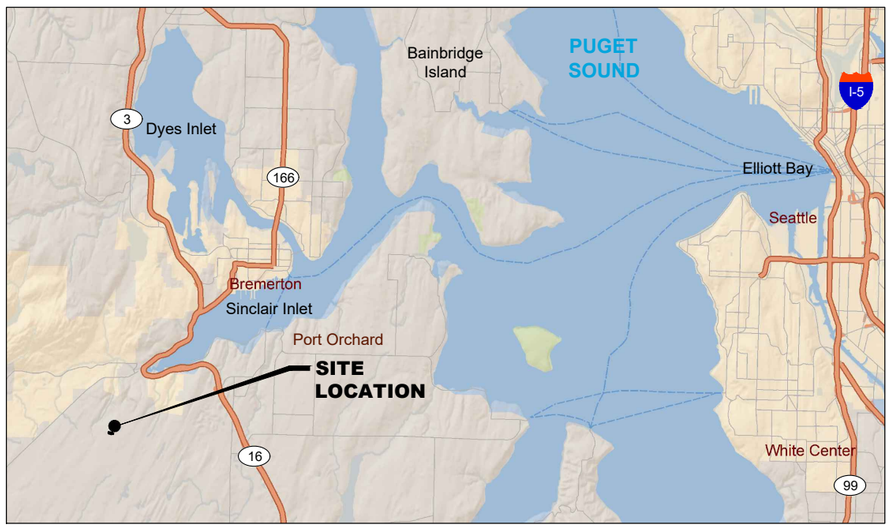
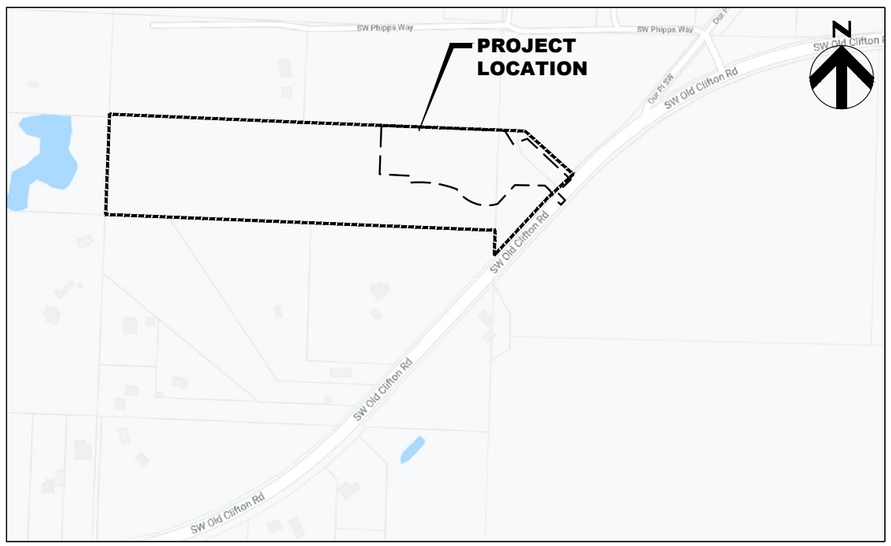
McCORMICK
CLOSE TO WHAT COUNTS



VICINITY MAP
NTS



SITE LOCATION MAP
NTS

Contract Drawings For

McCORMICK COMMUNITIES, LLC.

PORT ORCHARD 660 RESERVOIR

4807 SW OLD CLIFTON ROAD
PORT ORCHARD, WASHINGTON
98367

PROJECT NO.
10172116
July 2022

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STANDARD NOTES:

1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH ALL CURRENTLY ADOPTED WSDOT AND APWA SPECIFICATIONS AND PLANS, AND THE CITY OF PORT ORCHARD MUNICIPAL CODE, THE CURRENTLY ADOPTED CITY OF PORT ORCHARD DEVELOPER'S HANDBOOK, THE CURRENTLY ADOPTED SURFACE WATER DESIGN MANUAL AND THE CONDITIONS OF PRELIMINARY SUBDIVISION APPROVAL. IT SHALL BE THE SOLE RESPONSIBILITY OF THE APPLICANT AND THE PROFESSIONAL CIVIL ENGINEER TO CORRECT ANY ERROR, OMISSION, OR VARIATION FROM THE ABOVE REQUIREMENTS FOUND IN THESE PLANS. ALL CORRECTIONS SHALL BE AT NO ADDITIONAL COST OR LIABILITY TO THE CITY OF PORT ORCHARD.
2. THE DESIGN ELEMENTS WITHIN THESE PLANS HAVE BEEN REVIEWED ACCORDING TO THE PORT ORCHARD DESIGN STANDARDS. SOME ELEMENTS MAY HAVE BEEN OVERLOOKED OR MISSED BY THE CITY OF PORT ORCHARD CITY ENGINEER. ANY DEVIATION FROM ADOPTED STANDARDS IS NOT ALLOWED UNLESS SPECIFICALLY APPROVED BY THE CITY OF PORT ORCHARD CITY ENGINEER, PRIOR TO CONSTRUCTION.
3. APPROVAL OF THESE ENGINEERING PLANS SUCH AS FOR ROADS, GRADING, OR DRAINAGE DOES NOT CONSTITUTE AN APPROVAL OF ANY OTHER DESIGN (E.G., WATER, SEWER, GAS, ELECTRICAL, ETC.).
4. BEFORE ANY CONSTRUCTION OR DEVELOPMENT ACTIVITY, A PRECONSTRUCTION MEETING MUST BE HELD BETWEEN THE CITY OF PORT ORCHARD PUBLIC WORKS DEPARTMENT, THE APPLICANT AND THE APPLICANT'S CONSTRUCTION REPRESENTATIVE.
5. PROOF OF LIABILITY INSURANCE SHALL BE SUBMITTED TO THE CITY OF PORT ORCHARD PRIOR TO THE PRECONSTRUCTION MEETING.
6. A COPY OF THESE APPROVED PLANS MUST BE ON THE JOB SITE WHENEVER CONSTRUCTION IS IN PROGRESS.
7. CONSTRUCTION NOISE SHALL COMPLY WITH THE CURRENT POMC SECTION 9.24.050.
8. IT SHALL BE THE APPLICANT /CONTRACTOR'S RESPONSIBILITY TO OBTAIN ALL RIGHT-OF-WAY PERMITS AND CONSTRUCTION EASEMENTS NECESSARY BEFORE INITIATING OFF-SITE WORK WITHIN A CITY OF PORT ORCHARD STREET RIGHT-OF-WAY.
9. FRANCHISED UTILITIES OR OTHER INSTALLATIONS THAT ARE NOT SHOWN ON THESE APPROVED PLANS SHALL NOT BE CONSTRUCTED UNLESS AN APPROVED SET OF PLANS IS SUBMITTED TO THE CITY OF PORT ORCHARD PRIOR TO CONSTRUCTION.
10. THE VERTICAL DATUM SHALL BE NAVD 1988 AND THE HORIZONTAL DATUM SHALL BE NAD 1983 HARN STATE PLANE WASHINGTON NORTH FIPS 4601 FEET.
11. GROUNDWATER SYSTEM CONSTRUCTION SHALL BE WITHIN A RIGHT-OF-WAY OR APPROPRIATE DRAINAGE EASEMENT, BUT NOT UNDERNEATH THE ROADWAY SECTION.
12. ALL UTILITY TRENCHES SHALL BE BACKFILLED AND COMPACTED IN ACCORDANCE WITH THE CITY OF PORT ORCHARD STANDARDS.
13. ALL ROADWAY SUBGRADE SHALL BE BACKFILLED, COMPACTED TO 95% MAXIMUM DENSITY AND PREPARED FOR SURFACING IN ACCORDANCE WITH WSDOT STANDARD SPECIFICATION 206.3.
14. OPEN CUTTING OF EXISTING ROADWAYS IS NOT ALLOWED UNLESS SPECIFICALLY APPROVED BY THE CITY OF PORT ORCHARD CITY ENGINEER AND NOTED ON THESE APPROVED PLANS. ANY OPEN CUT SHALL BE RESTORED IN ACCORDANCE WITH THE CITY OF PORT ORCHARD STANDARD SPECIFICATIONS.
15. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ADEQUATE SAFEGUARDS, SAFETY DEVICES, PROTECTIVE EQUIPMENT, FLAGGERS, AND ANY OTHER NEEDED ACTIONS TO PROTECT THE LIFE, HEALTH, AND SAFETY OF THE PUBLIC, AND TO PROTECT PROPERTY IN CONNECTION WITH THE PERFORMANCE OF WORK COVERED BY THE CONTRACTOR. ANY WORK WITHIN THE TRAVELED RIGHT-OF-WAY THAT MAY INTERRUPT NORMAL TRAFFIC FLOW SHALL REQUIRE AT LEAST ONE FLAGGER FOR EACH LANE OF TRAFFIC AFFECTED. REFER TO "TRAFFIC CONTROL," OF THE WSDOT STANDARD SPECIFICATIONS SHALL APPLY IN ITS ENTIRETY. TRAFFIC CONTROL PLANS SHALL FOLLOW THE CURRENTLY ADOPTED MUTCD MANUAL AS APPLICABLE.

TO PROTECT SIGNIFICANT TREES FROM THE IMPACTS OF THE PROPOSED DEVELOPMENT, THE APPLICANT SHALL PROVIDE THE BEST PROTECTION FOR SIGNIFICANT TREES PER THE REGULATIONS. AT A MINIMUM, ANY SIGNIFICANT TREES TO BE RETAINED SHALL BE FENCED TWO FEET OUTWARD FROM THE IDENTIFIED DRIP LINE. TREES THAT SUSTAIN DAMAGE DURING CONSTRUCTION SHALL BE REPLACED PURSUANT TO POMC. A REPRESENTATIVE OF THE CITY OF PORT ORCHARD DCD STAFF SHALL VERIFY PROTECTIVE FENCING PLACEMENT PER THIS CONDITION PRIOR TO ISSUANCE OF A NOTICE TO PROCEED FOR GRADING AND CLEARING. THE CITY SHALL INSPECT FOR COMPLIANCE WITH THE TREE PLAN PRIOR TO A FINAL INSPECTION. THE INSPECTION SHALL ALSO EVALUATE THE CONDITION OF RETAINED TREES AND ANY AND ALL CORRECTIONS WILL BE REQUIRED TO BE COMPLETED PRIOR TO A FINAL INSPECTION AND RELEASE OF ANY POST FINANCIAL GUARANTEES FOR THE SITE.

EROSION AND SEDIMENT CONTROL NOTES:

1. APPROVAL OF THESE TEMPORARY EROSION AND SEDIMENT CONTROL (TESC) PLANS DOES NOT CONSTITUTE AN APPROVAL OF PERMANENT ROAD OR DRAINAGE DESIGN (E.G., SIZE AND LOCATION OF ROADS, PIPES, RESTRICTORS, CHANNELS, RETENTION FACILITIES, UTILITIES, ETC.).
2. THE IMPLEMENTATION OF THESE TESC PLANS AND THE CONSTRUCTION, MAINTENANCE, REPLACEMENT, AND UPGRADING OF THESE TESC FACILITIES IS THE RESPONSIBILITY OF THE APPLICANT/CESCL UNTIL ALL CONSTRUCTION IS APPROVED.
3. THE BOUNDARIES OF THE CLEARING LIMITS SHOWN ON THESE PLANS SHALL BE CLEARLY FLAGGED BY A CONTINUOUS LENGTH OF SURVEY TAPE (OR FENCING, IF REQUIRED) PRIOR TO CONSTRUCTION. DURING THE CONSTRUCTION PERIOD, NO DISTURBANCE BEYOND THE CLEARING LIMITS SHALL BE PERMITTED. THE CLEARING LIMITS SHALL BE MAINTAINED BY THE APPLICANT/CESCL FOR THE DURATION OF CONSTRUCTION.
4. STABILIZED CONSTRUCTION ENTRANCES, IN ACCORDANCE WITH STANDARD DETAILS SHALL BE INSTALLED AT THE BEGINNING OF CONSTRUCTION AND MAINTAINED FOR THE DURATION OF THE PROJECT. ADDITIONAL MEASURES, SUCH AS CONSTRUCTED WHEEL WASH SYSTEMS OR WASH PADS, MAY BE REQUIRED TO ENSURE THAT ALL PAVED AREAS ARE KEPT CLEAN AND TRACK-OUT TO STREET RIGHT-OF- WAY DOES NOT OCCUR FOR THE DURATION OF THE PROJECT.
5. THE TESC FACILITIES SHOWN ON THESE PLANS MUST BE CONSTRUCTED PRIOR TO ALL CLEARING AND GRADING TO ENSURE THAT THE TRANSPORT OF SEDIMENT TO SURFACE WATERS, DRAINAGE SYSTEMS, AND ADJACENT PROPERTIES IS REDUCED TO REQUIRED LEVELS.
6. THE TESC FACILITIES SHOWN ON THESE PLANS ARE THE MINIMUM REQUIREMENTS FOR ANTICIPATED SITE CONDITIONS. DURING THE CONSTRUCTION PERIOD, THESE TESC FACILITIES SHALL BE UPGRADED AS NEEDED FOR UNEXPECTED STORM EVENTS AND MODIFIED TO ACCOUNT FOR CHANGING SITE CONDITIONS (E.G., ADDITIONAL COVER MEASURES, ADDITIONAL SUMP PUMPS, RELOCATION OF DITCHES AND SILT FENCES, ADDITIONAL PERIMETER PROTECTION, ETC.), AS DIRECTED BY THE CITY ENGINEER.
7. THE TESC FACILITIES SHALL BE INSPECTED DAILY BY THE APPLICANT/CESCL AND MAINTAINED TO ENSURE CONTINUED PROPER FUNCTIONING. WRITTEN RECORDS SHALL BE KEPT OF WEEKLY REVIEWS OF THE TESC FACILITIES AND OF SAMPLES TAKEN DURING THE WET SEASON (OCTOBER 1 TO APRIL 30) AND OF MONTHLY REVIEWS DURING THE DRY SEASON (MAY 1 TO SEPTEMBER 30).
8. ANY AREAS OF EXPOSED SOILS, INCLUDING ROADWAY EMBANKMENTS, THAT WILL NOT BE DISTURBED FOR TWO DAYS DURING THE WET SEASON OR SEVEN DAYS DURING THE DRY SEASON SHALL BE IMMEDIATELY STABILIZED WITH THE APPROVED TESC METHODS (E.G., SEEDING, MULCHING, PLASTIC COVERING, ETC.).
9. ANY AREA NEEDING TESC MEASURES NOT REQUIRING IMMEDIATE ATTENTION SHALL BE ADDRESSED WITHIN SEVEN (7) DAYS
10. THE TESC FACILITIES ON INACTIVE SITES SHALL BE INSPECTED AND MAINTAINED A MINIMUM OF ONCE A MONTH OR WITHIN TWENTY-FOUR (24) HOURS FOLLOWING A STORM EVENT.
11. AT NO TIME SHALL MORE THAN ONE (1) FOOT OF SEDIMENT BE ALLOWED TO ACCUMULATE WITHIN A CATCH BASIN. ALL CATCH BASINS AND CONVEYANCE LINES SHALL BE CLEANED PRIOR TO FINAL INSPECTION. THE CLEANING OPERATION SHALL NOT FLUSH SEDIMENT-LADEN WATER INTO A DOWNSTREAM SYSTEM.
12. ANY PERMANENT FLOW CONTROL FACILITY USED AS A TEMPORARY SETTLING BASIN SHALL BE MODIFIED WITH THE NECESSARY EROSION CONTROL MEASURES AND SHALL PROVIDE ADEQUATE STORAGE CAPACITY. IF THE FACILITY IS TO FUNCTION ULTIMATELY AS AN INFILTRATION SYSTEM, THE TEMPORARY FACILITY MUST BE GRADED SO THAT THE BOTTOM AND SIDES ARE AT LEAST THREE (3) FEET ABOVE THE FINAL GRADE OF THE PERMANENT FACILITY.
13. WHERE STRAW MULCH FOR TEMPORARY EROSION CONTROL IS REQUIRED, IT SHALL BE APPLIED AT A MINIMUM THICKNESS OF 2 TO 3 INCHES.
14. PRIOR TO THE BEGINNING OF THE WET SEASON (OCTOBER 1), ALL DISTURBED AREAS SHALL BE REVIEWED TO IDENTIFY WHICH AREAS CAN BE SEEDED IN PREPARATION FOR THE WINTER RAINS. DISTURBED AREAS SHALL BE SEEDED WITHIN ONE WEEK OF THE BEGINNING OF THE WET SEASON. -A SKETCH MAP OF THOSE AREAS TO BE SEEDED AND THOSE AREAS TO REMAIN UNCOVERED SHALL BE SUBMITTED TO THE CITY OF PORT ORCHARD CITY ENGINEER. THE INSPECTOR CAN REQUIRE SEEDING OF ADDITIONAL AREAS IN ORDER TO PROTECT SURFACE WATERS, ADJACENT PROPERTIES, OR DRAINAGE FACILITIES.

CONSTRUCTION SEQUENCE NOTES:

1. CONDUCT A PRE-CONSTRUCTION MEETING WITH THE PUBLIC WORKS DEPARTMENT.
2. POST "NOTICE OF CONSTRUCTION ACTIVITY" SIGN WITH NAME AND PHONE NUMBER OF THE CESCL.
3. INSTALL CATCH BASIN PROTECTION, IF REQUIRED.
4. ESTABLISH SOIL STOCKPILE AREA..
5. MAINTAIN EROSION CONTROL MEASURES IN ACCORDANCE WITH THE CITY OF PORT ORCHARD STANDARDS AND MANUFACTURER'S RECOMMENDATIONS.
6. RELOCATE AND EROSION CONTROL MEASURES, OR INSTALL NEW MEASURES TO ENSURE THAT AS SITE CONDITIONS CHANGE THE EROSION AND SEDIMENT CONTROL IS ALWAYS IN ACCORDANCE WITH THE CITY OF PORT ORCHARD EROSION AND SEDIMENT CONTROL STANDARDS.
7. STABILIZE ALL AREAS THAT REACH FINAL GRADE WITHIN SEVEN DAYS.
8. UPON COMPLETION OF THE PROJECT, ALL DISTURBED AREAS MUST BE STABILIZED AND BEST MANAGEMENT PRACTICES REMOVED, IF APPROPRIATE.

WATER CONSTRUCTION NOTES:

1. THE DEVELOPER SHALL SUBMIT PLANS AND SPECIFICATIONS IN ACCORDANCE WITH INDIVIDUAL PERMIT REQUIREMENTS. CITY STANDARDS ARE ADEQUATE TO SERVE AS THE TECHNICAL SPECIFICATIONS FOR THE PROJECT, HOWEVER THE APPLICANT MAY PROPOSE DEVIATIONS FROM THE STANDARDS. THE CITY MAY ALSO REQUIRE ADDITIONAL SPECIFICATIONS IF PROJECT CONDITIONS WARRANT. PLANS AND SPECIFICATIONS FOR ALL PROJECTS MUST BE PREPARED AND STAMPED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF WASHINGTON, WITH THE EXCEPTION OF EXTENSIONS FOR SINGLE FAMILY RESIDENCES. AFTER THE REVIEW, THE DEVELOPER SHALL SUBMIT COPIES OF THE FINAL VERSION OF THE PLANS IN ACCORDANCE WITH PERMIT REQUIREMENTS.
2. ALL EXTENSIONS TO THE WATER SYSTEM MUST CONFORM TO THE DESIGN STANDARDS OF THE CITY AND SHALL MEET THE REQUIREMENTS OF THE LATEST KITSAP COUNTY FIRE PROTECTION ORDINANCES AND INTERNATIONAL FIRE CODES. IN ADDITION, PLANS AND SPECIFICATIONS FOR SYSTEM EXTENSIONS MUST BE APPROVED IN ACCORDANCE WITH THE REQUIREMENTS OF THE STATE DEPARTMENT OF HEALTH.

GRADING NOTES:

1. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IN THE EVENT OR DISCOVERY OF POOR SOILS, GROUNDWATER, OR DISCREPANCIES IN THE EXISTING CONDITIONS AS NOTED ON THE PLANS.
2. CUT AND FILL SLOPES SHALL BE CONSTRUCTED TO THE INCLINATIONS ON THE PLANS WHERE NOTED. ALL PERMANENT CUT AND FILL SLOPES SHALL BE NO GREATER THAN 3H:1V.
3. PREPARE AREAS TO RECEIVE STRUCTURAL FILL BY CLEARING AND GRUBBING VEGETATION AND STRIPPING TOPSOIL, NON-COMPLYING FILL, AND OTHER UNSUITABLE MATERIAL.
4. PRIOR TO PLACEMENT OF STRUCTURAL FILL, PROOF-ROLL AND COMPACT SUBGRADE TO A FIRM AND UNYIELDING CONDITION IN ORDER TO ACHIEVE A MINIMUM COMPACTION LEVEL OF 95% OF THE MODIFIED PROCTOR MAXIMUM DRY DENSITY PER ASTM D1557.
5. PLACE STRUCTURAL FILL IN UNIFORM, LOOSE LAYERS NOT EXCEEDING 12 INCHES AND COMPACT TO 95% OF THE MODIFIED PROCTOR MAXIMUM DRY DENSITY PER ASTM D1557.
6. SLOPE GRADES TO DRAIN WHERE NOTED ON THE PLANS BY FLOW DIRECTION SYMBOLS.
7. DISTURBED AREAS, INCLUDING UTILITY TRENCHES, NOT RECEIVING ALTERNATIVE SURFACING SHALL BE STABILIZED AND SEEDED WITH A LOW-GROWING SEED MIX ONCE GRADING IS COMPLETE.

CALL 48 HOURS
BEFORE YOU DIG
1-800-424-5555

ISSUE	DATE	DESCRIPTION
	7/2022	BID SET

PROJECT MANAGER	L. NOLAN
CIVIL ENG	J. KNOLL
WATER ENG	L. CHENG
STRUCTURAL ENG	M. HIJAZI
ELECTRICAL ENG	I. RINCON
INSTR. ENG	M. HUTSON
PROJECT NUMBER	10172116

LAURA NOLAN — STATE OF WASHINGTON — 21020170 — REGISTERED PROFESSIONAL ENGINEER — 07.01.2022

MCCORMICK — CLOSE TO WHAT COUNTS

PORT ORCHARD 660 RESERVOIR

CONSTRUCTION NOTES

0 1" 2"

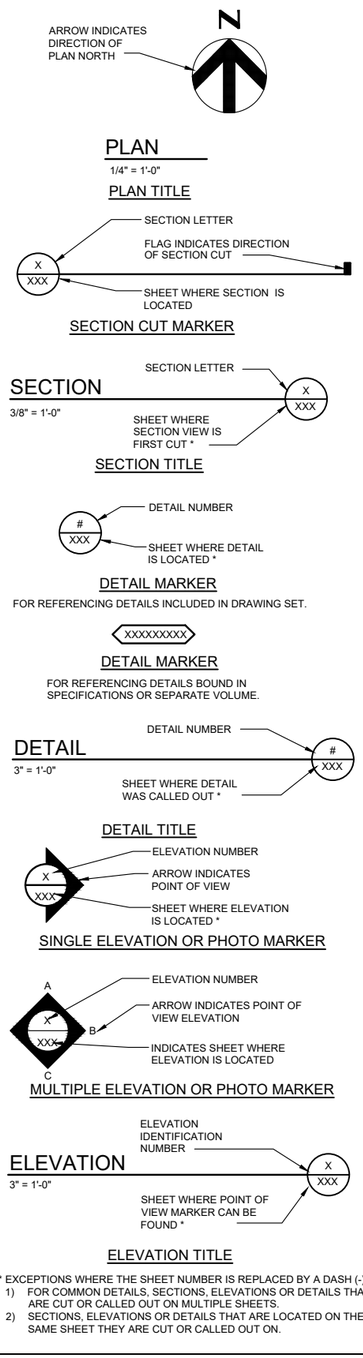
FILENAME G0-01.dwg
SCALE AS NOTED

SHEET G0-01

ABBREVIATIONS

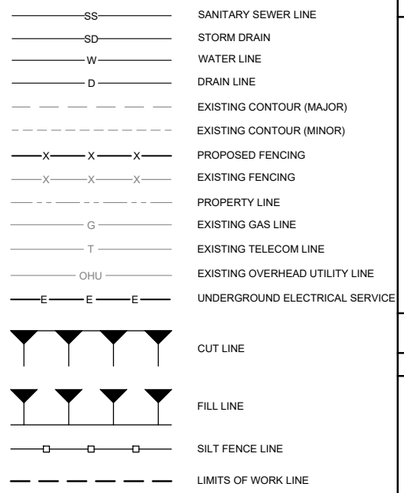
A	AMPERE
AGGR	AGGREGATE
AHU	AIR HANDLING UNIT
ANC	ANCHOR
ANOD	ANODIZED
AP	ANCHOR POINT
APPX	APPROXIMATE(LY)
AR	AIR RETURN
ARCH	ARCHITECTURAL
AS	AIR SUPPLY
ASPH	ASPHALT
AUTO	AUTOMATIC
AV	ANGLE VALVE
BF	BLIND FLANGE
BHP	BRAKE HORSEPOWER
BKR	BREAKER
BLDG	BUILDING
BLK	BLOCK
BM	BEAM, BENCHMARK
BO	BLOW OFF
BRG	BEARING
BRZ	BRONZE
BUV	BUTTERFLY VALVE
BV	BALL VALVE
C	CONDUIT
CAB	DIRECT BURIAL CABLE
C/C	CENTER TO CENTER
CD	CHEMICAL DRAIN
CDF	CONTROL DENSITY FILL
CDR	CONDUCTOR
CDU	CONDENSING UNIT
CED	CEILING EXHAUST DIFFUSER
CER	CEILING EXHAUST REGISTER
CF	CUBIC FEET
CFH	CUBIC FEET PER HOUR
CFM	CUBIC FEET PER MINUTE
CFR	CODE OF FEDERAL REGULATIONS
CFS	CUBIC FEET PER SECOND
CI	CAST IRON
CIP	CAST IRON PIPE, CAST IN PLACE
CJ	CONSTRUCTION JOINT
CKT	CIRCUIT
C/L	CENTERLINE
CL	CLEARANCE
CM	MANUAL CONTROL STATION
CMA	MANUAL-AUTO CONTROL STATION
CMP	CORRUGATED METAL PIPE
CMU	CONCRETE MASONRY UNIT
CND	CONDUIT
CNTL	CONTROL
CO	CLEANOUT
CONC	CONCRETE
COND	CONDUCTOR
CONT	CONTINUOUS
CONST	CONSTRUCTION
CP	CENTER POINT
CPLG	COUPLING
CTRL	CONTROL
CU	COPPER
CULV	CULVERT
CV	CONTROL VALVE
CY	CUBIC YARD
D	DRAIN
DB	DUCT BANK
DEMO	DEMOLISH
DET	DETAIL
DI	DUCTILE IRON
DIA	DIAMETER
DIP	DUCTILE IRON PIPE
DNR	DEPARTMENT OF NATURAL RESOURCES
DR	DRAINAGE
EA	EACH
ECC	ECCENTRIC
ED	EQUIPMENT DRAIN
EF	EXHAUST FAN
EG	EMERGENCY GENERATOR
EJ	EXPANSION JOINT
EL, ELEV	ELEVATION
ELECT	ELECTRICAL
ELL	ELBOW
EMBD	EMBEDDED
EOP	EDGE OF PAVEMENT
EQUIP	EQUIPMENT
EQUIV	EQUIVALENT
ESMT	EASEMENT
EXIST	EXISTING
EXP	EXPANSION
EXT	EXTERIOR
FC	FAIL CLOSED
FCO	FLOOR CLEANOUT
FCR	FINE CRUSHED ROCK
FD	FLOOR DRAIN
FDC	FLEXIBLE DUCT CONNECTOR
FDR	FEEDER
FE	FLOWMETER
FF	FINISH FLOOR
F/F	FACE TO FACE
FG	FINISHED GRADE
FH	FIRE HYDRANT
FIN	FINISHED
FLEX	FLEXIBLE
FLG'D)	FLANGE(D)
FLR	FLOOR
FND	FOUNDATION
FO	FAIL OPEN
FP	FIRE PROTECTION
FPC	FLEXIBLE PIPE COUPLING
FPM	FEET PER MINUTE
FPS	FEET PER SECOND
FT	FEET
FTG	FOOTING
FUT	FUTURE
GA	GAGE, GAUGE
GAL	GALLON
GALV	GALVANIZED
GBV	GLOBE VALVE
GEN,GEN'L	GENERAL
GFI	GROUND FAULT INTERRUPTER
GL	GLASS
GND	GROUND
GPD	GALLONS PER DAY
GPM	GALLONS PER MINUTE
GRD	GRADE
GRT	GROUT
GRTG	GRATING
GSKT	GASKET
GV	GATE VALVE
GWT	GROUND WATER TABLE
GYP	GYPSUM
H/A	HAND AUTO
HDPE	HIGH DENSITY POLYETHYLENE
HH	HANDHOLE
HOA	HAND-OFF-AUTO
HP	HORSEPOWER
HPEL	HIGHPOINT ELEVATION
HT	HEIGHT
HVAC	HEATING, VENTILATING, AND AIR CONDITIONING
IBC	INTERNATIONAL BUILDING CODE
ID	INSIDE DIAMETER
IE	INVERT ELEVATION
INSUL	INSULATE(D), INSULATION
INTLK	INTERLOCK
INV	INVERT
INV EL	INVERT ELEVATION
I/O	INPUT/OUTPUT
IRRIG	IRRIGATION
JB	JUNCTION BOX
JCT	JUNCTION
JT(S)	JOINT(S)
KV	KILOVOLT
KVA	KILOVOLT AMPERE
KVAR	KILOVAR
KW	KILOWATT
LB(S)	POUND(S)
LF	LINEAL FEET
MAN	MANUAL
MAT'L	MATERIAL
MAX	MAXIMUM
MCC	MOTOR CONTROL CENTER
MCU	MASTER CONTROL UNIT
MD	MOTORIZED DAMPER
MECH	MECHANICAL
MFR	MANUFACTURER
MG	MILLION GALLONS
MGD	MILLION GALLONS PER DAY
MG/L	MILLIGRAMS PER LITER
MGR	MANAGER
MH	MANHOLE
MIN	MINIMUM
MISC	MISCELLANEOUS
MJ	MECHANICAL JOINT
MTR	MOTOR
N	NEUTRAL
NC	NORMALLY CLOSED
NEG	NEGATIVE
NIC	NOT IN CONTRACT
NO	NORMALLY OPEN
NOM	NOMINAL
NP	NAMEPLATE
NPSH	NET POSITIVE SUCTION HEAD
NPT	NATIONAL PIPE THREAD
OC	ON CENTER
OF	OVERFLOW
OH	OVERHEAD
OL	OVERLOAD
PE	POPULATION EQUIVALENT
PF	POWER FACTOR
PG	PRESSURE GAGE
PH	PHASE
PL	PROPERTY LINE
PLC	PROGRAMMABLE LOGIC CONTROLLER
PRV	PRESSURE REGULATING (REDUCING) (RELIEF) VALVE
PS	PRESSURE SENSOR
PSF	POUNDS PER SQUARE FOOT
PSH	PRESSURE SWITCH HIGH
PSIA	POUNDS PER SQUARE INCH ABSOLUTE
PSIG	POUNDS PER SQUARE INCH GAGE
PVC	POLYVINYL CHLORIDE
PVT	PAVEMENT
PV	POWER VAULT
RD	ROOF DRAIN
RECP	RECEPTACLE
RED	REDUCE(R)
REQ'D	REQUIRED
RGS	RIGID GALVANIZED STEEL
RTU	REMOTE TERMINAL UNIT
SCFM	STANDARD CUBIC FEET PER MINUTE
SCH	SCHEDULE
SD	STORM DRAIN
SF	SQUARE FOOT
SST	STAINLESS STEEL
STA	STATION
STD	STORM DRAIN
SV	SOLENOID VALVE
SW	SEAL WATER
SWBD	SWITCHBOARD
SWGR	SWITCHGEAR
TESCP	TEMPORARY EROSION AND SEDIMENTATION CONTROL PLAN
TFR	TRANSFORMER
TRM	TRANSMITTER
TRN	TRANSDUCER
TRS	TRANSFER SWITCH
TYP	TYPICAL
UBC	UNIFORM BUILDING CODE
UG	UNDERGROUND
UH	UNIT HEATER
U/P	UTILITY POLE
UPS	UNINTERRUPTIBLE POWER SUPPLY
UTIL	UTILITIES
V	VOLTS
VAC	VOLTS ALTERNATING CURRENT
VB	VALVE BOX
VDC	VOLTS DIRECT CURRENT
WM	WATER MAIN
X	SPARE CONDUIT (SUFFIX LETTER), TIMES
XDCR	TRANSDUCER
XFMR	POWER TRANSFORMER
XMTR	TRANSMITTER
XP	EXPLOSION PROOF

GENERAL SYMBOLOGY

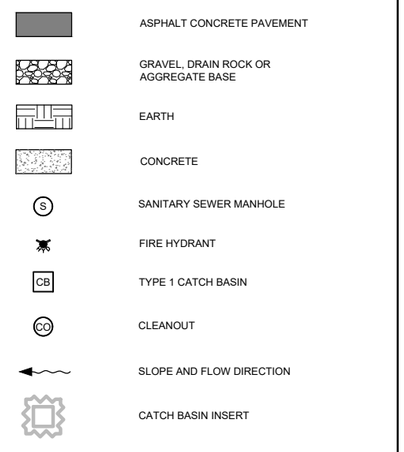


* EXCEPTIONS WHERE THE SHEET NUMBER IS REPLACED BY A DASH (-).
1) FOR COMMON DETAILS, SECTIONS, ELEVATIONS OR DETAILS THAT ARE CUT OR CALLED OUT ON MULTIPLE SHEETS.
2) SECTIONS, ELEVATIONS OR DETAILS THAT ARE LOCATED ON THE SAME SHEET THEY ARE CUT OR CALLED OUT ON.

GENERAL LINE SYMBOLOGY



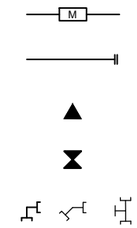
CIVIL SYMBOLOGY



EXISTING CIVIL SYMBOLOGY

PROCESS PIPING SYMBOLOGY

MISCELLANEOUS



VALVES

SINGLE LINE	ISOLATION
	BALL VALVE
	GATE VALVE
MOV	MOTOR OPERATED VALVE

SINGLE LINE	CONTROL
	CHECK VALVE
X	AIR RELEASE VACUUM VALVE A = AIR RELEASE V = VACUUM
	PRESSURE REGULATING VALVE

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ISSUE	DATE	DESCRIPTION
	7/2022	BID SET

PROJECT MANAGER	L. NOLAN
CIVIL ENG	J. KNOLL
WATER ENG	L. CHENG
STRUCTURAL ENG	M. HIJAZI
ELECTRICAL ENG	I. RINCON
INSTR. ENG	M. HUTSON
PROJECT NUMBER	10172116

LAURA NOLAN — STATE OF WASHINGTON — 21020170 — REGISTERED PROFESSIONAL ENGINEER
07.01.2022

MCCORMICK
CLOSE TO WHAT COUNTS

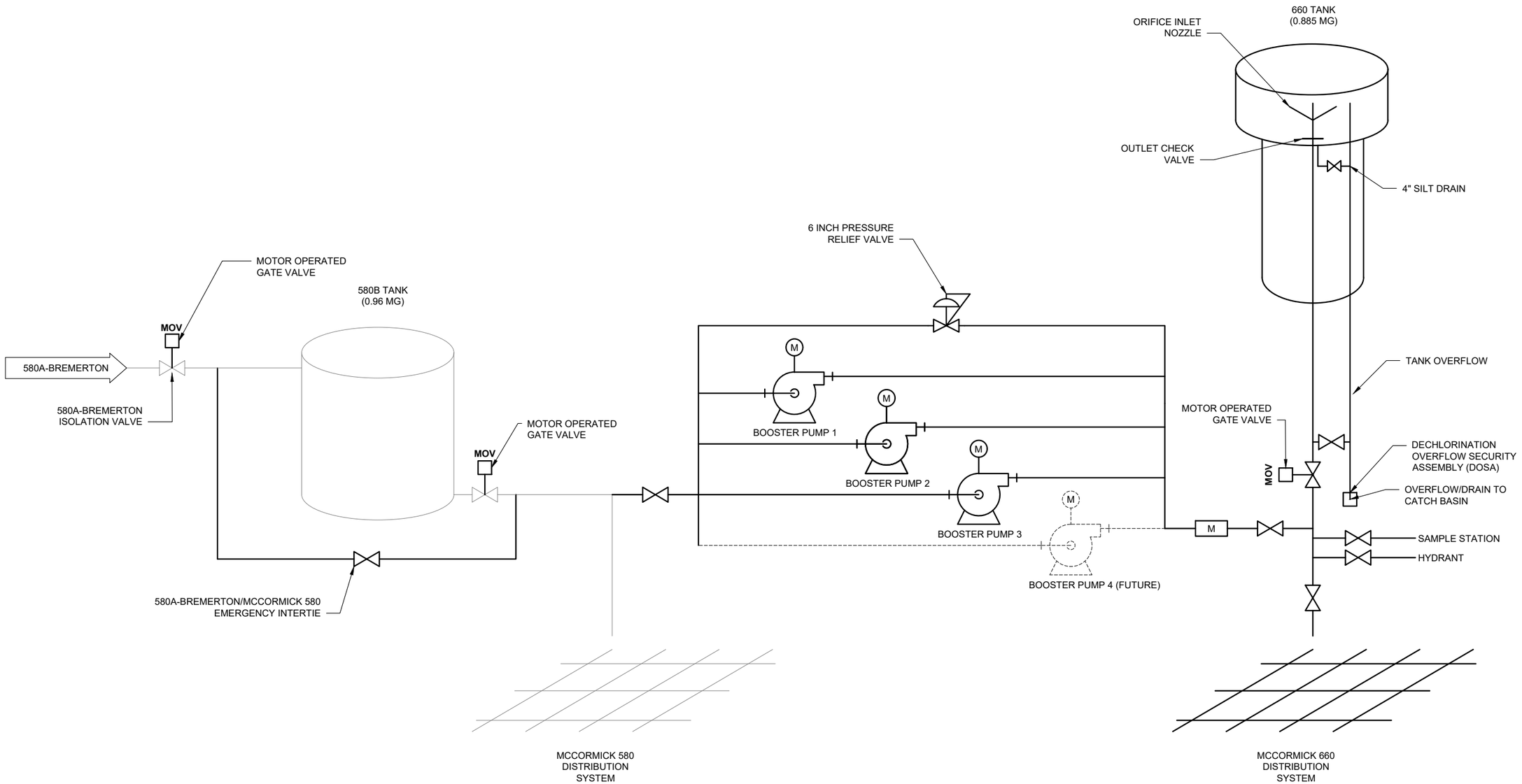
PORT ORCHARD 660 RESERVOIR

ABBREVIATIONS AND SYMBOLS

0 1" 2"

FILENAME	G0-02.dwg
SCALE	AS NOTED

SHEET **G0-02**



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PROCESS FLOW DIAGRAM

0 1" 2"

FILENAME G0-03.dwg
SCALE NOT TO SCALE

SHEET
G0-03

PORTIONS OF THE NE 1/4, NE 1/4 OF SECTION 7 & THE NW 1/4, NW 1/4, SECTION 8, TOWNSHIP 20 NORTH, RANGE 2 EAST, W.M.

VERTICAL DATUM:

BASE: COUNTY CORS STATION "PRDY"
ELEVATION= 345.462' (NAVD 88)

BASIS OF BEARING:

GRID NORTH. BASED UPON GLOBAL POSITIONING SYSTEM (GPS) LAMBERT GRID WASHINGTON STATE NORTH ZONE COORDINATES.THE NORTH AMERICAN DATUM OF 1983/2011 (NAD 83/2011 EPOCH 2010.00) GRID COORDINATES WERE FOUND TO BE 189899.60 / 1177628.83 AT A BRASS DISK IN CONCRETE, INCASED AT THE NORTH QUARTER CORNER OF SECTION 08, TOWNSHIP 21 NORTH, RANGE 1 EAST, W.M.. THE INVERSE OF BOTH THE SEA LEVEL CORRECTION FACTOR OF 0.9999808534 AND THE GRID SCALE FACTOR OF 0.9999990407 WAS APPLIED TO THE GRID COORDINATES FOR SHOWN GROUND DISTANCES.

SURVEYOR'S NOTES:

1) THE MONUMENT CONTROL SHOWN FOR THIS SITE WAS ACCOMPLISHED BY FIELD TRAVERSE UTILIZING A TWO (2) SECOND THEODOLITE WITH INTEGRAL ELECTRONIC DISTANCE MEASURING METER (TRIMBLE S-3) AND REAL TIME KINEMATIC (RTK) / STATIC GLOBAL POSITIONING SYSTEM (TRIMBLE R-8). LINEAR AND ANGULAR CLOSURE OF THE TRAVERSES MEET THE STANDARDS OF WAC 332-130-090.
2) UTILITIES OTHER THAN THOSE SHOWN MAY EXIST ON THIS SITE. ONLY THOSE WHICH ARE VISIBLE OR HAVING VISIBLE EVIDENCE OF THEIR INSTALLATION ARE SHOWN HEREON.
3) THIS SURVEY REPRESENTS PHYSICAL IMPROVEMENT CONDITIONS AS THEY EXISTED MAY 23, 2017, THE DATE OF THIS FIELD SURVEY.
4) LEGAL DESCRIPTION NOT PROVIDED. NO ADDITIONAL RESEARCH HAS BEEN ATTEMPTED.
5) OFFSET DIMENSIONS SHOWN HEREON ARE MEASURED PERPENDICULAR TO PROPERTY LINES.
6) IT IS NOT THE INTENT OF THIS SURVEY TO SHOW EASEMENTS OR RESERVATIONS WHICH MAY EFFECT THIS SITE.

DESCRIPTION:

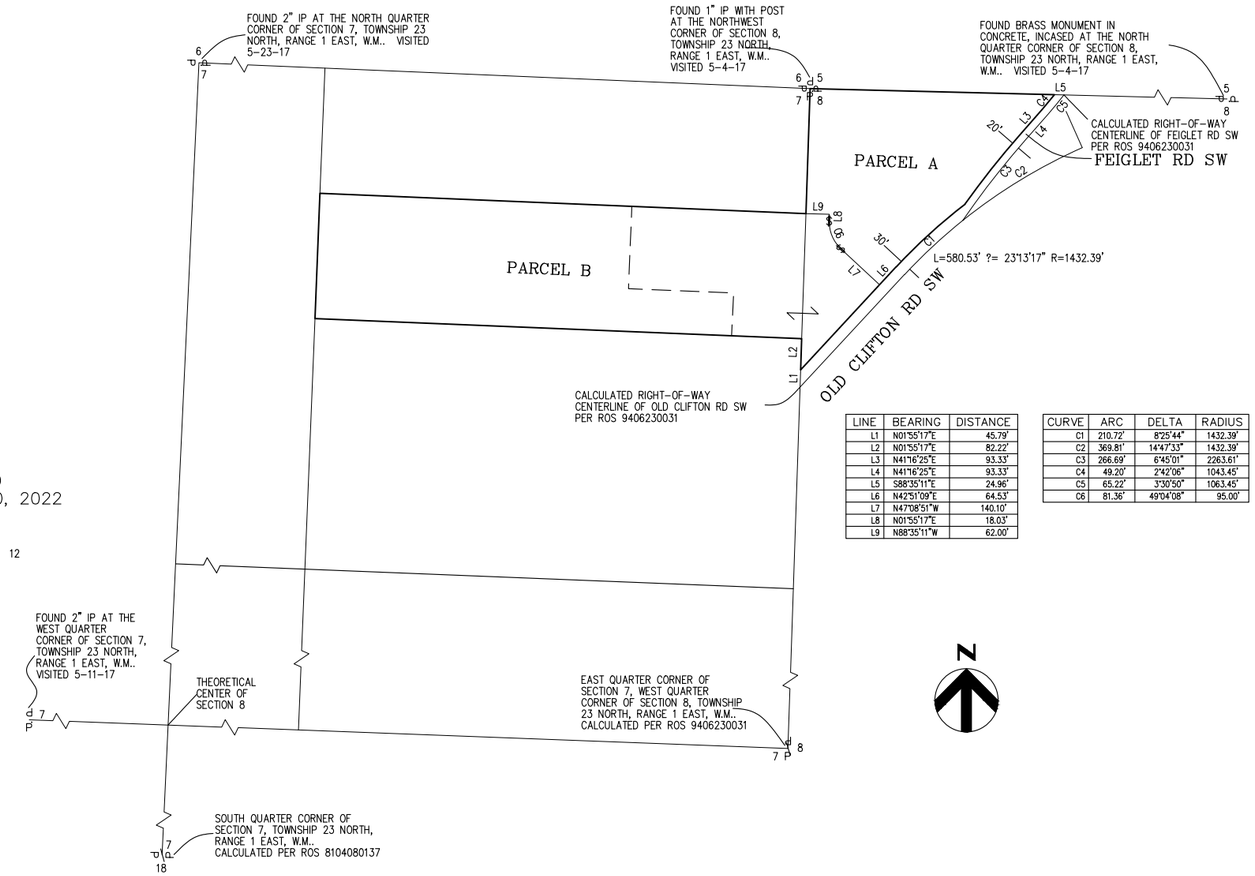
RESULTANT PARCEL A AND PARCEL B OF BOUNDARY LINE ADJUSTMENT RECORDED UNDER AUDITOR'S FILE NO. 3031737, RECORDS OF KITSAP COUNTY, WASHINGTON.

NOTE:

SITE TOPOGRAPHIC BASE MAP UPDATED PER REVISED SURVEY FROM CONTOUR ENGINEERING LLC, MARCH 10, 2022

LEGEND:

⌐ = CALCULATED MONUMENT POSITION
. = FOUND MONUMENT AS NOTED.



