MECHANICAL ELEMENTS / VALVING

EXISTING EQUIPMENT OR PIPE TO BE REMOVED.
GATE VALVE
GLOBE VALVE
PLUG VALVE
BUTTERFLY VALVE
BALL VALVE
SWING CHECK VALVE
LIFT CHECK VALVE
GATE VALVE, ANGLE
GLOBE VALVE, ANGLE
DIAPHRAGM VALVE
BALANCING VALVE
CBV — CIRCUIT SETTING BALANCING VALVE
THREE WAY CONTROL VALVE
TWO WAY CONTROL VALVE
S — SOLENOID VALVE
PRESSURE REDUCING VALVE (PRV)
TPV — TEMPERATURE/PRESSURE RELIEF VALVE
AIR VENT — HYDRAULIC SEPARATOR

RELIEF/SAFETY VALVE
GAS COCK
AUTOMATIC FILL VALVE
MV — MANUAL AIR VENT
AV — AUTOMATIC AIR VENT (EXTEND DISCHARGE TO DRAIN)
FLOW METER-VENTURI
FLOW METER-ORIFICE
DIRECTION OF FLOW
R D — DIRECTION OF PITCH-RISE OR DROP
STRAINER
STRAINER WITH BLOW OFF VALVE
PIPE RISING UP
PIPE DROPPING DOWN
CONCENTRIC REDUCER
ECCENTRIC REDUCER
UNION - SCREWED OR FLANGED
STEAM LEAK DETECTOR
FSD — FIRE SMOKE DAMPER
CO — CARBON MONOXIDE
CD — CARBON DIOXIDE
AIR SEPARATOR

A — ANCHOR
G — GUIDE
EJ — EXPANSION JOINT
FS — FLOW SWITCH
TT — TEMPERATURE TRANSMITTER
PT/PS — PRESSURE TRANSMITTER OR PRESSURE SWITCH
TH — THERMOMETER
GAUGE WITH GAUGE COCK & SYPHON (STEAM)
AQUASTAT
GAS PRESSURE REGULATOR
FLOAT OPERATED CONTROL VALVE
STEAM TRAP
EXPANSION LOOP
VB — VACUUM BREAKER
T — THERMOSTAT
S — DIGITAL SENSOR
OR — PUMP
HEAT EXCHANGER

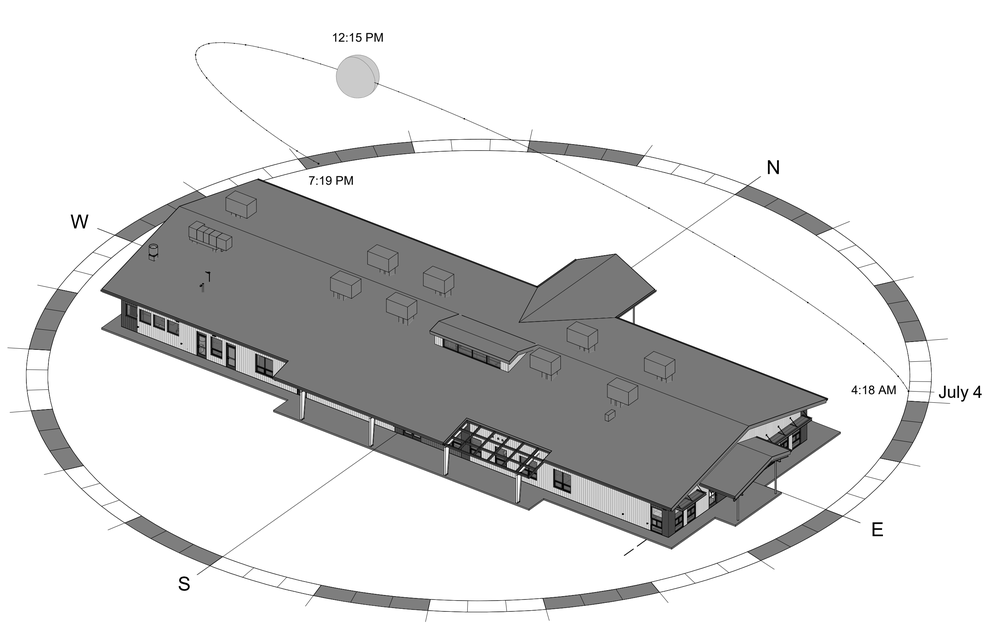
HVAC & DUCTWORK SYMBOLS

SECTION THROUGH RETURN DUCT
SECTION THROUGH EXHAUST AIR DUCT
SECTION THROUGH SUPPLY OR OUTSIDE AIR DUCT
FSD — FIRE / SMOKE DAMPER
SD — SMOKE DAMPER
SUPPLY OR OUTSIDE AIR DUCT
ACCESS DOOR (BOTTOM OR SIDE)
ACOUSTICALLY LINED DUCT
FD - SD - FSD — FIRE DAMPER, SMOKE DAMPER, FIRE/SMOKE DAMPER
VD — MANUAL VOLUME DAMPER
D — INCLINED DROP IN DIRECTION OF ARROW
R — INCLINED RISE IN DIRECTION OF ARROW
TRANSITION, RECTANGULAR TO ROUND
FLEXIBLE DUCT
IN-LINE FAN
TRANSITION, RECTANGULAR
SPIN-IN COLLAR INTO ADAPTER ON TOP OF DUCT
CEILING SUPPLY AIR REGISTER/GRILLE
SIDEWALL SUPPLY AIR REGISTER (SR)
ELBOW TURNED DOWN
ELBOW TURNED UP
ELBOW, RADIUS TYPE
ELBOW, SQUARE OR RECTANGULAR TYPE WITH AIRFOIL TURNING VANES
CEILING RETURN AIR REGISTER (RR)
SIDEWALL RETURN AIR REGISTER (RR)
OPEN END DUCT
FXC — FLEXIBLE CONNECTION

LINE DESIGNATION SYMBOLS

CHWR	CHILLED WATER RETURN
CHWS	CHILLED WATER SUPPLY
CA	COMPRESSED AIR
CR	CONDENSER WATER RETURN
CS	CONDENSER WATER SUPPLY
D	DRAIN
HPR	HEAT PUMP RETURN
HPS	HEAT PUMP SUPPLY
HWR	HOT WATER RETURN
HWS	HOT WATER SUPPLY
G	NATURAL GAS
RH	REFRIGERANT HIGH PRESSURE VAPOR
R	REFRIGERANT LIQUID AND VAPOR LINE
RS	REFRIGERANT SUCTION / VAPOR
SMR	SNOWMELT RETURN
SMS	SNOWMELT SUPPLY
V	VENT PIPING

MECHANICAL SHEET LIST



SUN PATH PERSPECTIVE VIEW

RESPONSIBLE DIVISION:

UNLESS OTHERWISE INDICATED ALL HEATING, VENTILATING, AIR CONDITIONING, PLUMBING, AND OTHER MECHANICAL EQUIPMENT, MOTORS, AND CONTROLS SHALL BE FURNISHED, SET IN PLACE AND WIRED AS FOLLOWS:

ITEM	FURNISHED	SET	POWER WIRED	CONTROL WIRED
EQUIPMENT	23	23	26	--
COMBINATION MAGNETIC MOTOR STARTERS, MAGNETIC MOTOR STARTERS, VFD'S AND CONTACTORS	23(1)	26	26(2)	23
FUSED AND UNFUSED DISCONNECT SWITCHES; THERMAL OVERLOAD SWITCHES AND HEATERS, MANUAL MOTOR STARTERS	26	26	26	--
MANUAL-OPERATING AND MULTI-SPEED SWITCHES	23	26	26	26
CONTROLS, RELAYS, TRANSFORMERS	23	23	26	23
THERMOSTATS (LOW VOLTAGE) AND TIME SWITCHES	23	23	26	23
THERMOSTATS (LINE VOLTAGE)	23	23	26	26
TEMPERATURE CONTROL PANELS	23	23	26	23
MOTOR AND SOLENOID VALVES, DAMPER MOTORS, PE & EP SWITCHES	23	23(2)	--	23(2)
PUSH-BUTTON STATIONS AND PILOT LIGHTS	23	23(2)	--	23(2)
HEATING, COOLING, VENTILATION AND AIR CONDITIONING CONTROLS	23	23	26	23
EXHAUST FAN SWITCHES	23	26	26	23(2)

SUBSCRIPT FOOTNOTES:
1. MOTOR STARTER TO INCLUDE CONTROL TRANSFORMER, HOA SWITCH, (1) NO AND (1)NC AUXILIARY CONTACT, AND "ON" AND "OFF" PILOT LIGHTS.
2. IF ITEM IS FOR LINE VOLTAGE, SET IN PLACE AND CONNECT UNDER DIVISION 26. WHERE FACTORY MOUNTED ON EQUIPMENT OR ATTACHED TO PIPING OR DUCTS AND USING LINE VOLTAGE FURNISH AND SET UNDER DIVISION 23, CONNECT UNDER DIVISION 26.

SUBSTITUTIONS:

A. SUBSTITUTIONS: SUBSTITUTION OF SPECIFIED EQUIPMENT WILL BE ALLOWED THROUGH A PRIOR APPROVAL PROCESS INITIATED BY THE CONTRACTOR. CONTRACTOR SHALL SUBMIT INTENDED SUBSTITUTION AT LEAST FIVE DAYS PRIOR TO BID FOR APPROVAL FROM ENGINEER. SUBMITTAL SHALL INCLUDE CAPACITIES, DIMENSIONS AND OPERATING INSTRUCTIONS FOR EACH PIECE OF EQUIPMENT. SUBSTITUTION SHALL OCCUR AT NO COST TO THE OWNER. CONTRACTOR IS RESPONSIBLE FOR COORDINATION OF APPROVED SUBSTITUTION AND SHALL INCUR ALL COSTS ASSOCIATED WITH THE SUBSTITUTION INCLUDING STRUCTURAL MODIFICATIONS, SPACE LAYOUT AND REDESIGN COSTS. SEE ALSO DIVISION I GENERAL REQUIREMENTS.

EXAMINATION OF SITE, DRAWINGS, SPECIFICATIONS:

A. EXAMINE CAREFULLY THE SITE AND CONDITIONS OF THE SITE. PROVIDE ALL NECESSARY EQUIPMENT AND LABOR TO INSTALL A COMPLETE WORKING SYSTEM WITHIN THE SITE CONDITIONS.

B. EXAMINE THE DRAWINGS AND SPECIFICATIONS AND 5 DAYS PRIOR TO BIDDING REPORT ANY ERRORS, OMISSIONS, INCONSISTENCIES, AND CONFLICTS TO THE ENGINEER TO BE REMEDIED IN AN ADDENDUM TO THE PROJECT PRIOR TO BID TIME.

C. DRAWINGS ARE DIAGRAMMATIC AND CATALOG NUMBERS GIVEN ARE FOR REFERENCE ONLY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE CAPACITY OF THE EQUIPMENT MEETS THE DRAWING REQUIREMENTS AND SHALL NOT DIMENSION FROM THE MECHANICAL, PLUMBING, OR PIPING DRAWINGS.

D. THE LATEST ADOPTED VERSIONS OF THE INTERNATIONAL BUILDING CODES SHALL BE USED AS REQUIRED. THIS WILL ALSO INCLUDE THE LATEST ADOPTED VERSIONS OF THE MECHANICAL, PLUMBING, AND ENERGY CONSERVATION CODES. ALL METHODS AND MATERIALS REQUIRED BY THESE CODES SHALL BE REQUIRED BY THESE SPECIFICATIONS UNLESS INDICATED OTHERWISE. OTHER APPLICABLE LOCAL CODES AND ORDINANCES SHALL BE AS REQUIRED AND IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO BE KNOWLEDGEABLE OF THESE REQUIREMENTS.

E. WHERE INSTALLATION PROCEDURES OR ANY PART THEREOF ARE REQUIRED TO BE IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE MANUFACTURER OF THE MATERIAL BEING INSTALLED, PRINTED COPIES OF THESE RECOMMENDATIONS SHALL BE FURNISHED TO THE ENGINEER PRIOR TO INSTALLATION. INSTALLATION OF THE ITEM WILL NOT BE ALLOWED TO PROCEED UNTIL THE RECOMMENDATIONS ARE RECEIVED. FAILURE TO FURNISH THESE RECOMMENDATIONS CAN BE CAUSE FOR REJECTION OF THE MATERIAL.

ABBREVIATIONS:

44"	MOUNTING HEIGHT ABOVE FINISHED FLOOR TO CENTER OF DEVICE
A	AMPS
A.D.	ACCESS DOOR
AAV	ADMITTANCE VALVE
ABV	ABOVE
AC	AIR CONDITIONING UNIT
AC	ABOVE COUNTER
AD	AREA DRAIN (SEE SYMBOLS)
AFC	ABOVE FINISHED CEILING
AFG	ABOVE FINISHED GRADE
AIC	AMPERE INTERRUPTING CAPACITY
AFCI	ARC FAULT CIRCUIT INTERRUPTERS
AFF	ABOVE FINISHED FLOOR
AHU	AIR HANDLING UNIT
ALUM	ALUMINUM
AP	ACCESS PANEL OR DOOR
ATS	AUTOMATIC TRANSFER SWITCH
AV	AUDIO / VIDEO
AVG	AVERAGE
AWG	AMERICAN WIRE GAGE
BAS	BUILDING AUTOMATION SYSTEM
BB	BASEBOARD
BD	BACK DRAFT DAMPER
BFP	BACK FLOW PREVENTOR
BL	BOILER
BLDG	BUILDING
BLW	BELOW
BOB	BOTTOM OF BEAM
BOD	BOTTOM OF DUCT
BOP	BOTTOM OF PIPE
BSMT	BASEMENT
BTU	BRITISH THERMAL UNIT
C	CHILLER
CAFCI	COMBINATION ARC FAULT CIRCUIT INTERRUPTERS
CAP	CAPACITY
CB	CIRCUIT BREAKER
CBV	CIRCUIT BALANCING VALVE
CCT	CORRELATED COLOR TEMPERATURE
CKT	CIRCUIT
CFH	CUBIC FEET PER HOUR
CFM	CUBIC FEET PER MINUTE
CHWR	CHILLED WATER RETURN
CHWS	CHILLED WATER SUPPLY
CI	CAST IRON
CL	CENTER LINE
CLG	CEILING
CMU	CONCRETE MASONRY UNIT
CO	CLEAN OUT
COL	COLUMN
COMP	COMPRESSOR
CONC	CONCRETE
COND	CONDENSATE
CONN	CONNECTION
CONT	CONTINUATION
CONTR	CONTRACTOR
CRI	COLOR RENDERING INDEX
CT	COOLING TOWER
CT	CURRENT TRANSFORMER
CU	CONDENSING UNIT
CU	COPPER
CUH	CABINET UNIT HEATER
CVB	CONSTANT VOLUME BOX
CWR	CONDENSER WATER RETURN
CWS	CONDENSER WATER SUPPLY
DB	DRY BULB
DEPT	DEPARTMENT
DF	DRINKING FOUNTAIN
DIA	DIAMETER
DIAG	DIAGRAM
DIFF	DIFFERENTIAL
DISCH	DISCHARGE
DIV	DIVISION
DN	DOWN
DS	DUCT SILENCER
DWG	DRAWING
DX	DIRECT EXPANSION
(E)	EXISTING
EA	EXHAUST AIR GRILLE/REGISTER
EAT	ENTERING AIR TEMPERATURE
EC	ELECTRICAL CONTRACTOR
ECC	ECCENTRIC
EF	EXHAUST FAN
EFF	EFFICIENCY
EL	ELEVATION
ELEC	ELECTRIC
ELEV	ELEVATOR
EM	EMERGENCY FUNCTION
ENT	ENTERING
EMT	ELECTRIC METALLIC TUBE
EQ	EQUAL
EQUIP	EQUIPMENT
EQUIV	EQUIVALENT
ES	END SWITCH
ESP	EXTERNAL STATIC PRESSURE
ET	EXPANSION TANK
EWC	ELECTRIC WATER COOLER
EWT	ENTERING WATER TEMPERATURE
EX	EXHAUST
EXPAN	EXPANSION
EXT	EXTERNAL
F	DEGREES FAHRENHEIT
FA	FREE AREA
FC	FAN COIL UNIT
FC	FOOTCANDLE
FCV	FLOW CONTROL VALVE
FD	FIRE DAMPER
FD	FLOOR DRAIN
FIN	FINISHED
FLA	FULL LOAD AMPS
FLEX	FLEXIBLE
FLR	FLOOR
FOB	FLAT ON BOTTOM
FOT	FLAT ON TOP
FP	FIRE PROTECTION
FP	FIRE PUMP
FPM	FEET PER MINUTE
FPS	FEET PER SECOND
FS	FLOW SWITCH
FSD	FIRE/SMOKE DAMPER
FT	FEET
FXC	FLEXIBLE CONNECTION
GND	GROUND
GA	GAUGE
GAL	GALLON
GALV	GALVANIZED
GEC	GROUND ELECTRODE CONDUCTOR
GF	GROUND FAULT CIRCUIT INTERRUPTER
GC	GENERAL CONTRACTOR
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
GRS/LB	GRS/LB GRAINS PER POUND
H2O	WATER
HB	HOSE BIBB
HD	HEAD (SEE SCHEDULES)
HP	HEAT PUMP
HP	HORSEPOWER
HR	HOUR
HT	HEIGHT
HTR	HEATER
HWR	HEATING WATER RETURN
HWS	HEATING WATER SUPPLY
HX	HEAT EXCHANGER
HZ	HERTZ
ID	INSIDE DIAMETER
IG	ISOLATED GROUND
IN	INCHES
INV	INVERT
JBOX	JUNCTION BOX
K	KELVIN
KW	KILOWATT
KVA	KILO VOLT - AMPS
L	LENGTH
LAT	LEAVING AIR TEMPERATURE
LV	LAVATORY
LB	POUND
LD	LINEAR DIFFUSER
LF	LINEAR FEET
LIN	LINEAR
LIQ	LIQUID
LM	LUMEN
LRA	LOCKED ROTOR AMPS
LV	LOUVER
LVG	LEAVING
LWT	LEAVING WATER TEMPERATURE
MBH	THOUSANDS OF BTU PER HOUR
MC	MECHANICAL CONTRACTOR
MCA	MINIMUM CIRCUIT AMPACITY
MCB	MAIN CIRCUIT BREAKER
MD	MOTORIZED DAMPER
MDP	MAIN DISTRIBUTION PANEL
MED	MEDIUM
MFR	MANUFACTURER
MIN	MINIMUM
MISC	MISCELLANEOUS
MLO	MAIN LUG ONLY
MOCP	MAXIMUM OVERCURRENT PROTECTION
MTD	MOUNTED
MUA	MAKE-UP AIR UNIT
N	NEUTRAL
NC	NORMALLY CLOSED
NEG	NEGATIVE
NIC	NOT IN CONTRACT
NL	NIGHT / SECURITY LIGHT - DO NOT SWITCH
NO	NORMALLY OPEN
NOM	NOMINAL
NTS	NOT TO SCALE
OA	OUTSIDE AIR
OBD	OPPOSED BLADE DAMPER
OC	ON CENTER
OCC	OCCUPIED
OCP	OVER CURRENT PROTECTION
OD	OUTSIDE DIAMETER
OL	OVERLOAD
ORD	OVERFLOW ROOF DRAIN
OZ	OUNCE
PBD	PARALLEL BLADE DAMPER
PD	PRESSURE DROP
PH	PHASE
POS	POSITIVE PRESSURE
POS	POINT OF SALES
PRV	PRESSURE REDUCING VALVE
PS	PRESSURE SWITCH
PSI	POUNDS PER SQUARE INCH
PT	PRESSURE TRANSMITTER
PTAC	PACKAGED TERMINAL AIR CONDITIONER
PV	PLUG VALVE
PVC	POLYVINYL CHLORIDE
QTY	QUANTITY
RA	RETURN AIR GRILLE / REGISTER
RCP	REFLECTED CEILING PLAN
RD	ROOF DRAIN
REL	RELIEF
REQD	REQUIRED
RF	RETURN FAN
RH	RELATIVE HUMIDITY
RHC	REHEAT COIL
RLA	RATED LOAD AMPS
RM	ROOM
RPM	REVOLUTIONS PER MINUTE
SA	SUPPLY AIR GRILLE / REGISTER
SC	SHORT CIRCUIT
SCA	SHORT CIRCUIT AVAILABLE
SCCR	SHORT CIRCUIT CURRENT RATING
SCH	SCHEDULE
SD	SMOKE DAMPER
SEF	SMOKE EXHAUST FAN
SF	SUPPLY FAN
SH	SENSIBLE HEAT
SH	SHOWER
SP	STATIC PRESSURE
SPD	SURGE PROTECTION DEVICE
SPEC	SPECIFICATION
SQ	SQUARE
SS	STAINLESS STEEL
SS	SAFETY SHOWER
STD	STANDARD
STL	STEEL
SYS	SYSTEM
TEMP	TEMPERATURE
TR	TRANSFER GRILLE / REGISTER
TR	TAMPER RESISTANT
TT	TEMPERATURE TRANSMITTER
TTB	TELECOMMUNICATIONS TERMINAL BACKBOARD
TYP	TYPICAL
TX	TRANSFORMER
UC	UNDERCUT DOOR
UH	UNIT HEATER
UNO	UNLESS NOTED OTHERWISE
UNOCC	UNOCCUPIED
UR	URINAL
V	VOLTS
VA	VOLT AMPERE
VA	VALVE
VAV	VARIABLE AIR VOLUME UNIT
VFD	VARIABLE FREQUENCY DRIVE
VRF	VARIABLE REFRIGERANT FLOW
VOLT	VOLTAGE
VTR	VENT THROUGH ROOF
W	WIDTH
W	WATTS
W/	WITH
W/O	WITHOUT
WB	WET BULB
WC	WATER COLUMN
WC	WATER CLOSET
WG	WATER GAUGE
WP	WEATHERPROOF
WPIU	WEATHERPROOF IN-USE
WSR	WITHSTAND RATING
XFMR	TRANSFORMER

KRAAI DESIGN ARCHITECTURE
2394 PATTERSON ROAD, SUITE 201
GRAND JUNCTION, CO 81505
126 ELK AVENUE, UNIT 1
CRESTED BUTTE, CO 81224
T: 970.712.5045

COLORADO LICENSED ROBERT SCOTT LYNCH 59005 Robert Lynch 12/17/2024 PROFESSIONAL ENGINEER

GILCREST HEAD START

11TH STREET
GILCREST, CO

REVISION(S):

#	DATE	COMMENTS

CONSTRUCTION DOCUMENTS

PROJECT NO: 2437

SHEET NAME: COVER SHEET

DATE: 12/17/2024

SHEET NO: M0-1

SCALE: 12" = 1'-0"

MECHANICAL PROVISIONS:

1. SCOPE OF WORK

A.THE CONTRACTOR IS RESPONSIBLE FOR ALL WORK, MATERIALS, AND LABOR TO SATISFY A COMPLETE WORKING SYSTEM WHETHER SPECIFIED OR IMPLIED.
B.ALL WORK IS TO BE PERFORMED IN STRICT COMPLIANCE WITH ALL LOCAL CODES AND ALL OTHER REGULATION GOVERNING WORK OF THIS NATURE.
C.THE CONTRACTOR SHALL, BEFORE SUBMITTING ANY PROPOSAL, EXAMINE THE PROPOSED SITE AND SHALL DETERMINE FOR HIMSELF THE CONDITIONS THAT MAY EFFECT THE WORK. NO ALLOWANCE SHALL BE MADE IF THE CONTRACTOR FAILS TO MAKE SUCH EXAMINATIONS.
D.ALL EQUIPMENT AND MATERIALS SHALL BE AS SPECIFIED OR "APPROVED EQUAL" BY THE ENGINEER OR ARCHITECT.

2. PERMITS

A.THE CONTRACTOR SHALL SECURE ALL PERMITS OR APPLICATIONS AND PAY ANY AND ALL FEES.

3. SHOP DRAWINGS

A.SUBMIT MATERIAL LIST AND SHOP DRAWINGS FOR MAJOR EQUIPMENT TO THE ARCHITECT/ENGINEER FOR APPROVAL. THE CONTRACTOR SHALL SUBMIT FIVE SETS OF SHOP DRAWINGS AND THEY SHALL BE CLEARLY LABELED.

4. FLEXIBLE DUCT WORK

A.FLEXIBLE TYPE DUCT SHALL BE OF TWO ELEMENT SPIRAL CONSTRUCTION COMPOSED OF A CORROSION RESISTANT METAL SUPPORTING SPIRAL AND COATED FABRIC WITH A MINERAL BASE. FLEXIBLE DUCT CONNECTORS SHALL BE LISTED BY U.L., CLASS 1 DUCTS, AND SHALL HAVE A FLAME SPREAD RATING NOT EXCEEDING 25 AND A SMOKE DEVELOPED RATING NOT EXCEEDING 50.
B.USE OF FLEXIBLE DUCTWORK SHALL BE LIMITED TO NO MORE THAN 6 LINEAR FEET PER RUN.
C.CONTRACTOR SHALL BE CAREFUL SO AS NOT TO KINK OR COLLAPSE FLEXIBLE DUCT.

5. REFRIGERANT

A. PIPING CONTRACTOR SHALL PROVIDE AND INSTALL REFRIGERANT PIPING IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND IN SUCH A WAY AS TO BE INCONSPICUOUS AND FREE FROM ANY POSSIBLE CONDENSATION.
B. INSULATE REFRIGERANT LINES WITH ARMOUR-FLEX TYPE INSULATION, SHALL BE TYPE "K" COPPER TUBING, WITH WROUGHT COPPER SOLDER TYPE FITTINGS SUITABLE FOR CONNECTION WITH SILVER SOLDER.

6. DUCTWORK

A.THE DUCTWORK SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE "SMACNA" APPLICABLE MANUALS.
B.ALL DUCTWORK SHALL BE THE LOW VELOCITY TYPE, UNLESS SPECIFIED OTHERWISE.
C.CONTRACTOR SHALL PROVIDE AND INSTALL APPROVED FIRE DAMPERS AND ACCESS PANELS IN ANY AND ALL DUCTWORK WHICH PENETRATES A HORIZONTAL OR VERTICAL FIRE PARTITION, OR AS OTHERWISE SHOWN ON DRAWINGS.
D.ALL BRANCH DUCTS TO HAVE VOLUME DAMPERS, SMOOTH TURN RADIUS DUCTWORK OR TURNING VANES SHALL BE USED THROUGHOUT WHERE FLOW EXCEEDS 150 CFM.
E.ALL DUCT JOINTS TO BE SEALED IN ACCORDANCE WITH "SMACNA"STANDARDS AND ACCEPTED GOOD PRACTICE.
F.ALL DUCT DIMENSIONS SHOWN ARE NET INSIDE VALUES.DIMENSIONS MAY BE CHANGED SO LONG AS THE NET FREE FACE AREA IS MAINTAINED.
G.ALL CONCEALED DUCTWORK SHALL BE INSULATED WITH 1-1/2" FIBERGLASS INSULATING BLANKET WITH ALUMINUM FOIL FACING.
H.ALL SUPPLY AND RETURN DUCTWORK 15 FEET DOWNSTREAM OF THE HVAC UNIT SHALL BE INTERNALLY LINED WITH A 1/2" ACOUSTICAL DUCT LINER UNLESS OTHERWISE NOTED ON THE DRAWINGS.

7. DRAINAGE PIPING

A.(CONDENSATE) SHALL BE SCHEDULE 40 PVC PIPE WITH SOLVENT JOINTS.PITCH HORIZONTAL LINES 1" IN 10'-0". CONDENSATE DRAINS SHALL BE ROUTED TO FLOOR DRAIN, ROOF DRAIN OR INDIRECT WASTE DRAIN.

8. HVAC CONTROLS

A.CONTRACTOR TO SUPPLY AND INSTALL ALL CONTROL WIRING AND THERMOSTATS AS REQUIRED.

9. ELECTRICAL

A.CONTRACTOR TO COORDINATE WITH ELECTRICAL CONTRACTOR FOR LOCATION OF WIRING FOR EACH HVAC UNIT.

10. PIPE SUPPORTS

A.ALL PIPE SHALL BE SUPPORTED FROM THE BUILDING STRUCTURE IN A NEAT AND WORKMANLIKE MANNER. THE USE OF WIRE OR METAL STRAP TO SUPPORT PIPES WILL NOT BE PERMITTED. SPACING OF PIPE SUPPORTS SHALL NOT EXCEED 8 FEET FOR ALL PIPING. PLASTIC PIPING TO BE SUPPORTED EVERY 4 FEET.

11. GAS PIPING

A.PIPING SHALL BE SCHEDULE 40 BLACK STEEL PIPE WITH MALLEABLE IRON FITTINGS. WHERE GAS PIPE CONNECTS TO EQUIPMENT, IT SHALL BE PROVIDED WITH A DRIP LEG THE FULL SIZE OF THE RUNOUT, A 100% SHUT-OFF VALVE AND A UNION. GAS PIPING CONTAINING PRESSURE GREATER THAN 9" W.G. SHALL BE SCHEDULE 40 BLACK STEEL PIPE WITH WELDED JOINTS.

12. MISCELLANEOUS

A.ALL EXTERIOR OPENINGS TO BE PROPERLY CAULKED AND SEALED WITH A SEALANT OF HIGH QUALITY AND LONG LIFE, TO PREVENT INFILTRATION OF OUTSIDE AIR INTO CONDITIONED SPACE.COORDINATE INSTALLATION OF ALL ROOF FLASHING AT ROOF PENETRATION.
B.DO NOT SCALE THIS DRAWING FOR EXACT DIMENSIONS.
C.VERIFY ALL FIGURES, CONDITIONS, AND DIMENSIONS AT THE JOB SITE.
D.THE MECHANICAL PLANS ARE INTENDED TO BE DIAGRAMMATIC AND ARE BASED ON ONE MANUFACTURE'S EQUIPMENT. THEY ARE NOT INTENDED TO SHOW EVERY ITEM IN ITS EXACT LOCATION, THE EXACT DIMENSIONS, OR ALL THE DETAILS OF THE EQUIPMENT.
E.THE CONTRACTOR SHALL VERIFY THE ACTUAL DIMENSIONS OF THE EQUIPMENT PROPOSED TO ENSURE THAT THE EQUIPMENT WILL FIT IN THE AVAILABLE SPACE.
F.PEX TUBING, IF PEX TUBING IS USED AS AN APPROVED ALTERNATE FOR APPLICATIONS WHERE METALLIC PIPING IS THE BASIS OF DESIGN. THE PEX MANUFACTURER SHALL SUBMIT SHOP DRAWINGS CLEARLY INDICATING THAT THE DESIGN HAS BEEN ANALYZED AND MODIFIED, AS REQUIRED TO MAINTAIN SCHEDULED HYDRONIC SYSTEM PARAMETERS. ANY DESIGN RESULTING IN INCREASED SYSTEM PRESSURE DROP AS A RESULT OF IMPROPER PEX SIZING OR DESIGN SHALL NOT BE PERMITTED.

13. TESTING AND BALANCING

A.THE HVAC SYSTEM SHALL BE TESTED AND AND BALANCED BY AN INDEPENDENT AGENCY, UNDER THE SUPERVISION OF A LICENSED PROFESSIONAL ENGINEER. A SEALED TYPE WRITTEN REPORT SHALL BE SUBMITTED TO THE ARCHITECT/ENGINEER FOR REVIEW AND APPROVAL.

