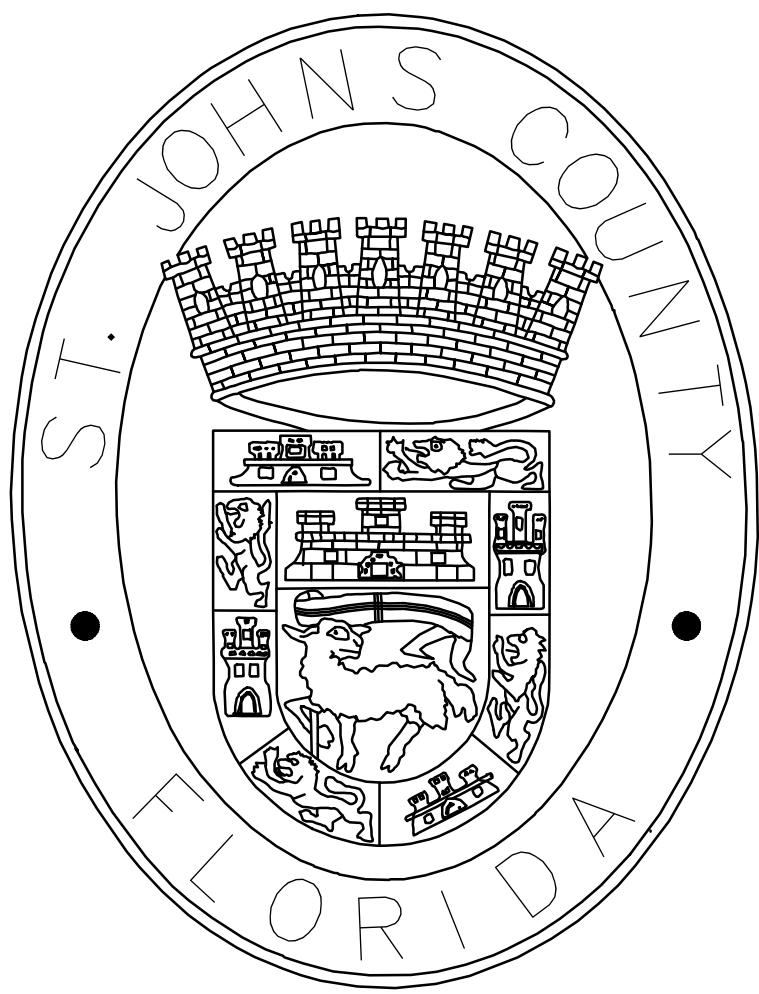


# ST. JOHNS COUNTY UTILITY DEPARTMENT

## ST. JOHNS COUNTY, FLORIDA

SJCUD PROJECT  
ENGINEERING NUMBER: 4488-56302-6475-53180  
CONSTRUCTION NUMBER: 4488-56302-6475-56302



STATE ROAD 16 WASTEWATER TREATMENT FACILITY  
HEADWORKS & RAS / WAS IMPROVEMENTS  
APRIL 2020

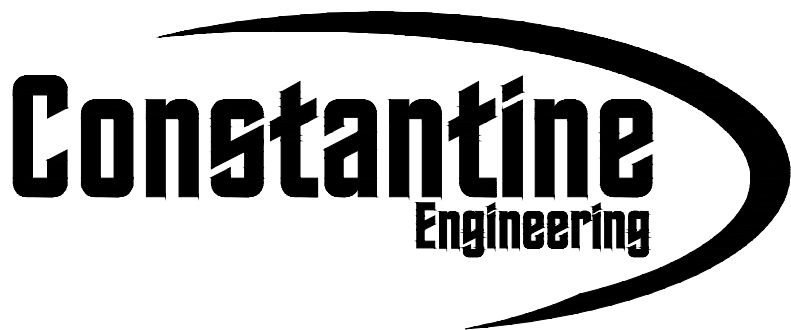


VICINITY MAP



PROJECT LOCATION  
3000 INDUSTRY CENTER RD.  
ST AUGUSTINE, FL. 32084

LOCATION MAP



100 CENTER CREEK RD. SUITE 108  
ST. AUGUSTINE, FL 32084  
PH. 904-562-2185  
TCG PROJECT NUMBER 100408.24

ISSUED FOR BID



GENERAL

- ALL WATER, SEWER, AND/OR REUSE CONSTRUCTION SHALL BE PERFORMED BY A CONTRACTOR LICENSED UNDER THE PROVISIONS OF CHAPTER 489, FLORIDA STATUTES. A COPY OF THE CONTRACTOR'S GENERAL LICENSE AND/OR UNDERGROUND UTILITY LICENSE SHALL BE PROVIDED AT THE PRE-CONSTRUCTION CONFERENCE.
- THE CONTRACTOR IS RESPONSIBLE FOR INSPECTING THE SITE PRIOR TO CONSTRUCTION.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD VERIFICATION OF ALL LOCATIONS & ELEVATIONS PRIOR TO COMMENCEMENT OF CONSTRUCTION.
- THE CONTRACTOR(S) SHALL LOCATE, VERIFY, AND IDENTIFY ALL EXISTING UTILITIES AND UNDERGROUND UTILITIES SHOWN OR NOT SHOWN ON THE PLANS PRIOR TO ANY EXCAVATING ACTIVITIES AND TAKE ALL MEASURES NECESSARY TO PROTECT UTILITIES DURING CONSTRUCTION. SHOULD ANY UTILITY LINE OR COMPONENT BECOME DAMAGED OR REQUIRE RELOCATION, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE AFFECTED UTILITY COMPANY, ENGINEER OF RECORD, COUNTY, AND SJUD.
- THE WATER, SEWER, AND/OR REUSE SYSTEM SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE SJUD APPROVED CONSTRUCTION DRAWINGS AND SPECIFICATIONS. IF THERE IS ANY DEVIATION FROM THE APPROVED CONSTRUCTION DRAWINGS OR SPECIFICATIONS, WITHOUT PRIOR AUTHORIZATION AND CONSENT FROM THE SJUD, THE CONTRACTOR SHALL REMOVE THE DEVIATION AND RESTORE IT TO THE APPROVED CONSTRUCTION DRAWING CONFIGURATION AT NO EXPENSE TO THE SJUD. ANY DEVIATIONS FROM THE APPROVED DOCUMENTS WILL DELAY THE COC SUBMITTAL PROCESS.
