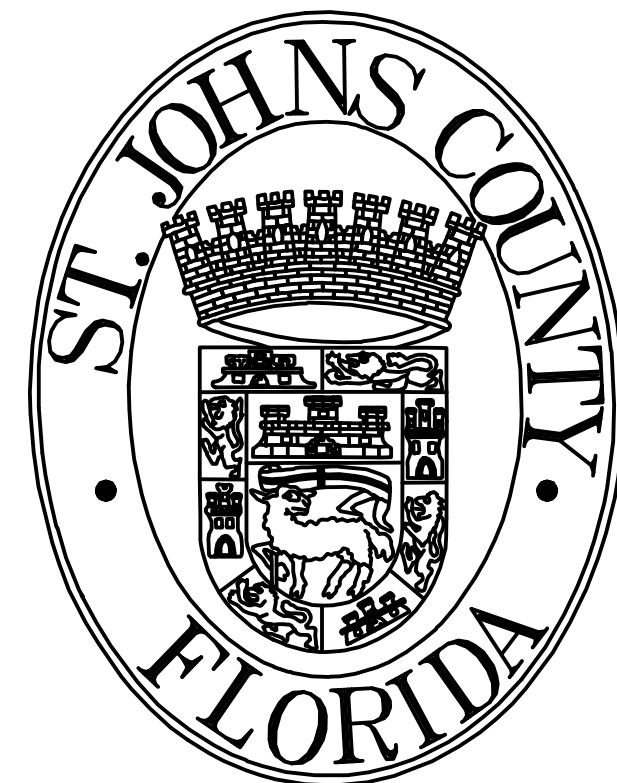


ST. JOHNS COUNTY UTILITY DEPARTMENT

ST. JOHNS COUNTY, FLORIDA

SJCUD PROJECT NO: 4484-56302-6258-56302



UTILITIES

NORTHWEST WTP PHASE 1 (6 TO 9 MGD) EXPANSION JULY 2019

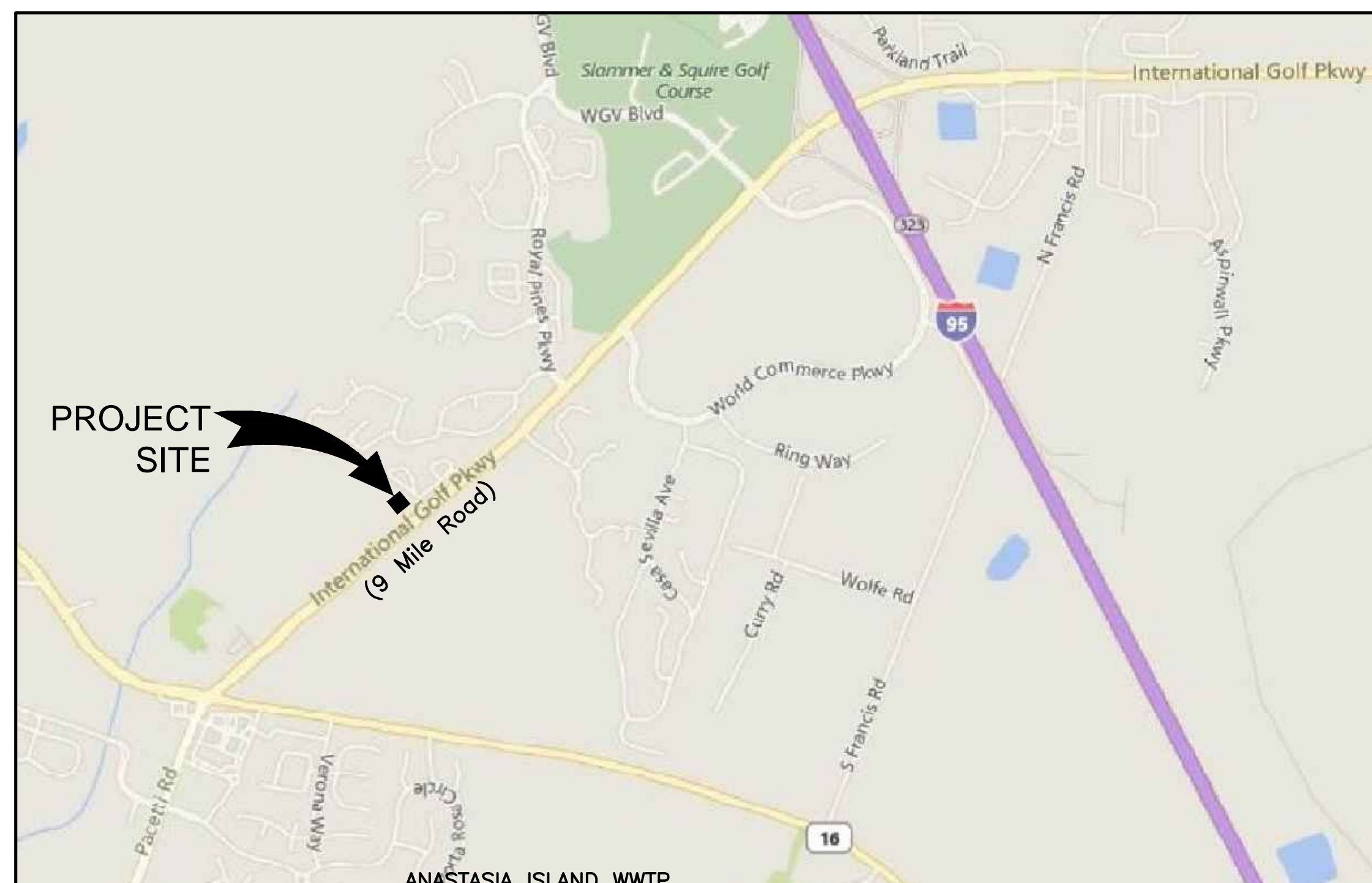
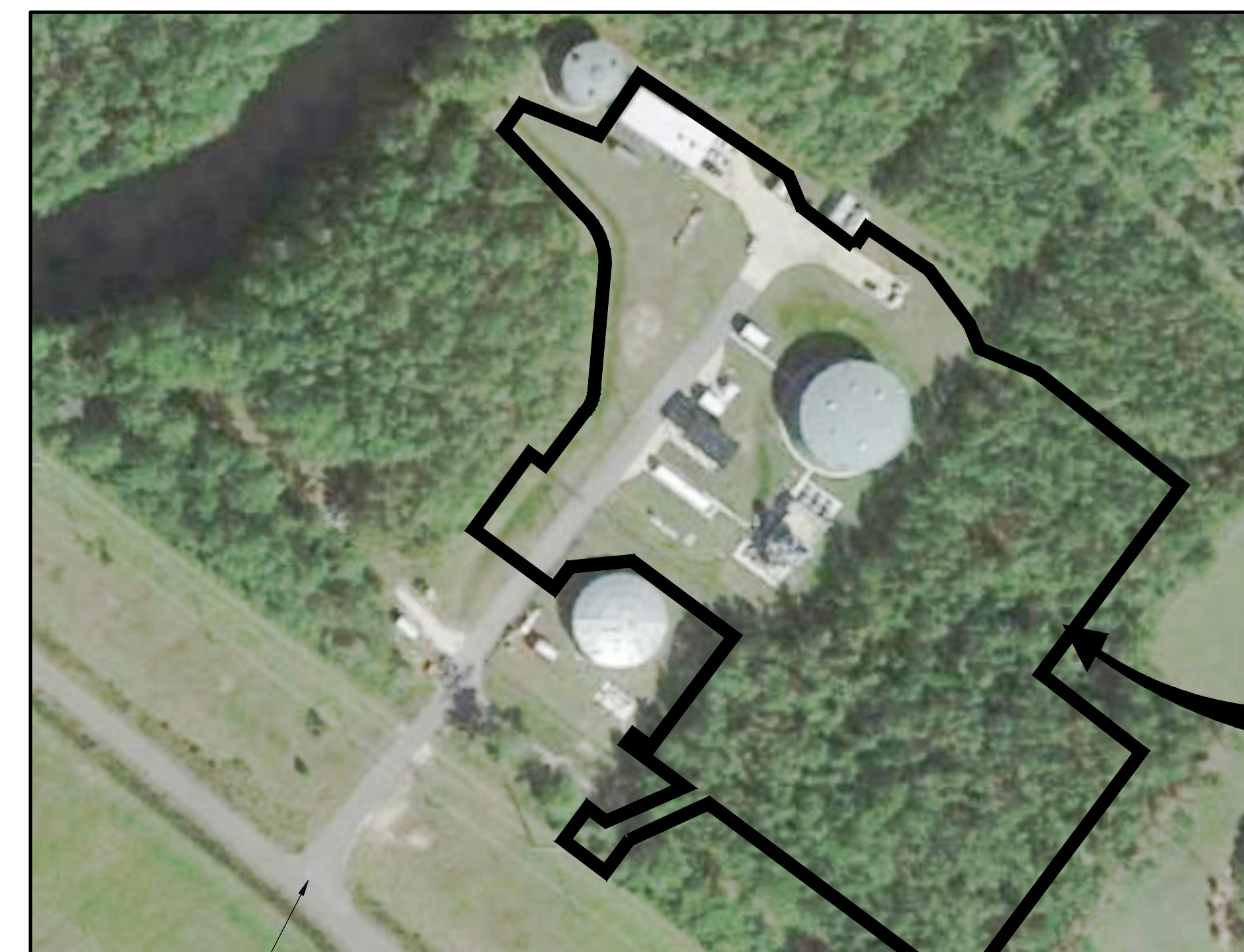


IMAGE OBTAINED FROM BING 2018 HERE, OpenStreetMap

3390 INTERNATIONAL GOLF PARKWAY
ST. AUGUSTINE, FL. 32092

LOCATION MAP



ENTRANCE TO PROJECT SITE

IMAGE OBTAINED FROM GOOGLE EARTH PRO, DECEMBER 2018

AREA MAP

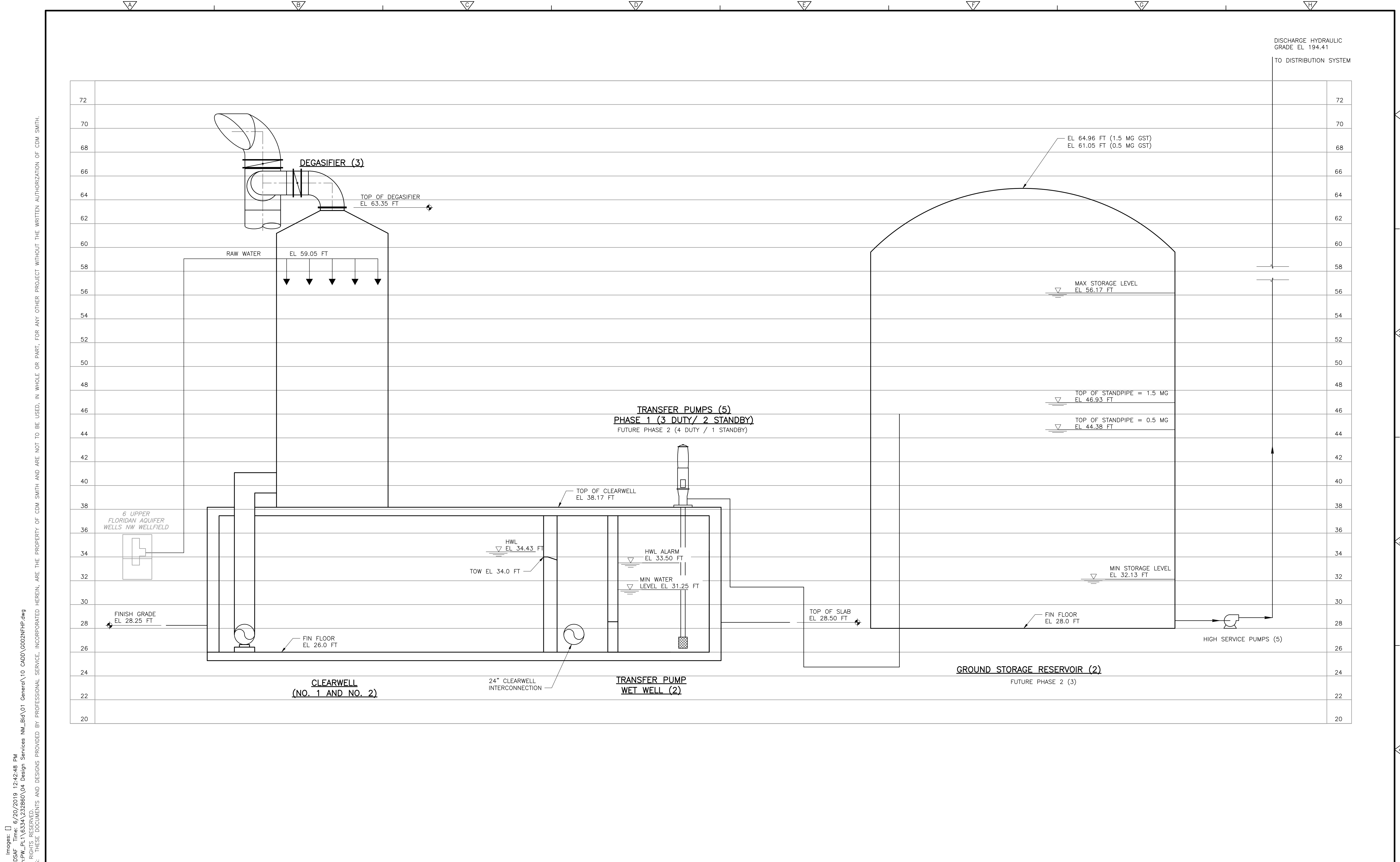


PROJECT LOCATION

**CDM
Smith**

4651 Salisbury Road, SUITE 420
JACKSONVILLE, FL 32256
TEL: 904-731-7109
FL. COA NO: EB-0000020
PROJECT NUMBER: 6334-232860

ISSUED FOR BID
JULY 2019



XREFs: [CDMS-2436] Images: []
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REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: J. WILLIAMS
 DRAWN BY: A. EDWARDS
 SHEET CHK'D BY: J. O'NEAL
 CROSS CHK'D BY: D. PRAH
 APPROVED BY: I. POLEMATIDIS
 DATE: JULY 2019

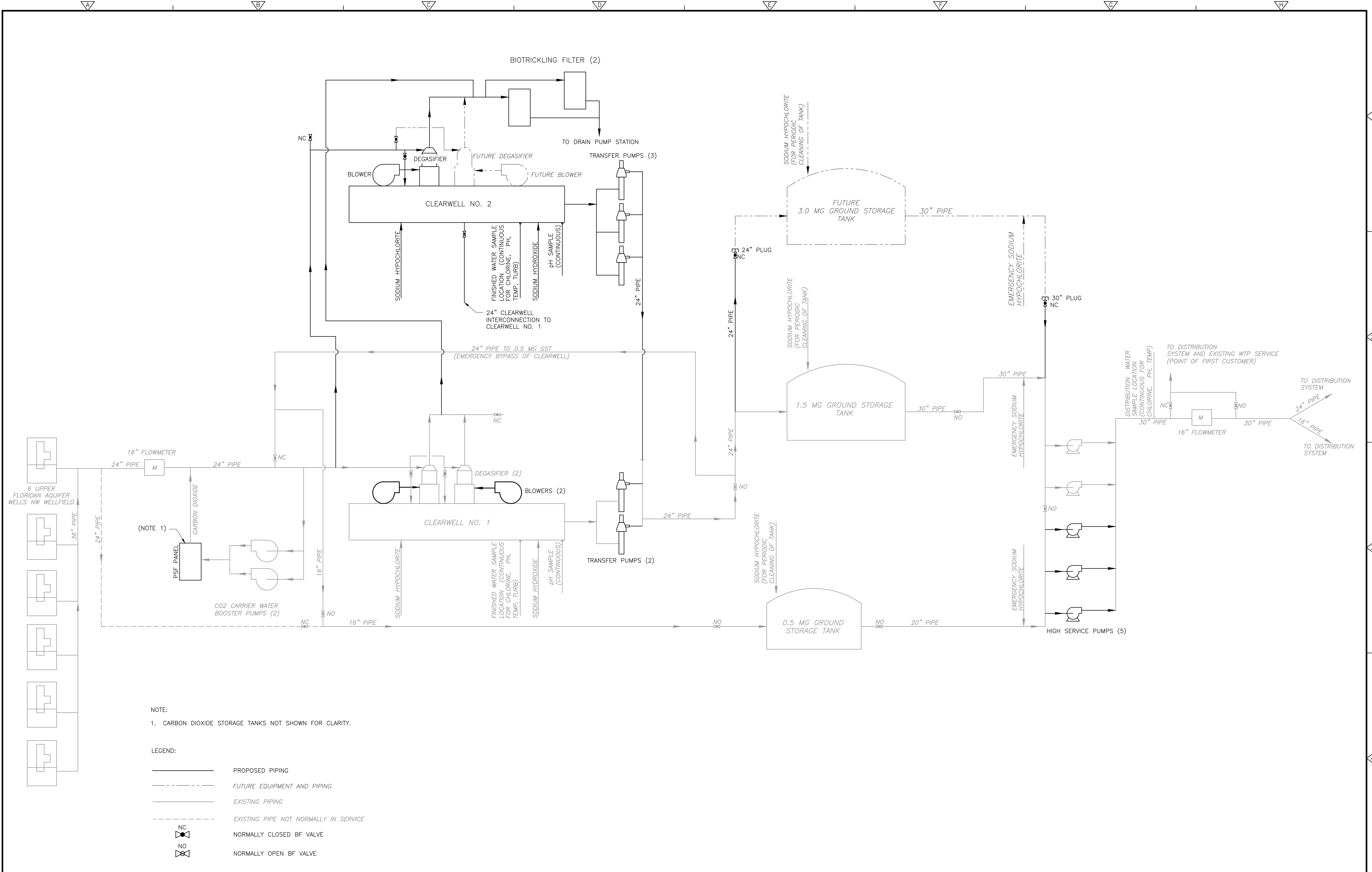
CDM Smith
 4651 Salisbury Road, Suite 420
 Jacksonville, FL 32256
 Tel: (904) 731-7109
 FL CCA No. EB-0000020

ST. JOHNS COUNTY UTILITY DEPARTMENT
 ST. JOHNS COUNTY, FLORIDA
 NORTHWEST WTP
 PHASE 1 (6 TO 9 MGD) EXPANSION

PROJECT NO. 6334-232860
 FILE NAME: G002NFHP.DWG
 SHEET NO. G-2

ISSUED FOR BID

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NOTE:
 1. CARBON DIOXIDE STORAGE TANKS NOT SHOWN FOR CLARITY.

LEGEND:

- PROPOSED PIPING
- FUTURE EQUIPMENT AND PIPING
- EXISTING PIPING
- EXISTING PIPE NOT NORMALLY IN SERVICE
- NC
 NORMALLY CLOSED BF VALVE
- NO
 NORMALLY OPEN BF VALVE

REV. NO.	DATE	DRWN	CHKD	REMARKS

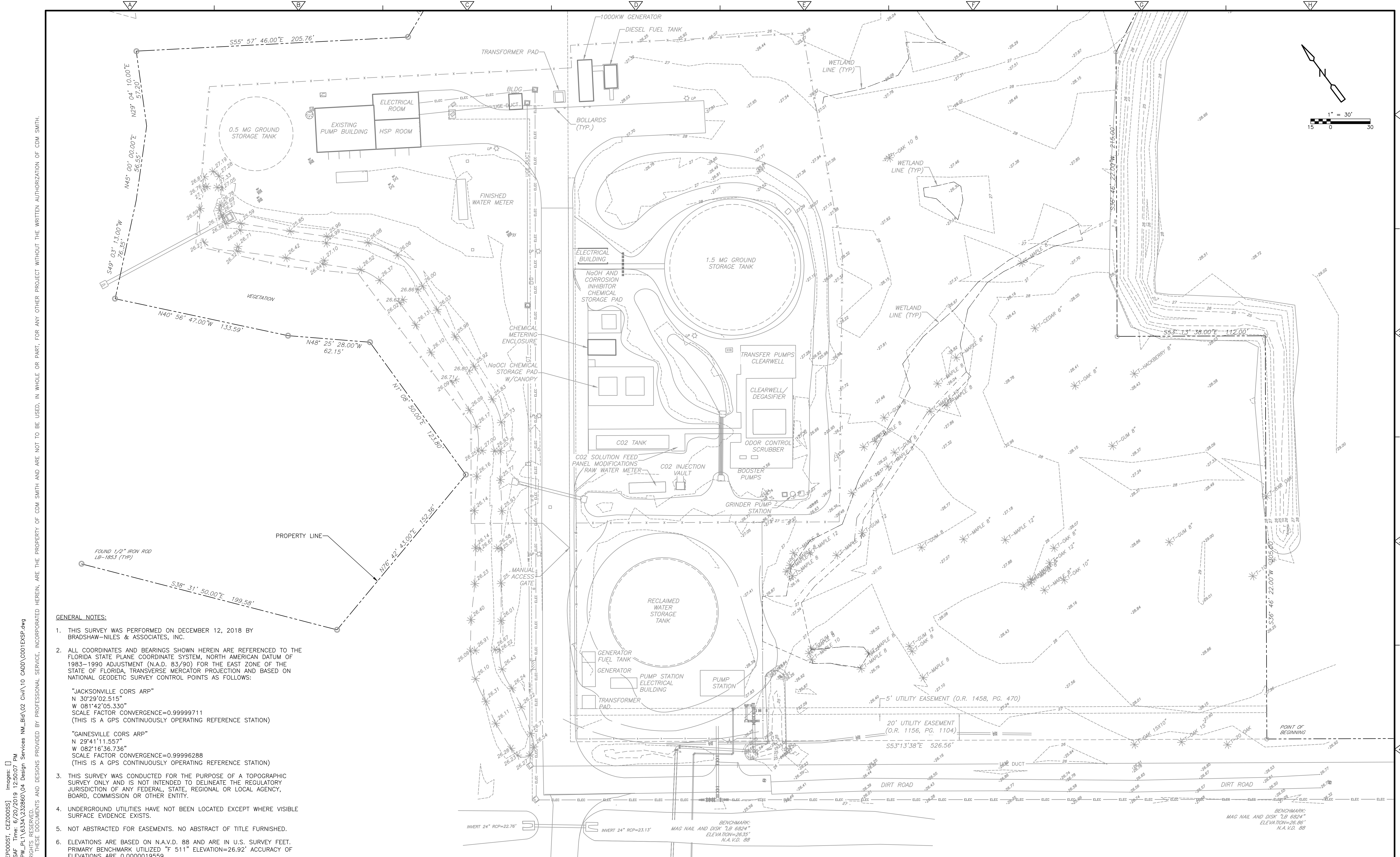
DESIGNED BY: J. WILLIAMS
 DRAWN BY: A. EDWARDS
 SHEET CHK'D BY: J. O'NEAL
 CROSS CHK'D BY: D. PRAH
 APPROVED BY: I. POLEMATIDIS
 DATE: JULY 2019



ST. JOHNS COUNTY UTILITY DEPARTMENT
 ST. JOHNS COUNTY, FLORIDA
 NORTHWEST WTP
 PHASE 1 (6 TO 9 MGD) EXPANSION

PROCESS FLOW DIAGRAM

PROJECT NO. 6334-232860
 FILE NAME: G003NFPR.DWG
 SHEET NO.
G-3



- GENERAL NOTES:**
- THIS SURVEY WAS PERFORMED ON DECEMBER 12, 2018 BY BRADSHAW-NILES & ASSOCIATES, INC.
 - ALL COORDINATES AND BEARINGS SHOWN HEREIN ARE REFERENCED TO THE FLORIDA STATE PLANE COORDINATE SYSTEM, NORTH AMERICAN DATUM OF 1983-1990 ADJUSTMENT (N.A.D. 83/90) FOR THE EAST ZONE OF THE STATE OF FLORIDA, TRANSVERSE MERCATOR PROJECTION AND BASED ON NATIONAL GEODETIC SURVEY CONTROL POINTS AS FOLLOWS:
 "JACKSONVILLE CORS ARP"
 N 30°29'02.515"
 W 081°42'05.330"
 SCALE FACTOR CONVERGENCE=0.99999711
 (THIS IS A GPS CONTINUOUSLY OPERATING REFERENCE STATION)
 "GAINESVILLE CORS ARP"
 N 29°41'11.557"
 W 082°16'36.736"
 SCALE FACTOR CONVERGENCE=0.99996288
 (THIS IS A GPS CONTINUOUSLY OPERATING REFERENCE STATION)
 - THIS SURVEY WAS CONDUCTED FOR THE PURPOSE OF A TOPOGRAPHIC SURVEY ONLY AND IS NOT INTENDED TO DELINEATE THE REGULATORY JURISDICTION OF ANY FEDERAL, STATE, REGIONAL OR LOCAL AGENCY, BOARD, COMMISSION OR OTHER ENTITY.
 - UNDERGROUND UTILITIES HAVE NOT BEEN LOCATED EXCEPT WHERE VISIBLE SURFACE EVIDENCE EXISTS.
 - NOT ABSTRACTED FOR EASEMENTS. NO ABSTRACT OF TITLE FURNISHED.
 - ELEVATIONS ARE BASED ON N.A.V.D. 88 AND ARE IN U.S. SURVEY FEET. PRIMARY BENCHMARK UTILIZED "F 511" ELEVATION=26.92' ACCURACY OF ELEVATIONS ARE 0.0000019559.

XREFS: [CDMS_2436_CEP00001_CEP00055] Images: []
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REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: J. WILLIAMS
 DRAWN BY: A. EDWARDS
 SHEET CHK'D BY: J. O'NEAL
 CROSS CHK'D BY: D. PRAH
 APPROVED BY: I. POLEMATIDIS
 DATE: JULY 2019

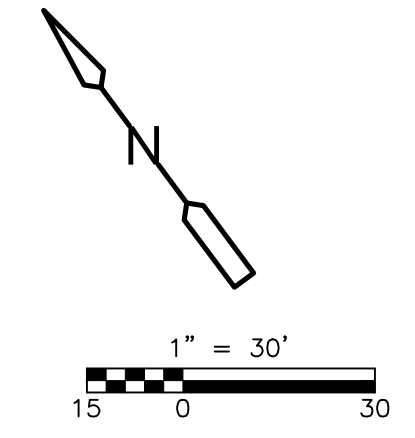
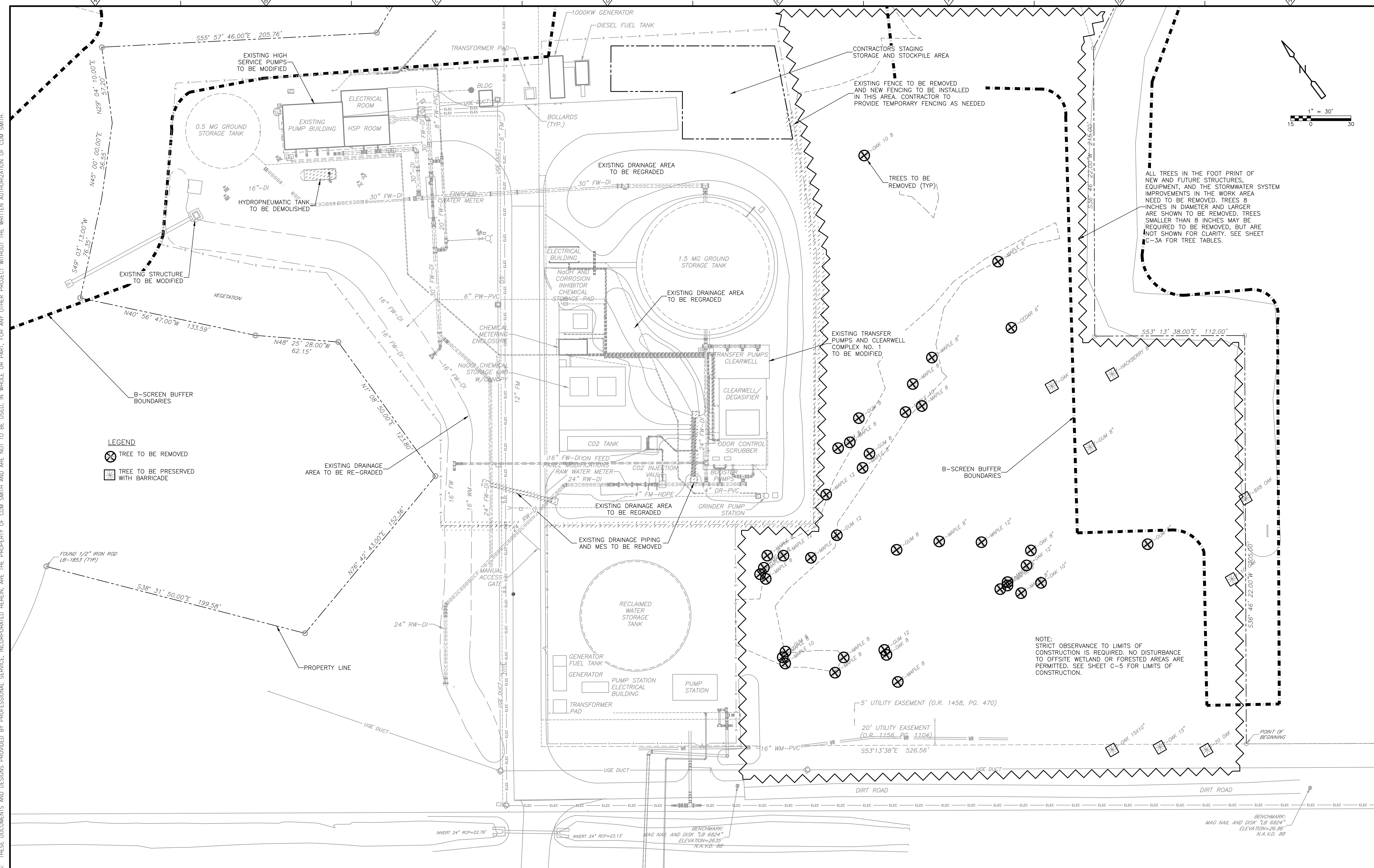
CDM Smith
 4651 Salisbury Road, Suite 420
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 Tel: (904) 731-7109
 FL CCA No. EB-0000020

ST. JOHNS COUNTY UTILITY DEPARTMENT
 ST. JOHNS COUNTY, FLORIDA
 NORTHWEST WTP
 PHASE 1 (6 TO 9 MGD) EXPANSION

EXISTING SITE PLAN
 SHEET NO. C-1

PROJECT NO. 6334-232860
 FILE NAME: C001EXSP.DWG
 SHEET NO. C-1
 ISSUED FOR BID

XREFs: [CDMS_2436_CEP00001_CEP00002_CEP00003_CEP00004_CEP00005_CEP00006_CEP00007_CEP00008_CEP00009_CEP00010_CEP00011_CEP00012_CEP00013_CEP00014_CEP00015_CEP00016_CEP00017_CEP00018_CEP00019_CEP00020_CEP00021_CEP00022_CEP00023_CEP00024_CEP00025_CEP00026_CEP00027_CEP00028_CEP00029_CEP00030_CEP00031_CEP00032_CEP00033_CEP00034_CEP00035_CEP00036_CEP00037_CEP00038_CEP00039_CEP00040_CEP00041_CEP00042_CEP00043_CEP00044_CEP00045_CEP00046_CEP00047_CEP00048_CEP00049_CEP00050_CEP00051_CEP00052_CEP00053_CEP00054_CEP00055_CEP00056_CEP00057_CEP00058_CEP00059_CEP00060_CEP00061_CEP00062_CEP00063_CEP00064_CEP00065_CEP00066_CEP00067_CEP00068_CEP00069_CEP00070_CEP00071_CEP00072_CEP00073_CEP00074_CEP00075_CEP00076_CEP00077_CEP00078_CEP00079_CEP00080_CEP00081_CEP00082_CEP00083_CEP00084_CEP00085_CEP00086_CEP00087_CEP00088_CEP00089_CEP00090_CEP00091_CEP00092_CEP00093_CEP00094_CEP00095_CEP00096_CEP00097_CEP00098_CEP00099_CEP00100] Images: []
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LEGEND

- TREE TO BE REMOVED
- TREE TO BE PRESERVED WITH BARRICADE

NOTE:
 STRICT OBSERVANCE TO LIMITS OF CONSTRUCTION IS REQUIRED. NO DISTURBANCE TO OFFSITE WETLAND OR FORESTED AREAS ARE PERMITTED. SEE SHEET C-5 FOR LIMITS OF CONSTRUCTION.

REV. NO.	DATE	DRWN	CHKD	REMARKS

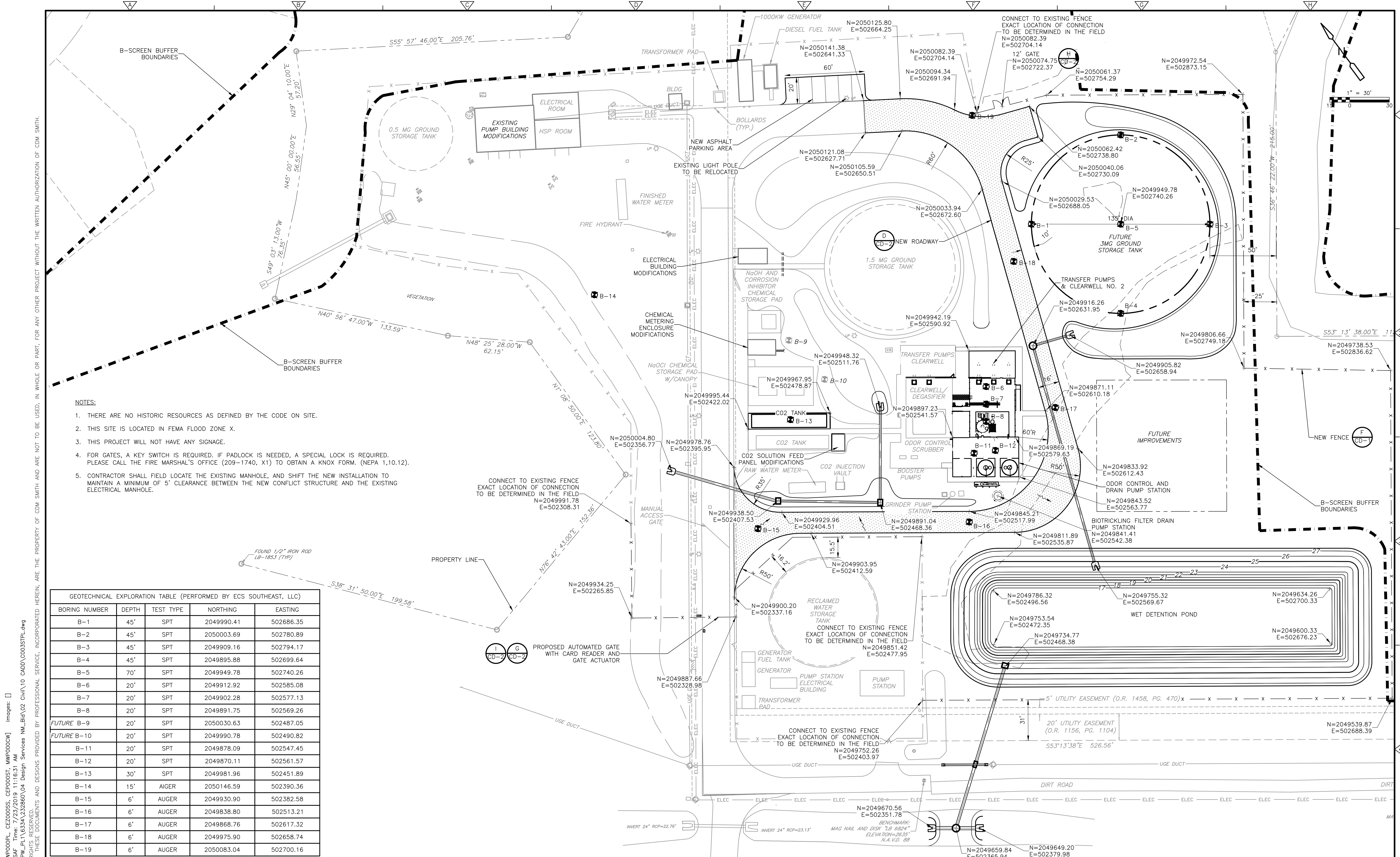
DESIGNED BY: J. WILLIAMS
 DRAWN BY: A. EDWARDS
 SHEET CHK'D BY: J. O'NEAL
 CROSS CHK'D BY: D. PRAH
 APPROVED BY: I. POLEMATIDIS
 DATE: JULY 2019



ST. JOHNS COUNTY UTILITY DEPARTMENT
 ST. JOHNS COUNTY, FLORIDA
 NORTHWEST WTP
 PHASE 1 (6 TO 9 MGD) EXPANSION

EXISTING YARD PIPING AND DEMOLITION PLAN
 SHEET NO. C-2

PROJECT NO. 6334-232860
 FILE NAME: CO02DMPL.DWG
 SHEET NO. C-2
 ISSUED FOR BID



- NOTES:**
1. THERE ARE NO HISTORIC RESOURCES AS DEFINED BY THE CODE ON SITE.
 2. THIS SITE IS LOCATED IN FEMA FLOOD ZONE X.
 3. THIS PROJECT WILL NOT HAVE ANY SIGNAGE.
 4. FOR GATES, A KEY SWITCH IS REQUIRED. IF PADLOCK IS NEEDED, A SPECIAL LOCK IS REQUIRED. PLEASE CALL THE FIRE MARSHAL'S OFFICE (209-1740, X1) TO OBTAIN A KNOX FORM. (NEPA 1,10,12).
 5. CONTRACTOR SHALL FIELD LOCATE THE EXISTING MANHOLE, AND SHIFT THE NEW INSTALLATION TO MAINTAIN A MINIMUM OF 5' CLEARANCE BETWEEN THE NEW CONFLICT STRUCTURE AND THE EXISTING ELECTRICAL MANHOLE.

GEOTECHNICAL EXPLORATION TABLE (PERFORMED BY ECS SOUTHEAST, LLC)

BORING NUMBER	DEPTH	TEST TYPE	NORTHING	EASTING
B-1	45'	SPT	2049990.41	502686.35
B-2	45'	SPT	2050003.69	502780.89
B-3	45'	SPT	2049909.16	502794.17
B-4	45'	SPT	2049895.88	502699.64
B-5	70'	SPT	2049949.78	502740.26
B-6	20'	SPT	2049912.92	502585.08
B-7	20'	SPT	2049902.28	502577.13
B-8	20'	SPT	2049891.75	502569.26
FUTURE B-9	20'	SPT	2050030.63	502487.05
FUTURE B-10	20'	SPT	2049990.78	502490.82
B-11	20'	SPT	2049878.09	502547.45
B-12	20'	SPT	2049870.11	502561.57
B-13	30'	SPT	2049981.96	502451.89
B-14	15'	AUGER	2050146.59	502390.36
B-15	6'	AUGER	2049930.90	502382.58
B-16	6'	AUGER	2049838.80	502513.21
B-17	6'	AUGER	2049868.76	502617.32
B-18	6'	AUGER	2049975.90	502658.74
B-19	6'	AUGER	2050083.04	502700.16

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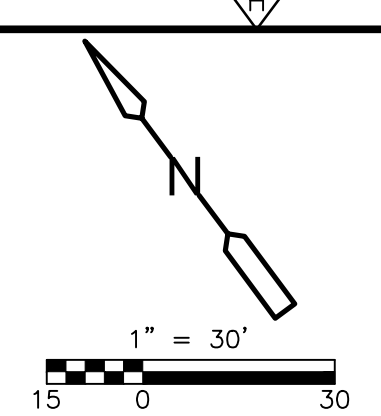
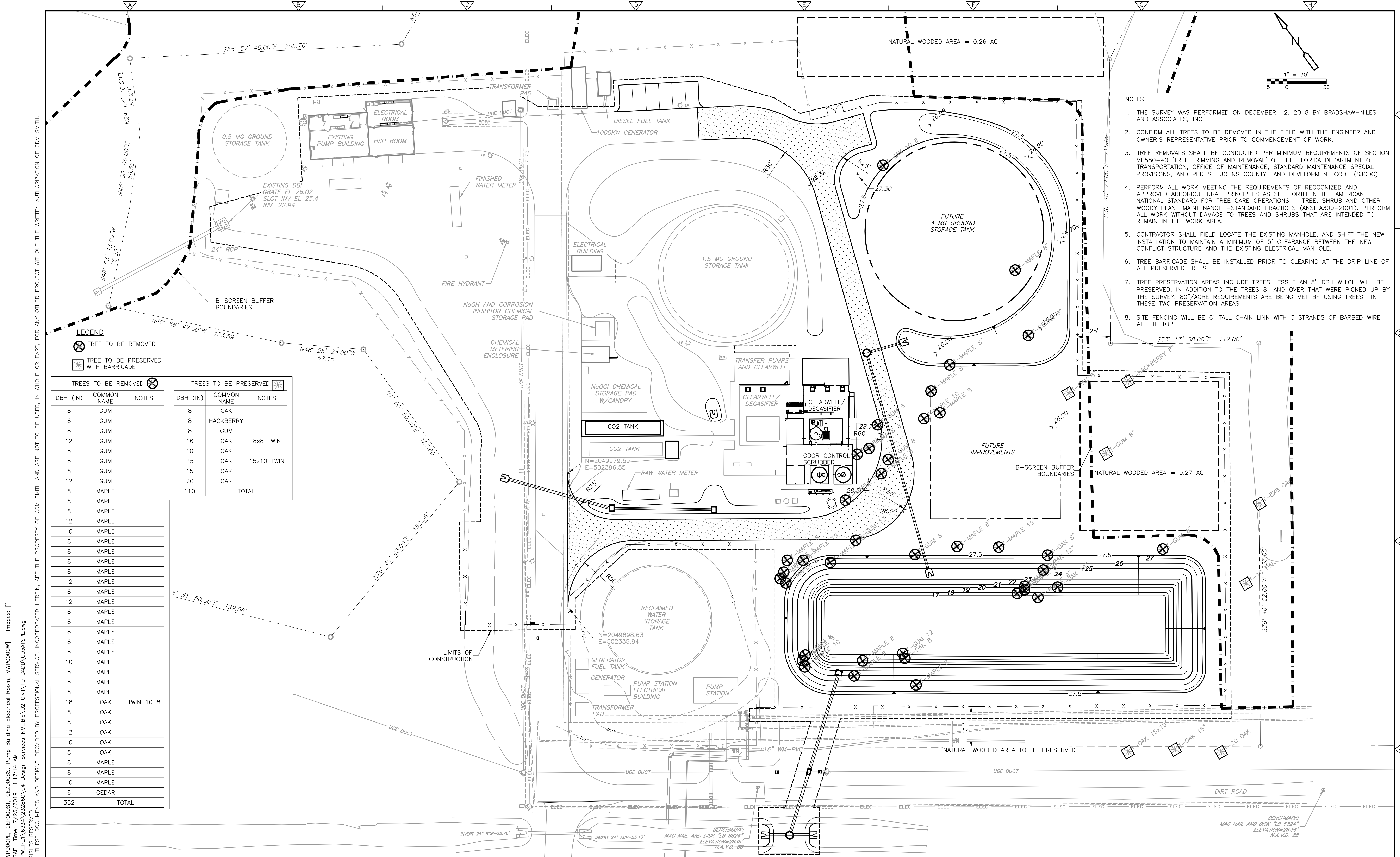


ST. JOHNS COUNTY UTILITY DEPARTMENT
 ST. JOHNS COUNTY, FLORIDA
 NORTHWEST WTP
 PHASE 1 (6 TO 9 MGD) EXPANSION

PROPOSED SITE PLAN
 AND BORING LOCATIONS

PROJECT NO. 6334-232860
 FILE NAME: C003STPL.DWG
 SHEET NO. C-3
 ISSUED FOR BID

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- NOTES:**
1. THE SURVEY WAS PERFORMED ON DECEMBER 12, 2018 BY BRADSHAW-NILES AND ASSOCIATES, INC.
 2. CONFIRM ALL TREES TO BE REMOVED IN THE FIELD WITH THE ENGINEER AND OWNER'S REPRESENTATIVE PRIOR TO COMMENCEMENT OF WORK.
 3. TREE REMOVALS SHALL BE CONDUCTED PER MINIMUM REQUIREMENTS OF SECTION ME580-40 'TREE TRIMMING AND REMOVAL' OF THE FLORIDA DEPARTMENT OF TRANSPORTATION, OFFICE OF MAINTENANCE, STANDARD MAINTENANCE SPECIAL PROVISIONS, AND PER ST. JOHNS COUNTY LAND DEVELOPMENT CODE (SJCDC).
 4. PERFORM ALL WORK MEETING THE REQUIREMENTS OF RECOGNIZED AND APPROVED ARBORICULTURAL PRINCIPLES AS SET FORTH IN THE AMERICAN NATIONAL STANDARD FOR TREE CARE OPERATIONS - TREE, SHRUB AND OTHER WOODY PLANT MAINTENANCE - STANDARD PRACTICES (ANSI A300-2001). PERFORM ALL WORK WITHOUT DAMAGE TO TREES AND SHRUBS THAT ARE INTENDED TO REMAIN IN THE WORK AREA.
 5. CONTRACTOR SHALL FIELD LOCATE THE EXISTING MANHOLE, AND SHIFT THE NEW INSTALLATION TO MAINTAIN A MINIMUM OF 5' CLEARANCE BETWEEN THE NEW CONFLICT STRUCTURE AND THE EXISTING ELECTRICAL MANHOLE.
 6. TREE BARRICADE SHALL BE INSTALLED PRIOR TO CLEARING AT THE DRIP LINE OF ALL PRESERVED TREES.
 7. TREE PRESERVATION AREAS INCLUDE TREES LESS THAN 8" DBH WHICH WILL BE PRESERVED, IN ADDITION TO THE TREES 8" AND OVER THAT WERE PICKED UP BY THE SURVEY. 80' ACRE REQUIREMENTS ARE BEING MET BY USING TREES IN THESE TWO PRESERVATION AREAS.
 8. SITE FENCING WILL BE 6' TALL CHAIN LINK WITH 3 STRANDS OF BARBED WIRE AT THE TOP.

- LEGEND**
- ⊗ TREE TO BE REMOVED
 - ⊗ TREE TO BE PRESERVED WITH BARRICADE

TREES TO BE REMOVED			TREES TO BE PRESERVED		
DBH (IN)	COMMON NAME	NOTES	DBH (IN)	COMMON NAME	NOTES
8	GUM		8	OAK	
8	GUM		8	HACKBERRY	
8	GUM		8	GUM	
12	GUM		16	OAK	8x8 TWIN
8	GUM		10	OAK	
8	GUM		25	OAK	15x10 TWIN
8	GUM		15	OAK	
12	GUM		20	OAK	
8	MAPLE		110		TOTAL
8	MAPLE				
8	MAPLE				
12	MAPLE				
10	MAPLE				
8	MAPLE				
8	MAPLE				
8	MAPLE				
8	MAPLE				
8	MAPLE				
12	MAPLE				
8	MAPLE				
8	MAPLE				
8	MAPLE				
10	MAPLE				
8	MAPLE				
8	MAPLE				
8	MAPLE				
8	MAPLE				
18	OAK	TWIN 10 8			
8	OAK				
8	OAK				
12	OAK				
10	OAK				
8	OAK				
8	MAPLE				
8	MAPLE				
10	MAPLE				
6	CEDAR				
352		TOTAL			

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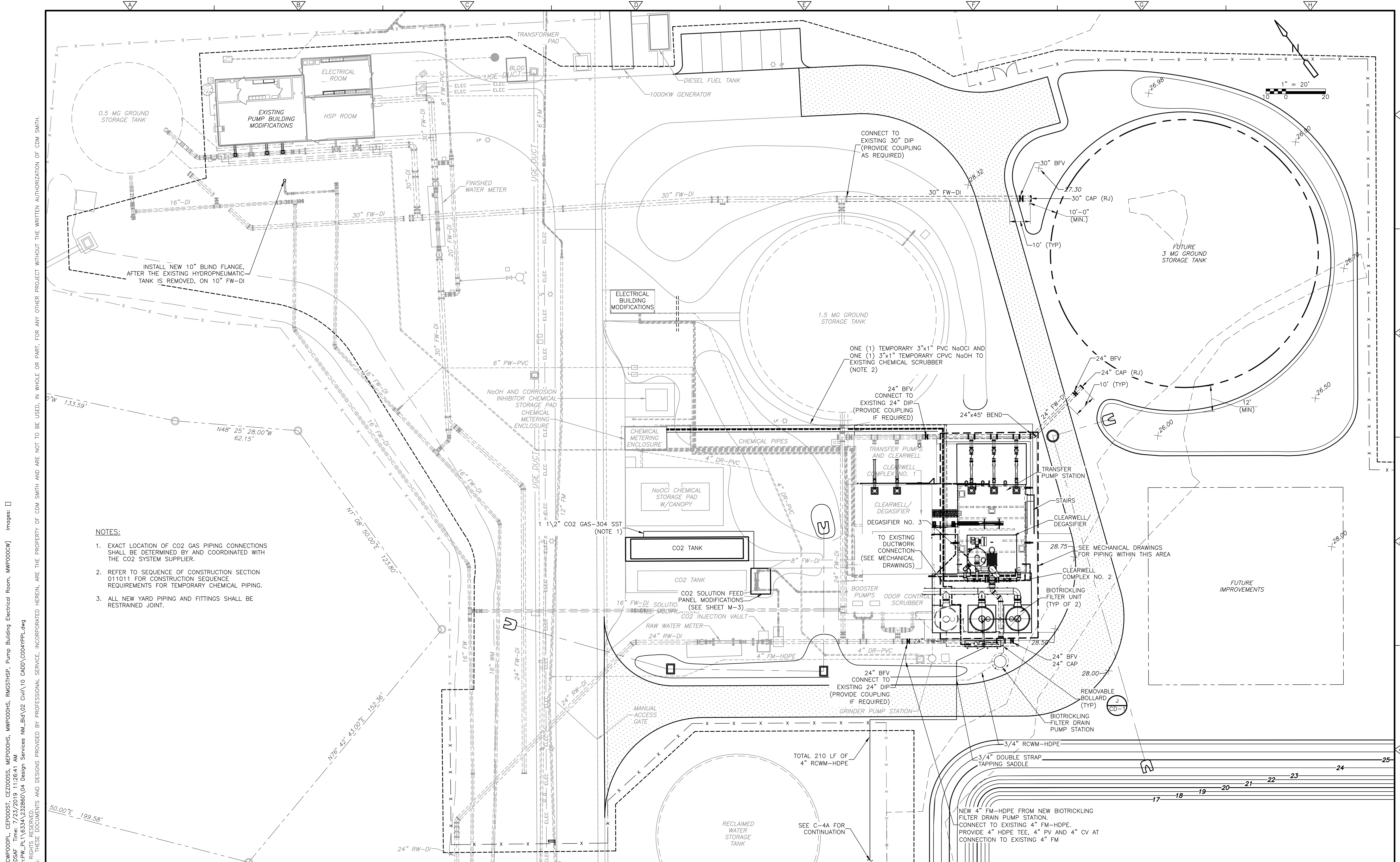
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 SHEET CHK'D BY: J. O'NEAL
 CROSS CHK'D BY: D. PRAH
 APPROVED BY: I. POLEMATIDIS
 DATE: JULY 2019



ST. JOHNS COUNTY UTILITY DEPARTMENT
 ST. JOHNS COUNTY, FLORIDA
NORTHWEST WTP
 PHASE 1 (6 TO 9 MGD) EXPANSION

TREE REMOVAL PLAN
 SHEET NO.
C-3A

PROJECT NO. 6334-232860
 FILE NAME: C03ATSPL.DWG
 SHEET NO.
C-3A
 ISSUED FOR BID



- NOTES:**
1. EXACT LOCATION OF CO2 GAS PIPING CONNECTIONS SHALL BE DETERMINED BY AND COORDINATED WITH THE CO2 SYSTEM SUPPLIER.
 2. REFER TO SEQUENCE OF CONSTRUCTION SECTION 011011 FOR CONSTRUCTION SEQUENCE REQUIREMENTS FOR TEMPORARY CHEMICAL PIPING.
 3. ALL NEW YARD PIPING AND FITTINGS SHALL BE RESTRAINED JOINT.

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REV. NO.	DATE	DRWN	CHKD	REMARKS

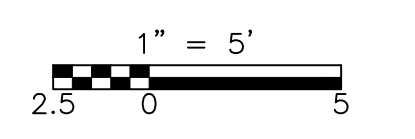
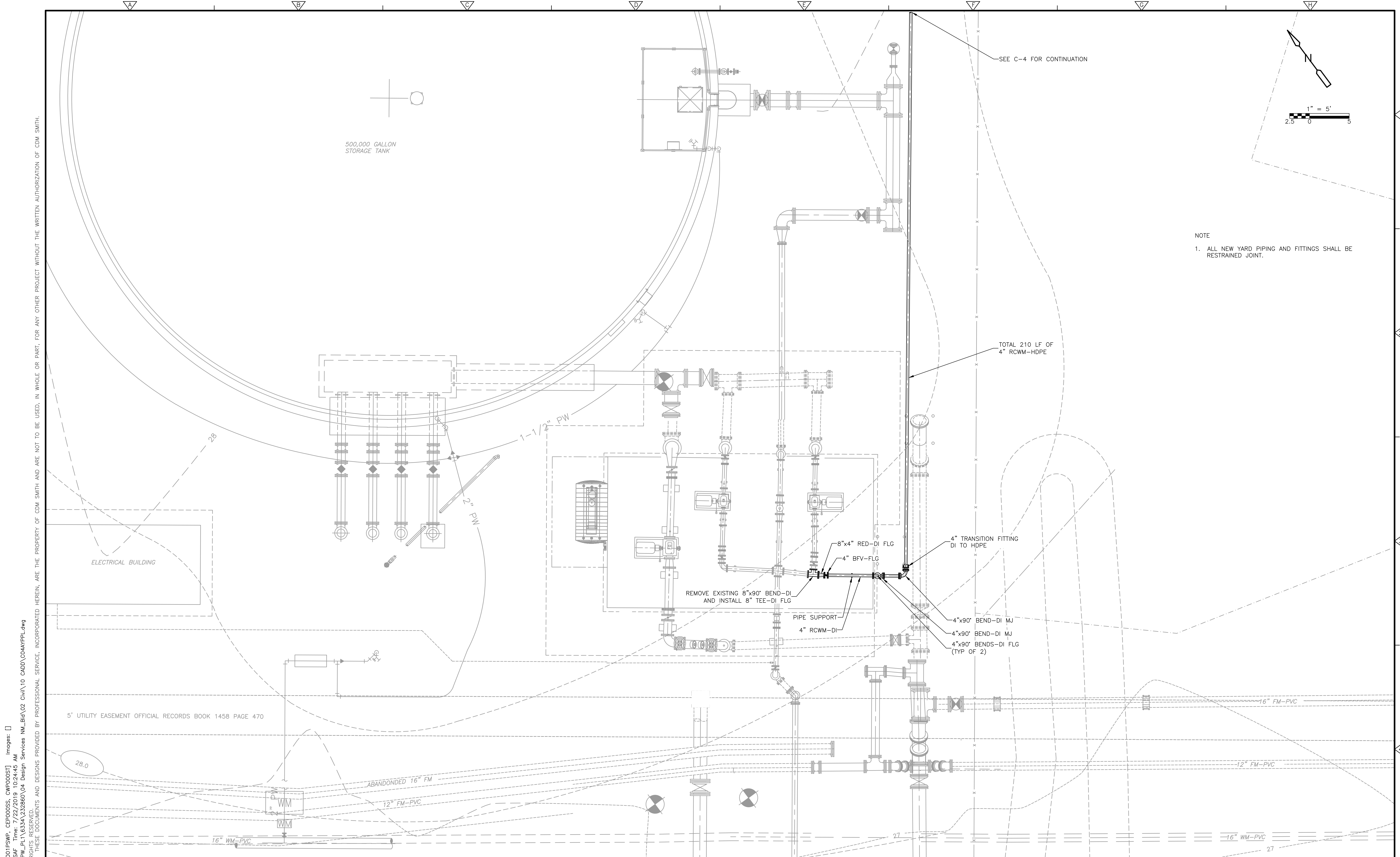
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 APPROVED BY: I. POLEMATIDIS
 DATE: JULY 2019



ST. JOHNS COUNTY UTILITY DEPARTMENT
 ST. JOHNS COUNTY, FLORIDA
NORTHWEST WTP
PHASE 1 (6 TO 9 MGD) EXPANSION

PROPOSED YARD PIPING PLAN
 SHEET NO. **C-4**

PROJECT NO. 6334-232860
 FILE NAME: C004YPPL.DWG
 SHEET NO. **C-4**
 ISSUED FOR BID



NOTE
 1. ALL NEW YARD PIPING AND FITTINGS SHALL BE RESTRAINED JOINT.

SEE C-4 FOR CONTINUATION

TOTAL 210 LF OF 4\"/>

REMOVE EXISTING 8\"/>

5' UTILITY EASEMENT OFFICIAL RECORDS BOOK 1458 PAGE 470

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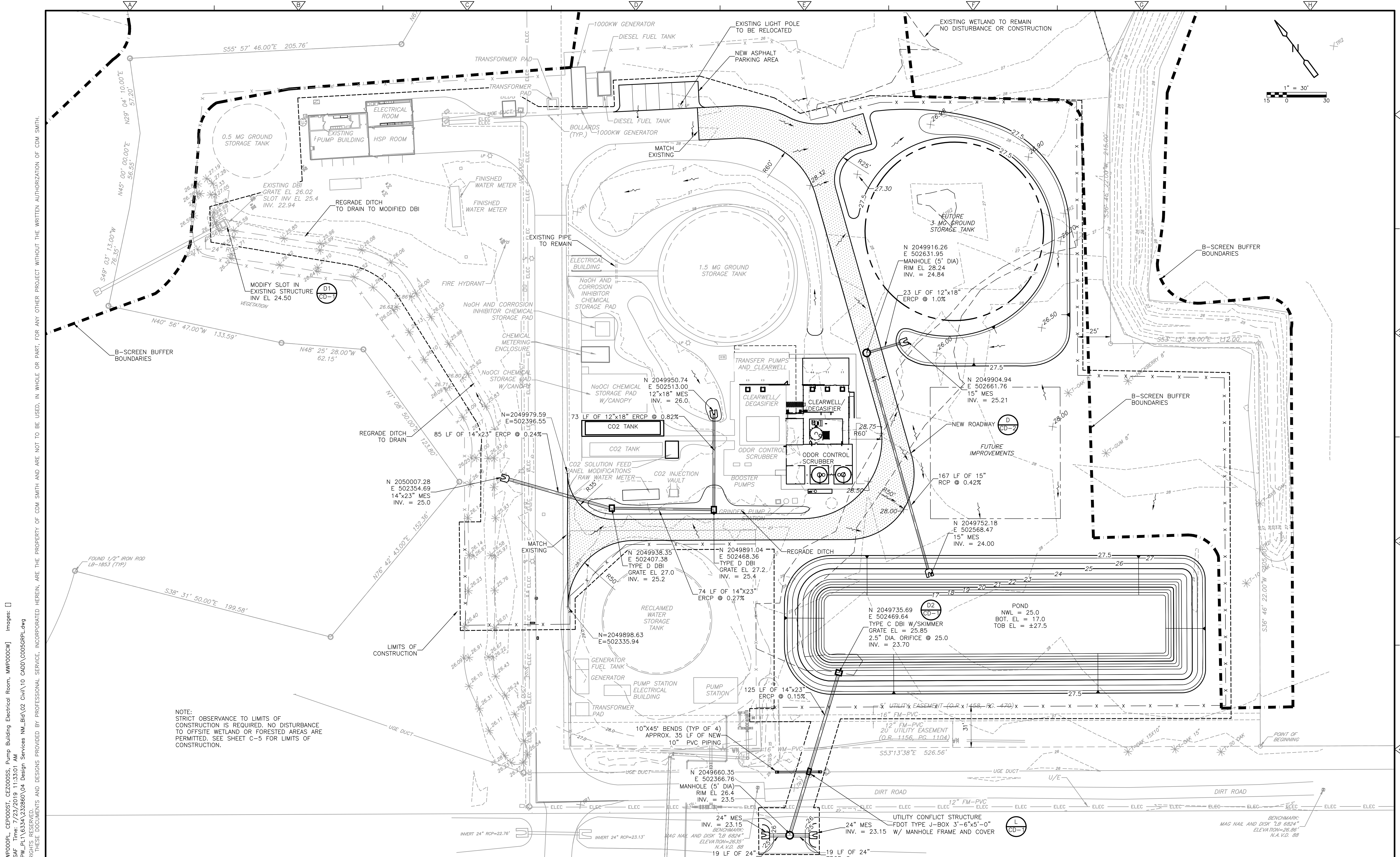
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 Tel: (904) 731-7109
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ST. JOHNS COUNTY UTILITY DEPARTMENT
 ST. JOHNS COUNTY, FLORIDA
 NORTHWEST WTP
 PHASE 1 (6 TO 9 MGD) EXPANSION

PROPOSED YARD PIPING PLAN
 RECLAIMED PIPING MODIFICATIONS

PROJECT NO. 6334-232860
 FILE NAME: C04AYPPL.DWG
 SHEET NO. C-4A

ISSUED FOR BID



NOTE:
STRICT OBSERVANCE TO LIMITS OF
CONSTRUCTION IS REQUIRED. NO DISTURBANCE
TO OFFSITE WETLAND OR FORESTED AREAS ARE
PERMITTED. SEE SHEET C-5 FOR LIMITS OF
CONSTRUCTION.

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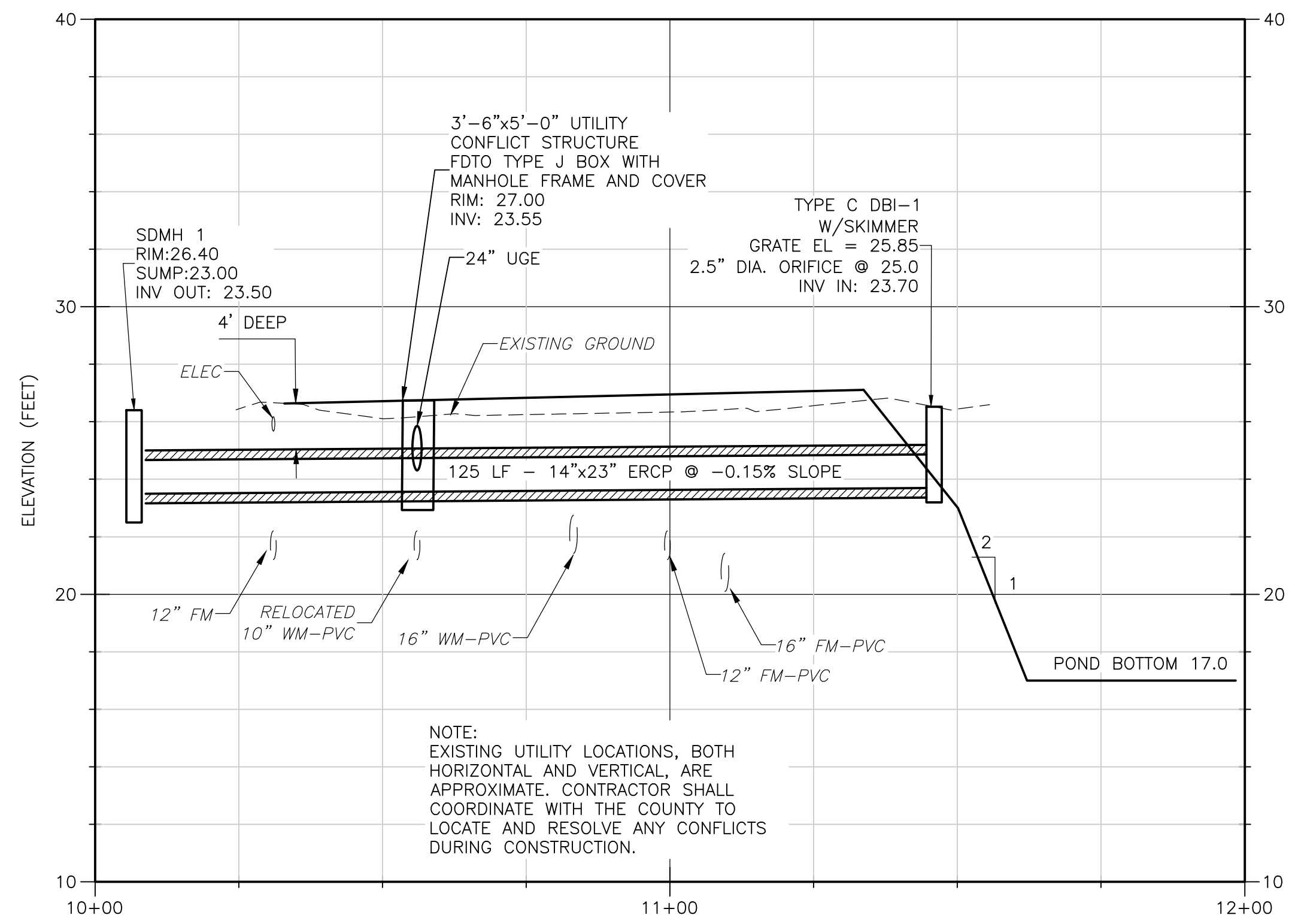


ST. JOHNS COUNTY UTILITY DEPARTMENT
 ST. JOHNS COUNTY, FLORIDA
 NORTHWEST WTP
 PHASE 1 (6 TO 9 MGD) EXPANSION

SITE GRADING, PAVING, DRAINAGE,
 AND STORMWATER PLAN
 SHEET NO. C-5

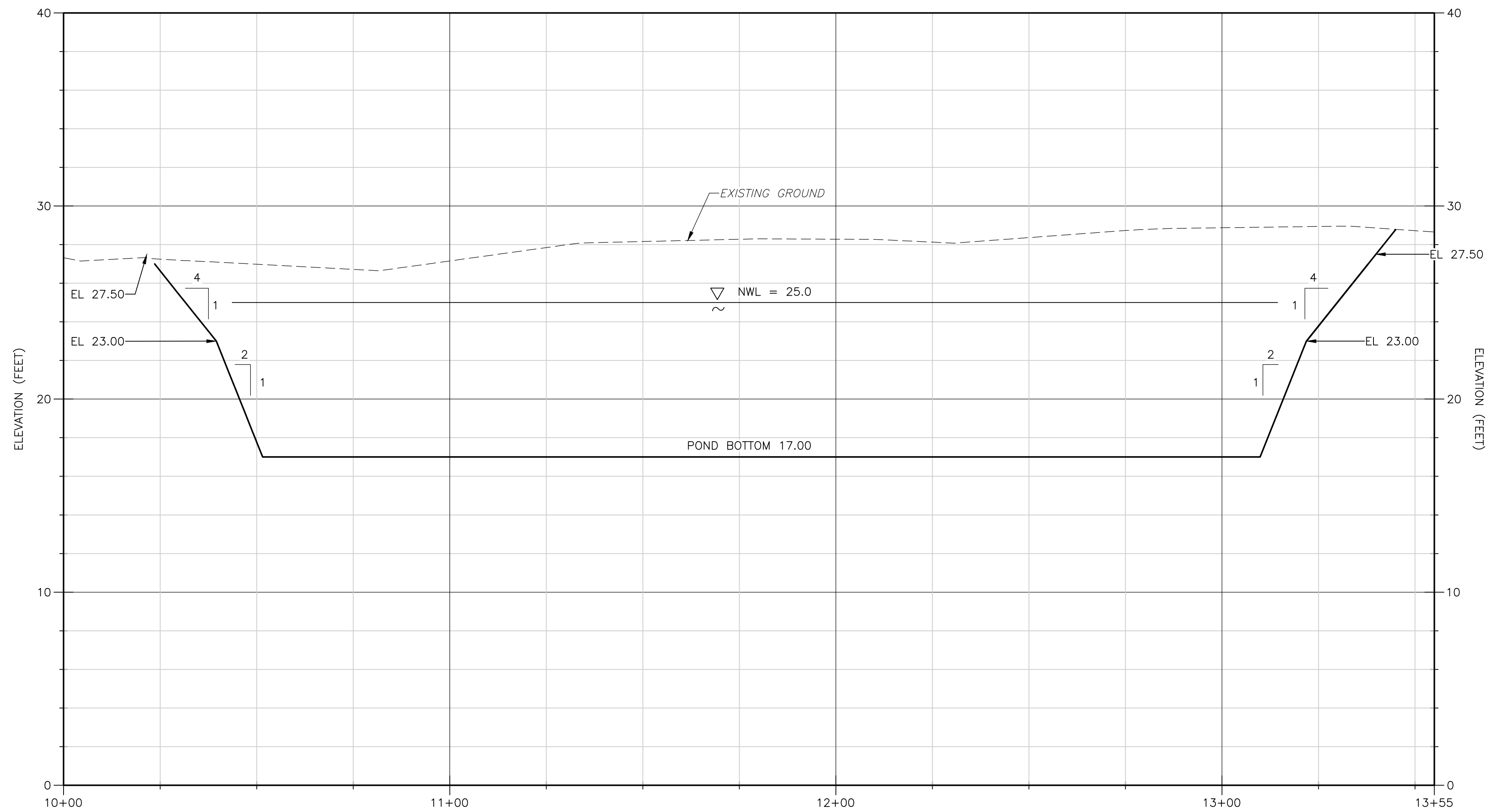
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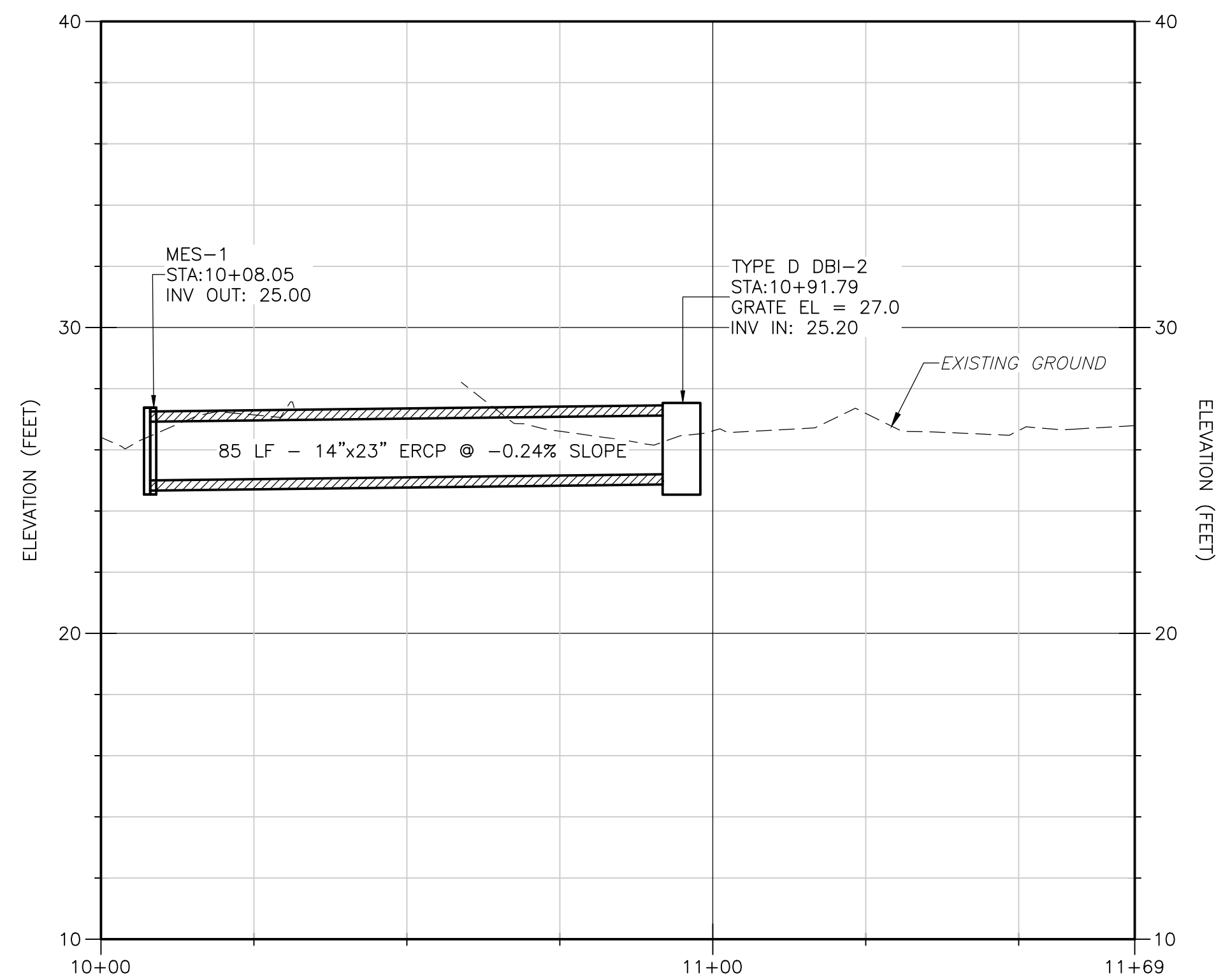
STORM DRAIN PROFILE AT SOUTH SIDE OF POND PROFILE

HORIZONTAL: 1" = 20'
 VERTICAL: 1" = 4'



POND SECTION (NORTHWEST TO SOUTHEAST) PROFILE

HORIZONTAL: 1" = 20'
 VERTICAL: 1" = 4'



STORM DRAIN PROFILE FROM DRAINAGE DITCH PROFILE

HORIZONTAL: 1" = 20'
 VERTICAL: 1" = 4'

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY:	J. WITTIG
DRAWN BY:	J. WILLIAMS
SHEET CHK'D BY:	J. O'NEAL
CROSS CHK'D BY:	D. PRAH
APPROVED BY:	I. POLEMATIDIS
DATE:	JULY 2019

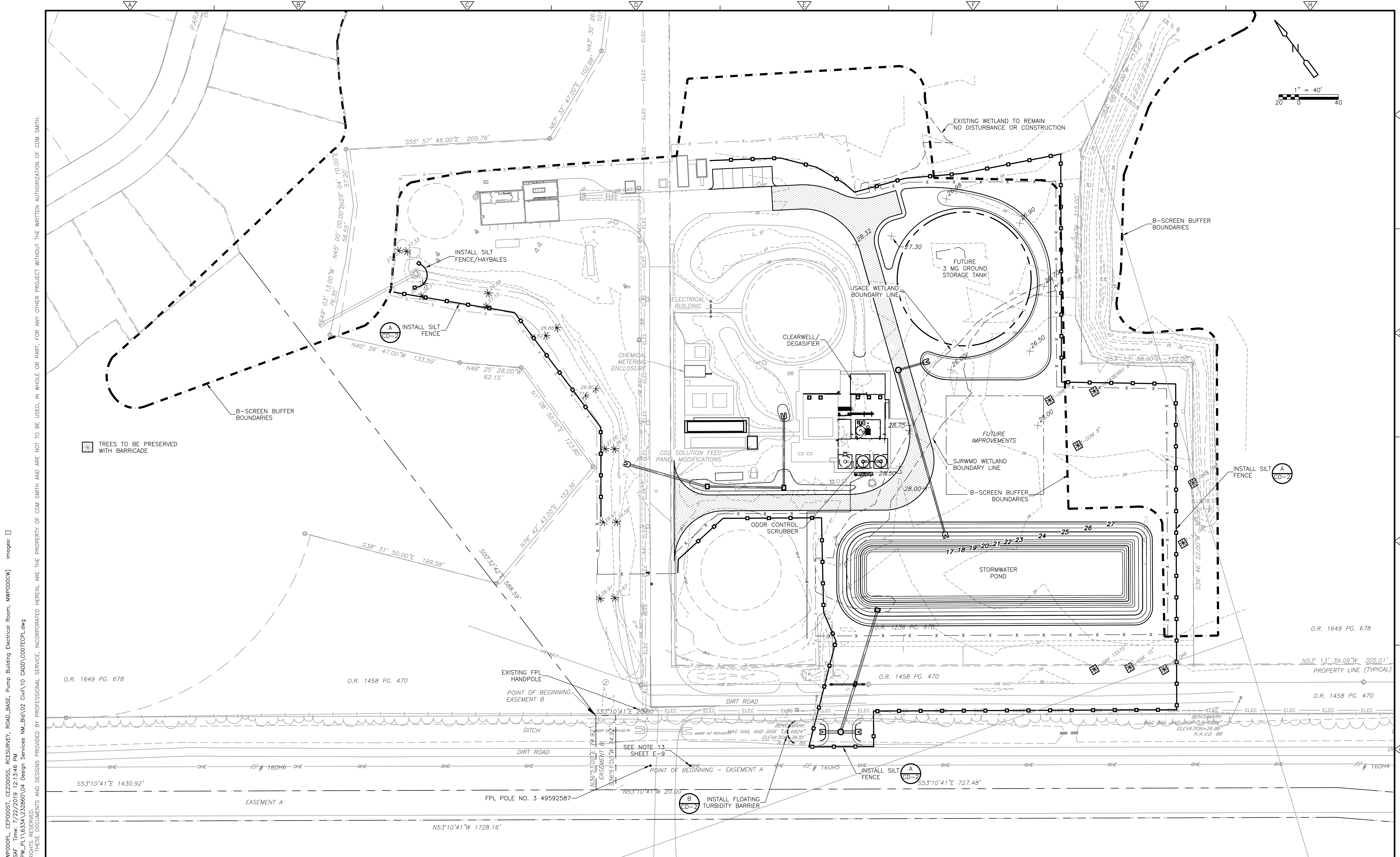


ST. JOHNS COUNTY UTILITY DEPARTMENT
 ST. JOHNS COUNTY, FLORIDA
 NORTHWEST WTP
 PHASE 1 (6 TO 9 MGD) EXPANSION

STORMWATER SECTIONS

PROJECT NO.	6334-232860
FILE NAME:	C006XSEC.DWG
SHEET NO.	C-6

ISSUED FOR BID



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REV. NO.	DATE	DRWN	CHKD	REMARKS

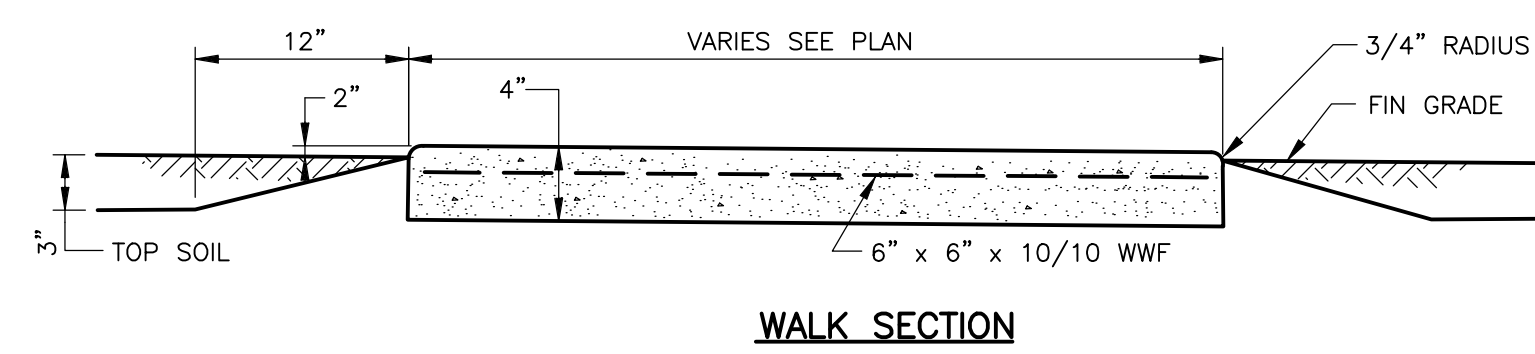
DESIGNED BY: J. WITTIG
 DRAWN BY: J. WILLIAMS
 SHEET CHK'D BY: J. O'NEAL
 CROSS CHK'D BY: D. PRAH
 APPROVED BY: I. POLEMATIDIS
 DATE: JULY 2019

CDM Smith
 4651 Salisbury Road, Suite 420
 Jacksonville, FL 32256
 Tel: (904) 731-7109
 FL CQA No. EB-0000020

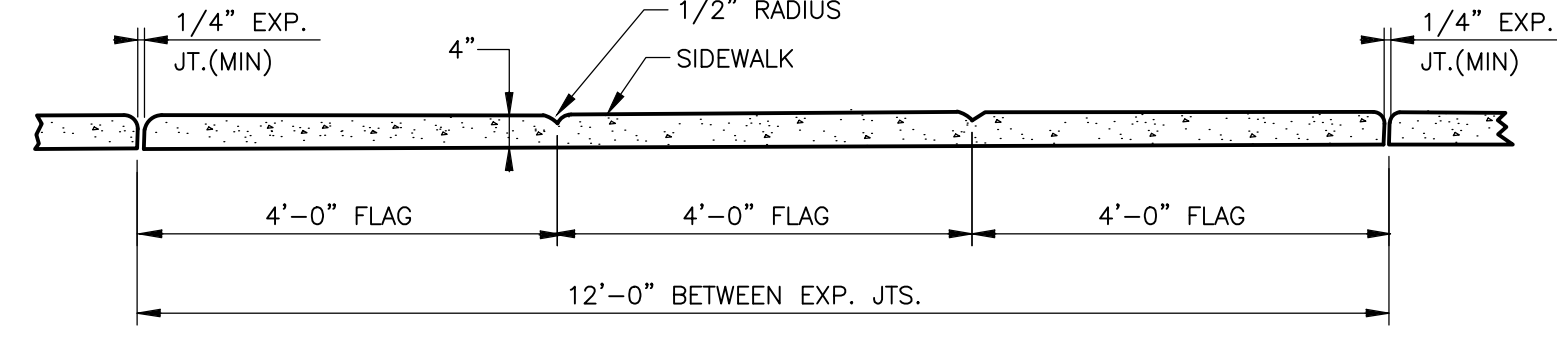
ST. JOHNS COUNTY UTILITY DEPARTMENT
 ST. JOHNS COUNTY, FLORIDA
 NORTHWEST WTP
 PHASE 1 (6 TO 9 MGD) EXPANSION

EROSION CONTROL PLAN
 SHEET NO. C-7

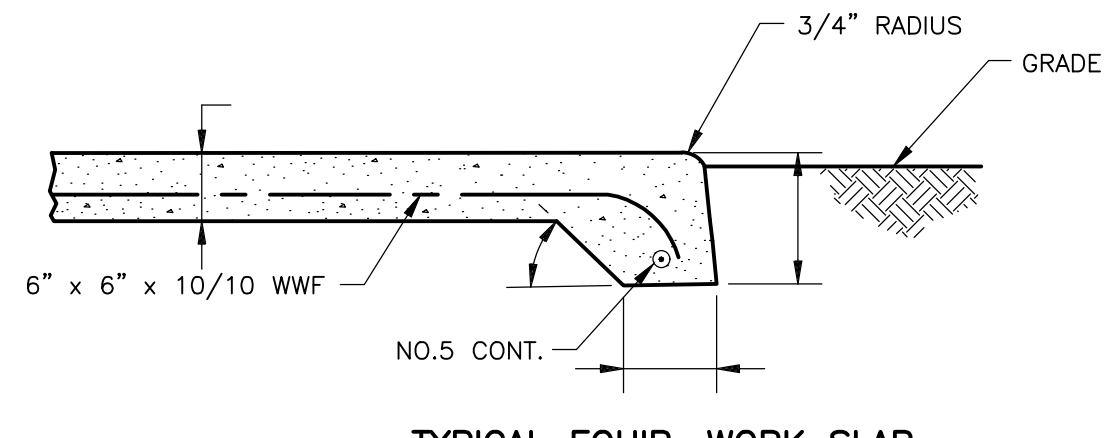
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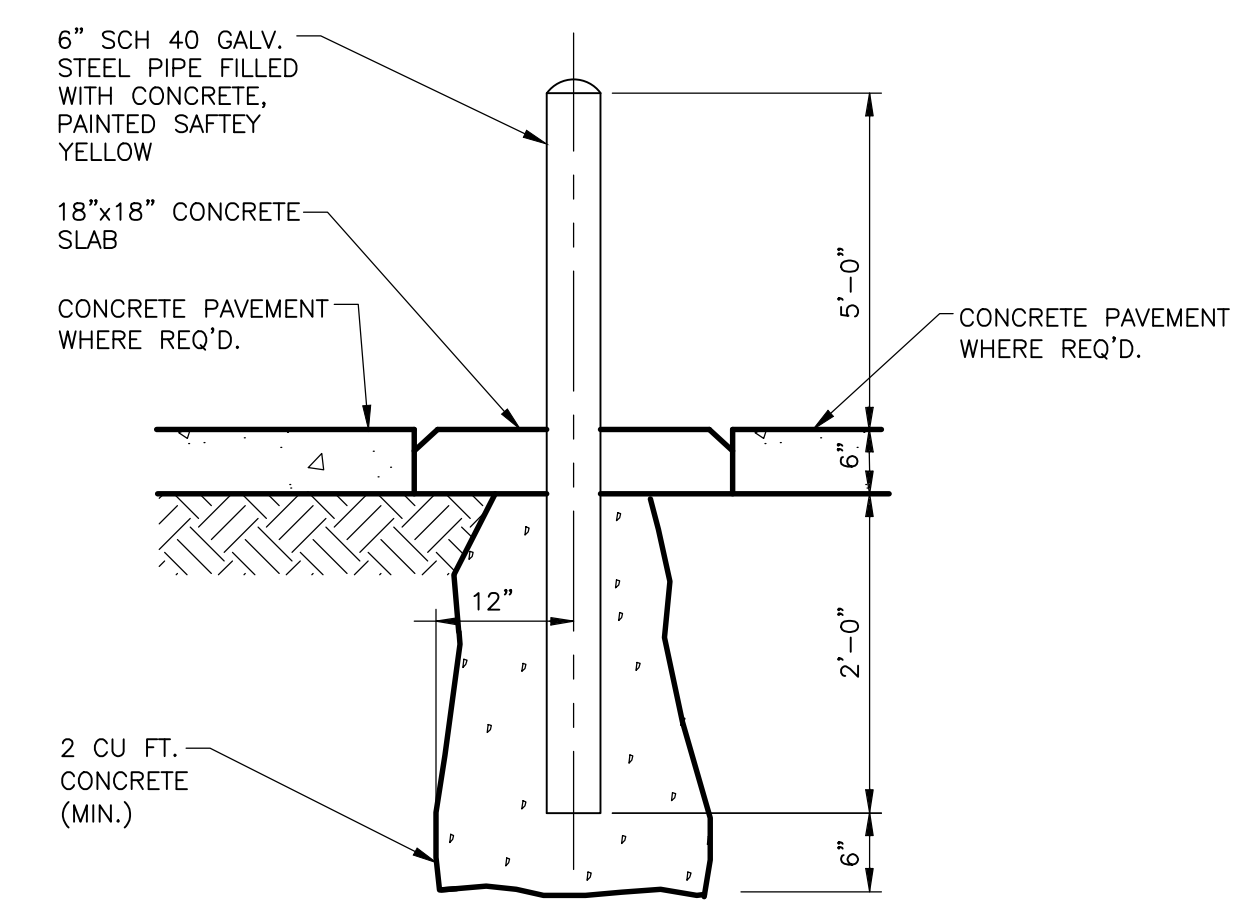
WALK SECTION
DETAIL A
NTS



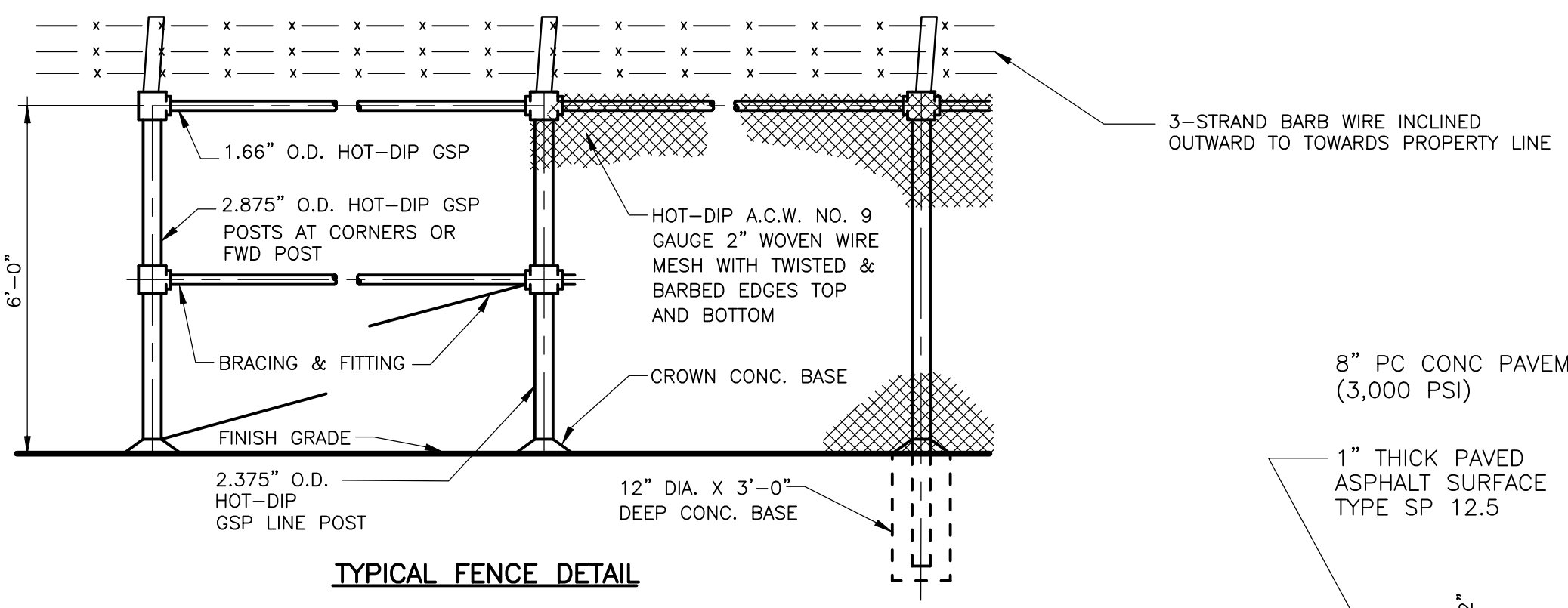
FLAG AND EXPANSION JOINT
DETAIL B
NTS



TYPICAL EQUIP. WORK SLAB
DETAIL C
NTS

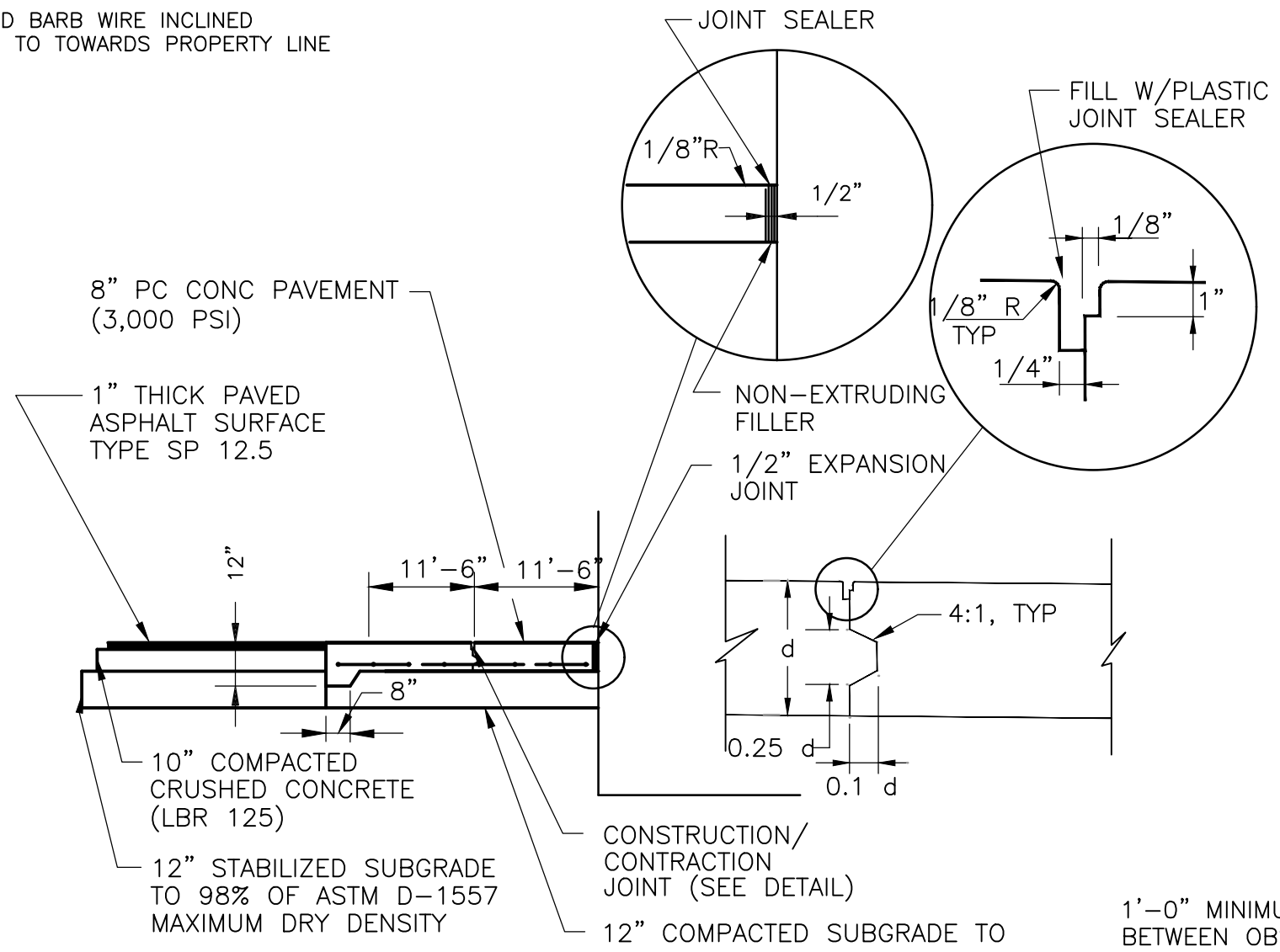


BOLLARD
DETAIL E
NTS

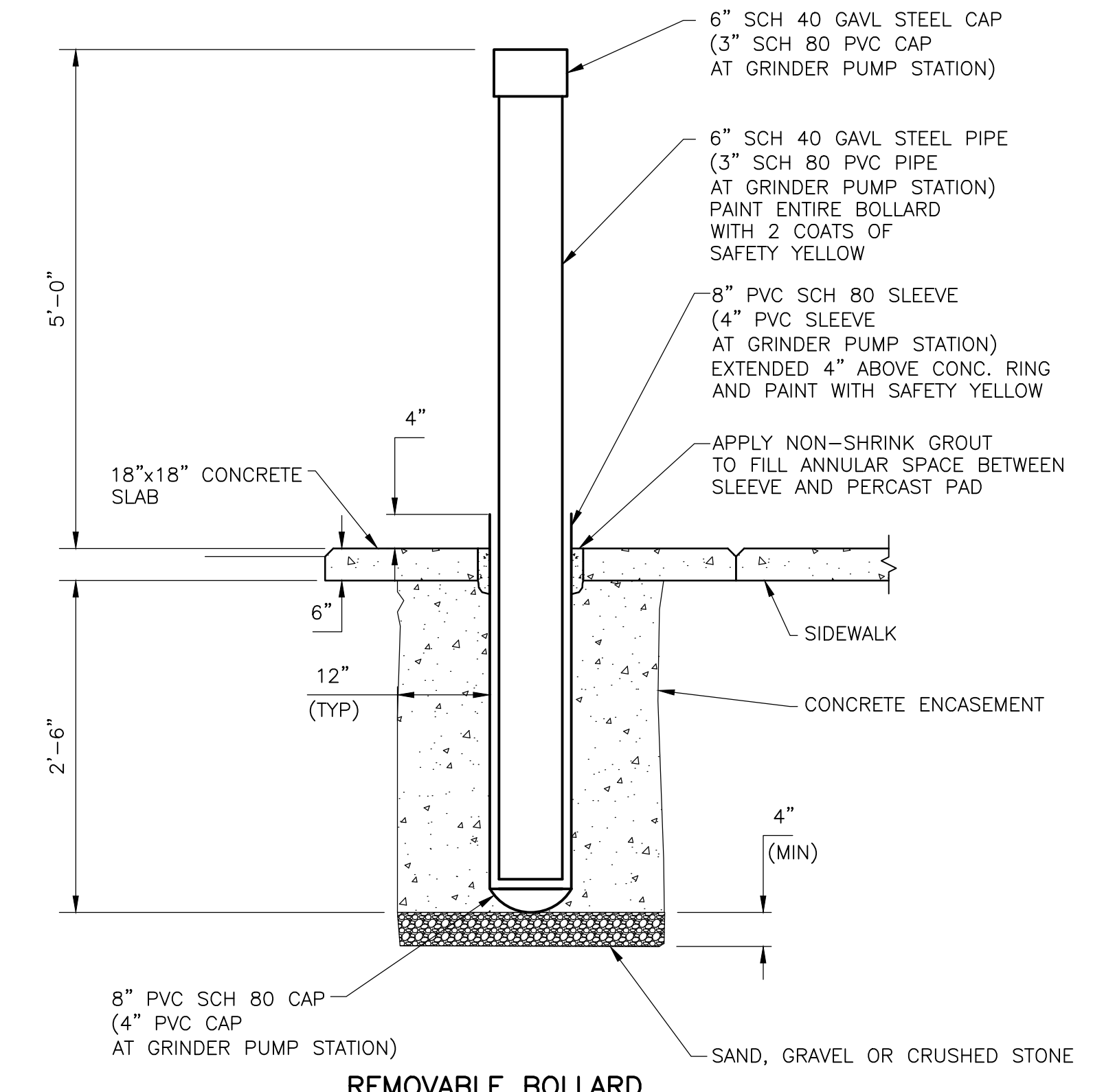


TYPICAL FENCE DETAIL
DETAIL F
NTS

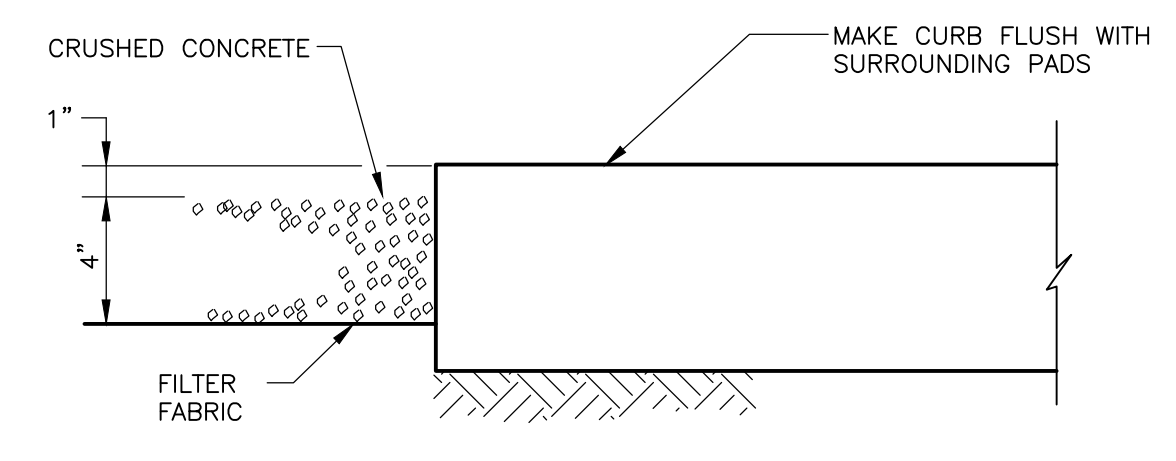
- NOTES:**
1. ALL FENCING AND POSTS SHALL BE GREEN VINYL COATED.
 2. THE LOCK AND HASP SHALL BE CAPABLE OF ACCEPTING A STANDARD COUNTY PADLOCK.



