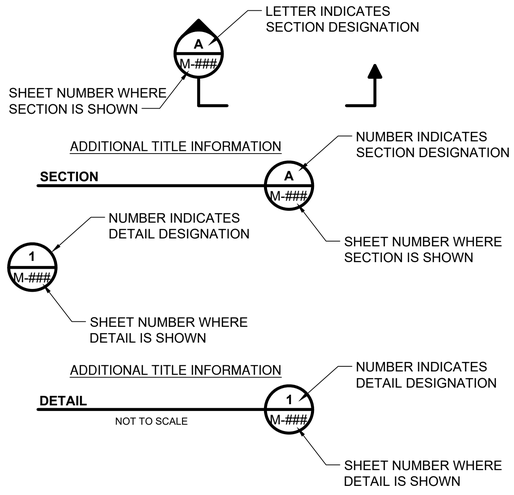
MECHANICAL SYMBOLS, PIPING, VALVES, & EQUIPMENT

- AUTOMATIC RECIRC. VALVE
- AUTOMATIC AIR VENT
- BALL VALVE (P&ID)
- BALL JOINT
- BASKET STRAINER
- BLIND FLANGE
- BUTTERFLY VALVE
- CENTRIFUGAL PUMP
- CHECK VALVE
- CLAY TREATER
- CONTROL VALVE
- ECCENTRIC REDUCER
- EMERGENCY VENT
- FILTER/SEPARATOR
- FILTER/SEPARATOR
- FLANGE
- FLOW ARROW
- FIELD MOUNTED INSTRUMENT
- FUEL SAMPLE CONNECTION
- INSTRUMENT VALVE
- ISO B COUPLING W/ DUST CAP
- ISOLATION FLANGE KIT
- MOTOR
- MOTOR ACTUATOR
- ORIFICE PLATE AND FLANGES
- PIPE TURN DOWN
- PLUG VALVE (DOUBLE BLOCK & BLEED)
- POSITIVE DISPLACEMENT METER
- POSITIVE DISPLACEMENT PUMP
- PREFILTER
- PRESSURE INDICATOR
- PRESSURE VACUUM VENT
- QUICK DISCONNECT COUPLING ADAPTER WITH DUST CAP
- REDUCER
- SIGHT FLOW INDICATOR
- SPR, 2-1/2" BAYONET CONNECTION
- SUBMERSIBLE PUMP
- SURGE ARRESTOR
- SUMP SEPARATOR
- THERMAL RELIEF VALVE
- THERMAL RELIEF VALVE (BALANCED TYPE)
- THREADED CAP
- THREADED PLUG
- ULTRASONIC FLOW METER
- UNION
- VERTICAL INLINE PUMP

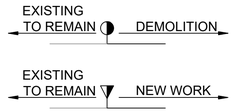
SECTION AND DETAIL IDENTIFICATION



LINE LEGEND (FOR PLAN & FLOW DIAGRAM)

- NEW ABOVEGROUND PIPING
- EXISTING ABOVEGROUND PIPING
- NEW UNDERGROUND PIPING
- EXISTING UNDERGROUND PIPING
- FUTURE PIPING AND EQUIPMENT

CONSTRUCTION INTERFACE



INSTRUMENT IDENTIFICATION KEY

	FIRST LETTER		SUCCEEDING LETTERS		
	MEASURED FOR INITIATING VARIABLE	MODIFIER	REDOUT OF PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
A	ANALYSIS		ALARM		
B	BURNER FLAME				
C	CONDUCTIVITY (ELECTRICAL)			CONTROL	
D	SPECIFIC GRAVITY	DIFFERENTIAL			
E	VOLTAGE (EMF)		PRIMARY ELEMENT		
F	FLOW RATE	RATIO (FRACTION)			
G	GAUGING (DIMENSIONAL)		GLASS		
H	HAND (MANUALLY INITIATED)				HIGH
I	CURRENT (ELECTRICAL)		INDICATE		
J	POWER				
K	TIME			CONTROL	
L	LEVEL		LIGHT (PILOT)	STATION	LOW
M	MOISTURE OR HUMIDITY				MIDDLE OR INTERMEDIATE
N					
O			ORIFICE (RESTRICTION)		
P	PRESSURE OR VACUUM			POINT (TEST CONNECTION)	
Q	QUANTITY OR EVENT	INTEGRATE OR TOTALIZE			
R	RADIOACTIVITY		RECORD OR PRINT		
S	SPEED OR FREQUENCY	SAFETY		SWITCH	
T	TEMPERATURE			TRANSMIT	
U	MULTIVARIABLE		MULTIFUNCTION	MULTIFUNCTION	MULTIFUNCTION
V	VISCOSITY			VALVE, DAMPER OR LOUVER	
W	WEIGHT OR FORCE		WELL		
X	UNCLASSIFIED		UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED
Y	USER'S CHOICE			RELAY OR COMPUTER	
Z	POSITION			DRIVE, ACTUATE, OR UNCLASSIFIED FINAL CONTROL ELEMENT	

* ANY DEVIATIONS TO THE KEY ARE LISTED AS MECHANICAL ABBREVIATIONS.

INSTRUMENT IDENTIFICATION LEGEND

- LOCAL, FIELD MOUNTED INSTRUMENT
- MAIN, CENTRAL PANEL MOUNTED INSTRUMENT
- LOCAL, FIELD MOUNTED DISPLAY
- MAIN, CENTRAL PANEL MOUNTED DISPLAY
- SOFTWARE FUNCTION (NOT ACCESSIBLE TO OPERATOR)
- CONTROL/INTERLOCK SCHEME
- MOTOR
- PROGRAMMABLE LOGIC CONTROL

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date	detailed
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designed	checked
D. WOODWARD	J. BURD

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PDX FACILITY IMPROVEMENTS
MECHANICAL SYMBOLS AND INSTRUMENTATION

project	contract
153929	

drawing **M-001** rev. **A**

file M-001.dwg

REGISTERED PROFESSIONAL ENGINEER 92938PE OREGON NOV. 14, 2017 DOUGLAS LYNN WOODWARD 12/21/2023
EXPIRES: JUNE 30, 2024

Scale For Microfilming: Millimeters / Inches

MECHANICAL GENERAL NOTES:

1. AFTER THE SUBCONTRACTOR HAS REVIEWED AND ACQUAINTED THEMSELVES WITH THE BID DOCUMENTS AND BEFORE SUBMITTING THEIR BID, SUBCONTRACTOR SHALL VISIT AND REVIEW PROJECT SITE AND WORK ("BID WALK"). SUBCONTRACTOR SHALL SUBMIT ANY SCOPE CLARIFICATION, EXCEPTIONS, AND DEVIATIONS IN WRITING WITH THEIR BID. SUBCONTRACTOR'S BID SHALL BE IN REFERENCE TO THE BID DOCUMENTS AND BID WALK.
2. THE DRAWINGS INDICATE VARIOUS PIPING SYSTEMS SCHEMATICALLY AND DO NOT ATTEMPT TO SHOW EXACT DETAILS OF ALL PIPING OR ALL OFFSETS THAT MAY BE REQUIRED. VERIFY ALL DIMENSIONS, ELEVATIONS, AND CONNECTIONS THAT ARE DETERMINED BY EQUIPMENT SELECTIONS AND ADJUST SYSTEMS TO ENSURE THAT EQUIPMENT AND PIPING CAN BE INSTALLED IN THE ALLOTTED SPACE. NO ADDED COMPENSATION SHALL BE PERMITTED FOR VARIATIONS DUE TO EQUIPMENT SELECTIONS.
3. PIPING 2" AND SMALLER IS INDICATED DIAGRAMMATICALLY. ALL REQUIRED FITTINGS AND SUPPORTS ARE NOT INDICATED. ALL 2" AND SMALLER PIPING SHALL BE PROPERLY SUPPORTED FOR STABILITY AND TO PREVENT EXCESSIVE DISTORTION OR SAG (1/8" MAX) AND IN ACCORDANCE WITH ASME B31.3. NOT ALL SMALL BORE FLANGES NECESSARY FOR CONSTRUCTION ARE INDICATED.
4. ALL MAINTENANCE BALL VALVES DOWNSTREAM AND UPSTREAM OF THERMAL RELIEF VALVES SHALL BE LOCKED OPEN WITH PADLOCKS. PROVIDE ALL PADLOCKS KEYED ALIKE AND COORDINATE WITH OPERATORS EXISTING PADLOCK KEYS.
5. ALL BENDS SHALL BE LONG RADIUS UNLESS NOTED OTHERWISE.
6. ALL PIPING SHALL BE CARBON STEEL UNLESS INDICATED OTHERWISE.
7. SEE STRUCTURAL DRAWINGS FOR PIPE SUPPORT DETAILS.
8. SUBCONTRACTOR SHALL PROTECT NEW AND EXISTING EQUIPMENT AND FACILITIES FROM BLASTING GRIT AND PAINT OVER SPRAY DURING COATING OPERATIONS. PROVIDE NECESSARY MASKING, TARPS, SHEETING, AND OTHER COVERINGS TO PREVENT DAMAGE. SPECIAL ATTENTION SHALL BE IMPLEMENTED TO PROTECT EQUIPMENT TAGS.
9. ALL DEMOLISHED EQUIPMENT AND MATERIALS, UNLESS OTHERWISE NOTED, SHALL BECOME THE PROPERTY OF THE SUBCONTRACTOR AND SHALL BE REMOVED FROM THE JOBSITE ON A DAILY BASIS AND PROPERLY RECYCLED OR DISPOSED OF IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL REGULATIONS.
10. ALL DIMENSIONS, ELEVATIONS, AND SITE CONDITIONS SHALL BE FIELD VERIFIED BY SUBCONTRACTOR AND ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE CONTRACTOR FOR CLARIFICATION BEFORE PROCEEDING WITH THE AFFECTED WORK.
11. SUBCONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL OF FUEL FROM THE FUEL SYSTEM PIPING AND TRANSFERRING THE FUEL INTO SUBCONTRACTOR- FURNISHED VACUUM TRUCKS OR TANKER TRUCKS. THE FUEL SYSTEM OPERATOR WILL TEST FUEL REMOVED FROM THE SYSTEM PIPING AND PERMIT THE SUBCONTRACTOR TO RETURN THE FUEL TO THE AIRPORT FUEL STORAGE FACILITY AFTER THE FUEL QUALITY HAS BEEN FOUND TO CONFORM TO ASTM D1655. SUBCONTRACTOR SHALL USE CERTIFIED CLEAN, DETERGENT FREE TANKER TRUCKS AND VACUUM TRUCKS FOR STORING AND TRANSPORTING FUEL REMOVED FROM THE SYSTEM. FUEL SYSTEM OPERATOR WILL ASSIST SUBCONTRACTOR WITH RETURNING ACCEPTABLE FUEL TO THE AIRPORT FUEL STORAGE FACILITY. ANY FUEL CONTAMINATED BY SUBCONTRACTOR'S WORK SHALL BE DISPOSED OF OFF-SITE BY THE SUBCONTRACTOR ALONG WITH REIMBURSEMENT TO THE OWNER FOR THE CONTAMINATED FUEL AS SPECIFIED IN SECTION 33 52 53. SUBCONTRACTOR SHALL BE RESPONSIBLE FOR THE CLEANUP OF FUEL RELEASED DUE TO ITS WORK. SEE SECTION 33 52 53 (INSPECTION, TESTING, AND FLUSHING) FOR ADDITIONAL REQUIREMENTS.
12. SUBCONTRACTOR SHOULD ANTICIPATE THAT EXISTING VALVES MAY LEAK AND SHALL MAKE PROVISIONS FOR CONTROLLING, CONTAINING, AND MANAGING LEAKAGE AS REQUIRED TO COMPLETE TIE-INS, DRAIN DOWNS, ETC.
13. SUBCONTRACTOR'S WORK SHALL COMPLY WITH THE LATEST EDITIONS OF API RP 2009 (SAFE WELDING, CUTTING, AND HOT WORK PRACTICES IN THE PETROLEUM AND PETROCHEMICAL INDUSTRIES) AND API RP 2201 (SAFE HOT TAPPING PRACTICES IN THE PETROLEUM & PETROCHEMICAL INDUSTRIES).
14. FOR PLANS THAT INCLUDE SECTIONS, REFER TO SECTIONS FOR PIPING ELEVATIONS.
15. ALL WORK SHALL BE SUBJECT TO INSPECTION BY AUTHORIZED PERSONNEL OF LOCAL AND GOVERNMENT REGULATORY AGENCIES, CONTRACTOR, AND OWNER.
16. ALL WORK SHALL BE PERFORMED AND EQUIPMENT INSTALLED AND TESTED IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL REGULATIONS.
17. IN CASE OF CONTRADICTIONS OR DISCREPANCIES BETWEEN REQUIREMENTS, SUBCONTRACTOR SHALL PROVIDE WHICHEVER IS MOST STRINGENT UNLESS OTHERWISE APPROVED BY CONTRACTOR. WHERE A QUESTION REMAINS ON WHICH REQUIREMENT IS MOST STRINGENT, SUBCONTRACTOR SHALL NOTIFY CONTRACTOR IN WRITING. THE DECISION OF THE CONTRACTOR SHALL BE CONSIDERED FINAL.
18. EXCEPT WHERE THE CONTRACT DOCUMENTS INCLUDE MORE STRINGENT REQUIREMENTS, APPLICABLE CONSTRUCTION INDUSTRY STANDARDS HAVE THE SAME FORCE AND EFFECT AS IF BOUND OR COPIED DIRECTLY INTO THE CONTRACT DOCUMENTS.
19. THE TERM "APPROVE", WHEN USED IN RESPONSE TO SUBMITTALS, REQUESTS, APPLICATIONS, INQUIRIES, REPORTS AND CLAIMS BY THE SUBCONTRACTOR, WILL BE HELD TO LIMITATIONS OF THE CONTRACTOR'S AND OWNER'S RESPONSIBILITIES AND DUTIES. IN NO CASE WILL "APPROVAL" BY THE CONTRACTOR OR OWNER BE INTERPRETED AS A RELEASE OF THE SUBCONTRACTOR FROM ITS RESPONSIBILITIES TO FULFILL REQUIREMENTS OF CONTRACT DOCUMENTS.
20. SUBCONTRACTOR SHALL MAINTAIN UPDATED RECORD DRAWINGS (AS-CONSTRUCTED DRAWINGS) AT ALL TIMES THROUGH THE DURATION OF THE PROJECT. CONSTRUCTION RECORD DRAWINGS SHALL BE SUBMITTED TO THE CONTRACTOR UPON REQUEST AND AT THE COMPLETION OF SUBCONTRACTOR'S WORK.
21. SUBCONTRACTOR SHALL PROTECT EXISTING FACILITIES AND ITS WORK.
22. UNLESS NOTED OTHERWISE, DETAILS, SECTIONS, AND NOTES SHOWN ON THESE DRAWINGS SHALL BE CONSIDERED TYPICAL FOR ALL SIMILAR CONDITIONS.

MECHANICAL PHASING NOTES:

1. SUBCONTRACTOR SHALL COORDINATE THEIR WORK WITH THE FUEL SYSTEM OPERATOR AND CONTRACTOR. SUBCONTRACTOR SHALL SUBMIT WORK PLANS TO THE FUEL SYSTEM OPERATOR AND CONTRACTOR 14 CALENDAR DAYS BEFORE THE SCHEDULED COMMENCEMENT DATE OF WORK ACTIVITIES THAT AFFECT THE OPERATOR OF THE FUEL STORAGE FACILITY (TIE-INS AND SHUTDOWNS). WORK PLANS SHALL IDENTIFY THE WORK ACTIVITIES TO BE COMPLETED, DURATION, VALVES TO BE CLOSED, SECTION OF PIPING TO BE ISOLATED, START AND COMPLETION TIMES FOR SHUTDOWNS, AND CONTINGENCY PLANS AND EFFORTS TO COMPLETE TIE-INS AND SHUTDOWNS. WORK PLANS SHALL DEFINE THE EXTENT OF IMPACTS TO THE OPERATION OF THE FUEL STORAGE FACILITY TO COMPLETE TIE-INS AND SHUTDOWNS.
2. SUBCONTRACTOR SHALL PHASE ITS CONSTRUCTION ACTIVITIES AS NECESSARY TO MINIMIZE DISRUPTION TO FUEL SYSTEM OPERATIONS.
3. SUBCONTRACTOR SHALL ASSIST THE FUEL SYSTEM OPERATOR IN THE ISOLATION AND LOCK-OUT/TAG-OUT OF FUEL FUEL SYSTEM AS REQUIRED TO COMPLETE TIE-INS AND SHUTDOWNS.
4. THE EXISTING VALVES LOCATED THROUGHOUT THE FACILITY MAY LEAK. SUBCONTRACTOR SHALL MAKE PREVISIONS TO CONTROL, CONTAIN, MANAGE, AND MITIGATE THE LEAKAGE AS REQUIRED TO COMPLETE TIE-INS SHOULD EXISTING VALVES BE FOUND TO LEAK.
5. NEW FUEL PIPING, INCLUDING SPOOL PIECES FOR TIE-INS, SHALL BE PREFABRICATED AND SUCCESSFULLY PRESSURE TESTED PRIOR TO REMOVING EXISTING PIPING FROM SERVICE TO MINIMIZE INTERRUPTION TO SERVICES AND OPERATIONS.
6. FLUSHING, SWABBING, AND HAND CLEANING OF NEW SUCTION PIPING SHALL BE COMPLETED TO THE SATISFACTION OF THE FUEL SYSTEM OPERATOR AND CONTRACTOR PRIOR TO TIE-INS.
7. SUBCONTRACTOR'S WORK SHALL NOT INTERRUPT THE OPERATION OF THE FUEL STORAGE FACILITY WITHOUT PRIOR WRITTEN APPROVAL BY FUEL SYSTEM OPERATOR AND CONTRACTOR. INTERRUPTIONS TO THE FUEL SYSTEM INCLUDE DRAINING AND ISOLATING FUEL PIPING. INTERRUPTIONS SHALL BE LIMITED TO FOUR HOUR DURATIONS BETWEEN THE HOURS OF 0000 AND 0400 UNLESS PRIOR APPROVAL OF AN EXTENDED OUTAGE IS ALLOWED BY THE SYSTEM OPERATOR AND CONTRACTOR.
8. SUBCONTRACTOR SHALL REVIEW THE INCLUDED CONCEPT CONSTRUCTION SCHEDULE AND PROVIDE A DETAILED PHASING CONSTRUCTION WORK PLAN FOR OPERATOR'S AND ENGINEER'S REVIEW AND APPROVAL PRIOR TO CONSTRUCTION.
9. IN ORDER TO MAINTAIN THE FUEL REQUIRED FOR THE FUEL FACILITIES OPERATIONS, THE GENERAL PHASING REQUIRES THE THREE NEW FUEL STORAGE TANKS TO BE FULLY OPERATIONAL, TIED INTO THE EXISTING HYDRANT, FILL AND TRANSFER SYSTEMS, AND COMMISSIONED PRIOR TO DEMOLISHING AND REMOVING THE THREE EXISTING FUEL STORAGE TANKS.

ABBREVIATIONS

Ø	DIAMETER
AAV	AUTOMATIC AIR VENT
AFF	ABOVE FINISH FLOOR
A/G	ABOVE GROUND
ALUM.	ALUMINUM
ARV	AUTOMATIC RECIRCULATION VALVE
ASSY	ASSEMBLY
B	BALANCED TYPE
BBL	BARRELS
BF	BLIND FLANGE
BLDG	BUILDING
BOP	BOTTOM OF PIPE
BV	BALL VALVE
CCW	COUNTER CLOCKWISE
℄	CENTERLINE
CONC	CONCENTRIC
CS	CARBON STEEL
CV	CONTROL VALVE
DBB	DOUBLE BLOCK & BLEED
DIA	DIAMETER
DIM	DIMENSION
DOA	DIVISION OF AVIATION
DP	DIFFERENTIAL PRESSURE
DR	DRAIN
DWG	DRAWING
EX	EXISTING
EA	EACH
ECC	ECCENTRIC
EL	ELEVATION
ESO	EMERGENCY SHUT OFF
EQ	EQUALLY
FBE	FUSION BOND EPOXY
FCV	FLOW CONTROL VALVE
FE	FLOW ELEMENT
FF	FLAT FACED
FFE	FINISHED FLOOR ELEVATION
FLG	FLANGE
FLSW	FLOW SWITCH
FP	FULL PORT (FULL BORE)
FOB	FLAT ON BOTTOM
FOT	FLAT ON TOP
FTHD	FEET OF HEAD
GA	GAUGE
GAL	GALLON
GALV	GALVANIZED
GPM	GALLONS PER MINUTE
HOA	HAND-OFF-AUTO
HP	HORSEPOWER
HPV	HIGH POINT VENT
HS	HAND SWITCH
IF	ISOLATION FLANGE
IN	INCHES
INV	INVERT
JF	JET FUEL
JY	SOLENOID
LC	LOCKED CLOSED
LO	LOCKED OPEN
LPD	LOW POINT DRAIN
LR	LONG RADIUS
MAV	MANUAL AIR VENT
MWTS	MOTOR WINDING TEMPERATURE SWITCH
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
NPT	NOMINAL PIPE THREAD
P	PUMP
PCC	PORTLAND CONCRETE CEMENT
PCV	PRESSURE CONTROL VALVE
PG	PRESSURE GAUGE
PT	PRESSURE TRANSMITTER
RCV	RECIRCULATION CONTROL VALVE
RFS	RECLAIM FILTER SEPARATOR
SA	SURGE ARRESTOR
SCH	SCHEDULE
SFI	SIGHT FLOW INDICATOR
SOF	SLIP-ON FLANGE
SR	SHORT RADIUS
SRC	SPRING RETURN TO CLOSE
SS	STAINLESS STEEL
STD	STANDARD
STL	STEEL
SW	SOCKET WELD
T	TEMPORARY
TBE	THREADED BOTH ENDS
THD	THREADED
THK	THICK
TOC	TOP OF CONCRETE
TOL	THREAD-O-LET
TRV	THERMAL RELIEF VALVE
TYP	TYPICAL
U/G	UNDERGROUND
VA	VALVE
V	VENT OR VOLT
W/	WITH
WNF	WELD NECK FLANGE
WOL	WELD-O-LET
WT	WEIGHT
XS	EXTRA-STRONG
ZI	POSITION INDICATOR
ZS	POSITION SWITCH
ZSC	POSITION SWITCH CLOSED
ZSO	POSITION SWITCH OPEN

REGISTERED PROFESSIONAL ENGINEER 92908PE OREGON NOV. 14, 2017 DOUGLAS LYNN WOODWARD 12/21/2023
EXPIRES: JUNE 30, 2024

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date	detailed
04/07/2023	H. HARMON
designed	checked
D. WOODWARD	J. BURD

PDX FUEL COMPANY L.L.C

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5000 NE MARINE DR.
PORTLAND, OREGON 97218

PDX FACILITY IMPROVEMENTS
MECHANICAL GENERAL NOTES AND ABBREVIATIONS

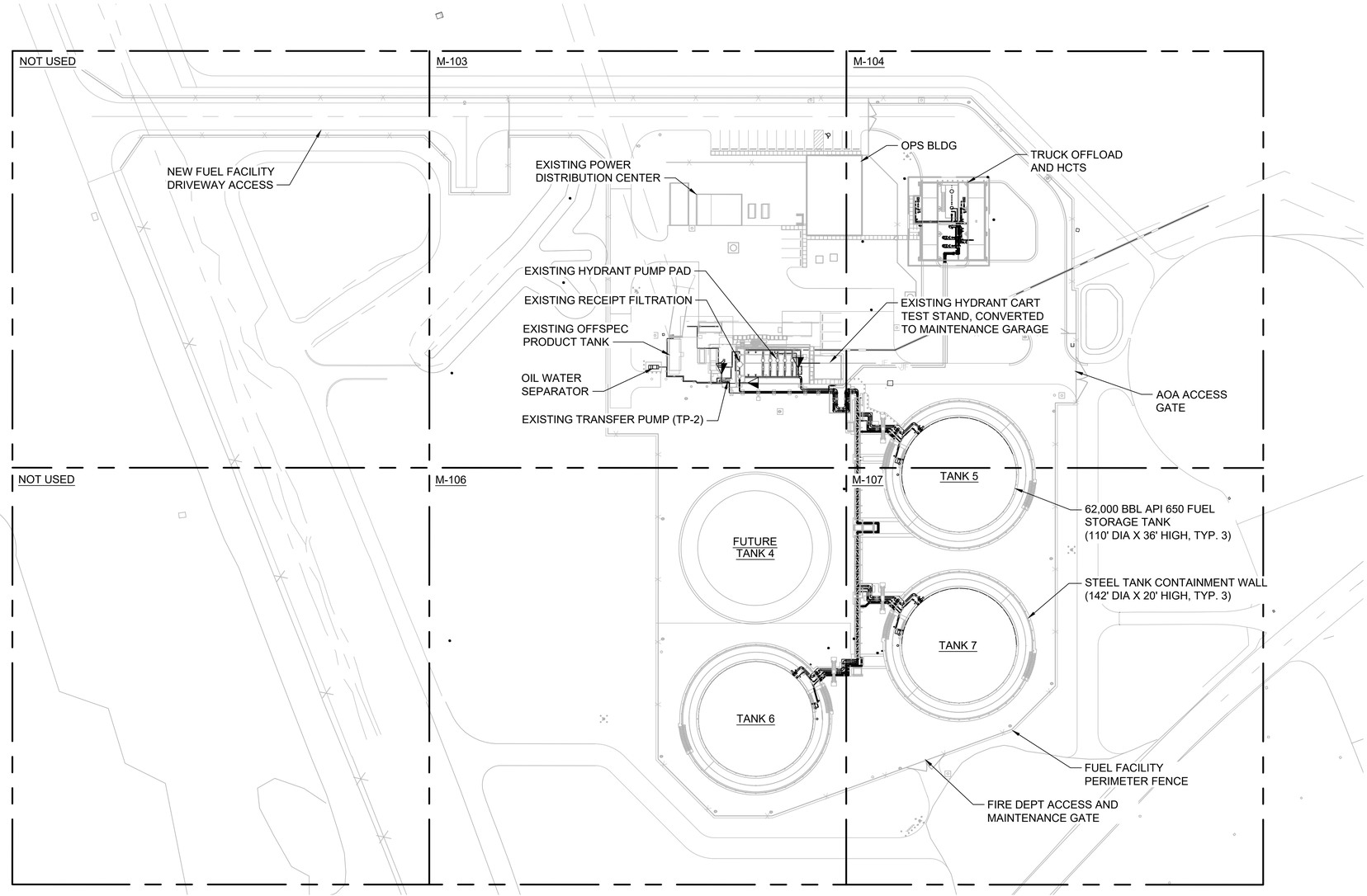
project	contract
153929	
drawing	rev.
M-002	A

file M-002.dwg

Scale For Microfilming: Millimeters / Inches

NOTES:

1. SEE DRAWINGS M-001 AND M-002 FOR ABBREVIATIONS, SYMBOLS, INSTRUMENTATION, AND GENERAL FUELING AND PHASING NOTES.
2. SEE DRAWINGS MD101 AND MD401 FOR MECHANICAL FUELING DEMO PLANS.



MECHANICAL OVERALL SITE PLAN

NORTH

0 60' 120'

SCALE IN FEET

Scale For Microfilming
Millimeters
Inches

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PDX FACILITY IMPROVEMENTS
MECHANICAL OVERALL SITE PLAN

project	contract
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drawing **M-101** rev. **A**

file 153929M-101.DWG

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92908PE
OREGON
NOV. 14, 2017
DOUGLAS LYNN WOODWARD
12/21/2023
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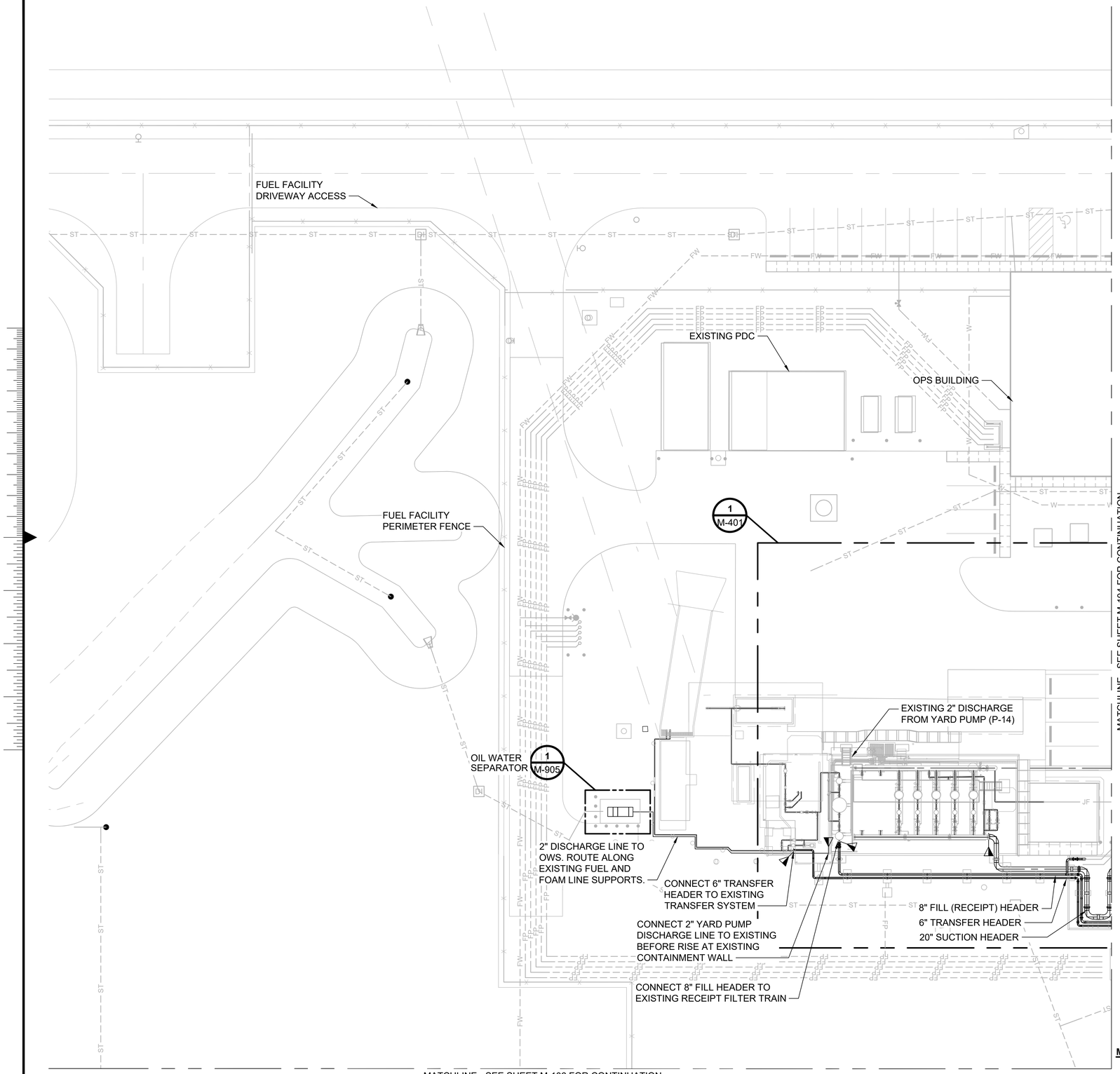

NOTES:

1. SEE DRAWINGS M-001 AND M-002 FOR ABBREVIATIONS, SYMBOLS, INSTRUMENTATION, AND GENERAL FUELING AND PHASING NOTES.
2. THE DRAWINGS INDICATE THE VARIOUS PIPING SYSTEMS SCHEMATICALLY AND DO NOT ATTEMPT TO SHOW EXACT DETAILS OF ALL PIPING OR ALL OFFSETS THAT MAY BE REQUIRED. VERIFY ALL DIMENSIONS, ELEVATIONS AND CONNECTIONS THAT ARE DETERMINED BY THE EQUIPMENT SELECTION AND ADJUST SYSTEMS TO ENSURE THAT EQUIPMENT, PIPE, ETC. CAN BE INSTALLED IN THE ALLOTTED SPACE. NO ADDED COMPENSATION SHALL BE PERMITTED FOR VARIATIONS DUE TO EQUIPMENT SELECTION.
3. ALL DIMENSIONS ARE IN INCHES UNLESS OTHERWISE INDICATED. ALL DIMENSIONS SHOWN TO CENTERLINE OF PIPE UNLESS OTHERWISE INDICATED.
4. ALL BLOCK VALVES UPSTREAM AND DOWNSTREAM OF THERMAL RELIEF VALVES SHALL BE FURNISHED WITH LOCKING DEVICES AND SHALL BE LOCKED IN THE OPEN POSITION.
5. NOT ALL SMALL BORE PIPING REQUIRED IS SHOWN ON PLANS AND SECTIONS FOR CLARITY. SEE MECHANICAL P&ID DRAWINGS FOR ADDITIONAL REQUIREMENTS.
6. SEE DRAWINGS MD101 AND MD401 FOR MECHANICAL FUELING DEMO PLANS.

