DESIGN CRITERIA

PROJECT SITE:	ESTES PARK, CO		
PROJECT ELEVATION:	7,500 FEET		
SUMMER OUTSIDE:	92 DEGREES DB / 60 DEGREES WB		
WINTER OUTSIDE:	-12 DEGREES DB		
EXTERIOR CONSTRUCTION "U" VALUES	WALLS:	U=0.04 (R-19)	(PENDING)
	ROOF:	U=0.03 (R-30)	(PENDING)
	GLAZING	U=0.55 / SC = 0.50	(PENDING)
CODES:	2006 INTERNATIONAL BUILDING CODE 2006 INTERNATIONAL MECH. CODE W / AMENDMENTS 2006 INTERNATIONAL PLUMBING CODE		
	* OUTSIDE AIR VENTILATION CALCULATION ARE ASHRAE 62.1 2004 COMPLIANT.		

Drawing List

Sheet Number	Sheet Name	Sheet Issue Date
M0	HVAC - LEGEND, INDEX, QUALIFICATION NOTES & CRITERIA	11-08-2012
M0.1	HVAC - SCHEDULES	11-08-2012
M0.2	HVAC - SCHEDULES	11-08-2012
M0.3	CONTROL SEQUENCES	11-08-2012
M1.0	HVAC- FIRST FLOOR PLAN	11-08-2012
M1.1	HVAC- SECOND FLOOR	11-08-2012
M2.0	HVAC - DIAGRAMS	11-08-2012
P0	LEGEND, INDEX, QUALIFICATION NOTES & CRITERIA	11-08-2012
P0.1	PLUMBING - SCHEDULES	11-08-2012
P1.0	PLUMBING - FIRST FLOOR PLAN DOMESTIC WATER ANG GAS	11-08-2012
P1.1	PLUMBING - SECOND FLOOR DOMESTIC WATER AND GAS	11-08-2012
P1.2	ENLARGED PLAN	11-08-2012
P2.0	PLUMBING - FIRST FLOOR PLAN SANITARY SEWER AND VENT	11-08-2012
P2.1	PARTIAL SECOND FLOOR & LOW ROOF	11-08-2012
P2.2	ENLARGED PLANS AND ISOMETRICS	11-08-2012
FP-1	FIRE PROTECTION - LOWER LEVEL, RISER, SECTION	11-08-2012
FP-2	FIRE PROTECTION - OVERHEAD SPRINKLER PLAN	11-08-2012
FP-3	FIRE PROTECTION -UPPER LEVEL PLAN	11-08-2012

GENERAL QUALIFICATION NOTES

1. DUCT ROUTINGS INDICATED ON THESE DRAWINGS ARE INTENDED TO RUN BETWEEN/THROUGH THE TRUSSES/JOISTS. THESE ROUTINGS HAVE BEEN COORDINATED AND NOTES HAVE BEEN ADDED TO ALERT THE TRUSS DESIGNER TO THESE DUCT ROUTINGS. THE CONTRACTOR IS TO COORDINATE/ VERIFY ALL ROUTINGS WITH THE TRUSS/JOIST LAYOUT PRIOR TO ANY FABRICATION OF DUCTWORK.

2. NO PROVISIONS HAVE BEEN MADE FOR ANY TYPE OF COOKING WITHIN THE CONCESSIONS/CATERING KITCHEN. THE SPACE IS INTENDED SOLELY AS A WARMING KITCHEN. ALL FOOD BEING SERVED WILL BE COOKED ELSEWHERE BROUGHT ON SITE. FINAL HVAC DESIGN PENDING INPUT FROM TOWN OF ESTES REPRESENTATIVE.

3. AT THE DIRECTION OF THE OWNER/ARCHITECT NO PROVISIONS HAVE BEEN MADE FOR ANY TYPE OF FUTURE EXPANSION OF THIS BUILDING.

4. THE OWNER WAS UNABLE TO PROVIDE EQUIPMENT LOADS FOR SOUND ROOM 200 PRIOR TO THE RELEASE OF THESE DOCUMENTS. THE FAN COIL UNIT INDICATED ON THESE DOCUMENTS IS SIZED TO PROVIDE 2-TON NOMINAL COOLING.

GENERAL SYMBOL LEGEND

X / MXX	PLAN, DIAGRAM, OR RISER NUMBER SHEET NUMBER
	POINT OF CONNECTION
T.O.U	TOP OF UNIT
B.O.U	BOTTOM OF UNIT
T.O.P.	TOP OF PIPE
B.O.P.	BOTTOM OF PIPE
AFF	ABOVE FINISHED FLOOR
MC	MECHANICAL CONTRACTOR
PC	PLUMBING CONTRACTOR
GC	GENERAL CONTRACTOR
EC	ELECTRICAL CONTRACTOR
FAC	FIRE ALARM CONTRACTOR
FSC	FIRE SPRINKLER CONTRACTOR
UP	PIPE OR DUCT OFFSET UP
DN	PIPE OR DUCT OFFSET DOWN
X %	PIPE OR DUCT SLOPE IN DIRECTION OF FLOW (NEGATIVE % DEPICTS SLOPING DOWN, POSITIVE % DEPICTS SLOPING UP)
	PIPE OR DUCT ELBOW DOWN
	PIPE OR DUCT ELBOW UP
	TEE OFF BOTTOM OF PIPE OR DUCT
	TEE OFF TOP OF PIPE OR DUCT
	PIPE OR DUCT REDUCER (CONCENTRIC UNLESS OTHERWISE NOTED)

DUCTWORK SYMBOL LEGEND

NOTE: FIRST DIMENSION LISTED OF RECTANGULAR DUCT DIMENSIONS REFERENCES THE TOP SIDE OF THE DUCT.
ALL DUCT DIMENSIONS ARE AIRWAY (INSIDE CLEAR) DIMENSIONS.

	SUPPLY, RETURN, EXHAUST DUCTS UP
	SUPPLY, RETURN, EXHAUST DUCTS DN
	SPIRAL DUCTWORK (ROUND UNLESS OTHEWISE NOTED AS OVAL ON PLANS)
UP	DUCT OFFSET UP (IN DIRECTION OF FLOW)
DN	DUCT OFFSET DOWN (IN DIRECTION OF FLOW)
24"x12"	DIMENSIONS INDICATED ON DRAWINGS ARE AIRWAY DIMENSIONS REFER TO GENERAL DUCTWORK NOTE #4 FOR INSULATION THICKNESS
	DUCTWORK WITH FLEXIBLE CONNECTION
	MITERED ELBOW WITH TURNING VANES AND SPLITTER TEE WITH TURNING VANES.
SD	DUCT MOUNTED SMOKE DETECTOR
(X HR)	FIRE DAMPER (X HOUR RATED)
(X HR) S	COMBINATION FIRE/SMOKE DAMPER (X HOUR RATED)
SD	SMOKE DAMPER
M	MOTORIZED DAMPER, OPPOSED BLADE SHOWN
MVD	MANUAL (OPPOSED BLADE) VOLUME DAMPER
	HIGH EFF. TAKE-OFF WITH MANUAL LOCKABLE DAMPER
	SUPPLY AIR OUTLET - CEILING AND SIDEWALL (NOTE: CEILING DIFFUSERS WILL ONLY HAVE FLOW ARROWS IF DISCHARGE DIRECTION IS CRITICAL).
	RETURN AIR INLET - DUCTED CEILING GRILLE, CEILING GRILLE TO RETURN PLENUM, AND SIDEWALL GRILLE.
A 30"x15" 1830 (3)	GRILLE, REGISTER, OR DIFFUSER TAG. DEVICE TYPE "D", 30"x15" NECK SIZE, 1830 CFM, TYPICAL OF 3. (NOTE: IF QUANTITY IS BLANK TAG PERTAINS TO ONE. IF CFM IS BLANK, CFM IS NOT CRITICAL/BALANCING IS NOT REQ'D.
A	GRILLE TAG FOR GRILLES THAT ARE OF TYPICAL SIZE, WHICH IS LISTED IN THE GRD SCHEDULE.
T	THERMOSTAT, ELECTRIC
CD	SENSOR (CD - CARBON DIOXIDE, CM - CARBON MONOXIDE, N - NITROGEN, RT - REMOTE TEMPERATURE)
S.A.	SUPPLY AIR
R.A.	RETURN AIR
E.A.	EXHAUST AIR
F.A.	FRESH AIR
RL.A.	RELIEF AIR
M.A.	MAKE UP AIR
C.A.	COMBUSTION AIR
T.O.D.	TOP OF DUCT
B.O.D.	BOTTOM OF DUCT

BID DOCUMENTS

THE CE GROUP
BUILDING SYSTEMS ENGINEERING
400 Remington Street, Suite A
Ft. Collins, CO 80524
970.266.9888
THECEGROUP.COM

DRAWINGS, SPECIFICATIONS, GENERAL NOTES AND OUTLINE SPECIFICATIONS ARE INSTRUMENTS OF SERVICE AND SHALL REMAIN THE PROPERTY OF THE CONSULTING ENGINEERING GROUP L.L.C. (A.K.A. THE CE GROUP). COPIES OF THESE DOCUMENTS RETAINED BY THE CLIENT ARE FOR THE CLIENTS USE IN THE CONSTRUCTION OF THE PROJECT FOR WHICH THESE DOCUMENTS WERE PREPARED. ANY USE OF THESE DOCUMENTS, IN WHOLE OR IN PART, BY ANY MEANS WHATSOEVER TO CONSTRUCT ANY OTHER PROJECT OR THE USE OF THESE DOCUMENTS, IN WHOLE OR IN PART, AS STOCK PLANS OR PROTOTYPE DESIGN FOR MULTIPLE BUILDING PROJECTS IS STRICTLY PROHIBITED, EXCEPT WITH THE SPECIFIC WRITTEN CONSENT OF THE CONSULTING ENGINEERING GROUP L.L.C. (A.K.A. THE CE GROUP), A COLORADO COMPANY.

NOTICE; DUTY OF COOPERATION - Release of these plans contemplates further cooperation among the owner, his contractor and the architect. Design and construction are complex, and even the best of plans and specifications contain omissions and ambiguities. Although the architect and his consultants have performed their services with due care and diligence, they cannot guarantee perfection. Communication is important. All omissions or discrepancies should be resolved before proceeding with the work affected. Failure to do so may result in unnecessary costs. A failure of communication may result in the owner paying for the consequences of such a failure. Dimensions have priority over scale measurements. Do not scale drawings. Contractors and subcontractors are responsible for all dimensions and conditions on the job and must report any errors, omissions or conflicts they find to the architect before proceeding with the work affected. Failure to do so will result in the contractor and subcontractor being responsible for all resulting costs. Shop drawings must be submitted to the architect for review before fabrication. Review of shop drawings that do not show all dimensions and conditions of the work affected by the shop drawings will be rejected. Review of shop drawings that show deviations from the requirements of the contract documents must be specifically noted by the contractor and subcontractor. Review of shop drawings that show deviations from the requirements of the contract documents will not relieve the contractor of responsibility for meeting all requirements of the contract documents with respect to such deviations. Changes made from the plans without the consent of the architect are unauthorized, and shall relieve the architect of responsibility for all consequences arising out of such changes.

kenney associates ARCHITECTS, INC.
(970) 663-0548

revisions

A New MULTI PURPOSE EVENT CENTER for:

Estes Park, Colorado

© 2009 kenney & associates INC

Construction Documents

date Dec. 07, 2012
drawn MWD
checked MDR/PDS
job no. 09017

HVAC - LEGEND, INDEX, QUALIFICATION NOTES & CRITERIA

Loveland • Colorado

sheet
M0

HEATING AND EVAP COOL UNIT SCHEDULE

NOTES:
1. A.G.A. & CGA CERTIFIED.
2. 18 GA. BLOWER CABINET.
3. BLOWER, EVAP, PLENUM ARRANGEMENT
4. 24 VOLT CONTROL TRANSFORMER.
5. OPEN DRIP PROOF MOTOR.
6. FAN AND LIMIT SAFETY CONTROLS.
7. FULLY ELECTRONIC MODULATION GAS BURNER
8. NATURAL VENT DUCT FURNACE
9. 35% EFF. 1" THICK PLEATED DISPOSABLE FILTERS.
10. ADJUSTABLE MOTOR SHEAVE.
11. ---

FACTORY INSTALLED OPTIONS:
A. STAINLESS STEEL (409) HEAT EXCHANGER AND BURNERS.
B. AUTOMATIC SPARK PILOT WITH TIMED LOCKOUT.
C. MOTOR STARTER.
D. ELECTRONIC BURNER MODULATION (FULL TO 40% TURNDOWN) WITH UNIT MOUNTED DUCT STAT AND REMOTE LEAVING AIR TEMPERATURE SELECTOR.
E. FIRE STAT & FREEZE STAT.
F. O.A. AND R.A. DAMPERS
G. FILTER RACK.
H. 120V/Ø CONVENIENCE OUTLET.
I. AIR FLOW PROVING SWITCH.
J. DOWNTURN PLENUM.
K. EVAP COOL MODULE WITH 12" RIGID CELLULOSE MEDIA
L. FILL & DRAIN KIT
M. SMOKE DETECTOR IN RETURN

FIELD INSTALLED OPTIONS:
N. DISCONNECT SWITCH.
O. REMOTE CONTROL CONSOLE WITH:
- SYSTEM ON/OFF LIGHT
- FAN ON/OFF LIGHT.
- HEAT ON/OFF LIGHT.
- COOL ON/OFF LIGHT
- EVAP COOL ON/OFF LIGHT
P. FULL PERIMETER ROOF CURB

