MEDICAL OFFICE LAYOUT

TENANT IMPROVEMENT

ERDA WAY & HWY 36
TOOELE, UTAH

CODE ANALYSIS

APPLICABLE CODES

	YEAR		YEAR
INTERNATIONAL BUILDING CODE	2021	NATIONAL ELECTRICAL CODE	2020
INTERNATIONAL MECHANICAL CODE	2021	UNIFORM CODE FOR	
INTERNATIONAL FUEL GAS CODE	2021	BUILDING CONSERVATION	2021
INTERNATIONAL PLUMBING CODE	2021	ADA ACCESSIBILITY	
INTERNATIONAL FIRE CODE	2021	GUIDELINES	ANSI A117.1 2017
INTERNATIONAL ENERGY CODE	2021		
CONSERVATION CODE	2021		

A. OCCUPANCY AND GROUP: B ____ ____ ____ ____

CHANGE IN USE: YES _____ NO X
SPECIAL USE AND OCCUPANCY (E.G. HIGH RISE, COVERED MALL) N/A

B. SEISMIC DESIGN CATEGORY: D

C. TYPE OF CONSTRUCTION (CIRCLE ONE):

I/A I/B II/A II/B III/A III/B IV/HT V/A (V/B) — V/B circled

D. FIRE RESISTANCE RATING REQUIREMENTS FOR THE EXTERIOR WALLS BASED ON THE FIRE SEPARATION DISTANCE (IN HOURS):
NORTH: N/A SOUTH: N/A EAST: N/A WEST: N/A

E. MIXED OCCUPANCIES: N/A NON-SEPARATED USES: N/A

F. SPRINKLERS:

REQUIRED: YES PROVIDED: YES

TYPE OF SPRINKLER SYSTEM (IBC 903.3.1.): NFPA 13

G. NUMBER OF STORIES: 2 BUILDING HEIGHT: 32'-6"

H. ACTUAL AREA PER FLOOR (SQUARE FEET): MAIN FLOOR = 4,434 SQ. FT.

I. TABULAR AREA: (TABLE 506.2): 9,000 SQ. FT.

J. AREA MODIFICATIONS:

a. $A_a = \left\{ A_t + \left[A_t \times I_f \right] + \left[A_t \times I_s \right] \right\}$ $I_f = \left[F/P - 0.25 \right] W/30$

b. SUM OF THE RATIO CALCULATIONS OF MIXED OCCUPANCIES:

$\frac{\text{ACTUAL AREA}}{\text{ALLOWABLE AREA}} \leq 1$

c. TOTAL ALLOWABLE AREA FOR:
1. ONE STORY: _____ SQ. FT.
2. TWO STORY: A_a (2) _____ SQ. FT.
3. THREE STORY: A_a (3) _____

d. UNLIMITED AREA BUILDING: YES _____ NO X CODE SELECTION: ___________

K. FIRE RESISTANCE RATING REQUIREMENTS FOR BUILDING ELEMENTS (HOURS):

ELEMENT	HOURS	ASSEMBLY/ LISTING	ELEMENT	HOURS	ASSEMBLY/ LISTING
EXTERIOR BEARING WALLS	0		FLOORS - CEILING FLOORS	N/A	
INTERIOR BEARING WALLS	N/A		ROOFS - CEILING ROOFS	0	
EXTERIOR NON-BEARING WALLS			EXTERIOR DOORS AND WINDOWS		
STRUCTURAL FRAME			SHAFT ENCLOSURES		
PARTITIONS - PERMANENT			FIRE WALLS		
FIRE BARRIERS			FIRE PARTITIONS		
			SMOKE PARTITIONS		

L. DESIGN OCCUPANT LOAD: 40

EXIT WIDTH REQUIRED: 36 EXIT WIDTH PROVIDED: 72

M. MINIMUM NUMBER OF REQUIRED PLUMBING FACILITIES:
a. WATER CLOSETS - REQUIRED (m) 1 (f) 1 PROVIDED (3) UNISEX (2) EXISTING (2) PROPOSED
b. URINALS - REQUIRED (m) 0 PROVIDED (m) 0
c. LAVATORIES - REQUIRED (m) 1 (f) 1 PROVIDED (m) 2 (f) 2
d. BATH TUBS OR SHOWERS: 0
e. DRINKING FOUNTAINS: (2) DUEL HT ADA SERVICE SINKS: 1

DIFFERED SUBMITTALS:

a. FIRE SPRINKLER DESIGN
b. FIRE ALARM DESIGN

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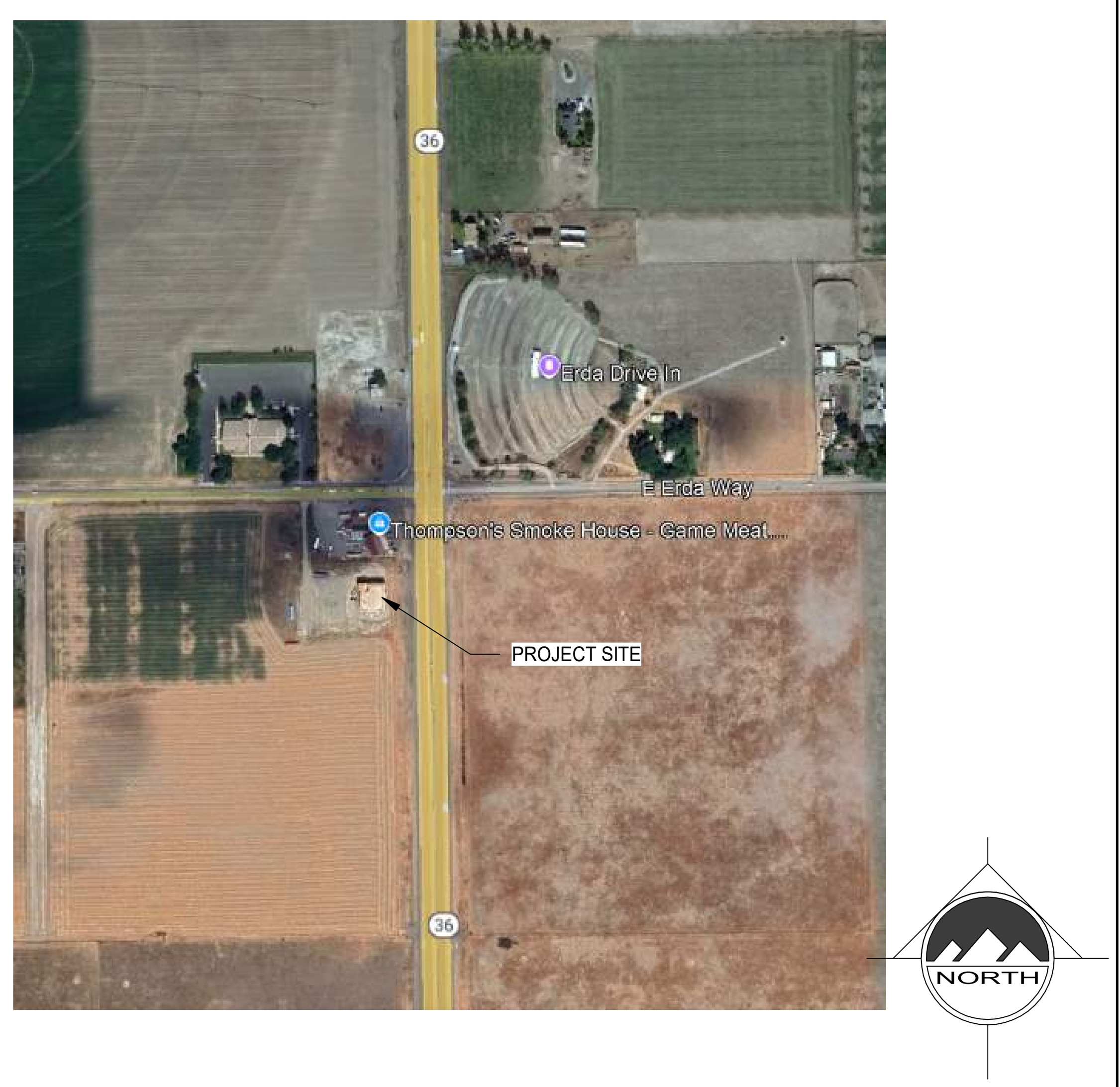
VICINITY MAP



SHEET INDEX

PROJECT SCOPE: NEW MEDICAL OFFICE TENANT IMPROVEMENT ON THE MAIN FLOOR OF AN EXISTING OFFICE SPACE. THREE PROVIDER OFFICES, 9 EXAM ROOMS, LAB ROOM, BREAKROOM, TWO EXISTING SHARED COMMON RESTROOMS, TWO NEW TENANT RESTROOMS.

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TENANT IMPROVEMENT
ERDA WAY & HWY 36
TOOELE, UTAH

STATE OF UTAH
STEVEN N. WARR
22-114812-0301
11/18/2024
LICENSED ARCHITECT

PERMIT SET 11/18/2024

NO.	DATE	REVISION

COVER SHEET

PROJECT NUMBER T1895M
DATE 07-10-2024
PROJECT MANAGER JMC
DESIGNED BY DMP

A000

ROOM SCHEDULE

NUMBER	NAME	FLOOR FINISH	BASE FINISH	WALL FINISHES				CEILINGS		COMMENTS
				NORTH	EAST	SOUTH	WEST	HEIGHTS	FINISH	
111	REST.	TILE	TILE	PAIN/TILE	PAIN/TILE	PAIN/TILE	PAIN/TILE	9' - 0"	GYP. BOARD	48" TILE WAINSCOT
112	LAB	VCT	RUBBER	PAINT	PAINT	PAINT	PAINT	10' - 0"	ACOUSTICAL GRID	
113	ROOM 1	VCT	RUBBER	PAINT	PAINT	PAINT	PAINT	10' - 0"	ACOUSTICAL GRID	
114	ROOM 2	VCT	RUBBER	PAINT	PAINT	PAINT	PAINT	10' - 0"	ACOUSTICAL GRID	
115	ROOM 3	VCT	RUBBER	PAINT	PAINT	PAINT	PAINT	10' - 0"	ACOUSTICAL GRID	
116	ROOM 4	VCT	RUBBER	PAINT	PAINT	PAINT	PAINT	10' - 0"	ACOUSTICAL GRID	
117	ROOM 5	VCT	RUBBER	PAINT	PAINT	PAINT	PAINT	10' - 0"	ACOUSTICAL GRID	
118	ROOM 6	VCT	RUBBER	PAINT	PAINT	PAINT	PAINT	10' - 0"	ACOUSTICAL GRID	
119	ROOM 9	VCT	RUBBER	PAINT	PAINT	PAINT	PAINT	10' - 0"	ACOUSTICAL GRID	
120	ROOM 8	VCT	RUBBER	PAINT	PAINT	PAINT	PAINT	10' - 0"	ACOUSTICAL GRID	
121	MA STATION	CARPET	CARPET	PAINT	PAINT	PAINT	PAINT	10' - 0"	ACOUSTICAL GRID	
122	ROOM 7	VCT	RUBBER	PAINT	PAINT	PAINT	PAINT	10' - 0"	ACOUSTICAL GRID	
123	REST.	TILE	TILE	PAIN/TILE	PAIN/TILE	PAIN/TILE	PAIN/TILE	9' - 0"	GYP. BOARD	48" TILE WAINSCOT
124	BREAK ROOM	VCT	RUBBER	PAINT	PAINT	PAINT	PAINT	10' - 0"	ACOUSTICAL GRID	
125	STORAGE	CONCRETE	NA	PAINT	PAINT	PAINT	PAINT	10' - 0"	ACOUSTICAL GRID	
126	OFFICE	CARPET	CARPET	PAINT	PAINT	PAINT	PAINT	10' - 0"	ACOUSTICAL GRID	
127	OFFICE	CARPET	CARPET	PAINT	PAINT	PAINT	PAINT	10' - 0"	ACOUSTICAL GRID	
128	OFFICE	CARPET	CARPET	PAINT	PAINT	PAINT	PAINT	10' - 0"	ACOUSTICAL GRID	
129	RECP	CARPET	CARPET	PAINT	PAINT	PAINT	PAINT	10' - 0"	ACOUSTICAL GRID	
130	WAITING ROOM	CARPET	CARPET	PAINT/GLASS	PAINT	PAINT	PAINT	10' - 0"	ACOUSTICAL GRID	
140	OFFICE	CARPET	CARPET	PAINT	PAINT	PAINT	PAINT	10' - 0"	ACOUSTICAL GRID	

WALL SCHEDULE

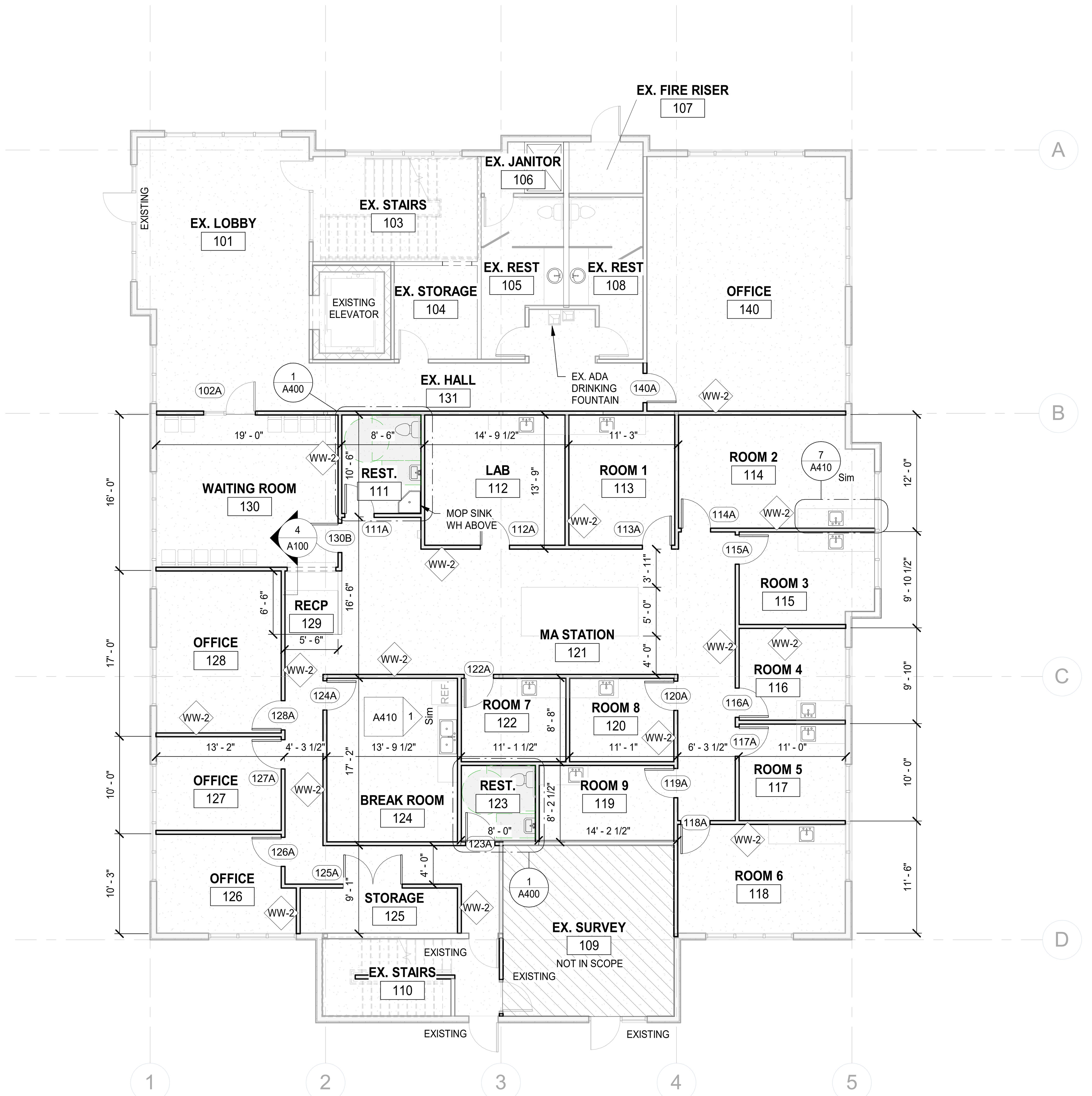
MARK	DESCRIPTION	COMMENTS
WW-2	2x4 WOOD FRAMED WALL @ 16" o.c. w/ 5/8" GYP. BOARD EA. SIDE	

DOOR SCHEDULE

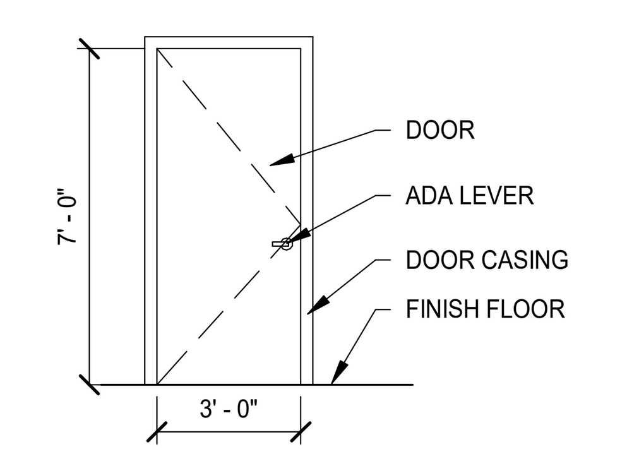
MARK	WIDTH	HEIGHT	FRAME TYPE	FINISH	FIRE RATING	HARDWARE	COMMENTS
102A	3' - 0"	7' - 0"	STORE FRONT	STORE FRONT			EXISTING
105A	3' - 0"	7' - 0"	HOLLOW METAL	PAINT		PASSAGE	EXISTING
105B	0' - 0"	0' - 0"					
111A	3' - 0"	7' - 0"	HOLLOW METAL	PAINT		PRIVACY	
112A	3' - 0"	7' - 0"	HOLLOW METAL	PAINT		PASSAGE	
113A	3' - 0"	7' - 0"	HOLLOW METAL	PAINT		PASSAGE	
114A	3' - 0"	7' - 0"	HOLLOW METAL	PAINT		PASSAGE	
115A	3' - 0"	7' - 0"	HOLLOW METAL	PAINT		PASSAGE	
116A	3' - 0"	7' - 0"	HOLLOW METAL	PAINT		PASSAGE	
117A	3' - 0"	7' - 0"	HOLLOW METAL	PAINT		PASSAGE	
118A	3' - 0"	7' - 0"	HOLLOW METAL	PAINT		PASSAGE	
119A	3' - 0"	7' - 0"	HOLLOW METAL	PAINT		PASSAGE	
120A	3' - 0"	7' - 0"	HOLLOW METAL	PAINT		PASSAGE	
122A	3' - 0"	7' - 0"	HOLLOW METAL	PAINT		PASSAGE	
123A	3' - 0"	7' - 0"	HOLLOW METAL	PAINT		PRIVACY	
124A	3' - 0"	7' - 0"	HOLLOW METAL	PAINT		PASSAGE	
125A	6' - 0"	7' - 0"	HOLLOW METAL	PAINT		PASSAGE	
126A	3' - 0"	7' - 0"	HOLLOW METAL	PAINT		LOCKSET	
127A	3' - 0"	7' - 0"	HOLLOW METAL	PAINT		LOCKSET	
128A	3' - 0"	7' - 0"	HOLLOW METAL	PAINT		LOCKSET	
130B	3' - 0"	7' - 0"	HOLLOW METAL	PAINT		PASSAGE	
140A	3' - 0"	7' - 0"	HOLLOW METAL	PAINT		LOCKSET	

Grand total: 22

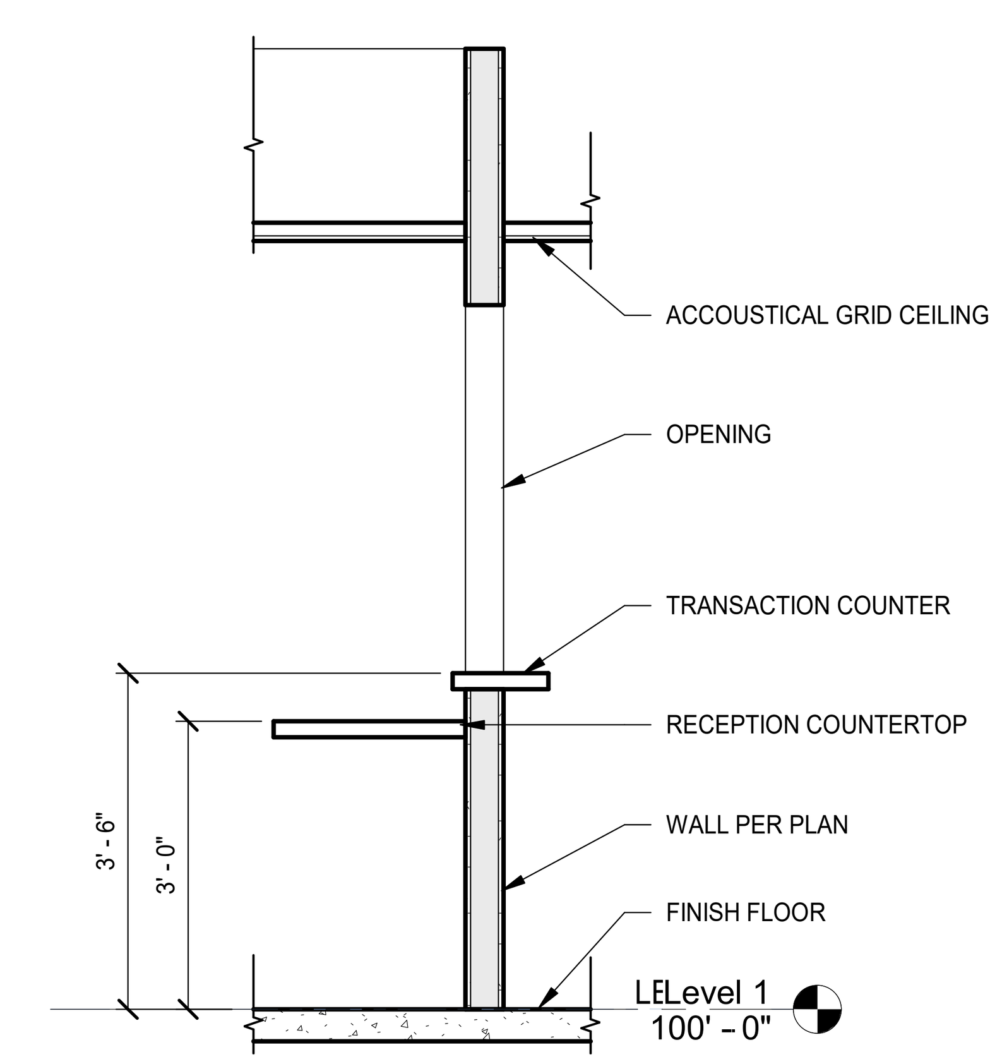
1. DOOR THRESHOLDS TO BE LESS THAN 1/2" ABOVE FINISH FLOOR.
2. ALL DOOR HARDWARE TO BE ADA LEVER TYPE.
3. EXIT DOORS ARE TO BE OPENABLE FROM THE INSIDE WITHOUT THE USE OF A KEY, SPECIAL KNOWLEDGE OR EFFORT.
4. DOORS TO MEET THE REQUIREMENTS OF IBC 1010.
5. DOOR HARDWARE TO BE LOCATED IN DOOR PER 1010.2.3
6. ALL LOCKSETS SHALL COMPLY WITH 1010.2.4 AND 1010.2.5



1 LEVEL 01
SCALE: 1/8" = 1'-0"



2 36" MANDOOR
SCALE: 1/4" = 1'-0"



4 RECEPTION DESK WINDOW SECTION
SCALE: 1/2" = 1'-0"

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MEDICAL OFFICE LAYOUT TENANT IMPROVEMENT

ERDA WAY & HWY 36
TOOELE, UTAH

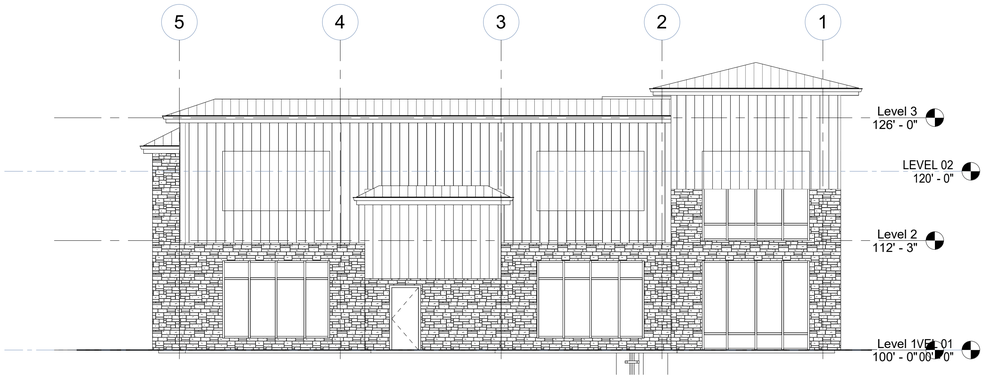
PERMIT SET 11/18/2024

NO.	DATE	REVISION

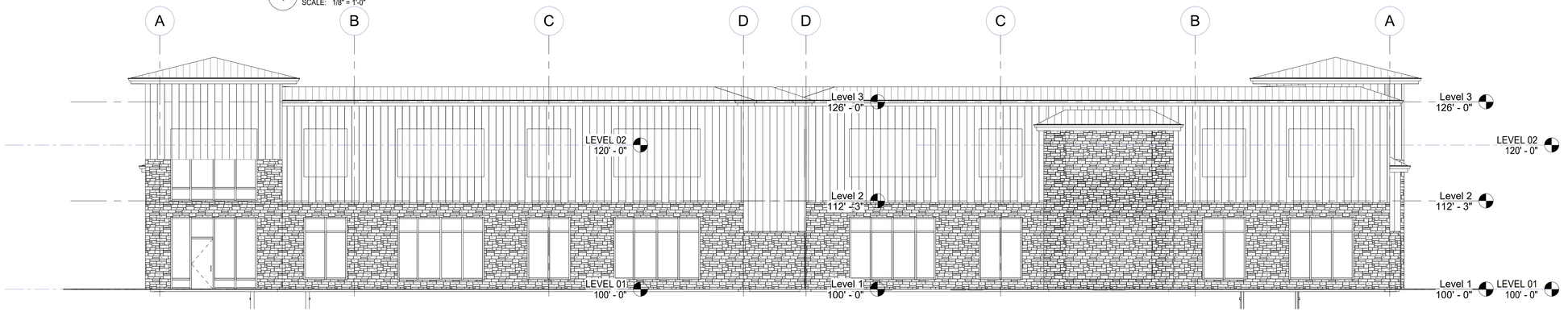
FLOOR PLAN

PROJECT NUMBER T1895M	DATE 07-10-2024
PROJECT MANAGER JMC	DESIGNED BY DMP

A100

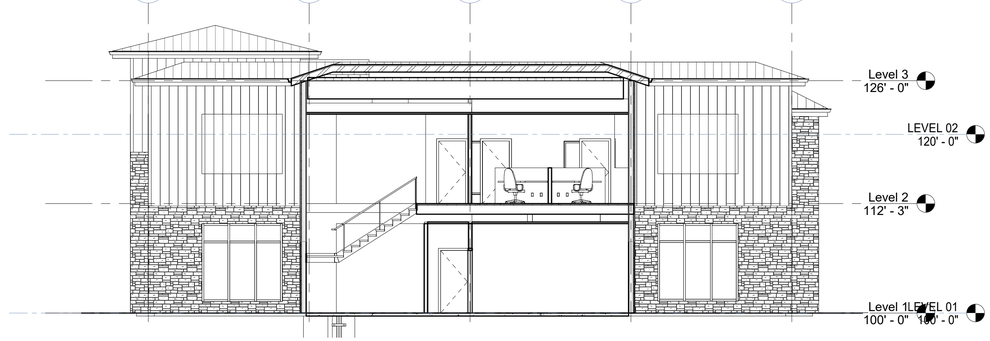


1 North
SCALE: 1/8" = 1'-0"



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

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



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

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TENANT IMPROVEMENT

ERDA WAY & HWY 36
TOOELE, UTAH

STATE OF UTAH
STEVEN R. WARD
22-114812-0301
11/18/2024
LICENSED ARCHITECT

PERMIT SET 11/18/2024

NO.	DATE	REVISION

EXTERIOR ELEVATIONS

PROJECT NUMBER T1898M
DATE 07-10-2024
PROJECT MANAGER JMC
DESIGNED BY DMP

A200

EGRESS PLAN LEGEND	
START LOCATION / END LOCATION	
(blue dashed arrow)	PATH OF TRAVEL < 75 FEET
(purple dashed arrow)	75 FEET ≤ PATH OF TRAVEL < 100 FEET
(red dashed arrow)	100 FEET ≤ PATH OF TRAVEL

OCCUPANCY LEGEND

- BUSINESS AREAS
- COMMON AREAS

1 LEVEL 01 EGRESS PLAN
SCALE: 1/8" = 1'-0"

KEYED NOTES
1 2x4 ACOUSTICAL GRID CEILING @ 10'-0" AFF
2 5/8" GYP. BD. @ 9'-0" AFF

2 LEVEL 01 REFLECTED CELING PLAN
SCALE: 1/8" = 1'-0"

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MEDICAL OFFICE LAYOUT TENANT IMPROVEMENT

ERDA WAY & HWY 36
TOOELE, UTAH

STATE OF UTAH — LICENSED ARCHITECT — 11/18/2024

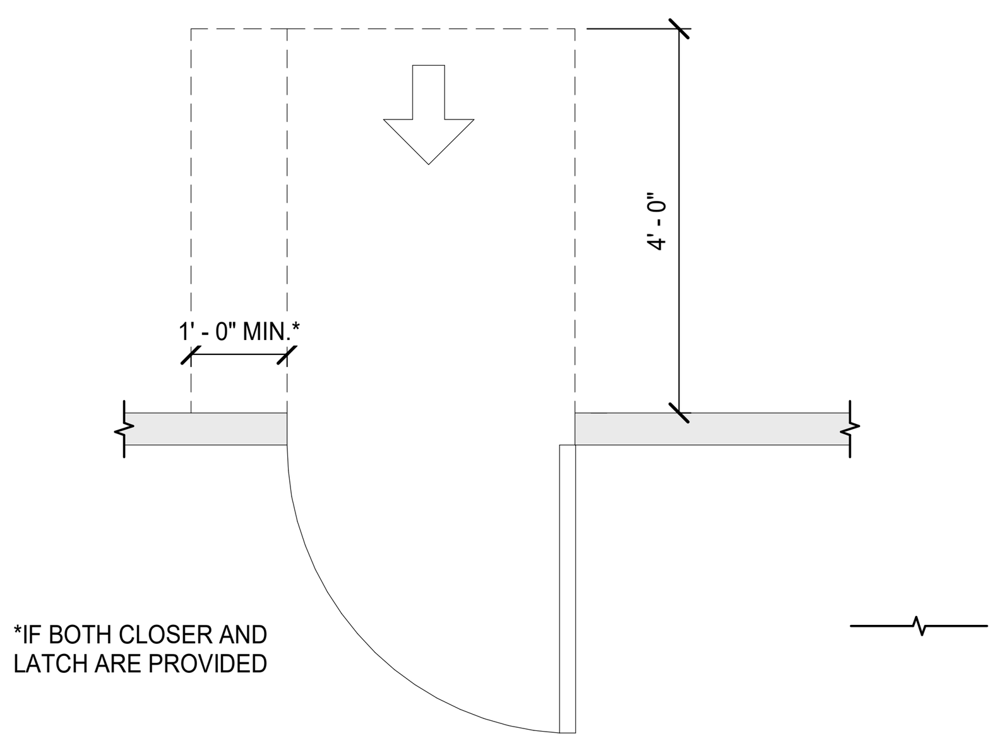
PERMIT SET 11/18/2024

NO.	DATE	REVISION

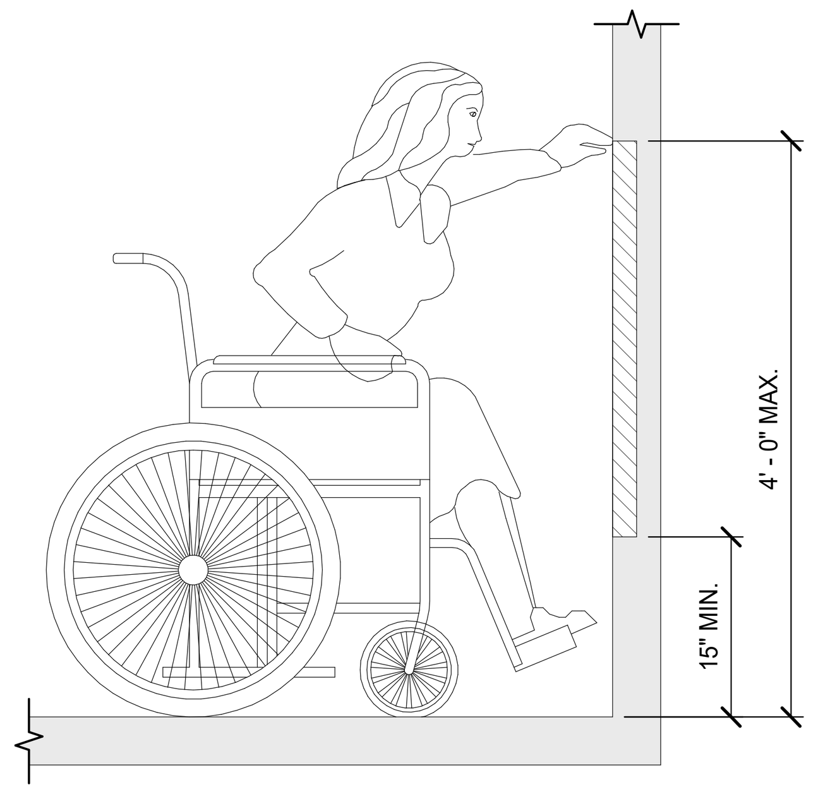
EGRESS & CEILING PLANS

PROJECT NUMBER	DATE
T1895M	07-10-2024
PROJECT MANAGER	DESIGNED BY
JMC	DMP

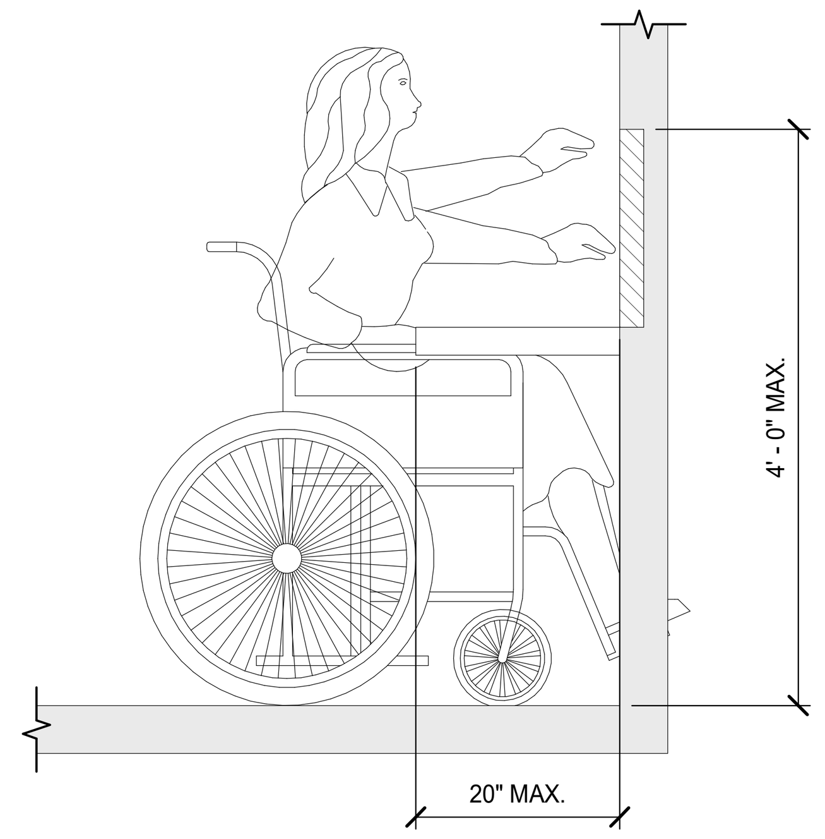
A300

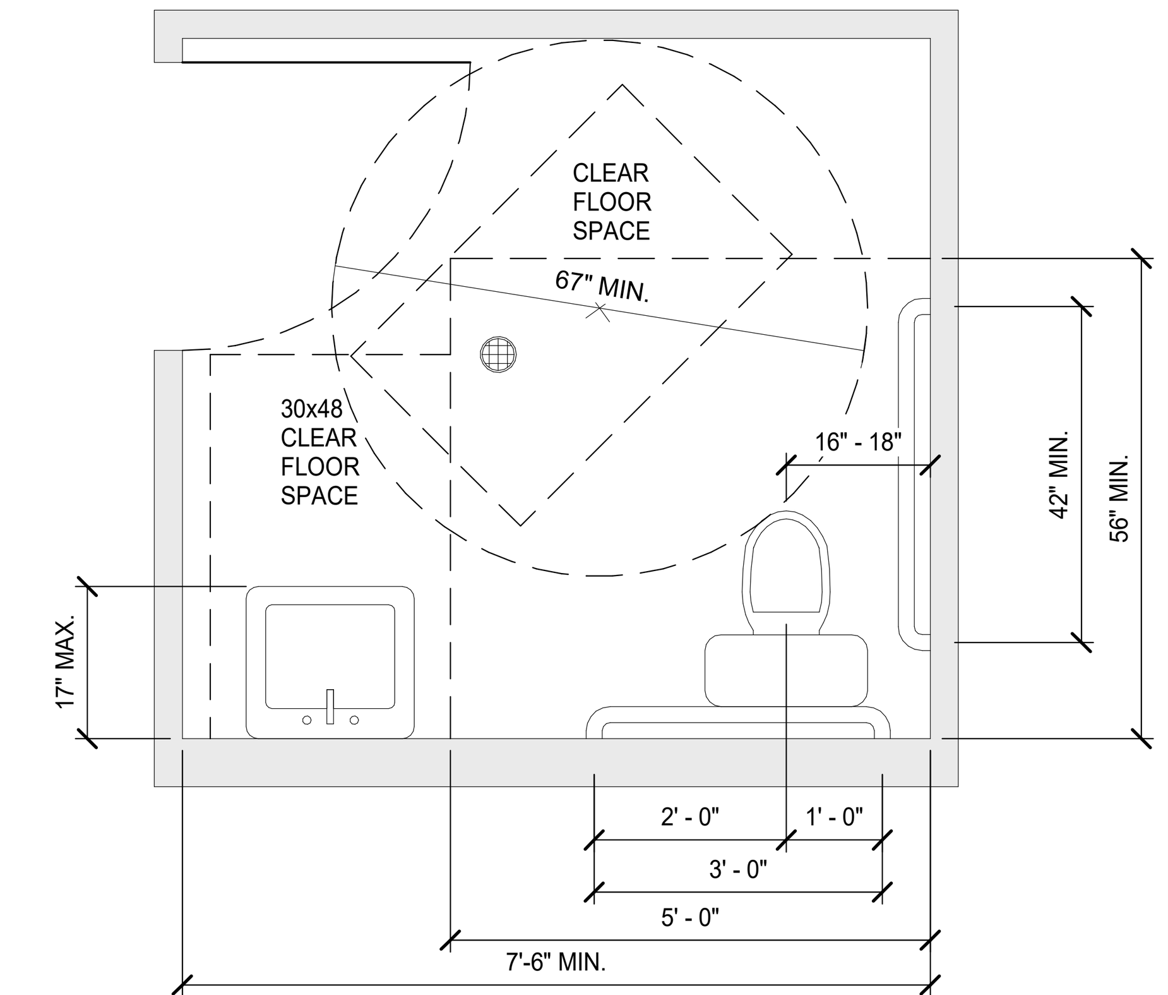


15 CLEARANCE AT FRONT APPROCH, PUSH SIDE
SCALE: 1/2" = 1'-0"

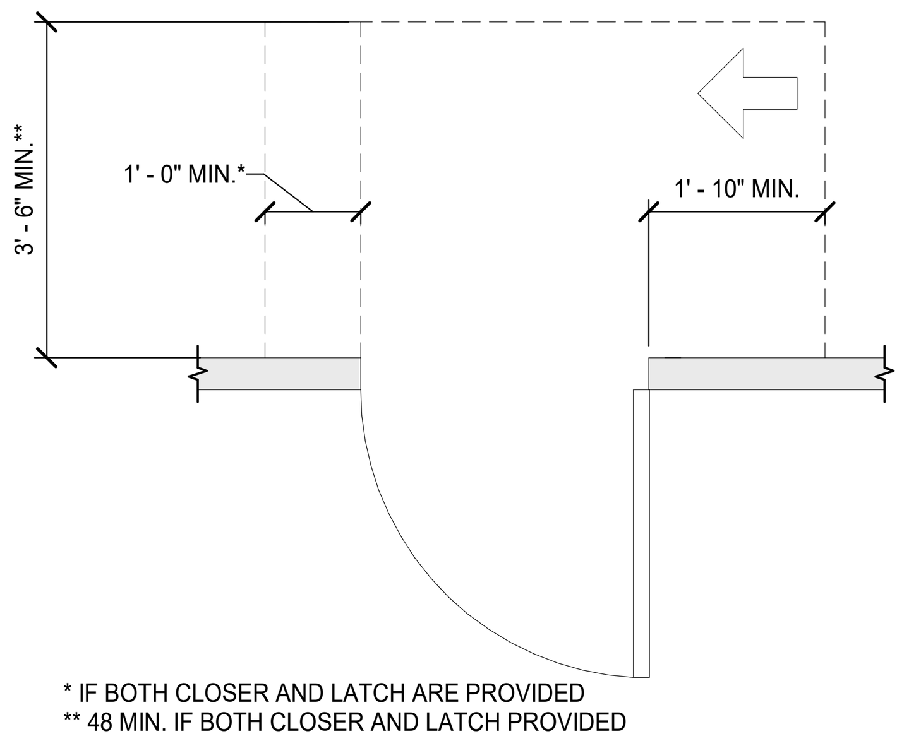


11 ADA UNOBSTRUCTED FORWARD REACH
SCALE: 3/4" = 1'-0"

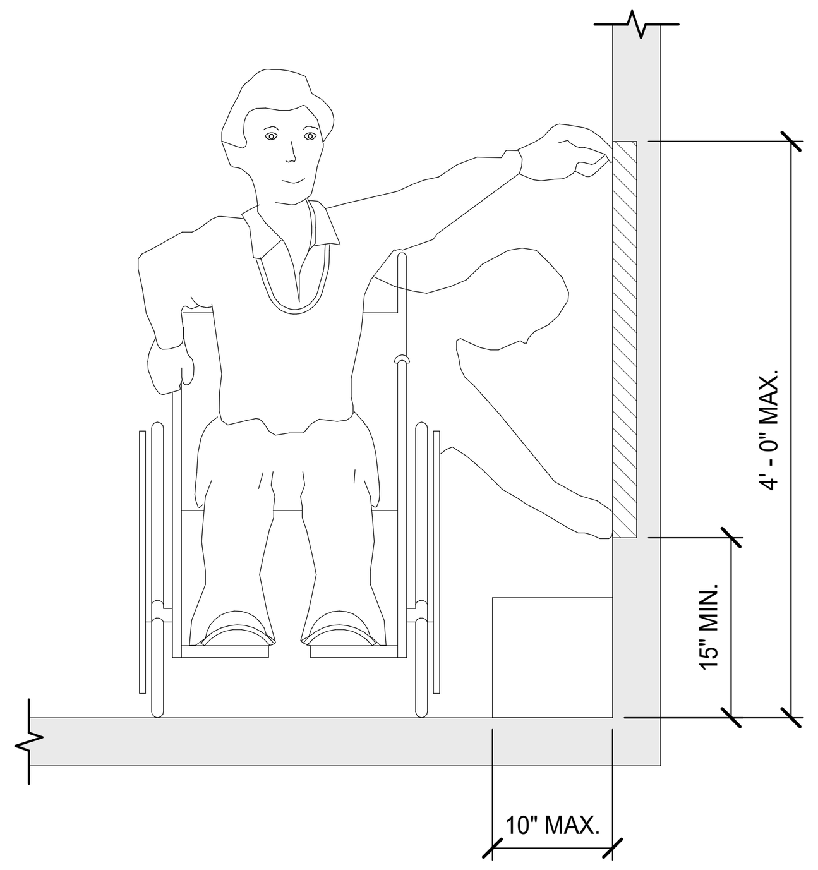




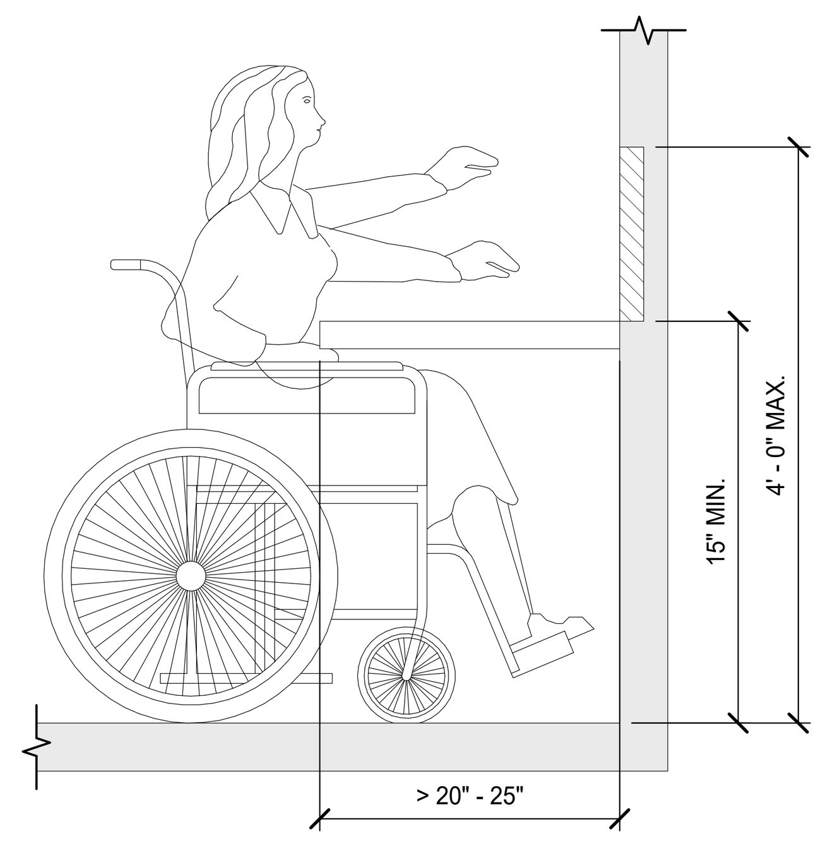
1 ADA RESTROOM
SCALE: 1/2" = 1'-0"



