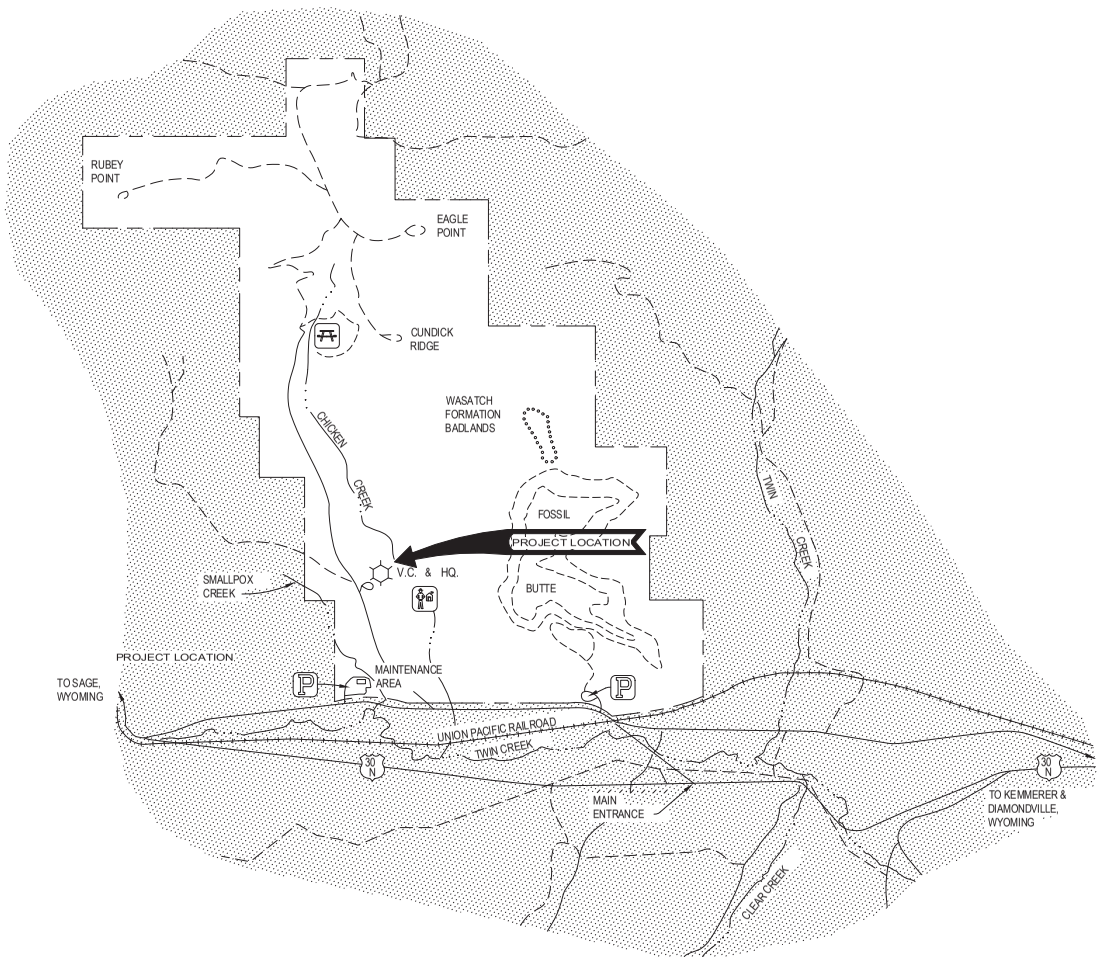
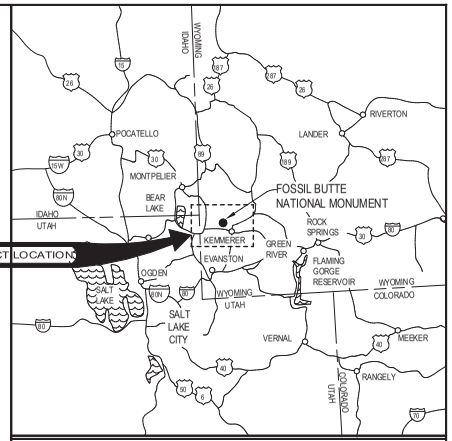




WYOMING

FOSSIL BUTTE NATIONAL MONUMENT

PMIS 282711

ARCHITECT
ANDERSON HALLAS ARCHITECTS, PC
GOLDEN, CO 80401

Mark	Sheet	REVISION	Date	Initial

QUALITY DESIGN CERTIFICATION

RECOMMENDED: _____ Project Manager _____ Date

APPROVED: _____ Superintendent _____ Date

FINAL CD

UNITED STATES
DEPARTMENT OF THE INTERIOR

NATIONAL PARK SERVICE
DENVER SERVICE CENTER

PROJECT
WATER SYSTEM IMPROVEMENTS TO MEET FIRE PROTECTION REQUIREMENTS

NAME OF PARK
FOSSIL BUTTE NATIONAL MONUMENT

REGION: INTERMOUNTAIN | COUNTY: LINCOLN | STATE: WYOMING

DRAWING NO. 174 173823

PMIS/PKG NO. 282711

SHEET 1 OF 60

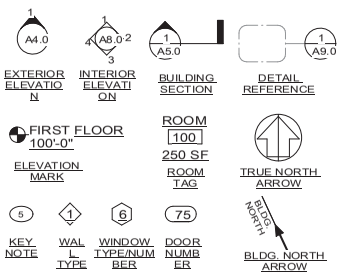
BASIC DATA: USGS TOPO MAP; PARK MINI FOLDER 1991; COVER SHEET REVISED & REDRAWN 8/94. UPDATED 11/98. SGS.

11/29/2022 10:56:44 AM BIM 360://2021-280 FOBU Fire Protection/2021280 - FOBU Fire Protection - v20 - BIM 360.rvt

ABBREVIATIONS

#	POUND(S) or NUMBER
&	AND
<	ANGLE
@	AT
A/V	AUDIO VISUAL
ABA	AMERICAN BARRIERS ACT
ABV	ABOVE
ACM	ASBESTOS CONTAINING MATERIAL
ACT	ACCOUSTICAL CEILING TILE
ADD	ADDENDUM
ADJ	ADJACENT or ADJUSTABLE
AFF	ABOVE FINISHED FLOOR
AHU	AIR HANDLING UNIT
AL	ALUMINUM
ALT	ALTERNATE
APPROX	APPROXIMATE(LY)
ARCH	ARCHITECTURAL
ASPH	ASPHALT
B.O.	BOTTOM OF
BLDG	BUILDING
BLKG	BLOCKING
BR	BACKER ROD
BTWN	BETWEEN
C.O.	CONTRACTING OFFICER
CAB	CABINET
CJ	CONTROL JOINT
CL	CENTERLINE
CLG	CEILING
CLR	CLEAR
CMU	CONCRETE MASONRY UNIT
COL	COLUMN
CONC	CONCRETE
CONST	CONSTRUCTION
CONT	CONTINUOUS
CORR	CORRIDOR
CPT	CARPET
CT	CERAMIC TILE
CTBB	CEMENTITIOUS TILE BACKER BOARD
CTR	CENTER
DBL	DOUBLE
DEMO	DEMOLITION
DET	DETAIL
DF	DRINKING FOUNTAIN
DIAM	DIAMETER
DIM	DIMENSION
DN	DOWN
DS	DOWNSPOUT
<E>	EXISTING
E	EAST
EA	EACH
EG	FOR EXAMPLE
ELEC	ELECTRICAL
ELEV	ELEVATION
EMER	EMERGENCY
ENGR	ENGINEER
EQ	EQUAL
EQP	EQUIPMENT
ETR	EXISTING TO REMAIN
EXT	EXTERIOR
FACP	FIRE ALARM CONTROL PANEL
FD	FLOOR DRAIN
FE	FIRE EXTINGUISHER
FEC	FIRE EXTINGUISHER CABINET
FIN	FINISH(ED)
FIXT	FIXTURE
FLR	FLOOR(ING)
FO	FACE OF
FP	FIRE PROTECTION
FRP	FIBERGLASS REINFORCED PANEL(ING)
FT	FEET
FTG	FOOTING
FURR	FURRING
GA	GAUGE OR GYPSUM ASSOCIATION
GALV	GLAVANIZED
GC	GENERAL CONTRACTOR
GD	GRADE
GL	GLASS or GLAZING
GND	GROUND
GWB	GYPSUM WALLBOARD
HM	HOLLOW METAL
HAZMAT	HAZARDOUS MATERIAL
HDR	HEADER
HDW	HARDWARE
HORIZ	HORIZONTAL
HT	HEIGHT
HVAC	HEATING, VENTILATION and AIR CONDITIONING
IBC	INTERNATIONAL BUILDING CODE
ID	INSIDE DIAMETER
INFO	INFORMATION
INS	INSULATION or INSULATED
INT	INTERIOR
JT	JOINT
LAV	LAVATORY
LIN	LINOLEUM
MATL	MATERIAL
MAX	MAXIMUM
MECH	MECHANICAL
MEP	MECHANICAL, ELECTRICAL and PLUMBING
MFG	MANUFACTURING
MFR	MANUFACTURER
MIN	MINIMUM
MISC	MISCELLANEOUS
MO	MASONRY OPENING
MTD	MOUNTED
MTL	METAL
<N>	NEW
N	NORTH
NA	NOT APPLICABLE
NIC	NOT IN CONTRACT
NO.	NUMBER
NOM	NOMINAL
NTS	NOT TO SCALE
OC	ON CENTER
OD	OUTSIDE DIAMETER
OH	OPPOSITE HAND
OPNG	OPENING
OPP	OPPOSITE
OSB	ORIENTED STRAND BOARD
PLAM	PLASTIC LAMINATE
PLAS	PLASTER
PLUMB	PLUMBING
PT	PAINT
PTD	PAINTED
PWD	PLYWOOD
QT	QUARRY TILE
RAD	RADIUS
RB	RUBBER BASE
RCP	REFLECTED CEILING PLAN
RD	ROOF DRAIN
REF	REFER TO or REFERENCE
REINF	REINFORCED
RELOC	RELOCATE(D)
REQ	REQUIRED
REV	REVISE, REVISED or REVISION
RM	ROOM
RO	ROUGH OPENING
RS	ROUGH SAWN
(S)	SEALANT
S	SOUTH
SCHED	SCHEDULE
SF	SQUARE FEET
SHTG	SHEATHING
SIM	SIMILAR
SOG	SLAB ON GRADE
SPEC	SPECIFICATION(S)
SQ	SQUARE
SS	STAINLESS STEEL
STD	STANDARD
STL	STEEL
STN	STAIN
STRUC	STRUCTURE or STRUCTURAL
(T)	TEMPERED
T&G	TONGUE AND GROOVE
T.O.	TOP OF
TD	THRESHOLD
TYP	TYPICAL
UON	UNLESS OTHERWISE NOTED
VB	VAPOR BARRIER
VCT	VINYL COMPOSITION TILE
VERT	VERTICAL
VIF	VERIFY IN FIELD
VIN	VINYL
VTR	VENT THROUGH ROOF
W	WEST
W/	WITH
W/O	WITHOUT
WD	WOOD
WIN	WINDOW

SYMBOLS



GENERAL NOTES

1. DO NOT SCALE DRAWINGS
2. ALL WORK TO BE PERFORMED TO APPLICABLE BUILDING CODES.
3. VERIFY DIMESIONS OF ELEMENTS TO REMAIN IN FIELD. DRAWINGS ARE BASED ON LIMITED FIELD MEASUREMENT.
4. ALL DIMENSIONS ARE TO FACE OF STRUCTURE UNLESS OTHERWISE NOTED. ALL DIMENSIONS INDICATING REQUIRED CLEARANCES ARE TO FACE OF FINISH UNLESS OTHERWISE NOTED.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FAMILIARIZING HIM OR HERSELF WITH THE CONTRACT DOCUMENTS, VERIFYING FIELD CONDITIONS AND DIMENSIONS, AND CONFIRMING THAT THE WORK MAY BE ACCOMPLISHED AS SHOWN PRIOR TO PROCEEDING WITH CONSTRUCTION. CONTRACTOR SHALL NOTIFY CONTRACTING OFFICER (C.O.) IN WRITING OF ANY DISCREPANCY WITHIN THE CONTRACT DOCUMENTS AND REQUEST CLARIFICATION PRIOR TO PROCEEDING WITH CONSTRUCTION.
6. SHOULD THERE BE ANY QUESTIONS CONCERNING THE CONTRACT DOCUMENTS, EXISTING CONDITIONS, AND/OR DESIGN INTENT, THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING A CLARIFICATION FROM THE C.O. PRIOR TO PROCEEDING WITH THE WORK, OR RELATED WORK IN QUESTION.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FAMILIARIZING HIMSELF WITH THE PROJECT SCOPE OF WORK, SCHEDULE, AND DEADLINES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ADVISING THE C.O. OF ALL ITEMS REQUIRING A LONG LEAD TIME UPON NOTICE TO PROCEED THAT WILL AFFECT THE SCHEDULE, AND SHALL SUBMIT ORDER CONFIRMATIONS AND DELIVERY DATES FOR THE ITEMS IN QUESTION TO THE C.O.
8. INSTALL ALL MANUFACTURED ITEMS, MATERIALS, AND EQUIPMENT IN STRICT ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDED SPECIFICATIONS, EXCEPT WHERE THE CONTRACT DOCUMENTS ARE MORE STRINGENT. ANY MISCELLANEOUS ITEMS OR MATERIALS NOT SPECIFICALLY NOTED, BUT REQUIRED FOR PROPER INSTALLATION SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR. THE CONTRACTOR SHALL FURNISH TO THE C.O. ALL WARRANTIES AND GUARANTEES REQUIRED AT THE CONCLUSION OF THE PROJECT.
9. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL HOOK UPS / UTILITY CONNECTIONS, ETC. TO TEMPORARY TRAILERS DURING CONSTRUCTION.

INDEX

SHEET	OF	#	NAME
GENERAL			
1	60	G0.0	COVER SHEET
2	60	G0.1	INDEX & ABBREVIATIONS
3	60	G0.2	CODE STUDY - PUMP HOUSE
4	60	G0.3	ARCHITECTURAL SITE PLAN
CIVIL			
5	60	C1	CIVIL GENERAL NOTES
6	60	C2	CIVIL ABBREVIATIONS AND LEGEND
7	60	C3	EXISTING CONDITIONS PLAN
8	60	C4	EROSION CONTROL AND STAGING PLAN
9	60	C5	OVERALL UTILITY PLAN
10	60	C6	GRADING PLAN
11	60	C7	FIRE WATER PLAN AND PROFILE
12	60	C8	TANK OVERFLOW PIPE PLAN AND PROFILE
13	60	C9	TANK AND PIPING DETAILS
14	60	C10	WATER DETAILS
15	60	C11	EROSION CONTROL DETAILS
ARCHITECTURAL			
16	60	A1.0	VISITOR CENTER EXISTING CONDITIONS
17	60	A1.1	VISITOR CENTER EXISTING CONDITIONS
18	60	A1.2	VISITOR CENTER EXISTING CONDITIONS
19	60	A2.0	PUMP HOUSE MAIN FLOOR PLAN
20	60	A2.1	PUMP HOUSE RCP & ROOF PLAN
21	60	A2.2	PUMP HOUSE ELEVATIONS
22	60	A2.3	PUMP HOUSE SECTIONS
23	60	A2.4	PUMP HOUSE WALL SECTIONS
24	60	A2.5	PUMP HOUSE DETAILS
25	60	A3.0	GENERATOR PLANS, ELEVATIONS AND SECTIONS
STRUCTURAL			
26	60	S0.1	GENERAL NOTES
27	60	S0.2	GENERAL NOTES
28	60	S0.3	ABBREVIATIONS AND SYMBOLS
29	60	S1.1	PUMP HOUSE - FOUNDATION AND ROOF FRAMING PLAN
30	60	S1.2	GENERATOR - FOUNDATION PLAN
31	60	S1.3	WATER TANK - FOUNDATION PLAN
32	60	S4.1	TYPICAL DETAILS AND SCHEDULES
33	60	S4.2	TYPICAL DETAILS AND SCHEDULES
34	60	S5.1	FOUNDATION SECTIONS
35	60	S5.2	ROOF SECTIONS
MECHANICAL			
36	60	MP0.0	MECH./PLUMB. GENERAL NOTES
37	60	M1.0	MECHANICAL PUMP HOUSE FLOOR PLAN
38	60	M2.0	MECH. PUMP HOUSE DETAILS/SCHEDULES
PLUMBING			
39	60	P1.0	PLUMBING PUMP HOUSE FLOOR PLAN
40	60	P2.0	PLUMBING VISITOR CENTER FLOOR PLAN
41	60	P3.0	GAS PIPING PLAN
42	60	P4.0	PLUMBING DETAILS/SCHEDULES
FIRE PROTECTION			
43	60	FP0.1	FP SYMBOLS AND GEN NOTES
44	60	FP0.9	FIRE PROTECTION SITE PLAN
45	60	FP1.0	FIRE PROTECTION VISITOR CENTER
46	60	FP1.1	FIRE PROTECTION VISITOR CENTER
47	60	FP2.0	FIRE PROTECTION PUMP HOUSE FLOOR PLAN
48	60	FP4.0	FIRE PROTECTION DETAILS
49	60	FA0.1	FA SYMBOLS AND GEN NOTES
50	60	FA0.9	FIRE ALARM SITE PLAN
51	60	FA1.0	FIRE ALARM VISITOR CENTER
52	60	FA1.1	FIRE ALARM VISITOR CENTER
53	60	FA2.0	FIRE ALARM PUMP HOUSE FLOOR PLAN
54	60	FA5.1	FIRE ALARM RISER DIAGRAM
ELECTRICAL			
55	60	E0.1	ELEC SYMBOLS AND GEN NOTES
56	60	E0.9	ELECTRICAL SITE PLAN
57	60	E1.1	ELECTRICAL VISITOR CENTER
58	60	E2.0	ELECTRICAL PUMP HOUSE FLOOR PLAN
59	60	E4.0	ELECTRICAL DETAILS
60	60	E5.1	ELECTRICAL SINGLE LINE DIAGRAMS

LICENSED ARCHITECT WILLIS M. SQUIRES 12-3198 STATE OF WYOMING

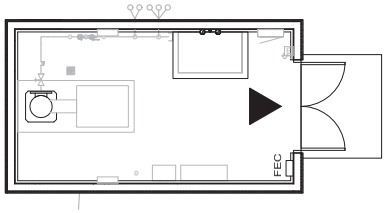
DESIGNED:	LM, JM
DRAWN:	DM, EV, JM
TECH REVIEW:	WMS
DATE:	12/02/2022
SUB SHEET NO.	G0.1
TITLE OF SHEET	INDEX & ABBREVIATIONS
	FOSSIL BUTTE NATIONAL MONUMENT
	WATER SYSTEM IMPROVEMENTS TO MEET FIRE PROTECTION REQUIREMENTS
DRAWING NO.	174
	173823
PMIS/PKG NO.	282711
SHEET	2 OF 60

11/29/2022 10:56:45 AM BIM 360://2021-280 FOBU Fire Protection/2021280 - FOBU Fire Protection - v20 - BIM 360.rvt

LEGEND

▶ EGRESS DOOR

FEC NEW SURFACE-MOUNTED FIRE EXTINGUISHER CABINET



1 G0.2 PUMP HOUSE - CODE PLAN

CODE ANALYSIS

1. APPLICABLE BUILDING CODES:

2021 IECC		
2021 IBC	2021 IMC	NFPA
2021 IEBC	2021 IPC	NFPA 70 NEC
ABAAS	ASHRAE 90.1	
NFPA 101	IEEE STANDARDS	

2. PROJECT DESCRIPTION.

NEW FIRE PROTECTION SYSTEMS ARE TO BE INSTALLED AT THE EXISTING VISITOR CENTER AT FOSSIL BUTTE NATIONAL MONUMENT. TO MEET THE WATER SUPPLY REQUIREMENTS OF THE NEW SYSTEM, CONSTRUCTION OF A FIRE WATER STORAGE TANK AND ASSOCIATED PUMP HOUSE ARE INCLUDED IN THIS PROJECT.

3. OCCUPANT LOAD FACTOR: 1 PER 300 SF
NUMBER OF OCCUPANTS: 1
BUILDING IS NOT TYPICALLY OCCUPIED

4. OCCUPANCY: U

5. CONSTRUCTION: TYPE VB

TABLE 601 - FIRE-RESISTANCE RATING REQUIREMENTS FOR TYPE VB

PRIMARY STRUCTURAL FRAME:	0HRS
BEARING WALLS:	0HRS
FLOOR CONSTRUCTION:	0HRS
ROOF CONSTRUCTION:	0HRS

6. A. BUILDING HEIGHT (WITH FIRE SUPPRESSION SYSTEM)

TABLE 504.3	ALLOWABLE	ACTUAL
PUMP HOUSE:		
TYPE VB, SPRINKLERED	60 FT	10 FT

6. B. ALLOWABLE NUMBER OF STORIES ABOVE GRADE

TABLE 504.4	ALLOWABLE	ACTUAL
PUMP HOUSE:		
TYPE VB, SPRINKLERED	2	1

6. C. ALLOWABLE AREA

TABLE 506.2	ALLOWABLE	ACTUAL
PUMP HOUSE:		
TYPE VB, S1	22,000 SQFT	180

7. PROJECT WILL INSTALL A NEW FIRE SPRINKLER SYSTEM AND FIRE ALARM SYSTEM IN THE EXISTING VISITOR CENTER AND PUMP HOUSE

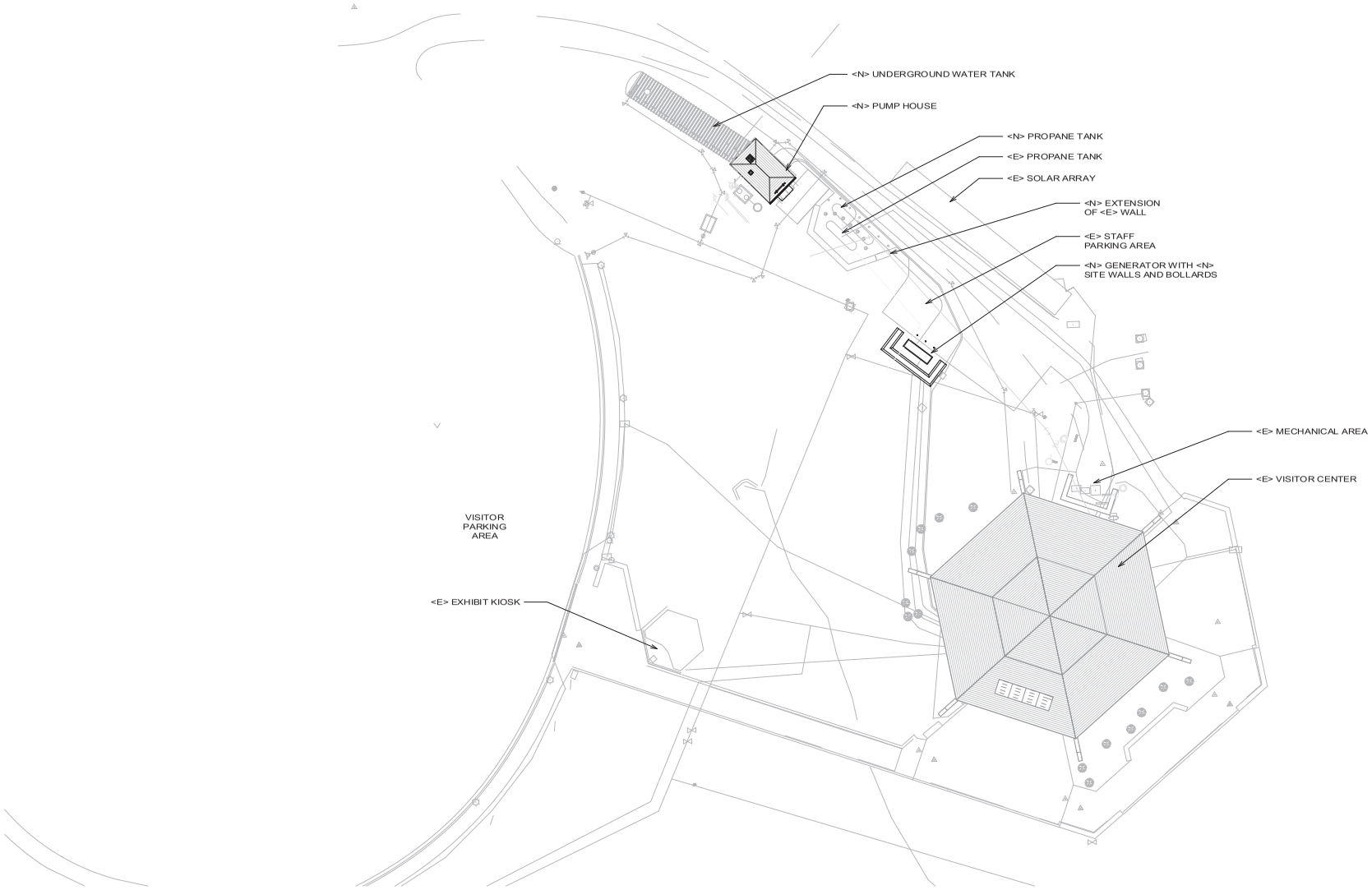
IECC
THE STRUCTURE IS CONSIDERED EXEMPT FROM THE BUILDING THERMAL ENVELOPE REQUIREMENTS OF THE IECC VIA SECTION C402.1 FOR LOW ENERGY AND EQUIPMENT BUILDINGS.

4 0 4 8
SCALE OF FEET

LICENSED ARCHITECT WELLS M. SQUIRES C-3198 STATE OF WYOMING

DESIGNED: LM, JM	SUB SHEET NO.	TITLE OF SHEET	DRAWING NO. 174 173823
CADD DM, EV, JM	G0.2	CODE STUDY - PUMP HOUSE	PMIS/PKG NO. 282711
TECH REVIEW: WMS		FOSSIL BUTTE NATIONAL MONUMENT	SHEET
DATE: 12/02/2022		WATER SYSTEM IMPROVEMENTS TO MEET FIRE PROTECTION REQUIREMENTS	3 OF 60

11/29/2022 10:56:45 AM BIM 360://2021-280 FOBU Fire Protection/2021280 - FOBU Fire Protection - v20 - BIM 360.rvt



1 G0.3 ARCHITECTURAL SITE PLAN

11/29/2022 10:56:46 AM BIM 360://2021-280 FOBU Fire Protection/2021280 - FOBU Fire Protection - v20 - BIM 360.rvt

LICENSED ARCHITECT WILLIS M. SQUIRES P-3199 STATE OF WYOMING

DESIGNED: LM, JM	SUB SHEET NO. G0.3	TITLE OF SHEET: ARCHITECTURAL SITE PLAN	DRAWING NO. 174 173823
DRAWN: DM, EV, JM		FOSSIL BUTTE NATIONAL MONUMENT	PMIS/PKG NO. 282711
TECH REVIEW: WMS		WATER SYSTEM IMPROVEMENTS TO MEET FIRE PROTECTION REQUIREMENTS	SHEET 4 OF 60
DATE: 12/02/2022			

GENERAL NOTES:

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL UTILITIES DURING CONSTRUCTION AND FOR COORDINATING WITH THE APPROPRIATE UTILITY COMPANY FOR ANY UTILITY CROSSINGS REQUIRED. REPAIR OF DAMAGED UTILITIES SHALL BE AT THE CONTRACTORS EXPENSE, INCLUDING BUT NOT LIMITED TO UNKNOWN UNDERGROUND UTILITIES.

2. THE CONTRACTOR IS RESPONSIBLE FOR FIELD LOCATING AND VERIFYING ELEVATIONS OF ALL EXISTING SEWER MAINS, WATER MAINS AND OTHER UTILITIES AT THE POINT OF CONNECTION SHOWN ON THE PLANS, AND AT ANY UTILITY CROSSINGS PRIOR TO INSTALLING ANY OF THE NEW IMPROVEMENTS. IF A CONFLICT EXISTS AND/OR A DESIGN MODIFICATION IS REQUIRED, THE CONTRACTOR SHALL COORDINATE WITH THE CONTRACTING OFFICER TO MODIFY THE DESIGN.

3. RECORD DRAWINGS SHOWING ALL CHANGES FROM THE APPROVED CONSTRUCTION DRAWINGS SHALL BE SUBMITTED TO THE CONTRACTING OFFICER PRIOR TO INITIATION OF THE WARRANTY PERIOD. THE RECORD DRAWINGS WILL CONSIST OF A MARKED-UP SET OF "ISSUED FOR CONSTRUCTION" DRAWINGS VERIFYING THE FOLLOWING:
   - ALL LENGTHS, SIZES, AND MATERIALS OF INSTALLED PIPE, MANHOLES, AND ANY OTHER IMPROVEMENT.
   - HORIZONTAL LOCATIONS EITHER BY STATION AND OFFSET, OR BY NORTHING AND EASTING COORDINATES OF ALL MANHOLES, BENDS, CLEANOUTS, VALVES, TAPS, WYES, STUBS, PLUGS, TEES, ETC.
   - INVERT ELEVATIONS OF STORM SEWER AND SANITARY SEWER MANHOLES, INLETS, OUTLETS, STUB ENDS, TOP OF PIPE ELEVATIONS OF EACH UTILITY CROSSING, ETC.
   - CONSTRUCTED SLOPE OF STORM AND SANITARY PIPES BETWEEN MANHOLES AND STRUCTURES.
   - TOP OF PIPE ELEVATION AT REGULAR INTERVALS AND/OR FITTINGS FOR WATER LINES.
   - ELEVATIONS AT FLOWLINE OF CURB AND GUTTER AT DESIGN LOCATIONS AND GRADE BREAKS. ELEVATION OF INLET AND TRENCH DRAIN GRATES. TOP OF CURB AT CURB INLETS.
   - ANY OTHER VARIATIONS FROM THE CONSTRUCTION DOCUMENTS MUST BE CLEARLY NOTED AND DETAILED ON THE PLANS.
   - AS-BUILT FIELD NOTES, FROM WHICH THE AS-BUILT DRAWINGS ARE PREPARED, ARE TO BE PROVIDED AND STAMPED/SIGNED AND DATED BY AN WYOMING REGISTERED PROFESSIONAL LAND SURVEYOR.

13. A GEOTECHNICAL REPORT HAS NOT BEEN PROVIDED FOR THIS PROJECT FOR PAVEMENT DESIGN AND RECOMMENDATIONS REGARDING EXCAVATION, COMPACTION, MATERIALS, EMBANKMENT, PAVEMENT SUBEXCAVATION, MOISTURE CONTROL, AND TOPSOIL REMOVAL AND REPLACEMENT. THE CONSTRUCTION METHODS FOR EXCAVATION/EMBANKMENTS, COMPACTION, AND SUBGRADE PREPARATION SHALL BE IN STRICT CONFORMANCE WITH THE PROJECT SPECIFICATIONS. THE CONTRACTING OFFICER SHALL BE NOTIFIED IMMEDIATELY OF DISCREPANCIES BETWEEN THE REQUIREMENTS OF THESE CONSTRUCTION DOCUMENTS AND SPECIFICATIONS.

14. ALL TREE REMOVAL MUST BE APPROVED BY THE CONTRACTING OFFICER PRIOR TO REMOVAL.

15. REFER TO THE PROJECT SPECIFICATIONS FOR ARCHEOLOGICAL MONITORING REQUIREMENTS DURING CONSTRUCTION.

SURVEY NOTES:

1. TOPOGRAPHIC SURVEY SHOWN HEREON HAS BEEN PREPARED BY MARTIN / MARTIN INC. IN JULY 2021.

WATER NOTES:

1. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ADJUST ALL WATER VALVE BOXES TO THE REQUIRED FINAL GRADE.

2. DISTANCES FOR FIRE WATER LINES ARE THE HORIZONTAL DISTANCE OF THE FULL RUN OF LINE. THEREFORE, DISTANCES SHOWN ON THE PLANS ARE APPROXIMATE AND COULD VARY DUE TO VERTICAL ALIGNMENT AND FITTING DIMENSIONS.

3. MAINTAIN A MINIMUM OF TEN FEET [10'] HORIZONTAL SEPARATION BETWEEN ALL SANITARY SEWER AND WATER MAINS AND SERVICES.

4. FOR ALL PIPE INSTALLATIONS, THE DEPTH OF COVER OVER THE PIPE MEASURED FROM FINAL GRADE TO THE TOP OF THE PIPE SHALL BE A MINIMUM OF 8 FEET AND SHALL BE KNOWN AS THE COVER OVER THE PIPE. IF DIFFICULTIES ARISE WHEN CROSSING INTERFERENCE AND WHERE SPECIFICALLY APPROVED BY THE CONTRACTING OFFICER, DEVIATIONS FROM 8 FEET OF COVER WILL BE PERMITTED. COVER OVER THE PIPE SHALL BE A MINIMUM OF 3 FEET AND A MAXIMUM OF 10 FEET.

5. WHEN IT IS NECESSARY TO LOWER OR RAISE WATER LINES AT STORM DRAINS AND OTHER UTILITY CROSSINGS, A MINIMUM CLEARANCE OF 24-INCHES SHALL BE MAINTAINED BETWEEN THE OUTSIDE OF PIPES.

6. THE WATER QUALITY CONTROL DIVISION OF THE WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY [WYDEQ] REQUIRES ALL WATER LINE CONTRACTORS TO POSSESS A CURRENT DISCHARGE PERMIT FOR DISCHARGES OF CHLORINATED AND PROCESS WATERS ASSOCIATED WITH THE INSTALLATION OF NEW MAINS OR CONDUITS. CONTACT WYDEQ WATER QUALITY CONTROL DIVISION AT 307-777-6150 FOR INFORMATION ON OBTAINING THE REQUIRED PERMIT.

7. CONTRACTOR TO COORDINATE HORIZONTAL AND VERTICAL LOCATIONS OF UTILITY SERVICE CONNECTIONS TO BUILDING WITH MECHANICAL/PLUMBING PLANS PRIOR TO CONSTRUCTION. WHERE NEW WATER MAINS CONNECT TO EXISTING BUILDING SERVICES, CONTRACTOR SHALL LOCATE SAID SERVICES A MINIMUM OF FIVE (5) DAYS PRIOR TO TRENCHING OF NEW WATER MAIN. NOTIFY THE CONTRACTING OFFICER OF ANY DISCREPANCIES.

8. CONTRACTOR TO INSTALL FIRE WATER LINES AS SHOWN ON PLANS IN ACCORDANCE WITH MANUFACTURES RECOMMENDATION FOR JOINT INSERTION, VERTICAL AND HORIZONTAL DEFLECTIONS. IF DESIGN ALIGNMENT REQUIRES A HORIZONTAL OR VERTICAL DEFLECTION IN EXCESS OF PIPE MANUFACTURES ALLOWANCES, CONTRACTOR TO SUBMIT TO THE CONTRACTING OFFICER PROPOSED ALTERNATIVE SOLUTIONS TO ACHIEVE THE INTENT OF THE DESIGN ALIGNMENT.

EROSION CONTROL NOTES:

1. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL REQUIRED PERMITS AND IMPLEMENTING AND MAINTAINING EROSION AND SEDIMENT CONTROL MEASURES AT ALL TIMES DURING CONSTRUCTION TO PREVENT DAMAGING FLOWS ON THE SITE AND IN THE WATERSHED BELOW THE SITE. CONTROL SYSTEMS SHALL BE INSTALLED PRIOR TO STRIPPING OF NATIVE VEGETATIVE COVER AND AS GRADING PROGRESSES. REFER TO SEDIMENT AND EROSION CONTROL PLANS. CONDITIONS IN THE FIELD MAY WARRANT EROSION CONTROL MEASURES IN ADDITION TO WHAT IS SHOWN ON THESE PLANS. THE PLAN MAY BE MODIFIED WITH APPROPRIATE APPROVALS AS FIELD CONDITIONS WARRANT.

2. NATURAL VEGETATION SHALL BE RETAINED AND PROTECTED WHEREVER POSSIBLE. EXPOSURE OF SOIL TO EROSION BY REMOVAL OR DISTURBANCE OF VEGETATION SHALL BE LIMITED TO THE AREA REQUIRED FOR IMMEDIATE CONSTRUCTION OPERATION AND FOR THE SHORTEST PRACTICAL PERIOD OF TIME.

3. TOPSOIL SHALL BE STOCKPILED TO THE EXTENT PRACTICABLE ON THE SITE FOR USE ON AREAS TO BE REVEGETATED. ANY AND ALL STOCKPILES SHALL BE LOCATED AND PROTECTED FROM EROSIVE ELEMENTS.

4. AT ALL TIMES, THE PROPERTY SHALL BE MAINTAINED AND/OR WATERED TO PREVENT WIND-CAUSED EROSION. EARTHWORK OPERATIONS SHALL BE DISCONTINUED WHEN FUGITIVE DUST SIGNIFICANTLY IMPACTS ADJACENT PROPERTY. IF EARTHWORK IS COMPLETE OR DISCONTINUED AND DUST FROM THE SITE CONTINUES TO CREATE PROBLEMS, THE CONTRACTOR SHALL IMMEDIATELY INSTITUTE MITIGATIVE MEASURES AND SHALL CORRECT DAMAGE TO ADJACENT PROPERTY.

5. PERMANENT OR TEMPORARY SOIL STABILIZATION MEASURES SHALL BE APPLIED TO DISTURBED AREAS WITHIN 30 DAYS AFTER FINAL GRADE IS REACHED ON ANY PORTION OF THE SITE. UNLESS SPECIFIED OTHERWISE, TEMPORARY VEGETATION SHALL BE INSTALLED ON ALL DISTURBED AREAS WHERE PERMANENT SURFACE IMPROVEMENTS ARE NOT SCHEDULED FOR INSTALLATION WITHIN THREE MONTHS. TEMPORARY VEGETATION SHALL BE A VIGOROUS, DROUGHT TOLERANT, NATIVE SPECIES MIX. PROJECT SCHEDULING SHOULD TAKE ADVANTAGE OF SPRING OR FALL PLANTING SEASONS FOR NATURAL GERMINATION, BUT SEEDED AREAS SHALL BE IRRIGATED, IF CONDITIONS MERIT. REFER TO THE LANDSCAPE PLAN FOR FINAL LANDSCAPING.

6. TEMPORARY FENCES SHALL BE INSTALLED ALONG ALL BOUNDARIES OF THE CONSTRUCTION LIMITS OR PROPERTY LINES AS SHOWN ON THE APPROVED EROSION CONTROL PLAN, TO PREVENT GRADING ON PROPERTY NOT OWNED BY THE OWNER/DEVELOPER. IN ADDITION, THE [LOCAL JURISDICTION] MAY REQUIRE ADDITIONAL TEMPORARY FENCES IF FIELD CONDITIONS WARRANT.

7. THE CONTRACTOR SHALL PREVENT SEDIMENT, DEBRIS AND ALL OTHER POLLUTANTS FROM ENTERING THE STORM SEWER SYSTEM DURING ALL DEMOLITION, EXCAVATION, TRENCHING, GRADING OR OTHER CONSTRUCTION OPERATIONS THAT ARE PART OF THIS PROJECT. THE CONTRACTOR SHALL BE HELD RESPONSIBLE FOR REMEDIATION OF ANY ADVERSE IMPACTS TO ADJACENT WATERWAYS, ROADWAYS, WETLANDS, ETC., RESULTING FROM WORK DONE AS PART OF THIS PROJECT.

8. THE CONTRACTOR AND/OR THEIR AUTHORIZED AGENTS SHALL REMOVE ALL SEDIMENT, MUD, CONSTRUCTION DEBRIS, OR OTHER POTENTIAL POLLUTANTS THAT MAY HAVE BEEN INADVERTENTLY DISCHARGED TO, OR ACCUMULATED IN, THE FLOWLINES AS A RESULT OF CONSTRUCTION ACTIVITIES ASSOCIATED WITH THIS SITE DEVELOPMENT OR CONSTRUCTION PROJECT.

9. THE GRADING CONTRACTOR AND/OR THEIR AUTHORIZED AGENTS SHALL ENSURE THAT ALL LOADS OF CUT AND FILL MATERIAL IMPORTED TO OR EXPORTED FROM THIS SITE SHALL BE PROPERLY COVERED TO PREVENT LOSS OF THE MATERIAL DURING TRANSPORT ON PUBLIC ROADWAYS.

10. APPROVED EROSION AND SEDIMENT CONTROL "BEST MANAGEMENT PRACTICES" [BMP] SHALL BE MAINTAINED AND KEPT IN GOOD REPAIR FOR THE DURATION OF THIS PROJECT. AT A MINIMUM, THE CONTRACTOR OR HIS AGENT SHALL INSPECT ALL BMPS WEEKLY AND AFTER SIGNIFICANT PRECIPITATION EVENTS. ALL NECESSARY MAINTENANCE AND REPAIR SHALL BE COMPLETED IN A TIMELY MANNER. ACCUMULATED SEDIMENT AND DEBRIS SHALL BE REMOVED FROM A BMP WHEN THE SEDIMENT LEVEL REACHES ONE HALF THE HEIGHT OF THE BMP OR, AT ANY TIME THAT SEDIMENT OR DEBRIS ADVERSELY IMPACTS THE FUNCTIONING OF THE BMP.

11. WATER USED IN THE CLEANING OF CONCRETE TRUCK DELIVERY CHUTES SHALL BE DISCHARGED INTO A PREDEFINED, BERMED CONTAINMENT AREA ON THE JOB SITE. THE REQUIRED CONTAINMENT AREA IS TO BE BERMED SO THAT WASH WATER IS TOTALLY CONTAINED. WASH WATER DISCHARGED INTO THE CONTAINMENT AREA SHALL BE ALLOWED TO INFILTRATE OR EVAPORATE. DRIED CONCRETE WASTE SHALL BE REMOVED FROM THE CONTAINMENT AREA AND PROPERLY DISPOSED OF. SHOULD A PREDEFINED BERMED CONTAINMENT AREA NOT BE AVAILABLE DUE TO THE PROJECT SIZE, OR LACK OF AN AREA WITH A SUITABLE GROUND SURFACE FOR ESTABLISHING A CONTAINMENT AREA, PROPER DISPOSAL OF READY MIX WASHOUT AND RINSE OFF WATER AT THE JOB SITE SHALL CONFORM TO THE APPROVED TECHNIQUES AND PRACTICES IDENTIFIED IN THE

12. THE CONTRACTOR SHALL PROTECT ALL STORM SEWER FACILITIES ADJACENT TO ANY LOCATION WHERE PAVEMENT CUTTING OPERATIONS INVOLVING WHEEL CUTTING, SAW CUTTING OR ABRASIVE WATER JET CUTTING ARE TO TAKE PLACE. THE CONTRACTOR SHALL REMOVE AND PROPERLY DISPOSE OF ALL WASTE PRODUCTS GENERATED BY SAID CUTTING OPERATIONS ON A DAILY BASIS. THE DISCHARGE OF ANY WATER CONTAMINATED BY WASTE PRODUCTS FROM CUTTING OPERATIONS TO THE STORM SEWER SYSTEM IS PROHIBITED.

13. PAVED SURFACES WHICH ARE ADJACENT TO CONSTRUCTION SITES SHALL BE SWEPT IN A TIMELY MANNER WHEN SEDIMENT AND OTHER MATERIALS ARE TRACKED OR DISCHARGED ON TO THEM. EITHER SWEEPING BY HAND OR USE OF STREET SWEEPERS IS ACCEPTABLE. STREET SWEEPERS USING WATER WHILE SWEEPING IS PREFERRED IN ORDER TO MINIMIZE DUST. FLUSHING OFF PAVED SURFACES WITH WATER IS PROHIBITED.

Professional Engineer (Civil) JERRY A. MAY 13622 Date 12/02/22 WYOMING

DESIGNED: JDL	SUB SHEET NO.	TITLE OF SHEET	DRAWING NO.	174
DRAWN: JDL	C1	CIVIL GENERAL NOTES		173823
TECH REVIEW: JAM		FOSSIL BUTTE NATIONAL MONUMENT WATER SYSTEM IMPROVEMENTS TO MEET FIRE PROTECTION REQUIREMENTS	PMIS/PKG NO.	282711
DATE: 12/02/2022			SHEET	5 OF 60

3/30/2022 11:57 AM G:\SULLIVAN\20.0646-NPS - FOBU WATER SYSTEM IMPROVEMENTS\282711\DRAWINGS\CIVIL\C1 CIVIL GENERAL NOTES.DWG

GENERAL ABBREVIATIONS

@	AT
'	FEET
"	INCHES
#	NUMBER
ABAAS	ARCHITECTURAL BARRIERS ACT ACCESSIBILITY GUIDELINES
B.D.	BEDDING
B.F.	BACKFILL
BLD	BUILDING
BLDG	BUILDING
BM	BENCHMARK
BOP	BOTTOM OF PIPE
BOT	BOTTOM
CIP	CAST IRON PIPE
CL	CENTERLINE
CMP	CORRUGATED METAL PIPE
CMR	CONSTRUCTION MANAGEMENT REPRESENTATIVE
CO	CONTRACTING OFFICER
CP	CONTROL POINT
CU	COPPER
DIA OR ø	DIAMETER
DISTR	DISTRIBUTAION
EL	ELEVATION
ELEV	ELEVATION
EOA	EDGE OF ASPHALT
EOC	EDGE OF CONCRETE
EOP	EDGE OF PAN
EOR	EDGE OF ROAD/DIRT/IMPROVED
EX	EXISTING
FF	FINISHED FLOOR ELEVATION
FG	FINISHED GRADE
FH	FIRE HYDRANT
FL	FLOW LINE
FNC	FENCE LINE
FP	FLAG POLE
FT	FEET
G	GAS
GALV	GALVANIZED STEEL PIPE
GB	GRADE BREAK
GS	GROUND SHOT
GV	GATE VALVE
HDPE	HIGH DENSITY POLYETHYLENE
HP	HIGH POINT
HYD	FIRE HYDRANT
IE	INVERT ELEVATION
IN	INCH
INV	INVERT ELEVATION
LF	LINEAR FEET
MIN	MINIMUM
NIC	NOT IN CONTRACT
PE	POLYETHYLENE
PVC	POLYVINYL CHLORIDE
PP	POWER POLE
PROP	PROPOSED
PT	POINT OF TANGENCY
RE	REFERENCE
SCH	SCHEDULE
SH	SPRINKLER HEAD
SN	SIGN
SS	SANITARY SEWER
SSFM	SANITARY SEWER FORCE MAIN
ST	STORM SEWER
STA	STATION
STL	STEEL PIPE
SW	SIDE WALK
TC	TOP OF CONCRETE
TOP	TOP OF PIPE
TOW	TOP OF WALL ELEVATION
TOW	TOP OF WATER
TYP	TYPICAL
UE	UNDERGROUND ELECTRIC CABLE
UFO	UNDERGROUND FIBER OPTIC
UT	UNDERGROUND TELEPHONE CABLE
VCP	VITRIFIED CLAY PIPE
VERT	VERTICAL
W	WATER
W/	WITH
WA	WALL
WS	WATER SERVICE (FIRE SUPPRESSION)
WWM	WELDED WIRE MESH

GENERAL SYMBOLS

EDGE OF ROAD

FIRE HYDRANT

BUILDING WALL

EXISTING ELECTRICAL — E

EXISTING FIBER OPTIC LINE — FO

EXISTING GAS LINE — GAS

EXISTING SANITARY SEWER LINE — SS

EXISTING STORM LINE — ST

EXISTING GAS LINE — G

EXISTING WATER LINE — W

EXISTING OVERHEAD ELECTRIC — OHE

EXISTING PROPANE TANK

ELECTRICAL LINE — OF

GAS LINE — G

FIRE LINE — FW

TANK OVERFLOW PIPE — OF

TREE (CONIFER, DECIDUOUS)

VALVE

WATER LINE — W

UTILITY CROSSING

Professional Engineer (Civil) JERRY A. MAY 13622 Date 12/02/22 WYOMING

DESIGNED:	JDL
DRAWN:	JDL
TECH REVIEW:	JAM
DATE:	12/02/2022
SUB SHEET NO.	C2

TITLE OF SHEET
CIVIL ABBREVIATIONS AND LEGEND

FOSSIL BUTTE NATIONAL MONUMENT
WATER SYSTEM IMPROVEMENTS TO MEET FIRE PROTECTION REQUIREMENTS

DRAWING NO.	174 173823
PMIS/PKG NO.	282711
SHEET	6 OF 60

3/30/2022 12:48 PM G:\SULLIVAN\20.0646-NPS - FOBU WATER SYSTEM IMPROVEMENTS\282711\DRAWINGS\CIVIL\C2 CIVIL ABBREVIATIONS AND LEGEND.DWG

BENCHMARK

ELEVATIONS ARE BASED ON A STATIC GPS OBSERVATION CALCULATED FROM 2 CORS STATIONS UTILIZING GEOID 18 TO CONTROL POINT # 50 BEING A 2 ½" ALUMINUM CAP STAMPED MARTIN/MARTIN CONTROL POINT NPS # 50 NEAR BEHIND THE SIDEWALK ON THE SOUTHSIDE OF THE VISITORS CENTER PARKING LOT 20 FEET EAST OF THE WESTERLY END OF THE SIDEWALK

ELEVATION = 6793.68' (NAVD 1988)

PROJECT COORDINATE SYSTEM AND BASIS OF BEARING

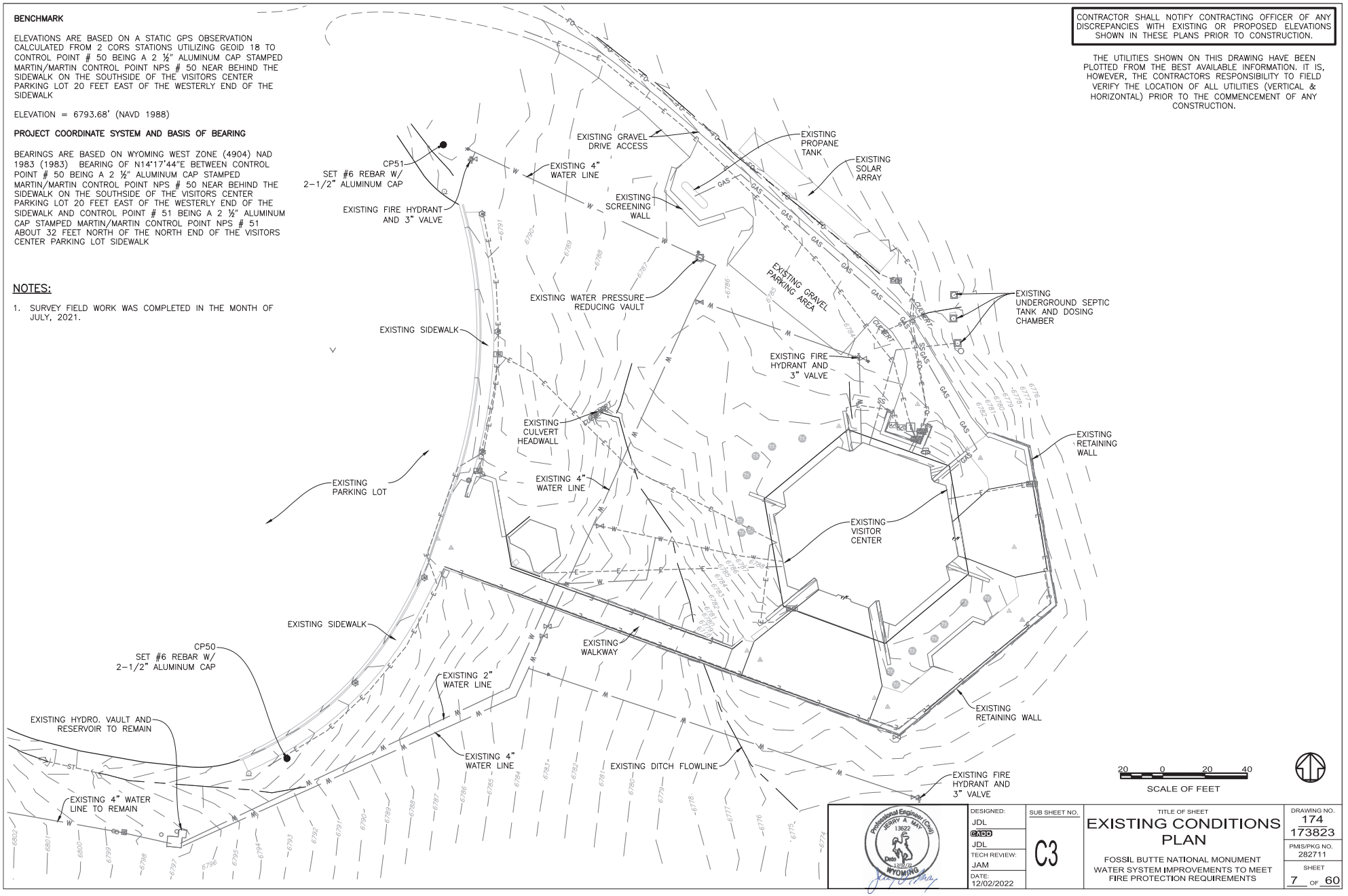
BEARINGS ARE BASED ON WYOMING WEST ZONE (4904) NAD 1983 (1983) BEARING OF N14°17'44"E BETWEEN CONTROL POINT # 50 BEING A 2 ½" ALUMINUM CAP STAMPED MARTIN/MARTIN CONTROL POINT NPS # 50 NEAR BEHIND THE SIDEWALK ON THE SOUTHSIDE OF THE VISITORS CENTER PARKING LOT 20 FEET EAST OF THE WESTERLY END OF THE SIDEWALK AND CONTROL POINT # 51 BEING A 2 ½" ALUMINUM CAP STAMPED MARTIN/MARTIN CONTROL POINT NPS # 51 ABOUT 32 FEET NORTH OF THE NORTH END OF THE VISITORS CENTER PARKING LOT SIDEWALK

NOTES:

1. SURVEY FIELD WORK WAS COMPLETED IN THE MONTH OF JULY, 2021.

CONTRACTOR SHALL NOTIFY CONTRACTING OFFICER OF ANY DISCREPANCIES WITH EXISTING OR PROPOSED ELEVATIONS SHOWN IN THESE PLANS PRIOR TO CONSTRUCTION.