TAG	LOCATION	SERVICE	MANUF.	MODEL	CFM	MIN. O.A. CFM	VENT OA	FAN DATA TYPE	DRIVE	DIAM.	ESP ("W.C.)	TSP ("W.C.)	MAX. RPM	MOTOR HP	VOLTS/Ø	EVAP. COOLING SECTION DATA (REC 180) @ 7,500 FT. ELEVATION MEDIA	DEPTH	SAT. EFF	EAT (°F) DB	EAT (°F) WB	LAT (°F) DB	LAT (°F) WB	P.D. (IN. WC.)	MEDIA SIZE	PUMP HP	PUMP VOLTS/PH
MAU-1	ROOF	LOBBY	STERLING	RT-35 A2E	6,500	850	6,500	F.C.	ADJUSTABLE BELT	---	1.50	2.50	1449	5	480/3	RIGID CELLULOSE	12"	90%	80	64	65.6	---	0.30	31"x 54-9/16"	1/50	115/1

TAG	HEATING SECTION DATA @ 7,500 FT. ELEVATION FUEL TYPE	INPUT (MBH)	OUTPUT (MBH)	EFF/CY.	EAT (°F) DB	BURNERS/ STAGES	LAT (°F) DB	GAS PRESS. ("W.C.)	CONN.	FILTER DATA QTY.	SIZE	MAX. VELOCITY (FPM)	AREA (SQ. FT.)	EMERG. POWER	OPER. WEIGHT (LBS)	NOTES	OPTIONS	TAG
MAU-1	NAT. GAS INDIRECT-FIRED	350	199	80%	62	1/2 (FULL)	100	6	3/4"	(2) (1) (4) (4)	16x16 16x25 12x25 12x30	206	16	Y	2,400	1 THRU 10	A THRU P	MAU-1

HVAC UNIT SCHEDULE

NOTES:
1. ADJUSTABLE PITCH MOTOR SHEAVE.
2. THRU CURB SINGLE POINT POWER CONNECTION.
3. COMPRESSOR MOTOR THERMAL AND CURRENT OVERLOADS.
4. CRANKCASE HEATER ON RECIP. COMPRESSOR.
5. EXTERNAL RUBBER ISOLATORS FOR COMPRESSORS.
6. REFRIGERANT SERVICE VALVES ON COMPRESSOR.
7. COMPRESSOR HI/LOW PRESSURE SAFETY SWITCHES WITH RESET.
8. LIQUID LINE SERVICE VALVE FILTER DRIER AND FIXED ORIFICE METERING SYSTEM.
9. INDEPENDENT CIRCUITS ON MULTI COMPRESSOR UNITS.
10. ALUMINUM FIN/COPPERTUBE EVAPORATOR COIL.
11. REDUNDANT MAIN GAS VALVE.
12. INSULATED (1/2" FIBERGLASS) HEATING SECTION AND EVAPORATOR CABINET.
13. DIRECT DRIVE INDUCED DRAFT BURNER.
14. DIRECT SPARK IGNITION.
15. ALUMINIZED STEEL TUBULAR HEAT EXCHANGER.
16. FLAME PROVING SWITCH & HIGH TEMPERATURE LIMIT SWITCH.
17. EVAP. FAN ON/OFF DELAY.
18. NON CORROSIVE STEEL SLOPED CONDENSATE DRAIN PAN.

FACTORY INSTALLED OPTIONS:
A. INTEGRATED MICROPROCESSOR BASED DRY BULB 100% OA ECONOMIZER WITH PARALLEL BLADE LOW LEAKAGE O.A. DAMPER.
B. POWERED EXHAUST
C. ALTERNATE HIGH STATIC MOTOR AND DRIVE.
D. LAT CONTROLS WITH ROOM RESET
E. HOT GAS BYPASS
F. ASHRAE 52 - MERV 13 FILTERS
G. SMOKE DETECTOR IN RETURN AIRSTREM

FIELD INSTALLED OPTIONS:
H. CONDENSER COIL HAIL GUARD.
I. ELECTRONIC PROGRAMMABLE THERMOSTAT.
J. ECONOMIZER O.A. HOOD WITH BIRDSCREEN.

TAG	SERVICE	MANUFACTURER	MODEL	SUPPLY FAN DATA QTY	SIZE	TYPE	CFM	ESP	MIN OA	VENT	MAX OA	HP	DRIVE	RPM	HEATING COIL DATA @ 7,500 FT. ELEVATION FUEL TYPE	MBH INPUT @S.L.	MBH OUTPUT	EAT (°F)	LAT (°F)	GAS CONN.	COOLING COIL DATA @ 7,500 FT. ELEVATION COIL TYPE	TOTAL	SENS.	ROWS/FINS	EAT	LAT	AMB °F	REFG. TYPE	COMPRESSORS TYPE	QTY	R.A. FILTERS TYPE	QTY.	SIZE	RELIEF FAN DATA QTY	SIZE	TYPE	CFM	ESP	HP	V/PH	UNIT MCA	UNIT MOCP	EMERG. POWER	OP. WEIGHT (LBS)	MIN. UNIT EER	NOTES	OPTIONS	TAG
HVAC-1	IT	CARRIER	48TCDA07	1	10x10	DWDI FC	2,700	0.6	25	25	ECON.	---	BELT	1575	(DISABLE ALL HEAT IN UNIT)						DX	67.9	40.63.5	4/15	76/64	57/54	93	R410A	SCROLL	1	TAW	4 1	16x16x2 20x24x1	1	---	PROP	1,600	0.1	---	460/3	17.3	25	Y	750	11.0	1 THRU 18	A THRU J	HVAC-1

SPLIT SYSTEM AIR HANDLING UNIT SCHEDULE

NOTES:
1. AGA CERTIFIED HORIZONTAL FLOW GAS FURNACE.
2. ALUMINIZED STEEL PRIMARY HEAT EXCHANGER.
3. HOT SURFACE IGNITION.
4. AUTOMATIC GAS VALVE WITH 100% SHUT-OFF.
5. CONTROL BOX WITH 24 VOLT TRANSFORMER.
6. 4-SPEED BLOWER.
7. BURNER HIGH LIMIT CONTROL.
8. INDUCED DRAFT COMBUSTION BLOWER.
9. INSULATED HEAT EXCHANGER CABINET.
10. BLOWER SAFETY INTERLOCK SWITCH.
11. POLYPROPYLENE LAMINATED STEEL SECONDARY HEAT EXCHANGER.
12. COMBUSTION CONDENSATE TRAP.
13. FILTER INCLUDED IN INTERNAL STATIC PRESSURE ALLOWANCE.
14. TXV VALVE.

FIELD INSTALLED OPTIONS:
A. 3"Ø PVC COMBUSTION AIR AND 3"Ø PVC FLUE EXHAUST CONCENTRIC ROOF TERMINATION KITS.
B. 2"Ø PVC COMBUSTION AIR AND 2"Ø PVC FLUE EXHAUST CONCENTRIC ROOF TERMINATION KITS.
C. PROGRAMMABLE 24 HOUR 7 DAY STAT.
D. REFRIGERANT METERING DEVICE.
E. UNIT SHALL BE EQUIPPED FOR LONG REFRIGERANT PIPING APPLICATION.
F. TWINNING KIT.
G. CONDENSATE FREEZE PROTECTION KIT.
H. SIDE FILTER RACK.

TAG	LOCATION	SERVICE	MATCHED WITH	MANUF.	FURNACE MODEL	EVAP. COIL MODEL	FURNACE TYPE	FAN DATA TOTAL CFM	MAX O.A. CFM	E.S.P. (IN W.G.)	TYPE - FAN/DRIVE	H.P.	HEATING DATA @ 7,500 FT. ELEV. FUEL	S.L. INPUT MBH	MIN. OUTPUT MBH	E.A.T.	MAX. L.A.T.	GAS (IN W.C.)	CONN.	AFUE	VENT TYPE	FILTER DATA TYPE	SIZE	EVAPORATOR COIL DATA @ 7,500 FT. ELEV. COIL TYPE	TOTAL MBH	SENS MBH	E.A.T. DB/WB	L.A.T. DB/WB	AIR P.D. (IN W.C.)	REF. CONNS. SUCT.	LIQ.	UNIT SEER	UNIT MCA	MAX. FUSE (AMPS)	VOLTS/PH	EMERG. POWER	GENERAL OP. WT. (LBS)	NOTES	OPTIONS	TAG
AHU-1	SILO MECH	1ST LEVEL INTERIOR	CU-1	CARRIER	59SC2B 040S14-10	CNPVP2417	VERT. COND.	675	100	0.7	CENTRIF./ DIRECT	1/3	NAT. GAS	40.0	37	61	92.1	4.5-13.6	1/2"	92%	DIRECT	TAW	16x25x1	VERTICAL CASED "N"	16.6	16.5	80/62	55/54	0.14 MAX	5/8"	3/8"	13.2	5.2	15	120/1	Y	225	1 THRU 12	A, C	AHU-1
AHU-2	SILO MECH	1ST LEVEL EXTERIOR	CU-2	CARRIER	59SC2B 080S21-16	CNPVP4221	VERT. COND.	1,350	200	0.7	CENTRIF./ DIRECT	1/2	NAT. GAS	80.0	75	61	92.1	4.5-13.6	1/2"	92%	DIRECT	TAW	20x25x1	VERTICAL CASED "N"	32.5	32.5	80/62	57/55	0.27 MAX	7/8"	3/8"	13	8.2	15	120/1	Y	300	1 THRU 12	A, C	AHU-2
AHU-3	SILO MECH	2ND LEVEL CONFERENCE	CU-3	CARRIER	59SC2B 080S21-16	CNPVP3617	VERT. COND.	1,125	175	0.7	CENTRIF./ DIRECT	1/2	NAT. GAS	80.0	75	61	92.1	4.5-13.6	1/2"	92%	DIRECT	TAW	16x25x1	VERTICAL CASED "N"	26.5	26.5	80/62	58/55	0.29 MAX	3/4"	3/8"	13	8.2	15	120/1	Y	250	1 THRU 12	A, C	AHU-3
AHU-4	CONCESSIONS	CONCESSIONS	---	CARRIER	59SC2B 080S21-16	---	HORIZ. COND.	1100	200	0.7	CENTRIF./ DIRECT	1/2	NAT. GAS	80.0	75	61	92.1	4.5-13.6	1/2"	92%	DIRECT	TAW	16x25x1	---	---	---	---	---	---	---	---	---	8.2	15	120/1	Y	250	1 THRU 12	A, C	AHU-4

LOUVERED ROOF SUPPLY FANS (FUTURE)

NOTES:
1. AIRFOIL BLADS DYNAMICALLY BALANCED
2. HEAVY GAUGE EXTRUDED ALUM LOUVERS
3. MOTOR SLIDE BASE, ADJUSTABLE BELT TENSION
4. NEOPRENE MOTOR VIBRATION ISOLATORS.

FACTORY INSTALLED OPTIONS:
A. MOTOR W/ THERMAL OVERLOADS.
B. WASHABLE FILTERS.
C. ALUMINUM BACKDRAFT DAMPER.

FIELD INSTALLED OPTIONS:

TAG	LOCATION	SERVICE	MANUF.	MODEL	FAN DATA TOTAL CFM	E.S.P. (IN W.C.)	TYPE	DIAM. (IN)	MAX RPM	MAX SONES	MOUNT	MOTOR DATA DRIVE	H.P.	VOLTS/PH	OP. WT. (LBS)	EMERG. POWER	NOTES	OPTIONS	TAG
SF-2	ROOF	MULTIPURPOSE	GREENHECK	LSF-24	20,000	0.20	CENTRIF.	-	1,650	5.1	SIDE WALL	DIRECT	7.5	460/3	1,800	N	1 THRU 4	--	SF-2

SPLIT SYSTEM CONDENSING UNIT SCHEDULE

NOTES:
1. 5 YEAR LIMITED COMPRESSOR & PARTS WARRANTY.
2. GALV. STEEL CABINET W/ BAKED-ON POWDER PAINT.
3. EXTERNAL REFRIGERANT SERVICE VALVES / PORTS.
4. INTERNAL PRESSURE RELIEF VALVE.
5. INTERNAL THERMAL OVERLOAD PROTECTION.
6. FIELD INSTALLED FILTER DRYER.
7. HIGH AND LOW PRESSURE SWITCHES.
8. DENSE WIRE COIL GUARD.
9. TOTALLY ENCLOSED FAN MOTOR.
10. ALUM. FIN/COPPER TUBE COND. COIL.

FACTORY INSTALLED OPTIONS:
A. BALL BEARING FAN MOTOR.
B. COMPRESSOR ANTI-CYCLE TIMER.
C. CRANKCASE HEATER.
D. WINTER START CONTROL.
E. START ASSIST CAPACITOR & RELAY.
F. TIME-DELAY RELAY.
G. MOTOR MASTER CONTROL FOR CONDENSER FAN.

FIELD INSTALLED OPTIONS:
H. PRE-INSULATED REFRIGERANT PIPING KIT.
I. EVAP. FREEZE STAT.
J. SOUND HOOD.
K. SUPPORT FEET.
L. LIQUID LINE SOLENOID VALVE.
M. LOW-AMBIENT PRESSURE SWITCH KIT.

TAG	LOCATION	SERVICE	MANUF.	MODEL	NOMINAL CAPACITY (MBH)	AMB. TEMP	REFRIG. TYPE	COMPRESSORS QTY	TYPE	COND. FANS QTY	TYPE	DRIVE	EMERG POWER	UNIT MCA	MAX. FUSE (AMPS)	VOLTS/PH	REF. PIPING SUCT.	LIQ.	OP. WT. (LBS)	NOTES	OPTIONS	TAG
CU-1	GRADE	AHU-1	CARRIER	24ABB318A-3	18.0	95°	R-410A	1	SCROLL	1	PROP.	DIRECT	N	11.8	15	208/1	5/8"	3/8"	150	1 THRU 10	A THRU I	CU-1
CU-2	GRADE	AHU-2	CARRIER	24ABB336A-3	36.0	95°	R-410A	1	SCROLL	1	PROP.	DIRECT	N	20.5	30	208/1	3/4"	3/8"	200	1 THRU 10	A THRU I	CU-2
CU-3	GRADE	AHU-3	CARRIER	24ABB330A-3	30.0	95°	R-410A	1	SCROLL	1	PROP.	DIRECT	N	16.8	25	208/1	3/4"	3/8"	175	1 THRU 10	A THRU I	CU-3

ELECTRIC RADIANT PANEL HEATER SCHEDULE

NOTES:
1. 24 GAUGE STEEL BACK.
2. 22 GAUGE STEEL FRONT COVER.
3. 1" HIGH TEMPERATURE FIBERGLASS INSULATION.
4. GRAPHITE HEATING ELEMENT.
5. CRYSTALLINE RADIANT SURFACE.
6. PRE-WIRED J-BOX.