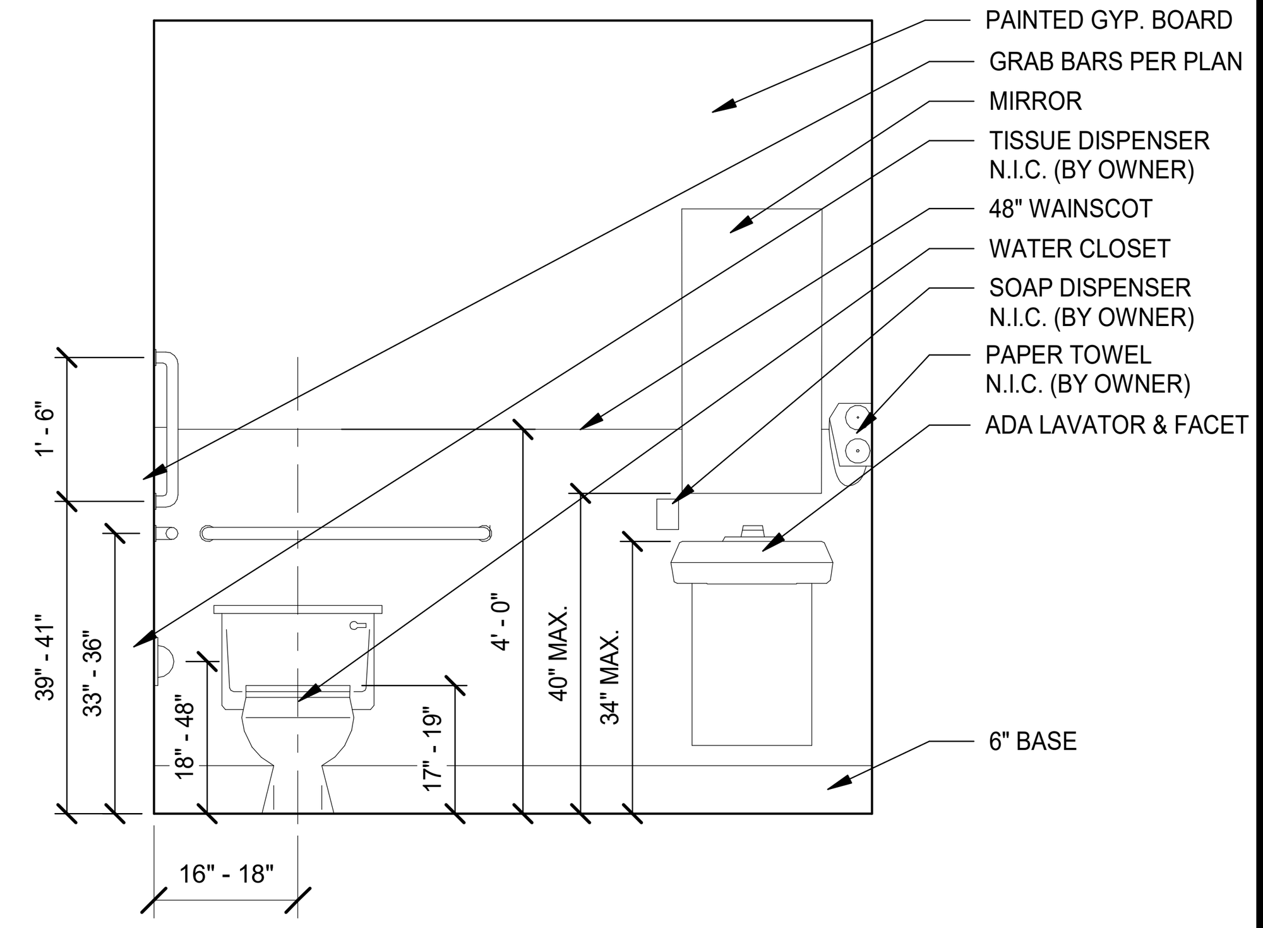
16 CLEARANCE AT HINGE APPROACH, PUSH SIDE
SCALE: 1/2" = 1'-0"



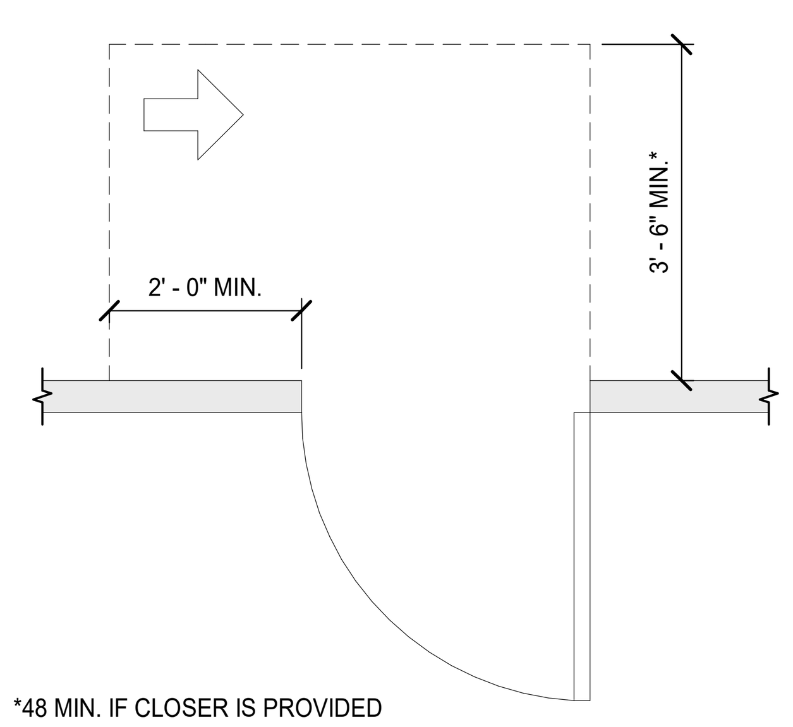
12 ADA UNOBSTRUCTED SIDE REACH
SCALE: 3/4" = 1'-0"



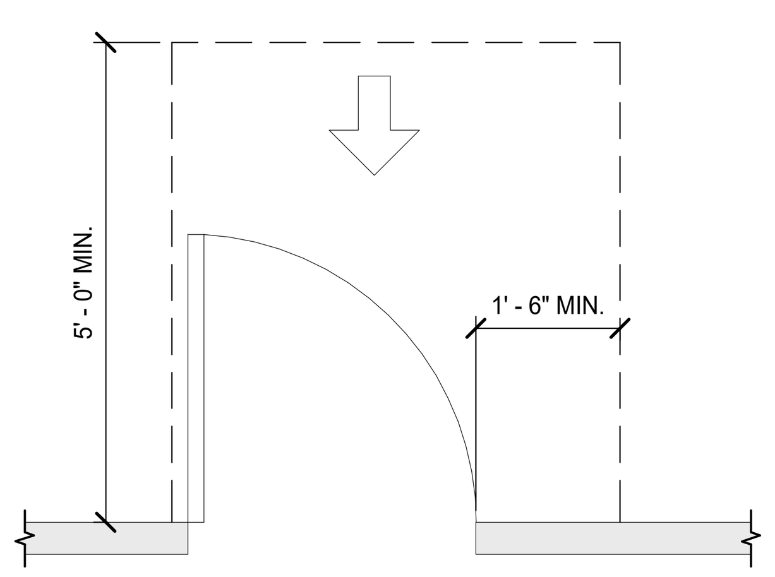
9 OBSTRUCTED HIGH FORWARD REACH
SCALE: 3/4" = 1'-0"



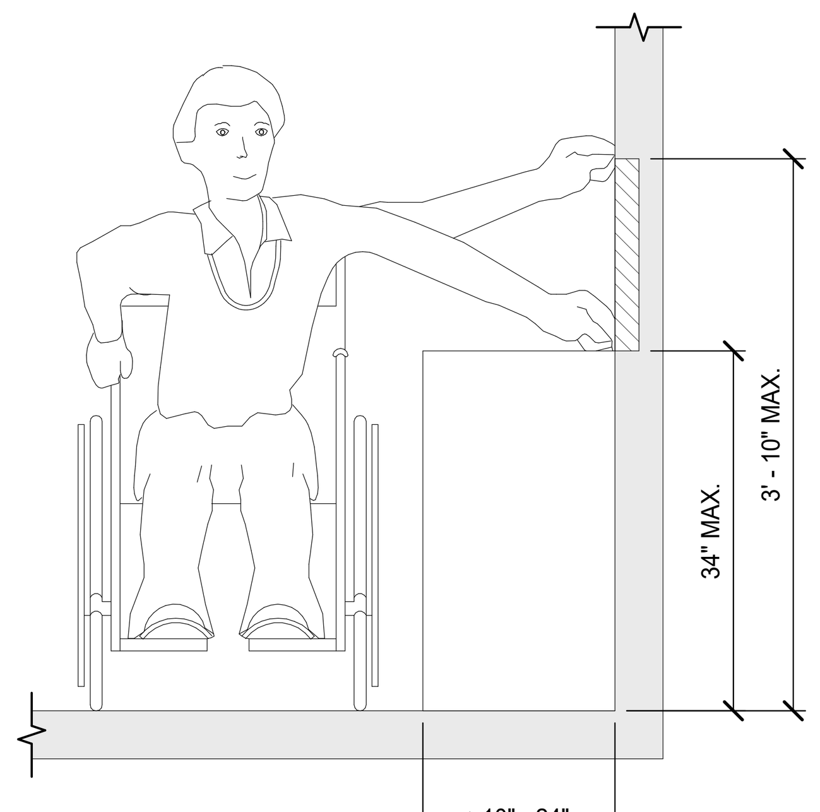
2 ADA RESTROOM ELEVATION
SCALE: 1/2" = 1'-0"

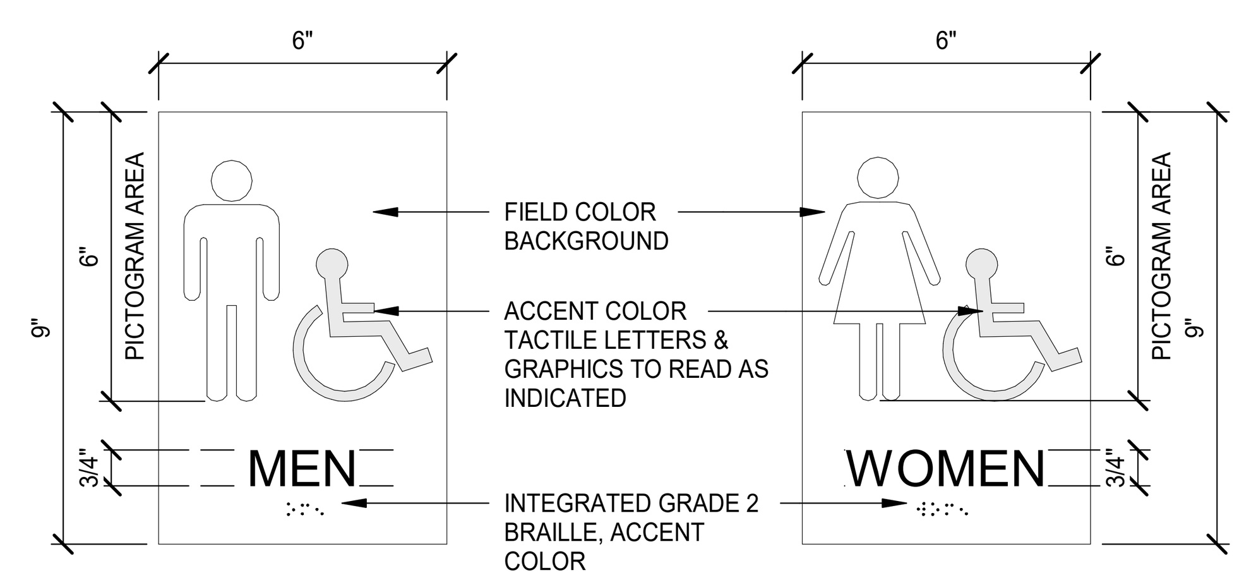


17 CLEARANCE AT LATCH APPROACH, PUSH SIDE
SCALE: 1/2" = 1'-0"

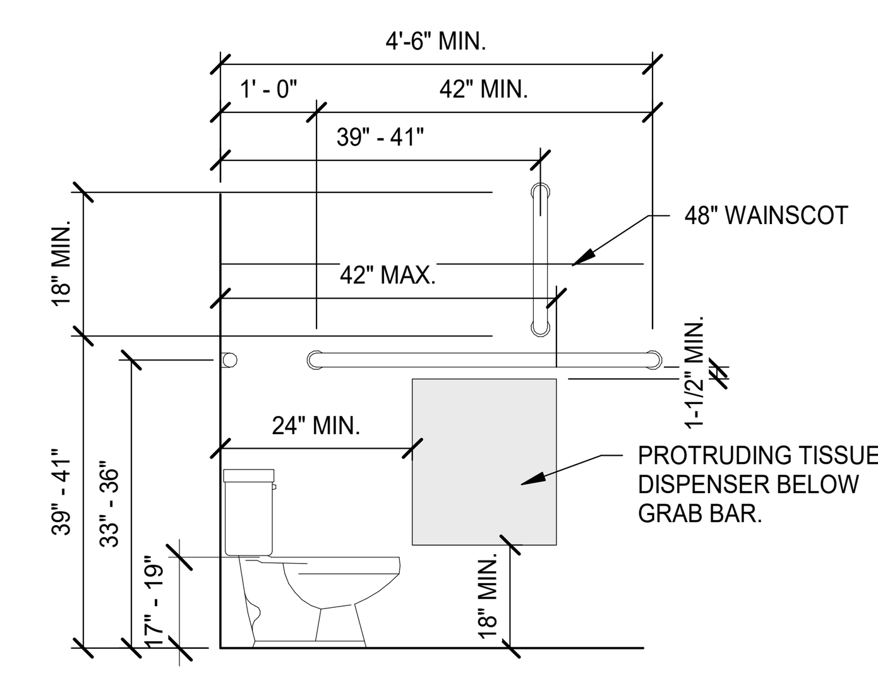


13 CLEARANCE AT FRONT APPROCH, PULL SIDE
SCALE: 1/2" = 1'-0"

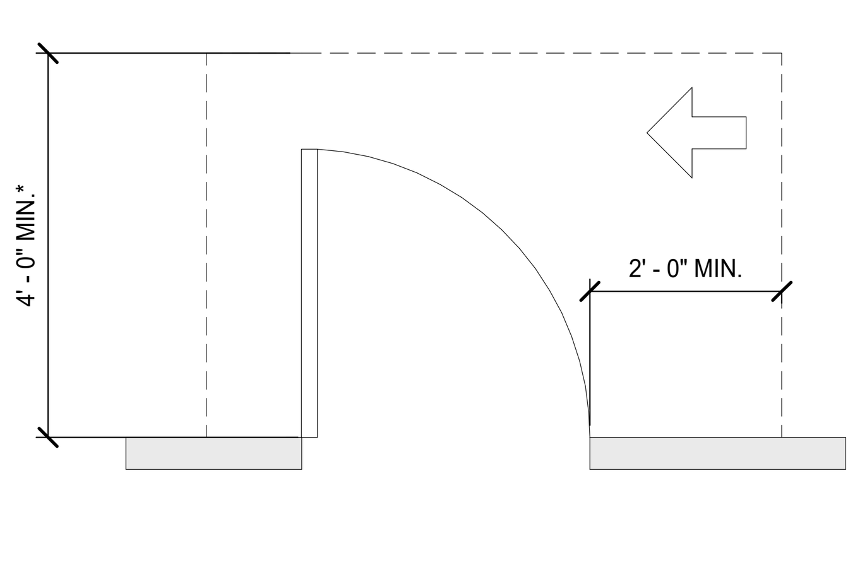




7 ADA RESTROOM SIGNS
SCALE: 3" = 1'-0"



3 ADA RESTROOM SIDEWALL
SCALE: 1/2" = 1'-0"



18 CLEARANCE AT LATCH APPROACH, PULL SIDE
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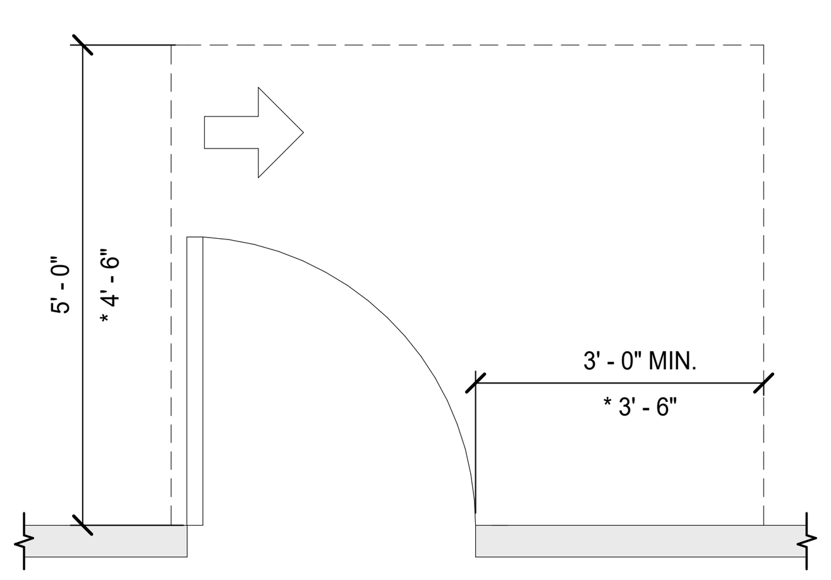

14 CLEARANCE AT HINGE APPROACH, PULL SIDE
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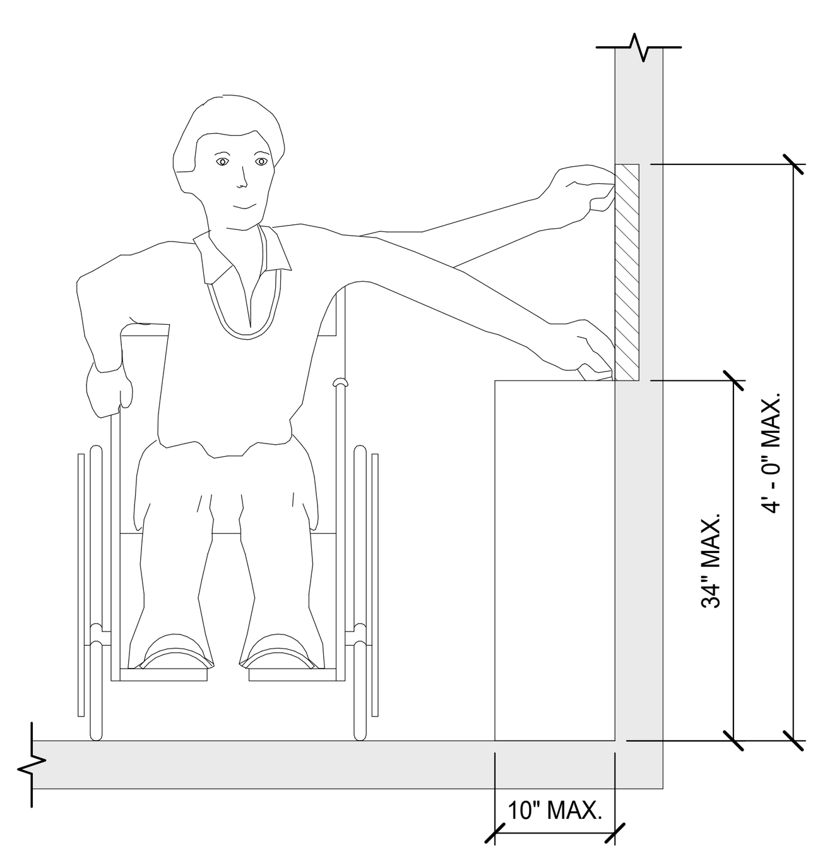

10 OBSTRUCTED HIGH SIDE REACH
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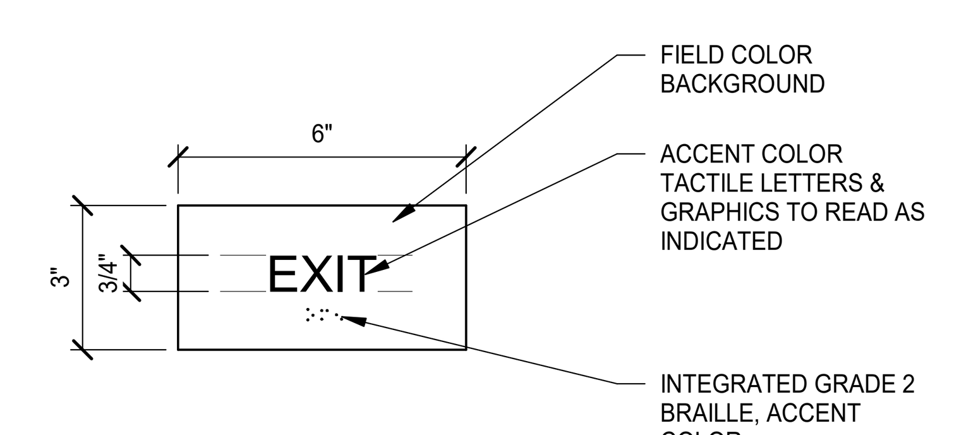
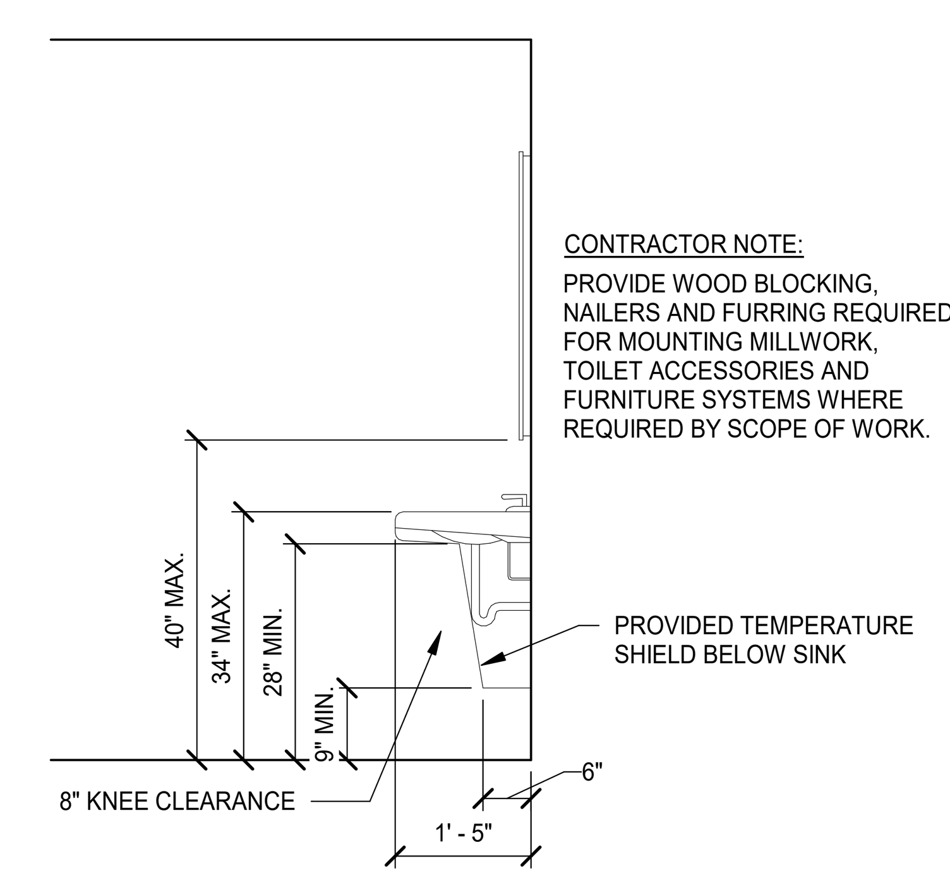


8 ADA EXIT SIGN
SCALE: 3" = 1'-0"



4 ADA SINK ELEV.
SCALE: 1/2" = 1'-0"

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ERDA WAY & HWY 36
TOOELE, UTAH

STATE OF UTAH · STEVEN R. WAIN · LICENSED ARCHITECT · 11/18/2024

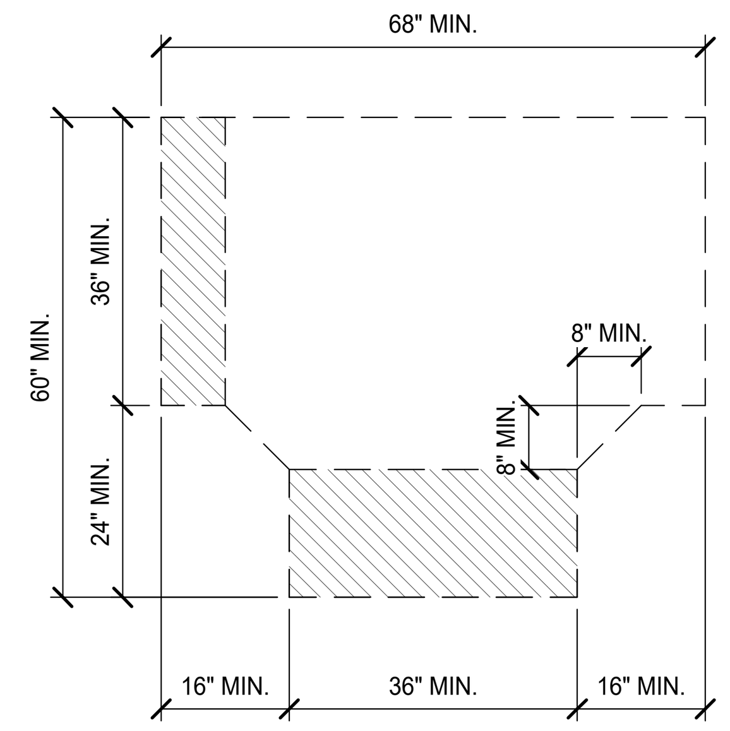
PERMIT SET 11/18/2024

NO.	DATE	REVISION

ADA DETAILS

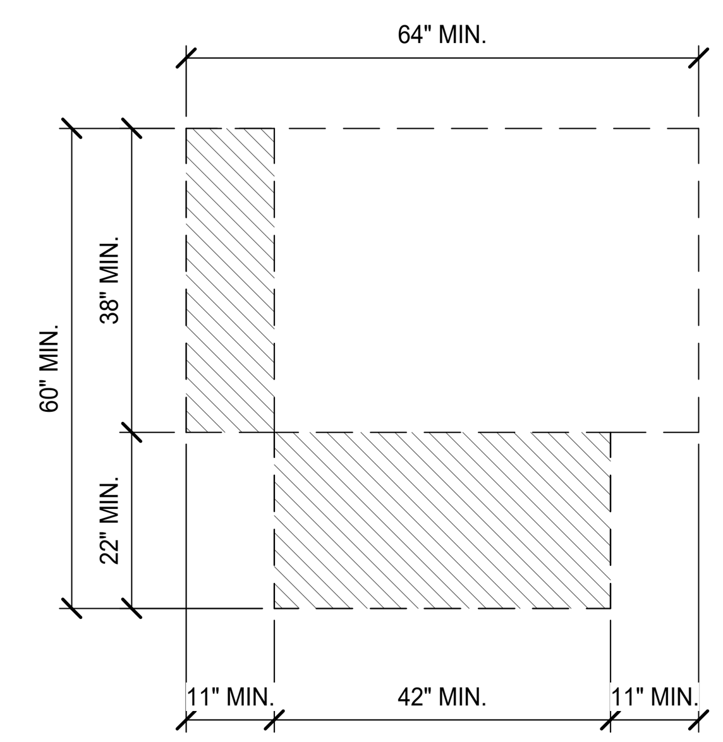
PROJECT NUMBER T1895M	DATE 07-10-2024
PROJECT MANAGER JMC	DESIGNED BY DMP

A400



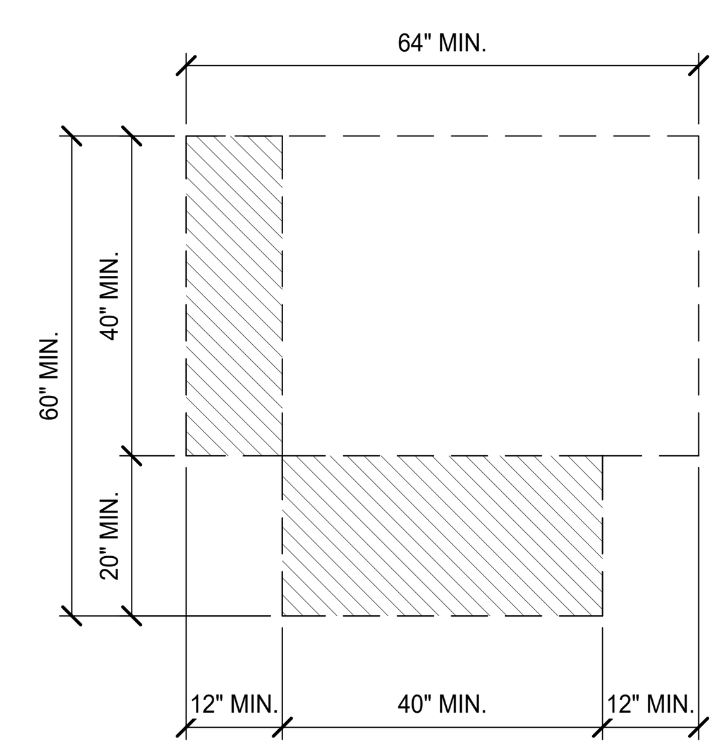
OPTION 1

= OVERLAP OF KNEE AND TOE CLEARANCE (EITHER BASE OR ARM - NOT BOTH)



OPTION 2

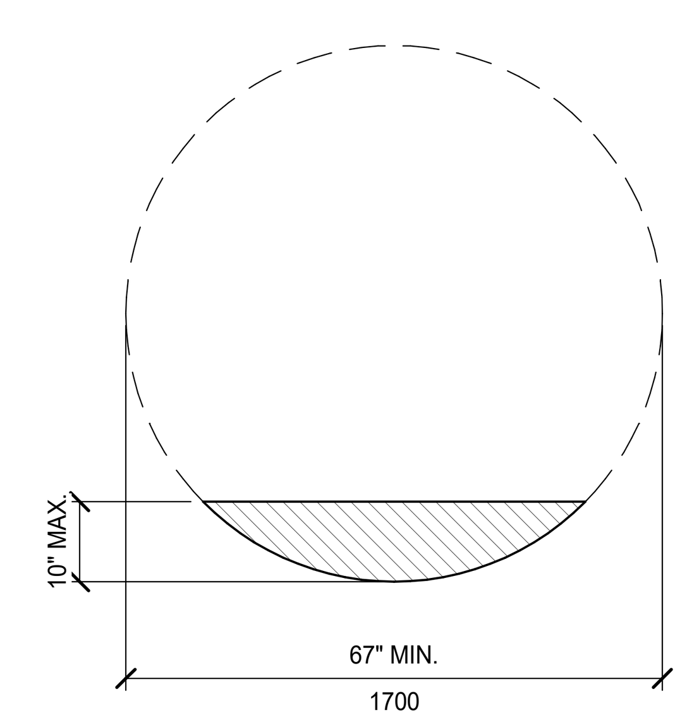
= OVERLAP OF KNEE AND TOE CLEARANCE (EITHER BASE OR ARM - NOT BOTH)



OPTION 3

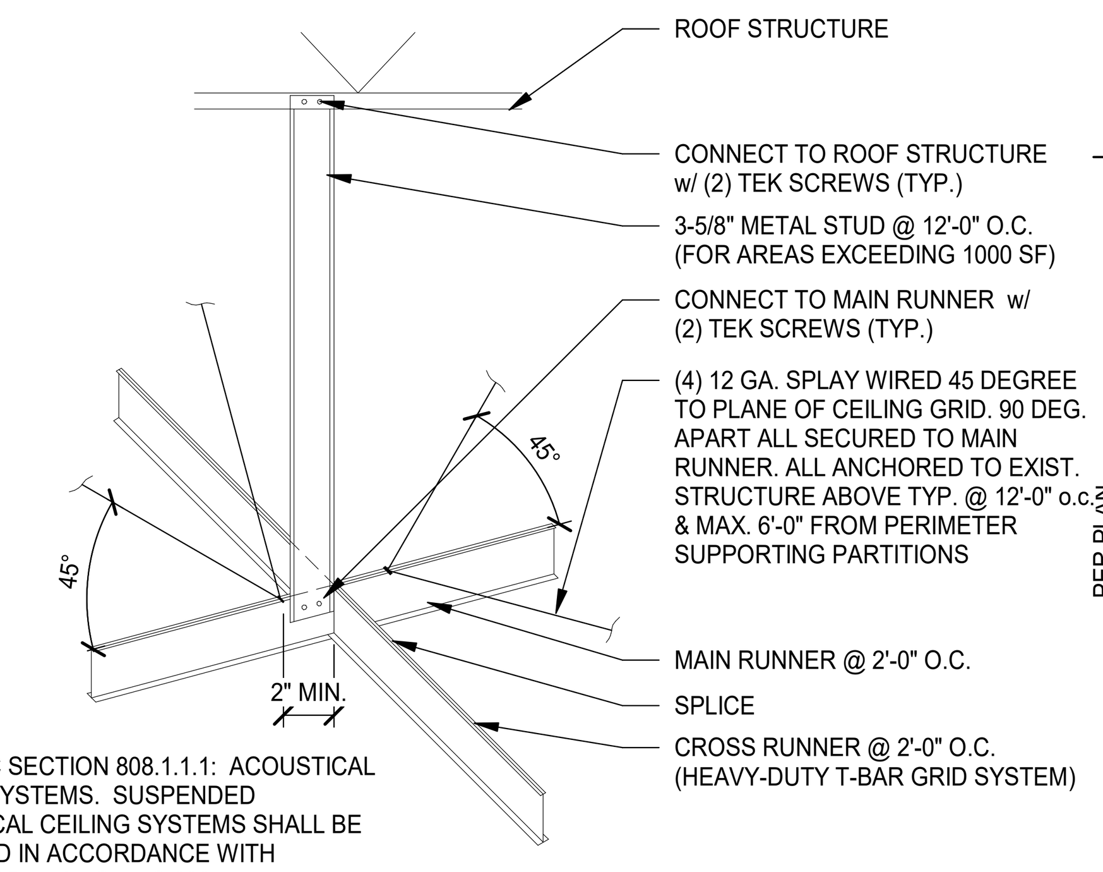
= OVERLAP OF KNEE AND TOE CLEARANCE (EITHER BASE OR ARM - NOT BOTH)

11 T SHAPE TURNING SPACE - NEW CONST.
SCALE: 1/2" = 1'-0"



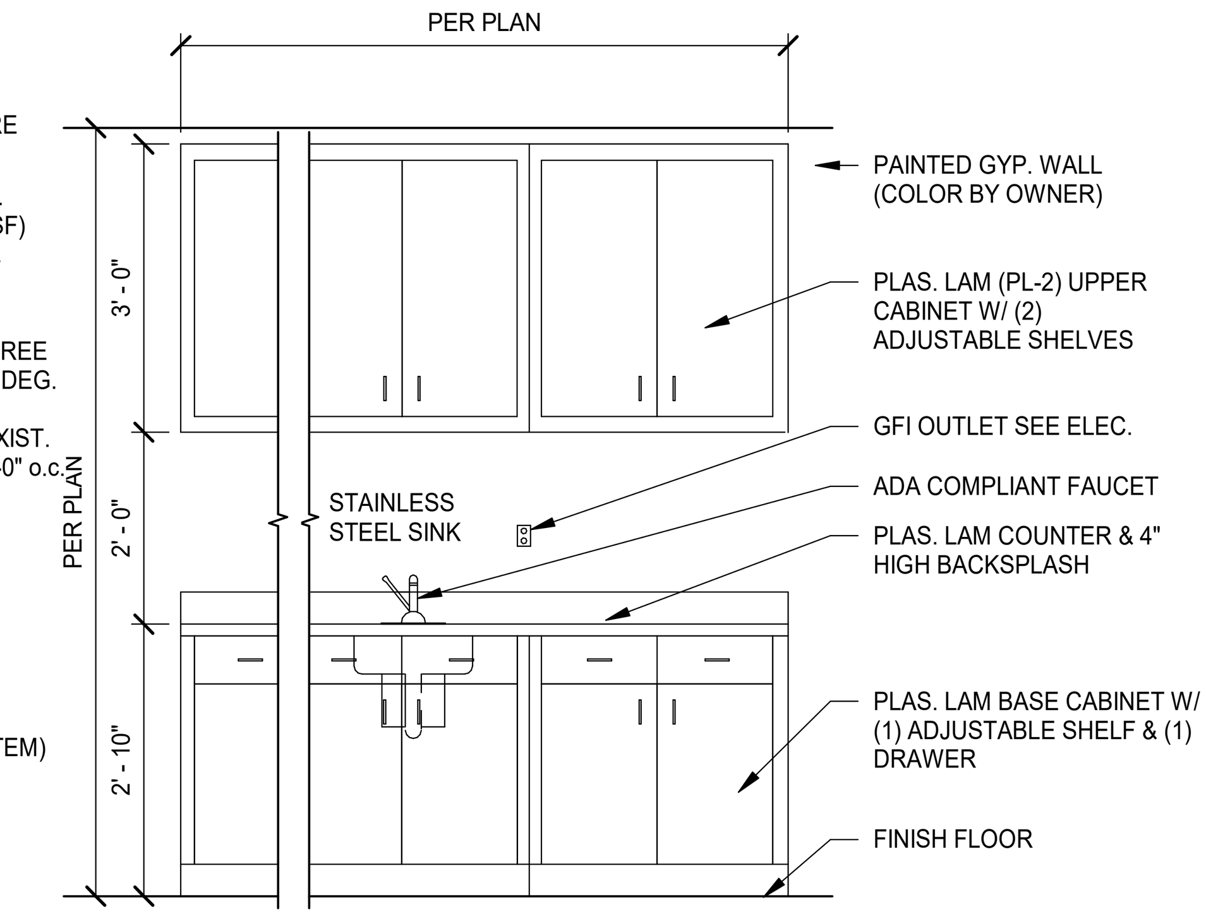
= OVERLAP OF KNEE AND TOE

12 TURNING RADIUS - NEW CONST.
SCALE: 1/2" = 1'-0"

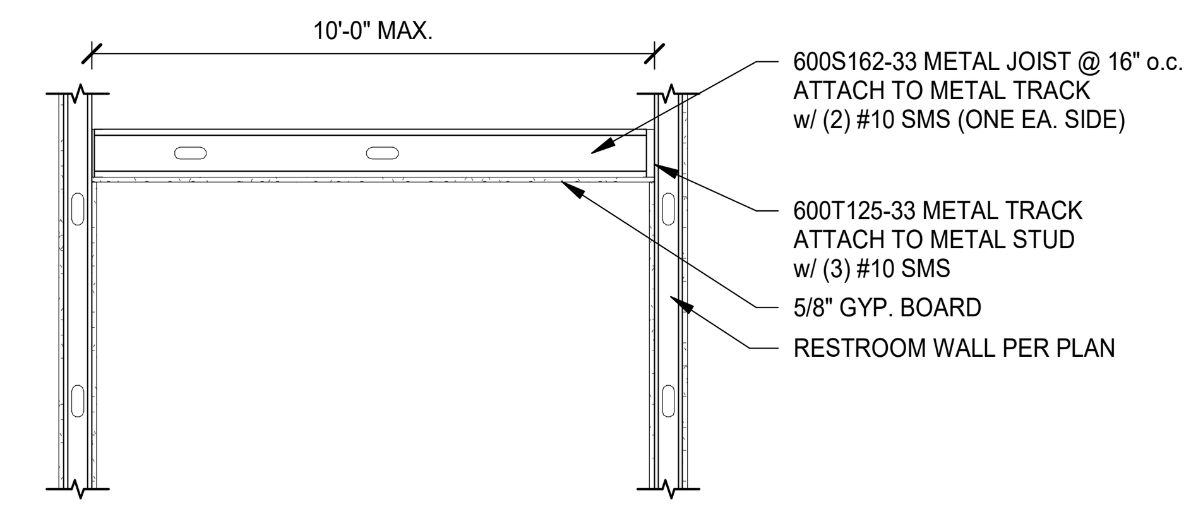


NOTE: IBC SECTION 808.1.1.1: ACOUSTICAL CEILING SYSTEMS. SUSPENDED ACOUSTICAL CEILING SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH ASTM C 635 AND ASTM C 636.