- THE CONTRACTOR SHALL FIELD VERIFY THE CONNECTION POINTS PRIOR TO THE COMMENCEMENT OF CONSTRUCTION. ALL DISCREPANCIES SHALL BE REPORTED TO THE ENGINEER OF RECORD AND SJUD IMMEDIATELY.
- EXISTING UTILITIES SHOWN ON THESE PLANS HAVE BEEN LOCATED PER AVAILABLE MEANS WITHOUT EXCAVATION.
- VERTICAL LOCATIONS OF ALL UTILITIES (EXCLUDING STORM SEWERS SHOWN ON PLAN AND PROFILE SHEETS, HAVE BEEN REFERENCED TO A BENCH MARK SHOWN ON THE UTILITY PLANS. CONTRACTOR SHALL EXERCISE CAUTION DURING EXCAVATION NEAR EXISTING UTILITIES SHOWN ON THE PLANS AND NOTIFY THE ENGINEER IF LOCATION DIFFERS FROM THAT SHOWN ON THE PLANS BEFORE CONTINUING WITH CONSTRUCTION.
- SHOULD CONDITIONS VARY FROM THOSE SHOWN ON THESE PLANS, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER AND SJUD PRIOR TO CONTINUING CONSTRUCTION.
- THE CONTRACTOR SHALL PROTECT SURVEY MARKERS, MONUMENTS, ETC. DURING CONSTRUCTION. THE CONTRACTOR SHALL RESTORE/REPLACE, AT NO ADDITIONAL EXPENSE TO THE OWNER, ANY DAMAGE DONE BY CONSTRUCTION ACTIVITIES.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO EXISTING UTILITIES CAUSED BY HIS OPERATIONS. ANY DAMAGE SHALL BE REPLACED/REPAIRED BY THE CONTRACTOR AT NO ADDITIONAL EXPENSE TO THE OWNER.
- THE CONTRACTOR SHALL COORDINATE ALL CONSTRUCTION AND BUILDING PLACEMENT WITH ALL OTHER UTILITIES CONSTRUCTION.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVAL AND DISPOSAL OF ANY UNSUITABLE MATERIAL FROM HIS OPERATION. FURNISHING AND COMPACTING SUITABLE REPLACEMENT BACKFILL MATERIAL SHALL BE IN ACCORDANCE WITH FEDERAL, STATE, AND LOCAL REGULATIONS.
- THE CONTRACTOR(S) SHALL NOTIFY ALL APPLICABLE UTILITY COMPANIES, THE ENGINEER OF RECORD AND THE PROPERTY OWNER 72 HOURS PRIOR TO INITIATING ANY EXCAVATION ACTIVITIES, OR AS SPECIFIED BY THE UTILITY COMPANIES AND THE PERMITS OBTAINED FOR THE WORK.
- THE ENGINEER OF RECORD AND SJUD SHALL BE GIVEN FORTY EIGHT HOURS (48-HR) NOTICE OF ALL REQUESTED MEETINGS AND/OR TESTING MEASURES.
- ALL WORK, MATERIALS, AND EQUIPMENT SHALL BE IN COMPLETE ACCORDANCE WITH ALL RELEVANT ST. JOHNS COUNTY STANDARDS AND REQUIREMENTS AS WELL AS STATE AND LOCAL REGULATIONS.