FIELD INSTALLED OPTIONS:
A. WALL MOUNTED LINE VOLTAGE THERMOSTAT.
B. EXTRUDED ALUMINUM SURFACE MOUNTING FRAME.

TAG	LOCATION	SERVICE	MANUFACTURER	MODEL	TYPE	SIZE	WATTS	VOLTS/PH	BTU/H	EMERG. PWR.	NOTES	OPTIONS	TAG
RP-1	PUBLIC RESTROOM	PUBLIC RESTROOM	AZTEC/MARLEY	CP7501	SURFACE MOUNTED	24"X48"	750	120/1	2550	Y	1 TO 6	A, B	RP-1
RP-2	FAMILY RESTROOM	FAMILY RESTROOM	AZTEC/MARLEY	CP7501	SURFACE MOUNTED	24"X48"	750	120/1	2550	Y	1 TO 6	A, B	RP-2

INFRARED RADIANT HEATER SCHEDULE

NOTES:
1. AGA CERTIFIED.
2. SPARK IGNITION WITH FLAME SUPERVISION.
3. POSITIVE PRESSURE BLOWER.
4. PRE PURGE CYCLE.
5. DIFFERENTIAL PRESSURE AIR FLOW SWITCH.
6. 100% SAFETY SHUT-OFF.
7. 24 V. CONTROLS
8. GROUNDED PLUG-IN CORD.
9. 14 GA. ALUMINIZED STEEL COMBUSTION CHAMBER.
10. POLISHED REFLECTORS.
11. BUILT-IN SUSPENSION HANGERS.
12. BURNER INDICATOR LIGHT.
13. CONTROL BOX SAFETY INTERLOCK SWITCH.

FACTORY INSTALLED OPTIONS:
A. HIGH ALTITUDE KIT.
B. FLUE VENT CAP.

FIELD INSTALLED OPTIONS:
C. HANGER KIT.
D. REFLECTOR GAP COVERS.
E. REFLECTOR END COVERS.
F. 3/4"Ø x 24" LONG FLEXIBLE GAS CONNECTOR.
G. REMOTE MOUNTED SENSOR CONTROL.
H. PROTECTIVE GUARD

PROVIDE AMBI-RAD SMART COM ENERGY CONTROLLER WITH REMOTE SENSING BLACK BULB SENSOR FOR EACH BANK OF HEATERS.

TAG	LOCATION	SERVICE	MANIF.	MODEL	TOTAL TUBING LENGTH	TYPE	TUBE CONFIG.	BURNER DATA @ 7'200 FT. ELEVATION A.G.A. INPUT MBH @ S.L.	A.G.A. OUTPUT MBH	HP	VOLTS/PH	AMPS	FLUE SIZE	C.A. INLET SIZE	GAS CONN.	OP. WT. (LBS)	EMERG. PWR.	NOTES	OPTIONS	TAG
IRH-1	MULTIPURPOSE	MULTIPURPOSE	AMBIRAD	VS150/U40	40'-0"	POSITIVE PRESSURE	U-TUBE	150	84	1/15	120/1	1.1	4"Ø	4"Ø	1/2"	185	Y	1 THRU 13	A THRU H	IRH-1
IRH-2	MULTIPURPOSE	MULTIPURPOSE	AMBIRAD	VS125/U40	40'-0"	POSITIVE PRESSURE	U-TUBE	125	70	1/15	120/1	1.1	4"Ø	4"Ø	1/2"	185	Y	1 THRU 13	A THRU H	IRH-2
IRH-3	STORAGE 102	STORAGE 102	AMBIRAD	VS125/L50	50'-0"	POSITIVE PRESSURE	U-TUBE	125	70	1/15	120/1	1.1	4"Ø	4"Ø	1/2"	195	Y	1 THRU 13	A THRU H	IRH-3

WALL CABINET UNIT HEATER SCHEDULE

NOTES:
1. 18 GAUGE STEEL HOUSING.
2. STEEL SHEATHED FINNED ELEMENT.
3. FAN OFF DELAY.
4. HIGH TEMPERATURE CUT OUT SWITCH WITH MANUAL RESET.
5. 16 GAUGE FRONT BAR GRILLE.

FACTORY INSTALLED OPTIONS:
A. BUILT-IN SNAP ACTING THERMOSTAT.
B. BUILT-IN DISCONNECT SWITCH.

FIELD INSTALLED OPTIONS:
C. FULL RECESSED MOUNTING FRAME.
D. 4" SURFACE MOUNTING FRAME.

TAG	LOCATION	SERVICE	MANUFACTURER	MODEL	TYPE	CFM	MBH	KW	HP	VOLTS/PH	AMPS	MOUNTING	OP. WT. (LBS)	NOTES	EMERG. PWR.	OPTIONS	TAG
CUH-1	VARIES	VARIES	MARKEL	G3425	SURFACE MOUNT	100	17.0	5.0	---	277/1	18.0	VERTICAL	25	1 THRU 5	N	A, B, D	CUH-1

GAS FIRED DUCT HEATER SCHEDULE

NOTES:
1. CSA CERTIFIED.
2. SEPARATED COMBUSTION INDOOR FURNACE..
3. NATURAL VENT BURNER
4. FAN RELAY.
5. HIGH LIMIT SWITCH.
6. 24v CONTROL TRANSFORMER.
7. PRESSURE REGULATOR.
8. POST-PURGE CONTROL SEQUENCE
9. INTERMITTANT SPARK IGNITION.
10. AIR FLOW Δ P PROVING SWITCH.
11. WASHABLE FILTERS.

FACTORY INSTALLED OPTIONS:
A. 409STAINLESS STEEL HEAT EXCHANGER
B. 409 STAINLESS STEEL DRIP PAN
C. 409 STAINLESS STEEL BURNER
D. SPARK-IGNITED SAFETY PIOT
E. ELECTRONIC MODULATION GAS CONTROL 50%-100%, FOR EACH OF (2) BURNERS.
F. RIGHTSIDE CONTROLS
G. FREEZE STAT
H. FIRE STAT

FIELD INSTALLED OPTIONS:
I. ROOM OVERRIDE FOR ELECTRONIC MODULATION W/DUCTSTAT
J. HORIZONTAL OR VERTICAL VENT TERMINAL/ COMBUSTION AIR ASSEMBLY
K. CONCENTRIC VENT AND COMBUSTION AIR

TAG	LOCATION	SERVICE	MANUF.	MODEL	TYPE	CFM	ESP IN. W.C.	TSP IN. W.C.	FAN RPM	A.G.A. INPUT @ S.L.	A.G.A. OUTPUT @ 7,500	EAT	LAT	GAS CONN.	VOLTS/PH	HP	OP. WT. (LBS)	EMER. POWER	NOTES	OPTIONS	TAG
DH-1	MONITOR	MULTIPURPOSE	STERLING	MS50A3	HORIZONTAL	4,000	0.30	0.60 (MAX)	1100	500,000	280,000	-5 F	79 F	3/4"	460/3	5	1,000	N	1 THRU 11	A THRU K	DH-1
DH-2	MONITOR	MULTIPURPOSE	STERLING	MS50A3	HORIZONTAL	4,000	0.30	0.60 (MAX)	1100	500,000	280,000	-5 F	79 F	3/4"	460/3	5	1,000	N	1 THRU 11	A THRU K	DH-2

GRILLE, REGISTER AND DIFFUSER SCHEDULE

NOTES:
1. FACTORY STANDARD WHITE FINISH.
2. REFER TO DRAWINGS FOR NECK SIZE AND AIR QUANTITY.
3. REFER TO ARCHITECTURAL DRAWING FOR CEILING TYPE AND LOCATION OF ALL GRD'S.

TYPE	MANUF.	MODEL	DESCRIPTION	NOTES
A	TITUS	272 RL	SUPPLY REGISTER, DOUBLE DEFLECTION, 3/4" BLADE SPACING, STEEL CONSTRUCTION, OPPOSED BLADE DAMPER.	1, 2, 3
B	TITUS	OMNI	SUPPLY DIFFUSER, 24"x24" FACE WITH FIXED SQUARE PANEL, STEEL CONSTRUCTION, SLIDING BLADE DAMPER.	1, 2, 3
C	TITUS	R-OMNI	ROUND PLAQUE SUPPLY DIFFUSER, STEEL CONSTRUCTION, WITH OPPOSED BLADE DAMPER.	1, 2, 3
D	TITUS	50 F	TRANSFER GRILLE, 24"x12", 1/2"x1/2" ALUMINUM CORE GRID ALUMINUM FRAME.	1, 2, 3
E	TITUS	50 F	TRANSFER GRILLE, 30"x8", 1/2"x1/2" ALUMINUM CORE GRID ALUMINUM FRAME.	1, 2, 3
F	TITUS	50 F	EXHAUST REGISTER, 1/2x1/2 ALUMINUM CORE GRID, ALUMINUM FRAME, OPPOSED BLADE DAMPER.	1, 2, 3
G	TITUS	50 F	TRANSFER GRILLE, 24"x48", 1/2"x1/2" ALUMINUM CORE GRID ALUMINUM FRAME.	1, 2, 3
H	TITUS	S300FS	SPIRAL DUCT MOUNTED GRILLE, DOUBLE DEFLECTION, 3/4" BLADE SPACING, ALUMINUM CONSTRUCTION, AIR SCOOP DAMPER/EXTRACTOR.	1, 2

TRANSFER FAN SCHEDULE

NOTES:
1. BACKWARD INCLINED ALUMINUM FAN WHEEL.
2. NEMA 1 DISCONNECT SWITCH.
3. INTERNAL CONDUIT CHASE.
4. ADJUSTABLE MOTOR PULLEY.
5. MOTOR VIBRATION ISOLATORS.
6. ALUMINUM MOTOR COVER
7. HEAVY GAUGE GALVANIZED STEEL HOUSING.

FACTORY INSTALLED OPTIONS:
A. ALL ALUMINUM CONSTRUCTION.
B. BIRDSCREEN.
C. GRAVITY BACKDRAFT DAMPER.

FIELD INSTALLED OPTIONS:
D. HANGING SPRING ISOLATOR KIT.
E. SOLID STATE SPEED CONTROLLER.
F. WALL CAP W/BIRD SCREEN

TAG	LOCATION	SERVICE	MANUF.	MODEL	FAN DATA TOTAL CFM	E.S.P. (IN W.C.)	TYPE	DIAM. (IN)	MAX RPM	MAX SONES	MOUNT	MOTOR DATA DRIVE	H.P.	VOLTS/PH	OP. WT. (LBS)	EMERG. POWER	NOTES	OPTIONS	TAG
TF-1	PUBLIC RESTROOMS	PUBLIC RESTROOMS	GREENHECK	BSQ-120-4	1,200	0.25	CENTRIF.	-	1,257	9	HANG	BELT	1/4	120/1	100	N	1,2,4,5,7	A, D, F	TF-1
TF-2	PUBLIC RESTROOMS	PUBLIC RESTROOMS	GREENHECK	BSQ-120-4	1,200	0.25	CENTRIF.	-	1,257	9	HANG	BELT	1/4	120/1	100	N	1,2,4,5,7	A, D, F	TF-2

SUPPLY FAN SCHEDULE

NOTES:
1. BACKWARD INCLINED ALUMINUM FAN WHEEL.
2. NEMA 1 DISCONNECT SWITCH.
3. INTERNAL CONDUIT CHASE.
4. ADJUSTABLE MOTOR PULLEY.
5. MOTOR VIBRATION ISOLATORS.
6. ALUMINUM MOTOR COVER
7. HEAVY GAUGE GALVANIZED STEEL HOUSING.

FACTORY INSTALLED OPTIONS:
A. ALL ALUMINUM CONSTRUCTION.
B. BIRDSCREEN.
C. GRAVITY BACKDRAFT DAMPER.

FIELD INSTALLED OPTIONS:
D. HANGING SPRING ISOLATOR KIT.
E. CUSTOM FABRICATED ROOF CURB FOR STANDING SEAM ROOF.
F. WALL CAP W/BIRD SCREEN

TAG	LOCATION	SERVICE	MANUF.	MODEL	FAN DATA TOTAL CFM	E.S.P. (IN W.C.)	TYPE	DIAM. (IN)	MAX RPM	MAX SONES	MOUNT	MOTOR DATA DRIVE	H.P.	VOLTS/PH	OP. WT. (LBS)	EMERG. POWER	NOTES	OPTIONS	TAG
SF-1	STORAGE	ELEC. ROOM SUPPLY	GREENHECK	BSQ-160-30	5,000	0.25	CENTRIF.	-	1,600	30	HANG	BELT	3	460/3	225	N	1,2,4,5,7	A, C, D, F	SF-1

CEILING FAN

CF-1 BIG ASS FAN - ISIS, 120" DIAM. COMMERCIAL CEILING FAN, 10-METAL AIRFOIL BLADES, 10-SPEEDS, SECONDARY SUPPORT CABLES, 8" DOWN ROD. 29,088 CFM AT MAX SPEED, 40 dBA MAX.. 120V/1Ø, 2.6 AMP. NOT ON E-POWER.

NOTE: CONTRACTOR TO INCLUDE FACTORY CERTIFIED INSTALLATION TO QUALIFY FOR 10-YEAR WARRANTY.

