Kuhn Aviation Hangar

Garfield County Airport
Rifle, CO 81650 United States

May 16, 2022

DRAWING LIST

SHEET NO.	SHEET TITLE
ARCHITECTURAL	
A1.0	COVER SHEET
A1.1	BUILDING CODE AND INSULATION DATA
A1.2	ACCESSIBILITY REQUIREMENTS PER ANSI STANDARD ICC A117.1-2009
A2.1	FLOOR PLAN
A2.2	ROOF PLAN
A2.3	REFLECTED CEILING PLAN
A5.1	BUILDING ELEVATIONS
A5.2	BUILDING SECTIONS
STRUCTURAL	
SHEET NO.	SHEET TITLE
S0.01	GENERAL NOTES
S0.02	SPECIAL INSPECTIONS
S1.01	FOUNDATION PLAN
S5.01	TYPICAL CONCRETE DETAILS
S5.03	FOUNDATION DETAILS & SCHEDULES
FIRE PROTECTION	
SHEET NO.	SHEET TITLE
FIRE PROTECTION DRAWINGS TO BE SUBMITTED UNDER A SEPERATE PERMIT	
PLUMBING	
SHEET NO.	SHEET TITLE
P0.01	PLUMBING LEGEND AND GENERAL NOTES
P0.02	PLUMBING SPECIFICATIONS
P1.01	WASTE AND VENT FLOOR PLAN
P1.02	WATER AND GAS FLOOR PLAN
P4.01	ENLARGED PLUMBING PLANS
P5.01	PLUMBING DETAILS
P6.01	PLUMBING SCHEDULES
P7.01	PLUMBING DIAGRAMS
MECHANICAL	
SHEET NO.	SHEET TITLE
M0.01	MECHANICAL LEGEND AND GENERAL NOTES
M0.02	MECHANICAL SPECIFICATIONS
M1.01	MAIN LEVEL MECHANICAL HVAC PLAN
M1.02	MAIN LEVEL MECHANICAL PIPING PLAN
M1.03	MECHANICAL SNOW MELT PLAN
M2.01	MECHANICAL ELEVATIONS
M2.02	MECHANICAL ELEVATIONS
M3.01	MECHANICAL SECTIONS
M3.02	MECHANICAL SECTIONS
M4.01	ENLARGED MECHANICAL PLANS
M4.02	ENLARGED MECHANICAL PLANS
M5.01	MECHANICAL DETAILS
M6.01	MECHANICAL SCHEDULES
M6.02	MECHANICAL SCHEDULES
M7.01	MECHANICAL PIPING DIAGRAMS
ELECTRICAL	
SHEET NO.	SHEET TITLE
E0.01	ELECTRICAL LEGEND AND GENERAL NOTES
E0.02	ELECTRICAL SPECIFICATIONS
E1.01	ELECTRICAL SITE PLAN
E1.02	ELECTRICAL FLOOR PLAN
E1.03	ELECTRICAL REFLECTED CEILING PLAN
E1.04	ELECTRICAL ROOF PLAN
E4.01	ENLARGED ELECTRICAL PLANS
E5.01	ELECTRICAL DIAGRAMS AND DETAILS
E6.01	ELECTRICAL EQUIPMENT SCHEDULES
E6.02	ELECTRICAL PANEL SCHEDULES

LOCATION MAP

OWNER:
Kuhn Aviation
959 Sycolin Road, Leesburg, VA 20175
phone: 703-909-2467
email: scott@kuhnavation.com
Scott Kuhn

ARCHITECT:
DMA Architecture, PLLC
380-H Knollwood Street, Suite 174, Winston-Salem, NC 27103
phone: 336-723-6360
email: craig@designbydma.com
Craig T. Dishner, AIA

GENERAL CONTRACTOR:
CRISAK, Inc.
37174 Devon Wick Lane, Purcellville, VA 20132
phone: 540-751-0606
email: smoffat@crisak.com
Scott Moffat

CIVIL:
SGM
118 W. Sixth Street, Suite 200, Glenwood Springs, CO 81601
phone: 970-384-9005
email: jeffs@sgm-inc.com
Jeff Simonson

FIRE PROTECTION:
TBD

STRUCTURAL:
SGM
118 W. Sixth Street, Suite 200, Glenwood Springs, CO 81601
phone: 970-384-9005
email: johnp@sgm-inc.com
John Partch

MECHANICAL:
SGM
118 W. Sixth Street, Suite 200, Glenwood Springs, CO 81601
phone: 970-384-9084
email: brianc@sgm-inc.com
Brian Carpenter

PLUMBING:
SGM
118 W. Sixth Street, Suite 200, Glenwood Springs, CO 81601
phone: 970-384-9084
email: brianc@sgm-inc.com
Brian Carpenter

ELECTRICAL:
SGM
118 W. Sixth Street, Suite 200, Glenwood Springs, CO 81601
phone: 970-384-9086
email: amberh@sgm-inc.com
Amber Haymes

NOTES, KEY NOTES, LEGENDS

DMA Architecture PLLC
380-H Knollwood Street, Suite 174
Winston-Salem, NC 27103
phone: 336-723-6360
designbydma.com

SEALS

STATE OF COLORADO
CRAIG TILLMAN DISHNER
ARC.00406963
LICENSED ARCHITECT
5.16.22

REVISIONS

No	Date	Description

PROJECT NAME

Kuhn Aviation Hangar

Garfield County Airport
Rifle, CO 81650

PHASE

- ☐ Schematic Design
- ☐ Design Development
- ■ Construction Documents
- ☐ Record Drawings

- ■ Released for Construction
- ☐ Not Released for Construction

DATE	PROJECT NO.
5/16/22	**21-1010**

SHEET TITLE

COVER SHEET

SHEET NO.

A1.0

ABBREVIATIONS

A-W	AIR & WATER
AC	AIR CONDITIONING
ACM	ALUMINUM COMPOSITE MATERIAL
ACT	ACOUSTICAL CEILING TILE
ADJ	ADJACENT (or) ADJUSTABLE
AFF	ABOVE FINISHED FLOOR
ALT	ALTERNATE
ALUM	ALUMINUM
ANOD	ANNODIZED
APPROX	APPROXIMATE
APT	APARTMENT
ARCH	ARCHITECT
AUTO	AUTOMATIC
AUX.	AUXILIARY
AVG	AVERAGE
AWB	AIR & WATER BARRIER
BITUM	BITUMINOUS
BLDG	BUILDING
BLKG	BLOCKING
BOS	BOTTOM OF STEEL
BR	BEDROOM
BRG	BEARING
BSMT	BASEMENT
BTW	BETWEEN
C TILE	CERAMIC TILE
CAB	CABINET
CB	CATCH BASIN
CEM	CEMENT
CIP	CAST IN PLACE
CJ	CONTROL JOINT
CLG	CEILING
CLR	CLEAR
CLST	CLOSET
CMU	CONCRETE MASONRY UNIT
CNTR	COUNTER
CO	CASED OPENING
COL	COLUMN
CONC	CONCRETE
CONF	CONFERENCE
CONST	CONSTRUCTION
CONT	CONTINUOUS
COORD	COORDINATE
CORR	CORRIDOR
CP	CENTERPOINT (or) CONTROL POINT
CPT	CARPET
CSMT	CASEMENT
CTR	CENTER
DEFS	DIRECT APPLIED EXTERIOR FINISH SYSTEM
DEPT	DEPARTMENT
DH	DOUBLE HUNG
DIA.	DIAMETER
DIAG	DIAGONAL
DIFF	DIFFUSER
DIM	DIMENSION
DIST	DISTANCE
DN	DOWN
DO	DOOR OPENING
DR	DOOR
DS	DOWNSPOUT
DTL	DETAIL
DWG	DRAWING
DWL	DOWEL
DWR	DRAWER
EA	EACH
EIFS	EXTERIOR INSULATED FINISHING SYSTEM
EJ	EXPANSION JOINT
ELEC	ELECTRICAL
ELEV	ELEVATOR (or) ELEVATION
EOD	EDGE OF DECK
EOS	EDGE OF SLAB
EQ	EQUAL
EQUIP	EQIUPMENT
EW	EACH WAY
EWC	ELECTRIC WATER COOLER
EXIST	EXISTING
EXP	EXPANSION
EXT	EXTERIOR
FD	FLOOR DRAIN
FE	FIRE EXTINGUISHER
FEC	FIRE EXTINGUISHER CABINET
FIN	FINISH
FL	FLOOR (or) FLOORING
FLASH	FLASHING
FO	FACE OF or FINISHED OPENINIG
FOB	FACE OF BRICK
FOM	FACE OF MASONRY
FOS	FACE OF STUD
FOW	FACE OF WALL
FRP	FIBERGLASS REINFORCED PLASTIC
FRT	FIRE RETARDANT TREATED
FT	FOOT (or) FEET
FTG	FOOTING
FURN	FURNITURE
FURR	FURRING
FV	FIELD VERIFY
GA	GAUGE
GALV	GALVANIZED
GC	GENERAL CONTRACTOR
GSF	GROSS SQUARE FEET
GWB	GYPSUM WALL BOARD
GYP	GYPSUM
H	HIGH (or) HEIGHT
HB	HOSE BIB
HC	HOLLOW CORE
HDG	HOT DIPPED GALVANIZED
HDW	HARDWARE
HDWD	HARDWOOD
HM	HOLLOW METAL
HORIZ	HORIZONTAL
HP	HORSEPOWER
HSS	HOLLOW STRUCTURAL SECTION
HT	HIGH (or) HEIGHT
HVAC	HEATING / VENTILATING / AIR CONDITIONING
HWY	HIGHWAY

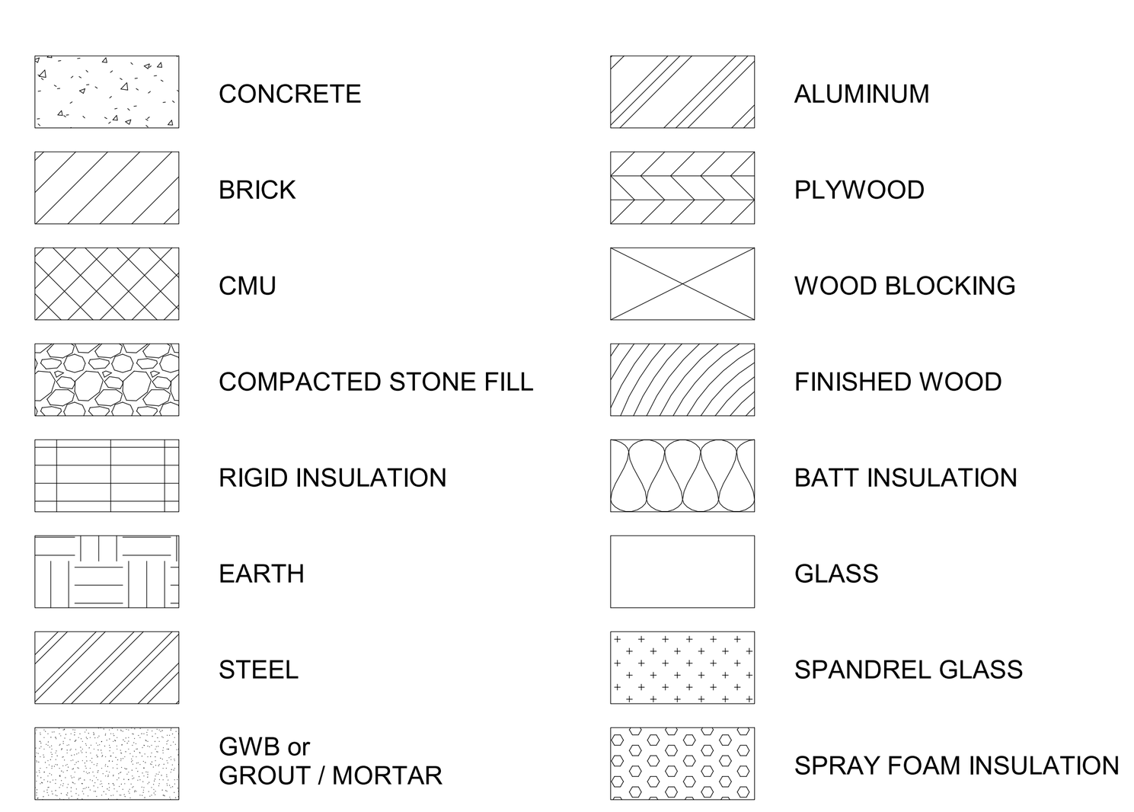
ABBREVIATIONS

ID	INSIDE DIAMETER
IGU	INSULATED GLASS UNIT
IN	INCHES
INCL	INCLUDE (or) INDLUDED (or) INCLUSION
INSUL	INSULATION (or) INSULATED
INT	INTERIOR
JAN	JANITOR
JT	JOINT
KIT	KITCHEN
KO	KNOCK OUT
L	LENGTH
LAM	LAMINATE (or) LAMINATED
LAV	LAVITORY
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
LR	LIVING ROOM
LSF	LEASABLE SQUARE FEET
LVR.	LOUVER
M	MEN
MAINT	MAINTENANCE
MAS	MASONRY
MATL	MATERIAL
MAX	MAXIMUM
MBR	MASTER BEDROOM
MECH	MECHANICAL
MEMB.	MEMBRANE
MEZZ.	MEZZANINE
MFR	MANUFACTURER
MH	MAN HOLE
MIN	MINIMUM
MISC	MISCELLANEOUS
MO	MASONRY OPENING
MTL	METAL
NFWH	NON-FREEZE WALL HYDRANT
NIC	NOT IN CONTRACT
NO	NUMBER
NOM	NOMINAL
NSF	NET SQUARE FEET
NTS	NOT TO SCALE
OC or O/C	ON CENTER
OD	OUTSIDE DIAMETER (or) OVERFLOW DRAIN
OFCI	OWNER FURNISHED CONTRACTOR INSTALLED
OFF	OFFICE
OFOI	OWNER FURNISHED OWNER INSTALLED
OH	OPPOSITE HAND
OPP	OPPOSITE
OZ	OUNCE
P LAM	PLASTIC LAMINATE
P TILE	PORCELAIN TILE
P-T	POST-TENSIONED
P/L	PLATE
PL	PLATE
PLUMB	PLUMBING
PLYWD	PLYWOOD
PNL	PANEL
PR	PAIR
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PT	PRESERVATIVE TREATED
PVC	POLYVINYL CHLORIDE
QTY	QUANTITY
R	RISER (or) RADIUS
R/W	RIGHT OF WAY
RCP	REFLECTED CEILING PLAN
RD	ROOF DRAIN
REBAR	REINFORCING BAR
REF	REFERENCE (or) REFRIDGERATOR
REINF	REINFORCING
REQ	REQUIRED
REV	REVISIONS
RL	ROOF LEADER
RM	ROOM
RO	ROUGH OPENING
ROW	RIGHT OF WAY
RTU	ROOTOP UNIT
SAN	SANITARY
SCHED	SCHEDULE
SCWD	SOLID CORE WOOD DOOR
SECT	SECTION
SF	SQUARE FEET
SHT	SHEET
SIM	SIMILAR
SOG	SLAB ON GRADE
SPEC	SPECIFICATION (or) SPECIFICATIONS
SQ	SQUARE
SS	STAINLESS STEEL
STC	SOUND TRANSMISSION CLASSIFICATION
STD	STANDARD
STL	STEEL
STOR	STORAGE
STRUC	STRUCTURE (or) STRUCTURAL
SUSP	SUSPENDED
SYM	SYMMETRY (or) SYMETRICAL
T	TREAD
T&G	TONGUE AND GROOVE
T.O.	TOP OF
T.O.P.	TOP OF PARAPET (or) TOP OF PANEL
TBD	TO BE DETERMINED
TEL	TELEPHONE
TEMP	TEMPERED (or) TEMPERATURE
TG	TEMPERED GLASS
THK	THICK (or) THICKNESS
TOC	TOP OF CONCRETE
TOF	TOP OF FOOTING
TOS	TOP OF STEEL
TOW	TOP OF WALL
TV	TELEVISION
TYP	TYPICAL

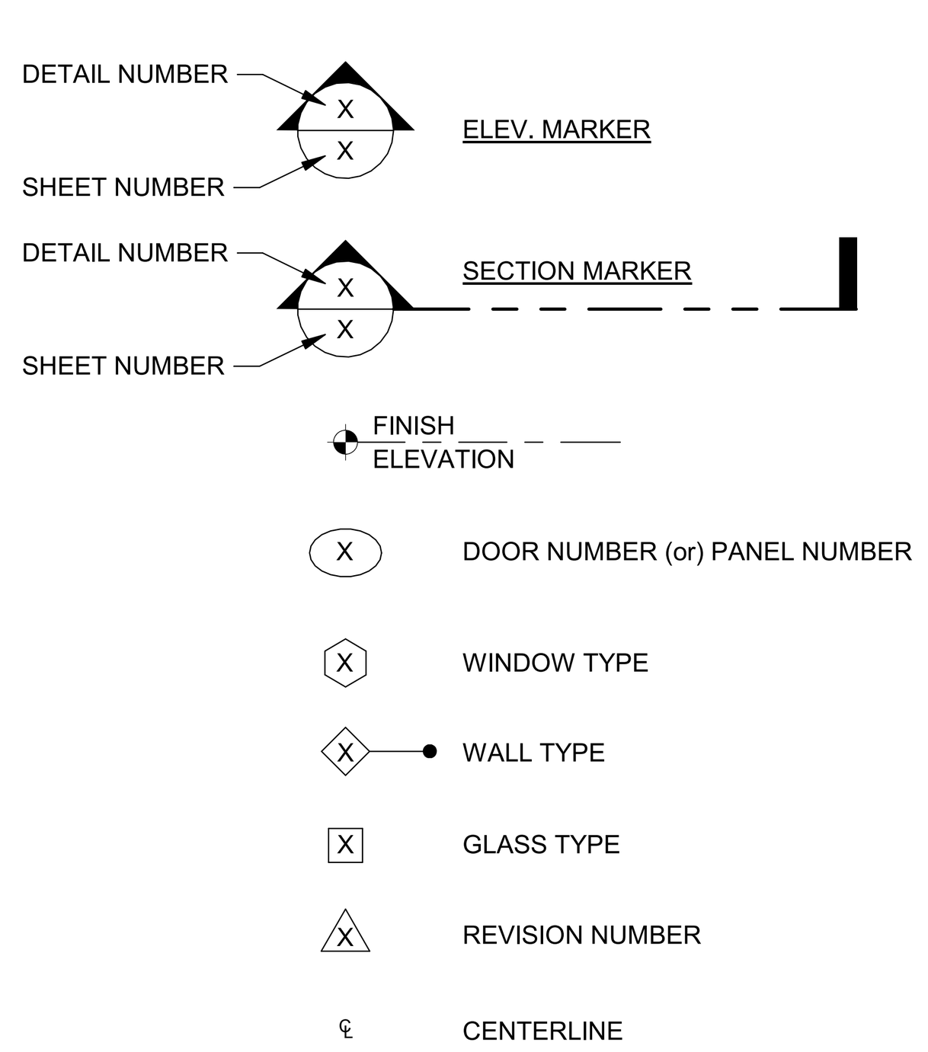
ABBREVIATIONS

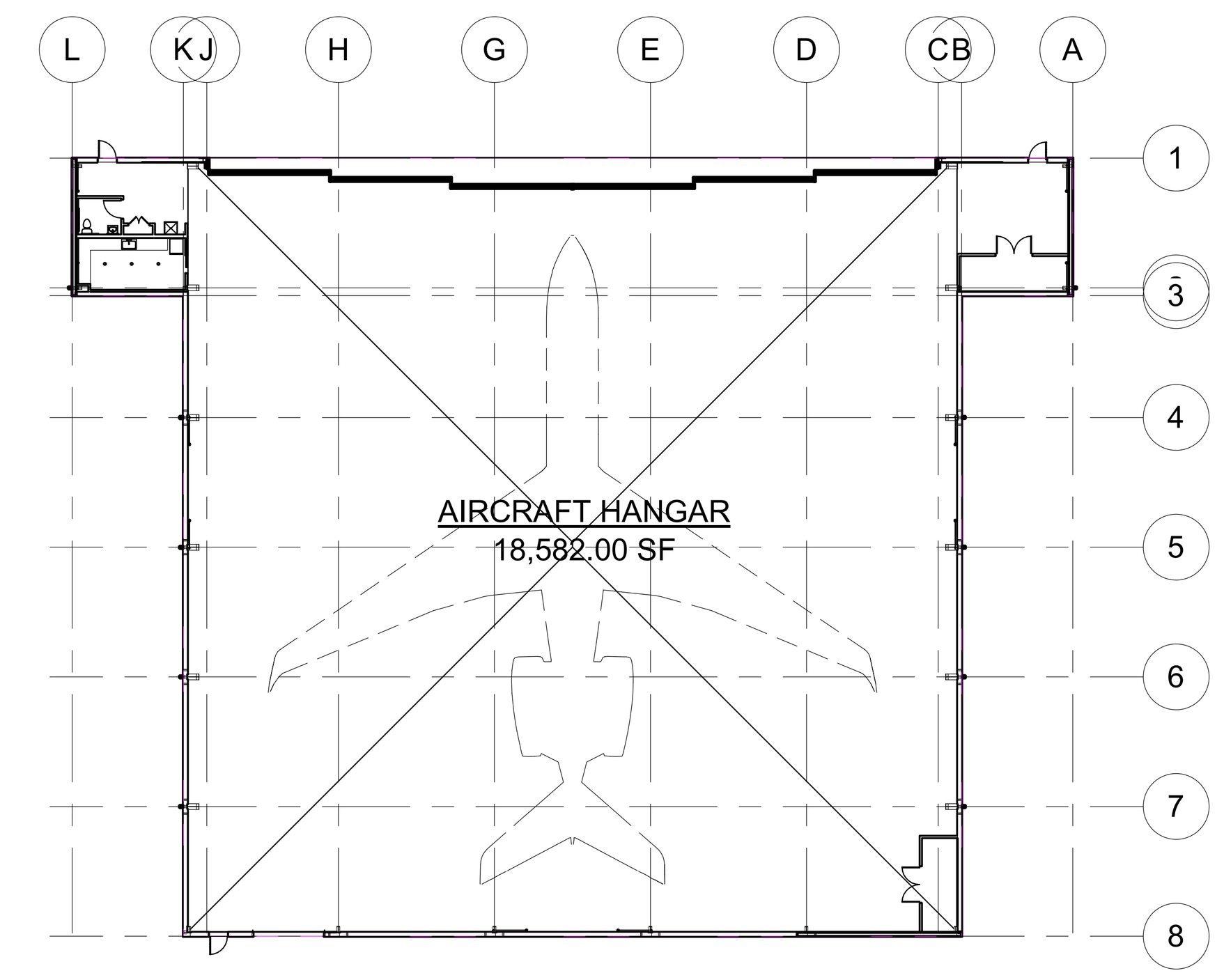
UNFIN	UNFINISHED
UNO	UNLESS NOTED OTHERWISE
UTIL	UTILITY
VB	VINYL BASE
VCT	VINYL COMPOSITE TILE
VENT	VENTILATING
VERT	VERTICAL
VEST	VESTIBULE
VIF	VERIFY IN FIELD
VOL	VOLUME
VT	VINYL TILE
W	WIDTH
W/	WITH
W/O	WITHOUT
WC	WATER CLOSET
WD	WOOD
WP	WATERPROOFING (or) WORK POINT
WSCT	WAINSCOT
WWF	WELDED WIRE FABRIC

MATERIAL LEGEND



SYMBOL LEGEND





OCCUPANCY CALCULATIONS PER TABLE 1004.1.2					
ROOM NAME	FUNCTION	SF PER OCCUPANT	AREA	CALCULATED OCCUPANCY	%
AIRCRAFT HANGAR	AIRCRAFT HANGERS	500	18,582.00 SF	37.16	100.00%
TOTAL			18,582.00 SF	37.16	100.00%

PROJECT DATA:

BUILDING AREA:

GROSS FLOOR AREA: **18,582 SF**

APPLICABLE BUILDING CODES:

BUILDING: 2015 INTERNATIONAL BUILDING CODE
FIRE: 2015 INTERNATIONAL FIRE CODE
PLUMBING: 2015 INTERNATIONAL PLUMBING CODE
ENERGY: 2009 INTERNATIONAL ENERGY CONSERVATION CODE
MECHANICAL: 2015 INTERNATIONAL MECHANICAL CODE
FUEL / GAS: 2015 INTERNATIONAL FUEL GAS CODE

CHAPTER 3: USE AND OCCUPANCY CLASSIFICATION

OCCUPANCY GROUP: S1
DESCRIPTION OF OCCUPANCY: AIRCRAFT HANGAR
ACCESSORY OCCUPANCIES: N/A

CHAPTER 5: GENERAL BUILDING HEIGHTS AND AREAS

ALLOWABLE HEIGHT AND AREA		
	ALLOWABLE	SHOWN ON PLANS
BUILDING HEIGHT	75'	40'-10"
BUILDING STORIES	1	1
BUILDING AREA	70,000	18,582

AREA FACTOR INCREASE = NR

CHAPTER 6: TYPES OF CONSTRUCTION

TYPE OF CONSTRUCTION: II B

FIRE-RESISTANCE RATING REQUIREMENTS FOR BUILDING ELEMENTS (TABLE 601)

STRUCTURAL FRAME 0
EXTERIOR BEARING WALLS 0
INTERIOR BEARING WALLS 0
EXTERIOR NON-BEARING WALLS 0
INTERIOR NON-BEARING WALLS 0
FLOOR CONSTRUCTION 0
ROOF CONSTRUCTION 0

CHAPTER 7: FIRE AND SMOKE PROTECTION FEATURES

ALLOWABLE WALL OPENING AREA (TABLE 705.8)			
	FIRE SEPARATION DISTANCE	OPENING PROTECTION	ALLOWABLE AREA
NORTH	25'-0" ≤ X ≤ 30'-0"	UP, S	NO LIMIT
EAST	> 30'-0"	UP, S	NO LIMIT
SOUTH	25'-0" ≤ X ≤ 30'-0"	UP, S	NO LIMIT
WEST	> 30'-0"	UP, S	NO LIMIT

CHAPTER 9: FIRE PROTECTION SYSTEMS

PROVIDED:
-AUTOMATIC SPRINKLER SYSTEM MONITORING AND ALARMS WILL BE PROVIDED.
-SPRINKLER DESIGN AND CALCULATIONS TO BE SUBMITTED UNDER SEPARATE COVER.
-MAXIMUM SINGLE FIRE AREA 40,000 SF 2018 IBC TABLE 412.3.6

CHAPTER 10: MEANS OF EGRESS

OCCUPANT LOADS & EXIT WIDTHS						
FUNCTION	AREA	OCC. LOAD FACTOR (TABLE 1004.5)	OCC. LOAD	NUMBER OF EXITS REQ'D (SECTION 1006)	REQ'D EXIT WIDTH STAIRWAYS (1005.3.1 EXC 1)	REQ'D EXIT WIDTH OTHER (1005.3.2 EXC 1)
STORAGE	18,582 SF	500	38	2	38 x 0.3" = 11.4"	38 x 0.2" = 7.6"

EXITS PROVIDED:
NUMBER OF EXITS: 3
EXIT WIDTH: 3 x 33" = 99"

MAXIMUM EXIT TRAVEL DISTANCE (TABLE 1017.2):
S-1 WITH SPRINKLER SYSTEM = 250'

BUILDING ENVELOPE SCHEDULE CLIMATE ZONE: 5B			
OPAQUE ELEMENTS	U-VALUE OR R-VALUE REQUIRED	U-VALUE OR R-VALUE PROVIDED	DESCRIPTION
ROOF / INSULATION	R-13 + R-13	R-13 + R-25	R-13 LINER SYSTEM - THERMAL BLOCKS - R-25 BOTTOM LAYER
EXTERIOR WALLS ABOVE GRADE / MASS	R-13 + R-5.6ci	R-13 + R-25	R-13 OVER GIRTS - R-25 IN WALL CAVITY
SLAB ON GRADE / HEATED	R-15 for 24" below	R-5 under entire slab	1" HIGH DENSITY XPS UNDER ENTIRE SLAB
OPAQUE DOORS / SWINGING	U-0.70	U-0.370	A60 GALV. HM DOORS WITH POLYSTYRENE CORE
GARAGE DOORS / OVERHEAD	U-0.50	U-0.071	STEEL SECTIONAL OVERHEAD DOOR WITH POLYSTYRENE CORE
FENESTRATION	VALUE REQUIRED	VALUE PROVIDED	BASIS OF DESIGN
STOREFRONT WINDOWS / FIXED	U-0.45 SHGC-0.40	U-0.036 SHGC-0.29	KAWNEER 451T STOREFRONT AND 1" IGU: SOLARBAN 60 + SOLARGRAY

INSULATION NOTES:
1. ALL INSTALLATIONS WILL INSTALLED ACCORDING TO MANUFACTURER'S SPECIFICATIONS
2. INSULATION IN CONTACT WITH GROUND SHALL HAVE < 0.3% WATER ABSORPTION RATE PER ASTM C272

DMA Architecture PLLC
380-H Knollwood Street, Suite 174
Winston-Salem, NC 27103
phone: 336-723-6360
designbydma.com

SEALS

STATE OF COLORADO
CRAIG TILLMAN DISHNER
ARC.00406963
LICENSED ARCHITECT
5.16.22

REVISIONS

No	Date	Description

PROJECT NAME

Kuhn Aviation Hangar

Garfield County Airport
Rifle, CO 81650

PHASE

- [ ] Schematic Design
- [ ] Design Development
- [x] Construction Documents
- [ ] Record Drawings

- [x] Released for Construction
- [ ] Not Released for Construction

DATE: **5/16/22** PROJECT NO.: **21-1010**

SHEET TITLE

BUILDING CODE AND INSULATION DATA

SHEET NO.

A1.1

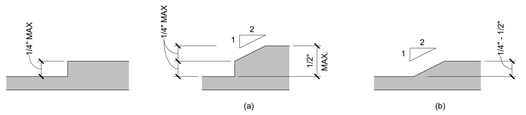
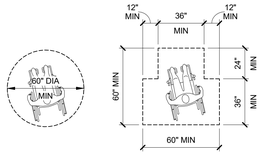


FIGURE 303.2
CARPET ON FLOOR SURFACES

(a) (b)

FIGURE 303.3
BEVELED CHANGES IN LEVEL

1 CHANGES IN LEVEL
12" = 1'-0"



(a) CIRCULAR (b) T-SHARPED

FIGURE 304.3
SIZE OF TURNING SPACE

2 TURNING SPACE
1/4" = 1'-0"

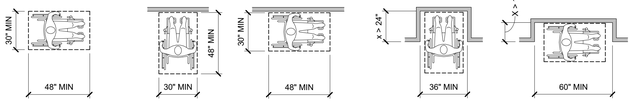


FIGURE 305.3
SIZE OF CLEAR FLOOR SPACE

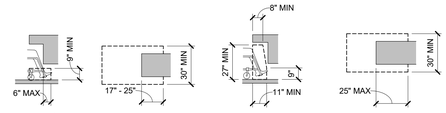
(a) FORWARD (b) PARALLEL

FIGURE 305.5
POSITION OF CLEAR FLOOR SPACE

(a) FORWARD APPROACH (b) PARALLEL APPROACH

FIGURE 305.7
MANEUVERING CLEARANCE IN AN ALCOVE

3 CLEAR FLOOR SPACE
1/4" = 1'-0"



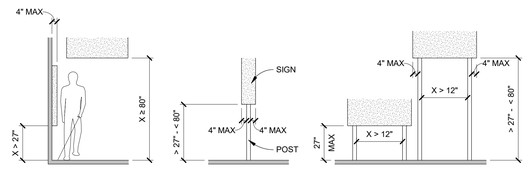
(a) ELEVATION (b) PLAN

FIGURE 306.2
TOE CLEARANCE

(a) ELEVATION (b) PLAN

FIGURE 306.3
KNEE CLEARANCE

4 KNEE AND TOE CLEARANCES
1/4" = 1'-0"



(a) (b)

FIGURE 307.2
LIMITS OF PROTRUDING OBJECTS

FIGURE 307.3
POST-MOUNTED PROTRUDING OBJECTS

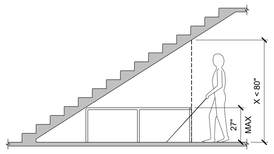
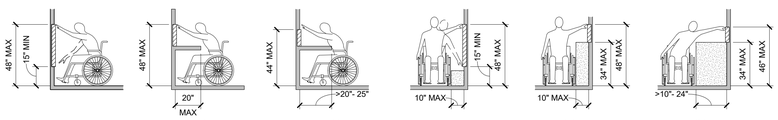


FIGURE 307.4
VERTICAL CLEARANCE



(a) (b)

FIGURE 308.2.1
UNOBSTRUCTED FORWARD REACH

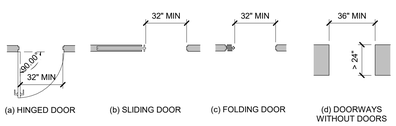
FIGURE 308.2.2
UNOBSTRUCTED HIGH FORWARD REACH

FIGURE 308.3.1
UNOBSTRUCTED SIDE REACH

(a) (b)

FIGURE 308.3.2
UNOBSTRUCTED HIGH SIDE REACH

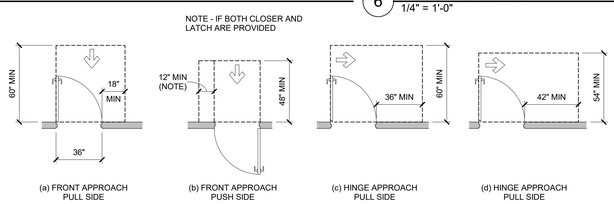
5 PROTRUDING OBJECTS
1/4" = 1'-0"



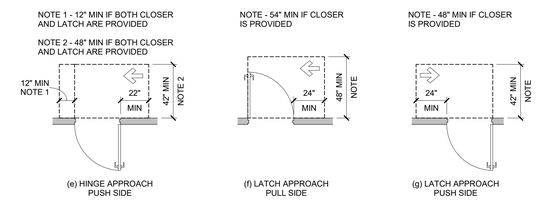
(a) HINGED DOOR (b) SLIDING DOOR (c) FOLDING DOOR (d) DOORWAYS WITHOUT DOORS

FIGURE 404.2.2
CLEAR WIDTH OF DOORWAYS

6 REACH RANGES
1/4" = 1'-0"



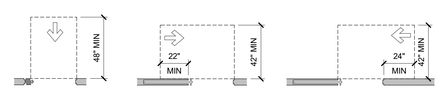
(a) FRONT APPROACH PULL SIDE (b) FRONT APPROACH PUSH SIDE (c) HINGE APPROACH PULL SIDE (d) HINGE APPROACH PUSH SIDE



(e) HINGE APPROACH PUSH SIDE (f) LATCH APPROACH PULL SIDE (g) LATCH APPROACH PUSH SIDE

FIGURE 404.2.3.2
MANEUVERING CLEARANCE AT MANUAL SWINGING DOOR

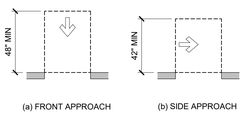
7 WALKING SURFACES
1/4" = 1'-0"



(a) FRONT APPROACH (b) POCKET OR HINGE APPROACH (c) STOP OR LATCH APPROACH

FIGURE 404.2.3.3
MANEUVERING CLEARANCES AT SLIDING AND FOLDING DOORS

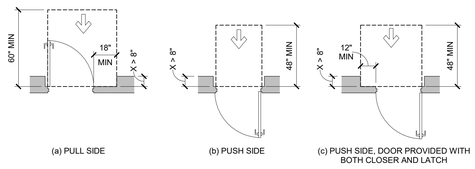
8 DOORS AND DOORWAYS
1/4" = 1'-0"



(a) FRONT APPROACH (b) SIDE APPROACH

FIGURE 404.2.3.4
MANEUVERING CLEARANCES AT DOORWAYS WITHOUT DOORS

9 DOORS AND DOORWAYS
1/4" = 1'-0"



(a) PULL SIDE (b) PUSH SIDE (c) PUSH SIDE, DOOR PROVIDED WITH BOTH CLOSER AND LATCH

FIGURE 404.2.3.5
MANEUVERING CLEARANCE AT RECESSED DOORS

10 DOORS AND DOORWAYS
1/4" = 1'-0"

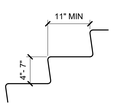
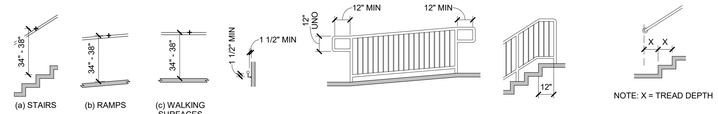


FIGURE 504.2
TREAD AND RISERS FOR ACCESSIBLE STAIRWAYS

11 DOORS AND DOORWAYS
1/4" = 1'-0"



(a) STAIRS (b) RAMPS (c) WALKING SURFACES

FIGURE 505.4
HANDRAIL HEIGHT

FIGURE 505.5
HANDRAIL CLEARANCE

FIGURE 505.10.1
TOP AND BOTTOM HANDRAIL EXTENSIONS AT RAMP

FIGURE 505.10.2
TOP HANDRAIL EXTENSIONS AT STAIRS

NOTE: X = TREAD DEPTH

FIGURE 505.10.3
BOTTOM HANDRAIL EXTENSIONS AT STAIRS

12 DOORS AND DOORWAYS
1/4" = 1'-0"

13 DOOR HARDWARE AND VISION LITES
1/4" = 1'-0"

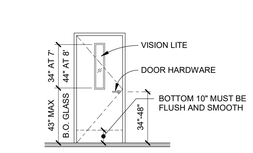
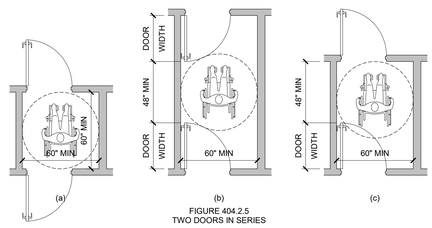


FIGURE 402.6, 404.2.10
DOOR HARDWARE AND VISION LITES

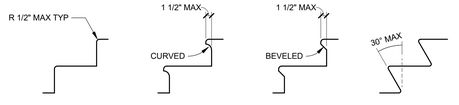
14 TWO DOORS IN SERIES
1/4" = 1'-0"



(a) (b) (c)

FIGURE 404.2.5
TWO DOORS IN SERIES

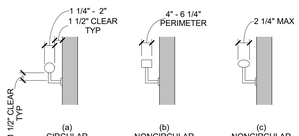
15 TREADS AND RISERS
3/4" = 1'-0"



(a) VERTICAL RISER (b) CURVED NOSING (c) BEVELED NOSING (d) ANGLED RISER

FIGURE 504.5
STAIR NOSINGS

16 STAIR NOSINGS
3/4" = 1'-0"

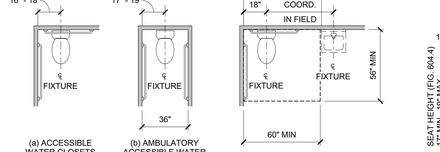


(a) CIRCULAR (b) NONCIRCULAR (c) NONCIRCULAR

FIGURE 505.7
HANDRAIL CROSS SECTION

17 HANDRAILS
1/4" = 1'-0"

18 HANDRAIL CROSS SECTION
1" = 1'-0"



(a) ACCESSIBLE WATER CLOSETS (b) AMBULATORY ACCESSIBLE WATER CLOSETS

FIGURE 604.2
WATER CLOSET LOCATION

FIGURE 604.3
SIZE OF CLEARANCE FOR WATER CLOSETS

19 WATER CLOSETS AND TOILET COMPARTMENTS
1/4" = 1'-0"

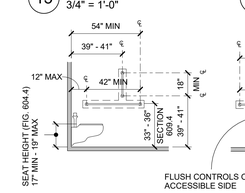


FIGURE 604.5.1
SIDE WALL GRAB BAR FOR WATER CLOSET

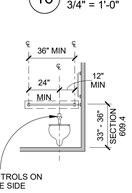
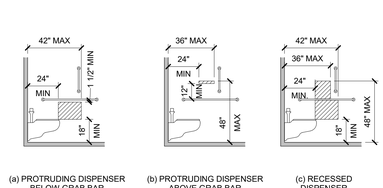


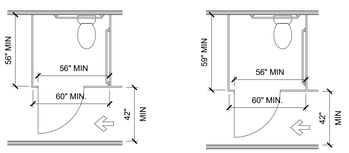
FIGURE 604.5.2
REAR WALL GRAB BAR FOR WATER CLOSET



(a) PROTRUDING DISPENSER BELOW GRAB BAR (b) PROTRUDING DISPENSER ABOVE GRAB BAR (c) RECESSED DISPENSER

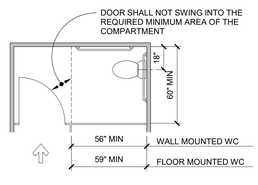
FIGURE 604.7
DISPENSER OUTLET LOCATION

20 WHEELCHAIR ACCESSIBLE TOILET COMPARTMENTS
1/4" = 1'-0"



(a) WALL-HUNG WATER CLOSET - ADULT (b) FLOOR-MOUNTED WATER CLOSET - ADULT

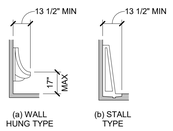
FIGURE 604.9.2
WHEELCHAIR ACCESSIBLE TOILET COMPARTMENTS



(c)

FIGURE 604.9.3.1
WHEELCHAIR ACCESSIBLE COMPARTMENT DOOR OPENINGS - ALTERNATE

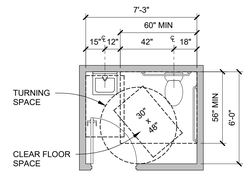
21 URINALS
1/4" = 1'-0"



(a) WALL HUNG TYPE (b) STALL TYPE

FIGURE 605.2
HEIGHT OF URINALS

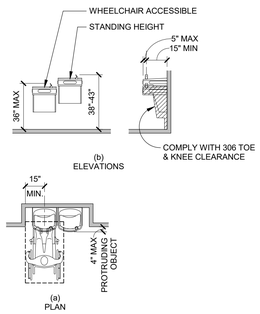
22 ACCESSIBLE INDIVIDUAL TOILET ROOM
1/4" = 1'-0"



MINIMUM ROOM DIMENSIONS WITH IN-SWINGING DOOR

NOTE:
603.2, EXC 2. WHERE THE ROOM IS FOR INDIVIDUAL USE AND A CLEAR FLOOR SPACE COMPLYING WITH SECTION 305.3 IS PROVIDED WITHIN THE ROOM BEYOND THE ARC OF THE DOOR SWING, THE DOOR SWING CAN OVERLAP THE TURNING SPACE AND FIXTURE CLEARANCES.

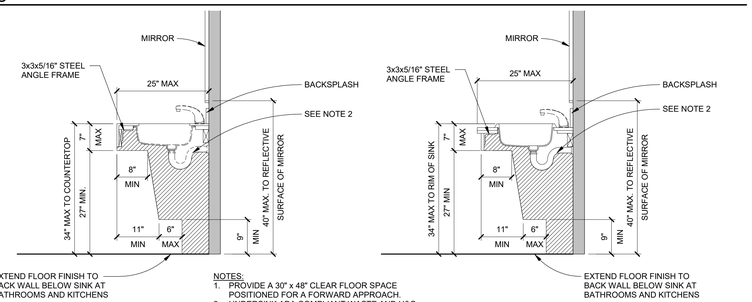
23 ELECTRIC WATER COOLERS
1/4" = 1'-0"



(b) ELEVATIONS (a) PLAN

FIGURE 602.5
SPOUT LOCATION

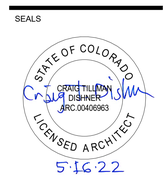
24 ACCESSIBLE SINKS
3/4" = 1'-0"



606
LAVATORIES AND SINKS
FORWARD APPROACH

DMA Architecture PLLC
380-H Knollwood Street, Suite 174
Winston-Salem, NC 27103
phone: 336-723-6360
designbydma.com

SEALS



REVISIONS

No	Date	Description

PROJECT NAME

Kuhn Aviation Hangar

Garfield County Airport
Rifle, CO 81650

PHASE

- ☐ Schematic Design
- ☐ Design Development
- ■ Construction Documents
- ☐ Record Drawings

- ■ Released for Construction
- ☐ Not Released for Construction

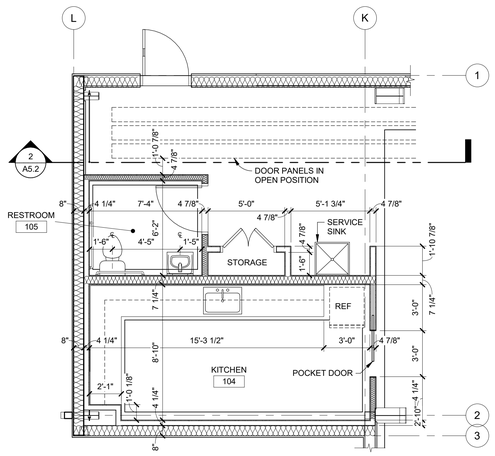
DATE	PROJECT NO.
5/16/22	**21-1010**

SHEET TITLE

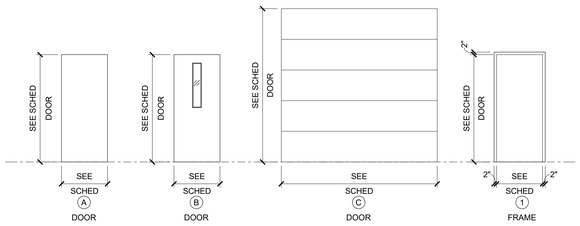
ACCESSIBILITY REQUIREMENTS PER ANSI STANDARD ICC A117.1-2009

SHEET NO.

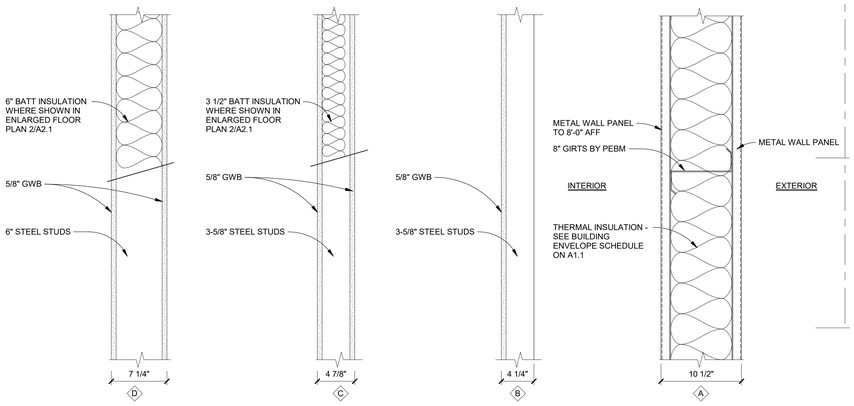
A1.2



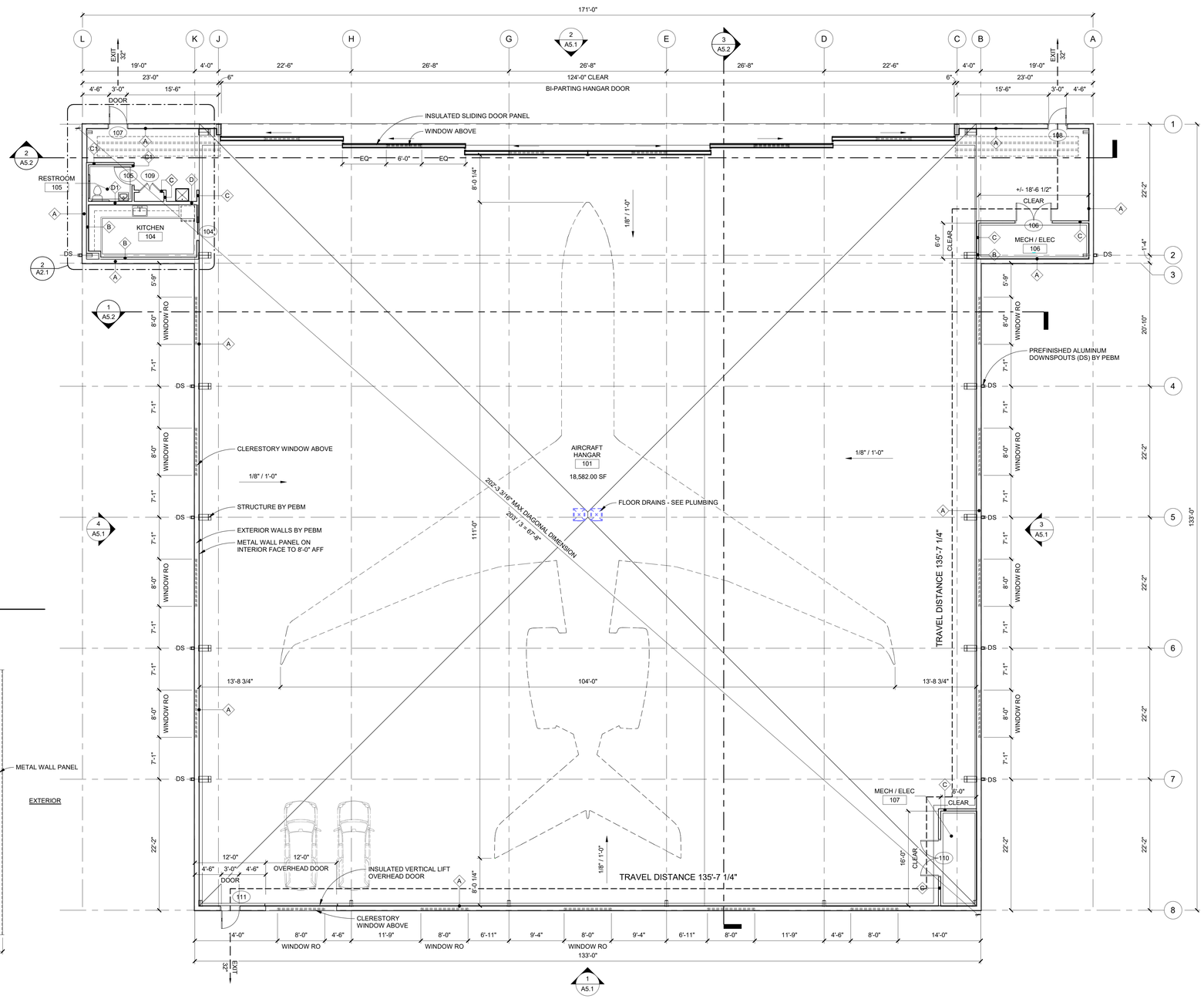
2 ENLARGED FLOOR PLAN
1/4" = 1'-0"



4 DOOR AND FRAME ELEVATIONS
1/4" = 1'-0"



3 PARTITION TYPES
1 1/2" = 1'-0"



1 FLOOR PLAN
1/8" = 1'-0"

NOTES, KEY NOTES, LEGENDS

FINISH SCHEDULE

RM#	ROOM NAME	SF	FLOOR	WALLS	BASE	CEILING	REMARKS
101	AIRCRAFT HANGAR	17,655.97 SF	SC	MTL	--	--	
104	KITCHEN	159.47 SF	SC	GWB	VB	GWB	
105	RESTROOM	45.22 SF	SC	GWB	VB	GWB	
106	MECH / ELEC	111.34 SF	SC	GWB	VB	GWB	
107	MECH / ELEC	96.17 SF	SC	GWB	VB	GWB	

GWB: 5/8" GWB, LEVEL IV FINISH. INSTALL CORNER BEADS AT ALL OUTSIDE CORNERS. PRIME AND PAINT.
MTL: METAL WALL PANELS BY PEBM. INSTALL TO 8'-0" AFF TYP ON INTERIOR WALLS. INSULATED LINER SYSTEM TO BE EXPOSED ABOVE 8'-0". INSTALL METAL WALL PANELS FULL HEIGHT ON INTERIOR FACE OF HANGER DOOR PANELS.
SC: CONCRETE FLOOR WITH EPOXY FLOOR SEALER TO REMAIN EXPOSED.
VB: INSTALL VINYL COVE BASE ON BOTH SIDES OF ALL GWB WALLS.

DOOR SCHEDULE

DOOR NO		DOOR WIDTH	DOOR HEIGHT	DOOR THICK	DOOR MAT	DOOR TYPE	FRAME MAT	FRAME TYPE	RATING	REMARKS
104		3'-0"	6'-8"	1 3/8"	SCWD	A	HM	1	--	POCKET DOOR
105		3'-0"	6'-8"	1 3/8"	SCWD	A	HM	1	--	PRIVACY FUNCTION LOCKSET
106	PR	6'-0"	6'-8"	1 3/8"	SCWD	A	HM	1	--	
107		3'-0"	7'-0"	1 3/4"	HM	B	HM	1	--	VERIFY KEYING AND HARDWARE REQUIREMENTS WITH OWNER
108		3'-0"	7'-0"	1 3/4"	HM	B	HM	1	--	VERIFY KEYING AND HARDWARE REQUIREMENTS WITH OWNER
109		3'-4"	6'-8"	1 3/8"	SCWD	A	HM	1	--	
110	PR	6'-0"	6'-8"	1 3/8"	SCWD	A	HM	1	--	
111		3'-0"	7'-0"	1 3/4"	HM	B	HM	1	--	VERIFY KEYING AND HARDWARE REQUIREMENTS WITH OWNER
115		12'-0"	10'-0"	1 5/8"	HM	C	HM	1	--	

DOORS:
SCWD: SOLID CORE DOOR FACTORY PRIMED FOR PAINT
HM: INSULATED 18GA HOLLOW METAL DOOR

FRAMES:
HM: 16GA HOLLOW METAL DOOR

DMA Architecture PLLC
380-H Knollwood Street, Suite 174
Winston-Salem, NC 27103
phone: 336-723-6360
designbydma.com

SEALS

STATE OF COLORADO
CRAIG TILLMAN
DISHNER
ARC.00406963
LICENSED ARCHITECT
5.16.22

REVISIONS

No	Date	Description

PROJECT NAME

Kuhn Aviation Hangar

CONCEPT PLAN

Garfield County Airport
Rifle, CO 81650

PHASE

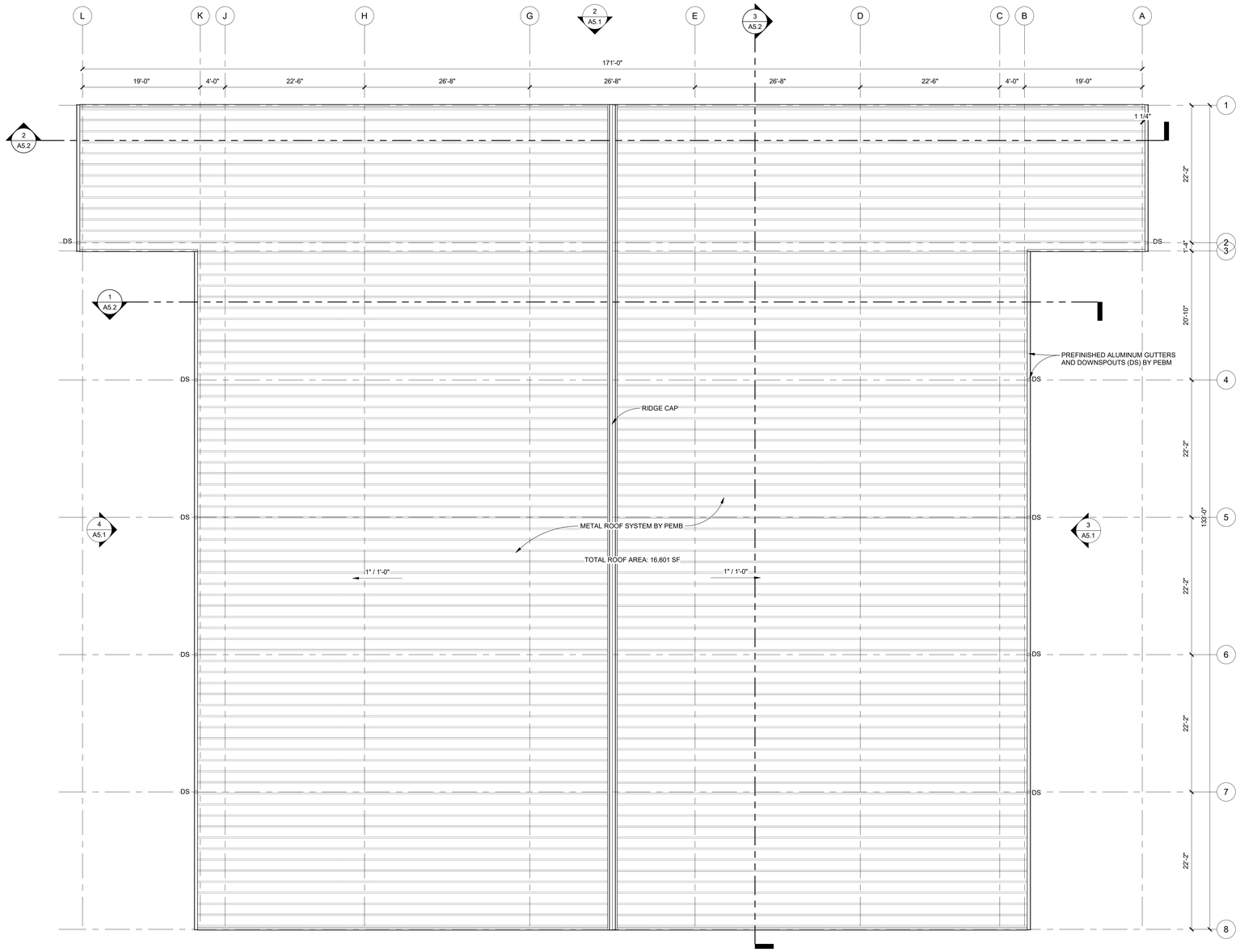
- [ ] Schematic Design
- [ ] Design Development
- [x] Construction Documents
- [ ] Record Drawings

- [x] Released for Construction
- [ ] Not Released for Construction

DATE: 5/16/22
PROJECT NO.: 21-1010

SHEET TITLE: FLOOR PLAN

SHEET NO.: A2.1



1 ROOF PLAN
1/8" = 1'-0"

NOTES, KEY NOTES, LEGENDS

DMA Architecture PLLC
380-H Knollwood Street, Suite 174
Winston-Salem, NC 27103
phone: 336-723-6360
designbydma.com

SEALS

STATE OF COLORADO
CRAIG TILLMAN
DISHNER
ARC.00406963
LICENSED ARCHITECT
5.16.22

REVISIONS

No	Date	Description

PROJECT NAME

Kuhn Aviation Hangar

Garfield County Airport
Rifle, CO 81650

PHASE

- ☐ Schematic Design
- ☐ Design Development
- ■ Construction Documents
- ☐ Record Drawings

- ■ Released for Construction
- ☐ Not Released for Construction

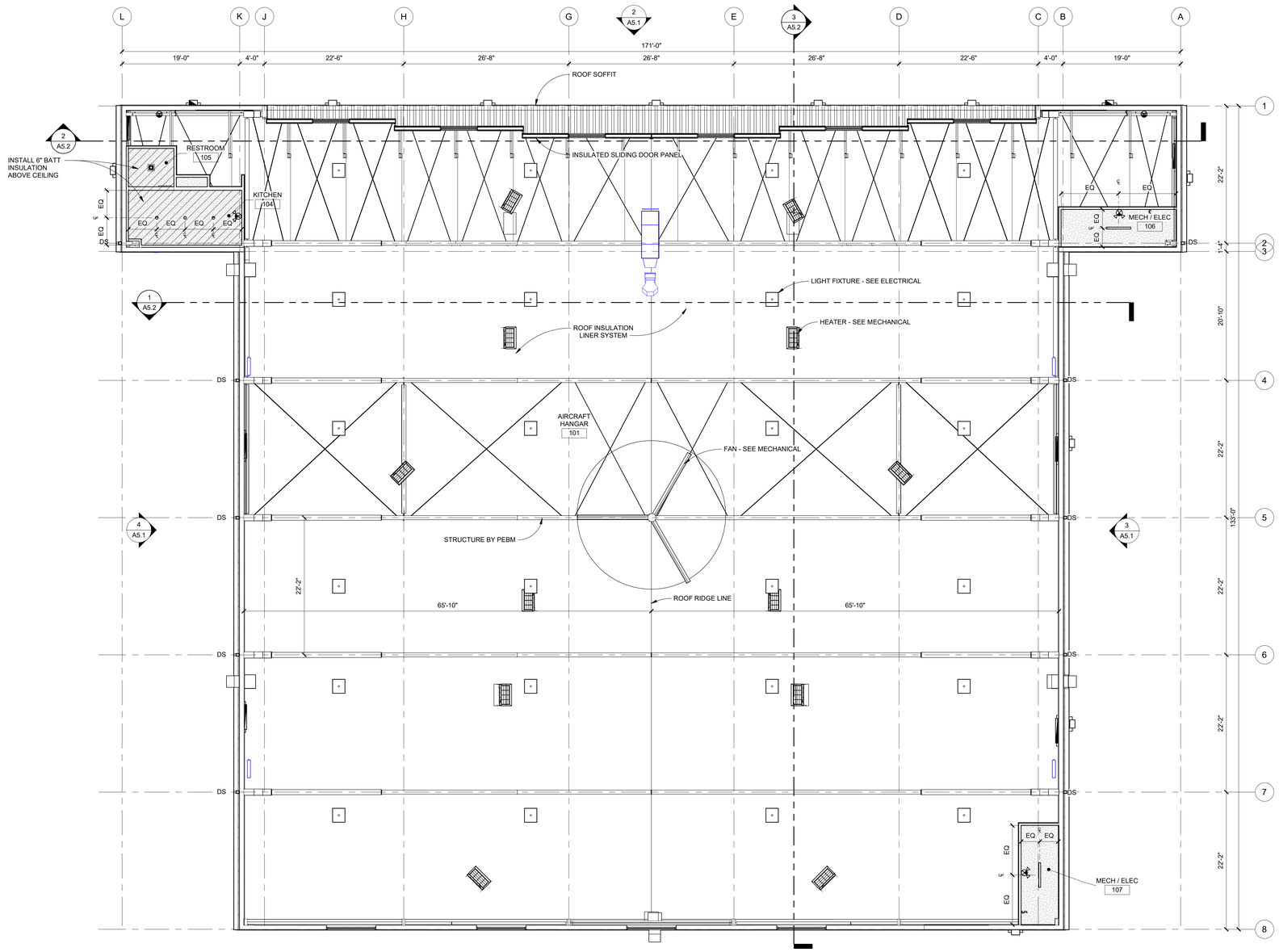
DATE	PROJECT NO.
5/16/22	**21-1010**

SHEET TITLE

ROOF PLAN

SHEET NO.

A2.2



1 REFLECTED CEILING PLAN
1/8" = 1'-0"

1
A5.1

DMA Architecture PLLC
380-H Knollwood Street, Suite 174
Winston-Salem, NC 27103
phone: 336-723-6360
designbydma.com

SEALS

STATE OF COLORADO
CRAIG TILLMAN
DESIGNER
ARC.00406963
LICENSED ARCHITECT
5.16.22

REVISIONS

No	Date	Description

PROJECT NAME

Kuhn Aviation Hangar

Garfield County Airport
Rifle, CO 81650

PHASE

- ☐ Schematic Design
- ☐ Design Development
- ■ Construction Documents
- ☐ Record Drawings

- ■ Released for Construction
- ☐ Not Released for Construction

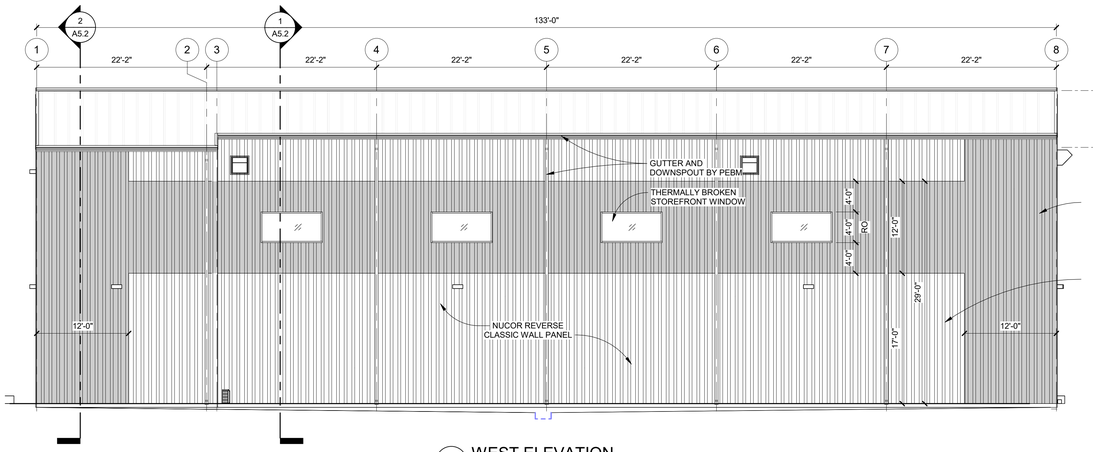
DATE	PROJECT NO.
5/16/22	**21-1010**

SHEET TITLE

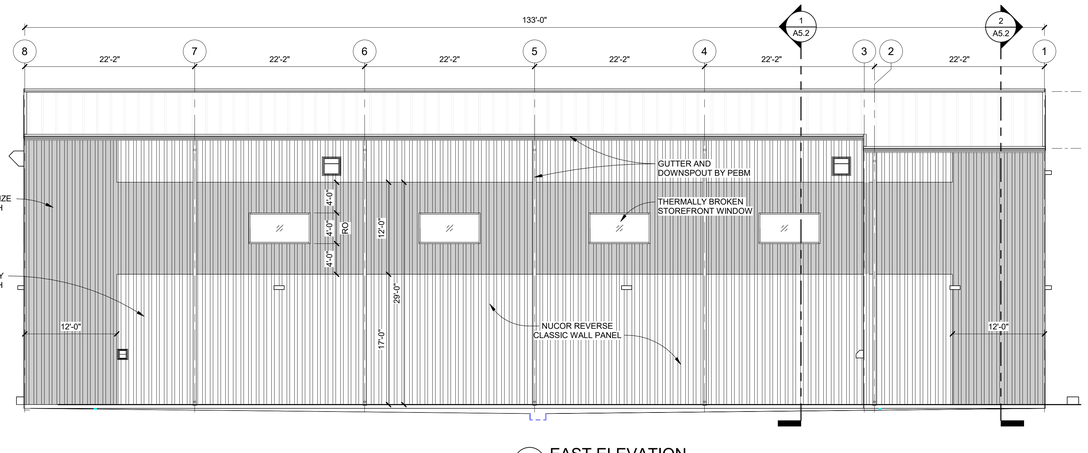
REFLECTED CEILING PLAN

SHEET NO.