- ALL UNDERGROUND UTILITY EQUIPMENT, MATERIALS AND INSTALLATION SHALL BE IN ACCORDANCE WITH THE LATEST REVISION OF THE MANUAL OF WATER, WASTEWATER, AND REUSE DESIGN STANDARDS & SPECIFICATIONS, ALL APPLICABLE FEDERAL, STATE AND LOCAL REGULATIONS, AND THE APPROVED SITE PLANS.
- ALL UTILITY CROSSINGS SHALL COMPLY WITH FDEP REGULATIONS (CH, 02-555.314, FAC)
- ANY LANDSCAPING TREES SHALL BE PLACED AT A MINIMUM OF 7.5 FEET AWAY FROM THE EDGE OF PIPELINE TO THE EDGE OF THE TREE LINE
- ALL ROCK AND UNSUITABLY SIZED STONES (AS DESCRIBED IN APPLICABLE AWWA AND ST. JOHNS COUNTY UTILITIES STANDARDS AND/OR PIPE MANUFACTURER'S RECOMMENDED INSTALLATION PROCEDURES FOUND IN TRENCHES FOR NEW AND RELOCATED PIPE SHALL BE REMOVED TO A DEPTH OF AT LEAST SIX (6) INCHES BELOW THE BOTTOM OF THE PIPE. CONTINUOUS AND UNIFORM BEDDING SHALL BE PROVIDED FOR NEW AND RELOCATED PIPES. THE BACKFILL MATERIAL SHALL BE TAMPED IN LAYERS AROUND THE NEW AND RELOCATED PIPES AND TO A SUFFICIENT HEIGHT ABOVE SUCH PIPE TO ADEQUATELY SUPPORT AND PROTECT THE PIPE.
- FOR WATER, WASTEWATER, AND REUSE MAINS SMALLER THAN 12 INCHES, THE MINIMUM AND MAXIMUM COVER SHALL BE 30 INCHES AND 36 INCHES, RESPECTIVELY, IN UNPAVED AREAS AND 36 INCHES AND 42 INCHES, RESPECTIVELY, IN PAVED AREAS, OR AS REQUIRED WITHIN FDOT OR RAILROAD RIGHTS-OF-WAY. FOR MAINS GREATER THAN 12 INCHES, THE MINIMUM AND MAXIMUM COVER SHALL BE 42 INCHES AND 54 INCHES, RESPECTIVELY. EXCEPTIONS WILL BE MADE FOR CONFLICTS.
- WHERE FORCE MAINS, WATER MAINS, OR REUSE MAINS ARE LAID WITHOUT FITTINGS, THE MAXIMUM DEFLECTION SHALL BE 80% OF THAT RECOMMENDED BY THE MANUFACTURER
- FITTINGS SHALL BE USED AT LOCATIONS INDICATED ON THE PLANS, UNLESS OTHERWISE APPROVED BY THE ENGINEER. ALL FITTINGS SHALL BE RESTRAINED PER THE RESTRAINED JOINT TABLE IN THE APPROVED PLAN SET.
- ALL UNDERGROUND VALVES SHALL BE INSTALLED WITH AN ADJUSTABLE CAST IRON VALVE BOX WITH THE TOP SET TO FINAL GRADE IN ACCORDANCE TO SJUD DETAILS AND SPECIFICATIONS. ALL VALVES SHALL HAVE PEG LOCATORS (145.7 KILOHERTZ).
- CONTRACTOR IS RESPONSIBLE FOR PROPER NOTIFICATION OF INSPECTING AUTHORITIES BEFORE AND DURING CONSTRUCTION.

