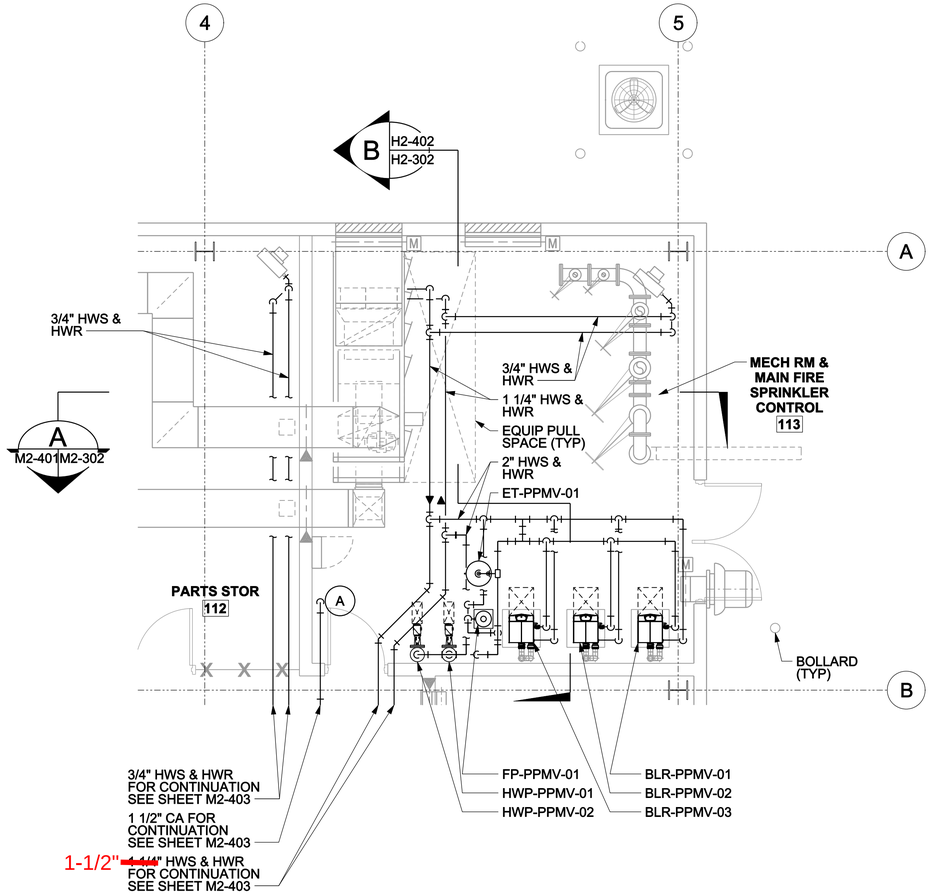
NOTES:

1. ALL DRAWINGS SHALL BE USED IN CONCERT TO UNDERSTAND ALL COMPONENTS THAT ARE NOT VISIBLE OR SHOWN, NOT JUST ON PLAN SHEETS BUT THE SET AS A WHOLE.
2. ALL UNIT HEATER PIPING AND VALVES 3/4" UNLESS NOTED OTHERWISE.
3. PROVIDE CHAIN WHEEL OPERATORS FOR ALL MANUAL VALVES INSTALLED OVER 6 FEET ABOVE FINISHED FLOOR.
4. ALL HEATING WATER PIPING AND FITTINGS SHALL BE SOLDERE TYPE - L COPPER.



1 PIPING MAIN LEVEL ENLARGED PLAN

M2-101M2-401 SCALE: 1/4" = 1'-0"

US Army Corps of Engineers
Baltimore District

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ISSUED FOR CONSTRUCTION
ACTIVITY MANAGER:
DATE: 10-25-2011

Mark	Description	Date	Appr.