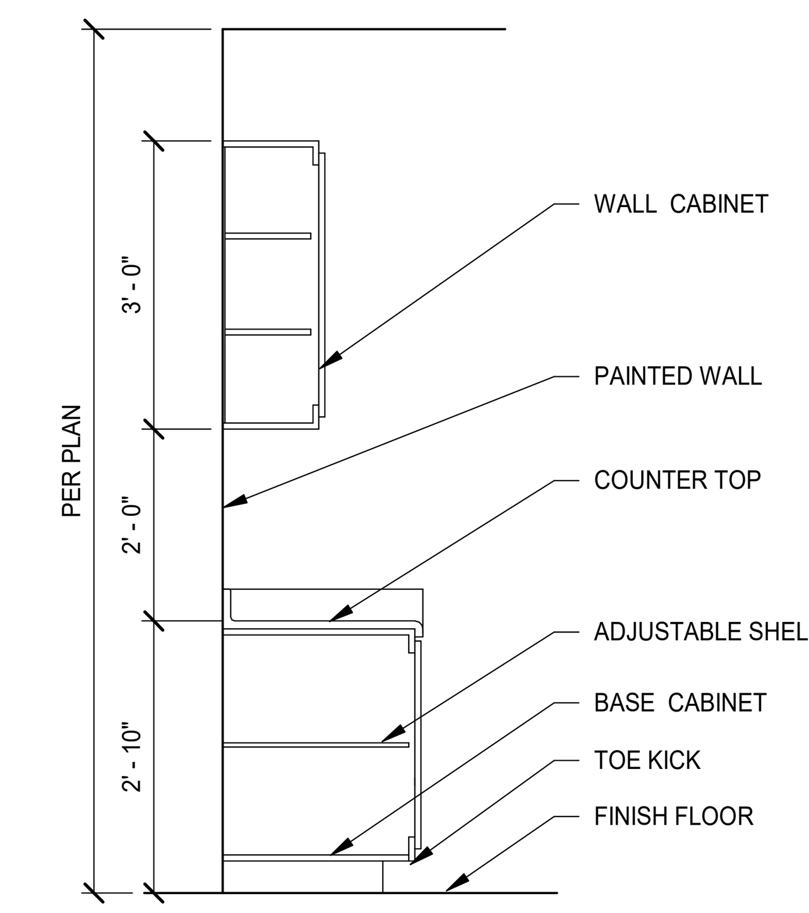
5 SIESMIC BRACING DETAIL
SCALE: 1/2" = 1'-0"



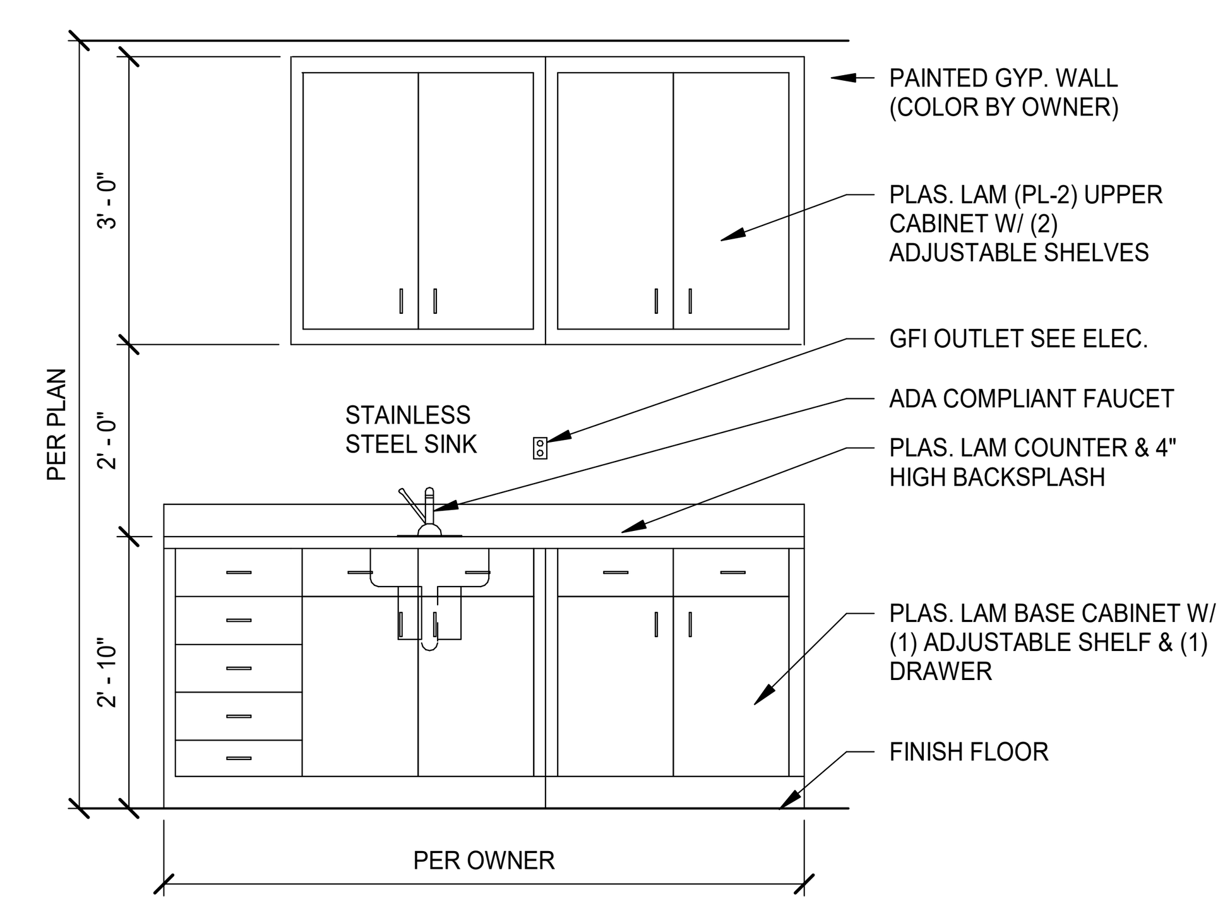
1 CABINET ELEVATION
SCALE: 1/2" = 1'-0"



6 CEILING DTL. GYP. BOARD
SCALE: 1/2" = 1'-0"

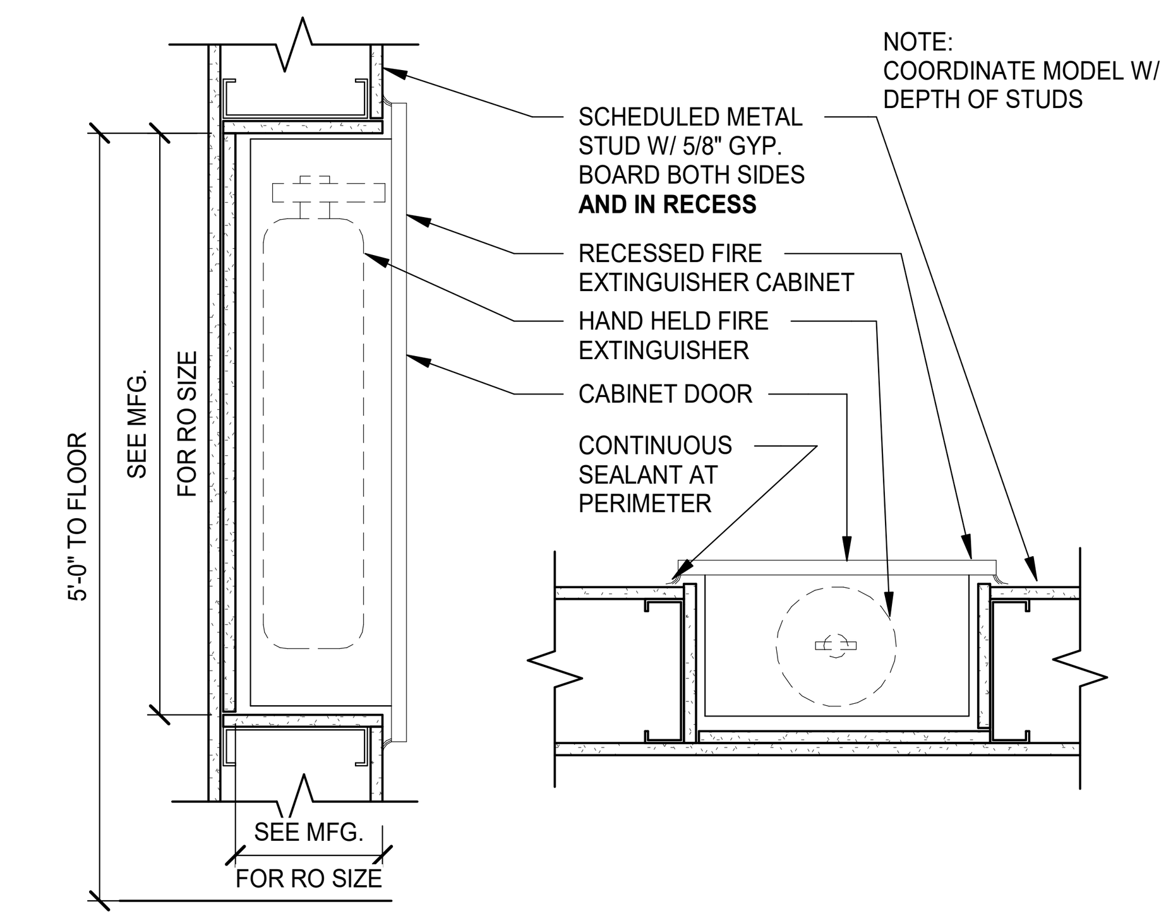


2 CABINET SECTION
SCALE: 1/2" = 1'-0"



7 EXAM ROOM CABINET ELEVATION
SCALE: N.T.S.

NOTE: COORDINATE MODEL W/ DEPTH OF STUDS



3 FIRE EXT CABINET
SCALE: 1 1/2" = 1'-0"

FRAMED WALL BRACING NOTES:

1. ALL WALLS SHALL BE BRACED @ A MAX. OF 48" O.C., EITHER TO THE ROOF STRUCTURE AS SHOWN ON THE APPROVED DRAWINGS, OR ALTERNATIVELY, ACROSS ADJOINING WALLS, THEN FINALLY TO THE EXTERIOR CONCRETE WALLS. THIS BRACING MAY CONSIST OF A SINGLE 3-5/8" x 20 GA. STUD, 6" x 20 GA. STUD, OR A DOUBLE 3-5/8" x 25 GA. STUD. NOTE THAT NO MORE THAN (3) INTERIOR WALLS SHOULD TRANSFER THROUGH THE SAME CONNECTION AT THE EXTERIOR WALLS.

2. ADDITIONAL BRACING MAY BE PROVIDED TO CONNECT TOP OF WALLS TO STIFFER PREP.. WALLS ACROSS HALLWAYS OR ROOM AREAS.

3. IT IS ACCEPTABLE TO PROVIDE BRACING ACROSS INTERSECTING WALLS @ 48" AWAY FROM THE CORNER.

4. PROVIDE A MINIMUM OF TWO SCREWS AT EACH CONNECTION OF BRACE TO WALL OR ROOF STRUCTURE. ALL SCREWS SHOULD RUN THROUGH THE THINNER MATERIAL FIRST, WHERE DIFFERENT MATERIAL OCCURS.

5. WHERE BOTH MATERIAL THICKNESS ARE 25 GA., PROVIDE MINIMUM THREE SCREWS PER CONNECTION.

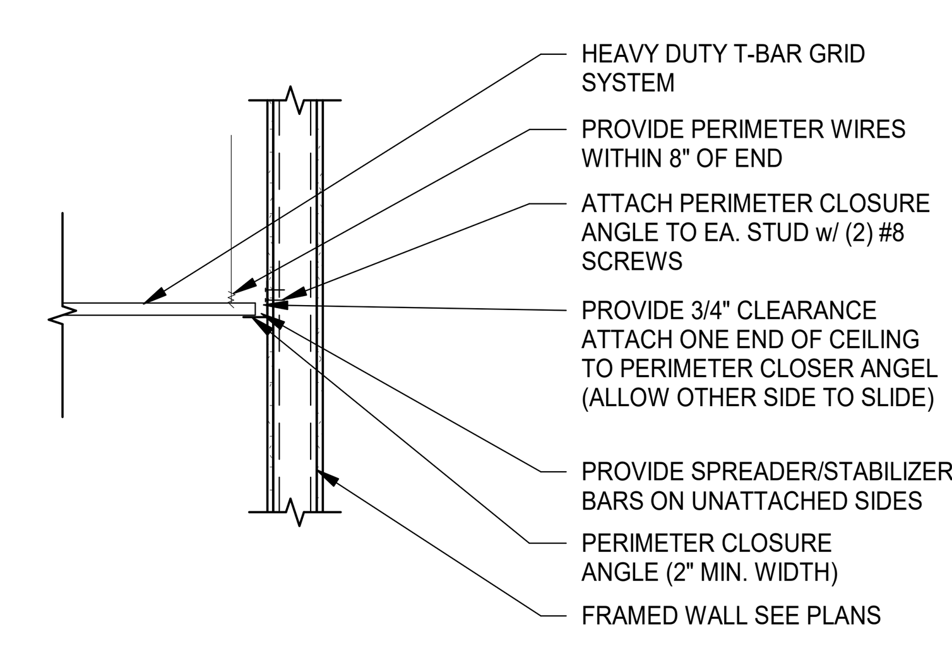
6. BRACING SHOULD BE ATTACHED TO CONNECT OVER WALL IN LIEU OF END OF CANTILEVERED TRACKS.

7. IN ALL LOCATIONS, NO WALL SHOULD BE LEFT UNBRACED FOR ANY LENGTH GREATER THAT 5'-0".

8. ALL BRACING SHALL BE TO ROOF STRUCTURE, AND NOT ATTACHED DIRECTLY TO ROOF DECK.

9. ALL WALL STUDS SHALL RECEIVE GYP. BOARD SHEATHING ON BOTH SIDES OR HORIZONTAL. BRIDGING SHALL BE INSTALLED NOT MORE THAN 54" APART. BRIDGING MAY CONSIST OF EITHER COLD ROLLED CHANNEL MECHANICALLY FASTENED TO WEBS OF PUNCHED STUDS OR A COMBINATION OF FLAT STRAPS AND STUD-TRACK SOLID BLOCKING OF WIDTH AND THICKNESS TO MATCH STUDS.

4 WALL BRACING NOTES
SCALE: 3/4" = 1'-0"



8 PERIMETER CONNECTION DETAIL
SCALE: 3/4" = 1'-0"

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MEDICAL OFFICE LAYOUT TENANT IMPROVEMENT

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TOOELE, UTAH

STATE OF UTAH
STEVEN N. WARD
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PROJECT NUMBER	DATE
T1895M	07-10-2024
PROJECT MANAGER	DESIGNED BY
JMC	DMP

A410

ABBREVIATIONS

(NOTE: ALL ABBREVIATIONS MAY NOT BE USED)

(E)	EXISTING
(F)	FUTURE
AAV	AIR ADMITTANCE VALVE
AD	ACCESS DOOR
AD	AREA DRAIN
AFF	ABOVE FINISHED FLOOR
AHJ	AUTHORITY HAVING JURISDICTION
AHU	AIR HANDLER UNIT
AP	ACCESS PANEL
APD	AIR PRESSURE DROP
ATC	AUTO TEMPERATURE CONTROL
AUTO	AUTOMATIC
AW	AIR WASHER
B	BOILER
B	BOTTOM
BAS	BUILDING AUTOMATION SYSTEM
BB	BASEBOARD
BC	BRANCH CONTROLLER
BD	BALANCING DAMPER
BDD	BACKDRAFT DAMPER
BHP	BRAKE HORSE POWER
BOD	BOTTOM OF DUCT
BOE	BOTTOM OF EQUIPMENT
BOP	BOTTOM OF PIPE
BP	BOOSTER PUMP
BS	BRANCH SELECTOR
BT	BATH TUB
BTH	BTU PER HOUR
BTU	BRITISH THERMAL UNITS
CA	COMBUSTION AIR
CA	COMPRESSED AIR LINE
CAV	CONSTANT AIR VOLUME
CC	COOLING COIL
CD	CONDENSATE DRAIN
CFH	CUBIC FEET PER HOUR
CFM	CUBIC FEET PER MINUTE
CH	CHILLER
CHWR	CHILLED WATER RETURN
CHWS	CHILLED WATER SUPPLY
CI	CAST IRON
CL	CENTER LINE ELEVATION
CLG	CEILING
CLG	COOLING
CO	CLEAN OUT
COMP	COMPONENT
COND	CONDENS(-ER, -ING, -ATION)
CONN	CONNECTION
CT	COOLING TOWER
CU	CONDENSING UNIT
CU	COPPER
CV	CONTROL VALVE
CWR	CONDENSER WATER RETURN
CWS	CONSDENSER WATER SUPPLY
DB	DRY BULB TEMPERATURE
DCW	DOMESTIC COLD WATER
DCWS	DOMESTIC COLD WATER SOFTENED
DF	DRINKING FOUNTAIN
DH	DUCT HEATER
DHW	DOMESTIC HOT WATER
DHWR	DOMESTIC HOT WATER RETURN
DIA	DIAMETER
DN	DOWN THROUGH FLOOR
DP	DIFFERENTIAL PRESSURE
DSN	DOWN SPOUT NOZZLE
DTW	DOMESTIC TEMPERED WATER
DV	DRYER VENT
EA	EXHAUST AIR
EAT	ENTERING AIR TEMPERATURE
EC	ELECTRICAL CONTRACTOR
EC	EVAPORATIVE COOLER
EER	ENERGY EFFICIENCY RATIO
EF	EXHAUST FAN
EFF	EFFICIENCY
EG	ETHYLENE CLYCOL
EH	ELECTRIC HEATER
EL	ELEVATION
ELEC	ELECTRIC
ELEV	ELEVATION
ENT	ENTERING
EOR	ENGINEER OF RECORD
ES	EMERGENCY SHOWER
ESP	EXTERNAL STATIC PRESSURE
ET	EXPANSION TANK
EVAP	EVAPORAT(-E, -ING, -ED, -OR)
EW	EMERGENCY EYE WASH
EWC	ELECTRIC WATER COOLER
EWT	ENTERING WATER TEMPERATURE
EX	EXISTING
EXT	EXTERNAL
F	FAHRENHEIT
F	FURNACE

ABBREVIATIONS

(NOTE: ALL ABBREVIATIONS MAY NOT BE USED)

FC	FAN COIL UNIT
FD	FIRE DAMPER
FD	FLOOR DRAIN
FDR	FLOOR DRAIN ROUND
FDS	FLOOR DRAIN SQUARE
FH	FIRE HYDRANT
FL	FILTER
FLA	FULL LOAD AMPERAGE
FLR	FLOOR
FOB	FLAT ON BOTTOM
FOS	FLAT ON SIDE
FOT	FLAT ON TOP
FPI	FINS PER INCH
FPM	FEET PER MINUTE
FPS	FEET PER SECOND
FS	FLOOR SINK
FSD	FIRE SMOKE DAMPER
FT	FOOT/FEET
FU	FIXTURE UNIT
GA	GAUGE
GAL	GALLON(S)
GC	GENERAL CONTRACTOR
GD	GARBAGE DISPOSAL
GE	GREASE EXHAUST
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
GRD	GRADE
GV	GREASE VENT
GW	GREASE WASTE
HB	HOSE BIBB
HD	HEAD
HDR	HEADER
HG	MERCURY
HHWR	HEATING HOT WATER RETURN
HHWS	HEATING HOT WATER SUPPLY
HP	HIGH PRESSURE
HP	HORSE POWER
HR	HOUR
HT	HEIGHT
HTG	HEATING
HTR	HEATER
HU	HUMIDIFIER
HVAC	HEATING, VENTILATING & AIR CONDITIONING
HX	HEAT EXCHANGER
HZ	HERTZ (FREQUENCY)
ID	INSIDE DIAMETER
IE	INVERT ELEVATION
IEER	INTEGRATED ENERGY EFFICIENCY RATIO
IM	ICE MAKER BOX
IN	INCHES
INSUL	INSULATION
JS	JANITOR SINK
KS	KITCHEN SINK
kW	KILOWATT
LAT	LEAVING AIR TEMPERATURE
LAV	LAVATORY
LBS	POUNDS
LH	LATENT HEAT
LI	LIQUID
LI/SU	LIQUID/SUCTION
LP	LOW PRESSURE
LRA	LOCKED ROTOR AMPS
LVG	LEAVING
LWT	LEAVING WATER TEMPERATURE
MA	MAKE UP AIR
MAU	MAKE UP AIR UNIT
MAX	MAXIMUM
MBH	THOUSAND BTU PER HOUR
MC	MECHANICAL CONTRACTOR
MCA	MINIMUM CIRCUIT AMPS
MD	MANUAL DAMPER
MFR	MANUFACTUR(-ER, -ED)
MH	MANHOLE
MIN	MINIMUM
MP	MEDIUM PRESSURE
N/A	NOT APPLICABLE
N/C	NOT CONDITIONED
NC	NOISE CRITERION
NC	NORMALLY CLOSED
NEBB	NATIONAL ENVIRONMENTAL BALANCING BUREAU
NEG	NEGATIVE
NEUT	NEUTRAL
NG	NATURAL GAS
NIC	NOT IN CONTRACT
NPSH	NET POSITIVE SUCTION HEAD
NTS	NOT TO SCALE
OA	OUTSIDE AIR
OD	OUTSIDE DIAMETER
ORD	OVERFLOW ROOF DRAIN
OS	OIL/SAND
OST	OUNCES PER SQUARE INCH

ABBREVIATIONS

(NOTE: ALL ABBREVIATIONS MAY NOT BE USED)

OZ	OUNCE
P	PUMP
P&TV	PRESSURE & TEMPERATURE VALVE
PD	PRESSURE DROP OF DIFFERENCE
PG	PROPOLENE GLYCOL
PH	PHASE
POS	POSITIVE
PPM	PARTS PER MILLION
PRESS	PRESSURE
PRV	PRESSURE REDUCING VALVE
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PSIA	PSI ABSOLUTE
PSIG	PSI GAUGE
PVC	POLYVINYL CHLORIDE
QD	QUICK DISCONNECT
R	THERMAL RESISTANCE
RA	RETURN AIR
RD	ROOF DRAIN
RF	RELIEF AIR
RH	RELATIVE HUMIDITY
RH	RELIEF HOOD
RI	ROUGH-IN
RLA	RATED LOAD AMPS
RP	RECIRCULATION PUMP
RPM	REVOLUTIONS PER MINUTE
RQD	REQUIRED
RTU	ROOF TOP UNIT
RV	RELIEF VENT
SA	SUPPLY AIR LOW PRESSURE
SA-MP	SUPPLY AIR MEDIUM PRESSURE
SC	SHADING COEFFICIENT
SCFM	STANDARD CUBIC FEET PER MINUTE
SD	STORM DRAIN
SF	SQUARE FOOTAGE
SF	SUPPLY FAN
SH	SENSIBLE HEAT
SH	SHOWER
SHWR	SNOWMELT HOT WATER RETURN
SHWS	SNOWMELT HOT WATER SUPPLY
SL	SEA LEVEL
SP	STATIC PRESSURE
SPEC(S)	SPECIFICATION(S)
SQ	SQUARE
SS	SANITARY SEWER
SS	STAINLESS STEEL
ST	SOUND TRAP
ST	STORAGE TANK
STD	STANDARD
SU	SUCTION
SW	SOIL, WASTE
TA	TRANSFER AIR
TAB	TESTING, ADJUSTING, AND BALANCING
TD	TEMP. DROP OR DIFF.
TD	TRENCH DRAIN
THERM	THERMAL
TMV	TEMPERATURE MIXING VALVE
TOD	TOP OF DUCT
TP	TRAP PRIMER ASSEMBLY
TRW	TEMPERED RECIRC WATER
TSTAT	THERMOSTAT
TWU	THROUGH WALL UNIT
TYP	TYPICAL
UH	UNIT HEATER
UP	UP THROUGH FLOOR
UR	URINAL
V	VENT, VENTALTION
VAC	VACUUM
VAV	VARIABLE AIR VOLUME
VB	VACUUM BREAKER
VEL	VELOCITY
VERT	VERTICAL
VFD	VARIABLE FREQUENCY DRIVE
VRF	VARIABLE REFRIGERANT FLOW
VRV	VARIABLE REFRIGERANT VOLUME
VTR	VENT THROUGH ROOF
W/	WITH
WB	WET BULB TEMPERATURE
WC	WATER CLOSET
WC	WATER COLUMN
WCO	WALL CLEAN OUT
WF	WASH FOUNTAIN
WG	INCHES WATER GAUGE
WG	WATER GAUGE
WH	WATER HEATER
WHA	WATER HAMMER ARRESTER
WM	WASHING MACHINE
WPD	WATER PRESSURE DROP
WT	WEIGHT

DEFINITIONS

(NOTE: ALL DEFINITIONS MAY NOT BE USED)

APPROVED: THE TERM "APPROVED", WHERE USED IN CONJUNCTION WITH THE ENGINEER'S ACTION ON THE CONTRACTOR'S SUBMITTALS, APPLICATIONS, AND REQUESTS, IS LIMITED TO THE ENGINEER'S DUTIES AND RESPONSIBILITIES AS STATED IN GENERAL AND SUPPLEMENTARY CONDITIONS.

DIRECTED: TERMS SUCH AS "DIRECTED", "REQUESTED", AUTHORIZED", "SELECTED", "APPROVED", "REQUIRED", AND "PERMITTED" MEAN "DIRECTED BY THE ENGINEER", "REQUESTED BY THE ENGINEER", AND SIMILAR PHRASES.

FURNISH: THE TERM "FURNISH" IS USED TO MEAN "SUPPLY AND DELIVER TO THE PROJECT SITE, READY FOR UNLOADING, UNPACKING, ASSEMBLY, INSTALLATION, AND SIMILAR OPERATIONS."

INDICATED: THE TERM "INDICATED" REFERS TO GRAPHIC REPRESENTATIONS, NOTES, OR SCHEDULES ON THE DRAWINGS, OTHER PARAGRAPHS OR SCHEDULES IN THE SPECIFICATIONS, AND SIMILAR REQUIREMENTS IN THE CONTRACT DOCUMENTS. WHERE TERMS SUCH AS "SHOWN", "NOTED", "SCHEDULED", AND "SPECIFIED" ARE USED, IT IS TO HELP THE READER LOCATE THE REFERENCE, NO LIMITATION ON LOCATION IS INTENDED.

INSTALL: THE TERM "INSTALL" IS USED TO DESCRIBE OPERATIONS AT PROJECT SITE INCLUDING THE ACTUAL "UNLOADING, UNPACKING, ASSEMBLY, ERECTION, PLACING, ANCHORING, APPLYING, WORKING TO DIMENSION, FINISHING, CURING, PROTECTING, CLEANING, AND SIMILAR OPERATIONS."

INSTALLER: AN "INSTALLER" IS THE CONTRACTOR OR AN ENTITY ENGAGED BY THE CONTRACTOR, EITHER AS AN EMPLOYEE, SUBCONTRACTOR, OR SUB-SUBCONTRACTOR, FOR PERFORMANCE OF A PARTICULAR CONSTRUCTION ACTIVITY, INCLUDING INSTALLATION, ERECTION, APPLICATION, AND SIMILAR OPERATIONS. INSTALLERS ARE REQUIRED TO BE EXPERIENCED IN THE OPERATIONS THEY ARE ENGAGED TO PERFORM.

PROVIDE: THE TERM "PROVIDE" MEANS "TO FURNISH AND INSTALL, COMPLETE AND READY FOR THE INTENDED USE."

SYMBOL LEGEND

- A∅ — ROUND DUCT
- AxB — RECTANGULAR DUCT, SIDE SHOWN IS "A" DIMENSION
- INSULATED DUCT
- LINED DUCT
- SUPPLY DIFFUSER
- (15") — DUCT DIFFUSER
- LINEAR SLOT DIFFUSER
- SIDE WALL DIFFUSER
- EXHAUST/RETURN GRILLE
- U-TRANSFER
- GRILLE, REGISTER, & DIFFUSER TAG — SERVICE: S-SUPPLY, E-EXHAUST, RETURN, OR TRANSFER; SURFACE TYPE: L-LAY IN, G-GYPSUM, D-DUCT, W-WALL, S-LINEAR SLOT; GRD IDENTIFIER; AIRFLOW, RAG, OR TAG (SL-XXXX, 1000 CFM)
- AIRFLOW ARROW
- U.C. 1/2" — TRANSFER AIR DOOR UNDERCUT INDICATOR
- WC-10 — PLUMBING FIXTURE TAG
- PIPE FLOW ARROW
- 1/8" / 1'-0" — PIPE SLOPE INDICATOR
- RTU-301 — MECHANICAL EQUIPMENT TAG
- Room name 101 — ROOM TAG
- 1 / A101 SIM — DETAIL INDICATOR
- B.1 — REVISION INDICATOR
- 1 — KEYNOTE INDICATOR
- NEW CONNECTION POINT TO EXISTING
- DEMO EXISTING SERVICES
- T — THERMOSTAT
- S — SWITCH
- LC — LIGHTING CONTROL OVERRIDE SWITCH
- CO — CO2 SENSOR
- DP — DIFFERENTIAL PRESSURE SENSOR
- SP — STATIC PRESSURE SENSOR
- J — JUNCTION BOX
- H — HUMIDISTAT

DRAWING INDEX

SHEET #	SHEET NAME	REV.	REV. NAME	DATE
M001	TITLE SHEET (Legend & Abbreviations)	0	PERMIT SET	09-19-2024
M002	MECHANICAL NOTES & SPECIFICATIONS	0	PERMIT SET	09-19-2024
M003	MECHANICAL CALCULATIONS	0	PERMIT SET	09-19-2024
M100	MECHANICAL ZONE PLAN	0	PERMIT SET	09-19-2024
M101	LEVEL 01 MECHANICAL PLAN	0	PERMIT SET	09-19-2024
M102	LEVEL 01 MECHANICAL PIPING PLAN	0	PERMIT SET	09-19-2024
M501	MECHANICAL DETAILS	0	PERMIT SET	09-19-2024
M601	MECHANICAL SCHEDULES	0	PERMIT SET	09-19-2024
M701	VRF SCHEMATIC	0	PERMIT SET	09-19-2024
P001	PLUMBING NOTES & SPECIFICATIONS	0	PERMIT SET	09-19-2024
P100	UNDERGROUND PLUMBING PLAN	0	PERMIT SET	09-19-2024
P101	LEVEL 01 PLUMBING PLAN	0	PERMIT SET	09-19-2024
P501	PLUMBING DETAILS & SCHEDULES	0	PERMIT SET	09-19-2024

HVAC BASIS OF DESIGN

CLIMATE ZONE: 5B

OUTSIDE DESIGN TEMPS.: 98°F Db SUMMER, 62°F Wb SUMMER, 9°F Db WINTER

DESIGN ALTITUDE: 5043 FT.

INTERIOR DESIGN DATA	SUMMER		WINTER	
	T DB (°F)	MAX RH (%)	T DB (°F)	MIN RH (%)
ALL	75	65	70	5

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MEDICAL OFFICE LAYOUT

ERDA WAY & HWY 36
TOOELE, UTAH

PROFESSIONAL ENGINEER — THOMAS BRADLEY SHAKESPEARE — 10361455 — STATE OF UTAH — 09-19-2024

NO.	DATE	REVISION
0	09-19-2024	PERMIT SET

TITLE SHEET (Legend & Abbreviations)

PROJECT NUMBER 24194
DATE 09-19-2024
PROJECT MANAGER LEB
DESIGNED BY MT

M001

PENETRATION FIRESTOP NOTES

1. FIRE-RATED PENETRATIONS DETAILS SHOWN ON THE CONSTRUCTIONS DOCUMENTS SHOW GENERAL METHOD OF MECHANICAL (HVAC) AND PLUMBING PENETRATION FIRESTOPPING.
2. THE CONTRACTOR SHALL REVIEW CONSTRUCTION DOCUMENTS AND PROVIDE SPECIFIC FIRESTOPPING DETAILS FROM A SPECIFIC FIRESTOPPING MANUFACTURER FOR EACH MECHANICAL (HVAC) AND PLUMBING PIPE OR DUCT PENETRATION FOR EACH FIRE RATED ASSEMBLY.
3. PROVIDE PENETRATION FIRESTOPPING THAT IS PRODUCED AND INSTALLED TO RESIST SPREAD OF FIRE ACCORDING TO REQUIREMENTS INDICATED, RESIST PASSAGE OF SMOKE AND OTHER GASES, AND MAINTAIN ORIGINAL FIRE-RESISTANCE RATING OF CONSTRUCTION PENETRATED.
4. PENETRATION FIRESTOPPING SYSTEMS SHALL BE COMPATIBLE WITH ONE ANOTHER, WITH THE SUBSTRATES FORMING OPENINGS, AND WITH PENETRATING ITEMS IF ANY.
5. PENETRATIONS IN FIRE-RESISTANCE-RATED WALLS: PROVIDE PENETRATION FIRESTOPPING WITH RATINGS DETERMINED PER ASTM E 814 OR UL 1479, BASED ON TESTING AT A POSITIVE PRESSURE DIFFERENTIAL OF 0.01-INCH W.G.
6. PENETRATION FIRESTOPPING PRODUCTS SHALL BEAR UL, ETL OR FM GLOBAL CLASSIFICATION MARKING OF QUALIFIED TESTING AND INSPECTING AGENCY.
7. DO NOT INSTALL PENETRATION FIRESTOPPING WHEN AMBIENT OR SUBSTRATE TEMPERATURES ARE OUTSIDE LIMITS PERMITTED BY PENETRATION FIRESTOPPING MANUFACTURERS OR WHEN SUBSTRATES ARE WET BECAUSE OF RAIN, FROST, CONDENSATION, OR OTHER CAUSES.
8. COORDINATE CONSTRUCTION OF OPENINGS AND PENETRATING ITEMS TO ENSURE THAT PENETRATION FIRESTOPPING IS INSTALLED ACCORDING TO SPECIFIED REQUIREMENTS.
9. COORDINATE SIZING OF SLEEVES, OPENINGS, CORE-DRILLED HOLES, OR CUT OPENINGS TO ACCOMMODATE PENETRATION FIRESTOPPING.
10. INSTALL PENETRATION FIRESTOPPING TO COMPLY WITH MANUFACTURER'S WRITTEN INSTALLATION INSTRUCTIONS AND PUBLISHED DRAWINGS FOR PRODUCTS AND APPLICATIONS INDICATED.
11. INSTALL FORMING MATERIALS AND OTHER ACCESSORIES OF TYPES REQUIRED TO SUPPORT FILL MATERIALS DURING THEIR APPLICATION AND IN THE POSITION NEEDED TO PRODUCE CROSS-SECTIONAL SHAPES AND DEPTHS REQUIRED TO ACHIEVE FIRE RATINGS INDICATED.
12. IDENTIFY PENETRATION FIRESTOPPING WITH PREPRINTED METAL OR PLASTIC LABELS. ATTACH LABELS PERMANENTLY TO SURFACES ADJACENT TO AND WITHIN 6 INCHES OF FIRESTOPPING EDGE SO LABELS WILL BE VISIBLE TO ANYONE SEEKING TO REMOVE PENETRATING ITEMS OR FIRESTOPPING.