14. GUARANTEE

A.MATERIALS, EQUIPMENT AND INSTALLATION SHALL BE GUARANTEED FOR A PERIOD OF ONE(1) YEAR FROM DATE OF ACCEPTANCE. DEFECTS WHICH APPEAR DURING THAT PERIOD SHALL BE CORRECTED AT THIS CONTRACTOR'S EXPENSE.
B.FOR THE SAME PERIOD, THE MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO PREMISES CAUSED BY DEFECTS IN WORKMANSHIP OR IN THE WORK OR EQUIPMENT FURNISHED AND/OR INSTALLED BY HIM.

PACKAGE ROOF TOP UNIT SCHEDULE

TYPE MARK	SERVICE	SUPPLY AIRFLOW (CFM)	OUTSIDE AIRFLOW (CFM)	SUPPLY E.S.P.	NOM. COOLING CAPACITY	HEATING			FILTERS	EVAP. FAN POWER (HP)	ELECTRICAL					WEIGHT (LBS)	MANUFACTURER	MODEL #	NOTES
						INPUT (MBH)	OUTPUT (MBH)	GAS FLOW RATE (CFH)			VOLTS	PHASE	FREQUENCY	MCA (A)	MOCP (A)				
RTU-1	PRESCHOOL 3	2000	600	1.07	5	150	121.5	187.5	MERV 13	1	208 V	3	60 Hz	36 A	50 A	853.00 lbf	TRANE	YHK0603SB	SEE NOTE 1
RTU-2	PRESCHOOL 2	2000	600	1.07	5	150	121.5	187.5	MERV 13	1	208 V	3	60 Hz	36 A	50 A	853.00 lbf	TRANE	YHK0603SB	SEE NOTE 1
RTU-3	PRESCHOOL 1	2000	600	1.07	5	150	121.5	187.5	MERV 13	1	208 V	3	60 Hz	36 A	50 A	853.00 lbf	TRANE	YHK0603SB	SEE NOTE 1
RTU-4	INFANT/TODD. 4&5	2000	600	1.07	5	150	121.5	187.5	MERV 13	1	208 V	3	60 Hz	36 A	50 A	853.00 lbf	TRANE	YHK0603SB	SEE NOTE 1
RTU-5	INFANT/TODD. 2&3	2000	600	1.07	5	150	121.5	187.5	MERV 13	1	208 V	3	60 Hz	36 A	50 A	853.00 lbf	TRANE	YHK0603SB	SEE NOTE 1
RTU-6	OFFICE SPACES	2000	600	1.07	5	150	121.5	187.5	MERV 13	1	208 V	3	60 Hz	36 A	50 A	853.00 lbf	TRANE	YHK0603SB	SEE NOTE 1
RTU-7	LARGE MEETING ROOM	2000	600	1.07	5	150	121.5	187.5	MERV 13	1	208 V	3	60 Hz	36 A	50 A	853.00 lbf	TRANE	YHK0603SB	SEE NOTE 1
RTU-8	OFFICE SPACES	2000	600	1.07	5	150	121.5	187.5	MERV 13	1	208 V	3	60 Hz	36 A	50 A	853.00 lbf	TRANE	YHK0603SB	SEE NOTE 1
RTU-9	INFANT/TODD. 1	2000	600	1.07	5	150	121.5	187.5	MERV 13	1	208 V	3	60 Hz	36 A	50 A	853.00 lbf	TRANE	YHK0603SB	SEE NOTE 1

NOTES:
1. PROVIDE WITH VIBRATION ISOLATION CURB, COIL GUARDS, 100% MODULATING ECONOMIZER, LOW LEAK DAMPERS, POWERED EXHAUST FAN, FACTORY UNITARY CONTROLS, FUSED DISCONNECT SWITCH, HIGH ALTITUDE KIT, POWERED CONVENIENCE OUTLET, AND CO2 DEMAND CONTROLLED VENTILATION SENSOR/SEQUENCE. PROVIDE RETURN AIR DUCT SMOKE DETECTOR WITH AUDIBLE AND VISUAL ALARMS, VFD ON SUPPLY FAN.

OUTDOOR GAS FIRED MAKE-UP AIR UNIT SCHEDULE

TYPE MARK	SERVICE	SUPPLY AIRFLOW (CFM)	E.S.P. (IN. W.G.)	INPUT (MBH)	OUTPUT (MBH)	A.F.U.E. EFFICIENCY	GAS FLOW RATE (CFH)	ELECTRICAL				MANUFACTURER	MODEL #	OPTIONS/ ACCESSORIES
								MOTOR POWER (HP)	VOLTS	PHASE	FREQUENCY			
MAU-1	KITCHEN	1084	0.75	82.1	66.5	81%	102.6	1/3	208 V	3	60 Hz	GREENHECK	IGX-P109-H12-MF-C	SEE NOTES BELOW

NOTES:
1. PROVIDE WITH STAINLESS STEEL BURNER/HEAT EXCHANGER, MERV 13 FILTERS, HIGH ALTITUDE ORIFICES, EVAPORATIVE COOLING WITH CELDEK MEDIA, DOWN DISCHARGE CONFIGURATION, FREEZE PROTECTION DRAIN CONTROL KIT, FACTORY UNITARY CONTROLS, CLOGGED FILTER SWITCH, CONVENIENCE OUTLET, FREEZE STAT, VFD CONTROLLED VARIABLE AIR VOLUMN, HINGED ACCESS PANELS, AND VIBRATION ISOLATION CURB. UNITS TO BE INTERLOCKED WITH KITCHEN AND CULINARY EXHAUST HOODS.

AIR CONDITIONING EQUIPMENT SCHEDULE

TYPE MARK	SERVICE	NOM. COOLING CAPACITY (BTU/HR)	NOM. HEATING CAPACITY (BTU/HR)	SUPPLY AIRFLOW (CFM)	EER EFF.	REFRIGERANT PIPING		VOLTS	PHASE	ELECTRICAL		MANUFACTURER	MODEL #	OPTIONS/ ACCESSORIES
						LIQUID	VAPOR			FREQUENCY	MCA (A)			
AC-1	IT	12000	-	385	13.3	1/4	1/2	280 V	1	60 Hz	1 A	MITSUBISHI	PKA-A12LA1	SEE NOTES BELOW

NOTES:
1. PROVIDE WITH CONDENSATE PUMP, DISCONNECT SWITCH, AND WIRED REMOTE CONTROL

AIR COOLED CONDENSING UNIT

TYPE MARK	SERVICE	NOM. COOLING CAPACITY (MBH)	REFRIGERANT PIPING		ELECTRICAL					MANUFACTURER	MODEL #	OPTIONS/ ACCESSORIES
			LIQUID	VAPOR	VOLTS	PHASE	FREQUENCY	MCA (A)	MOCP (A)			
CU-1	IT	12000	1/4	1/2	208 V	1	60 Hz	11 A	28 A	MITSUBISHI	PUY-A12NKA7	SEE NOTES BELOW

NOTES:
1. PROVIDE WITH MOUNTING PAD, STAND, WINDBAFFLE, HAIL GUARDS, AND DRAIN SOCKET. PROVIDE LINESETS PER MANUFACTURER RECOMMENDATION. CONTRACTOR TO COORINATE PIPE ROUTES.

EXHAUST FAN SCHEDULE

TYPE MARK	SERVICE	LOCATION	EXHAUST AIRFLOW (CFM)	EXHAUST E.S.P.	MOTOR					MANUFACTURER	MODEL #	NOTES
					EXHAUST FAN MOTOR POWER	EXHAUST FAN SPEED (RPM)	VOLTS	PHASE	ELECTRICAL FREQUENCY			
EF-1	RESTROOM	CEILING	140	.25	20 W	1123	115 V	1	60 Hz	GREENHECK	CSP-A390-VG	SEE NOTE 1
KEF-1	H-1	ROOF	1100	1.5	3/4 HP	1527	115 V	1	60 Hz	GREENHECK	CUE-140-VG	SEE NOTE 2

NOTES:
1. PROVIDE WITH VIBRATION ISOLATION, POWER DISCONNECT, SPEED CONTROL, AND OCCUPANCY SENSOR WITH MANUAL OVERRIDE SWITCH FOR ACTIVATION.
2. PROVIDE WITH HEAVY GUAGE ALUMINUM CONSTUCTION, POWER DISCONNECT, WELDED GREASE SPOUT, VIBRATION ISOLATION, CORROSION RESISTANT FASTENERS, UL 762 GREASE EXHAUST RATING, ROOF CURB, FACTORY CONTROLS (INTERLOCKED WITH EXHAUST HOOD CONTROLS), GREASE CUP, VFD FOR VARIABLE VOLUME AIRFLOW, AND HINGED ACCESS.

ELECTRIC UNIT HEATER SCHEDULE

TYPE MARK	SERVICE	CFM	HEAT CAPACITY (BTU/HR)	AIR TEMP. RISE	ELECTRICAL				MANUFACTURER	MODEL #	OPTIONS/ ACCESSORIES
					FLA (A)	VOLTS	PHASE	FREQUENCY			
EUH-1	VESTIBULE	100	5120	36	7 A	208 V	1	60 Hz	RAYWALL	HF3384D-RP	SEE NOTE 1
EUH-2	VESTIBULE	100	5120	36	7 A	208 V	1	60 Hz	RAYWALL	HF3384D-RP	SEE NOTE 1
EUH-3	VESTIBULE	100	5120	36	7 A	208 V	1	60 Hz	RAYWALL	HF3384D-RP	SEE NOTE 1
EUH-4	VESTIBULE	100	5120	36	7 A	208 V	1	60 Hz	RAYWALL	HF3384D-RP	SEE NOTE 1
EUH-5	SPRINK./WATER	275	8553	120	12 A	208 V	1	60 Hz	RAYWALL	HF5705T	SEE NOTE 1

NOTES:
1. PROVIDE WITH FACTORY TAMPER RESISTANT THERMOSTATS, ELECTRICAL DISCONNECT. CONTRACTOR TO COORDINATE MOUNTING WITH STRUCTURE/ARCHITECT PRIOR TO INSTALLATION.

GRILLE-REGISTER-DIFFUSER SCHEDULE

TYPE MARK	MOUNTING TYPE	DIFFUSER SIZE	FINISH	MANUFACTURER	MODEL #	NOTES
RC-1	CEILING	2'-0" x 2'-0"	PER ARCH	PRICE	SPD	SEE NOTE 1 & 2
RC-2	CEILING	2'-0" x 2'-0"	PER ARCH	PRICE	80FF SERIES	SEE NOTE 1
RW-1	WALL	4" x SEE PLAN	PER ARCH	PRICE	LBP (15A CORE)	SEE NOTE 1
SC-1	CEILING	2'-0" x 2'-0"	PER ARCH	PRICE	SPD	SEE NOTE 1
SW-1	WALL	4" x SEE PLAN	PER ARCH	PRICE	LBP (15A CORE)	SEE NOTE 1

NOTES:
1. COORDINATE ALL MOUNTING TYPES WITH CEILINGS, WALLS, OR SOFFITS.
2. RC-1 TO BE PROVIDED WITH LARGEST AVAILABLE NECK SIZE (15"Ø).

KRAAI DESIGN ARCHITECTURE
2394 PATTERSON ROAD, SUITE 201
GRAND JUNCTION, CO 81505
126 ELK AVENUE, UNIT 1
CRESTED BUTTE, CO 81224
T: 970.712.5045

COLORADO LICENSED
ROBERT SCOTT LYNCH
59005
Robert Lynch
12/17/2024
PROFESSIONAL ENGINEER

GILCREST HEAD START

11TH STREET
GILCREST, CO

REVISION(S):

#	DATE	COMMENTS

CONSTRUCTION DOCUMENTS

PROJECT NO: 2437

SHEET NAME: MECHANICAL - SCHEDULES

DATE: 12/17/2024

SHEET NO: M0-2

SCALE:

ZONES

- CU-1 & AC-1
- HEAT ONLY
- MAU-1
- RTU-1
- RTU-2
- RTU-3
- RTU-4
- RTU-5
- RTU-6
- RTU-7
- RTU-8
- RTU-9

NOTE: ZONES ARE COLOR CODED. HARD COPIES SHOULD BE PLOTTED WITH COLOR OR THE DIGITAL COPY SHOULD BE REFERENCED.

1 M0-3 MECHANICAL - ZONING PLAN
1/8" = 1'-0"

KRAAI DESIGN ARCHITECTURE
2394 PATTERSON ROAD, SUITE 201
GRAND JUNCTION, CO 81505
126 ELK AVENUE, UNIT 1
CRESTED BUTTE, CO 81224
T: 970.712.5045

COLORADO LICENSED
ROBERT SCOTT KRAAI
59005
Robert Kraai
12/17/2024
PROFESSIONAL ENGINEER

GILCREST HEAD START

11TH STREET
GILCREST, CO

REVISION(S):

#	DATE	COMMENTS

CONSTRUCTION DOCUMENTS

PROJECT NO: 2437

SHEET NAME: MECHANICAL- MAIN LEVEL - HVAC ZONING FLOOR PLAN

DATE: 12/17/2024

SHEET NO: M0-3

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

MECHANICAL GENERAL NOTES:

1. DRAWING IS DIAGRAMMATIC IN NATURE. LOCATIONS AND SIZES MAY VARY DURING FIELD COORDINATION & INSTALLATION OF MECHANICAL, PLUMBING, & ELECTRICAL. DRAWINGS DO NOT NECESSARILY INDICATE EVERY REQUIRED OFFSET, FITTING, ETC. DRAWINGS ARE NOT TO BE SCALED FOR DIMENSIONS. TAKE ALL DIMENSIONS FROM ARCHITECTURAL DRAWINGS, CERTIFIED EQUIPMENT DRAWINGS AND FROM THE STRUCTURE ITSELF BEFORE FABRICATING ANY WORK, VERIFY ALL SPACE REQUIREMENTS COORDINATING WITH OTHER TRADES, AND INSTALL THE SYSTEMS IN THE SPACE PROVIDED WITHOUT EXTRA CHARGES TO THE OWNER.

2. DUCT DIMENSIONS DO NOT REFLECT ADDITIONAL DIMENSIONS FOR INSULATION. ALL DUCTING SHALL BE INSULATED PER 2018 IECC CODE REQUIREMENTS. (SUPPLY AND RETURN AIR DUCTS AND PLENUMS SHALL BE INSULATED WITH NOT LESS THAN R-6 INSULATION WHERE LOCATED IN UNCONDITIONED SPACES AND WHERE LOCATED OUTSIDE THE BUILDING WITH NOT LESS THAN R-8 INSULATION IN CLIMATE ZONES 0 THROUGH 4 AND NOT LESS THAN R-12 INSULATION IN CLIMATE ZONES 5 THROUGH 8. DUCTS LOCATED UNDERGROUND BENEATH BUILDINGS SHALL BE INSULATED AS REQUIRED IN THIS SECTION OR HAVE AN EQUIVALENT THERMAL DISTRIBUTION EFFICIENCY. UNDERGROUND DUCTS UTILIZING THE THERMAL DISTRIBUTION EFFICIENCY METHOD SHALL BE LISTED AND LABELED TO INDICATE THE R-VALUE EQUIVALENCY. WHERE LOCATED WITHIN A BUILDING ENVELOPE ASSEMBLY, THE DUCT OR PLENUM SHALL BE SEPARATED FROM THE BUILDING EXTERIOR OR UNCONDITIONED OR EXEMPT SPACES BY NOT LESS THAN R-8 INSULATION IN CLIMATE ZONES 0 THROUGH 4 AND NOT LESS THAN R-12 INSULATION IN CLIMATE ZONES 5 THROUGH 8. WELD COUNTY IS **CLIMATE ZONE 5B**)

3. COORDINATE FINAL LOCATION OF THERMOSTAT WITH OWNER PRIOR TO INSTALLATION. IF THERMOSTAT IS LOCATED ON EXTERIOR WALL PROVIDE THERMOSTAT WITH INSULATED BACKING.

4. CONDENSING WATER HEATER, GAS FURNACE, AND BOILER VENT MATERIAL SHALL COMPLY WITH MANUFACTURER'S LISTED AND APPROVED MATERIALS. PVC SHALL NOT BE USED FOR FLUE/COMBUSTION AIR VENTING MATERIAL. ENGINEERS PREFERRED MATERIAL IS PRESSURE RATED, DOUBLE WALL, GASKETED, 316 STAINLESS STEEL CONDENSING FLUE VENTING MATERIAL. RECOMMENDED MANUFACTURER'S SELKIRK OR JERMIAS.

5. ALL REFRIGERANT LINES SHALL BE INSULATED IN A WORKMAN LIKE MANNER PER MANUFACTURER'S INSTRUCTIONS. REFRIGERANT LINESET LONGEST LENGTHS SHALL BE 75'.

6. ROUTE CONDENSATE FROM CONDENSING MECHANICAL EQUIPMENT TO CONDENSATE NEUTRALIZATION KITS. CONDENSATE FROM NEUTRALIZATION KITS SHALL BE DISCHARGED INDIRECTLY THROUGH AIR GAP TO NEAREST FLOOR DRAIN.

7. ALL MOTORIZED DAMPERS ON OUTDOOR AIR INTAKES AND EXHAUST SHALL BE PROVIDED WITH CLASS IA MOTORIZED DAMPERS WITH A MAXIMUM LEAKAGE RATE OF 4 CFM/FT² AT 1.0 INCH WATER GAUGE WHEN TESTED IN ACCORDANCE WITH AMCA 500D. (PER 2012 IECC)

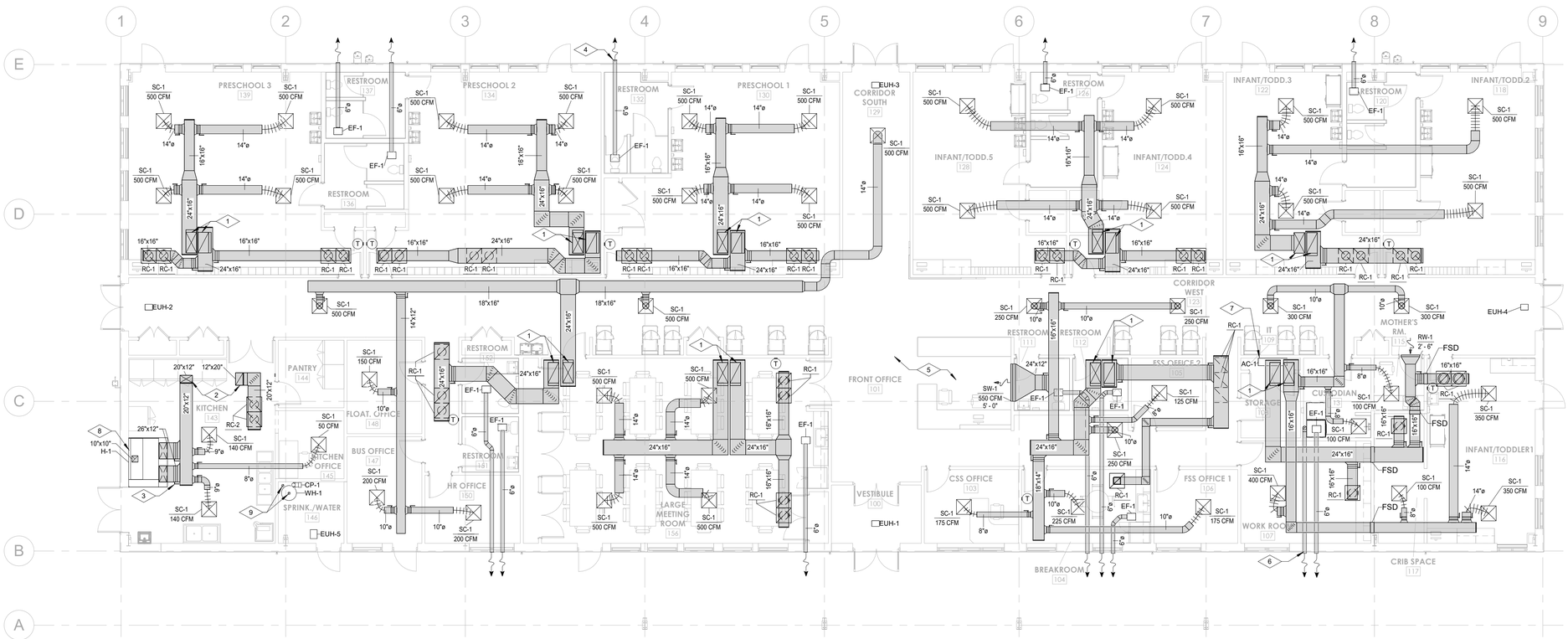
8. MECHANICAL EQUIPMENT MANUFACTURERS AS SCHEDULED ON MECHANICAL DRAWINGS ARE SUGGESTED MANUFACTURER'S. UNLESS NOTED OTHERWISE DUE TO OWNER/CLIENT REQUIREMENTS AND PREFERENCES. MECHANICAL CONTRACTOR CAN SUBMIT EQUIVALENT EQUIPMENT FROM MANUFACTURERS THAT DIFFER FROM SCHEDULED MECHANICAL EQUIPMENT. ALTERNATE MANUFACTURERS OF MECHANICAL EQUIPMENT WILL BE REVIEWED FOR EQUIVALENCE OF PERFORMANCE AND FUNCTIONALITY BY ENGINEER.

9. SINGLE PHASE VRF HEAT PUMP CONDENSER MODULES SHALL BE PROVIDED WITH LOCAL POWER SOURCE PROTECTION. POWER SOURCE PROTECTION DEVICE SHALL BE BETWEEN MAIN POWER SUPPLIED TO THE UNIT AND INTERNAL COMPONENTS. POWER PROTECTION DEVICE SHALL PROVIDE PROTECTION FROM VOLTAGE SAG AND SPORADIC FREQUENCY. POWER PROTECTION DEVICE SHALL AUTOMATICALLY SHUT OFF CONDENSER MODULE UPON DETECTION OF POWER EVENT. PHASE PROTECTION DEVICE SHALL AUTOMATICALLY ENERGIZE AND START UP CONDENSER MODULE UPON POWER EVENT ENDING. POWER MONITOR PROTECTION DEVICE SHALL BE SIMILAR/EQUIVALENT TO ICM #493 WITH 2-POLE CONFIGURATIONS.

10. WHERE EQUIPMENT REQUIRING ACCESS OR APPLIANCES ARE LOCATED ON AN ELEVATED STRUCTURE OR THE ROOF OF A BUILDING SUCH THAT PERSONNEL WILL HAVE TO CLIMB HIGHER THAN 16 FEET ABOVE GRADE TO ACCESS SUCH EQUIPMENT OR APPLIANCES, AN INTERIOR OR EXTERIOR MEANS OF ACCESS SHALL BE PROVIDED. SUCH ACCESS SHALL NOT REQUIRE CLIMBING OVER OBSTRUCTIONS GREATER THAN 30 INCHES IN HEIGHT OR WALKING ON ROOFS HAVING A SLOPE GREATER THAN 4 UNITS VERTICAL IN 12 UNITS HORIZONTAL. SUCH ACCESS SHALL NOT REQUIRE THE USE OF PORTABLE LADDERS. WHERE ACCESS INVOLVES CLIMBING OVER PARAPET WALLS, THE HEIGHT SHALL BE MEASURED TO THE TOP OF THE PARAPET WALL. PERMANENT LADDERS SHALL COMPLY WITH REQUIREMENTS LISTED IN SECTION 306.5 OF THE 2018 INTERNATIONAL MECHANICAL CODE.

11. WHERE APPLIANCES, EQUIPMENT, FANS OR OTHER COMPONENTS THAT REQUIRE SERVICE ARE INSTALLED ON A ROOF HAVING A SLOPE OF 3 UNITS VERTICAL IN 12 UNITS HORIZONTAL OR GREATER AND HAVING AN EDGE MORE THAN 30 INCHES ABOVE GRADE AT SUCH EDGE, A LEVEL PLATFORM SHALL BE PROVIDED ON EACH SIDE OF THE APPLIANCE OR EQUIPMENT TO WHICH ACCESS IS REQUIRED FOR SERVICE, REPAIR OR MAINTENANCE. THE PLATFORM SHALL BE NOT LESS THAN 30" IN ANY DIMENSION AND SHALL BE PROVIDED WITH GUARDS. PLATFORM SHALL BE DESIGNED SUCH THAT EQUIPMENT MAINTENANCE ACCESS IS MAINTAINED PER MANUFACTURER'S INSTALLATION REQUIREMENTS (I.E. ACCESS PANELS AND DOORS CAN BE OPENED AND COMPONENTS CAN BE REMOVED AND MAINTAINED PER MANUFACTURER REQUIREMENTS). THE GUARDS SHALL EXTEND NOT LESS THAN 42 INCHES ABOVE THE PLATFORM, SHALL BE CONSTRUCTED SO AS TO PREVENT THE PASSAGE OF A 21 INCH DIAMETER SPHERE AND SHALL COMPLY WITH THE LOADING REQUIREMENTS FOR GUARDS SPECIFIED IN THE INTERNATIONAL BUILDING CODE. ACCESS SHALL NOT REQUIRE WALKING ON ROOFS HAVING A SLOPE GREATER THAN 4 UNITS VERTICAL IN 12 UNITS HORIZONTAL WHERE ACCESS INVOLVES OBSTRUCTIONS GREATER THAN 30 INCHES IN HEIGHT. SUCH OBSTRUCTIONS SHALL BE PROVIDED WITH LADDERS INSTALLED IN ACCORDANCE WITH SECTION 306.5 OR STAIRWAYS INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS SPECIFIED IN THE INTERNATIONAL BUILDING CODE IN THE PATH OF TRAVEL TO AND FROM APPLIANCES, FANS OR EQUIPMENT REQUIRING SERVICE.

12. GUARDS SHALL BE PROVIDED WHERE VARIOUS COMPONENTS THAT REQUIRE SERVICE AND ROOF HATCH OPENINGS ARE LOCATED WITHIN 10 FEET OF A ROOF EDGE OR OPEN SIDE OF A WALKING SURFACE AND SUCH EDGE OR OPEN SIDE IS LOCATED MORE THAN 30 INCHES ABOVE THE FLOOR, ROOF OR GRADE BELOW. THE GUARD SHALL EXTEND NOT LESS THAN 30 INCHES BEYOND EACH END OF COMPONENTS THAT REQUIRE SERVICE AND EACH END OF THE ROOF HATCH PARALLEL TO THE ROOF EDGE. THE TOP OF THE GUARD SHALL BE LOCATED NOT LESS THAN 42 INCHES ABOVE THE ELEVATED SURFACE ADJACENT TO THE GUARD. THE GUARD SHALL BE CONSTRUCTED SO AS TO PREVENT THE PASSAGE OF A 21 INCH DIAMETER SPHERE AND SHALL COMPLY WITH THE LOADING REQUIREMENTS FOR GUARDS SPECIFIED IN THE INTERNATIONAL BUILDING CODE. NOTE - GUARDS ARE NOT REQUIRED WHERE FALL ARREST/RESTRAINT ANCHORAGE DEVICES THAT COMPLY WITH ANSI/ASSP Z359.1 ARE INSTALLED.



M1-1 KEYNOTES

NOTE NUMBER	KEYNOTE
1	UP TO RTU. DUCT DROP SIZE TO MATCH RTU CONNECTION SIZE.
2	UP TO MUA ON ROOF.
3	SUPPLY PLENUM ON HOOD TO HAVE 760 CFM OF SUPPLY AIR. BALANCE EACH SUPPLY BRANCH CONNECTED TO HOOD TO 380 CFM.
4	ROUTE EXHAUST DUCT TO EXTERIOR WALL AND TERMINATE WITH WALL CAP. COORDINATE FINAL INSTALLATION LOCATION TO MAINTAIN CODE REQUIRED CLEARANCES TO BUILDING OPENINGS. TYPICAL ALL EXHAUST FANS UNLESS OTHERWISE NOTED.
5	AS INDICATED, DUCTWORK SHALL NOT BE ROUTED ABOVE FRONT OFFICE/RECEPTION SPACE.
6	EQUIVALENT DRYER DUCT LENGTH IS ANTICIPATED TO BE 35 FEET. THEREFORE A BOOSTER FAN IS NOT REQUIRED. CONTRACTOR TO COORDINATE FINAL ROUTING AND CONFIRM DRYER EQUIVALENT VENT LENGTH WILL NOT EXCEED 35' FEET. IF COORDINATED ROUTE EXCEEDS 35 EQUIVALENT FEET, A BOOSTER FAN WILL BE REQUIRED.
7	ROUTE AC-1 CONDENSATE WASTE TO INDIRECT TERMINATION AT THE MOP SINK LOCATED IN CUSTODIAN 113. CONTRACTOR TO COORDINATE FINAL INSTALLATION ROUTE.
8	SEE MECHANICAL DETAIL SHEET FOR ADDITIONAL HOOD INFORMATION.
9	ROUTE WATER HEATER FLUE AND OUTSIDE AIR INTAKE INDEPENDENTLY TO ROOF TERMINATION. FLUE SIZE AND ROUTE TO MEET MANUFACTURER'S INSTALLATION INSTRUCTION.

