

# CONTROLS NOTES

**PUMP ROOM CONTROL:**  
 1. PUMP ROOM 102 SHALL BE PROVIDED WITH A WALL MOUNTED, TWO STAGE COOLING/TWO STAGE HEATING THERMOSTAT.  
 THE FIRST STAGE OF COOLING SHALL ENERGIZE EF-1, OPEN ASSOCIATED MOTORIZED EXHAUST DAMPER AND OPEN THE MOTORIZED DAMPER AT INTAKE LOUVER (162X30 LOUVER, TOP LOUVER, ON NORTH ELEVATION) IF THE INSIDE TEMPERATURE RISES ABOVE 80°F.  
 THE SECOND STAGE OF COOLING SHALL ENERGIZE EF-2, OPEN ASSOCIATED MOTORIZED EXHAUST DAMPER AND OPEN THE MOTORIZED DAMPER AT THE SECOND INTAKE LOUVER (84X48 LOUVER, BOTTOM LOUVER, ON NORTH ELEVATION) IF THE INSIDE TEMPERATURE RISES ABOVE 85°F.  
 THE FIRST STAGE OF HEATING SHALL ENERGIZE UH-1 IF THE INSIDE TEMPERATURE FALLS BELOW 65°F.  
 THE SECOND STAGE OF HEATING SHALL ENERGIZE UH-2 IF THE SPACE TEMPERATURE FALLS BELOW 80°F. ALL EQUIPMENT SHALL BE "OFF" AND MOTORIZED DAMPERS AT INTAKE LOUVERS SHALL BE CLOSED IF THE SPACE TEMPERATURE IS BETWEEN 65°F AND 80°F.

**SODIUM HYPOCHLORITE CONTROL:**  
 1. SODIUM HYPOCHLORITE 101 SHALL BE PROVIDED WITH A WALL MOUNTED, ONE STAGE COOLING/TWO STAGE HEATING THERMOSTAT.  
 COOLING: EF-3 SHALL ENERGIZE, OPEN ASSOCIATED MOTORIZED EXHAUST DAMPER AND OPEN THE MOTORIZED DAMPER AT INTAKE LOUVER (12X18 LOUVER ON NORTH ELEVATION) IF THE INSIDE TEMPERATURE RISES ABOVE 80°F.  
 HEATING: EUH-1 SHALL ENERGIZE IF THE INSIDE TEMPERATURE FALLS BELOW 65°F. EUH-2 SHALL ENERGIZE IF THE INSIDE TEMPERATURE FALLS BELOW 60°F.  
 EQUIPMENT SHALL BE "OFF" AND MOTORIZED DAMPERS AT INTAKE LOUVERS SHALL BE CLOSED IF THE SPACE TEMPERATURE IS BETWEEN 65°F AND 80°F.  
 2. EF-3 SHALL ALSO BE ENERGIZED WHEN WALL SWITCH, LOCATED OUTSIDE OF ROOM 101, HAS BEEN SWITCHED ON. WALL SWITCH SHALL HAVE INTERNAL TIMER OF 60 MINUTES AND WILL AUTOMATICALLY SHUT DOWN FAN AFTER THAT TIME. WHEN EF-3 IS ENERGIZED, THE ASSOCIATED MOTORIZED EXHAUST DAMPER AND MOTORIZED DAMPER AT INTAKE SHALL OPEN.

# LEGEND

(NOT ALL ITEMS WILL BE USED)