Designed by: RDT		Date: OCT 25, 2011	Rev. 0
Dwn by: BDB	Ckd by: JAB	Project No. 23051	
RSFO Project Manager Andrea de la Peña		Drawing Number: F-141-82-100	
Submitted by: John R. Hassed Project Manager		File name: 1023051-M2-401.dgn Plot date: 10/21/2011 Plot scale: 16	

MOUNTAINVIEW
Buckley AFB, Denver, CO
POWER PLANT
PIPING MAIN LEVEL ENLARGED PLAN
SHEET 1

Drawing No. 59935
Sheet Reference No. M2-401
Sheet 134 of 329

1/4"=1'-0" 0 1' 2' 4' 8' 12'

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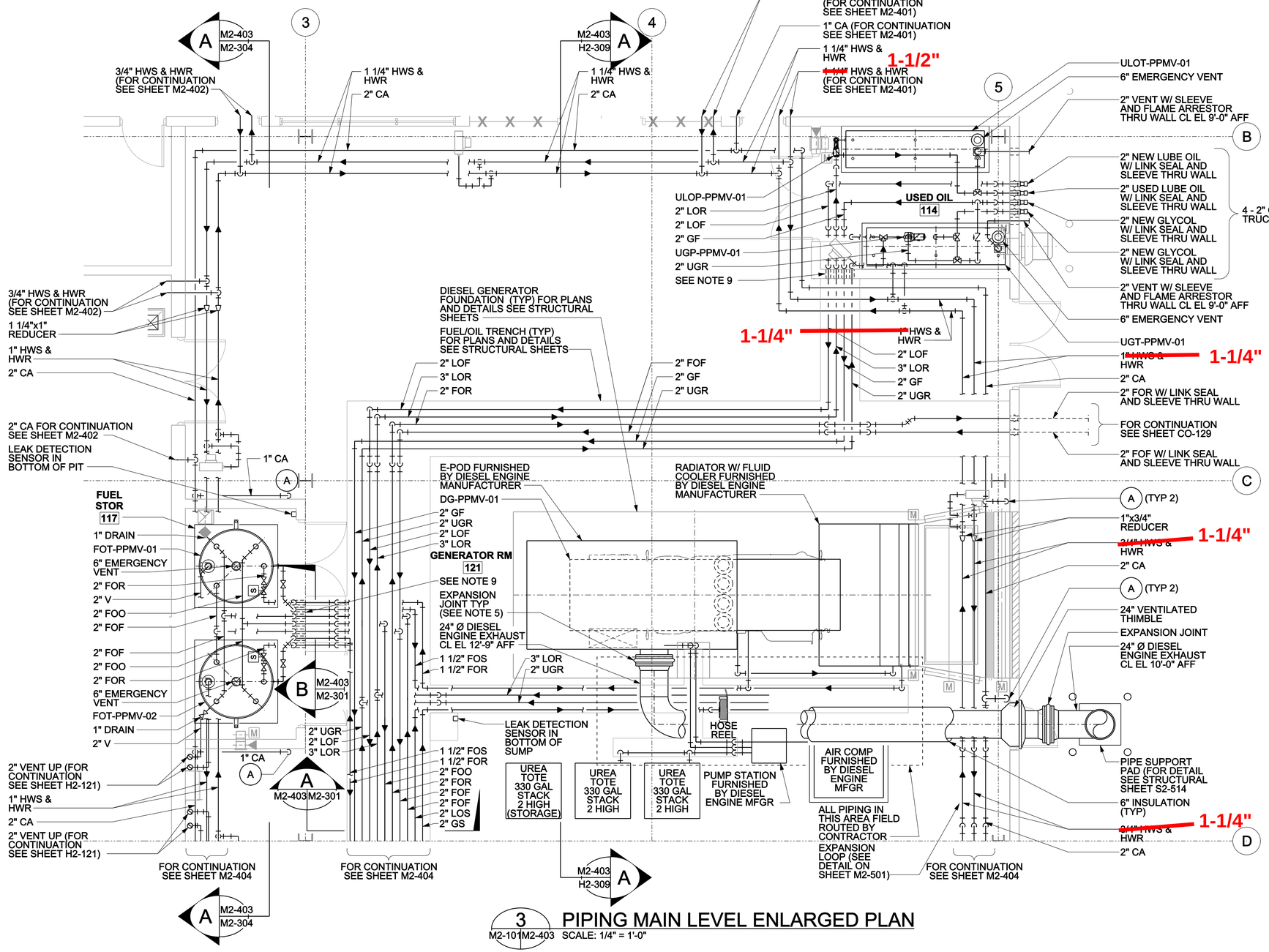
3. PROVIDE FLEX CONNECTIONS IN PIPING AT ALL EQUIPMENT CONNECTIONS.
4. PROVIDE CHAIN WHEEL OPERATORS FOR ALL MANUAL VALVES INSTALLED OVER 6 FEET ABOVE FINISHED FLOOR.
5. EXPANSION JOINTS WITH 150 LB. FLANGES MAXIMUM PRESSURE 0.5 PSIG AT 1000°F EXPANSION JOINT AT EPOD MAX AXIAL MOVEMENT ONE INCH, MAX TRANSVERSE MOVEMENT ZERO INCH, EXPANSION JOINT AT VERTICAL RISE MAX AXIAL MOVEMENT THREE INCHES MAX. TRANSVERSE MOVEMENT ZERO INCHES.
6. PROVIDE VISUAL LEVEL GAUGE ON FOT-PPMV-01, FOT-PPMV-02, AND ULOT-PPMV-01.
7. ALL HEATING WATER PIPING AND FITTINGS SHALL BE SOLDERED TYPE - L COPPER.
8. SUMP LEAK SENSOR BASIS OF DESIGN MICROSENSOR TLS-350R OR APPROVED EQUAL.
9. SLEEVE AND SEAL PIPES IN TRENCH PENETRATING WALL WITH 3 HR FIRE RATED SEALANT