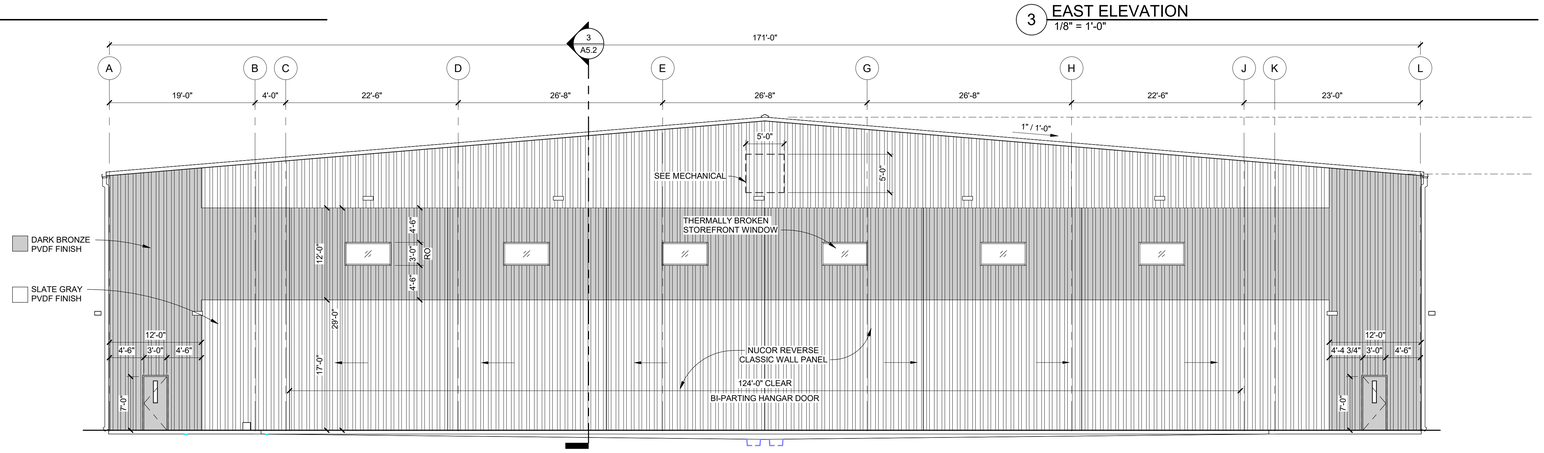
A2.3



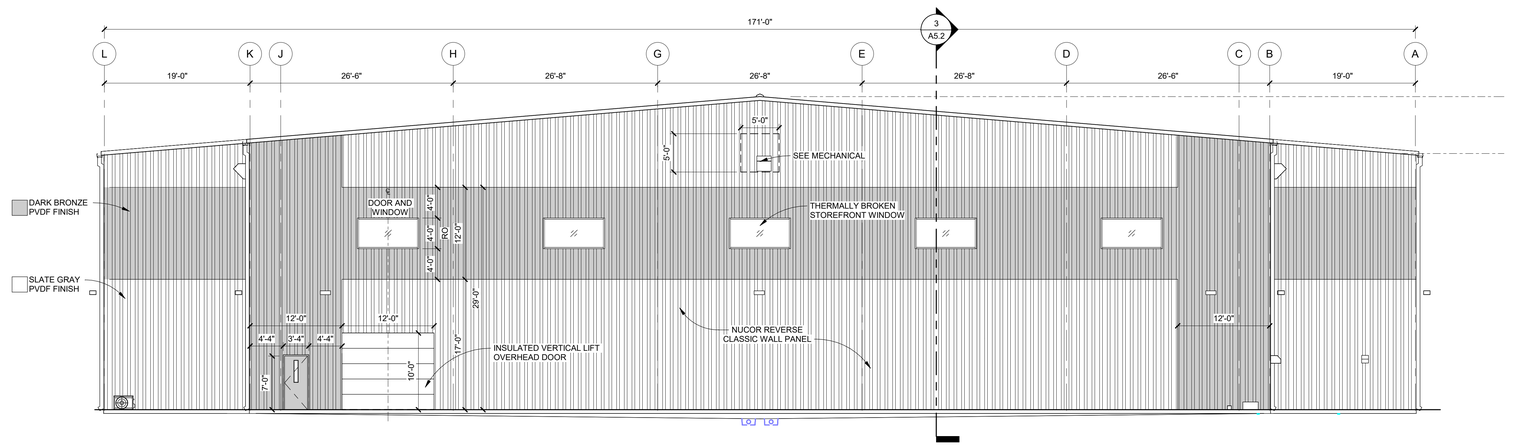
4 WEST ELEVATION
1/8" = 1'-0"



3 EAST ELEVATION
1/8" = 1'-0"



2 NORTH ELEVATION
1/8" = 1'-0"



1 SOUTH ELEVATION
1/8" = 1'-0"

NOTES, KEY NOTES, LEGENDS

DMA Architecture PLLC
380-H Knollwood Street, Suite 174
Winston-Salem, NC 27103
phone: 336-723-6360
designbydma.com

SEALS

STATE OF COLORADO
CRAIG TILLMAN
DISHNER
ARC.00406963
LICENSED ARCHITECT
5.16.22

REVISIONS

No	Date	Description

PROJECT NAME

Kuhn Aviation Hangar

CONCEPT PLAN

Garfield County Airport
Rifle, CO 81650

PHASE

- ☐ Schematic Design
- ☐ Design Development
- ■ Construction Documents
- ☐ Record Drawings

- ■ Released for Construction
- ☐ Not Released for Construction

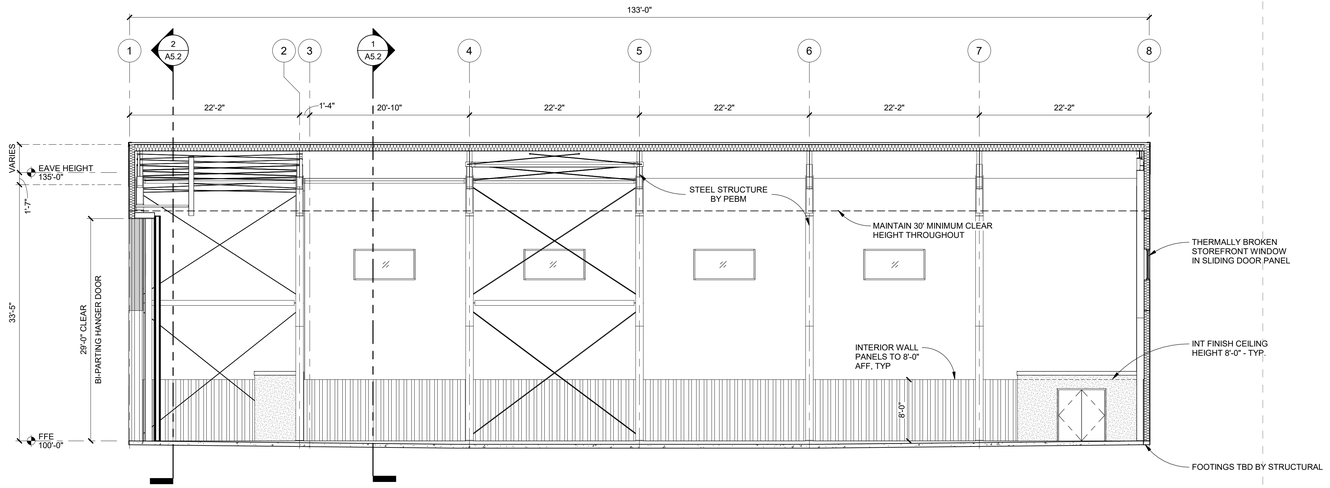
DATE	PROJECT NO.
5/16/22	**21-1010**

SHEET TITLE

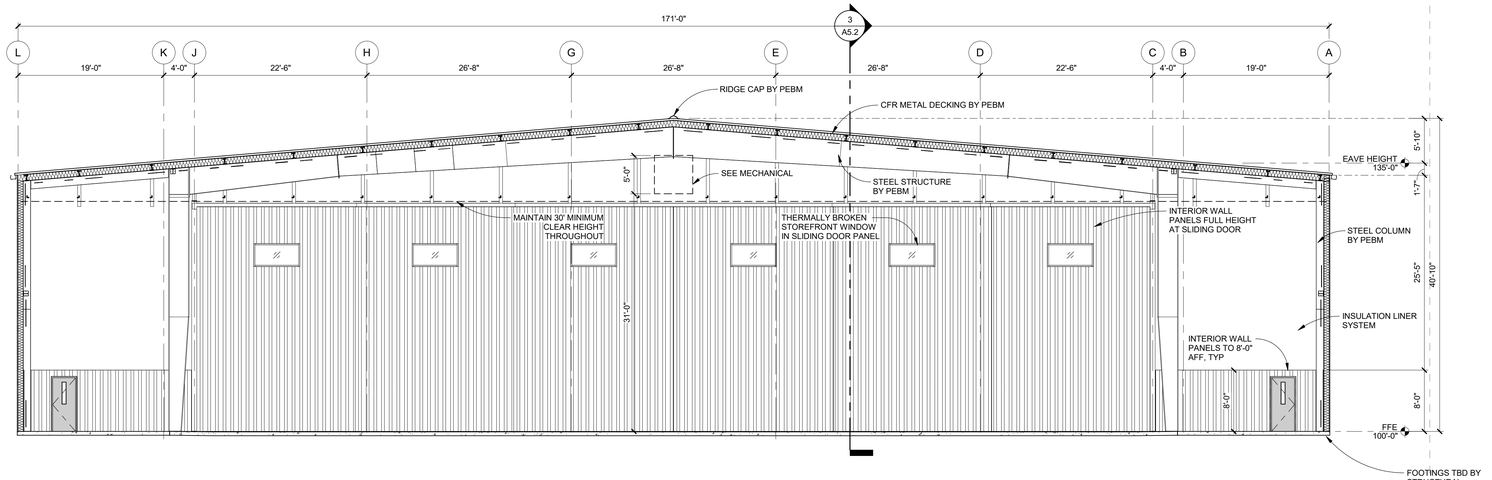
BUILDING ELEVATIONS

SHEET NO.

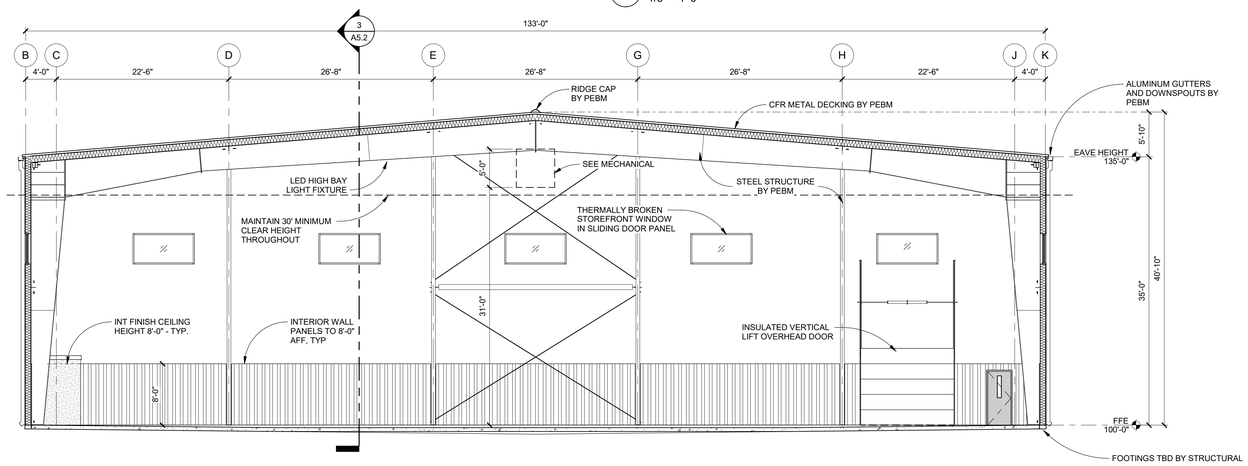
A5.1



3 BUILDING SECTION
1/8" = 1'-0"



2 BUILDING SECTION
1/8" = 1'-0"



1 BUILDING SECTION
1/8" = 1'-0"

DMA Architecture PLLC
380-H Knollwood Street, Suite 174
Winston-Salem, NC 27103
phone: 336-723-6360
designbydma.com

SEALS

STATE OF COLORADO
CRAIG TILLMAN
DESIGNER
JRC.00406963
LICENSED ARCHITECT
5.16.22

REVISIONS

No	Date	Description

PROJECT NAME

Kuhn Aviation Hangar

CONCEPT PLAN

Garfield County Airport
Rifle, CO 81650

PHASE

- ☐ Schematic Design
- ☐ Design Development
- ■ Construction Documents
- ☐ Record Drawings

- ■ Released for Construction
- ☐ Not Released for Construction

DATE	PROJECT NO.
5/16/22	21-1010

SHEET TITLE

BUILDING SECTIONS

SHEET NO.

A5.2

GENERAL STRUCTURAL NOTES:

Design Criteria:
Code Edition: 2015 IBC (International Building Code)
Loads used in design are as follows:

Dead Loads			
	Roof		
	PEMB (Pre-Engineered Metal Building)	Actual Weight psf	
	PEMB Roof Collateral Load	6 psf	
Floor Live Loads			
	Airplane Wheel Load	30 kips	
	Light Storage	125 psf	
Snow Loads	Elevation	5537.59 ft. ASL	
	Ground Snow Load	58 psf	
	Flat Roof Snow Load	40 psf	
	Snow Exposure Factor, Ce	1.00	
	Snow Load Importance Factor, Is	1.00	
	Thermal Factor, Ct	1.00	
Wind Design Data			
	Analysis Procedure	IBC Prescriptive Design	
	Ultimate Wind Speed, Vult.	115 mph	
	Nominal Wind Speed, Vasd.	89 mph	
	Nominal Wind Speed, Service Load Deflection, 10 yr MRI	76 mph	
	Risk Category	II	
	Wind Exposure	C	
	Internal Pressure Coefficient	+- 0.18	
	Exterior Component and Cladding Wind Pressures, (ASD Allowable Stress Design Pressures)		
	Roof - Flat to 6:12 pitch		
	zone 1 roof, < 10 sq. ft.	+17 psf	-30 psf
	zone 1 roof, > 100 sq. ft.	+12 psf	-27 psf
	zone 2 roof, < 10 sq. ft.	+17 psf	-50 psf
	zone 2 roof, > 100 sq. ft.	+12 psf	-35 psf
	zone 3 roof, < 10 sq. ft.	+17 psf	-75 psf
	zone 3 roof, > 100 sq. ft.	+12 psf	-55 psf
	overhang, zone 1 < 10 sq. ft.	-43 psf	-43 psf
	overhang, zone 1, <100 sq. ft.	-40 psf	-40 psf
	overhang, zone 1, <500 sq. ft.	-28 psf	-28 psf
	overhang, zone 2 < 10 sq. ft.	-55 psf	-55 psf
	overhang, zone 2, <100 sq. ft.	-55 psf	-55 psf
	overhang, zone 3 < 10 sq. ft.	-93 psf	-93 psf
	overhang, zone 3, >100 sq. ft.	-63 psf	-63 psf
	Roof - 6:12 to 12:12 pitch		
	zone 1 roof, < 10 sq. ft.	+17 psf	-30 psf
	zone 1 roof, > 100 sq. ft.	+12 psf	-27 psf
	zone 2 roof, < 10 sq. ft.	+17 psf	-50 psf
	zone 2 roof, > 100 sq. ft.	+12 psf	-35 psf
	zone 3 roof, < 10 sq. ft.	+17 psf	-75 psf
	zone 3 roof, > 100 sq. ft.	+12 psf	-55 psf
	overhang, zone 2 < 10 sq. ft.	-55 psf	-55 psf
	overhang, zone 2, <500 sq. ft.	-45 psf	-45 psf
	overhang, zone 3 < 10 sq. ft.	-93 psf	-93 psf
	overhang, zone 3, >100 sq. ft.	-63 psf	-63 psf
	Walls < 60 feet		
	zone 4 wall, <10 sq. ft.	+30 psf	-32 psf
	zone 4 wall, >500 sq. ft.	+22 psf	-25 psf
	zone 4 parapet walls	+85 psf	-50 psf
	zone 5 wall, <10 sq. ft.	+30 psf	-40 psf
	zone 5 wall, >500 sq. ft.	+22 psf	-25 psf
	zone 5 parapet walls	+108 psf	-72 psf
Seismic Design Data			
	Analysis Procedure	ASCE7 Equivalent Lateral Force Procedure	
	Ss	0.306	
	S1	0.08	
	Site Class	D	
	Sds	0.318	
	Sd1	0.127	
	Seismic Design Category	B	
	Seismic Force Resisting System(s)		
	Basic Seismic Force Resisting System 1	STEEL NOT SPECIFICALLY DETAILED FOR SEISMIC RESISTANCE	
	Design Base Shear	V = 0.106 x W	
	Seismic Response Coefficient, Cs	0.106	
	Response Modification Coefficient, R	3	
Geotechnical Design Data			
	Allowable Soil Bearing Pressure	2500 psf (native soil)	
	Allowable Soil Bearing Pressure	4500 psf (24 inches imported structural fill per Geotech)	
	Frost Depth (minimum)	36 inches	
	Passive Lateral Pressure	350 psf	
	Coefficient of Friction	0.4	

Geo-Technical Information

1 The foundation design was prepared in accordance with the geotechnical report by Yeh and Associates Inc., dated March 18 2022, job number 222-084. Footings were designed for an allowable bearing pressure of 2500 psf. Restrained walls were designed for an at rest lateral pressure of psf and unrestrained walls were designed for an active lateral pressure of psf. Footings shall bear on undisturbed native soils or compacted fill per geotech report 36 inches below adjacent finished grade. Subsurface drainage, excavation, backfilling, surface drainage, and compaction shall be done in accordance with the recommendations in the report. A representative of the soils engineer shall verify the soil conditions and allowable soil bearing pressure at the time of excavation

Reinforcing Steel:

1 All reinforcement detailing, fabrication and placement shall conform to the ACI Details and Detailing of Reinforcement (ACI 315).
2 Unless noted otherwise, all reinforcing bars #5 or larger shall be of deformed bars conforming to ASTM A615, Grade 60. #4 bars or smaller shall be ASTM A615, Grade 40. Welded reinforcing bars shall be ASTM A706, Grade 60.
3 Welded wire fabric shall conform to ASTM A185, Grade 60 and be lapped a minimum of one full mesh plus two inches at side and end splices and be wired together.
4 Reinforcement shall be the longest lengths practical. Where splices are necessary, lap splices shall be a minimum of 60 bar diameters for Grade 60 reinforcing and 40 bar diameters for Grade 40 reinforcing, unless noted otherwise. Do not weld or use mechanical splicing.
5 At corners make bar continuous through discontinuity or provide corner bars with a full length lap splice each side of corner.
6 Place two #5's (per 8 inches of wall thickness) to extend a minimum of 38 inches around all openings and steps in walls, slabs, and beams. Provide #5 x 5'-0 diagonal at all corners of openings and steps in walls, slabs, and beams.

Reinforced Concrete:

1 All structural concrete has been designed in accordance with ACI 318. All structural concrete construction work shall conform to ACI 301 unless noted otherwise.
2 Cast in place concrete shall be made with Type II or V cement. Admixtures containing chloride salts shall not be used. All concrete walls and slabs exposed to the weather and garage floor slabs shall have 5-7% of entrained air. Concrete shall have minimum 28 day compressive strengths of:

Element:	Minimum Compressive Strength, f'c (psi)
Basement walls, foundations, and other concrete not exposed to earth or weather:	4000 psi
Interior floor slabs:	4000 psi
Basement walls, foundation walls, exterior walls and other vertical concrete work exposed to earth or weather:	4000 psi
Exterior slabs and steps exposed to the weather:	4500 psi

3 Concrete coverage for reinforcing steel shall provide the following:

Unformed surfaces poured permanently against earth:	3 inches
Formed surfaces exposed to earth or weather:	
#5 bar or less:	1 1/2 inches
#6 bar or greater:	2 inches

4 Hot and cold weather concreting procedures shall conform to the recommendations in the ACI manual of Concrete Practice.
5 Bolts for beam and column bearing plates shall be set with templates.
6 Contractor shall coordinate all embeds, penetrations, openings, and verify all plan dimensions prior to forming and pouring concrete.
7 Construction joints shall be laid out to minimize the number of construction joints in each individual structure. Construction joints in walls shall not occur close to wall corners or intersections such that the divide additional corner or intersection reinforcement.

Concrete Anchors:

1 Anchor bolts are to be ASTM F1554, Grade 55 Heavy Hex headed anchor bolts, unless noted otherwise. Embedment shall be a minimum of 16 times anchor diameter unless noted otherwise.

Pre-Engineered Metal Building

1 Pre-Engineered Metal Building manufacturer shall be responsible for furnishing the metal building system which shall include the primary and secondary structural framing members and all associated framing, siding, roofing, flashing, fasteners, and other components, and accessories required for a complete building. Anchor bolts and other items embedded in the concrete shall be supplied by the general contractor.
2 Pre-Engineered Metal Building framing, parts, and components shall be designed for loads given. Calculations and shop drawings shall be signed and sealed by an Engineer registered in the project state. Submit calculations and shop drawings to the Engineer for review and confirmation of column reactions assumed in the foundation design prior to commencement of the project. Erection drawings and calculations shall be submitted for buiding department approval in accordance with the deferred submittal requirements of the Building Code.
3 The structural framing and foundation plans by the Engineer of Record indicate typical and assumed primary and secondary framing sizes, bracing type and location, column locations, pier sizes, and anchor bolt dimensions and layout. These may vary from manufacturer to manufacturer and shall be confirmed and coordinated by the building manufacturer and the general contractor. Foundation design and Anchor bolt sizes and embedments shall be confirmed by the Engineer of Record and any adjustments in the design or detailing provided prior to the start of foundation construction.
4 Pre-Engineered Metal Building Deformation and Drift Design shall conform with the following limits:

Metal Panel Roofing and Wall Cladding, Deflection Limit	L/60
Metal Panel Roofing Areas, Service Load Roof Framing Deflection Limit	L/150
Roof supported ceiling areas, Service Load Roof Framing Deflection Limit	L/240
Metal Panel Clad Walls, Wall Framing Service Load Deflection Limit	L/90
Unpartitioned and Metal Clad Building Areas, Allowable Seismic Drift Limit	H/50
Partitioned building areas with drywall clad walls or partitions, Allowable Seismic Drift Limit	H/67

General Requirements:

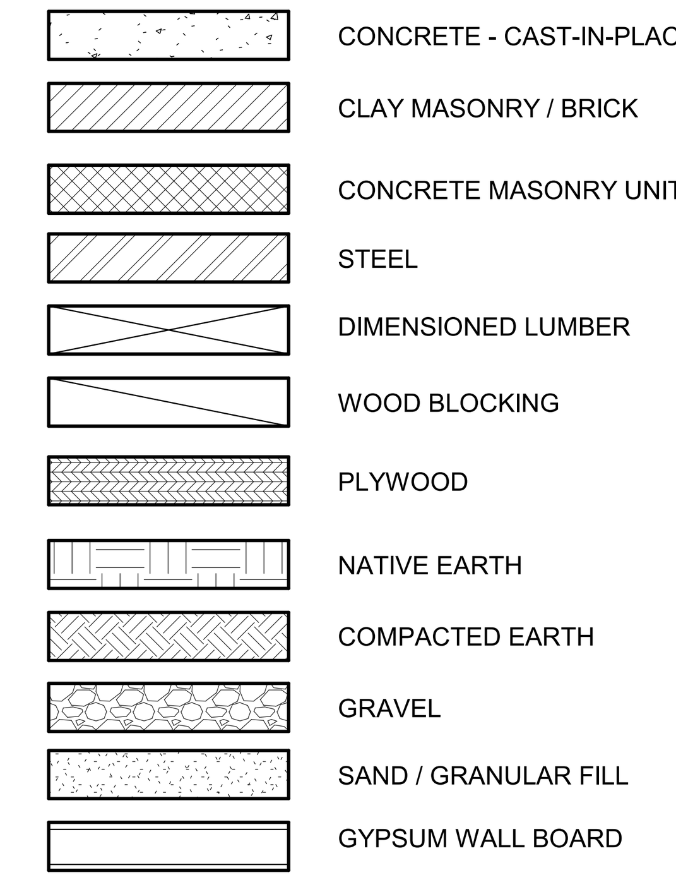
1 Structural erection and bracing: The structural drawings illustrate the completed structure with all elements in their final positions supported and braced. The contractor, in the proper sequence, shall provide shoring and bracing as may be required during construction to achieve the final completed structure. Contact engineer for consultation (not in contract) as required.
2 Dimensions: Check all dimensions against field and architectural drawings prior to construction. Do not scale drawings.
3 Construction practices: The general contractor is responsible for means, methods, techniques, sequences and procedures for construction of this project. Notify structural engineer of omissions or conflicts between the working drawings and existing conditions.
4 Coordinate requirements for mechanical/electrical/plumbing penetrations through structural elements with structural engineer. Prior to installation of such equipment or other items to be attached to the structure, the contractor shall obtain approval for connections and support. Contractor shall furnish required hangers, connections, etc. required for installation of such items, unless specifically noted on plans.
5 Jobsite safety is the sole responsibility of the contractor. All methods used for construction shall be in accordance with the latest edition of the IBC.
6 The structural engineer may make periodic observation visits to the jobsite for determination of general conformance with the construction documents. Such observation visits shall not replace required inspections by the governing authorities or serve as "special inspections" as may be required by the International Building Code.
7 Though every effort has been made to provide a complete and clear set of construction documents, discrepancies or omissions may occur. Release of these drawings anticipates cooperation and continued communication between the contractor, architect and engineer to provide the best possible structure. These drawings have been prepared for the use of a qualified contractor experienced in the construction techniques and systems depicted.

Deferred Submittals:

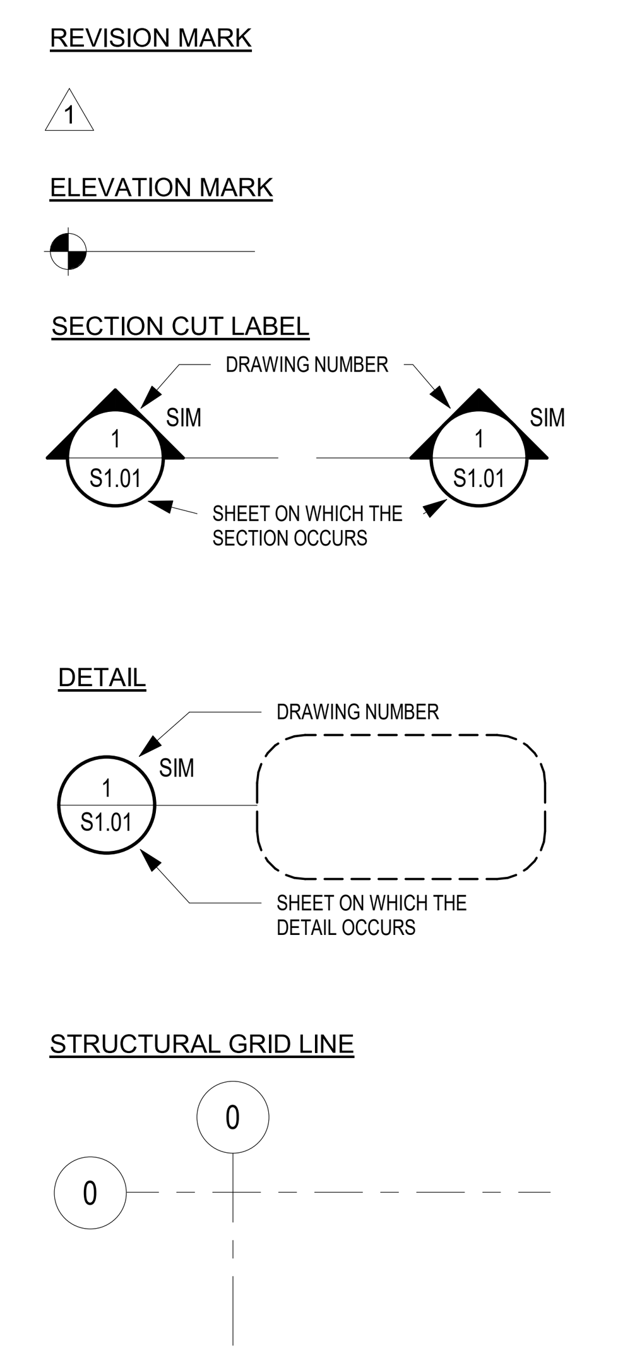
1 When received and reviewed by the Engineer of Record, the following submittal items will be submitted to the building official for review and approval:

Pre-Engineered Metal Building

MATERIALS LEGEND



SYMBOLS LEGEND



SGM
118 West Sixth Street, Suite 200
Glenwood Springs, CO 81601
970.945.1004 www.sgm-inc.com

NOT FOR CONSTRUCTION

Kuhn Aviation Hangar
Garfield County, CO

#	Revision:	Date:	By:

Project Milestone: PERMIT SET

Job No.	2021-546.001
Drawn by:	MAN
Date:	05/13/2022
QC: JEP	PE: MAN

Title:
GENERAL NOTES

Dwg No.
S0.01

STATEMENT OF SPECIAL INSPECTIONS

This Statement of Special Inspections is prepared in accordance with the 2015 International Building Code Section 1704.3. It is limited to structural elements and does not include requirements for architectural components, plumbing, mechanical, and electrical components, fire resistant materials, insulation systems and smoke control systems as outlined in IBC Sections 1705.12.5, 1705.12.6, 1705.14, 1705.15, 1705.16, 1705.17, and 1705.18. Additional Statements may be required from other Design Professionals.

Sections noted shall be inspected or tested in accordance with the referenced standards or IBC reference. See IBC for appropriate references.

Inspections and testing shall be performed by the Jurisdiction Building Official or by an approved agency engaged by the Owner or Owner's representative and recognized and approved by the Building Official in accordance with IBC Section 1703.

REQUIRED SPECIAL INSPECTIONS AND TESTS OF CONCRETE CONSTRUCTION

TYPE	CONTINUOUS DURING TASK LISTED	PERIODICALLY DURING TASK LISTED	REFERENCED STANDARDa	IBC REFERENCE
1. Inspection of reinforcing steel, including prestressing tendons, and verify placement.	—	X	ACI 318 Ch. 20, 25.2, 25.3, 26.6.1-26.6.3	1908.4
2. Reinforcing bar welding:				
a. Verify weldability of reinforcing bars other than ASTM A706	—	X	AWS D1.4 ACI 318: 26.6.4	—
b. Inspect single-pass fillet welds, maximum 5/16"; and		X		
c. Inspect all other welds	X			
3. Inspect anchors cast in concrete.	—	X	ACI 318: 17.8.2	—
4. Inspect anchors post-installed in hardened concrete members.b				
a. Adhesive anchors installed horizontally or upwardly inclined orientations to resist sustained tension loads.	X		ACI 318: 17.8.2.4	
b. Mechanical anchors and adhesive anchors not defined in 4.a		X	ACI 318: 17.8.2	—
5. Verifying use of required design mix.	—	X	ACI 318: Ch. 19, 26.4.3, 26.4.4	1904.1, 1904.2, 1908.2, 1908.3
6. Prior to concrete placement, fabricate specimens for strength tests, perform slump and air content tests, and determine the temperature of the concrete.	X	—	ASTM C 172 ASTM C 31 ACI 318: 26.4, 26.12	1908.10
7. Inspect concrete and shotcrete placement for proper application techniques.	X	—	ACI 318: 26.5	1908.6, 1908.7, 1908.8
8. Verify maintenance of specified curing temperature and techniques	—	X	ACI 318: 26.5.3-26.5.5	1908.9
9. Inspect prestressed concrete for:				
a. Application of prestressing forces; and	X	—	ACI 318: 26.10	—
b. Grouting of bonded prestressing tendons.	X	—		
10. Inspect erection of precast concrete members.	—	X	ACI 318: Ch. 26.8	—
11. Verify in-situ concrete strength, prior to stressing of tendons in post-tensioned concrete and prior to removal of shores and forms from beams and structural slabs.	—	X	ACI 318: 26.11.2	—
12. Inspect formwork for shape, location and dimensions of the concrete member being formed.	—	X	ACI 318: 26.11.1.2(b)	—

For SI: 1 inch = 25.4 mm
a. Where applicable, see also Section 1705.12, Special Inspections for seismic resistance.
b. Specific requirements for special inspection shall be included in the research report for the anchor issued by an approved source in accordance with 17.8.2 in ACI 318, or other qualification procedures. Where specific requirements are not provided, special inspection requirements shall be specified by the registered design professional and shall be approved by the building official prior to the commencement of the work.

Table 1705.6
REQUIRED SPECIAL INSPECTIONS AND TESTS OF SOILS

TYPE	CONTINUOUS SPECIAL INSPECTION	PERIODIC SPECIAL INSPECTION
1. Verify materials below shallow foundations are adequate to achieve the design bearing capacity.	-	X
2. Verify excavations are extended to proper depth and have reached proper material.	-	X
3. Perform classification and testing of compacted fill materials.	-	X
4. Verify use of proper materials, densities and lift thicknesses during placement and compaction of compacted fill.	X	-
5. Prior to placement of compacted fill, observe subgrade and verify that site has been prepared properly.	-	X

REQUIRED QUALITY CONTROL AND QUALITY ASSURANCE INSPECTIONS OF HIGH STRENGTH BOLTING

Quality Control Inspections shall be performed by the fabricator's or erector's Quality Control Inspector. Quality Assurance Inspections and nondestructive testing of structural steel elements in buildings, structures, and portions thereof shall be in accordance with the quality assurance inspection requirements of AISC 360. Observation of bolting operations shall be the primary method used to confirm that the materials, procedures and workmanship incorporated in construction are in conformance with the construction documents and provisions of the RCSC Specification.
(1) For snug-tight joints, pre-installation verification testing and monitoring of the installation procedures are not applicable.
(2) For pretensioned joints and slip-critical joints, when the installer is using the turn-of-the method with matchmarking techniques, the direct tension indicator method, or the twist off type tension control bolt method, QC and QA inspectors need not be present during installation.
(3) For pretensioned and slip-critical joints, when the installer is using the calibrated wrench method, or turn-of-the-nut method wihtout matchmarking, QC and QA inspectors shall be engaged in their assigned inspection duties during installation of fasteners.
As a minimum, bolting inspection tasks shall be in accordance with the following tables:
In these tables, the inspection tasks are as follows:
O - Observe these items on a random basis. Operations need not be delayed pending these inspections.
P - Perform these tasks for each welded joint or member.

INSPECTION TASKS PRIOR TO BOLTING	QC	QA
Manufacturer's certifications available for fastener materials	O	P
Fasteners marked in accordance with ASTM requirements	O	O
Proper fasteners selected for the joint detail (grade, type, bolt length if threads are to be excluded from shear plane)	O	O
Proper bolting procedure selected for joint detail	O	O
Connecting elements, including the appropriate faying surface condition and hole preparation, if specified, meet applicable requirements.	O	O
Pre-installation verification testing by installation personnel observed and documented for fastener assemblies and methods used.	P	O
Proper storage provided for bolts, nuts, washers, and other fastener components.	O	O

INSPECTION TASKS DURING BOLTING	QC	QA
Fastener assemblies, of suitable condition, placed in all holes and washers (if required) are positioned as required.	O	O
Joint brought to the snug-tight condition prior to the pretensioning operation.	O	O
Fastener component not turned by the wrench prevented from rotating.	O	O
Fasteners are pretensioned in accordance with the RCSC Specification, progressing systematically from the most rigid point toward the free edges.	O	O

INSPECTION TASKS AFTER BOLTING	QC	QA
Document acceptance or rejection of bolted connections	P	P

REQUIRED QUALITY CONTROL AND QUALITY ASSURANCE INSPECTIONS OF WELDED STEEL CONSTRUCTION

Quality Control Inspections shall be performed by the fabricator's or erector's Quality Control Inspector. Quality Assurance Inspections and nondestructive testing of structural steel elements in buildings, structures, and portions thereof shall be in accordance with the quality assurance inspection requirements of AISC 360. Observation of Welding operations and visual inspection of in-process and completed welds shall be the primary method to confirm that the materials, procedures and workmanship are in conformance with the construction documents. As a minimum welding inspection tasks shall be in accordance with the following tables. In these tables, the inspection tasks are as follows:
O - Observe these items on a random basis. Operations need not be delayed pending these inspections.
P - Perform these tasks for each welded joint or member.

INSPECTION TASKS PRIOR TO WELDING	QC	QA
Welding procedure specifications (WSPs) available	P	P
Manufacturer certifications for welding consumables available.	P	P
Material identification (type/grade)	O	O
Welder identification system 1	O	O
Fit-up of groove welds (including joint geometry) • Joint preparation • Dimensions (alignment, root opening, root face, bevel) • Cleanliness (condition of steel surfaces) • Tacking (tack weld quality and location) • Backing type and fit (if applicable)	O	O
Configuration and finish of access holes	O	O
Fit-up of fillet welds • Dimensions (alignment, gaps at root) • Cleanliness (condition of steel surfaces) • Tacking (tack weld quality and location)	O	O
Check welding equipment	O	O

1 The fabricator or erector, as applicable, shall maintain a system by which a welder who has welded a joint or member can be identified. Stamps, if used, shall be the low-stress type.

INSPECTION TASKS DURING WELDING	QC	QA
Use of qualified welders	O	O
Control and handling of welding consumables • Packaging • Exposure control	O	O
No welding over cracked tack welds	O	O
Environmental Conditions • Wind speed within limits • Precipitation and temperature	O	O
WPS followed • Settings on welding equipment • Travel speed • Selected welding materials • Shielding gas type/flow rate • Preheat applied • Interpass temperature maintained (min./max.) • Proper position (F, V, H, OH)	O	O
Welding techniques • Interpass and final cleaning • Each pass within profile limitations • Each pass meets quality requirements	O	O

INSPECTION TASKS AFTER WELDING	QC	QA
Welds cleaned	O	O
Size, length and location of welds	P	P
Welds meet visual acceptance criteria • Crack prohibition • Weld/base-metal fusion • Crater cross section • Weld profiles • Weld size • Undercut • Porosity	P	P
Arc strikes	P	P
k-area 1	P	P
Backing removed and weld tabs removed (if required)	P	P
Repair activities	P	P
Document acceptance or rejection of welded joint or member	P	P

1 When welding of doubler plates, continuity plates or stiffeners has been performed in the k-area, visually inspect the web k-area for cracks within 3 in. (75mm) of the weld.

SGM
118 West Sixth Street, Suite 200
Glenwood Springs, CO 81601
970.945.1004 www.sgm-inc.com

NOT FOR CONSTRUCTION

Kuhn Aviation Hangar
Garfield County, CO

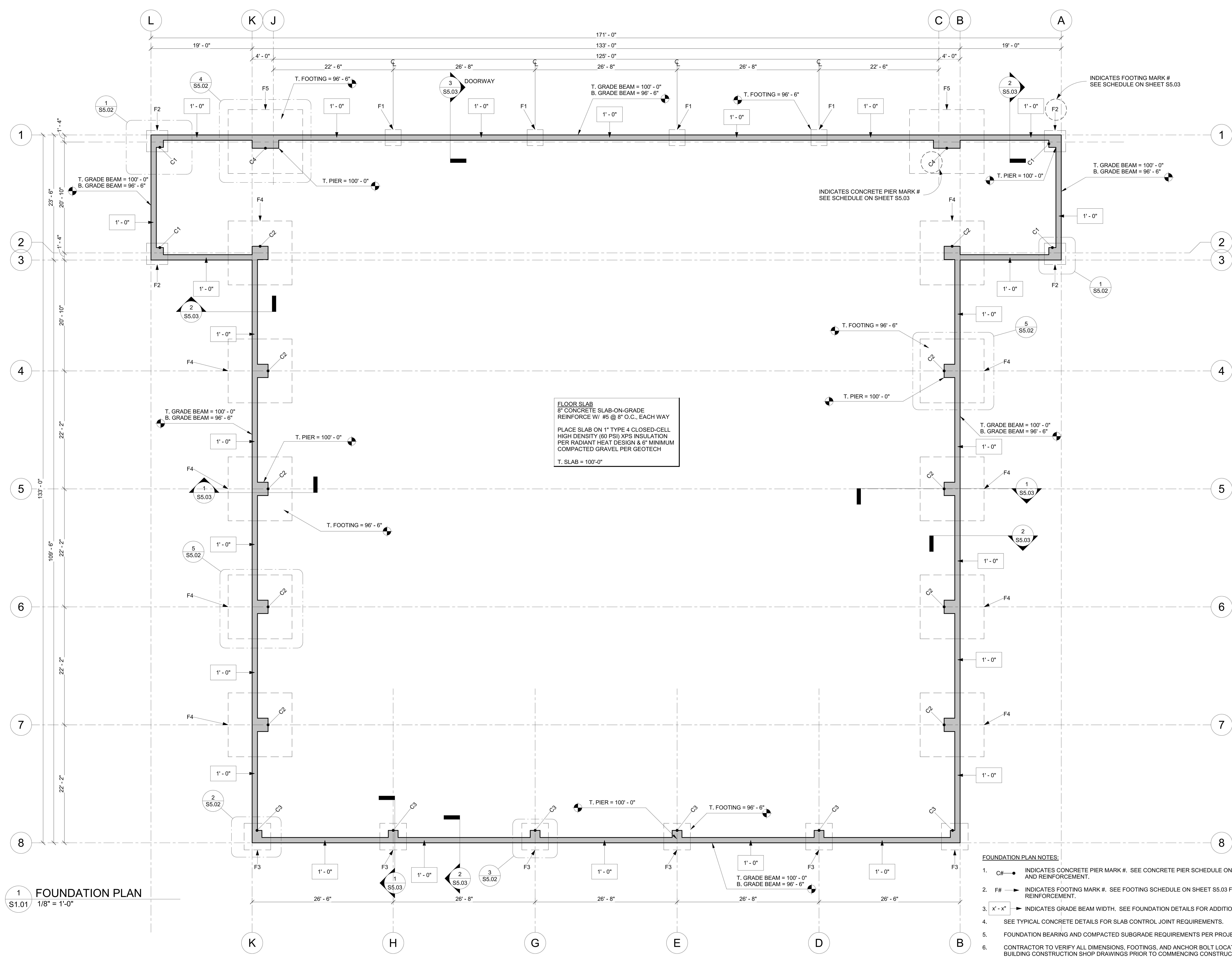
#	Revision:	Date:	By:

Project Milestone: PERMIT SET

Job No. 2021-546.001
Drawn by: MAN
Date: 05/13/2022
QC: JEP PE: MAN

Title: SPECIAL INSPECTIONS

Dwg No. S0.02



1 FOUNDATION PLAN
S1.01 1/8" = 1'-0"

FOUNDATION PLAN NOTES:

1. C# INDICATES CONCRETE PIER MARK #. SEE CONCRETE PIER SCHEDULE ON SHEET S5.03 FOR SIZE AND REINFORCEMENT.
2. F# INDICATES FOOTING MARK #. SEE FOOTING SCHEDULE ON SHEET S5.03 FOR SIZE AND REINFORCEMENT.
3. x' - x" INDICATES GRADE BEAM WIDTH. SEE FOUNDATION DETAILS FOR ADDITIONAL REQUIREMENTS.
4. SEE TYPICAL CONCRETE DETAILS FOR SLAB CONTROL JOINT REQUIREMENTS.
5. FOUNDATION BEARING AND COMPACTED SUBGRADE REQUIREMENTS PER PROJECT GEOTECH REPORT.
6. CONTRACTOR TO VERIFY ALL DIMENSIONS, FOOTINGS, AND ANCHOR BOLT LOCATIONS WITH FINAL METAL BUILDING CONSTRUCTION SHOP DRAWINGS PRIOR TO COMMENCING CONSTRUCTION.

SGM
118 West Sixth Street, Suite 200
Glenwood Springs, CO 81601
970.945.1004 www.sgm-inc.com

NOT FOR CONSTRUCTION

Kuhn Aviation Hangar
Garfield County, CO

#	Revision:	Date:	By:

Project Milestone: PERMIT SET

Job No.	2021-546.001
Drawn by:	MAN
Date:	05/13/2022
QC: JEP	PE: MAN

Title: FOUNDATION PLAN

Dwg No. S1.01

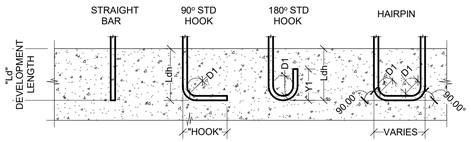
REINFORCING HOOKS AND SPLICE TABLE (F'C = 4000 PSI, Fy=60 KSI, BAR SPACING = 6 IN. MIN.)									
BAR SIZE	DIAMETER (d_b) (INCHES)	DEVELOPMENT LENGTH (L_d) (INCHES)		CLASS B LAP SPLICE (INCHES)		90° STD HOOK (INCHES)		180° STD HOOK (Y1) (INCHES)	INSIDE BEND DIA.(D1) (INCHES)
		"TOP" BARS	OTHER	"TOP" BARS	OTHER	HOOK	L_{dh}		
		REINFORCING BARS IN TENSION							
#3	0.375	19	15	24	19	6	7	4	2.25
#4	0.5	25	19	32	25	8	9	5	3
#5	0.625	31	24	40	31	10	11	5	3.75
#6	0.75	37	29	48	37	12	13	6	4.5
#7	0.875	54	42	70	54	14	16	7	5.25
#8	1	62	48	80	62	16	18	8	6

STIRRUP AND TIE HOOK SCHEDULE					
BAR SIZE	DIAMETER (d_b) (INCHES)	90° HOOK (INCHES)	135° HOOK (INCHES)	180° HOOK (Y2) (INCHES)	INSIDE HOOK DIA.(D2) (INCHES)
#3	0.375	5	5	4	1.5
#4	0.5	5	5	4	2
#5	0.625	6	6	5	2.5
#6	0.75	12	8	6	4.5
#7	0.875	14	9	7	5.25
#8	1	16	10	8	6

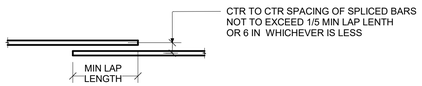
NOTES:

1. "TOP" BARS SHALL BE HORIZONTAL REINFORCEMENT PLACED SO THAT MORE THAN 12" OF FRESH CONCRETE IS CAST IN THE MEMBER BELOW THE DEVELOPMENT LENGTH OR SPLICE.
2. CLEAR SPACING OF BARS BEING DEVELOPED OR SPLICED SHALL
   A) NOT BE LESS THAN d/b, HAVE CLEAR COVER NOT LESS THAN d/b, AND STIRRUPS OR TIES THROUGHOUT L/d NOT LESS THAN THE CODE MINIMUM OR;
   B) CLEAR SPACING OF BARS BEING DEVELOPED OR SPLICED NOT LESS THAN 2d/b AND CLEAR COVER NOT LESS THAN d/b.
   WHERE d/b = DIAMETER OF REINFORCING BAR AND
   L/d = DEVELOPMENT LENGTH.
3. ALL LAP SPLICES SHALL BE CLASS B UNLESS NOTED OTHERWISE.
4. WHEN SPLICING BAR OF DIFFERENT SIZE, THE LENGTH OF LAP SHALL BE GOVERNED BY THE LARGER DIAMETER BAR.
5. SPLICES ARE TO BE MADE SO THAT THE GIVEN DISTANCES TO FACE OF CONCRETE WILL BE MAINTAINED.
6. SPLICES SHALL BE STAGGERED TO GIVE 12 INCHES CLEAR BETWEEN ENDS OF ADJACENT SPLICES, IF BARS ARE SPACED CLOSER THAN 6 INCHES OR 6 BAR DIAMETERS.

1 S5.01 STANDARD REINFORCING HOOKS AND SPLICE SCHEDULES
3/4" = 1'-0"



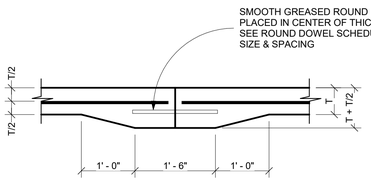
2 S5.01 PRIMARY REINFORCING HOOKS AND EMBEDMENT
3/4" = 1'-0"



3 S5.01 REINFORCING LAP SPLICE
3/4" = 1'-0"

4 S5.01 MAX REINFORCING OFFSET BEND
3/4" = 1'-0"

5 S5.01 TIE OR STIRRUP BENDS AND ENDS
3/4" = 1'-0"

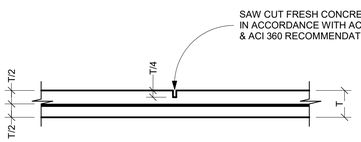


CONSTRUCTION JOINT

ROUND DOWEL SCHEDULE			
T (INCHES)	SIZE	LENGTH (INCHES)	SPACING (INCHES)
4	5/8" DIA.	12	12
5	3/4" DIA.	14	12
6	3/4" DIA.	14	12
7	7/8" DIA.	16	12
8	1" DIA.	16	12

- SUBMIT CONSTRUCTION JOINT LOCATIONS TO ENGINEER FOR APPROVAL
- STOP REINFORCEMENT AT CONSTRUCTION JOINT
- SEE DRAWINGS FOR SLAB REINFORCEMENT SIZE & SPACING
- THICKEN SLABS TO T + T/2 FOR SLABS <= 6"

CONSTRUCTION JOINT DOWELS ARE BASED ON THE PORTLAND CEMENT ASSOCIATION PUBLICATION "CONCRETE FLOORS ON GROUND" AND THE ACI MANUAL OF CONCRETE PRACTICE



CONTROL JOINT

RECOMMENDED CONTROL JOINT SPACING		
T (INCHES)	MAX. AGGREGATE SIZE LESS THAN 3/4"	MAX. AGGREGATE SIZE 3/4" OR LARGER
4	10'-0"	12'-0"
5	10'-0"	13'-0"
6	12'-0"	15'-0"
7	14'-0"	18'-0"
8	16'-0"	20'-0"

- SUBMIT CONTROL JOINT LOCATIONS TO ENGINEER FOR APPROVAL
- FILL JOINT WITH SEMI-RIGID EPOXY JOINT FILLER
- SEE DRAWINGS FOR SLAB REINFORCEMENT SIZE & SPACING

CONTROL JOINT SPACINGS ARE BASED ON THE PORTLAND CEMENT ASSOCIATION PUBLICATION "CONCRETE FLOORS ON GROUND" AND THE ACI MANUAL OF CONCRETE PRACTICE

6 S5.01 CONCRETE JOINTS DETAIL
3/4" = 1'-0"

SGM
118 West Sixth Street, Suite 200
Glenwood Springs, CO 81601
970.945.1004 www.sgm-inc.com

NOT FOR CONSTRUCTION

Kuhn Aviation Hangar
Garfield County, CO

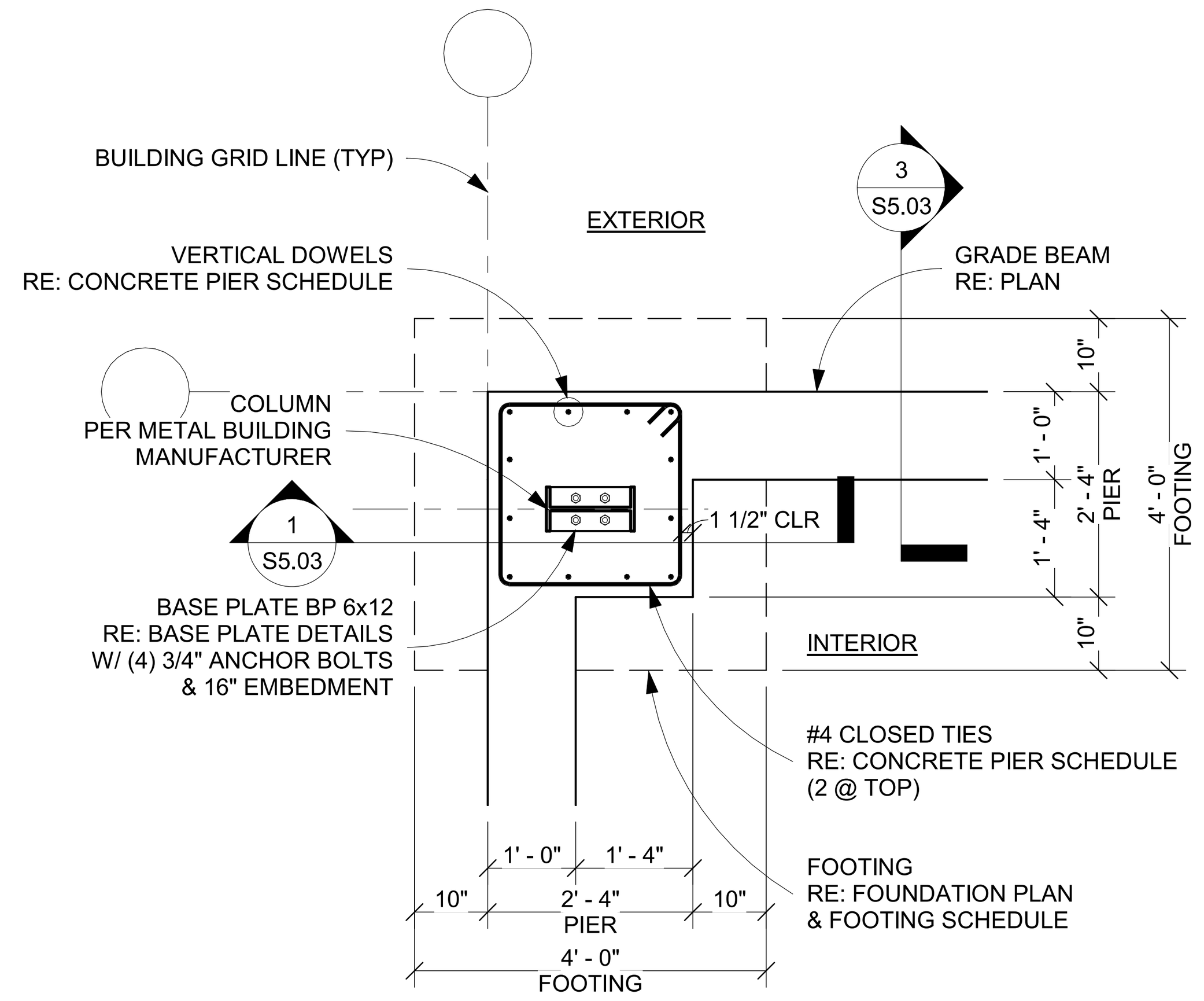
#	Revision:	Date:	By:

Project Milestone: PERMIT SET

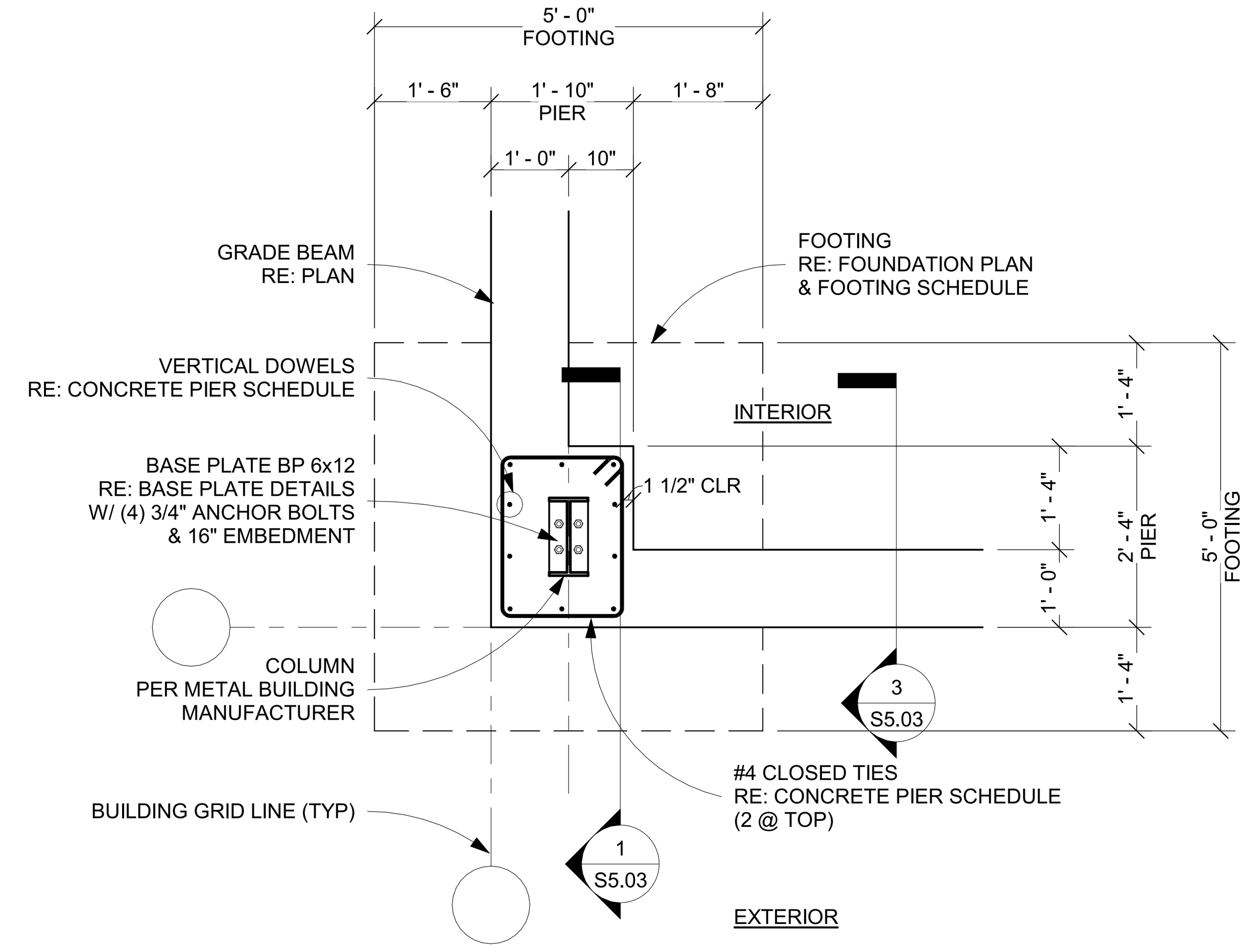
Job No.	2021-546.001
Drawn by:	MAN
Date:	05/13/2022
QC: JEP	PE: MAN

Title: TYPICAL CONCRETE DETAILS

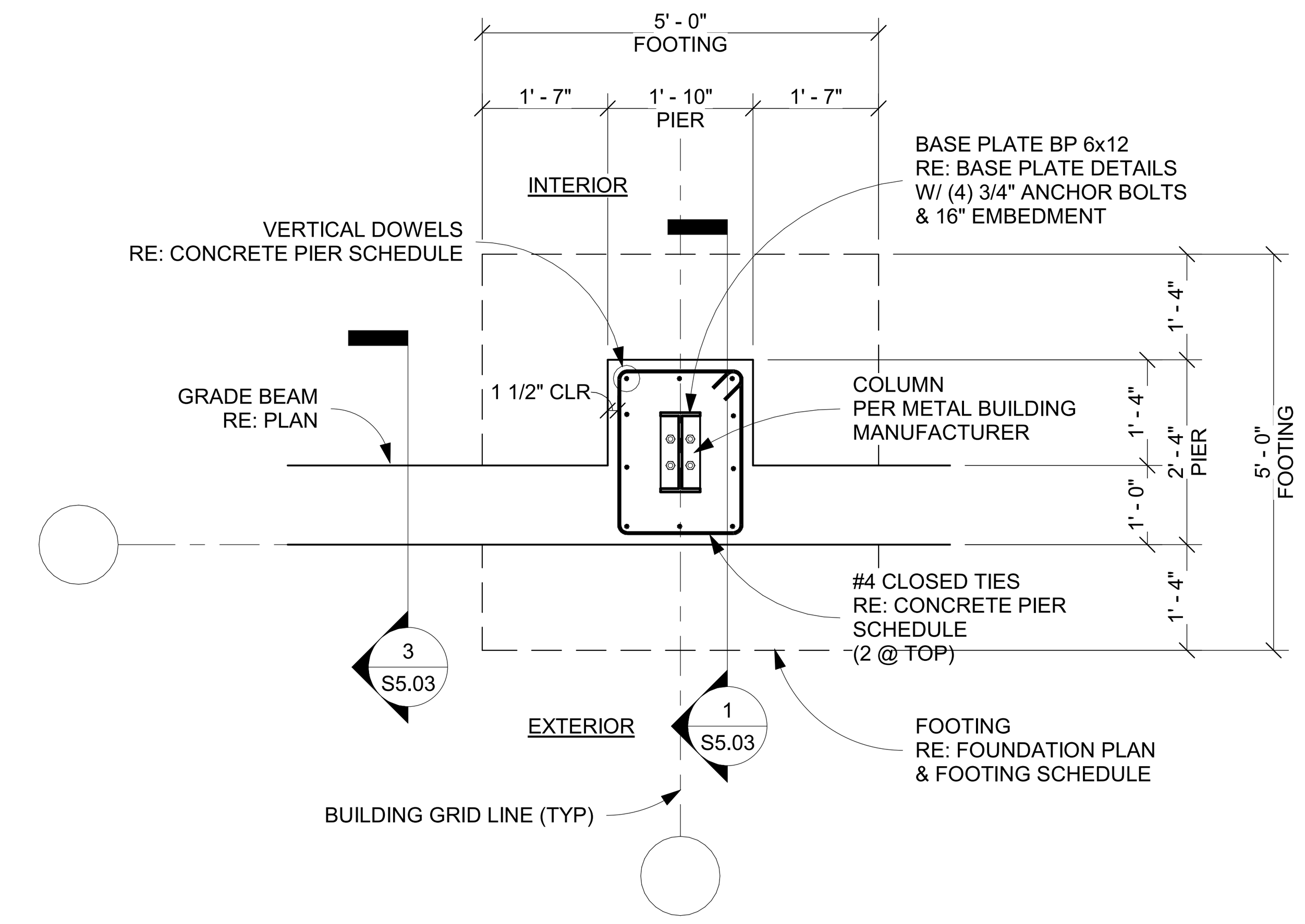
Dwg No. S5.01



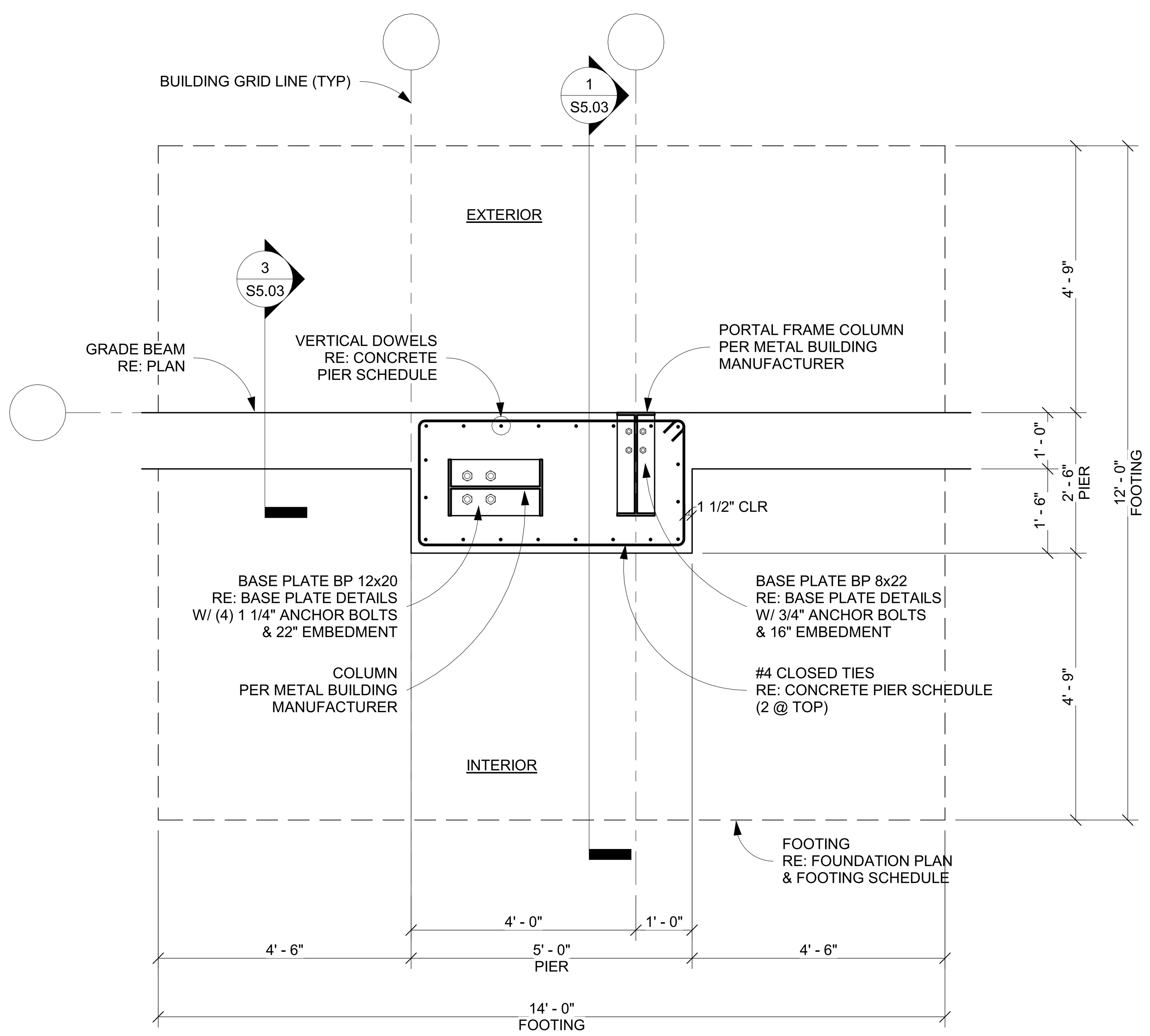
1 PIER PLAN DETAIL AT CORNER ENDWALL
S5.02 1/2" = 1'-0"



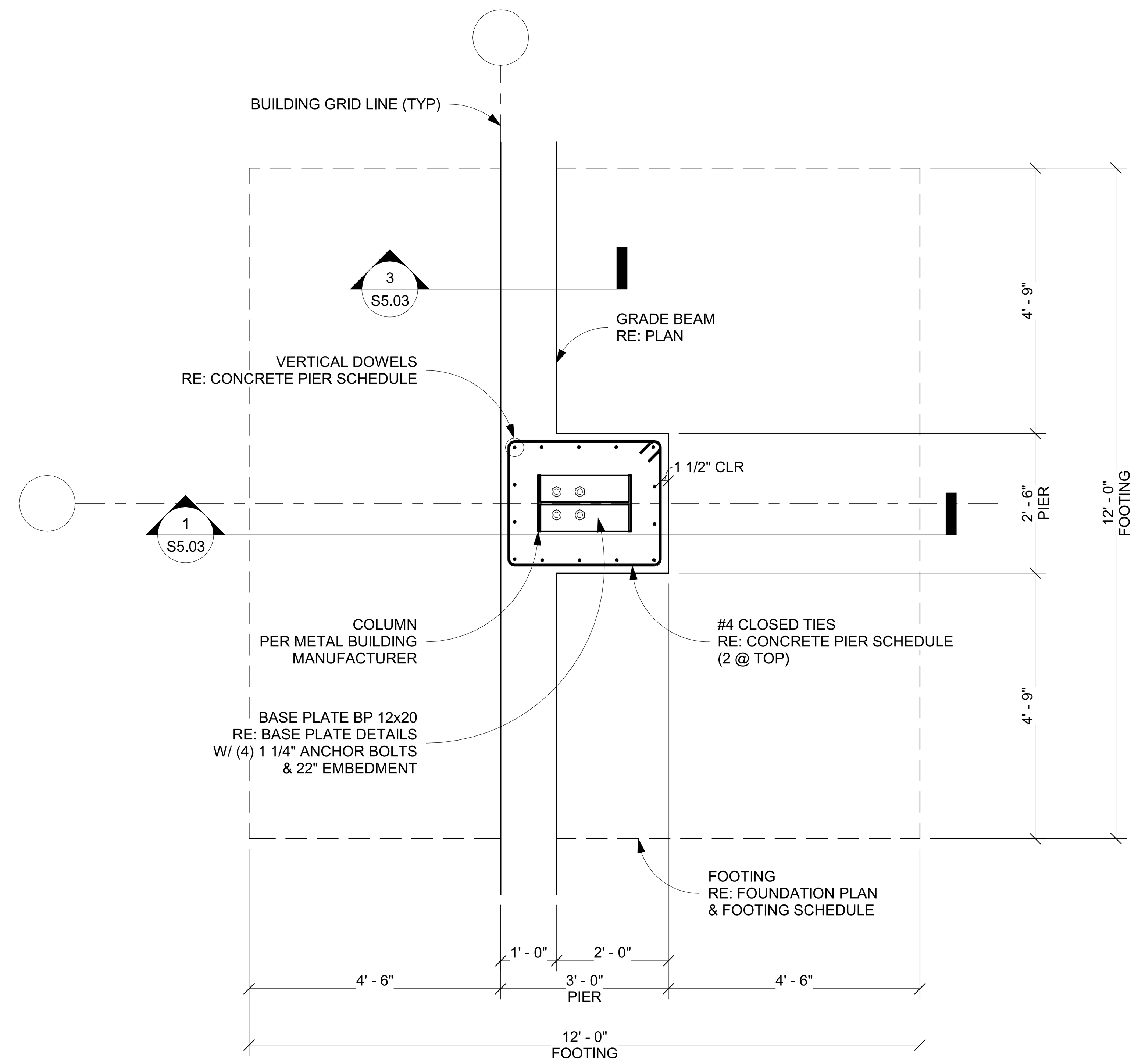
2 PIER PLAN DETAIL AT CORNER ENDWALL
S5.02 1/2" = 1'-0"



3 PIER PLAN DETAIL AT ENDWALL
S5.02 1/2" = 1'-0"



4 PIER PLAN DETAIL AT PORTAL FRAME
S5.02 1/2" = 1'-0"



5 PIER PLAN DETAIL AT MAIN FRAME
S5.02 1/2" = 1'-0"

SGM
118 West Sixth Street, Suite 200
Glenwood Springs, CO 81601
970.945.1004 www.sgm-inc.com

NOT FOR CONSTRUCTION

Kuhn Aviation Hangar
Garfield County, CO

#	Revision:	Date:	By:

Project Milestone: PERMIT SET

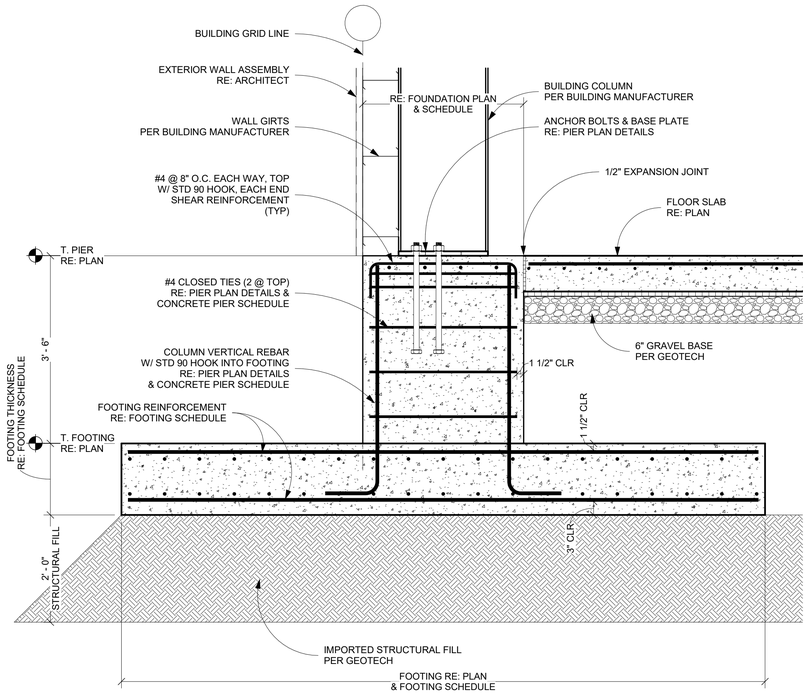
Job No.	2021-546.001
Drawn by:	MAN
Date:	05/13/2022
QC: JEP	PE: MAN

Title:
FOUNDATION PLAN DETAILS

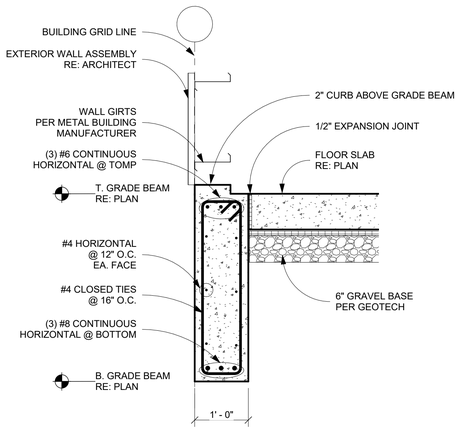
Dwg No.
S5.02

5/12/2022 4:40:46 PM

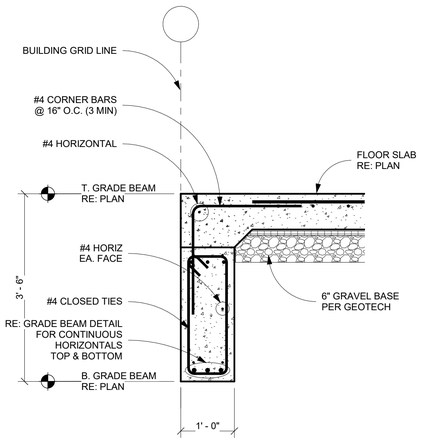
I:\2021\2021-546-Kuhn\MeekerHangar\001-AviationHangar\H-Dwgs\Struct\Revit\KuhnHangar\Rifle-Struct-R22.rvt



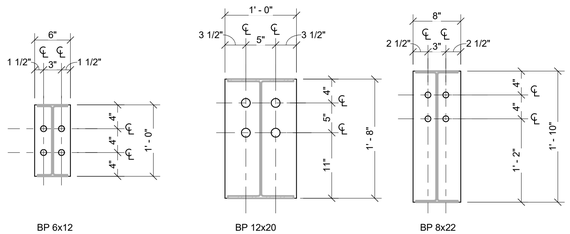
1 S5.03 **CONCRETE PIER SECTION**
3/4" = 1'-0"



2 S5.03 **GRADE BEAM SECTION**
3/4" = 1'-0"



3 S5.03 **GRADE BEAM SECTION AT DOORWAY**
3/4" = 1'-0"



BASE PLATE SIZES TO BE DETERMINED AND VERIFIED BY BUILDING MANUFACTURER. CONTACT ENGINEER FOR FOUNDATION REVISIONS IF BASE PLATE SIZES VARY FROM THOSE SHOWN.

