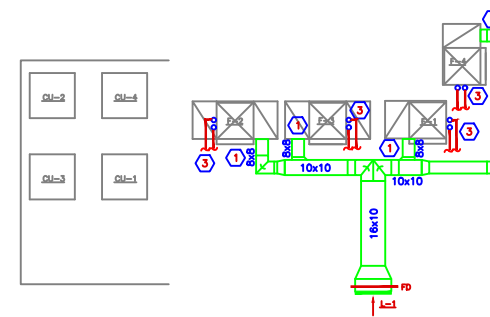
1/M2.1  
1/8"=1'-0"

**GENERAL MECHANICAL NOTES:**

- 1.) PROVIDE AND INSTALL A VOLUME DAMPER ON THE DUCT RUNOUT SERVING EACH DIFFUSER/GRILLE MOUNTED IN LAY-IN A.C.T. AREAS (CLASSROOM #108).
- 2.) ROUTE SUPPLY AND RETURN DUCTWORK IN MECHANICAL AS HIGH AS POSSIBLE TO ALLOW VERTICAL STACKING OF DUCTS.
- 3.) SPIRAL SUPPLY AIR DUCTWORK IS EXPOSED. THIS DUCT SHALL BE SPIRAL PAINTLOCK-TYPE.
- 4.) ROUTE EXPOSED SPIRAL PAINTLOCK SUPPLY DUCTWORK AS TIGHT TO STRUCTURE AS POSSIBLE, AND ALIGN WITH ROOFLINE SLOPE.

**KEY NOTES:**

- 1) ROUTE 12" EXHAUST DUCT FROM EXHAUST FAN UP THROUGH ROOF AND UP IN ARCH. STACK. VERIFY EXACT STACK LOCATION PRIOR TO INSTALLING EXHAUST FAN. EXHAUST FAN AND DUCTWORK TO BE MOUNTED ON MECH. MEZZANINE FLOOR. TERMINATE W/ AN APPROVED CAP.
- 2) SPLIT 18/16 RETURN DUCT TO FURNACE F-2 INTO (2) 14/14 RETURN DUCTS TO DROP ON BOTH SIDES OF FURNACE F-2. TRANSITION AS REQUIRED FOR CONNECTION TO RETURN AIR PLENUMS. ROUTE 18/16 SUPPLY DUCT FROM FURNACE OUTLET ELBOW, SEE DET. 3/MO.1.
- 3) SPLIT 20/16 RETURN DUCT TO FURNACE F-3 INTO (2) 14/14 RETURN DUCTS TO DROP ON BOTH SIDES OF FURNACE F-3. TRANSITION AS REQUIRED FOR CONNECTION TO RETURN AIR PLENUMS. ROUTE 20/16 SUPPLY DUCT FROM FURNACE OUTLET ELBOW, SEE DET. 3/MO.1.
- 4) ROUTE 16/14 RETURN DUCT TO FURNACE F-4. TRANSITION AS REQUIRED FOR CONNECTION TO RETURN AIR PLENUM. ROUTE 18/14 SUPPLY DUCT FROM FURNACE OUTLET ELBOW, SEE DET. 3/MO.1.
- 5) ROUTE 18/16 RETURN DUCT TO FURNACE F-1. TRANSITION AS REQUIRED FOR CONNECTION TO RETURN AIR PLENUM. ROUTE 18/16 SUPPLY DUCT FROM FURNACE OUTLET ELBOW, SEE DET. 3/MO.1.
- 6) INSTALL A VOLUME EXTRACTOR IN BRANCH DUCT TAKE-OFF TO THIS DIFFUSER.



**ENLARGED MECHANICAL RM.**

2/M2.1  
1/4"=1'-0"

**GENERAL MECHANICAL NOTES:**

- 1.) SEE DWG. 1/M2.1 FOR SUPPLY AND RETURN DUCT LAYOUT.

**KEY NOTES:**

- 1) ROUTE OUTDOOR AIR DUCT TO EACH FURNACE, AND CONNECT TO RETURN AIR PLENUM, SEE DET. 3/MO.1. COORDINATE ROUTING OF OUTDOOR AIR DUCT WITH SUPPLY AND RETURN DUCT SHOWN ON DWG. 1/M2.1. OUTDOOR AIRFLOWS TO BE:

FURNACE	OUTDOOR AIR
F-1	200
F-2	190
F-3	200
F-4	260

- 2) PROVIDE EACH OUTDOOR AIR DUCT SERVING EACH FURNACE WITH A VOLUME DAMPER.
- 3) PROVIDE DUCT TRANSITION TO LOUVER AS REQUIRED.
- 4) ROUTE 3" AIR INLET AND 3" FLUE PIPES FROM EACH FURNACE UP, TIE TOGETHER WITH CONCENTRIC FITTING, AND EXTEND SINGLE PIPE THROUGH ROOF. TERMINATE PER MANUF. RECOMMENDATIONS. FURNACE FLUES SHALL BE ROUTED TO PENETRATE ROOF INTO ARCHITECTURAL STACK ABOVE FOR A FULLY CONCEALED INSTALLATION. SEE ARCH. PLANS FOR STACK LOCATION.

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REVISIONS	DATE	BY/REVISION
AS-BUILT	8/2/99	AS-BUILT

CAD: 2049 M2.1/AS	DRAWN: CH	CHK'D: KC
DATE: 8/2/99	DATE: 8/2/99	PROJL:

**HVAC FLOOR PLAN**

**ULM PISHKUN**

DATE: 8/2/99  
SHEET NO.

AS-BUILT  
8/2/99

**M2.1**

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**MONTANA FISH, WILDLIFE & PARKS**

Site Plan, Notes, Existing System  
 First Peoples Buffalo Jump State HVAC



SHEET: 4 of 4