DUCT CONSTRUCTION NOTES

1. ALL DUCTWORK SHALL BE GALVANIZED SHEET METAL, EXCEPT WHERE INDICATED OTHERWISE.
2. SHEET METAL DUCT STATIC PRESSURE CLASSIFICATION:

   SUPPLY AIR DUCT: 2" W.C.
   RETURN AIR DUCT: 2" W.C. (NEGATIVE)
   EXHAUST AIR DUCT: 2" W.C. (NEGATIVE)
   OUTSIDE AIR DUCT: 2" W.C.
3. SEAL ALL TRANSVERSE JOINTS AND LONGITUDINAL SEAMS TO SMACNA SEAL CLASS B.
4. DO NOT USE GRAY DUCT TAPE, FOIL BACKED TAPE, OIL BASED CAULKING AND GLAZING COMPOUNDS TO SEAL METAL DUCTS.
5. CROSS-BREAK DUCT SURFACES 19" THROUGH 60". USE ANGLE REINFORCING FOR DUCTS SURFACES OF 60".
6. ALL METAL LONGITUDINAL SEAMS SHALL BE PITTSBURGH OR OTHER LISTED SMACNA LISTED SEAM. DO NOT USE BUTTON PUNCH SNAP-BACK SEAMS.
7. SUSPEND METAL DUCTWORK NOT EXCEEDING 30" LONGEST SIDE AT EVERY JOINT. DO NOT EXCEED 10'-0" HANGER SPACING. USE 1" X 18 GAGE GALVANIZED STRAPS (MINIMUM) ATTACHED TO BOTTOM AND SIDES OF DUCT.
8. SUSPEND METAL DUCTWORK EXCEEDING 30" LONGEST SIDE AT MAXIMUM 8'-0" SPACING USING ANGLES AND RODS.
9. SUPPORT DUCTWORK FROM STRUCTURAL MEMBERS. ATTACHMENT TO ROOF DECK IS NOT ACCEPTABLE.
10. DUCT SIZES SHALL BE VERIFIED FOR CLEARANCES AT THE JOB SITE PRIOR TO FABRICATION. DIMENSIONS MAY BE CHANGED TO ACCOMMODATE CONSTRUCTION CLEARANCES. FREE AREA OF DUCT SHALL BE MAINTAINED.
11. DUCT TRANSITIONS SHALL BE CONSTRUCTED WITH SLOPE OF 1/4.
12. PROVIDE ELBOWS AND CHANGES IN DIRECTION WITH SINGLE VANE TURNING VANES.
13. ALL JOINTS SHALL BE MADE AIRTIGHT BY APPROVED METHODS, INCLUDING TAPES, MASTICS, GASKETING OR OTHER APPROVED CLOSURE SYSTEMS.
14. TAPE ALONE CANNOT BE SUBSTITUTED FOR MECHANICAL FASTENERS.
15. TAPES AND MASTICS USED TO SEAL DUCTWORK MUST BE LISTED AND LABELED IN ACCORDANCE WITH UL 181A AND SHALL BE MARKED "181A-P" FOR PRESSURE-SENSITIVE TAPE, "181A-M" FOR MASTIC OR "181A-H" FOR HEAT SENSITIVE TAPE.
16. TAPES AND MASTICS USED TO SEAL FLEXIBLE AIR DUCTS SHALL COMPLY WITH UL 181B AND SHALL BE MARKED "181B-FX" FOR PRESSURE SENSITIVE TAPE, OR "181B-M" FOR MASTIC.
17. MECHANICAL FASTENERS USED WITH FLEXIBLE NON-METALLIC AIR DUCTS SHALL COMPLY WITH UL 181 AND SHALL BE MARKED "181B-".
18. FLEXIBLE CONNECTORS SHALL NOT BE USED.
19. HIGH EFFICIENCY TAKE-OFF FITTINGS WITH MANUAL DAMPER SHALL HAVE 2" STAND OFF BRACKET.
20. ALL BRANCH TAKE-OFFS TO INDIVIDUAL AIR INLET ORAIR OUTLET SHALL BE PROVIDED WITH MANUAL DAMPER.
21. ALL DUCTWORK SHALL BE A MINIMUM 26 GAUGE GALVANIZED SHEET METAL.

TEST ADJUST & BALANCE NOTES

1. THE MINIMUM REQUIRMENT FOR TESTING, ADJUSTING, AND BALANCING (TAB) OF THE HEATING, VENTILATION, AND AIR CONDITIONING (HVAC) DISTRIBUTION SYSTEMS AND DOMESTIC HOT WATER RECIRCULATION SYSTEMS SHALL BE AS FOLLOWS.
2. CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE TESTING ADJUSTING AND BALANCING FOR THIS PROJECT
3. THE SYSTEMS SHALL BE TESTED, ADJUSTED AND BALANCED (WHERE APPLICABLE): SUPPLY AIR SYSTEM, RETURN AIR SYSTEM, EXHAUST AIR SYSTEM, OUTSIDE AIR SYSTEM, ,HYDRONIC SYSTEM, REFRIGERANT SYSTEM, DOMESTIC HOT WATER RECIRCULATION SYSTEM, AND ALL ASSOCIATED EQUIPMENT.
4. CONTRACTOR PERFORMING TESTING ADJUSTING AND BALANCING WORK SHALL BE EITHER AABC OR NEBB CERTIFIED.
5. TESTING ADJUSTING AND BALANCING SHALL BE PERFORMED IN ACCORDANCE WITH THE NEBB OR AABC TEST PROCEDURES.
6. TESTING ADJUSTING AND BALANCING REPORT FORMS SHALL BE STANDARD FORMS FROM EITHER AABC OR NEBB.
7. CONTRACTOR SHALL VERIFY QUANTITIES AND LOCATIONS OF ALL BALANCING DEVICES. CONTRACTOR SHALL VERIFY THAT THESE BALANCING DEVICES ARE ACCESSIBLE AN APPROPRIATE FOR BALANCING AND FOR EFFICIENT SYSTEM AND EQUIPMENT OPERATION PRIOR TO COMMENCING WORK.
8. MECHANICAL AND HYDRONIC SYSTEMS SHALL BE ADJUSTED TO WITHIN THE FOLLOWING TOLERANCES.

   SUPPLY AIR AND RETURN AIR: (-) 10% TO (+) 10%
   EXHAUST FANS: (-) 5% TO (+) 10%
   EQUIPMENT WITH FANS: (-) 5% TO (+) 5%
   AIR OUTLETS AND INLETS: (-) 10% TO (+) 10%
   PUMPS: (-) 10% TO (+) 10%
   HYDRONIC BALANCE DEVICES: (-) 10% TO (+) 10%
9. FINAL BALANCE REPORT SHALL INCLUDE THE FOLLOWING (WHERE APPLICABLE): TEST CONDITIONS FOR FANS, SYSTEM DIAGRAMS, AIR CONDITIONING UNIT TEST REPORTS, FAN TEST REPORTS, AIR TERMINAL DEVICE REPORTS, PUMP REPORTS, AND HYDRONIC BALANCE DEVICE REPORTS.
10. SUBMIT FINAL BALANCING REPORT TO THE DESIGN ENGINEER AND OWNER. IF INCLUDED IN PROJECT SCOPE, CONTRACTOR SHALL REQUEST THAT A FINAL INSPECTION BE MADE BY THE DESIGN ENGINEER. DURING THE FINAL INSPECTION, DESIGN ENGINEER MAY SELECT MEASUREMENTS DOCUMENTED IN THE FINAL REPORT TO BE VERIFIED BY THE CONTRACTOR.
11. APPROXIMATELY 90 DAYS AFTER SUBMISSION OF THE FINAL BALANCING REPORT, CONTRACTOR SHALL PERFORM ADDITIONAL TESTING ADJUSTING AND BALANCING TO VERIFY THAT BALANCED CONDITIONS ARE BEING MAINTAINED THROUGHOUT EACH SYSTEM AND TO CORRECT UNUSUAL CONDITIONS.
12. ADDITIONAL TESTING ADJUSTING AND BALANCING SHALL BE MADE AS DIRECTED BY THE DESIGN ENGINEER TO CORRECT UNUSUAL CONDITIONS. ADDITIONAL TESTING WILL NOT EXCEED THREE (3) DAYS DURING THE FIRST SIX MONTHS OF OPERATION.
13. IF INITIAL TESTING ADJUSTING AND BALANCING PROCEDURES WERE NOT PERFORMED DURING NEAR-PEAK SUMMER AND WINTER CONDITIONS, PERFORM ADDITIONAL TESTING ADJUSTING AND BALANCING DURING NEAR PEAK SUMMER AND WINTER CONDITIONS.

GENERAL MECHANICAL NOTES

1. MECHANICAL DRAWINGS SHOW GENERAL DESIGN, ARRANGEMENT AND EXTENT OF MECHANICAL SYSTEMS. DRAWINGS DO NOT SHOW ALL THE OFFSETS, BENDS OR ELBOWS NECESSARY FOR COMPLETE INSTALLATION IN THE SPACE PROVIDED. THE CONTRACTOR SHALL MAKE SUCH SLIGHT ALTERATIONS AS MAY BE NECESSARY TO MAKE SYSTEMS COMPLETE AND OPERATIONAL IN ACCORDANCE WITH THE DESIGN INTENT. MAJOR DEVIATIONS SUCH AS CHANGES IN COMPONENT SIZES, WEIGHTS, QUANTITIES OR MATERIAL REQUIRE PRIOR APPROVAL BY DESIGN ENGINEER.
2. DRAWINGS AND SPECIFICATIONS HAVE BEEN PREPARED TO SUPPLEMENT EACH OTHER AND SHALL BE INTERPRETED AS IN INTEGRAL UNIT WITH ITEMS SHOWN ON ONE AND NOT OTHER BEING FURNISHED AND INSTALLED AS THOUGH SHOWN AND CALLED OUT IN BOTH.
3. ENTIRE MECHANICAL INSTALLATION SHALL CONFORM TO THE REQUIREMENTS OF THE MOST RECENTLY ADOPTED BUILDING CODES, MECHANICAL CODE, PLUMBING CODE, ELECTRICAL CODE, AND ALL OTHER APPLICABLE CITY, COUNTY, STATE, AND FEDERAL CODES AND REGULATIONS IN EFFECT.
4. ENTIRE MECHANICAL INSTALLATION SHALL CONFORM TO ANY CODES, RULES, REGULATIONS AND REQUIREMENTS OF OWNER.
5. PRIOR TO FABRICATION AND INSTALLATION OF ANY MECHANICAL COMPONENT, CONTRACTOR SHALL COORDINATE INSTALLATION OF ALL MECHANICAL WORK WITH ALL OTHER BUILDING TRADES, INCLUDING BUILDING TRADES HIRED DIRECTLY BY OWNER. WHERE CONFLICTS MAY OCCUR, THEY SHALL BE RESOLVED PRIOR TO INSTALLATION.
6. SPACE ABOVE ALL CEILINGS IS LIMITED. CAREFUL COORDINATION IS REQUIRED WITH ALL TRADES BEFORE ANY PIPE, DUCT, OR EQUIPMENT IS ORDERED AND OR INSTALLED. ANY CONFLICTS AND OR CHANGES FOUND DURING INSTALLATION THAT RESULT FROM LACK OF COORDINATION BY THE CONTRACTORS DURING SHOP DRAWING PROCESS ARE THE RESPONSIBILITY OF THE CONTRACTOR.
7. CONTRACTOR SHALL BE RESPONSIBLE TO REVIEW AND USE, WHERE APPROPRIATE, ALL MECHANICAL DETAILS SHOWN ON THE DRAWINGS. DETAILS MAY OR MAY NOT BE CALLED OUT ON DRAWINGS WITH SYMBOLS OR KEYED NOTES. ANY CHANGES RESULTING FROM FAILURE TO INSTALL MECHANICAL SYSTEM WITHOUT USING THE INCLUDED DETAILS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
8. STRUCTURE SHOWN ON DETAILS MAY OR MAY NOT PERTAIN TO A PORTION OR ANY PORTION OF THE BUILDING. COORDINATE ALL MOUNTING REQUIREMENTS WITH ARCHITECTURAL AND STRUCTURAL DRAWINGS.
9. ANY PART OF THE MECHANICAL INSTALLATION THAT FAILS, IS UNFIT, OR BECOMES DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED OR REPLACED BY CONTRACTOR AT NO ADDITIONAL EXPENSE TO OWNER.
10. SEE ARCHITECTURAL REFLECTED CEILING PLAN FOR EXACT LOCATION OF ALL CEILING DIFFUSERS AND GRILLES.
11. CONTRACTOR SHALL OPERATE SYSTEMS AND DEMONSTRATE ALL ASPECTS OF SYSTEMS TO ENGINEER AND OR OWNER TO PROVE ALL SYSTEMS ARE OPERATIONAL.
12. DURING CONSTRUCTION, THE CONTRACTOR SHALL MAINTAIN A SET OF AS-BUILT REDLINED RECORD DRAWINGS AT THE PROJECT SITE. ALL CHANGES IN LAYOUT, ROUTING, EQUIPMENT, COMPONENTS, AND ACCESSORIES SHALL BE RECORDED. THESE REDLINED DRAWINGS SHALL BE GIVEN TO THE ARCHITECT/ENGINEER AFTER FINAL INSPECTION IN ACCORDANCE WITH SPECIFICATIONS.

GENERAL EQUIPMENT NOTES

1. ALL CAPACITES ARE AT JOB SITE CONDITIONS AND ARE MINIMUM CAPACITY.
2. ALL AIR CONDITIONING EQUIPMENT SHALL BE A.R.I. CERTIFIED AND U.L. LISTED.
3. ALL MECHANICAL EQUIPMENT SHALL BE INSTALLED TO CONFORM WITH LOCAL SEISMIC REQUIREMENTS AND THE REQUIREMENTS OF THESE CONSTRUCTION DOCUMENTS.
4. VERIFY ALL REQUIRED SERVICE CONNECTIONS, INCLUDING ELECTRICAL CHARACTERISTICS FOR ALL EQUIPMENT PRIOR TO ORDERING EQUIPMENT.
5. ALL EQUIPMENT SHALL BE INDEPENDENTLY SUPPORTED FROM STRUCTURAL MEMBERS.
6. ALL EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTALLATION INSTRUCTIONS.
7. ALL SIMILAR EQUIPMENT SHALL BE OF THE SAME MANUFACTURER.
8. AIR INLETS AND OUTLETS SHALL BE OF THE SAME MANUFACTURER.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE HVAC EQUIPMENT CHECK-IN, SAFEKEEPING, AND DAMAGE
10. ALL SYSTEM COMPONENTS, WHERE REQUIRED, SHALL BE CERTIFIED AND LISTED BY A THIRD PARTY.
11. SEE ARCHITECTRURAL ADA DRAWINGS/DETAILS FOR WALL SWITCHES OR CONTROL SENSORS (I.E. THERMOSTATS) MOUNTING HEIGHTS, BUT NOT GREATER THAN 48" AFF.
12. THERMOSTAT SENSORS TO BE LOCATED TO AVOID DIRECT SUNLIGHT AND DIRECT AIRFLOW FROM AIR DEVICES. THERMOSTATS LOCATED ON BUILDING EXTERIOR WALLS TO HAVE ALL WIRING HOLES SEALED AND TO BE THERMALLY INSULATED FROM THE WALL SYSTEM.

230010 - BASIC MECHANICAL REQUIREMENTS

1. COORDINATE LOCATIONS OF ALL NEW ROOF OPENINGS AND ROOF MOUNTED EQUIPMENT WITH STRUCTURAL AND ARCHITECTURAL PLANS PRIOR TO ANY INSTALLATION.
2. V-BELT DRIVES SHALL BE OF FABRIC AND RUBBER CONSTRUCTION. BELT GUARDS SHALL BE PROVIDED FOR ALL EXPOSED BELTS AND DRIVES.
3. PROVIDE 4" THICK CONCRETE HOUSEKEEPING PADS UNDER ALL FLOOR MOUNTED EQUIPMENT.
4. PROPERLY LUBRICATE ALL PIECES OF EQUIPMENT BEFORE TURNING THE SYSTEM OVER TO OWNER.
5. INSTALL DUCT MOUNTED SUPPLY AND RETURN AIR SMOKE DETECTORS IN ALL ROOFTOP, FAN-COIL, AIR-HANDLING, AND OTHER SUPPLY AIR SYSTEMS WITH CAPACITY GREATER THAN 2000 CFM. SMOKE DETECTORS ARE PURCHASED AND WIRED BY DIVISION 26 CONTRACTOR.

230011 - BASIC PIPING MATERIALS & METHODS

1. CORE CUT ALL PIPE PENETRATION OF MASONRY OR CONCRETE WALLS AND FLOORS. SLEEVE ALL PENETRATIONS THROUGH NEW WALLS AND FLOORS. SEAL ALL PENETRATIONS WATER TIGHT WITH SILICONE SEALANT. USE FIRE RATED SEALANT (3M "FIRE BARRIER" OR EQUAL) FOR 1 HOUR OR 2 HOUR PENETRATIONS.
2. CAULK AROUND ALL PIPING THAT PASSES THROUGH FIRE-RATED PARTITIONS WITH A NON-HARDENING CAULKING SIMILAR TO 3M "FIRE BARRIER".
3. SEAL ALL PIPING THROUGH WALLS AIRTIGHT.

230523 - VALVES

1. PROVIDE VALVES OF TYPE AND QUANTITY SHOWN ON DRAWINGS. VALVES OF THE SAME TYPE SHALL BE BY ONE MANUFACTURER.

230593 - TESTING, ADJUSTING AND BALANCING

1. OBTAIN SERVICES OF AN INDEPENDENT TESTING AND BALANCING AGENCY TO BALANCE AND ADJUST SYSTEMS. THIS SHALL BE DONE BY PERSONS FULLY FAMILIAR WITH SYSTEMS OF THIS TYPE. BALANCING SHALL BE DONE IN ACCORDANCE WITH AABC OR NEBB STANDARDS. ALL DATA SHALL BE RECORDED AND A REPORT SUBMITTED TO THE ENGINEER PRIOR TO JOB CLOSE OUT.

230700 - MECHANICAL INSULATION

1. PIPE INSULATION TO BE SNAP-ON GLASS FIBER TYPE WITH VAPOR JACKET. SEAL ALL ENDS AND JOINTS TO PROVIDE A COMPLETELY SEALED SYSTEM. ALTERNATIVELY, USE FLEXIBLE UNICELLULAR ASTM 534 TYPE 1 INSULATION. ALL PIPE INSULATION SHALL BE LISTED AND LABELED.
2. INDOOR PIPE INSULATION AND RELATED MATERIALS SHALL HAVE A FLAME-SPREAD INDEX OF 25 OR LESS, AND SMOKE-DEVELOPED INDEX OF 50 OR LESS WHEN TESTED TO ASTM E 84.
3. ALL PIPE INSULATION SHALL NOT FLAME, GLOW, SMOLDER OR SMOKE WHEN TESTED IN ACORDANCE WITH ASTM C411.

MINIMUM PIPE INSULATION THICKNESS (INCHES)

FLUID OPERATING TEMPERATURE RANGE AND USAGE (°F)	INSULATION CONDUCTIVITY		NOMINAL PIPE OR TUBE SIZE (inches)				
	CONDUCTIVITY Btu x in./(h x ft^2 x °F)	Mean Rating Temperature, °F	< 1	1 to < 1 1/2	1 1/2 to < 4	4 to < 8	> 8
>350	0.32-0.34	250	4.5	5	5	5	5
251-350	0.29-0.32	200	3	4	4.5	4.5	4.5
201-250	0.27-0.30	150	2.5	2.5	2.5	3	3
141-200	0.25-0.29	125	1.5	1.5	2	2	2
105-140	0.21-0.28	100	1	1	1.5	1.5	1.5
40-60	0.21-0.27	75	0.5	0.5	1	1	1
< 40	0.20-0.26	50	0.5	1	1	1	1.5

230700 - MECHANICAL INSULATION

4. PIPING SERVING AS PART OF A HEATING OR COOLING SYSTEM SHALL BE THERMALLY INSULATED IN ACCORDANCE WITH THE MINIMUM PIPE INSULATION THICKNESS TABLE.

   NOTE: FOR PIPING SMALLER THAN 1 1/2 INCHES AND LOCATED IN PARTITIONS WITHIN CONDITIONED SPACES, REDUCTION OF THESE THICKNESSES BY 1 INCH SHALL BE PERMITTED BUT NOT TO A THICKNESS LESS THAN 1 INCH.
5. WRAP ALL SUPPLY AND RETURN DUCTWORK WITH FOIL FACED FIBERGLASS INSULATION. WRAP INSULATION TIGHTLY ON THE DUCT WITH ALL CIRCUMFERENTIAL JOINTS BUTTED AND LONGITUDINAL JOINTS OVERLAPPED A MIN. OF 2". COVER ALL JOINTS WITH FOIL-REINFORCED 'KRAFT' TAPE, 3" WIDE.
6. DUCT INSULATION IN CONDITIONED AREAS IS NOT REQUIRED IN CLIMATES B OR C.
7. DUCT INSULATION IN EXPOSED CONDITIONED AREAS IS NOT REQUIRED IN CLIMATES 4-7 A.
8. DUCT INSULATION SHALL BE MECHANICALLY FASTENED TO DUCT WIDER THAN 24" AND SHALL BE AFFIXED TO BOTTOM OF DUCT WITH WELDED METAL PINS AND 2" WASHERS AT 18" MAXIMUM SPACING.
9. OUTDOOR DUCTWORK EXPOSED TO THE WEATHER SHALL HAVE THE REQUIRED WRAP INSULATION TO MEET THE MINIMUM THERMAL RESISTANCE OF THE CLIMATE AND SHALL BE FITTED WITH 0.016 EMBOSSED ALUMINUM JACKET MECHANICALLY FASTENED FOR A TIGHT WEATHERPROOF FIT.

DUCT SYSTEM	DUCT LOCATION	MINIMUM THERMAL RESISTANCE ("R")
SUPPLY, RETURN, & OUTSIDE AIR	BUILDING INTERIOR, (CONDITIONED)	4
	BUILDING INTERIOR, (UNCONDITIONED)	6
	BUILDING EXTERIOR (OUTSIDE BUILDING INSULATION)	8 (CLIMATE ZONES 1-4) 12 (CLIMATE ZONES 5-8)
EXHAUST AIR	ALL	0

230700 - MECHANICAL INSULATION

10. INDOOR DUCT INSULATION AND RELATED MATERIALS SHALL HAVE A FLAME-SPREAD INDEX OF 25 OR LESS, AND SMOKE-DEVELOPED INDEX OF 50 OR LESS WHEN TESTED TO ASTM E 84.
11. OUTDOOR DUCT INSULATION AND RELATED MATERIALS SHALL HAVE A FLAME-SPREAD INDEX OF 75 OR LESS, AND SMOKE-DEVELOPED INDEX OF 150 OR LESS WHEN TESTED TO ASTM 84.
12. ALL DUCT COVERINGS AND LININGS SHALL NOT FLAME, GLOW, SMOLDER OR SMOKE WHEN TESTED IN ACORDANCE WITH ASTM C411.
13. ALL DUCT INSULATION SHALL BE LISTED AND LABELED.
14. INSULATE DUCTWORK PER MINIMUM THERMAL RESISTANCE REQUIREMENTS, SEE BASIS OF DESIGN ON SHEET M001 FOR PROJECT CLIMATE ZONE.
15. SEE 233113 FOR LINED RECTANGULAR DUCTWORK.

233113 - METAL DUCTWORK

1. ALL DUCTWORK SHALL BE CONSTRUCTED, ERECTED, AND TESTED IN ACCORDANCE WITH THE MOST RESTRICTIVE OF LOCAL REGULATIONS AND PROCEDURES DETAILED IN THE ASHRAE HANDBOOK OF FUNDAMENTALS, OR THE APPLICABLE STANDARDS ADOPTED BY THE SHEET METAL AND AIR CONDITIONING CONTRACTOR'S NATIONAL ASSOCIATION, (SMACNA).
2. TRANSITION ALL DUCTWORK TO CONNECT WITH EQUIPMENT SIZES AS REQUIRED.

DUCT LOCATION	DUCT TYPE			
	SUPPLY		EXH.	RET.
	<2in. Wg.	>2in. Wg.		
OUTDOORS	A	A	A	A
UNCONDITIONED SPACES	B	A	B	B
CONDITIONED SPACES	C	B	B	B
(CONCEALED DUCTWORK) CONDITIONED SPACES (EXPOSED DUCTWORK)	A	A	B	B

233113 - METAL DUCTWORK

3. DUCTWORK SHALL BE GALVANIZED STEEL THROUGHOUT, FABRICATED AND INSTALLED SO THAT NO VIBRATION OR NOISE RESULTS. IT SHALL BE MADE FROM THE BEST GRADE OF GALVANIZED MILLED STEEL SHEETS OF U.S. STANDARD GAUGE AND BE FREE FROM BLISTERS, SLIVERS, AND PITS. ALL SEAMS SHALL BE AIRTIGHT, THE CONSTRUCTION OF ALL DUCTWORK, INCLUDING GAUGES OF METAL, BRACING LAYOUT, ETC., SHALL BE IN ACCORDANCE WITH SMACNA. SLEEVES FOR FIRE DAMPERS AND DUCT SECTIONS FORMING AN EXTENSION OF THE FIRE WALL SHALL BE 10 GAUGE STEEL.
4. SEAL DUCTWORK ACCORDING TO THE FOLLOWING SMACNA DUCT SEALING CLASS:
5. HANGERS FOR DUCTS UP TO 18" IN WIDTH OR DIAMETER SHALL BE PLACED ON NOT MORE THAN 8 FOOT CENTERS. DUCTS 19" AND OVER IN WIDTH OR DIAMETER SHALL BE SUPPORTED ON NOT MORE THAN 4 FOOT CENTERS. DUCT HANGERS SHALL BE CONSTRUCTED OF GALVANIZED BAND IRON 1-1/8" FOR DUCTS UP TO 36" IN WIDTH OR DIAMETER. HANGERS SHALL EXTEND DOWN SIDES AND A MINIMUM OF 1" UNDER RECTANGULAR DUCTS, AND WRAP COMPLETELY AROUND ROUND DUCTS. ALL DUCTS SHALL BE RIGIDLY SUPPORTED.
6. ALL DUCTWORK SHALL BE CLEANED PRIOR TO THE INSTALLATION OF CEILING AND DIFFUSERS. OPERATE FANS TO BLOW OUT DUCTWORK.
7. RECTANGULAR LOW-PRESSURE SUPPLY AND RETURN AIR DUCTWORK SHALL BE LINED WITH 1" FACED FIBERGLASS INSULATION SECURELY BUTTONED OR LAPPED AND SEALED. INSULATION SHALL BE 1-1/2 POUND DENSITY.
8. DUCT LINER MAY BE SUBSTITUTED FOR DUCT WRAP INSULATION IF THE REQUIRED MINIMUM THERMAL RESISTANCE IS SATISFIED WITH THE LINER.
9. DUCT DIMENSIONS SHOWN ON DRAWINGS ARE INSIDE CLEAR AREA AND SHALL BE INCREASED TO ACCOMMODATE INSULATION. DUCT LINER TO BE BY KNAUF GmbH, JOHN-MANSVILLE OR SCHULLER INTERNATIONAL.
10. 1.ALL MATERIALS USED AS INTERNAL LINER AND EXPOSED TO THE AIR STREAM IN DUCTS SHALL BE SHOWN TO BE DURABLE WHEN TESTED IN ACCORDANCE WITH UL 181.

233300 - DUCTWORK ACCESSORIES

1. FLEXIBLE DUCTWORK: THE FINAL 5 FOOT CONNECTION TO GRILLES AND DIFFUSERS IN LAY-IN CEILINGS, OR TO FLOOR MOUNTED GRILLES, MAY BE MADE WITH FLEXIBLE DUCT, FLEXMASTER TYPE 5M ONLY. ENDS SHALL BE SEALED.
2. SQUARE AND/OR RECTANGULAR ELBOWS SHALL BE PROVIDED WITH TURNING VANES.
3. PROVIDE FLEXIBLE CONNECTIONS NOT LESS THAN 4" WIDE CONSTRUCTED OF HEAVY, WATERPROOF, WOVEN PLASTIC-COATED GLASS FABRIC AT SUPPLY AND RETURN CONNECTIONS TO FURNACES, AIR HANDLING, ROOFTOP, MAKE-UP AIR OR FAN-COIL UNITS. CORNERS SHALL BE SEWN TIGHT. CONNECTIONS SHALL BE 20 OUNCE VENTFABRICS OR EQUAL.
4. COMBINATION FIRE AND SMOKE DAMPERS OR FIRE DAMPERS IN DUCTWORK THROUGH ALL FLOORS AND FIRE WALLS SHALL BE FURNISHED AND INSTALLED AS REQUIRED TO CONFORM TO THE LATEST NFPA BULLETIN CONCERNING THIS TYPE OF BUILDING AND SHALL BEAR THE UL LABEL. DAMPERS, COMPLETE WITH MOUNTING ANGLES, SHALL BE MULTI-BLADE, FUSIBLE LINK, SPRING ACTING WITH 11 GAUGE SLEEVE. FUSIBLE LINK SHALL BE RATED AT 165°F.
5. DUCT MOUNTED BALANCING DAMPERS SHALL BE USED TO CONTROL SUPPLY AIR TO EACH DIFFUSER AND GRILLE. AN OPERATING HEAD SHALL BE PLACED ON THE SIDE OF THE DUCT WITH A POSITIVE LOCKING QUADRANT. DAMPERS SHALL BE PROVIDED IN RETURN AND EXHAUST AIR DUCTS WHERE SHOWN ON DRAWINGS. COORDINATE THE LOCATION OF CEILING ACCESS PANELS.
6. PROVIDE CEILING ACCESS DOORS AT ALL LOCATIONS OF BALANCING DAMPERS, FIRE DAMPERS, FIRE/SMOKE DAMPERS, VALVES, ETC., WHERE THERE IS NOT A LIFT-OUT TYPE CEILING. ACCESS DOORS SHALL BE HINGED OF METAL CONSTRUCTION WITH SCREWDRIVER LATCHES.
7. AT FIRE DAMPERS, A DUCT MOUNTED SHEET METAL HINGED DOOR SHALL BE PROVIDED AND INSTALLED WITH POSITIVE LOCKING HANDLE. WHERE DUCTS ARE INSULATED, COVERS SHALL BE INSULATED.
8. GRAVITY OR BACKDRAFT DAMPERS SHALL BE ALL ALUMINUM CONSTRUCTION, INTERCONNECTED AND BLADED, PRESSURE DROP THROUGH DAMPERS SHALL NOT EXCEED 0.04 INCH W.G.

233423 - FANS AND ROOF HOODS

1. ROOF MOUNTED EXHAUST FANS SHALL BE COMPLETE WITH BACKDRAFT DAMPERS. A DISCONNECT SWITCH SHALL BE PROVIDED AT FAN LOCATIONS. PROVIDE FAN ASSEMBLY COMPLETE WITH INSECT SCREEN AND PREFABRICATED ROOF CURB MATCHING THE FAN SIZE AND ROOF SLOPE.
2. CEILING MOUNTED EXHAUST FANS SHALL BE COMPLETE WITH LOUVERED GRILLE, BACKDRAFT DAMPER, AND WALL CAP OR ROOF CAP, SEE PLANS.
3. ROOF MOUNTED HOODS SHALL BE COMPLETE WITH BACKDRAFT DAMPERS, INSECT SCREEN AND PREFABRICATED ROOF CURB MATCHING THE HOOD SIZE AND ROOF SLOPE.

233713 - GRILLES, DIFFUSERS AND LOUVERS

1. ALL DIFFUSERS, REGISTERS AND GRILLES SHALL BE COMPLETE WITH FRAMES AND RUBBER GASKETS. FINISH FOR ALL DIFFUSERS, REGISTERS AND GRILLES SHALL BE WHITE.
2. COORDINATE LOCATIONS OF ALL CEILING DIFFUSERS, REGISTERS, AND GRILLES WITH ARCHITECTURAL REFLECTED CEILING PLAN, ELECTRICAL LIGHTING LAYOUT, AND ARCHITECTURAL ELEVATIONS.
3. LOUVERS SHALL HAVE MINIMUM FREE AREA AND MAXIMUM PRESSURE DROP AS LISTED IN THE SCHEDULES. LOUVERS SHALL HAVE FRAME AND SILLS COMPATIBLE WITH ADJACENT SUBSTRATE AND FIT ACCURATELY FOR WEATHERPROOF INSTALLATION. LOUVERS SHALL BE COMPLETE WITH 1/2" MESH ANODIZED ALUMINUM BIRD SCREEN.

235400 - FORCED AIR FURNACES

1. FACTORY ASSEMBLED CONDENSING GAS FURNACE WITH 100% OUTDOOR COMBUSTION AIR, SEALED COMBUSTION MINIMUM 90% AFUE. FURNACE SHALL CONSIST OF CASING, HEAT EXCHANGERS, BLOWER, AIR FILTER, REDUNDANT GAS VALVE, HOT SURFACE IGNITOR, AND CONTROLS. UNITS TO HAVE 20 YEAR HEAT EXCHANGER WARRANTY.
2. PIPING FOR FURNACE VENT/INTAKE AIR AND FOR CONDENSATE DRAINS SHALL BE PVC SCHEDULE 40, SECURELY SUPPORTED AT NO MORE THAN 5 FT CENTERS. INSULATE ALL VENTS AND AIR INTAKES LOCATED IN TRUSS SPACES AND IN ATTICS.
3. PROVIDE FURNACE MANUFACTURER'S STANDARD A-FRAME OR N- FRAME DX COOLING COIL. COIL TO BE COMPLETE WITH GALVANIZED DRAIN PAN WITH DRAIN CONNECTION, DX EXPANSION VALVE, LIQUID SOLENOID VALVE, AND LIQUID LINE SIGHT GLASS/MOISTURE INDICATOR. MOUNT COOLING COIL IN FURNACE SUPPLY PLENUM IN LOCATION SHOWN ON DRAWINGS.
4. INSTALL 3/4" COPPER CONDENSATE DRAIN LINE FROM COOLING COIL DRAIN PAN AT INDOOR UNIT OF SPLIT SYSTEMS AND EXTEND TO OUTSIDE, TIE TO TAILPIECE OF NEAREST SINK, RUN TO NEAREST FAN ROOM FLOOR DRAIN OR RUN TO NEAREST SERVICE SINK.

236300 - CONDENSING UNITS

1. FACTORY ASSEMBLED AND TESTED AIR COOLED CONDENSING UNITS, CONSISTING OF CASING, COMPRESSOR, CONDENSER COIL, CONDENSER FAN AND MOTOR, REFRIGERANT RESERVOIR, AND OPERATING CONTROLS. UNITS TO BE COMPLETE WITH HIGH AND LOW PRESSURE CUTOUTS, SERVICE SHUTOFF VALVES, AND HAVE 5 YEAR COMPRESSOR WARRANTY.

238126 - SPLIT SYSTEM A/C UNITS

1. PROVIDE FACTORY ASSEMBLED AND TESTED SPLIT TYPE AIR CONDITIONING UNIT WITH INDOOR UNIT CONSISTING OF CASING, EVAPORATOR COIL, EVAPORATOR FAN, AND DRAIN PAN: AND OUTDOOR UNIT CONSISTING OF COMPRESSOR, CONDENSER COIL, AND CONDENSER FAN. PROVIDE UNIT COMPLETE WITH CONDENSATE PUMP, MICROPROCESSOR CONTROLS AND 5 YEAR COMPRESSOR WARRANTY.

ENSIGN
THE STANDARD IN ENGINEERING

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MEDICAL OFFICE LAYOUT

ERDA WAY & HWY 36
TOOELE, UTAH

PROFESSIONAL ENGINEER
THOMAS BRADLEY SHAKESPEARE
19SEPT 2024
10361455
STATE OF UTAH

NO.	DATE	REVISION
0	09-19-2024	PERMIT SET

MECHANICAL NOTES & SPECIFICATIONS

PROJECT NUMBER: 24194
DATE: 09-19-2024
PROJECT MANAGER: LEB
DESIGNED BY: MT

M002

Zone Checksums
By shakespeare eng

FC-103

COOLING COIL PEAK — Peaked at Time: Mo/Hr: 7 / 10; Outside Air: OADB/WB/HR: 78 / 56 / 46
CLG SPACE PEAK — Mo/Hr: 7 / 10; OADB: 78

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads						
Skylite Solar	0	0	0	0	0	0
Skylite Cond	0	0	0	0	0	0
Roof Cond	0	0	0	0	0	0
Glass Solar	12,259	0	12,259	68	12,398	71
Glass/Door Cond	144	0	144	1	457	3
Wall Cond	329	88	417	2	395	2
Partition/Door	0		0	0	0	0
Floor	0		0	0	0.00	0
Adjacent Floor	0.00	0.00	0.00	0.00	0.00	0.00
Infiltration	0		0	0	0	0
Sub Total ==>	12,732	88	12,820	71	13,250	76
Internal Loads						
Lights	1,263	316	1,578	9	1,263	7
People	1,800	0	1,800	10	1,000	6
Misc	1,843	0	1,843	10	1,843	11
Sub Total ==>	4,906	316	5,221	29	4,106	24
Ceiling Load	66	-66	0	0	72	0
Ventilation Load	0	0	-404	-2	0	0
Adj Air Trans Heat	0		0	0	0	0
Dehumid. Ov Sizing			0	0		
Ov/Undr Sizing	0		0	0	0	0
Exhaust Heat		-19	-19	0		
Sup. Fan Heat			485	3		
Ret. Fan Heat		0	0	0		
Duct Heat Pkup		0	0	0		
Underflr Sup Ht Pkup			0	0		
Supply Air Leakage		0	0	0		
Grand Total ==>	17,703	319	18,104	100.00	17,427	100.00

HEATING COIL PEAK — Mo/Hr: Heating Design; OADB: 8

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	0	0.00
Glass Solar	0	0	0.00
Glass/Door Cond	-4,597	-4,597	71.25
Wall Cond	-855	-1,086	16.84
Partition/Door	0	0	0.00
Floor	0	0	0.00
Adjacent Floor	0.00	0.00	0.00
Infiltration	0	0	0.00
Sub Total ==>	-5,452	-5,683	88.08
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-27	0	0.00
Ventilation Load	0	-840	13.02
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	0	0	0.00
Exhaust Heat		8	-0.12
OA Preheat Diff.		0	0.00
RA Preheat Diff.		0	0.00
Additional Reheat		0	0.00
System Plenum Heat		63	-0.98
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
Grand Total ==>	-5,479	-6,452	100.00

TEMPERATURES

	Cooling	Heating
SADB	55.0	77.7
Ra Plenum	73.4	71.9
Return	73.4	71.9
Ret/OA	73.4	71.0
Fn MtrTD	0.1	0.0
Fn BldTD	0.1	0.0
Fn Frict	0.3	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	1,023	1,023
Terminal	1,023	1,023
Main Fan	1,023	1,023
Sec Fan	0	0
Nom Vent	55	55
AHU Vent	55	55
Infil	0	0
MinStop/Rh	102	102
Return	1,023	1,023
Exhaust	55	55
Rm Exh	0	0
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	5.3	5.3
cfm/ft²	1.77	1.77
cfm/ton	678.02	
ft²/ton	383.12	
Btu/hr·ft²	31.32	-11.34
No. People	4	

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter HR gr/lb	Leave DB °F	Leave WB °F	Leave HR gr/lb
Main Clg	1.5	18.1	17.8	1,023	73.6	60.1	70.0	54.7	53.5	70.0
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	1.5	18.1								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	578		
Part	0		
Int Door	0		
ExFlr	0		
Roof	0	0	0
Wall	550	227	41
Ext Door	0	0	0

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-6.5	1,023	71.0	77.7
Aux Htg	0.0	0	0.0	0.0
Preheat	0.0	0	0.0	0.0
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-6.6			

Zone Checksums
By shakespeare eng

FC-104

COOLING COIL PEAK — Peaked at Time: Mo/Hr: 7 / 18; Outside Air: OADB/WB/HR: 89 / 59 / 43
CLG SPACE PEAK — Mo/Hr: 7 / 18; OADB: 89

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads						
Skylite Solar	0	0	0	0	0	0
Skylite Cond	0	0	0	0	0	0
Roof Cond	0	0	0	0	0	0
Glass Solar	7,344	0	7,344	53	7,344	63
Glass/Door Cond	478	0	478	3	478	4
Wall Cond	326	94	420	3	326	3
Partition/Door	0		0	0	0	0
Floor	0		0	0	0.00	0
Adjacent Floor	0.00	0.00	0.00	0.00	0.00	0.00
Infiltration	0		0	0	0	0
Sub Total ==>	8,148	94	8,242	60	8,148	69
Internal Loads						
Lights	638	159	797	6	638	5
People	5,256	0	5,256	38	2,920	25
Misc	0	0	0	0	0	0
Sub Total ==>	5,894	159	6,053	44	3,558	30
Ceiling Load	40	-40	0	0	40	0
Ventilation Load	0	0	-826	-6	0	0
Adj Air Trans Heat	0		0	0	0	0
Dehumid. Ov Sizing			0	0		
Ov/Undr Sizing	0		0	0	0	0
Exhaust Heat		-31	-31	0		
Sup. Fan Heat			327	2		
Ret. Fan Heat		0	0	0		
Duct Heat Pkup		0	0	0		
Underflr Sup Ht Pkup			0	0		
Supply Air Leakage		0	0	0		
Grand Total ==>	14,082	182	13,764	100.00	11,746	100.00