LINE	BEARING	DISTANCE
L1	N01°55'17"E	45.79'
L2	N01°55'17"E	82.22'
L3	N41°16'25"E	93.33'
L4	N41°16'25"E	93.33'
L5	S88°35'11"E	24.96'
L6	N42°51'09"E	64.53'
L7	N47°08'51"W	140.10'
L8	N01°55'17"E	18.03'
L9	N88°35'11"W	62.00'

CURVE	ARC	DELTA	RADIUS
C1	210.72'	8°25'44"	1432.39'
C2	369.81'	14°47'33"	1432.39'
C3	266.69'	6°45'01"	2263.61'
C4	49.20'	2°42'06"	1043.45'
C5	65.22'	3°30'50"	1063.45'
C6	81.36'	49°04'08"	95.00'

PLAN

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CONTOUR ENGINEERING · LLC
CIVIL ENGINEERS~SURVEYORS~LAND PLANNERS
4706 97th St NW, Bldg. #2 - P.O. Box 949 - Gig Harbor, WA 98335
Ph: 253-857-5454 - Fax: 253-509-0044 - www.contourengineering.com

HDR

ISSUE	DATE	DESCRIPTION
	7/2022	BID SET

PROJECT MANAGER	L. NOLAN
CIVIL ENG	J. KNOLL
WATER ENG	L. CHENG
STRUCTURAL ENG	M. HIJAZI
ELECTRICAL ENG	I. RINCON
INSTR. ENG	M. HUTSON
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07.01.2022

McCORMICK
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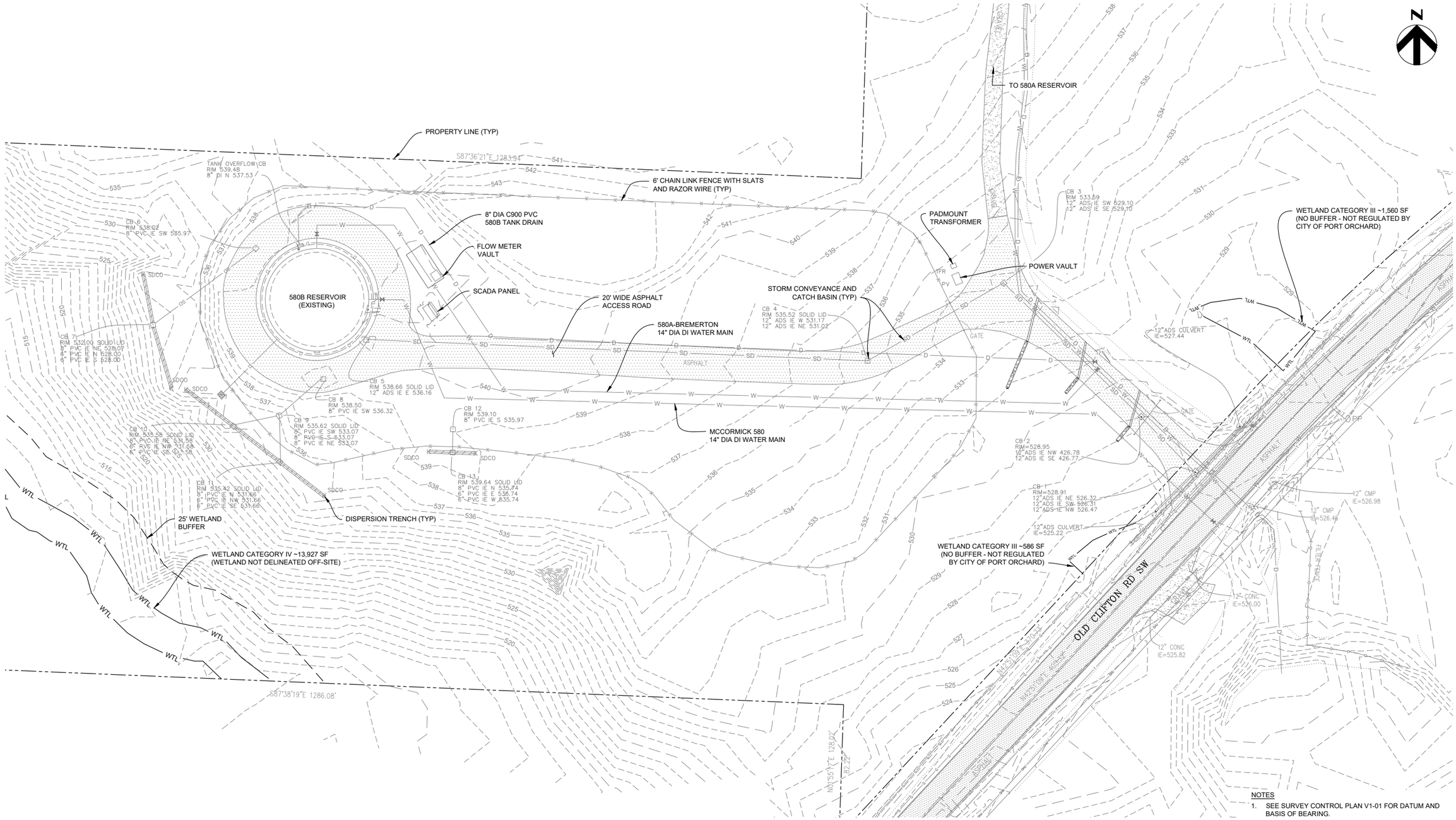
PORT ORCHARD 660 RESERVOIR

SURVEY CONTROL PLAN

0 1" 2"

FILENAME V1-01.dwg
SCALE AS NOTED

SHEET
V1-01



PLAN

0 15 30 60

SCALE IN FEET

NOTES

1. SEE SURVEY CONTROL PLAN V1-01 FOR DATUM AND BASIS OF BEARING.

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07.01.2022

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PORT ORCHARD 660 RESERVOIR

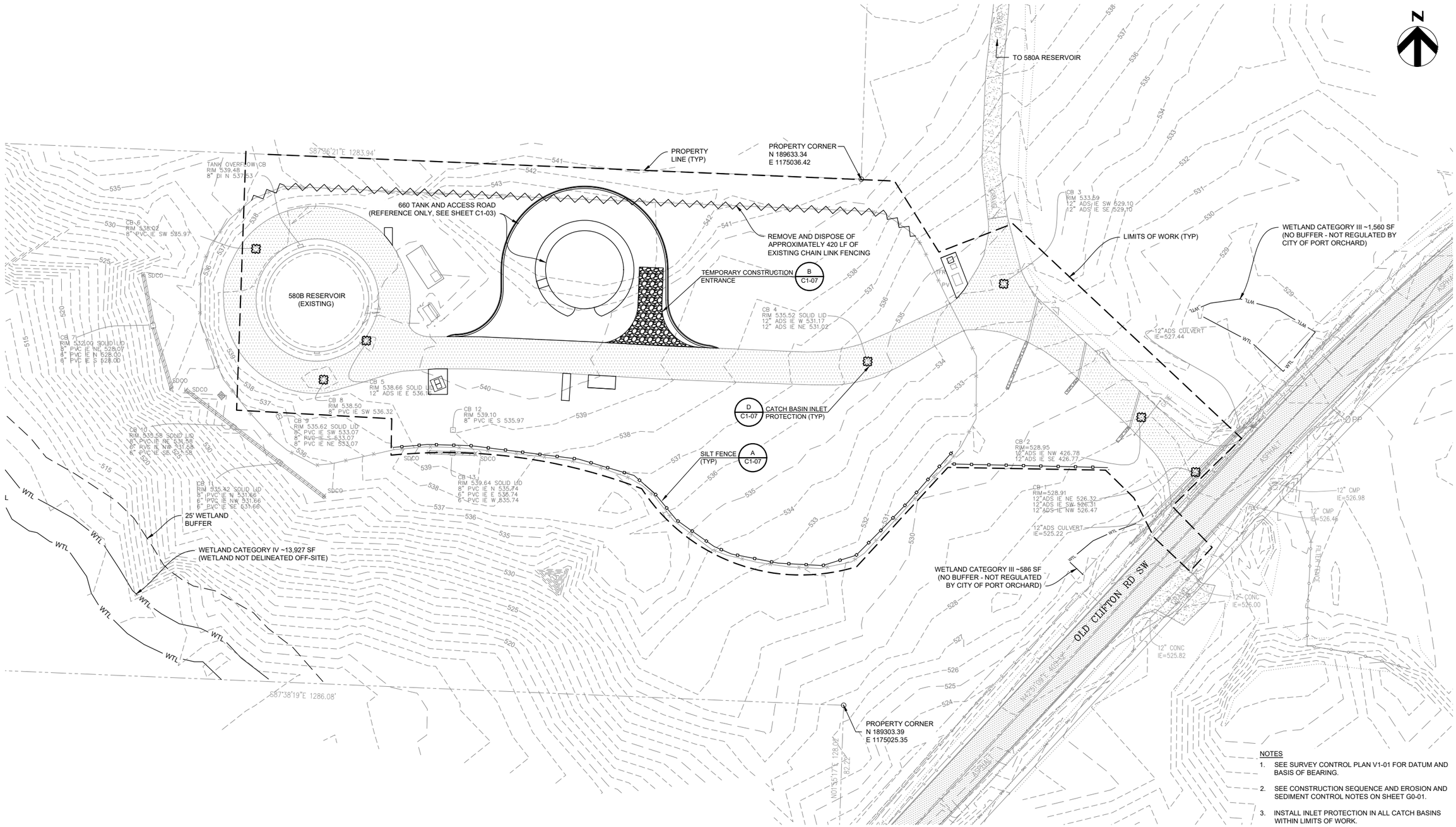
EXISTING SITE PLAN

0 1" 2"

FILENAME C1-01.dwg

SCALE 1" = 30'

SHEET
C1-01



PLAN

0 15 30 60

SCALE IN FEET

NOTES

1. SEE SURVEY CONTROL PLAN V1-01 FOR DATUM AND BASIS OF BEARING.
2. SEE CONSTRUCTION SEQUENCE AND EROSION AND SEDIMENT CONTROL NOTES ON SHEET G0-01.
3. INSTALL INLET PROTECTION IN ALL CATCH BASINS WITHIN LIMITS OF WORK.

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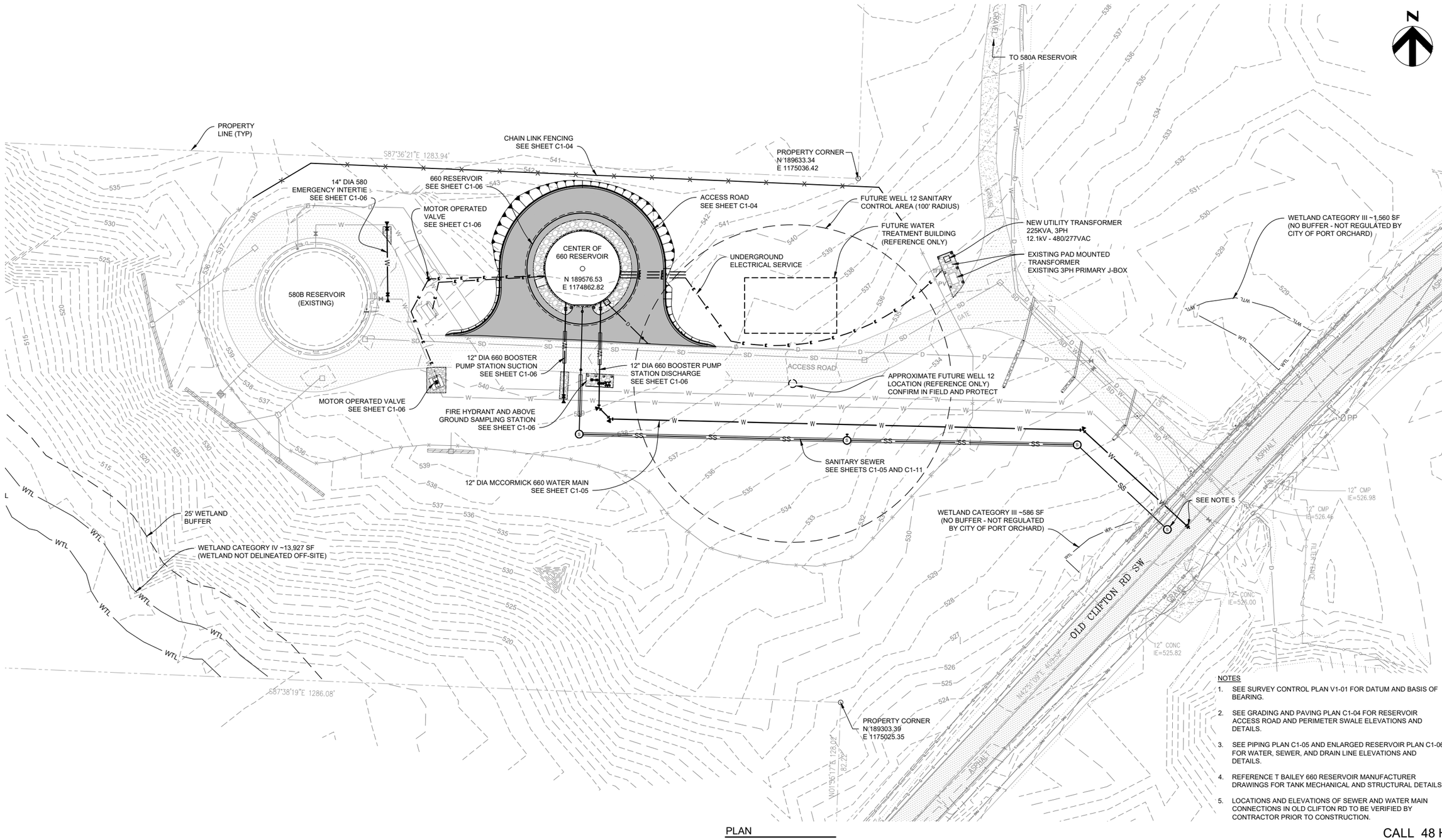
SITE PREPARATION AND TESC PLAN

0 1" 2"

FILENAME C1-02.dwg

SCALE 1" = 30'

SHEET C1-02



PLAN

0 15 30 60

SCALE IN FEET

NOTES

1. SEE SURVEY CONTROL PLAN V1-01 FOR DATUM AND BASIS OF BEARING.
2. SEE GRADING AND PAVING PLAN C1-04 FOR RESERVOIR ACCESS ROAD AND PERIMETER SWALE ELEVATIONS AND DETAILS.
3. SEE PIPING PLAN C1-05 AND ENLARGED RESERVOIR PLAN C1-06 FOR WATER, SEWER, AND DRAIN LINE ELEVATIONS AND DETAILS.
4. REFERENCE T BAILEY 660 RESERVOIR MANUFACTURER DRAWINGS FOR TANK MECHANICAL AND STRUCTURAL DETAILS
5. LOCATIONS AND ELEVATIONS OF SEWER AND WATER MAIN CONNECTIONS IN OLD CLIFTON RD TO BE VERIFIED BY CONTRACTOR PRIOR TO CONSTRUCTION.

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PORT ORCHARD 660 RESERVOIR

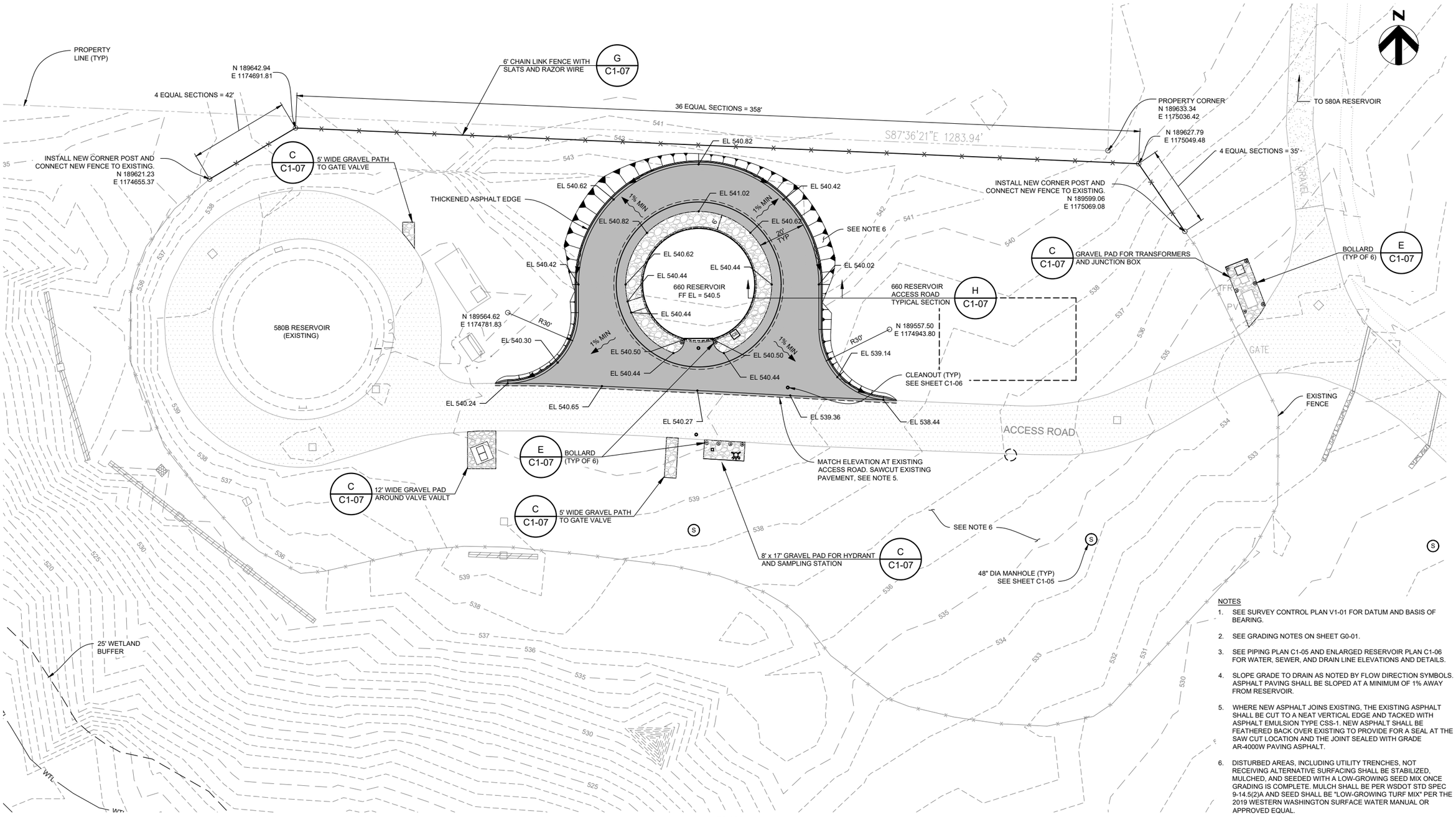
SITE PLAN

0 1" 2"

FILENAME C1-03.dwg

SCALE 1" = 30'

SHEET **C1-03**



PLAN

0 10 20 40

SCALE IN FEET

NOTES

1. SEE SURVEY CONTROL PLAN V1-01 FOR DATUM AND BASIS OF BEARING.
2. SEE GRADING NOTES ON SHEET G0-01.
3. SEE PIPING PLAN C1-05 AND ENLARGED RESERVOIR PLAN C1-06 FOR WATER, SEWER, AND DRAIN LINE ELEVATIONS AND DETAILS.
4. SLOPE GRADE TO DRAIN AS NOTED BY FLOW DIRECTION SYMBOLS. ASPHALT PAVING SHALL BE SLOPED AT A MINIMUM OF 1% AWAY FROM RESERVOIR.
5. WHERE NEW ASPHALT JOINS EXISTING, THE EXISTING ASPHALT SHALL BE CUT TO A NEAT VERTICAL EDGE AND TACKED WITH ASPHALT EMULSION TYPE CSS-1. NEW ASPHALT SHALL BE FEATHERED BACK OVER EXISTING TO PROVIDE FOR A SEAL AT THE SAW CUT LOCATION AND THE JOINT SEALED WITH GRADE AR-4000W PAVING ASPHALT.
6. DISTURBED AREAS, INCLUDING UTILITY TRENCHES, NOT RECEIVING ALTERNATIVE SURFACING SHALL BE STABILIZED, MULCHED, AND SEEDED WITH A LOW-GROWING SEED MIX ONCE GRADING IS COMPLETE. MULCH SHALL BE PER WSDOT STD SPEC 9-14.5(2)A AND SEED SHALL BE "LOW-GROWING TURF MIX" PER THE 2019 WESTERN WASHINGTON SURFACE WATER MANUAL OR APPROVED EQUAL.

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PORT ORCHARD 660 RESERVOIR

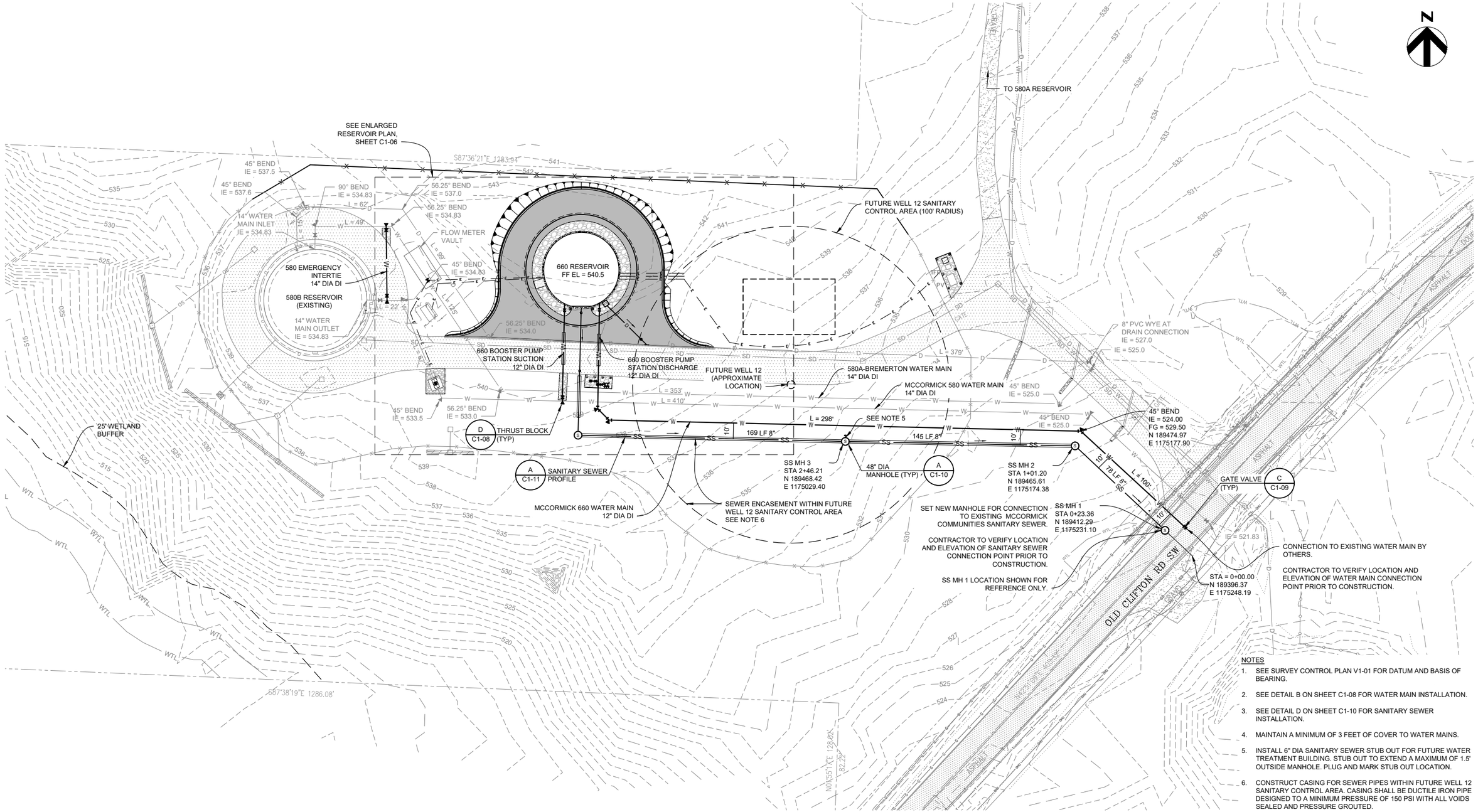
GRADING AND PAVING PLAN

0 1" 2"

FILENAME C1-04.dwg

SCALE 1" = 20'

SHEET C1-04



NOTES

1. SEE SURVEY CONTROL PLAN V1-01 FOR DATUM AND BASIS OF BEARING.
2. SEE DETAIL B ON SHEET C1-08 FOR WATER MAIN INSTALLATION.
3. SEE DETAIL D ON SHEET C1-10 FOR SANITARY SEWER INSTALLATION.
4. MAINTAIN A MINIMUM OF 3 FEET OF COVER TO WATER MAINS.
5. INSTALL 6" DIA SANITARY SEWER STUB OUT FOR FUTURE WATER TREATMENT BUILDING. STUB OUT TO EXTEND A MAXIMUM OF 1.5' OUTSIDE MANHOLE. PLUG AND MARK STUB OUT LOCATION.
6. CONSTRUCT CASING FOR SEWER PIPES WITHIN FUTURE WELL 12 SANITARY CONTROL AREA. CASING SHALL BE DUCTILE IRON PIPE DESIGNED TO A MINIMUM PRESSURE OF 150 PSI WITH ALL VOIDS SEALED AND PRESSURE GROUTED.

PLAN

0 15 30 60

SCALE IN FEET

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PORT ORCHARD 660 RESERVOIR

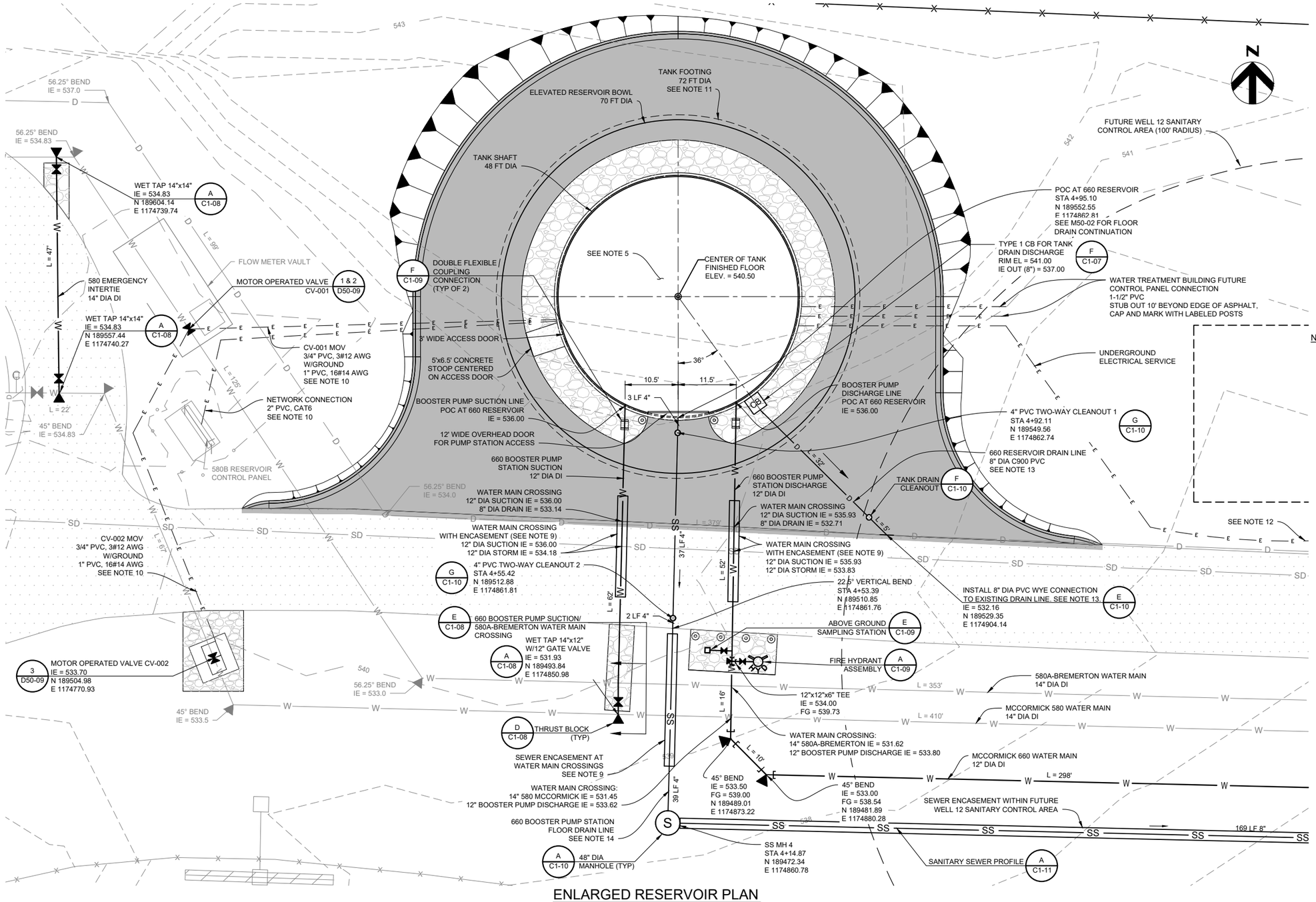
SITE PIPING PLAN

0 1" 2"

FILENAME C1-05.dwg

SCALE 1" = 30'

SHEET C1-05



ENLARGED RESERVOIR PLAN

0 5 10 20

SCALE IN FEET

NOTES:

1. SEE SURVEY CONTROL PLAN V1-01 FOR DATUM AND BASIS OF BEARING.
2. SEE DETAIL B ON SHEET C1-08 FOR WATER MAIN INSTALLATION.
3. SEE DETAIL D ON SHEET C1-10 FOR SANITARY SEWER INSTALLATION.
4. MAINTAIN A MINIMUM OF 3 FEET OF COVER TO WATER MAINS.
5. SEE SHEETS D50-01 AND D50-02 FOR 660 BOOSTER PUMP STATION PLAN AND ELEVATIONS.
6. REFERENCE T BAILEY 660 RESERVOIR MANUFACTURER DRAWINGS FOR TANK MECHANICAL AND STRUCTURAL DETAILS.
7. RESERVOIR CONTRACTOR IS RESPONSIBLE FOR CONSTRUCTION AND TESTING OF PIPING EXTENDING 10 FEET BEYOND THE EDGE OF THE RESERVOIR
8. SITE GENERAL CONTRACTOR IS RESPONSIBLE FOR ALL PIPING NOT INCLUDED IN NOTE 7.
9. ENCASEMENT OF WATER AND SEWER SHALL BE DUCTILE IRON PIPE DESIGNED TO A MINIMUM PRESSURE OF 150 PSI EXTENDING A MINIMUM OF 10 FEET TO EITHER SIDE OF THE CROSSING WITH ALL VOIDS SEALED AND PRESSURE GROUTED.
10. CONTRACTOR IS RESPONSIBLE FOR FINAL ROUTING OF ELECTRICAL CONTROL WIRING TO PUMP STATION. CONDUIT TO BE PVC, 36" FROM GRADE.
11. CONTRACTOR TO DESIGN AND INSTALL FOOTING DRAIN IN ACCORDANCE WITH GEOTECHNICAL REPORT, DATED JULY 2019. SLOPE TO DRAIN AND CONNECT TO EXISTING STORM SYSTEM.
12. SEE SHEET C1-03 FOR EXTERIOR ELECTRICAL UTILITY ROUTING.
13. CONTRACTOR TO VERIFY TANK OVERFLOW DRAIN CONNECTION WITH CITY OF PORT ORCHARD PRIOR TO CONSTRUCTION.
14. CONTRACTOR TO VERIFY FLOOR DRAIN CONNECTION AND ASSOCIATED PLUMBING EQUIPMENT WITH CITY OF PORT ORCHARD PRIOR TO CONSTRUCTION.

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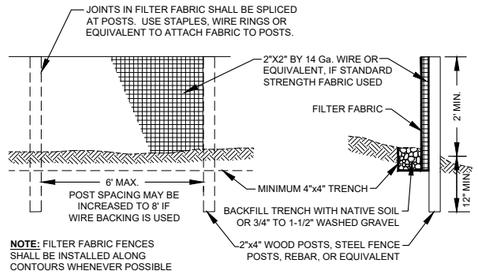
ENLARGED RESERVOIR PLAN

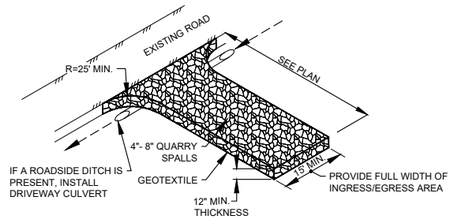
0 1" 2"

FILENAME C1-06.dwg
SCALE 1" = 10'

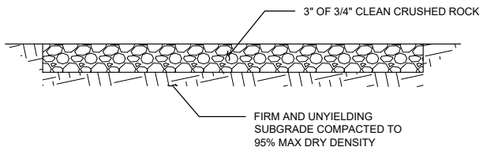
SHEET
C1-06



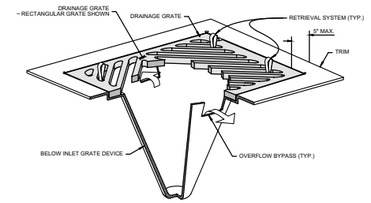
SILT FENCE (A)
SCALE: NO SCALE



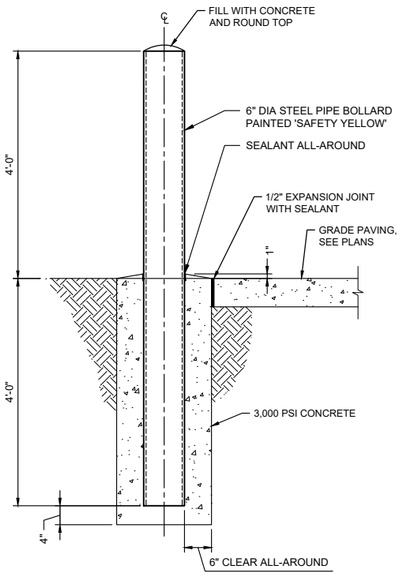
TEMPORARY CONSTRUCTION ENTRANCE (B)
SCALE: NO SCALE



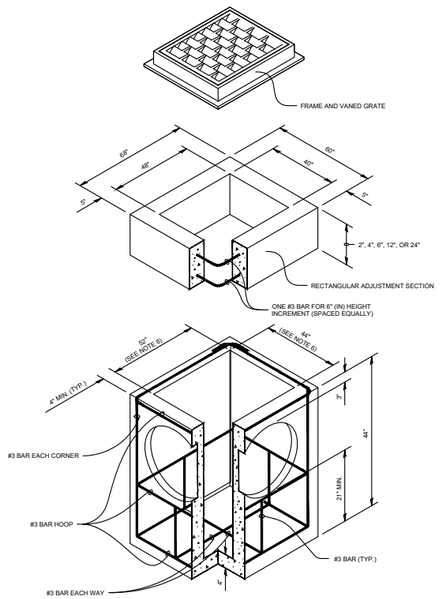
GRAVEL SURFACES (C)
SCALE: NO SCALE



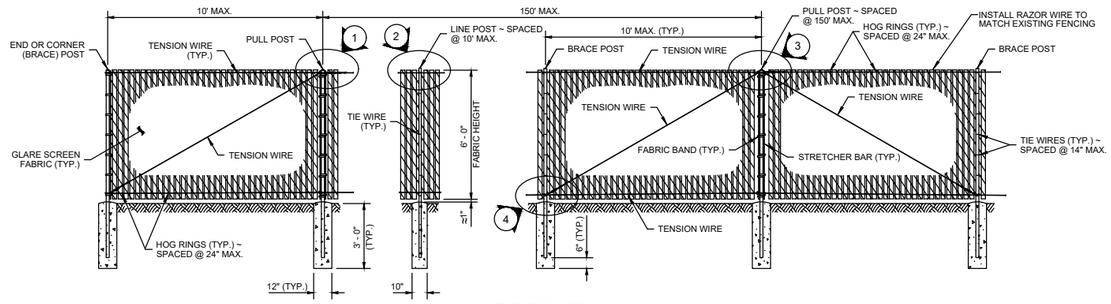
CATCH BASIN INLET PROTECTION (D)
SCALE: NO SCALE



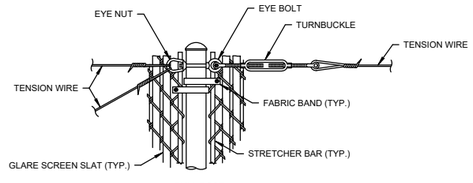
TYPICAL BOLLARD (E)
SCALE: NO SCALE



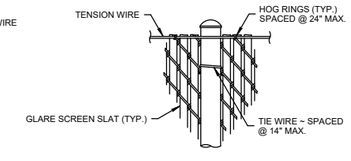
PRECAST TYPE 1 CATCH BASIN (F)
SCALE: NO SCALE



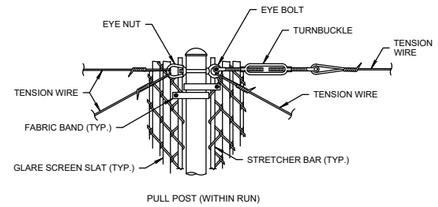
ELEVATION VIEW



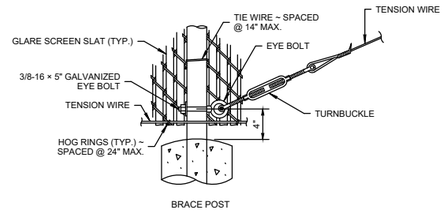
DETAIL (1)



DETAIL (2)

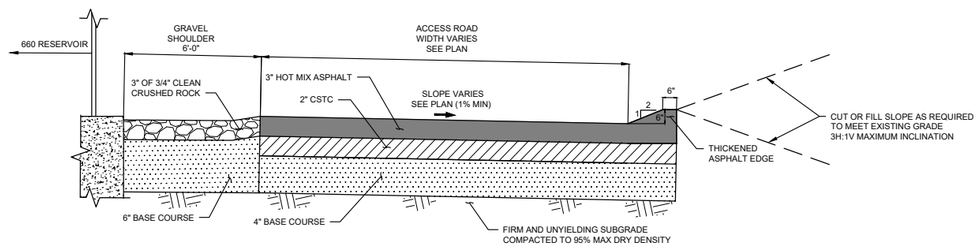


DETAIL (3)



DETAIL (4)

CHAIN LINK FENCE WITH SLATS AND RAZOR WIRE (G)
SCALE: NO SCALE



660 RESERVOIR ACCESS ROAD (H)
SCALE: NO SCALE

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STRUCTURAL ENG	M. HIJAZI
ELECTRICAL ENG	I. RINCON
INSTR. ENG	M. HUTSON
PROJECT NUMBER	10172116

LAURA NOLAN — STATE OF WASHINGTON — 21020170 — REGISTERED PROFESSIONAL ENGINEER
07.01.2022

MCCORMICK — CLOSE TO WHAT COUNTS

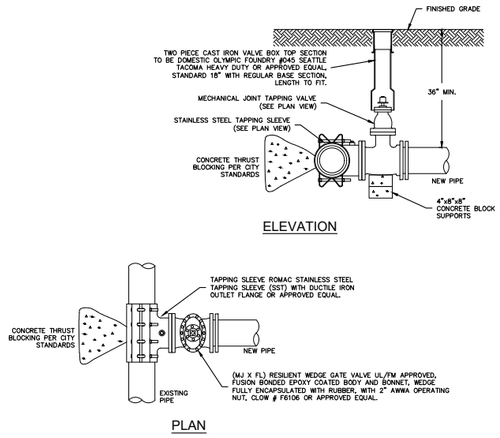
PORT ORCHARD 660 RESERVOIR

CIVIL DETAILS

0 1" 2"

FILENAME C1-07.dwg
SCALE AS NOTED

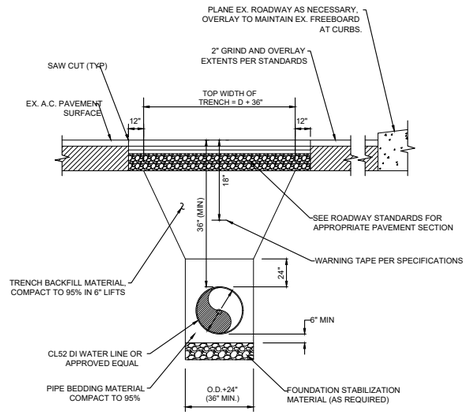
SHEET C1-07



NOTES:

1. PRIOR TO BORING:
   A. TAPPING SLEEVE AND VALVE SHALL BE PRESSURE TESTED AT 200 PSI FOR A PERIOD OF 15 MINUTES. PRESSURE LOSS DURING TESTING SHALL NOT EXCEED 5 PSI.
   B. TAPPING SLEEVE AND VALVE SHALL BE STERILIZED PER SPECIFICATIONS
2. PRIOR TO FINAL CONNECTION OF TAPPING VALVE TO NEW PIPING, THE NEW PIPING SHALL BE PRESSURE TESTED AND STERILIZED PER SPECIFICATIONS

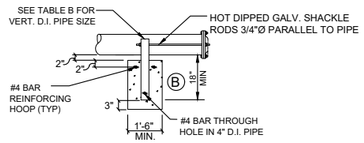
A	Est. 1890	RESTORATION, TAPS, AND BLOCKING C	WET TAP	DRAWN BY	IDS
-				DATE	1/30/2019
				SCALE	NTS
				DRAWING NUMBER	802



NOTES:

1) BED THE ENTIRE WIDTH OF THE TRENCH PAVEMENT
2) RESTORATION SHALL BE PER THE APPROPRIATE SECTION IN CHAPTER 6 (PAVEMENT SURFACING).
3) INSTALL TRACER WIRE PER SPECIFICATIONS

B	Est. 1890	RESTORATION, TAPS, AND BLOCKING B	WATER MAIN TRENCH	DRAWN BY	IDS
-				DATE	1/31/2019
				SCALE	NTS
				DRAWING NUMBER	801



TIE BACK BLOCK DETAIL

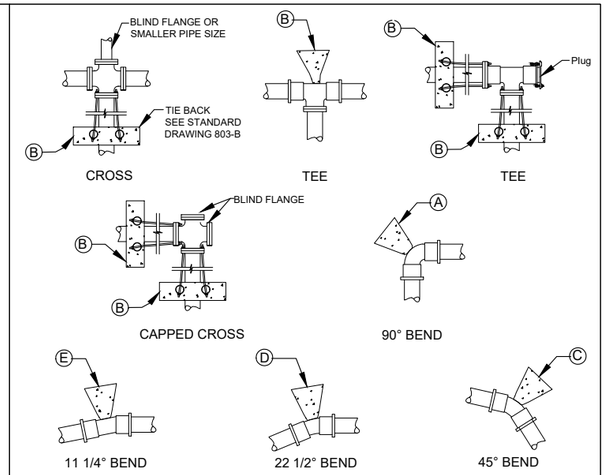
TABLE B - TIE BACK

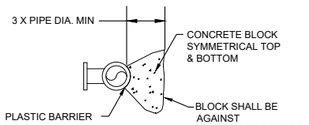
WATER MAIN PIPE	AMOUNT OF 3/4" GALV. SHACKLE RODS	SIZE OF VERT. PIPE IN CONC.	AMOUNT OF #4 REINFORCING BAR HOOPS
4"	2	4"	1
6"	2	4"	1
8"	2	4"	1
12"	4	4"	2
16"	6	6"	3
18"	6	6"	3
24"	6	6"	3

NOTES:

1. BEARING AREA OF CONCRETE THRUST BLOCK IS BASED ON 225 PSI PRESSURE AND SAFE SOIL BEARING LOAD OF 2000 PSF.
2. THE SAFE SOIL BEARING LOAD SHALL BE ADJUSTED TO MEASURED SOIL BEARING LOADS IN THE FIELD.
3. AREAS MUST BE ADJUSTED FOR OTHER PIPE SIZES, PRESSURES AND SOIL CONDITIONS.
4. CONCRETE BLOCKING SHALL BE CAST IN PLACE AND HAVE A MINIMUM OF 1/4 SQUARE FOOT BEARING AGAINST THE FITTING.
5. THE BLOCK SHALL BEAR AGAINST THE FITTINGS ONLY AND SHALL BE CLEAR OF JOINTS TO PERMIT TAKING UP AND DISMANTLING OF JOINT
6. THE CONTRACTOR SHALL INSTALL BLOCKING ADEQUATE TO WITHSTAND FULL TEST PRESSURE AS WELL AS TO CONTINUOUSLY WITHSTAND OPERATING PRESSURE UNDER ALL CONDITIONS OF SERVICE.
7. USE 2" THICK STYROFOAM TO FORM THE CONCRETE BLOCKING. PLASTIC SHALL BE INSTALLED BETWEEN ALL CONCRETE BLOCKING AND FITTINGS.

C	Est. 1890	RESTORATION, TAPS, AND BLOCKING	THRUST BLOCKING AND TIE BACKS	DRAWN BY	IDS
-				DATE	1/15/2019
				SCALE	NTS
				DRAWING NUMBER	803-B





TYPICAL CROSS-SECTION

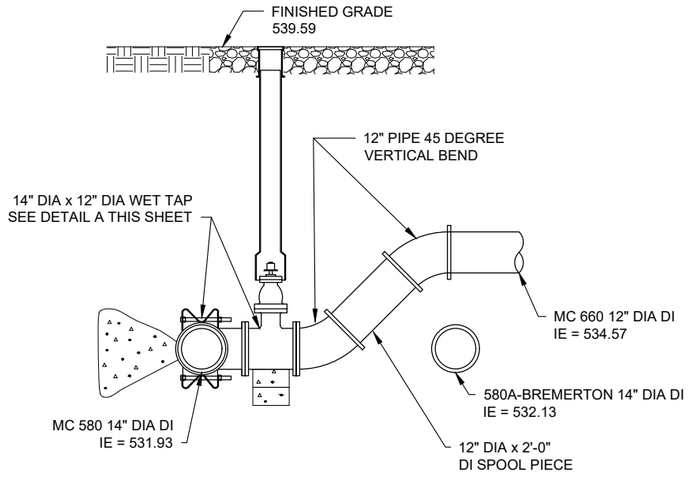
TABLE A - THRUST BLOCK

PIPE SIZE	Ⓐ SQ. FT.	Ⓑ SQ. FT.	Ⓒ SQ. FT.	Ⓓ SQ. FT.	Ⓔ SQ. FT.
4"	3	2	2	1	1
6"	6	5	4	2	1
8"	11	8	6	3	2
12"	22	16	12	6	3
16"	38	27	21	10	6
18"	48	34	26	14	7
24"	84	59	45	23	13

MIN. BEARING AREA AGAINST UNDISTURBED SOIL

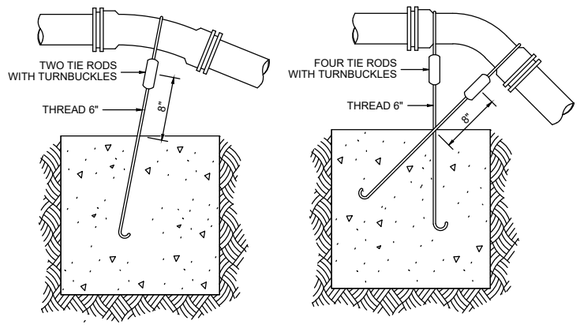
SEE DRAWING 803-B FOR ADDITIONAL NOTES

D	Est. 1890	RESTORATION, TAPS, AND BLOCKING	THRUST BLOCKING AND TIE BACKS	DRAWN BY	IDS
-				DATE	1/15/2019
				SCALE	NTS
				DRAWING NUMBER	803-A



660 BOOSTER PUMP SUCTION LINE / 580A-BREMERTON WATER MAIN CROSSING
SCALE: NO SCALE

E	-



VERTICAL THRUST BLOCK DETAIL
SCALE: NO SCALE

F	-

	TEST PRESSURE (PSI)		CONCRETE VOLUME (FT^3)	CUBE SIZE (Ft)		
4"	250	11.25°	6	1.8	5/8"	17"
		22.5°	12	2.3		
		45°	22	2.8		
6"	250	11.25°	14	2.4	5/8"	17"
		22.5°	27	3.0		
		45°	50	3.7		
8"	250	11.25°	25	2.9	5/8"	17"
		22.5°	48	3.6		
		45°	89	4.5		
10"	250	11.25°	38	3.4	5/8"	17"
		22.5°	75	4.2		
		45°	139	5.2		
12"	250	11.25°	55	3.8	5/8"	17"
		22.5°	108	4.8		
		45°	200	5.8	7/8"	24"
14"	250	11.25°	75	4.2	5/8"	17"
		22.5°	147	5.3	3/4"	20"
		45°	272	6.5	1"	27"
16"	250	11.25°	98	4.6	5/8"	17"
		22.5°	192	5.8	7/8"	24"
		45°	355	7.1	1 1/8"	30"

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ISSUE	DATE	DESCRIPTION
	7/2022	BID SET

PROJECT MANAGER	L. NOLAN
CIVIL ENG	J. KNOLL
WATER ENG	L. CHENG
STRUCTURAL ENG	M. HIJAZI
ELECTRICAL ENG	I. RINCON
INSTR. ENG	M. HUTSON
PROJECT NUMBER	10172116

LAURA NOLAN STATE OF WASHINGTON 21020170 REGISTERED PROFESSIONAL ENGINEER
07.01.2022

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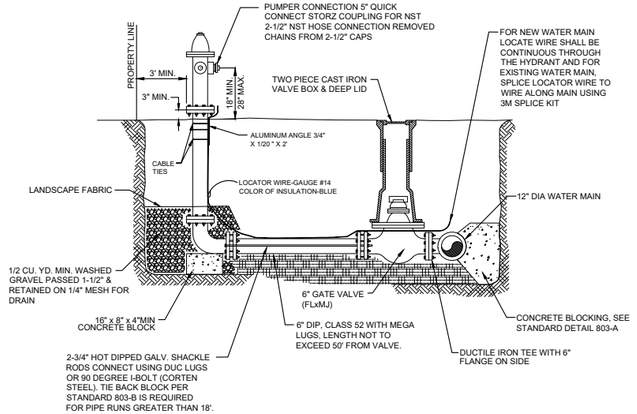
CIVIL DETAILS

0 1" 2"

FILENAME C1-08.dwg
SCALE AS NOTED

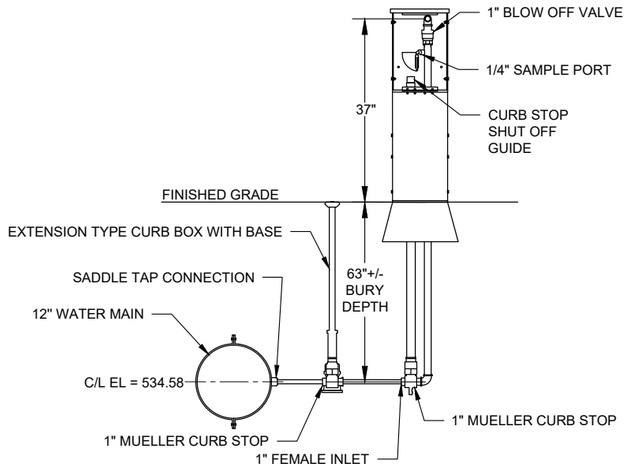
SHEET
C1-08



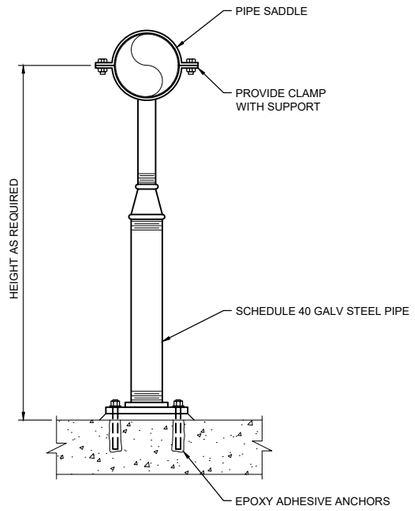
NOTES:

1. MAIN VALVE OPENING SHALL BE 5-1/4" IN DIAMETER EQUAL TO M&H 929. 6" MECHANICAL JOINT INLET. 1-1/2" PENTAGON OPERATING NUT. THE CITY WILL PAINT THE HYDRANT.
2. LOCATOR WIRE TO BE PROTECTED WITH ANGLE ALUMINUM (3/4" X 1/20" X 2' LONG) STRAP TO THE HYDRANT BURY WITH CABLE TIES (36" LENGTH, 175 LB TENSILE, COLOR BLACK, MANUFACTURED BY 3M). LOCATION SHALL BE BELOW THE LOWER FLANGE OF THE HYDRANT BELOW THE PUMPER PORT. LOCATE WIRE SHALL HAVE 6" SLACK FOR CONNECTING TO LOCATING DEVICE.
3. IF THE PIPE BETWEEN THE VALVE AND THE HYDRANT IS MORE ONE FULL STICK OF DUCTILE IRON PIPE, THEN A TIE BACK THRUST SHALL BE INSTALLED AND FIELD-LOK GASKETS AND MEGA LUGS SHALL BE USED.

A -	Est. 1890	SYSTEM APPURTENANCES B FIRE HYDRANT ASSEMBLY	DRAWN BY: IDS DATE: 1/23/2019 SCALE: NTS DRAWING NUMBER: 881

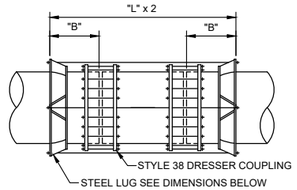


ABOVE GROUND SAMPLING STATION — E -
SCALE: NO SCALE

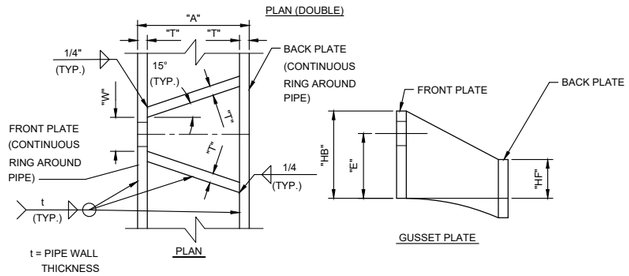


NOTE: PIPE SUPPORT DETAIL IS PROVIDED FOR REFERENCE ONLY. CONTRACTOR TO DESIGN AND INSTALL PIPE SUPPORTS AS REQUIRED.

PIPE SUPPORT DETAIL — B -
SCALE: NO SCALE



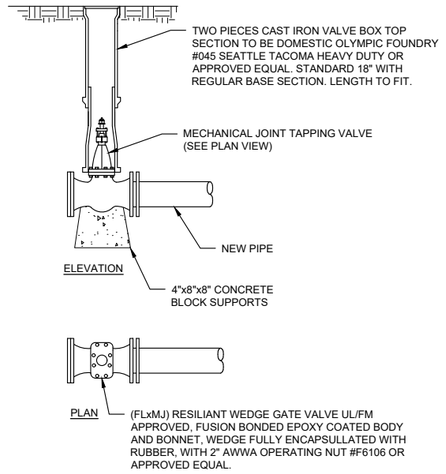
NOTE:
DOUBLE RESTRAINED JOINT TO BE LOCATED ON ALL WATER MAIN PIPING WITHIN 4'-0" OF 660 RESERVOIR WALL.