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MECHANICAL PARTIAL SITE PLAN - 3

0 10' 20' 40'
SCALE IN FEET

NORTH

REGISTERED PROFESSIONAL ENGINEER
92938PE
OREGON
NOV. 14, 2017
DOUGLAS LYNN WOODWARD
12/21/2023
EXPIRES: JUNE 30, 2024

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PDX FACILITY IMPROVEMENTS
MECHANICAL PARTIAL
SITE PLAN - 3

project	contract
153929	
drawing	rev.
M-103	**A**

file 153929M-103.DWG

Scale For Microfilming
Millimeters
Inches

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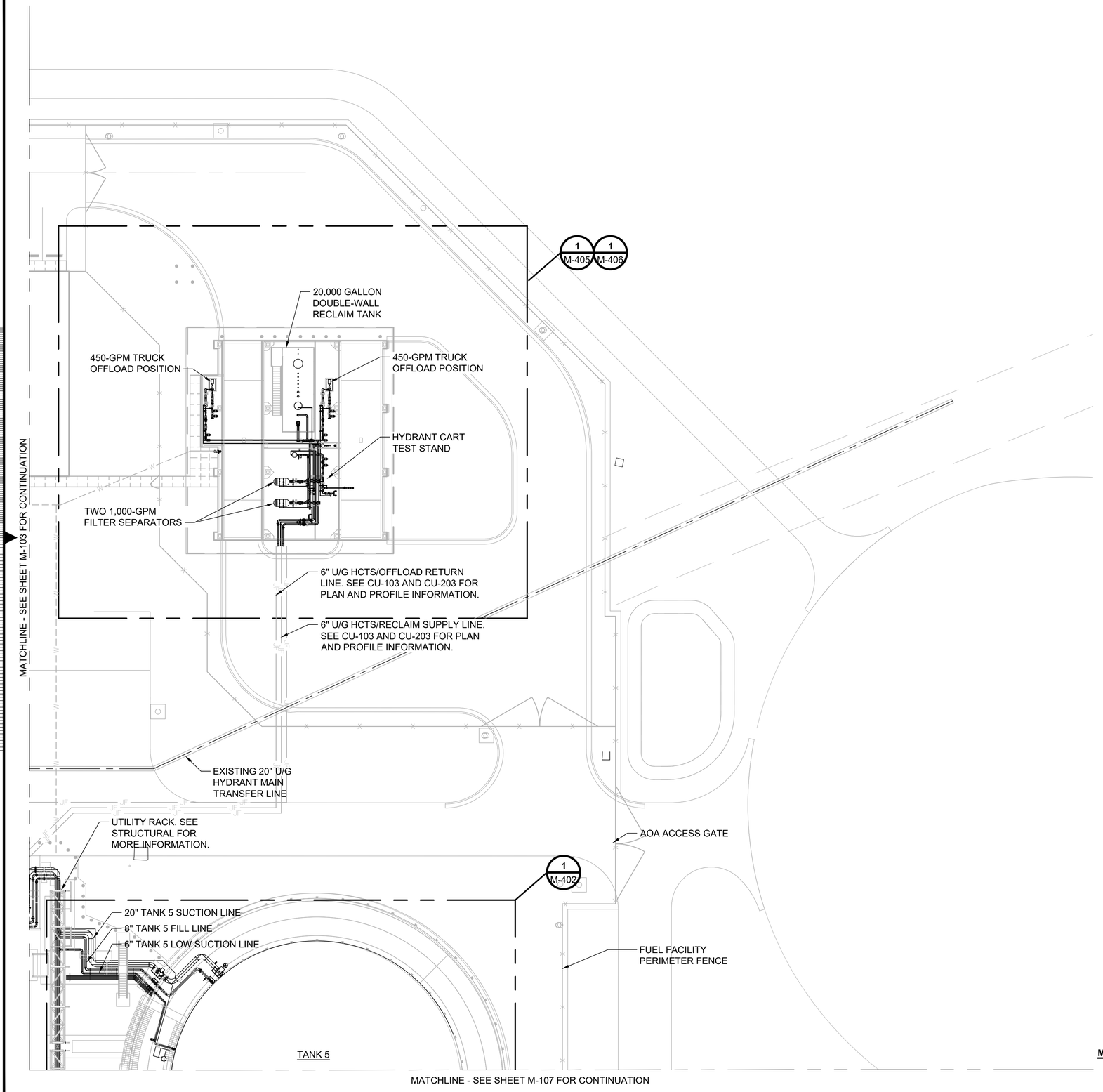

NOTES:

1. SEE DRAWINGS M-001 AND M-002 FOR ABBREVIATIONS, SYMBOLS, INSTRUMENTATION, AND GENERAL FUELING AND PHASING NOTES.
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3. ALL DIMENSIONS ARE IN INCHES UNLESS OTHERWISE INDICATED. ALL DIMENSIONS SHOWN TO CENTERLINE OF PIPE UNLESS OTHERWISE INDICATED.
4. ALL BLOCK VALVES UPSTREAM AND DOWNSTREAM OF THERMAL RELIEF VALVES SHALL BE FURNISHED WITH LOCKING DEVICES AND SHALL BE LOCKED IN THE OPEN POSITION.
5. NOT ALL SMALL BORE PIPING REQUIRED IS SHOWN ON PLANS AND SECTIONS FOR CLARITY. SEE MECHANICAL P&ID DRAWINGS FOR ADDITIONAL REQUIREMENTS.
6. SEE DRAWINGS MD101 AND MD401 FOR MECHANICAL FUELING DEMO PLANS.

MECHANICAL PARTIAL SITE PLAN - 4

0 10' 20' 40'
SCALE IN FEET

NORTH

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designed	checked
D. WOODWARD	J. BURD

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PDX FACILITY IMPROVEMENTS
MECHANICAL PARTIAL
SITE PLAN - 4

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153929	
drawing	rev.
M-104	**A**

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OREGON
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12/21/2023
EXPIRES: JUNE 30, 2024

file 153929M-104.DWG

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MATCHLINE - SEE SHEET M-103 FOR CONTINUATION

FUTURE TANK 4

1
M-403

20" TANK 6
SUCTION LINE

8" TANK 6 FILL LINE

6" TANK 6 LOW
SUCTION LINE

FUEL FACILITY
PERIMETER FENCE

TANK 6

MATCHLINE - SEE SHEET M-107 FOR CONTINUATION

NOTES:

1. SEE DRAWINGS M-001 AND M-002 FOR ABBREVIATIONS, SYMBOLS, INSTRUMENTATION, AND GENERAL FUELING AND PHASING NOTES.
2. THE DRAWINGS INDICATE THE VARIOUS PIPING SYSTEMS SCHEMATICALLY AND DO NOT ATTEMPT TO SHOW EXACT DETAILS OF ALL PIPING OR ALL OFFSETS THAT MAY BE REQUIRED. VERIFY ALL DIMENSIONS, ELEVATIONS AND CONNECTIONS THAT ARE DETERMINED BY THE EQUIPMENT SELECTION AND ADJUST SYSTEMS TO ENSURE THAT EQUIPMENT, PIPE, ETC. CAN BE INSTALLED IN THE ALLOTTED SPACE. NO ADDED COMPENSATION SHALL BE PERMITTED FOR VARIATIONS DUE TO EQUIPMENT SELECTION.
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5. NOT ALL SMALL BORE PIPING REQUIRED IS SHOWN ON PLANS AND SECTIONS FOR CLARITY. SEE MECHANICAL P&ID DRAWINGS FOR ADDITIONAL REQUIREMENTS.
6. SEE DRAWINGS MD101 AND MD401 FOR MECHANICAL FUELING DEMO PLANS.

MECHANICAL PARTIAL SITE PLAN - 6

0 10' 20' 40'
SCALE IN FEET

NORTH

no.	date	by	ckd	description
A	12/21/23	DLW	JJB	ISSUED FOR PERMIT

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BURNS McDONNELL
9400 WARD PARKWAY
KANSAS CITY, MO 64114
816-333-9400
Burns & McDonnell Engineering Co, Inc.

date	detailed
06/07/2023	H. HARMON
designed	checked
D. WOODWARD	J. BURD

PDX FUEL COMPANY L.L.C

PORTLAND INTERNATIONAL AIRPORT
5000 NE MARINE DR.
PORTLAND, OREGON 97218

PDX FACILITY IMPROVEMENTS
MECHANICAL PARTIAL
SITE PLAN - 6

project	contract
153929	

drawing **M-106** rev. **A**

file 153929M-106.DWG

REGISTERED PROFESSIONAL ENGINEER
92938PE
OREGON
NOV. 14, 2017
DOUGLAS LYNN WOODWARD
12/21/2023
EXPIRES: JUNE 30, 2024

Scale For Microfilming
Millimeters
Inches

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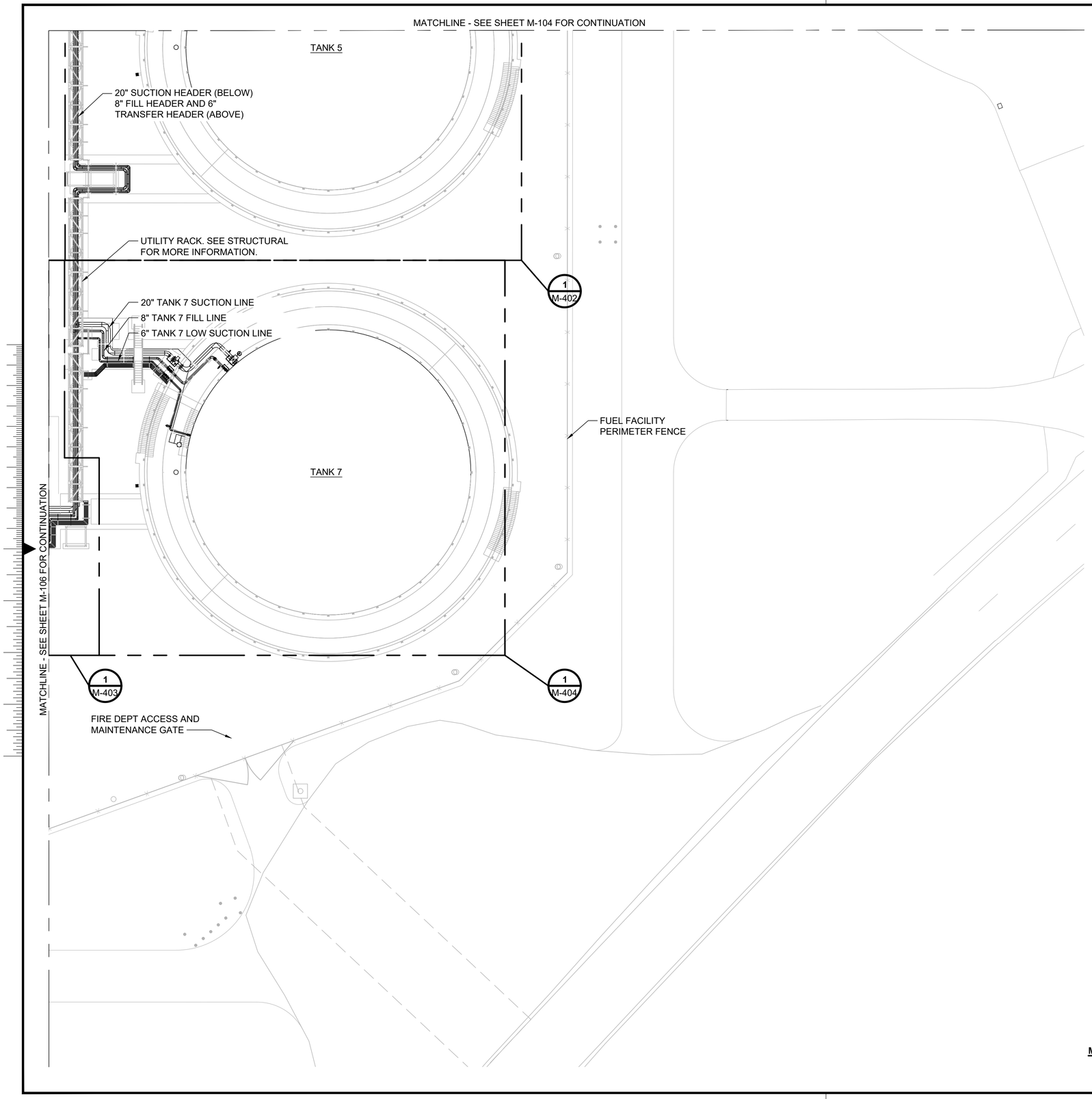

NOTES:

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6. SEE DRAWINGS MD101 AND MD401 FOR MECHANICAL FUELING DEMO PLANS.

no.	date	by	ckd	description
A	12/21/23	DLW	JJB	ISSUED FOR PERMIT

MECHANICAL PARTIAL SITE PLAN - 7

0 10' 20' 40'
SCALE IN FEET

NORTH

REGISTERED PROFESSIONAL ENGINEER
92938PE
OREGON
NOV. 14, 2017
DOUGLAS LYNN WOODWARD
12/21/2023
EXPIRES: JUNE 30, 2024

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Burns & McDonnell Engineering Co, Inc.

date	detailed
06/07/2023	H. HARMON
designed	checked
D. WOODWARD	J. BURD

PDX FUEL COMPANY L.L.C

PORTLAND INTERNATIONAL AIRPORT
5000 NE MARINE DR.
PORTLAND, OREGON 97218

PDX FACILITY IMPROVEMENTS
MECHANICAL PARTIAL
SITE PLAN - 7

project	contract
153929	
drawing	rev.
M-107	**A**

file 153929M-107.DWG

Scale For Microfilming
Millimeters
Inches

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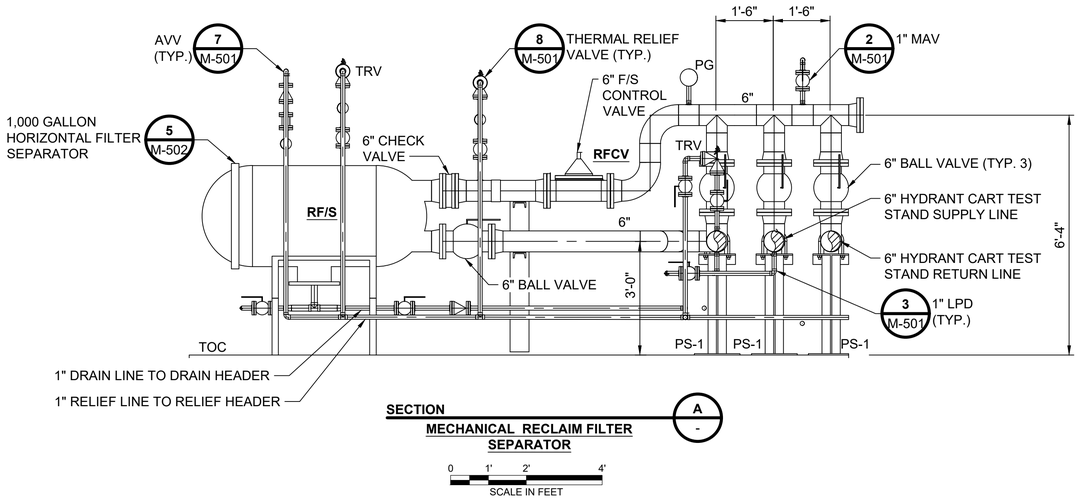

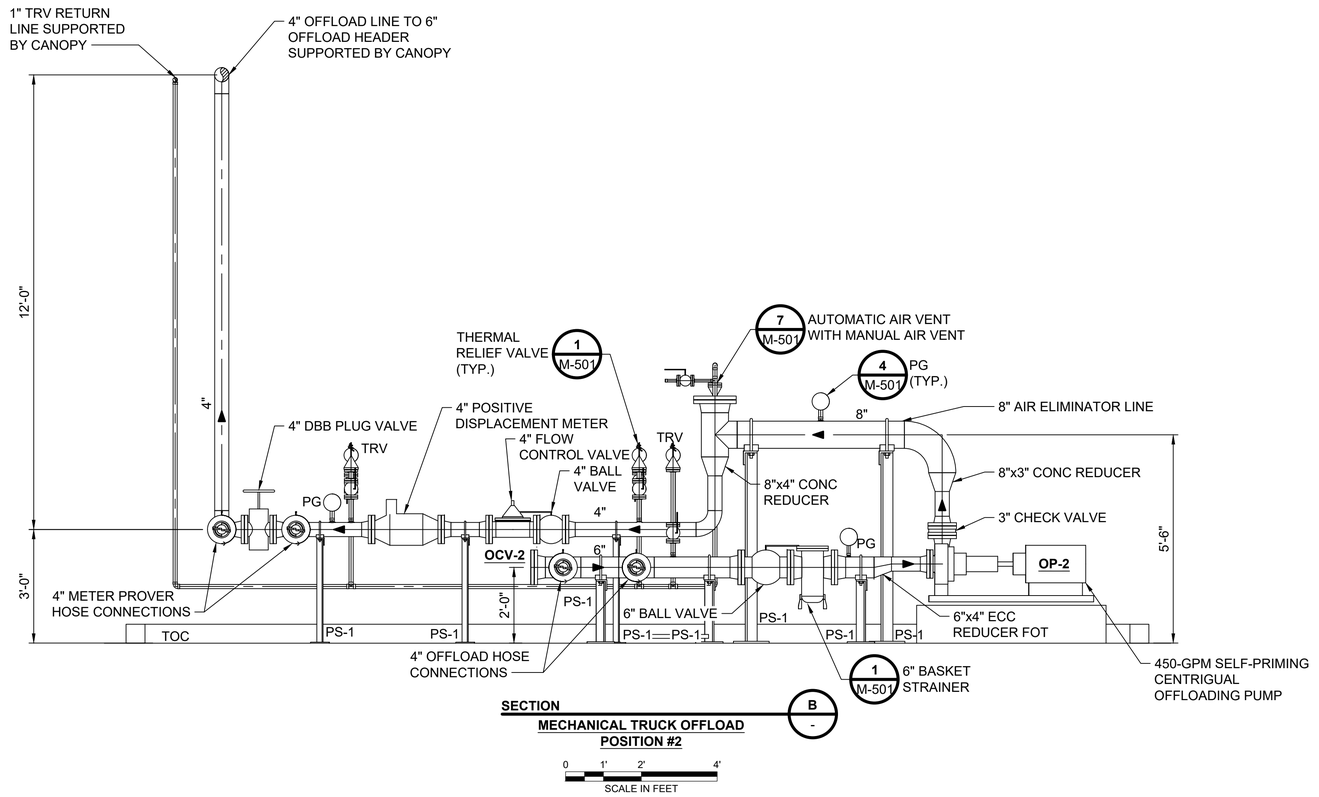

NOTES:

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no.	date	by	ckd	description
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9400 WARD PARKWAY
KANSAS CITY, MO 64114
816-333-9400
Burns & McDonnell Engineering Co, Inc.

date	detailed
07/26/2023	H. HARMON
designed	checked
D. WOODWARD	J. BURD

PDX FUEL COMPANY L.L.C

PORTLAND INTERNATIONAL AIRPORT
5000 NE MARINE DR.
PORTLAND, OREGON 97218

PDX FACILITY IMPROVEMENTS
MECHANICAL SECTIONS - 1

project	contract
153929	

drawing **M-301** rev. **A**

file 153929M-301.DWG

REGISTERED PROFESSIONAL ENGINEER 92908PE OREGON NOV. 14, 2017 DOUGLAS LYNN WOODWARD 12/21/2023

EXPIRES: JUNE 30, 2024

Scale For Microfilming
Millimeters
Inches

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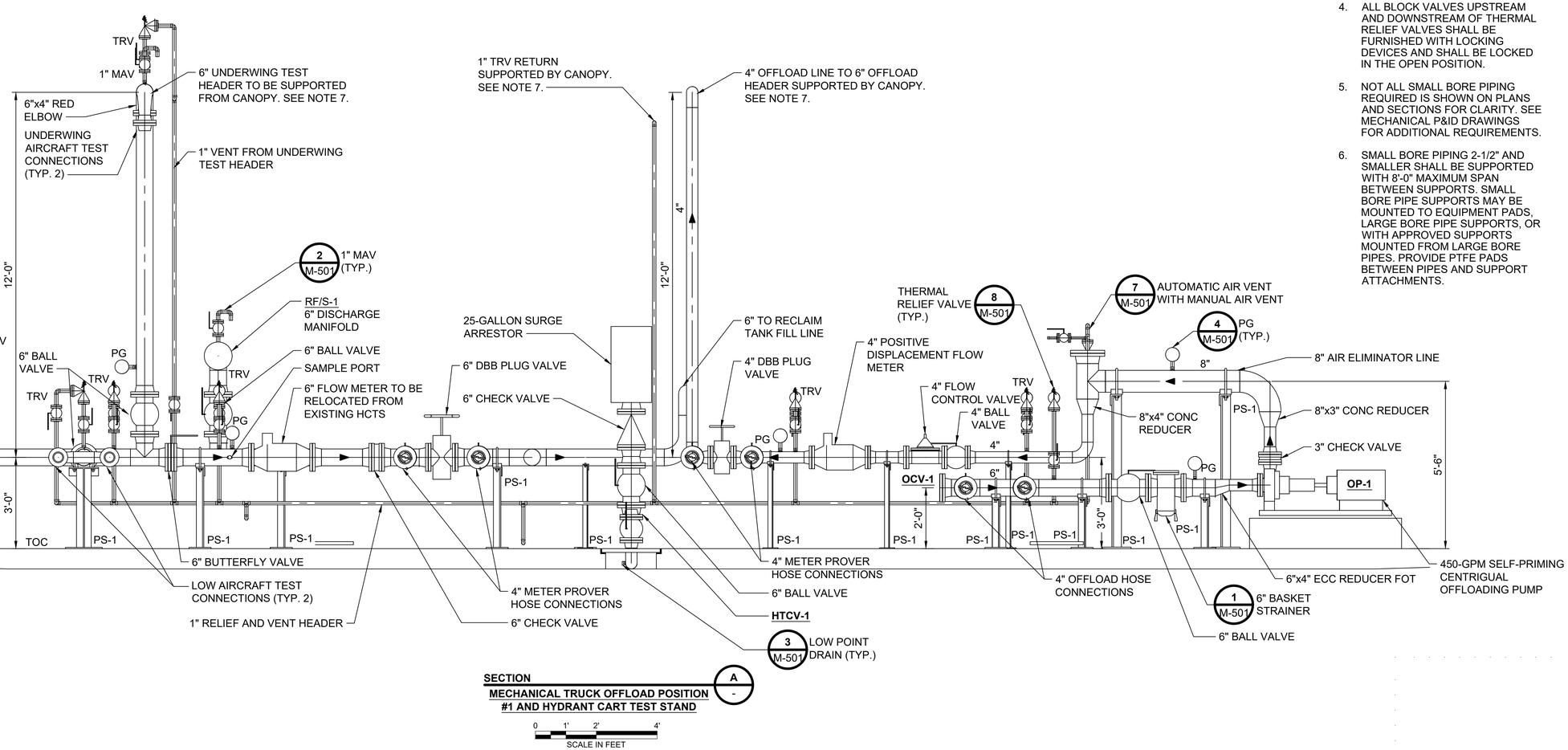

SECTION A
MECHANICAL TRUCK OFFLOAD POSITION #1 AND HYDRANT CART TEST STAND
-

0 1' 2' 4'
SCALE IN FEET

NOTES:

1. SEE DRAWINGS M-001 AND M-002 FOR ABBREVIATIONS, SYMBOLS, INSTRUMENTATION, AND GENERAL FUELING AND PHASING NOTES.
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no.	date	by	ckd	description
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9400 WARD PARKWAY
KANSAS CITY, MO 64114
816-333-9400
Burns & McDonnell Engineering Co, Inc.

date	detailed
07/26/2023	H. HARMON
designed	checked
D. WOODWARD	J. BURD

PDX FUEL COMPANY L.L.C

PORTLAND INTERNATIONAL AIRPORT
5000 NE MARINE DR.
PORTLAND, OREGON 97218

PDX FACILITY IMPROVEMENTS
MECHANICAL SECTIONS - 2

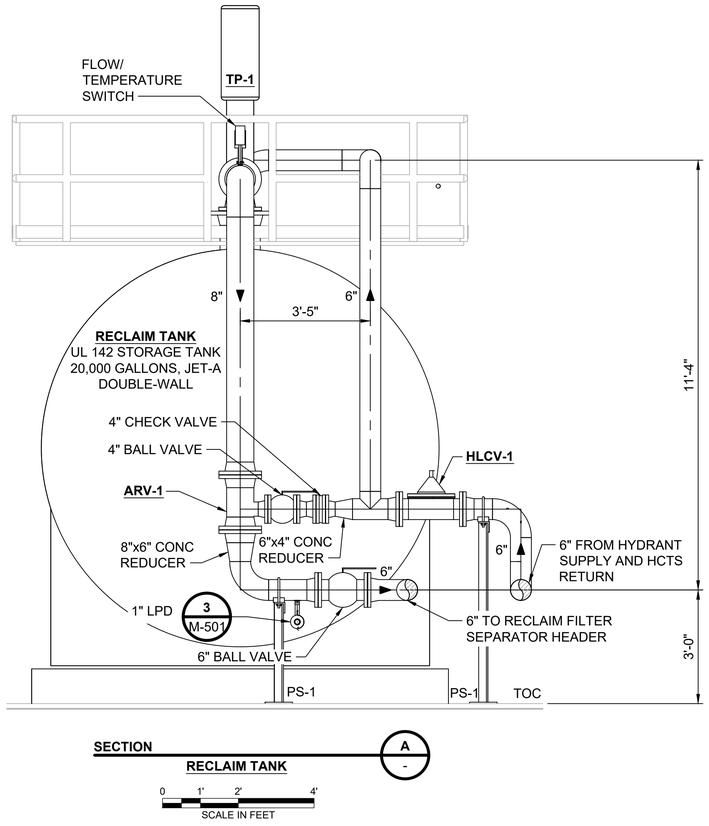
project	contract
153929	

drawing **M-302** rev. **A**

file 153929M-302.DWG

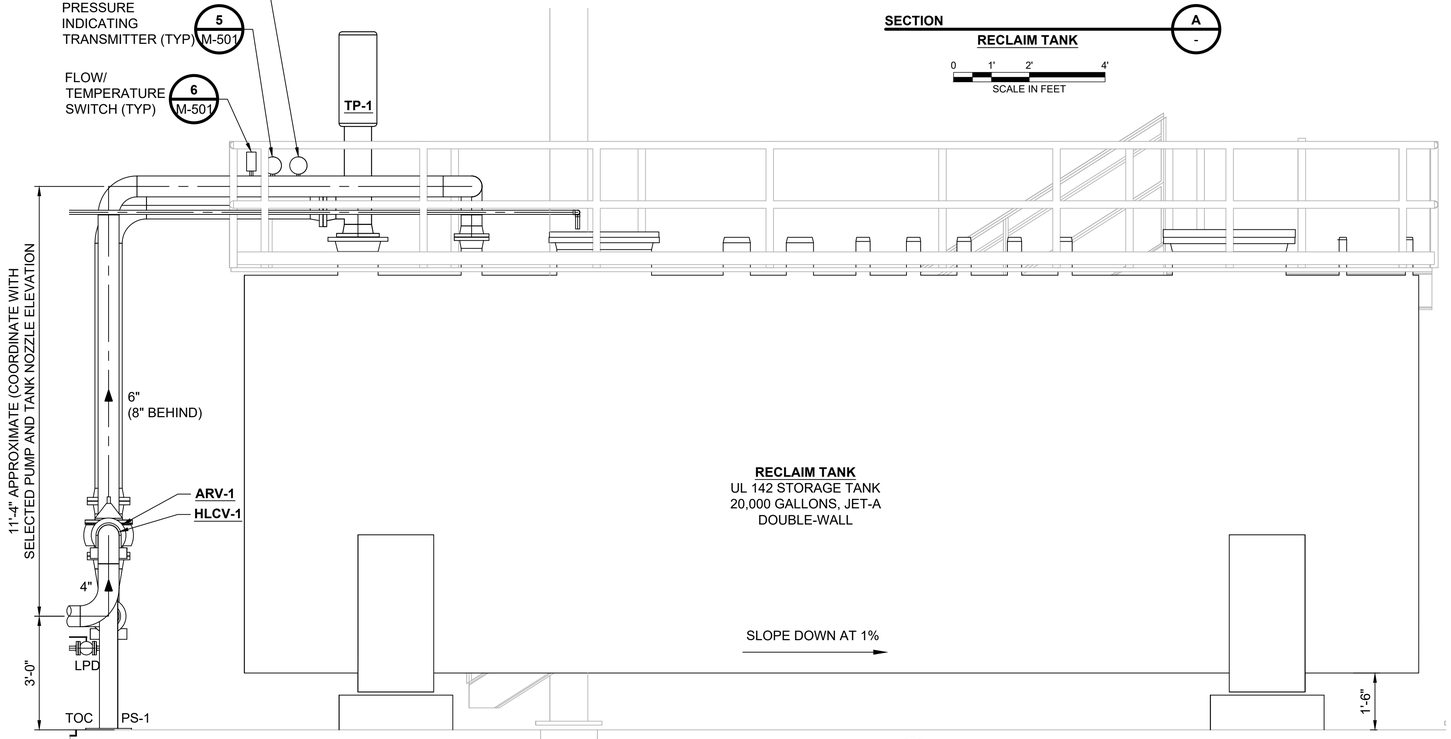
REGISTERED PROFESSIONAL ENGINEER
92938PE
OREGON
NOV. 14, 2017
DOUGLAS LYNN WOODWARD
12/21/2023
EXPIRES: JUNE 30, 2024