HEATING COIL PEAK — Mo/Hr: Heating Design; OADB: 8

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	0	0.00
Glass Solar	0	0	0.00
Glass/Door Cond	-1,722	-1,722	52.73
Wall Cond	-280	-360	11.03
Partition/Door	0	0	0.00
Floor	0	0	0.00
Adjacent Floor	0.00	0.00	0.00
Infiltration	0	0	0.00
Sub Total ==>	-2,001	-2,082	63.76
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-13	0	0.00
Ventilation Load	0	-1,166	35.71
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	0	0	0.00
Exhaust Heat		10	-0.32
OA Preheat Diff.		0	0.00
RA Preheat Diff.		0	0.00
Additional Reheat		0	0.00
System Plenum Heat		-28	0.85
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
Grand Total ==>	-2,015	-3,265	100.00

TEMPERATURES

	Cooling	Heating
SADB	55.0	75.1
Ra Plenum	73.4	71.9
Return	73.4	71.9
Ret/OA	73.9	70.1
Fn MtrTD	0.1	0.0
Fn BldTD	0.1	0.0
Fn Frict	0.3	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	689	689
Terminal	689	689
Main Fan	689	689
Sec Fan	0	0
Nom Vent	76	76
AHU Vent	76	76
Infil	0	0
MinStop/Rh	69	69
Return	689	689
Exhaust	76	76
Rm Exh	0	0
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	11.0	11.0
cfm/ft²	2.36	2.36
cfm/ton	601.03	
ft²/ton	254.57	
Btu/hr·ft²	47.14	-11.67
No. People	12	

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter HR gr/lb	Leave DB °F	Leave WB °F	Leave HR gr/lb
Main Clg	1.2	13.8	12.6	689	74.0	59.9	68.2	54.7	52.4	65.5
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	1.2	13.8								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	292		
Part	0		
Int Door	0		
ExFlr	0		
Roof	0	0	0
Wall	192	85	44
Ext Door	0	0	0

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-3.3	689	70.1	75.1
Aux Htg	0.0	0	0.0	0.0
Preheat	0.0	0	0.0	0.0
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-3.4			

Zone Checksums
By shakespeare eng

FC-105

COOLING COIL PEAK — Peaked at Time: Mo/Hr: 7 / 14; Outside Air: OADB/WB/HR: 94 / 65 / 62
CLG SPACE PEAK — Mo/Hr: 7 / 17; OADB: 92

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads						
Skylite Solar	0	0	0	0	0	0
Skylite Cond	0	0	0	0	0	0
Roof Cond	0	0	0	0	0	0
Glass Solar	0	0	0	0	0	0
Glass/Door Cond	0	0	0	0	0	0
Wall Cond	50	7	57	0	73	1
Partition/Door	0		0	0	0	0
Floor	0		0	0	0.00	0
Adjacent Floor	0.00	0.00	0.00	0.00	0.00	0.00
Infiltration	0		0	0	0	0
Sub Total ==>	50	7	57	0	73	1
Internal Loads						
Lights	4,008	1,002	5,010	25	4,008	28
People	8,502	0	8,502	42	4,746	33
Misc	5,266	0	5,266	26	5,266	37
Sub Total ==>	17,777	1,002	18,779	92	14,021	98
Ceiling Load	240	-240	0	0	249	2
Ventilation Load	0	0	1,229	6	0	0
Adj Air Trans Heat	0		0	0	0	0
Dehumid. Ov Sizing			0	0		
Ov/Undr Sizing	0		0	0	0	0
Exhaust Heat		-104	-104	-1		
Sup. Fan Heat			399	2		
Ret. Fan Heat		0	0	0		
Duct Heat Pkup		0	0	0		
Underflr Sup Ht Pkup			0	0		
Supply Air Leakage		0	0	0		
Grand Total ==>	18,067	665	20,360	100.00	14,343	100.00

HEATING COIL PEAK — Mo/Hr: Heating Design; OADB: 8

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	0	0.00
Glass Solar	0	0	0.00
Glass/Door Cond	0	0	0.00
Wall Cond	-71	-81	1.87
Partition/Door	0	0	0.00
Floor	0	0	0.00
Adjacent Floor	0.00	0.00	0.00
Infiltration	0	0	0.00
Sub Total ==>	-71	-81	1.87
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-85	0	0.00
Ventilation Load	0	-4,097	94.59
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	0	0	0.00
Exhaust Heat		37	-0.85
OA Preheat Diff.		0	0.00
RA Preheat Diff.		0	0.00
Additional Reheat		0	0.00
System Plenum Heat		-190	4.39
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
Grand Total ==>	-155	-4,331	100.00

TEMPERATURES

	Cooling	Heating
SADB	55.0	72.2
Ra Plenum	73.4	71.9
Return	73.4	71.9
Ret/OA	75.1	66.8
Fn MtrTD	0.1	0.0
Fn BldTD	0.1	0.0
Fn Frict	0.3	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	842	842
Terminal	842	842
Main Fan	842	842
Sec Fan	0	0
Nom Vent	267	267
AHU Vent	267	267
Infil	0	0
MinStop/Rh	84	84
Return	842	842
Exhaust	267	267
Rm Exh	0	0
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	31.7	31.7
cfm/ft²	0.46	0.46
cfm/ton	496.21	
ft²/ton	1,081.58	
Btu/hr·ft²	11.09	-2.64
No. People	19	

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter HR gr/lb	Leave DB °F	Leave WB °F	Leave HR gr/lb
Main Clg	1.7	20.4	16.8	842	75.3	60.4	68.5	54.7	51.3	60.7
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	1.7	20.4								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	1,835		
Part	0		
Int Door	0		
ExFlr	0		
Roof	0	0	0
Wall	24	0	0
Ext Door	0	0	0

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-4.3	842	66.8	72.2
Aux Htg	0.0	0	0.0	0.0
Preheat	0.0	0	0.0	0.0
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-4.8			

Zone Checksums
By shakespeare eng

FC-106

COOLING COIL PEAK — Peaked at Time: Mo/Hr: 7 / 10; Outside Air: OADB/WB/HR: 78 / 56 / 46
CLG SPACE PEAK — Mo/Hr: 7 / 10; OADB: 78

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads						
Skylite Solar	0	0	0	0	0	0
Skylite Cond	0	0	0	0	0	0
Roof Cond	0	0	0	0	0	0
Glass Solar	17,672	0	17,672	76	17,672	82
Glass/Door Cond	130	0	130	1	130	1
Wall Cond	524	125	649	3	524	2
Partition/Door	0		0	0	0	0
Floor	0		0	0	0.00	0
Adjacent Floor	0.00	0.00	0.00	0.00	0.00	0.00
Infiltration	0		0	0	0	0
Sub Total ==>	18,325	125	18,450	79	18,325	85
Internal Loads						
Lights	1,236	309	1,545	7	1,236	6
People	3,600	0	3,600	15	2,000	9
Misc	0	0	0	0	0	0
Sub Total ==>	4,836	309	5,145	22	3,236	15
Ceiling Load	64	-64	0	0	64	0
Ventilation Load	0	0	-916	-4	0	0
Adj Air Trans Heat	0		0	0	0	0
Dehumid. Ov Sizing			0	0		
Ov/Undr Sizing	0		0	0	0	0
Exhaust Heat		-43	-43	0		
Sup. Fan Heat			602	3		
Ret. Fan Heat		0	0	0		
Duct Heat Pkup		0	0	0		
Underflr Sup Ht Pkup			0	0		
Supply Air Leakage		0	0	0		
Grand Total ==>	23,226	327	23,238	100.00	21,626	100.00

HEATING COIL PEAK — Mo/Hr: Heating Design; OADB: 8

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	0	0.00
Glass Solar	0	0	0.00
Glass/Door Cond	-4,132	-4,132	56.76
Wall Cond	-1,000	-1,240	17.04
Partition/Door	0	0	0.00
Floor	0	0	0.00
Adjacent Floor	0.00	0.00	0.00
Infiltration	0	0	0.00
Sub Total ==>	-5,132	-5,372	73.80
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-26	0	0.00
Ventilation Load	0	-1,965	26.99
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	0	0	0.00
Exhaust Heat		18	-0.24
OA Preheat Diff.		0	0.00
RA Preheat Diff.		0	0.00
Additional Reheat		0	0.00
System Plenum Heat		40	-0.55
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
Grand Total ==>	-5,158	-7,280	100.00

TEMPERATURES

	Cooling	Heating
SADB	55.0	76.3
Ra Plenum	73.4	71.9
Return	73.4	71.9
Ret/OA	73.5	70.2
Fn MtrTD	0.1	0.0
Fn BldTD	0.1	0.0
Fn Frict	0.3	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	1,269	1,269
Terminal	1,269	1,269
Main Fan	1,269	1,269
Sec Fan	0	0
Nom Vent	128	128
AHU Vent	128	128
Infil	0	0
MinStop/Rh	127	127
Return	1,269	1,269
Exhaust	128	128
Rm Exh	0	0
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	10.1	10.1
cfm/ft²	2.24	2.24
cfm/ton	655.45	
ft²/ton	292.27	
Btu/hr·ft²	41.06	-13.29
No. People	8	

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter HR gr/lb	Leave DB °F	Leave WB °F	Leave HR gr/lb
Main Clg	1.9	23.2	22.7	1,269	73.6	59.9	68.8	54.7	53.1	68.2
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	1.9	23.2								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	566		
Part	0		
Int Door	0		
ExFlr	0		
Roof	0	0	0
Wall	572	204	36
Ext Door	0	0	0

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-7.3	1,269	70.2	76.3
Aux Htg	0.0	0	0.0	0.0
Preheat	0.0	0	0.0	0.0
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-7.5			

Zone Checksums
By shakespeare eng

FC-107

COOLING COIL PEAK — Peaked at Time: Mo/Hr: 7 / 18; Outside Air: OADB/WB/HR: 89 / 59 / 43
CLG SPACE PEAK — Mo/Hr: 7 / 18; OADB: 89

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads						
Skylite Solar	0	0	0	0	0	0
Skylite Cond	0	0	0	0	0	0
Roof Cond	0	0	0	0	0	0
Glass Solar	11,016	0	11,016	71	11,016	76
Glass/Door Cond	717	0	717	5	717	5
Wall Cond	609	158	766	5	609	4
Partition/Door	0		0	0	0	0
Floor	0		0	0	0.00	0
Adjacent Floor	0.00	0.00	0.00	0.00	0.00	0.00
Infiltration	0		0	0	0	0
Sub Total ==>	12,341	158	12,499	81	12,341	85
Internal Loads						
Lights	734	183	917	6	734	5
People	900	0	900	6	500	3
Misc	922	0	922	6	922	6
Sub Total ==>	2,555	183	2,739	18	2,155	15
Ceiling Load	46	-46	0	0	46	0
Ventilation Load	0	0	-104	-1	0	0
Adj Air Trans Heat	0		0	0	0	0
Dehumid. Ov Sizing			0	0		
Ov/Undr Sizing	0		0	0	0	0
Exhaust Heat		-12	-12	0		
Sup. Fan Heat			405	3		
Ret. Fan Heat		0	0	0		
Duct Heat Pkup		0	0	0		
Underflr Sup Ht Pkup			0	0		
Supply Air Leakage		0	0	0		
Grand Total ==>	14,943	283	15,526	100.00	14,543	100.00

HEATING COIL PEAK — Mo/Hr: Heating Design; OADB: 8

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	0	0.00
Glass Solar	0	0	0.00
Glass/Door Cond	-2,582	-2,582	69.86
Wall Cond	-522	-658	17.79
Partition/Door	0	0	0.00
Floor	0	0	0.00
Adjacent Floor	0.00	0.00	0.00
Infiltration	0	0	0.00
Sub Total ==>	-3,104	-3,240	87.65
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-15	0	0.00
Ventilation Load	0	-463	12.53
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	0	0	0.00
Exhaust Heat		4	-0.11
OA Preheat Diff.		0	0.00
RA Preheat Diff.		0	0.00
Additional Reheat		0	0.00
System Plenum Heat		3	-0.07
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
Grand Total ==>	-3,120	-3,696	100.00

TEMPERATURES

	Cooling	Heating
SADB	55.0	75.9
Ra Plenum	73.4	71.9
Return	73.4	71.9
Ret/OA	73.6	71.3
Fn MtrTD	0.1	0.0
Fn BldTD	0.1	0.0
Fn Frict	0.3	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	854	854
Terminal	854	854
Main Fan	854	854
Sec Fan	0	0
Nom Vent	30	30
AHU Vent	30	30
Infil	0	0
MinStop/Rh	85	85
Return	854	854
Exhaust	30	30
Rm Exh	0	0
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	3.5	3.5
cfm/ft²	2.54	2.54
cfm/ton	659.74	
ft²/ton	259.70	
Btu/hr·ft²	46.21	-11.17
No. People	2	

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter HR gr/lb	Leave DB °F	Leave WB °F	Leave HR gr/lb
Main Clg	1.3	15.5	15.4	854	73.7	60.3	70.4	54.7	53.5	70.2
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	1.3	15.5								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	336		
Part	0		
Int Door	0		
ExFlr	0		
Roof	0	0	0
Wall	323	128	39
Ext Door	0	0	0

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-3.7	854	71.3	75.9
Aux Htg	0.0	0	0.0	0.0
Preheat	0.0	0	0.0	0.0
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-3.8			

Zone Checksums
By shakespeare eng

FC-108

COOLING COIL PEAK — Peaked at Time: Mo/Hr: 9 / 16; Outside Air: OADB/WB/HR: 78 / 54 / 34
CLG SPACE PEAK — Mo/Hr: 9 / 16; OADB: 78

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads						
Skylite Solar	0	0	0	0	0	0
Skylite Cond	0	0	0	0	0	0
Roof Cond	0	0	0	0	0	0
Glass Solar	7,682	0	7,682	78	7,682	83
Glass/Door Cond	208	0	208	2	208	2
Wall Cond	385	99	484	5	385	4
Partition/Door	0		0	0	0	0
Floor	0		0	0	0.00	0
Adjacent Floor	0.00	0.00	0.00	0.00	0.00	0.00
Infiltration	0		0	0	0	0
Sub Total ==>	8,276	99	8,375	85	8,276	89
Internal Loads						
Lights	306	76	382	4	306	3
People	450	0	450	5	250	3
Misc	461	0	461	5	461	5
Sub Total ==>	1,217	76	1,293	13	1,017	11
Ceiling Load	17	-17	0	0	17	0
Ventilation Load	0	0	-113	-1	0	0
Adj Air Trans Heat	0		0	0	0	0
Dehumid. Ov Sizing			0	0		
Ov/Undr Sizing	0		0	0	0	0
Exhaust Heat		-5	-5	0		
Sup. Fan Heat			259	3		
Ret. Fan Heat		0	0	0		
Duct Heat Pkup		0	0	0		
Underflr Sup Ht Pkup			0	0		
Supply Air Leakage		0	0	0		
Grand Total ==>	9,510	153	9,809	100.00	9,310	100.00

HEATING COIL PEAK — Mo/Hr: Heating Design; OADB: 8

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	0	0.00
Glass Solar	0	0	0.00
Glass/Door Cond	-2,410	-2,410	75.48
Wall Cond	-498	-626	19.59
Partition/Door	0	0	0.00
Floor	0	0	0.00
Adjacent Floor	0.00	0.00	0.00
Infiltration	0	0	0.00
Sub Total ==>	-2,908	-3,036	95.07
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-6	0	0.00
Ventilation Load	0	-206	6.45
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	0	0	0.00
Exhaust Heat		2	-0.06
OA Preheat Diff.		0	0.00
RA Preheat Diff.		0	0.00
Additional Reheat		0	0.00
System Plenum Heat		46	-1.45
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
Grand Total ==>	-2,914	-3,193	100.00

TEMPERATURES

	Cooling	Heating
SADB	55.0	77.6
Ra Plenum	73.4	71.9
Return	73.4	71.9
Ret/OA	73.4	71.5
Fn MtrTD	0.1	0.0
Fn BldTD	0.1	0.0
Fn Frict	0.3	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	546	546
Terminal	546	546
Main Fan	546	546
Sec Fan	0	0
Nom Vent	13	13
AHU Vent	13	13
Infil	0	0
MinStop/Rh	55	55
Return	546	546
Exhaust	13	13
Rm Exh	0	0
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	2.5	2.5
cfm/ft²	3.90	3.90
cfm/ton	668.54	
ft²/ton	171.28	
Btu/hr·ft²	70.06	-22.99
No. People	1	

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter HR gr/lb	Leave DB °F	Leave WB °F	Leave HR gr/lb
Main Clg	0.8	9.8	9.7	546	73.6	60.2	70.5	54.7	53.6	70.4
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.8	9.8								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	140		
Part	0		
Int Door	0		
ExFlr	0		
Roof	0	0	0
Wall	305	119	39
Ext Door	0	0	0

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-3.2	546	71.5	77.6
Aux Htg	0.0	0	0.0	0.0
Preheat	0.0	0	0.0	0.0
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-3.2			

Zone Checksums
By shakespeare eng

FC-109

COOLING COIL PEAK — Peaked at Time: Mo/Hr: 9 / 13; Outside Air: OADB/WB/HR: 76 / 52 / 31
CLG SPACE PEAK — Mo/Hr: 9 / 12; OADB: 72

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads						
Skylite Solar	0	0	0	0	0	0
Skylite Cond	0	0	0	0	0	0
Roof Cond	0	0	0	0	0	0
Glass Solar	7,790	0	7,790	80	8,176	89
Glass/Door Cond	0	0	0	0	-186	-2
Wall Cond	387	93	479	5	282	3
Partition/Door	0		0	0	0	0
Floor	0		0	0	0.00	0
Adjacent Floor	0.00	0.00	0.00	0.00	0.00	0.00
Infiltration	0		0	0	0	0
Sub Total ==>	8,176	93	8,269	85	8,272	90
Internal Loads						
Lights	426	106	532	5	426	5
People	900	0	900	9	500	5
Misc	0	0	0	0	0	0
Sub Total ==>	1,326	106	1,432	15	926	10
Ceiling Load	23	-23	0	0	22	0
Ventilation Load	0	0	-222	-2	0	0
Adj Air Trans Heat	0		0	0	0	0
Dehumid. Ov Sizing			0	0		
Ov/Undr Sizing	0		0	0	0	0
Exhaust Heat		-14	-14	0		
Sup. Fan Heat			257	3		
Ret. Fan Heat		0	0	0		
Duct Heat Pkup		0	0	0		
Underflr Sup Ht Pkup			0	0		
Supply Air Leakage		0	0	0		
Grand Total ==>	9,525	163	9,723	100.00	9,220	100.00

HEATING COIL PEAK — Mo/Hr: Heating Design; OADB: 8

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	0	0.00
Glass Solar	0	0	0.00
Glass/Door Cond	-2,582	-2,582	66.77
Wall Cond	-617	-767	19.82
Partition/Door	0	0	0.00
Floor	0	0	0.00
Adjacent Floor	0.00	0.00	0.00
Infiltration	0	0	0.00
Sub Total ==>	-3,200	-3,349	86.59
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-9	0	0.00
Ventilation Load	0	-590	15.25
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	0	0	0.00
Exhaust Heat		5	-0.14
OA Preheat Diff.		0	0.00
RA Preheat Diff.		0	0.00
Additional Reheat		0	0.00
System Plenum Heat		66	-1.70
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
Grand Total ==>	-3,209	-3,868	100.00

TEMPERATURES

	Cooling	Heating
SADB	55.0	78.3
Ra Plenum	73.4	71.9
Return	73.4	71.9
Ret/OA	73.4	70.7
Fn MtrTD	0.1	0.0
Fn BldTD	0.1	0.0
Fn Frict	0.3	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	541	541
Terminal	541	541
Main Fan	541	541
Sec Fan	0	0
Nom Vent	38	38
AHU Vent	38	38
Infil	0	0
MinStop/Rh	54	54
Return	541	541
Exhaust	38	38
Rm Exh	0	0
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	7.1	7.1
cfm/ft²	2.78	2.78
cfm/ton	667.88	
ft²/ton	240.67	
Btu/hr·ft²	49.86	-20.21
No. People	2	

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter HR gr/lb	Leave DB °F	Leave WB °F	Leave HR gr/lb
Main Clg	0.8	9.7	9.6	541	73.6	59.8	68.5	54.7	53.1	68.4
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.8	9.7								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	195		
Part	0		
Int Door	0		
ExFlr	0		
Roof	0	0	0
Wall	355	128	36
Ext Door	0	0	0

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-3.9	541	70.7	78.3
Aux Htg	0.0	0	0.0	0.0
Preheat	0.0	0	0.0	0.0
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-3.9			

COM*check* Software Version COMcheckWeb

Mechanical Compliance Certificate

Project Information

Energy Code:	2021 IECC
Project Title:	CooperMedOfficeTI@TooeleOfficeBld-L1
Location:	Tooele, Utah
Climate Zone:	5b
Project Type:	Alteration

Construction Site: Erda Way & Hwy 36, Tooele, Utah
Owner/Agent:
Designer/Contractor:

Mechanical Systems List

Quantity	System Type & Description
2	FC-12MBH (Single Zone): Heating: 1 each - Other, Electric, Capacity = 14 kBtu/h No minimum efficiency requirement applies Cooling: 1 each - VRF Zone Fan Unit, Capacity = 12 kBtu/h, Unknown Economizer No minimum efficiency requirement applies
2	FC-18MBH (Single Zone): Heating: 1 each - Other, Electric, Capacity = 20 kBtu/h No minimum efficiency requirement applies Cooling: 1 each - VRF Zone Fan Unit, Capacity = 18 kBtu/h, Unknown Economizer No minimum efficiency requirement applies
1	FC-24MBH (Single Zone): Heating: 1 each - Other, Electric, Capacity = 26 kBtu/h No minimum efficiency requirement applies Cooling: 1 each - VRF Zone Fan Unit, Capacity = 24 kBtu/h, Unknown Economizer No minimum efficiency requirement applies
1	FC-30MBH (Single Zone): Heating: 1 each - Other, Electric, Capacity = 32 kBtu/h No minimum efficiency requirement applies Cooling: 1 each - VRF Zone Fan Unit, Capacity = 30 kBtu/h, Unknown Economizer No minimum efficiency requirement applies
1	FC-36MBH (Single Zone): Heating: 1 each - Other, Electric, Capacity = 38 kBtu/h No minimum efficiency requirement applies Cooling: 1 each - VRF Zone Fan Unit, Capacity = 36 kBtu/h, Unknown Economizer No minimum efficiency requirement applies
1	Water Heater: Electric Storage Water Heater, Capacity: 10 gallons w/ Circulation Pump No minimum efficiency requirement applies

Mechanical Compliance Statement

Compliance Statement: The proposed mechanical alteration project represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed mechanical systems have been designed to meet the 2021 IECC requirements in COM*check* Version COMcheckWeb and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

T. Bradley Shakespeare, PE - Principal — Name - Title
[signature] — Signature
09/05/2024 — Date

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laura@shakespeare-eng.com

MEDICAL OFFICE LAYOUT

ERDA WAY & HWY 36
TOOELE, UTAH

PROFESSIONAL ENGINEER — THOMAS BRADLEY SHAKESPEARE — 10361455 — STATE OF UTAH — 19SEPT 2024

NO.	DATE	REVISION
0	09-19-2024	PERMIT SET

MECHANICAL CALCULATIONS

PROJECT NUMBER: 24194	DATE: 09-19-2024
PROJECT MANAGER: LEB	DESIGNED BY: MT

M003

1 LEVEL 01 MECHANICAL ZONE PLAN

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

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ERDA WAY & HWY 36
TOOELE, UTAH

PROFESSIONAL ENGINEER
THOMAS BRADLEY SHAKESPEARE
10361455
STATE OF UTAH

NO.	DATE	REVISION
0	09-19-2024	PERMIT SET

MECHANICAL ZONE PLAN

PROJECT NUMBER	DATE
24194	09-19-2024
PROJECT MANAGER	DESIGNED BY
LEB	MT

M100

SHEET KEYNOTES

1 CONNECT TO EXISTING OA DUCT IN THIS APPROXIMATE LOCATION. FIELD VERIFY EXACT.
2 CONNECT TO EXISTING EA DUCT IN THIS APPROXIMATE LOCATION. FIELD VERIFY EXACT.
3 REBALANCE EXISTING DIFFUSER PER DESIGN AIRFLOW.

1 **LEVEL 01 MECHANICAL PLAN**
SCALE: 3/16" = 1'-0"

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MEDICAL OFFICE LAYOUT

**ERDA WAY & HWY 36
TOOELE, UTAH**

PROFESSIONAL ENGINEER THOMAS BRADLEY SHAKESPEARE 10361455 19SEPT 2024 STATE OF UTAH

NO.	DATE	REVISION
0	09-19-2024	PERMIT SET

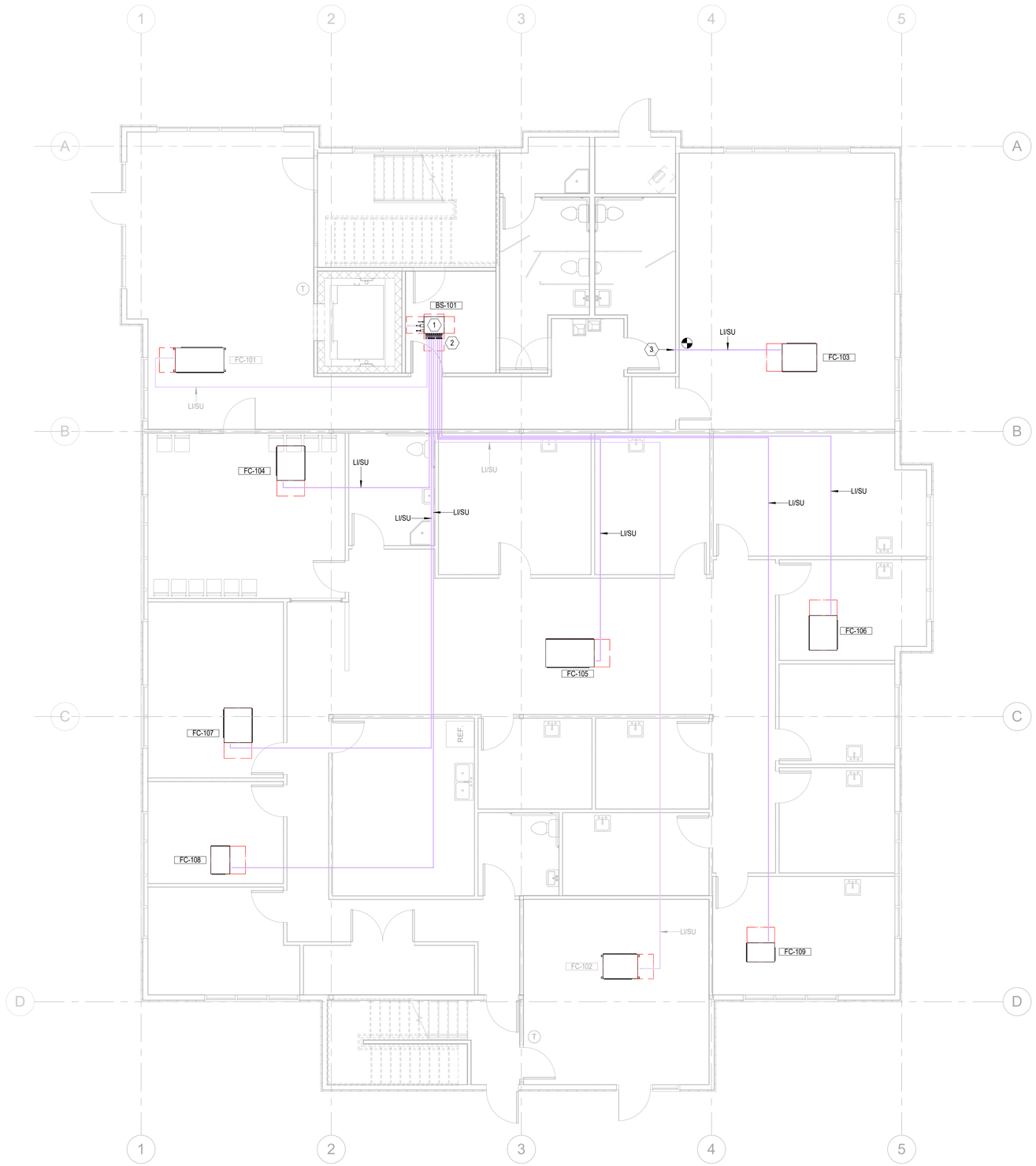
**LEVEL 01
MECHANICAL PLAN**

PROJECT NUMBER 24194
DATE 09-19-2024
PROJECT MANAGER LEB
DESIGNED BY MT

M101

SHEET KEYNOTES

1 CONNECT TO EXISTING BRANCH CONTROLLER IN THIS APPROXIMATE LOCATION. FIELD VERIFY EXACT.
2 SEE VRF SCHEMATIC FOR EXACT PIPE QUANTITY, SIZES, AND ROUTING.
3 LI/SU PIPING FROM FC-103 TO CONNECT TO EXISTING BC ON LEVEL 2.



1 LEVEL 01 MECHANICAL PIPING PLAN

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

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MEDICAL OFFICE LAYOUT

ERDA WAY & HWY 36
TOOELE, UTAH

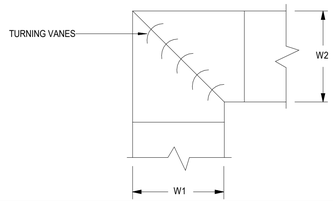
PROFESSIONAL ENGINEER
THOMAS BRADLEY SHAKESPEARE
10361455
STATE OF UTAH
09/19/2024

NO.	DATE	REVISION
0	09-19-2024	PERMIT SET

LEVEL 01 MECHANICAL PIPING PLAN

PROJECT NUMBER	DATE
24194	09-19-2024
PROJECT MANAGER	DESIGNED BY
LEB	MT

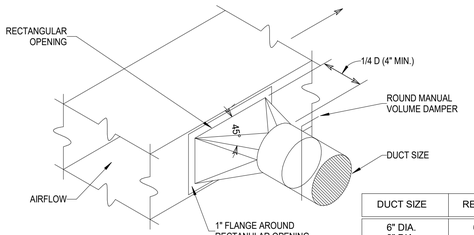
M102



NOTES:
1. ALL TURNING VANES SHALL BE SINGLE VANE TYPE REGARDLESS OF DIMENSION.
2. ALL SINGLE VANES SHALL HAVE A 2 INCH RADIUS, 1 INCH MAXIMUM SPACE BETWEEN VANES AND A 3/4 INCH TRAILING EDGE.

7 DUCT ELBOW - SQUARE

NTS

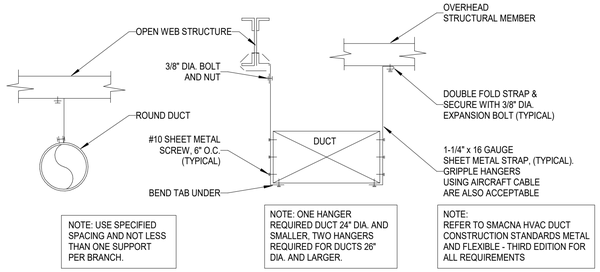


DUCT SIZE	RECT. OPNG.
6" DIA.	6" X 9"
8" DIA.	8" X 12"
10" DIA.	10" X 14"
12" DIA.	12" X 16"
14" DIA.	14" X 18"

NOTE:
CONSTRUCT FITTING PER SMACNA HVAC DUCT CONSTRUCTION STANDARDS METAL AND FLEXIBLE FIGURE 2-6.

4 DUCT HIGH EFFICIENCY TAKE-OFF

NTS



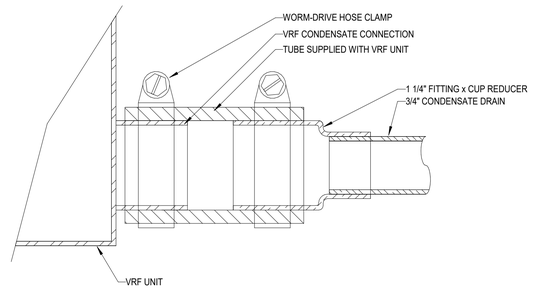
NOTE: USE SPECIFIED SPACING AND NOT LESS THAN ONE SUPPORT PER BRANCH.

NOTE: ONE HANGER REQUIRED DUCT 24" DIA. AND SMALLER, TWO HANGERS REQUIRED FOR DUCTS 26" DIA. AND LARGER.

NOTE:
REFER TO SMACNA HVAC DUCT CONSTRUCTION STANDARDS METAL AND FLEXIBLE - THIRD EDITION FOR ALL REQUIREMENTS

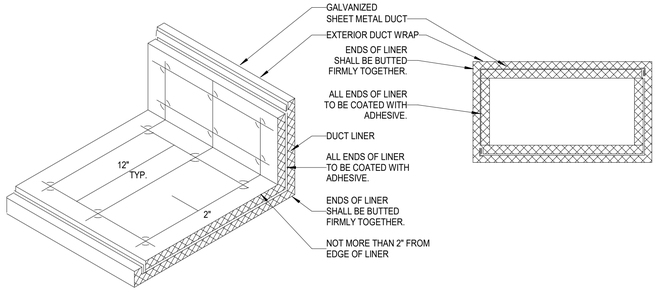
3 DUCT HANGER

NTS



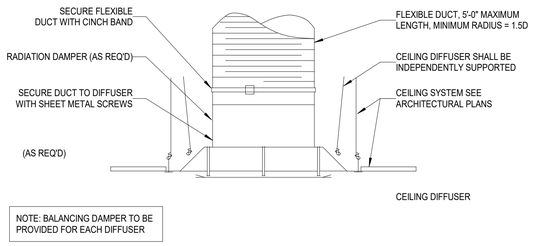
6 VRF - CONDENSATE CONNECTION

NTS



2 DUCT LINER AND INSULATION

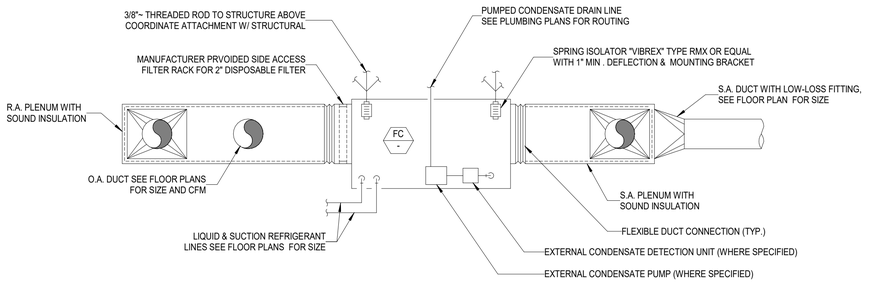
NTS



NOTE: BALANCING DAMPER TO BE PROVIDED FOR EACH DIFFUSER

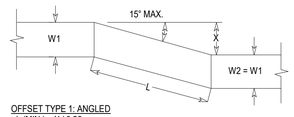
5 DIFFUSER - CEILING MOUNT

NTS

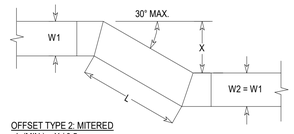


1 HORIZONTAL SPLIT SYSTEM FAN COIL

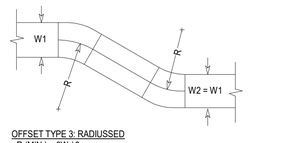
NTS



OFFSET TYPE 1: ANGLED
L (MIN.) = X / 0.26



OFFSET TYPE 2: MITERED
L (MIN.) = X / 0.5



OFFSET TYPE 3: RADIUSSED
R (MIN.) = 3W / 2

NOTES:
1. UNLESS OTHERWISE INDICATED ON PLANS, MAXIMUM ANGLES SHOWN SHALL APPLY.
2. ALL OFFSETS SHOWN ON DRAWINGS MADE BE MADE WITH ANY OF THE 3 OFFSET TYPES ABOVE.