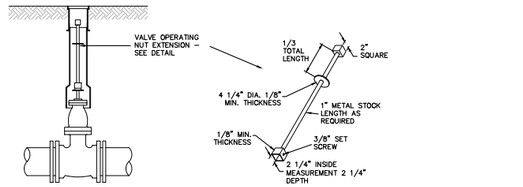
LUG DIMENSIONS FOR HARNESS OVER COUPLING 450 PSI

PIPE DIA.	STUD DIA.	NO. BOLTS	A	W	T	HB	E	HOLE DIA.	L	B	HF	DESIGN PRESSURE
12"	1 3/8"	2	8 3/4"	2 1/8"	3/4"	5 3/8"	3 3/8"	1 1/2"	36"	18"	2 1/2"	450 psi

DOUBLE FLEXIBLE COUPLING CONNECTION — F -
SCALE: NO SCALE

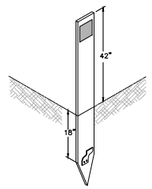


GATE VALVE — C -
SCALE: NO SCALE



EXTENSIONS ARE REQUIRED WHEN THE VALVE NUT IS MORE THAN THREE (3) FEET BELOW FINISHED GRADE. EXTENSIONS ARE TO BE A MINIMUM OF ONE (1) FOOT LONG, ONLY ONE EXTENSION PER VALVE. ALL EXTENSIONS ARE TO MADE OF STEEL SIZED AS NOTED, AND PAINTED WITH TWO COATS OF CARBON ELASTIC (ATCO NO. 2221) OR APPROVED EQUAL.

VALVE OPERATING NUT EXTENSION



VALVE MARKER POST

PROVIDE A VALVE MARKER POST FOR EACH VALVE. THE FIBERGLASS VALVE MARKER POST SHALL BE BLUE IN COLOR, 4" WIDE (FLAT), 72" LONG AND FURNISHED WITH A 2"x2" HIGH-INTENSITY WHITE REFLECTOR (250 CANDLEPOWER) AND A FLEXIBLE ANCHOR BARB.

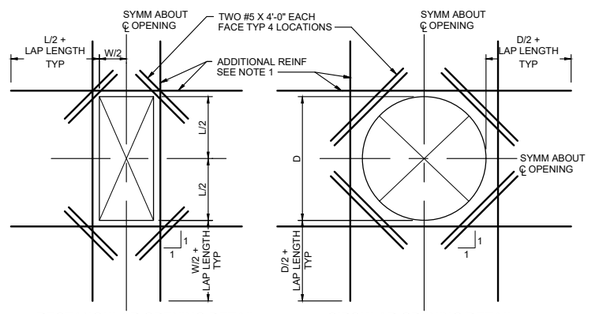
THE VALVE MARKER POST SHALL BE A CARSONITE CURV-FLEX MARKER OR APPROVED EQUAL.

THE POST SHALL BE SITUATED IN A SAFE, REASONABLY CONSPICUOUS LOCATION, AND AT A RIGHT ANGLE TO THE ROADWAY FROM THE VALVE.

THE DISTANCE FROM THE MARKER TO THE VALVE SHALL BE WRITTEN ON THE BACK OF THE MARKER IN 1-1/2" HIGH BLACK LETTERS.

VALVE MARKER

D -	Est. 1890	SYSTEM APPURTENANCES C VALVE MARKER AND VALVE EXTENSION	DRAWN BY: IDS DATE: 1/30/2019 SCALE: NTS DRAWING NUMBER: 882



RECTANGULAR OPENING DETAIL **CIRCULAR OPENING DETAIL**

NOTE: SLAB PENETRATION DETAIL IS PROVIDED FOR REFERENCE ONLY. CONTRACTOR TO DESIGN AND INSTALL SLAB PENETRATIONS AS REQUIRED.

SLAB PENETRATION — G -
SCALE: NO SCALE

NOTES:

1. PROVIDE ADDITIONAL REINFORCING THE SAME SIZE AS DISCONTINUOUS REINFORCEMENT AT OPENING. QUANTITY OF REINFORCING IN EACH DIRECTION SHALL BE EQUAL TO OR ONE GREATER THAN THE NUMBER OF DISCONTINUOUS BARS. PLACE 1/2 OF ADDITIONAL REINFORCING BARS EACH SIDE OF OPENING, PLACE ADDITIONAL REINFORCEMENT AT 3" OC (TYPICAL BOTH DIRECTIONS AND ALL LAYERS OF REINFORCEMENT). START FIRST BAR 2" CLEAR TO OPENING.
2. EXTEND ADDITIONAL REINFORCING BEYOND EDGE OF OPENING AS SHOWN ABOVE. ADDITIONAL BARS MAY TERMINATE AT THE END OF THE WALL WITH A STANDARD HOOK WHERE THE LENGTH OF THE WALL WILL NOT PERMIT BARS TO EXTEND AS SHOWN ABOVE.
3. TYPICAL WALL OR SLAB REINFORCING NOT SHOWN FOR CLARITY. TERMINATE TYPICAL REINFORCING 2" CLEAR TO OPENING.
4. OPENINGS 12" OR LESS IN SLABS AND WALLS, NO EXTRA REBARS ARE REQUIRED UNLESS SHOWN OTHERWISE. TYPICAL REINFORCING SHALL BE RESPACED (NOT CUT) TO ALLOW FOR OPENINGS TO BE MADE.
5. UNLESS SHOWN OTHERWISE ON DRAWINGS, PROVIDE EXTRA REINFORCING AROUND OPENINGS AS SHOWN AND INDICATED ABOVE.
6. PROVIDE ADDITIONAL DOWELS PER NOTE 1 ABOVE FOR ALL OPENINGS NEAR THE FLOOR SLAB, BASE SLAB, OR CORNERS.

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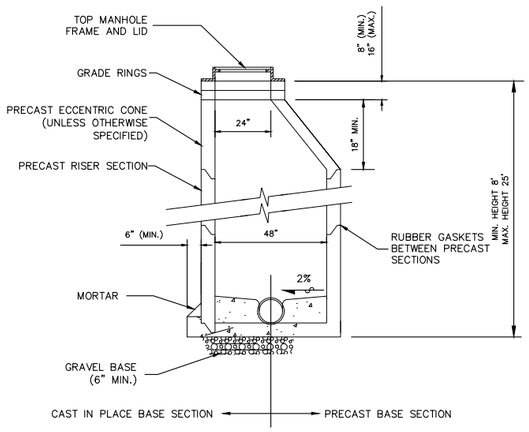
PORT ORCHARD 660 RESERVOIR

CIVIL DETAILS

0 1" 2"

FILENAME: C1-09.dwg
SCALE: AS NOTED

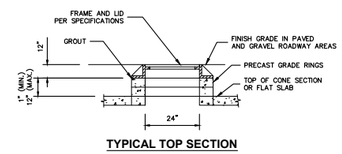
SHEET: C1-09



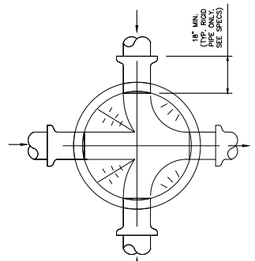
NOTES:

1. MATCH CROWNS OF SEWERS.
2. FOR CAST IN PLACE BASE, CONSTRUCT IN FIELD CHANNEL AND SHELF TO THE CROWN OF THE PIPE.
3. FOR PRECAST BASE, USE GRAVEL BACKFILL, 6" MIN. COMPACTED DEPTH UNDER THE BASE.
4. ALL RIGID PIPE ENTERING OR LEAVING THE MANHOLE SHALL BE PROVIDED WITH FLEXIBLE JOINTS WITHIN 1 ½ PIPE DIAMETERS OF THE MANHOLE STRUCTURE.
5. INSTALL DROP MANHOLE CONNECTION IF INVERT OF ANY INCOMING SEWER IS MORE THAN 2'-0" ABOVE THE TOP OF THE MAIN SEWER.
6. IN UNIMPROVED AREAS AND EASEMENTS, MANHOLE SHALL EXTEND A MINIMUM OF 2" AND A MAXIMUM OF 4" ABOVE FINISHED GRADE.
7. MANHOLE RING AND COVER SHALL HAVE A CLEAR OPENING. WORDING ON COVER SHALL BE "SEWER" IN 3" RAISED LETTERS.
8. ALL MANHOLE JOINTS SHALL USE A CONFINED ROUND RUBBER GASKET MEETING ASTM C-443 SPECIFICAITONS.

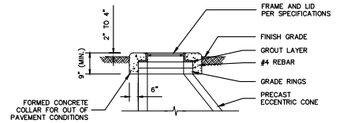
A	Est. 1890	MANHOLES A MANHOLE DETAIL 48"	DRAWN BY	IDS
-			DATE	1/30/2019
			SCALE	NTS
			DRAWING NUMBER	920



TYPICAL TOP SECTION

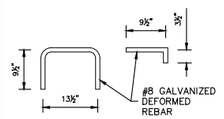


GENERAL PLAN OF CHANNEL INTERSECTION

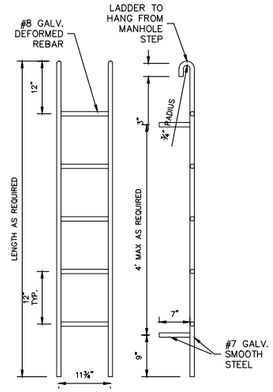


MANHOLE FRAME COLLAR UNPAVED AREAS

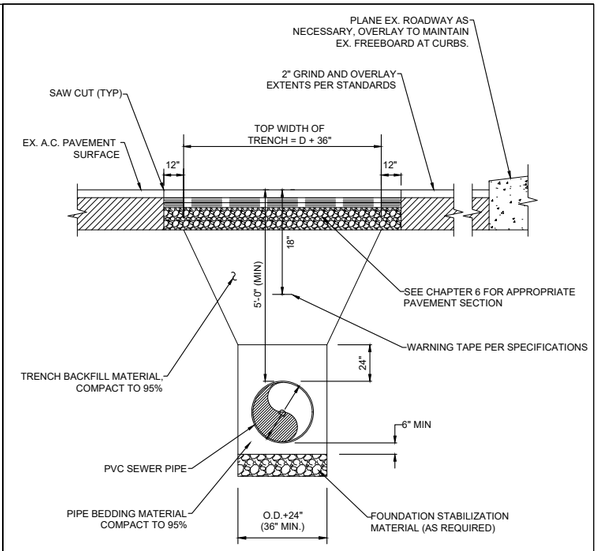
B	Est. 1890	MANHOLES C TOP SECTION AND CHANNELIZATION	DRAWN BY	IDS
-			DATE	1/30/2019
			SCALE	NTS
			DRAWING NUMBER	922



SAFETY STEP

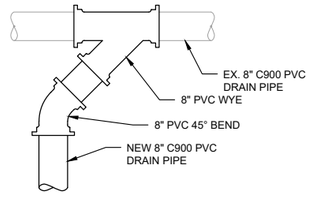


C	Est. 1890	MANHOLES E MANHOLE DETAIL - LADDER	DRAWN BY	IDS
-			DATE	1/30/2019
			SCALE	NTS
			DRAWING NUMBER	924

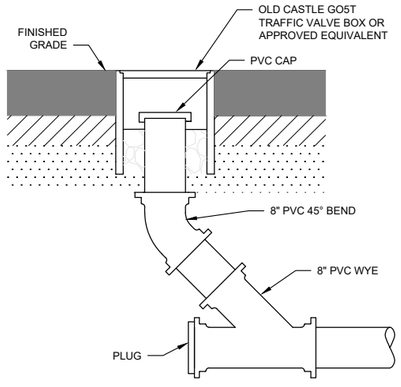


NOTES:
1) BED THE ENTIRE WIDTH OF THE TRENCH PAVEMENT
2) RESTORATION SHALL BE PER THE APPROPRIATE SECTION IN CHAPTER 6 (PAVEMENT SURFACING).

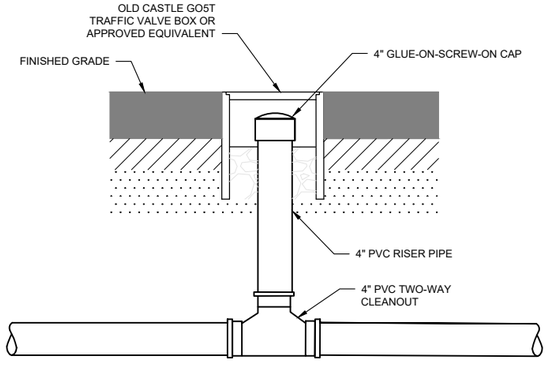
D	Est. 1890	TRENCHES AND PIPE CONNECTIONS A SEWER TRENCH DETAILS	DRAWN BY	IDS
-			DATE	1/23/2019
			SCALE	NTS
			DRAWING NUMBER	900



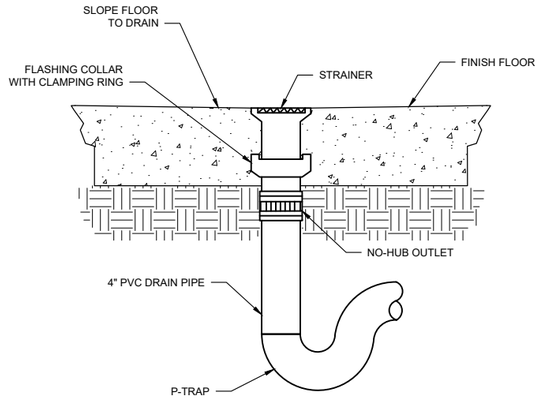
TANK DRAIN WYE DETAIL
SCALE: NO SCALE
E -



TANK DRAIN CLEANOUT DETAIL
SCALE: NO SCALE
F -



TWO-WAY SANITARY SEWER CLEANOUT
SCALE: NO SCALE
G -



PUMP STATION FLOOR DRAIN
SCALE: NO SCALE
H -

CALL 48 HOURS
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ISSUE	DATE	DESCRIPTION
	7/2022	BID SET

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MCCORMICK
CLOSE TO WHAT COUNTS

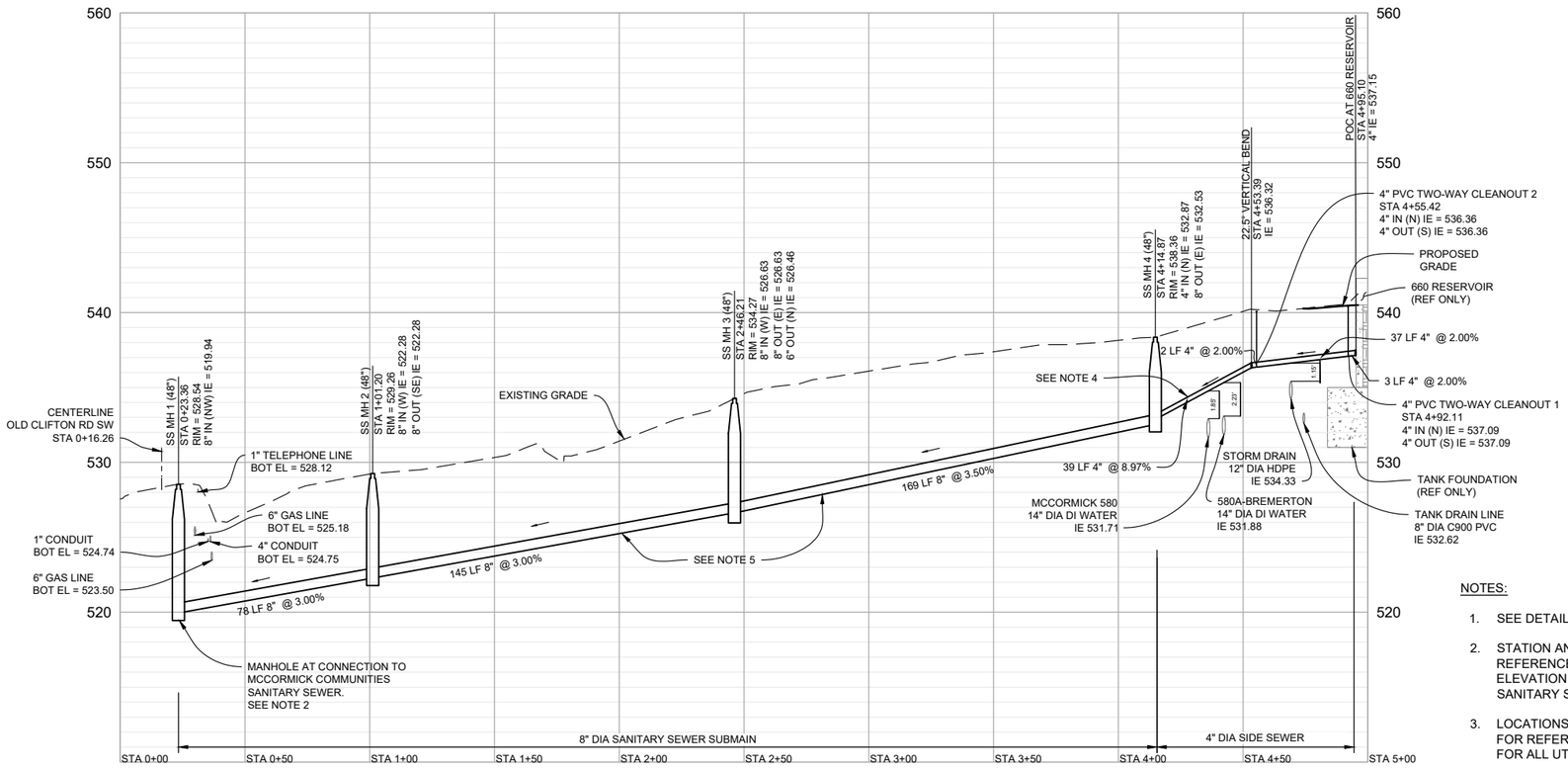
PORT ORCHARD 660 RESERVOIR

CIVIL DETAILS

0 1" 2"

FILENAME C1-10.dwg
SCALE AS NOTED

SHEET
C1-10



SEWER PROFILE - 660 RESERVOIR PUMP STATION FLOOR DRAIN

HORIZONTAL SCALE: 0 15 30 60 SCALE IN FEET

VERTICAL SCALE: 0 5 10 20 SCALE IN FEET

NOTES:

1. SEE DETAIL D ON SHEET C1-10 FOR SANITARY SEWER INSTALLATION.
2. STATION AND INVERT ELEVATIONS SHOWN FOR SS MH1 ARE FOR REFERENCE ONLY. CONTRACTOR TO VERIFY LOCATION AND ELEVATION OF CONNECTION POINT TO MCCORMICK COMMUNITIES SANITARY SEWER PRIOR TO CONSTRUCTION.
3. LOCATIONS AND ELEVATIONS OF EXISTING UTILITIES ARE SHOWN FOR REFERENCE ONLY. CONTRACTOR TO PERFORM FIELD LOCATES FOR ALL UTILITIES PRIOR TO CONSTRUCTION.
4. CONSTRUCT CASING FOR SEWER PIPE EXTENDING A MINIMUM OF 10 FEET TO EITHER SIDE OF WATER MAIN CROSSINGS. CASING SHALL BE DUCTILE IRON PIPE DESIGNED TO A MINIMUM PRESSURE OF 150 PSI WITH ALL VOIDS SEALED AND PRESSURE GROUTED. CENTER THE LENGTH OF SEWER PIPE AT POINTS OF CROSSING TO POSITION JOINTS AS FAR AS POSSIBLE FROM WATER MAINS.
5. CONSTRUCT CASING FOR SEWER PIPES WITHIN FUTURE WELL 12 SANITARY CONTROL AREA. CASING SHALL BE DUCTILE IRON PIPE DESIGNED TO A MINIMUM PRESSURE OF 150 PSI WITH ALL VOIDS SEALED AND PRESSURE GROUTED. SEE PLAN ON SHEET C1-05.

CALL 48 HOURS
BEFORE YOU DIG
1-800-424-5555

ISSUE	DATE	DESCRIPTION
	7/2022	BID SET

PROJECT MANAGER	L. NOLAN
CIVIL ENG	J. KNOLL
WATER ENG	L. CHENG
STRUCTURAL ENG	M. HIJAZI
ELECTRICAL ENG	I. RINCON
INSTR. ENG	M. HUTSON
PROJECT NUMBER	10172116

LAURA NOLAN
STATE OF WASHINGTON
21020170
REGISTERED
PROFESSIONAL ENGINEER
07.01.2022

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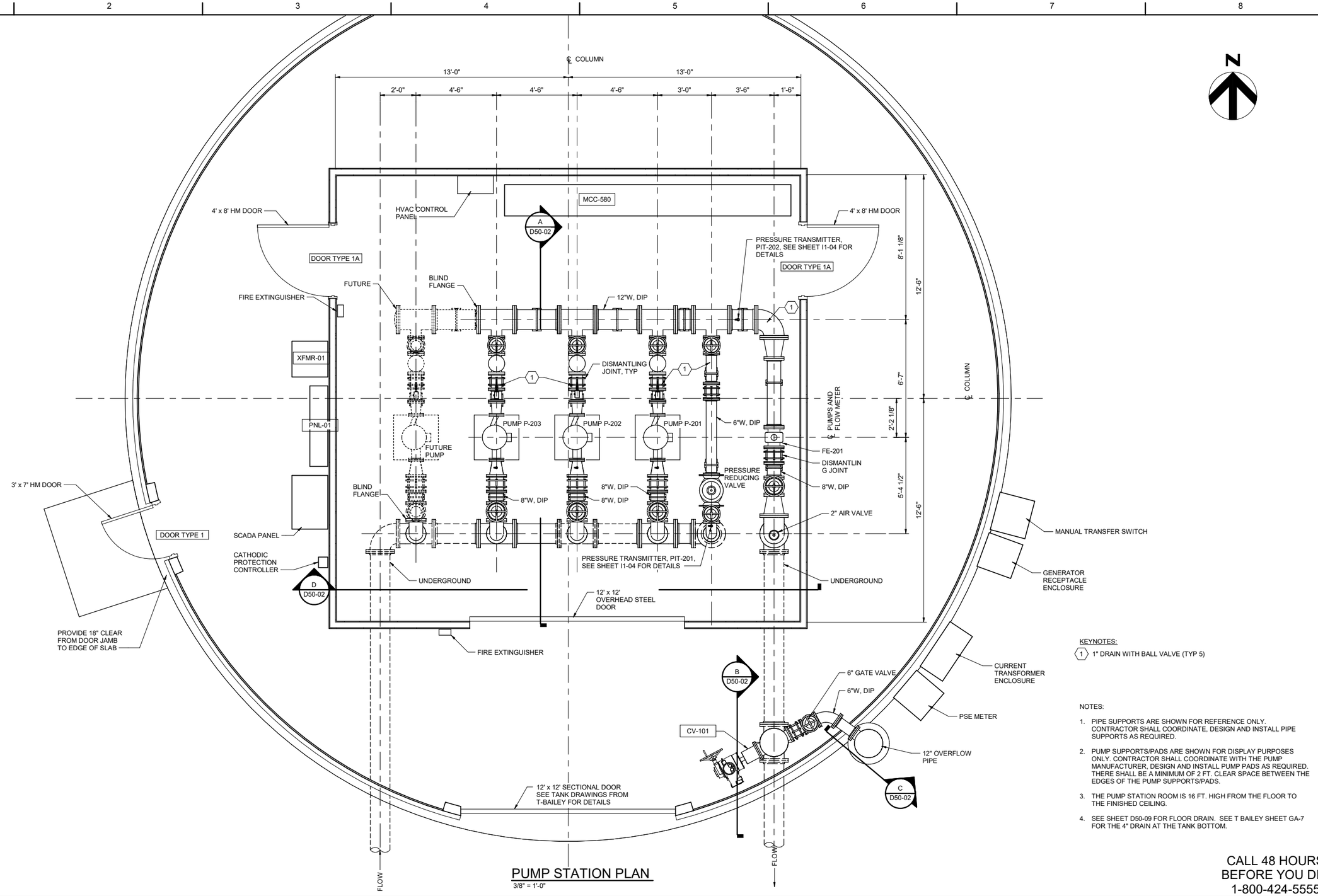
PORT ORCHARD 660 RESERVOIR

SANITARY SEWER PROFILE

0 1" 2"

FILENAME C1-11.dwg
SCALE AS NOTED

SHEET
C1-11



PUMP STATION PLAN

3/8" = 1'-0"

KEYNOTES:

(1) 1" DRAIN WITH BALL VALVE (TYP 5)

NOTES:

1. PIPE SUPPORTS ARE SHOWN FOR REFERENCE ONLY. CONTRACTOR SHALL COORDINATE, DESIGN AND INSTALL PIPE SUPPORTS AS REQUIRED.
2. PUMP SUPPORTS/PADS ARE SHOWN FOR DISPLAY PURPOSES ONLY. CONTRACTOR SHALL COORDINATE WITH THE PUMP MANUFACTURER, DESIGN AND INSTALL PUMP PADS AS REQUIRED. THERE SHALL BE A MINIMUM OF 2 FT. CLEAR SPACE BETWEEN THE EDGES OF THE PUMP SUPPORTS/PADS.
3. THE PUMP STATION ROOM IS 16 FT. HIGH FROM THE FLOOR TO THE FINISHED CEILING.
4. SEE SHEET D50-09 FOR FLOOR DRAIN. SEE T BAILEY SHEET GA-7 FOR THE 4" DRAIN AT THE TANK BOTTOM.

CALL 48 HOURS BEFORE YOU DIG 1-800-424-5555

ISSUE	DATE	DESCRIPTION
	7/2022	BID SET

PROJECT MANAGER	LAURA NOLAN
CIVIL ENG	J. KNOLL
WATER ENG	L. CHENG
STRUCTURAL ENG	M. HIJAZI
ELECTRICAL ENG	I. RINCON
MECHANICAL ENG	K. SUTTON
INSTR. ENG	M. HUTSON
PROJECT NUMBER	10172116

LAURA NOLAN — STATE OF WASHINGTON — 21020170 — REGISTERED PROFESSIONAL ENGINEER
07.01.2022

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PORT ORCHARD 660 RESERVOIR

PORT ORCHARD 660 RESERVOIR

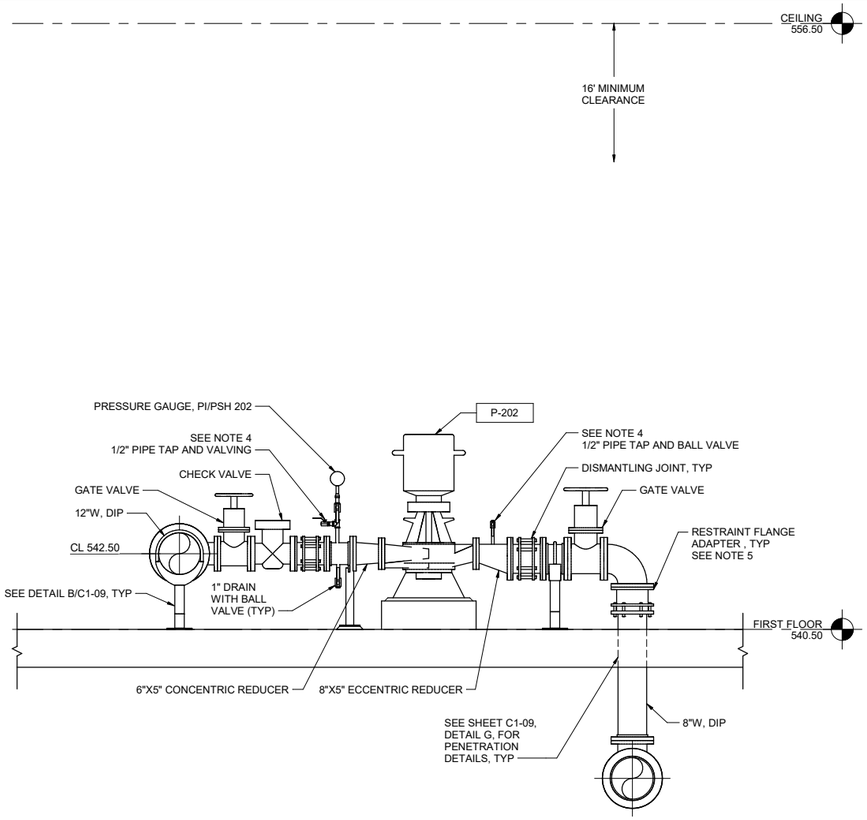
BOOSTER PUMP STATION PROCESS PLAN

0 1" 2"

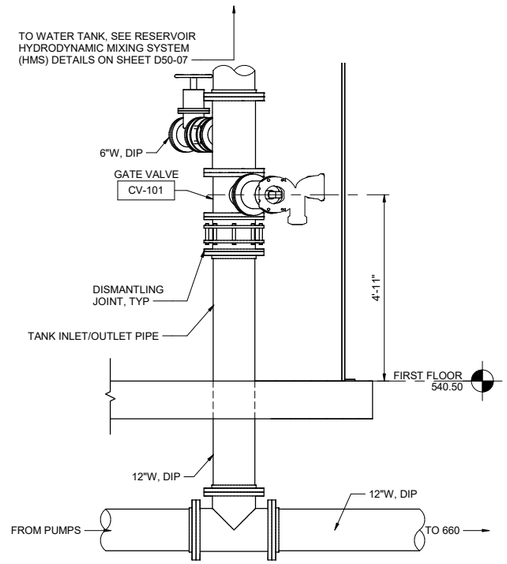
FILENAME 10172116-00-U.RVT
SCALE 3/8" = 1'-0"

SHEET **D50-01**

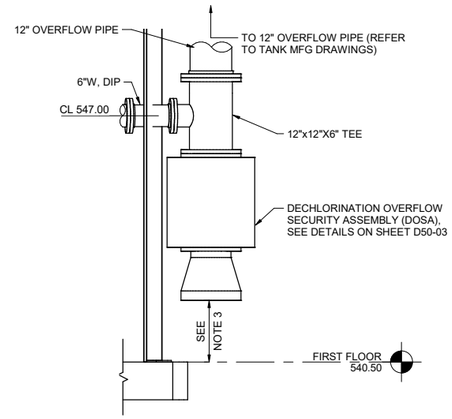
BIM 360://10172116_McCormick_Booster_Pump_Station_2020/10172116-00-U.rvt
7/5/2022 10:52:15 AM



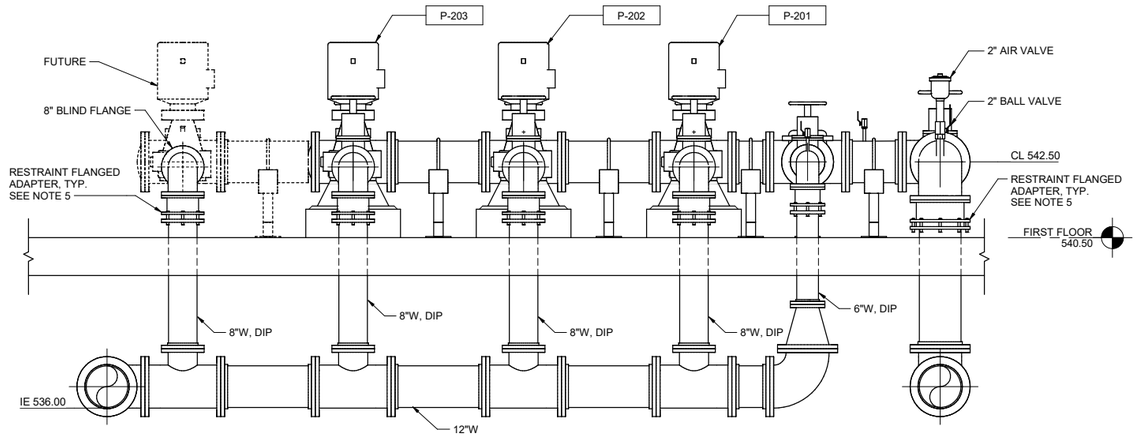
A D50-01 SECTION
1/2" = 1'-0"



B D50-01 SECTION
1/2" = 1'-0"



C D50-01 SECTION
1/2" = 1'-0"



D D50-01 SECTION
1/2" = 1'-0"

NOTES:

1. PIPE SUPPORTS ARE SHOWN FOR REFERENCE ONLY. CONTRACTOR SHALL COORDINATE, DESIGN AND INSTALL PIPE SUPPORTS AS REQUIRED.
2. PUMP SUPPORTS/PADS ARE SHOWN FOR DISPLAY PURPOSES ONLY. CONTRACTOR SHALL COORDINATE WITH THE PUMP MANUFACTURER, DESIGN AND INSTALL PUMP PADS AS REQUIRED.
3. THE BOTTOM OF THE DOSA TO BE 24" ABOVE GROUND LEVEL.
4. THE BALL VALVE SHALL BE PLACED AT LEAST 3 IN. ABOVE THE TOP OF PUMP VOLUTE FOR MANUAL AIR RELEASE.
5. VERTICAL PIPE RUNS THROUGH FLOOR SLAB MAY BE FLANGE X FLANGE OR PLAIN END WITH RFCA X FLANGE.

BIM 360://10172116_McCormick_Booster_Pump_Station_2020/10172116-00-U.rvt
7/5/2022 11:03:04 AM

ISSUE	DATE	DESCRIPTION
	7/2022	BID SET

PROJECT MANAGER	LAURA NOLAN
CIVIL ENG	J. KNOLL
WATER ENG	L. CHENG
STRUCTURAL ENG	M. HIJAZI
ELECTRICAL ENG	I. RINCON
MECHANICAL ENG	K. SUTTON
INSTR. ENG	M. HUTSON
PROJECT NUMBER	10172116

LAURA NOLAN — STATE OF WASHINGTON — 21020170 — REGISTERED PROFESSIONAL ENGINEER
07.01.2022

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PORT ORCHARD 660 RESERVOIR

PORT ORCHARD 660 RESERVOIR

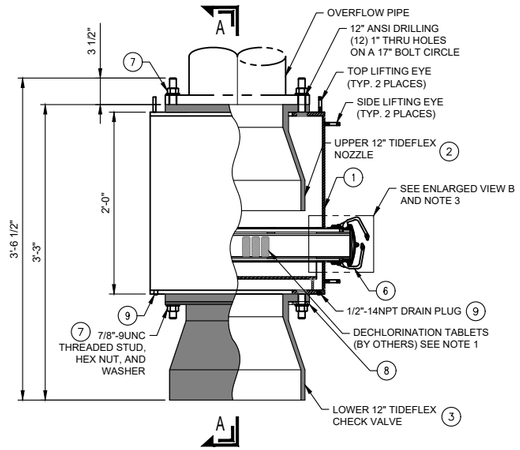
BOOSTER PUMP STATION SECTIONS

0 1" 2"

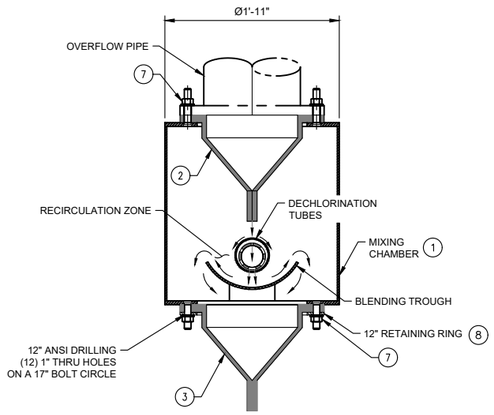
FILENAME 10172116-00-U.RVT
SCALE 1/2" = 1'-0"

SHEET D50-02

NOTES:
1. OWNER TO PROVIDE THE DECHLORINATION TABLETS.
2. DOSA TO BE ABRASIVE BLASTED, INTERIOR TO BE COATED WITH TWO COATS MACROPOXY 646, EXTERIOR TO BE PRIMED WITH ONE COAT MACROPOXY 646 (3-5 MILS DFT EACH COAT) BY TIDEFLEX. TOP COAT IS APPLIED IN FIELD.

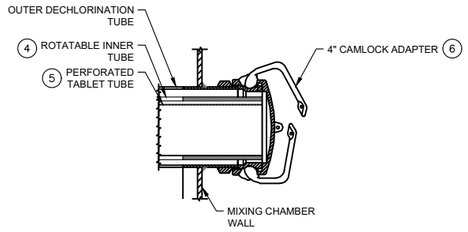


ELEVATION VIEW



SECTION A-A

ITEM	QTY.	DESCRIPTION
1	1	MIXING CHAMBER
2	1	UPPER 12" TIDEFLEX NOZZLE
3	1	LOWER 12" TIDEFLEX CHECK VALVE
4	1	PVC ROTATABLE INNER TUBE
5	1	316 S/STEEL PERFORATED TABLET TUBE
6	1	ALUMINUM 4" CAMLOCK ADAPTER
7	24	7/8"-9UNC HEX NUT AND WASHER
8	1	RETAINING RING
9	2	1/2"-14NPT DRAIN PLUG



ENLARGED VIEW B
DECHLORINATION TUBES

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1-800-424-5555

ISSUE	DATE	DESCRIPTION
	7/2022	BID SET

PROJECT MANAGER	L. NOLAN
CIVIL ENG	J. KNOLL
WATER ENG	L. CHENG
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ELECTRICAL ENG	I. RINCON
INSTR. ENG	M. HUTSON
PROJECT NUMBER	10172116

LAURA NOLAN STATE OF WASHINGTON 21020170 REGISTERED PROFESSIONAL ENGINEER
07.01.2022

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DECHLORINATING OVERFLOW SECURITY ASSEMBLY

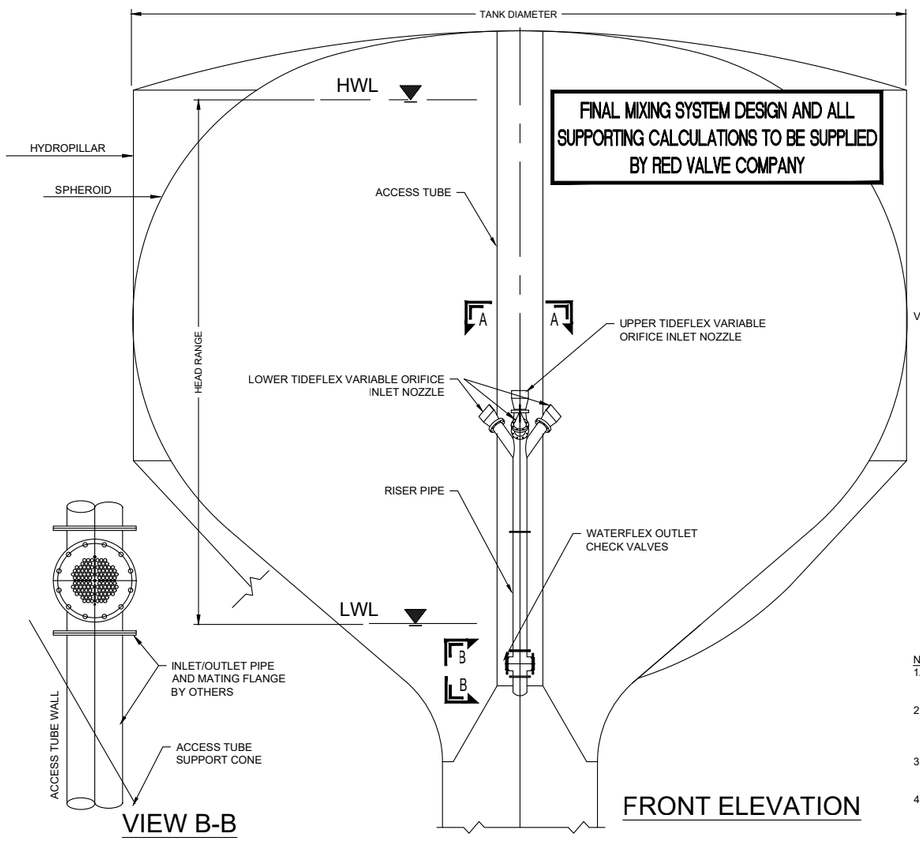
0 1" 2"

FILENAME D50-03.dwg
SCALE NTS

SHEET
D50-03

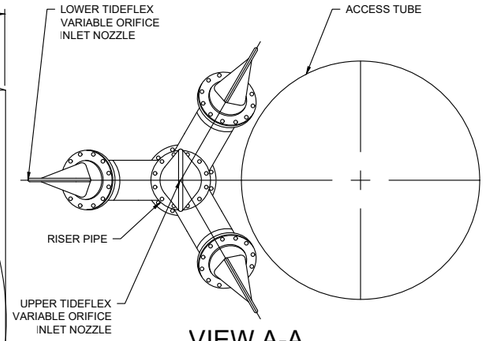
UNITED STATES PATENT NUMBER: 7,104,279

CANADIAN PATENT NUMBER: 2,409,009

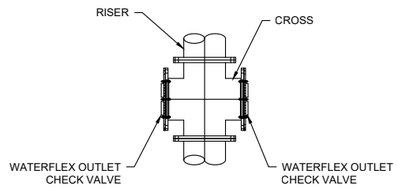


VIEW B-B

FRONT ELEVATION



VIEW A-A



OUTLET CHECK VALVES

NOTES:

1. DO NOT USE THIS DRAWING FOR CONSTRUCTION. DRAWING INTENDED AS A GENERAL REPRESENTATION ONLY.
2. QUANTITY, SIZE, ELEVATIONS, LOCATIONS, AND DISCHARGE ANGLES OF TIDEFLEX INLET NOZZLES AND OUTLET CHECK VALVES ARE TANK-SPECIFIC BASED ON HYDRAULICS, MIXING AND TURNOVER CRITERIA.
3. CARBON AND STAINLESS PIPE SECTIONS MAY BE SUPPLIED WITH PLAIN ENDS TO BE BUTT WELDED IN THE FIELD.
4. THE MIXING SYSTEM MANUFACTURE SHALL COORDINATE WITH THE TANK MANUFACTURE SO THAT THE TIDEFLEX NOZZLES ARE NOT IN CONFLICT WITH THE OVERFLOW PIPE PHYSICALLY AND HYDRAULICALLY AND SHALL TAKE SOLE RESPONSIBILITY FOR THE HYDRAULIC PERFORMANCE OF THE MIXING SYSTEM.

TIDEFLEX MIXING SYSTEM
GENERAL ARRANGEMENT
SCALE: 1" = 1'-0"

A
-

Tideflex® Technologies
A Division of Red Valve Company, Inc.
TIDEFLEX TECHNOLOGIES
TIDEFLEX MIXING SYSTEM
700 N. BELL AVENUE
CARNEGIE, PA 15106 USA
PHONE: 412-279-0044
FAX: 412-279-5410
WEBSITE: WWW.TIDEFLEX.COM
EMAIL: INFO@TIDEFLEX.COM

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ISSUE	DATE	DESCRIPTION
	7/2022	BID SET

PROJECT MANAGER	L. NOLAN
CIVIL ENG	J. KNOLL
WATER ENG	L. CHENG
STRUCTURAL ENG	M. HIJAZI
ELECTRICAL ENG	I. RINCON
INSTR. ENG	M. HUTSON
PROJECT NUMBER	10172116

LAURA NOLAN — STATE OF WASHINGTON — 21020170 — REGISTERED PROFESSIONAL ENGINEER
07.01.2022

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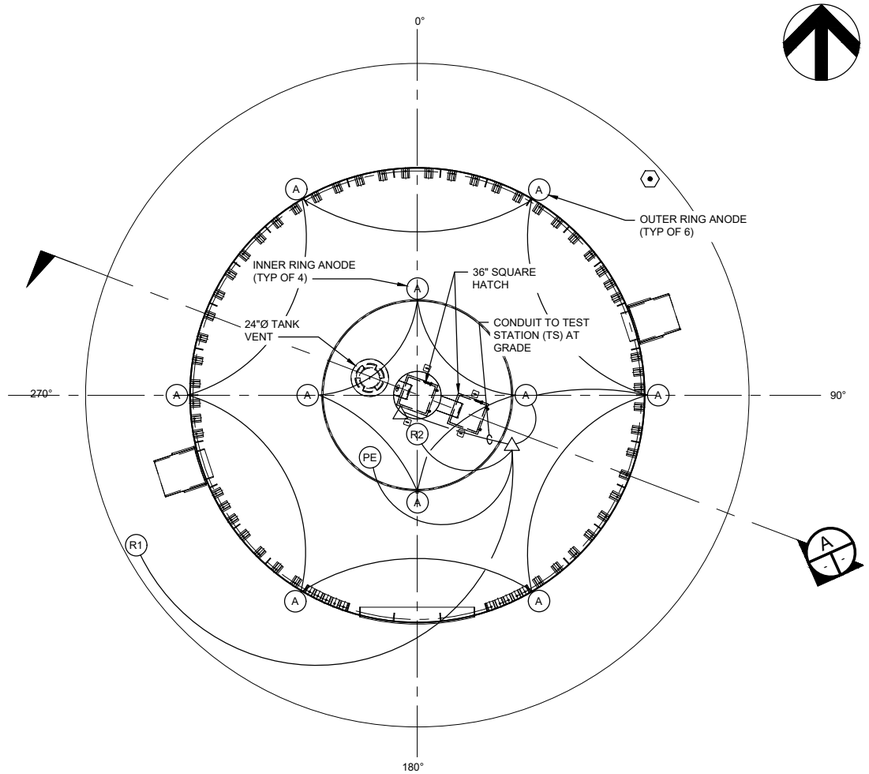
PORT ORCHARD 660 RESERVOIR

RESERVOIR MIXING SYSTEM DETAILS

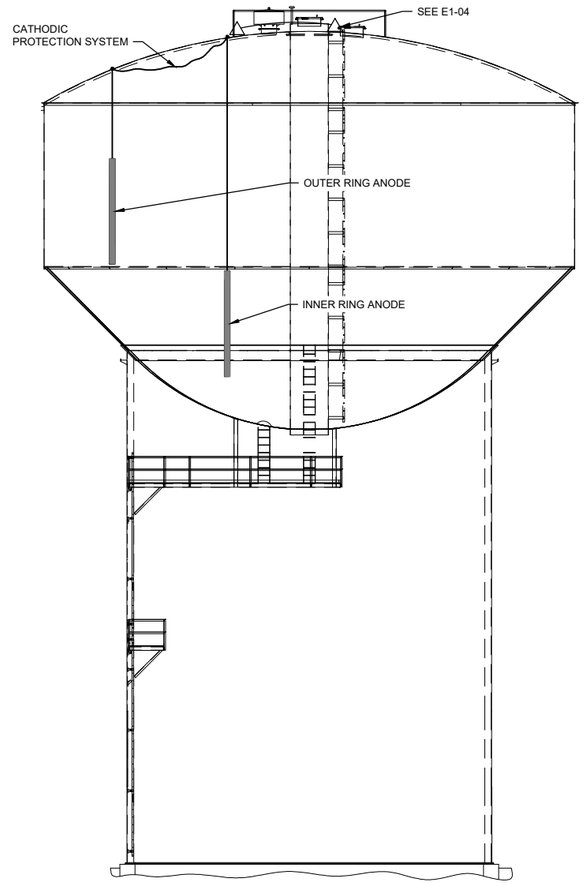
0 1" 2"

FILENAME D50-04.dwg
SCALE NTS

SHEET
D50-04



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



ELEVATION VIEW A-A
SCALE: 1:120
A
-

SYMBOLS

- TS — TEST STATION SEE (1 / D50-07)
- A — ANODE HANDHOLE (3 / D50-06)
- R1 — REFERENCE ELECTRODE HANDHOLE (2 / D50-06)
- R2 — REFERENCE ELECTRODE HANDHOLE (2 / D50-06)
- CP TEST POINT HANDHOLE (1 / D50-06)
- WIRE AND CONDUIT ASSEMBLY (4 / D50-06)
- PE — COPPER POWER ELECTRODE HANDHOLE (5 / D50-08)

NOTES

1. SEE SHEET D50–07 DETAIL 2 FOR WIRING SCHEMATICS.
2. NO FLAME CUTTING OF HANDHOLES SHALL BE ALLOWED.
3. DRILLING AND/OR CUTTING OPERATIONS WHILE TANK IS IN OPERATION SHALL BE PERFORMED WITH NSF 60/61 APPROVED CUTTING OILS.
4. CONTRACTOR SHALL ENSURE CUTTING OILS ARE REMOVED SUBSEQUENT TO INSTALLATION OPERATION.
5. SUBSEQUENT TO CLEANING ABOVE, EXPOSED EXTERIOR SURFACES OF STEEL SHALL BE COATED WITH SAME COATING AS REST OF TANK.
6. LOCATE REFERENCE ELECTRODE R1 48" OFF WALL, WITH ELECTRODE TOP AT 619.5' ELEVATION.
7. LOCATE REFERENCE ELECTRODE R2 48" OFF OF THE DRYWELL WALL, WITH ELECTRODE TOP AT 600' ELEVATION.
8. FOR OUTER RING OF ANODES, THE TOP OF EACH ANODE IS TO BE LOCATED AT 631.5' ELEVATION.
9. FOR INNER RING OF ANODES, THE TOP OF EACH ANODE IS TO BE LOCATED AT 619.5' ELEVATION.
10. INNER RING OF ANODES LOCATED ON CIRCLE WITH 10' RADIUS FROM TANK CENTER. OUTER RING OF ANODES LOCATED ON CIRCLE WITH 25' RADIUS FROM TANK CENTER.
11. INSTALL TEST STATION SUPPORT FOR NEW TEST STATION, SEE D50–07, DETAIL 1.
12. CP TEST POINT TO BE WITHIN 48" OF TANK SHELL.
13. ANODE LAYOUTS ARE APPROXIMATE AND CAN BE MOVED HORIZONTALLY UP TO 5 FEET ANY DIRECTION TO AVOID STRUCTURAL MEMBERS.