3 PIPING MAIN LEVEL ENLARGED PLAN

M2-101 M2-403 SCALE: 1/4" = 1'-0"

1/4"=1'-0" 0 1' 2' 4' 8' 12'

US Army Corps of Engineers
Baltimore District

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RSFO Project Manager Andrea de la Peña		Drawing Number: F-141-82-100	
Submitted by: John R. Hassed Project Manager		File name: 1023051-M2-403.dgn Plot date: 10/21/2011 Plot scale: 16	

MOUNTAINVIEW
Buckley AFB, Denver, CO

POWER PLANT
PIPING MAIN LEVEL ENLARGED PLAN
SHEET 3

Drawing No.
59937

Sheet Reference No.
M2-403
Sheet 136 of 329

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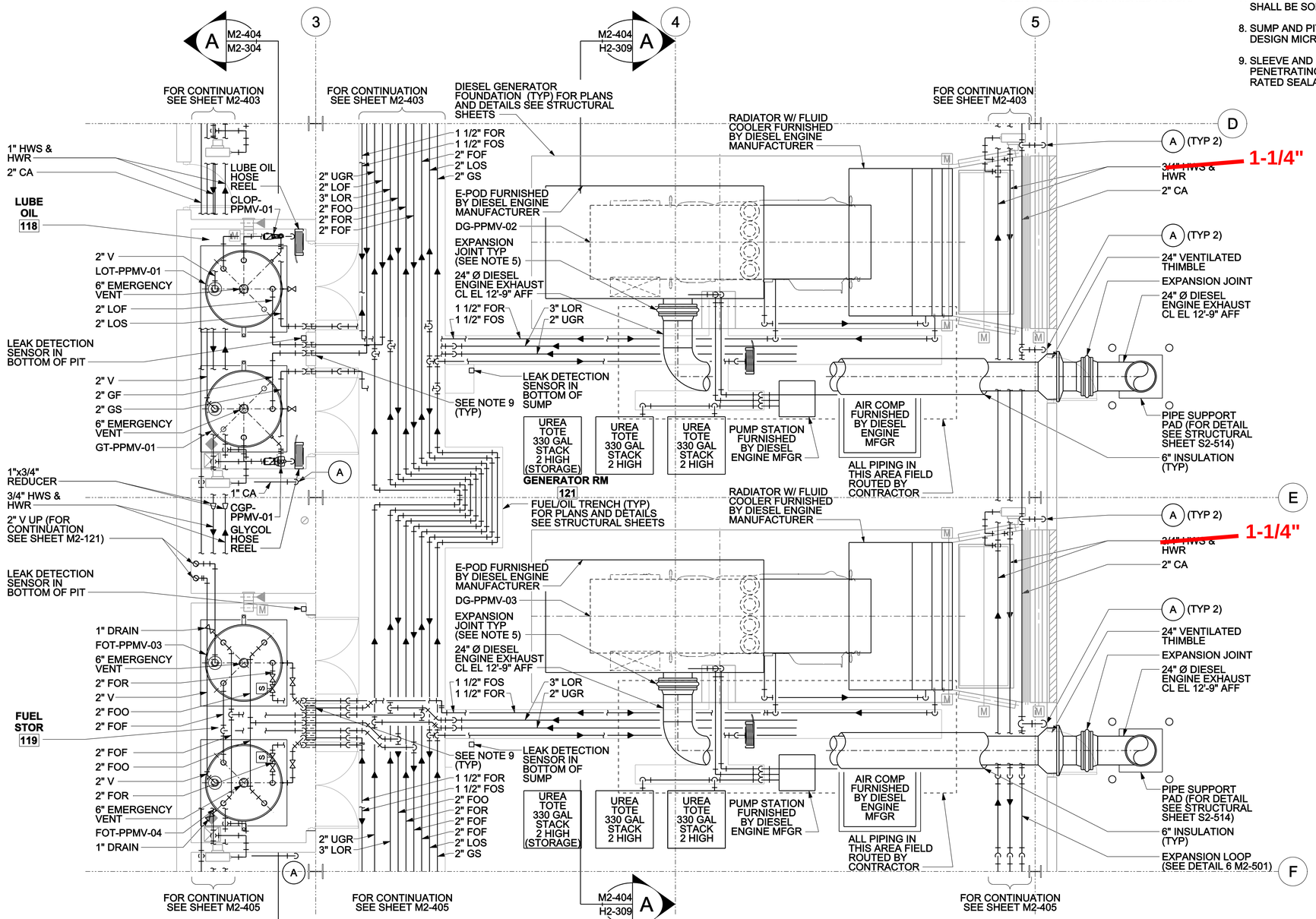
9. SLEEVE AND SEAL PIPES IN TRENCH PENETRATING WALL WITH 3 HR FIRE RATED SEALANT