THE UTILITIES SHOWN ON THIS DRAWING HAVE BEEN PLOTTED FROM THE BEST AVAILABLE INFORMATION. IT IS, HOWEVER, THE CONTRACTORS RESPONSIBILITY TO FIELD VERIFY THE LOCATION OF ALL UTILITIES (VERTICAL & HORIZONTAL) PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION.



DESIGNED:	JDL
CADD	JDL
TECH REVIEW:	JAM
DATE:	12/02/2022
SUB SHEET NO.	C3

TITLE OF SHEET
EXISTING CONDITIONS PLAN

FOSSIL BUTTE NATIONAL MONUMENT
WATER SYSTEM IMPROVEMENTS TO MEET FIRE PROTECTION REQUIREMENTS

DRAWING NO.	174 173823
PMIS/PKG NO.	282711
SHEET	7 OF 60

8/16/2021 3:40 PM G:\SULLIVAN\20.0646-NPS - FOBU WATER SYSTEM IMPROVEMENTS\282711\DRAWINGS\CIVIL\C3 EXISTING CONDITIONS PLAN.DWG

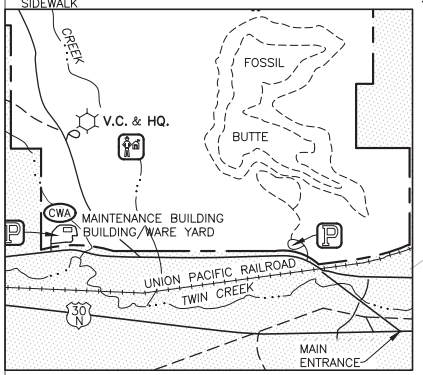
BENCHMARK

ELEVATIONS ARE BASED ON A STATIC GPS OBSERVATION CALCULATED FROM 2 CORS STATIONS UTILIZING GEOID 18 TO CONTROL POINT # 50 BEING A 2 ½" ALUMINUM CAP STAMPED MARTIN/MARTIN CONTROL POINT NPS # 50 NEAR BEHIND THE SIDEWALK ON THE SOUTHSIDE OF THE VISITORS CENTER PARKING LOT 20 FEET EAST OF THE WESTERLY END OF THE SIDEWALK

ELEVATION = 6793.68' (NAVD 1988)

PROJECT COORDINATE SYSTEM AND BASIS OF BEARING

BEARINGS ARE BASED ON WYOMING WEST ZONE (4904) NAD 1983 (1983) BEARING OF N14°17'44"E BETWEEN CONTROL POINT # 50 BEING A 2 ½" ALUMINUM CAP STAMPED MARTIN/MARTIN CONTROL POINT NPS # 50 NEAR BEHIND THE SIDEWALK ON THE SOUTHSIDE OF THE VISITORS CENTER PARKING LOT 20 FEET EAST OF THE WESTERLY END OF THE SIDEWALK AND CONTROL POINT # 51 BEING A 2 ½" ALUMINUM CAP STAMPED MARTIN/MARTIN CONTROL POINT NPS # 51 ABOUT 32 FEET NORTH OF THE NORTH END OF THE VISITORS CENTER PARKING LOT SIDEWALK



KEY MAP

VEHICLE TRACTION CONTROL
TOPSOIL STOCK PILE AREA
EXISTING GRAVEL DRIVE
STAGING AREA
NEW PUMP HOUSE AND UNDERGROUND WATER STORAGE TANK FOR FIRE PROTECTION
105LF SILT FENCE
LIMITS OF DISTURBANCE
EROSION CONTROL LOGS
LIMITS OF DISTURBANCE
CP51
SET #6 REBAR W/ 2-1/2" ALUMINUM CAP
NEW 6" FIRE WATER LINE
OPTIONAL STAGING AREA WITHIN EX PARKING SPACES
STAGING AREA WITHIN TWO PARKING SPOTS
80LF SILT FENCE
NEW FIRE HYDRANT LATERAL
NEW GAS LINE
NEW GENERATOR ON HOUSEKEEPING PAD WITH BOLLARDS AND SCREENING WALL RE: ARCH
40LF SILT FENCE
EXISTING PARKING LOT
EXISTING VISITOR CENTER
STAGING AREA WITHIN ONE RV PARKING SPOT
EXISTING PARKING ISLAND
CP50
SET #6 REBAR W/ 2-1/2" ALUMINUM CAP

CONTRACTOR SHALL NOTIFY CONTRACTING OFFICER OF ANY DISCREPANCIES WITH EXISTING OR PROPOSED ELEVATIONS SHOWN IN THESE PLANS PRIOR TO CONSTRUCTION.

THE UTILITIES SHOWN ON THIS DRAWING HAVE BEEN PLOTTED FROM THE BEST AVAILABLE INFORMATION. IT IS, HOWEVER, THE CONTRACTORS RESPONSIBILITY TO FIELD VERIFY THE LOCATION OF ALL UTILITIES (VERTICAL & HORIZONTAL) PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION.

NOTES

1. CONTRACTOR TO COORDINATE WITH THE CONTRACTING OFFICER FOR THE LOCATION OF THE STAGING AREA, STOCKPILING AND CONCRETE WASH OUT AREA.
2. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL REQUIRED PERMITS AND IMPLEMENTING AND MAINTAINING EROSION AND SEDIMENT CONTROL MEASURES AT ALL TIMES DURING CONSTRUCTION TO PREVENT DAMAGING FLOWS ON THE SITE AND IN THE WATERSHED BELOW THE SITE. CONTROL SYSTEMS SHALL BE INSTALLED PRIOR TO STRIPPING OF NATIVE VEGETATIVE COVER AND AS GRADING PROGRESSES. CONDITIONS IN THE FIELD MAY WARRANT EROSION CONTROL MEASURES IN ADDITION TO WHAT IS SHOWN ON THIS PLAN. THE PLAN MAY BE MODIFIED WITH APPROPRIATE APPROVALS AS FIELD CONDITIONS WARRANT.
3. NATURAL VEGETATION SHALL BE RETAINED AND PROTECTED WHEREVER POSSIBLE. EXPOSURE OF SOIL TO EROSION BY REMOVAL OR DISTURBANCE OF VEGETATION SHALL BE LIMITED TO THE AREA REQUIRED FOR IMMEDIATE CONSTRUCTION OPERATION AND FOR THE SHORTEST PRACTICAL PERIOD OF TIME.
4. TOPSOIL SHALL BE SEPARATELY STOCKPILED TO THE EXTENT PRACTICABLE ON THE SITE FOR USE ON AREAS TO BE REVEGETATED. ANY AND ALL STOCKPILES SHALL BE LOCATED AND PROTECTED FROM EROSIVE ELEMENTS.
5. INSTALL CONSTRUCTION FENCE AROUND THE EXCAVATION AREA WHERE THE UNDERGROUND TANK IS TO BE PLACED.
6. DUE TO THE EXTENTS OF EXCAVATION FOR THE UNDERGROUND FIRE WATER STORAGE TANK, THE EXISTING GRAVEL DRIVE WILL NEED TO BE TEMPORARY CLOSED WITH REQUIRED ROAD CLOSURE SIGNS AND BARRICADES.
7. ALL UNUSED EXCAVATED MATERIAL TO BE RELOCATED AND STOCKPILED NEAR THE MAINTENANCE BUILDING/WARE YARD, LOCATED IN SOUTHWEST CORNER OF THE PARK.
8. CONCRETE WASHOUT AREA TO BE LOCATED IN THE VICINITY OF THE MAINTENANCE BULDING/WARE YARD. COORDINATE WITH PARK STAFF ON SITE SUNDAY THROUGH FRIDAY.

LEGEND

- SILT FENCE
- VEHICLE TRACKING CONTROL
- EROSION CONTROL LOG
- STAGING AND STORAGE AREA
- STOCKPILE MANAGEMENT W/ PROTECTION
- CWA — CONCRETE WASHOUT AREA
- CONSTRUCTION FENCE
- LIMITS OF DISTURBANCE

20 0 20 40
SCALE OF FEET

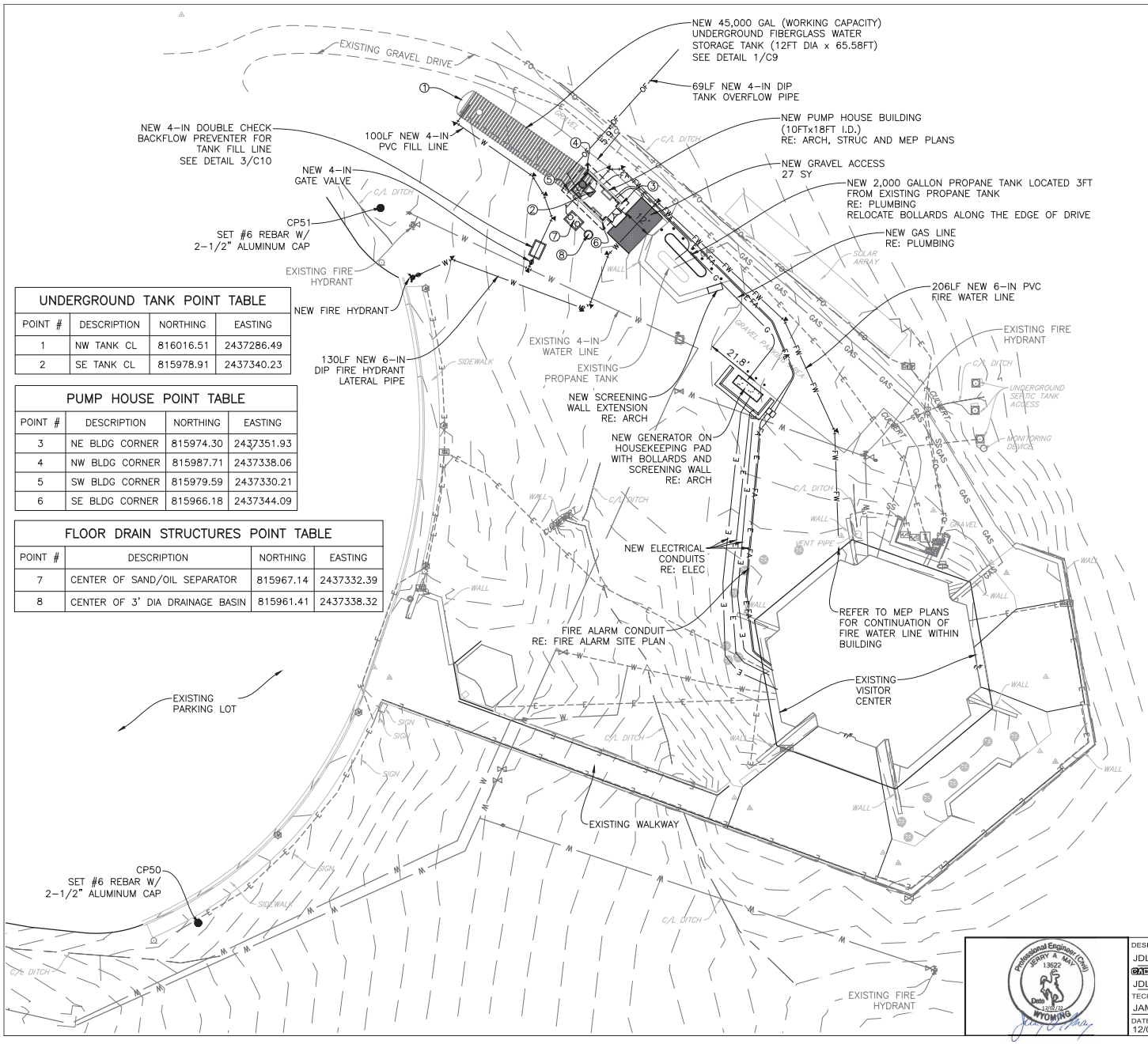
Professional Engineer (Civil) JERRY A. MAY 13622 Date 12/02/22 WYOMING

DESIGNED:	JDL
DRAWN:	JDL
TECH REVIEW:	JAM
DATE:	12/02/2022
SUB SHEET NO.	C4

TITLE OF SHEET
EROSION CONTROL AND STAGING PLAN
FOSSIL BUTTE NATIONAL MONUMENT
WATER SYSTEM IMPROVEMENTS TO MEET FIRE PROTECTION REQUIREMENTS

DRAWING NO.	174 173823
PMIS/PKG NO.	282711
SHEET	8 OF 60

8/24/2021 3:41 PM G:\SULLIVAN\20.0646-NPS - FOBU WATER SYSTEM IMPROVEMENTS\282711\DRAWINGS\CIVIL\C4 EROSION CONTROL AND STAGING PLAN.DWG



UNDERGROUND TANK POINT TABLE			
POINT #	DESCRIPTION	NORTHING	EASTING
1	NW TANK CL	816016.51	2437286.49
2	SE TANK CL	815978.91	2437340.23

PUMP HOUSE POINT TABLE			
POINT #	DESCRIPTION	NORTHING	EASTING
3	NE BLDG CORNER	815974.30	2437351.93
4	NW BLDG CORNER	815987.71	2437338.06
5	SW BLDG CORNER	815979.59	2437330.21
6	SE BLDG CORNER	815966.18	2437344.09

FLOOR DRAIN STRUCTURES POINT TABLE			
POINT #	DESCRIPTION	NORTHING	EASTING
7	CENTER OF SAND/OIL SEPARATOR	815967.14	2437332.39
8	CENTER OF 3' DIA DRAINAGE BASIN	815961.41	2437338.32

BENCHMARK

ELEVATIONS ARE BASED ON A STATIC GPS OBSERVATION CALCULATED FROM 2 CORS STATIONS UTILIZING GEOID 18 TO CONTROL POINT # 50 BEING A 2 ½" ALUMINUM CAP STAMPED MARTIN/MARTIN CONTROL POINT NPS # 50 NEAR BEHIND THE SIDEWALK ON THE SOUTHSIDE OF THE VISITORS CENTER PARKING LOT 20 FEET EAST OF THE WESTERLY END OF THE SIDEWALK

ELEVATION = 6793.68' (NAVD 1988)

PROJECT COORDINATE SYSTEM AND BASIS OF BEARING

BEARINGS ARE BASED ON WYOMING WEST ZONE (4904) NAD 1983 (1983) BEARING OF N14°17'44"E BETWEEN CONTROL POINT # 50 BEING A 2 ½" ALUMINUM CAP STAMPED MARTIN/MARTIN CONTROL POINT NPS # 50 NEAR BEHIND THE SIDEWALK ON THE SOUTHSIDE OF THE VISITORS CENTER PARKING LOT 20 FEET EAST OF THE WESTERLY END OF THE SIDEWALK AND CONTROL POINT # 51 BEING A 2 ½" ALUMINUM CAP STAMPED MARTIN/MARTIN CONTROL POINT NPS # 51 ABOUT 32 FEET NORTH OF THE NORTH END OF THE VISITORS CENTER PARKING LOT SIDEWALK

NOTES

1. REFER TO SHEET C4 FOR EROSION CONTROL MEASURES.
2. REFER TO SHEET C6 FOR SITE GRADING OF THE PUMP HOUSE AND GENERATOR ENCLOSURE.
3. REFER TO SHEETS C7 AND C8 FOR FIRE WATER LINE AND TANK PIPING PLAN AND PROFILE.
4. REFER TO SHEET C9 FOR PIPING TO PUMP HOUSE AND ADDITIONAL INFORMATION.
5. DUE TO DEPTH OF EXCAVATION REQUIRED TO INSTALL THE UNDERGROUND WATER STORAGE TANK, THE EXISTING GRAVEL DRIVE MAY NEED TEMPORARY CLOSURE WITH SIGNAGE AND BARRICADES. GRAVEL DRIVE TO BE REPLACED IN KIND.

CONTRACTOR SHALL NOTIFY CONTRACTING OFFICER OF ANY DISCREPANCIES WITH EXISTING OR PROPOSED ELEVATIONS SHOWN IN THESE PLANS PRIOR TO CONSTRUCTION.

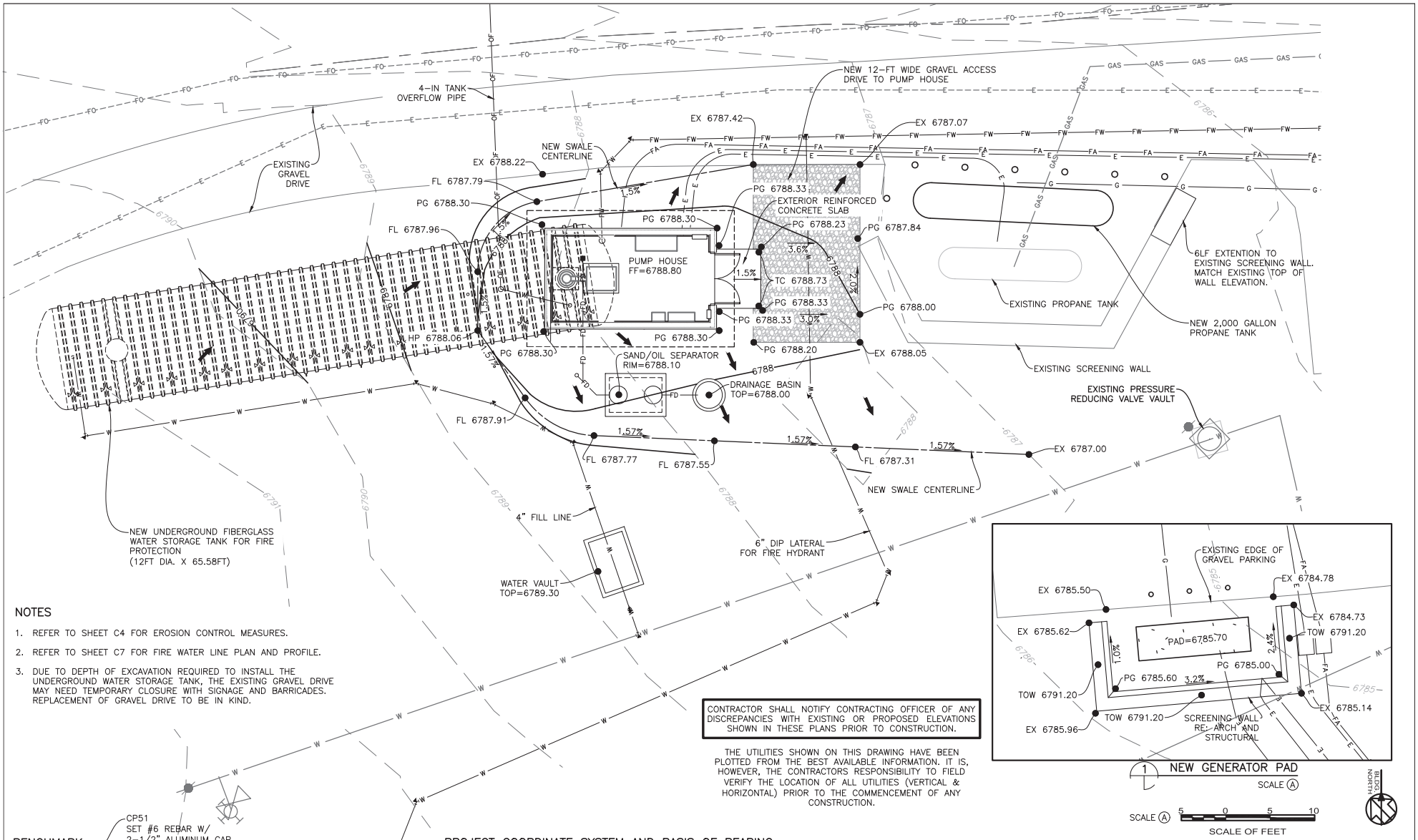
THE UTILITIES SHOWN ON THIS DRAWING HAVE BEEN PLOTTED FROM THE BEST AVAILABLE INFORMATION. IT IS, HOWEVER, THE CONTRACTORS RESPONSIBILITY TO FIELD VERIFY THE LOCATION OF ALL UTILITIES (VERTICAL & HORIZONTAL) PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION.

20 0 20 40
SCALE OF FEET

Professional Engineer (Civil) JERRY A. MARTIN 13622 Date 12/02/22 WYOMING

DESIGNED:	SUB SHEET NO.	TITLE OF SHEET	DRAWING NO.
JDL	C5	OVERALL UTILITY PLAN	174
DRAWN: JDL			173823
TECH REVIEW: JAM		FOSSIL BUTTE NATIONAL MONUMENT WATER SYSTEM IMPROVEMENTS TO MEET FIRE PROTECTION REQUIREMENTS	PMIS/PKG NO. 282711
DATE: 12/02/2022			SHEET 9 OF 60

8/16/2021 3:41 PM G:\SULLIVAN\20.0646-NPS - FOBU WATER SYSTEM IMPROVEMENTS\282711\DRAWINGS\CIVIL\C5 OVERALL UTILITY PLAN.DWG



NOTES

1. REFER TO SHEET C4 FOR EROSION CONTROL MEASURES.
2. REFER TO SHEET C7 FOR FIRE WATER LINE PLAN AND PROFILE.
3. DUE TO DEPTH OF EXCAVATION REQUIRED TO INSTALL THE UNDERGROUND WATER STORAGE TANK, THE EXISTING GRAVEL DRIVE MAY NEED TEMPORARY CLOSURE WITH SIGNAGE AND BARRICADES. REPLACEMENT OF GRAVEL DRIVE TO BE IN KIND.

CONTRACTOR SHALL NOTIFY CONTRACTING OFFICER OF ANY DISCREPANCIES WITH EXISTING OR PROPOSED ELEVATIONS SHOWN IN THESE PLANS PRIOR TO CONSTRUCTION.

THE UTILITIES SHOWN ON THIS DRAWING HAVE BEEN PLOTTED FROM THE BEST AVAILABLE INFORMATION. IT IS, HOWEVER, THE CONTRACTORS RESPONSIBILITY TO FIELD VERIFY THE LOCATION OF ALL UTILITIES (VERTICAL & HORIZONTAL) PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION.

BENCHMARK

CP51
SET #6 REBAR W/ 2-1/2" ALUMINUM CAP

ELEVATIONS ARE BASED ON A STATIC GPS OBSERVATION CALCULATED FROM 2 CORS STATIONS UTILIZING GEOID 18 TO CONTROL POINT # 50 BEING A 2 ½" ALUMINUM CAP STAMPED MARTIN/MARTIN CONTROL POINT NPS # 50 NEAR BEHIND THE SIDEWALK ON THE SOUTHSIDE OF THE VISITORS CENTER PARKING LOT 20 FEET EAST OF THE WESTERLY END OF THE SIDEWALK

ELEVATION = 6793.68' (NAVD 1988)

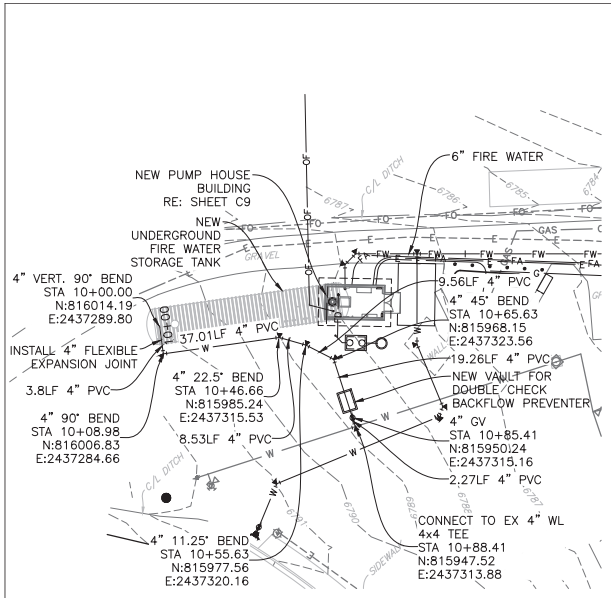
PROJECT COORDINATE SYSTEM AND BASIS OF BEARING

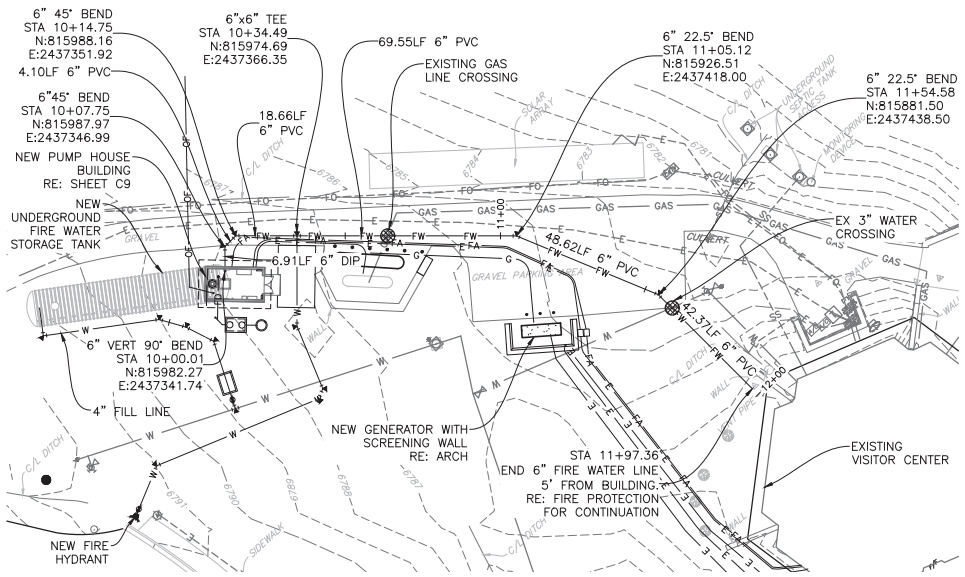
BEARINGS ARE BASED ON WYOMING WEST ZONE (4904) NAD 1983 (1983) BEARING OF N14°17'44"E BETWEEN CONTROL POINT # 50 BEING A 2 ½" ALUMINUM CAP STAMPED MARTIN/MARTIN CONTROL POINT NPS # 50 NEAR BEHIND THE SIDEWALK ON THE SOUTHSIDE OF THE VISITORS CENTER PARKING LOT 20 FEET EAST OF THE WESTERLY END OF THE SIDEWALK AND CONTROL POINT # 51 BEING A 2 ½" ALUMINUM CAP STAMPED MARTIN/MARTIN CONTROL POINT NPS # 51 ABOUT 32 FEET NORTH OF THE NORTH END OF THE VISITORS CENTER PARKING LOT SIDEWALK

Professional Engineer (Civil) JERRY A. MAY 13622 Date 12/02/22 WYOMING

DESIGNED:	SUB SHEET NO.	TITLE OF SHEET	DRAWING NO.
JDL	C6	GRADING PLAN	174
DRAWN: JDL		FOSSIL BUTTE NATIONAL MONUMENT WATER SYSTEM IMPROVEMENTS TO MEET FIRE PROTECTION REQUIREMENTS	173823
TECH REVIEW: JAM			PMIS/PKG NO. 282711
DATE: 12/02/2022			SHEET 10 OF 60

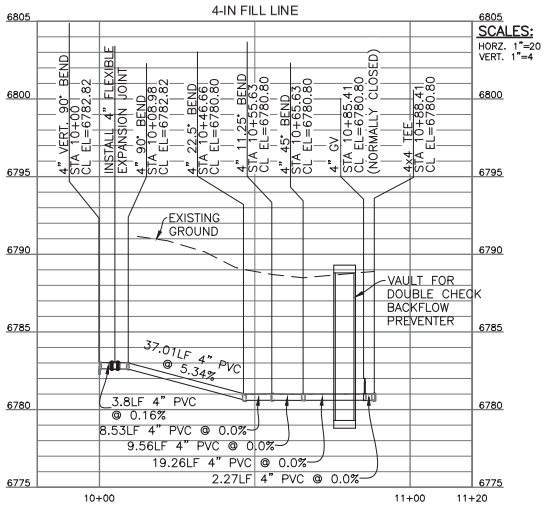
8/24/2021 2:53 PM G:\SULLIVAN\20.0646-NPS - FOBU WATER SYSTEM IMPROVEMENTS\282711\DRAWINGS\CIVIL\C6 GRADING PLAN.DWG

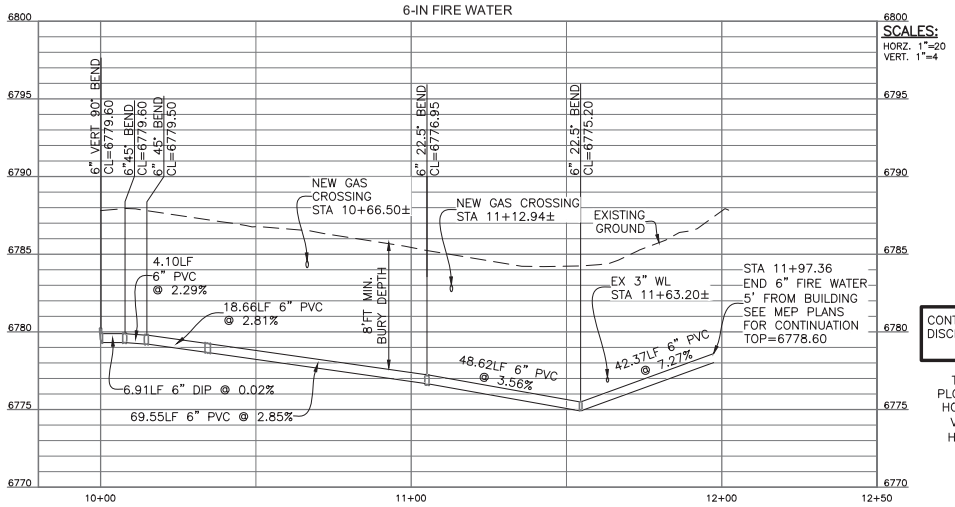




NOTES:

1. NEW 6" FIRE WATER LINE AND 4" FILL LINE SHALL BE INSTALLED WITH A MINIMUM BURY DEPTH OF 8 FEET FROM EXISTING GROUND TO TOP OF PIPE.
2. NEW FIRE WATER LINE SHALL BE C-900, DR-18 PVC (235 PSI) PIPE WITH RESTRAINED JOINTS AND FITTINGS.
3. ALL DISTURBED AREAS SHALL BE REVEGETATED AFTER COMPLETION OF THE FIRE PROTECTION TANK AREA AND ALL UNDERGROUND UTILITIES LOCATED IN PREVIOUS NATURAL VEGETATIVE AREAS. CONTRACTOR TO USE SEED MIX SPECIFIC TO WYOMING AND APPROVED BY THE PARK.
4. CONTRACTOR TO SUFFICIENTLY POTHOLE ALL UTILITY CROSSINGS TO VERIFY LOCATIONS AND ELEVATIONS PRIOR TO CONSTRUCTION OF THE FIRE WATER AND FILL LINES.





CONTRACTOR SHALL NOTIFY CONTRACTING OFFICER OF ANY DISCREPANCIES WITH EXISTING OR PROPOSED ELEVATIONS SHOWN IN THESE PLANS PRIOR TO CONSTRUCTION.

THE UTILITIES SHOWN ON THIS DRAWING HAVE BEEN PLOTTED FROM THE BEST AVAILABLE INFORMATION. IT IS, HOWEVER, THE CONTRACTORS RESPONSIBILITY TO FIELD VERIFY THE LOCATION OF ALL UTILITIES (VERTICAL & HORIZONTAL) PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION.

20 0 20 40
SCALE OF FEET

BENCHMARK

ELEVATIONS ARE BASED ON A STATIC GPS OBSERVATION CALCULATED FROM 2 CORS STATIONS UTILIZING GEOID 18 TO CONTROL POINT # 50 BEING A 2 ½" ALUMINUM CAP STAMPED MARTIN/MARTIN CONTROL POINT NPS # 50 NEAR BEHIND THE SIDEWALK ON THE SOUTHSIDE OF THE VISITORS CENTER PARKING LOT 20 FEET EAST OF THE WESTERLY END OF THE SIDEWALK

ELEVATION = 6793.68' (NAVD 1988)

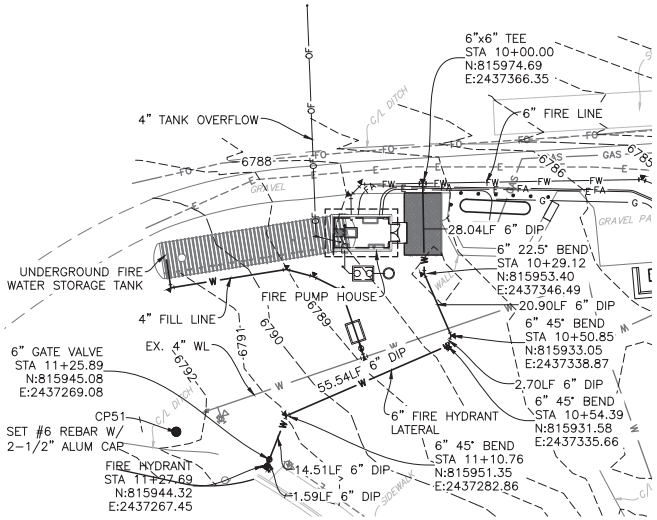
PROJECT COORDINATE SYSTEM AND BASIS OF BEARING

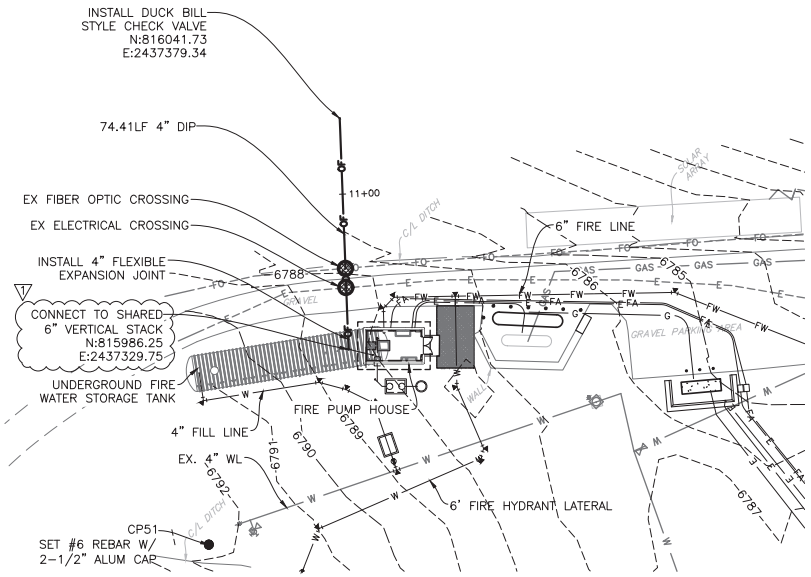
BEARINGS ARE BASED ON WYOMING WEST ZONE (4904) NAD 1983 (1983) BEARING OF N14°17'44"E BETWEEN CONTROL POINT # 50 BEING A 2 ½" ALUMINUM CAP STAMPED MARTIN/MARTIN CONTROL POINT NPS # 50 NEAR BEHIND THE SIDEWALK ON THE SOUTHSIDE OF THE VISITORS CENTER PARKING LOT 20 FEET EAST OF THE WESTERLY END OF THE SIDEWALK AND CONTROL POINT # 51 BEING A 2 ½" ALUMINUM CAP STAMPED MARTIN/MARTIN CONTROL POINT NPS # 51 ABOUT 32 FEET NORTH OF THE NORTH END OF THE VISITORS CENTER PARKING LOT SIDEWALK

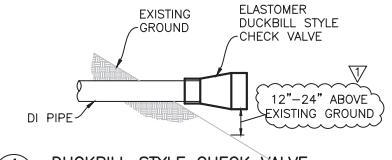
Professional Engineer (Civil) JERRY A. MAY 13622 Date 12/02/22 WYOMING

DESIGNED:	SUB SHEET NO.	TITLE OF SHEET	DRAWING NO.
JDL	C7	FIRE WATER PLAN AND PROFILE	174
CHKD JDL		FOSSIL BUTTE NATIONAL MONUMENT WATER SYSTEM IMPROVEMENTS TO MEET FIRE PROTECTION REQUIREMENTS	173823
TECH REVIEW: JAM			PMIS/PKG NO. 282711
DATE: 12/02/2022			SHEET 11 OF 60

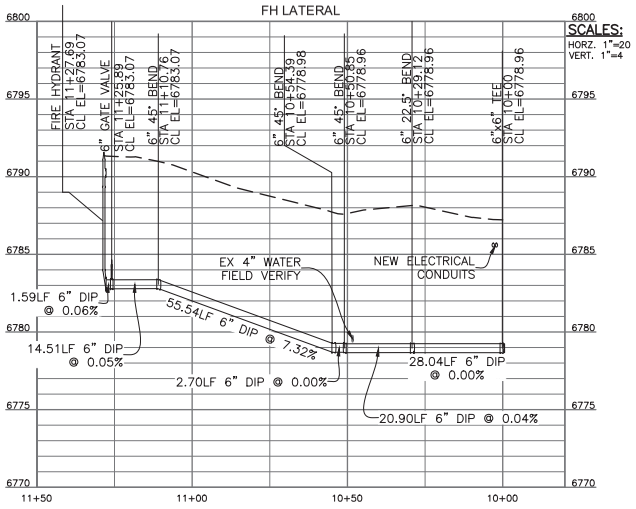
8/16/2021 3:41 PM G:\SULLIVAN\20.0646-NPS - FOBU WATER SYSTEM IMPROVEMENTS\282711\DRAWINGS\CIVIL\C7 FIRE WATER PLAN AND PROFILE.DWG

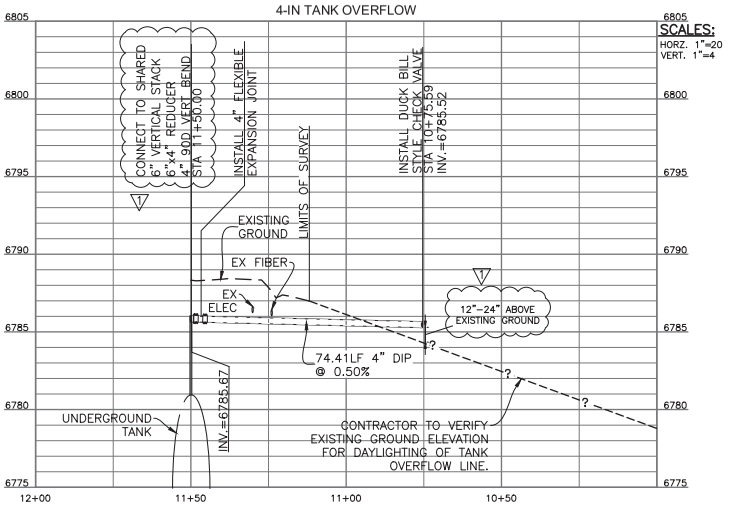






1 C8|C8 DUCKBILL STYLE CHECK VALVE
NO SCALE





NOTES:

1. ALL DISTURBED AREAS SHALL BE REVEGETATED AFTER COMPLETION OF THE FIRE PROTECTION TANK AND ALL UNDERGROUND PIPING.
2. CONTRACTOR TO SUFFICIENTLY POTHOLE ALL UTILITY CROSSINGS TO VERIFY LOCATIONS AND ELEVATIONS PRIOR TO CONSTRUCTION OF WATER AND TANK OVERFLOW PIPING.

CONTRACTOR SHALL NOTIFY CONTRACTING OFFICER OF ANY DISCREPANCIES WITH EXISTING OR PROPOSED ELEVATIONS SHOWN IN THESE PLANS PRIOR TO CONSTRUCTION.

THE UTILITIES SHOWN ON THIS DRAWING HAVE BEEN PLOTTED FROM THE BEST AVAILABLE INFORMATION. IT IS, HOWEVER, THE CONTRACTORS RESPONSIBILITY TO FIELD VERIFY THE LOCATION OF ALL UTILITIES (VERTICAL & HORIZONTAL) PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION.

BLDG NORTH

20 0 20 40
SCALE OF FEET

BENCHMARK

ELEVATIONS ARE BASED ON A STATIC GPS OBSERVATION CALCULATED FROM 2 CORS STATIONS UTILIZING GEOID 18 TO CONTROL POINT # 50 BEING A 2 ½" ALUMINUM CAP STAMPED MARTIN/MARTIN CONTROL POINT NPS # 50 NEAR BEHIND THE SIDEWALK ON THE SOUTHSIDE OF THE VISITORS CENTER PARKING LOT 20 FEET EAST OF THE WESTERLY END OF THE SIDEWALK

ELEVATION = 6793.68' (NAVD 1988)

PROJECT COORDINATE SYSTEM AND BASIS OF BEARING

BEARINGS ARE BASED ON WYOMING WEST ZONE (4904) NAD 1983 (1983) BEARING OF N14°17'44"E BETWEEN CONTROL POINT # 50 BEING A 2 ½" ALUMINUM CAP STAMPED MARTIN/MARTIN CONTROL POINT NPS # 50 NEAR BEHIND THE SIDEWALK ON THE SOUTHSIDE OF THE VISITORS CENTER PARKING LOT 20 FEET EAST OF THE WESTERLY END OF THE SIDEWALK AND CONTROL POINT # 51 BEING A 2 ½" ALUMINUM CAP STAMPED MARTIN/MARTIN CONTROL POINT NPS # 51 ABOUT 32 FEET NORTH OF THE NORTH END OF THE VISITORS CENTER PARKING LOT SIDEWALK

Mark	REVISION	Date	Initial
7	WYDEQ COMMENTS	10/24/23	JAM

Professional Engineer (Civil) JERRY A. MAY 13622 Date 12/02/22 WYOMING

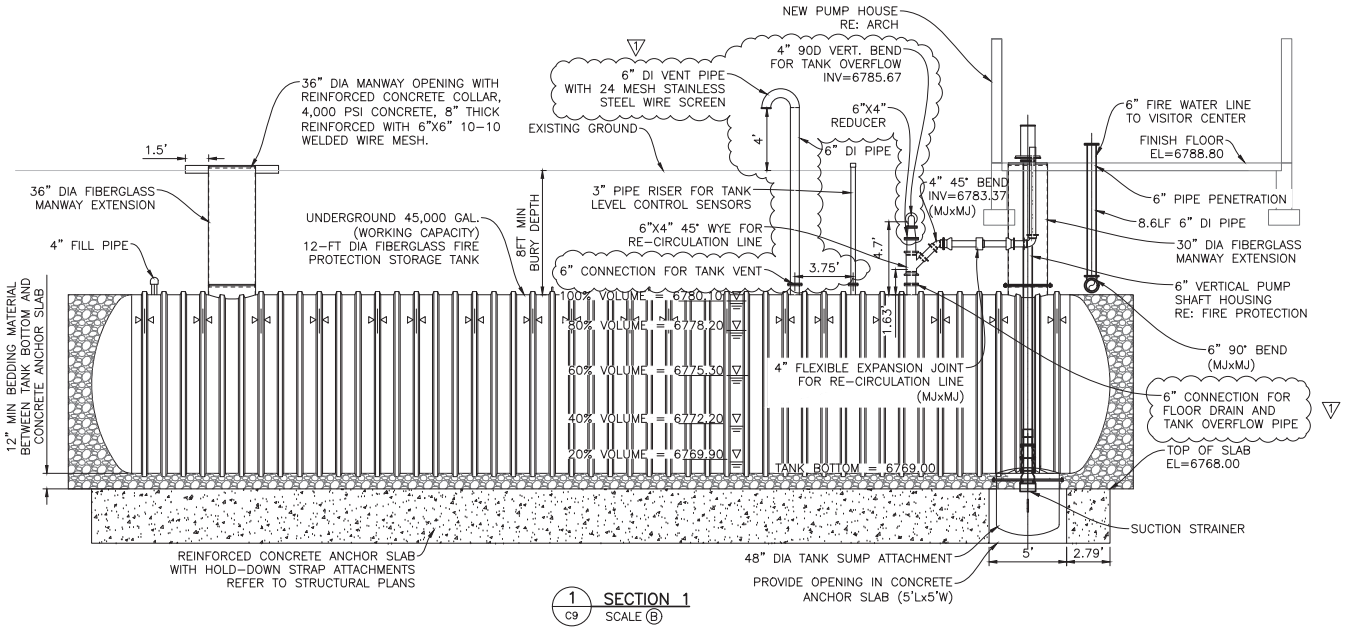
DESIGNED:	JDL
DRAWN:	JDL
TECH REVIEW:	JAM
DATE:	12/02/2022

SUB SHEET NO. C8

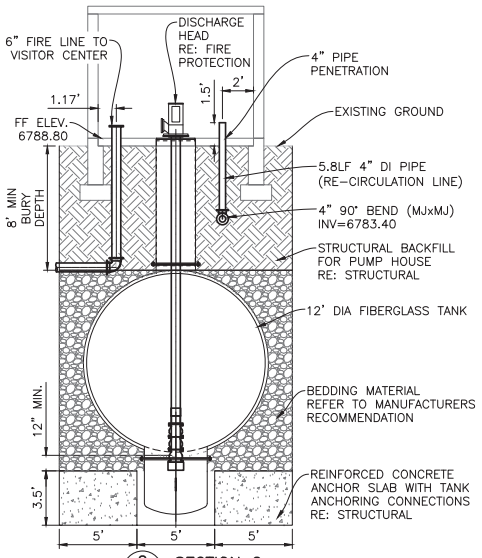
TITLE OF SHEET
FH LAT - OVERFLOW PLAN AND PROFILE
FOSSIL BUTTE NATIONAL MONUMENT
WATER SYSTEM IMPROVEMENTS TO MEET FIRE PROTECTION REQUIREMENTS

DRAWING NO.	174
	173823
PMIS/PKG NO.	282711
SHEET	12 OF 60

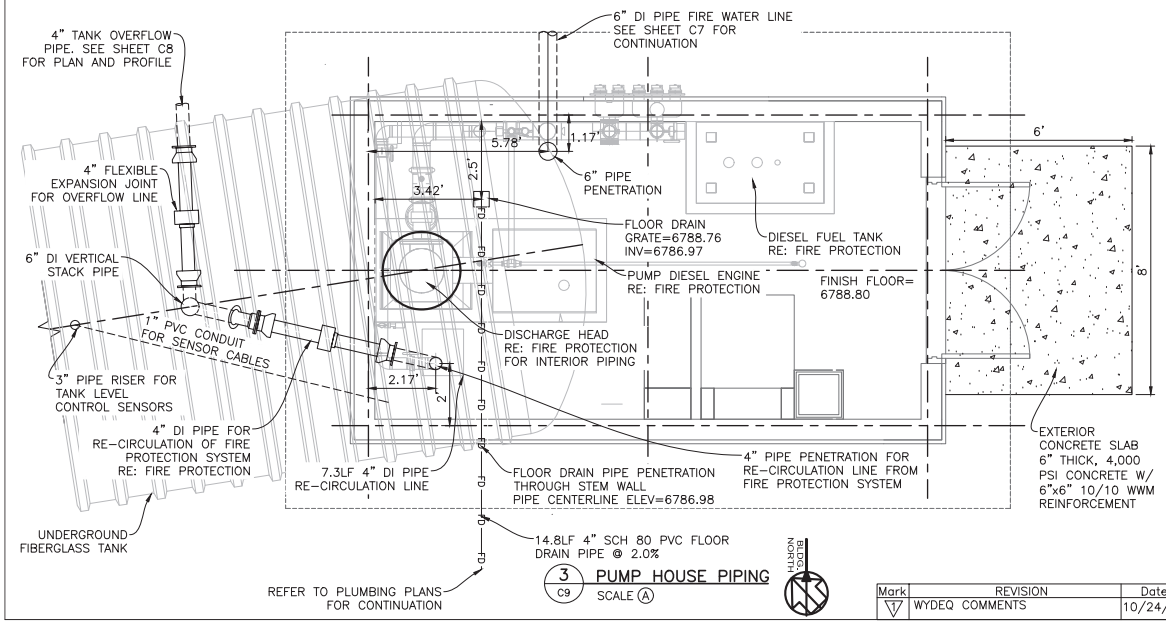
10/24/2023 8:32 AM G:\SULLIVAN\20.0646-NPS - FOBU WATER SYSTEM IMPROVEMENTS\282711\DRAWINGS\CIVIL\C8 FH LAT - OVERFLOW PLAN AND PROFILE.DWG



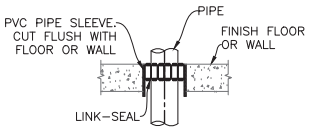
1 C9 SECTION 1
SCALE B



2 C9 SECTION 2
SCALE B

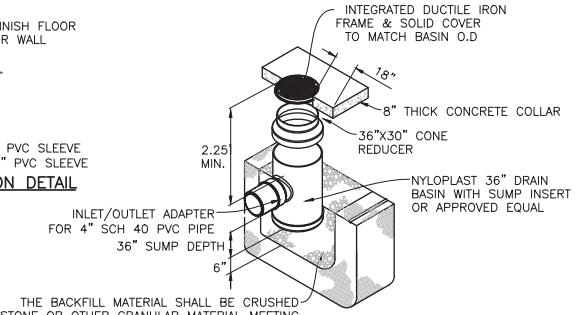


3 C9 PUMP HOUSE PIPING
SCALE A



*4" PIPE REQUIRES 8" PVC SLEEVE
6" PIPE REQUIRES 10" PVC SLEEVE

4 C9 PIPE PENETRATION DETAIL
NO SCALE



THE BACKFILL MATERIAL SHALL BE CRUSHED STONE OR OTHER GRANULAR MATERIAL MEETING THE REQUIREMENTS OF CLASS I, CLASS II, OR CLASS III MATERIAL AS DEFINED IN ASTM D2321. BEDDING & BACKFILL FOR SURFACE DRAINAGE INLETS SHALL BE PLACED & COMPACTED UNIFORMLY IN ACCORDANCE WITH ASTM D2321.

NOTE:
DRAIN BASIN TO BE CUSTOM MANUFACTURERED ACCORDING TO PLAN DETAILS

5 C9 DRAINAGE BASIN DETAIL
NO SCALE

NOTES

1. REFER TO SHEET C5 FOR PUMP HOUSE AND UNDERGROUND TANK PLACEMENT AND LAYOUT CONTROL POINTS ON SITE.
2. SEE FIRE PROTECTION PLANS FOR ALL INTERNAL PIPING WITHIN THE PUMP HOUSE.

SCALE A 2 0 2 4
SCALE OF FEET

SCALE B 4 0 4 8
SCALE OF FEET

Mark	REVISION	Date	Initial
7	WYDEQ COMMENTS	10/24/23	JAM

Professional Engineer (Civil) JERRY A. MAY 13622 Date 12/02/22 WYOMING

DESIGNED:	JDL
DRAWN:	JDL
TECH REVIEW:	JAM
DATE:	12/02/2022

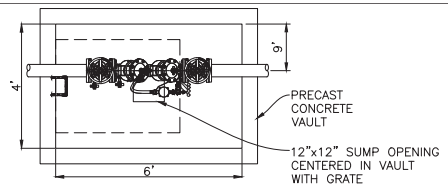
SUB SHEET NO. C9

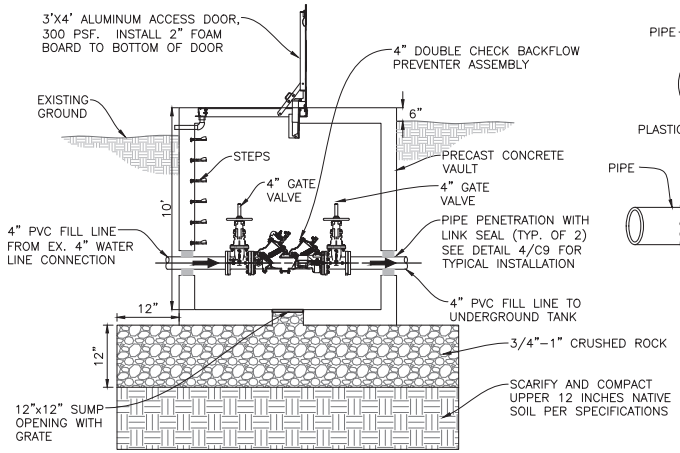
TITLE OF SHEET
TANK AND PIPING DETAILS

FOSSIL BUTTE NATIONAL MONUMENT
WATER SYSTEM IMPROVEMENTS TO MEET
FIRE PROTECTION REQUIREMENTS

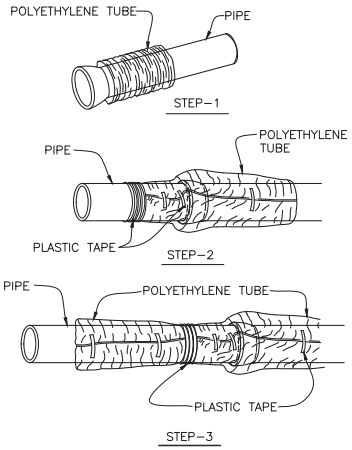
DRAWING NO.	174
	173823
PMIS/PKG NO.	282711
SHEET	13 OF 60

10/24/2023 8:42 AM G:\SULLIVAN\20.0646-NPS - FOBU WATER SYSTEM IMPROVEMENTS\282711\DRAWINGS\CIVIL\C9 TANK AND PIPING DETAILS.DWG





3 4-INCH DOUBLE CHECK BACKFLOW PREVENTER
NO SCALE



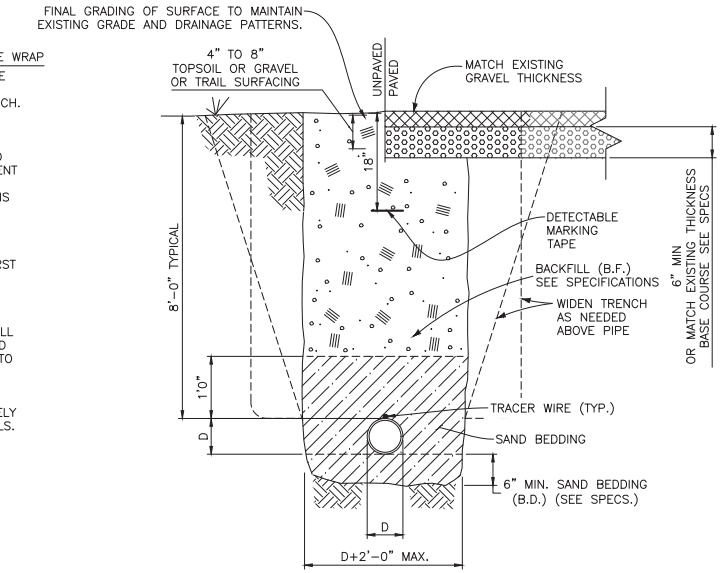
FIELD INSTALLATION-POLYETHYLENE WRAP

STEP-1 PLACE TUBE OF POLYETHYLENE MATERIAL AROUND PIPE PRIOR TO LOWERING PIPE INTO TRENCH.

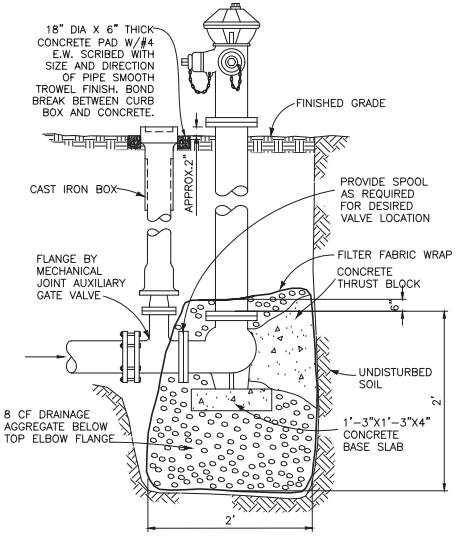
STEP-2 PULL THE TUBE OVER THE LENGTH OF THE PIPE. TAPE TUBE TO PIPE AT JOINT. FOLD MATERIAL AROUND THE ADJACENT SPIGOT END AND WRAP WITH THREE CIRCUMFERENTIAL TURNS OF TWO-INCH WIDE PLASTIC TAPE TO HOLD PLASTIC TUBE AROUND SPIGOT END.

STEP-3 ADJACENT TUBE OVERLAPS FIRST TUBE AND IS SECURED WITH PLASTIC ADHESIVE TAPE. THE POLYETHYLENE TUBE MATERIAL COVERING THE PIPE WILL BE LOOSE. EXCESS MATERIAL SHALL BE NEATLY DRAWN UP AROUND THE PIPE BARREL, FOLDED INTO AN OVERLAP ON TOP OF THE PIPE AND HELD IN PLACE BY MEANS OF PIECES OF THE PLASTIC TAPE AT APPROXIMATELY THREE TO FIVE FOOT INTERVALS.

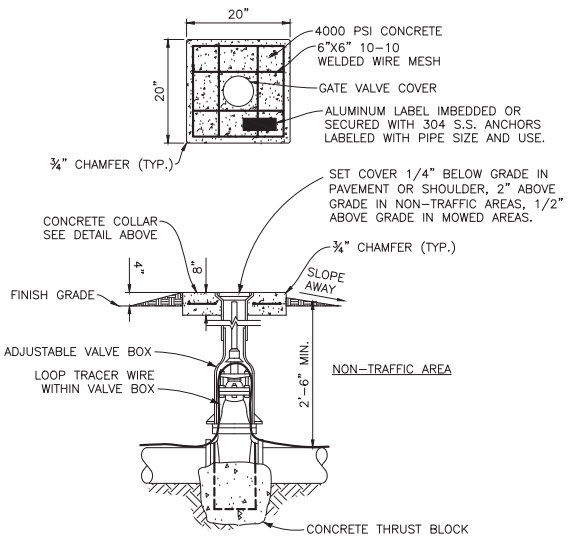
2 DI PIPE & FITTINGS POLYETHYLENE WRAP
NO SCALE



1 TRENCH DETAIL SINGLE PIPE, NON-TRAFFIC AREA
NO SCALE



7 FIRE HYDRANT
NO SCALE



6 TYPICAL GATE VALVE DETAIL
NO SCALE

TABLE I
THRUST(T) AT FITTINGS, IN POUNDS AT 100 PSI WATER PRESSURE

PIPE SIZE	TEE OR DEAD END	90° BEND	45° BEND	22 1/2° BEND	11 1/4° BEND
4"	1810	2559	1385	706	355
6"	3739	5288	2862	1459	733

TABLE II
SAFE BEARING LOADS (B)

SOIL	SAFE BEARING LOAD, POUNDS PER SQ. FT.
SOUND SHALE	10000
CEMENTED SAND AND GRAVEL	4000
COARSE AND FINE COMPACTED SAND	3000
MEDIUM CLAY (CAN BE SPADED)	2000
SOFT CLAY	1000
MUCK	0

$A_{SB} = \frac{T}{B} \times \frac{P_T}{100}$

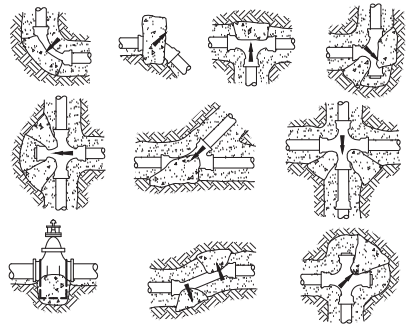
WHERE:

A_{SB} = AREA OF BLOCK BEARING AGAINST UNDISTURBED TRENCH MATERIAL IN SQ. FT.

T = THRUST FACTOR FROM TABLE I IN POUNDS AT 100 P.S.I.

B = SAFE BEARING LOAD FROM TABLE II IN POUNDS/SQ.FT.

P_T = PRESSURE USED FOR PIPELINE TEST IN P.S.I.



5 THRUST BLOCK SIZING
NO SCALE

4 LOCATION OF THRUST BLOCKS
NO SCALE

Professional Engineer (Civil) JERRY A. MAY 13622 Date 12/02/22 WYOMING

DESIGNED:	JDL
DRAWN:	JDL
TECH REVIEW:	JAM
DATE:	12/02/2022

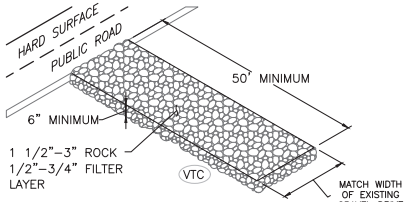
SUB SHEET NO. C10

TITLE OF SHEET
WATER DETAILS

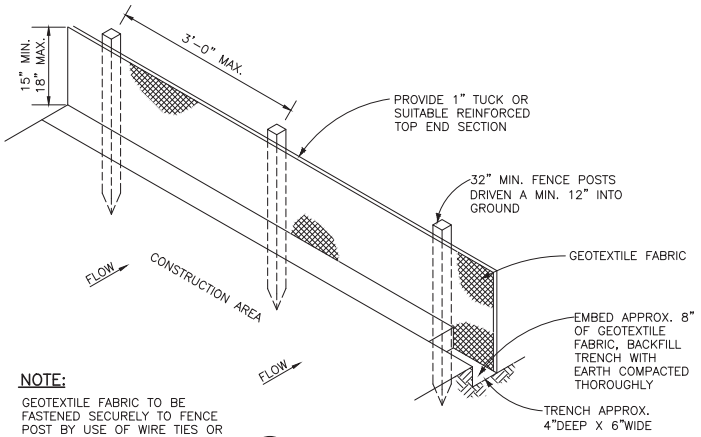
FOSSIL BUTTE NATIONAL MONUMENT
WATER SYSTEM IMPROVEMENTS TO MEET FIRE PROTECTION REQUIREMENTS

DRAWING NO.	174
	173823
PMIS/PKG NO.	282711
SHEET	14 OF 60

8/24/2021 1:14 PM G:\SULLIVAN\20.0646-NPS - FOBU WATER SYSTEM IMPROVEMENTS\282711\DRAWINGS\CIVIL\C10 WATER DETAILS.DWG



1 C11 VEHICLE TRACTION CONTROL
N.T.S.



NOTE:

GEOTEXTILE FABRIC TO BE FASTENED SECURELY TO FENCE POST BY USE OF WIRE TIES OR HOG RINGS. 2 PER POST

2 C11 SILT FENCE
N.T.S.

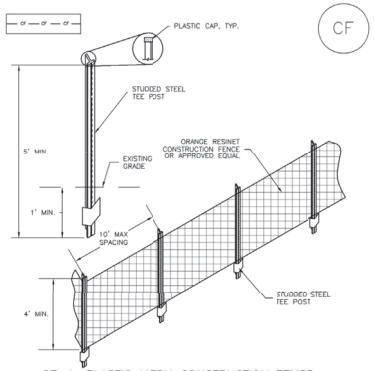
GENERAL BMP MAINTENANCE NOTES

1. INSPECT BMPS EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPS SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPS AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.
2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPS IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.
3. WHERE BMPS HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.

STAGING AREA NOTES

1. SEE PLAN VIEW FOR
   –LOCATION OF STAGING AREA(S).
   –CONTRACTOR MAY ADJUST LOCATION AND SIZE OF STAGING AREA WITH APPROVAL FROM THE CONTRACTING OFFICER.
2. STAGING AREA SHOULD BE APPROPRIATE FOR THE NEEDS OF THE SITE. OVERSIZING RESULTS IN A LARGER AREA TO STABILIZE FOLLOWING CONSTRUCTION.
3. ADDITIONAL PERIMETER BMPS MAY BE REQUIRED INCLUDING BUT NOT LIMITED TO SILT FENCE AND CONSTRUCTION FENCING.

5 C11 STAGING AND STORAGE AREA
N.T.S.



CF–1. PLASTIC MESH CONSTRUCTION FENCE

CONSTRUCTION FENCE INSTALLATION NOTES

CF

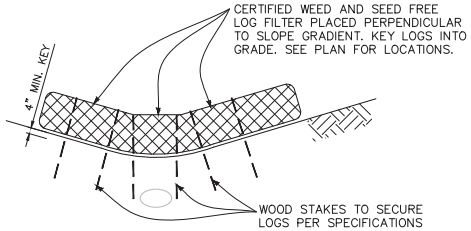
CONSTRUCTION FENCE INSTALLATION NOTES

1. SEE PLAN VIEW FOR: –LOCATION OF CONSTRUCTION FENCE.
2. CONSTRUCTION FENCE SHOWN SHALL BE INSTALLED PRIOR TO ANY LAND DISTURBING ACTIVITIES.
3. CONSTRUCTION FENCE SHALL BE COMPOSED OF ORANGE, CONTRACTOR–GRADE MATERIAL THAT IS AT LEAST 4' HIGH. METAL POST SHOULD HAVE A PLASTIC CAP FOR SAFETY.
4. STUDDED STEEL TEE POST SHALL BE UTILIZED TO SUPPORT THE CONSTRUCTION FENCE. MAXIMUM SPACING FOR STEEL TEE POST SHALL BE 10'.
5. CONSTRUCTION FENCE SHALL BE SECURELY FASTENED TO THE TOP, MIDDLE, AND BOTTOM OF EACH POST.

CONSTRUCTION FENCE MAINTENANCE NOTES

1. CONSTRUCTION FENCE SHALL BE REPAIRED AND REPLACED WHEN THERE ARE SIGNS OF DAMAGE SUCH AS RIPS OR SAGS. CONSTRUCTION FENCE IS TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS STABILIZED AND APPROVED BY THE CONTRACTING OFFICER.
2. WHEN CONSTRUCTION FENCES ARE REMOVED, ALL DISTURBED AREAS WITH THE INSTALLATION, MAINTENANCE AND/OR REMOVAL OF THE FENCE SHALL BE COVERED WITH TOPSOIL, SEEDED, AND MULCHED, OR OTHERWISE STABILIZED AS APPROVED BY THE CONTRACTING OFFICER.

3 C11 CONSTRUCTION FENCE
N.T.S.



4 C11 EROSION CONTROL LOG
N.T.S.

CWA MAINTENANCE NOTES

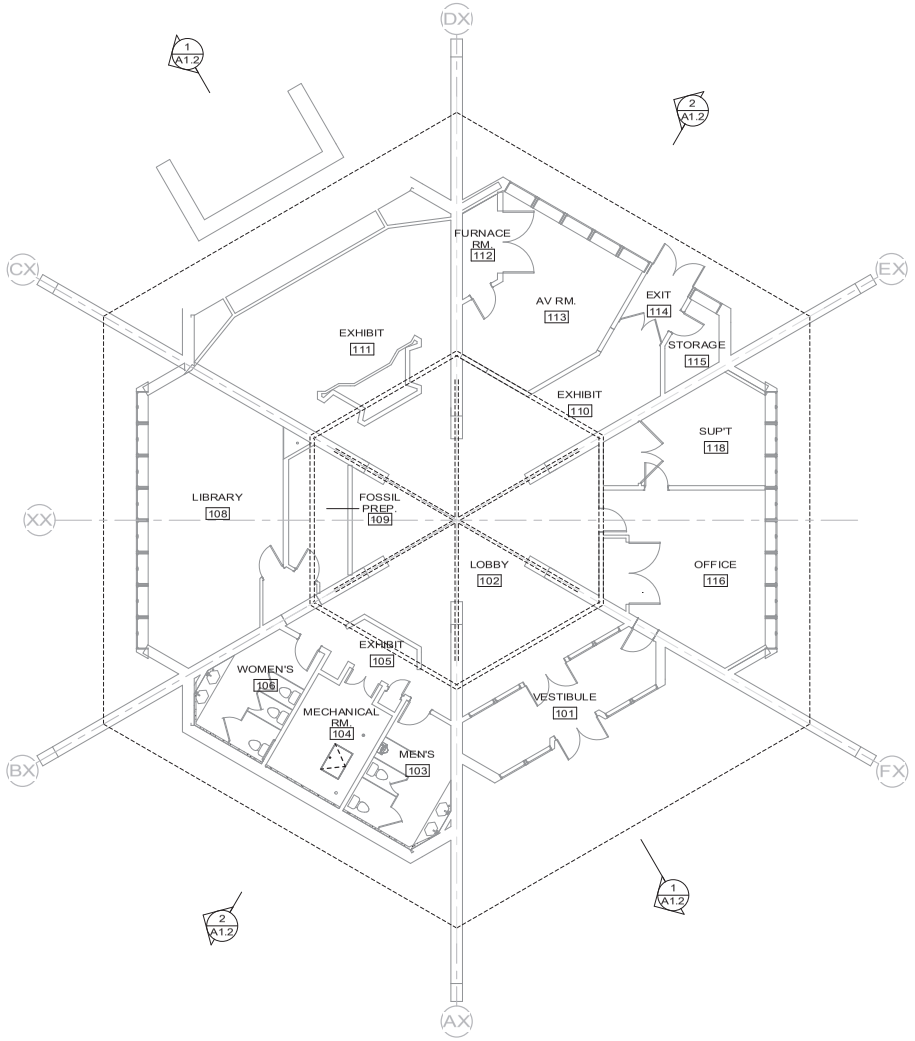
1. CONTRACTOR SHALL COORDINATE WITH CONTRACTING OFFICER FOR THE LOCATION OF THE EXISTING CONCRETE WASHOUT AREA NEAR THE PARK MAINTENANCE AREA. CONCRETE MATERIALS, ACCUMULATED IN PIT, SHALL BE REMOVED ONCE THE MATERIALS HAVE REACHED A DEPTH OF 2'
2. CONCRETE WASHOUT WATER, WASTED PIECES OF CONCRETE AND ALL OTHER DEBRIS IN THE SUBSURFACE PIT SHALL BE TRANSPORTED FROM THE JOB SITE IN A WATER–TIGHT CONTAINER AND DISPOSED OF PROPERLY.
3. THE CWA SHALL REMAIN IN PLACE UNTIL ALL CONCRETE FOR THE PROJECT IS PLACED.

6 C11 CONCRETE WASHOUT AREA CWA
N.T.S.

Professional Engineer (Civil) JERRY A. MAY 13622 Date 12/02/22 WYOMING

DESIGNED: JDL	SUB SHEET NO.	TITLE OF SHEET	DRAWING NO.	174
DRAWN: JDL	C11	EROSION CONTROL DETAILS		173823
TECH REVIEW: JAM		FOSSIL BUTTE NATIONAL MONUMENT WATER SYSTEM IMPROVEMENTS TO MEET FIRE PROTECTION REQUIREMENTS	PMIS/PKG NO.	282711
DATE: 12/02/2022			SHEET	15 OF 60

8/16/2021 3:42 PM G:\SULLIVAN\20.0646-NPS - FOBU WATER SYSTEM IMPROVEMENTS\282711\DRAWINGS\CIVIL\C11 EROSION CONTROL DETAILS.DWG



1 A1.0 VISITOR CENTER - EXISTING CONDITIONS FLOOR PLAN

GENERAL NOTES

1. EXISTING CONDITIONS AT THE VISITOR CENTER ARE SHOWN HERE AS A REFERENCE STANDARD FOR UNDERSTANDING OTHER WORK. ALL NEW CONSTRUCTION AT THE VISITOR CENTER IS DOCUMENTED BY OTHER DISCIPLINES, REF: FIRE PROTECTION, FIRE ALARM, ELECTRICAL, PLUMBING.
2. EXISTING CONDITIONS DRAWINGS ARE BASED ON FIELD MEASUREMENT AND AS-BUILT CONSTRUCTION DOCUMENTS.

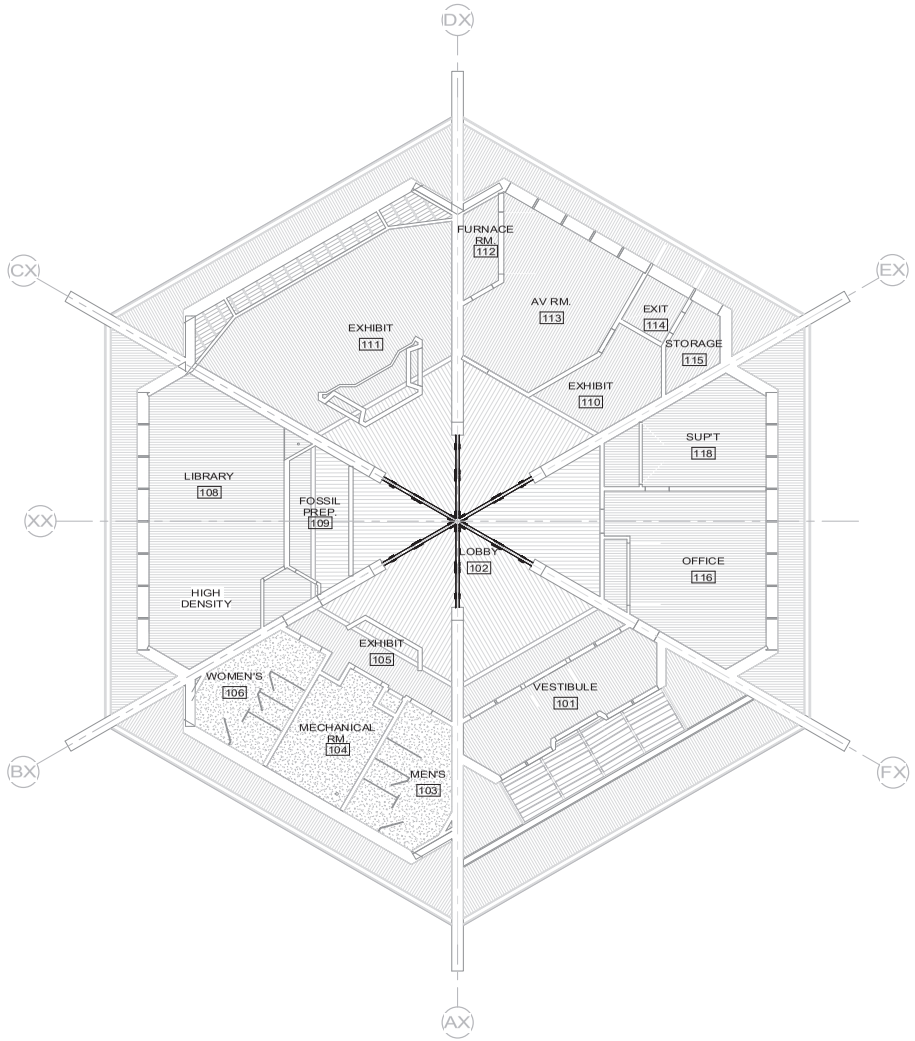
8 0 8 16
SCALE OF FEET

GRID NORTH

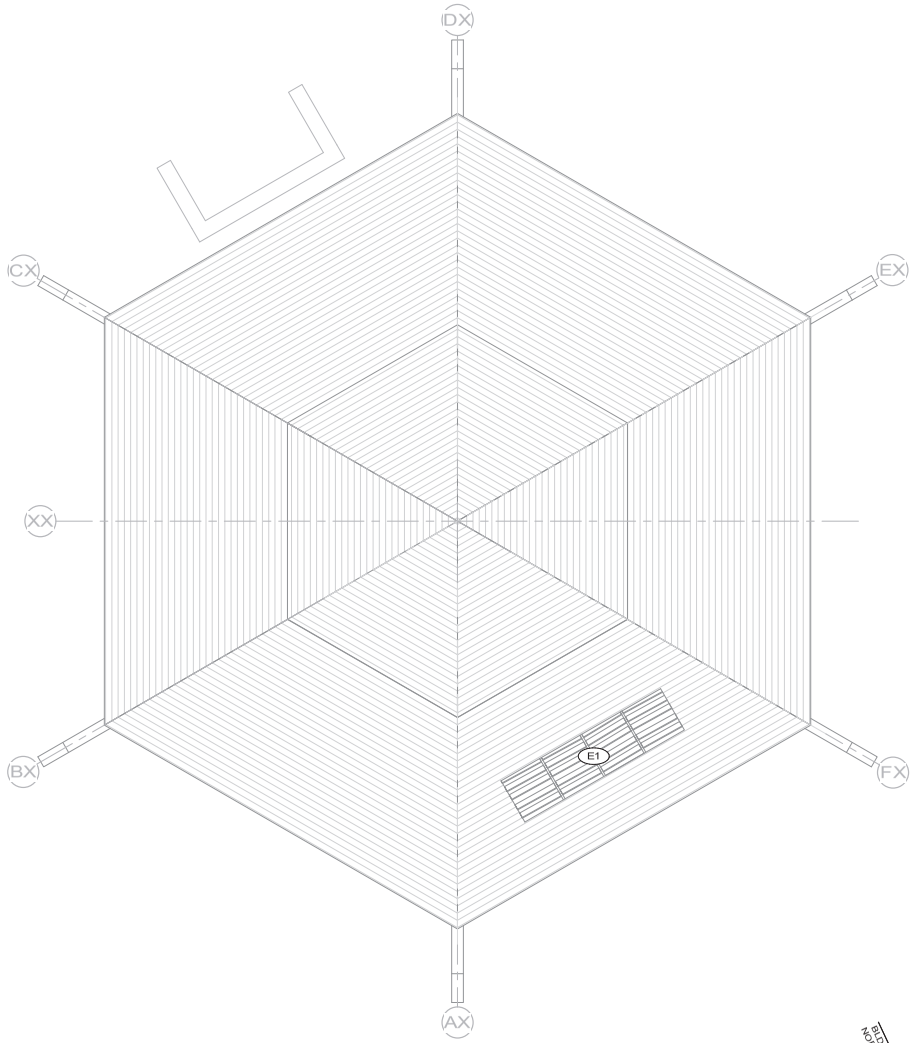
LICENSED ARCHITECT WILLIAM M. SQUIRES P-3199 STATE OF WYOMING

DESIGNED: LM, JM	SUB SHEET NO.	TITLE OF SHEET	DRAWING NO.
DRAWN: DM, EV, JM	A1.0	VISITOR CENTER EXISTING CONDITIONS	174 173823
TECH REVIEW: WMS		FOSSIL BUTTE NATIONAL MONUMENT	PMIS/PKG NO. 282711
DATE: 12/02/2022		WATER SYSTEM IMPROVEMENTS TO MEET FIRE PROTECTION REQUIREMENTS	SHEET 16 OF 60

11/29/2022 10:56:30 AM M 360://2021-280 FOBU Fire Protection//2021280 - FOBU Fire Protection - v20 - BIM 360.rvt



1 A1.1 VISITOR CENTER - EXISTING CONDITIONS REFLECTED CEILING PLAN



2 A1.1 VISITOR CENTER - EXISTING CONDITIONS ROOF PLAN

8 0 8 16
SCALE OF FEET

GENERAL NOTES

1. EXISTING CONDITIONS AT THE VISITOR CENTER ARE SHOWN HERE AS A REFERENCE STANDARD FOR UNDERSTANDING OTHER WORK. ALL NEW CONSTRUCTION AT THE VISITOR CENTER IS DOCUMENTED BY OTHER DISCIPLINES, REF: FIRE PROTECTION, FIRE ALARM, ELECTRICAL, PLUMBING.
2. EXISTING CONDITIONS DRAWINGS ARE BASED ON FIELD MEASUREMENT AND AS-BUILT CONSTRUCTION DOCUMENTS.

KEYNOTES

E1 SKYLIGHT DEMOLITION, BY OTHERS.

LICENSED ARCHITECT WILLIS M. SQUIRES P-3199 STATE OF WYOMING

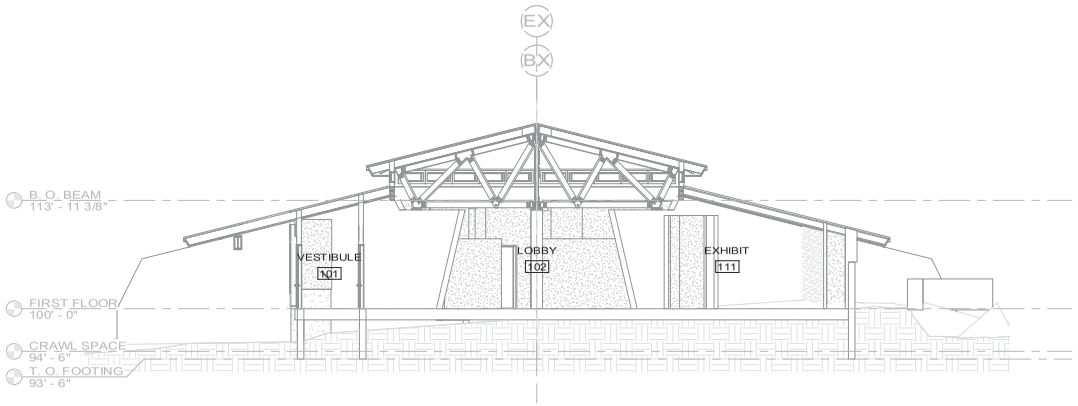
DESIGNED:	LM, JM
DRAWN:	DM, EV, JM
TECH REVIEW:	WMS
DATE:	12/02/2022
SUB SHEET NO.	A1.1

TITLE OF SHEET
VISITOR CENTER EXISTING CONDITIONS

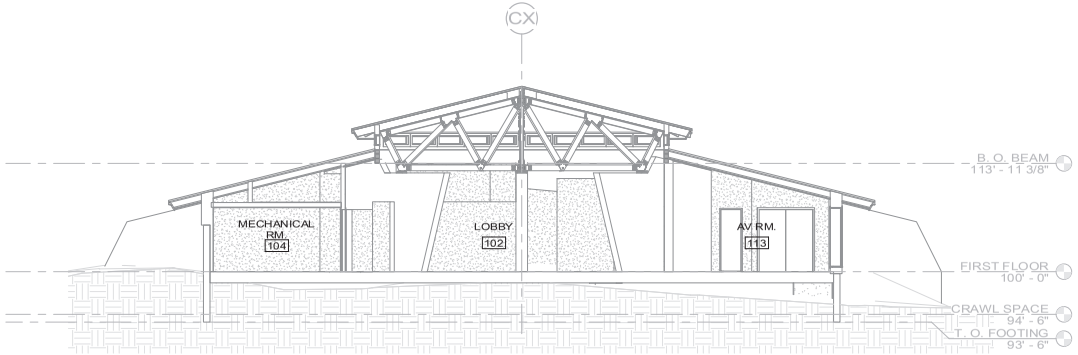
FOSSIL BUTTE NATIONAL MONUMENT
WATER SYSTEM IMPROVEMENTS TO MEET FIRE PROTECTION REQUIREMENTS

DRAWING NO.	174 173823
PMIS/PKG NO.	282711
SHEET	17 OF 60

11/29/2022 10:56:33 AM BIM 360://2021-280 FOBU Fire Protection/2021280 - FOBU Fire Protection - v20 - BIM 360.rvt



1 A1.2 VISITOR CENTER - EXISTING CONDITIONS - SECTION AT ENTRY



2 A1.2 VISITOR CENTER - EXISTING CONDITIONS - SECTION AT MECHANICAL ROOM

GENERAL NOTES

1. EXISTING CONDITIONS AT THE VISITOR CENTER ARE SHOWN HERE AS A REFERENCE STANDARD FOR UNDERSTANDING OTHER WORK. ALL NEW CONSTRUCTION AT THE VISITOR CENTER IS DOCUMENTED BY OTHER DISCIPLINES, REF: FIRE PROTECTION, FIRE ALARM, ELECTRICAL, PLUMBING.
2. EXISTING CONDITIONS DRAWINGS ARE BASED ON FIELD MEASUREMENT AND AS-BUILT CONSTRUCTION DOCUMENTS.

8 0 8 16
SCALE OF FEET

LICENSED ARCHITECT WILLIAM M. SQUIRES 12-3199 STATE OF WYOMING

DESIGNED:	LM, JM
DRAWN:	DM, EV, JM
TECH REVIEW:	WMS
DATE:	12/02/2022
SUB SHEET NO.	A1.2

TITLE OF SHEET
VISITOR CENTER EXISTING CONDITIONS

FOSSIL BUTTE NATIONAL MONUMENT
WATER SYSTEM IMPROVEMENTS TO MEET FIRE PROTECTION REQUIREMENTS

DRAWING NO.	174 173823
PMIS/PKG NO.	282711
SHEET	18 OF 60

11/29/2022 10:56:36 AM BIM 360://2021-280 FOBU Fire Protection/2021280 - FOBU Fire Protection - v20 - BIM 360.rvt

KEYNOTES

N4 INTAKE LOUVER, REF: MECHANICAL.
N8 5'-8" X 7'-0" INSULATED STEEL DOOR IN HOLLOW METAL FRAME.
N9 PUMP CONTROLLER; REF. FIRE PROTECTION AND ELEC.
N10 PUMP DIESEL ENGINE; REF. FIRE PROTECTION
N11 VERTICAL TURBINE FIRE PUMP; REF. FIRE PROTECTION.
N18 CONCRETE SLAB ON GRADE AT ENTRY.
N20 EXPOSED VENT PIPE, REF: MECH. & PLUMB.
N22 WALL HEATER, REF: MECHANICAL.
N23 ELECTRICAL PANEL, REF: ELEC.
N25 DIESEL FUEL TANK, REF: FIRE PROTECTION.
N26 CONCRETE SLAB ON GRADE, REF: STRUCTURAL, OVER VAPOR RETARDER, PROVIDE ROUGH BROOM FINISH.
N27 FIRE EXTINGUISHER CABINET

GENERAL NOTES

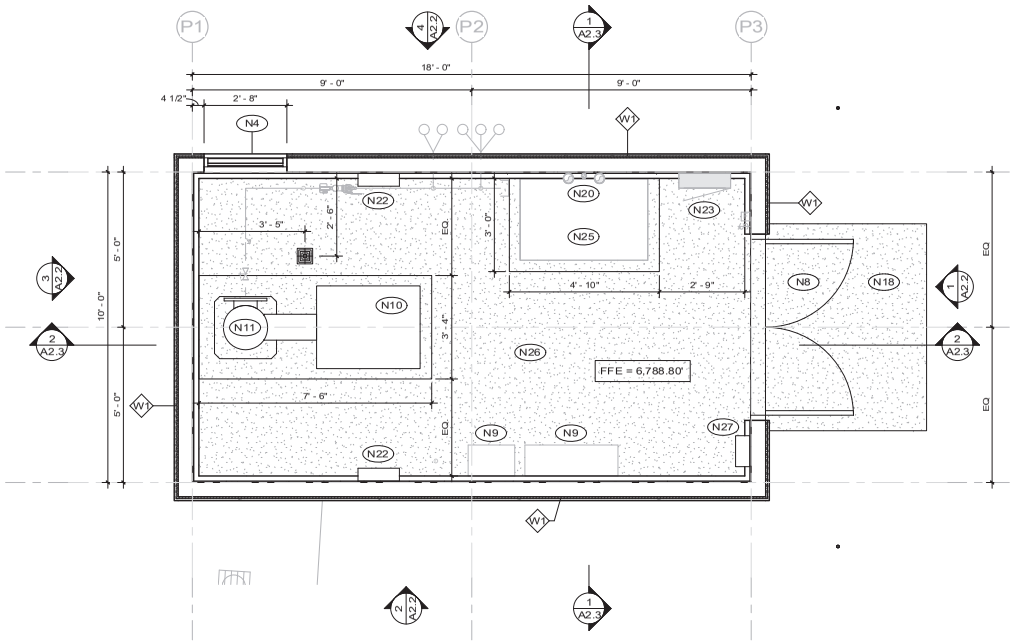
1. FIRE PROTECTION, MECHANICAL AND ELECTRICAL EQUIPMENT ARE SHOWN FOR REFERENCE ONLY. PLEASE SEE RESPECTIVE SHEETS AND SCHEDULES FOR DEFINITIVE INFORMATION.
2. DIMENSIONS ARE TO INSIDE FACE OF CURB OR INSIDE FACE OF STUD UNLESS OTHERWISE NOTED

WALL TYPES

TYPE # GRAPHIC REPRESENTATION

W1 (4 1/4")
EXTERIOR
- CHANNEL RUSTIC CEDAR SIDING W/ CORNERS MITERED
- WEATHER BARRIER
- EXTERIOR GRADE PLYWOOD SHEATHING
- R-21 MINERAL WOOL BATT INSULATION
- 2X6 WOOD STUDS AT 16" O.C.

INTERIOR
- MOISTURE RESISTANT GYP. BD., PAINT



1 A2.0 PUMP HOUSE MAIN FLOOR PLAN

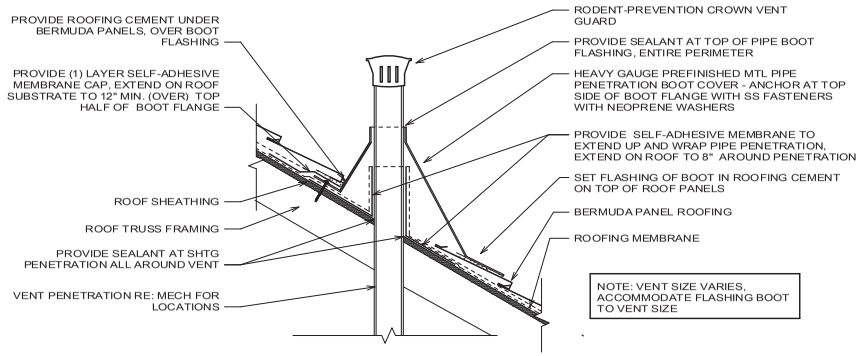
2 0 2 4
SCALE OF FEET

BLDG NORTH

LICENSED ARCHITECT WILLIS M. SQUIRES P-3199 STATE OF WYOMING

DESIGNED:	SUB SHEET NO.	TITLE OF SHEET	DRAWING NO.
LM, JM	A2.0	PUMP HOUSE MAIN FLOOR PLAN	174 173823
DRAWN: DM, EV, JM		FOSSIL BUTTE NATIONAL MONUMENT	PMIS/PKG NO. 282711
TECH REVIEW: WMS		WATER SYSTEM IMPROVEMENTS TO MEET FIRE PROTECTION REQUIREMENTS	SHEET 19 OF 60
DATE: 12/02/2022			

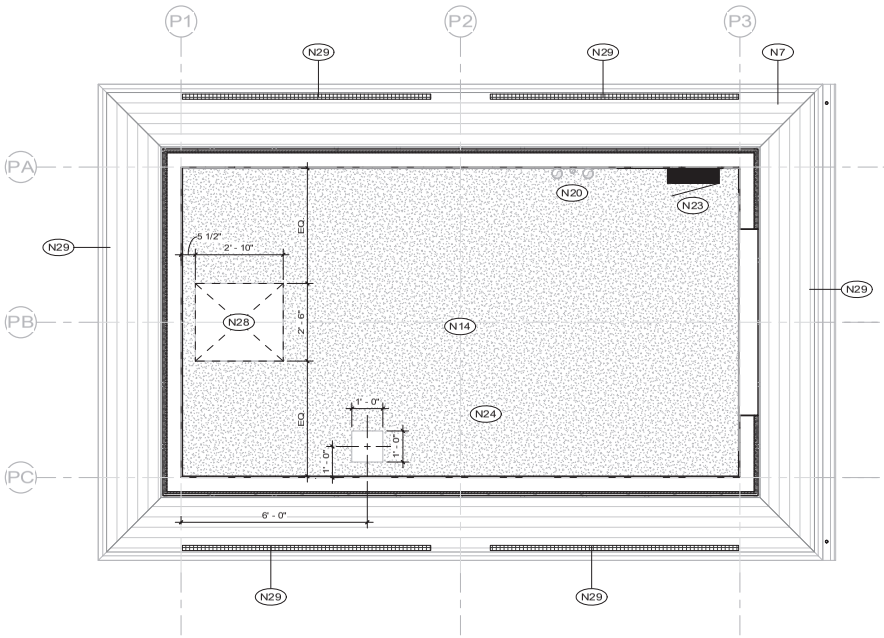
11/29/2022 10:56:36 AM BIM 360://2021-280 FOBU Fire Protection/2021280 - FOBU Fire Protection - v20 - BIM 360.rvt



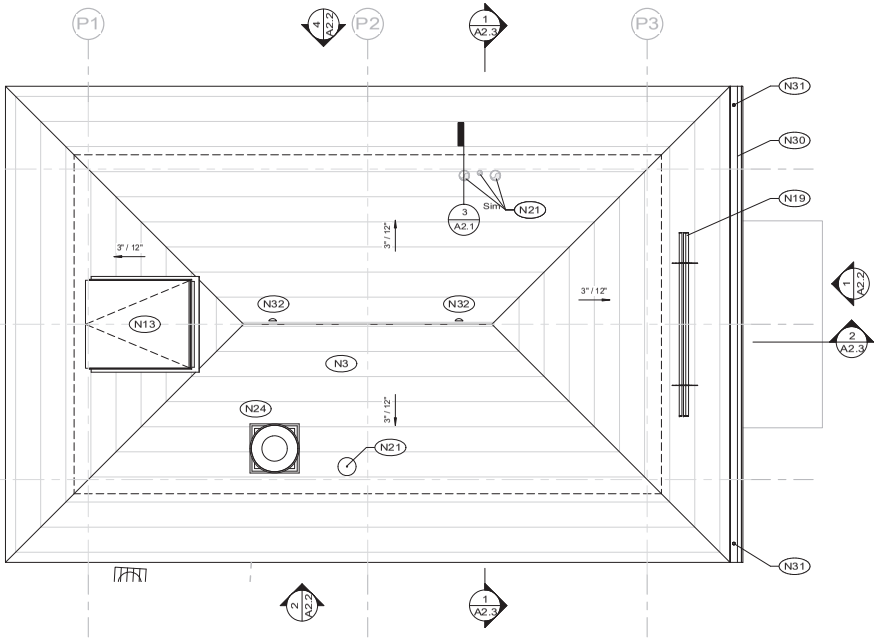
3 A2.1 TYP ROOF VENT PENETRATION AND CAP DETAIL

KEYNOTES

N3	ROOFING ASSEMBLY: BERMUDA PANEL METAL PANEL ROOFING OVER ICE AND WATER SHIELD OVER PLYWOOD SHEATHING. FLASHING: PREFINISHED METAL RIDGE, HIP, AND DRIP EDGE FLASHING.
N7	1X CEDAR SOFFIT BOARD WITH 8LF SOFFIT VENTS REF RCP
N13	30"X36" ROOF HATCH. INSTALL PER MANUFACTURER'S INSTRUCTIONS. DOOR HATCH TO OPEN AWAY FROM BUILDING SUCH THAT WHEN OPEN, THE DOOR DOES NOT INTERFERE WITH REMOVAL OF PUMP EQUIPMENT, REF: SECTION 2/A2.3
N14	MR GYP BD AT UNDERSIDE OF ROOF FRAMING.
N19	SNOW GUARD MOUNTED TO ROOF ABOVE ENTRY DOOR
N20	EXPOSED VENT PIPE, REF: MECH. & PLUMB.
N21	VENT THROUGH ROOF, REF: MECH. & PLUMB.
N23	ELECTRICAL PANEL, REF: ELEC.
N24	ROOF MOUNTED EXHAUST FAN, REF: MECHANICAL.
N28	PLYWOOD ATTIC ACCESS PANEL, COORDINATE SIZE AND LOCATION WITH ROOF ACCESS HATCH ABOVE, PAINT
N29	CONTINUOUS PERFORATED ALUMINUM SOFFIT VENTS
N30	PREFINISHED METAL GUTTER
N31	RAIN CHAIN DOWNSPOUT
N32	PERSONAL FALL ARREST AT ROOF RIDGE SPACED AT 6'-0" ON CENTER AND MAXIMUM 6'-0" FROM EDGE OF ROOF: FALLTECH 7434 OR SUPER ANCHOR SAFETY RS20. ALIGN WITH TRUSS TOP CHORD OR PREDRILL FOR FASTENERS PER MANUFACTURER. PLACE OVER TOP OF ROOF SHEATHING



1 A2.1 PUMP HOUSE - REFLECTED CEILING PLAN



2 A2.1 PUMP HOUSE ROOF PLAN

2 0 2 4
SCALE OF FEET

BLDG NORTH

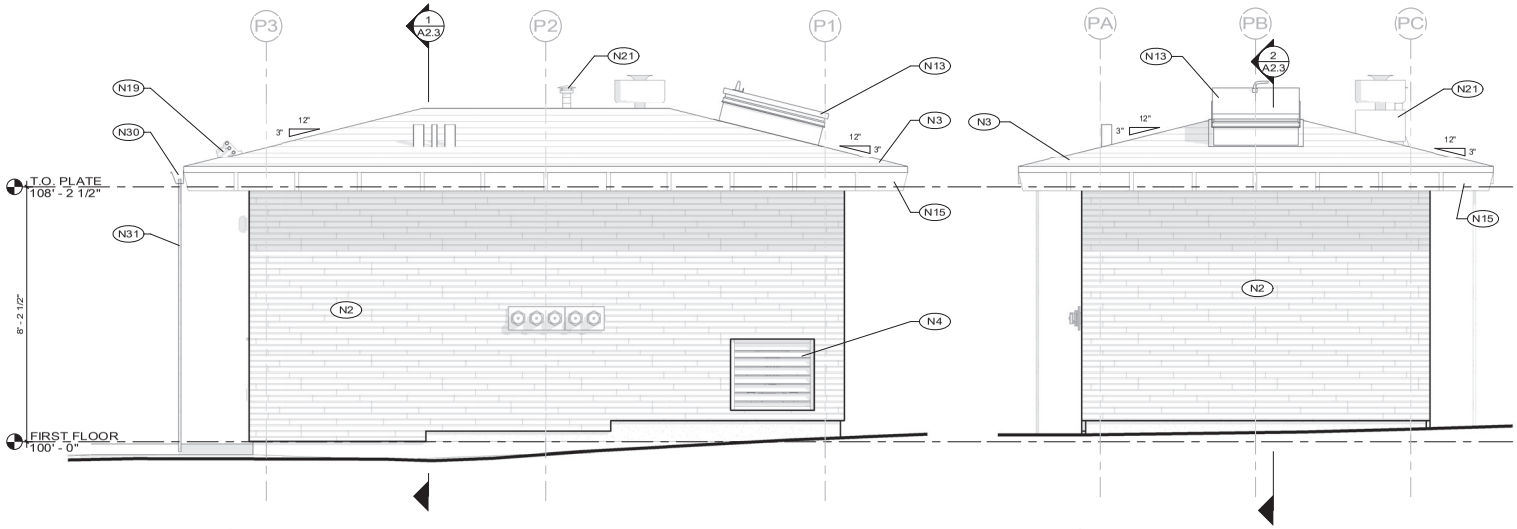
GENERAL NOTES

1. FIRE PROTECTION, MECHANICAL AND ELECTRICAL EQUIPMENT ARE SHOWN FOR REFERENCE ONLY. PLEASE SEE RESPECTIVE SHEETS AND SCHEDULES FOR DEFINITIVE INFORMATION.
2. DIMENSIONS ARE TO INSIDE FACE OF CURB OR INSIDE FACE OF STUD UNLESS OTHERWISE NOTED

LICENSED ARCHITECT WILLIS M. SQUIRES P-3198 STATE OF WYOMING

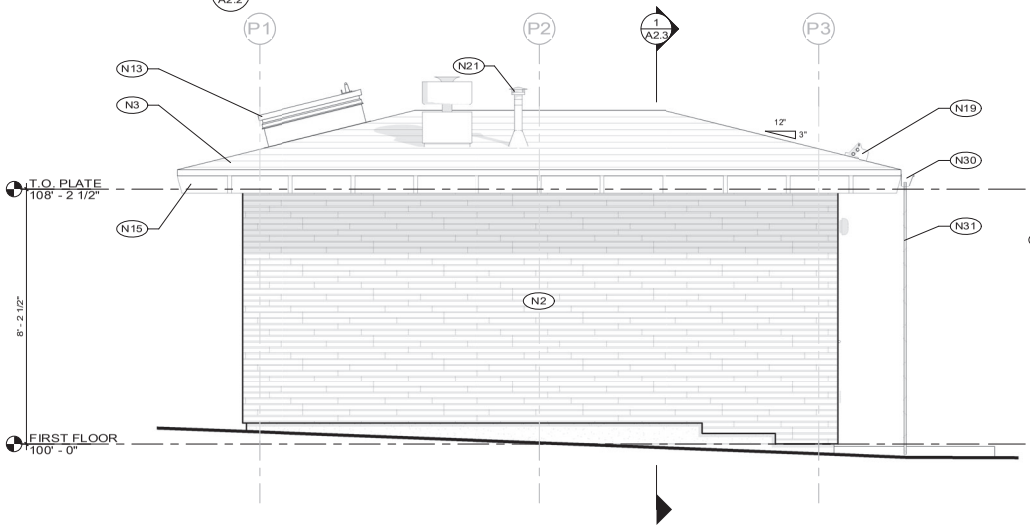
DESIGNED:	LM, JM
DRAWN:	DM, EV, JM
TECH REVIEW:	WMS
DATE:	12/02/2022
SUB SHEET NO.	A2.1
TITLE OF SHEET	PUMP HOUSE RCP & ROOF PLAN
	FOSSIL BUTTE NATIONAL MONUMENT
	WATER SYSTEM IMPROVEMENTS TO MEET FIRE PROTECTION REQUIREMENTS
DRAWING NO.	174 173823
PMIS/PKG NO.	282711
SHEET	20 OF 60

11/29/2022 10:56:37 AM 3M 360://2021-280 FOBU Fire Protection//2021280 - FOBU Fire Protection - v20 - BIM 360.rvt

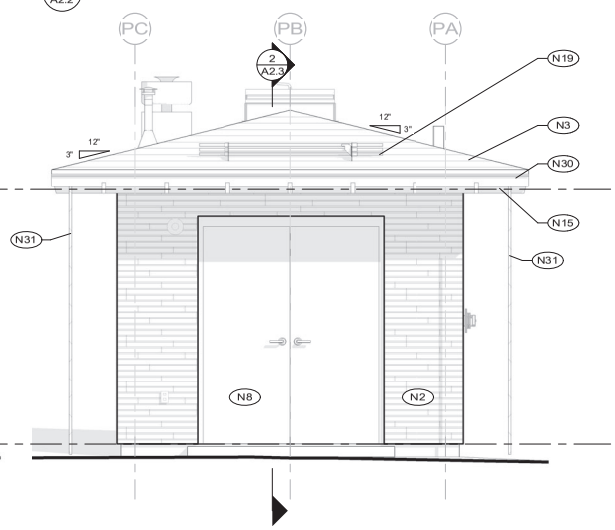


4 A2.2 PUMP HOUSE - NORTHEAST ELEVATION

3 A2.2 PUMP HOUSE - NORTHWEST ELEVATION



2 A2.2 PUMP HOUSE - SOUTHWEST ELEVATION



1 A2.2 PUMP HOUSE - SOUTHEAST ELEVATION

KEYNOTES

- N2 CHANNEL RUSTIC CEDAR SIDING, CORNERS MITRED
- N3 ROOFING ASSEMBLY: BERMUDA PANEL METAL PANEL ROOFING OVER ICE AND WATER SHIELD OVER PLYWOOD SHEATHING. FLASHING: PREFINISHED METAL RIDGE, HIP, AND DRIP EDGE FLASHING.
- N4 INTAKE LOUVER, REF: MECHANICAL.
- N8 5'-8" X 7'-0" INSULATED STEEL DOOR IN HOLLOW METAL FRAME.
- N13 30"X36" ROOF HATCH. INSTALL PER MANUFACTURER'S INSTRUCTIONS. DOOR HATCH TO OPEN AWAY FROM BUILDING SUCH THAT WHEN OPEN, THE DOOR DOES NOT INTERFERE WITH REMOVAL OF PUMP EQUIPMENT, REF: SECTION 2/A2.3
- N15 2X CEDAR FASCIA WITH 1X2 CEDAR TRIM AT 24" O.C.
- N19 SNOW GUARD MOUNTED TO ROOF ABOVE ENTRY DOOR
- N21 VENT THROUGH ROOF, REF: MECH. & PLUMB.
- N30 PREFINISHED METAL GUTTER
- N31 RAIN CHAIN DOWNSPOUT

2 0 2 4
SCALE OF FEET

GENERAL NOTES

1. FIRE PROTECTION, MECHANICAL AND ELECTRICAL EQUIPMENT ARE SHOWN FOR REFERENCE ONLY. PLEASE SEE RESPECTIVE SHEETS AND SCHEDULES FOR DEFINITIVE INFORMATION.
2. DIMENSIONS ARE TO INSIDE FACE OF CURB OR INSIDE FACE OF STUD UNLESS OTHERWISE NOTED