THE CE GROUP
BUILDING SYSTEMS ENGINEERING
400 Remington Street, Suite A
Ft. Collins, CO 80524
970.266.9669
THECEGROUP.COM

DRAWINGS, SPECIFICATIONS, GENERAL NOTES AND OUTLINE SPECIFICATIONS ARE INSTRUMENTS OF SERVICE AND SHALL REMAIN THE PROPERTY OF THE CONSULTING ENGINEERING GROUP L.L.C. (A.K.A. THE CE GROUP). COPIES OF THESE DOCUMENTS RETAINED BY THE CLIENT ARE FOR THE CLIENTS USE IN THE CONSTRUCTION OF THE PROJECT FOR WHICH THESE DOCUMENTS WERE PREPARED. ANY USE OF THESE DOCUMENTS, IN WHOLE OR IN PART, BY ANY MEANS WHATSOEVER TO CONSTRUCT ANY OTHER PROJECT OR THE USE OF THESE DOCUMENTS, IN WHOLE OR IN PART, AS STOCK PLANS OR PROTOTYPE DESIGN FOR MULTIPLE BUILDING PROJECTS IS STRICTLY PROHIBITED, EXCEPT WITH THE SPECIFIC WRITTEN CONSENT OF THE CONSULTING ENGINEERING GROUP L.L.C. (A.K.A. THE CE GROUP), A COLORADO COMPANY.

kenney & associates ARCHITECTS, INC.
(revisions)
(970) 663-0548

A New MULTI PURPOSE EVENT CENTER for:
Estes Park, Colorado

due care and diligence, they cannot guarantee perfection. Communication is not always perfect between parties, and omissions and errors do occasionally occur. Estimates of construction costs: A labor and material survey is not a construction bid. Bids should be requested from contractors. THIS SET IS NULL & VOID SHOULD SHF. A.I. BE OMITTED FROM THIS SET.

© 2009 kenney & associates INC

BID DOCUMENTS

Construction Documents
date Dec. 07, 2012
drawn MMD
Checked MDR/PDS
job no. 09017

Loveland • Colorado

HVAC - SCHEDULES

sheet
M0.1

DUCTLESS FAN COIL UNIT SCHEDULE

NOTES:
1. HEATING/COOLING THERMOSTAT WITH FAN ON-AUTO SUB-BASE.
2. 24V CONTROL TRANSFORMER.
3. INTERNAL CONDENSATE PUMP.
4. MOUNTING BRACKETS.
5. DIRECT DRIVE 3-SPEED BLOWER.
6. INSULATED CABINET.
7. WASHABLE FILTERS.
8. COIL FREEZE STAT.

FIELD INSTALLED OPTIONS:
A. FRESH AIR INTAKE KIT.
B. COMBINATION SUPPLY/RETURN GRILLE.

TAG	LOCATION	SERVICE	MANUF.	MODEL	TYPE	DRIVE	CFM	MIN. OA	ESP	TYPE	COOLING COIL DATA @ 7,500 FT. ELEV.			HEATING COIL DATA @ 7,500 FT. ELEV.				FILTERS		HP	OP.WT. (LBS.)	VOLTS/PH	MCA	MOCP	EMERG. POWER	NOTES	OPTIONS	TAG
											SENS MBH	EAT(°F) DB	LAT(°F) DB	TOTAL CAP.	ELECT. RES.	EAT(°F) DB	LAT(°F) DB	NO.	SIZE									
FCU-1	SOUND ROOM	SOUND ROOM	CARRIER	40KMQ036	CASSETTE	DIRECT	910	50	---	DX	23	76	50	10.2 MBH	3 KW	70	83	2	16.5"x16.5"	2 @ 1/16	110	208/1	16.9	20	N	1 THRU 8	A, B	FCU-1

FIXED LOUVER SCHEDULE

NOTES:
1. EXTRUDED ALUMINUM FRAME.
2. EXTRUDED ALUMINUM BLADES.
3. STEP BLADE DESIGN.

FACTORY INSTALLED OPTIONS:
A. INTERNAL MOUNTED EXPANDED ALUMINUM REMOVABLE BIRDSCREEN.
B. FLANGE FRAME

TAG	LOCATION	SERVICE	MANUF.	MODEL	WIDTH (IN.)	HEIGHT (IN.)	SHAPE	DEPTH (IN.)	MIN. FREE AREA FT^2	MAX. CFM	MAX. VEL. FPM	MAX. AIR P.D. (IN. W.C.)	BLADE TYPE	MAX. BLADE ANGLE	NOTES	OPTIONS	TAG
L-7	M.P. ROOM	RELIEF AIR	AIR BALANCE	A465	60	48	RECTANGULAR	4"	11.2	11,000	--	--	STATIONARY	30°	1, 2, 3	A, B	L-7

CONDENSING UNIT SCHEDULE

NOTES:
1. 5 YEAR WARRANTY.
2. HIGH AND LOW PRESSURE SWITCHES.
3. CRANKCASE HEATER FOR RECIP. COMPRESSOR.
4. COMPRESSOR ANTI-CYCLE TIMER.
5. PROVIDE ALL ACCESSORIES FOR YEAR ROUND OPERATION.

FIELD INSTALLED OPTIONS:
A. SNOW STAND.
B. WINTER START CONTROL.
C. LOW AMBIENT (-20.) CONTROL.
D. LIQUID LINE SOLENOID VALVE.
E. FILTER/DRYER ON REFRIGERANT LIQUID PIPING.
F. MOISTURE INDICATOR.
G. WIND BAFFLE.

TAG	LOCATION	SERVICE	MANUF.	MODEL	NOMINAL CAPACITY (MBH)	AMB. TEMP	COMPRESSORS		COND. FANS			UNIT MCA	MAX. FUSE (AMPS)	VOLTS/PH	REF. PIPING			OP. WT. (LBS)	EMERG. POWER	NOTES	OPTIONS	TAG
							QTY	TYPE	QTY	TYPE	DRIVE				REF. TYPE	SUCT.	LIQ.					
CU-4	ROOF	FCU-1	CARRIER	38HDF024	24	95°	1	RECIP.	1	PROP.	DIRECT	16.8	25	208/1	R-410A	5/8"	3/8"	180	N	1 THRU 5	A THRU G	CU-4

ELECTRIC UNIT HEATER SCHEDULE

NOTES:
1. STEEL CABINET WITH BAKED ENAMEL FINISH
2. ADJUSTABLE DISCHARGE LOUVERS
3. ALUMINUM TUBULAR FINNED ELEMENT.
4. HIGH TEMPERATURE CUT OUT SWITCH WITH AUTO RESET.
5. 24V CONTROL TRANSFORMER.
6. FAN OFF DELAY

FACTORY INSTALLED OPTIONS:
A. DISCONNECT SWITCH.

FIELD INSTALLED OPTIONS:
B. 24 V. WALL MOUNTED THERMOSTAT SET AT 60°F (ADJUSTABLE).
C. CEILING/WALL MOUNTING BRACKETS.

TAG	LOCATION	SERVICE	MANUF.	MODEL	TYPE	CFM	MBH	KW	HP	VOLTS/PH	AMPS	MOUNTING	EMER. POWER	OP. WT. (LBS)	NOTES	OPTIONS	TAG
EUH-1		VARIES	MARKEL	FIF5105N	SUSPENDED	400	17.1	5.0	---	208/1	24.1	VERTICAL	N	30	1 THRU 6	A, B, C	EUH-1

EXHAUST FAN SCHEDULE

NOTES:
1. BACKWARD INCLINED ALUMINUM FAN WHEEL.
2. NEMA 1 DISCONNECT SWITCH.
3. INTERNAL CONDUIT CHASE.
4. ADJUSTABLE MOTOR PULLEY.
5. MOTOR VIBRATION ISOLATORS.
6. ALUMINUM MOTOR COVER
7. HEAVY GAUGE GALVANIZED STEEL HOUSING.

FACTORY INSTALLED OPTIONS:
A. ALL ALUMINUM CONSTRUCTION.
B. BIRDSCREEN.
C. GRAVITY BACKDRAFT DAMPER.

FIELD INSTALLED OPTIONS:
D. HANGING SPRING ISOLATOR KIT.
E. CUSTOM FABRICATED ROOF CURB FOR STANDING SEAM ROOF.
F. WALL CAP W/BIRD SCREEN

TAG	LOCATION	SERVICE	MANUF.	MODEL	FAN DATA							MOTOR DATA			OP. WT. (LBS)	EMERG. POWER	NOTES	OPTIONS	TAG
					TOTAL CFM	E.S.P. (IN W.C.)	TYPE	DIAM. (IN)	MAX RPM	MAX SONES	MOUNT	DRIVE	H.P.	VOLTS/PH					
EF-1	PUBLIC RESTROOMS	PUBLIC RESTROOMS	GREENHECK	BSQ-140-10	2,900	0.375	CENTRIF.	-	1,728	18	HANG	BELT	1	460/3	125	N	1,2,4,5,7	A, C, D, F	EF-1
EF-3	ROOF	ELEC. ROOM EXHAUST	GREENHECK	CUBE-200-10	5,000	0.15	CENTRIF.	-	960	18	CURB	BELT	1	460/3	200	N	1-7	A, B, C, E	EF-3
EF-4	STORAGE	STORAGE	GREENHECK	BSQ-140-10	3,000	0.375	CENTRIF.	-	1,728	18	HANG	BELT	1	460/3	125	N	1,2,4,5,7	A, C, D, F	EF-4
EF-5	ROOF	CONCESSIONS	GREENHECK	CUBE - 121	1,100	0.25	CENTRIF.	-	1,140	8.2	CURB	BELT	1/4	120/1	--	N	1-7	A, B, C, E	EF-5

SIDEWALL PROPELLER FAN SCHEDULE

NOTES:
1. STEEL FAN PROPELLER.
2. GALVANIZED STEEL FAN PANELS.
3. ZINC PLATED HEAVY GAUGE WELDED WIRE MOTOR SUPPORTS AND FAN GUARD.
4. NEOPRENE MOTOR VIBRATION ISOLATORS.

FACTORY INSTALLED OPTIONS:
A. MOTOR W/ THERMAL OVERLOADS.

FIELD INSTALLED OPTIONS:
B. FLUSH EXTERIOR WALL HSG. W/ GUARD.
C. FLUSH EXTERIOR EXHAUST BACKDRAFT DAMPER.
D. LOW LEAKAGE BLADE & JAMB SEALS

TAG	LOCATION	SERVICE	MANUF.	MODEL	FAN DATA							MOTOR DATA			OP. WT. (LBS)	EMERG. POWER	NOTES	OPTIONS	TAG
					TOTAL CFM	E.S.P. (IN W.C.)	TYPE	DIAM. (IN)	MAX RPM	MAX SONES	MOUNT	DRIVE	H.P.	VOLTS/PH					
EF-2	MULTIPURPOSE	MULTIPURPOSE	GREENHECK	SBE-2L42-15	20,000	0.15	PROP	42.75	515	23	SIDEWALL	BELT	1.5	460/3	175	N	1 THRU 4	A, B, C, D	EF-2

FAN SCHEDULE

NOTES:
1. LOW PROFILE WHITE POLYMERIC GRILLE.
2. HEAVY GAUGE GALVANIZED STEEL HOUSING WITH ACOUSTIC INSULATION.
3. ELECTRIC TERMINAL BOX AND PLUG-IN DISCONNECT INSIDE HOUSING.
4. IMPACT RESISTANT POLYMETRIC BLOWER WHEEL.
5. ADJUSTABLE MOUNTING BRACKETS.
6. BUILT-IN BACKDRAFT DAMPER.
7. FORWARD CURVED FAN

FACTORY INSTALLED OPTIONS:

FIELD INSTALLED OPTIONS:
A. REMOTE WALL MOUNTED "DELAY OFF" ADJUSTABLE SWITCH.
B. ROOF CAP W/BIRD SCREEN.
C. LINE VOLTAGE STAT. FURNISHED BY MC. INSTALLED BY EC.

TAG	LOCATION	SERVICE	MANUF.	MODEL	FAN DATA							MOTOR DATA			OP. WT. (LBS)	NOTES	EMERG. POWER	OPTIONS	TAG
					TOTAL CFM	E.S.P. (IN W.C.)	TYPE	DIAM. (IN)	MAX RPM	MAX SONES	MOUNT	DRIVE	HP / W	VOLTS/PH					
EF-7	RESTROOM 116	RESTROOM 116	GREENHECK	SP-A125	100	0.25	CENT.	---	1,100	1.9	CEILING	DIRECT	53 W	120/1	15	1 THRU 7	N	A, B	EF-7

ELECTRIC BASEBOARD HEATER SCHEDULE

NOTES:
1. WALL MOUNTED.
2. 16 GAUGE FRONT COVER.
3. 1HEAVY DUTY CONSTRUCTION.
4. STEEL TUBULAR ELEMENT.
5. ALUMINUM FINS.
6. PRE-WIRED J-BOX.
7. BUILT-IN WIREWAY.
8. AUTOMATIC HIGH TEMP. CUT OUT SWITCH.

FACTORY INSTALLED OPTIONS:
A. INTEGRAL UNIT MOUNTED LINE VOLTAGE THERMOSTAT.
B. INTEGRAL DISCONNECT SWITCH.

TAG	LOCATION	SERVICE	MANUFACTURER	MODEL	TYPE	LENGTH	WATTS	VOLTS/PH	BTU/H	EMERG. PWR.	NOTES	OPTIONS	TAG
EBB-1	VARIES	VARIES	MARKEL	G2907-040SW	SURFACE MOUNTED	40"	750	277/1	2500	N	1 TO 8	A, B	EBB-1

OPERABLE LOUVER SCHEDULE

NOTES:
1. EXTRUDED ALUMINUM FRAME.
2. EXTRUDED ALUMINUM BLADES.
3. DRAINABLE BLADE DESIGN.
4. FLANGED FRAME.