1 M1-1 MECHANICAL - MAIN LEVEL - FLOOR PLAN
1/8" = 1'-0"

KRAAI DESIGN ARCHITECTURE
2394 PATTERSON ROAD, SUITE 201
GRAND JUNCTION, CO 81505
126 ELK AVENUE, UNIT 1
CRESTED BUTTE, CO 81224
T: 970.712.5045

COLORADO LICENSED
ROBERT SCOTT KRAAI
59005
Robert Kraai
12/17/2024
PROFESSIONAL ENGINEER

GILCREST HEAD START

11TH STREET
GILCREST, CO

REVISION(S):

#	DATE	COMMENTS

CONSTRUCTION DOCUMENTS

PROJECT NO: 2437

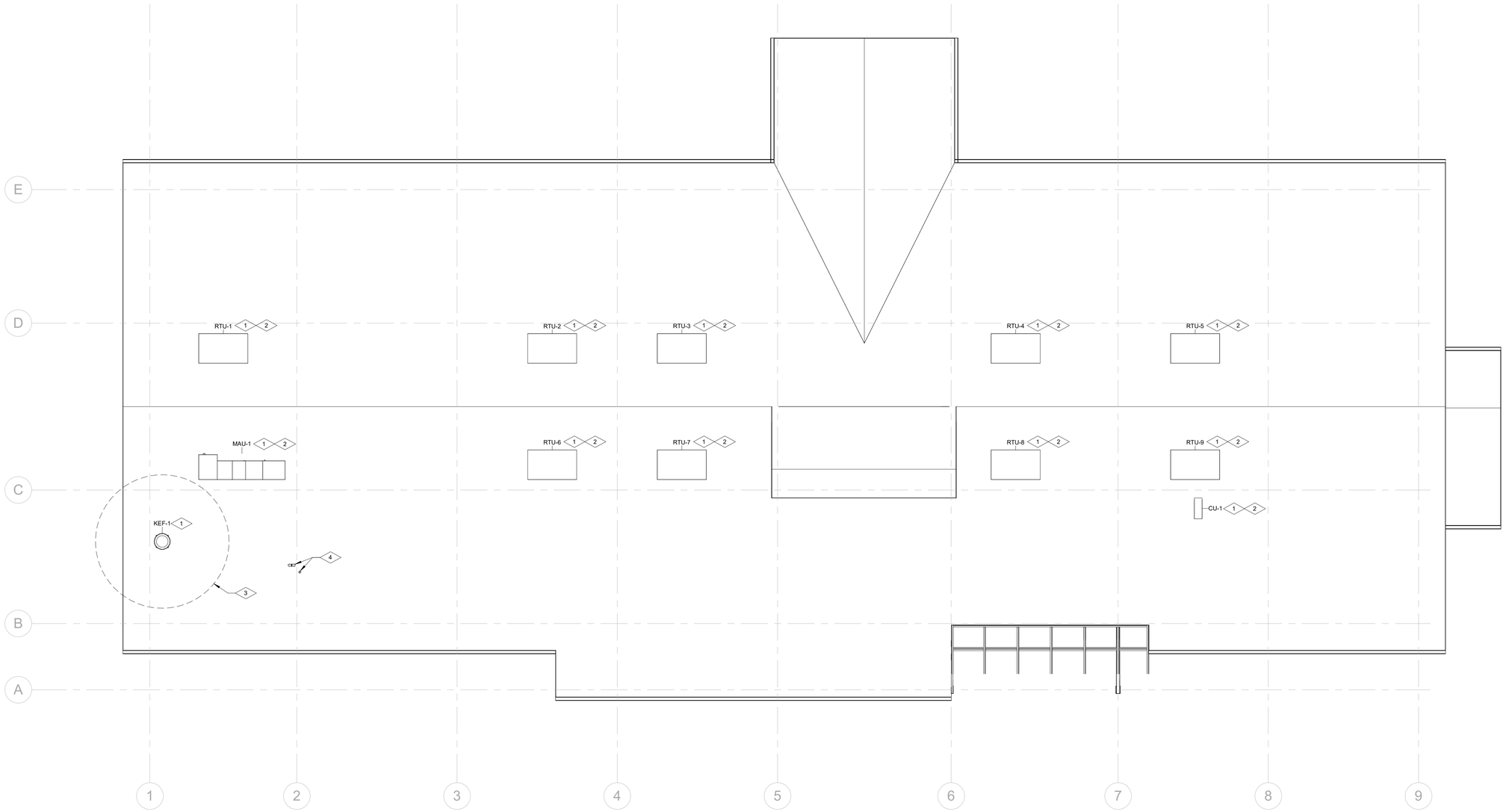
SHEET NAME: MECHANICAL- MAIN LEVEL - FLOOR PLAN

DATE: 12/17/2024

SHEET NO: M1-1

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

M1-2 KEYNOTES	
NOTE NUMBER	KEYNOTE
1	CONTRACTOR TO COORDINATE FINAL EQUIPMENT INSTALLATION LOCATIONS WITH ARCHITECT AND STRUCTURE PRIOR TO INSTALLATION. TYPICAL ALL ROOF MOUNTED EQUIPMENT.
2	PROVIDE SERVICE PLATFORMS FOR ALL RTUS & MUA UNIT. STRUCTURE TO COORDINATE PLATFORM STRUCTURE TO ACCOMODATE EQUIPMENT SERVICE/ACCESS REQUIREMENTS.
3	10'-0" CLEARANCE CIRCLE PROVIDED FOR REFERENCE ONLY. CONTRACTOR TO COORDINATE FINAL LOCATIONS TO MAINTAIN CODE REQUIRED CLEARANCES FROM BUILDING OPENINGS AND MECHANICAL OUTSIDE AIR INTAKES.
4	WATER HEATER FLUE AND OUTSIDE AIR INTAKE TO BE TERMINATED ABOVE THE ROOF. VENT SIZING AND ROUTING TO MEET MANUFACTURER'S INSTALLATION REQUIREMENTS.



1 M1-2 MECHANICAL - ROOF PLAN
1/8" = 1'-0"

KRAAI DESIGN ARCHITECTURE

2394 PATTERSON ROAD, SUITE 201
GRAND JUNCTION, CO 81505

126 ELK AVENUE, UNIT 1
CRESTED BUTTE, CO 81224

T: 970.712.5045

COLORADO LICENSED
ROBERT SCOTT KRAAI
59005
Robert Kraai
12/17/2024
PROFESSIONAL ENGINEER

GILCREST HEAD START

11TH STREET
GILCREST, CO

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CONSTRUCTION DOCUMENTS

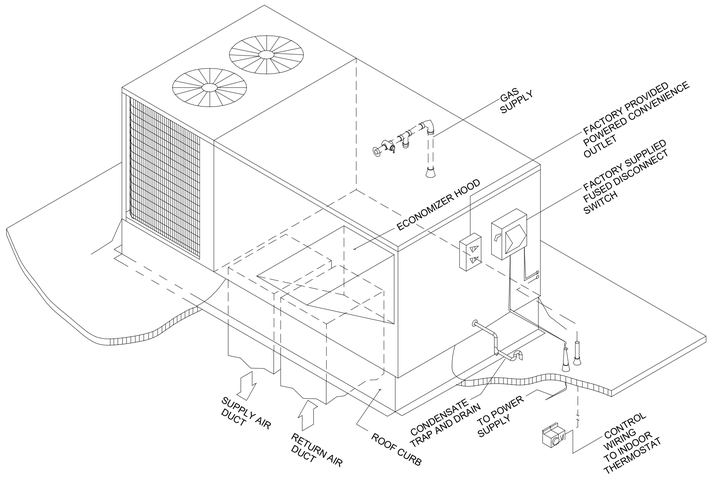
PROJECT NO: 2437

SHEET NAME: MECHANICAL - ROOF PLAN

DATE: 12/17/2024

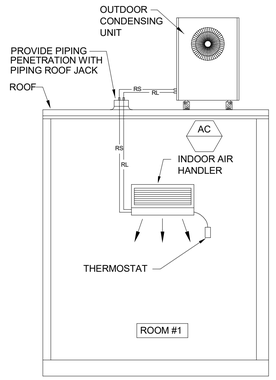
SHEET NO: M1-2

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



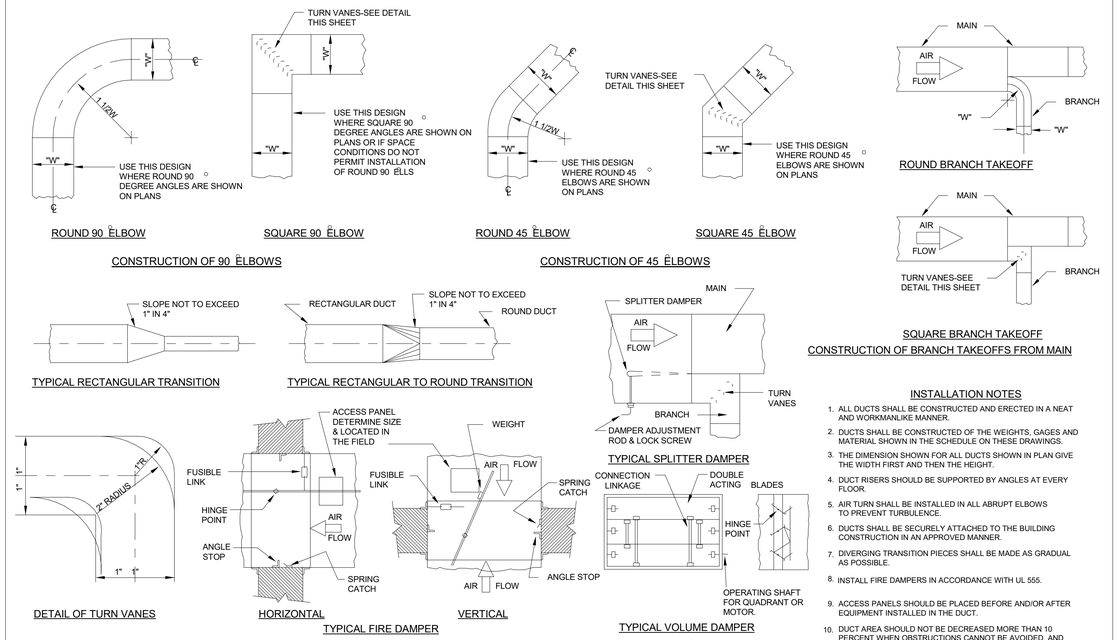
ROOFTOP PACKAGED HVAC UNIT DETAIL

NOT TO SCALE



DUCTLESS SPLIT-SYSTEM WITH SINGLE AIR HANDLING UNITS DETAIL

N.T.S.

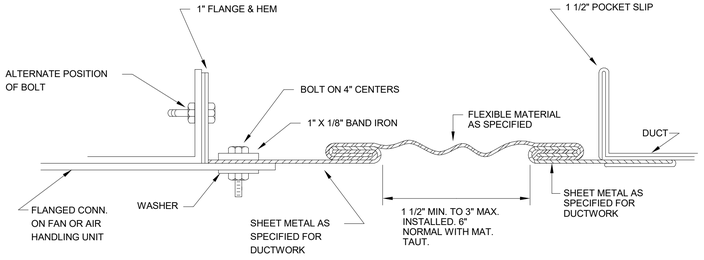


DETAILS OF THE LOW VELOCITY DUCT LAYOUT

NO SCALE

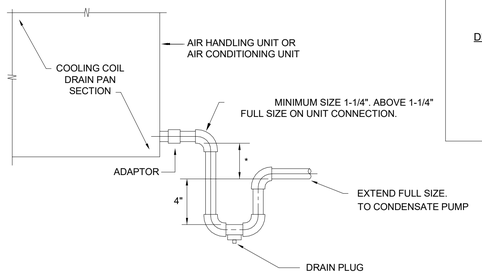
INSTALLATION NOTES

1. ALL DUCTS SHALL BE CONSTRUCTED AND ERECTED IN A NEAT AND WORKMANLIKE MANNER.
2. DUCTS SHALL BE CONSTRUCTED OF THE WEIGHTS, GAGES AND MATERIAL SHOWN IN THE SCHEDULE ON THESE DRAWINGS.
3. THE DIMENSION SHOWN FOR ALL DUCTS SHOWN IN PLAN GIVE THE WIDTH FIRST AND THEN THE HEIGHT.
4. DUCT RISERS SHOULD BE SUPPORTED BY ANGLES AT EVERY FLOOR.
5. AIR TURN SHALL BE INSTALLED IN ALL ABRUPT ELBOWS TO PREVENT TURBULENCE.
6. DUCTS SHALL BE SECURELY ATTACHED TO THE BUILDING CONSTRUCTION IN AN APPROVED MANNER.
7. DIVERGING TRANSITION PIECES SHALL BE MADE AS GRADUAL AS POSSIBLE.
8. INSTALL FIRE DAMPERS IN ACCORDANCE WITH UL 555.
9. ACCESS PANELS SHOULD BE PLACED BEFORE AND/OR AFTER EQUIPMENT INSTALLED IN THE DUCT.
10. DUCT AREA SHOULD NOT BE DECREASED MORE THAN 10 PERCENT WHEN OBSTRUCTIONS CANNOT BE AVOIDED, AND THEN A STREAMLINED FITTING SHOULD BE USED.
11. FLEXIBLE FABRIC CONNECTIONS (OR EQUAL) SHOULD BE USED ON BOTH INLETS AND OUTLETS OF ALL FANS AND AIR HANDLING UNITS.
12. JOINTS AND SEAMS OF SUPPLY DUCTS SHALL BE FASTENED SECURELY AND MADE AIR TIGHT.



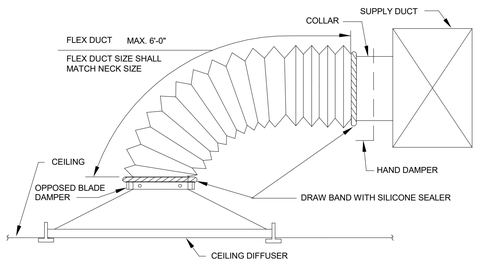
RECTANGULAR FLEXIBLE CONNECTION DETAIL

N.T.S.



CONDENSATE DRAIN DETAIL

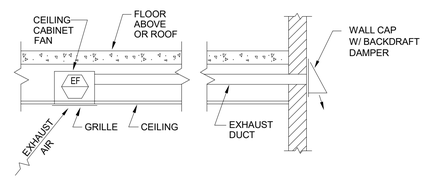
NOT TO SCALE



TYPICAL DIFFUSER CONNECTION

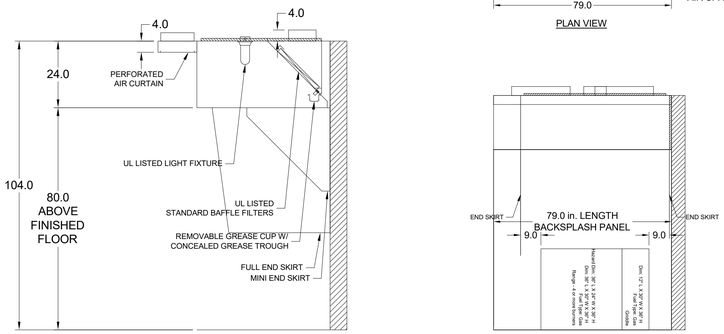
(SIDE OF DUCT CONNECTION)

NOT TO SCALE



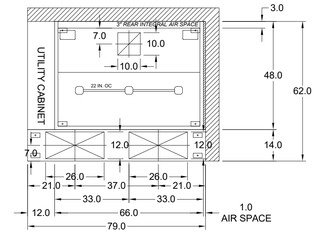
BATHROOM EXHAUST FAN DETAIL - SIDEWALL DISCHARGE

N.T.S.



KITCHEN EXHAUST HOOD DETAILS

N.T.S.



PLAN VIEW

kda
KRAAI DESIGN ARCHITECTURE
2394 PATTERSON ROAD, SUITE 201
GRAND JUNCTION, CO 81505
126 ELK AVENUE, UNIT I
CRESTED BUTTE, CO 81224
T: 970.712.5045

COLORADO LICENSED ROBERT SCOTT KRAAI 59005 Robert Kraai 12/17/2024 PROFESSIONAL ENGINEER

GILCREST HEAD START

11TH STREET
GILCREST, CO

REVISION(S):

#	DATE	COMMENTS

CONSTRUCTION DOCUMENTS

PROJECT NO: 2437

SHEET NAME: MECHANICAL - DETAILS

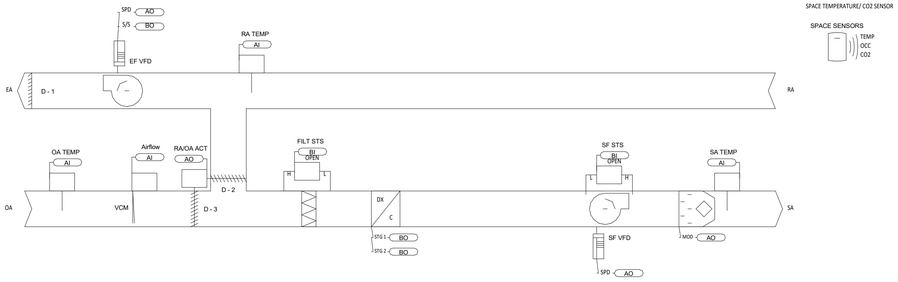
DATE: 12/17/2024

SHEET NO: M2-1

SCALE:

RTU - SYSTEM POINTS LIST

CONTROLLER: ReliaTel	POINT TYPE							ALARMS									
SYSTEM POINT DESCRIPTION	GRAPHIC	HARDWARE INPUT	HARWARE OUTPUT	SOFTWARE POINT	HARDWARE INTERLOCK	WIRELESS	NETWORK	DEFAULT VALUE	HIGH ANALOG LIMIT	LOW ANALOG LIMIT	BINARY	LATCH DIAGNOSTIC	SENSOR FAIL	COMMUNICATION FAIL	DIAGNOSTICS	NOTES
DISCHARGE AIR TEMPERATURE LOCAL	X	AI							X	X			X			
OUTSIDE AIR TEMPERATURE/ LOCAL TEMPERATURE	X	AI														
SPACE CO2 LOCAL	X	AI							X				X			
RETURN AIR LOCAL TEMPERATURE	X	AI														
OUTSIDE AIR CFM	X	AI														
SPACE TEMPERATURE LOCAL	X	AI				X										
PRIMARY FILTER STATUS LOCAL OPEN	X	BI									X					
SUPPLY FAN STATUS LOCAL OPEN	X	BI									X	X				
MIXED AIR DAMPER	X		AO													
REHEAT OUTPUT	X		AO													
SUPPLY FAN SPEED	X		AO													
COOLING OUTPUT 1	X		BO													
COOLING OUTPUT 2	X		BO													
EXHAUST FAN START/STOP	X		BO													
EXHAUST FAN SPEED	X		AO													
OCCUPANCY				X												
OCCUPIED COOLING SETPOINT				X				74.0 deg. F								
OCCUPIED HEATING SETPOINT				X				70.0 deg. F								
OCCUPIED STANDBY COOLING SETPOINT				X				80.0 deg. F								
OCCUPIED STANDBY HEATING SETPOINT				X				65.0 deg. F								
UNOCCUPIED COOLING SETPOINT				X				85.0 deg. F								
UNOCCUPIED HEATING SETPOINT				X				60.0 deg. F								
OCCUPIED BYPASS TIMER				X				2.0 HRS								
ECONOMIZER MINIMUM POSITION				X												
HEATING MODE SETPOINT				X												
COOLING MODE SETPOINT				X												
SPACE CO2 LIMIT				X				900 PPM								
SETPOINT OFFSET				X												
COMPRESSOR ENABLE				X				AUTO								
HEAT / COOL MODE				X				COOL								
FAN MODE COMMAND				X				ON								
APPLICATION MODE				X				AUTO								
OUTSIDE AIR DAMPER MINIMUM POSITION				X				10%								
EFFECTIVE OCCUPANCY	X			X												
EFFECTIVE HEAT / COOL MODE	X			X												
EFFECTIVE SPACE TEMPERATURE	X			X												
EFFECTIVE SPACE SETPOINT				X												
LOCAL SETPOINT				X												
HEAT OUTPUT	X			X												
COOL OUTPUT	X			X												
IECC 2015 ALARM	X			X												
AIR TEMPERATURE FAILURE/ FAULT	X			X											TECH INTERVENTION REQ	
NOT ECONOMIZING WHEN IT SHOULD BE	X			X											TECH INTERVENTION REQ	
ECONOMIZING WHEN UNIT SHOULD NOT BE	X			X											TECH INTERVENTION REQ	
DAMPER NOT MODULATING	X			X											TECH INTERVENTION REQ	
EXCESS OUTDOOR AIR	X			X											TECH INTERVENTION REQ	
SUPPLY AIR HEATING/COOLING SETPOINT				X											TECH INTERVENTION REQ	
SPACE HEATING/COOLING SETPOINT	X			X												
MAINTENANCE REQUIRED				X				600 HRS								
BAS COMMUNICATION STATE	X			X												
FILTER RUNTIME HOURS				X												
COMPRESSOR LOCKOUT STATUS				X												
TIMED OVERRIDE STATUS				X												
GENERAL NOTES																



Sequence of Operations
INTELLIPAK SZ VAV

Building Automation System Interface:
The Building Automation System (BAS) shall send the controller Occupied Bypass, Morning Warm-up / Pre-Cool, Occupied / Unoccupied and Heat / Cool modes. If a BAS is not present, or communication is lost with the BAS the controller shall operate using default modes and setpoints.
Occupied Mode:
During occupied periods, the supply fan shall run continuously and the outside air damper shall open to maintain the current airflow setpoint. The DX cooling shall stage and gas heat shall modulate to maintain the occupied space temperature setpoint. If economizing is enabled the outside air damper shall modulate to maintain the occupied space temperature setpoint.
Unoccupied Mode:
When the space temperature is below the unoccupied heating setpoint of 60.0 deg. F (adj.) the supply fan shall start, the outside air damper shall remain closed and the gas heat shall be enabled. When the space temperature rises above the unoccupied heating setpoint of 60.0 deg. F (adj.) plus the unoccupied differential of 4.0 deg. F (adj.) the supply fan shall stop and the gas heat shall be disabled.
When the space temperature is above the unoccupied cooling setpoint of 85.0 deg. F (adj.) the supply fan shall start, the outside air damper shall open if economizing is enabled and remain closed if economizing is disabled and the DX cooling shall be enabled. When the space temperature falls below the unoccupied cooling setpoint of 85.0 deg. F (adj.) minus the unoccupied differential of 4.0 deg. F (adj.) the supply fan shall stop, the DX cooling shall be disabled and the outside air damper shall close.

Optimal Start:
The BAS shall monitor the scheduled occupied time, occupied space setpoints and space temperature to calculate when the optimal start occurs.

Morning Warm-Up Mode:
During optimal start, if the space temperature is below the occupied heating setpoint a morning warm-up mode shall be activated. When morning warm-up is initiated the unit shall enable the heating and supply fan. The outside air damper shall remain closed. When the space temperature reaches the occupied heating setpoint (adj.), the unit shall transition to the occupied mode.
Pre-Cool Mode:
During optimal start, if the space temperature is above the occupied cooling setpoint, pre-cool mode shall be activated. When pre-cool is initiated the unit shall enable the fan and cooling or economizer. The outside air damper shall remain closed, unless economizing. When the space temperature reaches occupied cooling setpoint (adj.), the unit shall transition to the occupied mode.
Optimal Stop:
The BAS shall monitor the scheduled unoccupied time, occupied setpoints and space temperature to calculate when the optimal stop occurs. When the optimal stop mode is active the unit controller shall maintain the space temperature to the space temperature offset setpoint.
Occupied Bypass:
The BAS shall monitor the status of the "on" and "cancel" buttons of the space temperature sensor. When an occupied bypass request is received from a space sensor, the unit shall transition from its current occupancy mode to occupied bypass mode and the unit shall maintain the space temperature to the occupied setpoints (adj.).
Cooling Mode:
The unit controller shall monitor space temperature and space temperature cooling setpoint to determine when to initiate requests for cooling. When the space temperature rises above the space temperature cooling setpoint, the unit controller shall modulate the economizer or stage the mechanical cooling On or Off as required to maintain the space temperature cooling setpoint. The first compressor shall energize after its minimum 3-minute off time has expired. The supply fan shall modulate above minimum speed to meet zone requirements. If additional cooling capacity is required the next stage of cooling shall be enabled. Once the space temperature falls below the setpoint the compressors shall be deactivated and the fan shall modulate to minimum speed.

Heating Mode:
The unit controller shall monitor space temperature and space temperature heating setpoint to determine when to initiate requests for heat. When the space temperature drops below the space temperature heating setpoint, the controller shall enable the modulating heat bank at high fire for 60 seconds, then the controller shall modulate the heat bank to the necessary rate to satisfy the space temperature heating setpoint. The supply fan speed shall vary to meet zone heating requirements in conjunction with the heat bank output. Once the space temperature rises above the setpoint, the heating cycle shall be disabled.

Economizer Control :
The supply air sensor shall measure the dry bulb temperature of the air leaving the evaporator coil while economizing. When economizing is enabled and the unit is operating in the cooling mode, the economizer damper shall modulate between its minimum position and 100% to maintain the space temperature setpoint. Minimum position shall be calculated based on supply fan speed. If the supply air temperature starts to fall below supply air temperature setpoint, the outdoor damper shall be at minimum position. Compressors shall be delayed from operating until the economizer has opened to 100% for 5 minutes.

Reference Dry-Bulb:
Outside air temperature shall be compared with a reference dry bulb setpoint.
The economizer shall be enabled when the outdoor air temperature is less than or equal to reference dry bulb setpoint. The economizer shall be disabled when outdoor air temperature is greater than reference dry bulb + 5.0 deg F.

Ventilation Control:
When the space CO2 level is greater than or equal to the Design Minimum CO2 Setpoint, the outdoor air damper shall open to the Design Minimum Outdoor Air Damper Setpoint. When the space CO2 level is less than or equal to the DCV Minimum CO2 Setpoint, the outdoor air damper shall close to the DCV Minimum Outdoor Air Damper Setpoint. If there is a call for economizer cooling, the damper shall be opened further to satisfy the cooling request.

Demand Control Ventilation (DCV):
As the supply fan speed command varies between minimum and maximum, the Building Design and DCV Minimum Position Targets shall be calculated linearly between the user selected setpoints based on the instantaneous supply fan speed. The Bldg. Design and DCV Minimum Position Targets will be used to calculate the Active OA Damper Minimum Position Target based on CO2 levels relative to the active Design and DCV CO2 setpoints.

The Design Minimum and DCV Minimum OA Damper Position setpoints at Minimum Fan Speed Command and the Design Minimum OA Damper Position setpoint at Middle Fan Speed Command shall have a range of 0-100% while the Design Minimum and DCV

Minimum OA Damper Position setpoints at Full fan speed shall have a range of 0-50%. Note: On non-Single Zone VAV units, a 10% offset shall be enforced between the Design and DCV Minimum Positions throughout the fan speed range.
Supply Fan Operation:
The supply fan shall be enabled while in the occupied mode and cycled on during the unoccupied mode. The unit controller shall vary the supply fan speed to optimize minimum fan speed in all cooling and heating modes. A differential pressure switch shall monitor the differential pressure across the fan. If the switch does not open within 40 seconds after a request for fan operation a fan failure alarm shall be annunciated, the unit shall stop, requiring a manual reset.
Filter Status:
A differential pressure switch shall monitor the differential pressure across the filter when the fan is running. If the switch closes for 2 minutes after a request for fan operation a dirty filter alarm shall be annunciated at the BAS.

KRAAI DESIGN ARCHITECTURE
2394 PATTERSON ROAD, SUITE 201
GRAND JUNCTION, CO 81505
126 ELK AVENUE, UNIT 1
CRESTED BUTTE, CO 81224
T: 970.712.5045

COLORADO LICENSED
ROBERT SCOTT KRAAI
59005
Robert Kraai
12/17/2024
PROFESSIONAL ENGINEER

GILCREST HEAD START

11TH STREET
GILCREST, CO

REVISION(S):

#	DATE	COMMENTS

CONSTRUCTION DOCUMENTS

PROJECT NO: 2437

SHEET NAME: MECHANICAL - SEQUENCE OF OPERATION

DATE: 12/17/2024

SHEET NO: M3-1

SCALE:

LEGEND NOTES

NOTES:
SYMBOLS SHOWN ARE STANDARD. VARIATION AND/OR COMBINATIONS MAY BE USED ON THE PLANS. THIS LIST SHOWS STANDARD SYMBOLS AND ALL MAY NOT APPEAR ON THE PROJECT DRAWINGS; HOWEVER, WHEREVER THE SYMBOL ON THE PROJECT DRAWINGS OCCUR, THE ITEM SHALL BE PROVIDED AND INSTALLED.

VARIATION AND/OR COMBINATION MAY BE USED ON THE PLANS SUCH AS A LOWER CASE LETTER NEXT TO A SWITCH INDICATES THE SWITCH DESIGNATION. A NUMBER NEXT TO A DEVICE INDICATES A CIRCUIT NUMBER.

A LOWER CASE LETTER NEXT TO A SWITCH AND LIGHT FIXTURE INDICATES A SWITCH DESIGNATION.

AN UPPER CASE LETTER NEXT TO A SWITCH INDICATES THE FUNCTION OF THE SWITCH. REFER TO THE LIST BELOW. A COMBINATION OF DESIGNATIONS MAY BE USED.

AN UPPER CASE LETTER NEXT TO A LIGHT FIXTURE INDICATES THE TYPE OF FIXTURE. REFER TO THE LUMINAIRE SCHEDULE FOR FIXTURE SPECIFICATIONS.

<1> DRAWING FLAG NOTES

ROOM 100 ROOM DESIGNATION

SWITCH LEGEND

- $ SINGLE POLE SWITCH
- $2 TWO POLE SWITCH
- $3 THREE-WAY SWITCH
- $4 FOUR-WAY SWITCH
- $D DIMMER SWITCH
- $2D 3 WAY DIMMER SWITCH - (4D INDICATES A 4WAY DIMMER)
- $MA D MANUAL ON / AUTO OFF VACANCY SENSOR SWITCH
- $MA MANUAL ON / AUTO OFF DIMMING VACANCY SENSOR SWITCH
- $OS AUTO ON / AUTO OFF OCCUPANCY SENSOR SWITCH
- OS OS CEILING MOUNTED DUAL TECHNOLOGY OCCUPANCY SENSOR SWITCH
- $SC SCENE CONTROL STATION
- $MS UNIT LIGHTING MANAGEMENT CONTROL STATION
- $K KEY OPERATED LIGHT SWITCH
- $T MANUAL ON - TIMED AUTO OFF LIGHT SWITCH
- $P PILOT LIGHT SWITCH
- $M0 MANUAL MOTOR STARTER
- $DR DOOR ACTIVATED SWITCH

LIGHT FIXTURE LEGEND

- A 1'x4' LED TROFFER OR DIRECT/INDIRECT TYPE FIXTURE GRID, FLANGE OR SURFACE MOUNTED
- A 2'x4' LED TROFFER OR DIRECT/INDIRECT TYPE FIXTURE GRID, FLANGE OR SURFACE MOUNTED
- A 2'x2' LED TROFFER OR DIRECT/INDIRECT TYPE FIXTURE GRID, FLANGE OR SURFACE MOUNTED
- A OPEN STRIP LED FIXTURE
- A LED WALL BRACKET FIXTURE
- A WALL BRACKET LIGHT FIXTURE
- A RECESSED DOWNLIGHT CAN FIXTURE
- A SURFACE CEILING OR PENDANT MOUNTED FIXTURE
- EX2 DOUBLE FACE EXIT SIGN, WALL AND CEILING MOUNTED
- EX1 SINGLE FACE EXIT SIGN, WALL AND CEILING MOUNTED
- EM WALL MOUNTED EMERGENCY LIGHT
- EMR EMERGENCY EXTERIOR EGRESS FIXTURE

ELECTRICAL DEVICE LEGEND

- J CEILING JUNCTION BOX - SURFACE/FLUSH
- J WALL JUNCTION BOX - SURFACE/FLUSH
- DUPLEX RECEPTACLE
- FLOOR MOUNTED RECEPTACLE
- SPLIT WIRED DUPLEX RECEPTACLE
- CEILING MOUNTED DUPLEX RECEPTACLE
- FOURPLEX RECEPTACLE
- FLOOR MOUNTED FOURPLEX RECEPTACLE
- APPLIANCE RECEPTACLE - 3 WIRE
- GFCI RECEPTACLE WITH GROUND FAULT CIRCUIT INTERRUPTER
- USB RECEPTACLE WITH USB CHARGING CAPABILITIES
- AC RECEPTACLE MOUNTED ABOVE COUNTER
- CW RECEPTACLE MOUNTED IN CASEWORK
- GFCI WP RECEPTACLE - WITH GFCI AND WEATHER PROOF COVER
- GFCI 44" RECEPTACLE - WITH GFCI AND MOUNTED AT 44" A.F.F.
- D ELECTRIC HAND DRYER
- T THERMOSTAT
- OPEN / CLOSE / STOP PUSH BUTTON

ELECTRICAL EQUIPMENT LEGEND

- BRANCH CIRCUIT PANELBOARD
- TELEPHONE TERMINAL BOARD
- ELECTRIC MOTOR
- F FUSED SAFETY SWITCH / DISCONNECT COMBINATION
- MOTOR STARTER
- CONTACTOR
- LA-7 CIRCUITRY HOMERUN: PANEL LA - CIR. #7
- CONDUIT OR WIRE CONCEALED IN WALL/CLG. (SOLID LINE TYPE)
- CONDUIT OR WIRE UNDERFLOOR/UNDERGND. (DASHED LINE TYPE)

MAIN DISTRIBUTION GEAR LEGEND

- PAD MOUNTED TRANSFORMER
- M ELECTRICAL METER SHOWN IN ONE LINE
- 100 A 2P CLASS T 100A — FUSED DISCONNECT 100A = AMP RATING 2P = NUMBER OF POLES CLASS T = FUSE CLASS 100 A = FUSE SIZE
- CIRCUIT BREAKER
- PP1 225A MLO 120/208V 3PH, 4W; PP1 225A MCB 120/208V 3PH, 4W — ELECTRICAL POWER PANEL WITH MAIN LUG OR MAIN BREAKER PP1= PANEL NAME 225A MLO = MAIN LUG OR BREAKER SIZE 120/208V = PANEL VOLTAGE 3PH, 4 WIRE = PANEL PHASE, DISTRIBUTION TYPE

GENERAL DRAWING NOTES:
1. ALL ELECTRICAL WORK TO COMPLY WITH LATEST ADOPTED CODES TO INCLUDE NFPA 70, IECC AND ALL APPLICABLE LOCAL CODES AND ORDINANCES.
2. FIELD COORDINATION DURING CONSTRUCTION IS IMPERATIVE. CONTRACTORS BIDDING THIS WORK MUST MAKE REASONABLE ALLOWANCES FOR UNFORESEEN CONTINGENCIES.
3. THE ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR ALL COORDINATION BETWEEN THE APPROPRIATE DISCIPLINES AND CONTRACTORS. ALL EQUIPMENT IS TO BE INSTALLED TO STRICTLY CONFORM TO MANUFACTURER'S INSTALLATION GUIDELINES. ALL EQUIPMENT IS TO BE INSTALLED WITH ALL NECESSARY CONTROL/ACCESSORY OPTIONS TO FUNCTION AS INTENDED. IT IS THE RESPONSIBILITY OF THE EQUIPMENT MANUFACTURER/SUPPLIER AND THE CONTRACTOR/INSTALLER TO PROVIDE COMPLETE INSTALLATION AND FUNCTIONALITY OF ALL EQUIPMENT BASED ON DESIGN SPECIFICATIONS AS OUTLINED BY THE ARCHITECT/ENGINEER.
4. ELECTRIC UTILITY TO ADVISE OWNER AND/OR THE ELECTRICAL ENGINEER PRIOR TO SERVICE MODIFICATION REQUIRING COST TO THE OWNER.
5. ALL INSTALLED EQUIPMENT THAT REQUIRES MARKING, TAGGING, OR OTHER IDENTIFICATION SHALL BE SO MARKED, TAGGED, OR OTHERWISE IDENTIFIED BY THE CONTRACTOR/INSTALLER AT THE TIME OF INSTALLATION IN COMPLIANCE WITH ALL GOVERNING CODES.