ABBR.	SYMBOL	DESCRIPTION
G	LP (X PSIG)	PRESSURE GAS PIPING
	UNION, FLANGE, BLIND FLANGE	ISOLATION VALVE- SEE SPECIFICATIONS FOR VALVE TYPE, GLOBE VALVE
	CHECK VALVE, STRAINER	CHECK VALVE, STRAINER
	BALANCING VALVE, CALIBRATED, DYNAMIC BALANCING VALVES	BALANCING VALVE, CALIBRATED, DYNAMIC BALANCING VALVES
PRV	LUBRICATED PLUG VALVE, PRESSURE REDUCING VALVE	LUBRICATED PLUG VALVE, PRESSURE REDUCING VALVE
	THREE WAY CONTROL VALVE, SOLENOID AND TWO-WAY / MOTORIZED CONTROL VALVE	THREE WAY CONTROL VALVE, SOLENOID AND TWO-WAY / MOTORIZED CONTROL VALVE
RPBP	REDUCED PRESSURE BACKFLOW PREVENTER	REDUCED PRESSURE BACKFLOW PREVENTER
	ANGLE, RELIEF VALVE, GAUGE AND COCK, THERMOMETER	ANGLE, RELIEF VALVE, GAUGE AND COCK, THERMOMETER
	TEST PLUG	TEST PLUG
AAV / MAV, HEV	HOSE END DRAIN VALVE, AUTOMATIC AIR / MANUAL AIR VENT	HOSE END DRAIN VALVE, AUTOMATIC AIR / MANUAL AIR VENT
HB, FWH	HOSEBIBB, FROSTPROOF WALL HYDRANT	HOSEBIBB, FROSTPROOF WALL HYDRANT
	PIPE ELBOW DOWN, PIPE TEE DOWN, PIPE TEE UP, PIPE ELBOW UP	PIPE ELBOW DOWN, PIPE TEE DOWN, PIPE TEE UP, PIPE ELBOW UP
	SUPPLY AIR, RETURN/OUTSIDE AIR AND EXHAUST AIR	SUPPLY AIR, RETURN/OUTSIDE AIR AND EXHAUST AIR
	DUCTWORK UNLINED AND DUCTWORK LINED	DUCTWORK UNLINED AND DUCTWORK LINED
	FLEXIBLE AND RIGID ROUND DUCT	FLEXIBLE AND RIGID ROUND DUCT
	FIRE, SMOKE, COMBINATION FIRE AND SMOKE, BAROMETRIC, MOTORIZED AND MANUAL DAMPERS	FIRE, SMOKE, COMBINATION FIRE AND SMOKE, BAROMETRIC, MOTORIZED AND MANUAL DAMPERS
T, H, SD, TT, AQ	THERMOSTAT, HUMIDISTAT, SMOKE DETECTOR, TEMPERATURE TRANSMITTER, AIR QUALITY SENSOR, DEWPOINT SENSOR	THERMOSTAT, HUMIDISTAT, SMOKE DETECTOR, TEMPERATURE TRANSMITTER, AIR QUALITY SENSOR, DEWPOINT SENSOR
AP	ACCESS PANEL, ACCESS PANEL IN DUCT	ACCESS PANEL, ACCESS PANEL IN DUCT
VFD	VARIABLE FREQUENCY DRIVE	VARIABLE FREQUENCY DRIVE
SA, RA, EA, OA, CA, MA, NC, NO	SUPPLY, RETURN, EXHAUST, OUTSIDE, COMBUSTION AIR AND MAKE-UP AIR NORMALLY CLOSED, NORMALLY OPEN	SUPPLY, RETURN, EXHAUST, OUTSIDE, COMBUSTION AIR AND MAKE-UP AIR NORMALLY CLOSED, NORMALLY OPEN
RE., VTR, I.E.	REFERENCE, VENT THRU ROOF, INVERT ELEVATION	REFERENCE, VENT THRU ROOF, INVERT ELEVATION
	WORK NOTE 1, REVISION NO. 1, DEMOLITION NOTE 1, POINT OF CONNECTION	WORK NOTE 1, REVISION NO. 1, DEMOLITION NOTE 1, POINT OF CONNECTION
	SUPPLY AIR, RETURN AIR/EXHAUST AIR/OUTSIDE AIR FLOW ARROWS	SUPPLY AIR, RETURN AIR/EXHAUST AIR/OUTSIDE AIR FLOW ARROWS
A-AHU-AIR HANDLING UNIT R-RTU-ROOF TOP UNIT M-MAU-MAKE UP AIR UNIT	SECTION A ON SHEET M-1 DIAGRAM 1 ON SHEET M-1 RISER R-1 ON SHEET M-1	SECTION A ON SHEET M-1 DIAGRAM 1 ON SHEET M-1 RISER R-1 ON SHEET M-1
	EQUIPMENT TAG	EQUIPMENT TAG
	EQUIPMENT TYPE	EQUIPMENT TYPE
	EQUIPMENT NUMBER	EQUIPMENT NUMBER
	BOX DESIGNATION	BOX DESIGNATION
	CONNECTED FLOW (CFM)	CONNECTED FLOW (CFM)
	AHU OR MAU DESIGNATION - BOX NUMBER	AHU OR MAU DESIGNATION - BOX NUMBER