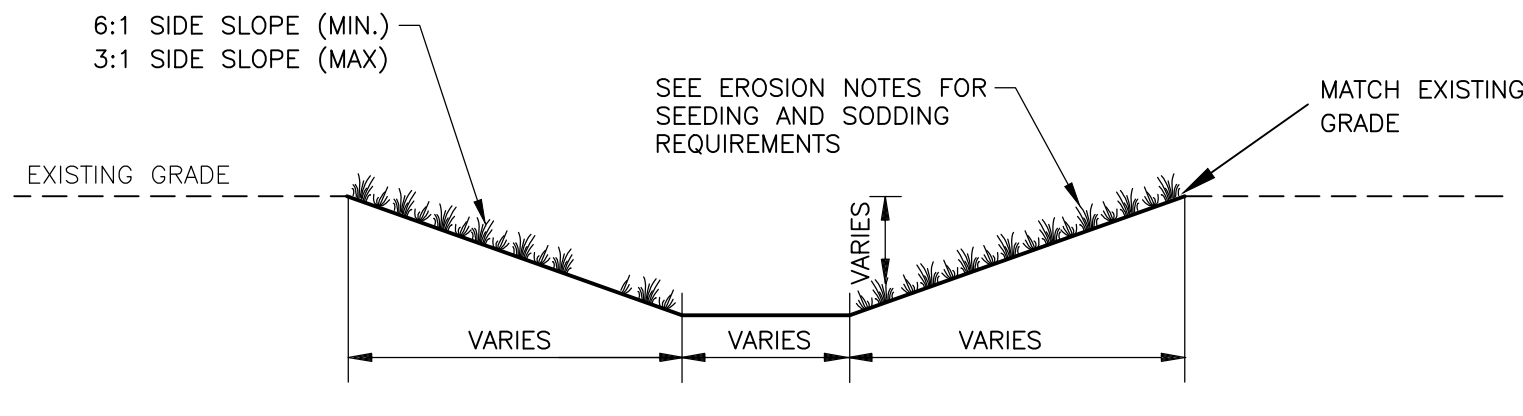
CONCRETE JOINT
DETAIL G
NTS



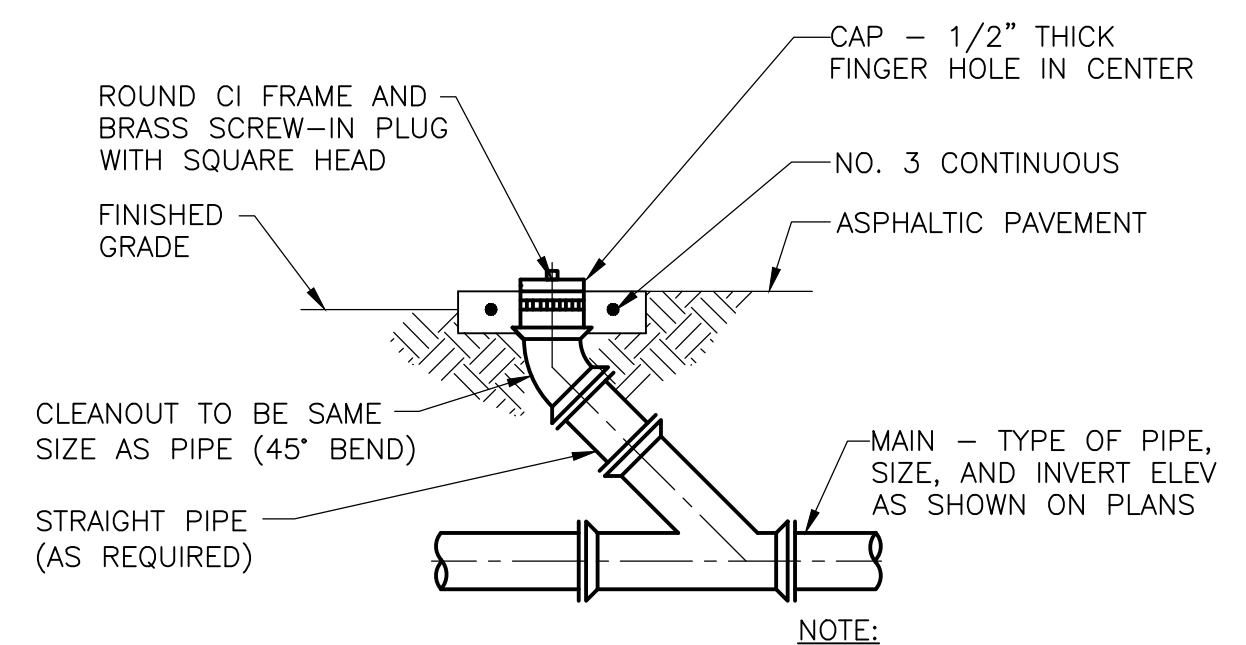
REMOVABLE BOLLARD
DETAIL J
NTS



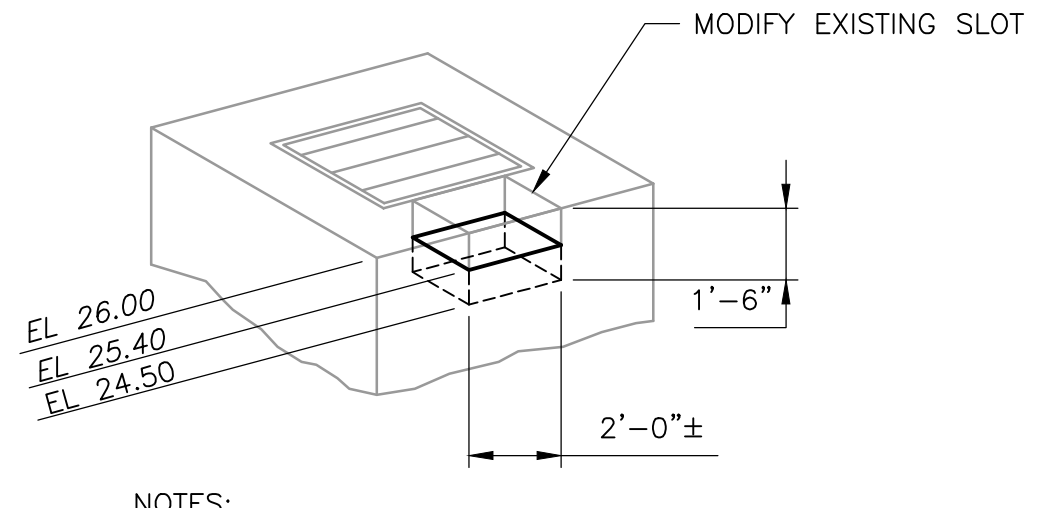
CONCRETE CURB
DETAIL H
NTS



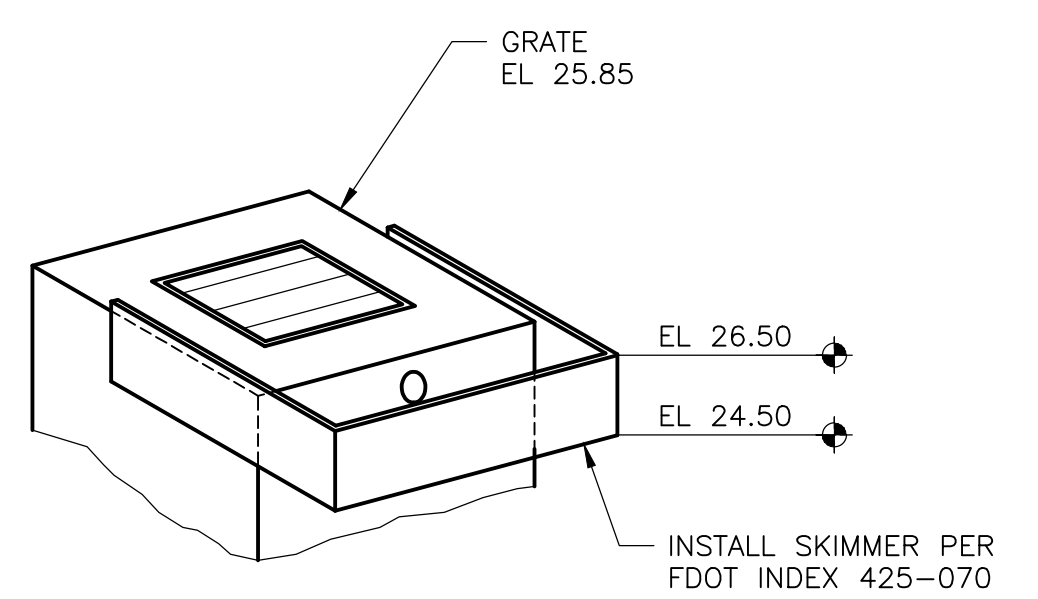
TYPICAL SWALE SECTION
DETAIL I
NTS



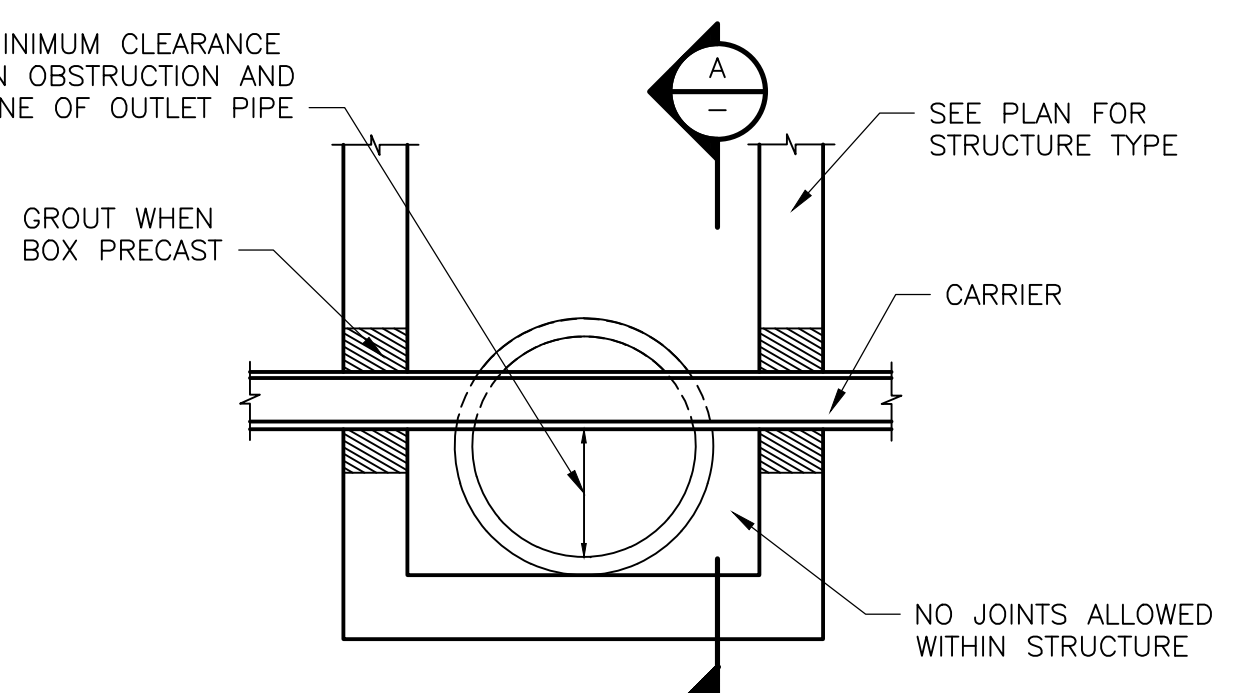
GRAVITY LINE CLEANOUT
DETAIL K
NTS



MODIFY EXISTING STRUCTURE
DETAIL D1
NTS

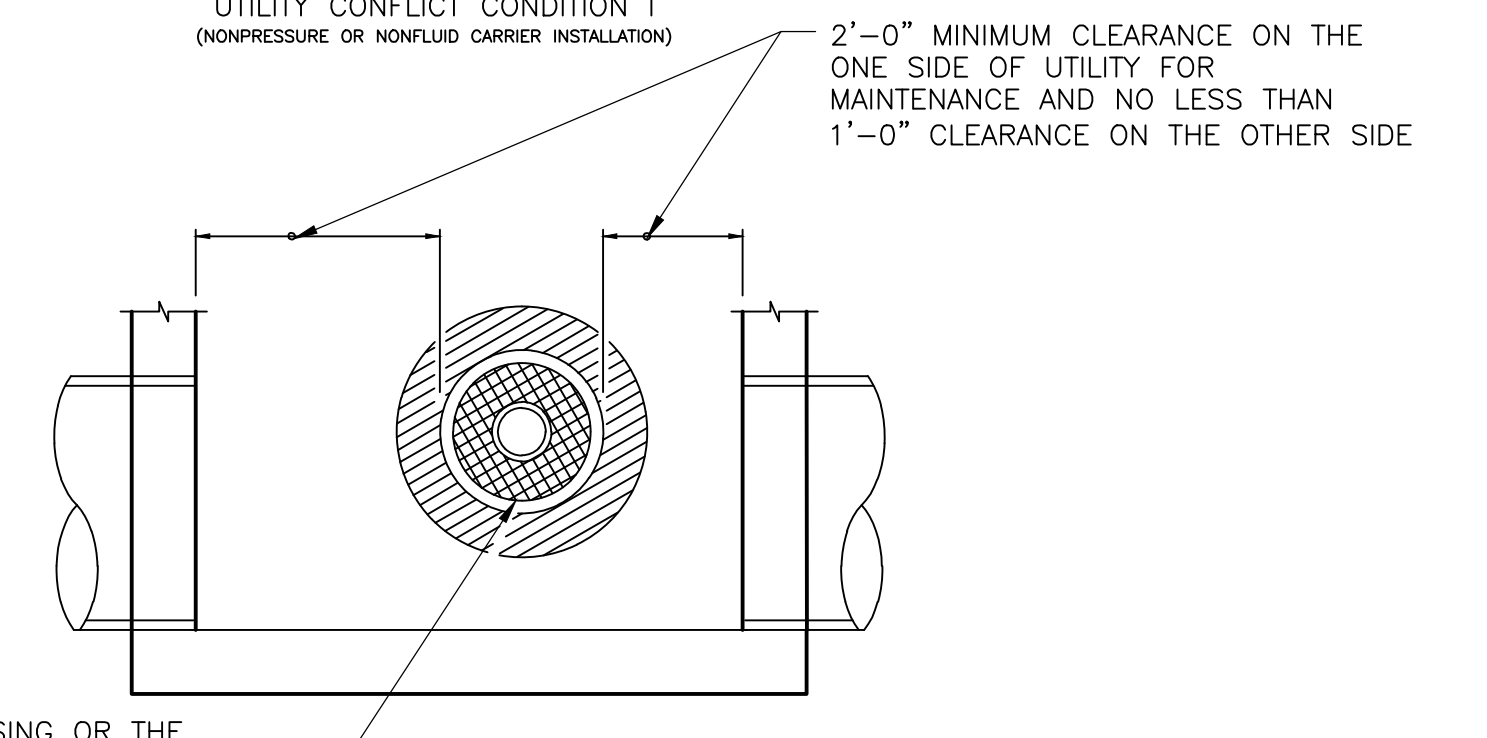


PROPOSED POND DBI
DETAIL D2
NTS



SECTION LONGITUDINAL TO CARRIER PIPE

- NOTES:**
1. CONFLICT STRUCTURE SHALL BE FDOT TYPE J BOX 3'-0"x5'-0" WITH MANHOLE FRAME AND COVER.
 2. CONCRETE USED IN CONFLICT STRUCTURES SHALL BE AS SPECIFIED IN ASTM C478. 4000 PSI MAY BE USED IN LIEU OF CLASS I CONCRETE.
 3. MAXIMUM OPENING FOR PIPE SHALL BE THE PIPE OD PLUS 6", MORTAR USED TO SEAL THE PIPE INTO THE OPENING WILL BE OF SUCH MIX THAT SHRINKAGE WILL NOT CASE LEAKAGE INTO OR OUT OF THE STRUCTURE.
 4. IF THE CONFLICT STRUCTURE IS ROUND OR THERE ARE MULTIPLE INLET OR OUTLET PIPES, THEN THE WALL SECTION SHOULD BE REVIEW FOR STRENGTH.



UTILITY CONFLICT STRUCTURE
DETAIL L
NTS

XREFs: [CDMS_2436] Images: []
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REV. NO.	DATE	DRWN	CHKD	REMARKS

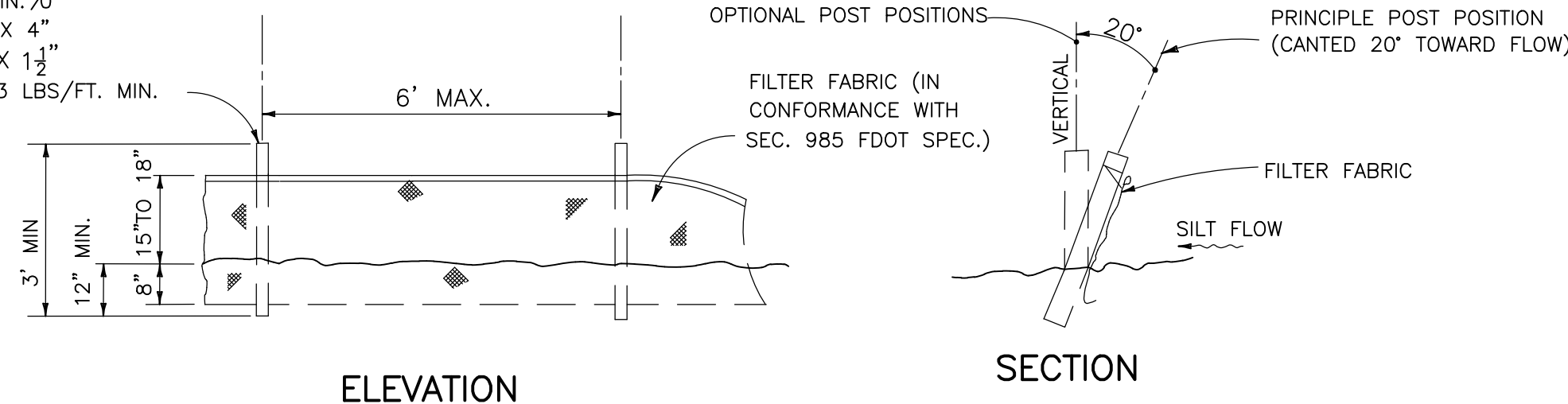
DESIGNED BY: J. WILLIAMS
 DRAWN BY: A. EDWARDS
 SHEET CHK'D BY: J. O'NEAL
 CROSS CHK'D BY: D. PRAH
 APPROVED BY: I. POLEMATIDIS
 DATE: JULY 2019



ST. JOHNS COUNTY UTILITY DEPARTMENT
 ST. JOHNS COUNTY, FLORIDA
 NORTHWEST WTP
 PHASE 1 (6 TO 9 MGD) EXPANSION

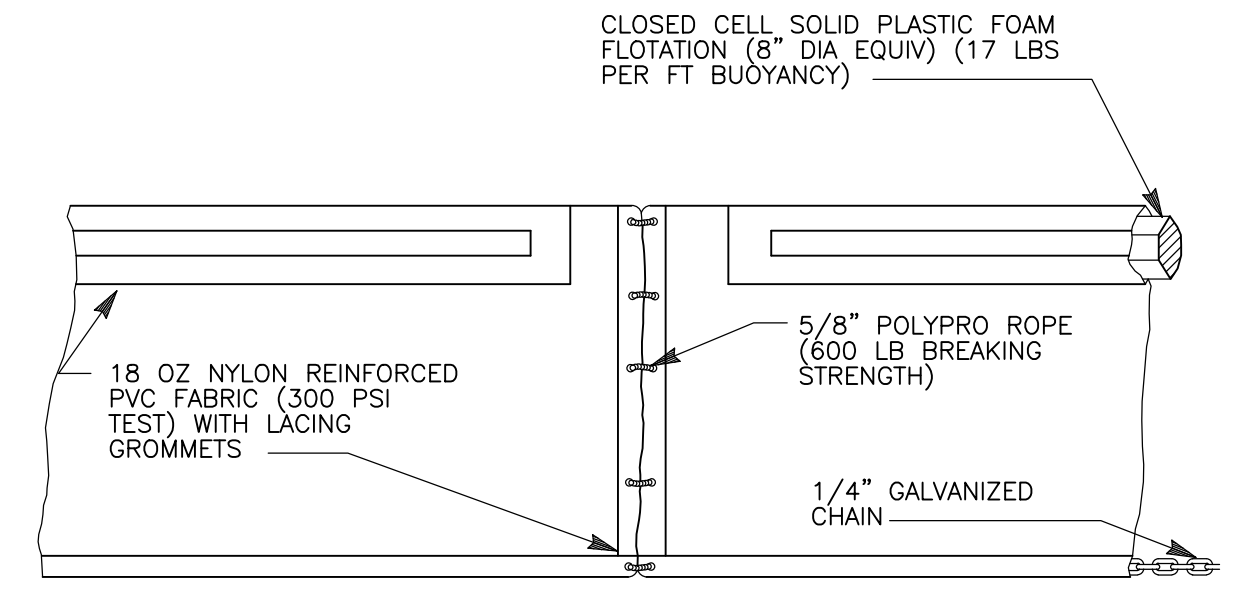
PROJECT NO. 6334-232860
 FILE NAME: CD01MIDT.DWG
 SHEET NO. CD-1
 ISSUED FOR BID

POST OPTIONS: WOOD 2 1/2" MIN. Ø
WOOD 2" X 4"
OAK 1 1/2" X 1 1/2"
STEEL 1.33 LBS./FT. MIN.



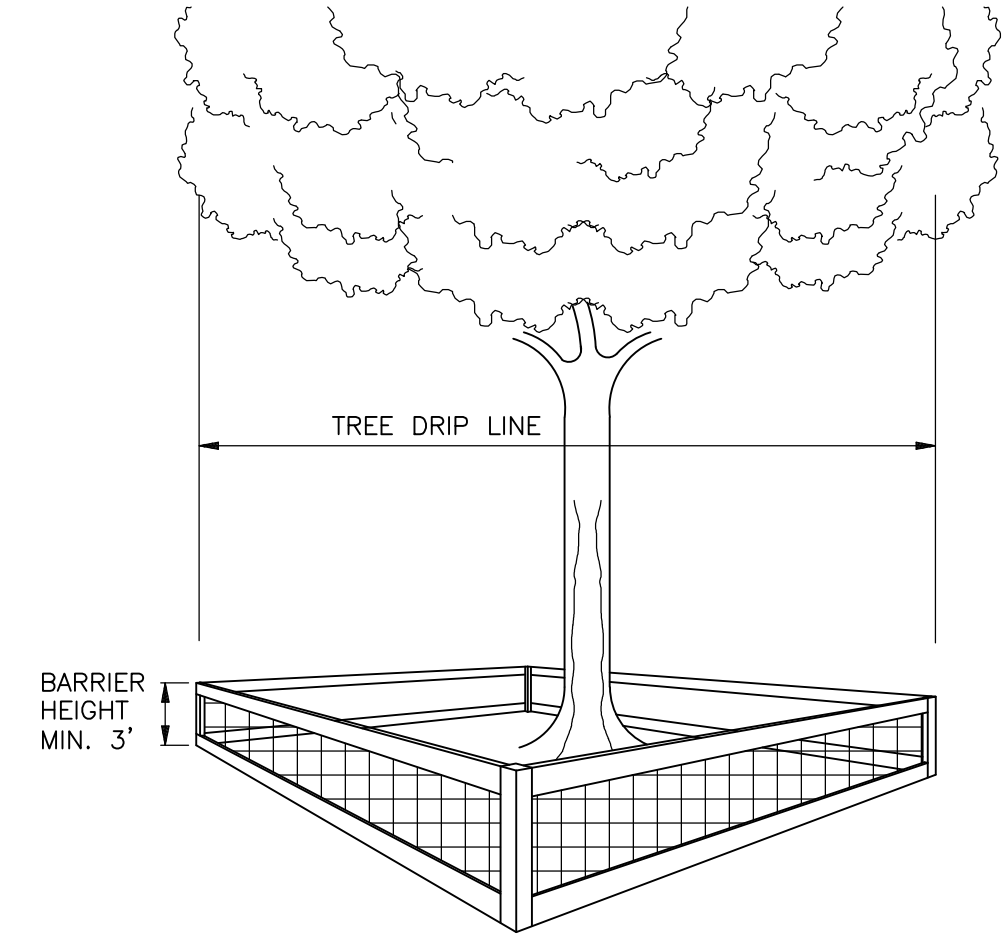
FDOT 102 TYPE III SILT FENCE

DETAIL A
NTS



FDOT INDEX 103 TYPE II FLOATING TURBIDITY BARRIER

DETAIL B
NTS



TREE PROTECTION BARRICADE SPECIFICATIONS:

1. CONTRACTOR TO COMPLY WITH ALL LOCAL TREE ORDINANCES IN ADDITION TO THE SPECIFICATIONS NOTED BELOW.
2. FOUR CORNER UPRIGHT STAKES OF NO LESS THAN 2" X 2" LUMBER CONNECTED BY HORIZONTAL MEMBERS OF NO LESS THAN 1" X 4" LUMBER; OR UPRIGHT STAKES SPACED AT 4-5' INTERVALS OF NO LESS THAN 2" X 2" LUMBER CONNECTED BY TWINE FLAGGED WITH PLASTIC SURVEYING TAPE AT REGULAR INTERVALS.
3. REQUIRED BARRICADES AND FLAGGING SHALL BE ERCTED BY THE CONTRACTOR AND APPROVED BY THE ENGINEER PRIOR TO COMMENCEMENT OF LAND ALTERATION ACTIVITIES. BARRICADES SHALL REMAIN IN PLACE UNTIL ALTERATION AND CONSTRUCTION ACTIVITIES ARE COMPLETED.
4. DURING LAND ALTERATION AND CONSTRUCTION ACTIVITIES, IT SHALL BE UNLAWFUL TO REMOVE VEGETATION BY GRUBBING OR TO PLACE SOIL DEPOSITS, DEBRIS, SOLVENTS, CONSTRUCTION MATERIAL, MACHINERY OR OTHER EQUIPMENT OF ANY KIND WITHIN THE DRIPLINE OF A TREE TO REMAIN ON THE SITE UNLESS OTHERWISE APPROVED BY THE ENGINEER.
5. LAND ALTERATION ACTIVITIES SHALL NOT UNNECESSARILY REMOVE EXISTING VEGETATION AND ALTER EXISTING TOPOGRAPHY.

TREE PROTECTION BARRICADE

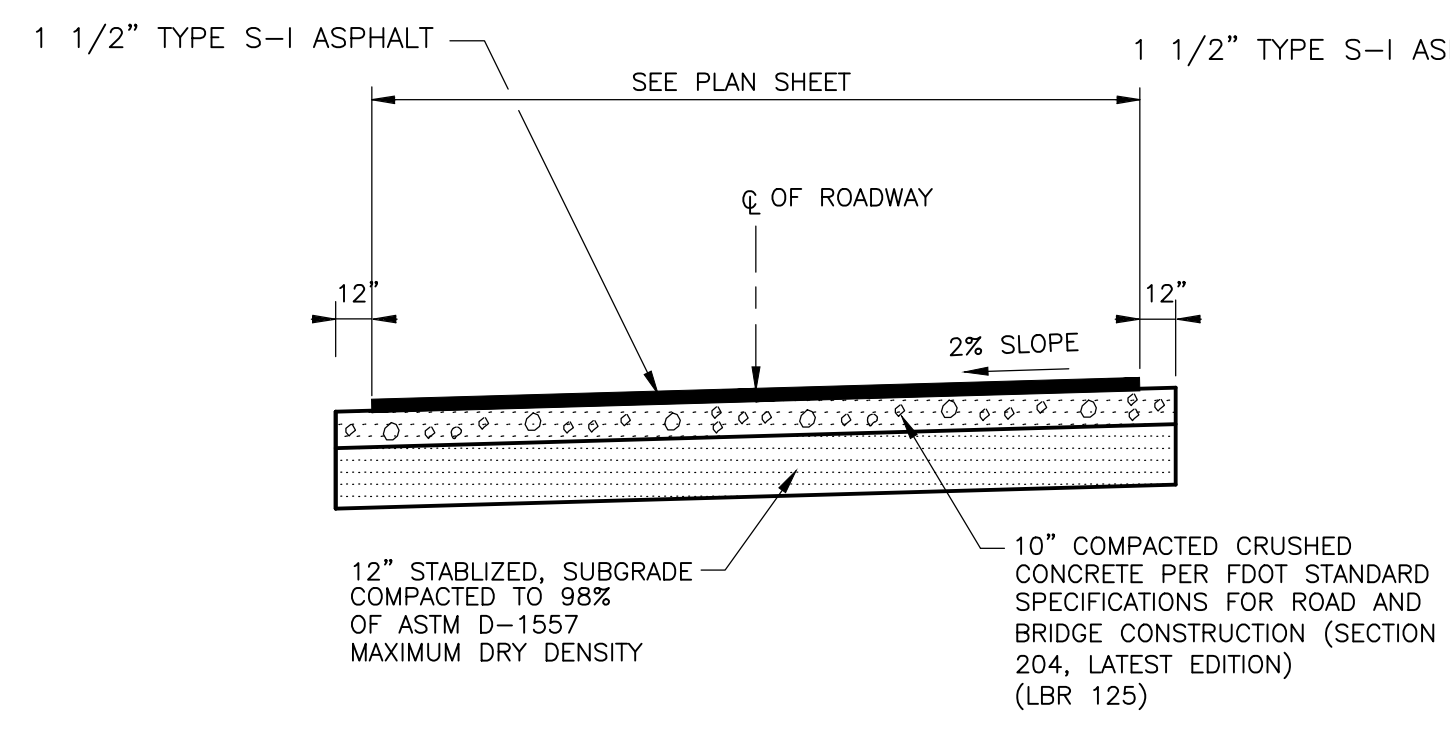
DETAIL C
NTS

EROSION CONTROL

IT IS THE CONTRACTORS RESPONSIBILITY TO IMPLEMENT THE EROSION AND TURBIDITY CONTROLS AS SHOWN ON THE EROSION AND TURBIDITY CONTROL PLAN. IT IS ALSO THE CONTRACTORS RESPONSIBILITY TO ENSURE THESE CONTROLS ARE PROPERLY INSTALLED, MAINTAINED AND FUNCTIONING PROPERLY TO PREVENT TURBID OR POLLUTED WATER FROM LEAVING THE PROJECT SITE. THE CONTRACTOR WILL ADJUST THE EROSION AND TURBIDITY CONTROLS SHOWN ON THE EROSION AND TURBIDITY CONTROL PLAN AND ADD ADDITIONAL CONTROL MEASURES, AS REQUIRED, TO ENSURE THE SITE MEETS ALL FEDERAL, STATE AND LOCAL EROSION AND TURBIDITY CONTROL REQUIREMENTS. THE FOLLOWING BEST MANAGEMENT PRACTICES WILL BE IMPLEMENTED BY THE CONTRACTOR AS REQUIRED BY THE EROSION AND TURBIDITY CONTROL PLAN AND AS REQUIRED BY THE REGULATORY AGENCIES.

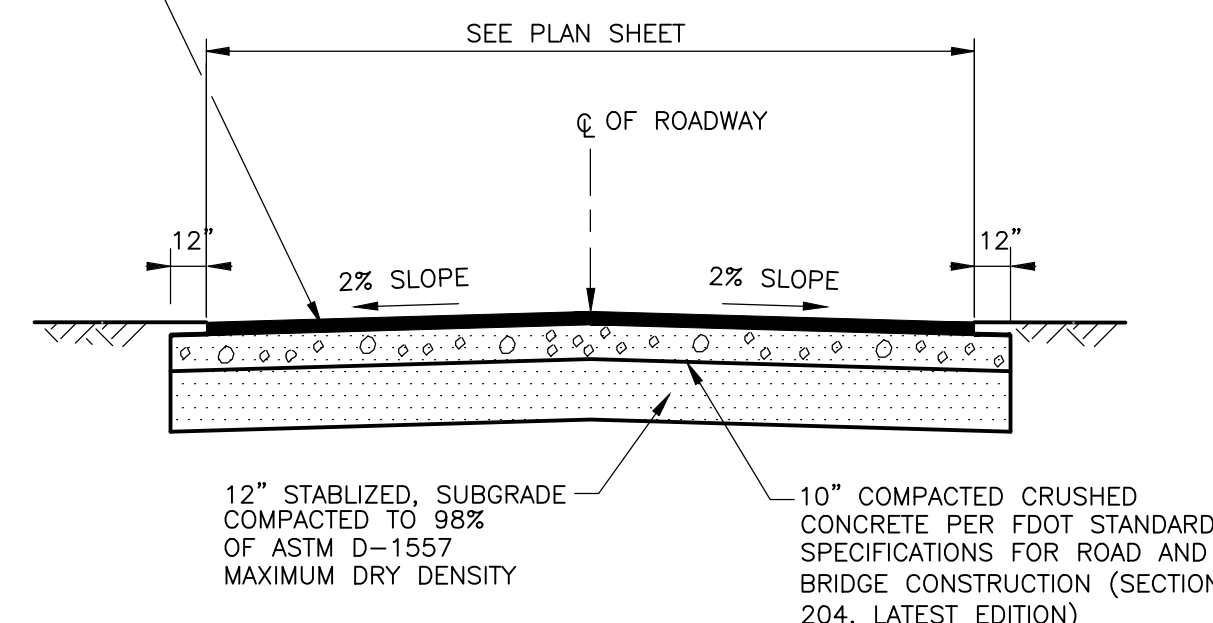
NOTES:

1. SEDIMENT BASINS AND TRAPS, PERIMETER DITCHES, SEDIMENT BARRIERS AND OTHER MEASURES INTENDED TO TRAP SEDIMENT SHALL BE CONSTRUCTED AS A FIRST STEP BEFORE ANY LAND-DISTURBING TAKES PLACE.
2. ALL SEDIMENT CONTROL MEASURES ARE TO BE ADJUSTED TO MEET FIELD CONDITIONS AT THE TIME OF CONSTRUCTION AND BE CONSTRUCTED PRIOR TO ANY GRADING OR DISTURBANCE OF EXISTING SURFACE MATERIAL ON BALANCE OF SITE. PERIMETER SEDIMENT BARRIERS SHALL BE CONSTRUCTED TO PREVENT SEDIMENT OR TRASH FROM FLOWING OR FLOATING ON TO ADJACENT PROPERTIES.
3. DURING CONSTRUCTION OF THE PROJECT, SOIL STOCK PILES SHALL BE STABILIZED OR PROTECTED WITH SEDIMENT TRAPPING MEASURES. THE CONTRACTOR IS RESPONSIBLE FOR THE TEMPORARY PROTECTION AND PERMANENT STABILIZATION OF ALL SOIL STOCKPILES ON SITE AS WELL AS SOIL INTENTIONALLY TRANSPORTED FROM THE PROJECT SITE.
4. AFTER ANY SIGNIFICANT RAINFALL, SEDIMENT CONTROL STRUCTURES WILL BE INSPECTED FOR INTEGRITY. ANY DAMAGED DEVICES SHALL BE REPAIRED IMMEDIATELY.
5. CONCENTRATED RUNOFF SHALL NOT FLOW DOWN CUT OR FILL SLOPES UNLESS CONTAINED WITHIN AN ADEQUATE TEMPORARY OR PERMANENT CHANNEL, FLUME OR SLOPE DRAIN STRUCTURE.
6. WHENEVER WATER SEEPS FROM A SLOPE FACE, ADEQUATE DRAINAGE OR OTHER PROTECTION SHALL BE PROVIDED.
7. SEDIMENT WILL BE PREVENTED FROM ENTERING ANY STORM DRAIN SYSTEM, DITCH, OR CHANNEL. ALL STORM SEWER INLETS THAT ARE MADE OPERABLE DURING CONSTRUCTION SHALL BE PROTECTED SO THAT SEDIMENT-LADEN WATER CANNOT ENTER THE CONVEYANCE SYSTEM WITHOUT FIRST BEING FILTERED OR OTHERWISE TREATED TO REMOVE SEDIMENT.
8. BEFORE TEMPORARY OR NEWLY CONSTRUCTED STORMWATER CONVEYANCE CHANNELS ARE MADE OPERATIONAL, ADEQUATE OUTLET PROTECTION AND ANY REQUIRED TEMPORARY OR PERMANENT CHANNEL LINING SHALL BE INSTALLED IN BOTH THE CONVEYANCE CHANNEL AND RECEIVING CHANNEL.
9. WHEN WORK IN A LIVE WATERCOURSE IS PERFORMED, PRECAUTIONS SHALL BE TAKEN TO MINIMIZE ENRICHMENT. CONTROL SEDIMENT TRANSPORT AND STABILIZE THE WORK AREA TO THE GREATEST EXTENT POSSIBLE DURING CONSTRUCTION. NONERODIBLE MATERIAL SHALL BE USED FOR THE CONSTRUCTION OF CAUSEWAYS AND COFFERDAMS. EARTHEN FILL MAY BE USED FOR THESE STRUCTURES IF ARMORED BY NONERODIBLE COVER MATERIALS.
10. STOCKPILING MATERIAL: NO EXCAVATED MATERIAL SHALL BE STOCKPILED IN SUCH A MANNER AS TO DIRECT RUNOFF DIRECTLY OFF THE PROJECT SITE INTO ANY ADJACENT WATER BODY OR STORM WATER COLLECTION FACILITY.
11. EXPOSED AREA LIMITATION: THE SURFACE AREA OF OPEN, RAW ERODIBLE SOIL EXPOSED BY CLEARING AND GRUBBING OPERATIONS OR EXCAVATION AND FILLING OPERATIONS SHALL NOT EXCEED 5 ACRES. IF THE TOTAL AREA TO BE CLEARED IS EQUAL TO, OR EXCEEDS FIVE (5) ACRES, THEN THE CONTRACTOR WILL BE RESPONSIBLE FOR PREPARING A STORMWATER POLLUTION PREVENTION PLAN (SWPPP) IN ACCORDANCE WITH EPA'S NPDES REGULATIONS. THE CONTRACTOR WILL BE RESPONSIBLE FOR SUBMITTING A NOTICE ON INTENT (NOI) TO EPA FORTY-EIGHT (48) HOURS PRIOR TO COMMENCING CONSTRUCTION.
12. TEMPORARY SEEDING: AREAS OPENED BY CONSTRUCTION OPERATIONS AND THAT ARE NOT ANTICIPATED TO BE RE-EXCAVATED OR DRESSED AND RECEIVE FINAL GRASSING TREATMENT WITHIN 30 DAYS SHALL BE SEEDDED WITH A QUICK-GROWING GRASS SPECIES WHICH WILL PROVIDE AN EARLY COVER DURING THE SEASON IN WHICH IT IS PLANTED AND WILL NOT LATER COMPETE WITH THE PERMANENT GRASSING.
13. TEMPORARY SEEDING AND MULCHING: SLOPES STEEPER THAN 6:1 THAT FALL WITHIN THE CATEGORY ESTABLISHED IN PARAGRAPH 12 ABOVE, LOOSE MEASURE OF MULCH MATERIAL CUT INTO THE SOIL OF THE SEEDDED AREA ADEQUATE TO PREVENT MOVEMENT OF SEED AND MULCH.
14. TEMPORARY GRASSING: THE SEEDDED OR SEEDDED AND MULCHED AREA(S) SHALL BE ROLLED AND WATERED OR HYDROMULCHED OR OTHER SUITABLE METHODS IF REQUIRED TO ASSURE OPTIMUM GROWING CONDITIONS FOR THE ESTABLISHMENT OF A GOOD GRASS COVER. TEMPORARY GRASSING SHALL BE THE SAME MIX & AMOUNT REQUIRED FOR PERMANENT GRASSING IN THE CONTRACT SPECIFICATIONS.
15. TEMPORARY REGRASSING: IF, AFTER 14 DAYS FROM SEEDING, THE TEMPORARY GRASSING AREAS HAVE NOT ATTAINED A MINIMUM OF 75 PERCENT GOOD GRASS COVER, THE AREA WILL BE REWORKED AND ADDITIONAL SEED APPLIED SUFFICIENT TO ESTABLISH THE DESIRED VEGETATIVE COVER.
16. MAINTENANCE: ALL FEATURES OF THE PROJECT DESIGNED AND CONSTRUCTED TO PREVENT EROSION AND SEDIMENT SHALL BE MAINTAINED DURING THE LIFE OF THE CONSTRUCTION SO AS TO FUNCTION AS THEY WERE ORIGINALLY DESIGNED AND CONSTRUCTED.
17. PERMANENT EROSION CONTROL: THE EROSION CONTROL FACILITIES OF THE PROJECT SHOULD BE DESIGNED TO MINIMIZE THE IMPACT ON THE OFFSITE FACILITIES.
18. PERMANENT GRASSING: ALL DISTURBED AREAS SHALL BE SOODED.



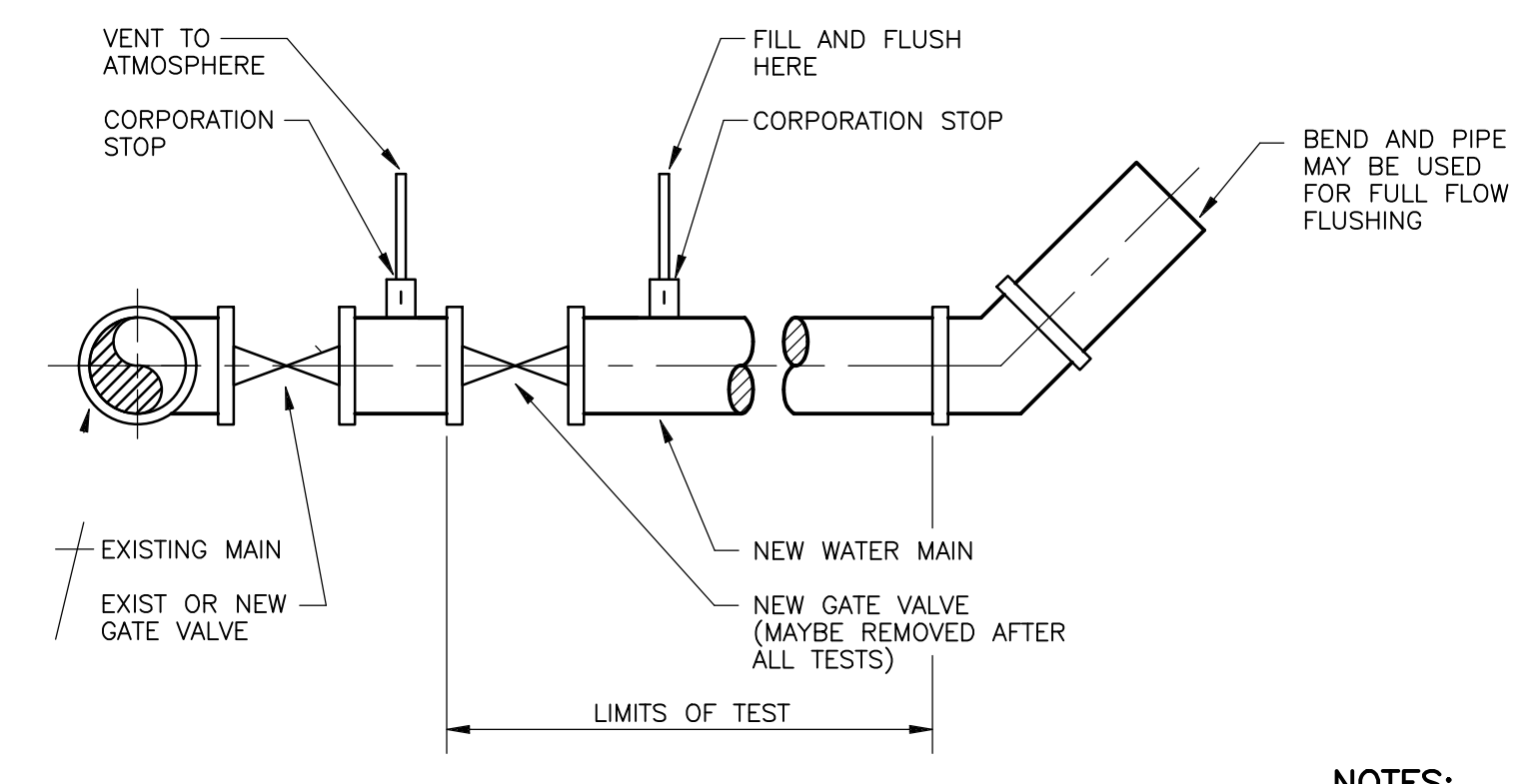
TYPICAL ROADWAY DETAIL

DETAIL D
NTS



TYPICAL ROADWAY DETAIL

DETAIL E
NTS



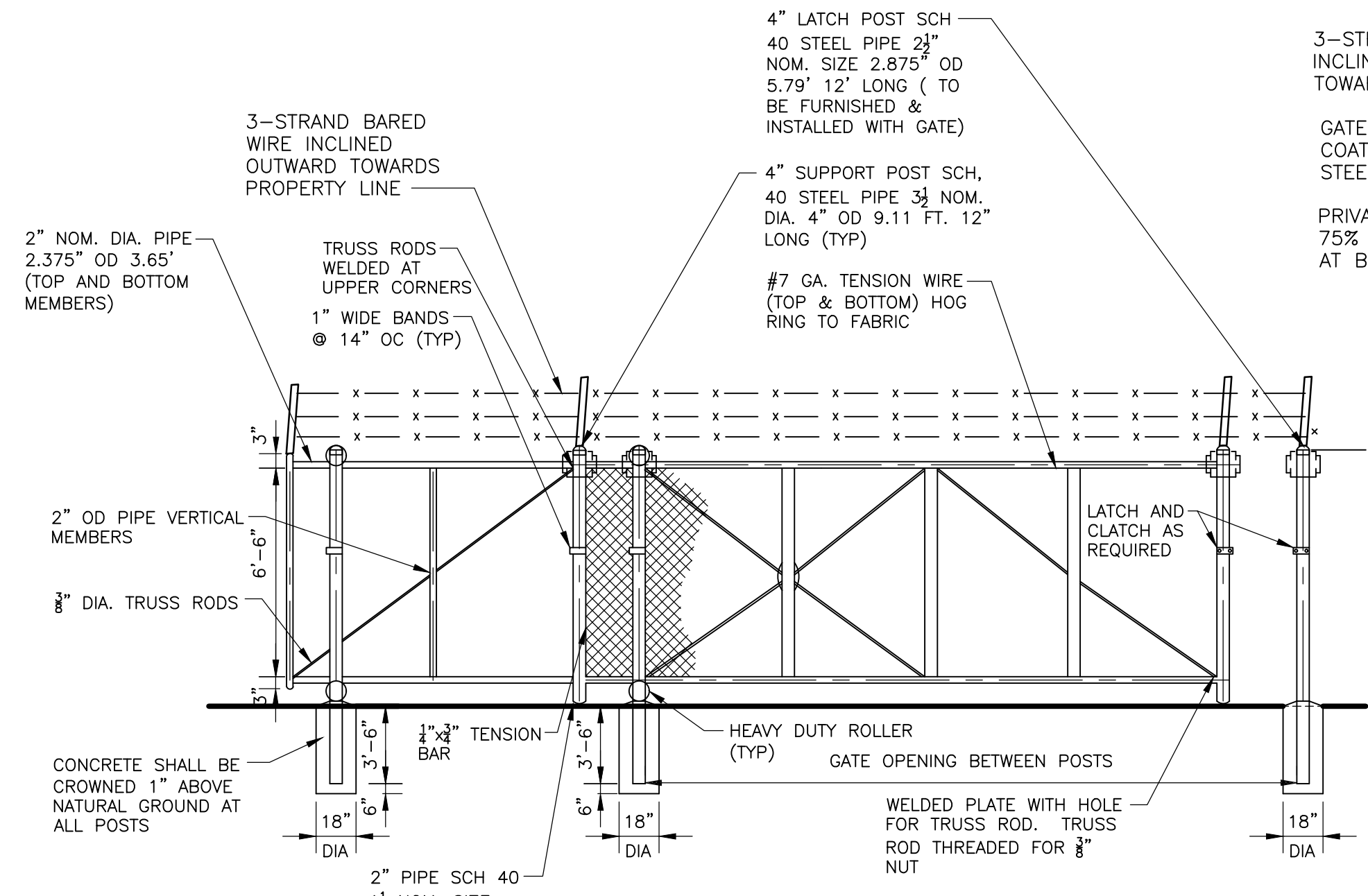
FILLING AND FLUSHING CONNECTION

DETAIL F
NTS

OTHER METHODS FOR FLUSHING MUST RECEIVE APPROVAL FROM THE UTILITY COMPANY.

NOTES:

1. REMOVE TEMPORARY CONNECTION AT CORPORATION STOPS ON NEW MAIN AFTER FILLING AND FLUSHING HAS BEEN COMPLETED.
2. DO NOT REMOVE TEMPORARY CONNECTION AT CORPORATION STOP ON NEW MAIN UNTIL ALL TESTING HAS BEEN COMPLETED.
3. COMPLY WITH ALL ST. JOHNS COUNTY HEALTH DEPT. REGULATIONS.
4. PROVIDE ALL NECESSARY THRUST BLOCKS OR OTHER RESTRAINTS.

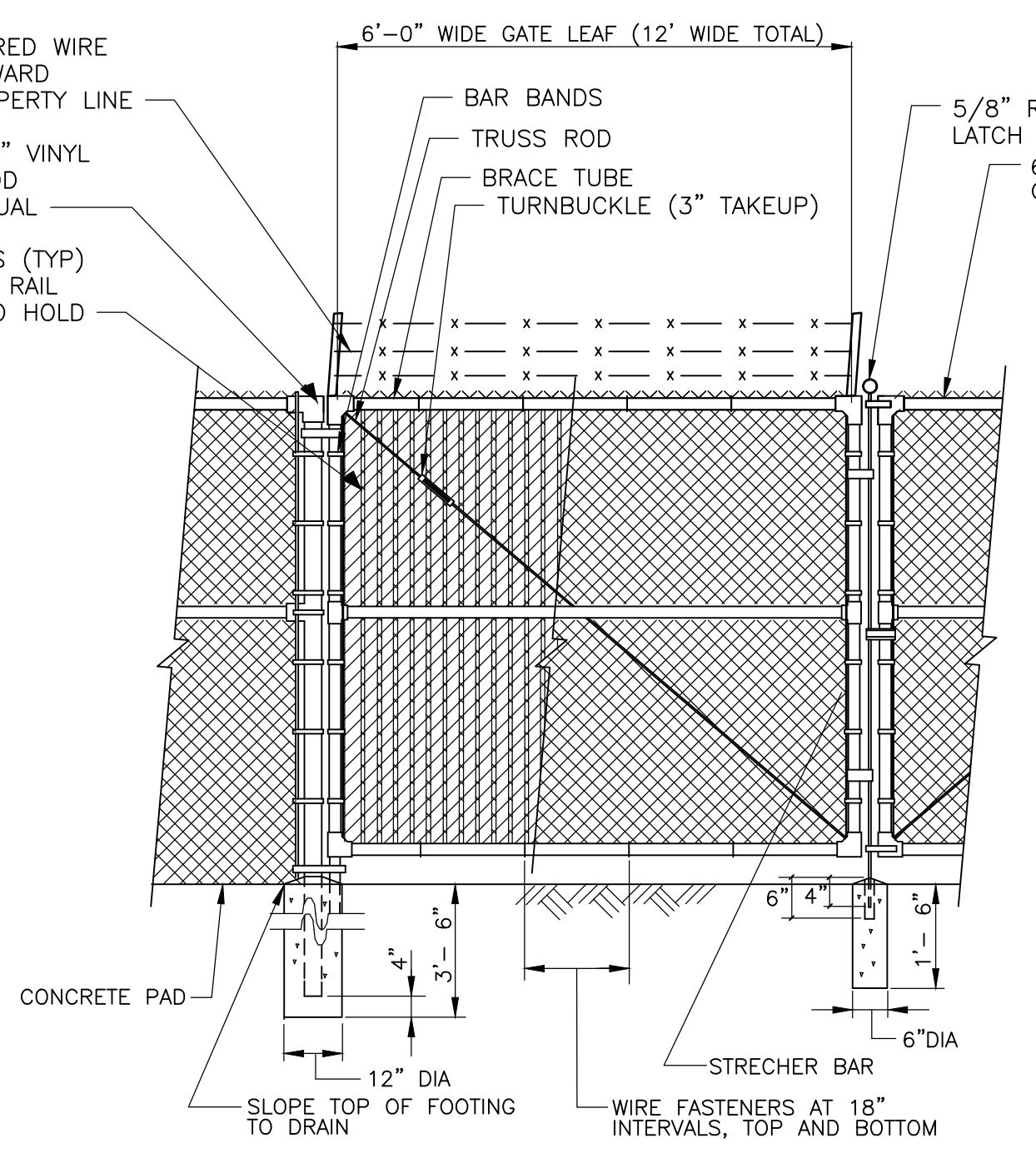


CANTILEVERED SLIDE GATE
FDOT INDEX NO. 803

DETAIL G
NTS

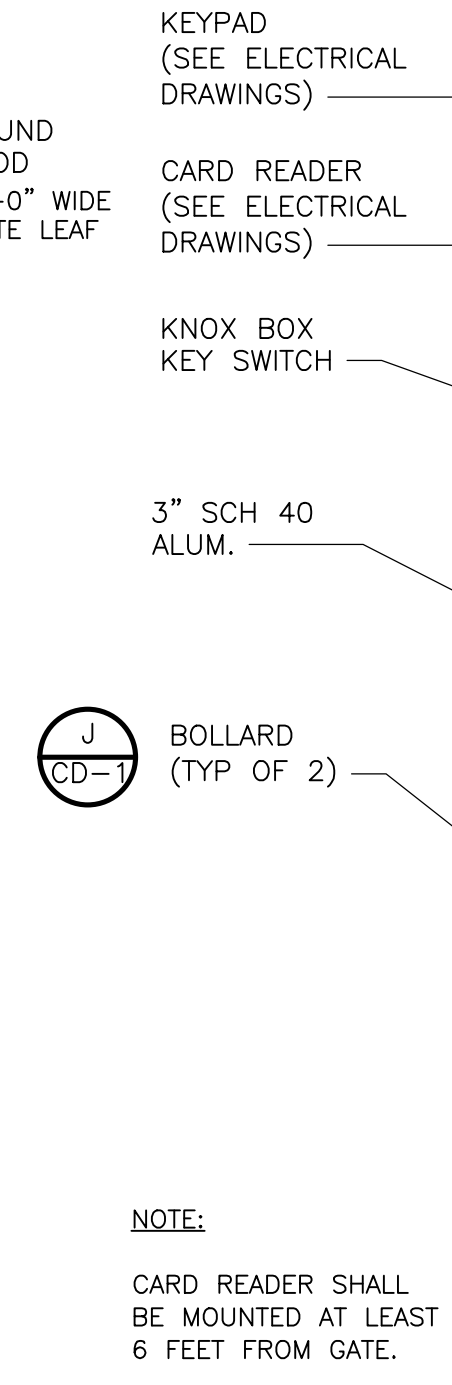
- NOTE:**
1. SEE SPECIFICATION SECTION 323113. PART 2.5 FOR GATE OPERATOR INFORMATION.

GATE OPENING	GATE FRAME	BACK FRAME
24'	24'-3"	12'



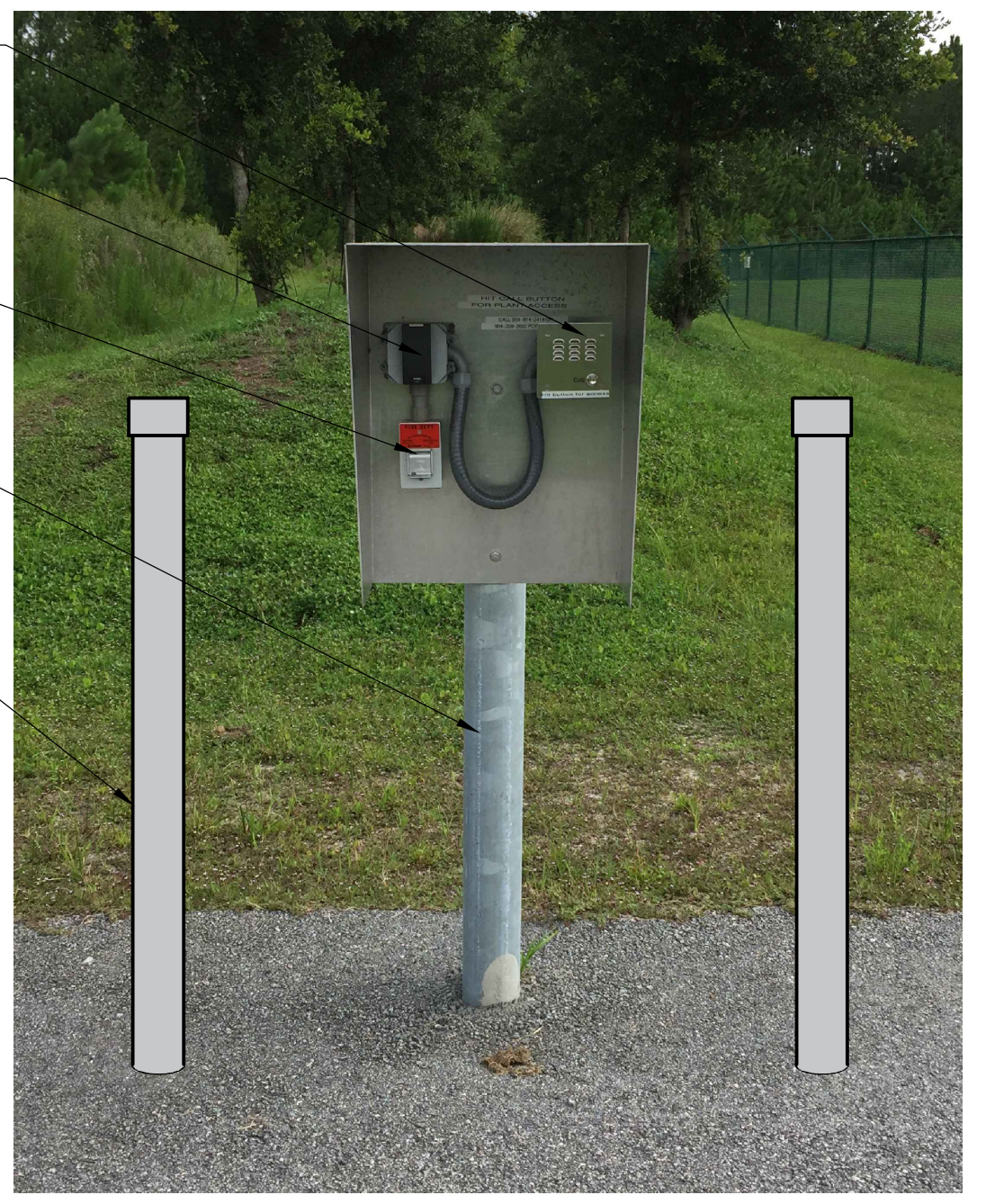
CHAIN LINK FENCE-GATE

DETAIL H
NTS



ACCESS CARD READER

DETAIL I
NTS



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DESIGNED BY: J. WILLIAMS
 DRAWN BY: A. EDWARDS
 SHEET CHK'D BY: J. O'NEAL
 CROSS CHK'D BY: D. PRAH
 APPROVED BY: I. POLEMATIDIS
 DATE: JULY 2019

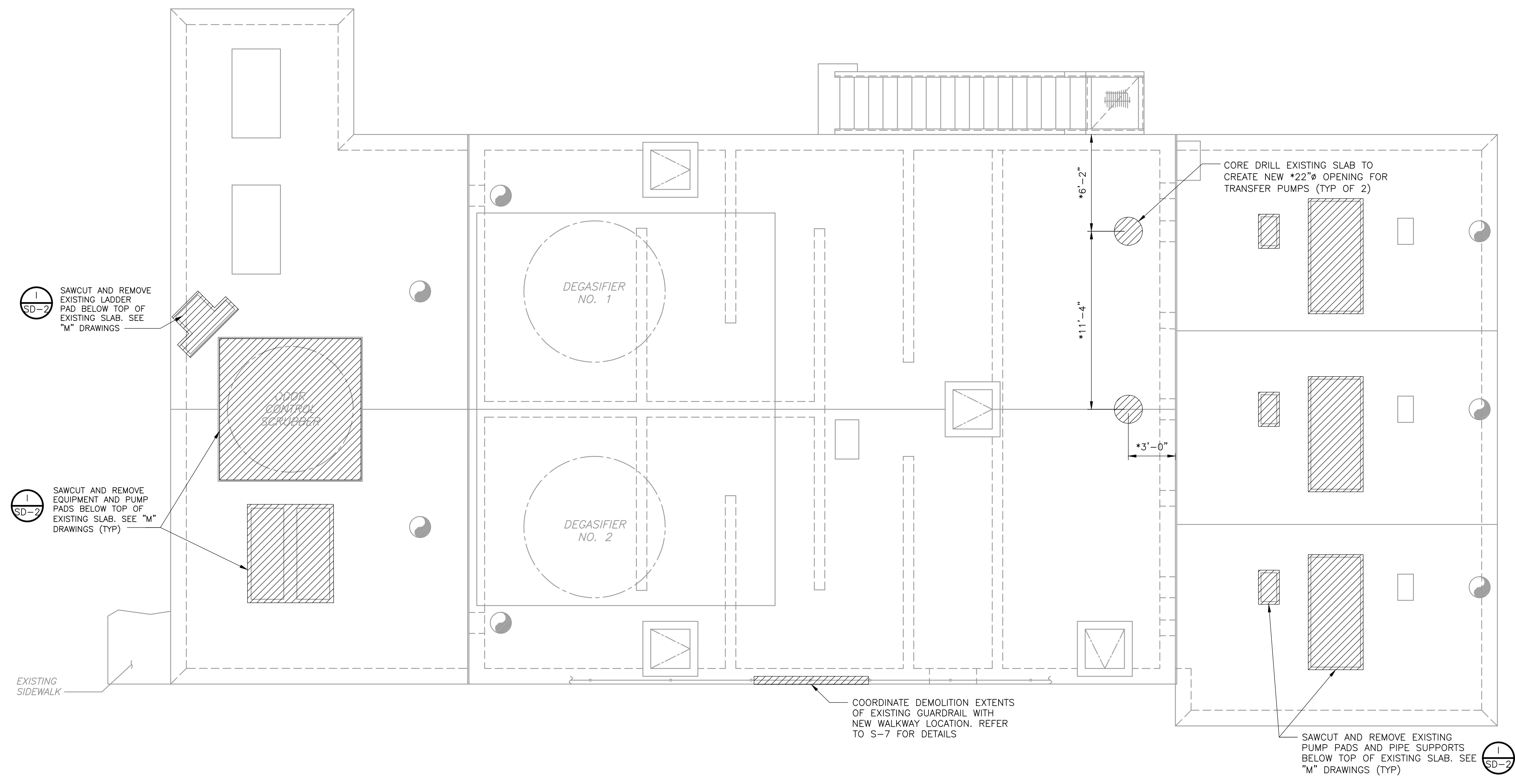


ST. JOHNS COUNTY UTILITY DEPARTMENT
 ST. JOHNS COUNTY, FLORIDA
 NORTHWEST WTP
 PHASE 1 (6 TO 9 MGD) EXPANSION

MISCELLANEOUS CIVIL DETAILS

PROJECT NO. 6334-232860
 FILE NAME: CD02MIDT.DWG
 SHEET NO. CD-2
 ISSUED FOR BID

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CLEARWELL NO.1 DEMOLITION
PLAN
 1/4" = 1'-0"

NOTES:
 1. * - COORDINATE DIMENSIONS WITH MECHANICAL DRAWINGS AND EQUIPMENT MANUFACTURER RECOMMENDATIONS.

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: K. FRANCOFORTE
 DRAWN BY: P. SCHIAVO
 SHEET CHK'D BY: P. KALARIA
 CROSS CHK'D BY: D. PRAH
 APPROVED BY: K. FRANCOFORTE
 DATE: JULY 2019

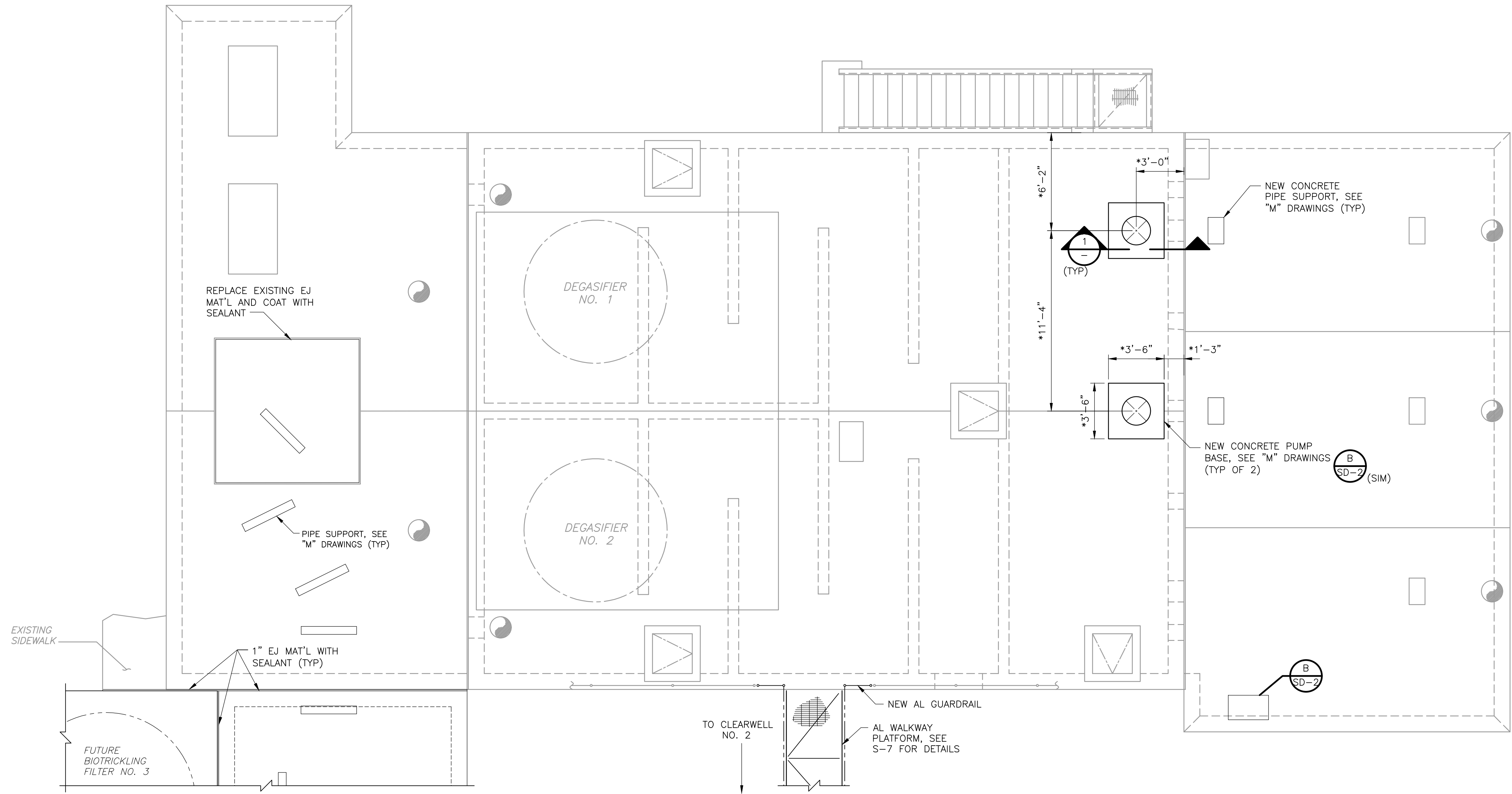
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 4651 Salisbury Road, Suite 420
 Jacksonville, FL 32256
 Tel: (904) 731-7109
 FL COA No. EB-0000020

ST. JOHNS COUNTY UTILITY DEPARTMENT
 ST. JOHNS COUNTY, FLORIDA
 NORTHWEST WTP
 PHASE 1 (6 TO 9 MGD) EXPANSION

**CLEARWELL NO. 1
 DEMOLITION PLAN**

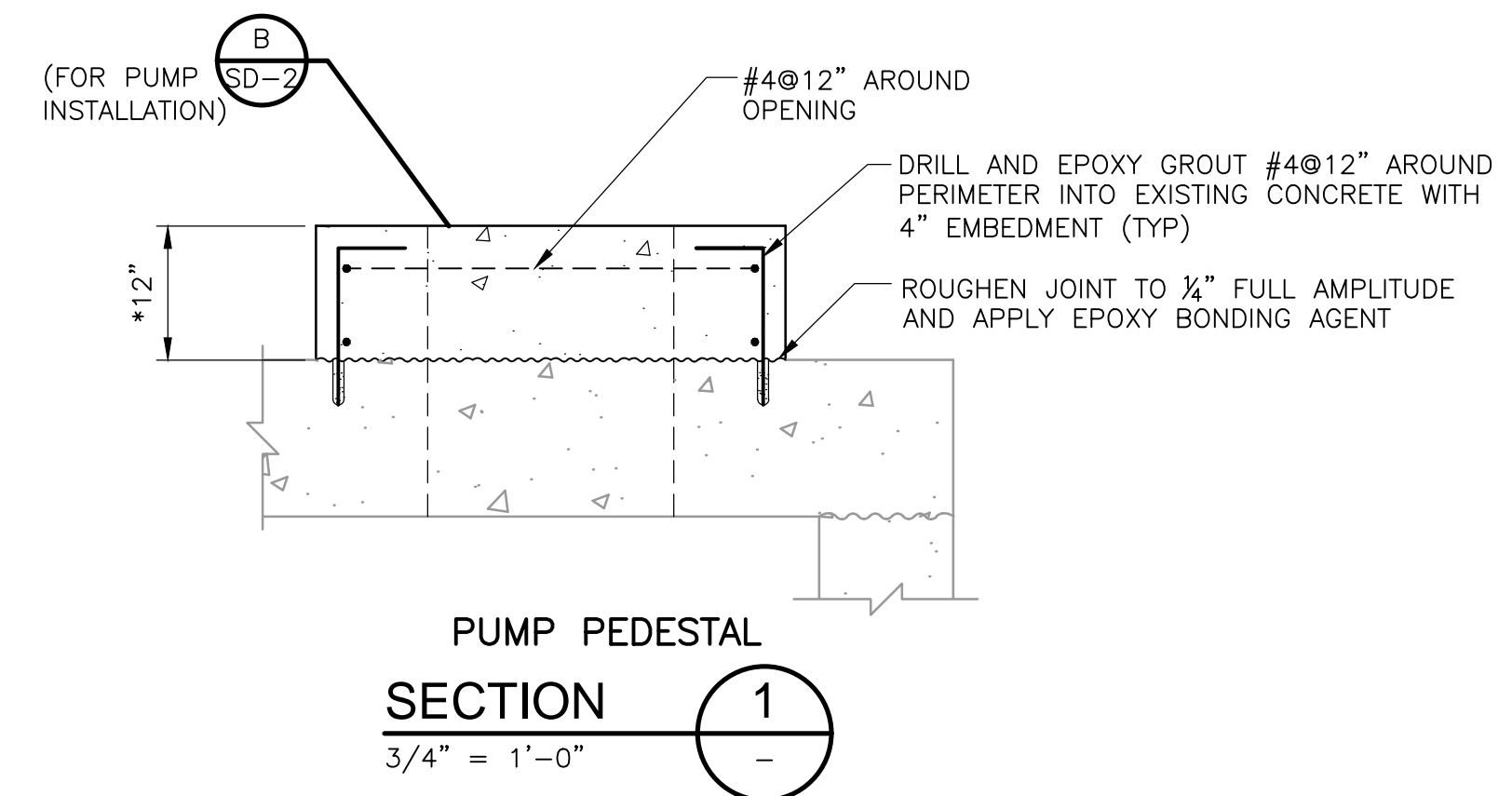
DATE: KEVIN M FRANCOFORTE
 PE NO. 73949
 PROJECT NO. 6334-232860
 FILE NAME: S002CWPL.DWG
 SHEET NO. **S-2**

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CLEARWELL NO.1 MODIFICATION
PLAN
 1/4" = 1'-0"

- NOTES:**
- * - COORDINATE DIMENSIONS WITH MECHANICAL DRAWINGS AND EQUIPMENT MANUFACTURER RECOMMENDATIONS.



REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: K. FRANCOFORTE
 DRAWN BY: P. SCHIAVO
 SHEET CHK'D BY: P. KALARIE
 CROSS CHK'D BY: D. PRAH
 APPROVED BY: K. FRANCOFORTE
 DATE: JULY 2019

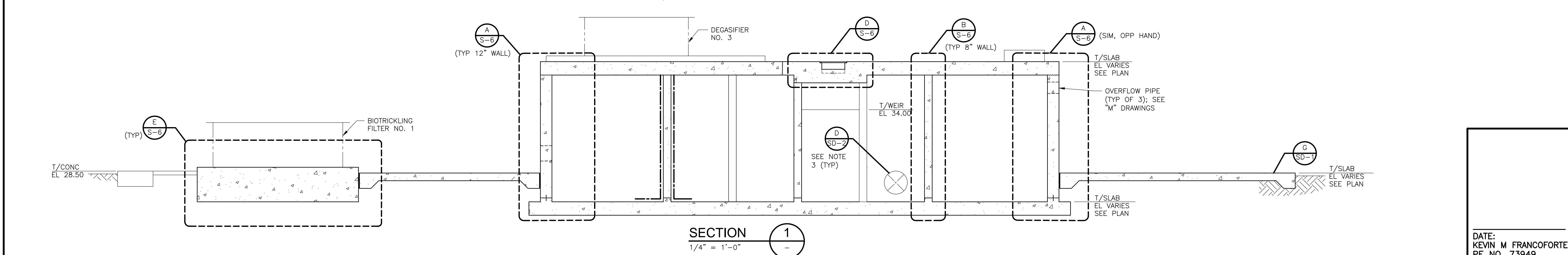
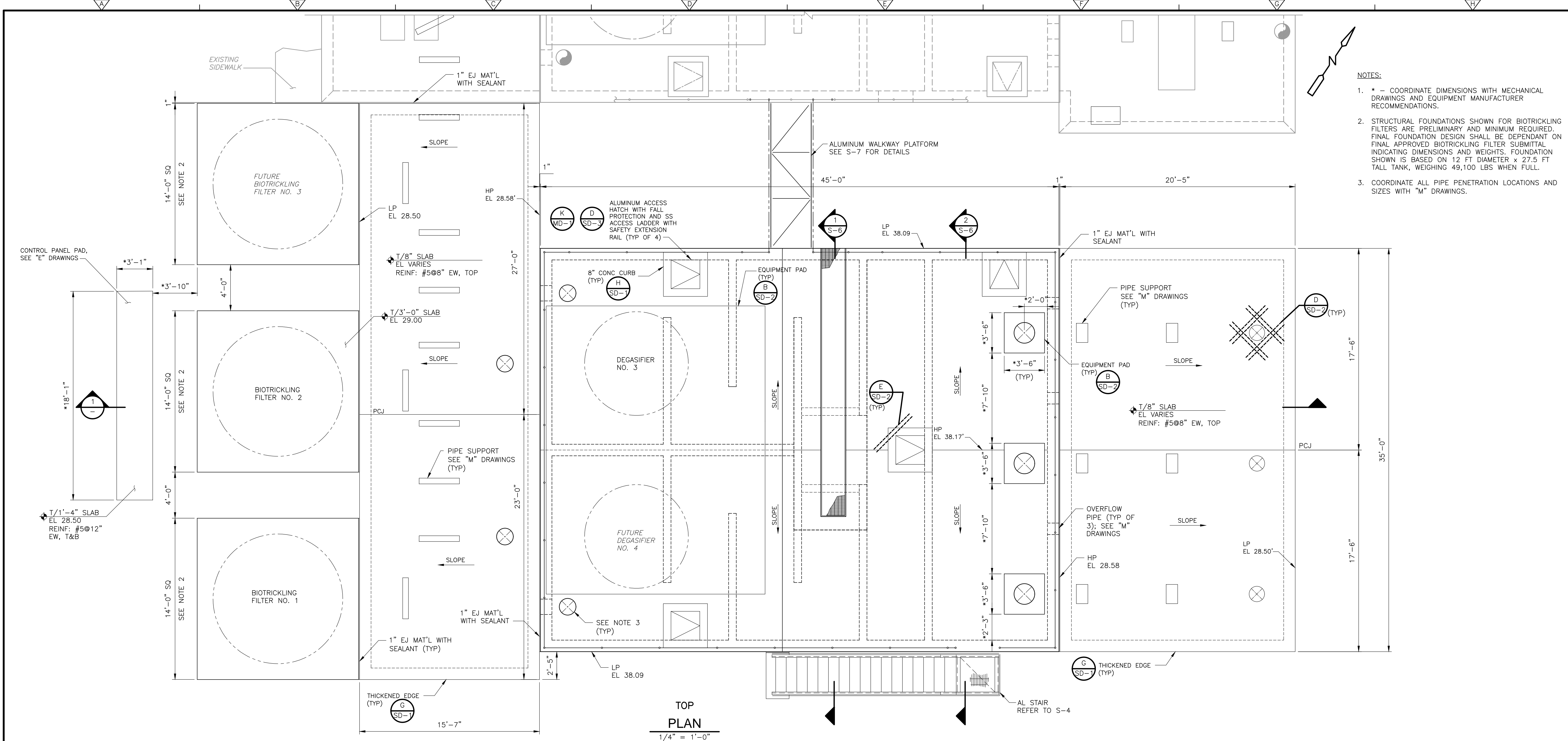
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 Jacksonville, FL 32256
 Tel: (904) 731-7109
 FL COA No. EB-0000020

ST. JOHNS COUNTY UTILITY DEPARTMENT
 ST. JOHNS COUNTY, FLORIDA
 NORTHWEST WTP
 PHASE 1 (6 TO 9 MGD) EXPANSION

CLEARWELL NO. 1
MODIFICATION PLAN AND SECTION

DATE: KEVIN M FRANCOFORTE
 PE NO. 73949
 PROJECT NO. 6334-232860
 FILE NAME: S003CWPL.DWG
 SHEET NO. S-3

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REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: K. FRANCOFORTE
 DRAWN BY: P. SCHIAVO
 SHEET CHK'D BY: P. KALARIA
 CROSS CHK'D BY: D. PRAH
 APPROVED BY: K. FRANCOFORTE
 DATE: JULY 2019

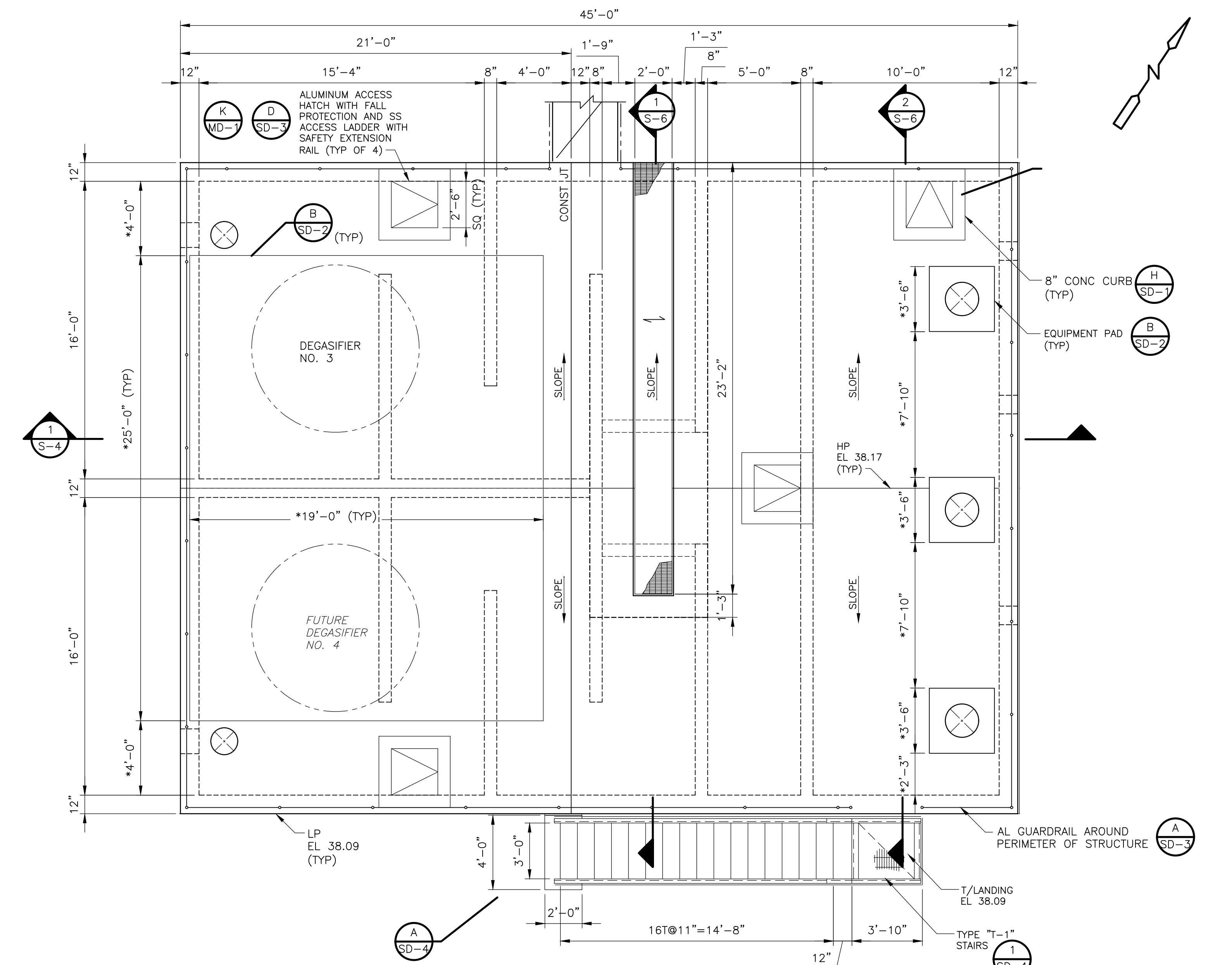
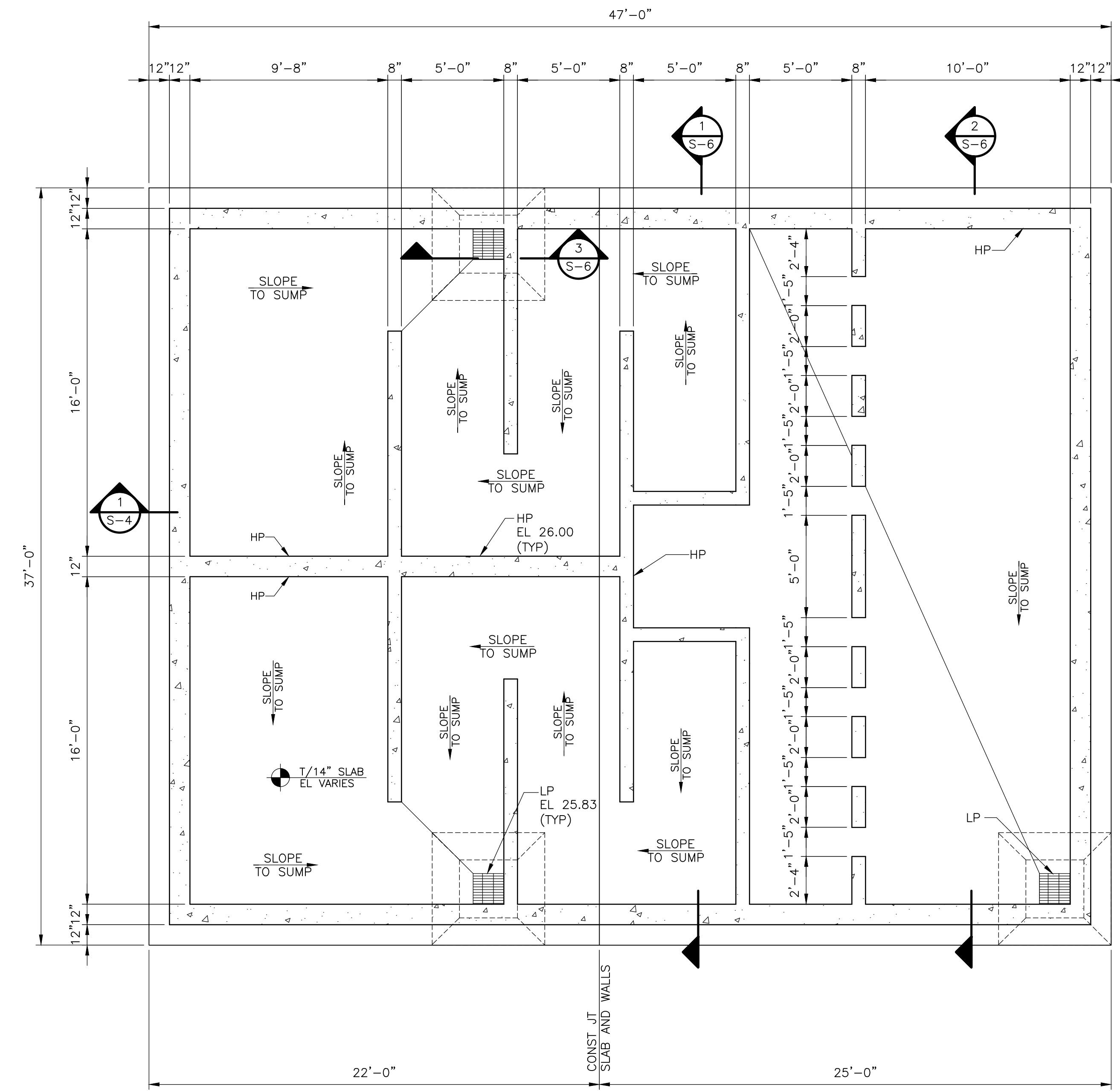
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 FL COA No. EB-0000020

ST. JOHNS COUNTY UTILITY DEPARTMENT
 ST. JOHNS COUNTY, FLORIDA
 NORTHWEST WTP
 PHASE 1 (6 TO 9 MGD) EXPANSION

CLEARWELL NO. 2
DEGASIFIER, ODOR CONTROL AND
TRANSFER PUMPS TOP PLAN AND SECTION

DATE: KEVIN M FRANCOFORTE
 PE NO. 73949
 PROJECT NO. 6334-232860
 FILE NAME: S004CDOT.DWG
 SHEET NO. S-4
 ISSUED FOR BID

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NOTES:
 1. * - COORDINATE DIMENSIONS WITH MECHANICAL DRAWINGS AND EQUIPMENT MANUFACTURER RECOMMENDATIONS.

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: K. FRANCOFORTE
 DRAWN BY: P. SCHIAVO
 SHEET CHK'D BY: P. KALARIA
 CROSS CHK'D BY: D. PRAH
 APPROVED BY: K. FRANCOFORTE
 DATE: JULY 2019

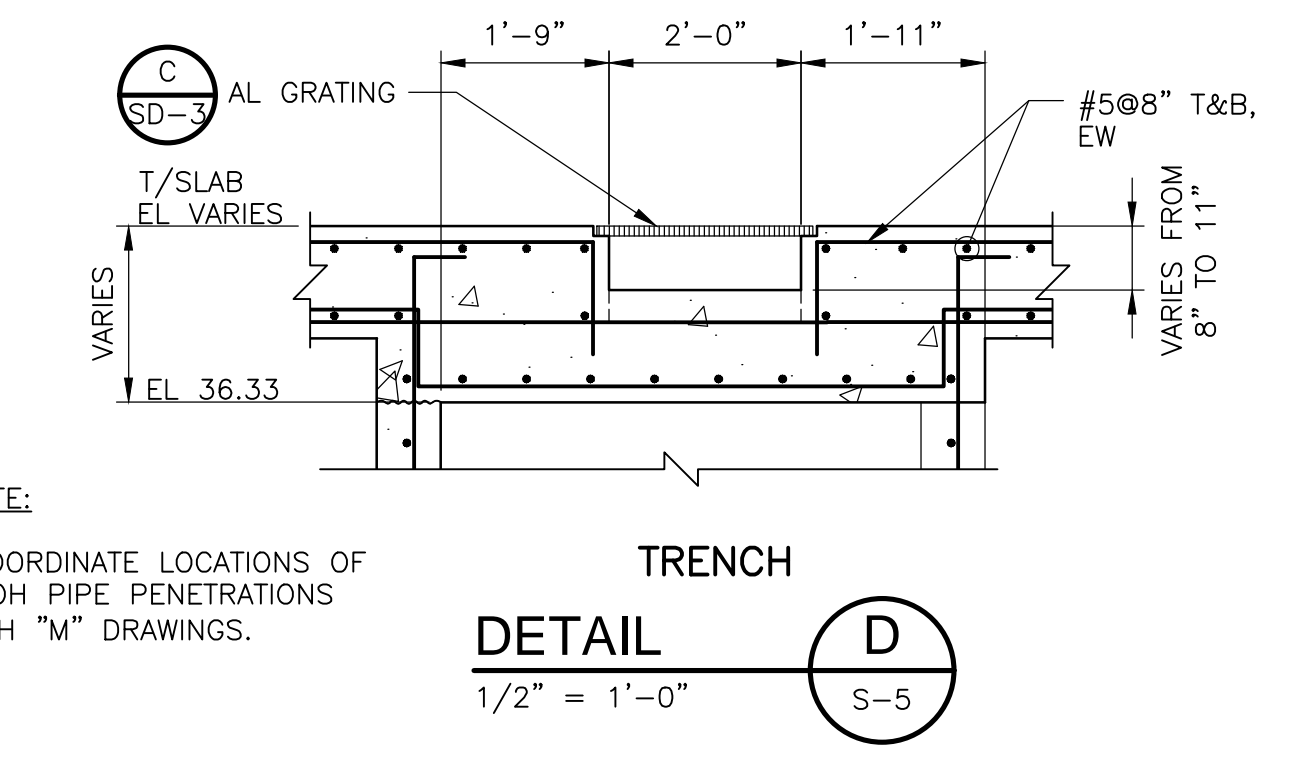
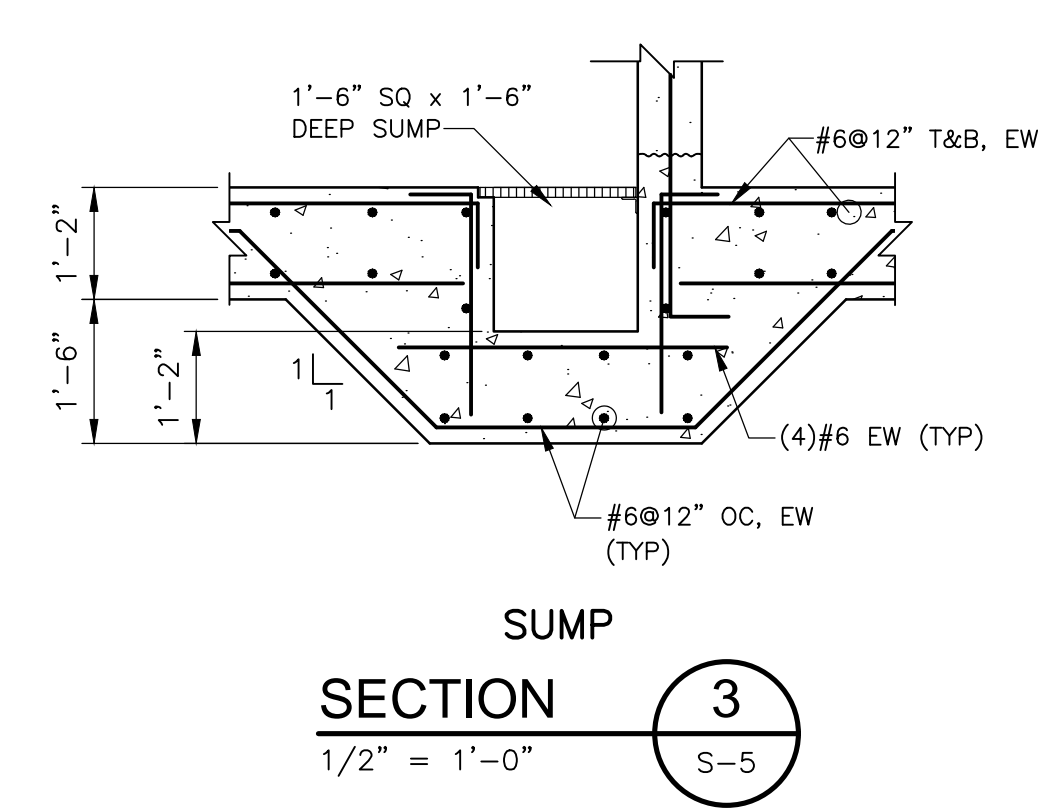
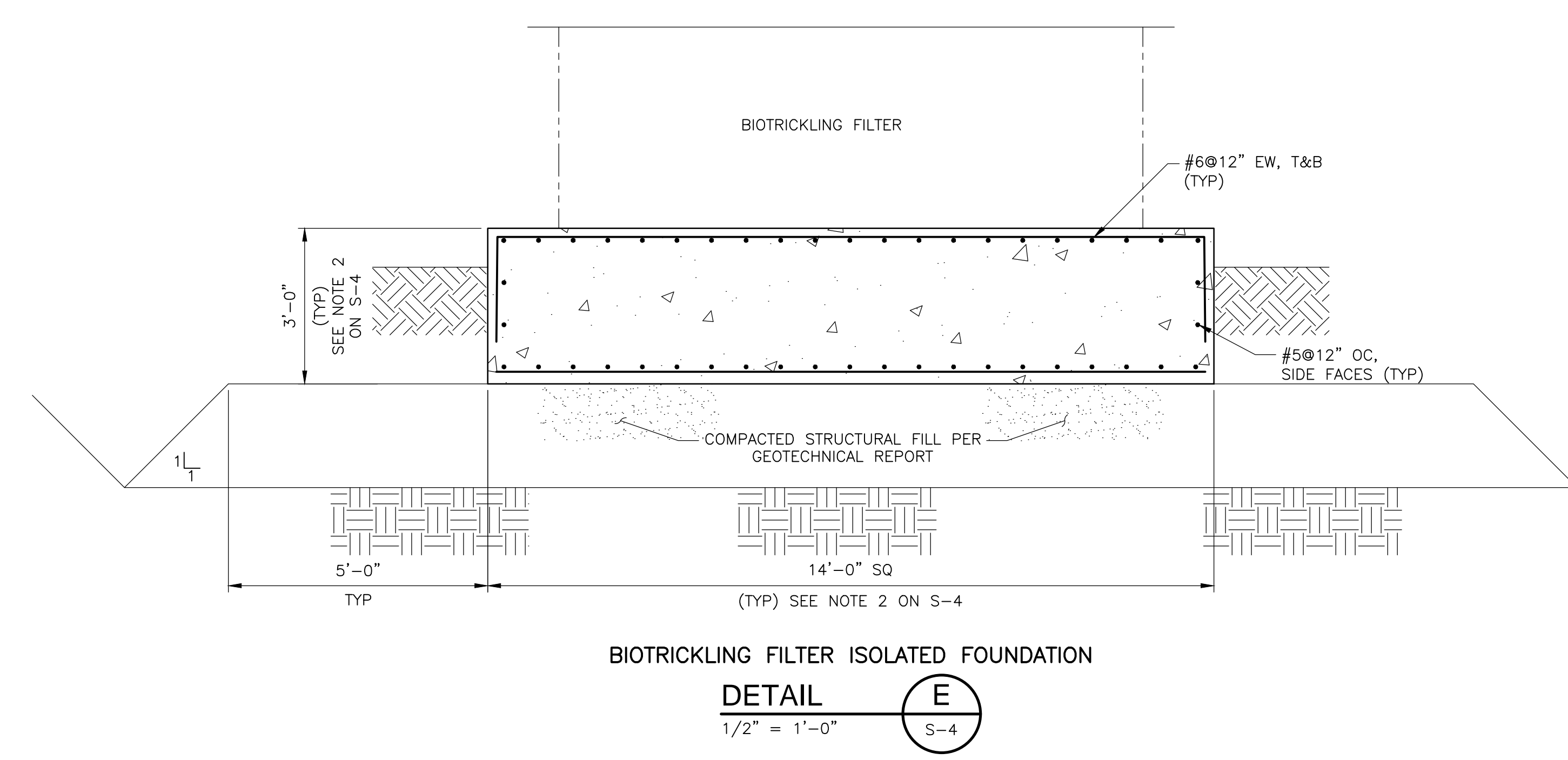
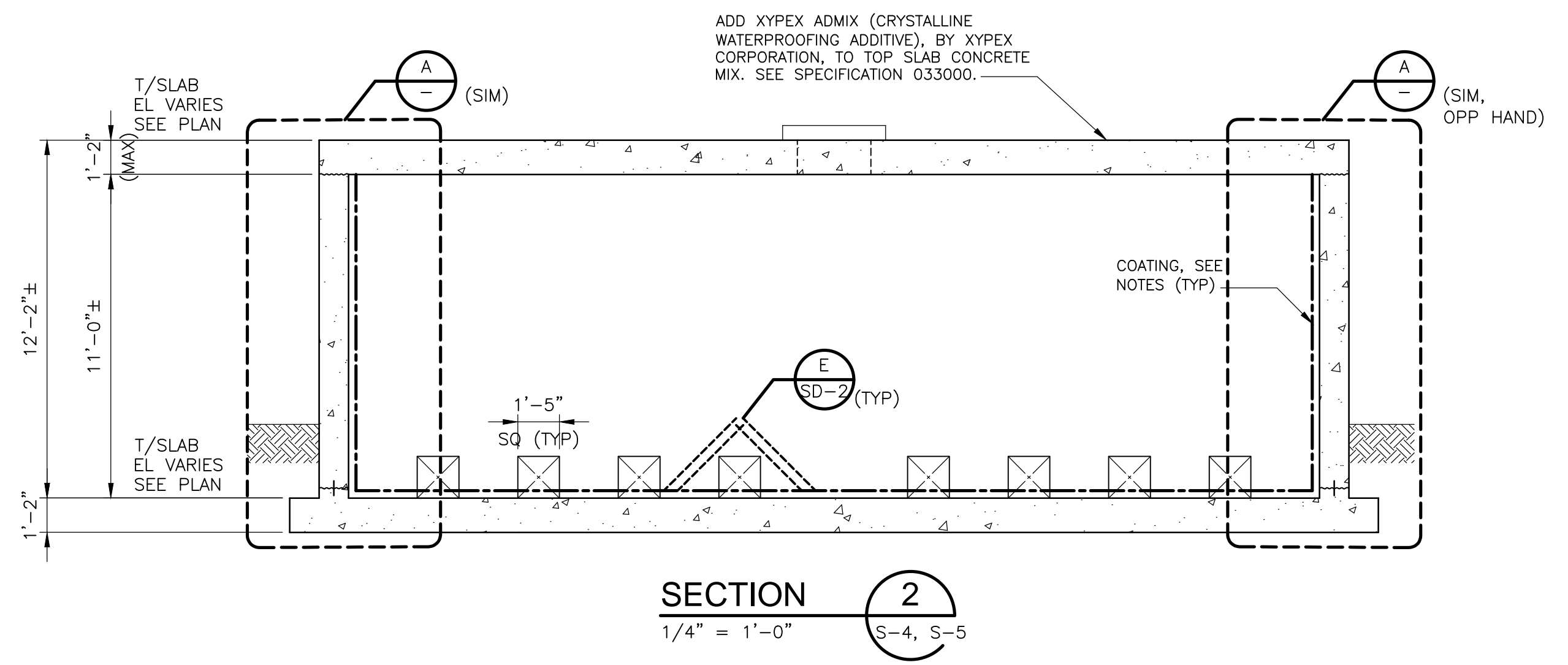
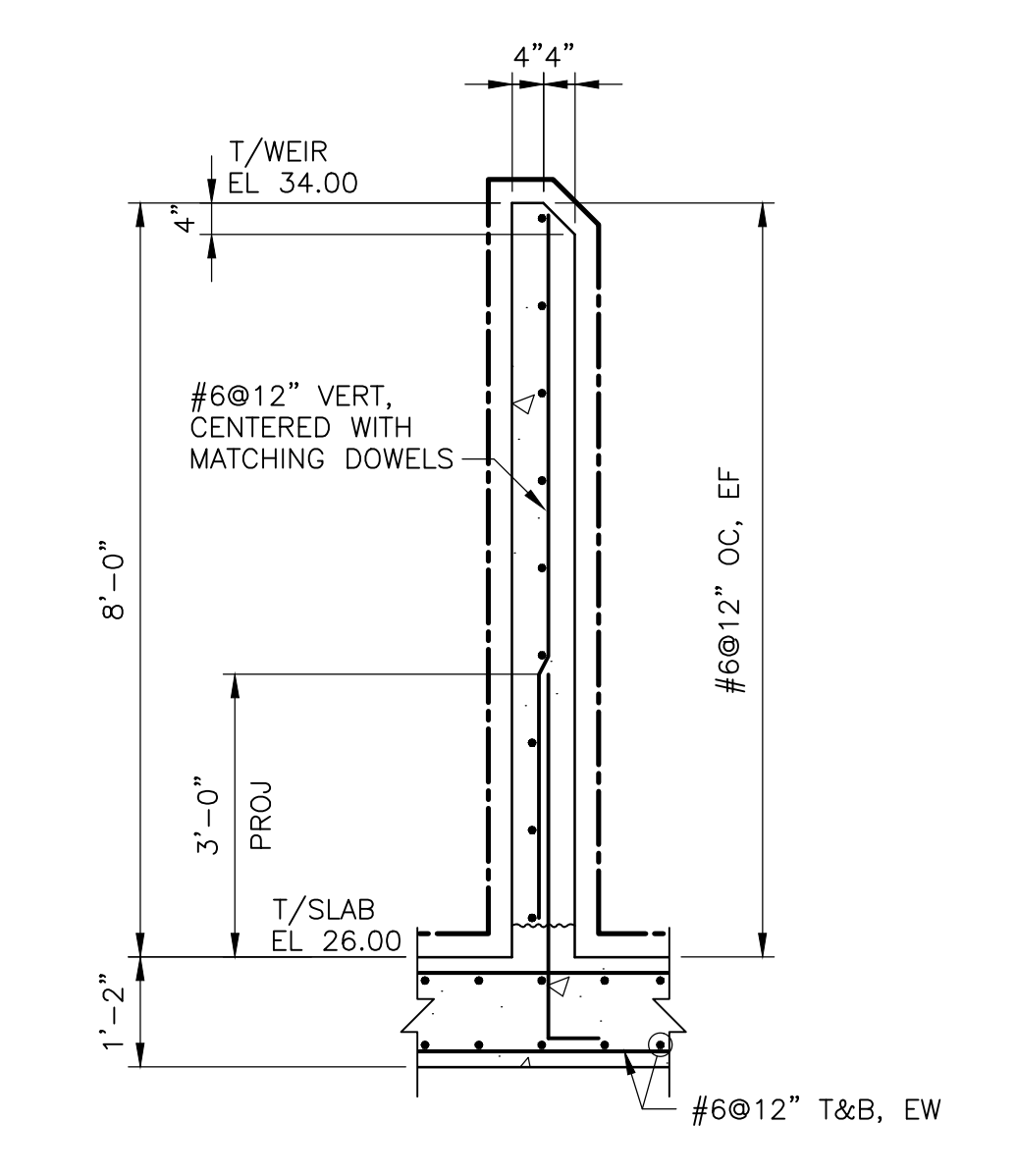
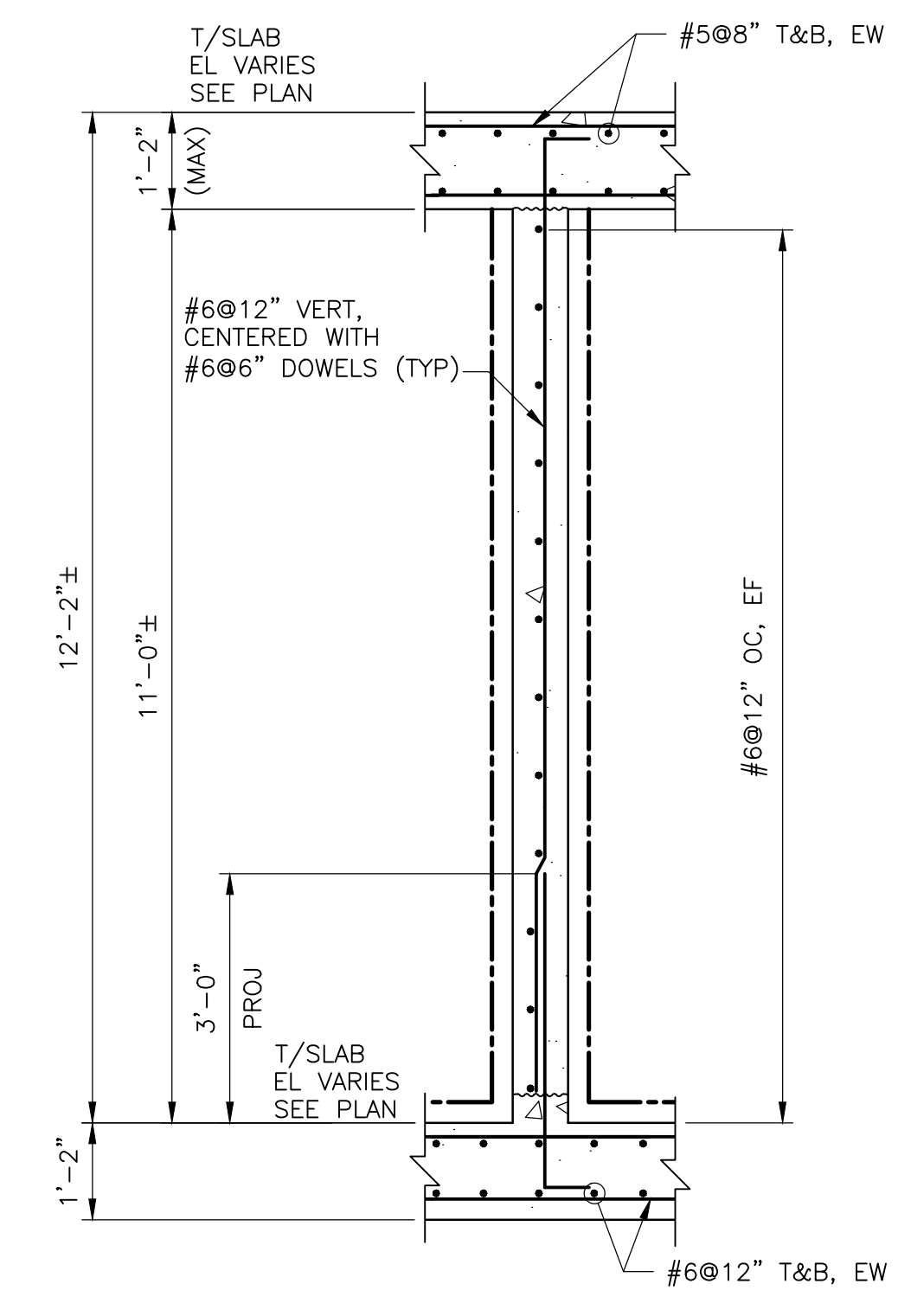
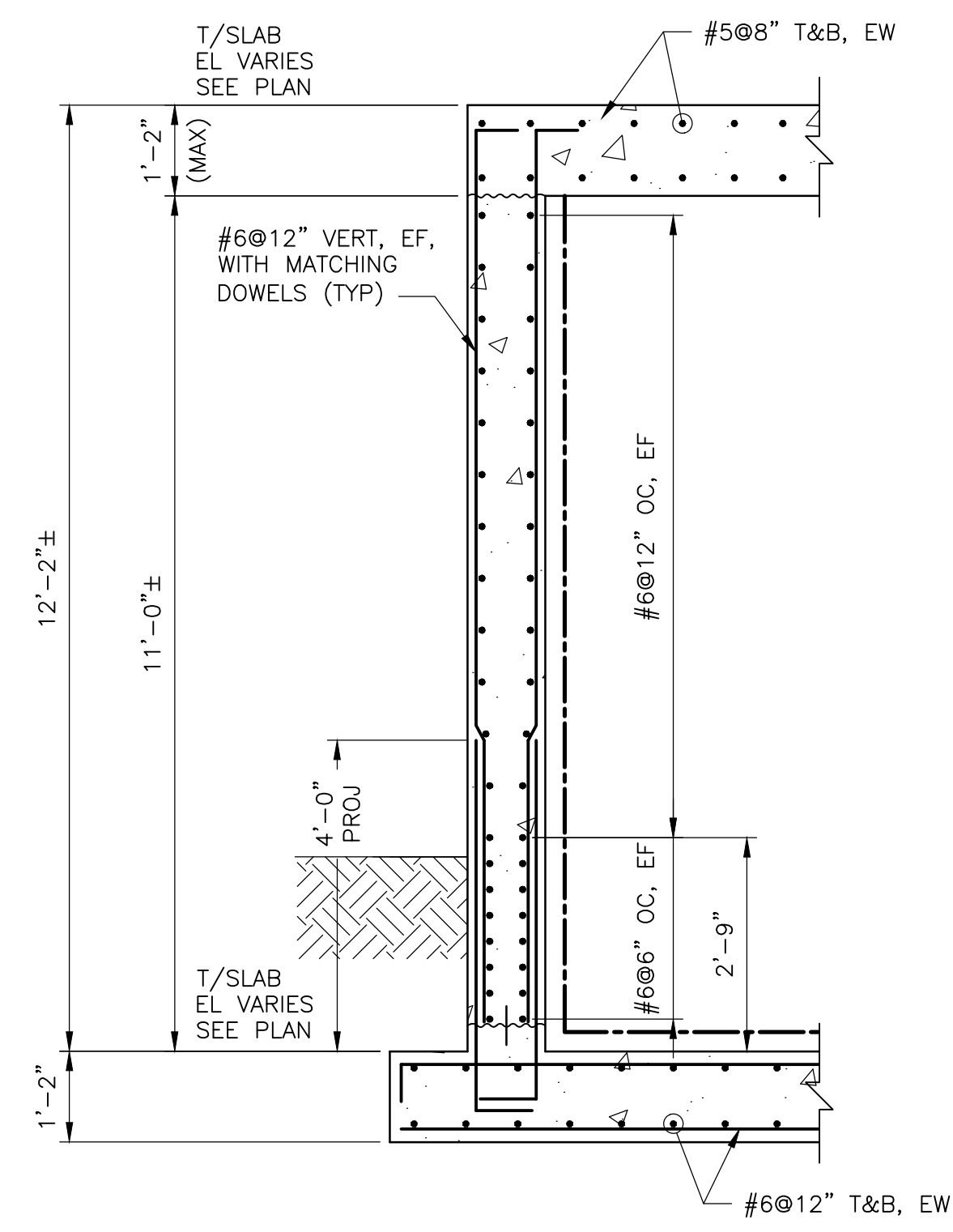
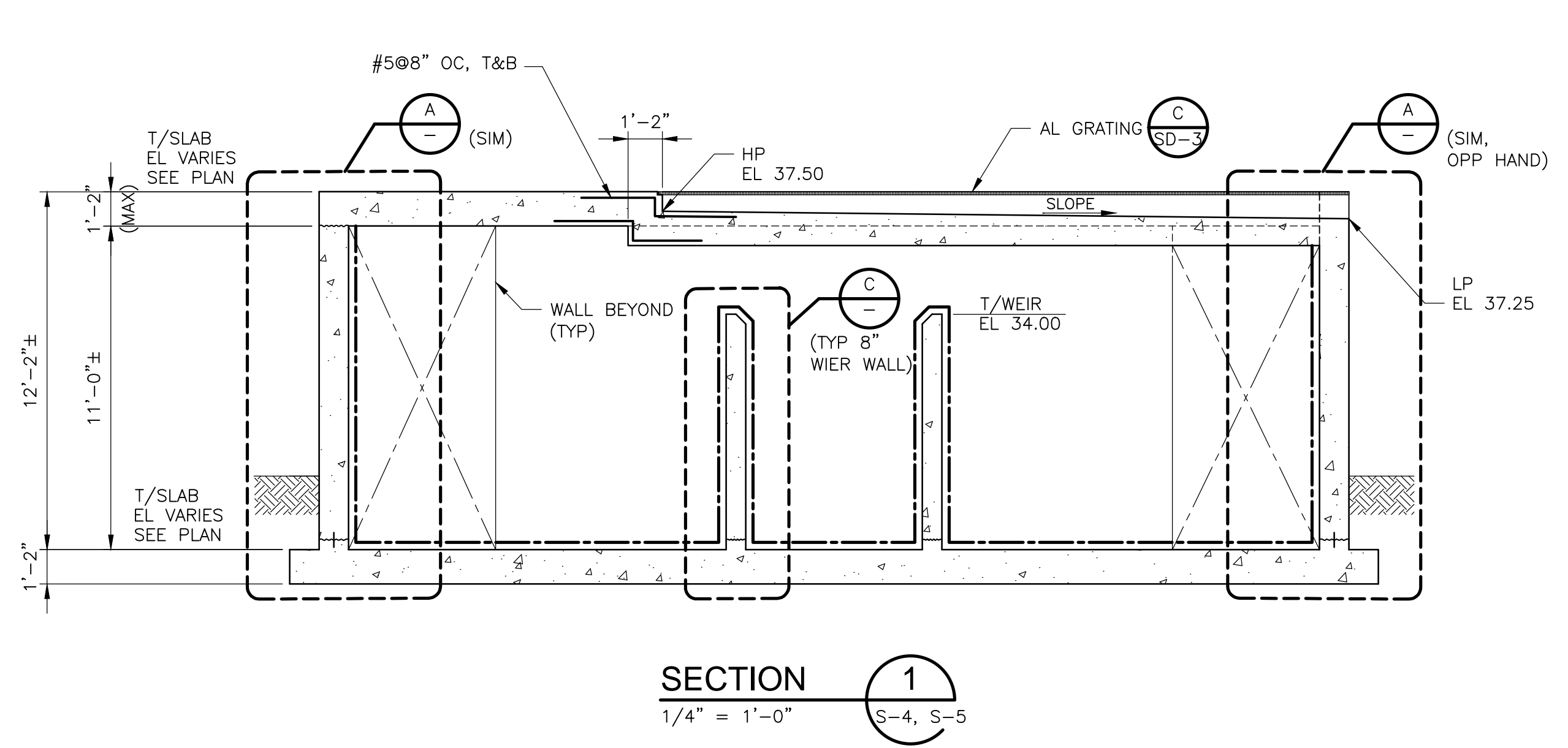


ST. JOHNS COUNTY UTILITY DEPARTMENT
 ST. JOHNS COUNTY, FLORIDA
 NORTHWEST WTP
 PHASE 1 (6 TO 9 MGD) EXPANSION

CLEARWELL NO. 2
 FOUNDATION AND TOP PLANS

DATE: KEVIN M FRANCOFORTE
 PE NO. 73949
 PROJECT NO. 6334-232860
 FILE NAME: S005CWPL.DWG
 SHEET NO. S-5
 ISSUED FOR BID

A B C D E F G H



NOTE:
*COORDINATE LOCATIONS OF NaOH PIPE PENETRATIONS WITH "M" DRAWINGS.