Scale For Microfilming
Millimeters
Inches



SECTION A — **RECLAIM TANK**

0 1' 2' 4'
SCALE IN FEET



SECTION B — **RECLAIM TANK**

0 1' 2' 4'
SCALE IN FEET

NOTES:

1. SEE DRAWINGS M-001 AND M-002 FOR ABBREVIATIONS, SYMBOLS, INSTRUMENTATION, AND GENERAL FUELING AND PHASING NOTES.
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9400 WARD PARKWAY
KANSAS CITY, MO 64114
816-333-9400
Burns & McDonnell Engineering Co, Inc.

date	detailed
07/26/2023	H. HARMON
designed	checked
D. WOODWARD	J. BURD

PDX FUEL COMPANY L.L.C

PORTLAND INTERNATIONAL AIRPORT
5000 NE MARINE DR.
PORTLAND, OREGON 97218

PDX FACILITY IMPROVEMENTS
MECHANICAL SECTIONS - 3

project	contract
153929	

drawing **M-303** rev. **A**

file 153929M-303.DWG

REGISTERED PROFESSIONAL ENGINEER
92938PE
OREGON
NOV. 14, 2017
DOUGLAS LYNN WOODWARD
12/21/2023
EXPIRES: JUNE 30, 2024

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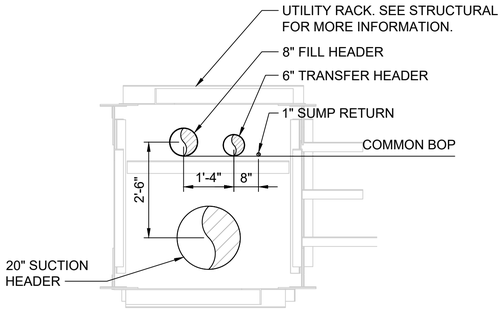
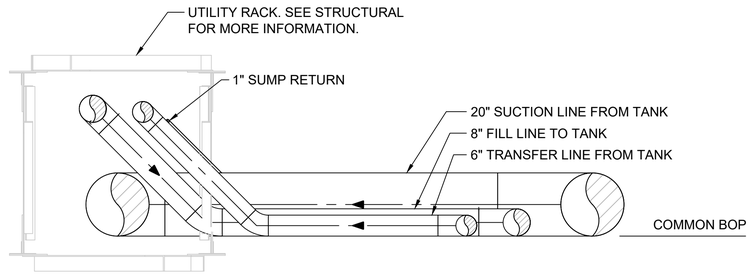


SECTION A
UTILITY RACK WITH MECHANICAL PIPING

0 1' 2' 4'
SCALE IN FEET



SECTION B
HEADER TO TANK PIPING

0 1' 2' 4'
SCALE IN FEET

NOTES:

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KANSAS CITY, MO 64114
816-333-9400
Burns & McDonnell Engineering Co, Inc.

date	detailed
11/01/2023	H. HARMON
designed	checked
D. WOODWARD	J. BURD

PDX FUEL COMPANY L.L.C

PORTLAND INTERNATIONAL AIRPORT
5000 NE MARINE DR.
PORTLAND, OREGON 97218

PDX FACILITY IMPROVEMENTS
MECHANICAL SECTIONS - 4

project	contract
153929	

drawing **M-304** rev. **A**

file 153929M-304.DWG

REGISTERED PROFESSIONAL ENGINEER
92908PE
OREGON
NOV. 14, 2017
DOUGLAS LYNN WOODWARD
12/21/2023
EXPIRES: JUNE 30, 2024

Scale For Microfilming
Millimeters
Inches

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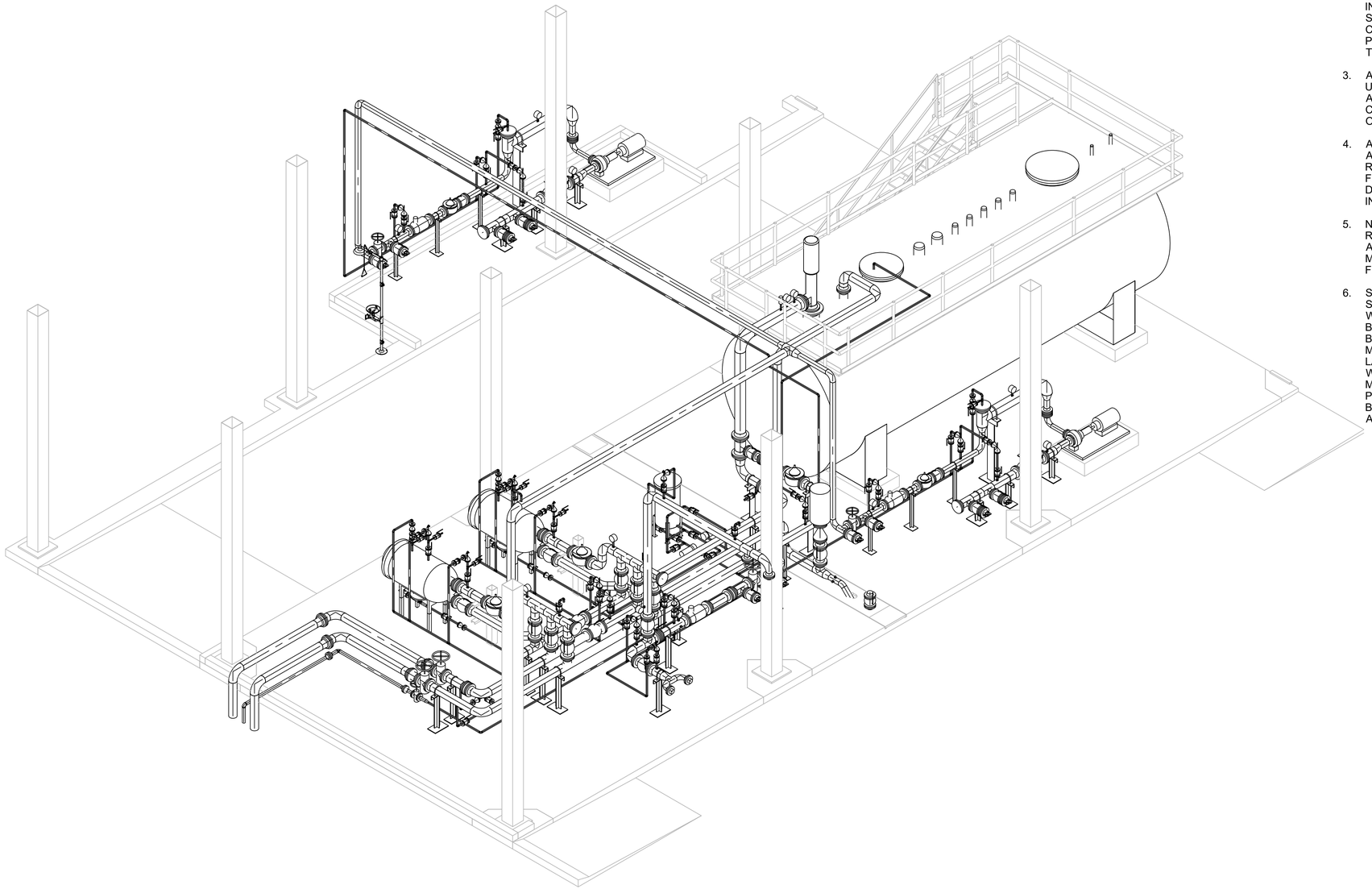

ISOMETRIC
TRUCK OFFLOAD POSITIONS, HYDRANT CART TEST STAND, AND RECLAIM TANK

A
-

NOT TO SCALE

NOTES:

1. SEE DRAWINGS M-001 AND M-002 FOR ABBREVIATIONS, SYMBOLS, INSTRUMENTATION, AND GENERAL FUELING AND PHASING NOTES.
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KANSAS CITY, MO 64114
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Burns & McDonnell Engineering Co, Inc.

date	detailed
11/01/2023	H. HARMON
designed	checked
D. WOODWARD	J. BURD

PDX FUEL COMPANY L.L.C

PORTLAND INTERNATIONAL AIRPORT
5000 NE MARINE DR.
PORTLAND, OREGON 97218

PDX FACILITY IMPROVEMENTS
MECHANICAL SECTIONS - 5

project	contract
153929	

drawing **M-305** rev. **A**

file 153929M-305.DWG

REGISTERED PROFESSIONAL ENGINEER
92938PE
OREGON
NOV. 14, 2017
DOUGLAS LYNN WOODWARD
12/21/2023
EXPIRES: JUNE 30, 2024

Scale For Microfilming
Millimeters
Inches

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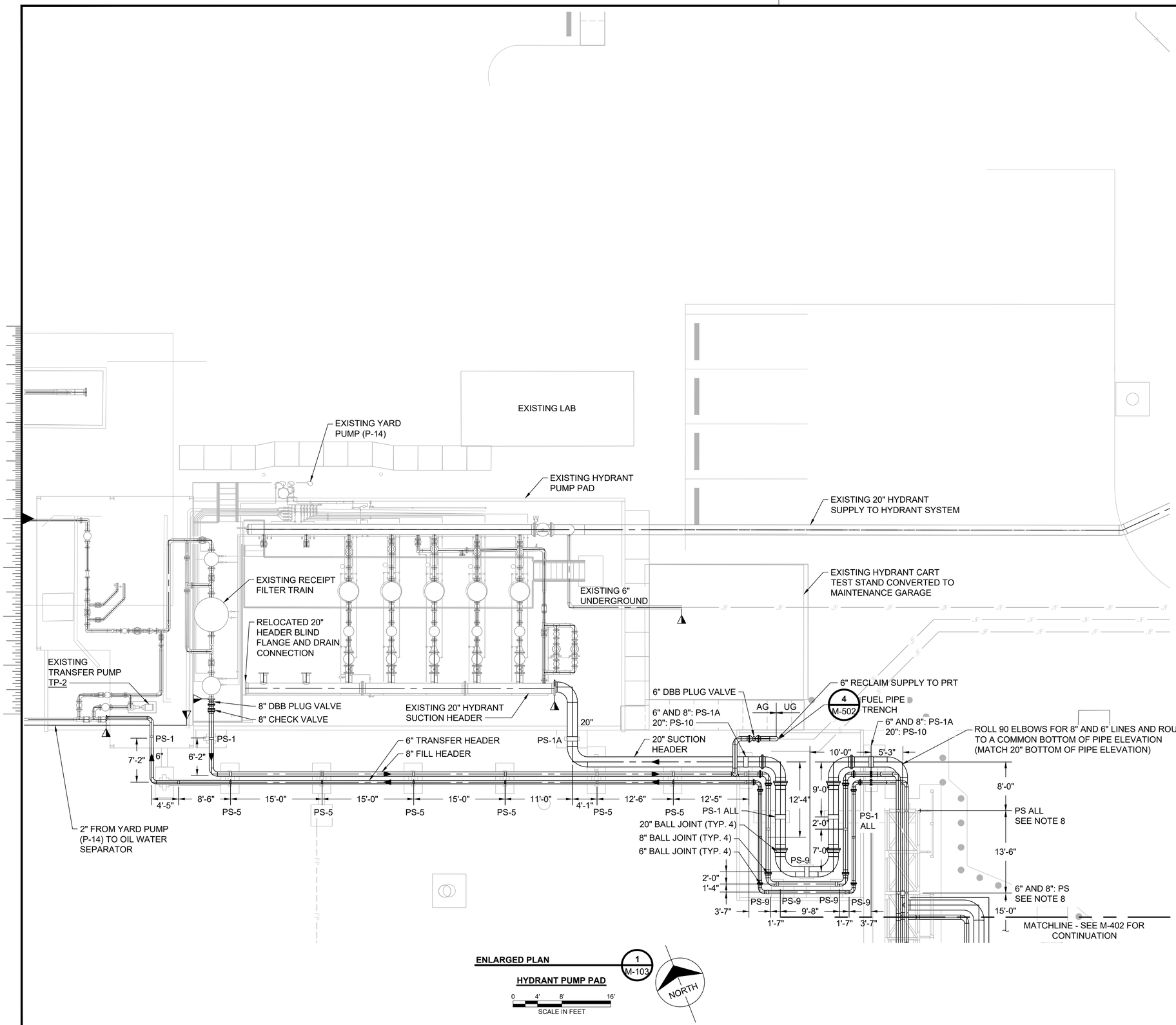

ENLARGED PLAN 1 / M-103

HYDRANT PUMP PAD

0 4' 8' 16'

SCALE IN FEET

NORTH

NOTES:

1. SEE DRAWINGS M-001 AND M-002 FOR ABBREVIATIONS, SYMBOLS, INSTRUMENTATION, AND GENERAL FUELING AND PHASING NOTES.
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7. PS-# CALL-OUTS INDICATE APPROXIMATE PIPE SUPPORT LOCATIONS. SEE STRUCTURAL DRAWINGS S-551 THRU S-553 FOR PIPE SUPPORT DETAILS.
8. TRUSS PIPE SUPPORT, SEE STRUCTURAL DRAWINGS S-532 THRU S-534.

no.	date	by	ckd	description
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Burns & McDonnell Engineering Co, Inc.

date	detailed
06/07/2023	H. HARMON
designed	checked
D. WOODWARD	J. BURD

PDX FUEL COMPANY L.L.C

PORTLAND INTERNATIONAL AIRPORT
5000 NE MARINE DR.
PORTLAND, OREGON 97218

PDX FACILITY IMPROVEMENTS
HYDRANT PUMP PAD
ENLARGED PLAN

project	contract
153929	

drawing **M-401** rev. **A**

file 153929M-401.DWG

REGISTERED PROFESSIONAL ENGINEER
92908PE
OREGON
NOV. 14, 2017
DOUGLAS LYNN WOODWARD
12/21/2023
EXPIRES: JUNE 30, 2024

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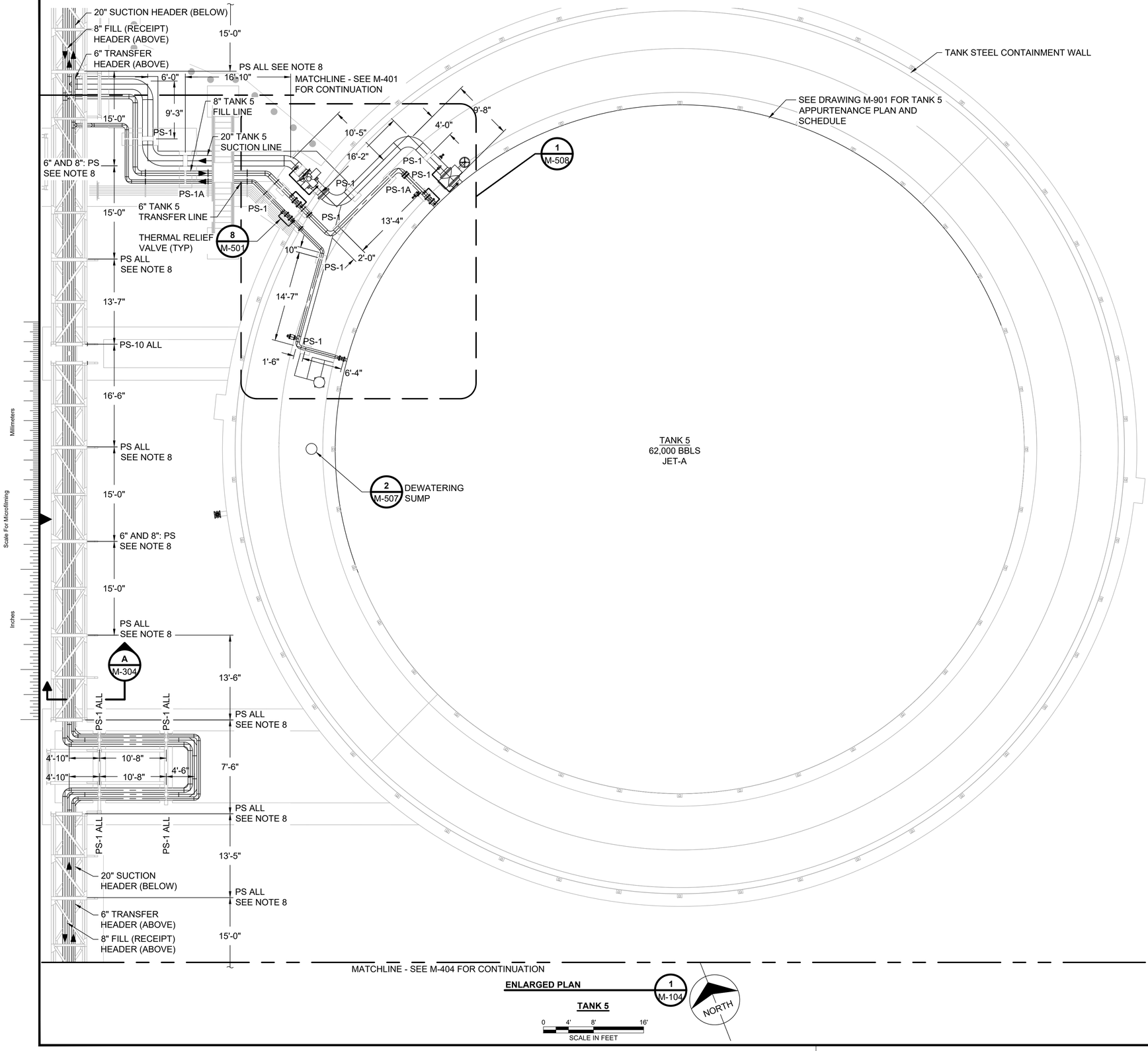

ENLARGED PLAN 1 M-104

TANK 5

0 4' 8' 16'

SCALE IN FEET

NORTH

NOTES:

1. SEE DRAWINGS M-001 AND M-002 FOR ABBREVIATIONS, SYMBOLS, INSTRUMENTATION, AND GENERAL FUELING AND PHASING NOTES.
2. THE DRAWINGS INDICATE THE VARIOUS PIPING SYSTEMS SCHEMATICALLY AND DO NOT ATTEMPT TO SHOW EXACT DETAILS OF ALL PIPING OR ALL OFFSETS THAT MAY BE REQUIRED. VERIFY ALL DIMENSIONS, ELEVATIONS AND CONNECTIONS THAT ARE DETERMINED BY THE EQUIPMENT SELECTION AND ADJUST SYSTEMS TO ENSURE THAT EQUIPMENT, PIPE, ETC. CAN BE INSTALLED IN THE ALLOTTED SPACE. NO ADDED COMPENSATION SHALL BE PERMITTED FOR VARIATIONS DUE TO EQUIPMENT SELECTION.
3. ALL DIMENSIONS ARE IN INCHES UNLESS OTHERWISE INDICATED. ALL DIMENSIONS SHOWN TO CENTERLINE OF PIPE UNLESS OTHERWISE INDICATED.
4. ALL BLOCK VALVES UPSTREAM AND DOWNSTREAM OF THERMAL RELIEF VALVES SHALL BE FURNISHED WITH LOCKING DEVICES AND SHALL BE LOCKED IN THE OPEN POSITION.
5. NOT ALL SMALL BORE PIPING REQUIRED IS SHOWN ON PLANS AND SECTIONS FOR CLARITY. SEE MECHANICAL P&ID DRAWINGS FOR ADDITIONAL REQUIREMENTS.
6. SMALL BORE PIPING 2-1/2" AND SMALLER SHALL BE SUPPORTED WITH 8'-0" MAXIMUM SPAN BETWEEN SUPPORTS. SMALL BORE PIPE SUPPORTS MAY BE MOUNTED TO EQUIPMENT PADS, LARGE BORE PIPE SUPPORTS, OR WITH APPROVED SUPPORTS MOUNTED FROM LARGE BORE PIPES. PROVIDE PTFE PADS BETWEEN PIPES AND SUPPORT ATTACHMENTS.
7. PS-# CALL-OUTS INDICATE APPROXIMATE PIPE SUPPORT LOCATIONS. SEE STRUCTURAL DRAWINGS S-551 THRU S-553 FOR PIPE SUPPORT DETAILS.
8. TRUSS PIPE SUPPORT, SEE STRUCTURAL DRAWINGS S-532 THRU S-534.

no.	date	by	ckd	description
A	12/21/23	DLW	JJB	ISSUED FOR PERMIT

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KANSAS CITY, MO 64114
816-333-9400
Burns & McDonnell Engineering Co, Inc.

date	detailed
06/07/2023	H. HARMON
designed	checked
D. WOODWARD	J. BURD

PDX FUEL COMPANY L.L.C

PORTLAND INTERNATIONAL AIRPORT
5000 NE MARINE DR.
PORTLAND, OREGON 97218

PDX FACILITY IMPROVEMENTS
TANK 5 ENLARGED PLAN

project	contract
153929	

drawing **M-402** rev. **A**

file 153929M-402.DWG

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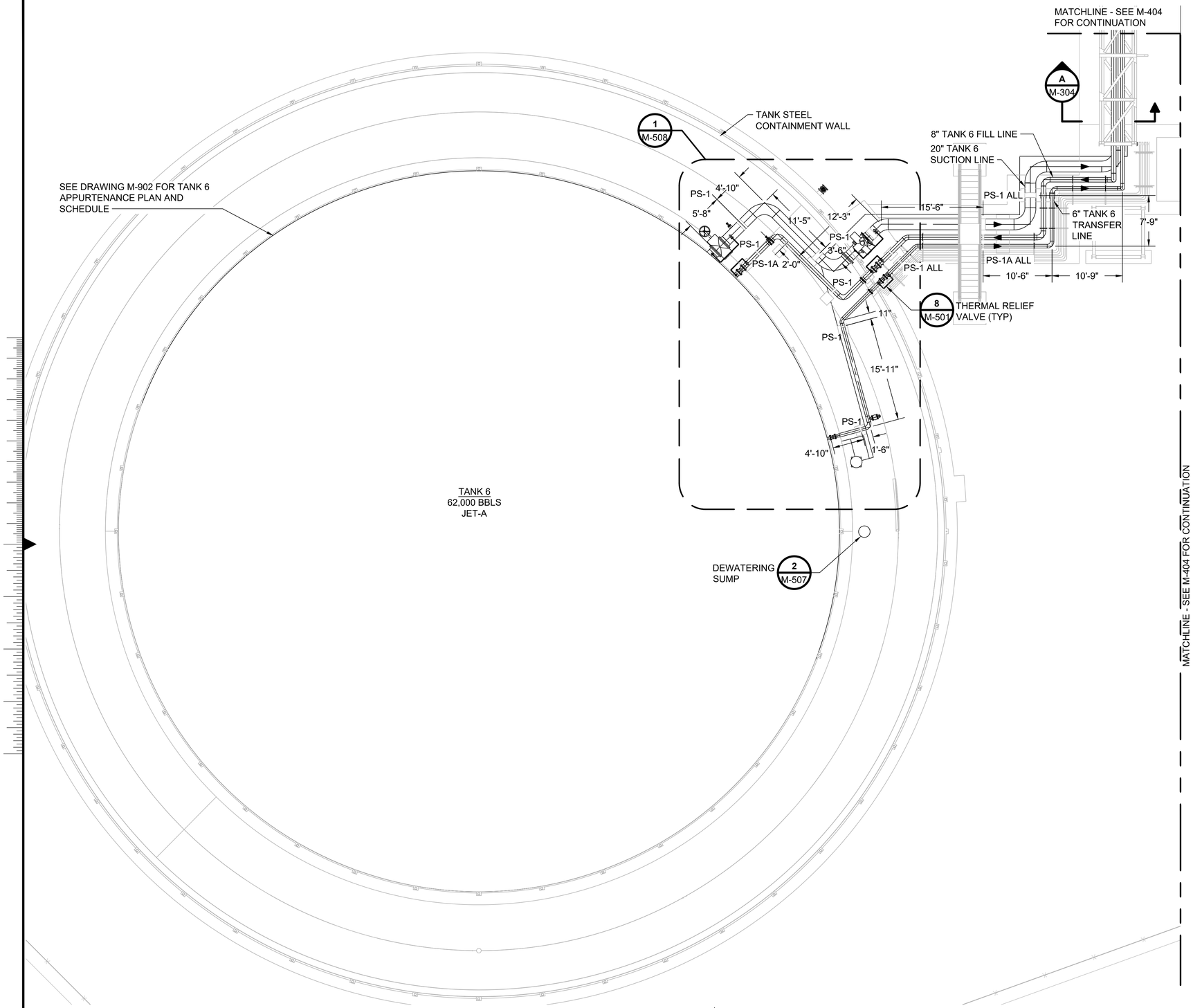
EXPIRES: JUNE 30, 2024



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7. PS-# CALL-OUTS INDICATE APPROXIMATE PIPE SUPPORT LOCATIONS. SEE STRUCTURAL DRAWINGS S-551 THRU S-553 FOR PIPE SUPPORT DETAILS.

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D. WOODWARD	J. BURD

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PDX FACILITY IMPROVEMENTS
TANK 6 ENLARGED PLAN

project	contract
153929	

drawing **M-403** rev. **A**

file 153929M-403.DWG

REGISTERED PROFESSIONAL ENGINEER 92938PE OREGON NOV. 14, 2017 DOUGLAS LYNN WOODWARD 12/21/2023

EXPIRES: JUNE 30, 2024

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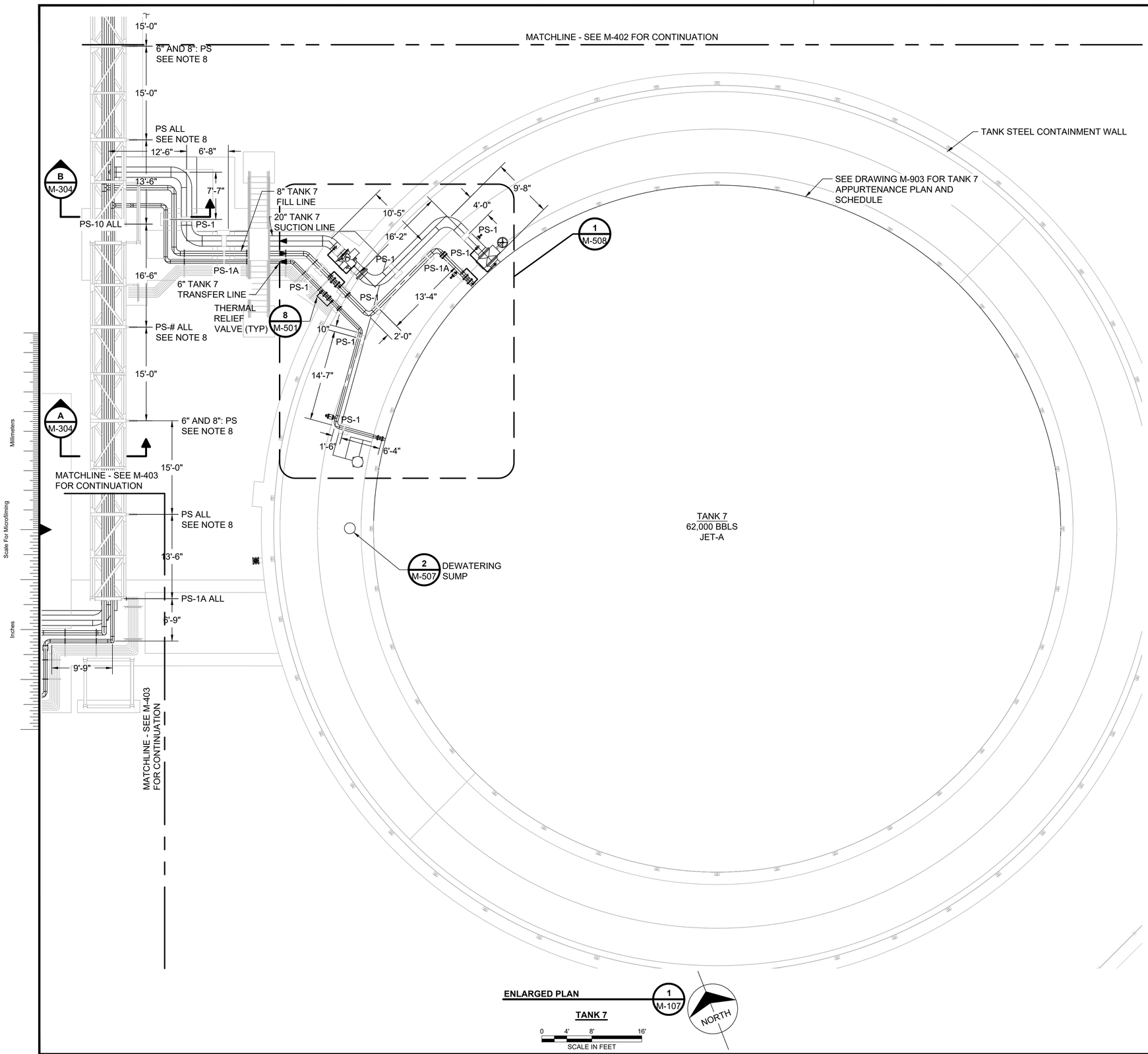

NOTES:

1. SEE DRAWINGS M-001 AND M-002 FOR ABBREVIATIONS, SYMBOLS, INSTRUMENTATION, AND GENERAL FUELING AND PHASING NOTES.
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06/07/2023	H. HARMON
designed	checked
D. WOODWARD	J. BURD

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PORTLAND, OREGON 97218

PDX FACILITY IMPROVEMENTS
TANK 7 ENLARGED PLAN

project	contract
153929	

drawing **M-404** rev. **A**

file 153929M-404.DWG

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OREGON
NOV. 14, 2017
DOUGLAS LYNN WOODWARD
12/21/2023
EXPIRES: JUNE 30, 2024