4 S5.03 **BASE PLATE DETAILS**
1" = 1'-0"

FOOTING SCHEDULE					
MARK	LENGTH	WIDTH	THICKNESS	REINFORCEMENT	COMMENTS
F1	3' - 0"	3' - 0"	1' - 0"	#6 @ 12" O.C. EACH WAY, BOTTOM	SEE CONCRETE PIER DETAILS
F2	4' - 0"	4' - 0"	1' - 0"	#6 @ 12" O.C. EACH WAY, BOTTOM	SEE CONCRETE PIER DETAILS
F3	5' - 0"	5' - 0"	1' - 0"	#6 @ 8" O.C. EACH WAY, BOTTOM	SEE CONCRETE PIER DETAILS
F4	12' - 0"	12' - 0"	1' - 4"	#6 @ 8" O.C. EACH WAY, TOP & BOTTOM	SEE CONCRETE PIER DETAILS
F5	12' - 0"	14' - 0"	1' - 4"	#6 @ 8" O.C. EACH WAY, TOP & BOTTOM	SEE CONCRETE PIER DETAILS

CONCRETE PIER SCHEDULE			
MARK	SIZE (L x W)	REINFORCEMENT	COMMENTS
C1	2'-4" x 2'-4"	(12) #6 VERTICAL; #4 HORIZ TIES @ 10" o.c.	PROVIDE #4 SHEAR REINFORCEMENT @ TOP; SEE CONCRETE PIER SECTION
C2	3'-0" x 2'-6"	(14) #6 VERTICAL; #4 HORIZ TIES @ 10" o.c.	PROVIDE #4 SHEAR REINFORCEMENT @ TOP; SEE CONCRETE PIER SECTION
C3	2'-4" x 1'-10"	(10) #6 VERTICAL; #4 HORIZ TIES @ 10" o.c.	PROVIDE #4 SHEAR REINFORCEMENT @ TOP; SEE CONCRETE PIER SECTION
C4	3'-0" x 5'-0"	(20) #6 VERTICAL; #4 HORIZ TIES @ 10" o.c.	PROVIDE #4 SHEAR REINFORCEMENT @ TOP; SEE CONCRETE PIER SECTION

SGM
118 West Sixth Street, Suite 200
Glenwood Springs, CO 81601
970.945.1004 www.sgm-inc.com

NOT FOR CONSTRUCTION

Kuhn Aviation Hangar
Garfield County, CO

#	Revision:	Date:	By:

Project Milestone: PERMIT SET

Job No. 2021-546.001
Drawn by: MAN
Date: 05/13/2022
QC: JEP PE: MAN

Title:
FOUNDATION DETAILS & SCHEDULES

Dwg No.
S5.03

GENERAL NOTES

DEFINITIONS:

1. CONTRACTOR: THE ENTITY BINDED BY THE PRIME AGREEMENT WITH THE CLIENT TO PERFORM THE TASKS INDICATED IN THE CONTRACT DOCUMENTS. THE TERM CONTRACTOR INCLUDES AND IMPLIES ANY RELEVANT SUB-CONTRACTOR THAT MAY BE PERFORMING THE ACTUAL TASK UNDER THE CONTRACTOR'S DIRECTION.
2. CONTRACT DOCUMENTS: THE COMPLIMENTARY COLLECTION OF DRAWINGS, SPECIFICATIONS, PROJECT MANUAL, AND ADDENDA WHICH ARE DIRECTED TO THE CONTRACTOR, UNDER THE PRIME AGREEMENT.
3. FURNISH: TO SUPPLY, DELIVER, UNLOAD, AND INSPECT FOR DAMAGE.
4. INSTALL: TO UNPACK, ASSEMBLE, ERECT, APPLY, PLACE, FINISH, CURE, PROTECT, CLEAN, START UP, AND MAKE READY FOR USE.
5. PROVIDE: TO FURNISH AND INSTALL.
6. SUPPLY: SAME AS FURNISH.
7. PRODUCT: MATERIAL, MACHINERY, COMPONENTS, EQUIPMENT, FIXTURES, AND SYSTEMS FORMING THE WORK RESULT. NOT MATERIALS OR EQUIPMENT USED FOR PREPARATION, FABRICATION, CONVEYING, OR ERECTION AND NOT INCORPORATED INTO THE WORK RESULT. PRODUCTS MAY BE NEW, NEVER BEFORE USED, OR RE-USED MATERIALS OR EQUIPMENT.

NATURE AND USE OF CONTRACT DOCUMENTS:

1. IF ANY DISCREPANCY IS FOUND WITHIN THE CONTRACT DOCUMENTS DURING CONSTRUCTION, SUBMIT AN RFI TO THE ENGINEER FOR DIRECTION BEFORE PROCEEDING. IF A DISCREPANCY IS FOUND DURING BIDDING, AND THE DESIGN TEAM DOES NOT PROVIDE A RESOLUTION BY THE FINAL ADDENDUM, BASE THE BID ON THE MORE COSTLY INTERPRETATION. FAILING TO DO SO WILL NOT BE CONSIDERED A VALID BASIS FOR CHANGE ORDERS DURING CONSTRUCTION.
2. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING COMPLETE CONTRACT DOCUMENTS TO ALL TRADES, AND FOR COORDINATING BETWEEN ALL TRADES TO ENSURE PROPER INSTALLATION OF COMPLETE AND FUNCTIONAL SYSTEMS AS SHOWN ON THE CONTRACT DOCUMENTS.
3. THE CONTRACTOR IS RESPONSIBLE FOR ALL SCOPES OF WORK, COMPLETENESS OF BIDS, AND PRICING EXERCISES. FURTHER, COORDINATION AND DIVISION OF SCOPE AMONGST SUB-CONTRACTORS IS THE RESPONSIBILITY OF THE CONTRACTOR.
4. DO NOT SCALE DRAWINGS FOR ROUGH-IN MEASUREMENTS OR USE AS SHOP DRAWINGS. WHERE DRAWINGS ARE REQUIRED FOR THESE PURPOSES OR HAVE TO BE MADE FROM FIELD MEASUREMENTS, TAKE THE NECESSARY MEASUREMENTS AND PREPARE THE DRAWINGS.
5. DRAWINGS ARE DIAGRAMMATIC IN NATURE AND DO NOT SHOW EVERY SYSTEM OFFSET REQUIRED, COORDINATE WITH THE EXISTING AND NEW STRUCTURE, ELECTRICAL, PLUMBING, FIRE PROTECTION AND CEILING TO PROVIDE OFFSETS AS REQUIRED AND APPROPRIATE.

CODES, INSPECTIONS, AND PERMITS:

1. PERFORM ALL WORK IN ACCORDANCE WITH THE CODES, REGULATIONS, AND LOCAL AMENDMENTS, AS CURRENTLY ADOPTED BY THE AUTHORITY HAVING JURISDICTION (AHJ).
2. IF ANY DISCREPANCIES ARE FOUND BETWEEN CONTRACT DOCUMENTS AND ANY APPLICABLE CODE OR LEGAL REQUIREMENT, SUBMIT AN RFI TO ENGINEER FOR DIRECTION BEFORE PROCEEDING.
3. OBTAIN ALL PERMITS AND INSPECTIONS REQUIRED BY THE AHJ FOR PROJECT COMPLETION.

WARRANTY:

1. UNCONDITIONALLY GUARANTEE ALL LABOR AND MATERIAL ON ALL WORK AGAINST DEFECTS IN WORKMANSHIP AND MATERIALS FOR A PERIOD OF ONE YEAR, FOLLOWING FINAL ACCEPTANCE, EXCEPT AS EXTENDED BY STANDARD MANUFACTURER WARRANTY AND/OR BY REQUIRED EXTENSION STATED IN THE CONTRACT DOCUMENTS.

SUBMITTALS AND SUBSTITUTIONS:

1. MEET THE CRITERIA DESCRIBED HEREIN, PRIOR TO ENGINEER'S REVIEW OF THE SUBMITTAL.
2. REFERENCE EQUIPMENT TAGS PROVIDED IN THE CONTRACT DOCUMENTS.
3. CLEARLY INDICATE THE INTENDED PRODUCT TYPE, MODE, OPTIONS, ACCESSORIES (FACTORY AND FIELD INSTALLED), AND ANY OTHER OPTIONS OF ANY KIND.
4. INDICATE THE PLAN ISSUANCE AND DATE ON WHICH SUBMITTAL IS BASED.
5. IF PROPOSING A SUBSTITUTION IN PLACE OF THE BASIS OF DESIGN EQUIPMENT, THE CONTRACTOR IS SOLELY RESPONSIBLE FOR THE SPATIAL REQUIREMENTS, ACOUSTICAL, THERMAL, PHOTOMETRIC, AND ELECTRICAL PERFORMANCE CHARACTERISTICS, AND COORDINATION OF ALL INSTALLATION REQUIREMENTS. REVIEW AND APPROVAL BY THE DESIGN TEAM DOES NOT ALTER OR MITIGATE THIS RESPONSIBILITY. CLEARLY MARK SUBSTITUTIONS AS SUCH.
6. DESCRIBE ANY IMPACT TO OTHER DIVISIONS CREATED BY A PRODUCT SUBSTITUTION ON THE SUBSTITUTION REQUEST FOR CONSIDERATION BY THE DESIGN TEAM. PROVIDE AN ESTIMATE OF ASSOCIATED COST IMPACT TO OTHER DIVISIONS WHERE APPLICABLE. CONTRACTOR SHALL BEAR ANY AND ALL ADDITIONAL COST RESULTING FROM SUBSTITUTIONS.
7. INDICATE WHERE PRODUCTS REQUIRE A PERFORMANCE DE-RATE DUE TO ALTITUDE EFFECTS.
8. RE-SUBMITTALS MUST CONTAIN MARKUPS THAT CLEARLY DELINEATE THE CHANGED ITEMS. ENGINEER WILL NOT RE-REVIEW THE ENTIRE SUBMITTAL PACKAGE IN ORDER TO FIND THE CHANGES.
9. ALL DATA REQUIRED FOR REVIEW MUST BE CONTAINED IN THE FILES PROVIDED TO THE ENGINEER. LINKS TO MANUFACTURER'S WEBSITES WILL NOT BE ACCEPTED.
10. ROOM SCHEDULES ARE ACCEPTABLE TO INDICATE QUANTITIES.

PROJECT CLOSEOUT REQUIREMENTS:

1. COMPLETE ALL REQUIRED AHJ INSPECTIONS. MAKE COPIES OF PERMITS AND INSPECTION REPORTS AVAILABLE.
2. PROVIDE A COMPLETE SET OF AS-BUILT PLANS AT THE COMPLETION OF THE PROJECT WITH ALL CHANGES NOTED.
3. CONDUCT A TRAINING SESSION FOR OWNER'S DESIGNATED STAFF FOR ALL CONTROLS SYSTEMS AND MAJOR EQUIPMENT. PRODUCE A SIGN IN SHEET FOR THIS SESSION SHOWING ATTENDEES, DATE, LIST OF EQUIPMENT AND SYSTEMS COVERED. ALL TRAININGS SHALL BE RECORDED AND MADE AVAILABLE TO THE OWNER AND OWNER'S REP THROUGH CLOUD BASED SYSTEM FOR THE DURATION OF THE WARRANTY.
4. CLEAN JOB SITE OF ALL CONSTRUCTION DEBRIS, REPAIR ALL DAMAGED FINISHES. REMOVE ALL EXISTING EQUIPMENT LABELS THAT ARE NO LONGER ACCURATE, AND INSTALL NEW LABELING FOR NEW EQUIPMENT AND SYSTEMS.
5. DELIVER EQUIPMENT MANUALS AND ANY REQUIRED SPARE PARTS TO OWNER.

ACCESS AND CLEARANCES:

1. MAINTAIN ALL SERVICE AND ACCESS CLEARANCES REQUIRED BY CODE OR MANUFACTURER FOR ALL EQUIPMENT.
2. PROVIDE ACCESS FOR ALL EQUIPMENT, ETC. LOCATED ABOVE NON-ACCESSIBLE CEILINGS OR IN CONCEALED AREAS. PROVIDE SUFFICIENT ACCESS FOR SERVICING AND MAINTENANCE.
3. UTILIZE APPROPRIATELY RATED ACCESS PANELS WHEN PENETRATING A RATED ASSEMBLY.

PENETRATIONS AND RATED ASSEMBLIES:

1. THE ARCHITECTURAL PLANS SERVE AS THE REFERENCE FOR LOCATIONS OF RATED WALLS, PARTITIONS, AND ASSEMBLIES. COORDINATE ALL PENETRATIONS PRIOR TO ROUGH IN. FOR ALL PENETRATIONS OF FIRE RATED ASSEMBLIES, UTILIZE AN ASSEMBLY UL LISTED TO MAINTAIN THE RATING AND APPROVED BY ALL APPLICABLE CODES.

STRUCTURAL MODIFICATIONS:

1. DO NOT DRILL, NOTCH, CUT, OR ALTER STRUCTURAL MEMBERS IN ANY MANNER EXCEPT AS PERMITTED BY THE MATERIAL SPECIFIC SECTIONS OF THE BUILDING CODE, MANUFACTURER'S GUIDELINES FOR ENGINEERED PRODUCTS, OR THE RECOMMENDATION OF THE STRUCTURAL ENGINEER OF RECORD.

SUPPORT FOR SYSTEMS AND EQUIPMENT:

1. PROVIDE SUPPORT (I.E. HANGERS, BRACKETS, STANCHIONS, RACKS, PADS, ANCHORS, ETC.) AT REGULAR INTERVALS FOR ALL SYSTEMS AND EQUIPMENT INDICATED AND IMPLIED ON CONTRACT DOCUMENTS, AND IN COMPLIANCE WITH SYSTEM SPECIFIC CODE REQUIREMENTS.

PLUMBING SPECIFICATIONS

SCOPE:

1. THE WORK OF THIS SECTION SHALL INCLUDE BUT NOT LIMITED TO:
   a. DOMESTIC COLD, HOT AND RE-CIRCULATION WATER DISTRIBUTION SYSTEM TO SERVE ALL FIXTURES AND EQUIPMENT AS INDICATED
   b. SANITARY SOIL WASTE AND VENT AND GREASE WASTE AND VENT SYSTEMS TO SERVE ALL FIXTURES AND EQUIPMENT AS INDICATED
   c. STORM DRAIN SYSTEM.
   d. NATURAL GAS DISTRIBUTION SYSTEM TO SERVE ALL GAS-FUELED EQUIPMENT. COORDINATE WITH LOCAL NATURAL GAS UTILITY PROVIDER TO ESTABLISH GAS SERVICE COMPLETE WITH METER AND REGULATOR SET.

PLUMBING AND ELECTRICAL SCOPE:

1. ALL SINGLE AND THREE PHASE MOTORS AND STARTERS TO BE SPECIFIED AND FURNISHED BY ELECTRICAL, UNLESS OTHERWISE NOTED. DISCONNECTS SHALL BE FURNISHED BY PLUMBING CONTRACTOR AND WIRED BY THE ELECTRICAL CONTRACTOR.

COMMON WORK RESULTS AND METHODS:

1. ALL PIPE INSULATION SHALL RUN CONTINUOUSLY THROUGH FLOORS, WALLS AND PARTITIONS. PIPE INSULATION SHALL BE MITERED AT ELBOWS AND TEES TO ENSURE COMPLETE COVERAGE OF PIPING.
2. PROVIDE SHUTOFF VALVES AS PER SECTION 606.2 OF THE 2015 IPC CODE. VALVES INSTALLED IN LOCATIONS NOT ADJACENT TO THE FIXTURE SHALL BE IDENTIFIED, INDICATING THE FIXTURE OR APPLIANCE SERVED.
3. BRANCH HOT WATER & COLD WATER PIPE SIZE TO FIXTURE SHALL MATCH VALVE SIZE, I.E., 3/4" SHOWER VALVE SHALL HAVE A 3/4" HOT & COLD WATER PIPE CONNECTION.
4. ANY PLUMBING FIXTURES WITH A COMMON SHUT OFF VALVE (I.E. PRE-RINSE , KITCHEN SINK, MOP SINK) ARE TO INCLUDE A CHECK VALVE ON THE HOT & COLD WATER VALVES TO PREVENT INTERCONNECTION OF HOT & COLD WATER LINES
5. VALVES SHALL BE NIBCO, JENKINS, POWELL, STOCKHAM, WATTS, WALWORTH OR EQUIVALENT APPROVED BY ENGINEER.
6. PROVIDE ACCESS DOORSFOR ALL VALVES AND DEVICES REQUIRING ACCESS WHEN LOCATED IN WALLS OR ABOVE INACCESSIBLE CEILING CONSTRUCTIONS. ACCESS DOORS TO BE RATED WHERE INSTALLED IN RATED ASSEMBLIES.
7. PROVIDE AN APPROVED BACKFLOW PREVENTER UPSTREAM OF ANY POTENTIAL HAZARD BETWEEN THE POTABLE WATER SUPPLY AND SOURCE OF CONTAMINATION. NO INSULATION IS PERMITTED ON BACKFLOW PREVENTER ASSEMBLY.
8. PROVIDE VACUUM BREAKERS FOR ALL FIXTURES TO WHICH HOSES MAY BE ATTACHED. VACUUM BREAKERS SHALL BE PERMANENTLY ATTACHED.
9. PROVIDE WATER HAMMER PROTECTION DEVICES ON ALL WATER DISTRIBUTION PIPING SERVING EQUIPMENT WITH QUICK CLOSING VALVES (ICE MAKERS, DISHWASHERS, FLUSH VALVES, WASHING MACHINES, WATER COOLERS, ETC.)
10. INSTALL AN APPROVED WATER PRESSURE REDUCING VALVE CONFORMING WITH ASSE 1003 IF INCOMING WATER PRESSURE TO THE BUILDING EXCEEDS 80 PSI STATIC
11. TERMINATE PLUMBING VENTS NOT LESS THAN TEN FEET FROM OR AT LEAST THREE FEET ABOVE ANY WINDOW, DOOR, OPENING, AIR INTAKE OR VENT SHAFT. MINIMUM VENT SIZE THRU ROOF SHALL BE 3" WITH EPDM ROOF GASKET.
12. PROVIDE CLEANOUTS AS PER SEC. 708 OF THE 2015 IPC CODE. CLEANOUTS SHALL BE PLACED IN READILY ACCESSIBLE LOCATIONS.
13. THE FIRST 15' OF THE HORIZONTAL SECTION OF THE STORM DRAIN PIPING (MEASURED FROM THE ROOF DRAIN) AND THE ROOF DRAIN BODY SHALL BE INSULATED, PER COLD WATER INSTALLATIONS WITH A VAPOR BARRIER, TO CONTROL CONDENSATION.
14. PROVIDE WATERTIGHT FLASHING WHEREVER PIPES PASS THRU EXTERIOR WALLS, FLOORS, CEILINGS AND ROOFS.
15. ENSURE PIPING LOCATED ON EXTERIOR WALLS (OR OTHER WALLS EXPOSED TO FREEZING CONDITIONS) IS INSTALLED ON WARM-SIDE OF WALL INSULATION.
16. PROVIDE U.L. LISTED ASSEMBLY FOR ALL PENETRATIONS THRU FIRE RATED WALLS, FLOORS AND CEILINGS.
17. PROVIDE FELT WITH METAL BACKING VIBRATION ISOLATION SLEEVES OR PADS AT ALL PIPE HANGERS OR SUPPORTS AND ALL POINTS WHERE PIPING COMES IN CONTACT WITH ANY PORTION OF THE STRUCTURE. APPLIES TO ALL WATER AND WASTE PIPING.
18. CONCEAL ALL PLUMBING LINES WITHIN THE BUILDING STRUCTURE TO THE GREATEST EXTENT POSSIBLE. ALL LINES NOT CONCEALED TO BE SECURED 6" OFF FLOOR AND 3/4" FROM WALL AND CEILINGS USING OFFSET BRACKETS.
19. SUPPORT ALL PIPING IN ACCORDANCE WITH ADOPTED EDITION OF THE IPC. ANY SUSPENDED MATERIALS SHALL BE DIRECTLY SUPPORTED BY THE BUILDING STRUCTURE.
20. AIR ADMITTANCE VALVES SHALL BE PROHIBITED UNLESS SPECIFICALLY INDICATED ON PLANS IN SPECIFIC LOCATIONS.

PLUMBING SYMBOL LEGEND

ANNOTATION SYMBOLS

Symbol	Description
##	KEYNOTE TAG
##	REVISION TAG
AA-#-###	EQUIPMENT TAG REFER TO EQUIPMENT SCHEDULE
AA-#-###	REFERENCE EQUIPMENT TAG SPECIFIED BY ANOTHER DISCIPLINE

LINETYPES / PHASING

Symbol	Description
	NEW, OR OTHER ACTION ITEMS *(Solid dark lines)*
	ITEMS TO BE DEMOLISHED *(Dashed dark lines on demo plans)*
reference info	EXISTING ITEMS TO REMAIN *(Solid light lines and text)*
	CONNECT NEW TO EXISTING

PIPING LINE TYPES

- COLD WATER
- HOT WATER
- HOT WATER RECIRC.
- VENT
- SYSTEM TYPE — SUPPLY / DRAIN
- SYSTEM TYPE — RETURN
- SYSTEM TYPE — BELOW GRADE

SYSTEM TYPE ABBREVIATIONS

CW	COLD WATER
HW	HOT WATER
HWR	HOT WATER RECIRC.
W	WASTE
GW	GREASE WASTE
SO	SAND/OIL
NG	NATURAL GAS (7"-14")
G2PSI	NATURAL GAS (2 PSI)
SD	STORM DRAIN
OD	OVERFLOW STORM DRAIN
V	VENT
PW	PUMPED WASTE
IW	INDIRECT WASTE
BD	BUILDING DRAIN

AHJ PLANS REVIEWER NOTE:

THE BASIS OF DESIGN FOR THIS PROJECT IS A GROUP I HANGAR FOR A BOMBARDIER GLOBAL 7500 IN TRANSIT AIRCRAFT. NO SERVICE, REPAIR, FUELING, MAINTENANCE OR PAINTING WILL TAKE PLACE.

AHJ PLANS REVIEWER NOTE:

A FIRE PROTECTION DESIGN (BY OTHERS) HAS NOT BEEN PUT FORTH AT THE TIME OF THIS PLAN ISSUANCE.

ADOPTED CODES

AHJ	GARFIELD COUNTY
NEC	2020
IBC	2015
IMC	2015
IFGC	2015
IPC	2015
IECC	2009
NFPA	409

PLUMBING SHEET LIST

Sheet Number	Sheet Name
P0.01	PLUMBING LEGEND AND GENERAL NOTES
P0.02	PLUMBING SPECIFICATIONS
P1.01	WASTE AND VENT FLOOR PLAN
P1.02	WATER AND GAS FLOOR PLAN
P4.01	ENLARGED PLUMBING PLANS
P5.01	PLUMBING DETAILS
P6.01	PLUMBING SCHEDULES
P7.01	PLUMBING DIAGRAMS

SITE CONDITIONS

ELEVATION	AIR DENSITY RATIO	CLIMATE ZONE	WINTER DESIGN	SUMMER DESIGN
5550' - 0"	0.81	6B	-2 °F	95 °F

SGM
118 West Sixth Street, Suite 200
Glenwood Springs, CO 81601
970.945.1004 www.sgm-inc.com

NOT FOR CONSTRUCTION

Kuhn Aviation Hangar
Rifle, CO 81650

#	Revision:	Date:	By:

Project Milestone: PERMIT SET

Job No.	2021-546
Drawn by:	PG
Date:	05/13/2022
QC: BC	PE: BC

Title: PLUMBING LEGEND AND GENERAL NOTES

Dwg No. P0.01

DOMESTIC WATER DISTRIBUTION PIPE SIZING BASED ON 2015 IPC

		DEMAND FIXTURE UNITS			TOTAL FIXTURE UNITS		
DESCRIPTION	QUANTITY	COLD	HOT	TOTAL	COLD	HOT	TOTAL
BAR SINK	0	0.5	0.5	0.7	0	0	0
BATHTUB, PRIVATE	0	1	1	1.4	0	0	0
BATHTUB, PUBLIC	0	3	3	4	0	0	0
BIDET	0	1.5	1.5	2	0	0	0
WASHING MACHINE, PRIVATE 8LB	0	1	1	1.4	0	0	0
WASHING MACHINE, PUBLIC 8LB	0	2.25	2.25	3	0	0	0
WASHING MACHINE, PUBLIC 15LB	0	3	3	4	0	0	0
DISHWASHING MACHINE, PRIVATE	0		1.4	1.4		0	0
DISHWASHING MACHINE, PUBLIC	0		2.8	2.8		0	0
DRINKING FOUNTAIN	0	0.25		0.25	0		0
HOSE BIBB (SILLCOCK)	0	2.5		2.5	0		0
KITCHEN SINK, PRIVATE	1	1	1	1.4	1	1	1.4
KITCHEN SINK, HOTEL / RESTAURANT	0	3	3	4	0	0	0
LAUNDRY 1 TO 3 COMPARTMENTS	0	1	1	1.4	0	0	0
LAVATORY, PRIVATE	0	0.5	0.5	0.7	0	0	0
LAVATORY, PUBLIC	1	1.5	1.5	2	1.5	1.5	2
SERVICE SINK OR MOP BASIN	1	2.25	2.25	3	2.25	2.25	3
SHOWER HEAD, PRIVATE MIXING VALVE	0	1	1	1.4	0	0	0
SHOWER HEAD, PUBLIC MIXING VALVE	0	3	3	4	0	0	0
URINAL 3/4" FLUSH VALVE	0	5		5	0		0
URINAL 1" FLUSH VALVE	0	10		10	0		0
URINAL FLUSH TANK	0	3		3	0		0
WATER CLOSET, FLUSH TANK PRIVATE	0	2.2		2.2	0		0
WATER CLOSET, FLUSH VALVE PRIVATE	0	6		6	0		0
WATER CLOSET, FLUSH TANK PUBLIC	1	5		5	5		5
WATER CLOSET, FLUSH VALVE PUBLIC	0	10		10	0		0
WATER CLOSET, FLUSHOMETER TANK	0	2		2	0		0
					COLD	HOT	ENTRY
WATER SUPPLY FIXTURE	4			FU	9.75	4.75	11.4
NOTES: 1- DEMAND BASED ON TABLE E103.3(3) FOR FLUSH TANK SYSTEMS 2- MAXIMUM PIPE VELOCITIES ARE 8 FPS FOR COLD WATER PIPING AND 5 FPS FOR HOT WATER PIPING.				DEMAND-GPM 1	14.6	9.4	16
				PIPE SIZE-IN	1	1	1
				VELOCITY-FPS	5.96	3.84	6.54

SANITARY DRAINAGE FIXTURE UNITS CALCULATION

DEMAND BASED ON TABLE 709.1 of 2015 IPC		FIXTURE UNITS	
DESCRIPTION	QUANTITY	DFU	TOTAL
AUTOMATIC CLOTHES WASHER, COMMERCIAL		3	0
AUTOMATIC CLOTHES WASHER, RESIDENTIAL		2	0
BATHTUB		2	0
BIDET		1	0
COMBINATION SINK & TRAY		2	0
DENTAL LAVATORY		1	0
DENTAL UNIT OR CUSPIDOR		1	0
DISHWASHING MACHINE, DOMESTIC		2	0
DRINKING FOUNTAIN		0.5	0
EMERGENCY FLOOR DRAIN		0	0
FLOOR DRAINS		2	0
FLOOR SINKS	2	2	4
KITCHEN SINK, DOMESTIC	1	2	2
KITCHEN SINK, DOMESTIC WITH FOOD DISPOSER AND/OR DISHWASHER		2	0
LAUNDRY TRAY (1 OR 2 COMPARTMENTS)		2	0
LAVATORY	1	1	1
SHOWER 5.7 GPM OR LESS		2	0
SHOWER 5.7 GPM TO 12.3 GPM		3	0
SHOWER 12.3 GPM TO 25.8 GPM		5	0
SHOWER 25.8 GPM TO 55.6 GPM		6	0
SERVICE SINK	1	2	2
SINK		2	0
URINAL		4	0
URINAL,1 GPF OR LESS		2	0
URINAL, NON WATER		0.5	0
WASH SINK (CIRCULAR OR MULTIPLE) EACH SET OF FAUCETS		2	0
WATER CLOSET, FLUSHOMETER TANK, PUBLIC OR PRIVATE		4	0
WATER CLOSET, PRIVATE 1.6 GPF		3	0
WATER CLOSET, PRIVATE MORE THAN 1.6 GPF		4	0
WATER CLOSET, PUBLIC 1.6 GPF	1	4	4
WATER CLOSET, PUBLIC MORE THAN 1.6 GPF		6	0
TOTAL	6	-	13

HYDRAULIC CALCULATIONS

	PRESSURE LOSS (PSI)	PRESSURE AVAILABLE
PRESSURE AT THE MAIN	NA	80
1" METER LOSS @ DESIGN GPM	3	77
PRESSURE REDUCING VALVE	2	75
P.R.V. PRESSURE FALL-OFF	NA	75
1" BACKFLOW PREVENTER @ DESIGN GPM	11	64
ELEVATION LOSS @ 5 FT. 0.433 PSI / FT	2.165	62
FUTURE WATER SOFTENER ALLOWANCE	NA	62
DESIGN PRESSURE @ FIXTURE	20	42
PRESSURE AVAILABLE FOR FRICTION LOSS	**42**	
PIPING SUPPLY INFORMATION		
LONGEST RUN TO FIXTURE (FT)	300	
FITTING ALLOWANCE	20%	
TOTAL DEVELOPED LENGTH (FT)	360	
FRICTION LOSS RATE PER FOOR (PSI/FT)	0.12	
FRICTION LOSS RATE (FT OF HEAD/ 100 FT OF PIPE)	27	

NOTE: INITIAL "PRESSURE AVAILABLE" VALUE INDICATED IS AN ALLOWANCE. FIRE PROTECTION DESIGN IS NOT AVAILABLE AT TIME OF THIS PLAN ISSUANCE. VERIFY AVAILABLE PRESSURE MATCHES ALLOWANCE AND NOTIFY ENGINEER IF DIFFERENT.

SLOPE OF HORIZONTAL SANITARY DRAINAGE PIPE

PIPE SIZE (IN)	MINIMUM SLOPE (IN PER FT)	MINIMUM SLOPE (%)
2-1/2 OR LESS	1/4	2
3 TO 6	1/8	1
8 OR LARGER	1/16	0.5

PLUMBING PIPE MATERIAL SPECIFICATION

SYSTEM	DESCRIPTION	NOMINAL SIZE	PIPING	JOINTS	FITTINGS	ISOLATION VALVE	INSULATION (YES/NO)
DOMESTIC WATER	POTABLE DOMESTIC COLD WATER BELOW GRADE	2" AND SMALLER	SOFT COPPER TUBE, TYPE K ANNEALED TEMPER, MANUFACTURED TO ONE OF THE FOLLOWING STANDARDS: ASTM B75, B88, B251, B447.	BRAZED JOINTS, LEAD FREE,COMPLYING WITH ANSI / AWS A5.8, A5.31, B2.2, C3.4	WROUGHT COPPER SOLDER FITTINGS, MANUFACTURED TO ONE OF THE FOLLOWING STANDARDS: ASME B16.15, B16.18, B16..22, B16.26, B16.51, ASSE 1061, ASTM F1476, ASTM F1548.	2-PIECE, FULL PORT, LEAD FREE BALL VALVE NIBCO 585, COMPLYING WITH NSF 61. MANUFACTURED TO ONE OF THE FOLLOWING STANDARDS: ASME A112.4.14, A112.18.1, B16.34, MSS SP-67, SP-80, SP-110, SP-139.	NA
	POTABLE DOMESTIC COLD WATER, HOT WATER ABOVE GRADE	2" AND SMALLER	HARD COPPER TUBE, TYPE L DRAWN TEMPER, MANUFACTURED TO ONE OF THE FOLLOWING STANDARDS: ASTM B75, B88, B251, B447.	SOLDER, LEAD-FREE, COMPLYING WITH NSF 372.	WROUGHT COPPER SOLDER FITTINGS, MANUFACTURED TO ONE OF THE FOLLOWING STANDARDS: ASME B16.15, B16.18, B16..22, B16.26, B16.51, ASSE 1061, ASTM F1476, ASTM F1548.	2-PIECE, FULL PORT, LEAD FREE BALL VALVE NIBCO 585, COMPLYING WITH NSF 61. MANUFACTURED TO ONE OF THE FOLLOWING STANDARDS: ASME A112.4.14, A112.18.1, B16.34, MSS SP-67, SP-80, SP-110, SP-139.	COLD WATER: 1/2 INCH HOT WATER 1 INCH RIGID FIBERGLASS, K FACTOR BETWEEN 0.23-0.27, SEALED WHITE ALL SERVICE JACKET (VAPOR BARRIER).
DRAIN / WASTE / VENT	DRAIN/WASTE/VENT BELOW GRADE	ALL	SOLID WALL PVC DWV PIPE, MANUFACTURED TO ONE OF THE FOLLOWING STANDARDS: ASTM D2949.	SOLVENT CEMENT AND PURPLE PRIMER COMPLYING WITH ASTM F656.	SOLID WALL PVC DWV OF DIMENSIONAL COMPATIBILITY WITH PIPE, MANUFACTURED TO ONE OF THE FOLLOWING STANDARDS: ASTM D2949.	NA	NA
	DRAIN/WASTE ABOVE GRADE	1-1/2" TO 15"	CAST IRON, HUBLESS, CONFORMING TO CISPI 301 OR ASTM A888.	HUBLESS, STAINLESS STEEL CLAMP AND SHIELD ACCESSORIES. COMPLYING WITH CISPI 310, ASTM C1277, OR ASTM C1540. ELASTOMERIC SLEEVE, NEOPRENE GASKET, CENTER STOP, AND COMPLYING WITH ASTM C564 OR CSA B602.	CAST IRON, HUBLESS, CONFORMING TO CISPI 301 OR ASTM A888.	NA	NA
	VENT ABOVE GRADE	1-1/2" TO 15"	CAST IRON, HUBLESS, CONFORMING TO CISPI 301 OR ASTM A888.	HUBLESS, STAINLESS STEEL CLAMP AND SHIELD ACCESSORIES. COMPLYING WITH CISPI 310, ASTM C1277, OR ASTM C1540. ELASTOMERIC SLEEVE, NEOPRENE GASKET, CENTER STOP, AND COMPLYING WITH ASTM C564 OR CSA B602.	CAST IRON, HUBLESS, CONFORMING TO CISPI 301 OR ASTM A888.	NA	NA
STORM DRAINAGE	BELOW GRADE (BELOW AND WITHIN 5 FEET OF THE BUILDING FOOTPRINT)	ALL	SOLID WALL PVC DWV PIPE, MANUFACTURED TO ONE OF THE FOLLOWING STANDARDS: ASTM D2949.	SOLVENT CEMENT AND PURPLE PRIMER COMPLYING WITH ASTM F656.	SOLID WALL PVC DWV OF DIMENSIONAL COMPATIBILITY WITH PIPE, MANUFACTURED TO ONE OF THE FOLLOWING STANDARDS: ASTM D2949.	NA	NA
NATURAL GAS	NATURAL GAS ABOVE GRADE	3" AND SMALLER	BLACK STEEL ASTM A53 ERW SCHEDULE 40, WITH YELLOW ENAMEL OUTDOOR RATED PAINT.	CUT TAPERED THREAD, MANUFACTURED TO ASME B31.1.	MALLEABLE IRON FITTINGS, MANUFACTURED TO ASME B16.3	IRON FULL PORT 1/4 TURN, BALL OR PLUG VALVE, MANUFACTURED TO ASME B16.44 OR B16.33.	NA
DRAIN FROM FUEL GAS FIRED CONDENSING APPLIANCE	COMBUSTION CONDENSATE FROM FUEL FIRED APPLIANCES	ALL	PVC OR CPVC COMPLYING WITH ASTM D1785 OR D2845	CEMENT AND PRIMER COMPLING WITH ASME D2564 OR F493	PVC OR CPVC COMPLYING WITH ASTM D1785 OR D2845	NA	NA

NOTES:
1. VALVES REPRESENT A MINIMUM STANDARD OF QUALITY. SUBSTITUTIONS OF EQUAL OR GREATER QUALITY ARE ALLOWED WITH ENGINEER'S APPROVAL.

FUEL GAS LINE PRESSURE REGULATOR SPECIFICATION

DESCRIPTION	FUEL	ANSI CLASSIFICATION	SERVICE	INLET PRESSURE (PSI)	MAX OUTLET PRESSURE (IN WC)	VENT METHOD	LOCATION	CAPACITY
LINE PRESSURE REGULATOR	N.G.	CLASS I CERTIFIED TO ANSI Z21.18	GAS FIRED APPLIANCES WITH 1/2 PSI (14" WC) RATED INLET PRESSURE CONTROLS	2	14	VENT LIMITING DEVICE TESTED AND APPROVED TO ANSI Z21.80	INDOORS	AS INDICATED PER MANUFACTURER FOR RATED MAXIUM INDIVIDUAL LOAD OR MAXIMUM MULTIPLE APLIANCE LOAD

SGM
118 West Sixth Street, Suite 200
Glenwood Springs, CO 81601
970.945.1004 www.sgm-inc.com

NOT FOR CONSTRUCTION

Kuhn Aviation Hangar
Rifle, CO 81650

#	Revision:	Date:	By:

Project Milestone: PERMIT SET

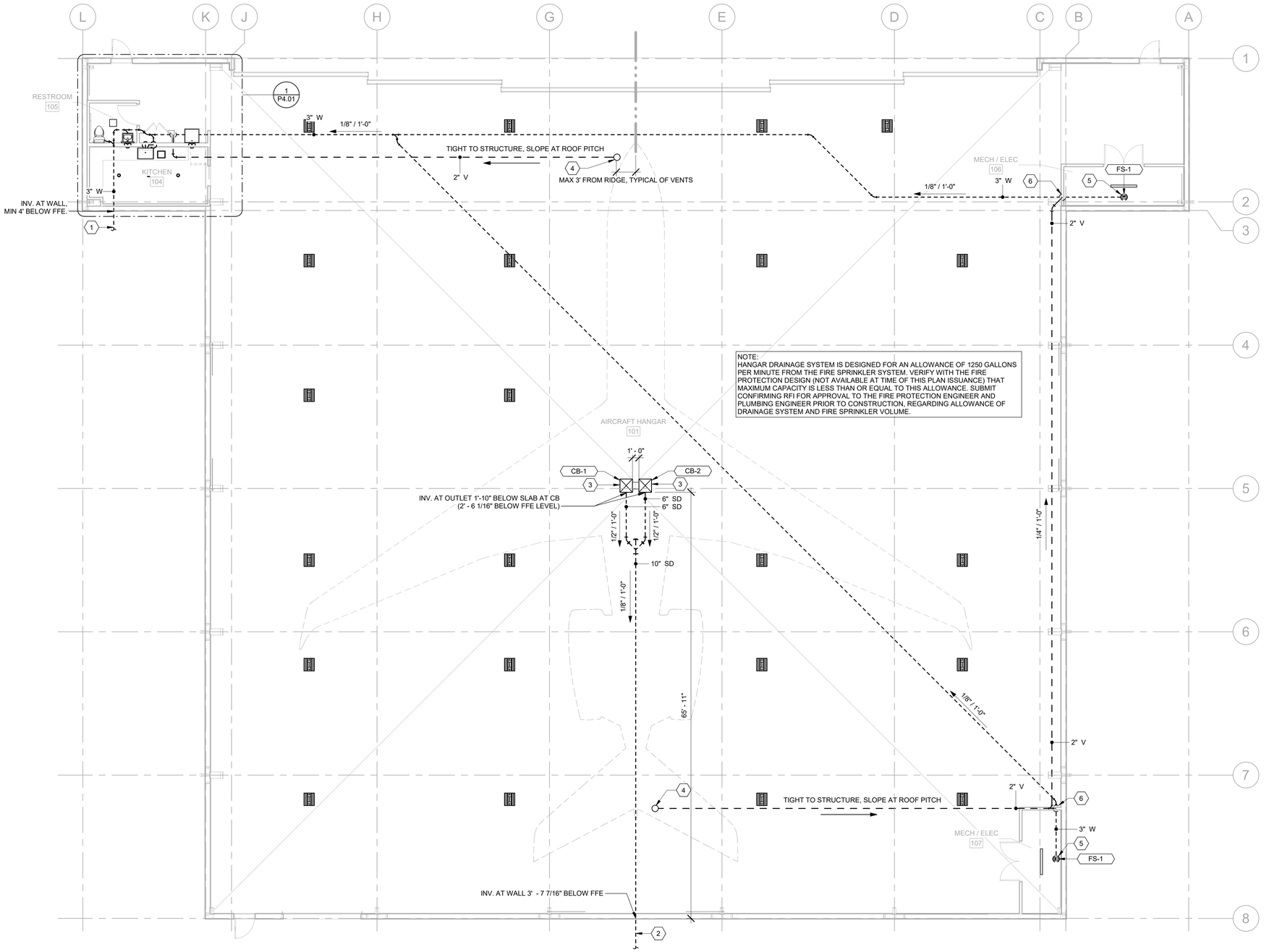
Job No. 2021-546
Drawn by: PG
Date: 05/13/2022
QC: BC PE: BC

Title: PLUMBING SPECIFICATIONS

Dwg No. P0.02

KEYNOTES

1	BUILDING SANITARY DRAIN TO BUILDING SANITARY SEWER. RE: CIVIL FOR CONTINUATION. PROVIDE CLEANOUT AS PER SECTION 708.1.2 OF THE 2015 IPC.
2	BUILDING STORM DRAIN TO BUILDING STORM SEWER. RE: CIVIL FOR CONTINUATION. PROVIDE CLEANOUT AS PER SECTION 1108.8 OF THE 2015 IPC. (REFERENCING SECTION 708.1.2)
3	CATCH BASIN END OUTLET TO STORM DRAINAGE. REFER TO DETAIL.
4	VENT UP THROUGH ROOF. REFER TO DETAIL.
5	3" W DOWN TO BRANCH DRAIN.
6	2" V UP TO HORIZONTAL RUN TIGHT TO STRUCTURE.



1 NORTH

WASTE AND VENT FLOOR PLAN

SCALE: 1/8" = 1'-0"

SGM
118 West Sixth Street, Suite 200
Glenwood Springs, CO 81601
970.945.1004 www.sgm-inc.com

NOT FOR CONSTRUCTION

Kuhn Aviation Hangar
Rifle, CO 81650

By:	
Date:	
Revision:	
#	
Project Milestone:	PERMIT SET
Job No.	2021-546
Drawn by:	PG
Date:	05/13/2022
QC: BC	PE: BC

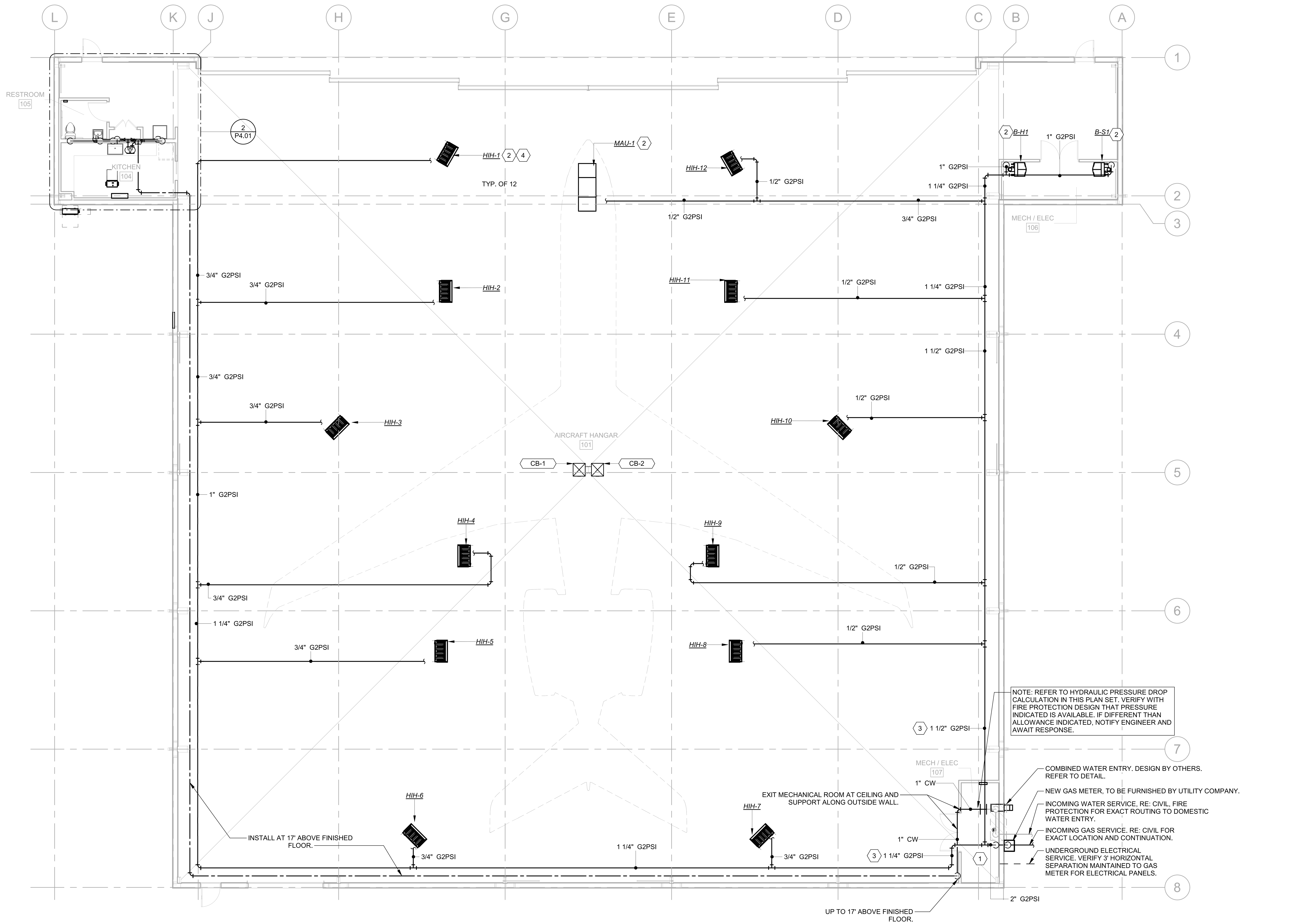
Title: WASTE AND VENT FLOOR PLAN

Dwg No. P1.01

5/13/2022 6:34:07 PM

C:\Users\ahaymon\Documents\Kuhn\Aviation\Hangar_MEP_R23_ahaymonSGM.rvt

KEYNOTES	
1	NO PIPING DIRECTLY OVER ELECTRICAL PANELS OR EQUIPMENT PER NEC 110.26(E). MAINTAIN MINIMUM 6" HORIZONTAL CLEARANCE.
2	CONNECT PIPE TO EQUIPMENT PER MANUFACTURER'S INSTALLATION INSTRUCTIONS. PIPE DOWNSTREAM FROM PRESSURE REDUCING VALE TO MATCH GAS-FIRED APPLIANCE GAS CONNECTION. REFER TO DETAIL SHEET P5.01.
3	INSTALL PIPE TO BE AT THE SAME LEVEL OF THE HIH. REFER TO MECHANICAL DRAWINGS.
4	DO NOT INSTALL GAS PIPING ABOVE THE HEATER OR IN HEAT ZONES.



NORTH

1 WATER AND GAS FLOOR PLAN

SCALE: 1/8" = 1'-0"

SGM
118 West Sixth Street, Suite 200
Glenwood Springs, CO 81601
970.945.1004 www.sgm-inc.com

NOT FOR CONSTRUCTION

Kuhn Aviation Hangar
Rifle, CO 81650

#	Revision:	Date:	By:

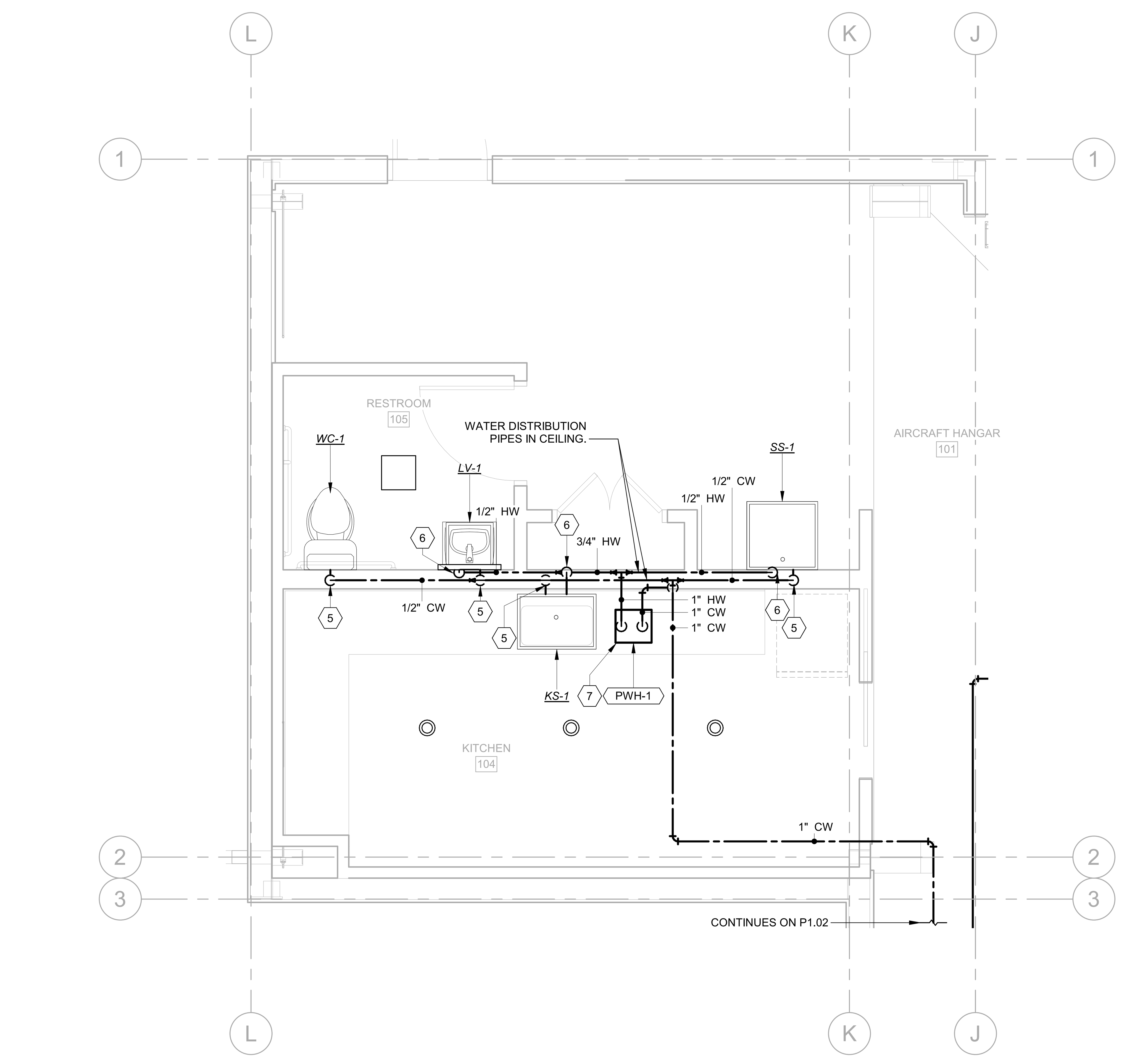
Project Milestone: PERMIT SET

Job No.	2021-546
Drawn by:	PG
Date:	05/13/2022
QC: BC	PE: BC

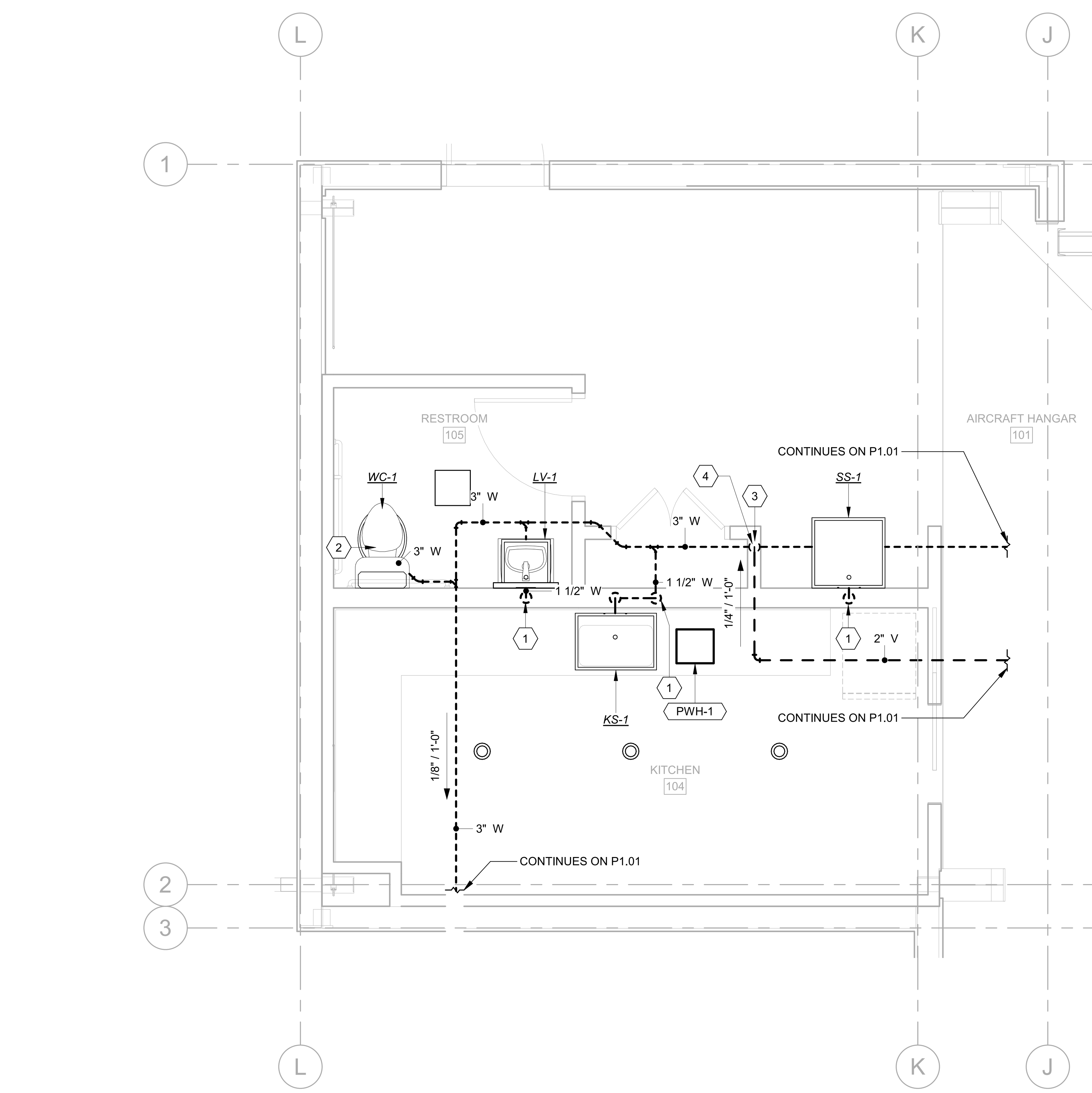
Title: WATER AND GAS FLOOR PLAN

Dwg No. P1.02

KEYNOTES	
1	1-1/2" W DOWN TO BRANCH DRAIN.
2	3" W DOWN TO BRANCH DRAIN.
3	CIRCUIT VENTED BRANCH, DRY VENT MUST CONNECT VERTICALLY TO BRANCH DRAIN VIA WYE COMBINATION WITH EIGHTH BEND. ALL FIXTURE DRAINS TO CONNECT HORIZONTALLY.
4	2" V UP TO HORIZONTAL RUN TIGHT TO STRUCTURE.
5	CW TO FIXTURE.
6	HW TO FIXTURE.
7	PWH-1 TO BE HOUSED IN FLOOR LEVEL CABINET. WATER LINES TO CONNECT FROM WALL. PROVIDE SHUTOFF VALVES AT WATER HEATER.



2 KITCHEN/RESTROOM ENLARGED WATER
SCALE: 3/8" = 1'-0"
NORTH



1 KITCHEN/RESTROOM ENLARGED WASTE AND VENT
SCALE: 3/8" = 1'-0"
NORTH

SGM
118 West Sixth Street, Suite 200
Glenwood Springs, CO 81601
970.945.1004 www.sgm-inc.com

NOT FOR CONSTRUCTION

Kuhn Aviation Hangar
Rifle, CO 81650

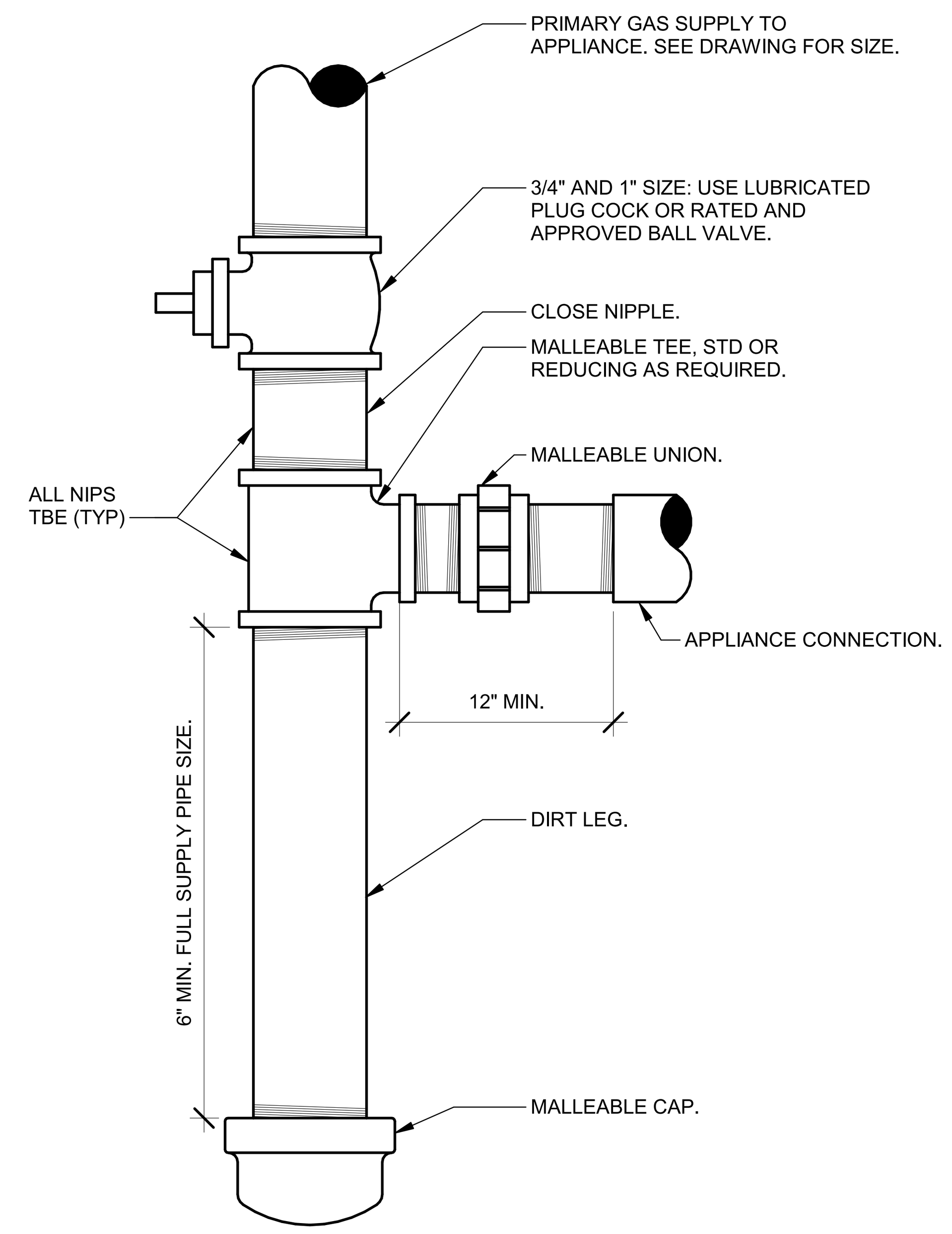
#	Revision:	Date:	By:

Project Milestone: PERMIT SET

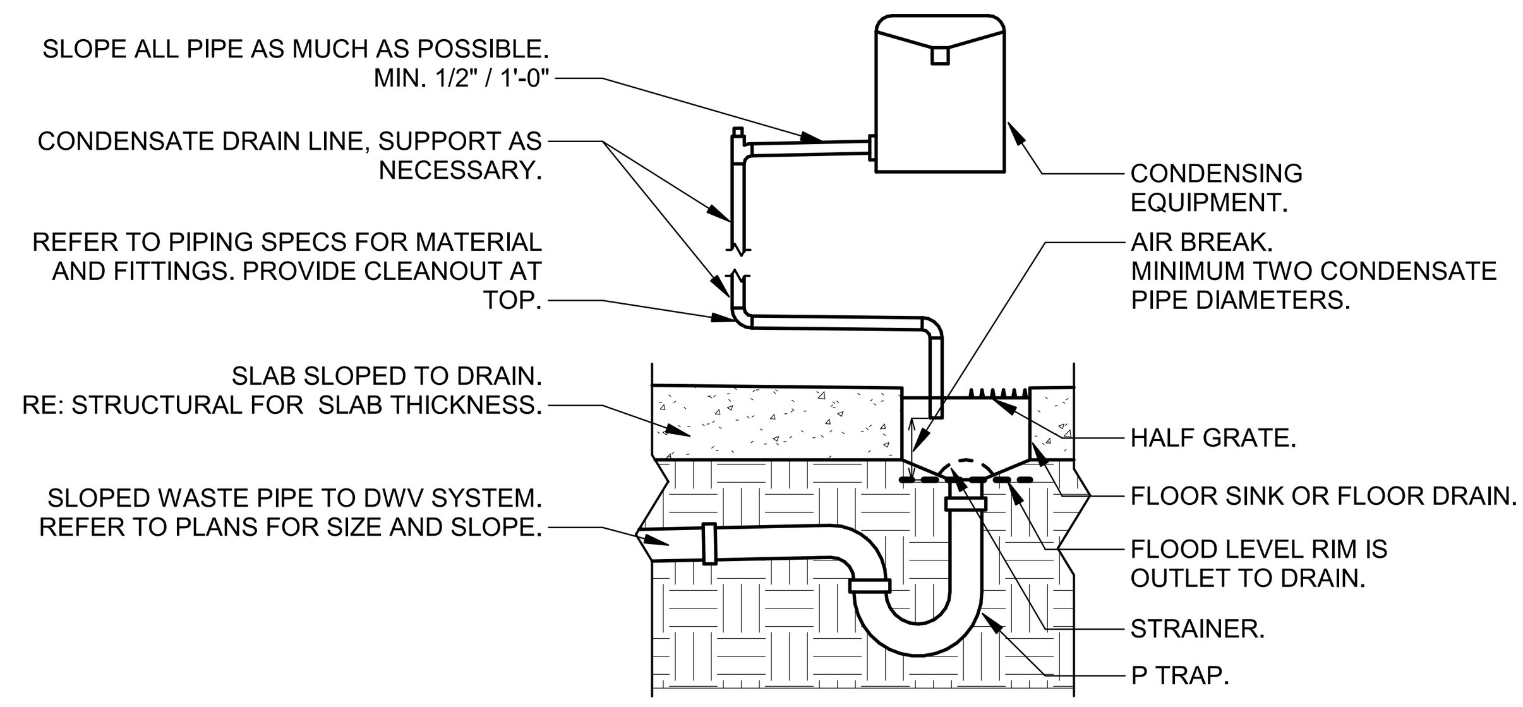
Job No.	2021-546
Drawn by:	PG
Date:	05/13/2022
QC: BC	PE: BC

Title:
ENLARGED PLUMBING PLANS

Dwg No.
P4.01

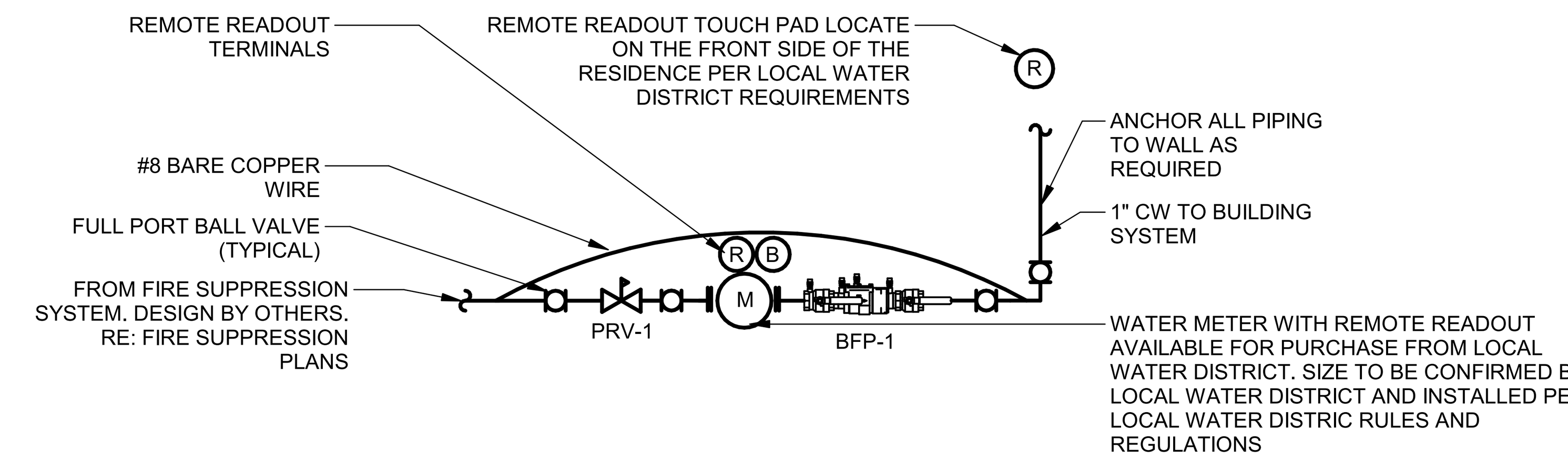


7 GAS CONNECTION DIRT LEG DETAIL
NO SCALE

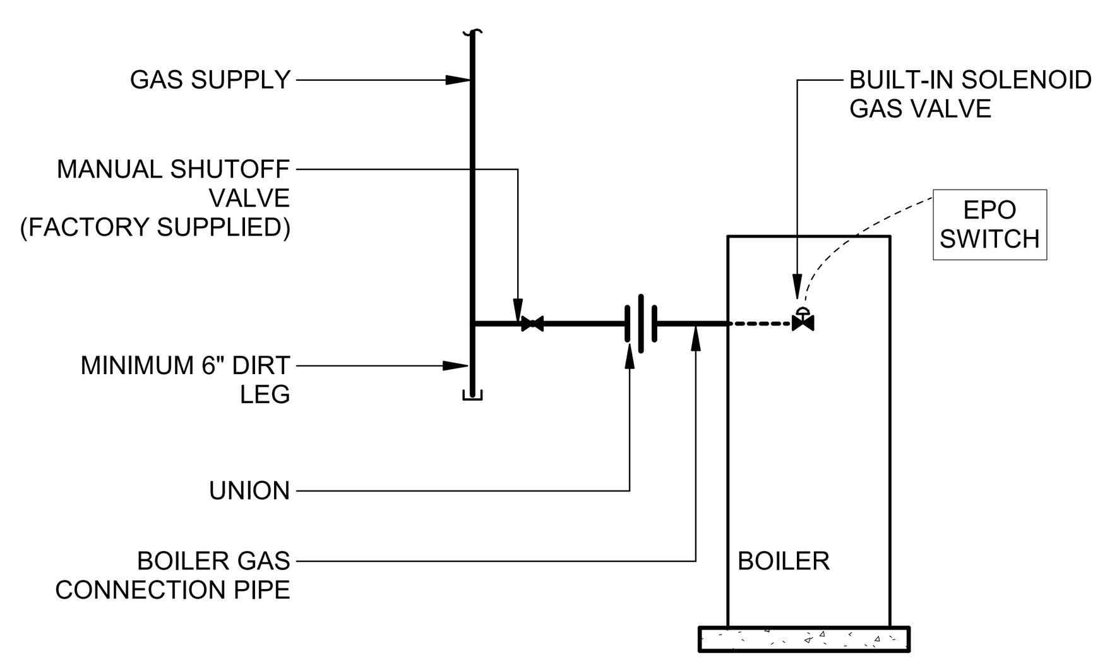


NOTES:
1. ROUTE PIPE UNOBTRUSIVELY.
2. AIR GAP SHALL BE SUFFICIENT TO REMOVE FLOOR DRAIN / SINK GRATE AND STRAINER.