LICENSED ARCHITECT WILLIS M. SQUIRES 12-3199 STATE OF WYOMING

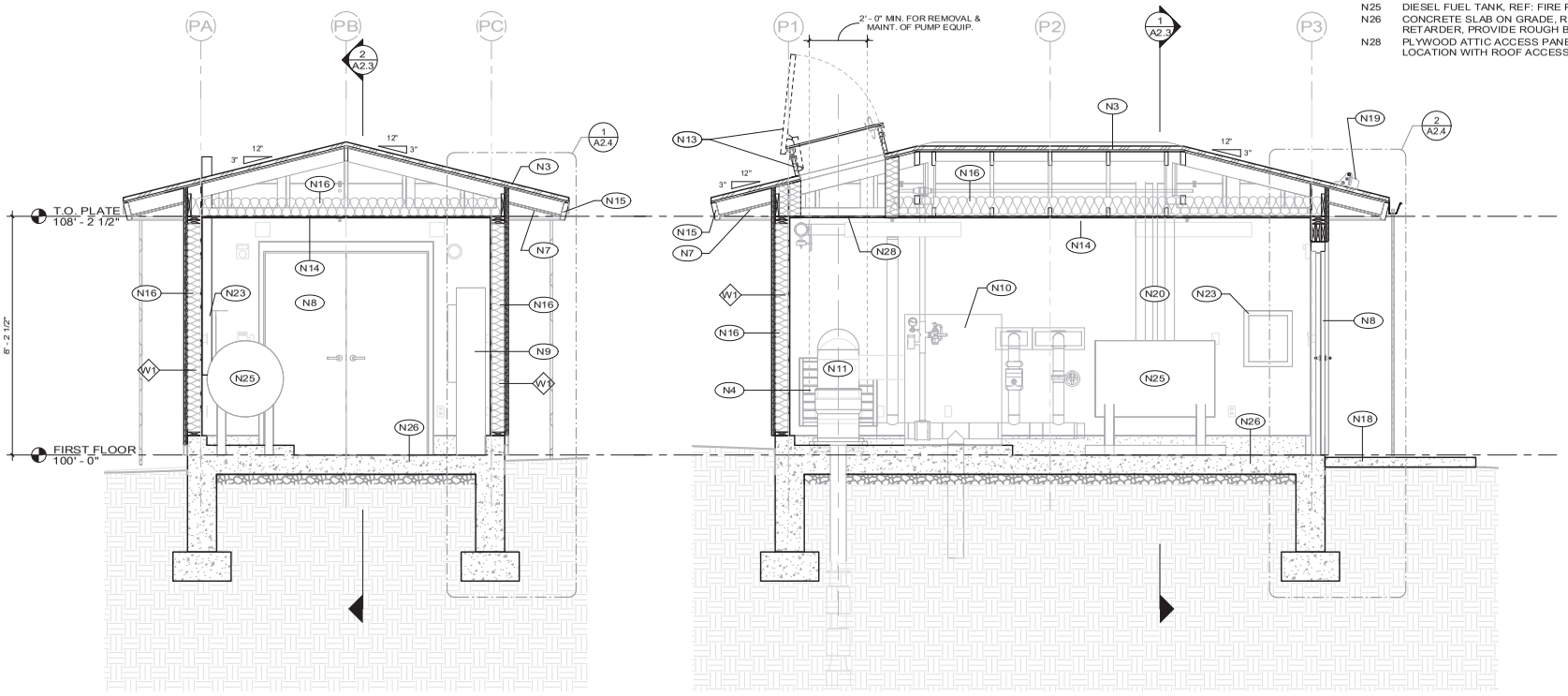
DESIGNED:	LM, JM
DRAWN:	DM, EV, JM
TECH REVIEW:	WMS
DATE:	12/02/2022
SUB SHEET NO.	A2.2
TITLE OF SHEET	PUMP HOUSE ELEVATIONS
	FOSSIL BUTTE NATIONAL MONUMENT
	WATER SYSTEM IMPROVEMENTS TO MEET FIRE PROTECTION REQUIREMENTS
DRAWING NO.	174 173823
PMIS/PKG NO.	282711
SHEET	21 OF 60

11/29/2022 10:56:41 AM
BIM 360://2021-280 FOBU Fire Protection/2021280 - FOBU Fire Protection - v20 - BIM 360.rvt

11/29/2022 10:56:42 AM BIM 360://2021-280 FOBU Fire Protection/2021280 - FOBU Fire Protection - v20 - BIM 360.rvt

KEYNOTES

N3	ROOFING ASSEMBLY: BERMUDA PANEL METAL PANEL ROOFING OVER ICE AND WATER SHIELD OVER PLYWOOD SHEATHING. FLASHING: PREFINISHED METAL RIDGE, HIP, AND DRIP EDGE FLASHING.
N4	INTAKE LOUVER, REF: MECHANICAL.
N7	1X CEDAR SOFFIT BOARD WITH 8LF SOFFIT VENTS REF RCP
N8	5'-8" X 7'-0" INSULATED STEEL DOOR IN HOLLOW METAL FRAME.
N9	PUMP CONTROLLER; REF. FIRE PROTECTION AND ELEC.
N10	PUMP DIESEL ENGINE; REF. FIRE PROTECTION
N11	VERTICAL TURBINE FIRE PUMP; REF. FIRE PROTECTION.
N13	30"X36" ROOF HATCH, INSTALL PER MANUFACTURER'S INSTRUCTIONS. DOOR HATCH TO OPEN AWAY FROM BUILDING SUCH THAT WHEN OPEN, THE DOOR DOES NOT INTERFERE WITH REMOVAL OF PUMP EQUIPMENT, REF: SECTION 2/A2.3
N14	MR GYP BD AT UNDERSIDE OF ROOF FRAMING.
N15	2X CEDAR FASCIA WITH 1X2 CEDAR TRIM AT 24" O.C.
N16	R-21 WALL AND R-30 ATTIC MINERAL WOOL BATT INSULATION
N18	CONCRETE SLAB ON GRADE AT ENTRY.
N19	SNOW GUARD MOUNTED TO ROOF ABOVE ENTRY DOOR
N20	EXPOSED VENT PIPE, REF: MECH. & PLUMB.
N23	ELECTRICAL PANEL, REF: ELEC.
N25	DIESEL FUEL TANK, REF: FIRE PROTECTION.
N26	CONCRETE SLAB ON GRADE, REF: STRUCTURAL, OVER VAPOR RETARDER, PROVIDE ROUGH BROOM FINISH.
N28	PLYWOOD ATTIC ACCESS PANEL, COORDINATE SIZE AND LOCATION WITH ROOF ACCESS HATCH ABOVE, PAINT



1 A2.3 PUMP HOUSE TRANSVERSE SECTION

2 A2.3 PUMP HOUSE LONGITUDINAL SECTION

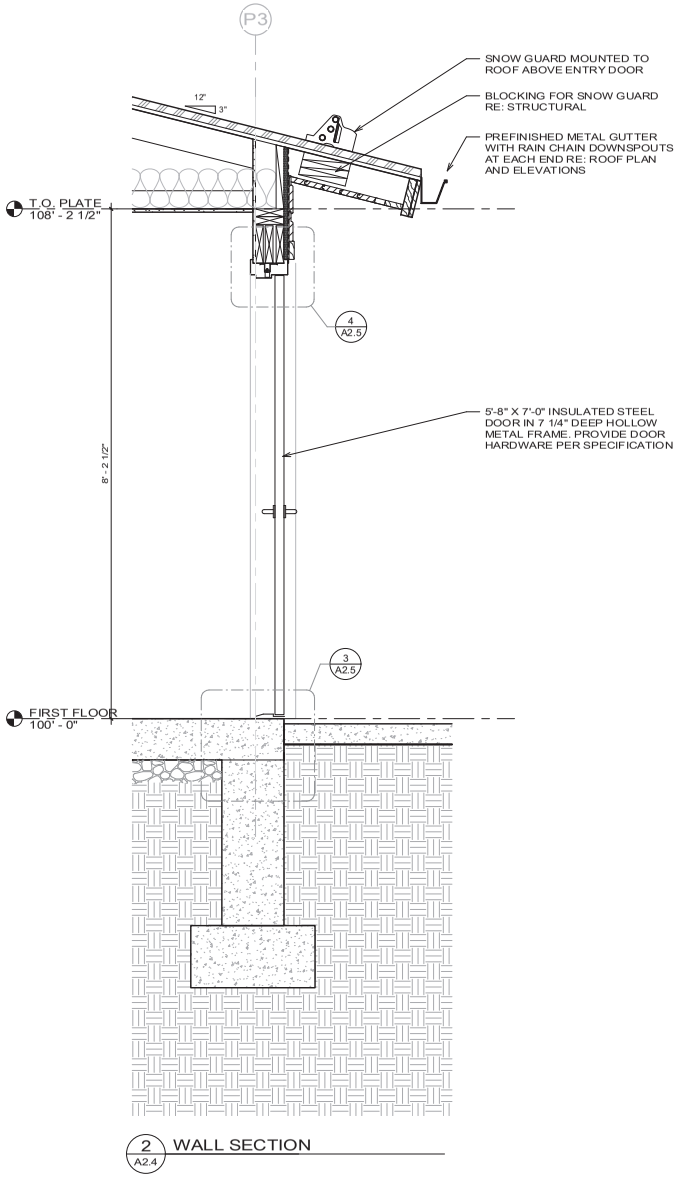
2 0 2 4
SCALE OF FEET

GENERAL NOTES

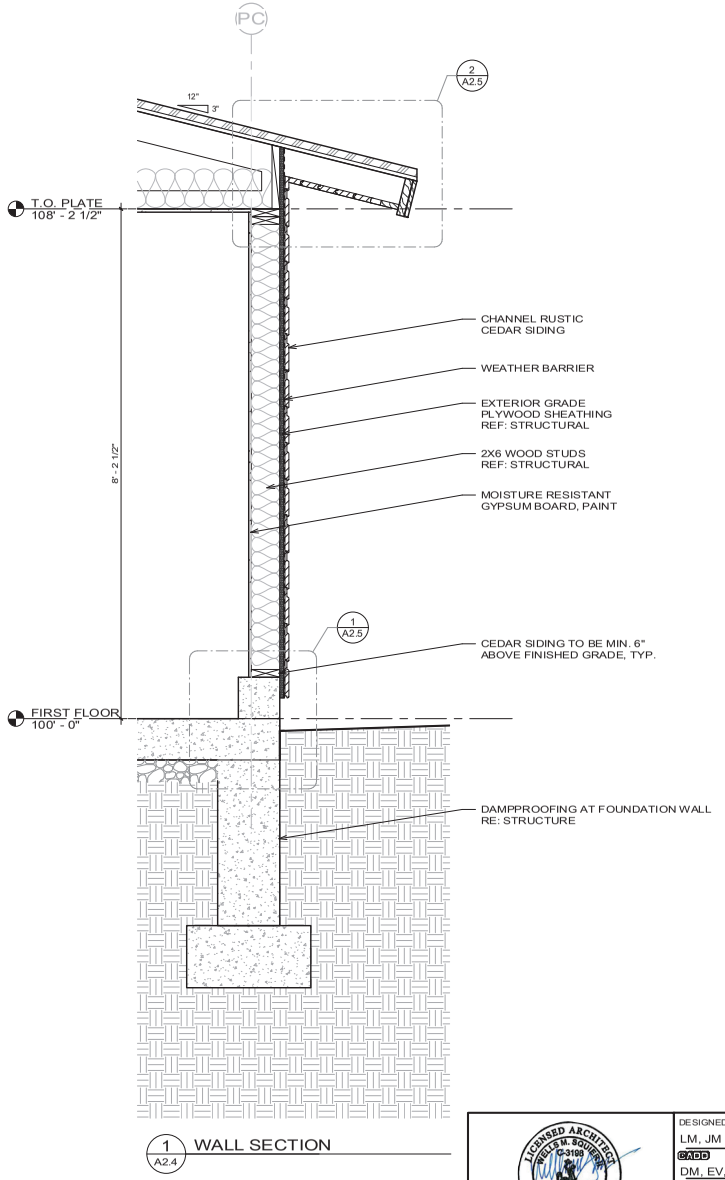
1. FIRE PROTECTION, MECHANICAL AND ELECTRICAL EQUIPMENT ARE SHOWN FOR REFERENCE ONLY. PLEASE SEE RESPECTIVE SHEETS AND SCHEDULES FOR DEFINITIVE INFORMATION.
2. DIMENSIONS ARE TO INSIDE FACE OF CURB OR INSIDE FACE OF STUD UNLESS OTHERWISE NOTED

LICENSED ARCHITECT WILLIAM M. SQUIRES P-3198 STATE OF WYOMING

DESIGNED:	LM, JM
DRAWN:	DM, EV, JM
TECH REVIEW:	WMS
DATE:	12/02/2022
SUB SHEET NO.	A2.3
TITLE OF SHEET	PUMP HOUSE SECTIONS
	FOSSIL BUTTE NATIONAL MONUMENT
	WATER SYSTEM IMPROVEMENTS TO MEET FIRE PROTECTION REQUIREMENTS
DRAWING NO.	174
	173823
PMIS/PKG NO.	282711
SHEET	22 OF 60



2 A2.4 WALL SECTION



1 A2.4 WALL SECTION

RODENT PREVENTION GENERAL NOTES

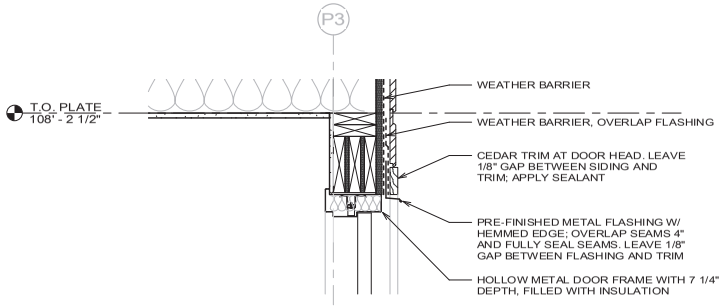
1. SEAMS, GAPS AND PENETRATIONS OF THE BUILDING ENCLOSURE GREATER THAN 1/4-INCH ARE POINTS OF ENTRY FOR RODENTS AND MUST BE SCREENED OR SEALED AS DISCUSSED BELOW
2. AT PENETRATIONS OF THE WALLS OR ROOF, FILL THE ANNULAR SPACE AROUND THE PIPE, ETC.TIGHTLY WITH STEEL WOOL OR COPPER GAUZE AND PROVIDE SEALANT AT THE EXTERIOR LAYER (SIDING OR ROOFING).
3. FOR LINEAR OPENINGS, SUCH AS THE BASE OF WALL, PROVIDE METAL HARDWARE CLOTH OR SIMILAR METAL SCREENING
4. AT LOUVERS, PROVIDE MANUFACTURER'S STAINLESS STEEL SCREENING BEHIND OPENINGS
5. AT SOFFIT VENTS, PROVIDE MANUFACTURER'S RECOMMENDED PERFORATIONS (LESS THAN 1/4" DIAMETER)
6. AT DOOR THRESHOLDS, MINIMIZE GAP BETWEEN DOOR AND THRESHOLD AND PROVIDED A DOOR SWEEP DESIGNED FOR RODENT PREVENTION
7. AT PIPE VENTS THROUGH ROOF, SEAL BOOT TO ROOF DECK AND PROVIDE PREFABRICATED RODENT CAP
8. PATCH GAPS AT INTERIOR DRYWALL WITH A METAL MESH WALL REPAIR PRODUCT

1 0 1 2
SCALE OF FEET

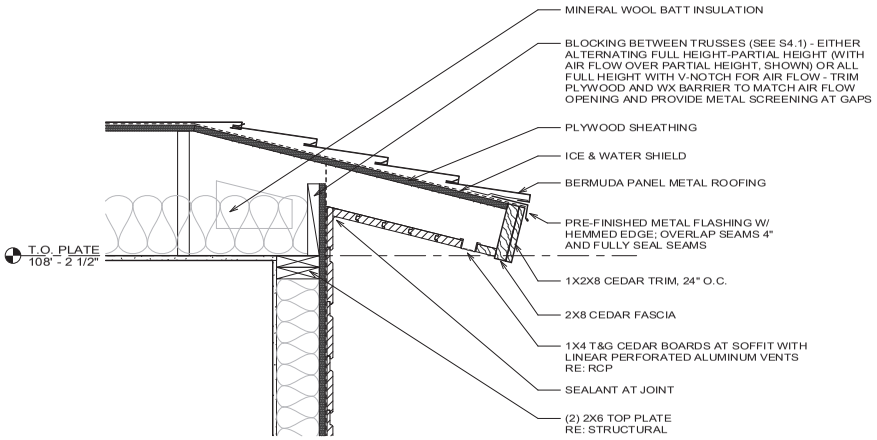
LICENSED ARCHITECT WILLIS M. SQUIRES 12-3199 STATE OF WYOMING

DESIGNED:	LM, JM
DRAWN:	DM, EV, JM
TECH REVIEW:	WMS
DATE:	12/02/2022
SUB SHEET NO.	A2.4
TITLE OF SHEET	PUMP HOUSE WALL SECTIONS
	FOSSIL BUTTE NATIONAL MONUMENT
	WATER SYSTEM IMPROVEMENTS TO MEET FIRE PROTECTION REQUIREMENTS
DRAWING NO.	174 173823
PMIS/PKG NO.	282711
SHEET	23 OF 60

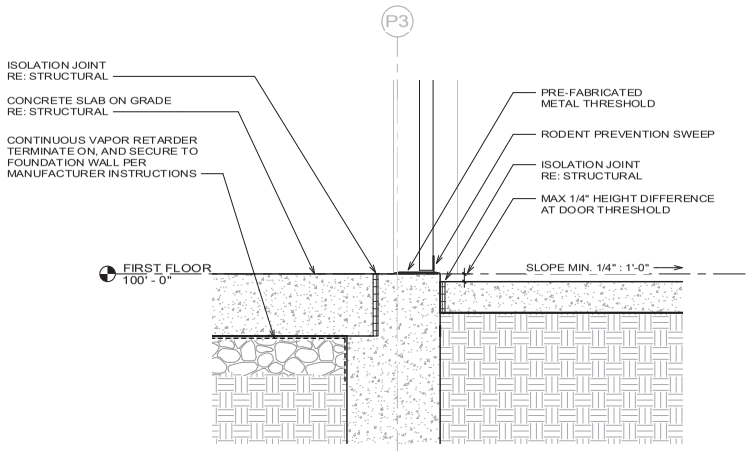
11/29/2022 10:56:42 AM\\BIM 360://2021-280 FOBU Fire Protection/2021280 - FOBU Fire Protection - v20 - BIM 360.rvt



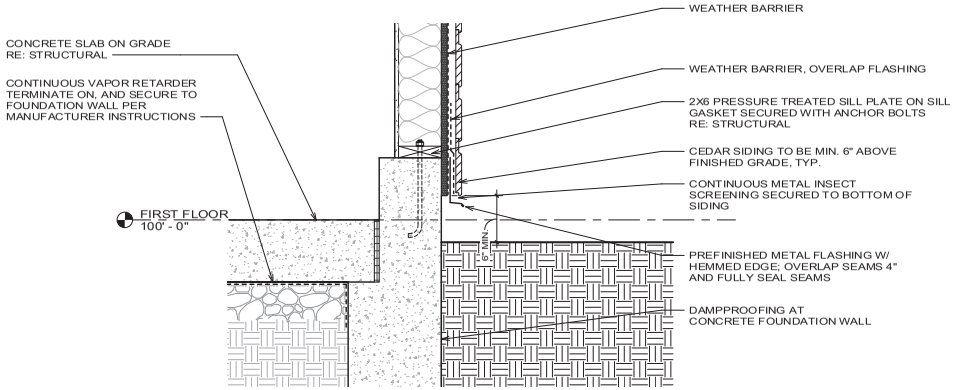
4 A2.5 DOOR HEADER DETAIL



2 A2.5 TYP. ROOF EAVE DETAIL



3 A2.5 DOOR THRESHOLD DETAIL



1 A2.5 TYP. WALL SILL DETAIL

RODENT PREVENTION GENERAL NOTES

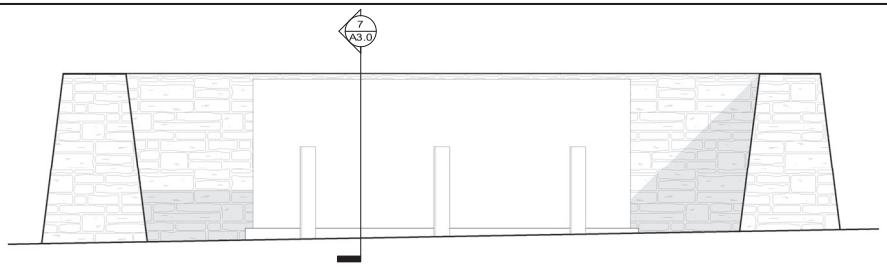
1. SEAMS, GAPS AND PENETRATIONS OF THE BUILDING ENCLOSURE GREATER THAN 1/4-INCH ARE POINTS OF ENTRY FOR RODENTS AND MUST BE SCREENED OR SEALED AS DISCUSSED BELOW
2. AT PENETRATIONS OF THE WALLS OR ROOF, FILL THE ANNULAR SPACE AROUND THE PIPE, ETC TIGHTLY WITH STEEL WOOL OR COPPER GAUZE AND PROVIDE SEALANT AT THE EXTERIOR LAYER (SIDING OR ROOFING).
3. FOR LINEAR OPENINGS, SUCH AS THE BASE OF WALL, PROVIDE METAL HARDWARE CLOTH OR SIMILAR METAL SCREENING
4. AT LOUVERS, PROVIDE MANUFACTURER'S STAINLESS STEEL SCREENING BEHIND OPENINGS
5. AT SOFFIT VENTS, PROVIDE MANUFACTURER'S RECOMMENDED PERFORATIONS (LESS THAN 1/4" DIAMETER)
6. AT DOOR THRESHOLDS, MINIMIZE GAP BETWEEN DOOR AND THRESHOLD AND PROVIDED A DOOR SWEEP DESIGNED FOR RODENT PREVENTION
7. AT PIPE VENTS THROUGH ROOF, SEAL BOOT TO ROOF DECK AND PROVIDE PREFABRICATED RODENT CAP
8. PATCH GAPS AT INTERIOR DRYWALL WITH A METAL MESH WALL REPAIR PRODUCT

1 0 1
SCALE OF FEET

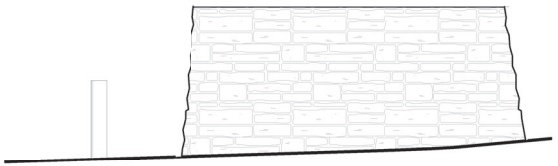
LICENSED ARCHITECT WILLIS M. SQUIRES P-3199 STATE OF WYOMING

DESIGNED: LM, JM	SUB SHEET NO.	TITLE OF SHEET	DRAWING NO.	
DRAWN: DM, EV, JM	A2.5	PUMP HOUSE DETAILS	174	
TECH REVIEW: WMS			173823	
DATE: 12/02/2022		FOSSIL BUTTE NATIONAL MONUMENT WATER SYSTEM IMPROVEMENTS TO MEET FIRE PROTECTION REQUIREMENTS	PMIS/PKG NO. 282711	
			SHEET 24 OF 60	

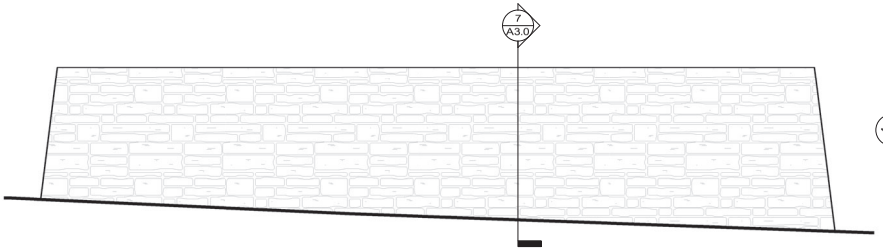
11/29/2022 10:56:43 AM BIM 360://2021-280 FOBU Fire Protection/2021280 - FOBU Fire Protection - v20 - BIM 360.rvt



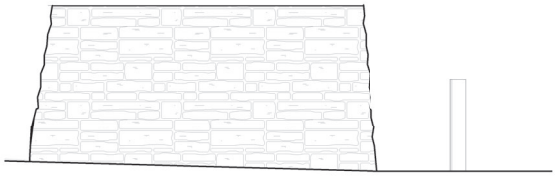
5 A3.0 GENERATOR WALL - NORTHEAST ELEVATION



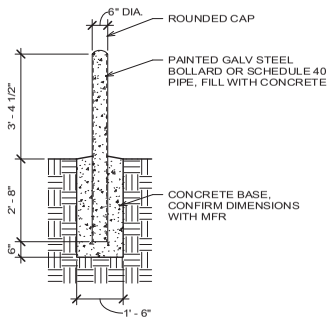
4 A3.0 GENERATOR WALL - NORTHWEST ELEVATION



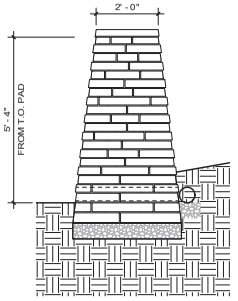
3 A3.0 GENERATOR WALL - SOUTHWEST ELEVATION



2 A3.0 GENERATOR WALL - SOUTHEAST ELEVATION



6 A3.0 BOLLARD DETAIL



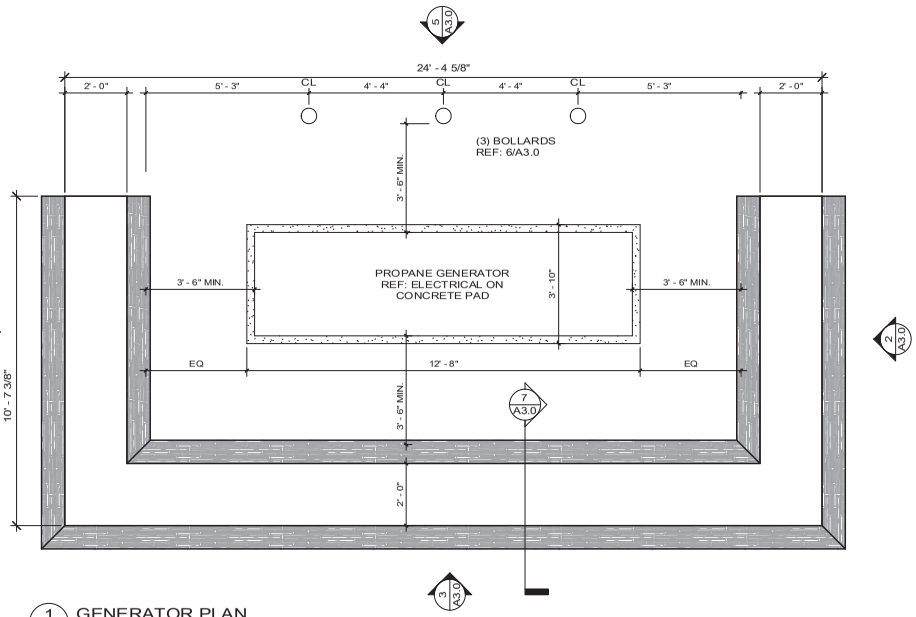
7 A3.0 WALL SECTION

DRY STACK WALL NOTES

1. CAP STONES FULL WIDTH OF TOP OF WALL AND WIDER THAN COURSE BELOW
2. WALL SECTION CONCEPT SHOWN HERE REF: 2/S1.2 FOR WALL CONSTRUCTION
3. EXTENSION OF <E> WALL AT PROPANE TANK SIMILAR - VERIFY DIMENSIONS AND CONDITIONS IN FIELD AND SUBMIT ENGINEERED SHOP DRAWINGS

STONE NOTES

1. DRY STACK STONE TO MATCH THAT USED AT VISITOR CENTER AND ELSEWHERE ON SITE IN COLOR, DIMENSION, AND DRESS
2. STONE SPECIE IS *LYONS RED*, SOURCED FROM LYONS SANDSTONE QUARRY, WITH BROWN TONES AND MINOR RED TONES CONSISTENT WITH SIMILAR CONSTRUCTIONS ON SITE
3. SUBMIT (2) ACTUAL SIZE PHYSICAL SAMPLES OF STONE OF SPECIES AND COLOR SHOWN FOR APPROVAL BY PARK



1 A3.0 GENERATOR PLAN

2 0 2 4
SCALE OF FEET

BLDG NORTH

LICENSED ARCHITECT WELLS M. SQUIRES P-3199 STATE OF WYOMING

DESIGNED: LM, JM	SUB SHEET NO.	TITLE OF SHEET	DRAWING NO. 174 173823
DRAWN: DM, EV, JM	A3.0	GENERATOR PLANS, ELEVATIONS AND SECTIONS	PMIS/PKG NO. 282711
TECH REVIEW: WMS		FOSSIL BUTTE NATIONAL MONUMENT	SHEET 25 OF 60
DATE: 12/02/2022		WATER SYSTEM IMPROVEMENTS TO MEET FIRE PROTECTION REQUIREMENTS	

11/29/2022 10:56:44 AM BIM 360://2021-280 FOBU Fire Protection/2021280 - FOBU Fire Protection - v20 - BIM 360.rvt

STRUCTURAL GENERAL NOTES

DESIGN LOADS:

1. AUTHORITY HAVING JURISDICTION: UNITED STATES GOVERNMENT
2. DESIGN LOADS BASED ON: 2021 INTERNATIONAL BUILDING CODE, ASCE 7-16, AND REFERENCED DOCUMENTS
3. RISK CATEGORY: II STANDARD
4. ROOFS:
   - A. ROOF DEAD LOAD 15 PSF
   - B. ROOF LIVE LOAD 20 PSF, 300 LBS
   - C. GROUND SNOW LOAD, Pg 57 PSF
   - D. FLAT-ROOF SNOW LOAD, Pf 40 PSF
   - E. SNOW EXPOSURE FACTOR, Ce 1.0
   - F. SNOW IMPORTANCE FACTOR, Is 1.0
   - G. THERMAL FACTOR, Ct 1.0
5. FLOOR LIVE LOADS:

OCCUPANCY OR USE	UNIFORMLY DISTRIBUTED (PSF)	CONCENTRATED LOAD (LBS)	LIVE LOAD REDUCTION
PUMP HOUSE	125	PUMP WT	NO
WATER TANK	100+130 (ASSUMED SOIL WT)	TANK WT WITH WATER	NO

6. WIND:
   - A. ULTIMATE DESIGN WIND SPEED, V_{ULT}, (3-SECOND GUST) 104 MPH
   - B. NOMINAL DESIGN WIND SPEED, V_{ASD}, (3-SECOND GUST) 80 MPH
   - C. INTERNAL PRESSURE COEFFICIENT 0.18 (ENCLOSED)
   - D. WIND EXPOSURE C
   - E. GROUND ELEVATION FACTOR 0.82
   - F. COMPONENTS AND CLADDING ULTIMATE DESIGN WIND PRESSURES

1. WALLS:			
	a. WITHIN 3 FEET OF CORNERS	+20 PSF	-26 PSF
	b. AWAY FROM CORNERS	+20 PSF	-21 PSF
2. ROOFS:			
	a. WITHIN 3 FEET OF CORNERS	+16 PSF	-50 PSF
	b. WITHIN 3 FEET OF EDGES	+16 PSF	-29 PSF
	c. AWAY FROM EDGES	+16 PSF	-24 PSF
3. OVERHANGS:			
	a. WITHIN 3 FEET OF CORNERS	+16 PSF	-59 PSF
	b. AWAY FROM CORNERS	+16 PSF	-50 PSF

   4. PRESSURES MAY BE REDUCED FOR EFFECTIVE WIND AREAS LARGER THAN 10 SQUARE FEET, BUT NOT BELOW 16 PSF.
7. SEISMIC:
   - A. SPECTRAL RESPONSE ACCELERATION PARAMETERS
     1. SHORT PERIOD
        - a. S_S 0.935 g
        - b. S_{DS} 0.748 g
     2. ONE SECOND
        - a. S_1 0.321 g
   - B. SOILS SITE CLASS D (DEFAULT)
   - C. SEISMIC IMPORTANCE FACTOR 1.0
   - D. SEISMIC DESIGN CATEGORY D
   - E. BASIC SEISMIC-FORCE-RESISTING SYSTEM(S)
     - a. LIGHT-FRAME (WOOD) WALLS SHEATHED WITH WOOD STRUCTURAL PANELS RATED FOR SHEAR RESISTANCE OR STEEL SHEETS
   - F. DESIGN BASE SHEAR(S) PUMP HOUSE: 5.2 KIPS
   - G. SEISMIC RESPONSE COEFFICIENT(S), C_S 0.17
   - H. RESPONSE MODIFICATION COEFFICIENT(S), R 6.5
   - I. ANALYSIS PROCEDURE EQUIVALENT LATERAL FORCE

FOUNDATION DESIGN:

1. A GEOTECHNICAL REPORT HAS NOT BEEN GENERATED FOR THIS SITE. JVA DESIGNED THE FOUNDATION BASED ON 1500 PSF ALLOWABLE SOIL BEARING PRESSURE PER THE IBC.
2. THE FOUNDATION FOR THE DRYSTACK STONE WALL AND GENERATOR MAT SHALL BE PLACED ON UNDISTURBED NATIVE SOILS. WHERE UNSTABLE SOILS ARE ENCOUNTERED, OVER EXCAVATE AND REPLACE WITH ON-SITE MATERIAL OR GRANULAR STRUCTURAL FILL. VIBRATORY COMPACTION SHALL BE USED PRIOR TO PLACING FORMWORK.
3. FILL SHALL BE PLACED WITHIN +/-2% OF THE OPTIMUM MOISTURE CONTENT AS DETERMIED BY ASTM D698 (STANDARD PROCTOR).
4. FILL SHALL BE PLACED IN 8" MAXIMUM LIFTS AND COMPACTED TO 95% STANDARD PROTOR.
5. WHERE ENCOUNTERED, OVER-EXCAVATE UNSTABLE SOILS AND REPLACE WITH THE ON-SITE OR GRANULAR STRUCTURAL FILL.
6. THE PUMP HOUSE BUILDING SHALL BE EXCAVATED DOWN TO THE SAME ELEVATION AS THE TANK FOUNDATION FOR THE ENTIRE FOOTPRINT OF THE BUILDING. THIS WILL HELP MITIGATE DIFFERENTIAL SETTLEMENT WITH THE FOOTPRINT OF THE PUMP HOUSE BUILDING.
7. SLAB ON GRADE SHALL BE PLACED ON A 4" THICK LAYER OF FREE DRAINING GRAVEL.
8. GEOTECHNICAL ENGINEER OR SPECIAL INSPECTOR SHALL VERIFY SOIL CONDITIONS AND TYPES DURING EXCAVATION AND PRIOR TO PLACEMENT OF FORMWORK OR CONCRETE.
9. MINIMUM FROST DEPTH SHALL BE 48" BELOW EXTERIOR GRADE.

FOOTINGS:

1. DESIGN OF FOOTINGS IS BASED ON
   - A. MAXIMUM ALLOWABLE BEARING PRESSURE 1500 PSF (ASSUMED)
2. BEAR ON COMPACTED STRUCTURAL FILL AS NOTED ON S1.1. EXTERIOR FOOTINGS SHALL BEAR BELOW FROST DEPTH.

EARTH RETAINING STRUCTURES:

1. EARTH EQUIVALENT FLUID LATERAL PRESSURE:
   - A. WALLS RESTRAINED AT TOP (AT REST) 65 PCF (ASSUMED)
   - B. CANTILEVERED WALLS (ACTIVE) 55 PCF (ASSUMED)
   - C. PASSIVE RESISTING 300 PCF (ASSUMED)
2. COEFFICIENT OF SLIDING FRICTION 0.3 (ASSUMED)

REINFORCED CONCRETE:

1. DESIGN IS BASED ON ACI 318 "BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE."
2. CONCRETE WORK SHALL CONFORM TO ACI 301 "STANDARD SPECIFICATIONS FOR STRUCTURAL CONCRETE."
3. STRUCTURAL CONCRETE SHALL HAVE THE FOLLOWING PROPERTIES:

INTENDED USE	EXPOSURE CLASS	f'c, PSI 28 DAYS	MAX W/CM RATIO	MAXIMUM AGGREGATE	SLUMP, INCHES (+/- 1")	AIR CONTENT PERCENT (+/- 1.5%)	CEMENT TYPE	ADMIXTURES / COMMENTS
FOOTINGS	F0-S0-W0-C1	3000	0.52	3/4" STONE	5	N/A	I/II	15% MINIMUM FLYASH
STEM WALLS & GENERATOR PAD	F2-S0-W0-C1	4500	0.45	3/4" STONE	4	6%	I/II	15% MINIMUM FLYASH
INTERIOR SLAB ON GRADE	F0-S0-W0-C0	4000	0.45	3/4" STONE	4	N/P	I/II	15% MINIMUM FLYASH

4. CONCRETE MIX TABLE NOTES:
   - A. SLUMP VALUES INDICATED ARE SUGGESTED BASED ON USE AND TYPICAL PLACEMENT METHODS. CONTRACTOR MAY ADJUST SLUMP AS NECESSARY FOR FIELD CONDITIONS AND INSTALLATION METHOD USED PROVIDED REMAINING REQUIREMENTS ARE MET.
   - B. AIR CONTENT:
     - a. N/P: AIR ENTRAINING ADMISTURES NOT PERMITTED, ENTRAPPED AIR ONLY
     - b. N/A: NOT APPLICABLE, NO STRUCTURAL AIR CONTENT REQUIREMENTS
   - C. GENERAL CONTRACTOR TO COORDINATE CONCRETE MOISTURE LEVEL AND ANTICIPATED MOISTURE MIGIGATION PROCEDURES WITH CONCRETE SUPPLIER/MIX DESIGNER AND OTHER AFFECTED SUBCONTRACTORS (UNCLUDING BUT NOT LIMITED TO FLOORING) TO ADDRESS ALL POTENTIAL SCHEDULE AND INSTALLATION CONFLICTS.
5. DETAILING, FABRICATION, AND PLACEMENT OF REINFORCING STEEL SHALL BE IN ACCORDANCE WITH ACI 315 "DETAILS AND DETAILING OF CONCRETE REINFORCEMENT."
6. REINFORCING BARS SHALL CONFORM TO ASTM A615, GRADE 60, EXCEPT TIES OR BARS SHOWN TO BE FIELD-BENT, WHICH SHALL BE GRADE 40.
7. UNLESS NOTED OTHERWISE ON THE STRUCTURAL DRAWINGS, LAP BARS 50 DIAMETERS (MINIMUM).
8. AT CORNERS AND INTERSECTIONS, MAKE HORIZONTAL BARS CONTINUOUS OR PROVIDE MATCHING CORNER BARS FOR EACH LAYER OF REINFORCEMENT.
9. TRIM OPENINGS IN WALLS AND SLABS WITH (2)-#5 FOR EACH LAYER OF REINFORCEMENT, FULLY DEVELOPED BY EXTENSION OR HOOK.
10. IN CONTINUOUS MEMBERS, SPLICE TOP BARS AT MID-SPAN AND SPLICE BOTTOM BARS OVER SUPPORTS.
11. FORM INTERMITTENT SHEAR KEYS AT ALL CONSTRUCTION JOINTS AND AS SHOWN ON THE STRUCTURAL DRAWINGS.
12. EXCEPT AS NOTED ON THE DRAWINGS, CONCRETE PROTECTION FOR REINFORCEMENT IN CAST-IN-PLACE CONCRETE SHALL BE AS FOLLOWS:
    - A. CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH: 3"
      1. EXPOSED TO EARTH OR WEATHER:
         - a. #6 THROUGH #18 BARS 2"
         - b. #5 BAR, W31 OR D31 WIRE, AND SMALLER 1-1/2"
    - B. NOT EXPOSED TO WEATHER OR IN CONTACT WITH GROUND:
      1. SLABS, WALLS, JOISTS: #11 BARS AND SMALLER 3/4"
      2. BEAMS AND COLUMNS:
         - a. PRIMARY REINFORCEMENT 1-1/2"
         - b. STIRRUPS, TIES, SPIRALS 1-1/2"
13. ANCHOR BOLTS AND RODS FOR BEAM AND COLUMN-BEARING PLATES SHALL BE PLACED WITH SETTING TEMPLATES.

STRUCTURAL MASONRY:

1. DESIGN IS BASED ON ACI 530/ASCE 5/TMS 402, "BUILDING CODE REQUIREMENTS FOR MASONRY STRUCTURES", ALLOWABLE STRESS DESIGN.
2. 28-DAY COMPRESSIVE STRENGTH OF MASONRY ASSEMBLY USED FOR DESIGN IS 2,000 PSI, BASED ON NET-BEDDED AREA.
3. EXCEPT AT MASONRY LINTELS USING STANDARD LINTEL UNITS, BOND BEAM UNITS SHALL BE PRODUCED FROM STANDARD VERTICALLY VOIDED UNITS WITH PRE-CUT KNOCKOUT CROSS WALLS.
4. HOLLOW LOAD-BEARING CONCRETE MASONRY UNITS (CMU) SHALL BE LIGHTWEIGHT, 85 TO 105 PCF DENSITY, CONFORMING TO ASTM C90, WITH A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 2,000 PSI BASED ON AVERAGE NET AREA.
5. MORTAR SHALL BE TYPE S CONFORMING TO ASTM C270.
6. MASONRY CEMENT SHALL NOT BE USED UNLESS PART OF A PRE-PACKAGED MORTAR OR GROUT MIX APPROVED BY THE CONTRACTING OFFICER.
7. ADMIXTURES SHALL NOT BE USED UNLESS APPROVED BY THE CONTRACTING OFFICER.
8. GROUT USED IN MASONRY WALLS AND BLOCK CELLS SHALL BE COARSE GROUT, AS DEFINED BY ARTICLE 2.2 OF TMS 602/ACI530.1/ASCE 6, WITH A MINIMUM CUBE STRENGTH = 2,000 PSI OR 3,000 PSI CONCRETE USING 3/8" DIAMETER AGGREGATE AND PLACED BY VIBRATING UNLESS AN APPROVED SELF-CONSOLIDATING MIX IS USED.
9. PLACEMENT OF MORTAR, GROUT, MASONRY UNITS AND WALL TIES SHALL COMPLY WITH TMS 602 / ACI 530.1 / ASCE 6.
10. PROVIDE FULL SHOVED MORTAR IN ALL HEAD AND BED JOINTS.
11. 'LOW-LIFT' GROUTING SHALL NOT EXCEED 5 FEET IN HEIGHT UNLESS ACI 530.1 'HIGH-LIFT' GROUTING PROCEDURES ARE REVIEWED AND APPROVED BY THE CONTRACTING OFFICER.
12. VENEER TIES SHALL BE STAINLESS STEEL OR HOT-DIP GALVANIZED.
13. REINFORCING BARS SHALL BE AS FOR REINFORCED CONCRETE EXCEPT AS NOTED. UNLESS OTHERWISE NOTED ON THE STRUCTURAL DRAWINGS, LAP BARS 50 DIAMETERS (MINIMUM) AT SPLICES. REINFORCEMENT SHALL BE SECURED AGAINST DISPLACEMENT PRIOR TO GROUTING BY WIRE BAR LOCATORS OR OTHER SUITABLE DEVICES AT INTERVALS NOT EXCEEDING 200 BAR DIAMETERS OR 10 FEET.
14. REINFORCE AND GROUT VERTICAL CELLS AT CORNERS, ENDS OF WALLS, JAMBS OF OPENINGS, EACH SIDE OF VERTICAL CONTROL JOINTS, AND AT SPACING SHOWN ON DRAWINGS.

Professional Engineer STATE OF WYOMING DEVEN D. CARLSON 16226

DESIGNED:	DMM
DRAWN:	DJM, LAB
TECH REVIEW:	TSS
DATE:	12/02/2022
SUB SHEET NO.	S0.1
TITLE OF SHEET	GENERAL NOTES
	FOSSIL BUTTE NATIONAL MONUMENT WATER SYSTEM IMPROVEMENTS TO MEET FIRE PROTECTION REQUIREMENTS
DRAWING NO.	174
	173823
PMIS/PKG NO.	282711
SHEET	26 OF 60

12/5/2022 1:42:33 PM BIM 360://2021-280 FOBU Fire Protection/20935 JVA Structural S20.rvt

STRUCTURAL WOOD FRAMING:

1. IN-GRADE BASE VALUES HAVE BEEN USED FOR DESIGN.
2. DIMENSIONAL LUMBER FRAMING SHALL BE S4S DOUGLAS FIR-LARCH NO. 2 AND BETTER UNO.
3. SOLID TIMBER BEAMS AND POSTS SHALL BE DOUGLAS FIR-LARCH NO. 1 AND BETTER UNO.
4. STUDS SHALL BE DOUGLAS FIR-LARCH STUD GRADE AND BETTER UNO.
5. TOP AND BOTTOM PLATES SHALL BE DOUGLAS FIR-LARCH NO. 2 AND BETTER UNO.
6. ALL LUMBER SHALL BE 19% MAXIMUM MOISTURE CONTENT AT THE TIME OF INSTALLATION.
7. ALL WOOD EXPOSED TO WEATHER OR IN CONTACT WITH CONCRETE OR MASONRY SHALL BE PRESSURE TREATED DOUGLAS FIR-LARCH OR SOUTHERN YELLOW PINE. PRESERVATIVE-TREATED WOOD SHALL BE TREATED IN ACCORDANCE WITH AWPA STANDARDS U1 AND M4. TREATMENTS SHALL HAVE NO AMMONIA ADDED AND SHALL HAVE THE FOLLOWING USE CATEGORY:
   A. UC2 AT INTERIOR
   B. UC3B AT EXTERIOR WITH NO GROUND CONTACT
   C. UC4B AT EXTERIOR WITH GROUND CONTACT
8. FASTENERS FOR USE WITH TREATED WOOD SHALL BE CORROSION RESISTANT IN ACCORDANCE WITH SECTION 2304.9.5 OF THE IBC.
9. ALL CONNECTORS USED WITH PRESSURE-TREATED MATERIAL SHALL BE STAINLESS STEEL ASTM 304 OR 316, OR HAVE A SIMPSON Z-MAX (G185) OR HDG COATING. STANDARD COATING (G90) IS ACCEPTABLE AT INTERIOR CONDITIONS WITH NON PRESSURE-TREATED LUMBER ONLY. CONNECTORS ARE TO BE IN ACCORDANCE WITH ASTM A653 OR ASTM 123.
10. ALL IRON AND STEEL PRODUCTS ATTACHED TO TREATED LUMBER SHALL BE HOT-DIPPED GALVANIZED IN ACCORDANCE WITH ASTM A123 OR SHALL BE TYPE 304 OR 316 STAINLESS STEEL.
11. STRUCTURAL MEMBERS SHALL NOT BE CUT FOR PIPES, ETC. UNLESS SPECIFICALLY NOTED OR DETAILED ON THE STRUCTURAL DRAWINGS.
12. ALL BOLTS SHALL BE RE-TIGHTENED PRIOR TO CLOSING IN OF WALLS, FLOORS, AND ROOFS.
13. ALL BOLTS BEARING ON WOOD SHALL HAVE STANDARD CUT WASHERS UNDER HEAD AND/OR NUT, UNO.
14. METAL FRAMING ANCHORS SHOWN OR REQUIRED, SHALL BE SIMPSON STRONG-TIE OR EQUAL CODE APPROVED CONNECTORS AND INSTALLED WITH ALL HOLES FILLED (ROUND AND TRIANGULAR) WITH THE MAXIMUM SIZE NAIL RECOMMENDED BY THE MANUFACTURER TO DEVELOP THE MAXIMUM RATED CAPACITY.
15. CONNECTOR BOLTS AND LAG SCREWS SHALL CONFORM TO ANSI/ASME B18.2.1 AND ASTM SAE J429 GRADE 1.
16. NAILS AND SPIKES SHALL CONFORM TO ASTM F 1667.
17. WOOD SCREWS SHALL CONFORM TO ANSI/ASME B18.6.1.
18. LEAD HOLES FOR LAG SCREWS SHALL BE 40%-70% OF THE SHANK DIAMETER AT THE THREADED SECTION AND EQUAL TO THE SHANK DIAMETER AT THE UNTHREADED SECTION.
19. CONVENTIONAL LIGHT FRAMING SHALL COMPLY WITH IBC SECTION 2308.
20. ALL BEAMS AND TRUSSES SHALL BE BRACED AGAINST ROTATION AT POINTS OF BEARING.
21. 2X BLOCKING SHALL BE PLACED BETWEEN JOISTS OR RAFTERS AT ALL SUPPORTS, UNO.
22. CROSS-BRIDGING OR SOLID BLOCKING SHALL BE PROVIDED AT 8'-0" MAX. FOR ALL JOISTS AND RAFTERS MORE THAN 10" IN DEPTH, 2X3 OR APPROVED METAL TYPE BRIDGING MAY BE USED.
23. ALL JOISTS AND BEAMS (EXCLUDING I-JOISTS) SHALL BE SEAT-CUT FOR FULL UNIFORM BEARING AT SUPPORTS, SEATS, CAPS, ETC.
24. VENTING IS REQUIRED IN ALL ENCLOSED ROOF AND CRAWL SPACE FRAMING CAVITIES, PER THE CONSTRUCTION DRAWINGS.
25. EXCEPT AS NOTED OTHERWISE, MINIMUM NAILING SHALL BE PROVIDED AS SPECIFIED IN TABLE 2304.9.1 "FASTENING SCHEDULE" OF THE IBC.
26. ALL MULTIPLE MEMBER BEAMS SHALL BE NAILED TOGETHER WITH MAX NUMBER OF 10D NAILS VERTICALLY @ 3" AND HORIZONTALLY @ 12" PER PLY, UNO.
27. ALL ROOF RAFTERS, JOISTS, TRUSSES, AND BEAMS SHALL BE ANCHORED TO SUPPORTS WITH H2.5A METAL FRAMING ANCHORS UNO. PROVIDE (2) WITHIN 4'-0" OF ALL CORNERS.

LIGHT-METAL-PLATE-CONNECTED WOOD TRUSSES:

1. TRUSS MANUFACTURER SHALL COMPLY WITH ALL REQUIREMENTS AS STATED IN SECTION 2303.4 OF THE IBC.
2. ALL PRE-ENGINEERED TRUSSES SHALL BE FABRICATED SUCH THAT THEY INCORPORATE ALL ROOF PLANES. AT CONTRACTOR'S OPTION, STANDARD SHAPE TRUSSES MAY BE USED IN CONJUNCTION WITH OVERFRAMING.
3. FULL HEIGHT BLOCKING SHALL BE PLACED BETWEEN TRUSSES AT ALL SUPPORTS.
4. CROSS BRIDGING DESIGN SHALL BE PROVIDED BY TRUSS MANUFACTURER AS REQUIRED FOR LATERAL EFFECTS.
5. TRUSS MEMBERS AND COMPONENTS SHALL NOT BE CUT, NOTCHED, DRILLED, SPLICED OR OTHERWISE ALTERED IN ANY WAY WITHOUT WRITTEN APPROVAL OF A REGISTERED DESIGN PROFESSIONAL
6. MANUFACTURE AND INSTALLATION OF METAL PLATED WOOD TRUSSES SHALL COMPLY WITH ANSI/TPI 1 "NATIONAL DESIGN STANDARD FOR METAL-PLATE-CONNECTED WOOD TRUSS CONSTRUCTION," BCSI (BUILDING COMPONENT SAFETY INFORMATION)" GUIDE TO GOOD PRACTICE FOR HANDLING.
7. INSTALLING & BRACING OF METAL PLATE CONNECTED WOOD TRUSSES, AND DSB-89 "RECOMMENDED DESIGN SPECIFICATION FOR TEMPORARY BRACING OF METAL PLATE CONNECTED WOOD TRUSSES."
8. PRE-ENGINEERED, PREFABRICATED TRUSSES SHALL BE DESIGNED BY AN ENGINEER REGISTERED IN THE STATE IN WHICH THE PROJECT IS LOCATED TO CARRY THE LOADS INDICATED ON THE STRUCTURAL DRAWINGS IN WHICH THE PROJECT IS LOCATED.
9. TRUSSES SHALL BE DESIGNED TO SUPPORT THE FULL DEAD LOADS AND THE SUPERIMPOSED DESIGN LOADS NOTED ON THE DRAWINGS.
10. STRESSES SHALL NOT EXCEED THOSE LISTED IN THE NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION (AF&PA NDS). <NO INCREASES IN STRESS ARE ALLOWED FOR DURATION OF LOAD.>
11. THE FABRICATOR SHALL DETERMINE TRUSS WEB ARRANGEMENTS AND MEMBER FORCES.
13. TRUSSES SHALL BE DESIGNED IN BEARING TO NOT EXCEED THE PERPENDICULAR TO GRAIN BEARING VALUES FOR THE TOP PLATE GRADES INDICATED IN THE "STRUCTURAL WOOD FRAMING" GENERAL NOTES. WHERE TRUSS BEARING EXCEED THIS VALUE THE TRUSS MANUFACTURER SHALL PROVIDE BEARING ENHANCERS TO COMPNESATE FOR OVERSTRESSES. TRUSS MANUFACTURER SHALL SPECIFY SIZES, SPECIES, AND NAILING FOR BEARING BLOCKS.
14. TRUSS FABRICATOR SHLALL SPECIFY ALL ROOF TRUSS BRACING AND BRIDGING.
15. CALCULATIONS AND SHOP DRAWINGS, INCLUDING MEMBER SIZES, LUMBER SPECIES AND GRADES, AND SUBSTANTIATING DATE FOR CONNECTOR CAPACITIES, SHALL BE SUBMITTED TO THE CONTRACTING OFFICER FOR REVIEW PRIOR TO FABRICATION.
16. TRUSS DESIGN SHALL INCLUDE A 250 LBS LOAD PER NFPA TO SUPPORT SPRINKLER LOADS LOCATED ANYWHERE ALONG THE BOTTOM CHORD OF THE TRUSS.