- COATING NOTES:**
- FLOOR AND INTERIOR VERTICAL SURFACES OF THE CLEARWELL SHALL BE COATED WITH THE FOLLOWING PRODUCTS AS PROVIDED BY TNEMEC:
SURFACE PREPARATION: PER MANUFACTURER'S RECOMMENDATIONS.
PRIMERS: PER MANUFACTURER'S RECOMMENDATIONS.
COATING: TWO COATS AT 8 MILS EACH OF TNEMEC SERIES N140 POTA-POX PLUS.
EXTERIOR ABOVE GRADE: WORLD GOLF VILLAGE GREEN.

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REV. NO.	DATE	DRWN	CHKD	REMARKS

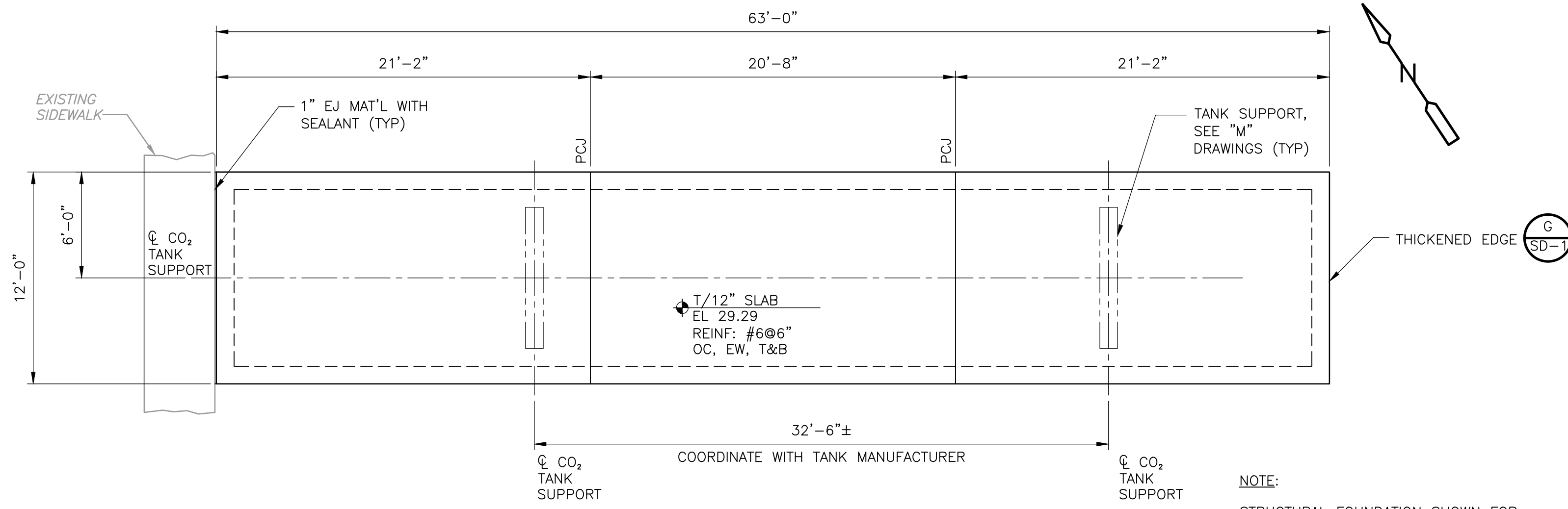
DESIGNED BY: K. FRANCOFORTE
 DRAWN BY: P. SCHIAVO
 SHEET CHK'D BY: P. KALARIA
 CROSS CHK'D BY: D. PRAH
 APPROVED BY: K. FRANCOFORTE
 DATE: JULY 2019



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 ST. JOHNS COUNTY, FLORIDA
 NORTHWEST WTP
 PHASE 1 (6 TO 9 MGD) EXPANSION

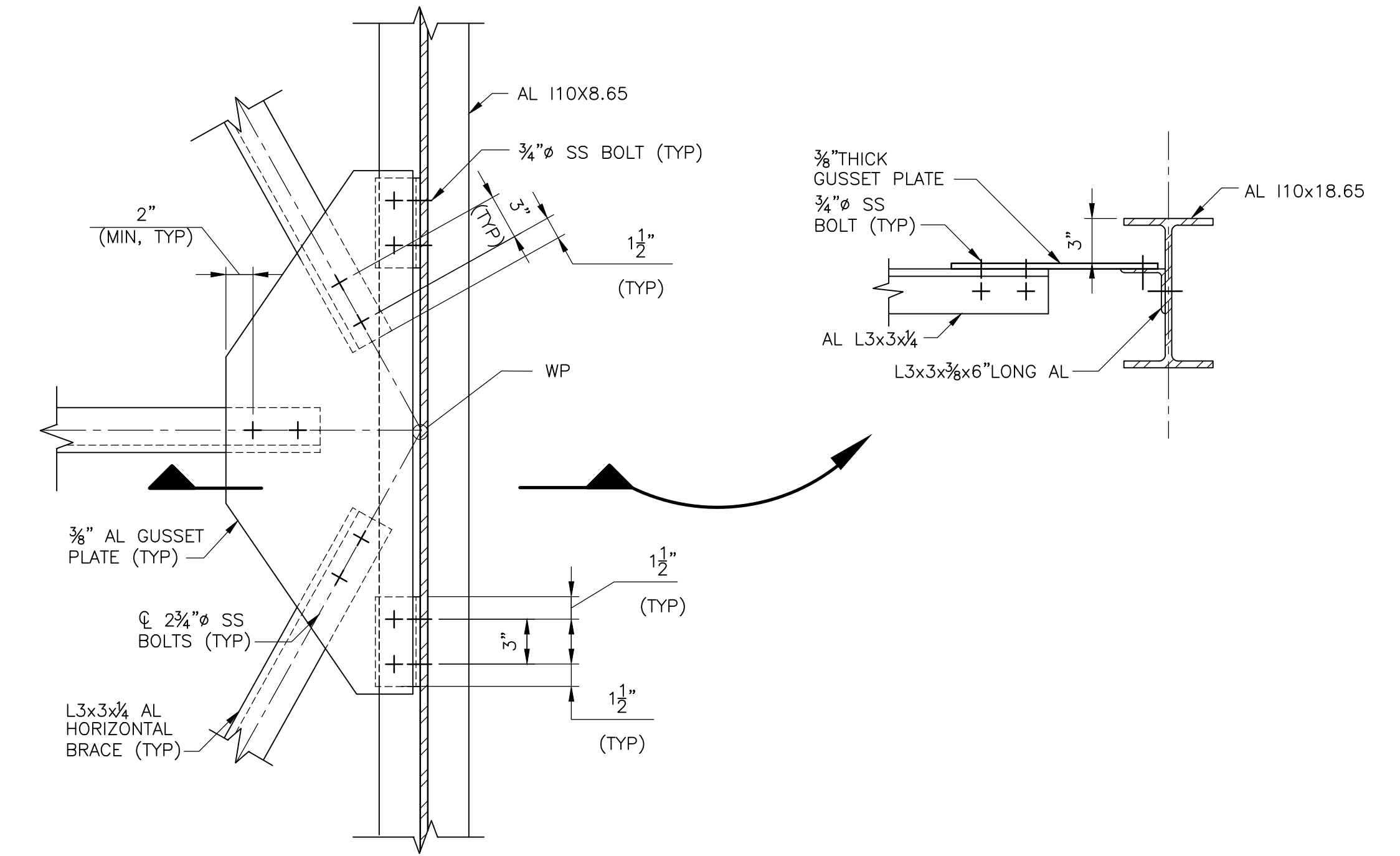
CLEARWELL NO. 2
SECTIONS AND DETAILS

DATE: KEVIN M FRANCOFORTE PE NO. 73949
 PROJECT NO. 6334-232860
 FILE NAME: S006CWSC.DWG
 SHEET NO. S-6
 ISSUED FOR BID

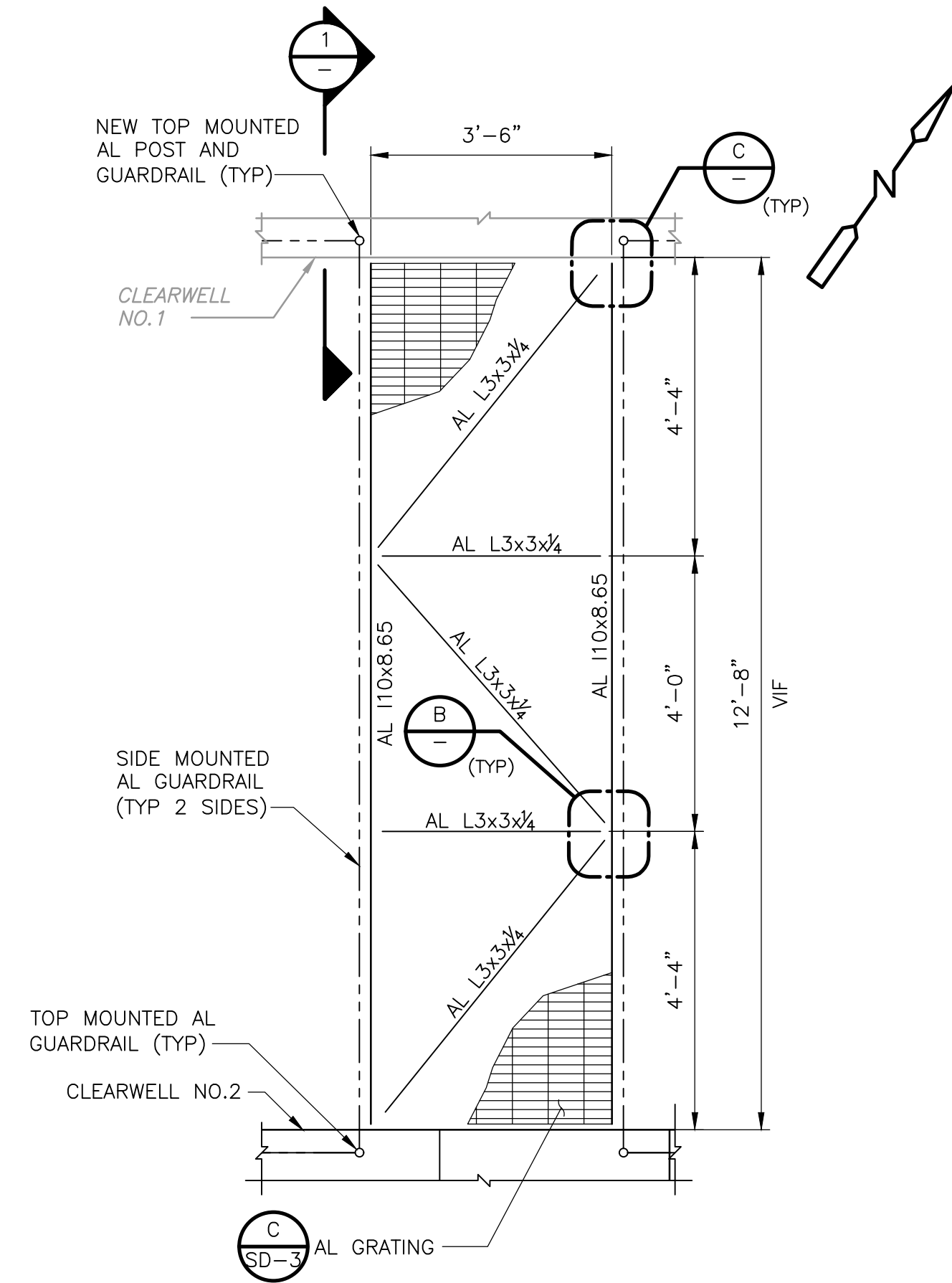


LIQUID CO2 STORAGE TANK PAD
 PLAN
 3/16" = 1'-0"

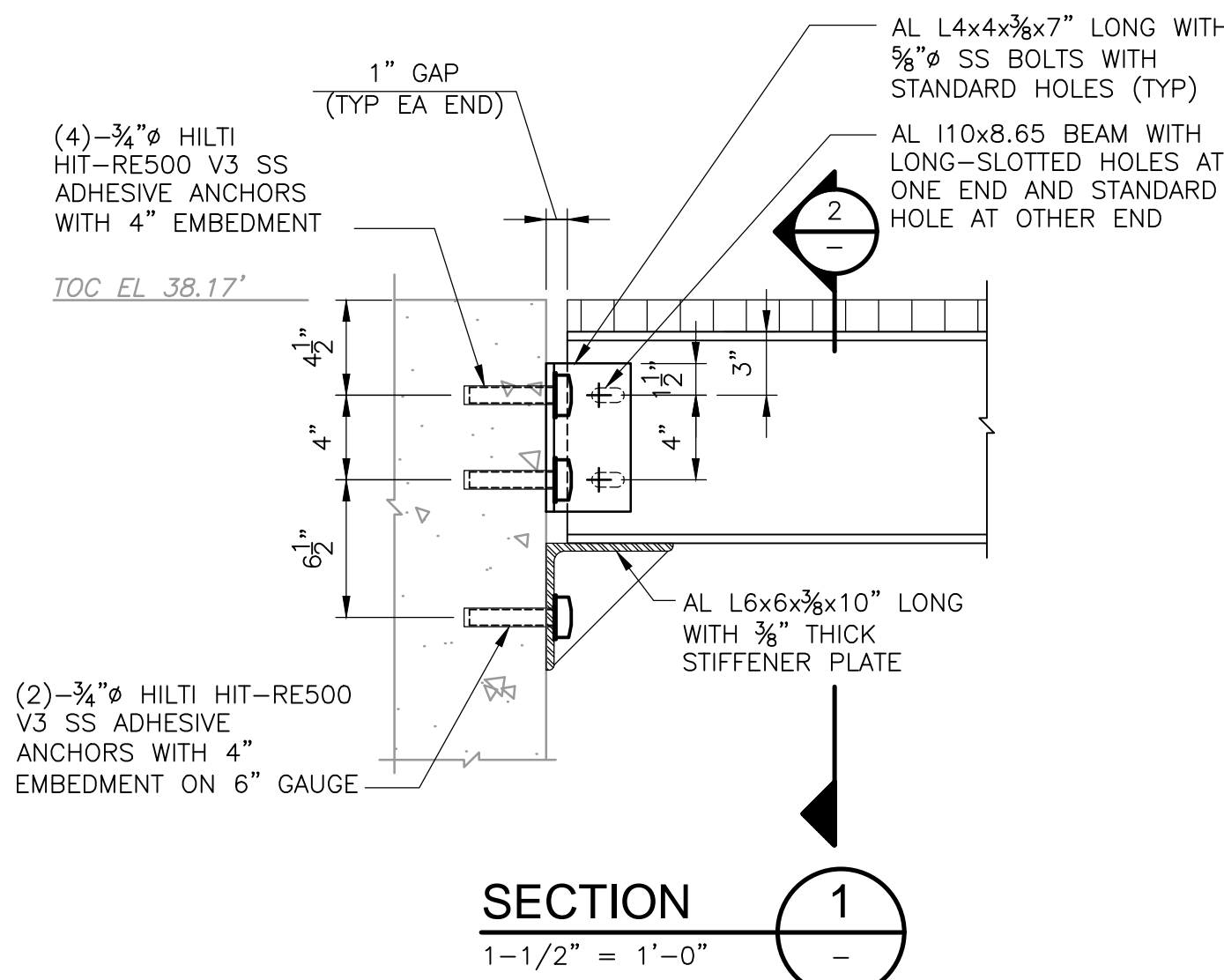
NOTE:
 STRUCTURAL FOUNDATION SHOWN FOR LIQUID CO2 STORAGE TANK IS PRELIMINARY AND MINIMUM REQUIRED. FINAL FOUNDATION DESIGN SHALL BE DEPENDANT ON FINAL APPROVED CO2 TANK SUBMITTAL INDICATING DIMENSIONS AND WEIGHTS.



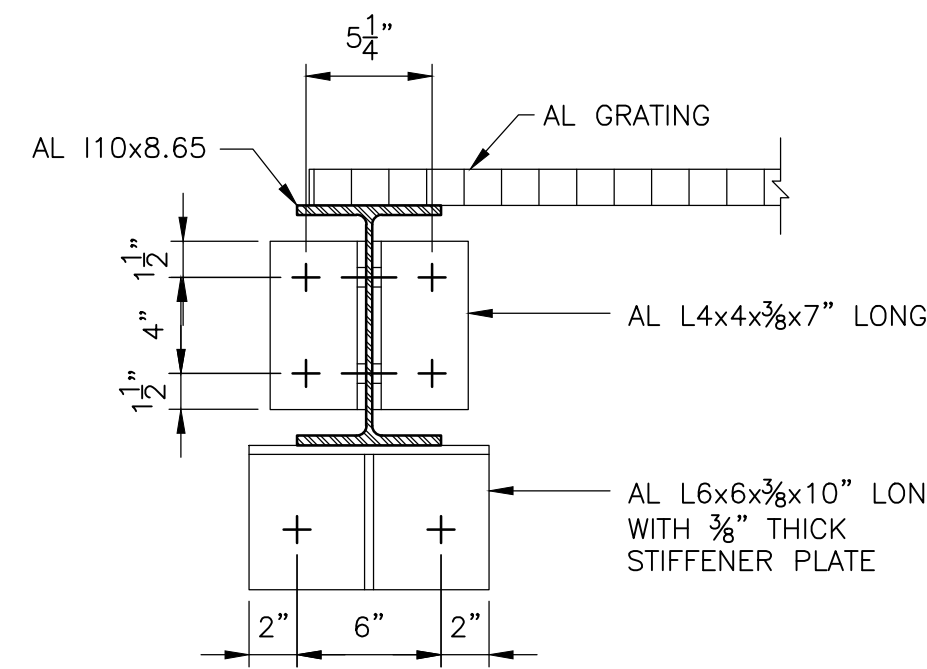
DETAIL A
 1 1/2" = 1'-0"



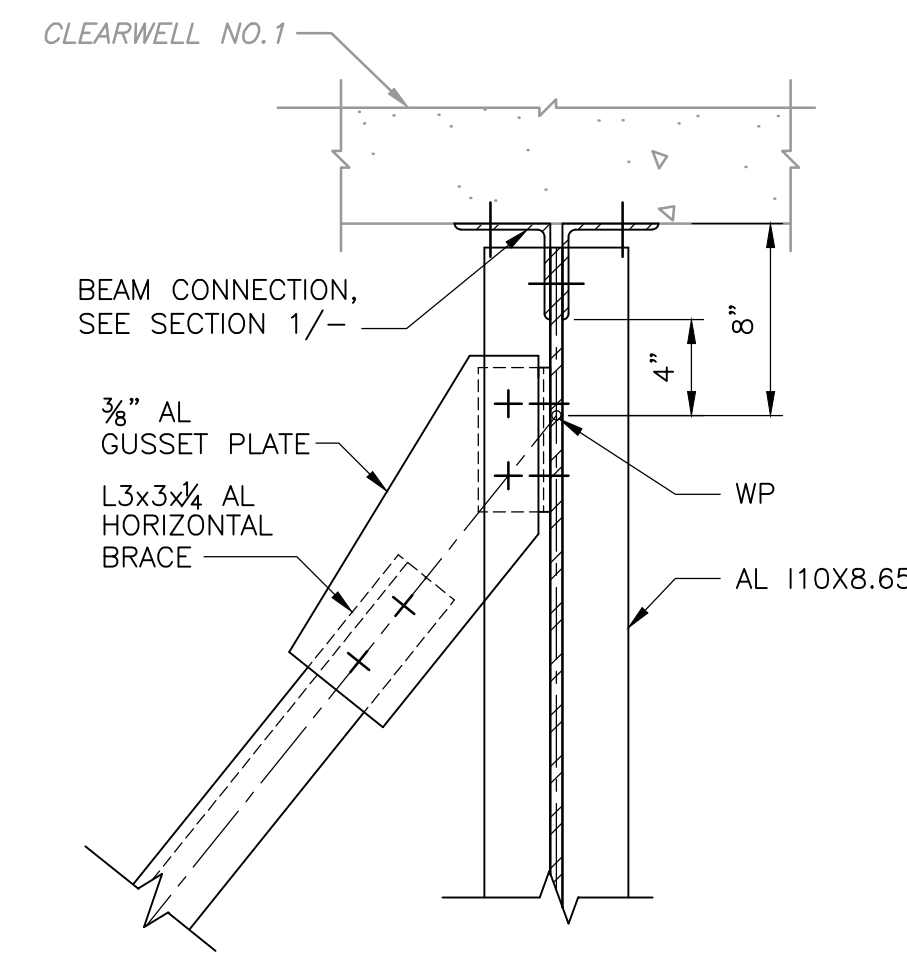
AL WALKWAY
 PLAN
 1/2" = 1'-0"



SECTION 1
 1-1/2" = 1'-0"



SECTION 2
 1-1/2" = 1'-0"



NOTE: SEE DETAIL A/- FOR ADDITIONAL DETAILS

DETAIL B
 1 1/2" = 1'-0"

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REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: K. FRANCOFORTE
 DRAWN BY: P. SCHIAVO
 SHEET CHK'D BY: P. KALARIA
 CROSS CHK'D BY: D. PRAH
 APPROVED BY: K. FRANCOFORTE
 DATE: JULY 2019

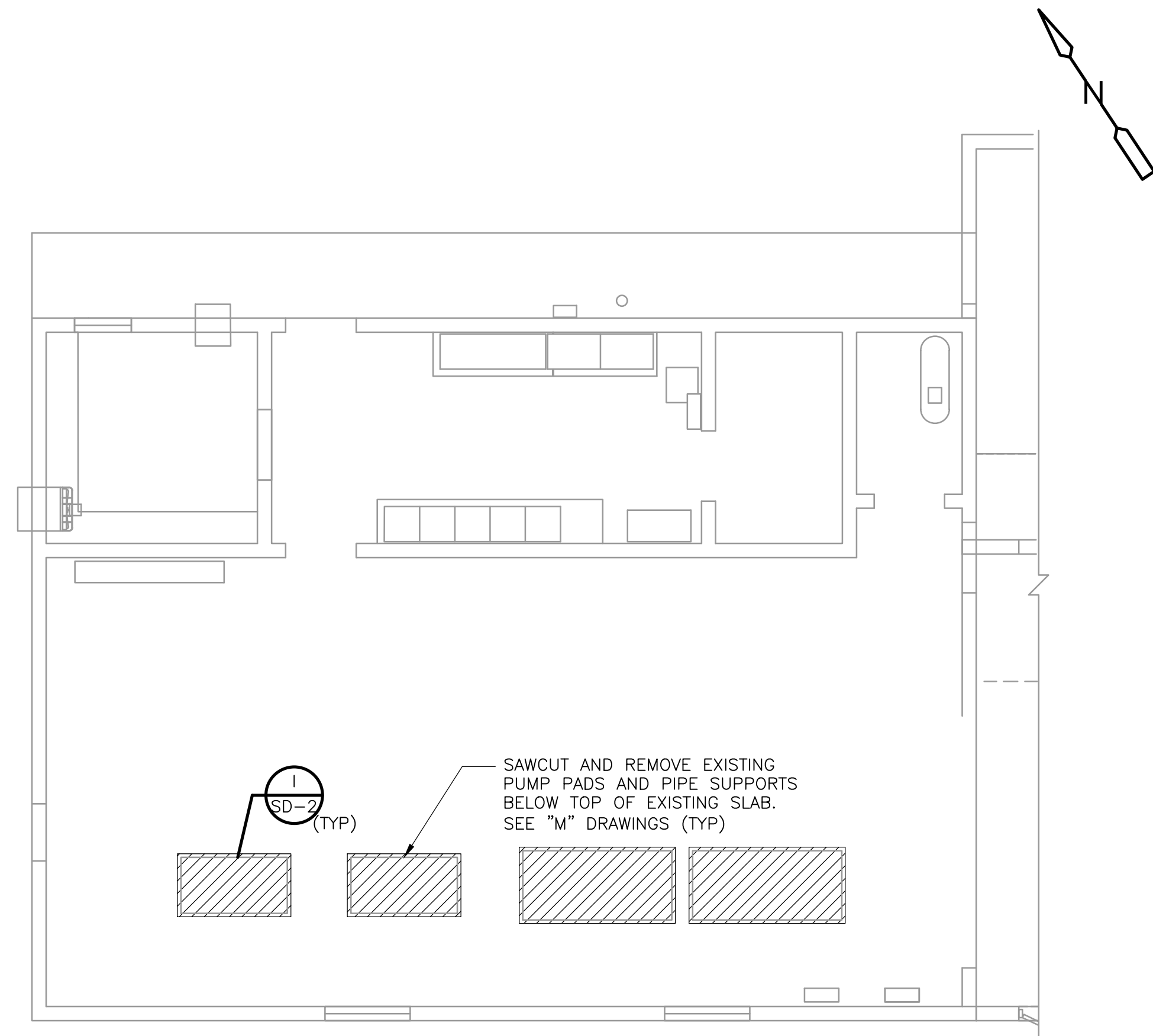
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 NORTHWEST WTP
 PHASE 1 (6 TO 9 MGD) EXPANSION

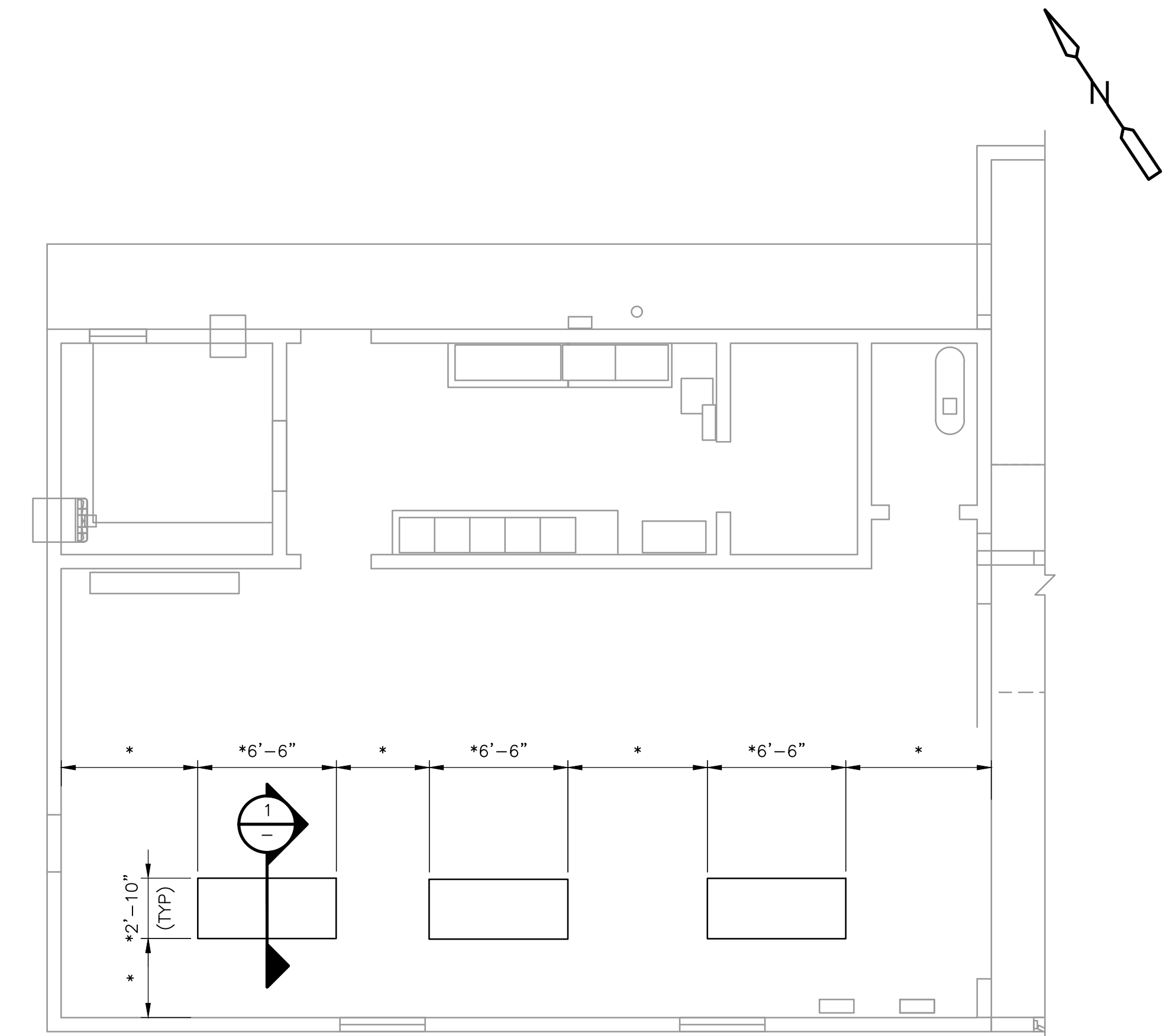
MISCELLANEOUS DETAILS

DATE: KEVIN M FRANCOFORTE
 PE NO. 73949
 PROJECT NO. 6334-232860
 FILE NAME: S007MPPL.DWG
 SHEET NO. S-7
 ISSUED FOR BID

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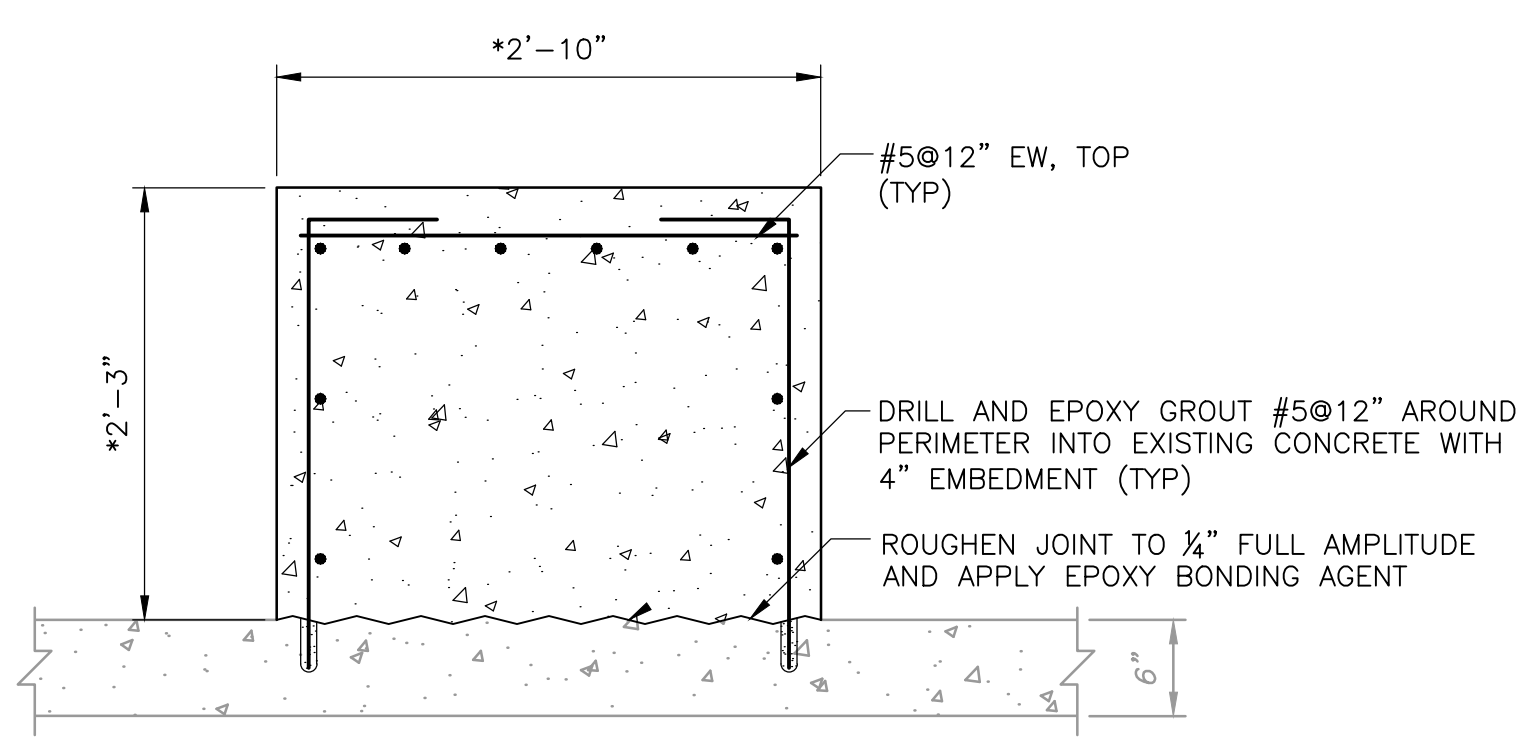


**DEMOLITION
PLAN**
 3/16" = 1'-0"



**MODIFICATION
PLAN**
 3/16" = 1'-0"

- NOTES:**
- * - COORDINATE DIMENSIONS WITH MECHANICAL DRAWINGS AND EQUIPMENT MANUFACTURER RECOMMENDATIONS IN FINAL APPROVED PUMP SHOP DRAWINGS.
 - COORDINATE ALL BONDING AND GROUNDING WITH ELECTRICAL DRAWINGS.



SECTION 1
 1" = 1'-0"

REV. NO.	DATE	DRWN	CHKD	REMARKS

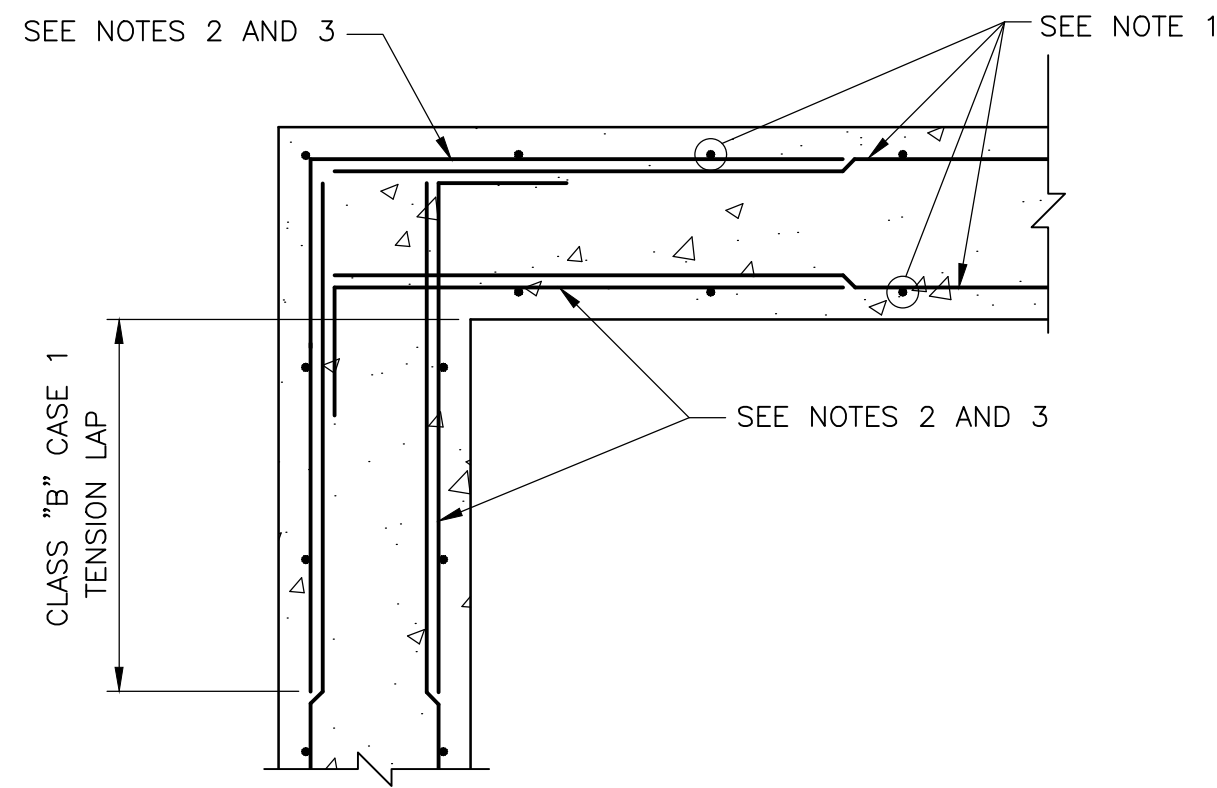
DESIGNED BY: K. FRANCOFORTE
 DRAWN BY: P. SCHIAVO
 SHEET CHK'D BY: P. KALARIA
 CROSS CHK'D BY: D. PRAH
 APPROVED BY: K. FRANCOFORTE
 DATE: JULY 2019



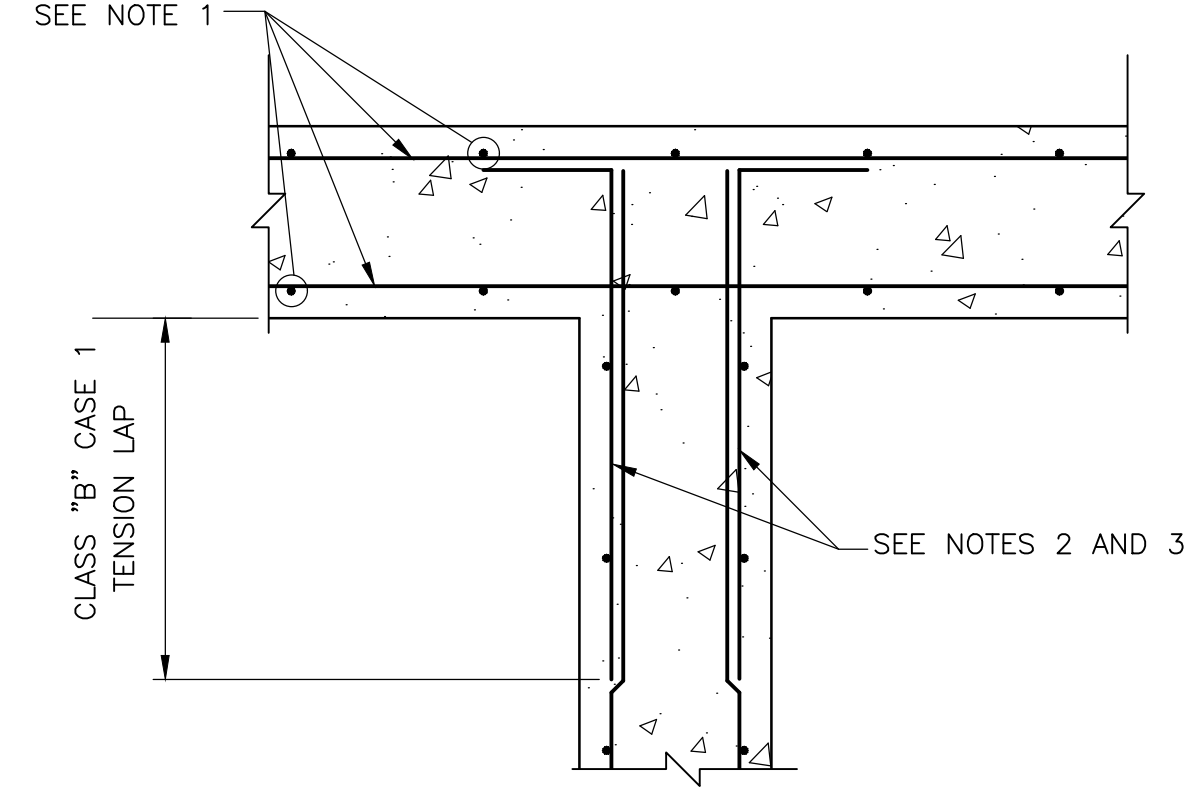
ST. JOHNS COUNTY UTILITY DEPARTMENT
 ST. JOHNS COUNTY, FLORIDA
NORTHWEST WTP
PHASE 1 (6 TO 9 MGD) EXPANSION

**HIGH SERVICE PUMP
DEMOLITION AND MODIFICATION
PLANS AND SECTION**

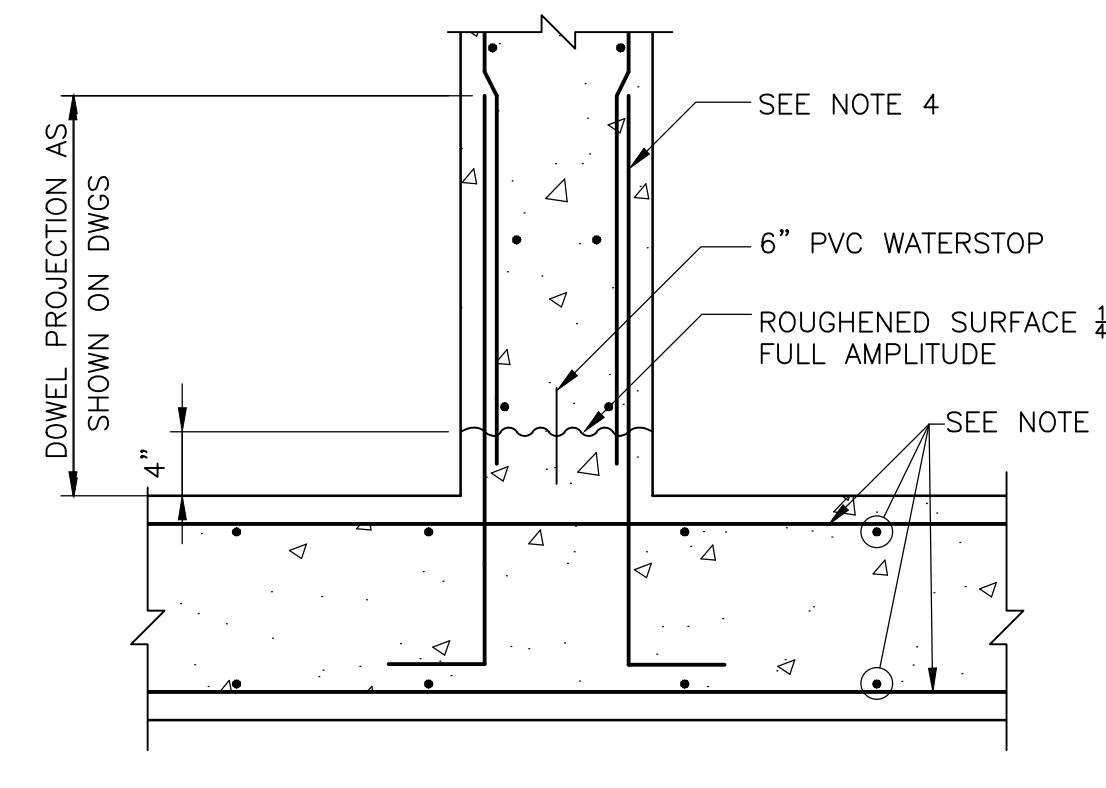
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PROJECT NO. 6334-232860 FILE NAME: SO08HSP.DWG
SHEET NO. S-8



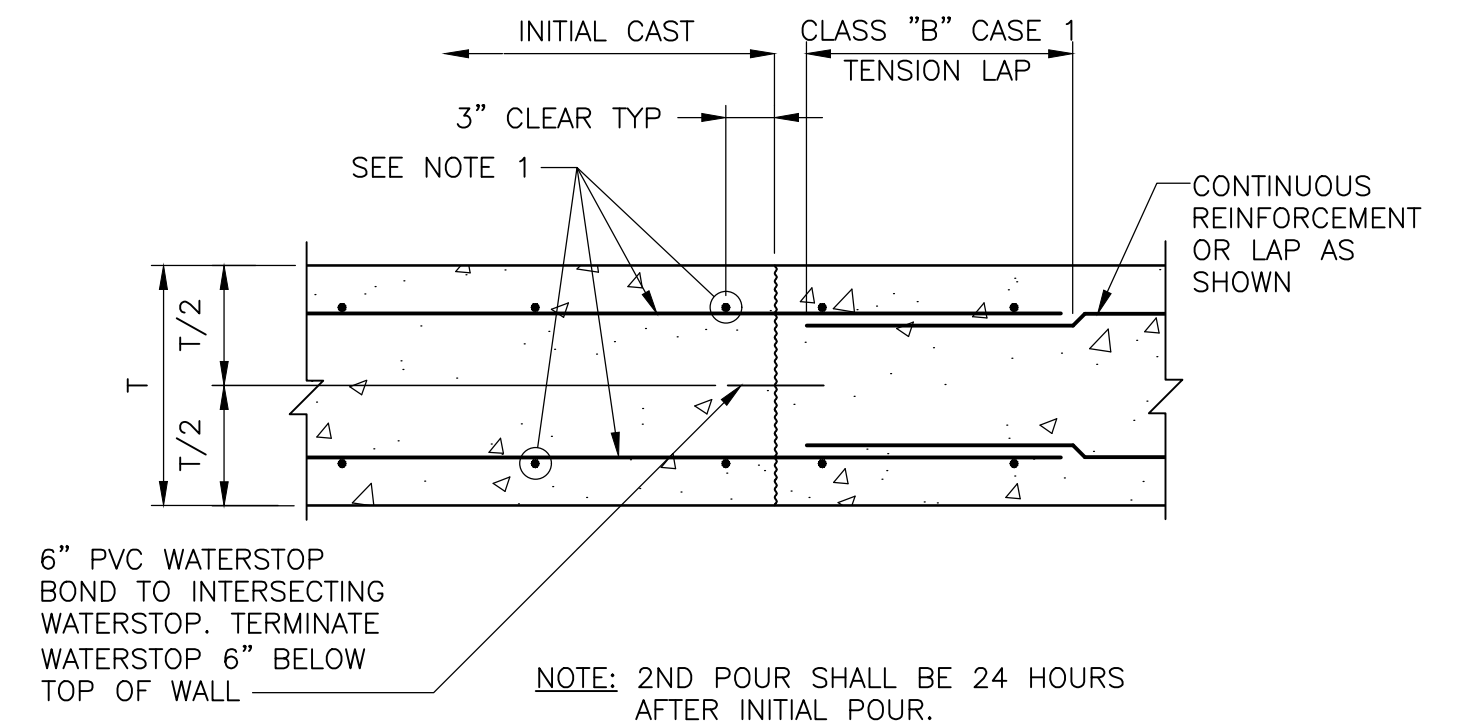
WALL CORNER REINFORCING
DETAIL A
NTS



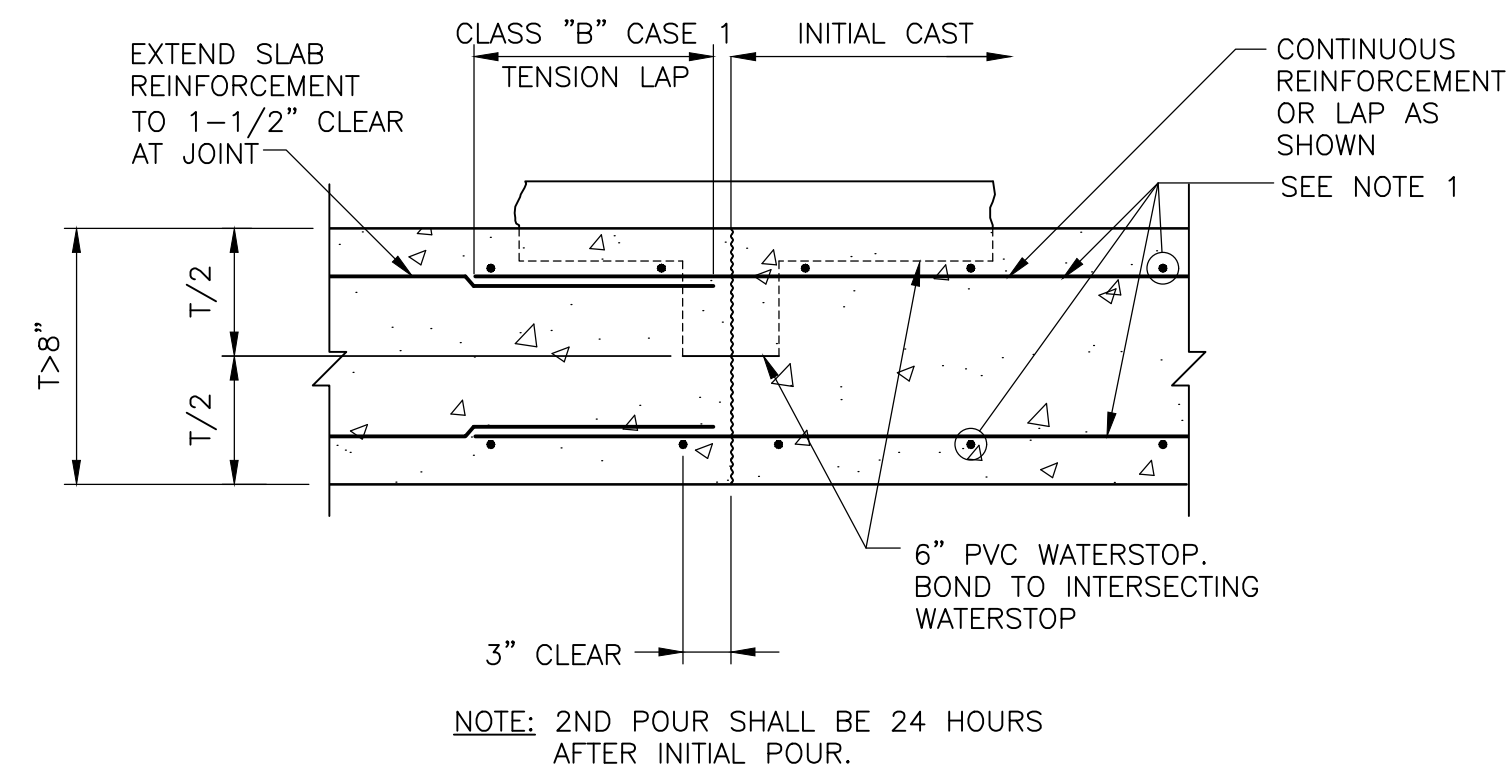
WALL INTERSECTION REINFORCING
DETAIL B
NTS



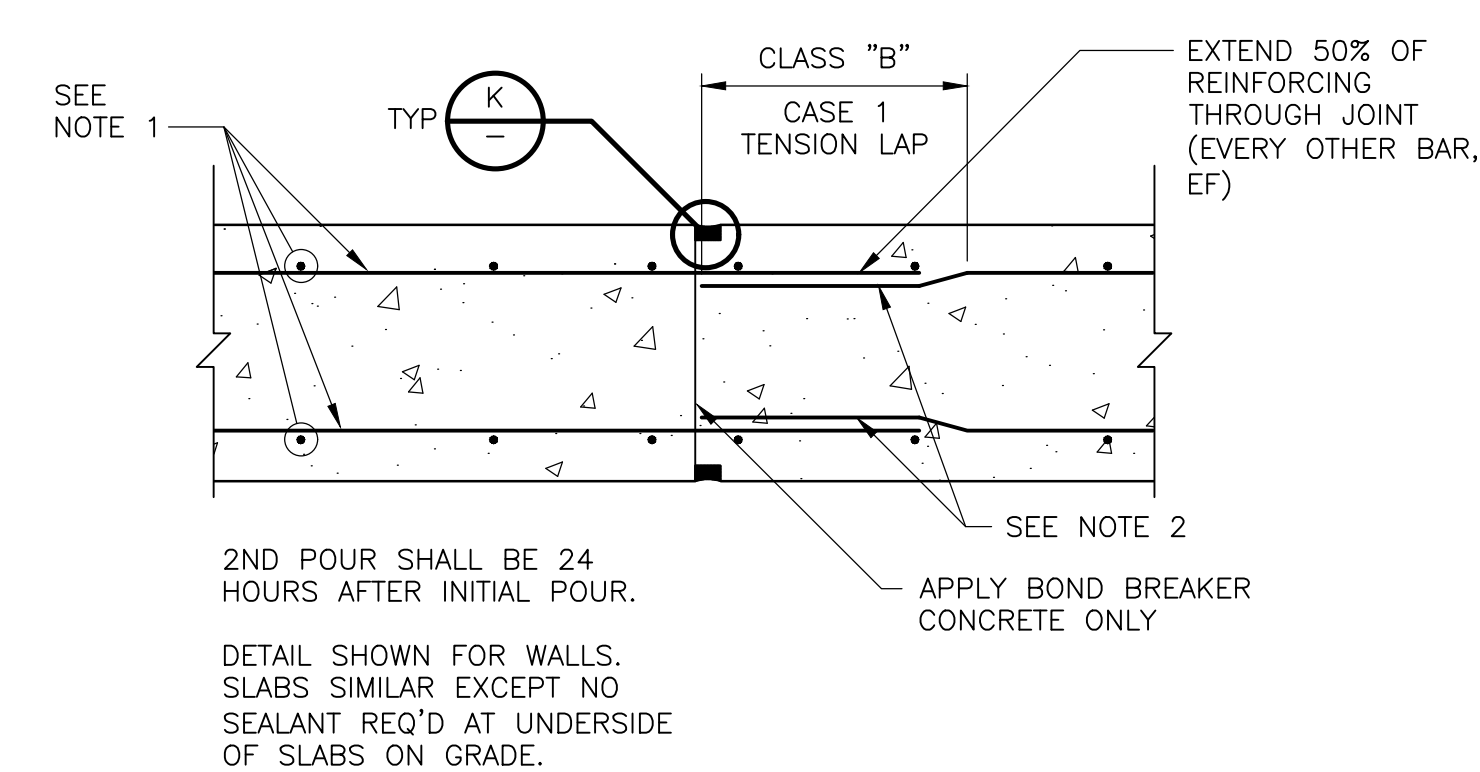
WALL BASE CONSTRUCTION JOINT
DETAIL C
NTS



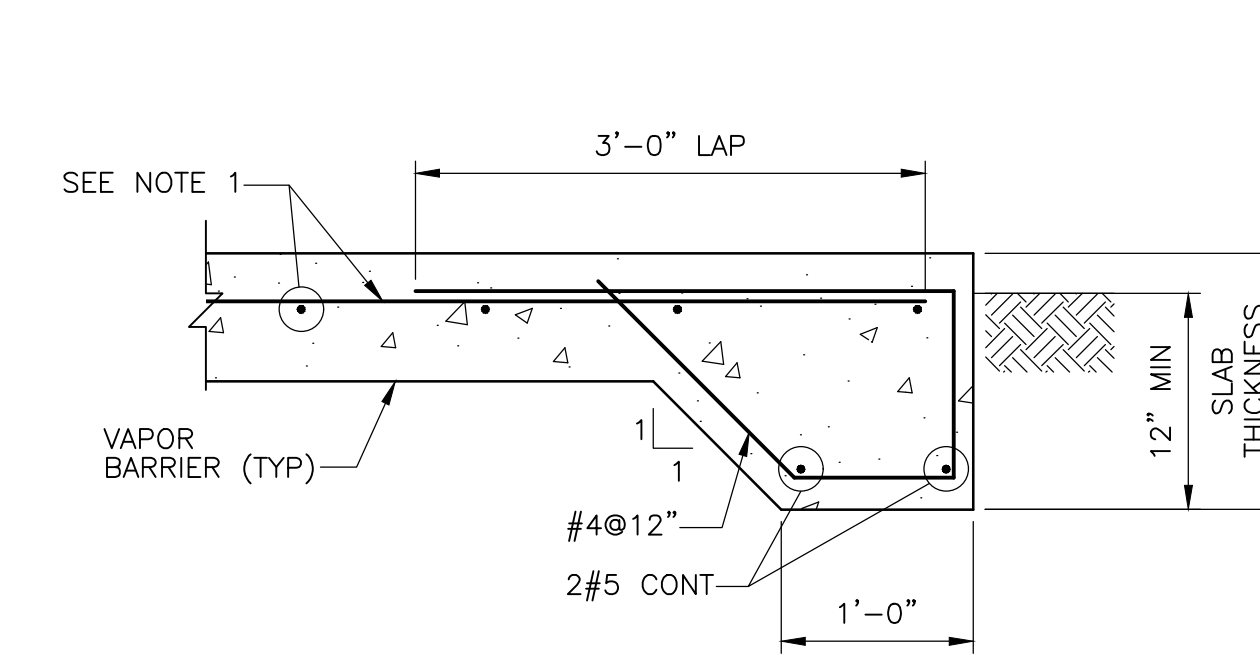
WALL CONSTRUCTION JOINT
DETAIL D
NTS



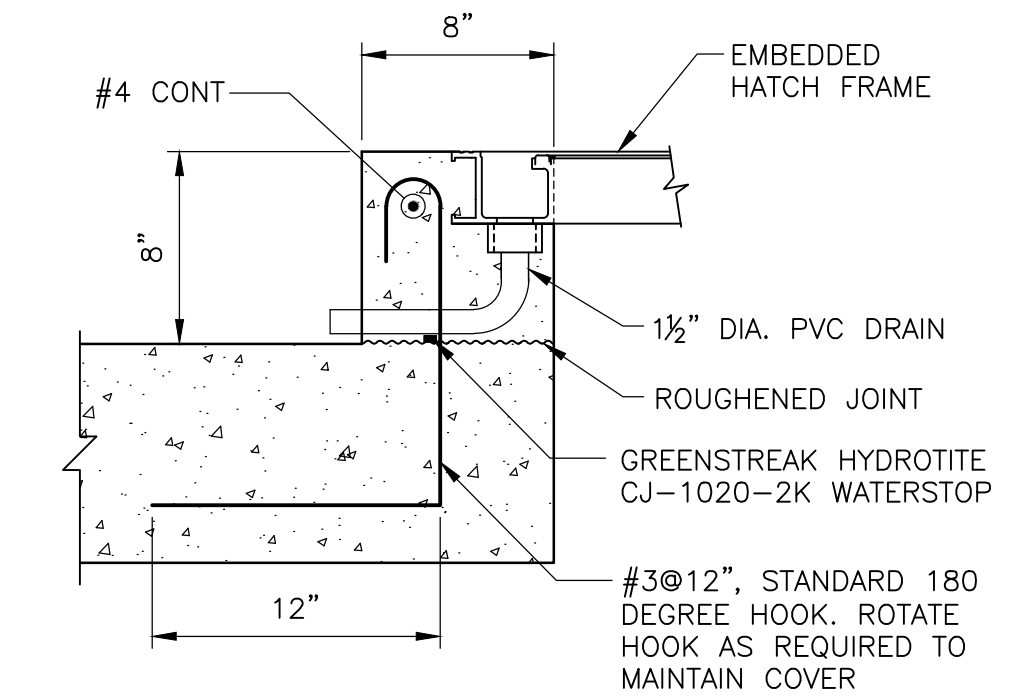
BASE/ELEVATED SLAB CONSTRUCTION JOINT
DETAIL E
NTS



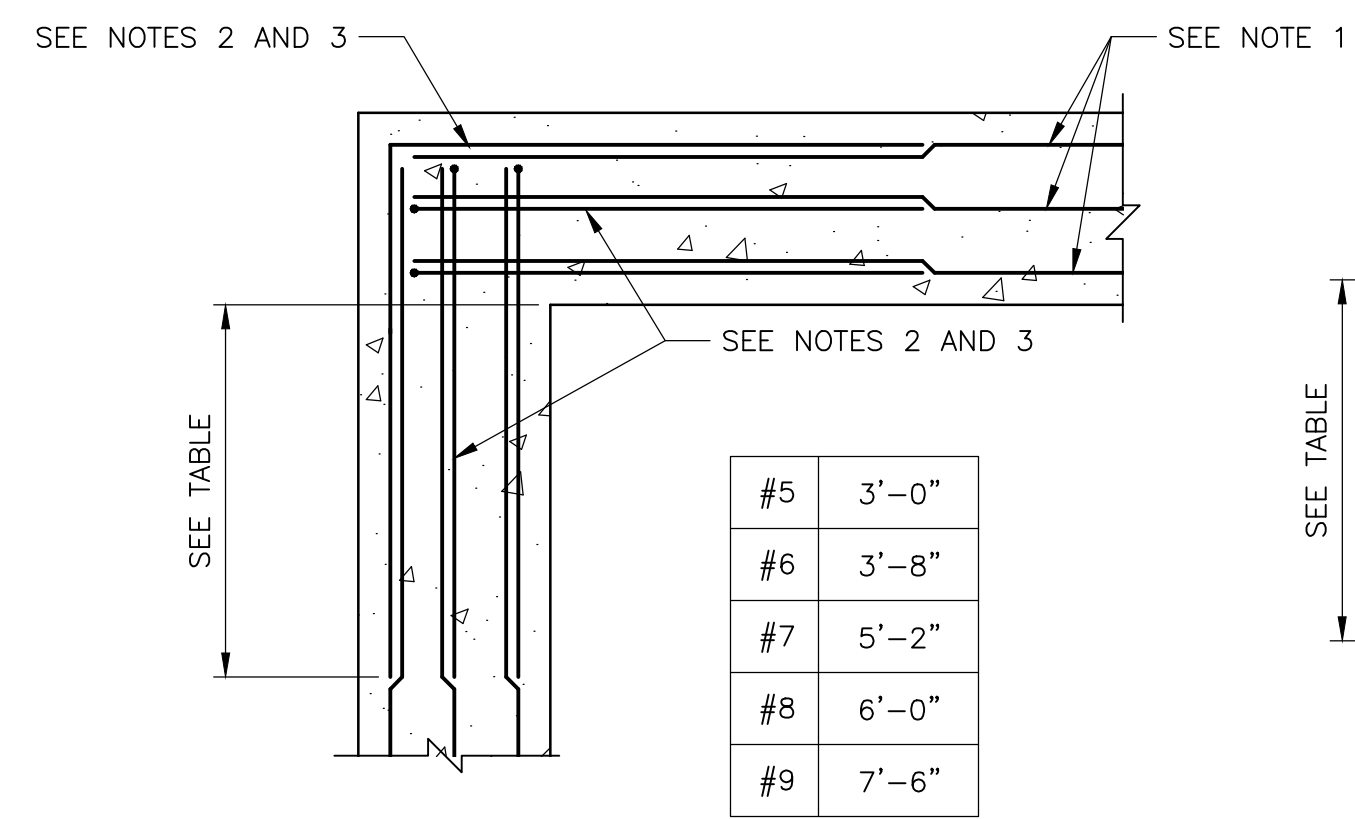
PARTIAL CONTRACTION JOINT
DETAIL F
NTS



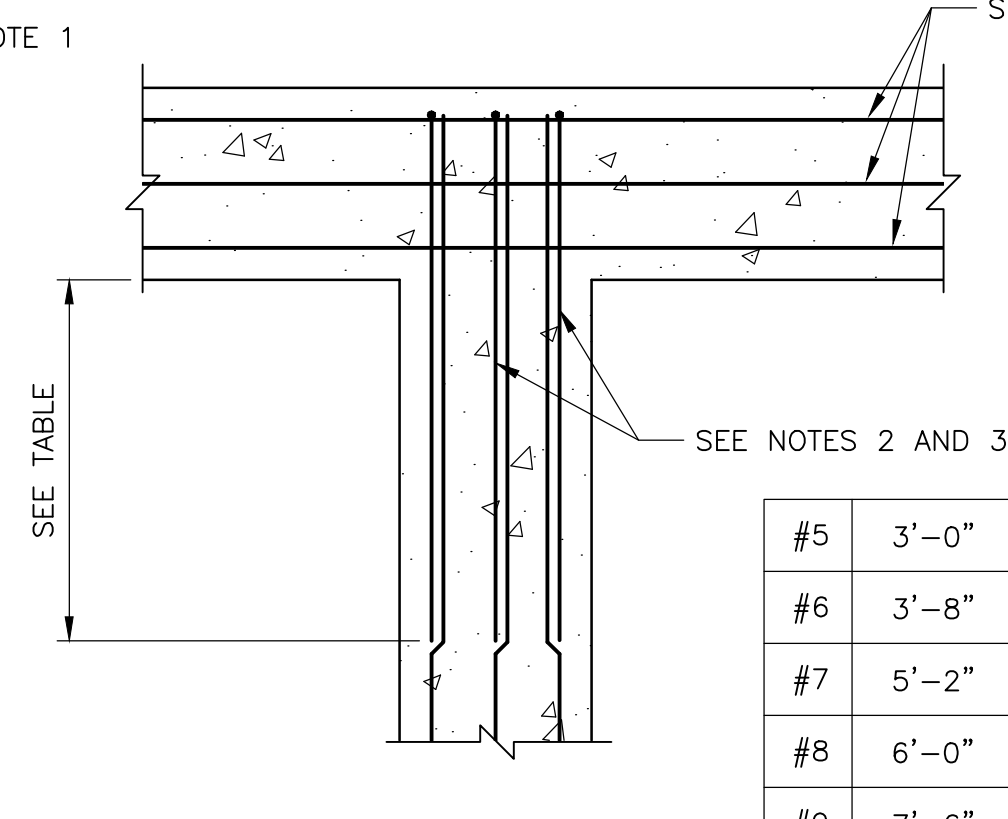
THICKENED EDGE SLAB
DETAIL G
NTS



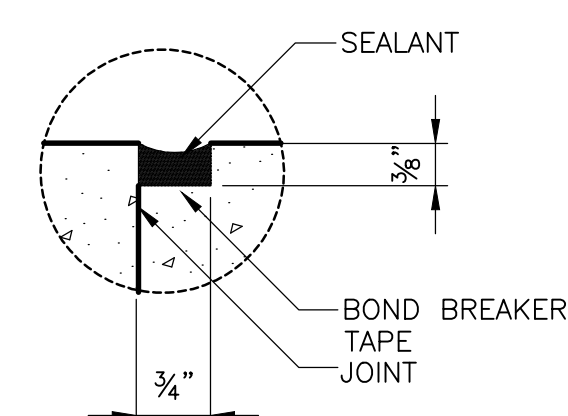
8" CONCRETE CURB
DETAIL H
NTS



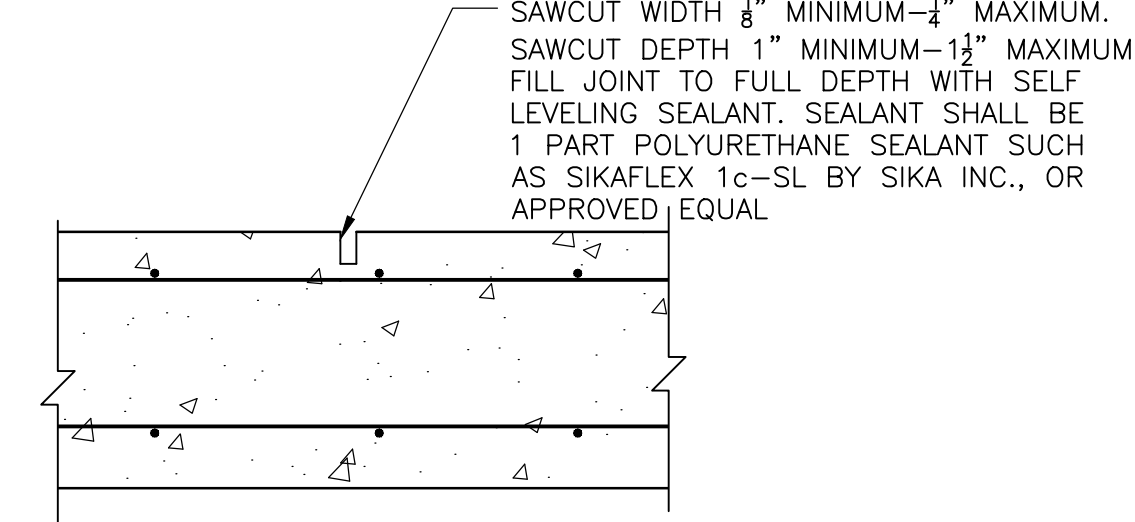
BEAM/GRADE BEAM CORNER REINFORCING
DETAIL I
NTS



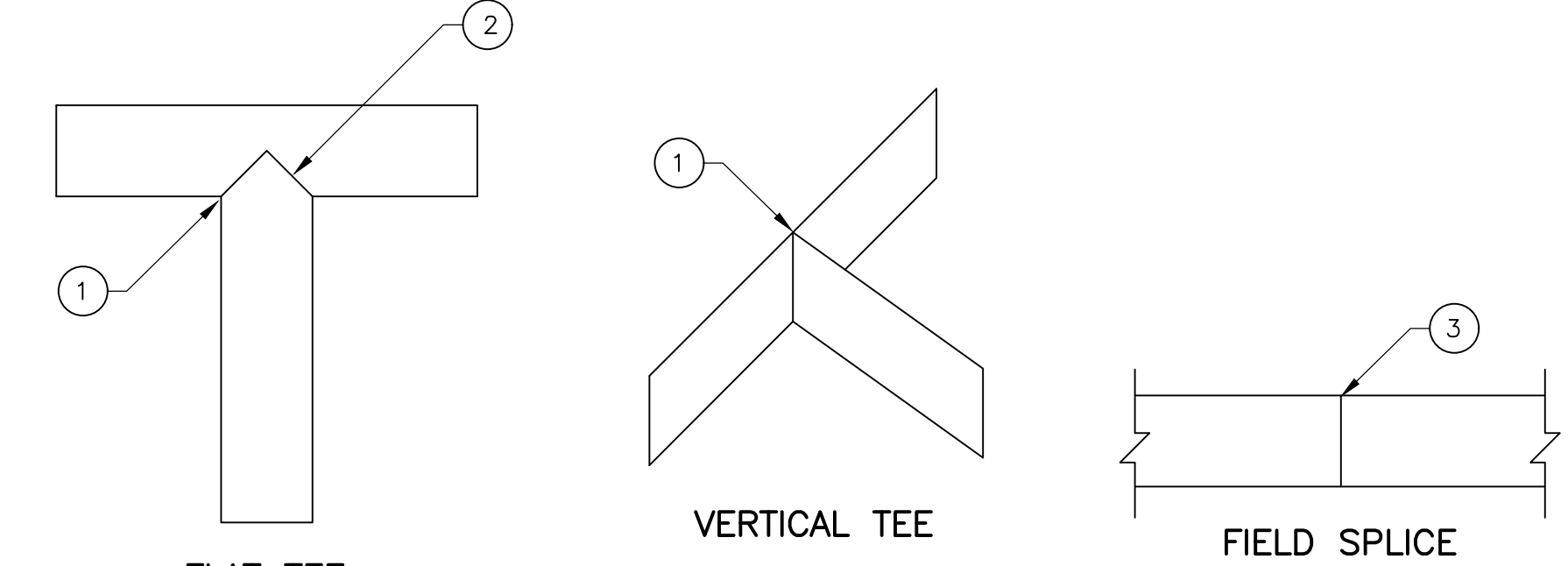
BEAM/GRADE BEAM INTERSECTION REINFORCING
DETAIL J
NTS



PARTIAL CONTRACTION JOINT SEALANT
DETAIL K
NTS



CONTROL JOINT
DETAIL L
NTS



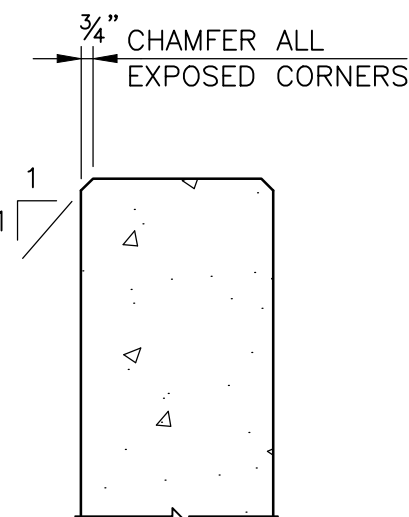
FLAT TEE

VERTICAL TEE

FIELD SPLICE

NOTES:

- FACTORY FABRICATED INTERSECTION PIECES.
- USE THERMOSTATICALLY CONTROLLED SPLICING IRON TO WELD INTERSECTION PIECE TO FIELD. SPLICING IRON SHALL BE DESIGNED SPECIFICALLY FOR THE WATERSTOP BEING SPLICED.
- USE INDIRECT SOURCE OF HEAT ONLY. USE OF DIRECT FLAME IS SPECIFICALLY PROHIBITED.
- FOLLOW MANUFACTURER'S RECOMMENDATIONS FOR ALL SPLICING AND WELDING REQUIREMENTS.



CHAMFER
DETAIL N
NTS

- NOTES:
- BASIC SLAB/WALL/BEAM REINFORCING AS SHOWN ON DESIGN DRAWINGS
 - SIZE AND SPACING OF BAR TO MATCH WALL/BEAM REINFORCEMENT AS SHOWN ON DESIGN DRAWINGS
 - FOR ADDITIONAL BARS AT CORNERS AND INTERSECTIONS SEE DESIGN DRAWINGS
 - FOR DOWEL SIZE AND SPACING SEE DESIGN DRAWINGS

DESIGNED BY: K. FRANCOFORTE
DRAWN BY: P. SCHIAVO
SHEET CHK'D BY: P. KALARIA
CROSS CHK'D BY: D. PRAH
APPROVED BY: K. FRANCOFORTE
DATE: JULY 2019



ST. JOHNS COUNTY UTILITY DEPARTMENT
ST. JOHNS COUNTY, FLORIDA
NORTHWEST WTP
PHASE 1 (6 TO 9 MGD) EXPANSION

STANDARD DETAILS

DATE: KEVIN M FRANCOFORTE PE NO. 73949

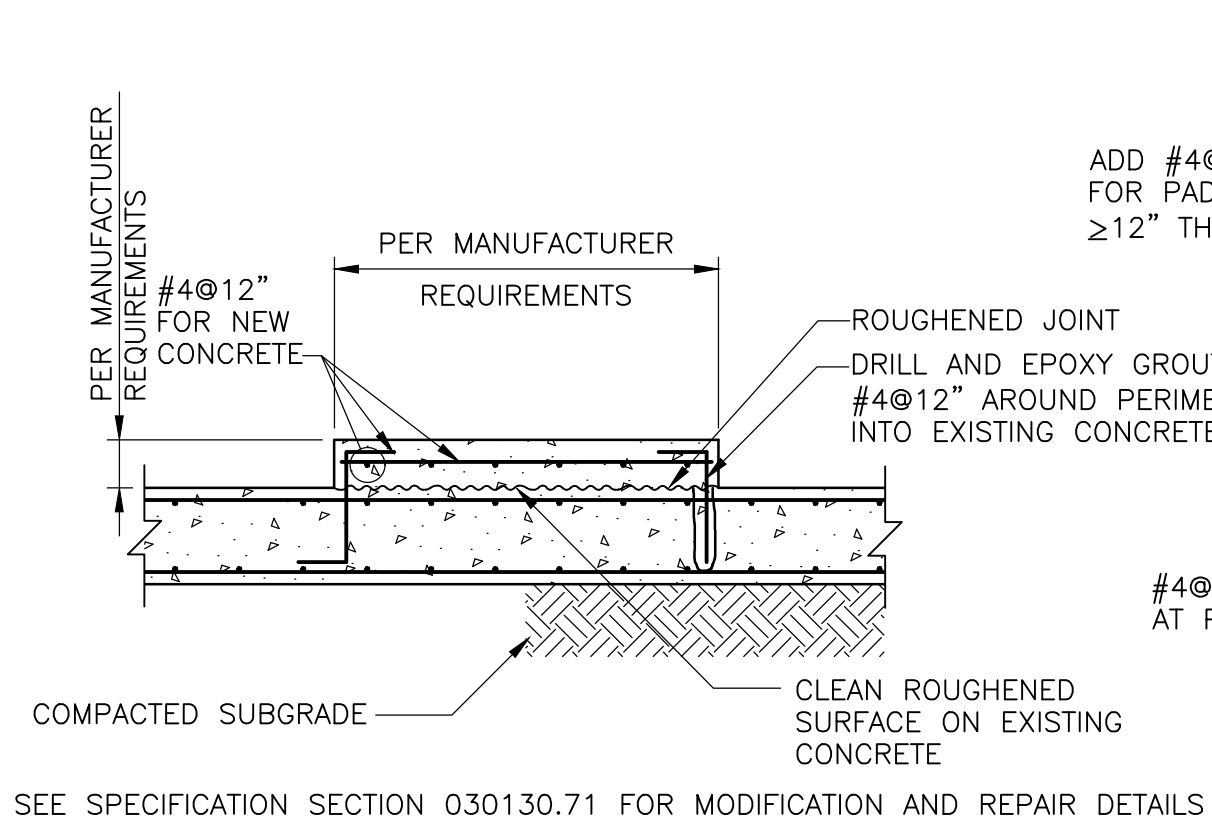
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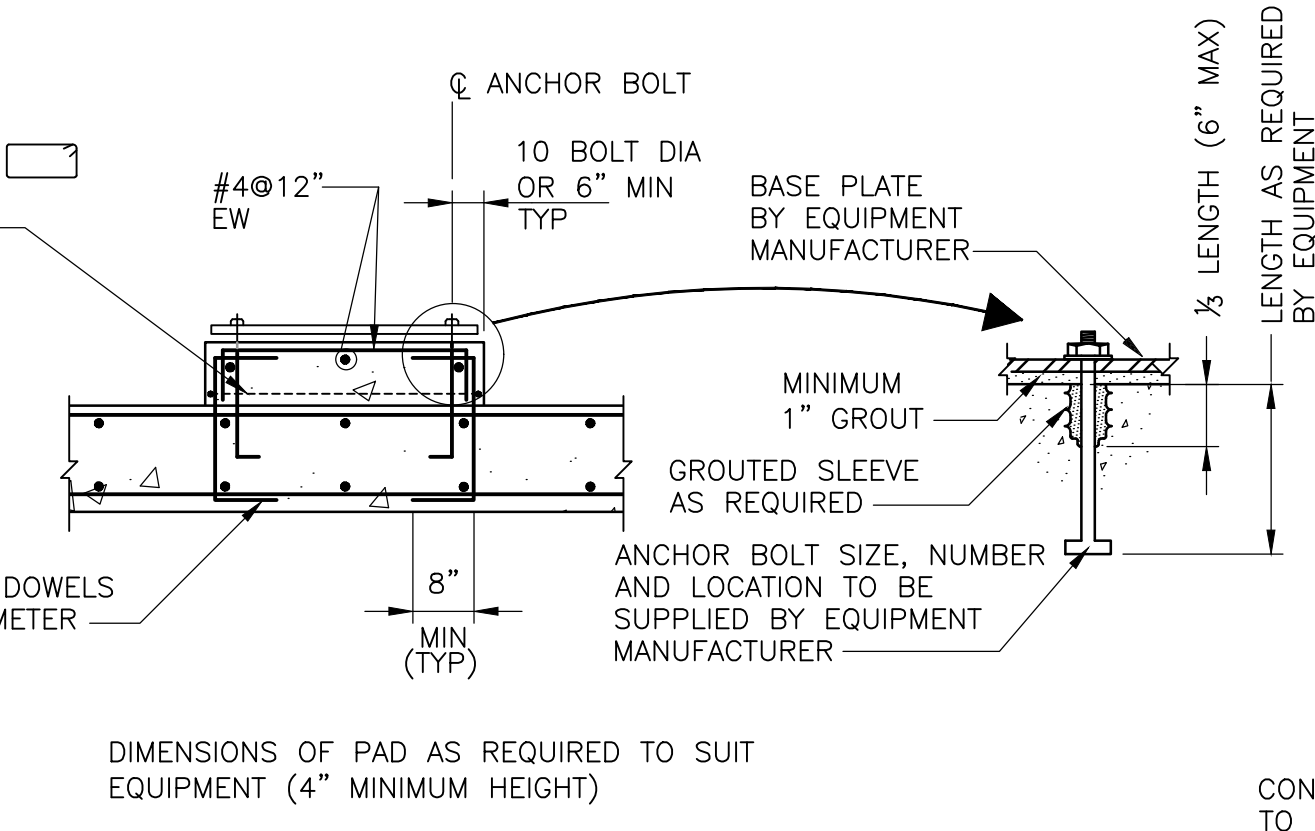
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ISSUED FOR BID

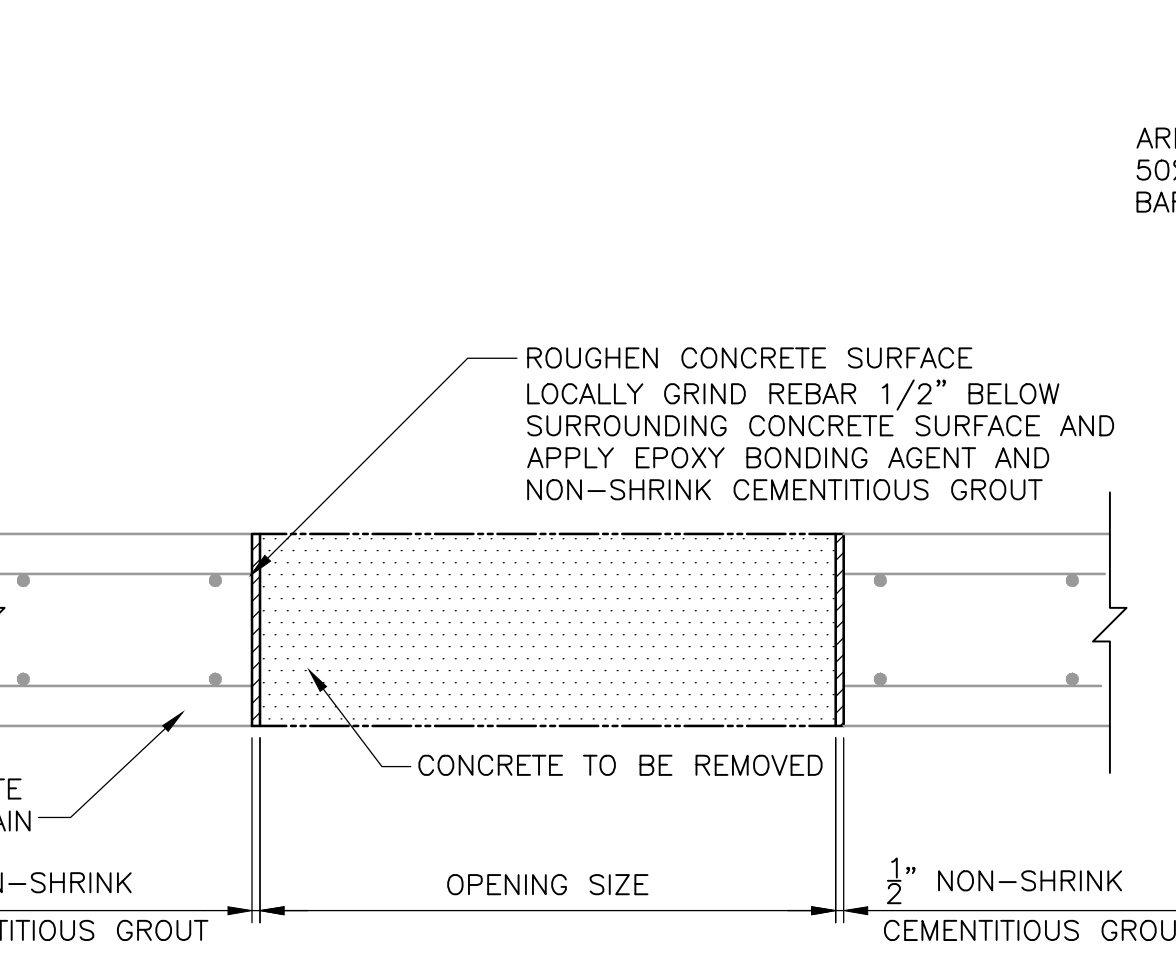
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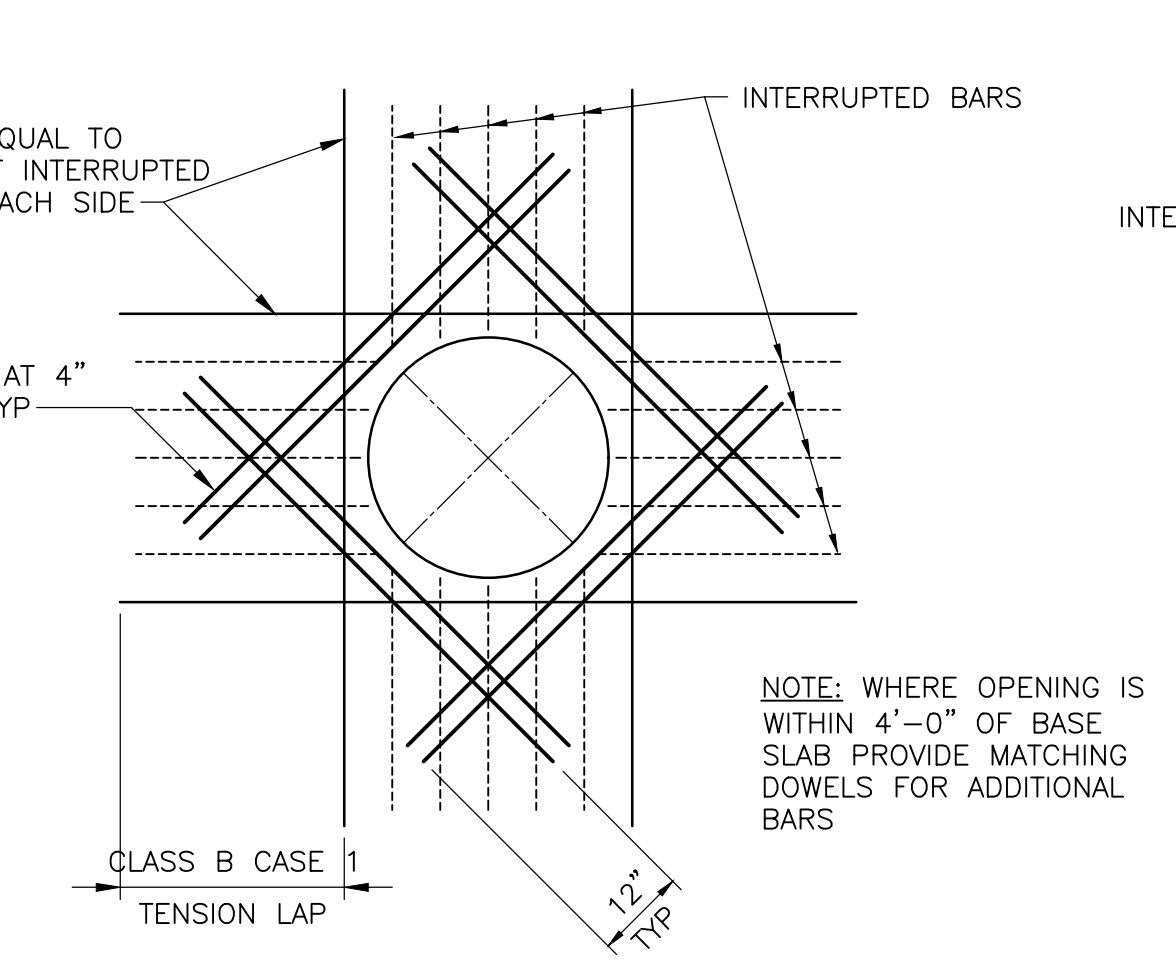
HOUSEKEEPING PAD FOR NEW OR EXISTING SLAB
DETAIL A



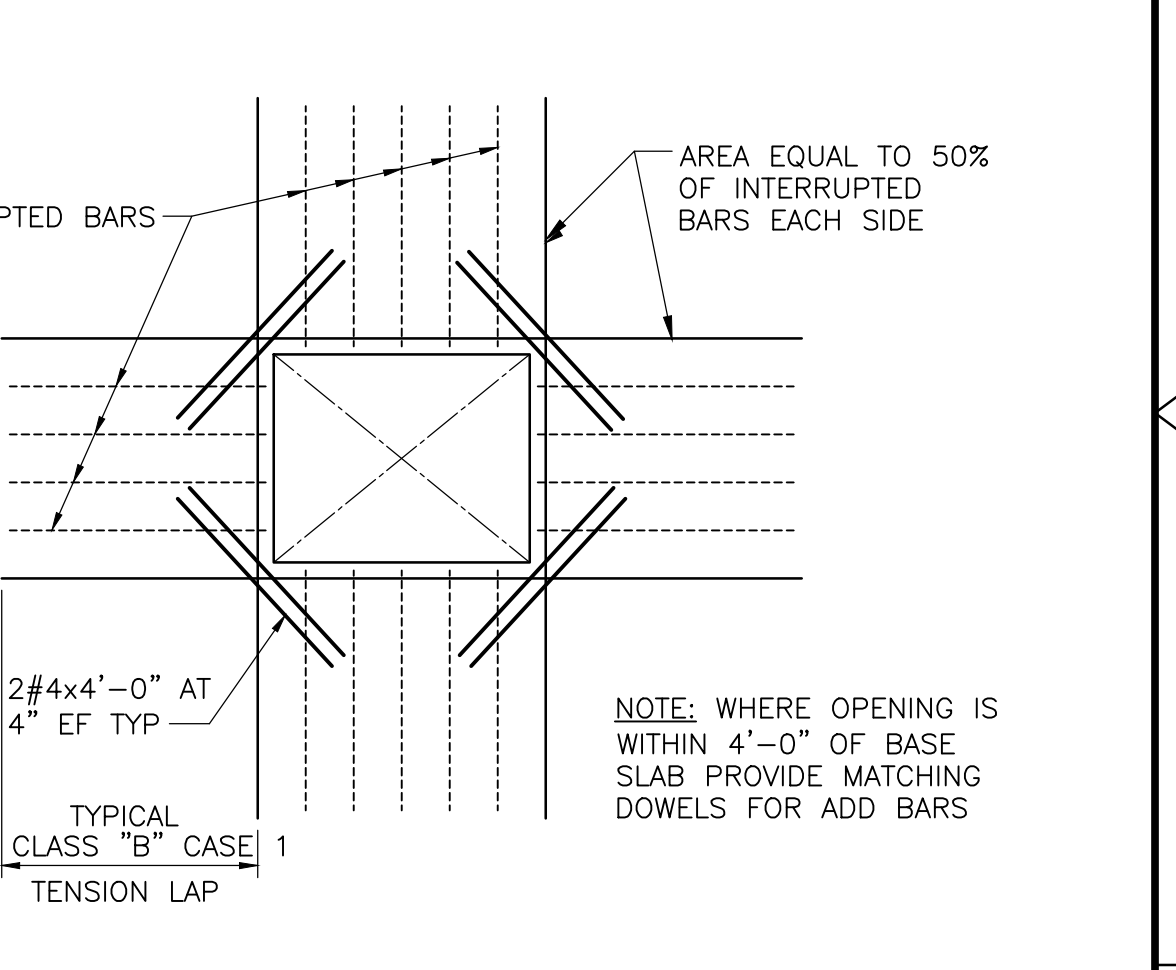
EQUIPMENT PAD
DETAIL B



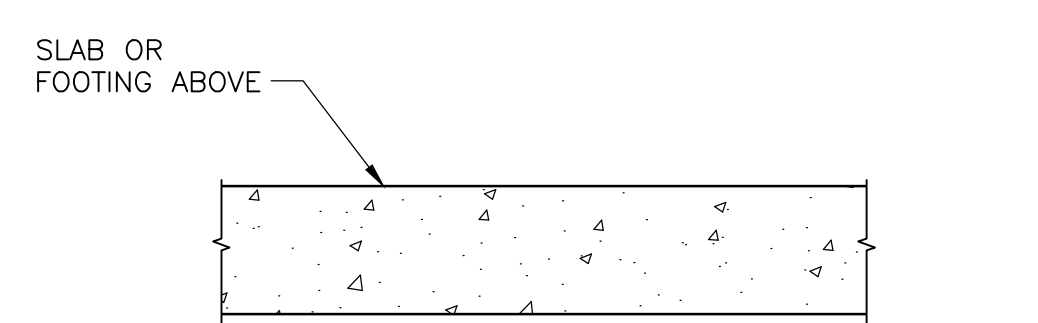
DEMOLITION OF EXISTING CONCRETE
DETAIL C



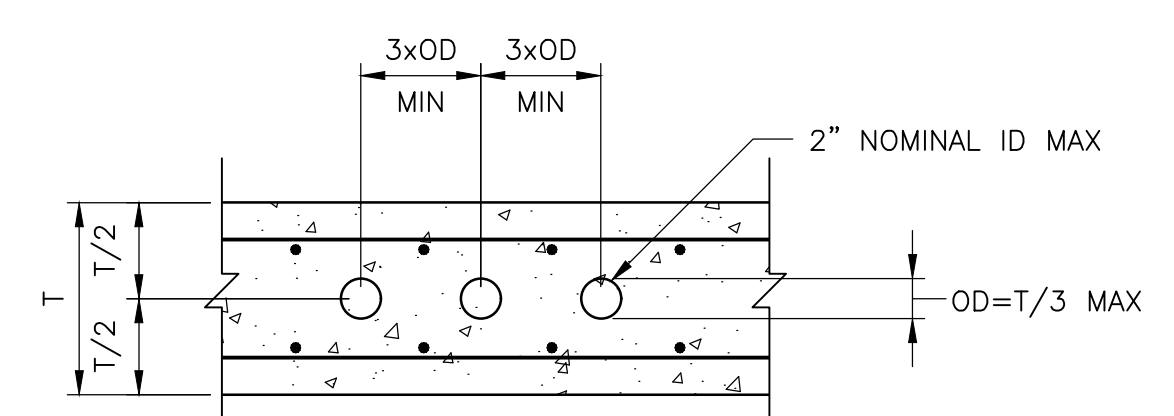
REINFORCEMENT AT CIRCULAR OPENINGS GREATER THAN 12"
DETAIL D



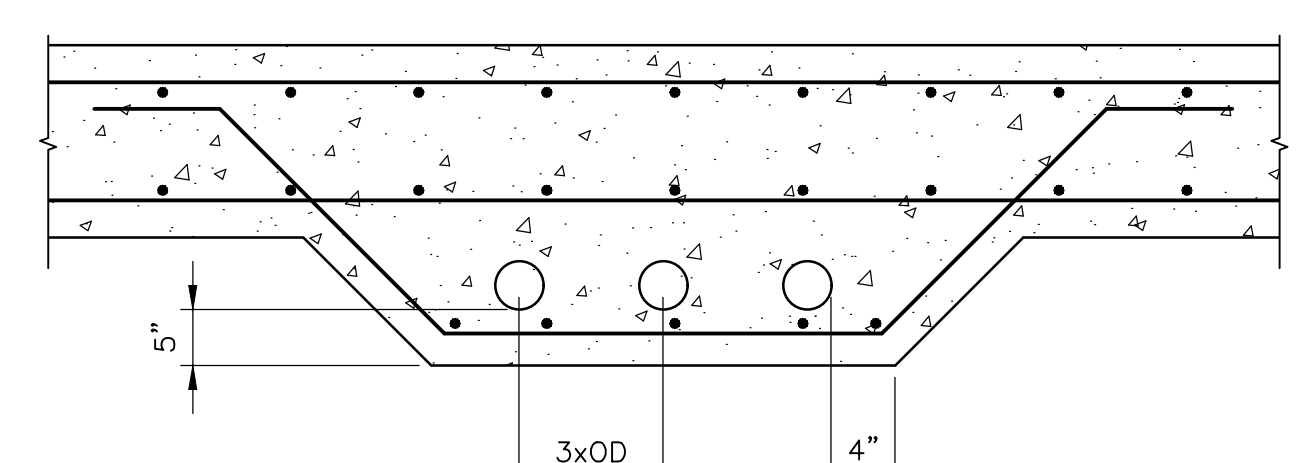
REINFORCEMENT AT RECTANGULAR OPENINGS GREATER THAN 12"
DETAIL E



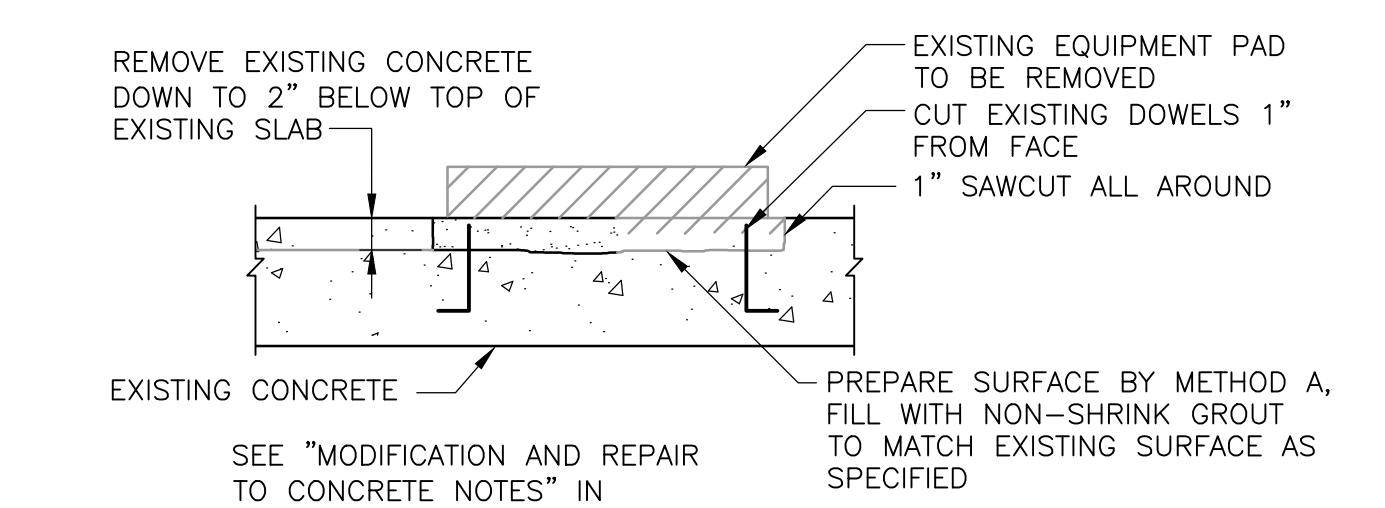
PIPE ENCASEMENT
DETAIL F



CONDUIT PASSING THROUGH SLAB OR WALL
DETAIL G



PIPE CONDUIT EMBEDDED IN ELEVATED SLAB
DETAIL H



EXISTING EQUIPMENT PAD REMOVAL
DETAIL I

- CONDUIT NOTES:**
- NO CONDUIT SHALL BE EMBEDDED IN STRUCTURAL BEAMS, COLUMNS, WALLS OR SLABS UNLESS SPECIFICALLY SHOWN ON THE STRUCTURAL DRAWING
 - CONDUIT SHALL BE PLACED 6" BELOW SLABS
 - WHERE CONDUIT MUST PASS THROUGH A SLAB OR WALL, MINIMUM SIZE AND SPACING REQUIREMENT PER THIS DETAIL
 - ALUMINUM SHALL NOT BE EMBEDDED IN CONCRETE UNLESS COATED TO PREVENT ALUMINUM-CONCRETE REACTION

- PIPE ENCASEMENT NOTES:**
- ALL PIPE SHALL BE PRESSURE TESTED BEFORE CONCRETE PLACEMENT.
 - ALL BELOW GRADE PIPES SHALL BE SUPPORTED ON CONCRETE BLOCKS PRIOR TO CASTING OF CONCRETE BEDDING. SIZE AND SPACING OF CONCRETE BLOCK SUPPORTS SHALL BE PER PIPE MANUFACTURER.
 - FOR ALL PIPES 12-INCH DIAMETER AND LARGER, ENCASEMENT SHALL BE CAST IN TWO POURS. INITIAL CAST SHALL BE CURED FOR 12 HOURS BEFORE CASTING THE SECOND POUR.
 - ENCASE ALL PIPES BELOW SLABS AND FOOTINGS. EXTEND ENCASEMENT 5'-0" BEYOND EDGE OF SLAB OR FOOTING.
 - ENCASEMENT FOR 6" DIAMETER AND SMALLER PIPES SHALL BE 6" MINIMUM. FOR PIPE DIAMETERS GREATER THAN 6", ENCASEMENT SHALL BE 12" MINIMUM.
 - MAINTAIN MINIMUM COVER FOR LAPS FOR PIPES SMALLER THAN 6" DIAMETER.

- NOTES:**
- BASIC SLAB/WALL/BEAM REINFORCEMENT AS SHOWN ON DESIGN DRAWINGS
 - SIZE AND SPACING OF BAR TO MATCH WALL/BEAM REINFORCEMENT AS SHOWN ON DESIGN DRAWINGS
 - FOR ADDITIONAL BARS AT CORNERS AND INTERSECTIONS SEE DESIGN DRAWINGS
 - FOR DWEL SIZE AND SPACING SEE DESIGN DRAWINGS

CLASS B TENSION LAP SPLICE LENGTHS IN WALLS AND SLABS (INCHES)

BAR SIZE	BLACK STEEL	
	f'c=4500 psi TOP BARS	f'c=4500 psi OTHER BARS
3	16	16
4	20	16
5	29	23
6	40	31
7	65	50
8	81	62
8*	49	37
9*	60	46
10*	74	57

TENSION DEVELOPMENT LENGTHS IN WALLS AND SLABS (INCHES)

BAR SIZE	BLACK STEEL	
	f'c=4500 psi TOP BARS	f'c=4500 psi OTHER BARS
3	12	12
4	15	12
5	23	17
6	31	24
7	50	38
8	62	48
8*	37	29
9*	46	36
10*	57	44

- NOTES:**
- MINIMUM BAR SPACING = 6" INCHES ON CENTER.
 - MINIMUM CONCRETE COVER = 1", EXCEPT AS NOTED BY *.
* INDICATES MINIMUM CONCRETE COVER= 2".
 - A TOP BAR IS A HORIZONTAL BAR WHERE MORE THAN 12" OF FRESH CONCRETE IS CAST DIRECTLY BELOW THE BAR. WHERE HORIZONTAL WALL REINFORCEMENT IS UNIFORMLY SPACED IN A VERTICAL PLANE AT 12" MAXIMUM SPACING, LENGTHS MAY BE AS FOR "OTHER BARS".
 - LENGTHS FOR BEAMS AND COLUMNS SHALL BE AS SHOWN ON THE DRAWINGS.