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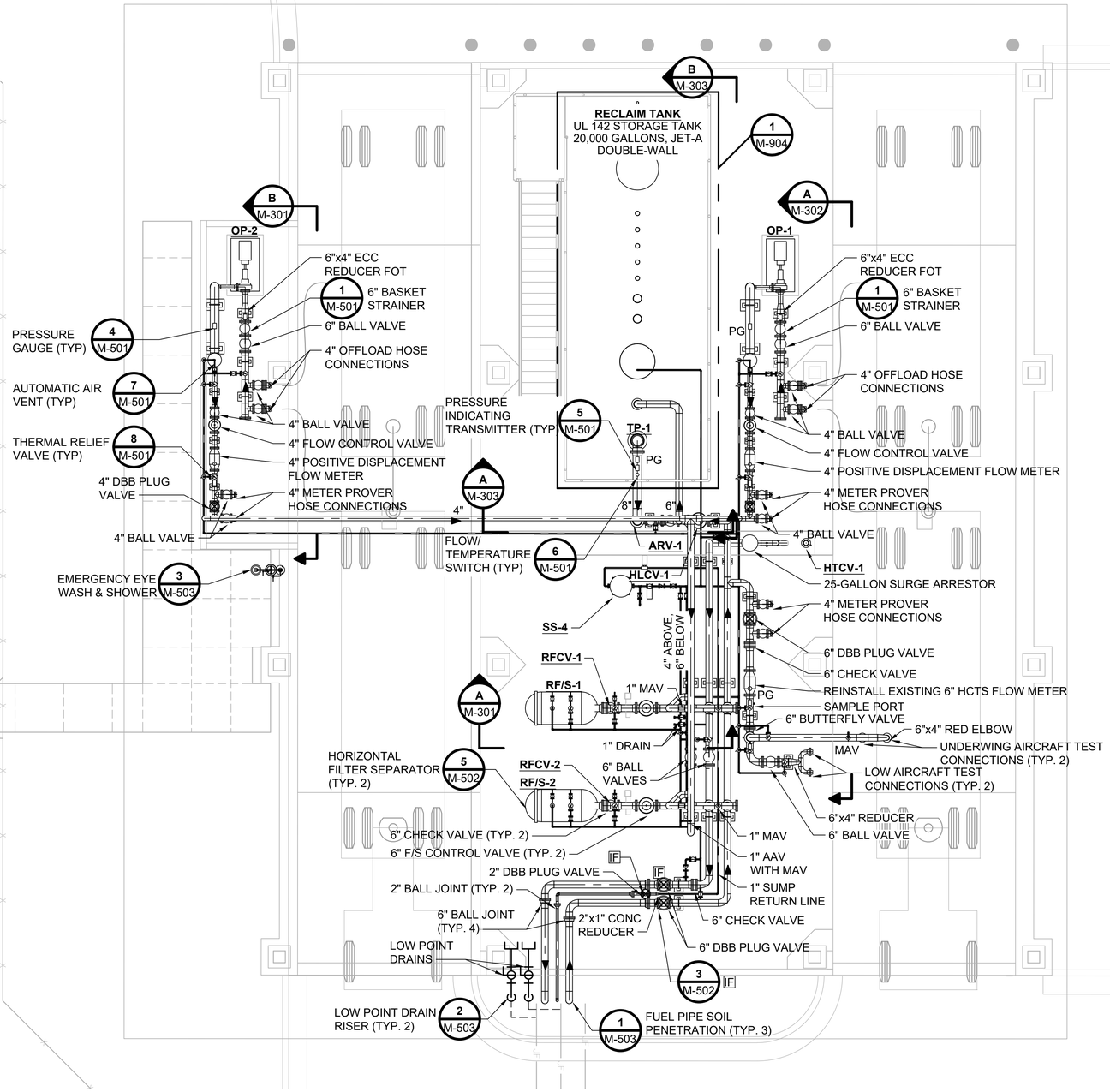

NOTES:

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06/07/2023	H. HARMON
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D. WOODWARD	J. BURD

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PORTLAND INTERNATIONAL AIRPORT
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PORTLAND, OREGON 97218

PDX FACILITY IMPROVEMENTS
HCTS & TRUCK OFFLOAD
ENLARGED PLAN

project	contract
153929	

drawing **M-405** rev. **A**

file 153929M-405.dwg

REGISTERED PROFESSIONAL ENGINEER 92908PE OREGON NOV. 14, 2017 DOUGLAS LYNN WOODWARD 12/21/2023

EXPIRES: JUNE 30, 2024

Scale For Microfilming: Millimeters / Inches

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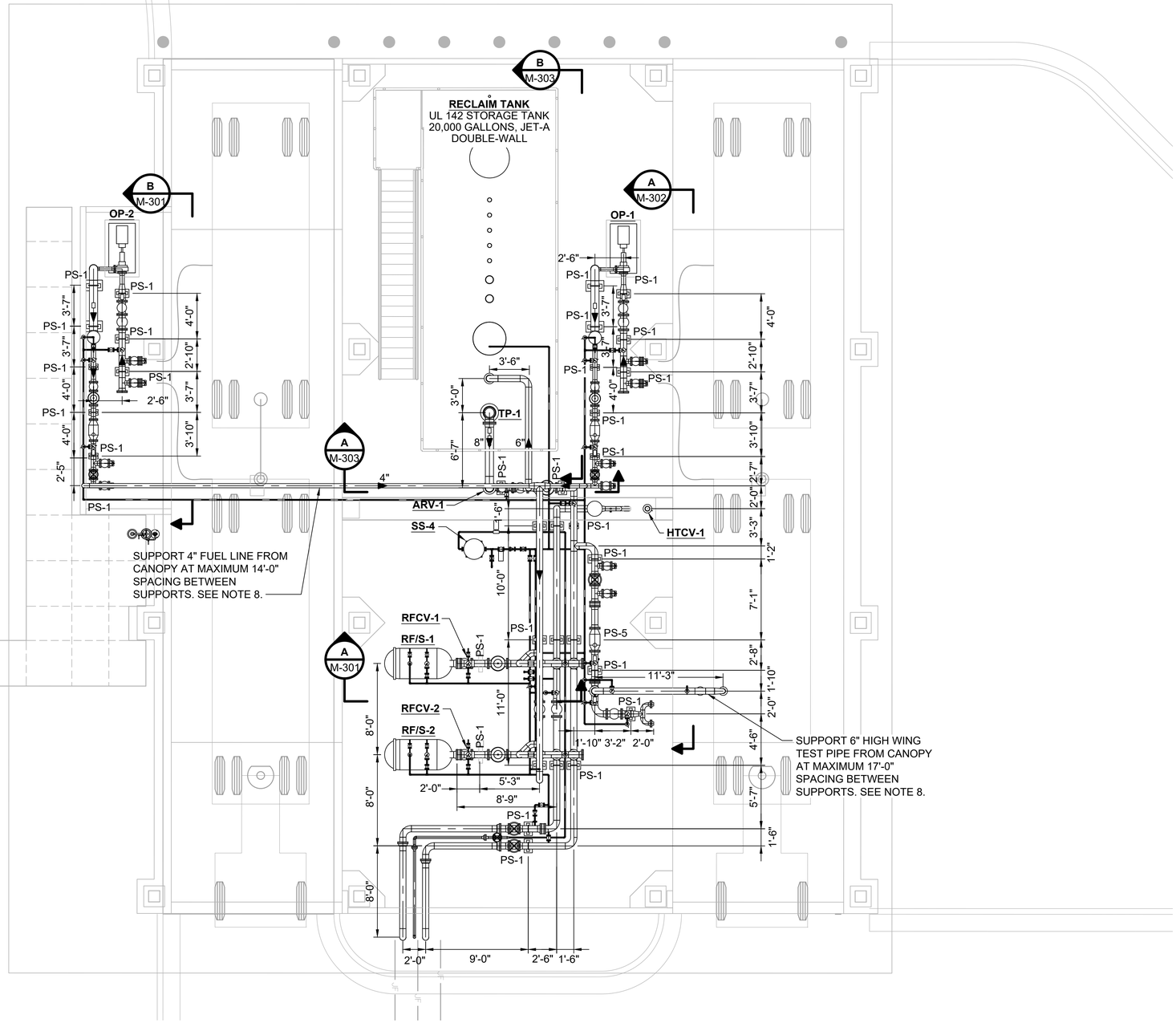

ENLARGED PLAN — 1 / M-104

HCTS & TRUCK OFFLOAD PIPE SUPPORTS

0 4' 8' 16'

SCALE IN FEET

NORTH

NOTES:

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7. PROVIDE CLEVIS HANGER TYPE PIPE SUPPORTS (ANVIL FIG. 260 OR APPROVED EQUAL) WITH ADJUSTABLE THREADED ROD TO SUPPORT 6" HIGH WING AIRCRAFT TEST PIPE (1,500 LBS) AND 4" OFFLOAD HEADER (2,500 LBS) FROM CANOPY SUPPORT STRUCTURE. SUBCONTRACTOR SHALL COORDINATE PIPE SUPPORT LOCATIONS WITH CANOPY MANUFACTURER. PROVIDE DRAWINGS OF PIPE HANGER ASSEMBLY AND ATTACHMENT TO CANOPY FOR ENGINEER'S REVIEW.

no.	date	by	ckd	description
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D. WOODWARD	J. BURD

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5000 NE MARINE DR.
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PDX FACILITY IMPROVEMENTS
HCTS & TRUCK OFFLOAD
PIPE SUPPORTS
ENLARGED PLAN

project	contract
153929	

drawing **M-406** rev. **A**

file 153929M-406.dwg

REGISTERED PROFESSIONAL ENGINEER — 92908PE — OREGON — NOV. 14, 2017 — DOUGLAS LYNN WOODWARD — 12/21/2023

EXPIRES: JUNE 30, 2024

Scale For Microfilming: Millimeters / Inches

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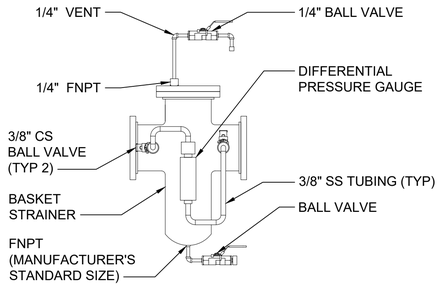
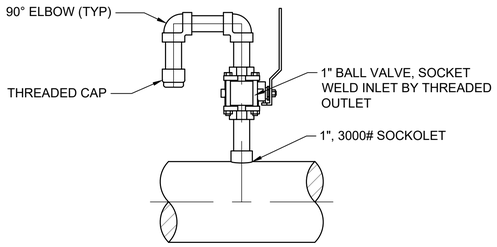


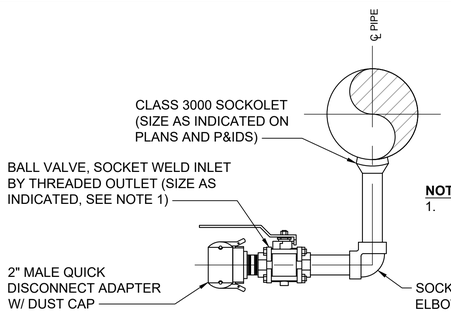
BASKET STRAINER 1

M-301
M-302
M-402
M-403
M-404
M-405



MANUAL AIR VENT 2

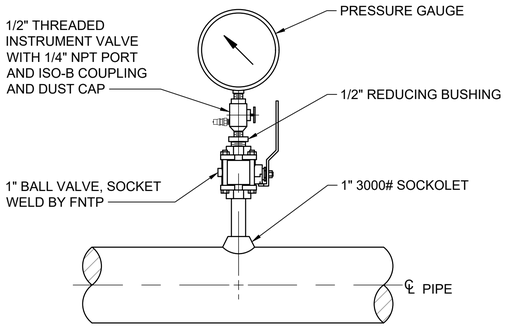
M-301
M-302
M-402
M-403
M-404
M-405



NOTES:
1. PROVIDE SWxSW BALL VALVE IN LOCATIONS WHERE DRAIN VALVE CONTINUES TO DRAIN LINE (NO QUICK DISCONNECT).

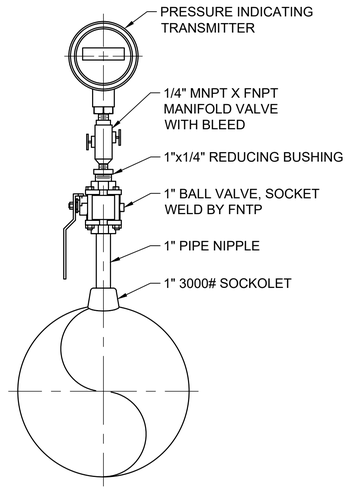
LOW POINT DRAIN 3

M-301
M-302
M-303
M-405
M-508



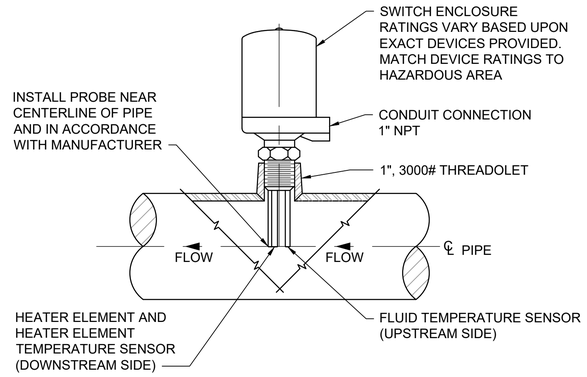
PRESSURE GAUGE 4

M-301
M-302
M-303
M-405



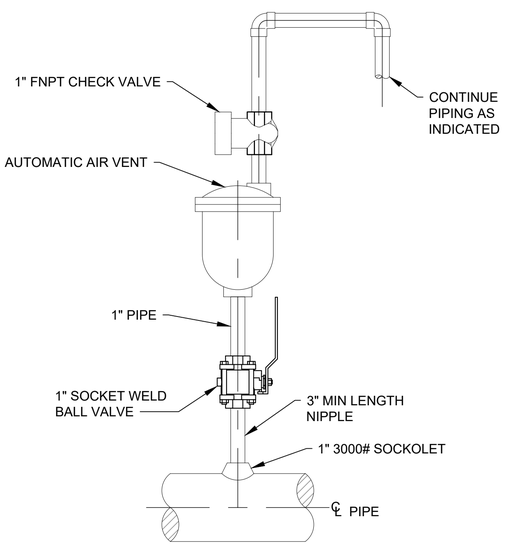
PRESSURE INDICATING TRANSMITTER 5

M-303
M-405



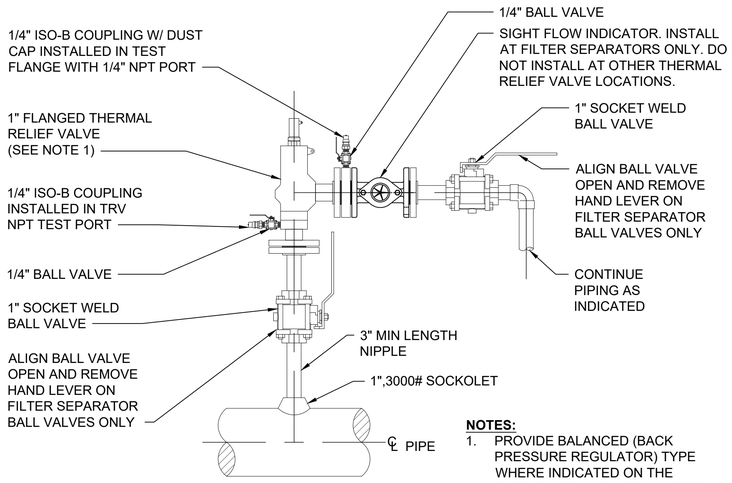
FLOW/TEMPERATURE SWITCH 6

M-303
M-405



AUTOMATIC AIR VENT 7

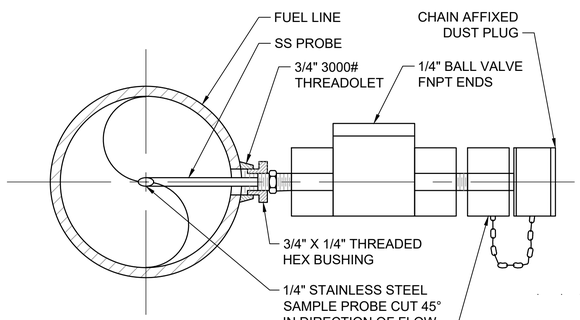
M-301
M-302
M-405



NOTES:
1. PROVIDE BALANCED (BACK PRESSURE REGULATOR) TYPE WHERE INDICATED ON THE FLOW DIAGRAMS WITH A B-TYPE SET POINT (B-###).

THERMAL RELIEF ASSEMBLY 8

M-301
M-302
M-402
M-403
M-404
M-405
M-508



NOTES:
1. INSTALL SAMPLING PROBE SO THE OPEN AREA FACES UPSTREAM.
2. INSTALL FUEL SAMPLE CONNECTION IN THE HORIZONTAL POSITION.
3. PROBE OPENING SHALL BE IN THE CENTER ONE-THIRD OF THE PIPING.

FUEL SAMPLING PROBE 9

-

no.	date	by	ckd	description
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date	detailed
06/07/2023	H. HARMON
designed	checked
D. WOODWARD	J. BURD

PDX FUEL COMPANY L.L.C

PORTLAND INTERNATIONAL AIRPORT
5000 NE MARINE DR.
PORTLAND, OREGON 97218

PDX FACILITY IMPROVEMENTS
MECHANICAL DETAILS - 1 OF 3

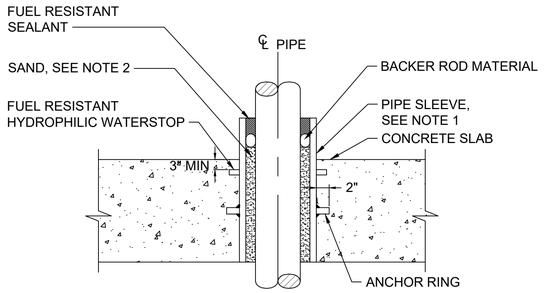
project	contract
153929	

drawing **M-501** rev. **A**

file 153929M-501.dwg

REGISTERED PROFESSIONAL ENGINEER 92938PE OREGON NOV. 14, 2017 DOUGLAS LYNN WOODWARD 12/21/2023
EXPIRES: JUNE 30, 2024

Scale For Microfilming
Millimeters
Inches

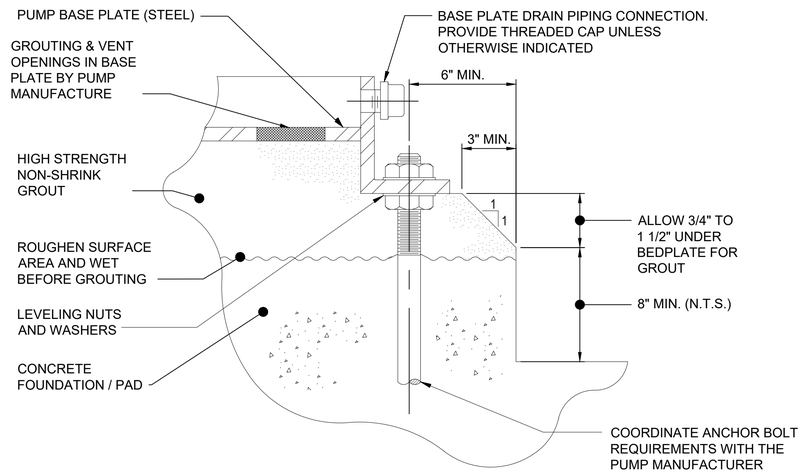


SLEEVE CLEARANCE TABLE	
NOM. PIPE DIA. INCHES	NOM. SLEEVE DIA. INCHES
2"	4"
6"	10"

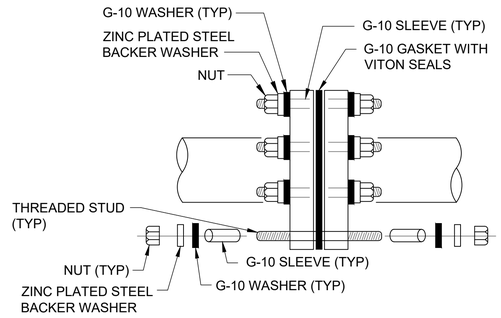
NOTES:

1. REFER TO STRUCTURAL DRAWINGS FOR PIPE SLEEVE REQUIREMENTS. EXTEND HEIGHT OF PIPE SLEEVE ABOVE HEIGHT OF CONTAINMENT CURB AS INDICATED ON STRUCTURAL DRAWINGS.
2. PACK ANNULAR SPACE WITH SAND OR OTHER APPROVED MATERIAL.

PIPE PENETRATION THROUGH CONCRETE — 1 / M-502



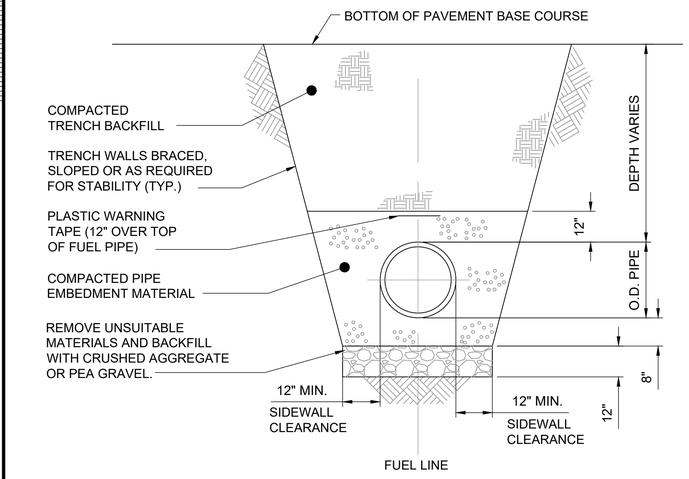
PUMP ANCHOR BOLTING — 2 / M-502



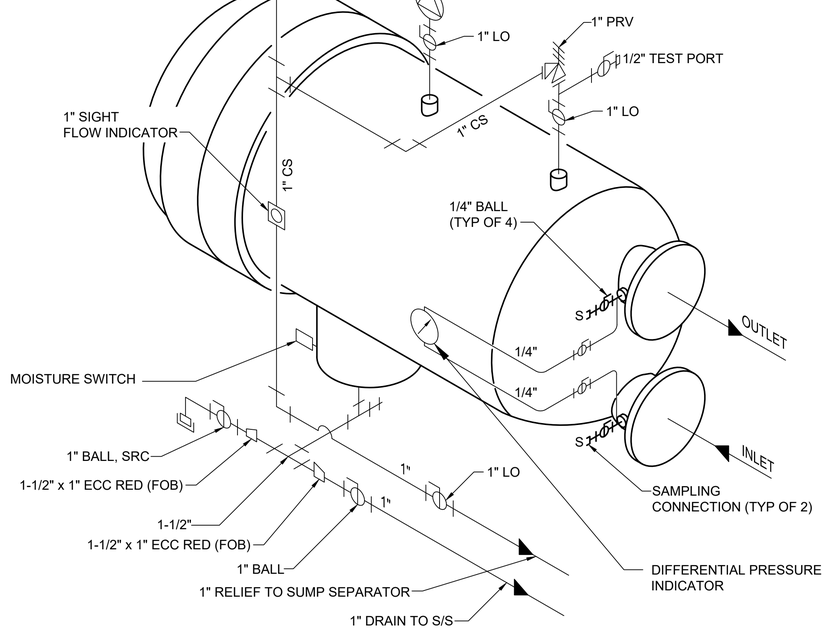
NOTES:

1. SOCKET WELD FLANGES INDICATED, SIMILAR FOR OTHER FLANGES REQUIRING INSULATION KITS.
2. INSULATING MATERIALS ARE TO BE SELECTED FOR COMPATIBILITY WITH PRODUCT IN THE PIPELINE AND THE OPERATING CONDITIONS.
3. REFER TO SECTION 33 52 45 FOR ADDITIONAL REQUIREMENTS.

INSULATING (DI-ELECTRIC) FLANGE KIT — 3 / M-405



FUEL PIPE TRENCH (TYPICAL) — 4 / M-401



HORIZONTAL FILTER/SEPARATOR — 5 / M-301, M-405

no.	date	by	ckd	description
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PORTLAND, OREGON 97218

PDX FACILITY IMPROVEMENTS
MECHANICAL DETAILS - 2 OF 3

project	contract
153929	

drawing **M-502** rev. **A**

file 153929M-502.dwg

REGISTERED PROFESSIONAL ENGINEER 92938PE OREGON NOV. 14, 2017 DOUGLAS LYNN WOODWARD 12/21/2023

EXPIRES: JUNE 30, 2024

Scale For Microfilming: Millimeters / Inches

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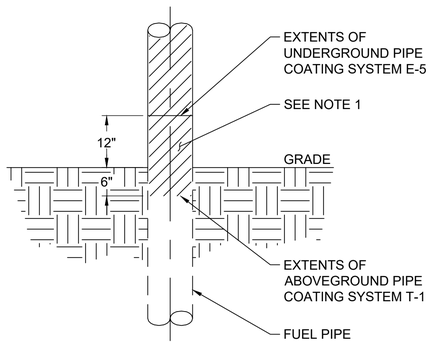
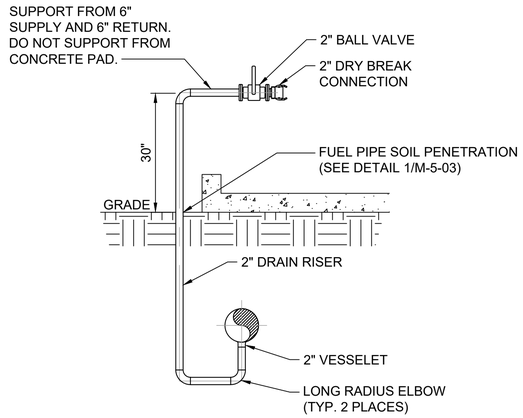
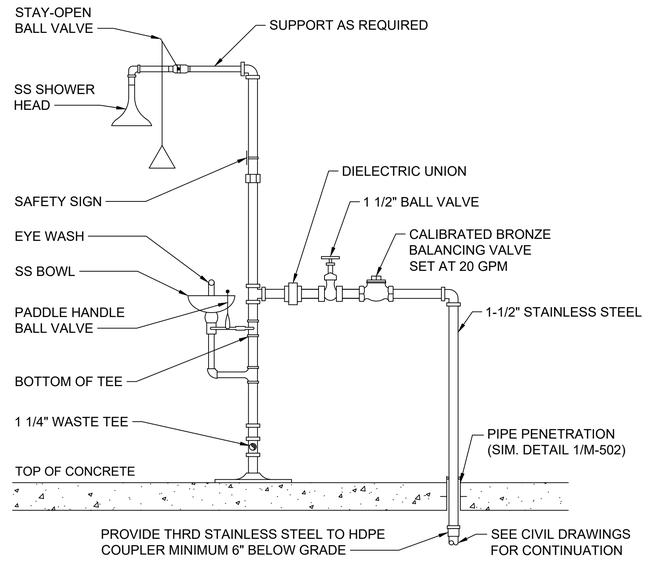


NOTE:
1. PROVIDE ABOVEGROUND COATING (SYSTEM T-1) OVER INTERFACE BETWEEN UNDERGROUND COATED PIPE (SYSTEM E-5) AND EXTEND 6" BELOW PIPE TO SOIL INTERFACE AT GRADE.

FUEL PIPE SOIL PENETRATION — 1 / M-405



LOW POINT DRAIN RISER — 2 / M-405



NOTE:
1. ALL EXPOSED ABOVE GROUND PIPING SHALL BE HEAT TRACED AND INSULATED FOR FREEZE PROTECTION AND HAVE MANUFACTURER STANDARD HIGH VISIBILITY PLASTIC COVERS.