CONDUCTORS AND CONVEYANCES:
1. ALL WIRING IS SHOWN DIAGRAMMATICALLY ON DRAWING, FIELD VERIFY ALL CONDITIONS PRIOR TO ROUGH-IN.
2. ALL CONDUITS AND CONVEYANCES SHALL BE CONCEALED, IN THE EVENT THAT A NEW DEVICE IS BEING INSTALLED IN AN EXISTING DRYWALL PARTITION, PROVIDE A CUT IN TYPE BOX AND FISH FLEXIBLE CONDUIT DOWN INSIDE THE WALL FROM ABOVE THE CEILING AND REPAIR THE DRYWALL AROUND THE CONDUIT. TRANSITION TO EMT ONCE ABOVE THE CEILING.
3. SIZES OF WIRE AND CABLES ARE BASED UPON COPPER CONDUCTORS, UNLESS OTHERWISE INDICATED. ALL CIRCUITS SHALL CONTAIN (2) #12 AWG WITH (1) #12 GND IN 1/2" CONDUIT UNLESS NOTED OTHERWISE.
4. ALL BRANCH CIRCUITS WITH HOME RUNS OVER 50 FEET, WILL BE SIZED ONE SIZE LARGER.
5. ALL PENETRATIONS IN OR THROUGH FIRE RATED PARTITIONS SHALL BE FIRE STOPPED IN SUCH A WAY THAT THE PENETRATION MATCHES THE FIRE RATING OF THE WALL.
6. ALL EXPOSED CONDUITS, BOXES, ETC. IN ROOMS TO BE PAINTED SHALL BE PAINTED TO MATCH THE SURROUNDING SURFACE. EXPOSED CONDUITS, BOXES, ETC. IN ROOMS WHICH ARE NOT PAINTED MAY BE LEFT UN-PAINTED. EXPOSED CONDUIT, BOXES, ETC. ON THE EXTERIOR OF BUILDINGS SHALL BE PAINTED TO MATCH THE SURROUNDING SURFACE AS CLOSELY AS POSSIBLE.
7. BRANCH CIRCUIT AND SPECIAL SYSTEMS WIRING FOR DEVICES ON WALLS IN FINISHED AREAS WHICH CANNOT BE CONCEALED SHALL BE INSTALLED IN SURFACE MOUNTED RACEWAY.
8. THE CONTRACTOR IS RESPONSIBLE FOR PATCHING, PAINTING, REPAIRING OR REPLACEMENT OF ALL WALLS, CEILING OR OTHER BUILDING ELEMENTS WHICH ARE DISTURBED AS PART OF THE DEMOLITION AND/OR INSTALLATION OF ELECTRICAL WORK.

EQUIPMENT AND DEVICES:
1. REFER TO THE MECHANICAL SCHEDULE FOR ADDITIONAL REQUIREMENTS ASSOCIATED WITH PLUMBING AND HVAC EQUIPMENT AND OWNER/GENERAL CONTRACTOR FURNISHED EQUIPMENT.
2. THE ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR ALL COORDINATION BETWEEN THE APPROPRIATE DISCIPLINES AND CONTRACTORS.
3. COORDINATE ALL DEVICE, FIXTURE AND HARDWARE COLOR SELECTIONS WITH THE ARCHITECT PRIOR TO MAKING SHOP DRAWING SUBMITTALS.
4. COORDINATE THE MOUNTING HEIGHTS OF ALL RECEPTACLES MOUNTED ABOVE COUNTERS, CASEWORK AND APPLIANCE RECEPTACLES WITH ARCHITECTURAL ELEVATIONS.
5. COORDINATE ALL DEVICE, FIXTURE AND HARDWARE COLOR SELECTIONS WITH THE ARCHITECT/OWNER PRIOR TO MAKING SHOP DRAWING SUBMITTALS.
6. PROVIDE ELECTRICAL CONNECTION TO ALL FIRE, SMOKE, AND FIRE / SMOKE DAMPERS INCLUDING POWER AND FIRE ALARM. VERIFY EXACT SIZE AND FINAL LOCATION OF ALL DAMPERS WITH THE MECHANICAL CONTRACTOR. ALL ROOFTOP UNITS RATED AT MORE THAN 2000 CFM WILL BE OUTFITTED WITH A DUCT DETECTOR IN THE RETURN DUCT. ALL ROOFTOP UNITS RATED AT MORE THAN 15000 CFM WILL BE OUTFITTED WITH A DUCT DETECTOR IN BOTH THE SUPPLY AND RETURN DUCT AT ROOFTOP LEVEL AND IN THE RETURN DUCT AT EVERY LEVEL THAT IS SERVED. ELECTRICAL CONTRACTOR WILL PROVIDE A REMOTE TEST STATION AND ALL WIRING NECESSARY TO COMPLETE INSTALLATION.

COMMUNICATION LEGEND

- PLAIN DATA OUTLET
- 80" PLAIN DATA OUTLET WITH MOUNTING HEIGHT
- COMBINATION DATA/TELEPHONE
- FLOOR MOUNTED COMBINATION DATA/TELEPHONE
- CEILING MOUNTED COMBINATION DATA/TELEPHONE
- TELEVISION OUTLET
- CLOCK ONLY
- CLOCK / PA SPEAKER WALL MOUNTED
- S ROUND CEILING MOUNTED SPEAKER
- S SQUARE SPEAKER
- C INTERCOM PUSH TO CALL SWITCH
- WAP WIRELESS ACCESS POINT ABOVE THE CEILING
- PROJECTOR PROJECTOR CONNECTION ABOVE THE CEILING
- HDMI WALL MOUNTED HDMI

FIRE ALARM EQUIPMENT LEGEND

- FACP FIRE ALARM CONTROL PANEL
- FAAP FIRE ALARM ANNUNCIATION PANEL
- F FIRE ALARM PULL STATION
- FIRE ALARM HORN
- FIRE ALARM STROBE
- FIRE ALARM HORN STROBE
- D DUCT DETECTOR
- P SMOKE DETECTOR - PHOTOELECTRIC
- I SMOKE DETECTOR - IONIZATION
- CO COMBINATION SMOKE / CARBON MONOXIDE DETECTOR
- H 135° HEAT DETECTOR - 135° ALARM
- R REMOTE LAMP
- FS FLOW SWITCH
- TS TAMPER SWITCH
- DH DOOR HOLD - MAGNETIC HOLD

SECURITY SYSTEM LEGEND

- SECURITY CAMERA
- HC ADA DOOR OPERATOR PUSH BUTTON
- DS ELECTRIC DOOR STRIKE
- CR CARD READER FOR DOOR OPERATOR
- KP KEY PAD FOR DOOR OPERATOR
- MC SPEAKER PHONE FOR ACCESS CONTROL

LUMINAIRES:
1. COORDINATE THE LOCATION OF ALL LIGHTING EQUIPMENT INCLUDING BUT NOT LIMITED TO THE LUMINAIRES, SWITCHES AND CONTROL COMPONENTS WITH THE ARCHITECTURAL, STRUCTURAL AND MECHANICAL DRAWINGS AND ALL OTHER TRADES AS REQUIRED. REFER TO THE ARCHITECTURAL REFLECTED CEILING PLANS FOR DIMENSIONAL LOCATION OF LIGHT FIXTURES.
2. LIGHTING FIXTURES SHALL BE SUPPORTED FROM THE STRUCTURE ABOVE AND SHALL NOT BE SUPPORTED FROM THE T-BAR CEILING GRID.
3. THE ELECTRICAL CONTRACTOR IS TO CONFIRM THE LIGHT FIXTURES ORDERED WILL BE COMPATIBLE WITH THE CEILING TYPES AS SHOWN ON THE ARCHITECTURAL REFLECTED CEILING PLANS. NOTIFY THE ENGINEER OF ANY DISCREPANCIES PRIOR TO ORDERING THE FIXTURES.
4. VERIFY LUMINAIRE MOUNTING REQUIREMENTS AND OVERALL HEIGHT OF ALL PENDANT MOUNTED FIXTURES PRIOR TO ORDERING.
5. ALL LIGHT FIXTURES SHALL BE PROVIDED WITH COMPATIBLE SWITCHES AND CONTROLS MEETING REQUIREMENTS AS IDENTIFIED IN THE LIGHTING CONTROL NARRATIVE.
6. THE LIGHTING PACKAGE SHALL BE APPROVED BY BOTH THE ARCHITECT AND ENGINEER AS APPROVED EQUAL BEFORE BID. NO LIGHT FIXTURE SHALL BE ORDERED UNTIL THE LIGHT FIXTURE SUBMITTAL PACKAGE HAS BEEN APPROVED IN WRITING BY THE ARCHITECT, GENERAL CONTRACTOR AND ELECTRICAL ENGINEER.

EMERGENCY AND EXIT LIGHTS:
1. PROVIDE EMERGENCY AND EXIT SIGNS AS PER ALL LOCAL CODES.
2. EXIT SIGNS CONNECTED TO A REMOTE EMERGENCY HEAD REQUIRE EXTRA BATTERY CAPACITY TO OPERATE THE REMOTELY LOCATED EMERGENCY HEAD FOR EGRESS AWAY FROM THE BUILDING.
3. REFER TO THE PLANS FOR THE NUMBER OF FACES REQUIRED AT EACH EXIT. FIELD ADJUST THE LOCATION OF THE EXIT SIGNS AND NUMBER OF FACES FOR THE BEST VISIBILITY POSSIBLE.
4. ALL LIGHTING FIXTURES DENOTED WITH "EM" SHALL BE PROVIDED WITH AN ENGINEER APPROVED EMERGENCY LED DRIVER OR INVERTER TO OPERATE THE FIXTURE IN AN EMERGENCY MODE TO MEET ALL CURRENT LOCAL CODES AND WILL BE CIRCUITED TO THE UNSWITCHED SIDE OF THE LIGHTING CIRCUIT.
5. ALL STAIRWELLS AND PATHS OF EGRESS TO THE EXTERIOR DOORS AND THE EXTERIOR PATH OF EGRESS AWAY FROM THE BUILDING SHALL RECEIVE EMERGENCY LIGHTING PER CODE.
6. ALL LIGHT FIXTURES DESIGNATED WITH "EM" OR SPECIFIED WITH AN EMERGENCY FUNCTION SHALL BE PROVIDED WITH ONE OF THE FOLLOWING.
a. INTEGRAL TEST SWITCH
b. REMOTE INFRARED HANDHELD DEVICE
c. INTEGRAL ELECTRONIC DEVICE THAT AUTOMATICALLY PERFORMS CODE REQUIRED TESTS.

RESPONSIBLE DIVISION:

UNLESS OTHERWISE INDICATED ALL HEATING, VENTILATING, AIR CONDITIONING, PLUMBING, AND OTHER MECHANICAL EQUIPMENT, MOTORS, AND CONTROLS SHALL BE FURNISHED, SET IN PLACE AND WIRED AS FOLLOWS:

ITEM	FURNISHED	SET	POWER WIRED	CONTROL WIRED
EQUIPMENT	23	23	26	--
COMBINATION MAGNETIC MOTOR STARTERS, MAGNETIC MOTOR STARTERS, VFD'S AND CONTACTORS	23(1)	26	26(2)	23
FUSED AND UNFUSED DISCONNECT SWITCHES, THERMAL OVERLOAD SWITCHES AND HEATERS, MANUAL MOTOR STARTERS	26	26	26	--
MANUAL-OPERATING AND MULTI-SPEED SWITCHES	23	26	26	26
CONTROLS, RELAYS, TRANSFORMERS	23	23	26	23
THERMOSTATS (LOW VOLTAGE) AND TIME SWITCHES	23	23	26	23
THERMOSTATS (LINE VOLTAGE)	23	23	26	26
TEMPERATURE CONTROL PANELS	23	23	26	23
MOTOR AND SOLENOID VALVES, DAMPER MOTORS, PE & EP SWITCHES	23	23(2)	--	23(2)
PUSH-BUTTON STATIONS AND PILOT LIGHTS	23	23(2)	--	23(2)
HEATING, COOLING, VENTILATION AND AIR CONDITIONING CONTROLS	23	23	26	23
EXHAUST FAN SWITCHES	23	26	26	23(2)

SUBSCRIPT FOOTNOTES:
1. MOTOR STARTER TO INCLUDE CONTROL TRANSFORMER, HOA SWITCH, (1) NO AND (1)NC AUXILIARY CONTACT, AND "ON" AND "OFF" PILOT LIGHTS.
2. IF ITEM IS FOR LINE VOLTAGE, SET IN PLACE AND CONNECT UNDER DIVISION 26. WHERE FACTORY MOUNTED ON EQUIPMENT OR ATTACHED TO PIPING OR DUCTS AND USING LINE VOLTAGE FURNISH AND SET UNDER DIVISION 23, CONNECT UNDER DIVISION 26.

ABBREVIATIONS:

44"	MOUNTING HEIGHT ABOVE FINISHED FLOOR TO CENTER OF DEVICE
A	AMPS
A.D.	ACCESS DOOR
AAV	ADMITTANCE VALVE
ABV	ABOVE
AC	AIR CONDITIONING UNIT
AC	ABOVE COUNTER
AD	AREA DRAIN (SEE SYMBOLS)
AFC	ABOVE FINISHED CEILING
AFG	ABOVE FINISHED GRADE
AIC	AMPERE INTERRUPTING CAPACITY
AFCI	ARC FAULT CIRCUIT INTERRUPTERS
AFF	ABOVE FINISHED FLOOR
AHU	AIR HANDLING UNIT
ALUM	ALUMINUM
AP	ACCESS PANEL OR DOOR
ATS	AUTOMATIC TRANSFER SWITCH
AV	AUDIO / VIDEO
AVG	AVERAGE
AWG	AMERICAN WIRE GAGE
BAS	BUILDING AUTOMATION SYSTEM
BB	BASEBOARD
BD	BACK DRAFT DAMPER
BFP	BACK FLOW PREVENTOR
BL	BOILER
BLDG	BUILDING
BLW	BELOW
BOB	BOTTOM OF BEAM
BOD	BOTTOM OF DUCT
BOP	BOTTOM OF PIPE
BSMT	BASEMENT
BTU	BRITISH THERMAL UNIT
C	CHILLER
CAFCI	COMBINATION ARC FAULT CIRCUIT INTERRUPTERS
CAP	CAPACITY
CB	CIRCUIT BREAKER
CBV	CIRCUIT BALANCING VALVE
CCT	CORRELATED COLOR TEMPERATURE
CKT	CIRCUIT
CFH	CUBIC FEET PER HOUR
CFM	CUBIC FEET PER MINUTE
CHWR	CHILLED WATER RETURN
CHWS	CHILLED WATER SUPPLY
CI	CAST IRON
CL	CENTER LINE
CLG	CEILING
CMU	CONCRETE MASONRY UNIT
CO	CLEAN OUT
COL	COLUMN
COMP	COMPRESSOR
CONC	CONCRETE
COND	CONDENSATE
CONN	CONNECTION
CONT	CONTINUATION
CONTR	CONTRACTOR
CRI	COLOR RENDERING INDEX
CT	COOLING TOWER
CT	CURRENT TRANSFORMER
CU	CONDENSING UNIT
CU	COPPER
CUH	CABINET UNIT HEATER
CVB	CONSTANT VOLUME BOX
CWR	CONDENSER WATER RETURN
CWS	CONDENSER WATER SUPPLY
DB	DRY BULB
DEPT	DEPARTMENT
DF	DRINKING FOUNTAIN
DIA	DIAMETER
DIAG	DIAGRAM
DIFF	DIFFERENTIAL
DISCH	DISCHARGE
DIV	DIVISION
DN	DOWN
DS	DUCT SILENCER
DWG	DRAWING
DX	DIRECT EXPANSION
(E)	EXISTING
EA	EXHAUST AIR GRILLE/REGISTER
EAT	ENTERING AIR TEMPERATURE
EC	ELECTRICAL CONTRACTOR
ECC	ECCENTRIC
EF	EXHAUST FAN
EFF	EFFICIENCY
EL	ELEVATION
ELEC	ELECTRIC
ELEV	ELEVATOR
EM	EMERGENCY FUNCTION
ENT	ENTERING
EMT	ELECTRIC METALLIC TUBE
EQ	EQUAL
EQUIP	EQUIPMENT
EQUIV	EQUIVALENT
ES	END SWITCH
ESP	EXTERNAL STATIC PRESSURE
ET	EXPANSION TANK
EWC	ELECTRIC WATER COOLER
EWT	ENTERING WATER TEMPERATURE
EX	EXHAUST
EXPAN	EXPANSION
EXT	EXTERNAL
F	DEGREES FAHRENHEIT
FA	FREE AREA
FC	FAN COIL UNIT
FC	FOOTCANDLE
FCV	FLOW CONTROL VALVE
FD	FIRE DAMPER
FD	FLOOR DRAIN
FIN	FINISHED
FLA	FULL LOAD AMPS
FLEX	FLEXIBLE
FLR	FLOOR
FOB	FLAT ON BOTTOM
FOT	FLAT ON TOP
FP	FIRE PROTECTION
FP	FIRE PUMP
FPM	FEET PER MINUTE
FPS	FEET PER SECOND
FS	FLOW SWITCH
FSD	FIRE/SMOKE DAMPER
FT	FEET
FXC	FLEXIBLE CONNECTION
GND	GROUND
GA	GAUGE
GAL	GALLON
GALV	GALVANIZED
GEC	GROUND ELECTRODE CONDUCTOR
GF	GROUND FAULT CIRCUIT INTERRUPTER
GC	GENERAL CONTRACTOR
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
GRS/LB	GRS/LB GRAINS PER POUND
H2O	WATER
HB	HOSE BIBB
HD	HEAD (SEE SCHEDULES)
HP	HEAT PUMP
HP	HORSEPOWER
HR	HOUR
HT	HEIGHT
HTR	HEATER
HWR	HEATING WATER RETURN
HWS	HEATING WATER SUPPLY
HX	HEAT EXCHANGER
HZ	HERTZ
ID	INSIDE DIAMETER
IG	ISOLATED GROUND
IN	INCHES
INV	INVERT
JBOX	JUNCTION BOX
K	KELVIN
KW	KILOWATT
KVA	KILO VOLT - AMPS
L	LENGTH
LAT	LEAVING AIR TEMPERATURE
LV	LAVATORY
LB	POUND
LD	LINEAR DIFFUSER
LF	LINEAR FEET
LIN	LINEAR
LIQ	LIQUID
LM	LUMEN
LRA	LOCKED ROTOR AMPS
LV	LOUVER
LVG	LEAVING
LWT	LEAVING WATER TEMPERATURE
MBH	THOUSANDS OF BTU PER HOUR
MC	MECHANICAL CONTRACTOR
MCA	MINIMUM CIRCUIT AMPACITY
MCB	MAIN CIRCUIT BREAKER
MD	MOTORIZED DAMPER
MDP	MAIN DISTRIBUTION PANEL
MED	MEDIUM
MFR	MANUFACTURER
MIN	MINIMUM
MISC	MISCELLANEOUS
MLO	MAIN LUG ONLY
MOCP	MAXIMUM OVERCURRENT PROTECTION
MTD	MOUNTED
MUA	MAKE-UP AIR UNIT
N	NEUTRAL
NC	NORMALLY CLOSED
NEG	NEGATIVE
NIC	NOT IN CONTRACT
NL	NIGHT / SECURITY LIGHT - DO NOT SWITCH
NO	NORMALLY OPEN
NOM	NOMINAL
NTS	NOT TO SCALE
OA	OUTSIDE AIR
OBD	OPPOSED BLADE DAMPER
OC	ON CENTER
OCC	OCCUPIED
OCP	OVER CURRENT PROTECTION
OD	OUTSIDE DIAMETER
OL	OVERLOAD
ORD	OVERFLOW ROOF DRAIN
OZ	OUNCE
PBD	PARALLEL BLADE DAMPER
PD	PRESSURE DROP
PH	PHASE
POS	POSITIVE PRESSURE
POS	POINT OF SALES
PRV	PRESSURE REDUCING VALVE
PS	PRESSURE SWITCH
PSI	POUNDS PER SQUARE INCH
PT	PRESSURE TRANSMITTER
PTAC	PACKAGED TERMINAL AIR CONDITIONER
PV	PLUG VALVE
PVC	POLYVINYL CHLORIDE
QTY	QUANTITY
RA	RETURN AIR GRILLE / REGISTER
RCP	REFLECTED CEILING PLAN
RD	ROOF DRAIN
REL	RELIEF
REQD	REQUIRED
RF	RETURN FAN
RH	RELATIVE HUMIDITY
RHC	REHEAT COIL
RLA	RATED LOAD AMPS
RM	ROOM
RPM	REVOLUTIONS PER MINUTE
SA	SUPPLY AIR GRILLE / REGISTER
SC	SHORT CIRCUIT
SCA	SHORT CIRCUIT AVAILABLE
SCCR	SHORT CIRCUIT CURRENT RATING
SCH	SCHEDULE
SD	SMOKE DAMPER
SEF	SMOKE EXHAUST FAN
SF	SUPPLY FAN
SH	SENSIBLE HEAT
SH	SHOWER
SP	STATIC PRESSURE
SPD	SURGE PROTECTION DEVICE
SPEC	SPECIFICATION
SQ	SQUARE
SS	STAINLESS STEEL
SS	SAFETY SHOWER
STD	STANDARD
STL	STEEL
SYS	SYSTEM
TEMP	TEMPERATURE
TR	TRANSFER GRILLE / REGISTER
TR	TAMPER RESISTANT
TT	TEMPERATURE TRANSMITTER
TTB	TELECOMMUNICATIONS TERMINAL BACKBOARD
TYP	TYPICAL
TX	TRANSFORMER
UC	UNDERCUT DOOR
UH	UNIT HEATER
UNO	UNLESS NOTED OTHERWISE
UNOCC	UNOCCUPIED
UR	URINAL
V	VOLTS
VA	VOLT AMPERE
VA	VALVE
VAV	VARIABLE AIR VOLUME UNIT
VFD	VARIABLE FREQUENCY DRIVE
VRF	VARIABLE REFRIGERANT FLOW
VOLT	VOLTAGE
VTR	VENT THROUGH ROOF
W	WIDTH
W	WATTS
W/	WITH
W/O	WITHOUT
WB	WET BULB
WC	WATER COLUMN
WC	WATER CLOSET
WG	WATER GAUGE
WP	WEATHERPROOF
WPIU	WEATHERPROOF IN-USE
WSR	WITHSTAND RATING
XFMR	TRANSFORMER

SUBSTITUTIONS:

A. SUBSTITUTIONS: SUBSTITUTION OF SPECIFIED EQUIPMENT WILL BE ALLOWED THROUGH A PRIOR APPROVAL PROCESS INITIATED BY THE CONTRACTOR. CONTRACTOR SHALL SUBMIT INTENDED SUBSTITUTION AT LEAST FIVE DAYS PRIOR TO BID FOR APPROVAL FROM ENGINEER. SUBMITTAL SHALL INCLUDE CAPACITIES, DIMENSIONS AND OPERATING INSTRUCTIONS FOR EACH PIECE OF EQUIPMENT. SUBSTITUTION SHALL OCCUR AT NO COST TO THE OWNER. CONTRACTOR IS RESPONSIBLE FOR COORDINATION OF APPROVED SUBSTITUTION AND SHALL INCUR ALL COSTS ASSOCIATED WITH THE SUBSTITUTION INCLUDING STRUCTURAL MODIFICATIONS, SPACE LAYOUT AND REDESIGN COSTS. SEE ALSO DIVISION I GENERAL REQUIREMENTS.

EXAMINATION OF SITE, DRAWINGS, SPECIFICATIONS:

A. EXAMINE CAREFULLY THE SITE AND CONDITIONS OF THE SITE. PROVIDE ALL NECESSARY EQUIPMENT AND LABOR TO INSTALL A COMPLETE WORKING SYSTEM WITHIN THE SITE CONDITIONS.

B. EXAMINE THE DRAWINGS AND SPECIFICATIONS AND 5 DAYS PRIOR TO BIDDING REPORT ANY ERRORS, OMISSIONS, INCONSISTENCIES, AND CONFLICTS TO THE ENGINEER TO BE REMEDIED IN AN ADDENDUM TO THE PROJECT PRIOR TO BID TIME.

C. DRAWINGS ARE DIAGRAMMATIC AND CATALOG NUMBERS GIVEN ARE FOR REFERENCE ONLY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE CAPACITY OF THE EQUIPMENT MEETS THE DRAWING REQUIREMENTS AND SHALL NOT DIMENSION FROM THE MECHANICAL, PLUMBING, OR PIPING DRAWINGS.

D. THE LATEST ADOPTED VERSIONS OF THE INTERNATIONAL BUILDING CODES SHALL BE USED AS REQUIRED. THIS WILL ALSO INCLUDE THE LATEST ADOPTED VERSIONS OF THE MECHANICAL, PLUMBING, AND ENERGY CONSERVATION CODES. ALL METHODS AND MATERIALS REQUIRED BY THESE CODES SHALL BE REQUIRED BY THESE SPECIFICATIONS UNLESS INDICATED OTHERWISE. OTHER APPLICABLE LOCAL CODES AND ORDINANCES SHALL BE AS REQUIRED AND IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO BE KNOWLEDGEABLE OF THESE REQUIREMENTS.

E. WHERE INSTALLATION PROCEDURES OR ANY PART THEREOF ARE REQUIRED TO BE IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE MANUFACTURER OF THE MATERIAL BEING INSTALLED, PRINTED COPIES OF THESE RECOMMENDATIONS SHALL BE FURNISHED TO THE ENGINEER PRIOR TO INSTALLATION. INSTALLATION OF THE ITEM WILL NOT BE ALLOWED TO PROCEED UNTIL THE RECOMMENDATIONS ARE RECEIVED. FAILURE TO FURNISH THESE RECOMMENDATIONS CAN BE CAUSE FOR REJECTION OF THE MATERIAL.