ISSUE	DATE	DESCRIPTION
	7/2022	BID SET

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CIVIL ENG	J. KNOLL
WATER ENG	L. CHENG
STRUCTURAL ENG	M. HIJAZI
ELECTRICAL ENG	I. RINCON
DRAWN BY	E. PILAPIL
PROJECT NUMBER	10172116

LAURA NOLAN — STATE OF WASHINGTON — 21020170 — REGISTERED PROFESSIONAL ENGINEER
07.01.2022

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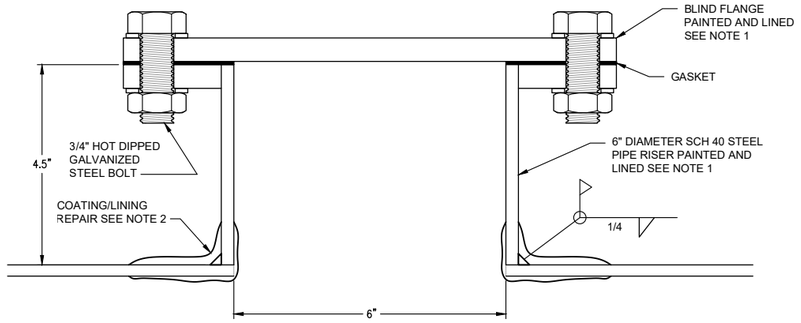
PORT ORCHARD 660 RESERVOIR

CATHODIC PROTECTION TANK SCHEMATIC

0 1" 2"

FILENAME D50-05.dwg
SCALE AS NOTED

SHEET
D50-05

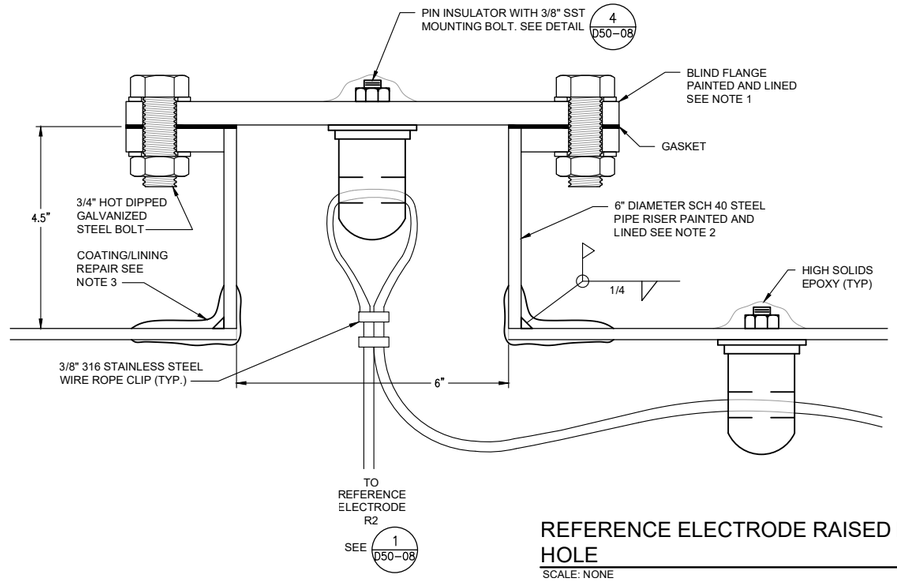


NOTES:

1. BLIND FLANGE AND PIPE RISER SHALL BE SHOP COATED AND LINED WITH SAME COATING AS REST OF TANK.
2. REPAIR COATING AND LINING AFTER WELD TO A DISTANCE 4" BEYOND BURN ZONE.
   A. COATING SHALL BE SAME COATING AS REST OF TANK.
3. DO NOT COAT BLIND FLANGE NUTS/BOLTS.

CP TEST POINT RAISED HAND HOLE

SCALE: NONE

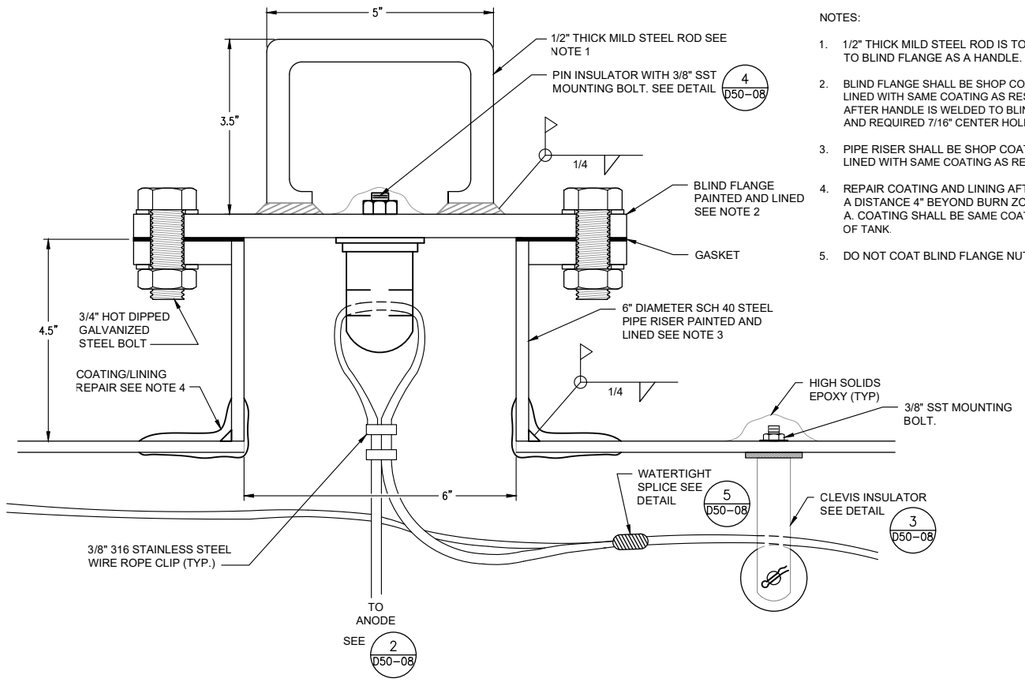


NOTES:

1. BLIND FLANGE SHALL BE 7/16" PRE-DRILLED ON CENTER, SHOP COATED AND LINED WITH SAME COATING AS REST OF TANK.
2. PIPE RISER SHALL BE SHOP COATED AND LINED WITH SAME COATING AS REST OF TANK.
3. REPAIR COATING AND LINING AFTER WELD TO A DISTANCE 4" BEYOND BURN ZONE.
   A. COATING SHALL BE SAME COATING AS REST OF TANK.
4. DO NOT COAT BLIND FLANGE NUTS/BOLTS.

REFERENCE ELECTRODE RAISED HAND HOLE

SCALE: NONE

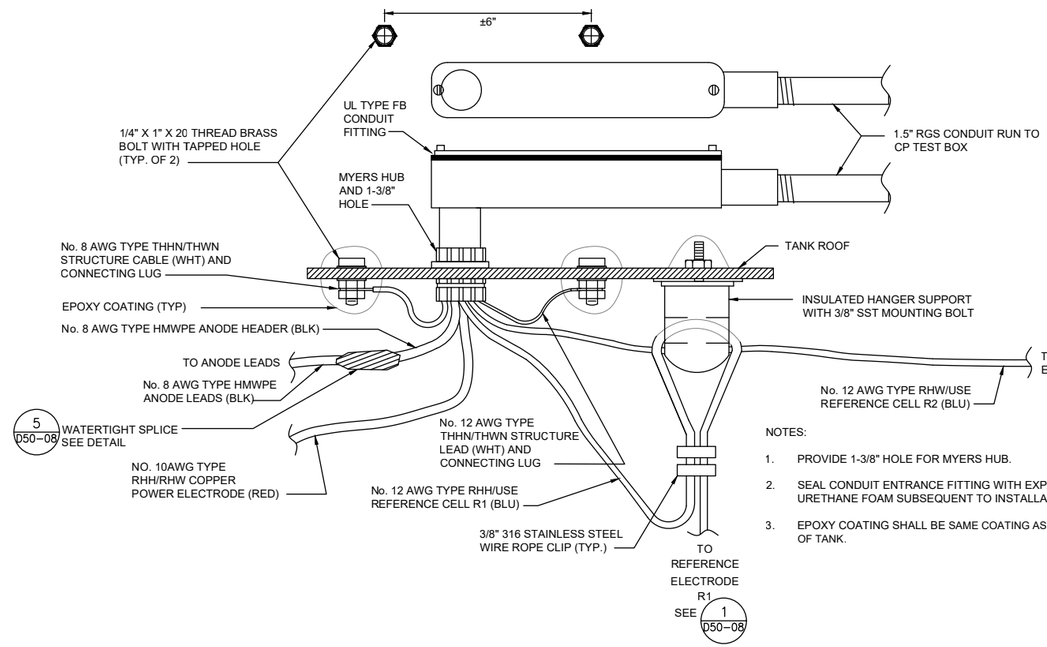


NOTES:

1. 1/2" THICK MILD STEEL ROD IS TO BE WELDED TO BLIND FLANGE AS A HANDLE.
2. BLIND FLANGE SHALL BE SHOP COATED AND LINED WITH SAME COATING AS REST OF TANK, AFTER HANDLE IS WELDED TO BLIND FLANGE AND REQUIRED 7/16" CENTER HOLE IS DRILLED.
3. PIPE RISER SHALL BE SHOP COATED AND LINED WITH SAME COATING AS REST OF TANK.
4. REPAIR COATING AND LINING AFTER WELD TO A DISTANCE 4" BEYOND BURN ZONE.
   A. COATING SHALL BE SAME COATING AS REST OF TANK.
5. DO NOT COAT BLIND FLANGE NUTS/BOLTS.

ANODE RAISED HAND HOLE WITH HANDLE

SCALE: NONE



NOTES:

1. PROVIDE 1-3/8" HOLE FOR MYERS HUB.
2. SEAL CONDUIT ENTRANCE FITTING WITH EXPANDING URETHANE FOAM SUBSEQUENT TO INSTALLATION.
3. EPOXY COATING SHALL BE SAME COATING AS REST OF TANK.

WIRE AND CONDUIT PENETRATION ASSEMBLY

SCALE: NONE

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DRAWN BY	E. PILAPIL
PROJECT NUMBER	10172116

LAURA NOLAN — STATE OF WASHINGTON — 21020170 — REGISTERED PROFESSIONAL ENGINEER
07.01.2022

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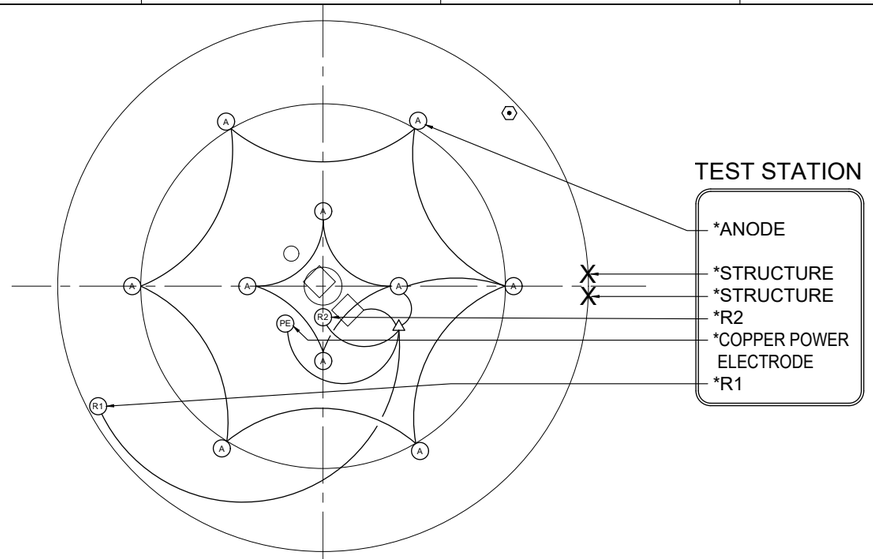
CATHODIC PROTECTION DETAILS 1

0 1" 2"

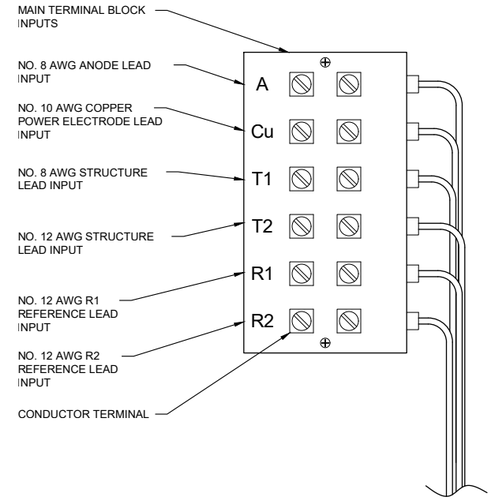
FILENAME D50-06.dwg
SCALE AS NOTED

SHEET **D50-06**

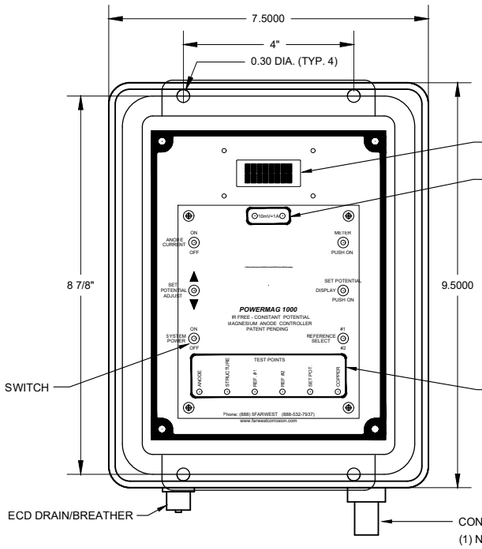
C:\pwworking\west01\d2192871\D50-06.dwg, LAYOUT, 3/31/2022 1:53:18 PM, EPILAPIL

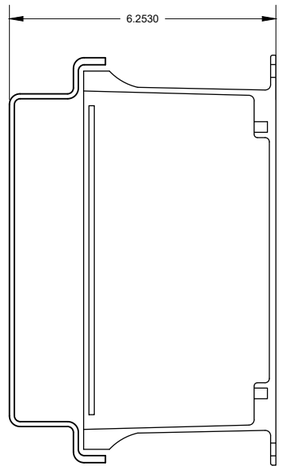


WIRING SCHEMATIC FOR CP SYSTEM (2)
SCALE: NONE



TEST STATION WIRING DIAGRAM (4)
SCALE: NONE



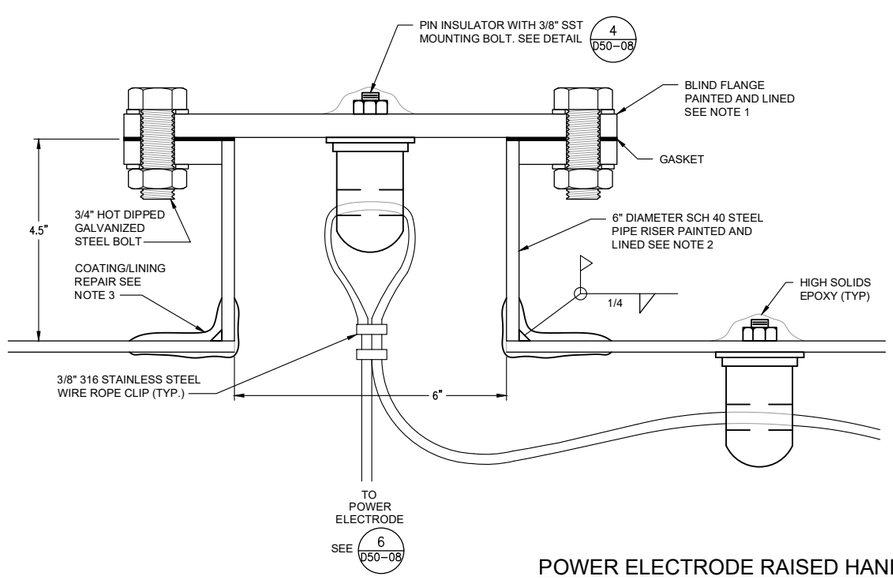


CONDUIT RUN TO TANK SHELL CONTAINS:
(1) NO. 8 AWG THHN/THWN ANODE LEAD (BLK)
(1) NO. 8 AWG THHN/THWN STRUCTURE LEAD (WHT)
(2) NO. 12 AWG RHW/USE REFERENCE ELECTRODE LEADS (BLU)
(1) NO. 12 AWG THHN/THWN STRUCTURE LEAD (WHT)
(1) NO. 10 AWG RHH/RHW COPPER POWER ELECTRODE LEAD (RED)

TEST STATION DETAIL (3)
SCALE: NONE

NOTES:

1. CABINET IS NEMA 4X FIBERGLASS WITH STAINLESS STEEL HINGE AND LATCH SUITABLE FOR PADLOCK. CABINET SHALL BE SIZED TO EASILY ACCOMMODATE CONTROL PANEL. THE HINGED DOOR SHALL CLOSE EASILY WITHOUT RUBBING OR BINDING ON THE PANEL.
2. INSTALL CROUSE-HINDS ECD DRAIN/BREATHER ON BOTTOM OF ENCLOSURE.
3. THE CATHODIC PROTECTION CONTROLLER SHALL BE MOUNTED ON THE OUTSIDE WALL OF THE PUMP STATION ROOM. SEE SHEET E1-04 FOR DETAILS



NOTES:

1. BLIND FLANGE SHALL BE 7/16" PRE-DRILLED ON CENTER, SHOP COATED AND LINED WITH SAME COATING AS REST OF TANK.
2. PIPE RISER SHALL BE SHOP COATED AND LINED WITH SAME COATING AS REST OF TANK.
3. REPAIR COATING AND LINING AFTER WELD TO A DISTANCE 4" BEYOND BURN ZONE.
   A. COATING SHALL BE SAME COATING AS REST OF TANK.
   B. LINING SHALL BE SAME COATING AS REST OF TANK.
4. DO NOT COAT BLIND FLANGE NUTS/BOLTS.

POWER ELECTRODE RAISED HAND HOLE (5)
SCALE: NONE

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1-800-424-5555

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ISSUE	DATE	DESCRIPTION
	7/2022	BID SET

PROJECT MANAGER	L. NOLAN
CIVIL ENG	J. KNOLL
WATER ENG	L. CHENG
STRUCTURAL ENG	M. HIJAZI
ELECTRICAL ENG	I. RINCON
DRAWN BY	E. PILAPIL
PROJECT NUMBER	10172116

LAURA NOLAN — STATE OF WASHINGTON — 21020170 — REGISTERED PROFESSIONAL ENGINEER
07.01.2022

MCCORMICK
CLOSE TO WHAT COUNTS

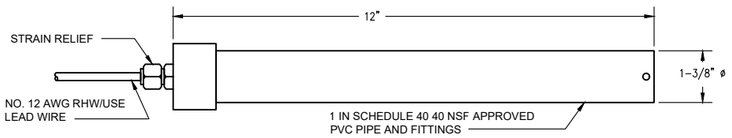
PORT ORCHARD 660 RESERVOIR

CATHODIC PROTECTION DETAILS 2

0 1" 2"

FILENAME D50-07.dwg
SCALE AS NOTED

SHEET
D50-07



NOTES:

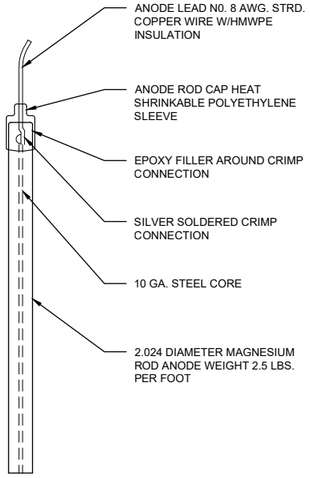
1. REFERENCE ELECTRODE SHALL BE CAPABLE OF MAINTAINING A STABLE POTENTIAL WITHIN +/- 10 MILLIVOLTS TO THAT OF A FRESHLY MADE COPPER SULFATE REFERENCE ELECTRODE WHILE A 3 MICROAMPERE ELECTRICAL CURRENT IS APPLIED TO IT. USE EDI MODEL IRW-CUG-LW300 FROM ELECTROCHEMICAL DEVICES.

2. MEASURE THE ACCURACY OF EACH COPPER SULFATE REFERENCE ELECTRODE BEFORE INSTALLING IT BY MEASURING THE DC VOLTAGE DIFFERENCE BETWEEN IT AND ONE OR MORE REFERENCE ELECTRODES OF KNOWN ACCURACY. THE MEASUREMENTS SHALL BE LESS THAN PLUS OR MINUS 0.010 DC VOLTS FOR ALL REFERENCE ELECTRODES. PERFORM THESE MEASUREMENTS AFTER TOTALLY SUBMERGING THE REFERENCE ELECTRODES IN A FIVE-GALLON BUCKET OF WATER FOR A MINIMUM PERIOD OF 15 MINUTES. USE ONLY POTABLE DRINKING WATER FOR THIS TEST. BRACKISH WATER OR SALTWATER WILL AFFECT THE TEST RESULTS AND DAMAGE THE REFERENCE ELECTRODE. PROVIDE FIVE DAYS WRITTEN NOTICE TO THE ENGINEER TO ALLOW THESE TESTS TO BE WITNESSED.

COPPER SULFATE REFERENCE ELECTRODE

SCALE: NONE

1 / -



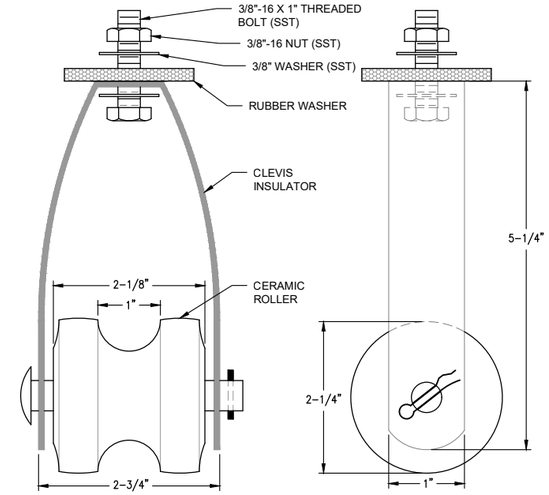
ALLOY COMPOSITION

ELEMENT	CONTENT %
AL	0.010% MAX.
Mn	0.5 - 1.3%
Si	0.5% MAX.
Cu	0.02% MAX.
Ni	0.001% MAX.
Fe	0.03 MAX.
Other	0.30 MAX.
Mg	REMAINDER

MAGNESIUM ANODE

SCALE: NONE

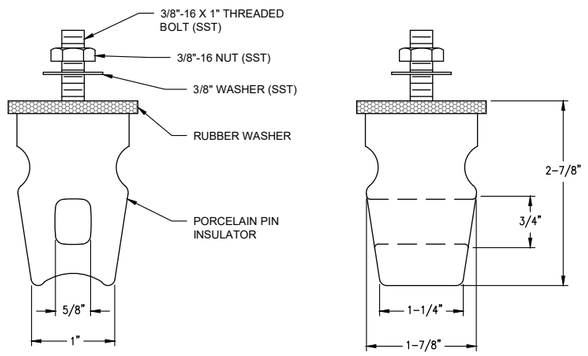
2 / -



CLEVIS INSULATOR

SCALE: NONE

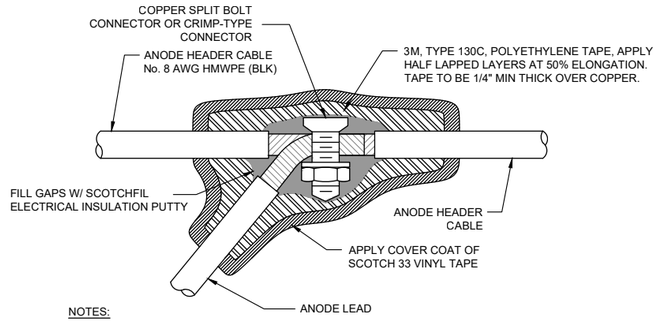
3 / -



PIN INSULATOR

SCALE: NONE

4 / -



NOTES:

1. MAKE SPLICE WATERPROOF

   A. SMOOTH ALL IRREGULAR SURFACES WITH 3M SCOTCHFIL ELECTRICAL INSULATION PUTTY OR APPROVED EQUAL.

   B. APPLY 2 LAYERS OF HALF LAPPED RUBBER SPLICING TAPE, SCOTCH LINERLESS RUBBER SPLICING TAPE 130C OR APPROVED EQUAL.

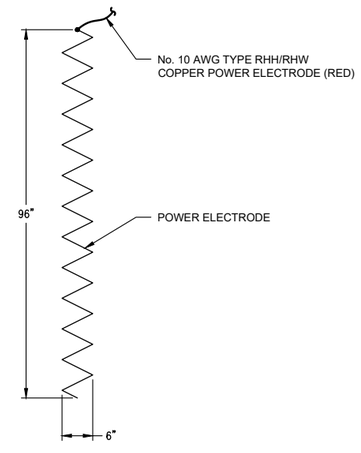
   C. APPLY 2 LAYERS OF HALF LAPPED VINYL ELECTRICAL TAPE, SCOTCH SUPER 33+ OR APPROVED EQUAL.

2. NUMBER OF WIRES MAY VARY PER SPLICE

SEALED SPLICE CONNECTION

SCALE: NONE

5 / -



POWER ELECTRODE

SCALE: NONE

6 / -

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LAURA NOLAN — STATE OF WASHINGTON — 21020170 — REGISTERED PROFESSIONAL ENGINEER — 07.01.2022

MCCORMICK
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PORT ORCHARD 660 RESERVOIR

CATHODIC PROTECTION DETAILS 3

0 1" 2"

FILENAME D50-08.dwg
SCALE AS NOTED

SHEET D50-08

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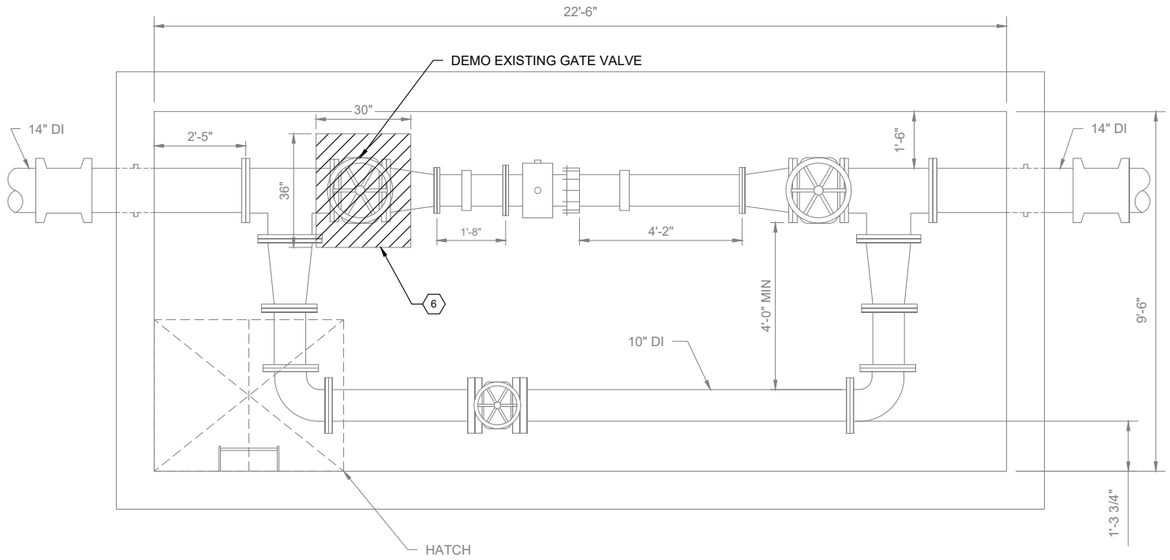
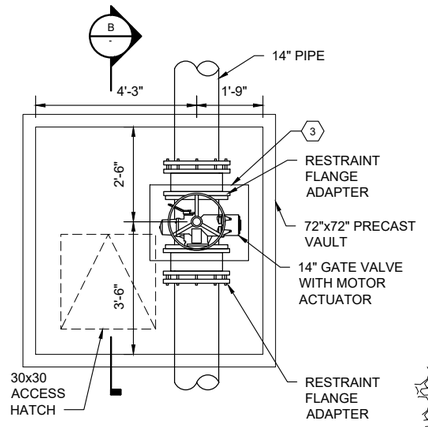
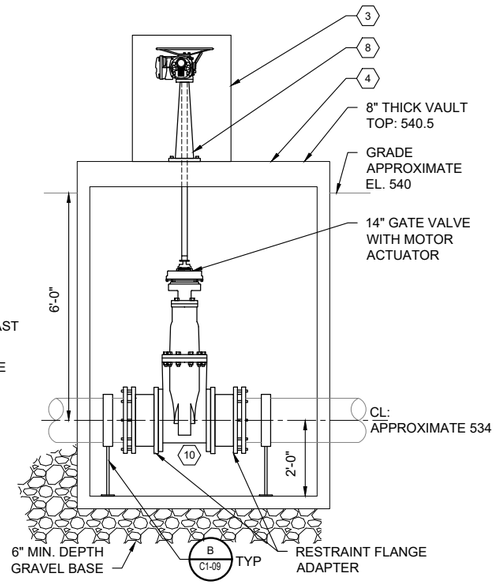


1 — FLOW METER VAULT DEMO PLAN
SCALE: NO SCALE



3 — CV-002 VALVE VAULT PLAN
SCALE: 1/2" = 1'-0"



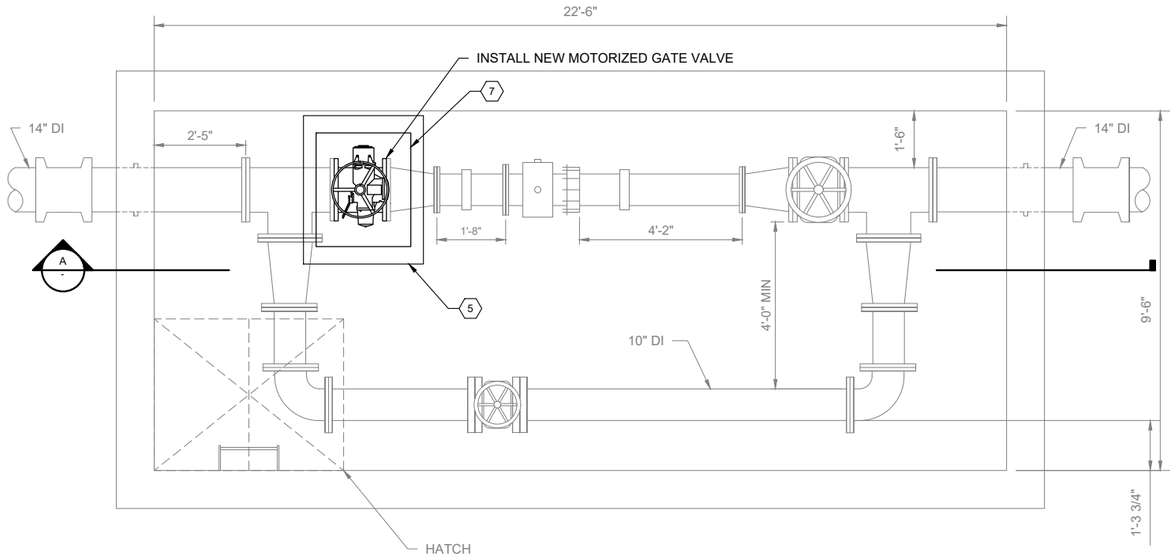
B — CV-002 VALVE VAULT SECTION
SCALE: 1/2" = 1'-0"

SHEET NOTE:

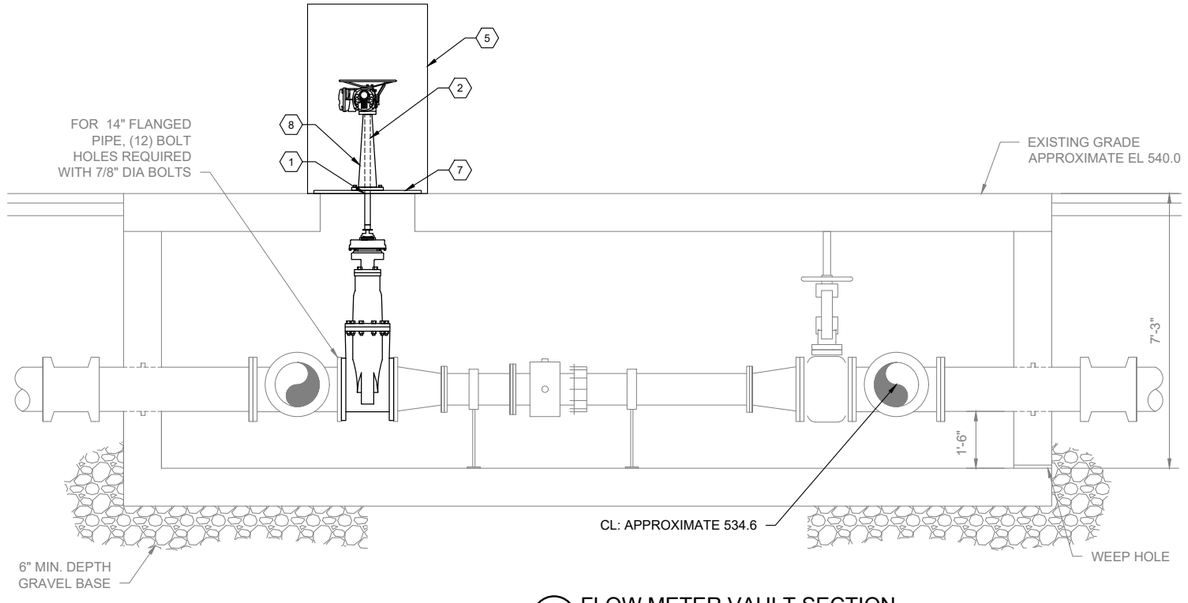
1. CONTRACTOR TO FIELD VERIFY THE DIMENSIONS AND THE EQUIPMENT INSIDE THE METERING VAULT.

KEY NOTES:

1. CONTRACTOR TO MODIFY CONCRETE SLAB TO PROVIDE WATER TIGHT SEAL AROUND ADDED FEATURES.
2. CONTRACTOR SHALL COORDINATE WITH THE VALVE MANUFACTURE TO SUPPORT THE ABOVE GROUND ACTUATOR. THE ACTUATOR SHALL BE A MINIMUM OF 3 FT. ABOVE GROUND LEVEL.
3. GUARDSHACK CLAMSHELL ENCLOSURE, MODEL GS-NP-1 OR ENGINEER APPROVED EQUAL.
4. CONTRACTOR TO PROVIDE A PRE-CAST VALVE VAULT WITH WITH REMOVABLE COVER AND MAN ACCESS HATCH THAT MEET THE MINIMUM DIMENSION OF THE SIZE SHOWN ON THE DRAWING. THE PRECAST VAULT SHALL BE OLD CASTLE 777-LA OR ENGINEER APPROVED EQUAL.
5. GUARDSHACK CLAMSHELL ENCLOSURE, MODEL GS-NP-3 OR ENGINEER APPROVED EQUAL.
6. REMOVE A 36"X30" CONCRETE SLAB SECTION CENTERED ON TOP OF THE 14" GATE VALVE.
7. INSTALL A 48"X42" HOT DIP GALVANIZED STEEL PLATE WITH MINIMUM 3/8" IN THICK AT THE OPENING. FOUR 1/2"Ø ANCHORS WITH 4-IN MIN EMBEDMENT LOCATED 3-IN FROM EDGES. THE MOV ACTUATOR SHALL BE ANCHORED TO THE STEEL PLATE.
8. FLOOR STAND FOR ACTUATOR SUPPORT.
9. THE VALVE SUPPORT IS SHOWN FOR REFERENCE ONLY. CONTRACTOR SHALL COORDINATE DESIGN AND INSTALL THE PIPE SUPPORT AS REQUIRED.
10. CONTRACTOR TO REMOVE PARTIAL PIPE TO INSTALL THE RESTRAINT FLANGED COUPLING ACCESSORIES AND THE 14" GATE VALVE.



2 — FLOW METER VAULT PLAN
SCALE: NO SCALE



A — FLOW METER VAULT SECTION
SCALE: 1/2" = 1'-0"

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INSTR. ENG	M. HUTSON
PROJECT NUMBER	10172116

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PORT ORCHARD 660 RESERVOIR

FLOW METER VAULT AND CV-002 VALVE VAULT

0 1" 2"

FILENAME D50-09.dwg
SCALE AS NOTED

SHEET D50-09

PIPING SYSTEMS

- COLD WATER, POTABLE (CW)
- HOT WATER, POTABLE (HW)
- HOT WATER RECIRCULATING, POTABLE (HWC)
- NPW — NON POTABLE COLD WATER
- 140 — HOT WATER - TEMPERATURE, POTABLE
- TW — TEPID WATER, POTABLE
- TWR — TEPID WATER RETURN, POTABLE
- SAN — SANITARY SEWER BELOW GRADE
- SAN — SANITARY SEWER ABOVE GRADE
- V — SANITARY VENT
- AW — ACID WASTE
- AV — ACID VENT
- CWV — COMBINATION WASTE AND VENT
- PD — PRESSURE DRAINAGE
- SD — STORM DRAIN ABOVE GRADE
- SD — STORM DRAIN BELOW GRADE
- OD — STORM DRAIN OVERFLOW
- NG — NATURAL GAS
- LP — LIQUEFIED PROPANE
- CA — COMPRESSED AIR
- HWS — HEATING HOT WATER SUPPLY
- HWR — HEATING HOT WATER RETURN
- GHWS — GLYCOL HEATING HOT WATER SUPPLY
- GHWR — GLYCOL HEATING HOT WATER RETURN
- CHWS — CHILLED WATER SUPPLY
- CHWR — CHILLED WATER RETURN
- GCWS — GLYCOL CHILLED WATER SUPPLY
- GCWR — GLYCOL CHILLED WATER RETURN
- CWS — CONDENSER WATER SUPPLY
- CWR — CONDENSER WATER RETURN
- RL — REFRIGERANT LIQUID
- RS — REFRIGERANT SUCTION
- CD — CONDENSATE DRAIN
- CPD — CONDENSATE PUMP DISCHARGE
- STM -15 — STEAM SUPPLY - PSI
- BBD — BOILER BLOW DOWN
- BF — BOILER FEED
- SV — STEAM VENT
- MU — MAKE-UP WATER

PIPING SYMBOLOGY

- PIPE ANCHOR
- PIPE GUIDE
- EXPANSION JOINT
- PT — PRESSURE/ TEMPERATURE PORT
- THERMOMETER
- THERMOWELL
- PRESSURE GAUGE
- T — TEMPERATURE GAUGE
- FLEXIBLE PIPING CONNECTION
- WYE STRAINER
- MANUAL AIR VENT
- A — AUTOMATIC AIR VENT
- M — METER (WATER, GAS, OTHER)
- FCO — FLOOR CLEANOUT
- CO — CLEANOUT
- WCO — WALL CLEANOUT
- GCO — DOUBLE GRADE CLEANOUT
- WATER HAMMER ARRESTOR
- EARTHQUAKE VALVE
- CONCENTRIC REDUCER
- ECCENTRIC REDUCER, FLAT ON BOTTOM
- ECCENTRIC REDUCER, FLAT ON TOP
- ELBOW, 90° TURN DOWN
- ELBOW, 90° TURN UP
- TEE, OUTLET UP
- TEE, OUTLET DOWN
- TEE, OUTLET UP W/ 90° TURN
- TEE, OUTLET DOWN W/ 90° TURN
- PIPE BREAK
- PIPE CAP
- BLIND FLANGE
- UNION
- FLOW ARROW
- SHUTOFF VALVE (NORMALLY OPEN)
- SHUTOFF VALVE (NORMALLY CLOSED)
- DRAIN VALVE
- CHECK VALVE
- VB — VACUUM BREAKER
- AUTOMATIC FLOW CONTROL VALVE
- CALIBRATED MANUAL BALANCING VALVE
- OR — PRESSURE-RELIEF VALVE
- PRESSURE-REDUCING VALVE (PRV)
- AUTOMATIC CONTROL VALVE, 2-WAY
- AUTOMATIC CONTROL VALVE, 3-WAY
- BFP — BACKFLOW PREVENTER
- XX-1 — PLUMBING FIXTURE

HVAC SYMBOLOGY

- 24x18 — SUPPLY AIR OR OUTSIDE AIR DUCT UP (SECTION CUT, FIRST DIMENSION DUCT WIDTH)
- SUPPLY AIR OR OUTSIDE AIR DUCT DOWN (NO SECTION CUT)
- RETURN AIR DUCT UP (SECTION CUT)
- RETURN AIR DUCT DOWN (NO SECTION CUT)
- EXHAUST AIR DUCT UP (NO SECTION CUT)
- EXHAUST AIR DUCT DOWN (NO SECTION CUT)
- ROUND ELBOW UP
- ROUND ELBOW DOWN
- TRANSITION - RECTANGULAR TO ROUND DUCT
- STANDARD BRANCH
- ELBOW - W/TURNING VANE (RECTANGULAR)
- ELBOW - (RECTANGULAR), SMOOTH RADIUS
- 18x24 — RECTANGULAR DUCT OR OPENING SIZE FIRST NUMBER INDICATES SIZE OF SIDE SHOWN
- 18ϕ — ROUND DUCT SIZE
- R OR D — RECTANGULAR DUCT INCLINE - RISE OR DROP IN RESPECT TO THE AIR FLOW
- R OR D — ROUND DUCT INCLINE - RISE OR DROP IN RESPECT TO THE AIR FLOW
- 18x24 — HIDDEN DUCT
- T 9'-10" B 9'-0" / 18x10 — DUCT/PIPE ELEVATION TAG ABOVE FINISH FLOOR
- VOLUME DAMPER
- M — MOTOR OPERATED DAMPER
- FIRE DAMPER
- S — SMOKE DAMPER
- S — SMOKE AND FIRE DAMPER
- FLEXIBLE CONNECTION
- FLEXIBLE DUCT - TWO LINE
- FLEXIBLE DUCT - ONE LINE
- ACOUSTICAL LINING - DUCT DIMENSIONS FOR NET FREE AREA
- UC — UNDERCUT DOOR
- NEW TO EXISTING CONNECTION
- REMOVE EXISTING UP TO THIS POINT
- HVAC EMERGENCY SHUTDOWN SWITCH

- TAG-SIZE / CFM — SUPPLY AIR REGISTER
- TAG-SIZE / CFM — EXHAUST AIR OR RETURN AIR GRILLE
- TAG / CFM — EXHAUST AIR OR RETURN AIR GRILLE
- TAG / CFM — SUPPLY AIR ASSEMBLY SQUARE DIFFUSER
- TAG / CFM — SUPPLY AIR ASSEMBLY ROUND DIFFUSER

TEMPERATURE CONTROL DIAGRAM SYMBOLOGY

MISCELLANEOUS DEVICE IDENTIFIER

CO	SPACE CARBON MONOXIDE SENSOR
CO2	SPACE CARBON DIOXIDE SENSOR
H	SPACE HUMIDITY SENSOR
NO2	SPACE NITROGEN DIOXIDE SENSOR
S	SPACE TEMPERATURE SENSOR
T	THERMOSTAT

CONTROL DEVICE IDENTIFIER

AFS	AIRFLOW MEASURING STATION
AM	AIRFLOW MEASURING SENSOR
CO	CARBON MONOXIDE SENSOR
CO2	CARBON DIOXIDE SENSOR
F	FLOW SWITCH
FRZ	FREEZE STAT
H	HUMIDITY SENSOR
HS	HIGH STATIC SWITCH
LS	LOW STATIC SWITCH
NO2	NITROGEN DIOXIDE SENSOR
P	PRESSURE SENSOR
S	SPACE TEMPERATURE SENSOR
SD	SMOKE DETECTOR
T	TEMPERATURE SENSOR
TS	TEMPERATURE SWITCH
ΔP	DIFFERENTIAL PRESSURE SENSOR

CONTROL INPUT/OUTPUT IDENTIFIER

AI	ANALOG INPUT
AO	ANALOG OUTPUT
DI	DIGITAL INPUT
DO	DIGITAL OUTPUT

COIL IDENTIFIERS

CC	CHILLED WATER COOLING COIL
DG	DIRECT FIRED GAS BURNER
DX	DIRECT EXPANSION COOLING COIL
EH	ELECTRIC HEATING COIL
ER	DIRECT EVAPORATIVE COIL
FC	FACE AND BYPASS COOLING COIL
FH	FACE AND BYPASS HEATING COIL
HC	HEATING HOT WATER HEATING COIL
IG	INDIRECT FIRED GAS BURNER
ST	STEAM HEATING COIL

CONTROL ABBREVIATIONS

BTU	BTU METER
COMM	COMMUNICATION
CT	CURRENT TRANSMITTER
EC	ELECTRONICALLY COMMUTATED
EF	EXHAUST FAN
FM	FLOW METER
M	MOTOR ACTUATOR
MA	MIXED AIR
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
OA	OUTDOOR AIR
RA	RETURN AIR
RL	RELIEF FAN
RF	RETURN FAN
SA	SUPPLY AIR
SF	SUPPLY FAN
TCC	TEMPERATURE CONTROL CONTRACTOR
VFC	VARIABLE FREQUENCY CONTROLLER

- S — DUCT MOUNTED SMOKE DETECTOR
- T — TEMPERATURE AVERAGING SENSOR
- M — MOTOR OPERATED DAMPER
- M — MOTOR OPERATED SINGLE BLADE DAMPER
- BACKDRAFT DAMPER
- HUMIDIFIER
- AFS — AIRFLOW MEASURING STATION
- INTAKE/ EXHAUST LOUVER
- FILTER
- FRZ — FREEZE STAT
- SEE CONTROL ABBREVIATIONS (TYP)
- M — FAN
- EC — FAN WITH EC MOTOR
- PUMP
- EC — PUMP WITH EC MOTOR

ABBREVIATIONS

AD	ACCESS DOOR
AFR	ABOVE FINISHED ROOF
AHU	AIR HANDLING UNIT
APD	AIR PRESSURE DROP
ARF	ABOVE RAISED FLOOR
AV	ABOVE RAISED FLOOR
BAS	BUILDING AUTOMATION SYSTEM
BDD	BACK DRAFT DAMPER
BHP	BRAKE HORSE POWER
BOE	BOTTOM OF EQUIPMENT
BTUH	BRITISH THERMAL UNITS PER HOUR
CAV	CONSTANT AIR VOLUME
CFH	CUBIC FEET PER HOUR
CFM	CUBIC FEET PER MINUTE
COP	COEFFICIENT OF PERFORMANCE
COR	CONTRACTING OFFICER'S REPRESENTATIVE
CRAC	COMPUTER ROOM AIR CONDITIONER
CU	CONDENSING UNIT
DB	DRY BULB
DDC	DIRECT DIGITAL CONTROL
DH	DEHUMIDIFIER
DX	DIRECT EXPANSION
EAT	ENTERING AIR TEMPERATURE
EDH	ELECTRIC DUCT HEATER
EER	ENERGY EFFICIENCY RATIO
EMCS	ENERGY MANAGEMENT CONTROL SYSTEM
ERU	ENERGY RECOVERY UNIT
ESP	EXTERNAL STATIC PRESSURE
ESS	EMERGENCY SHUTOFF SWITCH
EWT	ENTERING WATER TEMPERATURE
F	FUTURE
FA	FREE AREA
FCP	FAN CONTROL PANEL
FCU	FAN COIL UNIT
FDBK	FEEDBACK
FLA	FULL LOAD AMPS
FLT	FILTER
FPB	FAN POWERED BOX
FPM	FEET PER MINUTE
GC	GENERAL CONTRACTOR
GE	GRAVITY EXHAUST
GI	GRAVITY INTAKE
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
I/O	INPUT/OUTPUT
I/P	CURRENT TO PNEUMATIC
IAQ	INDOOR AIR QUALITY
IPLV	INTEGRATED PART LOAD VALUE
LAT	LEAVING AIR TEMPERATURE
LVR	LOUVER
LWT	LEAVING WATER TEMPERATURE
MAU	MAKE-UP AIR UNIT
MBH	THOUSAND BTUH
MCC	MOTOR CONTROL CENTER
NC	NOISE CRITERIA
NO	NUMBER
NRC	NOISE REDUCTION COEFFICIENT
OS&Y	OUTSIDE SCREW AND YOKE
PD	PRESSURE DROP
PPH	POUNDS PER HOUR
RH	RELATIVE HUMIDITY
RTU	ROOFTOP UNIT
S	SIGNAL PORT
SCFM	STANDARD CUBIC FEET PER MINUTE
SEER	SEASONAL ENERGY EFFICIENCY RATIO
SP	STATIC PRESSURE
TC	TECHNOLOGY CONTRACTOR
TCP	TEMPERATURE CONTROL PANEL
TD	TEMPERATURE DIFFERENTIAL
TES	THERMAL ENERGY STORAGE
TSP	TOTAL STATIC PRESSURE
UH	UNIT HEATER
V&C	VALVE AND CAP
VAV	VARIABLE AIR VOLUME
VRF	VARIABLE REFRIGERANT FLOW
VTR	VENT THROUGH ROOF
WB	WET BULB
WC	WATER COLUMN
WPD	WATER PRESSURE DROP

GENERAL NOTES

GENERAL MECHANICAL NOTES

1. THESE NOTES ARE NOT ALL INCLUSIVE. REFER TO DRAWINGS AND SPECIFICATION FOR ADDITIONAL REQUIREMENTS.
2. THIS IS A STANDARD MECHANICAL (HVAC AND PLUMBING) SYMBOLOGY AND ABBREVIATIONS SHEET. LISTING OF SYMBOLS AND ABBREVIATIONS DOES NOT IMPLY ALL SYMBOLS AND ABBREVIATIONS HAVE BEEN USED ON THIS PROJECT.
3. VALVE SYMBOLS SHOWN HERE ARE APPLICABLE ONLY TO MECHANICAL SHEETS.
4. PROVIDE ALL MATERIALS, LABOR, AND EQUIPMENT FOR COMPLETE AND OPERABLE SYSTEMS AS INDICATED ON THE DRAWINGS AS SPECIFIED, OR AS REQUIRED BY CODE.
5. MECHANICAL INSTALLATION SHALL COMPLY WITH THE ADA/ABA ACCESSIBILITY GUIDELINES.
6. DETAILS APPLY TO THE ENTIRE PROJECT AND ARE ONLY REFERENCED TO PROVIDE CLARITY IF THERE ARE MULTIPLE DETAILS THAT COULD APPLY TO A PARTICULAR PROJECT CONDITION.
7. COORDINATE LOCATION OF ALL MECHANICAL EQUIPMENT, DUCTWORK, AND PIPING WITH OTHER TRADES BEFORE PROCEEDING WITH WORK. DO NOT INSTALL MECHANICAL EQUIPMENT, DUCTWORK, OR PIPING ABOVE ELECTRICAL EQUIPMENT WHERE PROHIBITED BY ELECTRICAL CODES (SWITCHBOARDS, PANELS, ETC.).
8. LIGHT LINE WEIGHT INDICATES EXISTING PIPING, DUCTWORK, AND/OR EQUIPMENT TO REMAIN. BOLD LINE WEIGHT INDICATES NEW WORK TO BE INSTALLED AS WORK OF THIS CONTRACT.
9. COORDINATE INSTALLATION OF OUTSIDE AIR INTAKE WITH INSTALLATION OF PLUMBING VENTS, FLUES AND EXHAUST/RELIEF OUTLETS TO MAINTAIN 10' SEPARATION.
10. ALL WORK IN FINISHED SPACES SHALL BE LOCATED ABOVE CEILINGS, IN CHASES OR OTHER CONCEALED ACCESSIBLE LOCATIONS UNLESS NOTED OTHERWISE. LOCATE AND ARRANGE VALVES, DRAIN FITTINGS, ETC. TO BE ACCESSIBLE THROUGH LAY-IN CEILINGS, ACCESS PANELS OR ACCESS DOORS. PROVIDE AN ACCESS PANEL OR DOOR FOR ALL NON-ACCESSIBLE INSTALLATIONS. COORDINATE LOCATION OF ACCESS PANELS OR DOORS WITH THE ARCHITECT/ENGINEER AND OTHER TRADES.
11. ALL MATERIALS LOCATED IN PLENUM SHALL BE RATED FOR PLENUM INSTALLATION.
12. ALL DUCTWORK, PIPING, AND EQUIPMENT SUPPORTED FROM STRUCTURAL STEEL SHALL BE COORDINATED WITH ALL TRADES. ALL ATTACHMENTS TO STEEL BAR JOISTS, TRUSSES, OR JOIST GIRDERS SHALL BE AT PANEL POINTS OR AS SHOWN ON THE MECHANICAL OR STRUCTURAL DRAWINGS. WELDING TO STRUCTURAL MEMBERS SHALL NOT BE PERMITTED.
13. ALL MISCELLANEOUS METALS AND MATERIALS REQUIRED TO ENSURE PROPER INSTALLATION AND AS SHOWN IN DETAILS FOR PIPING, DUCTWORK, AND EQUIPMENT (UNLESS OTHERWISE NOTED) SHALL BE PROVIDED BY THE INSTALLING CONTRACTOR.
14. PROVIDE DIELECTRIC UNIONS AT ALL CONNECTIONS OF DISSIMILAR METALS (SUCH AS COPPER TO GALVANIZED STEEL).
15. PROVIDE ISOLATION VALVES AT EACH PIECE OF EQUIPMENT. ALSO PROVIDE ISOLATION VALVES ON EACH BRANCH AND/OR RISER SERVING MULTIPLE PIECES OF EQUIPMENT OR FIXTURES AND ELSEWHERE AS INDICATED. INSTALL VALVES AS CLOSE TO MAIN AS POSSIBLE.