# CODE INFORMATION

2003 INTERNATIONAL BUILDING CODE  
 2003 INTERNATIONAL MECHANICAL CODE  
 2003 INTERNATIONAL PLUMBING CODE  
 2003 INTERNATIONAL FIRE CODE  
 2003 INTERNATIONAL FUEL GAS CODE.

# DRAWING INDEX

DRAWING NUMBER	DRAWING TITLE	REVISIONS																				
		1	2	3	4	5	6	7	8	9	10	11	12									
H/P-1	DRAWING INDEX, LEGEND, SCHEDULES AND GENERAL NOTES																					
H/P-2	PLAN - HVAC AND PLUMBING																					

# GENERAL NOTES

- RESOLVE ALL QUESTIONS OR CONFLICTS WITH ENGINEER BEFORE ANY EQUIPMENT IS ORDERED, MATERIALS FABRICATED OR SYSTEMS INSTALLED.
- COORDINATE THE INSTALLATION OF MECHANICAL SYSTEMS WITH OTHER TRADES.
- COORDINATE ALL PENETRATIONS THROUGH STRUCTURAL MEMBERS.
- COORDINATE AND VERIFY THAT ALL OPENINGS IN WALLS ABOVE CEILING / DOOR LOUVERS / DOOR UNDERCUTS ARE PROVIDED AS INDICATED ON THESE DRAWINGS.
- SEAL ALL WALL AND ROOF PENETRATIONS WATERTIGHT WITH SILICONE CAULKING AND BACKER ROD.
- PROVIDE OFFSETS AS NECESSARY TO ACCOMMODATE STRUCTURE AND OTHER TRADES.
- PROVIDE SPRING HANGERS ON ALL EXHAUST FANS, HEATERS AND OTHER SIMILAR EQUIPMENT, UNLESS INTERNALLY ISOLATED.

# PLUMBING GENERAL NOTES

- INSTALL AN APPROVED GAS SHUT-OFF VALVE, UNION AND 6" LONG FULL SIZE DIRT LEG FOR EACH GAS FIRED EQUIPMENT.
- GAS SHUT-OFF VALVES SHALL CONFORM TO PARAGRAPH 409 OF THE IFGC.

# PIPING NOTATION FOR ALL SHEETS

X" LP (XXX) X" PROPANE GAS WITH XXX MBH CONNECTED LOAD.

# DESIGN CONDITIONS

CITY	SUMMER DESIGN DB (°F)	SUMMER COINCIDENT WB (°F)	WINTER DESIGN DB (°F)	ALTITUDE (FT)	DENSITY RATIO	SUMMER INTERIOR	WINTER INTERIOR
COLORADO CITY, COLORADO	97	62	-1	6600	0.807	103 MAX AT 97 AMBIENT	65

# EXHAUST FAN SCHEDULE

NOTES: A) REFERENCE CONTROLS REQUIREMENTS FOR OPERATION, ACCESSORIES: 1) MOTORIZED DISCHARGE DAMPER, 2) SPRING ISOLATOR HANGING KIT, 3) EPOXY POWDER COATING RESISTANT TO SODIUM HYPOCHLORITE.

TAG	MANUF.	MODEL	AIR QTY CFM	ESP "WC	TYPE	MOUNT	LOCATION	MOTOR HP (WATTS)	VOLTS/PHASE	DRIVE	SERVICE	OPER. WT (LBS)	NOTES	ACCESS.
EF-1	COOK	330SQI-B	12,000	0.5	CENTRIFUGAL INLINE	IN-LINE	PUMP ROOM 102	3	460/3	BELT	PUMP ROOM 102	700	A	1, 2
EF-2	COOK	330SQI-B	12,000	0.5	CENTRIFUGAL INLINE	IN-LINE	PUMP ROOM 102	3	460/3	BELT	PUMP ROOM 102	700	A	1, 2
EF-3	COOK	150SQI-HP	450	0.5	CENTRIFUGAL INLINE	IN-LINE	HYPOCHLORITE ROOM 101	1/6	120/1	BELT	HYPOCHLORITE ROOM 101	350	A	1, 2, 3