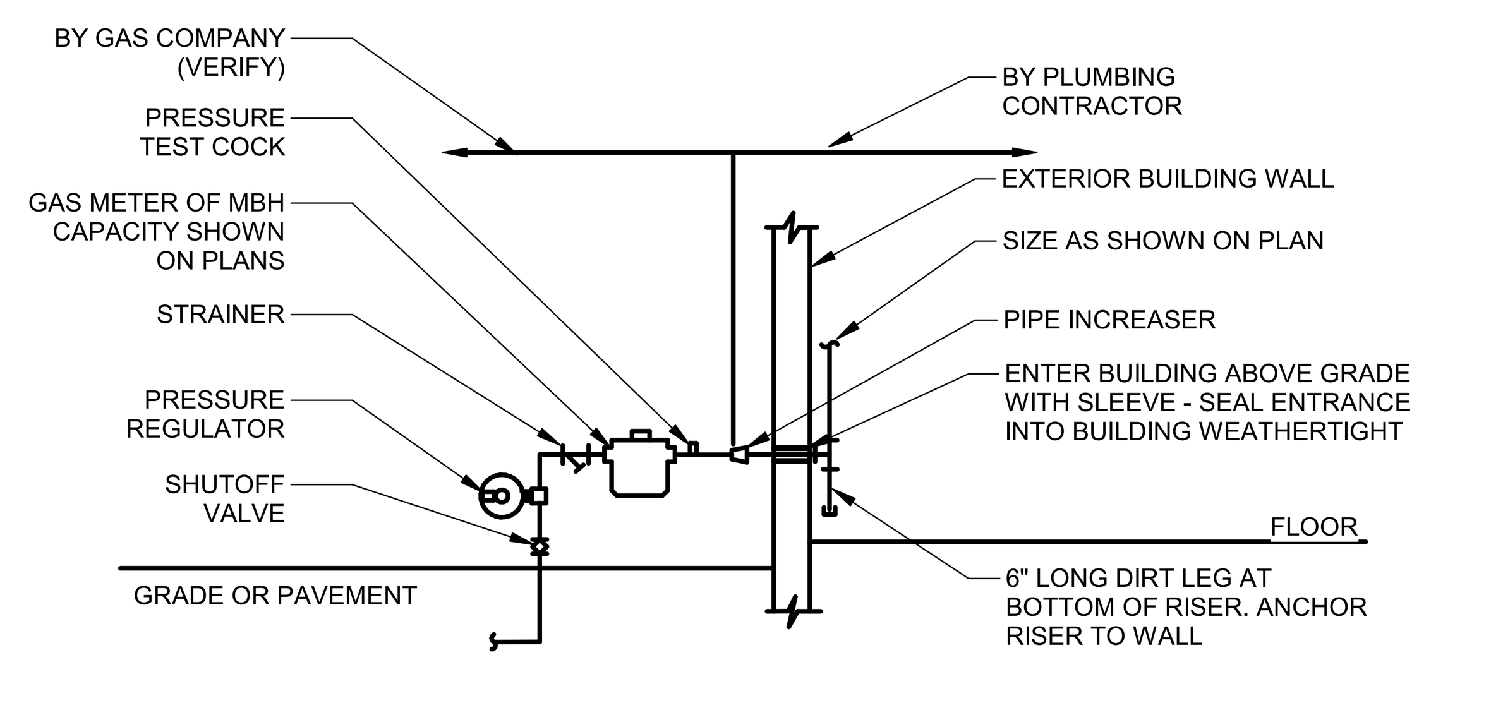
4 CONDENSATE DRAIN / AIR BREAK DETAIL
NO SCALE



1 DOMESTIC WATER ENTRY DETAIL
NO SCALE

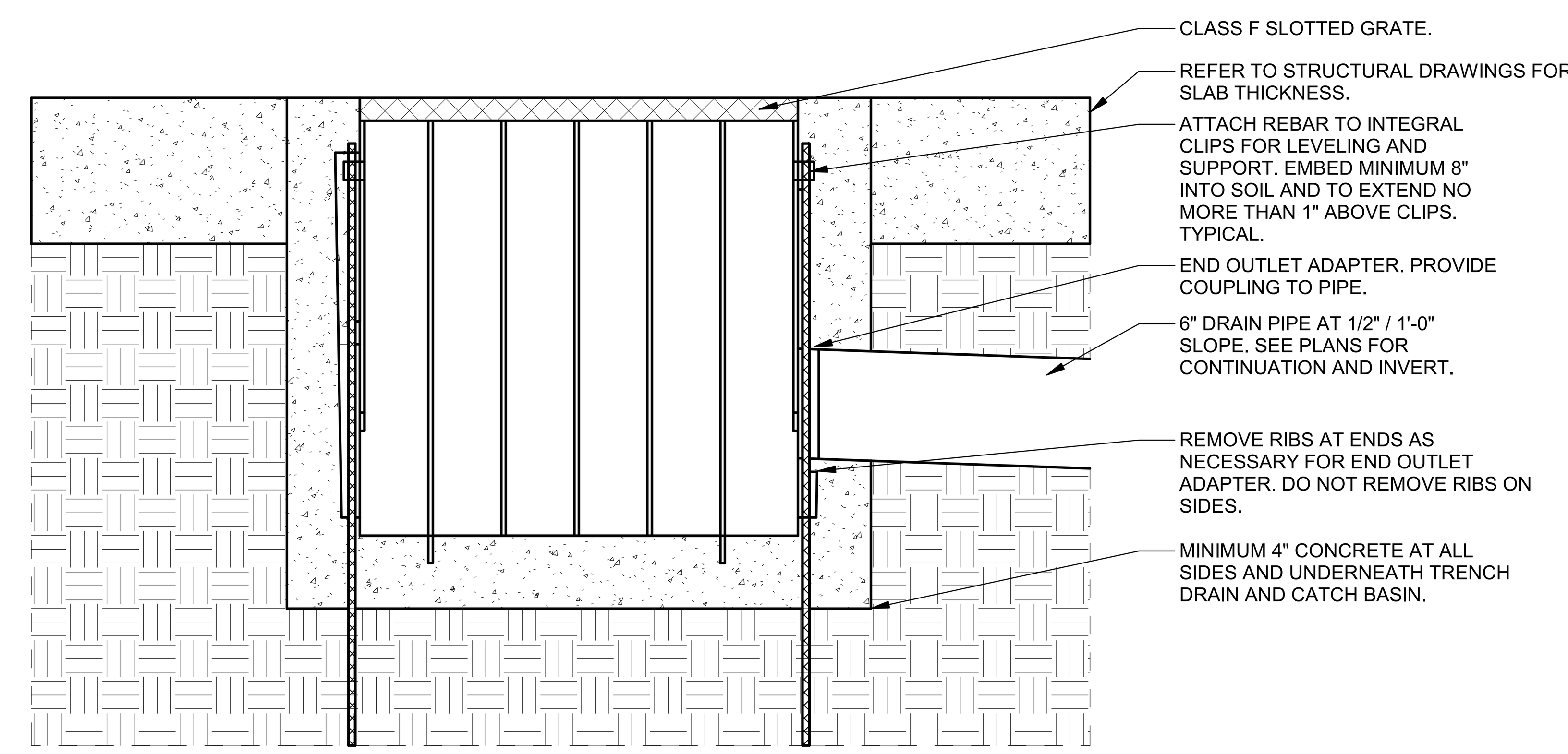


8 BOILER GAS CONNECTION DETAIL
NO SCALE

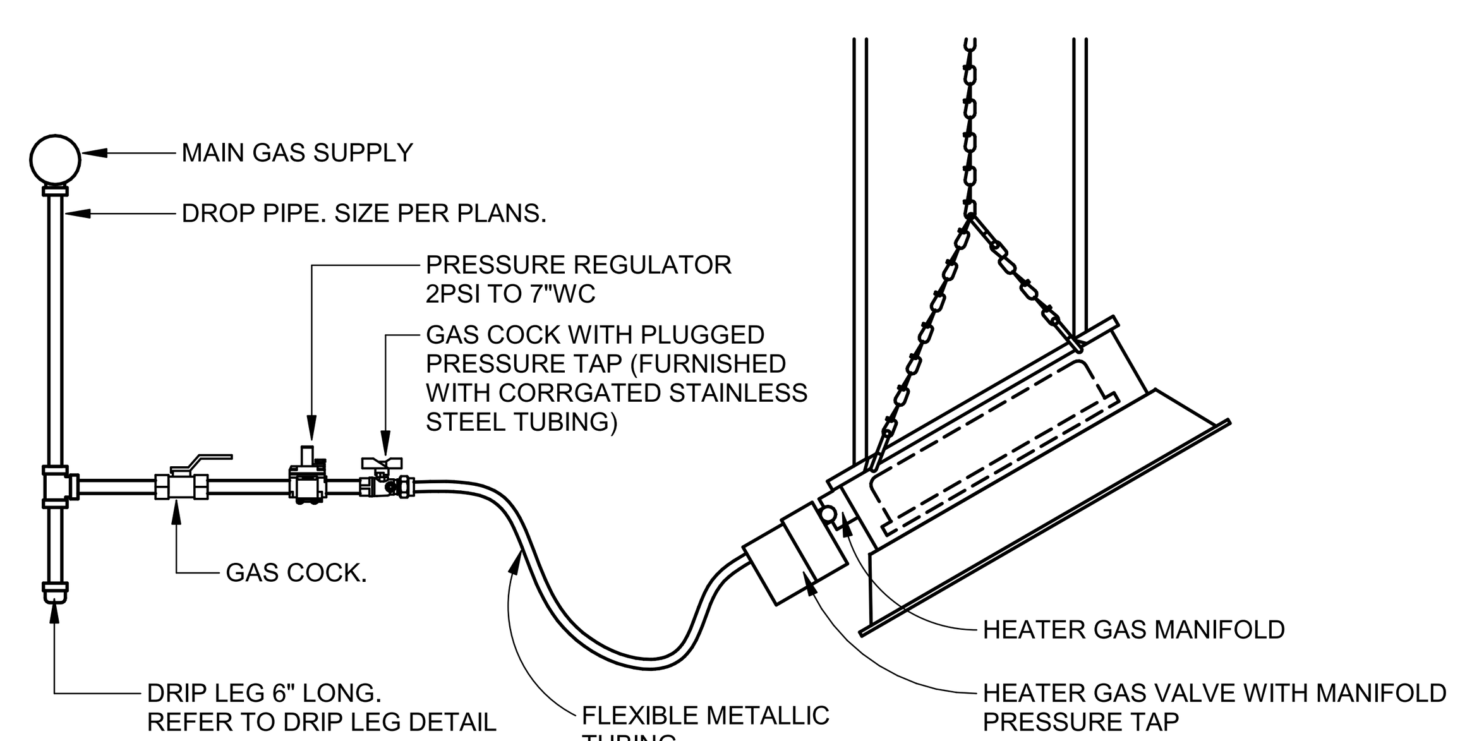


NOTE:
VERIFY REQUIREMENTS FOR METERING AND PIPING WITH GAS COMPANY. GAS COMPANY SHALL EXCAVATE, BACKFILL, AND REPAIR PAVING AND SOD FOR GAS SERVICE LINE INSTALLATION FOMR MAIN TO BUILDING. CONTRACTOR TO PAY ALL GAS COMPANY FEES FOR THIS INSTALLATION. USE SCREWED PIPE AND FITTINGS PER SPECIFICATION. PAIN EXPOSED METAL GAS PIPE, FITTINGS AND ITEMS PER ARCHITECT.

5 GAS SERVICES DETAIL
NO SCALE

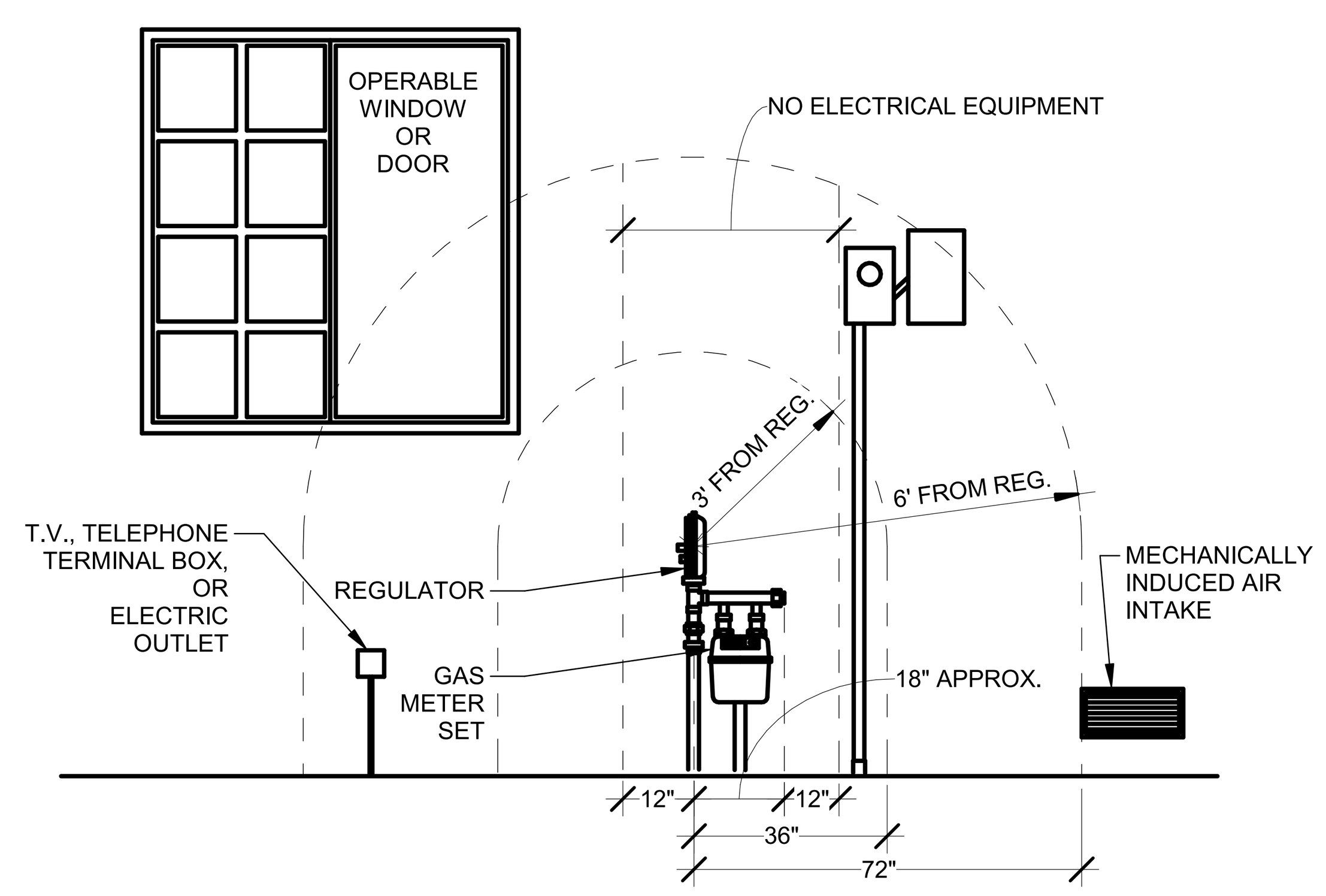


2 CATCH BASIN DETAIL
NO SCALE

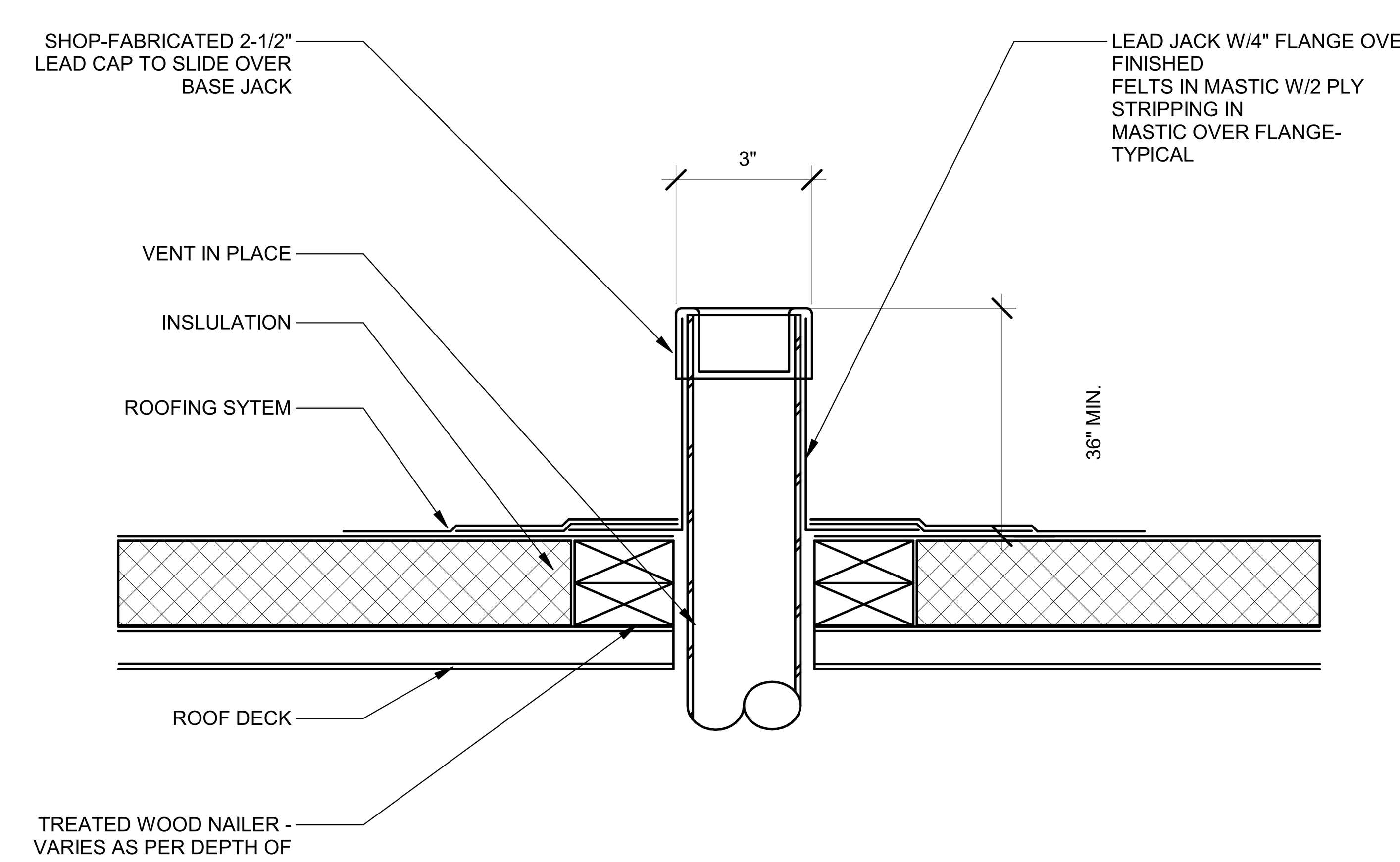


NOTE:
DO NOT INSTALL ANY GAS PIPING ABOVE THE HEATER OR IN HEAT ZONES

9 HIGH INTENSITY HEATER GAS CONNECTION DETAIL
NO SCALE



6 GAS METER SETTING DETAIL
NO SCALE



3 VENT THROUGH ROOF DETAIL
NO SCALE

SGM
118 West Sixth Street, Suite 200
Glenwood Springs, CO 81601
970.945.1004 www.sgm-inc.com

NOT FOR CONSTRUCTION

Kuhn Aviation Hangar
Rifle, CO 81650

#	Revision:	Date:	By:

Project Milestone: PERMIT SET

Job No.	2021-546
Drawn by:	PG
Date:	05/13/2022
QC: BC	PE: BC

Title:
PLUMBING DETAILS

Dwg No.
P5.01

CATCH BASIN SCHEDULE

UNIT TAG	FIXTURE MANUFACTURING & MODEL	DESCRIPTION	LOCATION	CONNECTION SIZE (IN)	VENT (IN)	POOLING DEPTH @ DESIGN FLOW. (IN. ABOVE GRATE)	FREE AREA (SQ IN)	FINSH	NOTES	REMARKS
CB-1	ZURN Z887-24-HD-GDF	23-1/4" WIDE REVEAL X 24-5/8" LONG CATCH BASIN WITH HEAVY DUTY FRAME AND CLASS F GALVANIZED DUCTILE GRATE	AIRCRAFT HANGAR 101	6	NA	0.5	206.4	HIGH DENSITY POLYETHELINE WITH GALVANIZED DUCTILE IRON SLOTTED GRATE	REFER TO STRUCTURAL PLANS FOR SLAB SLOPE AND THICKNESS	ALL
CB-2	ZURN Z887-24-HD-GDF	23-1/4" WIDE REVEAL X 24-5/8" LONG CATCH BASIN WITH HEAVY DUTY FRAME AND CLASS F GALVANIZED DUCTILE GRATE	AIRCRAFT HANGAR 101	6	NA	0.5	206.4	HIGH DENSITY POLYETHELINE WITH GALVANIZED DUCTILE IRON SLOTTED GRATE	REFER TO STRUCTURAL PLANS FOR SLAB SLOPE AND THICKNESS	ALL

NOTES
1. PROVIDE THE FOLLOWING OPTIONS AND ACCESSORIES: 6" NO-HUB END OUTLET, SEDIMENT BUCKET, GRATE LOCKDOWN HARDWARE.
2. GRATE MUST BE DIN 19580 LOAD CLASS F RATED OR BETTER.

WATER HEATER SCHEDULE

EQUIPMENT TAG	MANUFACTURER	MODEL	DESCRIPTION	SERVICE	NOMINAL CAPACITY (GAL.)	FIRST HOUR RATING (GAL.)	RECOVERY @ 90˚F TEMPERATURE RISE (G.P.H.) @ S.L	WATER PIPE CONNECTION SIZE (INCHES)	WATER PIPE CONNECTION TYPE	NUMBER OF ELEMENTS	ELEMENT WATTAGE (W)	ELECTRICAL			DIMENSIONS			UNIT WEIGHT (LBS)	REMARKS
												V	PH	Hz	HEIGHT (IN)	WIDTH (IN)	DEPTH (IN)		
PWH-1	AO SMITH	EPU-6	PROLINE SPECIALTY POINT OF USE ELECTRIC WATER HEATER	DOMESTIC HOT WATER	6	N/A	7	1/2	NPT	1	1440	120	1	60	20	13.75	12.5	73.5	1

REMARKS:
1. FURNISH WITH T&P RELIEF VALVE AND DRAIN PAN.

PLUMBING FIXTURE & CONNECTION SCHEDULE

UNIT TAG	FIXTURE MANUFACTURING & MODEL	DESCRIPTION	LOCATION	WASTE (IN)	VENT (IN)	COLD WATER (IN)	HOT WATER (IN)	FINSH	NOTES	REMARKS
WC-1	PLUMBING FIXTURES SPECS & HARDWARE TO BE SPECIFIED BY THE ARCHITECT. FINAL CONNECTIONS TO BE VERIFIED WITH THE ARCHITECT. FIXTURE ALOWANCE NO TO EXCEED THE ESTABLISHED BUDGET.	FLOOR MOUNTED TOILET FLUSH TANK	RESTROOM 105	3	1-1/2	1/2	NA	PER ARCHITECT	WATER SENSE AND ADA COMPLIANT, 1.28 GPF.	1
LV-1		WALL MOUNTED LAVATORY	RESTROOM 105	1-1/2	1-1/2	1/2	1/2	PER ARCHITECT	ADA COMPLIANT. 0.5 GPM	2
KS-1		KITCHEN SINK	KITCHEN 104	1-1/2	NA	1/2	1/2	PER ARCHITECT	NONE	2
SS-1		FLOOR MOUNT SERVICE SINK	SEE PLANS	1-1/2	1-1/2	1/2	1/2	PER ARCHITECT	NONE	2
FS-1	ZURN Z1900	12"x12" SANI-FLOOR RECEPTOR W/ HALF GRATE	MECH ROOMS	2	1-1/2	NA	NA	C.I. BODY WITH PORCELAIN ENAMEL INTERIOR	REFER TO ARCHITECTURAL PLANS FOR SLAB THICKNESS.	3

REMARKS:
1. LOOSE KEY ANGLE STOP, STAINLESS STEEEL BRAIDED SUPPLIES.
2. P-TRAP, LOOSE KEY ANGLE STOPS, STAINLESS BRAIDED SUPPLIES.
3. PROVIDE P-TRAP AND PROSET TRAP GUARD OR APPROVED EQUAL. COORDINATE FLOOR DRAIN BODY SIZE WITH BODY STRUCTURE.

WATER ENTRY COMPONENTS SCHEDULE

UNIT TAG	MANUFACTURER	MODEL	DESCRIPTION	LOCATION	DESIGN FLOW (GPM)	WATER SERVICE DELIVERY PRESSURE (PSIG)	OUTLET PRESSURE (PSIG)	COLD WATER (IN)	FINSH	NOTES
PRV-1	WATTS	LF223 1	LEAD FREE WATER PRESSURE REDUCING VALVE	MECH / ELEC 107	16	80	75	1	LEAD FREE BRASS	2
BFP-1	WATTS	LF009M2-PC-QT 1	REDUCED PRESSURE ZONE ASSEMBLY BACKFLOW PREVENTER	MECH / ELEC 107	16	75	64	1	LEAD FREE BRASS	ALL

NOTES:
1. FURNISHED WITH 1/2" BLOW OUT/FLUSH FITTING.
2. ASSE 1013 COMPLIANT.

SGM
118 West Sixth Street, Suite 200
Glenwood Springs, CO 81601
970.945.1004 www.sgm-inc.com

NOT FOR CONSTRUCTION

Kuhn Aviation Hangar
Rifle, CO 81650

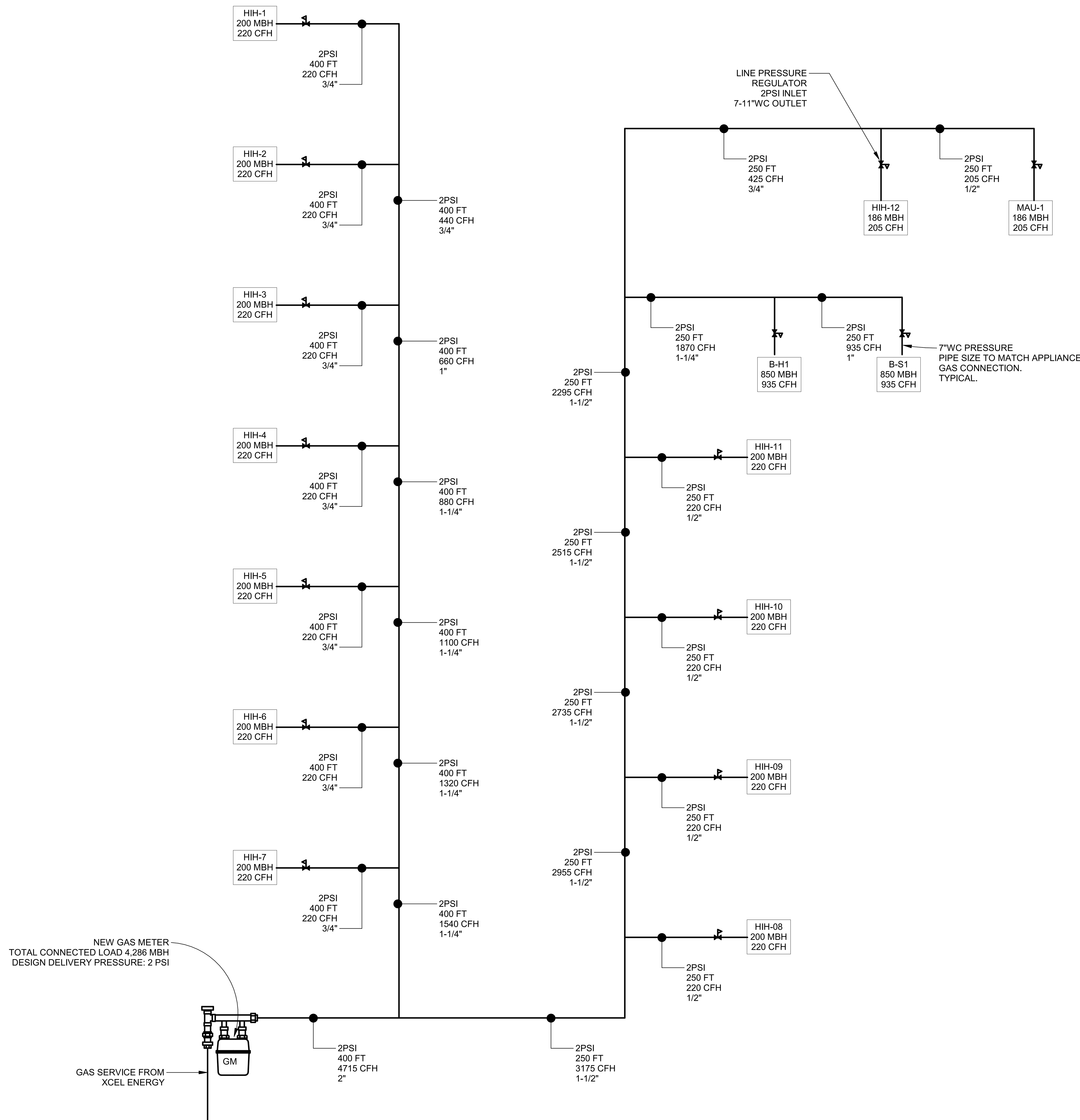
#	Revision:	Date:	By:

Project Milestone: PERMIT SET

Job No. 2021-546
Drawn by: PG
Date: 05/13/2022
QC: BC PE: BC

Title: PLUMBING SCHEDULES

Dwg No. P6.01



NOTE:
PIPE DISTANCES REPRESENT LENGTH FROM POINT OF DELIVERY TO FURTHEST OUTLET AS PER 2015 IFGC SECTION 402.4.2 BRANCH LENGTH METHOD

1 GAS PIPING DIAGRAM

NO SCALE

CONNECTED GAS LOAD SCHEDULE

ITEM	DESCRIPTION	LOCATION	BTU/HR LOAD @ SEA LEVEL	REQUIRED INLET PRESSURE MIN. / MAX. (IN.WG.)
BH-1	HEATING BOILER	MECHANICAL ROOM	850,000	7 / 14
B-S1	SNOWMELT BOILER	MECHANICAL ROOM	850,000	7 / 14
MAU-1	MAKE-UP AIR UNIT	AIRCRAFT HANGAR	186,000	7 / 14
HIH-1	HIGH INTENSITY HEATER	AIRCRAFT HANGAR	200,000	7 / 14
HIH-2	HIGH INTENSITY HEATER	AIRCRAFT HANGAR	200,000	7 / 14
HIH-3	HIGH INTENSITY HEATER	AIRCRAFT HANGAR	200,000	7 / 14
HIH-4	HIGH INTENSITY HEATER	AIRCRAFT HANGAR	200,000	7 / 14
HIH-5	HIGH INTENSITY HEATER	AIRCRAFT HANGAR	200,000	7 / 14
HIH-6	HIGH INTENSITY HEATER	AIRCRAFT HANGAR	200,000	7 / 14
HIH-7	HIGH INTENSITY HEATER	AIRCRAFT HANGAR	200,000	7 / 14
HIH-8	HIGH INTENSITY HEATER	AIRCRAFT HANGAR	200,000	7 / 14
HIH-9	HIGH INTENSITY HEATER	AIRCRAFT HANGAR	200,000	7 / 14
HIH-10	HIGH INTENSITY HEATER	AIRCRAFT HANGAR	200,000	7 / 14
HIH-11	HIGH INTENSITY HEATER	AIRCRAFT HANGAR	200,000	7 / 14
HIH-12	HIGH INTENSITY HEATER	AIRCRAFT HANGAR	200,000	7 / 14
TOTAL			4,286,000	

NOTES:
1. REQUIRED INLET PRESSURE PER EQUIPMENT MANUFACTURER INSTALLATION INSTRUCTIONS.

NATURAL GAS DISTRIBUTION PIPING SIZING CRITERIA

TOTAL DEVELOPED LENGTH (FT)	AVERAGE GAS HEAT VALUE (BTU / FT ^3)	DELIVERY PRESSURE AT METER (PSI)	INTERNATIONAL FUEL GAS CODE		
			TABLE NUMBER	PRSSURE DROP (PSI)	SPECIFIC GRAVITY
400 LONGEST SECTION 250 BRANCH	909	2	402.4(5)	1.0	0.6

NOTES:
1. FINAL DELIVERY PRESSURE AT THE METER SHALL BE COORDINATED AND VERIFIED WITH GAS UTILITY COMPANY BY CONTRACTOR.

SGM
118 West Sixth Street, Suite 200
Glenwood Springs, CO 81601
970.945.1004 www.sgm-inc.com

NOT FOR CONSTRUCTION

Kuhn Aviation Hangar
Rifle, CO 81650

#	Revision:	Date:	By:

Project Milestone: PERMIT SET

Job No. 2021-546
Drawn by: PG
Date: 05/13/2022
QC: BC PE: BC

Title:
PLUMBING DIAGRAMS

Dwg No.
P7.01

GENERAL NOTES

DEFINITIONS:

1. CONTRACTOR: THE ENTITY BINDED BY THE PRIME AGREEMENT WITH THE CLIENT TO PERFORM THE TASKS INDICATED IN THE CONTRACT DOCUMENTS. THE TERM CONTRACTOR INCLUDES AND IMPLIES ANY RELEVANT SUB-CONTRACTOR THAT MAY BE PERFORMING THE ACTUAL TASK UNDER THE CONTRACTOR'S DIRECTION.

2. CONTRACT DOCUMENTS: THE COMPLIMENTARY COLLECTION OF DRAWINGS, SPECIFICATIONS, PROJECT MANUAL, AND ADDENDA WHICH ARE DIRECTED TO THE CONTRACTOR, UNDER THE PRIME AGREEMENT.

3. FURNISH: TO SUPPLY, DELIVER, UNLOAD, AND INSPECT FOR DAMAGE.

4. INSTALL: TO UNPACK, ASSEMBLE, ERECT, APPLY, PLACE, FINISH, CURE, PROTECT, CLEAN, START UP, AND MAKE READY FOR USE.

5. PROVIDE: TO FURNISH AND INSTALL.

6. SUPPLY: SAME AS FURNISH.

7. PRODUCT: MATERIAL, MACHINERY, COMPONENTS, EQUIPMENT, FIXTURES, AND SYSTEMS FORMING THE WORK RESULT. NOT MATERIALS OR EQUIPMENT USED FOR PREPARATION, FABRICATION, CONVEYING, OR ERECTION AND NOT INCORPORATED INTO THE WORK RESULT. PRODUCTS MAY BE NEW, NEVER BEFORE USED, OR RE-USED MATERIALS OR EQUIPMENT.

NATURE AND USE OF CONTRACT DOCUMENTS:

1. IF ANY DISCREPANCY IS FOUND WITHIN THE CONTRACT DOCUMENTS DURING CONSTRUCTION, SUBMIT AN RFI TO THE ENGINEER FOR DIRECTION BEFORE PROCEEDING. IF A DISCREPANCY IS FOUND DURING BIDDING, AND THE DESIGN TEAM DOES NOT PROVIDE A RESOLUTION BY THE FINAL ADDENDUM, BASE THE BID ON THE MORE COSTLY INTERPRETATION. FAILING TO DO SO WILL NOT BE CONSIDERED A VALID BASIS FOR CHANGE ORDERS DURING CONSTRUCTION.

2. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING COMPLETE CONTRACT DOCUMENTS TO ALL TRADES, AND FOR COORDINATING BETWEEN ALL TRADES TO ENSURE PROPER INSTALLATION OF COMPLETE AND FUNCTIONAL SYSTEMS AS SHOWN ON THE CONTRACT DOCUMENTS.

3. THE CONTRACTOR IS RESPONSIBLE FOR ALL SCOPES OF WORK, COMPLETENESS OF BIDS, AND PRICING EXERCISES. FURTHER, COORDINATION AND DIVISION OF SCOPE AMONGST SUB-CONTRACTORS IS THE RESPONSIBILITY OF THE CONTRACTOR.

4. DO NOT SCALE DRAWINGS FOR ROUGH-IN MEASUREMENTS OR USE AS SHOP DRAWINGS. WHERE DRAWINGS ARE REQUIRED FOR THESE PURPOSES OR HAVE TO BE MADE FROM FIELD MEASUREMENTS, TAKE THE NECESSARY MEASUREMENTS AND PREPARE THE DRAWINGS.

5. DRAWINGS ARE DIAGRAMMATIC IN NATURE AND DO NOT SHOW EVERY SYSTEM OFFSET REQUIRED. COORDINATE WITH THE EXISTING AND NEW STRUCTURE, ELECTRICAL, PLUMBING, FIRE PROTECTION AND CEILING TO PROVIDE OFFSETS AS REQUIRED AND APPROPRIATE.

CODES, INSPECTIONS, AND PERMITS:

1. PERFORM ALL WORK IN ACCORDANCE WITH THE CODES, REGULATIONS, AND LOCAL AMENDMENTS, AS CURRENTLY ADOPTED BY THE AUTHORITY HAVING JURISDICTION (AHJ).

2. IF ANY DISCREPANCIES ARE FOUND BETWEEN CONTRACT DOCUMENTS AND ANY APPLICABLE CODE OR LEGAL REQUIREMENT, SUBMIT AN RFI TO ENGINEER FOR DIRECTION BEFORE PROCEEDING.

3. OBTAIN ALL PERMITS AND INSPECTIONS REQUIRED BY THE AHJ FOR PROJECT COMPLETION.

WARRANTY:

1. UNCONDITIONALLY GUARANTEE ALL LABOR AND MATERIAL ON ALL WORK AGAINST DEFECTS IN WORKMANSHIP AND MATERIALS FOR A PERIOD OF ONE YEAR, FOLLOWING FINAL ACCEPTANCE, EXCEPT AS EXTENDED BY STANDARD MANUFACTURER WARRANTY AND/OR BY REQUIRED EXTENSION STATED IN THE CONTRACT DOCUMENTS.

SUBMITTALS AND SUBSTITUTIONS:

1. MEET THE CRITERIA DESCRIBED HEREIN, PRIOR TO ENGINEER'S REVIEW OF THE SUBMITTAL.

2. REFERENCE EQUIPMENT TAGS PROVIDED IN THE CONTRACT DOCUMENTS.

3. CLEARLY INDICATE THE INTENDED PRODUCT TYPE, MODE, OPTIONS, ACCESSORIES (FACTORY AND FIELD INSTALLED), AND ANY OTHER OPTIONS OF ANY KIND.

4. INDICATE THE PLAN ISSUANCE AND DATE ON WHICH SUBMITTAL IS BASED.

5. IF PROPOSING A SUBSTITUTION IN PLACE OF THE BASIS OF DESIGN EQUIPMENT, THE CONTRACTOR IS SOLELY RESPONSIBLE FOR THE SPATIAL REQUIREMENTS, ACOUSTICAL, THERMAL, PHOTOMETRIC, AND ELECTRICAL PERFORMANCE CHARACTERISTICS, AND COORDINATION OF ALL INSTALLATION REQUIREMENTS. REVIEW AND APPROVAL BY THE DESIGN TEAM DOES NOT ALTER OR MITIGATE THIS RESPONSIBILITY. CLEARLY MARK SUBSTITUTIONS AS SUCH.

6. DESCRIBE ANY IMPACT TO OTHER DIVISIONS CREATED BY A PRODUCT SUBSTITUTION ON THE SUBSTITUTION REQUEST FOR CONSIDERATION BY THE DESIGN TEAM. PROVIDE AN ESTIMATE OF ASSOCIATED COST IMPACT TO OTHER DIVISIONS WHERE APPLICABLE. CONTRACTOR SHALL BEAR ANY AND ALL ADDITIONAL COST RESULTING FROM SUBSTITUTIONS.

7. INDICATE WHERE PRODUCTS REQUIRE A PERFORMANCE DE-RATE DUE TO ALTITUDE EFFECTS.

8. RE-SUBMITTALS MUST CONTAIN MARKUPS THAT CLEARLY DELINEATE THE CHANGED ITEMS. ENGINEER WILL NOT RE-REVIEW THE ENTIRE SUBMITTAL PACKAGE IN ORDER TO FIND THE CHANGES.

9. ALL DATA REQUIRED FOR REVIEW MUST BE CONTAINED IN THE FILES PROVIDED TO THE ENGINEER. LINKS TO MANUFACTURER'S WEBSITES WILL NOT BE ACCEPTED.

10. ROOM SCHEDULES ARE ACCEPTABLE TO INDICATE QUANTITIES.

PROJECT CLOSEOUT REQUIREMENTS:

1. COMPLETE ALL REQUIRED AHJ INSPECTIONS. MAKE COPIES OF PERMITS AND INSPECTION REPORTS AVAILABLE.

2. PROVIDE A COMPLETE SET OF AS-BUILT PLANS AT THE COMPLETION OF THE PROJECT WITH ALL CHANGES NOTED.

3. CONDUCT A TRAINING SESSION FOR OWNER'S DESIGNATED STAFF FOR ALL CONTROLS SYSTEMS AND MAJOR EQUIPMENT. PRODUCE A SIGN IN SHEET FOR THIS SESSION SHOWING ATTENDEES, DATE, LIST OF EQUIPMENT AND SYSTEMS COVERED. ALL TRAININGS SHALL BE RECORDED AND MADE AVAILABLE TO THE OWNER AND OWNER'S REP THROUGH CLOUD BASED SYSTEM FOR THE DURATION OF THE WARRANTY.

4. CLEAN JOB SITE OF ALL CONSTRUCTION DEBRIS, REPAIR ALL DAMAGED FINISHES. REMOVE ALL EXISTING EQUIPMENT LABELS THAT ARE NO LONGER ACCURATE, AND INSTALL NEW LABELING FOR NEW EQUIPMENT AND SYSTEMS.

5. DELIVER EQUIPMENT MANUALS AND ANY REQUIRED SPARE PARTS TO OWNER.

ACCESS AND CLEARANCES:

1. MAINTAIN ALL SERVICE AND ACCESS CLEARANCES REQUIRED BY CODE OR MANUFACTURER FOR ALL EQUIPMENT.

2. PROVIDE ACCESS FOR ALL EQUIPMENT, ETC. LOCATED ABOVE NON-ACCESSIBLE CEILINGS OR IN CONCEALED AREAS. PROVIDE SUFFICIENT ACCESS FOR SERVICING AND MAINTENANCE.

3. UTILIZE APPROPRIATELY RATED ACCESS PANELS WHEN PENETRATING A RATED ASSEMBLY.

PENETRATIONS AND RATED ASSEMBLIES:

1. THE ARCHITECTURAL PLANS SERVE AS THE REFERENCE FOR LOCATIONS OF RATED WALLS, PARTITIONS, AND ASSEMBLIES. COORDINATE ALL PENETRATIONS PRIOR TO ROUGH IN. FOR ALL PENETRATIONS OF FIRE RATED ASSEMBLIES, UTILIZE AN ASSEMBLY UL LISTED TO MAINTAIN THE RATING AND APPROVED BY ALL APPLICABLE CODES.

STRUCTURAL MODIFICATIONS:

1. DO NOT DRILL, NOTCH, CUT, OR ALTER STRUCTURAL MEMBERS IN ANY MANNER EXCEPT AS PERMITTED BY THE MATERIAL SPECIFIC SECTIONS OF THE BUILDING CODE, MANUFACTURER'S GUIDELINES FOR ENGINEERED PRODUCTS, OR THE RECOMMENDATION OF THE STRUCTURAL ENGINEER OF RECORD.

SUPPORT FOR SYSTEMS AND EQUIPMENT:

1. PROVIDE SUPPORT (I.E. HANGERS, BRACKETS, STANCHIONS, RACKS, PADS, ANCHORS, ETC.) AT REGULAR INTERVALS FOR ALL SYSTEMS AND EQUIPMENT INDICATED AND IMPLIED ON CONTRACT DOCUMENTS, AND IN COMPLIANCE WITH SYSTEM SPECIFIC CODE REQUIREMENTS.

MECHANICAL SPECIFICATIONS

MOUNTING HEIGHTS:

1. MOUNT ALL THERMOSTATS AT 48 INCHESS AFF, UNLESS NOTED OTHERWISE.

CONTROL WIRING:

1. PROTECT ALL EXPOSED CONTROL AND LOW VOLTAGE WIRING BY INSTALLING WITHIN EMT CONDUIT.

SUBMITTALS:

1. REFER TO GENERAL NOTES FOR SUBMITTAL REQUIREMENTS.

2. AT MINIMUM, PROVIDE SUBMITTALS FOR THE FOLLOWING:
   a. FANS.
   b. PUMPS.
   c. BOILERS.
   d. HYDRONIC SPECIALTIES.
   e. ROOF TOP UNITS.
   f. PACKAGED REQUIPMENT.
   g. GRILLES, REGISTERS, DIFFUSERS, AND DUCT ACCESSORIES.
   h. CONTROLS PACKAGES.
   i. DUCT AND DUCT INSULATION MATERIALS AND METHODS
   j. PIPE AND PIPE INSULATION MATERIALS AND METHODS.
   k. TEST AND BALANCE REPORTS.
   l. TERMINAL UNITS.
   m. RADIANT FLOOR AND SNOWMELT TUBING LAYOUT SHOP DRAWINGS.

TEST AND BALANCE:

1. PERFORM TESTING, ADJUSTING AND BALANCING (TAB) BY AN AABC, NEBB, OR TABB AGENCY WITH CURRENT CERTIFICATION.

2. TAB INCLUDES BUT IS NOT LIMITED TO (WHEN PRESENT): ADJUSTING AND RESHEAVING FANS, AIR HANDLING EQUIPMENT, PUMPS, AIR TERMINAL UNITS AND DEVICES, CALIBRATING THERMOSTATS, BALANCING VALVES, PRESSURE RELATIONSHIPS, OUTSIDE AIR DAMPERS, AND MEASURING MOTOR ELECTRICAL CHARACTERISTICS.

3. AIRSIDE TOLERANCES:
   a. SUPPLY, RETURN, AND EXHAUST FANS AND EQUIPMENT WITH FANS: MINUS 5 TO PLUS 10 PERCENT.
   b. AIR OUTLETS AND INLETS: 0 TO MINUS 10 PERCENT.

4. HYDRONIC TOLERANCES: CHECK THE SUM OF BRANCH-CIRCUIT FLOWS AGAINST APPROVED PUMP FLOW RATE.
   a. HEATING-WATER FLOW RATE: 0 TO MINUS 10 PERCENT.
   b. COOLING-WATER FLOW RATE: 0 TO MINUS 5 PERCENT.

5. INDICATE % DISCREPANCY BETWEEN ACTUAL AND DESIGN VALUES FOR EACH OF THE FOLLOWING (WHEN PRESENT WITH A SPECIFIED VALUE/SETTING), AT MINIMUM:
   a. DIFFUSER/REGISTER/GRILLE/LOUVER.
   b. FAN.
   c. PUMP.
   d. HYDRONIC BALANCING VALVE, VENTURI, OR CIRCUIT SETTER.

PENETRATIONS AND RATED ASSEMBLIES:

1. INSTALL COMBINATION FIRE/SMOKE DAMPERS AT ALL REQUIRED RATED WALL PENETRATIONS AND BE WIRED INTO THE FIRE ALARM PANEL BY THE ELECTRICAL AND/OR FIRE ALARM PANEL CONTRACTOR. COORDINATE TO PROVIDE MOTOR VOLTAGE TO MATCH THAT OF THE FIRE ALARM PANEL. INSTALL PER THE MANUFACTURER'S INSTRUCTIONS AND THE ADOPTED CODE.

2. FIRE DAMPERS AND FIRE SMOKE DAMPERS SHALL BE UL LISTED AND INSTALLED PER THE MANUFACTURER'S INSTRUCTIONS AND THE ADOPTED CODE.

3. PROVIDE FIRE STOP MATERIAL TO SEAL AROUND DUCT AND PIPE PENETRATIONS THROUGH RATED PARTITIONS AND ASSEMBLIES, IN ACCORDANCE WITH THE ADOPTED CODE.

DUCTWORK:

1. CONSTRUCT ALL DUCTWORK IN ACCORDANCE WITH THE MATERIAL, PRESSURE, AND SEAL CLASS, AS INDICATED WITHIN THE PROJECT DOCUMENTS.

2. ALL DUCT SIZES INDICATED ARE INSIDE CLEAR DIMENSIONS. ACTUAL SHEET METAL SIZE MAY VARY DEPENDING ON LINER AND WRAP SPECIFICATIONS DEFINED WITHIN THE PROJECT DOCUMENTS.

3. MATCH RUNOUT DUCTS TO SUPPLY DIFFUSERS WITH DIFFUSER NECK SIZE.

4. LIMIT LENGTH OF FLEXIBLE DUCWORK TO NO MORE THAN 8'-0".

5. AIR SYSTEMS WITH CAPACITIES GREATER THAN 2000 CFM MAY REQUIRE DUCT DETECTORS. PROVIDE DUCT DETECTORS AS PRESCRIBED BY THE ADOPTED CODE, AT THE LOCATIONS REQUIRED. DUCT DETECTORS SHALL BE INSTALLED AS FOLLOWS: MOUNTED BY MECHANICAL CONTRACTOR, POWER WIRING BY ELECTRICAL CONTRACTOR, CONTROL WIRING BY THE CONTROLS CONTRACTOR.

6. ALL AIR HANDLING EQUIPMENT IS TO HAVE VIBRATION ISOLATION.

SPLIT DX SYSTEMS:

1. CONSTRUCT ALL PIPING IN ACCORDANCE WITH THE MATERIALS, FITTINGS, METHODS, AND INSULATION REQUIREMENTS, AS INDICATED ELSEWHERE WITHIN THE PROJECT DOCUMENTS.

2. INSTALL REFRIGERATION SPECIALTIES IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.

3. PIPING INSTALLATION SHALL NOT EXCEED EQUIPMENT MANUFACTURER MAXIMUM VERTICAL AND HORIZONTAL LENGTHS. CONTRACTOR TO VERIFY FINAL LENGTHS ARE IN ACCORDANCE WITH MANUFACTURER SPECIFICATIONS PRIO TO PURCHASING AND INSTALLATION.

ELECTRICAL ROOMS:

1. ONLY PIPING DEDICATED TO SERVING AN ELECTRICAL ROOM MAY BE INSTALLED IN THE ELECTRICAL ROOM. IN SUCH CASES, PROVIDE SECONDARY CONTAINMENT TO PREVENT LEAKS AND/OR CONDENSATION, VIA SECONDARY CONTAINMENT BENEATH THE PIPE, WITH AUDIBLE ALARM UPON LEAK DETECTION OR VISUAL "TELL TALE" DRAIN TERMINATION LOCATION. REFERENCE NEC 110. IN NO CASE MY PIPING OR DUCTWORK BE INSTALLED DIRECTLY ABOVE ELECTRICAL EQUIPMENT.

MECHANICAL SYMBOL LEGEND

ANNOTATION SYMBOLS

- ## — KEYNOTE TAG
- ## — REVISION TAG
- AA-#-### — EQUIPMENT TAG, REFER TO EQUIPMENT SCHEDULE
- AA-#-### — REFERENCE EQUIPMENT TAG SPECIFIED BY ANOTHER DISCIPLINE
- Type CFM Size — GRILLE, REGISTER, DIFFUSER TAG

LINETYPES / PHASING

- NEW, OR OTHER ACTION ITEMS *(Solid dark lines)*
- ITEMS TO BE DEMOLISHED *(Dashed dark lines on demo plans)*
- reference info — EXISTING ITEMS TO REMAIN *(Solid light lines and text)*
- CONNECT NEW TO EXISTING

DEVICE SYMBOLS

- T — TEMPERATURE SENSOR
- T — THERMOSTAT
- FS — FLOOR SENSOR
- SS — SNOW MELT SENSOR
- FC — FAN CONTROLLER
- M — MOTORIZED DAMPER

CONTROL & INSTRUMENTATION SYMBOLS

- FLOW SWITCH
- PRESSURE GAUGE
- P/T — PRESSURE AND TEMPERATURE TAP
- THERMOMETER

COUPLING & CONNECTOR SYMBOLS

- FLANGED CONNECTION
- UNION

PIPING LINE TYPES

- SYSTEM TYPE — SUPPLY / DRAIN
- SYSTEM TYPE — RETURN
- SYSTEM TYPE — BELOW GRADE

SYSTEM TYPE ABBREVIATIONS

C	CONDENSATE
CA	COMPRESSED AIR
CD	GRAVITY FLOW CONDENSATE DRAIN
PCD	PUMPED CONDENSATE DRAIN
CH	CHILLED WATER
CW	CONDENSATE WATER
HW	HEATING WATER
RL/RS	REFRIGERANT LINESET
RS	REFRIGERANT SUCTION
RL	REFRIGERANT LIQUID
SM	SNOWMELT
HR	HEAT RECOVERY
HPS	HIGH PRESSURE STEAM
MPS	MEDIUM PRESSURE STEAM
LPS	LOW PRESSURE STEAM
HGBP	HOT GAS BYPASS

HYDRONIC SPECIALTIES SYMBOLS

- AIR VENT
- STRAINER

EQUIPMENT SYMBOLS

- PUMP

VALVE SYMBOLS

- 2-WAY VALVE
- 3-WAY VALVE
- ISOLATION VALVE
- BALANCING VALVE
- T/P — TEMP. AND PRESSURE RELIEF VALVE
- CHECK VALVE

MECHANICAL SHEET LIST

Sheet Number	Sheet Name
M0.01	MECHANICAL LEGEND AND GENERAL NOTES
M0.02	MECHANICAL SPECIFICATIONS
M1.01	MAIN LEVEL MECHANICAL HVAC PLAN
M1.02	MAIN LEVEL MECHANICAL PIPING PLAN
M1.03	MECHANICAL SNOW MELT PLAN
M2.01	MECHANICAL ELEVATIONS
M2.02	MECHANICAL ELEVATIONS
M3.01	MECHANICAL SECTIONS
M3.02	MECHANICAL SECTIONS
M4.01	ENLARGED MECHANICAL PLANS
M4.02	ENLARGED MECHANICAL PLANS
M5.01	MECHANICAL DETAILS
M6.01	MECHANICAL SCHEDULES
M6.02	MECHANICAL SCHEDULES
M7.01	MECHANICAL PIPING DIAGRAMS

AHJ PLANS REVIEWER NOTE:

THE BASIS OF DESIGN FOR THIS PROJECT IS A GROUP I HANGAR FOR A BOMBARDIER GLOBAL 7500 IN TRANSIT AIRCRAFT, NO SERVICE, REPAIR, FUELING, MAINTENANCE OR PAINTING WILL TAKE PLACE.

ADOPTED CODES

AHJ	GARFIELD COUNTY
NEC	2020
IBC	2015
IMC	2015
IFGC	2015
IPC	2015
IECC	2009
NFPA	409

SITE CONDITIONS

ELEVATION	AIR DENSITY RATIO	CLIMATE ZONE	WINTER DESIGN	SUMMER DESIGN
5550' - 0"	0.81	6B	-2 °F	95 °F

SGM
118 West Sixth Street, Suite 200
Glenwood Springs, CO 81601
970.945.1004 www.sgm-inc.com

NOT FOR CONSTRUCTION

Kuhn Aviation Hangar
Rifle, CO 81650

#	Revision:	Date:	By:

Project Milestone: PERMIT SET

Job No.: 2021-546
Drawn by: IB
Date: 05/13/2022
QC: BC | PE: BC

Title: MECHANICAL LEGEND AND GENERAL NOTES

Dwg No. M0.01

MECHANICAL DUCT INSULATION SCHEDULE

SERVICE	TYPE	LOCATION	INTERNAL LINER (IN.)	EXTERNAL WRAP (IN.)	REQUIRED R-VALUE (INSTALLED)	NOTES
EXHAUST	ALL ROUND, FLEX DUCT, AND RECTANGULAR. U.N.O.	INTERIOR	NA	NA	NA	NA
ERV EXHAUST, SUPPLY, RETURN	UNIT ERV DUCTWORK (EXCEPT OUTSIDE AIR INTAKE).	INTERIOR	NA	NA	NA	1
ERV AND MAU OUTSIDE AIR INTAKE	OUTSIDE AIR INTAKE.	INTERIOR	NA	3	R-8	NA
SUPPLY DUCT	DUCT DOWN STREAM OF UNIT MAU-1	INTERIOR	NA	NA	NA	1

NOTES:
1. INSULATION IS NOT REQUIRED VIA THE FOLLOWING: ALL DUCT IS LOCATED IN A CONDITIONED SPACE. AN INDIRECTLY HEATED SPACE SEPARATED BY UNINSULATED CEILINGS MAY BE CONSIDERED A CONDITIONED SPACE PER IECC CHAPTER 2 DEFINITION. PER IECC SECTION C403.2.9 INSULATION IS ONLY REQUIRED FOR UNCONDITIONED SPACES.
2. INSULATION IS NOT REQUIED VIA IECC C403.2.9 EXCEPTION 2. THE DESIGN TEMPERATURE DIFFERENCE FOR THIS SYSTEM IS LESS THAN 15 DEGREES.

ALL INSTALLATION METHODS, INCLUDING APPLICATION, SEALING, JOINTS, ETC. SHALL BE PER THE MANUFACTURER'S RECOMMENDATIONS.

ALL INTERIOR INSULATION SHALL BE PLENUM RATED.

ALL PRODUCTS SHALL BE LABELED FOR NFPA 90A AND 90B COMPLIANCE.

BASIS OF DESIGN:

LINER:
1. JM LINEACOUSTIC RC.

WRAP:
1. INTERIOR
   A. JM MICROLITE FSK 0.75 LB DENSITY.
   B. COMPOSITE FHC 25/50
2. EXTERIOR
   A. JM 800 SERIES SPIN GLASS 3 LB DENSITY.
   B. FLEXCLAD 250 ALUMINUM JACKET APPLIED OVER INSULATION, SUITABLE FOR EXPOSED EXTERIOR INSTALLATIONS.
   C. COMPOSITE FHC 25/50
3. 2-HOUR FIRE RATED BARRIER:
   A. 3M FIRE BARRIER DUCT WRAP 615+, 1.5 INCH, 6 PCF DENSITY RATED FOR CONTINUOUS USE AT 1832F.
   B. 3M FIRE BARRIER SEALANT.
   C. ASTM E2336.
   D. 3M FIRE BARRIER DUCT WRAP 615+.
   E. ZERO CLEARANCE TO COMBUSTIBLES.
   F. FOIL SCRIM BACKING.

MECHANICAL PIPING MATERIAL SPECIFICATION

SYSTEM	DESCRIPTION	PRESSURE RATING (PSIG)	NOMINAL SIZE	MATERIAL	JOINTS	FITTINGS	ISOLATION VALVE	BALANCE	INSULATION (YES/NO)	TEST PROCEDURE
HWS & HWR	HEATING WATER SUPPLY AND RETURN	125	2" SMALLER	COPPER ASTM B TYPE L HARD DRAWN	SOLDER, LEAD-FREE, ASTM B32 HB ALLOY	WROUGHT COPPER SOLDER FITTINGS ASTM B16	FULL PORT BALL VALVE NIBCO T-585-70 OR S-585-70	ARMSTRONG CBV	YES, PER SCHEDULE.	HYDROSTATIC TO 1.5X MAX. SYSTEM DESIGN PRESSURE OR 100 PSIG, WHICHEVER IS GREATER, FOR 15 MINUTES.
		125	2-1/2" & LARGER	BLACK STEEL ASTM A53 ERW SCHEDULE 40	WELDED	WELDED FITTINGS ASTM B16, 150# RFWN FLANGES	LUGGED RESILANT SEAT BUTTERFLY AND LOCKING LEVER NIBCO LD2000	FLOW DESIGN MODEL AF	YES, PER SCHEDULE.	HYDROSTATIC TO 1.5X MAX. SYSTEM DESIGN PRESSURE OR 100 PSIG, WHICHEVER IS GREATER, FOR 15 MINUTES.
RADIANT TUBING HWS & HWR	HEATING WATER SUPPLY AND RETURN INSTALLED IN RADIANT PANEL, SLAB, OR FLOOR.	125	ALL	UPONOR HEPEX PLUS	COMPRESSION FITTING AS RECOMMENDED BY THE MANUFACTURER	COMPRESSION FITTING AS RECOMMENDED BY THE MANUFACTURER	REFER TO MANIFOLD DETAIL	REFER TO MANIFOLD DETAIL	NO	HYDROSTATIC TO 1.5X MAX. SYSTEM DESIGN PRESSURE OR 100 PSIG, WHICHEVER IS GREATER, FOR 15 MINUTES.
CONDENSATE DRAIN	DRAIN FROM GAS FIRED CONDENSING APPLIANCE	NA	NA	PVC OR CPVC COMPLYING WITH ASTM D1785 OR D2845	CEMENT AND PRIMER COMPLING WITH ASME D2564 OR F493	PVC OR CPVC COMPLYING WITH ASTM D1785 OR D2845	NA	NA	NA	NA
SMS & SMR	SNOW MELT SUPPLY AND RETURN (NON EMBEDDED)	125	2" SMALLER	COPPER ASTM B TYPE L HARD DRAWN	SOLDER, LEAD-FREE, ASTM B32 HB ALLOY	WROUGHT COPPER SOLDER FITTINGS ASTM B16	FULL PORT BALL VALVE NIBCO T-585-70 OR S-585-70	ARMSTRONG CBV	YES, PER SCHEDULE.	HYDROSTATIC TO 1.5X MAX. SYSTEM DESIGN PRESSURE OR 100 PSIG, WHICHEVER IS GREATER, FOR 15 MINUTES.
		125	2-1/2" & LARGER	BLACK STEEL ASTM A53 ERW SCHEDULE 40	WELDED	WELDED FITTINGS ASTM B16, 150# RFWN FLANGES	LUGGED RESILANT SEAT BUTTERFLY AND LOCKING LEVER NIBCO LD2000	FLOW DESIGN MODEL AF	YES, PER SCHEDULE.	HYDROSTATIC TO 1.5X MAX. SYSTEM DESIGN PRESSURE OR 100 PSIG, WHICHEVER IS GREATER, FOR 15 MINUTES.
	SNOW MELT SUPPLY AND RETURN (BURIED)	PREINSULATED CASED PIPING SYSTEM UPONOR ECOFLEX WITH A SINGLE PEX-"A" CARRIER PIPE WITH OXYGEN BARRIER. FITTINGS SHALL BE AS SPECIFIED BY THE MANUFACTURER AND SHALL NOT VOID WARRANTY. CONTRACTOR TO PROVIDE CUT SHEET PRIOR TO REVIEW OR APPROVAL.								
SMS & SMR TUBING (EMBEDDED)	SNOW MELT SUPPLY AND RETURN TUBING (EMBEDDED)	125	ALL	UPONOR HEPEX PLUS PEX "A" WITH OXYGEN BARRIER	COMPRESSION FITTING AS RECOMMENDED BY THE MANUFACTURER	COMPRESSION FITTING AS RECOMMENDED BY THE MANUFACTURER	REFER TO MANIFOLD DETAIL	REFER TO MANIFOLD DETAIL	NO	HYDROSTATIC TO 1.5X MAX. SYSTEM DESIGN PRESSURE OR 100 PSIG, WHICHEVER IS GREATER, FOR 15 MINUTES.

NOTES:
1. VALVES REPRESENT A MINIMUM STANDARD OF QUALITY. SUBSTITUTIONS OF EQUAL OR GREATER QUALITY ARE ALLOWED WITH ENGINEER'S APPROVAL.
2. WHEN CONNECTING TO AN EXISTING SYSTEM, CONTRACTOR SHALL VERIFY EXISTING GLYCOL LEVELS AND NOTIFY OWNER OF ANY DISCREPENCY FROM THE THAT INDICATED BY THE SCHEDULE.
3. BALANCE VALVES AND CIRCUIT SETTER SIZES SHALL BE DETERMINED BY FLOW RATE REQUIRED IN LIEU OF LINE SIZE.
4. ALL PEX BASED PIPING SHALL USE FITTINGS, JOINTS, VALVES, AND METHODS AS REQUIRED BY THE SPECIFIC MANUFACTURER, SO AS NOT VOID ANY WARRANTY UPON INSTALLATION.

DUCT CONSTRUCTION SPECIFICATION

SERVICE	APPLICATION	PRESSURE CLASS (IN. W.C.)	SEAL CLASS	MATERIAL
MAKE UP AIR	MAKEUP AIR DUCTWORK	+1	B	GALVANIZED
ERV SUPPLY AND EXHAUST FANS INTAKE	ALL DUCTWORK UPSTREAM OF THE ERV SUPPLY FAN AND EXHAUST	-1	C	GALVANIZED
ERV SUPPLY AND EXHAUST FANS DISCHARGE	ALL DUCTWORK DOWNSTREAM OF THE ERV SUPPLY FAN AND EXHAUST	+1	C	GALVANIZED

NOTES FOR ALL DUCTWORK:
1. ALL DUCT SHALL BE CONSTRUCTED IN ACCORDANCE WITH SMACNA.

GALVANIZED SHEET METAL CONSTRUCTION:
1. GAUGES SHALL BE PER SMACNA LOW PRESSURE SYSTEMS.
2. SHEET METAL DUCT SHALL BE CONSTRUCTED OF LOCK FORMING QUALITY GALVANIZED STEEL SHEET, WITH A G60 ZINC COATED FINISH, AND IN COMPLIANCE WITH ASTM-A653. IF PAINTLOCK DUCT IS SPECIFICALLY NOTED, THE PRODUCT SHALL BE ASTM-A653 A40 GALVANNEALED.

MECHANICAL PIPING INSULATION SCHEDULE (IECC 2009) TABLE 503.2.8

FLUID	NOMINAL PIPE DIAMETER (in.) ≤1.5"	NOMINAL PIPE DIAMETER (in.) ≥1.5"	NOTES:
HEATING WATER AND SNOWMELT	1.5	2	A. BASED ON INSULATION HAVING A CONDUCTIVITY (k) NOT EXCEDING .27 BTU per inch/(h*ft^2*°F) B. FOR DIRECT BURRIED HEATING AND HOT WATER SYSTEM PIPING, REDUCTION OF THESE THICKNESSES BY 1.5 INCHES (38 mm) SHALL BE PERMITTED (THICKNESS SHALL NOT BE REDUCED BELOW 1 INCH)

EXCEPTIONS:

1. FACTORY-INSTALLED PIPING WITHIN HVAC EQUIPMENT
2. FACTORY-INSTALLED PIPING WITHIN ROOM FAN-COILS AND UNIT VENTILATORS
3. PIPING THAT CONVEYS FLUIDS THAT HAVE DESIGN OPERATING TEMPERATURE RANGE BETWEEN 55°F (13°C) AND 105°F (41°C)
4. PIPING THAT CONVEYS FLUIDS THAT HAVE NOT BEEN HEATED OR COOLED THROUGH THE USE OF FOSSIL FUELS OF ELECTRIC POWER
5. RUNOUT PIPING NOT EXCEEDING 4 FEET (1219 mm) IN LENGTH AND 1 INCH (25 mm) IN DIAMETER BETWEEN THE CONTROL VALVE AND HVAC COIL

BASIS OF DESIGN:

1. JM MICRO-LOK FIBER GLASS INSULATION
2. COMPOSITE FHC 25/50

HYDRONIC SYSTEM FLUID SPECIFICATION

SYSTEM TYPE	PROP. GLYCOL CONCENTRATION (% BY VOLUME)	FREEZE POINT (°F)	BURST POINT (°F)	SYSTEM LOWEST OPERATING TEMP (°F)	SPECIFIC HEAT AT SYSTEM LOWEST OPERATING TEMP. (Btu/lb*°F)	NOTES
HEATING WATER	20	19.2	3.3	100	0.959	ALL
SNOWMELT	50	-28.3	-100.0	140	0.881	ALL

NOTES:
1. PRIOR TO TEST AND BALANCE, FILL SYSTEM AND BLEED AIR, CHECK ALL STRAINERS FOR DEBRIS PRIOR, SET SYSTEM STATIC PRESSURE OF EXPANSION TANKS, FILL GLYCOL FEEDERS TO MAXIMUM LEVEL WITH PRE-MIXED GLYCOL (AT CONCENTRATION).
2. GLYCOL SHALL INCLUDE INHIBITORS.
3. AFTER TEST AND BALANCE, RECHECK CONCENTRATIONS LEVELS AND ADJUST AS NECESSARY PRIOR TO TURNOVER.
4. PROVIDE PERMANENT LABEL ON GLYCOL FEEDER INDICATING SPECIFIED CONCENTRATION.

COMBUSTION AIR AND FLUE SPECIFICATION

SYSTEM	DESCRIPTION	MAX. OPERATING GAS TEMPERATURE	NOMINAL SIZE	MANUFACTURER & MATERIAL	FITTINGS	TERMINATION AND ADAPTERS	LISTING
BOILER	HIGH EFFICEINCY BOILER COMBUSTION AIR INTAKE AND VENTING	230F	PER BOILER SCHEDULE	CENTROTHERM INNOFLUE SINGLE-WALL RIGID POLYPROPYLENE	SINGLE-WALL RIGID POLYPROPYLENE	AS SPECIFIED BY THE PIPE MANUFACTURER.	UL 1738 LISTED VENTING FOR CATEGORY IV GAS-BURNING APPLIANCES.

OUTDOOR AIR VENTILATION CALCULATION PER IMC

ZONE EQUIPMENT TAG	SYSTEM TYPE (EQUATION FOR VOT)	SPACE	ZONE FLOOR AREA (AZ) (SQ. FT.)	OCCUPANT DENSITY (PEOPLE PER 1,000 SQ. FT.)	ZONE POPULATION - PER ARCHITECTURAL LAYOUT	OA FLOW RATE PER PERSON (RP) (CFM/PERSON)	OA FLOW RATE PER UNIT AREA - TABLE 6-1 (RA) CFM/SF	ZONE POPULATION (PZ)	SYSTEM POPULATION (PS)	BREATHING ZONE OA FLOW (VBZ) (CFM)	ZONE AIR DISTRIBUTION EFFECTIVENESS (EZ)	ZONE OUTDOOR AIRFLOW (VOZ) (CFM)	ZONE PRIMARY OA FRACTION (ZP)	SYSTEM VENTILATION EFFICIENCY - TABLE 6-3 OR APPENDIX A (EVZ)	UNCORRECTED OUTDOOR AIR INTAKE (VOU) (CFM)	SYSTEM VENTILATION EFFICIENCY - TABLE 6-3 OR APPENDIX A (EV = MIN(EVZ))	OA REQUIRED (VOT) (CFM)	OA PROVIDED (ZRTU) (CFM)	COMPLIES WITH CODE (ZRTU>VOT)
ERV-1	100% OA	104 KITCHEN	160	5	NA	5.0	0.06	1	1	14	0.8	17	NA	NA	NA	NA	17	20	YES

REMARKS:

1. KITCHEN IS CLASSIFED AS AN OFFICE SPACE, NO RANGE TOP OR BURNERS ARE PRESENT.

OUTDOOR AIR VENTILATION CALCULATION PER IMC

ZONE EQUIPMENT TAG	SYSTEM TYPE (EQUATION FOR VOT)	SPACE	ZONE FLOOR AREA (AZ) (SQ. FT.)	OCCUPANT DENSITY (PEOPLE PER 1,000 SQ. FT.)	ZONE POPULATION - PER ARCHITECTURAL LAYOUT	OA FLOW RATE PER PERSON (RP) (CFM/PERSON)	OA FLOW RATE PER UNIT AREA - TABLE 6-1 (RA) CFM/SF	ZONE POPULATION (PZ)	SYSTEM POPULATION (PS)	BREATHING ZONE OA FLOW (VBZ) (CFM)	ZONE AIR DISTRIBUTION EFFECTIVENESS (EZ)	ZONE OUTDOOR AIRFLOW (VOZ) (CFM)	ZONE PRIMARY OA FRACTION (ZP)	SYSTEM VENTILATION EFFICIENCY - TABLE 6-3 OR APPENDIX A (EVZ)	UNCORRECTED OUTDOOR AIR INTAKE (VOU) (CFM)	SYSTEM VENTILATION EFFICIENCY - TABLE 6-3 OR APPENDIX A (EV = MIN(EVZ))	OA REQUIRED (VOT) (CFM)	OA PROVIDED (ZRTU) (CFM)	COMPLIES WITH CODE (ZRTU>VOT)
MAU-1	100% OA	101 AIRCRAFT HANGAR	16,272	NA	NA	NA	0.06	0	0	976	0.8	1,220	NA	NA	NA	NA	2,158	2,200	YES
		VEHICLE PARKING AREA	1,000	NA	NA	NA	0.75	0		750	0.8	938	NA	NA					

REMARKS:

1. AVIATION HANGER IS CLASSIFIED AS A STORAGE WAREHOUSE, BASED ON OCCUPANCY CLASSIFICATION OF S1.
2. VEHICLE PARKING AREA IS BASED ON AN ALLOWANCE FOR LIMITED PORTION OF THE HANGAR TO ACCOMDATE VEHICLES FOR PARKING PURPOSES ONLY, AREA IS CLASSIFIED AS ENCLOSED PARKING GARAGE.

SGM
118 West Sixth Street, Suite 200
Glenwood Springs, CO 81601
970.945.1004 www.sgm-inc.com

NOT FOR CONSTRUCTION

Kuhn Aviation Hangar
Rifle, CO 81650

#	Revision:	Date:	By:

Project Milestone: PERMIT SET

Job No.	2021-546
Drawn by:	IB
Date:	05/13/2022
QC: BC	PE: BC

Title: MECHANICAL SPECIFICATIONS

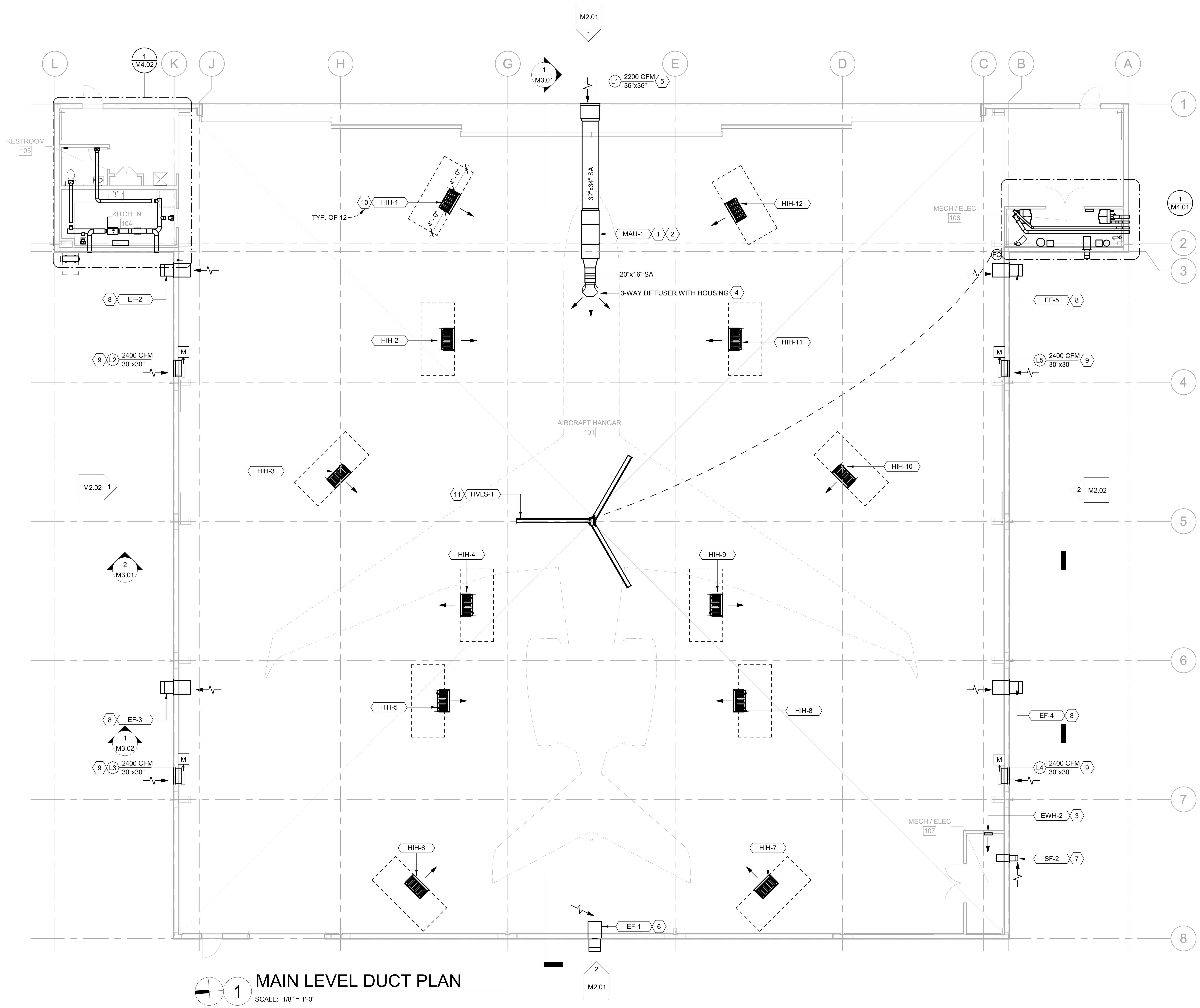
Dwg No. M0.02

GENERAL MECHANICAL NOTES

1	SUSPENDED MECHANICAL EQUIPMENT SHALL NOT BE LOCATED BELOW 30 FEET ABOVE FINISHED FLOOR.
2	REFER TO ELECTRICAL DRAWINGS FOR INFORMATION RELATED ON CLASSIFIED AREAS AND REQUIREMENTS.

KEYNOTES

1	INSTALL BOTTOM OF INTAKE DUCT ALIGNED WITH BOTTOM OF LOUVER.
2	REFER TO EQUIPMENT SCHEDULE FOR WEIGHT. UNIT SUBMITTAL SHALL BE SUBMITTED TO PEMB STRUCTURAL ENGINEER OF RECORD FOR REVIEW, PRIOR TO REVIEW BY MECHANICAL ENGINEER.
3	MOUNT UNIT 36" AFF.
4	PROVIDE 30DEG ELBOW DOWN AND INSTALL 3-WAY DIFFUSER TO ELBOW.
5	INSTALL BOTTOM OF LOUVER AT 31FT AFF.
6	INSTALL BO FAN AT 31FT AFF.
7	MOUNT BOTTOM OF FAN AT 6FT AFF.
8	MOUNT BOTTOM OF FAN AT 30FT AFF. EXHAUST SHALL BE ABOVE THE LEVEL OF THE HEATERS PER NFPA 54, SECTION 10.18.
9	MOUNT BOTTOM OF LOUVER AT 30FT AFF.
10	MOUNT HEATER WITH A 30DEG ANGLE AND WITH LOWEST CORNER AT 30FT AFF. MAINTAIN THE FOLLOWING CLEARANCES TO COMBUSTIBLES: SIDES 48", BACK 33", TOP 68", BELOW 140". BOTTOM OF HEATERS SHALL ALSO BE INSTALLED 10FT ABOVE UPPER SURFACE OF THE WINGS OR OF THE ENGINE ENCLOSURES PER NFPA 409 SECTION 7.13.5.2.
11	REFER TO EQUIPMENT SCHEDULE FOR FAN WEIGHT AND TORQUE REACTIONS. FAN SUBMITTAL SHALL BE SUBMITTED TO PEMB STRUCTURAL ENGINEER OF RECORD FOR REVIEW, PRIOR TO REVIEW BY MECHANICAL ENGINEER. SUBMITTAL SHALL INCLUDE MOUNTING INFORMATION AND REACTIONS (IN ADDITIONAL TO FAN PERFORMANCE).



MAIN LEVEL DUCT PLAN

1 SCALE: 1/8" = 1'-0"

SGM
118 West Sixth Street, Suite 200
Glenwood Springs, CO 81601
970.945.1004 www.sgm-inc.com

NOT FOR CONSTRUCTION

Kuhn Aviation Hangar
Rifle, CO 81650

#	Revision:	Date:	By:

Project Milestone: PERMIT SET

Job No.	2021-546
Drawn by:	IB
Date:	05/13/2022
QC: BC	PE: BC

Title: MAIN LEVEL MECHANICAL HVAC PLAN

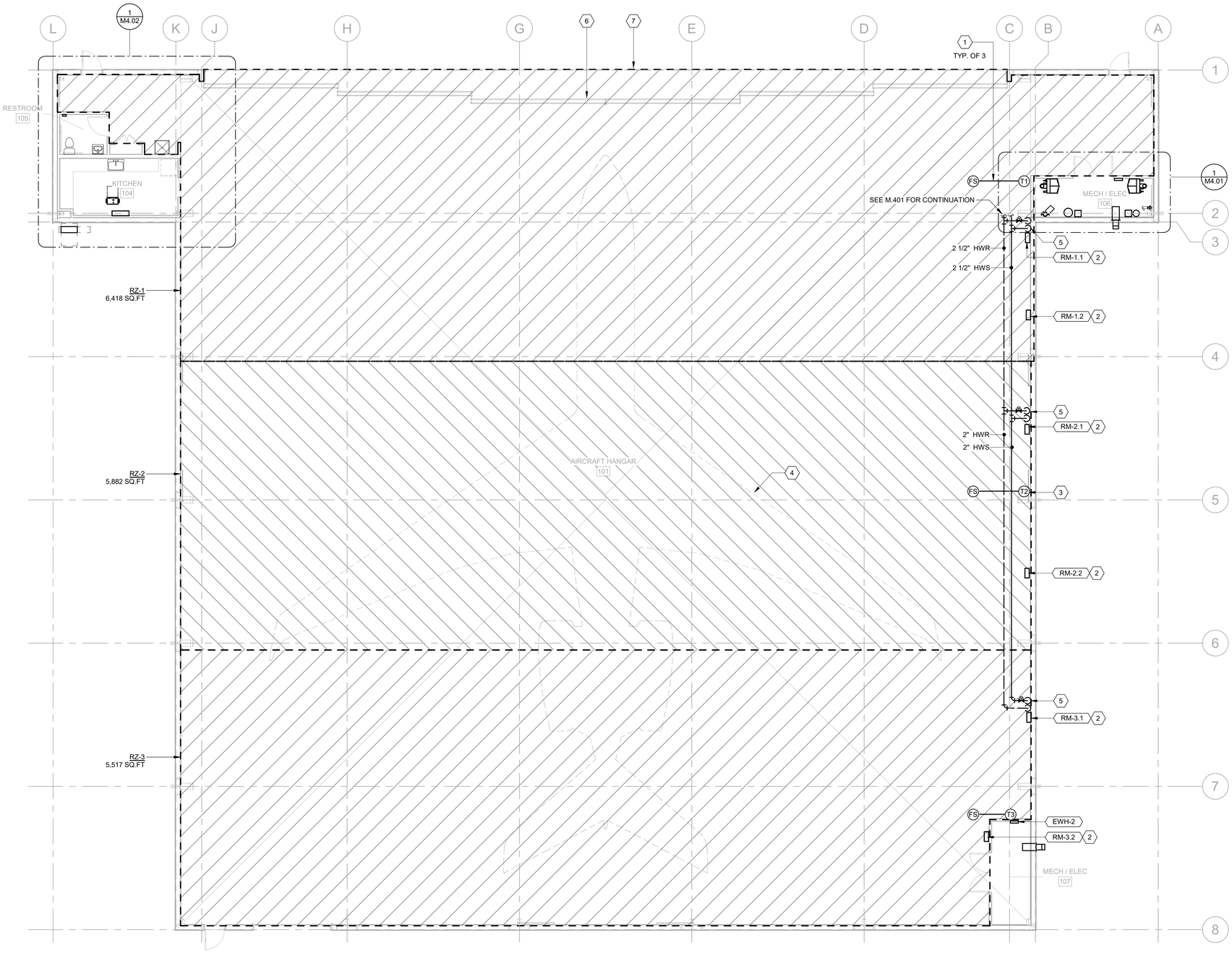
Dwg No. M1.01

GENERAL MECHANICAL NOTES

1	SUSPENDED MECHANICAL EQUIPMENT SHALL NOT BE LOCATED BELOW 30 FEET ABOVE FINISHED FLOOR.
2	REFER TO ELECTRICAL DRAWINGS FOR INFORMATION RELATED ON CLASSIFIED AREAS AND REQUIREMENTS.

KEYNOTES

1	PROVIDE CONDUIT IN SLAB FOR SENSOR WIRE.REFER TO ELECTRICAL DRAWINGS FOR CONDUIT REQUIREMENTS FOR CLASSIFIED AREAS.
2	MOUNT MANIFOLD ON RIGID UNI-STRUT 30" ABOVE SLAB.
3	PROVIDE INSULATED BASED BETWEEN THERMOSTAT AND MOUNTING SURFACE.
4	REFER TO ELECTRICAL PLANS FOR NEC CLASSIFIED AREA EXTENTS AND REQUIREMENTS.
5	2" HWS/R DN. EXTEND 1-1/2"HWS/R TO EACH MANIFOLD SERVING THE HEATING ZONE. PROVIDE 2-WAY ZONE VALVE AS INDICATED ON THE PIPING DIAGRAM, SHEET M.7.01.
6	HANGAR DOOR ASSUMED TO BE TRACKLESS AT SLAB. CONFIRM HANGAR DOOR INSTALLATION IS FLAT, AND SUBMIT RFI IF INSTALLATION REQUIREMENTS DIFFER, SUCH THAT RADIANT TUBING CAN BE COORDINATED.
7	EXTEND RADIANT FLOOR ZONE TO INCLUDE RADIANT FLOOR FOOTPRINT.



1 MAIN LEVEL PIPING PLAN

NORTH

SCALE: 1/8" = 1'-0"

SGM
118 West Sixth Street, Suite 200
Glenwood Springs, CO 81601
970.945.1004 www.sgm-inc.com

NOT FOR CONSTRUCTION

Kuhn Aviation Hangar
Rifle, CO 81650

By:	
Date:	
Revision:	
#	
Project Milestone:	PERMIT SET

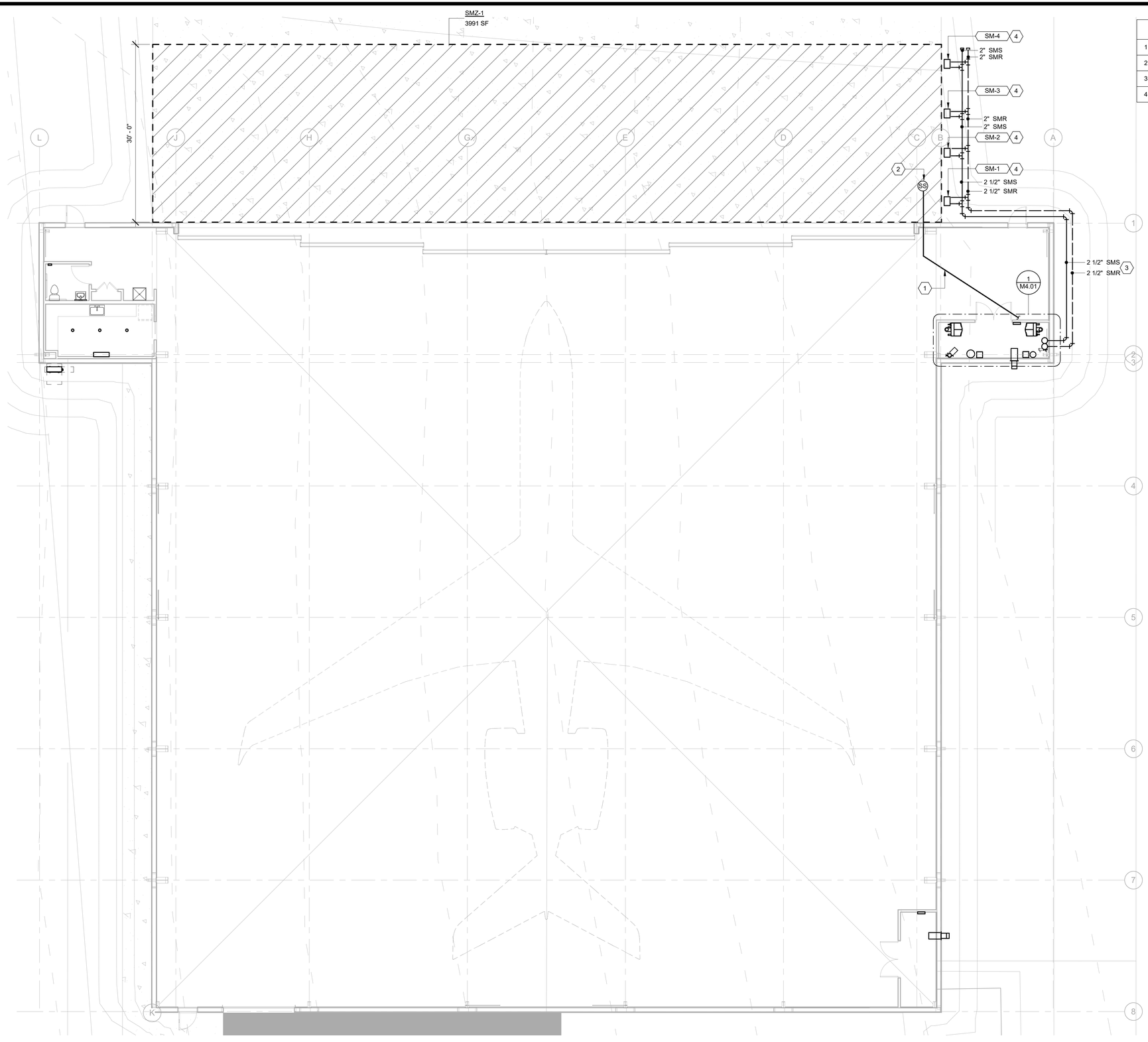
Job No.	2021-546		
Drawn by:	IB		
Date:	05/13/2022		
QC:	BC	PE:	BC

Title: MAIN LEVEL MECHANICAL PIPING PLAN

Dwg No. M1.02

5/13/2022 6:33:53 PM

C:\Users\ibeyrent\Documents\Kuhn\Aviation\Hangar_MEP_R21_ibeyrent5SMH.rvt



KEYNOTES

1	PROVIDE CONDUIT IN SLAB FOR SENSOR WIRE.REFER TO ELECTRICAL DRAWINGS FOR CONDUIT REQUIREMENTS FOR CLASSIFIED AREAS.
2	INSTALL SNOW MELT SENSOR 3FT FROM THE EDGE OF SLAB AND 5FT FROM EDGE OF THE BUILDING.
3	SNOWMELT DISTRIBUTION PIPING BELOW GRADE. SEE PIPE IN TRENCH DETAIL M5.01
4	PROVIDE IRRIGATION CONTROL VALVE TYPE BOX OR SIMILAR AT MANIFOLD LOCATION.

1 MAIN LEVEL SNOW MELT PLAN

SCALE: 1/8" = 1'-0"

NORTH

SGM
118 West Sixth Street, Suite 200
Glenwood Springs, CO 81601
970.945.1004 www.sgm-inc.com

NOT FOR CONSTRUCTION

Kuhn Aviation Hangar
Rifle, CO 81650

#	
Revision:	
Date:	
By:	
Project Milestone:	PERMIT SET

Job No.	2021-546		
Drawn by:	IB		
Date:	05/13/2022		
QC:	BC	PE:	BC

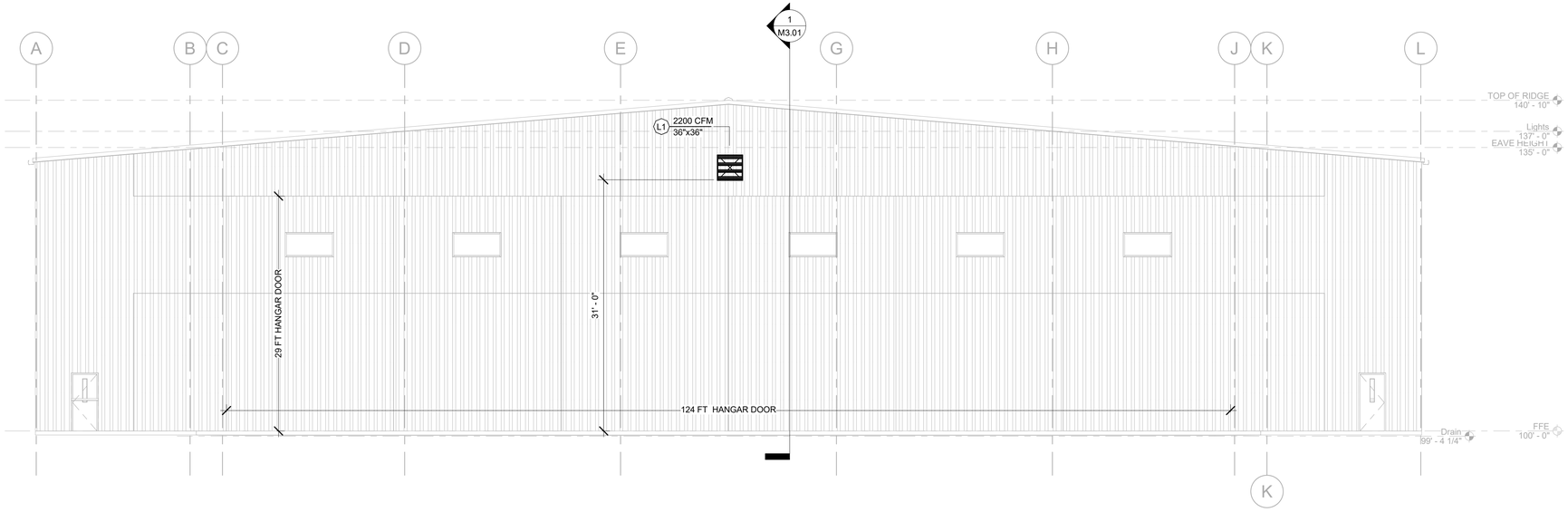
Title:
MECHANICAL SNOW MELT PLAN

Dwg No.
M1.03

5/13/2022 6:33:54 PM

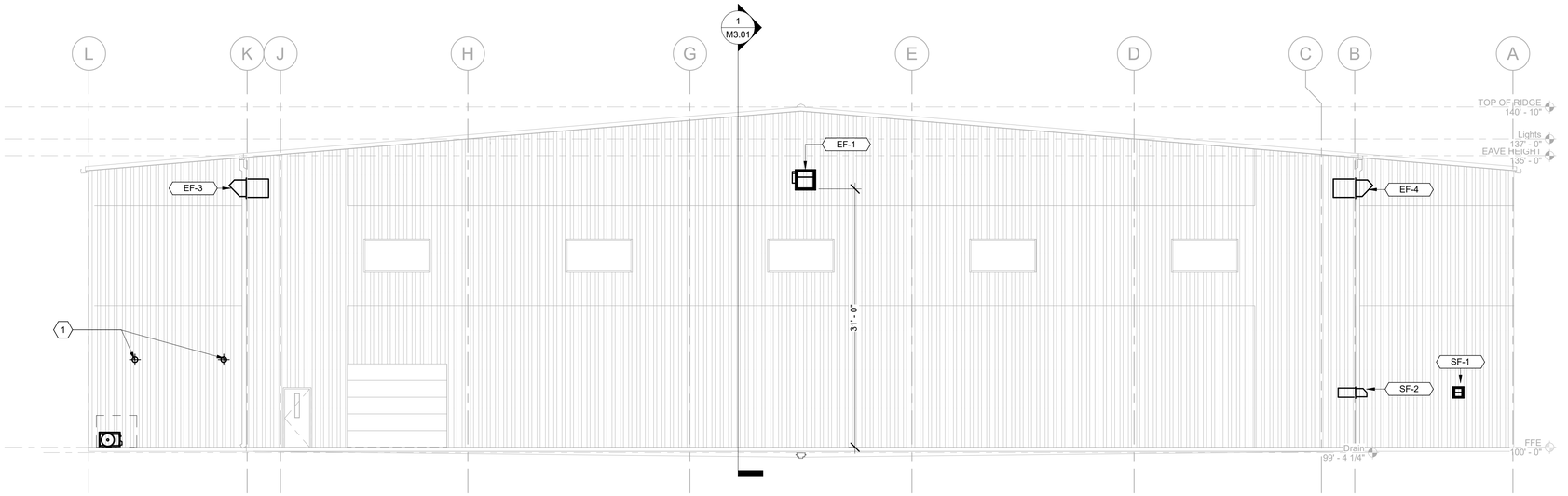
C:\Users\ebaymon\Documents\Kuhn\Aviation\Hangar_MEP_R23_ebaymon5GAH.rvt

KEYNOTES	
1	PROVIDE LOUVERED WALL VENTS. REFER TO ERV SCHEDULE.



1 EAST ELEVATION MECHANICAL

SCALE: 1/8" = 1'-0"



2 WEST ELEVATION MECHANICAL

SCALE: 1/8" = 1'-0"

SGM
118 West Sixth Street, Suite 200
Glenwood Springs, CO 81601
970.945.1004 www.sgm-inc.com

NOT FOR CONSTRUCTION

Kuhn Aviation Hangar
Rifle, CO 81650

#	Revision:	Date:	By:

Project Milestone: PERMIT SET

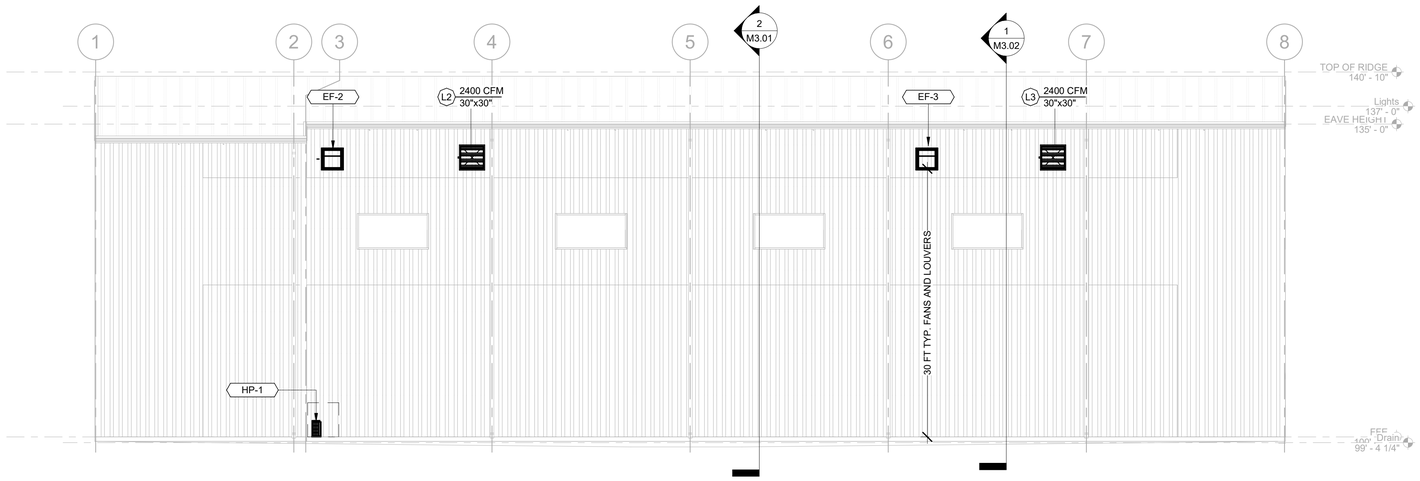
Job No.	2021-546
Drawn by:	IB
Date:	05/13/2022
QC: BC	PE: BC

Title: MECHANICAL ELEVATIONS

Dwg No. M2.01

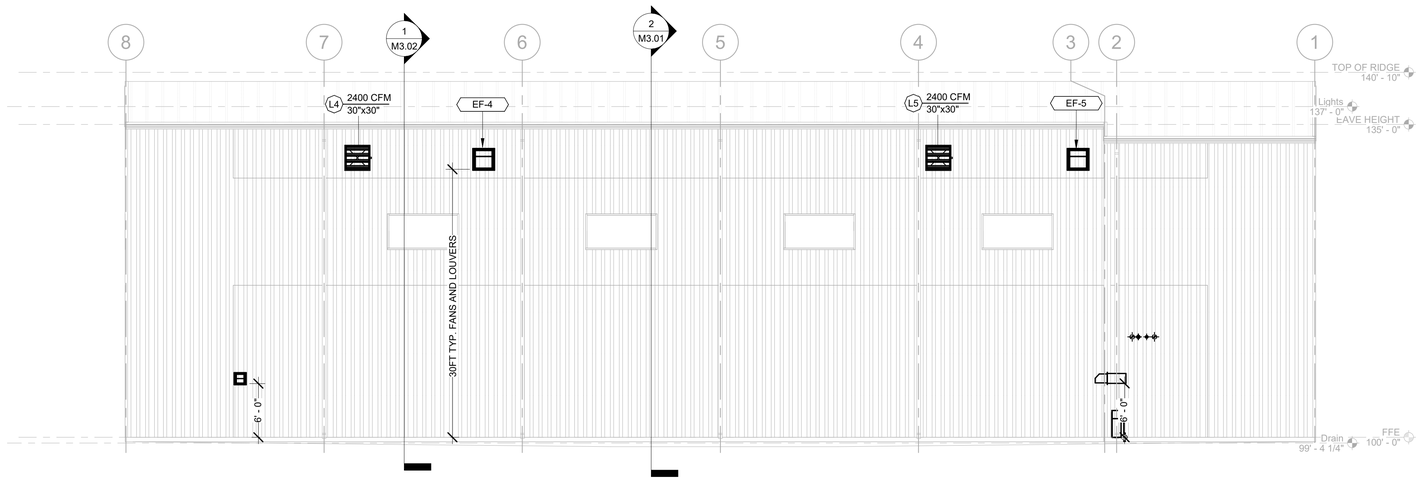
5/13/2022 8:33:55 PM

C:\Users\ahaynes\Documents\Kuhn\Aviation\Hangar_MEP_R22_ahaynes5GM.rvt



1 NORTH ELEVATION MECHANICAL

NO SCALE



2 MECHANICAL ELEVATION SOUTH

SCALE: 1/8" = 1'-0"

5/13/2022 6:23:56 PM

C:\Users\ekymm\Documents\Kuhn\Aviation\Hangar_MEP_R23_ekymm5GKH.rvt

SGM
118 West Sixth Street, Suite 200
Glenwood Springs, CO 81601
970.945.1004 www.sgm-inc.com

NOT FOR CONSTRUCTION

Kuhn Aviation Hangar
Rifle, CO 81650

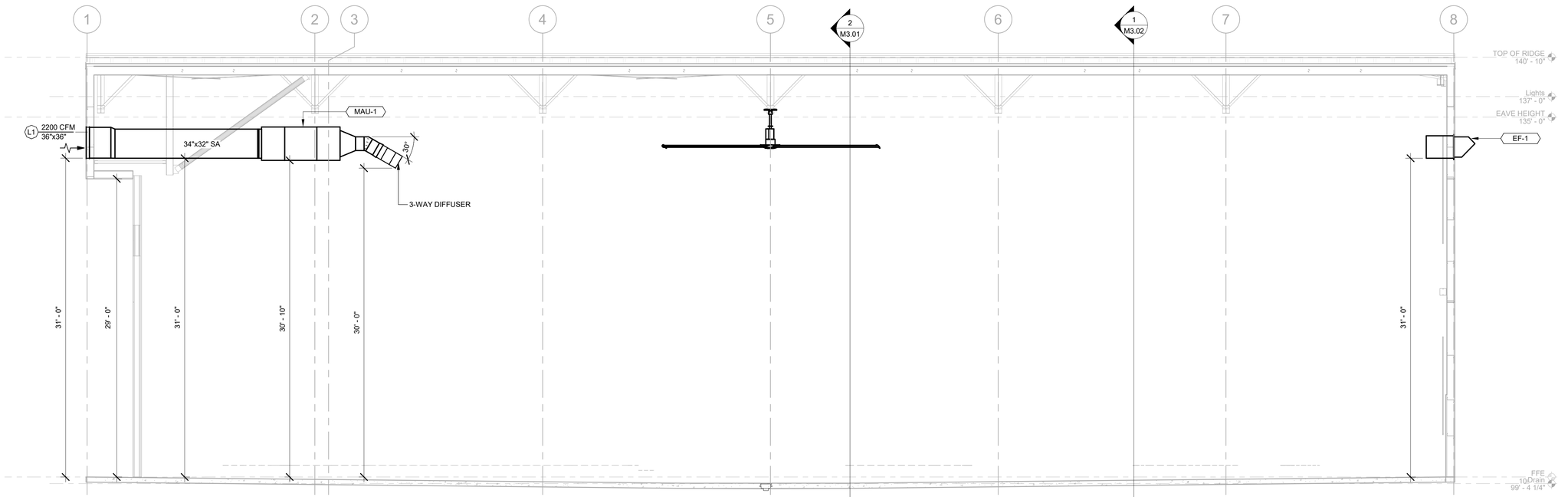
#	Revision:	Date:	By:
	Project Milestone: PERMIT SET		

Job No.	2021-546
Drawn by:	IB
Date:	05/13/2022
QC:	BC PE: BC

Title:
MECHANICAL ELEVATIONS

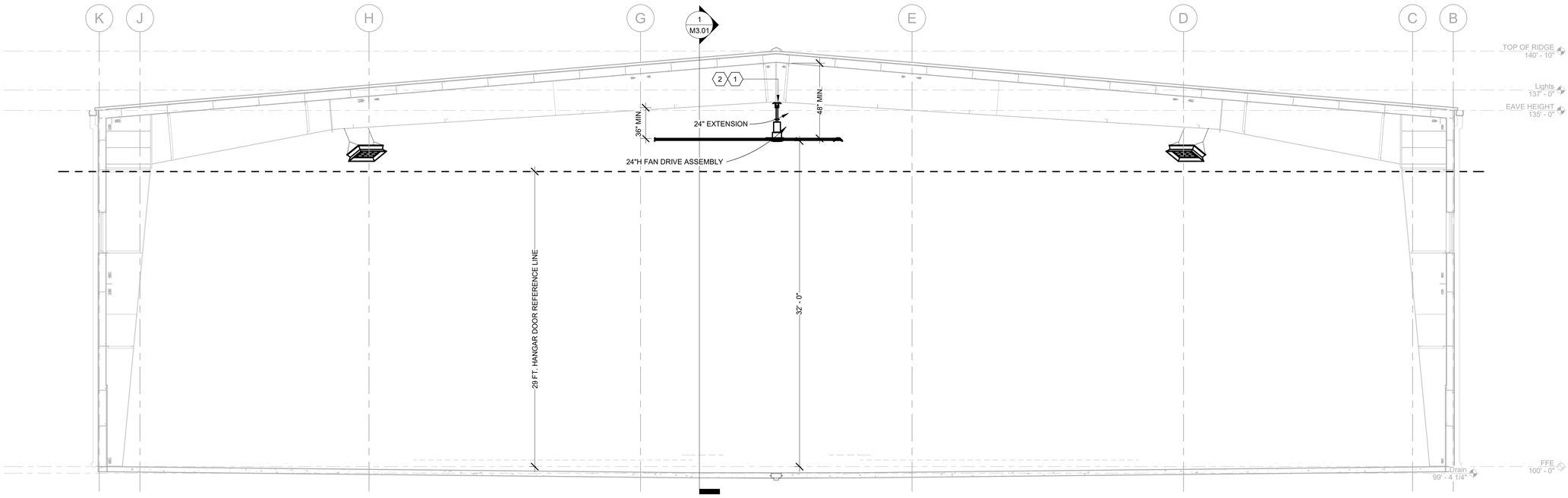
Dwg No.
M2.02

KEYNOTES	
1	REFER TO EQUIPMENT SCHEDULE FOR WEIGHT. UNIT SUBMITTAL SHALL BE SUBMITTED TO PEMB STRUCTURAL ENGINEER OF RECORD FOR REVIEW, PRIOR TO REVIEW BY MECHANICAL ENGINEER.
2	MOUNT FAN TO FRAME RAFTER PER FAN MANUFACTURER'S INSTRUCTIONS FOLLOWING MINIMUM CLEARANCES TO STRUCTURE. INSTALL WITH BO FAN AT 32FT AFF.



1 MECHANICAL SECTION 1 E-W

SCALE: 3/16" = 1'-0"



2 MECHANICAL SECTION 2 N-S

SCALE: 3/16" = 1'-0"

5/13/2022 6:23:57 PM

C:\Users\ebyrnes\Documents\Autodesk\Autodesk Hangar_MEP_R22_ebyrnes5GM.rvt

SGM
118 West Sixth Street, Suite 200
Glenwood Springs, CO 81601
970.945.1004 www.sgm-inc.com

NOT FOR CONSTRUCTION

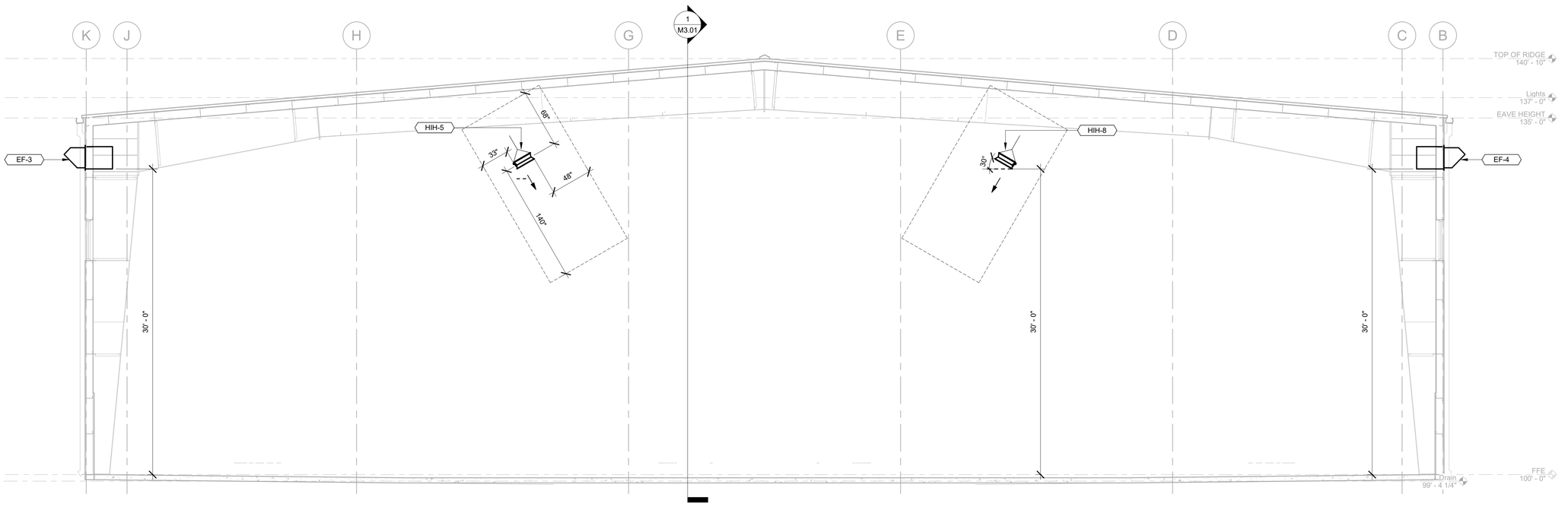
Kuhn Aviation Hangar
Rifle, CO 81650

#	Project Milestone:	Revision:	Date:	By:
	PERMIT SET			

Job No.	2021-546
Drawn by:	IB
Date:	05/13/2022
QC: BC	PE: BC

Title:
MECHANICAL SECTIONS

Dwg No.
M3.01



1 MECHANICAL SECTION 3 N-S

SCALE: 3/16" = 1'-0"

5/13/2022 6:33:59 PM

C:\Users\ehymm\Documents\Kuhn\Aviation\Hangar_MEP_R23_ehymm5GM.rvt

SGM
118 West Sixth Street, Suite 200
Glenwood Springs, CO 81601
970.945.1004 www.sgm-inc.com

NOT FOR CONSTRUCTION

Kuhn Aviation Hangar
Rifle, CO 81650

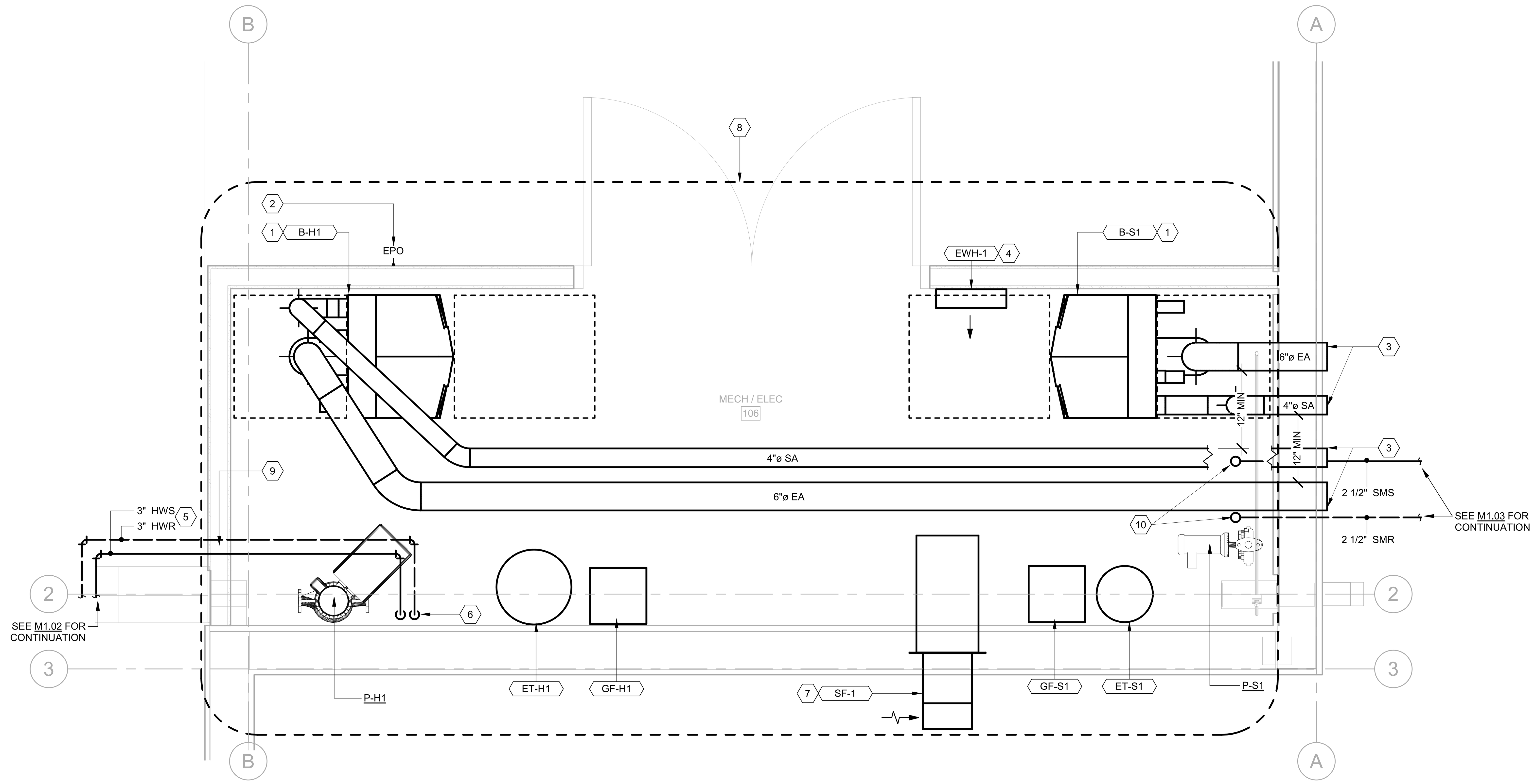
By:	
Date:	
Revision:	
#	
Project Milestone:	PERMIT SET
Job No.	2021-546
Drawn by:	IB
Date:	05/13/2022
QC: BC	PE: BC

Title:
MECHANICAL SECTIONS

Dwg No.
M3.02

KEYNOTES

1	MAINTAIN THE FOLLOWING SERVICE CLEARANCES:30" FRONT; 24" REAR AND TOP; 0" RIGHT AND LEFT SIDE .
2	PROVIDE EPO SWITCH OUTSIDE BOILER ROOM. INSTALL PER COLORADO DOLE BOILER AND PRESSURE VESSEL REGULATIONS.
3	TERMINATE COMBUSTION AND VENT PIPE THROUGH THE WALL USING FACTORY SUPPLIED WALL TERMINATION KIT. INSTALL PER MANUFACTURER'S INSTALLATION INSTRUCTIONS.
4	MOUNT UNIT 36" AFF.
5	INSTALL HWS PIPE ABOVE HWR PIPE. SHOWN NEXT TO EACH ON PLANS FOR CLARITY ONLY.
6	REFER TO MECHANICAL PIPING HANGAR HEATING PIPING DIAGRAM SHEET M7.01 FOR CONTINUATION.
7	MOUNT BOTTOM OF FAN AT 6FT AFF.
8	UNLESS SHOWN OTHERWISE; ALL DUCT AND EQUIPMENT LOCATED WITHIN THE RATED HORIZONTAL AND VERTICAL ASSEMBLIES SEPARATING THESE SPACES FROM THE HANGAR. DO NOT MOUNT EQUIPMENT OR DUCT ABOVE THE RATED ASSEMBLY.
9	FIRE CAULK PIPING PENETRATIONS.
10	SNOWMELT PIPING UP FROM BELOW GRADE. INSTALL PIPE BELOW GRADE BEAM AND MAINTAIN DEPTH TO MANIFOLD LOCATION.



BOILER ROOM ENLARGED PLAN

1

NORTH

SCALE: 3/4" = 1'-0"

SGM
118 West Sixth Street, Suite 200
Glenwood Springs, CO 81601
970.945.1004 www.sgm-inc.com

NOT FOR CONSTRUCTION

Kuhn Aviation Hangar
Rifle, CO 81650

#	Revision:	Date:	By:

Project Milestone: PERMIT SET

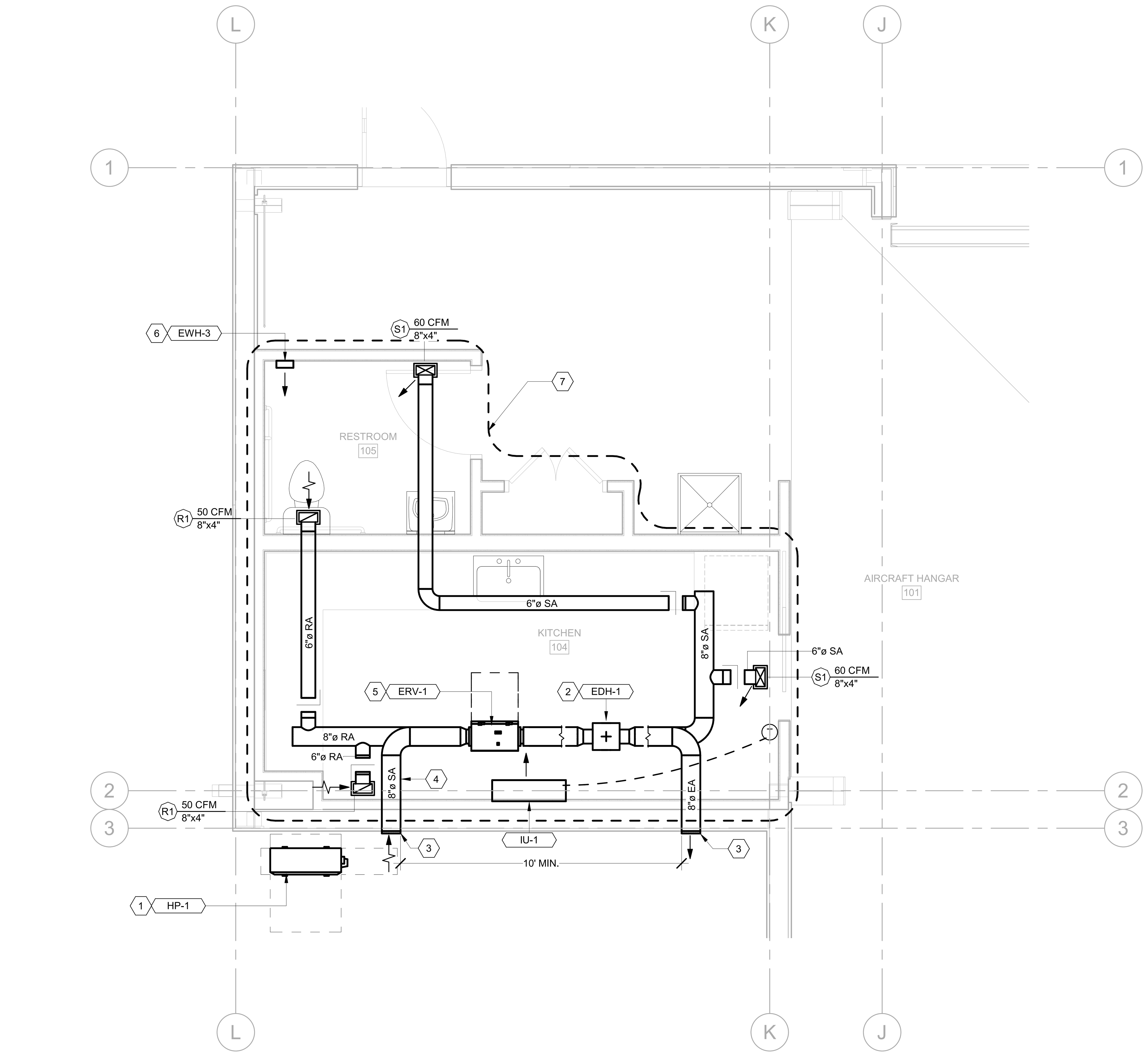
Job No.	2021-546
Drawn by:	IB
Date:	05/13/2022
QC: BC	PE: BC

Title:
ENLARGED MECHANICAL PLANS

Dwg No.
M4.01

KEYNOTES

1	INSTALL ON THE GROUND ON PLASTIC PAD.
2	MAINTAIN 36" OF STRAIGHT DUCT UPSTREAM AND DOWNSTREAM OF DUCT HEATER.
3	PROVIDE LOUVERED WALL VENTS. REFER TO ERV SCHEDULE.
4	PROVIDE WRAPPED INSULATION. REFER TO DUCT INSULATION SPECIFICATION FOR MIN. R-VALUE.
5	INSTALL UNIT IN SPACE ABOVE KITCHEN. SUPPORT UNIT TO THE WALL FOLLOWING MANUFACTURER'S INSTALLATION INSTRUCTIONS.
6	MOUNT UNIT 36" AFF.
7	UNLESS SHOWN OTHERWISE; ALL DUCT AND EQUIPMENT LOCATED WITHIN THE RATED HORIZONTAL AND VERTICAL ASSEMBLIES SEPARATING THESE SPACES FROM THE HANGAR. DO NOT MOUNT EQUIPMENT OR DUCT ABOVE THE RATED ASSEMBLY.