KRAAI DESIGN ARCHITECTURE
2394 PATTERSON ROAD, SUITE 201
GRAND JUNCTION, CO 81505
126 ELK AVENUE, UNIT 1
CRESTED BUTTE, CO 81224
T: 970.712.5045

COLORADO LICENSED WARREN A. SNYDER 60539 PROFESSIONAL ENGINEER

HEAD START

GILCREST HEAD START
11TH STREET
GILCREST, CO

REVISION(S):

#	DATE	COMMENTS
1	09/13/2024	

CONSTRUCTION DOCUMENTS

PROJECT NO: 2437

SHEET NAME: COVER SHEET

DATE: 12/17/2024

SHEET NO: E0-1

SCALE: 12" = 1'-0"

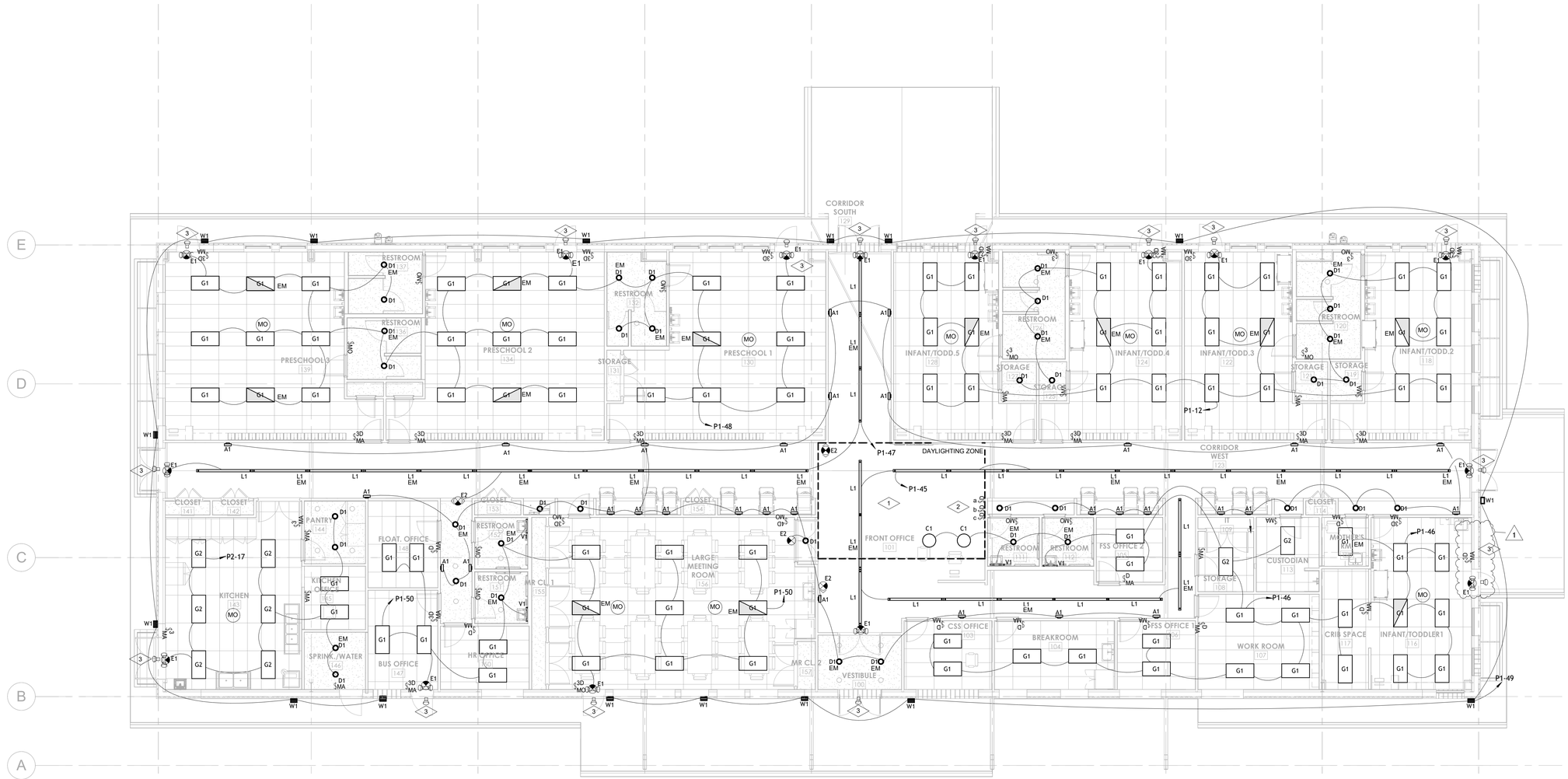
LIGHTING FIXTURE SCHEDULE

TYPE MARK	MANUFACTURER	MODEL #	LAMP TYPE	DESCRIPTION	NOTES
A1	LUMENWERX	POROS 12IN ULO 3H LED 80 750 40 120 D1 1 SUR W	7.5W, 750 LM, 0-10V DIMMING, 4000K CCT, LED	12" ROUND WALL MOUNTED LED, WHITE COVER	
C1	LUMENWERX	POROPDI 24IN ULO 3H LED 80 3500 900 SOLA 120 0-10 1 SWAC36 W	38.5 W ,4600LM, 0-10V, 2700-6500K CCT, LED	24" ROUND PENDANT MOUNTED LED, WHITE COVER	DIM TO WARM FIXTURE
D1	COOPER LIGHTING	HC620D010(REM7) – HM60525840-61WDH	21W, 2000 LM, 0-10V DIMMING, 4000K CCT, LED	6 "RECESSED LED DOWNLIGHT	PROVIDE EM BATTERY PACK OPTION (REM7) FOR FIXTURES MARKED WITH EM.
E1	COOPER LIGHTING	APCH7RG	2.81 W, BATTERY BACKUP LED	SURFACE WALL COMBINATION EGRESS/EXIT SIGNS, 90MINUTES OF EMERGENCY POWER	PROVIDE FIXTURE WITH APWR EXTERIOR EGRESS FIXTURE OR APPROVED EQUIVALENT
E2	COOPER LIGHTING	APXH7	2.01 W, BATTERY BACKUP, GREEN LED	SURFACE WALLEXIT SIGNS, 90 MINUTES OF EMERGENCY POWER	
G1	METALUX	24CZ-LD5-60SE-UNV-L840-CD1-U	47W, 5835 LM, 0-10V, 4000K CCT, LED	2'X4' LED TROFFER, UL LISTED, IC RATED, SUITABLE FOR DAMP LOCATIONS, SELECTABLE CCT AND LUMENS, MATTE WHITE FINISH	FIXTURES IDENTIFIED WITH EM ARE TO BE PROVIDED WITH EL14W BATTERY PACK.
G2	METALUX	24FP6440C	63W, 6506 LM, 0-10V, 4000K CCT, LED	2'x4' LED FLAT PANEL, IC RATED, DAMP LISTED, FIVE YEAR WARRANTY	
L1	DAY-O-LITE	ADL-RO6-D WRA 40 2DIM10 HO 8 AC W	72W, 8208 LM, 80 CRI, 4000K CCT, LED	8' ROUND LINEAR PENDANT LIGHT, WHITE LENS, AIRCRAFT CABLE PENDANT MOUNTED	FIXTURES IDENTIFIED WITH EM ARE TO BE PROVIDED WITH EPC12 BATTERY BACKUP
V1	SPI LIGHTING	SIW12169-2FT-L14W-120-277V-4000K-DF_80-DF_DIM1-JBC01	14W, 1504 LM, 4000K CCT, 80 CRI, LED	PAVO 2" DIAMETER x 2' LONG 14W VANITY FIXTURE	LOCATE POWER SUPPLY ABOVE GRID OVER DOORWAY TO SPACE WHERE FIXTURE IS INSTALLED.
W1	LITHONIA LIGHTING	WDGE1 LED PO 27K 80CRI VF	7W, 90CRI, 690LM, 2700K CCT, LED	11.5"W X 7"D X 9"H LED WALL MOUNTED SCONCE,WHITE FINISH, PHOTOCELL	

GENERAL LIGHTING NOTES:
1. LIGHTING IS DESIGNED AND IS TO BE INSTALLED WITHIN THE REQUIREMENTS IDENTIFIED IN THE 2018 IECC AND OTHER ADOPTED REQUIREMENTS.
2. CONTROLS ARE TO BE PROVIDED AS INDICATED ON PLAN BY SWITCH SYMBOLS FOR INDIVIDUAL SPACES, AND TIMECLOCK CONTROLS FOR CORRIDOR LIGHTING WITH DIMMING AS IDENTIFIED WITHIN FLAG NOTE 2.
3. WALL PACKS ARE INDICATIVE OF BUILDING MOUNTED EXTERIOR FIXTURES AS LOCATED ON SITE LIGHTING PLAN; SEE EXTERIOR SITE PLAN BY OTHERS FOR ADDITIONAL PROJECT SCOPE TO INCLUDE EXTERIOR POLE MOUNTED FIXTURES FOR PARKING AREA, AND TO VERIFY COUNTS AND LOCATIONS OF WALL MOUNTED FIXTURES. CONTRACTOR TO COORDINATE CONTROLS PACKAGE TO ACCOMMODATE BOTH SETS OF FIXTURES.
4. OCCUPANCY SENSORS ARE SHOWN ON PLAN TO DENOTE ANTICIPATED COVERAGE PATTERNS OF SENSORS IN SPACE. SEE SPECIFIC MANUFACTURER SENSOR COVERAGE PATTERNS TO DETERMINE QUANTITIES AND PLACEMENT LOCATIONS TO PROVIDE FULL COVERAGE OF THE SPACE.
5. SOME FIELD ADJUSTMENT MAY BE NECESSARY TO ACCOMMODATE FINISHES AND STRUCTURE. COORDINATE ON SITE WITH OTHER TRADES AND AS NECESSARY TO ACCOMMODATE BEST COVERAGE AND VISIBILITY IN THE SPACES INSTALLED.
6. CONTROL SYSTEMS FOR CLASSROOMS, OFFICES, BREAKROOMS, AND CONFERENCE ROOMS ARE TO BE PROVIDED WITH CAPABILITY TO PROVIDE FOR RECEPTACLE CONTROLS IN EACH SPACE; SEE NOTES ON E2-1 FOR ADDITIONAL INFORMATION.
7. EXIT AND EGRESS FIXTURES ARE TO BE CIRCUITED TO THE UNSWITCHED SIDE OF THE RESPECTIVE LIGHTING CIRCUIT SUPPLYING FIXTURES IN THE SPACE IT IS INSTALLED.

E1-1 LIGHTING KEYNOTES

NOTE NUMBER	KEYNOTE
1	ALL LIGHTING FIXTURES WITHIN DAYLIGHT ZONE SHALL BE PROVIDED WITH DAYLIGHTING CONTROLS IN ACCORDANCE WITH IECC C405.2.4
2	SWITCH MARKED WITH THE LETTER "a" CONTROL ALL A1 FIXTURES. SWITCH MARKED WITH THE LETTER "b" CONTROL ALL L1 FIXTURES. SWITCH MARKED WITH THE LETTER "c" CONTROL C1 AND VESTIBULE D1 FIXTURES. CONTRACTOR TO VERIFY SWITCHING CONTROL METHOD WITH ARCHITECT AND OWNER PRIOR TO ORDERING EQUIPMENT.
3	INDOOR EMERGENCY FIXTURE POWERS OUTDOOR EMERGENCY FIXTURE.



1 LIGHTING - MAIN LEVEL - REFLECTED CEILING PLAN
E1-1 1/8" = 1'-0"

KRAAI DESIGN ARCHITECTURE
2394 PATTERSON ROAD, SUITE 201
GRAND JUNCTION, CO 81505
126 ELK AVENUE, UNIT 1
CRESTED BUTTE, CO 81224
T: 970.712.5045

COLORADO LICENSED WARREN A. SNYDER 60539 PROFESSIONAL ENGINEER

GILCREST HEAD START

11TH STREET
GILCREST, CO

REVISION(S):

#	DATE	COMMENTS
1	10/28/2025	ELEC UPDATE

CONSTRUCTION DOCUMENTS

PROJECT NO: 2437

SHEET NAME: LIGHTING - MAIN LEVEL - REFCLECTED CEILING PLAN

DATE: 12/17/2024

SHEET NO: E1-1

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

COM*check* Software Version COMcheckWeb

Interior Lighting Compliance Certificate

Project Information

Energy Code: 2021 IECC
Project Title: 24186-HEADSTART-GILCREST
Project Type: New Construction

Construction Site:
11TH STREET
GILCREST, Colorado

Owner/Agent:

Designer/Contractor:

Additional Efficiency Package(s)

Credits: 10.0 Required 0.0 Proposed

Allowed Interior Lighting Power

A Area Category	B Floor Area (ft2)	C Allowed Watts / ft2	D Allowed Watts
1-HEAD START PROGRAM (School/University)	12400	0.72	8928
		Total Allowed Watts =	8928

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)
1-HEAD START PROGRAM (School/University)				
LED: A1: 12" ROUND WALL: LED A Lamp 8W:	1	30	8	240
LED: C1: 24" ROUND PENDANT: LED A Lamp 25W:	1	2	39	78
LED: D1: 6" RECESSED DOWNLIGHT: LED PAR 20W:	1	39	21	819
LED: G1: 2'x4' LED TROFFER: LED Panel 54W:	1	87	47	4089
LED: G2: 2'x4' LED FLAT PANEL: LED Panel 60W:	1	8	63	504
LED: L1: 8' ROUND PENDANT: LED Linear 33W:	1	34	72	2448
LED: V1: 2"DIAx24"L VANITY FIXTURE: LED Linear 15W:	1	14	4	56
		Total Proposed Watts =		8234

Interior Lighting PASSES: Design 8% better than code

Interior Lighting Compliance Statement

Compliance Statement: The proposed interior lighting design 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.

Name - Title Signature Date

LIGHTING FIXTURE SCHEDULE

TYPE MARK	MANUFACTURER	MODEL #	LAMP TYPE	DESCRIPTION	NOTES
A1	LUMENWERX	POROS 12IN ULO 3H LED 80 750 40 120 D1 1 SUR W	7.5W, 750 LM, 0-10V DIMMING, 4000K CCT, LED	12" ROUND WALL MOUNTED LED, WHITE COVER	
C1	LUMENWERX	POROPDI 24IN ULO 3H LED 80 3500 900 SOLA 120 0-10 1 SWAC36 W	38.5 W, 4600LM, 0-10V, 2700-6500K CCT, LED	24" ROUND PENDANT MOUNTED LED, WHITE COVER	DIM TO WARM FIXTURE
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E1	COOPER LIGHTING	APCH7RG	2.81 W, BATTERY BACKUP LED	SURFACE WALL COMBINATION EGRESS/EXIT SIGNS, 90MINUTES OF EMERGENCY POWER	PROVIDE FIXTURE WITH APWR EXTERIOR EGRESS FIXTURE OR APPROVED EQUIVALENT
E2	COOPER LIGHTING	APXH7	2.01 W, BATTERY BACKUP, GREEN LED	SURFACE WALLEXIT SIGNS, 90 MINUTES OF EMERGENCY POWER	
G1	METALUX	24CZ-LD5-60SE-UNV-L840-CD1-U	47W, 5835 LM, 0-10V, 4000K CCT, LED	2'X4' LED TROFFER, UL LISTED, IC RATED, SUITABLE FOR DAMP LOCATIONS, SELECTABLE CCT AND LUMENS, MATTE WHITE FINISH	FIXTURES IDENTIFIED WITH EM ARE TO BE PROVIDED WITH EL14W BATTERY PACK.
G2	METALUX	24FP6440C	63W, 6506 LM, 0-10V, 4000K CCT, LED	2'x4' LED FLAT PANEL, IC RATED, DAMP LISTED, FIVE YEAR WARRANTY	
L1	DAY-O-LITE	ADL-RO6-D WRA 40 2DIM10 HO 8 AC W	72W, 8208 LM, 80 CRI, 4000K CCT, LED	8' ROUND LINEAR PENDANT LIGHT, WHITE LENS, AIRCRAFT CABLE PENDANT MOUNTED	FIXTURES IDENTIFIED WITH EM ARE TO BE PROVIDED WITH EPC12 BATTERY BACKUP
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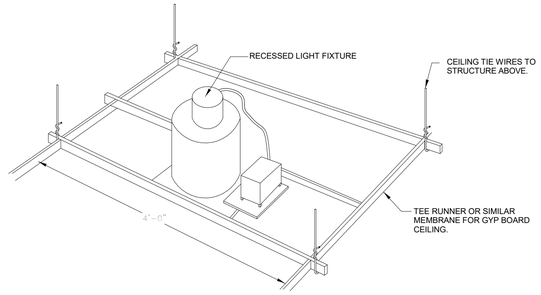
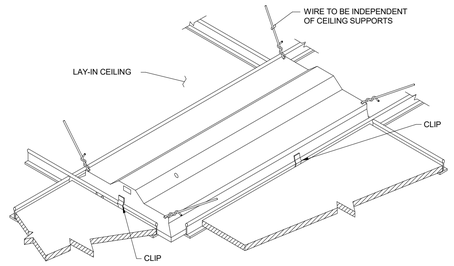
W1	LITHONIA LIGHTING	WDGE1 LED PO 27K 80CRI VF	7W, 90CRI, 690LM, 2700K CCT, LED	11.5"W X 7"D X 9"H LED WALL MOUNTED SCONCE,WHITE FINISH, PHOTOCELL	

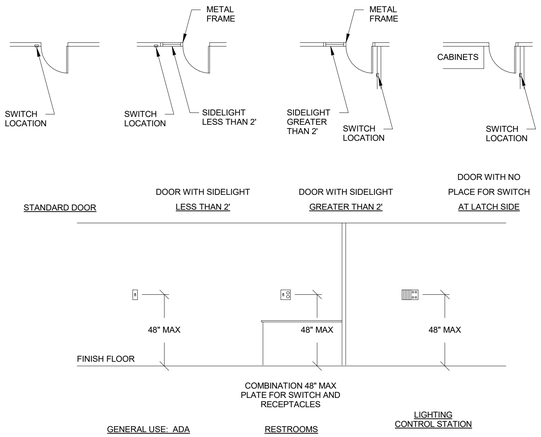




RECESSED LIGHT FIXTURE DETAIL

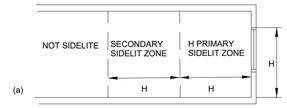
SCALE: NOT TO SCALE

NOTE:
1. ALL GRID MOUNTED FIXTURES ARE TO BE SUPPORTED FROM THE STRUCTURE ABOVE.
2. 200lb TEST WIRE HANGER AT EACH CORNER OF FIXTURE (TOTAL OF 4) OR 1 CADDY CLIP 515 PER SIDE (TOTAL OF 4)
3. TYPICAL ALL GRID MOUNTED FIXTURES.



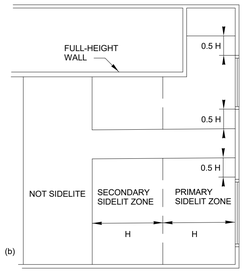
SWITCH MOUNTING DETAILS

SCALE: NOT TO SCALE



SECTION VIEW

(a) SECTION VIEW
(b) PLAN VIEW OF PRIMARY SIDELIT ZONE AND SECONDARY SIDELIT ZONE



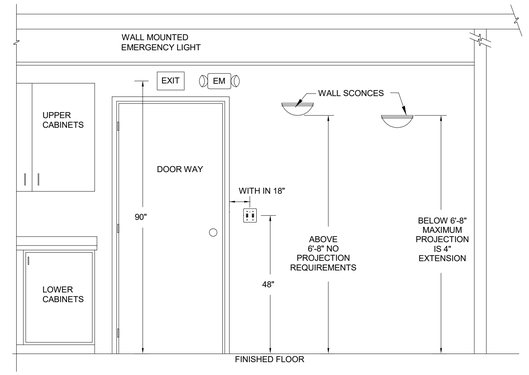
PLAN VIEW

SIDELIT DAYLIGHT ZONE:

CONDITIONS:
1. GENERAL LIGHTING MUST EXCEED 150W WITHIN PRIMARY DAYLIGHT ZONE OR 300W WITHIN SIDELIT DAYLIGHT ZONE.
2. UP TO 150W WITHIN SECONDARY DAYLIGHT ZONE CAN BE CONTROLLED WITH PRIMARY.
3. FENESTRATION MUST HAVE A VISIBLE TRANSMITTANCE OF NOT LESS THAN 0.20 AND BE GREATER THAN 24SF.
4. ADJACENT BUILDING AND GEOLOGICAL FORMATIONS SHOULD BE CONSIDERED.

DAYLIGHT HARVESTING ZONES

SCALE: NOT TO SCALE



LIGHTING DEVICE MOUNTING HEIGHT DETAIL

NOT TO SCALE

DETAIL NOTES:
1. ALL DEVICES SHOWN ON THIS DETAIL ARE FOR REFERENCES OF MOUNTING HEIGHTS ONLY. THE ELECTRICAL CONTRACTOR SHALL FIELD ADJUST THE HEIGHTS AND LOCATIONS OF THE DEVICES AS REQUIRED FOR PROPER MOUNTING.
2. ALL DEVICES REQUIRED FOR THIS PROJECT MAY NOT APPEAR ON THIS DETAIL. ALL ITEMS SHOWN ON THIS DETAIL MAY NOT BE REQUIRED FOR THIS PROJECT.
3. THE AMERICANS WITH DISABILITIES ACT, KNOWN AS ADA, AFFECTS LIGHT FIXTURES USED IN CIRCULATION OR EGRESS SPACES. IN PRACTICE THIS MEANS THAT WALL MOUNTED FIXTURES LOCATED BELOW 6'-8" AFF IN HALLS, CORRIDORS, PASSAGEWAYS OR AISLES, MUST BE NO GREATER THAN 4" DEEP. THE ADA AFFECTS CONSTRUCTION FOR BOTH NEW AND EXISTING BUILDINGS.

KRAAI DESIGN ARCHITECTURE
2394 PATTERSON ROAD, SUITE 201
GRAND JUNCTION, CO 81505
126 ELK AVENUE, UNIT 1
CRESTED BUTTE, CO 81224
T: 970.712.5045

COLORADO LICENSED WARREN A. SNITES 60539 PROFESSIONAL ENGINEER

GILCREST HEAD START

11TH STREET
GILCREST, CO

REVISION(S):

#	DATE	COMMENTS

CONSTRUCTION DOCUMENTS

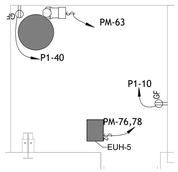
PROJECT NO: 2437

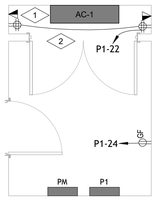
SHEET NAME: LIGHTING DETAILS

DATE: 12/17/2024

SHEET NO: E1-2

SCALE: 1" = 1'-0"





2 ELECTRICAL - MAIN LEVEL - FLOOR PLAN - SPRINKLER
1/4" = 1'-0"

3 ELECTRICAL - MAIN LEVEL - FLOOR PLAN - IT/ELEC
1/4" = 1'-0"

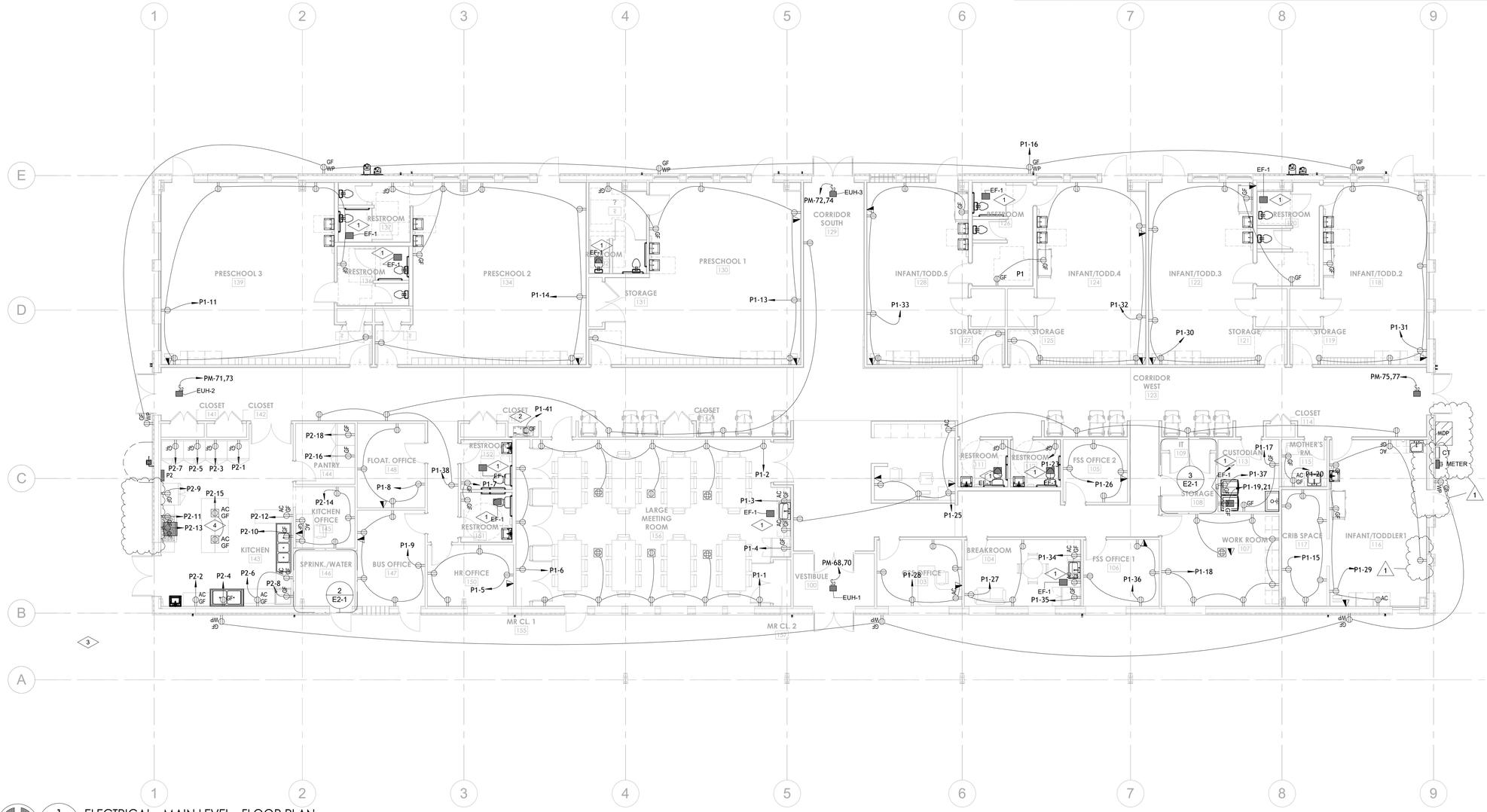
E2-1 CALLOUT ELECTRICAL KEYNOTES

NOTE NUMBER	KEYNOTE
1	OUTDOOR CONDENSING UNIT (CU-1) POWERS THE INDOOR UNIT (AC-1). REFER TO MECHANICAL DRAWINGS AND EQUIPMENT SCHEDULES FOR MORE INFORMATION. COORDINATE FINAL INSTALLATION REQUIREMENTS WITH MECHANICAL CONTRACTOR.
2	LOCATION OF DATA OUTLETS AND RECEPTACLES TO SERVE IT CLOSET TO BE COORDINATED WITH ARCHITECT AND OWNER.

GENERAL ELECTRICAL NOTES:
1. ALL GENERAL PURPOSE RECEPTACLES INSTALLED IN CLASSROOMS, OFFICES, AND CONFERENCE ROOMS ARE TO BE SPLIT CONTROLLED RECEPTACLES AND PROVIDED WITH ADDITIONAL CIRCUITING AND CONTROLS TO ACCOMMODATE AUTOMATIC RECEPTACLE CONTROL AS REQUIRED BY 2021 IECC C405.11. COORDINATE CONTROLS WITH ROOM LIGHTING CONTROL OCCUPANCY SENSOR FOR EACH SPACE.
2. ANY PENETRATIONS THROUGH FIRE RATED ASSEMBLIES ARE TO BE PROVIDED AND INSTALLED WITH LISTED MATERIALS TO MAINTAIN THE RATING OF ALL WALLS AND CEILINGS.
3. ELECTRICAL CONTRACTOR SHALL FOLLOW THE APPLICABLE INSTALLATION REQUIREMENTS OF 2023 NEC 406.12; AS AMENDED BY AHJ.

E2-1 FLOOR PLAN ELECTRICAL KEYNOTES

NOTE NUMBER	KEYNOTE
1	CIRCUIT EXHAUST FANS WITH THE LIGHTING CIRCUIT SERVING THE SPACE. COORDINATE SWITCHING WITH ARCHITECT.
2	COORDINATE HEIGHT OF OUTLET WITH INSTALLED HEIGHT OF FOUNTAIN COORDINATE WITH PLUMBER FOR INSTALLED HEIGHT.
3	CONTRACTOR TO COORDINATE WITH SITE DEVELOPMENT TO DETERMINE WHETHER ADDITIONAL CIRCUITRY WILL NEED TO BE EXTENDED TO NEW LIFT STATION TO ACCOMMODATE SITE DRAINAGE. VERIFY FINAL REQUIREMENTS IN FIELD.
4	CONTRACTOR TO FIELD COORDINATE INSTALLATION OF RECEPTACLES INSTALLED ON TABLE OR CASEWORK WITH PROVIDED SUFACE SUPPORTS TO SERVE KITCHEN ISLAND.



1 ELECTRICAL - MAIN LEVEL - FLOOR PLAN
E2-1 1/8" = 1'-0"

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GRAND JUNCTION, CO 81505
126 ELK AVENUE, UNIT 1
CRESTED BUTTE, CO 81224
T: 970.712.5045

COLORADO LICENSED
WARREN A. SNITES
60539
PROFESSIONAL ENGINEER

GILCREST HEAD START

11TH STREET
GILCREST, CO

REVISION(S):

#	DATE	COMMENTS
1	10/28/2025	ELEC UPDATE

CONSTRUCTION DOCUMENTS

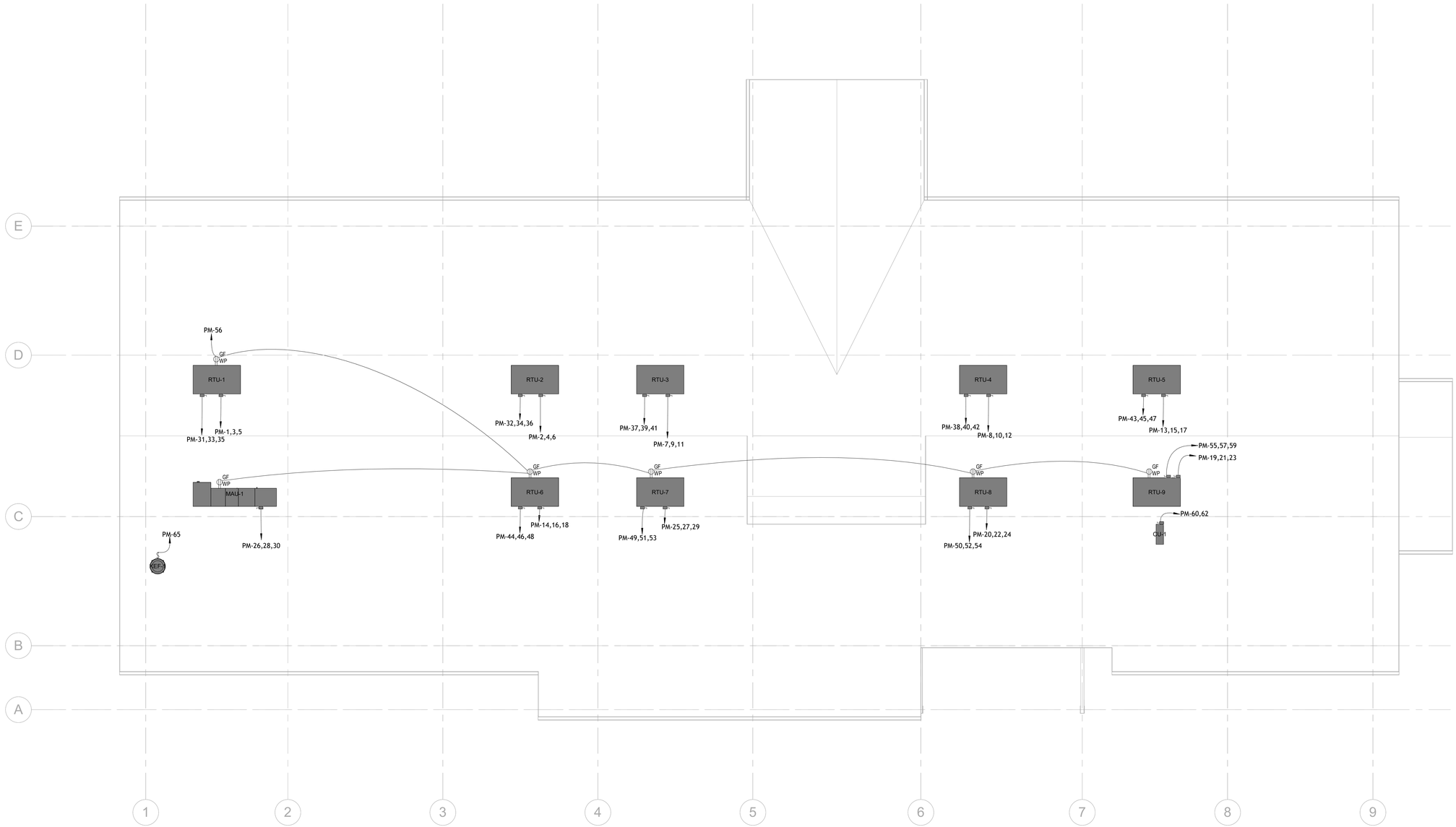
PROJECT NO: 2437

SHEET NAME: ELECTRICAL- MAIN LEVEL - FLOOR PLAN

DATE: 12/17/2024

SHEET NO: E2-1

SCALE: As indicated



1 E2-2 ELECTRICAL - ROOF PLAN

1/8" = 1'-0"

KRAAI DESIGN ARCHITECTURE

2394 PATTERSON ROAD, SUITE 201
GRAND JUNCTION, CO 81505

126 ELK AVENUE, UNIT 1
CRESTED BUTTE, CO 81224

T: 970.712.5045

COLORADO LICENSED
WARREN A. SNITES
60539
PROFESSIONAL ENGINEER

GILCREST HEAD START

11TH STREET
GILCREST, CO

REVISION(S):

#	DATE	COMMENTS

CONSTRUCTION DOCUMENTS

PROJECT NO: 2437

SHEET NAME: ELECTRICAL - ROOF - PLAN

DATE: 12/17/2024

SHEET NO: E2-2

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

Branch Panel: MDP

Location:
Supply From:
Mounting: Surface
Enclosure: NEMA 3R

Volts: 120/208 Wye
Phases: 3
Wires: 4

A.I.C. Rating:
Mains Type:
Mains Rating: 800 A
MCB Rating: 800 A

Notes:

CKT	Circuit Description	Trip	Poles	A	B	C	Poles	Trip	Circuit Description	CKT
1	P1	200 A	3	1902...						2
3	--	--	--		1378...					4
5	--	--	--			12000...				6
7	P2	200 A	3	5480...						8
9	--	--	--		5960...					10
11	--	--	--			4333...				12
13	PM	400 A	3	4655...						14
15	--	--	--		4422...					16
17	--	--	--			47053...				18
19										20
21										22
23										24
25										26
27										28
29										30
	Total Load:			71057 VA	63964 VA	63385 VA				
	Total Amps:			593 A	534 A	528 A				

Legend:

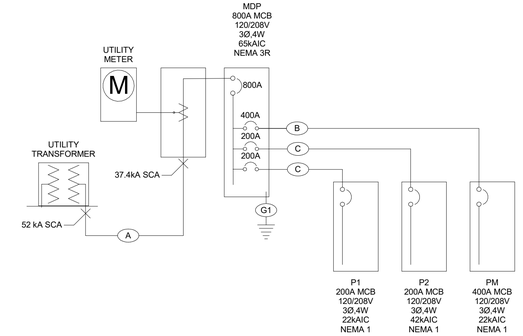
Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Heating	9059 VA	100.00%	9059 VA		
Lighting	7851 VA	100.00%	7851 VA	**Total Conn. Load:**	198406 VA
Motor	2400 VA	100.00%	2400 VA	**Total Est. Demand:**	186786 VA
Other	225 VA	100.00%	225 VA	**Total Conn.:**	551 A
Power	129492 VA	100.00%	129492 VA	**Total Est. Demand:**	518 A
Receptacle	33240 VA	65.04%	21620 VA		
Spare	2000 VA	100.00%	2000 VA		
Appliance	14160 VA	100.00%	14160 VA		

Notes:

ADDITIONAL PROJECT SCOPE NOTES:

FIRE ALARM SYSTEMS:
1. PROJECT IS TO BE PROVIDED WITH A FIRE ALARM CONTROL PANEL TO PROVIDE FOR MONITORING OF THE SPRINKLER SYSTEMS FLOW AND TAMPER SWITCHES AND PULL STATION LOCATED IN ADMIN SPACE. PROVIDE A SMOKE DETECTOR OVER THE FACP LOCATION AND COORDINATE WITH CLIENT FOR REMOTE ANNUNCIATION LOCATION IN LOBBY.
2. PROVIDE EXTERIOR RATED HORN STROBE OVER THE EXTERIOR SIAMESE CONNECTION.
3. EXTEND TWO DATA LINES TO THE FIRE ALARM CONTROL PANEL AND COORDINATE WITH LOCAL AHJ FOR REQUIRED MONITORING REQUIREMENTS.
4. AS PART OF 2021 IBC OCCUPANT NOTIFICATION IS TO INCLUDE EMERGENCY VOICE/ALARM COMMUNICATION SYSTEM; COORDINATE WITH SCHOOL FOR ANY DUAL USE SYSTEMS FOR PAGING AND FOR ANY LOCALLY ACCEPTED MODIFICATIONS TO ACCOMMODATE SECURITY PROTOCOLS.
5. COORDINATE WITH KITCHEN TYPE 1 HOOD CONTRACTOR FOR MONITORING DEVICE NECESSARY.
6. PROVIDE TYPE 2 SURGE SUPPRESSION DEVICE AND BATTERIES AS NECESSARY TO ACCOMMODATE ENTIRE SYSTEM AS REQUIRED BY NFPA 70 AND 72.
7. ALL SYSTEMS ARE TO BE INSTALLED TO MEET THE REQUIREMENTS OF 2021 IFC, AND IBC AS WELL AS THE REQUIREMENTS OF NFPA 72. SHOP DRAWINGS ARE TO BE DEVELOPED FOR A DEFERRED SUBMITTAL BY A NICET LEVEL II CERTIFIED DESIGNER.