LAP SPLICE AND DEVELOPMENT LENGTHS BLACK REINFORCING STEEL

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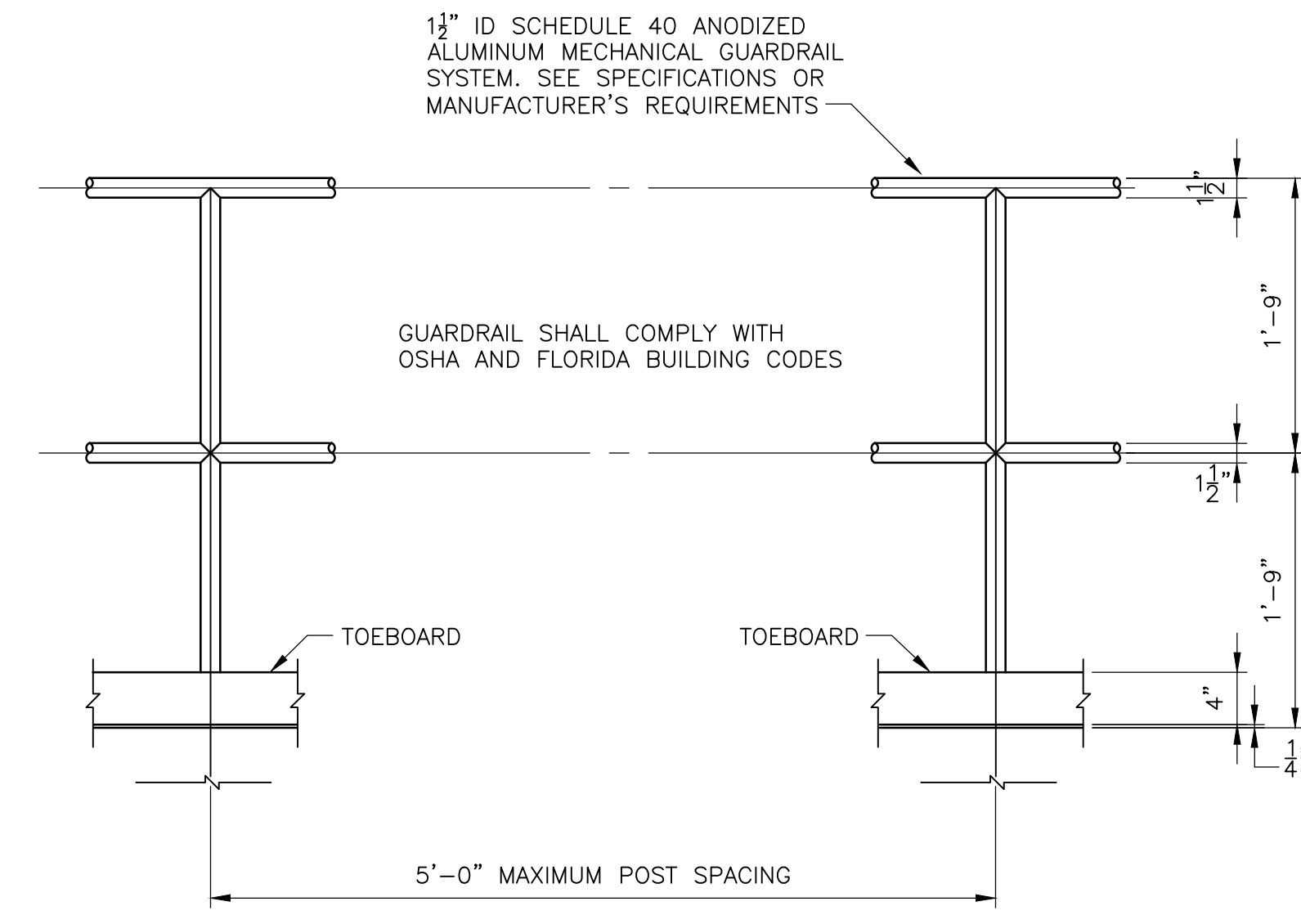
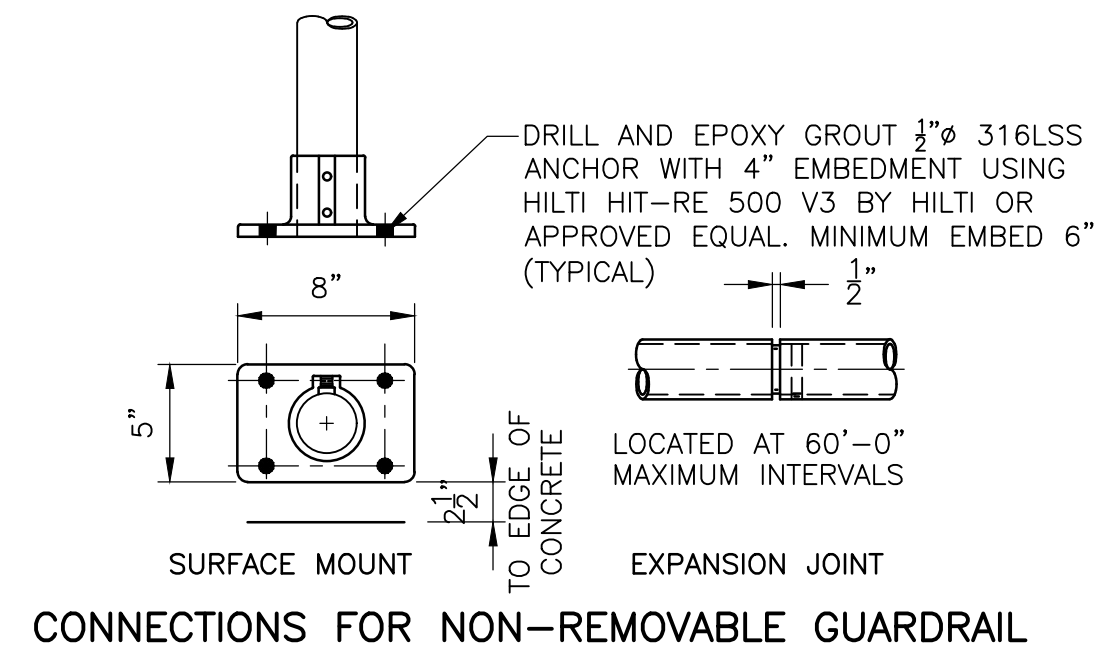
DESIGNED BY: K. FRANCOFORTE
 DRAWN BY: P. SCHIAVO
 SHEET CHK'D BY: P. KALARIA
 CROSS CHK'D BY: D. PRAH
 APPROVED BY: K. FRANCOFORTE
 DATE: JULY 2019



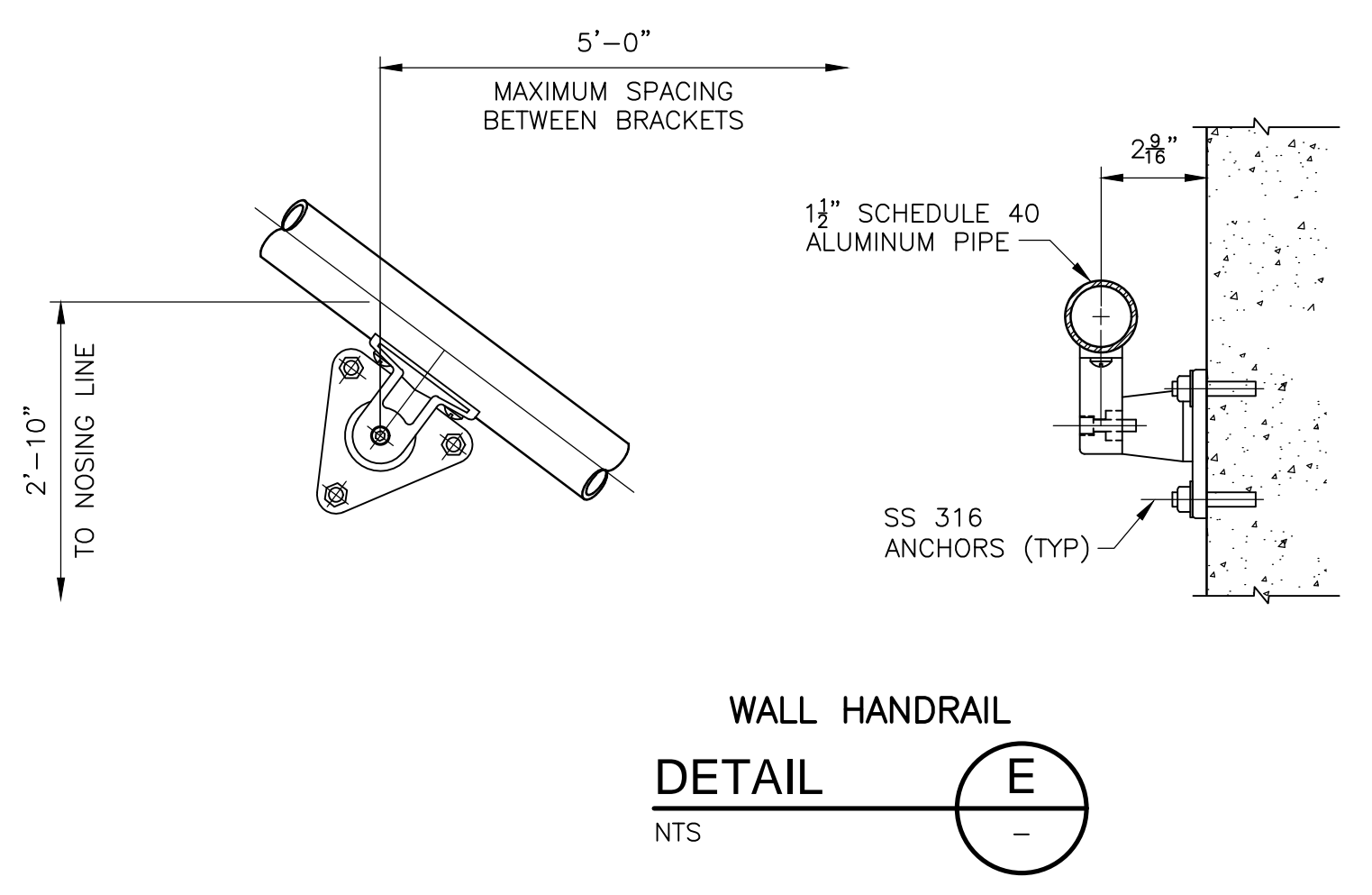
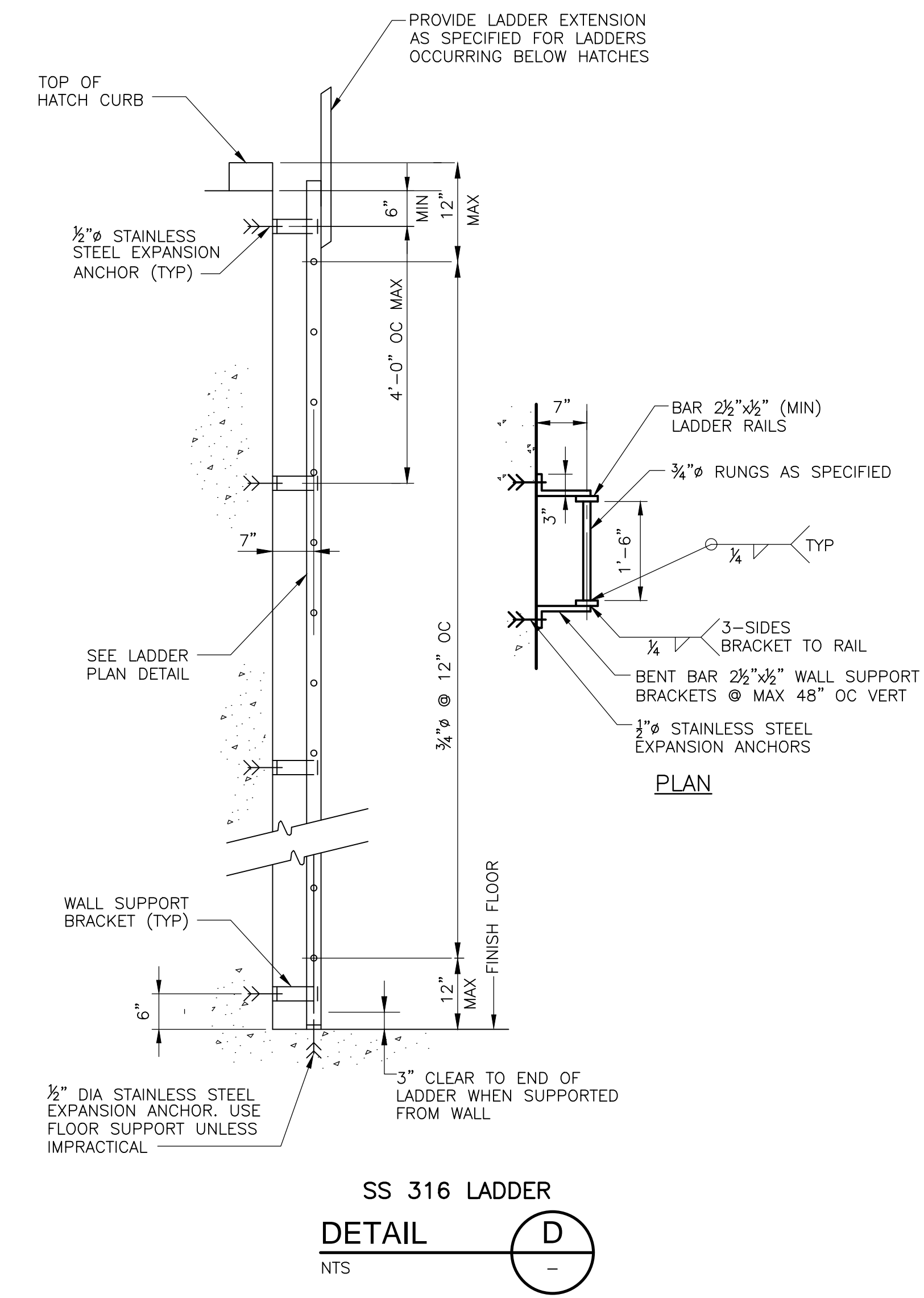
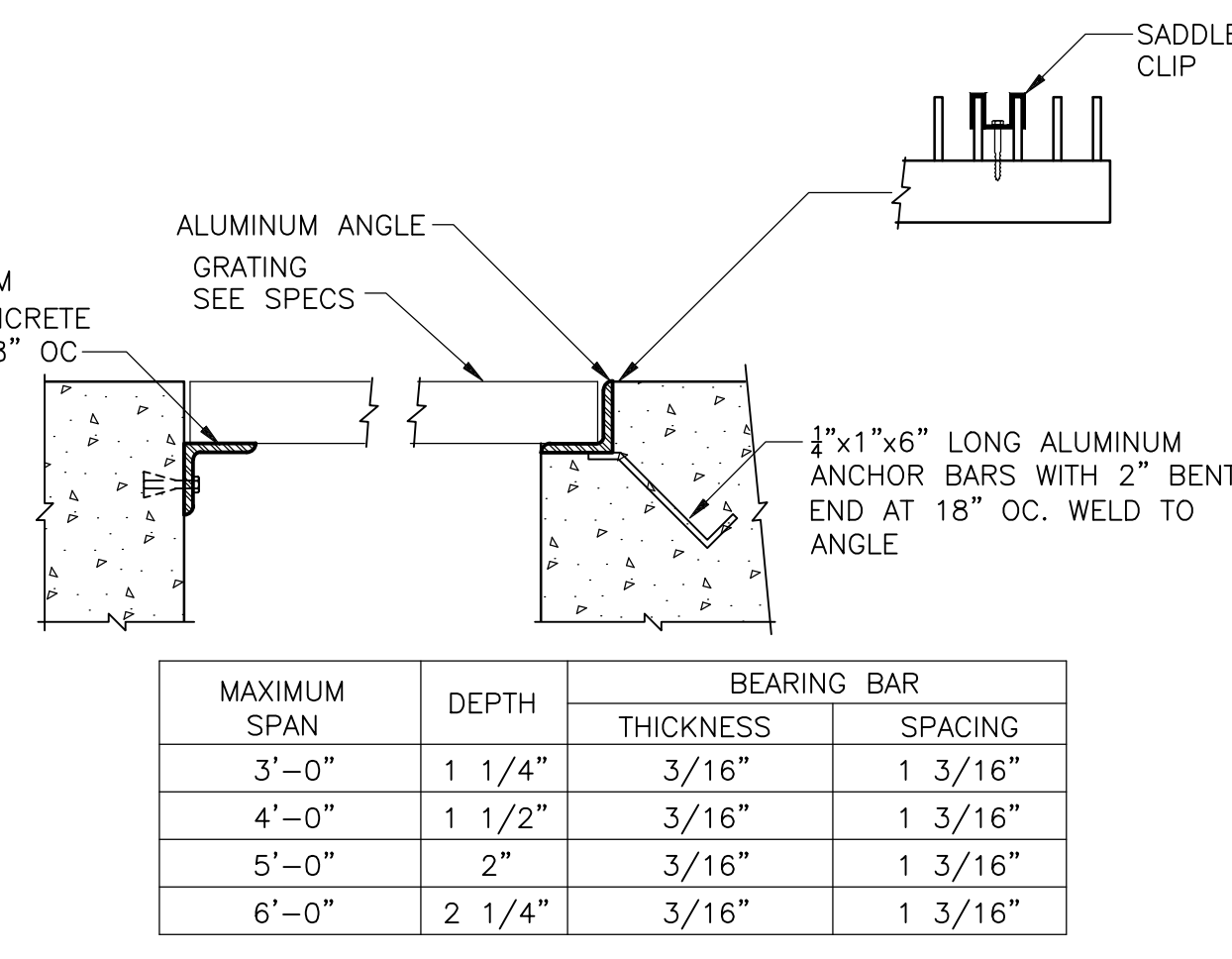
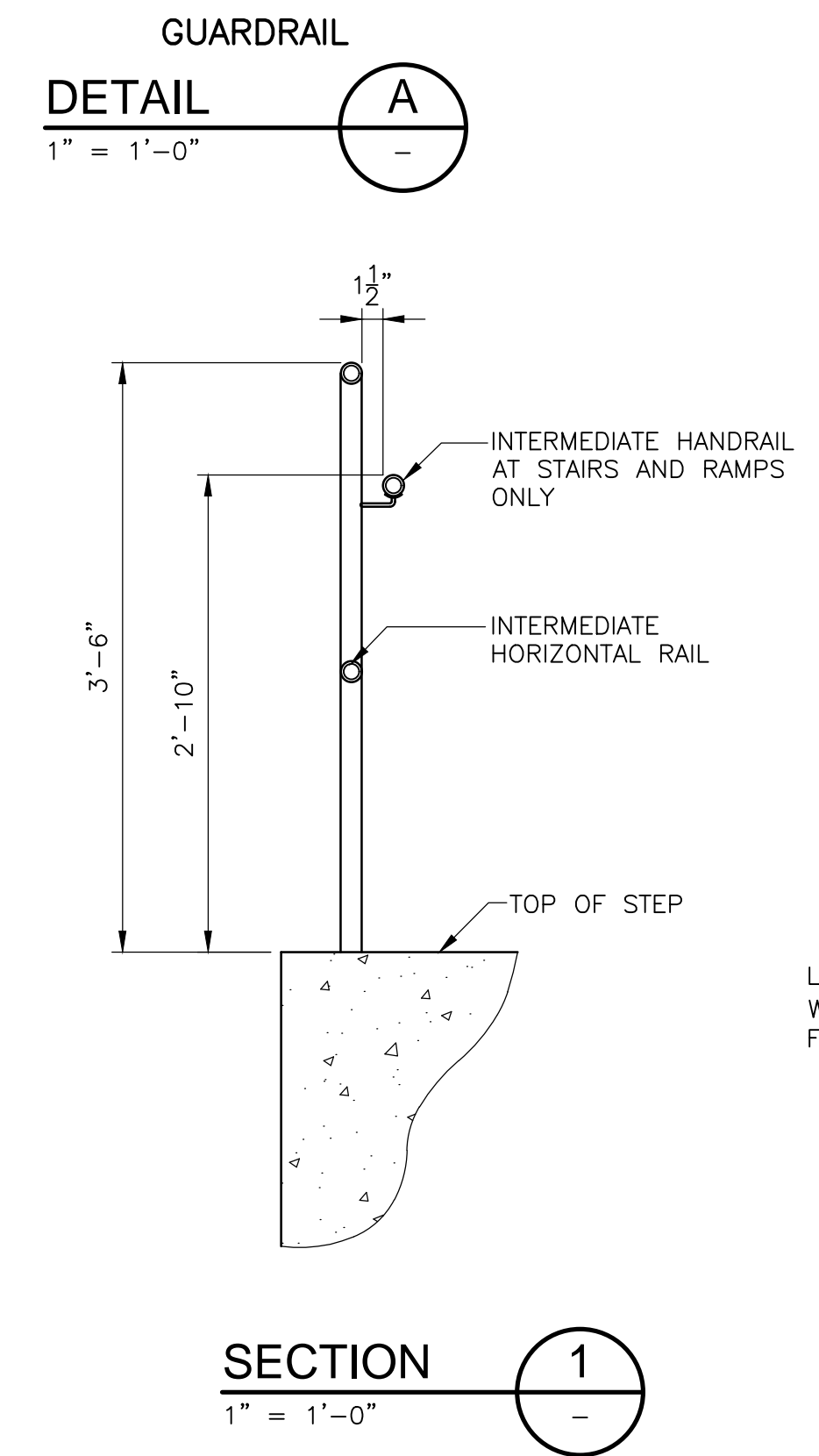
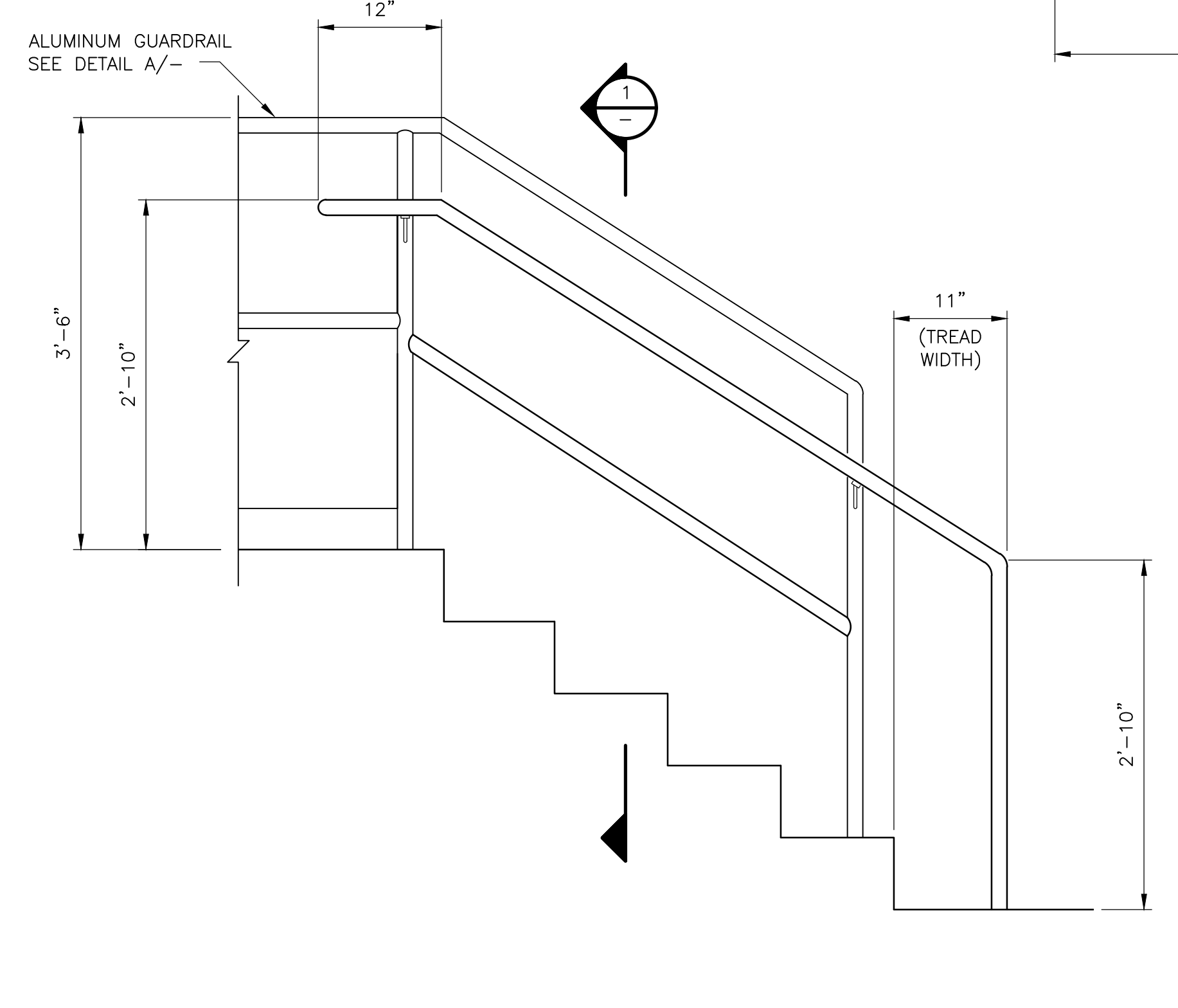
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 ST. JOHNS COUNTY, FLORIDA
 NORTHWEST WTP
 PHASE 1 (6 TO 9 MGD) EXPANSION

STANDARD DETAILS
 SHEET NO. SD-2

DATE: KEVIN M FRANCOFORTE PE NO. 73949
 PROJECT NO. 6334-232860
 FILE NAME: SD02STD1.DWG
 SHEET NO. SD-2
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- GUARDRAIL NOTES:**
- ALUMINUM EMBEDDED IN CONCRETE SHALL BE PAINTED WITH ONE SHOP COAT OF HEAVY BITUMASTIC.
 - ALUMINUM SHAPES IN CONTACT WITH CONCRETE SHALL BE SEPARATED BY A 1/32" NEOPRENE GASKET OR ANY CASE WHERE TWO DIFFERENT METALS ARE TO BE IN CONTACT. A NEOPRENE GASKET SHALL BE PROVIDED.
 - HANDRAILS, GUARDRAILS, POSTS, BRACKETS AND MOUNTINGS SHALL MEET THE FLORIDA BUILDING CODE AND OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) LOADING REQUIREMENTS.
 - TOP OF ALL GUARDRAILS SHALL BE 42" HIGH ABOVE THE FINISH FLOOR OR WALKWAY. THE CLEAR DISTANCE BETWEEN THE TOP AND INTERMEDIATE RAILS MEASURED AT RIGHT ANGLES TO THE RAILS SHALL NOT EXCEED 21".
 - GUARDRAILS SHALL BE TWO RAIL, 1 1/2" DIAMETER SYSTEM. THE CENTERLINE OF THE INTERMEDIATE PARALLEL RAIL SHALL BE AT THE POST MID-POINT BETWEEN THE TOP RAIL AND TOE BOARD (AT HORIZONTAL SURFACES) AND BETWEEN TOP RAIL AND STRINGER (AT STAIRS/STEPS). HOWEVER, MAXIMUM CLEAR DISTANCE BETWEEN RAILS MEASURED AT RIGHT ANGLES TO RAILS SHALL BE 21".
 - GUARDRAILS AT HORIZONTAL SURFACES (LANDINGS, MEZZANINES, ETC) SHALL BE 42" HIGH AND SHALL BE PROVIDED WITH A 4" TOE BOARD.
 - AT STAIRS/STEPS, PROVIDE STRINGER-MOUNTED GUARDRAIL SYSTEM PARALLEL TO STRINGER SLOPE, 42" HIGH ABOVE LEADING EDGE OF TREAD AND PROVIDE ADDITIONAL INSIDE MOUNTED HANDRAIL(S) MEETING THE REQUIREMENTS FOR HANDRAILS AS DESCRIBED BELOW.
 - HANDRAILS (WALL OR GUARDRAIL MOUNTED) AT STAIRS/STEPS, PROVIDE 1 1/2" DIAMETER WALL AND/OR GUARDRAIL MOUNTED (AS APPLICABLE) ALUMINUM HANDRAILS AT BOTH SIDES OF STAIRS/STEPS. HANDRAILS SHALL BE MOUNTED PARALLEL TO STRINGER SLOPE, 34" HIGH ABOVE LEADING EDGE OF TREAD. HANDRAILS SHALL EXTEND 12" BEYOND TOP RISER, AND SHALL EXTEND 11" BEYOND THE BOTTOM RISER. AT THE BOTTOM, HANDRAILS SHALL CONTINUE TO SLOPE FOR A DISTANCE OF THE DEPTH OF ONE TREAD BEYOND THE BOTTOM RISER, THE REMAINDER SHALL BE HORIZONTAL. THE FINGER CLEARANCE BETWEEN THE HANDRAIL AND THE WALL, GUARD OR OTHER OBSTRUCTION SHALL BE 1 1/2".



DATE:
KEVIN M FRANCOFORTE
PE NO. 73949

PROJECT NO. 6334-232860
FILE NAME: SD03STD.TDWG

SHEET NO.
SD-3

ISSUED FOR BID

DESIGNED BY: M. KARTHIK
DRAWN BY: KHALID AHMED
SHEET CHK'D BY: P. KALARIA
CROSS CHK'D BY: D. PRAH
APPROVED BY: K. FRANCOFORTE
DATE: JULY 2019

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FL COA No. EB-0000020

ST. JOHNS COUNTY UTILITY DEPARTMENT
ST. JOHNS COUNTY, FLORIDA
NORTHWEST WTP
PHASE 1 (6 TO 9 MGD) EXPANSION

STANDARD DETAILS

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SYMBOLS (ABBREVIATIONS)

Table listing various symbols for valves, gates, and actuators with their corresponding abbreviations (e.g., UNCLASSIFIED, GATE VALVE (GV), KNIFE GATE VALVE (KG), etc.).

SYMBOLS

Table listing symbols for regulators, relief valves, rupture disks, and dampers with their abbreviations (e.g., PRESSURE REDUCING REGULATOR (PCV), PRESSURE RELIEF OR SAFETY VALVE (PSV), etc.).

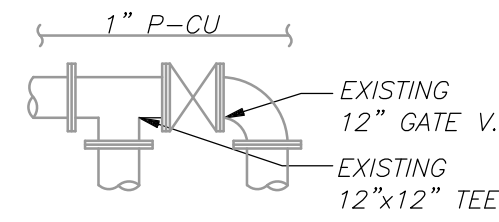
VALVE ACTUATORS

Table listing symbols for various valve actuators such as diaphragms, rotary motors, solenoids, and cylinders.

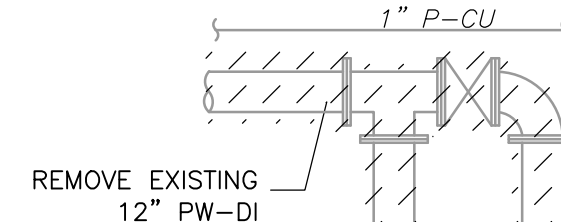
PIPE AND FITTING SYMBOLS

Table showing symbols for double and single line piping, joints (welded, flanged, mechanical), and fittings (couplings, expansion joints, flange guards).

EXISTING FACILITIES SYMBOLOGY AND ANNOTATION



EXISTING FACILITIES DEMOLITION SYMBOLOGY AND ANNOTATION



PIPE AND FITTING SYMBOLS NOTES:

- 1. GENERIC JOINT SYMBOL IS USED FOR ALL SINGLE LINE PIPING SHOWN ON THE INTERIOR AND EXTERIOR PIPING DRAWINGS.
2. BOTH, DETAILED AND SIMPLIFIED FLANGE REPRESENTATION SYMBOLS MAY BE SHOWN ON THE DRAWINGS.
3. UNLESS MODIFIED BY THE GENERAL PROJECT NOTES OR DETAILED ON THE LAYOUT AND SCHEMATIC DRAWINGS PIPE AND FITTING JOINT REQUIREMENTS FOR THE VARIOUS PIPE MATERIALS ARE DEFINED IN THE SPECIFICATIONS AND ARE INDICATED ON THE PROCESS PIPE SCHEDULES.

PROCESS PIPE IDENTIFICATION

PROCESS FLOW STREAMS

Table listing process flow streams such as ACIDIFIED FEED WATER, BACKWASH WATER SUPPLY, COAGULANT, PLANT AIR (COMPRESSED), etc.

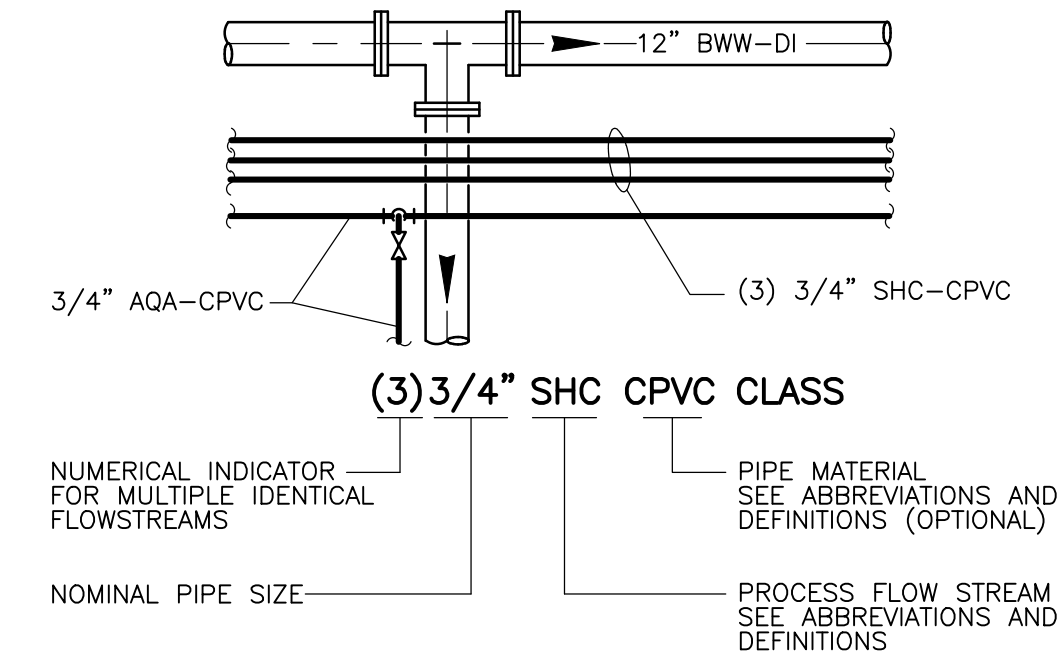
PIPE MATERIALS

Table listing pipe materials including CAST IRON, CARBON STEEL, STEEL, COPPER, CHLORINATED POLYVINYL CHLORIDE, DUCTILE IRON, etc.

PIPE JOINTS

Table listing pipe joints such as FLANGE, PLAIN END, MECHANICAL JOINT, RESTRAINED, etc.

PIPE TAG



MISCELLANEOUS SYMBOLS



LEGENDS SYMBOLS AND ABBREVIATIONS SHOWN ON SHEET M-1 INDICATE STANDARD SYMBOLS AND ABBREVIATIONS AND ARE PERTINENT TO THE CONDITIONS ON THIS SET OF DRAWINGS TO THE EXTENT APPLICABLE.

GENERAL NOTE
THIS IS A STANDARD LEGEND.
SOME SYMBOLS MAY NOT APPEAR
ON THE DRAWINGS.

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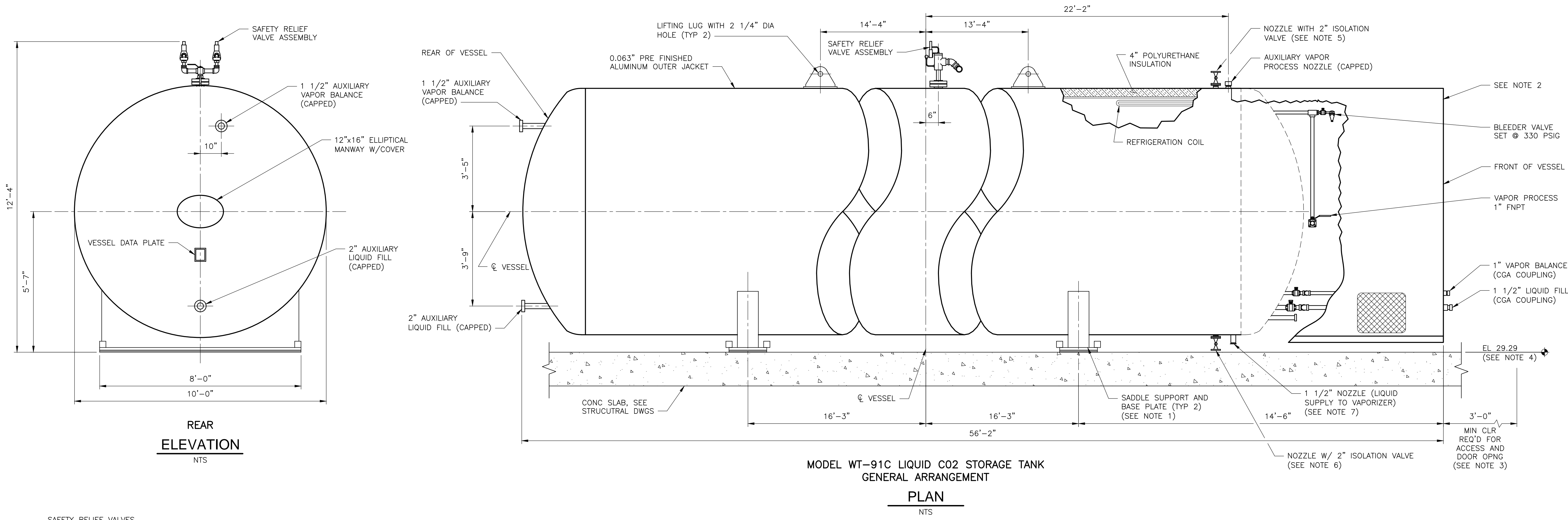
DESIGNED BY: J. O'NEAL
DRAWN BY: A. EDWARDS
SHEET CHK'D BY: J. O'NEAL
CROSS CHK'D BY: D. PRAH
APPROVED BY: I. POLEMATIDIS
DATE: JULY 2019



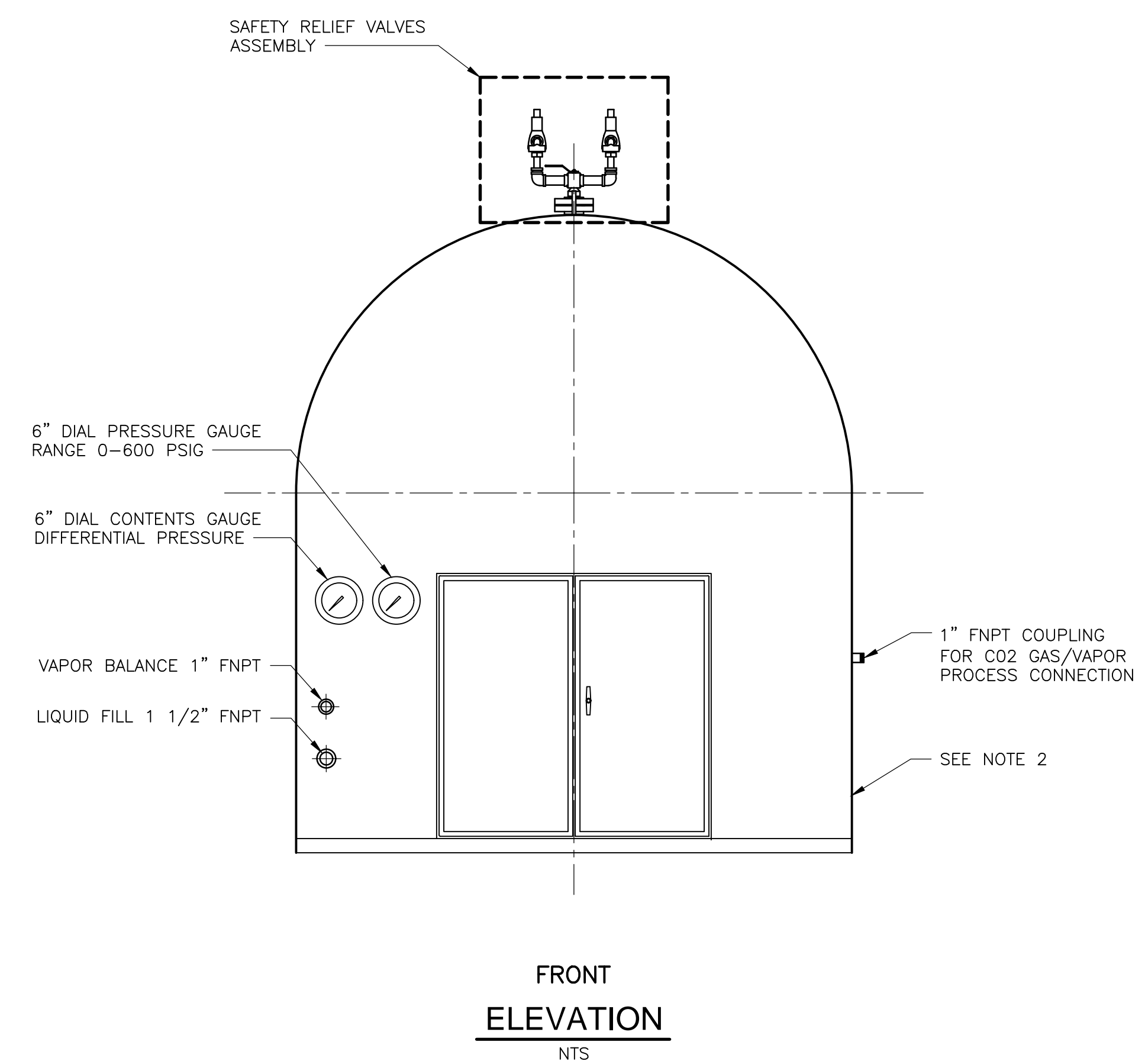
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NORTHWEST WTP
PHASE 1 (6 TO 9 MGD) EXPANSION

MECHANICAL GENERAL NOTES AND LEGEND

PROJECT NO. 6334-232860
FILE NAME: M001GNLD.DWG
SHEET NO. M-1
ISSUED FOR BID



MODEL WT-91C LIQUID CO2 STORAGE TANK
GENERAL ARRANGEMENT
PLAN
NTS



FRONT
ELEVATION
NTS

FRONT WITH DOOR REMOVED
ELEVATION
NTS

NOTES:

- SADDLE SUPPORT, BASE PLATE AND ANCHOR BOLTS SHALL BE PROVIDED BY LIQUID CO2 TANK MANUFACTURER AND INSTALLED BY CONTRACTOR PER MANUFACTURERS RECOMMENDATIONS.
- ORIENTATION OF NEW LIQUID CO2 TANK SHALL MATCH EXISTING LIQUID CO2 TANK. THE FRONT OF THE TANK SHALL FACE THE ROADWAY.
- EXACT PLACEMENT OF LIQUID CO2 TANK ON THE NEW PAD SHALL BE FIELD VERIFIED TO MATCH THE PLACEMENT OF EXISTING LIQUID CO2 TANK ON THE EXISTING PAD.
- FIELD VERIFY AND MATCH LIQUID CO2 TANK PAD ELEVATION.
- CONNECT TO EXISTING ISOLATION VALVE ON THE EXISTING LIQUID CO2 TANK WITH 2-INCH INSULATED SCH 80 304 SST PIPING FOR TANK-TO-TANK VAPOR SPACE INTERCONNECTION. PIPING SHALL BE PROVIDED AND INSTALLED BY CONTRACTOR.
- CONNECT TO EXISTING ISOLATION VALVE ON THE EXISTING LIQUID CO2 TANK WITH 2-INCH INSULATED SCH 80 304 SST PIPING FOR TANK-TO-TANK LIQUID INTERCONNECTION. PIPING SHALL BE PROVIDED AND INSTALLED BY CONTRACTOR.
- REFER TO CIVIL DRAWINGS FOR CO2 PIPING FROM TANK TO PSF PANEL. EXACT CONNECTION LOCATIONS SHALL BE DETERMINED BY AND COORDINATED WITH THE CO2 SYSTEM SUPPLIER.
- COORDINATE WITH PRESSURE VESSEL MANUFACTURER AND THE ENGINEER, DURING SHOP DRAWING REVIEW TO LOCATE THE TANK PEDESTALS AND COORDINATE PEDESTAL LOCATION TO PREVENT A CONFLICT WITH THE CONCRETE JOINTS.

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 DRAWN BY: A. EDWARDS
 SHEET CHK'D BY: J. O'NEAL
 CROSS CHK'D BY: D. PRAH
 APPROVED BY: I. POLEMATIDIS
 DATE: JULY 2019



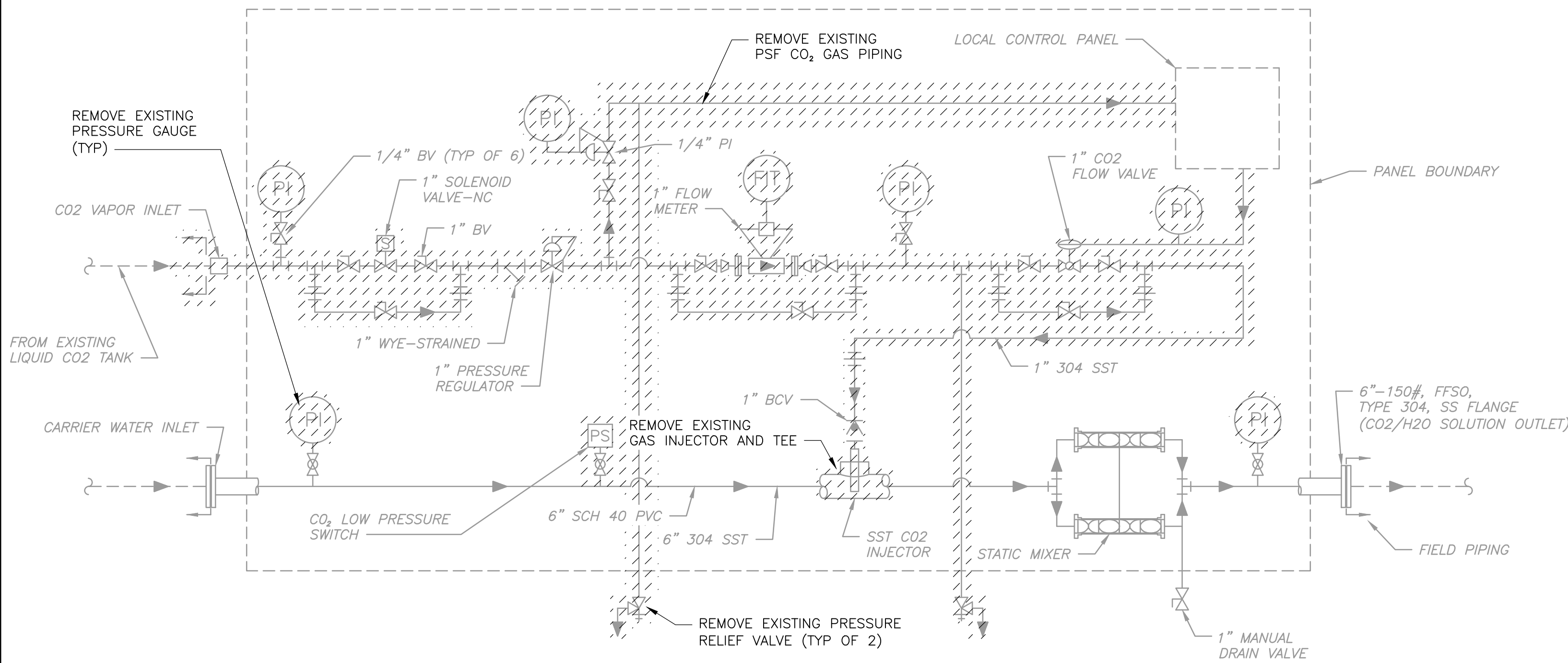
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 PHASE 1 (6 TO 9 MGD) EXPANSION

LIQUID CARBON DIOXIDE STORAGE TANK
 SECTIONS AND DETAILS

PROJECT NO. 6334-232860
 FILE NAME: MO02CDST.DWG
 SHEET NO. M-2
 ISSUED FOR BID

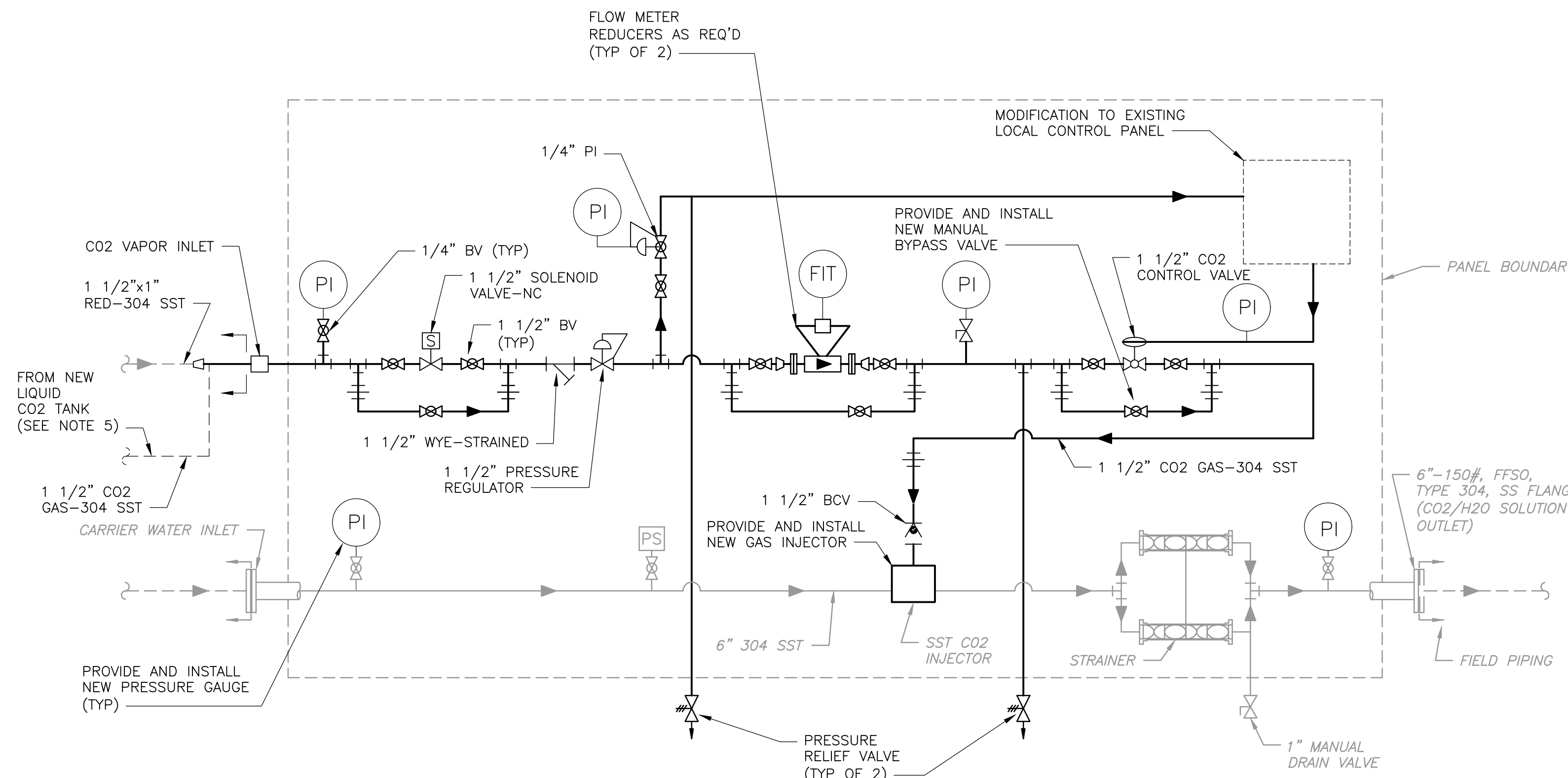
NOTES:

1. REMOVAL AND REPLACEMENT OF EXISTING EQUIPMENT ASSOCIATED WITH THE PSF PANEL SHOWN IS A MINIMUM. ADDITIONAL MODIFICATIONS REQUIRED SHALL BE DETERMINED BY THE MANUFACTURER TO MEET ALL SYSTEM REQUIREMENTS SPECIFIED IN SECTION 463143. THIS INCLUDES BUT IS NOT LIMITED TO MODIFICATIONS TO THE PSF PANEL PIPING, FITTINGS, INSTRUMENTS, VALVES, AND CONTROL PANEL.
2. ALL WORK AND MODIFICATIONS PERFORMED ON THE EXISTING PSF PANEL SHALL BE PERFORMED BY A FACTORY AUTHORIZED AND TRAINED SERVICE TECHNICIAN BY TOMCO, INC.
3. ALL REPLACEMENT TUBING TO BE 304 STAINLESS STEEL SCHEDULE 40.
4. REFER TO SEQUENCE OF CONSTRUCTION SECTION 011011 FOR CONSTRUCTION SEQUENCE REQUIREMENTS PRIOR TO DEMOLITION OR REMOVAL OF EQUIPMENT, PIPING, VALVES, INSTRUMENTS, ETC.
5. REFER TO CIVIL DRAWINGS FOR CO₂ PIPING FROM TANK TO PSF PANEL. EXACT CONNECTION LOCATIONS SHALL BE DETERMINED BY AND COORDINATED WITH THE CO₂ SYSTEM SUPPLIER.
6. OUTAGE OF CO₂ EQUIPMENT SHALL BE NO MORE THAN SIX HOURS/DAY (FROM 10:00 A.M. TO 4:00 P.M.), FOR THESE MODIFICATIONS.



REMOVAL OF EXISTING PSF PANEL EQUIPMENT (NOTE 1)

PLAN
NTS



INSTALLATION OF NEW PSF PANEL EQUIPMENT (NOTE 1)

PLAN
NTS

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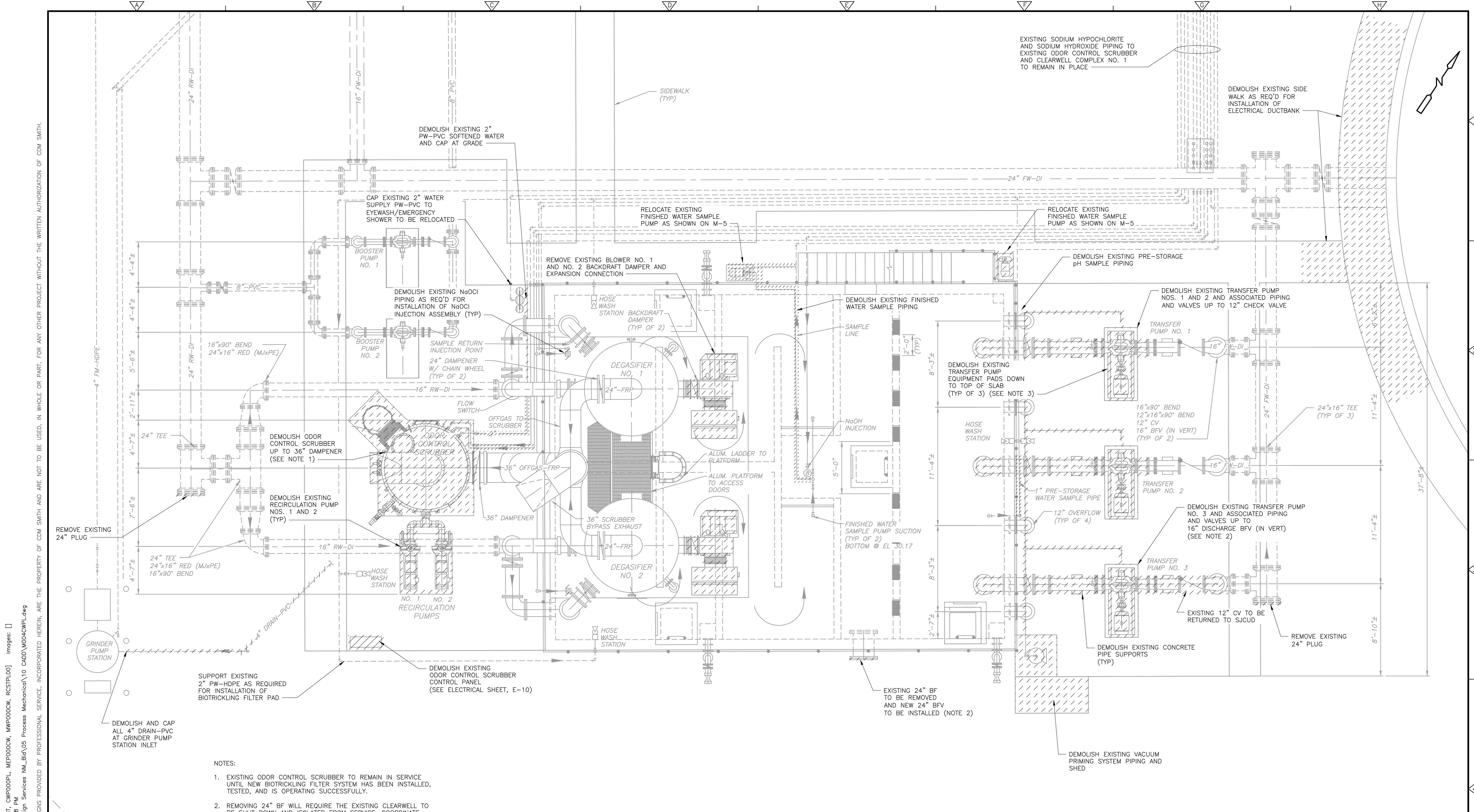
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 APPROVED BY: I. POLEMATIDIS
 DATE: JULY 2019



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 PHASE 1 (6 TO 9 MGD) EXPANSION

CARBON DIOXIDE PRESSURE SOLUTION
 FEED PANEL MODIFICATIONS

PROJECT NO. 6334-232860
 FILE NAME: M003CDMD.DWG
 SHEET NO. M-3



NOTES:

- EXISTING ODOR CONTROL SCRUBBER TO REMAIN IN SERVICE UNTIL NEW BIOTRICKLING FILTER SYSTEM HAS BEEN INSTALLED, TESTED, AND IS OPERATING SUCCESSFULLY.
- REMOVING 24" BF WILL REQUIRE THE EXISTING CLEARWELL TO BE SHUT DOWN AND ISOLATED FROM SERVICE. COORDINATE WORK WITH OWNER AND ENGINEER TO MINIMIZE DOWNTIME.
- RESURFACE AND SMOOTH TOP OF SLAB AFTER REMOVAL OF TRANSFER PUMP EQUIPMENT PADS. SEE STRUCTURAL SHEETS.
- REFER TO SEQUENCE OF CONSTRUCTION SECTION 011011 FOR CONSTRUCTION SEQUENCE REQUIREMENTS PRIOR TO DEMOLITION OR REMOVAL OF EQUIPMENT, PIPING, VALVES, INSTRUMENTS, ETC.

PLAN
1/4" = 1'-0"

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SHEET CHK'D BY:	J. O'NEAL
CROSS CHK'D BY:	D. PRAH
APPROVED BY:	I. POLEMATIDIS
DATE:	JULY 2019

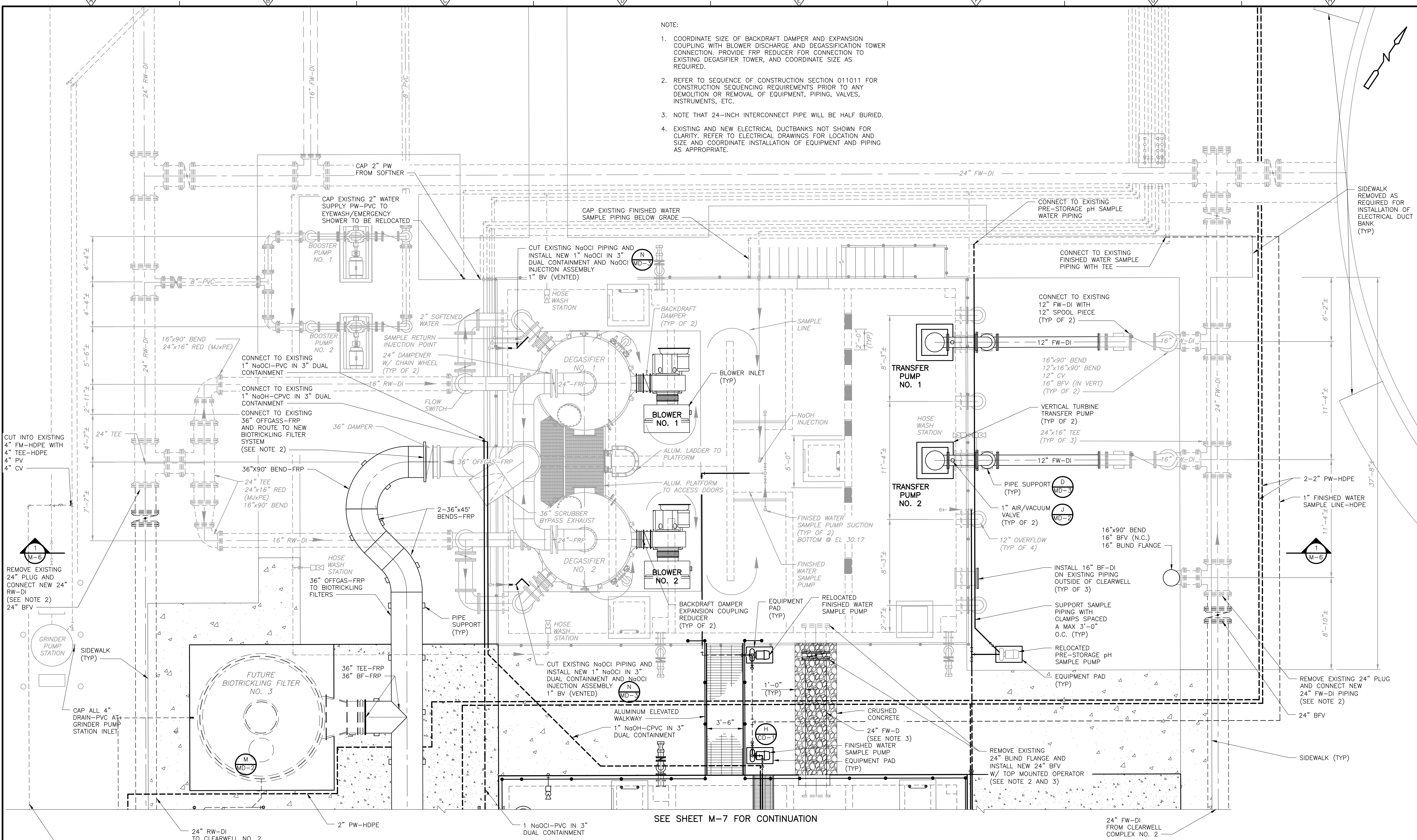
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 NORTHWEST WTP
 PHASE 1 (6 TO 9 MGD) EXPANSION

CLEARWELL COMPLEX NO. 1 DEMOLITION PLAN

PROJECT NO.	6334-232860
FILE NAME:	M004CWPL.DWG
SHEET NO.	M-4

- NOTE:
- COORDINATE SIZE OF BACKDRAFT DAMPER AND EXPANSION COUPLING WITH BLOWER DISCHARGE AND DEGASSIFICATION TOWER CONNECTION. PROVIDE FRP REDUCER FOR CONNECTION TO EXISTING DEGASSIFIER TOWER, AND COORDINATE SIZE AS REQUIRED.
 - REFER TO SEQUENCE OF CONSTRUCTION SECTION 011011 FOR CONSTRUCTION SEQUENCING REQUIREMENTS PRIOR TO ANY DEMOLITION OR REMOVAL OF EQUIPMENT, PIPING, VALVES, INSTRUMENTS, ETC.
 - NOTE THAT 24-INCH INTERCONNECT PIPE WILL BE HALF BURIED.
 - EXISTING AND NEW ELECTRICAL DUCTBANKS NOT SHOWN FOR CLARITY. REFER TO ELECTRICAL DRAWINGS FOR LOCATION AND SIZE AND COORDINATE INSTALLATION OF EQUIPMENT AND PIPING AS APPROPRIATE.



SEE SHEET M-7 FOR CONTINUATION

PLAN
1/4" = 1'-0"

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DESIGNED BY: J. O'NEAL
 DRAWN BY: A. EDWARDS
 SHEET CHK'D BY: J. O'NEAL
 CROSS CHK'D BY: D. PRAH
 APPROVED BY: I. POLEMATIDIS
 DATE: JULY 2019

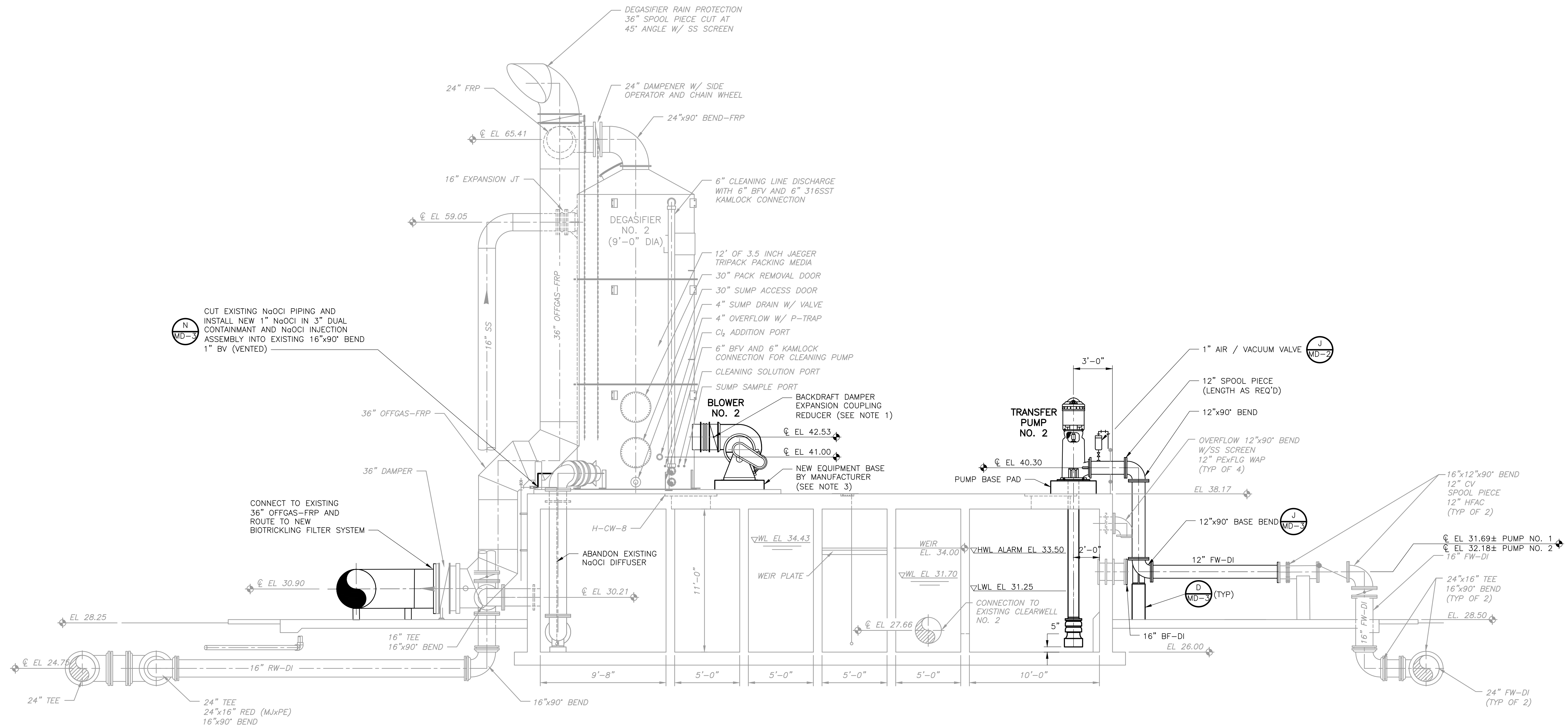


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 NORTHWEST WTP
 PHASE 1 (6 TO 9 MGD) EXPANSION

CLEARWELL COMPLEX NO. 1 IMPROVEMENTS
 SHEET NO. M-5

PROJECT NO. 6334-232860
 FILE NAME: MO05CWPL.DWG
 SHEET NO. M-5
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SECTION 1
 1/4" = 1'-0" M-5

- NOTES:
- COORDINATE SIZE OF BACKDRAFT DAMPER AND EXPANSION COUPLING WITH BLOWER DISCHARGE AND DEGASIFICATION TOWER CONNECTION. PROVIDE FRP REDUCER AS NECESSARY.
 - REFER TO SEQUENCE OF CONSTRUCTION SECTION 011011 FOR CONSTRUCTION SEQUENCING REQUIREMENTS PRIOR TO ANY DEMOLITION OR REMOVAL OF EQUIPMENT, PIPING, VALVES, INSTRUMENTS, ETC.
 - EQUIPMENT BASE AND HEIGHT SHALL BE COORDINATED WITH BLOWER MANUFACTURER.

REV. NO.	DATE	DRWN	CHKD	REMARKS

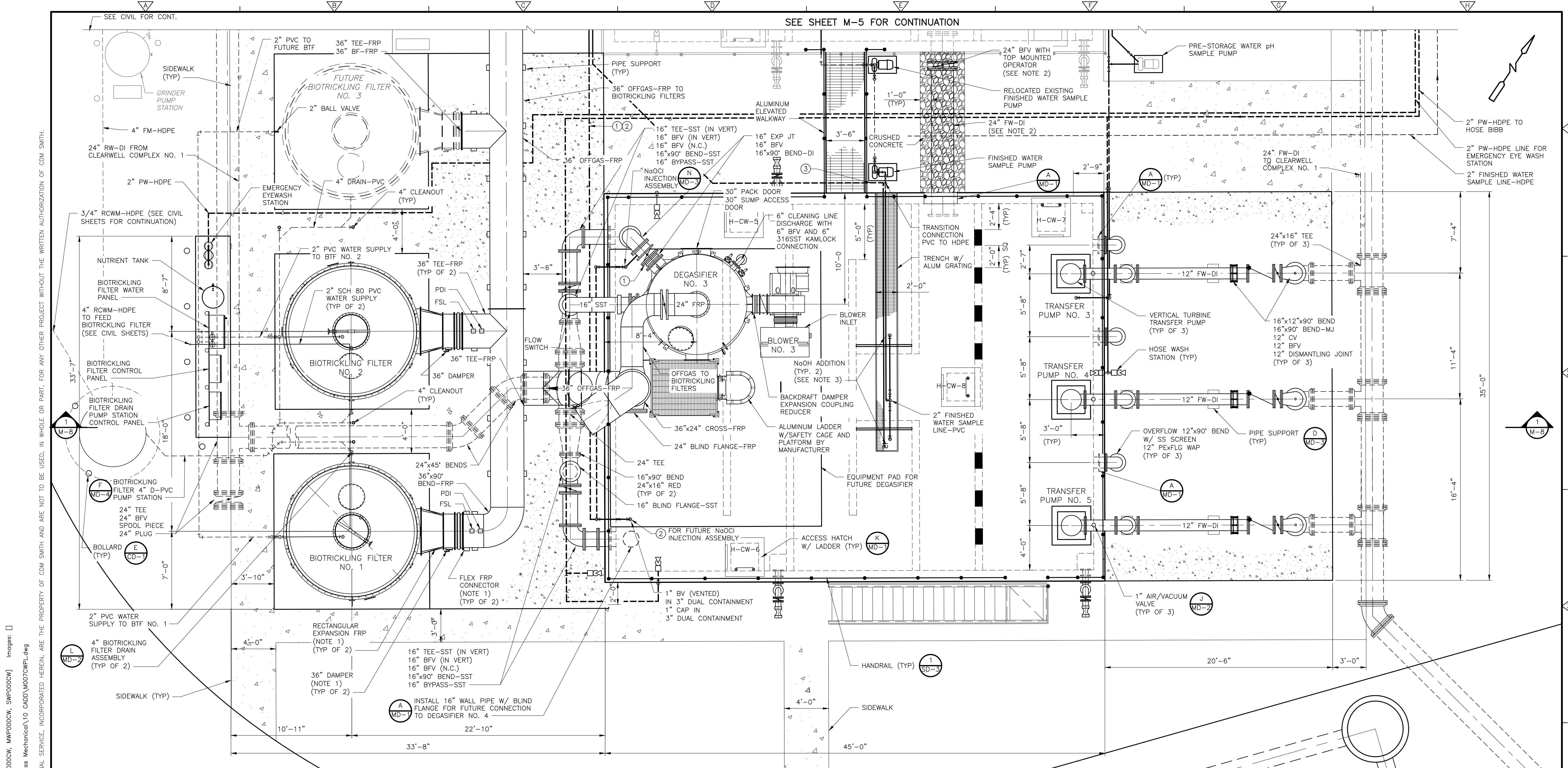
DESIGNED BY: J. O'NEAL
 DRAWN BY: A. EDWARDS
 SHEET CHK'D BY: J. O'NEAL
 CROSS CHK'D BY: D. PRAH
 APPROVED BY: I. POLEMATIDIS
 DATE: JULY 2019



ST. JOHNS COUNTY UTILITY DEPARTMENT
 ST. JOHNS COUNTY, FLORIDA
 NORTHWEST WTP
 PHASE 1 (6 TO 9 MGD) EXPANSION

PROJECT NO. 6334-232860
 FILE NAME: M006BTSC.DWG
 SHEET NO. M-6
 CLEARWELL COMPLEX NO. 1 SECTION

ISSUED FOR BID



PLAN
1/4" = 1'-0"

- NOTES:**
- CONTRACTOR SHALL COORDINATE SIZE AND DIMENSIONS OF BIOTRICKLING FILTER EXPANSION JOINT, ISOLATION DAMPER AND FLEX FRP CONNECTOR WITH VENDOR.
 - THE 24-INCH INTERCONNECT PIPE BETWEEN CLEARWELL NO. 1 AND NO. 2 WILL BE PARTIALLY BURIED.
 - TERMINATE 1-INCH NAOH PIPING 3-INCH BELOW CONCRETE DECK.
 - THE BASIS OF DESIGN FOR THE BTF SYSTEM IS BIOAIR, INC. A TEMPORARY RECIRCULATION PUMP WILL BE REQUIRED FOR THIS SYSTEM.

DOUBLE CONTAINMENT PIPING SCHEDULE						
LINE NO.	CHEMICAL	CHEMICAL INJECTION POINT	CARRIER PIPE		CONTAINMENT PIPE	
			SIZE (IN)	MATERIAL	SIZE (IN)	MATERIAL
1	SODIUM HYPOCHLORITE	PRIMARY DISINFECTION - CLEARWELL CHAMBER 1	1	PVC	3	PVC
2	SODIUM HYPOCHLORITE	PRIMARY DISINFECTION - CLEARWELL CHAMBER 2	1	PVC	3	PVC
3	SODIUM HYDROXIDE	pH ADJUSTMENT - CLEARWELL OVERFLOW	1	CPVC	3	CPVC

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: J. O'NEAL
 DRAWN BY: A. EDWARDS
 SHEET CHK'D BY: J. O'NEAL
 CROSS CHK'D BY: D. PRAH
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 DATE: JULY 2019



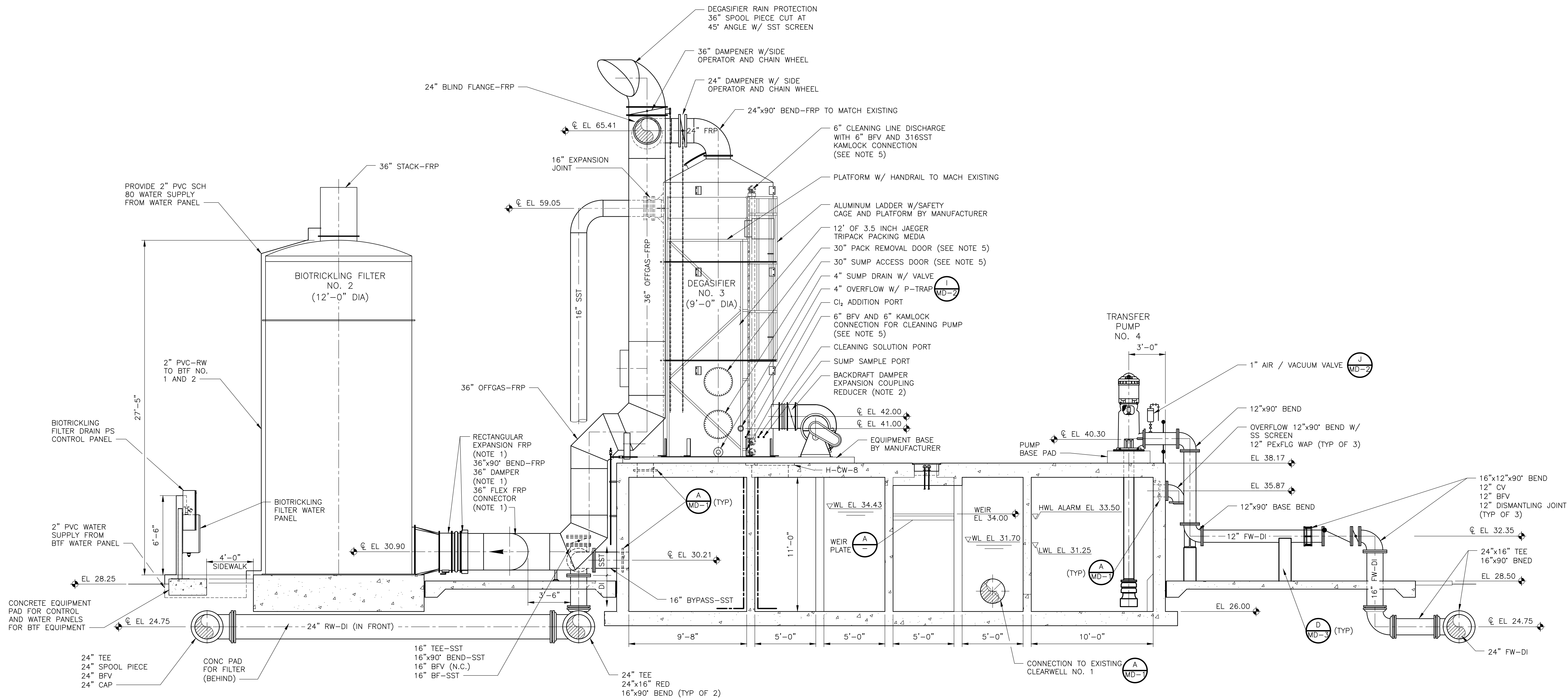
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 ST. JOHNS COUNTY, FLORIDA
 NORTHWEST WTP
 PHASE 1 (6 TO 9 MGD) EXPANSION

CLEARWELL COMPLEX NO. 2 PLAN

PROJECT NO. 6334-232860
 FILE NAME: M007CWPL.DWG
 SHEET NO.
M-7
 ISSUED FOR BID

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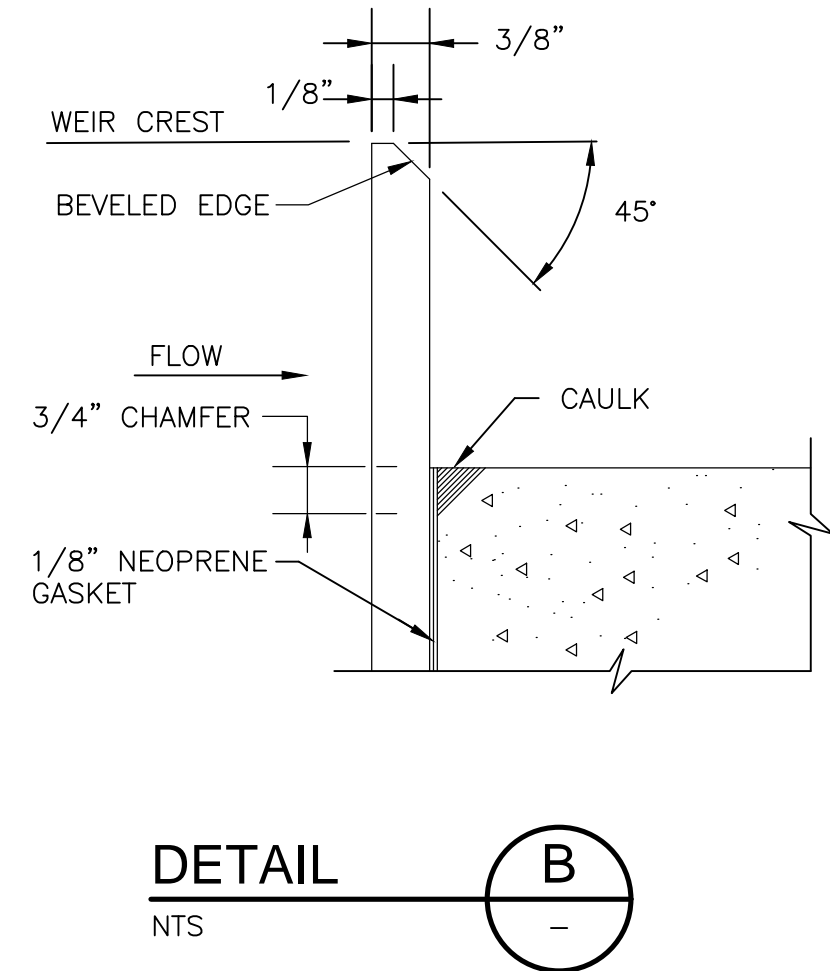
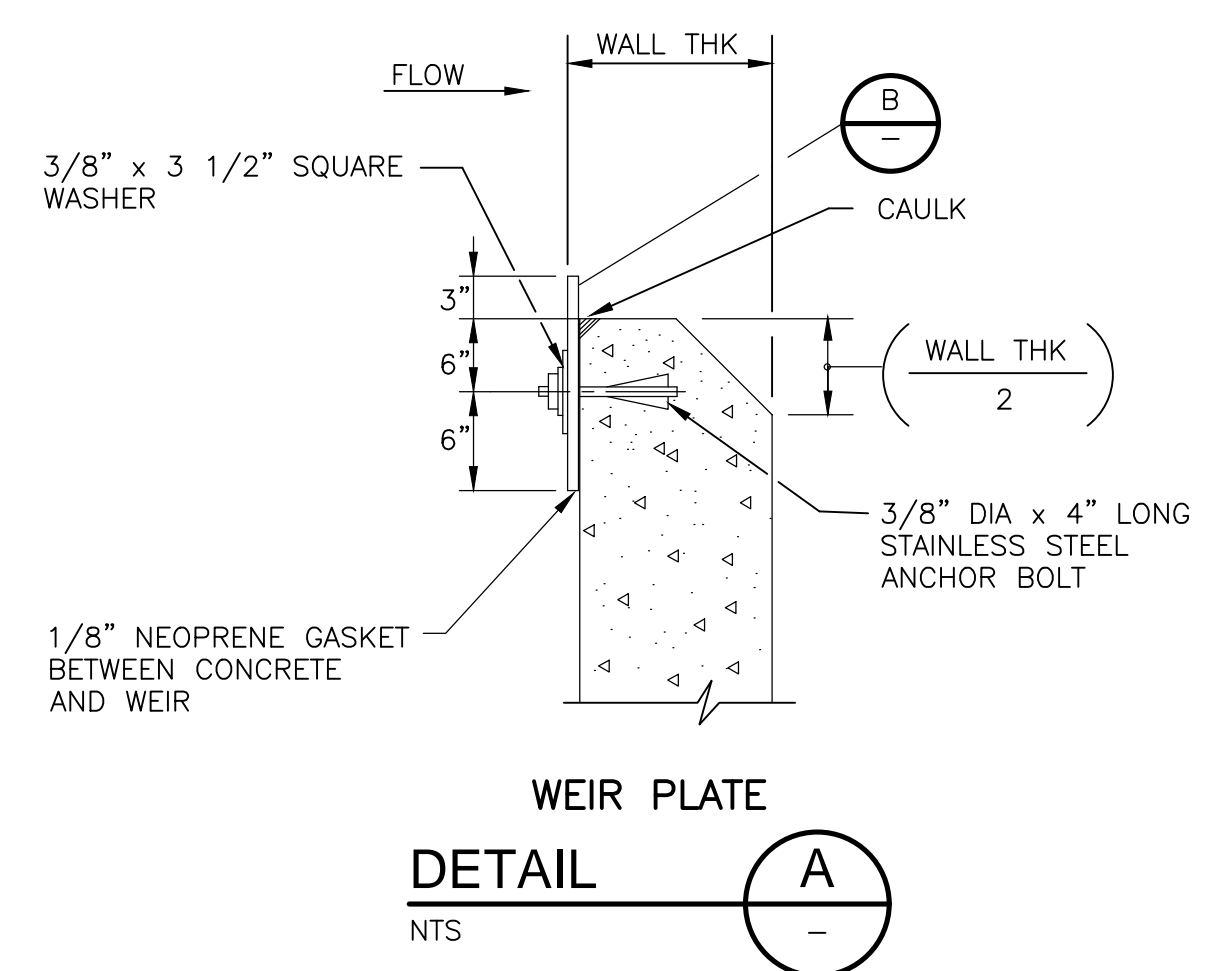
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SECTION 1
 1/4" = 1'-0"

NOTES:

1. CONTRACTOR SHALL COORDINATE SIZE AND DIMENSIONS OF BIOTRICKLING FILTER EXPANSION JOINT, ISOLATION DAMPER AND FLEX FRP CONNECTOR WITH BIOTRICKLING FILTER SUPPLIER.
2. COORDINATE SIZE OF BACKDRAFT DAMPER AND EXPANSION COUPLING WITH BLOWER DISCHARGE AND DEGASIFICATION TOWER CONNECTION. PROVIDE FRP REDUCER AS NECESSARY.
3. ALL ABOVE GRADE PIPING (UPSTREAM OF THE DEGASIFICATION TOWER AND BYPASS) SHALL BE STAINLESS STEEL.
4. LADDER AND PLATFORMS TO BE PROVIDED BY SCRUBBER AND DEGASIFIER MANUFACTURER.
5. SOME PIPE AND EQUIPMENT SHOWN IN SECTION MAY BE SHOWN IN A DIFFERENT ORIENTATION IN THE PLAN VIEW. REFER TO PLAN VIEW AND SHOP DRAWING SUBMITTAL FOR CORRECT ORIENTATION.
6. THE BASIS OF DESIGN FOR THE BTF SYSTEM IS BIOAIR, INC. A TEMPORARY RECIRCULATION PUMP WILL BE REQUIRED FOR THIS SYSTEM.
7. PROVIDE 1" SCH 80 PVC SAMPLE PIPE FROM 36" EXHAUST STACK TO BTF WATER PANEL W/ 1" BALL VALVE FOR BTF NO. 1 AND 2.



REV. NO.	DATE	DRWN	CHKD	REMARKS

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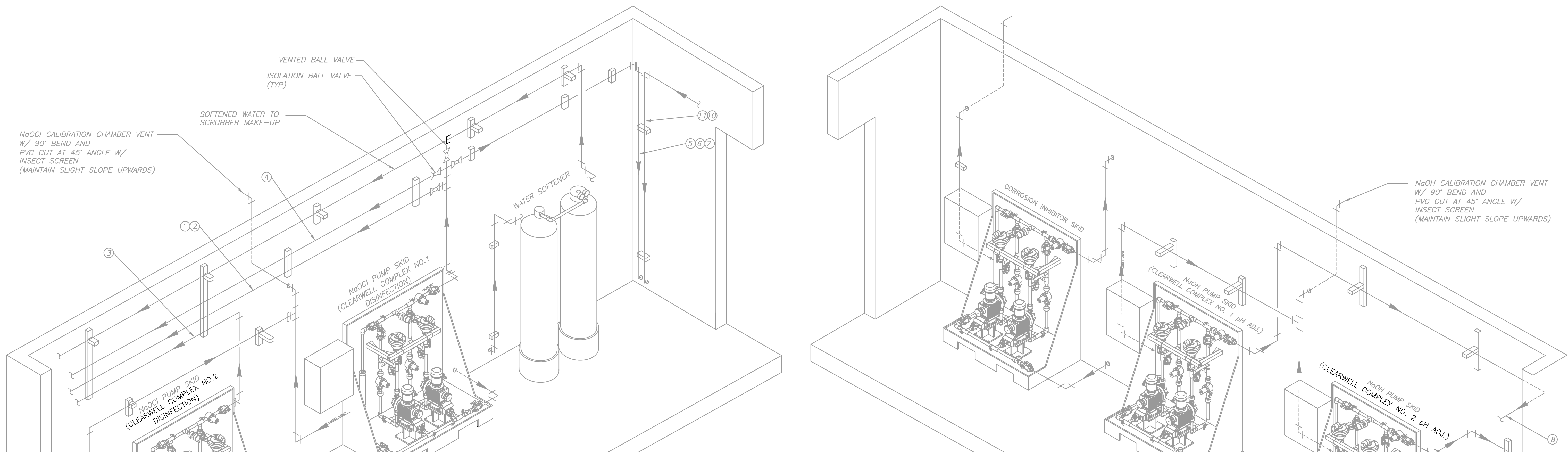


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 PHASE 1 (6 TO 9 MGD) EXPANSION

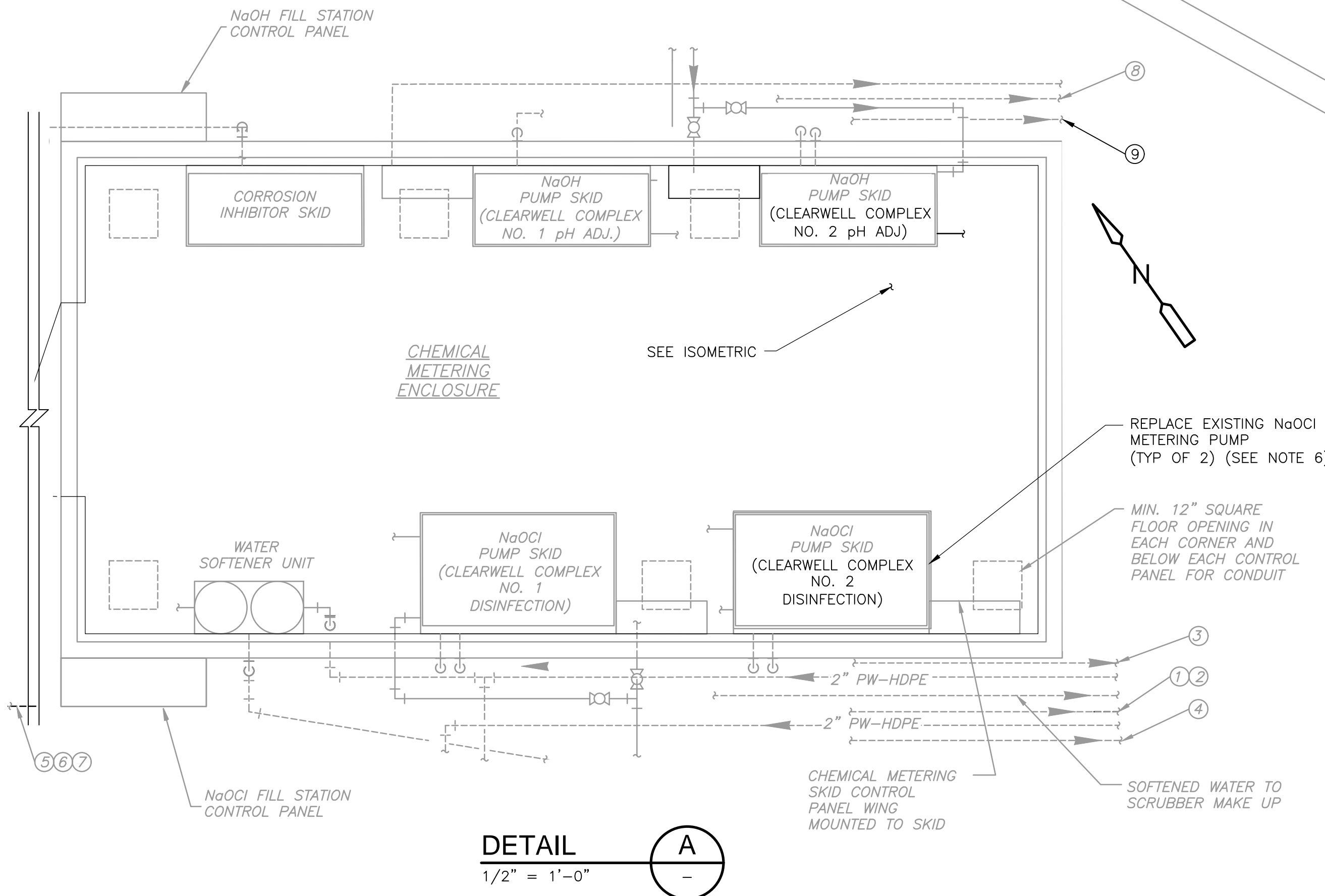
CLEARWELL COMPLEX NO. 2
SECTION AND DETAILS
M-8

PROJECT NO. 6334-232860
 FILE NAME: M008CWSC.DWG
 SHEET NO. M-8
 ISSUED FOR BID

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CHEMICAL METERING ENCLOSURE ISOMETRIC
 NTS
 (PIPING SHOWN FOR SCHEMATIC PURPOSES ONLY)



DETAIL A
 1/2" = 1'-0"

DOUBLE CONTAINMENT PIPING SCHEDULE

LINE NO.	CHEMICAL	CHEMICAL INJECTION POINT	CARRIER PIPE		CONTAINMENT PIPE	
			SIZE (IN)	MATERIAL	SIZE (IN)	MATERIAL
1	SODIUM HYPOCHLORITE	PRIMARY DISINFECTION - CLEARWELL COMPLEX NO. 1 CHAMBER 1	1	PVC	3	PVC
2	SODIUM HYPOCHLORITE	PRIMARY DISINFECTION - CLEARWELL COMPLEX NO. 1 CHAMBER 2	1	PVC	3	PVC
3	SODIUM HYPOCHLORITE	PRIMARY DISINFECTION - CLEARWELL COMPLEX NO. 2	1	PVC	3	PVC
4	SODIUM HYPOCHLORITE	EMERGENCY DISINFECTION AND GST CLEANING - 1.5-MG GST	1	PVC	3	PVC
5	SODIUM HYPOCHLORITE	EMERGENCY DISINFECTION AND GST CLEANING - 0.5-MG GST	1	PVC	3	PVC
6	SODIUM HYPOCHLORITE	EMERGENCY DISINFECTION - HSP SUCTION HEADER FROM 1.5-MG GST	1	PVC	3	PVC
7	SODIUM HYPOCHLORITE	EMERGENCY DISINFECTION - HSP SUCTION HEADER FROM 0.5-MG GST	1	PVC	3	PVC
8	SODIUM HYDROXIDE	pH ADJUSTMENT - CLEARWELL COMPLEX NO. 1 OVERFLOW	1	CPVC	3	CPVC
9	SODIUM HYDROXIDE	pH ADJUSTMENT - CLEARWELL COMPLEX NO. 2 OVERFLOW	1	CPVC	3	CPVC

- NOTES:
- FIELD ADJUST PIPING AS NECESSARY.
 - ALL CHEMICAL PIPES TO BE DOUBLE CONTAINED AS SHOWN IN TABLE.
 - ALL PIPES SHALL BE PROPERLY MARKED ACCORDING TO CHEMICAL AND DIRECTION.
 - VAPOR RELIEF VALVE SHALL BE PLACED AT ALL HIGH POINTS IN CHEMICAL LINES.
 - SLOPE CHEMICAL PIPING AS RECOMMENDED BY MANUFACTURER TOWARDS LEAK DETECTION STATION.
 - COORDINATE SUCTION AND DISCHARGE REDUCERS REQUIRED FOR NEW METERING PUMPS.

REV. NO.	DATE	DRWN	CHKD	REMARKS

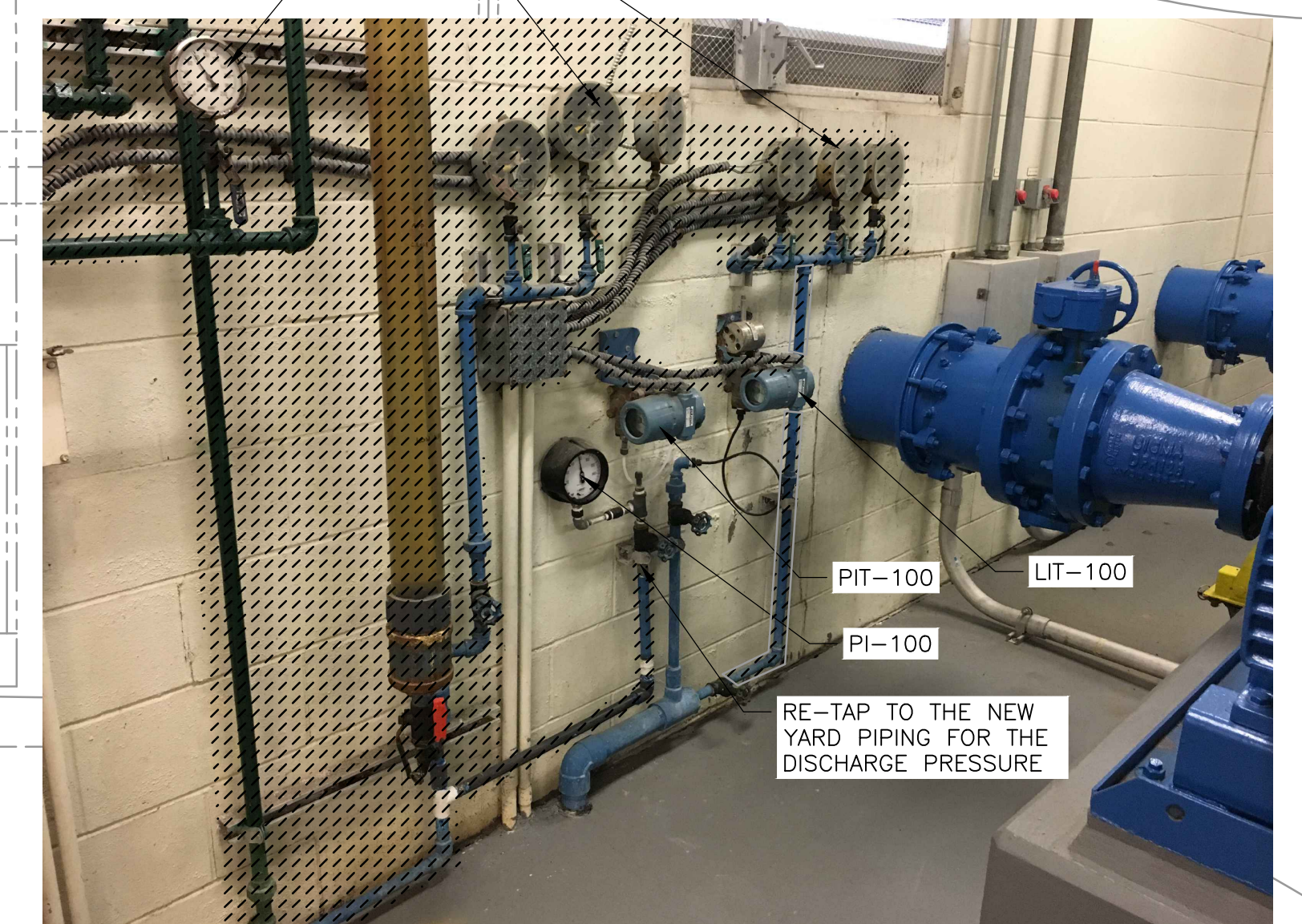
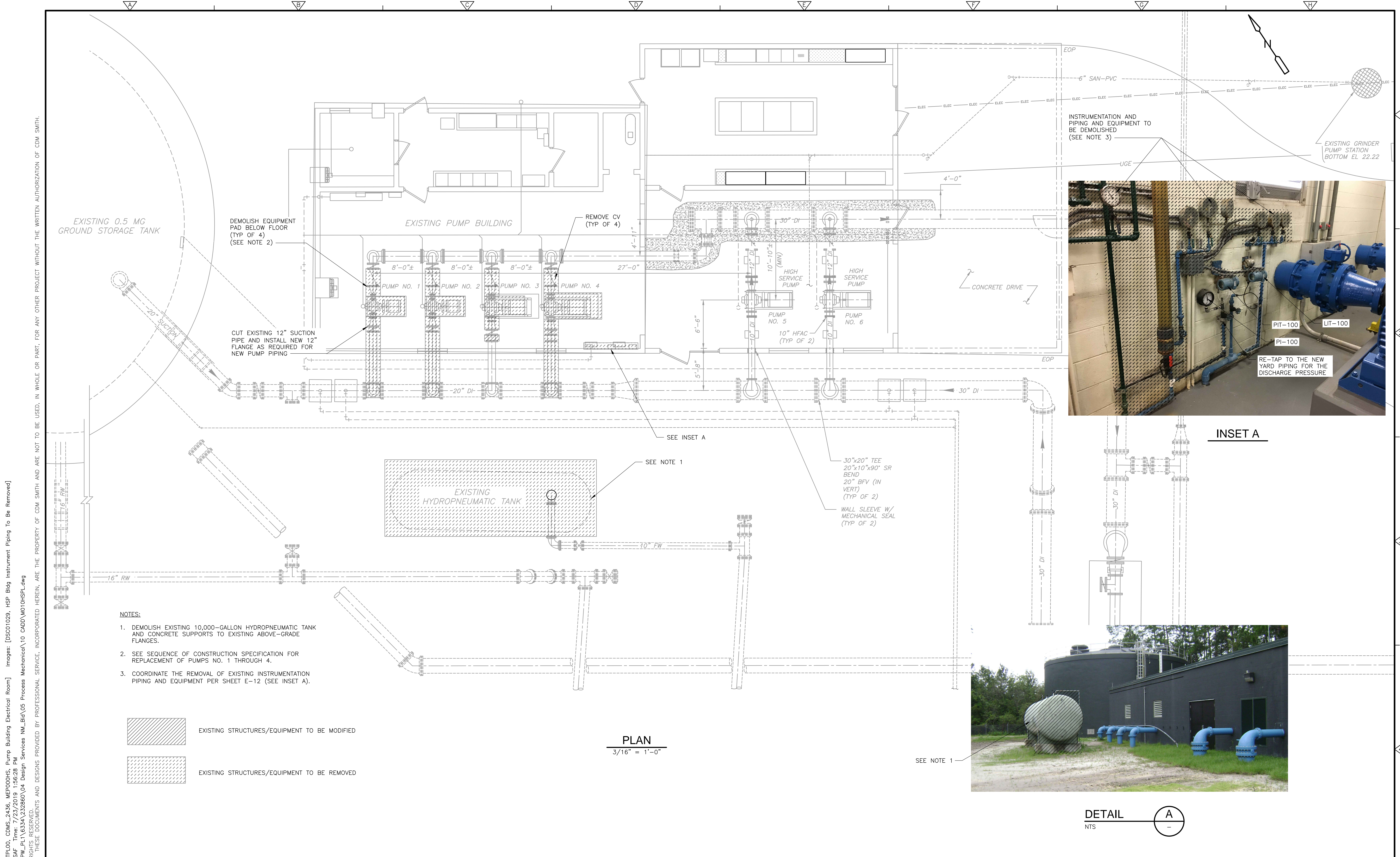
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 APPROVED BY: I. POLEMATIDIS
 DATE: JULY 2019

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 4651 Salisbury Road, Suite 420
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 FL OCA No. EB-000020

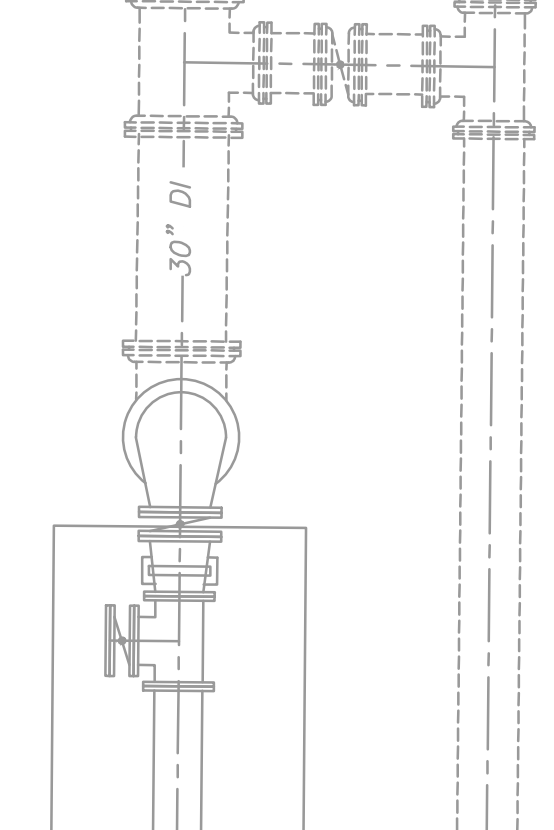
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 ST. JOHNS COUNTY, FLORIDA
 NORTHWEST WTP
 PHASE 1 (6 TO 9 MGD) EXPANSION

CHEMICAL METERING ENCLOSURE ISOMETRIC DETAIL

PROJECT NO. 6334-232860
 FILE NAME: M009MSDT
 SHEET NO. M-9
 ISSUED FOR BID



INSET A



DETAIL A

- NOTES:**
1. DEMOLISH EXISTING 10,000-GALLON HYDROPNEUMATIC TANK AND CONCRETE SUPPORTS TO EXISTING ABOVE-GRADE FLANGES.
 2. SEE SEQUENCE OF CONSTRUCTION SPECIFICATION FOR REPLACEMENT OF PUMPS NO. 1 THROUGH 4.
 3. COORDINATE THE REMOVAL OF EXISTING INSTRUMENTATION PIPING AND EQUIPMENT PER SHEET E-12 (SEE INSET A).

EXISTING STRUCTURES/EQUIPMENT TO BE MODIFIED
 EXISTING STRUCTURES/EQUIPMENT TO BE REMOVED

PLAN
3/16" = 1'-0"

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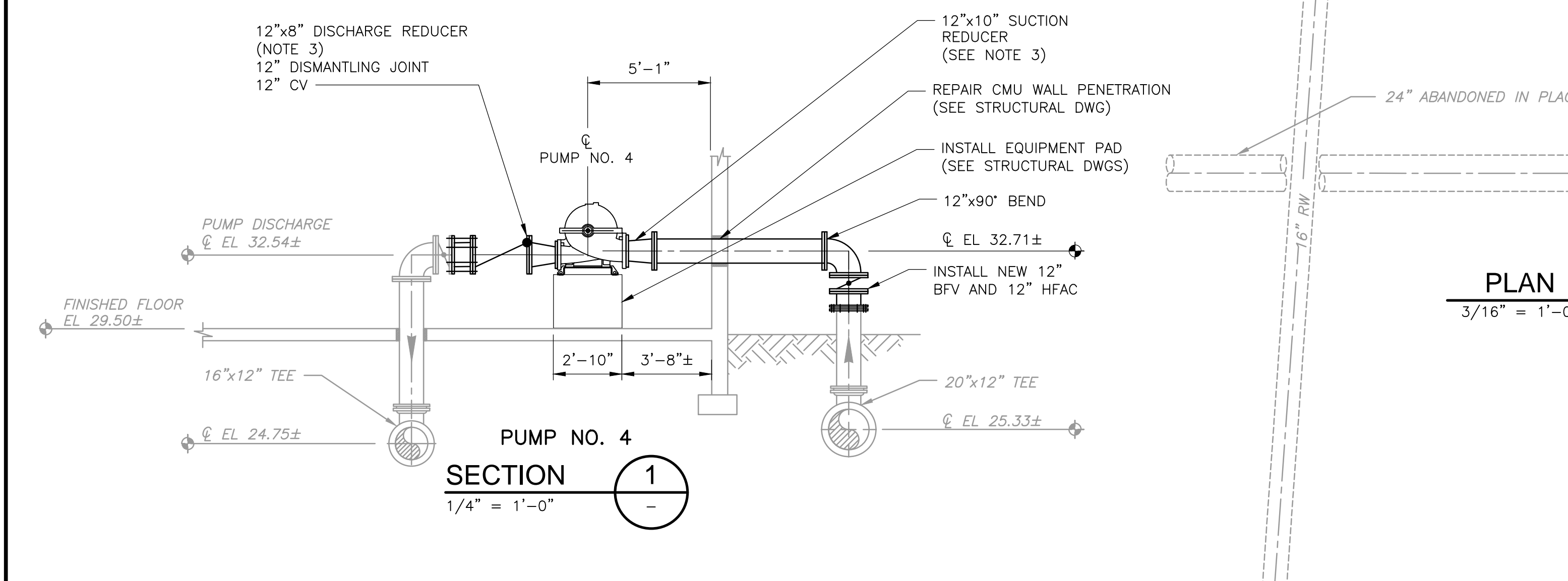
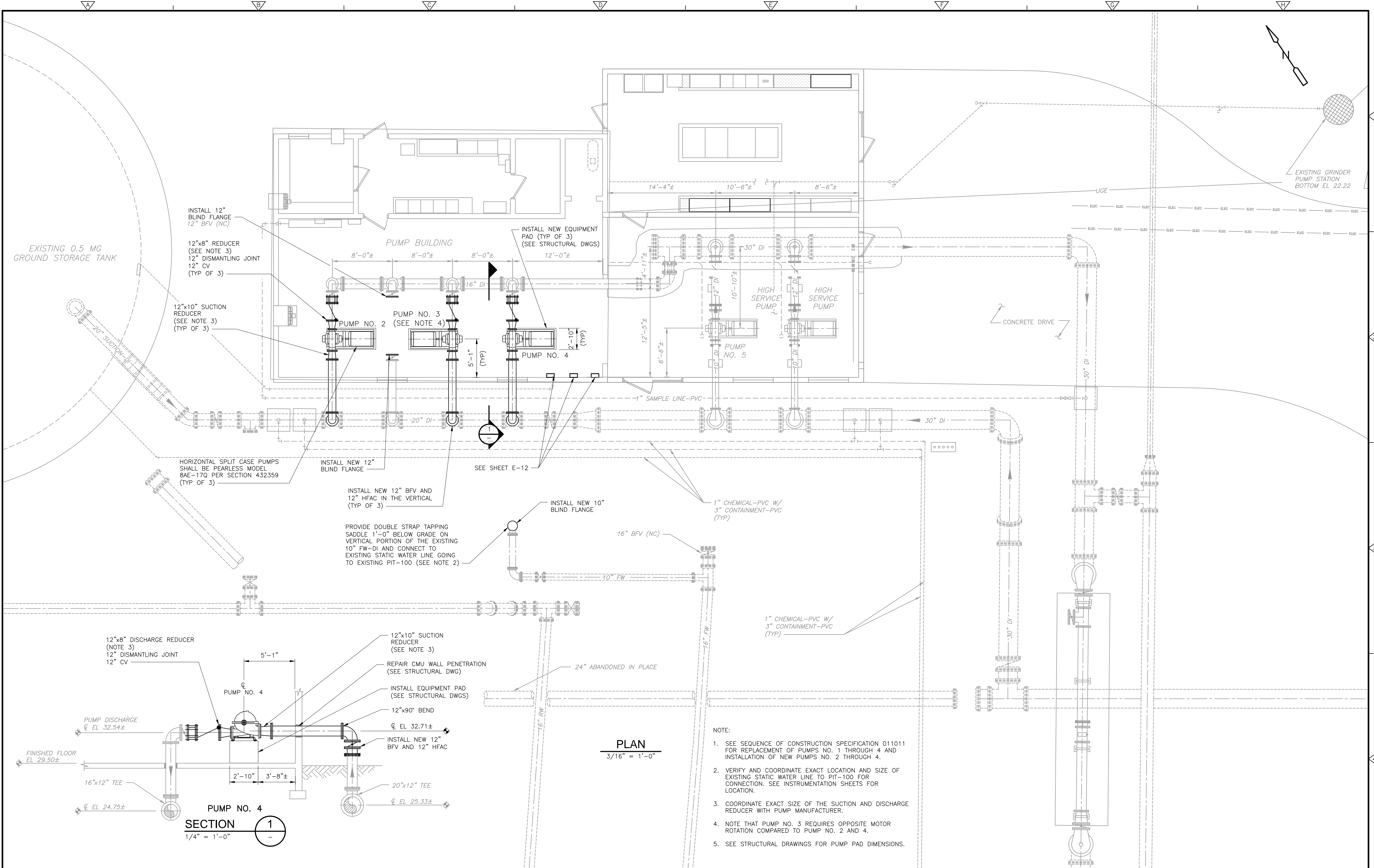
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 PHASE 1 (6 TO 9 MGD) EXPANSION

**EXISTING TANK AND HIGH SERVICE PUMP
 DEMOLITION AND MODIFICATION PLANS**

PROJECT NO.	6334-232860
FILE NAME:	M010HSP.dwg
SHEET NO.	M-10

XREFS: [CDMS-2436_WWP000HS_MEPRO00HS_RCEPLANT_RGSTPL00_Pump Building Electrical Room] Images: □
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- NOTE:**
- SEE SEQUENCE OF CONSTRUCTION SPECIFICATION 011011 FOR REPLACEMENT OF PUMPS NO. 1 THROUGH 4 AND INSTALLATION OF NEW PUMPS NO. 2 THROUGH 4.
 - VERIFY AND COORDINATE EXACT LOCATION AND SIZE OF EXISTING STATIC WATER LINE TO PIT-100 FOR CONNECTION. SEE INSTRUMENTATION SHEETS FOR LOCATION.
 - COORDINATE EXACT SIZE OF THE SUCTION AND DISCHARGE REDUCER WITH PUMP MANUFACTURER.
 - NOTE THAT PUMP NO. 3 REQUIRES OPPOSITE MOTOR ROTATION COMPARED TO PUMP NO. 2 AND 4.
 - SEE STRUCTURAL DRAWINGS FOR PUMP PAD DIMENSIONS.