4 PIPING MAIN LEVEL ENLARGED PLAN

M2-102 M2-404 SCALE: 1/4" = 1'-0"

1/4"=1'-0" 0 1' 2' 4' 8' 12'

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RSFO Project Manager Andrea de la Peña	Project No. 23051
Submitted by: John R. Hassed Project Manager	Drawing Number: F-141-62-100
	File name: 1023051-M2-404.dgn
	Plot date: 10/21/2011
	Plot scale: 16
	Rev. 0

MOUNTAINVIEW
Buckley AFB, Denver, CO

POWER PLANT
PIPING MAIN LEVEL ENLARGED PLAN
SHEET 4

Drawing No. 59938

Sheet Reference No. M2-404
Sheet 137 of 329

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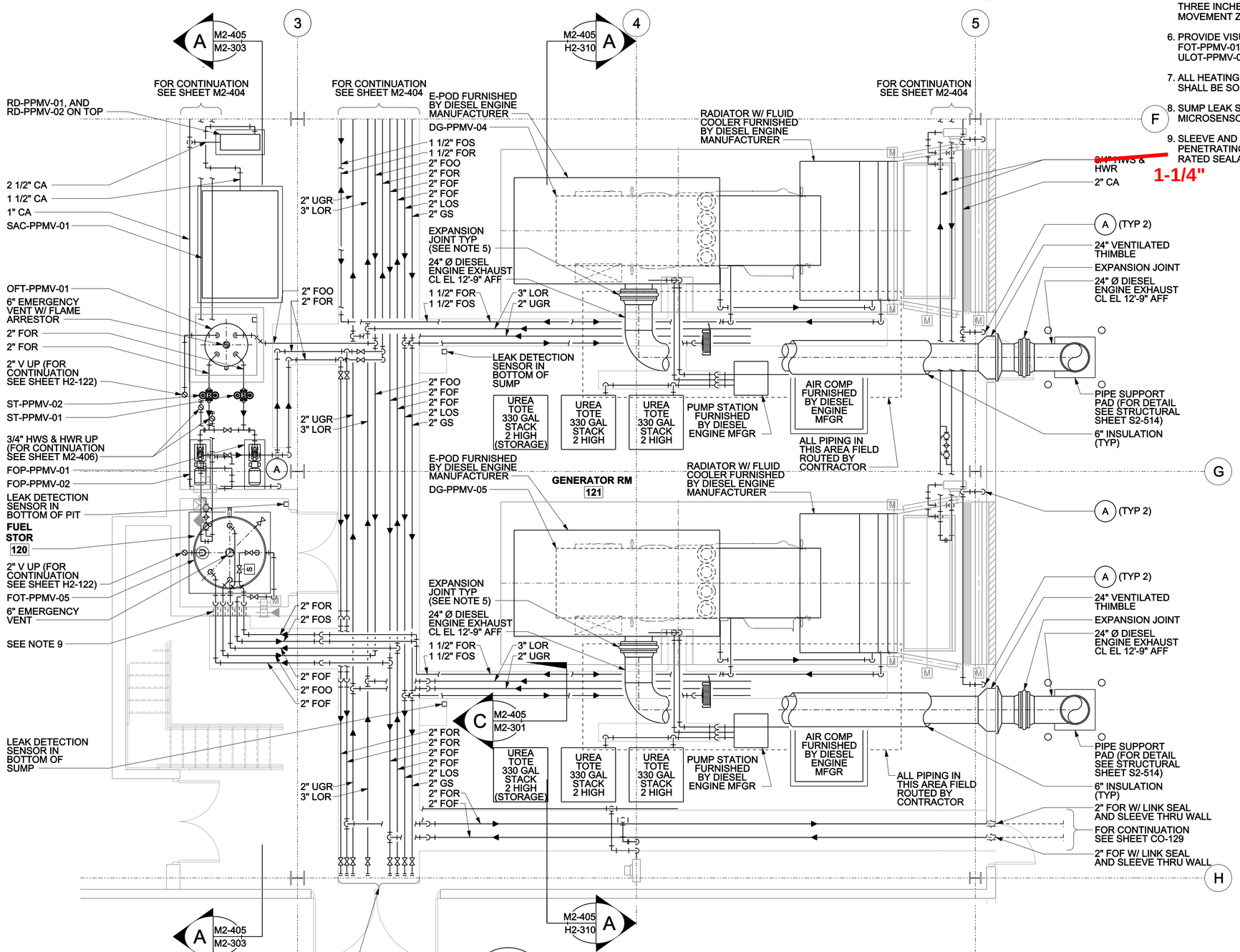