EMERGENCY EYE WASH & SHOWER — 3 / M-405

no.	date	by	ckd	description
A	12/21/23	DLW	JJB	ISSUED FOR PERMIT

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9400 WARD PARKWAY
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designed	checked
D. WOODWARD	J. BURD

PDX FUEL COMPANY L.L.C

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PDX FACILITY IMPROVEMENTS
MECHANICAL DETAILS - 3 OF 3

project	contract
153929	

drawing **M-503** rev. **A**

file 153929M-503.dwg

REGISTERED PROFESSIONAL ENGINEER
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OREGON
NOV. 14, 2017
DOUGLAS LYNN WOODWARD
12/21/2023
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Scale For Microfilming
Millimeters
Inches

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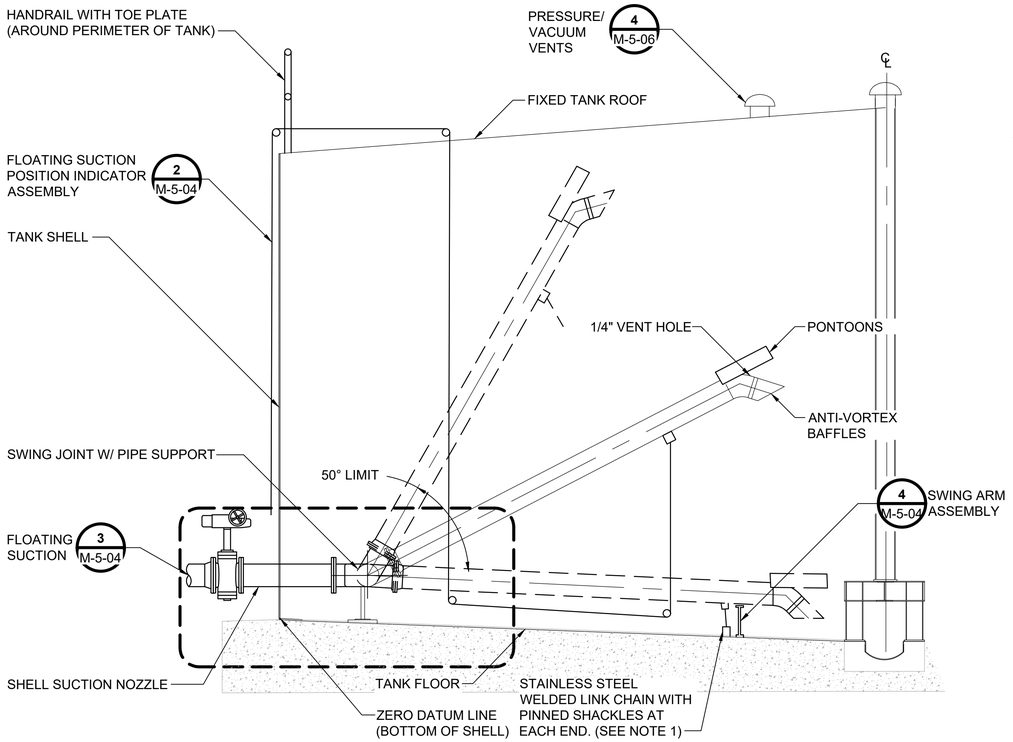
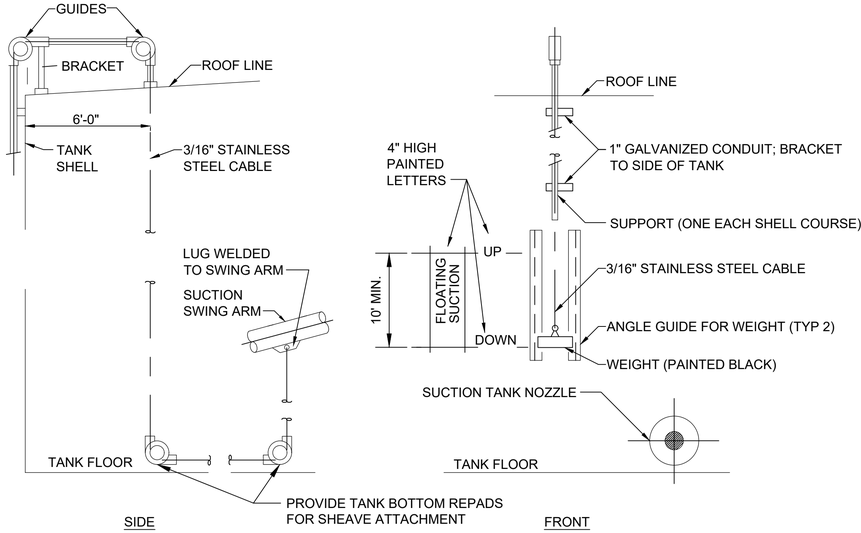


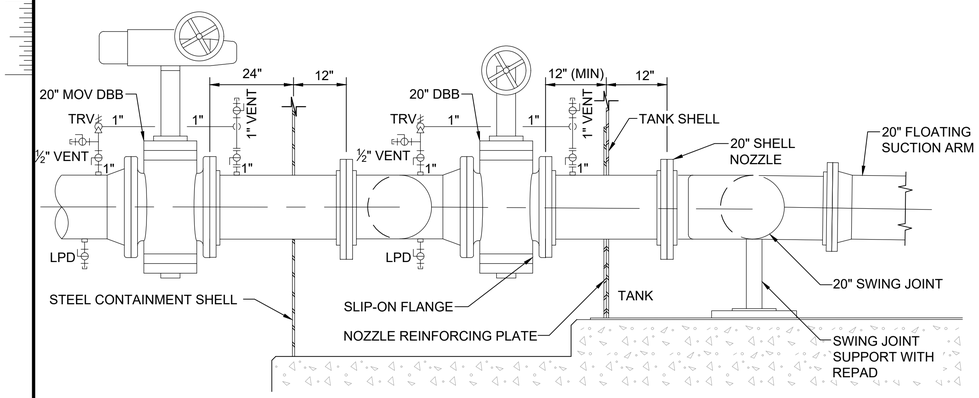


NOTE:

1. LENGTH TO LIMIT SWING ARM TRAVEL TO 50 DEGREES FROM HORIZONTAL OR LESS PER SWING JOINT MANUFACTURER RECOMMENDATIONS. ANCHOR THRU HOLES IN WELDED PLATES ATTACHED TO BOTH SWING ARM AND FLOOR

FLOATING SUCTION ASSEMBLY — 1 / -

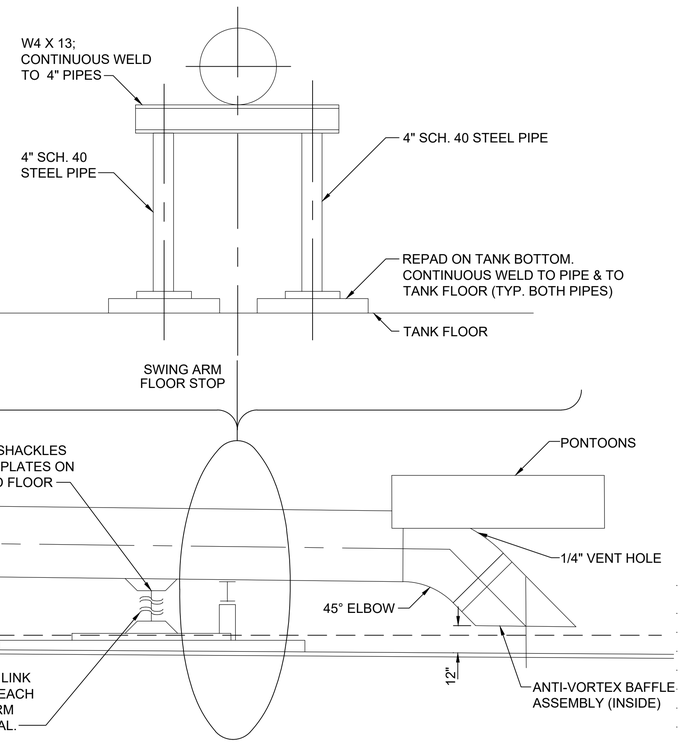
FLOATING SUCTION POSITION INDICATOR — 2 / -



NOTE:

1. PROVIDE THERMAL RELIEF VALVE ASSEMBLY SIMILAR TO DETAIL 5/M-5-01 WITH ADDITIONAL VENT.

FLOATING SUCTION NOZZLE — 3 / -



FLOATING SWING ARM ASSEMBLY — 4 / -

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PORTLAND, OREGON 97218

PDX FACILITY IMPROVEMENTS
MECHANICAL TANK DETAILS - 1 OF 4

project	contract
153929	

drawing **M-504** rev. **A**

file 153929M-504.dwg

REGISTERED PROFESSIONAL ENGINEER 92938PE OREGON NOV. 14, 2017 DOUGLAS LYNN WOODWARD 12/21/2023

EXPIRES: JUNE 30, 2024

Millimeters Inches Scale For Microfilming

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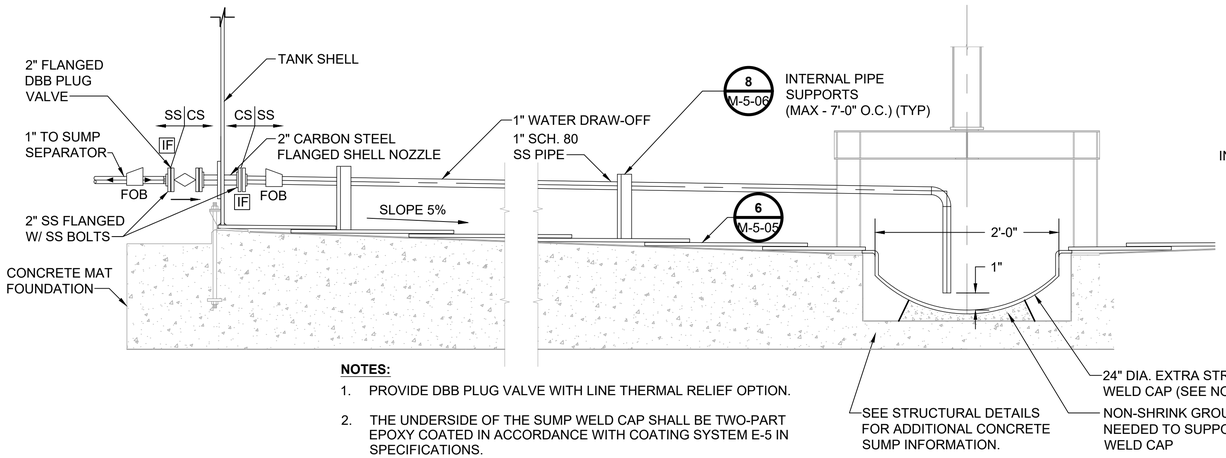
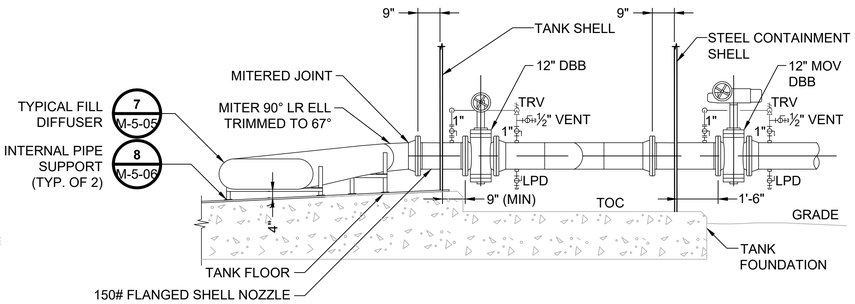


NOTES:

1. PROVIDE DBB PLUG VALVE WITH LINE THERMAL RELIEF OPTION.
2. THE UNDERSIDE OF THE SUMP WELD CAP SHALL BE TWO-PART EPOXY COATED IN ACCORDANCE WITH COATING SYSTEM E-5 IN SPECIFICATIONS.

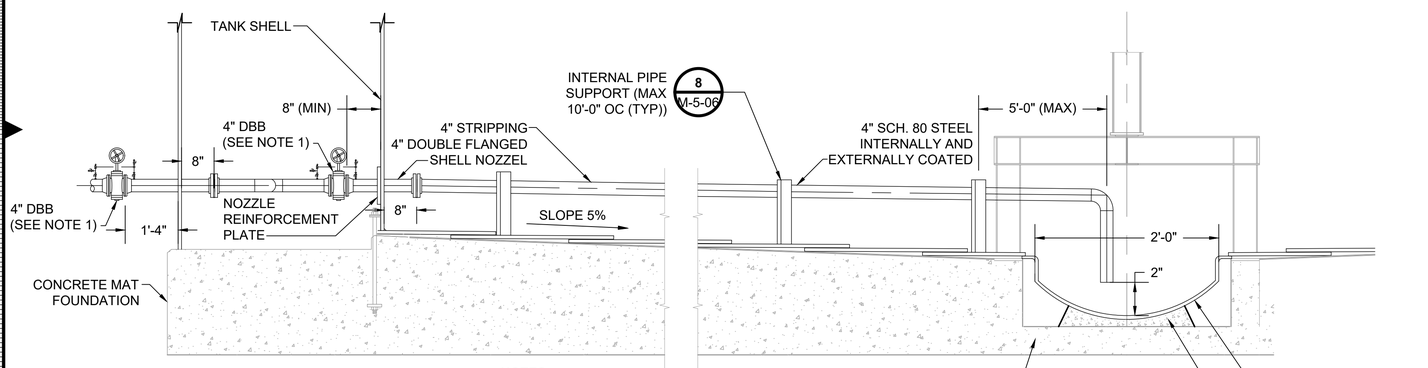
WATER DRAW-OFF NOZZLE — 1 / -



NOTE:

1. PROVIDE THERMAL RELIEF VALVE ASSEMBLY SIMILAR TO DETAIL 5/M-5-01.

FILL NOZZLE — 2 / -



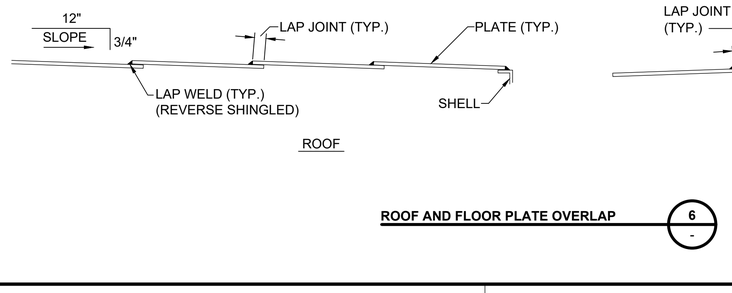
NOTES:

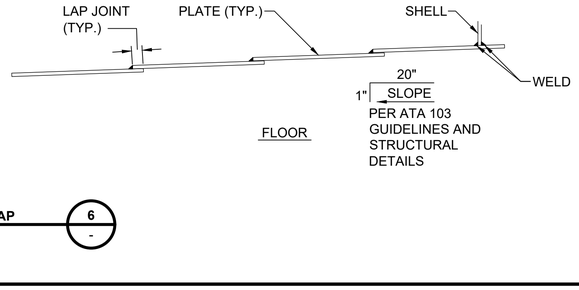
1. PROVIDE DBB PLUG VALVE WITH LINE THERMAL RELIEF OPTION.
2. THE UNDERSIDE OF THE SUMP WELD CAP SHALL BE TWO-PART EPOXY COATED IN ACCORDANCE WITH COATING SYSTEM E-5 IN SPECIFICATIONS.

LOW SUCTION NOZZLE — 3 / -

TANK DIFFUSER SCHEDULE				
TANKS	MARK	NOZZLE SIZE	DIM A	DIM B
ALL	B	8"	20"	40"

TYPICAL TANK DIFFUSER — 7 / -





ROOF AND FLOOR PLATE OVERLAP — 6 / -

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PDX FACILITY IMPROVEMENTS
MECHANICAL TANK DETAILS - 2 OF 4

project	contract
153929	

drawing **M-505** rev. **A**

file 153929M-505.dwg

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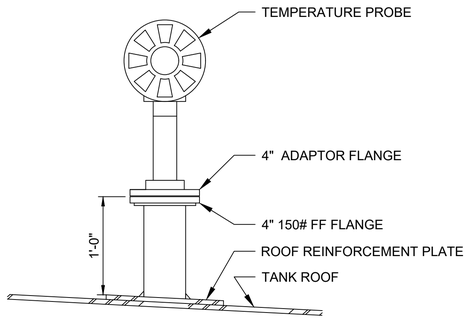
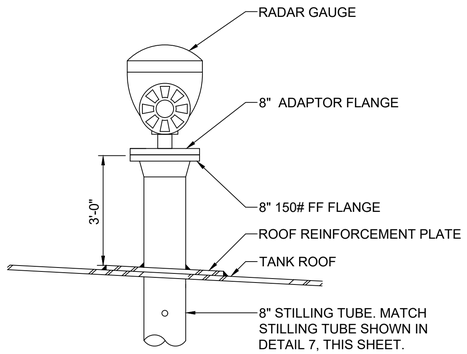
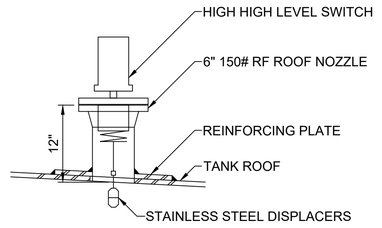


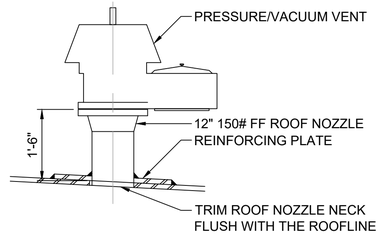
TEMPERATURE PROBE 1 -



AUTOMATIC TANK GAUGE 2 -

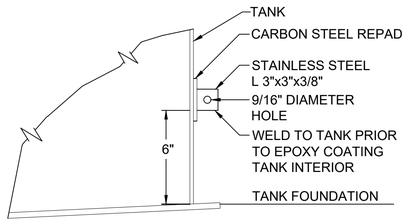


HIGH-HIGH LEVEL SWITCH NOZZLE 3 -

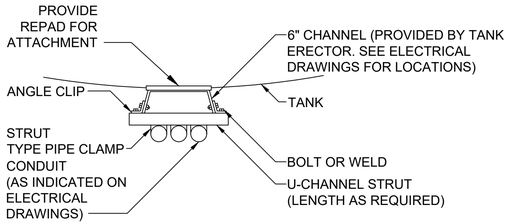


PRESSURE/VACUUM VENT NOZZLE 4 -

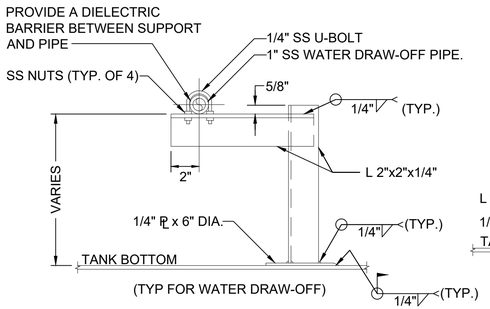
GAUGE HATCH STILLING WELL 7 -



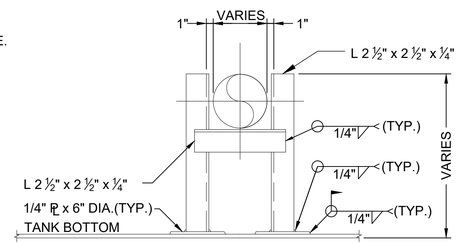
TANK GROUNDING LUG 5 -



TANK MOUNTED CONDUIT RISER 6 -



INTERNAL PIPE SUPPORT 8 -



(TYP FOR SUCTION, FILL, TRANSFER SUCTION, FLUSH RETURN AND LOW SUCTION LINES)

no.	date	by	ckd	description
A	12/21/23	DLW	JJB	ISSUED FOR PERMIT

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06/07/2023	H. HARMON
designed	checked
D. WOODWARD	J. BURD

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PORTLAND INTERNATIONAL AIRPORT
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PDX FACILITY IMPROVEMENTS
MECHANICAL TANK DETAILS - 3 OF 4

project	contract
153929	

drawing **M-506** rev. **A**

file 153929M-506.dwg

REGISTERED PROFESSIONAL ENGINEER 92938PE OREGON NOV. 14, 2017 DOUGLAS LYNN WOODWARD 12/21/2023

EXPIRES: JUNE 30, 2024

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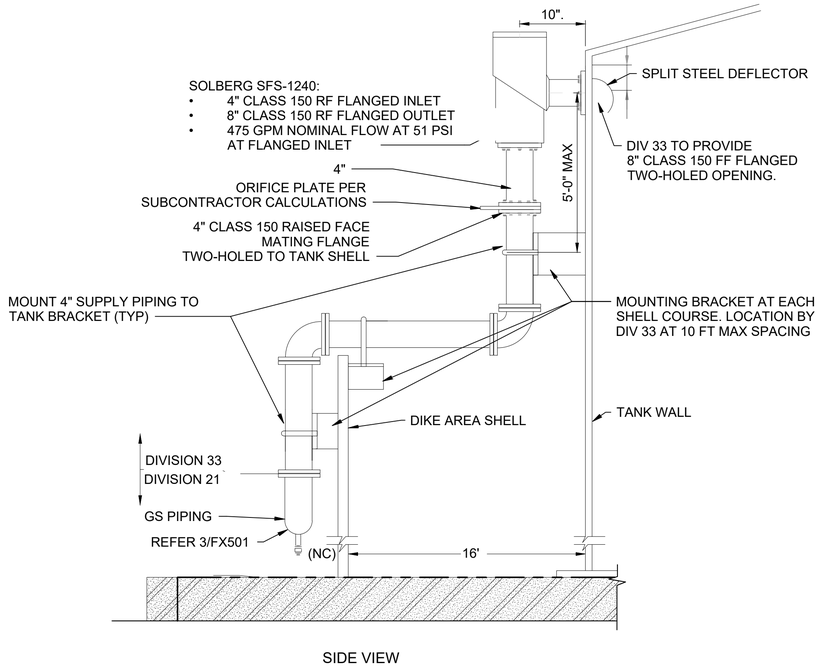
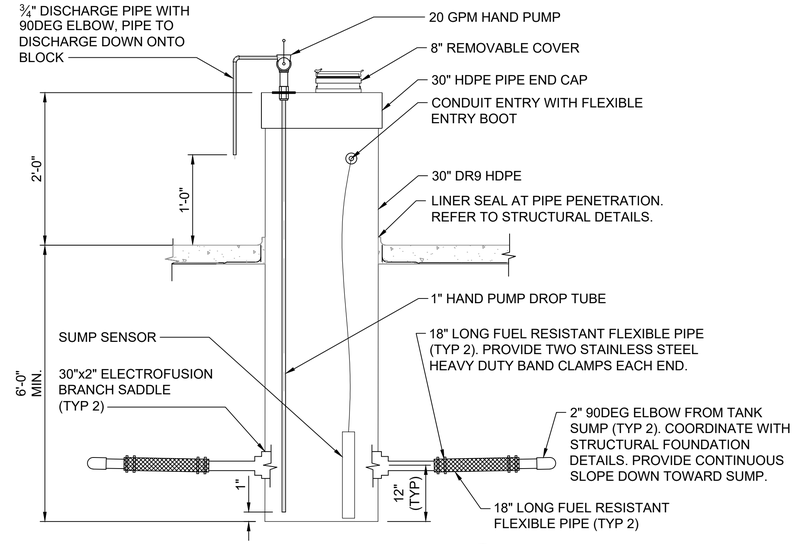
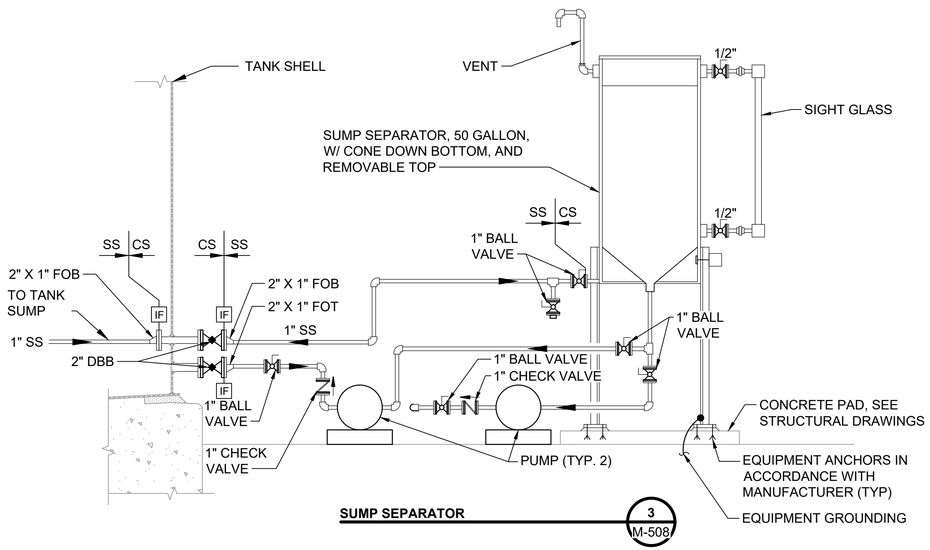


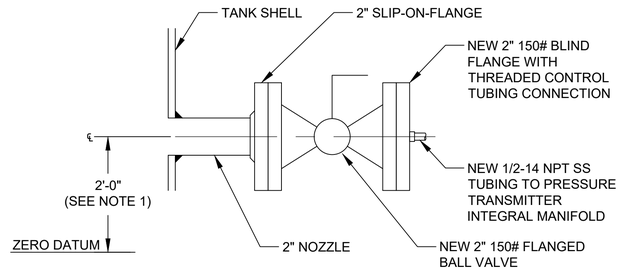
FOAM CHAMBER — 1 / -



FOUNDATION DEWATERING SUMP — 2 / M-402, M-403, M-404



SUMP SEPARATOR — 3 / M-508



NOTE:

1. SUBCONTRACTOR SHALL SURVEY DIMENSION FROM NOZZLE CENTERLINE TO TANK ZERO DATUM (BOTTOM OF TANK AT SHELL) AND PROVIDE DIMENSION TO COMMISSIONING AGENT FOR CALIBRATION. TYPICAL EACH TANK.

TANK PRESSURE TRANSMITTER — 4 / -

no.	date	by	ckd	description
A	12/21/23	DLW	JJB	ISSUED FOR PERMIT

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PORTLAND, OREGON 97218

PDX FACILITY IMPROVEMENTS
MECHANICAL TANK DETAILS - 4 OF 4

project	contract
153929	

drawing **M-507** rev. **A**

file 153929M-507.dwg

REGISTERED PROFESSIONAL ENGINEER 92908PE OREGON NOV. 14, 2017 DOUGLAS LYNN WOODWARD 12/21/2023

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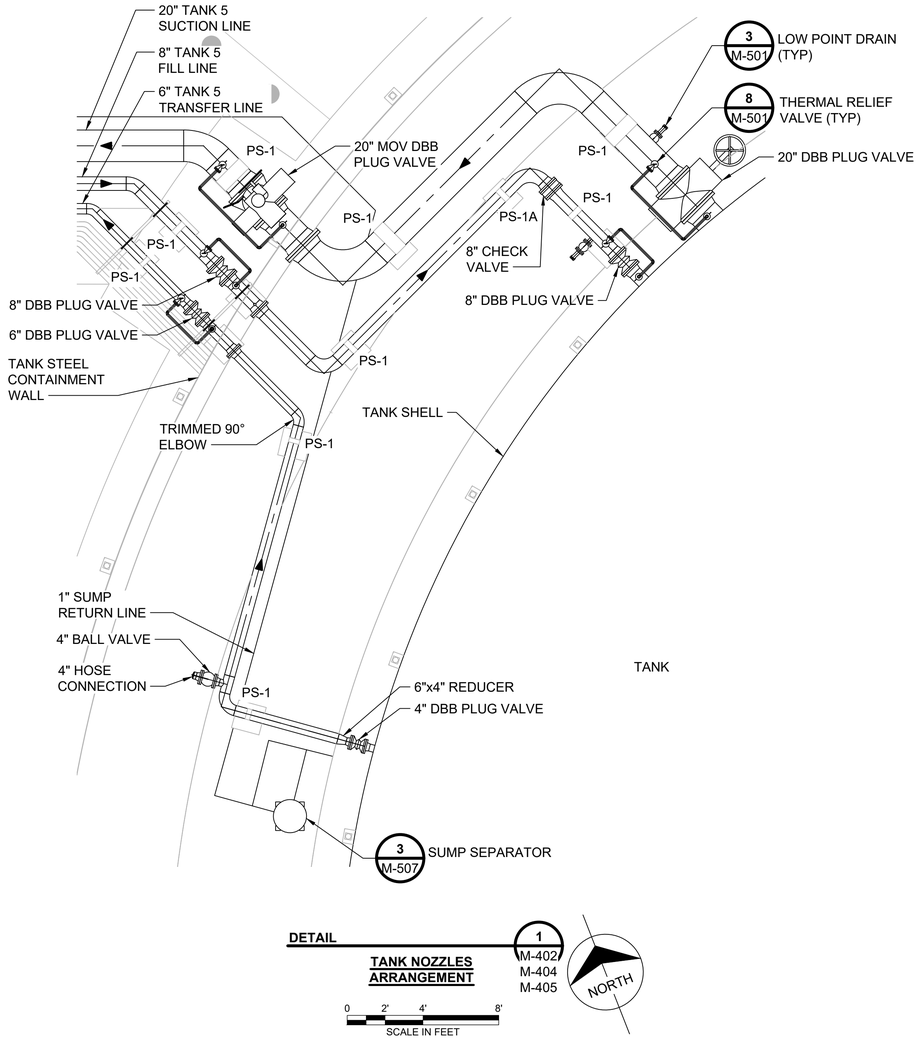

DETAIL 1 M-402 M-404 M-405

TANK NOZZLES ARRANGEMENT

NOTES:

1. SEE DRAWINGS M-001 AND M-002 FOR ABBREVIATIONS, SYMBOLS, INSTRUMENTATION, AND GENERAL FUELING AND PHASING NOTES.
2. THE DRAWINGS INDICATE THE VARIOUS PIPING SYSTEMS SCHEMATICALLY AND DO NOT ATTEMPT TO SHOW EXACT DETAILS OF ALL PIPING OR ALL OFFSETS THAT MAY BE REQUIRED. VERIFY ALL DIMENSIONS, ELEVATIONS AND CONNECTIONS THAT ARE DETERMINED BY THE EQUIPMENT SELECTION AND ADJUST SYSTEMS TO ENSURE THAT EQUIPMENT, PIPE, ETC. CAN BE INSTALLED IN THE ALLOTTED SPACE. NO ADDED COMPENSATION SHALL BE PERMITTED FOR VARIATIONS DUE TO EQUIPMENT SELECTION.
3. ALL DIMENSIONS ARE IN INCHES UNLESS OTHERWISE INDICATED. ALL DIMENSIONS SHOWN TO CENTERLINE OF PIPE UNLESS OTHERWISE INDICATED.
4. ALL BLOCK VALVES UPSTREAM AND DOWNSTREAM OF THERMAL RELIEF VALVES SHALL BE FURNISHED WITH LOCKING DEVICES AND SHALL BE LOCKED IN THE OPEN POSITION.
5. NOT ALL SMALL BORE PIPING REQUIRED IS SHOWN ON PLANS AND SECTIONS FOR CLARITY. SEE MECHANICAL P&ID DRAWINGS FOR ADDITIONAL REQUIREMENTS.
6. SMALL BORE PIPING 2-1/2" AND SMALLER SHALL BE SUPPORTED WITH 8'-0" MAXIMUM SPAN BETWEEN SUPPORTS. SMALL BORE PIPE SUPPORTS MAY BE MOUNTED TO EQUIPMENT PADS, LARGE BORE PIPE SUPPORTS, OR WITH APPROVED SUPPORTS MOUNTED FROM LARGE BORE PIPES. PROVIDE PTFE PADS BETWEEN PIPES AND SUPPORT ATTACHMENTS.
7. PS-# CALL-OUTS INDICATE APPROXIMATE PIPE SUPPORT LOCATIONS. SEE STRUCTURAL DRAWINGS S-551 THRU S-553 FOR PIPE SUPPORT DETAILS.

no.	date	by	ckd	description
A	12/21/23	DLW	JJB	ISSUED FOR PERMIT

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PDX FACILITY IMPROVEMENTS
TANK NOZZLES ARRANGEMENT DETAIL

project	contract
153929	

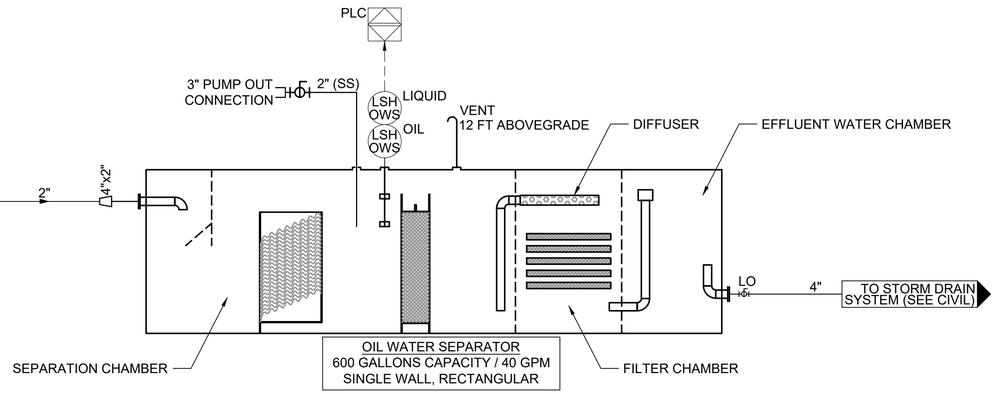
drawing **M-508** rev. **A**

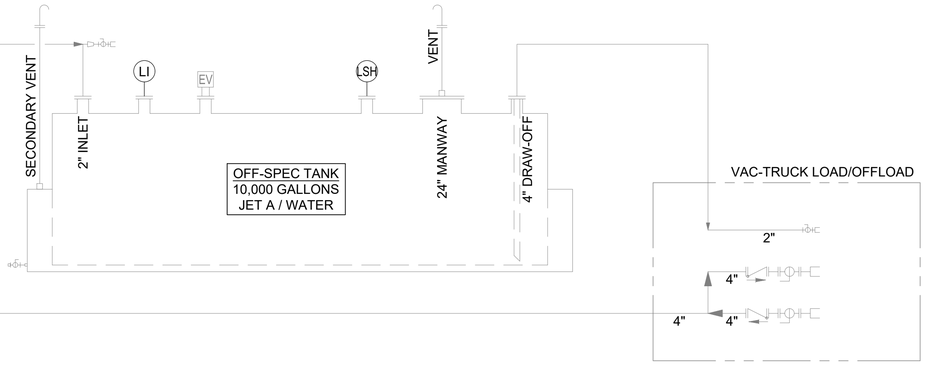
file 153929M-508.DWG

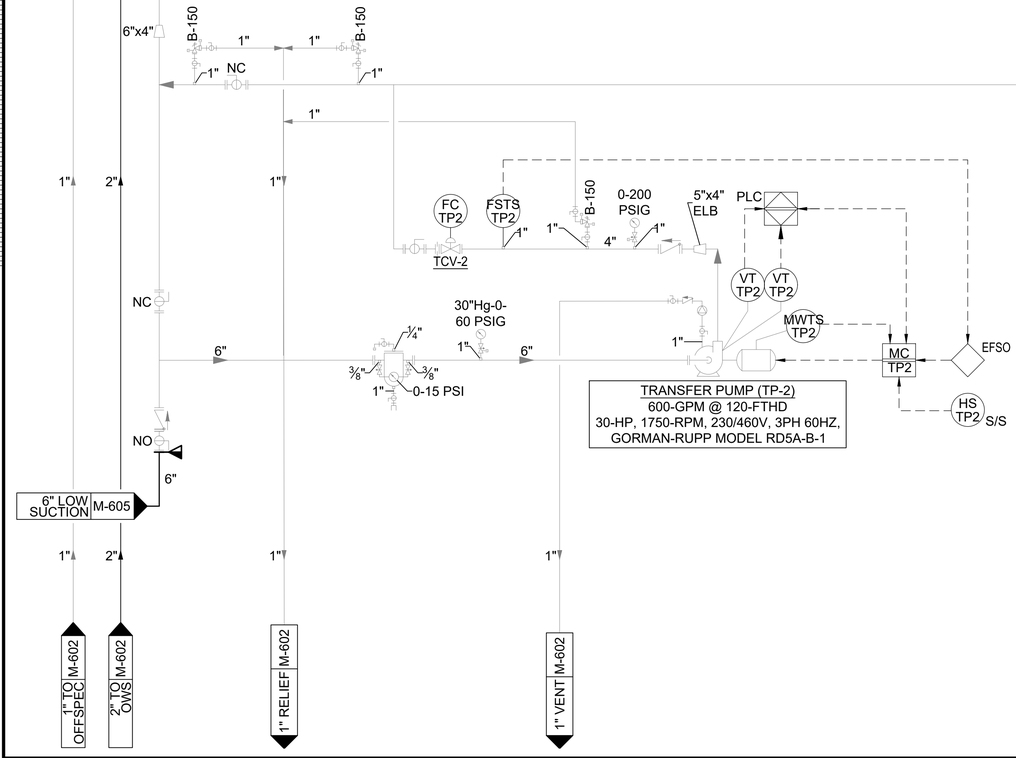
REGISTERED PROFESSIONAL ENGINEER 92908PE OREGON NOV. 14, 2017 DOUGLAS LYNN WOODWARD 12/21/2023