REV. NO.	DATE	DRWN	CHKD	REMARKS

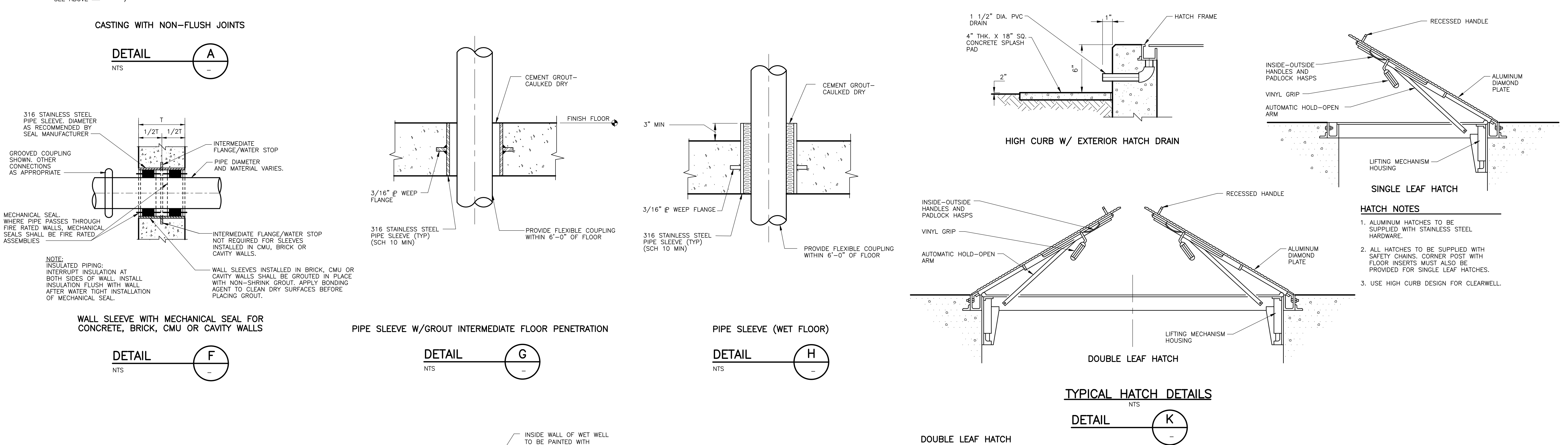
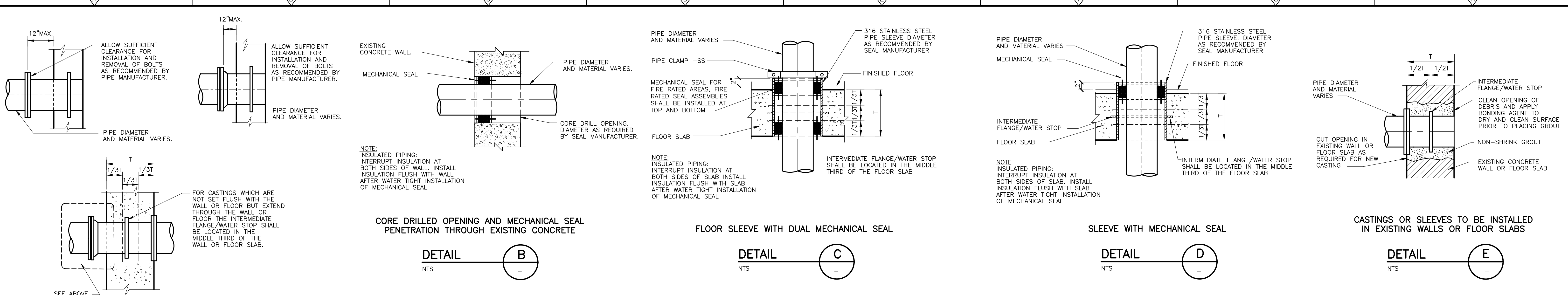
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 APPROVED BY: I. POLEMATIDIS
 DATE: JULY 2019



ST. JOHNS COUNTY UTILITY DEPARTMENT
 ST. JOHNS COUNTY, FLORIDA
 NORTHWEST WTP
 PHASE 1 (6 TO 9 MGD) EXPANSION

HIGH SERVICE PUMP STATION
 MODIFICATIONS PLAN AND SECTION

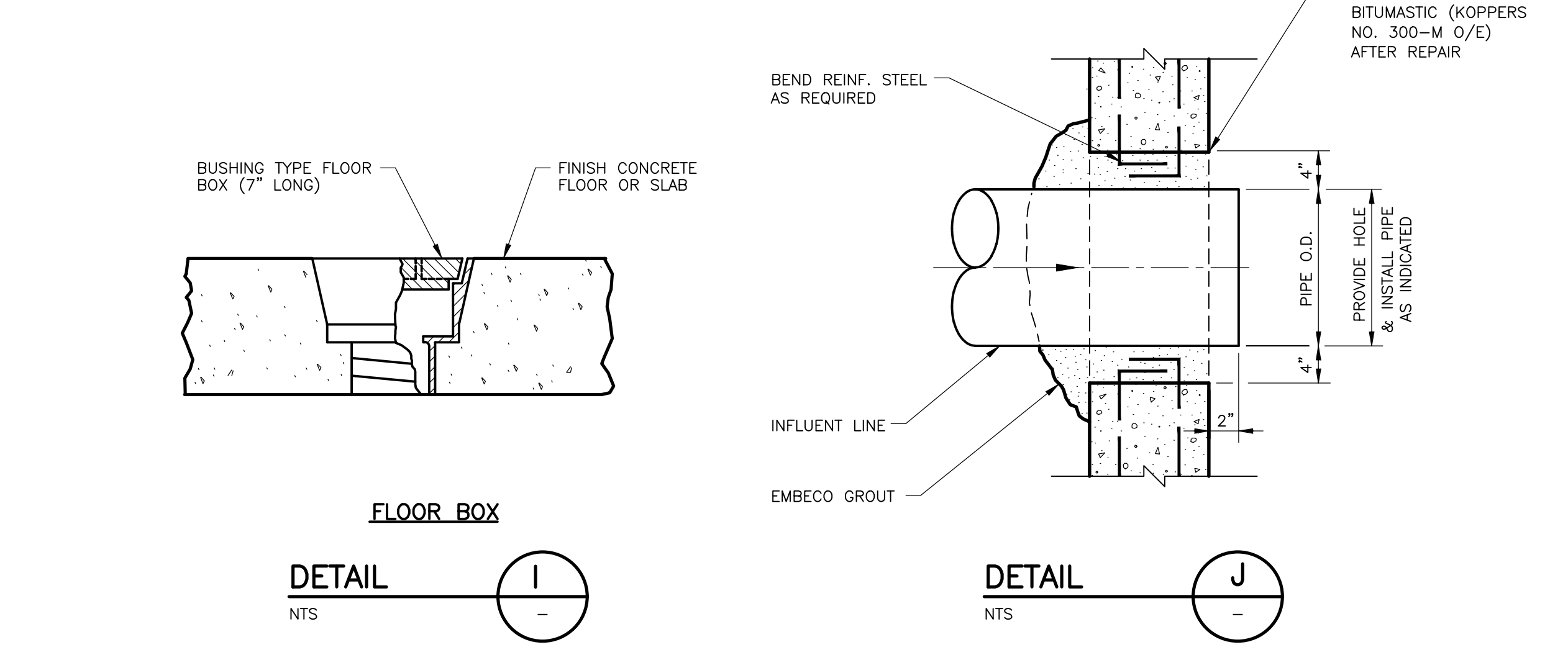
PROJECT NO. 6334-232860
 FILE NAME: M011HSPL.DWG
 SHEET NO. M-11
 ISSUED FOR BID



HATCH SCHEDULE

NO.	LOCATION	SIZE	LEAF	DRAIN	REMARKS
H-CW-5	CLEARWELL NO. 2	30" SQ.	SINGLE	YES	MOUNTED IN 6" HIGH CURB, CHANNEL FRAMED HATCH BUILT INTO CURB W/ GUTTER & DRAIN
H-CW-6	CLEARWELL NO. 2	30" SQ.	SINGLE	YES	MOUNTED IN 6" HIGH CURB, CHANNEL FRAMED HATCH BUILT INTO CURB W/ GUTTER & DRAIN
H-CW-7	CLEARWELL NO. 2	30" SQ.	SINGLE	YES	MOUNTED IN 6" HIGH CURB, CHANNEL FRAMED HATCH BUILT INTO CURB W/ GUTTER & DRAIN
H-CW-8	CLEARWELL NO. 2	30" SQ.	SINGLE	YES	MOUNTED IN 6" HIGH CURB, CHANNEL FRAMED HATCH BUILT INTO CURB W/ GUTTER & DRAIN

TYPICAL HATCH DETAILS AND SCHEDULE
NTS
NOTE: ALL CLEARWELL HATCHES MUST BE INSECT PROOF



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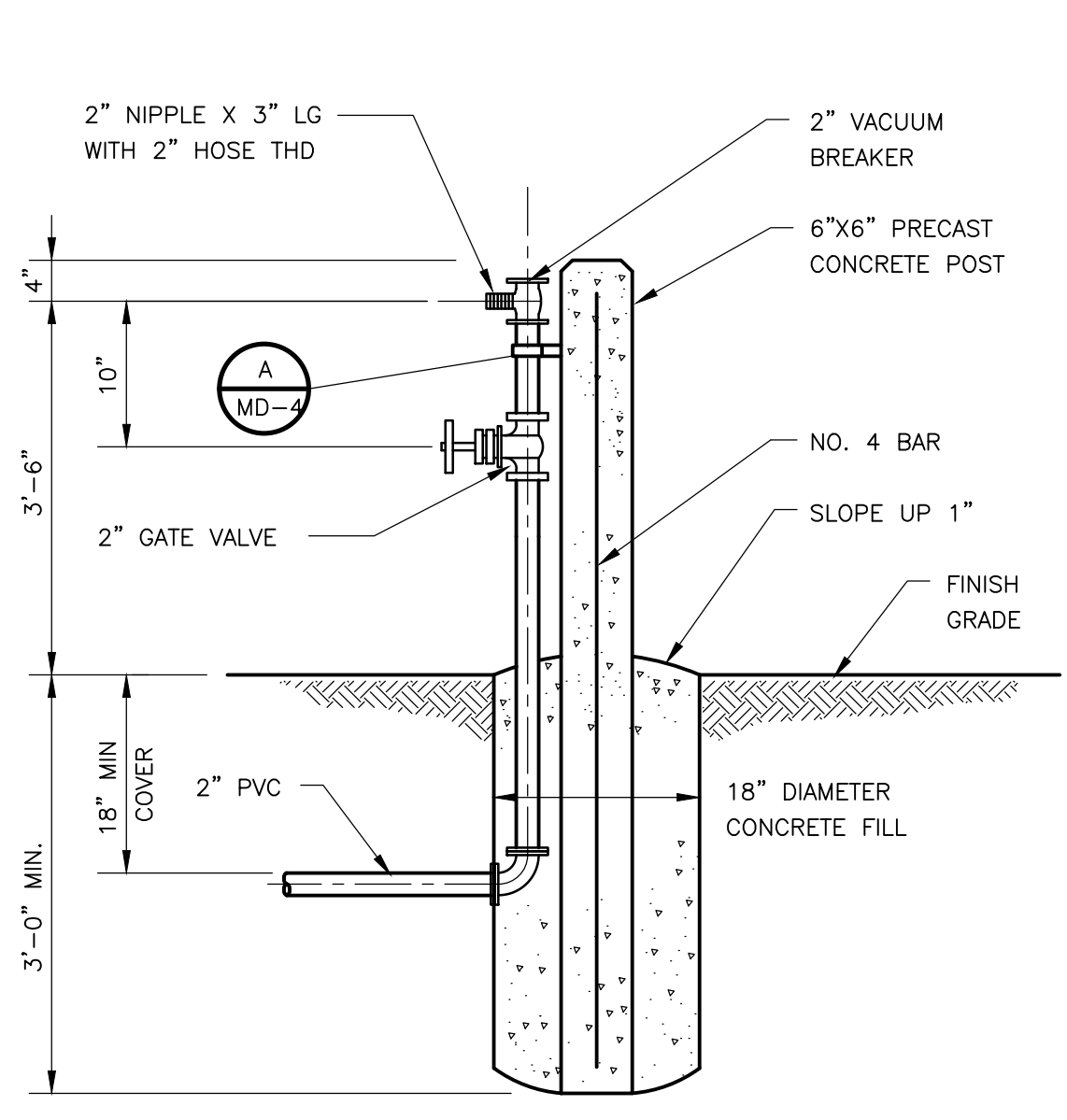
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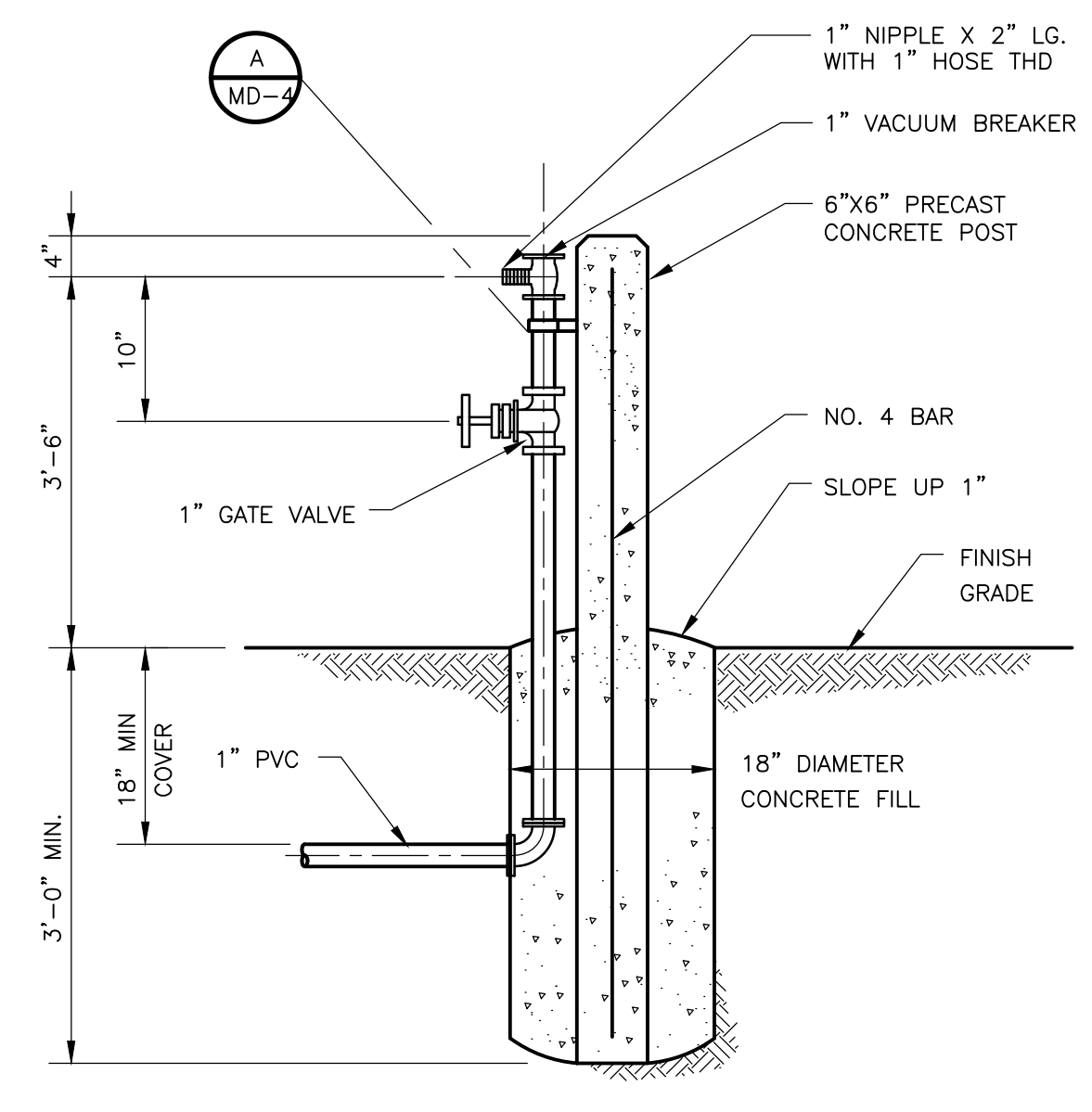
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 ST. JOHNS COUNTY, FLORIDA
 NORTHWEST WTP
 PHASE 1 (6 TO 9 MGD) EXPANSION

PROJECT NO. 6334-232860
 FILE NAME: MDO1MMDT
 SHEET NO. MD-1
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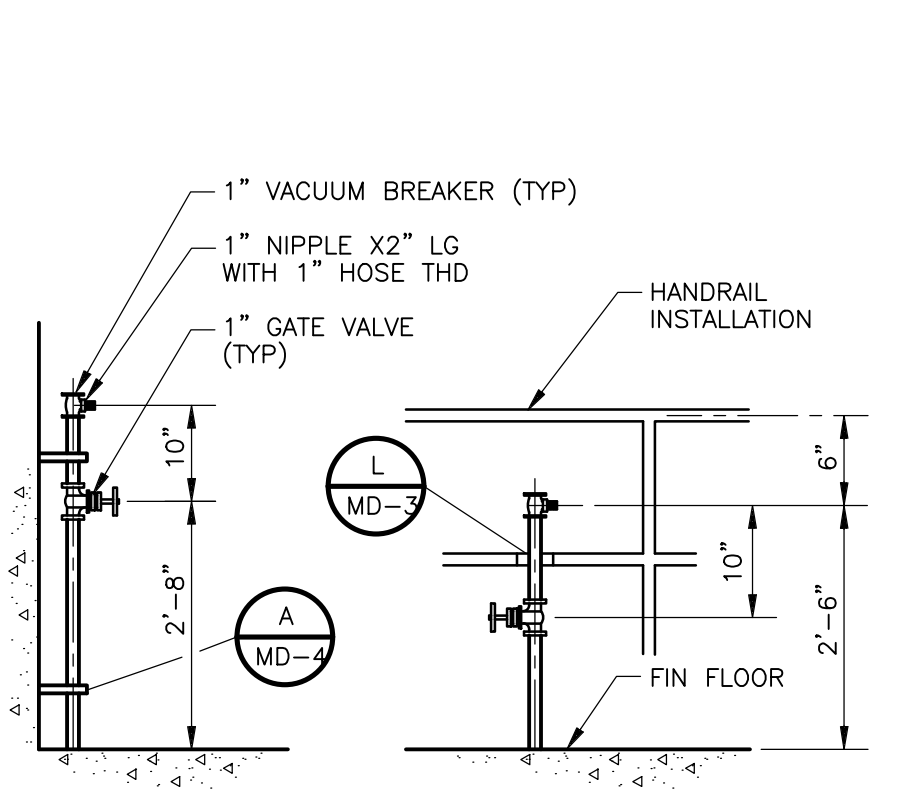
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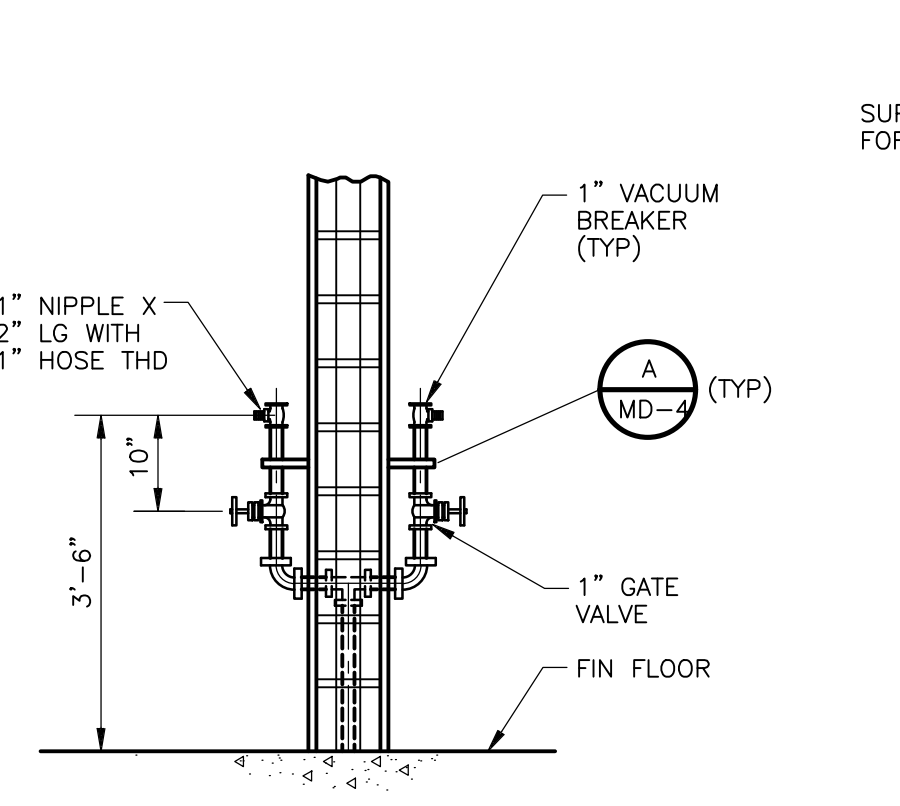
POST HYDRANT
DETAIL A
NTS



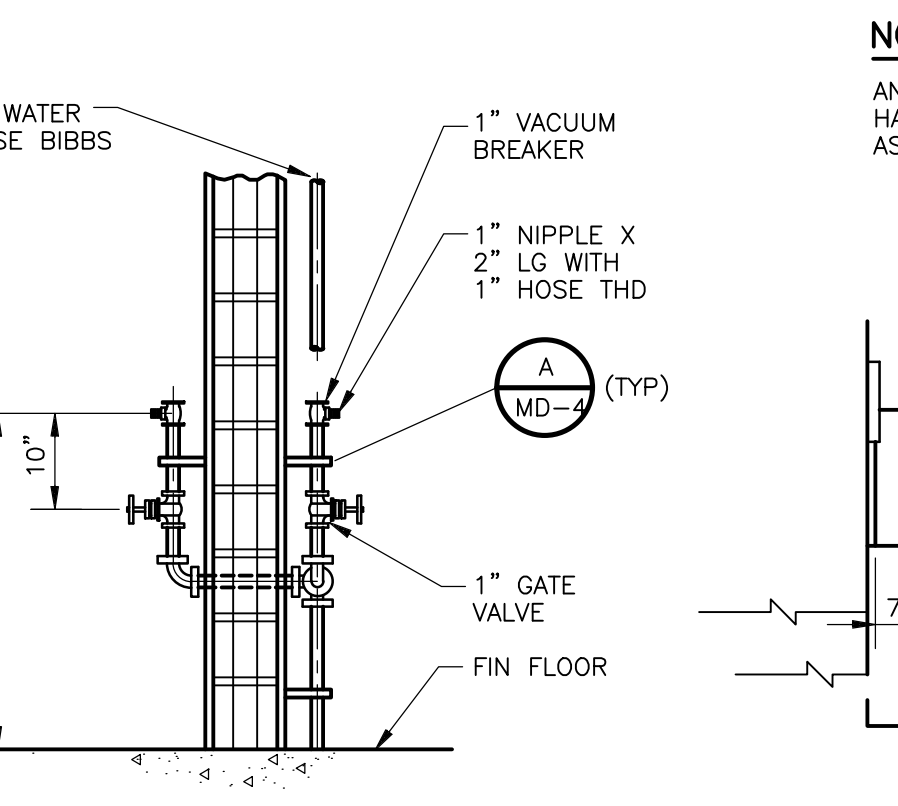
HOSE BIBB
DETAIL B
NTS



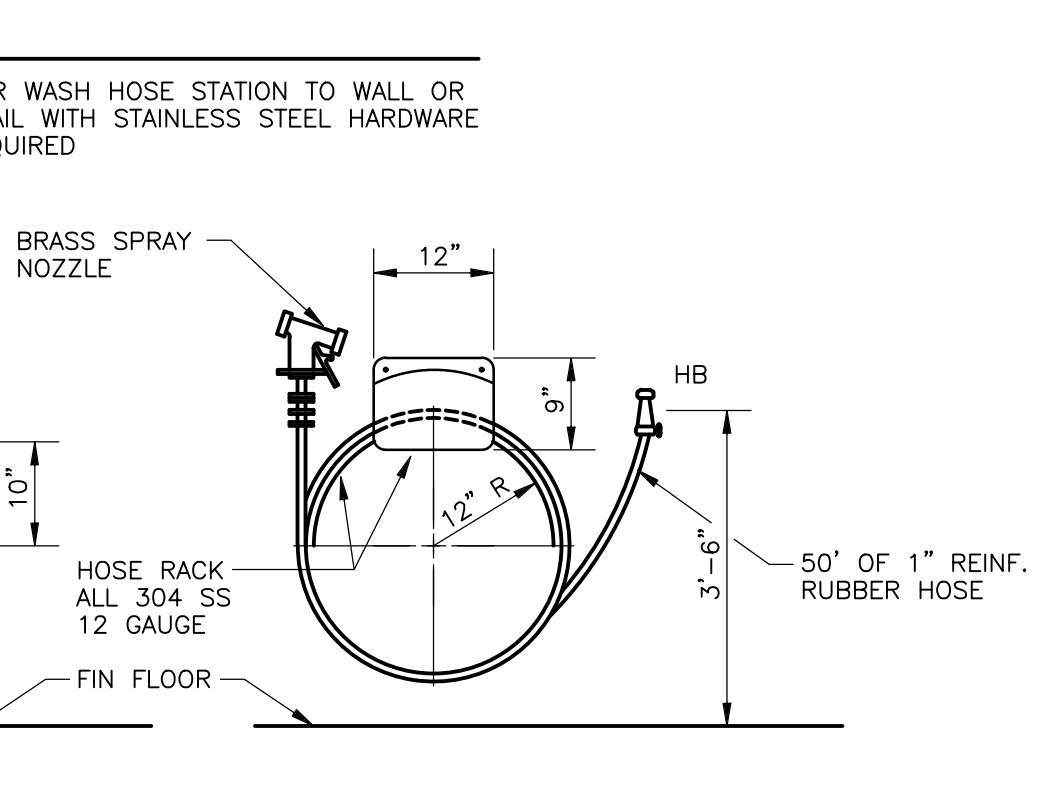
ELEVATION HOSE BIBB
DETAIL C
NTS



ELEVATION HOSE BIBB
DETAIL D
NTS

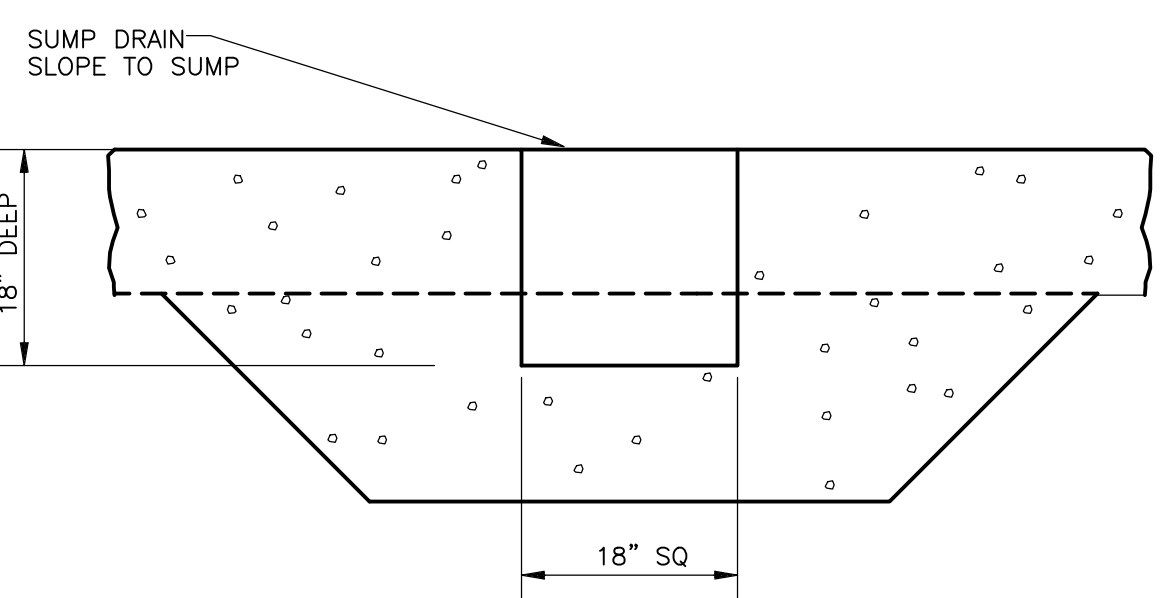


ELEVATION HOSE BIBB
DETAIL E
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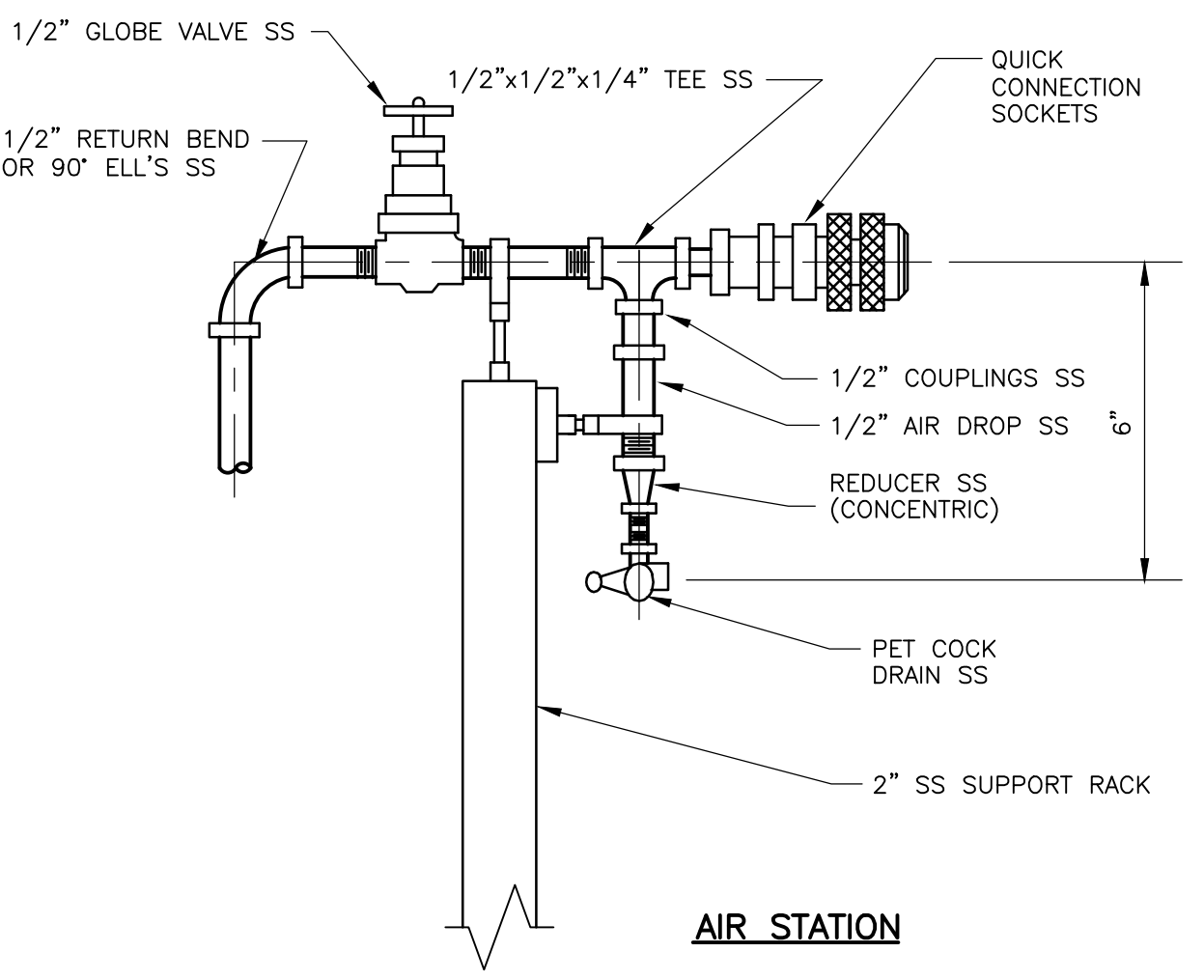


WASH HOSE STATION
DETAIL F
NTS

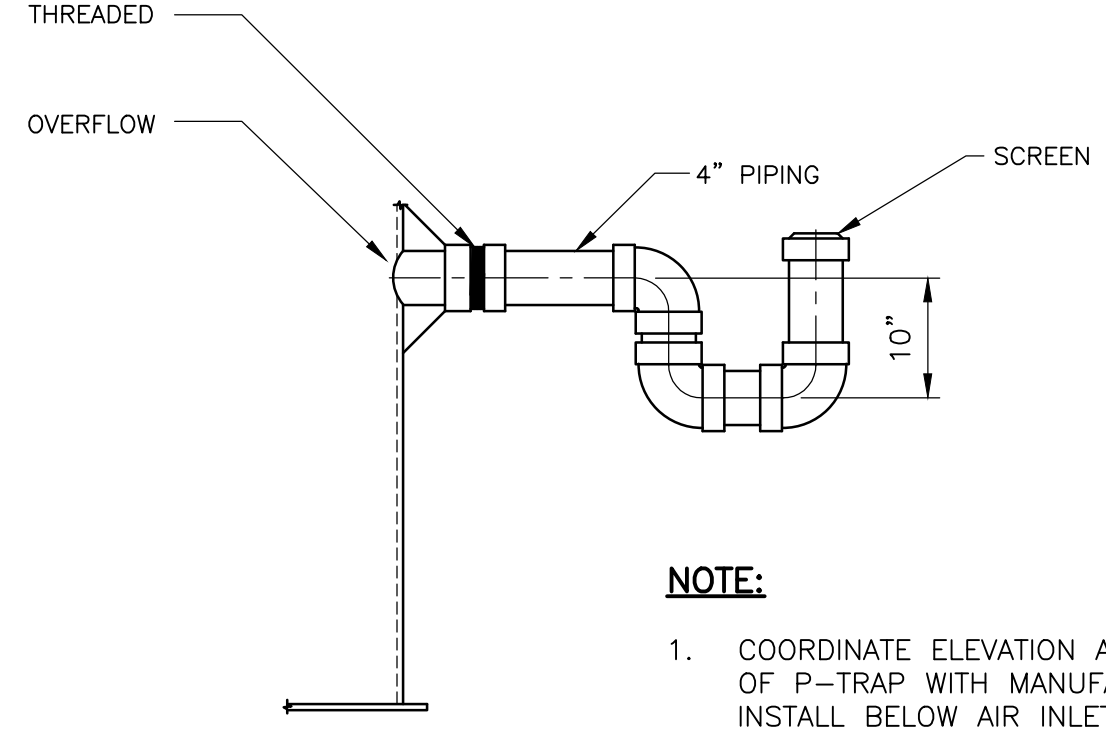
NOTE:
ANCHOR WASH HOSE STATION TO WALL OR HANDRAIL WITH STAINLESS STEEL HARDWARE AS REQUIRED



CLEARWELL SUMP-ELEVATION
DETAIL G
N.T.S.

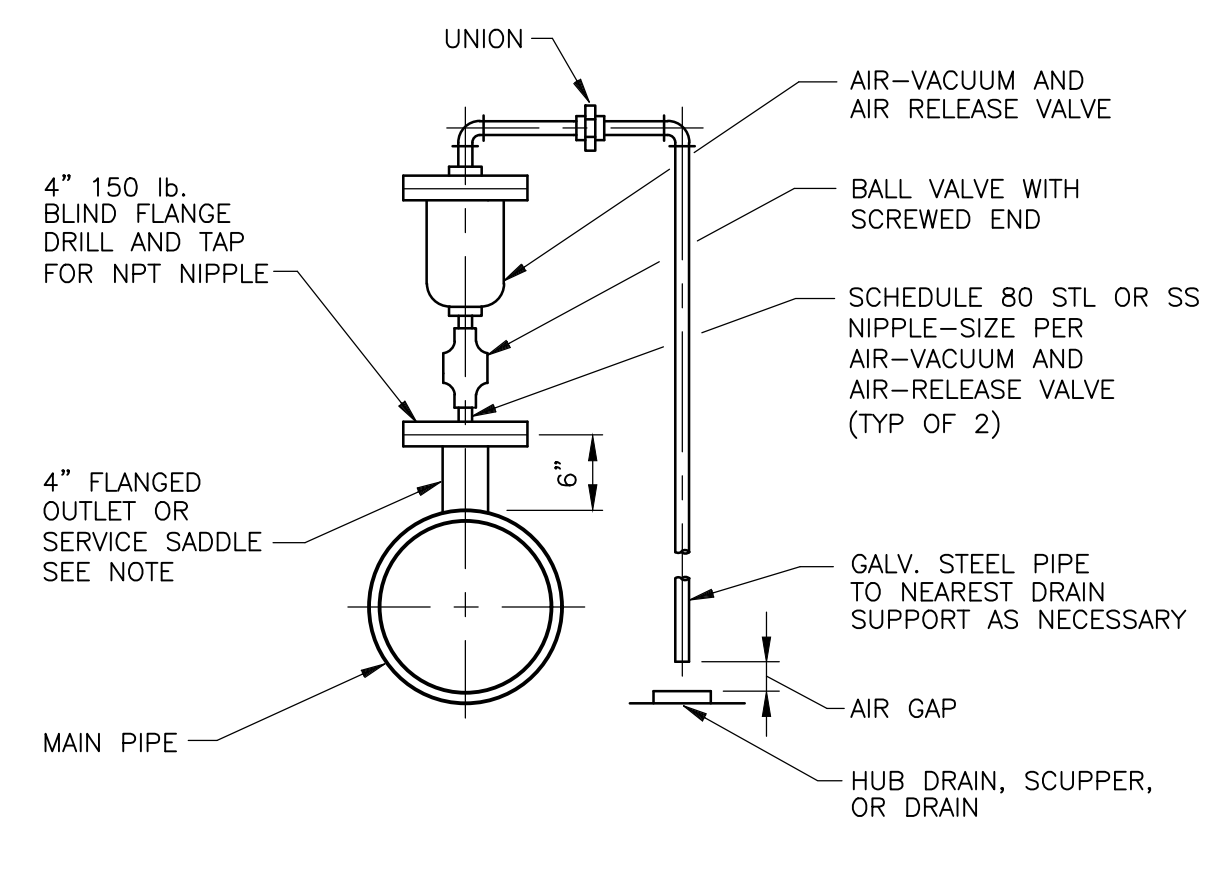


AIR STATION
DETAIL H
N.T.S.

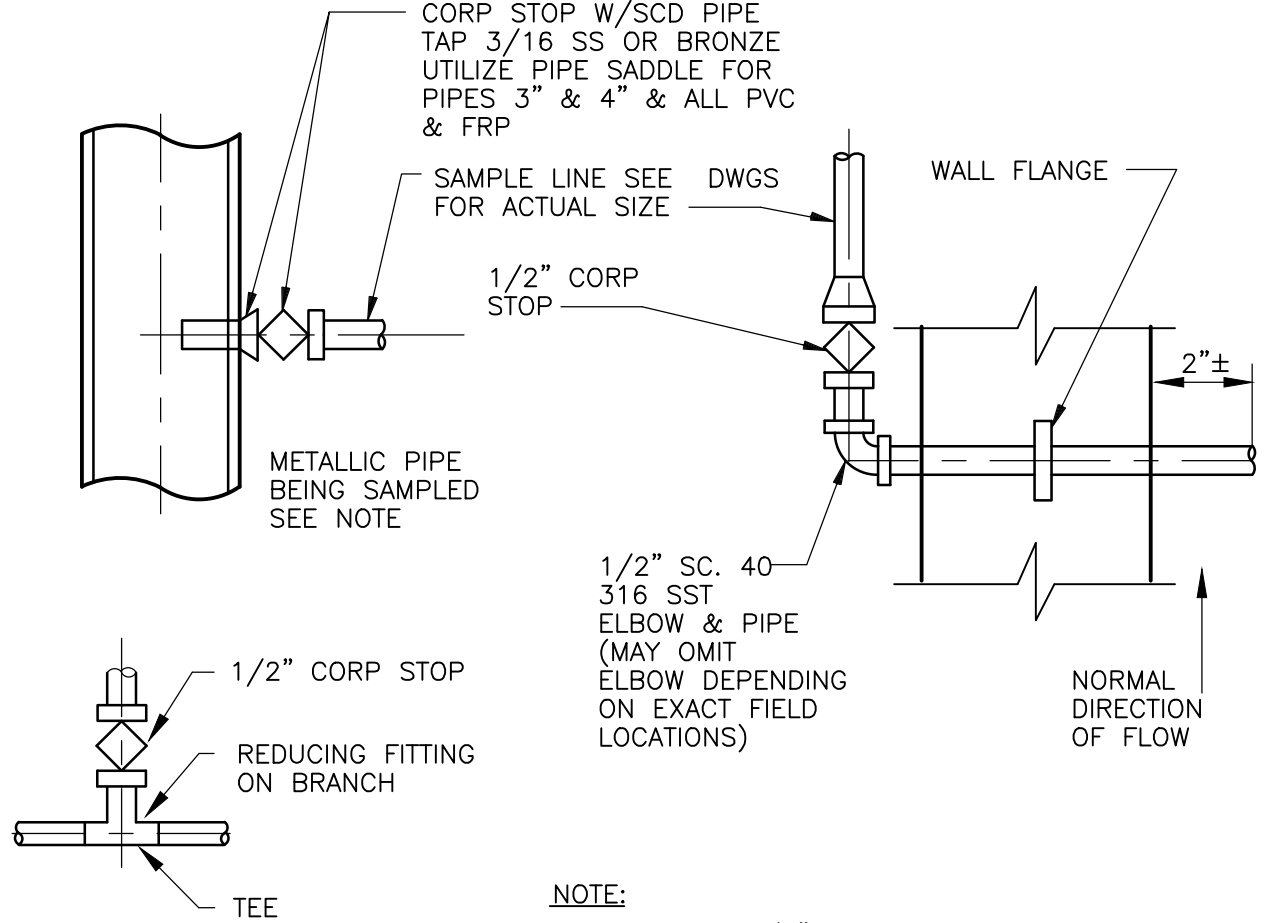


DEGASIFIER OVERFLOW TRAP DESIGN
DETAIL I
NTS

NOTE:
1. COORDINATE ELEVATION AND DEPTH OF P-TRAP WITH MANUFACTURERS. INSTALL BELOW AIR INLET AND ABOVE HIGH WATER LEVEL IN SUMP.

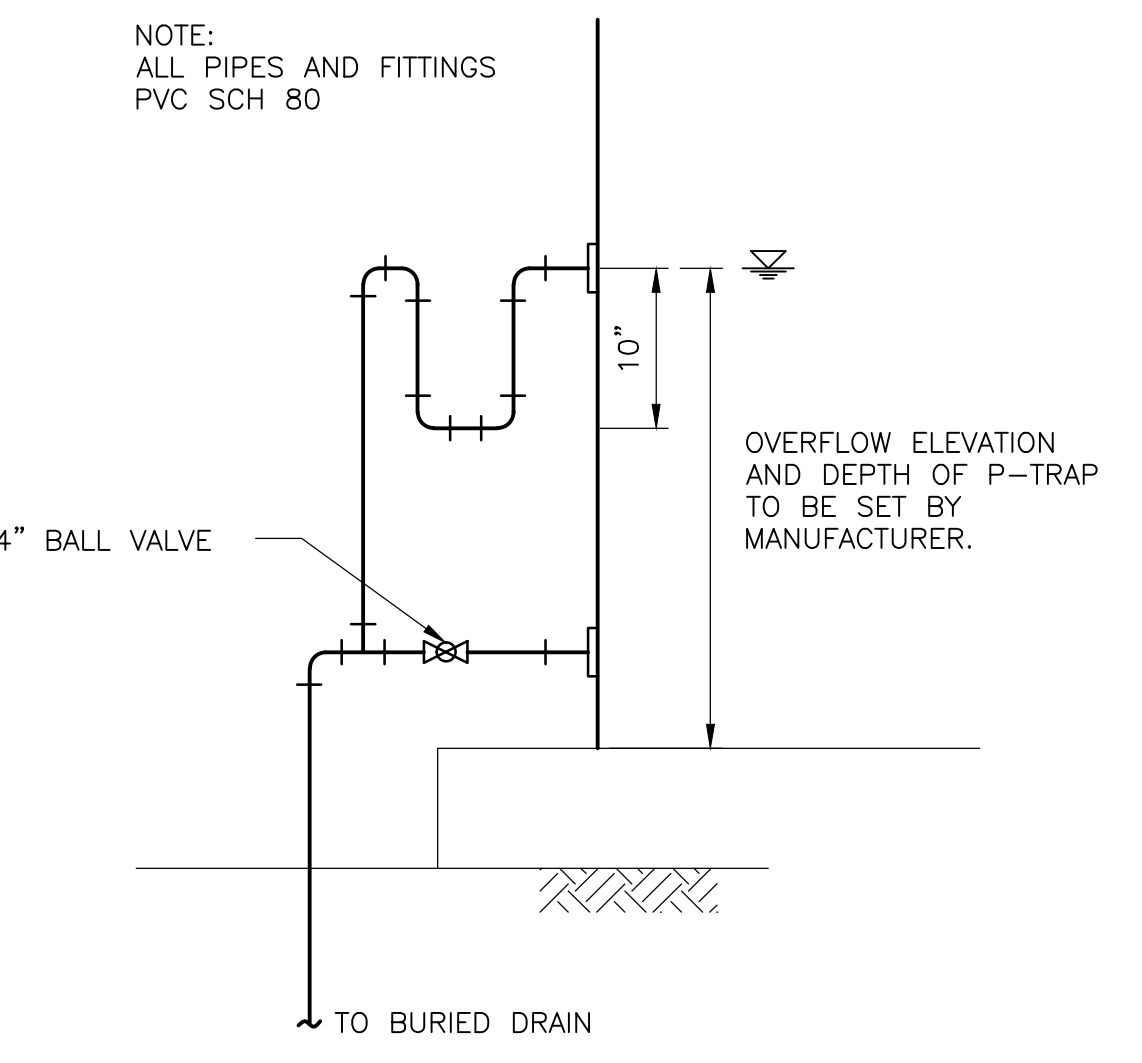


AIR RELEASE AND VACUUM
DETAIL J
NTS



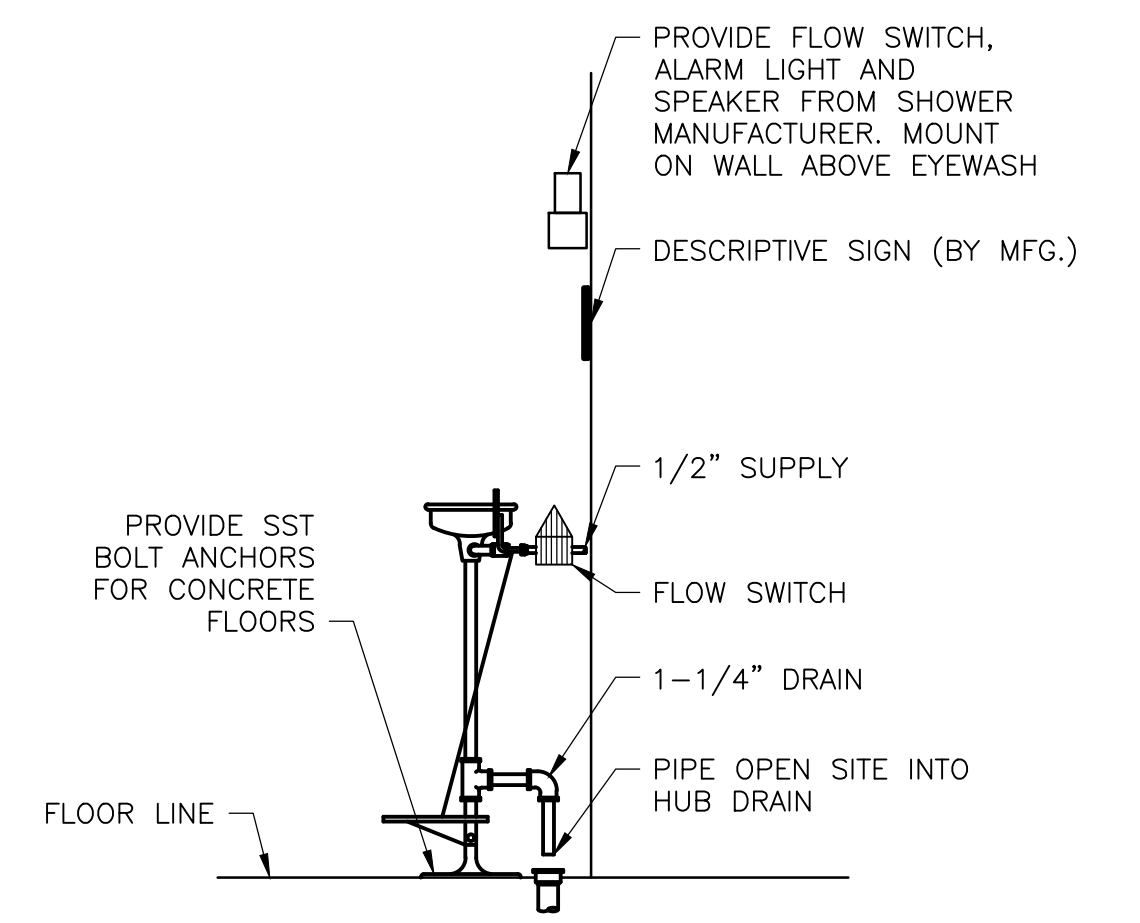
SAMPLE TAP CONNECTION
DETAIL K
NTS

NOTE:
FOR PIPES 2-1/2" OR LESS UTILIZE TEE IN MAIN LINES THUS:



BIOTRICKLING FILTER OVERFLOW AND DRAIN PIPING
DETAIL L
NTS

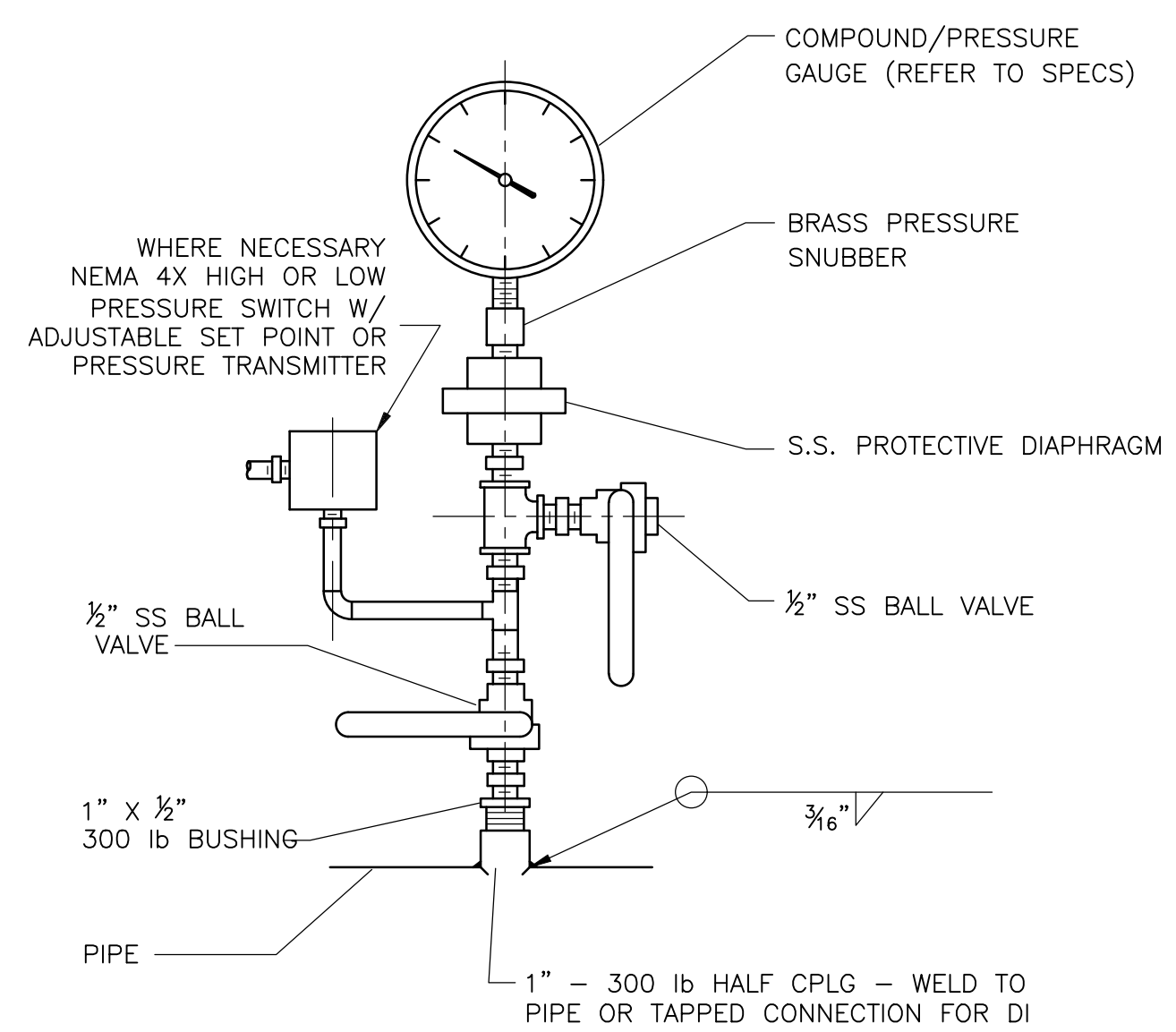
NOTE:
ALL PIPES AND FITTINGS PVC SCH 80



EMERGENCY EYEWASH
DETAIL M
NTS

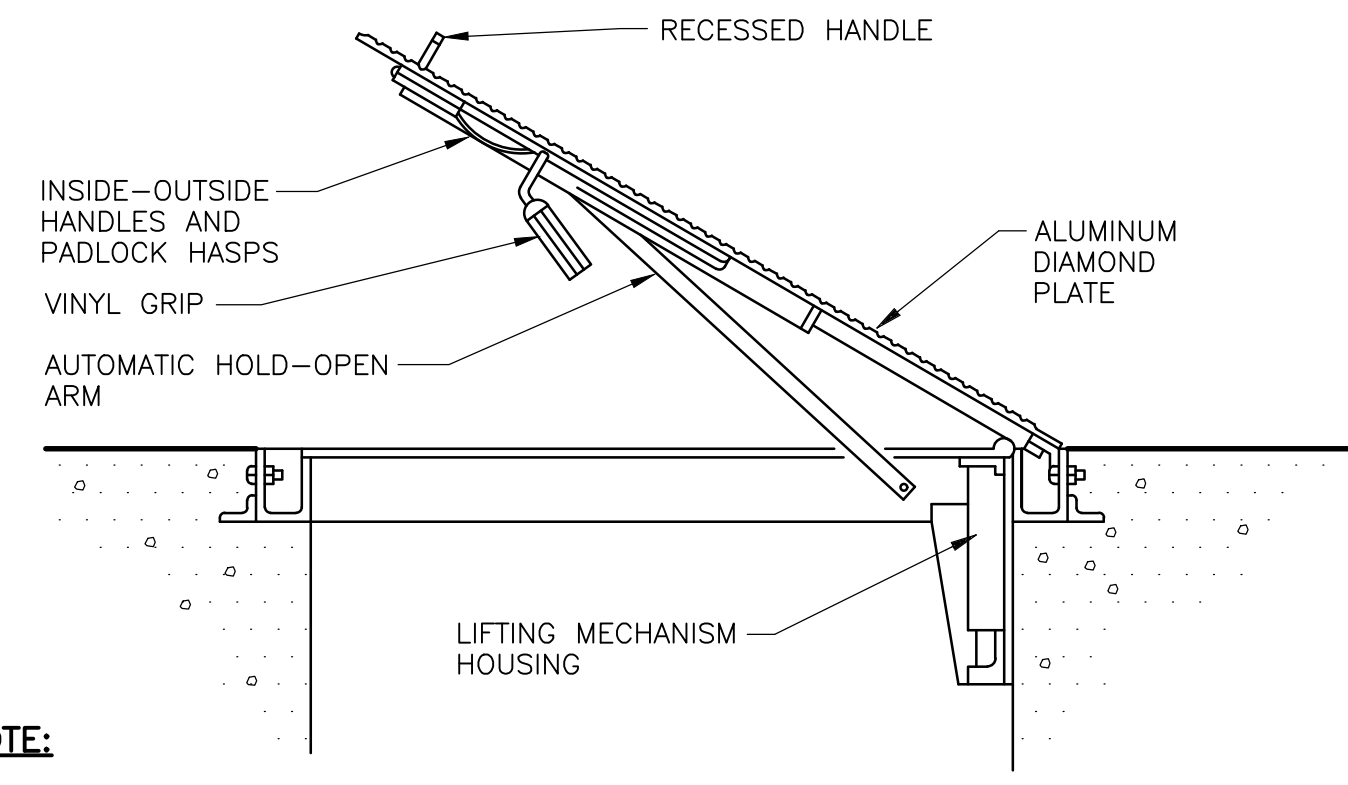
PROVIDE SST BOLT ANCHORS FOR CONCRETE FLOORS

PROVIDE FLOW SWITCH, ALARM LIGHT AND SPEAKER FROM SHOWER MANUFACTURER. MOUNT ON WALL ABOVE EYEWASH



PRESSURE GAUGE
DETAIL N
NTS

NOTE:
USE DIAPHRAGM SEALS AND VALVES FOR ALL CHEMICALS, SEWAGE, SLUDGE AND OTHER LIQUIDS CONTAINING SOLIDS



SINGLE LEAF HATCH
DETAIL O
NTS

NOTE:
1. THIS CONFIGURATION CAN BE USED AS SINGLE, DOUBLE, OR TRIPLE.

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SHEET CHK'D BY:	J. O'NEAL
CROSS CHK'D BY:	D. PRAH
APPROVED BY:	I. POLEMATIDIS
DATE:	JULY 2019

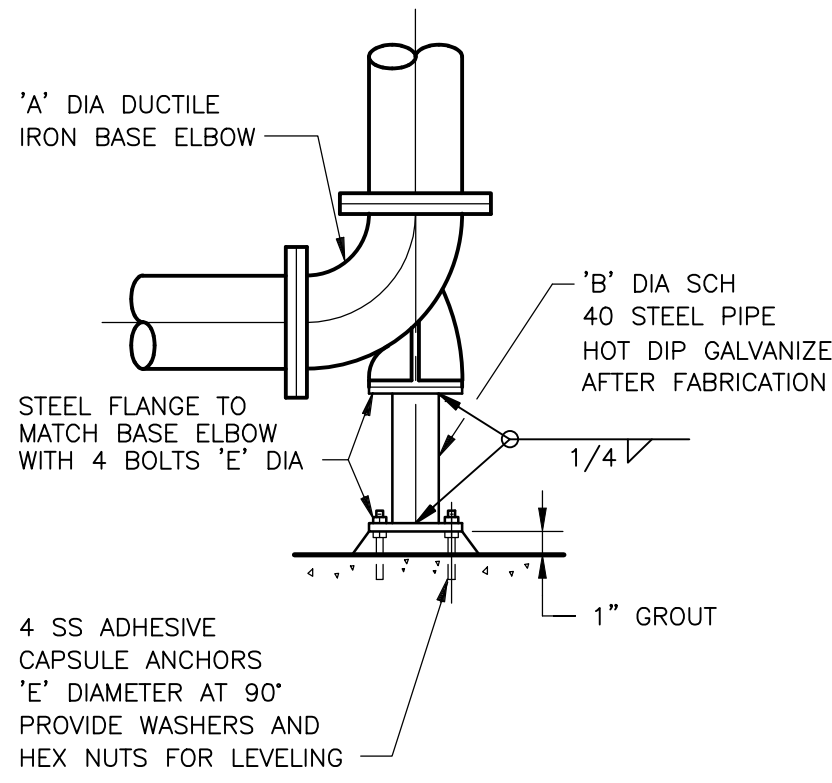
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Jacksonville, FL 32256
Tel: (904) 731-7109
FL CCA No. EB-0000020

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ST. JOHNS COUNTY, FLORIDA
NORTHWEST WTP
PHASE 1 (6 TO 9 MGD) EXPANSION

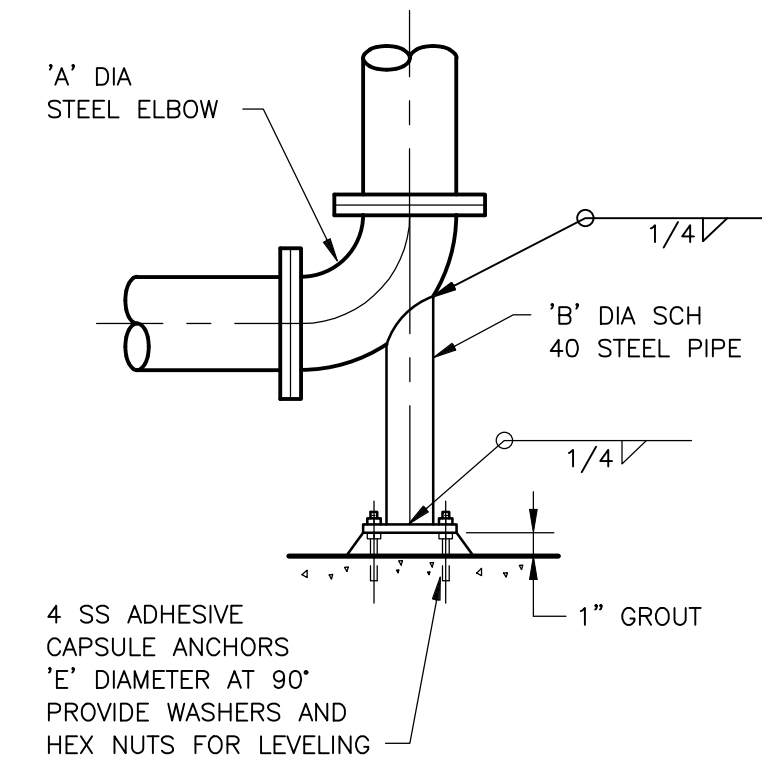
MISCELLANEOUS MECHANICAL DETAILS

PROJECT NO.	6334-232860
FILE NAME:	MD02MMDT
SHEET NO.	MD-2

ISSUED FOR BID



DUCTILE IRON ELBOW

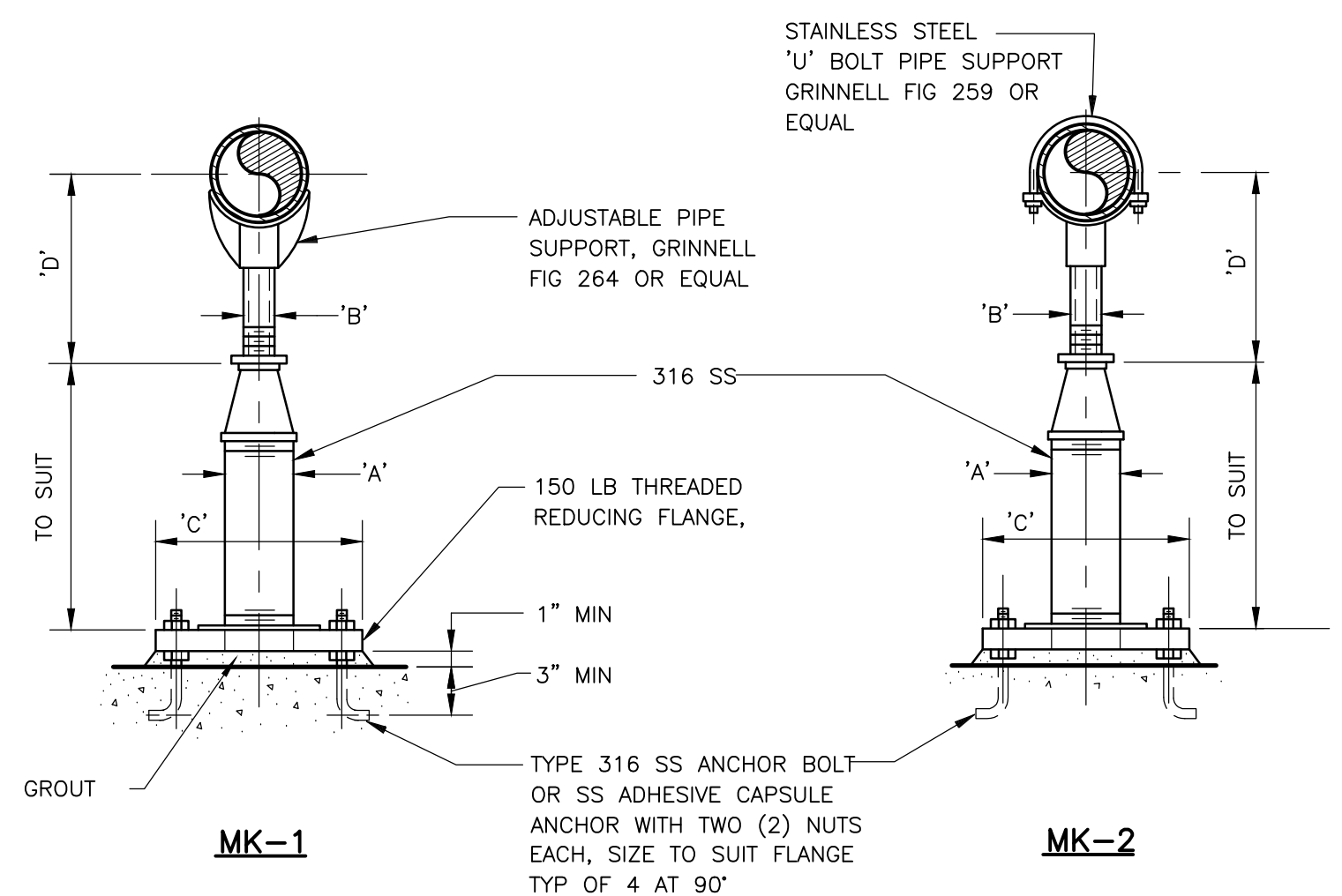


STEEL ELBOW

ELBOW 'A' DIA	DIMENSIONS IN INCHES			
	'B' DIA	'C' THICK	'D' SQ	'E' DIA
4	2	3/8	6	5/8
6	2 1/2	3/8	7	5/8
8	4	1/2	9	5/8
10	4	1/2	9	5/8
12	6	1/2	11	3/4
14	6	1/2	11	3/4
16	6	1/2	11	3/4
18	8	1/2	13 1/2	3/4
20	8	1/2	13 1/2	3/4
24	8	1/2	13 1/2	3/4
30	10	3/4	16	7/8
36	12	3/4	19	7/8
42	16	3/4	23 1/2	1
48	18	3/4	25	1 1/8

NOTES:
MATERIAL FINISH TO MATCH PIPE
ALTERNATIVE METHOD TO DETAIL "K" THIS SHEET

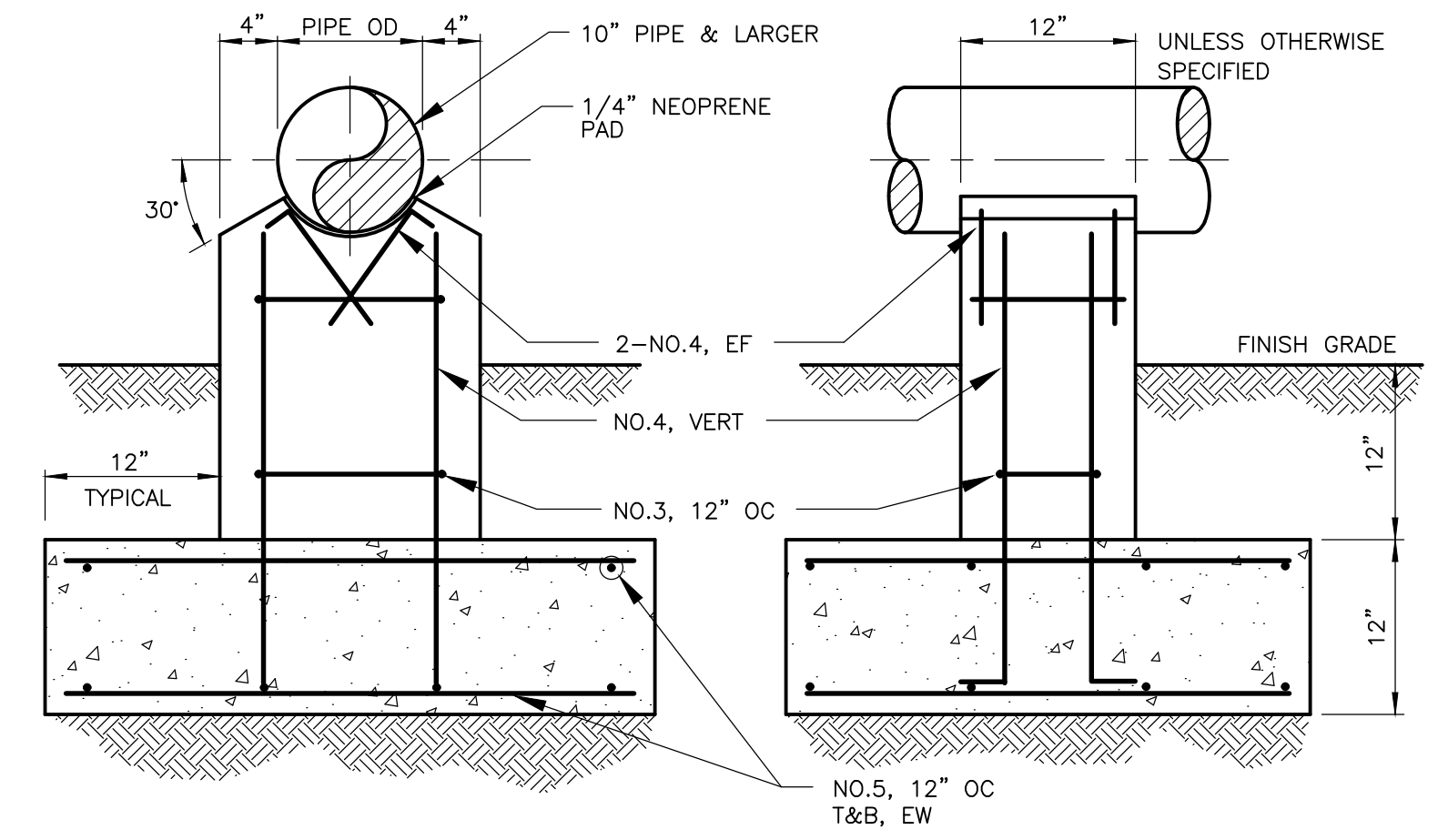
**ELBOW SUPPORT
DETAIL A**
NTS



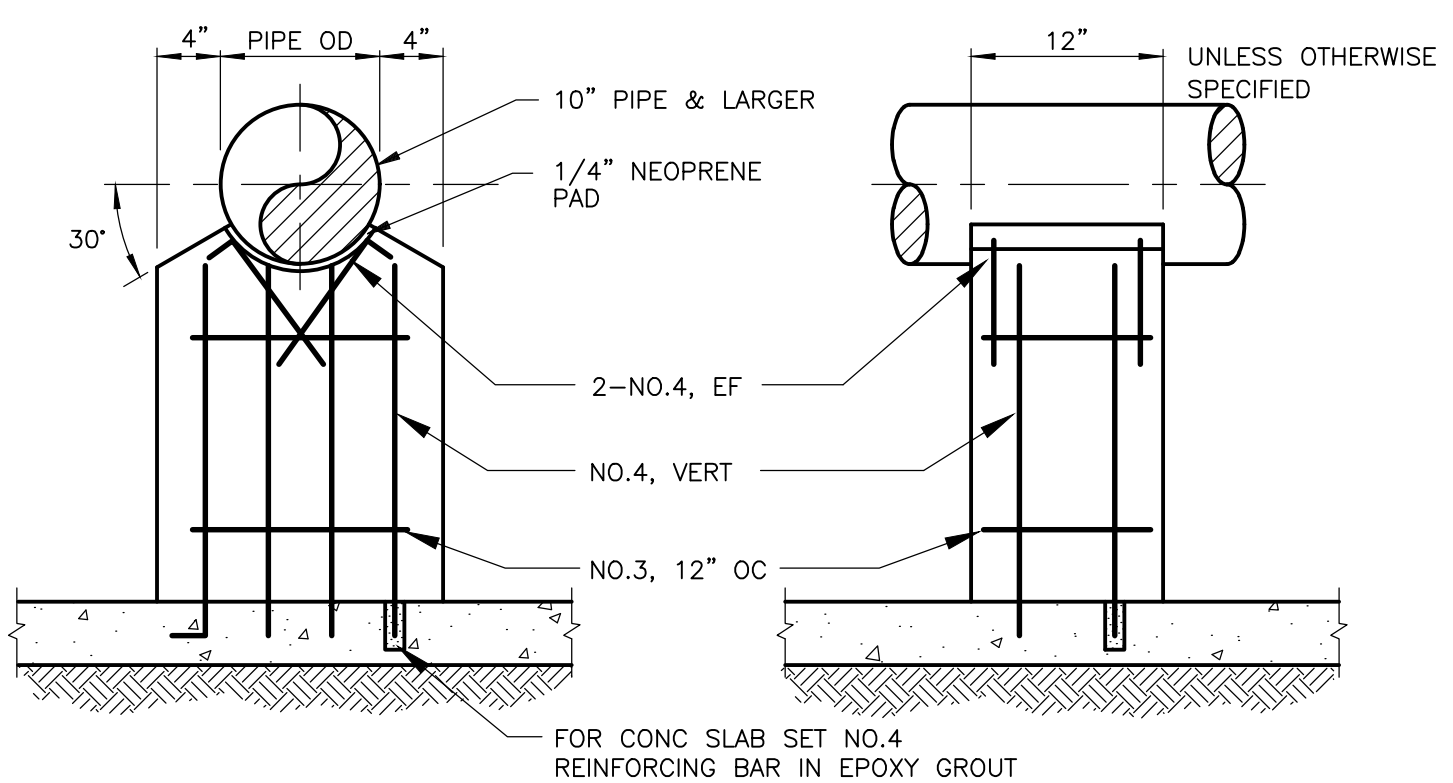
**ADJUSTABLE PIPE SUPPORT
DETAIL B**
NTS

PIPE SIZE	ADJUSTABLE PIPE SUPPORT APPROX DIMENSIONS IN INCHES				
	A	B	C	D MIN	D MAX
2 1/2	2 1/2	1 1/2	9	8	11 1/2
3	2 1/2	1 1/2	9	8 1/4	11 3/4
3 1/2	2 1/2	1 1/2	9	8 1/2	12
4	3	2 1/2	9	10 1/4	14
6	3	2 1/2	9	11 5/8	15 1/4
8	3	2 1/2	9	13 5/8	16 1/2
10	3	2 1/2	9	14 5/8	18 1/4
12	3	2 1/2	9	15 5/8	19 3/4
14	4	3	11	18 5/8	20 3/4
16	4	3	11	19 7/8	22 1/4
18	6	3 1/2	13 1/2	21 1/4	24
20	6	3 1/2	13 1/2	23 1/4	25 1/2
24	6	4	13 1/2	26 1/2	28 1/4
30	6	4	13 1/2	29 5/8	31 1/2
32	6	4	13 1/2	30 5/8	32 3/4
36	6	4	13 1/2	32 5/8	34 3/4

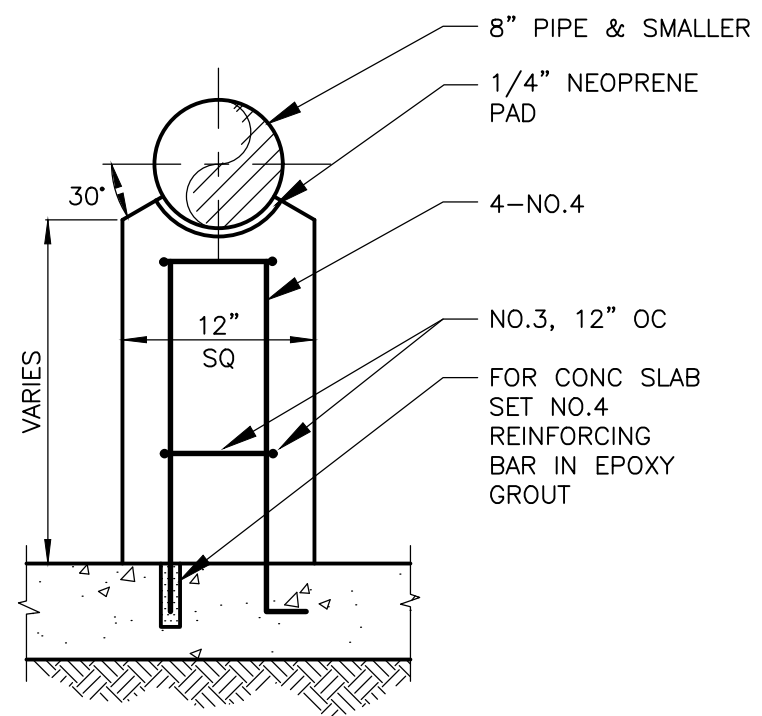
NOTE:
1. UNDER VALVES, METERS OR OTHER SPECIAL APPURTENANCES A FABRICATED SUPPORT PIECE MAY BE UTILIZED AS ACCEPTABLE TO ENGINEER



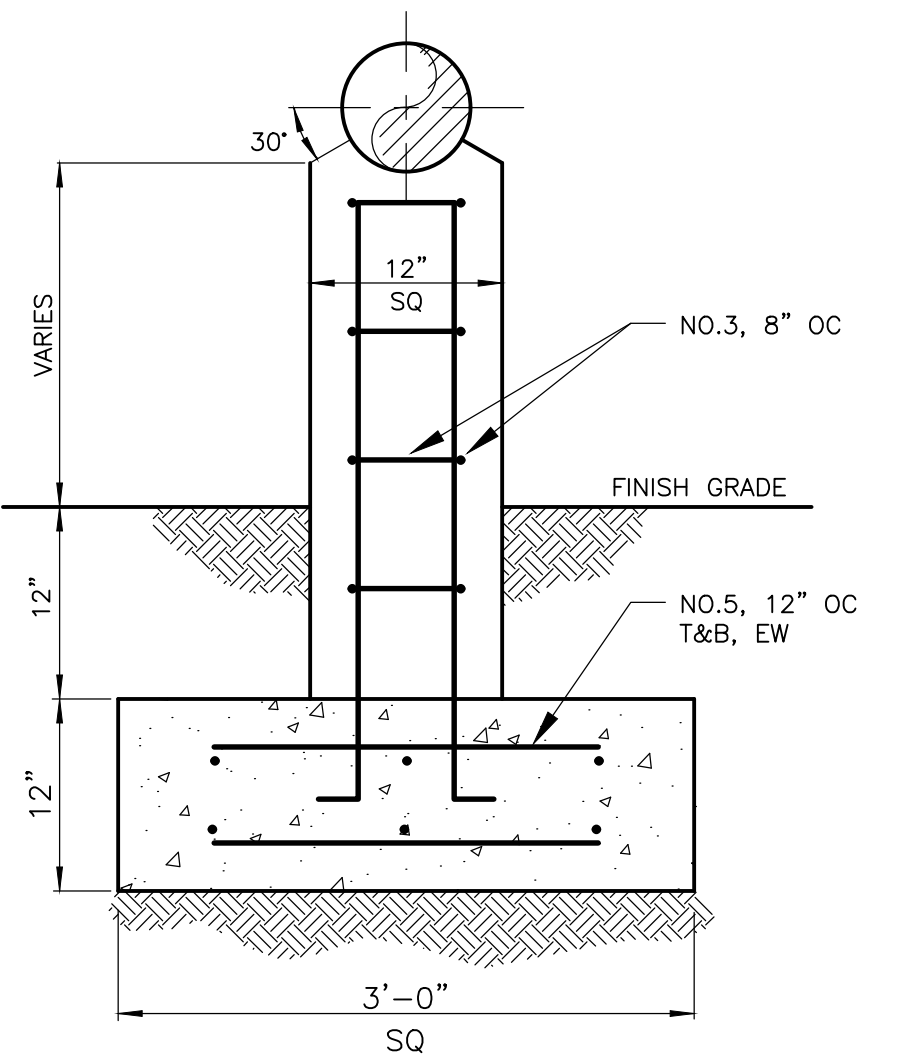
**10" PIPE AND LARGER
DETAIL C**
NTS



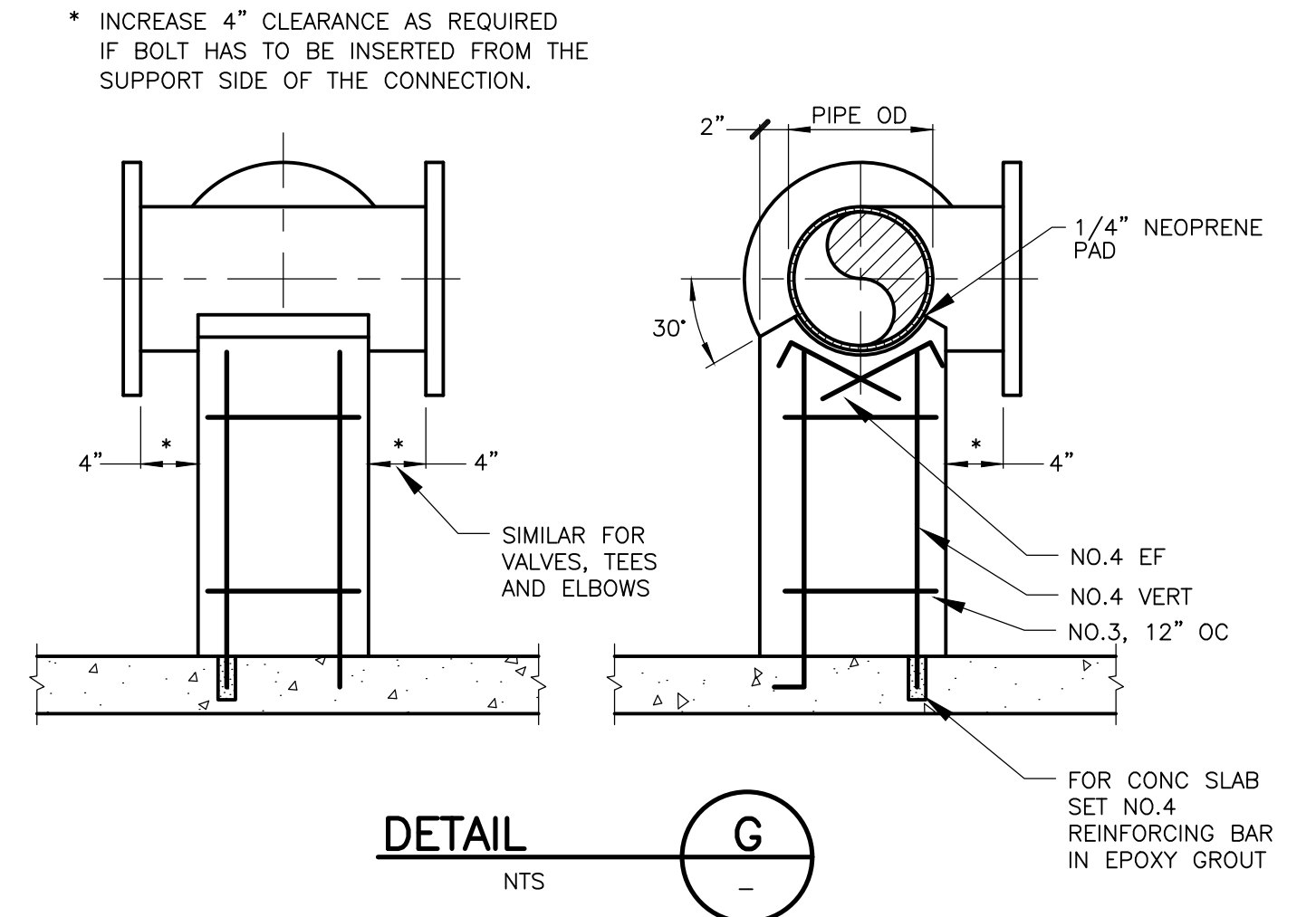
**10" PIPE AND LARGER
DETAIL D**
NTS



**8" PIPE OR SMALLER
DETAIL E**
NTS

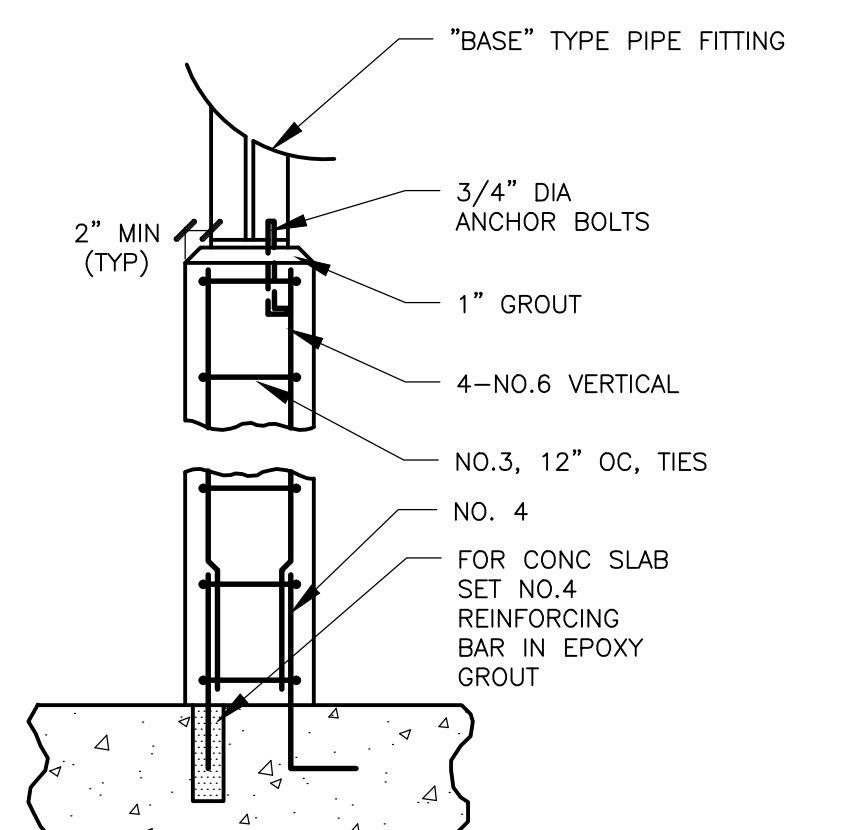


**8" PIPE OR SMALLER
DETAIL F**
NTS

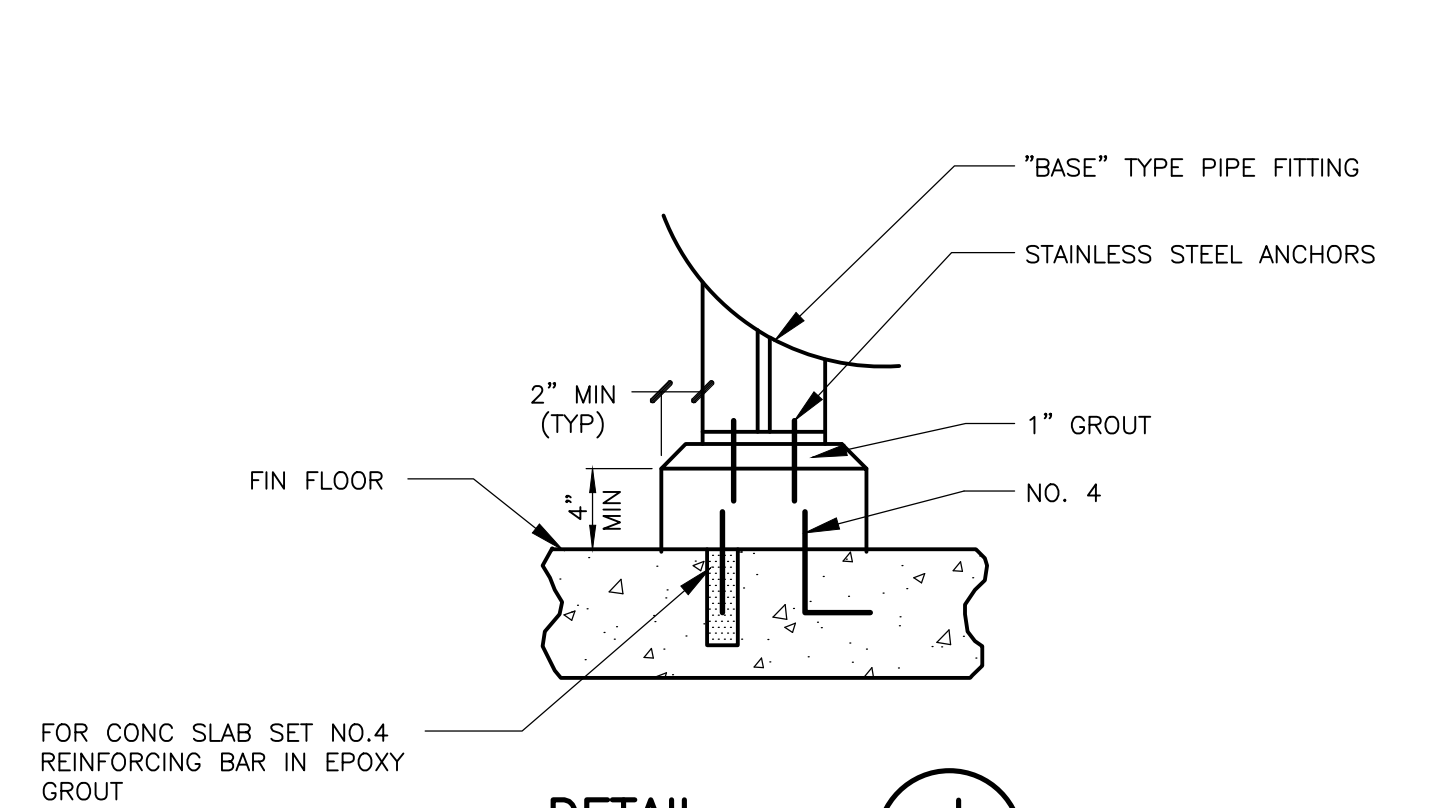


DETAIL G
NTS

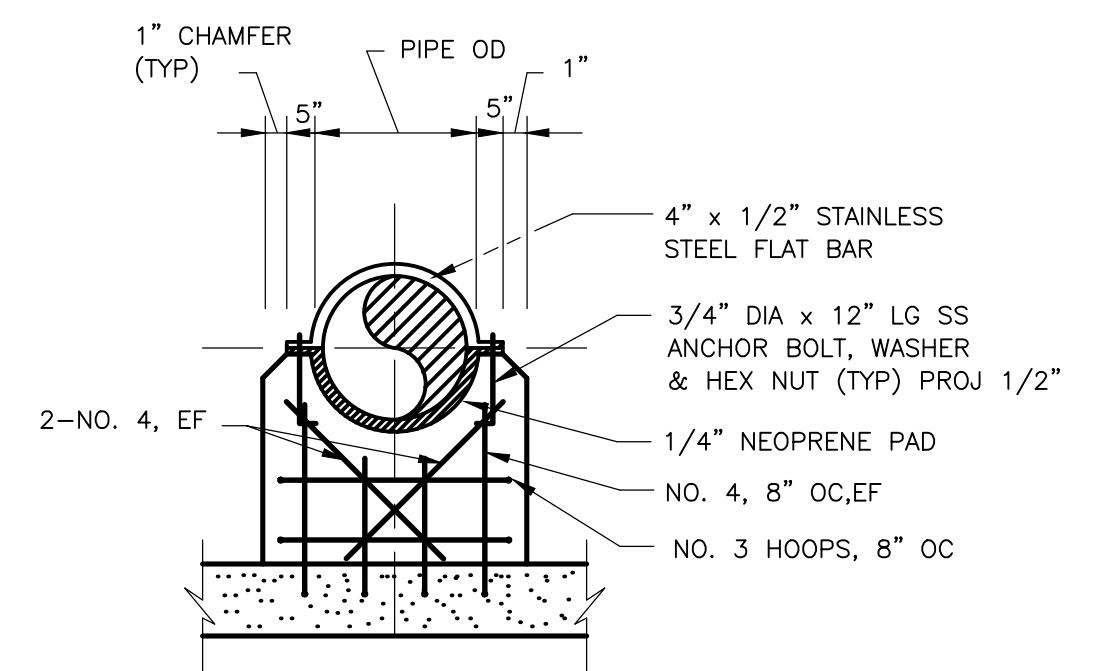
NOTES:
1. USE WASHERS WITH NUTS AND BOLTS.
2. ALL ANCHORS, FASTENERS, BOLTS, NUTS, WASHERS, SCREWS, ETC. SHALL BE 316 STAINLESS STEEL.
3. DETAILS SHOWN ARE INTENDED TO COVER A WIDE RANGE OF PROJECT SITUATIONS. ALL DETAILS MAY NOT APPLY TO THIS PROJECT.



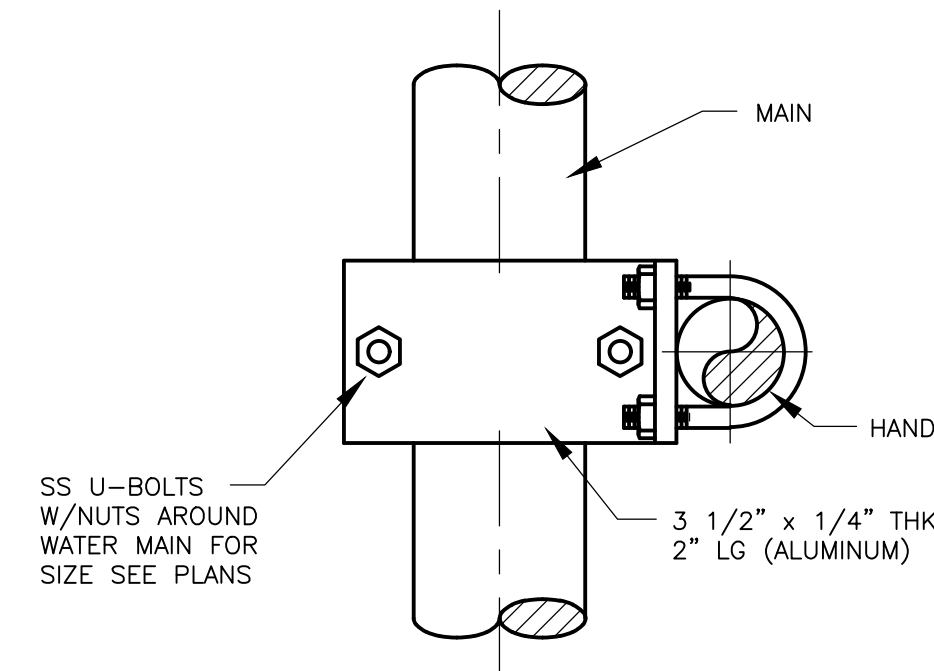
DETAIL H
NTS



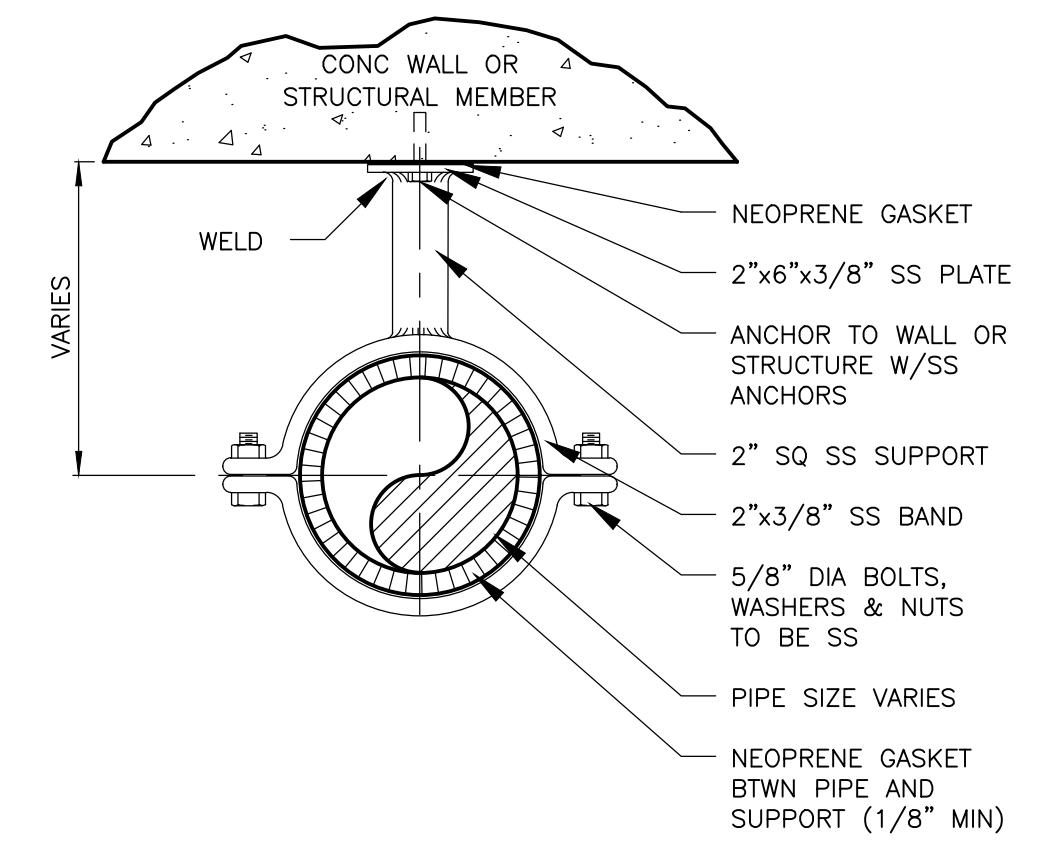
DETAIL J
NTS



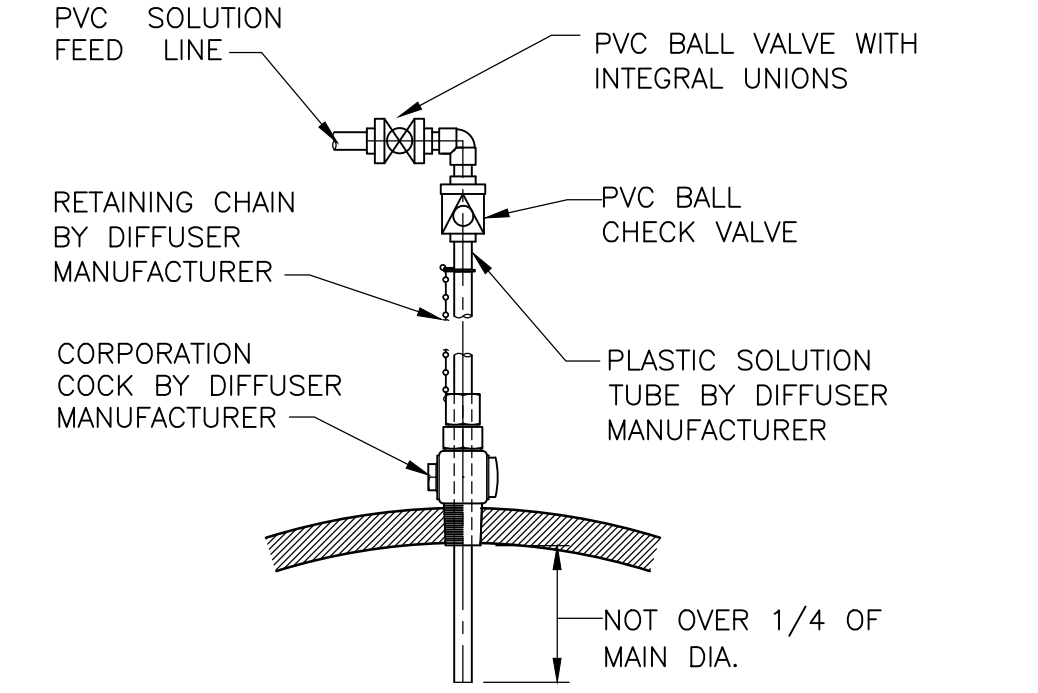
**REACTION TYPE PIPE SUPPORT
DETAIL K**
NTS



DETAIL L
NTS



DETAIL M
NTS



**CHEMICAL SOLUTION FEED POINT
DETAIL N**
NTS

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REV. NO.	DATE	DRWN	CHKD	REMARKS

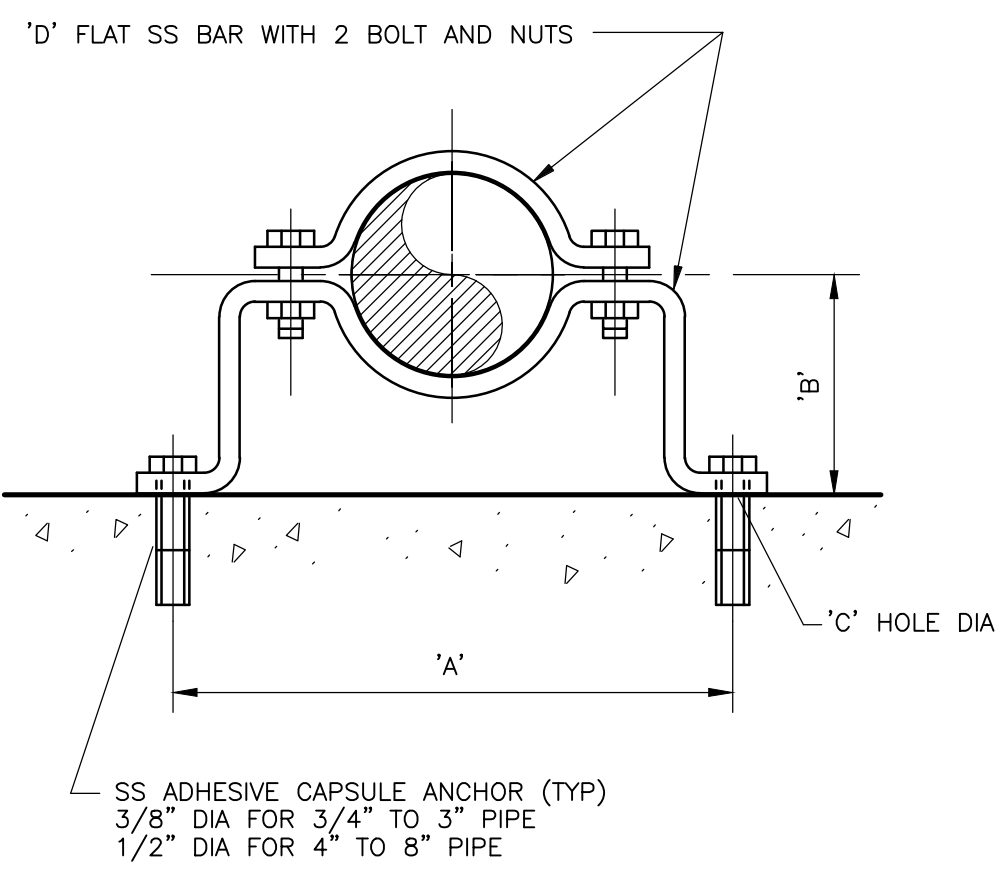
DESIGNED BY: J. O'NEAL
 DRAWN BY: A. EDWARDS
 SHEET CHK'D BY: J. O'NEAL
 CROSS CHK'D BY: D. PRAH
 APPROVED BY: I. POLEMATIDIS
 DATE: JULY 2019

CDM Smith
 4651 Salisbury Road, Suite 420
 Jacksonville, FL 32256
 Tel: (904) 731-7109
 FL COA No. EB-0000020

ST. JOHNS COUNTY UTILITY DEPARTMENT
 ST. JOHNS COUNTY, FLORIDA
 NORTHWEST WTP
 PHASE 1 (6 TO 9 MGD) EXPANSION

MISCELLANEOUS MECHANICAL DETAILS
 SHEET NO. MD-3

PROJECT NO. 6334-232860
 FILE NAME: MD03PSDT
 SHEET NO. MD-3
 ISSUED FOR BID



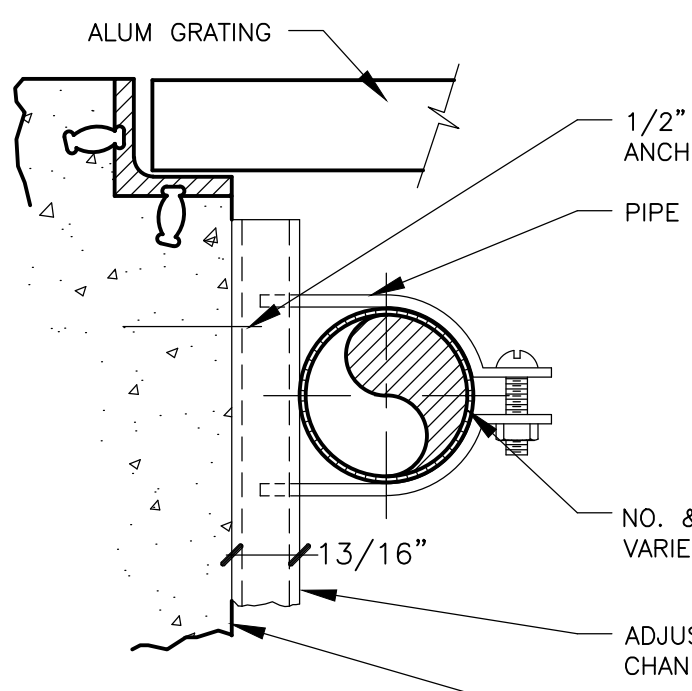
PIPE DIA.	DIMENSIONS IN INCHES				LOAD RATING LBS.*
	'A'	'B' SEE NOTE 3 BELOW	'C' HOLE DIA.	'D' FLAT BAR SIZE	
3/4	5-15/16	2-1/2	7/16	3/16 X 1-1/4	300
1	6-1/4	2-5/8	7/16	3/16 X 1-1/4	300
1-1/4	6-11/16	2-3/4	7/16	3/16 X 1-1/4	300
1-1/2	6-15/16	3	7/16	3/16 X 1-1/4	300
2	8-5/16	3-3/16	7/16	1/4 X 1-1/4	500
2-1/2	8-7/8	3-7/16	7/16	1/4 X 1-1/4	500
3	9-1/8	3-3/4	7/16	1/4 X 1-1/4	500
3-1/2	10-1/16	4	7/16	1/4 X 1-1/4	500
4	10-9/16	4-1/4	9/16	1/4 X 1-1/2	600
5	11-3/4	4-3/4	9/16	1/4 X 1-1/2	600
6	14-3/8	5-5/16	9/16	3/8 X 1-1/2	850
8	16-5/8	6-5/16	9/16	3/8 X 1-1/2	850

* SAFETY FACTOR OF 5

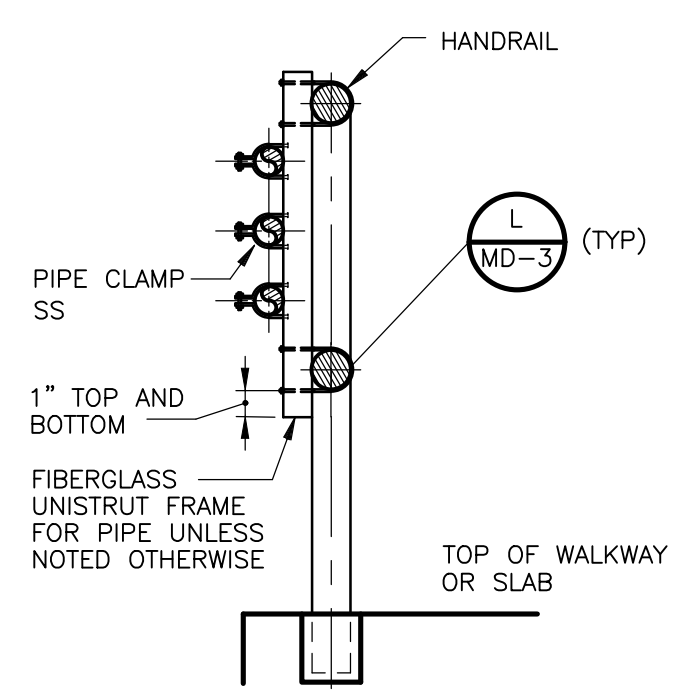
- NOTES:
- PIPE CLAMPS, WASHER AND SHIELD SHALL BE TYPE 316 STAINLESS STEEL.
 - WHEN USED WITH PVC OR FIBERGLASS PIPE PROVIDE STAINLESS STEEL SHIELD AROUND PIPE AT CLAMP, WITH LOOSE FIT. WRAP COPPER TUBES WITH 2" STRIP OF RUBBER FABRIC.
 - FOR FLANGED PIPING INCREASE 'B' DIMENSION AS REQUIRED.
 - ALL ANCHOR BOLTS SHALL BE TYPE 316 SS.