LOW VOLTAGE SCOPE:
1. AS PART OF PLAN SET, COMMUNICATION OUTLETS ARE SHOWN ON PLAN FOR PROPOSED LOCATIONS. DEVICES SHOWN ARE INDICATIVE OF A TWO GANG BOX WITH A SINGLE GANG MUD RING WITH 1 INCH CONDUIT EXTENDING TO ABOVE FINISHED CEILING. EACH OUTLET IS TO BE PROVIDED WITH A CAT 6 CABLE EXTENDING BACK TO A TWO POST RACK WITH A 48 PORT CAT 6 PATCH PANEL LOCATED IN THE IT SPACE. ANY FURTHER SYSTEM CABLING REQUIREMENTS ARE TO BE COORDINATED WITH CLIENT. PROVIDE COVERS WITH BLANKS FOR ALL SYSTEMS.
2. SECURITY SYSTEMS ARE ANTICIPATED AND ARE TO BE COORDINATED WITH CLIENT FOR DOORS REQUIRED AND EXTENT OF SYSTEM NECESSARY FOR THIS STRUCTURE. ALL EXTERIOR DOORS ARE TO BE ROUGHED IN TO ACCOMMODATE POWER FOR DOOR STRIKE AS WELL AS ROUTING FOR A DOOR POSITION SENSOR. VERIFY WITH CLIENT FOR CARD ACCESS LOCATIONS. SEE DETAIL SHEET FOR PROPOSED CONDUIT AND JUNCTION BOX INSTALLATIONS.
3. CAMERA SYSTEMS ARE TO BE COORDINATED WITH CLIENT FOR DESIRED LOCATIONS AND COVERAGE PATTERNS. ROUGH IN CONDUIT AS REQUIRED FOR ANY EXTERIOR LOCATIONS.



ONE-LINE DIAGRAM

NOT TO SCALE

NOTES:
1. PROVIDE GROUNDING AND BONDING TO MEET THE 2023 NEC ARTICLE 250 REQUIREMENTS.
2. FAULT CURRENT CALCULATIONS BASED UPON AN ANTICIPATED 300kVA TRANSFORMER AT AN ESTIMATED DISTANCE OF 50FT FROM THE TRANSFORMER TO THE SERVICE DISTRIBUTION PANEL.
3. PROVIDE LABELING TO MEET THE REQUIREMENTS OF NEC 110.21.

WIRE SCHEDULE:

(A) (3) 3 1/2"C - (4#400kCMIL(AL,THWN))

(B) (2) 2 1/2"C - (4#250KCMIL(AL,THWN)+ 1AWG (AL,THWN))

(C) 2 1/2"C - (4#250KCMIL(AL,THWN)+ 4AWG (AL,THWN))

(G1) #2/0AWG CU TO METAL WATER PIPES AND STRUCTURAL STEEL #4AWG CU TO 20' UNCOATED CONCRETE ENCASED ELECTRODE

FAULT CURRENT CALCULATIONS:

$F = \frac{L \times I \times 3^{1/2}}{N \times C \times E}$

L - LENGTH OF CABLE IN FEET
I - AVAILABLE FAULT CURRENT
N - NUMBER OF CONDUCTORS PER PHASE
C - CONDUCTANCE CONSTANT
- 400KCMIL ALUMINUM: 18,506
E - VOLTAGE LINE TO LINE
F - INTERMEDIARY VALUE FOR COMPUTATION
M = 1/(1+F)
M - MULTIPLIER TO ACHIEVE AVAILABLE FAULT
I(SC) = I(SC)*M

RUN #1: TRANSFORMER TO SERVICE

$F = \frac{L \times I \times 3^{1/2}}{N \times C \times E} = \frac{50FT \times 52.000\ A \times 3^{1/2}}{3 \times 18.506 \times 208\ V} = 0.390$

$M = \frac{1}{1+F} = \frac{1}{1+0.390} = 0.719$

I(SC) = IxM = 52,000A x 0.719 = 37,411 A

FEEDERS

LOAD NAME	PANEL	CIRCUIT	POWER	VOLTAGE	POLES	RATING	CONDUCTORS	TYPE	LENGTH	VOLTAGE DROP
FEED-HVAC										
RTU-1	PM	1,3,5	12969 VA	208 V	3	50 A	3-#4, 1-#4, 1-#6	CU,THWN,75°C	188' - 0 11/16"	4 V
RTU-2	PM	2,4,6	12969 VA	208 V	3	50 A	3-#4, 1-#4, 1-#6	CU,THWN,75°C	138' - 10 1/16"	3 V
RTU-3	PM	7,9,11	12969 VA	208 V	3	50 A	3-#6, 1-#6, 1-#10	CU,THWN,75°C	119' - 2"	4 V
RTU-4	PM	8,10,12	12969 VA	208 V	3	50 A	3-#6, 1-#6, 1-#10	CU,THWN,75°C	69' - 6"	2 V
RTU-5	PM	13,15,17	12969 VA	208 V	3	50 A	3-#6, 1-#6, 1-#10	CU,THWN,75°C	52' - 1 31/32"	2 V
RTU-6	PM	14,16,18	12969 VA	208 V	3	50 A	3-#6, 1-#6, 1-#10	CU,THWN,75°C	121' - 7"	4 V
RTU-9	PM	19,21,23	12969 VA	208 V	3	50 A	3-#6, 1-#6, 1-#10	CU,THWN,75°C	41' - 11 1/2"	1 V
RTU-8	PM	20,22,24	12969 VA	208 V	3	50 A	3-#6, 1-#6, 1-#10	CU,THWN,75°C	52' - 4"	2 V
RTU-7	PM	25,27,29	12969 VA	208 V	3	50 A	3-#6, 1-#6, 1-#10	CU,THWN,75°C	102' - 2"	3 V
MAU-1	PM	26,28,30	295 VA	208 V	3	20 A	3-#12, 1-#12, 1-#12	CU,THWN,75°C	162' - 9 7/16"	0 V
RTU-1 PE	PM	31,33,35	746 VA	208 V	3	20 A	3-#12, 1-#12, 1-#12	CU,THWN,75°C	190' - 11 11/16"	1 V
RTU-2 PE	PM	32,34,36	746 VA	208 V	3	20 A	3-#12, 1-#12, 1-#12	CU,THWN,75°C	142' - 0 1/16"	1 V
RTU-3 PE	PM	37,39,41	746 VA	208 V	3	20 A	3-#12, 1-#12, 1-#12	CU,THWN,75°C	122' - 9"	1 V
RTU-4 PE	PM	38,40,42	746 VA	208 V	3	20 A	3-#12, 1-#12, 1-#12	CU,THWN,75°C	72' - 11 3/4"	1 V
RTU-5 PE	PM	43,45,47	746 VA	208 V	3	20 A	3-#12, 1-#12, 1-#12	CU,THWN,75°C	49' - 0 31/32"	0 V
RTU-6 PE	PM	44,46,48	746 VA	208 V	3	20 A	3-#12, 1-#12, 1-#12	CU,THWN,75°C	124' - 7"	1 V
RTU-7 PE	PM	49,51,53	746 VA	208 V	3	20 A	3-#12, 1-#12, 1-#12	CU,THWN,75°C	105' - 8"	1 V
RTU-8 PE	PM	50,52,54	746 VA	208 V	3	20 A	3-#12, 1-#12, 1-#12	CU,THWN,75°C	55' - 0"	0 V
RTU-9 PE	PM	55,57,59	746 VA	208 V	3	20 A	3-#12, 1-#12, 1-#12	CU,THWN,75°C	40' - 5 1/2"	0 V
CU-1	PM	60,62	3962 VA	208 V	2	25 A	2-#10, 1-#10, 1-#10	CU,THWN,75°C	26' - 6 3/4"	1 V
CP-1	PM	63	230 VA	120 V	1	20 A	1-#12, 1-#12, 1-#12	CU,THWN,75°C	144' - 10 9/32"	1 V
KEF-1	PM	65	329 VA	120 V	1	20 A	1-#12, 1-#12, 1-#12	CU,THWN,75°C	170' - 7 1/4"	2 V
EUH-1	PM	68,70	1500 VA	208 V	2	20 A	2-#12, 1-#12, 1-#12	CU,THWN,75°C	73' - 0 1/8"	2 V
EUH-2	PM	71,73	1500 VA	208 V	2	20 A	2-#10, 1-#10, 1-#10	CU,THWN,75°C	176' - 5 19/32"	3 V
EUH-3	PM	72,74	1500 VA	208 V	2	20 A	2-#12, 1-#12, 1-#12	CU,THWN,75°C	109' - 3 21/32"	3 V
EUH-4	PM	75,77	1500 VA	208 V	2	20 A	2-#12, 1-#12, 1-#12	CU,THWN,75°C	62' - 4 13/16"	2 V
EUH-5	PM	76,78	2500 VA	208 V	2	20 A	2-#8, 1-#8, 1-#8	CU,THWN,75°C	149' - 6 3/4"	3 V
FEED-PANEL										
P1	MDP	1,3,5	44805 VA	208 V	3	200 A	3-#250, 1-#250, 1-#4	AL,XHHW,75°C	53' - 4 13/16"	1 V
P2	MDP	7,9,11	15773 VA	208 V	3	200 A	3-#250, 1-#250, 1-#4	AL,XHHW,75°C	202' - 6 7/8"	1 V
PM	MDP	13,15,17	137831 VA	208 V	3	400 A	2 runs of 3-#250, 1-#250, 1-#1	AL,XHHW,75°C	55' - 8 15/16"	1 V

GENERAL FEEDER NOTES:
1. AS PART OF 2021 IECC REQUIREMENTS TOTAL VOLTAGE DROP FROM SERVICE TO OUTLETS IS TO BE MINIMIZED TO 5%. VOLTAGE DROP VALUES IN THE TABLE ABOVE HAVE BEEN DEVELOPED BASED UPON ESTIMATED LENGTHS AS SHOWN ON THE PLANS. FIELD ADJUST FEEDER AND BRANCH CIRCUIT SIZES AS NECESSARY TO ACCOMMODATE THIS REQUIREMENT BASED UPON THE ACTUAL INSTALLED LENGTHS.
2. ALL CIRCUITS WITH HOMERUNS OVER 100FT ARE TO BE INCREASED BY ONE WIRE SIZE.

KRAAI DESIGN ARCHITECTURE
2394 PATTERSON ROAD, SUITE 201
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COLORADO LICENSED
WARREN A. SNYDER
60539
PROFESSIONAL ENGINEER

GILCREST HEAD START

11TH STREET
GILCREST, CO

REVISION(S):

#	DATE	COMMENTS

CONSTRUCTION DOCUMENTS

PROJECT NO: 2437

SHEET NAME: ELECTRICAL SCHEDULES

DATE: 12/17/2024

SHEET NO: E3-1

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

Branch Panel: P1

Location: STORAGE 108
Supply From: MDP
Mounting: Surface
Enclosure: NEMA 1

Volts: 120/208 Wye
Phases: 3
Wires: 4

A.I.C. Rating:
Mains Type:
Mains Rating: 200 A
MCB Rating: 200 A

Notes:

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
1	148 MEETING	20 A	1	1800...	1800...					1	20 A	148 MEETING	2
3	148 MEETING COUNTER	20 A	1			360 VA	180 VA			1	20 A	148 MEETING REF	4
5	150 HR OFFICE	20 A	1					720 VA	540 VA	1	20 A	148 MEETING CLOSET	6
7	147 RESTROOM	20 A	1	360 VA	720 VA					1	20 A	142 FLOAT OFFICE	8
9	143 BUS OFFICE	20 A	1			900 VA	180 VA			1	20 A	141 SPRINK./WATER	10
11	136 CLASSROOM	20 A	1					1080...	1484...	1	20 A	INFANT/TODD LTG	12
13	127 CLASSROOM	20 A	1	1260...	1440...					1	20 A	131 CLASSROOM	14
15	117 CRIB SPACE	20 A	1			1080...	900 VA			1	20 A	OUTDOOR BACK	16
17	113 CUSTODIAN	20 A	1					360 VA	1620...	1	20 A	107 CONFERENCE ROOM	18
19	113 DRYER - GFCI 5mA	30 A	2	2500...	360 VA					1	20 A	115 MOTHER'S ROOM	20
21	--	--	--			2500...	720 VA			1	20 A	110 IT	22
23	112 RESTROOM	20 A	1					360 VA	180 VA	1	20 A	108 STORAGE	24
25	LOBBY/FRONT OFFICE	20 A	1	1440...	720 VA					1	20 A	105 FSS OFFICE	26
27	104 BREAK ROOM	20 A	1			540 VA	900 VA			1	20 A	103 CSS OFFICE	28
29	116 INFANT/TODDLER	20 A	1					1080...	1260...	1	20 A	122 INFANT/TODDLER 3	30
31	118 INFANT TODDLER 2	20 A	1	1260...	1440...					1	20 A	124 INFANT TODDLER 4	32
33	128 INFANT/TODDLER 5	20 A	1			1260...	360 VA			1	20 A	104 BREAKROOM COUNTER	34
35	104 BREAKROOM REF	20 A	1					180 VA	720 VA	1	20 A	106 FSS OFFICE	36
37	113 WASHER	20 A	1	1500...	1080...					1	20 A	OFFICE HALL	38
39	OUTDOOR FRONT	20 A	1			720 VA	180 VA			1	20 A	146 WATER HEATER	40
41	DRINKING FOUNTAINS	20 A	1					180 VA	0 VA	1	20 A	SPARE	42
43	CORRIDOR - LTG - A1	20 A	1	230 VA	0 VA					1	20 A	SPARE	44
45	CORRIDOR - LTG - L1 NW	20 A	1			1125...	1431...			1	20 A	NW WING LTG	46
47	CORRIDOR - LTG - L1 SE	20 A	1					794 VA	1479...	1	20 A	PRE-K LTG	48
49	OUTDOOR - LTG - W1	20 A	1	160 VA	953 VA					1	20 A	NE WING LTG	50
51	OUTDOOR - LTG - SP	20 A	1			500 VA							52
53													54
55													56
57													58
59													60
			Total Load:	19023 VA		13784 VA		12000 VA					
			Total Amps:	161 A		117 A		100 A					

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Lighting	7360 VA	100.00%	7360 VA		
Other	225 VA	100.00%	225 VA	**Total Conn. Load:**	44805 VA
Power	1800 VA	100.00%	1800 VA	**Total Est. Demand:**	35766 VA
Receptacle	28080 VA	67.81%	19040 VA	**Total Conn.:**	124 A
Spare	500 VA	100.00%	500 VA	**Total Est. Demand:**	99 A
Appliance	6860 VA	100.00%	6860 VA		

Notes:

Branch Panel: P2

Location: KITCHEN 143
Supply From: MDP
Mounting: Surface
Enclosure: Type 1

Volts: 120/208 Wye
Phases: 3
Wires: 4

A.I.C. Rating:
Mains Type:
Mains Rating: 200 A
MCB Rating: 200 A

Notes:

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
1	143 KITC. FREEZER - GFCI 5mA	20 A	1	900 VA	180 VA					1	20 A	143 KITC. COUNTER- GFCI 5mA	2
3	143 KITC. FREEZER - GFCI 5mA	20 A	1			900 VA	1200...			1	20 A	143 KITC. G. DISPOSAL- GFCI 5mA	4
5	143 KITC. FREEZER - GFCI 5mA	20 A	1					900 VA	360 VA	1	20 A	143 KITC. COUNTER - GFCI 5mA	6
7	143 KITC. FREEZER - GFCI 5mA	20 A	1	900 VA	1920...					1	20 A	143 KITC. DISH WASHER- GFCI 5mA	8
9	143 KITC. FREEZER - GFCI 5mA	20 A	1			900 VA	1200...			1	20 A	143 KITC. G. DISPOSAL- GFCI 5mA	10
11	143 KITC. HOOD- GFCI 5mA	20 A	1					1000...	180 VA	1	20 A	143 KITC. COUNTER- GFCI 5mA	12
13	143 KITC. RANGE- GFCI 5mA	20 A	1	180 VA	900 VA					1	20 A	145 KITC. OFFICE- GFCI 5mA	14
15	143 KITC. ISLAND- GFCI 5mA	20 A	1			360 VA	900 VA			1	20 A	144 PANTRY FREEZER - GFCI 5mA	16
17	143 KITC. LIGHTING	20 A	1					493 VA	900 VA	1	20 A	144 PANTRY FREEZER - GFCI 5mA	18
19	SPARE	20 A	1	500 VA									20
21													22
23													24
25													26
27							500 VA			1	20 A	FACP - AUX	28
29									500 VA	1	20 A	FACP	30
			Total Load:	5480 VA		5960 VA		4333 VA					
			Total Amps:	47 A		51 A		36 A					

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Lighting	493 VA	100.00%	493 VA		
Motor	2400 VA	100.00%	2400 VA	**Total Conn. Load:**	15773 VA
Other	0 VA	0.00%	0 VA	**Total Est. Demand:**	15773 VA
Receptacle	4080 VA	100.00%	4080 VA	**Total Conn.:**	44 A
Spare	1500 VA	100.00%	1500 VA	**Total Est. Demand:**	44 A
Appliance	7300 VA	100.00%	7300 VA		

Notes:

Branch Panel: PM

Location: STORAGE 108
Supply From: MDP
Mounting: Surface
Enclosure: NEMA 1

Volts: 120/208 Wye
Phases: 3
Wires: 4

A.I.C. Rating:
Mains Type:
Mains Rating: 400 A
MCB Rating: 400 A

Notes:

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
1	RTU-1	50 A	3	4323...	4323...					3	50 A	RTU-2	2
3	--	--	--			4323...	4323...			--	--	--	4
5	--	--	--					4323...	4323...	--	--	--	6
7	RTU-3	50 A	3	4323...	4323...					3	50 A	RTU-4	8
9	--	--	--			4323...	4323...			--	--	--	10
11	--	--	--					4323...	4323...	--	--	--	12
13	RTU-5	50 A	3	4323...	4323...					3	50 A	RTU-6	14
15	--	--	--			4323...	4323...			--	--	--	16
17	--	--	--					4323...	4323...	--	--	--	18
19	RTU-9	50 A	3	4323...	4323...					3	50 A	RTU-8	20
21	--	--	--			4323...	4323...			--	--	--	22
23	--	--	--					4323...	4323...	--	--	--	24
25	RTU-7	50 A	3	4323...	98 VA					3	20 A	MAU-1	26
27	--	--	--			4323...	98 VA			--	--	--	28
29	--	--	--					4323...	98 VA	--	--	--	30
31	RTU-1 PE	20 A	3	249 VA	249 VA					3	20 A	RTU-2 PE	32
33	--	--	--			249 VA	249 VA			--	--	--	34
35	--	--	--					249 VA	249 VA	--	--	--	36
37	RTU-3 PE	20 A	3	249 VA	249 VA					3	20 A	RTU-4 PE	38
39	--	--	--			249 VA	249 VA			--	--	--	40
41	--	--	--					249 VA	249 VA	--	--	--	42
43	RTU-5 PE	20 A	3	249 VA	249 VA					3	20 A	RTU-6 PE	44
45	--	--	--			249 VA	249 VA			--	--	--	46
47	--	--	--					249 VA	249 VA	--	--	--	48
49	RTU-7 PE	20 A	3	249 VA	249 VA					3	20 A	RTU-8 PE	50
51	--	--	--			249 VA	249 VA			--	--	--	52
53	--	--	--					249 VA	249 VA	--	--	--	54
55	RTU-9 PE	20 A	3	249 VA	1080...					1	20 A	ROOF RECEPTACLES	56
57	--	--	--			249 VA							58
59	--	--	--					249 VA	1981...	2	25 A	CU-1	60
61					1981...					--	--	--	62
63	CP-1	20 A	1			230 VA							64
65	KEF-1	20 A	1					329 VA					66
67					750 VA					2	20 A	EUH-1	68
69							750 VA			--	--	--	70
71	EUH-2	20 A	2					750 VA	750 VA	2	20 A	EUH-3	72
73	--	--	--	750 VA	750 VA					--	--	--	74
75	EUH-4	20 A	2			750 VA	1250...			2	20 A	EUH-5	76
77	--	--	--					750 VA	1250...	--	--	--	78
79													80
81							0 VA			2	0 A	SPARE	82
83									0 VA	--	--	--	84
			Total Load:	46554 VA		44223 VA		47053 VA					
			Total Amps:	391 A		369 A		395 A					

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Heating	9059 VA	100.00%	9059 VA		
Power	127692 VA	100.00%	127692 VA	**Total Conn. Load:**	137831 VA
Receptacle	1080 VA	100.00%	1080 VA	**Total Est. Demand:**	137831 VA
				Total Conn.:	383 A
				Total Est. Demand:	383 A

Notes:

KRAAI DESIGN ARCHITECTURE
2394 PATTERSON ROAD, SUITE 201
GRAND JUNCTION, CO 81505
126 ELK AVENUE, UNIT 1
CRESTED BUTTE, CO 81224
T: 970.712.5045

COLORADO LICENSED
WARREN A. SNITES
60539
PROFESSIONAL ENGINEER

GILCREST HEAD START

11TH STREET
GILCREST, CO

REVISION(S):

#	DATE	COMMENTS

CONSTRUCTION DOCUMENTS

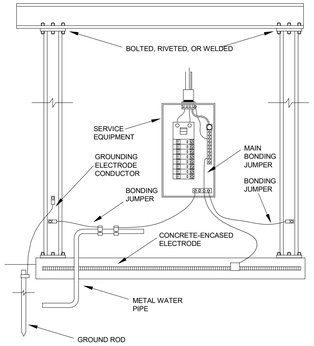
PROJECT NO: 2437

SHEET NAME: ELECTRICAL SCHEDULES

DATE: 12/17/2024

SHEET NO: E3-2

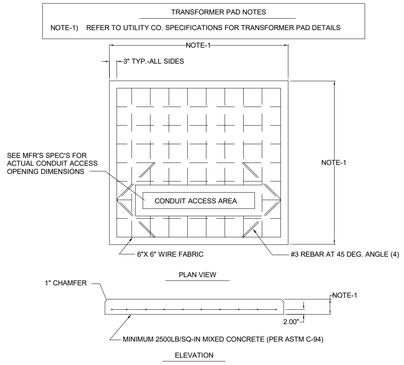
SCALE:



GROUNDING ELECTRODE SYSTEM DETAIL

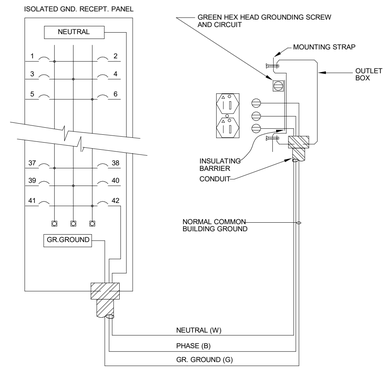
NOT TO SCALE

NOTES:
1. SEE ONE LINE DIAGRAM FOR GROUNDING CONDUCTOR SIZES REQUIRED.
2. PROVIDE A MINIMUM OF TWO SEPARATE GROUND SOURCES, U.O.N. ON ONE LINE DIAGRAM.



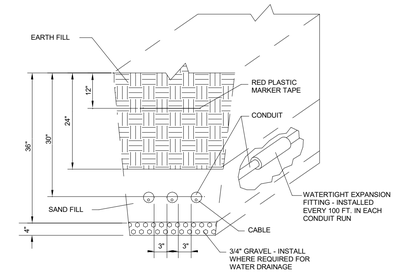
DISTRIBUTION TRANSFORMER BASE DETAIL

NOT TO SCALE



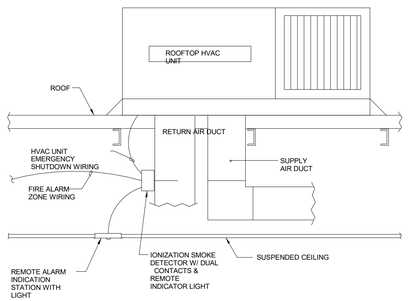
TYPICAL RECEPTACLE WIRING DIAGRAM

NOT TO SCALE



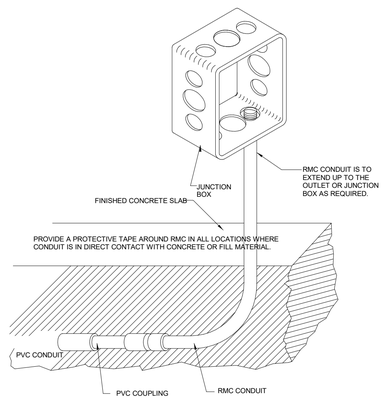
INSTALLATION OF UNDERGROUND CONDUITS

NOT TO SCALE



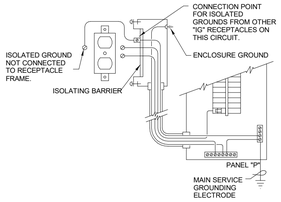
ROOFTOP HVAC UNIT DUCT MOUNTED SMOKE DETECTOR DETAIL

NOT TO SCALE



INSTALLATION OF PVC CONDUIT EMERGING FROM CONCRETE SLAB

NOT TO SCALE

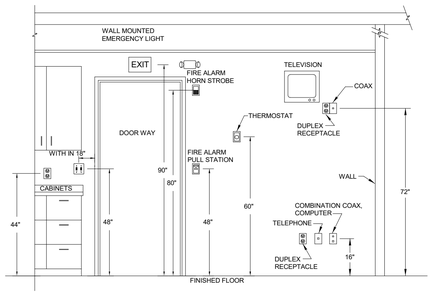


ISOLATED GROUND RECEPTACLE

NOT TO SCALE:

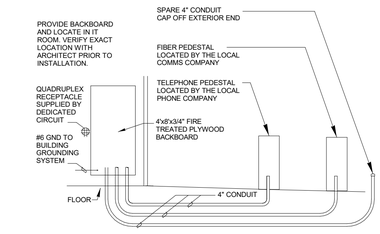
TRANSFORMER GROUNDING DETAIL

NOT TO SCALE



NOTES:
1. THE ELECTRICAL CONTRACTOR SHALL VERIFY THE EXACT LOCATION OF ALL TELEVISION OUTLETS WITH THE ARCHITECT PRIOR TO INSTALLATION.
2. ALL DEVICES SHOWN ON THIS DETAIL ARE FOR REFERENCES OF MOUNTING HEIGHTS ONLY. THE ELECTRICAL CONTRACTOR SHALL FIELD ADJUST THE HEIGHTS OF THE DEVICES AS REQUIRED FOR PROPER MOUNTING OF THE DEVICES.
3. ALL DEVICES REQUIRED FOR THIS PROJECT MAY NOT APPEAR ON THIS DETAIL. ALL ITEMS SHOWN ON THIS DETAIL MAY NOT BE REQUIRED FOR THIS PROJECT.
4. **LOCATE TAMPER-RESISTANT OUTLETS 4" ABOVE THE FINISHED FLOOR WHEREVER COUNTERS ARE** PROVIDED FOR ALL ADULT USE AND AT COMPUTER STATIONS

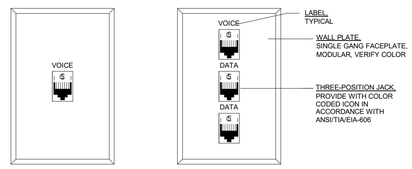
DEVICE MOUNTING HEIGHT



COMMUNICATIONS BACKBOARD DETAIL

NOT TO SCALE

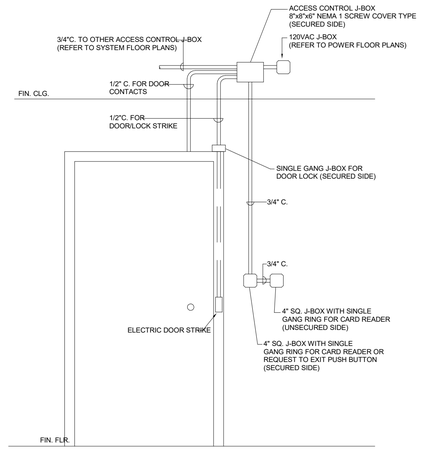
NOTES:
1. PROVIDE A #6 AWG GROUND WIRE AT THE BACKBOARD TIED TO THE COMMON POWER GROUND PER NEC ART. #250.
2. PROVIDE SWEEPS OR FIELD BENDS FOR ALL UNDERGROUND CONDUIT DIRECTIONAL CHANGES.