5 PIPING MAIN LEVEL ENLARGED PLAN
M2-102 M2-405 SCALE: 1/4" = 1'-0"

1/4"=1'-0" 0 1' 2' 4' 8' 12'

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RSFO Project Manager: Andrea de la Peña	Project No. 23051
Submitted by: John R. Hassed Project Manager	Drawing Number: F-141-92-100
	File name: 1023051-M2-405.dgn
	Plot date: 10/21/2011
	Plot scale: 16
	Rev. 0

MOUNTAINVIEW
Buckley AFB, Denver, CO

POWER PLANT
PIPING MAIN LEVEL ENLARGED PLAN
SHEET 5

Drawing No. 59939

Sheet Reference No. M2-405

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45 GPM @ 40 FT Head for both HWPs

PUMP SCHEDULE

TAG	DESCRIPTION	LOCATION	PUMP DATA: TYPE	PUMP DATA: FLOW (GPM)	PUMP DATA: HEAD (FT)	MOTOR DATA: HP	MOTOR DATA: VOLT	MOTOR DATA: PHASE	NOTES
HWP-PPMV-01	HEATING WATER PUMP	113	CENTRIFUGAL	35	22	1	460	3	1-5,9
HWP-PPMV-02	HEATING WATER PUMP	113	CENTRIFUGAL	35	22	1	460	3	1-5,9
FOP-PPMV-01	FUEL OIL PUMP	FUEL FARM	POSITIVE DISPLACEMENT	40	50	5	460	3	2-6
FOP-PPMV-02	FUEL OIL PUMP	FUEL FARM	POSITIVE DISPLACEMENT	40	50	5	460	3	2-6
FOP-PPMV-03	FUEL OIL PUMP	121	POSITIVE DISPLACEMENT	40	50	5	460	3	2-6
FOP-PPMV-04	FUEL OIL PUMP	121	POSITIVE DISPLACEMENT	40	50	5	460	3	2-6
SP-PPMV-01	SUMP PUMP	FUEL FARM	SUBMERSIBLE	5	10	1/2	460	3	1-5,7
SP-PPMV-02	SUMP PUMP	FUEL FARM	SUBMERSIBLE	5	10	1/2	460	3	1-5,7
SP-PPMV-03	SUMP PUMP	FUEL FARM	SUBMERSIBLE	5	10	1/2	460	3	1-5,7
SP-PPMV-04	SUMP PUMP	FUEL FARM	SUBMERSIBLE	5	10	1/2	460	3	1-5,7
CLOP-PPMV-01	CLEAN LUBE OIL PUMP	121	POSITIVE DISPLACEMENT	8	350	1	115	1	3,5,10,11
ULOP-PPMV-01	USED LUBE OIL PUMP	121	POSITIVE DISPLACEMENT	8	350	1	115	1	3,5,10,11
CGP-PPMV-01	CLEAN GLYCOL PUMP	114	CENTRIFUGAL	20	70	1	115	1	2,3,12,13
UGP-PPMV-01	USED GLYCOL PUMP	114	CENTRIFUGAL	20	70	1	115	1	2,3,12,13