GENERAL HVAC NOTES

1. DUCTWORK DIMENSIONS: FIRST NUMBER INDICATES SIDE OF DUCTWORK SHOWN. ALL DIMENSIONS ARE IN INCHES AND ARE INSIDE CLEAR DIMENSIONS.
2. VOLUME DAMPERS ABOVE PLASTER OR GYPBOARD CEILINGS SHALL HAVE EXTENSION RODS AND CHROME-PLATED ESCUTCHEON PLATES.
3. COORDINATE ALL GRILLE, REGISTER AND DIFFUSER LOCATIONS WITH REFLECTED CEILING PLAN, LIGHTING, AND ALL OTHER CEILING MOUNTED DEVICES.
4. PROVIDE FLEXIBLE CONNECTIONS IN ALL DUCTWORK AND PIPING SYSTEMS CONNECTED TO FANS, PUMPS AND OTHER EQUIPMENT WHICH REQUIRE VIBRATION ISOLATION.
5. PROVIDE ACCESSIBLE VOLUME DAMPERS OR OTHER MEANS OF AIRFLOW ADJUSTMENT AT ALL DUCT RUN-OUTS TO DIFFUSERS AND GRILLES.
6. PROVIDE DUCT ACCESS DOORS AT OUTSIDE AIR INTAKE PLENUMS.
7. ALL DUCT RUN-OUTS TO DIFFUSERS AND GRILLES SHALL BE THE SAME AS THE DIFFUSER OR GRILLE NECK SIZE UNLESS NOTED OTHERWISE.
8. ALL PIPING RUNOUTS SHALL BE 3/4" UNLESS NOTED OTHERWISE.

GENERAL PLUMBING NOTES

1. PROVIDE ALL PIPING AND FIXTURES IN ACCORDANCE WITH THE LOCAL PLUMBING CODES.
2. SANITARY SEWER PIPING SMALLER THAN 3" SHALL BE SLOPED AT 1/4" PER FOOT, 3" AND LARGER SHALL BE SLOPED AT 1/8" PER FOOT.

ISSUE	DATE	DESCRIPTION
	7/8/2022	ISSUED FOR BID

PROJECT MANAGER	LAURA NOLAN
CIVIL ENG	J. KNOLL
WATER ENG	L. CHENG
STRUCTURAL ENG	M. HIJAZI
ELECTRICAL ENG	L. KIRMEYER
MECHANICAL ENG	K. SUTTON
INSTR. ENG	M. HUTSON
PROJECT NUMBER	10172116

JEFFREY ALAN LEWIS — STATE OF WASHINGTON — 22309 — REGISTERED PROFESSIONAL ENGINEER — 7/8/2022

McCORMICK — CLOSE TO WHAT COUNTS

PORT ORCHARD 660 RESERVOIR

BOOSTER PUMP STATION MECHANICAL LEGEND

0 1" 2"

FILENAME 10172116-00-U.RVT

SCALE NONE

SHEET **M50-01**

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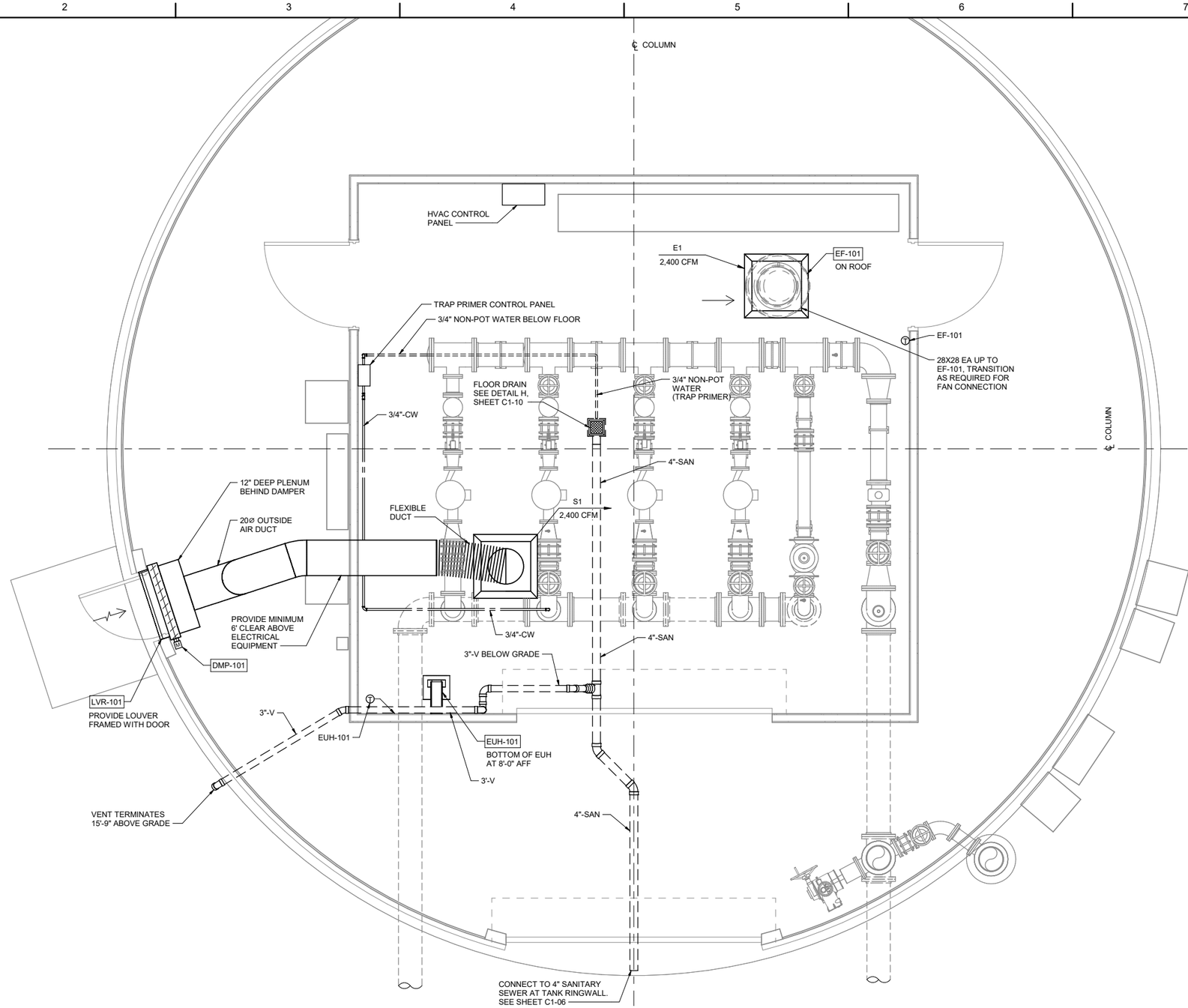

PUMP STATION MECHANICAL PLAN

3/8" = 1'-0"

CALL 48 HOURS BEFORE YOU DIG 1-800-424-5555

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JEFFREY ALAN LEWIS — STATE OF WASHINGTON — 22509 — REGISTERED PROFESSIONAL ENGINEER — 7/8/22

McCORMICK — CLOSE TO WHAT COUNTS

PORT ORCHARD 660 RESERVOIR

PORT ORCHARD 660 RESERVOIR

BOOSTER PUMP STATION MECHANICAL PLAN

0 1" 2"

FILENAME 10172116-00-U.RVT
SCALE 3/8" = 1'-0"

SHEET **M50-02**

MECHANICAL SPECIFICATIONS

GENERAL PROVISIONS
THIS CONTRACTOR SHALL EXAMINE ALL SUCH DRAWINGS AND SPECIFICATIONS AND BECOME THOROUGHLY FAMILIAR WITH THE PROVISIONS CONTAINED THEREIN.

MECHANICAL DRAWINGS ARE DIAGRAMMATIC. THEY ARE INTENDED TO SHOW THE APPROXIMATE LOCATIONS OF EQUIPMENT AND DUCTWORK, DIMENSIONS GIVEN ON THE PLANS, IN FIGURES, SHALL TAKE PRECEDENCE OVER SCALED DIMENSIONS AND SHALL BE VERIFIED IN THE FIELD.

UNTIL TIME OF INSTALLATION. MAKE MINOR CHANGES IN THE LOCATION OF DUCTWORK AND EQUIPMENT AS NECESSARY WITHOUT ADDITIONAL COST TO THE CONTRACT.

THE MECHANICAL DRAWINGS AND SPECIFICATIONS ARE INTENDED TO SUPPLEMENT EACH OTHER. MATERIAL AND LABOR NECESSARY TO THE PROJECT SHALL BE FURNISHED AND INSTALLED EVEN THOUGH NOT SPECIFICALLY MENTIONED IN BOTH. LABOR AND/OR MATERIALS NEITHER SHOWN NOR SPECIFIED, BUT OBVIOUSLY NECESSARY FOR THE COMPLETION AND PROPER FUNCTIONING OF THE SYSTEM SHALL BE FURNISHED AND INSTALLED BY THE MECHANICAL CONTRACTOR.

IT IS THE INTENT OF THESE DRAWINGS THAT THIS BE A COMPLETE MECHANICAL JOB. ANY ERRORS OR OMISSIONS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO SUBMITTAL AND INSTALLATION.

CODES
INSTALLATION SHALL BE IN FULL ACCORDANCE WITH ALL CODES, RULES AND REGULATIONS OF MUNICIPAL, CITY, COUNTY, STATE AND PUBLIC UTILITIES AND ALL OTHER AUTHORITIES HAVING JURISDICTION INCLUDING BUT NOT LIMITED TO:

- INTERNATIONAL BUILDING CODE 2018
- INTERNATIONAL MECHANICAL CODE 2018
- UNIFORM PLUMBING CODE 2018
- WASHINGTON STATE ENERGY CODE 2020 EDITION
- ASHRAE 90.1-2016
- ASHRAE 62.1-2016
- SMACNA HVAC DUCT CONSTRUCTION STANDARDS – METAL AND FLEXIBLE

COMPLY WITH ANY SPECIFICATION OR DRAWING REQUIREMENTS THAT ARE IN EXCESS, BUT NOT IN CONFLICT WITH CODE REQUIREMENTS.

STANDARDS AND SUBSTITUTIONS
SHOULD THE CONTRACTOR PROPOSE TO FURNISH MATERIALS OR EQUIPMENT OTHER THAN THOSE SPECIFIED, SUBMIT A WRITTEN REQUEST FOR SUBSTITUTION, ACCOMPANIED WITH COMPLETE DESCRIPTIVE (MANUFACTURER, CATALOG NUMBER, ETC.) AND TECHNICAL DATA FOR ALL ITEMS. FAILURE TO COMPLY WITH REQUIREMENT MAY CAUSE THE ITEM TO BE REJECTED.

QUALITY ASSURANCE
IT IS THE INTENT OF THE DRAWINGS AND SPECIFICATIONS TO ESTABLISH A STANDARD OF QUALITY OF MATERIALS AND EQUIPMENT INSTALLED. ALL PRODUCTS SHALL BE NEW AND OF THE TYPE AND QUALITY. WHERE MATERIAL, EQUIPMENT OR OTHER PRODUCTS ARE SPECIFIED BY MANUFACTURER, BRAND NAME, TYPE OR CATALOG NUMBER, SUCH DESIGNATION SHALL ESTABLISH THE STANDARD OF THE DESIRED QUALITY AND STYLE.

RECORD DRAWINGS
SUBMIT SET OF REPRODUCIBLE MECHANICAL DRAWINGS SHOWING THE RECORD CONDITIONS.

TESTING AND BALANCING REQUIREMENTS
TESTING AND BALANCING OF ALL AIR SYSTEMS SHALL BE DONE IN ACCORDANCE WITH THE ASSOCIATED AIR BALANCE COUNCIL (AABC), AMERICAN INDUSTRIAL HYGIENE ASSOCIATION (AIHA), ASHRAE HVAC SYSTEMS AND EQUIPMENT HANDBOOK – "TESTING, ADJUSTING, AND BALANCING" CHAPTER, AND NATIONAL ENVIRONMENTAL BALANCING BUREAU (NEBB).

THE TESTING AND BALANCING FIRM SHALL BE AN INDEPENDENT FIRM FROM THE HVAC EQUIPMENT INSTALLATION FIRM.

DO NOT BEGIN BALANCING AND TESTING UNTIL HVAC SYSTEMS ARE COMPLETE AND IN FULL WORKING ORDER.

OBTAIN DESIGN CFM AT FANS. DIFFUSERS, REGISTERS, AND GRILLES SHALL COMPLY WITH DESIGN REQUIREMENTS WITHIN 10 PCT. TEST AND RECORD ENTERING AND LEAVING AIR TEMPERATURES (DB-HEATING, DB/WB-COOLING). ADJUST AND ASSURE THAT THE OPERATION OF AUTOMATICALLY OPERATED DAMPERS ARE AS SPECIFIED.

COMMISSIONING
PROVIDE COMMISSIONING IN ACCORDANCE WITH WASHINGTON STATE ENERGY CODE.

CORROSION RESISTANT COATINGS/MATERIALS
ALL UNITS SHALL BE CONSTRUCTED WITH CORROSION-RESISTANT MATERIALS (ALUMINUM, STAINLESS STEEL, OR FRP) OR HAVE CORROSION-RESISTANT COATING MANUFACTURED BY HERESITE AND CHEMICAL CO., AERO-MARINE ENGINEERING, INC., OR APPROVED EQUAL.

DUCTWORK
DUCTWORK SHALL BE ALUMINUM WITH THICKNESS PER SMACNA FOR A 4 IN WC PRESSURE CLASS. DUCTWORK SHALL BE INSULATED WITH 2" THICK MINIMUM FIBERGLASS DUCT WRAP WITH FSK JACKET, AT A MINIMUM R-VALUE OF R-6.

SUPPORTS AND HANGERS: SUPPORTS ANGLES SHALL BE ALUMINUM OR STAINLESS STEEL, MINIMUM 1-1/2 BY 1-1/2 BY 1/4 ANGLE SUPPORT ANGLES. HANGER RODS SHALL BE ALUMINUM OR STAINLESS STEEL. ANCHORS SHALL BE STAINLESS STEEL WEDGE TYPE. FABRICATED UNITS SHALL BE TRAPEZE TYPE. STRAP HANGERS ARE PROHIBITED.

TURNING VANES: MATERIAL SHALL BE SAME AS DUCT. FABRICATED UNITS SHALL BE DOUBLE VANE TYPE. PRESSURE DROP THROUGH ELBOWS SHALL BE LIMITED TO A MAXIMUM 20 PERCENT OF VELOCITY PRESSURE.

FLEXIBLE CONNECTIONS: MATERIALS SHALL BE HYPALON, DOUBLE COATED WOVEN GLASS FABRIC. FABRICATED CONNECTIONS SHALL WITHSTAND 4.5 IN WC, POSITIVE AND NEGATIVE PRESSURE.
DAMPERS: MOTORIZED DAMPERS SHALL BE SAME MATERIAL AS DUCT.

LOUVERS
MATERIAL: ASTM B221 EXTRUDED ALUMINUM, ALLOY 6063T5, MINIMUM 0.081 IN THICK. 4 IN DEEP, DRAINABLE WITH BLADES AT 37-1/2 DEGREE ANGLE. CONTINUOUS BLADE APPEARANCE WITH MINIMUM FREE AREA: 8.58 SQFT FOR 4 X 4 FT LOUVER. MAXIMUM PRESSURE DROP: 0.10 IN OF WATER AT 700 FPM. WATER PENETRATION: 0.01 OZ/SQFT AT 873 FPM. SHALL BE AMCA CERTIFIED.

INSTALL IN STANDARD ALUMINUM FRAME. ANCHORS, FASTENERS, AND REINFORCING SHALL BE ALUMINUM OR STAINLESS STEEL. THE FINISH SHALL BE A AA-M12C22A41 CLEAR ANODIZED ARCHITECTURAL CLASS 1 COATING PER AA DAF 45. INSTALL PER MANUFACTURER'S INSTRUCTIONS AND RECOMMENDATIONS. INSTALL ANCHORING AND BRACING AS REQUIRED. INSTALL 0.040 IN ALUMINUM FLASHING AT SILL TO MATCH LOUVER.

HVAC EQUIPMENT

ROOF MOUNTED, CENTRIFUGAL EXHAUST FAN (EF-101)
MATERIALS OF THE FAN SHALL BE ALUMINUM WITH A SOLID STAINLESS-STEEL DRIVE SHAFT. PROPELLERS SHALL BE STATICALLY AND DYNAMICALLY BALANCED, OF AN AIRFOIL DESIGN, AND MUST HAVE A MINIMUM OF 4 BLADES. BEARINGS SHALL BE CAST-IRON PILLOW BLOCKS, REGREASABLE, AND HAVE AN AVERAGE 200,000 HOUR LIFE. PROVIDE WITH ELECTRICALLY COMMUTATED CONTROL. SEE SCHEDULE FOR SIZE, CAPACITY, MOTOR, AND ELECTRICAL INFORMATION.

PROVIDE WITH PREFABRICATED INSULATED ALUMINUM ROOF CURB, MOTORIZED DAMPER, BIRD SCREEN, AND EXTENDED GREASE LINES AND FITTINGS.

WASH-DOWN STYLE ELECTRIC UNIT HEATER (EUH-101):
UNIT SHALL BE UL LISTED, CORROSION RESISTANT WASHABLE CONSTRUCTION. THE MATERIALS OF THE HEATER SHALL BE NON-SPARKING ALUMINUM FOR THE FAN, STAINLESS STEEL FOR THE HEATER CASE WITH HEATING MONEL FINTUBE. THE JUNCTION BOX SHALL BE NEMA 4X. SEE SCHEDULE FOR SIZE, CAPACITY, MOTOR, AND ELECTRICAL INFORMATION.

PROVIDE WITH STAINLESS STEEL MOUNTING BRACKET AND 40 TO 90 °F, 5 °F DIFFERENTIAL WALL-MOUNTED THERMOSTAT.

MOTORIZED DAMPERS (DMP-101)
MATERIAL: 6063 T5 ALUMINUM WITH EXTRUDED VINYL BLADE SEAL. 0.125 IN MINIMUM FRAME THICKNESS, PARALLEL AIRFOIL BLADES, MAXIMUM 6 IN WIDE. 1/2 IN PLATED STEEL HEX AXLES, MOLDED SYNTHETIC BEARINGS. ELECTRIC MOTOR OPERATOR SIZED WITH A MINIMUM 150% SAFETY FACTOR WITH END POSITION SWITCHES.

LABELING:
NAMEPLATES: SHALL BE LAMINATED TWO-LAYER PHENOLIC OR DR (HIGH IMPACT) ACRYLIC WITH ENGRAVED BLACK LETTERS ON LIGHT CONTRASTING BACKGROUND. NAMEPLATE THICKNESS SHALL BE A MINIMUM OF 1/16 IN.

SELF ADHESIVE PIPE AND DUCT MARKERS: COLOR AND LETTERING SHALL CONFORM TO ASME A13.1. THE MATERIAL SHALL BE FLEXIBLE, VINYL FILM TAPE WITH PRESSURE SENSITIVE ADHESIVE BACKING AND PRINTED MARKINGS. THE THICKNESS SHALL BE A MINIMUM OF 5 MILS. THE LETTER HEIGHT SHALL BE 1/2 IN HIGH LETTERS UP TO 2 IN OUTSIDE DIAMETER OF INSULATION OR PIPE, 1 IN HIGH LETTERS FOR 2-1/2 TO 6 IN OUTSIDE DIAMETER OF INSULATION OR PIPE, AND 1-3/4 IN HIGH LETTERS FOR GREATER THAN 6 IN OUTSIDE DIAMETER OF INSULATION OR PIPE AND ALL DUCTWORK AND EQUIPMENT. THEY SHALL BE INDOOR/OUTDOOR GRADE, HAVE WEATHER AND UV RESISTANT INKS, AND PERMANENT ADHESIVE.

LOCKOUT DEVICES: LOCKOUT HASPS SHALL BE ANODIZED ALUMINUM HASP WITH ERASABLE LABEL SURFACE AT A MINIMUM OF 7-1/4 X 3 IN. VALVE LOCKOUT DEVICES SHALL BE BY BRADY CORPORATION OR MASTER LOCK COMPANY, LLC. THEY SHALL BE NYLON DEVICES PREVENTING ACCESS TO VALVE OPERATOR, ACCEPTING LOCK SHACKLE.

CONTROLS

1. CONTROLS AND SEQUENCE OF OPERATIONS INDICATED ILLUSTRATE BASIC OPERATING FUNCTIONS ONLY.
2. REVIEW DRAWINGS AND SUBMIT COMPLETE INSTALLATION DATA, INCLUDING MINOR DETAILS, TO PROVIDE PROPER OPERATION.
3. ALL TEMPERATURES AND SETPOINTS INDICATED SHALL BE CONSIDERED ADJUSTABLE WHETHER NOTED OR NOT.
4. EF-101 AND DMP-101:
   a. PROVIDE FAN CONTROL PANEL. EXHAUST FAN AND DAMPER SHALL BE INTERLOCKED. DAMPER SHALL BE PROVED OPEN PRIOR TO STARTING THE EXHAUST FAN.
   b. EXHAUST FAN SHALL RUN AS REQUIRED TO MAINTAIN THE MAXIMUM TEMPERATURE IN THE PUMP STATION AT 85°F (ADJUSTABLE) AT THE AIR VOLUME SHOWN ON THE SCHEDULES. EXHAUST FAN SHALL RUN UNTIL THE TEMPERATURE IS 5°F BELOW SETPOINT.
   c. A SELECTOR SWITCH WITH A 2-HOUR MAXIMUM TIMER SHALL BE PROVIDED TO ALLOW THE BUILDING OPERATOR TO MANUALLY SWITCH THE EXHAUST FAN ON.
5. EUH-101:
   a. ON A CALL FOR HEATING FROM THE UNIT'S SPACE THERMOSTAT, THE UNIT SHALL ENERGIZE TO MAINTAIN A SPACE TEMPERATURE OF 40°F.

PLUMBING FIXTURES, EQUIPMENT, AND MATERIALS

FLOOR DRAIN
CAST IRON FLOOR DRAIN BODY WITH ANCHOR FLANGE, INTEGRAL CLAMPING COLLAR, SEEPAGE OPENINGS, 1/2 IN PRIMER TAP WITH PLUG, GRATE SUPPORTED BUCKET, AND 12 IN ROUND DUCTILE IRON HEAVY DUTY GRATE. 6 IN DRAIN CONNECTION WITH TRAP.

TRAP PRIMER
ASSE 1044 ELECTRONIC TRAP PRIMER WITH 24 HOUR TIMER. 120V / 1 PH / 60 HZ, 6.3 WATTS. SURFACE MOUNTED CABINET. QUARTER TURN ISOLATION VALVE. ROUTE TUBING FROM TRAP PRIMER TO FLOOR DRAINS PER MANUFACTURER'S INSTRUCTIONS AND IN COMPLIANCE WITH THE PLUMBING CODE.

POTABLE AND NON-POTABLE WATER PIPING
ASTM B88 TYPE L COPPER PIPE WITH ASTM B16.22 WROUGHT COPPER SOLDER JOINT FITTINGS USING ASTM B32 SOLDER WITH TIN/ANTIMONY RATIO OF 95/5 AND NON-CORROSIVE FLUX. BURIED PIPING SHALL BE TYPE K COPPER PIPE WITH WROUGHT COPPER FITTINGS USING AWS A5.8 SILVER SOLDER. PROVIDE DIELECTRIC UNIONS WHEN CONNECTING TO DISSIMILAR MATERIALS. PROVIDE MSS SP 110, 600 PSI WOG, TWO PIECE BRONZE BODY, STAINLESS STEEL BALL, FULL PORT, TEFLON SEATS, BLOW-OUT PROOF STEM, SOLDER OR THREADED ENDS, WITH LEVER HANDLE BALL VALVES FOR ISOLATION / SHUT-OFF SERVICE.

SAN/VENT PIPING ABOVE GRADE
ASTM A74 SERVICE WEIGHT CAST IRON SOIL PIPE WITH CISPI 310 HUBLESS FITTINGS USING NEOPRENE GASKETS AND STANLESS STEEL CLAMP AND SHIELD ASSEMBLIES.

SAN/VENT PIPING BELOW GRADE
ASTM D2729 DWV TYPE PVC WITH ASTM D2855 SOLVENT WELD PVC DWV FITTINGS.

FAN SCHEDULE

MARK NUMBER	SERVES	OPERATING AIRFLOW (CFM)	STATIC PRESSURE IN WG	FAN TYPE	WHEEL DIA IN	FAN RPM	S P L 250 HZ MAX dB	MOTOR DATA HP	MOTOR DATA V/PH	MOTOR DATA DRIVE TYPE	MOTOR DATA CONTROL TYPE	BASIS OF DESIGN	NOTE
EF-101	PUMP ROOM	2,400	0.2	ROOF	19.5	583	70	0.25	120/1	DIRECT	EC	LOREN COOK ACRU-D VF	1,2,3

NOTES:
TYP. PROVIDE FANS AND MOTORS SIZED TO DELIVER NOMINAL AIRFLOW AND STATIC PRESSURE SHOWN.
1. WITH EC MOTOR FOR FAN SPEED ADJUSTMENT.
2. PROVIDE WITH MOTORIZED ISOLATION DAMPER, INSULATED ROOF CURB, AND CONTROLLER.
3. PROVIDE THERMOSTAT, CONDUIT, WIRING, DISCONNECTS, CONTROLLER, AND ALL NECESSARY APPURTENANCES AS REQUIRED TO OPERATE FAN AND DAMPERS AS A COMPLETE SYSTEM.

DIFFUSER, REGISTER, AND GRILLE SCHEDULE

MARK NUMBER	MAX AIRFLOW CFM	FACE SIZE IN (WXH)	CONNECTION SIZE, IN (WXH OR DIA)	MAX STATIC PRESS DROP IN WG	MAX NC	MOUNTING LOCATION	FRAME TYPE	MATERIAL	FINISH	BASIS OF DESIGN	NOTES
S1	2,400	30x30	28x28	0.05	30	CEILING	SURFACE	ALUMINUM	CLEAR ANODIZE	TITUS 300F	1,2,4
E1	2,400	30x30	28x28	0.05	30	CEILING	SURFACE	ALUMINUM	CLEAR ANODIZE	TITUS 350ZFL	1,3

NOTES:
1. COORDINATE WITH CEILING FRAMING TO PROVIDE BLOCKOUT FOR GRILLES AS REQUIRED TO NOT INTERRUPT FRAMING.
2. ADJUSTABLE DOUBLE DEFLECTION GRILLE WITH 3/4 IN BLADE SPACING AND FRONT BLADES PARALLEL TO THE HEIGHT (H) DIMENSION.
3. SINGLE DEFLECTION GRILLE WITH 3/4 IN BLADE SPACING AND FIXED BLADES SET AT 0 DEG AND PARALLEL TO THE WIDTH (W) DIMENSION.
4. PROVIDE SQUARE TO ROUND ADAPTOR.

UNIT HEATER SCHEDULE

MARK NUMBER	UNIT CONFIGURATION	SENS CAP MBH	NOMINAL AIRFLOW CFM	COIL E A T DEG F	ELECTRIC COIL DATA KW	ELECTRIC COIL DATA TEMP RISE	MOTOR DATA V/PH	MOTOR DATA HP	MOTOR DATA V/PH	BASIS OF DESIGN	NOTE
EUH-101	HORIZONTAL	6.8	405	40	2	21	208/3	1/15	208/3	CHROMALOX HD3D	1,2,3

NOTES:
TYP. PROVIDE UNIT MOUNTED MOTOR STARTER AND DISCONNECT.
1. PROVIDE WASH-DOWN STYLE, CORROSION RESISTANT ELECTRIC UNIT HEATER.
2. PROVIDE WALL MOUNTED THERMOSTAT, CONDUIT, AND WIRING.
3. PROVIDE WALL MOUNTING BRACKET.

MOTORIZED DAMPER SCHEDULE

MARK NUMBER	SYSTEM SERVED	SERVICE TYPE	DAMPER CONFIGURATION	BLADE TYPE	MAX AIR VELOCITY FPM	NOMINAL SIZE L x W IN	ACTUATOR TYPE	BASIS OF DESIGN	NOTE
DMP-101	INTAKE	INTAKE	PARALLEL	AIRFOIL	500	40 x 36	ELEC	RUSKIN CD-50	1

NOTES:
1. PROVIDE WITH SPRING OPEN, POWER CLOSED DAMPER ACTUATOR AND END SWITCHES AS REQUIRED TO MEET CONTROL SEQUENCE.

LOUVER SCHEDULE

MARK NUMBER	ELEVATION N/S/E/W	SYSTEM SERVED	SERVICE TYPE	LOUVER TYPE	NOMINAL AIRFLOW CFM	MAX VEL @ FREE AREA FPM	MAX PRESS DROP IN WG	LOUVER MATERIAL	SCREEN TYPE	SIZE H x W x D IN	BASIS OF DESIGN	NOTE
LVR-101	SOUTH	PUMP ROOM	INTAKE	FIXED	2400	500	0.05	ALUMINUM	BIRD	36 x 40 x 4	RUSKIN 375DX	1

NOTES:
TYP. COORDINATE FINAL FINISHED FACE SIZE, MOUNTING, COLOR AND WALL ELEVATIONS WITH ARCHITECT PRIOR TO FURNISHING MATERIALS.
1. PROVIDE WITH FLATTENED ALUMINUM BIRD SCREEN.

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JEFFREY ALAN LEWIS — STATE OF WASHINGTON — 21500 — REGISTERED PROFESSIONAL ENGINEER — 7/8/2022

McCORMICK
CLOSE TO WHAT COUNTS

PORT ORCHARD 660 RESERVOIR

HVAC SCHEDULES AND SPECIFICATIONS

0 1" 2"

FILENAME 10172116-00-U.RVT
SCALE NONE

SHEET M50-03

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ONE-LINE, POWER, AND LIGHTING SYMBOLOGY

X 20A 3P OR X 100AF 80AT 3P — LOW VOLTAGE CIRCUIT BREAKER (CB). RATING AND NO. OF POLES AS SHOWN. WHEN SPECIFIC TYPE, OTHER THAN MCCB, IS REQUIRED, X INDICATES TYPE.

TYPES:
- MCCB - MOLDED CASE
- ICCB - INSULATED CASE
- LVP - LOW VOLTAGE POWER
- MCP - MOTOR CIRCUIT PROTECTOR (RATING PER CONNECTED LOAD)

TRIP UNIT:
- L - LONG TIME PICKUP
- S - SHORT TIME PICKUP
- I - INSTANTANEOUS PICKUP
- G - GROUND FAULT PICKUP
- A - ARC ENERGY REDUCTION MODE

X — INTERLOCK: X - INDICATES TYPE

TYPES:
- E - ELECTRICAL
- M - MECHANICAL
- K - KEY

GFP — GROUND FAULT PROTECTION

52 — MEDIUM VOLTAGE CIRCUIT BREAKER

FUSE, RATING, AND NUMBER OF FUSES AS NOTED

FUSED CUTOUT, CURRENT RATING, FUSE RATING, AND QUANTITY AS NOTED

FUSIBLE SWITCH, CURRENT RATING, FUSE RATING, AND QUANTITY AS NOTED (3 POLE UON)

NON-FUSED SWITCH, CURRENT RATING, AND NUMBER OF POLES AS NOTED (3 POLE UON)

DISCONNECT OR DRAWOUT CONNECTION

A C B & A C B — MAGNETIC MOTOR STARTER AND SEPARATELY MOUNTED COMBINATION MAGNETIC MOTOR STARTER

D C & D C — MOTOR/LOAD CONTROLLER AND SEPARATELY MOUNTED MOTOR/LOAD CONTROLLER WITH SHORT CIRCUIT PROTECTION AND DISCONNECT

MOTOR STARTER AND CONTROLLER SUBSCRIPTS:

A - MAGNETIC STARTER NEMA SIZE

B - STARTER TYPE
- NONE - FULL VOLTAGE NON-REVERSING (FVNR)
- FVR - FULL VOLTAGE REVERSING
- 2S - TWO SPEED
- RVAT - REDUCED VOLTAGE AUTO TRANSFORMER

C - CONTROL DIAGRAM OR CONTROLS SCHEDULE NUMBER (IF REQUIRED)

D - CONTROLLER TYPE
- VFD - VARIABLE FREQUENCY DRIVE
- SS - SOLID STATE
- CONT - CONTACTOR

SEPARATELY MOUNTED COMBINATION MOTOR STARTER OR CONTROLLER; SEE ELECTRICAL ONE - LINE DIAGRAM OR SCHEDULE FOR DESCRIPTION

SEPARATELY MOUNTED MOTOR STARTER OR CONTROLLER; SEE ELECTRICAL ONE-LINE DIAGRAM OR SCHEDULE FOR DESCRIPTION.

X — NON-FUSED SAFETY SWITCH, 30A, 3P, X INDICATES AMP RATING GREATER THAN 30A

X/Y — FUSED SAFETY SWITCH, 3P, X INDICATES AMP RATING GREATER THAN 30A, Y INDICATES FUSE SIZE

CB — SEPARATELY MOUNTED CIRCUIT BREAKER; SEE ELECTRICAL ONE - LINE DIAGRAM OR SCHEDULE FOR DESCRIPTION

7 1/2 OR HP — MOTOR WITH DESIGN HORSEPOWER (WHEN INDICATED)

G — GENERATOR

ATS — TRANSFER SWITCH, CURRENT RATING, AND NUMBER OF POLES AS NOTED

ATS - AUTOMATIC
MTS - MANUAL

AUTOMATIC TRANSFER SWITCH BYPASS ISOLATION TYPE

TRANSFORMER
- Δ 3-PHASE, 3-WIRE DELTA CONNECTION
- Y 3-PHASE, 4-WIRE GROUNDED WYE CONNECTION

LP100 208/120V 3Ø 4W — SWITCHBOARD OR PANELBOARD; NAME, VOLTAGE, PHASE, NUMBER OF WIRES WHEN INDICATED

100 KVA — NON-MOTOR LOAD WITH DESIGN KVA, KW, OR AMP

VOLTAGE TRANSFORMER (VT, PT, OR CPT)

CURRENT TRANSFORMER (CT)

WH — UTILITY WATT-HOUR METER PER UTILITY REQUIREMENTS

DMP — DIGITAL METERING PACKAGE

GROUND

LIGHTNING ARRESTER

SPD — LOW VOLTAGE SURGE PROTECTIVE DEVICE

CS — CONTROL STATION

IC — INSTRUMENTATION/CONTROL DEVICE

CONTROL PANEL INTEGRAL OR PROVIDED WITH ASSOCIATED EQUIPMENT

CONTROL PANEL WITH DISCONNECT SWITCH INTEGRAL OR PROVIDED WITH ASSOCIATED EQUIPMENT

J — JUNCTION OR PULL BOX

PANELBOARD (250V TO 600V)

PANELBOARD (LESS THAN 250V)

X — ELECTRICAL EQUIPMENT ENCLOSURE: SWITCHBOARD, MOTOR CONTROL CENTER, CONTROL PANEL, TRANSFORMER OR OTHER EQUIPMENT AS INDICATED. ESTIMATED SIZE AS INDICATED. WHEN USED X INDICATES EQUIPMENT TYPE.

EQUIPMENT TYPES:
- ATS - AUTOMATIC TRANSFER SWITCH
- CP - CONTROL PANEL
- MTS - MANUAL TRANSFER SWITCH
- MCC - MOTOR CONTROL CENTER
- UPS - UNINTERRUPTIBLE POWER SUPPLY
- VFD - VARIABLE FREQUENCY DRIVE
- SB - SWITCHBOARD
- SG - SWITCHGEAR
- T - TRANSFORMER

Z X Y — CEILING/PENDANT/BOLLARD MOUNTED LUMINAIRE, LAMP TYPE AS SPECIFIED

Z X Y — CEILING/PENDANT/BOLLARD MOUNTED LUMINAIRE, LAMP TYPE AS SPECIFIED, EMERGENCY (INTERNAL OR EXTERNAL POWER SOURCE AS INDICATED)

X Z Y — WALL MOUNTED LUMINAIRE, LAMP TYPE AS SPECIFIED

X Z Y — WALL MOUNTED LUMINAIRE, LAMP TYPE AS SPECIFIED, EMERGENCY (INTERNAL OR EXTERNAL POWER SOURCE AS INDICATED)

X Z Y — WALL MOUNTED FLOOD LUMINAIRE, LAMP TYPE AS SPECIFIED

X Z Y — POLE/STANCHION MOUNTED LUMINAIRE, LAMP TYPE AS SPECIFIED

X Z Y — POLE/STANCHION MOUNTED LUMINAIRE, LAMP TYPE AS SPECIFIED, EMERGENCY (INTERNAL OR EXTERNAL POWER SOURCE AS INDICATED

X Z Y — POLE/STANCHION MOUNTED FLOOR LUMINAIRE, LAMP TYPE AS SPECIFIED

Z Z X Y — CEILING/PENDANT MOUNTED LUMINAIRE, LAMP TYPE AS SPECIFIED

Z X Y — WALL MOUNTED LUMINAIRE, LAMP TYPE AS SPECIFIED

Z X Y — CEILING/PENDANT MOUNTED LUMINAIRE, LAMP TYPE AS SPECIFIED, ALL OR PARTIAL EMERGENCY (INTERNAL OR EXTERNAL POWER SOURCE AS INDICATED

Z X Y — WALL MOUNTED LUMINAIRE, LAMP TYPE AS SPECIFIED, ALL OR PARTIAL EMERGENCY (INTERNAL OR EXTERNAL POWER SOURCE AS INDICATED

X Y — EMERGENCY LIGHT, NUMBER OF ATTACHED HEADS AS SHOWN

X Y — EMERGENCY LIGHT, REMOTE MOUNTED HEAD

X Y X Y — DOUBLE-FACED CEILING OR WALL MOUNTED EXIT LIGHT; DIRECTIONAL ARROWS (IF REQUIRED) AS INDICATED ON PLANS

X Y X Y — SINGLE-FACED CEILING OR WALL MOUNTED EXIT LIGHT; DIRECTIONAL ARROWS (IF REQUIRED) AS INDICATED ON PLANS

LIGHTING FIXTURE SUBSCRIPTS:
- X - INDICATES LUMINAIRE TYPE PER LUMINAIRE SCHEDULE
- Y - INDICATES CIRCUIT NUMBER FROM PANELBOARD
- Z - INDICATES CONTROLLING SWITCH (IF REQUIRED)
- NL - NIGHT LIGHT UNSWITCHED

$ Y X — WALL SWITCH

SUBSCRIPTS:
X - INDICATES TYPE
- NONE - SINGLE POLE
- 2 - DOUBLE POLE
- 3 - THREE-WAY
- 4 - FOUR-WAY
- K - KEY SWITCH
- P - PILOT LIGHT
- L - LIGHTED HANDLE
- DM - DIMMING
- MC - MOMENTARY CONTACT
- T - TIMER

Y - INDICATES CONTROLLING SWITCH (IF REQUIRED)

$ Y X — MANUAL MOTOR STARTER

SUBSCRIPTS:
X - INDICATES TYPE
- HP - HORSEPOWER RATED
- TE - HORSEPOWER RATED WITH THERMAL ELEMENT
- FT - HORSEPOWER RATED WITH FUSETRON FUSE

Y - INDICATES SWITCH TYPE
- NONE - TOGGLE SWITCH TYPE
- R - ROTARY SWITCH TYPE

PC — PHOTOCELL

TC — TIME CLOCK

$ OSX OR OSX — LIGHTING CONTROL OCCUPANCY SENSOR, WALL MOUNTED, X INDICATES SPECIFIC TYPE AS SPECIFIED

OSX — LIGHTING CONTROL OCCUPANCY SENSOR, CEILING MOUNTED, X INDICATES SPECIFIC TYPE AS SPECIFIED

X — ROOM/AREA LIGHTING CONTROL TYPE, SEE LIGHTING CONTROL SCHEDULE FOR REQUIREMENTS

PLUG-IN RECEPTACLE STRIP, QUANTITY AND SPACING OF RECEPTACLES AS NOTED OR SPECIFIED

X Y — SPECIAL-PURPOSE RECEPTACLE AS DEFINED ON PLANS

X Y OR X Y — TWO RECEPTACLES IN 2-GANG BOX UNDER COMMON COVER PLATE

X Y — DUPLEX RECEPTACLE

X Y — SIMPLEX RECEPTACLE

X Y — RECESSED FLOOR MOUNTED BOX, QUANTITY AND TYPE OF RECEPTACLES AS INDICATED

SUBSCRIPTS:

X - INDICATES TYPE
- GFCI - GROUND FAULT CIRCUIT INTERRUPTER
- IG - ISOLATED GROUND
- TR - TAMPER RESISTANT
- PLH - PLUG LOAD HALF CONTROLLED
- PLD - PLUG LOAD DUAL CONTROLLED
- USB - USB CHARGING STATION
- SPD - SURGE PROTECTIVE DEVICE

Y - INDICATES CIRCUIT NUMBER FROM PANELBOARD

CONDUIT TURNING UP

CONDUIT TURNING DOWN

(#X) — HOMERUN TO SOURCE (E.G. PANELBOARD, MCC)
NUMBER IN PARENTHESES REPRESENTS CONDUCTOR SIZE OTHER THAN #12
SINGLE PHASE: 2#12, 1#12G IN 3/4"C
THREE PHASE: 3#12, 1#12G IN 3/4"C
UNLESS OTHERWISE NOTED, CONDUCTOR SIZE IS FOR ENTIRE CIRCUIT, SOURCE TO LAST DEVICE. ALSO, SEE ONE LINE DIAGRAM FOR CIRCUIT REQUIREMENTS

CONDUIT CONNECTION TO EQUIPMENT

CIRCUIT RUN BETWEEN DEVICES EXPOSED IN NON-ARCHITECTURALLY FINISHED AREAS; CONCEALED IN ARCHITECTURALLY FINISHED AREAS. CONDUIT AND CONDUCTOR SIZES SHALL BE THE SAME AS THE HOMERUN FOR THE CIRCUIT.

CONDUIT RUN BETWEEN DEVICES CONCEALED IN NON-ARCHITECTURALLY FINISHED AREAS OR UNDER FLOOR SLAB. CONDUIT AND CONDUCTOR SIZES SHALL BE THE SAME AS THE HOMERUN FOR THE CIRCUIT.

(#X) — CIRCUIT HASH MARKS (WHEN INDICATED); LONG, SHORT, SINGLE DOT, AND DOUBLE DOT REPRESENT PHASE, NEUTRAL, EQUIPMENT GROUND, AND ISOLATED EQUIPMENT GROUND, RESPECTIVELY. X REPRESENTS CONDUCTOR SIZE OTHER THAN #12 IN 3/4" CONDUIT.

CIRCUIT CONTINUATION

CONDUIT STUBBED OUT AND CAPPED

CORD AND PLUG CONNECTION

XXX OR XXX — CONDUIT TAG OR CIRCUIT NUMBER - WIRE AND CONDUIT SIZE AS SPECIFIED IN CIRCUIT SCHEDULE ON THE SHEETS

GROUND CABLE

GROUND ROD

GENERAL NOTES:

1. THIS IS A STANDARD ELECTRICAL SYMBOLOGY SHEET. NOT ALL SYMBOLS MAY BE USED ON THIS PROJECT.
2. SCREENING OR SHADING OF WORK IS USED TO INDICATE EXISTING COMPONENTS OR TO DE-EMPHASIZE PROPOSED IMPROVEMENTS TO HIGHLIGHT SELECTED TRADE WORK. REFER TO CONTEXT OF EACH SHEET FOR USAGE.
3. SEE P&ID LEGEND SHEET FOR PROJECT SPECIFIC EQUIPMENT SYMBOLS, EQUIPMENT ABBREVIATIONS, AND PIPING SYSTEM ABBREVIATIONS.