1 KITCHEN/RESTROOM MECHANICAL ENLARGED PLAN

SCALE: 3/8" = 1'-0"

NORTH

SGM
118 West Sixth Street, Suite 200
Glenwood Springs, CO 81601
970.945.1004 www.sgm-inc.com

NOT FOR CONSTRUCTION

Kuhn Aviation Hangar
Rifle, CO 81650

#	Revision:	Date:	By:

Project Milestone: PERMIT SET

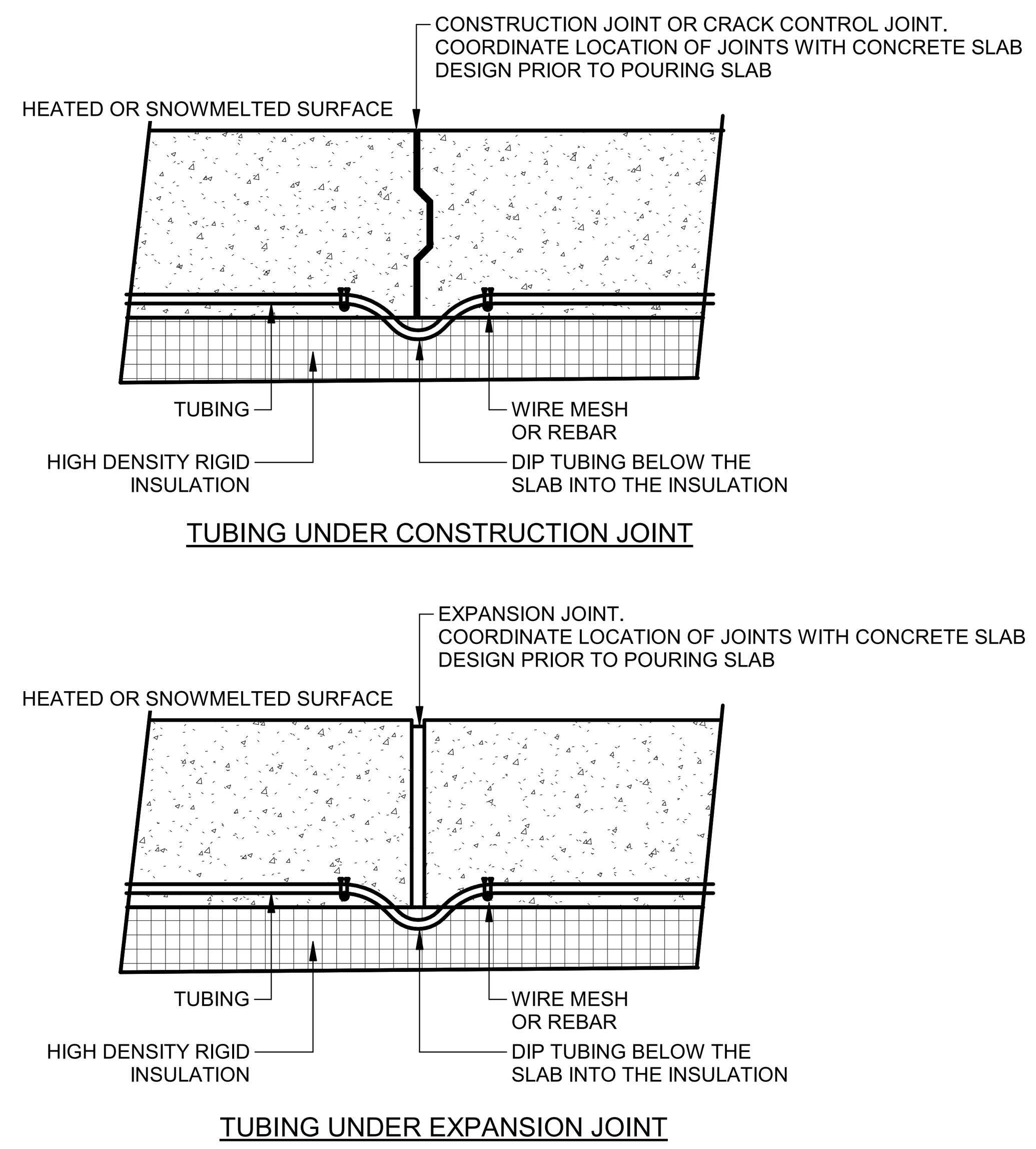
Job No.	2021-546
Drawn by:	IB
Date:	05/13/2022
QC: BC	PE: BC

Title: ENLARGED MECHANICAL PLANS

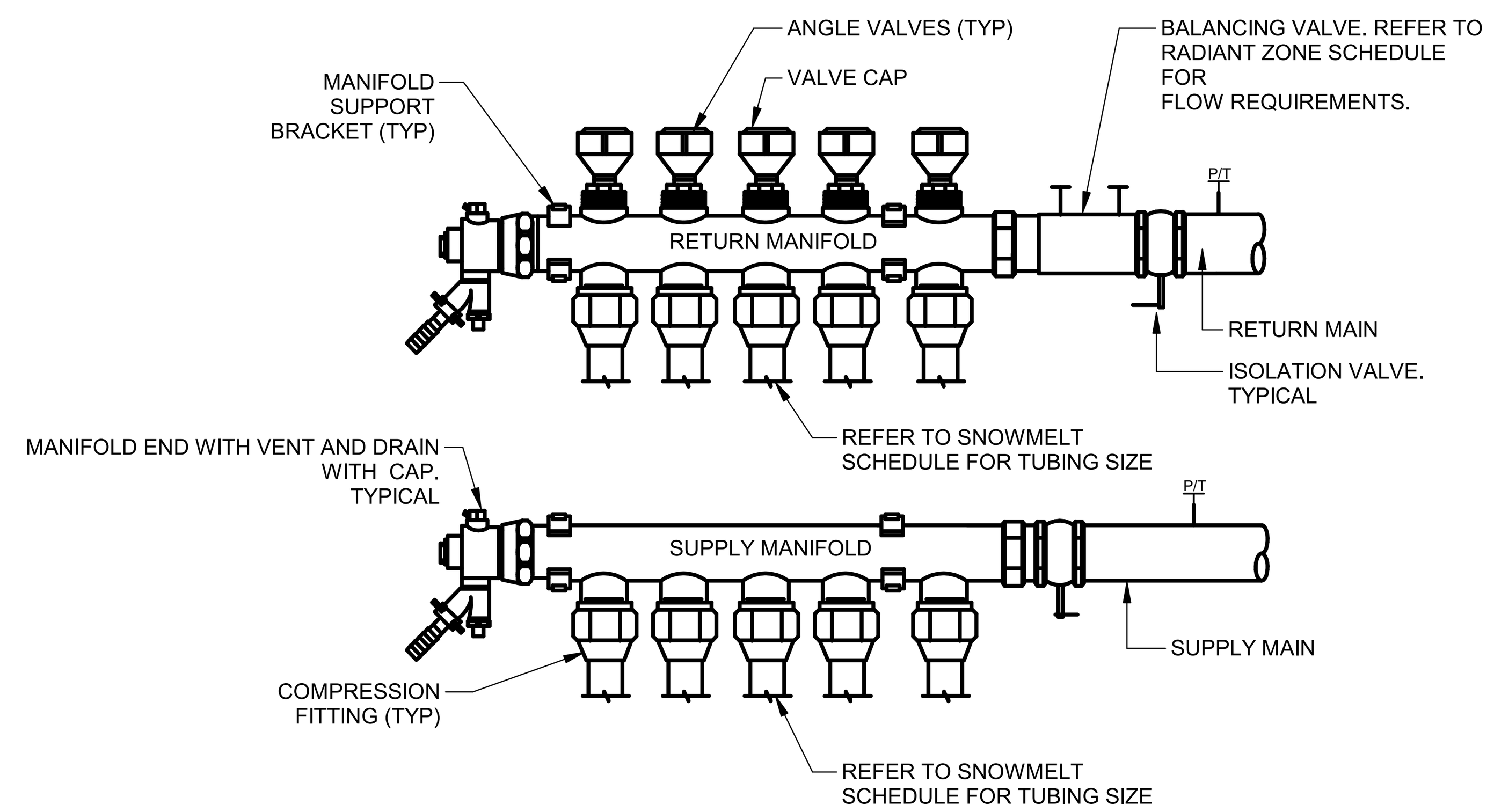
Dwg No. M4.02

5/13/2022 6:23:59 PM

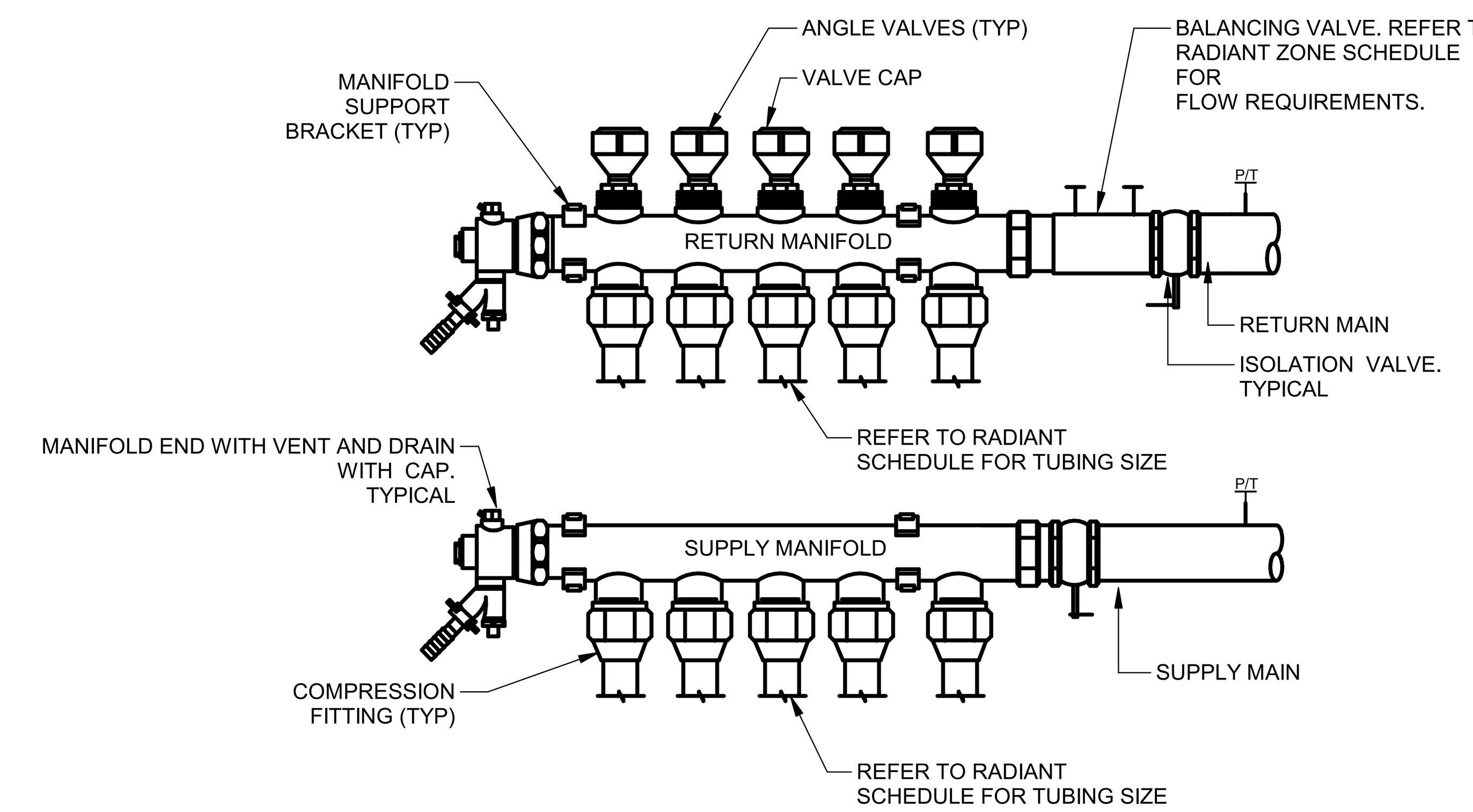
C:\Users\ahaymes\Documents\KuhnAviationHangar_MEP_R22_ahaymesSGM.rvt



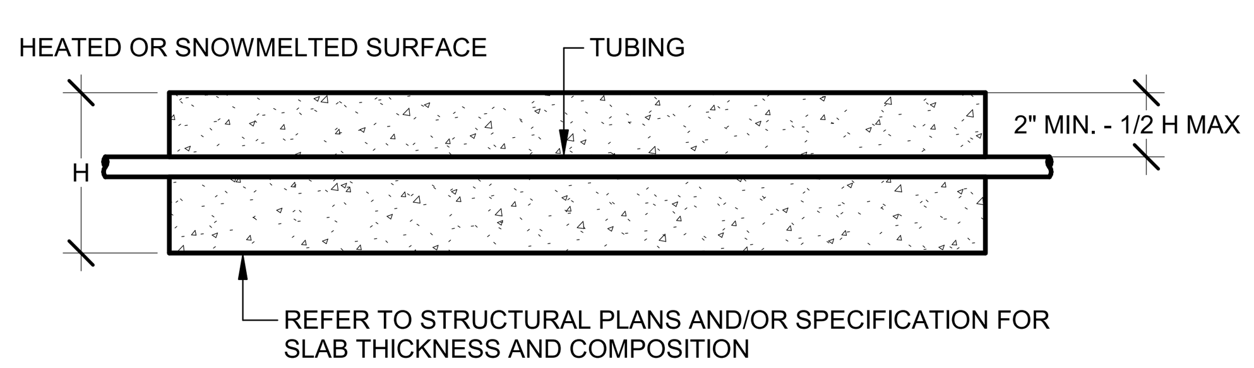
7 HYDRONIC TUBING UNDER CONCRETE JOINTS DETIAL
NO SCALE



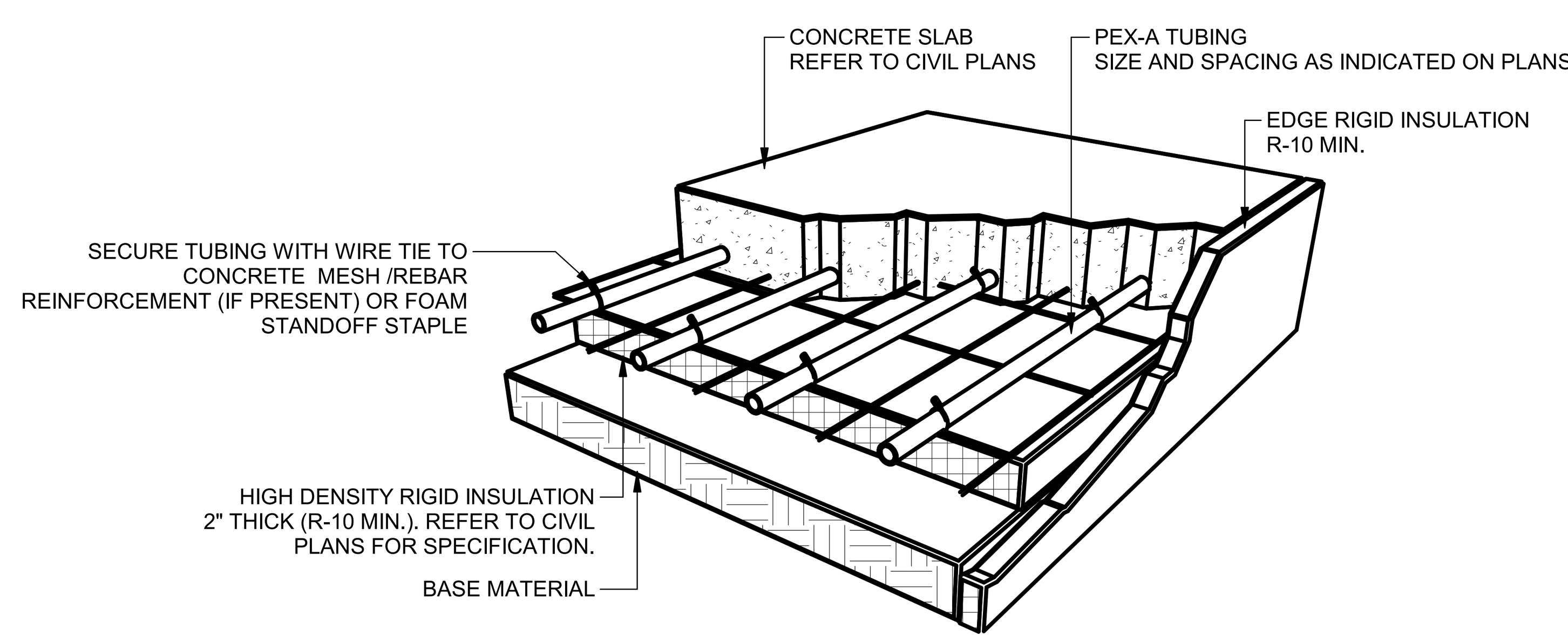
4 SNOWMELT MANIFOLD DETAIL
NO SCALE



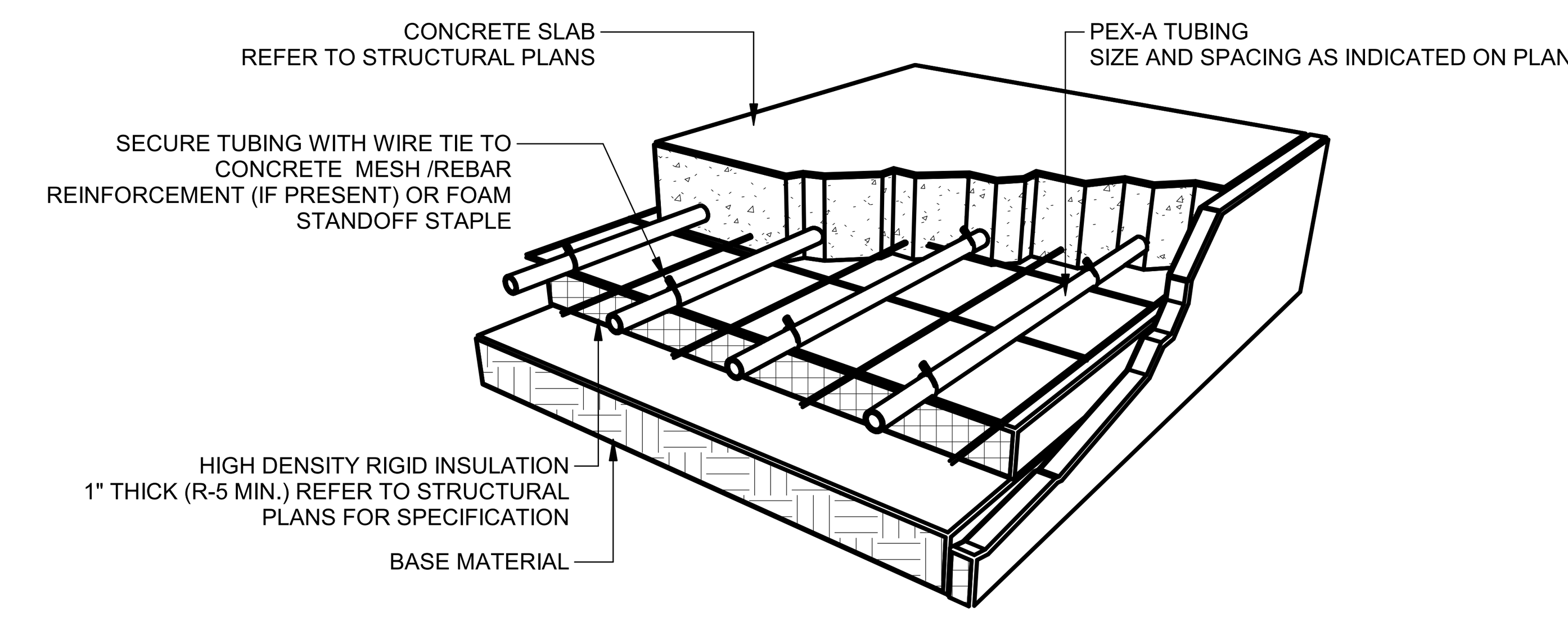
1 RADIANT MANIFOLD DETAIL
NO SCALE



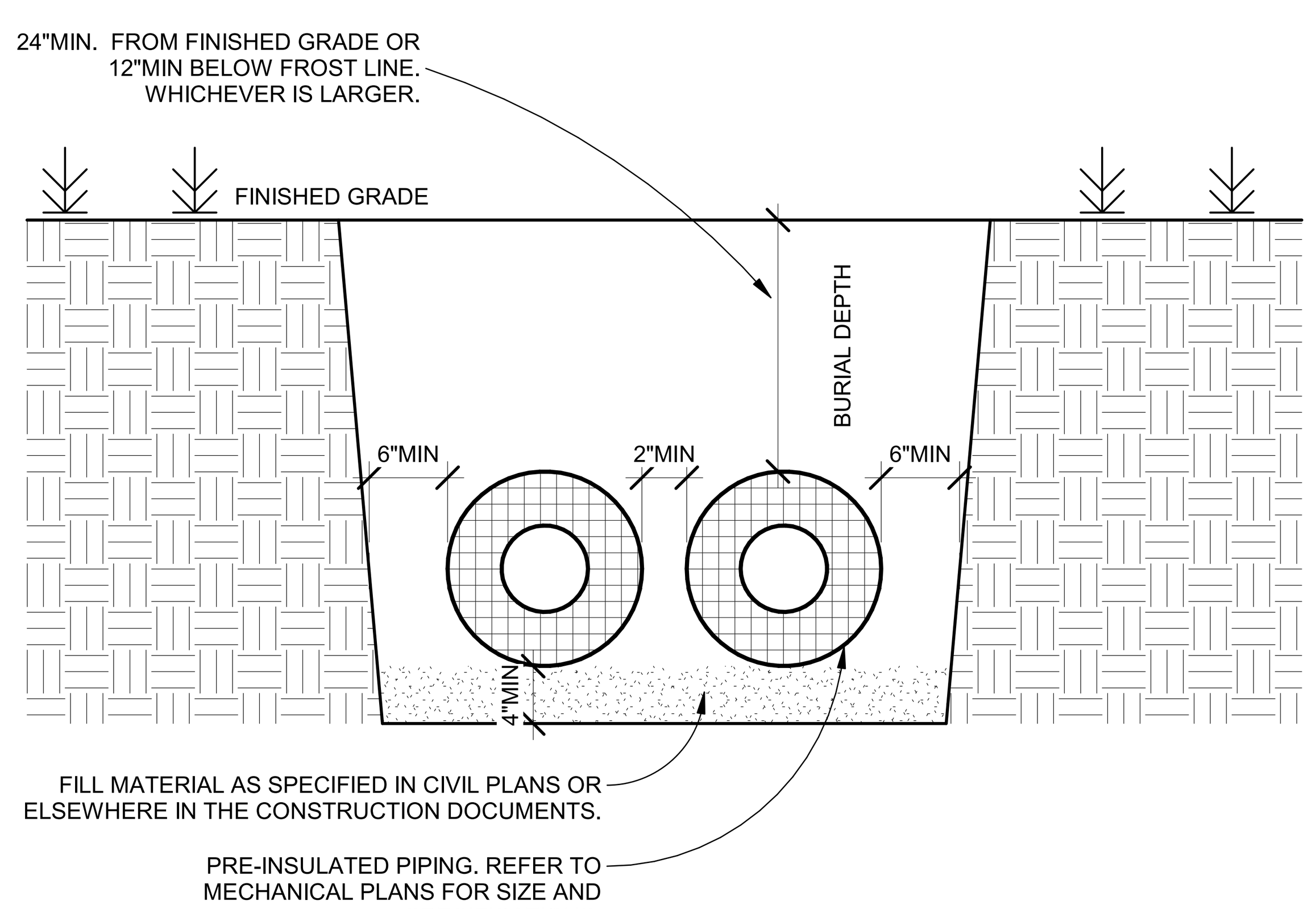
8 HYDRONIC TUBING EMBEDED LOCATION DETAIL
NO SCALE



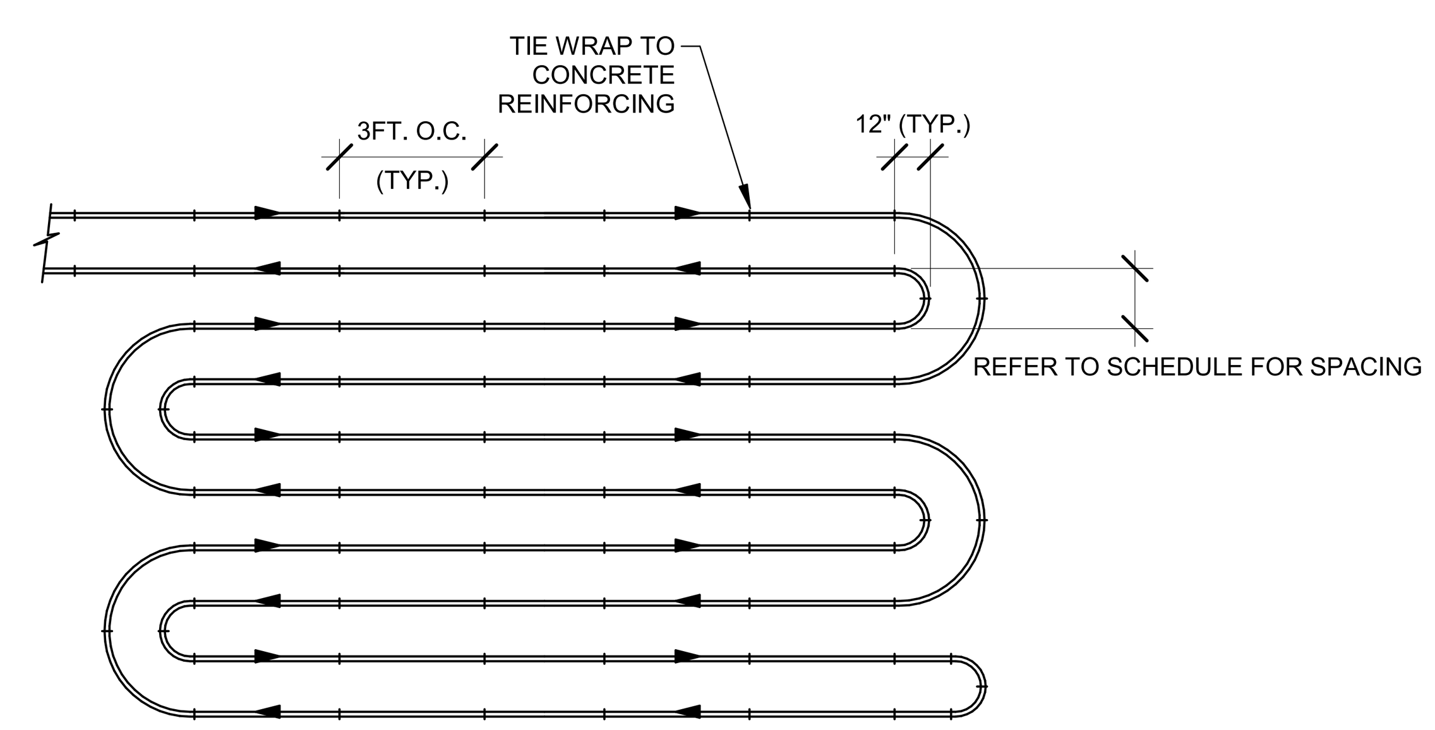
5 SNOWMELT TUBING AND INSULATION DETAIL
NO SCALE



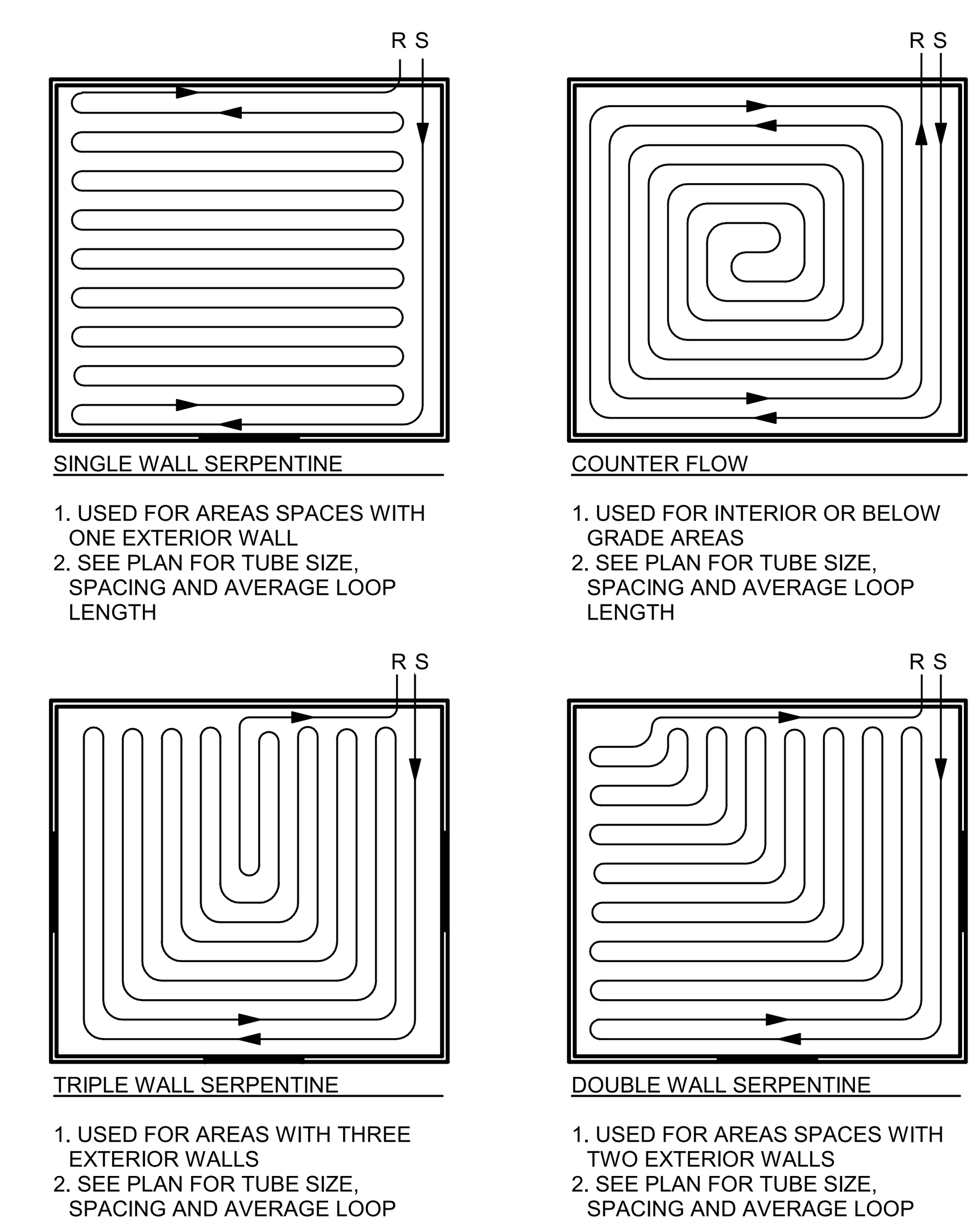
2 RADIANT TUBING AND INSULATION DETAIL
NO SCALE



9 PRE-INSULATED SNOWMELT PIPING IN TRENCH DETAIL
NO SCALE



6 SNOWMELT TUBING ARRANGEMENT DETAIL
NO SCALE



3 RADIANT TUBING ARRANGEMENT DETAIL
NO SCALE

SGM
118 West Sixth Street, Suite 200
Glenwood Springs, CO 81601
970.945.1004 www.sgm-inc.com

NOT FOR CONSTRUCTION

Kuhn Aviation Hangar
Rifle, CO 81650

#	Revision:	Date:	By:

Project Milestone: PERMIT SET

Job No.	2021-546
Drawn by:	IB
Date:	05/13/2022
QC: BC	PE: BC

Title:
MECHANICAL DETAILS

Dwg No.
M5.01

5/13/2022 6:24:00 PM
C:\Users\ahaymes\Documents\KuhnAviationHangar_MEP_R22_ahaymesSGM.rvt

CONDENSING BOILER SCHEDULE

TAG	MFR.	MODEL	DESCRIPTION	SERVICE	THERMAL EFFICIENCY (%)	INPUT (MBH)	OUTPUT @PROJ. ELEV, (MBH)	GAS PRESSURE RANGE (IN.WC)	MAX WORKING PRESSURE (PSI)	VOL. FLOW RATE @20TD (GPM)	WATER PD (FT.)	RELIEF VALVE SETTING (PSI)	VENT PIPE SIZE (IN)	COMBUSTION SIZE (IN)	VENT CATEGORY	GAS TRAIN (NATURAL GAS)		ELECTRICAL		DIMENSIONS			UNIT WEIGHT (LBS)	OPTIONS AND ACCESSORIES	NOTES
																TURN DOWN	PILOT TYPE	V / PH	MCA	HEIGHT (IN)	WIDTH (IN)	DEPTH (IN)			
B-H1	LOCHINVAR	FTXL 850N	FLOOR MOUNT FORCED DRAFT FIRE TUBE CONDENSING	BUILDING HEATING	97%	850	806	4-14	160	83	5.7	50	6	4	IV	7:1	DIRECT SPARK	120 / 1	<12	54	26.125	23	695	VARIABLE SPEED PUMP, HIGH AND LOW GAS PRESSURE SWITCH W/ MANUAL RESET, FLOW SWITCH, CONDENSATE NEUTRALIZATION KIT, OUTDOOR TEMPERATURE SENSOR.	ALL
B-S1	LOCHINVAR	FTXL 850N	FLOOR MOUNT FORCED DRAFT FIRE TUBE CONDENSING	BUILDING SNOW MELT	97%	850	806	4-14	160	83	5.7	50	6	4	IV	7:1	DIRECT SPARK	120 / 1	<12	54	26.125	23	695	VARIABLE SPEED PUMP, HIGH AND LOW GAS PRESSURE SWITCH W/ MANUAL RESET, FLOW SWITCH, CONDENSATE NEUTRALIZATION KIT, OUTDOOR TEMPERATURE SENSOR.	ALL

NOTES:
1. UNIT SHALL BE EQUIPPED WITH CONTROLS AND SAFETY DEVICES REQUIRED PER ASME CSD-1 ADOPTED BY COLORADO BOILER AND PRESSURE VESSSEL REGULATIONS.
2. UNIT SHALL BE HIGH ALTITUDE MODEL.

PUMP SCHEDULE

EQUIPMENT TAG	TYPE	MFR.	MODEL	SERVICE	FLOW RATE (GPM)	TOTAL DYNAMIC HEAD (FT. WATER COLUMN)	FLUID TYPE	RPM	MAXIMUM OPERATING TEMPERATURE (°F)	CAPACITY CONTROL	CONNECTION SIZE AND TYPE	ELECTRICAL				WEIGHT (LBS)	NOTES
												V	PH	HZ	MOTOR SIZE (HP)		
P-H1	CLOSED-COUPLED VERTICAL INLINE PUMP	TACO	SKV1506D-A-2P-PD Oe SELFSENSING PACKAGE	RADIANT FLOOR DISTRIBUTION PIPING	72.5	55	20% P.G.	3500	250	VARIABLE SPPED PROPORTIONAL DIFFERENTIAL PRESSURE	1-1/2" FLANGED	208	3	60	3	260	1,3,4
P-S1	CLOSED-COUPLED INLINE PUMP	TACO	1911-2P-PM	SNOWMELT DISTRBUTION	63	45	50% P.G.	3500	250	CONSTANT SPEED	1-1/2" FLANGED	208	3	60	2	67	2,3,4

NOTES:
1. UNIT SHALL BE STANDARD CONSTRUCTION WITH BRONZE ASTMB584 ALLOY IMPELLE, CARBON STEEL SHAFT, AND CAST IRON VOLUTE.
2. UNIT SHALL BE STANDARD CONSTRUCTION WITH 304 STAINLESS STEEL IMPELLER, 416 STAINLESS STEEL SHAFT, AND CAST IRON VOLUTE.
3. SEALS SHALL BE COMPATIBLE WITH FLUID INDICATED.
4. PROVIDE DISCONNECT SWITCH.

RADIANT ZONE SCHEDULE

RADIANT ZONE TAG	AREA NAME	MANIFOLD TAG	APPROX. HEATED AREA (SQ. FT.)	RADIANT PANEL TYPE	TUBE SPACING (IN.)	TUBING SIZE (IN)	FLOW (GPM)	RADIANT PANEL HEAD LOSS (FT. WC.)	ZONE HEAD LOSS (FT. WC.)	HEATING LOAD (MBH)	FLUX (BTU/SQ. FT.)	QUANTITY OF LOOPS	ESTIMATED LOOP LENGTH (FT.)	SURFACE TEMP. (°F)	EWT (°F)	LWT (°F)	SENSOR TYPE	PIPE SIZE TO MANIFOLD (IN.)	REMARKS
RZ-1	AIRCRAFT HANGAR NORTH	RM-1.1	2,998	CONCRETE EMBEDED	12	5/8"	12.84	12.2	18.0	125.3	42	9	333	87	120	100	AIR/SLAB	1-1/2	ALL
		RM-1.2	3,150	CONCRETE EMBEDED	12	5/8"	11.32	11.7	16.6	110.5	35	8	394	87	120	100		1-1/2	ALL
RZ-2	AIRCRAFT HANGAR CENTER	RM-2.1	2,941	CONCRETE EMBEDED	12	5/8"	12.47	12.1	17.5	121.7	41	9	327	87	120	100	AIR/SLAB	1-1/2	ALL
		RM-2.3	2,940	CONCRETE EMBEDED	12	5/8"	12.47	13.9	19.3	121.7	41	9	327	87	120	100		1-1/2	ALL
RZ-3	AIRCRAFT HANGAR SOUTH	RM-3.1	2,941	CONCRETE EMBEDED	12	5/8"	12.47	12.2	17.7	121.7	41	9	327	87	120	100	AIR/SLAB	1-1/2	ALL
		RM-3.2	2,576	CONCRETE EMBEDED	12	5/8"	10.92	10.4	15.1	106.6	41	8	322	87	120	100		1-1/2	ALL

REMARKS:
1. BASIS OF DESIGN: UPONOR 1-1/4" STAINLESS STEEL WITH BALL VALVE AND FLOWMETERS.
2. RADIANT HEAD LOSS IS FOR TUBING ONLY. ZONE HEAD LOSS INCLUDE MANIFOLD LOSSESS.
3. HEATING FLUX INCLUDES 10% DOWNWARD LOSSES.
4. LOOP LENGTH AND LAYOUT SUBJECT TO CHANGE PER THE RADIANT SUPPLIER EQUIPMENT AND LOOP DRAWINGS. SUBMIT SHOP DRAWINGS AND CALCULATION FOR APPROVAL. DRAWINGS SHALL INDICATE FLOW, PRESSURE DROP, LOOP LENGTH, AND HEAT FLUX, IF LAYOUT DIFFERS FROM SCHEDULED VALUES.

SNOW MELT ZONE SCHEDULE

SNOWMELT TAG	AREA NAME	MANIFOLD TAG	AREA (SQ. FT.)	RADIANT PANEL TYPE	TUBING SIZE (IN)	TUBE SPACING (IN.)	FLOW (GPM)	RADIANT PANEL HEAD LOSS (FT. WC.)	TOTAL PANEL HEAD LOSS (FT. WC.)	LOAD (MBH)	FLUX (BTU/SQ. FT.)	QUANTITY OF LOOPS	ESTIMATED LOOP LENGTH (FT.)	SURFACE TEMP. (°F)	EWT (°F)	LWT (°F)	PIPE SIZE TO MANIFOLD (IN.)	REMARKS
SMZ-1	HANGAR ENTRY APRON	SM-1	992	CONCRETE SLAB	5/8"	9	16.4	7.9	15.3	183.6	185	11	120	35	135	110	1-1/2	ALL
		SM-2	992	CONCRETE SLAB	5/8"	9	16.4	7.9	15.3	183.7	185	11	120	35	135	110	1-1/2	ALL
		SM-3	992	CONCRETE SLAB	5/8"	9	16.4	7.9	15.3	183.7	185	11	120	35	135	110	1-1/2	ALL
		SM-4	1,015	CONCRETE SLAB	5/8"	9	13.4	7.9	13.3	150.1	148	9	150	35	135	110	1-1/2	ALL

REMARKS:
1. BASIS OF DESIGN: 50% PROPYLENE GLYCOL BY VOLUME, UPONOR 1-1/4" STAINLESS STEEL MANIFOLD.
2. RADIANT HEAD LOSS IS FOR TUBING ONLY. TOTAL PANEL HEAD LOSS INCLUDE MANIFOLD LOSSESS.
3. LOAD INCLUDES 10% DOWNWARD LOSSES.
4. LOOP LENGTH AND LAYOUT SUBJECT TO CHANGE PER THE RADIANT SUPPLIER EQUIPMENT AND LOOP DRAWINGS. SUBMIT SHOP DRAWINGS AND CALCULATION FOR APPROVAL. DRAWINGS SHALL INDICATE FLOW, PRESSURE DROP, LOOP LENGTH, AND HEAT FLUX IF LAYOUT DIFFERS FROM SCHEDULED VALUES.

AIR AND DIRT SEPARATOR SCHEDULE

UNIT TAG	MANUFACTURER	MODEL	DESCRIPTION	SERVICE	LOCATION	GPM	PIPE SIZE (IN)	CONNECTION	HEIGHT (IN)	WIDTH (IN)	WEIGHT (IN)
AS-H1	SPIROTHERM	VDT250	AIR / DIRT SEPARATOR	HEATING SYSTEM	MECHANICAL 106	72.5	2-1/2	THREADED	10.5	15.7	56
AS-S1	SPIROTHERM	VDT250	AIR / DIRT SEPARATOR	SNOWMELT SYSTEM	MECHANICAL 106	63	2-1/2	THREADED	10.5	15.7	56

EXPANSION TANK SCHEDULE

EQUIPMENT TAG	MFR.	MODEL	TYPE	SERVICE	TANK VOLUME (GALLONS)	ACCEPTANCE VOLUME (GALLONS)	OPERATING FLUID TEMP. (°F)	PRE-CHARGED PRESSURE (PSI)	MAWP (PSI)	ASME RATED	DIMENSIONS		OPERATING WEIGHT (LBS)	NOTES
											HEIGHT (IN)	DIAMETER (IN)		
ET-S1	WESSELS COMPANY	NTA-20	DIAPHRAGM	SNOWMELT	11	8.8	135	40	200	YES	25	12	125	1
ET-H1	WESSELS COMPANY	NTA-40	DIAPHRAGM	HEATING WATER	25	20.2	120	40	200	YES	33	16	252	1

NOTES:
1. OPERATING PRESSURE SHALL BE REVISED DURING THE INSTALLATION TO SATISFY OVERALL SYSTEM REQUIREMENTS

FAN SCHEDULE

TAG	SERVICE	MFR.	MODEL	TYPE	AIRFLOW DIRECTION	DRIVE	CAPACITY CONTROL	SOUND PRESSURE (DBA)	FAN INFORMATION				MOTOR INFORMATION			DIMENSIONS (IN)	WEIGHT (LBS)	NOTES
									VOLUME @ PROJECT ALTITUDE (CFM)	S.P. @ PROJECT ALTITUDE (IN.WG.)	S.P. @ SEA LEVEL (IN.WG.)	RPM	VOLTS / PHASE	FLA	POWER (HP)	W X H X D		
EF-1	AIRCRAFT HANGAR VENTILATION	GREENHECK	AER-E20C-310-VG	SIDEWALL PROPELLER FAN	EXHAUST	DIRECT	VARIABLE SPEED MOTR	76	2200	0.3	0.37	1654	115 / 1	6.4	1/2	26 X 26 X 32	180	1
EF-2,3, 4 & 5	INFRARED HEATER COMBUSTION AIR	GREENHECK	AER-E20C-620-VG	SIDEWALL PROPELLER FAN	EXHAUST	DIRECT	VARIABLE SPEED MOTR	69	2400	0.3	0.37	1170	115 / 1	6.4	1/2	26 X 26 X 32	180	1
S1-1 & 2	MECHANICAL ROOM PRESSURIZATION	GREENHECK	SS1-8-440-E	SIDEWALL PROPELLER FAN	SUPPLY	DIRECT	VARIABLE SPEED MOTR	33	100	0.08	0.10	946	115 / 1	NA	1/100	13 X 13 X 19	70	2

NOTES:
1. PROVIDE THE FOLLOWING OPTIONS AND ACCESSORIES: DIAL CONTROL FOR BALANCING, SHORT WALL HOUSING FLUSH EXTERIOR W/OSHA GUARD, BACKDRAFT DAMPER, 45DEG WEATHERHOOD WITH BIRD SCREEN, NEMA-1 DISCONNECT SWITCH.
2. PROVIDE THE FOLLOWING OPTIONS AND ACCESSORIES: DIAL CONTROL FOR BALANCING, SHORT WALL HOUSING FLUSH EXTERIOR W/OSHA GUARD, BACKDRAFT DAMPER, 90DEG WEATHERHOOD WITH BIRD SCREEN, NEMA-1 DISCONNECT SWITCH.

CHEMICAL FEED SYSTEMS SCHEDULE

ID	MANUFACTURER & MODEL	SERVICE	LOCATION	TYPE	SIZE (GAL)	ELECTRICAL (V / PH / HZ)
GF-H1	AXIOM INDUSTIRES DMF300	HEATING WATER	MECHANICAL ROOM 106	CHEMICAL PUMP GLYCOL FEED SYSTEM; PRESSURE PUMP WITH FUSE PROTECTION; LOW FLUID LEVEL PUMP CUT-OUT FLOAT SWITCH; MANUAL DIVERTER VALVE; DIGITAL PRESSURE SWITCH (0-45 PSIG; DIGITAL PRESSURE DISPLAY; LOW LEVEL ALARM. UL LISTED AND FUSED POWER SUPPLY ADAPTER; 120-240/60HZ/1 TO 24 VDC SUPPLIED LOOSE FOR FIELD INSTALLATION.	17	120 OR 240 / 60 / 1 POWER CORD
GF-S1	AXIOM INDUSTIRES DMF300	SNOWMELT SYSTEM	MECHANICAL ROOM 106	CHEMICAL PUMP GLYCOL FEED SYSTEM; PRESSURE PUMP WITH FUSE PROTECTION; LOW FLUID LEVEL PUMP CUT-OUT FLOAT SWITCH; MANUAL DIVERTER VALVE; DIGITAL PRESSURE SWITCH (0-45 PSIG; DIGITAL PRESSURE DISPLAY; LOW LEVEL ALARM. UL LISTED AND FUSED POWER SUPPLY ADAPTER; 120-240/60HZ/1 TO 24 VDC SUPPLIED LOOSE FOR FIELD INSTALLATION.	17	120 OR 240 / 60 / 1 POWER CORD

SGM
118 West Sixth Street, Suite 200
Glenwood Springs, CO 81601
970.945.1004 www.sgm-inc.com

NOT FOR CONSTRUCTION

Kuhn Aviation Hangar
Rifle, CO 81650

#	Revision:	Date:	By:

Project Milestone: PERMIT SET

Job No.	2021-546
Drawn by:	IB
Date:	05/13/2022
QC: BC	PE: BC

Title:
MECHANICAL SCHEDULES

Dwg No.
M6.01

MAKE-UP AIR UNIT SCHEDULE

UNIT TAG	MFR.	MODEL	CONFIGURATION	SERVICE	FAN: CFM @ PROJECT ALTITUDE	FAN: MIN. SUPPLY CFM	FAN: EXT. STATIC PRESSURE @ S.L. (IN WC)	FAN: EXT. STATIC PRESSURE @ ALTITUDE (IN WC)	FAN: CAPACITY CONTROL	FAN: RPM	HEATING: GAS TYPE	HEATING: DIRECT FIRE (Y/N)	HEATING: MINIMUM FIRING TURNDOWN OR STAGES	HEATING: GAS PRESSURE MIN. / MAX (IN. WC)	HEATING: INPUT @ S.L. (MBH)	HEATING: INPUT @ ALTITUDE (MBH)	HEATING: OUTPUT @ ALTITUDE (MBH)	HEATING: TEMP. RISE (F)	ELECTRICAL DATA: HP	ELECTRICAL DATA: VOLTS/ PHASE	ELECTRICAL DATA: MCA (AMPS)	ELECTRICAL DATA: MOCP (AMPS)	DIMENSIONS: L X W X H (IN)	SOUND (DBA)	FILTER	APPROX. OPER. WT. (LBS)	NOTES
MAU-1	GREENHECK	DGX-P112-H12	INDOOR / END FLOW	AIRCRAFT HANGAR	2,200	870	0.6	0.50	FACTORY VFD	2458	N.G.	YES	30:1	7.0	186	151	139	72	1-1/2	208/3	8.9	15	92 x 34 x 39	70	2" MERV 8 4" MERV 13	690	ALL

NOTES:
1. PERFORMANCE IS BASED ON 100% OUTSIDE AIR CONFIGURATION.
2. FURNISH WITH THE FOLLOWING OPTIONS & ACCESSORIES: INLET DAMPER MODULE W/ MOTORIZED DAMPER AND END SWITCH, FILTER HOUSING, MOTOR SPRING VIBRATIONS ISOLATORS, BUILDING PRESSURE SENSOR, DISCHARGE AIR TEMPERATURE SENSOR, FREEZE PROTECTION SENSOR, FACTORY WIRED SERVICE RECEPTACLE AND LIGHT, DISCONNECT SWITCH, REMOTE PANEL, DIRTY FILTER SWITCH, BOTTOM PANELS, HINGED SIDE ACCESS, AND 3-WAY SUPPLY DIFFUSER.
3. UNIT SHALL HAVE PANELED BOTTOM INDOOR SUSPENDED INSTALLATION.

ENERGY RECOVERY VENTILATOR SCHEDULE

UNIT TAG	MANUFACTURER	MODEL NUMBER	AREA SERVED	SUPPLY FAN: ALTITUDE VOLUME (CFM)	SUPPLY FAN: SEA LEVEL ESP (IN.WG)	SUPPLY FAN: MOTOR TYPE	EXHAUST FAN: ALTITUDE VOLUME (CFM)	EXHAUST FAN: SEA LEVEL ESP (IN.WG)	EXHAUST FAN: MOTOR TYPE	WINTER AIRSTREAM: INDOOR: DRY BULB (F)	WINTER AIRSTREAM: INDOOR: WET BULB (F)	WINTER AIRSTREAM: OUTDOOR: DRY BULB (F)	WINTER AIRSTREAM: OUTDOOR: WET BULB (F)	SUMMER AIRSTREAM: INDOOR: DRY BULB (F)	SUMMER AIRSTREAM: INDOOR: WET BULB (F)	SUMMER AIRSTREAM: OUTDOOR: DRY BULB (F)	SUMMER AIRSTREAM: OUTDOOR: WET BULB (F)	LEAVING AIR TEMPERATURE: WINTER (F)	LEAVING AIR TEMPERATURE: SUMMER (F)	CORE PERFORMANCE: TOTAL EFFECTIVENESS: SUMMER (%)	CORE PERFORMANCE: TOTAL EFFECTIVENESS: WINTER (%)	ELECTRICAL: V	ELECTRICAL: PH	ELECTRICAL: HZ	ELECTRICAL: MCA	ELECTRICAL: MOP	DIMENSIONS: HEIGHT (IN)	DIMENSIONS: DEPTH (IN)	DIMENSIONS: WIDTH (IN)	UNIT WEIGHT (LBS)	NOTES
ERV-1	RENEWAIRE	EV PREMIUM M	KITCHEN / RESTROOM	120	0.4	ECM	100	0.4	ECM	70	58	-2	NA	75	58	95	59	46	80	58	77	120	1	60	10	10	22	13	22.5	36	ALL

NOTES:
1. AIR CONDITIONS ARE AT PROJECT ALTITUDE.
2. UNIT INCLUDES TWO MERV 8 FILTERS, LINE-CORD POWER, AND LOW-VOLTAGE CIRCUIT FOR CONTROLS.
3. FURNISH WITH THE FOLLOWING ACCESSORIES: BACKDRAFT DAMPER, AND VW12X8 GALVANIZED LOUVERED VENT WITH METAL SCREEN.

SPLIT DX INDOOR UNIT SCHEDULE

UNIT TAG	MFR.	MODEL	TYPE	SERVICE	OUTDOOR UNIT	FAN: VOLUME @ PROJECT ALTITUDE (CFM)	FAN: S.P. @ PROJECT ALTITUDE (IN.WG.)	FAN: S.P. @ SEA LEVEL (IN.WG.)	FAN: FAN SPEED (H/M/L)	SOUND (DBA)	COOLING: NOMINAL CAPACITY (MBH)	COOLING: TOTAL LOAD (MBH)	COOLING: SENSIBLE LOAD (MBH)	COOLING: EAT DB (˚F)	COOLING: EAT WB (˚F)	COOLING: LAT DB (˚F)	HEATING: NOMINAL CAPACITY (MBH)	HEATING: CORRECTED CAPACITY (MBH)	HEATING: EAT (F)	HEATING: LAT (F)	ELECTRICAL DATA: VOLTS / PHASE / HZ	ELECTRICAL DATA: POWERED FROM OUTDOOR UNIT (Y/N)	DIMESIONS: W X H X D (IN)	WEIGHT (LBS)	REMARKS
IU-1	CARRIER	40MAHBQ06	DUCTLESS HIGH WALL	KITCHEN	HP-1	380	NA	NA	H	38	6.0	9.5	6.9	75	60	>55	7.4	5.7	70	>85	208 / 1 / 60	Y	31 X 12 X 9	23	ALL

REMARKS:
1. PERFORMANCE VALUES ARE AT PROJECT ALTITUDE UNLESS NOTED OTHERWISE.
2. FURNISH WITH THE FOLLOWING ACCCESSORIES: CONDENSATE OVERFLOW SWITCH, HARD WIRED THERMOSTAT WITH 7 DAY PROGRAMMABLE SCHEDULE.

AIR COOLED HEAT PUMP UNIT SCHEDULE

UNIT TAG	INDOOR UNIT TAG	MFR.	MODEL	REFRIGERANT TYPE	SOUND PRESSURE (DBA)	FAN VOLUME (CFM)	AMBIENT TEMP.: SUMMER (F)	AMBIENT TEMP.: WINTER (F)	CAPACITY CONTROL	NOMINAL CAPACITY: COOLING (MBH)	NOMINAL CAPACITY: HEATING (MBH)	CORRECTED CAPACITY: COOLING (MBH)	CORRECTED CAPACITY: HEATING (MBH)	EFFICIENCY @ AHRI	UNIT ELECTRICAL DATA: V / PH / HZ	UNIT ELECTRICAL DATA: MCA (AMPS)	UNIT ELECTRICAL DATA: MOCP (AMPS)	DIMENSIONS: W X H X D (IN)	WEIGHT (LBS)	NOTES
HP-1	IU-1	CARRIER	38MARBQ06	R-410A	55	1,324	95	-2	VARIABLE SPEED COMPRESSOR	6	6	9.5	5.7	13 SEE 7.7 HSPF	208 / 1 / 60	13	15	30 X 22 X 12	65	ALL

NOTES:
1. ALL PERFORMANCE VALUES AT PROJECT ALTITUDE UNLESS NOTED OTHERWISE.
2. FURNISH WITH OPTIONS AND ACCCESSORIES: FACTORY DISCONNECT, AND GROUND MOUNTING PAD.
3. REFRIGERANT PIPING AS SPECIFIED BY PROJECT SPECIFIC LAYOUT AND COMPUTER GENERATED BILL OF MATERIALS FROM MANUFACTURER. REFER TO PLANS AND RELATED SCHEDULES FOR ADDITIONAL INFORMATION.

ELECTRIC DUCT HEATING COIL SCHEDULE

TAG	MFR.	MODEL	SERVICE	AIRFLOW (SCFM)	CAPACITY (KW)	TEMP. RISE AT ALTITUDE (F)	DUCT MOUNTING STYLE	DUCT COLLAR (IN)	CAPACITY CONTROL	DIMENSIONS: WIDTH (IN)	DIMENSIONS: HEIGHT (IN)	DIMENSIONS: DEPTH (IN)	ELECTRICAL: V	ELECTRICAL: PH	ELECTRICAL: AMPS	NOTES
EDH-1	RENEWAIRE	RH-D	EDH-1	120	1.0	27	FLANGED	6	SCR	11.5	8	11.5	120	1	8.3	ALL

NOTES:
1. PROVIDE THE FOLLOWING ACCESSORIES AND OPTIONS: FACTORY DISCONNECT, AIRFLOW SENSOR, MANUAL RESET SWITCH, OVER CURRENT PROTECTION, 24 VAC CONTOL TRANSFORMERS, INTEGRAL THERMOSTAT, AND DUCT MOUNT TEMPERATURE SENSOR AND CONTROL.
2. REFER TO PLANS FOR ORIENTATION.
3. UNIT SHALL BE ETL OR NRTL LISTED.

HVLS FAN SCHEDULE

TAG	SERVICE	MFR.	MODEL	TYPE	DRIVE	CAPACITY CONTROL	FAN INFORMATION: NUMBER OF BLADES	FAN INFORMATION: MAX. SPEED (RPM)	FAN INFORMATION: TORQUE AT MAX. SPEED (FT.LB)	MOTOR INFORMATION: VOLTS / PHASE	MOTOR INFORMATION: POWER (HP)	DIMENSIONS: HEIGHT (IN)	DIMENSIONS: DIAMETER (FT)	WEIGHT (LBS)	NOTES
HVLS-1	AIRCRAFT HANGAR	CANARM	TRI-LITE	HIGH VOLUME LOW SPEED	DIRECT	VARIABLE SPPED	3	57	SEE NOTES 3	480 / 3	1	24	24	251	ALL

NOTES:
1. PROVIDE THE FOLLOWING OPTIONS AND ACCESSORIES: STANDARD CONTROLLER, MOUNTING SYSTEM KIT, AND DISCONNECT.
2. FAN SHALL BE AMCA CERTIFIED AND UL 507 LISTED. CONTROLS AND INSTALLATION MUST COMPLY WITH NFPA 13 AND NFPA 72.
3. MANUFACTURER TO PROVIDE DATA AS PART OF THE SUBMITTAL.
4. SPECIFICATION PROVIDED BY OWNER.

LOUVER SCHEDULE

UNIT TAG	MFR.	MODEL	SERVICE	LOCATION	AIRFLOW (CFM)	AIRFLOW DIRECTION	SIZE (IN): WIDTH	SIZE (IN): HEIGHT	FACE VELOCITY (FPM)	NET VELOCITY (FPM)	WATER PENETRATION VELOCITY (FPM)	PRESSURE DROP @ S.L. (IN W.G.)	FREE AREA (SQ.FT.)	FRAME DEPTH (IN.)	FINISH	NOTES
L-1	GREENHECK	ESD-435	MAU-1	AIRCRAFT HANGAR	2,200	INTAKE	36	36	244	470	>1100	<0.12	4.68	4	MILL	1,2
L-2 ,3 4 & 5	GREENHECK	ESD-435	EF-2,3,4,5,	AIRCRAFT HANGAR	2,400	INTAKE	30	30	384	768	>1100	<0.12	3.13	4	MILL	1,3

NOTES:
1. LOUVER SHALL BE AMCA CERTIFIED, WITH DRAINABLE STATIONARY BLADE.
2. PROVIDE THE FOLLOWING OPTIONS AND ACCESSORIES: BIRD SCREEN.
3. PROVIDE THE FOLLOWING OPTIONS AND ACCESSORIES: BIRD SCREEN AND MOTORIZED DAMPER WITH ACTUATOR.

GRILLE, REGISTER, AND DIFFUSER SCHEDULE

SYMBOL	SERVICE	MFR. & MODEL	FACE TYPE	MOUNTING	MATERIAL	FINISH	DEVICE MOUNTED DAMPER	ACCESSORIES / OPTIONS	DESCRIPTION	FACE SIZE / NECK SIZE (INCHES)	NOTES
S1	SUPPLY	PRICE 520L	ADJUSTABLE DOUBLE DEFLECTION FACE BARS	SURFACE	STEEL	WHITE POWDER COAT	NO	NA	3/4 INCH BLADE SPACING, FRONT BLADES PARALLEL TO LONG DIMENSION.	FACE DIMENSIONS WILL BE APPROX. 2 IN. LARGER THAN NECK SIZE / AS NOTED	ALL
R1	EXHAUST	PRICE 530L	FIXED ANGLE SINGLE DEFLECTION	SURFACE	STEEL	WHITE POWDER COAT	NO	NA	FIXED BLADE, 45-DEGREE FACE BARS, 3/4 IN. CENTERS , BLADES PARALLEL TO LONG DIMENSION.	FACE DIMENSIONS WILL BE APPROX. 2 IN. LARGER THAN NECK SIZE / AS NOTED	ALL

NOTES:
1. GENERAL: VERIFY CEILING, WALL AND FLOOR CONSTRUCTION MATERIALS AND FINISHES ON THE ARCHITECTURAL DRAWINGS, AND COORDINATE BORDER TYPES/FRAMES FOR THE GRILLES, REGISTERS AND DIFFUSERS ACCORDINGLY.
2. MILL FINISH AND FACTORY WHITE FINISH SHALL BE PAINTABLE. REFER TO ARCHITECTURAL FOR PAINT COLOR (IF APPLICABLE).

GAS FIRED HIGH INTENSITY HEATER SCHEDULE

UNIT TAG	MFR. & MODEL	SERVICE	COMBUSTION: IGNITION	COMBUSTION: SEPARATED	COMBUSTION: EFF.	HEATING (NATURAL GAS): MIN. STAGES	HEATING (NATURAL GAS): GAS PRESSURE (IN. WC)	HEATING (NATURAL GAS): INPUT @ S.L. (MBH)	HEATING (NATURAL GAS): OUTPUT @ S.L. (MBH)	HEATING (NATURAL GAS): OUTPUT @ ALTITUDE (MBH)	CONNECTIONS: GAS SIZE (IN. NPT)	ELECTRICAL DATA: V/PH/HZ	ELECTRICAL DATA: TOTAL WATTS	ELECTRICAL DATA: MOCP	LENGTH X WIDTH X DEPTH (INCHES)	WEIGHT (LBS)	NOTES
HIH-1	SOLARONICS K-200 DSAN	AIRCRAFT DE-ICING	DIRECT SPARK	NO	92%	1	7-14	200	184	184	1/2	115/1/60	17	15	42.5 X 29 X 9	70	ALL
HIH-2	SOLARONICS K-200 DSAN	AIRCRAFT DE-ICING	DIRECT SPARK	NO	92%	1	7-14	200	184	184	1/2	115/1/60	17	15	42.5 X 29 X 9	70	ALL
HIH-3	SOLARONICS K-200 DSAN	AIRCRAFT DE-ICING	DIRECT SPARK	NO	92%	1	7-14	200	184	184	1/2	115/1/60	17	15	42.5 X 29 X 9	70	ALL
HIH-4	SOLARONICS K-200 DSAN	AIRCRAFT DE-ICING	DIRECT SPARK	NO	92%	1	7-14	200	184	184	1/2	115/1/60	17	15	42.5 X 29 X 9	70	ALL
HIH-5	SOLARONICS K-200 DSAN	AIRCRAFT DE-ICING	DIRECT SPARK	NO	92%	1	7-14	200	184	184	1/2	115/1/60	17	15	42.5 X 29 X 9	70	ALL
HIH-6	SOLARONICS K-200 DSAN	AIRCRAFT DE-ICING	DIRECT SPARK	NO	92%	1	7-14	200	184	184	1/2	115/1/60	17	15	42.5 X 29 X 9	70	ALL
HIH-7	SOLARONICS K-200 DSAN	AIRCRAFT DE-ICING	DIRECT SPARK	NO	92%	1	7-14	200	184	184	1/2	115/1/60	17	15	42.5 X 29 X 9	70	ALL
HIH-8	SOLARONICS K-200 DSAN	AIRCRAFT DE-ICING	DIRECT SPARK	NO	92%	1	7-14	200	184	184	1/2	115/1/60	17	15	42.5 X 29 X 9	70	ALL
HIH-9	SOLARONICS K-200 DSAN	AIRCRAFT DE-ICING	DIRECT SPARK	NO	92%	1	7-14	200	184	184	1/2	115/1/60	17	15	42.5 X 29 X 9	70	ALL
HIH-10	SOLARONICS K-200 DSAN	AIRCRAFT DE-ICING	DIRECT SPARK	NO	92%	1	7-14	200	184	184	1/2	115/1/60	17	15	42.5 X 29 X 9	70	ALL
HIH-11	SOLARONICS K-200 DSAN	AIRCRAFT DE-ICING	DIRECT SPARK	NO	92%	1	7-14	200	184	184	1/2	115/1/60	17	15	42.5 X 29 X 9	70	ALL
HIH-12	SOLARONICS K-200 DSAN	AIRCRAFT DE-ICING	DIRECT SPARK	NO	92%	1	7-14	200	184	184	1/2	115/1/60	17	15	42.5 X 29 X 9	70	ALL

NOTES:
1. PROVIDE THE FOLLOWING ACCESSORIES: DISCONNECT SWITCH, CH-30DM 30 DEG ANGLE CHAIN KIT, CH-50 CHAIN KITS,00K4-10-003 WIRE GRID, AND 0002-10-046 GAS FLEX W/GAS COCK
2. UNIT SHALL BE CSA CERTIFIED TO ANSI Z83.19 OR Z83.20.

ELECTRIC WALL HEATER SCHEDULE

TAG	MFR.	MODEL	SERVICE	MOUNTING CONFIGURATION	SCFM	HEATING CAPACITY (KW)	ELECTRICAL: V	ELECTRICAL: PH	ELECTRICAL: AMPS	DIMENSIONS: HEIGHT (IN)	DIMENSIONS: WIDTH (IN)	DIMENSIONS: DEPTH (IN)	UNIT WEIGHT (LBS)	NOTES
EWH-1	INDEECO	WCI	MECHANICAL ROOM 106	SURFACE	160	2.30	208	1	11.1	20	15	4	24	ALL
EWH-2	INDEECO	WCI	MECHANICAL ROOM 107	SURFACE	160	2.30	208	1	11.1	20	15	4	24	ALL
EWH-3	INDEECO	WLI	RESTROOM 105	SURFACE	40	0.75	120	1	6.3	16	7-1/4	3	9	ALL

NOTES:
1. FINISH SHALL BE FACTORY WHITE.
2. UNIT SHALL HAVE FACTORY INTEGRAL THERMOSTAT AND AUTOMATIC RESET THERMAL CUTOUT.
3. FURNISH WITH FACTORY DISCONNECT SWITCH.

SGM
118 West Sixth Street, Suite 200
Glenwood Springs, CO 81601
970.945.1004 www.sgm-inc.com

NOT FOR CONSTRUCTION

Kuhn Aviation Hangar
Rifle, CO 81650

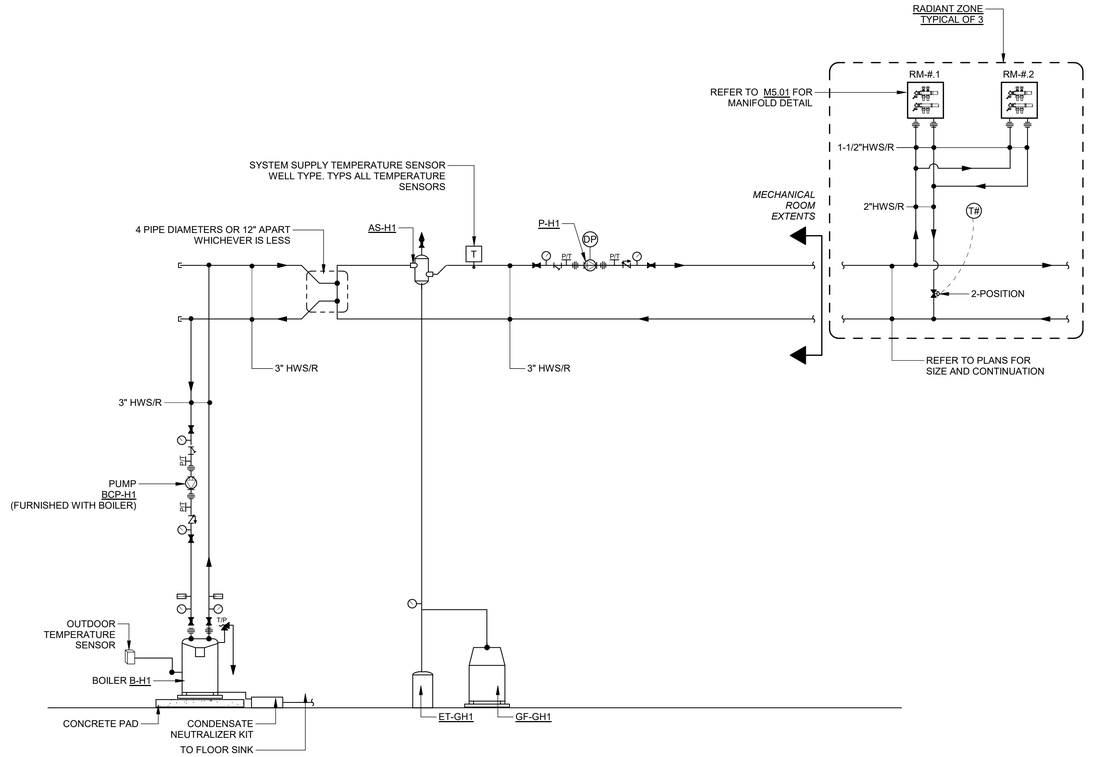
#	Revision:	Date:	By:

Project Milestone: PERMIT SET

Job No. 2021-546
Drawn by: IB
Date: 05/13/2022
QC: BC PE: BC

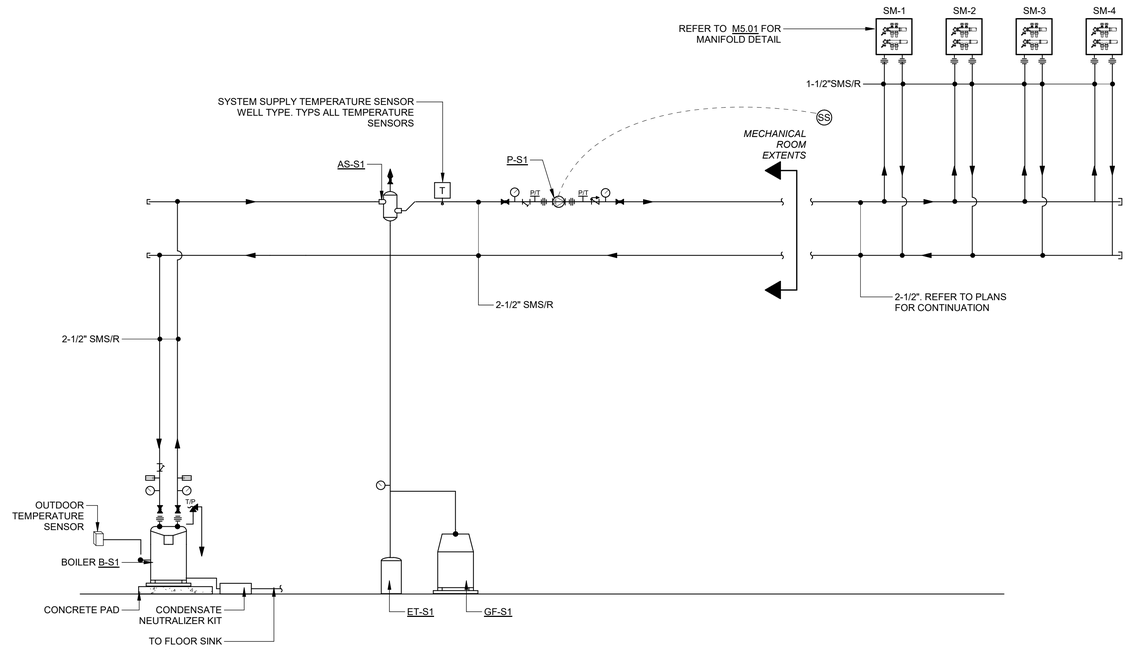
Title: MECHANICAL SCHEDULES

Dwg No. M6.02



1 HANGAR HEATING PIPING DIAGRAM

NO SCALE



2 HANGAR SNOWMELT PIPING DIAGRAM

NO SCALE

SGM
118 West Sixth Street, Suite 200
Glenwood Springs, CO 81601
970.945.1004 www.sgm-inc.com

NOT FOR CONSTRUCTION

Kuhn Aviation Hangar
Rifle, CO 81650

#	Revision:	Date:	By:

Project Milestone: PERMIT SET

Job No.	2021-546
Drawn by:	IB
Date:	05/13/2022
QC: BC	PE: BC

Title: MECHANICAL PIPING DIAGRAMS

Dwg No. M7.01

5/13/2022 8:54:55 PM

C:\Users\ahaymes\Documents\Kuhn Aviation Hangar_MEP_R22_aHaymes52AH.rvt

GENERAL NOTES

DEFINITIONS:

1. CONTRACTOR: THE ENTITY BINDED BY THE PRIME AGREEMENT WITH THE CLIENT TO PERFORM THE TASKS INDICATED IN THE CONTRACT DOCUMENTS. THE TERM CONTRACTOR INCLUDES AND IMPLIES ANY RELEVANT SUB-CONTRACTOR THAT MAY BE PERFORMING THE ACTUAL TASK UNDER THE CONTRACTOR'S DIRECTION.
2. CONTRACT DOCUMENTS: THE COMPLIMENTARY COLLECTION OF DRAWINGS, SPECIFICATIONS, PROJECT MANUAL, AND ADDENDA WHICH ARE DIRECTED TO THE CONTRACTOR, UNDER THE PRIME AGREEMENT.
3. FURNISH: TO SUPPLY, DELIVER, UNLOAD, AND INSPECT FOR DAMAGE.
4. INSTALL: TO UNPACK, ASSEMBLE, ERECT, APPLY, PLACE, FINISH, CURE, PROTECT, CLEAN, START UP, AND MAKE READY FOR USE.
5. PROVIDE: TO FURNISH AND INSTALL.
6. SUPPLY: SAME AS FURNISH.
7. PRODUCT: MATERIAL, MACHINERY, COMPONENTS, EQUIPMENT, FIXTURES, AND SYSTEMS FORMING THE WORK RESULT. NOT MATERIALS OR EQUIPMENT USED FOR PREPARATION, FABRICATION, CONVEYING, OR ERECTION AND NOT INCORPORATED INTO THE WORK RESULT. PRODUCTS MAY BE NEW, NEVER BEFORE USED, OR RE-USED MATERIALS OR EQUIPMENT.

NATURE AND USE OF CONTRACT DOCUMENTS:

1. IF ANY DISCREPANCY IS FOUND WITHIN THE CONTRACT DOCUMENTS DURING CONSTRUCTION, SUBMIT AN RFI TO THE ENGINEER FOR DIRECTION BEFORE PROCEEDING. IF A DISCREPANCY IS FOUND DURING BIDDING, AND THE DESIGN TEAM DOES NOT PROVIDE A RESOLUTION BY THE FINAL ADDENDUM, BASE THE BID ON THE MORE COSTLY INTERPRETATION. FAILING TO DO SO WILL NOT BE CONSIDERED A VALID BASIS FOR CHANGE ORDERS DURING CONSTRUCTION.
2. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING COMPLETE CONTRACT DOCUMENTS TO ALL TRADES, AND FOR COORDINATING BETWEEN ALL TRADES TO ENSURE PROPER INSTALLATION OF COMPLETE AND FUNCTIONAL SYSTEMS AS SHOWN ON THE CONTRACT DOCUMENTS.
3. THE CONTRACTOR IS RESPONSIBLE FOR ALL SCOPES OF WORK, COMPLETENESS OF BIDS, AND PRICING EXERCISES. FURTHER, COORDINATION AND DIVISION OF SCOPE AMONGST SUB-CONTRACTORS IS THE RESPONSIBILITY OF THE CONTRACTOR.
4. DO NOT SCALE DRAWINGS FOR ROUGH-IN MEASUREMENTS OR USE AS SHOP DRAWINGS. WHERE DRAWINGS ARE REQUIRED FOR THESE PURPOSES OR HAVE TO BE MADE FROM FIELD MEASUREMENTS, TAKE THE NECESSARY MEASUREMENTS AND PREPARE THE DRAWINGS.
5. DRAWINGS ARE DIAGRAMMATIC IN NATURE AND DO NOT SHOW EVERY SYSTEM OFFSET REQUIRED. COORDINATE WITH THE EXISTING AND NEW STRUCTURE, ELECTRICAL, PLUMBING, FIRE PROTECTION AND CEILING TO PROVIDE OFFSETS AS REQUIRED AND APPROPRIATE.