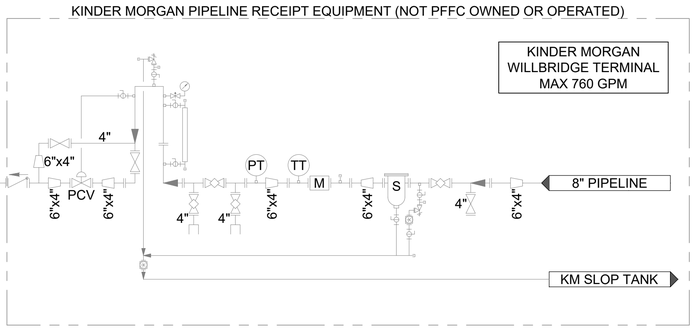
EXPIRES: JUNE 30, 2024

Scale For Microfilming
Millimeters
Inches









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PDX FACILITY IMPROVEMENTS
MECHANICAL P&ID (1 OF 8)

project	contract
153929	

drawing **M-601** rev. **A**

file M-601.dwg

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1" TO OFFSPEC M-601
2" TO OWS M-601
1" RELIEF M-601
1" VENT M-601
8" FILL M-601
8" FILL M-605
RECEIPT SAMPLE CONNECTIONS
PLC
DPIT FS6 FS-6
DPIT CF1 CF-1
DPIT PF1 PF-1
MS FS6
LEAK AND LEVEL DETECTION PANEL
LSH P14
LSL P14
HD P14
P-14
HPP CONTAINMENT SUMP
EFSO
VFD
MC HP7
TT HP7
VTX HP7
VTY HP7
MWTS HP7
30"Hg-0-60 PSIG
0-300 PSIG
300#
HP-7
12"x6" ECC FOT
0-15 PSI
2"x1" NC
FSTS HP7
MS HFS7
DPIT HFS7 HFS-7
1½"x1" ECC FOB
TO HFS SAMPLE CONNECTIONS
FE HP7
FC HP7
JY HP7
HFCV-7
SRC
SG
70%
SS-3
LSH SS3
HS P9
HS P8
P-9
P-8
HYDRANT PUMP (HP-7)
VERTICAL INLINE CENTRIFUGAL
1200-GPM @ 470-FTHD
200-HP VFD, 230/460V, 3PH, 60HZ
CLYDEUNION MODEL 6X6X13A VLK-L
EFSO
VFD
MC HP6
TT HP6
VTX HP6
VTY HP6
MWTS HP6
HP-6
FSTS HP6
MS HFS6
DPIT HFS6 HFS-6
FE HP6
FC HP6
JY HP6
HFCV-6
FUTURE HYDRANT PUMP (HP-6)
VERTICAL INLINE CENTRIFUGAL
1200-GPM @ 470-FTHD
200-HP VFD, 230/460V, 3PH, 60HZ
1" DRAIN HFS-4
1" DRAIN HFS-3
1" DRAIN HFS-2
1" DRAIN HFS-1
1" F/S RELIEF
1" OFFSPEC
20" ISSUE
1" F/S RELIEF
1" VENT
20" SUCTION
1" TO OFFSPEC M-603
1" RELIEF M-603
20" SUCTION M-603
20" ISSUE M-603
1" F/S RELIEF M-603
1" VENT M-603
1" DRAIN HFS-4 M-603
1" DRAIN HFS-3 M-603
1" DRAIN HFS-2 M-603
1" DRAIN HFS-1 M-603
1" F/S RELIEF M-603
1" OFFSPEC M-603

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designed	checked
D. WOODWARD	J. BURD

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PORTLAND INTERNATIONAL AIRPORT
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PORTLAND, OREGON 97218

PDX FACILITY IMPROVEMENTS
MECHANICAL P&ID (2 OF 8)

project	contract
153929	

drawing **M-602** rev. **A**

file M-602.dwg

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Inches

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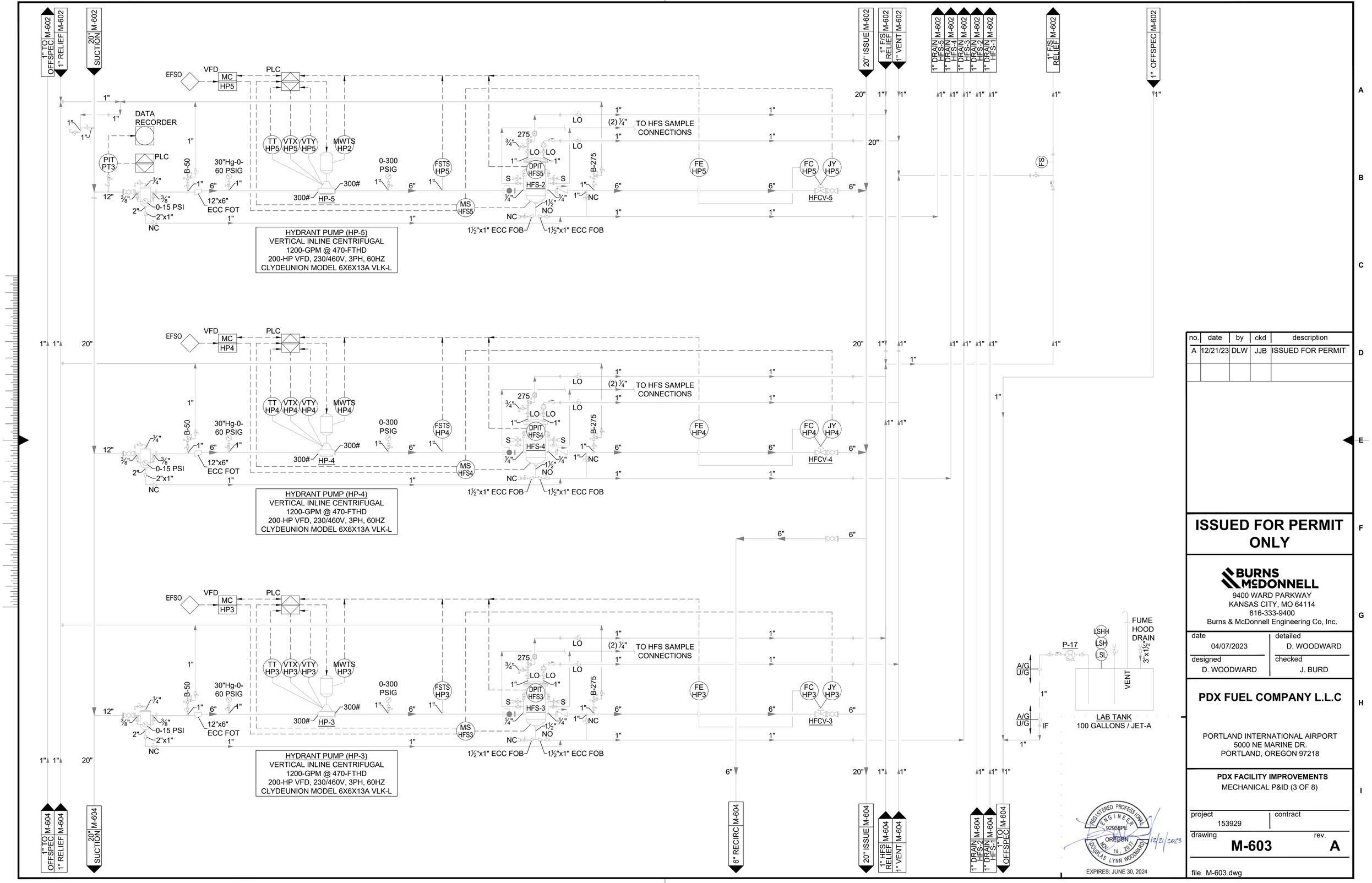

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D. WOODWARD	J. BURD

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PDX FACILITY IMPROVEMENTS
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1" TO OFFSPEC M-603
1" RELIEF M-603
20" SUCTION M-603
6" RECIRC M-603
20" ISSUE M-603
1" HFS RELIEF M-603
1" VENT M-603
1" DRAIN HFS-2 M-603
1" DRAIN HFS-1 M-603
1" TO OFFSPEC M-603

EFSO
VFD
MC HP2
PLC
TT HP2
VTX HP2
VTY HP2
MWTS HP2
B-50
30"Hg-0-60 PSIG
0-15 PSI
12"x6" ECC FOT
2"x1"
NC
300# HP-2
0-300 PSIG
FSTS HP2
MS HFS2
1½"x1" ECC FOB
1½"x1" ECC FOB
LO
(2) ¼" TO HFS SAMPLE CONNECTIONS
DPIT HFS2
HFS-2
B-275
NO
NC
FE HP2
FC HP2
JY HP2
HFCV-2

HYDRANT PUMP (HP-2)
VERTICAL INLINE CENTRIFUGAL
1200-GPM @ 470-FTHD
200-HP VFD, 230/460V, 3PH, 60HZ
CLYDEUNION MODEL 6X6X13A VLK-L

EFSO
VFD
MC HP1
PLC
TT HP1
VTX HP1
VTY HP1
MWTS HP1
B-50
30"Hg-0-60 PSIG
0-15 PSI
12"x6" ECC FOT
2"x1"
NC
300# HP-1
0-300 PSIG
FSTS HP1
MS HFS1
1½"x1" ECC FOB
1½"x1" ECC FOB
LO
(2) ¼" TO HFS SAMPLE CONNECTIONS
DPIT HFS1
HFS-1
B-275
NO
NC
FE HP1
FC HP1
JY HP1
HFCV-1

HYDRANT PUMP (HP-1)
VERTICAL INLINE CENTRIFUGAL
1200-GPM @ 470-FTHD
200-HP VFD, 230/460V, 3PH, 60HZ
CLYDEUNION MODEL 6X6X13A VLK-L

FROM HYDRANT FILTER SEPARATORS
(2) ¼" FROM HFS-1
(2) ¼" FROM HFS-2
(2) ¼" FROM HFS-3
(2) ¼" FROM HFS-4
(2) ¼" FROM HFS-5
FUTURE (2) ¼" FROM HFS-6
FUTURE (2) ¼" FROM HFS-7

DATA RECORDER
PLC
FIT HRC
FE HRC
6"x4"
1,200-GPM

PIT PT1
PIT PT2
DATA RECORDER
PLC
DATA RECORDER
PLC
A/G
U/G
IF

20" SUCTION M-605
1" SUMP RETURN M-605
PC R2
JY R2A
JY R2B
RCV-2
PC R1
JY R1A
JY R1B
RCV-1
B-275
30"Hg-0-60 PSIG
0-300 PSIG
PLC

HFS SAMPLE CONNECTIONS

20" HYDRANT MAIN

6" RECLAIM SUPPLY M-608

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PDX FACILITY IMPROVEMENTS
MECHANICAL P&ID (4 OF 8)

project	contract
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drawing **M-604** rev. **A**

file M-604.dwg

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OREGON
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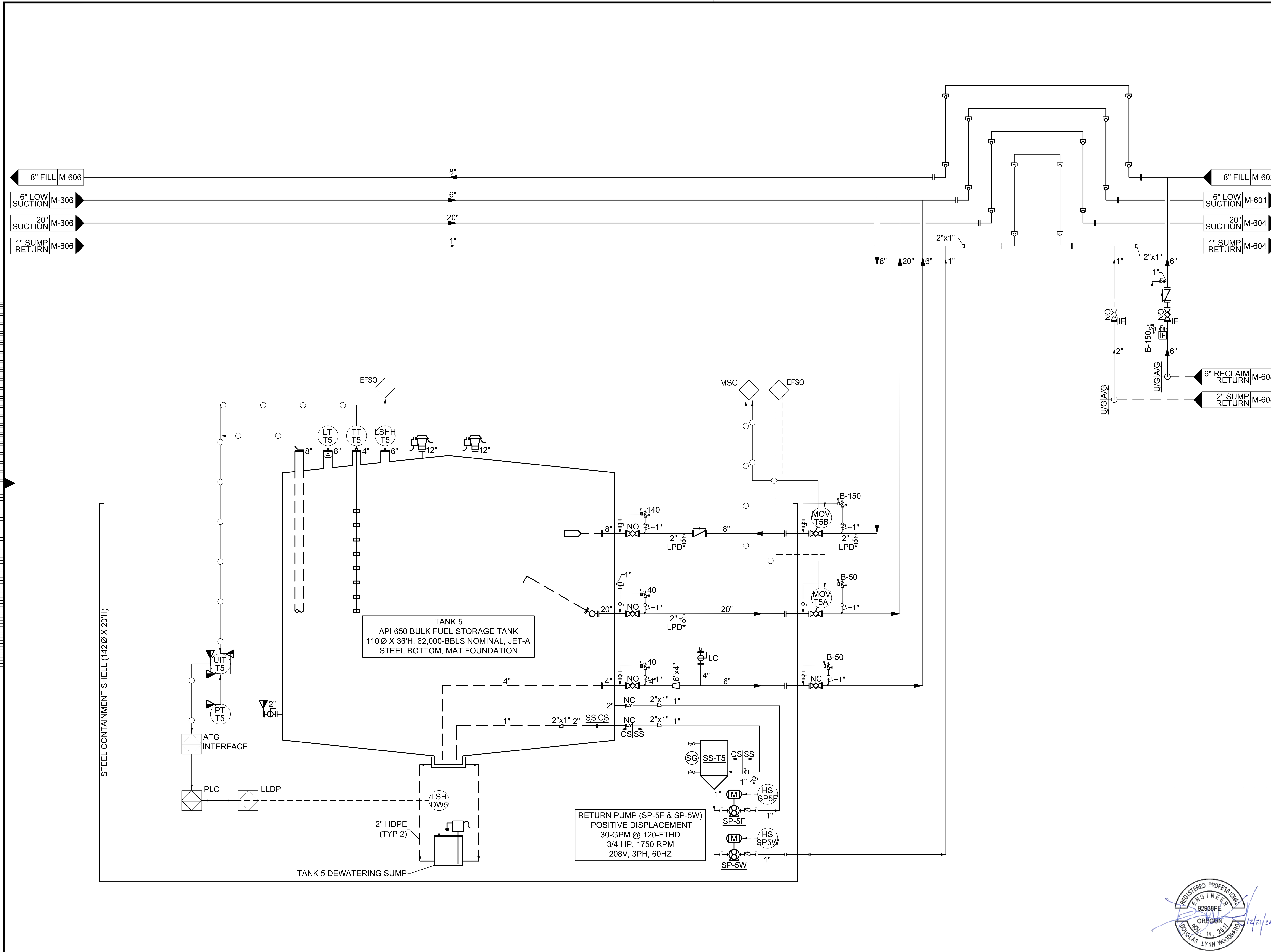

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designed: D. WOODWARD
checked: J. BURD

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PDX FACILITY IMPROVEMENTS
MECHANICAL P&ID (5 OF 8)

project: 153929
contract:
drawing: **M-605**
rev. **A**

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file M-605.dwg

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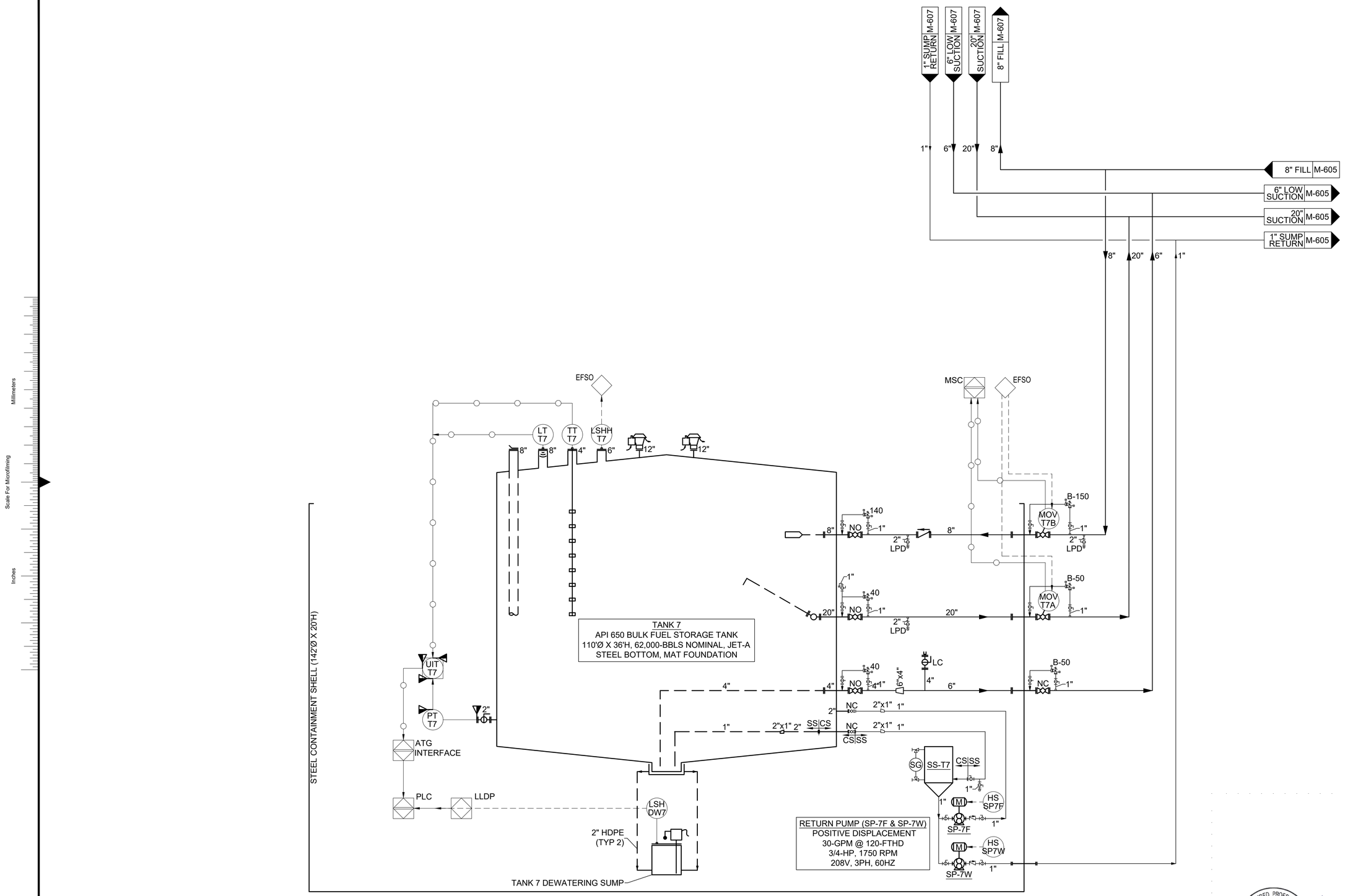

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PDX FACILITY IMPROVEMENTS
MECHANICAL P&ID (6 OF 8)

project	contract
153929	

drawing **M-606** rev. **A**

file M-606.dwg

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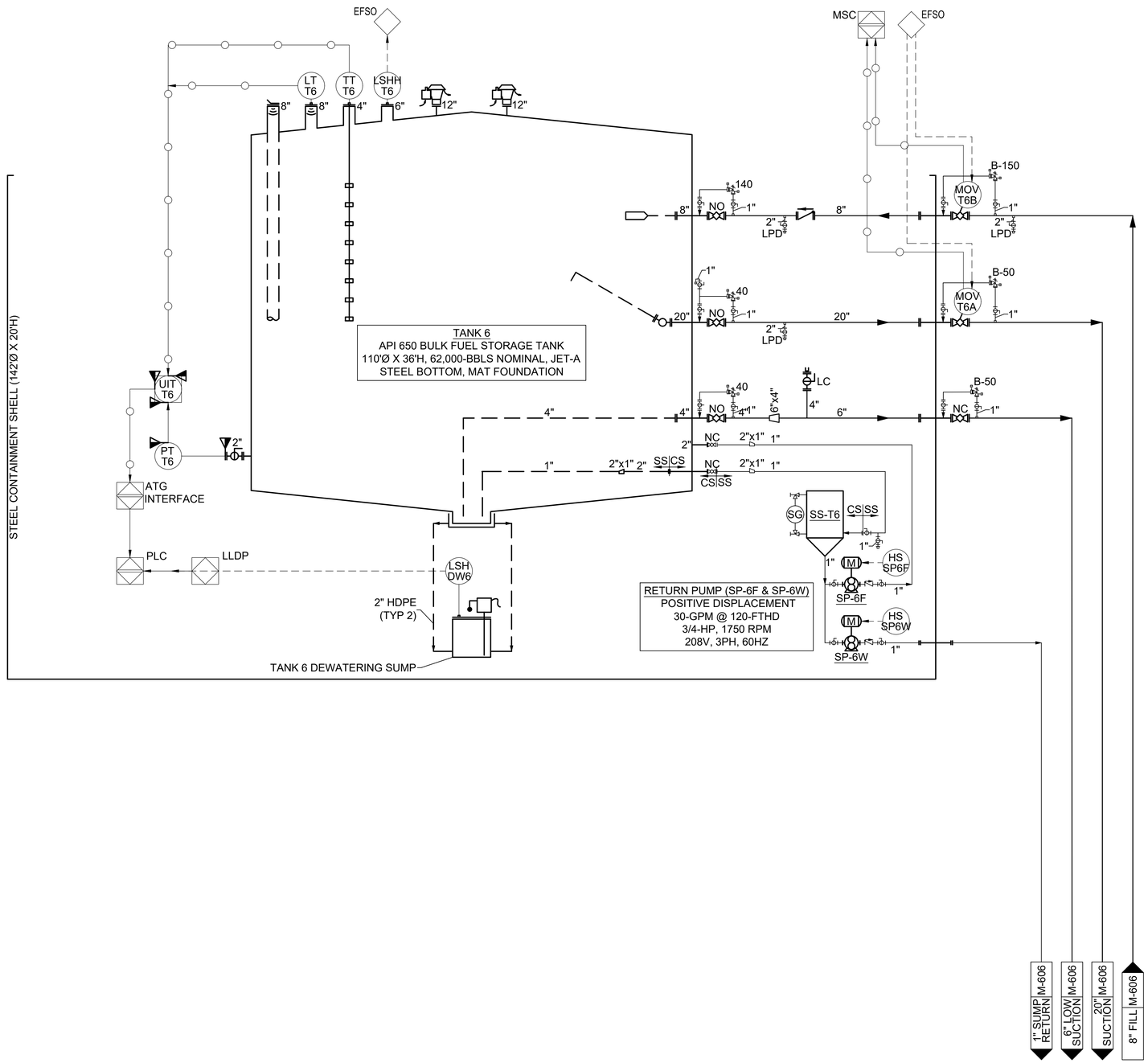

Scale For Microfilming
Millimeters
Inches

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PDX FACILITY IMPROVEMENTS
MECHANICAL P&ID (7 OF 8)

project	contract
153929	

drawing **M-607** rev. **A**

file M-607.dwg

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6" RECLAIM SUPPLY M-604
6" RECLAIM RETURN M-605
2" SUMP RETURN M-605
U/G|A/G
EFSO
MSC
MOV RCS
MOV RCR
IF
NC
NO
2"x1"
RF/S-2
1,000 GPM
RF/S-1
1,000 GPM
RFCV-2
RFCV-1
FC RFS2
JY RFS2
FC RFS1
JY RFS1
DPIT RFS2
FE RFS2
DPIT RFS1
FE RFS1
MS RFS2
MS RFS1
PLC
0-300 PSIG
0-160 PSIG
0-15 PSID
30"Hg-0-60 PSIG
FIT OP2
FC OP2
FS OP2
450-GPM
OCV-1
MWTS OP2
MC OP2
HS OP2 S/S
OFFLOAD PUMP 2 (OP-2)
SELF-PRIMING HORIZONTAL
450-GPM @ 200-FTHD
40-HP, 3600 RPM, 230/460V, 3PH, 60HZ
GORMAN-RUPP MODEL RD4A-B-1
HS TP1 S/S
MC TP1
VFD
YL TP1
RUN STATUS
FC RT
HLCV-1
PIT TP1
FSTS TP1
TSH TP1
TT TP1
VTX TP1
VTY TP1
ARV-1
TP-1
300#
LO
HYDRANT CART TEST PUMP (TP-1)
VERTICAL TURBINE
820-GPM @ 375-FTHD
100-HP, VFD, 230/460V, 3PH, 60HZ
TBD
UT RT
LT RT
TT RT
LSHH RT
90%
LLRP
WATER DRAW-OFF PUMP
LD RT
6" DROP TUBE
36" MANWAY
8" PRIMARY EMER VENT
8" SECONDARY EMER VENT
4" PRIMARY P/V VENT
MANUAL GAUGE WELL
EV
4" SPARE
30" MANWAY
1" DROP TUBE
RECLAIM TANK
UL 142 STORAGE TANK
20,000 GALLONS, JET-A
DOUBLE-WALL
SRC
SS-4
SG
NO
P-19F
P-19W
RETURN PUMP (P-19F & P-19W)
POSITIVE DISPLACEMENT
30-GPM @ 120-FTHD
3/4-HP, 1750 RPM
208V, 3PH, 60HZ
FE HCTS
FIT HCTS
HTCV-1
H
SA
25 GALLONS
820-GPM
OFFLOAD PUMP 1 (OP-1)
SELF-PRIMING HORIZONTAL
450-GPM @ 200-FTHD
40-HP, 3600 RPM, 230/460V, 3PH, 60HZ
GORMAN-RUPP MODEL RD4A-B-1
MWTS OP1
MC OP1
HS OP1 S/S
EFSO

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PDX FACILITY IMPROVEMENTS
MECHANICAL P&ID (8 OF 8)

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file M-608.dwg

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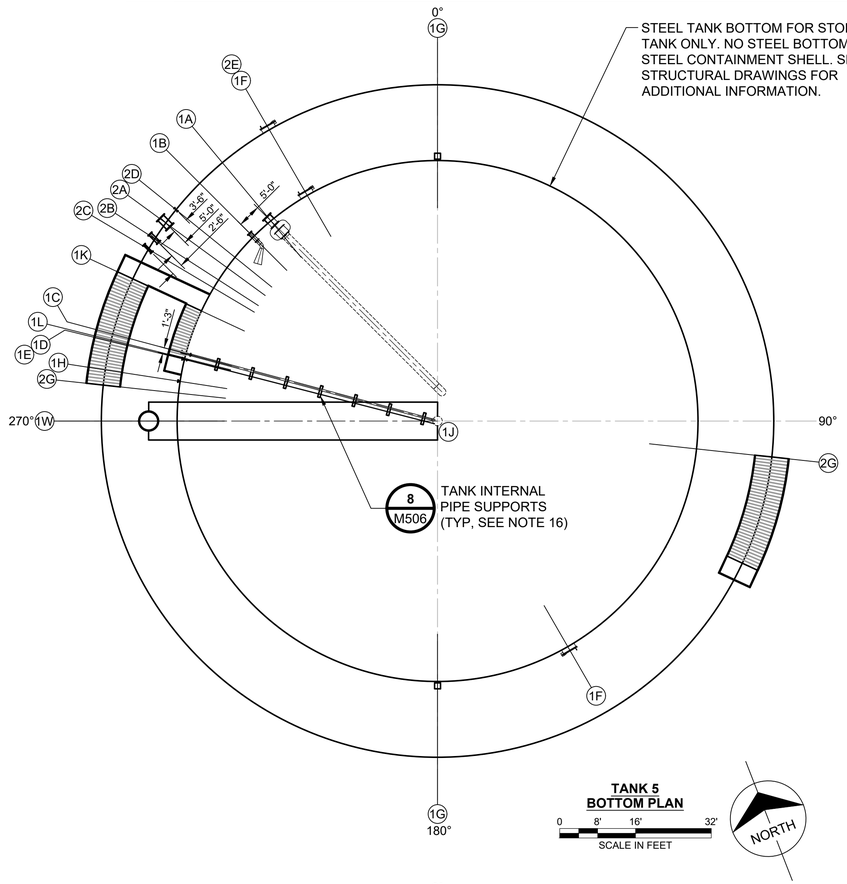
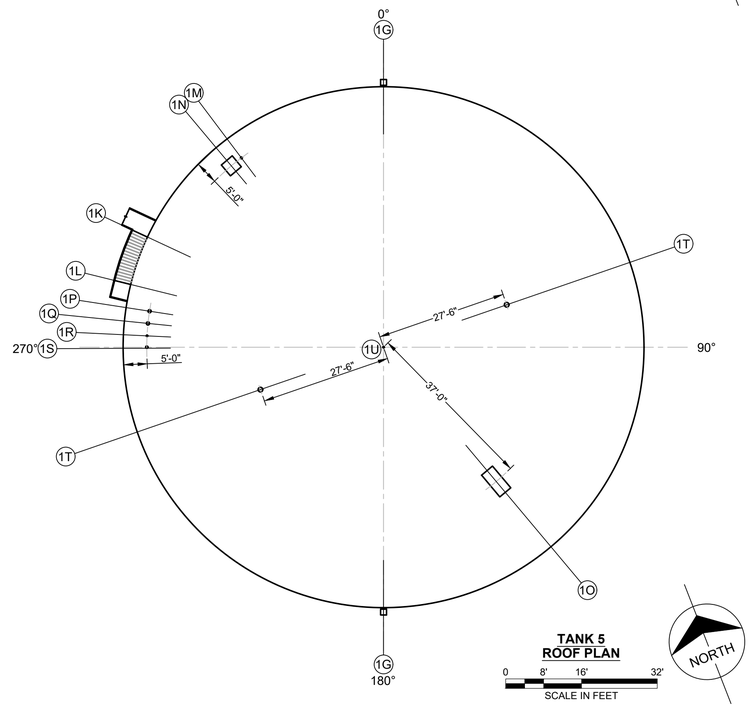