# PROPANE UNIT HEATER SCHEDULE

NOTES: A) 4" VENT AND COMBUSTION AIR SIZE, B) EQUIPPED FOR HIGH ALTITUDE, C) MULTI-TRY DIRECT SPARK IGNITION WITH 100% LOCKOUT, D) PRESSURE SWITCH, E) ISOLATED FAN AND MOTOR ASSEMBLY, F) 11" W.C. TO 14" W.C. ACCESSORIES: 1) REMOTE MOUNTED THERMOSTAT, 2) CEILING SUSPENSION KIT, 3) VERTICAL CONCENTRIC VENT TERMINATION KIT, 4) DOWNTURN NOZZLE KIT, 5) GAS TO PROPANE CONVERSION KIT, 6) DISCONNECT SWITCH.

TAG	LOCATION	MANUFACTURER	MODEL	MOUNT	FUEL	INPUT MBH	OUTPUT MBH@ALT.	ELECT. DATA				MOUNTING HEIGHT	NOTES	ACCESS.
								KW	MOTOR HP	VOLTS/Ø	FLA			
UH-1	PUMP STATION MAIN ROOM	REZNOR	UDAS-45	CEILING	LP	45	30	N/A	0.03	120/1	2.4	12'-0"	A, B, C, D, E, F	1, 2, 3, 4, 5, 6
UH-2	PUMP STATION MAIN ROOM	REZNOR	UDAS-45	CEILING	LP	45	30	N/A	0.03	120/1	2.4	12'-0"	A, B, C, D, E, F	1, 2, 3, 4, 5, 6

# ELECTRIC UNIT HEATER SCHEDULE

TAG	DESCRIPTION
EUH-1	ELECTRIC UNIT HEATER, MARKEL MODEL # HLA 12-480360-3.0-24, 3 KW (SINGLE STAGE), 480/3Ø, 4.3 AMPS, 10' MOUNTING HEIGHT, 200 POUNDS, PROVIDE EPOXY POWDER COATING RESISTANT TO SODIUM HYPOCHLORITE, MOUNTING BRACKET, INTEGRAL DISCONNECT, THERMAL CUT-OUT, (HIGH LIMIT), REMOTE MOUNTED THERMOSTAT RE: CONTROL NOTES.
EUH-2	ELECTRIC UNIT HEATER, MARKEL MODEL # HLA 12-480360-7.5-24, 7.5 KW (SINGLE STAGE), 480/3Ø, 9.7 AMPS, 10' MOUNTING HEIGHT, 250 POUNDS, PROVIDE EPOXY POWDER COATING RESISTANT TO SODIUM HYPOCHLORITE, MOUNTING BRACKET, INTEGRAL DISCONNECT, THERMAL CUT-OUT, (HIGH LIMIT), REMOTE MOUNTED THERMOSTAT RE: CONTROL NOTES.