8 DUCT OFFSETS

NTS

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MEDICAL OFFICE LAYOUT

ERDA WAY & HWY 36
TOOELE, UTAH

NO.	DATE	REVISION
0	09-19-2024	PERMIT SET

MECHANICAL DETAILS

PROJECT NUMBER 24194
DATE 09-19-2024
PROJECT MANAGER LEB
DESIGNED BY MT

M501

TERMINAL FAN COIL UNIT SCHEDULE (VRF)

ACCEPTABLE MANUFACTURERS:
MITSUBISHI
DAIKIN
LENNOX

ACCESSORIES AND REMARKS:
1) FILTER BOX (MANUFACTURE) - 2" MERV 8 - FLD INSTALLED
2) LINED FILTER BOX (CUSTOM) - (1) 24"x24"x2" MERV 8 FILTER, TOP MOUNT.
3) PRE-INSULATED REFRIGERANT LINESET - FLD INSTALLED
4) OUTSIDE AIR AUTO-FLOW BALANCE DAMPER - FLD INSTALLED
5) DRAIN PAN OVERFLOW SHUT-OFF SWITCH
6) RUN FAN CONTINIOUSLY DURING OCCUPIED HOURS.
7) CONDENSATE LIFT PUMP - FAC INSTALLED
8) DUCT SMOKE DETECTOR (RA) - FLD INSTALLED
9) THERMOSTAT – WALL-MOUNT PROGRAMMABLE LCD DISPLAY (1H, 1C)
10) CO2 SENSOR – WALL-MOUNT WITH LCD
11)MOTORIZED 2-POS OA DAMPER, OPEN 100% WHEN CO2 SENSOR EXCEEDS LIMIT, OTHERWISE CLOSED. FAIL CLOSE.
12) MANUFACTURE CONTROLS WITH TENANT BILLING CAPABILLITY AND REMOTE ACCESS.
13) BI-POLAR ION GENERATOR (PLASMA AIR 7200), INTERLOCK WITH FAN CIRCUIT (120/1/60; 2W) - FLD INSTALLED

SYMBOL	MANUFACTURER	MODEL	NOM. SIZE (MBH)	TOTAL DESIGN CAPACITY		TYPE	AIRFLOW						REFRIGERANT		ELECTRICAL			WEIGHT (LBS)	SOUND (dBA)	ACCESSORIES AND REMARKS	STATUS
				TOTAL DESIGN COOLING (MBH)	TOTAL DESIGN HEATING (MBH)		SA (CFM)			OA (CFM)			TYPE	TUBE SIZE (IN)	POWER	MCA	HP	DISC BY			
							MIN	MAX	DESIGN	MIN	MAX	DAMPER SELECTION	SYSTEM								
FC-101	DAIKIN	FXMQ30PBVJU	30	30	34	HORIZONTAL DUCTED	812	1094	1095	95	95	6" UE-CR06M	ERV-1	R410A	SEE SCHEMATIC	208-1-60	2.8	-	EC	021	-	1,4,6,7,9,12	EXISTING
FC-102	DAIKIN	FXMQ24PBVJU	24	24	27	HORIZONTAL DUCTED	565	688	690	35	35	4" UE-CR04H	ERV-1	R410A	SEE SCHEMATIC	208-1-60	1.8	-	EC	80	-	1,4,6,7,9,12	EXISTING
FC-103	DAIKIN	FXMQ24PBVJU	24	24	27	HORIZONTAL DUCTED	565	688	690	40	40	4" UE-CR04H	ERV-1	R410A	SEE SCHEMATIC	208-1-60	1.8	-	EC	80	-	1,4,6,7,9,12	NEW
FC-104	DAIKIN	FXMQ18PBVJU	18	18	20	HORIZONTAL DUCTED	529	635	635	60	60	6" UE-CR06M	ERV-1	R410A	SEE SCHEMATIC	208-1-60	1.6	-	EC	80	-	1,4,6,7,9,12	NEW
FC-105	DAIKIN	FXMQ36PBVJU	36	36	40	HORIZONTAL DUCTED	812	1130	1130	200	200	8" UE-CR08H	ERV-1	R410A	SEE SCHEMATIC	208-1-60	2.9	-	EC	102	-	1,4,6,7,9,12	NEW
FC-106	DAIKIN	FXMQ30PBVJU	30	30	34	HORIZONTAL DUCTED	812	1094	1095	95	95	6" UE-CR06M	ERV-1	R410A	SEE SCHEMATIC	208-1-60	2.8	-	EC	102	-	1,4,6,7,9,12	NEW
FC-107	DAIKIN	FXMQ18PBVJU	18	18	20	HORIZONTAL DUCTED	529	635	635	30	30	4" UE-CR04H	ERV-1	R410A	SEE SCHEMATIC	208-1-60	1.6	-	EC	80	-	1,4,6,7,9,12	NEW
FC-108	DAIKIN	FXMQ12PBVJU	12	12	13.5	HORIZONTAL DUCTED	388	450	450	15	15	4" UE-CR04M	ERV-1	R410A	SEE SCHEMATIC	208-1-60	1.4	-	EC	62	-	1,4,6,7,9,12	NEW
FC-109	DAIKIN	FXMQ12PBVJU	12	12	13.5	HORIZONTAL DUCTED	388	450	450	15	15	4" UE-CR04M	ERV-1	R410A	SEE SCHEMATIC	208-1-60	1.4	-	EC	62	-	1,4,6,7,9,12	NEW

BRANCH CONTROLLER SCHEDULE (VRF)

ACCEPTABLE MANUFACTURERS:
MITSUBISHI
DAIKIN
LENNOX

ACCESSORIES AND REMARKS:
1) EXTERNAL CONDENSATE LIFT PUMP (FLD)
2) SAE BRAZED BALL VALVES @ EACH PORT (FLD)
3) ACCESSABLE 1" LINED SHEETMETAL SOUND COVER. (FLD)

SYMBOL	MANUFACTURER	MODEL	REFRIGERANT					ELECTRICAL			DRAIN (IN)	WEIGHT (LBS)	SOUND (dBA)	ACCESSORIES AND REMARKS	STATUS
			BRANCH PORTS	SUB BC PORTS	TYPE	TUBE SIZE (IN)	SYSTEM	POWER	MCA	DISC BY					
BS-101	DAIKIN	BSF8Q54TBJ	8	-	R410A	SEE SCHEMATIC	SEE SCHEMATIC	208-1-60	0.8	EC	3/4"	85	-	1,2	EXISTING

AIR DEVICE SCHEDULE

ACCEPTABLE MANUFACTURERS:
ANEMOSTAT
TITUS
KRUEGER
TUTTLE AND BAILEY

ACCESSORIES AND REMARKS:
1) VAV THERMOSTATIC DIFFUSER (HTG&CLG) WITH RELIEF AIR COLLAR AND INTEGRAL THERMOSTAT
2) LONGEST LENGTH FRONT LOUVER
3) AIR BALANCE DEFLECTOR
4) OPPOSED BLADE DAMPER
5) BUTTERFLY DAMPER
6) THERMAL BLANKET
7) 1HR RADIATION DAMPER
8) PLENUM BOX-INSULATED
9) AIR VOLUME CONTROL VANE
10) 1" FILTER, PIANO HINGE (LONG DIM.), QUARTER TURN LATCH
11) 1" DUCT LINER, 20ga. PYRAMID, DRUM LOUVERS

SYMBOL	SERVICE	SURFACE TYPE	MOUNTING LOCATION	NECK SIZE	FACE SIZE	FACE TYPE	MATERIAL	FINISH	MANUFACTURER - MODEL	ACCESSORIES AND REMARKS	QTY
EG-0808	EA, RA, TA	GYP	CEILING	8x8	NECK+1.75"	PERFORATED	STEEL	WHITE ENAMEL	ANEMOSTAT - 3P		2
EL-2406	EA, RA, TA	LAY-IN	CEILING	6Ø	24x24	PERFORATED	STEEL	WHITE ENAMEL	ANEMOSTAT - 3PDL		2
EL-2412	EA, RA, TA	LAY-IN	CEILING	24x12	24x12	PERFORATED	STEEL	WHITE ENAMEL	ANEMOSTAT - 3PUL		13
EL-2424	EA, RA, TA	LAY-IN	CEILING	24x24	24x24	PERFORATED	STEEL	WHITE ENAMEL	ANEMOSTAT - 3PUL		1
SL-2406	SA	LAY-IN	CEILING	6Ø	24x24	PLAQUE	STEEL	WHITE ENAMEL	ANEMOSTAT - PGL		5
SL-2408	SA	LAY-IN	CEILING	8Ø	24x24	PLAQUE	STEEL	WHITE ENAMEL	ANEMOSTAT - PGL		3
SL-2410	SA	LAY-IN	CEILING	10Ø	24x24	PLAQUE	STEEL	WHITE ENAMEL	ANEMOSTAT - PGL		9
SL-2412	SA	LAY-IN	CEILING	12Ø	24x24	PLAQUE	STEEL	WHITE ENAMEL	ANEMOSTAT - PGL		3

Electric Duct Heater Schedule

#	Tag	Frame Dimensions W	Frame Dimensions H	Airflow (CFM	Air Vel. (FPM	Electrical Section P(kW)	VAC-Ph	I(A)	Ctrl V	Signal	Stages Qty	Stages kW	Stages A	Model	Options	Thermostats	Notes
1	DH-103	14.00	12.00	693	594	6.56	208-1	31.54	24	Mod	1X	6.56	31.54	DF CF00H	FC-CA-SF-DS-AC-MC-TR-TF-PDA-HECM-SSR-CGC-N1-BLE	TRO5404 STC8-11	
2	DH-104	12.00	12.00	635	635	6.03	208-1	28.98	24	Mod	1X	6.03	28.98	DF CF00H	FC-CA-SF-DS-AC-MC-TR-TF-PDA-HECM-SSR-CGC-N1-BLE-RA	TRO5404 STC8-11	
3	DH-105	18.00	12.00	953	636	6.03	208-1	28.98	24	Mod	1X	6.03	28.98	DF CF00H	FC-CA-SF-DS-AC-MC-TR-TF-PDA-HECM-SSR-CGC-N1-BLE	TRO5404 STC8-11	
4	DH-106	14.00	12.00	742	636	6.03	208-1	28.98	24	Mod	1X	6.03	28.98	DF CF00H	FC-CA-SF-DS-AC-MC-TR-TF-PDA-HECM-SSR-CGC-N1-BLE	TRO5404 STC8-11	
5	DH-107	14.00	12.00	635	545	6.03	208-1	28.98	24	Mod	1X	6.03	28.98	DF CF00H	FC-CA-SF-DS-AC-MC-TR-TF-PDA-HECM-SSR-CGC-N1-BLE	TRO5404 STC8-11	
6	DH-108	12.00	12.00	546	546	6.03	208-1	28.98	24	Mod	1X	6.03	28.98	DF CF00H	FC-CA-SF-DS-AC-MC-TR-TF-PDA-HECM-SSR-CGC-N1-BLE-RA	TRO5404 STC8-11	
7	DH-109	12.00	12.00	450	450	6.03	208-1	28.98	24	Mod	1X	6.03	28.98	DF CF00H	FC-CA-SF-DS-AC-MC-TR-TF-PDA-HECM-SSR-CGC-N1-BLE-RA	TRO5404 STC8-11	

DAMPER SCHEDULE

ACEPTABLE MANUFACTURERS:
AIR BALANCE
GREENHECK
LOUVERS & DAMPERS
RUSKIN

SYMBOL	MANUFACTURER	MODEL	DESCRIPTION	DIMENSIONS (INCHES) WIDTH	HEIGHT	DEPTH	DIA. (Ø)	ACCESSORIES AND REMARKS	QTY	IMAGE
RMVD	RUSKIN	MDRS25	MANUAL VOLUME DAMPER: ROUND, SINGLE BLADE, 22 GAUGE GALVANIZED STEEL BLADE, MOLDED SYNTHETIC BEARING, (20" MAXIMUM DUCT)			6"	6"	2" STAND-OFF BRACKET WITH HEAVY DUTY LOCKING QUATRANT (DURA-DYNE8177)	12	
RMVD	RUSKIN	MDRS25	MANUAL VOLUME DAMPER: ROUND, SINGLE BLADE, 22 GAUGE GALVANIZED STEEL BLADE, MOLDED SYNTHETIC BEARING, (20" MAXIMUM DUCT)			6"	8"	2" STAND-OFF BRACKET WITH HEAVY DUTY LOCKING QUATRANT (DURA-DYNE8177)	4	
RMVD	RUSKIN	MDRS25	MANUAL VOLUME DAMPER: ROUND, SINGLE BLADE, 22 GAUGE GALVANIZED STEEL BLADE, MOLDED SYNTHETIC BEARING, (20" MAXIMUM DUCT)			6"	10"	2" STAND-OFF BRACKET WITH HEAVY DUTY LOCKING QUATRANT (DURA-DYNE8177)	9	

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MEDICAL OFFICE BUILDING
ERDA WAY & HWY 36
TOOELE, UTAH

PROFESSIONAL ENGINEER
THOMAS BRADLEY SHAKESPEARE
10361455
STATE OF UTAH
19 SEPT 2024

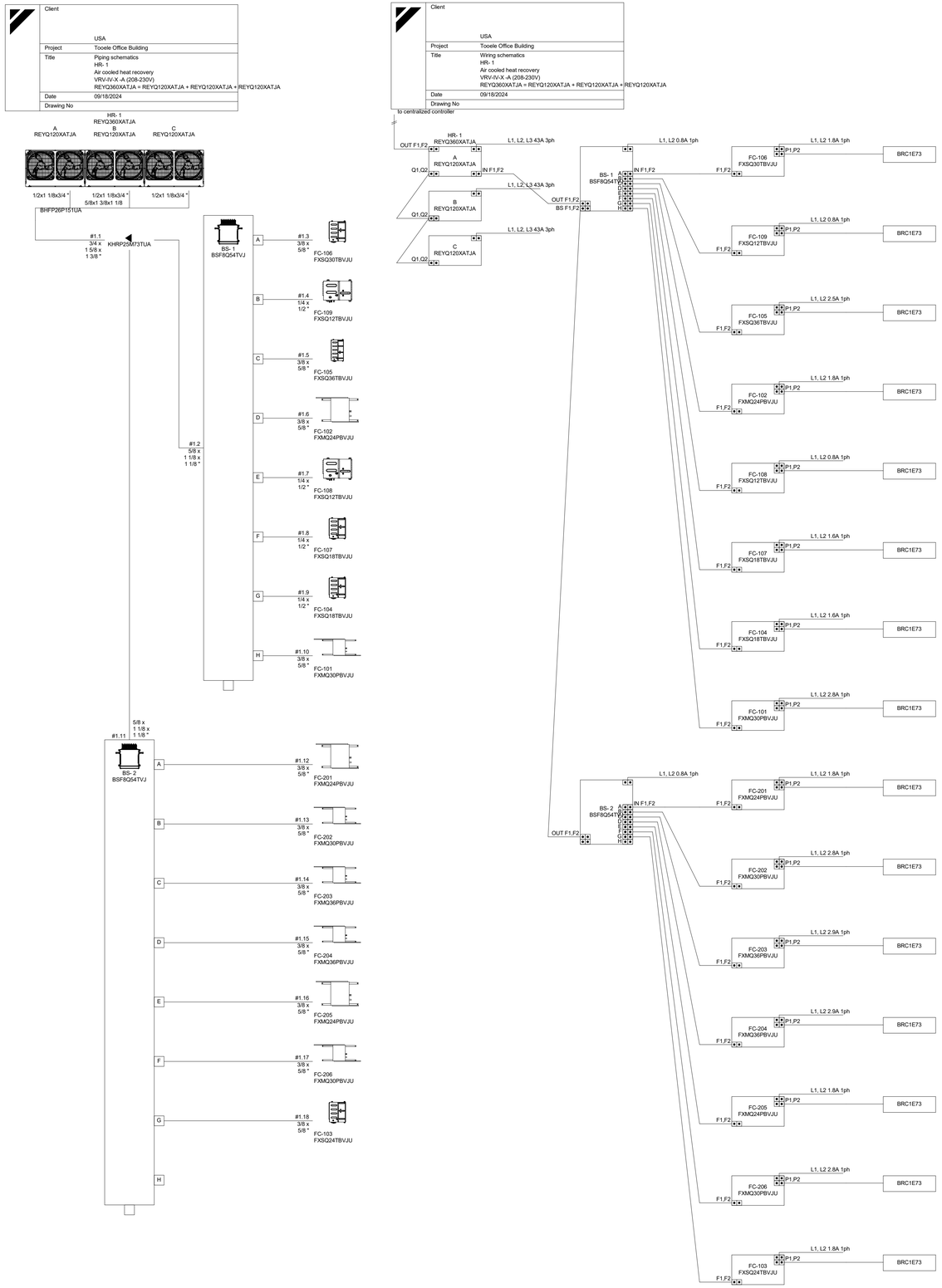
NO.	DATE	REVISION
0	09-19-2024	PERMIT SET

MECHANICAL SCHEDULES

PROJECT NUMBER 24194
DATE 09-19-2024
PROJECT MANAGER LEB
DESIGNED BY MT

M601

NOTE:
VRF SCHEMATIC IS FOR REFERENCE ONLY. MC TO FIELD VERIFY ALL INSTALLED EQUIPMENT LOCATIONS AND ANTICIPATED LINESET LENGTHS. MC TO PROVIDE THIS INFORMATION TO MANUFACTURER AND INSTALL PER MANUFACTURERS UPDATED SCHEMATIC. NOTIFY EOR OF ANY MAJOR DEVIATIONS.



1 VRF Schematic

SCALE: 1" = 10'-0"

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MEDICAL OFFICE LAYOUT

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TOOELE, UTAH

PROFESSIONAL ENGINEER
THOMAS BRADLEY SHAKESPEARE
10361455
STATE OF UTAH
09/19/2024

NO.	DATE	REVISION
0	09-19-2024	PERMIT SET

VRF SCHEMATIC

PROJECT NUMBER 24194
DATE 09-19-2024
PROJECT MANAGER LEB
DESIGNED BY MT

M701

PLUMBING PIPE MATERIAL SPECIFICATIONS

SERVICE	PIPE MATERIAL	FITTINGS	JOINTS	NOTES
DOMESTIC WATER (BELOW GRADE)	ASTM B8 TYPE "K" COPPER TUBING	ASME B16.18 CAST COPPER-ALLOY SOLDER JOINT OR ASME B16.22 WROUGHT COPPER SOLDER JOINT	ASTM B32 SILVER SOLDER BRAZE	PERMITTED FOR 1/2" THROUGH 3" TUBING
	UL/FM APPROVED 304 SST STAILNESS STEEL RISER	PRE-FABFRICATED SINGLE EXTENDED 90 DEGREE BUTT WELDED RISER.	AWWA C900 (INLET) AWWA C606 (OUTLET)	PERMITTED FOR 4" THROUGH 10" TUBING
DOMESTIC WATER (ABOVE GRADE)	ASTM B88 TYPE 'L' COPPER TUBING	ASME B16.18 CAST COPPER-ALLOY SOLDER JOINT OR ASME B16.22 WROUGHT COPPER SOLDER JOINT	ASTM B32 LEAD FREE SOLDER	
	ASTM F876 AND OR F877 CROSS-LINKED POLYETHYLENE (PEX) SDR 9	ASTM F877 LEAD FREE BRASS INSERT OR ASTM F 1960 ENG. PLASTIC INSERT	ASTM F877 COPPER CRIMP RING OR ASTM F1960 COLD EXPANSION	NOT PERMITTED IN RETURN AIR PLENUMS FITTING AND JOINING METHOD APPROVED BY PIPE MANUFACTURER PROVIDE A 2-FT. X 3-FT. THERMAL EXPANSION LOOP FOR EVERY 60 FT. OF LINEAR HOT WATER PIPE SECTION.
	ASTM F2389 POLYPROPYLENE (PP-R) TUBING AQUATHERM "GREENPIPE" SDR 11	ASME F 2389 POLYPROPYLENE (PP-R) AQUATHERM "GREENPIPE" SOCKET FUSION WELD	SOCKET FUSION WELD OR BUT FUSION WELD	NOT PERMITTED IN RETURN AIR PLENUMS FITTING AND PIPE BY SAME MANUFACTURER PROVIDE A 2-FT. X 3-FT. THERMAL EXPANSION LOOP FOR EVERY 60 FT. OF LINEAR HOT WATER PIPE SECTION.
	ASTM D2646 CHLORINATED POLYVINYL CHLORIDE (CPVC) CTS (SDR 11)	ASTM D2846 CTS FITTINGS	LISTED PRIMER & SOLVENT CEMENT OR ASTM F 493 YELLOW ONE-STEP SOLVENT CEMENT	SINGLE STEP SOLVENT CEMENT PERMITTED FOR 1/2" THROUGH 2" PIPE SIZES. PROVIDE A 2-FT. X 3-FT. THERMAL EXPANSION LOOP FOR EVERY 60 FT. OF LINEAR HOT WATER PIPE SECTION.
DRAIN WASTE AND VENT (BELOW GRADE)	ASTM D1785 SCHEDULE 40 SOLID CORE PVC	ASTM AD 2665 DRAINAGE PATTERN	ASTM D 2564 SOLVENT CEMENT	
DRAIN WASTE AND VENT (ABOVE GRADE)	ASTM F 891 SCHEDULE 40 CELLULAR CORE PVC	ASTM AD 2665 DRAINAGE PATTERN	ASTM D 2564 SOLVENT CEMENT	NOT PERMITTED IN RETURN AIR PLENUMS
	ASTM A 74 STANDARD WEIGHT CAST IRON NO-HUB	ASTM A74 STANDARD WEIGHT CAST IRON NO-HUB, DRAINAGE PATTERN.	ASTM C 1277 COMPRESSION TYPE NEOPRENE GASKETS, STAINLESS STEEL BANDS.	
NATURAL GAS (BELOW GRADE)	ASTM D2513 POLYETHYLENE (PE) MEDIUM DENSITY	ASTM D3350	FUSION (SOCKET, BUTT, SADDLE, OR ELECTRO) OR MECHANICAL RATED FOR DIRECT BURIAL	BURY NOT LESS THAN 24" BELOW GRADE CONTINUOUS LINE TRACE WIRE
NATURAL GAS (ABOVE GRADE)	ASTM A53 SCHEDULE 40 BLACK STEEL	ASTM B16.3 CLASS 150 MALLEABLE IRON OR ASTM B16.9 BUTT WELDED STEEL	THREADED TEFLON TAPE	CONTINIOUS WARNING LABEL 12" ABOVE
CONDENSATE DRAIN	ASTM D 1785 SCHEDULE 40 POLYVINYL CHLORIDE (PVC)	ASTM D 2466 PVC SOCKET JOINT	ASTM F 656 PURPLE PRIMER ASTM D 2664 SOLVENT CEMENT	NOT PERMITTED IN RETURN AIR PLENUMS
	ASTM B88 TYPE 'M' COPPER TUBING	ASME B16.18 CAST COPPER-ALLOY SOLDER JOINT OR ASME B16.22 WROUGHT COPPER SOLDER JOINT	ASTM B32 LEAD FREE SOLDER	
ROOF DRAIN (BELOW GRADE)	ASTM D1785 SCHEDULE 40 SOLID CORE PVC	ASTM AD 2665 DRAINAGE PATTERN	ASTM D 2564 SOLVENT CEMENT	
ROOF DRAIN (ABOVE GRADE)	ASTM F 891 SCHEDULE 40 CELLULAR CORE PVC	ASTM AD 2665 DRAINAGE PATTERN	ASTM D 2564 SOLVENT CEMENT	NOT PERMITTED IN RETURN AIR PLENUMS
	ASTM A 74 STANDARD WEIGHT CAST IRON NO-HUB	ASTM A74 STANDARD WEIGHT CAST IRON NO-HUB, DRAINAGE PATTERN.	ASTM C 1277 COMPRESSION TYPE NEOPRENE GASKETS, STAINLESS STEEL BANDS.	

220500 - BASIC PIPING MATERIALS AND METHODS

1. CORE CUT ALL PIPE PENETRATIONS OF MASONRY OR CONCRETE WALLS AND FLOORS. SLEEVE ALL PENETRATIONS THROUGH NEW WALLS AND FLOORS. SEAL ALL PENETRATIONS WATERTIGHT WITH SILICONE SEALANT. USE FIRE RATED SEALANT (3M "FIRE BARRIER" OR EQUAL) FOR 1 HOUR OR 2 HOUR PENETRATIONS.
2. CAULK AROUND ALL PIPING THAT PASSES THROUGH FIRE-RATED PARTITIONS WITH A NON-HARDENING CAULKING SIMILAR TO 3M "FIRE BARRIER".
3. SEAL ALL PIPING THROUGH WALLS AIRTIGHT.

220700 - PLUMBING INSULATION

1. PIPE INSULATION: SNAP-ON GLASS FIBER TYPE WITH VAPOR JACKET. SEAL ALL ENDS AND JOINTS TO PROVIDE A COMPLETELY SEALED SYSTEM. ALTERNATIVELY, FOR INTERIOR WATER PIPING, USE FLEXIBLE UNICELLULAR ASTM 534 TYPE 1 INSULATION. USE THE FOLLOWING MIN. PIPE INSULATION THICKNESS BY SERVICE AND SIZE:

   a. DCW: ALL SIZES (1/2")
   b. DHW: 1/2"-1-1/4" (1")
   c. DHW: 1-1/2"+ (1-1/2")
   d. RD & ORD: ALL SIZES (1")
2. FOR PIPING SMALLER THAN 1-1/2" AND LOCATED IN PARTITIONS WITHIN CONTIDIONED SPACES, REDUCTION OF THESE THICKNESSES BY 1" SHALL BE PERMITTED BUT NOT TO A THICKNESS LESS THAN 1".
3. INDOOR PIPE INSULATION AND RELATED MATERIALS SHALL HAVE A FLAME-SPREAD INDEX OF 25 OR LESS, AND SMOKE-DEVELOPED INDEX OF 50 OR LESS WHEN TESTED TO ASTM E 84.
4. ALL PIPE INSULATION SHALL NOT FLAME, GLOW, SMOLDER OR SMOKE WHEN TESTED IN ACORDANCE WITH ASTM C411.
5. PROVIDE ADA COMPLIANT FIXTURES WITH SNAP ON ADA ARTICLE 4.19 22FF COMPLIANT WHITE INSULATION. TRUEBRO LAV GUARD, BASIN GUARD OR LAV SHIELD.
6. FOR RD AND ORD PIPING IN DRY ASHRAE CLIMATE B ZONES, INSULATION ONLY REQUIRED ON HORIZONTAL PIPING AND FIRST 10' FROM SOURCE.

221116 - WATER DISTRIBUTION PIPING

1. INSTALL PIPE HANGERS WITH MINIMUM ROD SIZES AND MAXIMUM SPACING AS SHOWN IN DRAWING SCHEDULES.
2. ALL PIPE HANGERS AND EQUIPMENT SUPPORTS SHALL BE LOCATED A MINIMUM OF 2" FROM ANY REFRIGERANT PIPE.
3. ALL PLUMBING FIXTURES CONNECTED TO THE POTABLE WATER SYSTEM WITH HOSE CONNECTIONS ON THE OUTLET SIDE SHALL BE PROVIDED WITH BACKFLOW PREVENTION.

221316 - DRAINAGE AND VENT SYSTEMS

1. INSTALL SANITARY DRAIN LINES 2-1/2" AND SMALLER WITH A MIN. SLOPE OF 2%. INSTALL SANITARY DRAIN LINES 3" AND LARGER WITH A MIN. SLOPE OF 1%.
2. PROVIDE ACCESSIBLE WALL CLEAN-OUT WITH FLAT CHROME COVER PLATE AT ALL SEWER STACKS AND URINAL FIXTURES.

221416 - NATURAL GAS SYSTEMS

1 SEE GAS UTILITY CALUCLATIONS AND/OR ISOMETRIC FOR SYSTEM PRESSURE. WHERE GREATER THAN 1/2" PSIG (7" W.C.), LOCATE PRESSURE REGULATORS AS SHOWN ON THE DRAWINGS TO REDUCE PRESSURE TO 7" W.C. PROVIDE FULL SIZE VENT LINES FROM GAS PRESSURE REGULATORS AND EXTEND TO OUTSIDE OR THROUGH ROOF (AS REQUIRED). FLASH PENETRATIONS AND MAKE WATERTIGHT.

2 PROVIDE GAS SHUT OFF VALVE AT EACH PIECE OF GAS UTILIZING EQUIPMENT.

3 1.THE EQUIPMENT INSTALLER SHALL APPLY AND SIGN A CERTIFICATION LABEL TO EACH GAS-FIRED APPLIANCE, STATING THE APPLIANCE HAS BEEN ADJUSTED OR MODIFIED PER MANUFACTURER'S REQUIREMENTS FOR OPERATION AT THE PROJECT ALTITUDE AND WITH THE BTU-CONTENT OF THE AVAILABLE FUEL-GAS.

223400 - WATER HEATERS

1. INSTALL UNITS PLUMB AND LEVEL AND FIRMLY ANCHORED PER SEISMIC REQUIREMENTS. MAINTAIN MANUFACTURER'S RECOMMENDED CLEARANCES. ORIENT SO CONTROLS AND DEVICES NEEDING SERVICING ARE ACCESSIBLE.
2. CONNECT HOT AND COLD-WATER PIPING TO UNITS WITH SHUT-OFF VALVES AND UNIONS. CONNECT HOT WATER CIRCULATING PIPING TO UNIT WITH SHUT-OFF VALVE, CHECK VALVE AND UNION.
3. USE DIELECTRIC FITTINGS AND UNIONS WHERE PIPING CONNECTIONS ARE DISSIMILAR METALS.
4. INSTALL VACUUM RELIEF VALVE IN COLD WATER INLET PIPING. EXTEND RELIEF VALVE DISCHARGE TO CLOSEST FLOOR DRAIN. INSTALL DRAIN AS INDIRECT WASTE TO SPILL INTO OPEN DRAIN OR OVER FLOOR DRAIN.
5. PROVIDE AND INSTALL EXPANSION TANK AS SCHEDULED IN DRAWINGS. EXPANSION TANK: DIAPHRAGM TYPE, PRE- PRESSURIZED STEEL TANK WITH RELIEF VALVE SETTING @ 120 PSI MAXIMUM PRESSURE.
6. CONNECT GAS SUPPLY PIPING TO BURNER WITH DRIP LEG, TEE, GAS COCK, AND UNION. MINIMUM SIZE SAME AS INLET CONNECTION. INSTALL GAS PRESSURE REGULATORS WHERE INDICATED.
7. ELECTRICAL CONNECTIONS: POWER WIRING AND DISCONNECT SWITCHES ARE SPECIFIED IN DIVISION 26. CONNECT UNIT COMPONENTS TO GROUND IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE.
8. VENT CONNECTIONS: CONNECT GAS FIRED WATER HEATER DRAFT HOOD TO THE VENT SYSTEM. UNLESS OTHERWISE INDICATED, PROVIDE VENT SAME SIZE AS OUTLET ON HEATER. COMPLY WITH GAS UTILITY REQUIREMENTS.
9. PROVIDE SEALED COMBUSTION SYSTEMS WITH CONNECTIONS FOR OUTSIDE COMBUSTION AIR.
10. PROVIDE CONCENTRIC VENT TERMINATION KIT FOR ROOF OR WALL APPLICATIONS.
11. PROVIDE PVC COMBUSTION AIR AND VENT PIPING FROM WATER HEATER TO TERMINATION KIT.
12. PROVIDE CONDENSATE DRAIN FROM WATER HEATER OR VENT AS REQUIRED.

224213 - PLUMBING FIXTURES

1. PROVIDE CARRIERS AS REQUIRED FOR FLOOR OR WALL MOUNTED PLUMBING FIXTURES. INSTALL ALL FIXTURES WITH ACCESSORIES AS REQUIRED TO PROVIDE A COMPLETE, WORKABLE INSTALLATION.
2. PLUMBING FIXTURES SHALL INCLUDE COMPRESSION STOPS ABOVE FLOOR IN SUPPLIES TO ALL FIXTURES AND A MINIMUM 17 GAUGE P- TRAP.
3. ALL LAVATORIES AND HAND SINKS WILL HAVE A COMBINATION FAUCET OR PREMIXING FAUCET CAPABLE OF SUPPLYING WARM WATER FOR A MINIMUM OF 10 SECONDS.
4. ALL JANITORIAL SINK FAUCETS MUST BE PROVIDED WITH AN APPROVED BACKFLOW PREVENTION DEVICE.
5. FLOOR DRAINS AND FLOOR SINKS ARE SHOWN IN THE APPROXIMATE LOCATION. COORDINATE FINAL LOCATION WITH EQUIPMENT AND DRAINAGE REQUIREMENTS. PROVIDE BLOCKOUTS AS NECESSARY.
6. SEE REFRIGERATION OR ARCHITECTURAL DRAWINGS FOR EXACT LOCATION OF FLOOR DRAINS AND FLOOR SINKS.

PLUMBING FIXTURE NOTES

1. SIMILAR EQUIPMENT SHALL BE OF THE SAME MANUFACTURER.
2. ALL EQUIPMENT SHALL PROVIDE SCHEDULED PERFORMANCE AT JOB SITE ELEVATION.
3. FIXTURE AND EQUIPMENT MODEL NUMBERS SHOWN IN PLUMBING FIXTURE SCHEDULE AND PLUMBING EQUIPMENT SCHEDULES ARE SHOWN TO ESTABLISH TYPE OF PRODUCT THAT SHALL BE USED. SUBMITTED PRODUCTS SHALL MEET SCHEDULED PERFORMANCE DATA SHOWN ON THE DRAWINGS EVEN IF A DIFFERENT MODEL IS SUPPLIED.
4. ALL EQUIPMENT SHALL BE INSTALLED IN STRICT ACCORDANCE WITH THE EQUIPMENT MANUFACTURER'S INSTALLATION INSTRUCTIONS. PROVIDE ALL NECESSARY FITTINGS, TRANSITIONS, VALVES AND OTHER DEVICES AND ACCESSORIES REQUIRED FOR A COMPLETE, WORKABLE INSTALLATION.
5. ALL MOTOR STARTING EQUIPMENT, NOT PROVIDED AS A PART OF THE PLUMBING EQUIPMENT, SHALL BE PROVIDED BY DIVISION 26.
6. SEE "PLUMBING FIXTURE SCHEDULE" FOR INDIVIDUAL TRAPS, WASTE, VENT, AND DOMESTIC WATER PIPING SIZES FOR INDIVIDUAL FIXTURES.
7. ALL PLUMBING EQUIPMENT SHALL BE LISTED AND LABELED BY AN APPROVED THIRD-PARTY TESTING AGENCY.
8. FIXTURES, EQUIPMENT AND PIPING INSTALLATION SHALL MEET NSF STANDARDS.
9. PROVIDE WATER HAMMER ARRESTERS (W/HA) AT ALL PIPING CONNECTIONS TO PLUMBING FIXTURES AND PLUMBING EQUIPMENT PROVIDED WITH QUICK CLOSING VALVES AND INSTALLATIONS WHICH RESULT IN EXCESS PIPE VIBRATION OR MOVEMENT.
10. ALL OWNER FURNISHED EQUIPMENT WITH DIRECT CONNECTION TO THE DOMESTIC WATER SYSTEM SHALL BE PROVIDED WITH AN APPROVED BACKFLOW DEVICE.
11. INSTALLATION AND FINAL CONNECTION OF ALL-OWNER-FURNISHED EQUIPMENT SHALL BE BY DIVISION 22.

DRAIN, WASTE & VENT NOTES

1. ALL EXPOSED DRAINAGE PIPING ON OCCUPIED SPACES INCLUDING TRAPS UNDER SINKS SHALL BE POLISHED CHROME PLATED.
2. DRAWINGS SHOW GENERAL ARRANGEMENT OF DRAIN, WASTE AND VENT SYSTEM. CONTRACTOR SHALL PROVIDE ALL ADDITIONAL CLEANOUTS AS REQUIRED BY PLUMBING CODE.
3. INVERT ELEVATIONS AS SHOWN ON DRAWINGS ARE REFERENCED FROM FINISHED FLOOR ELEVATION. COORDINATE ALL INVERTS WITH BOTH CIVIL AND ARCHITECTURAL DRAWINGS PRIOR TO INSTALLATION.
4. ALL VENTS THROUGH ROOF SHALL BE A MINIMUM OF 10 FEET FROM ANY AIR INTAKES.
5. SLOPE VENT SYSTEM TOWARDS DRAINAGE SYSTEM.
6. INSTALL ALL SANITARY DRAINAGE PIPING 3" AND LARGER WITH SLOPE IN DIRECTION OF FLOW OF 1/8" PER FOOT MINIMUM.
7. INSTALL ALL SANITARY DRAINAGE PIPING 2-1/2" AND SMALLER AND ALL GREASE WASTE PIPING WITH SLOPE IN DIRECTION OF FLOW AT 1/4" PER FOOT.
8. DRAINAGE PATTERN FITTINGS SHALL BE USED ON ALL VENT PIPING LOCATED BELOW THE FLOOD LEVEL RIM OF FIXTURES.

FUEL GAS PIPING GENERAL NOTES

1 NATURAL GAS PIPING IS SIZED AT 2.0 PSI.

2 PROVIDE GAS SHUT OFF VALVES AT ALL GAS FIRED EQUIPMENT.

3 ALL EXTERIOR FUEL GAS PIPING SHALL BE PAINTED WITH TWO COATS OF PAINT:

a.ONE COAT: 2.5 MIL (DRY) 5.0 MIL (WET) 4160-7100 (RED) DEVGUARD EXTERIOR, MULTI-PURPOSE TANK & STRUCTURAL ALKYD PRIMER. SEE SPEC. 15195.

b. ONE COAT: 1486-XXXX (GRAY) UNIGRIP WATER BASED AQUACRYLIC DRY FALL SEMI-GLOSS PAINT.

4 FUEL GAS PIPING SHALL BE PURGED OF ALL AIR PRIOR TO THE PIPING SYSTEM BEING PUT INTO OPERATION.

5 THE OPEN END OF FUEL GAS PIPING SYSTEM BEING PURGED SHALL DISCHARGE TO THE OUTDOORS.

6 THE OPEN END OF THE GAS PIPING SYSTEM SHALL BE CONTINUOUSLY MONITORED DURING PURGING.

DOMESTIC WATER GENERAL NOTES

1. ALL EXPOSED DOMESTIC WATER PIPE IN OCCUPIED SPACES SHALL BE POLISHED CHROME PLATED.
2. PROVIDE ISOLATION VALVES IN DOMESTIC WATER PIPING TO EACH SET OF RESIDENT ROOMS OR BATHROOM GROUPS.
3. INSTALL PIPING SO THAT VALVES, STRAINERS, UNIONS, TRAPS, FLANGES, AND ALL OTHER APPURTENANCES REQUIRING ACCESS ARE ACCESSIBLE.
4. VALVES (EXCEPT CONTROL VALVES) AND STRAINERS SHALL BE FULL SIZE OF PIPE BEFORE REDUCING PIPE SIZE TO MAKE CONNECTIONS TO EQUIPMENT.
5. VALVES SHALL BE INSTALLED SO THAT VALVE REMAINS IN SERVICE WHEN EQUIPMENT OR PIPING ON EQUIPMENT SIDE OF VALVE IS REMOVED.
6. PROVIDE DOMESTIC WATER BOOSTER PUMP IF WATER PRESSURE FROM LOCAL UTILITY IS INADEQUATE TO SERVE BUILDING. BOOSTER PUMP SHALL BE INCLUDED IF REQUIRED.
7. PROVIDE MANIFOLD PIPING AT WATER HEATERS PER MANUFACTURER'S WRITTEN RECOMMENDATIONS. BALANCE WATER FLOW THROUGH WATER HEATERS AFTER INSTALLATION.
8. INSTALL DOMESTIC WATER PIPING ABOVE OR BEHIND WATER HEATERS TO ALLOW FOR WATER HEATER REMOVAL
9. SOFTENED WATER SHALL SERVE DOMESTIC COLD-WATER SERVICE TO WATER HEATERS ONLY.

PLUMBING GENERAL NOTES

1. THE DRAWINGS SHOW GENERAL DESIGN, ARRANGEMENT AND EXTENT OF PLUMBING SYSTEMS. BECAUSE OF THE SMALL SCALE, THE DRAWINGS DO NOT SHOW ALL OFFSETS, BENDS OR ELBOWS NECESSARY FOR COMPLETE INSTALLATION IN SPACES PROVIDED. THIS CONTRACTOR SHALL MAKE SUCH MINOR ALTERATIONS AS MAY BE NECESSARY TO MAKE PLUMBING SYSTEMS COMPLETE AND OPERATIONAL IN ACCORDANCE WITH DESIGN INTENT.
2. MAJOR DEVIATIONS SUCH AS CHANGES IN COMPONENT SIZES, WEIGHTS, QUANTITIES OR MATERIAL REQUIRE PRIOR APPROVAL BY DESIGN ENGINEER.
3. DRAWINGS AND SPECIFICATIONS HAVE BEEN PREPARED TO SUPPLEMENT EACH OTHER AND SHALL BE INTERPRETED AS AN INTEGRAL UNIT WITH ITEMS SHOWN ON ONE AND NOT THE OTHER BEING FURNISHED AND INSTALLED AS THOUGH SHOWN AND CALLED OUT IN BOTH.
4. ENTIRE PLUMBING INSTALLATION SHALL CONFORM TO THE REQUIREMENTS OF THE MOST RECENTLY ADOPTED BUILDING CODES, MECHANICAL CODE, PLUMBING CODE, ELECTRICAL CODE, AND ALL OTHER APPLICABLE CITY, COUNTY, STATE, AND FEDERAL CODES AND REGULATIONS IN EFFECT.
5. PRIOR TO FABRICATION AND INSTALLATION OF ANY PLUMBING COMPONENTS THE CONTRACTOR SHALL COORDINATE ALL PLUMBING WORK WITH ALL OTHER BUILDING TRADES, INCLUDING BUILDING TRADES HIRED DIRECTLY BY OWNER. WHERE CONFLICTS MAY OCCUR, THEY SHALL BE RESOLVED PRIOR TO INSTALLATION.
6. CONTRACTOR SHALL BE RESPONSIBLE TO REVIEW AND USE, WHERE APPROPRIATE, ALL PLUMBING DETAILS SHOWN ON THE DRAWINGS. DETAILS MAY OR MAY NOT BE CALLED OUT ON THE DRAWINGS WITH SYMBOLS OR KEYED NOTES. ANY CHANGES RESULTING FROM FAILURE TO INSTALL PLUMBING SYSTEMS WITHOUT USING THE INCLUDED DETAILS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
7. 1.ANY PART OF THE PLUMBING INSTALLATION THAT FAILS, IS UNFIT, OR BECOMES DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR AT NO ADDITIONAL EXPENSE TO OWNER.

PLUMBING PIPING GENERAL NOTES

1. PROVIDE PROPER PROVISIONS FOR EXPANSION, CONTRACTION, OR MOVEMENT OF ALL PIPING.
2. INSTALL PIPING WITHOUT FORCING OR SRINGING.
3. INSTALL PIPING TO CLEAR DOORS AND WINDOWS.
4. PROVIDE LARGE ENOUGH PIPE SLEEVES THROUGH WALL OR FLOOR TO ALLOW FOR ANTICIPATED DIFFERENTIAL MOVEMENT.
5. ALL EXPOSED PIPING SHALL INSTALLED NEATLY; ARRANGED PARALLEL TO BUILDING STRUCTURAL ELEMENTS.
6. COPPER PIPING SHALL NOT COME IN CONTACT WITH FIRE TREATED LUMBER. PROVIDE ½" THICK SLIP-ON CLOSED CELL INSULATION WHERE COPPER PIPING IS ADJACENT TO FIRE TREATED LUMBER. CLOSED CELL INSULATION SHALL EXTEND A MINIMUM OF 1-1/2" PAST LUMBER.
7. INSTALL EXTERIOR WATER PIPING, SEWER AND WASTE PIPING AND ROOF DRAINAGE (BELOW FROST LEVEL (4'-0" MINIMUM). VERIFY EXACT LOCAL REQUIREMENTS WITH AND CIVIL ENGINEER AND SITE UTILITY DRAWINGS PRIOR TO INSTALLATION.

PIPE HANGERS GENERAL NOTES

1. SUPPORT ALL PIPING WITH CLEVIS OR LOOP HANGERS (MSS TYPE 1). PERFORATED METAL STRAPS OR PLASTIC STRAPPING (PLUMBER TAPE) SHALL NOT BE USED TO SUPPORT OR BRACE ANY PIPE.
2. PROVIDE PIPE HANGERS WITHIN 18 INCHES OF ALL CHANGES OF DIRECTION.
3. ALL STEEL HANGERS USED TO SUPPORT COPPER PIPING SHALL BE COPPER PLATED OR PLASTIC COATED.
4. ALL STEEL HANGERS USED TO SUPPORT PLASTIC PIPING SHALL BE PLASTIC COATED.
5. PROVIDE ELASTOMERIC CUSHION (COOPER B-LINE B1999 "VIBRA CUSHION") BETWEEN COPPER PIPING AND GALVANIZED CHANNEL SUPPORT CLAMPS. PLASTIC PIPE WRAP TAPE IS NOT ACCEPTABLE.
6. PROVIDE ELASTOMERIC INSERT (COOPER B-LINE BVP "VIBRA- CLAMPS") BETWEEN PLASTIC PIPE AND GALVANIZED CHANNEL SUPPORT CLAMPS. PLASTIC PIPE WRAP TAPE IS NOT ACCEPTABLE.
7. PROVIDE SWAY BRACING FOR ALL PIPING 4" AND LARGER AT ALL CHANGES IN DIRECTION GREATER THAN 45 DEGREES.