HDR

ISSUE	DATE	DESCRIPTION
	7/2022	BID SET

PROJECT MANAGER	L. NOLAN
CIVIL ENG	J. KNOLL
WATER ENG	L. CHENG
STRUCTURAL ENG	M. HIJAZI
ELECTRICAL ENG	I. RINCON
INSTR. ENG	M.HUTSON
PROJECT NUMBER	10172116

ISABEL C. RINCON — STATE OF WASHINGTON — 14197 — REGISTERED PROFESSIONAL ENGINEER
07-01-2022

MCCORMICK — CLOSE TO WHAT COUNTS

PORT ORCHARD 660 RESERVOIR

ELECTRICAL LEGEND 1

0 1" 2"

FILENAME E1-01.dwg
SCALE AS NOTED

SHEET E1-01

COMMUNICATION SYMBOLOGY

- WALL MOUNTED TELEPHONE OUTLET
- WALL MOUNTED DATA OUTLET
- WALL MOUNTED COMBINATION TELEPHONE AND DATA OUTLET
- RECESSED FLOOR MOUNTED TELEPHONE OUTLET
- RECESSED FLOOR MOUNTED DATA OUTLET
- RECESSED FLOOR MOUNTED COMBINATION TELEPHONE AND DATA OUTLET

AUDIO/VISUAL SYMBOLOGY

- TV — TELEVISION OUTLET
- S — CEILING MOUNT SPEAKER
- S X — WALL MOUNT SPEAKER
  SPEAKER SUBSCRIPTS:
  X - INDICATES HEIGHT
- H — HORN TYPE TRANSDUCER
- VC — VOLUME CONTROL
- PAHE — HEAD END EQUIPMENT
- M — FLOOR MOUNTED MICROPHONE JACK
- M — WALL MOUNTED MICROPHONE JACK

SECURITY SYMBOLOGY

- DOOR POSITION SWITCH
- COMBINATION ELECTRIC DOOR STRIKE AND POSITION SWITCH
- R P — PROXIMITY CARD READER
- R K — PROXIMITY CARD READER WITH KEYPAD
- M — DUAL TECHNOLOGY MOTION DETECTOR
- REQUEST TO EXIT MOTION DETECTOR
- REQUEST TO EXIT PUSH BUTTON
- G — GLASS BREAK DETECTOR
- PTZ — CCTV CAMERA
  PAN/TILT/ZOOM WHEN INDICATED
- SEC — SECURITY EQUIPMENT CABINET
- R — REMOTE KEYPAD/CONTROL STATION

EMERGENCY ALARM SYMBOLOGY

- E — ALARM BELL
- E — ALARM HORN
- E — ALARM FLASHING LIGHT
- E — ALARM BELL AND FLASHING LIGHT COMBINATION UNIT
- E — ALARM HORN AND FLASHING LIGHT COMBINATION UNIT
- E — PUSHBUTTON OR PULLSTATION

SITE SYMBOLOGY

- EXTERIOR PAD MOUNTED TRANSFORMER
- POLE - MOUNTED TRANSFORMER
- X / Y — ELECTRICAL HANDHOLE OR MANHOLE
  Y- MHX OR HHX
  X - INDICATES SEQUENCE NUMBER
- X / Y — POLE/STANCHION MOUNTED FLOOD LUMINAIRE, LAMP TYPE AS SPECIFIED
- X / Y — POLE MOUNTED AREA OR ROADWAY LUMINAIRE, LAMP TYPE AS SPECIFIED
- X / Y — HIGH MAST LIGHTING, NUMBER OF LUMINAIRES AS SPECIFIED
  LIGHTING FIXTURE SUBSCRIPTS:
  X - INDICATES LUMINAIRE TYPE PER LUMINAIRE SCHEDULE
  Y - INDICATES CIRCUIT NUMBER FROM PANELBOARD
- POWER POLE
- DOWNGUY
- E — UNDERGROUND (UNO) ELECTRICAL AND COMMUNICATION SYSTEMS PATHWAY
- OHE — OVERHEAD ELECTRICAL AND COMMUNICATION SYSTEMS PATHWAY

CONTROL SYMBOLOGY

- ELECTRICAL CONNECTION
- OR OR — NO ELECTRICAL CONNECTION
- SV OR — SOLENOID VALVE
- X / Y — CONTROL/RELAY COIL:
  X-INDICATES TYPE
  Y-INDICATES LOOP NUMBER, WHEN USED
  TYPES:
  CR-CONTROL RELAY — TC-TIME CLOCK
  PC-PHOTOCELL — LC-LIGHTING CONTACTOR
  DP-DEFINITE PURPOSE — TR-TIMING RELAY
  M-MOTOR STARTER
- NORMALLY OPEN CONTACT (N.O.)
- NORMALLY CLOSED CONTACT (N.C.)
- NORMALLY OPEN TIME DELAY RELAY CONTACT WITH TIME DELAY ON CLOSING AFTER COIL IS ENERGIZED
- NORMALLY CLOSED TIME DELAY RELAY CONTACT WITH TIME DELAY ON OPENING AFTER COIL IS ENERGIZED
- NORMALLY OPEN TIME DELAY RELAY CONTACT WITH TIME DELAY ON OPENING AFTER COIL IS DE-ENERGIZED
- NORMALLY CLOSED TIME DELAY RELAY CONTACT WITH TIME DELAY ON CLOSING AFTER COIL IS DE-ENERGIZED
- NORMALLY OPEN TEMPERATURE SWITCH; CLOSE ON RISING TEMPERATURE
- NORMALLY CLOSED TEMPERATURE SWITCH; OPEN ON RISING TEMPERATURE
- NORMALLY OPEN FLOW SWITCH; CLOSE ON INCREASING FLOW
- NORMALLY CLOSED FLOW SWITCH; OPEN ON INCREASING FLOW
- NORMALLY OPEN LEVEL SWITCH, CLOSE ON RISING LEVEL
- NORMALLY CLOSED LEVEL SWITCH, OPEN ON RISING LEVEL
- NORMALLY OPEN PRESSURE SWITCH, CLOSE ON INCREASING PRESSURE
- NORMALLY CLOSED PRESSURE SWITCH, OPEN ON INCREASING PRESSURE
- NORMALLY OPEN LIMIT SWITCH, CLOSE ON REACHING LIMIT
- NORMALLY CLOSED LIMIT SWITCH, OPEN ON REACHING LIMIT
- MICROPROCESSOR (PLC, RTU, ETC.) OUTPUT
- MICROPROCESSOR (PLC, RTU, ETC.) INPUT
- FIELD WIRING EXTERNAL TO CONTROL PANEL
- OFF / HAND / AUTO — XOO / OOX — 3 POSITION SELECTOR SWITCH, MAINTAINED CONTACTS; UNLESS OTHERWISE NOTED, 2-POSITION SIMILAR
- NORMALLY OPEN PUSHBUTTON, MOMENTARY CONTACT UNLESS OTHERWISE NOTED
- NORMALLY CLOSED PUSHBUTTON, MOMENTARY CONTACT UNLESS OTHERWISE NOTED

CONTROL SYMBOLOGY

- X — INDICATING LIGHT: X INDICATES LENS COLOR
- X — PUSH TO TEST INDICATING LIGHT: X INDICATES LENS COLOR
  LENS COLORS:
  R - RED — Y - YELLOW
  G - GREEN — W - WHITE
  B - BLUE — A - AMBER
- THERMAL OVERLOAD ELEMENT
- OL / (X) — THERMAL OVERLOAD RELAY CONTACT. WHEN SHOWN X INDICATES QUANTITY.
- CPT — CONTROL POWER TRANSFORMER (CPT)
- RTM — RUN TIME METER

ISSUE	DATE	DESCRIPTION
	7/2022	BID SET

PROJECT MANAGER	L. NOLAN
CIVIL ENG	J. KNOLL
WATER ENG	L. CHENG
STRUCTURAL ENG	M. HIJAZI
ELECTRICAL ENG	I. RINCON
INSTR. ENG	M.HUTSON
PROJECT NUMBER	10172116

ISABEL C. RINCON — STATE OF WASHINGTON — 24197 — REGISTERED PROFESSIONAL ENGINEER
07-01-2022

MCCORMICK — CLOSE TO WHAT COUNTS

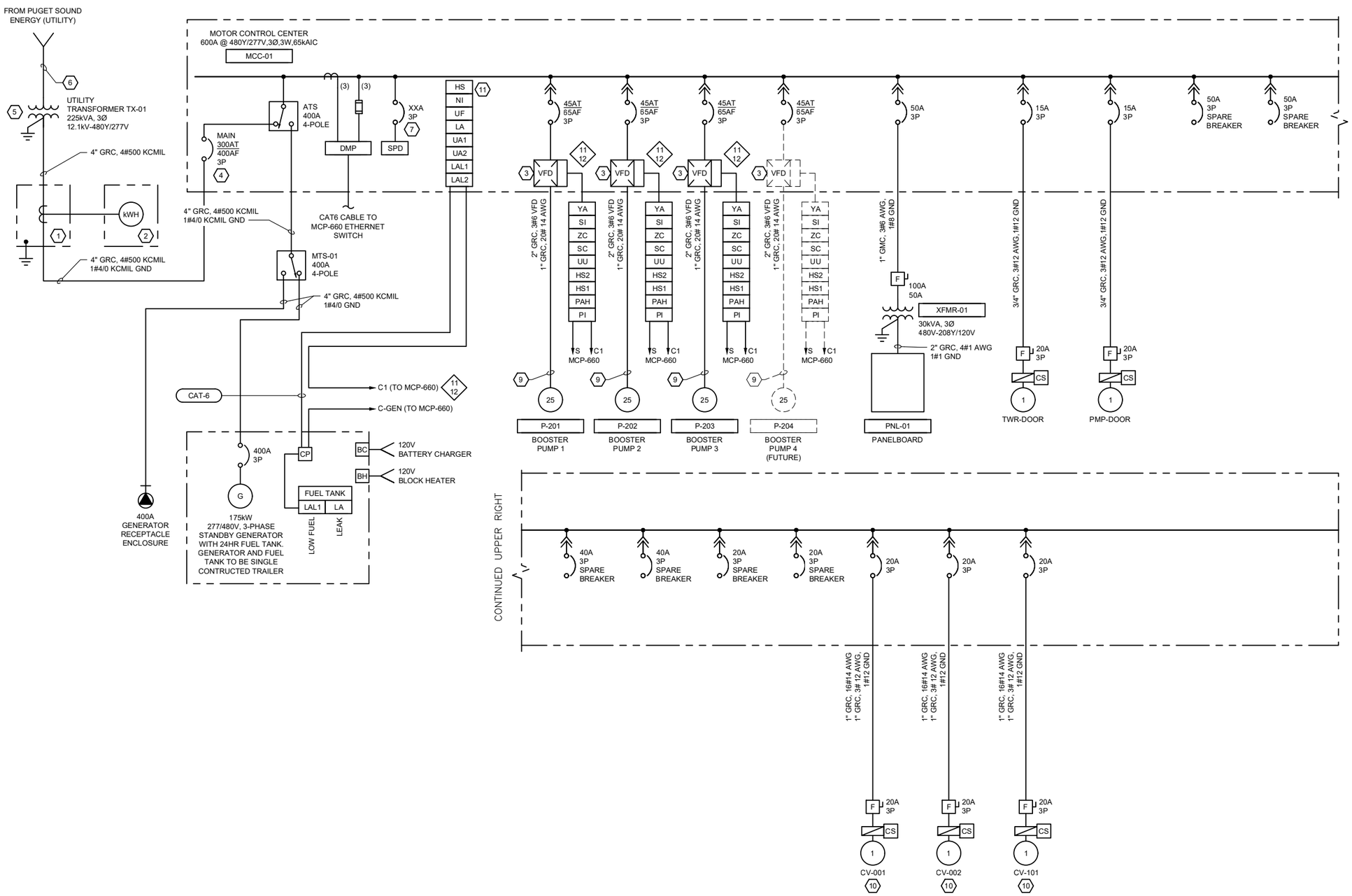
PORT ORCHARD 660 RESERVOIR

ELECTRICAL LEGEND 2

0 1" 2"

FILENAME E1-02.dwg
SCALE AS NOTED

SHEET E1-02



ABBREVIATIONS:

ATS	AUTOMATIC TRANSFER SWITCH
DMP	DIGITAL METERING PACKAGE
MTS	MANUAL TRANSFER SWITCH
SPD	SURGE PROTECTION DEVICE
VFD	VARIABLE FREQUENCY DEVICE

NOTES:

1. SEE PANELBOARD SCHEDULES FOR COMPLETE LIST OF PANELBOARD LOADS AND BREAKERS.
2. SEE SPECIFICATION SECTION 26 05 26 FOR GROUNDING REQUIREMENTS.
3. COORDINATE WITH ELECTRIC UTILITY TO PROVIDE ALL INTERIOR AND EXTERIOR ABOVE GROUND AND BELOW GROUND ELECTRICAL SYSTEM COMPONENTS TO MEET UTILITY REQUIREMENTS FOR A COMPLETE, OPERATIONAL, FUNCTIONAL PUMP STATION BUILDING ELECTRICAL SYSTEM THAT COMPLIES WITH NFPA 70 AND NEC.

KEYNOTES: (X)

1. PROVIDE UTILITY METERING CURRENT TRANSFORMER CABINET PER UTILITY REQUIREMENTS. UTILITY METERING CURRENT TRANSFORMERS IN CABINET. PROVIDE CT WIRING AS REQUIRED BY UTILITY.
2. UTILITY METER BASE AND UTILITY METER.
3. VFD WILL BE EATON "DG1" OR EQUIVALENT ROCKWELL BRAND.
4. 100% RATED BREAKER.
5. OBTAIN AVAILABLE FAULT CURRENT FROM PUGET SOUND ENERGY.
6. FOR USE BY PUGET SOUND ENERGY.
7. SIZE CIRCUIT BREAKER DISCONNECT AS REQUIRED TO ACCOMMODATE SPD.
8. PROVIDE 3% LOAD REACTOR WITH EACH VFD.
9. VFD RATED CABLE, PER MANUFACTURER'S RECOMMENDATION.
10. SEE SHEET C1-106 FOR ELECTRICAL CONDUIT ROUTING AND LOCATIONS.
11. GENERATOR REMOTE ANNUNCIATOR TO BE MOUNTED ADJACENT TO MCC.
12. PROVIDE 1 IN CONDUIT WITH MULTI-CONDUCTOR CONTROL CABLE FOR CONTROL SIGNALS. MINIMUM 10#14 AWG.
13. PROVIDE 1 IN CONDUIT WITH INSTRUMENTATION ANALOG CABLE FOR 4-20 mA SIGNALS, MINIMUM 2#16 TWISTED SHIELDED CABLE.
14. PROVIDE CAT6 DIGITAL INSTRUMENTATION CABLE IN 1 IN CONDUIT.

CONTROL SIGNAL TABLE:

YA	- FAULT
SI	- SPEED
ZC	- CALL TO RUN
SC	- SPEED COMMAND
UU	- MULTIPLE SIGNALS
HS2	- HAND
HS1	- AUTO
PAH	- PRESS HIGH
PI	- PRESSURE

GENERATOR:

HS	- AUTO
NI	- RUNNING
UF	- GEN FAIL
LA	- LEAK
UA1	- GEN FAULT
UA2	- BATTERY FAULT
LAL1	- LOW FUEL
LAL2	- LOW OIL

ISSUE	DATE	DESCRIPTION
	7/2022	BID SET

PROJECT MANAGER	L. NOLAN
CIVIL ENG	J. KNOLL
WATER ENG	L. CHENG
STRUCTURAL ENG	M. HIJAZI
ELECTRICAL ENG	I. RINCON
INSTR. ENG	M.HUTSON
PROJECT NUMBER	10172116

ISABEL C. RINCON — STATE OF WASHINGTON — 24197 — REGISTERED PROFESSIONAL ENGINEER
07-01-2022

MCCORMICK — CLOSE TO WHAT COUNTS

PORT ORCHARD 660 RESERVOIR

ONE-LINE DIAGRAM

0 1" 2"

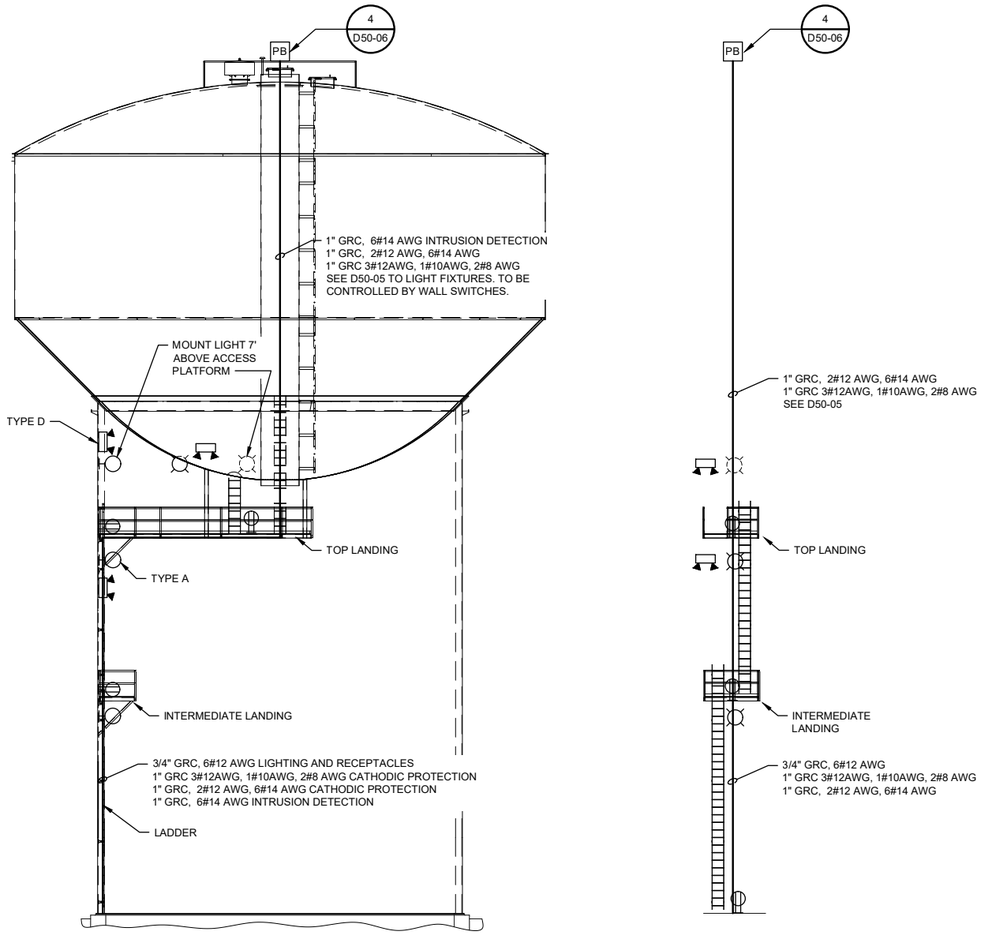
FILENAME E1-03.dwg
SCALE AS NOTED

SHEET E1-03

LIGHTING SCHEDULE						
TYPE	MANUFACTURER	MANUFACTURER ID	LAMP	WATTS	VOLTAGE	COMMENTS
A	RAB	VXBRLED26NDG	LED	27	120VAC	JELLY JAR - WALL MOUNTED, VAPOR TIGHT
B	RAB	SHARK 4-36NW_D10	LED	37	120VAC	
C	EXITLIGHT CO.	WLTCOMBO	LED		120/277VAC	RED OR GREEN
D	EXITLIGHT CO.	EL-STLED	LED	5	120/277VAC	BATTERY BACKUP BUGEYE LIGHT

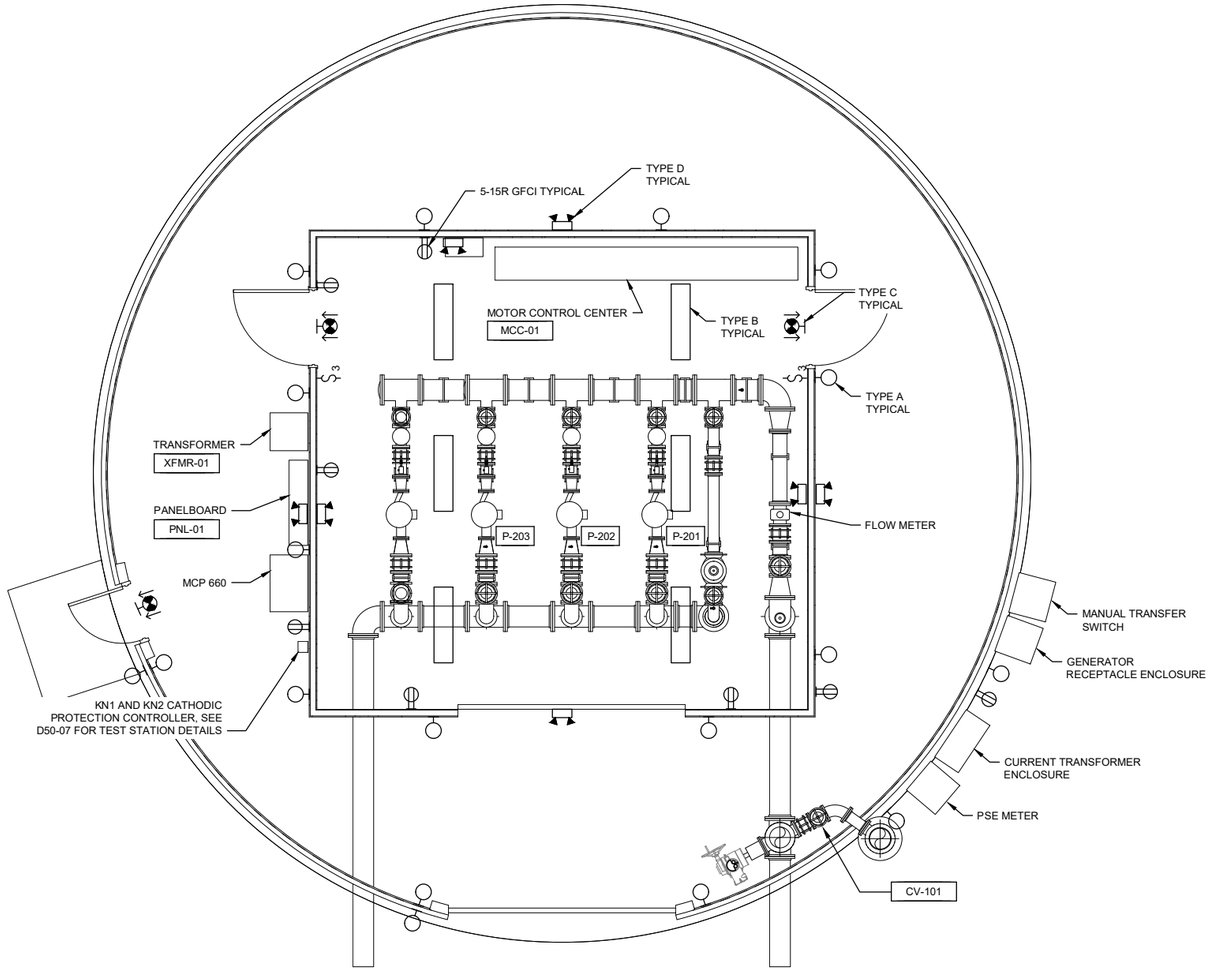
NOTES:

1. ALL RECEPTACLES SHALL BE GFCI TYPE WITH WEATHERPROOF COVER.
2. SEAL CONDUIT OPENING INTO TANK AND CONDUIT OPENING INTO TEST STATION WITH EXPANDABLE POLYURETHANE FOAM.
3. PROVIDE DETAILED LIGHTING AND LIGHTING CONTROLS DESIGN AND LIGHTING SYSTEM COMPONENTS.
4. EMERGENCY LIGHTING SHALL MEET NFPA 101 LIFE AND SAFETY PROVIDING MINIMUM 1 FC ON THE BUILDING EGRESS PATH.



ACCESS LADDER LIGHTING AND RECEPTACLE PLAN - ELEVATION

SCALE: 1:120



PUMP HOUSE LIGHTING AND RECEPTACLE PLAN

SCALE: 1/4"=1'-0"

CALL 48 HOURS
BEFORE YOU DIG
1-800-424-5555

ISSUE	DATE	DESCRIPTION
	7/2022	BID SET

PROJECT MANAGER	L. NOLAN
CIVIL ENG	J. KNOLL
WATER ENG	L. CHENG
STRUCTURAL ENG	M. HIJAZI
ELECTRICAL ENG	I. RINCON
INSTR. ENG	M.HUTSON
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ISABEL C. RINCON
STATE OF WASHINGTON
44197
REGISTERED
PROFESSIONAL ENGINEER
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CLOSE TO WHAT COUNTS

PORT ORCHARD 660 RESERVOIR

ELECTRICAL
LIGHTING AND RECEPTACLE PLAN

0 1" 2"

FILENAME E1-04.dwg
SCALE AS NOTED

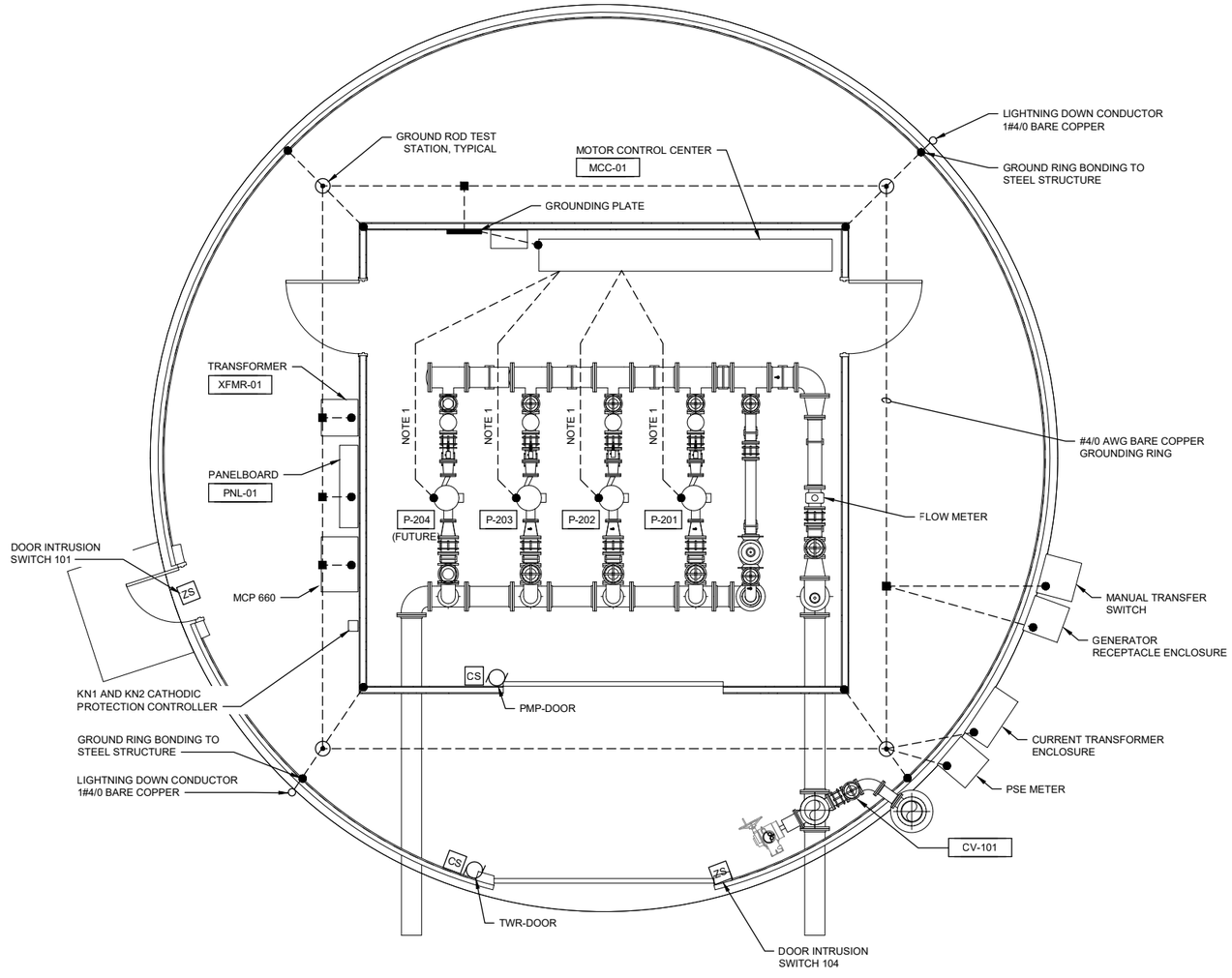
SHEET
E1-04

LEGEND:

- ■ GROUNDING RING CONNECTION
- ● EQUIPMENT GROUNDING CONNECTION

NOTES:

1. RESISTANCE FROM GROUNDING RING TO GROUND TO NOT EXCEED 25 OHMS. CONTRACTOR TO INSTALL SUPPLEMENTAL ELECTRODE AS REQUIRED. COMPLY WITH REQUIREMENTS OF SPECIFICATION 26 05 26 GROUNDING AND BONDING.
2. CLASS 2 LIGHTNING PROTECTION MATERIALS.
3. CONDUIT TO BE EMBEDDED IN FLOOR SLAB. BOOSTER PUMP CONDUIT TO BE 2".
4. COMPLY WITH REQUIREMENTS OF SPECIFICATION SECTION 26 41 13 LIGHTNING PROTECTION.



PUMP STATION GROUNDING PLAN

SCALE: 1/4"=1'-0"

CALL 48 HOURS
BEFORE YOU DIG
1-800-424-5555

ISSUE	DATE	DESCRIPTION
	7/2022	BID SET

PROJECT MANAGER	L. NOLAN
CIVIL ENG	J. KNOLL
WATER ENG	L. CHENG
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ELECTRICAL ENG	I. RINCON
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PROJECT NUMBER	10172116

ISABEL C. RINCON — STATE OF WASHINGTON — 44197 — REGISTERED PROFESSIONAL ENGINEER
07-01-2022

MCCORMICK
CLOSE TO WHAT COUNTS

PORT ORCHARD 660 RESERVOIR

PUMP STATION GROUNDING AND LIGHTNING PROTECTION PLAN

0 1" 2"

FILENAME	E1-05.dwg
SCALE	AS NOTED

SHEET E1-05

NAME: **MCC-01** v 1.1

VOLTAGE: **480** | NEUTRAL BUS: **NO** | LOCATION: **ELECTRICAL BLDG**

GROUND BUS: **NO** | FED FROM: **Utility Transformer**

PHASE: **3** | MAIN BREAKER SIZE: **300** | FEED (OCPD SIZE): **600**

WIRE: **3** | MINIMUM BUS SIZE: **600 AMPS** | ENCLOSURE TYPE: **NEMA 1**

HERTZ: **60** | FAULT CURRENT BRACING: **65kA IC AMPS, RMS SYMMETRICAL**

ASSET NUMBER	EQUIPMENT NAME OR LOAD DESCRIPTION	CONNECTED LOAD																	
		LOAD SIZE	LOAD UNIT	VOLT	PH	HP	AMPS	Working=1 Standby=0	Demand Factor	Effic.	p.f.	KVA	LOAD TYPE	LTG	RCPT	MOTOR	HVAC	MISC	LARGEST MOTOR
P-201	BOOSTER PUMP-1 (LARGEST MOTOR 1.25%)*	25	HP	480	3	25.0	34.0	1.0	0.9	0.9	0.9	20.7	LM	0.0	0.0	0.0	0.0	0.0	20.7
P-202	BOOSTER PUMP-2	25	HP	480	3	25.0	34.0	1.0	0.9	0.9	0.9	20.7	M	0.0	0.0	20.7	0.0	0.0	0.0
P-203	BOOSTER PUMP-3	25	HP	480	3	25.0	34.0	1.0	0.9	0.9	0.9	20.7	M	0.0	0.0	20.7	0.0	0.0	0.0
P-204	BOOSTER PUMP-4 (FUTURE)	25	HP	480	3	25.0	34.0	1.0	0.9	0.9	0.9	20.7	M	0.0	0.0	20.7	0.0	0.0	0.0
XFMR-01	XFMR-01 30KVA	30	KVA	480	3	0.0	36.1	1.0	0.8	0.9	0.9	26.7	L	26.7	0.0	0.0	0.0	0.0	0.0
CV-101	CV-101 MOV	1	HP	480	3	1.0	2.1	1.0	0.3	0.75	0.9	0.3	M	0.0	0.0	0.3	0.0	0.0	0.0
CV-001	CV-001 MOV	1	HP	480	3	1.0	2.1	1.0	0.3	0.75	0.9	0.3	M	0.0	0.0	0.3	0.0	0.0	0.0
CV-002	CV-002 MOV	1	HP	480	3	1.0	2.1	1.0	0.3	0.75	0.9	0.3	M	0.0	0.0	0.3	0.0	0.0	0.0
TWR-DOOR	TWR-DOOR	1	HP	480	3	1.0	2.1	1.0	0.3	0.75	0.9	0.3	M	0.0	0.0	0.3	0.0	0.0	0.0
PMP-DOOR	PMP-DOOR	1	HP	480	3	1.0	2.1	1.0	0.3	0.75	0.9	0.3	M	0.0	0.0	0.3	0.0	0.0	0.0
					3	0.0	0.0	1.0	0.3	0.75	0.9	0.0	M	0.0	0.0	0.0	0.0	0.0	0.0
												Connected Totals:		26.67	0.00	63.82	0.00	0.00	20.72

MCC-01 LOAD CALCULATION:

CONNECTED KVA				METHOD	NEC DEMAND	CALC. KVA	
TOTAL EXISTING (E) LOAD FROM 30 DAY							
METER RECORDING, PER NEC (2017) 220.87:	E			ALL @	1.25	0	
TOTAL LIGHTING (L) LOAD:	L	26.67		ALL @	100%	26.67	
TOTAL RECEPTACLE (R) LOAD:	R	0.00		FIRST 10KVA @	100%	0.00	
				REMAINDER OVER 10KVA	50%	0.00	
TOTAL MOTOR (M) LOAD:	M	63.82		ALL @	100%	63.82	
	LM	20.72		125% OF LARGEST	125%	25.90	
TOTAL HVAC (H) LOAD:	H	0.00		ALL @	100%	0.00	
TOTAL MISCELLANEOUS (X) LOAD:	X	0.00		ALL @	100%	0.00	
TOTAL KVA:		111.21	KVA			116.39	KVA
AVERAGE AMPS @ 480 volts		133.77	AMPS			140.00	AMPS

PANELBOARD SCHEDULE: PNL-01

VOLTAGE: 208/120	BUS AMPACITY: 125A	LOCATION: EXTERIOR PUMP HOUSE	MAIN BREAKER: YES
PHASE: 3 ϕ	NEUTRAL AMPACITY: 100%	POWERED FROM: XFMR EQUIPMENT TAG	MAIN LUGS ONLY: NO
WIRE: 4-WIRE	MAIN BREAKER AMPS: 100A	FED FROM: BOTTOM	FED-THRU LUGS: NO
AIC RATING: 10KAIC		FEEDER ENTRY: BOTTOM	DOUBLE LUGS: NO

	CIRCUIT DESCRIPTION	LOAD TYPE	LOAD (KVA)	CB AMPS	CB POLE	PHASE	CB POLE	CB AMPS	LOAD (KVA)	LOAD TYPE	CIRCUIT DESCRIPTION	
1	LIGHTING - INDOOR	L	0.11	20	1	A	1	20	1.30	R	RECEPTACLE - INDOOR	2
3	LIGHTING - OUTDOOR	L	0.35	20	1	B	1	20	0.72	R	RECEPTACLE - OUTDOOR	4
5	LIGHTING - TANK ACCESS	L	0.14	20	1	C	1	20	0.72	R	RECEPTACLE - TANK ACCESS	6
7	MCP-660 PLC UPS	Z	0.24	20	1	A	1	20	0.05	Z	CATHODIC PROTECTION UNIT	8
9	MCP-660 PLC	Z	0.24	20	1	B	1	20	1.92	Z	GEN BATTERY CHARGER	10
11	EXIT LIGHT CHARGER	L	0.20	20	1	C	1	20	1.92	Z	GEN BLOCK HEATER	12
13	EXHAUST FAN	M	0.60	20	1	A	1	20	6.66	Z		14
15					1	B	1	20	6.66	Z	EUH-101	16
17					1	C	1	20	6.66	Z		18
19					1	A	1					20
21					1	B	1					22
23					1	C	1					24
25					1	A	1					26
27					1	B	1					28
29					1	C	1					30
31						A						32
33						B						34
35						C						36

LOAD TYPE CODE AND DESCRIPTION	CONNECTED LOAD (KVA)			NEC DEMAND FACTOR	CALCULATED LOAD (KVA)			
	A	B	C		A	B	C	TOTAL
H = HVAC	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00
K = KITCHEN EQUIPMENT	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00
L = LIGHTING	0.11	0.35	0.34	1.25	0.14	0.44	0.42	0.99
LM = LARGEST MOTOR LOAD	0.00	0.00	0.00	1.25	0.00	0.00	0.00	0.00
M = MOTORS AND COMPRESSORS	0.60	0.00	0.00	1.00	0.60	0.00	0.00	0.60
R = GENERAL-USE RECEPTACLES <= 10 KVA	1.30	0.72	0.72	1.00	1.30	0.72	0.72	2.74
R = GENERAL-USE RECEPTACLES > 10 KVA	0.00	0.00	0.00	0.50	0.00	0.00	0.00	0.00
S = SPECIFIC-USE RECEPTACLES	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00
Z = MISCELLANEOUS AND APPLIANCES	6.95	8.82	8.58	1.00	6.95	8.82	8.58	24.35
CALCULATED LOAD TOTAL (KVA):					8.99	9.98	9.72	**28.68**
CALCULATED LOAD TOTAL (AMPS):					10.81	12.00	11.69	**34.50**

CALL 48 HOURS
BEFORE YOU DIG
1-800-424-5555

ISSUE	DATE	DESCRIPTION
	7/2022	BID SET

PROJECT MANAGER	L. NOLAN
CIVIL ENG	J. KNOLL
WATER ENG	L. CHENG
STRUCTURAL ENG	M. HIJAZI
ELECTRICAL ENG	I. RINCON
INSTR. ENG	M.HUTSON
PROJECT NUMBER	10172116

ISABEL C. RINCON — STATE OF WASHINGTON — 44197 — REGISTERED PROFESSIONAL ENGINEER

07-01-2022

MCCORMICK
CLOSE TO WHAT COUNTS

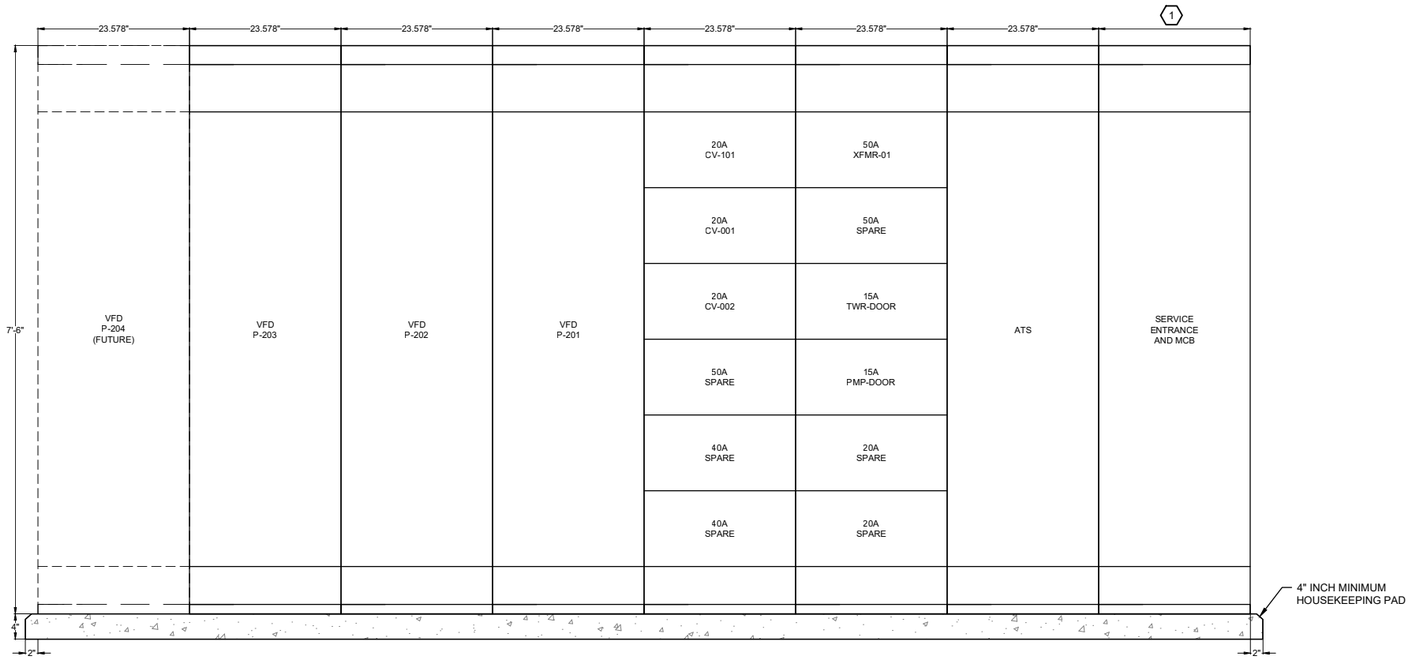
PORT ORCHARD 660 RESERVOIR

ELECTRICAL LOAD SCHEDULES

0 1" 2"

FILENAME E1-06.dwg
SCALE AS NOTED

SHEET **E1-06**



MCC-01 - FRONT ELEVATION

SCALE: NONE

GENERAL NOTES:

1. PROVIDE MOTOR CONTROL CENTER RATED FOR SERVICE ENTRANCE. MAIN CIRCUIT BREAKER MIGHT REQUIRE ITS OWN SECTION.

KEYNOTES: (X)

1. DIMENSIONS OF THE UTILITY SERVICE CONDUCTORS PULLING SECTION TO MEET UTILITY REQUIREMENTS.

CALL 48 HOURS
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1-800-424-5555

ISSUE	DATE	DESCRIPTION
	7/2022	BID SET

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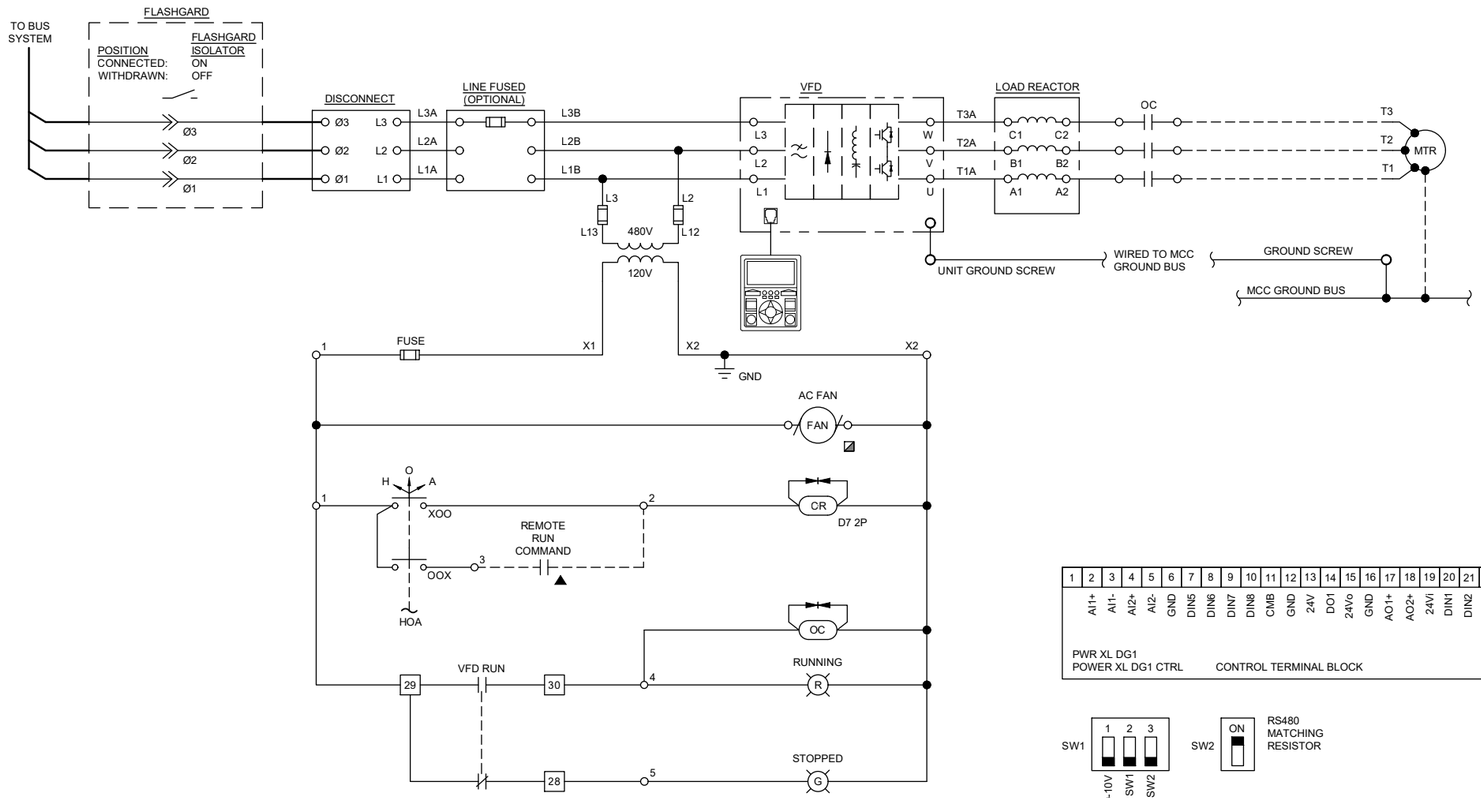
PORT ORCHARD 660 RESERVOIR

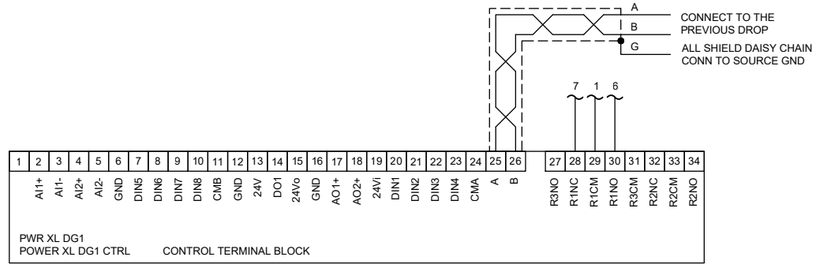
MOTOR CONTROL CENTER
MCC-01 ELEVATION

0 1" 2"

FILENAME E1-07.dwg
SCALE AS NOTED

SHEET
E1-07





LEGEND:

- FIELD WIRING
- TERMINAL POINT IN MCC
- REMOTE EQUIPMENT
- [#] DG1 INPUT/OUTPUT TERMINAL BLOCK CONNECTION
- FANS PER UNIT ASSEMBLY

NOTE:

1. ALL DC WIRE TO BE BLUE.

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07-01-2022

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CLOSE TO WHAT COUNTS

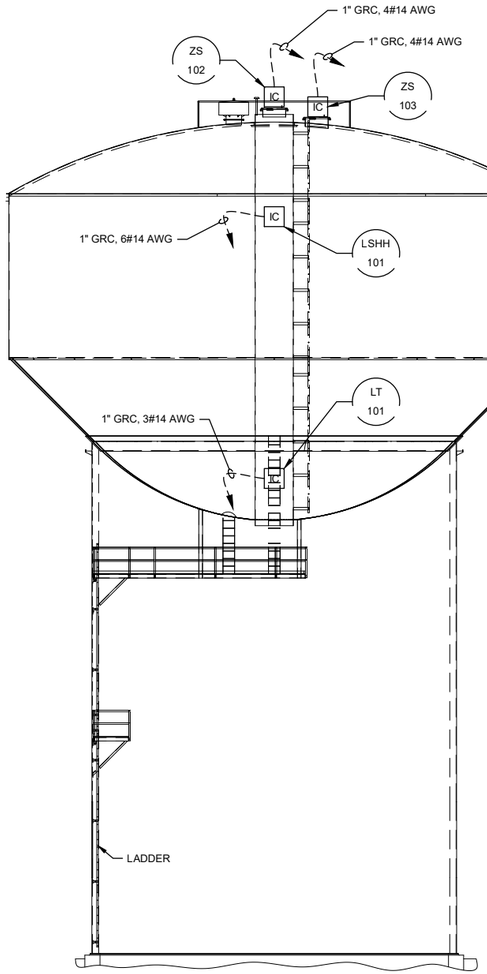
PORT ORCHARD 660 RESERVOIR

VFD ELEMENTARY AND CONTROL DIAGRAM

0 1" 2"

FILENAME E1-08.dwg
SCALE AS NOTED

SHEET
E1-08

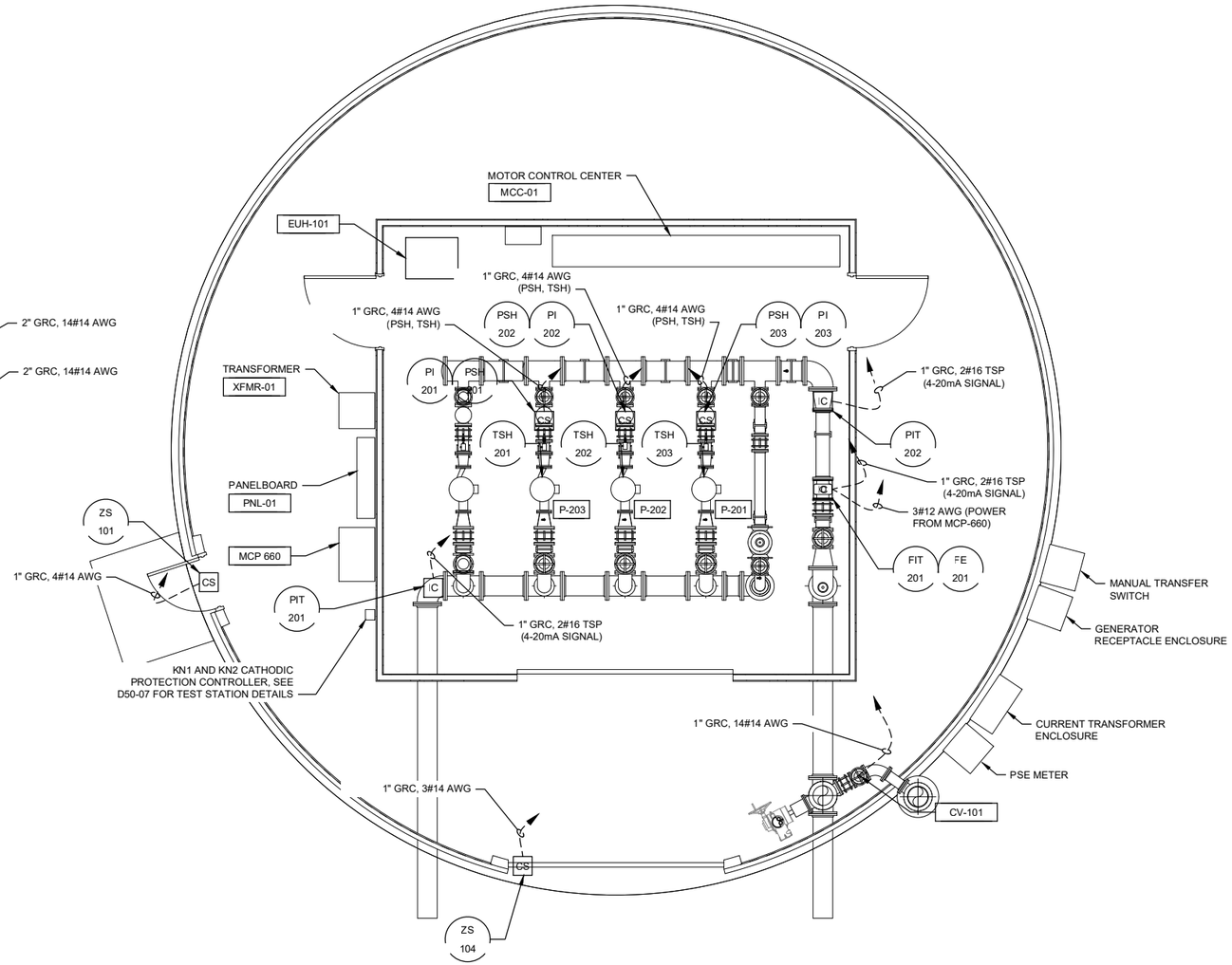


ACCESS LADDER
INSTRUMENTATION PLAN - ELEVATION
SCALE: 1:120

SEE C1-06 FOR LOCATION AND ROUTING

CV-001 — 2" GRC, 14#14 AWG

CV-002 — 2" GRC, 14#14 AWG



PUMP HOUSE POWER
INSTRUMENTATION PLAN
SCALE: 1/4"=1'-0"

CALL 48 HOURS
BEFORE YOU DIG
1-800-424-5555

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ISABEL C. RINCON — STATE OF WASHINGTON — 44197 — REGISTERED PROFESSIONAL ENGINEER
07-01-2022

MCCORMICK
CLOSE TO WHAT COUNTS

PORT ORCHARD 660 RESERVOIR

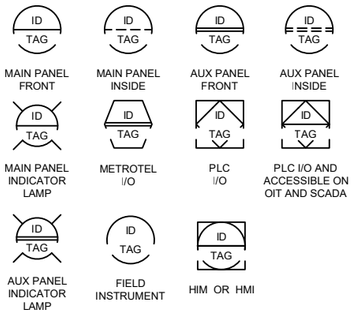
INSTRUMENTATION PLAN

0 1" 2"

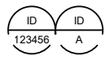
FILENAME E1-09.dwg
SCALE AS NOTED

SHEET
E1-09

INSTRUMENT IDENTIFICATION



A DEVICE WITH A SINGLE LETTER IN PLACE OF THE TAG NUMBER INDICATES THAT THE DEVICE HAS THE SAME TAG NUMBER AS OTHER DEVICES NEARBY, WITH THE ADDITION OF INDICATED LETTER FOR EXAMPLE



MEANS THE DEVICE ON THE RIGHT HAS TAG 123456A.