PIPE CLAMP FOR INDIVIDUAL PIPES

DETAIL A

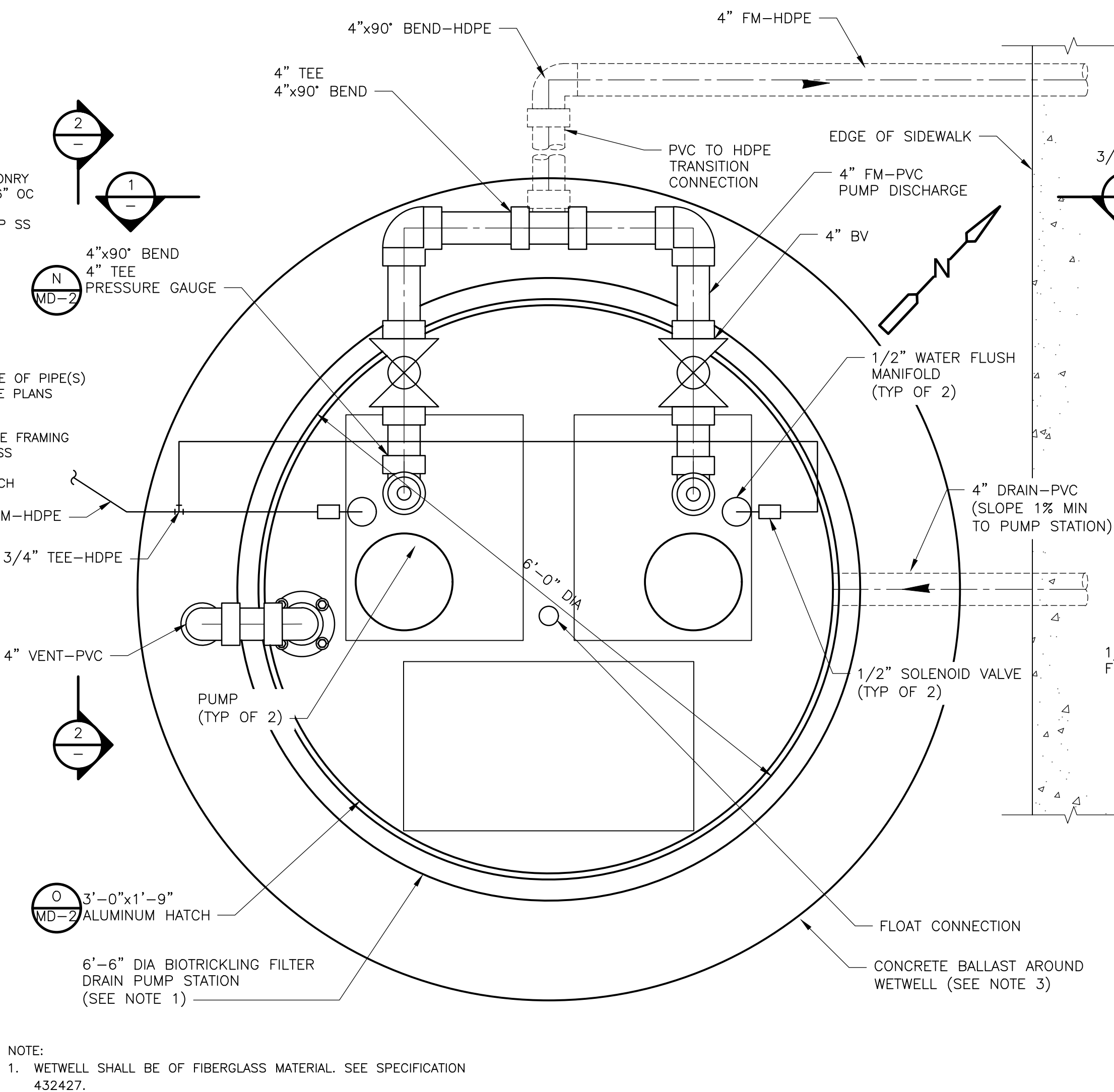


DETAIL D



HANDRAIL SUPPORTED PIPE

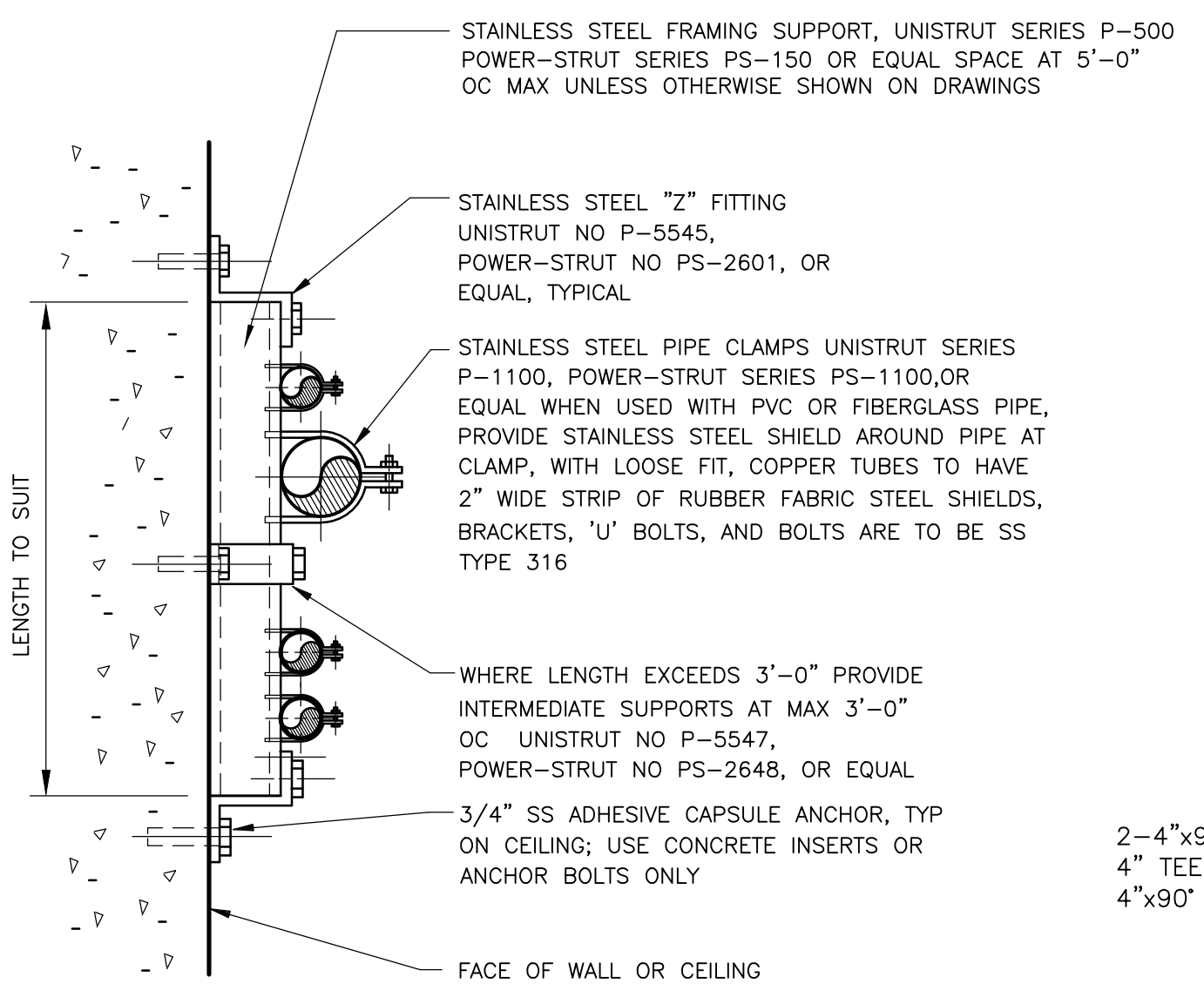
DETAIL E



BIOTRICKLING FILTER DRAIN PUMP STATION

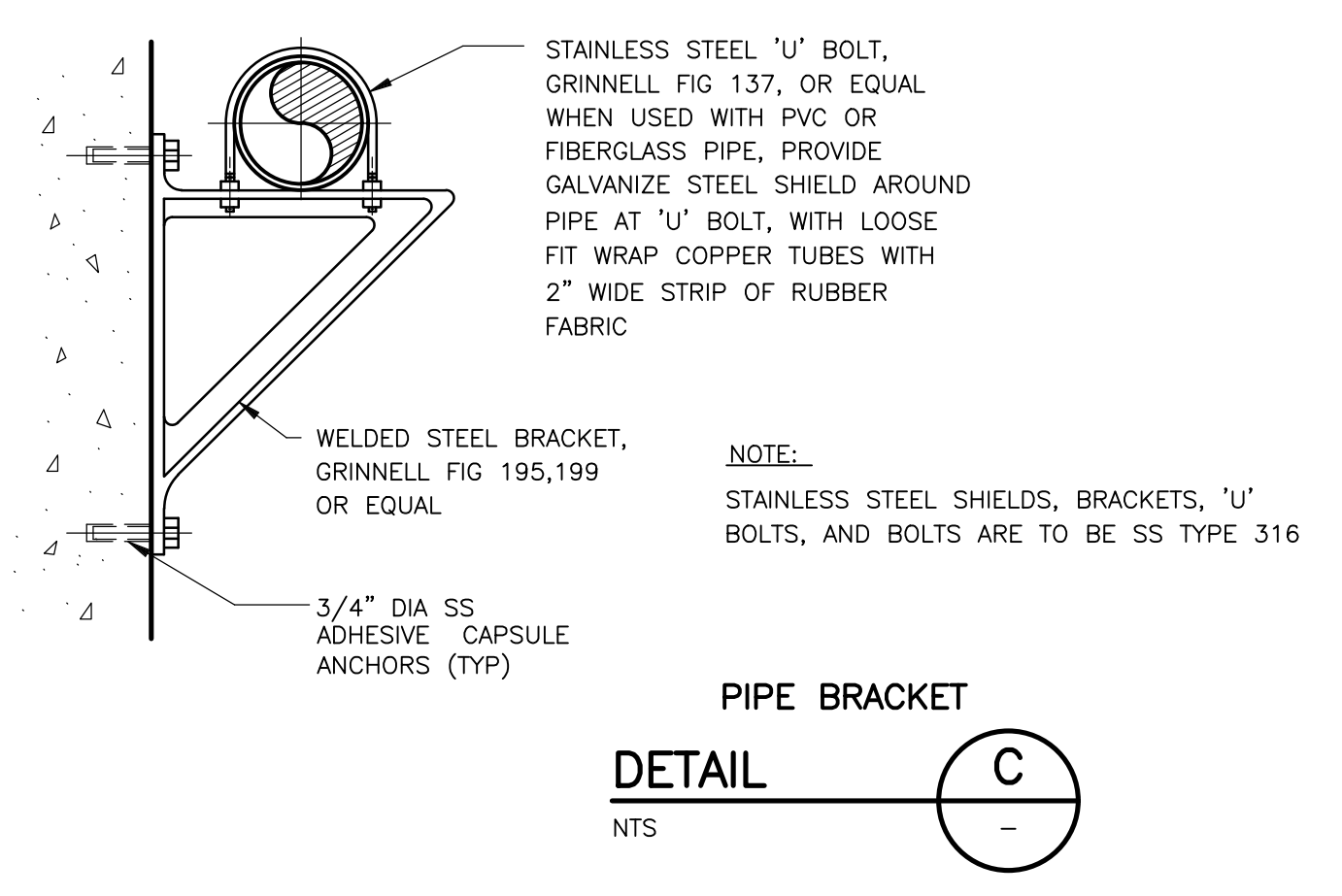
DETAIL F

- NOTE:
- WETWELL SHALL BE OF FIBERGLASS MATERIAL. SEE SPECIFICATION 432427.
 - PUMP INTAKE SHALL BE EQUIPPED WITH A STRAINER.
 - CONTRACTOR TO SUBMIT CONCRETE BALLAST CALCULATIONS FOR REVIEW AND APPROVAL.
 - PUMP SCREEN SEPARATION FROM BOTTOM OF WETWELL TO BE COORDINATED WITH PUMP MANUFACTURER.
 - PRESTRESSED CONCRETE WETWELL TOP SLAB TO BE FLUSH WITH TOP OF FIBERGLASS WETWELL. COORDINATE SLAB PENETRATIONS WITH PUMP MANUFACTURER.



FLUSH MOUNTED PIPE SUPPORT

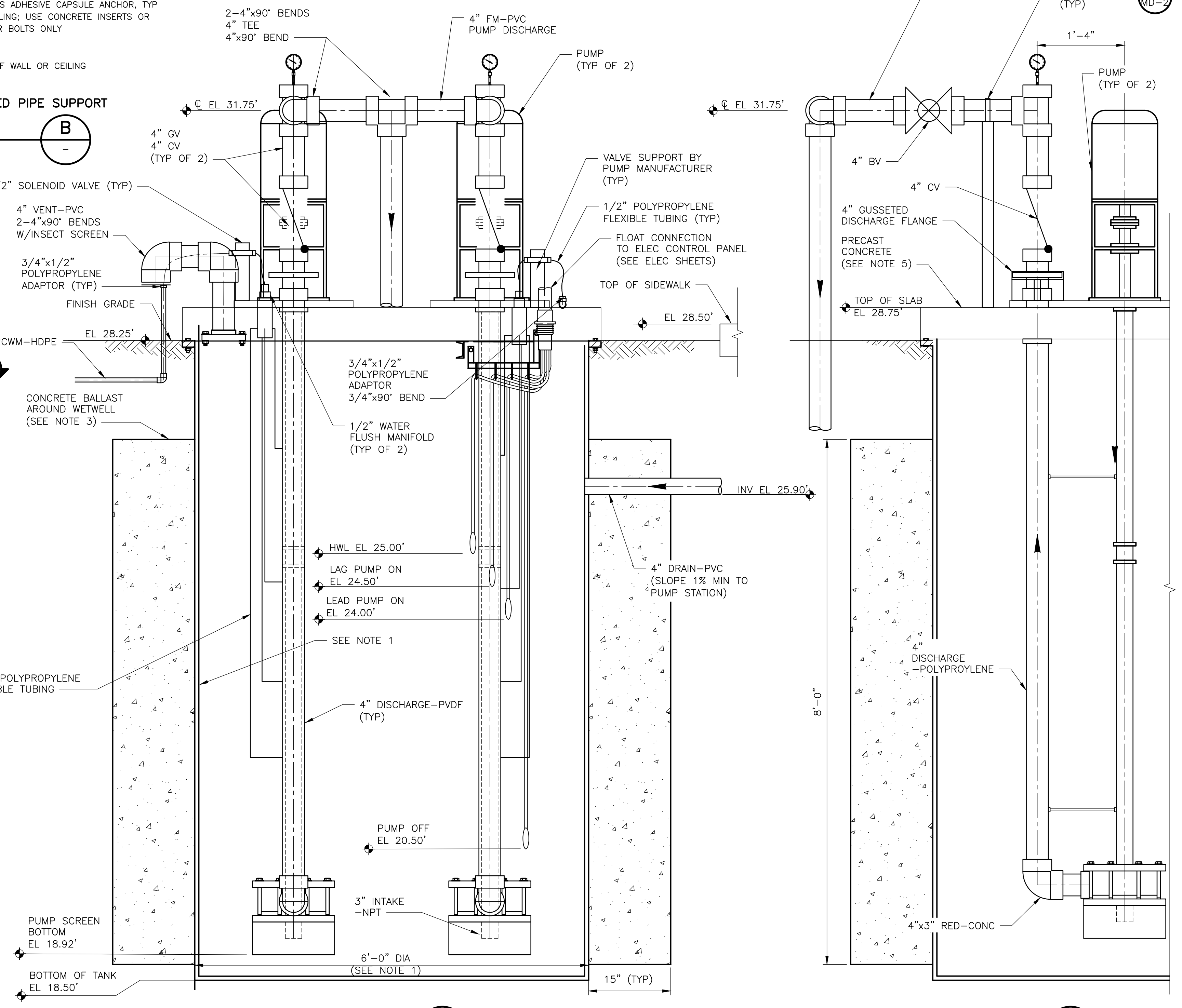
DETAIL B



PIPE BRACKET

DETAIL C

- NOTES:
- USE WASHERS WITH NUTS AND BOLTS.
 - ALL ANCHORS, FASTENERS, BOLTS, NUTS, WASHERS, SCREWS, ETC. SHALL BE 316 STAINLESS STEEL.
 - DETAILS SHOWN ARE INTENDED TO COVER A WIDE RANGE OF PROJECT SITUATIONS. ALL DETAILS MAY NOT APPLY TO THIS PROJECT.



SECTION 1

SECTION 2

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REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY:	J. O'NEAL
DRAWN BY:	A. EDWARDS
SHEET CHK'D BY:	J. O'NEAL
CROSS CHK'D BY:	D. PRAH
APPROVED BY:	I. POLEMATIDIS
DATE:	JULY 2019



ST. JOHNS COUNTY UTILITY DEPARTMENT
 ST. JOHNS COUNTY, FLORIDA
 NORTHWEST WTP
 PHASE 1 (6 TO 9 MGD) EXPANSION

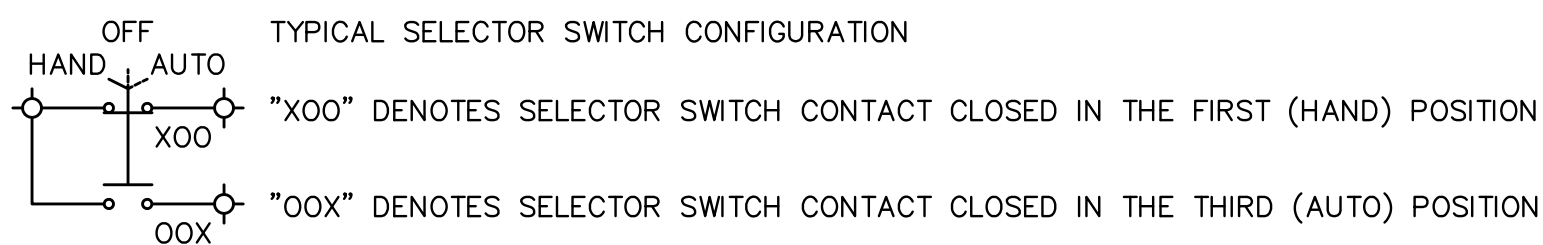
MISCELLANEOUS MECHANICAL DETAILS

PROJECT NO.	6334-232860
FILE NAME:	MD04PHDT
SHEET NO.	MD-4

ISSUED FOR BID

ELECTRICAL LEGEND

	FEEDER CONDUIT "P101" (SEE CONDUIT AND CABLE SCHEDULE)		CIRCUIT BREAKER (FRAME SIZE/TRIP RATING - "MCP" MOTOR CIRCUIT PROTECTOR) MAGNETIC TYPE COMBINATION MOTOR STARTER, NEMA
	CONDUIT RUNS CONCEALED		SIZE AS INDICATED ("FV" FULL VOLTAGE, "RV" SOLID STATE REDUCED VOLTAGE, "NR" NON-REVERSING, "R" REVERSING, "2S" TWO SPEED, "1W" SINGLE WINDING "2W" TWO WINDING, "LC" LIGHTING CONTACTOR)
	CONDUIT RUNS EXPOSED		SIZE 3
	CONDUIT RUNS IN DUCT BANKS OR BELOW GRADE		VARIABLE FREQUENCY DRIVE
	CONDUIT TURNING UP		MOTOR (NUMERAL INDICATES HORSEPOWER - "H" SPACE HEATER, "T" WINDING THERMOSTAT, "M" MOISTURE DETECTOR)
	CONDUIT TURNING DOWN		POTENTIAL TRANSFORMER; CURRENT TRANSFORMER
	CHANGE IN CONDUIT ELEVATIONS USING CONDUIT OUTLET BODIES.		PILOT LIGHT ("A" AMBER, "B" BLUE, "C" CLEAR, "G" GREEN, "R" RED, "W" WHITE)
	CONDUIT TERMINATED WITH WATERTIGHT CABLE CONNECTOR		ALARM SIGNAL OR ANNUNCIATOR POINT
	BRANCH CIRCUIT HOMERUN (ARROWS INDICATE PANEL CIRCUITS, SHORT STROKES INDICATE PHASE OR SWITCHED CONDUCTORS, LONG STROKE DENOTES NEUTRAL, CURVED STROKE DENOTES GROUND. (NO STROKES INDICATES 3/4" CONDUIT WITH 3#12 PHASE/NEUTRAL/GROUND CONDUCTORS).		ASSOCIATED DEVICE "REMOTE" FROM MOTOR CONTROL CENTER OR CONTROL PANEL
	HANDHOLE, OR PULLBOX AS INDICATED ("E" ELECTRICAL, "C" COMMUNICATION))		HAND/OFF/AUTOMATIC SELECTOR SWITCH CONTROL STATION
	TYPICAL WIRING DEVICE NOTATIONS ("W" WEATHERPROOF OR "X" EXPLOSION PROOF DEVICE CONNECTED TO CIRCUIT "5". ENCLOSING SQUARE DENOTES FLOORBOX)		SAFE OFF MOMENTARY PUSHBUTTON CONTROL STATION WITH LOCKING DEVICE
	RECEPTACLE		MOTOR PROTECTION LOW CURRENT RELAY
	SPECIAL PURPOSE OUTLET		AMMETER AND AMMETER SWITCH
	JUNCTION BOX, PULL BOX		HOURS OF OPERATION; ELAPSED TIME METER
	SINGLE POLE SWITCH CONTROLS FIXTURES MARKED "b" ("2" 2 POLE, "3" 3 WAY, "T" TIME SWITCH, "M" MANUAL MOTOR STARTER)		VOLTMETER AND VOLTMETER SWITCH
	THERMOSTAT (LINE VOLTAGE TYPE WITH ON-OFF-AUTO SWITCH UNLESS NOTED).		CONTROL RELAY, INTERPOSING CONTROL RELAY
	SAFETY DISCONNECT SWITCH (AMPERAGE RATING/POLES/FUSE RATING - "NF" NON-FUSED, "DT" DOUBLE-THROW)		GROUND FAULT PROTECTION SYSTEM
	TELEPHONE OUTLET		POWER MONITOR
	TELEPHONE BACKBOARD		TIME DELAY RELAY
	LOW VOLTAGE PANELBOARD		PRESSURE CONTROLLER
	HIGH VOLTAGE PANELBOARD		OVERLOAD DEVICE; SURGE CONTROL PANEL
	TYPICAL LIGHTING FIXTURE NOTATIONS (TYPE "E" CONNECTED TO CIRCUIT "2" AND SWITCH "b". SHADING DENOTES EMERGENCY UNIT. BRACKET DENOTES WALL MOUNTING)		LEVEL SWITCH
	FLUORESCENT FIXTURE		ZERO SPEED SWITCH; POSITION SWITCH
	H.I.D. FIXTURE		PRESSURE SWITCH
	INCANDESCENT FIXTURE		SOLENOID VALVE; VALVE CONTROL ACTUATOR
	REFERENCE TO NOTE "#"		ALARM HORN



ELECTRICAL LOAD CALCULATIONS

EXISTING CONNECTED LOAD

HIGH SERVICE PUMP NO.1	75 HP	96 AMPS
HIGH SERVICE PUMP NO.2	75 HP	96 AMPS
HIGH SERVICE PUMP NO.3	125 HP	156 AMPS
HIGH SERVICE PUMP NO.4	125 HP	156 AMPS
HIGH SERVICE PUMP NO.5	200 HP	240 AMPS
HIGH SERVICE PUMP NO.6	200 HP	240 AMPS
WELL PUMP NO.1	50 HP	65 AMPS
WELL PUMP NO.2	40 HP	52 AMPS
AIR COMPRESSOR	5 HP	8 AMPS
EF2 HIGH SERVICE PUMP RM	2 HP	4 AMPS
EF3 HIGH SERVICE PUMP RM	2 HP	4 AMPS
CO2 BOOSTER PUMP 1	40 HP	52 AMPS
CO2 BOOSTER PUMP 2	40 HP	52 AMPS
TRANSFER PUMP 1	30 HP	40 AMPS
TRANSFER PUMP 2	30 HP	40 AMPS
TRANSFER PUMP 3	30 HP	40 AMPS
TRANSFER PUMP 4	30 HP	40 AMPS
TRANSFER PUMP 5	25 HP	34 AMPS
DEGASIFIER BLOWER 1	15 HP	21 AMPS
DEGASIFIER BLOWER 2	15 HP	21 AMPS
SCRUBBER RECIRC PUMP 1	15 HP	21 AMPS
SCRUBBER RECIRC PUMP 2	15 HP	21 AMPS
GRINDER PUMP	5 HP	8 AMPS
VACUUM PRIMING SYSTEM	0.5 HP	1 AMPS

EXISTING TOTAL MOTOR LOAD 1434 AMPS
EXISTING MOTOR DEMAND FACTOR 100 %

NEW CONNECTED LOAD

HIGH SERVICE PUMP NO.2	200 HP	240 AMPS
HIGH SERVICE PUMP NO.3	200 HP	240 AMPS
HIGH SERVICE PUMP NO.4	200 HP	240 AMPS
TRANSFER PUMP 1	25 HP	34 AMPS
TRANSFER PUMP 2	25 HP	34 AMPS
TRANSFER PUMP 3	25 HP	34 AMPS
TRANSFER PUMP 4	25 HP	34 AMPS
TRANSFER PUMP 5	25 HP	34 AMPS
DEGASIFIER BLOWER 1	30 HP	40 AMPS
DEGASIFIER BLOWER 2	30 HP	40 AMPS
DEGASIFIER BLOWER 3	30 HP	40 AMPS
BTF DRAIN PS PUMP 1	20 HP	27 AMPS
BTF DRAIN PS PUMP 2	20 HP	27 AMPS
BTF STARTUP RECIRC PUMP 1	5 HP	8 AMPS
BTF STARTUP RECIRC PUMP 2	5 HP	8 AMPS

NEW TOTAL MOTOR LOAD 1080 AMPS
NEW MOTOR DEMAND FACTOR 100 %

NEW MOTOR PEAK DEMAND 1080 AMPS
CO2 FEED SYSTEM NO.2 40 KVA 48 AMPS

TOTAL NEW CONNECTED LOAD 1128 AMPS

9 MGD ELECTRICAL SERVICE LOAD CALCULATIONS

TOTAL EXISTING CONNECTED LOAD	1676 AMPS
TOTAL EXISTING TO BE REMOVED	709 AMPS
<hr/>	
TOTAL EXISTING LOAD REMAINING	967 AMPS
TOTAL NEW CONNECTED LOAD	1128 AMPS
<hr/>	
TOTAL 9 MGD CONNECTED LOAD	2095 AMPS
TOTAL NON-COINCIDENTAL LOAD	387 AMPS
<hr/>	
PEAK DEMAND LOAD	1708 AMPS
0.25 X LARGEST MOTOR	60 AMPS
<hr/>	
MIN SERVICE AMPACITY	1768 AMPS
MIN MAIN BREAKER RATING	2135 AMPS

EXISTING MAIN SWITCHBOARD ELECTRICAL SERVICE:
3000 AMP, 480 VOLT, 3 PHASE

EXISTING MOTOR PEAK DEMAND

LIGHTING PANEL L1	25 KVA	52 AMPS
LIGHTING PANEL L2	45 KVA	54 AMPS
LIGHTING PANEL L3	30 KVA	36 AMPS
GENERATOR ENCLOSURE	25 KVA	52 AMPS
CO2 FEED SYSTEM NO.1	40 KVA	48 AMPS

TOTAL EXISTING CONNECTED LOAD 1676 AMPS

9 MGD NON-COINCIDENTAL LOAD CALCULATIONS

HIGH SERVICE PUMP	200 HP	240 AMPS
TRANSFER PUMP	25 HP	34 AMPS
TRANSFER PUMP	25 HP	34 AMPS
CO2 BOOSTER PUMP	40 HP	52 AMPS
BTF DRAIN PS PUMP	20 HP	27 AMPS

NON-COINCIDENTAL MOTOR LOAD 387 AMPS
MOTOR DEMAND FACTOR 100 %

TOTAL NON-COINCIDENTAL LOAD 387 AMPS

EXISTING ELECTRICAL SERVICE TRANSFORMER

SERVICE TRANSFORMER	2,500 KVA
FPL FAULT CURRENT LETTER	45,270 AMPS

EXISTING CONNECTED LOAD TO BE REMOVED

HIGH SERVICE PUMP NO.1	75 HP	96 AMPS
HIGH SERVICE PUMP NO.2	75 HP	96 AMPS
HIGH SERVICE PUMP NO.3	125 HP	156 AMPS
HIGH SERVICE PUMP NO.4	125 HP	156 AMPS
TRANSFER PUMP 1	30 HP	40 AMPS
TRANSFER PUMP 2	30 HP	40 AMPS
TRANSFER PUMP 3	30 HP	40 AMPS
TRANSFER PUMP 4	30 HP	40 AMPS
TRANSFER PUMP 5	25 HP	34 AMPS
DEGASIFIER BLOWER 1	15 HP	21 AMPS
DEGASIFIER BLOWER 2	15 HP	21 AMPS
SCRUBBER RECIRC PUMP 1	15 HP	21 AMPS
SCRUBBER RECIRC PUMP 2	15 HP	21 AMPS
VACUUM PRIMING SYSTEM	0.5 HP	1 AMPS

REMOVED TOTAL MOTOR LOAD 709 AMPS
REMOVED MOTOR DEMAND FACTOR 100 %

TOTAL EXISTING TO BE REMOVED 709 AMPS

MCC3 NON-COINCIDENTAL LOAD CALCULATIONS

TRANSFER PUMP	25 HP	34 AMPS
TRANSFER PUMP	25 HP	34 AMPS
CO2 BOOSTER PUMP	40 HP	52 AMPS
BTF DRAIN PS PUMP	20 HP	27 AMPS

NON-COINCIDENTAL MOTOR LOAD 147 AMPS
MOTOR DEMAND FACTOR 100 %

TOTAL NON-COINCIDENTAL LOAD 147 AMPS

MCC3 ELECTRICAL SERVICE LOAD CALCULATIONS

MCC3 TOTAL CONNECTED LOAD	604 AMPS
MCC3 NON-COINCIDENTAL LOAD	147 AMPS
<hr/>	
PEAK DEMAND LOAD	457 AMPS
0.25 X LARGEST MOTOR	13 AMPS
<hr/>	
MIN SERVICE AMPACITY	470 AMPS
MIN MAIN BREAKER RATING	571 AMPS

UPGRADED FEEDER FROM THE MAIN SWITCHBOARD:
800 AMP, 480 VOLT, 3 PHASE

MCC3 TOTAL CONNECTED LOAD

CO2 BOOSTER PUMP 1	40 HP	52 AMPS
CO2 BOOSTER PUMP 2	40 HP	52 AMPS
TRANSFER PUMP 1	25 HP	34 AMPS
TRANSFER PUMP 2	25 HP	34 AMPS
TRANSFER PUMP 3	25 HP	34 AMPS
TRANSFER PUMP 4	25 HP	34 AMPS
TRANSFER PUMP 5	25 HP	34 AMPS
DEGASIFIER BLOWER 1	30 HP	40 AMPS
DEGASIFIER BLOWER 2	30 HP	40 AMPS
DEGASIFIER BLOWER 3	30 HP	40 AMPS
GRINDER PUMP	5 HP	8 AMPS
BTF DRAIN PS PUMP 1	20 HP	27 AMPS
BTF DRAIN PS PUMP 2	20 HP	27 AMPS
BTF1 STARTUP RECIRC PUMP	5 HP	8 AMPS
BTF2 STARTUP RECIRC PUMP	5 HP	8 AMPS

EXISTING TOTAL MOTOR LOAD 472 AMPS
EXISTING MOTOR DEMAND FACTOR 100 %

EXISTING MOTOR PEAK DEMAND 472 AMPS
LIGHTING PANEL L3 30 KVA 36 AMPS
CO2 FEED SYSTEM NO.1 40 KVA 48 AMPS
CO2 FEED SYSTEM NO.2 40 KVA 48 AMPS

TOTAL EXISTING CONNECTED LOAD 604 AMPS

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: D. LASSETTER
DRAWN BY: CDM SMITH
SHEET CHK'D BY: D. LASSETTER
CROSS CHK'D BY: CDM SMITH
APPROVED BY: D. LASSETTER
DATE: JULY 2019

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FL OCA No. EB-0000020

ST. JOHNS COUNTY UTILITY DEPARTMENT
ST. JOHNS COUNTY, FLORIDA
NORTHWEST WTP
PHASE 1 (6 TO 9 MGD) EXPANSION

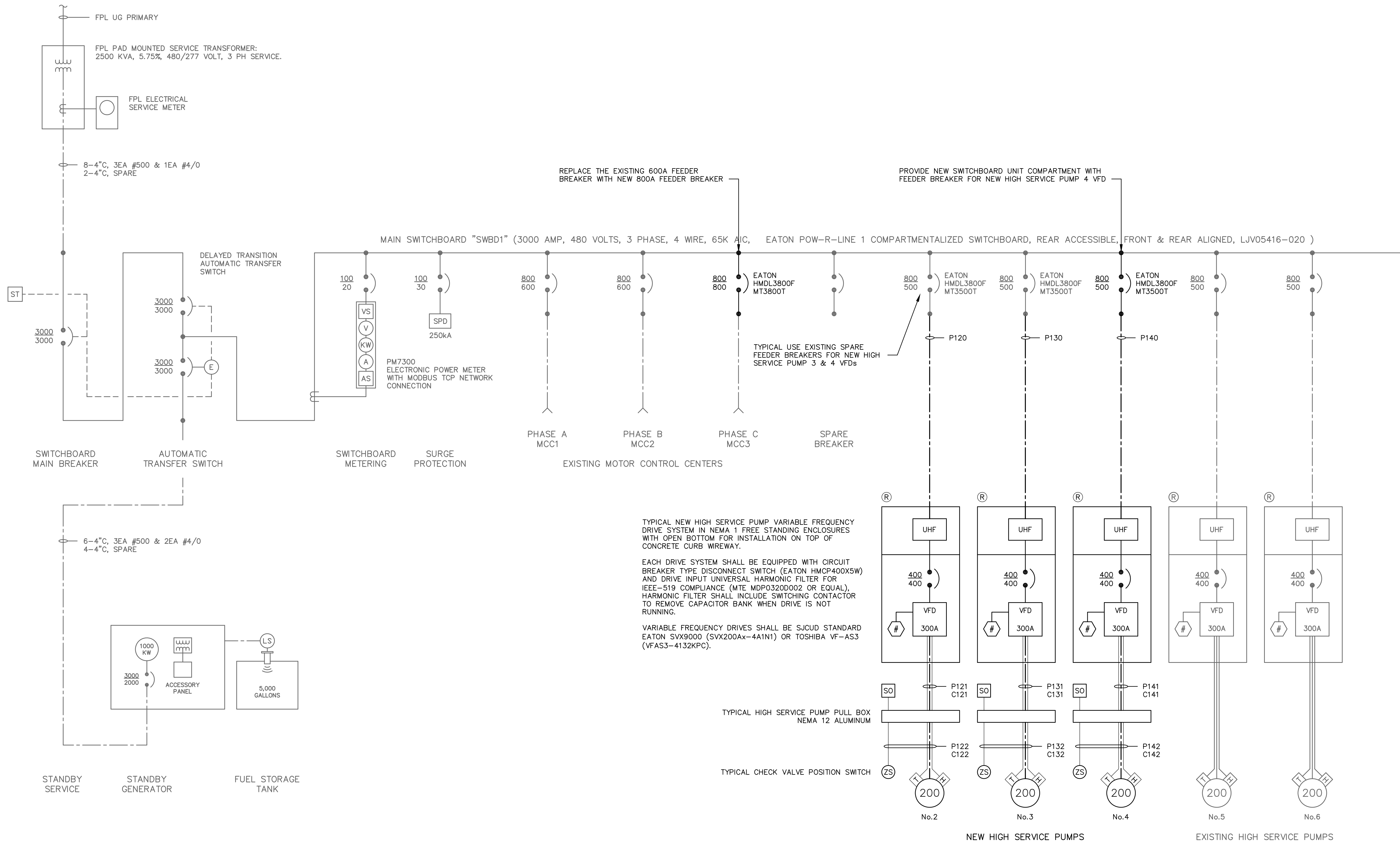
ELECTRICAL LEGEND AND SCHEDULES

PROJECT NO.	6334-232860
FILE NAME:	819E00P8.DWG
SHEET NO.	E-1

ISSUED FOR BID

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3837 Buckskin Trail East
Jacksonville, FL 32277
904-743-1585

WD LASSETTER, PE
NO. 37971



TYPICAL NEW HIGH SERVICE PUMP VARIABLE FREQUENCY DRIVE SYSTEM IN NEMA 1 FREE STANDING ENCLOSURES WITH OPEN BOTTOM FOR INSTALLATION ON TOP OF CONCRETE CURB WIREWAY.

EACH DRIVE SYSTEM SHALL BE EQUIPPED WITH CIRCUIT BREAKER TYPE DISCONNECT SWITCH (EATON HMCP400X5W) AND DRIVE INPUT UNIVERSAL HARMONIC FILTER FOR IEEE-519 COMPLIANCE (MTE MDP0320D002 OR EQUAL), HARMONIC FILTER SHALL INCLUDE SWITCHING CONTACTOR TO REMOVE CAPACITOR BANK WHEN DRIVE IS NOT RUNNING.

VARIABLE FREQUENCY DRIVES SHALL BE SJUD STANDARD EATON SVX9000 (SVX200Ax-4A1N1) OR TOSHIBA VF-AS3 (VFAS3-4132KPC).

MODIFY THE EXISTING HIGH SERVICE PUMP 5 & 6 VFD CONTROL WIRING TO MATCH THE NEW HIGH SERVICE PUMP VFDs INCLUDING NEW MODBUS COMMUNICATIONS. REMOVE THE EXISTING DRIVE OUTPUT CONTACTORS. REPLACE THE EXISTING TSP CABLES FROM EACH VFD TO RTU200 WITH NEW SHIELDED CAT6 CABLES.

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: D. LASSETTER
 DRAWN BY: CDM SMITH
 SHEET CHK'D BY: D. LASSETTER
 CROSS CHK'D BY: CDM SMITH
 APPROVED BY: D. LASSETTER
 DATE: JULY 2019

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ST. JOHNS COUNTY UTILITY DEPARTMENT
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SINGLE LINE DIAGRAM
 MAIN SWITCHBOARD

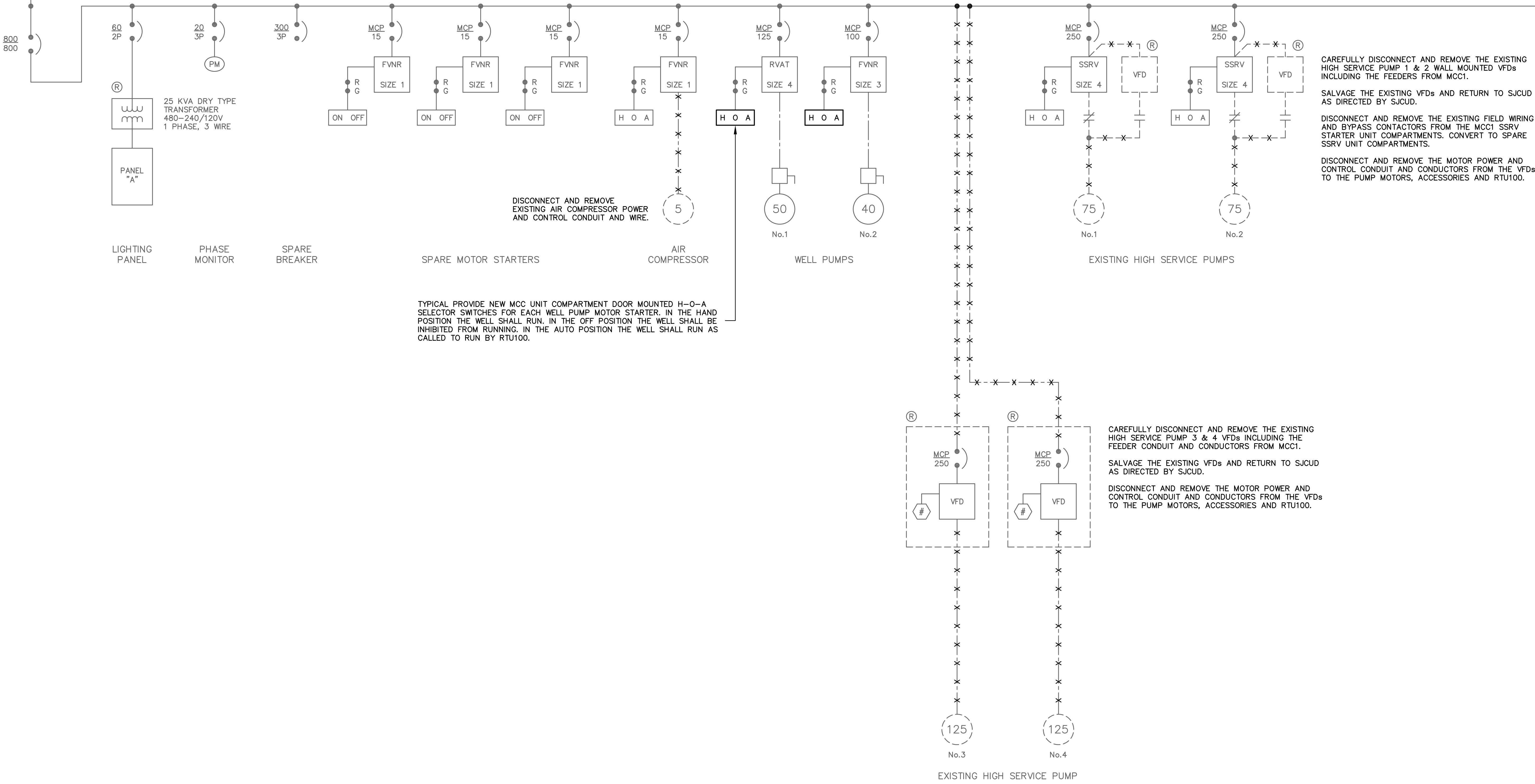
PROJECT NO. 6334-232860
 FILE NAME: 819E00P8.DWG
 SHEET NO. E-2
 ISSUED FOR BID

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TO SWBD1
2-4"C, 3EA#500, 1EA#4/0G

EXISTING MOTOR CONTROL CENTER "MCC1" (1000 AMP, 480 VOLT, 3 PHASE, 42K AIC, SIEMENS MODEL 95, SN 30-1430-82485)



CAREFULLY DISCONNECT AND REMOVE THE EXISTING HIGH SERVICE PUMP 1 & 2 WALL MOUNTED VFDs INCLUDING THE FEEDERS FROM MCC1.
SALVAGE THE EXISTING VFDs AND RETURN TO SJUD AS DIRECTED BY SJUD.
DISCONNECT AND REMOVE THE EXISTING FIELD WIRING AND BYPASS CONTACTORS FROM THE MCC1 SSRV STARTER UNIT COMPARTMENTS. CONVERT TO SPARE SSRV UNIT COMPARTMENTS.
DISCONNECT AND REMOVE THE MOTOR POWER AND CONTROL CONDUIT AND CONDUCTORS FROM THE VFDs TO THE PUMP MOTORS, ACCESSORIES AND RTU100.

DISCONNECT AND REMOVE EXISTING AIR COMPRESSOR POWER AND CONTROL CONDUIT AND WIRE.

TYPICAL PROVIDE NEW MCC UNIT COMPARTMENT DOOR MOUNTED H-O-A SELECTOR SWITCHES FOR EACH WELL PUMP MOTOR STARTER. IN THE HAND POSITION THE WELL SHALL RUN. IN THE OFF POSITION THE WELL SHALL BE INHIBITED FROM RUNNING. IN THE AUTO POSITION THE WELL SHALL RUN AS CALLED TO RUN BY RTU100.

CAREFULLY DISCONNECT AND REMOVE THE EXISTING HIGH SERVICE PUMP 3 & 4 VFDs INCLUDING THE FEEDER CONDUIT AND CONDUCTORS FROM MCC1.
SALVAGE THE EXISTING VFDs AND RETURN TO SJUD AS DIRECTED BY SJUD.
DISCONNECT AND REMOVE THE MOTOR POWER AND CONTROL CONDUIT AND CONDUCTORS FROM THE VFDs TO THE PUMP MOTORS, ACCESSORIES AND RTU100.

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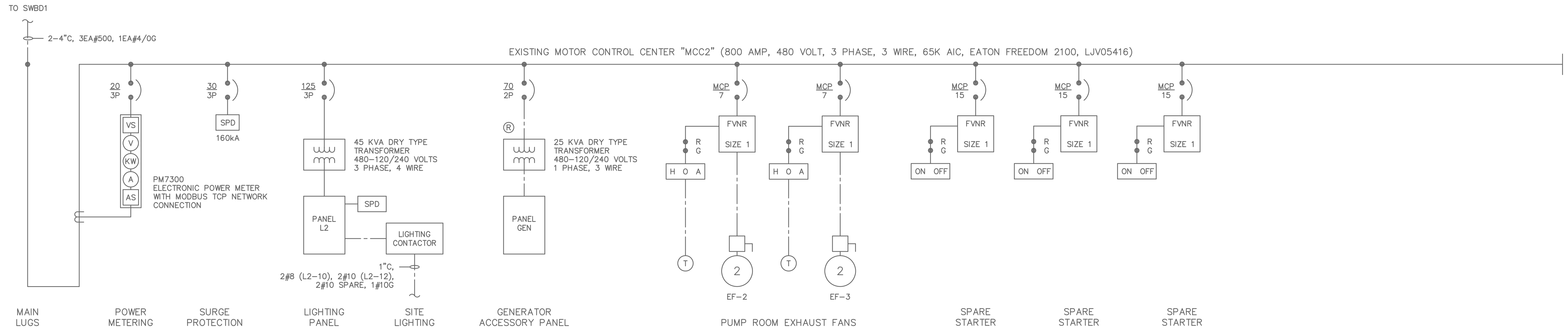
ST. JOHNS COUNTY UTILITY DEPARTMENT
ST. JOHNS COUNTY, FLORIDA
NORTHWEST WTP
PHASE 1 (6 TO 9 MGD) EXPANSION

SINGLE LINE DIAGRAM
MCC1

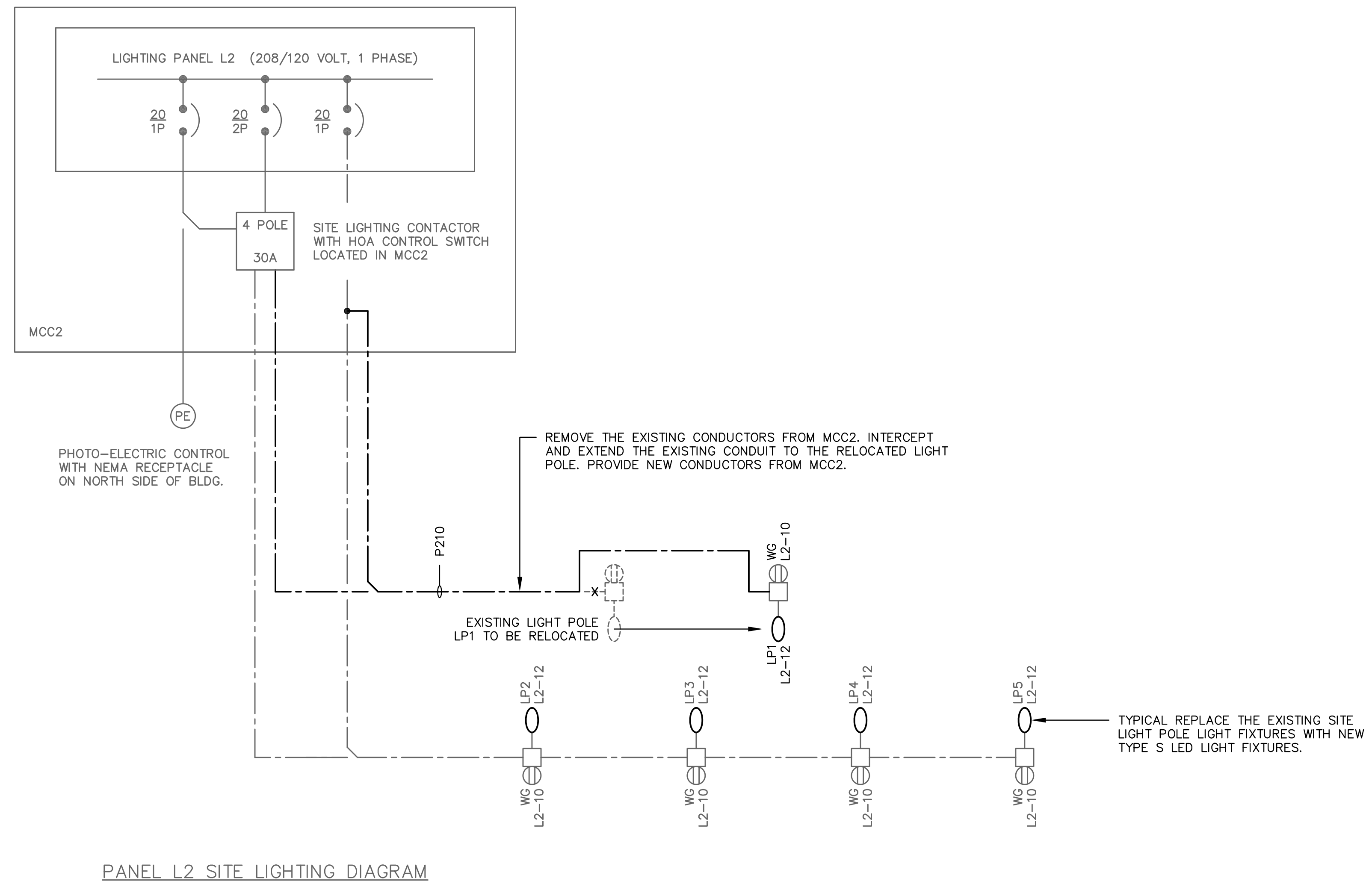
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NO. 37971

PROJECT NO. 6334-232860
FILE NAME: 819E00P8.DWG
SHEET NO.
E-3



LIGHTING PANEL L2									
175 AMP MCB					NEMA 12 120/208 VOLTS/ 3 PH/ 4 W				
CKT	LOAD DESCRIPTION	POLE	TRIP	KVA	CKT	LOAD DESCRIPTION	POLE	TRIP	KVA
1	LTGS - ELEC ROOM	1	20	0.8	2	RCTS - ELEC ROOM	1	20	0.6
3	LTGS - EXTERIOR	1	20	0.4	4	RCTS - EXTERIOR	1	20	0.4
5	LTGS - PUMP ROOM	1	20	0.6	6	RCTS - PUMP ROOM	1	20	1.2
7	LTGS - PUMP ROOM	1	20	0.6	8	RCTS - PUMP ROOM	1	20	1.0
9	SPARE	1	20	--	10	RCTS - SITE	1	20	1.0
11	SPARE	1	20	--	12	LTGS - SITE	2	20	0.7
13	SPARE	1	20	--	14	LTGS - SITE	--	--	--
15	RTU200 INST PANEL	1	20	1.8	16	LIGHTING CONTACTOR	1	20	0.1
17	AIT300, AIT301, TIT302	1	20	0.3	18	SPARE	1	20	--
19	SPARE	1	20	--	20	SPARE	1	20	--
21	SPARE	1	20	--	22	SPARE	1	20	--
23	SPARE	1	20	--	24	SPARE	1	20	--
25	SPARE	1	20	--	26	SPARE	1	20	--
27	SPARE	1	20	--	28	SPARE	1	20	--
29	AHU-1	2	15	2.0	30	AHU-2	2	15	2.0
31	AHU-1	--	--	--	32	AHU-2	--	--	--
33	ACCU-1	2	60	8.0	34	ACCU-2	2	60	8.0
35	ACCU-1	--	--	--	36	ACCU-2	--	--	--
37	SPACE	1	--	--	38	TVSS	3	30	--
39	SPACE	1	--	--	40	TVSS	--	--	--
41	SPACE	1	--	--	42	TVSS	--	--	--



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ST. JOHNS COUNTY UTILITY DEPARTMENT
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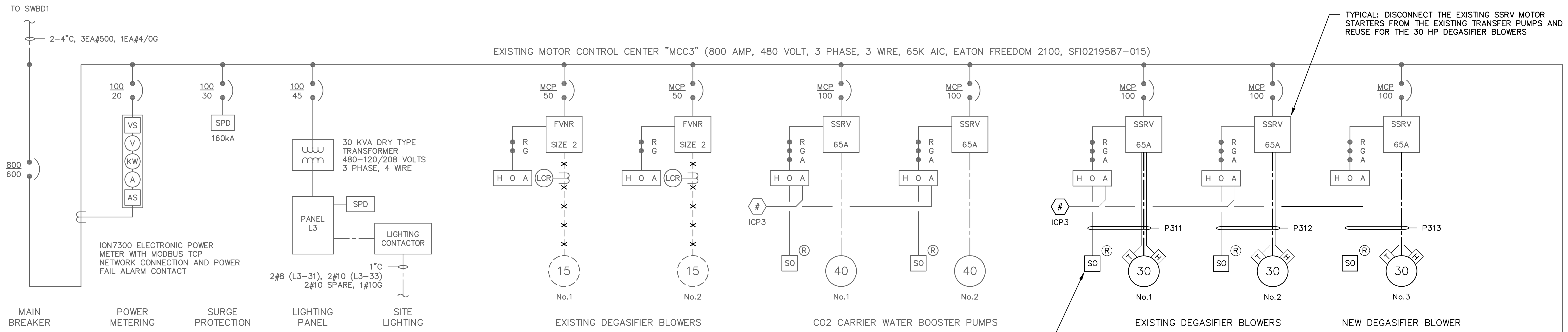
SINGLE LINE DIAGRAM
 MCC2

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PROJECT NO. 6334-232860
 FILE NAME: 819E00P8.DWG

SHEET NO.
E-4



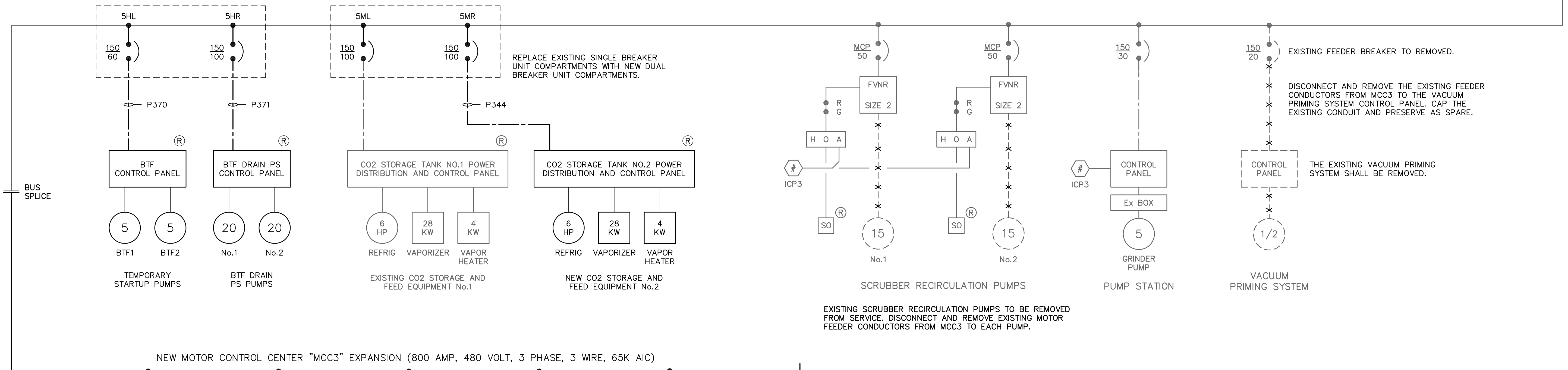
TYPICAL: DISCONNECT THE EXISTING SSRV MOTOR STARTERS FROM THE EXISTING TRANSFER PUMPS AND REUSE FOR THE 30 HP DEGASIFIER BLOWERS

EXISTING 15 HP DEGASIFIER BLOWER MOTORS TO BE REPLACED WITH 30 HP MOTORS. DISCONNECT AND REMOVE THE EXISTING MOTOR POWER AND CONTROL CONDUCTORS.

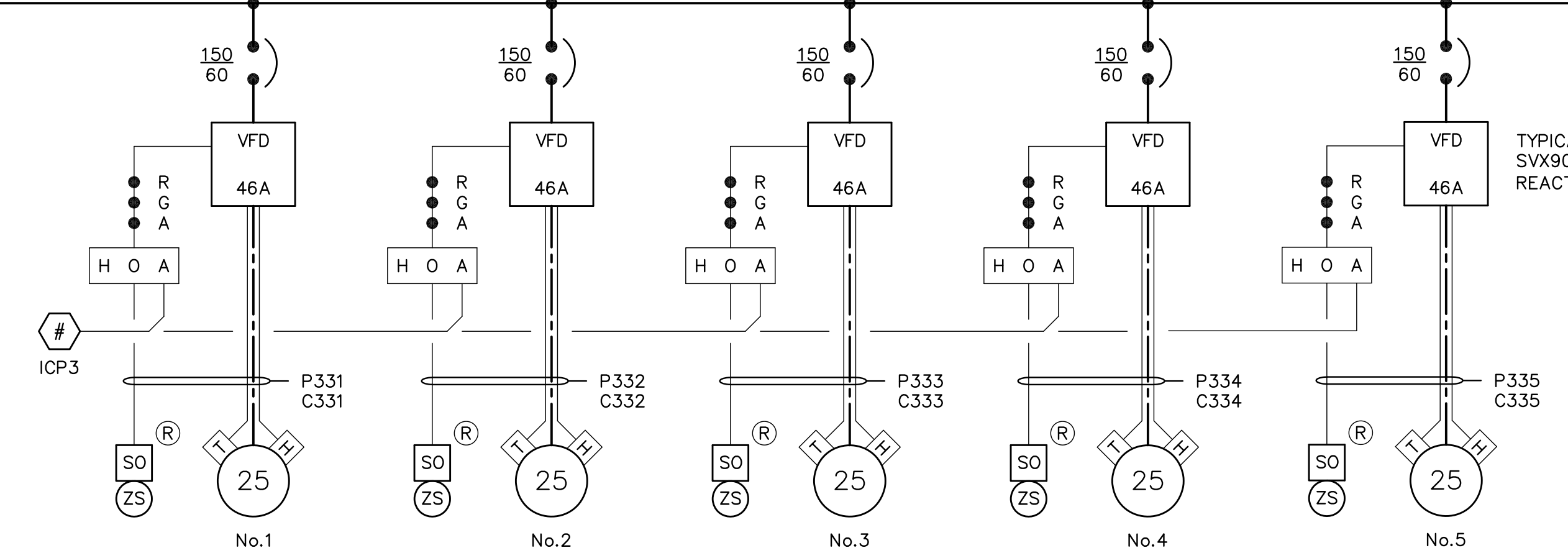
TYPICAL: REPLACE EXISTING SAFE OFF CONTROL STATIONS

EXISTING 15 HP DEGASIFIER BLOWER MOTORS TO BE REPLACED WITH 30 HP MOTORS. REUSE THE EXISTING TRANSFER PUMP SSRV MOTOR STARTERS.

REUSE THE EXISTING TRANSFER PUMP SSRV MOTOR STARTER.



NEW MOTOR CONTROL CENTER "MCC3" EXPANSION (800 AMP, 480 VOLT, 3 PHASE, 3 WIRE, 65K AIC)



TYPICAL SJUCUD STANDARD EATON SVX9000 VFD WITH 3% INPUT LINE REACTOR & DV/DT OUTPUT FILTER

THREE EXISTING CONSTANT SPEED CLEARWELL TRANSFER PUMPS TO BE REPLACED WITH FIVE NEW VARIABLE SPEED CLEARWELL TRANSFER PUMPS. MODIFY THE EXISTING MCC3 TO ADD NEW VFDs FOR TRANSFER PUMP 1. PROVIDE NEW MCC3 EXPANSION WITH NEW VFDs FOR TRANSFER PUMPS 2-5.

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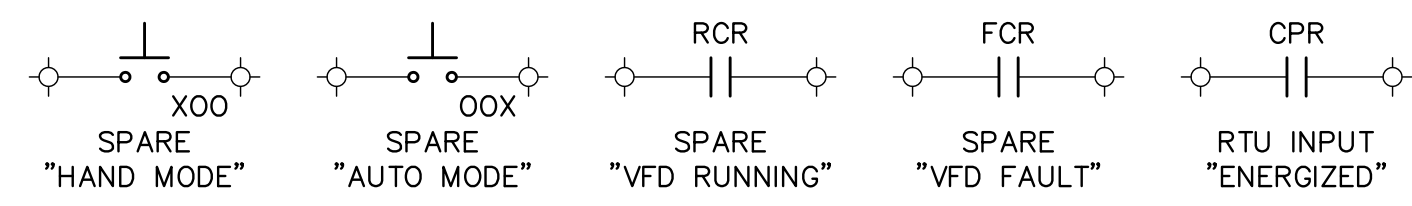
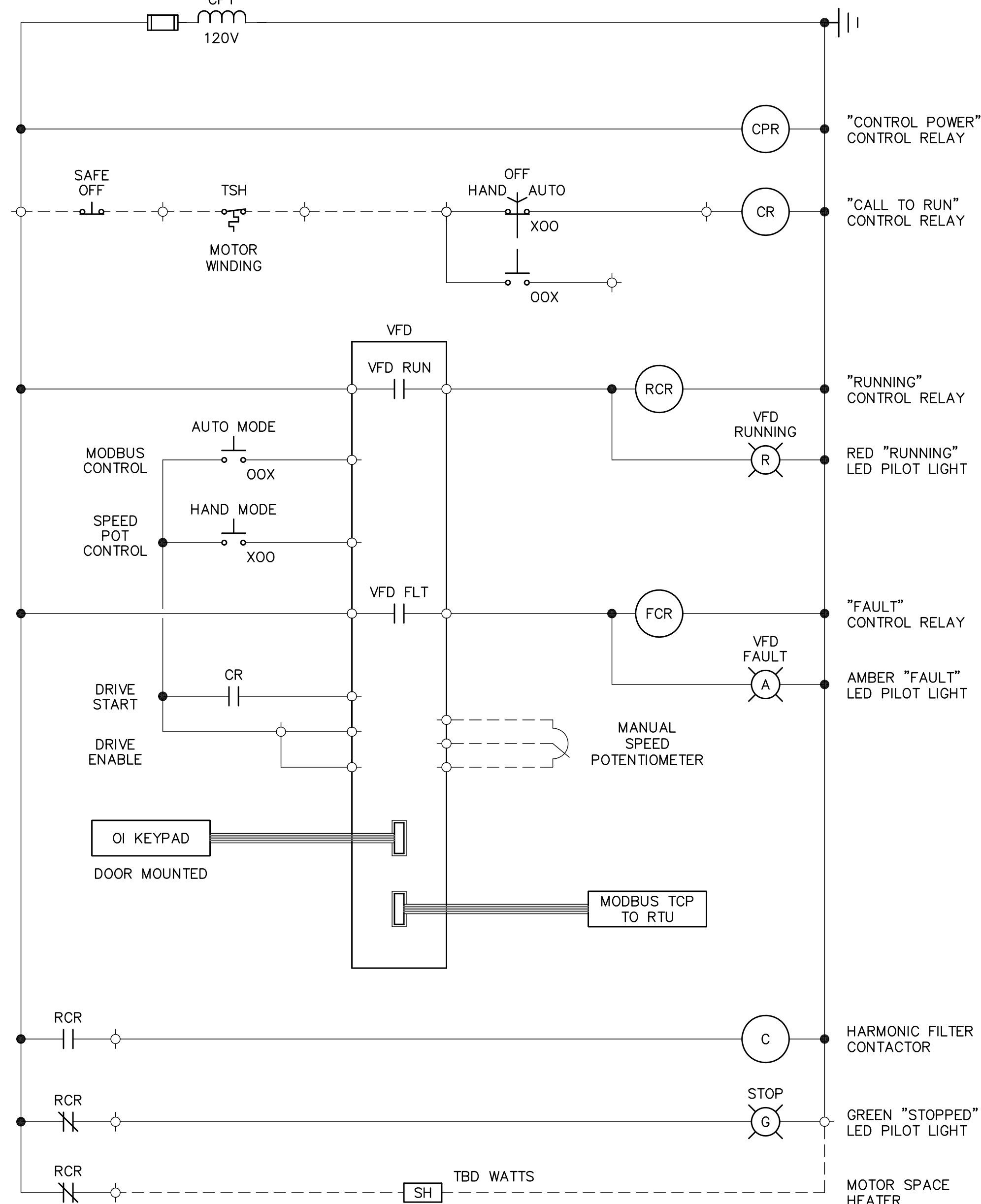
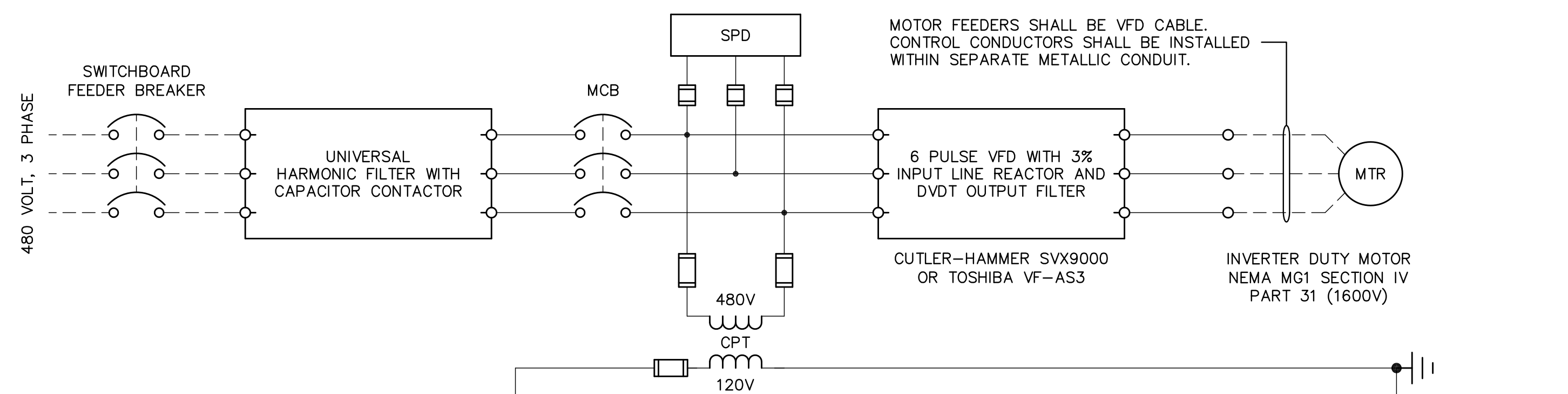
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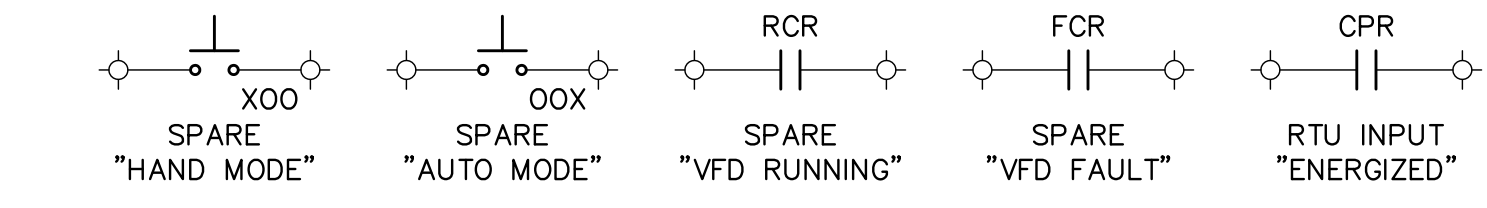
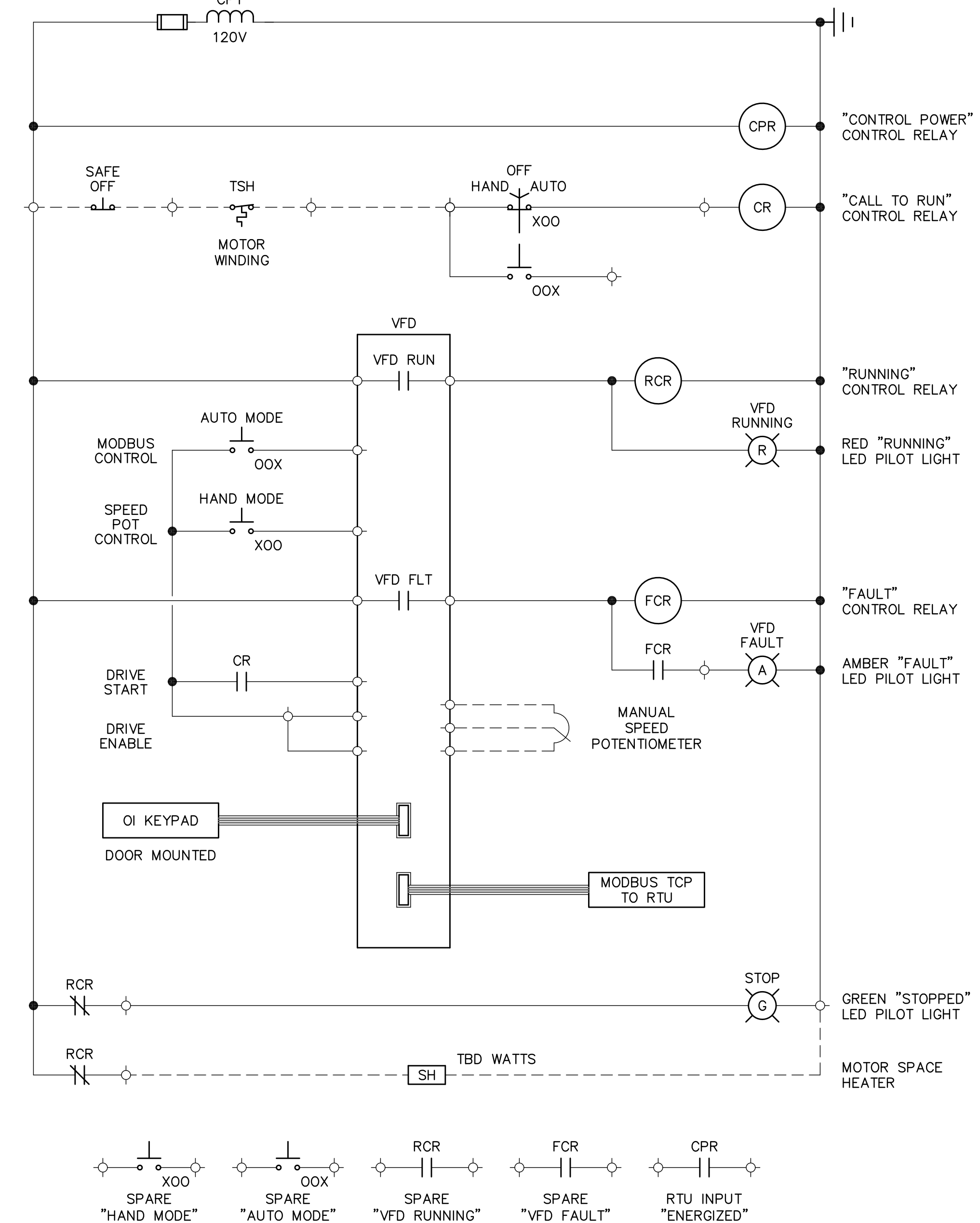
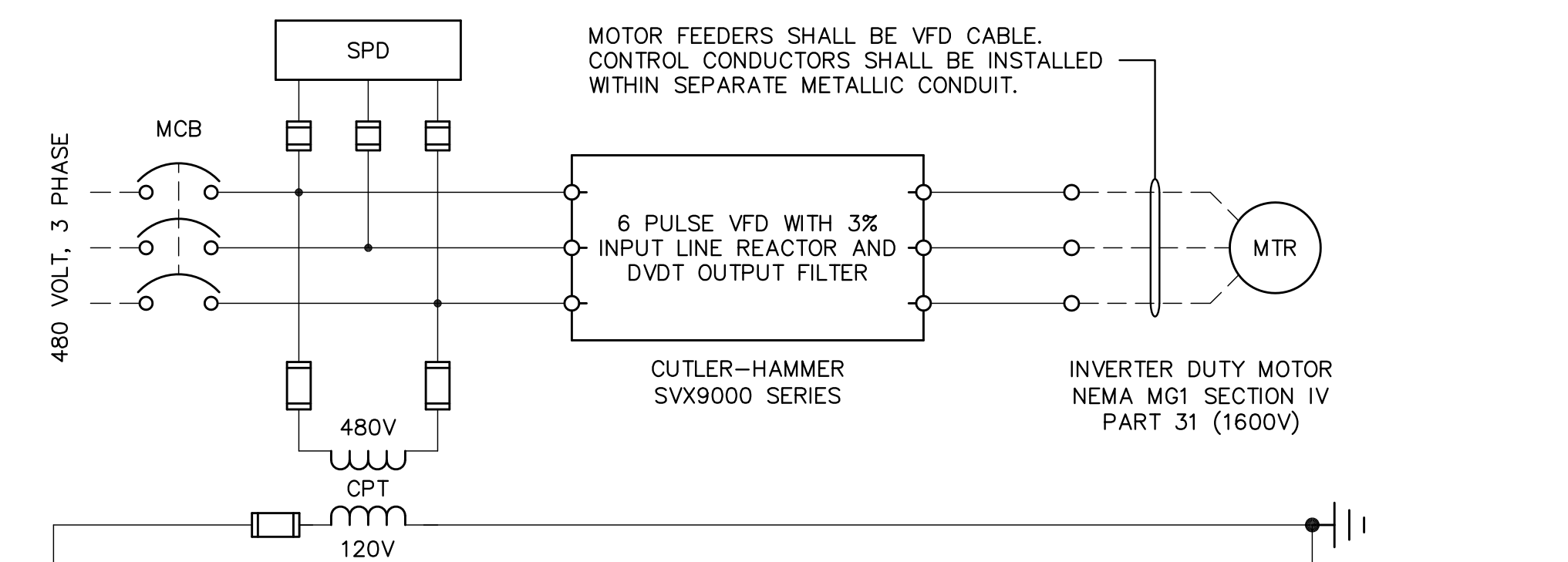
SINGLE LINE DIAGRAM
MCC3

PROJECT NO. 6334-232860
FILE NAME: 819E00P8.DWG
SHEET NO. E-5
ISSUED FOR BID



TYPICAL HIGH SERVICE PUMP VFD CONTROL WIRING DIAGRAM

- NOTES:
1. THE NEW SCADA SYSTEM AUTOMATIC OPERATION OF HIGH SERVICE PUMPS SHALL ALTERNATE SUCH THAT PUMP 2, 3 OR 4 IS ALWAYS IN THE LAST LAG POSITION.



TYPICAL CLEARWELL TRANSFER PUMP VFD CONTROL WIRING DIAGRAM

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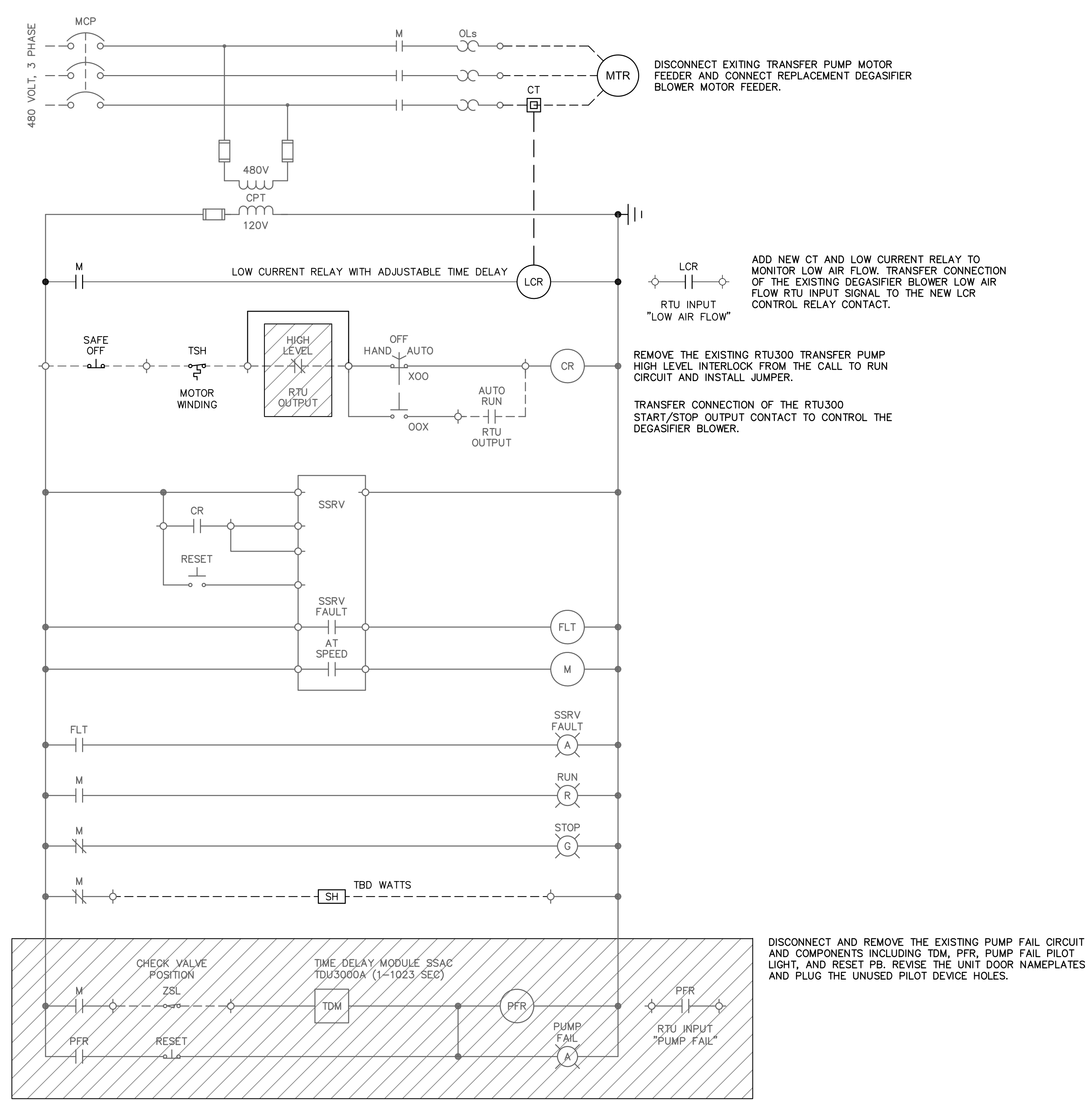
CONTROL WIRING DIAGRAMS
 SHEET NO. E-6

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 NO. 37971

PROJECT NO. 6334-232860
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TYPICAL DEGASIFIER BLOWER CONTROL WIRING DIAGRAM

- NOTES:
- THE THREE EXISTING TRANSFER PUMP SSRV MOTOR STARTERS SHALL BE REUSED FOR THE NEW LARGER DEGASIFIER BLOWERS 1 & 2, AND THE NEW DEGASIFIER BLOWER 3. MODIFY THE EXISTING SSRV MOTOR STARTERS AS REQUIRED.
 - PROVIDE AS BUILT CONTROL WIRING DIAGRAMS.

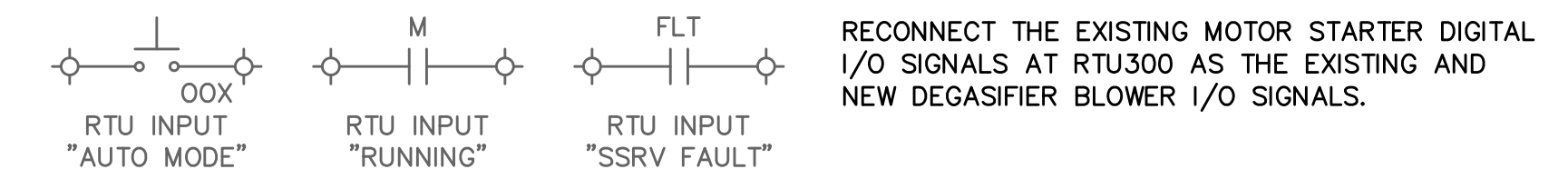
DISCONNECT EXISTING TRANSFER PUMP MOTOR FEEDER AND CONNECT REPLACEMENT DEGASIFIER BLOWER MOTOR FEEDER.

ADD NEW CT AND LOW CURRENT RELAY TO MONITOR LOW AIR FLOW. TRANSFER CONNECTION OF THE EXISTING DEGASIFIER BLOWER LOW AIR FLOW RTU INPUT SIGNAL TO THE NEW LCR CONTROL RELAY CONTACT.

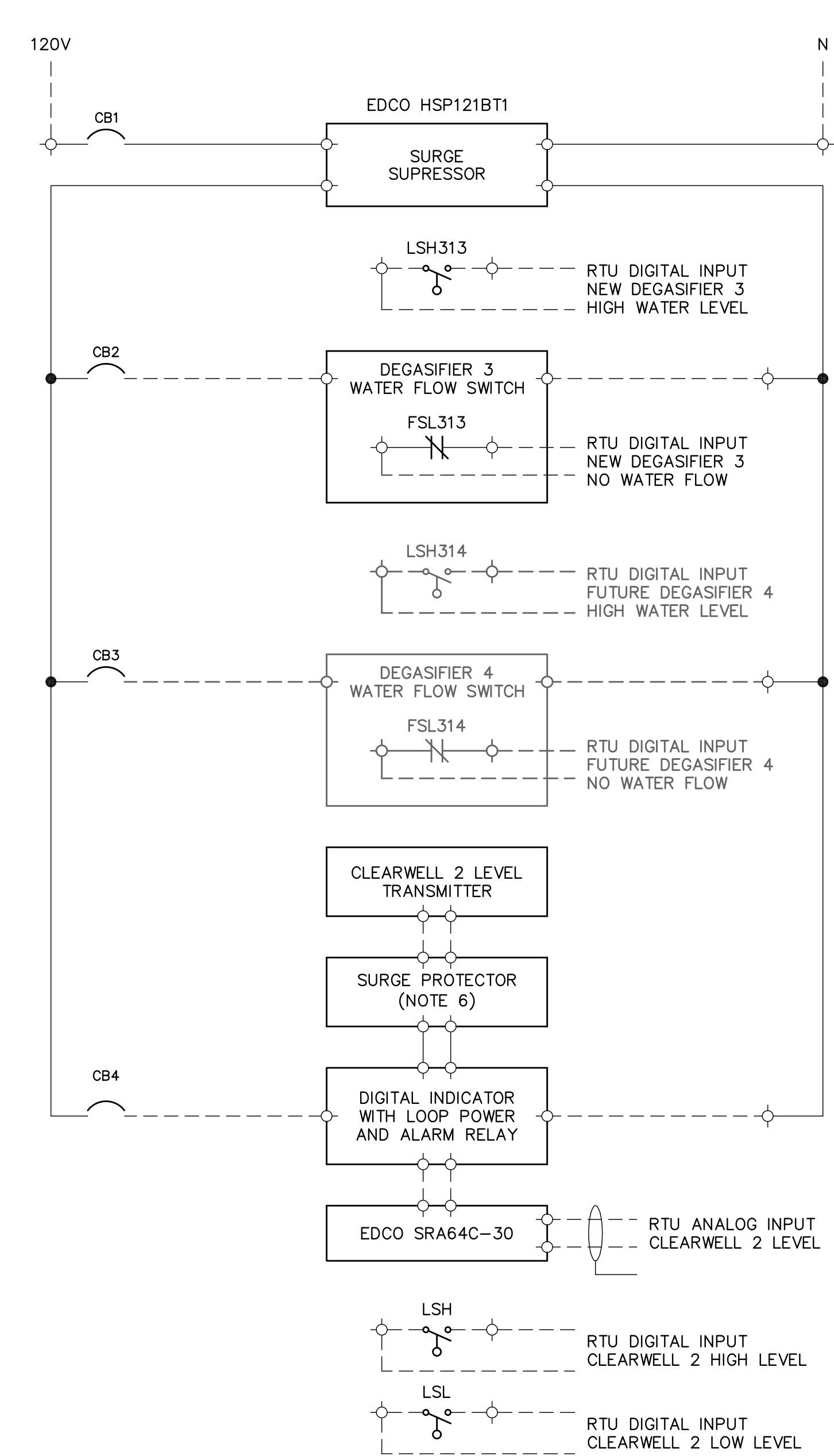
REMOVE THE EXISTING RTU300 TRANSFER PUMP HIGH LEVEL INTERLOCK FROM THE CALL TO RUN CIRCUIT AND INSTALL JUMPER.

TRANSFER CONNECTION OF THE RTU300 START/STOP OUTPUT CONTACT TO CONTROL THE DEGASIFIER BLOWER.

DISCONNECT AND REMOVE THE EXISTING PUMP FAIL CIRCUIT AND COMPONENTS INCLUDING TDM, PFR, PUMP FAIL PILOT LIGHT, AND RESET PB. REVISE THE UNIT DOOR NAMEPLATES AND PLUG THE UNUSED PILOT DEVICE HOLES.



RECONNECT THE EXISTING MOTOR STARTER DIGITAL I/O SIGNALS AT RTU300 AS THE EXISTING AND NEW DEGASIFIER BLOWER I/O SIGNALS.



DEGASIFIER/CLEARWELL INSTRUMENTATION PANEL 2 (DCIP2) WIRING DIAGRAM

- DEGASIFIER BLOWER SEQUENCE OF OPERATION:
- THE SCADA SYSTEM SHALL MONITOR AND CONTROL THE DEGASIFIER BLOWERS.
 - THE DEGASIFIER BLOWERS SHALL BE ACTIVATED FOR AN OPERATOR ADJUSTABLE TIME PERIOD PRIOR TO STARTING THE RAW WATER WELLS, AND SHALL REMAIN IN SERVICE FOR AN OPERATOR ADJUSTABLE TIME PERIOD FOLLOWING TERMINATION OF RAW WATER FLOW.
 - THE SCADA SYSTEM SHALL MONITOR DEGASIFIER WATER FLOW TO CONFIRM WHICH DEGASIFIERS ARE IN SERVICE. THE SCADA SYSTEM SHALL CALCULATE THE RAW WATER FLOW TO EACH DEGASIFIER BASED ON THE TOTAL RAW WATER FLOW SIGNAL. THE SCADA SYSTEM SHALL ACTIVATE AN ALARM AND STOP THE RAW WATER FLOW ANYTIME THE WATER FLOW TO A DEGASIFIER EXCEEDS THE RATED CAPACITY.
 - THE SCADA SYSTEM SHALL MONITOR DEGASIFIER BLOWER MOTOR CURRENT TO CONFIRM AIR FLOW. THE SCADA SYSTEM SHALL ACTIVATE AN ALARM, STOP THE RAW WATER FLOW, AND DISABLE THE ASSOCIATED BLOWER ON LOW AIR FLOW FOR A DEGASIFIER THAT IS IN SERVICE.
 - THE SCADA SYSTEM SHALL MONITOR DEGASIFIER HIGH WATER LEVEL. THE SCADA SYSTEM SHALL ACTIVATE AN ALARM, STOP THE RAW WATER FLOW, AND DISABLE THE DEGASIFIER BLOWERS ON HIGH LEVEL IN ANY DEGASIFIER.
 - PROVIDE BLUE RIBBON MODEL BCP3000 SURGE PROTECTOR AS REQUIRED FOR THE LEVEL TRANSDUCER MANUFACTURER'S LIFETIME WARRANTY.

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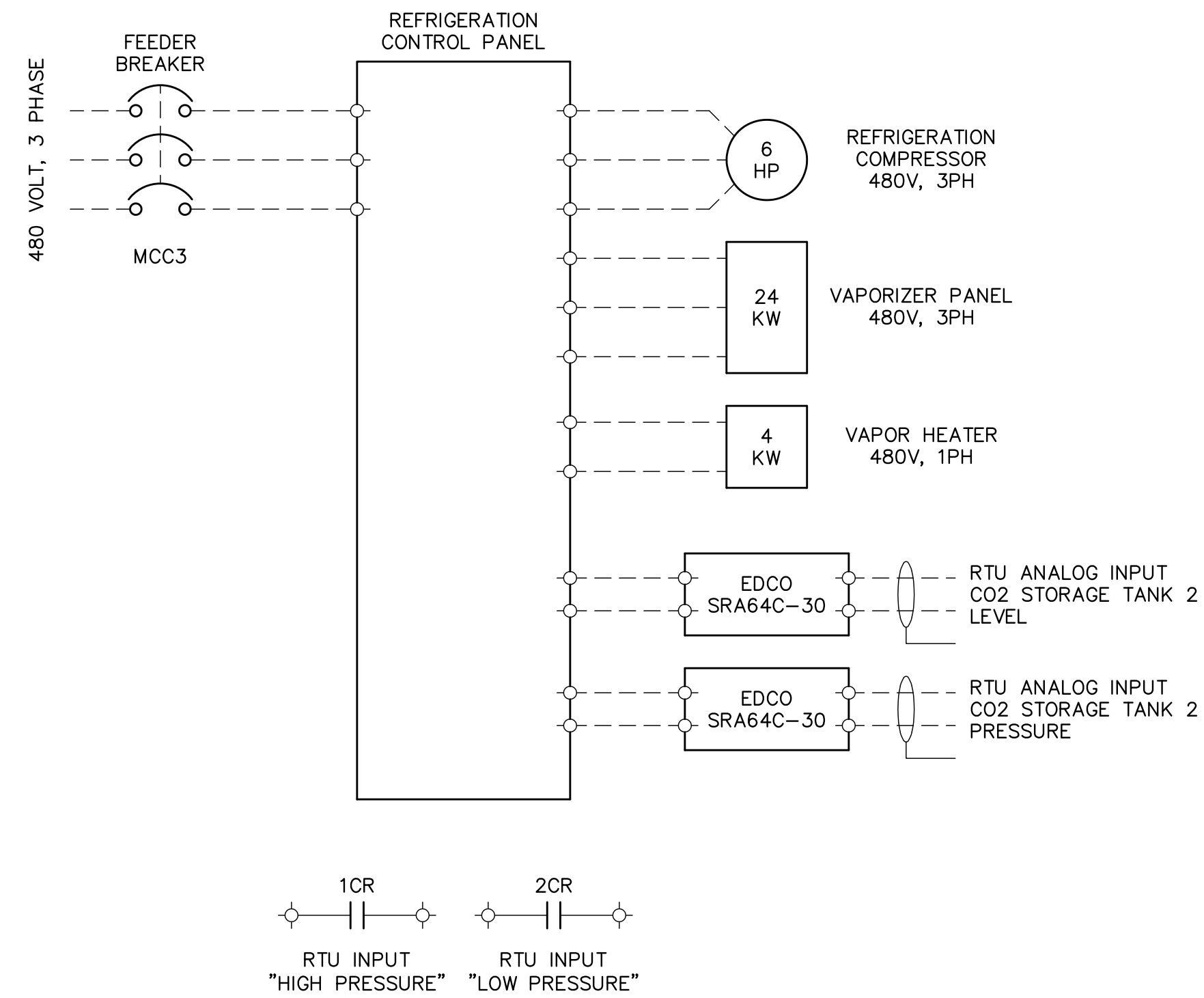
DESIGNED BY: D. LASSETTER
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CONTROL WIRING DIAGRAMS
SHEET NO. E-7

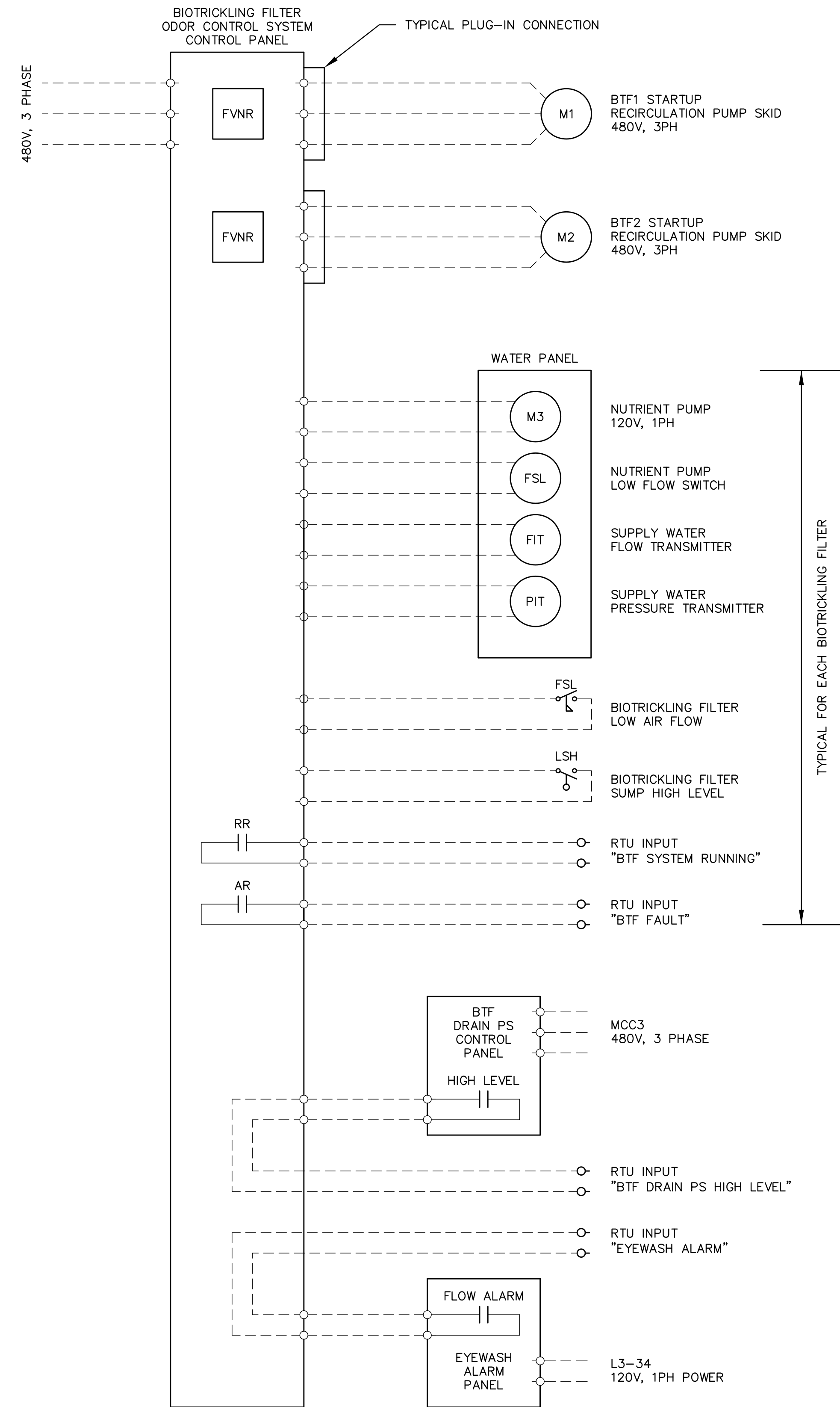
PROJECT NO. 6334-232860
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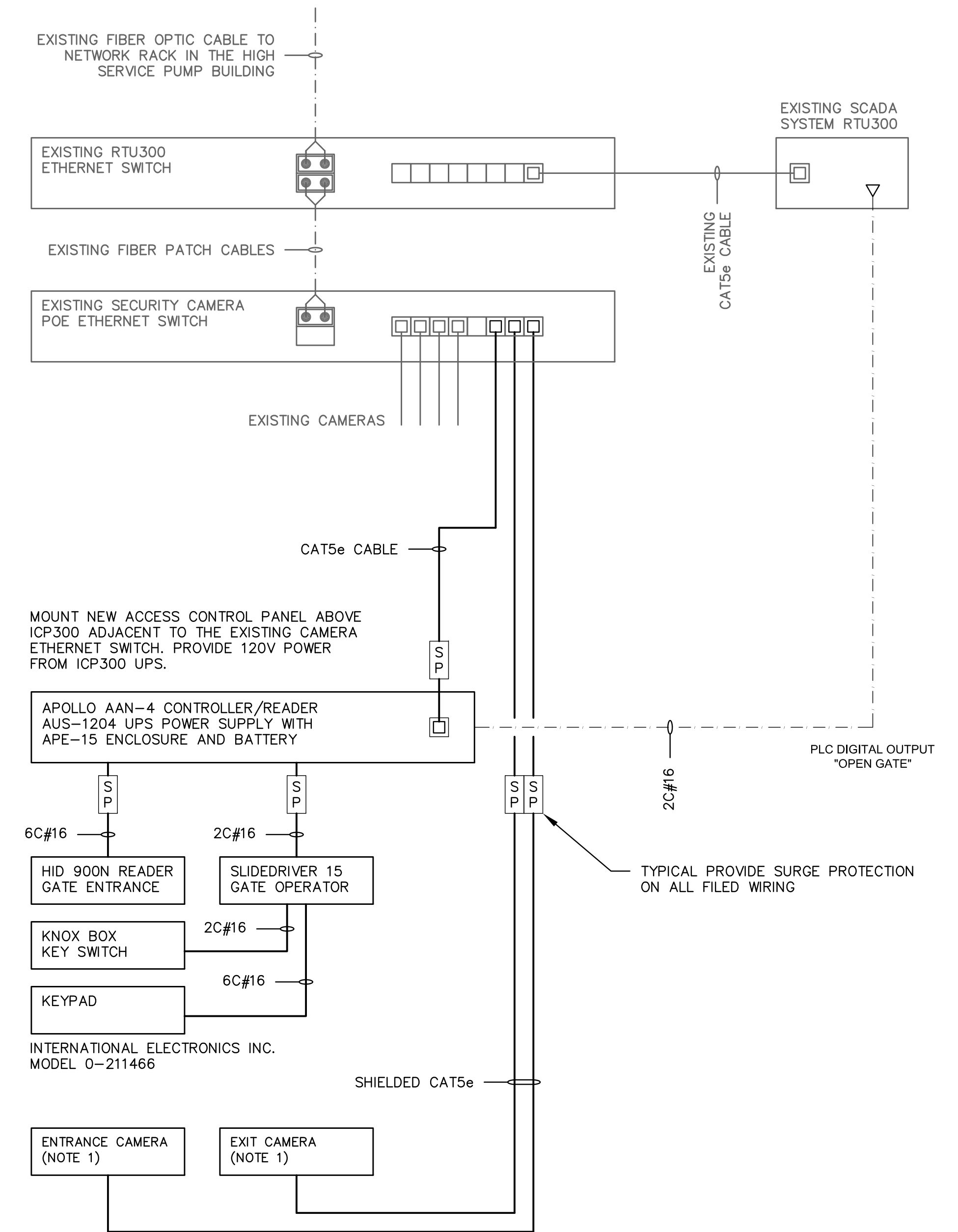
CO2 STORAGE TANK 2 CONTROL PANEL

NOTES:

1. THE SCADA SYSTEM SHALL MONITOR THE CO2 STORAGE TANK 2 PRESSURE AND LIQUID LEVEL, AND SHALL ACTIVATE ALARMS ON HIGH PRESSURE, LOW PRESSURE, HIGH LEVEL AND LOW LEVEL.



BTF ODOR CONTROL SYSTEM CONTROL PANEL DIAGRAM



ENTRANCE GATE ACCESS CONTROL SYSTEM SCHEMATIC DIAGRAM

NOTES:

1. PROVIDE NEW ENTRANCE AND EXIT CAMERAS MOUNTED TO THE EXISTING SITE LIGHT POLE:
 - CAMERA: HANWHA QNV-7010R
 - INSTALLATION BOX: SBP-300NB
 - WALL MOUNT: SBP-300WM1

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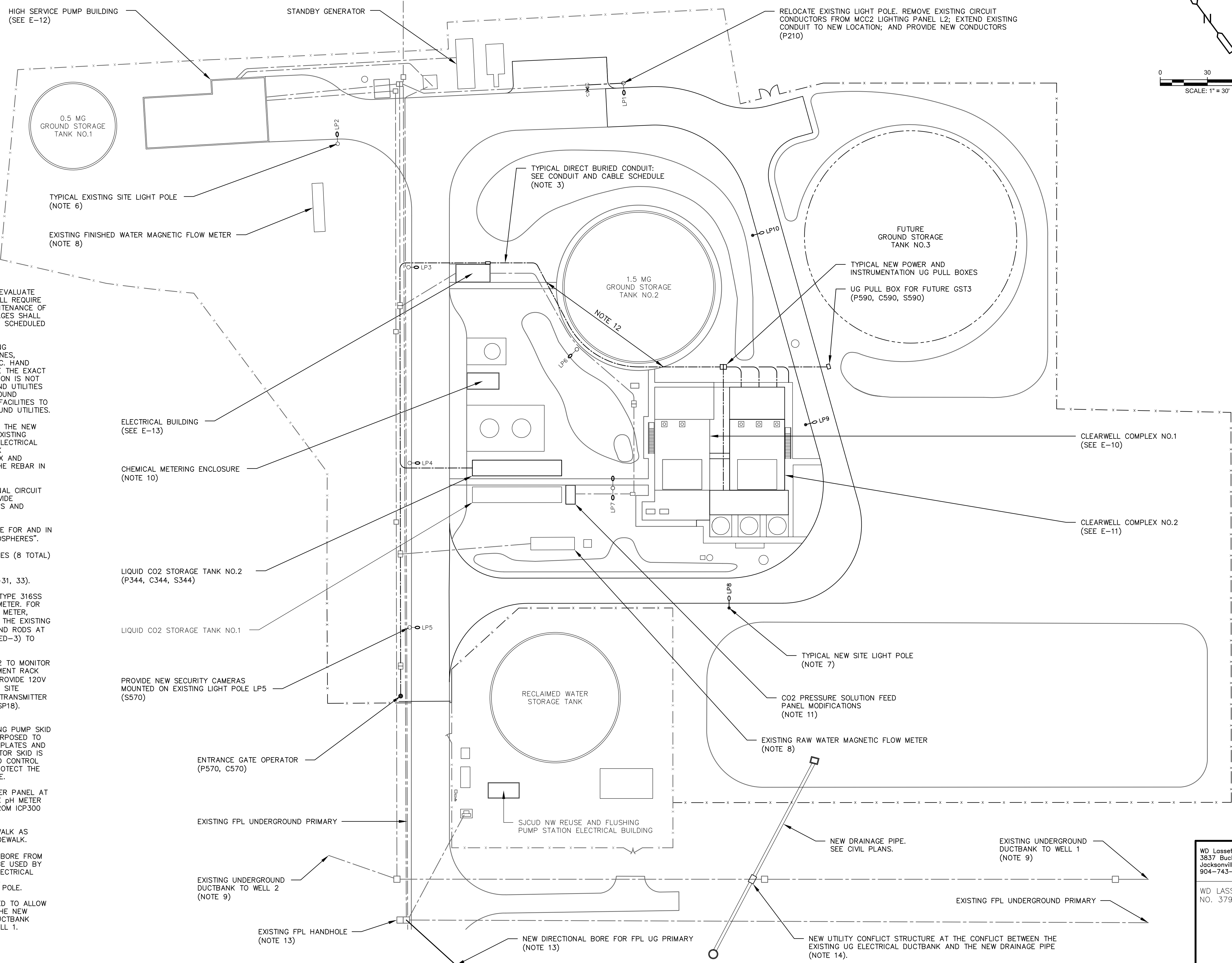
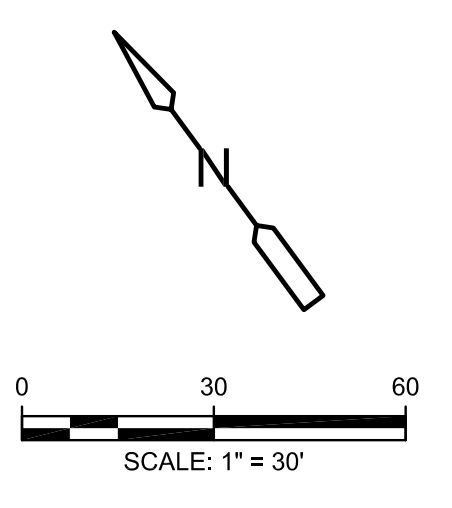
CONTROL WIRING DIAGRAMS

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SHEET NO.
E-8



- NOTES:
- THE CONTRACTOR SHALL INSPECT THE SITE PRIOR TO BID TO EVALUATE EXISTING CONDITIONS. INSTALLATION OF THE NEW FACILITIES WILL REQUIRE FIELD COORDINATION WITH PLANT OPERATIONS TO PERMIT MAINTENANCE OF OPERATION DURING CONSTRUCTION. DURATION OF POWER OUTAGES SHALL BE MINIMUM REQUIRED FOR SAFE INSTALLATION AND SHALL BE SCHEDULED WITH AND APPROVED BY THE OWNER.
 - THE CONTRACTOR SHALL TAKE PRECAUTIONS TO AVOID EXISTING UNDERGROUND UTILITIES INCLUDING PROCESS PIPING, WATER LINES, CHEMICAL FEED PIPING, ELECTRICAL CONDUITS, TELEPHONE, ETC. HAND EXCAVATION SHALL BE REQUIRED IN CONGESTED AREAS WHERE THE EXACT LOCATION OF ALL UTILITIES IS UNKNOWN AND SURFACE LOCATION IS NOT PRACTICAL. LOCATIONS SHOWN FOR THE EXISTING UNDERGROUND UTILITIES ARE APPROXIMATE ONLY. NOT ALL OF THE EXISTING UNDERGROUND UTILITIES ARE SHOWN. FIELD ADJUST LOCATIONS OF THE NEW FACILITIES TO ACCOMMODATE THE EXISTING SITE CONDITIONS AND UNDERGROUND UTILITIES.
 - PROVIDE #4/0 TINNED COPPER COUNTERPOISE INSTALLED WITH THE NEW DIRECT BURIED CONDUITS. BOND THE COUNTERPOISE TO THE EXISTING ELECTRICAL BUILDING COUNTERPOISE LOOP. BOND EACH NEW ELECTRICAL ENCLOSURE THROUGHOUT THE PROJECT TO THE CONDUIT BANK COUNTERPOISE. PROVIDE GROUND RODS AT EACH UG PULL BOX AND ELECTRICAL EQUIPMENT RACK. BOND THE COUNTERPOISE TO THE REBAR IN EACH CORNER OF THE NEW CLEARWELL CONCRETE FOOTER.
 - MAINTAIN MINIMUM 18" SEPARATION BETWEEN POWER AND SIGNAL CIRCUIT CONDUITS IN THE UNDERGROUND CONDUIT BANK SYSTEM. PROVIDE CONCRETE ENCASUREMENT WHERE CONDUITS CROSS UNDER ROADS AND DRIVEWAYS.
 - ALL EXTERIOR MATERIAL AND INSTALLATION SHALL BE SUITABLE FOR AND IN ACCORDANCE WITH THE SPECIFICATIONS FOR "CORROSIVE ATMOSPHERES".
 - TYPICAL REPLACE THE EXISTING SITE LIGHT POLE LIGHT FIXTURES (8 TOTAL) WITH NEW TYPE "S" LIGHT FIXTURES.
 - TYPICAL PROVIDE NEW TYPE "S" SITE LIGHT POLES (P301; L3-31, 33).
 - TYPICAL EXISTING MAGNETIC FLOW METER: PROVIDE TWO NEW TYPE 316SS GROUNDING RINGS FOR THE FINISHED WATER MAGNETIC FLOW METER. FOR THE FINISHED WATER FLOW METER AND THE RAW WATER FLOW METER, PROVIDE NEW #4/0 TINNED COPPER GROUND GRID ENCIRCLING THE EXISTING ABOVE GRADE PIPING PAD WITH A MINIMUM OF TWO 20' GROUND RODS AT EACH END. PROVIDE MAGNETIC FLOW METER GROUNDING (SEE ED-3) TO THE NEW GROUND GRID.
 - PROVIDE NEW WIRELESS I/O PANELS AT EXISTING WELLS 1 & 2 TO MONITOR THE EXISTING FLOW SIGNALS. PROVIDE NEW ELECTRICAL EQUIPMENT RACK AT EACH WELL TO SUPPORT THE NEW WIRELESS I/O PANEL. PROVIDE 120V POWER TO THE WIRELESS I/O PANEL FROM THE EXISTING WELL SITE RECEPTACLE CIRCUIT (3/4" C, 3#12). CONNECT EXISTING FLOW TRANSMITTER OUTPUT SIGNALS TO THE NEW WIRELESS I/O PANEL (3/4", 1TSP18). PROVIDE MAGNETIC FLOW METER GROUNDING PER NOTE 8.
 - CHEMICAL METERING ENCLOSURE: THE EXISTING NaOCL METERING PUMP SKID FOR THE CHEMICAL SCRUBBER IS TO BE MODIFIED AND RE-PURPOSED TO SERVE THE NEW CLEARWELL NO.2. REPLACE ASSOCIATED NAMEPLATES AND UPDATE PANEL L3 SCHEDULE. THE EXISTING CORROSION INHIBITOR SKID IS BEING REMOVED. DISCONNECT AND REPLACE THE EXISTING SKID CONTROL PANEL WITH A NEW NEMA 4X NON-METALLIC PULL BOX TO PROTECT THE EXISTING CONDUIT AND WIRE. UPDATE THE PANEL L3 SCHEDULE.
 - CO2 PSF PANEL MODIFICATIONS: THE EXISTING SINGLE pH METER PANEL AT THE CO2 PSF PANEL IS TO BE REPLACED WITH A NEW DUPLEX pH METER PANEL. EXTEND AND CONNECT THE EXISTING SPARE 1TSP18 FROM ICP300 TO THE ADDITIONAL pH METER.
 - REMOVE AND REPLACE SECTIONS OF THE EXISTING OST2 SIDEWALK AS REQUIRED TO INSTALL THE NEW CONDUIT BANK BELOW THE SIDEWALK.
 - INSTALL TWO NEW 4" SCH 40 PVC CONDUITS BY DIRECTIONAL BORE FROM THE EXISTING FPL POLE TO THE EXISTING FPL HANDHOLE TO BE USED BY FPL TO REPLACE SEGMENT OF THE EXISTING UNDERGROUND ELECTRICAL PRIMARY, AND SHALL BE INSTALLED IN ACCORDANCE WITH FPL REQUIREMENTS. SEE C-7 FOR LOCATION OF THE EXISTING FPL POLE.
 - THE NEW UTILITY CONFLICT STRUCTURE SHALL BE CONSTRUCTED TO ALLOW THE EXISTING UG ELECTRICAL DUCTBANK TO PASS THROUGH THE NEW STRUCTURE. SEE SHEET C-5. THE EXISTING UG ELECTRICAL DUCTBANK INCLUDES SEVERAL CONCRETE ENCASED CONDUITS SERVING WELL 1.