CODES, INSPECTIONS, AND PERMITS:

1. PERFORM ALL WORK IN ACCORDANCE WITH THE CODES, REGULATIONS, AND LOCAL AMENDMENTS, AS CURRENTLY ADOPTED BY THE AUTHORITY HAVING JURISDICTION (AHJ).
2. IF ANY DISCREPANCIES ARE FOUND BETWEEN CONTRACT DOCUMENTS AND ANY APPLICABLE CODE OR LEGAL REQUIREMENT, SUBMIT AN RFI TO ENGINEER FOR DIRECTION BEFORE PROCEEDING.
3. OBTAIN ALL PERMITS AND INSPECTIONS REQUIRED BY THE AHJ FOR PROJECT COMPLETION.

WARRANTY:

1. UNCONDITIONALLY GUARANTEE ALL LABOR AND MATERIAL ON ALL WORK AGAINST DEFECTS IN WORKMANSHIP AND MATERIALS FOR A PERIOD OF ONE YEAR, FOLLOWING FINAL ACCEPTANCE, EXCEPT AS EXTENDED BY STANDARD MANUFACTURER WARRANTY AND/OR BY REQUIRED EXTENSION STATED IN THE CONTRACT DOCUMENTS.

SUBMITTALS AND SUBSTITUTIONS:

1. MEET THE CRITERIA DESCRIBED HEREIN, PRIOR TO ENGINEER'S REVIEW OF THE SUBMITTAL.
2. REFERENCE EQUIPMENT TAGS PROVIDED IN THE CONTRACT DOCUMENTS.
3. CLEARLY INDICATE THE INTENDED PRODUCT TYPE, MODE, OPTIONS, ACCESSORIES (FACTORY AND FIELD INSTALLED), AND ANY OTHER OPTIONS OF ANY KIND.
4. INDICATE THE PLAN ISSUANCE AND DATE ON WHICH SUBMITTAL IS BASED.
5. IF PROPOSING A SUBSTITUTION IN PLACE OF THE BASIS OF DESIGN EQUIPMENT, THE CONTRACTOR IS SOLELY RESPONSIBLE FOR THE SPATIAL REQUIREMENTS, ACOUSTICAL, THERMAL, PHOTOMETRIC, AND ELECTRICAL PERFORMANCE CHARACTERISTICS, AND COORDINATION OF ALL INSTALLATION REQUIREMENTS. REVIEW AND APPROVAL BY THE DESIGN TEAM DOES NOT ALTER OR MITIGATE THIS RESPONSIBILITY. CLEARLY MARK SUBSTITUTIONS AS SUCH.
6. DESCRIBE ANY IMPACT TO OTHER DIVISIONS CREATED BY A PRODUCT SUBSTITUTION ON THE SUBSTITUTION REQUEST FOR CONSIDERATION BY THE DESIGN TEAM. PROVIDE AN ESTIMATE OF ASSOCIATED COST IMPACT TO OTHER DIVISIONS WHERE APPLICABLE. CONTRACTOR SHALL BEAR ANY AND ALL ADDITIONAL COST RESULTING FROM SUBSTITUTIONS.
7. INDICATE WHERE PRODUCTS REQUIRE A PERFORMANCE DE-RATE DUE TO ALTITUDE EFFECTS.
8. RE-SUBMITTALS MUST CONTAIN MARKUPS THAT CLEARLY DELINEATE THE CHANGED ITEMS. ENGINEER WILL NOT RE-REVIEW THE ENTIRE SUBMITTAL PACKAGE IN ORDER TO FIND THE CHANGES.
9. ALL DATA REQUIRED FOR REVIEW MUST BE CONTAINED IN THE FILES PROVIDED TO THE ENGINEER. LINKS TO MANUFACTURER'S WEBSITES WILL NOT BE ACCEPTED.
10. ROOM SCHEDULES ARE ACCEPTABLE TO INDICATE QUANTITIES.

PROJECT CLOSEOUT REQUIREMENTS:

1. COMPLETE ALL REQUIRED AHJ INSPECTIONS. MAKE COPIES OF PERMITS AND INSPECTION REPORTS AVAILABLE.
2. PROVIDE A COMPLETE SET OF AS-BUILT PLANS AT THE COMPLETION OF THE PROJECT WITH ALL CHANGES NOTED.
3. CONDUCT A TRAINING SESSION FOR OWNER'S DESIGNATED STAFF FOR ALL CONTROLS SYSTEMS AND MAJOR EQUIPMENT. PRODUCE A SIGN IN SHEET FOR THIS SESSION SHOWING ATTENDEES, DATE, LIST OF EQUIPMENT AND SYSTEMS COVERED, ALL TRAININGS SHALL BE RECORDED AND MADE AVAILABLE TO THE OWNER AND OWNER'S REP THROUGH CLOUD BASED SYSTEM FOR THE DURATION OF THE WARRANTY.
4. CLEAN JOB SITE OF ALL CONSTRUCTION DEBRIS, REPAIR ALL DAMAGED FINISHES. REMOVE ALL EXISTING EQUIPMENT LABELS THAT ARE NO LONGER ACCURATE, AND INSTALL NEW LABELING FOR NEW EQUIPMENT AND SYSTEMS.
5. DELIVER EQUIPMENT MANUALS AND ANY REQUIRED SPARE PARTS TO OWNER.

ACCESS AND CLEARANCES:

1. MAINTAIN ALL SERVICE AND ACCESS CLEARANCES REQUIRED BY CODE OR MANUFACTURER FOR ALL EQUIPMENT.
2. PROVIDE ACCESS FOR ALL EQUIPMENT, ETC. LOCATED ABOVE NON-ACCESSIBLE CEILINGS OR IN CONCEALED AREAS. PROVIDE SUFFICIENT ACCESS FOR SERVICING AND MAINTENANCE.
3. UTILIZE APPROPRIATELY RATED ACCESS PANELS WHEN PENETRATING A RATED ASSEMBLY.

PENETRATIONS AND RATED ASSEMBLIES:

1. THE ARCHITECTURAL PLANS SERVE AS THE REFERENCE FOR LOCATIONS OF RATED WALLS, PARTITIONS, AND ASSEMBLIES. COORDINATE ALL PENETRATIONS PRIOR TO ROUGH IN. FOR ALL PENETRATIONS OF FIRE RATED ASSEMBLIES, UTILIZE AN ASSEMBLY UL LISTED TO MAINTAIN THE RATING AND APPROVED BY ALL APPLICABLE CODES.

STRUCTURAL MODIFICATIONS:

1. DO NOT DRILL, NOTCH, CUT, OR ALTER STRUCTURAL MEMBERS IN ANY MANNER EXCEPT AS PERMITTED BY THE MATERIAL SPECIFIC SECTIONS OF THE BUILDING CODE, MANUFACTURER'S GUIDELINES FOR ENGINEERED PRODUCTS, OR THE RECOMMENDATION OF THE STRUCTURAL ENGINEER OF RECORD.

SUPPORT FOR SYSTEMS AND EQUIPMENT:

1. PROVIDE SUPPORT (I.E. HANGERS, BRACKETS, STANCHIONS, RACKS, PADS, ANCHORS, ETC.) AT REGULAR INTERVALS FOR ALL SYSTEMS AND EQUIPMENT INDICATED AND IMPLIED ON CONTRACT DOCUMENTS, AND IN COMPLIANCE WITH SYSTEM SPECIFIC CODE REQUIREMENTS.

ELECTRICAL SYMBOL LEGEND

ANNOTATION SYMBOLS

Symbol	Description
##	KEYNOTE TAG
##	REVISION TAG
AA-#-###	ELECTRICAL EQUIPMENT TAG REFER TO EQUIPMENT SCHEDULE
AA-#-###	ELECTRICAL CONNECTION TAG (EQUIPMENT SPECIFIED BY OTHERS) REFER TO CONNECTION SCHEDULE
A###	FEEDER TAG REFER TO FEEDER SCHEDULE
AA - #,#,#	CIRCUIT TAG REFER TO PANEL SCHEDULE
A## a	LIGHTING FIXTURE TAG UPPERCASE TAG IS FIXTURE TYPE LOWERCASE LETTER IS SWITCH ID
C##	LIGHTING CONTROL SCENARIO TAG REFER TO CONTROL SCHEDULE

LINETYPES / PHASING

- SOLID DARK LINES INDICATE NEW OR MODIFIED ITEMS
- DASHED DARK LINES INDICATE ITEMS TO BE DEMOLISHED
- SOLID LIGHT LINES INDICATE EXISTING ITEMS TO REMAIN (reference info)

RECEPTACLES

- STANDARD WALL MOUNTED DUPLEX RECEPTACLE

RECEPTACLE SYMBOL MODIFIERS:

- CROSS LINES INDICATE QUADRUPLEX
- SINGLE LINE INDICATES SIMPLEX
- TRIANGLE INDICATES SPECIAL NEMA TYPE (SEE KEYNOTES)
- CENTER FILL INDICATES ABOVE COUNTER (16" TO BOTTOM)
- OUTER CIRCLE INDICATES CEILING MOUNT (FLUSH)
- OUTER SQUARE INDICATES FLOOR MOUNT
- G — "G" INDICATES PROVIDE GFCI PROTECTION AT DEVICE OR BREAKER
- W — "W" INDICATES WEATHERPROOF IN-USE COVER AND GFCI PROTECTION
- U — "U" INDICATES INTEGRAL USB CHARGING PORT
- T — "T" INDICATES TAMPER PROOF
- a — LOWER CASE LETTER INDICATES SWITCHING ZONE

COMMUNICATION DEVICES

- DIGITAL DATA OUTLET SINGLE PORT
- ANALOG PHONE OUTLET SINGLE PORT
- COMBINATION DATA / PHONE SINGLE PORT EACH

COMMUNICATION SYMBOL MODIFIERS:

- CIRCLE INDICATES CEILING MOUNT (FLUSH)
- SQUARE INDICATES FLOOR MOUNT
- 4 — NUMBER INDICATES QUANTITY OF PORTS
- H — "H" INDICATES HDMI PORT TYPE (SEE KEYNOTES)

SINGLE LINE DIAGRAM SYMBOLS

- CIRCUIT BREAKER
- FUSE
- DISCONNECT SWITCH
- NT — NEUTRAL BUS
- GR — GROUND BUS
- BOND
- GROUNDING ELECTRODE (SEE KEYNOTE FOR TYPE)
- VFD — VARIABLE FREQUENCY DRIVE
- M — METER
- GFP — GROUND FAULT PROTECTION

LIGHTING FIXTURES

- GENERAL LIGHT FIXTURE DRAWN TO APPROX. SIZE AND SHAPE

LIGHT FIXTURE SYMBOL MODIFIERS:

- HALF FILL INDICATES EMERGENCY BACKUP
- DIAGONAL LINE INDICATES RECESSED MOUNTING
- DOT INDICATES SUSPENDED MOUNTING
- SIDE LINES INDICATE WALL MOUNTING

EXIT AND EGRESS TYPES:

- EXIT SIGN FILLED QUARTERS INDICATE FACES
- EXIT SIGN WITH INTEGRAL LIGHTS
- DEDICATED EMERGENCY LIGHT

ACCENT FIXTURE TYPES:

- TRACK MOUNTED FIXTURES (HEADS AND TRACK WILL HAVE SEPERATE TYPE DESIGNATIONS)
- SURFACE MOUNTED ACCENT FIXTURES

CONTROL DEVICES

- $ª — WALL SWITCH LOWER CASE LETTER INDICATES CONTROL ZONE
- $ª₃ — THREE WAY SWITCH
- $ª_K — KEYED SWITCH
- $ª_P — PILOT LIGHTED SWITCH
- $ª_D — DIMMING SWITCH, 0-10V UNLESS OTHERWISE NOTED
- $_N — NETWORKED SWITCH, LOW VOLT (SEE KEYNOTE OR LIGHTING CONTROL DETAILS FOR FUNCTION)
- EPO — EMERGENCY POWER OFF BUTTON

LIGHTNING PROTECTION SYSTEM (LPS)

- MAIN CONDUCTOR
- DOWN CONDUCTOR
- COUNTERPOISE CONDUCTOR
- AIR TERMINAL
- GROUNDING ELECTRODE

ELECTRICAL SHEET LIST

AHJ PLANS REVIEWER NOTE:

THE BASIS OF DESIGN FOR THIS PROJECT IS A GROUP I HANGAR FOR A BOMBARDIER GLOBAL 7500 IN TRANSIT AIRCRAFT. NO SERVICE, REPAIR, FUELING, MAINTENANCE OR PAINTING WILL TAKE PLACE.

AHJ PLANS REVIEWER NOTE:

THE STATE ELECTRICAL INSPECTOR HAS STATED THAT NEC ARTICLE 513 IS APPLICABLE DUE TO THE POTENTIAL FOR CLASS I FUELS TO BE PRESENT IN THE FUTURE.

ADOPTED CODES

AHJ	GARFIELD COUNTY
NEC	2020
IBC	2015
IMC	2015
IFGC	2015
IPC	2015
IECC	2009
NFPA	409

SGM
118 West Sixth Street, Suite 200
Glenwood Springs, CO 81601
970.945.1004 www.sgm-inc.com

NOT FOR CONSTRUCTION

Kuhn Aviation Hangar
Rifle, CO 81650

#	Revision:	Date:	By:

Project Milestone: PERMIT SET

Job No.: 2021-546
Drawn by: Author
Date: 05/13/2022
QC: Checker PE: Approver

Title: ELECTRICAL LEGEND AND GENERAL NOTES

Dwg No. E0.01

ELECTRICAL SPECIFICATIONS

SCOPE AND PERFORMANCE OF WORK:

1. COORDINATE ALL LINE VOLTAGE WIRING AND CONDUIT SYSTEMS REQUIRED BY ALL DIVISIONS AND ENSURE THAT THEY ARE CAPTURED IN THE ELECTRICAL SUBCONTRACTOR'S SCOPE OF WORK. EVERY ATTEMPT WILL BE MADE TO REFLECT THESE REQUIREMENTS ON THE ELECTRICAL SHEETS, BUT ENSURE THAT THE ELECTRICAL SUBCONTRACTOR RECEIVES A COMPLETE DRAWING SET, AND UNDERSTANDS THE COMPLETE PROJECT SCOPE.

2. PROVIDE TEMPORARY CONSTRUCTION POWER AS REQUIRED BY THE GENERAL CONTRACTOR.

3. WHEN INSTALLING OR MODIFYING SERVICE OR METERING EQUIPMENT, COORDINATE WITH UTILITY COMPANY TO ENSURE THAT THEIR CURRENT STANDARDS ARE MET. IF ANY DISCREPANCY IS FOUND BETWEEN UTILITY STANDARDS AND CONTRACT DOCUMENTS, SUBMIT RFI TO ENGINEER FOR DIRECTION.

4. PROVIDE COMPLETE AND FUNCTIONAL ELECTRICAL AND LIGHTING SYSTEMS. INCLUDE ALL REQUIRED LABOR AND MATERIALS, REGARDLESS OF WHETHER SUCH MATERIALS ARE SPECIFICALLY CALLED OUT ON THE DRAWINGS, UNLESS THE DRAWINGS EXPLICITLY DESIGNATE CERTAIN ITEMS AS BEING PROVIDED BY OTHERS.

5. ELECTRICAL WORK SHALL BE PERFORMED IN A NEAT AND WORKMANLIKE MANNER, AS DEFINED BY THE NECA 1 STANDARD.

6. COORDINATE WITH OTHER TRADES FOR CUTTING, PATCHING, DRILLING, ROOF FLASHING, OR OTHER PENETRATION REQUIREMENTS CREATED BY ELECTRICAL WORK.

7. OBTAIN AND FOLLOW MANUFACTURER'S WIRING DIAGRAMS FOR ALL EQUIPMENT.

ELECTRICAL COMMISSIONING:

1. PERFORM ELECTRICAL COMMISSIONING IN COMPLIANCE WITH SECTION C408 OF THE ADOPTED IECC.

2. COMMISSION ALL SCHEDULED EQUIPMENT AND WORK INDICATED AS NEW OR MODIFIED WITHIN THE PLANS AND SPECIFICATIONS. COMMISSIONING SERVICES SHALL BE SUFFICIENT TO DEMONSTRATE INTENDED OPERATING CONDITIONS AND FUNCTIONS.

3. COMMISSIONING AGENTS SHALL INCLUDE BUT ARE NOT LIMITED TO: THE ELECTRICAL CONTRACTOR, LIGHTING CONTROL SUPPLIER, LOW VOLTAGE AND RELATED SUB CONTRACTORS.

4. FURNISH PRELIMINARY AND FINAL COMMISSIONING REPORTS TO THE ENGINEER FOR APPROVAL. INCLUDE ITEMIZATION OF DEFICIENCIES, DEFERRED TESTS, AND CLIMATIC CONDITIONS, AT A MINIMUM.

ELECTRICAL SUBMITTAL REQUIREMENTS:

1. VERIFY THAT THE SUBMITTED DISTRIBUTION EQUIPMENT WILL ACCEPT THE SPECIFIED CONDUCTOR SIZES, EVEN WHEN CONDUCTORS ARE OVERSIZED TO MITIGATE VOLTAGE DROP. LUG KITS ARE ONLY ACCEPTABLE WHEN APPROVED BY THE EQUIPMENT MANUFACTURER.

2. GENERATOR SUBSTITUTION SUBMITTALS MUST INCLUDE LOAD CALCULATION SUMMARIES, INCLUDING LOAD TYPES, LOAD STEPS, OPERATING TEMPERATURE RANGE, AND ELEVATION DE-RATING.

3. SUBMITTALS FOR ELEVATOR DISCONNECTS AND ASSOCIATED DISTRIBUTION EQUIPMENT WILL NOT BE FULLY APPROVED UNTIL ELEVATOR SHOP DRAWINGS HAVE BEEN REVIEWED.

4. LIGHTING CONTROL SUBMITTALS MUST INCLUDE ONE LINE DIAGRAMS OF ANY CENTRAL CONTROL SYSTEMS, SHOP DRAWINGS SHOWING SPECIFIC DEVICE LOCATIONS ON A BUILDING FLOORPLAN, DEVICE CUTSHEETS AND MODEL NUMBERS, AND WIRING DIAGRAMS FOR EACH CONTROL SCENARIO LISTED ON THE CONTRACT DOCUMENTS.

5. WHEN THE CONTRACT DOCUMENTS CALL FOR PROVISION OF LIGHTING CONTROL SYSTEMS OR INVERTERS, INCLUDE PROGRAMMING AND STARTUP BY A FACTORY AUTHORIZED TECHNICIAN.

6. INVERTER SUBMITTALS MUST INCLUDE A SIZING CALCULATION APPLYING THE MANUFACTURER'S RECOMMENDED MAXIMUM PERCENT LOADING FOR THE TYPE OF FIXTURES BEING SUPPLIED.

IDENTIFICATION:

1. PROVIDE NEW TYPED SCHEDULES FOR ALL PANELS AFFECTED BY PROJECT. SCHEDULES SHALL CONTAIN ALL NEW CIRCUITING AS INSTALLED, AND ALL EXISTING CIRCUIT INFORMATION AVAILABLE. FOR EXAMPLE, IF A CIRCUIT WAS NOT MODIFIED IN THIS PROJECT, THE NEW PRINTED SCHEDULE SHOULD CONTAIN THE SAME TEXT AS THE EXISTING SCHEDULE. IF NO INFORMATION IS AVAILABLE, WRITE "UNKNOWN" IN THE SCHEDULE. PRINTING SCHEDULES FROM THE CONSTRUCTION DRAWING IS NOT ACCEPTABLE; RE-ATTACHING OLD SCHEDULES IS NOT ACCEPTABLE.

2. PROVIDE PERMANENT, ENGRAVED PLASTIC NAMEPLATES FOR ALL DISTRIBUTION EQUIPMENT REFLECTING THE NAMES SHOWN ON THE CONSTRUCTION DOCUMENTS. REMOVE ALL OLDER CONFLICTING LABELS.

3. PROVIDE ADHESIVE PRINTED PLASTIC LABELS FOR ALL RECEPTACLES, JUNCTION BOXES, AND DISCONNECT SWITCHES SHOWING PANEL AND CIRCUIT NUMBER (AND EQUIPMENT TAG IF APPLICABLE). IN FINISHED SPACES, LOCATE RECEPTACLE LABELS ON INSIDE OF FACEPLATE UNLESS DIRECTED OTHERWISE BY OWNER.

4. IDENTIFY ALL CONDUIT RUNS LONGER THAN SIX FEET, AND AT 50 FOOT INTERVALS.

5. INSTALL WARNING TAPE WITH ALL UNDERGROUND CONDUIT AND CABLE, AT 12" BELOW GRADE.

6. COLOR CODE ALL POWER CONDUCTORS USING FACTORY APPLIED COLORS. FOR 120/208 AND 240 SYSTEMS, USE BLACK/RED/BLUE FOR PHASES A/B/C. FOR 277/480 SYSTEMS, USE BROWN/ORANGE/YELLOW FOR PHASES A/B/C. FOR GROUNDED (NEUTRAL) CONDUCTORS USE WHITE OR GRAY. FOR GROUNDING CONDUCTORS USE GREEN. FOR ISOLATED GROUNDING CONDUCTORS USE GREEN WITH WHITE STRIPE.

7. USE ONLY PERMANENT LABELING METHODS. PENCIL, MASKING TAPE, OR PAPER TAPED TO SURFACES ARE NOT ACCEPTABLE. HAND WRITTEN LABELS ARE ONLY ACCEPTABLE FOR CONDUIT AND JUNCTION BOXES IN UNFINISHED AREAS, AND MUST BE PRINTED IN A NEAT AND LEGIBLE MANNER USING INK.

8. IN LOCATIONS EXPOSED TO SUNLIGHT, MOISTURE, OR CORROSIVE GASES, USE ONLY LABELING PRODUCTS RATED FOR THAT ENVIRONMENT AND GUARANTEED NOT TO FADE, DEGRADE, OR DETACH.

9. PROVIDE ALL REQUIRED SAFETY PLACARDS CONFORMING TO NEC STANDARDS.

RACEWAY AND CONDUCTORS:

1. ALL CONDUIT SIZES SHOWN ON DRAWINGS ARE MINIMUMS.

2. WHERE UNDERGROUND CONDUIT PASSES BELOW VEHICLE TRAFFIC AREAS, USE SCHEDULE 80 PVC. SCHEDULE 40 IS ACCEPTABLE IN OTHER UNDERGROUND AREAS.

3. WHERE EXTERIOR CONDUIT IS LOCATED BELOW 4' AFG, OR OTHERWISE EXPOSED TO DAMAGE, USE GALVANIZED RMC OR PVC. EXTERIOR CONDUIT NOT EXPOSED TO DAMAGE MAY BE EMT.

4. IN CORROSIVE ENVIRONMENTS, PROVIDE ALL CONDUIT WITH CORROSION PROTECTION.

5. IN CRAWL SPACES, USE ONLY PVC, GALVANIZED RMC, OR PVC JACKETED MC CABLE.

6. FLEXIBLE METALLIC CABLE (MC) IS ACCEPTABLE ONLY IN CONCEALED OR UNFINISHED LOCATIONS, AND ONLY FOR CIRCUITS 20 AMPS OR LESS. MC RUNS SHALL BE NEATLY GROUPED, SECURED, AND ROUTED PARALLEL TO BUILDING LINES WHEREVER PRACTICAL.

7. FLEXIBLE NONMETALLIC CABLE (AKA "ROMEX") IS NOT ACCEPTABLE IN ANY LOCATION UNLESS EXPLICITLY ALLOWED ON DRAWING OR RFI RESPONSE.

8. USE ONLY CONDUIT SUPPORT DEVICES RATED FOR THE SPECIFIC APPLICATION. VERIFY THE ADEQUACY OF ALL CUSTOM SUPPORT STRUCTURES FOR CONDUIT. DESIGN CUSTOM SUPPORT STRUCTURES TO SUPPORT 125% OF THE ACTUAL WEIGHT OF THE STRUCTURE AND ITS CONTENTS.

BRANCH CIRCUITS AND DEVICES:

1. PROVIDE DEDICATED NEUTRAL CONDUCTORS FOR ALL CIRCUITS, OF SAME SIZE AS PHASE CONDUCTOR(S). SHARED NEUTRALS ARE NOT ACCEPTABLE.

2. DETERMINE THE MOST EFFICIENT GROUPING OF HOME RUNS IN THE FIELD, AND COMPLY WITH RESULTING CONDUIT FILL AND WIRE DERATING REQUIREMENTS.

3. GFCI OUTLETS SHALL INCLUDE INDICTOR LIGHTS THAT ILLUMINATE WHEN TRIPPED.

4. IN FINISHED SPACES, PROVIDE MATCHING FACEPLATES, DEVICES, AND SCREW HEADS (COLOR AND STYLE AS DIRECTED BY ARCHITECT), IN UNFINISHED SPACES, PROVIDE GALVANIZED STEEL FACEPLATES.

5. WHERE WEATHERPROOF DEVICE COVERS ARE REQUIRED, USE ONLY HEAVY DUTY, WHILE-IN-USE TYPE.

6. MOUNT ALL OUTDOOR RECEPTACLES WITH BOTTOM OF ENCLOSURE AT LEAST 16" ABOVE FINISHED GRADE.

GROUNDING AND BONDING:

1. INSTALL WIRE-TYPE EQUIPMENT GROUNDING CONDUCTORS WITH ALL FEEDERS AND ALL BRANCH CIRCUITS. CONDUIT IS NOT AN ACCEPTABLE EQUIPMENT GROUNDING MEANS UNLESS EXPLICITLY ALLOWED IN CONSTRUCTION DRAWINGS FOR A PARTICULAR LOCATION.

2. IF A LIGHT POLE STRUCTURE IS SUPPLIED BY ONLY A SINGLE BRANCH CIRCUIT, A SEPARATE GROUNDING ELECTRODE (ROD) IS NOT REQUIRED. BOND THE EQUIPMENT GROUNDING CONDUCTOR OF THE SUPPLY CIRCUIT TO POLE BASE REBAR AND EXPOSED METALLIC POLE COMPONENTS. IF THE POLE STRUCTURE IS SUPPLIED BY MULTIPLE BRANCH CIRCUITS, INSTALL AN 8 FT GROUND ROD AT THE POLE, AND BOND IT TO POLE BASE REBAR, EXPOSED METALLIC POLE COMPONENTS, AND EQUIPMENT GROUNDING CONDUCTORS OF ALL SUPPLY CIRCUITS. KEEP NEUTRALS ISOLATED IN BOTH CASES.

3. BOND FENCES ENCLOSING TRANSFORMERS, GENERATORS, OR SOLAR/WIND GENERATION EQUIPMENT TO THE GROUNDING ELECTRODE(S) ASSOCIATED WITH THE EQUIPMENT.

4. FOR ALL GROUNDING AND BONDING CONNECTIONS, USE ONLY PRODUCTS UL LISTED FOR THE SPECIFIC APPLICATION, MATERIALS, AND ENVIRONMENT INVOLVED.

5. BOND SERVICE ENTRANCE GROUNDING ELECTRODE SYSTEMS TO AVAILABLE METALLIC PIPE, EXPOSED METAL STRUCTURE, REBAR, ETC AS REQUIRED BY THE NEC.

EXACT LOCATIONS:

1. ELECTRICAL PLANS ARE DIAGRAMMATIC EXCEPT WHERE SPECIFIC DIMENSIONAL REQUIREMENTS ARE CALLED OUT ON PLAN. COORDINATE EXACT PLACEMENT OF EQUIPMENT AND ROUTING OF CONDUIT.

2. WHERE DEVICES ARE SHOWN IN CASEWORK, COORDINATE EXACT LOCATIONS WITH ARCHITECTURAL DETAILS PRIOR TO ROUGH-IN.

3. VERIFY FINAL LOCATIONS OF ALL SINKS PRIOR TO ROUGH-IN OF NEARBY ELECTRICAL DEVICES.

4. COORDINATE THE EXACT LOCATIONS OF EQUIPMENT PRIOR TO ROUGH IN OF ELECTRICAL CONNECTIONS.

5. IF DISCREPANCIES ARE FOUND IN EQUIPMENT LOCATIONS BETWEEN ARCHITECTURAL AND ELECTRICAL PLANS, SUBMIT RFI FOR DIRECTION BEFORE PROCEEDING.

LIGHTNING PROTECTION SYSTEMS (LPS):

1. PROVIDE A LPS CONSISTING OF THE LATEST UL LISTED PRODUCTS OF A MANUFACTURER REGULARLY ENGAGED IN PRODUCTION OF LIGHTNING PROTECTION SYSTEM COMPONENTS. COMPLY WITH NFPA 70, NFPA 780, AND UL 96.

2. PROVIDE DOCUMENTATION SHOWING THAT THE INSTALLER IS A UL LISTED LIGHTNING PROTECTION INSTALLER. THE DOCUMENTATION MUST SHOW THAT THE INSTALLER HAS COMPLETED AND PASSED THE REQUIREMENTS FOR CERTIFICATION OR LISTING, AND HAS A MINIMUM OF 2 YEARS DOCUMENTED EXPERIENCE INSTALLING LIGHTNING PROTECTION SYSTEMS.

3. PROVIDE INSTALLATION SHOP DRAWING FOR THE OVERALL LPS. INCLUDE ON THE DRAWINGS THE PHYSICAL LAYOUT OF THE EQUIPMENT, MOUNTING DETAILS, AND RELATIONSHIP TO OTHER PARTS OF THE WORK.

4. PROVIDE DETAIL DRAWINGS FOR EACH MAJOR COMPONENT INCLUDING MANUFACTURER'S DESCRIPTIVE AND TECHNICAL LITERATURE AND CATALOG CUTSHEETS.

5. PROVIDE PROOF OF COMPLIANCE THAT COMPONENTS ARE UL LISTED AND LABELED.

6. TBD

7. TBD

LPS MATERIALS:

1. DETAIL TBD

LPS GROUNDING AND BONDING:

1. DETAIL TBD

SGM
118 West Sixth Street, Suite 200
Glenwood Springs, CO 81601
970.945.1004 www.sgm-inc.com

NOT FOR CONSTRUCTION

Kuhn Aviation Hangar
Rifle, CO 81650

#	Revision:	Date:	By:

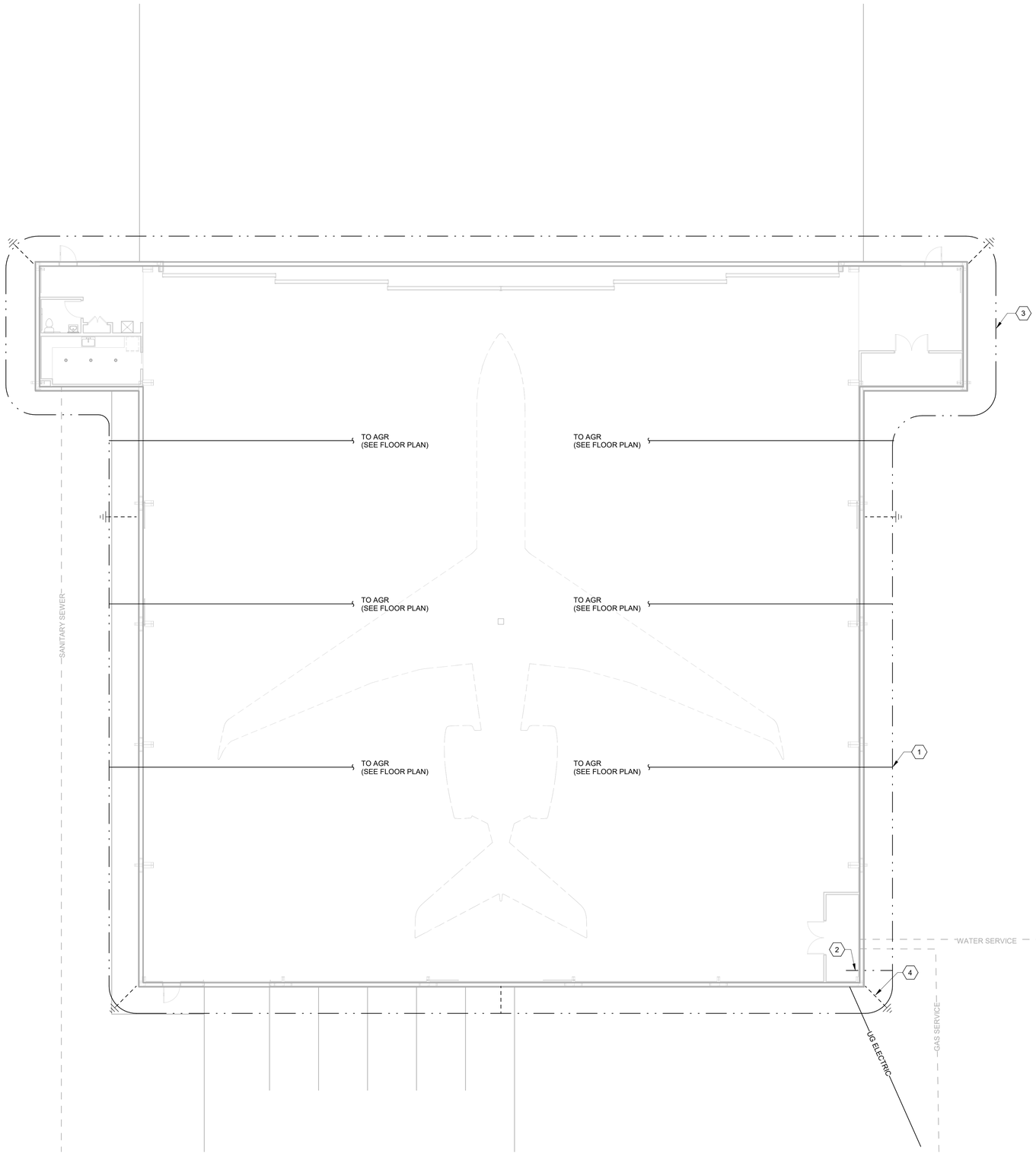
Project Milestone: PERMIT SET

Job No.	2021-546
Drawn by:	Author
Date:	05/13/2022
QC: Checker	PE: Approver

Title: ELECTRICAL SPECIFICATIONS

Dwg No. E0.02

KEYNOTES	
1	ALL CONNECTIONS TO THE COUNTERPOISE SHALL BE MADE USING EXOTHERMIC WELD CONNECTIONS OR IRREVERSIBLE COMPRESSION CONNECTORS. (TYP)
2	BOND GROUNDING COUNTERPOISE TO MASTER GROUND BAR IN ELECTRICAL ROOM.
3	COUNTERPOISE SHALL BE 4/0 AWG BARE COPPER CABLE, BURIED 3 FEET BELOW FINISHED GROUND, AND 5 FEET AWAY FROM THE BUILDING FOUNDATION.
4	INSTALL AN ACCESSIBLE DOWN CONDUCTOR DISCONNECT IN EACH DOWN CONDUCTOR EXCEPT THE ONE NEAREST THE BUILDING ELECTRICAL SERVICE ENTRANCE; USE 4-BOLT TUBULAR SPLICE FITTINGS.



1 ELECTRICAL SITE PLAN
SCALE: 1" = 10'-0"
NORTH

SGM
118 West Sixth Street, Suite 200
Glenwood Springs, CO 81601
970.945.1004 www.sgm-inc.com

NOT FOR CONSTRUCTION

Kuhn Aviation Hangar
Rifle, CO 81650

#	Revision:	Date:	By:

Project Milestone: PERMIT SET

Job No.	2021-546		
Drawn by:	Author		
Date:	05/13/2022		
QC:	Checker	PE:	Approver

Title:
ELECTRICAL SITE PLAN

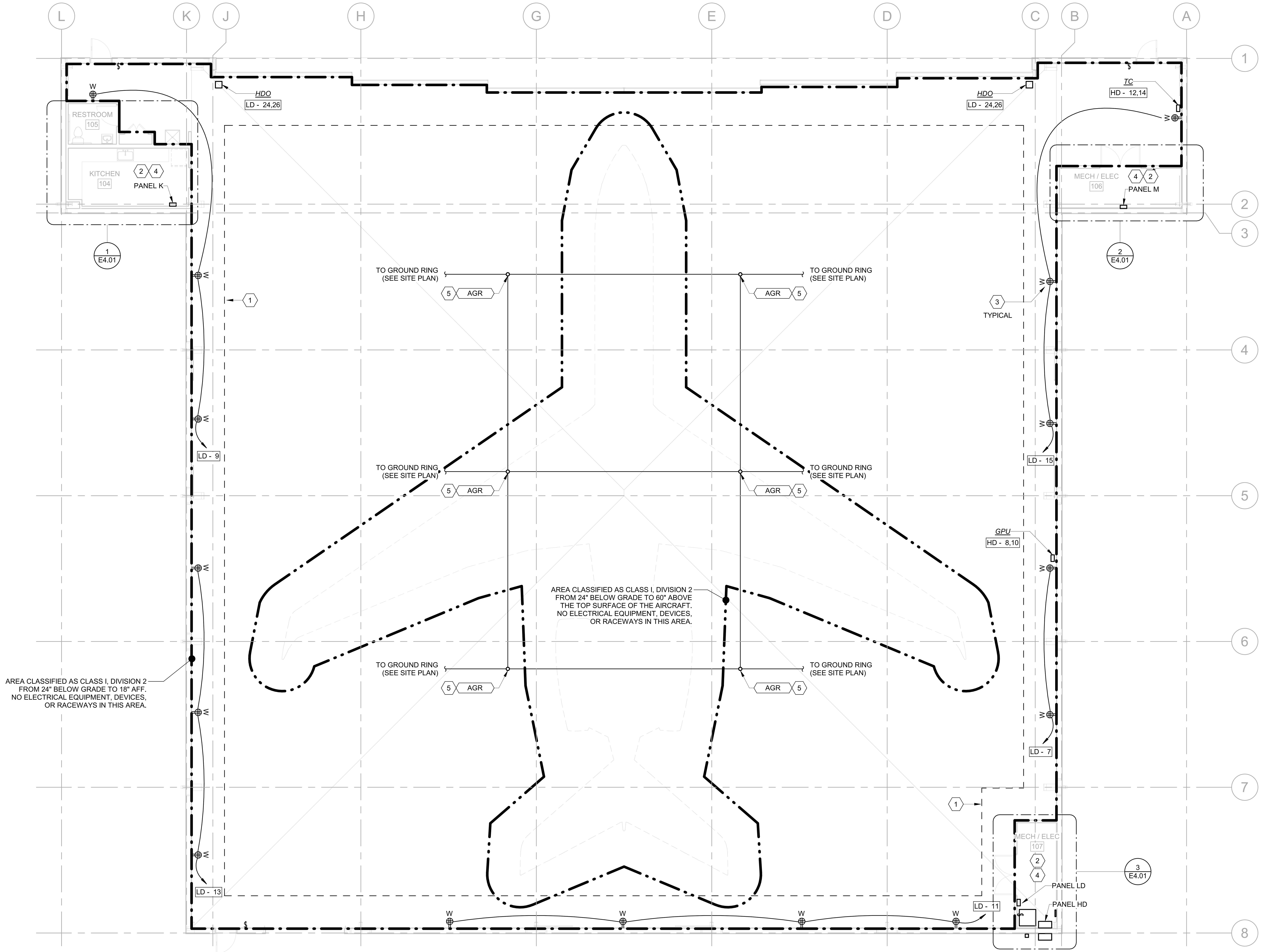
Dwg No.
E1.01

5/13/2022 8:23:43 PM

C:\Users\rshaymet\Documents\Kuhn\Aviation\Hangar_MEP_R22_rshaymet22AH.rvt

GENERAL POWER PLAN NOTES	
1	DO NOT ROUTE ANY RACEWAY IN OR BELOW HANGAR SLAB. ALL CONDUIT RUNS SHALL BE OVERHEAD, ENTERING AND EXITING THE HANGAR SPACE ABOVE 18" AFF.
2	ENCLOSE ALL FEEDER AND BRANCH CIRCUIT CONDUCTORS IN EMT THROUGHOUT BUILDING INTERIOR.

KEYNOTES	
1	PROVIDE PERMANENT YELLOW STRIPED HAZARD TAPE 5' FROM ALL WALLS WITHIN HANGAR SPACE, WITH PERMANENT LABEL READING "NO PART OF ANY AIRCRAFT PAST THIS LINE.".
2	ROOMS SEPERATED FROM THE CLASSIFIED HANGAR SPACE BY FULL HEIGHT PARTITIONS ARE UNCLASSIFIED BY BEING KEPT AT POSITIVE AIR PRESSURE WITH RESPECT TO THE HANGAR. REFER TO MECHANICAL DRAWINGS FOR DETAILS.
3	MOUNT ALL RECEPTACLES IN HANGAR AT 48" AFF.
4	ALL ELECTRICAL EQUIPMENT SHALL BE LOCATED IN DEDICATED ROOMS HAVING A 1 HOUR FIRE RATED PARTITION SEPARATING THEM FROM THE HAGAR SPACE (ARCHITECTURAL PLAN TO BE REVISED ACCORDINGLY). ALL CONDUIT PENETRATIONS THROUGH RATED PARTITIONS SHALL MAINTAIN THE RATING USING A PRODUCT UL LISTED FOR THAT PURPOSE.
5	AT EACH AIRCRAFT GROUNDING POINT, PROVIDE 3/4" X 8' CU CLAD STEEL GROUND ROD. BOND ALL RODS TO EACH OTHER AND THE EXTERIOR GROUND RING USING SOLID BARE #X CU.



ELECTRICAL FLOOR PLAN

1 NORTH

SCALE: 1/8" = 1'-0"

SGM
118 West Sixth Street, Suite 200
Glenwood Springs, CO 81601
970.945.1004 www.sgm-inc.com

NOT FOR CONSTRUCTION

Kuhn Aviation Hangar
Rifle, CO 81650

#	Revision:	Date:	By:

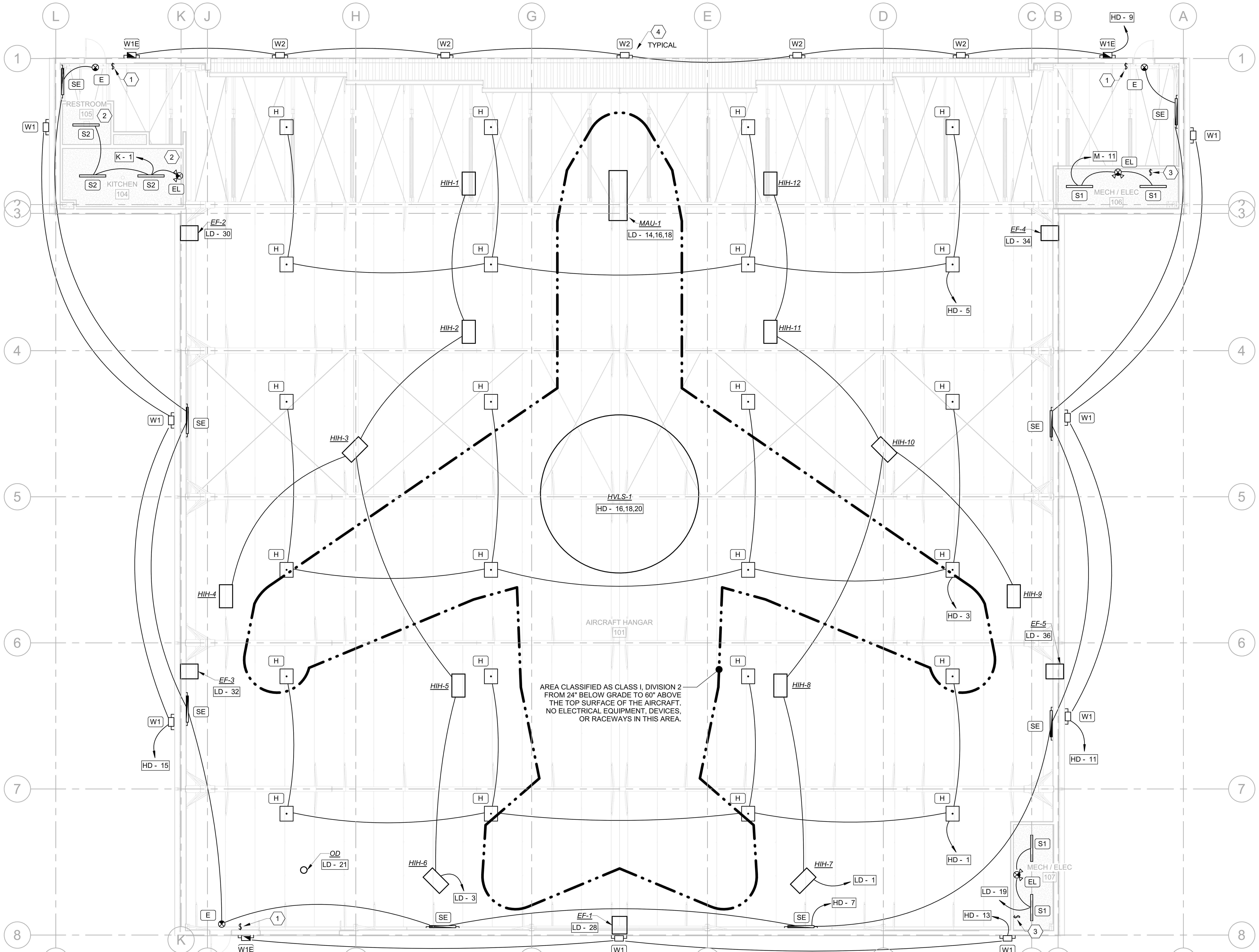
Project Milestone: PERMIT SET

Job No. 2021-546
Drawn by: Author
Date: 05/13/2022
QC: Checker PE: Approver

Title: ELECTRICAL FLOOR PLAN

Dwg No. E1.02

KEYNOTES	
1	ROUTE ALL HANGAR LIGHTING CIRCUITS THROUGH CONTACTOR IN ELECTRICAL ROOM. AT EACH HANGAR ENTRANCE, PROVIDE SWITCH TO OPERATE CONTACTOR.
2	KITCHEN AND RESTROOM FIXTURES INCLUDE INTEGRAL OCCUPANCY SENSORS, REFER TO LUMINAIRE SCHEDULE FOR DETAILS.
3	IN EQUIPMENT ROOMS, OCCUPANCY SENSOR CONTROL IS OMITTED FOR SAFETY. PROVIDE SINLE SWITCH AT ENTRANCE CONTROLING ALL FIXTURES IN ROOM.
4	EXTERIOR FIXTURES INCLUDE INTEGRAL PHOTOCELLS FOR DUSK-TO-DAWN OPERATION, REFER TO LUMINAIRE SCHEDULE FOR DETAILS.



ELECTRICAL REFLECTED CEILING PLAN

1

NORTH

SCALE: 1/8" = 1'-0"

SGM
118 West Sixth Street, Suite 200
Glenwood Springs, CO 81601
970.945.1004 www.sgm-inc.com

NOT FOR CONSTRUCTION

Kuhn Aviation Hangar
Rifle, CO 81650

#	Revision:	Date:	By:

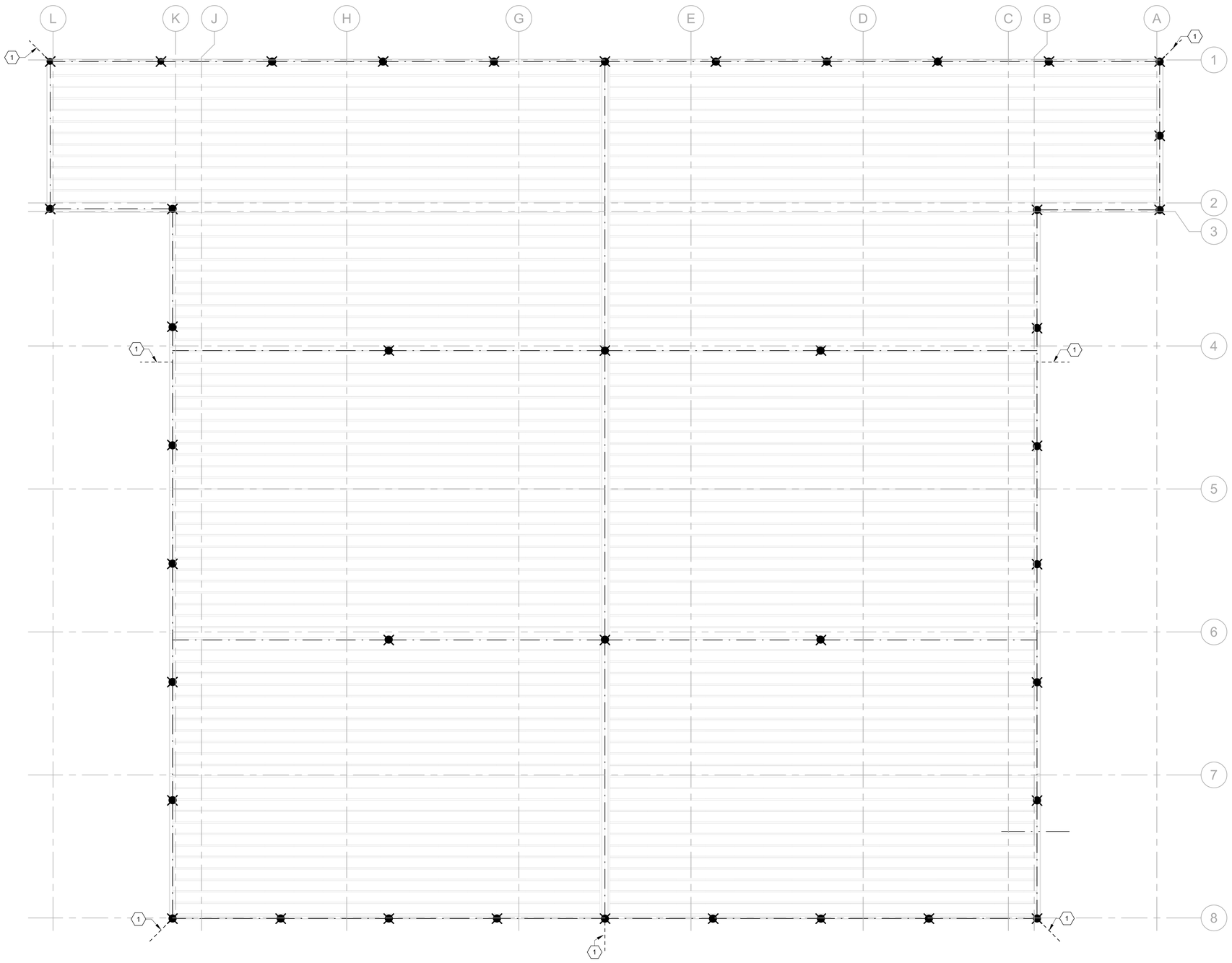
Project Milestone: PERMIT SET

Job No.	2021-546
Drawn by:	Author
Date:	05/13/2022
QC: Checker	PE: Approver

Title:
ELECTRICAL REFLECTED CEILING PLAN

Dwg No.
E1.03

KEYNOTES	
1	INSTALL AN ACCESSIBLE DOWN CONDUCTOR DISCONNECT IN EACH DOWN CONDUCTOR EXCEPT THE ONE NEAREST THE BUILDING ELECTRICAL SERVICE ENTRANCE; USE 4-BOLT TUBULAR SPLICE FITTINGS.



NOTE:
ICE MELT TO BE ADDED IN GUTTERS AND DOWNSPOUTS DETAILS TBD IN CONSTRUCTION DRAWING SET.

1 ROOF PLAN
SCALE: 1/8" = 1'-0"
NORTH

SGM
118 West Sixth Street, Suite 200
Glenwood Springs, CO 81601
970.945.1004 www.sgm-inc.com

NOT FOR CONSTRUCTION

Kuhn Aviation Hangar
Rifle, CO 81650

#	Revision:	Date:	By:
1	Revision 1	Date 1	

Project Milestone: PERMIT SET

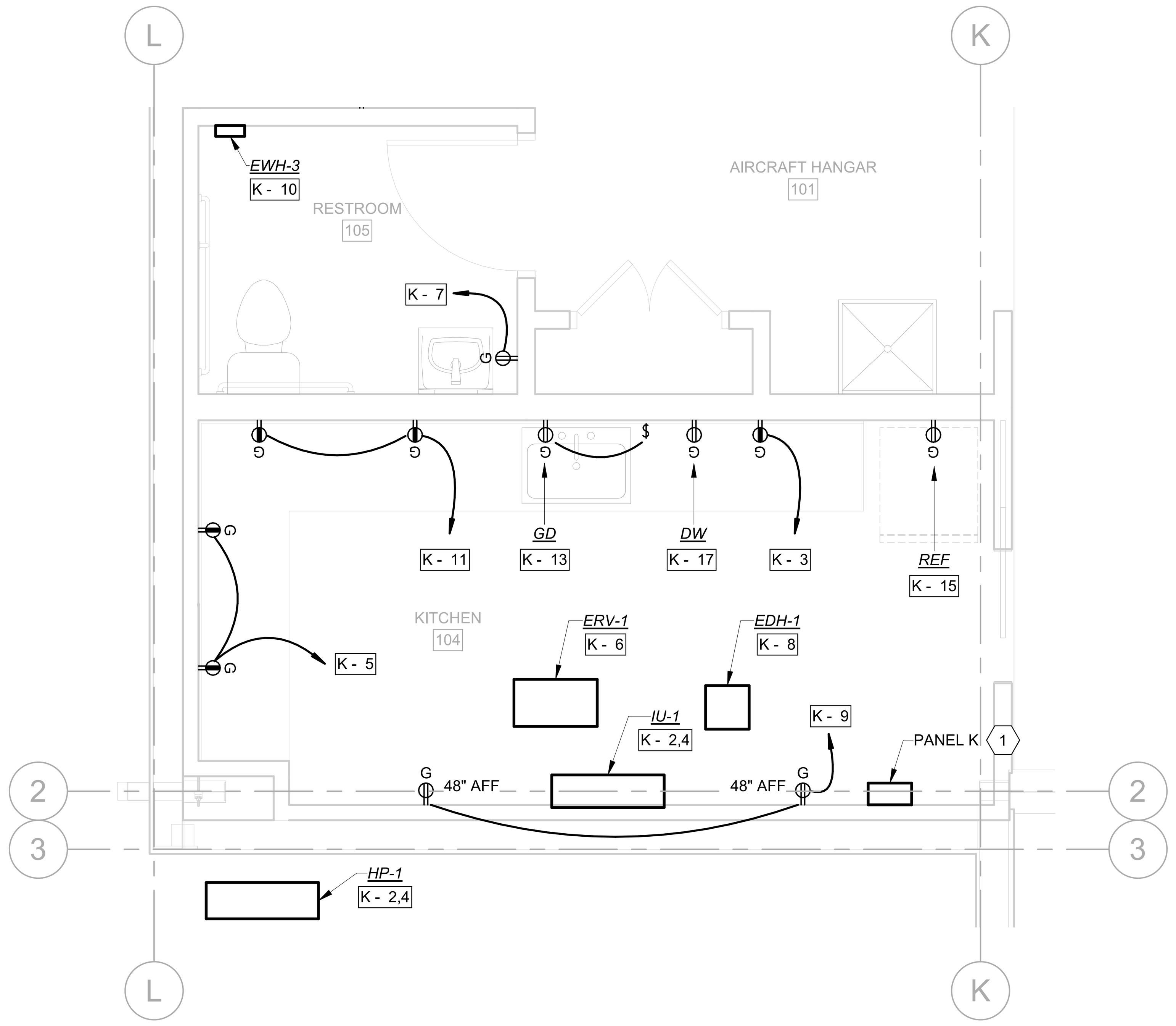
Job No.	2021-546
Drawn by:	Author
Date:	05/13/2022
QC: Checker	PE: Approver

Title:
ELECTRICAL ROOF PLAN

Dwg No.
E1.04

5/13/2022 6:23:49 PM
C:\Users\rhyman\Documents\Kuhn\Autodesk\Hangar_MEP_R23_rhyman5SM.rvt

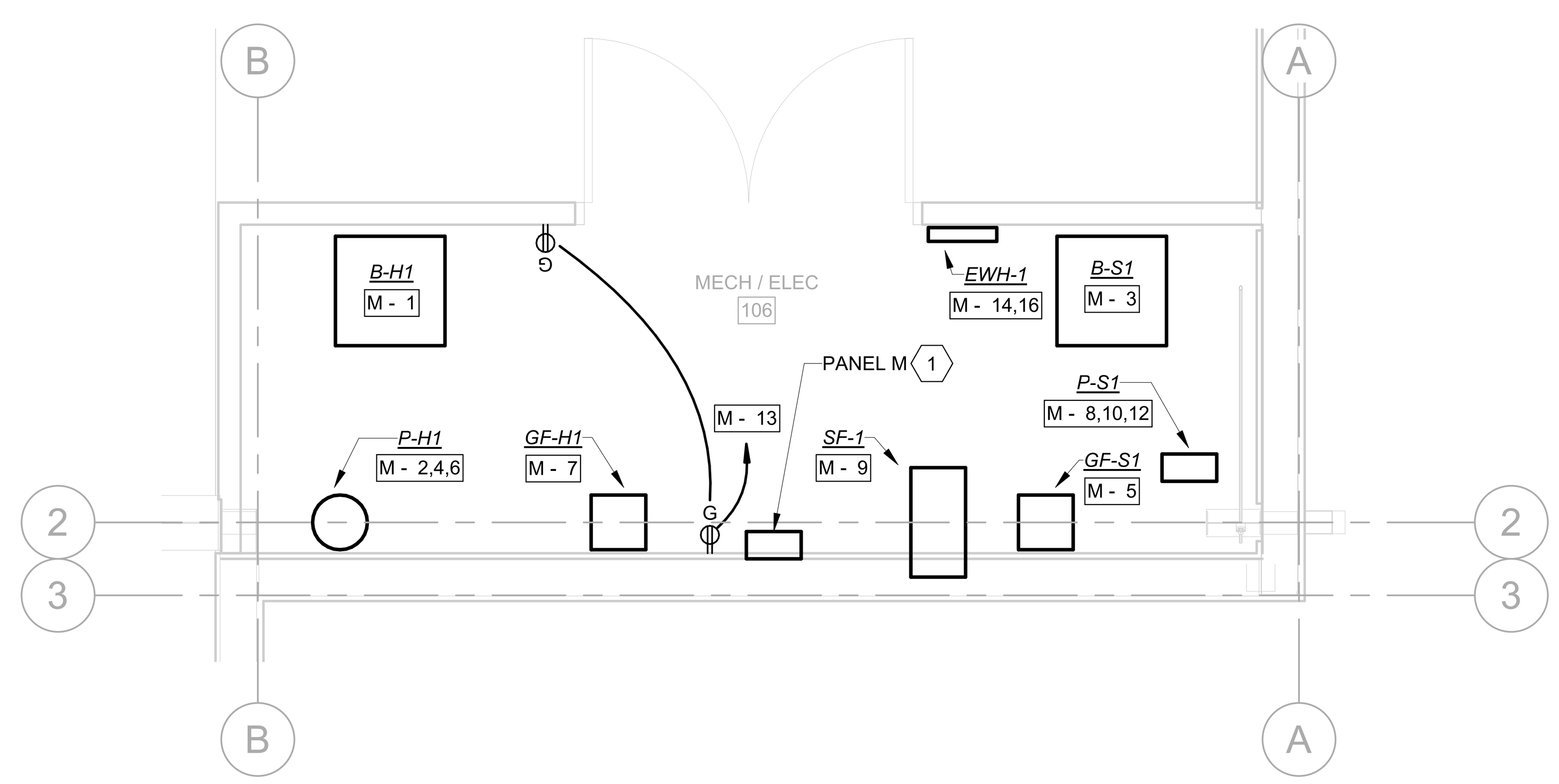
KEYNOTES	
1	ALL ELECTRICAL EQUIPMENT SHALL BE LOCATED IN DEDICATED ROOMS HAVING A 1 HOUR FIRE RATED PARTITION SEPARATING THEM FROM THE HAGAR SPACE (ARCHITECTURAL PLAN TO BE REVISED ACCORDINGLY). ALL CONDUIT PENETRATIONS THROUGH RATED PARTITIONS SHALL MAINTAIN THE RATING USING A PRODUCT UL LISTED FOR THAT PURPOSE.



1 ENLARGED ELECTRICAL PLAN - 104/105

NORTH

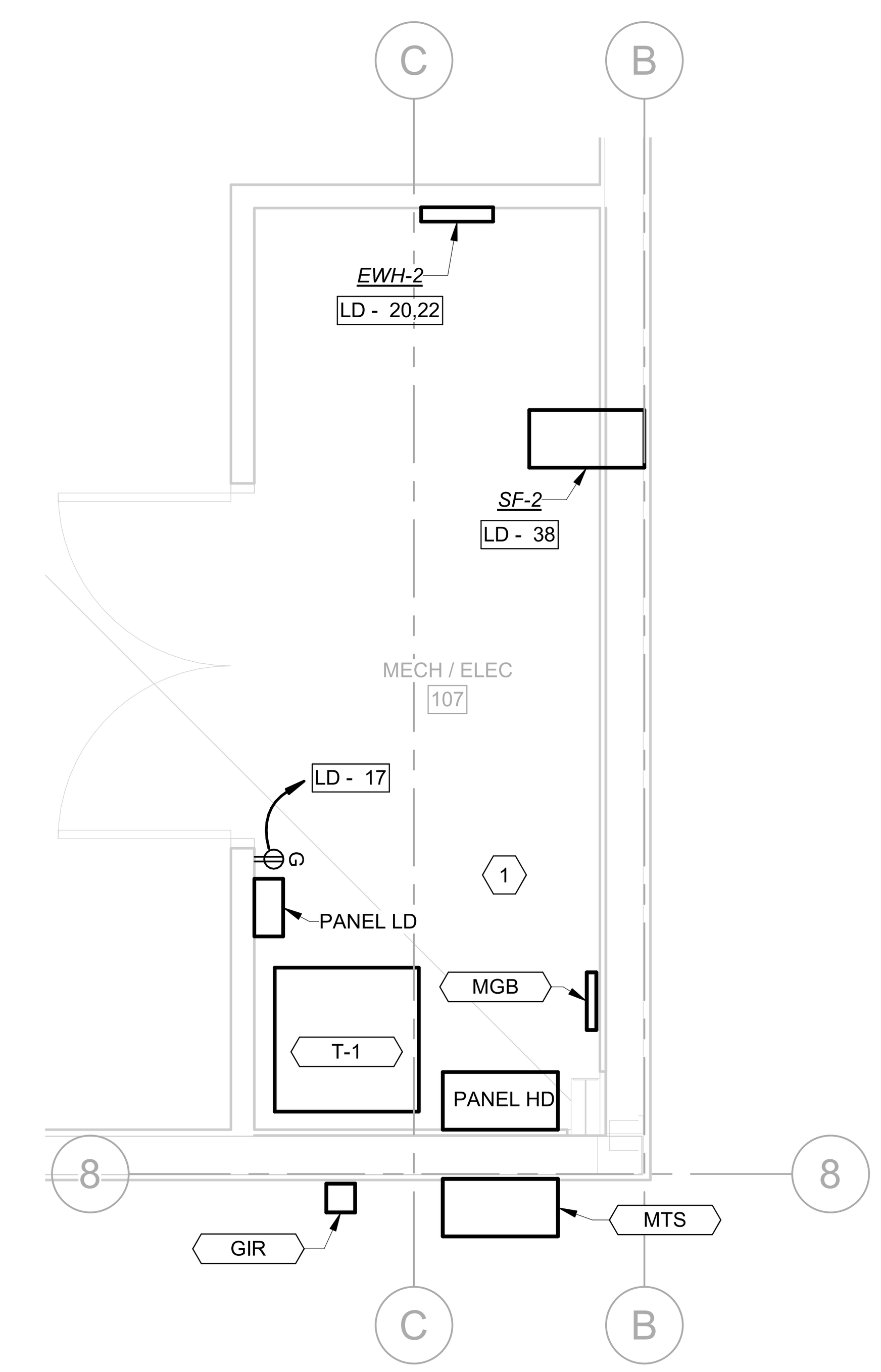
SCALE: 3/8" = 1'-0"



2 ENLARGED ELECTRICAL PLAN - 106

NORTH

SCALE: 3/8" = 1'-0"



3 ENLARGED ELECTRICAL PLAN - 107

NORTH

SCALE: 3/8" = 1'-0"

SGM
118 West Sixth Street, Suite 200
Glenwood Springs, CO 81601
970.945.1004 www.sgm-inc.com

NOT FOR CONSTRUCTION

Kuhn Aviation Hangar
Rifle, CO 81650

#	Revision:	Date:	By:

Project Milestone: PERMIT SET

Job No.	2021-546
Drawn by:	Author
Date:	05/13/2022
QC: Checker	PE: Approver

Title:
ENLARGED ELECTRICAL PLANS

Dwg No.
E4.01

FEEDER LEGEND

TAG	FEEDER
F1/0	(3) # 1/0 AL +# 6 AL EGC IN 1.5" EMT
F3/0	(4) # 3/0 AL + #3 AL EGC IN 2" EMT [UPSIZED DUE TO DISTANCE]
F250	(4) 250 MCM AL + #4 AL EGC IN 2.5" EMT
F500	(4) 500 MCM AL + #2 AL EGC IN 3" EMT
GEC2	# 2 CU (IN 1/2" PVC WHERE EXPOSED)
S500	(4) 500 MCM AL IN 3" SCHED 40 PVC

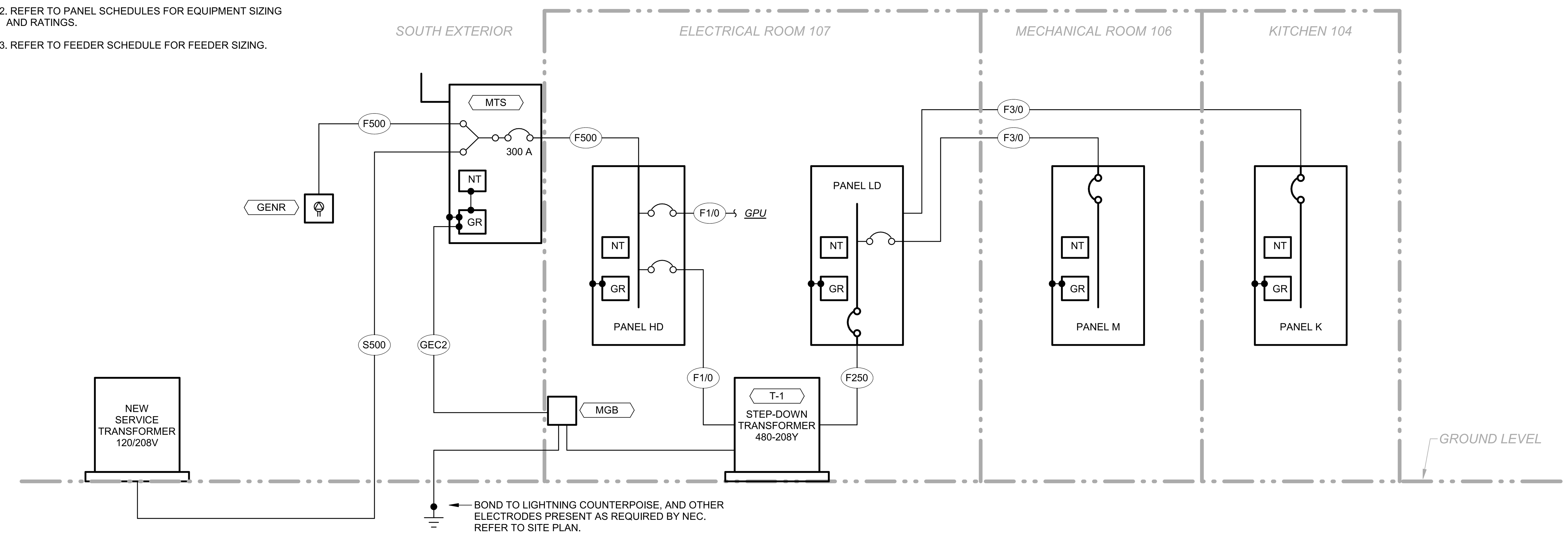
FAULT AND VOLTAGE DROP CALCULATIONS

FAULT POINT	DESCRIP.	SOURCE POINT	SOURCE Isc	PHASE	# PARALLEL SETS	WIRE SIZE	MATERIAL	L-L VOLTAGE	LENGTH *	VOLT. DROP - SEGMENT	VOLT. DROP - CUMULATIVE	AVAILABLE FAULT
1	SERVICE	At the secondary of the utility transformer. (Assumes infinite bus with low %Z transformer, pending utility selection)										36084
2	MTS	1	36084	3	1	500	AL	480	125	0.6%	0.6%	20692
3	PANEL HD	2	20692	3	1	500	AL	480	5	0.0%	0.6%	20288
4	T-1 PRI	3	20288	3	1	1	AL	480	5	0.0%	0.7%	18806
5	T-1 SEC	4	18806	3	0	0	0	480	0	0.0%	0.7%	5108
6	PANEL LD	5	5108	3	1	250	AL	208	5	0.1%	0.7%	5020
7	PANEL M	6	5020	3	1	3/0	AL	208	175	1.6%	2.4%	2745
8	PANEL K	6	5020	3	1	3/0	AL	208	275	2.5%	3.3%	2180
9	GPU	3	20288	3	2	1/0	AL	480	100	0.3%	1.0%	12419

* Length shown is an estimate for calculation purposes. Do not use this length for bidding. If field conditions require feeder to be more than 20% different from this length, notify engineer for direction before proceeding.