NOTES:
1. PROVIDE ALL DEVICES U.L. LISTED FOR USE IN CATEGORY 6 INSTALLATIONS.
2. PROVIDE INSTALLATION AND LABELLING IN ACCORDANCE WITH ANSI/TIA/EIA STANDARDS 568A AND 606.

TYPICAL TELECOMMUNICATIONS OUTLET

NOT TO SCALE



ACCESS CONTROL CONDUIT FOR CARD READER SYSTEM DETAIL

NOT TO SCALE

KRAAI DESIGN ARCHITECTURE
2394 PATTERSON ROAD, SUITE 201
GRAND JUNCTION, CO 81505
126 ELK AVENUE, UNIT 1
CRESTED BUTTE, CO 81224
T: 970.712.5045

COLORADO LICENSED WARREN A. SNITES 60539 PROFESSIONAL ENGINEER

GILCREST HEAD START

11TH STREET
GILCREST, CO

REVISION(S):

#	DATE	COMMENTS

CONSTRUCTION DOCUMENTS

PROJECT NO: 2437

SHEET NAME: ELECTRICAL DETAILS

DATE: 12/17/2024

SHEET NO: E3-3

SCALE: 1" = 1'-0"

PLUMBING PIPE DESIGNATIONS

LINE TYPE	DESCRIPTION
140	HIGH TEMPERATURE (140°) WATER PIPE
	COLD WATER PIPE (CW)
CA	COMPRESSED AIR
DC	DECONTAMINATION PIPING
DER	DEIONIZED WATER RETURN
DES	DEIONIZED WATER SUPPLY
DIS	DISTILLED WATER SUPPLY
DIR	DISTILLED WATER RETURN
CD	EQUIPMENT CONDENSATE DRAIN
FP	FIRE MAIN
GW	GREASE WASTE PIPE
HE	HELIUM
HPS	HIGH PRESSURE STEAM
HPC	HIGH PRESSURE CONDENSATE
	HOT WATER RECIRCULATION (HWR)
	HOT WATER PIPE (HW)
H2	HYDROGEN
LPC	LOW PRESSURE CONDENSATE
LPS	LOW PRESSURE STEAM
MA	MEDICAL AIR
G	NATURAL GAS PIPE
N2	NITROGEN
N2O	NITROUS OXIDE
ORD	OVERFLOW STORM WATER PIPE
O2	OXYGEN
PG	PROPANE GAS
RD	ROOF DRAIN PIPE
	SOIL OR WASTE PIPE
S/O	SOIL / OIL WASTE PIPE
TWR	TOWER WATER RETURN
TWS	TOWER WATER SUPPLY
VAC	VACUUM
	VENT PIPE (V)

PLUMBING ELEMENTS / VALVING

LINE TYPE	DESCRIPTION
	PRESSURE REDUCING VALVE (PRV)
	GATE VALVE
	GLOBE VALVE
	PLUG VALVE
	BUTTERFLY VALVE
	BALL VALVE
	SWING CHECK VALVE
	LIFT CHECK VALVE
	GATE VALVE, ANGLE
	GLOBE VALVE, ANGLE
TPV	TEMPERATURE AND PRESSURE RELIEF VALVE
	RELIEF/SAFETY VALVE
	GAS COCK
	GAS PRESSURE REGULATOR
	STRAINER
	STRAINER WITH BLOW OFF VALVE
WH	WATER HEATER
M	WATER METER
	PRESSURE GAGE
	TEMPERATURE GAGE

LINE TYPE	DESCRIPTION
	PIPE RISING UP
	PIPE DROPPING DOWN
	UNION - SCREWED OR FLANGED
PT/PS	PRESSURE TRANSMITTER OR PRESSURE SWITCH
TH/TI	THERMOMETER/TEMPERATURE INDICATOR
PI/GA	GAUGE WITH GAUGE COCK/ PRESSURE INDICATOR
	BACKFLOW PREVENTOR (REDUCED ZONE)
SA	BACKFLOW PREVENTOR (DOUBLE CHECK VALVE ASSEMBLY)
	WATER HAMMER ARRESTER
	CIRCUIT SETTING
HB	HOSE BIBB
RD	ROOF DRAIN
FD	FLOOR DRAIN
AD	AREA DRAIN
CO	FLOOR CLEAN OUT
FS	FLOOR SINK
COG	CLEAN OUT TO GRADE
CO	WALL CLEAN OUT
	FLEXIBLE-CONNECTION
	CHECK VALVE
	VACUUM BREAKER

PLUMBING SHEET LIST

Sheet Number	Sheet Name
P0-1	COVER SHEET
P0-2	PLUMBING SCHEDULE/DETAILS
P1-0	PLUMBING - MAIN LEVEL - BELOW FLOOR PLAN
P1-1	PLUMBING - MAIN LEVEL - FLOOR PLAN
P1-2	GAS - MAIN LEVEL - FLOOR PLAN
P2-1	PLUMBING - DETAILS

RESPONSIBLE DIVISION:

UNLESS OTHERWISE INDICATED ALL HEATING, VENTILATING, AIR CONDITIONING, PLUMBING, AND OTHER MECHANICAL EQUIPMENT, MOTORS, AND CONTROLS SHALL BE FURNISHED, SET IN PLACE AND WIRED AS FOLLOWS:

ITEM	FURNISHED	SET	POWER WIRED	CONTROL WIRED
EQUIPMENT	23	23	26	--
COMBINATION MAGNETIC MOTOR STARTERS, MAGNETIC MOTOR STARTERS, VFD'S AND CONTACTORS	23(1)	26	26(2)	23
FUSED AND UNFUSED DISCONNECT SWITCHES, THERMAL OVERLOAD SWITCHES AND HEATERS, MANUAL MOTOR STARTERS	26	26	26	--
MANUAL-OPERATING AND MULTI-SPEED SWITCHES	23	26	26	26
CONTROLS, RELAYS, TRANSFORMERS	23	23	26	23
THERMOSTATS (LOW VOLTAGE) AND TIME SWITCHES	23	23	26	23
THERMOSTATS (LINE VOLTAGE)	23	23	26	26
TEMPERATURE CONTROL PANELS	23	23	26	23
MOTOR AND SOLENOID VALVES, DAMPER MOTORS, PE & EP SWITCHES	23	23(2)	--	23(2)
PUSH-BUTTON STATIONS AND PILOT LIGHTS	23	23(2)	--	23(2)
HEATING, COOLING, VENTILATION AND AIR CONDITIONING CONTROLS	23	23	26	23
EXHAUST FAN SWITCHES	23	26	26	23(2)

SUBSCRIPT FOOTNOTES:
1. MOTOR STARTER TO INCLUDE CONTROL TRANSFORMER, HOA SWITCH, (1) NO AND (1)NC AUXILIARY CONTACT, AND "ON" AND "OFF" PILOT LIGHTS.
2. IF ITEM IS FOR LINE VOLTAGE, SET IN PLACE AND CONNECT UNDER DIVISION 26. WHERE FACTORY MOUNTED ON EQUIPMENT OR ATTACHED TO PIPING OR DUCTS AND USING LINE VOLTAGE FURNISH AND SET UNDER DIVISION 23, CONNECT UNDER DIVISION 26.

SUBSTITUTIONS:

A. SUBSTITUTIONS: SUBSTITUTION OF SPECIFIED EQUIPMENT WILL BE ALLOWED THROUGH A PRIOR APPROVAL PROCESS INITIATED BY THE CONTRACTOR. CONTRACTOR SHALL SUBMIT INTENDED SUBSTITUTION AT LEAST FIVE DAYS PRIOR TO BID FOR APPROVAL FROM ENGINEER. SUBMITTAL SHALL INCLUDE CAPACITIES, DIMENSIONS AND OPERATING INSTRUCTIONS FOR EACH PIECE OF EQUIPMENT. SUBSTITUTION SHALL OCCUR AT NO COST TO THE OWNER. CONTRACTOR IS RESPONSIBLE FOR COORDINATION OF APPROVED SUBSTITUTION AND SHALL INCUR ALL COSTS ASSOCIATED WITH THE SUBSTITUTION INCLUDING STRUCTURAL MODIFICATIONS, SPACE LAYOUT AND REDESIGN COSTS. SEE ALSO DIVISION I GENERAL REQUIREMENTS.

EXAMINATION OF SITE, DRAWINGS, SPECIFICATIONS:

A. EXAMINE CAREFULLY THE SITE AND CONDITIONS OF THE SITE. PROVIDE ALL NECESSARY EQUIPMENT AND LABOR TO INSTALL A COMPLETE WORKING SYSTEM WITHIN THE SITE CONDITIONS.

B. EXAMINE THE DRAWINGS AND SPECIFICATIONS AND 5 DAYS PRIOR TO BIDDING REPORT ANY ERRORS, OMISSIONS, INCONSISTENCIES, AND CONFLICTS TO THE ENGINEER TO BE REMEDIED IN AN ADDENDUM TO THE PROJECT PRIOR TO BID TIME.

C. DRAWINGS ARE DIAGRAMMATIC AND CATALOG NUMBERS GIVEN ARE FOR REFERENCE ONLY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE CAPACITY OF THE EQUIPMENT MEETS THE DRAWING REQUIREMENTS AND SHALL NOT DIMENSION FROM THE MECHANICAL, PLUMBING, OR PIPING DRAWINGS.

D. THE LATEST ADOPTED VERSIONS OF THE INTERNATIONAL BUILDING CODES SHALL BE USED AS REQUIRED. THIS WILL ALSO INCLUDE THE LATEST ADOPTED VERSIONS OF THE MECHANICAL, PLUMBING, AND ENERGY CONSERVATION CODES. ALL METHODS AND MATERIALS REQUIRED BY THESE CODES SHALL BE REQUIRED BY THESE SPECIFICATIONS UNLESS INDICATED OTHERWISE. OTHER APPLICABLE LOCAL CODES AND ORDINANCES SHALL BE AS REQUIRED AND IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO BE KNOWLEDGEABLE OF THESE REQUIREMENTS.

E. WHERE INSTALLATION PROCEDURES OR ANY PART THEREOF ARE REQUIRED TO BE IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE MANUFACTURER OF THE MATERIAL BEING INSTALLED, PRINTED COPIES OF THESE RECOMMENDATIONS SHALL BE FURNISHED TO THE ENGINEER PRIOR TO INSTALLATION. INSTALLATION OF THE ITEM WILL NOT BE ALLOWED TO PROCEED UNTIL THE RECOMMENDATIONS ARE RECEIVED. FAILURE TO FURNISH THESE RECOMMENDATIONS CAN BE CAUSE FOR REJECTION OF THE MATERIAL.

ABBREVIATIONS:

44"	MOUNTING HEIGHT ABOVE FINISHED FLOOR TO CENTER OF DEVICE
A	AMPS
A.D.	ACCESS DOOR
AAV	ADMITTANCE VALVE
ABV	ABOVE
AC	AIR CONDITIONING UNIT
AC	ABOVE COUNTER
AD	AREA DRAIN (SEE SYMBOLS)
AFC	ABOVE FINISHED CEILING
AFG	ABOVE FINISHED GRADE
AIC	AMPERE INTERRUPTING CAPACITY
AFCI	ARC FAULT CIRCUIT INTERRUPTERS
AFF	ABOVE FINISHED FLOOR
AHU	AIR HANDLING UNIT
ALUM	ALUMINUM
AP	ACCESS PANEL OR DOOR
ATS	AUTOMATIC TRANSFER SWITCH
AV	AUDIO / VIDEO
AVG	AVERAGE
AWG	AMERICAN WIRE GAGE
BAS	BUILDING AUTOMATION SYSTEM
BB	BASEBOARD
BD	BACK DRAFT DAMPER
BFP	BACK FLOW PREVENTOR
BL	BOILER
BLDG	BUILDING
BLW	BELOW
BOB	BOTTOM OF BEAM
BOD	BOTTOM OF DUCT
BOP	BOTTOM OF PIPE
BSMT	BASEMENT
BTU	BRITISH THERMAL UNIT
C	CHILLER
CAFCI	COMBINATION ARC FAULT CIRCUIT INTERRUPTERS
CAP	CAPACITY
CB	CIRCUIT BREAKER
CBV	CIRCUIT BALANCING VALVE
CCT	CORRELATED COLOR TEMPERATURE
CKT	CIRCUIT
CFH	CUBIC FEET PER HOUR
CFM	CUBIC FEET PER MINUTE
CHWR	CHILLED WATER RETURN
CHWS	CHILLED WATER SUPPLY
CI	CAST IRON
CL	CENTER LINE
CLG	CEILING
CMU	CONCRETE MASONRY UNIT
CO	CLEAN OUT
COL	COLUMN
COMP	COMPRESSOR
CONC	CONCRETE
COND	CONDENSATE
CONN	CONNECTION
CONT	CONTINUATION
CONTR	CONTRACTOR
CRI	COLOR RENDERING INDEX
CT	COOLING TOWER
CT	CURRENT TRANSFORMER
CU	CONDENSING UNIT
CU	COPPER
CUH	CABINET UNIT HEATER
CVB	CONSTANT VOLUME BOX
CWR	CONDENSER WATER RETURN
CWS	CONDENSER WATER SUPPLY
DB	DRY BULB
DEPT	DEPARTMENT
DF	DRINKING FOUNTAIN
DIA	DIAMETER
DIAG	DIAGRAM
DIFF	DIFFERENTIAL
DISCH	DISCHARGE
DIV	DIVISION
DN	DOWN
DS	DUCT SILENCER
DWG	DRAWING
DX	DIRECT EXPANSION
(E)	EXISTING
EA	EXHAUST AIR GRILLE/REGISTER
EAT	ENTERING AIR TEMPERATURE
EC	ELECTRICAL CONTRACTOR
ECC	ECCENTRIC
EF	EXHAUST FAN
EFF	EFFICIENCY
EL	ELEVATION
ELEC	ELECTRIC
ELEV	ELEVATOR
EM	EMERGENCY FUNCTION
ENT	ENTERING
EMT	ELECTRIC METALLIC TUBE
EQ	EQUAL
EQUIP	EQUIPMENT
EQUIV	EQUIVALENT
ES	END SWITCH
ESP	EXTERNAL STATIC PRESSURE
ET	EXPANSION TANK
EWC	ELECTRIC WATER COOLER
EWT	ENTERING WATER TEMPERATURE
EX	EXHAUST
EXPAN	EXPANSION
EXT	EXTERNAL
F	DEGREES FAHRENHEIT
FA	FREE AREA
FC	FAN COIL UNIT
FC	FOOTCANDLE
FCV	FLOW CONTROL VALVE
FD	FIRE DAMPER
FD	FLOOR DRAIN
FIN	FINISHED
FLA	FULL LOAD AMPS
FLEX	FLEXIBLE
FLR	FLOOR
FOB	FLAT ON BOTTOM
FOT	FLAT ON TOP
FP	FIRE PROTECTION
FP	FIRE PUMP
FPM	FEET PER MINUTE
FPS	FEET PER SECOND
FS	FLOW SWITCH
FSD	FIRE/SMOKE DAMPER
FT	FEET
FXC	FLEXIBLE CONNECTION
GND	GROUND
GA	GAUGE
GAL	GALLON
GALV	GALVANIZED
GEC	GROUND ELECTRODE CONDUCTOR
GF	GROUND FAULT CIRCUIT INTERRUPTER
GC	GENERAL CONTRACTOR
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
GRS/LB	GRS/LB GRAINS PER POUND
H2O	WATER
HB	HOSE BIBB
HD	HEAD (SEE SCHEDULES)
HP	HEAT PUMP
HP	HORSEPOWER
HR	HOUR
HT	HEIGHT
HTR	HEATER
HWR	HEATING WATER RETURN
HWS	HEATING WATER SUPPLY
HX	HEAT EXCHANGER
HZ	HERTZ
ID	INSIDE DIAMETER
IG	ISOLATED GROUND
IN	INCHES
INV	INVERT
JBOX	JUNCTION BOX
K	KELVIN
KW	KILOWATT
KVA	KILO VOLT - AMPS
L	LENGTH
LAT	LEAVING AIR TEMPERATURE
LV	LAVATORY
LB	POUND
LD	LINEAR DIFFUSER
LF	LINEAR FEET
LIN	LINEAR
LIQ	LIQUID
LM	LUMEN
LRA	LOCKED ROTOR AMPS
LV	LOUVER
LVG	LEAVING
LWT	LEAVING WATER TEMPERATURE
MBH	THOUSANDS OF BTU PER HOUR
MC	MECHANICAL CONTRACTOR
MCA	MINIMUM CIRCUIT AMPACITY
MCB	MAIN CIRCUIT BREAKER
MD	MOTORIZED DAMPER
MDP	MAIN DISTRIBUTION PANEL
MED	MEDIUM
MFR	MANUFACTURER
MIN	MINIMUM
MISC	MISCELLANEOUS
MLO	MAIN LUG ONLY
MOCP	MAXIMUM OVERCURRENT PROTECTION
MTD	MOUNTED
MUA	MAKE-UP AIR UNIT
N	NEUTRAL
NC	NORMALLY CLOSED
NEG	NEGATIVE
NIC	NOT IN CONTRACT
NL	NIGHT / SECURITY LIGHT - DO NOT SWITCH
NO	NORMALLY OPEN
NOM	NOMINAL
NTS	NOT TO SCALE
OA	OUTSIDE AIR
OBD	OPPOSED BLADE DAMPER
OC	ON CENTER
OCC	OCCUPIED
OCP	OVER CURRENT PROTECTION
OD	OUTSIDE DIAMETER
OL	OVERLOAD
ORD	OVERFLOW ROOF DRAIN
OZ	OUNCE
PBD	PARALLEL BLADE DAMPER
PD	PRESSURE DROP
PH	PHASE
POS	POSITIVE PRESSURE
POS	POINT OF SALES
PRV	PRESSURE REDUCING VALVE
PS	PRESSURE SWITCH
PSI	POUNDS PER SQUARE INCH
PT	PRESSURE TRANSMITTER
PTAC	PACKAGED TERMINAL AIR CONDITIONER
PV	PLUG VALVE
PVC	POLYVINYL CHLORIDE
QTY	QUANTITY
RA	RETURN AIR GRILLE / REGISTER
RCP	REFLECTED CEILING PLAN
RD	ROOF DRAIN
REL	RELIEF
REQD	REQUIRED
RF	RETURN FAN
RH	RELATIVE HUMIDITY
RHC	REHEAT COIL
RLA	RATED LOAD AMPS
RM	ROOM
RPM	REVOLUTIONS PER MINUTE
SA	SUPPLY AIR GRILLE / REGISTER
SC	SHORT CIRCUIT
SCA	SHORT CIRCUIT AVAILABLE
SCCR	SHORT CIRCUIT CURRENT RATING
SCH	SCHEDULE
SD	SMOKE DAMPER
SEF	SMOKE EXHAUST FAN
SF	SUPPLY FAN
SH	SENSIBLE HEAT
SH	SHOWER
SP	STATIC PRESSURE
SPD	SURGE PROTECTION DEVICE
SPEC	SPECIFICATION
SQ	SQUARE
SS	STAINLESS STEEL
SS	SAFETY SHOWER
STD	STANDARD
STL	STEEL
SYS	SYSTEM
TEMP	TEMPERATURE
TR	TRANSFER GRILLE / REGISTER
TR	TAMPER RESISTANT
TT	TEMPERATURE TRANSMITTER
TTB	TELECOMMUNICATIONS TERMINAL BACKBOARD
TYP	TYPICAL
TX	TRANSFORMER
UC	UNDERCUT DOOR
UH	UNIT HEATER
UNO	UNLESS NOTED OTHERWISE
UNOCC	UNOCCUPIED
UR	URINAL
V	VOLTS
VA	VOLT AMPERE
VA	VALVE
VAV	VARIABLE AIR VOLUME UNIT
VFD	VARIABLE FREQUENCY DRIVE
VRF	VARIABLE REFRIGERANT FLOW
VOLT	VOLTAGE
VTR	VENT THROUGH ROOF
W	WIDTH
W	WATTS
W/	WITH
W/O	WITHOUT
WB	WET BULB
WC	WATER COLUMN
WC	WATER CLOSET
WG	WATER GAUGE
WP	WEATHERPROOF
WPIU	WEATHERPROOF IN-USE
WSR	WITHSTAND RATING
XFMR	TRANSFORMER

KRAAI DESIGN ARCHITECTURE
2394 PATTERSON ROAD, SUITE 201
GRAND JUNCTION, CO 81505
126 ELK AVENUE, UNIT 1
CRESTED BUTTE, CO 81224
T: 970.712.5045

COLORADO LICENSED PROFESSIONAL ENGINEER 59905 Robert Lynch 12/17/2024 PROFESSIONAL ENGINEER

GILCREST HOT HEAD START

11TH STREET
GILCREST, CO

REVISION(S):

#	DATE	COMMENTS

CONSTRUCTION DOCUMENTS

PROJECT NO: 2437

SHEET NAME: COVER SHEET

DATE: 12/17/2024

SHEET NO: P0-1

SCALE: 12" = 1'-0"

PLUMBING SPECIFICATION:

1. SCOPE OF WORK

A.THE CONTRACTOR IS RESPONSIBLE FOR ALL WORK, MATERIALS, AND LABOR TO SATISFY A COMPLETE WORKING SYSTEM WHETHER SPECIFIED OR IMPLIED.

B.ALL WORK IS TO BE PREFORMED IN STRICT COMPLIANCE WITH THE INTERNATIONAL PLUMBING CODE (LATEST EDITION), ALL LOCAL CODES AND ALL OTHER REGULATION GOVERNING WORK OF THIS NATURE.

C.THE CONTRACTOR SHALL, BEFORE SUBMITTING ANY PROPOSAL, EXAMINE THE PROPOSED SITE AND SHALL DETERMINE FOR HIMSELF THE CONDITIONS THAT MAY AFFECT THE WORK. NO ALLOWANCE SHALL BE MADE IF THE CONTRACTOR FAILS TO MAKE SUCH EXAMINATIONS.

D.ALL EQUIPMENT AND MATERIALS SHALL BE AS SPECIFIED OR "APPROVED AS EQUAL" BY THE ENGINEER OR ARCHITECT.

2. PERMITS

A.THE CONTRACTOR SHALL SECURE ALL PERMITS OR APPLICATIONS AND PAY ANY AND ALL FEES.

3. SHOP DRAWINGS

A.SUBMIT MATERIAL LIST AND SHOP DRAWINGS FOR MAJOR EQUIPMENT TO THE ARCHITECT/ENGINEER FOR APPROVAL. THE CONTRACTOR SHALL SUBMIT FIVE SETS OF SHOP DRAWINGS AND THEY SHALL BE CLEARLY LABELED.

4. DOMESTIC WATER SUPPLY PIPING

A.UNDERGROUND: PROVIDE TYPE "K" SOFT DRAWN COPPER TUBING WITH BRAZED CONNECTIONS.

B.ABOVE GROUND: PROVIDE TYPE "L" HARD DRAWN COPPER TUBING WITH 125 PSI SOLDER JOINTS, COPPER OR BRASS FITTINGS. ALL SOLDER TO BE "NO LEAD" TYPE.

C.ALL HOT WATER PIPING TO BE INSULATED WITH 1" FIBERGLASS INSULATION.

D.ALL COLD WATER PIPING TO BE INSULATED WITH 1/2" FOAM INSULATION.

5. SANITARY/STORM DRAINAGE AND VENT PIPING

A.ABOVE GRADE:

-2" BELOW: SCHEDULE 40 GALV. STEEL PIPE WITH SCREWED ENDS OR SOLID CORE SCHEDULE 40 PVC WITH SOLVENT JOINTS OR DWV COPPER WITH SOLDER JOINTS. ALL SOLDER TO BE "NO LEAD" TYPE.

-3" AND ABOVE: SERVICE WT. CAST IRON WITH NO-HUB OR BELL AND SPIGOT JOINTS; OR SOLID CORE SCHEDULE 40 PVC WITH SOLVENT JOINTS.

B.BELOW GRADE: SERVICE WT. CAST IRON WITH NO-HUB OR BELL AND SPIGOT JOINTS; OR SOLID CORE SCHEDULE 40 PVC WITH SOLVENT JOINTS.

C.PVC PIPING SHALL NOT BE USED IN AIR PLENUM CEILINGS AND SHALL NOT CROSS FIRE RATED WALLS, CEILINGS, OR FLOORS.

D.DRAINAGE PIPING SHALL BE RUN AS STRAIGHT AS POSSIBLE AND SHALL HAVE LONG TURN FITTINGS.

E.DRAINAGE PIPING 3" SIZE AND SMALLER SHALL RUN AT A UNIFORM GRADE OF AT LEAST 1/4" PER FOOT. AND PIPING LARGER THAN 3" SHALL BE RUN AT A GRADE OF NO LESS THAN 1/8" PER FOOT.

F.ALL VENT PIPING SHALL BE SLOPED TO DRAIN BACK TO FIXTURES.

G.CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROPER FLASHING OF THE VENT PIPING RUN THROUGH THE ROOF.

H.PVC USED TO BE SOLID CORE TYPE SCHEDULE 40 PVC.

7. PIPE SUPPORTS

A.ABOVE GRADE: ALL PIPE SHALL BE SUPPORTED FROM THE BUILDING STRUCTURE IN A NEAT AND WORKMANLIKE MANNER. THE USE OF WIRE AND PERFORATED METAL TO SUPPORT PIPES WILL NOT BE PERMITTED. SPACING OF PIPE SUPPORTS SHALL BE A S SPECIFIED IN INTERNATIONAL PLUMBING CODE (LATEST EDITION).

B.BELOW GRADE: EARTH SHALL BE EXCAVATED TO A MINIMUM DEPTH WITH AN EVEN SURFACE TO INSURE SOLID BEARING OF PIPE FOR ITS ENTIRE LENGTH.

-INTERIOR: THE PIPE SHALL BE INSTALLED (UNLESS OTHERWISE SPECIFIED) A MINIMUM OF 4 INCHES BELOW THE BOTTOM OF THE SLAB AND SHALL NOT BE IN ANY DIRECT CONTACT WITH THE CONCRETE AT ANY POINT.

-EXTERIOR: THE WATER PIPE SHALL HAVE A MINIMUM OF 60" OF COVER AND THE SANITARY WASTE PIPE SHALL HAVE A MINIMUM OF 24" OF COVER.

8. MISCELLANEOUS

A.COORDINATE INSTALLATION OF ALL ROOFS FLASHING AT ROOF PENETRATIONS.

B.DO NOT SCALE THIS DRAWING FOR EXACT DIMENSIONS. VERIFY ALL FIGURES, CONDITIONS AND DIMENSIONS AT THE JOB SITE.

C.THE PLUMBING PLANS ARE INTENDED TO BE DIAGRAMMATIC AND ARE BASED ON ONE MANUFACTURER'S EQUIPMENT. THEY ARE NOT INTENDED TO SHOW EVERY ITEM IN ITS EXACT LOCATION. THE EXACT DIMENSIONS OR ALL THE DETAILS OF THE EQUIPMENT. THE CONTRACTOR SHALL VERIFY THE ACTUAL DIMENSIONS OF THE EQUIPMENT PROPOSED TO ENSURE THAT THE EQUIPMENT WILL FIT THE AVAILABLE SPACE.

9. TESTING

A.PLUMBING SYSTEM SHALL BE FLOW AND PRESSURE TESTED IN ACCORDANCE WITH THE INTERNATIONAL PLUMBING CODE (LATEST EDITION).

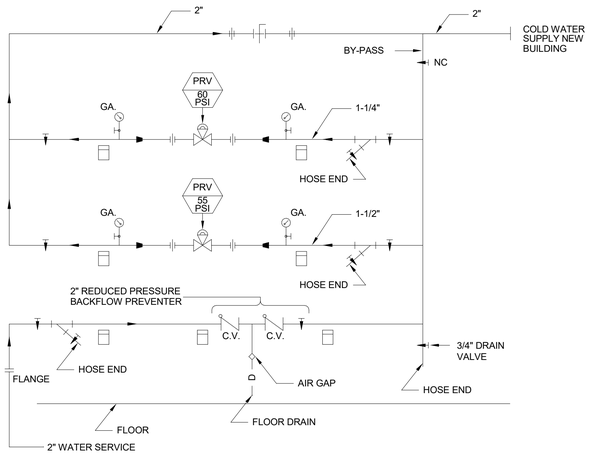
10 GUARANTEE

A.MATERIALS, EQUIPMENT AND INSTALLATION SHALL BE GUARANTEED FOR A PERIOD OF ONE (1) YEAR FROM DATE OF ACCEPTANCE. DEFECTS WHICH APPEAR DURING THAT PERIOD SHALL BE CORRECTED AT THIS CONTRACTORS EXPENSE.

B.FOR THE SAME PERIOD THE PLUMBING CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO PREMISES CAUSED BY DEFECTS IN WORKMANSHIP OR IN THE WORK OR EQUIPMENT FURNISHED AND/OR INSTALLED BY HIM.