WOOD SHEATHING:

1. PLYWOOD AND ORIENTED STRAND BOARD (OSB) ROOF SHEATHING SHALL BE APA RATED WITH STAMP INCLUDING APA TRADEMARK AND PANEL SPAN RATING.
   A. MINIMUM ROOF SHEATHING: 5/8" OSB OR CDX PLYWOOD, APA 40/20, NAILED.
   B. MINIMUM WALL SHEATHING: 7/16" OSB OR CDX PLYWOOD, APA 24/16, BLOCKED AND NAILED.
2. MINIMUM (3) 8D NAILS PER STUD. NAIL ALL PLATES USING EDGE NAIL SPACING INDICATED.
3. SHEATHE ALL EXTERIOR WALLS.
4. SHEATHING SHALL BE CONTINUOUS FROM BOTTOM PLATE TO TOP PLATE. CUT IN "L" AND "T" SHAPES AROUND OPENINGS. LAP SHEATHING OVER SINGLE 2X PLATE MEMBER AT RIM JOIST. AT RIM JOIST PROVIDE A MINIMUM OF 3" BETWEEN SHEATHING EDGE AND TOP/BOTTOM EDGE OF RIM.
5. MINIMUM HEIGHT OF SHEATHING PANELS SHALL BE 16" TO ENSURE THAT PLATES ARE TIED TO STUDS.
6. ALL SHEATHING SHEETS SHALL HAVE 1/8" GAP AT ALL EDGES AND JOINTS.
7. PROVIDE (1) PANEL SHEATHING CLIP AT ALL UNSUPPORTED ROOF SHEATHING PANEL EDGES. WHERE SPANS ARE GREATER THAN 32" PROVIDE (2) CLIPS.

SHOP DRAWINGS:

1. THE CONSTRUCTION DRAWINGS ARE COPYRIGHTED AND SHALL NOT BE COPIED FOR USE AS ERECTION PLANS OR SHOP DETAILS. USE OF THE GOVERNMENT'S ELECTRONIC FILES AS THE BASIS FOR SHOP DRAWINGS REQUIRES PRIOR APPROVAL BY THE CONTRACTING OFFICER, A SIGNED RELEASE OF LIABILITY BY THE GENERAL CONTRACTOR AND/OR HIS SUBCONTRACTORS, AND DELETION OF THE TITLEBLOCK FROM ALL SHEETS TO BE USED.
2. THE GENERAL CONTRACTOR SHALL SUBMIT IN WRITING ANY REQUESTS TO MODIFY THE CONSTRUCTION DRAWINGS OR PROJECT SPECIFICATIONS.
3. ALL SHOP AND ERECTION DRAWINGS SHALL BE CHECKED AND STAMPED (AFTER HAVING BEEN CHECKED) BY THE GENERAL CONTRACTOR PRIOR TO SUBMISSION FOR THE CONTRACTING OFFICER'S REVIEW; SHOP DRAWING SUBMITTALS NOT CHECKED BY THE GENERAL CONTRACTOR PRIOR TO SUBMISSION TO THE CONTRACTING OFFICER WILL BE RETURNED WITHOUT REVIEW.
4. FURNISH ELECTRONIC VERSION (PDF) OF SHOP AND ERECTION DRAWINGS TO THE CONTRACTING OFFICER FOR REVIEW PRIOR TO FABRICATION FOR:
   A. CONCRETE MIX DESIGNS
   B. CONCRETE REINFORCING STEEL
   C. MASONRY REINFORCING STEEL
   D. PRE-ENGINEERED WOOD TRUSSES
5. SUBMIT IN A TIMELY MANNER TO PERMIT 10 WORKING DAYS FOR REVIEW BY THE CONTRACTING OFFICER.
6. SHOP DRAWINGS SUBMITTED FOR REVIEW DO NOT CONSTITUTE "REQUEST FOR CHANGE IN WRITING" UNLESS SPECIFIC SUGGESTED CHANGES ARE CLEARLY MARKED. IN ANY EVENT, CHANGES MADE BY MEANS OF THE SHOP DRAWING SUBMITTAL PROCESS BECOME THE RESPONSIBILITY OF THE ONE INITIATING THE CHANGE.

FIELD VERIFICATION OF EXISTING CONDITIONS:

1. THE GENERAL CONTRACTOR SHALL THOROUGHLY INSPECT AND SURVEY THE EXISTING STRUCTURE TO VERIFY CONDITIONS THAT AFFECT THE WORK SHOWN ON THE DRAWINGS.
2. THE GENERAL CONTRACTOR SHALL REPORT ANY VARIATIONS OR DISCREPANCIES TO THE CONTRACTING OFFICER BEFORE PROCEEDING.

STRUCTURAL ERECTION AND BRACING REQUIREMENTS:

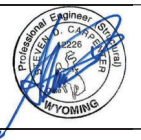
1. THE CONSTRUCTION DRAWINGS ILLUSTRATE AND DESCRIBE THE COMPLETED STRUCTURE WITH ELEMENTS IN THEIR FINAL POSITIONS, PROPERLY SUPPORTED, CONNECTED, AND/OR BRACED.
2. THE CONSTRUCTION DRAWINGS ILLUSTRATE TYPICAL AND REPRESENTATIVE DETAILS TO ASSIST THE GENERAL CONTRACTOR. DETAILS SHOWN APPLY AT ALL SIMILAR CONDITIONS UNLESS OTHERWISE INDICATED. ALTHOUGH DUE DILIGENCE HAS BEEN APPLIED TO MAKE THE DRAWINGS AS COMPLETE AS POSSIBLE, NOT EVERY DETAIL IS ILLUSTRATED AND NOT EVERY EXCEPTIONAL CONDITION IS ADDRESSED.
3. ALL PROPRIETARY CONNECTIONS AND ELEMENTS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURERS' RECOMMENDATIONS.
4. ALL WORK SHALL BE ACCOMPLISHED IN A WORKMANLIKE MANNER AND IN ACCORDANCE WITH THE APPLICABLE CODES AND LOCAL ORDINANCES.
5. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR COORDINATION OF ALL WORK, INCLUDING LAYOUT AND DIMENSION VERIFICATION, MATERIALS COORDINATION, SHOP DRAWING REVIEW, AND THE WORK OF SUBCONTRACTORS. ANY DISCREPANCIES OR OMISSIONS DISCOVERED IN THE COURSE OF THE WORK SHALL BE IMMEDIATELY REPORTED TO THE CONTRACTING OFFICER FOR RESOLUTION.
6. CONTINUATION OF WORK WITHOUT NOTIFICATION OF DISCREPANCIES RELIEVES THE CONTRACTING OFFICER FROM ALL CONSEQUENCES.
7. UNLESS OTHERWISE SPECIFICALLY INDICATED, THE CONSTRUCTION DRAWINGS DO NOT DESCRIBE METHODS OF CONSTRUCTION.
8. THE GENERAL CONTRACTOR, IN THE PROPER SEQUENCE, SHALL PERFORM OR SUPERVISE ALL WORK NECESSARY TO ACHIEVE THE FINAL COMPLETED STRUCTURE, AND TO PROTECT THE STRUCTURE, WORKMEN, AND OTHERS DURING CONSTRUCTION. SUCH WORK SHALL INCLUDE, BUT NOT BE LIMITED TO TEMPORARY BRACING, SHORING FOR CONSTRUCTION EQUIPMENT, SHORING FOR EXCAVATION, FORMWORK, SCAFFOLDING, SAFETY DEVICES AND PROGRAMS OF ALL KINDS, SUPPORT AND BRACING FOR CRANES AND OTHER ERECTION EQUIPMENT.
9. DO NOT BACKFILL AGAINST BASEMENT OR RETAINING WALLS UNTIL SUPPORTING SLABS AND FLOOR FRAMING ARE IN PLACE AND SECURELY ANCHORED, UNLESS ADEQUATE TEMPORARY BRACING IS PROVIDED.
10. TEMPORARY BRACING SHALL REMAIN IN PLACE UNTIL ALL FLOORS, WALLS, ROOFS AND ANY OTHER SUPPORTING ELEMENTS ARE IN PLACE.
11. THE CONTRACTING OFFICER BEARS NO RESPONSIBILITY FOR THE ABOVE ITEMS, AND OBSERVATION VISITS TO THE SITE DO NOT IN ANY WAY INCLUDE INSPECTIONS OF THESE ITEMS.

DEFERRED SUBMITTALS:

1. PORTIONS OF THE STRUCTURE HAVE ELEMENTS OF PROPRIETARY DESIGN AND FABRICATION, WHICH SHALL BE SUBMITTED BY THE SUPPLIER FOR APPROVAL AFTER AWARD OF CONTRACT.
2. THESE ITEMS SHALL CONFORM TO THE LOAD, CAPACITY, SIZE, GEOMETRY, CONNECTION, AND SUPPORT CRITERIA NOTED ON THE STRUCTURAL DRAWINGS.
3. SHOP DRAWINGS AND CALCULATIONS SHALL BE PREPARED BY AN ENGINEER REGISTERED IN THE STATE IN WHICH THE PROJECT IS LOCATED. FINAL SHOP DRAWING SUBMITTALS SHALL BE STAMPED AND SIGNED.
4. FURNISH DEFERRED SUBMITTALS FOR:
   A. SUPPLIER ENGINEERED OPEN-WEB WOOD TRUSSES
5. SUBMITTALS WILL BE REVIEWED BY THE CONTRACTING OFFICER FOR COMPLIANCE WITH THE SPECIFIED DESIGN REQUIREMENTS.
6. DEFERRED SUBMITTAL ITEMS SHALL NOT BE INSTALLED UNTIL THEIR DESIGN CALCULATIONS AND DRAWINGS HAVE BEEN REVIEWED BY THE CONTRACTING OFFICER.

SPECIAL INSPECTIONS - 2018:

1. THE FOLLOWING SPECIAL INSPECTIONS AND TESTING SHALL BE PERFORMED BY A QUALIFIED SPECIAL INSPECTOR, RETAINED BY THE CONTRACTOR, IN ACCORDANCE WITH THE FOLLOWING SECTIONS OF IBC CHAPTER 17:
   A. SECTION 1704 SPECIAL INSPECTIONS, CONTRACTOR RESPONSIBILITY, AND STRUCTURAL OBSERVATIONS AND THE FOLLOWING SUB-SECTIONS:
      1. 1704.2 SPECIAL INSPECTIONS AND TESTS
      2. 1704.3 STATEMENT OF SPECIAL INSPECTIONS
   B. SECTION 1705 REQUIRED VERIFICATION AND INSPECTION AND THE FOLLOWING SUB-SECTIONS:
      1. 1705.3 CONCRETE CONSTRUCTION
      2. 1705.4 MASONRY CONSTRUCTION, LEVEL B SPECIAL INSPECTION
      3. 1705.5 WOOD CONSTRUCTION
      4. 1705.6 SOILS
      5. SECTION 1705.12 SPECIAL INSPECTIONS FOR SEISMIC RESISTANCE AND THE FOLLOWING SUB-SECTIONS:
         a. 1705.12.4 DESIGNATED SEISMIC SYSTEM
      6. SECTION 1705.13 STRUCTURAL TESTING FOR SEISMIC RESISTANCE AND THE FOLLOWING SUB SECTIONS:
         a. 1705.13.3 DESIGNATED SEISMIC SYSTEMS (SDC C, D, E, OR F)
2. THE SPECIAL INSPECTOR SHALL BE A QUALIFIED PERSON WHO SHALL DEMONSTRATE COMPETENCE, TO THE SATISFACTION OF THE CONTRACTING OFFICER, FOR INSPECTION OF THE PARTICULAR TYPE OF CONSTRUCTION OR OPERATION REQUIRING SPECIAL INSPECTION. THE APPROVED INSPECTOR MUST BE INDEPENDENT FROM THE CONTRACTOR RESPONSIBLE FOR THE WORK BEING INSPECTED.
3. DUTIES AND RESPONSIBILITIES OF THE SPECIAL INSPECTOR SHALL BE TO INSPECT AND/OR TEST THE WORK OUTLINED ABOVE AND WITHIN THE STATEMENT OF SPECIAL INSPECTIONS IN ACCORDANCE WITH CHAPTER 17 OF THE IBC FOR CONFORMANCE WITH THE APPROVED CONSTRUCTION DOCUMENTS.
4. ALL DISCREPANCIES SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE CONTRACTING OFFICER FOR CORRECTION.
5. PER SECTION 1704.2.4 THE SPECIAL INSPECTOR SHALL FURNISH REGULAR REPORTS TO THE CONTRACTING OFFICER. PROGRESS REPORTS FOR CONTINUOUS INSPECTION SHALL BE FURNISHED WEEKLY. INDIVIDUAL REPORTS OF PERIODIC INSPECTIONS SHALL BE FURNISHED WITHIN ONE WEEK OF INSPECTION DATES. THE REPORTS SHALL NOTE UNCORRECTED DEFICIENCIES, CORRECTION OF PREVIOUSLY REPORTED DEFICIENCIES, AND CHANGES TO THE APPROVED CONSTRUCTION DOCUMENTS AUTHORIZED BY THE CONTRACTING OFFICER.
6. THE SPECIAL INSPECTOR SHALL SUBMIT A FINAL SIGNED REPORT WITHIN 10 DAYS OF THE FINAL SPECIAL INSPECTION STATING WHETHER THE WORK REQUIRING SPECIAL INSPECTION WAS, TO THE BEST OF THE INSPECTOR'S KNOWLEDGE, IN CONFORMANCE WITH THE APPROVED CONSTRUCTION DOCUMENTS AND THE APPLICABLE WORKMANSHIP PROVISIONS OF THE IBC. WORK NOT IN COMPLIANCE SHALL BE NOTED IN THE REPORT.
7. THE CONTRACTOR SHALL SUBMIT A WRITTEN STATEMENT OF RESPONSIBILITY TO THE CONTRACTING OFFICER PRIOR TO THE COMMENCEMENT OF WORK ON A MAIN WIND- OR SEISMIC-FORCE-RESISTING SYSTEM PER SECTION 1704.4. THE STATEMENT SHALL ACKNOWLEDGE THE AWARENESS OF THE SPECIAL LISTED REQUIREMENTS OF DESIGNATED SEISMIC SYSTEM OR A WIND- OR SEISMIC-RESISTING COMPONENT IN THE STATEMENT OF SPECIAL INSPECTIONS PER SECTION 1705.
8. EXCEPT AS NOTED, THE SPECIAL INSPECTIONS OUTLINED ABOVE ARE IN ADDITION TO, AND BEYOND THE SCOPE OF, PERIODIC STRUCTURAL OBSERVATIONS AS DEFINED IN SECTION 1704.5.



DESIGNED:	SUB SHEET NO.	TITLE OF SHEET	DRAWING NO.
DMM		GENERAL NOTES	174
DRAWN: DJM, LAB	S0.2		173823
TECH REVIEW: TSS			PMIS/PKG NO. 282711
DATE: 12/02/2022		FOSSIL BUTTE NATIONAL MONUMENT WATER SYSTEM IMPROVEMENTS TO MEET FIRE PROTECTION REQUIREMENTS	SHEET 27 OF 60

12/5/2022 1:42:35 PM BIM 360://2021-280 FOBU Fire Protection/20935 JVA Structural S20.rvt

(E)	EXISTING
(N)	NEW
(R)	REMOVE
@	ON CENTER SPACING
AB	ANCHOR ROD (BOLT)
ADDL	ADDITIONAL
ADJ	ADJUSTABLE
AESS	ARCH EXPOSED STRUCTURAL STEEL
AFF	ABOVE FINISHED FLOOR
ALT	ALTERNATE
AMT	AMOUNT
ANCH	ANCHOR, ANCHORAGE
APPROX	APPROXIMATE
ARCH	ARCHITECT, -URAL
ATR	ALL THREAD ROD
AVG	AVERAGE
BC	BOTTOM OF CONCRETE
BL	BRICK LEDGE
BLK	BLOCK
BLKG	BLOCKING
BM	BEAM
BOT	BOTTOM
BRG	BEARING
BW	BOTTOM OF WALL
CB	COUNTERBORE
CF	CUBIC FOOT
CFS	COLD FORMED STEEL
CG	CENTER OF GRAVITY
CIP	CAST-IN-PLACE
CJ	CONSTRUCTION JOINT, CONTROL JOINT
CJP	COMPLETE JOINT PENETRATION
CL	CENTER LINE
CLG	CEILING
CLR	CLEAR
CM	CONSTRUCTION MANAGER, -MENT
CMU	CONCRETE MASONRY UNIT
COL	COLUMN
COM	COMMON
COMB	COMBINATION
CONC	CONCRETE
CONN	CONNECTION
CONT	CONTINUOUS, CONTINUE
COORD	COORDINATE, COORDINATION
CS	COUNTERSINK
CTR	CENTER
CY	CUBIC YARD
DAB	DEFORMED ANCHOR BAR
DET	DETAIL

DEV	DEVELOP
DIAG	DIAGONAL
DIM	DIMENSION
DL	DEAD LOAD
DN	DOWN
DP	DRILLED PIER
DT	DOUBLE TEE
DWG	DRAWING
DWL	DOWEL
E-E	END TO END
E-W	EAST TO WEST
EA	EACH
ECC	ECCENTRIC
EF	EACH FACE
EJ	EXPANSION JOINT
EL	ELEVATION
ELEC	ELECTRIC, ELECTRICAL
EMBED	EMBEDMENT
ENGR	ENGINEER
EQ	EQUAL
EQUIP	EQUIPMENT
EQUIV	EQUIVALENT
ES	EACH SIDE
EST	ESTIMATE
EXC	EXCAVATE
EXP	EXPANSION
EXT	EXTERIOR
F-F	FACE TO FACE
FD	FLOOR DRAIN
FDN	FOUNDATION
FF	FINISHED FLOOR, FAR FACE
FIG	FIGURE
FL	FLUSH
FLG	FLANGE
FLR	FLOOR
FO	FACE OF
FP	FULL PENETRATION
FS	FOOTING STEP, FAR SIDE
FTG	FOOTING
GA	GAGE, GAUGE
GALV	GALVANIZED
GC	GENERAL CONTRACTOR
GEN	GENERAL
GL	GLUED LAMINATED, GLULAM
GND	GROUND
GR	GRADE
GT	GIRDER TRUSS
GYP BD	GYPSUM BOARD

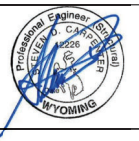
HAS	HEADED ANCHOR STUD
HDG	HOT-DIP GALVANIZED
HDR	HEADER
HORIZ	HORIZONTAL
HP	HIGH POINT
HT	HEIGHT
ID	INSIDE DIAMETER
IF	INSIDE FACE
INT	INTERIOR, INTERMEDIATE
IT	INVERTED TEE
JB	JOIST BEARING
JST	JOIST
JT	JOINT
K	KIPP (1,000 LBS)
LGS	LIGHT GAGE STEEL
LL	LIVE LOAD
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
LOC	LOCATION
LP	LOW POINT
LSL	LAMINATED STRAND LUMBER
LT	LIGHT
LVL	LAMINATED VENEER LUMBER
MACH	MACHINE
MASY	MASONRY
MATL	MATERIAL
MAX	MAXIMUM
MB	MACHINE BOLT
MECH	MECHANICAL
MEZZ	MEZZANINE
MFR	MANUFACTURE, -ER, -ED
MIN	MINIMUM
ML	MICROLLAM (TRUS-JOIST BRAND LVL)
MO	MASONRY OPENING
MTL	METAL
N-S	NORTH TO SOUTH
NF	NEAR FACE
NIC	NOT IN CONTRACT
NS	NEAR SIDE
NTS	NOT TO SCALE
OCJ	OSHA COLUMN JOIST
OD	OUTSIDE DIAMETER
OF	OUTSIDE FACE
OH	OPPOSITE HAND
OPNG	OPENING
OPP	OPPOSITE
OSB	ORIENTED STRAND BOARD
PAF	POWDER ACTUATED FASTENER

PC	PRECAST
PCF	POUNDS PER CUBIC FOOT
PE	PRE-ENGINEERED
PEN	PENETRATION
PERP	PERPENDICULAR
PJP	PARTIAL JOINT PENETRATION
PL	PLATE
PLF	POUND PER LINEAR FOOT
PNL	PANEL
PP	PANEL POINT
PS	PRESTRESSED
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PSL	PARALLEL STRAND LUMBER
PT	POST TENSIONED, PRESSURE TREATED
PTN	PARTITION
PWD	PLYWOOD
QTY	QUANTITY
R	RADIUS
RE	REFERENCE, REFER TO
RECT	RECTANGLE
REINF	REINFORCE, -ED, -ING
REQ	REQUIRED
REQMT	REQUIREMENT
RET	RETAINING
RM	ROOM
RMO	ROUGH MASONRY OPENING
RO	ROUGH OPENING
SC	SLIP-CRITICAL
SCH	SCHEDULE
SDST	SELF-DRILLING/SELF-TAPPING
SECT	SECTION
SF	SQUARE FEET, SUB-FLOOR
SFRS	SEISMIC FORCE-RESISTING SYSTEM
SHT	SHEET
SHTG	SHEATHING
SIM	SIMILAR
SLH	SHORT LEG HORIZONTAL
SLV	SHORT LEG VERTICAL
SOG	SLAB ON GRADE
SP	SPACES, SPACED
SPEC	SPECIFICATIONS
SQ	SQUARE
SSR	SHEAR STUD RAIL
ST	SNUG-TIGHT
STD	STANDARD
STIFF	STIFFENER
STL	STEEL

STRUCT	STRUCTURE, -AL
SUPT	SUPPORT
SY	SQUARE YARD
SYM	SYMMETRICAL
T&B	TOP AND BOTTOM
T&G	TOUNGE AND GROOVE
TB	TOP OF BEAM
TC	TOP OF CONCRETE
TCA	TORQUE-CONTROLLED ANCHOR
TD	TOP OF DECK
THD	THREAD
THK	THICK, -NESS
TJ	TOP OF JOIST
TL	TOTAL LOAD
TPG	TOPPING
TRANS	TRANSVERSE
TW	TOP OF WALL
TYP	TYPICAL
ULT	ULTIMATE
UNO	UNLESS OTHERWISE NOTED
VERT	VERTICAL
VIF	VERIFY IN FIELD
WP	WORK POINT
WT	WEIGHT
WTS	WELDED THREADED STUD
WWF	WELDED WIRE FABRIC
XS	EXTRA STRONG
XSECT	CROSS SECTION
XXS	DOUBLE EXTRA STRONG

SYMBOLS KEY

DIRECTION OF DECK SPAN	WOOD HEADER
GRID GRID DESIGNATION	WOOD JOIST OR BEAM SUPPORTED BY METAL HANGER
REVISION	WOOD JOIST CONTINUOUS OVER INTERMEDIATE SUPPORT
SHORING	WOOD JOIST BEARING ON TOP OF SUPPORT
STEP IN FLOOR ELEVATION	XXX'-X TOP OF FLOOR ELEVATION
STONE MASONRY	XX:12 ROOF SLOPE
CIP CONCRETE	SLOPE DIRECTION OF SLOPE (DOWN)
EXISTING CONCRETE	DN UP STAIR OR RAMP DIRECTION
EARTH	
TEXT BLACK TEXT DENOTING NEW WORK	
TEXT GRAY TEXT DENOTING EXISTING CONSTRUCTION	



DESIGNED:	DMM
DRAWN:	DJM, LAB
TECH REVIEW:	TSS
DATE:	12/02/2022

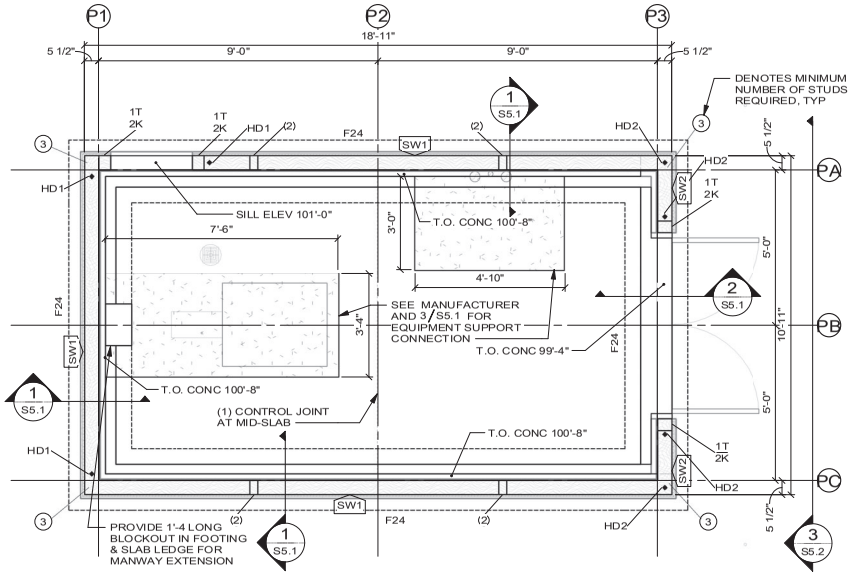
SUB SHEET NO. S0.3

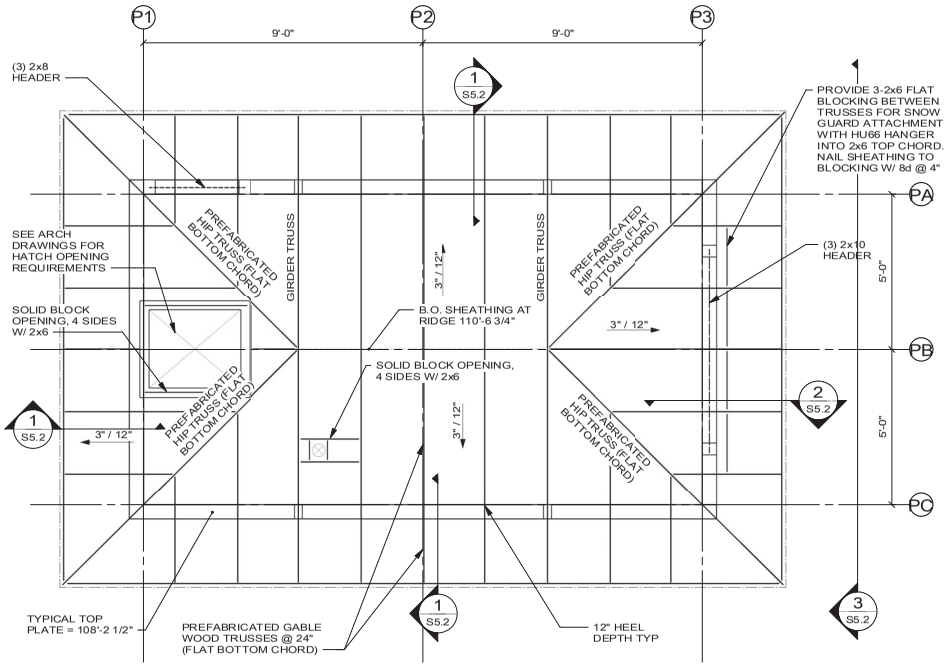
TITLE OF SHEET
ABBREV AND SYMBOLS

FOSSIL BUTTE NATIONAL MONUMENT
WATER SYSTEM IMPROVEMENTS TO MEET FIRE PROTECTION REQUIREMENTS

DRAWING NO. 174 173823
PMIS/PKG NO. 282711
SHEET 28 OF 60

12/5/2022 1:42:36 PM BIM 360://2021-280 FOBU Fire Protection/20935 JVA Structural S20.rvt





1 S1.1 PUMP HOUSE - FOUNDATION PLAN

SCALE Ⓐ

- USGS ELEVATION 6788.80' = 100'-0, TOP OF MAIN LEVEL INTERIOR FLOOR SLAB
- TOP OF INTERIOR FLOOR SLAB ELEVATION = 100'-0 UNLESS NOTED THUS: (XXX-X)
- TOP OF PERIMETER/EXTERIOR FOOTING = 96'-8 UNLESS NOTED THUS: (XXX-X)
- TOP OF CONCRETE STEM WALL ELEVATION = 100'-8 AT LOAD BEARING WOOD STUDS, AND 99'-4 AT DOOR OPENINGS UNLESS NOTED XXX-X

HOUSEKEEPING PAD:
4" CONCRETE WITH #4 @ 16" EACH WAY AT PUMPS, PLACE HOUSEKEEPING PAD A MINIMUM OF 14 DAYS AFTER SOG HAS BEEN PLACED

TYPICAL EXTERIOR WOOD FRAMED WALLS (UNO):
2x6 STUDS @ 16" SHEATHED WITH 7/16" APA 24/16, EXPOSURE 1 ON EXTERIOR FACE; NAIL WALL SHEATHING WITH 8d (0.113"Ø x 2 3/8") @ 4" AT PANEL EDGES AND @ 12" IN FIELD OF PANEL; BLOCK AND NAIL ALL EDGES BETWEEN STUDS. IF GUN NAILS ARE USED FOR NAILING, NAILS MUST BE AT A MINIMUM THE DIAMETER AND LENGTH NOTED ABOVE.

TYPICAL INTERIOR SLAB ON GRADE:
8" THICK CONCRETE SLAB OVER 4" GRAVEL LAYER COMPACTED STRUCTURAL FILL PER NOTE THIS SHEET; REINFORCE SLAB WITH #4 @ 16", EA WAY, T&B (2" CLEAR FROM TOP AND 3" CLEAR FROM BOTTOM); ADD (2) #4 x 5'-0 DIAGONAL BARS AT MID-DEPTH OF SLAB AT ALL RE-ENTRANT CORNERS.

STRUCTURAL FILL ABOVE TANK AND UNDER PUMP HOUSE

1. EXCAVATE UNDER THE TANK TO THE BOTTOM OF THE MAT. IN ADDITION, EXCAVATION FOR THE PUMP HOUSE BUILDING THAT DOESN'T SIT DIRECTLY OVER THE TANK SHALL BE EXCAVATED DOWN TO A MINIMUM OF 8' BELOW GRADE FOR THE ENTIRE FOOTPRINT OF THE BUILDING, EXTENDING 5' OUTSIDE THE EDGE OF FOOTING.
2. WHERE ENCOUNTERED AT THE BOTTOM OF THE TANK MAT EXCAVATION, OVER-EXCAVATE UNSTABLE SOILS AND REPLACE WITH ON-SITE MATERIAL OR GRANULAR FILL.
3. FILL SHALL BE PLACED WITHIN +/-2% OF THE OPTIMUM MOISTURE CONTENT AS DETERMINED BY ASTM D698 (STANDARD PROCTOR).
4. FILL SHALL BE PLACED IN 8" MAXIMUM LIFTS AND COMPACTED TO 95% STANDARD PROCTOR.
5. A GEOTECHNICAL ENGINEER OR SPECIAL INSPECTOR SHALL VERIFY EXISTING SOIL CONDITIONS AND TYPES DURING EXCAVATION AND PRIOR TO PLACEMENT OF FORMS AND CONCRETE.

2 S1.1 PUMP HOUSE - ROOF FRAMING PLAN

SCALE Ⓐ

TRUSS SUPPLIER NOTE:
DESIGN ALL ROOF TRUSSES TO CLEAR SPAN TO BEARING WALLS/ BEAMS INDICATED ON PLAN.
DESIGN LOADS ARE AS FOLLOWS:
DEAD LOAD BOTTOM CHORD = 10 PSF
DEAD LOAD TOP CHORD = 15 PSF
SNOW LOAD TOP CHORD = 40 PSF
LIMIT DEFLECTION TO:
SPAN/360 FOR SNOW LOAD
SPAN/240 (LIMIT TO 1" MAXIMUM) FOR TOTAL LOAD

ALL TRUSS-TO-TRUSS CONNECTIONS TO BE DESIGNED AND SUPPLIED BY TRUSS MANUFACTURER. TRUSS FABRICATOR SHALL SUBMIT SHOP DRAWINGS AND CALCULATIONS STAMPED BY A COLORADO REGISTERED ENGINEER TO CONTRACTING OFFICER FOR REVIEW BEFORE FABRICATION.

DO NOT ALTER TRUSS LAYOUT. BEARING DESIGN SHALL ASSUME HEM FIR WALL TOP PLATES (405 psi). USE MULTIPLE PLIES, BEARING BLOCKS, OR BEARING ENHANCERS TO ACCOMMODATE 5-1/2" BEARING LENGTHS PER PLAN. THE USE OF DOUGLAS FIR OR END GRAIN BEARING IS NOT ACCEPTABLE UNLESS SPECIFICALLY APPROVED BY THE CONTRACTING OFFICER FOR THE PROJECT.

TYPICAL ROOF SHEATHING:
5/8" APA 40/20 RATED SHEATHING FASTENED WITH 8d NAILS (0.113"Ø x 2 3/8") @ 6" ALONG PANEL EDGES AND @ 12" ALONG INTERMEDIATE FRAMING MEMBERS. LAY PANELS PERPENDICULAR TO FRAMING MEMBERS AND STAGGER PANEL JOINTS.

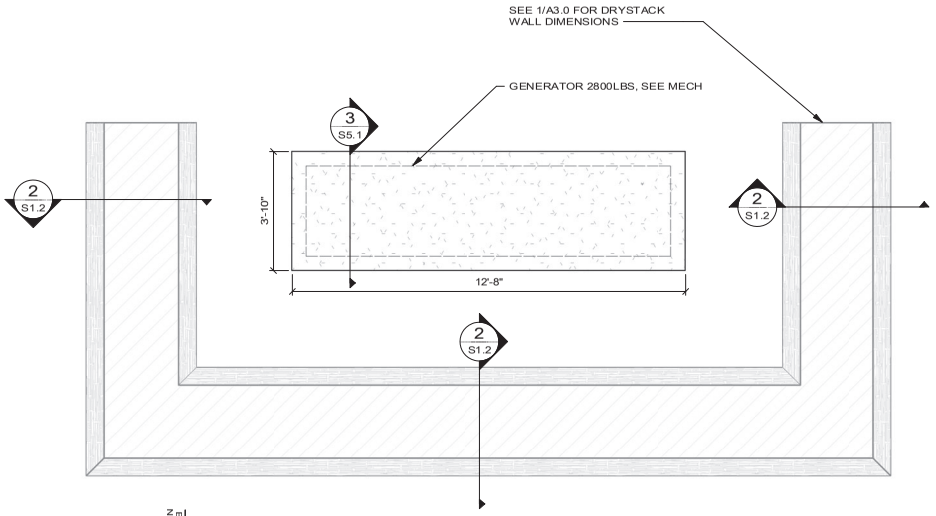
BLDG NORTH

SCALE Ⓐ 2 0 2 4
SCALE OF FEET

Professional Engineer — STEVEN D. CARLSON — 32226 — WYOMING

DESIGNED: DMM	SUB SHEET NO.	TITLE OF SHEET	DRAWING NO. 174
DRAWN: DJM, LAB	S1.1	PUMP HOUSE - FOUNDATION AND ROOF FRAMING PLAN	173823
TECH REVIEW: TSS		FOSSIL BUTTE NATIONAL MONUMENT	PMIS/PKG NO. 282711
DATE: 12/02/2022		WATER SYSTEM IMPROVEMENTS TO MEET FIRE PROTECTION REQUIREMENTS	SHEET 29 OF 60

12/5/2022 1:42:37 PM BIM 360://2021-280 FOBU Fire Protection/20935 JVA Structural S20.rvt



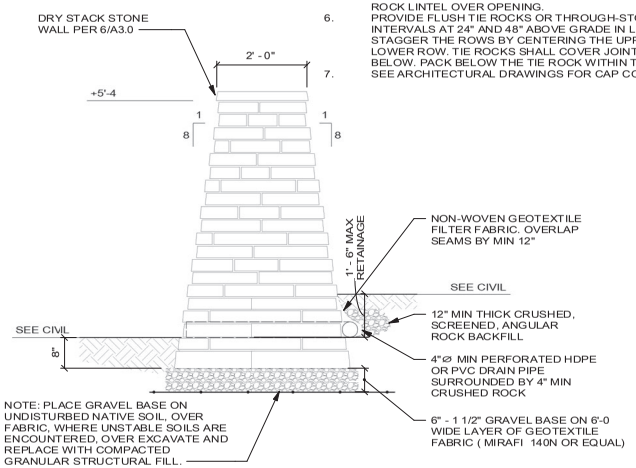
1 S1.2 GENERATOR - FOUNDATION PLAN
SCALE Ⓐ

- SEE ARCHITECTURAL DRAWINGS FOR WALL LAYOUT

GENERATOR PAD:
8" MAT REINFORCED W/ #5 @ 12" EA WAY (3" CLEAR FROM BOTTOM)

DRY STACK STONE WALL ERECTION PROCEDURE

1. LAY ROCKS LEVEL WITH LONGEST DIMENSION GOING INTO WALL.
2. CONSTRUCT THE WALL ONE COURSE AT A TIME AND CAREFULLY PACK THE CORE WITH SMALLER STONES AS EACH COURSE IS LAID.
3. "BREAK" THE JOINTS, OR "COVER" THE JOINTS SO THAT JOINTS DON'T LINE UP VERTICALLY.
4. LAY LONG ROCKS OPPOSITE SHORT ONES ON THE OPPOSITE FACE.
5. WHERE WALL IS RETAINING SMALL AMOUNT OF EARTH, PROVIDE GRAVEL BACKFILL AND MINIMUM 6" DRAIN HOLES @ 8' O.C. WITH ROCK LINTEL OVER OPENING.
6. PROVIDE FLUSH TIE ROCKS OR THROUGH-STONES AT 36" INTERVALS AT 24" AND 48" ABOVE GRADE IN LEVEL ROWS. STAGGER THE ROWS BY CENTERING THE UPPER ROW OVER THE LOWER ROW. TIE ROCKS SHALL COVER JOINTS IN THE COURSE BELOW. PACK BELOW THE TIE ROCK WITHIN THE WALL.
7. SEE ARCHITECTURAL DRAWINGS FOR CAP CONSTRUCTION.



2 S1.2 SECTION
SCALE Ⓑ

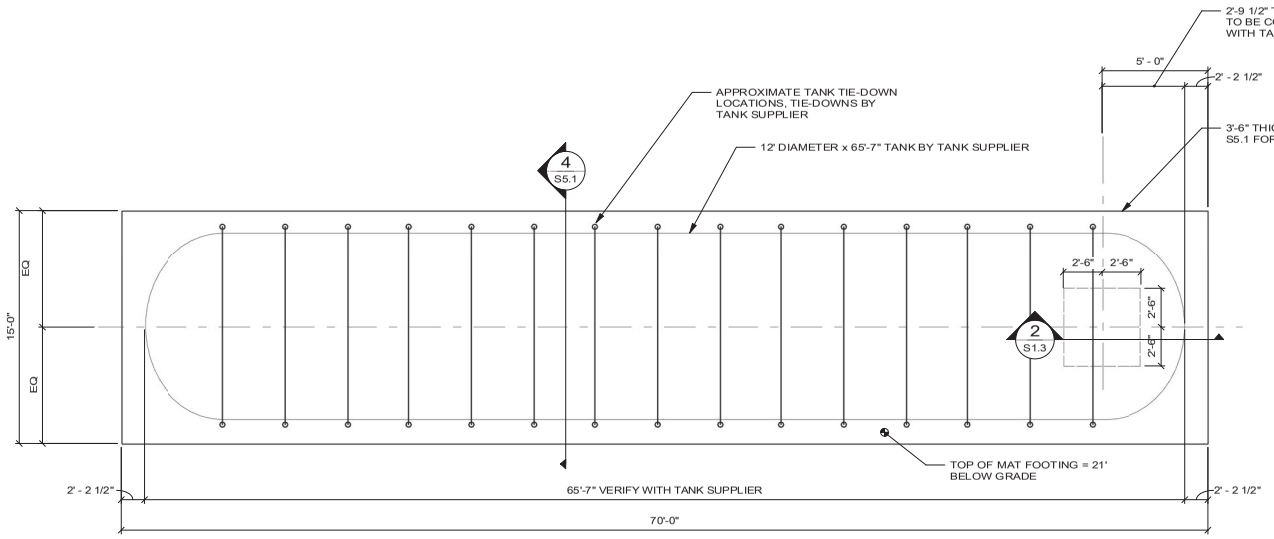
SCALE Ⓑ 1 0 1 2 3
SCALE OF FEET

SCALE Ⓐ 2 0 2 4
SCALE OF FEET

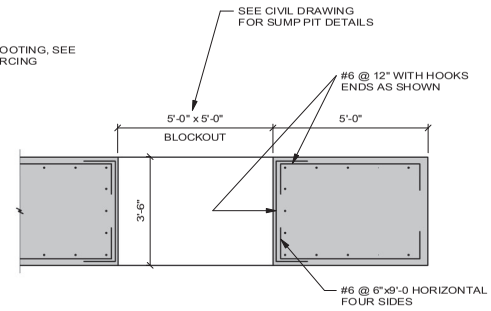
BLDG. NORTH

Professional Engineer (Structural) STEVEN O. CARPENTER 42226 WYOMING	DESIGNED: DMM CADD: DJM, LAB TECH REVIEW: TSS DATE: 12/02/2022	SUB SHEET NO. S1.2	TITLE OF SHEET GENERATOR - FOUNDATION PLAN FOSSIL BUTTE NATIONAL MONUMENT WATER SYSTEM IMPROVEMENTS TO MEET FIRE PROTECTION REQUIREMENTS	DRAWING NO. 174 173823 PMIS/PKG NO. 282711 SHEET 30 OF 60

12/5/2022 1:42:39 PM BIM 360://2021-280 FOBU Fire Protection/20935 JVA Structural S20.rvt



1 S1.3 WATER TANK FOUNDATION PLAN
SCALE Ⓐ



2 S1.3 SECTION
SCALE Ⓐ

BOUYANCY FORCE LOADS:

F = 462 KIPS TOTAL (OR 7 KLF WORKING LOAD)

THESE LOADS ARE BASED ON THE GROUND WATER LEVEL TO BE AT GRADE LEVEL.

SCALE Ⓐ 4 0 4 8
SCALE OF FEET

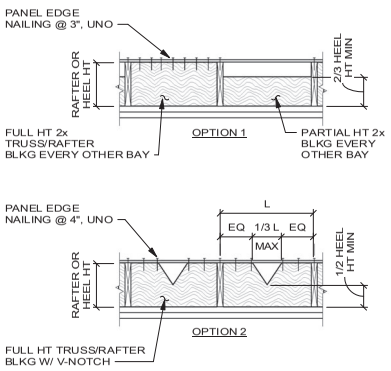
BLDG. NORTH

Professional Engineer (Structural) STEVEN D. CARPENTER 12226 WYOMING	DESIGNED: DMM CADD: DJM, LAB TECH REVIEW: TSS DATE: 12/02/2022	SUB SHEET NO. S1.3	TITLE OF SHEET WATER TANK - FOUNDATION PLAN FOSSIL BUTTE NATIONAL MONUMENT WATER SYSTEM IMPROVEMENTS TO MEET FIRE PROTECTION REQUIREMENTS	DRAWING NO. 174 173823 PMIS/PKG NO. 282711 SHEET 31 OF 60

12/5/2022 1:42:40 PM BIM 360://2021-280 FOBU Fire Protection/20935 JVA Structural S20.rvt

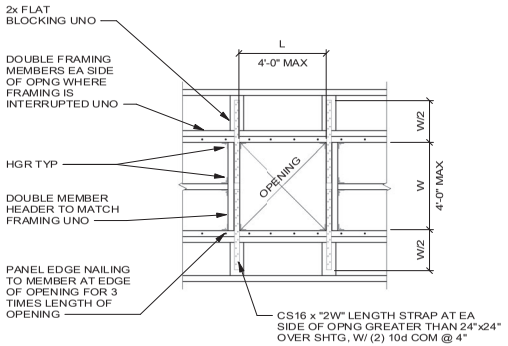
PENNYWEIGHT	TYPE	DIAMETER	LENGTH
8d	COMMON	0.131"	2-1/2"
8d	BOX	0.113"	2-1/2"
8d	SINKER	0.113"	2-3/8"
8d	GUN	0.113"	2-3/8"
10d	COMMON	0.148"	3"
10d	BOX	0.128"	3"
10d	SINKER	0.120"	2-7/8"
10d	GUN	0.131"	3"
12d	COMMON	0.148"	3-1/4"
12d	BOX	0.128"	3-1/4"
12d	SINKER	0.135"	3-1/8"
12d	GUN	0.131"	3-1/4"
16d	COMMON	0.162"	3-1/2"
16d	BOX	0.135"	3-1/2"
16d	SINKER	0.148"	3-1/4"

4 S4.1 SCHEDULE
SCALE Ⓐ



TYPICAL TRUSS/RAFTER BLOCKING AT HEEL

5 S4.1 DETAIL
SCALE Ⓐ



TYPICAL PLAN VIEW OF DIAPHRAGM OPENING UP TO 4'-0" SQUARE

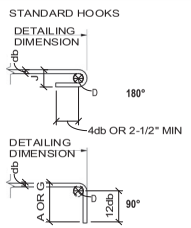
6 S4.1 DETAIL
SCALE Ⓐ

TYPICAL CONCRETE REINFORCING LAP LENGTHS (UNO)							
BAR SIZE	TYPE	Fc = 3000 PSI (TOP)	Fc = 3000 PSI (OTHER)	Fc = 4000 PSI (TOP)	Fc = 4000 PSI (OTHER)	Fc = 5000 PSI (TOP)	Fc = 5000 PSI (OTHER)
#3	EMBED	22	17	19	15	17	13
#3	LAP	28	22	24	19	22	17
#4	EMBED	29	22	25	19	22	17
#4	LAP	37	29	32	25	29	22
#5	EMBED	36	28	31	24	28	22
#5	LAP	47	36	40	31	36	28
#6	EMBED	43	33	37	29	33	26
#6	LAP	56	43	48	37	43	33
#7	EMBED	63	48	54	42	49	37
#7	LAP	81	63	70	54	63	49

NOTES:
1. TOP BARS ARE HORIZONTAL BARS WITH MORE THAN 12 INCHES OF FRESH CONCRETE CAST BELOW BAR
2. TABULATED VALUES ARE BASED ON GRADE 60 NON-EPOXY-COATED REINFORCING BARS AND NORMAL WEIGHT CONCRETE
3. VALUES ARE IN INCHES

1 S4.1 SCHEDULE
SCALE Ⓐ

STANDARD HOOKS

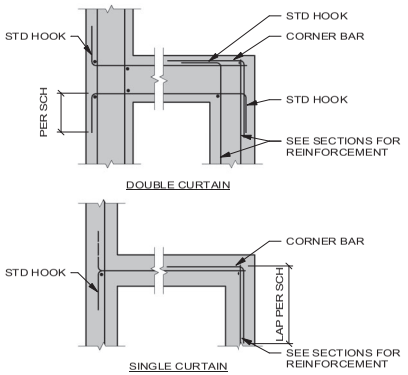


MIN D = 6 db FOR #3 THROUGH #8
MIN D = 8 db FOR #9, #10, AND #11

ALL GRADES OF STEEL
D = FINISHED INSIDE BEND DIAMETER
db = NOMINAL BAR DIAMETER

STANDARD HOOKS				
BAR SIZE	D	180° (A OR G)	180° (J)	90° (A OR G)
#3	2-1/4"	5"	3"	6"
#4	3"	6"	4"	8"
#5	3-3/4"	7"	5"	10"
#6	4-1/2"	8"	6"	1'-0"
#7	5-1/4"	10"	7"	1'-2"

2 S4.1 SCHEDULE
SCALE Ⓐ



TYPICAL WALL INTERSECTIONS

3 S4.1 DETAIL
SCALE Ⓐ

SCALE Ⓐ 1 0 1 2 3
SCALE OF FEET

DESIGNED: DMM
DRAWN: DJM, LAB
TECH REVIEW: TSS
DATE: 12/02/2022

SUB SHEET NO. S4.1

TITLE OF SHEET
TYPICAL DETAILS & SCHEDULES

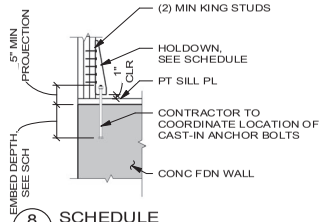
FOSSIL BUTTE NATIONAL MONUMENT
WATER SYSTEM IMPROVEMENTS TO MEET FIRE PROTECTION REQUIREMENTS

DRAWING NO. 174 173823
PMIS/PKG NO. 282711
SHEET 32 OF 60

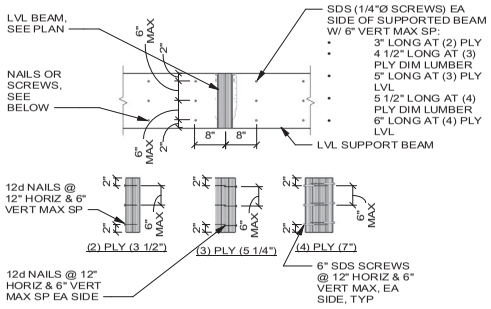
12/5/2022 1:42:41 PM BIM 360://2021-280 FOBU Fire Protection/20935 JVA Structural S20.rvt

HOLDOWN SCHEDULE					
MARK	MODEL #	ANCHOR BOLTS	EMBEDMENT DEPTH	SCREWS OR NAILS	END STUDS
HD1	HDU2-SDS2.5	5/8"Ø ASTM F1554-36 ATR	8"	(6) SDS25212	(2) 2x6
HD2	HDU5-SDS2.5	5/8"Ø ASTM F1554-36 ATR	8"	(14) SDS25212	(2) 2x6

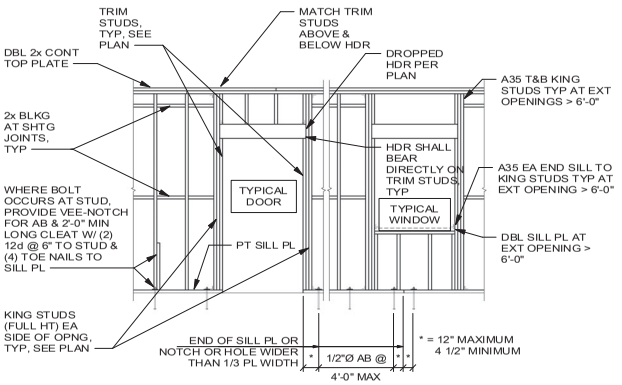
HARDWARE TO FRAMING MEMBERS AND FOUNDATION



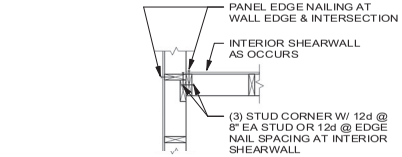
8 S4.2 SCHEDULE
NO SCALE

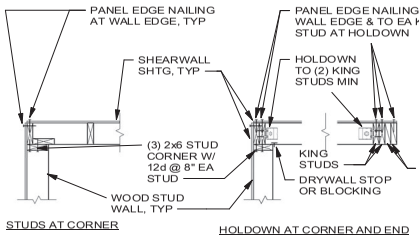


5 S4.2 DETAIL
NO SCALE



1 S4.2 DETAIL
NO SCALE





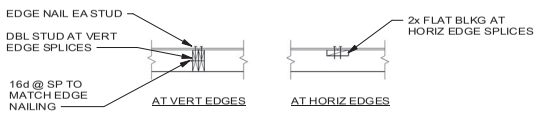
6 S4.2 DETAIL
NO SCALE

WOOD FRAMING FASTENING SCHEDULE		
CONNECTION	FASTENING	LOCATION
1. JOIST/RAFTER/ BLOCKING TO BEARING SUPPORT	(3) 8d COMMON [OR] (3) 12d SINKER	TOENAIL
2. BRIDGING/ BLOCKING TO JOIST	(2) 8d COMMON [OR] (2) 12d SINKER	TOENAIL, EACH END
6. SOLE PLATE TO JOIST OR BLOCKING	16d COMMON @ 16" [OR] 12d SINKER @ 8"	FACE NAIL
7. STUD TO TOP AND SOLE PLATE	(2) 16d COMMON [OR] (3) 12d SINKER	END NAIL
8. STUD TO SOLE PLATE	(4) 8d COMMON [OR] (4) 12d SINKER	TOENAIL
9. DOUBLE STUDS AND BUILT-UP CORNER STUDS	16d COMMON @ 24" [OR] 12d SINKER @ 8"	FACE NAIL, EACH STUD
10. DOUBLE TOP PLATES	16d COMMON @ 16" [OR] 12d SINKER @ 12"	TYPICAL FACE NAIL
	(8) 16d COMMON [OR] (12) 12d SINKER	LAP SPLICE FACE NAIL
12. RIM JOIST AND JOIST BLOCKING TO TOP PLATE	8d COMMON @ 6" [OR] 12d SINKER @ 6"	TOENAIL
13. TOP PLATE INTERSECTION	(2) 16d COMMON [OR] (3) 12d SINKER	FACE NAIL
14. BUILT UP HEADER	16d COMMON @ 16" [OR] 12d SINKER @ 12"	FACE NAIL ALONG EACH EDGE, EACH 2x
16. HEADER TO KING STUD	(4) 8d COMMON" [OR] (4) 12d SINKER	TOENAIL

GENERAL NOTES:
1. REFER TO IBC TABLE 2304.9.1 FOR MORE INFORMATION.
2. ALL FASTENINGS ARE TYPICAL UNLESS NOTED OTHERWISE.