DISINFECT POTABLE WATER NOTES

1. DOMESTIC COLD WATER AND DOMESTIC HOT WATER SYSTEMS (I.E. POTABLE WATER) SHALL BE PURGED OF DELETEROUS MATTER AND DISINFECTED PRIOR TO UTILIZATION.
2. FOLLOW METHOD PRESCRIBED THE LOCAL HEALTH AUTHORITY OR WATER PURVEYOR HAVING JURISDICTIONS.
3. IN THE ABSENCE OF A PRESCRIBED METHOD, THE PROCEDURE DESCRIBED IN EITHER AWWA C651 OR AWWA C652 OR AS DESCRIBED SHALL BE FOLLOWED.
4. THESE PROCEDURES SHALL APPLY TO "ON-SITE" OR "IN-PLANT" FABRICATION OF A SYSTEM OR TO A MODULAR PORTION OF A SYSTEM.
5. DISINFECTION PROCEDURE:

a.THE PIPING SYSTEM, INCLUDING FIXTURES AND EQUIPMENT, SHALL BE FLUSHED WITH CLEAR, POTABLE WATER UNTIL DIRTY WATER DOES NOT APPEAR AT THE POINTS OF OUTLET.

b.THE SYSTEM OR PARTS THEREOF SHALL BE FILLED WITH A WATER/CHLORINE SOLUTION CONTAINING NOT LESS THAN 50 PARTS PER MILLION OF CHLORINE, AND THE SYSTEM OR PART THEREOF SHALL BE VALVES OFF AND ALLOWED TO STAND FOR 24-HOURS;

OR

c.THE SYSTEM OR PART THEREOF SHALL BE FILLED WITH A WATER/CHLORINE SOLUTION CONTAINING NOT LESS THAN 200 PARTS PER MILLION OF CHLORINE AND ALLOWED TO STAND FOR 3-HOURS

d.FOLLOWING THE REQUIRED STANDING TIME, THE SYSTEM SHALL BE FLUSHED WITH CLEAN POTABLE WATER UNTIL THE CHLORINE IS PURGED FROM THE SYSTEM.

e.THE PROCEDURE SHALL BE REPEATED WHERE SHOWN BY A BACTERIOLOGICAL EXAMINATION THAT CONTAMINATION REMAINS PRESENT IN THE SYSTEM.

f.DURING THE DISINFECTION PROCEDURE, WARNING SIGNS SHALL BE PLACED AT BUILDING ENTRANCES, ROOM ENTRANCES AND WATER OUTLETS INDICATING THAT POTABLE WATER HAS A HIGH CONCENTRATION OF CHLORINE AND IS NOT SAFE TO DRINK OR USE.

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10361455
STATE OF UTAH
SEP 19 2024

NO.	DATE	REVISION
0	09-19-2024	PERMIT SET

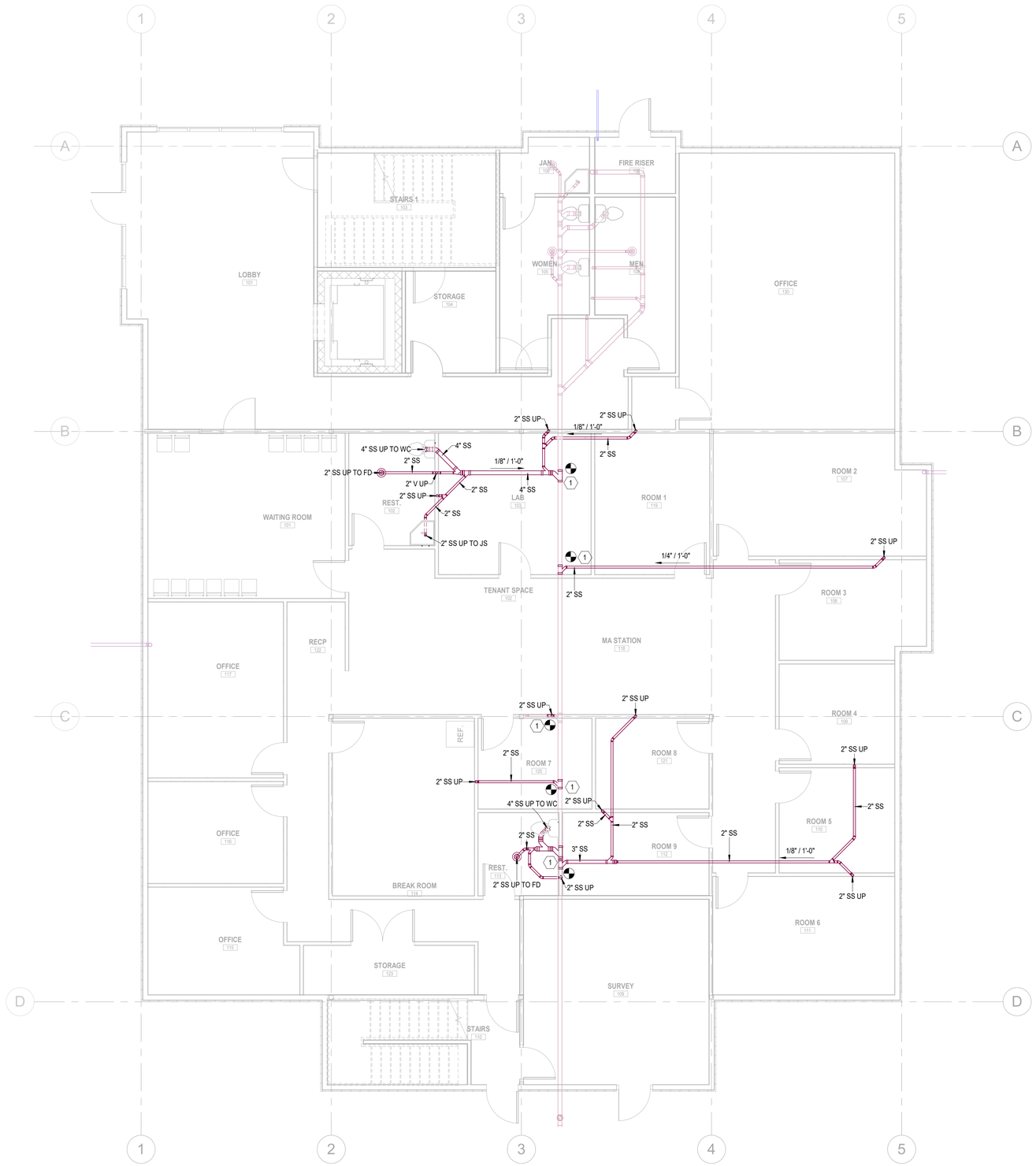
PLUMBING NOTES & SPECIFICATIONS

PROJECT NUMBER 24194
DATE 09-19-2024
PROJECT MANAGER LEB
DESIGNED BY MT

P001

SHEET KEYNOTES

1 CONNECT TO EXISTING SS IN THIS APPROXIMATE LOCATION. FIELD VERIFY EXACT LOCATION AND ROUTING.



1 UNDERGROUND PLUMBING PLAN

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

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STATE OF UTAH
09/19/2024

NO.	DATE	REVISION
0	09-19-2024	PERMIT SET

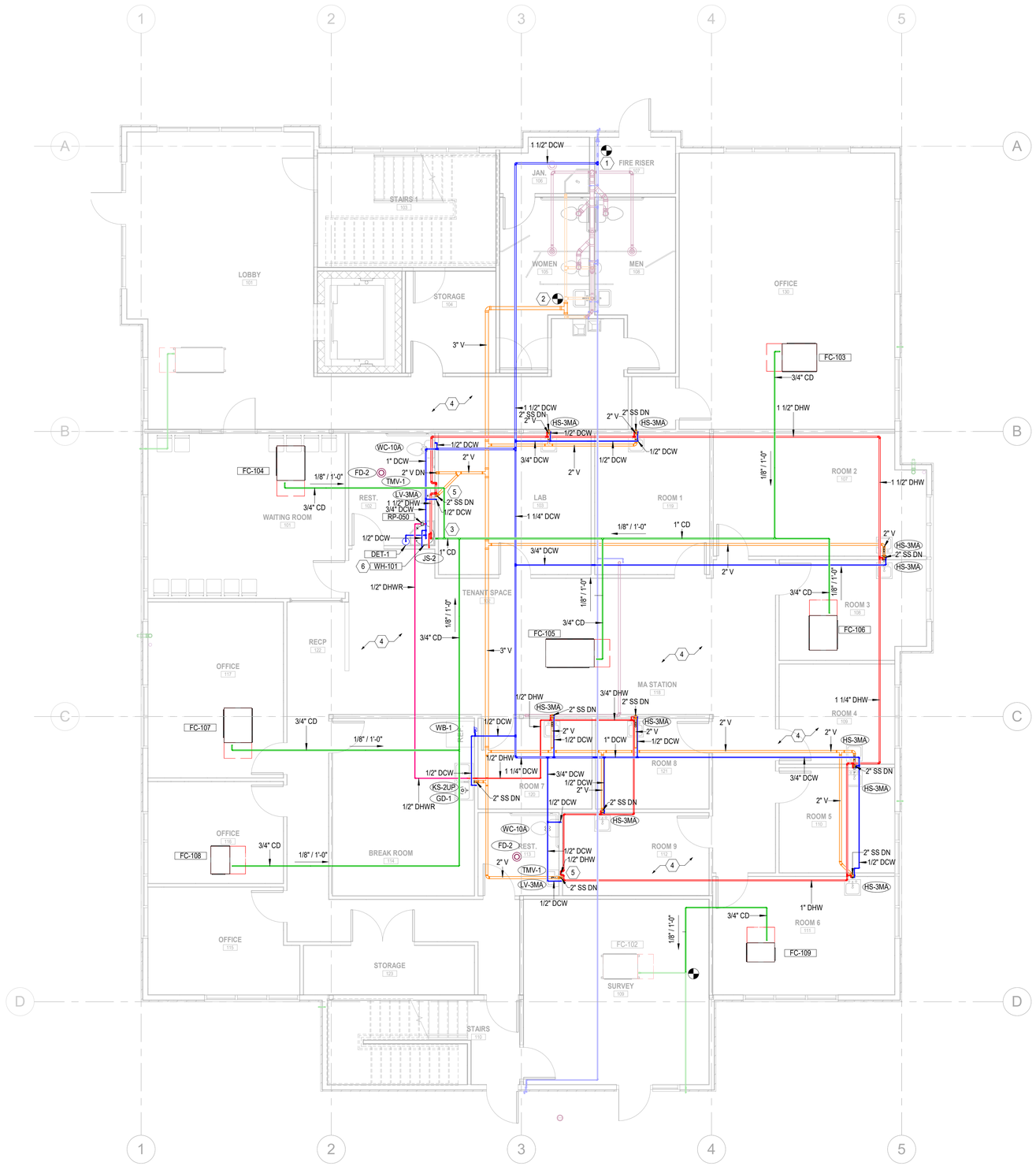
UNDERGROUND PLUMBING PLAN

PROJECT NUMBER	DATE
24194	09-19-2024
PROJECT MANAGER	DESIGNED BY
LEB	MT

P100

SHEET KEYNOTES

1 CONNECT TO EXISTING DCW IN THIS APPROXIMATE LOCATION. PROVIDE ISOLATION VALVE AT CONNECTION. FIELD VERIFY EXACT LOCATION AND ROUTING.
2 CONNECT TO EXISTING VENT IN THIS APPROXIMATE LOCATION. FIELD VERIFY EXACT LOCATION AND ROUTING.
3 CD TO INDIRECTLY DRAIN INTO JANITOR SINK. SEE DETAIL.
4 ROUTE ALL PLUMBING THROUGH STRUCTURE WHERE POSSIBLE, COORDINATE AROUND OTHER TRADES. (TYP).
5 EXTEND HOT WATER LOOP FULL SIZE DOWN WALL WITHIN 24" OF PLUMBING FIXTURE.
6 MOUNT WATER HEATER ABOVE JANITOR SINK NOT LESS THAN 7FT AFF. SEE DETAIL.



1 LEVEL 01 PLUMBING PLAN

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

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NO.	DATE	REVISION
0	09-19-2024	PERMIT SET

LEVEL 01 PLUMBING PLAN

PROJECT NUMBER	DATE
24194	09-19-2024
PROJECT MANAGER	DESIGNED BY
LEB	MT

P101

PLUMBING BUILDING UTILITY CALCULATIONS

Fixture	Quantity	Waste Fixtures		Total Water Fixtures	
Fixture	Quantity	Units (A)	Total Units	Units (A)	Total Units
Water Closet (Private Tank)	2	3.0	6.0	2.2	4.4
Lavatory (Private)	2	1.0	2.0	0.7	1.4
Sink (Kitchen)	1	2.0	2.0	1.4	1.4
Sink (Janitor)	1	2.0	2.0	3.0	3.0
Hand Sink	10	1.0	10.0	2.0	20.0
		DFU:	**22.0**	WSFU:	**30.2**
		Slope (In/Ft):	**1/8**	GPM (A):	**24**
				GPM (B):	**0**
Suggested Water Meter Size (in):	**3/4"**	SIZE:	**3"**	SIZE:	**1 1/2"**
(A) Based on IPC 2018					
(B) Based on ASHRAE MOD. HUNTER (No Hunter Curve)					Tank

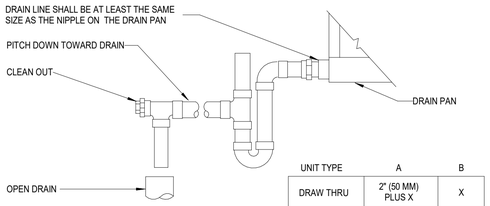
PLUMBING FIXTURE SCHEDULE

SYMBOL	FIXTURE	CONNECTION SIZES (IN)					DESCRIPTION	MODEL	QTY
		TRAP	WASTE	VENT	DCW	DHW			
FD-2	Floor Drain-Round	2	2	2	-	-	POLYVINYL CHLORIDE (PVC) BODY, ADJUSTABLE, ANCHOR FLANGE, 6" ROUND NICKEL BRONZE STRAINER, LIGHT DUTY BARRIER TYPE FLOOR DRAIN TRAP SEAL PROTECTION DEVICE, ASSE STANDARD 1072 PVC P-TRAP WITH SOLVENT WELD JOINTS.	JR SMITH 212 (DRAIN) PROSET (TRAPGUARD)	2
GD-1	Garbage Disposal - 1/2 HP	1 1/2	2	-	-	-	CONTINIOUS FEED TYPE, WALL SWITH CONTROL, DISHWASHER DRAIN CONNECTION, (1/2 HP 120-1-60)	Insinkerator Badger 5	1
JS-2	Janitor Sink, FLOOR MOUNT	2	2	2	1/2	1/2	BODY: WHITE, 24"x24"x10", COMPOSIT FAUCET: CHROME, 8" CENTERSET, INTEGRAL STOPS, 3/4" HOSE END, VACUUM BREAKER, PAIL HOOK FITTINGS: STRAINER.	Mustee 63M (BASIN) Mainline XD-141RC (FAUCET)	1
KS-2UP	Kitchen Sink (1.8 GPM) 2 COMP UNDER MOUNT, PULLDOWN	1 1/2	2	2	1/2	1/2	BODY: BRUSHED SATIN, 14-1/2"x16"x10" (BOWL 1), 14-1/2"x16"x10" (BOWL 2), 16GA. STAINLESS STEEL, BACK CENTER DRAINS, SOUND PADS; FAUCET: BRUSHED NICKEL, PULL DOWN, SINGLE HOLE, LEVER HANDLE, LEAD FREE, WATER SENSE FITTINGS: TAIL PIECE, TRAP, STOP/SUPPLY, TRAP PROTECTOR, STRAINER	LUXART LXUD771 (BASIN) LUXART AERRO-BN (FAUCET)	1
LV-3MA	Lavatory (0.5 GPM) WALL MOUNT-MANUAL VALVE (ADA)	1 1/4	2	2	1/2	1/2	BODY: WHITE, 20"x18" ,6 1/2" DEEP, VITREOUS CHINA, OVERFLOW DRAIN; FAUCET: POLISHED CHROME, 4" CENTERSET, SINGLE CONTROL, 5" SPOUT, LEVEL HANDLE, LEAD FREE, WATER SENSE; FITTINGS: TAIL PIECE, TRAP, STOP/SUPPLY, TRAP PROTECTOR.	ZURN Z5340 (Basin), ZURN Z7440-XL (FAUCET)	2
TMV-1	THERMOSTATIC MIXING VALVE POINT OF USE - LOW FLOW	-	-	-	1/2	1/2	LEAD FREE, BRONZE BODY, VANDAL RESISTANT ADJUSTMENT TEMPERATURE FACTORY SET TO 105°F, INTEGRAL CHECK VALVES ON INLETS. MIN FLOW RATE: 0.25 GPM, RATED FLOW RATE@5PSI: 0.7 GPM, MAX HOT WATER TEMPERATURE: 180°F, MAX OPERATING PRESSURE: 125PSI ASSE 1070 CERTIFIED.	POWERS LFG480	2
WB-1	WATER Box	-	-	-	1/2	-	WHITE, 5-3/4"x5"x3-1/2", PVC, RECESSED WALL BOX,QUARTER TURN VALVE, SNAP-ON FRAME ASME A112.18.1 COMPLIANT	Water-Tite AB97**	1
WC-10A	Water Closet (1.28 GPF) Floor Mount-Manual Tank (ADA)	INT	4	2	1/2	-	BODY: WHITE, VITREOUS CHINA, ELONGATED BOWL, COMBINATION TOILET, CHROME LEVER, EXTRA HEAVY DUTY OPEN FRONT SEAT, ASME A112.19.2M, WATER SENSE FITTINGS: BEDPAN LUGS, WAX RING, WALL ESCUTCHEON, STOP, BRAIDED HOSE CONNECTOR	ZURN Z5555-K	2

WATER HEATER SCHEDULE (ELECTRIC STORAGE)

ACCEPTABLE MANUFACTURERS:	ACCESSORIES AND REMARKS:
RHEEM RBI DW-0600 A.O. SMITH LOCHINVAR BRADFORD WHITE NILES STEEL TANK	(1) GLASS LINED STORAGE TANK. (2) AGA/ASME TEMPERATURE & PRESSURE RELIEF VALVE. (3) SIDE WALL CONCENTRIC VENT KIT. (4) SET WATER HEATER OUTPUT TEMPERATURE AT 140°F.

SYMBOL	MANUFACTURER	MODEL	STORAGE CAPACITY (GALLONS)	RECOVERY CAPACITY				ELECTRICAL		WEIGHT (LBS)	ACCESSORIES AND REMARKS
				GALLONS PER HOUR (GPH)	INLET TEMP. (DEG. F.)	OUTLET TEMP. (DEG. F.)	INPUT CAPACITY (KW)	AMPS	POWER		
WH-101	RHEEM	EGSP30	30 GALLONS	-	50	140	2.0	16.7	120-1-60	370	1-3

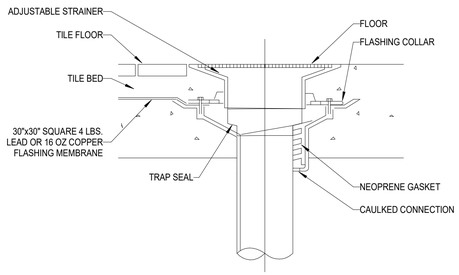


UNIT TYPE	A	B
DRAW THRU	2" (50 MM) PLUS X	X
BLOW THRU	1" (25 MM) MINIMUM	2X

WHERE X = STATIC PRESSURE IN PAN

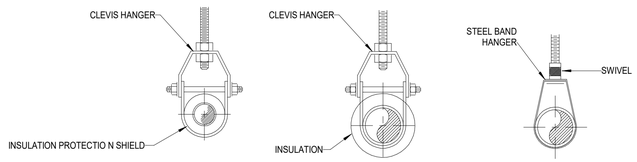
7 CONDENSATE DRAIN

NTS



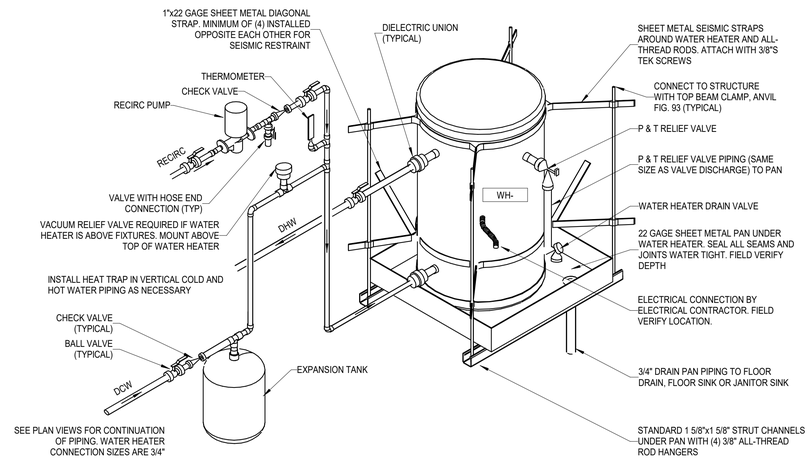
6 FLOOR DRAIN - TRAP SEAL

NTS



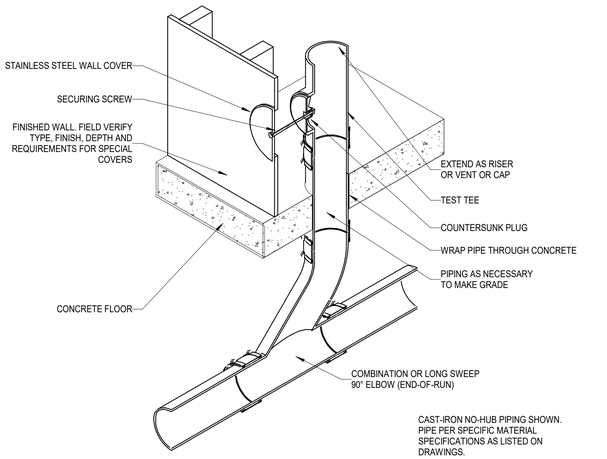
5 PIPE HANGERS

NTS



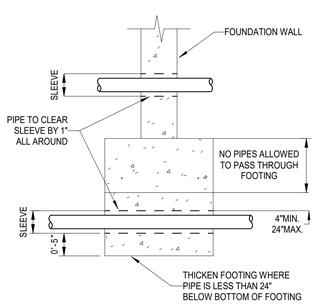
4 WATER HEATER - POINT OF USE W/RECIRC

NTS

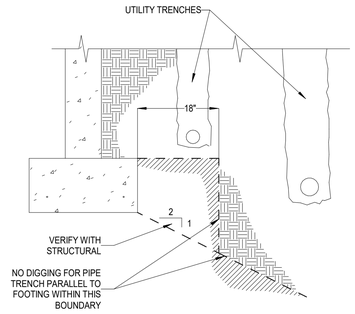


2 CLEAN OUT - WALL

NTS



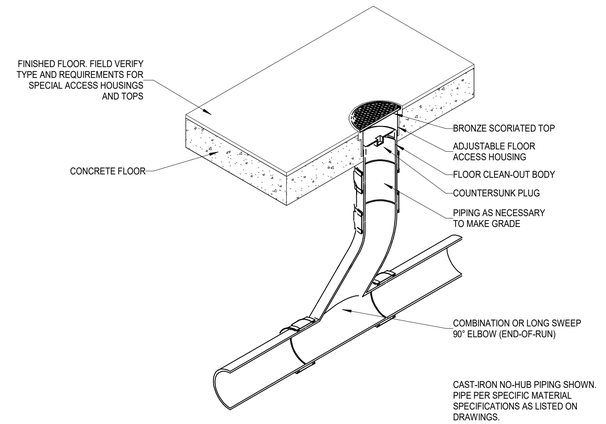
PIPE CROSSING FOOTING / FOUNDATION WALL



PIPE PARALLEL TO FOOTING

3 PIPE LOCATIONS RELATIVE TO FOOTINGS

NTS



1 CLEAN OUT - FLOOR

NTS

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For Questions Contact:
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laura@shakespeare-eng.com

MEDICAL OFFICE LAYOUT

ERDA WAY & HWY 36
TOOELE, UTAH

PROFESSIONAL ENGINEER
THOMAS BRADLEY SHAKESPEARE
10361455
STATE OF UTAH

NO.	DATE	REVISION
0	09-19-2024	PERMIT SET

PLUMBING DETAILS & SCHEDULES

PROJECT NUMBER	DATE
24194	09-19-2024
PROJECT MANAGER	DESIGNED BY
LEB	MT

P501

GENERAL DRAWING SYMBOLS AND REFERENCES

THIS IS A STANDARD LEGEND NOT ALL SYMBOLS MAY BE USED ON THIS PROJECT

1	REFERENCE NOTE
1	DEMOLITION NOTE
NO	REVISION NOTE
1	IDENTIFICATION NOTE
NO	PHOTO REFERENCE
XX–XX / HPE	HPE DETAIL BUBBLE
XX / XX	EQUIPMENT REFERENCE
WIRE	WIRE SIZE REFERENCE
PHOTO XXX / XXXX	PHOTO REFERENCE
A / –	SECTION/ELEVATION REFERENCE
XXX–XXX	EQUIPMENT ID TAG

CONDUIT AND RACEWAYS

THIS IS A STANDARD LEGEND NOT ALL SYMBOLS MAY BE USED ON THIS PROJECT

	RACEWAY OR WIRING SYSTEM IN OR UNDER FLOOR OR CONCEALED IN WALL OR BEHIND STRUCTURE OR EQUIPMENT OR CONDUIT ROUTED BELOW GRADE IN CONCRETE ENCASEMENT
	FLEX CONDUIT
	RACEWAY OR WIRING SYSTEM ABOVE FLOOR LEVEL BELOW CEILING, EXPOSED
	HOMERUN: DESIGNATIONS INDICATE A ONE–LINE DIAGRAM OR PANELBOARD SCHEDULE REFERENCE
J	JUNCTION BOX
	RACEWAY OR WIRING SYSTEM TURNED TOWARD THE VIEWER (UP ON PLAN DRAWINGS)
	RACEWAY OR WIRING SYSTEM TURNED AWAY FROM THE VIEWER (DOWN ON PLAN DRAWINGS)
	RACEWAY OR WIRING SYSTEM CHANGE IN ELEVATION OR DISTANCE FROM VIEWER
	CONDUIT STUB AND CAP

PLAN SYMBOLS

THIS IS A STANDARD LEGEND NOT ALL SYMBOLS MAY BE USED ON THIS PROJECT

EQUIPMENT	
	CIRCUIT DISTRIBUTION PANELBOARD SURFACE MOUNTED
	CIRCUIT DISTRIBUTION PANELBOARD RECESSED
	POWER DISTRIBUTION PANELBOARD SURFACE OR FLOOR MOUNTED DOORS DESIGNATE FRONT OF PANEL MDP DESIGNATES MAIN DISTRIBUTION PANEL
	CONTROL PANEL ENCLOSURE
	LIGHTING CONTROL PANEL
	DISCONNECT
HVAC EQUIPMENT	
	UNIT HEATER, WALL MOUNTED
	UNIT HEATER, CEILING MOUNTED
	CONDENSING UNIT, PAD MOUNTED, SIDE DISCHARGE
	CONDENSING UNIT, PAD MOUNTED, UP FLOW
	ROOFTOP MOUNTED EQUIPMENT

LIGHTING SYMBOLS

THIS IS A STANDARD LEGEND NOT ALL SYMBOLS MAY BE USED ON THIS PROJECT

F1	DESIGNATES FIXTURE NUMBER – REFER TO FIXTURE SCHEDULE
EM	DESIGNATES EMERGENCY FIXTURE
CL	CLOCK
OS	OCCUPANCY SENSOR
LED FIXTURES	
	SURFACE OR RECESSED 1X2 FIXTURE
	SURFACE OR RECESSED 1X4 FIXTURE
	SURFACE OR RECESSED 18"X4' FIXTURE
	SURFACE OR RECESSED 1X8 FIXTURE
	SURFACE OR RECESSED 2X2 FIXTURE
	SURFACE OR RECESSED 2X4 FIXTURE SHADED AREA INDICATES EMERGENCY BATTERY PACK
	SURFACE OR RECESSED 4X4 FIXTURE
	4 FOOT STRIP
	8 FOOT STRIP
	SUSPENDED PENDANT MOUNTED FIXTURE
	1X4 WALL MOUNTED FIXTURE
	2 FOOT WALL MOUNTED FIXTURE
	4 FOOT WALL MOUNTED FIXTURE
LED FIXTURES	
	RECESSED CANISTER FIXTURE

WIRING DEVICES

THIS IS A STANDARD LEGEND NOT ALL SYMBOLS MAY BE USED ON THIS PROJECT

	20 AMP RATED RECEPTACLE SINGLE STROKE = SINGLE DOUBLE STROKE = DUPLEX RECEPTACLE MODIFIERS: X–X = CIRCUIT NUMBER AF = ARC FAULT CIRCUIT INTERRUPTER S = SURFACE MOUNTED IG = ISOLATED GROUND WP = WEATHER PROOF
	EXISTING RECEPTACLE
	GANGED RECEPTACLES IN COMMON BOX WITH COMMON COVER PLATE
	GFCI RECEPTACLE
	CEILING MOUNTED DUPLEX RECEPTACLE
	RECESSED FLOOR DUPLEX RECEPTACLE
	480 VOLT RECEPTACLE
TV	CABLE TELEVISION COAX CABLE CONNECTION
	DATA JACK ONLY
	VOICE JACK ONLY
	DATA/VOICE JACK
	RECESSED FLOOR DATA/VOICE JACK
	PHOTOELECTRIC CONTROL UNIT
T	THERMOSTAT LOCATION
	CONTROL STATION

EXTERIOR LIGHTS	
	WALL PAK FIXTURE

LIGHT SWITCHES

THIS IS A STANDARD LEGEND NOT ALL SYMBOLS MAY BE USED ON THIS PROJECT

S	SINGLE POLE SWITCH
$$	GANGED SWITCHES IN COMMON BOX WITH COMMON COVER PLATE
$°	SWITCH SUPERSCRIPT MODIFIER, LOWER CASE LETTER INDICATES CIRCUIT CONTROLLER –– a,b,c ETC. MAY BE COMBINED WITH CIRCUIT NUMBER. EXAMPLE: 1a, 3b
$₃	SWITCH SUBSCRIPT MODIFIER, UPPER CASE LETTER OR NUMBER: 2 = DOUBLE POLE 3 = THREE WAY 4 = FOUR WAY K = KEY OPERATED M = HORSEPOWER RATED MANUAL STARTER MC = MOMENTARY CONTACT, THREE POSITION MS = MANUAL (STARTER) OR SWITCH D = DIMMER S = SURFACE F = FLUSH OS = OCCUPANCY SENSOR

ONE–LINE SYMBOLS

THIS IS A STANDARD LEGEND NOT ALL SYMBOLS MAY BE USED ON THIS PROJECT

POWER SOURCE	POWER FEED
	TRANSFORMER
3/0, #6, WATER PIPE, DRIVEN ELECTRODE, UFER	EQUIPMENT GROUNDING
	CONNECTION DOT
	CIRCUIT BREAKER
PNL A	EXISTING PANELBOARD
20A 3P	AMPS AND POLES

FIRE ALARM SYMBOLS

THIS IS A STANDARD LEGEND NOT ALL SYMBOLS MAY BE USED ON THIS PROJECT

	EXISTING CEILING MOUNTED HORN/STROBE
	CEILING MOUNTED HORN/STROBE

EQUIPMENT GROUNDING CONDUCTORS

FUSE OR CB SIZE	SIZE (COPPER)
15	14
20	12
30	10
40	10
60	10
100	8
200	6
300	4
400	3
500	2
600	1
800	1/0
1000	2/0
1200	3/0
1600	4/0
2000	250
2500	350

GROUNDING ELECTRODE CONDUCTOR SERVICE ENTRANCE OR SEPARATELY DERIVED SYSTEM

COPPER CONDUCTOR	WIRE SIZE
#2 OR SMALLER	#8
1 OR 1/0	#6
2/0 OR 3/0	#4
>3/0 THRU 350 KCMIL	#2
>350 KCMIL THRU 600 KCMIL	1/0

CONDUIT/CONDUCTOR SCHEDULE *

THHN, THWN, THWN–2

AMP RATING	WIRE ID.	CONDUCTOR QTY.	CONDUCTOR SIZE	MIN. CONDUIT SIZE	EXCEPTIONS
20	212	2	#12	3/4"	
	312	3		3/4"	
	412	4		3/4"	
30	20	2	#10	3/4"	
	30	3		3/4"	
	40	4		3/4"	
50	28	2	#8	3/4"	
	38	3		3/4"	
	48	4		3/4"	
65	26	2	#6	3/4"	
	36	3		3/4"	
	46	4		3/4"	1"(C9)
85	24	2	#4	3/4"	1"(C2,C9)
	34	3		1"	3/4"(C4),1–1/4"(C9)
	44	4		1"	1–1/4"(C9)
115	22	2	#2	1"	
	32	3		1"	1–1/4"(C9)
	42	4		1–1/4"	
130	21	2	#1	1–1/4"	1"(C3,C4)
	31	3		1–1/4"	1"(C3)
	41	4		1–1/4"	1–1/2"(C2,C9,C10)
150	210	2	1/0	1–1/4"	
	310	3		1–1/4"	1–1/2"(C3,C9)
	410	4		1–1/2"	2"(C9)
175	220	2	2/0	1–1/4"	1–1/2"(C3,C4,C9)
	320	3		1–1/2"	
	420	4		2"	
200	230	2	3/0	1–1/2"	1–1/4(C4)
	330	3		1–1/2"	2"(C3,C9)
	430	4		2"	
230	240	2	4/0	1–1/2"	2"(C3)
	340	3		2"	
	440	4		2"	2–1/2"(C9)
255	225	2	250 KCMIL	2"	1–1/2"(C4)
	325	3		2"	2–1/2"(C1,C8)
	425	4		2–1/2"	2"(C4)
310	235	2	350 KCMIL	2"	2–1/2"(C9)
	335	3		2–1/2"	2"(C4)
	435	4		3"	2–1/2"(C1,C4)
380	250	2	500 KCMIL	2–1/2"	2"(C4)
	350	3		3"	2–1/2"(C1,C4)
	450	4		3"	3–1/2"(C9)
475	275	2	750 KCMIL	3"	
	375	3		3–1/2"	3"(C1,C7,C8)
	475	4		4"	3–1/2"(C1,C4,C8)

* CONDUCTOR QUANTITY DOES NOT INCLUDE GROUNDING CONDUCTOR. SEE EQUIPMENT GROUNDING CONDUCTORS FOR WIRE SIZE.

WHERE:
C1 = ELECTRICAL METALLIC TUBING
C2 = ELECTRICAL NON–METALLIC TUBING
C3 = FLEXIBLE STEEL CONDUIT
C4 = INTERMEDIATE METALLIC CONDUIT
C7 = LIQUIDTIGHT FLEXIBLE METAL CONDUIT
C8 = RIGID METALLIC CONDUIT
C9 = PVC SCHEDULE 80 CONDUIT
C10 = PVC SCHEDULE 40 CONDUIT

H.P.E., INC., ELECTRICAL ENGINEERS
POWER SYSTEMS, CONTROL & INSTRUMENTATION SYSTEMS
HEGERHORST POWER ENGINEERING INCORPORATED (801) 642–2051
708 EAST 50 SOUTH FAX (801) 642–2154
AMERICAN FORK, UT 84003

HPE PROJECT: 24.054
FOR INFORMATION ABOUT THIS JOB, PLEASE CONTACT: BEN SORENSON

GENERAL NOTES:

1. NOT USED.

SHEET KEYNOTES:

1. NOT USED.

Sheet List Table

Sheet Number	Sheet Title
E100	LEGEND & GENERAL NOTES
E200	ONE–LINE DIAGRAM & SCHEDULES
E201	SCHEDULES CONT.
E300	POWER PLAN
E301	LIGHTING PLAN
E302	HVAC PLAN
E400	ELECTRICAL DETAILS
E500	COMcheck
E501	COMcheck CONT.

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(435) 830-3642

MEDICAL OFFICE LAYOUT

ERDA WAY & HWY 36
TOOELE COUNTY, UTAH

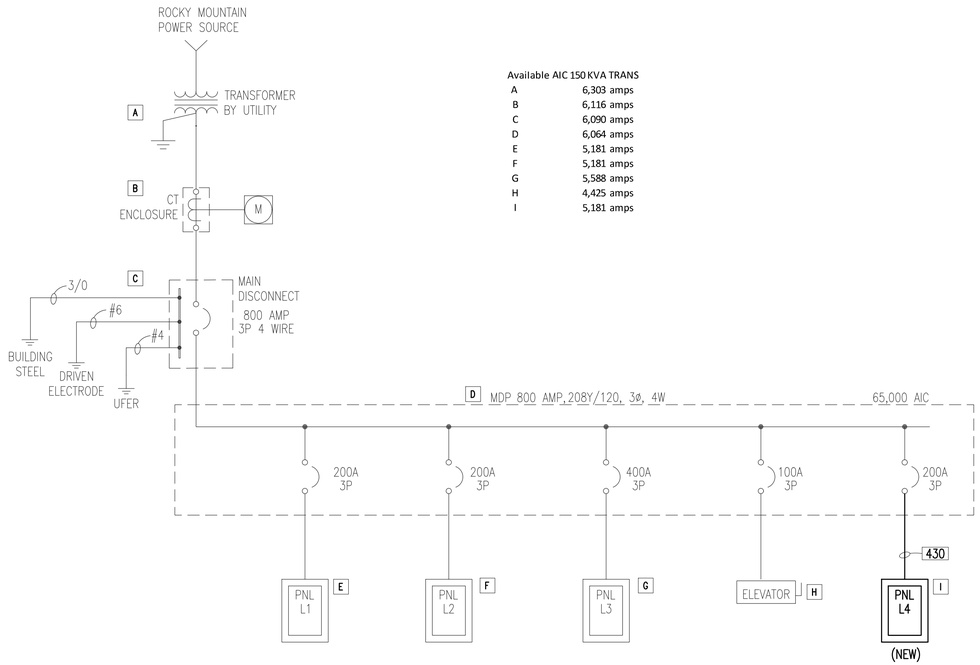
REGISTERED PROFESSIONAL ENGINEER
No. 86–7214–2202
KEITH B. HEGERHORST
10 / 01 / 2024
STATE OF UTAH

NO.	DATE	REVISION

LEGEND & GENERAL NOTES

PROJECT NUMBER T1895M
DATE 10-01-24
DRAWN BY GDS
CHECKED BY KBH
APPROVED BY KBH
DESIGNED BY BES

E100



Available AIC 150 KVA TRANS	
A	6,303 amps
B	6,116 amps
C	6,090 amps
D	6,064 amps
E	5,181 amps
F	5,181 amps
G	5,588 amps
H	4,425 amps
I	5,181 amps

1 ONE-LINE DIAGRAM
SCALE: NTS

H.P.E. INC. ELECTRICAL ENGINEERS
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HEGERHORST POWER ENGINEERING INCORPORATED
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FAX (801) 642-2154

HPE PROJECT: 24.054
FOR INFORMATION ABOUT THIS JOB, PLEASE CONTACT: BEN SORENSON

GENERAL NOTES:

1. NOT USED.

SHEET KEYNOTES:

1. NOT USED.

EXISTING MDP

LOCATION: ELECTRICAL ROOM | MFGR: SQ D | 800 AMPS | VOLTS: 208Y/120
DIMENSIONS: 20" W X 5.75 D X 53" H | TYPE: METER MAIN | | PHASE: 3
MOUNTING: SURFACE | NEMA: 1 | XX M.L.O | WIRES: 4
65,000 A.I.C.

BRKR A	BRKR P	DESCRIPTION	WIRE SIZE	CONT. WATTS	N.CONT. WATTS	NO	A CONT.	A N.CONT.	B CONT.	B N.CONT.	C CONT.	C N.CONT.	NO	N.CONT. WATTS	CONT. WATTS	WIRE SIZE	DESCRIPTION	BRKR A	BRKR P
							PHASE LOADS												
200	3	L1	430	4,834	29,968	1	2,089	9,696	1,000	10,834	1,745	9,438	2		374	312	FC-101 & FC-102	20	2
200	3	L2	430	0	36,984	1	0	12,936	0	12,192	0	11,856	4		374	-	-	-	-
400	3	L3	(2)-430	57,609	11,487	2	20,244	5,294	19,290	2,478	18,075	3,715	6		1,500	312	EUH-1 HEATER RISER ROOM	20	2
100	3	ELEVATOR (20 HP ESTIMATE)	430	0	22,373	3	0	7,458	0	7,458	0	7,458	8		1,500	-	-	-	-
200	3	**L4 NEW**	**430**	48,073	2,660	8	17,187	540	16,983	1,940	13,903	180	10				SPACE		
		TOTAL WATTS PANEL B2C		110,516	103,472		39,521	35,923	37,273	34,902	33,723	32,647	12	540		212	REC OFFICE 130	20	1
		CONTINUOUS LOAD:		110,516									14				SPARE		
		CONTINUOUS LOAD * 125%:		138,146									16				SPARE		
		NON-CONTINUOUS LOAD:		103,472			**BOLD= NEW LOAD**						18				SPARE		
													20				SPARE		
		DESIGN WATTS:		241,618									22				SPARE		
		MIN. RATING (AMPS):		671									24				SPARE		

EXISTING PANELBOARD L1

LOCATION: 1ST FLOOR OF OFFICE | MFGR: SQ D | 200 AMPS | VOLTS: 208Y/120
DIMENSIONS: 20" W X 5.75 D X 53" H | TYPE: QO | | PHASE: 3
MOUNTING: SURFACE | NEMA: 1 | 200 MCB | WIRES: 4
10,000 A.I.C.