NOTES:
1. PUMP CAPACITY BASED ON 100% WATER.
2. PUMP SHALL NOT EXCEED 1800 RPM.
3. MOTOR SHALL HAVE THE REQUIRED CAPACITY TO PREVENT OVERLOADING AT ANY POINT ON THE PUMP'S CHARACTERISTIC CURVE.
4. BASIS OF DESIGN IS IMO.
5. PUMP AND ELECTRIC MOTOR SHALL MEET THE RATED CAPACITIES AT AN ELEVATION OF 5660 FEET.
6. BASIS OF DESIGN IS BENECOR NO C12 HP, SKID MOUNTED DULPEX UNIT, NEMA 4 OR EQUIVALENT.
7. BASIS OF DESIGN IS STANCOR, WITH UTILITY OIL-MINDER CONTROL SYSTEM, DUPLEX NEMA 4 PUMP CONTROL, OR EQUIVALENT
8. ALL ELECTRIC MOTORS OVER 1 HP SHALL BE NEMA PREMIUM EFFICIENCY RATED
9. PROVIDE VFD WITH UNIT
10. PUMP CAPACITY BASED ON 100% LUBE OIL.
11. BASIS OF DESIGN IS GRACO OIL TRANSFER PUMP MODEL NUMBER 260109
12. BASIS OF DESIGN IS GOULD J10S SHALLOW WELL PUMP
13. PUMP CAPACITY BASED UPON 50% WATER AND 50% GLYCOL MIXTURE

STORAGE TANK SCHEDULE

TAG	FUNCTION	CAPACITY (GAL)	NOMINAL DIMENSIONS: DIAMETER	HEIGHT	WIDTH	LENGTH	DESIGN PRESS.	SHELL MATERIAL	NOTES
FOT-PPMV-01	FUEL OIL DAY TANK	1,000	5'-4"	6'	N/A	N/A	ATMOSPHERIC	STEEL	1,3,4,9,10
FOT-PPMV-02	FUEL OIL DAY TANK	1,000	5'-4"	6'	N/A	N/A	ATMOSPHERIC	STEEL	1,3,4,9,10
FOT-PPMV-03	FUEL OIL DAY TANK	1,000	5'-4"	6'	N/A	N/A	ATMOSPHERIC	STEEL	1,3,4,9,10
FOT-PPMV-04	FUEL OIL DAY TANK	1,000	5'-4"	6'	N/A	N/A	ATMOSPHERIC	STEEL	1,3,4,9,10
FOT-PPMV-05	FUEL OIL DAY TANK	1,000	5'-4"	6'	N/A	N/A	ATMOSPHERIC	STEEL	1,3,4,9,10
FOT-PPMV-06	FUEL OIL STORAGE	20,000	10'	N/A	N/A	34'	ATMOSPHERIC	STEEL	1,2,5-8,10
FOT-PPMV-07	FUEL OIL STORAGE	20,000	10'	N/A	N/A	34'	ATMOSPHERIC	STEEL	1,2,5-8,10
ULOT-PPMV-01	USED OIL TANK	1,000	N/A	60"	32"	120"	ATMOSPHERIC	STEEL	1,3,9,10,11
LOT-PPMV-01	LUBE OIL TANK	1,000	5'-4"	6'	N/A	N/A	ATMOSPHERIC	STEEL	1,3,4,9,10
UGT-PPMV-01	USED GLYCOL TANK	1,000	N/A	60"	32"	120"	ATMOSPHERIC	STEEL	1,3,9,10,11
GT-PPMV-01	GLYCOL TANK	1,000	5'-4"	6'	N/A	N/A	ATMOSPHERIC	STEEL	1,3,4,9,10
OFT-PPMV-01	OVERFLOW TANK	240	38"	N/A	N/A	4'-1"	ATMOSPHERIC	STEEL	1,3,4,9,10