2 S4.2 SCHEDULE
NO SCALE

SHEAR WALL SCHEDULE						
MARK	SHEATHING	PANEL NAILING EDGE	PANEL NAILING FIELD	ANCHOR BOLTS	BOTTOM PL NAILING	TOP PLATE CLIPS
SW1	7/16" APA 24/16 ONE SIDE	8d COM @ 6"	8d COM @ 12"	1/2" Ø @ 32"	12d @ 6"	A35 @ 24"
SW2	7/16" APA 24/16 ONE SIDE	8d COM @ 2"	8dCOM @ 12"	1/2" Ø @ 16"	12d @ 4"	A35 @ 8"



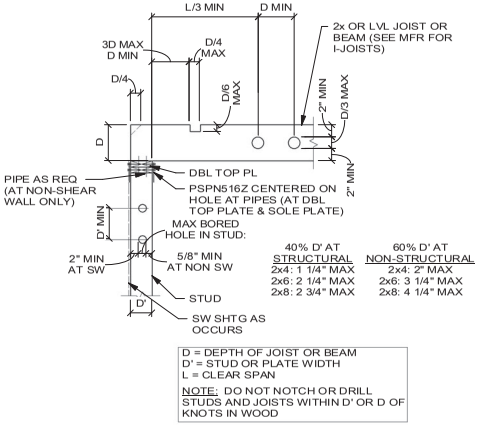
'SW2' PANEL EDGE NAILING DETAIL

TYPICAL FOR ALL SHEAR WALL NAILING:
PER IBC / AWC SDPWS, SHEATHING NAILS SHALL BE DRIVEN FLUSH BUT SHALL NOT FRACTURE THE SURFACE OF THE SHEATHING. SHEATHING PANEL NAILING NOT CONFORMING TO THIS SECTION WILL NOT BE ACCEPTABLE AND WILL HAVE TO BE REINSTALLED. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE THAT THE NAIL GUNS USED FOR FASTENING ARE SET AT THE PROPER DEPTH AND/OR AIR PRESSURE TO ACHIEVE THE REQUIRED PENETRATION

GENERAL NOTES:
1. SEE PLAN FOR HOLDOWN TYPE AND LOCATION
2. UNLESS NOTED OTHERWISE, NUMBER OF STUDS AT EACH END OF SHEAR WALLS IS CALLED OUT IN 8/S4.2
3. NO PENETRATIONS GREATER THAN 12"x12" IN SHEAR WALLS, BLOCK AND NAIL ALL EDGES
4. NO MECHANICAL OR PLUMBING PENETRATIONS IN TOP AND BOTTOM PLATES
5. ALL EDGES SHALL BE BLOCKED WITH 2x MEMBERS AT PLYWOOD/OSB SHEATHED WALLS
6. ALL WALLS HAVE (2) 2x TOP PLATES AND (1) 2x BOTTOM PLATE EQUAL TO WIDTH OF STUD SIZE, TYP UNO
7. MINIMUM WIDTH OF SHEATHING PANELS AT ENDS OF SHEAR WALLS SHALL BE 4'-0 TO ENSURE END STUDS ARE ENGAGED
8. SEE DETAILS FOR ATTACHMENT OF DIAPHRAGMS TO SHEARWALL PLATES, TYPICAL
9. ALL NAILS TO BE 8d COM (0.131"Ø x 2 1/2"), UNO

0.229"x3" PLATE WASHER DETAIL

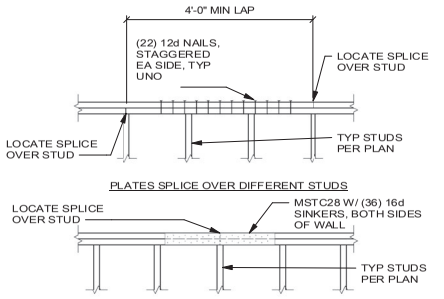
7 S4.2 SCHEDULE
NO SCALE



D = DEPTH OF JOIST OR BEAM
D' = STUD OR PLATE WIDTH
L = CLEAR SPAN

NOTE: DO NOT NOTCH OR DRILL STUDS AND JOISTS WITHIN D' OR D OF KNOTS IN WOOD

3 S4.2 DETAIL
NO SCALE

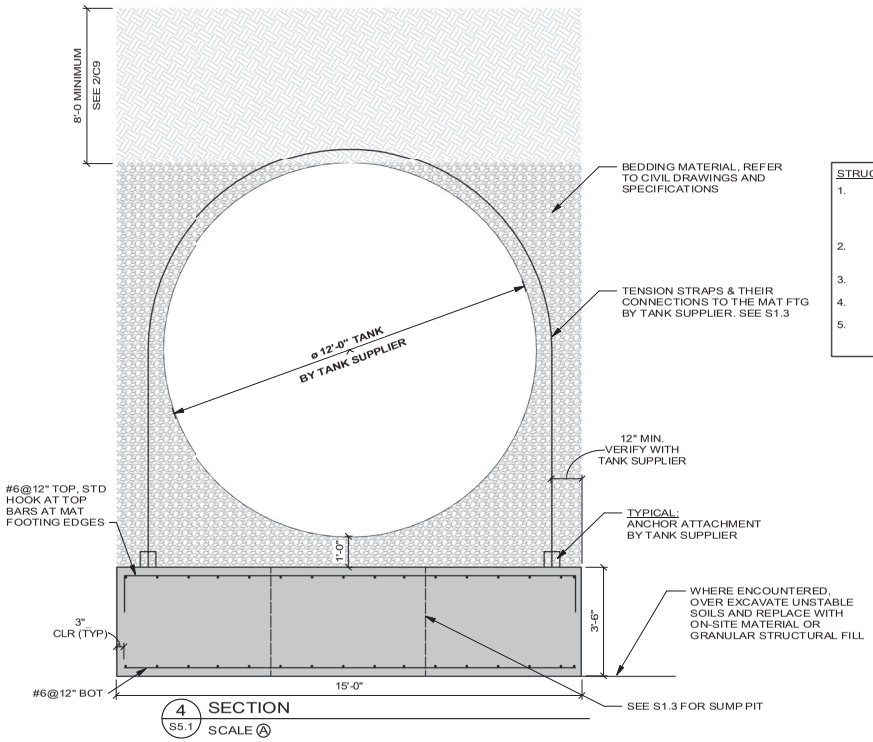


4 S4.2 DETAIL
NO SCALE

Professional Engineer — STEVEN J. CARLSON — 12226 — WYOMING

DESIGNED:	SUB SHEET NO.	TITLE OF SHEET	DRAWING NO.
DMM	S4.2	TYPICAL DETAILS & SCHEDULES	174
DRAWN: DJM, LAB		FOSSIL BUTTE NATIONAL MONUMENT WATER SYSTEM IMPROVEMENTS TO MEET FIRE PROTECTION REQUIREMENTS	173823
TECH REVIEW: TSS			PMIS/PKG NO. 282711
DATE: 12/02/2022			SHEET 33 OF 60

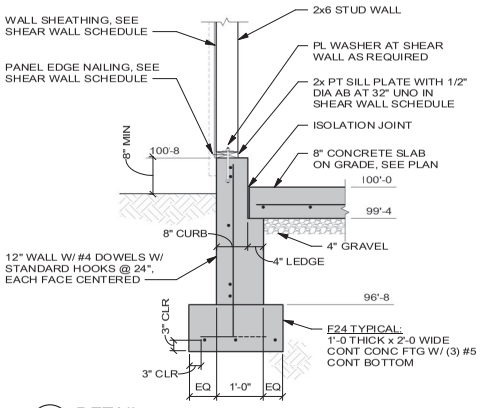
12/5/2022 1:42:43 PM BIM 360://2021-280 FOBU Fire Protection/20935 JVA Structural S20.rvt



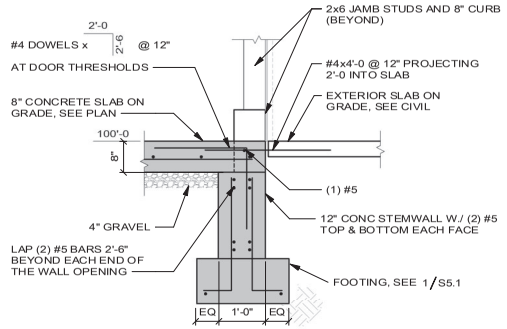
4 S5.1 SECTION
SCALE Ⓐ

STRUCTURAL FILL ABOVE TANK AND UNDER PUMP HOUSE

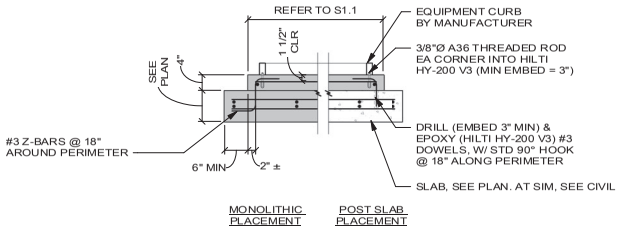
1. EXCAVATE UNDER THE TANK TO THE BOTTOM OF THE MAT. IN ADDITION, EXCAVATION FOR THE PUMP HOUSE BUILDING THAT DOESN'T SIT DIRECTLY OVER THE TANK SHALL BE EXCAVATED DOWN TO A MINIMUM OF 8' BELOW GRADE FOR THE ENTIRE FOOTPRINT OF THE BUILDING, EXTENDING 5' OUTSIDE THE EDGE OF FOOTING.
2. WHERE ENCOUNTERED AT THE BOTTOM OF THE TANK MAT EXCAVATION, OVER-EXCAVATE UNSTABLE SOILS AND REPLACE WITH ON-SITE MATERIAL OR GRANULAR FILL.
3. FILL SHALL BE PLACED WITHIN +/-2% OF THE OPTIMUM MOISTURE CONTENT AS DETERMINED BY ASTM D698 (STANDARD PROCTOR).
4. FILL SHALL BE PLACED IN 8" MAXIMUM LIFTS AND COMPACTED TO 95% STANDARD PROCTOR.
5. A GEOTECHNICAL ENGINEER OR SPECIAL INSPECTOR SHALL VERIFY EXISTING SOIL CONDITIONS AND TYPES DURING EXCAVATION AND PRIOR TO PLACEMENT OF FORMS AND CONCRETE.



1 S5.1 DETAIL
SCALE Ⓑ



2 S5.1 SECTION
SCALE Ⓑ



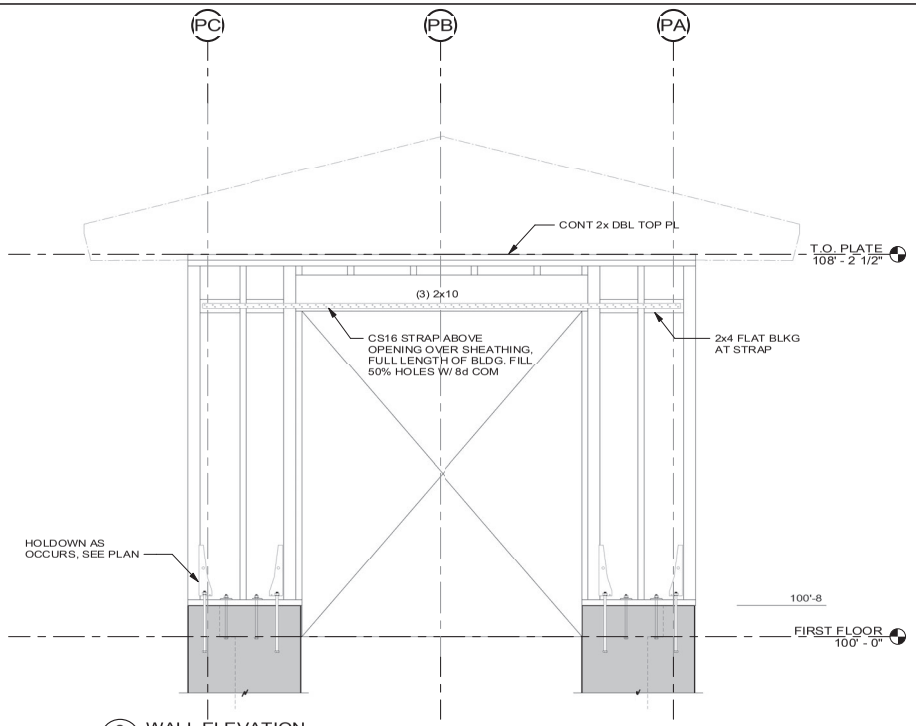
3 S5.1 SECTION
SCALE Ⓑ

SCALE Ⓑ 1 0 1 2 3
SCALE OF FEET
SCALE Ⓐ 2 0 2 4
SCALE OF FEET

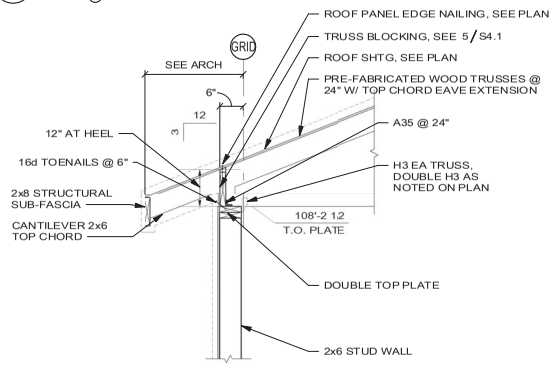
Professional Engineer — STEVEN D. CAMPBELL — 12226 — WYOMING

DESIGNED: DMM	SUB SHEET NO. S5.1	TITLE OF SHEET: FOUNDATION SECTIONS	DRAWING NO. 174 / 173823
DRAWN: DJM, LAB		FOSSIL BUTTE NATIONAL MONUMENT WATER SYSTEM IMPROVEMENTS TO MEET FIRE PROTECTION REQUIREMENTS	PMIS/PKG NO. 282711
TECH REVIEW: TSS			SHEET 34 OF 60
DATE: 12/02/2022			

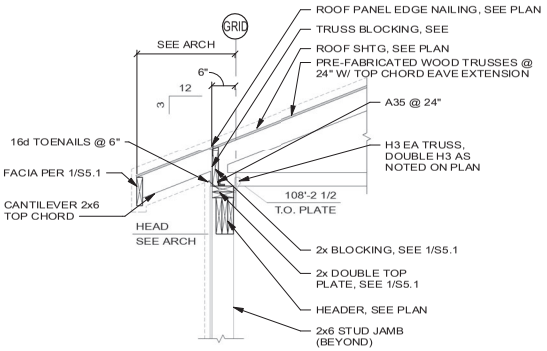
12/5/2022 1:42:44 PM BIM 360://2021-280 FOBU Fire Protection/20935 JVA Structural S20.rvt



3 S5.2 WALL ELEVATION
SCALE Ⓐ



1 S5.2 SECTION
SCALE Ⓐ



2 S5.2 SECTION
SCALE Ⓐ

SCALE Ⓐ 1 0 1 2 3
SCALE OF FEET

Professional Engineer (Structural) STEVEN D. CARPENTER 42226 WYOMING

DESIGNED: DMM	SUB SHEET NO.	TITLE OF SHEET	DRAWING NO. 174 173823
CADD DJM, LAB	S5.2	ROOF SECTIONS	PMIS/PKG NO. 282711
TECH REVIEW: TSS		FOSSIL BUTTE NATIONAL MONUMENT WATER SYSTEM IMPROVEMENTS TO MEET FIRE PROTECTION REQUIREMENTS	SHEET 35 OF 60
DATE: 12/02/2022			

12/5/2022 1:42:46 PM BIM 360://2021-280 FOBU Fire Protection/20935 JVA Structural S20.rvt

MECHANICAL NOTES

I. GENERAL

A. ALL WORK SHALL BE IN ACCORDANCE WITH SMACNA STANDARDS AND SPECIFICATIONS, CURRENT INTERNATIONAL INTERNATIONAL CODE, ASHRAE, AND INTERNATIONAL ENERGY CONSERVATION CODE.

B. THESE DRAWINGS ARE DIAGRAMMATIC IN NATURE AND NOT INTENDED TO SHOW ALL TRANSITIONS, OFFSETS, ETC. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS AND PROVIDE ALL NECESSARY FITTINGS TO COMPLETE THE INTENT OF THE DRAWINGS. ANY DISCREPANCIES BETWEEN DRAWINGS AND FIELD CONDITIONS SHALL BE REPORTED TO THE CONTRACTING OFFICER FOR RESOLUTION. CONTRACTOR MAY LOCATE MECHANICAL EQUIPMENT DIFFERENTLY THAN SHOWN ON DRAWINGS DUE TO CONFLICTS, AS LONG AS FUNCTION AND/OR APPEARANCE ARE NOT AFFECTED. CONTRACTOR TO RED LINE ANY AND ALL MODIFICATIONS IN THE AS BUILTS.

C. COORDINATE SPACE REQUIREMENTS, SUPPORTS, AND INSTALLATION OF MECHANICAL WORK, WHICH ARE INDICATED DIAGRAMMATICALLY ON THE DRAWINGS. FOLLOW ROUTING SHOWN FOR PIPES AND DUCTS AS CLOSELY AS PRACTICABLE; PLACE RUNS PARALLEL WITH LINES OF BUILDING. UTILIZE SPACES EFFICIENTLY TO MAXIMIZE ACCESSIBILITY FOR OTHER INSTALLATIONS, FOR MAINTENANCE, AND FOR REPAIRS.

D. COMPLY WITH MANUFACTURER'S INSTRUCTIONS INCLUDING EACH STEP IN SEQUENCE. SHOULD MANUFACTURERS' INSTRUCTIONS CONFLICT WITH THE DRAWINGS REQUEST CLARIFICATION FROM THE ENGINEER BEFORE PROCEEDING.

E. DUCT SIZES ARE INSIDE DIMENSION.

F. CONTRACTOR SHALL REVIEW THESE DOCUMENTS CAREFULLY. CONTRACTOR SHALL CONTACT THE CONTRACTING OFFICER FOR RESOLUTION OF ANY DISCREPANCIES, OMISSIONS, OR CLARIFICATIONS, BEFORE BID DATE. IN THE EVENT THAT AN INTERPRETATION OF BID DOCUMENTS IS NECESSARY AFTER THE BID DATE, THE DECISION OF THE CONTRACTING OFFICER SHALL BE FINAL AND BINDING.

G. PRODUCT DELIVERY, STORAGE, AND HANDLING: PROVIDE EQUIPMENT AND PERSONNEL TO HANDLE PRODUCTS BY METHODS TO PREVENT DAMAGE. PROMPTLY INSPECT SHIPMENTS TO ENSURE THAT PRODUCTS ARE UNDAMAGED. STORE AND PROTECT PRODUCTS IN ACCORDANCE WITH MANUFACTURERS' INSTRUCTIONS.

H. THE CONTRACTOR IS RESPONSIBLE FOR THE COSTS OF ALL CHANGE ORDERS, WHICH THE CONTRACTING OFFICER HAS NOT APPROVED IN WRITING PRIOR TO THE EXECUTION OF THE ASSOCIATED WORK.

I. CONTRACTOR SHALL COORDINATE WORK WITH OTHER TRADES AND NOTIFY THE CONTRACTING OFFICER IF ANY CONFLICTS OCCUR.

PLUMBING NOTES

I. GENERAL

A. THESE DRAWINGS ARE DIAGRAMMATIC IN NATURE AND NOT INTENDED TO SHOW ALL TRANSITIONS, OFFSETS, ETC. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS AND PROVIDE ALL NECESSARY FITTINGS TO COMPLETE THE INTENT OF THE DRAWINGS. ANY DISCREPANCIES BETWEEN DRAWINGS AND FIELD CONDITIONS SHALL BE REPORTED TO THE CONTRACTING OFFICER FOR RESOLUTION.

B. CONTRACTOR SHALL COORDINATE WORK WITH OTHER TRADES AND NOTIFY CONTRACTING OFFICERIF ANY CONFLICTS OCCUR.

C. CONTRACTOR SHALL REVIEW THESE DOCUMENTS CAREFULLY. CONTRACTOR SHALL CONTACT CONTRACTING OFFICER FOR RESOLUTION OF ANY DISCREPANCIES, OMISSIONS, OR CLARIFICATIONS, BEFORE BID DATE. IN THE EVENT THAT AN INTERPRETATION OF BID DOCUMENTS IS NECESSARY AFTER THE BID DATE, THE DECISION OF CONTRACTING OFFICER SHALL BE FINAL AND BINDING.

D. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COSTS OF ALL CHANGE ORDERS, WHICH THE CONTRACTING OFFICER HAS NOT APPROVED IN WRITING PRIOR TO THE EXECUTION OF THE ASSOCIATED WORK.

II. EXECUTION

A. ALL PLUMBING WORK SHALL COMPLY WITH FEDERAL REGULATIONS AND WITH LOCAL CODES AND ORDINANCES WHERE SYSTEMS CONNECT TO LOCAL WATER AND SANITARY UTILITIES.

B. PROVIDE DIELECTRIC FITTINGS AT CONNECTIONS BETWEEN DISSIMILAR METALS, I.E., IRON VALVES AND COPPER TUBING.

C. PROVIDE PIPE HANGERS OF THE SAME MATERIAL AS THE PIPING SYSTEM OR USE COATED HANGERS.

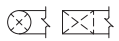
D. PROVIDE BALL VALVES AND UNIONS ON ALL LINES TO EQUIPMENT FOR ISOLATION AND REMOVAL.

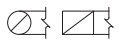
ABBREVIATIONS

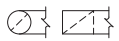
AFF	ABOVE FINISHED FLOOR
AP	ACCESS PANEL
AUX.	AUXILIARY
AVG	AVERAGE
BDD	BACKDRAFT DAMPER
BTUH	BRITISH THERMAL UNIT PER HOUR
CFM	CUBIC FEET PER MINUTE
C.I.	CAST IRON
CO	CLEANOUT
CW	COLD WATER
DB	DRY BULB
DN	DOWN
(E)	EXISTING
EA	EXHAUST AIR
EAT	ENTERING AIR TEMPERATURE
E.C.	ELECTRICAL CONTRACTOR
EWT	ENTERING WATER TEMP
F	FAHRENHEIT
FCO	FLOOR CLEANOUT
FLA	FULL LOAD AMPS
FPM	FEET PER MINUTE
FT	FEET
G.C.	GENERAL CONTRACTOR
GPM	GALLONS PER MINUTE
HX	HEAT EXCHANGER
ID	INSIDE DIAMETER
IN	INCHES
KW	KILOWATT
LAT	LEAVING AIR TEMPERATURE
M	MOTORIZED DAMPER
M.C.	MECHANICAL CONTRACTOR
NA	NOT APPLICABLE
NC	NORMALLY CLOSED
NIC	NOT IN CONTRACT
NO	NORMALLY OPEN
(N)	NEW
OA	OUTSIDE AIR
OAT	OUTSIDE AIR TEMPERATURE
SA	SUPPLY AIR
SP	STATIC PRESSURE
SL	SEA LEVEL
TYP.	TYPICAL
UNO	UNLESS NOTED OTHERWISE
V	VENT
VTR	VENT THROUGH ROOF
WB	WET BULB
W	WASTE
W/	WITH
W/O	WITHOUT
ESP	EXTERNAL STATIC PRESSURE
EFF	EFFICIENCY
HP	HORSEPOWER
GPF	GALLON PER FLUSH

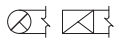
VENTILATION AND AIR CONDITIONING SYMBOLS

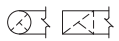
SUPPLY DUCT UP

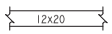

SUPPLY DUCT DOWN


RETURN DUCT UP


RETURN DUCT DOWN


EXHAUST DUCT UP

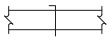

EXHAUST DUCT DOWN



DUCT (FIRST FIGURE, SIDE SHOWN AND SECOND FIGURE, SIDE NOT SHOWN) ALL DUCTS DIMENSIONS SHALL BE SHOWN IN INCHES.

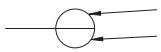
TRANSITIONS

FLEXIBLE CONNECTION


MANUAL VOLUME DAMPER

THERMOSTAT

MOTORIZED DAMPER

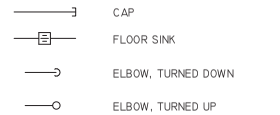


NOTE

ALL SYMBOLS AND ABBREVIATIONS SHOWN ARE NOT NECESSARILY USED.

PLUMBING PIPING SYMBOLS

PIPING SYMBOLS

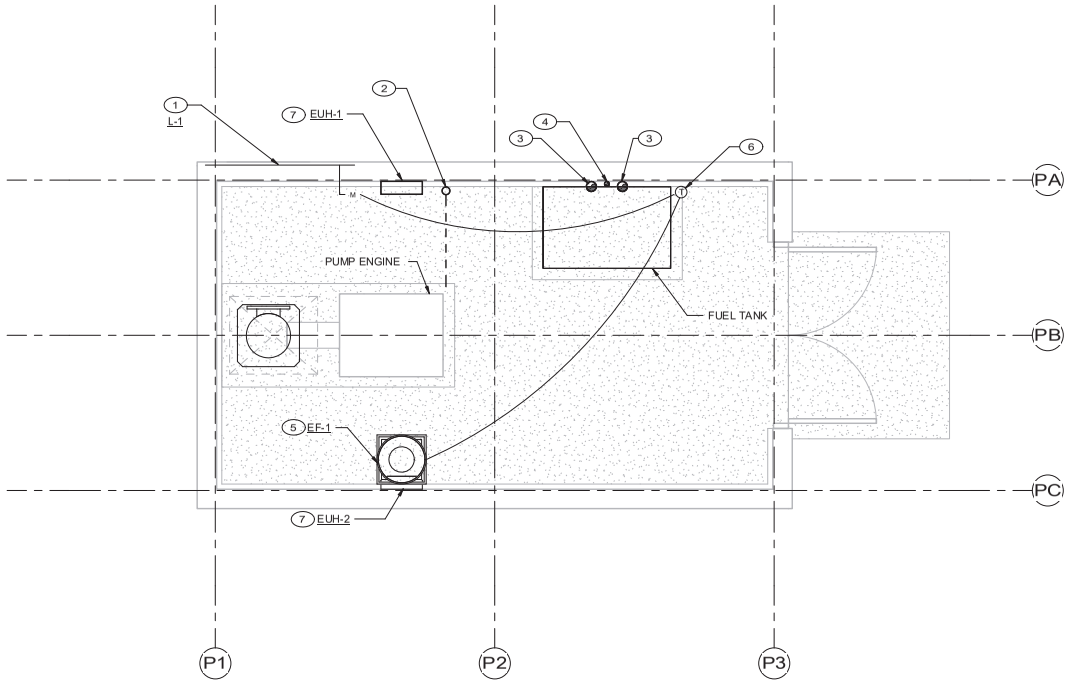


NOTE

NEW PLUMBING LINES AND EQUIPMENT SHOWN HEAVIER LINEWEIGHT THAN EXISTING LINES

DESIGNED: SJR	SUB SHEET NO.	TITLE OF SHEET: MECH./PLUMB. GENERAL NOTES	DRAWING NO. 174 173823
DRAWN: SJR/AEF	MP0.0	FOSSIL BUTTE NATIONAL MONUMENT WATER SYSTEM IMPROVEMENTS TO MEET FIRE PROTECTION REQUIREMENTS	PMIS/PKG NO. 282711
TECH REVIEW: SJR/DMD			SHEET 36 OF 60
DATE: 12/02/2022			

12/2/2022 9:15:57 AM BIM 360://2021-280 FOBU Fire Protection/2020- FOBU Mech Model_afley3W34P.rvt



1 PUMP HOUSE FLOOR PLAN
SCALE A

KEY NOTES:

1. INTAKE LOUVER, L-1, MOUNT BOTTOM EDGE 14" AFF.
2. 3" ENGINE EXHAUST EXPOSED ON INTERIOR OF WALL. EXTEND THROUGH ROOF PER MANUFACTURER'S GUIDELINES.
3. 4" EMERGENCY RELIEF VENT EXPOSED ON INTERIOR SIDE OF WALL. EXTEND THROUGH ROOF PER MANUFACTURER'S GUIDELINES.
4. 2" VENT EXPOSED ON INTERIOR SIDE OF WALL. EXTEND THROUGH ROOF PER MANUFACTURER'S GUIDELINES.
5. STUB 12"x12" DUCT DOWN 24" INTO SPACE WITH OPEN END
6. LINE VOLTAGE THERMOSTAT, MOUNT 48" AFF.
7. MOUNT BOTTOM EDGE 24" AFF.

SCALE A 2 0 2 4
SCALE OF FEET

NORTH

12/2/2022 9:15:57 AM BIM 360://2021-280 FOBU Fire Protection/2020- FOBU Mech Model_afiley3W34P.rvt

DESIGNED: SJR DRAWN: SJR/AEF TECH REVIEW: SJR/DMD DATE: 12/02/2022	SUB SHEET NO. M1.0	TITLE OF SHEET: MECHANICAL PUMP HOUSE FLOOR PLAN FOSSIL BUTTE NATIONAL MONUMENT WATER SYSTEM IMPROVEMENTS TO MEET FIRE PROTECTION REQUIREMENTS	DRAWING NO. 174 173823 PMIS/PKG NO. 282711 SHEET 37 OF 60

FAN SCHEDULE

GENERAL						PERFORMANCE (@ 6,950 FT)					ELECTRICAL				PHYSICAL				NOTES
TAG	MANUFACTURER	MODEL	LOCATION	SERVICE	TYPE	AIRFLOW [CFM]	ESP [IN. W.C.]	SPEED [RPM]	SIZE [HP]	SOUND [SONES]	VOLTAGE [V]	Ø	FREQ. [HZ]	FLA [A]	LENGTH [IN]	WIDTH [IN]	HEIGHT [IN]	WEIGHT [LBS]	
EF-1	GREENHECK	G-130-VG	PUMP HOUSE	EXHAUST	ROOF	1300	0.25	1091	0.25	8.6	115	1	60	3.8	19	19	36	44	1,2,3,4,5

NOTES:
1. PROVIDE WITH ROOF CURB
2. PROVIDE WITH BACKDRAFT DAMPER
3. PROVIDE WITH BIRD SCREEN
4. UNIT WEIGHT DOES NOT INCLUDE ACCESSORIES
5. PROVIDE WITH LINE VOLTAGE THERMOSTAT

LOUVER SCHEDULE

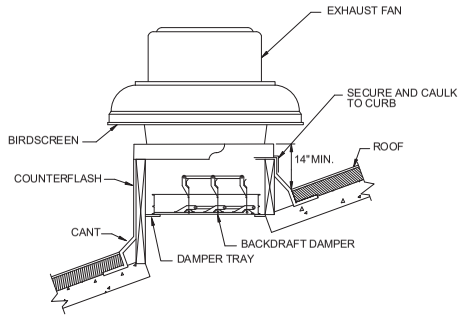
GENERAL					PERFORMANCE				PHYSICAL				NOTES
TAG	MANUFACTURER	MODEL	LOCATION	SERVICE	AIRFLOW [CFM]	FREE AREA [SF]	FACE VELOCITY [FT/MIN]	PRESSURE DROP [IN. W.C.]	HEIGHT [IN]	WIDTH [IN]	DEPTH [IN]	WEIGHT [LBS]	
L-1	GREENHECK	EDJ-401	PUMP HOUSE	INTAKE	1452	2.5	589	0.06	28	28	4	17	1,2,3,4

NOTES:
1 PROVIDE WITH STAINLESS STEEL BIRDSCREEN
2 PROVIDE WITH 2 COATS OF KYNAR PAINT. COORDINATE FINAL COLOR SELECTION WITH CONTRACTING OFFICER PRIOR TO ORDERING
3 PROVIDE WITH EXTENDED SILL, FLANGED FRAME, AND WELDED CONSTRUCTION
4 PROVIDE WITH CONTROL DAMPER AND NORMALLY CLOSED 2-POS ACTUATOR AND END SWITCH, GREENHECK MODEL VCD-23, MATCH LOUVER SIZE

ELECTRIC HEAT SCHEDULE

GENERAL						ELECTRICAL				PHYSICAL				
TAG	MANUFACTURER	MODEL	LOCATION	INSTALLATION	AIR FLOW [CFM]	VOLTAGE [V]	PHASE	FREQ [HZ]	POWER [KW]	DEPTH [IN]	WIDTH [IN]	HEIGHT [IN]	WEIGHT [LBS]	REMARKS
EUH-1	INDEECO	WCI 932U010500B	PUMP HOUSE	SURFACE	160	120	1	60.0	1.5	1	16	22	24	1,2,3
EUH-2	INDEECO	WCI 932U010500B	PUMP HOUSE	SURFACE	160	120	1	60.0	1.5	1	16	22	24	1,2,3

NOTES:
1. PROVIDE WITH INTEGRAL ELECTRICAL DISCONNECT
2. PROVIDE WITH EXTERNAL, UNIT MOUNTED, THERMOSTAT
3. PROVIDE WITH MANUFACTURER'S MOUNTING BRACKET AND HARDWARE



1 / M2.0 EXHAUST FAN DETAIL
SCALE: NTS

CONTROL SEQUENCE

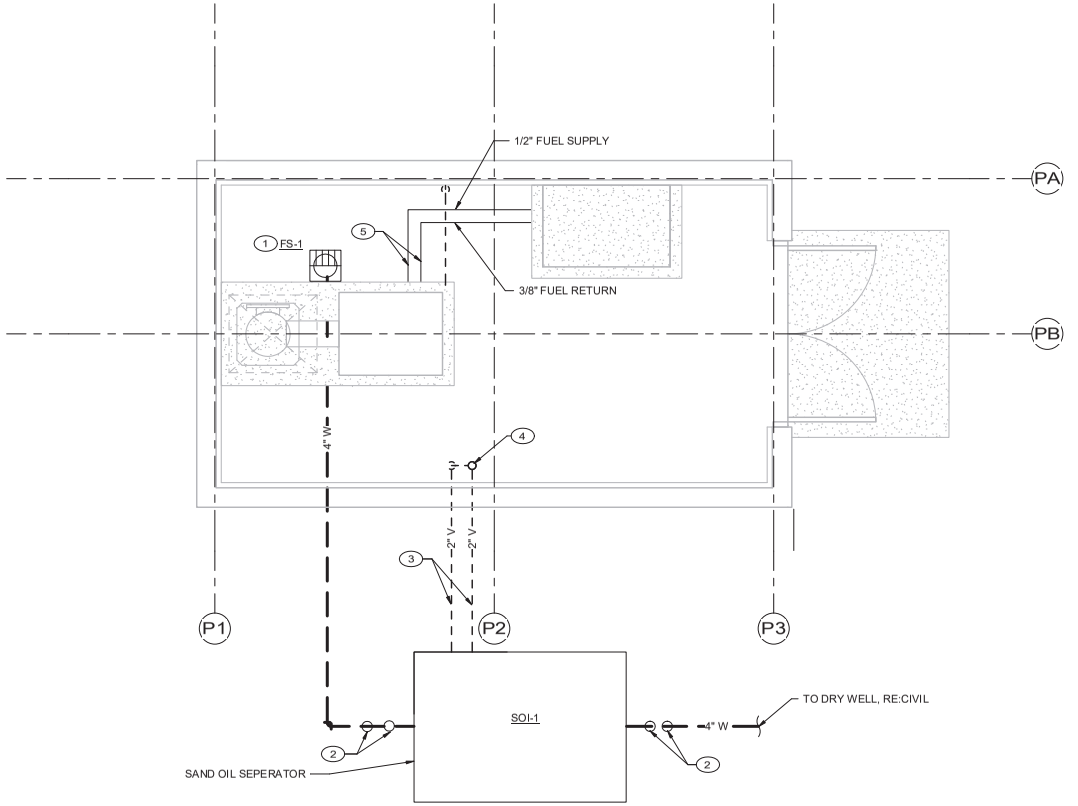
EUH-1 AND EUH-2: SHALL BE CONTROLLED BY THEIR EXTERNAL, UNIT MOUNTED THERMOSTATS TO MAINTAIN SPACE TEMPERATURE.

EF-1 AND L-1: SHALL BE CONTROLLED VIA A LINE VOLTAGE THERMOSTAT. WHEN THE SPACE TEMPERATURE RISES ABOVE 75ºF, THE LOUVER SHALL OPEN AND THE EXHAUST FAN TURNS ON. UPON A DROP IN TEMPERATURE TO 65ºF, THE EXHAUST FAN SHALL TURN OFF AND THE LOUVER CLOSED.

THE LOUVER SHALL OPEN AND THE EXHAUST FAN SHALL BE ON ANY TIME THE PUMP ENGINE IS OPERATING.

12/2/2022 9:15:57 AM BIM 360://2021-280 FOBU Fire Protection/2020- FOBU Mech Model_afiley3W34P.rvt

DESIGNED: SJR DRAWN: SJR/AEF TECH REVIEW: SJR/DMD DATE: 12/02/2022	SUB SHEET NO. M2.0	TITLE OF SHEET: MECH. PUMP HOUSE DETAILS/SCHEDULES FOSSIL BUTTE NATIONAL MONUMENT WATER SYSTEM IMPROVEMENTS TO MEET FIRE PROTECTION REQUIREMENTS	DRAWING NO. 174 173823 PMIS/PKG NO. 282711 SHEET 38 OF 60



1 PLUMBING PUMP HOUSE FLOOR PLAN
SCALE A

KEY NOTES:

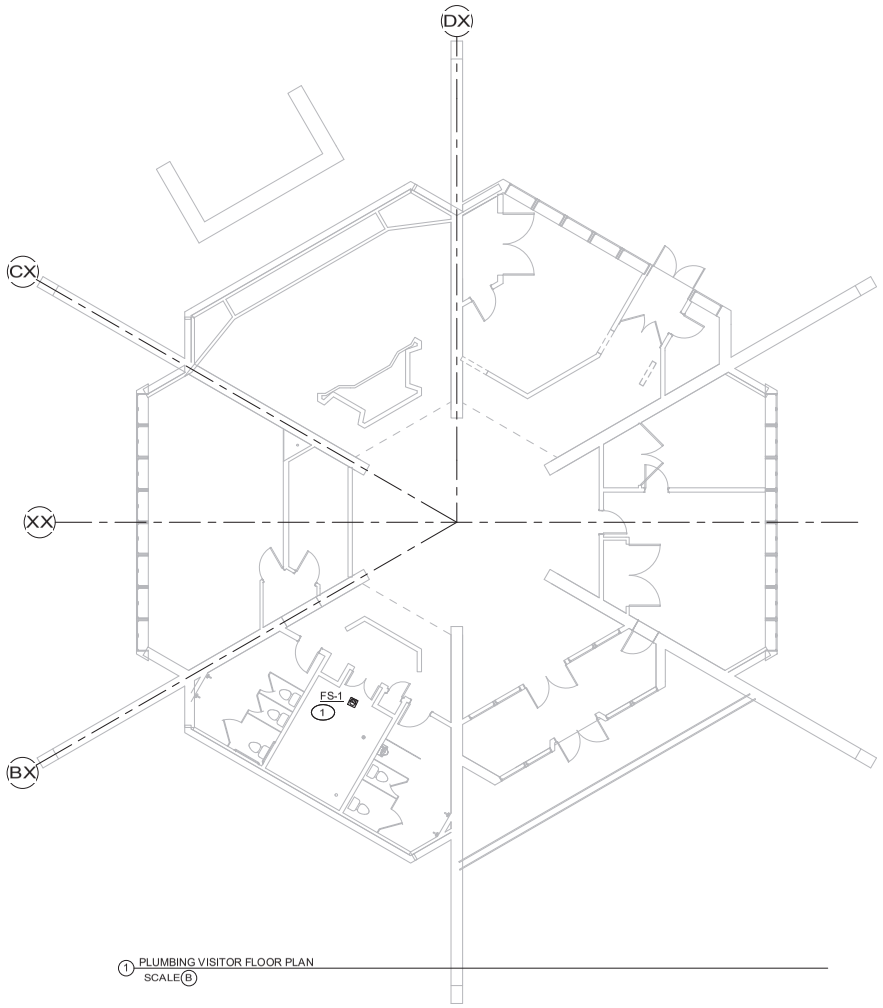
1. PROVIDE NEW 4" FLOOR SINK, COORDINATE EXACT LOCATION WITH PUMP ENGINE AND FUEL TANK.
2. PROVIDE DOUBLE CLEANOUTS FOR THE SAND OIL SEPERATOR. SEE DETAIL 1 ON SHEET P4.0.
3. PROVIDE VENT LINES UNDERGROUND TO PUMP HOUSE.
4. PROVIDE 3" VENT THROUGH ROOF, CONNECTED TO VENT LINES FROM THE SAND OIL SEPERATOR. SEE DETAIL 1 ON SHEET P4.0.
5. ROUTE 1/2" DIESEL FUEL SUPPLY TO AND 3/8" DIESEL FUEL RETURN FROM PUMP ENGINE PIPING SHALL BE ASTM A53/A53M BLACK STEEL, SCHEDULE 40, TYPE S, GRADE B WITH MALLEABLE-IRON THREADED FITTINGS (ASME B16.3, CLASS 150, STANDARD PATTERN) AND UNIONS (ASME B16.39, CLASS 150, WITH BRASS-TO IRON SEAT, GROUND JOINT, AND THREADED ENDS). USE INSTALLATION METHODS SIMILAR TO THOSE DESCRIBED IN SPECIFICATION SECTION 23 11 26 "FACILITY LIQUEFIED-PETROLEUM GAS PIPING". COORDINATE EXACT ROUTING IN FIELD WITH FUEL TANK AND PUMP ENGINE, AND PROVIDE CONNECTIONS PER MANUFACTURER'S REQUIREMENTS AND RECOMMENDATIONS.

SCALE A 2 0 2 4
SCALE OF FEET

NORTH BLDG

DESIGNED: SJR DRAWN: SJR/AEF TECH REVIEW: SJR/DMD DATE: 12/02/2022	SUB SHEET NO. P1.0	TITLE OF SHEET PLUMBING PUMP HOUSE FLOOR PLAN FOSSIL BUTTE NATIONAL MONUMENT WATER SYSTEM IMPROVEMENTS TO MEET FIRE PROTECTION REQUIREMENTS	DRAWING NO. 174 173823 PMIS/PKG NO. 282711 SHEET 39 OF 60

12/2/2022 9:15:57 AM BIM 360://2021-280 FOBU Fire Protection/2020- FOBU Mech Model_afiley3W34P.rvt



1 PLUMBING VISITOR FLOOR PLAN
SCALE B

KEY NOTES:

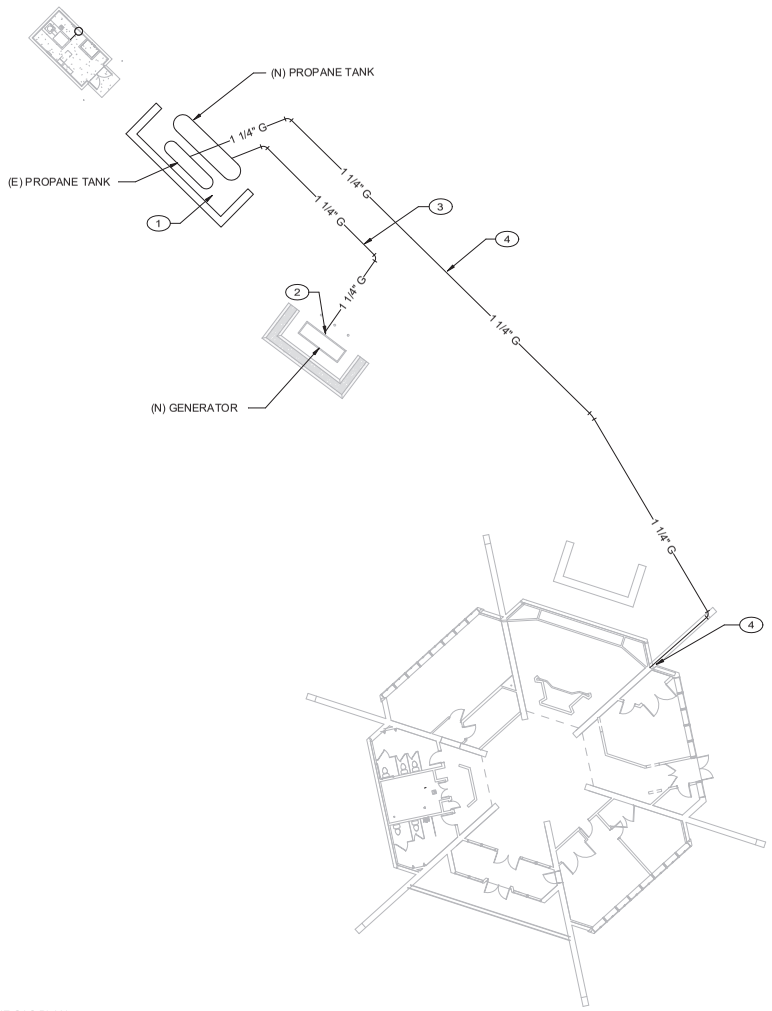
1 REPLACE EXISTING FLOOR DRAIN IN THE MECHANICAL ROOM WITH NEW 4" FLOOR SINK. CONNECT TO EXISTING SANITARY WASTE AND VENT LINES.

SCALE B 8 0 8 16
SCALE OF FEET

BLDG NORTH

DESIGNED: SJR DRAWN: SJR/AEF TECH REVIEW: SJR/DMD DATE: 12/02/2022	SUB SHEET NO. P2.0	TITLE OF SHEET PLUMBING VISITOR CENTER FLOOR PLAN FOSSIL BUTTE NATIONAL MONUMENT WATER SYSTEM IMPROVEMENTS TO MEET FIRE PROTECTION REQUIREMENTS	DRAWING NO. 174 173823 PMIS/PKG NO. 282711 SHEET 40 OF 60

12/2/2022 9:15:57 AM BIM 360://2021-280 FOBU Fire Protection/2020- FOBU Mech Model_afiley3W34P.rvt



1 PROPANE GAS PLAN
SCALE C

GAS CALCULATIONS (LINE SIZING PER IFGC TABLE 402.4(28))		
NEW GAS LINE CONNECTED LOAD		
EQUIPMENT	INPUT EACH AT SEA LEVEL (MBH)	INPUT EACH AT ALT (CFH)
(N) GENERATOR	370.2	478
TOTAL LOAD (CFH)		478
TOTAL EQUIVALENT LENGTH (FT)		76
SYSTEM DESIGN PRESSURE (in W.C)		11.0
SYSTEM DESIGN PRESSURE DROP (in W.C)		0.5

478 CFH WITH THE ABOVE DESIGN VARIABLES EQUALS A 1-1/4" GAS MAIN.

KEY NOTES:

1. PROVIDE NEW 2,000 GALLON PROPANE TANK WITH ALGAS-SDI TORREX LPG VAPORIZER, MODEL TX50 TO ACCOMMODATE 25 GAL/HR VAPORIZATION CAPACITY. PROVIDE 240V/1PH POWER TO VAPORIZER FROM 45A CIRCUIT (RE:ELEC). COORDINATE EXACT LOCATIONS OF TANKS WITH CIVIL AND ARCHITECTUAL PLANS.
2. ROUTE 1-1/4" PROPANE GAS LINE TO NEW GENERATOR AND PROVIDE FINAL CONNECTION WITH GAS TRAIN PER GENERATOR MANUFACTURER'S REQUIREMENTS AND RECOMMENDATIONS.
3. PROVIDE NEW 1-1/4" PROPANE GAS LINE BELOW GRADE TO NEW GENERATOR LOCATION.
4. EXISTING ROPANE GAS LINE TO VISITOR CENTER FURNACES TO REMAIN UNCHANGED.

SCALE C 16 0 16 32
SCALE OF FEET

BLDG NORTH

DESIGNED: SJR DRAWN: SJR/AEF TECH REVIEW: SJR/DMD DATE: 12/02/2022	SUB SHEET NO. P3.0	TITLE OF SHEET: GAS PIPING PLAN FOSSIL BUTTE NATIONAL MONUMENT WATER SYSTEM IMPROVEMENTS TO MEET FIRE PROTECTION REQUIREMENTS	DRAWING NO. 174 173823 PMIS/PKG NO. 282711 SHEET 41 OF 60

12/2/2022 9:15:57 AM BIM 360://2021-280 FOBU Fire Protection/2020- FOBU Mech Model_afilley3W34P.rvt

PUMP HOUSE PLUMBING FIXTURE SCHEDULE

	DESCRIPTION	MANUFACTURER	MODEL NUMBER	FINISH	MANUFACTURER	MODEL NUMBER	FINISH	GPM/GPF	ELECTRICAL	REMARKS
FS-1	FLOOR SINK- 8" SQUARE, 6" DEEP	JAY R SMITH	3410-Y	WHITE ACID RESISTANT	-	-	-	-	-	1,2,3

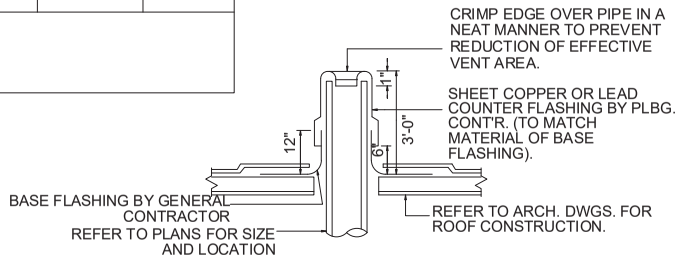
REMARKS:
1. PROVIDE WITH TRAP GUARD
2. MOUNT FLUSH WITH FLOOR
3. 1/2 GRATE, DOME STRAINER.

OIL SEPARATOR SCHEDULE

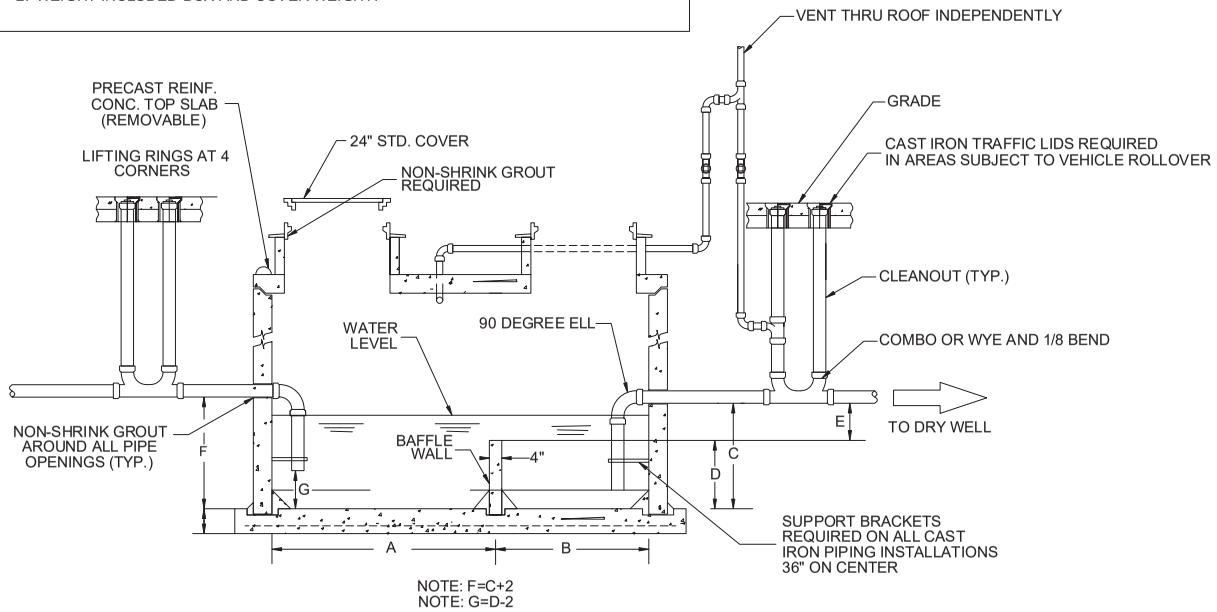
GENERAL				PHYSICAL				NOTES
TAG	MANUFACTURER	MODEL#	CAPACITY [G]	LENGTH [IN]	WIDTH [IN]	HEIGHT [IN]	WEIGHT-FULL [LBS]	
SOI-1	COPELAND	11010	320	58	82	50	11,300	1,2

NOTES:
1. SEE DETAIL.
2. WEIGHT INCLUDED BOX AND COVER WEIGHT.