FIRST LETTER		
MEASURED OR INITIATING VARIABLE		MODIFIER
A	ANALYSIS	
B	BURNER FLAME	
C	CONDUCTIVITY (ELECTRICAL)	
D	DENSITY (MASS) OR SPECIFIC GRAVITY	DIFFERENTIAL
E	ENERGY (kW)	
F	FLOW RATE	RATIO (FRACTION)
G	GAUGING (DIMENSIONAL)	
H	HAND (MANUALLY INITIATED)	
I	CURRENT (ELECTRICAL)	
J	POWER	SCAN
K	TIME OR TIME SCHEDULE	TIME RATE OF CHANGE
L	LEVEL	LEAK
M	MOTOR OR MOISTURE	MOMENTARY
N	USER'S CHOICE	
O	USER'S CHOICE	
P	PRESSURE OR VACUUM	
Q	QUANTITY	INTEGRATE OR TOTALIZE
R	RADIATION	
S	SPEED	SAFETY
T	TEMPERATURE	
U	MULTIVARIABLE	
V	VIBRATION	
W	TORQUE, WEIGHT, FORCE	
X	UNCLASSIFIED	
Y	EVENT	
Z	POSITION	

SUCCEEDING LETTERS		
READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
ALARM	ALARM	AUTO
USER'S CHOICE	USER'S CHOICE	USER'S CHOICE
	CONTROL	CLOSED
		DIRECTION
PRIMARY ELEMENT		
		FAIL, ERROR ABNORMAL
GLASS		READY
		HIGH
INDICATE		
		RUNNING, RUN
	CONTROL STATION	STOP
LIGHT (PILOT)		LOW, LOCAL
		MID
ORIFICE (RESTRICTION)		OPEN
POINT (TEST CONNECTION)		
RECORD OR PRINT		REMOTE
	SWITCH	
	TRANSMIT	
MULTIFUNCTION	MULTIFUNCTION	MULTIFUNCTION
	VALVE, DAMPER, OR LOUVER	
WELL		
PLC INPUT	UNCLASSIFIED	
	RELAY OR COMPUTER OR PLC OUTPUT	
	DRIVE, ACTUATE OR UNCLASSIFIED FINAL CONTROL ELEMENT	

INSTRUMENT CONTROL SWITCH NOTATION / ABBREVIATIONS

AAB	LIT-A / AUTO /LIT-B
ACK	ACKNOWLEDGE
ACUPS	AC UPS
AE	ANALYTICAL ELEMENT
AI	ANALYTICAL INDICATOR
AIT	ANALYTICAL INDICATING TRANSMITTER
ALL	AUTO / MANUAL
AM	ANALYTICAL ALARM LOW
AO	AUTO / OFF
AOM	AUTO / OFF / MANUAL
ASH	ANALYTICAL SWITCH HIGH
ASL	ANALYTICAL SWITCH LOW
ATS	AUTO TRANSFER SWITCH
AU	AUTO
AV	AUTO LEVEL
BA	BACKUP/AUTO
CARV	COMBINED AIR RELEASE VALVE
CL	CLOSED
CMD	COMMAND
CONC	CONCENTRATION
CP	CONTROL POWER
CS	CONTROL STATION
CKV	CHECK VALVE
D/A	DIGITAL TO ANALOG CONVERTER
DMP	DAMPER
DP	DIFFERENTIAL PRESSURE
E/I	VOLTAGE-TO-CURRENT CONVERTER
ECAB	ELECTRICAL COMMUNICATION CABINET
ED	ENABLE/DISABLE
EE	VOLTAGE ELEMENT
EF	EXHAUST FAN
ES	ELECTRICAL SUPPLY
ESEW	EMERGENCY SHOWER AND EYE WASH STATION
ESTOP	EMERGENCY STOP
ETM	ELAPSED TIME METER
FAL	FLOW ALARM LOW
FAU	FAULT
FCV	FLOW CONTROL VALVE
FE	FLOW ELEMENT
FIT	FLOW INDICATING TRANSMITTER
FLT	FLOAT(S)
FOR	FORWARD / OFF / REVERSE
FOS	FAST / OFF / SLOW
FR	FORWARD / REVERSE
FREQ	FREQUENCY
FS	FAST/SLOW
FSL	FLOW SWITCH LOW
FV	FLOW VALVE
H_2S	HYDROGEN SULFIDE
H	HAND
HIM	HUMAN INTERFACE MODULE
HMI	HUMAN MACHINE INTERFACE
HO	HAND / OFF
HOA	HAND / OFF / AUTO
HOAL	HAND / OFF / AUTO / LOCAL
HOR	HAND / OFF / REMOTE
HORL	HAND / OFF / REMOTE / LOCAL
HS	HAND SWITCH
I/I	CURRENT ISOLATOR
INV	INVERTER
INT	INTERMEDIATE
IS	CURRENT SWITCH
IY	INTRINSIC SAFETY BARRIER
JAM	JAM
JE	POWER ELEMENT
JN	JOG / NORMAL
JOG	JOG
JQT	ENERGY TRANSMITTER
KQ	TIME INTEGRATING INDICATOR
LAF	LEVEL / AUTO / FLOATS
LAH	LEVEL ALARM HIGH
LCP	LOCAL CONTROL PANEL
LCS	LOCAL CONTROL STATION
LE	LEVEL ELEMENT
LEL	LOWER EXPLOSIVE LIMIT
LL	LEAD / LAG
LLCO	LOW LEVEL CUT OFF
LOC	LOCAL
LOH	LOCAL / OFF / HAND
LOR	LOCAL / OFF / REMOTE
LOS	LOCKOUT STOP
LP	LIGHTING PANEL
LSC	LEVEL SWITCH CONTROLLER
LSH	LEVEL SWITCH HIGH
LSHH	LEVEL SWITCH HIGH HIGH
LSM	LEVEL SWITCH MIDDLE
LSS	LOW SIGNAL SELECTOR
LSR	LOCAL / STOP / REMOTE
LSL	LEVEL SWITCH LOW
LSLL	LEVEL SWITCH LOW LOW
LT	LEVEL TRANSMITTER
LVL	LEVEL
M	MOTOR
MH	MANHOLE
MTS	MANUAL TRANSFER SWITCH
NP	NORMAL / PUMP-DOWN
O_2	OXYGEN
OA	OFF / AUTO
OC	OPEN / CLOSE
OCA	OPEN / CLOSE / AUTO
OCP	ODOR CONTROL PANEL OFF / ENABLE
OCU	ODOR CONTROL UNIT
OL	OVERLOAD
OO	ON / OFF
OOA	ON / OFF / AUTO
OOR	ON / OFF / REMOTE
OOS	OUT OF SERVICE
OP	OPENED
OR	OFF / REMOTE
OSC	OPEN / STOP / CLOSE
OSCA	OPEN / STOP / CLOSE / AUTO
OSCR	OPEN / STOP / CLOSE / REMOTE
P	PUMP
PAC	PROGRAMMABLE AUTOMATION CONTROLLER
PDI	PRESSURE DIFFERENTIAL INDICATOR
PI	PRESSURE INDICATOR
PIT	PRESSURE INDICATING TRANSMITTER
POS	POSITION
PP	POWER PANEL
PT	PRESSURE TRANSMITTER
PV	PLUG VALVE
RDY	READY
REM	REMOTE
RNG	RUNNING
RPBA	REDUCED PRESSURE BACKFLOW ASSEMBLY
RST	RESET
RUN	RUN
SCADA	SUPEVISORY CONTROL AND DATA ACQUISITION
SD	SMOKE DETECTOR
SEP	SERVICE ENTRANCE PANEL
SF	SUPPLY FAN
SIL	SILENCE
SL	STROBE LIGHT
SP	SET POINT
SLC	SILENCER
SS	START/STOP
ST	STOP
SW	SOFT WATER
TAH	TEMPERATURE ALARM HIGH
TK	TANK
TMR	TIMER
TP	TELEPHONE PANEL
TRBL	TROUBLE
TSH	TEMPERATURE SWITCH HIGH
TST	TEST
UVT	ULTRAVIOLET TRANSMITTANCE
V	VALVE
VFD	VARIABLE FREQUENCY DRIVE

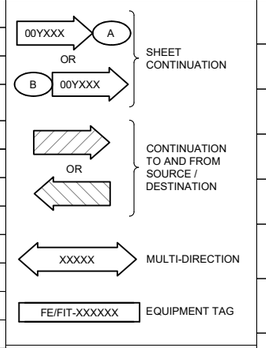
PLC INTERFACE, INTERLOCK, AND PACKAGE LEGEND

▲	ANALOG INPUT	△	DISCRETE INPUT
▼	ANALOG OUTPUT	▽	DISCRETE OUTPUT
*	PACKAGE SYSTEM	►	DIRECTION
**	ELECTRICAL SPECIFICATION	◇ I	INTERLOCK

LINE TYPE AND CABLE TYPE

	MAIN PROCESS LINE
	SECONDARY PROCESS LINE
	DIRECTION OF FLOW
	DIAGRAM CABLE
	ANALOG CABLE
	DISCRETE CABLE
	PNEUMATIC CABLE
	POWER CABLE
	DF1 LEASED LINE
	CABLE CROSSOVER, NO CONNECTION
	CABLE CROSSOVER, CONNECTED
	HEAT TRACE CABLE
	AREA (ie: FIELD, BUILDING, ETC)
	EQUIPMENT CONTROL (ie: PANEL, VFD, ETC)
	EQUIPMENT CONTROL (INTERNAL DEVICES)
	EQUIPMENT CONTROL (VENDOR PROVIDED)

CROSS REFERENCE



ACTUATOR

ACTUATOR DEVICE
CIRCLE = INDICATES REMOTE ACTUATOR
SQUARE = INDICATES INTEGRAL ACTUATOR
X = INDICATES:

E = ELECTRIC F = FLOAT
H = HYDRAULIC M = MOTOR
P = PNEUMATIC S = SOLENOID

PIPING ENDPOINT

⊏	CAP	⊖	DOWN
≀	BREAK	⊕	UP

PRIMARY ELEMENT

SPRAY NOZZLE	VENTURI TUBE	WEIR	EJECTOR	CABLE SUSPENDED PRESSURE TRANSMITTER
EXPANSION JOINT	FLEX COUPLING	FLUME	FLAME ARRESTER	IN-LINE FLANGED DIAPHRAGM SEAL
GREASE FILTER	SILENCER	SUMP PUMP	METERING PUMP	ULTRA SONIC LEVEL SENSOR
TANK HEATER	AIR FILTER	LOUVER	HEAT EXCHANGER	FLOAT SWITCH
IN-WALL PUMP	BASKET STRAINER	MIXER	IN SITU PROBE SENSOR	ROTAMETER
BUBBLER LEVEL TUBE	RADAR LEVEL SENSOR	TURBINE DRIVER	DIAPHRAGM SEAL	THERMAL DISPERSION ELEMENT
BLOWER	PUMP	GRINDER	THERMOWELL	SONIC OR ULTRASONIC ELEMENT
AUTO STRAINER	AIR COMPRESSOR	VERTICAL PUMP	SPIRAL HEAT EXCHANGER	PERISTALTIC PUMP

GENERAL NOTES

1. THIS IS A STANDARD INSTRUMENTATION SYMBOLS AND ABBREVIATION SHEET. LISTING OF SYMBOLS AND ABBREVIATIONS DOES NOT IMPLY ALL SYMBOLS AND ABBREVIATIONS HAVE BEEN USED ON THIS PROJECT.
2. SCREENING OR SHADING OF WORK IS USED TO INDICATE EXISTING COMPONENTS OR TO DE-EMPHASIZE PROPOSED IMPROVEMENTS TO HIGHLIGHT SELECTED TRADE WORK. REFER TO CONTEXT OF EACH SHEET FOR USAGE.
3. SEE OTHER DISCIPLINES FOR SYMBOLS AND ABBREVIATIONS SPECIFIC TO THE PROJECT.
4. INSTRUMENT IDENTIFICATIONS LETTER TABLE IS EXCERPTED FROM ISA S50.1

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ISSUE	DATE	DESCRIPTION
	7/2022	BID SET

PROJECT MANAGER	L. NOLAN
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WATER ENG	L. CHENG
STRUCTURAL ENG	M. HIJAZI
ELECTRICAL ENG	I. RINCON
INSTR. ENG	M.HUTSON
PROJECT NUMBER	10172116

07/01/2022

MCCORMICK
CLOSE TO WHAT COUNTS

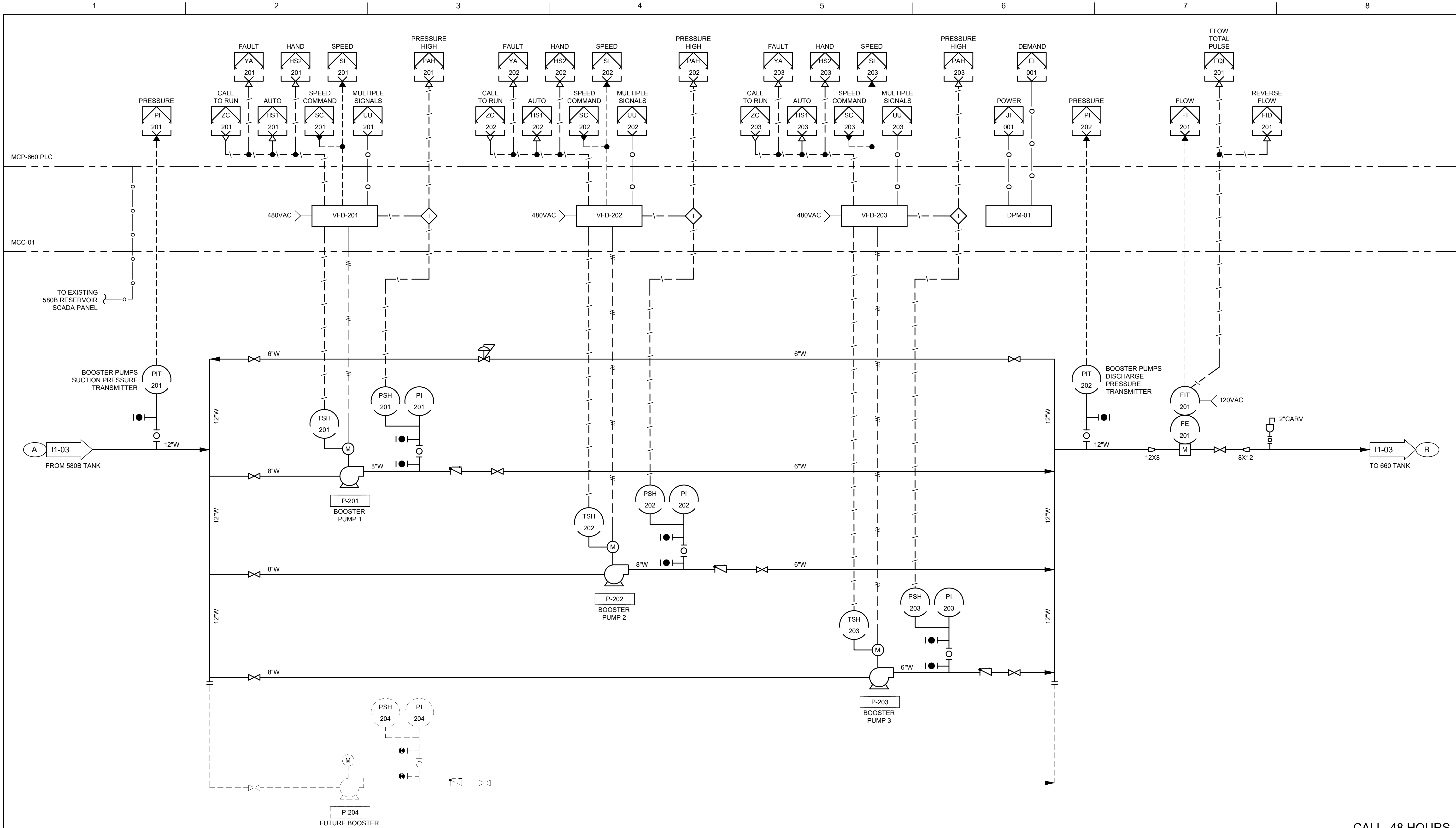
PORT ORCHARD 660 RESERVOIR

INSTRUMENTATION LEGEND AND ABBREVIATIONS

0 1" 2"

FILENAME I1-01.dwg
SCALE AS NOTED

SHEET I1-01



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HDR

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INSTR. ENG	M.HUTSON
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MADELEINE HUTSON STATE OF WASHINGTON REGISTERED PROFESSIONAL ENGINEER 07/01/2022

MCCORMICK
CLOSE TO WHAT COUNTS

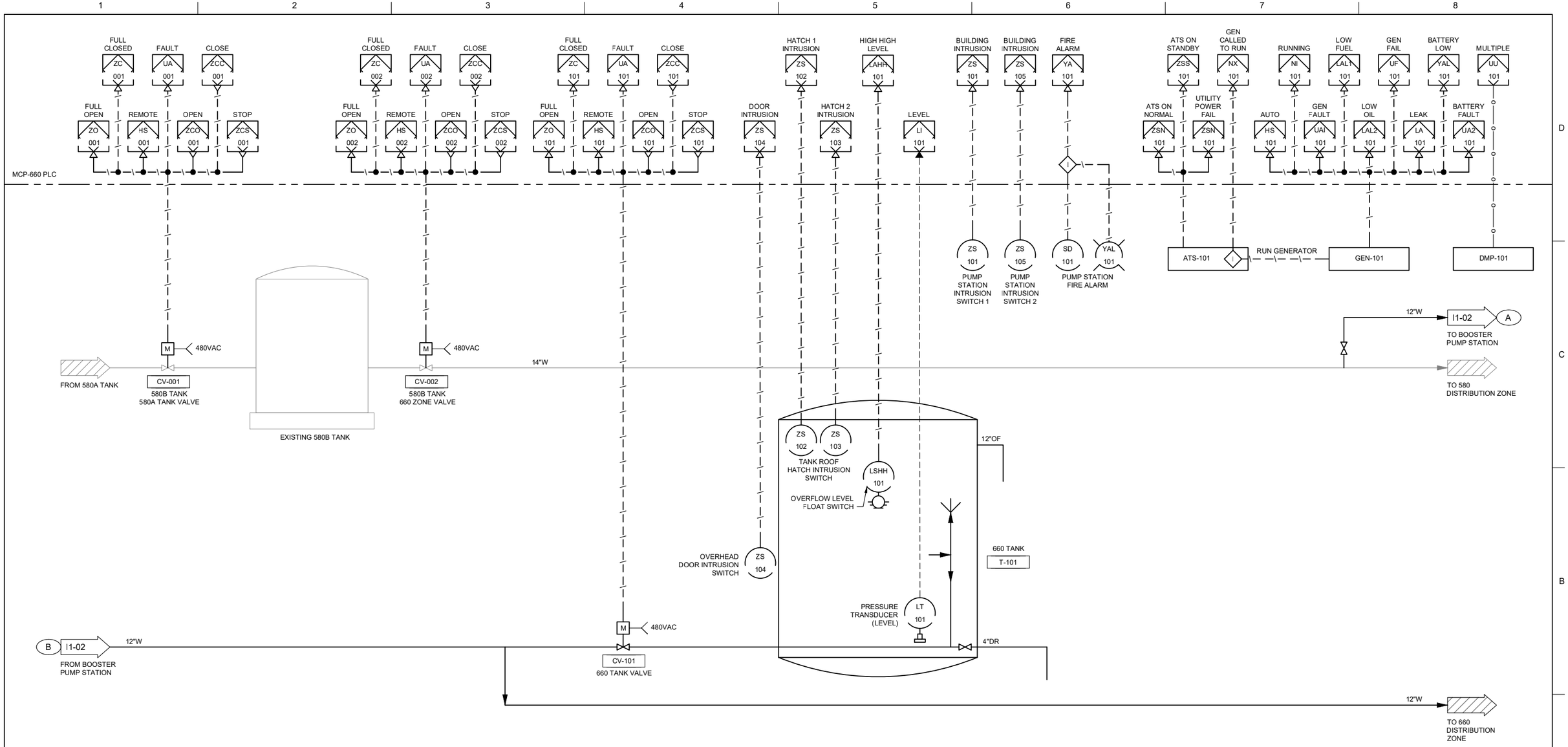
PORT ORCHARD 660 RESERVOIR

P&ID
BOOSTER PUMP STATION

0 1" 2"

FILENAME	I1-02.dwg
SCALE	AS NOTED

SHEET
I1-02



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ELECTRICAL ENG	I. RINCON
INSTR. ENG	M.HUTSON
PROJECT NUMBER	10172116

STATE OF WASHINGTON MADELEINE HUTSON 21027 REGISTERED PROFESSIONAL ENGINEER
07/01/2022

MCCORMICK
CLOSE TO WHAT COUNTS

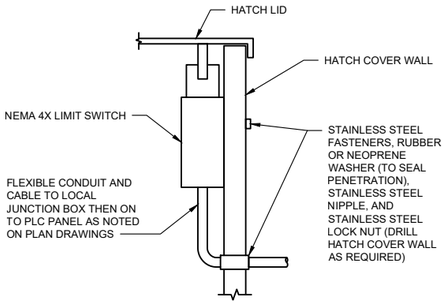
PORT ORCHARD 660 RESERVOIR

P&ID
660 TANK

0 1" 2"

FILENAME I1-03.dwg
SCALE AS NOTED

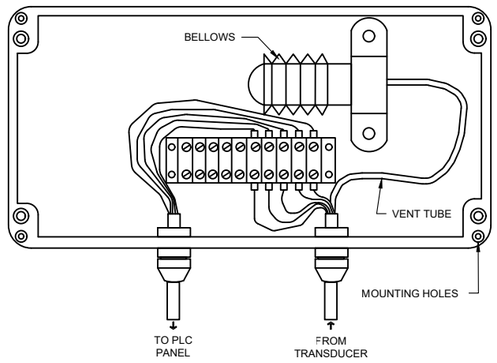
SHEET
I1-03



HATCH INTRUSION SWITCH

1

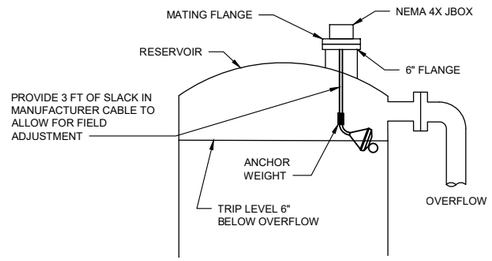
SCALE: N.T.S.



KPSI LEVEL TRANSDUCER BELLOWS JUNCTION BOX PN 845

2

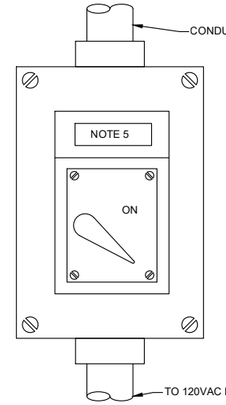
SCALE: N.T.S.



RESERVOIR FLOAT SWITCH INSTALLATION

3

SCALE: N.T.S.



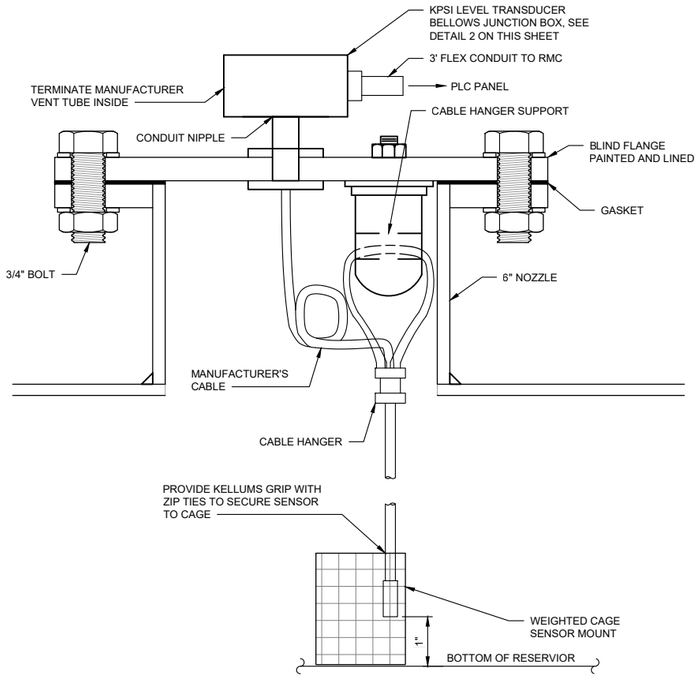
NOTES:

1. SINGLE-PHASE, MANUAL SWITCH REQUIRED FOR POWERED INSTRUMENT, UNLESS OTHERWISE SPECIFIED
2. OPERATING HANDLE PAD-LOCKABLE IN OFF POSITION
3. CAST ALUMINUM NEMA 4X, WATERPROOF ENCLOSURE
4. EATON TYPE MS, OR EQUAL
5. NAME PLATE ATTACHED SECURELY. ENGRAVED WITH INSTRUMENT TAG NUMBER

SINGLE-PHASE DISCONNECT

4

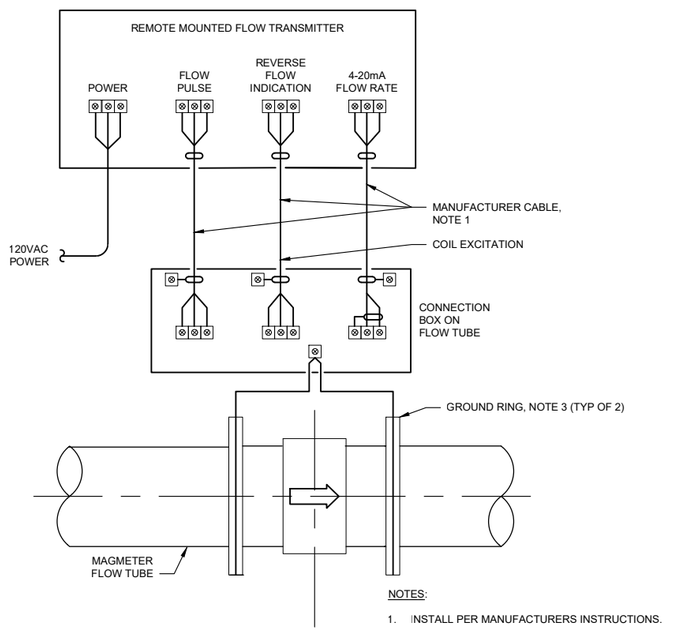
SCALE: N.T.S.



LEVEL SENSOR MOUNTING DETAILS

5

SCALE: N.T.S.



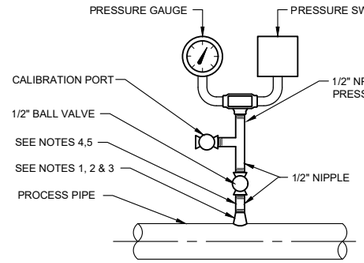
NOTES:

1. INSTALL PER MANUFACTURERS INSTRUCTIONS.
2. METER REGISTER TO INCLUDE CUSTODY TRANSFER OPTION.

MAGNETIC FLOW METER FLOW TUBE INSTALLATION

6

SCALE: N.T.S.



NOTES:

1. FOR PIPE 2 1/2" AND SMALLER, USE A BUSHING IN A TEE.
2. FOR DI AND PVC ALL SIZES, USE PIPE SADDLE W/ BUSHING.
3. FOR STL, AND SST PIPES 3" AND LARGER, AND PRESSURE VESSELS. USE SHOP INSTALLED THREAD-O-LET, OR EQUAL AS SHOWN.
4. PROVIDE 1/2" TEE WITH BALL VALVE FOR AIR RELEASE FOR PRESSURE SWITCH/PRESSURE GAUGE ASSEMBLY ONLY.
5. AIR RELEASE VALVE SHALL BE MINIMUM 3" ABOVE THE TOP OF THE ASSOCIATED PUMP VOLUTE.
6. TYPICAL FOR INSTALLATIONS WITH EITHER PRESSURE GAUGE, PRESSURE SWITCH/TRANSMITTER OR BOTH.

PRESSURE GAUGE AND PRESSURE SWITCH/TRANSMITTER

7

SCALE: N.T.S.

HDR

ISSUE	DATE	DESCRIPTION
	7/2022	BID SET

PROJECT MANAGER	L. NOLAN
CIVIL ENG	J. KNOLL
WATER ENG	L. CHENG
STRUCTURAL ENG	M. HIJAZI
ELECTRICAL ENG	I. RINCON
INSTR. ENG	M.HUTSON
PROJECT NUMBER	10172116

07/01/2022

MCCORMICK
CLOSE TO WHAT COUNTS

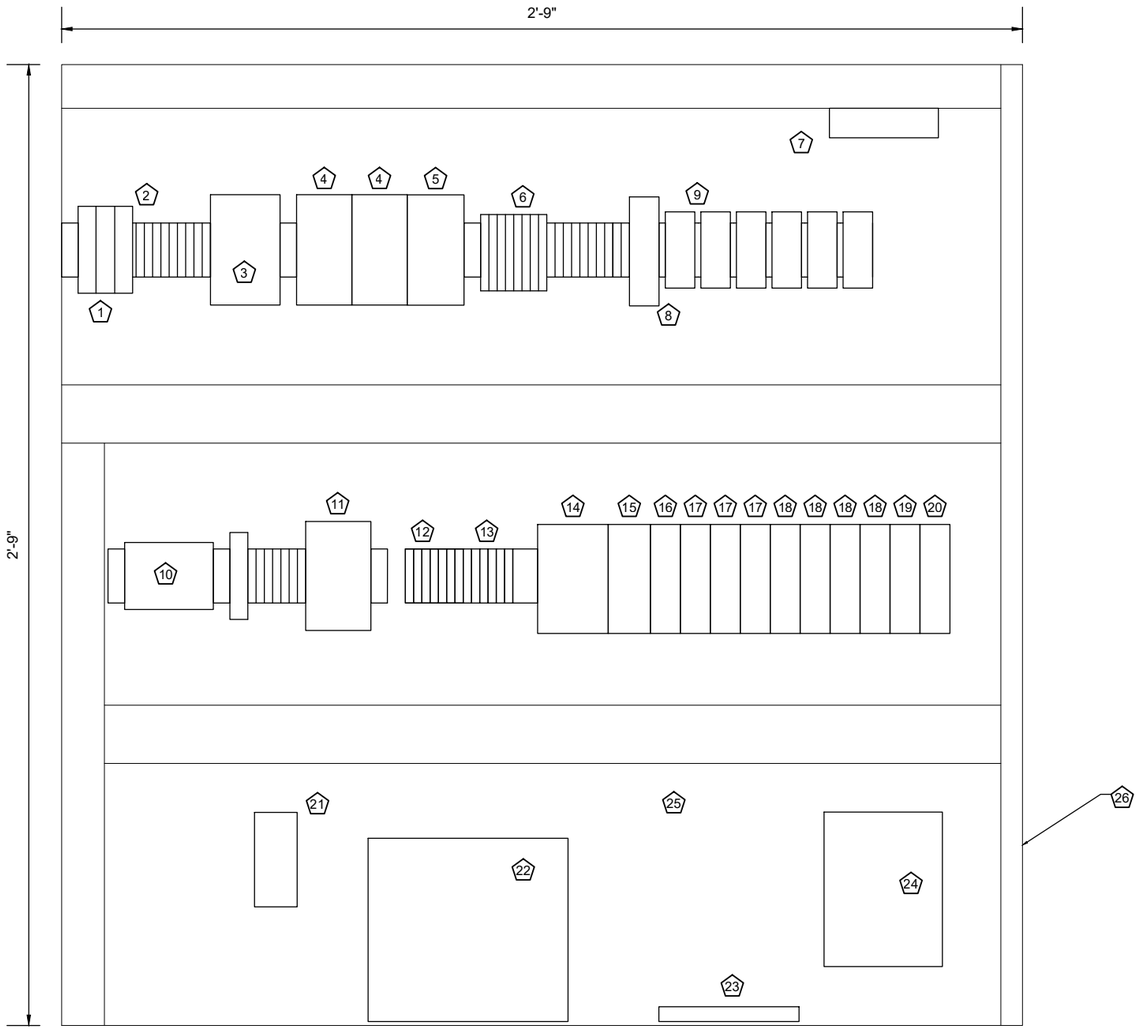
PORT ORCHARD 660 RESERVOIR

INSTRUMENTATION DETAILS

0 1" 2"

FILENAME	I1-04.dwg
SCALE	AS NOTED

SHEET I1-04



INTERIOR LAYOUT
SCALE: NTS

MCP-660 BILL OF MATERIALS				
ITEM NO. (X)	QTY.	DESCRIPTION	MANUFACTURER	MAN. PART NO.
1	AS REQ.	CIRCUIT BREAKER, SIZE AS REQUIRED, UL489	EATON	VARIOUS
2	AS REQ.	CIRCUIT BREAKER, SIZE AS REQUIRED, UL489	EATON	VARIOUS
3	1	SURGE SUPRESSOR, 120 VAC NOMINAL VOLTAGE, STATUS AS INDICATED	ALLEN-BRADLEY	4983-DC120-20
4	2	DC POWER SUPPLY	PULS	QS10.241
5	1	24VDC POWER SUPPLY REDUNDANCY MODULE	PULS	YRM2.DIODE
6	AS REQ.	TERMINAL: FUSED, INDICATING 24VDC LED	ALLEN-BRADLEY	1492-H5
7	1	INTRUSION SWITCH, PANEL DOOR	ENFORCER	SS-072Q
8	1	ETHERNET SWITCH	ALLEN-BRADLEY	1783-BMS10CGA
9	AS REQ.	CONTROL RELAY: 24VDC, DPDT, INDICATOR LIGHT	DEC	RH2B-UL-DC24
10	1	UTILITY BOX	ABB-ENTRELEC	XUS000424
11	1	DUPLEX OUTLET: 120 VAC, 15A, DIN RAIL MOUNT, UL 508A	ALLEN-BRADLEY	1492-REC15G
12	AS REQ.	TERMINAL: 600V, 35A	ALLEN-BRADLEY	1492-J4
13	AS REQ.	TERMINAL: GROUNDING	ALLEN-BRADLEY	1492-JG4
14	1	PLC PROCESSOR CONTROLLER	ALLEN-BRADLEY	1769-L36ER
15	1	PLC POWER SUPPLY	ALLEN-BRADLEY	1769-PB2
16	1	PLC ETHERNET COMMUNICATION MODULE	ALLEN-BRADLEY	1769-EN2T
17	3	PLC ANALOG INPUT MODULE, 4 INPUTS	ALLEN-BRADLEY	1769-IF4
18	4	PLC DISCRETE INPUT MODULE, 16 INPUTS	ALLEN-BRADLEY	1769-IQ16
19	1	PLC ANALOG OUTPUT MODULE, 4 OUTPUTS	ALLEN-BRADLEY	1769-OF4
20	1	PLC DISCRETE OUTPUT MODULE, 16 OUTPUTS	ALLEN-BRADLEY	1769-OB16
21	1	DC-UPS WITH INTEGRATED BATTERY CHARGER	PHOENIX	
22	1	UPS BATTERY	PHOENIX	2866352
23	1	GROUND BAR: 12 TERMINAL, COPPER ALLOY, WIRE RANGE #6-#14 AWG	ELECTRIC MOTION	EM4251-12-SS-0
24	1	HEATER: 120 VAC, 200 WATT, THERMOSTAT CONTROLLED	PFANNENBERG	17020715034
25	1	BACKPANEL	HOFFMAN	A36P36SS6
26	1	PANEL ENCLOSURE	HOFFMAN	A36H3612SS LP3PT
27	1	OPERATOR INTERFACE TERMINAL, 10 IN	AUTOMATION DIRECT	EA9-T10CL

ISSUE	DATE	DESCRIPTION
	7/2022	BID SET

PROJECT MANAGER	L. NOLAN
CIVIL ENG	J. KNOLL
WATER ENG	L. CHENG
STRUCTURAL ENG	M. HIJAZI
ELECTRICAL ENG	I. RINCON
INSTR. ENG	M.HUTSON
PROJECT NUMBER	10172116

MADELEINE HUTSON — STATE OF WASHINGTON — 21007716 — REGISTERED PROFESSIONAL ENGINEER
07/01/2022

MCCORMICK
CLOSE TO WHAT COUNTS

PORT ORCHARD 660 RESERVOIR

CONTROL PANEL LAYOUT AND BILL OF MATERIALS

0 1" 2"

FILENAME I1-05.dwg
SCALE AS NOTED

SHEET
I1-05

SCHEDULE B

GENERAL

G1. Scope

The notes on in this section apply to the elevated reservoir and its foundation.

G2. Applicable specifications and codes

A. 2015 International Building Code (IBC)
B. ASCE 7-10, Minimum Design Loads for Buildings and other Structures
C. ACI 318-14, Building code requirements for structural concrete
D. AISC Steel Construction Manual, 14th Edition
E. AISC 341-10, Seismic design manual
F. AWWA D100-21

G3. Design criteria

(LOCATION: 4607 SW OLD CLIFTON ROAD, PORT ORCHARD, WA 98367)

A. DEAD LOAD	
1. SUPERIMPOSED DEAD LOAD	8 PSF
B. ROOF LIVE LOAD	25 PSF
C. WIND LOAD	
1. WIND SPEED	85 MPH
2. AWWA D100-21, WIND EXPOSURE	B
3. AWWA D100-21, WIND IMPORTANCE FACTOR (I)	1.15
4. AWWA D100-21, GUST FACTOR, G	1.00
5. FORCE COEFFICIENT, CF	1.00
D. SNOW LOAD	
1. AWWA D100-21, GROUND SNOW LOAD	27 PSF
2. EXPOSURE FACTOR, CE=	1.0
3. THERMAL FACTOR, CT=	1.0
4. IMPORTANCE FACTOR Is =	1.2
E. SEISMIC LOAD:	
1. AWWA SEISMIC USE GROUP III	
2. SHORT PERIOD RESPONSE ACCELERATION Ss:	1.626
3. LONG PERIOD RESPONSE ACCELERATION S1:	0.567
4. SOIL SITE CLASSC	
Fa:	1.0
Fv:	1.3
Sds:	1.08
5. IMPULSIVE RESPONSE MODIFICATION FACTOR	Ri = 3.0
6. CONVECTIVE RESPONSE MODIFICATION FACTOR	Rc = 1.5
7. SEISMIC IMPORTANCE FACTOR	Ie = 1.5

G4. Geotechnical design criteria

1. Allowable Bearing Capacity Under Foundation 8,000 PSF
2. Frost Depth 12”
3. Reference Geotechnical Report by Riley Group dated July 2, 2019 and their letter dated December 14, 2021.

G5. Special inspections

Special Inspections are required in accordance with Chapter 1 and Chapter 17 of the IBC. Payment of these inspections is not the responsibility of T BAILEY, INC but they will provide full access to the work by the Special Inspector per the inspection schedule provided by others. Special Inspections are required for the following items of work:

Grading, excavation, and back filling
Concrete testing and placement
Reinforcing steel placement
Anchors, embeds, and bolts in concrete
High strength bolting
Structural Welding
Anchor bolt installation

CONCRETE

C1. Design strengths

F'c = 5,000 PSI
Fy = 60,000 PSI

C2. Concrete cover

Concrete deposited against earth:	3”
Tie reinforcing at cols:	1 ½”
All other:	2”

C3. All detailing, fabrication, and erection of reinforcing bars shall be in accordance with the current edition of the ACI manual of standard practice.

C4. Provide ¾” chamfers at all exposed edges and ½” chamfers at joints.

C5. Field adjust reinforcing at openings and embedded items as needed.

C6. Absolutely no welding of reinforcing bars or torching to bend reinforcing without the specific approval of the structural engineer.

C7. All Cast-In-Place anchors shall comply with Chapter 17 of ACI 318 and Chapter 19 of the IBC.

STEEL

S1. Design strengths per design calculations

S2. Dimensions to centerline of column and beams, top surfaces of beams and back of channels and angles.

S3. Elevations noted refer to top surface of member or flange, UNO.

S4. Welding shall conform to AWS Code for arc and gas welding. Welders shall be certified.

S5. Bolts for structural steel connections shall be high strength conforming to ASTM A325. Installation of bolts shall conform to AISC specifications for structural joints.

S6. Conform to AISC 360, Steel Construction Manual and AISC 341, Seismic Design Manual.

DEFERRED SUBMITTALS

DS1. Deferred submittals are those portions of the design which are not submitted at the time of permit application and which are to be submitted to the permitting agency for acceptance prior to installation of the port of the work.

DS2. The following is a list of anticipated deferred submittals for the elevated reservoir and foundation that will be submitted for review prior to installation:

1. Ladders, platforms, and handrail systems
2. Grating
3. Access hatches
4. Vents
5. Reservoir nozzles and attachments

SPECIAL INSPECTIONS (IBC 1705)

SI1. Special Inspections and structural observations are required in accordance with IBC Chapter 1 and Chapter 17. Payment for these inspections is not he responsibility of T BAILEY, INC. We will provide full access to the work by the Special Inspector.

SI2. T BAILEY, INC is an approved AISC Shop Fabricator and will provide a certificate of compliance stating work was performed in accordance with the approved construction documents.

SI3. The following construction is subject to special inspection:

Schedule of Special Inspection Service

Inspection Item Required	Frequency		Code Reference
	Continuous	Periodic	
General Structural Observations			
Conduct daily visual observations of the structural systems for general conformance to the construction documents. Prepare weekly report of observations describing work progress and non-conforming items.		X	
Soil & Earthwork			
Verify materials below foundation is adequate to achieve the design bearing capacity.		X	
Verify excavation is extended to proper depth and has reach proper material.		X	
Perform classification and testing of compacted fill materials.		X	Table 1705.06
Verify use of proper materials, densities, and lift thickness during placement and compaction of compacted fill.	X		
Prior to placement of compacted fill, observe subgrade and verify that site has been prepared properly.		X	

Schedule of Special Inspection Service

Inspection Item Required	Frequency		Code Reference
	Continuous	Periodic	
Concrete and Reinforcing Steel			Table 1705.06
Inspection of reinforcing steel size and placement.		X	ACI 318: Ch.20, 25.2, 25.3, 26.5.1-
Inspection of reinforcing steel welding.		X	AWS D1.4, ACI 318: 26.5.4
Inspection of anchor placement.		X	ACI 318: 17.8.2
Verifying use of required design mix.		X	ACI 318: Ch.19, 26.4.3, 26.4.4
At the time fresh concrete is sampled to fabricate specimens for strength tests, perform slump and aire content tests, and determine temperature of the concrete.	X		A5TM C172 & C31, ACI 318: 26.4.5, 26.12
Inspection of concrete placement for proper application techniques.	X		ACI 318: 26.4.5
Inspection for maintenance of specified curing temperature and techniques.		X	ACI 318: 26.4.7 - 26.4.9
Verify concrete strength		X	ACI 318: 26.10.2
Inspect formwork for shape, location, and dimensions of the concrete member being formed.		X	ACI 318: 26.10.1(b)
Structural Steel			
Verifying fabricator certification		X	
Hold pre-construction meetings with the owner and fabricator to discuss the project, fabrication/erection procedures, and inspection procedures/scheduling.		X	
Inspect /observe fabrication shop and procedures.		X	
Material verification of H5 bolts/nuts and manufacturers certificate of compliance.		X	AI5C 360: A3.3 and ASTM
Inspection of HS bolting: 5nug tight joints.		X	AISC 360: M2.5
Material verification of structural steel for identification markings to conform to AI5C 360.			AISC 360: M2.6
Material verification of other steel to conform to ASTM 5tandards.		X	
Material verification of manufacturers certified test reports.		X	
Material verification of weld filler materials and manufacturers certificate of compliance.		X	
Verify welder certifications.		X	
Visually inspect welds.		X	
Verify rediographic inspection of full penetration welds per design requirements was performed by 3rd party.		X	

REV.	BY	DATE	DESCRIPTION

REVISIONS

T BAILEY INC.
AISC CERTIFIED FABRICATOR
9628 S March Point Rd.
Anacortes, WA 98221
PH: (360) 293-0682
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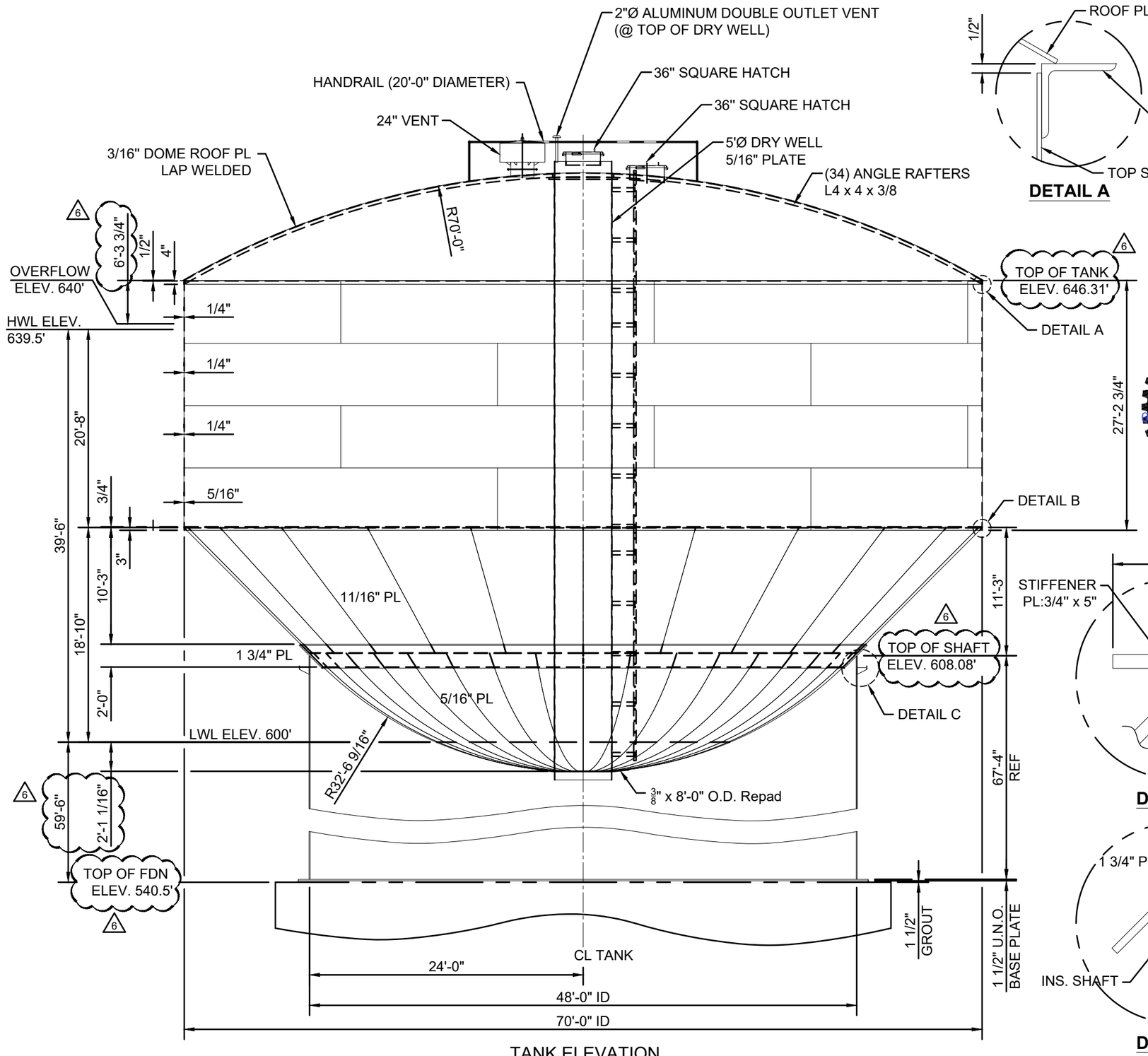
Website:
www.TBailey.com

DRAWN BY: PJ	DATE: 06/28/2022	CHK'D BY: DB	DATE: 06/28/2022

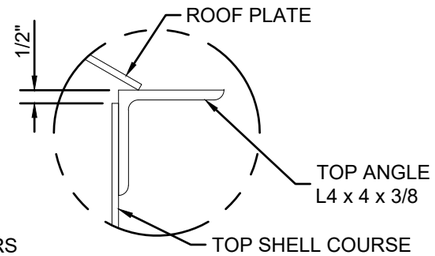
CUSTOMER: McCORMICK COMMUNITIES, LLC
PROJECT: PORT ORCHARD 660 RESERVOIR
70'-0" I.D. WATER TANK

TITLE: GENERAL STRUCTURAL NOTES

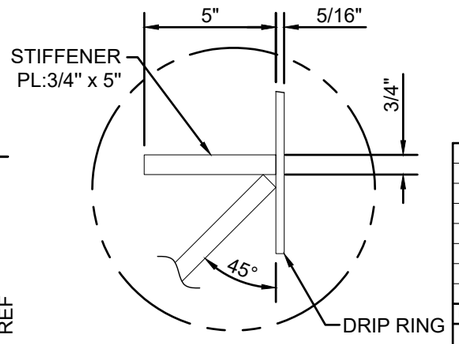
JOB#: 681-01 (HEI: 21-1657) SHT#: S-1 0



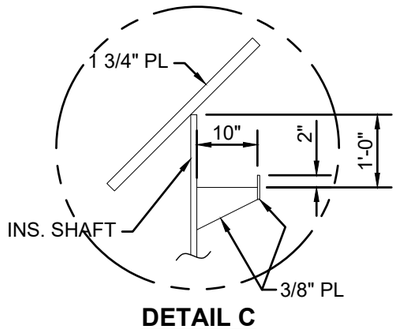
TANK ELEVATION



DETAIL A



DETAIL B



DETAIL C
(PAINTERS RAIL)

DESIGN INFORMATION

CODE: AWWA D100-21
INSIDE DIAMETER: 70'-0"
HEIGHT: 40'-6"
DESIGN LIQUID LEVEL: 39'-6"
NOMINAL CAPACITY: 892,000 GALS
NET WORK CAPACITY: 885,000 GALS
PRODUCT: WATER
DESIGN SPECIFIC GRAVITY: 1.0
DESIGN PRESSURE: ATMOSPHERIC
DESIGN VACUUM: ATMOSPHERIC
MAXIMUM DESIGN TEMPERATURE: AMBIENT
MAXIMUM OPERATING TEMPERATURE: AMBIENT
DESIGN METAL TEMPERATURE: N./A
WIND SPEED: 108 MPH (3 SEC GUST-ULT)
WIND IMPORTANCE FACTOR: 1.15
SEISMIC SITE SPECIFIC: Ss = 1.625, S1 = 0.567
SITE CLASS: "C"
SEISMIC SUG: 111, 1 = 1.5
ROOF LIVE LOAD: 25 PSF
JOINT EFFICIENCY: 0.85 ON SHELL, CONE AND BOWL
CORROSION ALLOWANCE: NONE
FILL RATE: 0-2400 GPM 6
SUCTION RATE: 0-2400 GPM 6
MATERIAL: CS
ALLOWABLE SOIL BEARING: 8,000 PSF

DOUGLAS JOHN BAYLES
STATE OF WASHINGTON
40599
REGISTERED
PROFESSIONAL ENGINEER
06/30/2022

REV.	BY	DATE	DESCRIPTION
6	PJ	6/28/2022	REVISED ELEVATIONS, UPDATED DESIGN TABLE
5	PJ	6/10/2022	REVISED TANK HEIGHT
4	PJ	3/31/2022	REVISED CONE PLATE THICKNESS TO 11/16" ONLY
3	DB	1/12/2022	REVISED WIND SPEED, TOP ANGLE AND RAFTER SIZES
2	DB	1/10/2022	REVISED PER CUSTOMER MARKUPS
1	DB	1/3/2022	REVISED PER CUSTOMER MARKUPS

REVISIONS

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DRAWN BY: PAO	DATE: 12/7/2021	CHK'D BY: DB	DATE: 12/7/2021

CUSTOMER: McCORMICK COMMUNITIES, LLC
PROJECT: PORT ORCHARD 660 RESERVOIR
70'-0" I.D. WATER TANK

TITLE: DESIGN SKETCH

JOB#: 681-01 (HEI: 21-1657) SHT#: GA-1 6

N

0°

OUTER FOUNDATION WALL

INNER FOUNDATION WALL

BOOSTER PUMP STATION OUTLINE

10"Ø VENTING PIPE
(2) ROWS OF (4) VENTS EQ. SPACED AROUND SHAFT
(SEE ELEVATIONS ON GA-4)

A

A

45°

5

FOUNDATION PERIMETER DRAIN (BY OTHERS)

26'-0"

CATWALK

25'-0"

1'-6"

90°

270°

90°

18°

6'-0"

ACCESS DOOR
3' WIDE x 6'-8" TALL
W/WEATHER SHIELD

5'-0"

CONCRETE PAD
(BY OTHERS)

12" TIDEFLEX
INLET/OUTLET PIPE

12" OVERFLOW
PIPE

29°

25°

4'-0 5/16"

180°

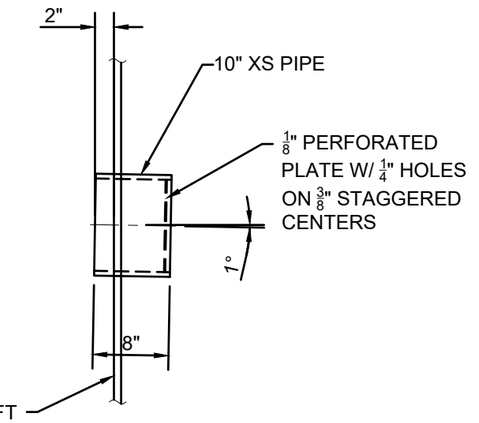
OVERHEAD DOOR
W/ BOLLARDS
12' WIDE x 12' TALL

CONCRETE PAD (BY OTHERS)
(DIMENSIONS TBD /
REFER TO HDR DWG FOR DETAILS)

PLAN VIEW ORIENTATION

NOTE:

1. REFER TO HDR DWG D50-01 FOR BOOSTER PUMP STATION LAYOUT.



SECTION A-A
(VENTING PIPES)

REV.	BY	DATE	DESCRIPTION
5	PJ	6/27/2022	ADDED NOTE FOR PERIMETER DRAIN
4	PJ	6/10/2022	REMOVED EAST ACCESS DOOR, REVISED INLET LOCATION
3	PJ	3/31/2022	REVISED PER CUSTOMER MARKUPS
2	DB	1/10/2022	REVISED PER CUSTOMER MARKUPS
1	DB	1/3/2022	REVISED PER CUSTOMER MARKUPS

REVISIONS

DOUGLAS JOHN BAYLES
STATE OF WASHINGTON
40599
REGISTERED
PROFESSIONAL ENGINEER
06/30/2022

T BAILEY INC.