NOTES:
1. BASIS OF DESIGN HIGHLAND TANKS OR EQUIVALENT
2. 110% CONTAINMENT DIKE IS 41FT LONG, THE TANKS ARE SET INTO AND CENTERED IN THE DIKE.
3. DOUBLE WALL TANK, DIMENSIONS ARE THE INNER TANK DIMENSIONS.
4. VERTICAL TANK.
5. HORIZONTAL TANK.
6. INCLUDE TWO TANK HEATERS FOR EACH TANK, BASIS OF DESIGN PART # OCH 5-5.0-1000-483 5KW, 480V, 3 PHASE FOR 3 INCH PIPE, OR EQUIVALENT.
7. PROVIDE TWO MODEL OCH3-TE TERMINAL ENCLOSURES, OR APPROVED EQUAL.
8. PROVIDE ONE MODEL CC04-124-483 HEATER CONTROL CENTER, 480V/3 PHASE, NEMA 4, OR APPROVED EQUAL.
9. SEE DRAWINGS FOR TANK CONNECTIONS AND APPURTENANCES.
10. PROVIDE VISUAL LEVEL GAUGE ON ALL TANKS.
11. RECTANGULAR HORIZONTAL TANK

STRAINER SCHEDULE

TAG	LOCATION	TYPE	SIZE (IN)	CONNECTION TYPE	BODY MATRIAL	STRAINER MATERIAL	MESH	FLUID	FLOW RATE (GPM)	PRESSURE DROP (PSI)	NOTES
ST-PPMV-01	TANK FARM	DUPLEX BASKET	3	FLANGED	CAST IRON	SS PERFORATED BASKET	HO (BASKET SUPPORTS)	DIESEL	50	1	1
ST-PPMV-02	TANK FARM	DUPLEX BASKET	3	FLANGED	CAST IRON	SS PERFORATED BASKET	HO (BASKET SUPPORTS)	DIESEL	50	1	1
ST-PPMV-03	TANK FARM	DUPLEX BASKET	3	FLANGED	CAST IRON	SS PERFORATED BASKET	HO (BASKET SUPPORTS)	DIESEL	50	1	1
ST-PPMV-04	TANK FARM	DUPLEX BASKET	3	FLANGED	CAST IRON	SS PERFORATED BASKET	HO (BASKET SUPPORTS)	DIESEL	50	1	1

NOTES:
1. A MESH SIZE OF 40 IS REQUIRED FOR THE STRAINERS

EXPANSION TANK SCHEDULE

TAG	FUNCTION	LOCATION	NET STORAGE CAPACITY (GAL)	NOMINAL DIMENSIONS: DIAMETER (IN)	HEIGHT (IN)	OPERATION PRESS. (PSIG)	DESIGN PRESS. (PSIG)	SHELL MATERIAL	DIAPHRAGM	NOTES
ET-PPMV-01	HW ET	113	5	17	20	100 (max)/ 40 (min)	125	STEEL	BUTYL/EPDM	1-2

NOTES:
1. BASIS OF DESIGN IS AMTROL ST-30V-C OR EQUIVALENT.
2. ACCEPTANCE VOLUME 5 GALLONS. CHARGE TANK TO 30 PSIG.

DUPLEX AIR COMPRESSOR SCHEDULE

TAG	DESCRIPTION	LOCATION	CAPACITY (SCFM)	CONTINUAL PRESSURE (PSIG)	MAX PRESSURE (PSIG)	RECIEVER TANK SIZE (GAL)	DESIGN TEMP (F)	TYPE	MOTOR DATA: HP	MOTOR DATA: V / PH / HZ	REMARKS
SAC-PPMV-01	AIR COMPRESSOR	121	72	175	175	240	95	RECIP	25	460 / 3 / 60	1-4

NOTES:
1. COMPRESSOR SHALL MEET THE RATED CAPACITIES AT AN ELEVATION OF 5660 FEET.
2. BASIS OF DESIGN INGERSALL RAND MODEL 2-2000A250 SPLASH LUBE TYPE 30 RECIPROCATING AIR COMPRESSOR WITH AFTERCOOLER OR EQUIVALENT.
3. INCLUDE INSTALLATION KIT FOR MODEL 2000. INCLUDE 460V DELUX ALTERNATOR AND START-UP KIT, NEMA 1.
4. INCLUDE INGERSOLL F144 1G GENERAL PURPOSE 85 SCFM COALESCING FILTER, OR EQUIVALENT, WITH ELECTRONIC DRAIN VALVES AND MOUNTING KIT, GAUGE, AND REGULATOR.
5. ALL ELECTRIC MOTORS OVER 1 HP SHALL BE NEMA PREMIUM EFFICIENCY RATED