RATED CAPACITY	DIMENSION (INCHES)						
	W	L	A	B	C	D	E
300	50"	82"	50"	31"	21"	14"	7"



2 P4.0 PLUMBING VENT THROUGH FLAT ROOF DETAIL
SCALE: NTS



1 P4.0 SAND OIL SEPERATOR DETAIL
SCALE: NTS

DESIGNED: SJR	SUB SHEET NO. P4.0	TITLE OF SHEET: PLUMBING DETAILS/SCHEDULES	DRAWING NO. 174 173823
DRAWN: SJR/AEF		FOSSIL BUTTE NATIONAL MONUMENT WATER SYSTEM IMPROVEMENTS TO MEET FIRE PROTECTION REQUIREMENTS	PMIS/PKG NO. 282711
TECH REVIEW: SJR/DMD			SHEET 42 OF 60
DATE: 12/02/2022			

12/2/2022 9:15:57 AM BIM 360://2021-280 FOBU Fire Protection/2020- FOBU Mech Model_afiley3W34P.rvt

FIRE PROTECTION SYMBOLS LIST

Abbreviations

(A)	ABANDON IN PLACE
AFF	ABOVE FINISHED FLOOR
AS	AUTOMATIC SPRINKLER
BOB	BOTTOM OF BEAM
BOD	BOTTOM OF DECK
BOP	BOTTOM OF PIPE
BOR	BOTTOM OF RISER
BV	BUTTERFLY VALVE
C	CENTER LINE
CV	CHECK VALVE
(X)	DEMOLITION
DDCV	DOUBLE DETECTOR CHECK VALVE ASSEMBLY
DN	DROP NIPPLE
EL	ELEVATION
ENCL	ENCLOSURE
(E)	EXISTING
EC	EXTENDED COVERAGE
F	FAHRENHEIT
FT	FEET
FF	FINISHED FLOOR
FDC	FIRE DEPARTMENT CONNECTION
FHC	FIRE HOSE CABINET
FHS	FIRE HOSE STATION
FFL	FLOOR FLANGE
FS	FLOW SWITCH
(F)	FUTURE
GPM	GALLONS PER MINUTE
GV	GATE VALVE
GEN	GENERAL
G	GRADE
H	HANGER
HSW	HORIZONTAL SIDE WALL
HV	HOSE VALVE
IN	INCHES
ID	INSIDE DIAMETER
MAX	MAXIMUM
MIN	MINIMUM
NEC	NATIONAL ELECTRICAL CODE
(N)	NEW
N&C	NIPPLE AND CAP
N.C	NORMALLY CLOSED
N.O	NORMALLY OPEN
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE
NO	NUMBER
OBJ	OPEN BAR JOIST
OD	OUTSIDE DIAMETER
OS & Y	OUTSIDE SCREW & YOKE
PIV	POST INDICATOR VALVE
PRV	PRESSURE REDUCING VALVE
PS	PRESSURE SWITCH
(R)	RELOCATE/RELOCATED LOCATION
REQ	REQUIRED
RN	RISER NIPPLE
RM	ROOF MANIFOLD
SOV	SHUT OFF VALVE
SF	SQUARE FEET
SSP	STANDARD SPRAY PENDENT
SSU	STANDARD SPRAY UPRIGHT
SP	STANDPIPE
SB	SWAY BRACE
TS	TAMPER SWITCH
TOB	TOP OF BEAM
TOP	TOP OF PIPE
TOR	TOP OF RISER
TOS	TOP OF STEEL
TYP	TYPICAL
UNO	UNLESS NOTED OTHERWISE

Control

- BELL/GONG
- CONTROL PANEL
- FLOW DETECTION SWITCH
- MONITOR SWITCH
- PRESSURE GAUGE
- TAMPER DETECTOR
- WATER MOTOR ALARM

General

- CONTINUATION
- DETAIL NUMBER AND SHEET LOCATION
- EQUIPMENT IDENTIFICATION
- FOOD SERVICE EQUIPMENT / CALCULATION TAG
- KEYED NOTE
- PIPE OR CONDUIT BELOW GRADE
- POINT OF CONNECTION
- SECTION NUMBER AND SHEET LOCATION
- DEMOLISH
- DEMOLISH (DASH-DOT)
- EXISTING WORK
- NEW WORK

Valves

- ALARM CHECK VALVE, ELEVATION VIEW
- ALARM CHECK VALVE, PLAN VIEW
- ANGLE VALVE
- CHECK VALVE
- DELUGE VALVE
- DRY VALVE
- INDICATING BUTTERFLY VALVE
- NON-RISING STEM VALVE
- PREACTION VALVE
- SPRINKLER DOUBLE DETECTOR CHECK VALVE ASSEMBLY
- VALVE WITH TAMPER SWITCH

MAXIMUM SPACING (ft)(m) OF STEEL PIPE RESTRAINTS

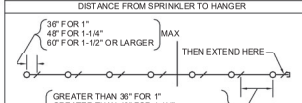
PIPE	SEISMIC COEFFICIENT, Cp			
(in.) (mm)	Cp ≤ .49	.5 < Cp ≤ .71	.71 < Cp ≤ 1.40	Cp ≥ 1.40
1 (25)	43 (13.1)	36 (11.0)	26 (7.9)	22 (6.7)
1-1/4 (32)	46 (14.0)	39 (11.9)	27 (8.2)	24 (7.3)
1-1/2 (40)	49 (14.9)	41 (12.5)	29 (8.8)	25 (7.6)
2 (50)	53 (16.1)	45 (13.7)	31 (9.4)	27 (8.2)

MAXIMUM DISTANCE BETWEEN HANGERS (FT-IN)

STEEL PIPE	NOMINAL PIPE SIZE (IN)							
	1	1-1/4	1-1/2	2	2-1/2	3	4	6
	12-0	12-0	15-0	15-0	15-0	15-0	15-0	15-0

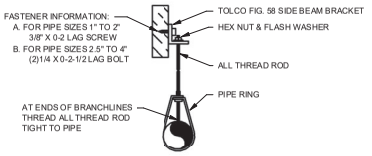
FOR STEEL PIPE, THE MAXIMUM LENGTH FOR UNSUPPORTED ARMOVER SHALL BE 2'-0". WHEN PRESSURE EXCEEDS 100 PSI, UNSUPPORTED LENGTH SHALL BE 1'-0".

DISTANCE FROM SPRINKLER TO HANGER

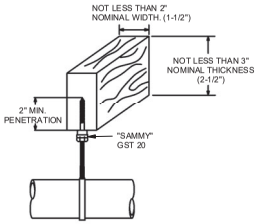


HANGER ROD SIZE	
PIPE SIZE	DIA. OF ROD
UP TO AND INCLUDING 4"	3/8"
6" AND 8"	1/2"

NOTE: TYPICAL TICK MARKS AS SHOWN ON PIPING PLAN MAY NOT REFLECT ACTUAL FIELD INSTALLATION. FINAL HANGER INSTALLATION SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF NFPA 13 CHAPTER 9.



2 FP0.1 SIDE BEAM BRACKET HANGER



3 FP0.1 WOOD JOIST "SAMMY" HANGER

GENERAL FIRE PROTECTION NOTES

A. SCOPE OF WORK:
   a. FIRE PUMP BUILDING: PROVIDE A NEW DIESEL MOTOR-DRIVEN VERTICAL TURBINE FIRE PUMP (RATED AT 500GPM@75PSI). COMPLETE WITH NFPA 20 (2019) REQUIRED PUMP CONTROLLER AND VALVES, DOUBLE WALL FUEL TANK, TEST HEADER, FLOW TEST METER, JOCKEY PUMP AND CONTROLLER IN A STAND-ALONE BUILDING. FIRE PUMP BUILDING WILL BE PROTECTED WITH A WET-PIPE SPRINKLER SYSTEM IN ACCORDANCE WITH NFPA 13(2019).
   b. VISITOR CENTER: PROVIDE A COMPLETE WET-PIPE SPRINKLER SYSTEM THROUGHOUT ENTIRE BUILDING IN ACCORDANCE WITH NFPA 13 (2019) REQUIREMENTS. SYSTEM WILL BE FED FROM UNDERGROUND MAIN FROM FIRE PUMP BUILDING. AREAS SUBJECT TO FREEZING WILL BE PROTECTED BY DRY-BARREL SPRINKLERS AND A NITROGEN GAS SUPERVISED DRY-PIPE SPRINKLER SYSTEM IN ACCORDANCE WITH NFPA 13(2019).

B. ALL MATERIALS TO BE UL LISTED AND/OR FM APPROVED.

C. VISITOR CENTER ABOVE GROUND SPRINKLER PIPE - COPPER TYPE K OR TYPE L AS REQUIRED PER NFPA 13. REFER TO CIVIL INFORMATION FOR BELOW GRADE PIPING MATERIAL. PROVIDE DIELECTRIC UNION OR FLANGE WHEN PIPE TYPES DIFFER.

D. FIRE PUMP HOUSE ABOVE GROUND SPRINKLER PIPE - BLACK STEEL SCHEDULE 40. SCHEDULE 10 NOT ALLOWED PER NPS STANDARDS.

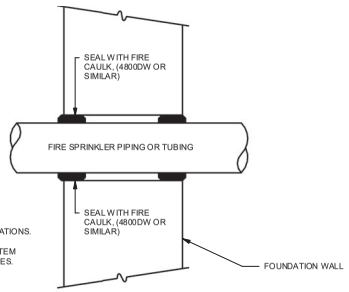
E. PROVIDE SEISMIC BRACING, RESTRAINTS AND HANGERS IN ACCORDANCE WITH NFPA 13.

F. STRUCTURAL FIRE MANAGER, NATIONAL PARK SERVICE (NPS) REGIONAL OFFICE SERVING INTERIOR REGIONS 6,7&8 IS THE AUTHORITY HAVING JURISDICTION (AHJ).

SPRINKLER HEAD LEGEND

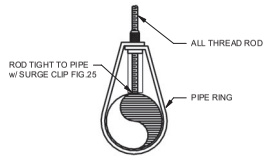
SYMBOL	DESCRIPTION	S/N #	K-FACTOR	ORIFICE SIZE	RESPONSE	TEMP	COVERAGE	FINISH	ESCHUTCHEON	COUNT	COMMENTS
	UPRIGHT SPRINKLER	VK3001	5.6	1/2"	Quick	155	Standard	BRASS	NONE	16	
	PENDENT SPRINKLER W/OUT ESCHUTCHEON	VK3021	5.6	1/2"	Quick	155	Standard	BRASS	NONE	9	INSTALL WITH DEFLECTOR PARRALLEL TO ROOF SLOPE
	PENDENT SPRINKLER (FINISHED CEILINGS)	VK3021	5.6	1/2"	Quick	155	Standard	WHITE POLY	RECESSED	9	
	CONCEALED SIDEWALL	VK680	5.6	1/2"	Quick	155	Standard	WHITE POLY	CONCEALED	5	
	DRY BARREL SIDEWALL SPRINKLER	VK178	5.6	1/2"	Quick	195	Standard	BRASS	RECESSED	10	INSTALL PER MFG'S SUGGESTED BARREL LENGTH
	EXTENDED COVERAGE SIDEWALL SPRINKLER	VK630	8	1/2"	Quick	155	Extended	WHITE POLY	CONCEALED, FLAT	4	
	HORIZONTAL SIDEWALL SPRINKLER	VK305	5.6	1/2"	Quick	155	Standard	WHITE POLY	RECESSED	12	

TOTAL SPRINKLERS: 65



NOTE:
APPLICABLE TO NON-FIRE RATED ASSEMBLY PENETRATIONS. PROVIDE PREFABRICATED U.L. LISTED FIRE STOP SYSTEM FOR FIRE RATED ASSEMBLIES.

1 FP0.1 FOUNDATION WALL PIPE PENETRATION



4 FP0.1 END OF BRANCHLINE AND INTERVAL HANGER

SHEET INDEX

FP0.1	FP SYMBOLS AND GEN NOTES
FP0.9	FIRE PROTECTION SITE PLAN
FP1.0	FIRE PROTECTION VISITOR CENTER
FP1.1	FIRE PROTECTION VISITOR CENTER
FP2.0	FIRE PROTECTION PUMP HOUSE FLOOR PLAN
FP4.0	FIRE PROTECTION DETAILS

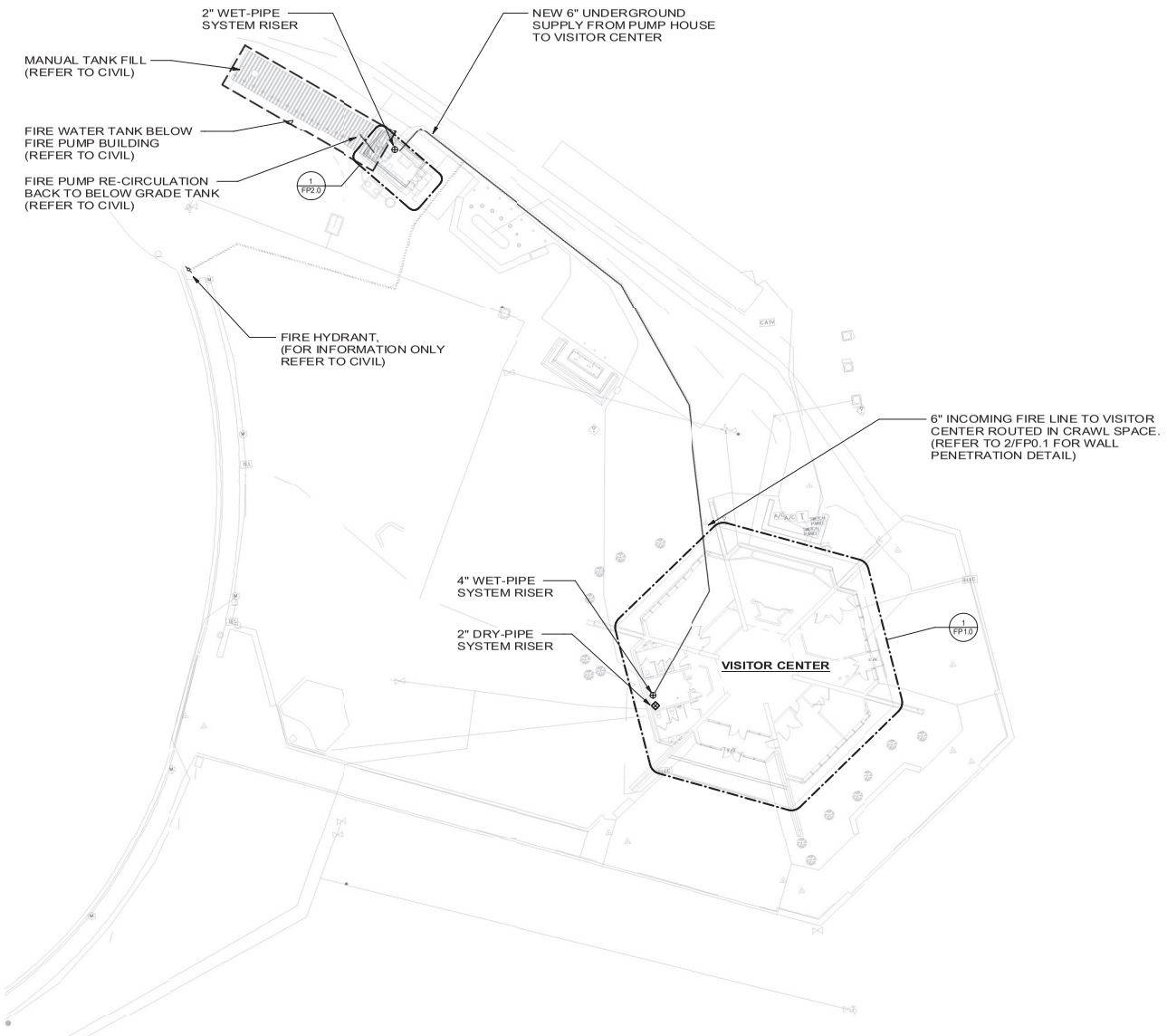
DESIGNED: CK
DRAWN: CK
TECH REVIEW: KA
DATE: 12/07/2022

SUB SHEET NO. FP0.1

TITLE OF SHEET
FP SYMBOLS AND GEN NOTES

FOSSIL BUTTE NATIONAL MONUMENT
WATER SYSTEM IMPROVEMENTS TO MEET FIRE PROTECTION REQUIREMENTS

DRAWING NO. 174 173823
PMIS/PKG NO. 282711
SHEET 43 OF 60



40 20 0 40

SCALE OF FEET

1 FP0.9 SITE PLAN - FIRE PROTECTION

FOR REFERENCE ONLY (REFER TO CIVIL PLANS)

Professional Engineer KENTON J. AKENS 18213 WYOMING

DESIGNED:	CK
DRAWN:	CK
TECH REVIEW:	KA
DATE:	12/07/2022
SUB SHEET NO.	FP0.9

TITLE OF SHEET

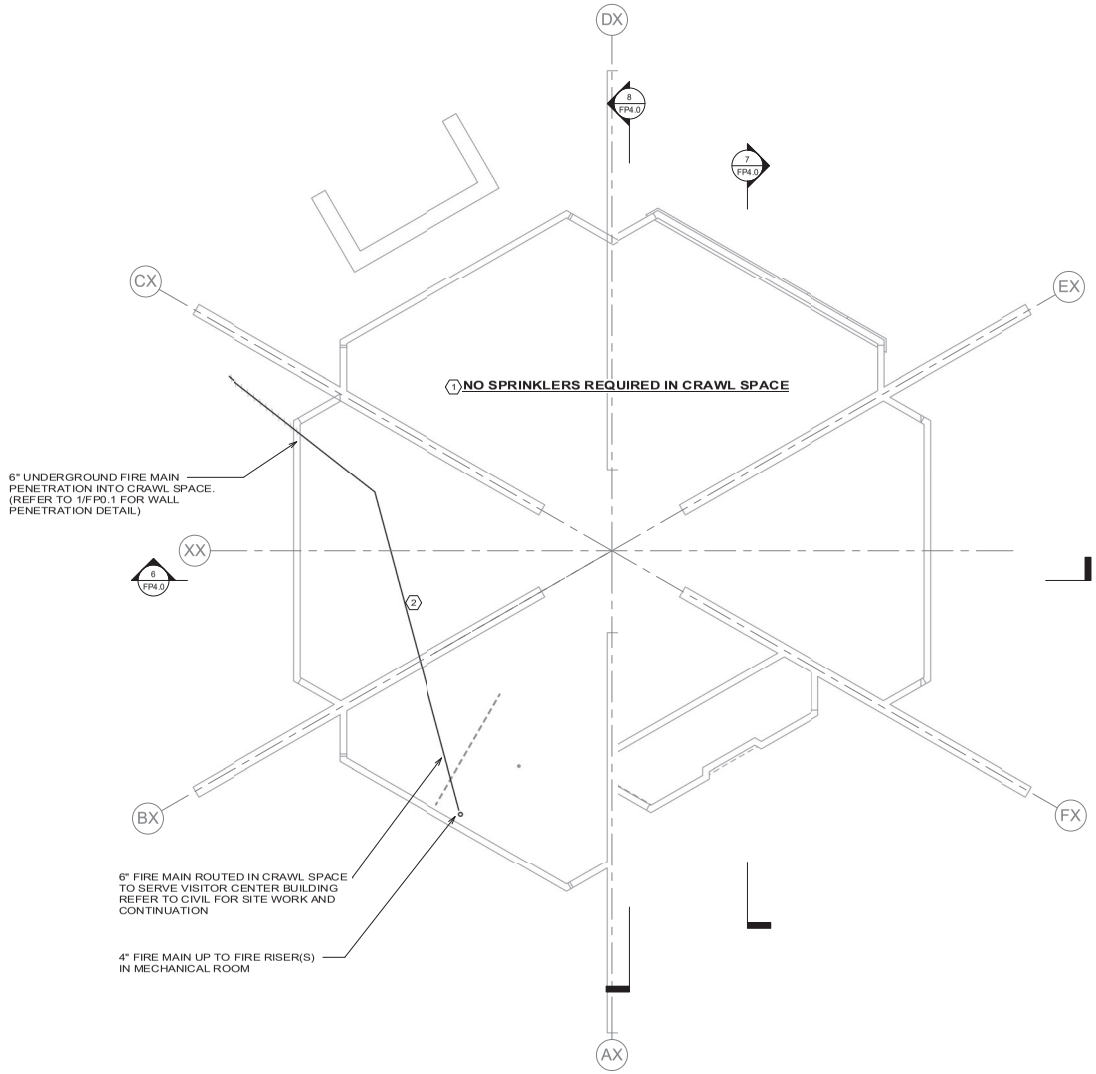
FIRE PROTECTION SITE PLAN

FOSSIL BUTTE NATIONAL MONUMENT
WATER SYSTEM IMPROVEMENTS TO MEET FIRE PROTECTION REQUIREMENTS

DRAWING NO.	174 173823
PMIS/PKG NO.	282711
SHEET	44 OF 60

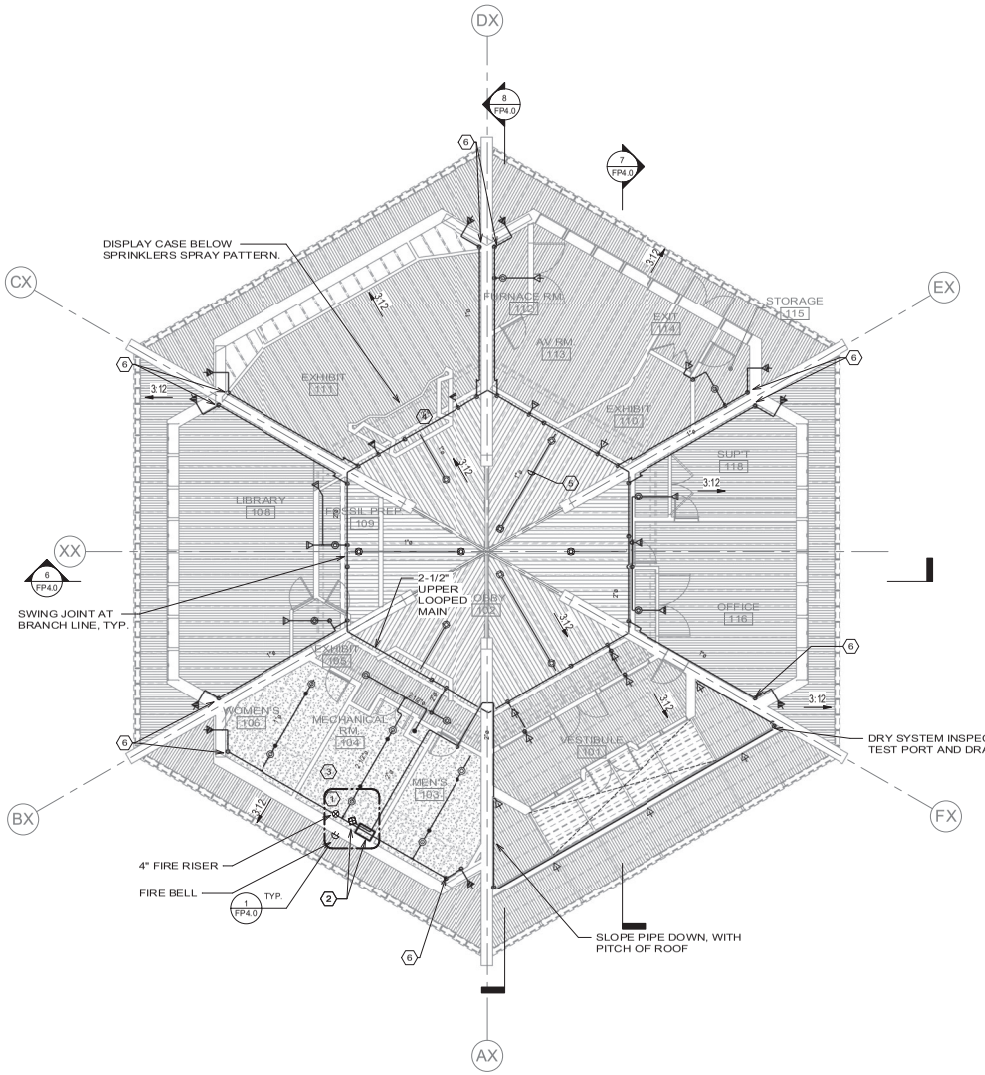
SHEET KEYNOTES

1. SPRINKLERS NOT PROVIDED IN CRAWL SPACE AS PERMITTED BY NFPA 13, SECTION 9.13.18.1 AND NFPA 13 SECTION 9.2.2.
2. PROVIDE HANGERS, BRACING IN ACCORDANCE WITH NFPA 13 REQUIREMENTS FOR CRAWL SPACE 6" MAIN.

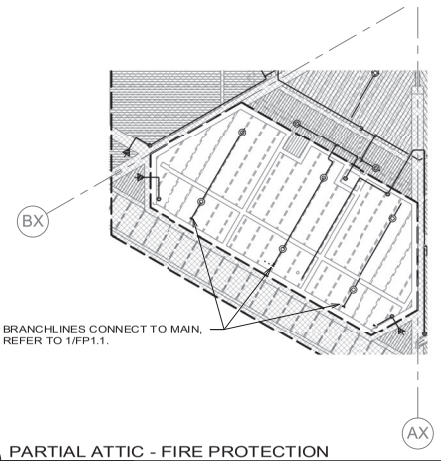


1 FP1.0 VISTOR CENTER - CRAWL SPACE - FIRE PROTECTION

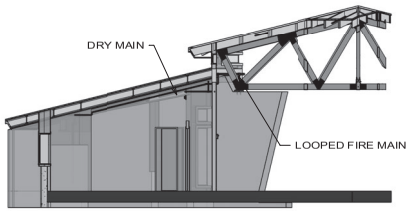
Professional Engineer KENTON J. AIKENS 18713 WYOMING	DESIGNED: CK CADD: CK TECH REVIEW: KA DATE: 12/07/2022	SUB SHEET NO. FP1.0	TITLE OF SHEET FIRE PROTECTION VISITOR CENTER FOSSIL BUTTE NATIONAL MONUMENT WATER SYSTEM IMPROVEMENTS TO MEET FIRE PROTECTION REQUIREMENTS	DRAWING NO. 174 173823 PMIS/PKG NO. 282711 SHEET 45 OF 60



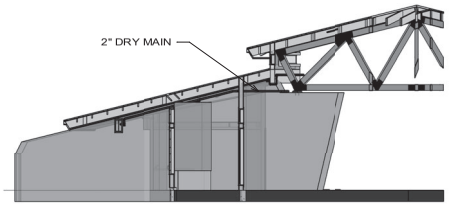
1 FP1.1 VISITOR CENTER REFLECTED CEILING PLAN - FIRE PROTECTION



2 FP1.1 PARTIAL ATTIC - FIRE PROTECTION



3 FP1.1 3D - GRID LINE - FX



4 FP1.1 3D - GRID LINE - AX

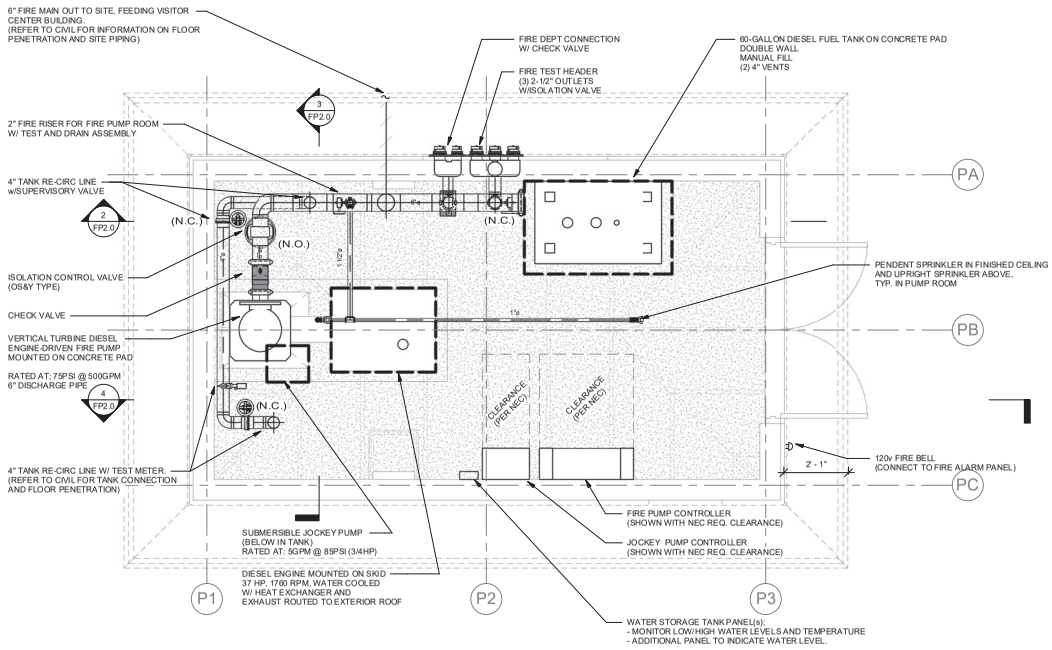
SHEET KEYNOTES

1. 4" FIRE RISER CONNECTED TO 6" DEDICATED FIRE SUPPLY. 6" SUPPLY FEED FROM FIRE PUMP BUILDING ROUTED THROUGH CRAWL SPACE. REFER TO CIVIL PLANS FOR EXACT SITE ROUTING AND CONTINUATION.
2. 2" DRY-PIPE SYSTEM RISER. PROVIDE DRY VALVE WITH TEST AND DRAIN, ROUTE DRAIN TO FLOOR DRAIN CAPABLE OF HANDLING FLOW. PROVIDE WITH SUPERVISORY NITROGEN GAS SYSTEM. REFER TO FP4.0 FOR ADDITIONAL RISER DETAIL.
3. ATTIC SPACE LOCATED ABOVE MECHANICAL ROOM AND RESTROOMS. PROVIDE PENDENT SPRINKLER IN LOWER CEILING WITH UPRIGHTS IN ATTIC AREA. REFER TO 2/FP1.1 FOR ADDITIONAL INFORMATION.
4. PROVIDE 1" STUB, CAPPED FOR FUTURE CONNECTIONS.
5. 1" BRANCH LINES ROUTED TIGHT TO DECK ABOVE. PROVIDE WITH PENDENT TYPE SPRINKLERS ON TEES. PER NFPA 13 (9.3.6.5) - NO BRANCH LINE RESTRAINTS REQUIRED WHEN PIPING IS LOCATED WITHIN 6" OR LESS FROM ATTACHMENT POINT ABOVE.
6. PROVIDE PLUGGED DRAIN TEE, TYP., AT ALL LOW POINTS SERVING DRY BARREL SIDEWALLS.

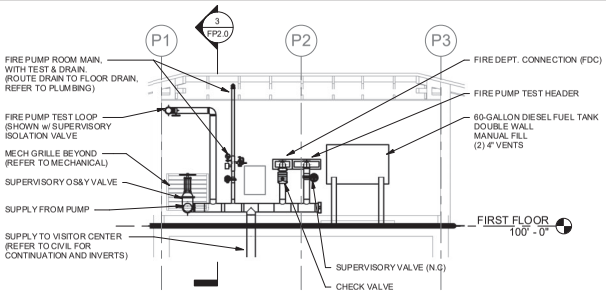
8 0 8 16
SCALE OF FEET

BLDG NORTH

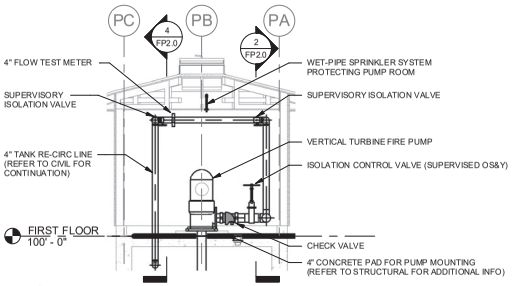
Professional Engineer KENTON J. AIKENS 18713 WYOMING	DESIGNED: CK CADD: CK TECH REVIEW: KA DATE: 12/07/2022	SUB SHEET NO. FP1.1	TITLE OF SHEET FIRE PROTECTION VISITOR CENTER FOSSIL BUTTE NATIONAL MONUMENT WATER SYSTEM IMPROVEMENTS TO MEET FIRE PROTECTION REQUIREMENTS	DRAWING NO. 174 173823 PMIS/PKG NO. 282711 SHEET 46 OF 60



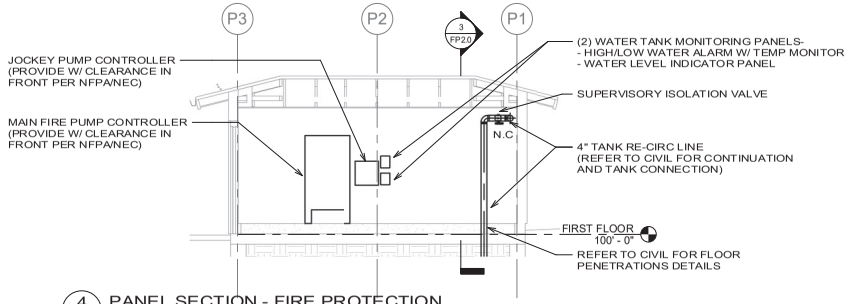
1 FP2.0 PUMP HOUSE REFLECTED CEILING PLAN - FIRE PROTECTION
SCALE (A)



2 FP2.0 RISER SECTION - FIRE PROTECTION
SCALE (B)



3 FP2.0 PUMP SECTION - FIRE PROTECTION
SCALE (B)



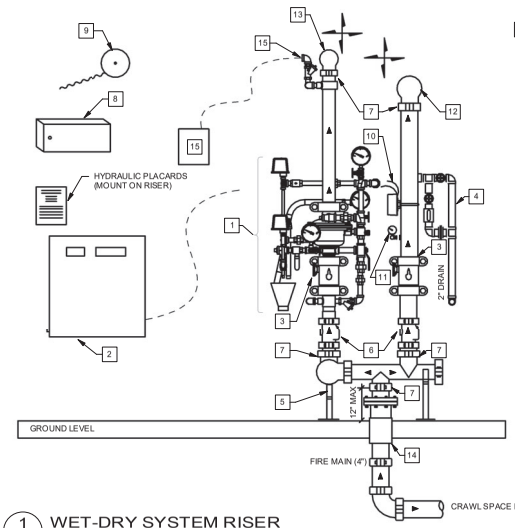
4 FP2.0 PANEL SECTION - FIRE PROTECTION
SCALE (B)

SCALE (B) 4 0 4 8
SCALE OF FEET
SCALE (A) 2 0 2 4
SCALE OF FEET

BLDG NORTH

Professional Engineer KENTON J. AKERS 18213 WYOMING

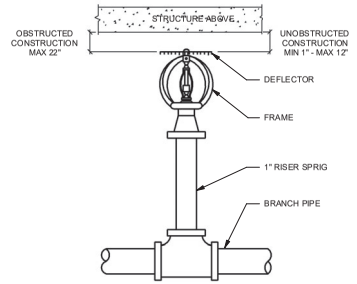
DESIGNED: CK	SUB SHEET NO.	TITLE OF SHEET	DRAWING NO. 174 173823
ADD CK	FP2.0	FIRE PROTECTION PUMP HOUSE FLOOR PLAN	PMIS/PKG NO. 282711
TECH REVIEW: KA		FOSSIL BUTTE NATIONAL MONUMENT	SHEET 47 OF 60
DATE: 12/07/2022		WATER SYSTEM IMPROVEMENTS TO MEET FIRE PROTECTION REQUIREMENTS	



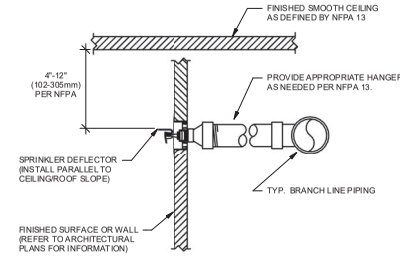
DETAIL KEYNOTES

1 DRY PIPE VALVE WITH TRIM (COORDINATE CONNECTION OF AIR SUPERVISORY SWITCH AND WATERFLOW PRESSURE SWITCH WITH FIRE ALARM CONTRACTOR).
2 WALL MOUNTED N2 GENERATOR AND COMPRESSOR UNIT. CONNECT TO VALVE VIA 1/2"NPT FEMALE OUTLET FROM PANEL. PROVIDE 120V POWER. COORDINATE WITH ELEC.
3 BUTTERFLY VALVE (COORDINATE CONNECTION WITH FIRE ALARM CONTRACTOR)
4 SECTIONAL TEST AND DRAIN w/ PRESSURE RELIEF VALVE. DRAIN ROUTED TO PLUMBING PROVIDED FLOOR DRAIN CAPABLE OF HANDLING FLOW.
5 FLOOR STAND. (SCHEDULE-40)
6 CHECK VALVE
7 FLEXIBLE COUPLING.
8 SPARE SPRINKLER HEAD BOX.
9 ELECTRIC BELL. PROVIDE 120V POWER (COORDINATE POWER SUPPLY WITH ELECTRICAL CONTRACTOR).
10 WATERFLOW SWITCH (COORDINATE CONNECTION TO FIRE ALARM PANEL AND ELECTRIC BELL WITH FIRE ALARM CONTRACTOR).
11 300 PSI PRESSURE GAUGE.
12 WET SYSTEM - ZONE 1.
13 DRY SYSTEM - ZONE 2.
14 PROVIDE PIPE SLEEVE 4" LARGER THAN PIPE INSTALLED (8" SLEEVE)
15 PROVIDE OXYGEN DRY VENT FOR NITROGEN PURGE AT TOP OF RISER (ECS PVS-D, OR SIMILAR) CONNECT CONDUIT TO CONTROL PANEL

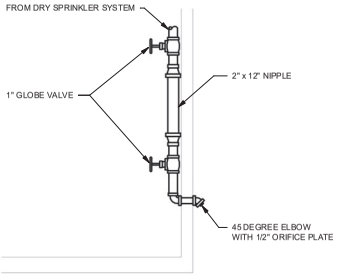
1 FP4.0 WET-DRY SYSTEM RISER



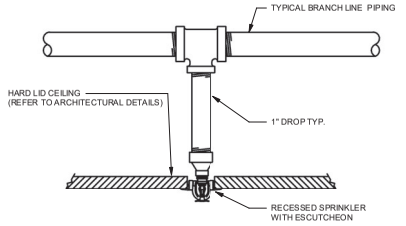
2 FP4.0 UPRIGHT HEAD ON SPRIG UP



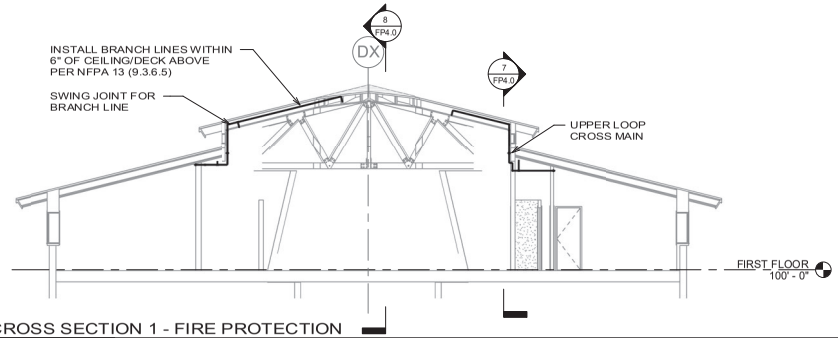
3 FP4.0 HORIZONTAL SIDEWALL SPRINKLER



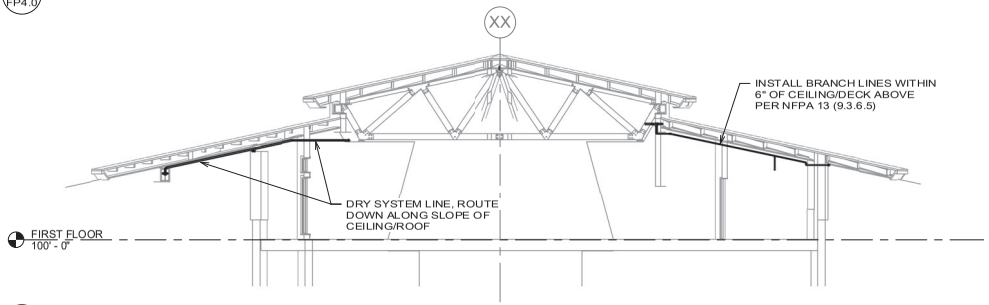
4 FP4.0 DRY SYSTEM - 1 INCH INSPECTOR'S TEST



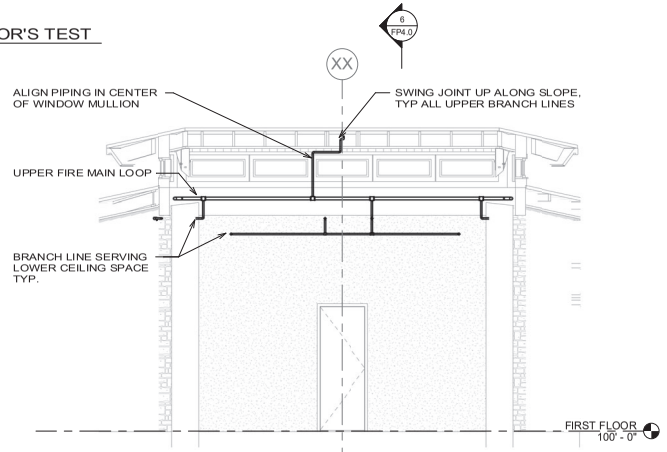
5 FP4.0 PENDENT DROP IN HARD LID CEILING



6 FP4.0 CROSS SECTION 1 - FIRE PROTECTION



8 FP4.0 CROSS SECTION 2 - FIRE PROTECTION



7 FP4.0 UPPER LOOP SECTION - FIRE PROTECTION

Professional Engineer KENTON J. AKERS 18213 WYOMING

DESIGNED:	CK
DRAWN:	CK
TECH REVIEW:	KA
DATE:	12/07/2022
SUB SHEET NO.	FP4.0

TITLE OF SHEET
FIRE PROTECTION DETAILS

FOSSIL BUTTE NATIONAL MONUMENT
WATER SYSTEM IMPROVEMENTS TO MEET FIRE PROTECTION REQUIREMENTS

DRAWING NO.	174
	173823
PMIS/PKG NO.	282711
SHEET	48 OF 60

FIRE ALARM SYMBOL LIST

NOTE: This is a standard symbol list and not all items listed may be used.

Abbreviations

(E)	EXISTING
AHJ	AUTHORITY HAVING JURISDICTION
AUX	AUXILIARY
AWG	AMERICAN WIRE GAUGE
BAS	BUILDING AUTOMATION SYSTEM
C	CONDUIT
CLG	CEILING
CO	CARBON MONOXIDE
COORD	COORDINATE
dB	DECIBEL
DIA	DIAMETER
DIV	DIVISION
DTL	DETAIL
DWG	DRAWING
EA	EACH
EMT	ELECTRICAL METALLIC TUBING
ENCL	ENCLOSURE
FA	FIRE ALARM
FAA	FIRE ALARM ANNUNCIATOR
FACP	FIRE ALARM CONTROL PANEL
FF	FINISHED FLOOR
FMC	FLEXIBLE METAL CONDUIT
FT	FOOT, FEET
GEN	GENERAL
HT	HEIGHT
ID	IDENTIFICATION
IN	INCH, INCHES
LED	LIGHT EMITTING DIODE
LV	LOW VOLTAGE
mA	MILLIAMPERE
MIN	MINIMUM
MISC	MISCHELLANEOUS
N/A	NOT APPLICABLE
NAC	NOTIFICATION APPLINACE CIRCUIT
NTS	NOT TO SCALE
PG	PROTECTIVE GUARD
PNL	PANEL
PVC	POLYVINYL CHLORIDE
PWR	POWER
QTY	QUANTITY
REF	REFERENCE
RFI	REQUEST FOR INFORMATION
SHT	SHEET
SIM	SIMILAR
SLC	SIGNALING LINE CIRCUIT
STD	STANDARD
TBD	TO BE DETERMINED
TYP	TYPICAL
UG	UNDERGROUND
UL	UNDERWRITERS LABORATORIES
V	VOLT, VOLTS
WG	WIREGUARD
WP	WEATHERPROOF

Fire Alarm

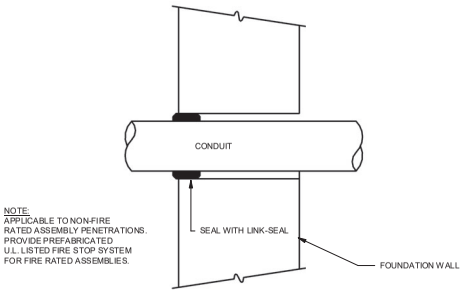
FACP	FIRE ALARM CONTROL PANEL
NAC	NOTIFICATION APPLIANCE CIRCUIT PANEL
FAA	FIRE ALARM ANNUNCIATOR PANEL
DSC	FIRE ALARM CELLULAR COMMUNICATOR
S	SMOKE DETECTOR, DUCT MOUNTED
S	SMOKE DETECTOR (SB = SOUNDER BASE, R = RELAY BASE)
S	SMOKE DETECTOR, WALL MOUNTED
H +F	HEAT DETECTOR (+F = FIXED, HIGH TEMP)
F	PULL STATION
WF	SPRINKLER FLOW SWITCH AND ADDRESSABLE INPUT MODULE
VS	SPRINKLER TAMPER SWITCH AND ADDRESSABLE INPUT MODULE
LS	SPRINKLER LIQUID LEVEL DETECTOR SWITCH AND ADDRESSABLE INPUT MODULE
PS	PRESSURE SWITCH AND ADDRESSABLE INPUT MODULE
PIV	SPRINKLER POST INDICATOR VALVE WITH INPUT MODULE
	SPRINKLER FLOW BELL
	HORN (C = CEILING MOUNTED)
#	HORN/STROBE COMBINATION (# INDICATES MINIMUM CANDELA RATING, C = CEILING MOUNTED)
#	STROBE, CEILING MOUNTED (# INDICATES MINIMUM CANDELA RATING)
#	STROBE, WALL MOUNTED (# INDICATES MINIMUM CANDELA RATING)
AIM	ADDRESSABLE INPUT MODULE
AOM	ADDRESSABLE OUTPUT MODULE
IM	FAULT ISOLATER MODULE
SS	SURGE SUPPRESSOR
T	THERMOSTAT

General

X/X	DETAIL NUMBER AND SHEET LOCATION
X	KEYED NOTE

Raceways

———	CONDUIT
- - - - - -	CONDUIT ROUTED BELOW FLOOR / GRADE



2 FA0.1 FOUNDATION WALL PIPE PENETRATION

FIRE ALARM SCOPE NOTES:

A. MODIFY AND EXTEND THE EXISTING VISITOR CENTER FIRE ALARM SYSTEM TO ACCOMMODATE THE NEW FIRE PUMP, FIRE PUMP BUILDING, AND WET/DRY SPRINKLER SYSTEMS IN THE VISITOR CENTER.

B. PROVIDE CONDUIT AND WIRING OUT TO NEW FIRE PUMP BUILDING TO MONITOR FIRE PUMP.

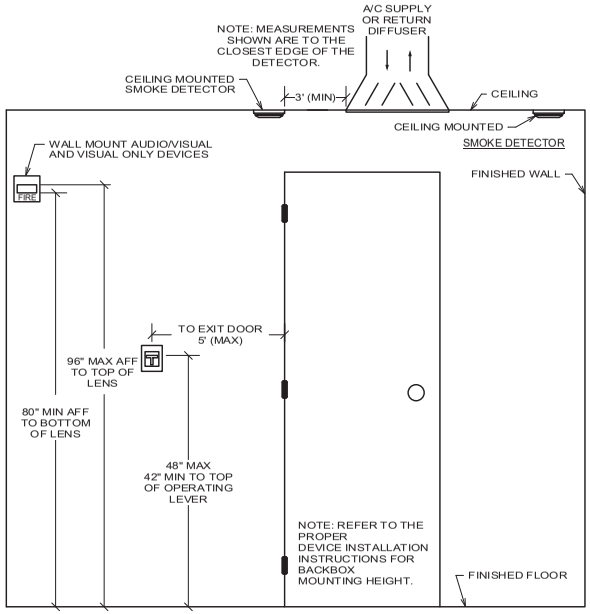
C. PROVIDE PULL STATION AND NOTIFICATION FOR NEW FIRE PUMP BUILDING.

D. PROVIDE MONITOR MODULES IN EXISTING VISITOR CENTER TO MONITOR NEW WET AND DRY FIRE SPRINKLER SYSTEMS.

E. PROVIDE MONITOR MODULES IN EXISTING VISITOR CENTER TO MONITOR NEW NITROGEN GENERATOR SYSTEM.

F. PROVIDE SURGE SUPPRESSORS ON ALL WIRING ENTERING OR EXITING BUILDINGS.

G. PROVIDE SPRINKLER FLOW BELL ON FIRE PUMP BUILDING TO SOUND ON SPRINKLER WATER FLOW.



1 FA0.1 DEVICE MOUNTING HEIGHTS

DESIGNED:	JM
DRAWN:	JM
TECH REVIEW:	KA
DATE:	12/07/2022
SUB SHEET NO.	FA0.1

TITLE OF SHEET
FA SYMBOLS AND GEN NOTES

FOSSIL BUTTE NATIONAL MONUMENT
WATER SYSTEM IMPROVEMENTS TO MEET FIRE PROTECTION REQUIREMENTS

DRAWING NO.	174 173823
PMIS/PKG NO.	282711
SHEET	49 OF 60

40 20 0 40

SCALE OF FEET

1 FA0.9 SITE PLAN - FIRE ALARM

Professional Engineer KENTON J. AKERS 18215 WYOMING

DESIGNED:	JM
DRAWN:	JM
TECH REVIEW:	KA
DATE:	12/07/2022

SUB SHEET NO. FA0.9

TITLE OF SHEET
FIRE ALARM SITE PLAN

FOSSIL BUTTE NATIONAL MONUMENT
WATER SYSTEM IMPROVEMENTS TO MEET FIRE PROTECTION REQUIREMENTS

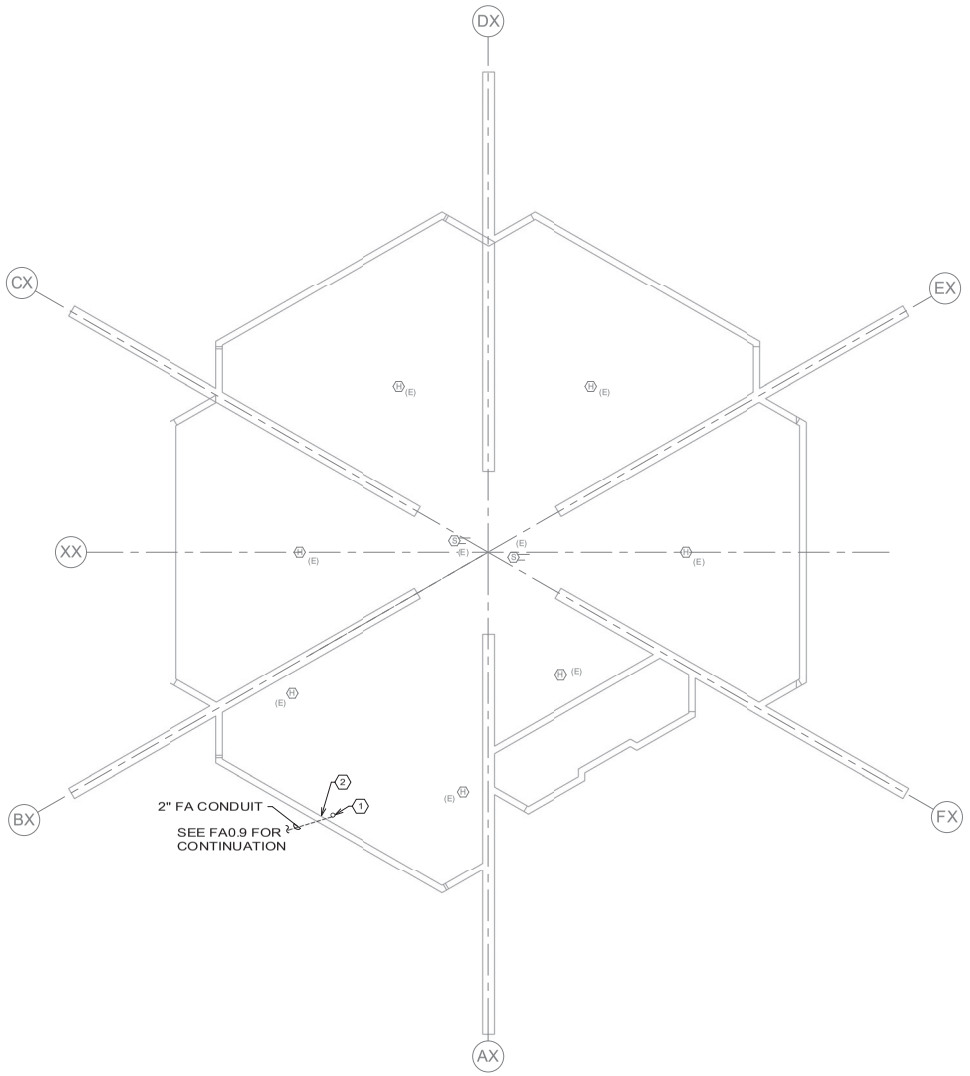
DRAWING NO. 174 173823

PMIS/PKG NO. 282711

SHEET 50 OF 60

SHEET KEYNOTES

1. 2" FIRE ALARM CONDUIT UP TO MECH/ELEC UTILITY ROOM.
2. CORE DRILL THROUGH BUILDING FOUNDATION FOR UNDERGROUND CONDUIT PENETRATION TO BUILDING CRAWL SPACE. SEE DETAIL 2/FA0.1.