ELECTRICAL BUILDING (SEE E-13)

CHEMICAL METERING ENCLOSURE (NOTE 10)

LIQUID CO2 STORAGE TANK NO.2 (P344, C344, S344)

LIQUID CO2 STORAGE TANK NO.1

PROVIDE NEW SECURITY CAMERAS MOUNTED ON EXISTING LIGHT POLE LP5 (S570)

ENTRANCE GATE OPERATOR (P570, C570)

EXISTING FPL UNDERGROUND PRIMARY

EXISTING UNDERGROUND DUCTBANK TO WELL 2 (NOTE 9)

EXISTING FPL HANDHOLE (NOTE 13)

TYPICAL DIRECT BURIED CONDUIT: SEE CONDUIT AND CABLE SCHEDULE (NOTE 3)

1.5 MG GROUND STORAGE TANK NO.2 (NOTE 12)

TYPICAL NEW POWER AND INSTRUMENTATION UG PULL BOXES (P590, C590, S590)

FUTURE GROUND STORAGE TANK NO.3

CLEARWELL COMPLEX NO.1 (SEE E-10)

CLEARWELL COMPLEX NO.2 (SEE E-11)

TYPICAL NEW SITE LIGHT POLE (NOTE 7)

CO2 PRESSURE SOLUTION FEED PANEL MODIFICATIONS (NOTE 11)

EXISTING RAW WATER MAGNETIC FLOW METER (NOTE 8)

NEW DRAINAGE PIPE. SEE CIVIL PLANS.

EXISTING UNDERGROUND DUCTBANK TO WELL 1 (NOTE 9)

EXISTING FPL UNDERGROUND PRIMARY

NEW UTILITY CONFLICT STRUCTURE AT THE CONFLICT BETWEEN THE EXISTING UG ELECTRICAL DUCTBANK AND THE NEW DRAINAGE PIPE (NOTE 14).

REV. NO.	DATE	DRWN	CHKD	REMARKS

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 CROSS CHK'D BY: CDM SMITH
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 DATE: JULY 2019



ST. JOHNS COUNTY UTILITY DEPARTMENT
 ST. JOHNS COUNTY, FLORIDA
 NORTHWEST WTP
 PHASE 1 (6 TO 9 MGD) EXPANSION

ELECTRICAL SITE PLAN

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 NO. 37971

PROJECT NO. 6334-232860
 FILE NAME: 819E00P8.DWG

SHEET NO.
 E-9

NOTES:

1. DEGASIFIER BLOWER REPLACEMENT: THE EXISTING CLEARWELL 1 DEGASIFIER BLOWERS ARE TO BE REPLACED, PRESERVE THE EXISTING CONDUITS FROM MCC3. REPLACE EXISTING CONDUCTORS, PULL BOXES, SAFE OFF CONTROL STATIONS, AND FLEXIBLE CONDUIT CONNECTIONS.
2. TRANSFER PUMP REPLACEMENT: THE EXISTING CLEARWELL 1 TRANSFER PUMPS ON THE GRADE SLAB ARE TO BE REPLACED WITH NEW VERTICAL TURBINE TRANSFER PUMPS ON TOP OF THE CLEARWELL. PRESERVE THE EXISTING MOTOR FEEDER CONDUITS FROM MCC3. REPLACE THE EXISTING CONDUCTORS WITH NEW VFD CABLE.
3. INSTALL NEW NEMA 4X ALUMINUM PULL BOX AT THE EXISTING TRANSFER PUMP CONDUIT STUB-UPS AND EXTEND NEW RIGID ALUMINUM CONDUIT EXPOSED TO THE NEW TRANSFER PUMPS. ROUTE THE EXPOSED CONDUIT IN PARALLEL WITH PIPING TO PREVENT CREATING A TRIP HAZARD.

EXISTING SCRUBBER TO BE DEMOLISHED. DISCONNECT AND REMOVE ALL CONDUCTORS FROM THE SCRUBBER CONTROL PANEL TO THE SCRUBBER COMPONENTS. CAP THE EMPTY CONDUITS.

EXISTING EYEWASH STATION ALARM PANEL TO BE DEMOLISHED. DISCONNECT AND REMOVE ALL CONDUCTORS FROM THE SCRUBBER CONTROL PANEL. CUT OFF AND CAP THE EMPTY CONDUITS.

TYPICAL REPLACE BOTH EXISTING POLE MOUNTED LIGHT FIXTURES ON EACH CLEARWELL 1 LIGHT POLE WITH NEW TYPE "T" LIGHT FIXTURES.

DEMOLISH EXISTING BRANCH CIRCUIT CONDUIT AND CONDUCTORS FOR THE EXISTING RELOCATED SAMPLE PUMP.

TYPICAL EXISTING TRANSFER PUMP TO BE DEMOLISHED (NOTES 2, 3)

EXISTING DEGASIFIER/CLEARWELL INSTRUMENTATION PANEL 1 (DCIP1)

TRANSFER PUMP 1
P331, C331
(NOTE 2)

DEGASIFIER BLOWER 1
P311
(NOTE 1)

DEMOLISH EXISTING BRANCH CIRCUIT CONDUIT AND CONDUCTORS FOR THE EXISTING RELOCATED SAMPLE PUMP.

TRANSFER PUMP 2
P332, C332
(NOTE 2)

DEGASIFIER BLOWER 2
P312
(NOTE 1)

RELOCATED FINISHED WATER SAMPLE PUMP 1 (P337)

P336, C336

RELOCATED PRE-STORAGE pH SAMPLE PUMP (P338)

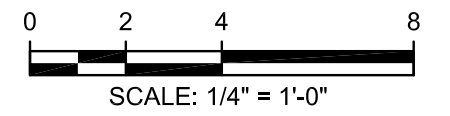
EXISTING VACUUM PRIMING SYSTEM TO BE DEMOLISHED. PRESERVE THE EXISTING CONDUITS P336, C336. PROVIDE NEW NEMA 4X ALUMINUM TERMINAL BOX "TB336" TO TERMINATE THE EXISTING CONDUITS. REPLACE THE EXISTING P336 CONDUCTORS AS SCHEDULED. MAINTAIN THE EXISTING C336 CONDUCTORS AS SPARE.

EXISTING SCRUBBER RECIRCULATION PUMPS TO BE DEMOLISHED. DISCONNECT AND REMOVE ALL CONDUCTORS FROM MCC3 TO THE RECIRCULATION PUMPS. CAP THE EMPTY CONDUITS.

EXISTING SCRUBBER CONTROL PANEL TO BE REMOVED AND REPLACED WITH A NEW NEMA 4X ALUMINUM TERMINAL BOX "TB520" (24"x20"x10").

PRESERVE EXISTING CONDUITS P520, C520, S520 AND TERMINATE THE EXISTING CONDUCTORS IN THE NEW TERMINAL BOX. MATCH THE EXISTING CONTROL PANEL TERMINAL BLOCK NUMBERS.

TYPICAL NEW FS BOX WITH MANUAL MOTOR STARTER



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ST. JOHNS COUNTY UTILITY DEPARTMENT
 ST. JOHNS COUNTY, FLORIDA
 NORTHWEST WTP
 PHASE 1 (6 TO 9 MGD) EXPANSION

CLEARWELL COMPLEX 1 IMPROVEMENTS
 ELECTRICAL PLAN

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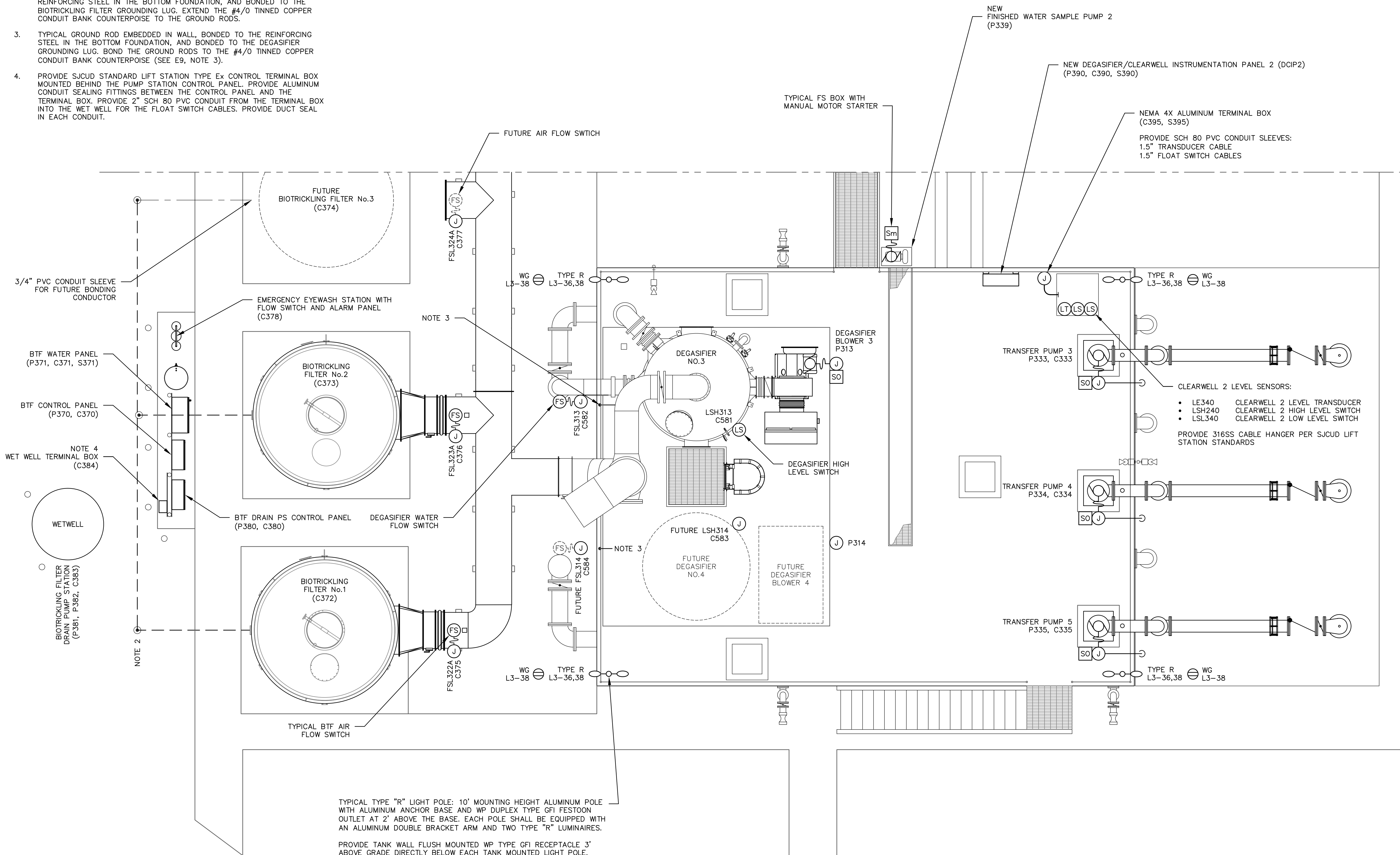
PROJECT NO. 6334-232860
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SHEET NO.
E-10

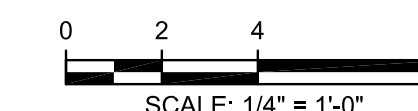
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NOTES:

- BIOTRICKLING FILTER CONTROL PANEL: THE CONTROL PANEL SHALL BE EQUIPPED WITH THE MOTOR STARTER, CONTROLS AND TEMPORARY POWER CONNECTIONS REQUIRED FOR THE TEMPORARY STARTUP RECIRCULATION PUMP SKID.
- FOR EACH BIOTRICKLING FILTER PROVIDE GROUND ROD BONDED TO THE REINFORCING STEEL IN THE BOTTOM FOUNDATION, AND BONDED TO THE BIOTRICKLING FILTER GROUNDING LUG. EXTEND THE #4/0 TINNED COPPER CONDUIT BANK COUNTERPOISE TO THE GROUND RODS.
- TYPICAL GROUND ROD EMBEDDED IN WALL, BONDED TO THE REINFORCING STEEL IN THE BOTTOM FOUNDATION, AND BONDED TO THE DEGASIFIER GROUNDING LUG. BOND THE GROUND RODS TO THE #4/0 TINNED COPPER CONDUIT BANK COUNTERPOISE (SEE E9, NOTE 3).
- PROVIDE SJCUD STANDARD LIFT STATION TYPE Ex CONTROL TERMINAL BOX MOUNTED BEHIND THE PUMP STATION CONTROL PANEL. PROVIDE ALUMINUM CONDUIT SEALING FITTINGS BETWEEN THE CONTROL PANEL AND THE TERMINAL BOX. PROVIDE 2" SCH 80 PVC CONDUIT FROM THE TERMINAL BOX INTO THE WET WELL FOR THE FLOAT SWITCH CABLES. PROVIDE DUCT SEAL IN EACH CONDUIT.



TYPICAL TYPE "R" LIGHT POLE: 10' MOUNTING HEIGHT ALUMINUM POLE WITH ALUMINUM ANCHOR BASE AND WP DUPLEX TYPE GFI FESTOON OUTLET AT 2' ABOVE THE BASE. EACH POLE SHALL BE EQUIPPED WITH AN ALUMINUM DOUBLE BRACKET ARM AND TWO TYPE "R" LUMINAIRES.
 PROVIDE TANK WALL FLUSH MOUNTED WP TYPE GFI RECEPTACLE 3' ABOVE GRADE DIRECTLY BELOW EACH TANK MOUNTED LIGHT POLE.



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 PHASE 1 (6 TO 9 MGD) EXPANSION

CLEARWELL COMPLEX 2
 ELECTRICAL PLAN

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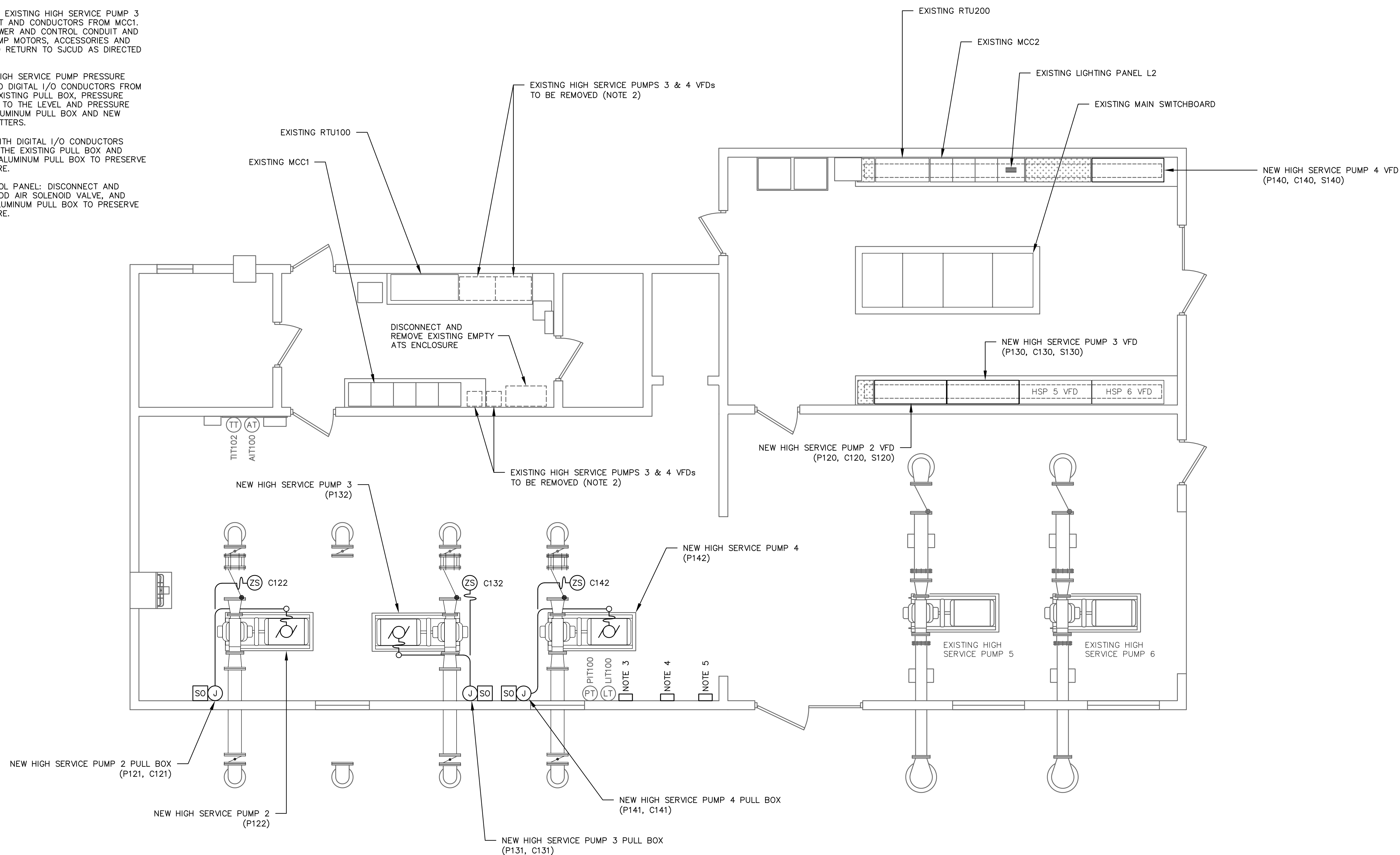
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 NO. 37971

PROJECT NO. 6334-232860
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SHEET NO.
E-11

NOTES:

- CAREFULLY DISCONNECT AND REMOVE THE EXISTING HIGH SERVICE PUMP 1 & 2 VFDs INCLUDING THE FEEDER CONDUIT AND CONDUCTORS FROM MCC1. DISCONNECT AND REMOVE THE MOTOR POWER AND CONTROL CONDUIT AND CONDUCTORS FROM THE VFDs TO THE PUMP MOTORS, ACCESSORIES AND RTU100. SALVAGE THE EXISTING VFDs AND RETURN TO SJCUD AS DIRECTED BY SJCUD.
- CAREFULLY DISCONNECT AND REMOVE THE EXISTING HIGH SERVICE PUMP 3 & 4 VFDs INCLUDING THE FEEDER CONDUIT AND CONDUCTORS FROM MCC1. DISCONNECT AND REMOVE THE MOTOR POWER AND CONTROL CONDUIT AND CONDUCTORS FROM THE VFDs TO THE PUMP MOTORS, ACCESSORIES AND RTU100. SALVAGE THE EXISTING VFDs AND RETURN TO SJCUD AS DIRECTED BY SJCUD.
- EXISTING GST1 LEVEL TRANSMITTER AND HIGH SERVICE PUMP PRESSURE TRANSMITTER PULL BOX WITH ANALOG AND DIGITAL I/O CONDUCTORS FROM RTU100: DISCONNECT AND REMOVE THE EXISTING PULL BOX, PRESSURE SWITCHES, AND GREENFIELD CONNECTIONS TO THE LEVEL AND PRESSURE TRANSMITTERS. PROVIDE NEW NEMA 12 ALUMINUM PULL BOX AND NEW SEALTIGHT CONNECTIONS TO THE TRANSMITTERS.
- EXISTING GST1 LEVEL SWITCH PULL BOX WITH DIGITAL I/O CONDUCTORS FROM RTU100: DISCONNECT AND REMOVE THE EXISTING PULL BOX AND LEVEL SWITCHES. PROVIDE NEW NEMA 12 ALUMINUM PULL BOX TO PRESERVE THE EXISTING CONDUIT AND WIRE AS SPARE.
- EXISTING HYDRO-PNEUMATIC TANK CONTROL PANEL: DISCONNECT AND REMOVE THE EXISTING CONTROL PANEL, ADD AIR SOLENOID VALVE, AND LEVEL PROBES. PROVIDE NEW NEMA 12 ALUMINUM PULL BOX TO PRESERVE THE EXISTING CONDUIT AND WIRE AS SPARE.



HIGH SERVICE PUMP BUILDING MODIFICATIONS – ELECTRICAL PLAN

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



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SHEET NO.

E-12

ISSUED FOR BID

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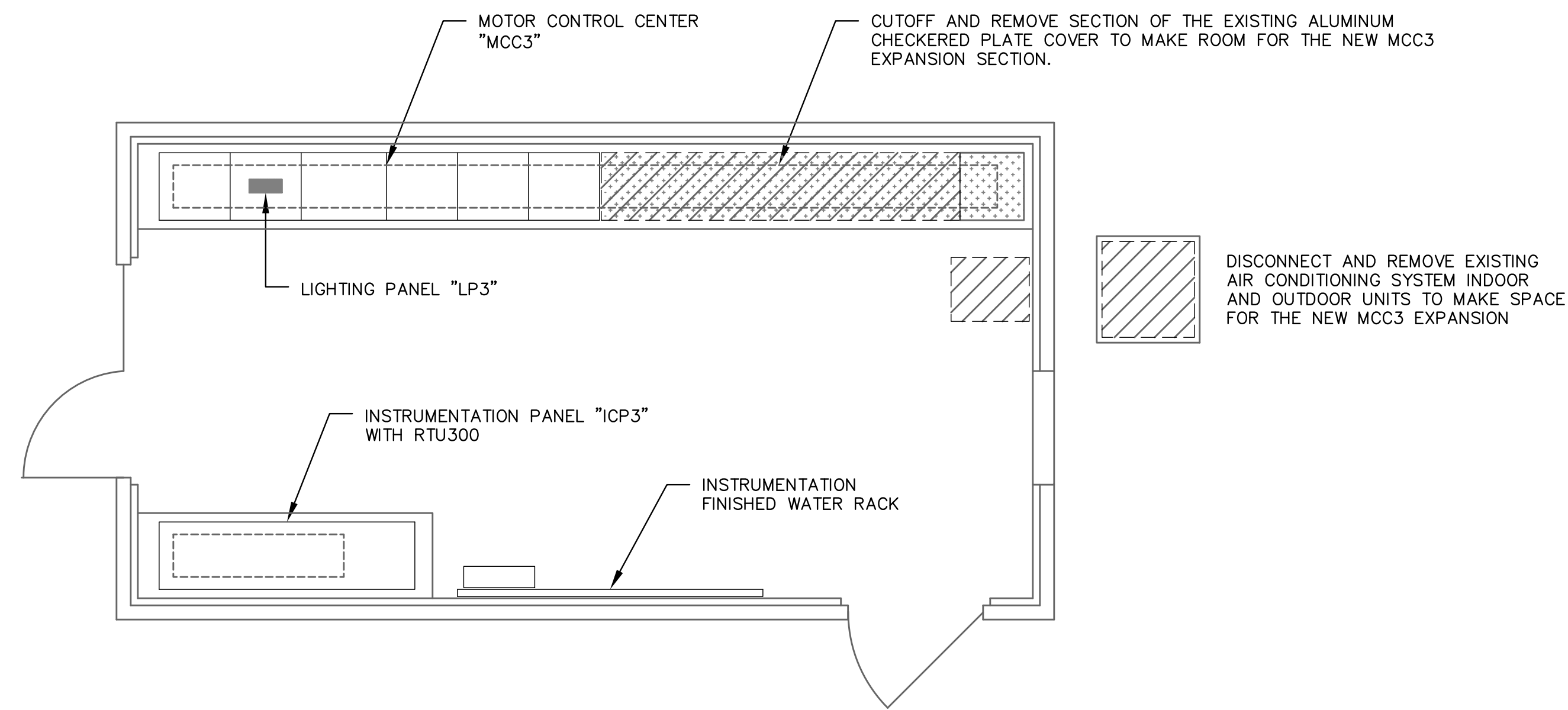


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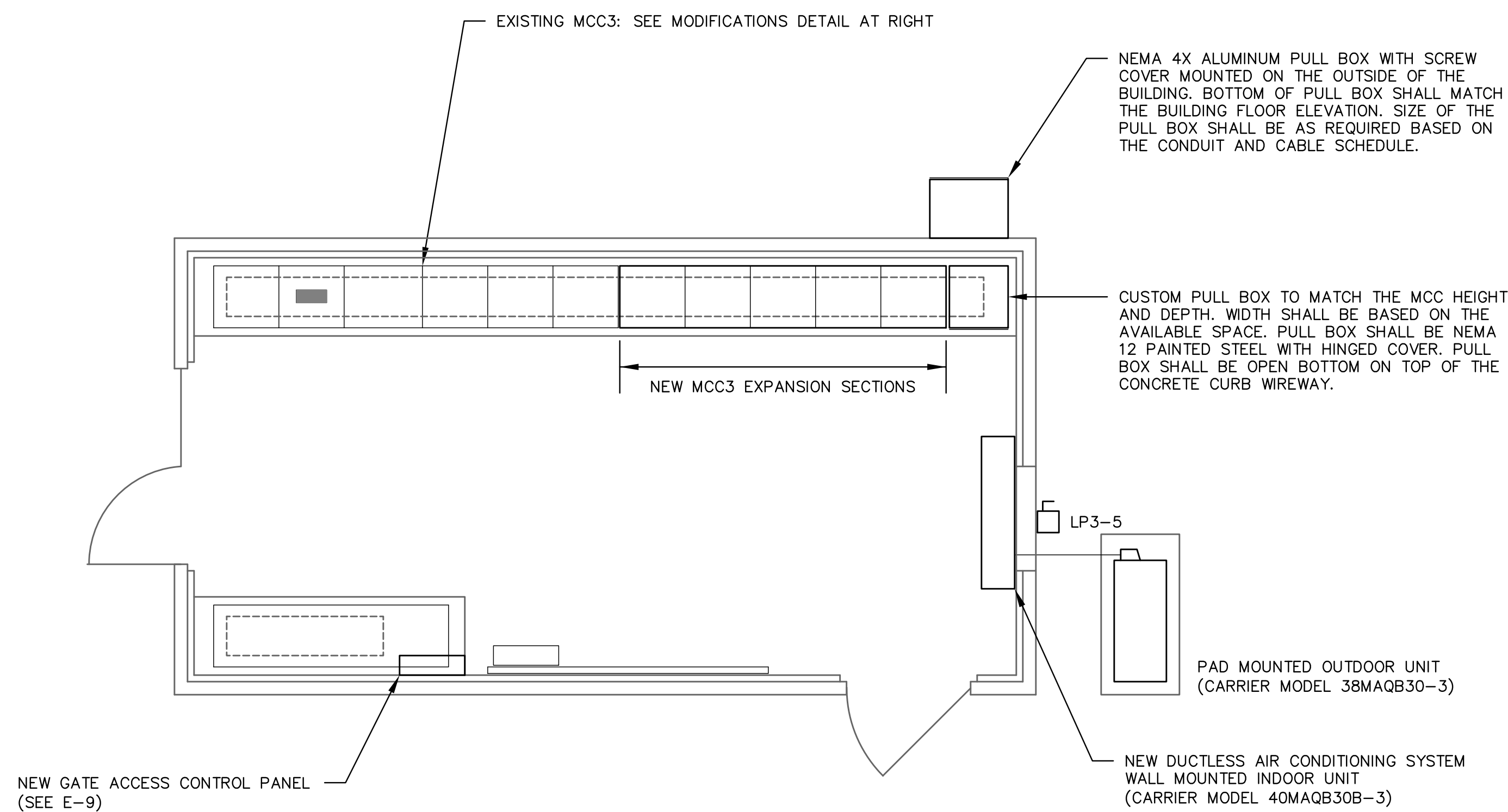
ST. JOHNS COUNTY UTILITY DEPARTMENT
ST. JOHNS COUNTY, FLORIDA
NORTHWEST WTP
PHASE 1 (6 TO 9 MGD) EXPANSION

HIGH SERVICE PUMP BUILDING MODIFICATIONS
ELECTRICAL PLAN

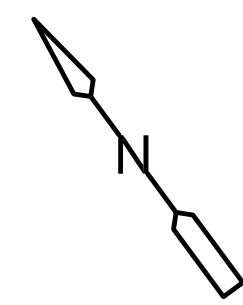
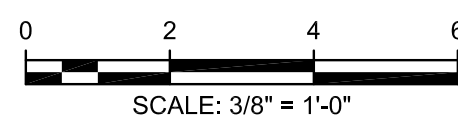
REV. NO.	DATE	DRWN	CHKD	REMARKS



ELECTRICAL BUILDING EXISTING CONDITIONS – ELECTRICAL PLAN
SCALE: 3/8" = 1'-0"



ELECTRICAL BUILDING PROPOSED MODIFICATIONS – ELECTRICAL PLAN
SCALE: 3/8" = 1'-0"



1	2	3	4	5	6
B		B			
D	C	D	C	C	
	D				D
		F	F	F	
			J	H	H
				K	K
M	M	M	M	M	M

MOTOR CONTROL CENTER MCC3 (EXISTING CONDITIONS)

- | | | | |
|----|---------------------------|----|-----------------------|
| 1B | SPACE | 5C | CO2 BOOSTER PUMP 1 |
| 1D | POWER METER | 5F | CO2 BOOSTER PUMP 2 |
| 1M | MCC3 MAIN BREAKER | 5H | VACUUM PRIMING SYSTEM |
| 2C | SPD | 5K | GRINDER PS |
| 2D | SPACE | 5M | CO2 STORAGE TANK 1 |
| 2M | LIGHTING PANEL L3 | 6D | DEGASIFIER BLOWER 1 |
| 3B | SCRUBBER RECIRC PUMP 1 | 6H | DEGASIFIER BLOWER 2 |
| 3D | SCRUBBER RECIRC PUMP 2 | 6K | SPACE |
| 3F | SITE LIGHTING CONTACTOR | 6M | SPACE |
| 3M | PANEL L3 TRANSFORMER | | |
| 4C | CLEARWELL TRANSFER PUMP 1 | | |
| 4F | CLEARWELL TRANSFER PUMP 2 | | |
| 4J | CLEARWELL TRANSFER PUMP 3 | | |
| 4M | SPACE | | |

MCC3 MODIFICATIONS NOTES:

- UPGRADE THE EXISTING MCC3 MAIN BREAKER TRIP RATING FROM 600A TO 800A. THE EXISTING MAIN BREAKER IS AN EATON HMDL3800F WITH MES3800LS AND FIXED 600A RATING PLUG.
- ADD NEW MCC3 EXPANSION SECTIONS BUS CONNECTED TO THE EXISTING MCC3. COORDINATE TIME OF DAY AND DURATION OF POWER OUTAGE REQUIRED TO COMPLETE THE NEW BUS SPLICE. POWER OUTAGE MAY NEED TO OCCUR AFTER HOURS. SUCUD MUST APPROVED ALL POWER OUTAGES.
- REPLACE THE EXISTING SINGLE BREAKER UNIT COMPARTMENT FOR THE CO2 STORAGE TANK 1 FEEDER BREAKER WITH A NEW DUAL BREAKER UNIT COMPARTMENT TO SERVE THE NEW AND EXISTING CO2 STORAGE TANKS.
- FOLLOWING STARTUP OF THE NEW MCC3 EXPANSION SECTIONS AND AFTER THE NEW CLEARWELL 2 TRANSFER PUMPS HAVE BEEN PLACED IN SERVICE, MODIFY AND RE-PURPOSE THE EXISTING CLEARWELL 1 TRANSFER PUMP 3 SSRV MOTOR STARTER TO SERVE THE NEW DEGASIFIER BLOWER 3.
- AFTER CLEARWELL 2 AND DEGASIFIER BLOWER 3 HAVE BEEN PLACED IN SERVICE, ONE AT A TIME MODIFY AND RE-PURPOSE THE EXISTING CLEARWELL 1 TRANSFER PUMPS 1 & 2 SSRV MOTOR STARTERS TO SERVE THE UPGRADED DEGASIFIER BLOWERS 1 & 2.
- REPLACE EXISTING SINGLE BREAKER UNIT COMPARTMENT FOR THE VACUUM PRIMING SYSTEM FEEDER BREAKER A WITH NEW DUAL BREAKER UNIT COMPARTMENT. THIS WORK MUST BE DONE AFTER THE EXISTING VACUUM PRIMING SYSTEM HAS BEEN TAKEN OUT OF SERVICE.

NOTE 4						NEW MCC3 EXPANSION SECTIONS				
						NOTE 2				
1	2	3	4	5	6	7	8	9	10	11
B		B								
D	C	D	C	C						
	D				D					
		F	F	F						
			J	H	H					
				K	K					
M	M	M	M	M	M	M	M	M	M	M

MOTOR CONTROL CENTER MCC3 (PROPOSED)

- | | | | | | |
|----|-------------------------|-----|------------------------|-----|---------------------------|
| 1B | SPACE | 5C | CO2 BOOSTER PUMP 1 | 7M | CLEARWELL TRANSFER PUMP 1 |
| 1D | POWER METER | 5F | CO2 BOOSTER PUMP 2 | 8M | CLEARWELL TRANSFER PUMP 2 |
| 1M | MCC3 MAIN BREAKER | 5H | BTF CONTROL PANEL | 9M | CLEARWELL TRANSFER PUMP 3 |
| 2C | SPD | 5HR | BTF DRAIN PUMP STATION | 10M | CLEARWELL TRANSFER PUMP 4 |
| 2D | SPACE | 5K | GRINDER PUMP STATION | 11M | CLEARWELL TRANSFER PUMP 5 |
| 2M | LIGHTING PANEL L3 | 5ML | CO2 STORAGE TANK 1 | | |
| 3B | SPARE FVNR SIZE 2 | 5MR | CO2 STORAGE TANK 2 | | |
| 3D | SPARE FVNR SIZE 2 | 6D | SPARE FVNR SIZE 2 | | |
| 3F | SITE LIGHTING CONTACTOR | 6H | SPARE FVNR SIZE 2 | | |
| 3M | PANEL L3 TRANSFORMER | 6K | SPACE | | |
| 4C | DEGASIFIER BLOWER 1 | 6M | SPACE | | |
| 4F | DEGASIFIER BLOWER 2 | | | | |
| 4J | DEGASIFIER BLOWER 3 | | | | |
| 4M | SPACE | | | | |

MOTOR CONTROL CENTER "MCC3" MODIFICATIONS DETAIL
NOT TO SCALE

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SHEET NO.

E-13

ISSUED FOR BID

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ELECTRICAL BUILDING MODIFICATIONS
ELECTRICAL PLAN

REV. NO.	DATE	DRWN	CHKD	REMARKS

CONDUIT AND CABLE SCHEDULE											
CONDUIT		CABLE				FROM	TO	FOR	NOTES		
NO.	SIZE	COND.	AWG	TYPE	VOLT						
P120	4.00	4	500	XHHW	600	SWITCHBOARD DISTRIBUTION	HIGH SERVICE PUMP 2 VFD	POWER	EXISTING CONDUIT		
P120	----	1	4/0	XHHW	600	SWITCHBOARD DISTRIBUTION	HIGH SERVICE PUMP 2 VFD	GROUND	EXISTING CONDUIT		
C120	0.75	5	14	XHHW	600	RTU200 I&C PANEL	HIGH SERVICE PUMP 2 VFD	DIGITAL I/O	EXISTING CONDUIT		
S120	1.00	----	----	----	----	RTU200 I&C PANEL	HIGH SERVICE PUMP 2 VFD	SHIELDED CAT6 CABLE	EXISTING CONDUIT		
P121	3.00	3	350	XHHW	600	HIGH SERVICE PUMP 2 VFD	HIGH SERVICE PUMP 2 PB	POWER			
P121	----	1	2	XHHW	600	HIGH SERVICE PUMP 2 VFD	HIGH SERVICE PUMP 2 PB	GROUND			
C121	1.00	9	14	XHHW	600	HIGH SERVICE PUMP 2 VFD	HIGH SERVICE PUMP 2 PB	TS, SH, SO, ZS			
P122	3.00	3	350	XHHW	600	HIGH SERVICE PUMP 2 PB	HIGH SERVICE PUMP 2	POWER			
P122	----	1	2	XHHW	600	HIGH SERVICE PUMP 2 PB	HIGH SERVICE PUMP 2	GROUND			
P122	----	4	14	XHHW	600	HIGH SERVICE PUMP 2 PB	HIGH SERVICE PUMP 2	TS, SH			
C122	0.75	3	14	XHHW	600	HIGH SERVICE PUMP 2 PB	HIGH SERVICE PUMP 2 CV	ZS			
P130	4.00	4	500	XHHW	600	SWITCHBOARD DISTRIBUTION	HIGH SERVICE PUMP 3 VFD	POWER	EXISTING CONDUIT		
P130	----	1	4/0	XHHW	600	SWITCHBOARD DISTRIBUTION	HIGH SERVICE PUMP 3 VFD	GROUND	EXISTING CONDUIT		
C130	0.75	5	14	XHHW	600	RTU200 I&C PANEL	HIGH SERVICE PUMP 3 VFD	DIGITAL I/O	EXISTING CONDUIT		
S130	1.00	----	----	----	----	RTU200 I&C PANEL	HIGH SERVICE PUMP 3 VFD	SHIELDED CAT6 CABLE	EXISTING CONDUIT		
P131	3.00	3	350	XHHW	600	HIGH SERVICE PUMP 3 VFD	HIGH SERVICE PUMP 3 PB	POWER			
P131	----	1	2	XHHW	600	HIGH SERVICE PUMP 3 VFD	HIGH SERVICE PUMP 3 PB	GROUND			
C131	1.00	9	14	XHHW	600	HIGH SERVICE PUMP 3 VFD	HIGH SERVICE PUMP 3 PB	TS, SH, SO, ZS			
P132	3.00	3	350	XHHW	600	HIGH SERVICE PUMP 3 PB	HIGH SERVICE PUMP 3	POWER			
P132	----	1	2	XHHW	600	HIGH SERVICE PUMP 3 PB	HIGH SERVICE PUMP 3	GROUND			
P132	----	4	14	XHHW	600	HIGH SERVICE PUMP 3 PB	HIGH SERVICE PUMP 3	TS, SH			
C132	0.75	3	14	XHHW	600	HIGH SERVICE PUMP 3	HIGH SERVICE PUMP 3 CV	ZS			
P140	4.00	4	500	XHHW	600	SWITCHBOARD DISTRIBUTION	HIGH SERVICE PUMP 4 VFD	POWER			
P140	----	1	4/0	XHHW	600	SWITCHBOARD DISTRIBUTION	HIGH SERVICE PUMP 4 VFD	GROUND			
C140	0.75	5	14	XHHW	600	RTU200 I&C PANEL	HIGH SERVICE PUMP 4 VFD	DIGITAL I/O			
S140	1.00	----	----	----	----	RTU200 I&C PANEL	HIGH SERVICE PUMP 4 VFD	SHIELDED CAT6 CABLE			
P141	3.00	3	350	XHHW	600	HIGH SERVICE PUMP 4 VFD	HIGH SERVICE PUMP 4 PB	POWER			
P141	----	1	2	XHHW	600	HIGH SERVICE PUMP 4 VFD	HIGH SERVICE PUMP 4 PB	GROUND			
C141	1.00	9	14	XHHW	600	HIGH SERVICE PUMP 4 VFD	HIGH SERVICE PUMP 4 PB	TS, SH, SO, ZS			
P142	3.00	3	350	XHHW	600	HIGH SERVICE PUMP 4 PB	HIGH SERVICE PUMP 4	POWER			
P142	----	1	2	XHHW	600	HIGH SERVICE PUMP 4 PB	HIGH SERVICE PUMP 4	GROUND			
P142	----	4	14	XHHW	600	HIGH SERVICE PUMP 4 PB	HIGH SERVICE PUMP 4	TS, SH			
C142	0.75	3	14	XHHW	600	HIGH SERVICE PUMP 4	HIGH SERVICE PUMP 4 CV	ZS			
P210	1.00	2	8	XHHW	600	PANEL L2	LIGHT POLE RECEPTACLE	POWER, NEUTRAL	L2-10		
P210	----	5	10	XHHW	600	PANEL L2	LIGHT POLE LIGHTS	POWER, GROUND	L2-12		
P301	1.00	2	8	XHHW	600	PANEL L3	LIGHT POLE RECEPTACLE	POWER, NEUTRAL	L3-31		
P301	----	5	10	XHHW	600	PANEL L3	LIGHT POLE LIGHTS	POWER, GROUND	L3-33		
P311	1.00	3	6	XHHW	600	MOTOR CONTROL CENTER 3	DEGASIFIER BLOWER 1	POWER	EXISTING CONDUIT		
P311	----	1	8	XHHW	600	MOTOR CONTROL CENTER 3	DEGASIFIER BLOWER 1	GROUND			
P311	----	4	14	XHHW	600	MOTOR CONTROL CENTER 3	DEGASIFIER BLOWER 1	SO/TS, SH			
P312	1.00	3	6	XHHW	600	MOTOR CONTROL CENTER 3	DEGASIFIER BLOWER 2	POWER	EXISTING CONDUIT		
P312	----	1	8	XHHW	600	MOTOR CONTROL CENTER 3	DEGASIFIER BLOWER 2	GROUND			
P312	----	4	14	XHHW	600	MOTOR CONTROL CENTER 3	DEGASIFIER BLOWER 2	SO/TS, SH			
P313	1.25	3	6	XHHW	600	MOTOR CONTROL CENTER 3	DEGASIFIER BLOWER 3	POWER			
P313	----	1	8	XHHW	600	MOTOR CONTROL CENTER 3	DEGASIFIER BLOWER 3	GROUND			
P313	----	4	14	XHHW	600	MOTOR CONTROL CENTER 3	DEGASIFIER BLOWER 3	SO/TS, SH			
P314	1.25	----	----	----	----	MOTOR CONTROL CENTER 3	DEGASIFIER BLOWER 4	FUTURE			
P331	2.00	4C	6	XLP	1000	MOTOR CONTROL CENTER 3	TRANSFER PUMP 1	VFD CABLE	EXISTING CONDUIT		
C331	0.75	7	14	XHHW	600	MOTOR CONTROL CENTER 3	TRANSFER PUMP 1	SO/TS, SH, ZS			
S331	0.75	----	----	----	----	RTU300 I&C PANEL	TRANSFER PUMP 1 VFD	SHIELDED ETHERNET CABLE			
P332	2.00	4C	6	XLP	1000	MOTOR CONTROL CENTER 3	TRANSFER PUMP 2	VFD CABLE	EXISTING CONDUIT		
C332	0.75	7	14	XHHW	600	MOTOR CONTROL CENTER 3	TRANSFER PUMP 2	SO/TS, SH, ZS			
S332	0.75	----	----	----	----	RTU300 I&C PANEL	TRANSFER PUMP 2 VFD	SHIELDED ETHERNET CABLE			
P333	2.00	4C	6	XLP	1000	MOTOR CONTROL CENTER 3	TRANSFER PUMP 3	VFD CABLE			
C333	0.75	7	14	XHHW	600	MOTOR CONTROL CENTER 3	TRANSFER PUMP 3	SO/TS, SH, ZS			
S333	0.75	----	----	----	----	RTU300 I&C PANEL	TRANSFER PUMP 3 VFD	SHIELDED ETHERNET CABLE			
P334	2.00	4C	6	XLP	1000	MOTOR CONTROL CENTER 3	TRANSFER PUMP 4	VFD CABLE			
C334	0.75	7	14	XHHW	600	MOTOR CONTROL CENTER 3	TRANSFER PUMP 4	SO/TS, SH, ZS			
S334	0.75	----	----	----	----	RTU300 I&C PANEL	TRANSFER PUMP 4 VFD	SHIELDED ETHERNET CABLE			
P335	2.00	4C	6	XLP	1000	MOTOR CONTROL CENTER 3	TRANSFER PUMP 5	VFD CABLE			
C335	0.75	7	14	XHHW	600	MOTOR CONTROL CENTER 3	TRANSFER PUMP 5	SO/TS, SH, ZS			
S335	0.75	----	----	----	----	RTU300 I&C PANEL	TRANSFER PUMP 5 VFD	SHIELDED ETHERNET CABLE			

CONDUIT AND CABLE SCHEDULE											
CONDUIT		CABLE				FROM	TO	FOR	NOTES		
NO.	SIZE	COND.	AWG	TYPE	VOLT						
C336	0.75	5	14	THWN	600	RTU300 I&C PANEL	VACUUM PRIMING PANEL	SPARE	EXISTING		
P336	0.75	----	----	----	----	MOTOR CONTROL CENTER 3	VACUUM PRIMING PANEL	NEW TB336	EXISTING CONDUIT		
P336	----	7	10	XHHW	600	LIGHTING PANEL L3	NEW TB336	L3-2, 4, 6	NEW CONDUCTORS		
P337	0.75	3	10	XHHW	600	NEW TB336	SAMPLE PUMP 1	L3-2			
P338	0.75	3	10	XHHW	600	NEW TB336	SAMPLE PUMP 2	L3-4			
P339	0.75	3	10	XHHW	600	NEW TB336	SAMPLE PUMP 3	L3-6			
P344	2.00	4	2	XHHW	600	MOTOR CONTROL CENTER 3	CO2 STORAGE TANK 2	POWER, GROUND			
C344	0.75	5	14	XHHW	600	RTU300 I&C PANEL	CO2 STORAGE TANK 2	DIGITAL I/O			
S344	1.00	2TSP	18	XLP	600	RTU300 I&C PANEL	CO2 STORAGE TANK 2	ANALOG I/O			
C350	1.00	24	14	XHHW	600	RTU300 I&C PANEL	MOTOR CONTROL CENTER 3	DIGITAL I/O			
C351	1.00	24	14	XHHW	600	RTU300 I&C PANEL	MOTOR CONTROL CENTER 3	DIGITAL I/O			
P370	1.25	4	4	XHHW	600	MOTOR CONTROL CENTER 3	BTF CONTROL PANEL	POWER, GROUND			
C370	1.00	19	14	XHHW	600	RTU300 I&C PANEL	BTF CONTROL PANEL	DIGITAL I/O			
P371	0.75	7	12	XHHW	600	BTF CONTROL PANEL	BTF WATER PANEL	POWER, GROUND			
C371	0.75	13	14	XHHW	600	BTF CONTROL PANEL	BTF WATER PANEL	DIGITAL I/O			
S371	2.00	6TSP	18	XHHW	600	BTF CONTROL PANEL	BTF WATER PANEL	ANALOG I/O			
S371	----	6	14	XHHW	600	BTF CONTROL PANEL	BTF WATER PANEL	24VDC POWER			
C372	0.75	5	14	XHHW	600	BTF CONTROL PANEL	BTF1 SUMP LSH	CONTROL			
C373	0.75	5	14	XHHW	600	BTF CONTROL PANEL	BTF2 SUMP LSH	CONTROL			
C374	0.75	----	----	----	----	BTF CONTROL PANEL	BTF3 SUMP LSH	FUTURE			
C375	0.75	5	14	XHHW	600	BTF CONTROL PANEL	BTF1 AIR FLOW FSL	CONTROL			
C376	0.75	5	14	XHHW	600	BTF CONTROL PANEL	BTF2 AIR FLOW FSL	CONTROL			
C377	0.75	----	----	----	----	BTF CONTROL PANEL	BTF3 AIR FLOW FSL	FUTURE			
C378	0.75	3	12	XHHW	600	BTF CONTROL PANEL	BTF EYEWASH ALARM PNL	POWER, GROUND			
C378	----	2	14	XHHW	600	BTF CONTROL PANEL	BTF EYEWASH ALARM PNL	DIGITAL I/O			
P380	2.00	4	2	XHHW	600	MOTOR CONTROL CENTER 3	BTF DRAIN PS CNTRL PANEL	POWER, GROUND			
C380	0.75	5	14	XHHW	600	BTF CONTROL PANEL	BTF DRAIN PS CNTRL PANEL	DIGITAL I/O			
P381	1.00	4	10	XHHW	600	BTF DRAIN PS CNTRL PANEL	BTF DRAIN PUMP 1	POWER, GROUND			
P381	----	4	14	XHHW	600	BTF DRAIN PS CNTRL PANEL	BTF DRAIN PUMP 1	TS, SH			
P382	1.00	4	10	XHHW	600	BTF DRAIN PS CNTRL PANEL	BTF DRAIN PUMP 2	POWER, GROUND			
P382	----	4	14	XHHW	600	BTF DRAIN PS CNTRL PANEL	BTF DRAIN PUMP 2	TS, SH			
C383	2.00	----	----	----	----	CONTROL TERMINAL BOX	WET WELL	FLOAT CABLES			
C384	0.75	9	14	XHHW	600	BTF DRAIN PS CNTRL PANEL	CONTROL TERMINAL BOX	CONTROL			
P520	0.75	3	12	XHHW	600	LIGHTING PANEL L3	TB520	SPARE	EXISTING		
C520	0.75	9	14	XHHW	600	RTU300 I&C PANEL	TB520	SPARE	EXISTING		
S520	1.00	2TSP	18	XLP	600	RTU300 I&C PANEL	TB520	SPARE			
P570	0.75	3	10	XHHW	600	LIGHTING PANEL L3	GATE OPERATOR	POWER, GROUND	L3-42		
C570	1.00	2C	16	XHHW	600	GATE ACCESS PANEL	GATE OPERATOR	CONTROL	SHIELDED		
C570	----	6C	16	XHHW	600	GATE ACCESS PANEL	GATE ACCESS CARD READER	CONTROL	SHIELDED		
S570	1.25	----	----	----	----	CAMERA ETHERNET SWITCH	ENTRANCE CAMERA	SHIELDED PoE CAT6			
S570	----	----	----	----	----	CAMERA ETHERNET SWITCH	EXIT CAMERA	SHIELDED PoE CAT6			
P580	0.75	3	12	XHHW	600	LIGHTING PANEL L3	DCIP 2	POWER, GROUND			
C580	0.75	13	14	XHHW	600	RTU300 I&C PANEL	DCIP 2	DIGITAL I/O			
S580	1.00	2TSP	18	XLP	600	RTU300 I&C PANEL	DCIP 2	ANALOG I/O			
C581	0.75	5	14	XHHW	600	DCIP 2	DEGASIFIER NO.3	LSH			
C582	0.75	5	14	XHHW	600	DCIP 2	DEGASIFIER NO.3	FSL			
C583	0.75	5	14	XHHW	600	DCIP 2	FUTURE DEGASIFIER NO.4	LSH			
C584	0.75	5	14	XHHW	600	DCIP 2	FUTURE DEGASIFIER NO.4	FSL			
C585	0.75	5	14	XHHW	600	DCIP 2	CLEARWELL 2 LEVEL TB	LSH, LSL			
S585	1.00	2TSP	18	XLP	600	DCIP 2	CLEARWELL 2 LEVEL TB	LT			
P590	0.75	----	----	----	----	LIGHTING PANEL L3	FUTURE GST3	FUTURE POWER, GROUND			
C590	0.75	----	----	----	----	RTU300 I&C PANEL	FUTURE GST3	FUTURE DIGITAL I/O			
S590	1.00	----	----	----	----	RTU300 I&C PANEL	FUTURE GST3	FUTURE ANALOG I/O			

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WD LASSETTER, PE
NO. 37971

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: D. LASSETTER
DRAWN BY: CDM SMITH
SHEET CHK'D BY: D. LASSETTER
CROSS CHK'D BY: CDM SMITH
APPROVED BY: D. LASSETTER
DATE: JULY 2019



ST. JOHNS COUNTY UTILITY DEPARTMENT
ST. JOHNS COUNTY, FLORIDA
NORTHWEST WTP
PHASE 1 (6 TO 9 MGD) EXPANSION

CONDUIT AND CABLE SCHEDULE
SHEET NO. ED-1

PROJECT NO. 6334-232860
FILE NAME: 819E00P8.DWG
SHEET NO. ED-1

LIGHTING PANEL L3

100 AMP MCB						NEMA 4X SS		120/208 VOLTS/ 3 PH/ 4 W	
CKT	LOAD DESCRIPTION	POLE	TRIP	KVA	CKT	LOAD DESCRIPTION	POLE	TRIP	KVA
1	LTGS - ELEC BLDG	1	20	0.6	2	FW SAMPLE PUMP 1	1	20	1.2
3	RCTS - ELEC BLDG	1	20	1.2	4	pH SAMPLE PUMP	1	20	1.2
5	AIR CONDITIONING	2	25	2.0	6	FW SAMPLE PUMP 2	1	20	1.2
7	AIR CONDITIONING	--	--	--	8	LTGS - CHEM BLDG	1	20	1.5
9	LTGS - CLEARWELL 1	1	20	0.8	10	RCTS - CHEM BLDG	1	20	0.8
11	RCTS - CLEARWELL 1	1	20	1.2	12	LTGS - CHEM STORAGE	1	20	0.6
13	SPARE	1	20	--	14	RCTS - CHEM STORAGE	1	20	0.6
15	SPARE	1	20	--	16	NaOCI TRUCK PANEL	1	20	0.2
17	DEGASIFIER PANEL 1	1	20	0.2	18	NaOCI PUMPS 1&2	1	20	0.9
19	SPARE	1	20	--	20	NaOCI PUMPS 3&4	1	20	0.9
21	CO2 PSF PANEL	1	20	0.2	22	NaOH TRUCK PANEL	1	20	0.2
23	ICP RTU300	1	20	1.0	24	NaOH TANK HEATING	1	20	1.3
25	INSTRUMENT RACK	1	20	0.5	26	NaOH PIPE HEATING	1	20	1.0
27	FIT100 RAW WTR FLOW	1	20	0.1	28	NaOH PIPE HEATING	1	20	1.2
29	RCTS - 1.5MG GST	1	20	0.4	30	NaOH PUMPS 1&2	1	20	0.1
31	RCTS - SITE	1	20	1.0	32	NaOH PUMPS 3&4	1	20	0.1
33	LTGS - SITE	2	20	0.9	34	EYEWASH ALARM PANEL	1	20	0.2
35	LTGS - SITE	--	--	--	36	LTGS - CLEARWELL 2	1	20	0.2
37	LIGHTING CONTACTOR	1	20	0.1	38	RCTS - CLEARWELL 2	1	20	1.6
39	SPARE	1	20	--	40	DEGASIFIER PANEL 2	1	20	0.2
41	SPARE	1	20	--	42	GATE OPERATOR	1	20	1.5

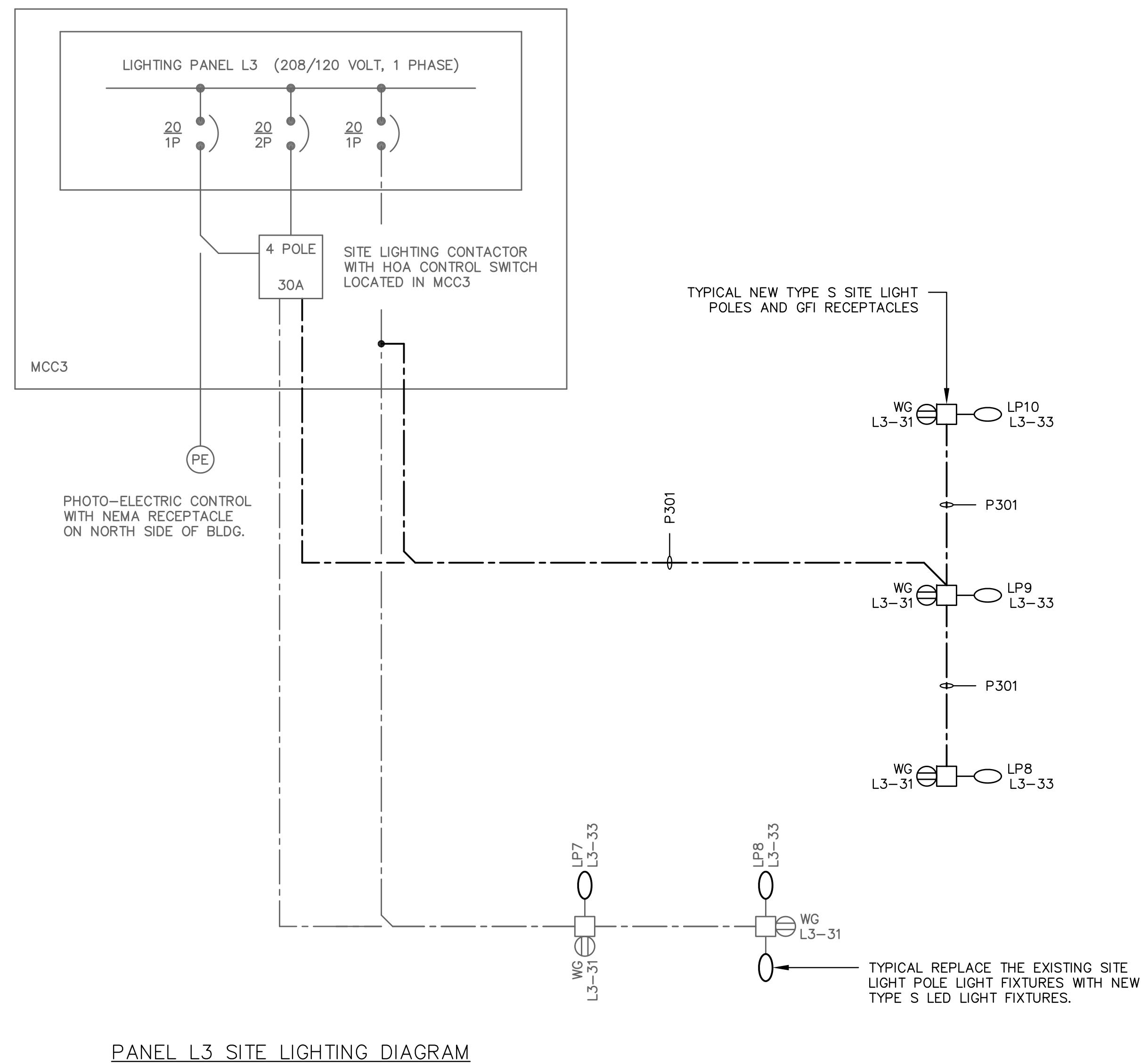
100KA BUS MOUNTED SPD

LIGHTING FIXTURE SCHEDULE

TYPE	MANUFACTURER & CATALOG NUMBER	LAMPS	VOLTS	WATTS	MOUNTING	REMARKS
R	AEL LNH2 LU5 MVOLT R5 BA SH	LED	120	64	POLE	10' ALUMINUM POLE, TWIN 2' ALUMINUM SPOKE ARM, NOTE 2
S	LITHONIA DSX1 LED 40C 1000 40K T3M MVOLT MA DNAXD	LED	208	138	POLE	SQUARE CONCRETE POLE, DIRECT BURIAL, 30' MH, 6" ALUMINUM ARM, NOTE 2

LIGHTING FIXTURE NOTES:

- ALTERNATE LIGHT FIXTURE SUBMITTALS SHALL INCLUDE PHOTOMETRIC CALCULATIONS FOR EACH AREA FOR WHICH THE ALTERNATE LIGHT FIXTURE IS PROPOSED, ELECTRONIC COPIES OF THE ASSOCIATED IES FILES, AND A WRITTEN COMPARISON OF THE CONSTRUCTION, OPTICS, AND ELECTRICAL FEATURES OF THE ALTERNATE LIGHT FIXTURE WITH THE BASIS OF DESIGN LIGHT FIXTURE LISTED ABOVE.
- COMPLETE LIGHT POLE ASSEMBLIES WITH FIXTURES AND BRACKET ARMS SHALL BE RATED FOR MINIMUM 142 MPH WIND WITH 1.5 GUST FACTOR.



PANEL L3 SITE LIGHTING DIAGRAM

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904-743-1585

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NO. 37971

PROJECT NO. 6334-232860
FILE NAME: 819E00P8.DWG

SHEET NO.

ED-2

ISSUED FOR BID

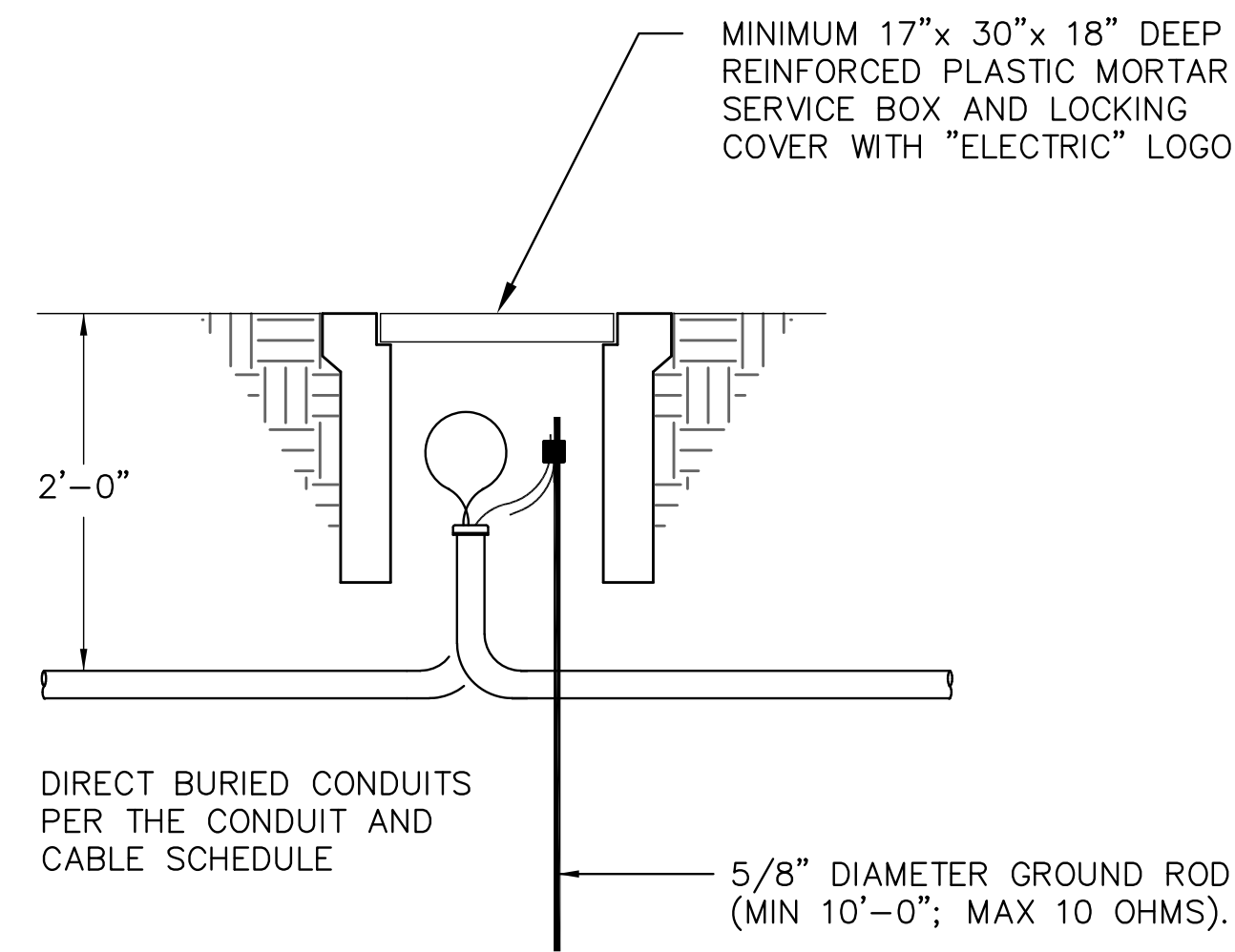
DESIGNED BY: D. LASSETTER
DRAWN BY: CDM SMITH
SHEET CHK'D BY: D. LASSETTER
CROSS CHK'D BY: CDM SMITH
APPROVED BY: D. LASSETTER
DATE: JULY 2019



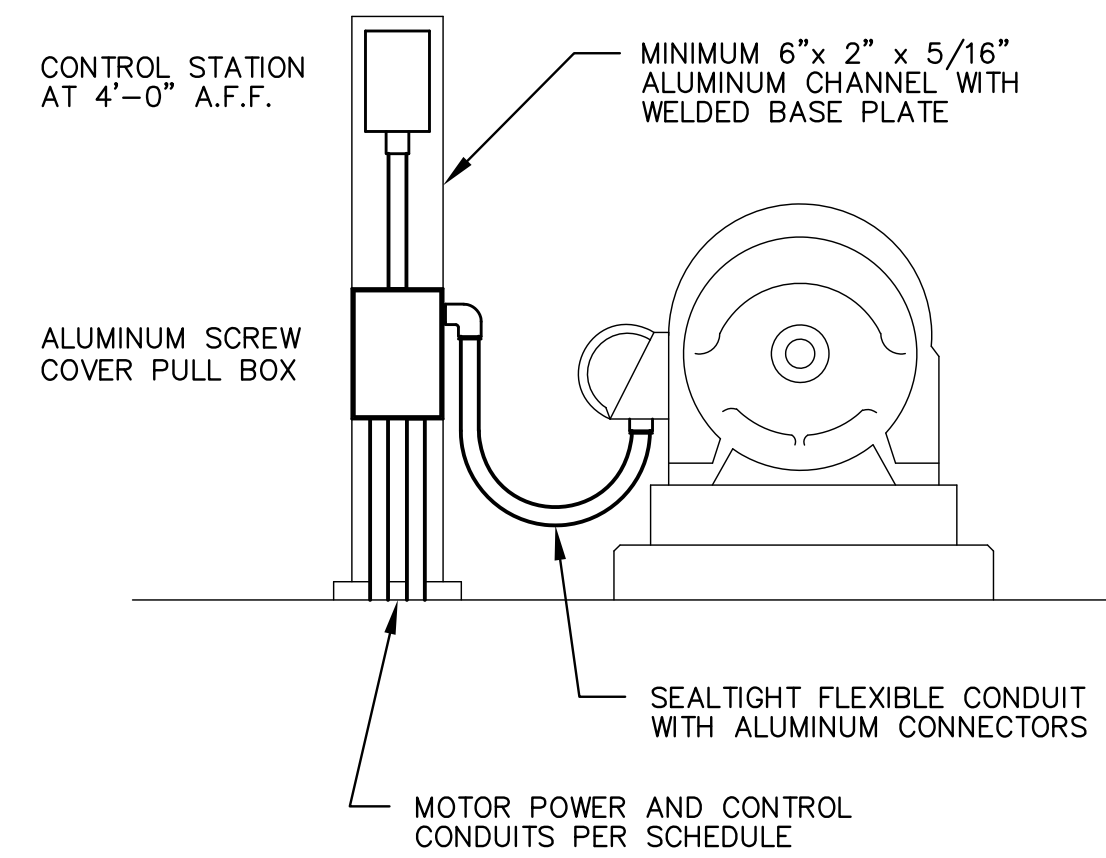
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ST. JOHNS COUNTY, FLORIDA
NORTHWEST WTP
PHASE 1 (6 TO 9 MGD) EXPANSION

LIGHTING DETAILS

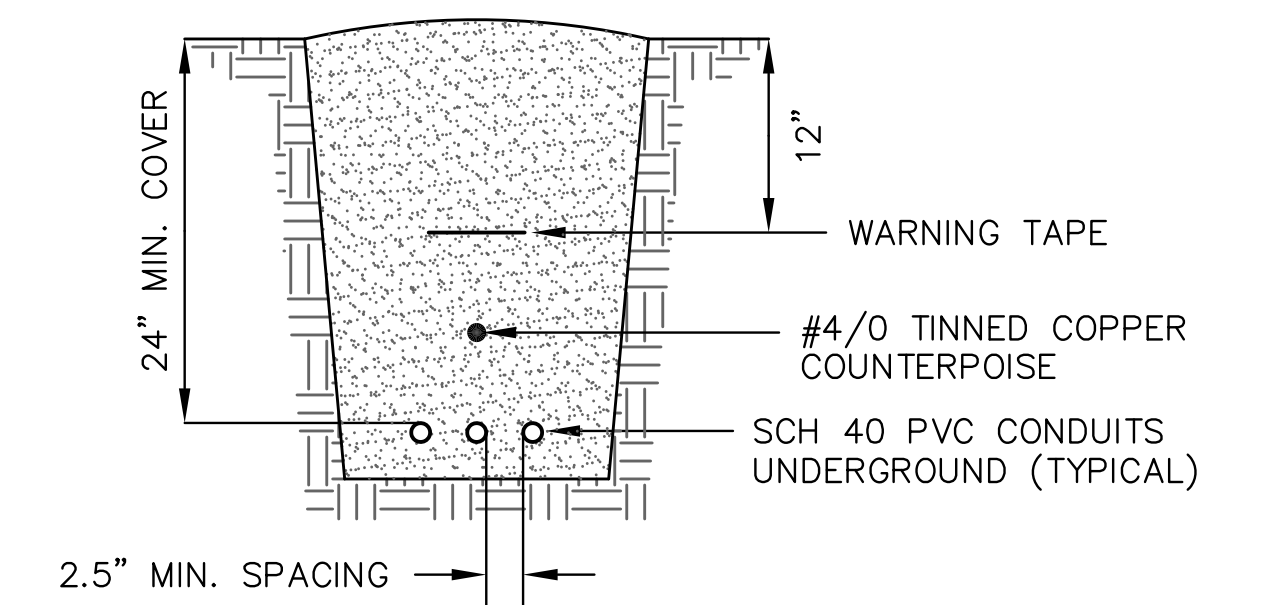
REV. NO.	DATE	DRWN	CHKD	REMARKS



TYPICAL UNDERGROUND PULL BOX DETAIL
NOT TO SCALE

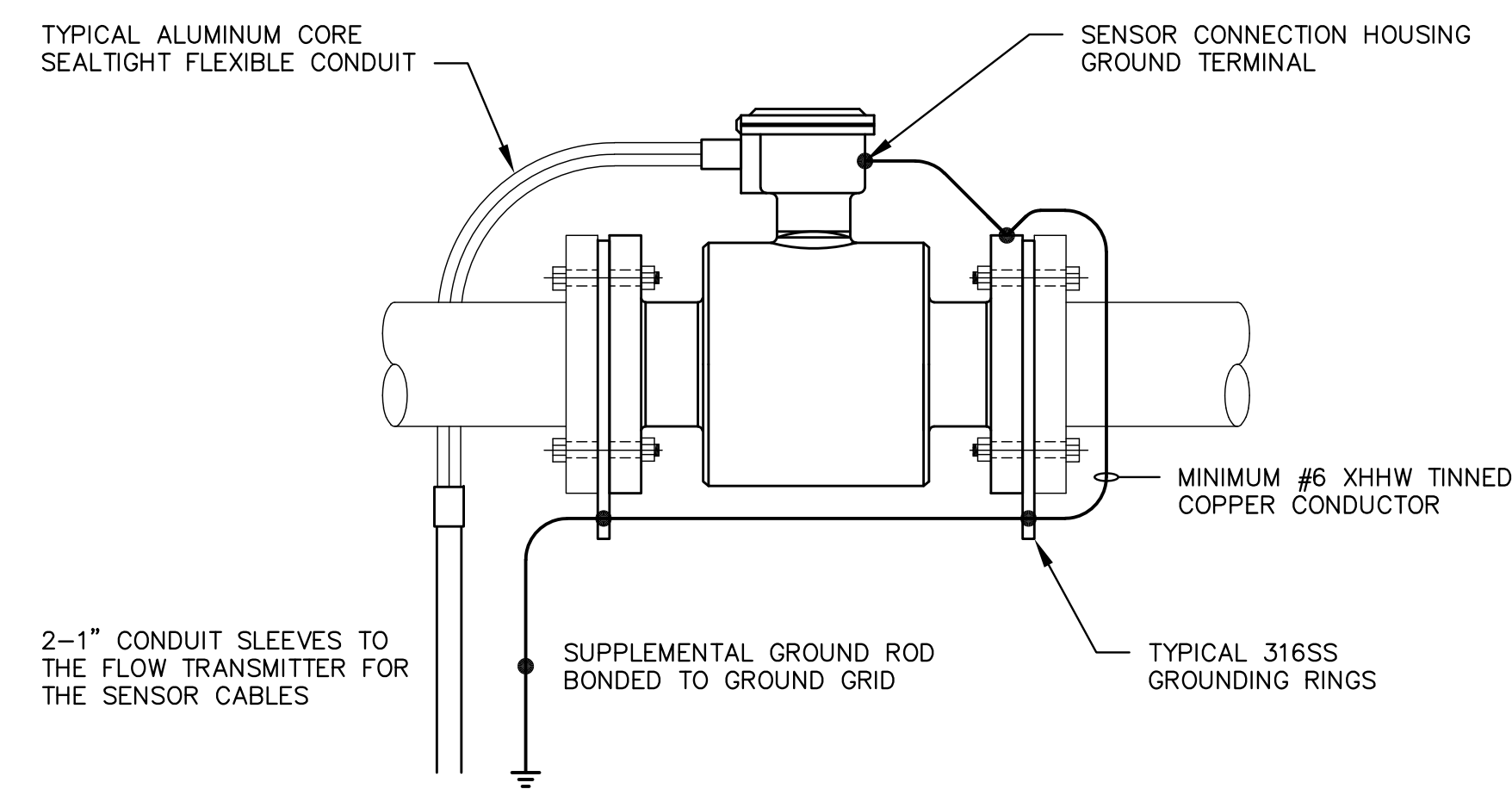


TYPICAL MOTOR CONNECTION
NOT TO SCALE



TYPICAL DIRECT BURIED CONDUIT DETAIL
NOT TO SCALE

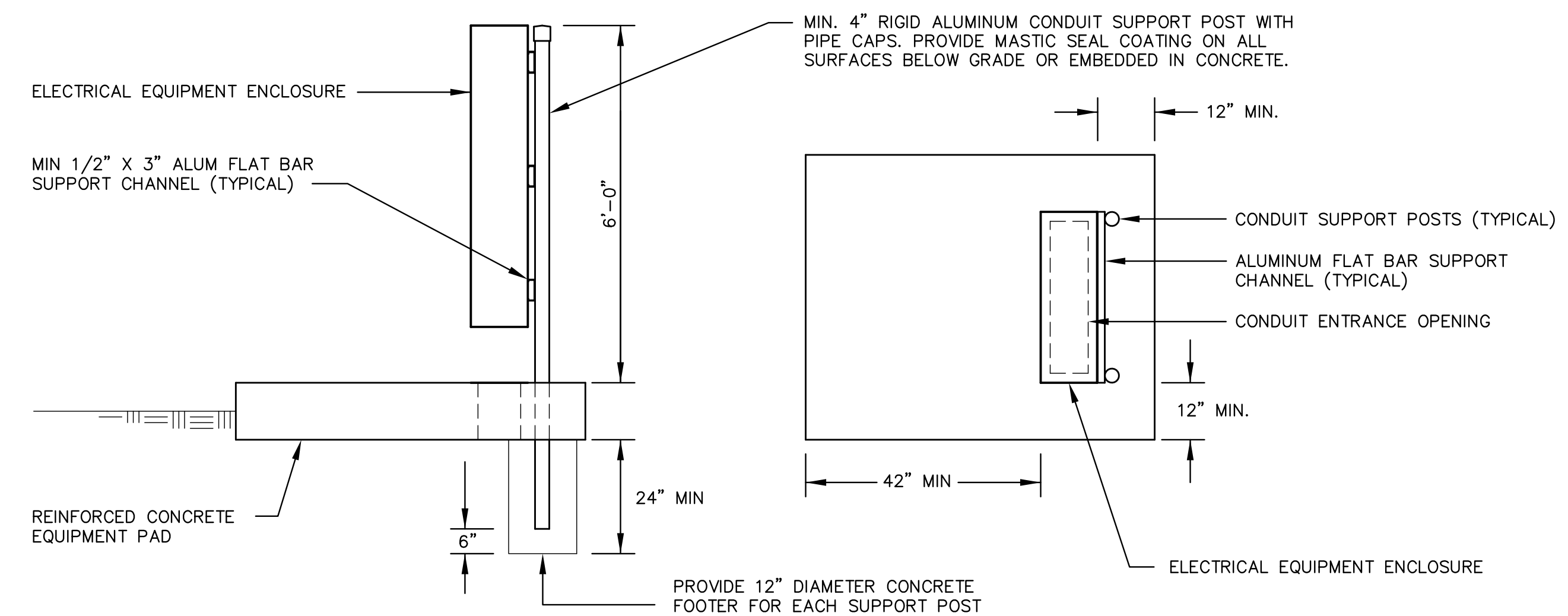
NOTE: SEE ELECTRICAL SITE PLAN AND CONDUIT AND CABLE SCHEDULE FOR NUMBER AND SIZE OF CONDUITS



TYPICAL MAGNETIC FLOW METER DETAIL
NOT TO SCALE

NOTES:

1. FLOW TUBE SHALL HAVE A MINIMUM OF 5 STRAIGHT PIPE DIAMETERS UPSTREAM AND 3 STRAIGHT PIPE DIAMETERS DOWNSTREAM.
2. PROVIDE GROUNDING RINGS (BOTH SIDES).



TYPICAL ELECTRICAL EQUIPMENT MOUNTING DETAIL
NOT TO SCALE

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: D. LASSETTER
 DRAWN BY: CDM SMITH
 SHEET CHK'D BY: D. LASSETTER
 CROSS CHK'D BY: CDM SMITH
 APPROVED BY: D. LASSETTER
 DATE: JULY 2019

CDM Smith
 8381 Dix Ellis Trail, Suite 400
 Jacksonville, FL 32256
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 FL CCA No. EB-0000020

ST. JOHNS COUNTY UTILITY DEPARTMENT
 ST. JOHNS COUNTY, FLORIDA
 NORTHWEST WTP
 PHASE 1 (6 TO 9 MGD) EXPANSION

ELECTRICAL DETAILS

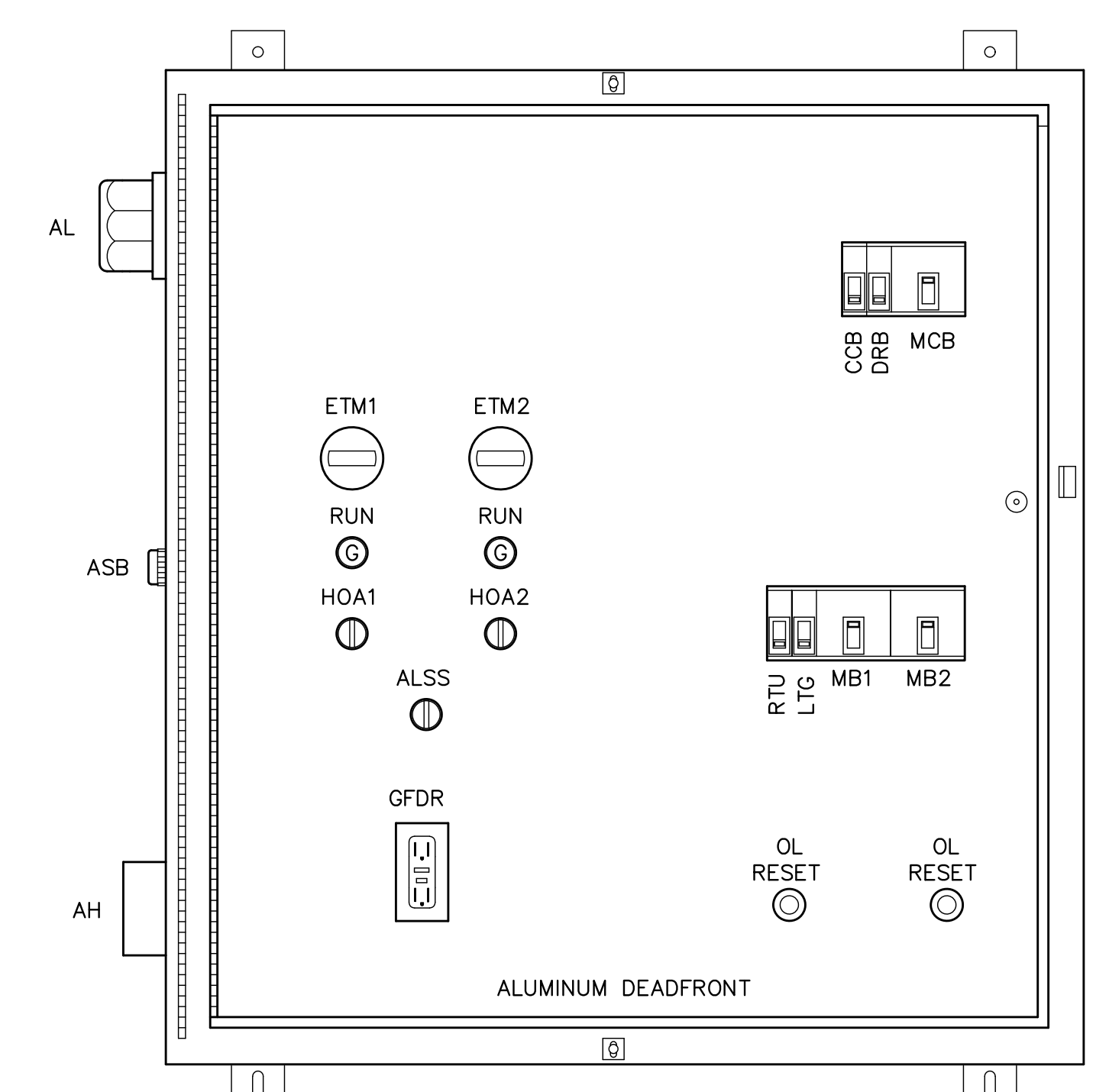
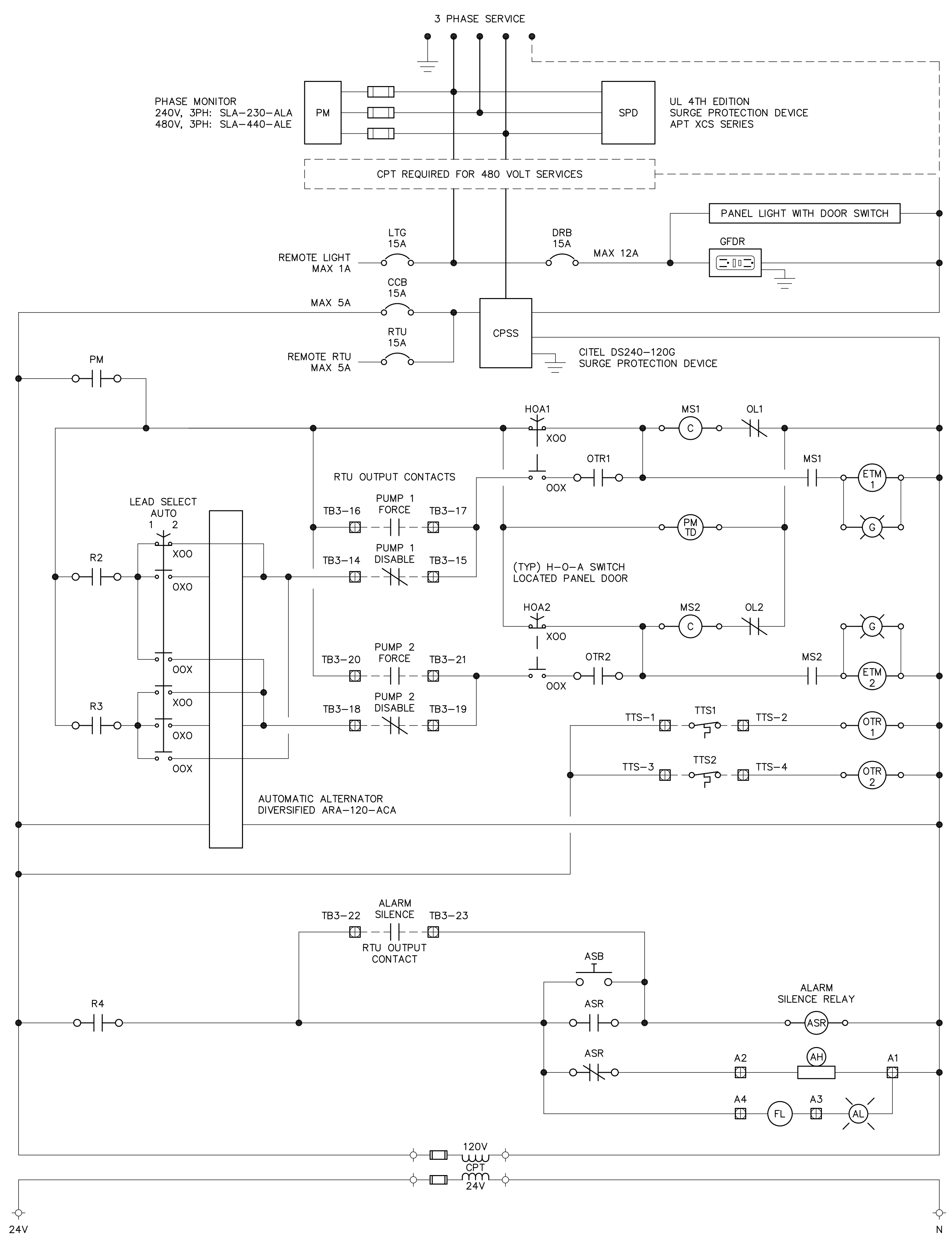
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SHEET NO.
 ED-3

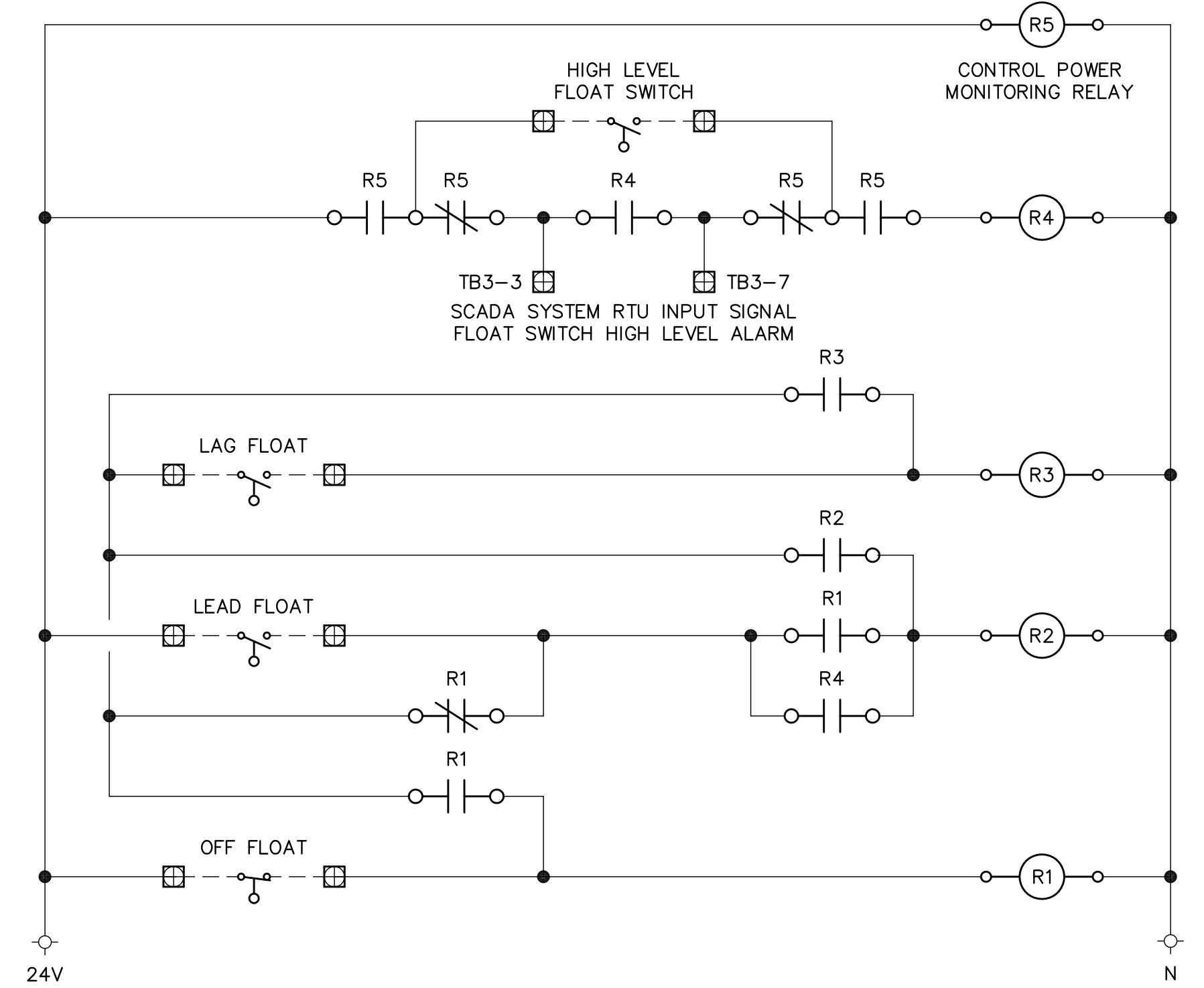
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OUTER DOOR REMOVED TO SHOW DEADFRONT LAYOUT
NEMA TYPE 3R S.S. ENCL. WITH CONTINUOUS HINGE
ALL HARDWARE STAINLESS STEEL, WITH 3-PT LATCH

- CONTROL PANEL LEGEND**
- AH - ALARM HORN
 - AL - ALARM LIGHT
 - ASB - ALARM SILENCE BUTTON
 - ASR - ALARM SILENCE RELAY
 - ALSS - ALTERNATOR LEAD SELECTOR SWITCH
 - CPSS - CONTROL POWER SURGE SUPPRESSOR
 - CCB - CONTROL CIRCUIT BREAKER
 - DPDT - DOUBLE POLE DOUBLE THROW
 - DRB - DUPLEX RECEPTACLE BREAKER
 - ETM - ELAPSED TIME METER
 - F - FUSE
 - FB - FUSE BLOCK
 - FL - FLASHER
 - G - GREEN LED "RUNNING" PILOT LIGHT
 - GFDR - GROUND FAULT DUPLEX RECEPTACLE
 - LCB - LIGHTING CIRCUIT BREAKER
 - MB - MOTOR BREAKER
 - MCB - MAIN CIRCUIT BREAKER
 - MS - MOTOR STARTER
 - OL - OVERLOAD
 - OT - OVERTEMP
 - PB - POWER BLOCK
 - PM - PHASE MONITOR
 - R - RELAY
 - RCB - RTU CIRCUIT BREAKER
 - RL - RUNNING LIGHT
 - SPD - SURGE PROTECTION DEVICE
 - TB - TERMINAL BLOCK
 - TTS - THERMAL TERMINAL STRIP

- NOTES:**
- CONTROL PANEL TO BE UL AND SERVICE ENTRANCE RATED.
 - ALL CONTROL PANEL WIRING, RTU WIRING, AND ALL WIRING FROM THE CONTROL PANEL TO THE RTU, SHALL BE TINNED CONDUCTORS.
 - ALL CONTROL RELAYS SHALL BE TPDT.
 - POWER MONITOR TIME DELAY RELAY "PMTD" SHALL BE EATON TMR6 TIME DELAY ON DE-ENERGIZE RELAY PROVIDING OFF DELAY FUNCTION WITHOUT REQUIRING INPUT VOLTAGE DURING OFF TIME DELAY. SET OFF TIME DELAY AT 60 SECONDS.
 - FIELD TERMINAL BLOCKS SHALL BE ANGLE MOUNTED TO FACILITATE FIELD CONNECTIONS.
 - TERMINALS FOR PUMP CONTROLS (RTU OUTPUTS, 120VAC) TB3-14 THRU TB3-23 SHALL BE COLOR CODED RED. TERMINALS FOR SCADA SIGNALS (RTU INPUTS, 24VDC) TB3-3 THRU TB3-13 SHALL BE COLOR CODED BLUE.



SJUCD STANDARD LIFT STATION CONTROL PANEL DETAIL
NOT TO SCALE

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SHEET NO.
ED-4

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: D. LASSETTER
DRAWN BY: CDM SMITH
SHEET CHK'D BY: D. LASSETTER
CROSS CHK'D BY: CDM SMITH
APPROVED BY: D. LASSETTER
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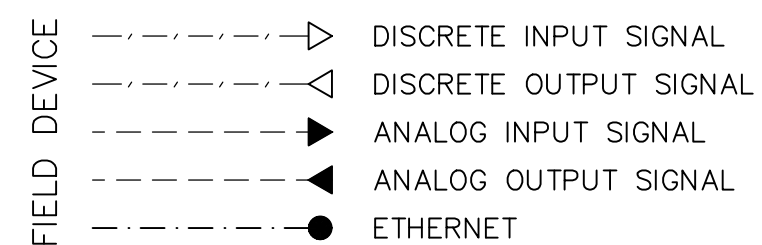
ST. JOHNS COUNTY UTILITY DEPARTMENT
ST. JOHNS COUNTY, FLORIDA
NORTHWEST WTP
PHASE 1 (6 TO 9 MGD) EXPANSION

ELECTRICAL DETAILS

INSTRUMENTATION LEGEND



P&ID SIGNAL DESIGNATIONS

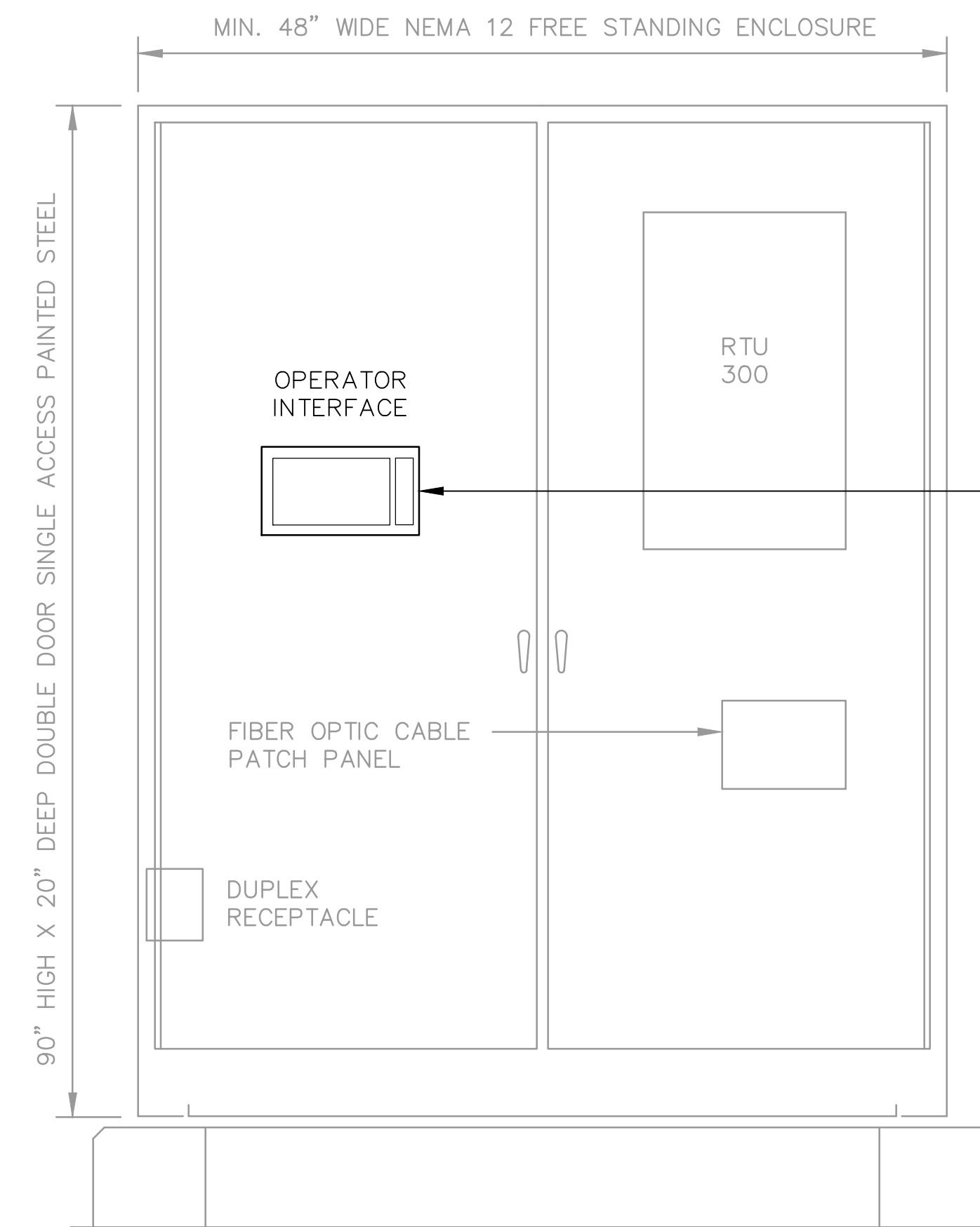


"XY"	FIRST LETTER	SUCCEEDING LETTERS
A	ANALYTICAL	ALARM
B	BURNER, COMBUSTION	
C		CONTROLLER
D	DIFFERENTIAL	
E	VOLTAGE	SENSOR, PRIMARY ELEMENT
F	FLOW	
G		GLASS, VIEWING DEVICE
H	HAND	HIGH
I	CURRENT	INDICATE
J	POWER	
K	TIME	CONTROL STATION
L	LEVEL	LOW
M		MIDDLE, INTERMEDIATE
N		
O		ORIFICE
P	PRESSURE, VACUUM	POINT
Q	QUANTITY	
R	RADIATION	RECORDER
S	SPEED, FREQUENCY	SWITCH
T	TEMPERATURE	TRANSMITTER
U	MULTIVARIABLE	MULTIFUNCTION
V	VIBRATION	VALVE, DAMPER, LOUVER
W	WEIGHT, FORCE	WELL
X		
Y	EVENT	RELAY, COMPUTE, CONVERTER
Z	POSITION	ACTUATOR

"XYZ"	MISCELLANEOUS ABBREVIATIONS
ACM	ANALOG CONTROL MODULE
AI	ANALOG INPUT SIGNAL
AMM	ANALOG MONITOR MODULE
AO	ANALOG OUTPUT SIGNAL
CL	CHLORINE RESIDUAL MEASUREMENT
DCM	DIGITAL CONTROL MODULE
DI	DIGITAL INPUT SIGNAL
DO	DIGITAL OUTPUT SIGNAL
FOR	FORWARD-OFF-REVERSE SELECTOR SWITCH
HOA	HAND-OFF-AUTOMATIC SELECTOR SWITCH
ICP	INSTRUMENTATION/CONTROL PANEL
NTU	NEPHELOMETRIC TURBIDITY UNITS
MCC	MOTOR CONTROL CENTER
MIP	MAIN INSTRUMENTATION PANEL
MLSS	MIXED LIQUOR SUSPENDED SOLIDS
O2	DISSOLVED OXYGEN MEASUREMENT
OI	OPERATOR INTERFACE
PCM	PUMP CONTROL MODULE
PLC	PROGRAMMABLE LOGIC CONTROLLER MODULE
pH	pH MEASUREMENT
PSM	POWER SUPPLY MODULE
RIM	RADIO INTERFACE MODULE
RTU	REMOTE TELEMETRY UNIT
S/C	SIGNAL CONVERTER
S/I	SIGNAL ISOLATOR
VFD	VARIABLE FREQUENCY DRIVE

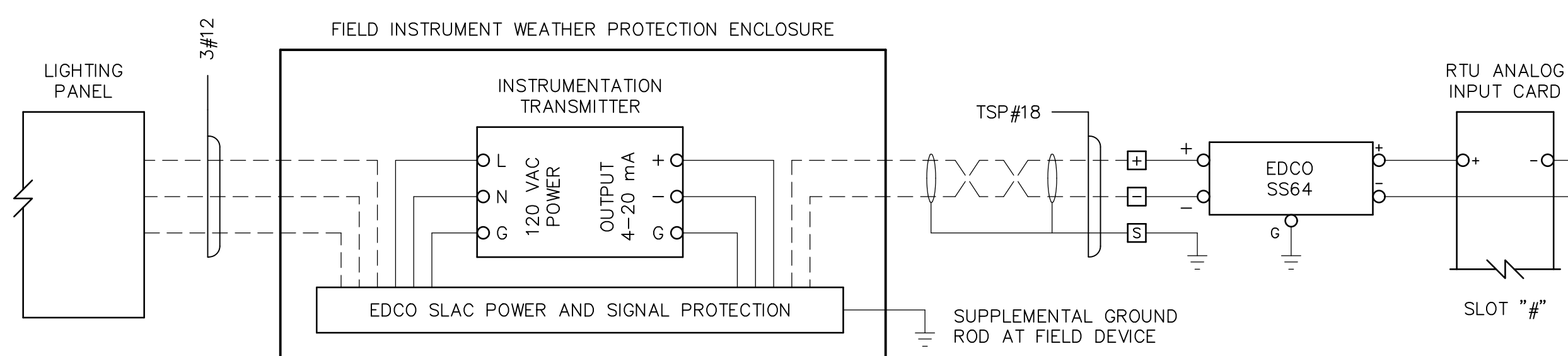


EXISTING STRUCTURES
(TO BE DEMOLISHED)

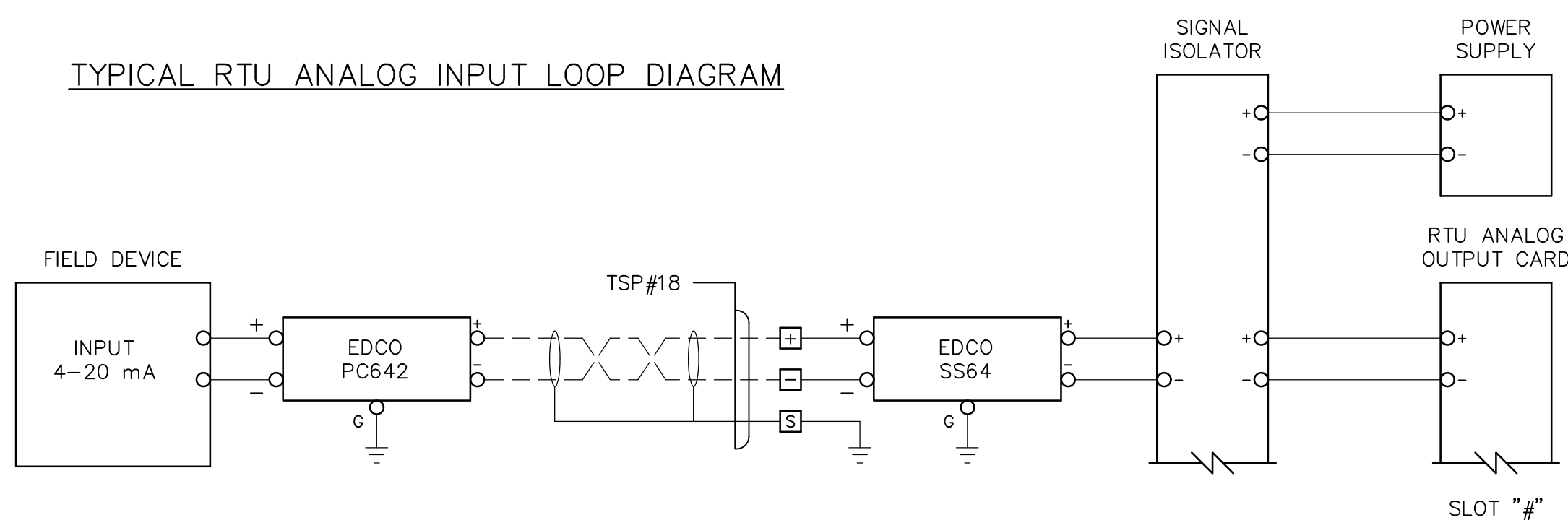


REMOVE THE EXISTING, DAMAGED OPERATOR INTERFACE, MODEL HM15100T, AND REPLACE WITH NEW OPERATOR INTERFACE, MODEL HM15121XL. REFER TO SPECIFICATION SECTION 406253 FOR ADDITIONAL DETAILS.