BRKR A	BRKR P	DESCRIPTION	WIRE SIZE	CONT. WATTS	N.CONT. WATTS	NO	A CONT.	A N.CONT.	B CONT.	B N.CONT.	C CONT.	C N.CONT.	NO	N.CONT. WATTS	CONT. WATTS	WIRE SIZE	DESCRIPTION	BRKR A	BRKR P
							PHASE LOADS												
20	1	REC STAIRS STORAGE	212		360	1	374	360					2		374	312	FC-101 & FC-102	20	2
20	1	REC JAN, RESTROOM, DRINK	212		360	3			374	360			4		374	-	-	-	-
20	1	REC SURVEY OFFICE 109	212		720	5					1,500	720	6		1,500	312	EUH-1 HEATER RISER ROOM	20	2
20	1	REC LOBBY 101	212		360	7	1,500	360					8		1,500	-	-	-	-
20	1	REC LOBBY 101	212		360	9			0	2,658			10	2,298		20	IHW-0460A HOT WATER HTR	30	2
20	1	REC OPEN AREA	212		540	11					0	2,838	12	2,298		-	-	-	-
20	1	REC OPEN AREA	212		900	13	0	2,460					14	1,560		20	IHW-0900 HOT WATER HTR	30	2
20	1	LTS FIRST FLOOR	212	626		15			626	1,560			16	1,560		-	-	-	-
20	**1**	**LTS FIRST FLOOR**	**212**	**245**		17					245	180	18	180		212	BS-101	20	1
20	1	LTS FIRST FLOOR	212	215		19	215	720					20	**720**		**212**	**REC LAB 103**	**20**	**1**
20	**1**	**REC OFFICE 117**	**212**		**720**	**21**			**0**	**1,440**			**22**	**720**		**212**	**REC ROOM 1**	**20**	**1**
20	**1**	**REC OFFICE 118**	**212**		**720**	**23**					**0**	**1,440**	**24**	**720**		**212**	**REC ROOM 2**	**20**	**1**
20	**1**	**REC OFFICE 115**	**212**		**720**	**25**	**0**	**1,440**					**26**	**720**		**212**	**REC ROOM 3**	**20**	**1**
20	**1**	**REC WAITING & REC 122**	**212**		**900**	**27**			**0**	**1,620**			**28**	**720**		**212**	**REC ROOM 4**	**20**	**1**
20	**1**	**REC HALL & STORAGE 123**	**212**		**1,080**	**29**					**0**	**1,800**	**30**	**720**		**212**	**REC ROOM 5**	**20**	**1**
20	**1**	**REC BREAK ROOM 114 & GARBAGE**	**212**		**1,716**	**31**	**0**	**2,436**					**32**	**720**		**212**	**REC ROOM 6**	**20**	**1**
20	**1**	**REC BREAK REFRIG 114**	**212**		**1,200**	**33**			**0**	**1,920**			**34**	**720**		**212**	**REC ROOM 7**	**20**	**1**
20	**1**	**REC BREAK COUNTER 114**	**212**		**1,200**	**35**					**0**	**1,920**	**36**	**720**		**212**	**REC ROOM 8**	**20**	**1**
20	**1**	**REC BREAK COUNTER 114**	**212**		**1,200**	**37**	**0**	**1,920**					**38**	**720**		**212**	**REC ROOM 9**	**20**	**1**
20	**1**	**REC REST102 AND HALL**	**212**		**1,260**	**39**			**0**	**1,276**			**40**	16		212	ELEVATOR PIT LIGHT	20	1
20	**1**	**REC MA STATION**	**212**		**360**	**41**					**0**	**540**	**42**	180		212	ELEVATOR PIT REC	20	1
		TOTAL WATTS PANEL B2C		1,086	14,676		2,089	9,696	1,000	10,834	1,745	9,438		15,292	3,748				
		CONTINUOUS LOAD:		4,834															
		CONTINUOUS LOAD * 125%:		6,043															
		NON-CONTINUOUS LOAD:		29,968			**BOLD= NEW LOAD**												
		DESIGN WATTS:		36,011															
		MIN. RATING (AMPS):		100															

NEW PANELBOARD L4

LOCATION: 1ST FOOR ELECTRICAL ROOM | MFGR: SQ D | 200 AMPS | VOLTS: 208Y/120
DIMENSIONS: 20" W X 5.75 D X 53" H | TYPE: QO | | PHASE: 3
MOUNTING: SURFACE | NEMA: 1 | XX M.L.O. | WIRES: 4
10,000 A.I.C.

BRKR A	BRKR P	DESCRIPTION	WIRE SIZE	CONT. WATTS	N.CONT. WATTS	NO	A CONT.	A N.CONT.	B CONT.	B N.CONT.	C CONT.	C N.CONT.	NO	N.CONT. WATTS	CONT. WATTS	WIRE SIZE	DESCRIPTION	BRKR A	BRKR P
							PHASE LOADS												
40	2	FC-103	38	3,280		1	3,280	540					2	540		212	REC OFFICE 130	20	1
-	-	VERIFY IF NEUTRAL WIRE IS NEEDED	-	3,280		3			3,280	540			4	540		212	REC OFFICE 130	20	1
40	2	FC-104	38	3,015		5					3,964	0	6		949	212	LTS MED OFFICE	20	1
-	-	-	-	3,015		7	4,113	0					8		1,098	212	LTS MED OFFICE	20	1
40	2	FC-105	38	3,015		9			3,015	1,400			10	1,400		212	WATER HEATER WH-101	20	1
-	-	-	-	3,015		11					3,015	0	12				SPARE	20	1
40	2	FC-106	38	3,015		13	3,015	0					14				SPARE	20	1
-	-	-	-	3,015		15			3,015	0			16				SPARE	20	1
40	2	FC-107	38	3,015		17					3,015	0	18				SPARE	20	1
-	-	-	-	3,015		19	3,015	0					20				SPARE	20	1
40	2	FC-108	38	3,015		21			3,015	0			22				SPARE	20	1
-	-	-	-	3,015		23					3,015	0	24				SPARE	20	1
40	2	FC-109	38	3,015		25	3,015	0					26				SPACE		
-	-	-	-	3,015		27			3,015	0			28				SPACE		
20	1	SPARE				29					0	0	30				SPACE		
20	1	SPARE				31	0	0					32				SPACE		
20	2	FAN COIL UNITS 101-105	312	894		33			894	0			34				SPACE		
-	-	-	-	894		35					894	0	36				SPACE		
20	2	FAN COIL UNITS 106-109	312	749		37	749	0					38				SPACE		
-	-	-	-	749		39			749	0			40				SPACE		
20	1	BS-101 BRANCH CONTROLLER	212		180	41					0	180	42				SPACE		
		TOTAL WATTS PANEL B2C		46,026	180		17,187	540	16,983	1,940	13,903	180		2,480	2,047				
		CONTINUOUS LOAD:		48,073															
		CONTINUOUS LOAD * 125%:		60,091															
		NON-CONTINUOUS LOAD:		2,660															
		DESIGN WATTS:		62,751															
		MIN. RATING (AMPS):		174															

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(435) 830-3642

MEDICAL OFFICE LAYOUT

ERDA WAY & HWY 36
TOOELE COUNTY, UTAH

REGISTERED PROFESSIONAL ENGINEER
No. 8617214-2202
KEITH B. HEGERHORST
10/01/2024
STATE OF UTAH

NO.	DATE	REVISION

ONE-LINE DIAGRAM & SCHEDULES

PROJECT NUMBER	DATE
T1895M	10-01-24
DRAWN BY	CHECKED BY
GDS	KBH
APPROVED BY	DESIGNED BY
KBH	BES

E200

HVAC EQUIPMENT SCHEDULE

ITEM	ITEM	EQUIPMENT LOCATION	EQUIPMENT RATING								DISCONNECT						STARTER		
			VOLTS	PH	WATTS	CFM	FLA	MCA	MCB	CIRCUIT	AMPS	VOLTS	POLES	NEMA	FUSE	CONNECTION	TYPE	NEMA SIZE	NOTES
FC-101	FAN COIL UNIT	CEILING NEW DR OFFICE	208	1	466	1,064	2.2	2.8	20	L4-33,35	30	240	2	1	N/A	HARDWIRED	INC		1
FC-102	FAN COIL UNIT	CEILING NEW DR OFFICE	208	1	300	688	1.4	1.8	20	L4-33,35	30	240	2	1	N/A	HARDWIRED	INC		1
FC-103	FAN COIL UNIT	CEILING NEW DR OFFICE	208	1	300	688	1.4	1.8	20	L4-33,35	30	240	2	1	N/A	HARDWIRED	INC		1
FC-104	FAN COIL UNIT	CEILING NEW DR OFFICE	208	1	266	635	1.3	1.6	20	L4-33,35	30	240	2	1	N/A	HARDWIRED	INC		1
FC-105	FAN COIL UNIT	CEILING NEW DR OFFICE	208	1	483	1,130	2.3	2.9	20	L4-33,35	30	240	2	1	N/A	HARDWIRED	INC		1
FC-106	FAN COIL UNIT	CEILING NEW DR OFFICE	208	1	466	1,094	2.2	2.8	20	L4-37,39	30	240	2	1	N/A	HARDWIRED	INC		1
FC-107	FAN COIL UNIT	CEILING NEW DR OFFICE	208	1	266	635	1.3	1.6	20	L4-37,39	30	240	2	1	N/A	HARDWIRED	INC		1
FC-108	FAN COIL UNIT	CEILING NEW DR OFFICE	208	1	233	450	1.1	1.4	30	L4-37,39	30	240	2	1	N/A	HARDWIRED	INC		1
FC-109	FAN COIL UNIT	CEILING NEW DR OFFICE	208	1	233	450	1.1	1.4	30	L4-37,39	30	240	2	1	N/A	HARDWIRED	INC		1
BS-101	VRF BRANCH CONTROLLER	CEILING	208	1	133		0.6	0.8	20	L4-41	30	240	2	1	*	HARDWIRED	INC		1
DH-103	DUCT HEATER	BASEMENT CEILING-FC-103	208	1	6560		31.5	39.4	40	L4-1,3	60	240	2	1	*	HARDWIRED	INC		1
DH-104	DUCT HEATER	BASEMENT CEILING-FC-104	208	1	6030		29.0	36.2	40	L4-5,7	60	240	2	1	*	HARDWIRED	INC		1
DH-105	DUCT HEATER	BASEMENT CEILING-FC-105	208	1	6030		29.0	36.2	40	L4-9,11	60	240	2	1	*	HARDWIRED	INC		1
DH-106	DUCT HEATER	BASEMENT CEILING-FC-106	208	1	6030		29.0	36.2	40	L4-13,15	60	240	2	1	*	HARDWIRED	INC		1
DH-107	DUCT HEATER	BASEMENT CEILING-FC-107	208	1	6030		29.0	36.2	40	L4-17,19	60	240	2	1	*	HARDWIRED	INC		1
DH-108	DUCT HEATER	BASEMENT CEILING-FC-108	208	1	6030		29.0	36.2	40	L4-21,23	60	240	2	1	*	HARDWIRED	INC		1
DH-109	DUCT HEATER	BASEMENT CEILING-FC-109	208	1	6030		29.0	36.2	40	L4-25,27	60	240	2	1	*	HARDWIRED	INC		1
WH-101	WATER HEATER	BASEMENT RESROOMS	120	1	1400		11.7	14.6	20	L4-10	20	120	1	1	N/A	HARDWIRED	TSTAT		1

NOTES: 1. Internal disconnects may be provided with this unit verify with mechanical before ordering disconnect.

*=FUSE AS PER MANUFACTORS RECOMMENDATION

FIXTURE SCHEDULE

TYPE	DESCRIPTION	MANUFACTURER		FIXTURE VA	LAMP	LUMENS	TEMP	MOUNTING	NOTES:
		NAME	CATALOG NO.						
F1	LED TROFFER 2' X 2'	METALUX	24G4-LD5-38-F1-UNV-L840-CD1-U	30.6	LED	3880	4000 K	RECESSED T-BAR	EM-EL14W
F2	LED VANITY MIRROR LIGHT	UTOPIA	ULW3-2G-2-27-40K-HE-C9-UNV-FR-EMG20	30.7	LED	3776	4000 K	WALL	EM=EMG20
F3	LED SURFACE WRAP	METALUX	4WSNLED-LD4-28SL-F-UNV-L840-CD1-U	26.5	LED	2853	4000 K	SURFACE	EM-EL14W
F4	WALL PACKS	MCGRAW-EDISON	GWC-AF-02-LED-E1-T4W	129	LED	16080	4000 K	WALL	
F5	POLE MOUNTED SHOE BOX	MCGRAW-EDISON	GALN-SA2C-740-U-T4W	216	LED	14148	4000 K	POLE	POLE=SSS -6-M-25-S* COLOR BY ARC
F6	EXIT EGRESS LIGHT	LUMARK	AXCL8A	72	LED	9696	4000 K	WALL	CBP=OLD WEATHER BATTERY PACK
F7	WALL SCONCES	SHAPER	674-43-L4/840-UNV-**-	29	LED	3000	4000 K	WALL	
F8	ELEVATOR PIT LIGHT	HALO	SLD6-12-9S-E010-MW	15.6	LED	1200	4000 K	WALL	
EX	EXIT LIGHT	SURE-LITES	LPX-7-SD	1.09	LED			WALL	

H.P.E. INC. ELECTRICAL ENGINEERS
POWER SYSTEMS, CONTROL & INSTRUMENTATION SYSTEMS
HEGERHORST POWER ENGINEERING INCORPORATED (801) 642-2051
708 EAST 50 SOUTH FAX (801) 642-2154
AMERICAN FORK, UT 84003

HPE PROJECT: 24.054
FOR INFORMATION ABOUT THIS JOB, PLEASE CONTACT: BEN SORENSON

GENERAL NOTES:

1. NOT USED.

SHEET KEYNOTES:

1. NOT USED.

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FOR:
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MEDICAL OFFICE LAYOUT
ERDA WAY & HWY 36
TOOELE COUNTY, UTAH

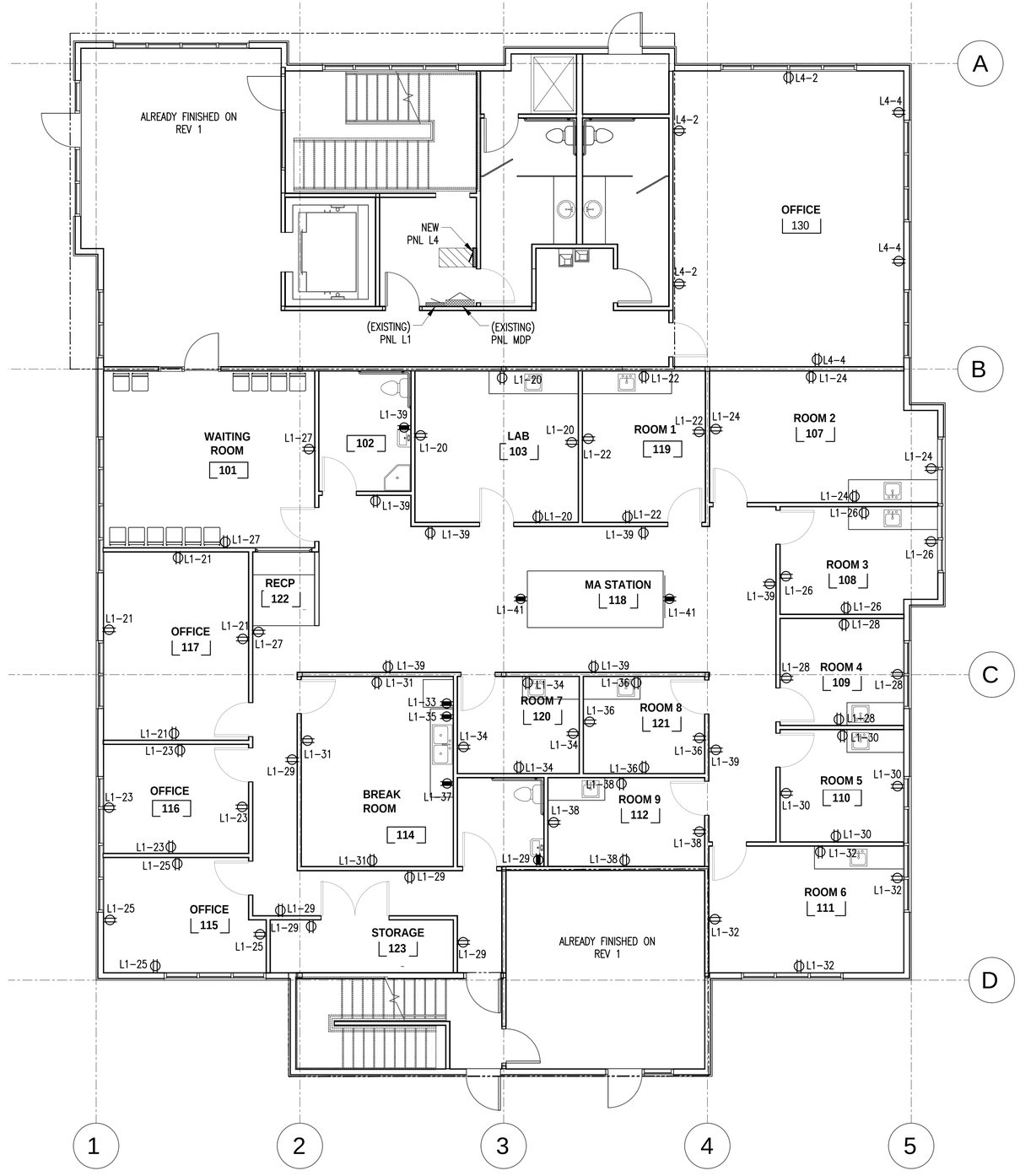
REGISTERED PROFESSIONAL ENGINEER
No. 86-177214-2202
KEITH B. HEGERHORST
10/01/2024
STATE OF UTAH

NO.	DATE	REVISION

SCHEDULES CONT.

PROJECT NUMBER T1895M
DATE 10-01-24
DRAWN BY GDS
CHECKED BY KBH
APPROVED BY KBH
DESIGNED BY BES

E201



1 POWER PLAN
SCALE:0 4' 8' 16'
3/16" = 1'-0"

H.P.E. INC. ELECTRICAL ENGINEERS
POWER SYSTEMS, CONTROL & INSTRUMENTATION SYSTEMS
HEGERHORST POWER ENGINEERING INCORPORATED
708 EAST 50 SOUTH
AMERICAN FORK, UT 84003
(801) 642-2051
FAX (801) 642-2154

HPE PROJECT: 24.054
FOR INFORMATION ABOUT THIS JOB, PLEASE CONTACT: BEN SORENSON

GENERAL NOTES:

1. NOT USED.

SHEET KEYNOTES:

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MEDICAL OFFICE LAYOUT

ERDA WAY & HWY 36
TOOELE COUNTY, UTAH

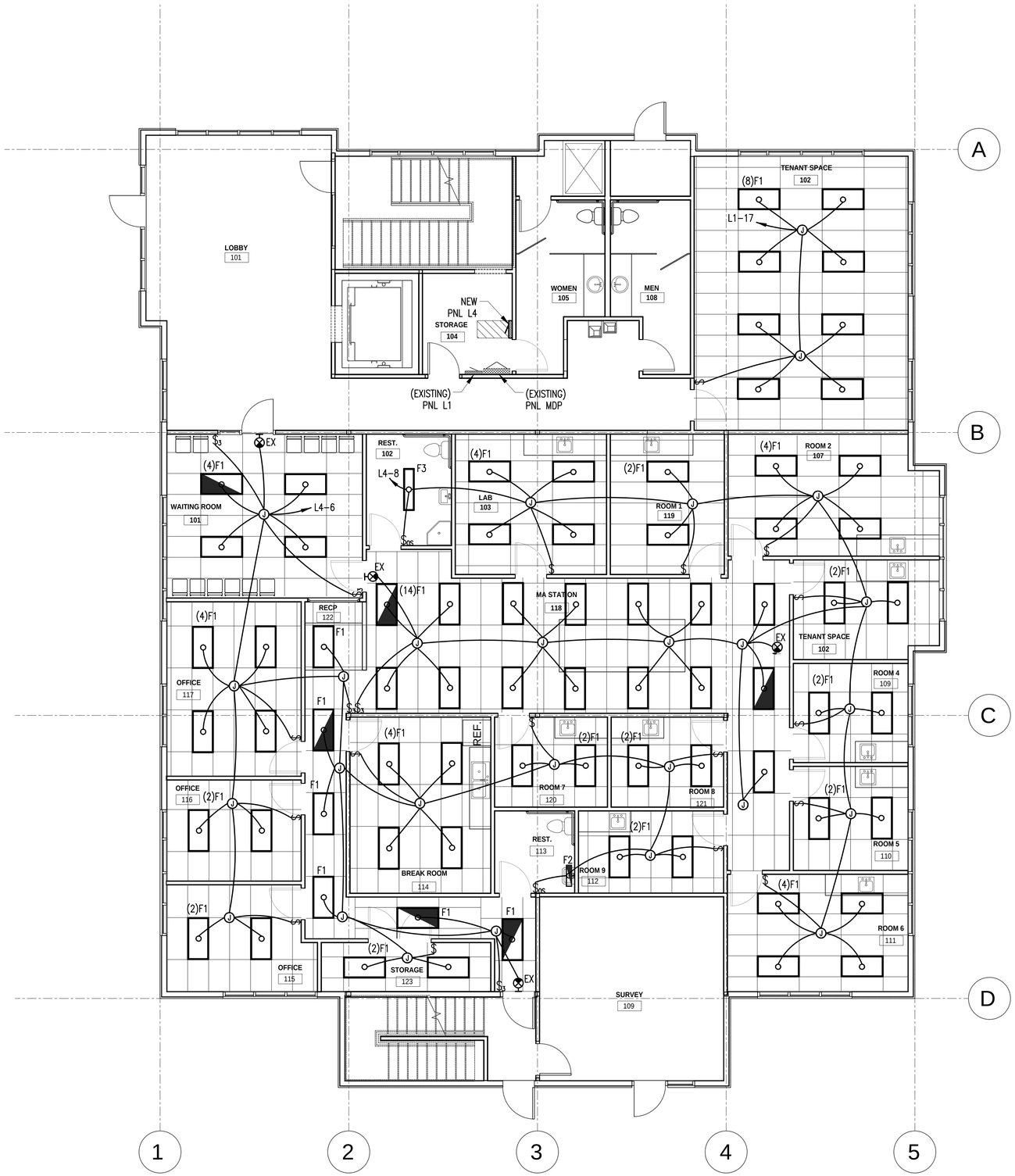
REGISTERED PROFESSIONAL ENGINEER
No. 86-7214-2202
KEITH B. HEGERHORST
10/01/2024
STATE OF UTAH

NO.	DATE	REVISION

POWER PLAN

PROJECT NUMBER	DATE
T1895M	10-01-24
DRAWN BY	CHECKED BY
GDS	KBH
APPROVED BY	DESIGNED BY
KBH	BES

E300



1 LIGHTING PLAN
SCALE: 0 4' 8' 16'
3/16"=1'-0"

H.P.E. INC. ELECTRICAL ENGINEERS
POWER SYSTEMS, CONTROL & INSTRUMENTATION SYSTEMS
HEGERHORST POWER ENGINEERING INCORPORATED (801) 642-2051
708 EAST 50 SOUTH FAX (801) 642-2154
AMERICAN FORK, UT 84003

HPE PROJECT: 24.054
FOR INFORMATION ABOUT THIS JOB, PLEASE CONTACT: BEN SORENSON

GENERAL NOTES:

1. NOT USED.

SHEET KEYNOTES:

1. NOT USED.

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MEDICAL OFFICE LAYOUT

ERDA WAY & HWY 36
TOOELE COUNTY, UTAH

REGISTERED PROFESSIONAL ENGINEER
No. 86-172142202
KEITH B. HEGERHORST
10/01/2024
STATE OF UTAH

NO.	DATE	REVISION

LIGHTING PLAN

PROJECT NUMBER	DATE
T1895M	10-01-24
DRAWN BY	CHECKED BY
GDS	KBH
APPROVED BY	DESIGNED BY
KBH	BES

E301

H.P.E. INC. ELECTRICAL ENGINEERS
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FAX (801) 642-2154

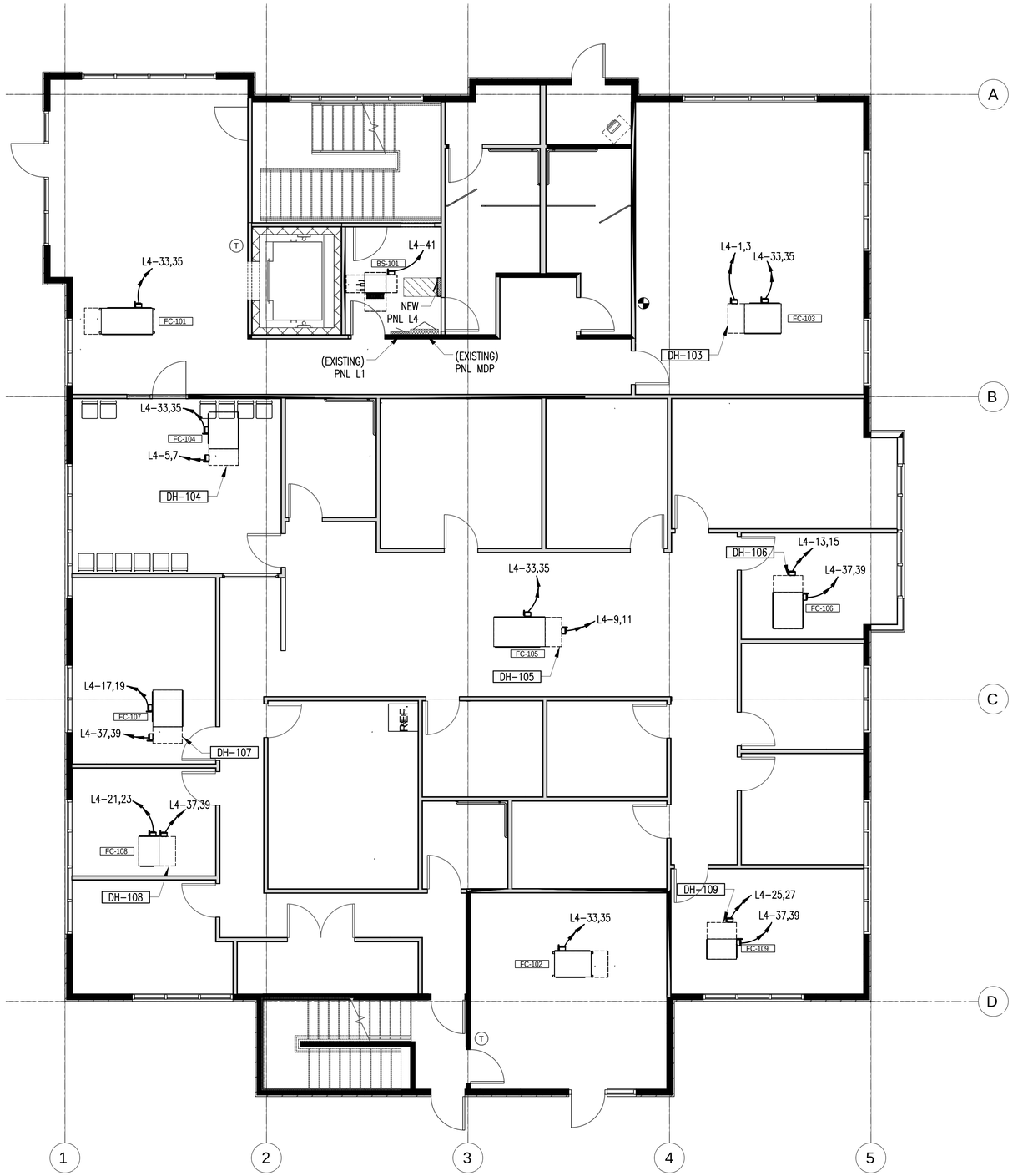
HPE PROJECT: 24.054
FOR INFORMATION ABOUT THIS JOB, PLEASE CONTACT: BEN SORENSON

GENERAL NOTES:

1. NOT USED.

SHEET KEYNOTES:

1. NOT USED.



1 HVAC EQUIPMENT
SCALE: 0 4' 8' 16'
3/16"=1'-0"

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MEDICAL OFFICE LAYOUT

ERDA WAY & HWY 36
TOOELE COUNTY, UTAH

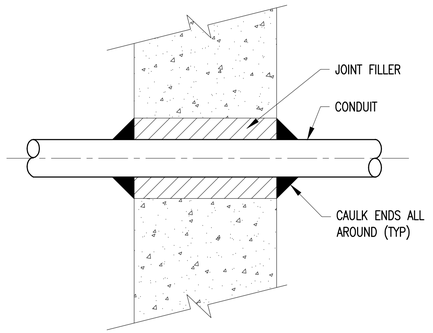
REGISTERED PROFESSIONAL ENGINEER
Lic. No. 86-172214-2202
KEITH B. HEGERHORST
10 / 01 / 2024
STATE OF UTAH

NO.	DATE	REVISION

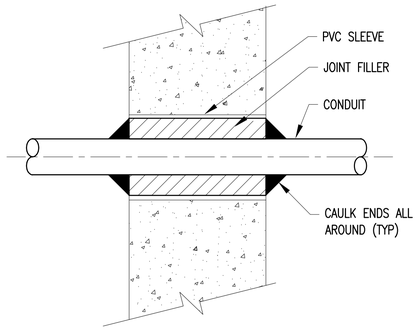
HVAC PLAN

PROJECT NUMBER	DATE
T1895M	10-01-24
DRAWN BY	CHECKED BY
GDS	KBH
APPROVED BY	DESIGNED BY
KBH	BES

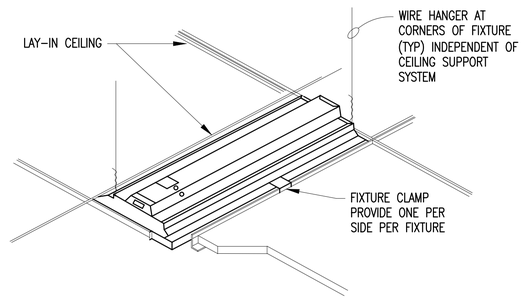
E302



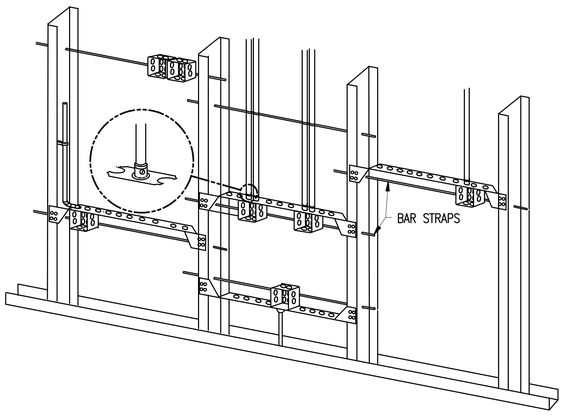
A — CONDUIT PENETRATION THRY EXISTING WALL
SCALE: 3" = 1'-0"



B — CONDUIT PENETRATION THRU NEW WALL
SCALE: 3" = 1'-0"



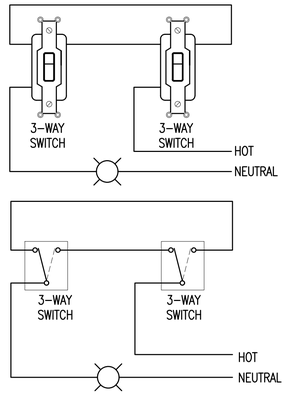
C — 2X4 LAY-IN CEILING FIXTURE INSTALLATION
SCALE: 3/4" = 1'-0"



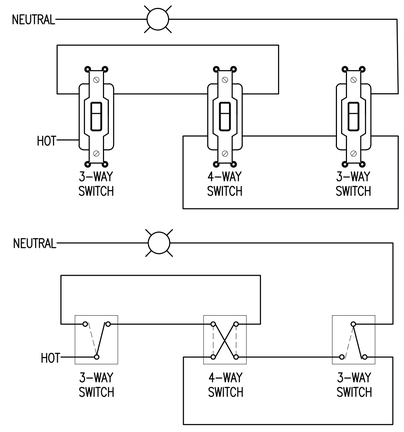
D — TYPICAL ROUGH-IN INSTALLATION
SCALE: 1' = 1'-0"

NOTES:

1. TYPICAL FOR WOOD AND METAL STUD ROUGH-IN.
2. PLASTER RINGS NOT SHOWN.
3. LOCATE ALL OUTLET BOXES IN ACCORDANCE WITH ARCHITECTURAL AND MECHANICAL DRAWINGS AND WITH ALL APPLICABLE SHOP DRAWINGS.
4. IN ACCORDANCE WITH UBC 4304 OUTLETS ON OPPOSITE SIDES OF WALLS OR PARTITIONS IN THE SAME STUD SPACE MUST BE SEPARATED BY A MINIMUM OF 24" HORIZONTAL DISTANCE.



E — THREE-WAY SWITCH & WIRING DIAGRAM
SCALE: 1' = 1'-0"



F — FOUR-WAY SWITCH & WIRING DIAGRAM
SCALE: 1' = 1'-0"

GENERAL NOTES:

1. NOT USED.

SHEET KEYNOTES:

1. NOT USED.

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HPE PROJECT: 24.054
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FOR:
JOE WHITE
IRONWOOD REAL ESTATE LLC
1392 PASS CANYON ROAD
ERDA, UTAH 84074
(435) 830-3642

MEDICAL OFFICE LAYOUT

ERDA WAY & HWY 36
TOOELE COUNTY, UTAH

REGISTERED PROFESSIONAL ENGINEER
No. 86-171214-2202
KEITH B. HEGERHORST
10 / 01 / 2024
STATE OF UTAH

NO.	DATE	REVISION

ELECTRICAL DETAILS

PROJECT NUMBER	DATE
T1895M	10-01-24
DRAWN BY	CHECKED BY
GDS	KBH
APPROVED BY	DESIGNED BY
KBH	BES

E400

H.P.E. INC. ELECTRICAL ENGINEERS
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708 EAST 50 SOUTH FAX (801) 642-2154
AMERICAN FORK, UT 84003

HPE PROJECT:24.054
FOR INFORMATION ABOUT THIS JOB, PLEASE CONTACT: BEN SORENSON

GENERAL NOTES:

1. NOT USED.

SHEET KEYNOTES:

1. NOT USED.

COMcheck Software Version COMcheckWeb

Interior Lighting Compliance Certificate

Project Information

Energy Code: 2021 IECC
Project Title: Cooper Medical Office TI
Project Type: Alteration

Construction Site:
Erda Way & HWY36
Tooele County, Utah

Owner/Agent:
Utah

Designer/Contractor:
Hegerhorst Power Engineering
708 east 50 south
American Fork, Utah 84003
8016422051

Allowed Interior Lighting Power

A Area Category	B Floor Area (ft2)	C Allowed Watts / ft2	D Allowed Watts
1-Medical office (Office)	4225	0.64	2704
		Total Allowed Watts =	2704

Proposed Interior Lighting Power

A Fixture ID : Description / Lamp / Wattage Per Lamp / Ballast	B Lamps/ Fixture	C # of Fixture	D Fixture Watt.	E (C X D)
Medical office (Office, 4225 sq.ft.)				
LED: F1: RECESSED TROFFER: LED Panel 19W:	1	73	31	2234
LED: F2: 2' VANITY MIRROR: LED Panel 19W:	1	1	31	31
LED: F3: 4' SURFACE: LED Panel 19W:	1	1	26	26
			Total Proposed Watts =	2291

Interior Lighting PASSES

Interior Lighting Compliance Statement

Compliance Statement: The proposed interior lighting alteration project represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed interior lighting systems have been designed to meet the 2021 IECC requirements in COM*check* Version COMcheckWeb and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

Ben Eliot Sorenson Engineer — Name - Title
Ben Eliot Sorenson — Signature
10/01/2024 — Date

COMcheck Software Version COMcheckWeb

Inspection Checklist

Energy Code: 2021 IECC

Requirements: 0.0% were addressed directly in the COM*check* software

Text in the "Comments/Assumptions" column is provided by the user in the COMcheck Requirements screen. For each requirement, the user certifies that a code requirement will be met and how that is documented, or that an exception is being claimed. Where compliance is itemized in a separate table, a reference to that table is provided.

Section # & Req.ID	Plan Review	Complies?	Comments/Assumptions
C103.2 [PR4][1]	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the interior lighting and electrical systems and equipment and document where exceptions to the standard are claimed. Information provided should include interior lighting power calculations, wattage of bulbs and ballasts, transformers and control devices.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	

Additional Comments/Assumptions:

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

Section # & Req.ID	Rough-In Electrical Inspection	Complies?	Comments/Assumptions
C405.2.3.1 [EL22][1]	Spaces required to have light-reduction controls have a manual control that allows the occupant to reduce the connected lighting load in a reasonably uniform illumination pattern >= 50 percent.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C405.2.1, C405.2.1.1 [EL18][1]	Occupancy sensors installed in classrooms/lecture/training rooms, conference/meeting/multipurpose rooms, copy/print rooms, lounges/breakrooms, enclosed offices, open plan offce areas, restrooms, storage rooms, locker rooms, corridors, warehouse storage areas, and other spaces <= 300 sqft that are enclosed by floor-to-ceiling height partitions. Reference section language C405.2.1.2 for control function in warehouses and section C405.2.1.3 for open plan office spaces.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C405.2.1.2 [EL19][1]	Occupancy sensors control function in warehouses: in warehouses, the lighting in aisleways and open areas is controlled with occupant sensors that automatically reduce lighting power by 50% or more within 20 minutes of when the areas are unoccupied. The occupant sensors control lighting in each aisleway independently and do not control lighting beyond the aisleway being controlled by the sensor. Lights not turned off by occupant sensors is done so by time-switch.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C405.2.1.3 [EL20][1]	Occupant sensor control function in open plan offce areas: Occupant sensor controls in open office spaces >= 300 sq.ft. have controls 1) configured so that general lighting can be controlled separately in control zones with floor areas <= 600 sq.ft. within the space, 2) general lighting in each zone permitted to turn on upon occupancy in control zone, 3) automatically turn off general lighting in all control zones within 20 minutes after all occupants have left the space, 4) are configured so that general lighting power in each control zone is reduced by >= 80% of the full zone general lighting power within 20 minutes of all occupants leaving that control zone.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C405.2.2, C405.2.2.1 [EL21][2]	Each area not served by occupancy sensors (per C405.2.1.1) have time-switch controls and functions detailed in sections C405.2.2.1.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

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Section # & Req.ID	Rough-In Electrical Inspection	Complies?	Comments/Assumptions
C405.2.4, C405.2.4.1, C405.2.4.2 [EL23][2]	Daylight zones provided with individual controls that control the lights independent of general area lighting. See code section C405.2.3 Daylight-responsive controls for applicable spaces, C405.2.3.1 Daylight responsive control function and section C405.2.3.2 Sidelit zone.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C405.2.5 [EL27][1]	Additional interior lighting power allowed for special functions per the approved lighting plans and is automatically controlled and separated from general lighting.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C405.7 [EL26][2]	Low-voltage dry-type distribution electric trans/ormers meet the minimum efficiency requirements of Table C405.6.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C405.8 [EL27][2]	Electric motor's meet the minimum efficiency requirements of Tables C405.7(1) through C405.7(4). Efficiency verified through certification under an approved certification program or the equipment efficiency ratings shall be provided by motor manufacturer (where certification programs do not exist).	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C405.9.1, C405.9.2 [EL28][2]	Escalators and moving walks comply with ASME A17.1/CSA B44 and have automatic controls configured to reduce speed to the minimum permitted speed in accordance with ASME A17.1/CSA B44 or applicable local code when not conveying passengers.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C405.10 [EL29][2]	Total voltage drop across the combination of feeders and branch circuits <= 5%.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C405.1.1 [EL30][2]	At least 90% of dwelling unit permanently installed lighting shall have lamp efficacy >= 65 lm/W or luminaires with efficacy >= 45 lm/W or comply with C405.2.4 or C405.3.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C405.11, C405.11.1 [EL31][2]	50% of 15/20 amp receptacles installed in enclosed offices, conference rooms, copy rooms, break rooms, classrooms and workstations and > 25% of branch circuit feeders for modular furniture will have automatic receptacle control in accordance with C405.11.1.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	

Additional Comments/Assumptions:

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

Section # & Req.ID	Final Inspection	Complies?	Comments/Assumptions
C303.3, C408.2.5.2 [FI17][3]	Furnished O&M instructions for systems and equipment to the building owner or designated representative.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C408.1.1 [FI57][1]	Building operations and maintenance documents will be provided to the owner. Documents will cover manufacturers' information, specifications, programming procedures and means of illustrating to owner how building, equipment and systems are intended to be installed, maintained, and operated.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C408.2.5 [FI16][3]	Furnished as-built drawings for electric power systems within 90 days of system acceptance.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C408.3 [FI33][1]	Lighting systems have been tested to ensure proper calibration, adjustment, programming, and operation.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	

Additional Comments/Assumptions:

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

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HPE PROJECT: 24.054
FOR INFORMATION ABOUT THIS JOB, PLEASE CONTACT: BEN SORENSON

GENERAL NOTES:

1. NOT USED.

SHEET KEYNOTES:

1. NOT USED.

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10/01/2024
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PROJECT NUMBER T1895M
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