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**MALCOLM PIRNIE**

13516  
 REGISTERED PROFESSIONAL ENGINEER  
 AUG 14 2008

REVISIONS	
NO.	DATE

DES: KAH  
 DWN: KAH  
 CKD: GRM

**COLORADO CITY METROPOLITAN DISTRICT**

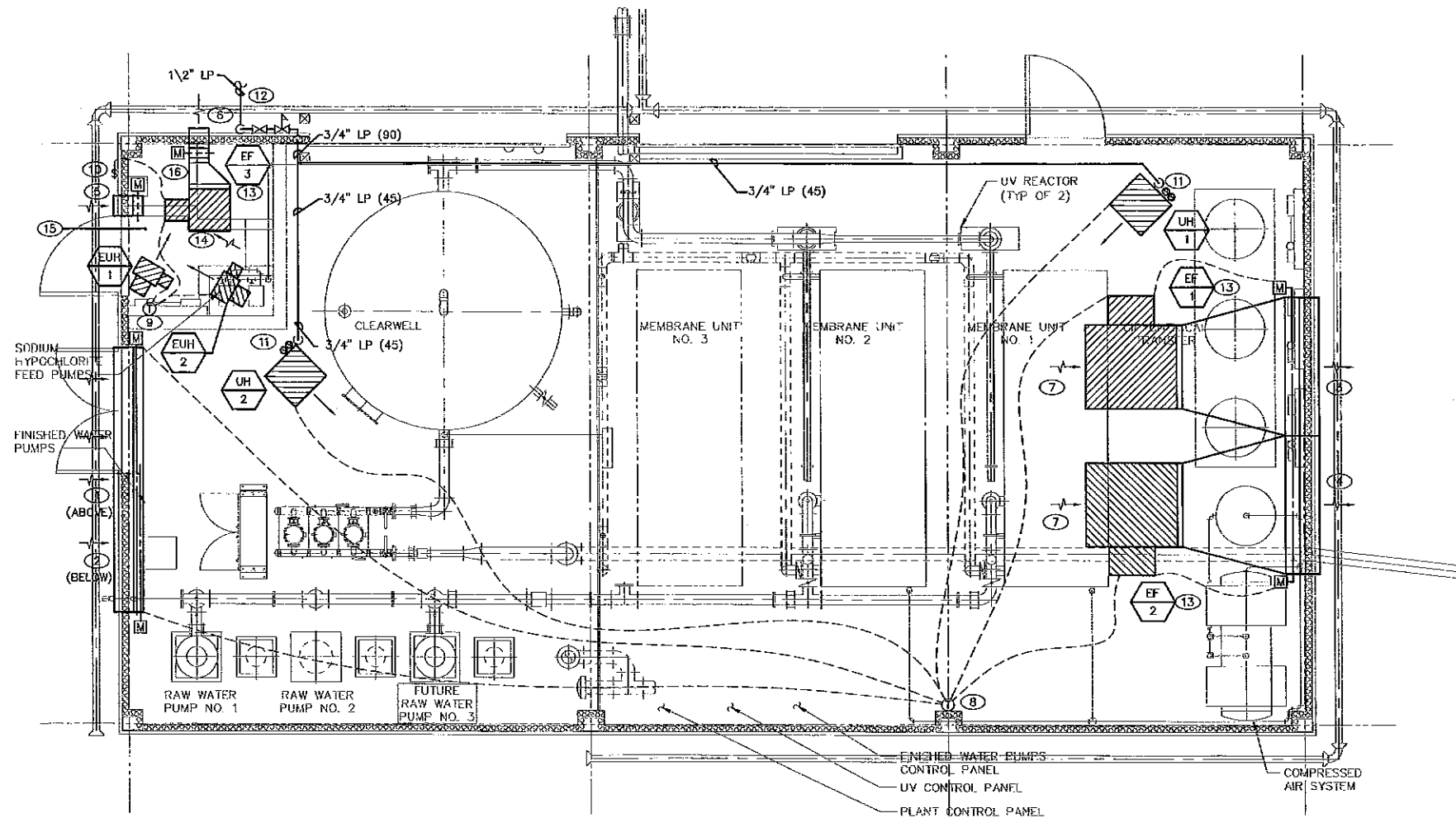
COLORADO CITY METROPOLITAN DISTRICT  
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 COLD SPRING WTP  
 IMPROVEMENTS

HVAC AND PLUMBING  
 DRAWING INDEX, LEGENDS,  
 SCHEDULES AND NOTES  
 SCALE: AS SHOWN

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 MALCOLM PIRNIE, INC.  
 DATE: AUGUST 2009  
 H/P SHEET 1 OF 2  
 CAD REF. NO. HP-1.DWG

WORK NOTES (THIS SHEET ONLY)