FACTORY INSTALLED OPTIONS:
A. EXTERNAL MOUNTED EXPANDED ALUMINUM REMOVABLE BIRDSCREEN.
B. TIGHT SHUT OFF BLADE AND JAMB SEALS
C. CLASS 1 MOTORIZED DAMPER, 120/1 ACTUATOR.

TAG	LOCATION	SERVICE	MANUF.	MODEL	WIDTH (IN.)	HEIGHT (IN.)	DEPTH (IN.)	FREE AREA (%)	MAX. CFM	MAX. VEL. FPM	MAX. AIR P.D. (IN. W.C.)	BLADE TYPE	MAX. BLADE ANGLE	NOTES	OPTIONS	TAG
L-1	MONITOR	DH-1	AIR BALANCE	A445A	48	48	4"	36	5,000	700	0.09	ADJUSTABLE	30°	1, 2, 3, 4	A,B,C	L-1
L-2	MONITOR	DH-2	AIR BALANCE	A445A	48	48	4"	36	5,000	700	0.09	ADJUSTABLE	30°	1, 2, 3, 4	A,B,C	L-2
L-3	SILO	VENTILATION AIR	AIR BALANCE	A445A	24	18	4"	36	475	700	0.09	ADJUSTABLE	30°	1, 2, 3, 4	A,B,C	L-3
L-4	RESTROOM	EF-1	AIR BALANCE	A445A	48	24	4"	36	2,875	700	0.09	ADJUSTABLE	30°	1, 2, 3, 4	A,B,C	L-4
L-5	STORAGE	EF-4	AIR BALANCE	A445A	48	24	4"	36	3,000	700	0.09	ADJUSTABLE	30°	1, 2, 3, 4	A,B,C	L-5
L-6	STORAGE	SF-1	AIR BALANCE	A445A	48	48	4"	36	5,500	700	0.09	ADJUSTABLE	30°	1, 2, 3, 4	A,B,C	L-6

BID DOCUMENTS

THE CE GROUP
BUILDING SYSTEMS ENGINEERING
400 Remington Street, Suite A
Ft. Collins, CO 80524
970.266.9888
THECEGROUP.COM

DRAWINGS, SPECIFICATIONS, GENERAL NOTES AND OUTLINE SPECIFICATIONS ARE INSTRUMENTS OF SERVICE AND SHALL REMAIN THE PROPERTY OF THE CONSULTING ENGINEERING GROUP L.L.C. (A.K.A. THE CE GROUP). COPIES OF THESE DOCUMENTS RETAINED BY THE CLIENT ARE FOR THE CLIENTS USE IN THE CONSTRUCTION OF THE PROJECT FOR WHICH THESE DOCUMENTS WERE PREPARED. ANY USE OF THESE DOCUMENTS, IN WHOLE OR IN PART, BY ANY MEANS WHATSOEVER TO CONSTRUCT ANY OTHER PROJECT OR THE USE OF THESE DOCUMENTS, IN WHOLE OR IN PART, AS STOCK PLANS OR PROTOTYPE DESIGN FOR MULTIPLE BUILDING PROJECTS IS STRICTLY PROHIBITED, EXCEPT WITH THE SPECIFIC WRITTEN CONSENT OF THE CONSULTING ENGINEERING GROUP L.L.C. (A.K.A. THE CE GROUP), A COLORADO COMPANY.

due care and diligence, they cannot guarantee perfection. Communication is imperfect at best and plans, specifications, and other documents may contain errors and omissions. Therefore the contractor and subcontractors are responsible for all expenses incurred due to such errors and omissions. Although the architect and his consultants have performed their services with due care and diligence, they cannot guarantee perfection. Communication is imperfect at best and plans, specifications, and other documents may contain errors and omissions. Therefore the contractor and subcontractors are responsible for all expenses incurred due to such errors and omissions. Construction costs. A failure to discover errors, omissions, or inconsistencies in the plans and specifications shall not relieve the contractor of responsibility for all consequences arising out of such errors and omissions. THIS SET IS NULL & VOID SHOULD SHT. A-1 BE OMITTED FROM THIS SET.

kenney associates ARCHITECTS, INC.
(970) 663-0548

revisions

A New MULTI PURPOSE EVENT CENTER for:

Estes Park, Colorado

© 2009 kenney & associates INC

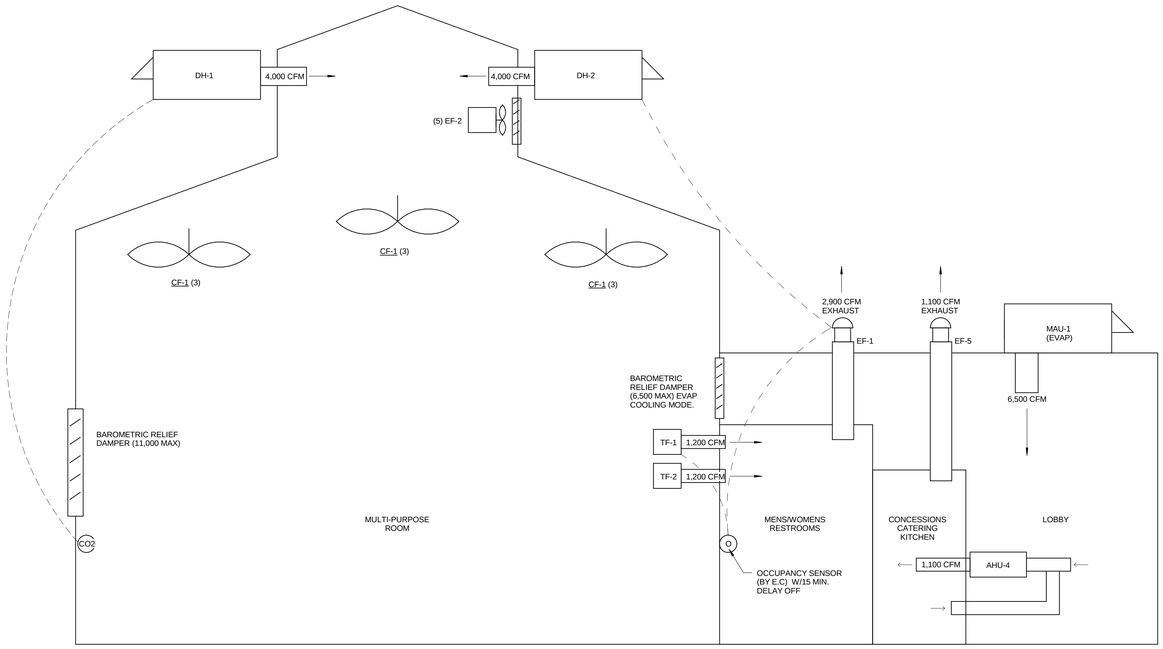
Construction Documents

date Dec. 07, 2012
drawn MWD
checked MDR/PDS
job no. 09017

HVAC - SCHEDULES

Loveland • Colorado

sheet
M0.2



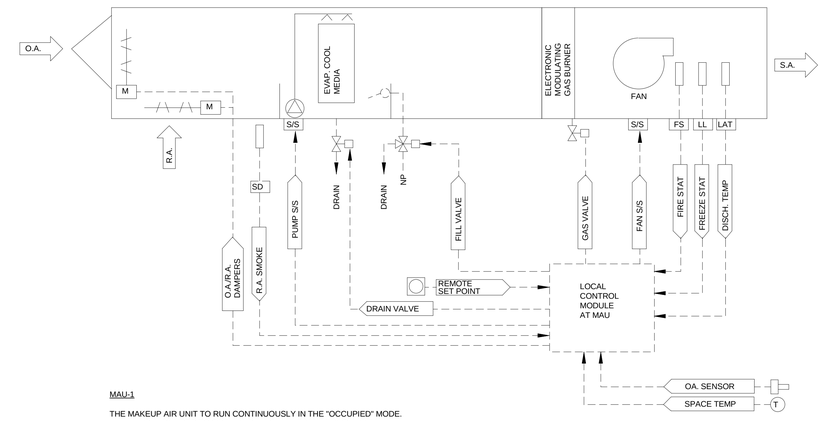
* EF-2 & EF-4 NOT INDICATED ON BUILDING AIR BALANCE DIAGRAM. THESE FANS RELY ON BUILDING OCCUPANT TO OPEN GARAGE DOOR FOR MAKEUP AIR.

Building Air Balance

SCALE: NONE

1
M0.3

LOBBY VENTILATION CONTROL SEQUENCE



MAU-1

THE MAKEUP AIR UNIT TO RUN CONTINUOUSLY IN THE "OCCUPIED" MODE.
- O.A. DAMPER TO OPEN AND ALLOW THE MINIMUM O.A. CFM
- RA DAMPER TO CLOSE TO ITS CORRESPONDING POSITION.

SUMMER: THE OUTSIDE AIR TEMPERATURE SENSOR WILL CYCLE ON THE EVAPORATIVE COOLING SECTION PUMP AT OUTSIDE TEMPERATURES OF 80°AND ABOVE.

- FULLY OPEN O.A. DAMPER OF MAU-1.
- CLOSE R.A. DAMPER OF MAU-1.

WINTER: THE DISCHARGE AIR TEMPERATURE SENSOR TO FIRE THE BURNER TO MAINTAIN A 72°LEAVING AIR TEMPERATURE A T OUTSIDE AIR TEMPERATURES OF 60°AND BELOW. A SPACE TEMPERATURE SENSOR TO OVER- RIDE THE LEAVING AIR TEMPERATURE SENSOR IF SPACE TEMPERATURE FALLS TO 68°(ADJUSTABLE) OR BELOW AND TURN THE BURNER TO "FULL FIRE" UNTIL THE SPACE TEMPERATURE SETPOINT IS SATISFIED. A REMOTE SETPOINT ADJUSTER ALLOWS THE USER TO ADJUST THE DISCHARGE AIR TEMPERATURE SETPOINT.

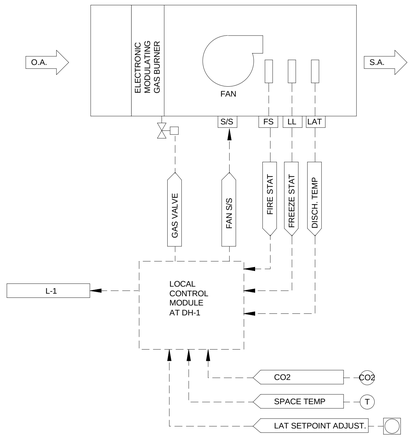
- BURNER TO FIRE AT 40% AND MODULATE UP TO 100%
- O.A. DAMPER OF MAU-1 TO MIN SETPOINT POSITION (850 CFM).
- OPEN R.A. DAMPER OF MAU-1.

IN THE "UNOCCUPIED" MODE UNIT SHALL BE DE-ENERGIZED.
- O.A. DAMPER TO FULLY CLOSE.
- RA DAMPER TO FULLY OPEN

SET BACK TEMPERATURE TO 65°.

MISCELLANEOUS:
- MAKE-UP AIR UNIT'S O.A. TEMPERATURE SENSOR TO CLOSE IT'S RESPECTIVE EVAPORATIVE COOLER WATER MAKE-UP VALVE AND OPEN THE RESERVOIR DRAIN VALVE AT 40F (ADJUSTABLE) AND BELOW.
- RETURN DUCT MOUNTED SMOKE DETECTOR, FREEZE STAT, AND FIRE STAT TO SHUT DOWN THE UNIT.
- WHEN THE SUPPLY FAN HAS BEEN SHUT DOWN FOR SERVICING, BY ONE OF THE SAFETIES OR A LOSS IN ELECTRICAL POWER, ALL CONTROL FUNCTIONS TO BE DEACTIVATED.
- COORDINATE FOR ALL CONTROLS TO BE ON EMERGENCY POWER.

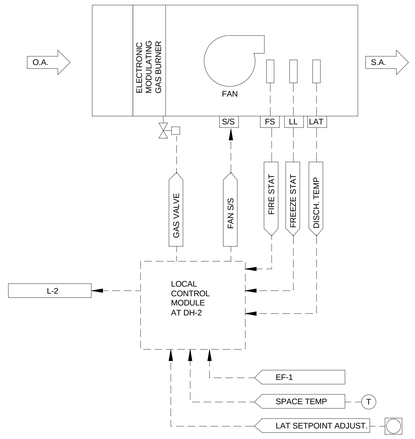
MULTIPURPOSE VENTILATION CONTROL SEQUENCE



DH-1

- UPON A SIGNAL FROM THE ROOM MOUNTED CO2 DETECTOR (> 800 PPM) OR ROOM THERMOSTAT, FULLY OPEN L-1 AND ALLOW THE SUPPLY FAN TO OPERATE. THE DISCHARGE AIR TEMPERATURE SENSOR TO FIRE THE BURNER TO MAINTAIN A 74°LEAV ING AIR TEMPERATURE AT OUTSIDE AIR TEMPERATURES OF 60°AND BELOW. A SPACE TEMPERATURE SENSOR TO OVER-RIDE THE LEAVING AIR TEMPERATURE SENSOR IF SPACE TEMPERATURE FALLS TO 68°(ADJUSTABLE) OR BELOW AND TURN THE BU RNER TO "FULL FIRE" UNTIL THE SPACE TEMPERATURE SETPOINT IS SATISFIED. A REMOTE SETPOINT ADJUSTER ALLOWS THE USER TO ADJUST THE DISCHARGE AIR TEMPERATURE SETPOINT.
- BURNERS TO OPERATE: #1 FIRE AT 50%. ON CALL FOR ADDITIONAL HEAT, FIRE #2 AT 50%. ON CALL FOR ADDTIONAL HEAT MODULATE BOTH BURNERS FROM 50% TO 100%.
- A BAROMETRIC RELIEF DAMPER WITHIN THE BUILDING TO RELIEVE THE BUILDING PRESSURE.
- IN THE 'UNOCCUPIED' CYCLE THE SUPPLY FAN TO REMAIN DE-ENERGIZED.

MULTIPURPOSE VENTILATION CONTROL SEQUENCE



DH-2

- INTERLOCK WITH EF-1, UPON A SIGNAL FROM EF-1., FULLY OPEN L-2 AND ALLOW THE SUPPLY FAN TO OPERATE. THE DISCHARGE AIR TEMPERATURE SENSOR TO FIRE THE BURNER TO MAINTAIN A 74°LEAVING AIR TEMPERATURE AT OUTSIDE AIR TEM PERATURES OF 60°AND BELOW. A SPACE TEMPERATURE SENSOR TO OV ER-RIDE THE LEAVING AIR TEMPERATURE SENSOR IF SPACE TEMPERATURE FALLS TO 68°(ADJUSTABLE) OR BELOW AND TURN THE BURNER TO "FULL FIRE" UNTIL THE SPACE TEMPERATURE SETPOINT IS SATISFIED. A REMOTE SETPOINT ADJUSTER ALLOWS THE USER TO ADJUST THE DISCHARGE AIR TEMPERATURE SETPOINT.
- BURNERS TO OPERATE: #1 FIRE AT 50%. ON CALL FOR ADDITIONAL HEAT, FIRE #2 AT 50%. ON CALL FOR ADDTIONAL HEAT MODULATE BOTH BURNERS FROM 50% TO 100%.
- A BAROMETRIC RELIEF DAMPER WITHIN THE BUILDING TO RELIEVE THE BUILDING PRESSURE.
- IN THE 'UNOCCUPIED' CYCLE THE SUPPLY FAN TO REMAIN DE-ENERGIZED.

HVAC CONTROL SEQUENCES

HVAC-1

- THE UNITS FAN TO RUN CONTINUOUSLY IN THE 'OCCUPIED' CYCLE AS DETERMINED BY THE HEATING AND COOLING PROGRAMMABLE THERMOSTATS 'OCCUPIED' SCHEDULE. SET AT CONTINOUS 24 HR/7 DAY SCHEDULE.
- UNIT WILL BE COOLING ONLY. DISABLE ALL HEAT IN UNIT.
- O.A. DAMPERS TO OPEN TO ALLOW THE MINIMUM O.A. QUANTITY SCHEDULED ON THE DRAWINGS.
- COMPRESSOR AND BURNER OPERATION STAGING TO BE DETERMINED BY THE PROGRAMMABLE THERMOSTAT.
  - 1ST STAGE COOLING CALL FROM THE STAT TO BE ECONOMIZER.
  - 2ND STAGE COOLING CALL FROM THE STAT TO BE COMPRESSOR.
- THE O.A. DAMPERS WILL OPEN TO THE 100% POSITION BASED ON THE UNITS DRY BULB TYPE ECONOMIZER.
- A POWERED EXHAUST FAN WITHIN THE UNIT TO RELIEVE THE IT ROOM PRESSURE DURING THE ECONOMIZER OPERATION.
- THE O.A. DAMPERS TO REMAIN CLOSED.
- A UNIT MOUNTED SMOKE DETECTOR IN THE RETURN TO SHUT DOWN THE SUPPLY FAN UPON DETECTION OF SMOKE/PRODUCTS OF COMBUSTION.
  - THE O.A. DAMPERS TO REMAIN CLOSED.
  - COORDINATE FOR ALL CONTROLS TO BE ON EMERGENCY POWER.

MISC. CONTROL SEQUENCES

EXHAUST FANS:
- EF-1 - FAN TO BE CONTROLLED BY AN OCCUPANCY SENSOR (BY E.C.) WITH A 15 MIN. TIME DELAY OFF. INTERLOCK WITH TF-1, TF-2 & DH-2.
- EF-2 - TO BE MANUALLY STARTED AND STOPPED BY THE BUILDING OCCUPANT. GARAGE DOORS TO BE OPENED MANUALLY TO PROVIDE MAKEUP AIR.
- EF-4 - TO BE MANUALLY STARTED AND STOPPED BY THE BUILDING OCCUPANT. GARAGE DOORS TO BE OPENED MANUALLY TO PROVIDE MAKEUP AIR.
- EF-5 - INTERLOCKED TO START WITH AHU-4 VENTILATION MODE ONLY.
- SF-1/ EF-3 - TO START AND STOP VIA A WALL MOUNTED LINE VOLTAGE (120/1) HIGH LIMIT. STAT SET AT 85°F (ADJUSTABLE) COORDINATE WITH E.C.
- EF-7 - FAN AND LIGHT TO INITIATE IN SWITCH "ON" POSITION, LIGHT TO DE-ENERGIZE AND FAN TO CONTINUE OPERATION FOR MINIMUM 15 MINUTES (ADJUSTABLE) IN SWITCH "OFF" POSITION.
- ALL CF-1 - TO BE MANUALLY STARTED AND STOPPED AND SPEED CONTROLLED BY THE BUILDING OCCUPANT. CENTER CF-1TO BE OPERATED IN WINTER ON LOW SPEED TO PROVIDE DE-STRATIFICATION.

HEAT PUMP UNIT
- FCU-1 - FAN TO RUN CONTINUOUSLY. COOLING SHALL CYCLE TO MAINTAIN THERMOSTAT PROGRAMMED SET POINT. REHEAT COIL SHALL CYCLE TO MAINTAIN THERMOSTAT PROGRAMMED SET POINT.

OPERABLE LOUVERS
- L-1 - MOTORIZED DAMPER TO OPEN ON SIGNAL FROM DH-1.
- L-2 - MOTORIZED DAMPER TO OPEN ON SIGNAL FROM DH-2.
- L-3- MOTORIZED DAMPER TO OPEN DURING BUILDING OCCUPIED CYCLE. COORDINATE WTIH AHU-1 / 2 / 3 "OCCUPIED" MODE.
- L-4 - MOTORIZED DAMPER TO OPEN WHILE EF-1 IS ENERGIZED.
- L-5 - MOTORIZED DAMPER TO OPEN WHILE EF-4 IS ENERGIZED.
- L-6 - MOTORIZED DAMPER TO OPEN WHILE SF-1 IS ENERGIZED.

CABINET UNIT HEATER/UNIT HEATER:

CUH-1/EUH-1 - FAN AND HEATER ELEMENT TO ENERGIZE VIA THE BUILT-IN THERMOSTAT TO MAINTAIN SET POINT TEMPERATURE OF 70°F (ADJUSTABLE), SET PO INT FOR EUH-1 TO BE 45°(ADJUSTABLE).

ELECTRIC BASEBOARD HEATER

EBB-1- HEATER ELEMENT TO ENERGIZE VIA THE BUILT-IN THERMOSTAT TO MAINTAIN SET POINT TEMPERATURE OF 60°F (ADJUSTABLE).

RADIANT PANEL

RP-1/2- HEATER ELEMENT TO ENERGIZE VIA WALL MOUNTED THERMOSTAT TO MAINTAIN SET POINT TEMPERATURE OF 65°F (ADJUSTABLE).

INFRARED HEATERS

IRH-1/2- HEATER ELEMENT TO ENERGIZE VIA REMOTE LOCATED AMBIRAD SMARTCOM ENERGY MANAGEMENT CONTROLLER. TO INCLUDE SELF ADAPTING OPTIMIZED START/STOP, 7 DAY/NIGHT/HOLIDAY PROGRAMING, 24V SUPPLY, (2) BLACK BULB REMOTE SENSORS PER CONTROLLER FOR TEMPERATURE AVERAGING, ZONE HIGH SETTING IF TEMP DROPS MORE THAN 3 DEG. F FROM SET POINT TEMPERATURE.

IRH-3- HEATER ELEMENT TO ENERGIZE VIA WALL MOUNTED THERMOSTAT TO MAINTAIN SET POINT TEMPERATURE OF 65°F (ADJUSTABLE).

AHU-4 CONTROL SEQUENCES

- THE UNITS FAN TO RUN CONTINUOUSLY IN THE "OCCUPIED" CYCLE AS DETERMINED BY THE PROGRAMMABLE THERMOSTATS "OCCUPIED" SCHEDULE.
- HEATING AND VENTILATING TO BE STAGED "ON" AS DETERMINED BY THE SPACE THERMOSTAT TO MAINTAIN IT'S PROGRAMMED SET POINTS.
- IN VENTILATION MODE, FULLY CLOSE RA DAMPER AND FULLY OPEN THE TRANSFER AIR DAMPER. INTERLOCKED EF-5 WILL PURGE SPACE.
- AUTOMATIC CHANGE-OVER FROM HEATING TO VENTILATION WILL BE DETERMINED BY THE PROGRAMMABLE THERMOSTAT.
- IN THE "UNOCCUPIED" CYCLE THE SUPPLY FAN TO REMAIN DE-ENERGIZED AND TO CYLCLE "ON" BASED ON A CALL FOR VENTILATION AND / OR HEATING TO MAINTAIN THE PROGRAMMED SET UP / SET BACK TEMPERATURES.
- COORDINATE FOR ALL CONTROLS TO BE ON EMERGENCY POWER FOR HEATING ONLY.

SPLIT SYSTEM CONTROL SEQUENCES

AHU-1 - 3/CU-1 - 3

- THE UNITS FAN TO RUN CONTINUOUSLY IN THE "OCCUPIED" CYCLE AS DETERMINED BY THE PROGRAMMABLE THERMOSTATS "OCCUPIED" SCHEDULE.
- HEATING AND COOLING TO BE STAGED "ON" AS DETERMINED BY THE SPACE THERMOSTAT TO MAINTAIN IT'S PROGRAMMED SET POINTS.
- AUTOMATIC CHANGE-OVER FROM HEATING TO COOLING WILL BE DETERMINED BY THE PROGRAMMABLE THERMOSTAT.
- IN THE "UNOCCUPIED" CYCLE THE SUPPLY FAN TO REMAIN DE-ENERGIZED AND TO CYLCLE "ON" BASED ON A CALL FOR COOLING AND / OR HEATING TO MAINTAIN THE PROGRAMMED SET UP / SET BACK TEMPERATURES.
- COORDINATE FOR ALL CONTROLS TO BE ON EMERGENCY POWER FOR HEATING ONLY.

BID DOCUMENTS

THE CE GROUP
BUILDING SYSTEMS ENGINEERING
400 Remington Street, Suite 6
Ft. Collins, CO 80524
970.266.9889
THECEGROUP.COM

DRAWINGS, SPECIFICATIONS, GENERAL NOTES AND OUTLINE SPECIFICATIONS ARE INSTRUMENTS OF SERVICE AND SHALL REMAIN THE PROPERTY OF THE CONSULTING ENGINEERING GROUP L.L.C. (A.K.A. THE CE GROUP). COPIES OF THESE DOCUMENTS RETAINED BY THE CLIENT ARE FOR THE CLIENTS USE IN THE CONSTRUCTION OF THE PROJECT FOR WHICH THESE DOCUMENTS WERE PREPARED. ANY USE OF THESE DOCUMENTS, IN WHOLE OR IN PART, BY ANY MEANS WHATSOEVER TO CONSTRUCT ANY OTHER PROJECT OR THE USE OF THESE DOCUMENTS, IN WHOLE OR IN PART, AS STOCK PLANS OR PROTOTYPE DESIGN FOR MULTIPLE BUILDING PROJECTS IS STRICTLY PROHIBITED, EXCEPT WITH THE SPECIFIC WRITTEN CONSENT OF THE CONSULTING ENGINEERING GROUP L.L.C. (A.K.A. THE CE GROUP), A COLORADO COMPANY.

NOTICE: DUTY OF COOPERATION - Release of these plans contemplates further cooperation among the owner, his contractor, and the architect. Design and construction are complex, although the architect and his consultants have performed their services with due care and diligence, they cannot guarantee perfection. Communication is imperfect at best and construction contracts should provide for the owner to pay the architect for additional services and expenses incurred as a result of such imperfections. A failure of communication may result in omissions or misinterpretations. The owner should require his contractor to review the plans and report any errors, omissions or conflicts he may discover. Failure to do so shall relieve the architect from responsibility for all consequences. Changes made from the plans without the consent of the architect are unauthorized, and shall relieve the architect of responsibility for all consequences arising out of such changes.

kenney associates ARCHITECTS, INC.