MODULAR CONDENSING BOILER SCHEDULE

TAG	LOCATION	BOILER: INPUT CAPACITY (MBH)	OUTPUT CAPACITY (MBH)	FUEL	FLOW (GPM)	PRESSURE DROP (FT WG)	ENTERING FLUID TEMP (F)	LEAVING FLUID TEMP (F)	MINIMUM BOILER EFFICIENCY	ELECTRICAL DATA: VOLT	PHASE	HERTZ	NOTES
BLR-PPMV-01	113	130,000	123,500	NATURAL GAS	13.7	30	120	140	95%	120	1	60	1,2
BLR-PPMV-02	113	130,000	123,500	NATURAL GAS	13.7	30	120	140	95%	120	1	60	1,2
BLR-PPMV-03	113	130,000	123,500	NATURAL GAS	13.7	30	120	140	95%	120	1	60	1,2

NOTES:
1. SITE ELEVATION IS 5660 FEET ASL.
2. BASIS OF DESIGN IS KNIGHT BOILER MODEL KBN151 OR EQUIVALENT.

CYCLING REFRIGERANT DRYER SCHEDULE

TAG	DESCRIPTION	CAPACITY (SCFM)	DEWPOINT (F)	MAX PRESSURE (PSIG)	ELECTRICAL CONNECTION V / PH / HZ	REMARKS
RD-PPMV-01	REFRIGERANT DRYER	125	38	230	120 / 1 / 60	1-3
RD-PPMV-02	REFRIGERANT DRYER	125	38	230	120 / 1 / 60	1-3

NOTES:
1. BASIS OF DESIGN IS INGERSOL RAND D127NC NIRVANA CYCLING REFRIGERANT DRYER, HEAT EXCHANGER TYPE 314L STAINLESS STEEL OR EQUIVALENT. THE TWO DRYERS SHALL BE STACKED, PROVIDE STEEL FRAME TO STRADDLE LOWER DRYER AND SUPPORT UPPER DRYER.
2. NEMA 1.
3. CAPACITY BASED UPON 100 PSIG INLET AIR, 100F AMBIENT, 5660FT ELEVATION.

COIL SCHEDULE

TAG	ROOM SERVED	LOCATION	MINUMUM COIL CAPACITY (BTUH)	HOT WATER: DESIGN GPM	HOT WATER: PRESSURE DROP (FT. OF H2O)	NOTES
HWC-PPMV-01	122	124	10,000	1	0.8	1,2
HWC-PPMV-02	122	124	10,000	1	0.8	1,2

NOTES:
1. SINGLE ROW HOT WATER COIL
2. BASIS OF DESIGN COIL COMPANY SINGLE ROW HOT WATER

FUEL POLISHING SYSTEM SCHEDULE

TAG	DESCRIPTION	FLOWRATE (GPM)	COALESCER (MICRON)	SEPERATOR (MICRON)	REMARKS
FPS-PPMV-01	FUEL POLISHING SYSTEM	90	5	5	1-5
FPS-PPMV-02	FUEL POLISHING SYSTEM	90	5	5	1-5

NOTES:
1. BASIS OF DESIGN RCI TECHNOLOGIES MODEL FP1500, OR EQUIVALENT.
2. POLISHING STATION SHALL CONTAIN A FUEL FILTER AND WATER SEPERATOR AND INSTALLATION KIT
3. PROVIDE AUTOMATIC AIR ELIMINATOR, PRESSURE RELIEF VALVE, WATER LEVER SIGHT GLASS, WALL MOUNT BRACKERS, AND INLET CHECK VALVE.
4. PROVIDE WITH INSTALLATION KIT AND DIFFERENTIAL PRESSURE SWITCH.
5. PROVIDE AUTOMATIC SWITCH-OVER CONTROL VALVES AND DIFFERENTIAL PRESSURE SWITCH.

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Mark	Description	Date	Appr.

Designed by: RDT
Dwn by: BDB
Ckd by: JAB
RSFO Project Manager: Andrea de la Peña
Submitted by: John R. Hassed, Project Manager
Date: OCT 25, 2011
Rev. 0
Project No. 23051
Drawing Number: F-141-62-100
File name: 1023051-M2-601.dgn
Plot date: Plot date
Plot scale: 0:1

MOUNTAINVIEW
Buckley AFB, Denver, CO

POWER PLANT
PIPING SCHEDULES

Drawing No. 59943

Sheet Reference No. M2-601

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