TANK 5
BOTTOM PLAN



TANK 5
ROOF PLAN

TANK 5 SCHEDULE
STORAGE TANK - 110'-0" Ø X 36'-0" H

MARK	QTY.	SIZE	DESCRIPTION	DETAIL	TANK LOCATION	ELEVATION (NOTE 17)
1A	1	20"	SUCTION NOZZLE (NOTE 1)	1/M-504	320° (NOTE 2)	C/L @ 1'-8 3/4"
1B	1	8"	FILL NOZZLE (NOTE 1)	2/M-505	315°	C/L @ 1'-1"
1C	1	4"	LOW SUCTION NOZZLE (NOTE 1)	3/M-505	285°	C/L @ 1'-0"
1D	1	2"	WATER DRAW-OFF	1/M-505	284°	C/L @ 9"
1E	1	2"	PRODUCT RETURN	3/M-507	284°	C/L @ 2'-9"
1F	2	36"	SHELL MANWAY		150°, 330°	C/L @ 3'-6"
1G	2	4"	FOAM CHAMBER	1/M-507	0°, 180° (NOTE 5 & 7)	C/L @ 35'-0"
1H	1	2"	PRESSURE TRANSMITTER	4/M-507	279°	C/L @ 3'-0"
1I	??	???	GROUNDING LUG	5/M-506	???	C/L @ 7 1/2"
1J	1	24"Ø x 12"D	BOTTOM SUMP		CENTER	FLOOR
1K	1	8-1/2" x 36"	START OF STAIRS / CATWALK		295° (NOTE 4)	TOP OF FIRST STEP @ 8"
1L	1	36" x 42"	ROOF LANDING		284°	ROOF
1M	1	1 1/2"	FLOATING SUCTION POSITION INDICATOR	2/M-504	323° (NOTE 3)	ROOF
1N	1	36" x 36"	ROOF MANHOLE		320° (NOTE 5)	ROOF
1O	1	36" x 72"	BOLTED ROOF COVER		140° (NOTE 5)	ROOF
1P	1	8"	GAUGE HATCH	7/M-506	279° (NOTE 5)	ROOF
1Q	1	8"	AUTOMATIC TANK GAUGE	2/M-506	276° (NOTE 5)	ROOF
1R	1	4"	TEMPERATURE PROBE	1/M-506	273° (NOTE 5)	ROOF
1S	1	6"	HIGH LEVEL SWITCH	3/M-506	270° (NOTE 5)	ROOF
1T	2	12"	PRESSURE/VACUUM VENTS (NOTE 6)	4/M-506	71°, 251° (NOTE 5)	ROOF
1U	1	4"	SCAFFOLD-CABLE SUPPORT		CENTER	ROOF
1V	1	-	PERIMETER HAND RAIL AND TOEBOARD		PERIMETER (NOTE 11)	ROOF
1W	1	30"Ø	FOUNDATION DEWATERING SUMP	2/M-507	270° (NOTE 13)	GRADE
			CONTAINMENT SHELL - 142'-0" Ø X 24'-0" H			
2A	1	20"	CONTAINMENT SUCTION NOZZLE (NOTE 1)		306° (NOTE 18)	C/L @ 2'-2 3/4"
2B	1	8"	CONTAINMENT FILL NOZZLE (NOTE 1)		303° (NOTE 19)	C/L @ 1'-7"
2C	1	6"	CONTAINMENT LOW SUCTION NOZZLE (NOTE 1)		301° (NOTE 20)	C/L @ 1'-6"
2D	1	1"	SUMP RETURN		309° (NOTE 21)	C/L @ 1'-1"
2E	1	36"	CONTAINMENT MANWAY		330°	C/L @ 3'-6"
2F	??	???	GROUNDING LUG	5/M-506	???	C/L @ 7 1/2"
2G	1	8-1/2" x 36"	START OF STAIRS		96°, 276° (NOTE 4)	TOP OF FIRST STEP @ 8"

SCHEDULE NOTES:
1. PROVIDE 1" FLANGED NOZZLE ON TOP FOR THERMAL RELIEF CONNECTION.
2. SUCTION NOZZLE SHALL BE INSTALLED PARALLEL AND OFFSET 5'-0" C/L TO C/L FROM THE 8" FILL NOZZLE.
3. HORIZONTAL DIMENSION FROM THE ROOF-TO-SHELL SEAM.
4. ADJUST LOCATION AS NECESSARY TO COORDINATE WITH ROOF LANDING. STAIRS SHALL RISE AT MAX 45° ANGLE.
5. LOCATE BETWEEN ROOF FRAMING. ADJUST LOCATION AS NECESSARY.
6. TRIM NOZZLE FLUSH WITH INTERIOR OF ROOF LINE.
7. PROVIDE SUPPORT FOR FOAM RISERS AT INTERVALS OF ONE SUPPORT PER SHELL COURSE. NOT TO EXCEED 10'-0" SPACING MAXIMUM.
8. TANK SHALL BE PROVIDED IN ACCORDANCE WITH API 650, LATEST EDITION.
9. TANK EXTERIOR AND INTERIOR SHALL BE FULLY COATED IN ACCORDANCE WITH SPECIFICATIONS. THIS INCLUDES THE INTERIOR OF ALL INTERNAL PIPING, STILLING WELLS, AND NOZZLES 4" AND LARGER.
10. INTERMEDIATE WIND GIRDERS ARE NOT ALLOWED FOR STORAGE TANK. THEY ARE ALLOWED FOR CONTAINMENT SHELL ONLY.
11. PROVIDE A CONTINUOUS HANDRAIL AROUND THE PERIMETER OF THE TANK ROOF.
12. PROVIDE A WEAK ROOF-TO-SHELL ATTACHMENT (FRANGIBLE JOINT) AS SPECIFIED IN API 650, FOR EMERGENCY RELIEF.
13. SEE STRUCTURAL STORAGE TANK FOUNDATION PLANS FOR ADDITIONAL INFORMATION ON LEAK DETECTION PIPE TO THE TANK FOUNDATION DEWATERING SUMP.
14. AXES SHALL BE PERPENDICULAR AND PARALLEL TO INTERMEDIATE DIKE WALL.
15. ZINC PLATED, GALVANIZED, COPPER, COPPER ALLOY, CADMIUM PLATED, OR PLASTIC MATERIALS ARE NOT PERMITTED TO BE IN CONTACT WITH JET FUEL.
16. MAXIMUM TANK INTERNAL PIPE SUPPORT SPACING FOR THE 4" LOW SUCTION LINE AND 1" SS WATER DRAW-OFF LINE SHALL BE 10'-0".
17. ELEVATIONS ARE GIVEN RELATIVE TO THE TOP OF THE TANK BOTTOM PLATE AT THE TANK SHELL (CHIME).
18. CONTAINMENT 20" SUCTION NOZZLE SHALL BE INSTALLED APPROXIMATELY 8.9° OFF AXIS.
19. CONTAINMENT 8" FILL NOZZLE SHALL BE INSTALLED PARALLEL AND OFFSET 5'-0" FROM THE 20" SUCTION NOZZLE, APPROXIMATELY 12.2° OFF AXIS.
20. CONTAINMENT 6" LOW SUCTION NOZZLE SHALL BE INSTALLED PARALLEL AND OFFSET 2'-6" FROM THE 8" FILL NOZZLE, APPROXIMATELY 14.3° OFF AXIS.
21. CONTAINMENT 1" SUMP RETURN NOZZLE SHALL BE INSTALLED PARALLEL AND OFFSET 3'-6" FROM THE 20" SUCTION NOZZLE, APPROXIMATELY 6.1° OFF AXIS.

DESIGN DATA
CODE (DESIGN & CONSTRUCTION): API 650, LATEST EDITION & ADDENDUMS
DESIGN SPECIFICATION: SECTION 33 56 43
DESIGN PRESSURE: ATMOSPHERIC
DESIGN TEMPERATURE: 32 DEG F
WELD INSPECTION: IN ACCORDANCE WITH API 650
SHELL CORROSION ALLOWANCE: ANNULAR RING 0.15-INCH (IF USED), OTHERWISE NONE
TANK BOTTOM CORROSION ALLOWANCE: NONE
SPECIFIC GRAVITY OF CONTENTS: 0.82
DESIGN SPECIFIC GRAVITY: 1.0
NOMINAL SHELL CAPACITY: 62,000 BBLS
DESIGN FILL/RECEIPT FLOW RATE: 1,200 GPM
DESIGN EMPTY/ISSUE FLOW RATE: 7,500 GPM
TANK BOTTOM CONFIGURATION: CONE DOWN WITH CENTER SUMP AND OVERALL SLOPE OF 20:1
DESIGN LIQUID LEVEL (CRITICAL HIGH LEVEL): 28'-9"
SIESMIC SLOSHING HEIGHT REQUIREMENT: 7'-3"

TANK 5 NOZZLE SCHEDULE

	20" SUCTION	8" FILL	4" LOW SUCTION
F_R (lbf)	TBD	TBD	TBD
F_L (lbf)	TBD	TBD	TBD
F_C (lbf)	TBD	TBD	TBD
M_T (ft-lbf)	TBD	TBD	TBD
M_C (ft-lbf)	TBD	TBD	TBD
M_L (ft-lbf)	TBD	TBD	TBD

TANK 5 CONTAINMENT NOZZLE SCHEDULE

	20" SUCTION	8" FILL	6" LOW SUCTION
F_R (lbf)	TBD	TBD	TBD
F_L (lbf)	TBD	TBD	TBD
F_C (lbf)	TBD	TBD	TBD
M_T (ft-lbf)	TBD	TBD	TBD
M_C (ft-lbf)	TBD	TBD	TBD
M_L (ft-lbf)	TBD	TBD	TBD

*NOZZLE LOADS ARE PROVIDED WITH COORDINATE SYSTEM IN ACCORDANCE WITH API 650 ANNEX P, FIGURE P-1 "NOMENCLATURE FOR PIPING LOADS AND DEFORMATION"

REGISTERED PROFESSIONAL ENGINEER 92938PE OREGON NOV. 14, 2011 DOUGLAS LYNN WOODWARD 12/21/2023
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9400 WARD PARKWAY
KANSAS CITY, MO 64114
816-333-9400
Burns & McDonnell Engineering Co, Inc.

date	detailed
05/09/2023	H. HARMON
designed	checked
D. WOODWARD	D. WOODWARD

PDX FUEL COMPANY L.L.C

PORTLAND INTERNATIONAL AIRPORT
5000 NE MARINE DR.
PORTLAND, OREGON 97218

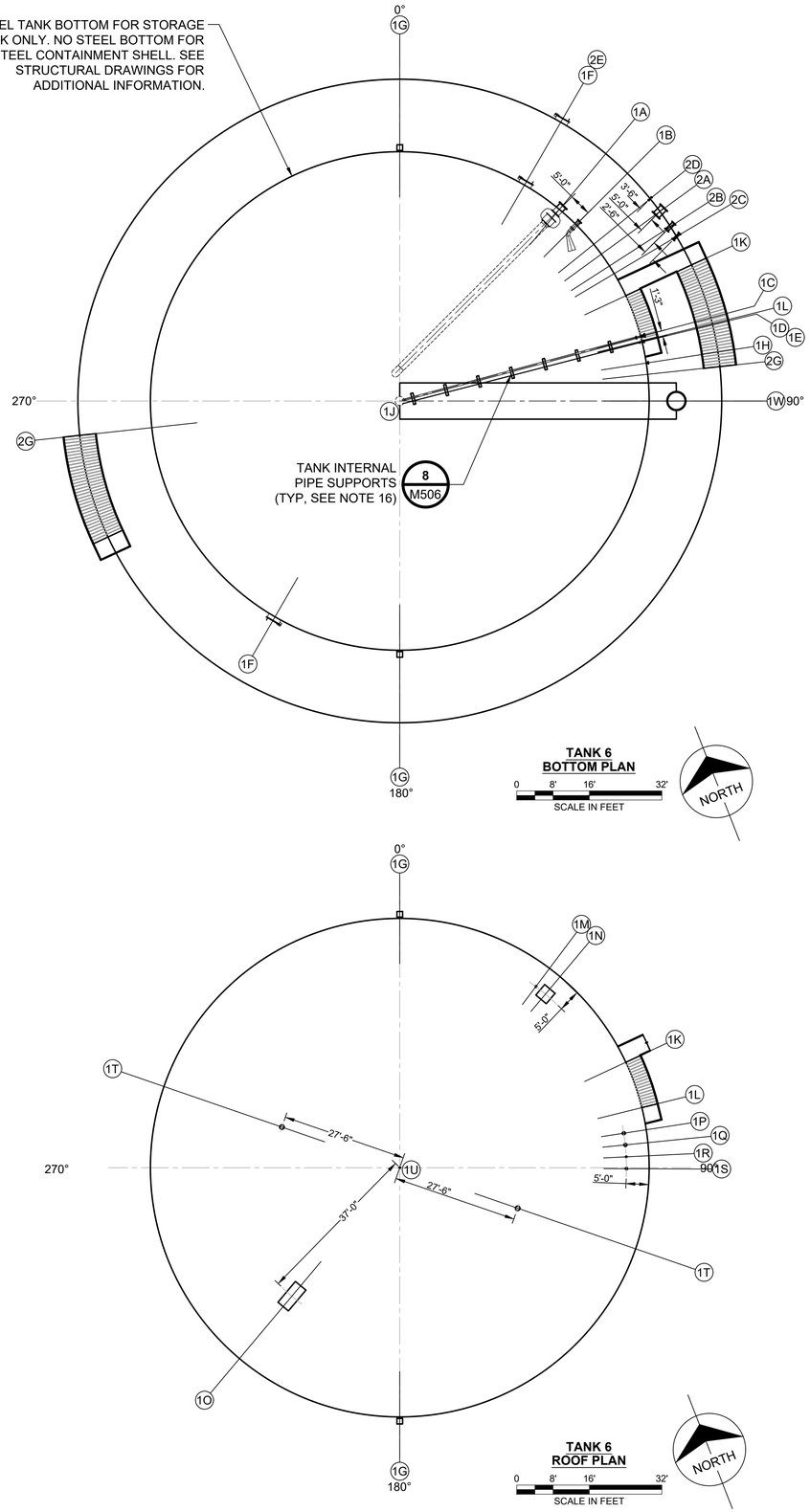
PDX FACILITY IMPROVEMENTS
APPURTENANCE PLANS
TANK 5

project	contract
153929	

drawing **M-901** rev. **A**

file 153929M-901.dwg

Scale For Microfilming
Millimeters
Inches



TANK 6 BOTTOM PLAN

0 8' 16' 32'

SCALE IN FEET

TANK 6 ROOF PLAN

0 8' 16' 32'

SCALE IN FEET

TANK 6 SCHEDULE
STORAGE TANK - 110'-0" Ø X 36'-0" H

MARK	QTY.	SIZE	DESCRIPTION	DETAIL	TANK LOCATION	ELEVATION (NOTE 17)
1A	1	20"	SUCTION NOZZLE (NOTE 1)	1/M-504	40° (NOTE 2)	C/L @ 1'-8 3/4"
1B	1	8"	FILL NOZZLE (NOTE 1)	2/M-505	45°	C/L @ 1'-1"
1C	1	4"	LOW SUCTION NOZZLE (NOTE 1)	3/M-505	75°	C/L @ 1'-0"
1D	1	2"	WATER DRAW-OFF	1/M-505	76°	C/L @ 9"
1E	1	2"	PRODUCT RETURN	3/M-507	76°	C/L @ 2'-9"
1F	2	36"	SHELL MANWAY		30°, 210°	C/L @ 3'-6"
1G	2	4"	FOAM CHAMBER	1/M-507	0°, 180° (NOTE 5 & 7)	C/L @ 35'-0"
1H	1	2"	PRESSURE TRANSMITTER	4/M-507	81°	C/L @ 3'-0"
1I	??	???	GROUNDING LUG	5/M-506		C/L @ 7 1/2"
1J	1	24"Ø x 12"D	BOTTOM SUMP		CENTER	FLOOR
1K	1	8-1/2" x 36"	START OF STAIRS / CATWALK		65° (NOTE 4)	TOP OF FIRST STEP @ 8"
1L	1	36" x 42"	ROOF LANDING		76°	ROOF
1M	1	1 1/2"	FLOATING SUCTION POSITION INDICATOR	2/M-504	37° (NOTE 3)	ROOF
1N	1	36" x 36"	ROOF MANHOLE		40° (NOTE 5)	ROOF
1O	1	36" x 72"	BOLTED ROOF COVER		220° (NOTE 5)	ROOF
1P	1	8"	GAUGE HATCH	7/M-506	81° (NOTE 5)	ROOF
1Q	1	8"	AUTOMATIC TANK GAUGE	2/M-506	84° (NOTE 5)	ROOF
1R	1	4"	TEMPERATURE PROBE	1/M-506	87° (NOTE 5)	ROOF
1S	1	6"	HIGH LEVEL SWITCH	3/M-506	90° (NOTE 5)	ROOF
1T	2	12"	PRESSURE/VACUUM VENTS (NOTE 6)	4/M-506	109°, 289° (NOTE 5)	ROOF
1U	1	4"	SCAFFOLD-CABLE SUPPORT		CENTER	ROOF
1V	1	-	PERIMETER HAND RAIL AND TOEBOARD		PERIMETER (NOTE 11)	ROOF
1W	1	30"Ø	FOUNDATION DEWATERING SUMP	2/M-507	90° (NOTE 13)	GRADE
			CONTAINMENT SHELL - 142'-0" Ø X 24'-0" H			
2A	1	20"	CONTAINMENT SUCTION NOZZLE (NOTE 1)		54° (NOTE 18)	C/L @ 2'-2 3/4"
2B	1	8"	CONTAINMENT FILL NOZZLE (NOTE 1)		57° (NOTE 19)	C/L @ 1'-7"
2C	1	6"	CONTAINMENT LOW SUCTION NOZZLE (NOTE 1)		59° (NOTE 20)	C/L @ 1'-6"
2D	1	1"	SUMP RETURN		51° (NOTE 21)	C/L @ 1'-1"
2E	1	36"	CONTAINMENT MANWAY		30°	C/L @ 1'-1"
2F	??	???	GROUNDING LUG	5/M-506	???	C/L @ 7 1/2"
2G	1	8-1/2" x 36"	START OF STAIRS		83°, 263° (NOTE 4)	TOP OF FIRST STEP @ 8"

SCHEDULE NOTES:

1. PROVIDE 1" FLANGED NOZZLE ON TOP FOR THERMAL RELIEF CONNECTION.
2. SUCTION NOZZLE SHALL BE INSTALLED PARALLEL AND OFFSET 5'-0" C/L TO C/L FROM THE 8" FILL NOZZLE.
3. HORIZONTAL DIMENSION FROM THE ROOF-TO-SHELL SEAM.
4. ADJUST LOCATION AS NECESSARY TO COORDINATE WITH ROOF LANDING. STAIRS SHALL RISE AT MAX 45° ANGLE.
5. LOCATE BETWEEN ROOF FRAMING. ADJUST LOCATION AS NECESSARY.
6. TRIM NOZZLE FLUSH WITH INTERIOR OF ROOF LINE.
7. PROVIDE SUPPORT FOR FOAM RISERS AT INTERVALS OF ONE SUPPORT PER SHELL COURSE. NOT TO EXCEED 10'-0" SPACING MAXIMUM.
8. TANK SHALL BE PROVIDED IN ACCORDANCE WITH API 650, LATEST EDITION.
9. TANK EXTERIOR AND INTERIOR SHALL BE FULLY COATED IN ACCORDANCE WITH SPECIFICATIONS. THIS INCLUDES THE INTERIOR OF ALL INTERNAL PIPING, STILLING WELLS, AND NOZZLES 4" AND LARGER.
10. INTERMEDIATE WIND GIRDERS ARE NOT ALLOWED FOR STORAGE TANK. THEY ARE ALLOWED FOR CONTAINMENT SHELL ONLY.
11. PROVIDE A CONTINUOUS HANDRAIL AROUND THE PERIMETER OF THE TANK ROOF.
12. PROVIDE A WEAK ROOF-TO-SHELL ATTACHMENT (FRANGIBLE JOINT) AS SPECIFIED IN API 650, FOR EMERGENCY RELIEF.
13. SEE STRUCTURAL STORAGE TANK FOUNDATION PLANS FOR ADDITIONAL INFORMATION ON LEAK DETECTION PIPE TO THE TANK FOUNDATION DEWATERING SUMP.
14. AXES SHALL BE PERPENDICULAR AND PARALLEL TO INTERMEDIATE DIKE WALL.
15. ZINC PLATED, GALVANIZED, COPPER, COPPER ALLOY, CADMIUM PLATED, OR PLASTIC MATERIALS ARE NOT PERMITTED TO BE IN CONTACT WITH JET FUEL.
16. MAXIMUM TANK INTERNAL PIPE SUPPORT SPACING FOR THE 4" LOW SUCTION LINE AND 1" SS WATER DRAW-OFF LINE SHALL BE 10'-0".
17. ELEVATIONS ARE GIVEN RELATIVE TO THE TOP OF THE TANK BOTTOM PLATE AT THE TANK SHELL (CHIME).
18. CONTAINMENT 20" SUCTION NOZZLE SHALL BE INSTALLED APPROXIMATELY 8.9° OFF AXIS.
19. CONTAINMENT 8" FILL NOZZLE SHALL BE INSTALLED PARALLEL AND OFFSET 5'-0" FROM THE 20" SUCTION NOZZLE, APPROXIMATELY 12.2° OFF AXIS.
20. CONTAINMENT 6" LOW SUCTION NOZZLE SHALL BE INSTALLED PARALLEL AND OFFSET 2'-6" FROM THE 8" FILL NOZZLE, APPROXIMATELY 14.3° OFF AXIS.
21. CONTAINMENT 1" SUMP RETURN NOZZLE SHALL BE INSTALLED PARALLEL AND OFFSET 3'-6" FROM THE 20" SUCTION NOZZLE, APPROXIMATELY 6.1° OFF AXIS.

DESIGN DATA
CODE (DESIGN & CONSTRUCTION): API 650, LATEST EDITION & ADDENDUMS
DESIGN SPECIFICATION: SECTION 33 56 43
DESIGN PRESSURE: ATMOSPHERIC
DESIGN TEMPERATURE: 32 DEG F
WELD INSPECTION: IN ACCORDANCE WITH API 650
SHELL CORROSION ALLOWANCE: ANNULAR RING 0.15-INCH (IF USED), OTHERWISE NONE
TANK BOTTOM CORROSION ALLOWANCE: NONE
SPECIFIC GRAVITY OF CONTENTS: 0.82
DESIGN SPECIFIC GRAVITY: 1.0
NOMINAL SHELL CAPACITY: 62,000 BBLS
DESIGN FILL/RECEIPT FLOW RATE: 1,200 GPM
DESIGN EMPTY/ISSUE FLOW RATE: 7,500 GPM
TANK BOTTOM CONFIGURATION: CONE DOWN WITH CENTER SUMP AND OVERALL SLOPE OF 20:1
DESIGN LIQUID LEVEL (CRITICAL HIGH LEVEL): 28'-9"
SIESMIC SLOSHING HEIGHT REQUIREMENT: 7'-3"

TANK 6 NOZZLE SCHEDULE

	20" SUCTION	8" FILL	4" LOW SUCTION
F_R (lbf)	TBD	TBD	TBD
F_L (lbf)	TBD	TBD	TBD
F_C (lbf)	TBD	TBD	TBD
M_T (ft-lbf)	TBD	TBD	TBD
M_C (ft-lbf)	TBD	TBD	TBD
M_L (ft-lbf)	TBD	TBD	TBD

TANK 6 CONTAINMENT NOZZLE SCHEDULE

	20" SUCTION	8" FILL	6" LOW SUCTION
F_R (lbf)	TBD	TBD	TBD
F_L (lbf)	TBD	TBD	TBD
F_C (lbf)	TBD	TBD	TBD
M_T (ft-lbf)	TBD	TBD	TBD
M_C (ft-lbf)	TBD	TBD	TBD
M_L (ft-lbf)	TBD	TBD	TBD

*NOZZLE LOADS ARE PROVIDED WITH COORDINATE SYSTEM IN ACCORDANCE WITH API 650 ANNEX P, FIGURE P-1 "NOMENCLATURE FOR PIPING LOADS AND DEFORMATION"

REGISTERED PROFESSIONAL ENGINEER 92908PE OREGON JULY 14, 2017 DOUGLAS LYNN WOODWARD 12/21/2023

EXPIRES: JUNE 30, 2024

no.	date	by	ckd	description
A	12/21/23	DLW	JJB	ISSUED FOR PERMIT

ISSUED FOR PERMIT ONLY

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KANSAS CITY, MO 64114
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05/09/2023	H. HARMON
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D. WOODWARD	D. WOODWARD

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PORTLAND INTERNATIONAL AIRPORT
5000 NE MARINE DR.
PORTLAND, OREGON 97218

PDX FACILITY IMPROVEMENTS
APPURTENANCE PLANS
TANK 6

project	contract
153929	

drawing **M-902** rev. **A**

file 153929M-902.dwg

Scale For Microfilming
Millimeters
Inches

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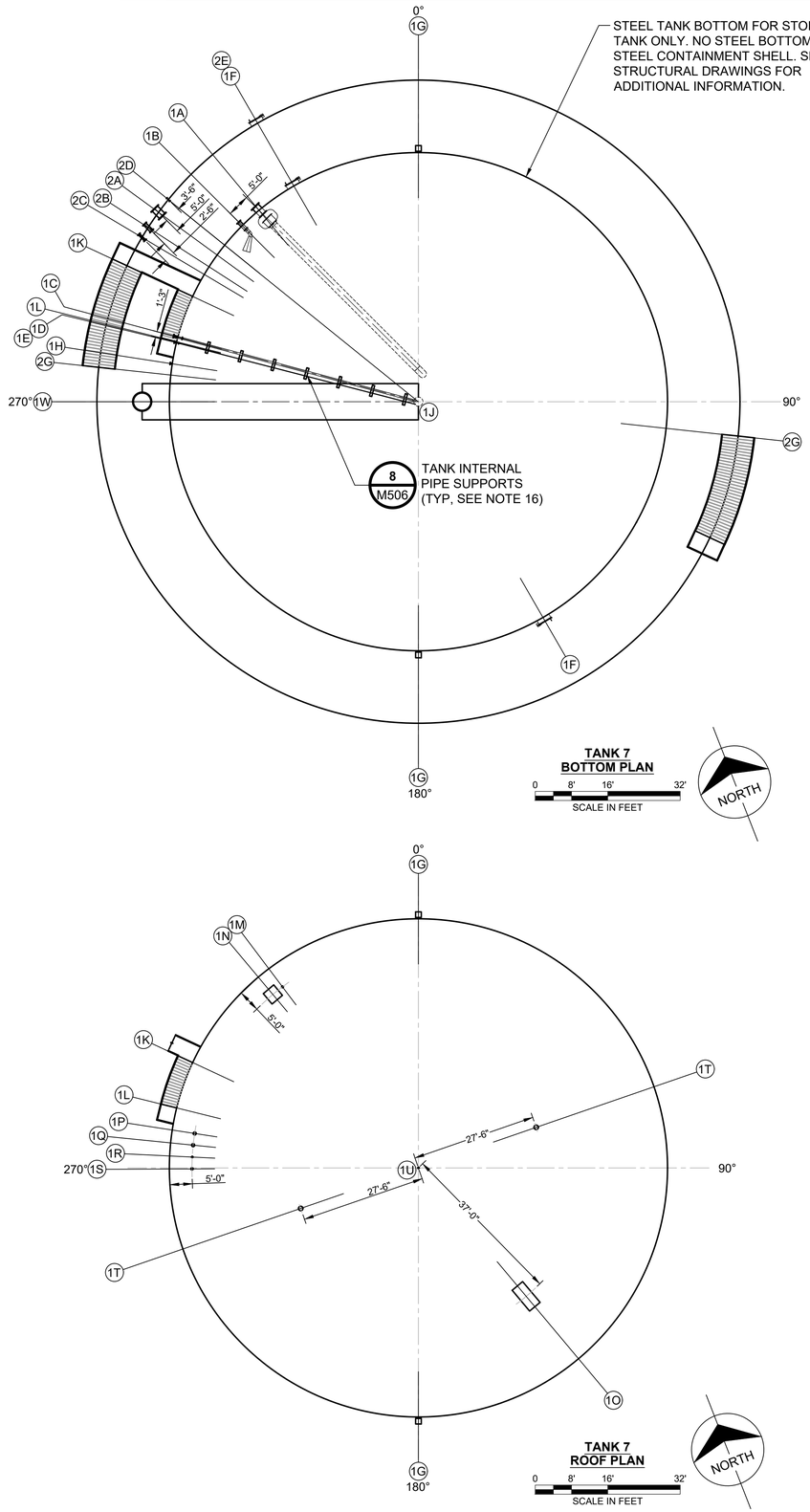

TANK 7 BOTTOM PLAN

0 8' 16' 32'

SCALE IN FEET

TANK 7 ROOF PLAN

0 8' 16' 32'

SCALE IN FEET

Millimeters

Inches

Scale For Microfilming

TANK 7 SCHEDULE
STORAGE TANK - 110'-0" Ø X 36'-0" H

MARK	QTY.	SIZE	DESCRIPTION	DETAIL	TANK LOCATION	ELEVATION (NOTE 17)
1A	1	20"	SUCTION NOZZLE (NOTE 1)	1/M-504	320° (NOTE 2)	C/L @ 1'-8 3/4"
1B	1	8"	FILL NOZZLE (NOTE 1)	2/M-505	315°	C/L @ 1'-1"
1C	1	4"	LOW SUCTION NOZZLE (NOTE 1)	3/M-505	285°	C/L @ 1'-0"
1D	1	2"	WATER DRAW-OFF	1/M-505	284°	C/L @ 9"
1E	1	2"	PRODUCT RETURN	3/M-507	284°	C/L @ 2'-9"
1F	2	36"	SHELL MANWAY		150°, 330°	C/L @ 3'-6"
1G	2	4"	FOAM CHAMBER	1/M-507	0°, 180° (NOTE 5 & 7)	C/L @ 35'-0"
1H	1	2"	PRESSURE TRANSMITTER	4/M-507	279°	C/L @ 3'-0"
1I	??	???	GROUNDING LUG	5/M-506	???	C/L @ 7 1/2"
1J	1	24"Ø x 12"D	BOTTOM SUMP		CENTER	FLOOR
1K	1	8-1/2" x 36"	START OF STAIRS / CATWALK		295° (NOTE 4)	TOP OF FIRST STEP @ 8"
1L	1	36" x 42"	ROOF LANDING		284°	ROOF
1M	1	1 1/2"	FLOATING SUCTION POSITION INDICATOR	2/M-504	323° (NOTE 3)	ROOF
1N	1	36" x 36"	ROOF MANHOLE		320° (NOTE 5)	ROOF
1O	1	36" x 72"	BOLTED ROOF COVER		140° (NOTE 5)	ROOF
1P	1	8"	GAUGE HATCH	7/M-506	279° (NOTE 5)	ROOF
1Q	1	8"	AUTOMATIC TANK GAUGE	2/M-506	276° (NOTE 5)	ROOF
1R	1	4"	TEMPERATURE PROBE	1/M-506	273° (NOTE 5)	ROOF
1S	1	6"	HIGH LEVEL SWITCH	3/M-506	270° (NOTE 5)	ROOF
1T	2	12"	PRESSURE/VACUUM VENTS (NOTE 6)	4/M-506	71°, 251° (NOTE 5)	ROOF
1U	1	4"	SCAFFOLD-CABLE SUPPORT		CENTER	ROOF
1V	1	-	PERIMETER HAND RAIL AND TOEBOARD		PERIMETER (NOTE 11)	ROOF
1W	1	30"Ø	FOUNDATION DEWATERING SUMP	2/M-507	270° (NOTE 13)	GRADE
			CONTAINMENT SHELL - 142'-0" Ø X 24'-0" H			
2A	1	20"	CONTAINMENT SUCTION NOZZLE (NOTE 1)		306° (NOTE 18)	C/L @ 2'-2 3/4"
2B	1	8"	CONTAINMENT FILL NOZZLE (NOTE 1)		303° (NOTE 19)	C/L @ 1'-7"
2C	1	6"	CONTAINMENT LOW SUCTION NOZZLE (NOTE 1)		301° (NOTE 20)	C/L @ 1'-6"
2D	1	1"	SUMP RETURN		309° (NOTE 21)	C/L @ 1'-1"
2E	1	36"	CONTAINMENT MANWAY		330°	C/L @ 3'-6"
2F	??	???	GROUNDING LUG	5/M-506	???	C/L @ 7 1/2"
2G	1	8-1/2" x 36"	START OF STAIRS		96°, 276° (NOTE 4)	TOP OF FIRST STEP @ 8"

SCHEDULE NOTES:

1. PROVIDE 1" FLANGED NOZZLE ON TOP FOR THERMAL RELIEF CONNECTION.
2. SUCTION NOZZLE SHALL BE INSTALLED PARALLEL AND OFFSET 5'-0" C/L TO C/L FROM THE 8" FILL NOZZLE.
3. HORIZONTAL DIMENSION FROM THE ROOF-TO-SHELL SEAM.
4. ADJUST LOCATION AS NECESSARY TO COORDINATE WITH ROOF LANDING. STAIRS SHALL RISE AT MAX 45° ANGLE.
5. LOCATE BETWEEN ROOF FRAMING. ADJUST LOCATION AS NECESSARY.
6. TRIM NOZZLE FLUSH WITH INTERIOR OF ROOF LINE.
7. PROVIDE SUPPORT FOR FOAM RISERS AT INTERVALS OF ONE SUPPORT PER SHELL COURSE. NOT TO EXCEED 10'-0" SPACING MAXIMUM.
8. TANK SHALL BE PROVIDED IN ACCORDANCE WITH API 650, LATEST EDITION.
9. TANK EXTERIOR AND INTERIOR SHALL BE FULLY COATED IN ACCORDANCE WITH SPECIFICATIONS. THIS INCLUDES THE INTERIOR OF ALL INTERNAL PIPING, STILLING WELLS, AND NOZZLES 4" AND LARGER.
10. INTERMEDIATE WIND GIRDERS ARE NOT ALLOWED FOR STORAGE TANK. THEY ARE ALLOWED FOR CONTAINMENT SHELL ONLY.
11. PROVIDE A CONTINUOUS HANDRAIL AROUND THE PERIMETER OF THE TANK ROOF.
12. PROVIDE A WEAK ROOF-TO-SHELL ATTACHMENT (FRANGIBLE JOINT) AS SPECIFIED IN API 650, FOR EMERGENCY RELIEF.
13. SEE STRUCTURAL STORAGE TANK FOUNDATION PLANS FOR ADDITIONAL INFORMATION ON LEAK DETECTION PIPE TO THE TANK FOUNDATION DEWATERING SUMP.
14. AXES SHALL BE PERPENDICULAR AND PARALLEL TO INTERMEDIATE DIKE WALL.
15. ZINC PLATED, GALVANIZED, COPPER, COPPER ALLOY, CADMIUM PLATED, OR PLASTIC MATERIALS ARE NOT PERMITTED TO BE IN CONTACT WITH JET FUEL.
16. MAXIMUM TANK INTERNAL PIPE SUPPORT SPACING FOR THE 4" LOW SUCTION LINE AND 1" SS WATER DRAW-OFF LINE SHALL BE 10'-0".
17. ELEVATIONS ARE GIVEN RELATIVE TO THE TOP OF THE TANK BOTTOM PLATE AT THE TANK SHELL (CHIME).
18. CONTAINMENT 20" SUCTION NOZZLE SHALL BE INSTALLED APPROXIMATELY 8.9° OFF AXIS.
19. CONTAINMENT 8" FILL NOZZLE SHALL BE INSTALLED PARALLEL AND OFFSET 5'-0" FROM THE 20" SUCTION NOZZLE, APPROXIMATELY 12.2° OFF AXIS.
20. CONTAINMENT 6" LOW SUCTION NOZZLE SHALL BE INSTALLED PARALLEL AND OFFSET 2'-6" FROM THE 8" FILL NOZZLE, APPROXIMATELY 14.3° OFF AXIS.
21. CONTAINMENT 1" SUMP RETURN NOZZLE SHALL BE INSTALLED PARALLEL AND OFFSET 3'-6" FROM THE 20" SUCTION NOZZLE, APPROXIMATELY 6.1° OFF AXIS.

DESIGN DATA
CODE (DESIGN & CONSTRUCTION): API 650, LATEST EDITION & ADDENDUMS
DESIGN SPECIFICATION: SECTION 33 56 43
DESIGN PRESSURE: ATMOSPHERIC
DESIGN TEMPERATURE: 32 DEG F
WELD INSPECTION: IN ACCORDANCE WITH API 650
SHELL CORROSION ALLOWANCE: ANNULAR RING 0.15-INCH (IF USED), OTHERWISE NONE
TANK BOTTOM CORROSION ALLOWANCE: NONE
SPECIFIC GRAVITY OF CONTENTS: 0.82
DESIGN SPECIFIC GRAVITY: 1.0
NOMINAL SHELL CAPACITY: 62,000 BBLS
DESIGN FILL/RECEIPT FLOW RATE: 1,200 GPM
DESIGN EMPTY/ISSUE FLOW RATE: 7,500 GPM
TANK BOTTOM CONFIGURATION: CONE DOWN WITH CENTER SUMP AND OVERALL SLOPE OF 20:1
DESIGN LIQUID LEVEL (CRITICAL HIGH LEVEL): 28'-9"
SIESMIC SLOSHING HEIGHT REQUIREMENT: 7'-3"

TANK 7 NOZZLE SCHEDULE			
	20" SUCTION	8" FILL	4" LOW SUCTION
F_R (lbf)	TBD	TBD	TBD
F_L (lbf)	TBD	TBD	TBD
F_C (lbf)	TBD	TBD	TBD
M_T (ft-lbf)	TBD	TBD	TBD
M_C (ft-lbf)	TBD	TBD	TBD
M_L (ft-lbf)	TBD	TBD	TBD

TANK 7 CONTAINMENT NOZZLE SCHEDULE			
	20" SUCTION	8" FILL	6" LOW SUCTION
F_R (lbf)	TBD	TBD	TBD
F_L (lbf)	TBD	TBD	TBD
F_C (lbf)	TBD	TBD	TBD
M_T (ft-lbf)	TBD	TBD	TBD
M_C (ft-lbf)	TBD	TBD	TBD
M_L (ft-lbf)	TBD	TBD	TBD

*NOZZLE LOADS ARE PROVIDED WITH COORDINATE SYSTEM IN ACCORDANCE WITH API 650 ANNEX P, FIGURE P-1 "NOMENCLATURE FOR PIPING LOADS AND DEFORMATION".

REGISTERED PROFESSIONAL ENGINEER 92908PE OREGON NOV. 14, 2017 DOUGLAS LYNN WOODWARD 12/21/2023

EXPIRES: JUNE 30, 2024

no.	date	by	ckd	description
A	12/21/23	DLW	JJB	ISSUED FOR PERMIT

ISSUED FOR PERMIT ONLY

BURNS McDONNELL
9400 WARD PARKWAY
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D. WOODWARD	D. WOODWARD

PDX FUEL COMPANY L.L.C

PORTLAND INTERNATIONAL AIRPORT
5000 NE MARINE DR.
PORTLAND, OREGON 97218

PDX FACILITY IMPROVEMENTS
APPURTENANCE PLANS
TANK 7

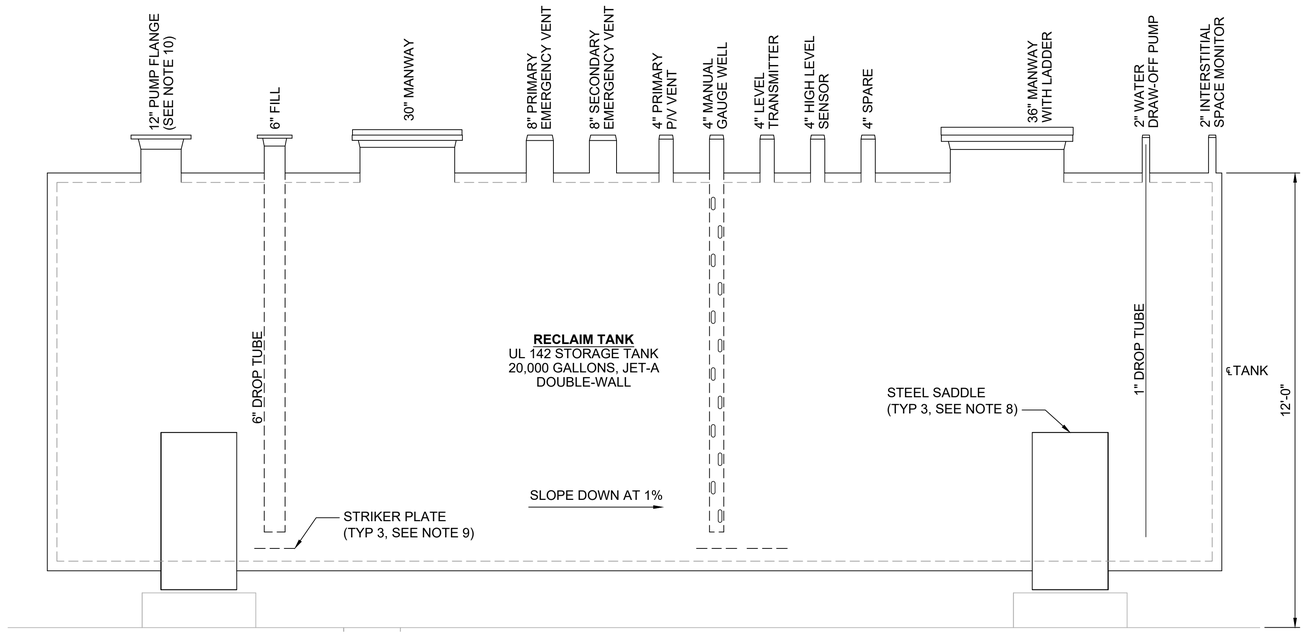
project	contract
153929	

drawing **M-903** rev. **A**

file 153929M-903.dwg

RECLAIM TANK ENLARGED PLAN 1 M-405 M-406

SCALE :1/2"=1'-0"
0 1' 2' 4'
SCALE IN FEET



RECLAIM TANK SECTION VIEW A M-904

SCALE :1/2"=1'-0"
0 1' 2' 4'
SCALE IN FEET

NOTES:

1. SEE DRAWINGS M-001 AND M-002 FOR ABBREVIATIONS, SYMBOLS, INSTRUMENTATION, AND GENERAL FUELING AND PHASING NOTES.
2. THE DRAWINGS SHOW THE VARIOUS PIPING SYSTEMS SCHEMATICALLY AND DO NOT ATTEMPT TO SHOW EXACT DETAILS OF ALL PIPING OR ALL OFFSETS THAT MAY BE REQUIRED. VERIFY ALL DIMENSIONS, ELEVATIONS AND CONNECTIONS THAT ARE DETERMINED BY THE EQUIPMENT SELECTION AND ADJUST SYSTEMS TO ENSURE THAT EQUIPMENT, PIPE, ETC. CAN BE INSTALLED IN THE ALLOTTED SPACE. NO ADDED COMPENSATION SHALL BE PERMITTED FOR VARIATIONS DUE TO EQUIPMENT SELECTION.
3. SUBCONTRACTOR SHALL VERIFY ALL DIMENSIONS, ELEVATIONS AND CONNECTIONS THAT ARE DETERMINED BY EXISTING LINES AND EQUIPMENT. ALL DIMENSION ARE SHOWN TO CENTERLINE OF PIPE UNLESS OTHERWISE NOTED.
4. ALL DIMENSIONS ARE IN INCHES UNLESS INDICATED OTHERWISE.
5. SUBCONTRACTOR MAY SUBMIT ALTERNATIVE TANK NOZZLE LAYOUTS FOR ENGINEER'S REVIEW AND APPROVAL.
6. PIPING AND TANK EQUIPMENT NOT SHOWN FOR CLARITY.
7. RECLAIM TANK SHALL BE A SHOP-FABRICATED, HORIZONTAL, CYLINDRICAL, STEEL DOUBLE-WALL TANK, CONSTRUCTED AND CERTIFIED IN ACCORDANCE WITH UL 142. RECLAIM TANK SHALL HAVE A NOMINAL 20,000-GALLON CAPACITY.
8. TANK SHALL BE PROVIDED WITH STEEL SADDLES WHICH PROVIDE THE TANK WITH A 1% SLOPE DOWN TO PUMPOUT NOZZLE.
9. PROVIDE STRIKER PLATE UNDER ALL GAUGE AND FILL PORTS.
10. SUBCONTRACTOR SHALL COORDINATE WITH PUMP MANUFACTURER AND PROVIDE TANK PUMP NOZZLE SIZE AS REQUIRED FOR APPROVED PUMP. SUBCONTRACTOR SHALL COORDINATE LENGTH OF PUMP COLUMN ASSEMBLY WITH TANK AND PROVIDE MINIMUM CLEARANCE FROM TANK BOTTOM AS RECOMMENDED BY PUMP MANUFACTURER, BUT NO LESS THAN 4 INCHES.

no.	date	by	ckd	description
A	12/21/23	DLW	JJB	ISSUED FOR PERMIT

ISSUED FOR PERMIT ONLY

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PDX FACILITY IMPROVEMENTS
APPURTENANCE PLANS
RECLAIM TANK

project	contract
153929	

drawing **M-904** rev. **A**

file 153929M-904.dwg

REGISTERED PROFESSIONAL ENGINEER
92908PE
OREGON
NOV. 14, 2017
DOUGLAS LYNN WOODWARD
12/21/2023
EXPIRES: JUNE 30, 2024

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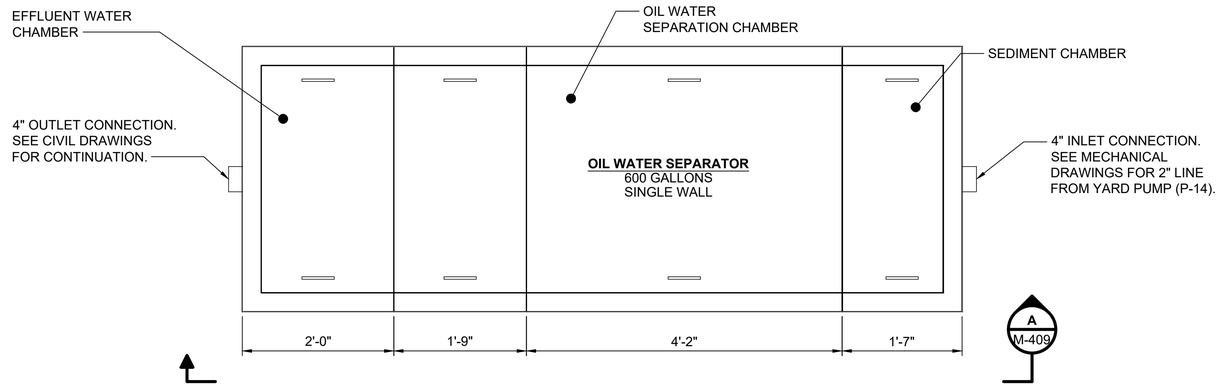
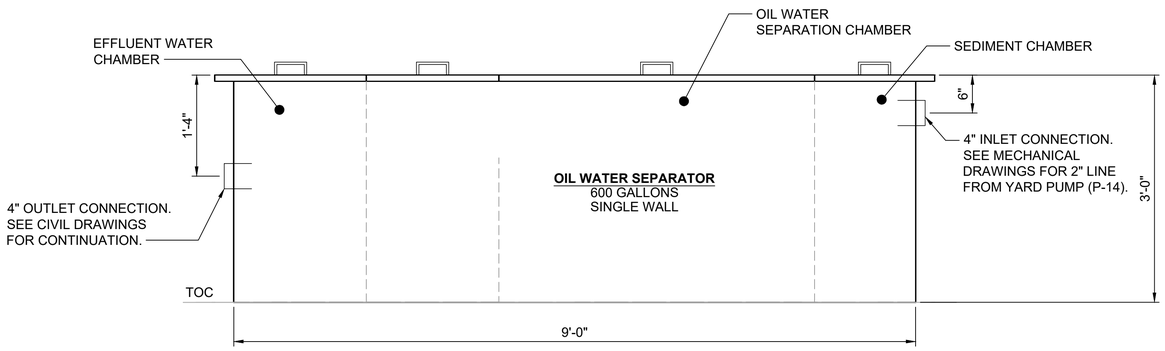


OWS ENLARGED PLAN (1 / M-103)
SCALE : 1"=1'-0"

0 1/2" 1" 2'
SCALE IN FEET

NORTH



OWS SECTION VIEW (A / M-905)
SCALE : 1"=1'-0"

0 1/2" 1" 2'
SCALE IN FEET

NOTES:

1. SEE DRAWINGS M-001 AND M-002 FOR ABBREVIATIONS, SYMBOLS, INSTRUMENTATION, AND GENERAL FUELING AND PHASING NOTES.
2. THE DRAWINGS SHOW THE VARIOUS PIPING SYSTEMS SCHEMATICALLY AND DO NOT ATTEMPT TO SHOW EXACT DETAILS OF ALL PIPING OR ALL OFFSETS THAT MAY BE REQUIRED. VERIFY ALL DIMENSIONS, ELEVATIONS AND CONNECTIONS THAT ARE DETERMINED BY THE EQUIPMENT SELECTION AND ADJUST SYSTEMS TO ENSURE THAT EQUIPMENT, PIPE, ETC. CAN BE INSTALLED IN THE ALLOTTED SPACE. NO ADDED COMPENSATION SHALL BE PERMITTED FOR VARIATIONS DUE TO EQUIPMENT SELECTION.
3. SUBCONTRACTOR SHALL VERIFY ALL DIMENSIONS, ELEVATIONS AND CONNECTIONS THAT ARE DETERMINED BY EXISTING LINES AND EQUIPMENT. ALL DIMENSION ARE SHOWN TO CENTERLINE OF PIPE UNLESS OTHERWISE NOTED.
4. ALL DIMENSIONS ARE IN INCHES UNLESS INDICATED OTHERWISE.
5. SUBCONTRACTOR MAY SUBMIT ALTERNATIVE TANK NOZZLE LAYOUTS FOR ENGINEER'S REVIEW AND APPROVAL.
6. PIPING AND TANK EQUIPMENT NOT SHOWN FOR CLARITY.

no.	date	by	ckd	description
A	12/21/23	DLW	JJB	ISSUED FOR PERMIT

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BURNS McDONNELL
9400 WARD PARKWAY
KANSAS CITY, MO 64114
816-333-9400
Burns & McDonnell Engineering Co, Inc.

date	detailed
05/09/2023	H. HARMON
designed	checked
D. WOODWARD	D. WOODWARD

PDX FUEL COMPANY L.L.C

PORTLAND INTERNATIONAL AIRPORT
5000 NE MARINE DR.
PORTLAND, OREGON 97218

PDX FACILITY IMPROVEMENTS
APPURTENANCE PLANS
OIL WATER SEPARATOR

project	contract
153929	

drawing **M-905** rev. **A**

file 153929M-905.dwg

REGISTERED PROFESSIONAL ENGINEER
92938PE
OREGON
NOV. 14, 2017
DOUGLAS LYNN WOODWARD
12/21/2023
EXPIRES: JUNE 30, 2024

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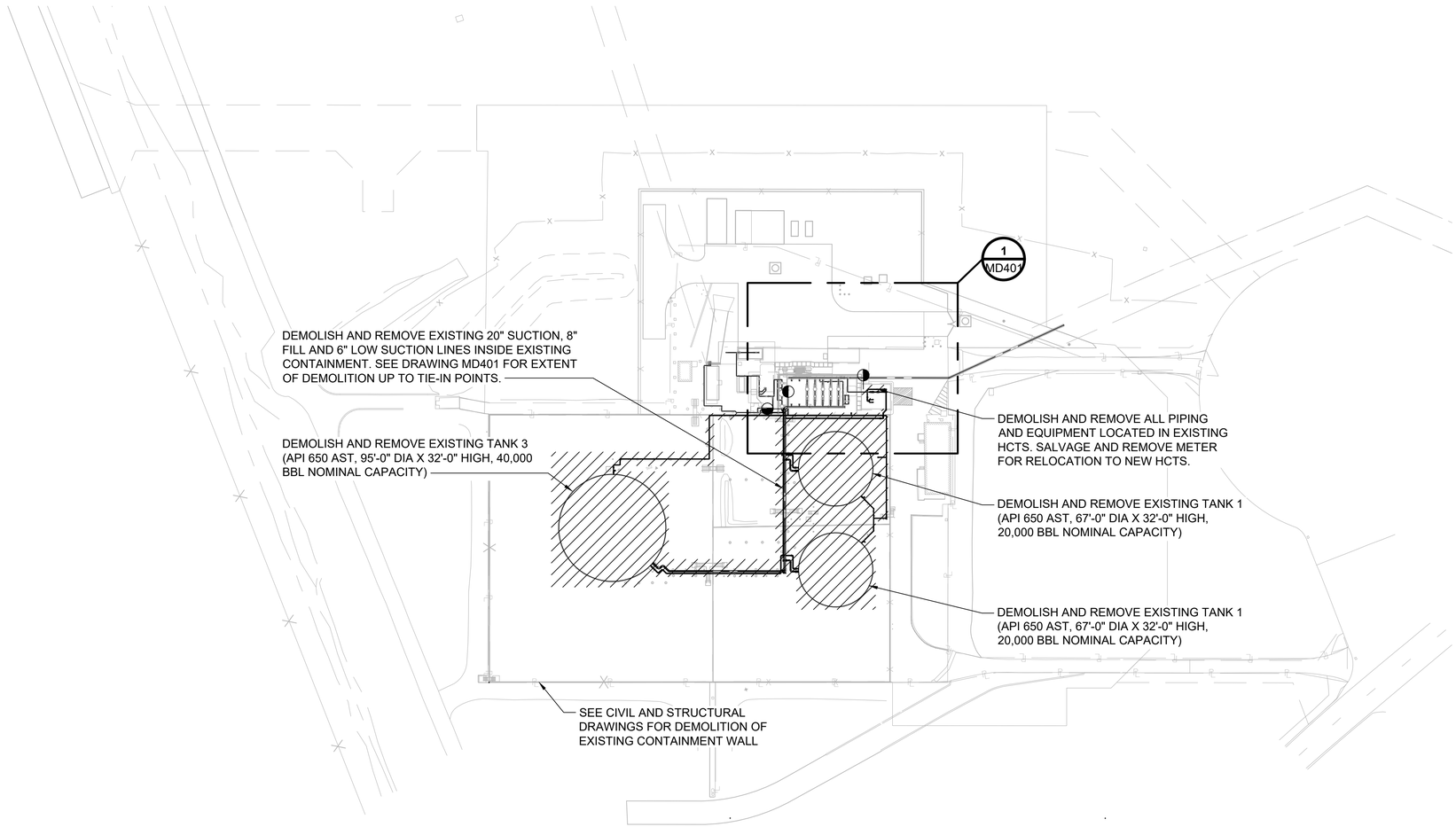
NOTES:

1. SEE DRAWINGS M-001 AND M-002 FOR ABBREVIATIONS, SYMBOLS, INSTRUMENTATION, AND GENERAL FUELING AND PHASING NOTES.
2. SEE DRAWINGS MD101 AND MD401 FOR MECHANICAL FUELING DEMO PLANS.



MECHANICAL OVERALL SITE PLAN

0 60' 120'
SCALE IN FEET

NORTH

Scale For Microfilming
Millimeters
Inches

no.	date	by	ckd	description
A	12/21/23	DLW	JJB	ISSUED FOR PERMIT

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date	detailed
06/07/2023	H. HARMON
designed	checked
D. WOODWARD	J. BURD

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PORTLAND, OREGON 97218

PDX FACILITY IMPROVEMENTS
MECHANICAL DEMOLITION OVERALL SITE PLAN

project	contract
153929	

drawing **MD101** rev. **A**

file 153929MD101.DWG

REGISTERED PROFESSIONAL ENGINEER
92938PE
OREGON
NOV. 14, 2017
DOUGLAS LYNN WOODWARD
12/21/2023
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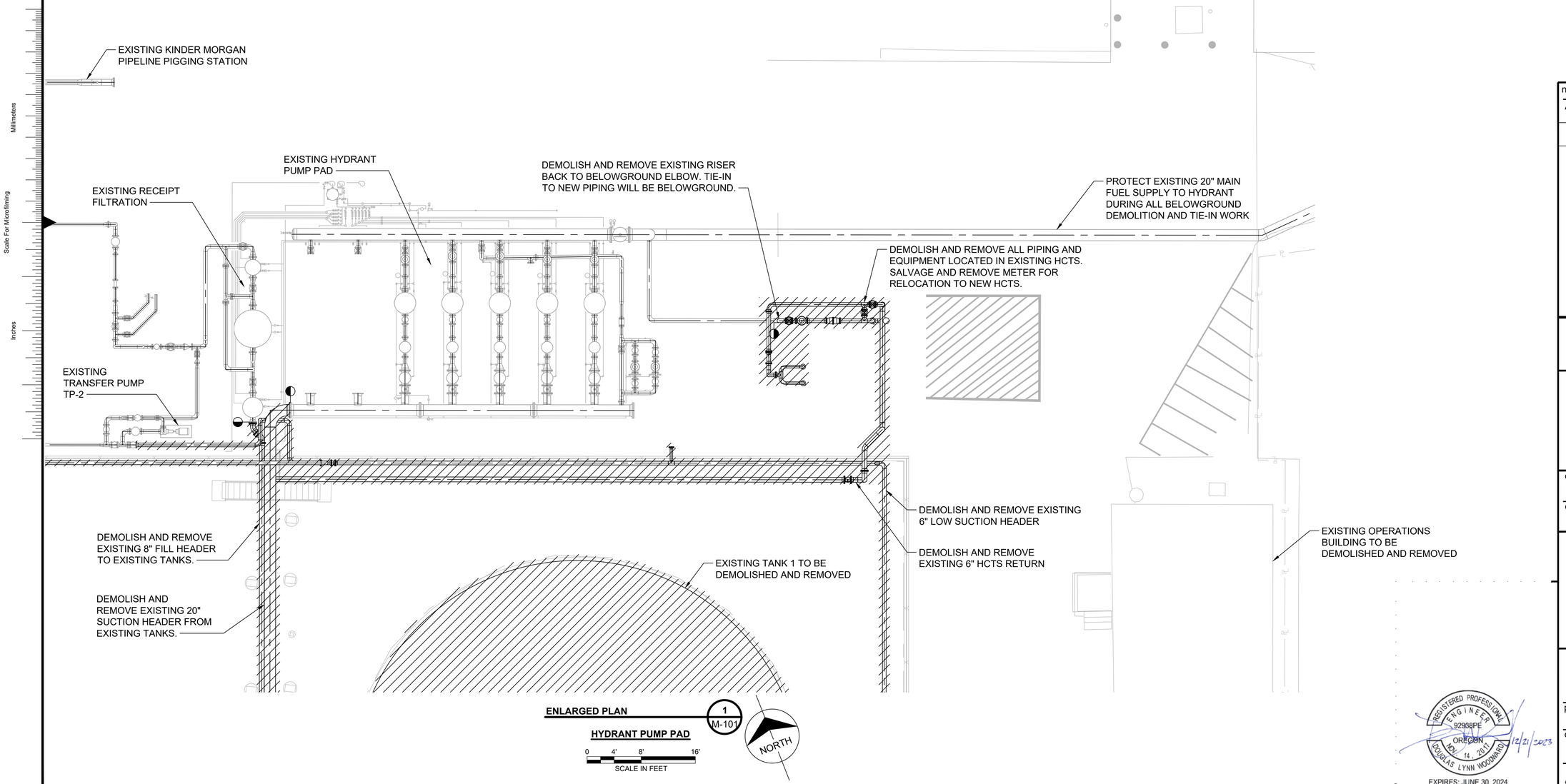
NOTES:

1. SEE DRAWINGS M-001 AND M-002 FOR ABBREVIATIONS, SYMBOLS, INSTRUMENTATION, AND GENERAL FUELING AND PHASING NOTES.
2. THE DRAWINGS INDICATE THE VARIOUS PIPING SYSTEMS SCHEMATICALLY AND DO NOT ATTEMPT TO SHOW EXACT DETAILS OF ALL PIPING.
3. ALL DIMENSIONS ARE IN INCHES UNLESS OTHERWISE INDICATED. ALL DIMENSIONS SHOWN TO CENTERLINE OF PIPE UNLESS OTHERWISE INDICATED.
4. NOT ALL SMALL BORE PIPING REQUIRED IS SHOWN ON PLANS AND SECTIONS FOR CLARITY. SEE MECHANICAL P&ID DRAWINGS FOR ADDITIONAL REQUIREMENTS.



Scale For Microfilming
Millimeters
Inches

no.	date	by	ckd	description
A	12/21/23	DLW	JJB	ISSUED FOR PERMIT

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ENLARGED DEMOLITION PLAN
HYDRANT PUMP PAD

project	contract
153929	

drawing **MD401** rev. **A**

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