SINGLE LINE DIAGRAM GENERAL NOTES:

1. THIS DIAGRAM IS SCHEMATIC, AND IS NOT INTENDED TO SPECIFY CONDUIT ROUTING OR FEED SIDE OF PANELS. THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE MOST EFFICIENT ROUTING OF FEEDERS AND ORDERING EQUIPMENT ACCORDINGLY.
2. REFER TO PANEL SCHEDULES FOR EQUIPMENT SIZING AND RATINGS.
3. REFER TO FEEDER SCHEDULE FOR FEEDER SIZING.



1 SINGLE LINE DIAGRAM

NO SCALE

SGM
118 West Sixth Street, Suite 200
Glenwood Springs, CO 81601
970.945.1004 www.sgm-inc.com

NOT FOR CONSTRUCTION

Kuhn Aviation Hangar
Rifle, CO 81650

#	Revision:	Date:	By:

Project Milestone: PERMIT SET

Job No. 2021-546
Drawn by: Author
Date: 05/13/2022
QC: Checker PE: Approver

Title: ELECTRICAL DIAGRAMS AND DETAILS

Dwg No. E5.01

LUMINAIRE SCHEDULE

GENERAL REMARKS:
1. Interior fixtures shall be 3500K, and 80 CRI minimum.
2. Exterior fixtures shall be 3000K, and 70 CRI minimum.
3. Substitution requests must be acompanied by ies files.

TAG	DESCRIPTION	ACCESSORIES	MOUNTING	MANUFACTURER	MODEL#	VOLTS	WATTS	LAMP
E	EXIT SIGN	BATTERY PACK	WALL, 8' AFF	HE WILLIAMS	EXIT-R-EM-WHT-D	277	3 VA	LED
EL	EXIT SIGN WITH LIGHTS	BATTERY PACK	WALL, 8' AFF	HE WILLIAMS	EXIT/EM/LED-R-WHT-D	120	3 VA	LED
H	HIGH BAY, 65,000 LUMEN, 4000K	CLEAR LENS, 3% UPLIGHT REFLECTOR, CABLE KIT	SUSPENDED, 29' AFF	HE WILLIAMS	GP6-L650-840W-CL-UP-GS/Y26/10-DIM-UNV	277	520 VA	LED
S1	4' STRIPLIGHT WITH DIFFUSING LENS	SURFACE HANGER, INTEGRAL MOTION SENSOR	SURFACE, GYP	HE WILLIAMS	76R-4-L52/840-SMH-76R-DRV-UNV	120	36 VA	LED
S2	4' STRIPLIGHT WITH DIFFUSING LENS	SURFACE HANGER, INTEGRAL MOTION SENSOR	SURFACE, GYP	HE WILLIAMS	76R-4-L52/840-SMH-76R-LV-OSFHU-ITW-120-347 -DRV-UNV	120	36 VA	LED
SE	4' STRIPLIGHT WITH DIFFUSING LENS, 7200 LUMEN	SURFACE HANGER, BATTERY PACK	WALL, 12' AFF	HE WILLIAMS	76R-4-L72/840-SMH-76R-EM/10W-DRV-UNV	277	50 VA	LED
W1	WALLPACK, FULL CUTOFF, 3000 LUMEN, 3K CCT	DIFFUSING LENS, PHOTOCELL	WALL, 15' AFF	HE WILLIAMS	VWPH-L30/730-T3-FINISH-SDGL-PC-277	277	36 VA	LED
W1E	WALLPACK, FULL CUTOFF, 3000 LUMEN, 3K CCT	DIFFUSING LENS, PHOTOCELL, COLD WEATHER BATTERY PACK	WALL, 15' AFF	HE WILLIAMS	VWPH-L30/730-T3-FINISH-SDGL-PC-277-EM/10WC	277	36 VA	LED
W2	WALLPACK, FULL CUTOFF, 6000 LUMEN, 3K CCT	DIFFUSING LENS, PHOTOCELL	WALL, 30' AFF	HE WILLIAMS	VWPH-L60/730-TFT-FINISH-SDGL-PC-277	277	70 VA	LED

ELECTRICAL EQUIPMENT SCHEDULE

REMARKS:
1. Include heavy duty, weatherproof while-in-use cover. A cord/plug style inlet integral to the MTS is acceptable if weatherproof while-in-use.
2. 22,000 AIC
3. Details TBD.

TYPE	QUANT.	DESCRIPTION	AMPACITY	VOLTS	PHASE	ENCLOSURE	MOUNTING	REMARKS
AGR	6	AIRCRAFT GROUNDING RECEPTACLE	0 A	0 V	0	N/A	FLUSH WITH SLAB	3
GIR	1	GENERATOR INLET RECEPTACLE	300 A	480 V	3	NEMA 3R	SURFACE	1
MGB	1	MASTER GROUND BAR	0 A	0 V	0	N/A	WALL	3
MTS	1	MANUAL TRANSFER SWITCH, SERVICE ENTRANCE RATED	300 A	480 V	3	NEMA 3R	SURFACE	2
T-1	1	STEP DOWN TRANSFORMER, 75 kVA, 480-208Y	0 A	480 V	3	NEMA 1	FLOOR	

ELECTRICAL CONNECTION SCHEDULE

REMARKS:
1. For equipment specification and detail, see drawing set indicated in "refer to" column.
2. Supply from outdoor unit per manufacturer instructions.

TAG	DESCRIPTION	REFER TO	CB SIZE	CONDUCTORS / CONDUIT	DISCONNECT	VOLTS	PHASE	VA	REMARKS
B-H1	GAS FIRED BOILER, HEATING	MECHANICAL DRAWINGS	20 A	# 12 CU + # 12 CU EGC IN 0.5" EMT	PROVIDE SWITCH	120 V	1	1440 VA	1
B-S1	GAS FIRED BOILER, SNOWMELT	MECHANICAL DRAWINGS	20 A	# 12 CU + # 12 CU EGC IN 0.5" EMT	PROVIDE SWITCH	120 V	1	1440 VA	1
DW	DISHWASHER	OWNER'S EQUIPMENT SUPPLIER	20 A	# 12 CU + # 12 CU EGC IN 0.5" EMT	PROVIDE GFCI RECEPTACLE	120 V	1	1000 VA	1
EDH-1	ELECTRIC DUCT HEATER	MECHANICAL DRAWINGS	20 A	# 12 CU + # 12 CU EGC IN 0.5" EMT	INTEGRAL	120 V	1	1000 VA	1
EF-1	EXHAUST FAN (HANGAR), 1/2 HP	MECHANICAL DRAWINGS	15 A	# 12 CU + # 12 CU EGC IN 0.5" EMT	INTEGRAL	120 V	1	768 VA	1
EF-2	EXHAUST FAN (HANGAR), 1/2 HP	MECHANICAL DRAWINGS	15 A	# 12 CU + # 12 CU EGC IN 0.5" EMT	INTEGRAL	120 V	1	768 VA	1
EF-3	EXHAUST FAN (HANGAR), 1/2 HP	MECHANICAL DRAWINGS	15 A	# 12 CU + # 12 CU EGC IN 0.5" EMT	INTEGRAL	120 V	1	768 VA	1
EF-4	EXHAUST FAN (HANGAR), 1/2 HP	MECHANICAL DRAWINGS	15 A	# 12 CU + # 12 CU EGC IN 0.5" EMT	INTEGRAL	120 V	1	768 VA	1
EF-5	EXHAUST FAN (HANGAR), 1/2 HP	MECHANICAL DRAWINGS	15 A	# 12 CU + # 12 CU EGC IN 0.5" EMT	INTEGRAL	120 V	1	768 VA	1
ERV-1	ENERGY RECOVERY VENTILATOR	MECHANICAL DRAWINGS	15 A	# 12 CU + # 12 CU EGC IN 0.5" EMT	INTEGRAL	120 V	1	1200 VA	1
EWH-1	ELECTRIC WALL HEATER	MECHANICAL DRAWINGS	20 A	# 12 CU + # 12 CU EGC IN 0.5" EMT	INTEGRAL	208 V	1	2309 VA	1
EWH-2	ELECTRIC WALL HEATER	MECHANICAL DRAWINGS	20 A	# 12 CU + # 12 CU EGC IN 0.5" EMT	INTEGRAL	208 V	1	2309 VA	1
EWH-3	ELECTRIC WALL HEATER	MECHANICAL DRAWINGS	20 A	# 12 CU + # 12 CU EGC IN 0.5" EMT	INTEGRAL	120 V	1	750 VA	1
GD	DISPOSAL	OWNER'S EQUIPMENT SUPPLIER	15 A	# 12 CU + # 12 CU EGC IN 0.5" EMT	PROVIDE GFCI RECEPTACLE	120 V	1	180 VA	1
GF-H1	GLYCOL FEED, HEATING	MECHANICAL DRAWINGS	15 A	# 12 CU + # 12 CU EGC IN 0.5" EMT	PROVIDE GFCI RECEPTACLE	120 V	1	100 VA	1
GF-S1	GLYCOL FEED, SNOWMELT	MECHANICAL DRAWINGS	15 A	# 12 CU + # 12 CU EGC IN 0.5" EMT	PROVIDE GFCI RECEPTACLE	120 V	1	100 VA	1
GPU	GROUND POWER UNIT	OWNER'S EQUIPMENT SUPPLIER	125 A	REFER TO SINGLE LINE DIAGRAM	TBD	480 V	1	90000 VA	1
HDO	HANGAR DOOR OPERATOR	OWNER'S EQUIPMENT SUPPLIER	20 A	# 12 CU + # 12 CU EGC IN 0.5" EMT	TBD	208 V	1	1760 VA	1
HIH-1	HIGH INTENSITY HEATER (AIRCRAFT DEICING)	MECHANICAL DRAWINGS	15 A	# 12 CU + # 12 CU EGC IN 0.5" EMT	INTEGRAL	120 V	1	17 VA	1
HIH-2	HIGH INTENSITY HEATER (AIRCRAFT DEICING)	MECHANICAL DRAWINGS	15 A	# 12 CU + # 12 CU EGC IN 0.5" EMT	INTEGRAL	120 V	1	17 VA	1
HIH-3	HIGH INTENSITY HEATER (AIRCRAFT DEICING)	MECHANICAL DRAWINGS	15 A	# 12 CU + # 12 CU EGC IN 0.5" EMT	INTEGRAL	120 V	1	17 VA	1
HIH-4	HIGH INTENSITY HEATER (AIRCRAFT DEICING)	MECHANICAL DRAWINGS	15 A	# 12 CU + # 12 CU EGC IN 0.5" EMT	INTEGRAL	120 V	1	17 VA	1
HIH-5	HIGH INTENSITY HEATER (AIRCRAFT DEICING)	MECHANICAL DRAWINGS	15 A	# 12 CU + # 12 CU EGC IN 0.5" EMT	INTEGRAL	120 V	1	17 VA	1
HIH-6	HIGH INTENSITY HEATER (AIRCRAFT DEICING)	MECHANICAL DRAWINGS	15 A	# 12 CU + # 12 CU EGC IN 0.5" EMT	INTEGRAL	120 V	1	17 VA	1
HIH-7	HIGH INTENSITY HEATER (AIRCRAFT DEICING)	MECHANICAL DRAWINGS	15 A	# 12 CU + # 12 CU EGC IN 0.5" EMT	INTEGRAL	120 V	1	17 VA	1
HIH-8	HIGH INTENSITY HEATER (AIRCRAFT DEICING)	MECHANICAL DRAWINGS	15 A	# 12 CU + # 12 CU EGC IN 0.5" EMT	INTEGRAL	120 V	1	17 VA	1
HIH-9	HIGH INTENSITY HEATER (AIRCRAFT DEICING)	MECHANICAL DRAWINGS	15 A	# 12 CU + # 12 CU EGC IN 0.5" EMT	INTEGRAL	120 V	1	17 VA	1
HIH-10	HIGH INTENSITY HEATER (AIRCRAFT DEICING)	MECHANICAL DRAWINGS	15 A	# 12 CU + # 12 CU EGC IN 0.5" EMT	INTEGRAL	120 V	1	17 VA	1
HIH-11	HIGH INTENSITY HEATER (AIRCRAFT DEICING)	MECHANICAL DRAWINGS	15 A	# 12 CU + # 12 CU EGC IN 0.5" EMT	INTEGRAL	120 V	1	17 VA	1
HIH-12	HIGH INTENSITY HEATER (AIRCRAFT DEICING)	MECHANICAL DRAWINGS	15 A	# 12 CU + # 12 CU EGC IN 0.5" EMT	INTEGRAL	120 V	1	17 VA	1
HP-1	SPLIT SYSTEM HEAT PUMP	MECHANICAL DRAWINGS	20 A	# 12 CU + # 12 CU EGC IN 0.5" EMT	INTEGRAL	208 V	1	2704 VA	1
HVLS-1	HIGH VOLUME LOW SPEED FAN. 1HP	MECHANICAL DRAWINGS	15 A	# 12 CU + # 12 CU EGC IN 0.5" EMT	PROVIDE LOCKABLE SOURCE BREAKER	480 V	3	1746 VA	1
IU-1	SPLIT SYSTEM INDOOR UNIT	MECHANICAL DRAWINGS	20 A	# 12 CU + # 12 CU EGC IN 0.5" EMT	INTEGRAL	208 V	1	0 VA	1, 2
MAU-1	MAKE UP AIR UNIT	MECHANICAL DRAWINGS	15 A	# 12 CU + # 12 CU EGC IN 0.5" EMT	INTEGRAL	208 V	3	3206 VA	1
OD	OVERHEAD DOOR	OWNER'S EQUIPMENT SUPPLIER	20 A	# 12 CU + # 12 CU EGC IN 0.5" EMT	PROVIDE LOCKABLE SOURCE BREAKER	120 V	1	1176 VA	1
P-H1	PUMP, HEATING, 3 HP	MECHANICAL DRAWINGS	20 A	# 12 CU + # 12 CU EGC IN 0.5" EMT	PROVIDE LOCKABLE SOURCE BREAKER	208 V	3	3819 VA	1
P-S1	PUMP, SNOWMELT, 2 HP	MECHANICAL DRAWINGS	15 A	# 12 CU + # 12 CU EGC IN 0.5" EMT	PROVIDE LOCKABLE SOURCE BREAKER	208 V	3	2702 VA	1
REF	REFRIGERATOR	OWNER'S EQUIPMENT SUPPLIER	20 A	# 12 CU + # 12 CU EGC IN 0.5" EMT	PROVIDE GFCI RECEPTACLE	120 V	1	1200 VA	1
SF-1	SUPPLY FAN, EQUIP ROOM PRESSURIZATION	MECHANICAL DRAWINGS	15 A	# 12 CU + # 12 CU EGC IN 0.5" EMT	INTEGRAL	120 V	1	50 VA	1
SF-2	SUPPLY FAN, EQUIP ROOM PRESSURIZATION	MECHANICAL DRAWINGS	15 A	# 12 CU + # 12 CU EGC IN 0.5" EMT	INTEGRAL	120 V	1	50 VA	1
TC	TUG CHARGER	OWNER'S EQUIPMENT SUPPLIER	30 A	# 10 CU + # 10 CU EGC IN 0.5" EMT	PROVIDE RECEPTACLE, NEMA TYPE TBD	480 V	1	11520 VA	1

SGM
118 West Sixth Street, Suite 200
Glenwood Springs, CO 81601
970.945.1004 www.sgm-inc.com

NOT FOR CONSTRUCTION

Kuhn Aviation Hangar
Rifle, CO 81650

By:
Date:
Revision:
#
Project Milestone: PERMIT SET

Job No. 2021-546
Drawn by: Author
Date: 05/13/2022
QC: Checker PE: Approver

Title: ELECTRICAL EQUIPMENT SCHEDULES

Dwg No. E6.01

5/13/2022 6:23:49 PM

C:\Users\ahaymes\Documents\Kuhn\Aviation\Hangar_MEP_R23_ahaymes5GH.rvt

PANEL SCHEDULE: M

Enclosure: NEMA 1 | **Volts:** 120/208 Wye | **A.I.C. Rating:** 10,000
Mounting: SURFACE | **Phases:** 3 | **Mains Type:** MCB
Notes: | **Wires:** 4 | **Mains Rating:** 100 A

CKT	Circuit Description	Trip	Pole	A		B		C		Pole	Trip	Circuit Description	CKT
1	BOILER B-H1	20 A	1	1440	1273					3	20 A	HEATING PUMP P-H1 [LCK]	2
3	BOILER B-S1	20 A	1			1440	1273			--	--	--	4
5	SNOWMELT GLYCOL GF-S1	20 A	1					100	1273	--	--	--	6
7	HEAT GLYCOL GF-H1	20 A	1	100	901					3	20 A	SNOWMELT PUMP P-S1 [LCK]	8
9	FAN SF-2	20 A	1			50	901			--	--	--	10
11	LGHT- MECH ROOM	20 A	1					75	901	--	--	--	12
13	REC- MECH ROOM	20 A	1	360	1155					2	20 A	HEATER EWH-1	14
15	Spare	20 A	1			0	1155			--	--	--	16
17	Spare	20 A	1					0					18
19	Spare	20 A	1	0									20
21	Spare	20 A	1			0							22
23	Spare	20 A	1					0					24
25	Spare	20 A	1	0									26
27	Spare	20 A	1			0							28
29	Spare	20 A	1					0					30
31													32
33													34
35													36
37													38
39													40
41													42
	Total Load:			5228 VA		4818 VA		2292 VA					
	Total Amps:			47 A		43 A		19 A					

LEGEND: [LCK] = LOCKABLE [GFI] = GFCI BREAKER [AFI] = AFCI BREAKER [ST] = SHUNT TRIP

Load Classification	Connected Load	Demand Factor	Estimated...	Panel Totals	
Motor	6521 VA	100.00%	6521 VA		
Other	3 VA	100.00%	3 VA	**Total Conn. Load:**	12338 VA
HVAC	3130 VA	100.00%	3130 VA	**Total Est. Demand:**	12919 VA
Receptacle	360 VA	100.00%	360 VA	**Total Conn.:**	34 A
Lighting	72 VA	125.00%	90 VA	**Total Est. Demand:**	36 A
Electric Heating	2309 VA	125.00%	2886 VA		

PANEL SCHEDULE: K

Enclosure: NEMA 1 | **Volts:** 120/208 Wye | **A.I.C. Rating:** 10,000
Mounting: SURFACE | **Phases:** 3 | **Mains Type:** MCB
Notes: | **Wires:** 4 | **Mains Rating:** 100 A

CKT	Circuit Description	Trip	Pole	A		B		C		Pole	Trip	Circuit Description	CKT
1	LGT- KITCHEN, RR	20 A	1	111	1352					2	20 A	HEAT PUMP, HP-1. IU-1	2
3	REC- COUNTER	20 A	1			360	1352			--	--	--	4
5	REC- COUNTER	20 A	1					720	1200	1	20 A	VENTILATOR, ERV-1	6
7	REC- RR	20 A	1	180	1000					1	20 A	DUCT HEATER, EDH-1	8
9	REC - WALL	20 A	1			360	750			1	20 A	RESTROOM HEATER, EWH-3	10
11	REC- COUNTER	20 A	1					720					12
13	DISPOSAL	20 A	1	180									14
15	REFRIGERATOR	20 A	1			1200							16
17	DISHWASHER	20 A	1					1000					18
19	Spare	20 A	1	0									20
21	Spare	20 A	1			0							22
23	Spare	20 A	1					0					24
25	Spare	20 A	1	0									26
27	Spare	20 A	1			0							28
29	Spare	20 A	1					0					30
31	Spare	20 A	1	0									32
33													34
35													36
37													38
39													40
41													42
	Total Load:			2740 VA		4022 VA		3640 VA					
	Total Amps:			23 A		35 A		31 A					

LEGEND: [LCK] = LOCKABLE [GFI] = GFCI BREAKER [AFI] = AFCI BREAKER [ST] = SHUNT TRIP

Load Classification	Connected Load	Demand Factor	Estimated...	Panel Totals	
Other	3 VA	100.00%	3 VA		
HVAC	3904 VA	100.00%	3904 VA	**Total Conn. Load:**	10401 VA
Receptacle	4720 VA	100.00%	4720 VA	**Total Est. Demand:**	10845 VA
Lighting	108 VA	125.00%	135 VA	**Total Conn.:**	29 A
Electric Heating	1750 VA	125.00%	2188 VA	**Total Est. Demand:**	30 A

PANEL SCHEDULE: HD

Enclosure: NEMA 1 | **Volts:** 480/277 Wye | **A.I.C. Rating:** 22,000
Mounting: SURFACE | **Phases:** 3 | **Mains Type:** MCB
Notes: | **Wires:** 4 | **Mains Rating:** 300 A

CKT	Circuit Description	Trip	Pole	A		B		C		Pole	Trip	Circuit Description	CKT
1	LGT- HANGAR WEST	20 A	1	4160	14688					3	100 A	PANEL LD, VIA T-1	2
3	LGT- HANGAR CENTER	20 A	1			4160	16037			--	--	--	4
5	LGT- HANGAR EAST	20 A	1					4160	11916	--	--	--	6
7	LGT- HANGAR EGRESS	20 A	1	409	45000					2	125 A	GPU	8
9	LGT- EXT EAST	20 A	1			422	45000			--	--	--	10
11	LGT- EXT SOUTH	20 A	1					108	5760	2	30 A	TUG CHARGER	12
13	LGT- EXT WEST	20 A	1	108	5760					--	--	--	14
15	LGT- EXT NORTH	20 A	1			108	582			3	20 A	FAN HVLS-1, [LCK]	16
17	Spare	20 A	1					0	582	--	--	--	18
19	Spare	20 A	1	0	582					--	--	--	20
21	Spare	20 A	1			0							22
23	Spare	20 A	1					0					24
25	Spare	20 A	1	0									26
27	Spare	20 A	1			0							28
29	Spare	20 A	1					0					30
31	Spare	20 A	1	0									32
33	Spare	20 A	1			0							34
35													36
37													38
39													40
41													42
	Total Load:			67329 VA		62924 VA		19750 VA					
	Total Amps:			267 A		251 A		71 A					

LEGEND: [LCK] = LOCKABLE [GFI] = GFCI BREAKER [AFI] = AFCI BREAKER [ST] = SHUNT TRIP

Load Classification	Connected Load	Demand Factor	Estimated...	Panel Totals	
Motor	16803 VA	100.00%	16803 VA		
Other	18 VA	100.00%	18 VA	**Total Conn. Load:**	149826 VA
HVAC	10494 VA	100.00%	10494 VA	**Total Est. Demand:**	155122 VA
Receptacle	10660 VA	96.90%	10330 VA	**Total Conn.:**	180 A
Lighting	13878 VA	125.00%	17348 VA	**Total Est. Demand:**	187 A
Electric Heating	6368 VA	125.00%	7960 VA		
GPU	90000 VA	100.00%	90000 VA		
TUG CHARGER	11520 VA	125.00%	14400 VA		

PANEL SCHEDULE: LD

Enclosure: NEMA 1 | **Volts:** 120/208 Wye | **A.I.C. Rating:** 10,000
Mounting: SURFACE | **Phases:** 3 | **Mains Type:** MCB
Notes: | **Wires:** 4 | **Mains Rating:** 200 A

CKT	Circuit Description	Trip	Pole	A		B		C		Pole	Trip	Circuit Description	CKT
1	DEICING NORTH, HIH-1-5	20 A	1	102	5228					3	100 A	PANEL M	2
3	DEICING SOUTH, HIH-6-12	20 A	1			102	4818			--	--	--	4
5									2292	--	--	--	6
7	REC- HANGAR SW	20 A	1	720	2740					3	100 A	PANEL K	8
9	REC- HANGAR NE	20 A	1			1080	4022			--	--	--	10
11	REC- HANGAR W	20 A	1					1440	3640	--	--	--	12
13	REC- HANGAR NW	20 A	1	1080	1069					3	20 A	MAKE UP AIR, MAU-1	14
15	REC- HANGAR SE	20 A	1			1080	1069			--	--	--	16
17	REC- ELEC ROOM	20 A	1					180	1069	--	--	--	18
19	LGT- ELEC ROOM	20 A	1	75	1155					2	20 A	HEATER EWH-2	20
21	OVERHEAD DOOR, OD [LCK]	20 A	1			1176	1155			--	--	--	22
23	Spare	20 A	1					0	1760	2	20 A	HANGAR DOOR	24
25	Spare	20 A	1	0	1760					--	--	--	26
27	Spare	20 A	1			0	768			1	20 A	FAN EF-1	28
29	Spare	20 A	1					0	768	1	20 A	FAN EF-2	30
31	Spare	20 A	1	0	768					1	20 A	FAN EF-3	32
33	Spare	20 A	1			0	768			1	20 A	FAN EF-4	34
35	Spare	20 A	1					0	768	1	20 A	FAN EF-5	36
37	Spare	20 A	1	0	50					1	20 A	FAN SF-2	38
39	Spare	20 A	1			0							40
41	Spare	20 A	1					0					42
	Total Load:			14688 VA		16037 VA		11916 VA					
	Total Amps:			126 A		137 A		99 A					

LEGEND: [LCK] = LOCKABLE [GFI] = GFCI BREAKER [AFI] = AFCI BREAKER [ST] = SHUNT TRIP

SGM
118 West Sixth Street, Suite 200
Glenwood Springs, CO 81601
970.945.1004 www.sgm-inc.com

NOT FOR CONSTRUCTION

Kuhn Aviation Hangar
Rifle, CO 81650

#	Revision:	Date:	By:

Project Milestone: PERMIT SET

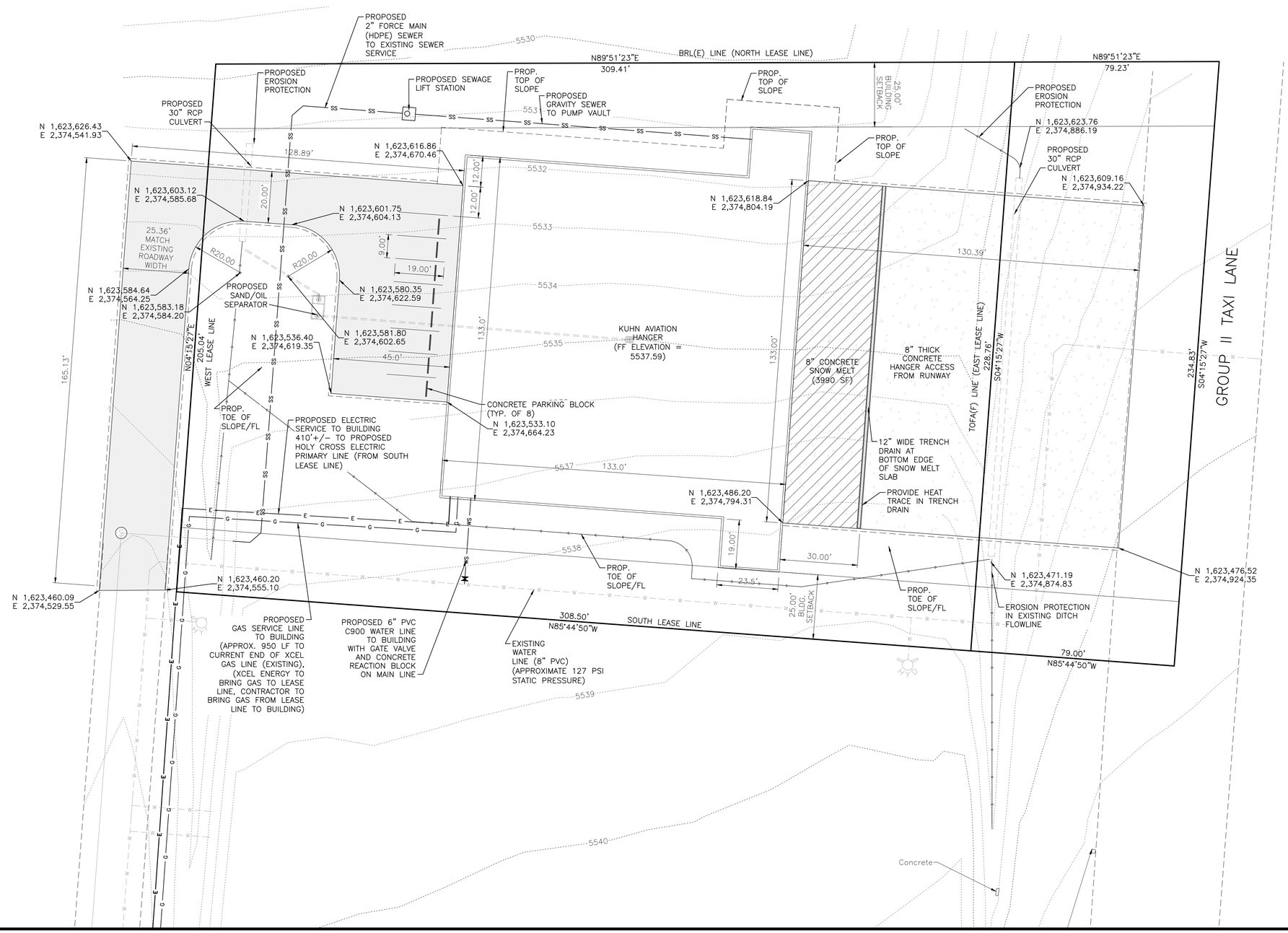
Job No. 2021-546
Drawn by: Author
Date: 05/13/2022
QC: Checker PE: Approver

Title: ELECTRICAL PANEL SCHEDULES

Dwg No. E6.02

5/13/2022 6:23:49 PM

C:\Users\stephyrnes\Documents\Autodesk\Hangar_MEP_R22_stephyrnes5SM.rvt



Graphic Scale

0 10 20 40

In Feet: 1" = 20'

SGM
118 West Sixth Street, Suite 200
Glenwood Springs, CO 81601
970.945.1004
www.sgm-inc.com

COLORADO REGISTERED PROFESSIONAL ENGINEER
Jeffrey S. Simonson
5/12/22

Kuhn Aviation Hanger

Lot A-1, Garfield County Airport

#	Revision	Date	By
1			
2			
3			

Project Milestone: PRELIMINARY NOT FOR CONSTRUCTION

Job No.	2021-546.001
Drawn by:	IT
Print Date:	5/06/2022
QC: XX | PE:	JSS
File:	Site Plan

Title:

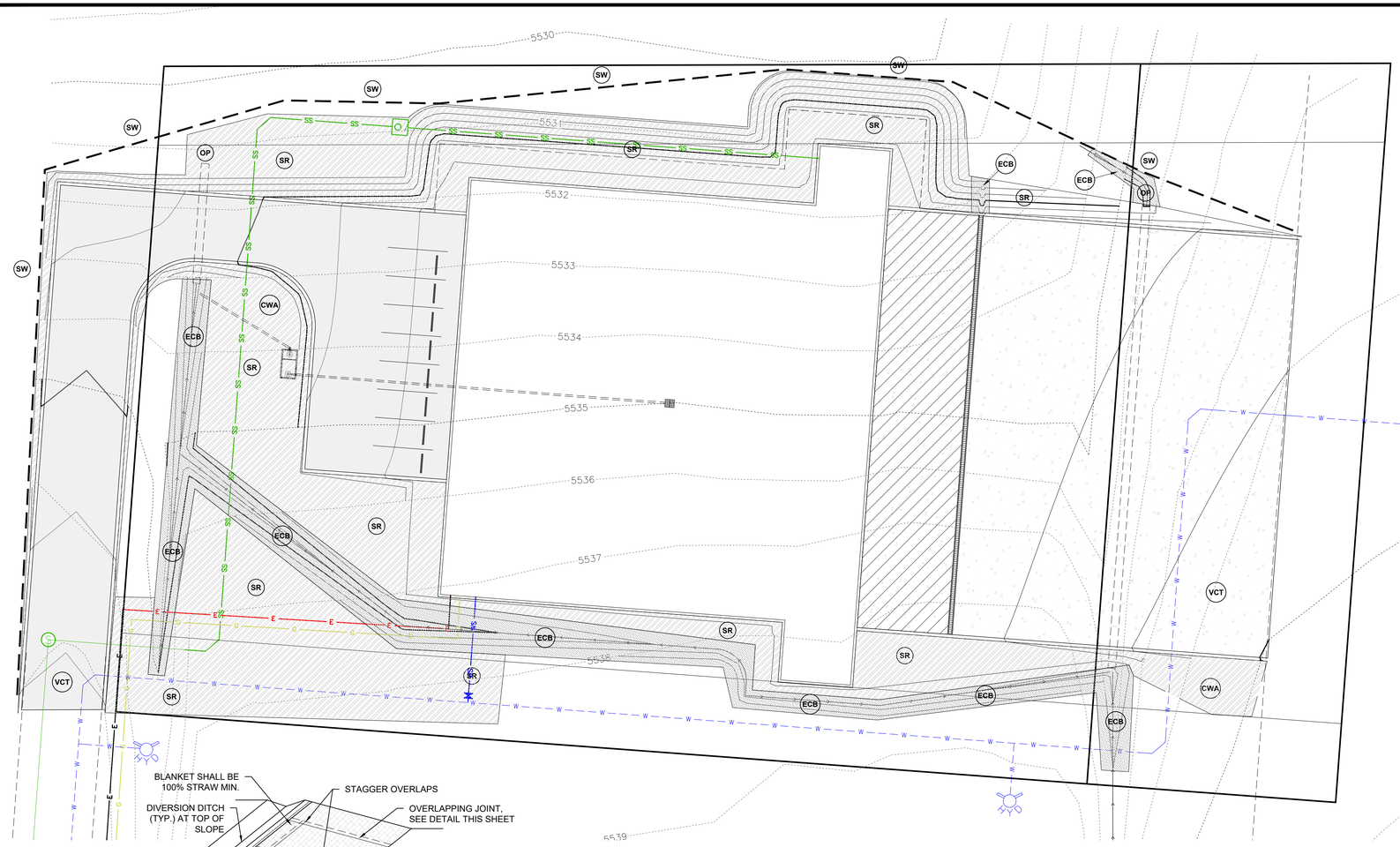
Site Plan

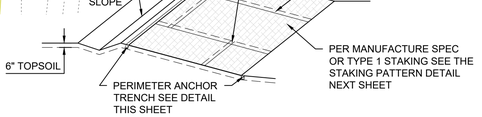
Dwg No.

1

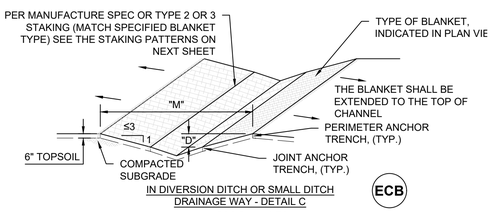
Of: 5

I:\2021\2021-546 - KuhnMeeserHanger\001 - Aviation\Hanger\VI - Dwgs\Civil\CPS - SheetSet\Site Plan.dwg Plotted: 5/12/2022 4:46 PM By: Jeff Simonson

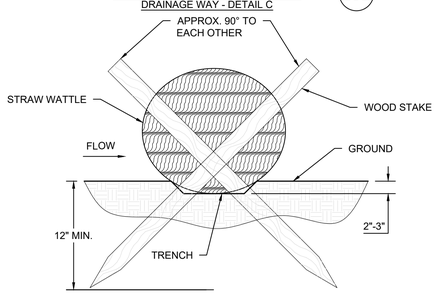




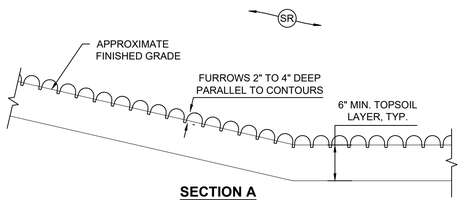
OUTSIDE OF STREAMS AND DRAINAGE CHANNELS - DETAIL B



IN DIVERSION DITCH OR SMALL DITCH DRAINAGE WAY - DETAIL C (ECB)



STRAW WATTLE INSTALLATION DETAIL (SW)
SCALE: 1" = 1'-0"



SECTION A

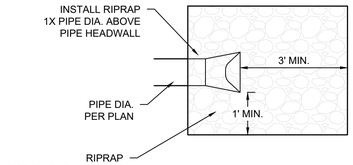
SURFACE ROUGHENING INSTALLATION NOTES

1. SURFACE ROUGHENING SHALL BE PROVIDED ON ALL FINISHED GRADES (SLOPES AND "FLAT" AREAS) WITHIN 2 DAYS OF COMPLETION OF FINISHED GRADE (FOR AREAS NOT RECEIVING TOPSOIL) OR WITHIN 2 DAYS OF TOPSOIL PLACEMENT.
2. AREAS WHERE BUILDING FOUNDATIONS, PAVEMENT, OR SOD IS TO BE PLACED WITHIN 7-DAYS OF FINISHED GRADING DO NOT NEED TO BE SURFACE ROUGHENED.
3. DISTURBED SURFACES SHALL BE ROUGHENED USING RIPPING OR TILLING EQUIPMENT ON THE CONTOUR OR TRACKING UP AND DOWN A SLOPE USING EQUIPMENT TREADS.

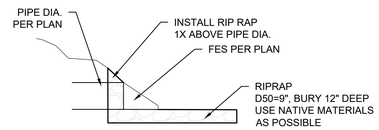
SURFACE ROUGHENING MAINTENANCE NOTES

1. THE SWMP MANAGER SHALL INSPECT THE SURFACE ROUGHENING WEEKLY, DURING AND AFTER ANY STORM EVENT AND MAKE REPAIRS OR CLEAN OUT UPSTREAM SEDIMENT AS NECESSARY.
2. VEHICLES AND EQUIPMENT SHALL GENERALLY BE CONFINED TO ACCESS DRIVES AND SHALL NOT BE DRIVEN OVER AREAS THAT HAVE BEEN SURFACE ROUGHENED.
3. IN NON-TURF GRASS FINISHED AREAS, SEEDING AND MULCHING SHALL TAKE PLACE DIRECTLY OVER SURFACE ROUGHENED AREAS WITHOUT FIRST SMOOTHING OUT THE SURFACE.
4. IN AREAS NOT SEEDED AND MULCHED AFTER SURFACE ROUGHENING, SURFACES SHALL BE RE-ROUGHENED AS NECESSARY TO MAINTAIN GROOVE DEPTH AND SMOOTH OVER ANY RILL EROSION.

SURFACE ROUGHING DETAIL (SR)
SCALE: 1" = 1'-0"



PLAN



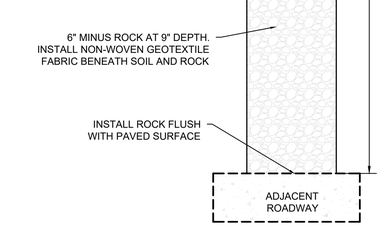
PROFILE

OP

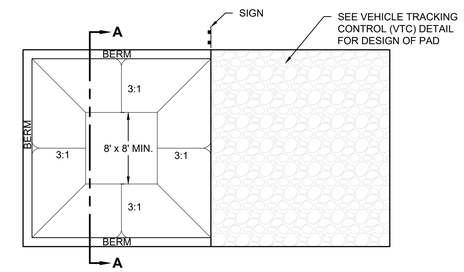
CULVERT INLET AND OUTLET PROTECTION DETAIL
SCALE: 1/2" = 1'-0"

VTC INSTALLATION NOTES:

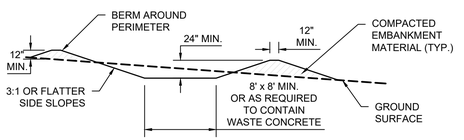
1. INSTALL SEE PLAN VIEW FOR GENERAL LOCATION. CONTRACTOR TO DETERMINE FINAL LOCATION OF CONSTRUCTION SITE ENTRANCE. VTC SHALL BE LOCATED AT ALL ACCESS POINTS TO PUBLIC OR PRIVATE ROADWAY CORRIDORS.
2. VTC SHALL BE INSTALLED PRIOR TO ANY LAND DISTURBING ACTIVITIES.
3. INSPECT VTC DAILY AND MAINTAIN IN EFFECTIVE OPERATING CONDITION. INSPECT ALL BMPS AFTER ANY PRECIPITATION EVENT. AND PERFORM NECESSARY MAINTENANCE.
4. ROCK SHALL BE REPLACED OR REGRADED TO MAINTAIN CONSISTENT DEPTH.
5. SEDIMENT TRACKED ONTO PAVED ROADS SHALL BE REMOVED THROUGHOUT THE DAY AND AT THE END OF EACH WORK DAY BY SHOVELING AND SWEEPING. SEDIMENT SHALL NOT BE DISPOSED OF INTO STORM DRAIN SYSTEM.



VEHICLE TRACKING CONTROL DETAIL (VTC)
SCALE: 1/8" = 1'-0"



PLAN VIEW



SECTION A-A

CONCRETE WASHOUT AREA DETAIL (CWA)
SCALE: 1/8" = 1'-0"

CONCRETE WASHOUT AREA INSTALLATION NOTES

1. SEE PLAN VIEW FOR LOCATIONS OF CONCRETE WASHOUT AREA.
2. THE CONCRETE WASHOUT AREA SHALL BE INSTALLED PRIOR TO ANY CONCRETE PLACEMENT ON SITE.
3. VEHICLE TRACKING CONTROL IS REQUIRED AT THE ACCESS POINT.
4. SIGNS SHALL BE PLACED AT THE CONSTRUCTION ENTRANCE, AT THE WASHOUT AREA, AND ELSEWHERE AS NECESSARY TO CLEARLY INDICATE THE LOCATION OF THE CONCRETE WASHOUT AREA TO OPERATORS OF CONCRETE TRUCKS AND PUMP RIGS.
5. EXCAVATED MATERIAL SHALL BE UTILIZED IN PERIMETER BERM CONSTRUCTION.

CONCRETE WASHOUT AREA MAINTENANCE NOTES

1. THE CONCRETE WASHOUT AREA SHALL BE REPAIRED AND ENLARGED OR CLEANED OUT AS NECESSARY TO MAINTAIN CAPACITY FOR WASTED CONCRETE.
2. AT THE END OF CONSTRUCTION, ALL CONCRETE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF AT AN APPROVED WASTE SITE.
3. WHEN THE CONCRETE WASHOUT AREA IS REMOVED, COVER THE DISTURBED AREA WITH TOPSOIL, DRILL SEED AND CRIMP MULCH OR OTHERWISE STABILIZE IN A MANNER APPROVED BY THE LOCAL JURISDICTION.
4. INSPECT WEEKLY, DURING AND AFTER ANY STORM EVENT.

Graphic Scale
0 10 20 40
In Feet: 1" = 20'

SGM
118 West Sixth Street, Suite 200
Glenwood Springs, CO 81601
970.945.1004
www.sgm-inc.com

COLORADO LICENSED PROFESSIONAL ENGINEER
JEFFREY S. SIMONSON
No. 28152
5/12/22

Kuhn Aviation Hanger
Lot A-1, Garfield County Airport

#	Revision	Date	By
1			
2			
3			

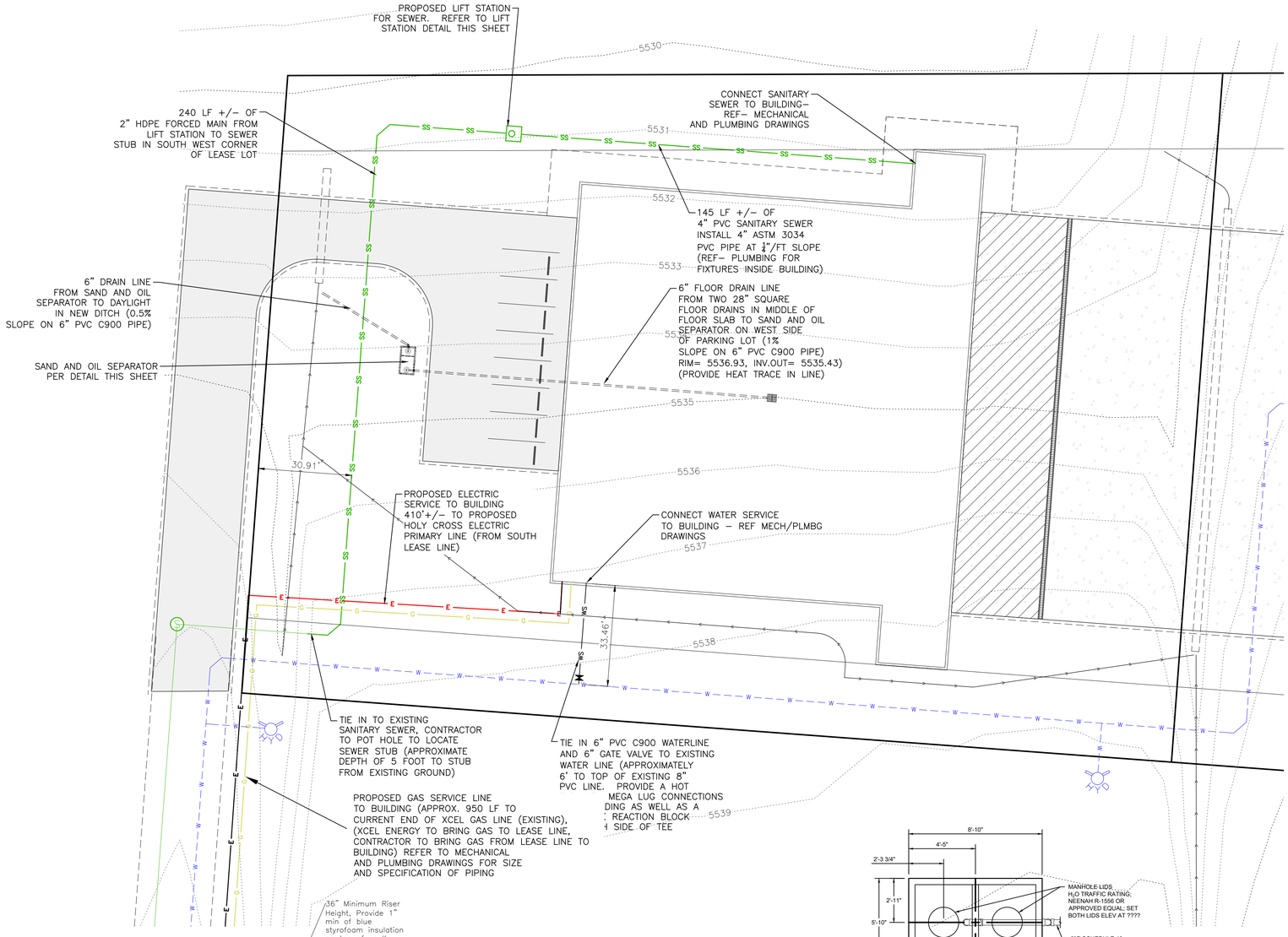
Project Milestone: PRELIMINARY NOT FOR CONSTRUCTION

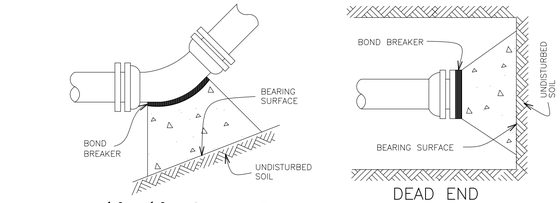
Job No.	2021-546.001
Drawn by:	IT
Print Date:	5/06/2022
QC: JP | PE:	JSS
File:	Erosion Control Plan

Title:

Erosion Control Plan

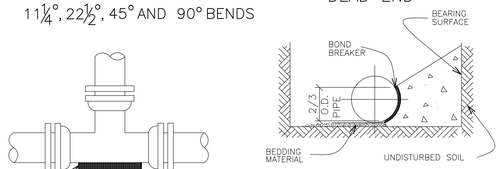
Dwg No.
2
Of : 5





$11\frac{1}{4}°, 22\frac{1}{2}°, 45°$ AND $90°$ BENDS

DEAD END



TYPICAL CROSS SECTION

TEE

MINIMUM BEARING SURFACE AREA
(IN SQUARE FEET)

SIZE OF PIPE	BENDS				TEE OR DEAD END
	11¼°	22½°	45°	90°	
4"	1.00	1.00	1.00	1.50	1.50
6"	1.00	1.25	2.25	3.00	3.00
8"	1.00	2.00	4.00	5.25	5.25
12"	2.25	4.50	8.75	11.25	11.25
16"	3.75	7.50	14.50	27.00	19.00
20"	5.00	10.00	19.50	35.50	25.00
24"	7.00	14.00	27.75	51.00	36.00

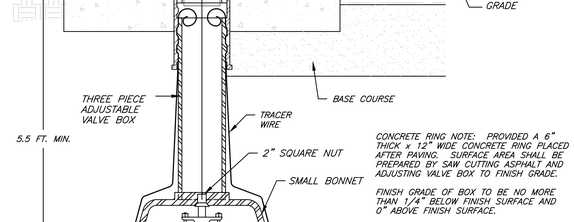
NOTES:

1.) BEARING SURFACES SHOWN IN CHART ARE MINIMUM.

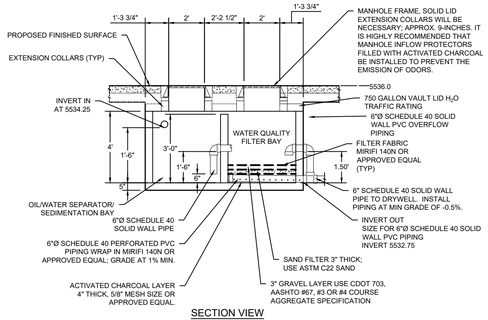
2.) BASED ON 150 PSI INTERNAL PIPE PRESSURE PLUS WATER HAMMER. 4",6",8" AND 12" WATER HAMMER = 110 P.S.I. 16",20"AND 24" WATER HAMMER = 70 P.S.I.

3.) BASED ON 3,000 psf SOIL BEARING CAPACITY.

4.) ALL BENDS, TEE BRANCHES AND DEAD ENDS SHALL BE RESTRAINED AND KICK BLOCKED.



PLAN VIEW



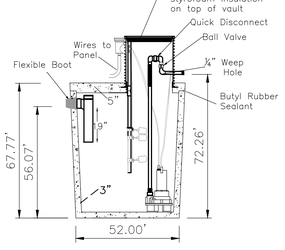
SECTION VIEW

750 GALLON WATER/OIL SEPARATOR DETAIL

SCALE: 1/4" = 1'-0"

NOTES

1. TRAFFIC RATING FOR THE MANHOLE LIDS AND WATER/OIL SEPARATOR VAULT LID TO BE MINIMUM H_2O.
2. MAINTENANCE REQUIREMENTS SHALL BE PER STORMWATER BEST MANAGEMENT PRACTICES OPERATIONS AND MAINTENANCE AGREEMENT.
3. PLACE THE MATERIAL SHOWN IN THE FILTER BAY IN THE FOLLOWING ORDER, BEGINNING FROM THE BOTTOM OF THE VAULT; PERFORATED PIPE WRAPPED IN MIRIFI 140N; CHARCOAL FILTER TO THE TOP OF THE PERFORATED PIPE, APPROXIMATELY 4.5"; MIRIFI 140N; 6" OF ASTM C33 SAND; MIRIFI 140N; 6" AASHTO #67, #3 OR #4 COARSE AGGREGATE; MIRIFI 140N. ALL FILTER MEDIA SHALL COVER THE ENTIRE FILTER BAY AREA, PLUS NECESSARY ANCHOR.



DESIGN NOTES
- Design per performance test per ASTM C1227
- Top surface area 23.4 ft²
- f'c @ 28 days; concrete = 6,000 PSI Min.

Installation:
- Tank to be set on 5" min. sand bed or pea gravel
- Tank to be backfilled uniformly on all sides in lifts less than 24" and mechanically compacted
- Excavated material may be used for backfill, provided large stones are removed
- Excavation should be dewatered and tank filled with water prior to being put in service for installation with water table less than 2' below grade
- Meets C1644-06 for resilient connectors
- Inlet and Outlet identified above pipe
- Delivered complete with internal piping
- Secondary safety screen available with PVC riser
- 4' Maximum bury depth

ALLOWABLE BURY (Based on Water Table)	
WATER TABLE	ALLOWABLE EARTH FILL
0' – 0"	3' – 0"
1' – 0"	4' – 0"
2' – 0"	4' – 0"
3' – 0"	4' – 0"
DRY	4' – 0"

*Service contracts available for maintenance

Pump:
- Long life pump- Orenco PFSW50 Sewage Pump or Equal (10 gpm and 20 ft TDH)
- Complete installation (wiring panel, mounting and start-up procedures)
- Ideal for lifting to city sewer or for basement plumbing
- Complete warranty

500 Gallon Standard:

Digging Specs	Invert		Dimensions			Net Capacity	Net Weight		
				Min			Lid	Tank	Total
7' Long x 7' Wide 56" below inlet	Inlet 56"	Outlet 73"	Length 58"	Width 58"	Height 92"	522 gallons	1,340 lbs	4,100 lbs	5,640 lbs

**Available in all tank sizes

NOTES:

1. ALL VALVES ADJACENT TO FITTING SHALL BE FLANGE x MJ. FITTING SHALL BE FLANGED NEXT TO VALVE. LINE VALVES TO BE MJ x MJ.
2. DESIGN LOCATIONS OF VALVES ARE OUTSIDE OF CONCRETE CURB/GUTTER AND VALLEY PANS. INSTALLED VALVES WHICH CONFLICT WITH CONCRETE AREAS SHALL BE RELOCATED AT THE CONTRACTOR'S EXPENSE.

CONCRETE RING NOTE: PROVIDED A 6" THICK x 12" WIDE CONCRETE RING PLACED AFTER PAVING. SURFACE AREA SHALL BE PREPARED BY SAW CUTTING ASPHALT AND ADJUSTING VALVE BOX TO FINISH GRADE.

FINISH GRADE OF BOX TO BE NO MORE THAN 1/4" BELOW FINISH SURFACE AND 0" ABOVE FINISH SURFACE.

CONCRETE RING TO BE PROVIDED IN ALL AREAS.

INSTALLATION OF OTHER VALVE TYPES:

INSTALL OTHER TYPES OF VALVES IN A SIMILAR MANNER AS SHOWN FOR THE GATE VALVE INSTALLATION.

INSTALLATION OF OTHER VALVE TYPES IS ALLOWED ONLY BY WRITTEN APPROVAL.

TYPICAL GATE VALVE

N.T.S.

TRACER WIRE SHALL BE NO LESS THAN 1 FT. FROM TOP OF VALVE BOX COVER.

SEE DRAWING W-60 FOR DEBRIS CAP DETAIL.

Graphic Scale
0 10 20 40
In Feet: 1" = 20'

SGM
118 West Sixth Street, Suite 200
Glenwood Springs, CO 81601
970.945.1004
www.sgm-inc.com

COLORADO REGISTERED PROFESSIONAL ENGINEER 20132 5/12/22 PRINCIPAL ENGINEER

Kuhn Aviation Hangar
Lot A-1, Garfield County Airport

#	Revision	Date	By
1			
2			
3			

Project Milestone: PRELIMINARY NOT FOR CONSTRUCTION

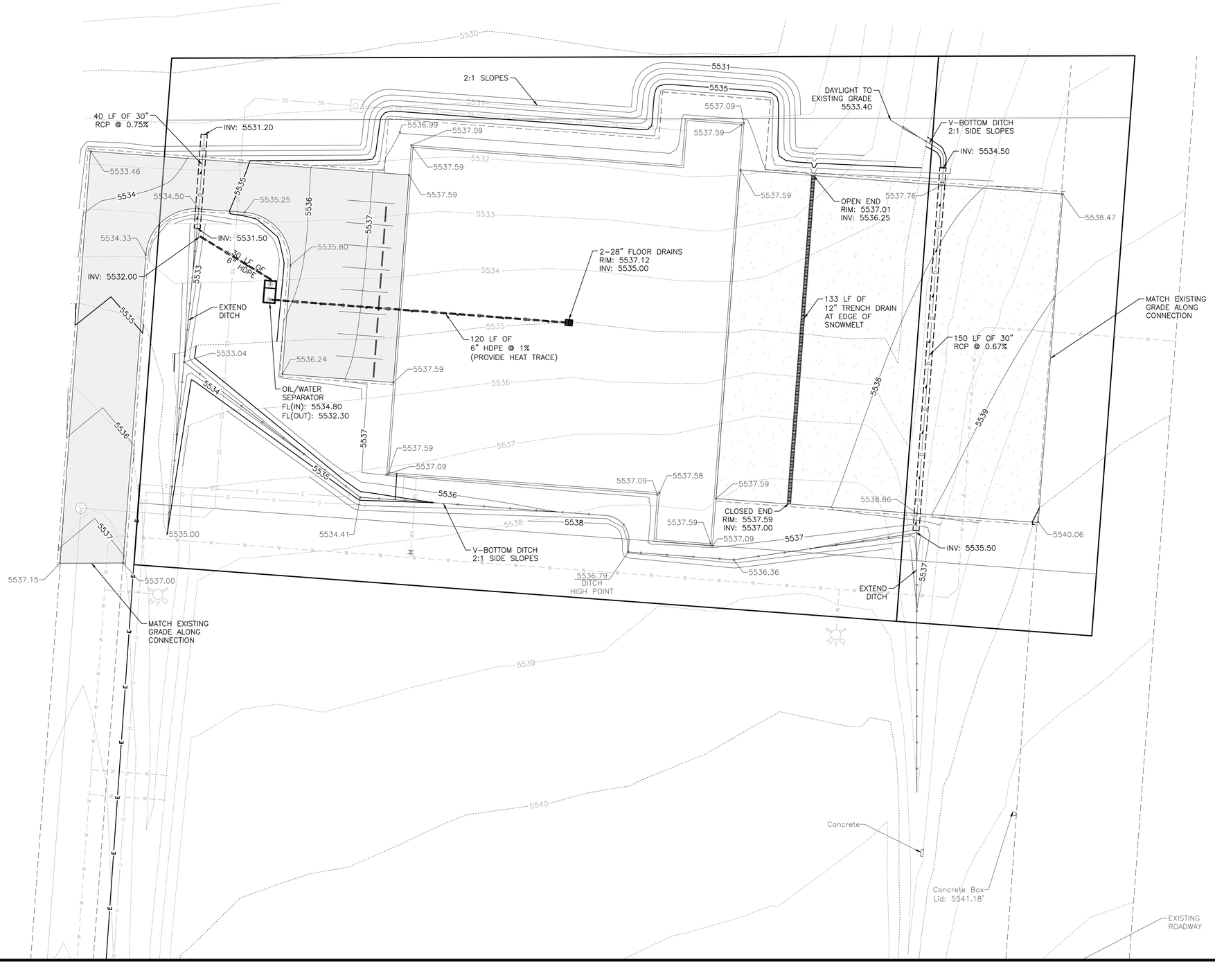
Job No.	2021-546.001
Drawn by:	IT
Print Date:	5/06/2022
QC: XX | PE:	JSS
File:	Utility Plan

Title: Utility Plan

Dwg No. 3

Of : 5

I:\2021\2021-546-KuhnMeekerHanger\001-AviationHanger\Vt-Dwgs\Civil\PS-SheetSet\Utility Plan.dwg Plotted: 5/12/2022 3:43 PM By: Jeff Simonson



Graphic Scale

0 10 20 40

In Feet: 1" = 20'

SGM
118 West Sixth Street, Suite 200
Glenwood Springs, CO 81601
970.945.1004
www.sgm-inc.com

JEFFREY S. SIMONSON 20152 5/12/22 PROFESSIONAL ENGINEER

Kuhn Aviation Hangar

Lot A-1, Garfield County Airport

#	Revision	Date	By
1			
2			
3			

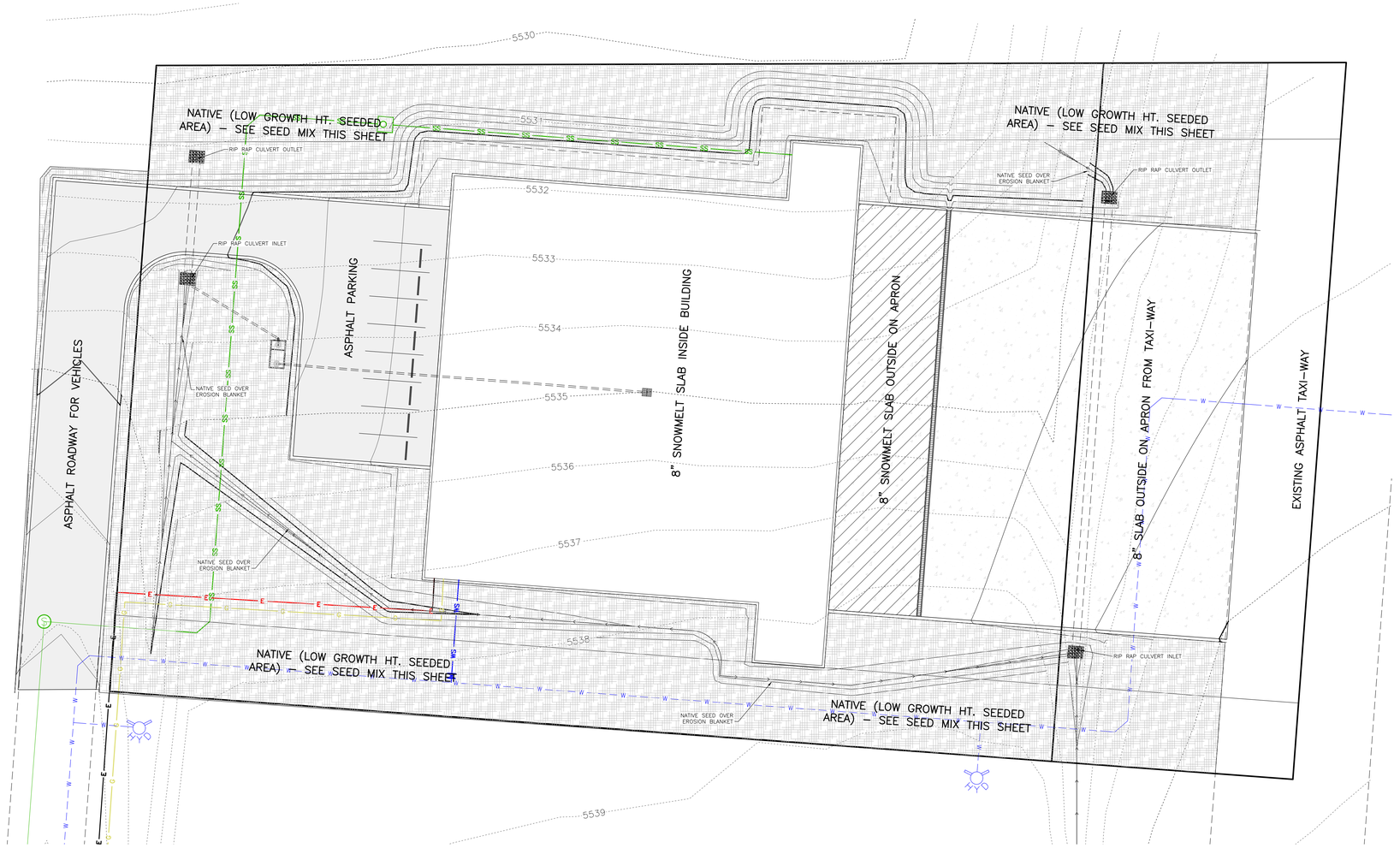
Project Milestone: PRELIMINARY NOT FOR CONSTRUCTION

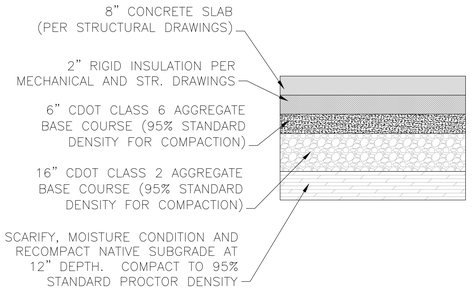
Job No.	2021-546.001
Drawn by:	JP
Print Date:	5/06/2022
QC: DJC	PE: JSS
File:	Grading Plan

Title: Grading Plan

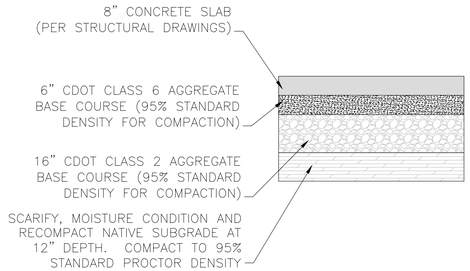
Dwg No. 4

Of : 5





PAVING SECTION
SNOWMELT SLAB ON
AIRCRAFT APRON



PAVING SECTION
ON AIRCRAFT APRON
(FROM TAXI–WAY)

SEEDING NOTES

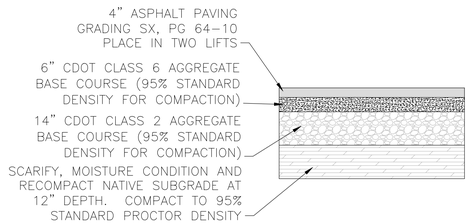
Revegetation:

1. Seeding should occur in late fall to prevent seeds from germinating in summer/early-fall and desiccating, and to prevent seeds from freezing in winter.
2. Seeding should be applied in concert with a sterilized hydromulch to stabilize soil surface until germination while reducing weed establishment. Additional erosion control measures will be installed on steeper slopes, as descripted in the erosion control plan.
3. Drill seeding will be utilized throughout the project. Broadcast seeding will be used only as necessary for spot coverage if drill-seeding is impractical in isolated locations.
   a. For drill seeding, seeds will be placed in direct contact with soil at an average depth of 0.5-inch.
4. Seeding material and application rates to be used for reclamation shall be as listed below for drill seeding. Application rates should be doubled for broadcast seeding.

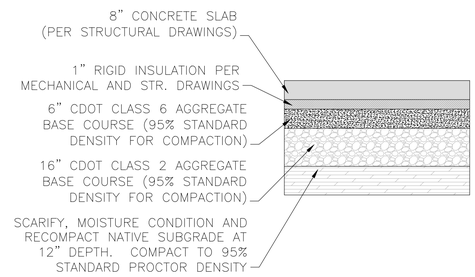
Table 1 – Aviation Hanger, Garfield County Airport Upland Seed Mix

Common Name	*Scientific Name*	*Variety*	*Season*	*Height*	*Form*	*PLS lbs/acre**
Plant Each of the Following (10% Each, 20% Total)						
James' galleta	*Hilaria (Paromychia) jamesii*	Viva	Warm-season perennial	11-19 in.	bunchgrass	5
Bottlebrush squirreltail	*Elymus elymoides*	Wapiti	Cool-season perennial	4-25 in.	bunchgrass	8
and Plant Each of the Following (40% Each, 80% Total)						
Buffalograss	*Bouteloua dactyloides*	As available	Warm-season perennial	4-6 in.	Stoloniferous sod-forming	12
Blue grama	*Bouteloua gracilis*	Hachita	Warm-season perennial	6-24 in.	Sod-forming to bunchgrass	2

***Based on drill seeding. If broadcast or hydroseeded, double application rate**



PAVING SECTION
ACCESS ROAD AND PARKING



PAVING SECTION
SLAB INSIDE BUILDING

Graphic Scale
0 10 20 40
In Feet: 1" = 20'

SGM
118 West Sixth Street, Suite 200
Glenwood Springs, CO 81601
970.945.1004
www.sgm-inc.com

COLORADO REGISTERED PROFESSIONAL ENGINEER
JEFFREY S. SIMONSON
28152
5/12/22

Kuhn Aviation Hanger
Lot A-1, Garfield County Airport

#	Revision	Date	By
1			
2			
3			

Project Milestone: PRELIMINARY NOT FOR CONSTRUCTION

Job No. 2021-546.001
Drawn by: IT
Print Date: 5/06/2022
QC: JP | PE: JSS
File: Landscape Plan

Title: Landscape Plan

Dwg No. 5
Of : 5