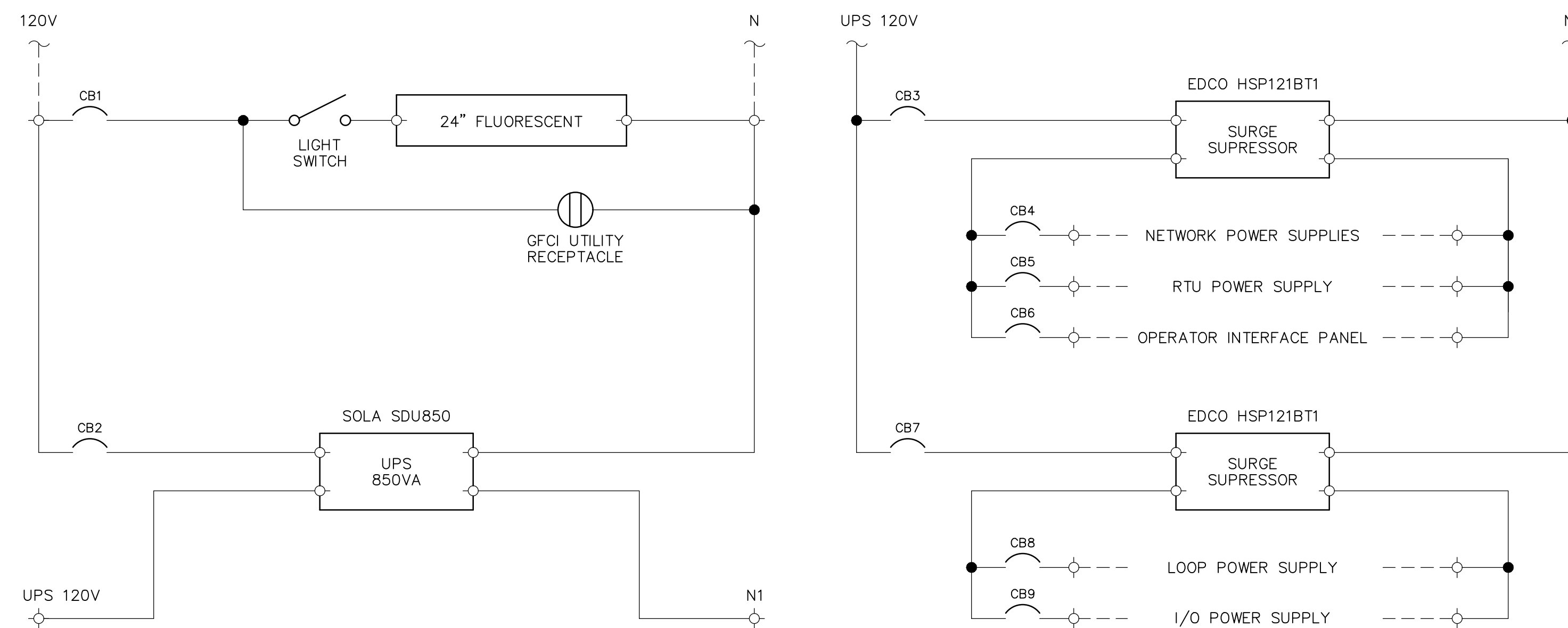
RTU300 INSTRUMENTATION AND CONTROL PANEL DETAIL
NOT TO SCALE



TYPICAL RTU ANALOG INPUT LOOP DIAGRAM



TYPICAL RTU ANALOG OUTPUT LOOP DIAGRAM



INSTRUMENTATION AND CONTROL PANEL POWER DISTRIBUTION DIAGRAM

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REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: M. GRAHAM
 DRAWN BY: R. CHARITY
 SHEET CHK'D BY: M. GRAHAM
 CROSS CHK'D BY: D. UBERT
 APPROVED BY: M. GRAHAM
 DATE: JULY 2019



ST. JOHNS COUNTY UTILITY DEPARTMENT
 ST. JOHNS COUNTY, FLORIDA
 NORTHWEST WTP
 PHASE 1 (6 TO 9 MGD) EXPANSION

INSTRUMENTATION LEGEND
AND SCHEDULES

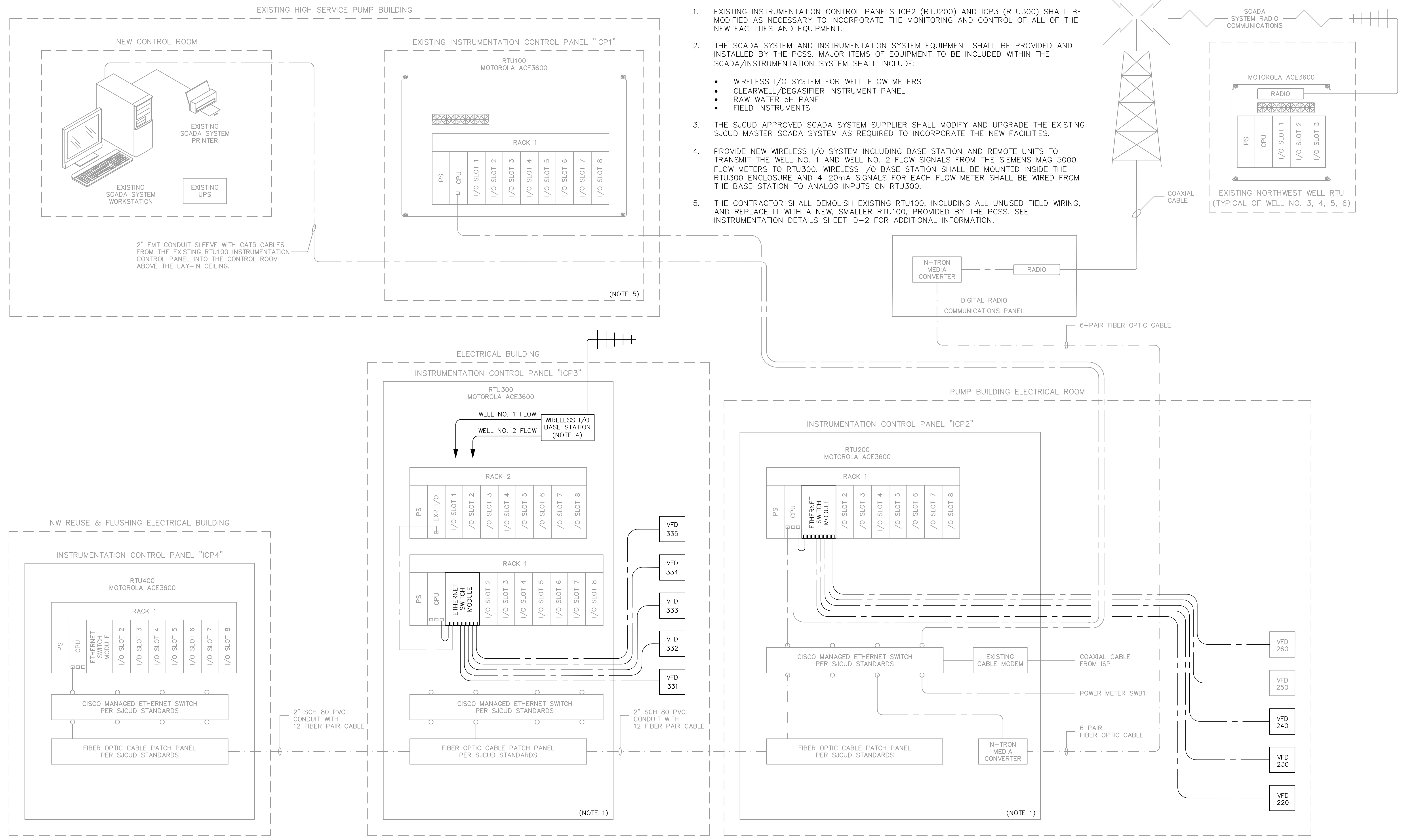
PROJECT NO. 6334-232860 FILE NAME: I001SYMB.dwg
SHEET NO. I-1

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SCADA SYSTEM NOTES:

- EXISTING INSTRUMENTATION CONTROL PANELS ICP2 (RTU200) AND ICP3 (RTU300) SHALL BE MODIFIED AS NECESSARY TO INCORPORATE THE MONITORING AND CONTROL OF ALL OF THE NEW FACILITIES AND EQUIPMENT.
- THE SCADA SYSTEM AND INSTRUMENTATION SYSTEM EQUIPMENT SHALL BE PROVIDED AND INSTALLED BY THE PCSS. MAJOR ITEMS OF EQUIPMENT TO BE INCLUDED WITHIN THE SCADA/INSTRUMENTATION SYSTEM SHALL INCLUDE:
 - WIRELESS I/O SYSTEM FOR WELL FLOW METERS
 - CLEARWELL/DEGASIFIER INSTRUMENT PANEL
 - RAW WATER pH PANEL
 - FIELD INSTRUMENTS
- THE SJUCD APPROVED SCADA SYSTEM SUPPLIER SHALL MODIFY AND UPGRADE THE EXISTING SJUCD MASTER SCADA SYSTEM AS REQUIRED TO INCORPORATE THE NEW FACILITIES.
- PROVIDE NEW WIRELESS I/O SYSTEM INCLUDING BASE STATION AND REMOTE UNITS TO TRANSMIT THE WELL NO. 1 AND WELL NO. 2 FLOW SIGNALS FROM THE SIEMENS MAG 5000 FLOW METERS TO RTU300. WIRELESS I/O BASE STATION SHALL BE MOUNTED INSIDE THE RTU300 ENCLOSURE AND 4-20mA SIGNALS FOR EACH FLOW METER SHALL BE WIRED FROM THE BASE STATION TO ANALOG INPUTS ON RTU300.
- THE CONTRACTOR SHALL DEMOLISH EXISTING RTU100, INCLUDING ALL UNUSED FIELD WIRING, AND REPLACE IT WITH A NEW, SMALLER RTU100, PROVIDED BY THE PCSS. SEE INSTRUMENTATION DETAILS SHEET ID-2 FOR ADDITIONAL INFORMATION.



REV. NO.	DATE	DRWN	CHKD	REMARKS

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 APPROVED BY: M. GRAHAM
 DATE: JULY 2019

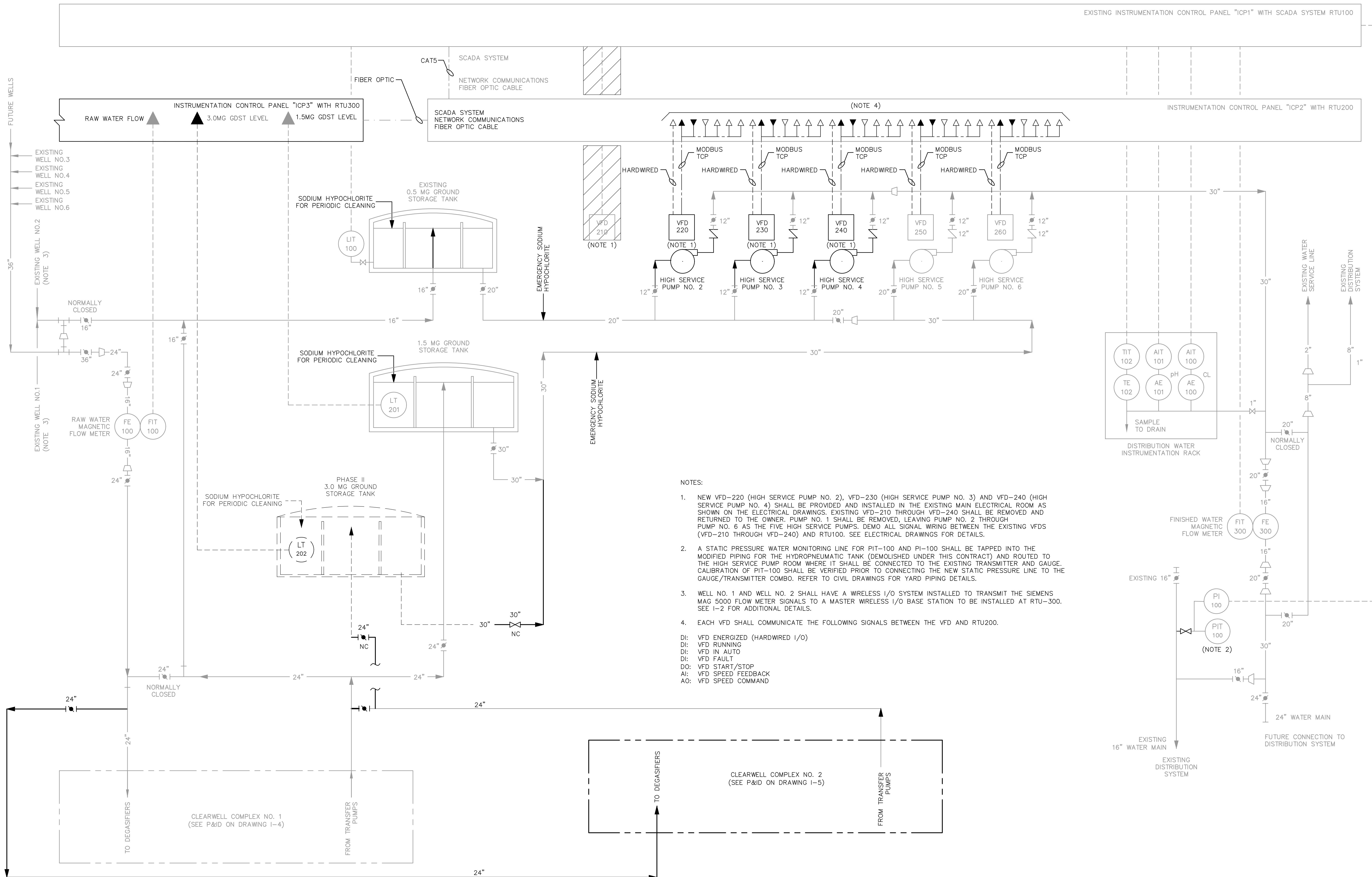


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 PHASE 1 (6 TO 9 MGD) EXPANSION

SCADA SYSTEM
 BLOCK DIAGRAM

PROJECT NO. 6334-232860
 FILE NAME: 1002PIDT.dwg
 SHEET NO. 1-2
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- NOTES:
- NEW VFD-220 (HIGH SERVICE PUMP NO. 2), VFD-230 (HIGH SERVICE PUMP NO. 3) AND VFD-240 (HIGH SERVICE PUMP NO. 4) SHALL BE PROVIDED AND INSTALLED IN THE EXISTING MAIN ELECTRICAL ROOM AS SHOWN ON THE ELECTRICAL DRAWINGS. EXISTING VFD-210 THROUGH VFD-240 SHALL BE REMOVED AND RETURNED TO THE OWNER. PUMP NO. 1 SHALL BE REMOVED, LEAVING PUMP NO. 2 THROUGH PUMP NO. 6 AS THE FIVE HIGH SERVICE PUMPS. DEMO ALL SIGNAL WIRING BETWEEN THE EXISTING VFDs (VFD-210 THROUGH VFD-240) AND RTU100. SEE ELECTRICAL DRAWINGS FOR DETAILS.
 - A STATIC PRESSURE WATER MONITORING LINE FOR PIT-100 AND PI-100 SHALL BE TAPPED INTO THE MODIFIED PIPING FOR THE HYDROPNEUMATIC TANK (DEMOLISHED UNDER THIS CONTRACT) AND ROUTED TO THE HIGH SERVICE PUMP ROOM WHERE IT SHALL BE CONNECTED TO THE EXISTING TRANSMITTER AND GAUGE. CALIBRATION OF PIT-100 SHALL BE VERIFIED PRIOR TO CONNECTING THE NEW STATIC PRESSURE LINE TO THE GAUGE/TRANSMITTER COMBO. REFER TO CIVIL DRAWINGS FOR YARD PIPING DETAILS.
 - WELL NO. 1 AND WELL NO. 2 SHALL HAVE A WIRELESS I/O SYSTEM INSTALLED TO TRANSMIT THE SIEMENS MAG 5000 FLOW METER SIGNALS TO A MASTER WIRELESS I/O BASE STATION TO BE INSTALLED AT RTU-300. SEE I-2 FOR ADDITIONAL DETAILS.
 - EACH VFD SHALL COMMUNICATE THE FOLLOWING SIGNALS BETWEEN THE VFD AND RTU200.
 DI: VFD ENERGIZED (HARDWIRED I/O)
 DI: VFD RUNNING
 DI: VFD IN AUTO
 DI: VFD FAULT
 DO: VFD START/STOP
 AI: VFD SPEED FEEDBACK
 AO: VFD SPEED COMMAND

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: M. GRAHAM
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 SHEET CHK'D BY: M. GRAHAM
 CROSS CHK'D BY: D. UBERT
 APPROVED BY: M. GRAHAM
 DATE: JULY 2019

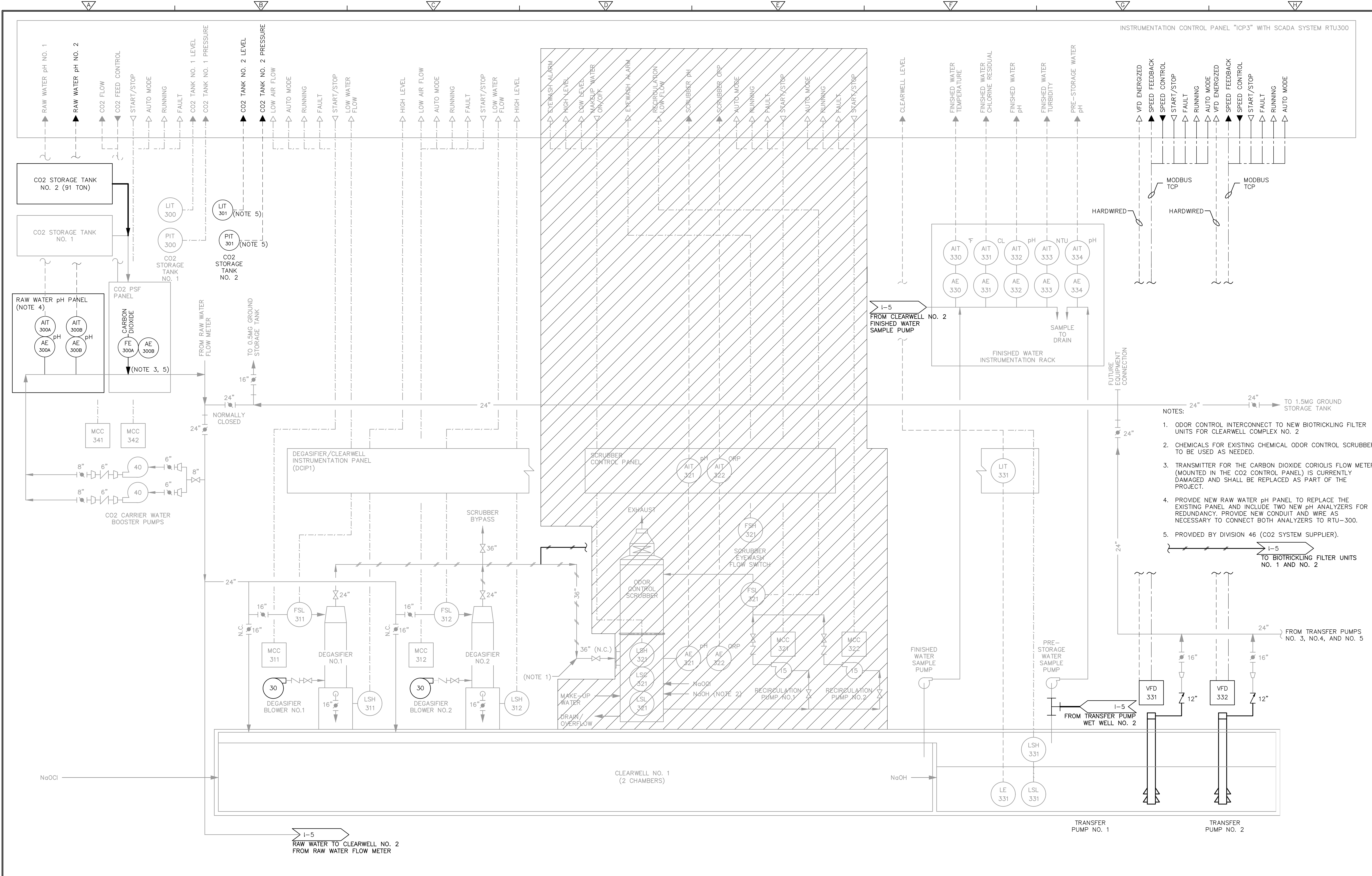
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 PHASE 1 (6 TO 9 MGD) EXPANSION

P&ID
 WATER TREATMENT PLANT

PROJECT NO. 6334-232860
 FILE NAME: 1003PID1.dwg
 SHEET NO. I-3
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INSTRUMENTATION CONTROL PANEL "ICP3" WITH SCADA SYSTEM RTU300

- NOTES:
- ODOR CONTROL INTERCONNECT TO NEW BIOTRICKLING FILTER UNITS FOR CLEARWELL COMPLEX NO. 2
 - CHEMICALS FOR EXISTING CHEMICAL ODOR CONTROL SCRUBBER TO BE USED AS NEEDED.
 - TRANSMITTER FOR THE CARBON DIOXIDE CORIOLIS FLOW METER (MOUNTED IN THE CO2 CONTROL PANEL) IS CURRENTLY DAMAGED AND SHALL BE REPLACED AS PART OF THE PROJECT.
 - PROVIDE NEW RAW WATER pH PANEL TO REPLACE THE EXISTING PANEL AND INCLUDE TWO NEW pH ANALYZERS FOR REDUNDANCY. PROVIDE NEW CONDUIT AND WIRE AS NECESSARY TO CONNECT BOTH ANALYZERS TO RTU-300.
 - PROVIDED BY DIVISION 46 (CO2 SYSTEM SUPPLIER).

1-5
RAW WATER TO CLEARWELL NO. 2
FROM RAW WATER FLOW METER

PROJECT NO. 6334-232860
FILE NAME: 1004PID1.dwg
SHEET NO. I-4

DESIGNED BY: M. GRAHAM
DRAWN BY: R. CHARITY
SHEET CHK'D BY: M. GRAHAM
CROSS CHK'D BY: D. UBERT
APPROVED BY: M. GRAHAM
DATE: JULY 2019



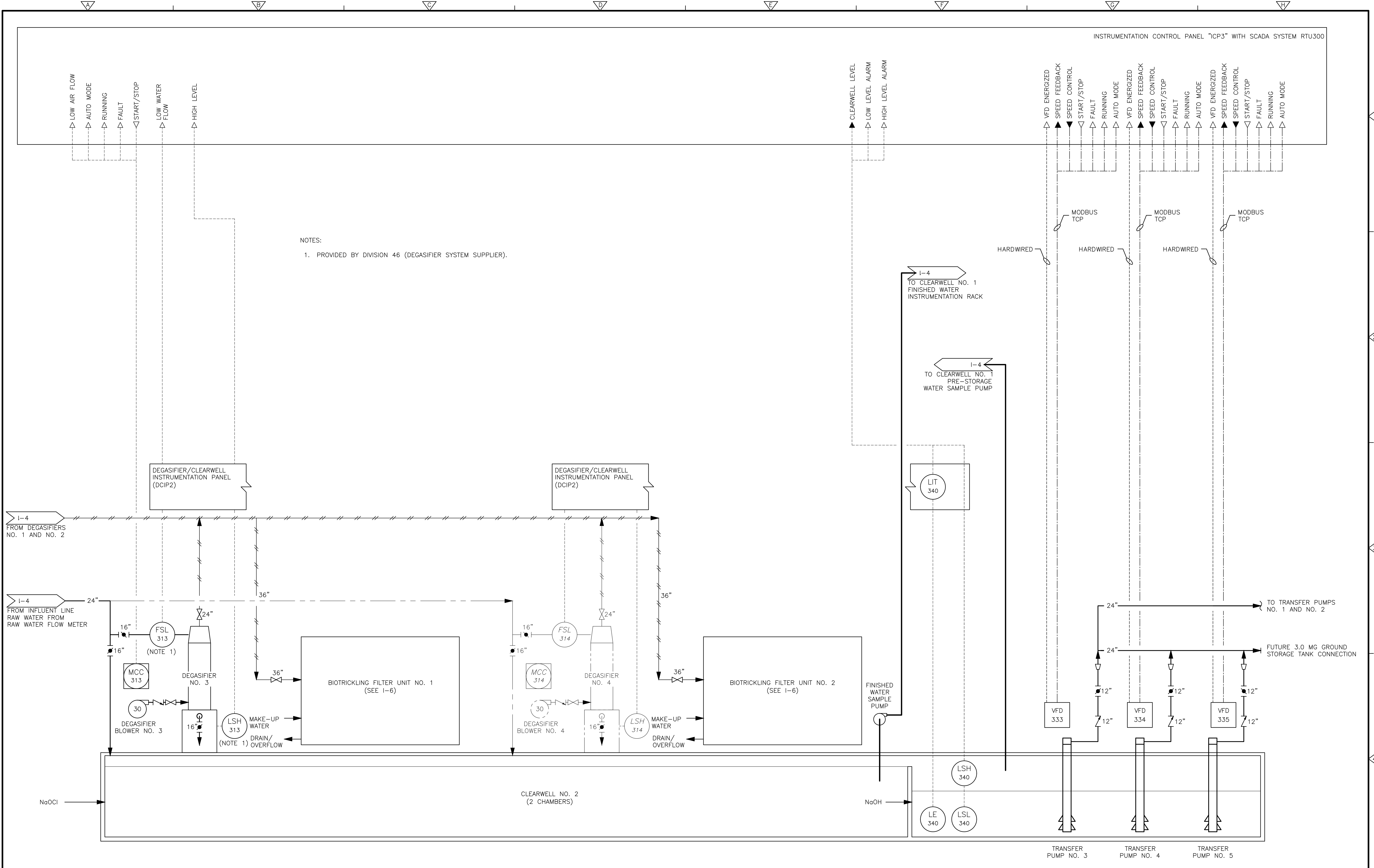
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PHASE 1 (6 TO 9 MGD) EXPANSION

P&ID
CLEARWELL NO. 1

REV. NO.	DATE	DRWN	CHKD	REMARKS

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NOTES:
 1. PROVIDED BY DIVISION 46 (DEGASIFIER SYSTEM SUPPLIER).

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: M. GRAHAM
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 SHEET CHK'D BY: M. GRAHAM
 CROSS CHK'D BY: D. UBERT
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 DATE: JULY 2019



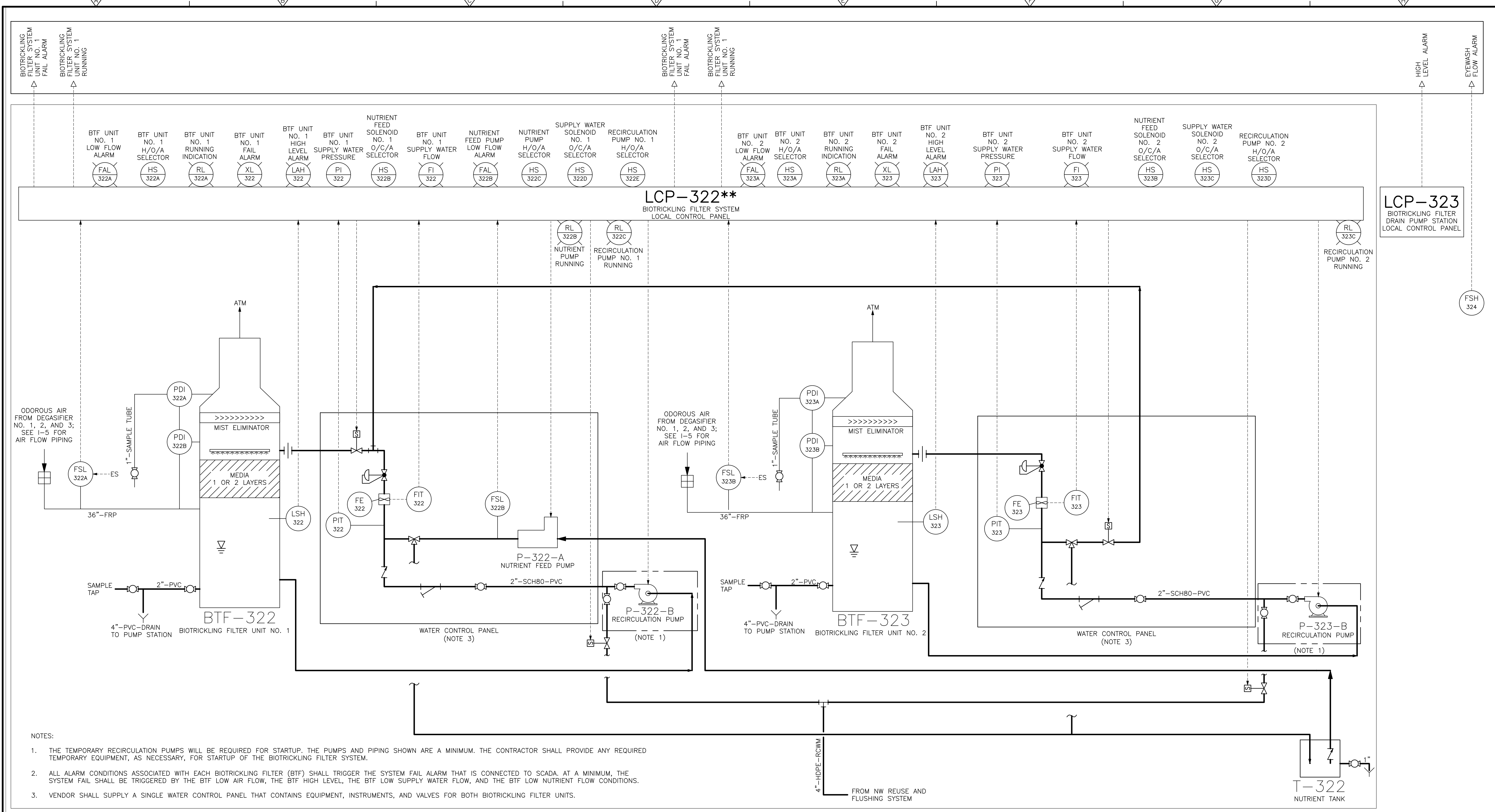
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 NORTHWEST WTP
 PHASE 1 (6 TO 9 MGD) EXPANSION

P&ID
 CLEARWELL NO. 2

PROJECT NO. 6334-232860
 FILE NAME: 1005PID1.dwg
 SHEET NO. I-5

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- NOTES:
1. THE TEMPORARY RECIRCULATION PUMPS WILL BE REQUIRED FOR STARTUP. THE PUMPS AND PIPING SHOWN ARE A MINIMUM. THE CONTRACTOR SHALL PROVIDE ANY REQUIRED TEMPORARY EQUIPMENT, AS NECESSARY, FOR STARTUP OF THE BIOTRICKLING FILTER SYSTEM.
 2. ALL ALARM CONDITIONS ASSOCIATED WITH EACH BIOTRICKLING FILTER (BTF) SHALL TRIGGER THE SYSTEM FAIL ALARM THAT IS CONNECTED TO SCADA. AT A MINIMUM, THE SYSTEM FAIL SHALL BE TRIGGERED BY THE BTF LOW AIR FLOW, THE BTF HIGH LEVEL, THE BTF LOW SUPPLY WATER FLOW, AND THE BTF LOW NUTRIENT FLOW CONDITIONS.
 3. VENDOR SHALL SUPPLY A SINGLE WATER CONTROL PANEL THAT CONTAINS EQUIPMENT, INSTRUMENTS, AND VALVES FOR BOTH BIOTRICKLING FILTER UNITS.

BIOTRICKLING FILTER PACKAGE SYSTEM**

REV. NO.	DATE	DRWN	CHKD	REMARKS

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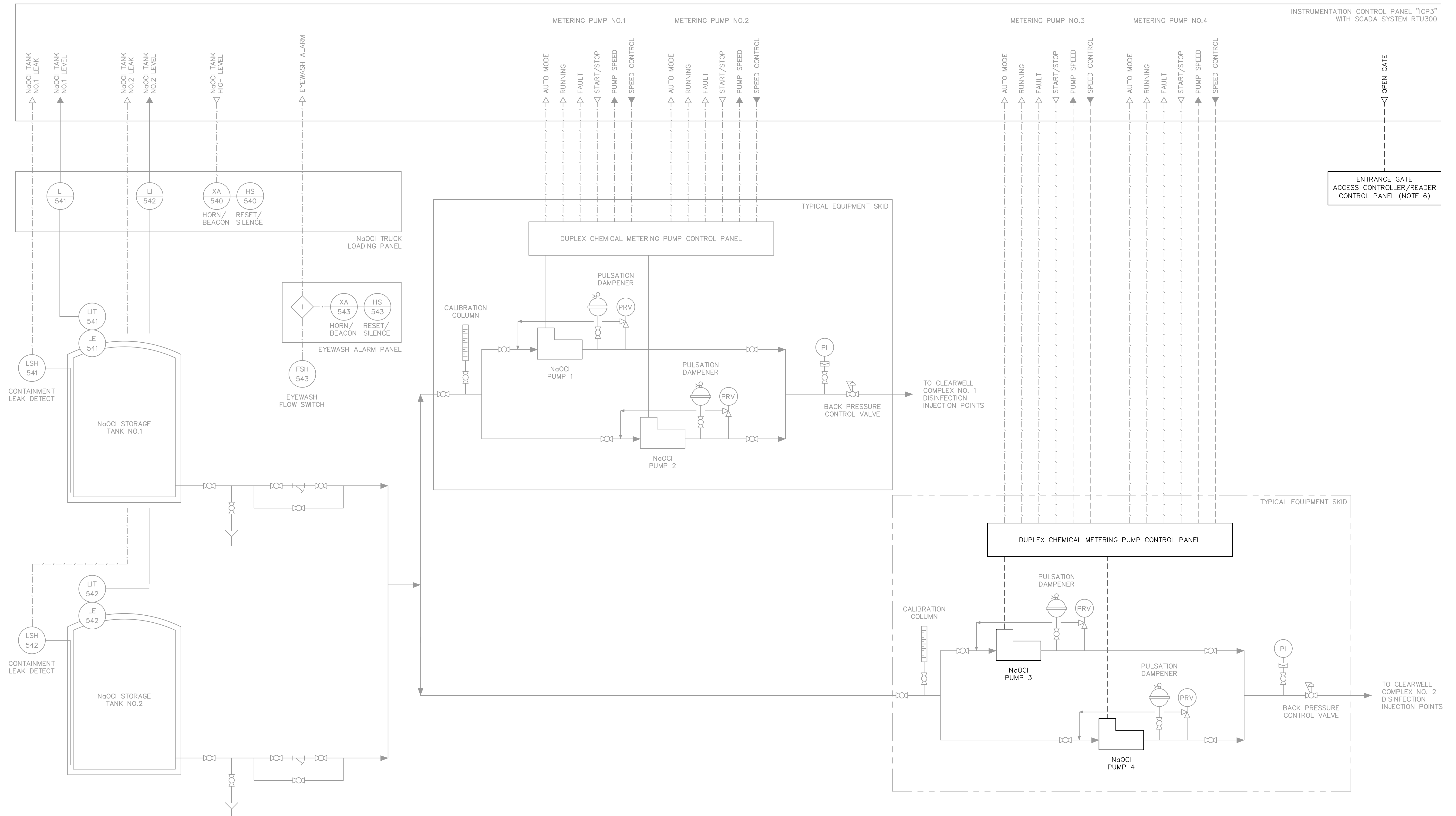


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 PHASE 1 (6 TO 9 MGD) EXPANSION

P&ID
 BIOTRICKLING FILTER SYSTEM

PROJECT NO. 6334-232860
FILE NAME: 1006PID1.dwg
SHEET NO. 1-6

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NOTES:

1. THE EXISTING SODIUM HYPOCHLORITE SKID FOR THE CHEMICAL SCRUBBER SHALL BE CONVERTED FOR NAOCL FEED TO CLEARWELL COMPLEX NO. 2. REFER TO MECHANICAL DRAWINGS FOR ADDITIONAL DETAILS.
2. EACH CHEMICAL METERING PUMP SHALL BE EQUIPPED WITH THE FOLLOWING FEATURES: REMOTE ON-OFF CONTROL (DRY CONTACT), ANALOG INPUT CONTROL (4-20mA), ANALOG OUTPUT SIGNAL (4-20mA), AND ALARM RELAY OUTPUT (SPDT).
3. PUMP STROKE FREQUENCY SHALL BE PROPORTIONAL TO THE ANALOG INPUT SIGNAL.
4. PUMP ANALOG OUTPUT SIGNAL SHALL BE THE A MULTIPLICATIVE FACTOR OF BOTH STROKE LENGTH PERCENT AND STROKE FREQUENCY PERCENT, REFLECTING THE REAL TIME OUTPUT CAPACITY OF THE METERING PUMP.
5. THE CHEMICAL METERING PUMP CONTROL PANELS SHALL INCLUDE A PROCESS CONTROLLER FOR EACH PUMP; RED LION P1641100. THE PROCESS CONTROLLERS SHALL DISPLAY THE REAL TIME OUTPUT CAPACITY OF THE METERING PUMP, SHALL PROVIDE A RUN INDICATION DRY CONTACT, AND SHALL PROVIDE LOCAL MANUAL CONTROL OF PUMP STROKE FREQUENCY ADJUSTMENT.
6. REFER TO ELECTRICAL DRAWING E-8 FOR ADDITIONAL DETAILS REGARDING THE ENTRANCE GATE ACCESS CONTROL SYSTEM.

REV. NO.	DATE	DRWN	CHKD	REMARKS

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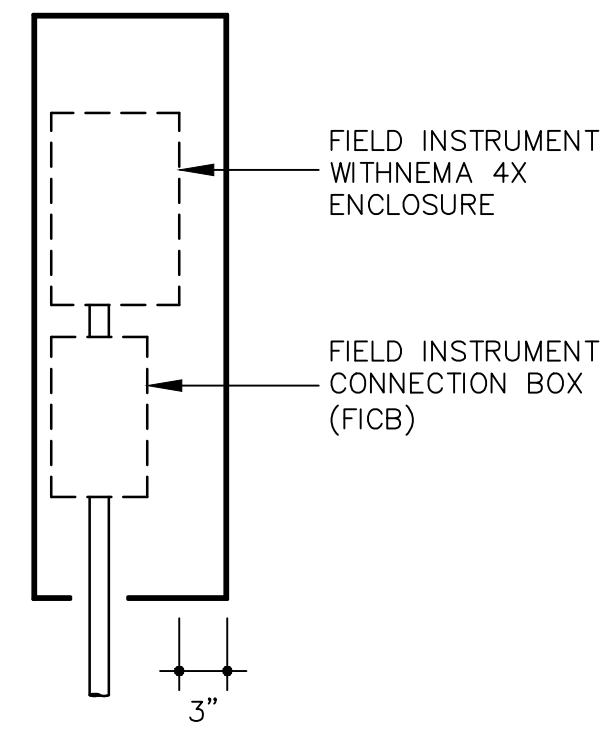
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 PHASE 1 (6 TO 9 MGD) EXPANSION

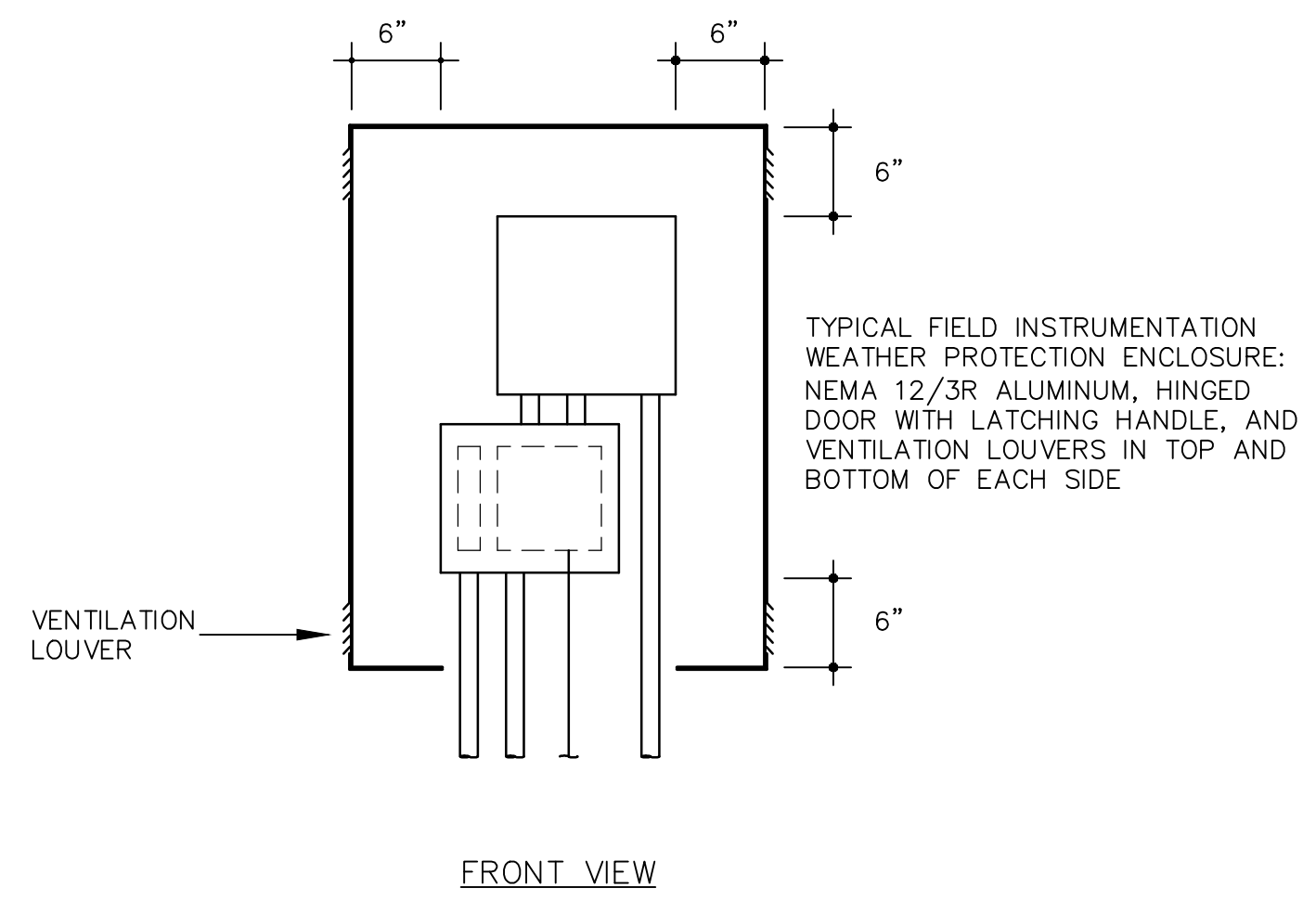
P&ID
SODIUM HYPOCHLORITE FEED SYSTEM

PROJECT NO. 6334-232860
 FILE NAME: 1007PID1.dwg
 SHEET NO. 1-7
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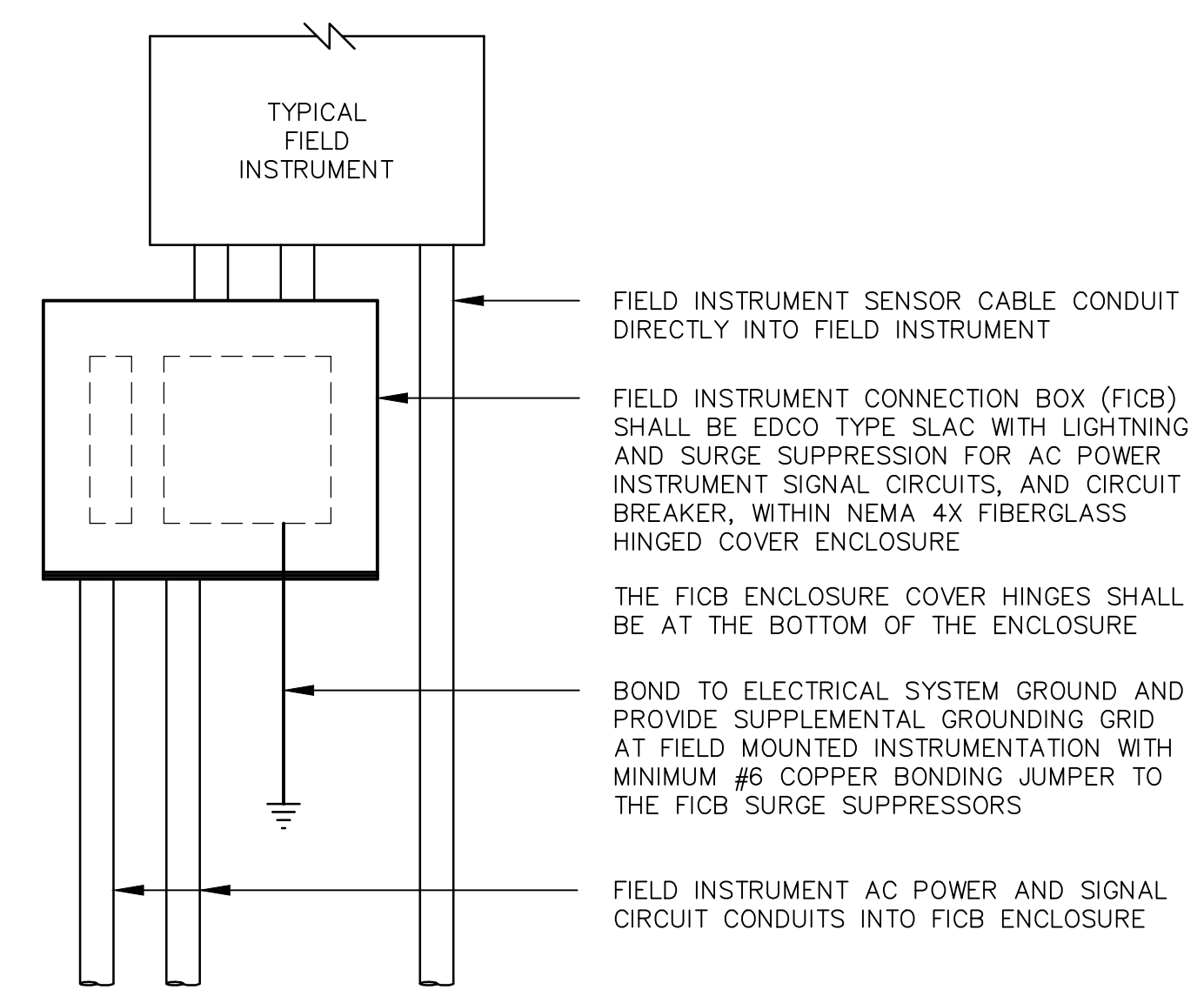


SIDE VIEW



FRONT VIEW

TYPICAL OUTDOOR FIELD INSTRUMENT MOUNTING DETAIL
NOT TO SCALE



TYPICAL FIELD INSTRUMENT CONNECTION BOX (FICB)
NOT TO SCALE

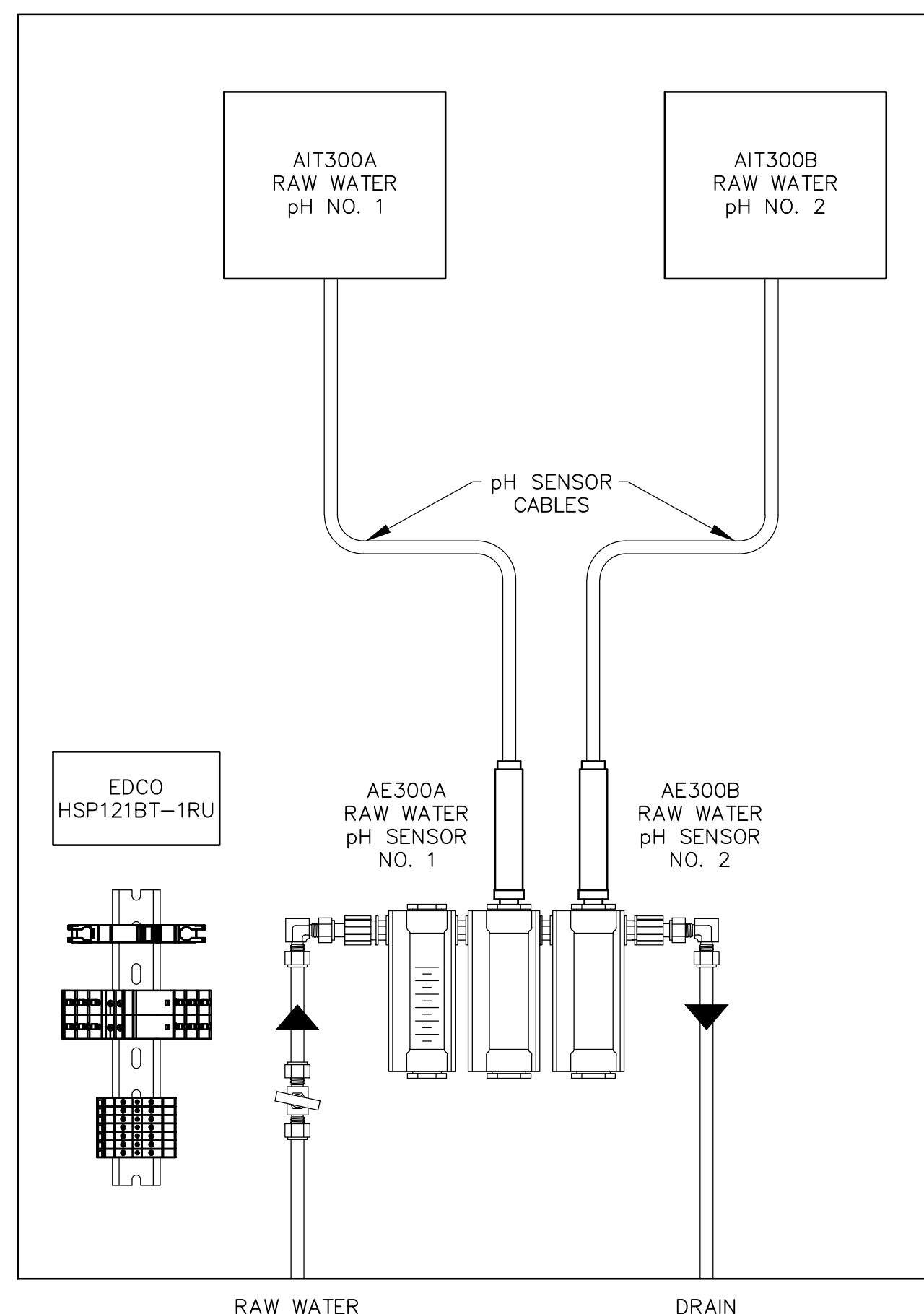
FIELD INSTRUMENT SENSOR CABLE CONDUIT DIRECTLY INTO FIELD INSTRUMENT

FIELD INSTRUMENT CONNECTION BOX (FICB) SHALL BE EDCO TYPE SLAC WITH LIGHTNING AND SURGE SUPPRESSION FOR AC POWER INSTRUMENT SIGNAL CIRCUITS, AND CIRCUIT BREAKER, WITHIN NEMA 4X FIBERGLASS HINGED COVER ENCLOSURE

THE FICB ENCLOSURE COVER HINGES SHALL BE AT THE BOTTOM OF THE ENCLOSURE

BOND TO ELECTRICAL SYSTEM GROUND AND PROVIDE SUPPLEMENTAL GROUNDING GRID AT FIELD MOUNTED INSTRUMENTATION WITH MINIMUM #6 COPPER BONDING JUMPER TO THE FICB SURGE SUPPRESSORS

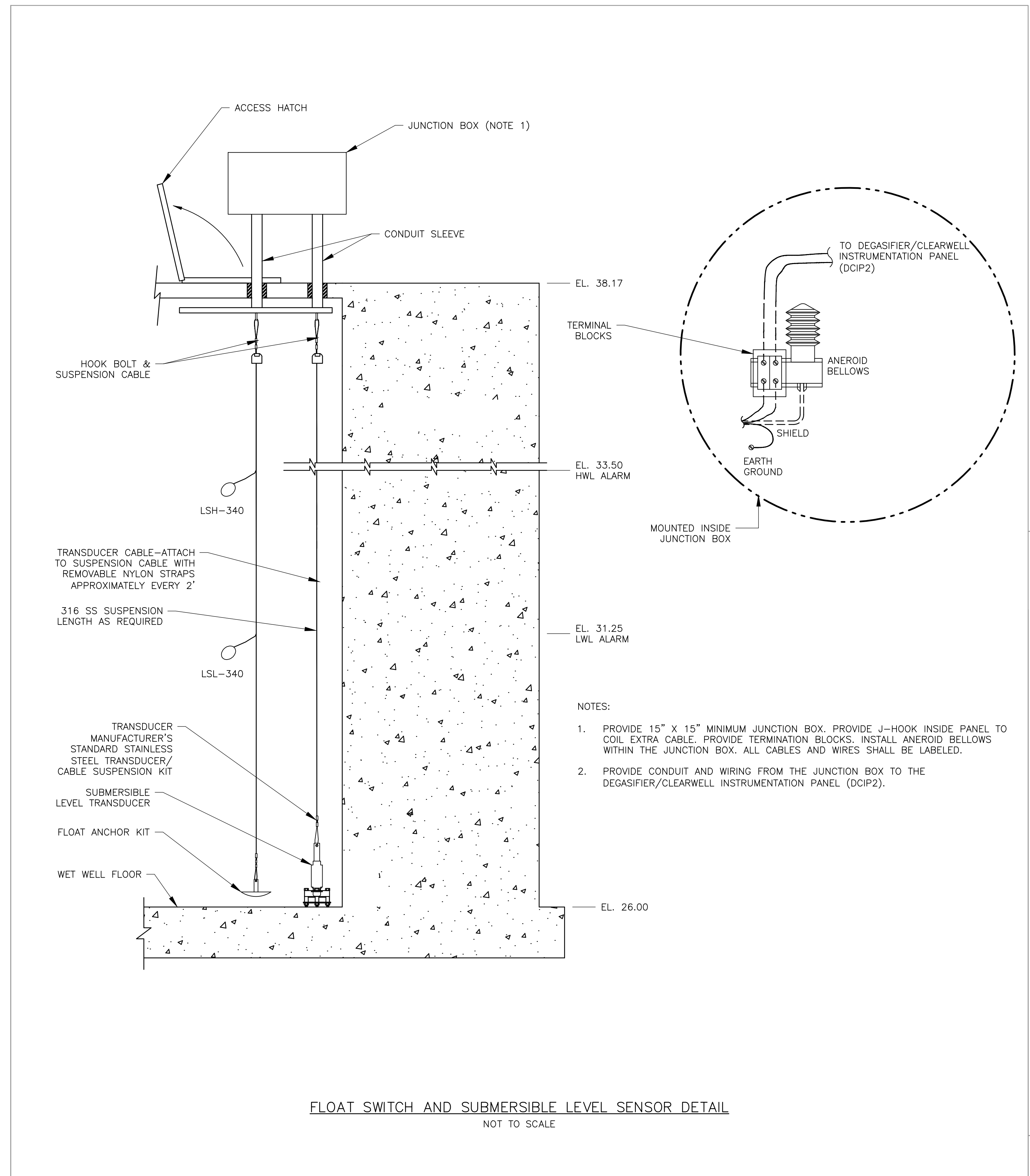
FIELD INSTRUMENT AC POWER AND SIGNAL CIRCUIT CONDUITS INTO FICB ENCLOSURE



NOTES:

1. RAW WATER pH CONTROL PANEL SHALL BE MINIMUM 36"H X 24"W X 12"D, NEMA 4X, 304SS, PAINTED WHITE, WALL-MOUNTABLE ENCLOSURE. PANEL SHALL BE MOUNTED IN THE SAME LOCATION AS THE EXISTING pH PANEL.

RAW WATER pH CONTROL PANEL DETAIL
NOT TO SCALE



FLOAT SWITCH AND SUBMERSIBLE LEVEL SENSOR DETAIL
NOT TO SCALE

NOTES:

1. PROVIDE 15" X 15" MINIMUM JUNCTION BOX. PROVIDE J-HOOK INSIDE PANEL TO COIL EXTRA CABLE. PROVIDE TERMINATION BLOCKS. INSTALL ANEROID BELLOWS WITHIN THE JUNCTION BOX. ALL CABLES AND WIRES SHALL BE LABELED.

2. PROVIDE CONDUIT AND WIRING FROM THE JUNCTION BOX TO THE DEGASIFIER/CLEARWELL INSTRUMENTATION PANEL (DCIP2).

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CROSS CHK'D BY:	D. UBERT
APPROVED BY:	M. GRAHAM
DATE:	JULY 2019

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FL OCA No. EB-0000020

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NORTHWEST WTP
PHASE 1 (6 TO 9 MGD) EXPANSION

INSTRUMENTATION
DETAILS I

PROJECT NO.	6334-232860
FILE NAME:	IDD1PIDT.dwg
SHEET NO.	ID-1

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EXISTING RTU100 I/O SCHEDULE																		
SLOT 1 - 16 DIGITAL INPUT MODULE			SLOT 2 - 16 DIGITAL INPUT MODULE			SLOT 3 - 16 DIGITAL OUTPUT MODULE			SLOT 4 - 8 ANALOG INPUT MODULE			SLOT 5 - 4 ANALOG OUTPUT MODULE			SLOT 6 - MIXED I/O MODULE (DI POINTS)		SLOT 6 - MIXED I/O MODULE (DO AND AI POINTS)	
DI	SIGNAL DESCRIPTION	DI	SIGNAL DESCRIPTION	DO	SIGNAL DESCRIPTION	AI	SIGNAL DESCRIPTION	AO	SIGNAL DESCRIPTION	DI	SIGNAL DESCRIPTION	DO	SIGNAL DESCRIPTION	DI	SIGNAL DESCRIPTION	DO	SIGNAL DESCRIPTION	
1	HIGH SERVICE PUMP NO. 1 RUNNING	1	HIGH SERVICE PUMP NO. 1 VFD SPEED IN LOCAL	1	HIGH SERVICE PUMP NO. 1 START/STOP	1	GST LEVEL (LIT-100)	1	HIGH SERVICE PUMP NO. 1 SPEED REFERENCE	1	HIGH SERVICE PUMP NO. 3 RUNNING	1	SPARE					
2	HIGH SERVICE PUMP NO. 2 RUNNING	2	HIGH SERVICE PUMP NO. 1 VFD SPEED IN REMOTE	2	HIGH SERVICE PUMP NO. 1 VFD SELECT	2	DISTRIBUTION PRESSURE (PIT-100)	2	HIGH SERVICE PUMP NO. 2 SPEED REFERENCE	2	HIGH SERVICE PUMP NO. 3 FAIL	2	SPARE					
3	HIGH SERVICE PUMP NO. 1 IN HAND	3	HIGH SERVICE PUMP NO. 2 VFD SPEED IN LOCAL	3	HIGH SERVICE PUMP NO. 1 SOFT START SELECT	3	DISTRIBUTION PH (AIT-101)	3	HIGH SERVICE PUMP NO. 3 SPEED REFERENCE	3	HIGH SERVICE PUMP NO. 3 IN AUTO	3	HIGH SERVICE PUMP NO. 3 START/STOP					
4	HIGH SERVICE PUMP NO. 2 IN HAND	4	HIGH SERVICE PUMP NO. 2 VFD SPEED IN REMOTE	4	SPARE	4	DISTRIBUTION CL2 RESIDUAL (AIT-100)	4	HIGH SERVICE PUMP NO. 4 SPEED REFERENCE	4	GENERATOR RUNNING (NOTE 14)	4	HIGH SERVICE PUMP NO. 4 START/STOP					
5	HIGH SERVICE PUMP NO. 1 FAULT	5	HIGH SERVICE PUMP NO. 1 VFD CONTROL SELECTED	5	HIGH SERVICE PUMP NO. 2 START/STOP	5	DISTRIBUTION FLOW (FIT-300)			5	GENERATOR FAULT (NOTE 14)	AI	SIGNAL DESCRIPTION					
6	HIGH SERVICE PUMP NO. 2 FAULT	6	HIGH SERVICE PUMP NO. 1 SOFT START CONTROL SELECTED	6	HIGH SERVICE PUMP NO. 2 VFD SELECT	6	HIGH SERVICE PUMP NO. 1 SPEED INDICATION			6	HIGH SERVICE PUMP NO. 4 RUNNING	1	HIGH SERVICE PUMP NO. 3 SPEED INDICATION					
7	HIGH SERVICE PUMP NO. 1 IN AUTO	7	HIGH SERVICE PUMP NO. 2 VFD CONTROL SELECTED	7	HIGH SERVICE PUMP NO. 2 SOFT START SELECT	7	HIGH SERVICE PUMP NO. 2 SPEED INDICATION			7	HIGH SERVICE PUMP NO. 4 FAIL	2	HIGH SERVICE PUMP NO. 4 SPEED INDICATION					
8	HIGH SERVICE PUMP NO. 2 IN AUTO	8	HIGH SERVICE PUMP NO. 2 SOFT START CONTROL SELECTED	8	SPARE	8	DISTRIBUTION TEMPERATURE (TIT-102)			8	HIGH SERVICE PUMP NO. 4 IN AUTO	3	SPARE					
9	WELL PUMP NO. 1 RUNNING	9	HIGH SERVICE PUMP NO. 1 SOFT START IN LOCAL	9	PLC HEALTH RELAY (NOTE 15)					9	SPARE	4	SPARE					
10	WELL PUMP NO. 2 RUNNING	10	HIGH SERVICE PUMP NO. 1 VFD IN LOCAL	10	WELL PUMP NO. 1 START/STOP					10	SPARE							
11	WELL PUMP NO. 1 IN HAND	11	HIGH SERVICE PUMP NO. 2 SOFT START IN LOCAL	11	WELL PUMP NO. 2 START/STOP					11	SPARE							
12	WELL PUMP NO. 1 IN AUTO	12	HIGH SERVICE PUMP NO. 2 VFD IN LOCAL	12	SPARE					12	SPARE							
13	WELL PUMP NO. 2 IN HAND	13	AIR COMPRESSOR RUNNING (NOTE 12)	13	SPARE					13	SPARE							
14	WELL PUMP NO. 2 IN AUTO	14	CHEMICAL PUMP NO. 1 RUNNING (NOTE 13)	14	SPARE					14	SPARE							
15	PHASE MONITOR OK (NOTE 10)	15	CHEMICAL PUMP NO. 2 RUNNING (NOTE 13)	15	SPARE					15	SPARE							
16	TANK INTRUSION (NOTE 11)	16	ATS IN EMERGENCY POSITION (NOTE 14)	16	SPARE					16	SPARE							

EXISTING RTU100 I/O SCHEDULE (NOTE 9)


I/O SCHEDULE LEGEND
 ORANGE = CONVERT TO MODBUS TCP COMMUNICATIONS; REMOVE PHYSICAL I/O WIRING
 YELLOW = PHYSICAL I/O WIRING TO BE REMOVED; I/O BECOMES SPARE

FINAL RTU100 I/O SCHEDULE			
SLOT 1 - MIXED I/O MODULE (16 DI, 4 DO, 4 AI)		SLOT 1 - MIXED I/O MODULE (16 DI, 4 DO, 4 AI)	
DI	SIGNAL DESCRIPTION	DI	SIGNAL DESCRIPTION
1	WELL PUMP NO. 1 RUNNING	1	SPARE
2	WELL PUMP NO. 1 IN HAND	2	SPARE
3	WELL PUMP NO. 1 IN AUTO	3	SPARE
4	WELL PUMP NO. 2 RUNNING	4	SPARE
5	WELL PUMP NO. 2 IN HAND	5	SPARE
6	WELL PUMP NO. 2 IN AUTO	6	SPARE
7	SPARE	7	SPARE
8	SPARE	8	SPARE
9	SPARE	9	SPARE
10	SPARE	10	SPARE
11	SPARE	11	SPARE
12	SPARE	12	SPARE
13	SPARE	13	SPARE
14	SPARE	14	SPARE
15	SPARE	15	SPARE
16	SPARE	16	SPARE
DO	SIGNAL DESCRIPTION	DO	SIGNAL DESCRIPTION
1	WELL PUMP NO. 1 START/STOP	1	SPARE
2	WELL PUMP NO. 2 START/STOP	2	SPARE
3	SPARE	3	SPARE
4	SPARE	4	SPARE
AI	SIGNAL DESCRIPTION	AI	SIGNAL DESCRIPTION
1	GST LEVEL (LIT-100)	1	DISTRIBUTION FLOW (FIT-300)
2	DISTRIBUTION PRESSURE (PIT-100)	2	DISTRIBUTION TEMPERATURE (TIT-102)
3	DISTRIBUTION PH (AIT-101)	3	SPARE
4	DISTRIBUTION CL2 RESIDUAL (AIT-100)	4	SPARE

NEW RTU100 I/O SCHEDULE (NOTE 3)

NOTES:

- SJUCD SHALL EMPLOY THE SERVICES OF A SJUCD APPROVED SCADA SYSTEM INTEGRATOR (I.E. THE PROCESS CONTROL SYSTEM SUPPLIER (PCSS)) TO MODIFY THE EXISTING NW WTP PLANT INSTRUMENTATION AND CONTROL SYSTEM TO FULLY INTEGRATE THE NEW FACILITIES, INCLUDING THE INTEGRATION OF THE NEW RTU100 THAT SHALL REPLACE THE EXISTING RTU IN THE MCC1 ELECTRICAL ROOM AS WELL AS INTEGRATING THE MODIFICATIONS BEING MADE TO RTU200 (MCC2 ELECTRICAL ROOM) AND RTU300 (MCC3 ELECTRICAL BUILDING). ALL RTU AND HMI PROGRAMMING SHALL BE PROVIDED BY SJUCD.
- RTU100 SHALL BE PROVIDED BY THE PCSS UNDER THIS CONTRACT. THE NEW RTU SHALL BE WALL-MOUNTED AND SHALL UTILIZE MOTOROLA ACE3600 RTU HARDWARE. AT A MINIMUM, THE NEW RTU100 SHALL BE EQUIPPED WITH POWER SUPPLY, CPU, 16-POINT DIGITAL INPUT MODULE, 8-POINT RELAY OUTPUT MODULE, AND AN 8-POINT ANALOG INPUT MODULE. THE NEW RTU100 I/O SIGNALS SHALL BE AS SHOWN IN THE I/O SCHEDULE ON THIS SHEET.
- RTU100 SHALL BE DEMOLISHED AND REPLACED WITH THE NEW WALL-MOUNTED RTU100. ALL SIGNALS SHOWN ON THIS I/O SCHEDULE DETAIL SHALL HAVE THEIR FIELD WIRING UNTERMINATED FROM THE EXISTING RTU100 ENCLOSURE AND THE FIELD WIRING SHALL BE PROTECTED WHILE THE EXISTING RTU100 ENCLOSURE IS REMOVED. FIELD WIRING SHALL BE RE-TERMINATED TO A WALL-MOUNTED MARSHALLING CABINET WITH TERMINAL BLOCKS FOR THE FIELD WIRING. THE FIELD WIRING SHALL BE EXTENDED FROM THE MARSHALLING CABINET TO THE NEW RTU100.
- HAND-OFF-AUTO SELECTOR SWITCHES SHALL BE ADDED TO THE MOTOR STARTER BUCKETS IN MCC1 TO REPLACE THE ELEMENTARY WIRING FOR START/STOP CONTROL THAT EXISTS IN INSTRUMENTATION CONTROL PANEL ICP100. REFER TO ELECTRICAL DRAWINGS FOR DETAILS.
- THE EXISTING DISTRIBUTION FLOW METER (FIT-300) IS A SIEMENS MAGFLO MAGNETIC FLOW METER. THE PCSS / CONTRACTOR SHALL RELOCATE THE SIEMENS MODEL MAG5000 (PART NUMBER 7ME6910-1AA10-1AA0) TRANSMITTER FROM THE FRONT OF THE EXISTING RTU100 TO THE WALL NEXT TO THE NEW RTU100. ANY TEMPORARY MOUNTING ARRANGEMENT SHALL BE PROVIDED BY THE CONTRACTOR WHILE RTU100 IS BEING REMOVED TO ENSURE THAT THE DISTRIBUTION FLOW IS BEING MONITORED LOCALLY ON THE FRONT OF THE TRANSMITTER AS WELL AS AT THE WTP SCADA SOFTWARE.
- EXISTING RTU100 IS CURRENTLY BEING USED AS A PASS-THROUGH FOR SEVERAL CAT5/CAT6 CABLES. THE PCSS / CONTRACTOR SHALL REMOVE THESE CABLES AND RE-LOCATE THEM TO A NEW PERMANENT NETWORK PATCH PANEL. THE PCSS / CONTRACTOR SHALL LABEL EACH END OF THE CABLE AT THE POINT IN THE CABLE WHERE THEY ARE BEING CUT. ONE END OF EACH CUT CABLE SHALL BE PUNCHED DOWN TO THE NEW NETWORK PATCH PANEL. THE OTHER END OF EACH CUT CABLE SHALL BE TERMINATED WITH AN RJ-45 CONNECTOR AND LANDED ON THE CORRECT PORT WHERE THE CORRESPONDING CABLE END WAS PUNCHED DOWN TO THE PATCH PANEL. THE CAT5 / CAT6 CABLES SHALL NOT BE CUT AND SPLICED.
- NEW ICP100 CONTROL PANEL FOR RTU100 SHALL BE MINIMUM 36"H X 30"W X 12"D, NEMA12, STEEL, PAINTED GRAY, WALL-MOUNTABLE ENCLOSURE. PANEL SHALL BE MOUNTED IN THE LOCATION SHOWN ON THE ELECTRICAL DRAWINGS.
- THE EXISTING SODIUM HYDROXIDE SKID FOR THE CHEMICAL SCRUBBER SHALL BE CONVERTED FOR NAOH FEED TO CLEARWELL COMPLEX NO. 2. REFER TO MECHANICAL DRAWINGS FOR ADDITIONAL DETAILS.
- ALL SIGNALS SHOWN IN ORANGE SHALL BE CONVERTED TO MODBUS TCP. LOGIC FOR THE HIGH SERVICE PUMPS AND THE MODBUS TCP COMMUNICATIONS FOR THE HIGH SERVICE PUMPS SHALL BE LOCATED IN RTU200. ALL SIGNALS SHOWN IN YELLOW SHALL BE REMOVED/DEMOLISHED. REMAINING I/O SHALL BE INCLUDED IN THE NEW RTU100 WITH THE SPARE I/O SHOWN IN THE NEW I/O SCHEDULE.
- PHASE MONITOR IS PART OF ICP100 WHICH SHALL BE DEMOLISHED BY THE CONTRACTOR AS PART OF THIS PROJECT.
- GROUND STORAGE TANK INTRUSION ALARM IS NOT FUNCTIONAL AND IS NOT CURRENTLY MONITORED AS AN ALARM IN VT SCADA.
- AIR COMPRESSOR RUNNING IS NO LONGER REQUIRED DUE TO THE REMOVAL OF THE HYDROPNEUMATIC TANK.
- CHEMICAL PUMP RUNNING STATUSES ARE NO LONGER REQUIRED DUE TO THE CHEMICAL SYSTEMS BEING RE-LOCATED TO RTU300 IN A PREVIOUS PROJECT.
- THESE SIGNALS ARE NO LONGER REQUIRED DUE TO THE GENERATOR BEING MONITORED IN RTU200.
- PLC HEALTH RELAY IS NO LONGER REQUIRED AS PART OF THE WELL PUMP NO. 1 AND NO. 2 START/STOP CIRCUITRY. WELL PUMP NO. 1 AND NO. 2 SHALL HAVE H/O/A SWITCHES AND WIRING ADDED TO THE EXISTING MCC BUCKETS. REFER TO ELECTRICAL DRAWINGS FOR DETAILS.

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DRAWN BY: R. CHARITY				
SHEET CHK'D BY: M. GRAHAM				
CROSS CHK'D BY: D. UBERT				
APPROVED BY: M. GRAHAM	DATE: JULY 2019			
REV. NO.	DATE	DRWN	CHKD	REMARKS

ST. JOHNS COUNTY UTILITY DEPARTMENT
 ST. JOHNS COUNTY, FLORIDA
 NORTHWEST WTP
 PHASE 1 (6 TO 9 MGD) EXPANSION

INSTRUMENTATION
 DETAILS II

PROJECT NO. 6334-232860
 FILE NAME: I0D2PIDT.dwg

SHEET NO.
 ID-2

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EXISTING RTU200 I/O SCHEDULE							
RACK 1 SLOT 1 - 32 DI/DO MODULE (24DI / 8DO)		RACK 1 SLOT 2 - 32 DI/DO MODULE (24DI / 8DO)		RACK 1 SLOT 3 - 4AO/8AI MODULE		RACK 1 SLOT 4 - 4AO/8AI MODULE	
DI	SIGNAL DESCRIPTION	DI	SIGNAL DESCRIPTION	AO	SIGNAL DESCRIPTION	AO	SIGNAL DESCRIPTION
1	ATS IN NORMAL POSITION	1	SPARE	1	HIGH SERVICE PUMP #5 SPEED CONTROL	1	SPARE
2	ATS NORMAL SOURCE AVAILABLE	2	SPARE	2	HIGH SERVICE PUMP #6 SPEED CONTROL	2	SPARE
3	ATS IN EMERGENCY POSITION	3	SPARE	3	SPARE	3	SPARE
4	ATS EMERGENCY SOURCE AVAILABLE	4	SPARE	4	SPARE	4	SPARE
5	STANDBY GENERATOR RUNNING	5	SPARE	AI		AI	
6	STANDBY GENERATOR TROUBLE	6	SPARE	1	HIGH SERVICE PUMP #5 SPEED REPLY	1	SPARE
7	FUEL STORAGE TANK LOW LEVEL	7	SPARE	2	HIGH SERVICE PUMP #6 SPEED REPLY	2	SPARE
8	FUEL STORAGE TANK LEAK DETECTION	8	SPARE	3	SPARE	3	SPARE
9	MCC2 PHASE MONITOR OK	9	SPARE	4	SPARE	4	SPARE
10	ELECTRICAL BUILDING HIGH TEMPERATURE	10	SPARE	5	SPARE	5	LOOP POWERED SPARE
11	HIGH SERVICE PUMP #5 RUNNING	11	SPARE	6	SPARE	6	LOOP POWERED SPARE
12	HIGH SERVICE PUMP #5 TROUBLE	12	SPARE	7	SPARE	7	LOOP POWERED SPARE
13	HIGH SERVICE PUMP #5 IN REMOTE	13	SPARE	8	SPARE	8	LOOP POWERED SPARE
14	HIGH SERVICE PUMP #6 RUNNING	14	SPARE				
15	HIGH SERVICE PUMP #6 TROUBLE	15	SPARE				
16	HIGH SERVICE PUMP #6 IN REMOTE	16	SPARE				
17	PS142 POWER SUPPLY FAILURE	17	SPARE				
18	PS150 POWER SUPPLY FAILURE	18	SPARE				
19	SPARE	19	SPARE				
20	SPARE	20	SPARE				
21	SPARE	21	SPARE				
22	SPARE	22	SPARE				
23	SPARE	23	SPARE				
24	SPARE	24	SPARE				
DO	SIGNAL DESCRIPTION	DO	SIGNAL DESCRIPTION				
1	HIGH SERVICE PUMP #5 AUTO RUN	1	SPARE				
2	HIGH SERVICE PUMP #5 DISABLE	2	SPARE				
3	HIGH SERVICE PUMP #6 AUTO RUN	3	SPARE				
4	HIGH SERVICE PUMP #6 DISABLE	4	SPARE				
5	SPARE	5	SPARE				
6	SPARE	6	SPARE				
7	SPARE	7	SPARE				
8	SPARE	8	SPARE				

EXISTING RTU200 I/O SCHEDULE (NOTE 3)

I/O SCHEDULE LEGEND
ORANGE = CONVERT TO MODBUS TCP COMMUNICATIONS; REMOVE PHYSICAL I/O WIRING

FINAL RTU200 I/O SCHEDULE							
RACK 1 SLOT 1 - 32 DI/DO MODULE (24DI / 8DO)		RACK 1 SLOT 2 - 32 DI/DO MODULE (24DI / 8DO)		RACK 1 SLOT 3 - 4AO/8AI MODULE		RACK 1 SLOT 4 - 4AO/8AI MODULE	
DI	SIGNAL DESCRIPTION	DI	SIGNAL DESCRIPTION	AO	SIGNAL DESCRIPTION	AO	SIGNAL DESCRIPTION
1	ATS IN NORMAL POSITION	1	SPARE	1	SPARE	1	SPARE
2	ATS NORMAL SOURCE AVAILABLE	2	SPARE	2	SPARE	2	SPARE
3	ATS IN EMERGENCY POSITION	3	SPARE	3	SPARE	3	SPARE
4	ATS EMERGENCY SOURCE AVAILABLE	4	SPARE	4	SPARE	4	SPARE
5	STANDBY GENERATOR RUNNING	5	SPARE	AI		AI	
6	STANDBY GENERATOR TROUBLE	6	SPARE	1	SPARE	1	SPARE
7	FUEL STORAGE TANK LOW LEVEL	7	SPARE	2	SPARE	2	SPARE
8	FUEL STORAGE TANK LEAK DETECTION	8	SPARE	3	SPARE	3	SPARE
9	MCC2 PHASE MONITOR OK	9	SPARE	4	SPARE	4	SPARE
10	ELECTRICAL BUILDING HIGH TEMPERATURE	10	SPARE	5	SPARE	5	LOOP POWERED SPARE
11	SPARE	11	SPARE	6	SPARE	6	LOOP POWERED SPARE
12	SPARE	12	SPARE	7	SPARE	7	LOOP POWERED SPARE
13	SPARE	13	SPARE	8	SPARE	8	LOOP POWERED SPARE
14	SPARE	14	SPARE				
15	SPARE	15	SPARE				
16	SPARE	16	SPARE				
17	PS142 POWER SUPPLY FAILURE	17	SPARE				
18	PS150 POWER SUPPLY FAILURE	18	SPARE				
19	SPARE	19	SPARE				
20	HIGH SERVICE PUMP NO. 2 VFD ENERGIZED	20	SPARE				
21	HIGH SERVICE PUMP NO. 3 VFD ENERGIZED	21	SPARE				
22	HIGH SERVICE PUMP NO. 4 VFD ENERGIZED	22	SPARE				
23	HIGH SERVICE PUMP NO. 5 VFD ENERGIZED	23	SPARE				
24	HIGH SERVICE PUMP NO. 6 VFD ENERGIZED	24	SPARE				
DO	SIGNAL DESCRIPTION	DO	SIGNAL DESCRIPTION				
1	SPARE	1	SPARE				
2	SPARE	2	SPARE				
3	SPARE	3	SPARE				
4	SPARE	4	SPARE				
5	SPARE	5	SPARE				
6	SPARE	6	SPARE				
7	SPARE	7	SPARE				
8	SPARE	8	SPARE				

NEW RTU200 I/O SCHEDULE (NOTE 3)

I/O SCHEDULE LEGEND
GREEN = NEW I/O ADDED FOR THE PHASE I EXPANSION PROJECT

NOTES:

- SJUD SHALL EMPLOY THE SERVICES OF A SJUD APPROVED SCADA SYSTEM INTEGRATOR (I.E. THE PROCESS CONTROL SYSTEM SUPPLIER (PCSS)) TO MODIFY THE EXISTING NW WTP PLANT INSTRUMENTATION AND CONTROL SYSTEM TO FULLY INTEGRATE THE NEW FACILITIES, INCLUDING THE INTEGRATION OF THE NEW RTU100 THAT SHALL REPLACE THE EXISTING RTU IN THE MCC1 ELECTRICAL ROOM AS WELL AS INTEGRATING THE MODIFICATIONS BEING MADE TO RTU200 (MCC2 ELECTRICAL ROOM) AND RTU300 (MCC3 ELECTRICAL BUILDING). ALL RTU AND HMI PROGRAMMING SHALL BE PROVIDED BY SJUD.
- RTU200 SHALL BE MODIFIED TO ADD AN ETHERNET SWITCH MODULE FOR COMMUNICATIONS TO THE HIGH SERVICE PUMP VFDS.
- ALL SIGNALS SHOWN IN ORANGE SHALL BE CONVERTED TO MODBUS TCP. LOGIC FOR THE HIGH SERVICE PUMPS AND THE MODBUS TCP COMMUNICATIONS FOR THE HIGH SERVICE PUMPS SHALL BE LOCATED IN RTU200.

REV. NO.	DATE	DRWN	CHKD	REMARKS

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ST. JOHNS COUNTY UTILITY DEPARTMENT
ST. JOHNS COUNTY, FLORIDA
NORTHWEST WTP
PHASE 1 (6 TO 9 MGD) EXPANSION

INSTRUMENTATION
DETAILS III

PROJECT NO. 6334-232860
FILE NAME: I0D3PIDT.dwg
SHEET NO. ID-3

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EXISTING RTU300 I/O SCHEDULE									
RACK 1 SLOT 1 - 32 DI/DD MODULE (24DI / 8DO)		RACK 1 SLOT 2 - 32 DI/DD MODULE (24DI / 8DO)		RACK 1 SLOT 3 - 32 DI/DD MODULE (24DI / 8DO)		RACK 1 SLOT 4 - 32 DI/DD MODULE (24DI / 8DO)		RACK 1 SLOT 5 - 32 DI/DD MODULE (24DI / 8DO)	
DI	SIGNAL DESCRIPTION	DI	SIGNAL DESCRIPTION	DI	SIGNAL DESCRIPTION	DI	SIGNAL DESCRIPTION	DI	SIGNAL DESCRIPTION
1	1.5MG GROUND STORAGE TANK INTRUSION	1	RECIRCULATION PUMP NO. 1 IN AUTO (NOTE 4)	1	SODIUM HYPOCHLORITE TANK NO. 1 LEAK	1	SODIUM HYDROXIDE PUMP NO. 2 FAULT	1	SPARE
2	CO2 STORAGE TANK NO. 1 HIGH PRESSURE	2	RECIRCULATION PUMP NO. 1 RUNNING (NOTE 4)	2	SODIUM HYPOCHLORITE TANK NO. 2 LEAK	2	SODIUM HYDROXIDE PUMP NO. 3 IN AUTO	2	SPARE
3	CO2 STORAGE TANK NO. 1 LOW PRESSURE	3	RECIRCULATION PUMP NO. 1 FAULT (NOTE 4)	3	SODIUM HYPOCHLORITE STORAGE EYEWASH ALARM	3	SODIUM HYDROXIDE PUMP NO. 3 RUNNING	3	SPARE
4	CO2 BOOSTER WATER LOW PRESSURE	4	RECIRCULATION PUMP NO. 2 IN AUTO (NOTE 4)	4	SODIUM HYPOCHLORITE PUMP NO. 1 IN AUTO	4	SODIUM HYDROXIDE PUMP NO. 3 FAULT	4	SPARE
5	CO2 BOOSTER PUMP NO. 1 IN AUTO	5	RECIRCULATION PUMP NO. 2 RUNNING (NOTE 4)	5	SODIUM HYPOCHLORITE PUMP NO. 1 RUNNING	5	SODIUM HYDROXIDE PUMP NO. 4 IN AUTO	5	SPARE
6	CO2 BOOSTER PUMP NO. 1 RUNNING	6	RECIRCULATION PUMP NO. 2 FAULT (NOTE 4)	6	SODIUM HYPOCHLORITE PUMP NO. 1 FAULT	6	SODIUM HYDROXIDE PUMP NO. 4 RUNNING	6	SPARE
7	CO2 BOOSTER PUMP NO. 1 FAULT	7	RECIRCULATION LOW FLOW (NOTE 4)	7	SODIUM HYPOCHLORITE PUMP NO. 2 IN AUTO	7	SODIUM HYDROXIDE PUMP NO. 4 FAULT	7	SPARE
8	CO2 BOOSTER PUMP NO. 2 IN AUTO	8	SCRUBBER HIGH LEVEL (NOTE 4)	8	SODIUM HYPOCHLORITE PUMP NO. 2 RUNNING	8	CORROSION INHIBITOR PUMP NO. 1 IN AUTO (NOTE 5)	8	SPARE
9	CO2 BOOSTER PUMP NO. 2 RUNNING	9	SCRUBBER LOW LEVEL (NOTE 4)	9	SODIUM HYPOCHLORITE PUMP NO. 2 FAULT	9	CORROSION INHIBITOR PUMP NO. 1 RUNNING (NOTE 5)	9	SPARE
10	CO2 BOOSTER PUMP NO. 2 FAULT	10	SCRUBBER EYEWASH ALARM (NOTE 4)	10	SODIUM HYPOCHLORITE PUMP NO. 3 IN AUTO	10	CORROSION INHIBITOR PUMP NO. 1 FAULT (NOTE 5)	10	SPARE
11	CO2 FEED SYSTEM FCV AUTO START	11	TRANSFER PUMP NO. 1 IN AUTO	11	SODIUM HYPOCHLORITE PUMP NO. 3 RUNNING	11	CORROSION INHIBITOR PUMP NO. 2 IN AUTO (NOTE 5)	11	SPARE
12	CO2 FEED SYSTEM IN REMOTE	12	TRANSFER PUMP NO. 1 RUNNING	12	SODIUM HYPOCHLORITE PUMP NO. 3 FAULT	12	CORROSION INHIBITOR PUMP NO. 2 RUNNING (NOTE 5)	12	SPARE
13	DEGASIFIER BLOWER NO. 1 IN AUTO	13	TRANSFER PUMP NO. 1 FAULT	13	SODIUM HYPOCHLORITE PUMP NO. 4 IN AUTO	13	CORROSION INHIBITOR PUMP NO. 2 FAULT (NOTE 5)	13	SPARE
14	DEGASIFIER BLOWER NO. 1 RUNNING	14	TRANSFER PUMP NO. 2 IN AUTO	14	SODIUM HYPOCHLORITE PUMP NO. 4 RUNNING	14	SPARE	14	SPARE
15	DEGASIFIER BLOWER NO. 1 FAULT	15	TRANSFER PUMP NO. 2 RUNNING	15	SODIUM HYPOCHLORITE PUMP NO. 4 FAULT	15	SPARE	15	SPARE
16	DEGASIFIER BLOWER NO. 1 LOW AIR FLOW	16	TRANSFER PUMP NO. 2 FAULT	16	SODIUM HYDROXIDE TANK LEAK	16	SPARE	16	SPARE
17	DEGASIFIER BLOWER NO. 2 IN AUTO	17	TRANSFER PUMP NO. 3 IN AUTO	17	SODIUM HYDROXIDE TANK HIGH TEMPERATURE	17	SPARE	17	SPARE
18	DEGASIFIER BLOWER NO. 2 RUNNING	18	TRANSFER PUMP NO. 3 RUNNING	18	SODIUM HYDROXIDE TANK LOW TEMPERATURE	18	SPARE	18	SPARE
19	DEGASIFIER BLOWER NO. 2 FAULT	19	TRANSFER PUMP NO. 3 FAULT	19	SODIUM HYDROXIDE STORAGE EYEWASH ALARM	19	SPARE	19	SPARE
20	DEGASIFIER BLOWER NO. 2 LOW AIR FLOW	20	ELECTRICAL BUILDING HIGH TEMPERATURE	20	SODIUM HYDROXIDE PUMP NO. 1 IN AUTO	20	SPARE	20	SPARE
21	DEGASIFIER NO. 1 NO WATER FLOW	21	PS122 POWER SUPPLY FAILURE	21	SODIUM HYDROXIDE PUMP NO. 1 RUNNING	21	SPARE	21	SPARE
22	DEGASIFIER NO. 1 HIGH LEVEL	22	PS130 POWER SUPPLY FAILURE	22	SODIUM HYDROXIDE PUMP NO. 1 FAULT	22	SPARE	22	SPARE
23	DEGASIFIER NO. 2 NO WATER FLOW	23	SPARE	23	SODIUM HYDROXIDE PUMP NO. 2 IN AUTO	23	SPARE	23	SPARE
24	DEGASIFIER NO. 2 HIGH LEVEL	24	SPARE	24	SODIUM HYDROXIDE PUMP NO. 2 RUNNING	24	SPARE	24	SPARE
DO	SIGNAL DESCRIPTION	DO	SIGNAL DESCRIPTION	DO	SIGNAL DESCRIPTION	DO	SIGNAL DESCRIPTION	DO	SIGNAL DESCRIPTION
1	CO2 BOOSTER PUMP NO. 1 START/STOP	1	RECIRCULATION PUMP NO. 1 START/STOP (NOTE 4)	1	TRANSFER PUMP NO. 3 START/STOP	1	SODIUM HYDROXIDE TANK HIGH LEVEL	1	SPARE
2	CO2 BOOSTER PUMP NO. 2 START/STOP	2	RECIRCULATION PUMP NO. 1 DISABLE (NOTE 4)	2	TRANSFER PUMP NO. 3 DISABLE	2	SODIUM HYDROXIDE PUMP NO. 1 START/STOP	2	SPARE
3	CO2 FEED SYSTEM FCV AUTO START	3	RECIRCULATION PUMP NO. 2 START/STOP (NOTE 4)	3	SODIUM HYPOCHLORITE TANK NO. 1 HIGH LEVEL	3	SODIUM HYDROXIDE PUMP NO. 2 START/STOP	3	SPARE
4	DEGASIFIER BLOWER NO. 1 START/STOP	4	RECIRCULATION PUMP NO. 2 DISABLE (NOTE 4)	4	SODIUM HYPOCHLORITE TANK NO. 2 HIGH LEVEL	4	SODIUM HYDROXIDE PUMP NO. 3 START/STOP	4	SPARE
5	DEGASIFIER BLOWER NO. 1 DISABLE	5	TRANSFER PUMP NO. 1 START/STOP	5	SODIUM HYPOCHLORITE PUMP NO. 1 START/STOP	5	SODIUM HYDROXIDE PUMP NO. 4 START/STOP	5	SPARE
6	DEGASIFIER BLOWER NO. 2 START/STOP	6	TRANSFER PUMP NO. 1 DISABLE	6	SODIUM HYPOCHLORITE PUMP NO. 2 START/STOP	6	CORROSION INHIBITOR PUMP NO. 1 START/STOP (NOTE 5)	6	SPARE
7	DEGASIFIER BLOWER NO. 2 DISABLE	7	TRANSFER PUMP NO. 2 START/STOP	7	SODIUM HYPOCHLORITE PUMP NO. 3 START/STOP	7	CORROSION INHIBITOR PUMP NO. 2 START/STOP (NOTE 5)	7	SPARE
8	SCRUBBER MAKEUP WATER ON/OFF (NOTE 4)	8	TRANSFER PUMP NO. 2 DISABLE	8	SODIUM HYPOCHLORITE PUMP NO. 4 START/STOP	8	SPARE	8	SPARE
RACK 2 SLOT 1 - 4A0/BAI MODULE		RACK 2 SLOT 2 - 4A0/BAI MODULE		RACK 2 SLOT 3 - 4A0/BAI MODULE		RACK 2 SLOT 4 - 4A0/BAI MODULE		RACK 2 SLOT 5 - 32 DI/DD MODULE (24DI / 8DO)	
AO	SIGNAL DESCRIPTION	AO	SIGNAL DESCRIPTION	AO	SIGNAL DESCRIPTION	AO	SIGNAL DESCRIPTION	AO	SIGNAL DESCRIPTION
1	RAW WATER CO2 FEED CONTROL 0-100%	1	SODIUM HYPOCHLORITE PUMP NO. 4 SPEED CONTROL 0-100%	1	SODIUM HYDROXIDE PUMP NO. 4 SPEED CONTROL 0-100%	1	SPARE	1	SPARE
2	SODIUM HYPOCHLORITE PUMP NO. 1 SPEED CONTROL 0-100%	2	SODIUM HYDROXIDE PUMP NO. 1 SPEED CONTROL 0-100%	2	CORROSION INHIBITOR PUMP NO. 1 SPEED CONTROL 0-100% (NOTE 5)	2	SPARE	2	SPARE
3	SODIUM HYPOCHLORITE PUMP NO. 2 SPEED CONTROL 0-100%	3	SODIUM HYDROXIDE PUMP NO. 2 SPEED CONTROL 0-100%	3	CORROSION INHIBITOR PUMP NO. 2 SPEED CONTROL 0-100% (NOTE 5)	3	SPARE	3	SPARE
4	SODIUM HYPOCHLORITE PUMP NO. 3 SPEED CONTROL 0-100%	4	SODIUM HYDROXIDE PUMP NO. 3 SPEED CONTROL 0-100%	4	SPARE	4	SPARE	4	SPARE
AI		AI		AI		AI		AI	
1	RAW WATER FLOW 0-6 MGD	1	1.5MG GROUND STORAGE TANK LEVEL 0-30 FEET	1	SODIUM HYPOCHLORITE TANK NO. 2 LEVEL 0-15 FEET	1	SODIUM HYDROXIDE PUMP NO. 3 FEED RATE 0-100%	1	SPARE
2	RAW WATER PH NO. 1 0-14	2	CO2 STORAGE TANK NO. 1 LEVEL 0-100 IN H2O	2	CO2 STORAGE TANK NO. 1 FEED RATE 0-100%	2	SODIUM HYDROXIDE PUMP NO. 4 FEED RATE 0-100%	2	SPARE
3	CLEARWELL NO. 1 LEVEL 0-11 FEET	3	CO2 STORAGE TANK NO. 1 PRESSURE 0-400 PSIG	3	SODIUM HYPOCHLORITE PUMP NO. 2 FEED RATE 0-100%	3	CORROSION INHIBITOR PUMP NO. 1 FEED RATE 0-100% (NOTE 5)	3	SPARE
4	FINISHED WATER PH 0-14	4	CO2 FLOW 0-800 LBS/HR	4	SODIUM HYPOCHLORITE PUMP NO. 3 FEED RATE 0-100%	4	CORROSION INHIBITOR PUMP NO. 2 FEED RATE 0-100% (NOTE 5)	4	SPARE
5	FINISHED WATER CHLORINE RESIDUAL 0-10 MG/L	5	SCRUBBER PH 0-14	5	SODIUM HYPOCHLORITE PUMP NO. 4 FEED RATE 0-100%	5	SPARE	5	SPARE
6	FINISHED WATER TEMPERATURE 0-100 DEG F	6	SCRUBBER ORP 0-1000 MV	6	SODIUM HYDROXIDE TANK LEVEL 0-10 FEET	6	SPARE	6	SPARE
7	FINISHED WATER TURBIDITY 0-100 NTU	7	SPARE	7	SODIUM HYDROXIDE PUMP NO. 1 FEED RATE 0-100%	7	SPARE	7	SPARE
8	PRE-STORAGE WATER PH 0-14	8	SODIUM HYPOCHLORITE TANK NO. 1 LEVEL 0-15 FEET	8	SODIUM HYDROXIDE PUMP NO. 2 FEED RATE 0-100%	8	SPARE	8	SPARE

NOTES:

- SJUCUD SHALL EMPLOY THE SERVICES OF A SJUCUD APPROVED SCADA SYSTEM INTEGRATOR (I.E. THE PROCESS CONTROL SYSTEM SUPPLIER (PCSS)) TO MODIFY THE EXISTING NW WTP PLANT INSTRUMENTATION AND CONTROL SYSTEM TO FULLY INTEGRATE THE NEW FACILITIES, INCLUDING THE INTEGRATION OF THE NEW RTU100 THAT SHALL REPLACE THE EXISTING RTU IN THE MCC1 ELECTRICAL ROOM AS WELL AS INTEGRATING THE MODIFICATIONS BEING MADE TO RTU200 (MCC2 ELECTRICAL ROOM) AND RTU300 (MCC3 ELECTRICAL BUILDING), ALL RTU AND HMI PROGRAMMING SHALL BE PROVIDED BY SJUCUD.
- RTU300 SHALL BE MODIFIED TO ADD AN ETHERNET SWITCH MODULE FOR COMMUNICATIONS TO THE TRANSFER PUMP VFDS.
- ALL SIGNALS SHOWN IN ORANGE SHALL BE CONVERTED TO MODBUS TCP. LOGIC FOR THE TRANSFER PUMPS AND THE MODBUS TCP COMMUNICATIONS FOR THE TRANSFER PUMPS SHALL BE LOCATED IN RTU300. ALL SIGNALS SHOWN IN YELLOW SHALL BE REMOVED/DEMOLISHED. ALL SIGNALS IN GREEN ARE NEW I/O THAT ARE BEING ADDED FOR THIS PROJECT.
- THESE SIGNALS ARE NO LONGER REQUIRED DUE TO THE CHEMICAL SCRUBBER BEING REMOVED AS PART OF THIS PROJECT.
- THESE SIGNALS ARE NO LONGER REQUIRED DUE TO THE CORROSION INHIBITOR CHEMICAL SKID BEING REMOVED AS PART OF THIS PROJECT.
- THE WELL FLOW METERS SHALL COMMUNICATE THEIR SIGNALS VIA WIRELESS I/O PANELS TO THE WIRELESS I/O BASE STATION/CONTROLLER THAT SHALL BE MOUNTED IN RTU300. SEE SYSTEM ARCHITECTURE FOR ADDITIONAL DETAILS.

EXISTING RTU300 I/O SCHEDULE (NOTE 3)

I/O SCHEDULE LEGEND

- ORANGE = CONVERT TO MODBUS TCP COMMUNICATIONS; REMOVE PHYSICAL I/O WIRING
- YELLOW = PHYSICAL I/O WIRING TO BE REMOVED; I/O BECOMES SPARE

FINAL RTU300 I/O SCHEDULE									
RACK 1 SLOT 1 - 32 DI/DD MODULE (24DI / 8DO)		RACK 1 SLOT 2 - 32 DI/DD MODULE (24DI / 8DO)		RACK 1 SLOT 3 - 32 DI/DD MODULE (24DI / 8DO)		RACK 1 SLOT 4 - 32 DI/DD MODULE (24DI / 8DO)		RACK 1 SLOT 5 - 32 DI/DD MODULE (24DI / 8DO)	
DI	SIGNAL DESCRIPTION	DI	SIGNAL DESCRIPTION	DI	SIGNAL DESCRIPTION	DI	SIGNAL DESCRIPTION	DI	SIGNAL DESCRIPTION
1	1.5MG GROUND STORAGE TANK INTRUSION	1	SPARE	1	SODIUM HYPOCHLORITE TANK NO. 1 LEAK	1	SODIUM HYDROXIDE PUMP NO. 2 FAULT	1	BIOTRICKLING FILTER UNIT NO. 2 RUNNING
2	CO2 STORAGE TANK NO. 1 HIGH PRESSURE	2	SPARE	2	SODIUM HYPOCHLORITE TANK NO. 2 LEAK	2	SODIUM HYDROXIDE PUMP NO. 3 IN AUTO	2	BIOTRICKLING FILTER UNIT NO. 2 ALARM
3	CO2 STORAGE TANK NO. 1 LOW PRESSURE	3	SPARE	3	SODIUM HYPOCHLORITE STORAGE EYEWASH ALARM	3	SODIUM HYDROXIDE PUMP NO. 3 RUNNING	3	BIOTRICKLING FILTER DRAIN PS HIGH LEVEL
4	CO2 BOOSTER WATER LOW PRESSURE	4	SPARE	4	SODIUM HYPOCHLORITE PUMP NO. 1 IN AUTO	4	SODIUM HYDROXIDE PUMP NO. 3 FAULT	4	TRANSFER PUMP NO. 1 VFD ENERGIZED
5	CO2 BOOSTER PUMP NO. 1 IN AUTO	5	SPARE	5	SODIUM HYPOCHLORITE PUMP NO. 1 RUNNING	5	SODIUM HYDROXIDE PUMP NO. 4 IN AUTO	5	TRANSFER PUMP NO. 2 VFD ENERGIZED
6	CO2 BOOSTER PUMP NO. 1 RUNNING	6	SPARE	6	SODIUM HYPOCHLORITE PUMP NO. 1 FAULT	6	SODIUM HYDROXIDE PUMP NO. 4 RUNNING	6	TRANSFER PUMP NO. 3 VFD ENERGIZED
7	CO2 BOOSTER PUMP NO. 1 FAULT	7	SPARE	7	SODIUM HYPOCHLORITE PUMP NO. 2 IN AUTO	7	SODIUM HYDROXIDE PUMP NO. 4 FAULT	7	TRANSFER PUMP NO. 4 VFD ENERGIZED
8	CO2 BOOSTER PUMP NO. 2 IN AUTO	8	SPARE	8	SODIUM HYPOCHLORITE PUMP NO. 2 RUNNING	8	SPARE	8	TRANSFER PUMP NO. 5 VFD ENERGIZED
9	CO2 BOOSTER PUMP NO. 2 RUNNING	9	SPARE	9	SODIUM HYPOCHLORITE PUMP NO. 2 FAULT	9	SPARE	9	SPARE
10	CO2 BOOSTER PUMP NO. 2 FAULT	10	SPARE	10	SODIUM HYPOCHLORITE PUMP NO. 3 IN AUTO	10	SPARE	10	SPARE
11	CO2 FEED SYSTEM IN AUTO	11	SPARE	11	SODIUM HYPOCHLORITE PUMP NO. 3 RUNNING	11	SPARE	11	SPARE
12	CO2 FEED SYSTEM IN REMOTE	12	SPARE	12	SODIUM HYPOCHLORITE PUMP NO. 3 FAULT	12	SPARE	12	SPARE
13	DEGASIFIER BLOWER NO. 1 IN AUTO	13	SPARE	13	SODIUM HYPOCHLORITE PUMP NO. 4 IN AUTO	13	SPARE	13	SPARE
14	DEGASIFIER BLOWER NO. 1 RUNNING	14	SPARE	14	SODIUM HYPOCHLORITE PUMP NO. 4 RUNNING	14	DEGASIFIER BLOWER NO. 3 IN AUTO	14	SPARE
15	DEGASIFIER BLOWER NO. 1 FAULT	15	SPARE	15	SODIUM HYPOCHLORITE PUMP NO. 4 FAULT	15	DEGASIFIER BLOWER NO. 3 RUNNING	15	SPARE
16	DEGASIFIER BLOWER NO. 1 LOW AIR FLOW	16	SPARE	16	SODIUM HYDROXIDE TANK LEAK	16	DEGASIFIER BLOWER NO. 3 FAULT	16	SPARE
17	DEGASIFIER BLOWER NO. 2 IN AUTO	17	SPARE	17	SODIUM HYDROXIDE TANK HIGH TEMPERATURE	17	DEGASIFIER BLOWER NO. 3 LOW AIR FLOW	17	SPARE
18	DEGASIFIER BLOWER NO. 2 RUNNING	18	SPARE	18	SODIUM HYDROXIDE TANK LOW TEMPERATURE	18	DEGASIFIER NO. 3 NO WATER FLOW	18	SPARE
19	DEGASIFIER BLOWER NO. 2 FAULT	19	SPARE	19	SODIUM HYDROXIDE STORAGE EYEWASH ALARM	19	DEGASIFIER NO. 3 HIGH LEVEL	19	SPARE
20	DEGASIFIER BLOWER NO. 2 LOW AIR FLOW	20	ELECTRICAL BUILDING HIGH TEMPERATURE	20	SODIUM HYDROXIDE PUMP NO. 1 IN AUTO	20	CLEARWELL NO. 2 HIGH LEVEL	20	SPARE
21	DEGASIFIER NO. 1 NO WATER FLOW	21	PS122 POWER SUPPLY FAILURE	21	SODIUM HYDROXIDE PUMP NO. 1 RUNNING	21	CLEARWELL NO. 1 LOW LEVEL	21	SPARE
22	DEGASIFIER NO. 1 HIGH LEVEL	22	PS130 POWER SUPPLY FAILURE	22	SODIUM HYDROXIDE PUMP NO. 1 FAULT	22	BIOTRICKLING FILTER UNIT NO. 1 RUNNING	22	SPARE
23	DEGASIFIER NO. 2 NO WATER FLOW	23	CO2 STORAGE TANK NO. 2 HIGH PRESSURE	23	SODIUM HYDROXIDE PUMP NO. 2 IN AUTO	23	BIOTRICKLING FILTER UNIT NO. 1 ALARM	23	SPARE
24	DEGASIFIER NO. 2 HIGH LEVEL	24	CO2 STORAGE TANK NO. 2 LOW PRESSURE	24	SODIUM HYDROXIDE PUMP NO. 2 RUNNING	24	BIOTRICKLING FILTER SYSTEM EYEWASH ALARM	24	SPARE
DO	SIGNAL DESCRIPTION	DO	SIGNAL DESCRIPTION	DO	SIGNAL DESCRIPTION	DO	SIGNAL DESCRIPTION	DO	SIGNAL DESCRIPTION
1	CO2 BOOSTER PUMP NO. 1 START/STOP	1	SPARE	1	SPARE	1	SODIUM HYDROXIDE TANK HIGH LEVEL	1	ENTRANCE GATE OPEN COMMAND
2	CO2 BOOSTER PUMP NO. 2 START/STOP	2	SPARE	2	SPARE	2	SODIUM HYDROXIDE PUMP NO. 1 START/STOP	2	SPARE
3	CO2 FEED SYSTEM FCV AUTO START	3	SPARE	3	SODIUM HYPOCHLORITE TANK NO. 1 HIGH LEVEL	3	SODIUM HYDROXIDE PUMP NO. 2 START/STOP	3	SPARE
4	DEGASIFIER BLOWER NO. 1 START/STOP	4	SPARE	4	SODIUM HYPOCHLORITE TANK NO. 2 HIGH LEVEL	4	SODIUM HYDROXIDE PUMP NO. 3 START/STOP	4	SPARE
5	DEGASIFIER BLOWER NO. 1 DISABLE	5	SPARE	5	SODIUM HYPOCHLORITE PUMP NO. 1 START/STOP	5	SODIUM HYDROXIDE PUMP NO. 4 START/STOP	5	SPARE
6	DEGASIFIER BLOWER NO. 2 START/STOP	6	SPARE	6	SODIUM HYPOCHLORITE PUMP NO. 2 START/STOP	6	SPARE	6	SPARE
7	DEGASIFIER BLOWER NO. 2 DISABLE	7	SPARE	7	SODIUM HYPOCHLORITE PUMP NO. 3 START/STOP	7	SPARE	7	SPARE
8	SPARE	8	SPARE	8	SODIUM HYPOCHLORITE PUMP NO. 4 START/STOP	8	DEGASIFIER BLOWER NO. 3 START/STOP	8	SPARE
RACK 2 SLOT 1 - 4A0/BAI MODULE		RACK 2 SLOT 2 - 4A0/BAI MODULE		RACK 2 SLOT 3 - 4A0/BAI MODULE		RACK 2 SLOT 4 - 4A0/BAI MODULE		RACK 2 SLOT 5 - 32 DI/DD MODULE (24DI / 8DO)	
AO	SIGNAL DESCRIPTION	AO	SIGNAL DESCRIPTION	AO	SIGNAL DESCRIPTION	AO	SIGNAL DESCRIPTION	AO	SIGNAL DESCRIPTION
1	RAW WATER CO2 FEED CONTROL 0-100%	1	SODIUM HYPOCHLORITE PUMP NO. 4 SPEED CONTROL 0-100%	1	SODIUM HYDROXIDE PUMP NO. 4 SPEED CONTROL 0-100%	1	SPARE	1	SPARE
2	SODIUM HYPOCHLORITE PUMP NO. 1 SPEED CONTROL 0-100%	2	SODIUM HYDROXIDE PUMP NO. 1 SPEED CONTROL 0-100%	2	SPARE	2	SPARE	2	SPARE
3	SODIUM HYPOCHLORITE PUMP NO. 2 SPEED CONTROL 0-100%	3	SODIUM HYDROXIDE PUMP NO. 2 SPEED CONTROL 0-100%	3	SPARE	3	SPARE	3	SPARE
4	SODIUM HYPOCHLORITE PUMP NO. 3 SPEED CONTROL 0-100%	4	SODIUM HYDROXIDE PUMP NO. 3 SPEED CONTROL 0-100%	4	SPARE	4	SPARE	4	SPARE
AI		AI		AI		AI		AI	
1	RAW WATER FLOW 0-6 MGD	1	1.5MG GROUND STORAGE TANK LEVEL 0-30 FEET	1	SODIUM HYPOCHLORITE TANK NO. 2 LEVEL 0-15 FEET	1	SODIUM HYDROXIDE PUMP NO. 3 FEED RATE 0-100%	1	WELL PUMP NO. 1 FLOW (NOTE 6)
2	RAW WATER PH NO. 1 0-14	2	CO2 STORAGE TANK NO. 1 LEVEL 0-100 IN H2O	2	SODIUM HYPOCHLORITE PUMP NO. 1 FEED RATE 0-100%	2			