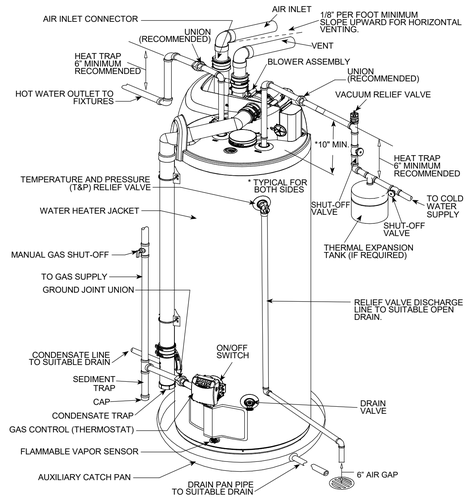
PLUMBING FIXTURE SCHEDULE

TYPE MARK	MANUFACTURER	MODEL #	TRIM	PIPE CONNECTIONS				OPTIONS/ ACCESSORIES
				S/W	VENT	CW	HW	
DF-1	ELKAY	LVRCGRNTL8WSK		1 1/2"	1 1/2"	1/2"	---	PROVIDE WITH WALL CARRIER, 1/4 TURNS, CHROME WALL ESCUTCHEONS, 8 GPH FILTERED DOMESTIC COLD WATER, FLEXI-GUARD SAFETY BUBBLER, 115V/1PH/60HZ 370 WATTS FLA 6 AMPS, DUAL LEVEL ADA DRINKING FOUNTAIN WITH BOTTLE FILLER.
DF-2	ELKAY	EDFP217C		1 1/2"	1 1/2"	1/2"	---	
FD-1	J.R. SMITH	2005		4"	2"	---	---	PROVIDE WITH SPEEDI-SET OUTLET, SQUARE NICKEL BRONZE STRAINER, QUAD CLOSE TRAP SEAL.
GI-1								
HB-1	PRIER	C-144D10		---	---	1/2"	---	PROVIDE WITH HANDEL OPERATED FULL TURN VALVE, PITCHED STEM,
LV-1	GERBER	12-384		1 1/2"	1 1/2"	1/2"	1/2"	
MSB-1	FIAT	TSB700	PROVIDE TOP BRACE UTILITY FAUCET WITH VACUUM BREAKER	3"	1 1/2"	1/2"	1/2"	
SK-1	ELKAY	DLR312210PD	FAUCET MODEL LKGT1041	1 1/2"	1 1/2"	1/2"	1/2"	
SK-2	ELKAY	14-2C18X24-L-18X	FAUCET MODEL LK940AT12L2H	1 1/2"	1 1/2"	1/2"	1/2"	COORDINATE FAUCET AND SINK WITH OWNER PRITOR TO ORDERING
SK-3	ELKAY	14-3C16X20-2-18X	FAUCET MODEL LK940AT12L2H	1 1/2"	1 1/2"	1/2"	1/2"	COORDINATE FAUCET AND SINK WITH OWNER PRITOR TO ORDERING
SK-4	ELKAY	DLR221910PD		1 1/2"	1 1/2"	1/2"	1/2"	
WC-1	AMERICAN STANDARD	2467.100		4"	2"	3/4"	---	DUAL FLUSH VALVE FLOOR MOUNTED ADA WATER CLOSET. PROVIDE WITH VACUUM BREAKER, WATER HAMMER ARRESTOR, DEDICATED ISOLATION VALVE, CHROME WALL ESCUTCHEON AT PIPING-WALL PENETRATION, ELONGATED SEAT, EPDM SEAL, WATER SENSE EPA RATING. COORDINATE FINAL COLOR SELECTION WITH ARCHITECT PRIOR TO ORDERING.
WC-2	AMERICAN STANDARD	2315.228	BABY BOWL	4"	2"	3/4"	---	<varies>
WSB-1	OATEY	38311		2"	---	1/4"	1/4"	PROVIDE WITH WATER HAMMER ARRESTOR, PRESSURE SHOCK ARRESTORS, QUICK CLOSING VALVES.



DOMESTIC WATER PRESSURE REDUCING STATION DETAIL

NOT TO SCALE



TYPICAL GAS WATER HEATER DETAIL

NOT TO SCALE

KRAAI DESIGN ARCHITECTURE

2394 PATTERSON ROAD, SUITE 201
GRAND JUNCTION, CO 81505

126 ELK AVENUE, UNIT 1
CRESTED BUTTE, CO 81224

T: 970.712.5045

COLORADO LICENSED PROFESSIONAL ENGINEER 59005 Robert Lynch 12/17/2024

GILCREST HEAD START

11TH STREET
GILCREST, CO

REVISION(S):

#	DATE	COMMENTS

CONSTRUCTION DOCUMENTS

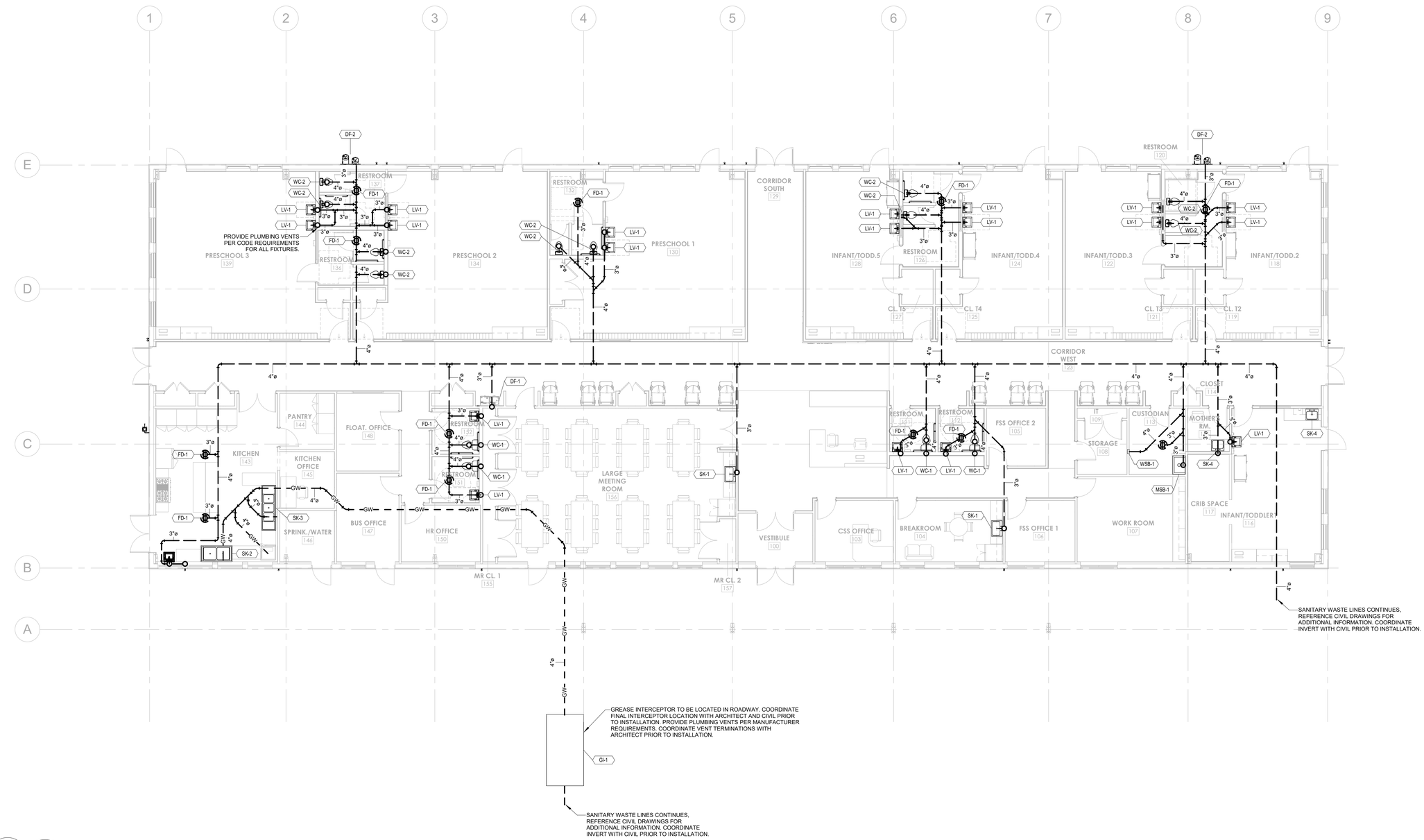
PROJECT NO: 2437

SHEET NAME: PLUMBING SCHEDULE/DETAILS

DATE: 12/17/2024

SHEET NO: P0-2

SCALE:



1 P1-0 PLUMBING - WASTE PLAN

1/8" = 1'-0"

KRAAI DESIGN ARCHITECTURE

2394 PATTERSON ROAD, SUITE 201
GRAND JUNCTION, CO 81505

126 ELK AVENUE, UNIT 1
CRESTED BUTTE, CO 81224

T: 970.712.5045

COLORADO LICENSED PROFESSIONAL ENGINEER
59005
Robert Lynch
12/17/2024

GILCREST HEAD START

11TH STREET
GILCREST, CO

REVISION(S):

#	DATE	COMMENTS

CONSTRUCTION DOCUMENTS

PROJECT NO: 2437

SHEET NAME: PLUMBING - MAIN LEVEL - BELOW FLOOR PLAN

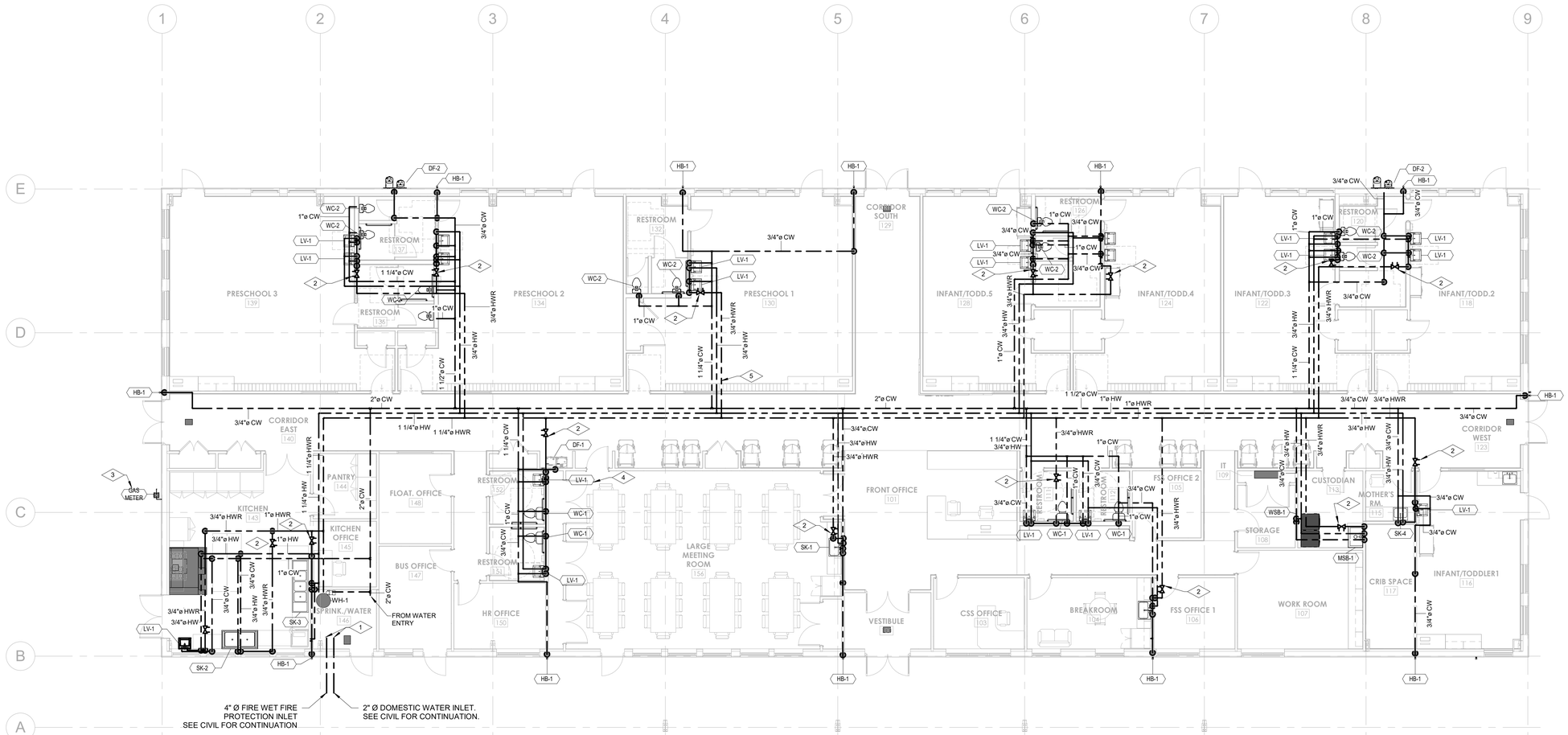
DATE: 12/17/2024

SHEET NO: P1-0

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

P1-1 KEYNOTES

NOTE NUMBER	KEYNOTE
1	ROUTE DOMESTIC WATER TO DOMESTIC WATER ENTRY STATION. SEE PLUMBING DETAILS FOR WATER ENTRY DETAILS. FIRE PROTECTION WATER TO BE ROUTED TO FIRE ENTRY.
2	PROVIDE CIRCUIT SOLVER FOR HOT WATER RECIRCULATION SYSTEM. CONTRACTOR TO COORDINATE LOCATION AND ACCESS. SEE PLUMBING DETAILS FOR RECIRCULATION INSTALLATION REQUIREMENTS.
3	SEE SHEET P1-2 FOR GAS PIPE ROUTING AND METER LOADS.
4	PROVIDE ISOLATION VALVES AT EACH PLUMBING FIXTURE. TYPICAL ALL PLUMBING FIXTURES.
5	PROVIDE ISOLATION VALVES AT EACH PLUMBING BRANCH. TYPICAL ALL PLUMBING BRANCHES.



1 PLUMBING - MAIN LEVEL - FLOOR PLAN
P1-1 1/8" = 1'-0"

KRAAI DESIGN ARCHITECTURE
2394 PATTERSON ROAD, SUITE 201
GRAND JUNCTION, CO 81505
126 ELK AVENUE, UNIT 1
CRESTED BUTTE, CO 81224
T: 970.712.5045

COLORADO LICENSED PROFESSIONAL ENGINEER
59005
Robert Lynch
12/17/2024

GILCREST HEAD START

11TH STREET
GILCREST, CO

REVISION(S):

#	DATE	COMMENTS

CONSTRUCTION DOCUMENTS

PROJECT NO: 2437

SHEET NAME: PLUMBING - MAIN LEVEL - FLOOR PLAN

DATE: 12/17/2024

SHEET NO: P1-1

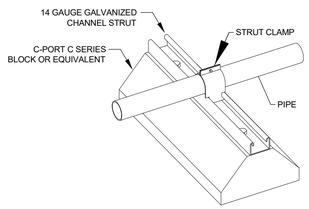
SCALE: 1/8" = 1'-0"

GAS LOADS

TYPE MARK	HEATING INPUT (MBH)	GAS FLOW RATE (CFH)
MAU-1	82.1	102.6
RANGE	136	170
RTU-1	150	187.5
RTU-2	150	187.5
RTU-3	150	187.5
RTU-4	150	187.5
RTU-5	150	187.5
RTU-6	150	187.5
RTU-7	150	187.5
RTU-8	150	187.5
RTU-9	150	187.5

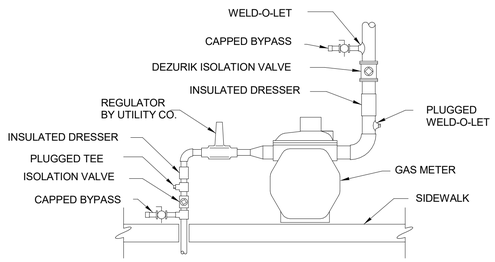
GAS SYSTEM DESIGN NOTES:

1. GAS PIPE SIZED BASED ON 2 PSIG (MEDIUM PRESSURE) DELIVERY GAS PRESSURE AND LONGEST LENGTH OF 250 FT.
2. PER BOILER HOUSE JOURNAL: 800 CFH PER BTUHR.
3. PROVIDE GAS COCK AND PRESSURE REGULATORS AT EQUIPMENT. PRESSURE REGULATORS TO MEET MANUFACTURER REQUIREMENTS FOR THE EQUIPMENT SERVED. CONTRACTOR TO COORDINATE LOCATIONS AND ACCESS.
4. GAS LINES PENETRATING WALLS SHALL BE SEALED PER LOCAL CODE REQUIREMENTS.



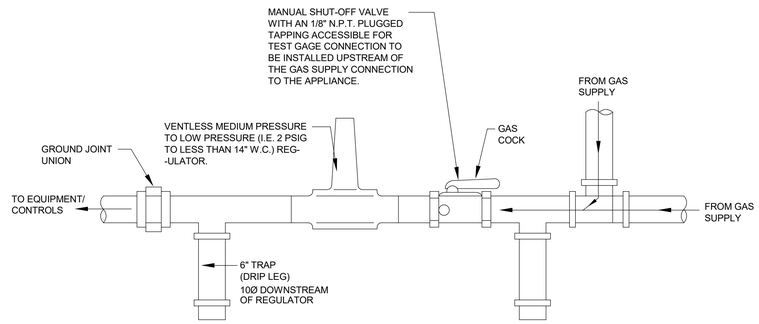
ROOF TOP PIPE SUPPORT DETAIL

NOT TO SCALE



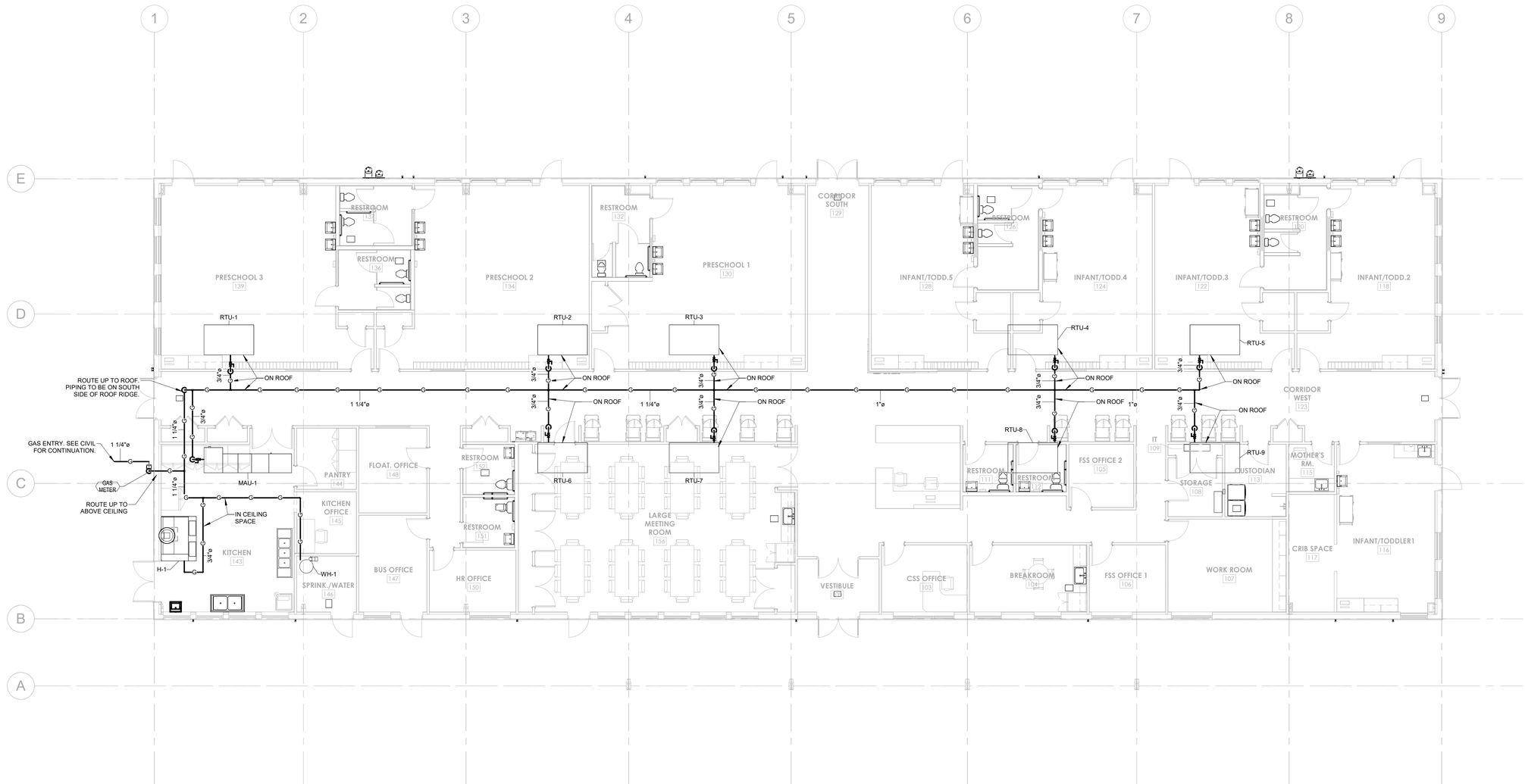
GAS METER DETAIL

NOT TO SCALE



GAS CONNECTION TO EQUIPMENT DETAIL

NOT TO SCALE



1 GAS - MAIN LEVEL - FLOOR PLAN

P1-2 1/8" = 1'-0"

KRAAI DESIGN ARCHITECTURE

2394 PATTERSON ROAD, SUITE 201
GRAND JUNCTION, CO 81505

126 ELK AVENUE, UNIT 1
CRESTED BUTTE, CO 81224

T: 970.712.5045

COLORADO LICENSED PROFESSIONAL ENGINEER 59005 Robert Lynch 12/17/2024

GILCREST HEAD START

11TH STREET
GILCREST, CO

REVISION(S):

#	DATE	COMMENTS

CONSTRUCTION DOCUMENTS

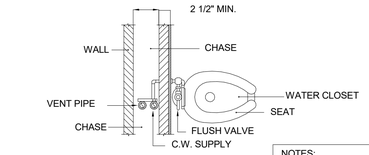
PROJECT NO: 2437

SHEET NAME: GAS - MAIN LEVEL - FLOOR PLAN

DATE: 12/17/2024

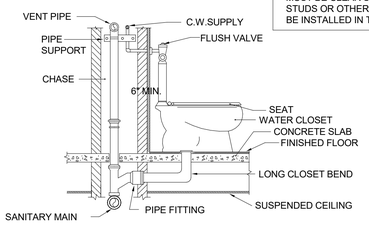
SHEET NO: P1-2

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



PLAN VIEW

NOTES:
1. FOR CONTINUATION OF PIPING SEE PLANS.
2. MINIMUM CHASE SPACE SHOWN MUST BE CLEAR SPACE. NO STEEL STUDS OR OTHER IMPEDIMENTS CAN BE INSTALLED IN THIS SPACE.

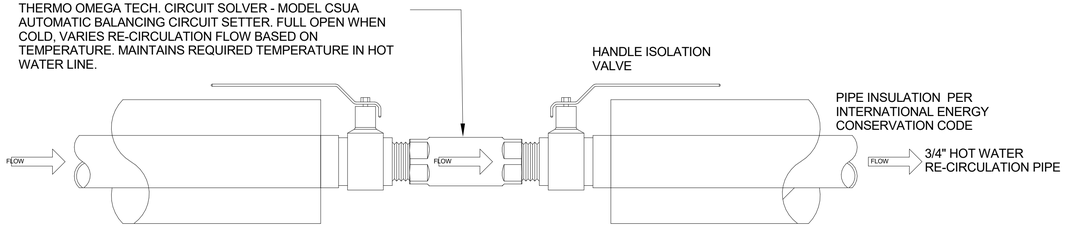


ELEVATION

SINGLE FLOOR MOUNTED WATER CLOSET DETAIL

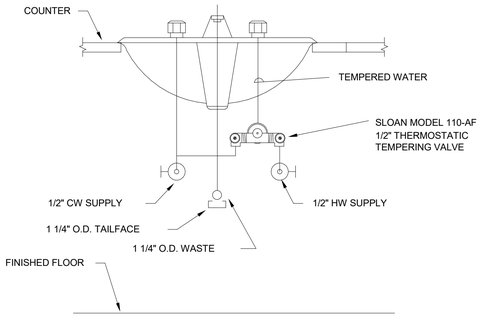
NOT TO SCALE

THERMO OMEGA TECH. CIRCUIT SOLVER - MODEL CSUA AUTOMATIC BALANCING CIRCUIT SETTER. FULL OPEN WHEN COLD, VARIES RE-CIRCULATION FLOW BASED ON TEMPERATURE. MAINTAINS REQUIRED TEMPERATURE IN HOT WATER LINE.



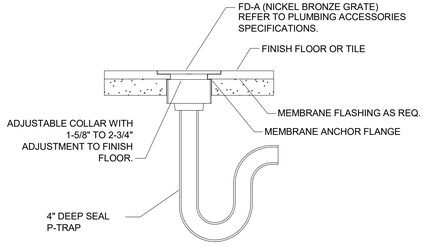
CIRCUIT SOLVER - AUTOMATIC CIRCUIT SETTER DETAIL

NOT TO SCALE



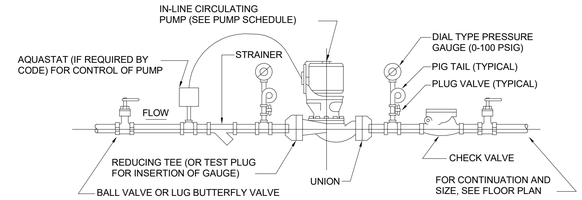
LOCAL MIXING VALVE DETAIL

NOT TO SCALE



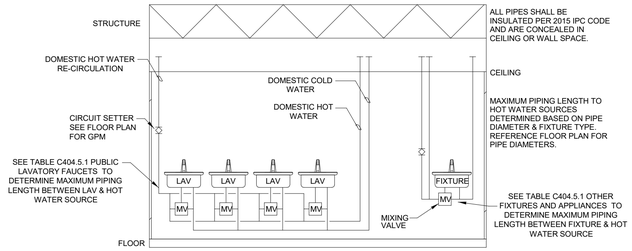
TOILET AREA FLOOR DRAIN

NOT TO SCALE



IN-LINE CIRCULATING PUMP DETAIL

NOT TO SCALE



AIR GAP OR AIR BREAK

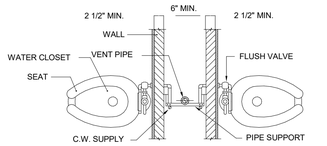
TABLE C404.5.1 PIPING VOLUME AND MAXIMUM PIPING LENGTHS			
NOMINAL PIPE SIZE (INCHES)	VOLUME (LIQUID OUNCES PER FOOT LENGTH)	MAXIMUM PIPING LENGTH (FEET)	
		PUBLIC LAVATORY FAUCETS	OTHER FIXTURES AND APPLIANCES
1/4	0.33 = .0026 GAL	6 FT.	50 FT.
5/16	0.5 = .0039 GAL	4 FT.	50 FT.
3/8	0.75 = .0059 GAL	3 FT.	50 FT.
1/2	1.5 = .0117 GAL	2 FT.	43 FT.
5/8	2 = .0156 GAL	1 FT.	32 FT.
3/4	3 = .0234 GAL	0.5 FT.	21 FT.
7/8	4 = .0313 GAL	0.5 FT.	16 FT.
1	5 = .0391 GAL	0.5 FT.	13 FT.
1-1/4	8 = .0625 GAL	0.5 FT.	8 FT.
1-1/2	11 = .0859 GAL	0.5 FT.	6 FT.
2 OR GREATER	18 = .1406 GAL	0.5 FT.	4 FT.

1. FOR SI: 1 INCH = 25.4 MM, 1 FOOT = 304.8 MM, 1 LIQUID OUNCE = 0.030 L, 1 GALLON = 128 OUNCES.
2. FOR ALL PUBLIC LAVATORYS CONTRACTOR TO INSTALL HOT WATER SOURCE WITHIN MAXIMUM PIPING LENGTH. ANY OTHER TYPE FIXTURE OR APPLIANCE SHALL HAVE HOT WATER SOURCE WITHING ALTERNATIVE MAXIMUM PIPING LENGHT, SEE TABLE ABOVE.

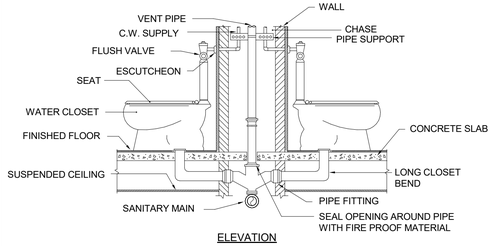
DOMESTIC HOT WATER RECIRCULATION DISTANCE FROM FIXTURES

NOT TO SCALE

NOTES
1. FOR CONTINUATION OF PIPING SEE PLANS.
2. MINIMUM CHASE SPACE SHOWN MUST BE CLEAR SPACE. NO STEEL STUDS OR OTHER IMPEDIMENTS CAN BE INSTALLED IN THIS SPACE.



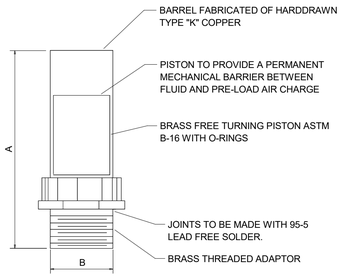
PLAN VIEW



ELEVATION

BACK-TO-BACK FLOOR MOUNTED WATER CLOSET DETAIL

NOT TO SCALE

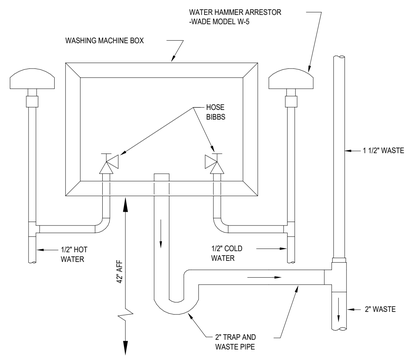


PPP SIZE	P.D.I. SYMBOL	FIXTURE UNIT RATINGS	A SIZE	B SIZE
1/2"	A	1 - 11	5"	1/2"
3/4"	B	12 - 32	5"	3/4"
1"	C	33 - 60	7"	1"
1-1/4"	D	61 - 113	7"	1-1/4"
1-1/2"	E	114 - 154	9"	1-1/2"
2"	F	155 - 330	9"	2"

NOTE: SEE WATER RISER DIAGRAMS FOR LOCATIONS OF SHOCK ABSORBERS.

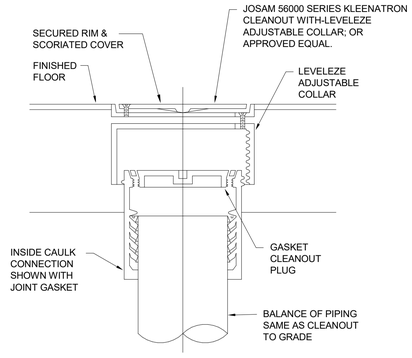
WATER SHOCK ARRESTOR DETAIL

NOT TO SCALE



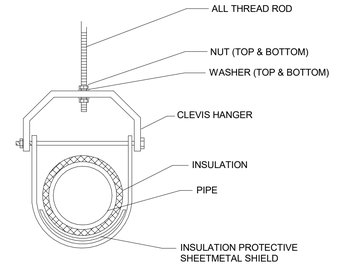
WASHING MACHINE BOX DETAIL

NOT TO SCALE



FLOOR CLEANOUT DETAIL

NOT TO SCALE



TYPICAL CLEVIS HANGER DETAIL

NOT TO SCALE

KRAAI DESIGN ARCHITECTURE
2394 PATTERSON ROAD, SUITE 201
GRAND JUNCTION, CO 81505
126 ELK AVENUE, UNIT 1
CRESTED BUTTE, CO 81224
T: 970.712.5045

COLORADO LICENSED 59005 Robert Lynch 12/17/2024 PROFESSIONAL ENGINEER

GILCREST HEAD START

11TH STREET
GILCREST, CO

REVISION(S):

#	DATE	COMMENTS

CONSTRUCTION DOCUMENTS

PROJECT NO: 2437

SHEET NAME: PLUMBING - DETAILS

DATE: 12/17/2024

SHEET NO: P2-1

SCALE: