

MECHANICAL ABBREVIATIONS

<u>ABBRE.</u>	<u>DESCRIPTION</u>
A/C	AIR CONDITIONING
AC	AIR COMPRESSOR
ADJ	ADJUSTABLE
AF	AIR FILTER
AF ^C	ABOVE FINISHED CEILING
AF ^F	ABOVE FINISHED FLOOR
AF ^G	ABOVE FINISHED GRADE
AH ^U	AIR HANDLING UNIT
AP	ACCESS PANEL
AP ^D	AIR PRESSURE DROP
ARI	AMERICAN REFRIGERANT INSTITUTE
ARCH	ARCHITECT (URAL)
AS	AIR SEPARATOR
ASHRAE	AMERICAN SOCIETY OF HEATING, RE- FRIGERATION & AIR CONDITIONING ENG.
ASME	AMERICAN SOCIETY OF MECHANICAL ENG.
ASTM	AMERICAN SOCIETY OF TESTING & MATERIALS
AVG	AVERAGE
AUX	AUXILIARY
B	BOILER
BAS	BUILDING AUTOMATION SYSTEMS
BDD	BACK DRAFT DAMPER
BFG	BELOW FINISHED GRADE
BLDG	BUILDING
BOS	BOTTOM OF STRUCTURE
BTU	BRITISH THERMAL UNIT
CFM	CUBIC FEET PER MINUTE
CH	CHILLER/WATER COOLED CHILLER
CHP	CHILLED WATER PUMP
CIRC	CIRCULATING
CL	CENTER LINE
CLG	CEILING
CMU	CONCRETE MASONRY UNIT
CONN	CONNECTION
CONT	CONTROLS; CONTINUATION
COTG	CLEANOUT TO GRADE
CPVC	CHLORINATED POLYVINYL CHLORIDE
CRAC	COMPUTER ROOM AIR CONDITIONING UNIT
CT	COOLING TOWER
CU	CONDENSING UNIT
CW	COLD WATER - DOMESTIC
CWP	CONDENSER WATER PUMP
DB	DRY BULB TEMPERATURE
DDC	DIRECT DIGITAL CONTROL
DIA	DIAMETER
DIF	DIFUSER
DN	DOWN
DWS	DRAWING
DX	DIRECT EXPANSION
E	EXISTING
EA	EACH
EAT	ENTERING AIR TEMPERATURE
EC	ELECTRICAL CONTRACTOR
ECC	ECCENTRIC
EDB	ENTERING (AIR TEMPERATURE) DRY BULB
EDH	ELECTRIC DUCT HEATER
EF	EXHAUST FAN
EFF	EFFICIENCY
ELEC	ELECTRICAL
ENGR	ENGINEER
EQ	EQUAL
EQUIP	EQUIPMENT
ESP	EXTERNAL STATIC PRESSURE
ET	EXPANSION TANK
ETR	EXISTING TO REMAIN
EVAP	EVAPORATOR
EWB	ENTERING WET BULB
EWT	ENTERING WATER TEMPERATURE
F	DEGREES FAHRENHEIT
FCO	FLOOR CLEANOUT
FD	FIRE DAMPER
FLA	FULL LOAD AMPS
FLEX	FLEXIBLE
FT	FAN TERMINAL, OR FEET
GAL	GALLON
GALV	GALVANIZED
GC	GENERAL CONTRACTOR
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
GRDS	GRILLES, RESISTERS & DIFFUSERS
H	HEIGHT
HD	HEAD
HORIZ	HORIZONTAL
HP	HORSEPOWER, or HEAT PUMP
HSTAT	HUMIDISTAT
HW	HOT WATER - DOMESTIC
HWC	HOT WATER CIRCULATING- DOMESTIC
HX	HEAT EXCHANGER
IC	INSIDE CLEAR
ID	INSIDE DIAMETER
IN	INCH
INSUL	INSULATION
INT	INTERNAL, or INTERIOR
IRH	INFRARED RADIANT HEATER
KEC	KITCHEN EQUIPMENT CONTRACTOR
KW	KILOWATT
L	LENGTH
LAT	LEAVING AIR TEMPERATURE
LB	POUNDS (WEIGHT)
LF	LINEAR FEET
LRA	LOCKED ROTAR AMPS
LWB	LEAVING WET BULB
LWCO	LOW WATER CUT OFF
LWT	LEAVING WATER TEMPERATURE














































ABBR.	DESCRIPTION
MAT	MIXED AIR TEMPERATURE
MAX	MAXIMUM
MBH	THOUSAND BTU PER HOUR
MC	MECHANICAL CONTRACTOR
MCA	MINIMUM CIRCUIT AMPS
MECH	MECHANICAL
MFR	MANUFACTURER
MIN	MINIMUM
MC/CP	MAXIMUM OVERCURRENT PROTECTION
MTD	MOUNTED
MUA	MAKEUP AIR
NC	NORMALLY CLOSED
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
NIC	NOT IN CONTRACT
NK	NECK
NO	NORMALLY OPEN
NO.	NUMBER
NTS	NOT TO SCALE
OBD	OPPOSED BLADE DAMPER
OC	ON CENTER
OD	OUTSIDE DIAMETER
P	PUMP
PC	PLUMBING CONTRACTOR
PD	PRESSURE DROP
PH	PHASE
PLBG	PLUMBING
PPM	PARTS PER MILLION
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PSIG	POUNDS PER SQUARE INCH GAUGE
PVC	POLYVINYL CHLORIDE
QTY	QUANTITY
RAT	RETURN AIR TEMPERATURE
RCP	REFLECTED CEILING PLAN
RE	REFERENCE, or REFER
REQD	REQUIRED
REV	REVISION, or REVISE
RH	RELATIVE HUMIDITY
RLA	RUNNING LOAD AMPS
RPM	REVOLUTIONS PER MINUTE
RTU	ROOFTOP UNIT
SCHED	SCHEDULE
SF	SQUARE FEET
SH	SENSIBLE HEAT
SIM	SIMILAR
SP	STATIC PRESSURE
SPEC	SPECIFICATION
SS	SANITARY SEWER
SQ	SQUARE
SSSG	SOLID STATE SPEED CONTROL
STD	STANDARD
TC	TEMPERATURE CONTROL
TF	TRANSFER FAN
TSP	TOTAL STATIC PRESSURE
TSTAT	THERMOSTAT
TXV	THERMOSTATIC EXPANSION VALVE
TYP	TYPICAL
UCD	UNDERCUT DOOR
UH	UNIT HEATER
UL	UNDERWRITERS' LABORATORIES, INC.
UNO	UNLESS NOTED OTHERWISE
VAV	VARIABLE AIR VOLUME
VERT	VERTICAL
VFD	VARIABLE FREQUENCY DRIVE
W	WIDTH, or WASTE
W/	WITH
W/O	WITHOUT
WB	WET BULB TEMPERATURE
WC	WATER COLUMN
WCO	WALL CLEANOUT
WG	WATER GAUGE
WPD	WATER PRESSURE DROP
XFER	TRANSFER

MECHANICAL PIPING LEGEND

PIPING
EXISTING PIPING IS SHOWN IN LIGHT LINETYPE,
PROPOSED PIPING IS SHOWN IN BOLD LINETYPE,
NOT ALL ITEMS MAY APPEAR ON DRAWINGS.

— CWS	CHILLED WATER SUPPLY
— CWR	CHILLED WATER RETURN
— CW	COLD WATER
— CA	COMPRESSED AIR
— CS	CONDENSER WATER SUPPLY
— CR	CONDENSER WATER RETURN
— HW	HEATING WATER RETURN
— HWS	HEATING WATER SUPPLY
— HW	HOT WATER—DOMESTIC
— HWC	HOT WATER CIRCULATION—DOMESTIC
— NG	NATURAL GAS
— LPG	LIQUIFIED PETROLEUM GAS
— SS	SANITARY SEWER
— SV	SANITARY VENT
— SMS	SNOWMELT SUPPLY
— SMR	SNOWMELT RETURN
— WA	WASTE
—	ELBOW
—	ELBOW UP
—	ELBOW DOWN
—	TEE
—	TEE UP
—	TEE DOWN
—	PIPE CAP
—	PIPE BREAK
—	FLOW ARROW





PIPING ACCESSORIES

	ANGLE VALVE LEFT, GATE OR GLOBE
	ANGLE VALVE RIGHT, GATE OR GLOBE
	BALANCING VALVE, CALIBRATED
	BALL VALVE
	BUTTERFLY VALVE
	CHECK VALVE
	CONTROL VALVE, 2-WAY
	CONTROL VALVE, 3-WAY
	GATE OR ISOLATION VALVE
	PLUG VALVE WITH MEMORY STOP
	PRESSURE REDUCING VALVE
	PRESSURE REGULATING VALVE
	RELIEF VALVE
	SOLENOID VALVE
	TEMPERATURE & PRESSURE RELIEF VALVE
	THERMOSTATIC EXPANSION VALVE
	UNION
	P-T PORT
	STRAINER
	THERMOMETER IN PIPELINE
	HOSE BIBB
	PRESSURE INDICATOR
	HORIZONTAL CLEANOUT
	FLOOR CLEAN OUT
	TWO-WAY CLEANOUT
	FLOOR DRAIN OR SHOWER DRAIN
	FLOOR SINK
	AQUASTAT
	FLOW SWITCH
	PRESSURE SWITCH
	TEMPERATURE SENSOR
	PUMP
	MANUAL AIR VENT, AUTOMATIC AIR VENT
	TEMPERATURE & PRESSURE TEST PLUG
	CONCENTRIC REDUCER
	ECCENTRIC REDUCER
	EXPANSION JOINT
	PIPE ANCHOR
	FLEXIBLE CONNECTION
	FLEXIBLE CONNECTION
	PRESSURE SENSOR
	DIFFERENTIAL PRESSURE SENSOR
	REFRIGERANT SENSOR
	EMERGENCY SHUT OFF SWITCH
	VACUUM BREAKER

MECHANICAL DUCTWORK LEGEND












NOT ALL ITEMS MAY APPEAR ON DRAWINGS.




SUPPLY OR OUTSIDE AIR UP
 MANUAL VOLUME DAMPER
 FIRE DAMPER
 FIRE/SMOKE DAMPER
 MOTORIZED CONTROL DAMPER IN DUCT
 BACKDRAFT DAMPER
 SMOKE DETECTOR
 RETURN OR EXHAUST AIR UP
 RISE IN DUCT
 FALL IN DUCT
 RECTANGULAR BRANCH TAP (SINGLE LINE)
 RETURN OR EXHAUST AIR GRILLE
 DUCT END (SINGLE LINE)
 SIDEWALL RETURN OR EXHAUST AIR GRILLE
 RETURN OR EXHAUST AIRFLOW
 ROUND ELBOW
 RETURN OR EXHAUST AIR DOWN
 DIFFUSER TAG
 DIFFUSER NECK SIZE
 DIFFUSER CFM
 SUPPLY AIR DIFFUSER
 SPIN-IN WITHOUT MVD
 DUCT BREAK (SINGLE LINE)
 TRANSITION (SINGLE LINE)
 SPIN IN WITHOUT MVD
 FLEXIBLE DUCTWORK
 SLOT DIFFUSER
 RECTANGULAR BRANCH TAP
 (E) SUPPLY AIR DIFFUSER
 (E) FLEXIBLE DUCTWORK
 (E) SPIN IN WITH MVD
 (E) SUPPLY AIR DOWN
 (E) DUCT DIMENSIONS, LxW
 (E) SPIN-IN WITHOUT MVD
 POINT OF CONNECTION TO EXISTING
 DUCTWORK DIMENSIONS, LxW
 SIDEWALL SUPPLY AIR GRILLE
 SUPPLY OR SOUTSIDE AIRFLOW
 FLEXIBLE DUCTWORK CONNECTION
 RECTANGULAR DUCT BREAK
 NEW DUCTWORK
 TRANSITION
 RECTANGULAR ELBOW WITH TURNING VANES
 SQUARE TO ROUND TRANSITION
 ROUND DUCT BREAK
 ROUND DUCTWORK DOWN
 ROUND DUCTWORK UP

	16"x12"	SUPPLY DUCT DOWN, DIMENSION ACROSS LISTED FIRST
	16"x12"	DUCT ELBOW, DIMENSION OF SIDE SHOWN = 16"
	16"x12"	DUCT, DIMENSION OF SIDE SHOWN = 16"
		DUCT SMOKE DETECTOR OR SMOKE DETECTION SENSOR

MECHANICAL EQUIPMENT LEGEND

NOT ALL ITEMS MAY APPEAR ON DRAWINGS.

S	SWITCH
	HUMIDISTAT WITH CONTROL WIRING
	THERMOSTAT WITH CONTROL WIRING
	DUCT THERMOSTAT OR TEMPERATURE SENSOR
	DUCT HUMIDISTAT OR HUMIDITY SENSOR
	MECHANICAL EQUIPMENT
	EQUIPMENT PLAN CODE INDICATOR
	EQUIPMENT PLAN CODE INDICATOR (VAV: PLAN CODE ≠ CFM)
	EQUIPMENT PLAN CODE INDICATOR W/ CFM & GPM OR KW
	EQUIPMENT PLAN CODE INDICATOR (FAN TERMINAL: PLAN CODE, COOLING CFM, HEATING CFM & HEATING GPM)
	(BBR: PLAN CODE, FEET OF ELEMENT LENGTH, FEET OF COVER LENGTH, HEATING GPM)
	ACCESS PANEL

	SECTION REFERENCE INDICATOR
	DETAIL REFERENCE INDICATOR
	EQUIPMENT DESIGNATION (REFER TO SPECIFICATIONS AND SCHEDULES)

MECHANICAL GENERAL NOTES

1. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE LATEST EDITIONS OF THE RULES, REGULATIONS AND CODES OF THE STATE OF COLORADO AND THE LOCAL JURISDICTIONAL AUTHORITY.
2. EQUIPMENT SHALL CONFORM TO STATE AND/OR LOCAL ENERGY CONSERVATION STANDARDS.
3. IT IS THE INTENT OF THESE DRAWINGS AND SPECIFICATIONS TO RESULT IN A COMPLETE MECHANICAL INSTALLATION IN COMPLETE ACCORDANCE WITH ALL APPLICABLE LOCAL CODES AND ORDINANCES.
4. THIS CONTRACTOR IS RESPONSIBLE FOR COORDINATING ALL WORK UNDER HIS/HER CONTRACT WITH ALL OTHER BUILDING TRADES.
5. ALL DUCTWORK TO BE HELD TIGHT TO STRUCTURE UNLESS NOTED OTHERWISE.
6. THIS CONTRACTOR SHALL REVIEW EXISTING FIELD CONDITIONS PRIOR TO THE PURCHASE, FABRICATION AND INSTALLATION OF ANY EQUIPMENT, DUCTWORK, PIPING, ETC. AND SHALL INFORM THE ARCHITECT OR GENERAL CONTRACTOR OF ANY DISCREPANCIES FOR RESOLUTION. ITEMS NOT SPECIFICALLY MENTIONED IN THE SPECIFICATION OR NOTED ON THE DRAWINGS, BUT WHICH ARE OBVIOUSLY NECESSARY TO MAKE A COMPLETE WORKING INSTALLATION, SHALL BE INCLUDED.
7. THIS CONTRACTOR SHALL PROVIDE ALL MANUAL AND AUTOMATIC STARTERS FOR THE EQUIPMENT INDICATED ON THE DRAWINGS.
8. THESE DRAWINGS ARE DIAGRAMMATIC IN NATURE AND DO NOT SHOW EVERY DUCTWORK AND PIPING OFFSET REQUIRED.
9. THIS CONTRACTOR SHALL COORDINATE WITH THE EXISTING, AND OR NEW STRUCTURE ELECTRICAL, MECHANICAL, PLUMBING, FIRE PROTECTION AND CEILING TO PROVIDE OFFSETS AS REQUIRED AND APPROPRIATE.
10. THIS CONTRACTOR SHALL PROVIDE ACCESS TO ALL EQUIPMENT, VALVES, DAMPERS, ETC. IN CONCEALED SPACES FOR SERVICING AND MAINTENANCE.
11. ALL RECTANGULAR AND ROUND DUCTWORK SHALL BE CONSTRUCTED OF GALVANIZED SHEET METAL IN ACCORDANCE WITH SMACNA HVAC DUCT STANDARDS. DUCTS TO BE SEALED PER SMACNA PRESSURE CLASS REQUIREMENTS. SHEET METAL DUCTWORK WITH WRAP INSULATION HAVING A THERMAL RESISTANCE OF R-6 FOR THE TOTAL THICKNESS.
12. ALL NEW RECTANGULAR DUCTWORK SHALL HAVE DUCT LINER IN COMPLIANCE WITH NFPA 90A AND AS DEFINED IN KEYNOTES OR THE SPECIFICATION. SHEET METAL SIZE SHALL BE INCREASED TO ACCOMMODATE THICKNESS OF LINER DUCT SIZE INDICATED ON DRAWINGS IS THE INSIDE CLEAR DIMENSION.
13. RUNOUT DUCTS TO SUPPLY AIR DIFFUSERS SHALL MATCH DIFFUSER NECK SIZE FACTORY-MADE FLEXIBLE DUCTWORK SHALL BE USED, TRIM TO THE LENGTH REQUIRED FOR PROPER CONNECTION. INSTALL PER MANUFACTURER'S RECOMMENDATIONS AND APPLICABLE LOCAL CODES. MAXIMUM LENGTH OF FLEXIBLE DUCTWORKS SHALL BE NO MORE THAN 8'-0". SHEET METAL DUCTWORK WITH WRAP INSULATION HAVING A THERMAL RESISTANCE OF R-6 FOR THE TOTAL THICKNESS AND A MOISTURE BARRIER SHALL BE PROVIDED FOR LONGER DISTANCES.
14. PROVIDE SPIN-IN FITTINGS WITH MANUAL VOLUME DAMPERS (MVD) AT ALL RUNOUT DUCTS TO DIFFUSERS FROM RECTANGULAR DUCTWORK. PROVIDE IN-LINE MANUAL VOLUME DAMPERS WHERE A SPIN-IN FITTING WITH A MVD IS NOT FEASIBLE.
15. COMBINATION FIRE/SMOKE DAMPERS SHALL BE INSTALLED AT ALL REQUIRED RATED WALL OR FLOOR PENETRATIONS AND BE WIRED INTO THE FIRE ALARM PANEL AS A SUPERVISORY SIGNAL BY THE ELECTRICAL AND/OR FIRE ALARM CONTRACTOR. COORDINATE TO PROVIDE MOTOR VOLTAGE TO MATCH THAT OF THE FIRE ALARM PANEL. INSTALL PER THE MANUFACTURER'S INSTRUCTIONS AND THE LOCAL CODE, PROVIDING REMOTE RESET CAPABILITY IF REQUIRED.
16. FIRE DAMPERS AND FIRE SMOKE DAMPERS SHALL BE UL LISTED AND INSTALLED PER THE MANUFACTURER'S INSTRUCTIONS AND THE LOCAL CODE. PROVIDE ALL NECESSARY ACCESS TO LINKS AND ACTUATORS.
17. THERMOSTATS SHALL BE MOUNTED AT 48" ABOVE FINISHED FLOOR ELEVATION WHERE INDICATED, UNLESS NOTED OTHERWISE.
18. TESTING, ADJUSTING AND BALANCING SHALL BE PERFORMED BY A SUBCONTRACTOR, CURRENTLY CERTIFIED BY EITHER AABC, NEBB OR TABIC AGENCIES. SUBMIT COPY OF DATED CERTIFICATE TO ARCHITECT. PROVIDE THREE COPIES OF TESTING, ADJUSTING AND BALANCING REPORT TO ARCHITECT FOR REVIEW.
19. ANY AIR HANDLING DEVICE THAT EXCEEDS 2000 CFM OF SUPPLY AIR IS REQUIRED TO HAVE A SMOKE DETECTOR IN THE DUCT OR UNIT TO DISABLE THE UNIT WHEN ACTIVATED.
20. MECHANICAL CONTRACTOR TO COORDINATE SPACE REQUIREMENTS WITH ELECTRICAL CONTRACTOR IN SUPPLY OR RETURN (IBC 2009, IMC 2009, AND IEC 2009) DUCTWORK FOR DUCT SMOKE DETECTION INSTALLATION. DETECTOR IS TO BE MOUNTED BY MECHANICAL CONTRACTOR WITH POWER WIRING BY ELECTRICAL CONTRACTOR AND CONTROL WIRING BY MECHANICAL CONTRACTOR.
21. THIS CONTRACTOR IS SOLELY RESPONSIBLE FOR THE SPATIAL REQUIREMENTS, ACOUSTICAL, THERMAL, AND ELECTRICAL PERFORMANCE CHARACTERISTICS AND COORDINATION OF ALL INSTALLATION REQUIREMENTS FOR EQUIPMENT SUBSTITUTIONS FROM THAT DEFINED AS THE BASIS FOR DESIGN. REVIEW AND APPROVAL BY THE DESIGN TEAM DOES NOT ALTER OR MITIGATE THIS RESPONSIBILITY.

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*LEGENDS AND
NOTES*

PROJ. NO. 2013-247.001
PROJECT DATE: 5/9/14
SHEET NUMBER:

21. THIS CONTRACTOR SHALL VISIT THE PROJECT SITE TO BECOME ACQUAINTED WITH EXISTING CONDITIONS. FAILURE TO DO SO SHALL NOT RELIEVE CONTRACTOR FROM THE RESPONSIBILITY FOR PERFORMING THE WORK PROPERLY.

23. MAINTAIN ALL REQUIRED SERVICE AND ACCESS CLEARANCES REQUIRED BY CODE OR THE MANUFACTURER FOR ALL EQUIPMENT, INCLUDING THE 36" ELECTRICAL CLEARANCE WHERE REQUIRED BY NEC.

25. DRAWINGS SHALL NOT BE SCALED FOR ROUGH-IN MEASUREMENTS OR USED AS SHOP DRAWINGS. WHERE DRAWINGS ARE REQUIRED FOR THESE PURPOSES OR HAVE TO BE MADE FROM FIELD MEASUREMENTS, THE CONTRACTOR SHALL TAKE THE NECESSARY MEASUREMENTS AND PREPARE THE DRAWINGS.

27. CONFER, COOPERATE, AND COORDINATE WORK WITH OTHER TRADES. COORDINATE CEILING CAVITY SPACE CAREFULLY WITH ALL TRADES. IN EVENT OF CONFLICT, INSTALL MECHANICAL AND ELECTRICAL SYSTEMS WITHIN CAVITY SPACE IN FOLLOWING ORDER OF PRIORITY.

28. ALL NEW LOW PRESSURE MAIN OR TRUNK DUCT DIMENSIONS INCLUDE 1" DUCT LINER INSULATION AND ARE OUTSIDE DUCT DIMENSION. IF DUCTWRAP IS TO BE USED FOR DUCT INSULATION, 2" MAY BE REMOVED IN BOTH WIDTH AND HEIGHT FROM DUCT SIZES SHOWN ON PLAN.

10. M.C. SHALL INSTALL REFRIGERANT PIPING IN THE SHORTEST POSSIBLE ROUTE. EQUIPMENT MANUFACTURER SHALL SIZE ALL REFRIGERANT PIPING PRIOR TO INSTALLATION.

22. PROVIDE FIRE STOP MATERIAL TO SEAL AROUND ALL DUCTS WITHIN MECHANICAL CHASE THAT PENETRATE FLOOR. ALL DUCT OPENINGS IN FLOORS SHALL CONFORM TO SECTION 607.6.3 OF 2009 IMC.

2. CONTRACTOR TO VERIFY MOST EFFICIENT ZONE.

3. LAYOUT. SNOW MELT & IN FLOOR TUBING:

3.A. CONTROLS SHALL CONSIST OF PROGRAMMABLE ELECTRONIC COMPONENTS.

3.B. ALL COMPONENTS OF SYSTEM SHALL BE PROVIDED BY ONE MANUFACTURER INCLUDING TUBING, MANIFOLDS, SUPPORT BRACKETS, FASTENING SYSTEMS, TUBE BEND SUPPORTS, COUPLINGS, SLICING NIPPLES, ETC.

3.C. TUBING SHALL BE CROSS-LINKED POLYETHYLENE WITH AN OXYGEN DIFFUSION BARRIER RATED AT 180°F AT 100 PSIG. PIPE SHALL BE 5/8" ID AND MEET ASTM F876-877

3.D. TUBING SHALL CARRY A TEN-YEAR NON-PRORATED WARRANTY AGAINST FAILURE DUE TO MANUFACTURING DEFECTS OR EXPOSURE TO STRESS CRACKING AGENTS. ALL OTHER COMPONENTS TO BE PROVIDED WITH ONE-YEAR WARRANTY FROM DATE OF OWNER ACCEPTANCE OF PROJECT.

3.E. MANIFOLDS SHALL BE MADE OF BRASS RESISTANT TO DEZINCIFICATION AND BE CAPABLE OF MULTIPLE UNIT CONNECTIONS. RETURN MANIFOLDS SHALL BE PROVIDED WITH AN AIR VENT AND HOSE ADAPTER, AND HAVE A BALANCING VALVE FOR EACH TUBING CIRCUIT. SUPPLY MANIFOLD TUBING CIRCUIT CONNECTIONS SHALL BE CAPABLE OF BEING LEFT MANUALLY OPEN OR FITTED WITH A 24-VOLT VALVE OPERATOR FOR ZONE CONTROL.

3.F. CONTRACTOR SHALL HAVE AN OPTION OF SHOP-FABRICATING MANIFOLDS THAT DO NOT HAVE INDIVIDUAL CIRCUIT BALANCING VALVES ONLY WHEN ALL CIRCUITS ARE CONNECTED TO THE MANIFOLD TO ALLOW EQUIVALENT PRESSURE DROP ACROSS EACH CIRCUIT. SUPPLY MANIFOLDS TO HAVE SHUT-OFF VALVE AND MANUAL AIR VENT. RETURN MANIFOLDS SHALL HAVE A SHUT-OFF VALVE AND BALANCE VALVE WITH METER PORTS.

3.G. CONTRACTOR TO COORDINATE INSTALLATION OF 3/4" CONDUIT TO SNOW MELT MANIFOLDS FOR SNOW MELT SYSTEM CONTROLS.

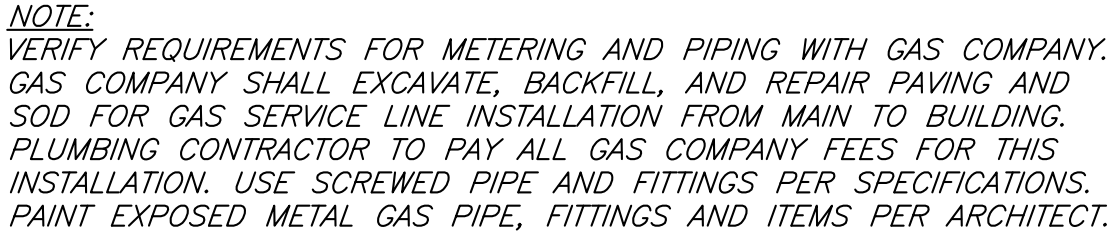
4. SNOW MELT TO INCLUDE CURB AND GUTTER NEXT TO SNOWMELT AREAS, EXCEPT FOR CURB AND GUTTERS ADJACENT TO PUBLIC STREETS.

5. SIZE ALL PIPING TO MANIFOLDS AT A MAXIMUM PRESSURE LOSS OF 4' PER 100' (EQUIVALENT LENGTH) OF PIPE.

1. AREA TO BE PROVIDED WITH SNOW MELT, TYPICAL VARIATION IN HATCHING PATTERN FOR VISUAL SEPARATION OF ZONES ONLY.

GLYCOL FEED SYSTEM GFS-5I
(SNOW MELT SYSTEM) NEUTRINE (OR EQUIVALENT) CHEMICAL
PUMP GLYCOL FEED SYSTEM G-50-1A, 1.5 GPM AT 100 PSI,
1/3 HP PUMP MOTOR, 115V/1PH W/ POWER CORD & PLUG,
LOW LEVEL LIGHT, AUDIBLE ALARM, DISCHARGE & SUCTION
PIPING ASSEMBLIES, 50-GALLON TANK W/ POLY COVER,
NEMA 4X CONTROL PANEL, BRASS ROTARY GEAR PUMP, HOA
SWITCH FOR PUMP. (ACCEPTABLE ALTERNATE BY CALCIUM
CONTROL, INC.)

GLYCOL FEED SYSTEM GFS--HI
(HEATING WATER SYSTEM) NEPTUNE (OR EQUIVALENT)
CHEMICAL PUMP GLYCOL FEED SYSTEM G-50-1A, 1.5 GPM
AT 100 PSI, 1/3 HP PUMP MOTOR, 115V/1PH W/ POWER
CORD & PLUG, LOW LEVEL LIGHT, AUDIBLE ALARM,
DISCHARGE & SUCTION PIPING ASSEMBLIES, 50-GALLON TANK
W/ POLY COVER, NEMA 4X CONTROL PANEL, BRASS ROTARY
GEAR PUMP, HOA SWITCH FOR PUMP. (ACCEPTABLE
ALTERNATE BY CALCIUM CONTROL, INC.)



N.T.S.

NOTES
CONTINUED

PROJ. NO. 2013-247.001

PROJECT DATE: 5/9/14

SHEET NUMBER.

MO.2



FOR REVIEW ONLY
NOT FOR CONSTRUCTION


11-2011-2013-247 Bldgpyr\003 MEP\11-Dwg\Terry's CAD\PEO_Schedules.dwg Source: Thu, 08 May 2014 4:00pm Edited: Thu, 08 May 2014 4:05pm Proszchke




ROOF TOP UNIT & ENERGY RECOVERY VENTILATOR SCHEDULE																		RTU	ERV
EQUIPMENT NO.	SERVICE AREA	HEATING COIL TYPE	INPUT/OUTPUT HEATING CAPACITY (MBH) HIGH ALTITUDE// HEAT RECOVERED	COOLING CAPACITY (TON)/ EFFECTIVENESS (%)	GROSS/NET COOLING CAPACITY (MBH)	SUPPLY FAN				ELECTRIC VOLTS.-PH.-CY.	POWER SUPPLY (MCA)	POWER SUPPLY (MOCp)	DIMENSIONS				CONTROL	MANUFACTURER & MODEL	OPTIONS-ACCESSORIES
						POWER (HP)	AIRFLOW (CFM)	SPEED (RPM)	EXTERNAL SP (IN. WG)				LENGTH (IN)	WIDTH (IN)	HEIGHT (IN)	WEIGHT (LB)			
RTU 1	ADMINISTRATION, MULTI, FITNESS, LOCKERS, DORMS, DAYROOM	NG HX	350/204	20	203/185	5	7,500	851	1.51	208-3-60	140	150	165	94	73	4,769	CARRIER i-Vu	CARRIER MODEL # 48A3S020FJV52GVT	SEE NOTES
ERV 1	FITNESS, LOCKERS	N/A	163	69	N/A	2 - 2	2,000	-	0.25	208-3-60	6.1 - 5.8	15	62.25	89.75	40.38	726	CARRIER i-Vu	RENEWAIRE MODEL # HE3XRT	14 INCH CURB, MERV 8 FILTERS, INTERLOCK WITH RTU-1
NOTES: PROVIDE FACTORY ACCESSORIES: PREMIUM EFFICIENCY 5 HP WITH VFD, DRY-BULB CHANGEOVER ECONOMIZER, NON FUSED DISCONNECT, OA MEASURING STATION, CO2 SENSOR, IN DUCT SMOKE DETECTOR, PLUGGED AIR FILTER SENSOR, MODULATING POWER EXHAUST, HOT GAS BYPASS, 115 V CONVENIENCE OUTLET, STAINLESS STEEL DRAIN PAN, 4" MERV 7 CONSTRUCTION FILTERS, LOW SOUND CONDENSER FANS, DOMESTIC W BACNET COMM, DOUBLE WALL, LOW SOUND BLANKET MODEL # CRSOUBLN002A00, HAIL GUARD MODEL # CRHAILGDD06A00, 14 INCH ROOF CURB MODEL # CRRFCURB005A00, 4" MERV 13 FILTER KIT MODEL # CRFLTKA009A00.																			

VARIABLE AIR VOLUME TERMINAL SCHEDULE																							VAV
EQUIPMENT NO.	THERMOSTAT LOCATION AND SERVICE AREA	ASSOC. RTU	DOWNSTREAM SP (IN. WG)	INLET SP (IN. WG)	HEATING COIL APD (IN. WG)	INLET SIZE (IN.)	EAT (°F)	LAT (°F)	AIR QUANTITY				REHEAT COIL CAPACITY (MBH)	REHEAT COIL ROWS	EWT (°F)	LWT (°F)	HEATING COIL FLUID FLOW (GPM)	FLUID PD (FT. WG)	MAX SOUND (DB)	CONTROL	MANUFACTURER & MODEL	OPTIONS-ACCESSORIES	NOTES
									COOLING MAX (CFM)	COOLING MIN (CFM)	HEATING MAX (CFM)	HEATING MIN (CFM)											
VAV 1	CHIEFS, CONF. & ASST CHIEF	RTU 1	0.25	0.75	0.274	7	54	98.50	482	123	482	131	17.88	3	120	116.23	10.00	18.31	20	i-Vu	CARRIER 35E	PROVIDE THERMOSTAT AND CARRIER i-Vu CONTROL	TO MEET SPECIFIED FLOWS AND FLOW PD, ALL INLET AND OUTLET PIPING MUST BE 1" DIAMETER PIPE (MINIMUM 0.875" ID). PROVIDE A HONEYWELL M6410A OR EQUIVALENT MODULATING ZONE VALVE ACTUATOR AND A HONEYWELL V5852A OR V5853A ZONE VALVE (2WAY OR 3 WAY) PER VAV REHEAT COIL.
VAV 2	RECEPTION, STORAGE, & LOBBIES	RTU 1	0.25	1.00	0.561	10	54	84.03	900	189	900	175	22.54	4	120	96.24	2.00	0.68	20	i-Vu	CARRIER 35E	PROVIDE THERMOSTAT AND CARRIER i-Vu CONTROL	
VAV 3	TLT	RTU 1	0.25	0.75	0.080	6	54	108.77	180	40	120	40	5.48	3	120	114.22	2.00	1.78	20	i-Vu	CARRIER 35E	PROVIDE THERMOSTAT AND CARRIER i-Vu CONTROL	
VAV 4	MULTI PURPOSE, TABLES, & CHAIRS	RTU 1	0.25	0.75	0.411	9	54	87.36	755	197	755	180	21.00	4	120	97.74	1.99	0.67	20	i-Vu	CARRIER 35E	PROVIDE THERMOSTAT AND CARRIER i-Vu CONTROL	
VAV 5	DAYROOM	RTU 1	0.25	0.75	0.456	12	54	101.25	1,098	361	750	257	29.55	4	120	106.35	4.57	3.65	20	i-Vu	CARRIER 35E	PROVIDE THERMOSTAT AND CARRIER i-Vu CONTROL	
VAV 6	KITCHEN	RTU 1	0.25	1.00	0.601	12	54	102.90	1,502	495	451	352	18.39	3	120	109.38	3.65	2.81		i-Vu	CARRIER 35E	PROVIDE THERMOSTAT AND CARRIER i-Vu CONTROL	
VAV 7	HALL & DORM 1	RTU 1	0.25	0.75	0.232	6	54	105.64	281	72	200	65	8.61	4	120	110.92	2.00	1.06	20	i-Vu	CARRIER 35E	PROVIDE THERMOSTAT AND CARRIER i-Vu CONTROL	
VAV 8	DORM 2	RTU 1	0.25	0.75	0.099	6	54	102.97	203	52	175	46	7.15	3	120	111.75	1.83	1.51	20	i-Vu	CARRIER 35E	PROVIDE THERMOSTAT AND CARRIER i-Vu CONTROL	
VAV 9	DORM 3	RTU 1	0.25	0.75	0.086	6	54	112.02	188	48	90	43	4.35	3	120	115.41	2.00	1.78	20	i-Vu	CARRIER 35E	PROVIDE THERMOSTAT AND CARRIER i-Vu CONTROL	
VAV 10	DORM 4 & STORAGE	RTU 1	0.25	0.75	0.122	6	54	105.29	229	59	150	52	6.42	3	120	112.59	1.83	1.51	20	i-Vu	CARRIER 35E	PROVIDE THERMOSTAT AND CARRIER i-Vu CONTROL	
VAV 11	CORRIDOR AND LAUNDRY	RTU 1	0.25	0.75	0.493	6	54	97.24	430	98	325	89	11.72	4	120	107.65	2.00	1.06	20	i-Vu	CARRIER 35E	PROVIDE THERMOSTAT AND CARRIER i-Vu CONTROL	
VAV 12	LOCKER ROOMS	RTU 1	0.25	0.75	0.119	16	54	90.96	902	424	902	653	27.79	4	120	90.7	2.00	0.26	20	i-Vu	CARRIER 35E	PROVIDE THERMOSTAT AND CARRIER i-Vu CONTROL	
VAV 13	FITNESS	RTU 1	0.20	1.00	0.312	12	54	102.28	886	453	453	282	18.23	4	120	100.78	2.00	0.85	20	i-Vu	CARRIER 35E	PROVIDE THERMOSTAT AND CARRIER i-Vu CONTROL	

BOILER SCHEDULE																	B
QTY.	EQUIPMENT NO.	SERVICE	INPUT (MBH)		OUTPUT (MBH)	BOILER WATER CAPACITY (GALLONS)	WATER PIPE CONNECTION SIZE (IN)	WATER PIPE CONNECTION TYPE	GAS PIPE CONNECTION SIZE (IN)	GAS PIPE CONNECTION TYPE	ELECTRIC VOLTS. -PH. -CY. -AMPS.	DIMENSIONS				MANUFACTURER & MODEL	OPTIONS-ACCESSORIES
			MIN	MAX								LENGTH (IN)	WIDTH (IN)	HEIGHT (IN)	WEIGHT (LB)		
3	B-1, B-2, B-3	WVS, FCUS, DWH & SNOWMELT	100	500	490	4.2	1 1/2	NPT	1	NPT	120-1-60-10.5	31.25	15.5	42.5	310	LOCHINVAR KNIGHT MODEL # KBN500	HIGH ALTITUDE
NOTES: HIGH EFFICIENCY BOILERS (96.5%). SUBSTITUTIONS CAN BE USED ONLY WITH PRIOR ENGINEER'S APPROVAL.																	

CABINET UNIT HEATER & FAN COIL SCHEDULE														
QTY.	EQUIPMENT NO.	SERVICE	CAPACITY (MBH)	ELECTRIC	DIMENSIONS				AIRFLOW (CFM)	MANUFACTURER & MODEL	OPTIONS-ACCESSORIES			
				VOLTS.-PH.-CY- AMPS.	DEPTH (IN)	WIDTH (IN)	HEIGHT (IN)	WEIGHT (LB)						
2	CUH-1, CUH-2	ENTRY 1 & 2	5	208-1-60-9.6	4	79.5	11.25	9.83	-	DAYTON MODEL # 3ENC8				
3	UH-2, UH-3, UH-8	BUNKER GEAR, MEZZANINE	35.9	115-1-60-1.4	10.5	20.5	18.5	40.2	850	DAYTON MODEL # 5PV26	PROVIDE ZONE VALVE, AND HEAT ONLY WALL MOUNT PROGRAMMABLE THERMOSTAT.			
6	UH-1, UH-4 THROUGH UH-7	MECH ROOMS, SHOP, SCBA, UTILITY/DECON, EMS STORAGE	24.8	115-1-60-1.2	8.75	18	16	27	580	DAYTON MODEL # 5PV22	PROVIDE ZONE VALVE, AND HEAT ONLY WALL MOUNT PROGRAMMABLE THERMOSTAT.			

PUMP SCHEDULE											
QTY.	EQUIPMENT NO.	SERVICE	LOAD (BTU/H)	FLOW RATE (GPM)	TDH (FEET)	POWER (HP)	ELECTRIC	SPEED (RPM)	OPERATING TEMPERATURE (°F)	MANUFACTURER & MODEL	
							VOLTS—PH—CY—AMPS				
2	P-1	SECONDARY LOOP	229,000	84	40	1/2	230-1-60	1400 - 4600	130	WILO STRATOS MODEL: 1.5X3-40 TYPE: HORIZONTAL PROVIDE 0-10VDC CONTROL OPTION	
1	P-2	DHW LOOP	125,000	4.2	3	1/25	115-1-60	[1] 1450	130	ARMSTRONG ASTRO MULTI SPEED MODEL # ASTRO 30B-3-0.04HP	
1	P-3	SOLAR LOOP	125,000	4.2	25	1/25	115-1-60	[3] 4350	130	ARMSTRONG ASTRO MULTI SPEED MODEL # ASTRO 30-3-0.04HP	
1	P-4	SNOWMELT HOT SIDE	231,500	16.5	3	1/25	115-1-60	[1] 1450	130	ARMSTRONG ASTRO MULTI SPEED MODEL # ASTRO 30B-3-0.04HP	
1	P-5	SNOWMELT COLD SIDE	231,500	6.5	7	0.11	115-1-60	[2] 2900	130	ARMSTRONG ASTRO MULTI SPEED MODEL # ASTRO 225SSU-0.11HP	
1	P-6	DHW RECIRCULATOR	—	4	3	1/40	115-1-60-0.45	3250	130	TACO 003-B4-2PNP	
1	P-7	CW BOOSTER	—	15	60	1/2	115-1-60-9.2	—	70	GRUNDFOS MODEL #BMQE-05A-110, PROVIDE BMQE CONTROLLER AND 2 GAL. EXP. TANK	

GRILLES, REGISTERS AND DIFFUSERS SCHEDULE												
SYMBOL	TYPE	MANUFACTURER	MODEL	FRAME	MATERIAL	FINISH	DAMPER TYPE	ACCESSORIES	REMARKS			
CD-1	CEILING DIFFUSER	PRICE	SCD	LAY-IN	STEEL	WHITE POWDER COAT	NONE	NONE	24" x 24" FACE SIZE 3 CONE, 4 WAY THROW 22" x 22" NECK SIZE UNLESS OTHERWISE SHOWN			
LSD-1	LINEAR SLOT DIFFUSER	PRICE	SDS100	LAY-IN	ALUMINUM	WHITE POWDER COAT	NONE	SDB1100 INSULATED PLENUM	48" LENGTH, 1" SLOT 2 SLOT CONFIGURATION 6" NECK SIZE UNLESS OTHER WISE SHOWN.			
LSD-1	LINEAR SLOT DIFFUSER	PRICE	SDS100	LAY-IN	ALUMINUM	WHITE POWDER COAT	NONE	SDB1100 INSULATED PLENUM	24" LENGTH, 1" SLOT 2 SLOT CONFIGURATION 6" NECK SIZE UNLESS OTHERWISE SHOWN.			
RG-1	RETURN GRILLE	PRICE	PDDR	LAY-IN	STEEL	WHITE POWDER COAT	NONE	NONE	24"x 24" FACE SIZE 22"x 22" NECK SIZE UNLESS OTHERWISE SHOWN			
EG-1	EXHAUST GRILLE	PRICE	70 AIRFOIL SERIES	SURFACE MOUNT	ALUMINUM	ALUMINUM	NONE	NONE	12"x 12" FACE SIZE FOR REVIEW ONLY			

FOR REVIEW ONLY
NOT FOR CONSTRUCTION

RIDGWAY FIRE STATION
RIDGWAY FIRE PROTECTION DISTRICT
LOT 26-B1, RIDGWAY, CO 81432

ISSUE LOG

SCHEDULES

PROJ. NO. 2013-247.001

PROJECT DATE: 5/9/14

SHEET NUMBER:

M0.3

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

1-1-2011,2011-247 Bldgwp\003 MEP\H-Dwg\Tory's CAD\PEO_Schedules.dwg Saved: Thu, 08 May 2014 4:05pm Plotted: Thu, 08 May 2014 4:05pm Plotschke

INFRARED TUBE HEATERS SCHEDULE															IRH	
EQUIPMENT NO.	THERMOSTAT LOCATION AND SERVICE AREA	INPUT HEAT CAPACITY (MBH)	HEAT TYPE	GAS CONNECTION (NPT)	GAS PRESSURE MINIMUM (INCHES W.C.)	GAS PRESSURE MAXIMUM (INCHES W.C.)	VENT & OA CONNECTION (INCHES)	ELECTRIC		DIMENSIONS				MANUFACTURER & MODEL	OPTIONS-ACCESSORIES	NOTES
								VOLTS.-PH.-CY.	CURRENT (AMPS)	LENGTH (IN)	WIDTH (IN)	HEIGHT (IN)	HANGER MIN WORKING LOAD (LB)			
IRH 1 THROUGH IR-3	APARATUS BAYS	175	NG	3/4"	5	14	4	120-1-60	1	70	12.5	12.5	75	GORDON RAY MODEL# BH 175-70	PROVIDE PROGRAMMABLE WALL MOUNT THERMOSTAT AND 24 VOLT RELAY. PROVIDE WIND PROOF FLUE CAP.	-
IRH 4	APARATUS BAYS	175	NG	3/4"	5	14	4	120-1-60	1	60	12.5	12.5	75	GORDON RAY MODEL# BH 175-60		

WATER HEATER SCHEDULE																	WH
EQUIPMENT NO.	SERVICE	CAPACITY (GALLONS)	HEAT SOURCE WATER (GALLONS)	BOILER HSW (GALLONS)	STANDBY LOSS (°F/HR)	CONTINUOUS DELIVERY (GPH)	1ST HOUR DELIVERY (GALLONS)	MINIMUM COIL LOAD (BTU/H)	FLOW RATE (GPM)	WATER PIPE CONNECTION SIZE	WATER PIPE CONNECTION TYPE	COIL CONNECTION SIZE	DIMENSIONS			MANUFACTURER & MODEL	OPTIONS-ACCESSORIES
													HEIGHT (IN)	DIAMETER (IN)	WEIGHT (LB)		
WH-1	KITCHEN, BATHS, & LAUNDRY	109.8	3.2	2.6	0.4000	250.2000	300.5	181,000	14	1 1/2"	NPT	1"	68	28	224	LOCHINVAR SQUIRE MODEL # SDT-119	
NOTES:																	

HEAT EXCHANGER SCHEDULE																																	HEX				
EQUIPMENT NO.	SERVICE	LOAD (BTU/H)	HOT SIDE										MAX HEAT EXCHANGED (BTU/H)	LMTD (°F)	HEAT TRANSFER AREA (SQ. FT.)	REL. DIRECTIONS OF FLUIDS	NUMBER OF PLATES	NUMBER OF PASSES	DESIGN PRESSURE (PSI)	TEST PRESSURE (PSI)	DESIGN TEMPERATURE (°F)	COLD SIDE										DIMENSIONS				MANUFACTURER & MODEL	NOTES
			PROP GLYCOL	DENSITY (LB/CUBE FT.)	SPECIFIC HEAT CAPACITY (BTU/lb,°F)	THERMAL CONDUCTIVITY (BTU/lb,h,°F)	VISCOSITY, INLET (cP)	VISCOSITY, OUTLET (cP)	FLOW RATE (GPM)	EWI (°F)	LWT (°F)	PRESSURE DROP (PSI)										PROP GLYCOL	DENSITY (LB/CUBE FT.)	SPECIFIC HEAT CAPACITY (BTU/lb,°F)	THERMAL CONDUCTIVITY (BTU/lb,h,°F)	VISCOSITY, INLET (cP)	VISCOSITY, OUTLET (cP)	FLOW RATE (GPM)	EWI (°F)	LWT (°F)	PRESSURE DROP (PSI)	HEIGHT (IN)	WIDTH (IN)	DEPTH (IN)	WEIGHT (LB)		
HX-2	SNOWMELT	231,500	25%	62.31	0.96	0.295	0.762	1.14	17	138	110	9.37	227,400	29.1	12	CONTER-CURRENT	17	1	150	195	150	50%	63.79	0.88	0.221	10.3	1.83	6.5	50	126.8	2.14	31	7	16	154	ALFA LAVAL MODEL # TL3-BFG	
HX-2	SNOWMELT	231,500	25%	62.31	0.96	0.295	0.762	1.14	17	138	110	9.37	227,400	29.1	12	CONTER-CURRENT	17	1	150	195	150	50%	63.79	0.88	0.221	10.3	1.83	6.5	50	126.8	2.14	31	7	16	154	ALFA LAVAL MODEL # TL3-BFG	
NOTES: 1. USE TACO RADIANT MIXING BLOCK FOR MANIFOLD AND CONTROL																																					

EXHAUST FAN SCHEDULE										EF
QTY.	EQUIPMENT NO.	SERVICE	TYPE	CAPACITY (CFM)	ELECTRIC			MANUFACTURER & MODEL	OPTIONS-ACCESSORIES	
					VOLTS. -PH. -CY-AMPS.	DIAM. (IN)	HEIGHT (IN)			WEIGHT (LB)
1	EF-1	TLTs	DOWNBLAST	100	208-1-60-3.1	18 3/8	15	29	GREENHECK MODEL # GB-060-VG-6E	PROVIDE OPTIONAL FACTORY DISCONNECT AND MOTOR STARTER.
1	EF-2	BUNKER GEAR	DOWNBLAST	350	115-1-60-3.1	18 3/8	15	29	GREENHECK MODEL # GB-070-VG-6D	
1	EF-3	KITCHEN HOOD	DOWNBLAST	750	115-1-60-3.9	24 3/4	31	50	GREENHECK MODEL # GB-099-VG-4B	
1	EF-4	SHOP, SCBA, UTILITY/DECON, EMS STORAGE	DOWNBLAST	400	115-1-60-3.1	18 3/8	15	29	GREENHECK MODEL # GB-075-VG-6A	
2	EF-5	APPARATUS BAYS	DOWNBLAST	4000	208-1-60-12.0	28 7/8	31	90	GREENHECK MODEL # GB-183-VG-20B	
1	EF-6	ELECTRICAL ROOM	DOWNBLAST	100	208-1-60-3.1	18 3/8	15	29	GREENHECK MODEL # GB-060-VG-6E	

GLYCOL FEEDER SCHEDULE										GF
EQUIPMENT NO.	MANUFACTURER & MODEL NO.	SERVICE	LOCATION	TANK VOLUME (GAL)	PUMP PERFORMANCE AT 100 PSI (GPM)	ELECTRICAL DATA				
						W	V	PH	HZ	
GF-1	NEPTUNE G-50-1A	MAIN BOILER SYSTEM	MECHANICAL ROOM	50	1.5	50	115	1	60	PROVIDE LOW LEVEL ALARM PANEL C/W REMOTE MONITORING DRY CONTACTS AND AUDIBLE ALARM.
GF-2	NEPTUNE G-50-1A	SNOWMELT SYSTEM	MECHANICAL ROOM	50	1.5	50	115	1	60	PROVIDE LOW LEVEL ALARM PANEL C/W REMOTE MONITORING DRY CONTACTS AND AUDIBLE ALARM.

SNOWMELT MANIFOLD SCHEDULE							
MANIFOLD PLAN CODE	SERVICE	LOAD (BTU/H)	EWI (°F)	LWT (°F)	PROP GLYCOL %	GPM	NOTES
ZONE-1	APPARATUS APRON ZONE 1	231,500	50	126	50%	6.5	
ZONE-2	APPARATUS APRON ZONE 2	231,500	50	126	50%	6.5	

CO DETECTOR SCHEDULE							
DEVICE	SERVICE	GAS	LOW ALERT (PPM)	HIGH ALERT (PPM)	DELAY (MIN)	MANUFACTURER AND MODEL	NOTES
GAS DETECTOR	APPARATUS BAY	CO	35	100	3	BRASCH GSE-CM-TLR1 DETECTOR	ONE LOCAL AND ONE REMOTE DETECTOR
		NO2	1	5	3		
		O2	19	16	1		

DAMPER SCHEDULE									
QTY.	SERVICE	LOAD (BTU/H)	HEIGHT (IN)	WIDTH (IN)	DEPTH (IN)	WEIGHT (LB)	MANUFACTURER	MODEL #	NOTES
7	APPARATUS BAY	231,500	72	48	7.75	125	GREENHECK	VCD-34	PROVIDE OPTIONAL BELIMO INTERNAL MOUNT ACTUATOR # AFBUP

BARBEQUE GRILLE GAS VALVE SCHEDULE							<div>6V</div> <div>550</div>
DEVICE	SERVICE	ELECTRIC	GAS PIPE CONNECTION SIZE (INCHES)	GAS PIPE CONNECTION TYPE	MANUFACTURER AND MODEL	NOTES	
		VOLTS. -PH. -CY- AMPS.					
GAS LINE SOLENOID VALVE	DAYROOM PORCH	115-1-60-3.1	1	NPT	ASCO JB8214235C	PROVIDE TIMER	

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ISSUE LOG

SCHEDULES CONTINUED

PROJ. NO. 2013-247.001
PROJECT DATE: 5/9/14
SHEET NUMBER:

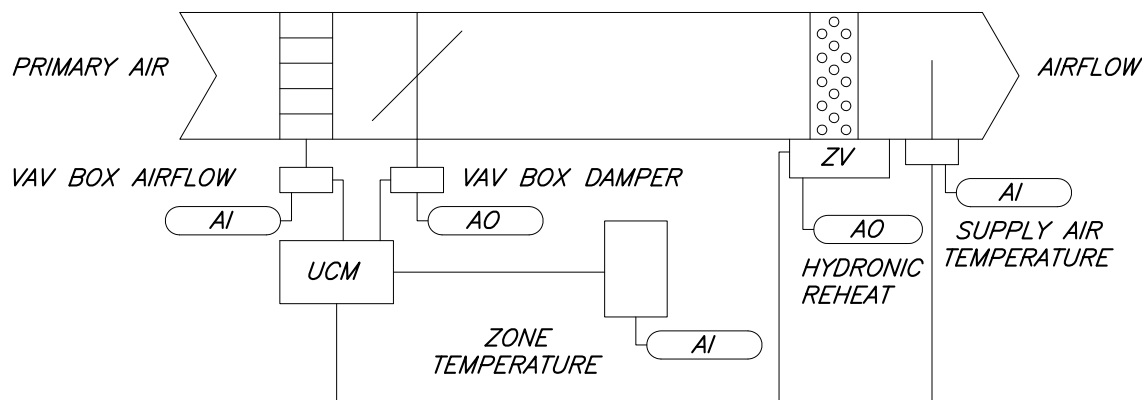
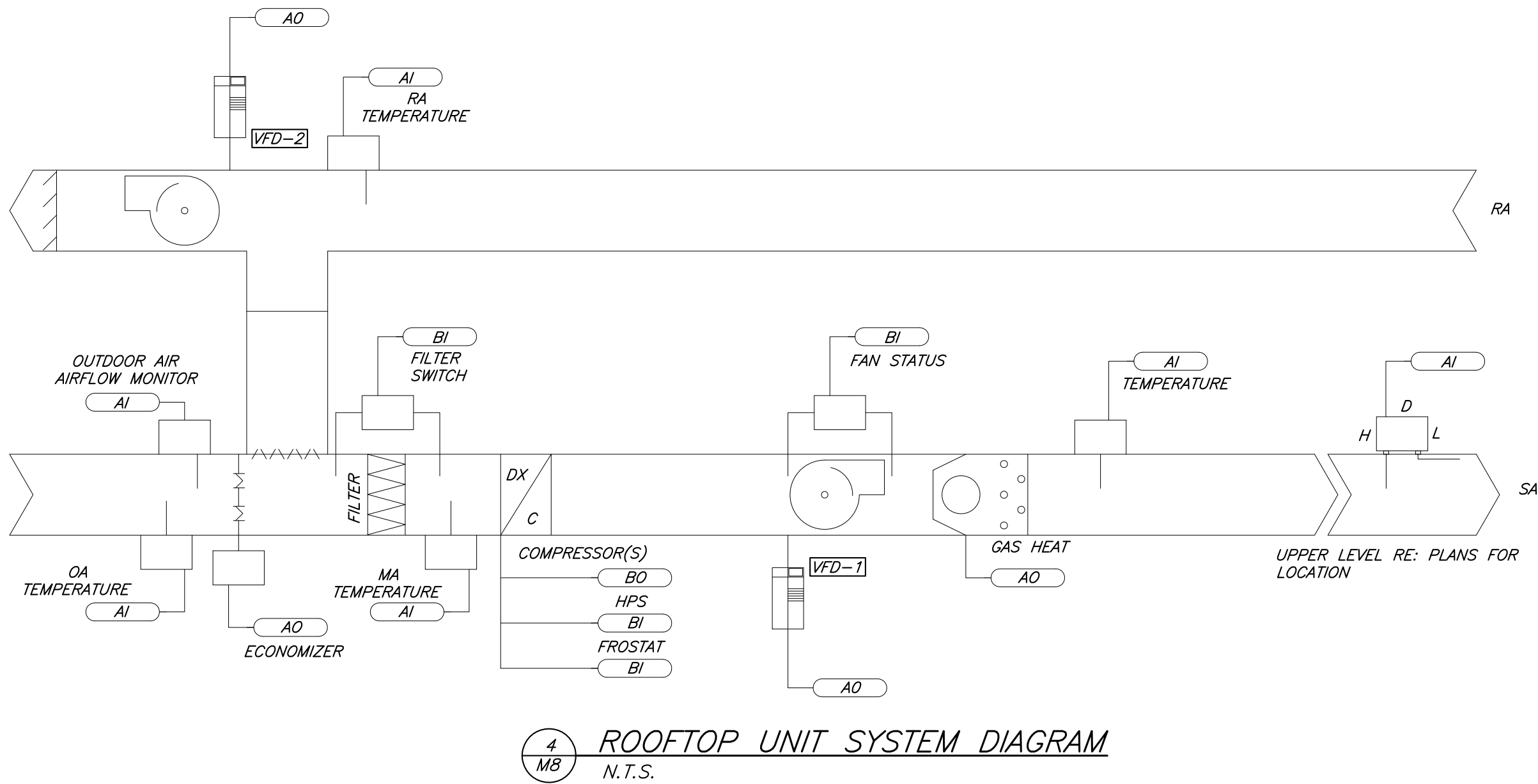
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RIDGWAY FIRE STATION
RIDGWAY FIRE PROTECTION DISTRICT
LOT 26-B1, RIDGWAY, CO 81432

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

11-2011-2011-247 BldgProj\003 MEP\11-Dwg\Terry's CAD\RTU_Schedules.dwg, Source: Wed, 07 May 2014 4:26pm PlotDate: Wed, 07 May 2014 4:51pm PlottedBy: [redacted]

RTU-1 SYSTEM POINT LIST												
SYSTEM POINT DESCRIPTION	POINT TYPE				ALARMS						DIAGNOSTICS	REMARKS
	GRAPHIC	HARDW. INPUT	HARDW. OUTPUT	SOFTWARE POINT	DEFAULT VALUE	HIGH ANALOG	LOW ANALOG	BINARY	LATCH DIAGNOSTIC	SENSOR FAIL	COMM. FAIL	
VAV COMMERCIAL ROOFTOP												
COOLING SET POINT	X			AV	55F							
HEATING SET POINT	X			AV	110F							
HEAT FAIL		BI						X				
EXHAUST FAN		BI						X				
EXH. ACTUATOR				AV								
SYSTEM MODE	X											
SUPPLY FAN	X	BI						X				FAN FAIL
SUPPLY AIR TEMPERATURE	X	AI				X	X			X		SA SENSOR FAIL
DUCT STATIC PRESSURE	X	AI				X	X					PRESS. SENSOR FAIL
DUCT STATIC PRESSURE SETPOINT				AV	1.5" WC							
BUILDING STATIC PRESSURE												PRESS. SENSOR FAIL
BUILDING STATIC PRESSURE SETPOINT				AV	0.5" WC							
DIRTY FILTER	X	BI						X				FILTER STATUS
VFD_MAX_OCC.				AV	100%							
VFD_POSITION	X	AI										
EVAPORATOR		AI								X		EVAP. TEMP. SENSOR FAIL
LOW PR. CONTROL		BI						X				LOW PRESSURE DIAGNOSTIC
CONDENSER		AI								X		CONDENS. TEMP. SENSOR FAIL
COMPRESSOR TRIP		BI						X				COMPRESSOR DIAGNOSTIC
COMP. CONTRACTORS		BI						X				
COND. FAN CONTACT		BI						X				
ECONOMIZER	X	AI										
OUTDOOR AIR TEMPERATURE	X	AI										
RETURN AIR TEMPERATURE	X	AI										
DAMPER MIN. POSITION				AV	15%							
OUTDOOR AIR CFM	X	AI										
MIXED AIR TEMPERATURE	X	AI										
INTERLOCK ERV WITH RTU SUCH THAT IF RTU IS IN UNOCCUPIED MODE, ERV IS ALSO IN UNOCCUPIED MODE.												
GENERAL NOTES: 1. OPTIONAL FEATURE 2. CAN BE A COMMUNICATED VALUE 3. DISPLAYED AT THE BAS USER INTERFACE												



COMMERCIAL ROOFTOP AIR CONDITIONING UNIT

- A. THE COMMERCIAL ROOFTOP UNIT SHALL BE INTERLOCKED WITH THE ENERGY RECOVERY VENTILATOR (ERV) AND HAVE A MICROPROCESSOR-BASED CONTROLLER WHICH SHALL MONITOR AND CONTROL THE COMMERCIAL ROOFTOP UNIT AS DIRECTED BY THE BUILDING AUTOMATION SYSTEM.
- B. THE BUILDING AUTOMATION SYSTEM (BAS) SHALL PERFORM THE FOLLOWING ROOFTOP CONTROL STRATEGIES, PROVIDE THE POINTS LISTED ON THE POINTS LIST AND PROVIDE THE SPECIFIED MONITORING AND DIAGNOSTICS.
- UNOCCUPIED MODE: WHEN THE BAS INITIATES THE UNOCCUPIED MODE, THE ROOFTOP SHALL ASSUME THE UNOCCUPIED HEATING AND COOLING SET POINTS. IF THE UNOCCUPIED SET POINTS ARE EXCEEDED, THE UNIT SHALL HEAT OR COOL UNTIL THE ZONE TEMPERATURE IS WITHIN THE UNOCCUPIED SET POINTS.
 - NIGHT SETBACK TEMPERATURE CONTROL: DURING UNOCCUPIED HOURS, THE ROOFTOP UNIT SHALL BE CONTROLLED BY THE BAS TO MAINTAIN USER-DEFINED UNOCCUPIED HEATING AND COOLING SET POINTS. THE OUTDOOR AIR DAMPER SHALL REMAIN CLOSED FOR NIGHT SETBACK OPERATION (UNLESS ECONOMIZING FOR ZONE COOLING). THE FAN SHALL OPERATE IN THE AUTOMATIC CONTROL MODE.
 - PURGE/NIGHT ECONOMIZER: THE PURGE MODE SHALL TURN ON THE SUPPLY AND RELIEF FAN AND ENABLE THE ECONOMIZER DURING UNOCCUPIED HOURS TO COOL A ZONE USING COOL NIGHT OUTDOOR AIR. THROUGH THE BAS TIME OF DAY SCHEDULING, THE OPERATOR SHALL SPECIFY WHEN THE PURGE MODE OCCURS. DURING THE PURGE MODE, THE ECONOMIZER SHALL BE ENABLED WHILE MECHANICAL OUTDOOR COOLING AND HEATING ARE DISABLED. ALL VAV TERMINAL UNIT DAMPERS SHALL BE SET TO THE NORMALLY OPEN POSITION DURING THIS OPERATION.
 - TRANSITION FROM UNOCCUPIED TO OCCUPIED: WHEN THE UNIT TRANSITIONS FROM THE UNOCCUPIED OPERATION TO OCCUPIED OPERATION, START -UP OR MORNING WARM-UP MODE SHALL BE ACTIVATED.
 - STARTUP MODE: THE ROOFTOP UNIT CAN BE CONTROLLED TO THE STARTUP MODE BY THE BAS FOR OPTIMAL START PURPOSES. DURING THE STARTUP MODE, HEATING AND COOLING ARE ENABLED FOR THE ROOFTOP. ON VARIABLE AIR VOLUME UNITS, THE TRANSITION FROM THE UNOCCUPIED TO THE STARTUP MODE MAY INITIATE THE MORNING WARM-UP MODE, IF THE ANY SPACE TEMPERATURE IS BELOW THE MORNING WARM-UP SET POINT.
 - ON VARIABLE AIR VOLUME UNITS, THE OUTDOOR AIR DAMPER SHALL REMAIN CLOSED, UNLESS ECONOMIZING, UNTIL THE ZONE'S SCHEDULED OCCUPIED TIME.
 - MORNING WARM-UP: WHEN THE ROOFTOP SHALL CHANGE FROM THE UNOCCUPIED TO THE OCCUPIED MODE, THE UNIT MAY ENTER THE MORNING WARM-UP MODE. THE MORNING WARM-UP MODE SHALL BE INITIATED IF ANY SPACE SENSOR VALUE IS LESS THAN THE MORNING WARM-UP SET POINT. THE ECONOMIZER SHALL BE KEPT CLOSED AND THE SELECTED ZONE IS HEATED. THE BAS SHALL SEND THE ROOFTOP UNIT A MORNING WARM-UP TEMPERATURE AND SET POINT. THE MORNING WARM-UP SET POINT SHALL BE BASED ON ONE SPECIFIC ZONE DESIGNATED BY THE OPERATOR OR BASED ON AN AVERAGE ZONE TEMPERATURE.
 - OCCUPIED OPERATION: WHEN THE ROOFTOP UNIT IS CONTROLLED TO THE OCCUPIED MODE, ALL ROOFTOP UNIT FUNCTIONS SHALL BE ENABLED. VARIABLE AIR VOLUME UNITS SHALL OPERATE IN SUPPLY AIR TEMPERATURE CONTROL MODE. THE ROOFTOP UNIT SHALL DEFAULT TO THIS MODE IN THE EVENT THAT COMMUNICATIONS WITH THE BAS ARE LOST.
 - COOLING/ECONOMIZER: DURING THE OCCUPIED COOLING MODE OF OPERATION THE ECONOMIZER AND MECHANICAL COOLING ARE USED TO CONTROL THE SUPPLY AIR TEMPERATURE. IF THE TEMPERATURE OF THE OUTDOOR AIR IS APPROPRIATE TO USE FREE COOLING THE ECONOMIZER SHALL BE USED TO SATISFY THE SUPPLY AIR SET POINT. IF MORE COOLING IS THEN REQUIRED, COMPRESSORS SHALL BE STAGED ON AS NECESSARY. MINIMUM ON/OFF TIMING OF THE COMPRESSORS SHALL PREVENT RAPID CYCLING AS DETERMINED BY THE INTERNAL UNIT CONTROLS.
 - AT OUTDOOR AIR CONDITIONS ABOVE THE TEMPERATURE CONTROL SETTING, MECHANICAL COOLING ONLY SHALL BE USED AND THE FRESH AIR DAMPERS SHALL REMAIN AT MINIMUM POSITION.
 - SUPPLY AIR SET POINT: THE SUPPLY AIR SET POINT FOR EACH ROOFTOP UNIT SHALL BE RESET AUTOMATICALLY BASED ON AN OUTDOOR AIR OR ZONE TEMPERATURE.
 - DAYTIME WARM-UP: WHEN THE AVERAGE ZONE TEMPERATURE DROPS BELOW AN OPERATOR-SPECIFIED DAYTIME WARM-UP SET POINT, THE ROOFTOP SHALL ENTER THE DAYTIME WARM-UP MODE. IN THIS MODE, THE ROOFTOP SHALL SUPPLY HEAT TO THE VAV BOXES BY DRIVING THE VAV BOXES FULLY OPEN AND VFD FAN IS DRIVING TO 100 PERCENT. AFTER THE ZONE IS WARMED UP, THE UNIT SHALL RESUME NORMAL COOLING. THE BAS SHALL COMMUNICATE THE DAYTIME WARM-UP TEMPERATURE VALUE FOR THE ROOFTOP TO USE TO INITIATE THE NECESSARY HEATING FOR THE ZONE.
 - ECONOMIZER CONTROL: THE ECONOMIZER CONTROLLER ON THE ROOFTOP UNIT TO PROVIDE FREE COOLING.
 - TIMED OVERRIDE: WHEN A TIMED OVERRIDE IS INITIATED BY THE USER, THE ROOFTOP UNIT SHALL RETURN TO ITS NORMAL OCCUPIED MODE FOR A PERIOD OF TIME AS SPECIFIED AT THE BAS. WHEN THE TIMED OVERRIDE PERIOD HAS ENDED, THE UNIT SHALL AUTOMATICALLY RETURN TO ITS UNOCCUPIED CYCLE. THE BAS SHALL MONITOR AND STORE THE OVERRIDE TIME FOR EACH TIMED OVERRIDE INPUT FOR DOCUMENTATION OF AFTER-HOURS OPERATION. THE BAS SHALL ALSO RECOGNIZE A TIMED OVERRIDE FUNCTION IF PROVIDED.
 - SHUTDOWN: IN THE SHUTDOWN MODE, THE UNIT SHALL TURN OFF AS RAPIDLY AS POSSIBLE WITH ALL COOLING AND HEATING DISABLED, AND THE OUTDOOR AIR DAMPER SHALL BE CLOSED.
 - SPACE PRESSURE CONTROL: THE SPACE PRESSURE CONTROL SHALL MODULATE THE EXHAUST FANS VFD, AND SHALL OPEN THE EXHAUST DAMPERS TO MAINTAIN A SLIGHTLY POSITIVE INDOOR STATIC PRESSURE. THE BAS SHALL ALSO MONITOR THE BUILDING STATIC PRESSURE SENSOR DIFFERENTIAL.
 - SUPPLY AIR PRESSURE CONTROL: THE BAS SHALL SEND SUPPLY AIR PRESSURE SET POINTS TO THE ROOFTOP TO MODULATE THE SUPPLY FAN VFD BASED ON THE STATIC PRESSURE SENSOR LOCATED IN THE SUPPLY AIR DUCT. THE BAS SHALL ALSO READ THE STATUS ON THE SUPPLY AIR SENSOR AND DISPLAY THE PRESSURE READING ON THE STATUS SCREEN.
- D. UNIT STATUS REPORT: FOR EACH ROOFTOP UNIT, THE BAS SHALL PROVIDE AN OPERATING STATUS SUMMARY OF THE FOLLOWING INFORMATION TO PROVIDE THE OPERATOR WITH CRITICAL ROOFTOP OPERATING DATA.
- UNIT TYPE AND SIZE
 - OPERATING MODE
 - ACTIVE ROOFTOP DIAGNOSTICS
 - ACTIVE COOLING/HEATING MODE
 - ACTIVE COOLING/SUPPLY AIR SET POINT
 - ACTIVE HEATING/SUPPLY AIR SET POINT
 - SUPPLY AIR TEMPERATURE
 - SPACE TEMPERATURE
 - SUPPLY FAN STATUS
 - SUPPLY FAN PERCENT MODULATION
 - EXHAUST FAN STATUS
 - EXHAUST FAN PERCENT MODULATION
 - ACTIVE SPACE PRESSURE
 - ACTIVE SUPPLY AIR PRESSURE
 - HEAT STAGE ON/OFF STATUS
 - COMPRESSOR ON/OFF STATUS
 - CONDENSER ON/OFF STATUS
 - RETURN AIR TEMPERATURE
 - RETURN AIR RELATIVE HUMIDITY
 - ECONOMIZER STATUS
 - ECONOMIZER POSITION - PERCENT
 - MINIMUM OUTDOOR AIR CFM SET POINT
 - CARBON DIOXIDE CONCENTRATION - PERCENT
 - OUTDOOR AIRFLOW

SHUTOFF VAV BOXES WITH HYDRONIC REHEAT

- A. OCCUPANCY - THE OCCUPANCY MODE CAN BE COMMUNICATED OR HARDWIRED TO THE VAV VIA A BINARY INPUT. VALID OCCUPANCY MODES FOR THE VAV SHALL BE:
- OCCUPIED: NORMAL OPERATING MODE FOR OCCUPIED SPACES OR DAYTIME OPERATION. WHEN THE UNIT IS IN THE OCCUPIED MODE THE VAV SHALL MAINTAIN THE SPACE TEMPERATURE AT THE ACTIVE OCCUPIED HEATING OR COOLING SET POINT. APPLICABLE VENTILATION AND AIRFLOW SET POINTS SHALL BE ENFORCED. THE OCCUPIED MODE SHALL BE THE DEFAULT MODE OF THE VAV.
 - UNOCCUPIED: NORMAL OPERATING MODE FOR UNOCCUPIED SPACES OR NIGHTTIME OPERATION. WHEN THE UNIT IS IN UNOCCUPIED MODE THE VAV SHALL MAINTAIN THE SPACE TEMPERATURE AT THE STORED UNOCCUPIED HEATING OR COOLING SET POINT REGARDLESS OF THE PRESENCE OF A HARDWIRED OR COMMUNICATED SET POINT. WHEN THE SPACE TEMPERATURE EXCEEDS THE ACTIVE UNOCCUPIED SET POINT THE VAV SHALL MODULATE FULLY CLOSED.
 - OCCUPIED BYPASS: MODE USED TO TEMPORARILY PLACE THE UNIT INTO THE OCCUPIED OPERATION. TENANTS SHALL BE ABLE TO OVERRIDE THE UNOCCUPIED MODE FROM THE SPACE SENSOR. THE OVERRIDE SHALL LAST FOR A MAXIMUM OF 4 HOURS (CONFIGURABLE). THE TENANTS SHALL BE ABLE TO CANCEL THE OVERRIDE FROM THE SPACE SENSOR AT ANY TIME. DURING THE OVERRIDE THE UNIT SHALL RUN IN OCCUPIED MODE.
- B. COOLING OPERATION - WHEN THE UNIT IS IN COOLING MODE, THE VAV SHALL MAINTAIN THE SPACE TEMPERATURE AT THE ACTIVE COOLING SET POINT BY MODULATING THE AIRFLOW BETWEEN THE ACTIVE COOLING MINIMUM AIRFLOW SET POINT TO THE MAXIMUM COOLING AIRFLOW SET POINT.
- C. THE VAV SHALL USE THE MEASURED SPACE TEMPERATURE AND THE ACTIVE COOLING SET POINT TO DETERMINE THE REQUESTED COOLING CAPACITY OF THE UNIT. THE OUTPUTS SHALL BE CONTROLLED BASED ON THE UNIT CONFIGURATION AND THE REQUESTED COOLING CAPACITY.
- D. HEATING OPERATION - WHEN THE UNIT IS IN HEATING MODE, THE APPLICATION SPECIFIC CONTROLLERS (ASC) SHALL MAINTAIN THE SPACE TEMPERATURE AT THE ACTIVE HEATING SET POINT BY MODULATING THE AIRFLOW BETWEEN THE ACTIVE HEATING MINIMUM AIRFLOW SET POINT TO THE MAXIMUM HEATING AIRFLOW SET POINT.
- E. THE ASC SHALL USE THE MEASURED SPACE TEMPERATURE AND THE ACTIVE HEATING SET POINT TO DETERMINE THE REQUESTED HEATING CAPACITY OF THE UNIT. THE OUTPUTS SHALL BE CONTROLLED BASED ON THE UNIT CONFIGURATION AND THE REQUESTED HEATING CAPACITY.
- F. THE REHEAT WILL BE ENABLED WHEN THE SPACE TEMPERATURE DROPS BELOW THE ACTIVE HEATING SET POINT AND THE AIRFLOW IS BETWEEN THE MINIMUM AND MAXIMUM HEATING AIRFLOW SET POINT. DURING REHEAT THE VAV SHALL MODULATE AIRFLOW BASED ON D. ABOVE AND MODULATE THE REHEAT ZONE VALVE BASED ON THE SAT.

- E. DIAGNOSTICS: THE BAS SYSTEM SHALL BE ABLE TO ALARM FROM ALL SENSED POINTS FROM THE ROOFTOP UNITS AND DIAGNOSTIC ALARMS SENSED BY THE UNIT CONTROLLER. ALARM LIMITS SHALL BE DESIGNATED FOR ALL SENSED POINTS.
- INDIVIDUAL ROOFTOP DIAGNOSTIC AND ALARM STATUSES SHALL INCLUDE THE FOLLOWING LATCHING ITEMS FOR EACH ROOFTOP UNIT:
 - EMERGENCY STOP
 - SUPPLY FAN FAILURE
 - EXHAUST FAN FAILURE
 - COMPRESSOR TRIP (EACH CIRCUIT)
 - MANUAL SUPPLY AIR STATIC PRESSURE LIMIT
 - COMPRESSOR CONTACTOR FAIL (EACH CIRCUIT)
 - INDIVIDUAL ROOFTOP DIAGNOSTIC AND ALARM STATUSES SHALL INCLUDE THE FOLLOWING NON-LATCHING ITEMS FOR EACH ROOFTOP UNIT:
 - ZONE TEMPERATURE SENSOR FAILURE
 - SUPPLY AIR TEMPERATURE SENSOR FAILURE
 - AUXILIARY TEMPERATURE SENSOR FAILURE
 - OUTDOOR AIR TEMPERATURE SENSOR FAILURE
 - OCCUPIED ZONE COOL/HEAT SET POINT FAILURE
 - SUPPLY AIR PRESSURE SENSOR FAILURE
 - OUTDOOR AIR HUMIDITY SENSOR FAILURE
 - EVAPORATOR TEMPERATURE SENSOR FAILURE (EACH CIRCUIT)
 - CONDENSER TEMPERATURE SENSOR FAILURE (EACH CIRCUIT)
 - MORNING WARM-UP ZONE SENSOR FAILURE
 - HEAT FAILURE
 - UNOCCUPIED ZONE COOL/HEAT SET POINT FAILURE
 - SUPPLY AIR PRESSURE SET POINT FAILURE
 - SPACE STATIC PRESSURE SET POINT FAILURE
 - SPACE PRESSURE SENSOR FAILURE
 - RETURN AIR TEMPERATURE SENSOR FAILURE
 - RETURN AIR HUMIDITY SENSOR FAILURE
 - AUTO SUPPLY AIR STATIC PRESSURE LIMIT
 - UNIT COMMUNICATIONS LOSS
 - HEAT COMMUNICATIONS FAILURE
 - NIGHT SETBACK PANEL COMMUNICATIONS FAILURE
 - VENTILATION OVERRIDE MODE COMMUNICATIONS LOSS
 - SUPPLY AIR TEMPERATURE COOL/HEAT SET POINT FAILURE
 - DIRTY FILTER
 - NIGHT SETBACK ZONE TEMPERATURE SENSOR FAILURE
- DISCHARGE DUCT STATIC PRESSURE SET POINT OPTIMIZATION
- THE BUILDING AUTOMATION SYSTEM (BAS) SHALL CONTINUOUSLY MONITOR THE DAMPER POSITION OF ALL VAV TERMINAL UNITS.
 - WHEN ANY VAV DAMPER IS MORE THAN 75% (ADJ.) OPEN, THE SUPPLY FAN DISCHARGE DUCT STATIC PRESSURE SET POINT SHALL BE RESET UPWARD BY 0.1 IN W.C. (ADJ.), AT A FREQUENCY OF 15 MINUTES (ADJ.), UNTIL NO DAMPER IS MORE THAN 75% OPEN OR THE STATIC PRESSURE SET POINT HAS RESET UPWARD TO THE SYSTEM MAXIMUM DUCT STATIC PRESSURE SET POINT OR THE RTU VARIABLE-FREQUENCY DRIVE IS AT THE MAXIMUM SPEED SETTING.
 - WHEN ALL VAV DAMPERS ARE LESS THAN 65% (ADJ.) OPEN, THE SUPPLY FAN DISCHARGE DUCT STATIC PRESSURE SET POINT SHALL BE RESET DOWNWARD BY 0.1 IN W.C. (ADJ.), AT A FREQUENCY OF 15 MINUTES (ADJ.), UNTIL AT LEAST ONE DAMPER IS MORE THAN 65% OPEN OR THE STATIC PRESSURE SET POINT HAS RESET DOWNWARD TO THE SYSTEM MINIMUM DUCT STATIC PRESSURE SET POINT OR THE RTU VARIABLE-FREQUENCY DRIVE IS AT THE MINIMUM SPEED SETTING.
 - THE CONTROL BANDS, SET POINT ADJUSTMENT VALVES VALUES AND ADJUSTMENT FREQUENCIES SHALL BE ADJUSTED TO MAINTAIN STATIC PRESSURE OPTIMIZATION WITH STABLE SYSTEM CONTROL AND COMFORT CONTROL.
 - THE BAS SHALL HAVE THE CAPABILITY TO ALLOW THE OPERATOR TO EXCLUDE "PROBLEM" TERMINAL UNITS THAT SHOULD NOT BE CONSIDERED WHEN DETERMINING THE OPTIMIZED SET POINT.
 - THE BAS SHALL ALSO READ THE STATUS OF THE SUPPLY AIR STATIC PRESSURE SENSOR AND DISPLAY THE ACTIVE DUCT STATIC PRESSURE READING ON THE STATUS SCREEN.
 - THE BAS SHALL IDENTIFY, AND DISPLAY TO THE USER, THE VAV BOX THAT SERVES THE CRITICAL ZONE (THAT IS, THE ZONE WITH THE MOST WIDE-OPEN VAV DAMPER). THIS INFORMATION SHALL UPDATE DYNAMICALLY AS THE LOCATION OF THE CRITICAL ZONE CHANGES BASED ON BUILDING LOAD, AND DUCT STATIC PRESSURE SET POINT OPTIMIZATION CONTROL.
 - THE CONTROLS CONTRACTOR SHALL DEMONSTRATE THE PERFORMANCE OF FAN PRESSURE OPTIMIZATION.
- VENTILATION (DEMAND CONTROLLED) OPTIMIZATION
- ROOFTOP UNIT MANUFACTURER SHALL PROVIDE AN OA MEASURING STATION AND A CO2 SENSOR ON THE COMMERCIAL RTU TO MONITOR CO2 LEVELS AND AUTOMATICALLY ADJUST OUTSIDE AIR.
 - THE VENTILATION (DEMAND CONTROLLED) OPTIMIZATION SEQUENCE SHALL BE DISABLED DURING THE ECONOMIZER MODE.
 - THE RTU OUTDOOR-AIR DAMPER SHALL BE CONTROLLED TO DELIVER REQUIRED OUTDOOR AIRFLOW AT ALL LOAD CONDITIONS. THE OUTDOOR AIRFLOW SET POINT SHALL BE DETERMINED ACCORDING TO CHAPTER 4 OF THE 2009 INTERNATIONAL MECHANICAL CODE (WHERE $E_z = 0.8$ IN HEATING MODE AND $E_z = 1.0$ IN COOLING MODE). THE ACTUAL OUTDOOR AIRFLOW SHALL BE SENSED AT EACH OUTDOOR AIR INTAKE.
 - THE BAS SHALL INCLUDE A TIME-OF-DAY SCHEDULE TO INDICATE WHETHER A ZONE IS NORMALLY OCCUPIED OR UNOCCUPIED. WHEN THE SCHEDULE INDICATES THAT THE ZONE IS NORMALLY UNOCCUPIED, THE REQUIRED OUTDOOR AIRFLOW FOR THE ZONE SHALL BE ZERO. WHEN THE SCHEDULE INDICATES THAT THE ZONE IS NORMALLY OCCUPIED, THE REQUIRED OUTDOOR AIRFLOW FOR THE ZONE SHALL EQUAL THE DESIGN OUTDOOR AIRFLOW (BASED ON DESIGN OCCUPANCY).
 - THE REQUIRED OUTDOOR-AIR FRACTION (Z_p) SHALL BE RECALCULATED FOR EACH VAV TERMINAL ZONE EVERY 15 MINUTES (ADJ.). OUTDOOR-AIR FRACTION IS DEFINED AS THE CURRENT REQUIRED OUTDOOR AIRFLOW FOR THE ZONE DIVIDED BY THE CURRENT PRIMARY AIRFLOW TO THE ZONE.
 - THE BAS SHALL DETERMINE THE HIGHEST ZONE OUTDOOR-AIR FRACTION EVERY 15 MINUTES (ADJ.), SUM THE OUTDOOR AIRFLOW REQUIREMENTS FOR ALL VAV ZONES, AND SUM THE CURRENT PRIMARY AIRFLOWS FOR ALL VAV ZONES TO DETERMINE THE TOTAL SYSTEM PRIMARY AIRFLOW. THIS INFORMATION SHALL BE USED IN CHAPTER 4 OF THE 2009 INTERNATIONAL MECHANICAL CODE TO CALCULATE THE MINIMUM REQUIRED OUTDOOR AIRFLOW FOR THE SYSTEM. THIS MINIMUM OUTDOOR AIRFLOW SET POINT SHALL BE RECALCULATED EVERY 15 MINUTES (ADJ.).
 - PRIOR TO FINAL SYSTEM ACCEPTANCE, A CONTRACTOR SHALL PROVIDE A TREND LOG OF ACTUAL SYSTEM OPERATION TO THE ENGINEER AND OWNER. OPERATING CONDITIONS TO BE LOGGED INCLUDE: HIGHEST ZONE OUTDOOR-AIR FRACTION, TOTAL SYSTEM PRIMARY AIRFLOW, CALCULATED OUTDOOR AIRFLOW SET POINT FOR THE SYSTEM, AND THE ACTUAL MEASURED OUTDOOR AIRFLOW. THESE CONDITIONS MUST BE LOGGED AT 15-MINUTE INTERVALS OVER A TYPICAL 48-HOUR PERIOD.

ISSUE LOG

CONTROL SEQUENCE

PROJ. NO. 2013-247.001

PROJECT DATE: 5/9/14

SHEET NUMBER:

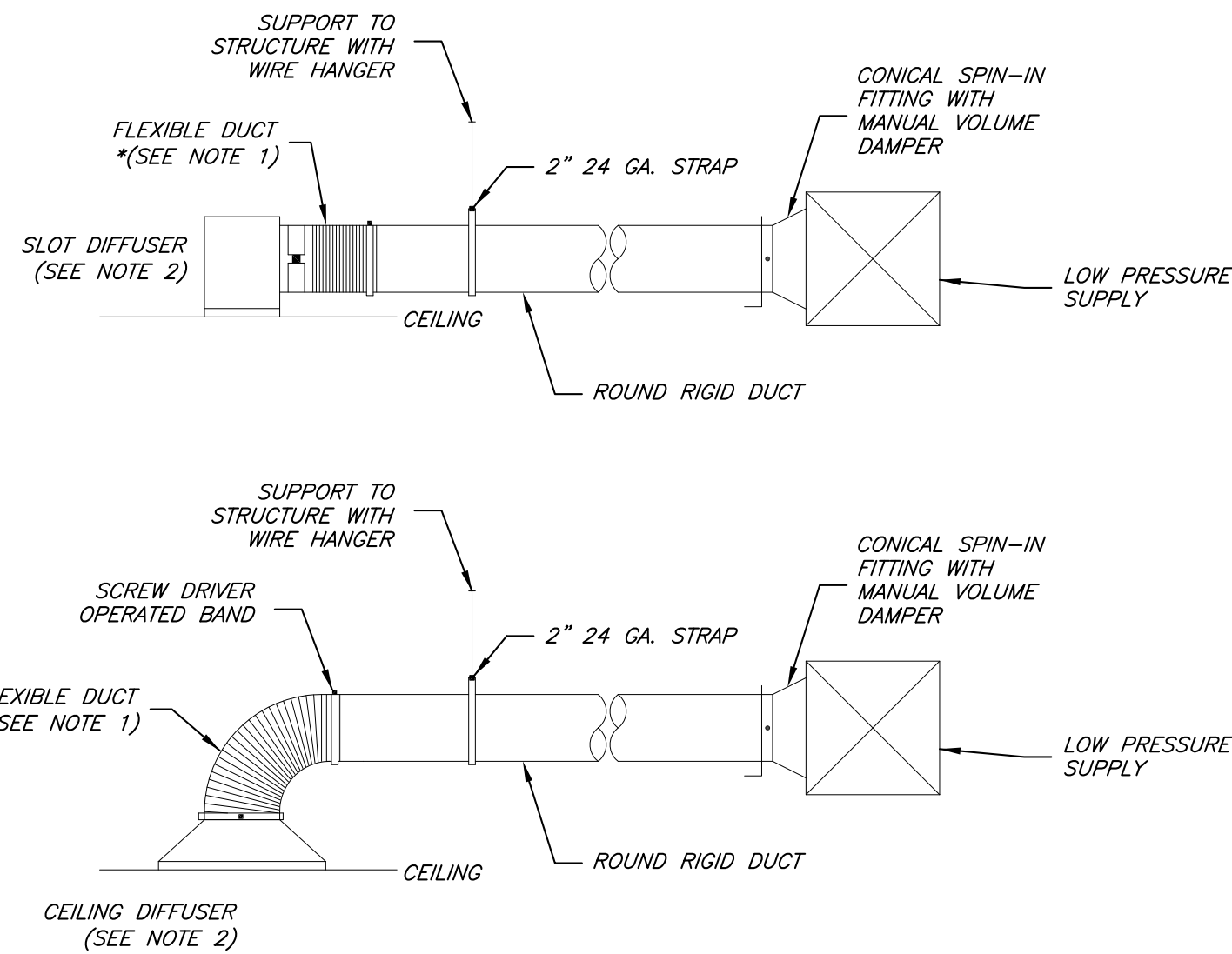
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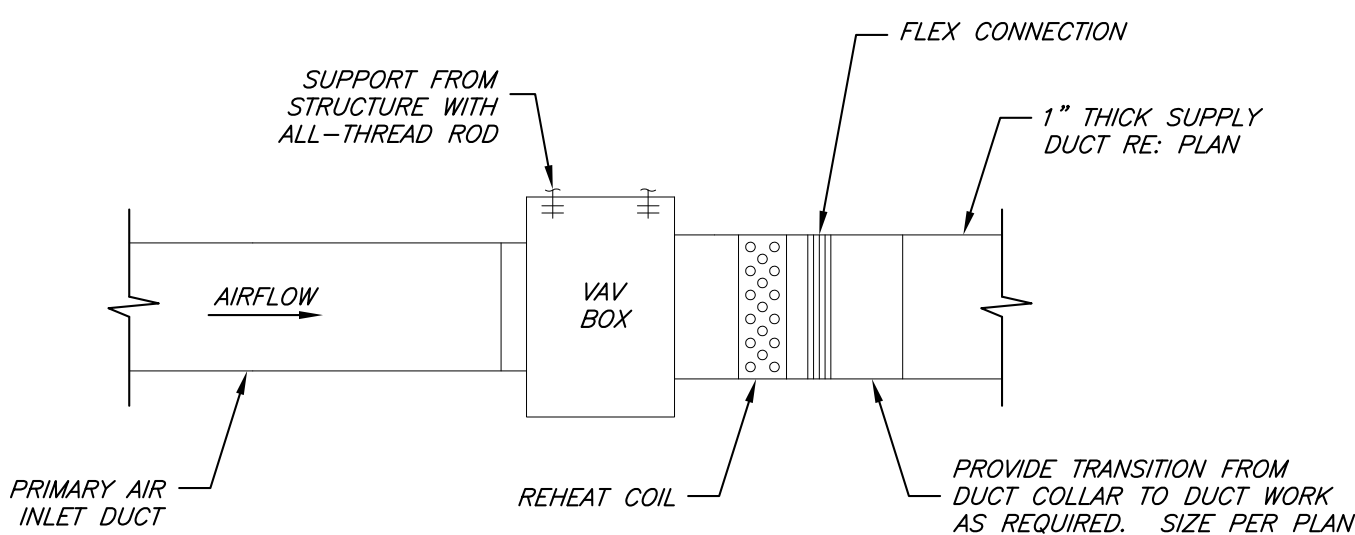
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RIDGWAY FIRE STATION
RIDGWAY FIRE PROTECTION DISTRICT
LOT 26-B1, RIDGWAY, CO 81432

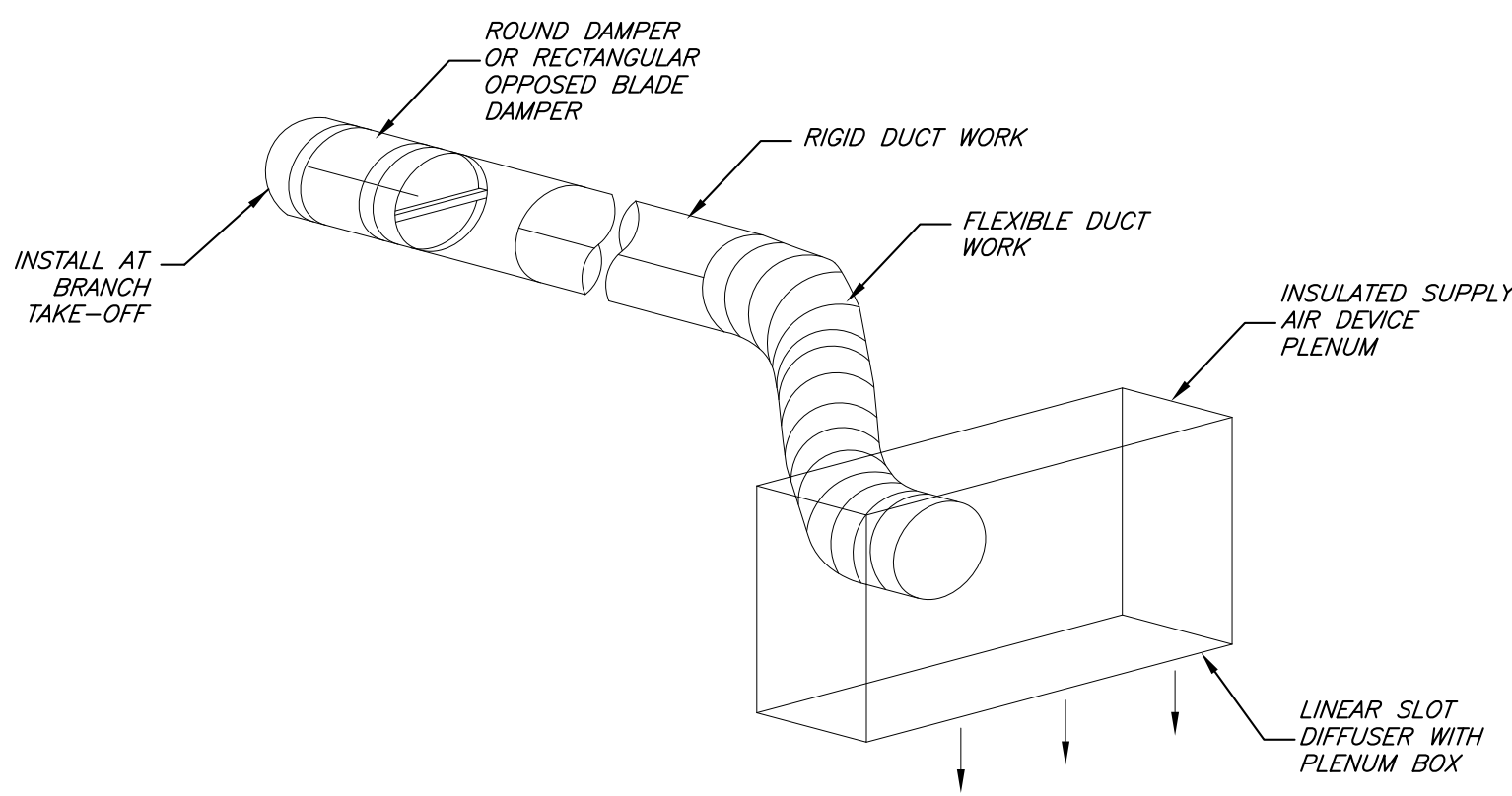
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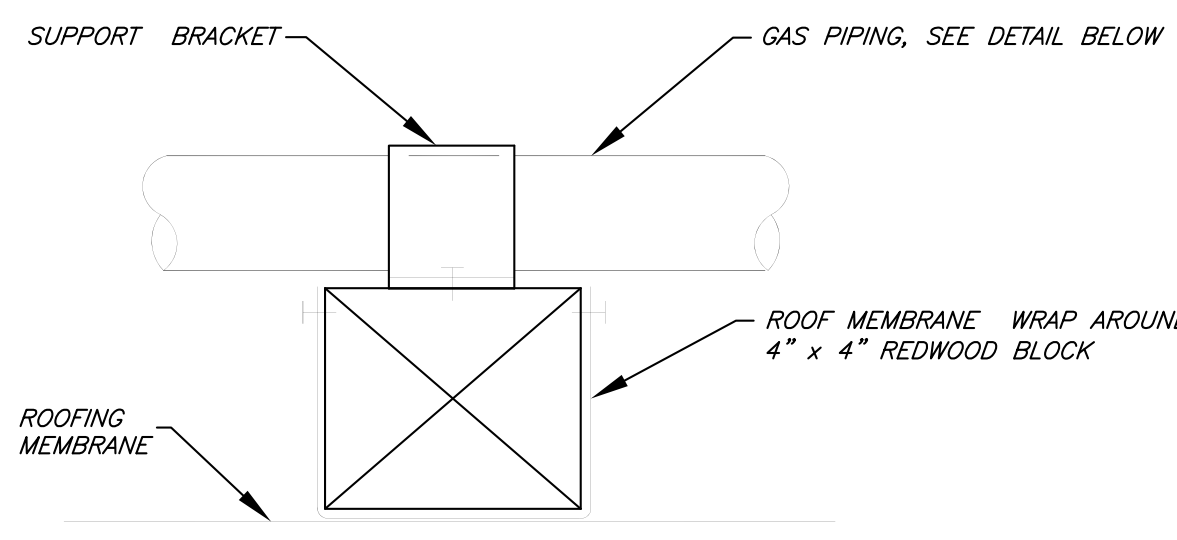
SLOT/CEILING DIFFUSER DIAGRAM
N.T.S.



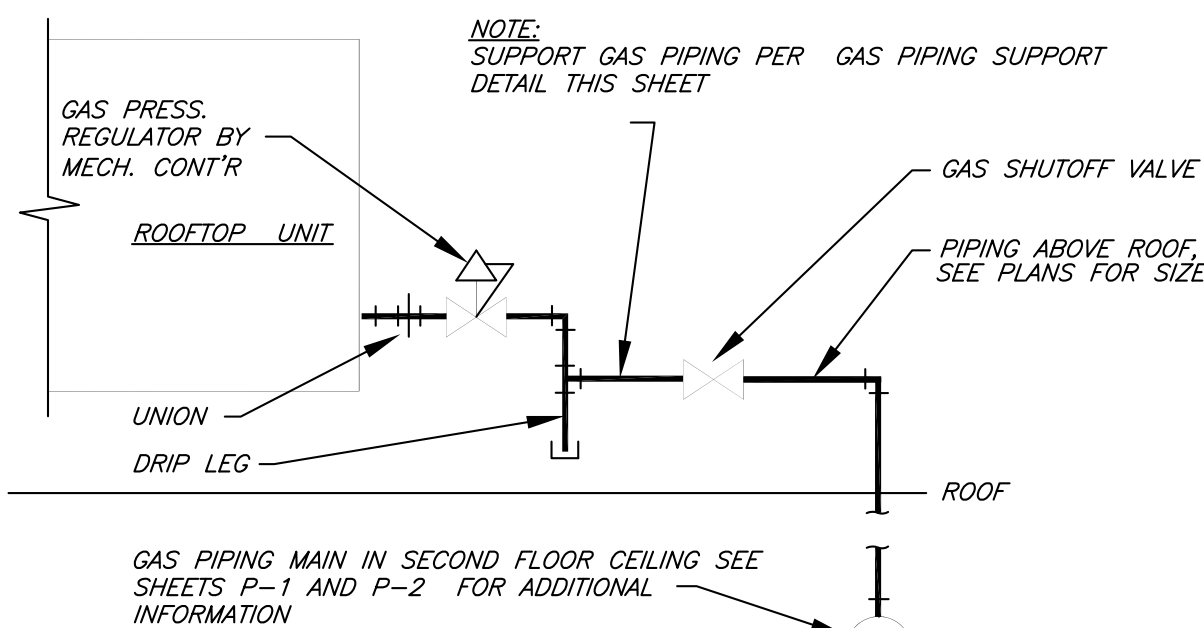
VAV BOX WITH REHEAT DIAGRAM
N.T.S.



SLOT DIFFUSER DIAGRAM
N.T.S.



ROOFTOP UNIT GAS PIPING (AT ROOF)
SUPPORT DETAIL
N.T.S.

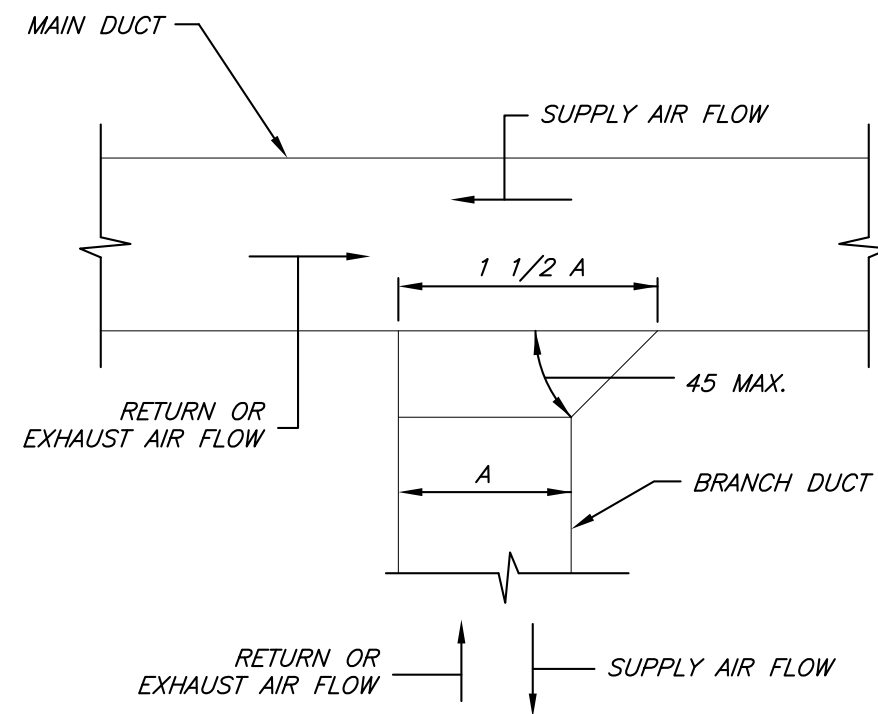


ROOFTOP UNIT GAS PIPING DETAIL
N.T.S.

- NOTES
1. PROVIDE MINIMUM OF ONE SUPPORT FOR EACH 3'-0" OF LENGTH.
 2. SUPPORT DIFFUSER INDEPENDENT FROM DUCT WORK WITH WIRE HANGER WHEN REQUIRED BY LOCAL CODE.

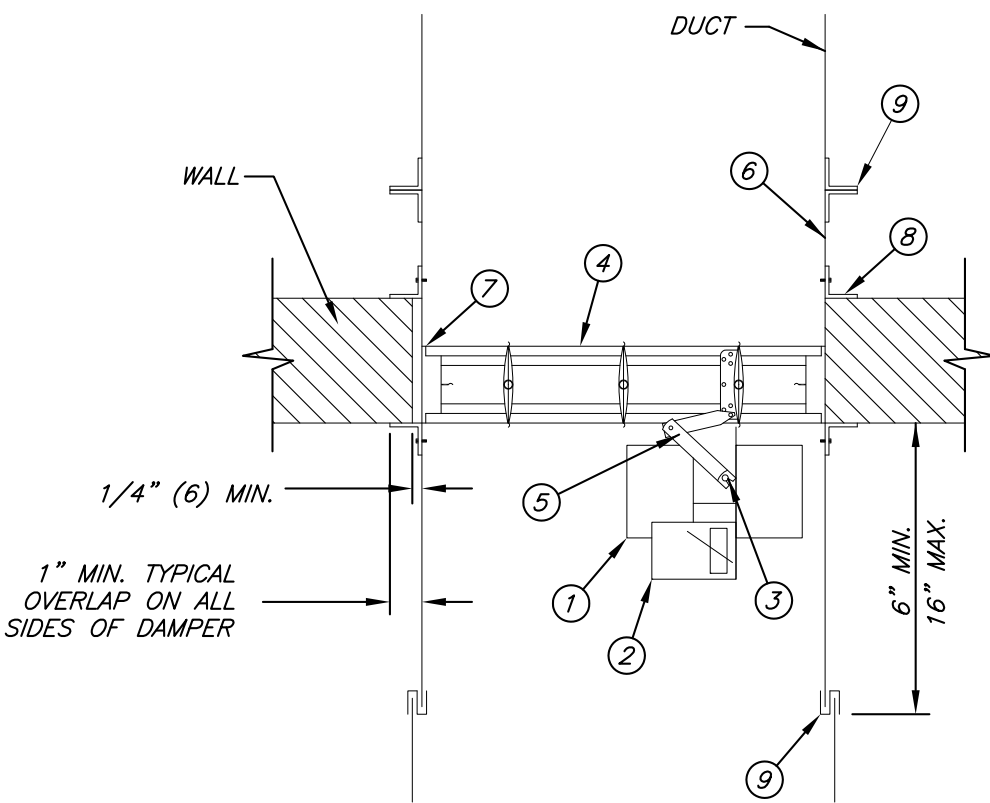
M.C. SHALL INSTALL NEOPRENE PAD AT COMPLETE INTERFACE BETWEEN ROOF MOUNTING CURB AND BOTTOM OF RTU AND AT ALL INTERMEDIATE CROSS MEMBERS.

ERV & RTU CURB SECTION VIEWS
N.T.S.

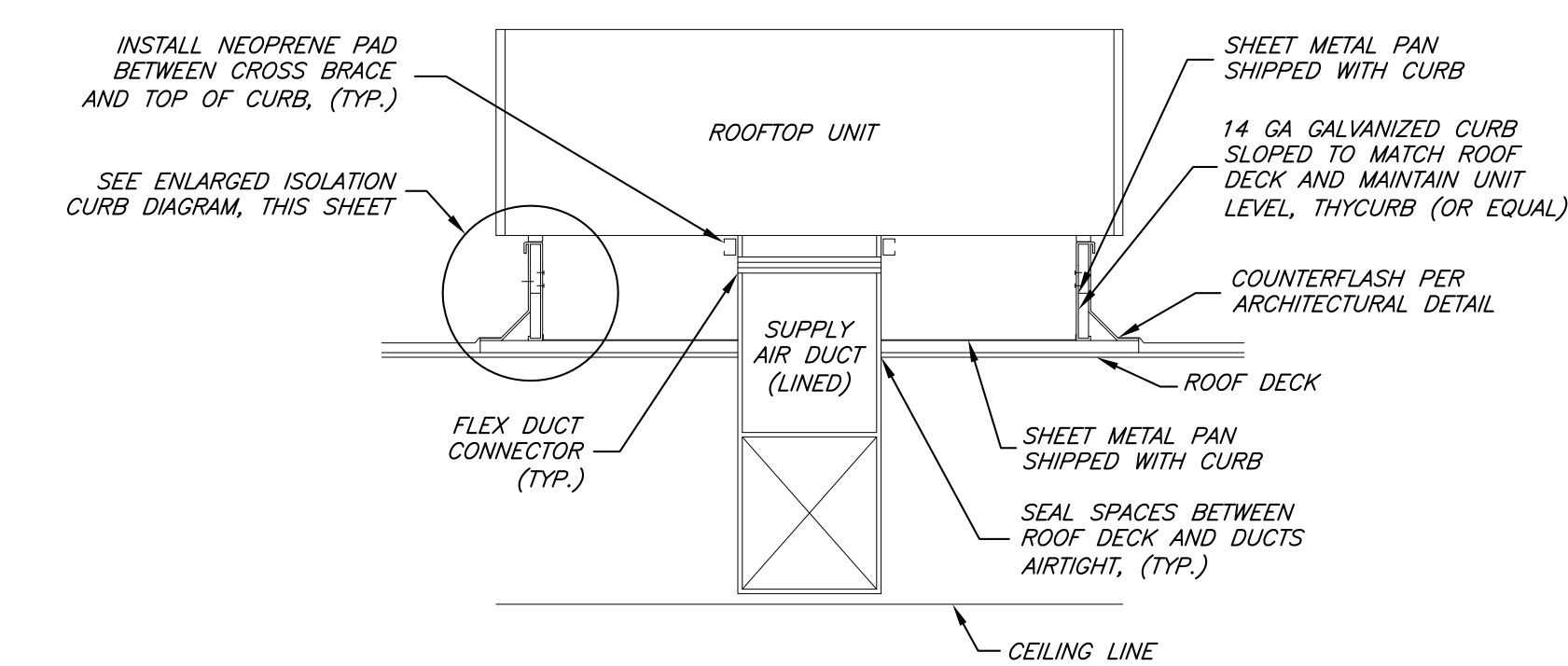


DUCT TAKE-OFF DIAGRAM
N.T.S.

FIRE/SMOKE DAMPER INSTALLATION DIAGRAM-HORIZONTAL
N.T.S.



NOTE
PROVIDE TRANSITION FROM DUCT COLLAR TO DUCTWORK AS REQUIRED. SIZE PER PLAN

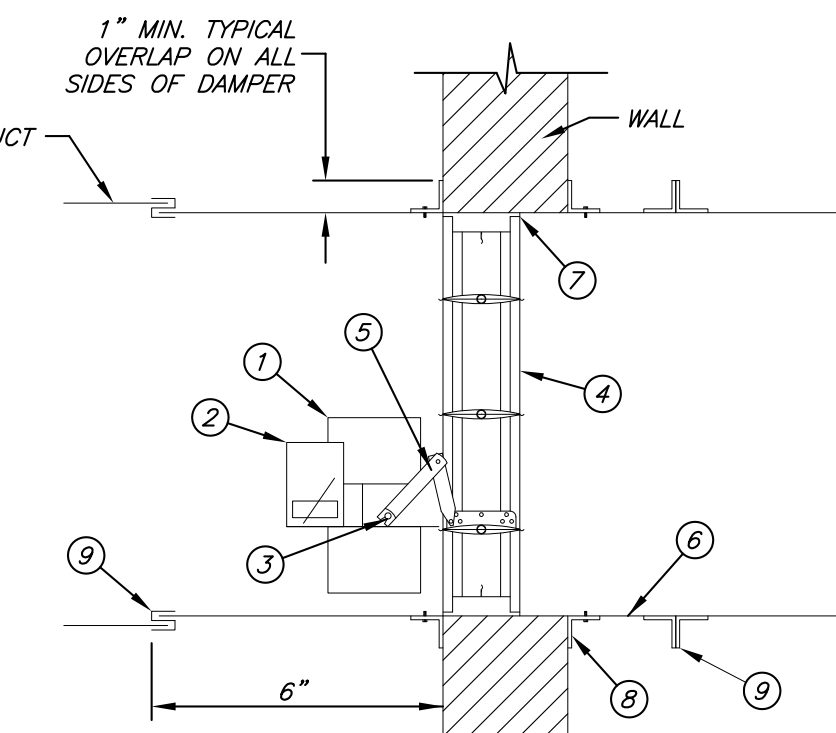


ROOFTOP AND ERV UNIT AND ISOLATION CURB DIAGRAM TYPICAL
N.T.S.

TAG IDENTIFICATION

- 1 ACTUATOR (LOCATION MAY VARY). DAMPER MAY BE SUPPLIED WITHOUT ACTUATOR INSTALLED. SEE ACTUATOR INSTALLATION INSTRUCTIONS FOR FIELD MOUNTING OF DAMPER ACTUATORS.
- 2 DUCT SMOKE DETECTOR
- 3 AUXILIARY OPERATING JACK SHAFT
- 4 DAMPER
- 5 OVER CENTER LOCK
- 6 SLEEVE
- 7 CAULKING MATERIAL MAY BE ON EITHER SIDE OF DAMPER FRAME
- 8 PFMA OR CONVENTIONAL MOUNTING ANGLES
- 9 S-JOINT/DUCT MATE, SLEEVE TO DUCT

- NOTES
1. INSTALL ASSEMBLY IN STRICT ACCORDANCE WITH MFR'S INSTRUCTIONS.
 2. PROVIDE AND INSTALL ADDITIONAL STEEL MULLIONS FOR MULTIPLE FIRE/SMOKE DAMPER ASSEMBLIES.
 3. PROVIDE APPROPRIATE DUCT TRANSITIONS BETWEEN SCHEDULED DAMPER SIZE AND INDICATED DUCT SIZE.
 4. PROVIDE RED IDENTIFICATION PAINT ON EXTERIOR OF DAMPER ASSEMBLY.

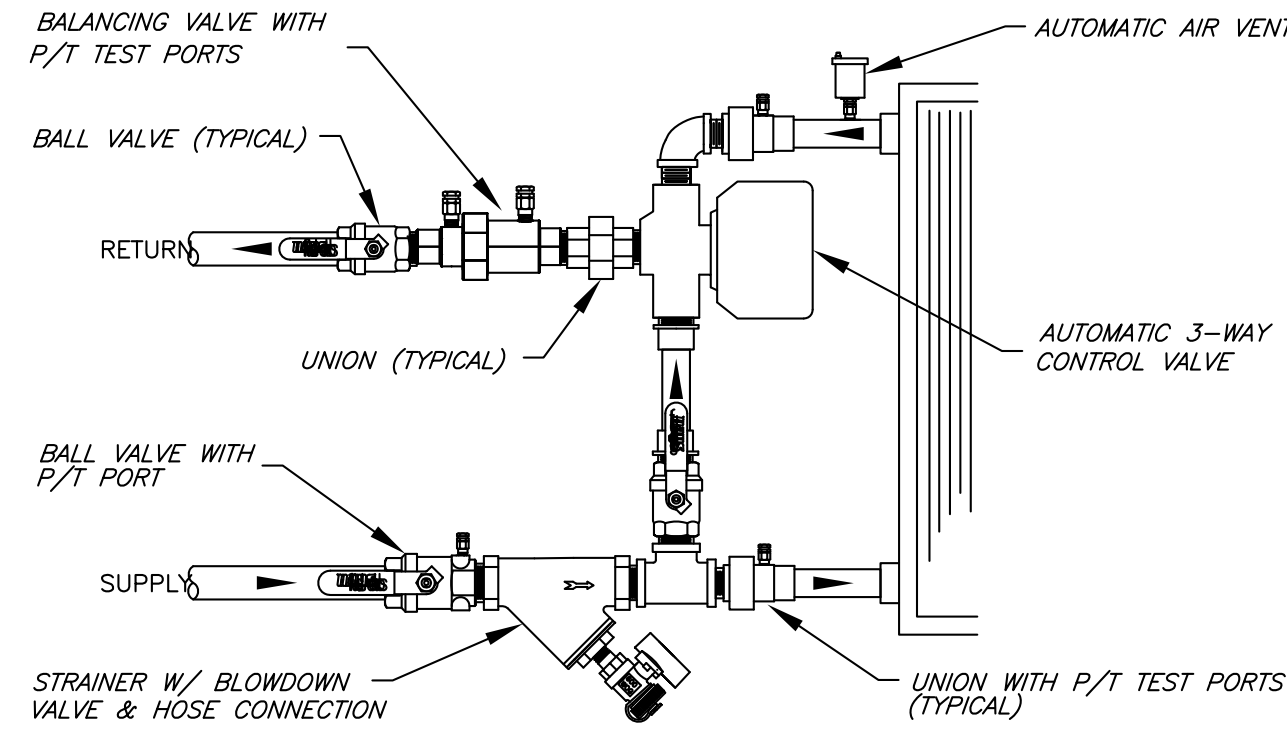


FIRE/SMOKE DAMPER INSTALLATION DIAGRAM-VERTICAL
N.T.S.

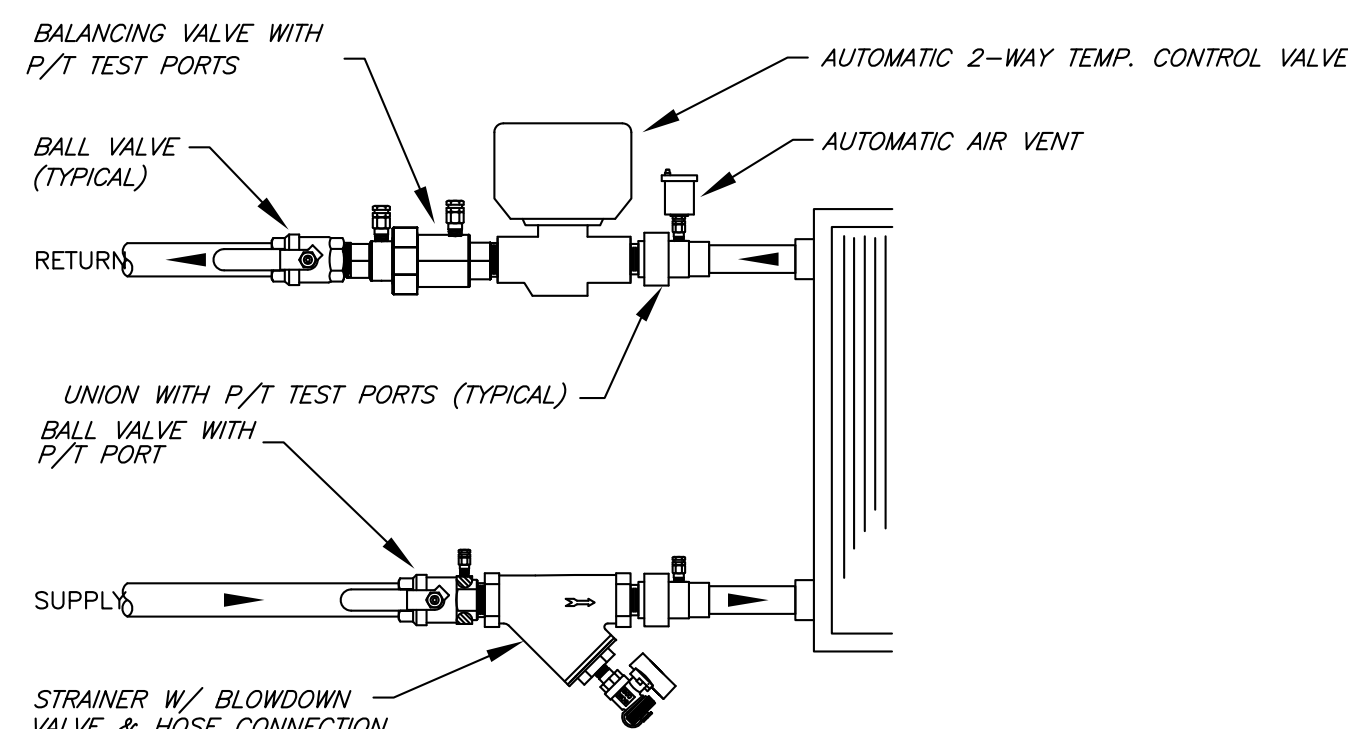
TAG IDENTIFICATION

- 1 ACTUATOR (LOCATION MAY VARY). DAMPER MAY BE SUPPLIED WITHOUT ACTUATOR INSTALLED. SEE ACTUATOR INSTALLATION INSTRUCTIONS FOR FIELD MOUNTING OF DAMPER ACTUATORS.
- 2 OPTIONAL FIRESTAT OR SP100.
- 3 AUXILIARY OPERATING JACK SHAFT
- 4 DAMPER
- 5 OVER CENTER LOCK
- 6 SLEEVE
- 7 CAULKING MATERIAL MAY BE ON EITHER SIDE OF DAMPER FRAME
- 8 PFMA OR CONVENTIONAL MOUNTING ANGLES
- 9 S-JOINT/DUCT MATE, SLEEVE TO DUCT

- NOTES
1. INSTALL ASSEMBLY IN STRICT ACCORDANCE WITH MFR'S INSTRUCTIONS.
 2. PROVIDE AND INSTALL ADDITIONAL STEEL MULLIONS FOR MULTIPLE FIRE/SMOKE DAMPER ASSEMBLIES.
 3. PROVIDE APPROPRIATE DUCT TRANSITIONS BETWEEN SCHEDULED DAMPER SIZE AND INDICATED DUCT SIZE.
 4. PROVIDE RED IDENTIFICATION PAINT ON EXTERIOR OF DAMPER ASSEMBLY.

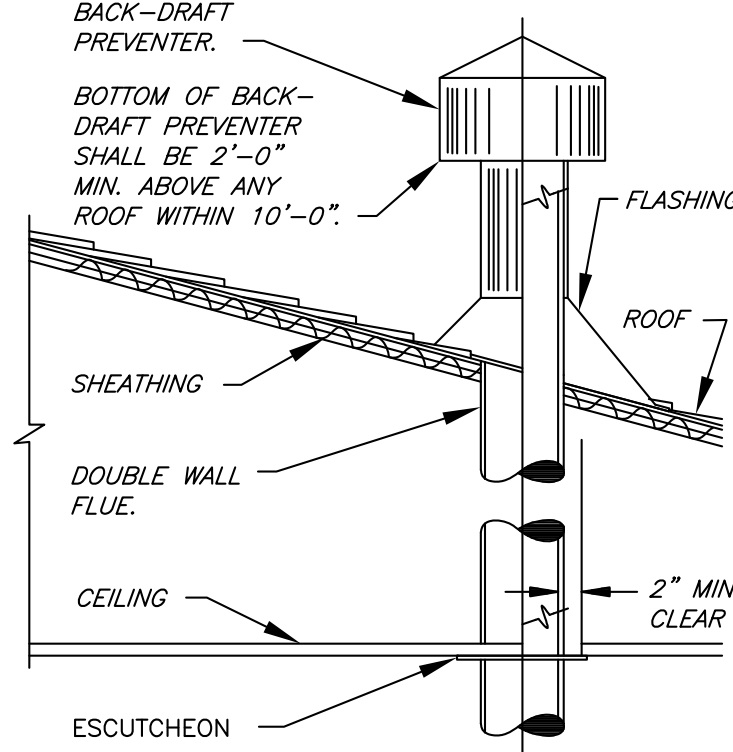


3-WAY VALVE (TWO POSITION DIVERTING) COIL
PIPING DETAIL
N.T.S.

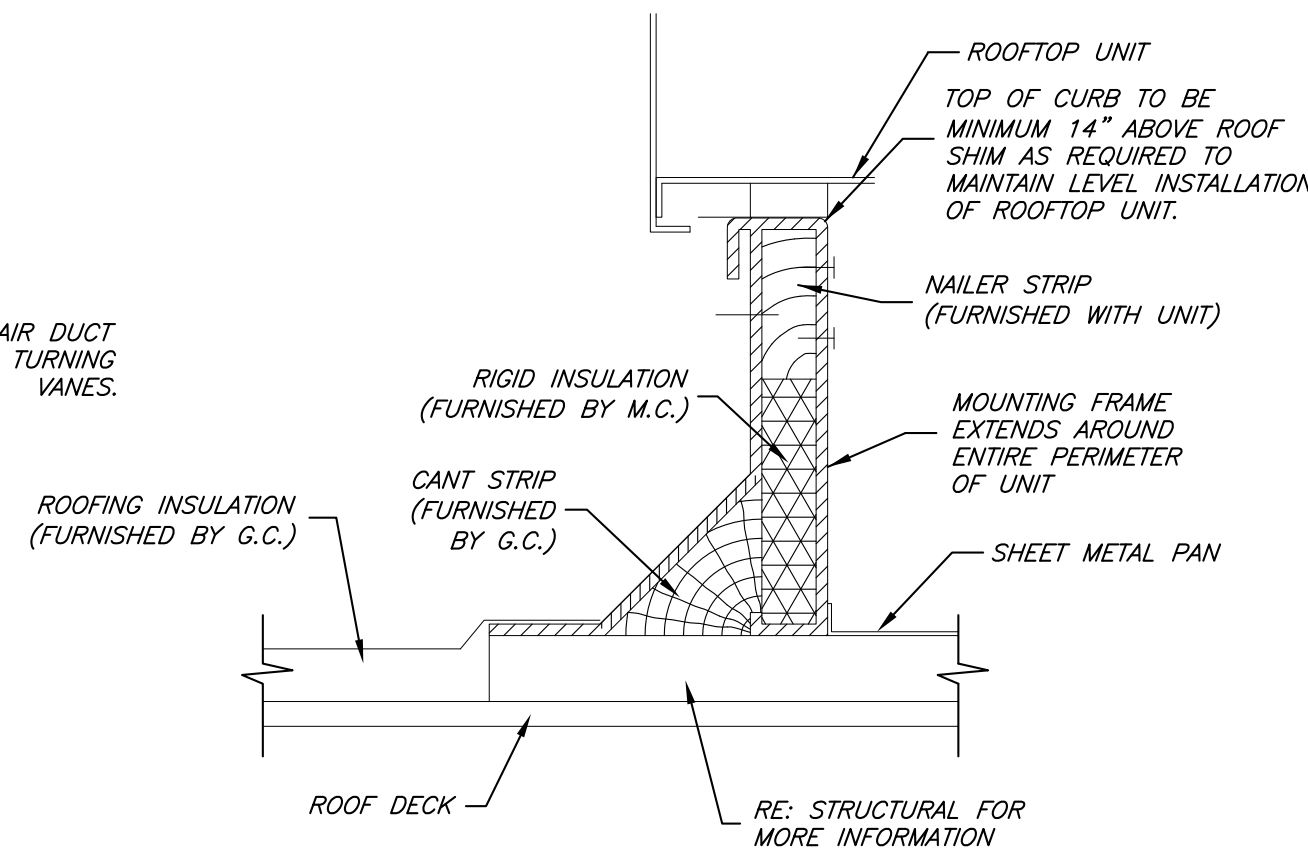


2-WAY VALVE (TWO POSITION) COIL PIPING DETAIL
N.T.S.

ENLARGED ISOLATION CURB DIAGRAM
N.T.S.



FLUE THRU ROOF DIAGRAM
N.T.S.



RTU/SMOKE DETECTOR DIAGRAM
N.T.S.



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RIDGWAY FIRE STATION

RIDGWAY FIRE PROTECTION DISTRICT
LOT 26-B1, RIDGWAY, CO 81432

ISSUE LOG

AIRSIDE
DETAILS

PROJ. NO. 2013-247.001

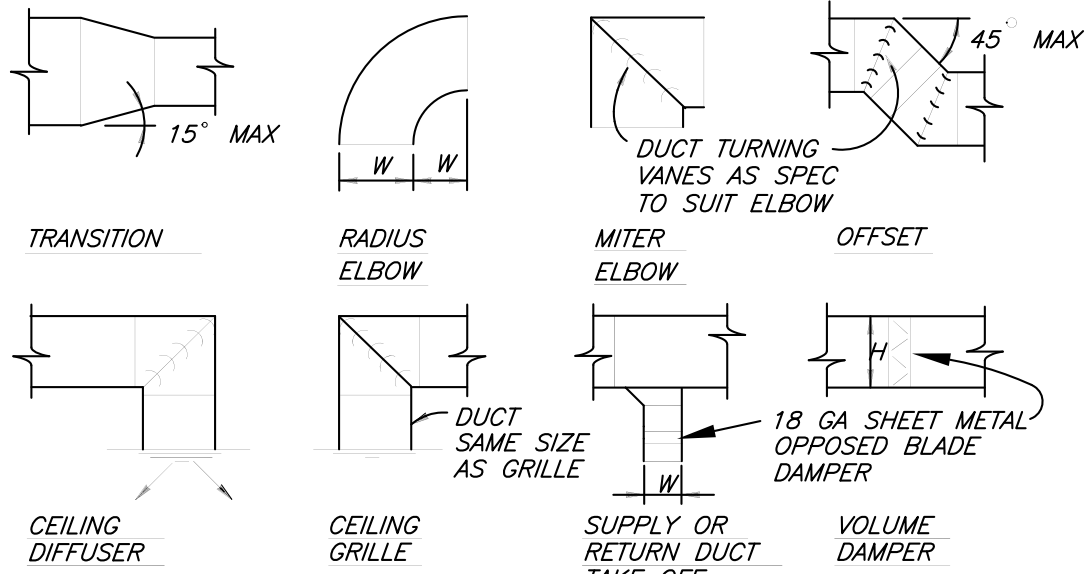
PROJECT DATE: 5/9/14

SHEET NUMBER:

M0.6

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11-2011-2013-247 Bldgwp1003 MEP1 (H-Dwg) Twp's CAD (PFD) Schedules.dwg Source: Wed, 07 May 2014 4:53pm Transcribe

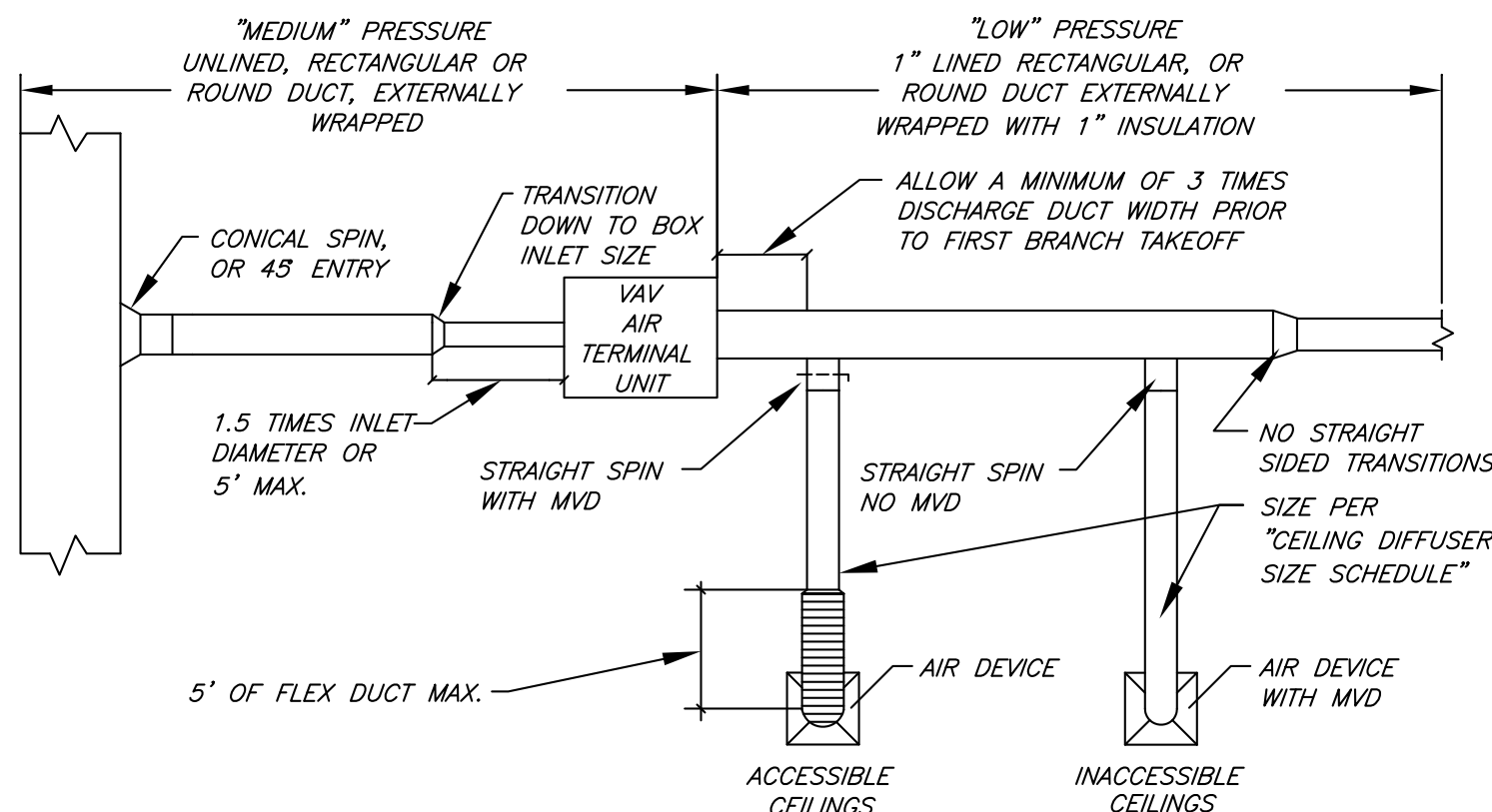


GENERAL NOTES:

1. CEILING DIFFUSERS AND GRILLES ARE TO BE LOCATED IN TH PANELS BETWEEN THE T-BAR GRIDS IN ALL SUSPENDED CEILING SYSTEMS. WHERE REFLECTED CEILING PLANS ARE PROVIDED, LOCATE DIFFUSERS AND GRILLES AS INDICATED. PROVIDE VOLUME DAMPERS FOR EACH GRILLE AT EACH RETURN.
2. CONNECTION AND ANY OTHER LOCATIONS INDICATED ON THE DRAWINGS. IN ACCORDANCE WITH TYPICAL DUCT CONSTRUCTION DETAILS ABOVE. DAMPERS TO BE INSTALLED MINIMUM 5'-0" FROM GRILLE, EXCEPT AS NOTED.

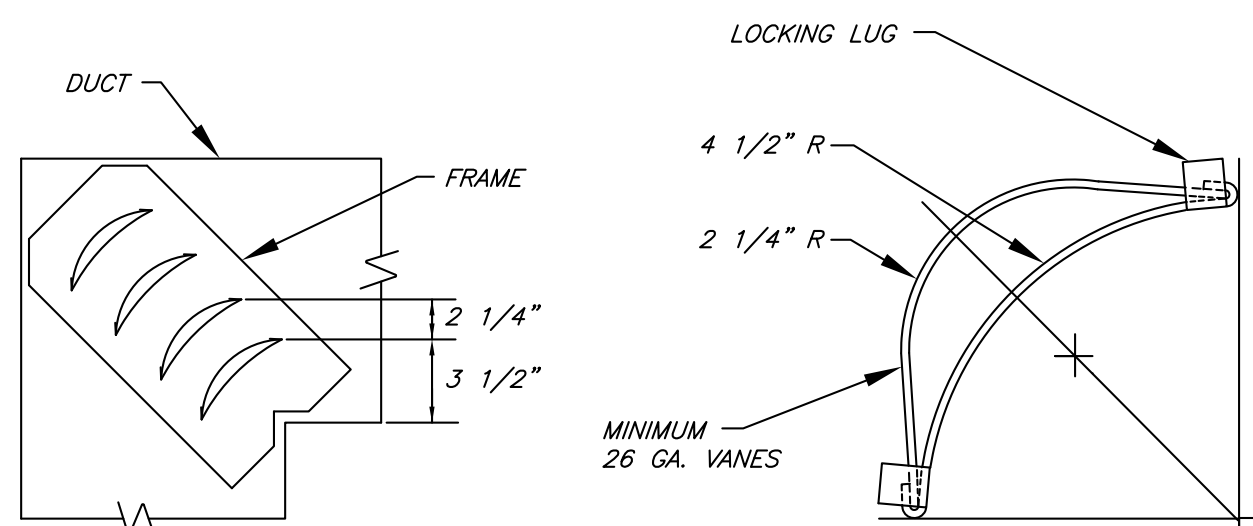
DUCT CONSTRUCTION DETAILS

N.T.S.



STANDARD VAV DUCT DESIGN AND CONSTRUCTION DETAIL

N.T.S.



VANED ELBOW

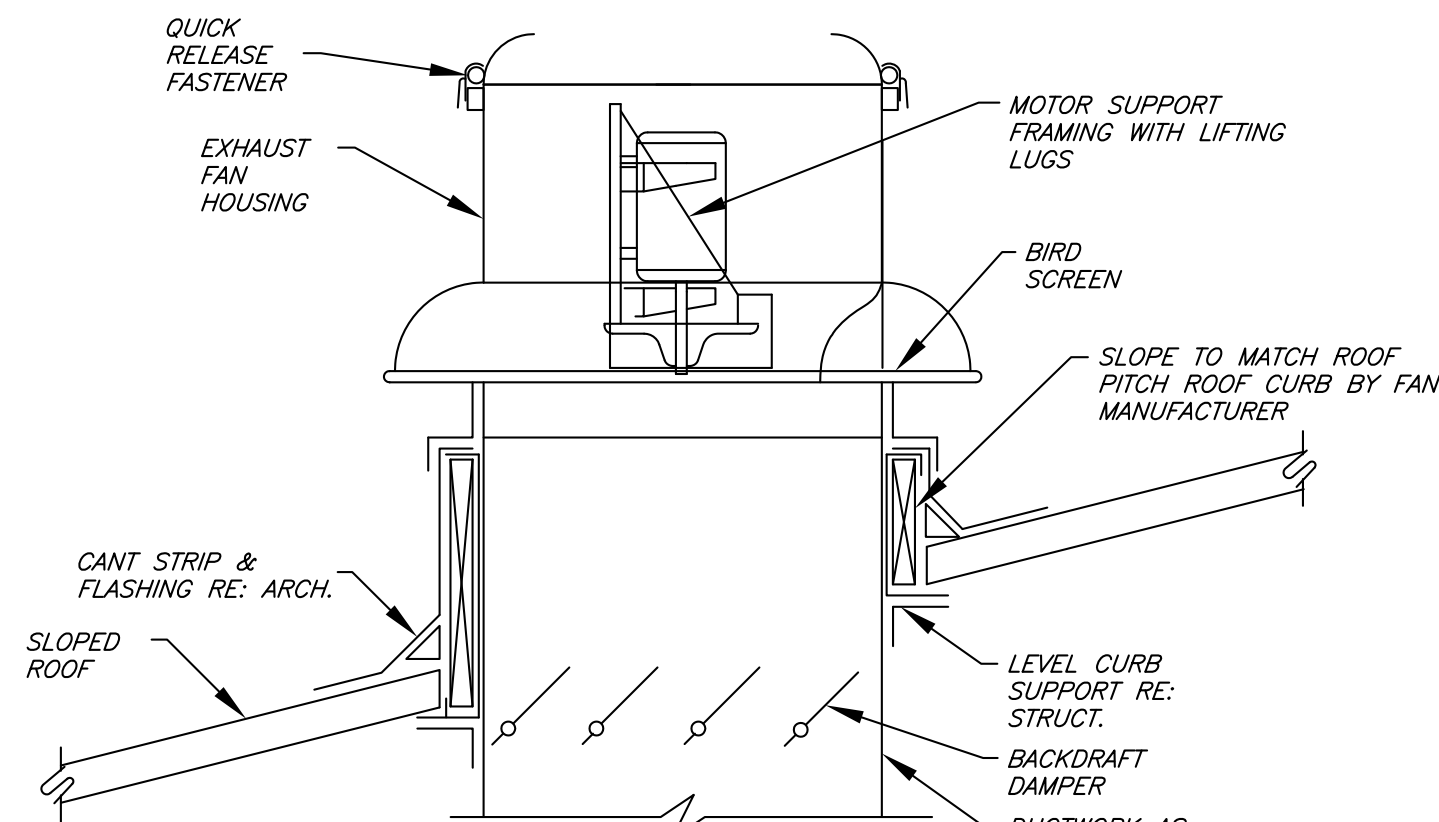
NOTES:

1. LOCKING LUGS INTEGRAL WITH VANE.
2. MAXIMUM UNSUPPORTED VANE LENGTH 48".
3. FRAMES - BOLTED OR RIVETED TO ELBOW.
4. VANES AND FRAMES - SAME GAUGE AS ELBOW.

TURNING VANE

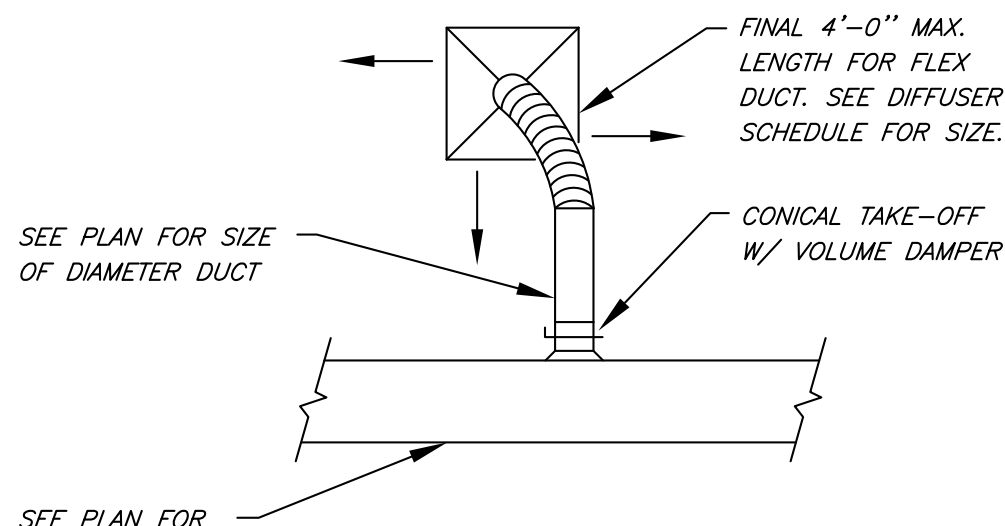
DOUBLE - THICKNESS TURNING VANES

N.T.S.



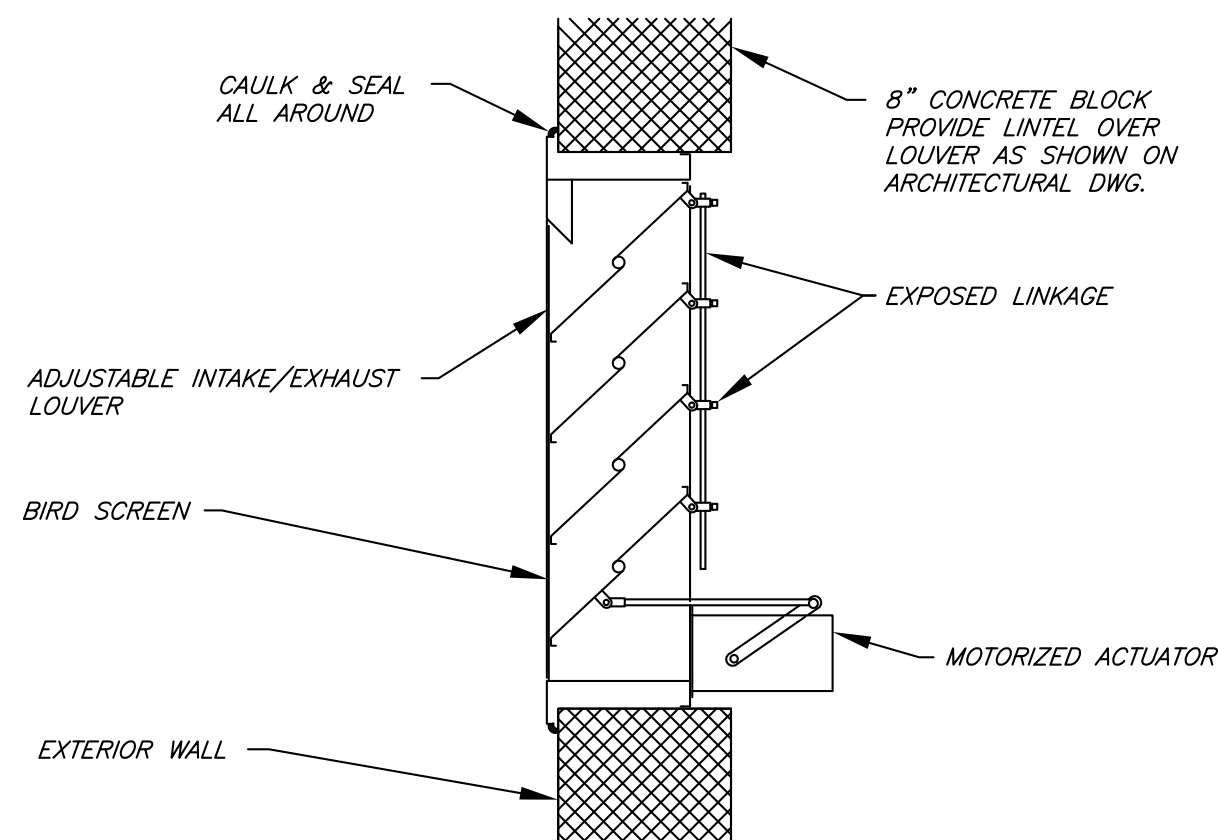
ROOF EXHAUST FAN DETAIL

N.T.S.



ROUND DUCT TAKE-OFF DETAIL

N.T.S.

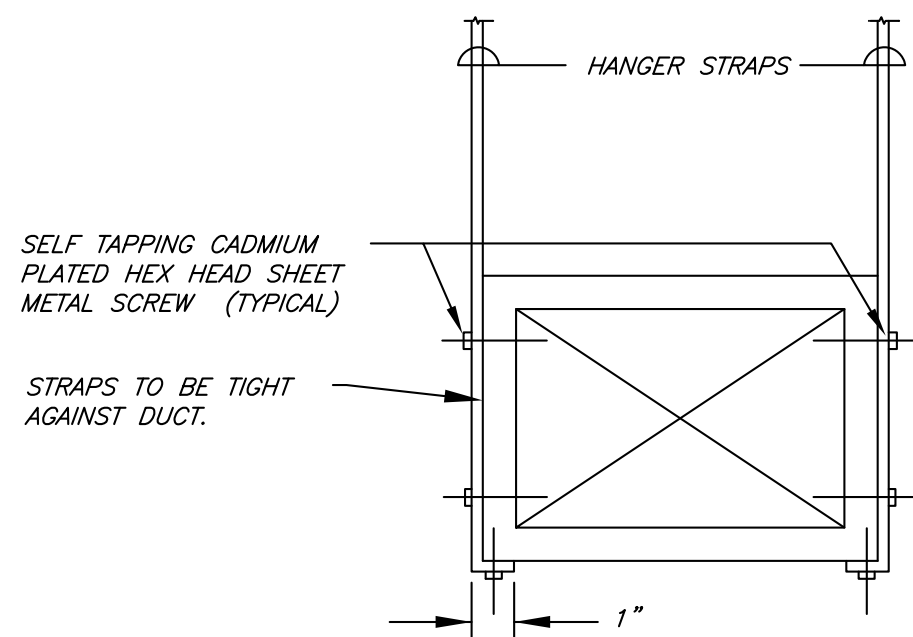
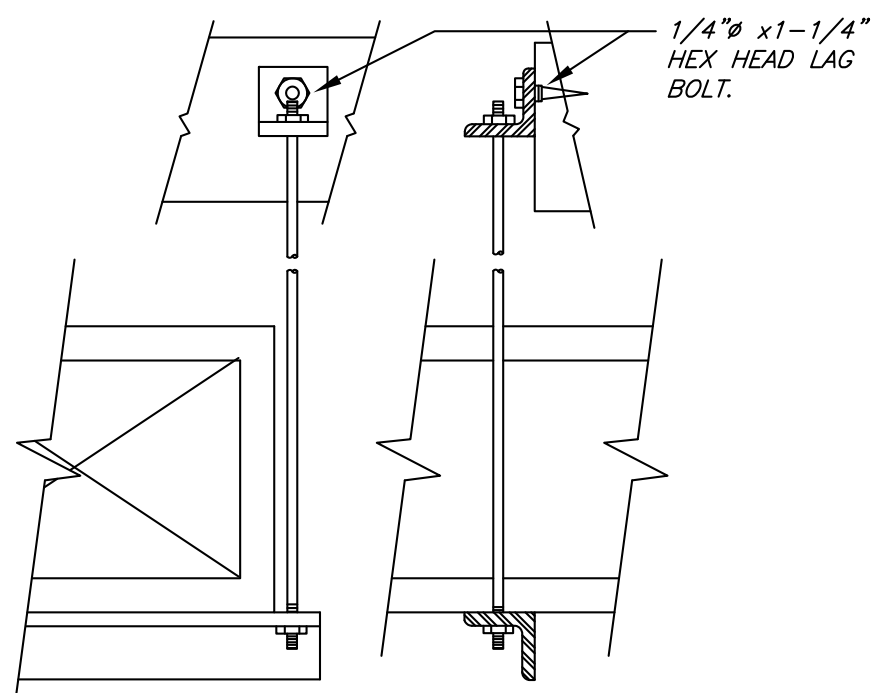


MOTORIZED LOUVER DETAIL

N.T.S.

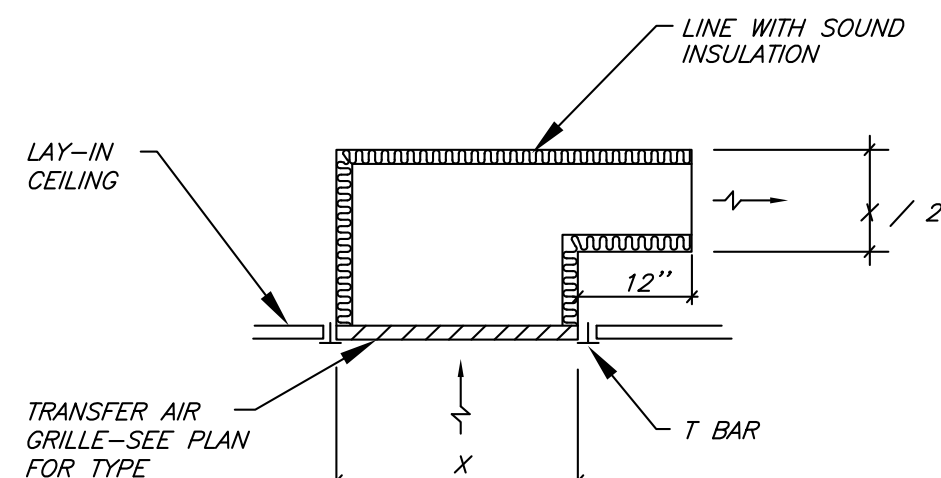
HANGER SIZES FOR RECTANGULAR DUCT			
MAX. SIZE	HANGER	HORIZONTAL SUPPORT ANGLE	MAXIMUM SPACING
30"	1"x18" GAGE STRAP	NONE REQUIRED	10'-0"
36"	1/4" ROUND ROD	1-1/2"x1-1/2"x1/8"	8'-0"
48"	1/4" ROUND ROD	2"x2"x1/8"	8'-0"
60"	5/16" ROUND ROD	2"x2"x1/8"	8'-0"
84"	3/8" ROUND ROD	2"x2"x1/8"	8'-0"

NOTE:
ALL SUPPLY AIR DUCT SHALL BE WRAPPED EXTERNALLY AS PER SPECIFICATIONS.
NO POP RIVETS ALLOWED



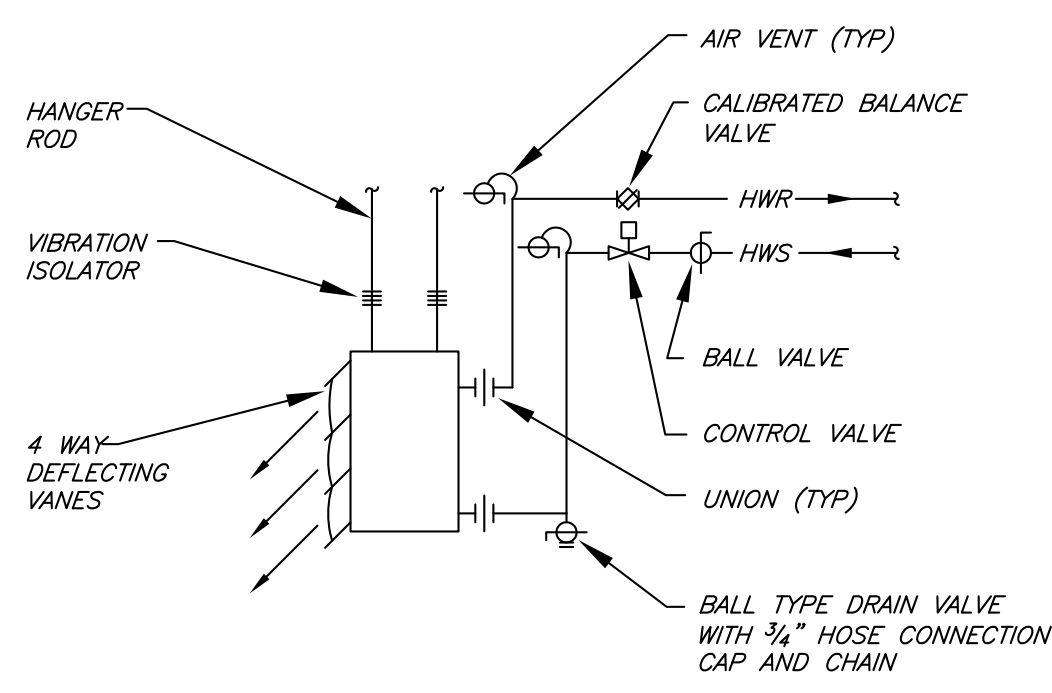
DUCT STRAP HANGER DETAIL

N.T.S.



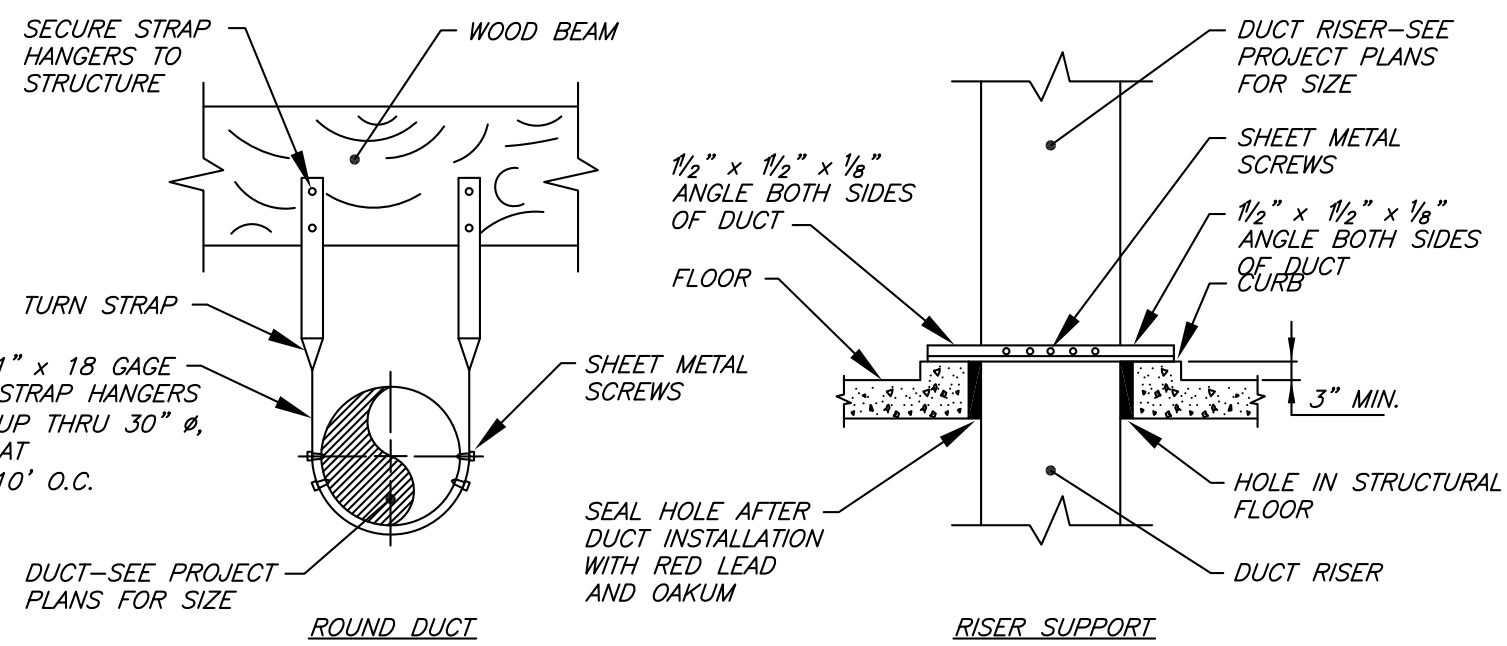
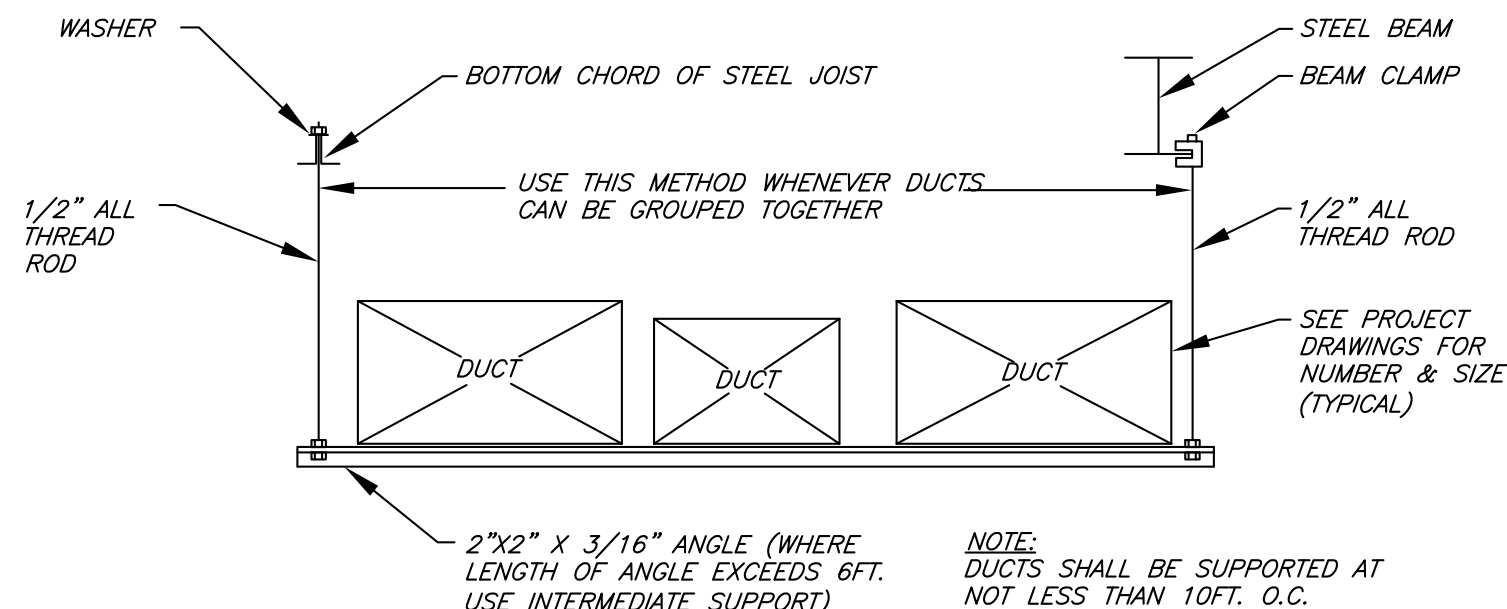
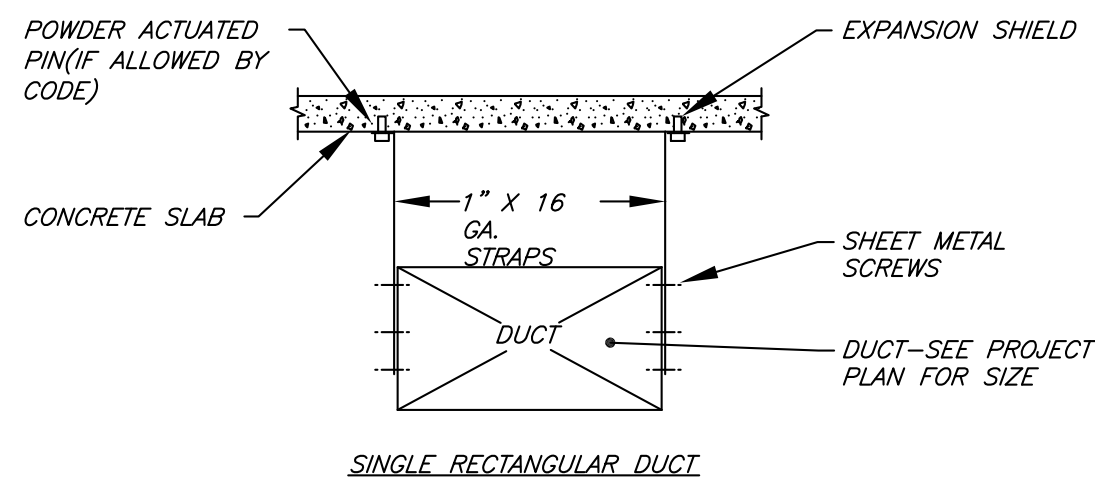
RETURN INSULATED ELBOW DETAIL

N.T.S.



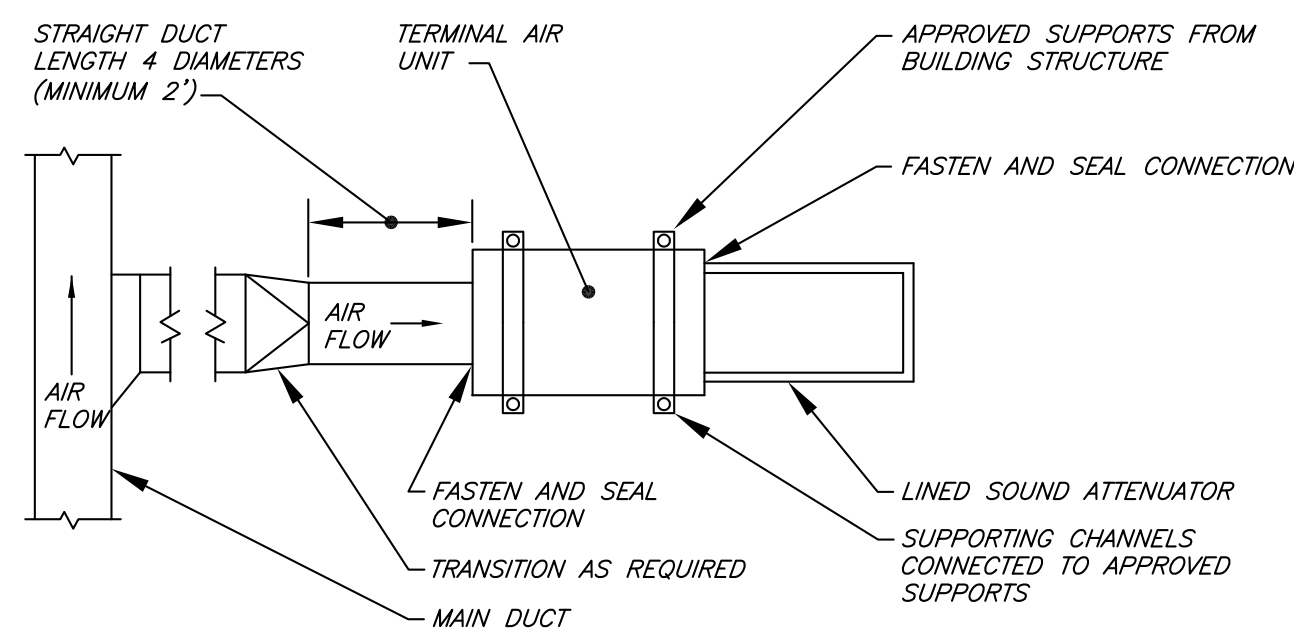
HOT WATER UNIT HEATER DETAIL

N.T.S.



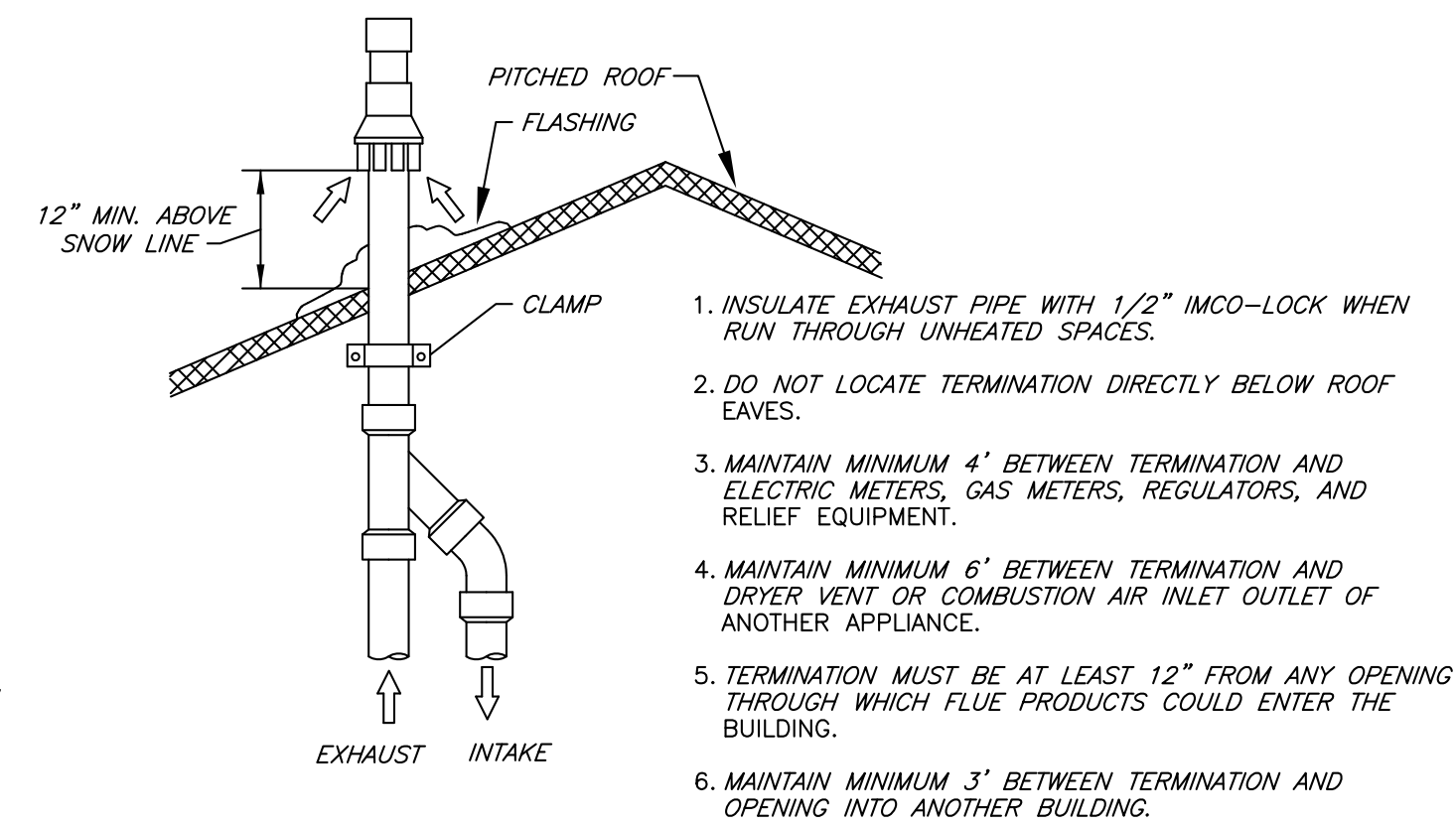
HANGER AND SUPPORT DETAILS FOR LOW PRESSURE DUCTWORK (UP THRU 2" W.G.

N.T.S.



TERMINAL UNIT INSTALLATION DETAIL

N.T.S.



CONCENTRIC SLOPED ROOF TERMINATION

N.T.S.

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RIDGWAY FIRE STATION

RIDGWAY FIRE PROTECTION DISTRICT
LOT 26-B1, RIDGWAY, CO 81432

ISSUE LOG

AIRSIDE DETAILS

PROJ. NO. 2013-247.001

PROJECT DATE: 5/9/14

SHEET NUMBER:

M0.7

RIDGWAY FIRE STATION
RIDGWAY FIRE PROTECTION DISTRICT
LOT 26-B1, RIDGWAY, CO 81432

ISSUE LOG

MECHANICAL
PLAN - LEVEL 1

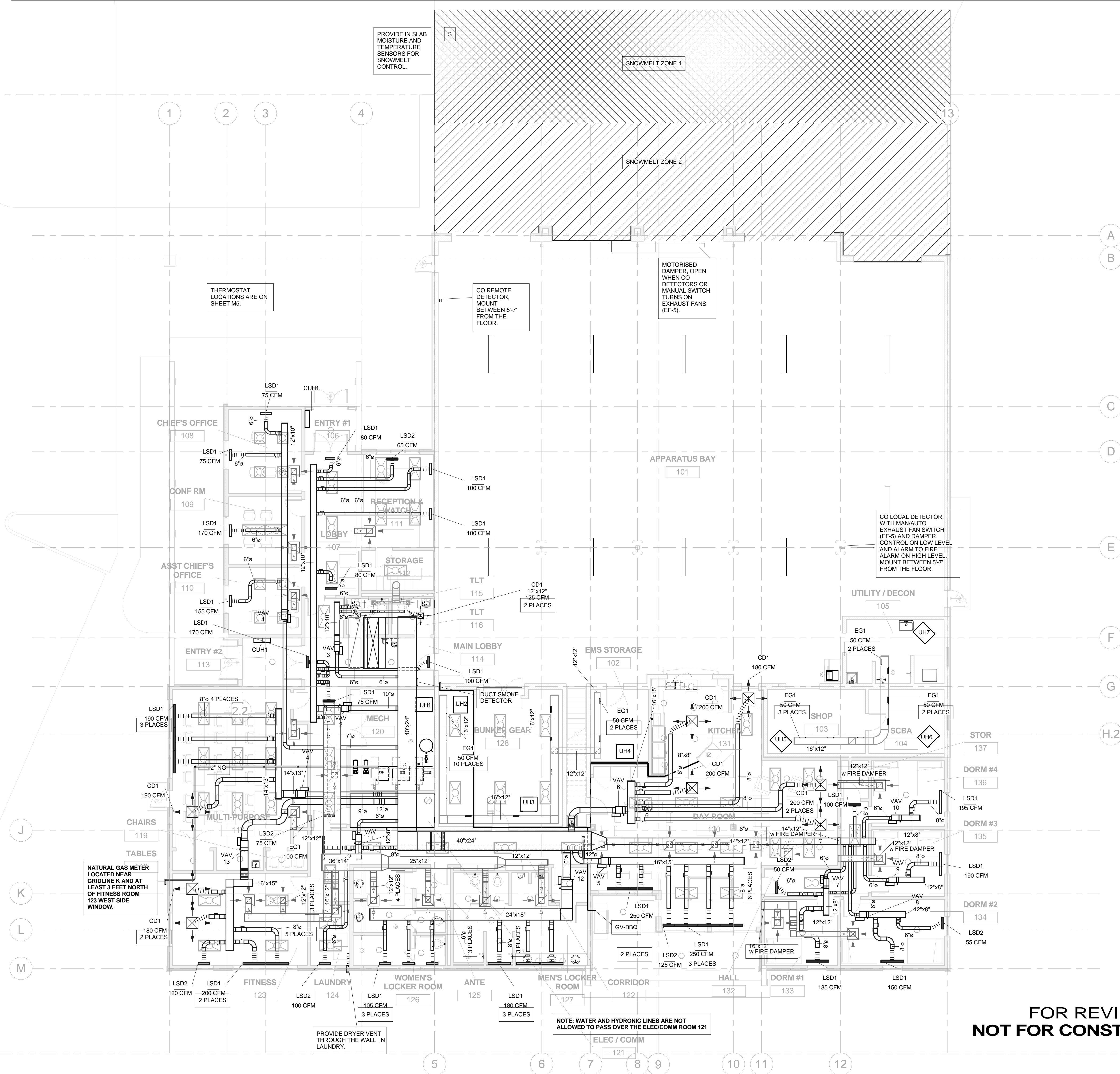
PROJECT NO.: 2013-247.001

PROJECT DATE: 5/9/14

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RIDGWAY FIRE PROTECTION DISTRICT
LOT 26-B1, RIDGWAY, CO 81432

ISSUE LOG

MECHANICAL
PLAN - LEVEL 2

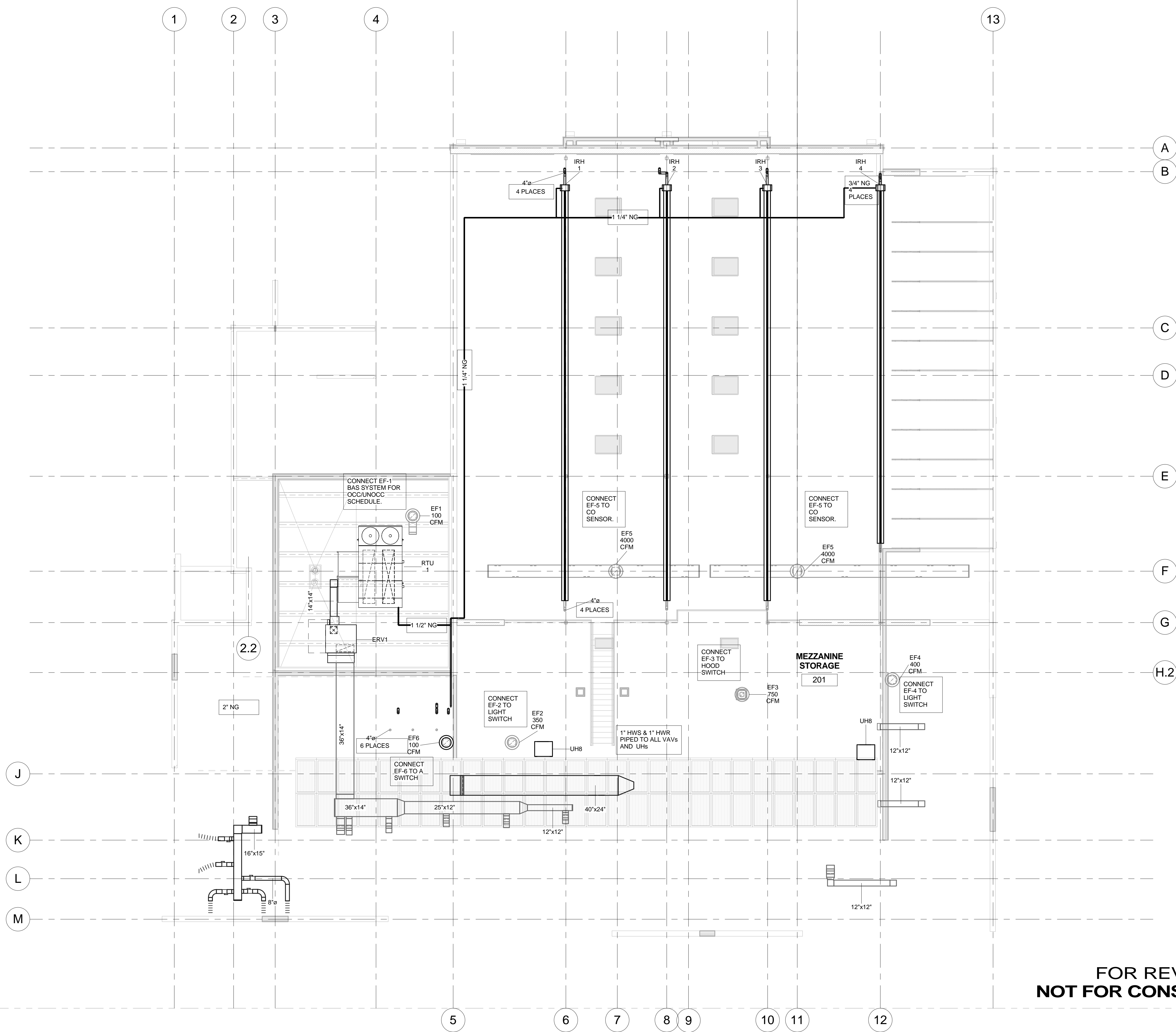
PROJECT NO.: 2013-247.001

PROJECT DATE: 5/9/14

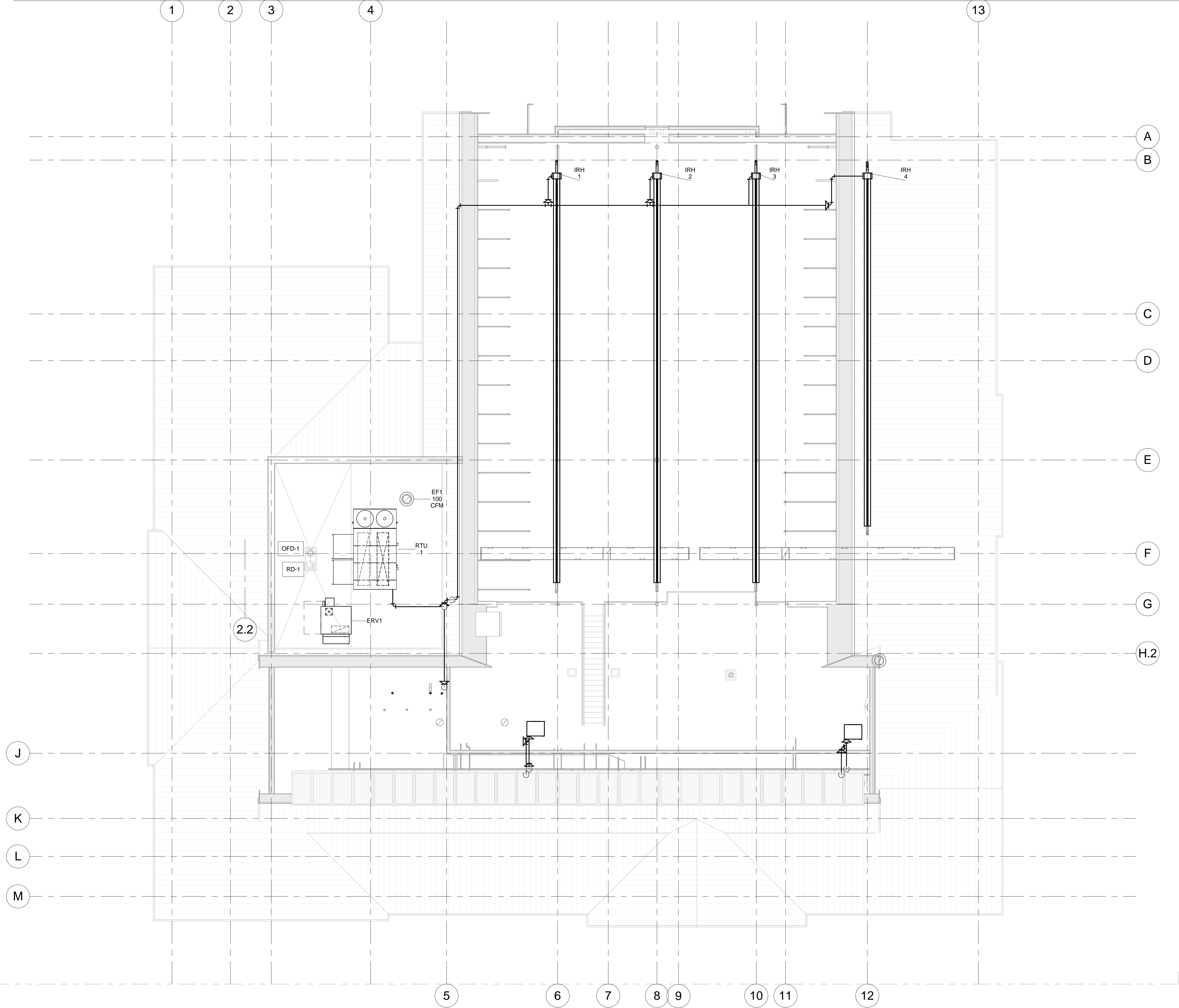
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ISSUE LOG

ROOF PLAN

PROJECT NO.: 2013-247.001

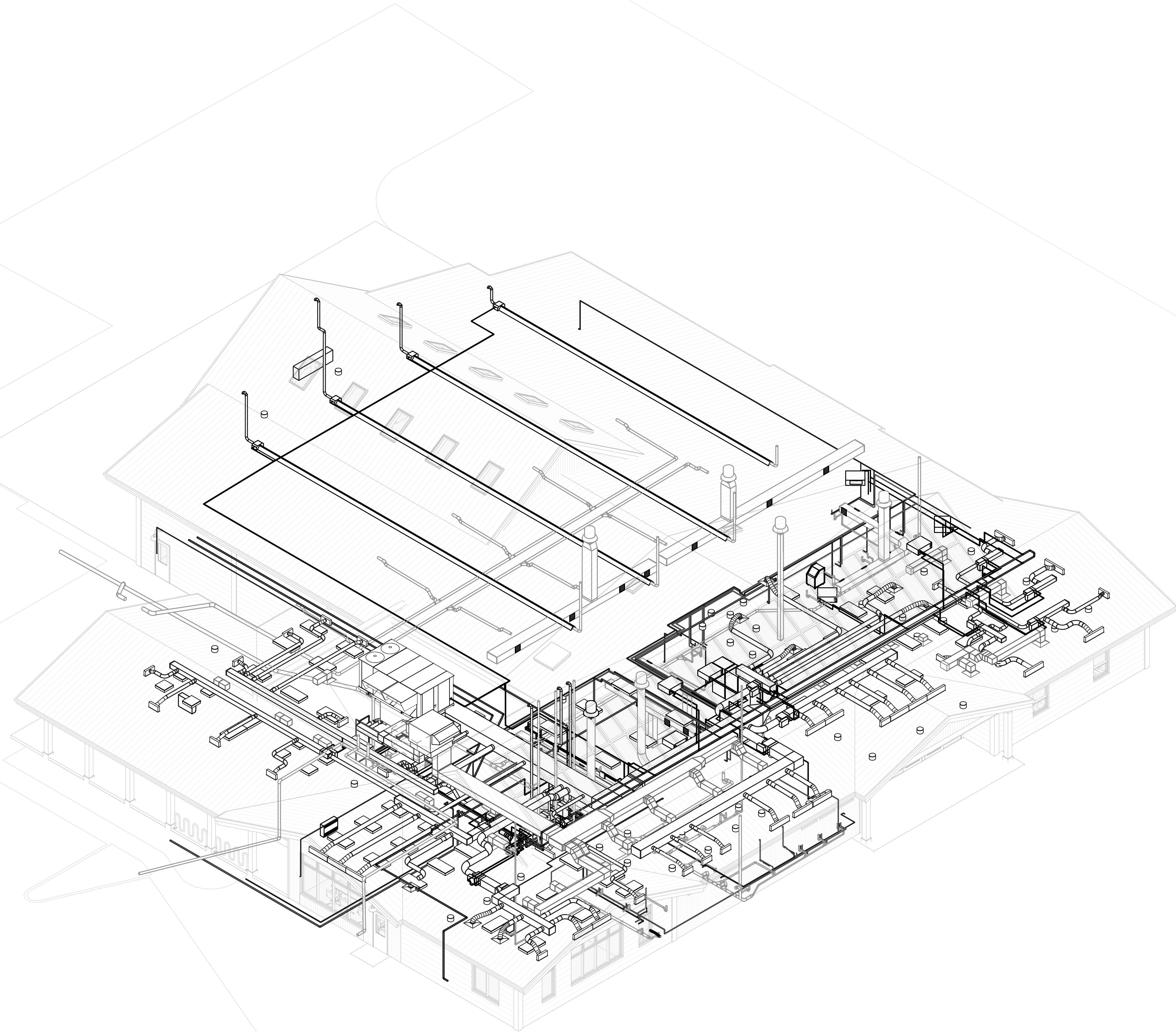
PROJECT DATE: 5/9/14

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M3

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RIDGWAY FIRE PROTECTION DISTRICT
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ISSUE LOG

MECHANICAL -
3D

PROJECT NO.: 2013-247.001

PROJECT DATE: 5/9/14

SHEET NUMBER:

M4

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RIDGWAY FIRE STATION
RIDGWAY FIRE PROTECTION DISTRICT
LOT 26-B1, RIDGWAY, CO 81432

ISSUE LOG

MECH PIPING
PLAN - LEVEL 1

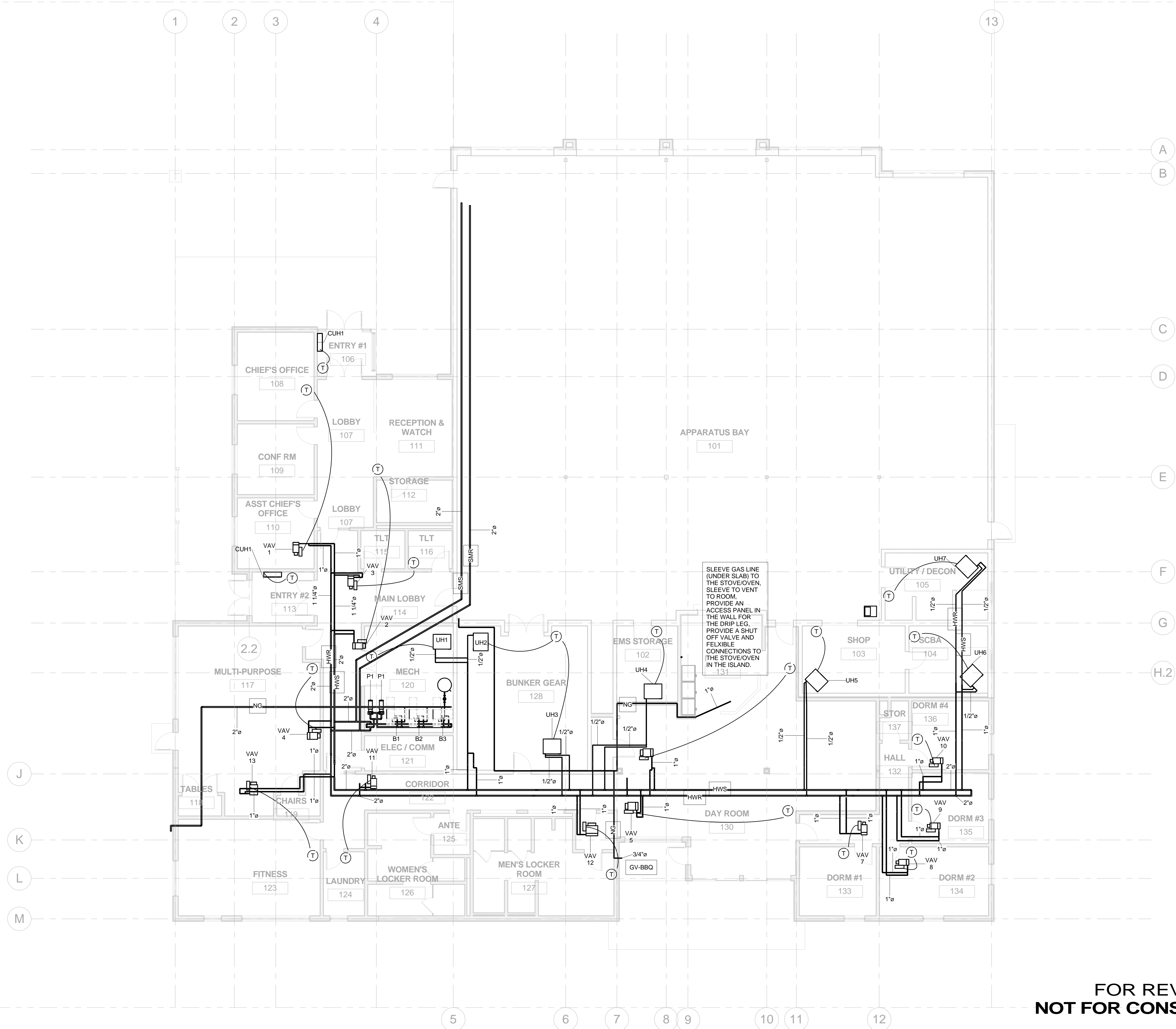
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PROJECT DATE: 5/9/14

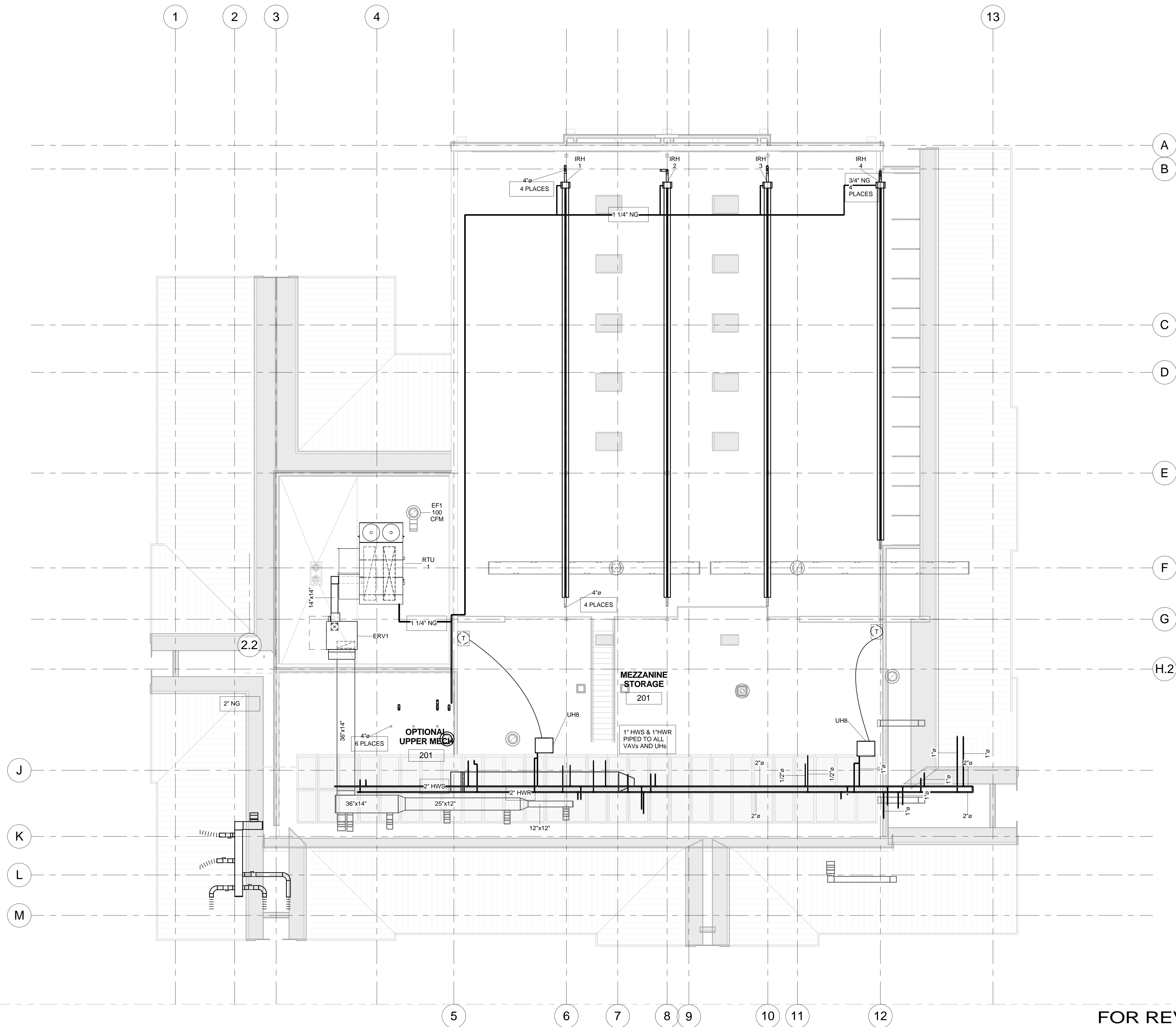
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ISSUE LOG

MECH PIPING
PLAN - LEVEL 2

PROJECT NO.: 2013-247.001

PROJECT DATE: 5/9/14

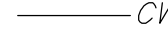



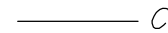



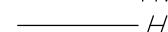







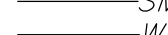



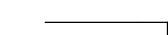








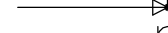







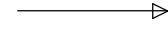
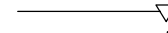
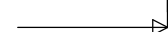



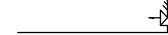








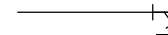


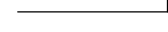



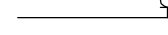


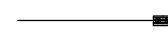



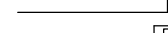


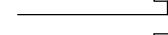

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PLUMBING FIXTURE SCHEDULE							
SYM.	TYPE	A.D.A.	ACCESSORIES	FINISH	MANUFACTURER AND MODEL NUMBER	FAUCET TRIM MFG. & MODEL #	REMARKS
WC-1	FLUSH VALVE WALL HUNG WATER CLOSET	YES	SEAT	WHITE/STAINLESS	SLOAN HET WETS 2020.1001-128	SLOAN OPTIMA PLUS SMOOTH 8111-128	FLUSH VALVE AND TOILET MUST MEET LEED SPECIFICATIONS
WC-2	FLUSH VALVE WALL HUNG WATER CLOSET	YES	SEAT	WHITE/STAINLESS	SLOAN HET WETS 2020.1403-128 SMOOTH	SLOAN WES111-128 DUAL FLUSH	FLUSH VALVE AND TOILET MUST MEET LEED SPECIFICATIONS
WU-1	WALL HUNG WATERLESS URINAL	YES	DRAIN, ADA INSULATION PACKAGE	WHITE/STAINLESS	SLOAN WES-1000	WES-150 CARTRIDGE KIT	URINAL MUST MEET LEED SPECIFICATIONS
FD-1	FLOOR DRAIN	-	-	STAINLESS	ZURN Z415B-IC	-	
SD-1	SHOWER DRAIN	-	-	BRONZE	ZURN Z420	-	
TD-1	TRENCH DRAIN	-	ZURN P886-U4-NS, ZURN 8601	PLASTIC	ZURN Z886	-	
SH-1	SHOWER VALVE AND HEAD	-	-	STAINLESS	MOEN ADLER POSI TEMP L82691	-	SHOWER HEAD MUST MEET LEED SPECIFICATIONS
SVH-1	SHOWER VALVE, HEAD, AND WAND	-	-	STAINLESS	AMERICAN STANDARD 1662.601	-	SHOWER HEAD MUST MEET LEED SPECIFICATIONS
BFP-1	BACK FLOW PREVENTER	-	-	BRASS	ZURN 950XLT 1"	-	
BFP-2	BACK FLOW PREVENTER	-	-	BRASS	ZURN 950XLT 2"	-	
DF1	DRINKING FOUNTAIN	YES	CANE APRON	STAINLESS /STAINLESS	ELKAY EDFPBM116	-	
PBS-1	PRESSURE BOOST SYSTEM	-	2 GALLON EXPANSION TANK	-	GRUNDFOS 15BMQE-05A-110	-	
RD-1, OFD-1	ROOF AND OVERFLOW ROOF DRAINS	-	-	STEEL/PLASTIC	ZURN Z164	-	
MS-1	MOP SINK	-	-	TERRAZO/CHROME	FIAT TBS-3000	FIAT 830-AA	
EW-1	EMERGENCY EYE WASH	-	-	STAINLESS STEEL/CHROME	GUARDIAN G1891	-	
EW-1	EXTERIOR WALL HYDRANT	-	-	STAINLEES/BRASS	ZURN 1305 12"	-	
S-1	A.D.A. BATH SINK	YES	STOPPER DRAIN, DRAIN & ADA INSULATION PACKAGE	WHITE/STAINLESS	ZURN Z5340	MOEN 8414	FAUCET MUST MEET LEED SPECIFICATIONS
S-2	MULTI-PURPOSE ROOM SINK	-	STRAINER BASKET	STAINLESS /STAINLESS	ELKAY LRQ1716	MOEN CAMERIST 4905	FAUCET MUST MEET LEED SPECIFICATIONS
S-3	LOCKER ROOM SINKS	-	STOPPER DRAIN, DRAIN & ADA INSULATION PACKAGE	WHITE/STAINLESS	AMERICAN STANDARD RONDALYN 0491.019	MOEN CHATEAU L4621	FAUCET MUST MEET LEED SPECIFICATIONS
S-4	KITCHEN SINK	-	GD-1, STRAINER BASKET, SPRAYER	STAINLESS /STAINLESS	ELKAY CR4322	MOEN CAMERIST 7840	FAUCET MUST MEET LEED SPECIFICATIONS
GD-1	KITCHEN GARBAGE DISPOSAL	-	-	-	INSINKERATOR BADGER 5	-	
S-5	UTILITY DECON SINK	-	STRAINER BASKET, SPRAYER	STAINLESS /STAINLESS	ELKAY LRSQ3322	MOEN CHATEAU 7430	FAUCET MUST MEET LEED SPECIFICATIONS
HB-1	HOSE BIBB	APPARATUS BAY HOSE BIBB	-	BRASS	ARROWHEAD BRASS 301SC	-	
FF-1	FIREMEN'S FILL	APPARATUS BAY FIRE TRUCK FILL	-	BRASS	ELKHART BRASS H28	-	
NOTES: FIXTURE EQUIVALENTS: AMERICAN STANDARD, KOHLER, CRANE, UNIVERSAL RUNDLE, FIAT, STERN WILLIAMS DRAIN EQUIVALENTS: JOSAM, WADE, SMITH, ZURN FAUCET EQUIVALENTS: CHICAGO FAUCET, SPEARMAN, KOHLER, DELTA, AMERICAN STANDARD							

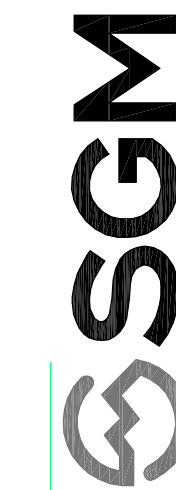
MECHANICAL PIPING LEGEND

PIPING	
EXISTING PIPING IS SHOWN IN LIGHT LINETYPE, PROPOSED PIPING IS SHOWN IN BOLD LINETYPE, NOT ALL ITEMS MAY APPEAR ON DRAWINGS.	
	CHILLED WATER SUPPLY
	CHILLED WATER RETURN
	COLD WATER
	COMPRESSED AIR
	CONDENSER WATER SUPPLY
	CONDENSER WATER RETURN
	HEATING WATER RETURN
	HEATING WATER SUPPLY
	HOT WATER-DOMESTIC
	HOT WATER CIRCULATION-DOMESTIC
	NATURAL GAS
	LIQUIFIED PETROLEUM GAS
	SANITARY SEWER
	SANITARY VENT
	SNOWMELT SUPPLY
	SNOWMELT RETURN
	WASTE
	ELBOW
	ELBOW UP
	ELBOW DOWN
	TEE
	TEE UP
	TEE DOWN
	PIPE CAP
	PIPE BREAK
	FLOW ARROW
PIPING ACCESSORIES	
	ANGLE VALVE LEFT, GATE OR GLOBE
	ANGLE VALVE RIGHT, GATE OR GLOBE
	BALANCING VALVE, CALIBRATED
	BALL VALVE
	BUTTERFLY VALVE
	CHECK VALVE
	CONTROL VALVE, 2-WAY
	CONTROL VALVE, 3-WAY
	GATE OR ISOLATION VALVE
	PLUG VALVE WITH MEMORY STOP
	PRESSURE REDUCING VALVE
	PRESSURE REGULATING VALVE
	RELIEF VALVE
	SOLENOID VALVE
	TEMPERATURE & PRESSURE RELIEF VALVE
	THERMOSTATIC EXPANSION VALVE
	UNION
	P-T PORT
	STRAINER
	THERMOMETER IN PIPELINE
	HOSE BIBB
	PRESSURE INDICATOR
	HORIZONTAL CLEANOUT
	FLOOR CLEAN OUT
	TWO-WAY CLEANOUT
	FLOOR DRAIN OR SHOWER DRAIN
	FLOOR SINK
	AQUASTAT
	FLOW SWITCH
	PRESSURE SWITCH
	TEMPERATURE SENSOR
	PUMP
	MANUAL AIR VENT, AUTOMATIC AIR VENT
	TEMPERATURE & PRESSURE TEST PLUG
	CONCENTRIC REDUCER
	ECCENTRIC REDUCER
	EXPANSION JOINT
	PIPE ANCHOR
	FLEXIBLE CONNECTION
	FLEXIBLE CONNECTION
	PRESSURE SENSOR
	DIFFERENTIAL PRESSURE SENSOR
	REFRIGERANT SENSOR
	EMERGENCY SHUT OFF SWITCH
	VACUUM BREAKER

MECHANICAL GENERAL NOTES

- ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE LATEST EDITIONS OF THE RULES, REGULATIONS AND CODES OF THE STATE OF COLORADO AND THE LOCAL JURISDICTIONAL AUTHORITY.
- EQUIPMENT SHALL CONFORM TO STATE AND/OR LOCAL ENERGY CONSERVATION STANDARDS.
- IT IS THE INTENT OF THESE DRAWINGS AND SPECIFICATIONS TO RESULT IN A COMPLETE MECHANICAL INSTALLATION IN COMPLETE ACCORDANCE WITH ALL APPLICABLE LOCAL CODES AND ORDINANCES.
- THIS CONTRACTOR IS RESPONSIBLE FOR COORDINATING ALL WORK UNDER HIS/HER CONTRACT WITH ALL OTHER BUILDING TRADES.
- ALL DUCTWORK TO BE HELD TIGHT TO STRUCTURE UNLESS NOTES OTHERWISE.
- THIS CONTRACTOR SHALL REVIEW EXISTING FIELD CONDITIONS PRIOR TO THE PURCHASE, FABRICATION AND INSTALLATION OF ANY EQUIPMENT, DUCTWORK, PIPING, ETC. AND SHALL INFORM THE ARCHITECT OR GENERAL CONTRACTOR OF ANY DISCREPANCIES FOR RESOLUTION. ITEMS NOT SPECIFICALLY MENTIONED IN THE SPECIFICATION OR NOTED ON THE DRAWINGS, BUT WHICH ARE OBVIOUSLY NECESSARY TO MAKE A COMPLETE WORKING INSTALLATION, SHALL BE INCLUDED.
- THIS CONTRACTOR SHALL PROVIDE ALL MANUAL AND AUTOMATIC STARTERS FOR THE EQUIPMENT INDICATED ON THE DRAWINGS.
- THESE DRAWINGS ARE DIAGRAMMATIC IN NATURE AND DO NOT SHOW EVERY DUCTWORK AND PIPING OFFSET REQUIRED.
- THIS CONTRACTOR SHALL COORDINATE WITH THE EXISTING, AND OR NEW STRUCTURE ELECTRICAL, MECHANICAL, PLUMBING, FIRE PROTECTION AND CEILING TO PROVIDE OFFSETS AS REQUIRED AND APPROPRIATE.
- THIS CONTRACTOR SHALL PROVIDE ACCESS TO ALL EQUIPMENT, VALVES, DAMPERS, ETC. IN CONCEALED SPACES FOR SERVICING AND MAINTENANCE.
- ALL RECTANGULAR AND ROUND DUCTWORK SHALL BE CONSTRUCTED OF GALVANIZED SHEET METAL IN ACCORDANCE WITH SMACNA HVAC DUCT STANDARDS. DUCTS TO BE SEALED PER SMACNA PRESSURE CLASS REQUIREMENTS. SHEET METAL DUCTWORK WITH WRAP INSULATION HAVING A THERMAL RESISTANCE OF R-6 FOR THE TOTAL THICKNESS.
- ALL NEW RECTANGULAR DUCTWORK SHALL HAVE DUCT LINER IN COMPLIANCE WITH NFPA 90A AND AS DEFINED IN KEYNOTES OR THE SPECIFICATION. SHEET METAL SIZE SHALL BE INCREASED TO ACCOMMODATE THICKNESS OF LINER DUCT SIZE INDICATED ON DRAWINGS IS THE INSIDE CLEAR DIMENSION.
- RUNOUT DUCTS TO SUPPLY AIR DIFFUSERS SHALL MATCH DIFFUSER NECK SIZE FACTORY-MADE FLEXIBLE DUCTWORK SHALL BE USED, TRIM TO THE LENGTH REQUIRED FOR PROPER CONNECTION. INSTALL PER MANUFACTURER'S RECOMMENDATIONS AND APPLICABLE LOCAL CODES. MAXIMUM LENGTH OF FLEXIBLE DUCTWORKS SHALL BE NO MORE THAT 8'-0". SHEET METAL DUCTWORK WITH WRAP INSULATION HAVING A THERMAL RESISTANCE OF R-6 FOR THE TOTAL THICKNESS AND A MOISTURE BARRIER SHALL BE PROVIDED FOR LONGER DISTANCES.
- PROVIDE SPIN-IN FITTINGS WITH MANUAL VOLUME DAMPERS (MVD) AT ALL RUNOUT DUCTS TO DIFFUSERS FROM RECTANGULAR DUCTWORK. PROVIDE IN-LINE MANUAL VOLUME DAMPERS WHERE A SPIN-IN FITTING WITH A MVD IS NOT FEASIBLE.
- COMBINATION FIRE/SMOKE DAMPERS SHALL BE INSTALLED AT ALL REQUIRED RATED WALL OR FLOOR PENETRATIONS AND BE WIRED INTO THE FIRE ALARM PANEL AS A SUPERVISORY SIGNAL BY THE ELECTRICAL AND/OR FIRE ALARM CONTRACTOR. COORDINATE TO PROVIDE MOTOR VOLTAGE TO MATCH THAT OF THE FIRE ALARM PANEL. INSTALL PER THE MANUFACTURER'S INSTRUCTIONS AND THE LOCAL CODE, PROVIDING REMOTE RESET CAPABILITY IF REQUIRED.
- FIRE DAMPERS AND FIRE SMOKE DAMPERS SHALL BE UL LISTED AND INSTALLED PER THE MANUFACTURER'S INSTRUCTIONS AND THE LOCAL CODE. PROVIDE ALL NECESSARY ACCESS TO LINKS AND ACTUATORS.
- THERMOSTATS SHALL BE MOUNTED AT 48" ABOVE FINISHED FLOOR ELEVATION WHERE INDICATED, UNLESS NOTED OTHERWISE.
- TESTING, ADJUSTING AND BALANCING SHALL BE PERFORMED BY A SUBCONTRACTOR CURRENTLY CERTIFIED BY EITHER AABC, NEBB OR TABCO AGENCIES. SUBMIT COPY OF DATED CERTIFICATE TO ARCHITECT. PROVIDE THREE COPIES OF TESTING, ADJUSTING AND BALANCING REPORT TO ARCHITECT FOR REVIEW.
- ANY AIR HANDLING DEVICE THAT EXCEEDS 2000 CFM OF SUPPLY AIR IS REQUIRED TO HAVE A SMOKE DETECTOR IN THE DUCT OR UNIT TO DISABLE THE UNIT WHEN ACTIVATED.
- MECHANICAL CONTRACTOR TO COORDINATE SPACE REQUIREMENTS WITH ELECTRICAL CONTRACTOR IN SUPPLY OR RETURN (IBC 2009, IMC 2009, AND IEC 2009) DUCTWORK FOR DUCT SMOKE DETECTION INSTALLATION. DETECTOR IS TO BE MOUNTED BY MECHANICAL CONTRACTOR WITH POWER WIRING BY ELECTRICAL CONTRACTOR AND CONTROL WIRING BY MECHANICAL CONTRACTOR.
- THIS CONTRACTOR IS SOLELY RESPONSIBLE FOR THE SPATIAL REQUIREMENTS, ACOUSTICAL, THERMAL, AND ELECTRICAL PERFORMANCE CHARACTERISTICS AND COORDINATION OF ALL INSTALLATION REQUIREMENTS FOR EQUIPMENT SUBSTITUTIONS FROM THAT DEFINED AS THE BASIS FOR DESIGN. REVIEW AND APPROVAL BY THE DESIGN TEAM DOES NOT ALTER OR MITIGATE THIS RESPONSIBILITY.

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RIDGWAY FIRE STATION

RIDGWAY FIRE PROTECTION DISTRICT
LOT 26-B1, RIDGWAY, CO 81432

ISSUE LOG

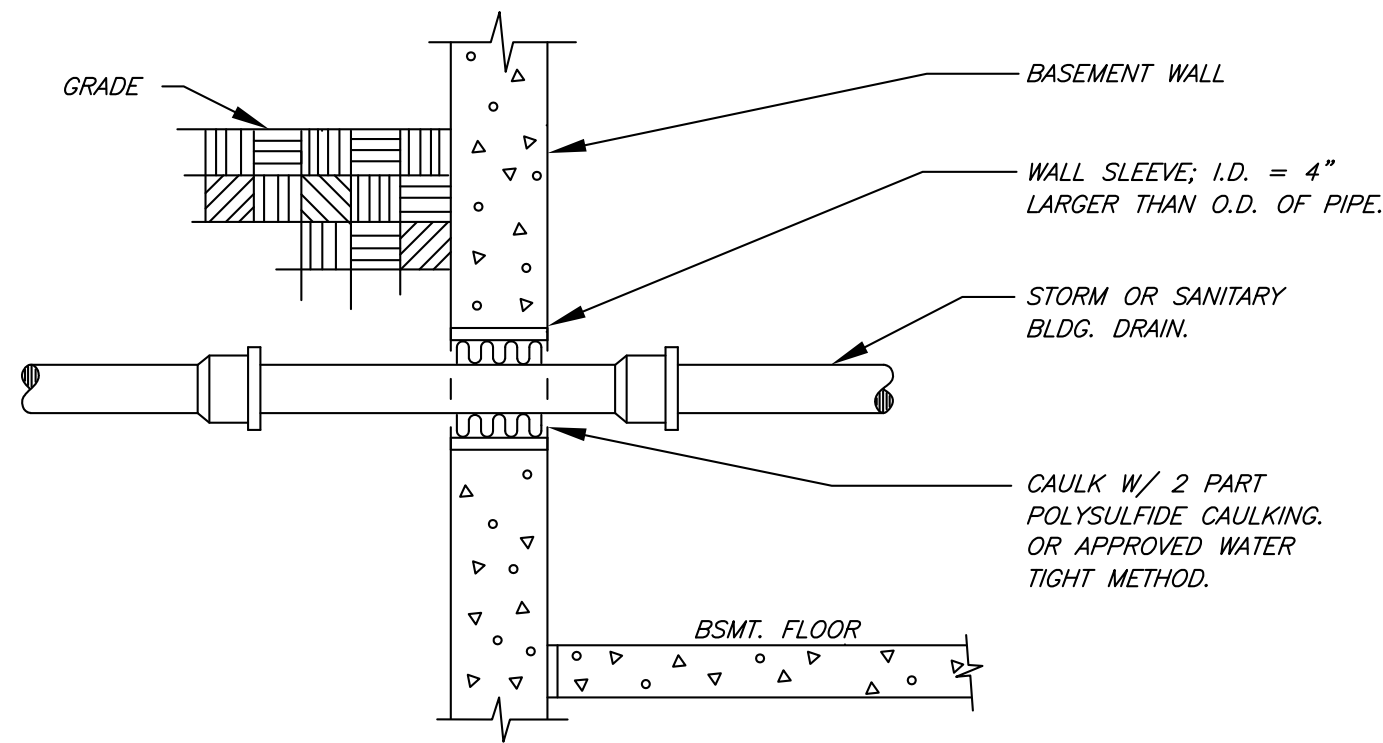
PLUMBING
NOTES AND
SCHEDULES

PROJ. NO. 2013-247.001

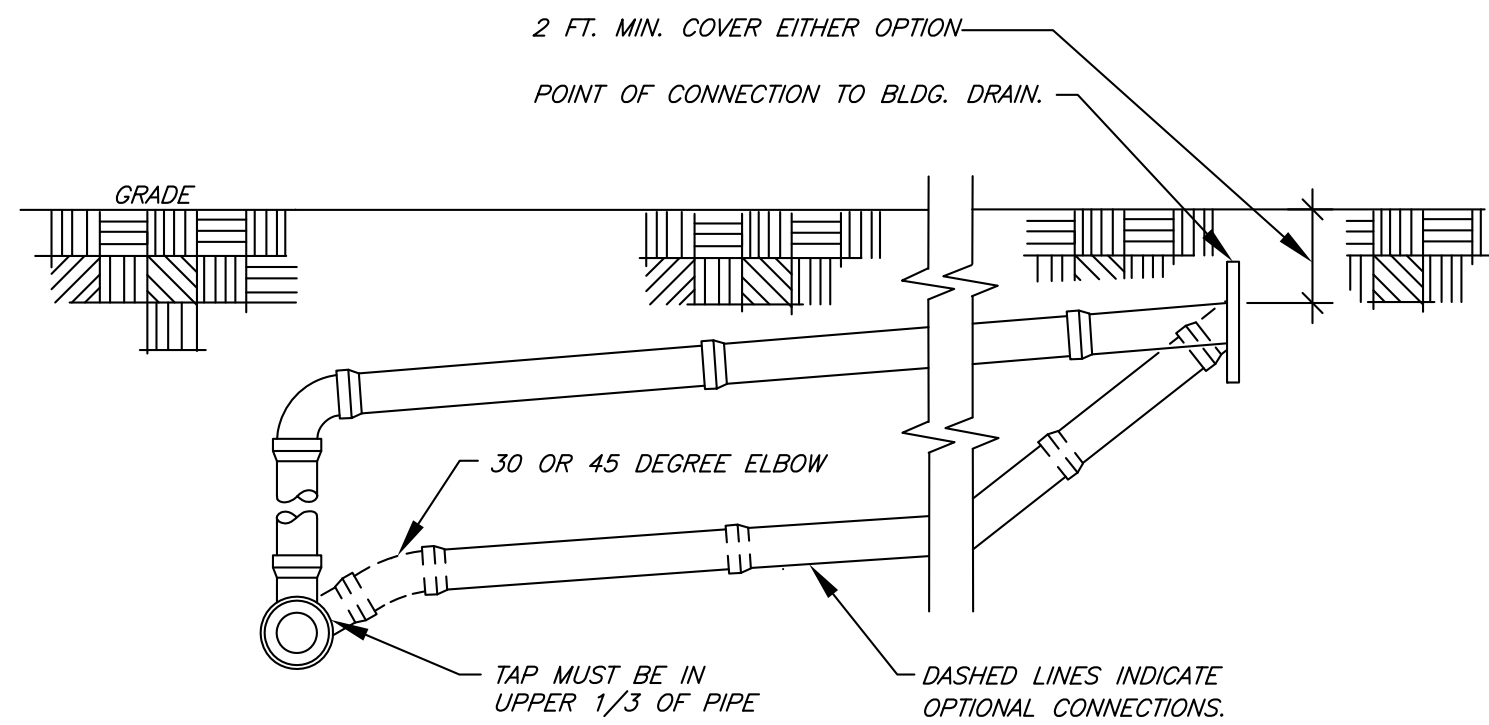
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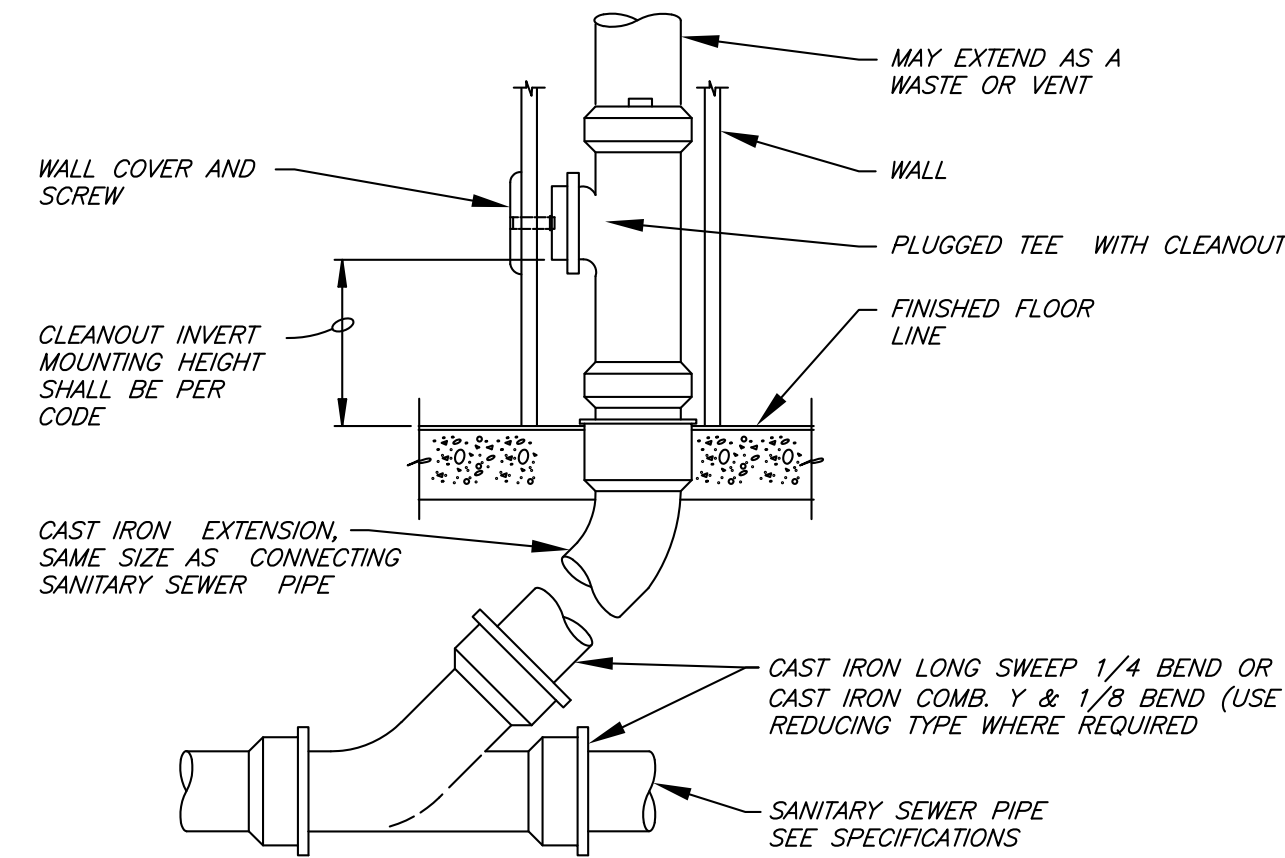
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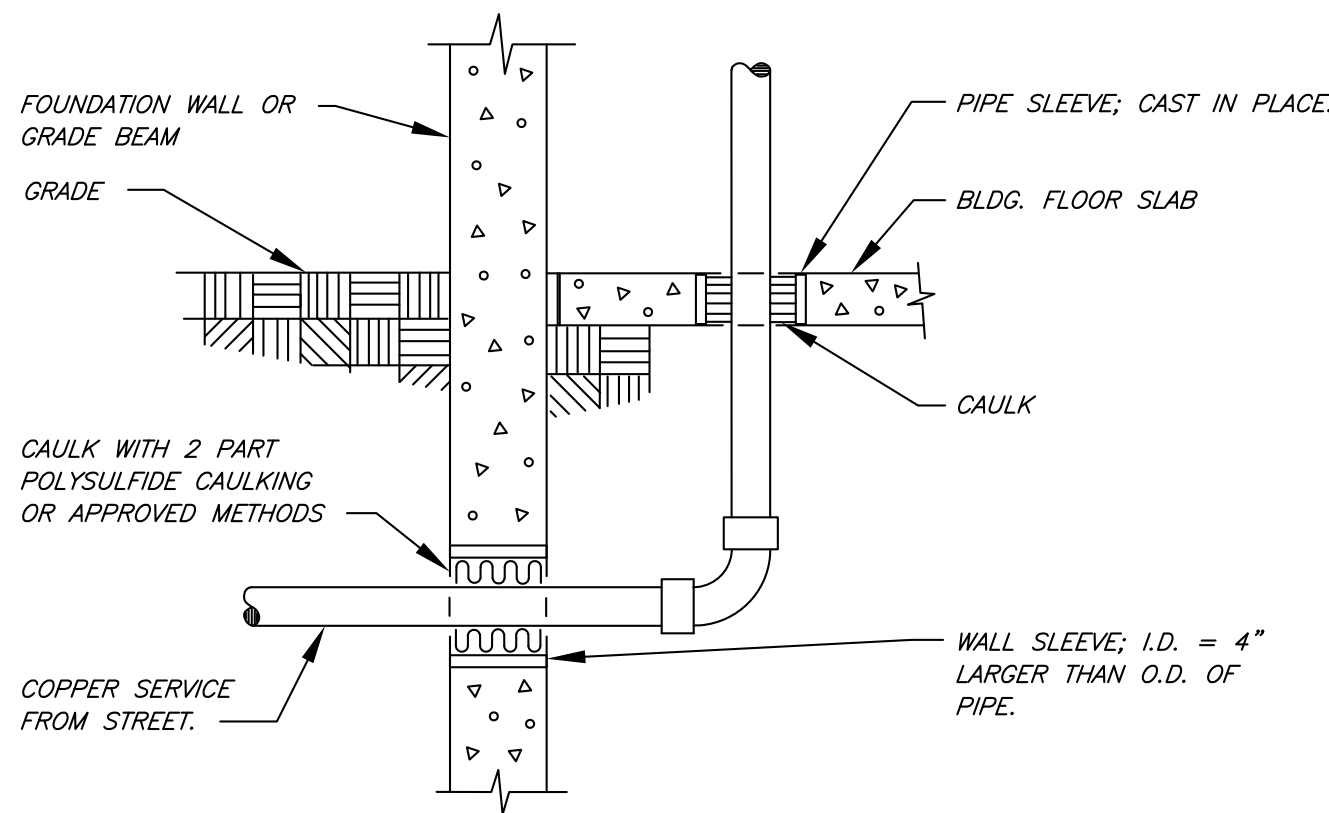
SANITARY OR STORM BUILDING DRAIN THRU WALL DETAIL
N.T.S.



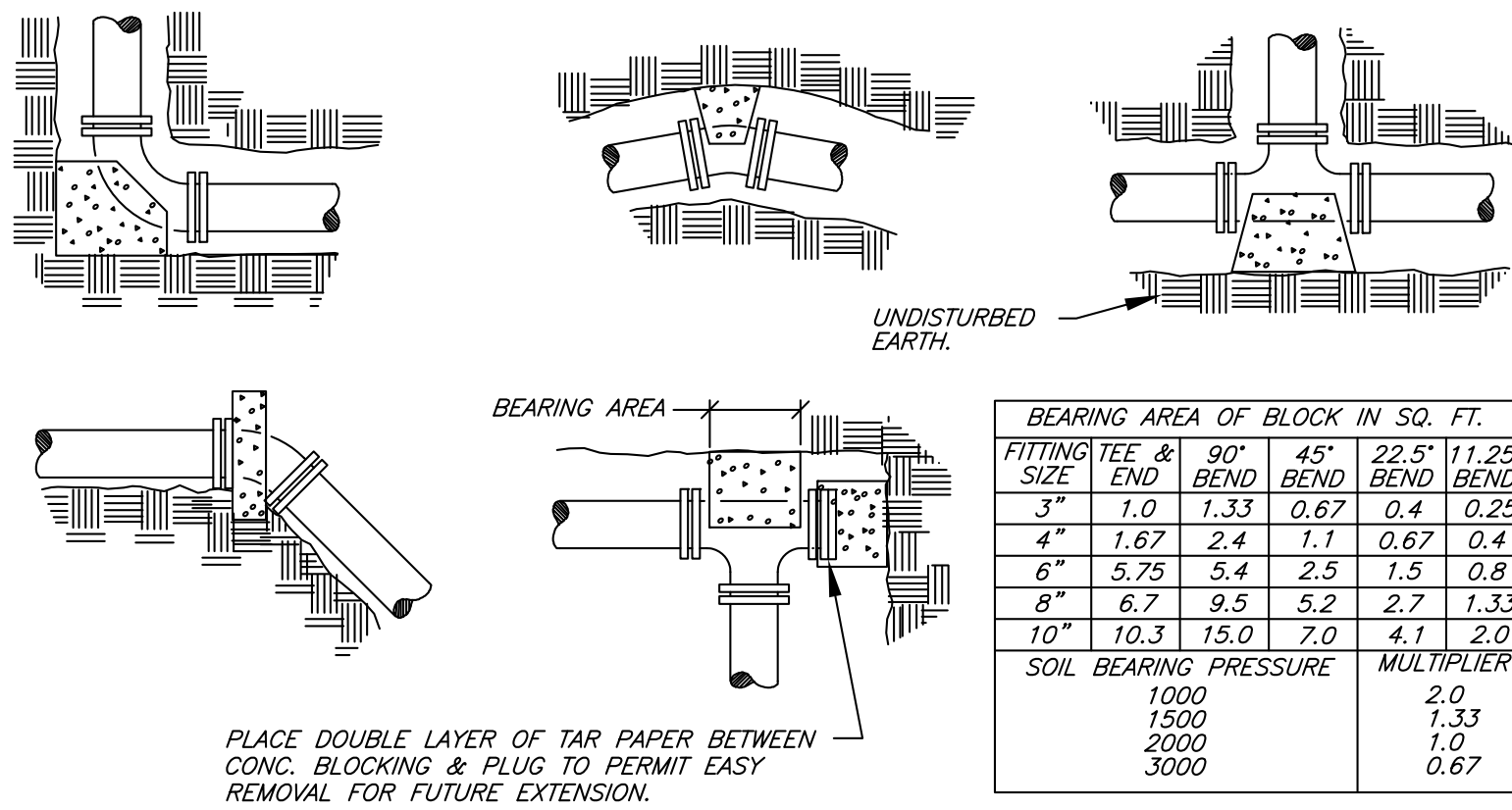
SANITARY OR STORM SEWER BUILDING CONNECTION DETAIL
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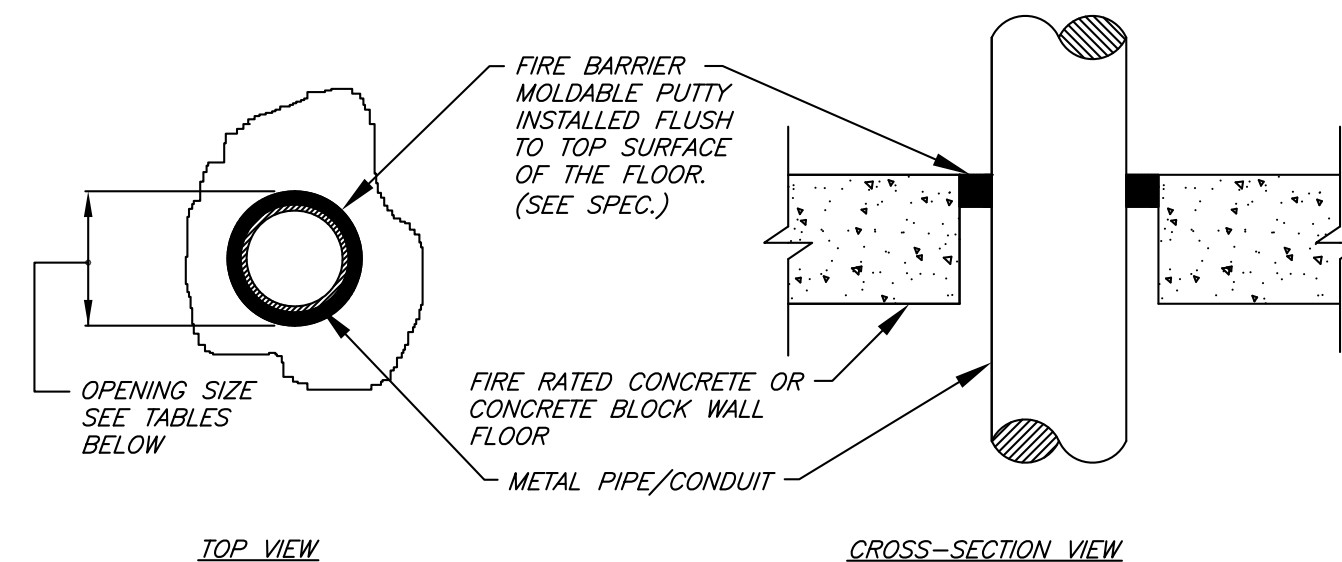
WALL CLEAN OUT (WCO) DETAIL
N.T.S.



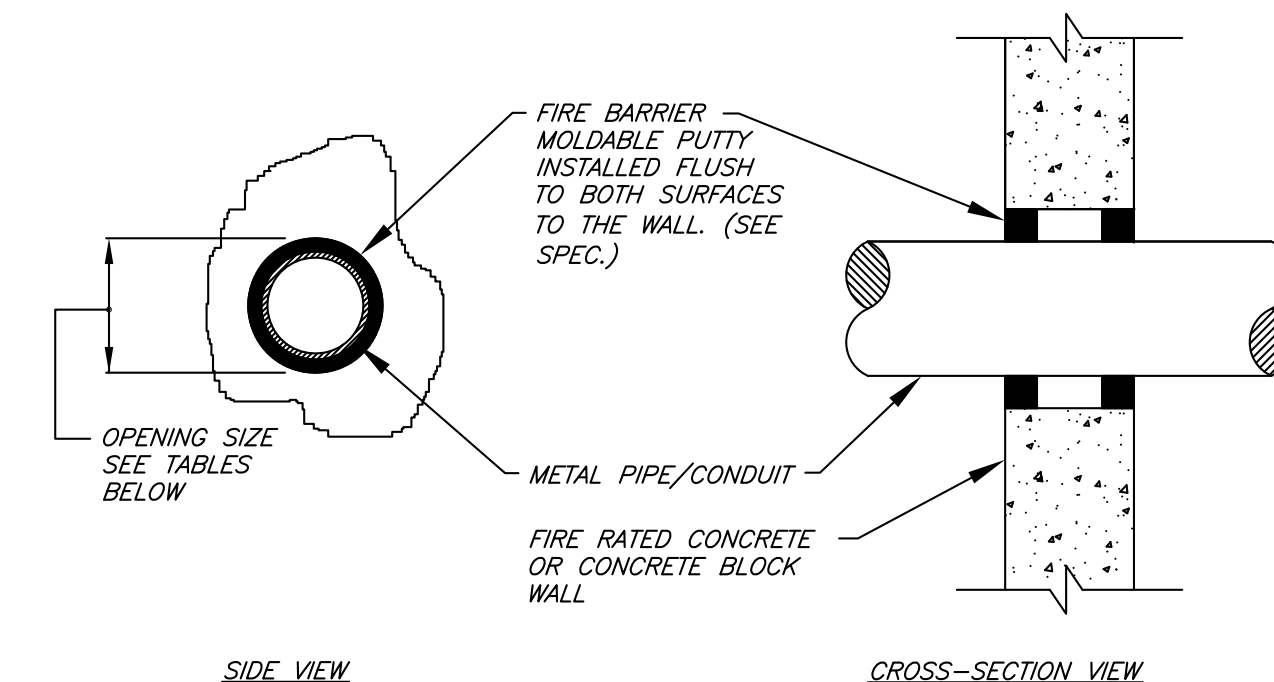
WATER ENTRY - COPPER
N.T.S.



THRUST BLOCK DIAGRAM
N.T.S.

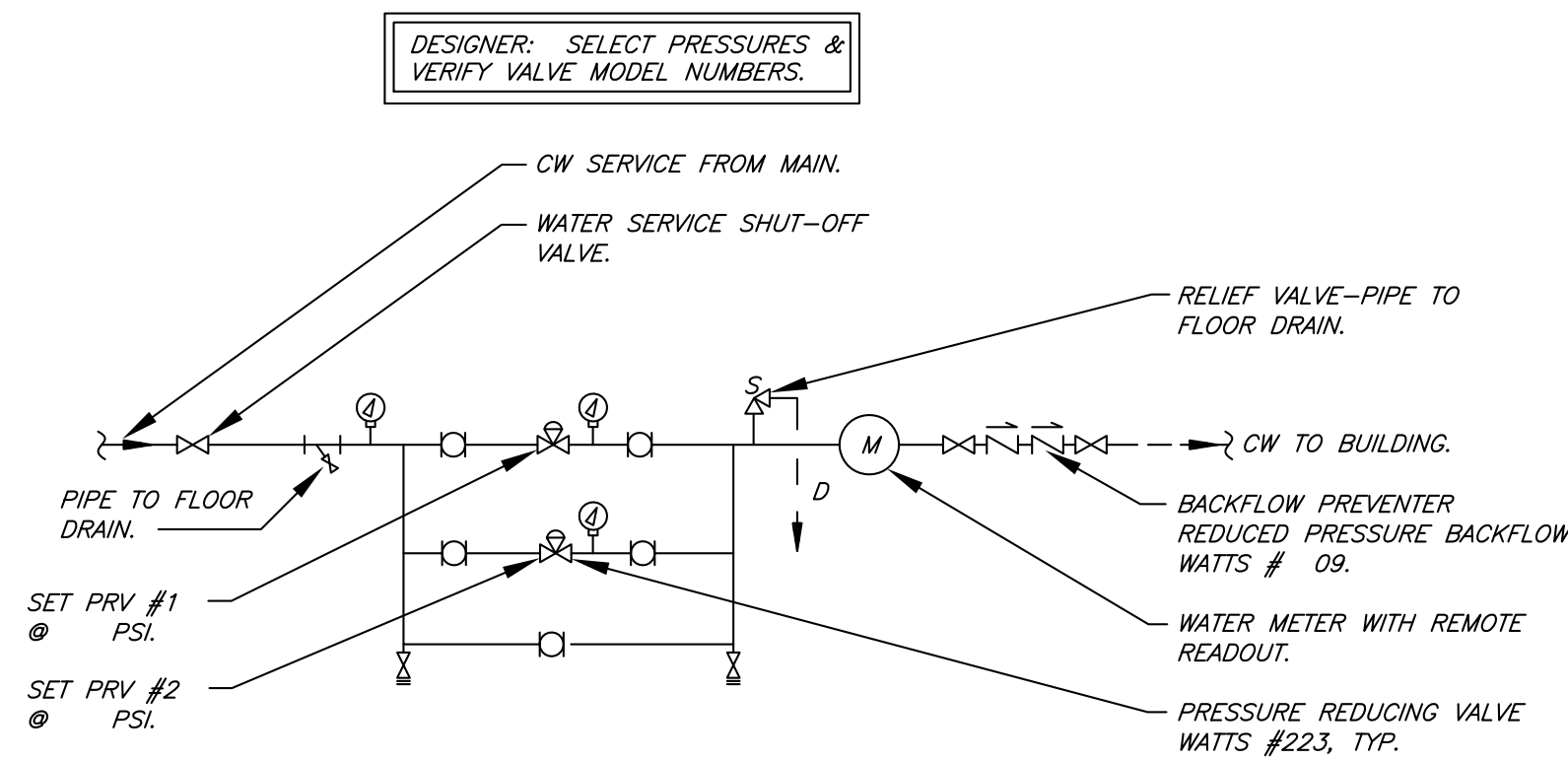


NOTE:
FOR METAL PIPE/CONDUIT THROUGH A CONCRETE FLOOR

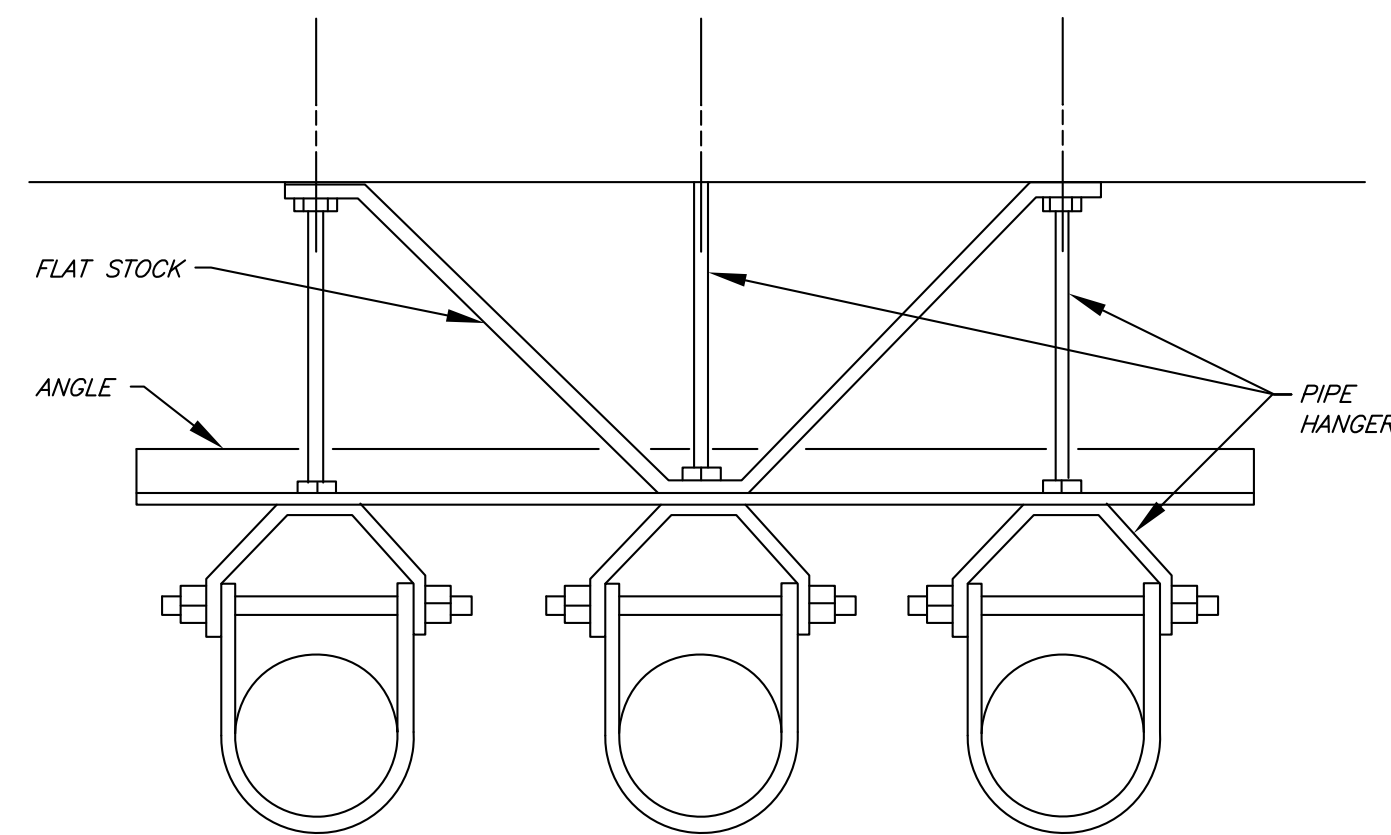


NOTE:
FOR METAL PIPE/CONDUIT THROUGH A CONCRETE WALL

PENETRATION FIRESTOP DETAILS
N.T.S.

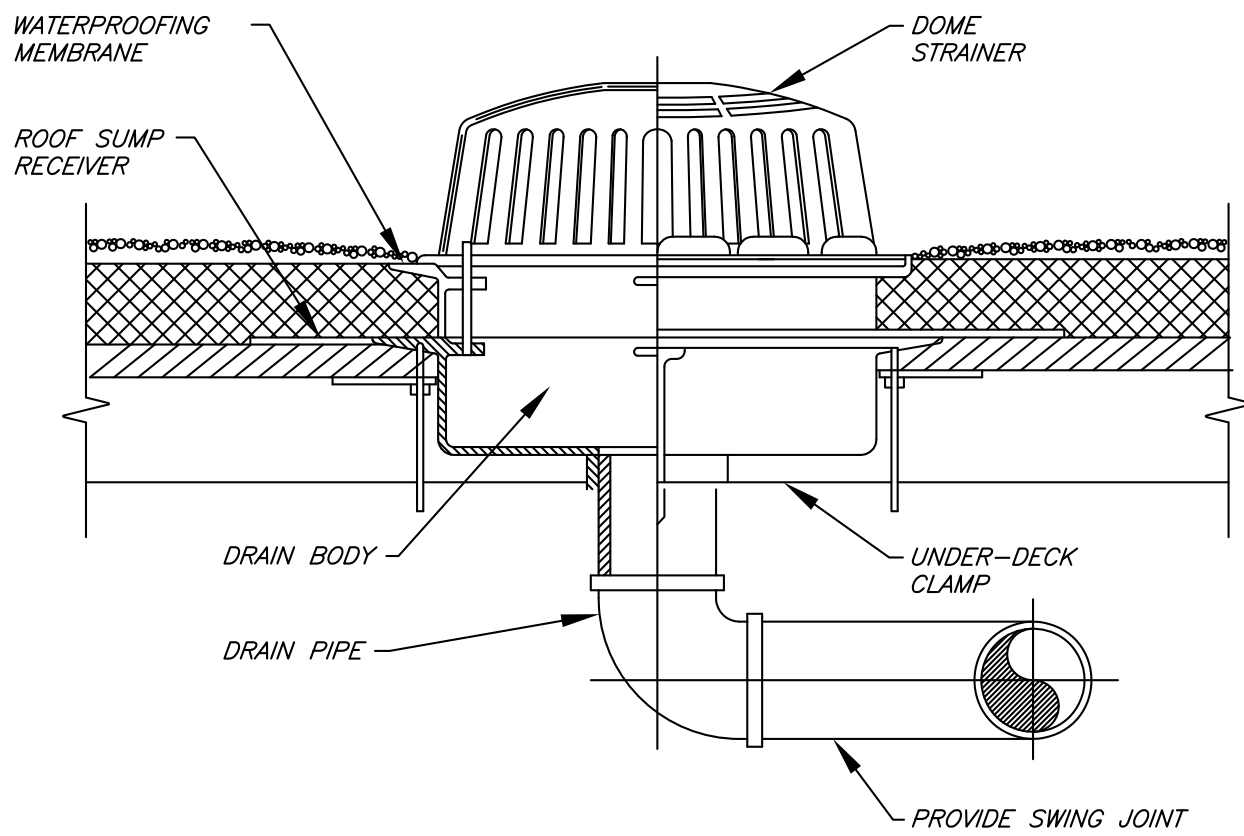


DOMESTIC WATER ENTRANCE SCHEMATIC
N.T.S.

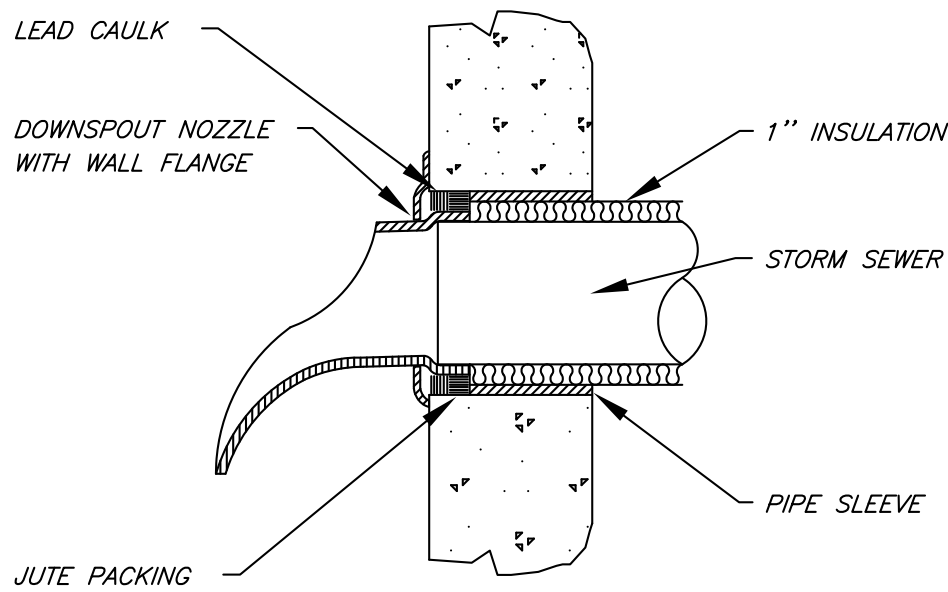


MECHANICAL PIPING SEISMIC DETAIL
N.T.S.

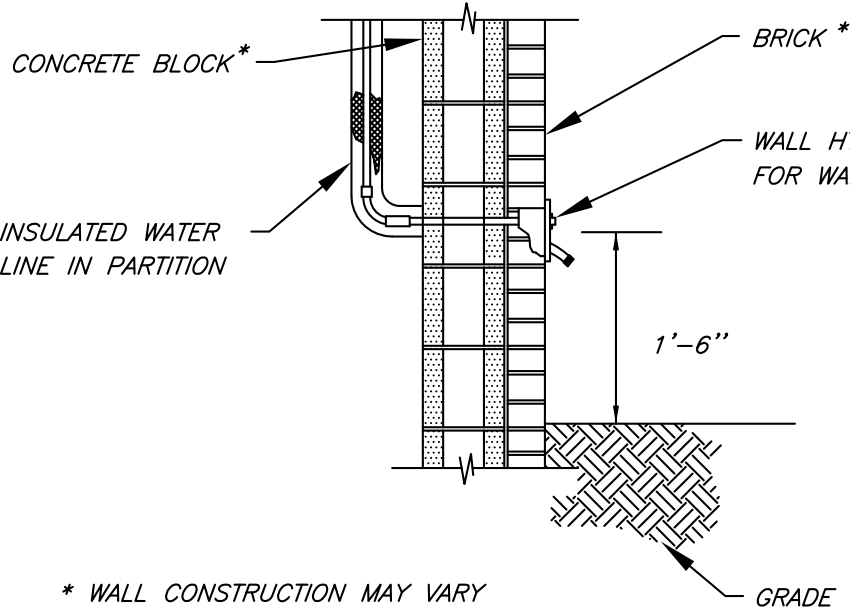
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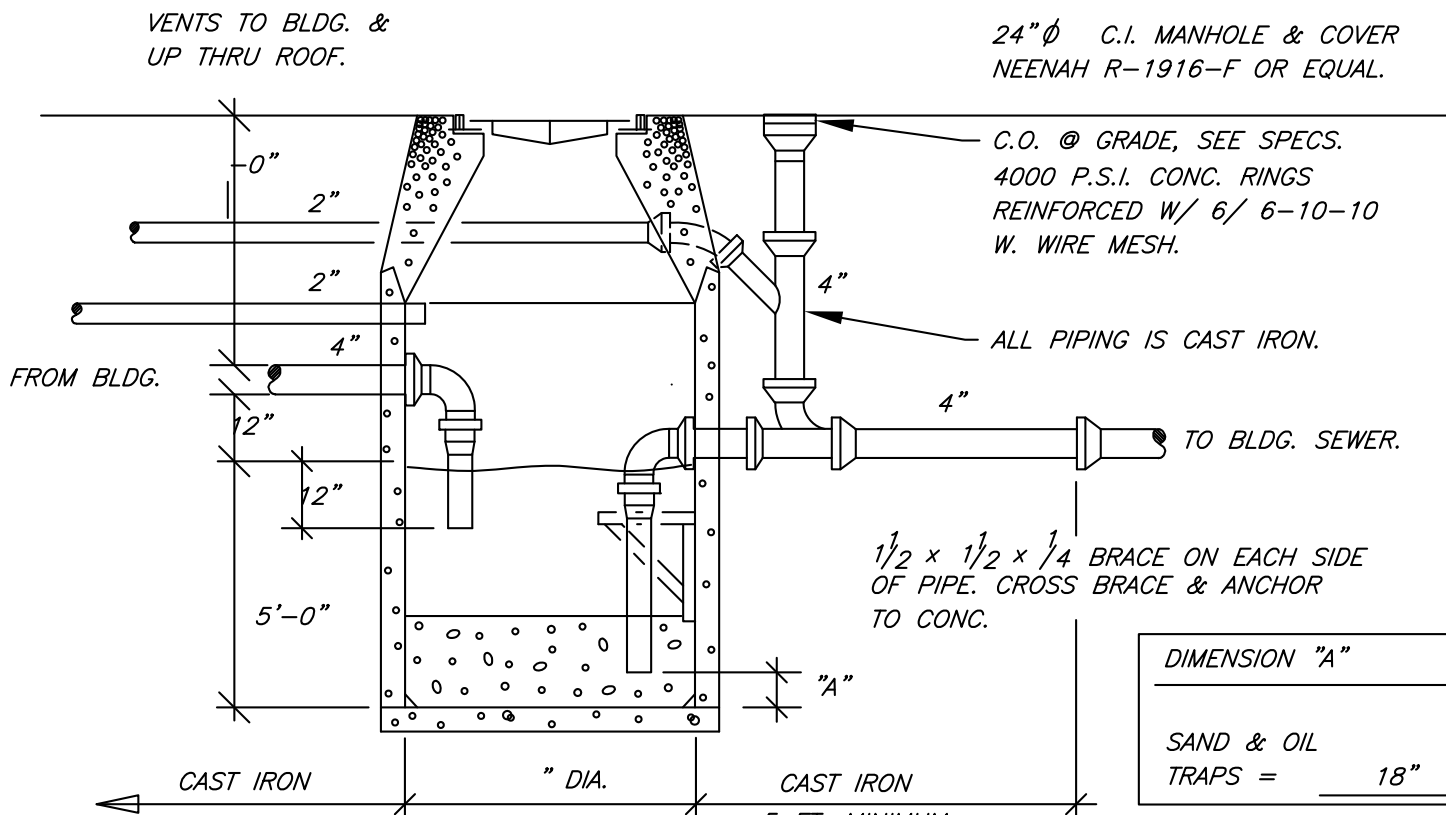
ROOF DRAIN (DOME TYPE) DETAIL
N.T.S.



DOWNSPOUT NOZZLE DETAIL
N.T.S.

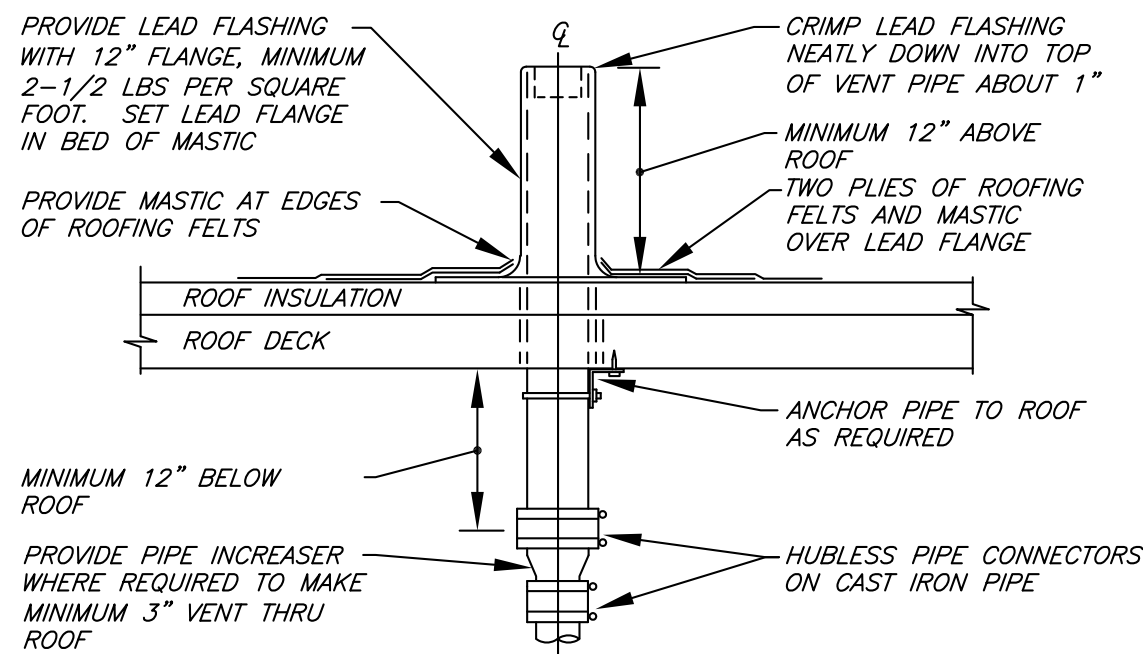


WALL HYDRANT DETAIL
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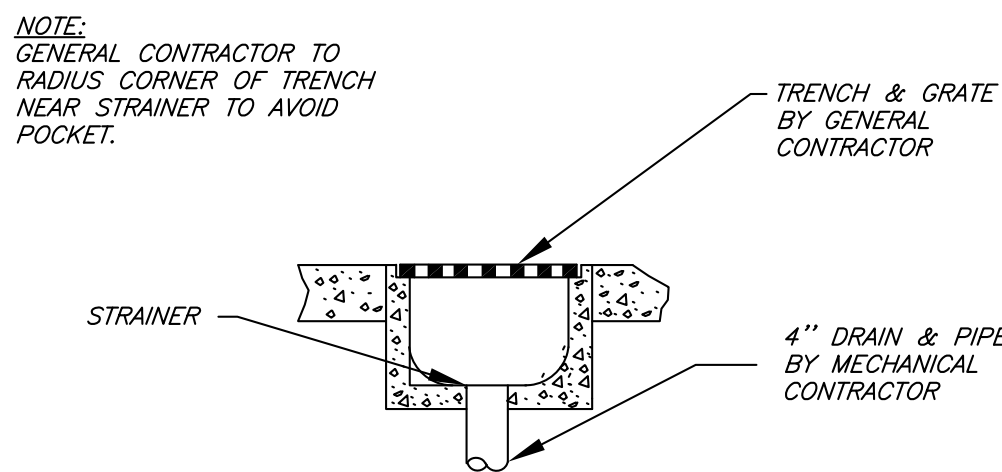
SAND & OIL TRAP DETAIL
N.T.S.

DESIGNER: THIS DETAIL
REQUIRES CALCULATIONS.
ALSO VERIFY SPECIFIED
ITEMS FOR AVAILABILITY

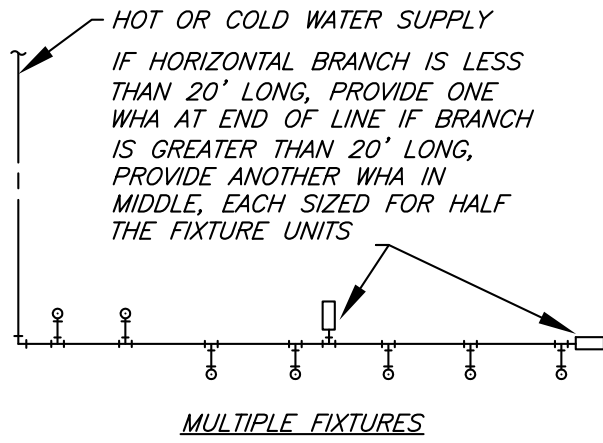


NOTE:
REFER TO PLANS FOR VTR PIPE SIZES AND LOCATIONS. LOCATE VTR TEN FEET HORIZONTAL OR THREE FEET VERTICAL ABOVE ANY BUILDING OPENING OR FRESH AIR INTAKE. PROVIDE 1/2" FIBERGLASS INSULATION WITH ALL-SERVICE JACKET ON VENT PIPE INSIDE BUILDING FROM UNDERSIDE OF ROOF, DOWN TO FIRST 90° FITTING, OR 5'0" VERTICAL LENGTH. VERIFY FLASHING AND COUNTERFLASHING WITH ROOFING CONTRACTOR.

VENT THRU ROOF DETAIL
N.T.S.



TRENCH DRAIN DETAIL
N.T.S.

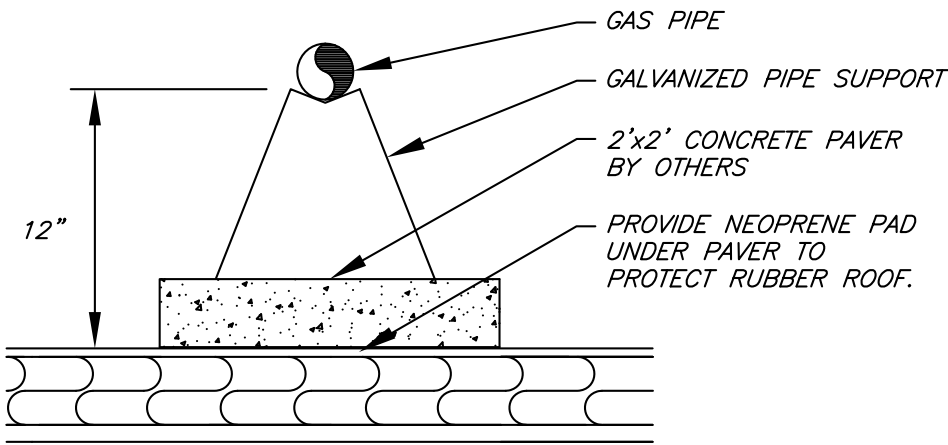


PDI SIZE	PIPE SIZE	FIXTURE UNIT LOAD	FIXTURE UNIT TABULATION	
			FIXTURE	COLD HOT
A	1/2"	1-11	VALVE WATER CLOSET	10 --
B	3/4"	12-32	TANK WATER CLOSET	5 --
C	1"	33-60	URINAL	5 --
D	1-1/4"	61-113	LAVATORY/SINK	1.5 1.5
E	1-1/2"	114-154	JANITOR'S SINK	3 3
F	2"	154-330	SHOWER/BATHTUB	2 2

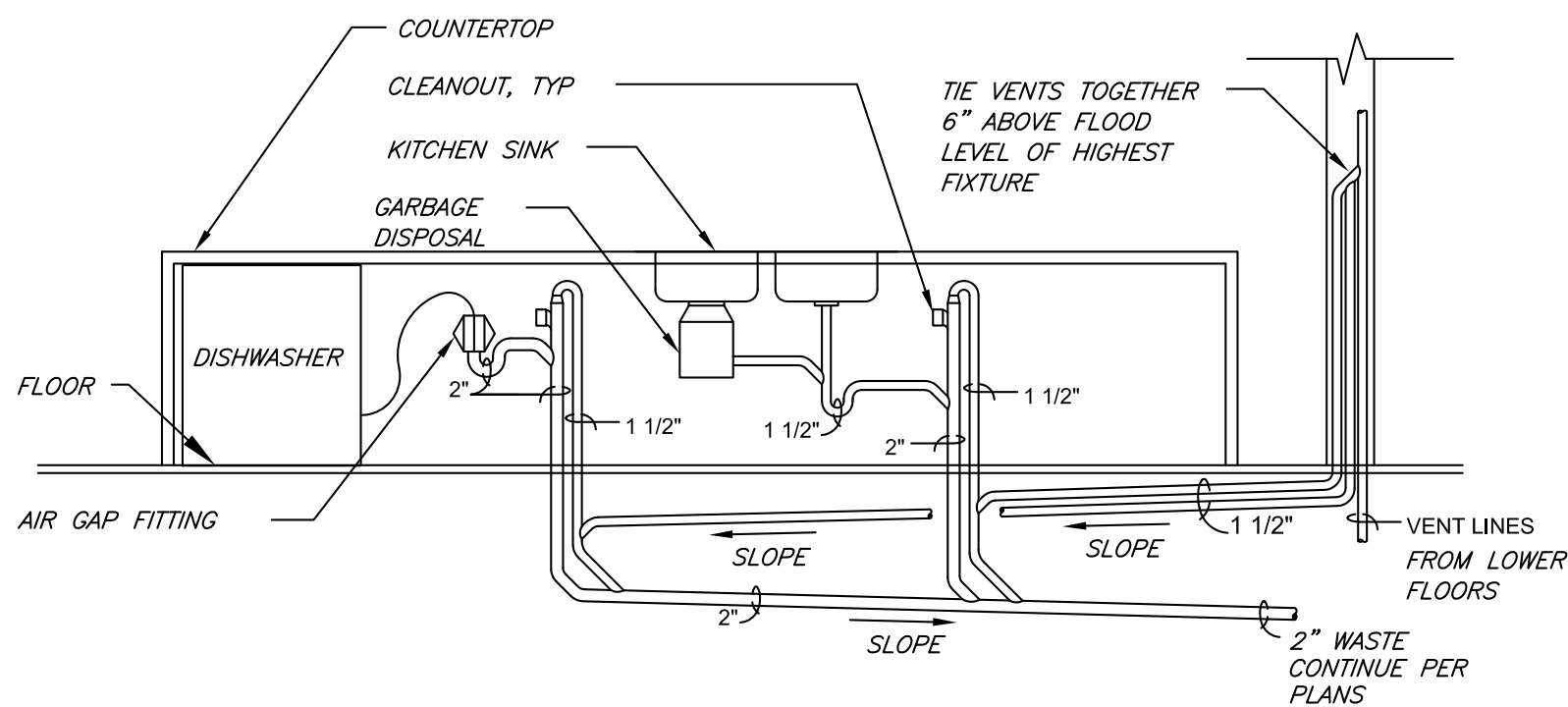
NOTE:
PO TO PROVIDE AIR CHAMBERS OR WATER HAMMER ARRESTERS BY SIOUX CHIEF, PRECISION PLUMBING PRODUCTS, WATTS OR APPROVED EQUIVALENT WITH PISTON AND O-RING CONSTRUCTION, HAVING PDI #WH-201, ASSE # 1010 AND ANSI # A112.26.1M CERTIFICATION. INSTALL IN HORIZONTAL OR VERTICAL POSITION, BUT NEVER UPSIDE DOWN. INSTALL IN LINE WITH WATER FLOW DIRECTION IF POSSIBLE. SIZE THE UNITS AS SHOWN ON THE DRAWINGS AND/OR PER THE TABLES SHOWN ABOVE.

WATER HAMMER ARRESTER DETAIL
N.T.S.

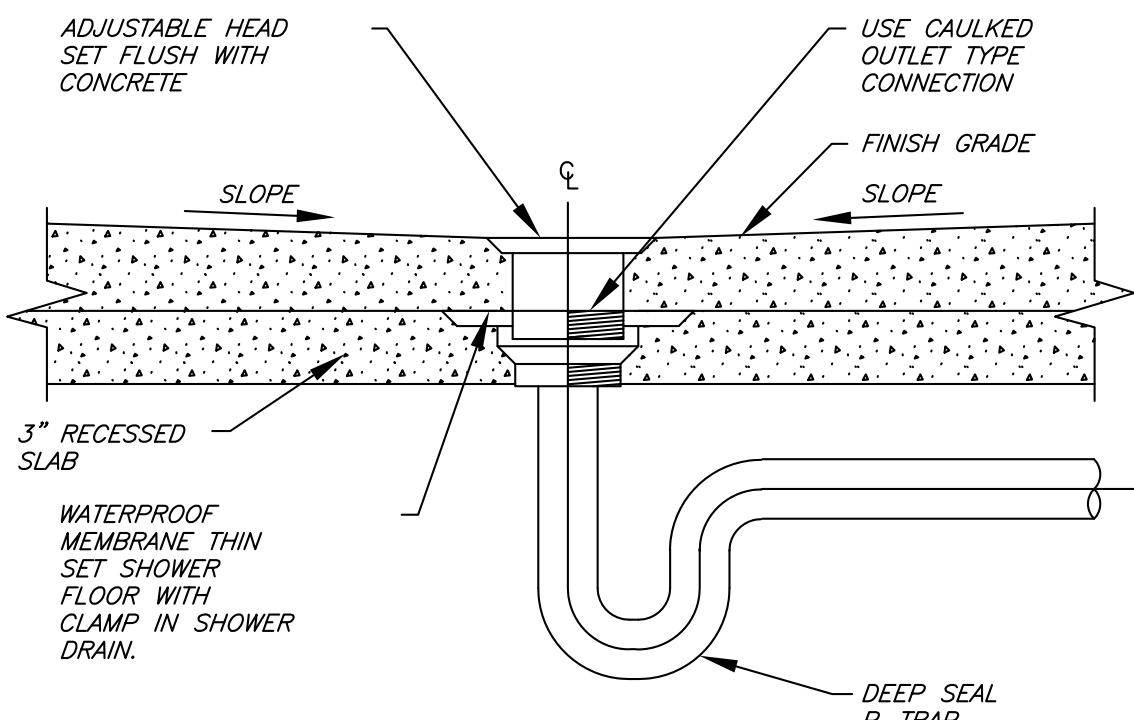
(PDI = PLUMBING DESIGN INSTITUTE)



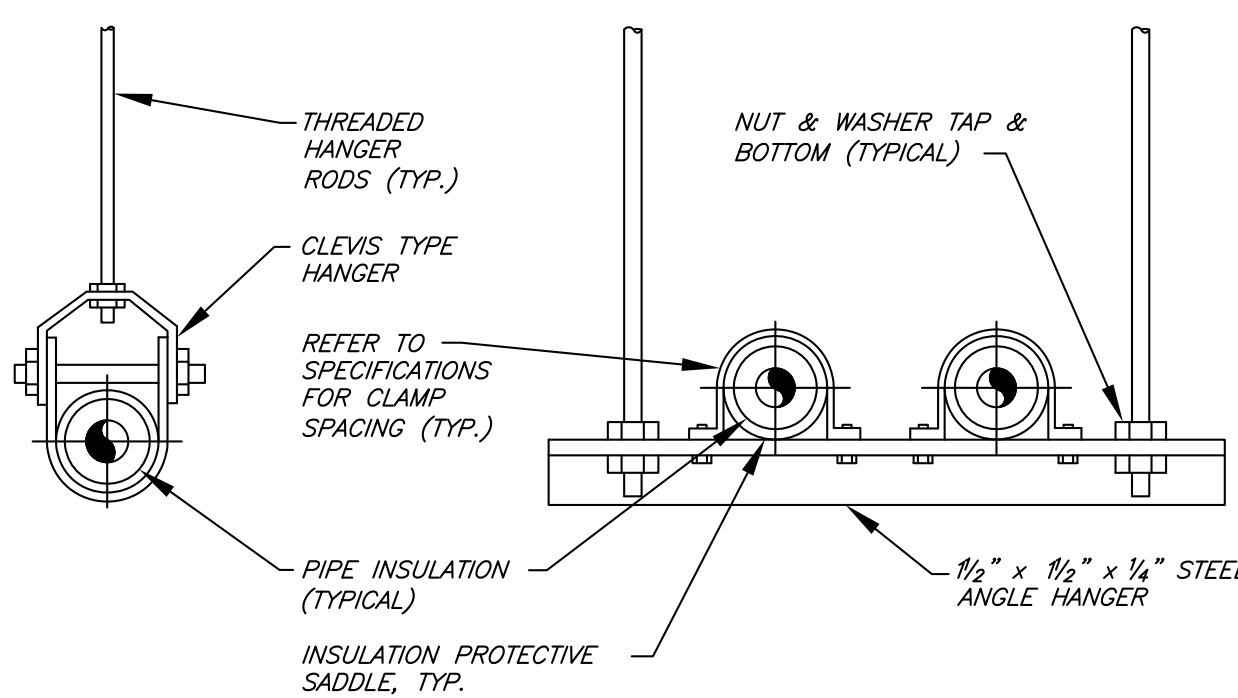
GAS PIPING SUPPORT DETAIL
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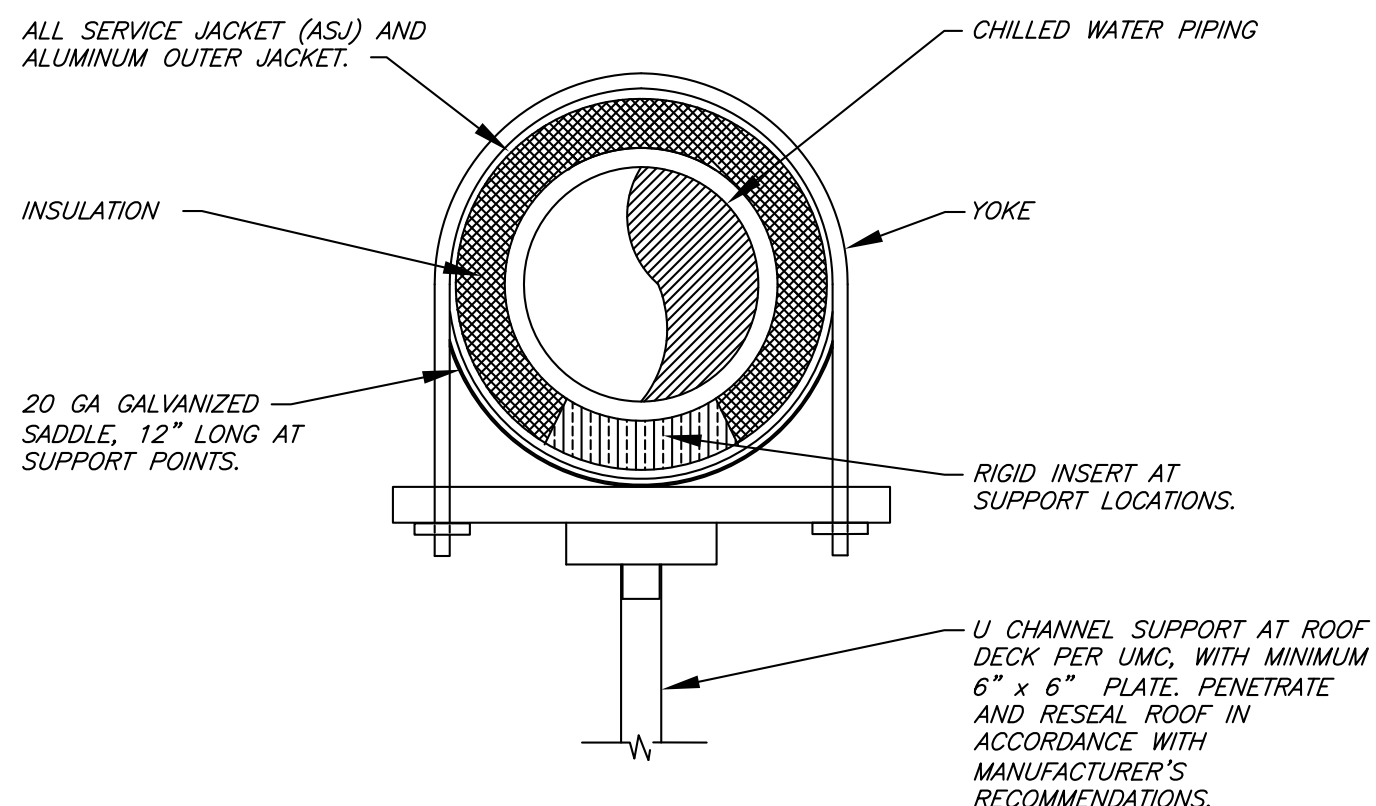
KITCHEN / DISHWASHER ISLAND VENT DIAGRAM
N.T.S.



SHOWER DRAIN DETAIL
N.T.S.



TYPICAL PIPE HANGER SUPPORT DETAIL
N.T.S.



PIPING AT ROOF SUPPORT DETAIL
N.T.S.

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ISSUE LOG

PLUMBING
DETAILS

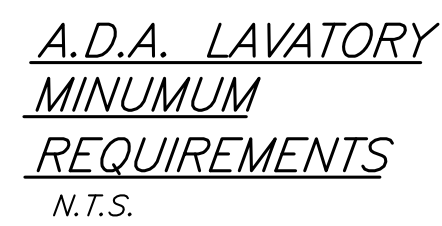
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PROJECT DATE: 5/9/14

SHEET NUMBER:

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PLUMBING DETAILS

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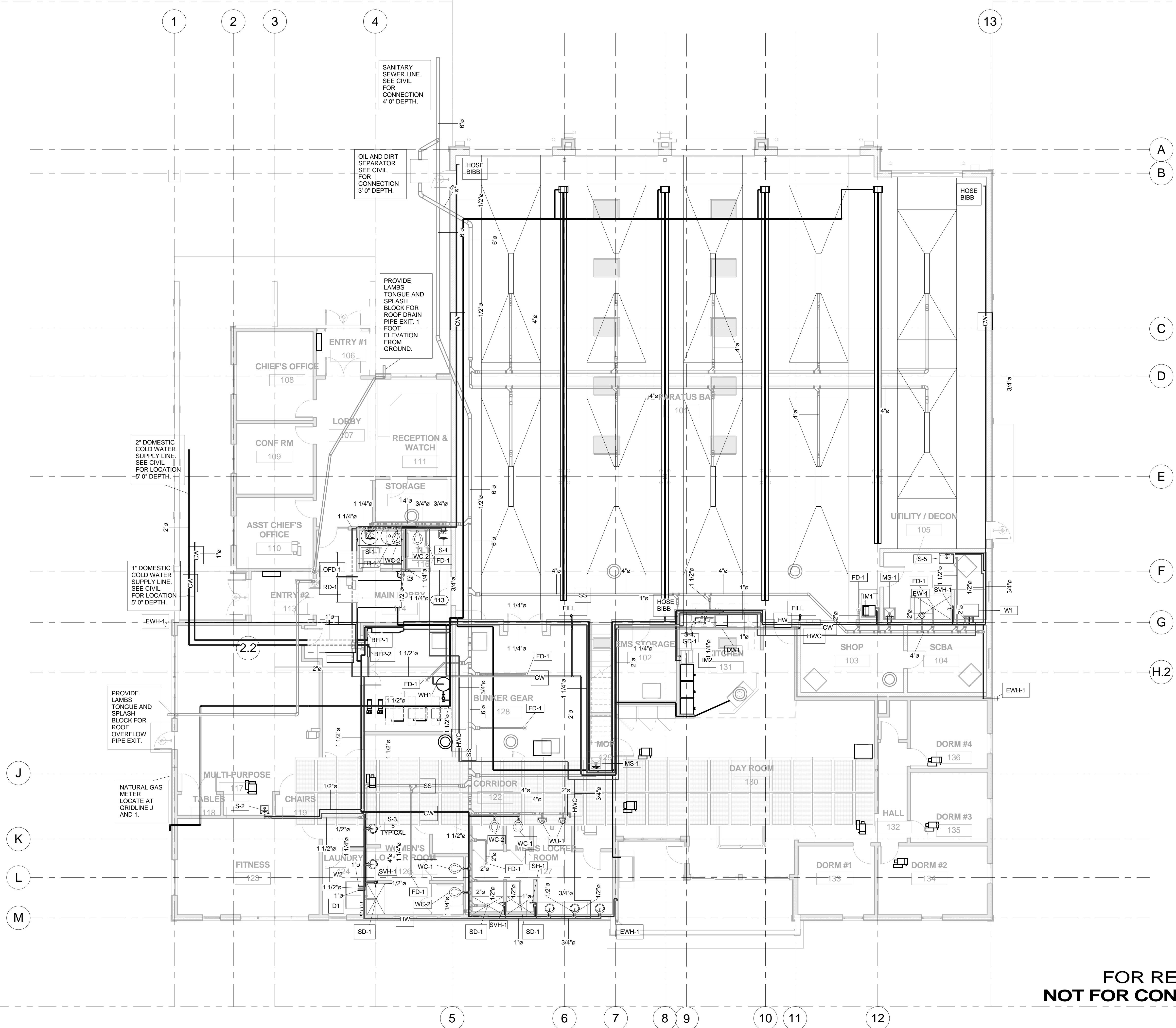


PLUMBING PLAN
- LEVEL 1

PROJECT NO.: 2013-247.001
PROJECT DATE: 5/9/14
SHEET NUMBER:

P1

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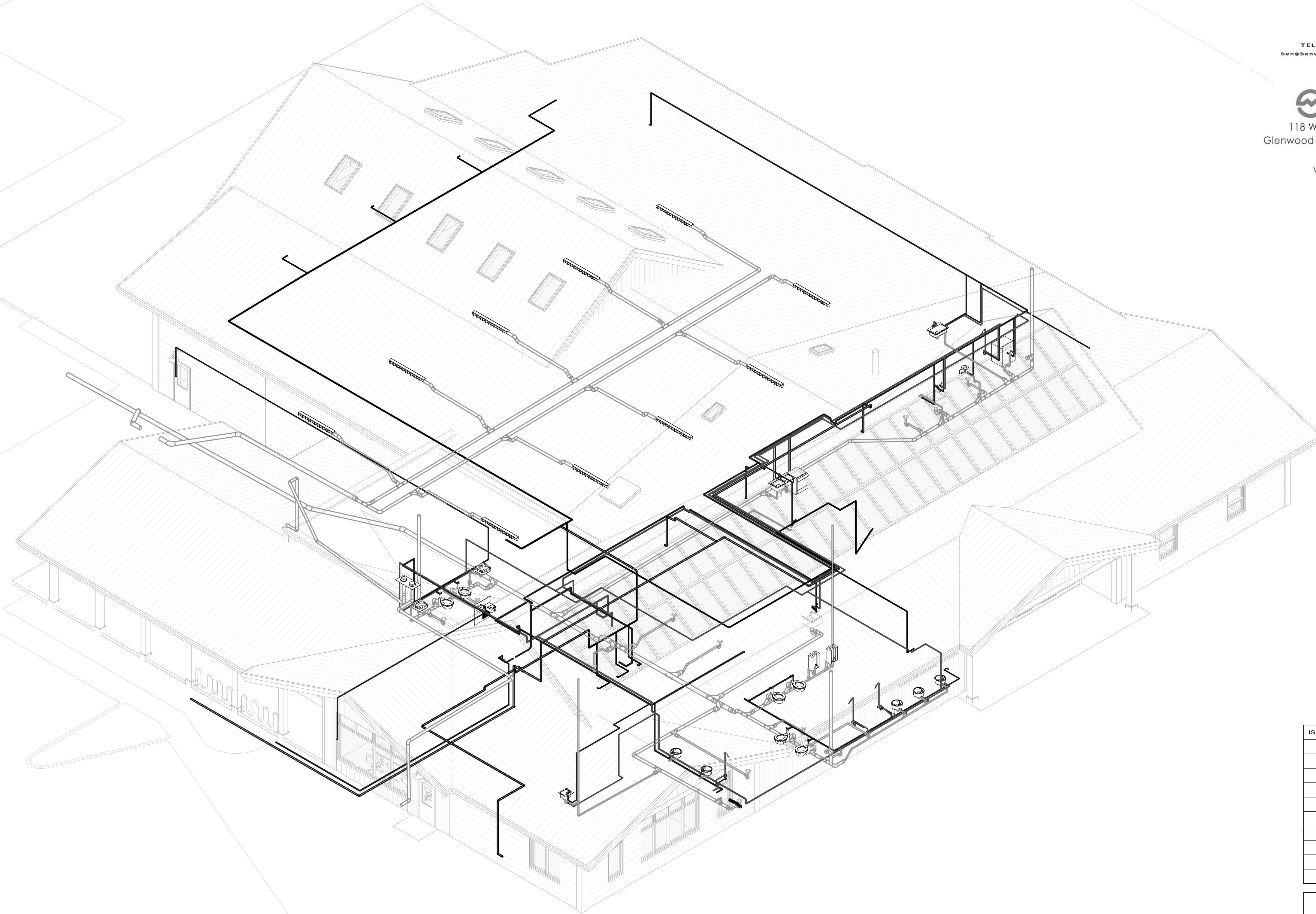
PLUMBING - 3D

PROJECT NO.: 2013-247.001

PROJECT DATE: 5/9/14

SHEET NUMBER:

P2



1 3D Plumbing

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