(970) 663-0548

(revisions)

A New MULTI PURPOSE EVENT CENTER for:

Estes Park, Colorado

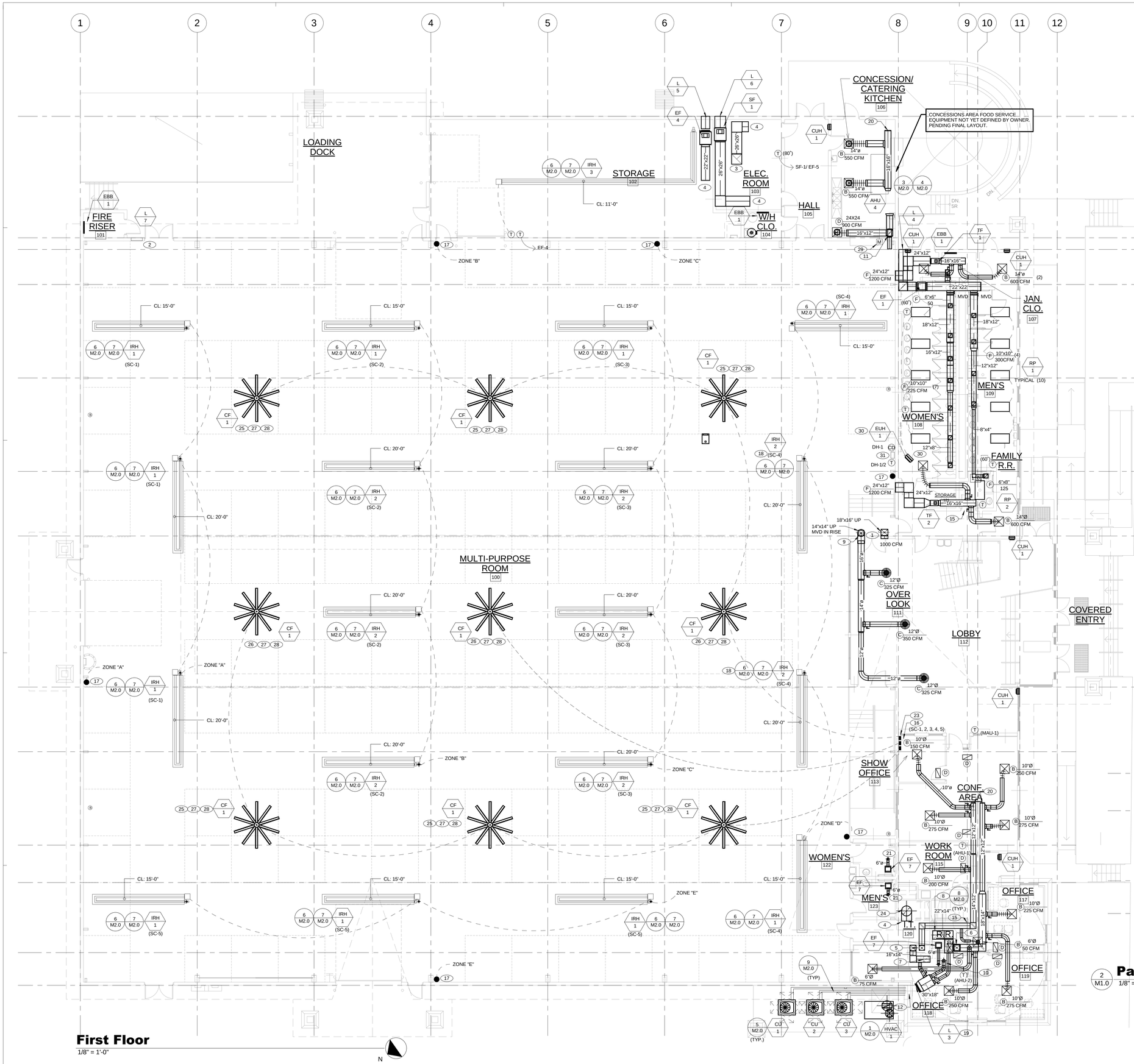
© 2009 kenney & associates INC

Construction Documents
date Dec. 07, 2012
drawn MMD
checked MDR/PDS
job no. 09017

CONTROL SEQUENCES

Loveland • Colorado

sheet
M0.3

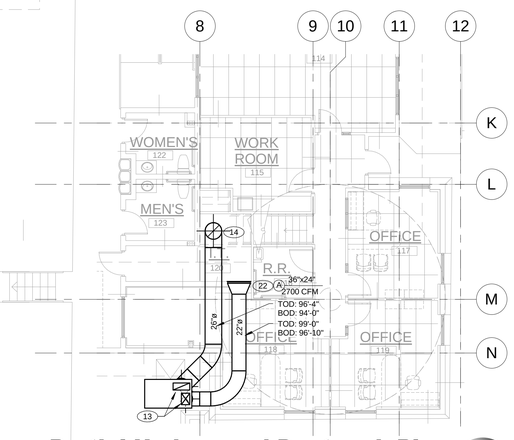


First Floor

1/8" = 1'-0"

REFERENCE NOTES

1. PROVIDE MANUAL BALANCE DAMPER IN VERTICAL RISE
2. PROVIDE 48"x48" COUNTERWEIGHTED (0.015" W.C.) RELIEF DAMPER IN SHEETMETAL SLEEVE BEHIND L-7. GREENHECK MODEL HB-110. MOUNT APPROX. 8'-0" A.F.F., DAMPER TO RELIEVE EXCESS BUILDING PRESSURE FROM DH-1/2.
3. 26"x26" E.A. UP TO EF-3.
4. TERMINATE DUCT OPEN ENDED. PROVIDE 1/2" SCREEN MESH OVER OPENING.
5. 14"x12" S.A. AND 16"x14" R.A. FROM AHU-1 ABOVE. PROVIDE TURNING VANES IN S.A. ELBOWS.
6. 18"x14" S.A. AND 22"x14" R.A. FROM AHU-2 ABOVE. PROVIDE TURNING VANES IN S.A. ELBOWS.
7. 14"x14" OPENING IN TOP OF R.A. DUCT.
8. 18"x18" OPENING IN TOP OF R.A. DUCT.
9. PROVIDE TURNING VANES IN S.A. ELBOW.
10. 8" DIA. O.A. DUCT UP TO AHU-3.
11. 10"x20" TRANSFER AIR DUCT UP, SEE SHEET M1.1 FOR CONTINUATION. CONNECT TO 16 X 12 RA DUCT TO AHU-4
12. REFRIGERANT LINE SET UP IN EXTERIOR WALL FROM CONDENSING UNITS. INSULATE BOTH LIQUID LINE AND SUCTION LINE.
13. 22"ø SA & 26"ø. RA FRP OR PVC COATED STEEL CLASS I, S.A. DUCT DOWN BELOW GRADE. USE SQUARE THROAT/MITERED ELBOW WITH TURNING VANES. ENSURE DUCTWORK IS INSTALLED WITHOUT CONFLICT OF STRUCTURAL FOOTING.
14. 26" DIA. R.A. UP TO UNDERSIDE OF STAIR LANDING.
15. COORDINATION WITH G.C. TO PROVIDE DOOR UNDERCUT.
16. MOUNTING LOCATION OF AMBI-RAD SMARTCOM ENERGY MGMT CONTROLLERS.
17. MOUNTING LOCATION OF AMBI-RAD BLACK BULB REMOTE SENSOR. INSTALL ON 2" STYROFOAM INSULATION BOARD.
18. TILT REFLECTORS & TUBING AT 20 DEGREE ANGLE AWAY FROM COMMON WALL.
19. BOTTOM OF LOUVER APPROX. 9'-2" A.F.F.
20. PROVIDE 4" THICK FIBERGLASS AT END CAP.
21. 6" EXHAUST AIR UP TO ROOF CAP PROVIDED WITH FAN.
22. MOUNT BOTTOM OF GRILLE APPROX. 6" A.F.F.
23. FAN CONTROLLER(S) FOR UP TO (4) FANS. (AS SHOWN)
24. PROVIDE TEE WITH 4" INSULATION AT END CAP (AT TOP) FOR SOUND ATTENUATION.
25. MOUNT FAN AT 14'-0" ABOVE FLOOR.
26. MOUNT FAN AT 18'-0" ABOVE FLOOR.
27. PROVIDE GUY WIRE SUPPORTS FOR FAN.
28. PROVIDE 4" LIGHT WEIGHT I-BEAM BETWEEN GIRDERS AT HIGH POINT OF GIRDER NEAR "Z" PURLINS FOR FAN INSTALLATION.
29. TRANSFER / RETURN DAMPERS. SET MINIMUM TRANSFER AIR AT 200 CFM AND MAXIMUM RETURN AIR AT 900 CFM.
30. LOCATE ABOVE CEILING TO PROTECT WATER PIPING.
31. REMOTE LAT SET POINT ADJUSTER FOR DH-1/2.



2 M1.0 **Partial Undergroud Ductwork Plan**

1/8" = 1'-0"

BID DOCUMENTS

THE CE GROUP
BUILDING SYSTEMS ENGINEERING
490 Remington Street, Suite A
Ft. Collins, CO 80524
970.266.9888
THECEGROUP.COM

kenney associates ARCHITECTS INC.

(970) 663-0548

(revisions)

A New MULTI PURPOSE EVENT CENTER for:

Estes Park, Colorado

due care and diligence, they cannot guarantee perfection. Communication is difficult on large projects and we do not guarantee that all conflicts, omissions, or ambiguities will be found in the construction docs. A Minor deviation from the plans is normal and expected. THIS SET IS NULL & VOID SHOULD SHF. A1 BE OMITTED FROM THIS SET.

NOTICE: DUTY OF COOPERATION - Release of these plans contemplates further cooperation among the owner, his contractor, and the architect. Design and construction are complex. Although the architect and his consultants have performed their services with due care and diligence, they cannot guarantee perfection. Communication is difficult on large projects and we do not guarantee that all conflicts, omissions, or ambiguities will be found in the construction docs. A Minor deviation from the plans is normal and expected. Changes made from the plans without the consent of the architect are unauthorized, and shall relieve the architect of responsibility for all consequences arising out of such changes.

© 2009 kenney & associates INC

Construction Documents

date Dec. 07, 2012
drawn MMD
checked MDR/PDS
job no. 09017

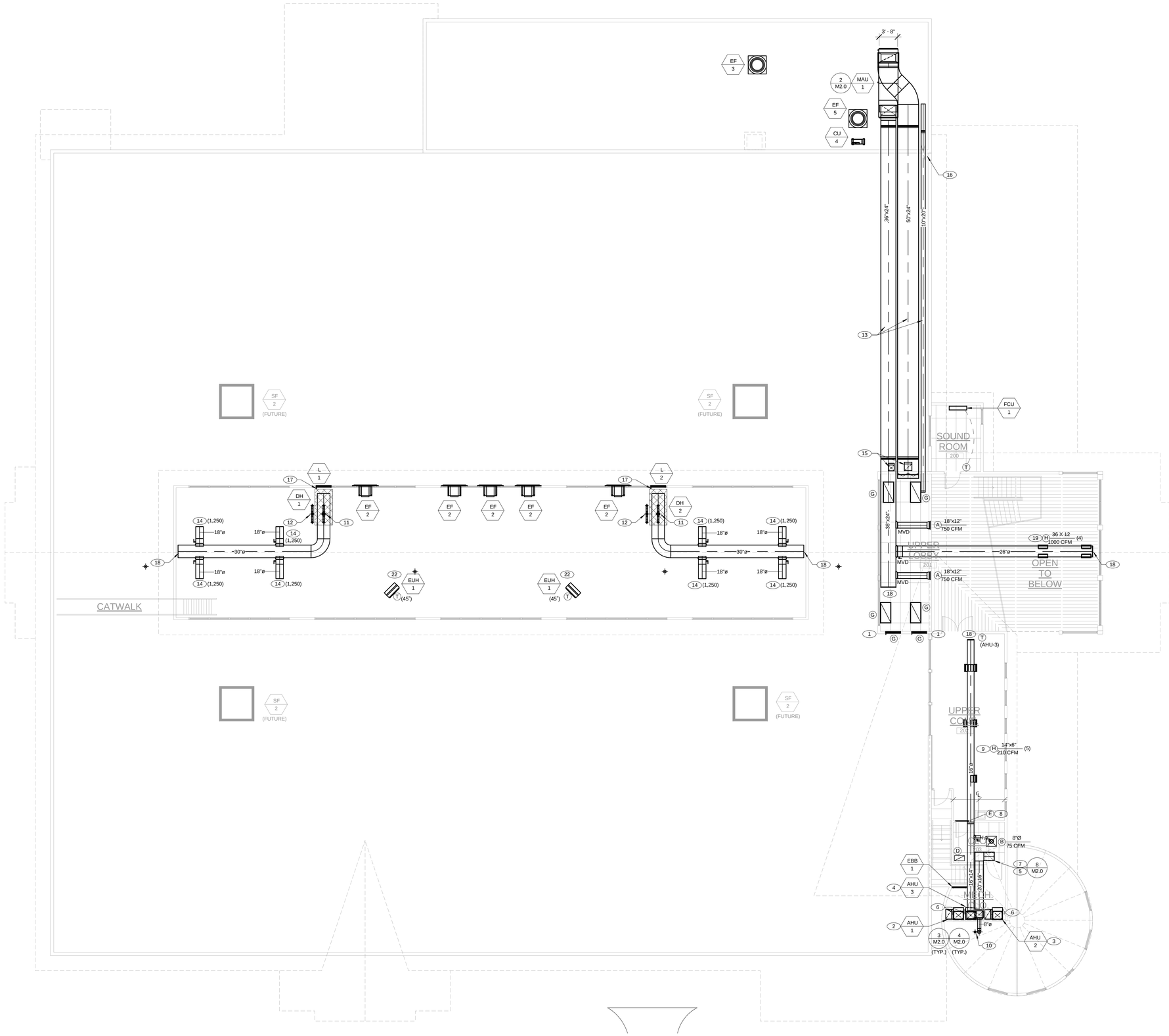
HVAC- FIRST FLOOR PLAN

Loveland • Colorado

sheet

M1.0

DRAWINGS, SPECIFICATIONS, GENERAL NOTES AND OUTLINE SPECIFICATIONS ARE INSTRUMENTS OF SERVICE AND SHALL REMAIN THE PROPERTY OF THE CONSULTING ENGINEERING GROUP L.L.C. (A.K.A. THE CE GROUP). COPIES OF THESE DOCUMENTS RETAINED BY THE CLIENT ARE FOR THE CLIENTS USE IN THE CONSTRUCTION OF THE PROJECT FOR WHICH THESE DOCUMENTS WERE PREPARED. ANY USE OF THESE DOCUMENTS, IN WHOLE OR IN PART, BY ANY MEANS WHATSOEVER TO CONSTRUCT ANY OTHER PROJECT OR THE USE OF THESE DOCUMENTS, IN WHOLE OR IN PART, AS STOCK PLANS OR PROTOTYPE DESIGN FOR MULTIPLE BUILDING PROJECTS IS STRICTLY PROHIBITED, EXCEPT WITH THE SPECIFIC WRITTEN CONSENT OF THE CONSULTING ENGINEERING GROUP L.L.C. (A.K.A. THE CE GROUP), A COLORADO COMPANY.