- ① 162x30 INTAKE LOUVER WITH BIRDSCREEN AND MOTORIZED DAMPER (INTERLOCKED WITH EF-1 OPERATION). REFERENCE ARCHITECTURAL DRAWINGS FOR EXACT LOCATION OF LOUVER.
- ② 84x48 INTAKE LOUVER WITH BIRDSCREEN AND MOTORIZED DAMPER (INTERLOCKED WITH EF-2 OPERATION). REFERENCE ARCHITECTURAL DRAWINGS FOR EXACT LOCATION OF LOUVER.
- ③ 84x48 EXHAUST LOUVER WITH BIRDSCREEN AND MOTORIZED DAMPER (INTERLOCKED WITH EF-1 OPERATION). REFERENCE ARCHITECTURAL DRAWINGS FOR EXACT LOCATION OF LOUVER.
- ④ 84x48 EXHAUST LOUVER WITH BIRDSCREEN AND MOTORIZED DAMPER (INTERLOCKED WITH EF-2 OPERATION). REFERENCE ARCHITECTURAL DRAWINGS FOR EXACT LOCATION OF LOUVER.
- ⑤ 12x18 316 S.S. INTAKE LOUVER WITH 316 S.S. BIRDSCREEN AND 316 S.S. MOTORIZED DAMPER (INTERLOCKED WITH EF-3 OPERATION). REFERENCE ARCHITECTURAL DRAWINGS FOR EXACT LOCATION OF LOUVER.
- ⑥ 12x18 316 S.S. EXHAUST LOUVER WITH 316 S.S. BIRDSCREEN AND 316 S.S. MOTORIZED DAMPER (INTERLOCKED WITH EF-3 OPERATION). REFERENCE ARCHITECTURAL DRAWINGS FOR EXACT LOCATION OF LOUVER.
- ⑦ PROVIDE WIRE MESH SCREEN OVER INTAKE OF EXHAUST FAN.
- ⑧ REFERENCE CONTROLS NOTES/PUMP ROOM CONTROL ON SHEET H/P-1 FOR THERMOSTAT CONTROL REQUIREMENTS.
- ⑨ REFERENCE CONTROLS NOTES/SODIUM HYPOCHLORITE ROOM CONTROL ON SHEET H/P-1 FOR THERMOSTAT CONTROL REQUIREMENTS.
- ⑩ PROVIDE WALL SWITCH WITH TIMER AND LOCKABLE DEVICE ON EXTERIOR WALL IN THIS LOCATION TO MANUALLY TURN ON EXHAUST FAN (EF-3) FOR ODOR CONTROL PURPOSES.
- ⑪ 4" VENT AND 4" COMBUSTION AIR DUCT UP THRU ROOF. TERMINATE PER ALL MANUFACTURER'S RECOMMENDATIONS AND WITH APPROVED CONCENTRIC VENT KIT.
- ⑫ 1/2" LP GAS LINE FROM PROPANE TANK ON SITE. REFERENCE SHEET C1 FOR CONTINUATION. REGULATOR AT THE EXISTING TANK IS A TWIN STAGE REGULATOR. SET REGULATOR TO 3.0 PSI. IF EXISTING REGULATOR CANNOT PROVIDE 3.0 PSI. PROVIDE A NEW HIGH STAGE REGULATOR AT THE TANK TO PROVIDE 3.0 PSI. PROVIDE A LOW PRESSURE REGULATOR AT THE BUILDING TO PROVIDE 14" W.C. PRIOR TO ENTERING THE BUILDING.
- ⑬ TRANSITION AS REQUIRED FROM FAN OUTLET TO LOUVER. PROVIDE FLEXIBLE CONNECTIONS.
- ⑭ PROVIDE 316 S.S. WIREMESH OVER INTAKE OF EXHAUST FAN.
- ⑮ ALL HVAC/PLUMBING SUPPORTS AND MISCELLANEOUS MATERIALS WITHIN SODIUM HYPOCHLORITE ROOM SHALL BE A MINIMUM OF 316 S.S.
- ⑯ TRANSITION AS REQUIRED, USING 316 S.S. DUCTWORK. PROVIDE FLEXIBLE CONNECTIONS.



PLAN - HVAC AND PLUMBING

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



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AUG 1, 4 2009

REVISIONS			
NO.	BY	DATE	REMARKS

DES: KAH  
 DWN: KAH  
 CKD: GRM



COLORADO CITY METROPOLITAN DISTRICT  
 COLORADO CITY, COLORADO  
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 IMPROVEMENTS

HVAC AND PLUMBING  
 PLAN - HVAC AND  
 PLAN AND SECTIONS  
 SCALE: AS SHOWN

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 H/P SHEET 2 OF 2  
 CAD REF. NO. HP-2.DWG

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