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DRAWN BY: DB	DATE: 12/9/2021	CHK'D BY: TJH	DATE: 12/9/2021

CUSTOMER: McCORMICK COMMUNITIES, LLC
PROJECT: PORT ORCHARD 660 RESERVOIR
70'-0" I.D. TANK

TITLE: PLAN VIEW ORIENTATION

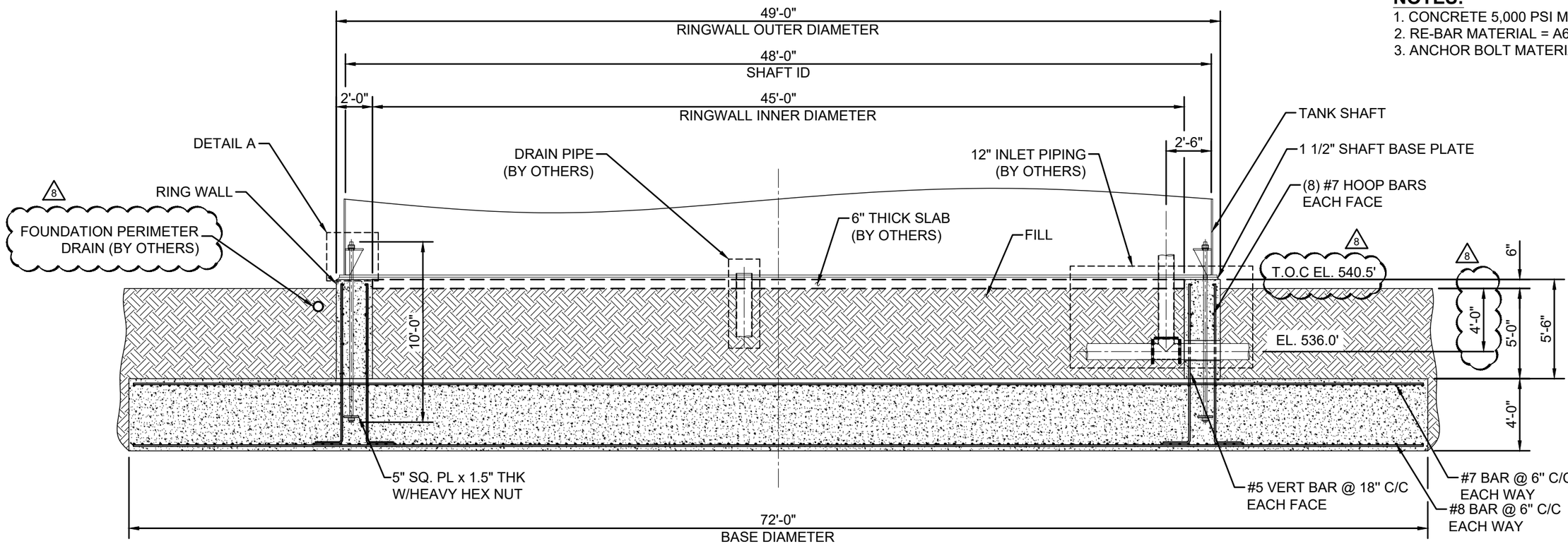
JOB#: 681-01 (HEI: 21-1657)

SHT#: GA-2

5

NOTES:

1. CONCRETE 5,000 PSI MINIMUM PER ACI 318.
2. RE-BAR MATERIAL = A615-60.
3. ANCHOR BOLT MATERIAL = ASTM F1554-55.

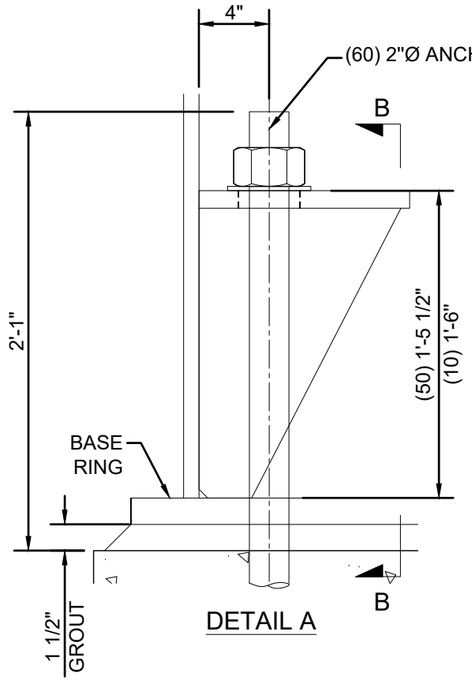


CONCRETE

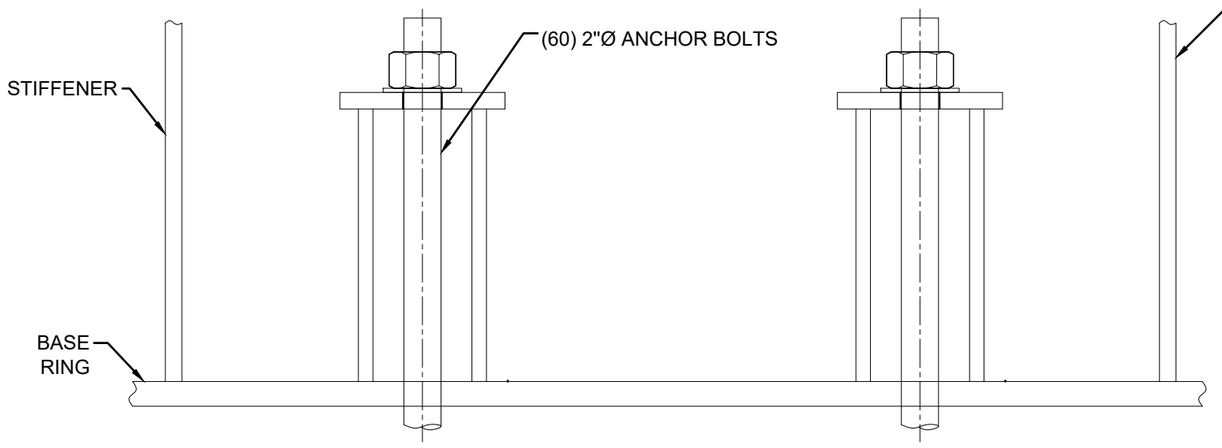
STRUCTURAL FILL

HATCH LEGEND

FOUNDATION DESIGN



DETAIL A



SECTION B-B

DOUGLAS JOHN BAYLES
STATE OF WASHINGTON
40599
REGISTERED
PROFESSIONAL ENGINEER
06/30/2022

REV.	BY	DATE	DESCRIPTION
8	PJ	6/27/2022	REVISED T.O.C. ELEVATION
7	PJ	6/10/2022	REVISED ANCHOR BOLTS DIAMETER
6	PJ	3/31/2022	REVISED INLET
5	DB	1/12/2022	REVISED ANCHOR CHAIRS
4	DB	1/10/2022	REVISED PER CUSTOMER MARKUPS
3	DB	1/3/2022	REVISED PER CUSTOMER MARKUPS
2	DB	12/23/2021	ADDED THRUST BOX, & REMOVED FLANGES, 10" PIPING
1	DB	12/17/2021	ADDED RINGWALL CALLOUTS DIMENSIONS & DETAILS

REVISIONS

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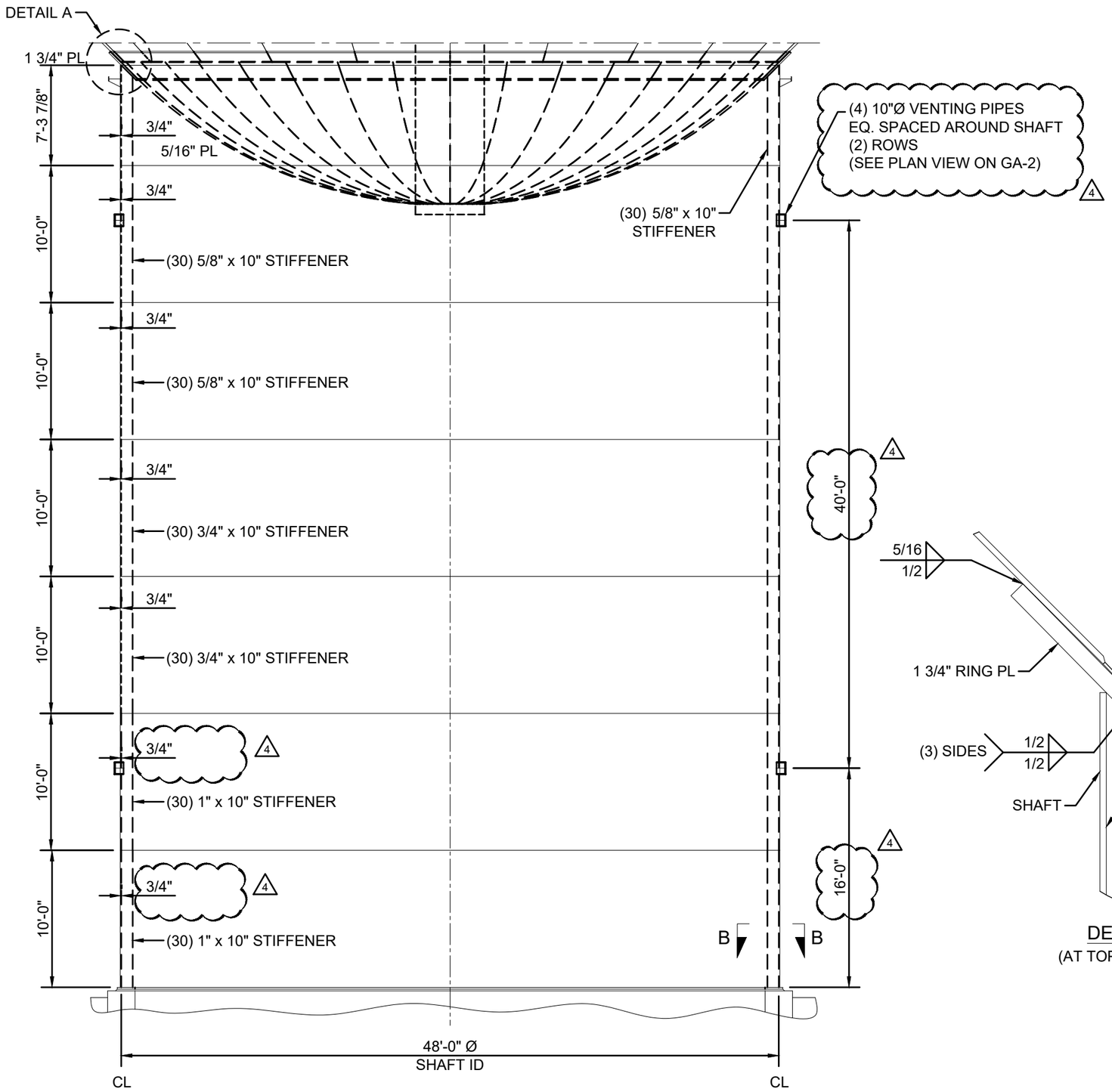
Website:
www.TBailey.com

DRAWN BY: DB	DATE: 12/10/2021	CHK'D BY: TJH	DATE: 12/10/2021

CUSTOMER: McCORMICK COMMUNITES, LLC
70'-0" I.D. TANK
PROJECT: PORT ORCHARD 660 RESERVOIR

TITLE: FOUNDATION DESIGN

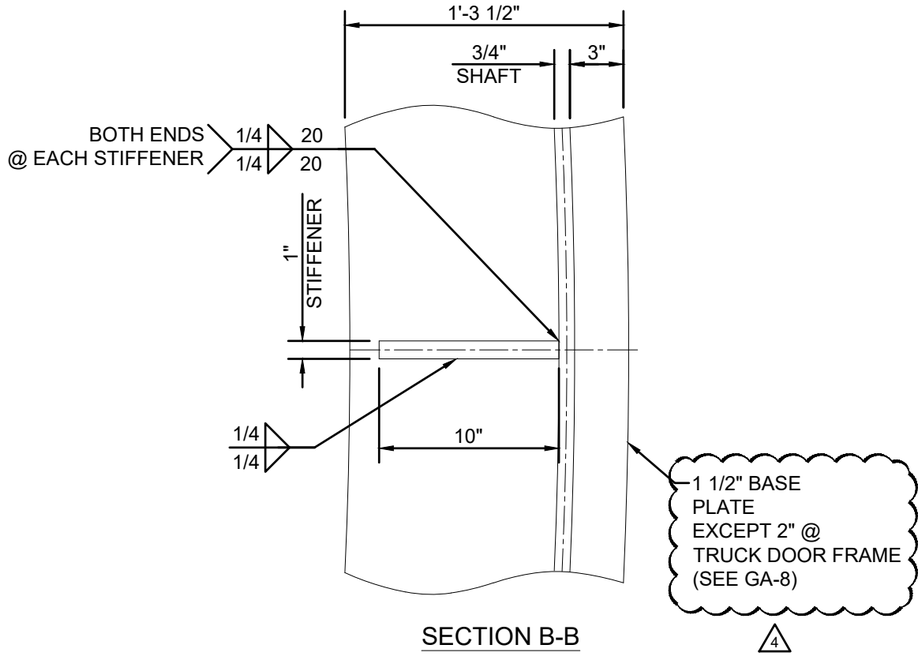
JOB#: 681-01 (HEI: 21-1657)
SHT#: GA-3
8



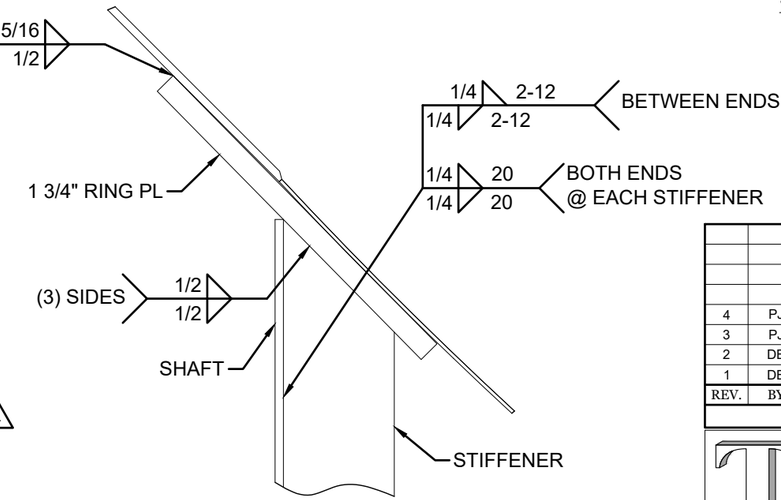
SHAFT ELEVATION

NOTE:

1. STIFFENERS (QUANTITY OF 30) ARE EQUALLY SPACED AROUND OUTSIDE WALL (SHAFT).



SECTION B-B
(AT BASE)



DETAIL A
(AT TOP OF SHAFT)

REV.	BY	DATE	DESCRIPTION
4	PJ	6/10/2022	REVISED THK AT SHAFT, REVISED NOTE ON SECTION B-B
3	PJ	3/31/2022	REVISED STIFFENERS WELDS
2	DB	1/10/2022	REVISED PER CUSTOMER MARKUPS
1	DB	1/3/2022	REVISED PER CUSTOMER MARKUPS

REVISIONS

DOUGLAS JOHN BAYLES
STATE OF WASHINGTON
40599
REGISTERED
PROFESSIONAL ENGINEER
06/30/2022

T BAILEY INC.
AISC CERTIFIED FABRICATOR

9628 S March Point Rd.
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FAX: (360) 293-3893
Website:
www.TBailey.com

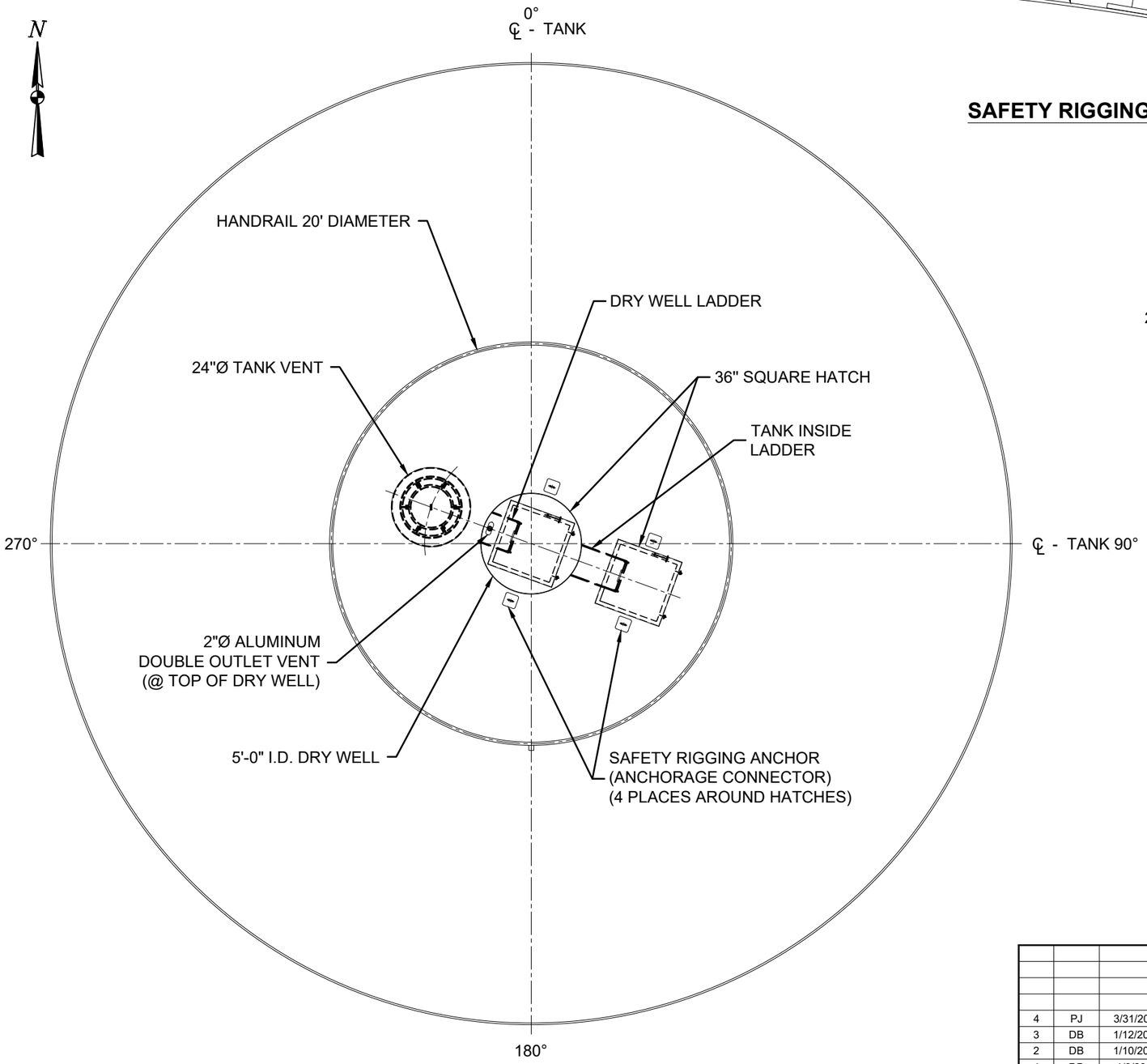
DRAWN BY: DB	DATE: 12/14/2021	CHK'D BY: TJH	DATE: 12/14/2021

CUSTOMER: McCORMICK COMMUNITIES, LLC
70'-0" I.D. TANK
PROJECT: PORT ORCHARD 660 RESERVOIR

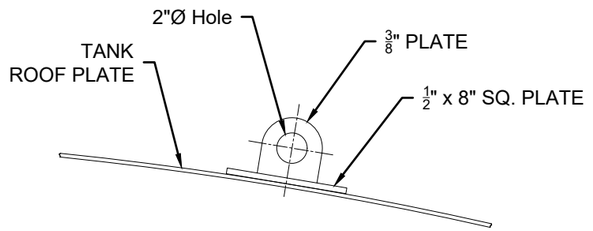
TITLE: SHAFT DESIGN

JOB#: 681-01 (HEI: 21-1657)

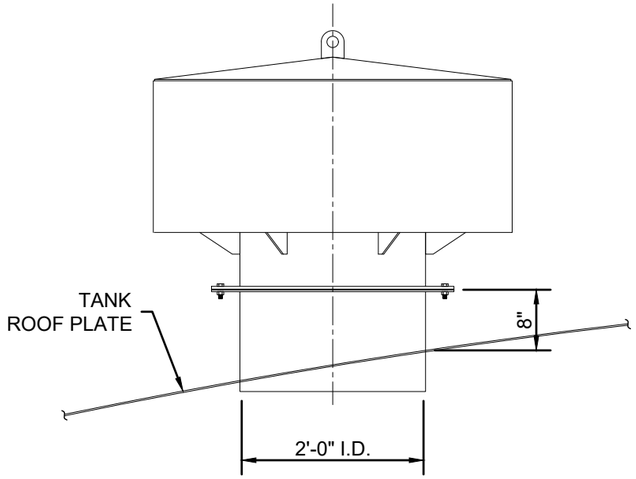
SHT#: GA-4 4



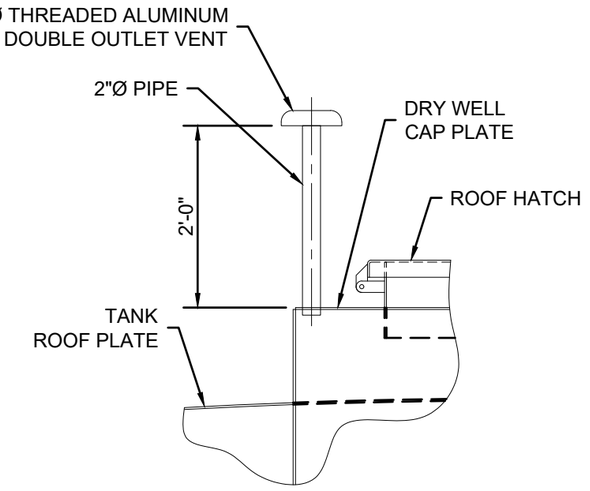
ORIENTATION



SAFETY RIGGING ANCHOR DETAIL



24" TANK VENT DETAIL



DRY WELL VENT DETAIL

DOUGLAS JOHN BAYLES
STATE OF WASHINGTON
40599
REGISTERED
PROFESSIONAL ENGINEER
06/30/2022

REV.	BY	DATE	DESCRIPTION
4	PJ	3/31/2022	REMOVED FA LIGHT MOUNT
3	DB	1/12/2022	MOVED ANCHOR CHAIRS TO ANOTHER DRAWING
2	DB	1/10/2022	REVISED PER CUSTOMER MARKUPS
1	DB	1/3/2022	REVISED PER CUSTOMER MARKUPS

REVISIONS

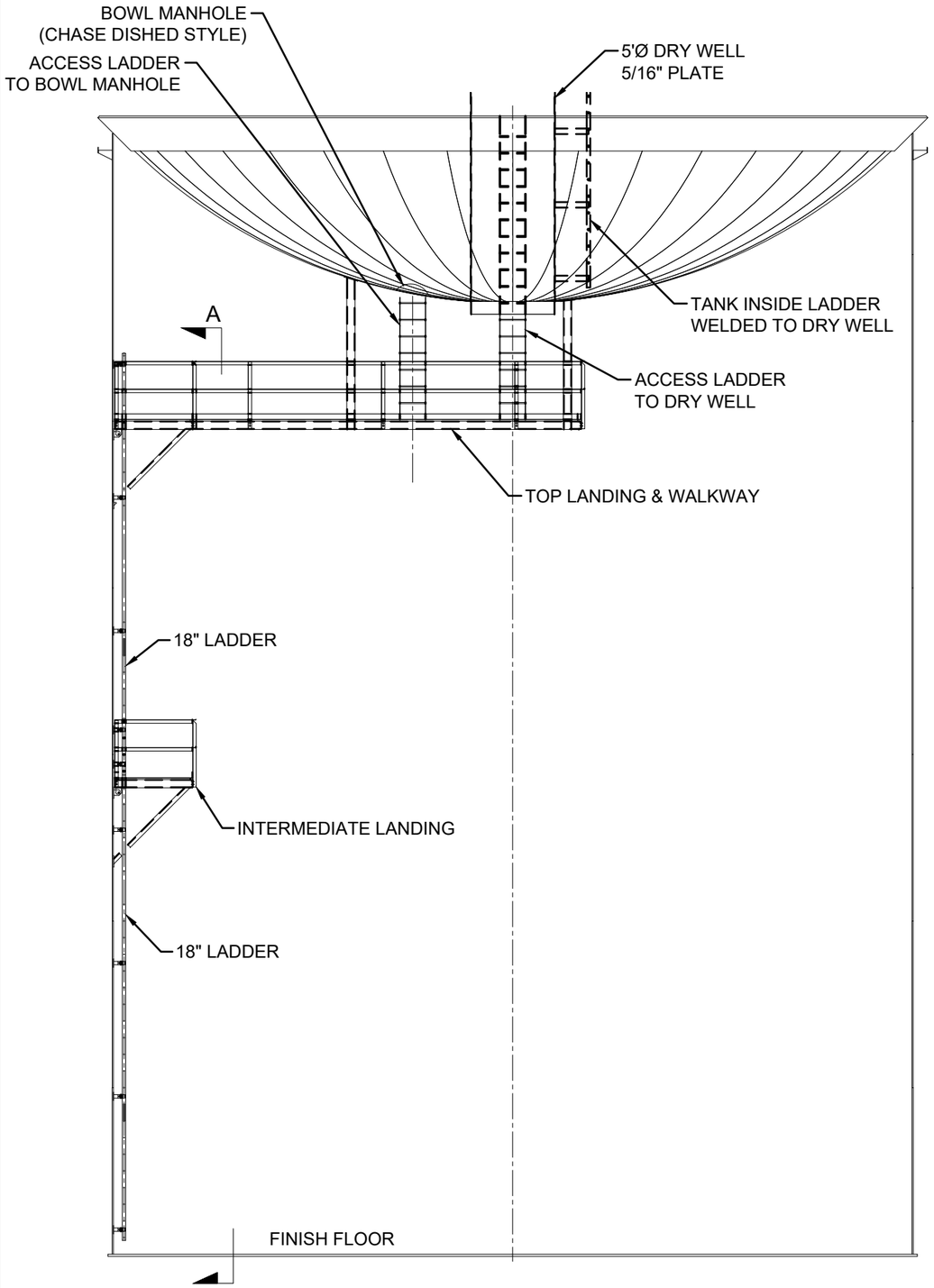
T BAILEY INC.
AISC CERTIFIED FABRICATOR
9628 S March Point Rd.
Anacortes, WA 98221
PH: (360) 293-0682
FAX: (360) 293-3893
Website:
www.TBailey.com

DRAWN BY: DB	DATE: 12/16/2021	CHK'D BY: TJH	DATE: 12/16/2021

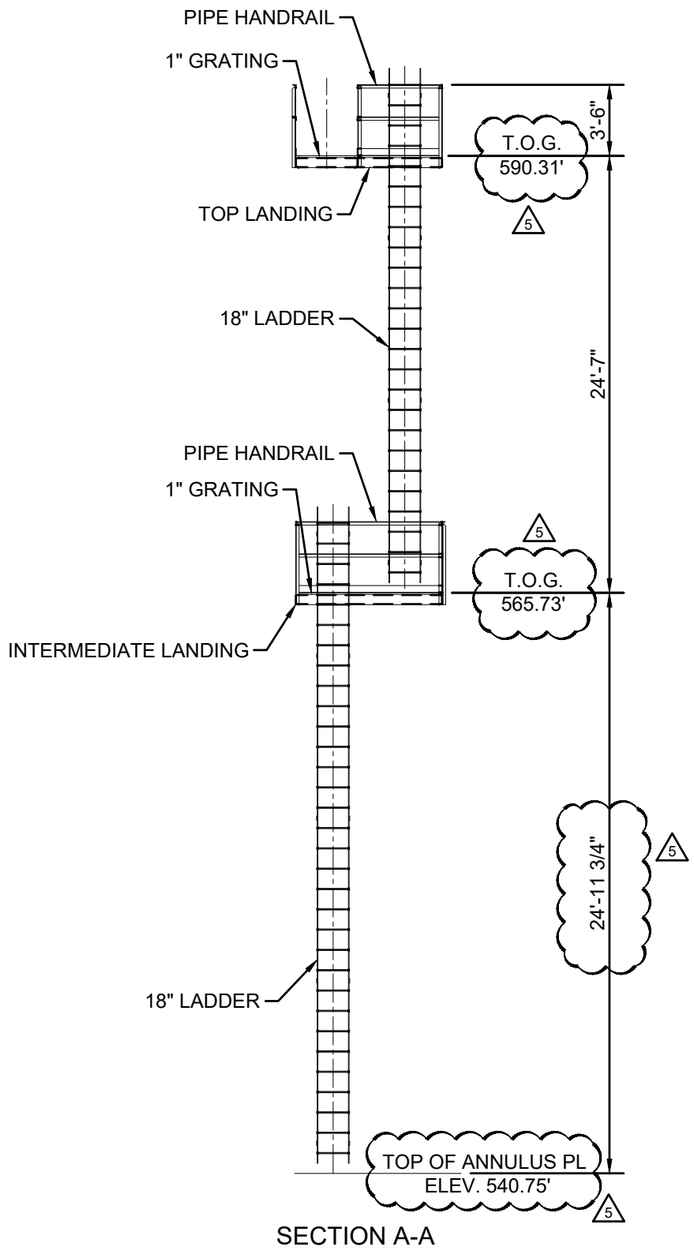
CUSTOMER: McCORMICK COMMUNITIES, LLC
70'-0" I.D. TANK
PROJECT: PORT ORCHARD 660 RESERVOIR

TITLE: ROOF ORIENTATION

JOB#: 681-01 (HEI: 21-1657) | SHT#: GA-5 | 4



LADDERS ELEVATION VIEW
(INSIDE SHAFT)



SECTION A-A

NOTES:

1. LADDER, LANDING - DESIGN AND FABRICATION BASIS - OSHA 29 CFR 1910

DOUGLAS JOHN BAYLES
STATE OF WASHINGTON
40599
REGISTERED
PROFESSIONAL ENGINEER
06/30/2022

REV.	BY	DATE	DESCRIPTION
5	PJ	6/27/2022	REVISED ELEVATIONS
4	PJ	6/10/2022	REVISED VIEW CALLOUT
3	PJ	3/31/2022	REVISED TOP OF PLATFORM ELEVATIONS
2	DB	1/10/2022	REVISED PER CUSTOMER MARKUPS
1	DB	1/3/2022	REVISED PER CUSTOMER MARKUPS

REVISIONS

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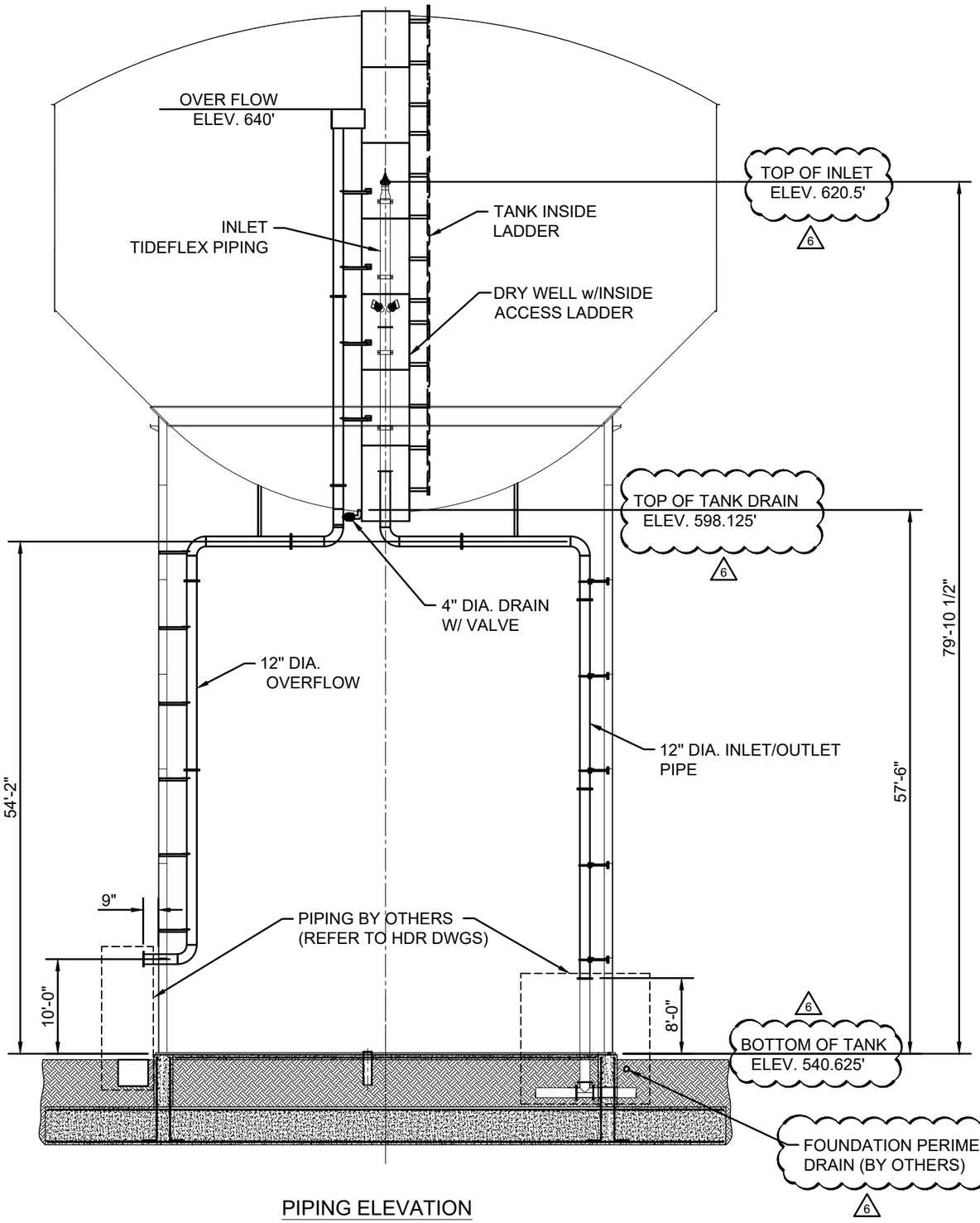
DRAWN BY: DB	DATE: 12/17/2021	CHK'D BY: TJH	DATE: 12/17/2021

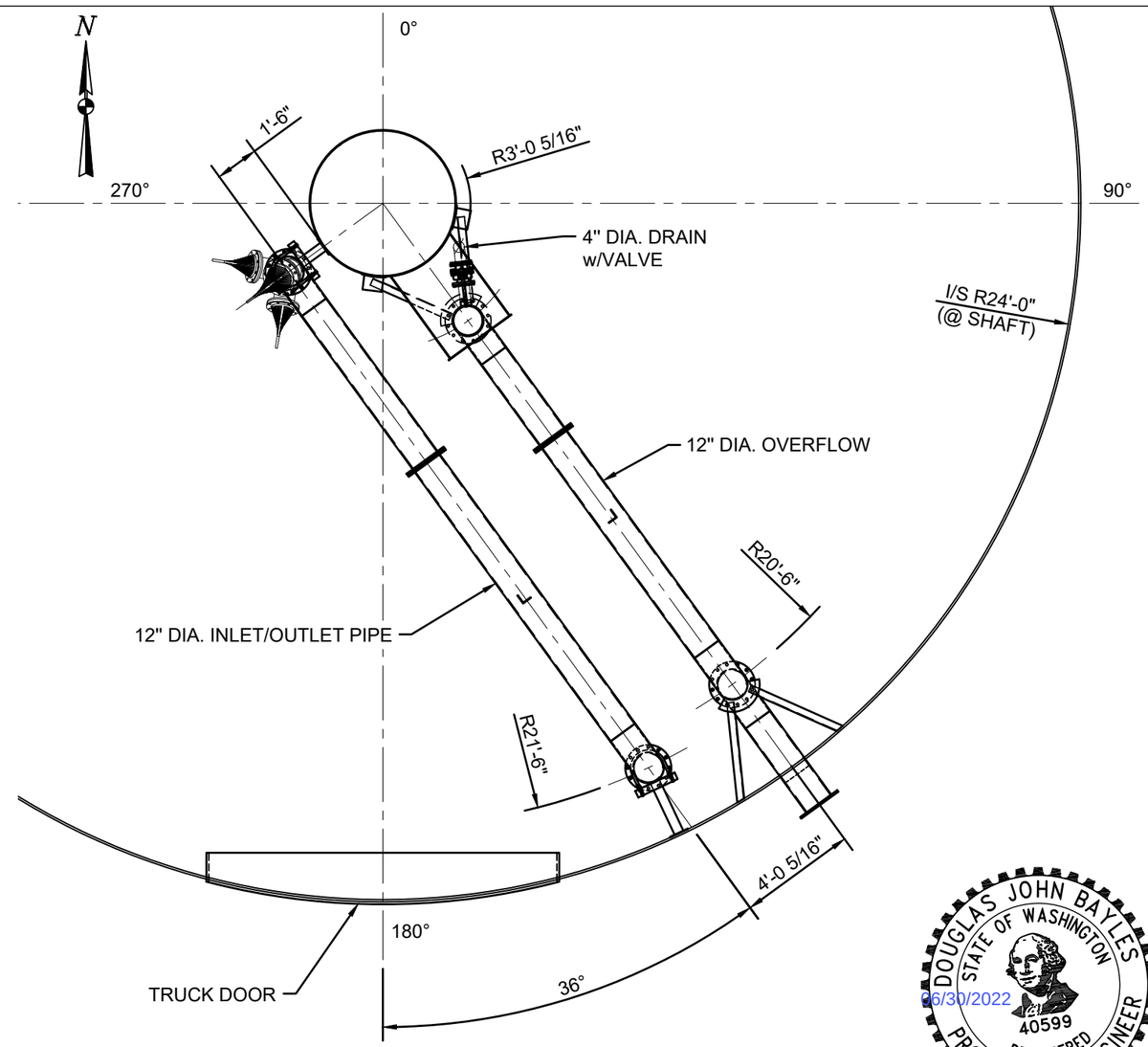
CUSTOMER: McCORMICK COMMUNITIES, LLC
PROJECT: PORT ORCHARD 660 RESERVOIR
70'-0" I.D. TANK

TITLE: LADDER WITH PLATFORM DESIGNS

JOB#: 681-01 (HEI: 21-1657)
SHT#: GA-6
5



PIPING ELEVATION



PIPING PLAN

DOUGLAS JOHN BAYLES
STATE OF WASHINGTON
40599
REGISTERED
PROFESSIONAL ENGINEER
06/30/2022

REV.	BY	DATE	DESCRIPTION
6	PJ	6/27/2022	REVISED ELEVATIONS, ADDED PERIMETER DRAIN NOTE
5	PJ	6/10/2022	REVISED INLET LOCATION
4	PJ	3/31/2022	REVISED PER CUSTOMER MARKUPS
3	DB	1/10/2022	REVISED PER CUSTOMER MARKUPS
2	DB	1/3/2022	REVISED PER CUSTOMER MARKUPS
1	DB	12/23/2021	ADDED THRUST BOX

REVISIONS

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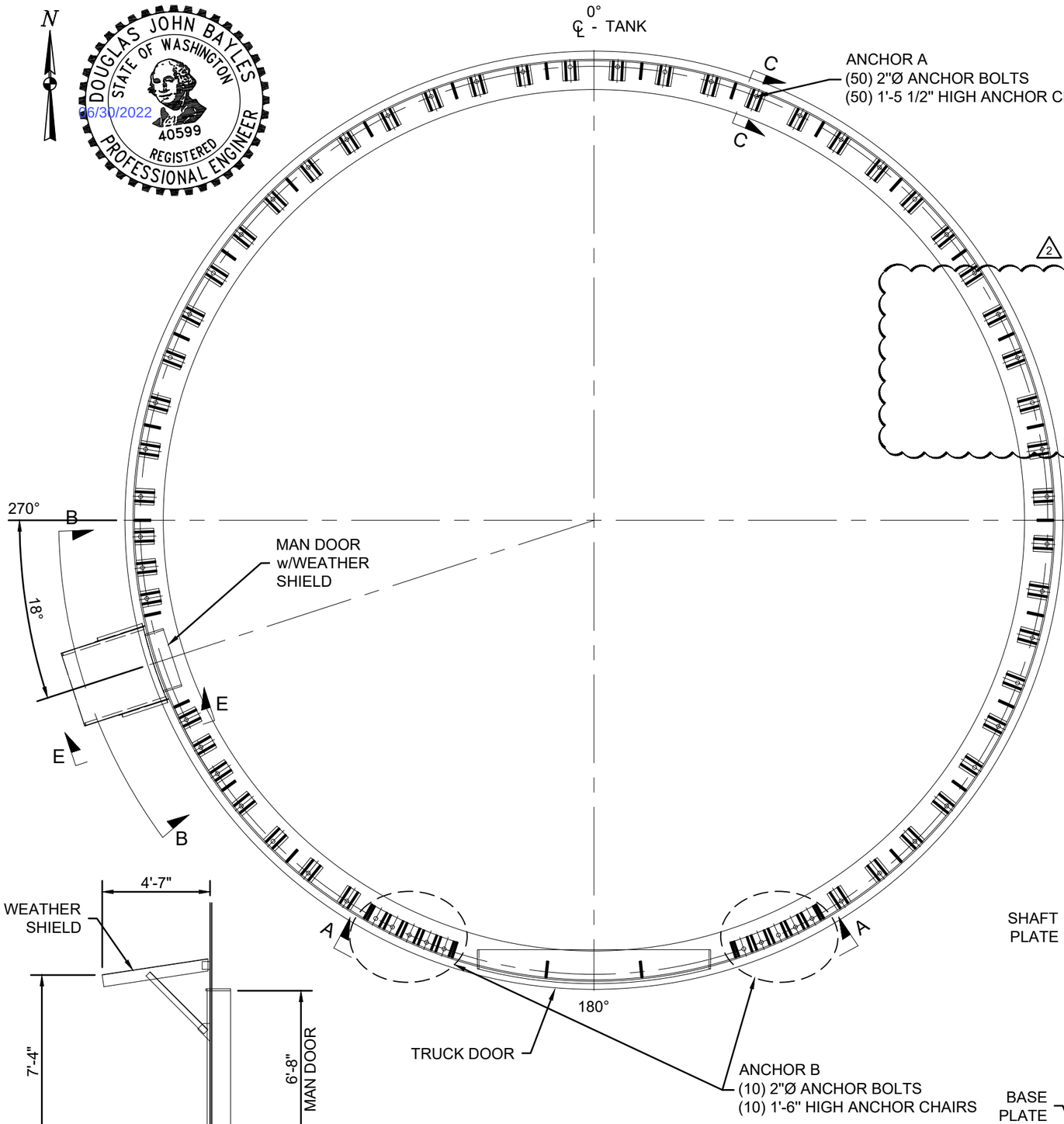
FAX: (360) 293-3893
Website:
www.TBailey.com

DRAWN BY: DB	DATE: 12/23/2021	CHK'D BY: TJH	DATE: 12/23/2021

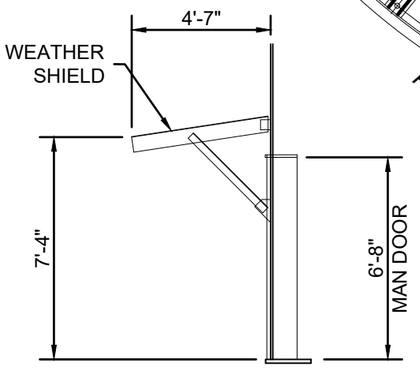
CUSTOMER: McCORMICK COMMUNITIES, LLC
70'-0" I.D. TANK
PROJECT: PORT ORCHARD 660 RESERVOIR

TITLE: PIPING PLAN

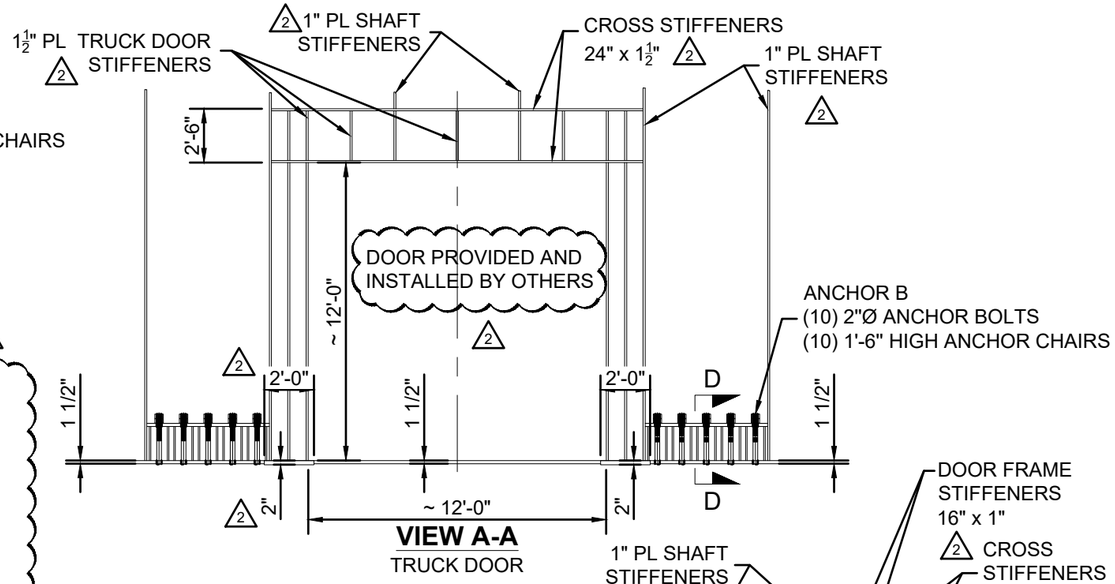
JOB#: 681-01 (HEI 21-1657)
SHT#: GA-7
6



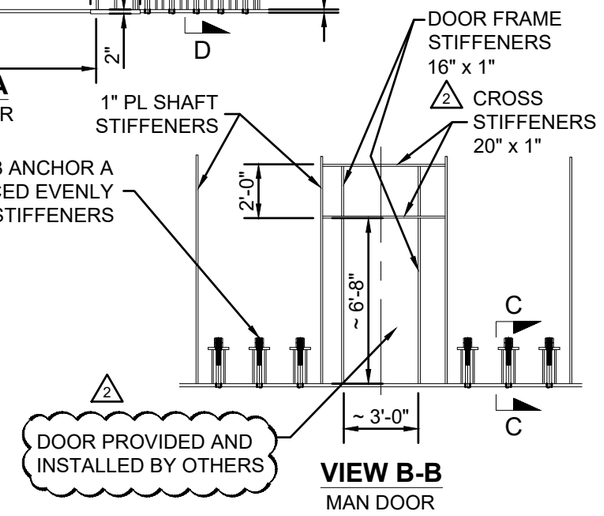
ANCHOR CHAIR ORIENTATION



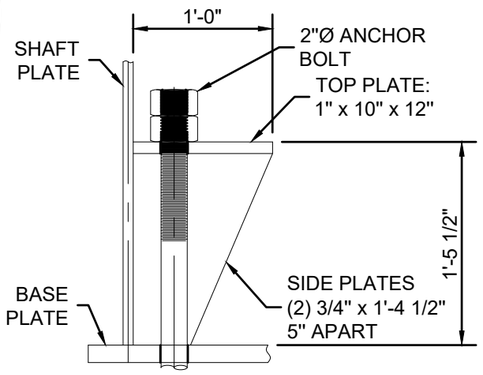
SECTION E-E



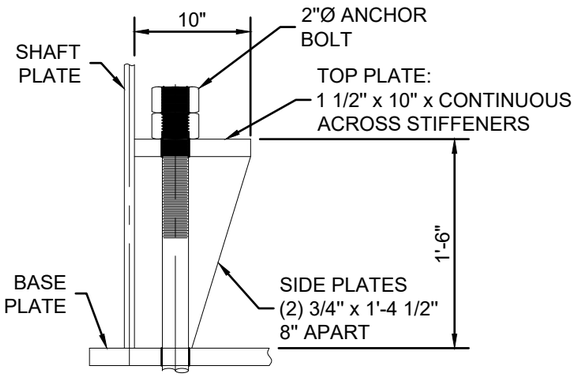
VIEW A-A
TRUCK DOOR



VIEW B-B
MAN DOOR



SECTION C-C



SECTION D-D

REV.	BY	DATE	DESCRIPTION
2	PJ	6/10/2022	REMOVED EAST ACCESS DOOR
1	PJ	3/31/2022	ADDED SECOND MAN DOOR & WEATHER SHIELDS

REVISIONS

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DRAWN BY: DB	DATE: 1/13/2021	CHK'D BY: TJH	DATE: 1/13/2021

CUSTOMER: McCORMICK COMMUNITIES, LLC
70'-0" I.D. TANK
PROJECT: PORT ORCHARD 660 RESERVOIR

TITLE: ANCHOR CHAIR & DOORS ORIENTATION & DETAILS

JOB#: 681-01 (HEI: 21-1657) | SHT#: GA-8 2