Upper Level / Roof

1/8" = 1'-0"

N

REFERENCE NOTES

1. PROVIDE 48"x24" COUNTERWEIGHTED (0.015" W.C.) RELIEF DAMPER IN SHEET METAL SLEEVE BEHIND GRILLE. GREENHECK MODEL HB-110. MOUNT APPROX. 9'-6" A.F.F. (WITHIN THE CEILING PLENUM). DAMPER TO RELIEVE EXCESS BUILDING PRESSURE FROM MAU-1.
2. PROVIDE FLEX CONNECTION TO AHU-1. TRANSITION TO 14"x12" S.A. & 16"X14" R.A. DOWN THRU FLOOR.
3. PROVIDE FLEX CONNECTION TO AHU-2. TRANSITION TO 18"x14" S.A. & 22"X14" R.A. DOWN THRU FLOOR.
4. PROVIDE FLEX CONNECTION TO AHU-3. TRANSITION TO 16"x14" S.A. & 20"X16" R.A. UP TO CEILING SPACE. PROVIDE TURNING VANES IN S.A. ELBOW.
5. 18"x18" OPENING IN TOP OF R.A. DUCT.
6. 3" V (PVC) & 3" CA (PVC) FROM AHU-1/2/3 UP THROUGH ROOF. TERMINATE PER MANUFACTURES RECOMMENDATIONS.
7. COORDINATE WITH G.C. TO PROVIDE R.A. PLENUM SPACE ABOVE CLOSET 203.
8. MOUNT 30"x8" R.A. GRILLE ABOVE DOOR.
9. ANGLE DIFFUSERS 35°DOWN FROM HORIZONTAL.
10. 6" EXHAUST AIR UP TO ROOF CAP PROVIDED WITH FAN.
11. 4" TYPE "B" VENT UP FROM EACH FURNACE SECTION TO CONCENTRIC VENT KIT SUPPLIED WITH UNIT, 8" DIA. VENT UP THRU ROOF.
12. 4" SINGLE WALL GALVANIZED COMBUSTION AIR UP FROM EACH FURNACE SECTION TO CONCENTRIC VENT KIT SUPPLIED WITH UNIT, 6" DIA COMBUSTION AIR UP THRU ROOF.
13. HOLD DUCTWORK TIGHT TO UNDERSIDE OF ROOF DECK TO MATCH ROOF SLOPE.
14. ANGLE DUCT 35°DOWN FROM HORIZONTAL.
15. 14"x14" SA. & 18"x16" RA. DOWN TO BELOW.
16. 10"x20" TRANSFER AIR DUCT UP FROM BELOW.
17. TRANSITION FROM L-1/2 TO INTAKE OF DH-1/2. PROVIDE FLEX AT CONNECTION TO DH-1/2.
18. PROVIDE 4" THICK FIBERGLASS AT END CAP.
19. MOUNT SUPPLY REGISTER AT 60"FROM VERTICAL.
20. 50"x24" R.A. DUCT WITH MANUAL VOLUME DAMPER. STUB INTO CEILING PLENUM.
21. INSTALL EUH-1 APPROX. 6'-6" ABOVE CATWALK.

DRAWINGS, SPECIFICATIONS, GENERAL NOTES AND OUTLINE SPECIFICATIONS ARE INSTRUMENTS OF SERVICE AND SHALL REMAIN THE PROPERTY OF THE CONSULTING ENGINEERING GROUP L.L.C. (A.K.A. THE CE GROUP). COPIES OF THESE DOCUMENTS RETAINED BY THE CLIENT ARE FOR THE CLIENTS USE IN THE CONSTRUCTION OF THE PROJECT FOR WHICH THESE DOCUMENTS WERE PREPARED. ANY USE OF THESE DOCUMENTS, IN WHOLE OR IN PART, BY ANY MEANS WHATSOEVER TO CONSTRUCT ANY OTHER PROJECT OR THE USE OF THESE DOCUMENTS, IN WHOLE OR IN PART, AS STOCK PLANS OR PROTOTYPE DESIGN FOR MULTIPLE BUILDING PROJECTS IS STRICTLY PROHIBITED, EXCEPT WITH THE SPECIFIC WRITTEN CONSENT OF THE CONSULTING ENGINEERING GROUP L.L.C. (A.K.A. THE CE GROUP), A COLORADO COMPANY.

BID DOCUMENTS

THE CE GROUP
BUILDING SYSTEMS ENGINEERING
455 Remington Street, Suite 6
Ft. Collins, CO 80524
970.266.9889
THECEGROUP.COM

NOTICE: DUTY OF COOPERATION - Release of these plans contemplates further cooperation among the owner, his contractor, and the architect. Design and construction are complex, although the architect and his consultants have performed their services with due care and diligence, they cannot guarantee perfection. Communication is imperfect and plans, specifications, and other documents are subject to omissions and ambiguities. The owner and contractor should anticipate and make allowances for some degree of construction cost. A failure to cooperate in the resolution of such omissions and ambiguities may result in increased construction costs. A failure to cooperate in the resolution of such omissions and ambiguities may result in increased costs for which the architect is not responsible. Changes made from the plans without the consent of the architect are unauthorized, and shall relieve the architect of responsibility for all consequences arising out of such changes. THIS SET IS NULL & VOID SHOULD SHT. A-1 BE OMITTED FROM THIS SET.

kenney associates ARCHITECTS, INC.
(970) 663-0548

revisions

A New MULTI PURPOSE EVENT CENTER for:

Estes Park, Colorado

© 2009 kenney & associates INC

Construction Documents

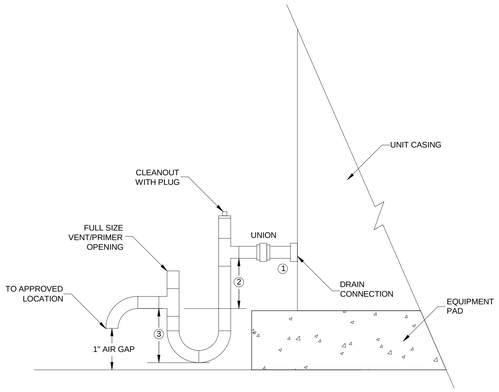
date	Dec. 07, 2012
drawn	MMD
checked	MDR/PDS
job no.	09017

HVAC- SECOND FLOOR

Loveland • Colorado

sheet

M1.1



① MINIMUM DRAIN PIPE SIZE EQUAL TO CONNECTION PROVIDED WITH EQUIPMENT.

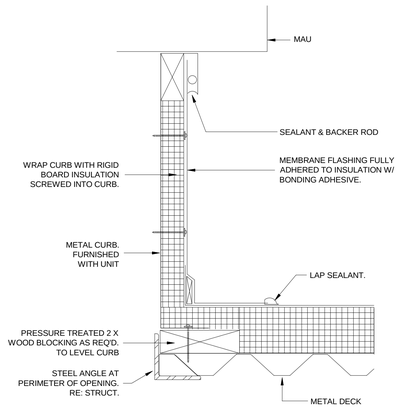
② MINIMUM DISTANCE EQUAL TO NEGATIVE STATIC PRESSURE (IN. W.C.) +1". OR A POSITIVE STATIC PRESSURE (IN. W.C.) +1".

③ DISTANCE EQUAL TO A NEGATIVE STATIC PRESSURE (IN. W.C.) +1" OR POSITIVE STATIC PRESSURE (IN. W.C.) +1". SEE MECH. SCHEDULES FOR STATIC PRESSURE INFORMATION.

COIL DRAIN PAN PIPING

SCALE: NONE

1 / M2.0

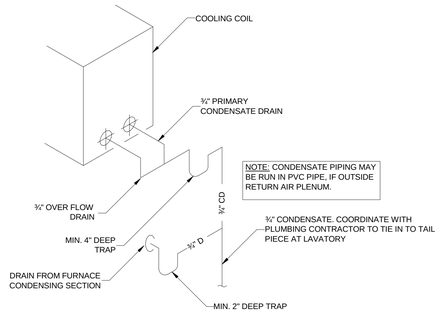


ROOF CURB WITHOUT CONCRETE PAD

ROOF CURB

SCALE: NONE

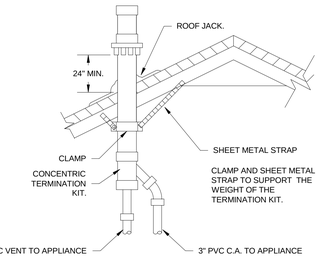
2 / M2.0



CONDENSATE DRAIN PIPING

SCALE: NONE

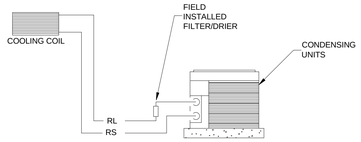
3 / M2.0



FURNACE FLUE & CA ROOF TERMINATION KIT

SCALE: NONE

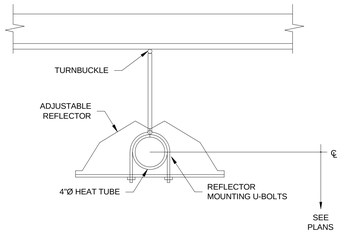
4 / M2.0



REFRIGERANT PIPING

SCALE: NONE

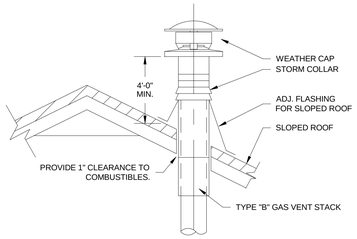
5 / M2.0



INFRA-RED TUBE & REFLECTOR

SCALE: NONE

6 / M2.0



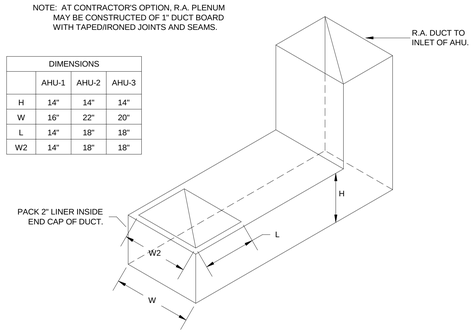
TYPE "B" VENT THRU ROOF

SCALE: NONE

7 / M2.0

NOTE: AT CONTRACTOR'S OPTION, R.A. PLENUM MAY BE CONSTRUCTED OF 1" DUCT BOARD WITH TAPED/IRONED JOINTS AND SEAMS.

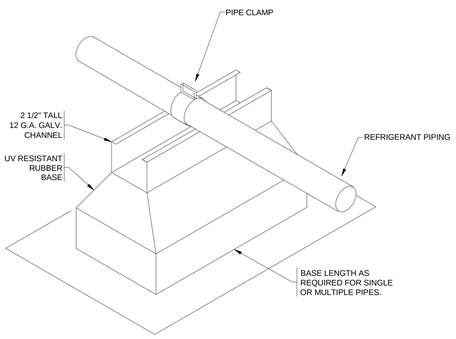
DIMENSIONS			
	AHU-1	AHU-2	AHU-3
H	14"	14"	14"
W	16"	22"	20"
L	14"	18"	18"
W2	14"	18"	18"



LINED R.A. PLENUM

SCALE: NONE

8 / M2.0



NOTE: PIPE SUPPORT EQUAL TO B-LINE C-6 SERIES

REFRIGERANT PIPE ON GRADE

SCALE: NONE

9 / M2.0

DRAWINGS, SPECIFICATIONS, GENERAL NOTES AND OUTLINE SPECIFICATIONS ARE INSTRUMENTS OF SERVICE AND SHALL REMAIN THE PROPERTY OF THE CONSULTING ENGINEERING GROUP L.L.C. (A.K.A.- THE CE GROUP) COPIES OF THESE DOCUMENTS RETAINED BY THE CLIENT ARE FOR THE CLIENTS USE IN THE CONSTRUCTION OF THE PROJECT FOR WHICH THESE DOCUMENTS WERE PREPARED. ANY USE OF THESE DOCUMENTS, IN WHOLE OR IN PART, BY ANY MEANS WHATSOEVER TO CONSTRUCT ANY OTHER PROJECT OR THE USE OF THESE DOCUMENTS, IN WHOLE OR IN PART, AS STOCK PLANS OR PROTOTYPE DESIGN FOR MULTIPLE BUILDING PROJECTS IS STRICTLY PROHIBITED, EXCEPT WITH THE SPECIFIC WRITTEN CONSENT OF THE CONSULTING ENGINEERING GROUP L.L.C. (A.K.A.- THE CE GROUP), A COLORADO COMPANY.

BID DOCUMENTS

THE CE GROUP
BUILDING SYSTEMS ENGINEERING
490 Remington Street, Suite A
Ft. Collins, CO 80524
970.266.0965
THECEGROUP.COM

NOTICE: DUTY OF COOPERATION - Release of these plans contemplates further cooperation among the owner, his contractor, and the architect. Design and construction are complex, and mistakes and oversights occur despite best efforts and careful checking. It is agreed that the owner and his contractor will give the architect a reasonable opportunity to review shop drawings and other submittals and to visit the site to observe the progress and quality of the executed work to determine if, in general, the work is being performed in a manner indicating that the work in accordance with the contract documents will be achieved. If the owner and/or his contractor request services from the architect beyond those specified in our agreement, such services will be paid for by the owner as extra services. The owner and his contractor agree to notify the architect of any deficiencies they may discover in the plans and specifications and agree that their failure to do so promptly shall relieve the architect of responsibility for all consequences arising out of such failure. The owner and his contractor further agree that they cannot guarantee perfection. Communication is difficult, and there will always be some degree of misunderstanding and omission. Although the architect and his consultants have performed their services with due care and diligence, they cannot guarantee perfection. Communication is difficult, and there will always be some degree of misunderstanding and omission. Although the architect and his consultants have performed their services with construction costs. A failure of communication may result in omissions or misinterpretations which may increase construction costs. Changes made from the plans without the consent of the architect are unauthorized, and shall relieve the architect of responsibility for all consequences arising out of such changes.

kenney associates ARCHITECTS, INC.
(970) 663-0548

revisions

A New MULTI PURPOSE EVENT CENTER for:

Estes Park, Colorado

© 2009 kenney & associates INC

Construction Documents

date Dec. 07, 2012
drawn MWD
checked MDR/PDS
job no. 09017

HVAC - DIAGRAMS

Loveland • Colorado

sheet

M2.0