1 FA1.0 VISTOR CENTER - CRAWL SPACE - FIRE ALARM

8 0 8 16

SCALE OF FEET

BLDG NORTH

Professional Engineer KENTON J. AKERS 18215 WYOMING

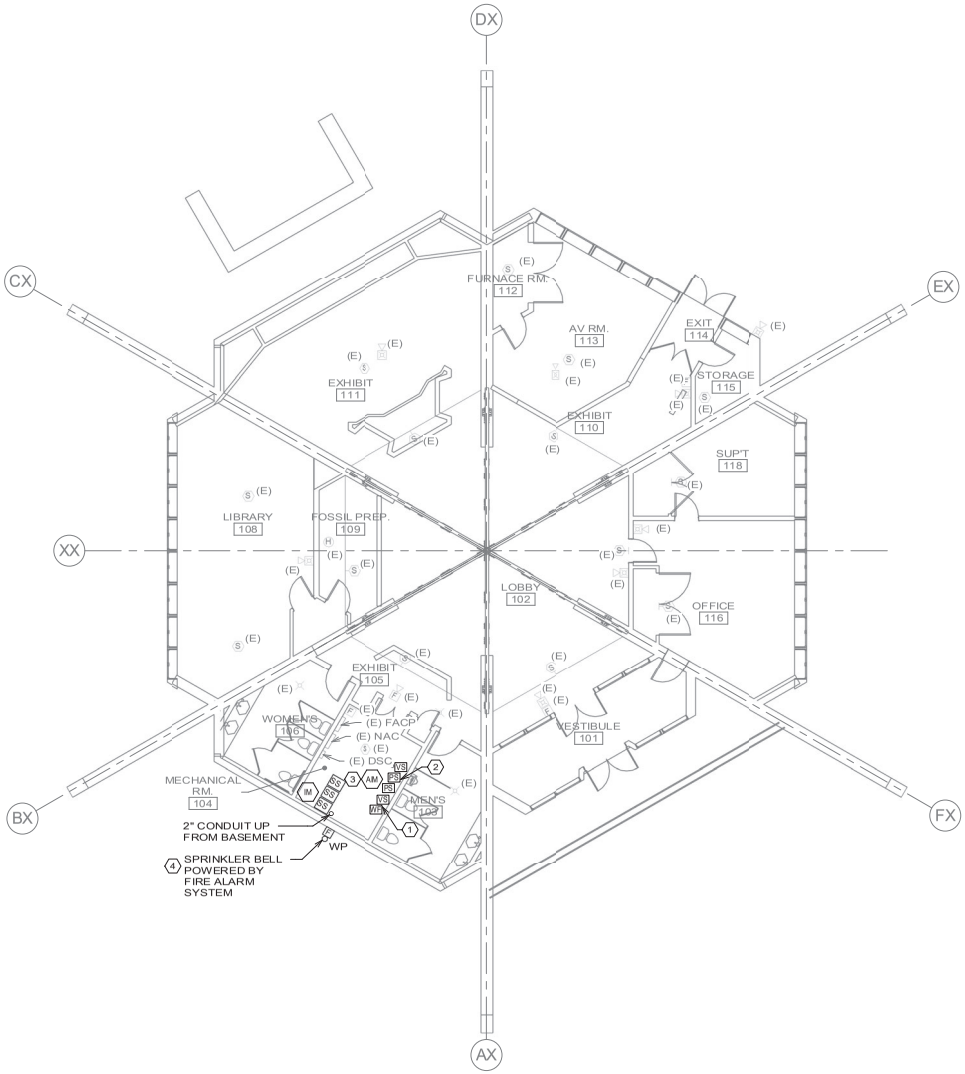
DESIGNED:	JM
DRAWN:	JM
TECH REVIEW:	KA
DATE:	12/07/2022
SUB SHEET NO.	FA1.0

TITLE OF SHEET

FIRE ALARM VISITOR CENTER

FOSSIL BUTTE NATIONAL MONUMENT
WATER SYSTEM IMPROVEMENTS TO MEET FIRE PROTECTION REQUIREMENTS

DRAWING NO.	174 / 173823
PMIS/PKG NO.	282711
SHEET	51 OF 60



SHEET KEYNOTES

1. PROVIDE INPUT MODULES TO MONITOR FIRE SPRINKLER RISER FLOW SWITCH AND VALVE TAMPER SWITCH.
2. PROVIDE INPUT MODULES TO MONITOR DRY SPRINKLER SYSTEM PRESSURE SWITCHES AND VALVE TAMPER SWITCH.
3. PROVIDE INPUT MODULE TO MONITOR NITROGEN GENERATOR SYSTEM BYPASS MODE ALARM, POWER MONITORING, AND LEAK MONITORING.
4. FIRE SPRINKLER BELL TO ACTIVATE ON FIRE SPRINKLER WATER FLOW. BELL TO BE NON-SILENCEABLE.

8 0 8 16
SCALE OF FEET

BLDG NORTH

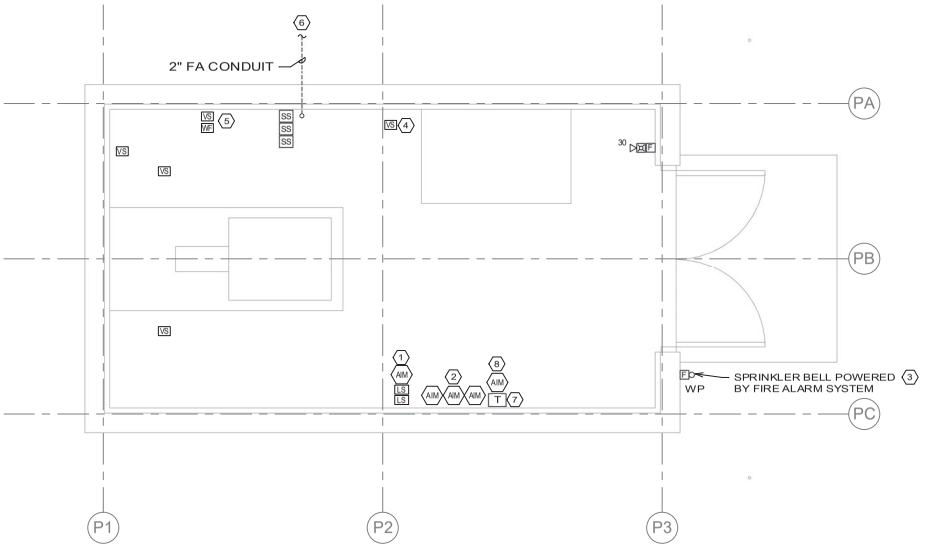
1 FA1.1 VISITOR CENTER FLOOR PLAN - FIRE ALARM

Professional Engineer KENTON J. AKENS 18213 WYOMING

DESIGNED:	SUB SHEET NO.	TITLE OF SHEET	DRAWING NO.
JM	FA1.1	FIRE ALARM VISITOR CENTER	174 173823
CADD: JM			PMIS/PKG NO. 282711
TECH REVIEW: KA		FOSSIL BUTTE NATIONAL MONUMENT WATER SYSTEM IMPROVEMENTS TO MEET FIRE PROTECTION REQUIREMENTS	SHEET 52 OF 60
DATE: 12/07/2022			

SHEET KEYNOTES

1. PROVIDE INPUT MODULES TO MONITOR TANK LOW WATER AND HIGH WATER LEVEL INDICATOR, AND WATER TEMP SENSOR.
2. PROVIDE INPUT MODULES TO MONITOR FIRE PUMP CONTROLLER FOR ENGINE RUNNING, CONTROLLER IN MANUAL, AND ENGINE/CONTROLLER TROUBLE.
3. FIRE SPRINKLER BELL TO ACTIVATE ON FIRE SPRINKLER WATER FLOW. BELL TO BE NON-SILENCEABLE.
4. PROVIDE INPUT MODULE TO MONITOR TEST HEADER VALVE TAMPER SWITCH.
5. PROVIDE INPUT MODULES TO MONITOR FIRE SPRINKLER FLOW SWITCH AND VALVE TAMPER SWITCH.
6. FIRE ALARM CONDUIT AND WIRING FROM VISITOR CENTER FIRE ALARM CONTROL PANEL.
7. PROVIDE DEDICATED THERMOSTAT FOR MONITORING PUMP HOUSE TEMPERATURE.
8. PROVIDE INPUT MODULE TO MONITOR PUMP HOUSE TEMPERATURE.



1 FA2.0 PUMP HOUSE FLOOR PLAN - FIRE ALARM

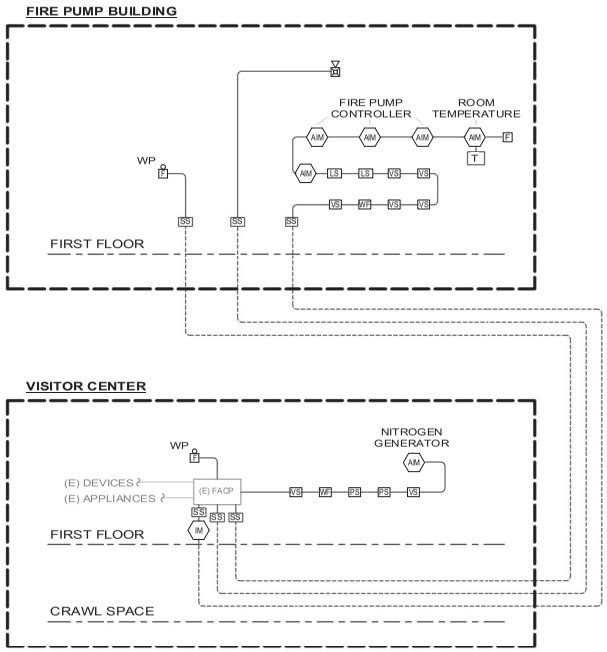
SCALE OF FEET

BLDG NORTH

Professional Engineer KENTON J. AKERS 18215 WYOMING	DESIGNED: JM DRAWN: JM TECH REVIEW: KA DATE: 12/07/2022	SUB SHEET NO. FA2.0	TITLE OF SHEET: FIRE ALARM PUMP HOUSE FLOOR PLAN FOSSIL BUTTE NATIONAL MONUMENT WATER SYSTEM IMPROVEMENTS TO MEET FIRE PROTECTION REQUIREMENTS	DRAWING NO. 174 173823 PMIS/PKG NO. 282711 SHEET 53 OF 60

GENERAL NOTES

1. ONE-LINE IS DIAGRAMMATICAL AND MAY NOT SHOW ALL DEVICES, APPLIANCES, AND EQUIPMENT REQUIRED FOR A COMPLETE SYSTEM. SEE FLOOR PLANS FOR LOCATIONS AND QUANTITIES.



1 FA5.1 FIRE ALARM ONE-LINE DIAGRAM

Professional Engineer KENTON J. AKERS 18215 WYOMING	DESIGNED: JM DRAWN: JM TECH REVIEW: KA DATE: 12/07/2022	SUB SHEET NO. FA5.1	TITLE OF SHEET: FIRE ALARM RISER DIAGRAM FOSSIL BUTTE NATIONAL MONUMENT WATER SYSTEM IMPROVEMENTS TO MEET FIRE PROTECTION REQUIREMENTS	DRAWING NO. 174 173823 PMIS/PKG NO. 282711 SHEET 54 OF 60

ELECTRICAL SYMBOL LIST

NOTE: This is a standard symbol list and not all items listed may be used.

Abbreviations

AFC	ABOVE FINISHED CEILING
AFF	ABOVE FINISHED FLOOR
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
AWG	AMERICAN WIRE GAUGE
A	AMPERES, AMBER
AHJ	AUTHORITY HAVING JURISDICTION
AIC	AVAILABLE INTERRUPTING CAPACITY
BAS	BUILDING AUTOMATION SYSTEM
CA	CABLE
CAT	CATEGORY
CLG	CEILING
C	CONDUIT, CLOSE, CONTROL
COORD	COORDINATE
CU	COPPER
dB	DECIBEL
(X)	DEMOLISH
DTL	DETAIL
DIA	DIAMETER
DIM	DIMENSION
DIV	DIVISION
DN	DOWN
DWG	DRAWING
EA	EACH
EMT	ELECTRICAL METALLIC TUBING
EL	ELEVATION
E	EMERGENCY
EF	EXHAUST FAN
(E)	EXISTING
FA	FIRE ALARM
FMC	FLEXIBLE METAL CONDUIT
FT	FOOT, FEET
FBO	FURNISHED BY OTHERS
G, GND	GROUND
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GFI	GROUND FAULT INTERRUPTER
GFP	GROUND FAULT PROTECTION
HT	HEIGHT
ID	IDENTIFICATION
IN	INCH, INCHES
IEEE	INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS
IG	ISOLATED GROUND
KV	KILOVOLT
KVA	KILOVOLT AMPERES
KW	KILOWATT
LED	LIGHT EMITTING DIODE
LFMC	LIQUIDTIGHT FLEXIBLE METAL CONDUIT
LV	LOW VOLTAGE
MOCP	MAXIMUM OVERCURRENT PROTECTION
MIN	MINIMUM
MCA	MINIMUM CIRCUIT AMPS
MISC	MISCELLANEOUS
MCC	MOTOR CONTROL CENTER
MT, MTD	MOUNT, MOUNTED
NEC	NATIONAL ELECTRIC CODE
NESC	NATIONAL ELECTRIC SAFETY CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATI
N	NEUTRAL
N/A	NOT APPLICABLE
N.I.C.	NOT IN CONTRACT
NTS	NOT TO SCALE
OC	ON CENTER
OFCI	OWNER FURNISHED, CONTRACTOR INSTALLED
PNL	PANEL
PH	PHASE
PVC	POLY-VINYL-CHLORIDE
PWR	POWER
QTY	QUANTITY
(R)	RELOCATE
RFI	REQUEST FOR INFORMATION
REQD	REQUIRED
RMC	RIGID METAL CONDUIT
RM	ROOM
SHT	SHEET
STD	STANDARD
SPD	SURGE PROTECTION DEVICE
SWBD	SWITCHBOARD
TBD	TO BE DETERMINED
XFMR	TRANSFORMER
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSOR
TYP	TYPICAL
UL	UNDERWRITERS LABORATORIES
UPS	UNINTERRUPTIBLE POWER SUPPLY
UON	UNLESS OTHERWISE NOTED
V	VOLTS, VOLTAGE
WP	WEATHERPROOF
W/	WITH
W/O	WITHOUT

Connections / Equipment

- COMBINATION ADJUSTABLE FREQUENCY DRIVE WITH SAFETY DISCONNECT SWITCH
- COMBINATION MOTOR STARTER/FUSED DISCONNECT SWITCH
- HEAVY DUTY FUSED DISCONNECT SWITCH
- MOTOR CONNECTION
- NON-FUSED DISCONNECT SWITCH
- TRANSFORMER
- FIRE SMOKE DAMPER
- SMOKE DAMPER
- CEILING MOUNTED JUNCTION BOX
- FLOOR MOUNTED JUNCTION BOX
- WALL-MOUNTED JUNCTION BOX

General

- DETAIL NUMBER AND SHEET LOCATION
- XX-X LOCATION — EQUIPMENT IDENTIFICATION
- KEYED NOTE
- DEMOLISH
- EXISTING WORK
- NEW WORK

Lighting

- SURFACE OR PENDANT MOUNTED 1' X 4' LUMINAIRE
- SURFACE OR PENDANT MOUNTED 1' X 4' LUMINAIRE CONNECTED TO EMERGENCY/LIFE SAFETY CIRCUIT OR WITH INTEGRAL EMERGENCY BATTERY CONNECTED TO UNSWITCHED CIRCUIT
- SURFACE OR PENDANT MOUNTED STRIPLIGHT

Miscellaneous

- #10 / B-27,29,31. — BRANCH CIRCUIT WIRING. ARROW INDICATES HOME RUN TO PANEL WITH CIRCUITS AS NOTED. WIRE SIZE IS #12 AWG MINIMUM UNLESS NOTED OTHERWISE. SHORT TICK MARKS INDICATE PHASE CONDUCTORS. LONG TICK MARKS INDICATE NEUTRAL CONDUCTORS. A SINGLE CURVED TICK MARK INDICATES INSULATED GREEN GROUND CONDUCTOR. SECOND CURVED TICK MARK INDICATES "ISOLATED GROUND" (GREEN INSULATION WITH YELLOW STRIPE) CONDUCTOR.
- BRANCH PANEL
- CIRCUIT BREAKER
- DRY TYPE TRANSFORMER
- FLUSH WALL MOUNTED BRANCH PANEL
- GB — GROUND BAR
- MAIN DISTRIBUTION PANEL / SUB DISTRIBUTION PANEL

Raceways

- CONDUIT CONCEALED IN WALL OR CEILING SPACE
- CONDUIT ROUTED BELOW FLOOR / GRADE
- CONDUIT ELLED DOWN
- CONDUIT ELLED UP
- CONDUIT/WIRING CONTINUATION
- CONDUIT/WIRING STUBBED OUT WITH END CAP OR INSULATED PLASTIC BUSHING
- FLEXIBLE CONDUIT

Switches and Receptacles

- DUPLEX RECEPTACLE (MULTIPLE LETTERS INDICATE MULTIPLE OPTIONS)
  A = ABOVE COUNTER
  B = CLOCK HANGER
  C = FLUSH CEILING MOUNTED
  E = EMERGENCY
  F = ARC FAULT PROTECTED BY BREAKER IN PANEL
  G = GROUND FAULT CIRCUIT INTERRUPTER
  H = HOSPITAL GRADE
  K = CHILD RESISTANT COVER
  L = ISOLATED GROUND
  P = PENDANT MOUNTED WITH CORD GRIPS. VERIFY PENDANT LENGTH
  R1 = HALF SWITCHED BY OCCUPANCY SENSOR RELAY
  R2 = FULLY SWITCHED BY OCCUPANCY SENSOR RELAY
  S = SPLIT WIRED
  T = TAMPER RESISTANT SHUTTERED RECEPTACLE
  U = USB PORT(S)
  W = WEATHERPROOF CONTINUOUS USE COVER, GFCI PROTECTED, WITH WEATHER-RESISTANT RECEPTACLE
- DOUBLE DUPLEX RECEPTACLE. SEE LETTER CODE LIST AT DUPLEX RECEPTACLE FOR OPTIONS
- EQUIPMENT ELECTRICAL CONNECTION
- SPECIAL PURPOSE RECEPTACLE. LETTER CODE DENOTES RECEPTACLE CONFIGURATION
  LX-XXR = NEMA CONFIGURATION TWIST-LOCK RECEPTACLE
  X-XXR = NEMA CONFIGURATION STRAIGHT BLADE RECEPTACLE
  P = PENDANT MOUNT WITH CORD GRIPS. VERIFY PENDANT LENGTH
  X = COORDINATE RECEPTACLE CONFIGURATION WITH EQUIPMENT BEING SUPPLIED
- $ — SINGLE POLE SWITCH
  2 = DOUBLE POLE SWITCH
  3 = THREE-WAY SWITCH
  4 = FOUR-WAY SWITCH
  a THRU z (LOWERCASE) = LUMINAIRE CONTROL DESIGNATION
  D = DIMMER
  F = FAN SPEED CONTROL
  K = KEY OPERATED SWITCH
  L = LIGHTED HANDLE
  M = MANUAL MOTOR STARTER WITH THERMAL OVERLOAD
  P = SWITCH WITH PILOT LIGHT
  S = SENTRY SWITCH
  T = INTERVAL TIMER
  W = WEATHERPROOF SWITCH
  V = LOW VOLTAGE SWITCH

GENERAL ELECTRICAL NOTES

A. CONSULT ALL DRAWINGS AND SPECIFICATIONS IN THIS PROJECT AND BECOME FAMILIAR WITH ALL EQUIPMENT TO BE INSTALLED. COORDINATE ALL ASPECTS OF THE CONTRUCTION WITH THE OTHER TRADES ON THE JOB TO ENSURE THAT ALL WORK AND MATERIALS REQUIRED PROVIDE A COMPLETE AND OPERATIONAL FACILITY ARE INCLUDED IN THE BID.

SHEET INDEX

E0.1 ELEC SYMBOLS AND GEN NOTES

E0.9 ELECTRICAL SITE PLAN

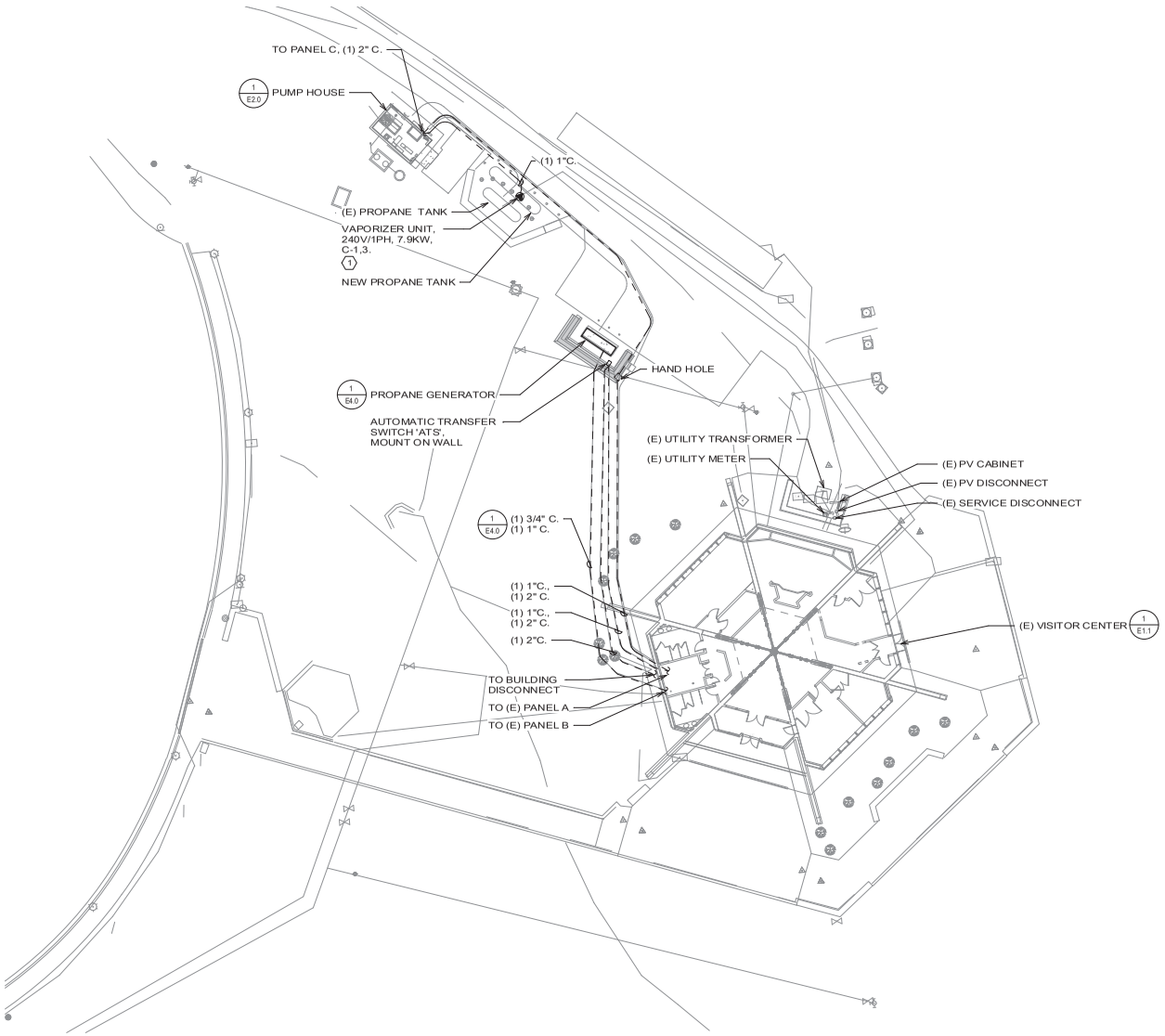
E1.1 ELECTRICAL VISITOR CENTER
E2.0 ELECTRICAL PUMP HOUSE FLOOR PLAN

E4.0 ELECTRICAL DETAILS

E5.1 ELECTRICAL SINGLE LINE DIAGRAMS

Professional Engineer — TRAVIS T. PRUCHA — 15568 — WYOMING

DESIGNED:	KCL
DRAWN:	KCL
TECH REVIEW:	MKO
DATE:	12/07/2022
SUB SHEET NO.	E0.1
TITLE OF SHEET	ELEC SYMBOLS AND GEN NOTES
	FOSSIL BUTTE NATIONAL MONUMENT WATER SYSTEM IMPROVEMENTS TO MEET FIRE PROTECTION REQUIREMENTS
DRAWING NO.	174 / 173823
PMIS/PKG NO.	282711
SHEET	55 OF 60



1 E0.9 SITE PLAN - POWER

SHEET KEYNOTES

1. PROVIDE CONNECTION TO VAPORIZER UNIT PER DIVISION 22 AND MANUFACTURER SHOP DRAWING REQUIREMENTS. CIRCUIT TO PANEL 'C' WITH (2) #6 CU, (1) #10 CU GROUND., IN 1" CONDUIT. PROVIDE 45A/2P BREAKER IN PANEL 'C'.

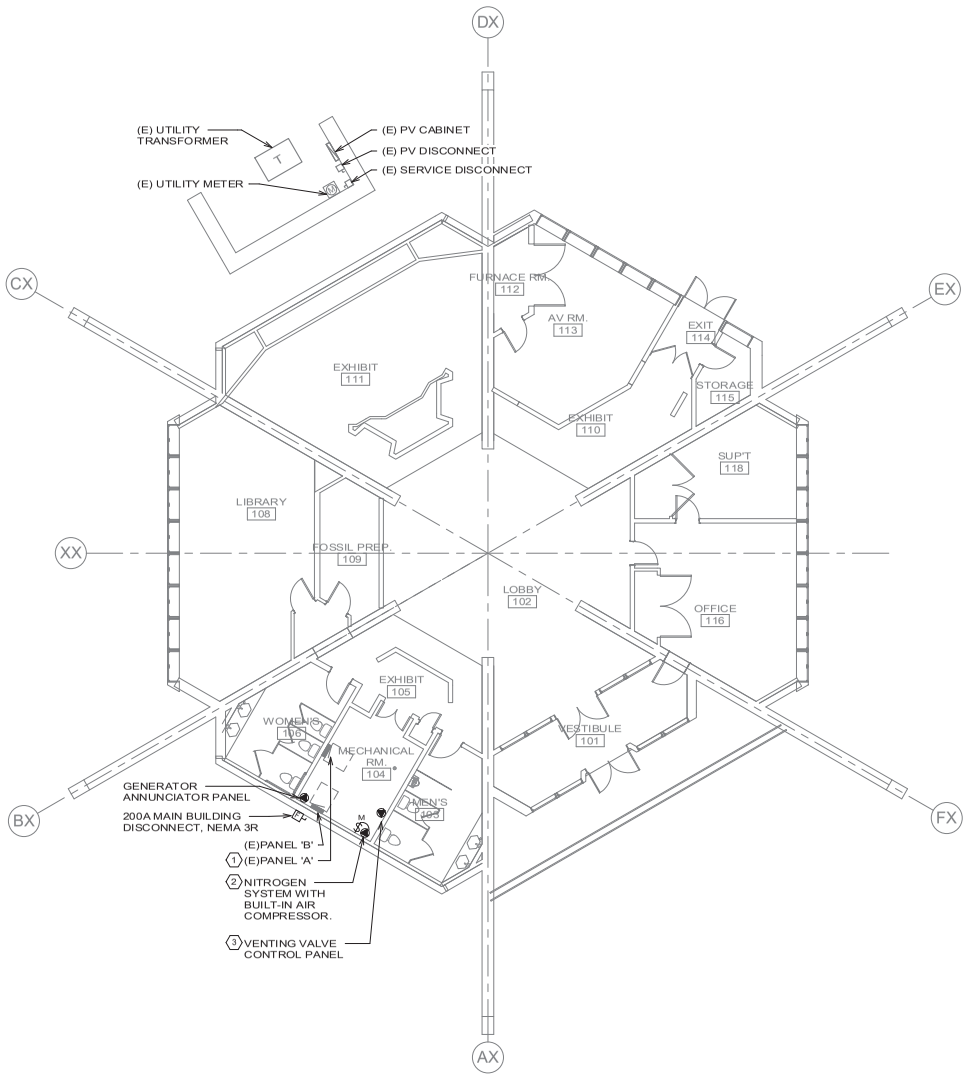
GENERAL ELECTRICAL NOTES

A. REFERENCE 2/E4.0

40 20 0 40

SCALE OF FEET

Professional Engineer THANH T. PHUONG 15568 WYOMING	DESIGNED: KCL CADD: KCL TECH REVIEW: MKO DATE: 12/07/2022	SUB SHEET NO. E0.9	TITLE OF SHEET ELECTRICAL SITE PLAN FOSSIL BUTTE NATIONAL MONUMENT WATER SYSTEM IMPROVEMENTS TO MEET FIRE PROTECTION REQUIREMENTS	DRAWING NO. 174 173823 PMIS/PKG NO. 282711 SHEET 56 OF 60



1 E1.1 VISITOR CENTER FLOOR PLAN - POWER

GENERAL ELECTRICAL NOTES

A. EXISTING EQUIPMENT, DEVICES, AND LIGHTING IN VISITORS CENTER TO REMAIN.

⬡ SHEET KEYNOTES

1. (2) EXISTING 20A/1P CIRCUITS IN PANEL 'A' TO BE RETERMINATED IN PANEL 'B' TO CREATE SPACE FOR (1) NEW 70A/2P BREAKERS TO BE PROVIDED IN PANEL 'A'. NEW BREAKER TO MATCH EXISTING MANUFACTURER AND AIC RATING. REVISE IDENTIFICATION LABELS ON CONDUIT / JUNCTION BOXES / COVER PLATES OF RELOCATED CIRCUITS.
2. PROVIDE CONNECTION TO NITROGEN SYSTEM PER DIVISION 21. CIRCUIT TO PANEL 'B-23'. PROVIDE (1) NEW 20A/1P BREAKER IN PANEL 'B'. NEW BREAKER TO MATCH EXISTING MANUFACTURER AND AIC RATING.
3. PROVIDE CONNECTION TO FIRE RISER VENTING VALVE CONTROL PANEL PER DIVISION 21. CIRCUIT TO PANEL 'B-31'. PROVIDE (1) NEW 20A/1P BREAKER IN PANEL 'B'. NEW BREAKER TO MATCH EXISTING MANUFACTURER AND AIC RATING.

8 0 8 16
SCALE OF FEET

BLDG NORTH

Professional Engineer THANH T. PHUONG 15568 WYOMING

DESIGNED:	KCL
DRAWN:	KCL
TECH REVIEW:	MKO
DATE:	12/07/2022
SUB SHEET NO.	E1.1
TITLE OF SHEET	ELECTRICAL VISITOR CENTER
	FOSSIL BUTTE NATIONAL MONUMENT WATER SYSTEM IMPROVEMENTS TO MEET FIRE PROTECTION REQUIREMENTS
DRAWING NO.	174 173823
PMIS/PKG NO.	282711
SHEET	57 OF 60

GENERAL ELECTRICAL NOTES

A. TYPE 'A': LED 4-FT LENSED LINEAR LUMINAIRE, SURFACE / PENDANT MOUNT, 85 CRI, 4000K, 4000 NOMINAL LUMENS, 40 WATTS, 120 VOLT. MANUFACTURERS: LITHONIA LIGHTING CLX-LED SERIES, H.E. WILLAIMS 75 LED SERIES, COLUMBIA LIGHTING LCL SERIES OR APPROVED EQUIVALENT.

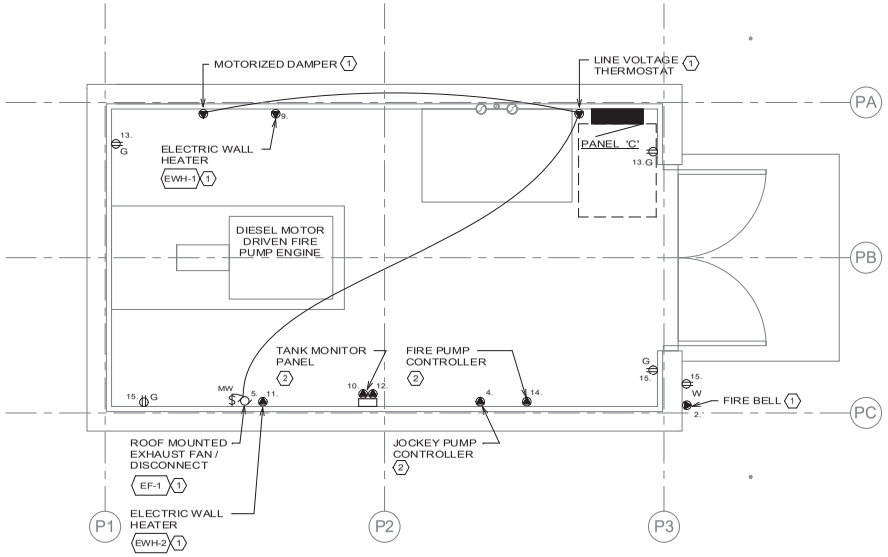
B. TYPE 'AE': SAME AS TYPE 'A' WITH INTEGRAL EMERGENCY BATTERY BACKUP WITH MINIMUM 1200 NOMINAL LUMEN OUTPUT.

C. CIRCUITS AS INDICATED ON PLAN ARE SERVED FROM PANEL 'C'.

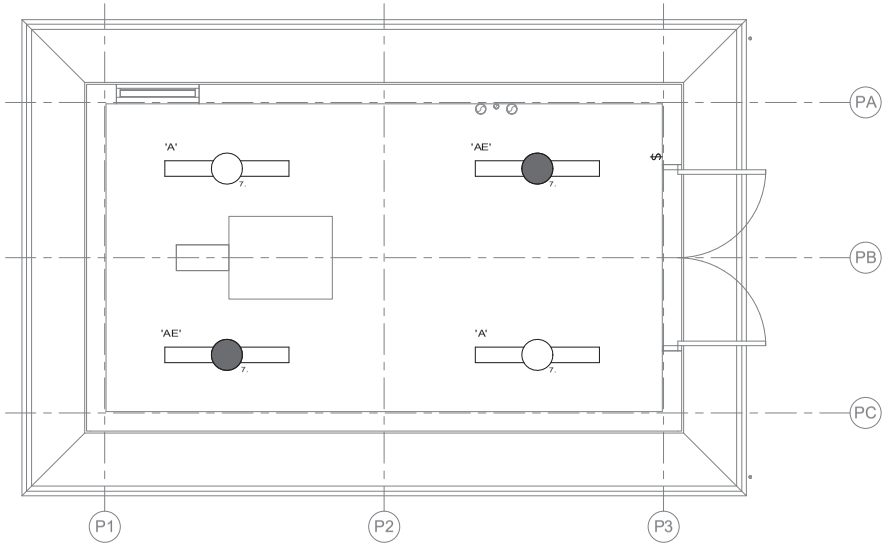
SHEET KEYNOTES

1. PROVIDE CONNECTION TO MECHANICAL EQUIPMENT AND ASSOCIATED CONTROLS PER MANUFACTURER REQUIREMENTS. REFER TO DIVISION 23 FOR ADDITIONAL INFORMATION AND FINAL LOCATION. CIRCUIT TO PANEL 'C'.

2. PROVIDE CONNECTION TO JOCKEY PUMP, GENERATOR BATTERIES, BLOCK HEATER, PUMP CONTROLLERS, TANK MONITORS, AND FIRE BELL PER DIVISION 21. CIRCUIT TO PANEL 'C'.



1 E2.0 PUMP HOUSE FLOOR PLAN - POWER

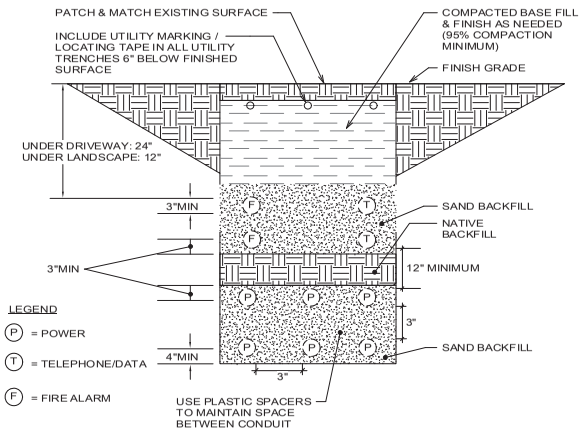


2 E2.0 PUMP HOUSE REFLECTED CEILING PLAN - LIGHTING

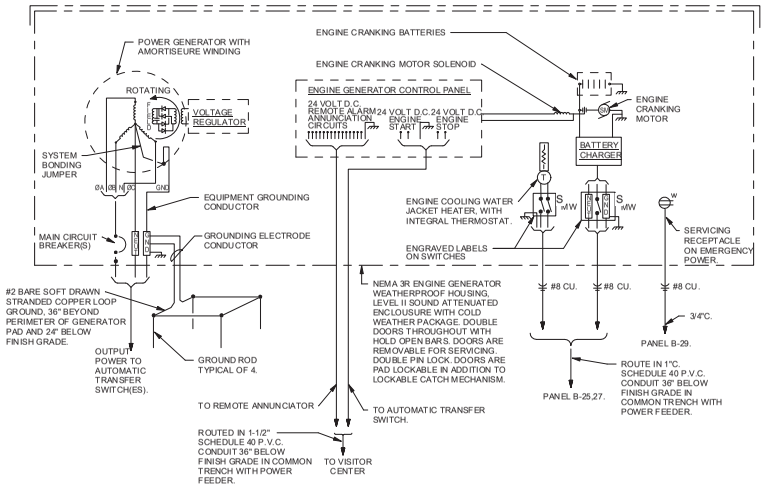
2 0 2 4
SCALE OF FEET

BLDG NORTH

Professional Engineer THANH T. PHUONG 15568 WYOMING	DESIGNED: KCL CADD: KCL TECH REVIEW: MKO DATE: 12/07/2022	SUB SHEET NO. E2.0	TITLE OF SHEET ELECTRICAL PUMP HOUSE FLOOR PLAN FOSSIL BUTTE NATIONAL MONUMENT WATER SYSTEM IMPROVEMENTS TO MEET FIRE PROTECTION REQUIREMENTS	DRAWING NO. 174 173823 PMIS/PKG NO. 282711 SHEET 58 OF 60



2 E4.0 UTILITY TRENCH



1 E4.0 EXTERIOR ENGINE GENERATOR DIAGRAM (SEPARATELY DERIVED SYSTEM)

Professional Engineer
THANH T. PHUONG
15568
WYOMING

DESIGNED:	KCL
DRAWN:	KCL
TECH REVIEW:	MKO
DATE:	12/07/2022
SUB SHEET NO.	E4.0
TITLE OF SHEET	ELECTRICAL DETAILS
	FOSSIL BUTTE NATIONAL MONUMENT WATER SYSTEM IMPROVEMENTS TO MEET FIRE PROTECTION REQUIREMENTS
DRAWING NO.	174 173823
PMIS/PKG NO.	282711
SHEET	59 OF 60

FEEDER SCHEDULE

C,S,X C=Conduit only
S=Service secondary
X=Seperately derived system
G=Upsized ground

(A) Abandon

(E) Existing

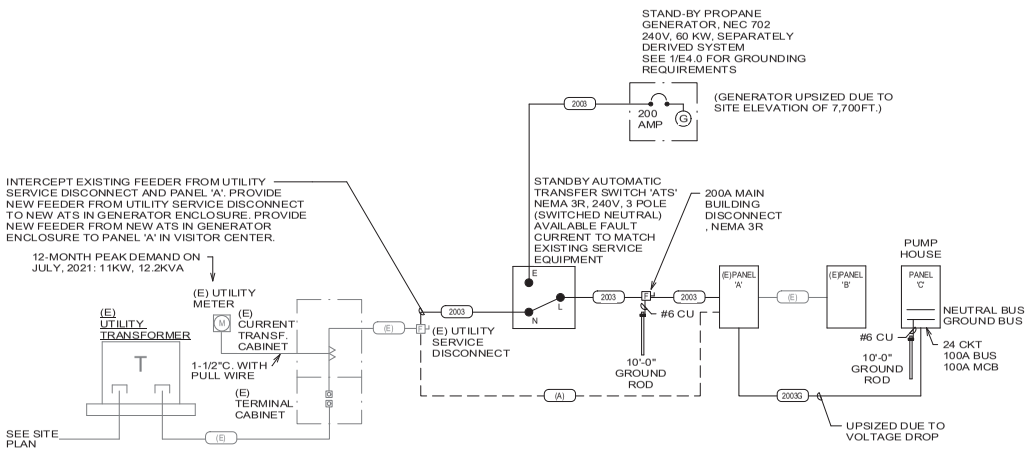
2003 3 #3/0 CU, 1 #6 CU GND., IN 2" C.

2003G 3 #3/0 CU, 1 #2 CU GND., IN 2" C.

Short Circuit Calculations	
Transformer kVA	50 kVA
Tranformer V_L-L	240 V 1 phase, 3 wire
ifla = kVAx1000 / V_L-Lx1.732	120 A
Isc	7,290 A
%Z transformer	0.9977
f factor = 1.732 x l x Isc / C x n x V_L-N	
where l = conductor length, C = constant for conductors per manufacturer Eaton table, and n = number of parallel runs	
M = 1/(1+f)	
Isc = Isc x M	

Equipment Name	Isc upstream equipment	length	C	n	f	M	Isc
Main Service Disconnect	7,290	10	13923	2	0.0218	0.978665	**7,134**
ATS	7,134	35	13923	2	0.074671	0.930517	**6,639**
Main Building Disconnect	6,639	106	13923	2	0.210433	0.826151	**5,485**
Panel A	5,485	10	13923	2	0.016401	0.983864	**5,396**
Panel C	5,485	252	18594	1	0.618953	0.617683	**3,388**

VOLTAGE DROP CALCULATIONS							
SINGLE PHASE	VOLTAGE	# OF SETS WIRES	WIRE SIZE	AMPACITY	LENGTH	VOLTAGE DROP	% VOLTAGE DROP	3% TOLERANCE MET?
MAIN SERVICE DISCONNECT TO ATS	240	1	3/0	200 A	80 Feet	1.07	0.45	YES
ATS TO MAIN BUILDING DISCONNECT	240	1	3/0	200 A	106 Feet	3.25	1.36	YES
MAIN BUILDING DISCONNECT TO PANEL A	240	1	3/0	200 A	10 Feet	0.31	0.13	YES
PANEL A TO PANEL C	240	1	3/0	70 A	252 Feet	2.71	1.13	YES



1 E5.1 ONE-LINE POWER DISTRIBUTION DIAGRAM

(E) Panel 'A'

2019-0261

120/240V, 1Ph, 3W.; 225A Bus with Main Lug Only Surface Mounted Panelboard

Ckt. No.	Description / Location	Load (VA)	Type	C.B. A/Pole	Note	Ph.	Note	C.B. A/Pole	Load (VA)	Type	Description / Location	Ckt. No.
1	(E)HEAT TRACE			20/1		A		20/1			(E)LIGHTS	2
3	(E)FOSSIL PREP LIGHTS			20/1		C		20/1			(E)LIGHTS	4
5	(E)OFFICE LIGHTS ADMIN			20/1		A		20/1			(E)EMERGENCY LIGHTS	6
7	(E)LIGHTS			20/1		C		30/1			(E)LIBRARY & STORAGE	8
9	(E)RESTROOM FAN			20/1		A		20/1			(E)MECHANICAL ROOM	10
11	(E)FOSSIL PREP RECEPTACLES			20/1		C		30/1			(E)PARKING & WALKWAY LIGHTS	12
13	(E)FURNACE B			20/1		A		20/1			(E)AIR COMPRESSOR	14
15	(E)FURNACE A			20/1		C		20/1			(E)PHONE SYSTEM	16
17	(E)WATER HEATER			20/1		A		20/1			(E)RECEPTACLES	18
19	(E)LIBRARY			20/1		C		20/1			(E)RECEPTACLES	20
21	(E)RECEPTACLES			20/1		A		20/1			(E)MICROWAVE LIBRARY	22
23	(E)UPS SYSTEM			30/2		C		30/2			(E)UPS BY-PASS	24
25	---			-		A		-			---	26
27	(E)RECEPTACLES			50/2		C		20/1			(E)RECEPTACLES	28
29	(E)RECEPTACLES			-		A		20/1			(E)RECEPTACLES	30
31	(E)FIRE & INSTRUSION PANEL			30/2		C		20/1			(E)RECEPTACLES IN CRAWL SPACE	32
33	(E)LIGHTS IN CRAWL SPACE			-		A		20/1			(E)ENGINE HEATER PEDISTAL	34
35	(E)ENGINE HEATER PEDISTAL			20/2		C		20/1			(E)ENGINE HEATER PEDISTAL	36
37	(E)ENGINE HEATER PEDISTAL			-		A		20/1			(E)FOSSIL EXHIBIT	38
39	(E)SUB PANEL B			100/2		C	1,2	**100/2**			(R)TRACK LIGHTS / (N) SUB PANEL C	40
41	---			-		A	1,2	-			(R)TRACK LIGHTS / (N) SUB PANEL C	42

Connected Load: Ph. A 0 VA 0 Amps
Connected Load: Ph. C 0 VA 0 Amps
Panel Connected Load: 0.0 KVA 0.0 Amps
Sub-Fed Connected Load: 0.0 KVA 0.0 Amps
Total Demand Load: 0.0 **KVA** 0.0 **Amps**

Notes:
1. RELOCATE CIRCUIT SERVING TRACK LIGHTS TO PANEL B-28,30. PROVIDE NEW BREAKER TO SERVE NEW PANEL C.
2. NEW BREAKER TO MATCH EXISTING MANUFACTURER AND AIC RATING

Accessories:

(E) Panel 'B'

2019-0261

120/240V, 1Ph, 3W.; 225A Bus with Main Lug Only Surface Mounted Panelboard

Ckt. No.	Description / Location	Load (VA)	Type	C.B. A/Pole	Note	Ph.	Note	C.B. A/Pole	Load (VA)	Type	Description / Location	Ckt. No.
1	(E)MEN'S'S BATHROOM LIGHTS			15/1		A		20/1			(E)LOBBY TRUE LIGHTS	2
3	(E)LADIES' BATHROOM LIGHTS			15/1		C		20/1			(E)LOBBY TRUE LIGHTS	4
5	(E)AUTO DOOR OPENERS			20/1		A		20/1			(E)OUTLETS, COMPUTER CLOSET	6
7	(E)WATER HEATER			20/2		C		20/1			(E)WATER HEATER	8
9	---			-		A		-			---	10
11	(E)3D TERRAIN EXHIBIT			20/1		C		20/1			(E)ADA DOOR OPENERS FRONT	12
13	(E)LIBRARY OUTLET (TV+DVD)			20/1		A		20/1			(E)VIDEO ROOM	14
15	(E)LIBRARY OUTLET			15/1		C		20/1			(E)VIDEO ROOM	16
17	(E)TILT CASELIGHTS, AIR FILTER, TRACK LTS			20/1		A		20/1			(E)WATER HEATER, PREP RM + LIBRARY	18
19	(E)RIGHT DIARAMA OUTLET			15/1		C		15/1			(E)LEFT DIARAMA OUTLET	20
21	(E)HVAC ZONE PANEL			20/1		A		20/1			(E)PARKING LOT EXHIBIT OUTLETS	22
23	**NITROGEN SYSTEM**			**20/1**	1	C		20/1			(E)PARKING LOT EXHIBIT LIGHTS	24
25	**GENERATOR HEATER**	250	H	**20/1**	1	A		20/1			(E)HEAT TRACE	26
27	**GENERATOR BATTERY CHARGER**	100	G	**20/1**	1	C	1	**20/1**			**TRACK LIGHTS**	28
29	**GENERATOR RECEPT/LIGHTS**	200	R	**20/1**	1	A	1	**20/1**			**TRACK LIGHTS**	30
31	**VENTING VALVE CONTROL PANEL**	100	G	**20/1**	1	C					(E)SPACE	32
33	(E)SPACE					A					(E)SPACE	34
35	(E)SPACE					C					(E)SPACE	36
37	(E)SPACE					A					(E)SPACE	38
39	(E)SPACE					C					(E)SPACE	40
41	(E)SPACE					A					(E)SPACE	42

Connected Load: Ph. A 450 VA 4 Amps
Connected Load: Ph. C 200 VA 2 Amps
Panel Connected Load: 0.7 KVA 2.7 Amps
Sub-Fed Connected Load: 0.0 KVA 0.0 Amps
Total Demand Load: 0.7 **KVA** 2.7 **Amps**

Notes:
1. NEW BREAKER TO MATCH EXISTING MANUFACTURER AND AIC RATING.

Accessories:

Panel 'C'

2019-0261

120/240V, 1Ph, 3W.; 100A Bus with 100A Main Circuit Breaker Surface Mounted Panelboard with an Available Fault Current of 8145A RMS

Ckt. No.	Description / Location	Load (VA)	Type	C.B. A/Pole	Note	Ph.	Note	C.B. A/Pole	Load (VA)	Type	Description / Location	Ckt. No.
1	VAPORIZER	3,936	M	4/5/2		A		20/1	20	G	FIRE BELL	2
3	---	3,936	M	-		C		20/1	1,656	M	JOCKEY PUMP, CONTROLLER	4
5	EF-1	456	M	20/1		A		20/1	100	G	GENERATOR BATTERY CHARGER	6
7	LIGHTING	160	L	20/1		C		20/1	200	H	GENERATOR HEATER	8
9	EWH-1	1,500	H	20/1		A		20/1	25	G	TANK MONITOR PANEL	10
11	EWH-2	1,500	H	20/1		C		20/1	25	G	TANK MONITOR PANEL	12
13	RECEPTACLES	360	R	20/1		A		20/1	25	G	FIRE PUMP CONTROLLER	14
15	RECEPTACLES	540	R	20/1		C		20/1			SPARE	16
17	SPARE			20/1		A		20/1			SPARE	18
19	SPARE			20/1		C		20/1			SPARE	20
21	SPACE					A					SPACE	22
23	SPACE					C					SPACE	24

Connected Load: Ph. A 6,422 VA 54 Amps
Connected Load: Ph. C 8,017 VA 67 Amps
Panel Connected Load: 14.4 KVA 60.2 Amps
Sub-Fed Connected Load: 0.0 KVA 0.0 Amps
Total Demand Load: 16.4 **KVA** 68.5 **Amps**

Professional Engineer TRAVIS T. PRUCHA 15568 WYOMING

DESIGNED:	KCL
DRAWN:	KCL
TECH REVIEW:	MKO
DATE:	12/07/2022
SUB SHEET NO.	E5.1

TITLE OF SHEET
ELECTRICAL SINGLE LINE DIAGRAMS

FOSSIL BUTTE NATIONAL MONUMENT
WATER SYSTEM IMPROVEMENTS TO MEET FIRE PROTECTION REQUIREMENTS

DRAWING NO.	174 / 173823
PMIS/PKG NO.	282711
SHEET	60 OF 60