WASTEWATER SYSTEM NOTES:

- EXISTING LINER WILL BE DAMAGED DURING REMOVAL OF THE EXISTING SCREEN. THE LINER SYSTEM AND CONCRETE STRUCTURE SHALL BE REPAIRED BY SAUERISEN LINING SYSTEM OR APPROVED EQUAL.
- SANITARY SEWER FORCE MAIN 4" AND LARGER SHALL BE C900 DR25 PVC PIPE CONFORMING TO ASTM D-1784, D-1785, AND D-2241. DUCTILE IRON PIPE SHALL ONLY BE USED WITH PRIOR APPROVAL BY THE SJUD. SANITARY FORCE MAIN SHALL BE COLOR CODED GREEN AND CLEARLY MARKED.
- THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER OF RECORD AND SJUD ALL VIDEO LOGS, WRITTEN REPORTS AND DEFLECTION TEST RESULTS FOR REVIEW AND APPROVAL.

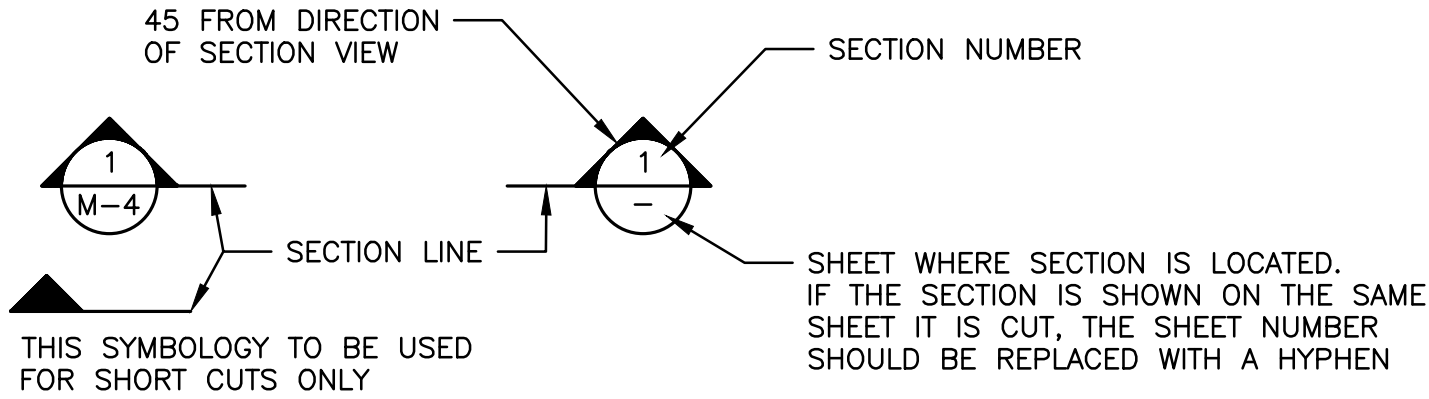
HYDROSTATIC TESTING NOTES:

- AFTER ALL PRESSURE PIPES ARE INSTALLED, THE JOINTS COMPLETED, AND THE TRENCH BACKFILLED, THE NEWLY LAID PIPE AND APPURTENANCES SHALL BE SUBJECTED TO A HYDROSTATIC TEST FOR A PERIOD OF AT LEAST TWO (2) HOURS. THE ENGINEER AND THE SJUD MUST BE NOTIFIED AT LEAST 72 HOURS BEFORE A TEST IS TO BE PERFORMED. TEST SHALL BE AS SET FORTH IN AWWA STANDARD C605. ANY LEAKS DETECTED SHALL BE CORRECTED AND THE SECTION OF PIPELINE RETESTED. THE TWO HOUR TEST PERIOD SHALL BEGIN WHEN ALL JOINTS HAVE BEEN DETERMINED TO BE WATER TIGHT. LEAKAGE SHALL BE LIMITED TO THAT ALLOWANCE SET FORTH IN SECTION 4 OF AWWA STANDARD C600 LATEST EDITION. HYDROSTATIC AND LEAKAGE TEST AND BLOW-DOWN (ZEROING OF GAGE) MUST OCCUR BEFORE SAMPLING FOR BACTERIOLOGICAL TEST. THE MAXIMUM ALLOWABLE PRESSURE LOSS IS 5 PSI.
- WATER RETAINING STRUCTURE SHALL BE TESTED IN ACCORDANCE WITH THE SPECIFICATIONS AND MUST BE OBSERVED BY THE ENGINEER OR OWNER.

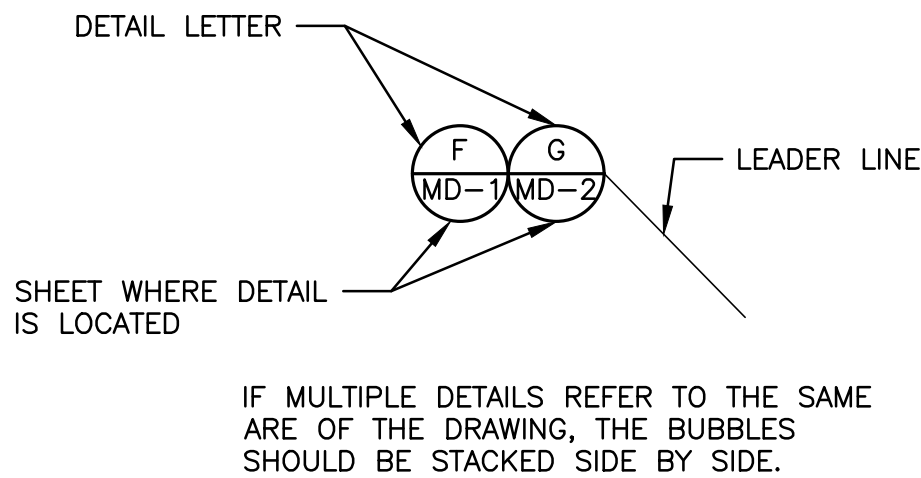
SURVEY INFORMATION

- EXISTING ELEVATIONS SHOWN ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88)

SECTION CUT SYMBOLS

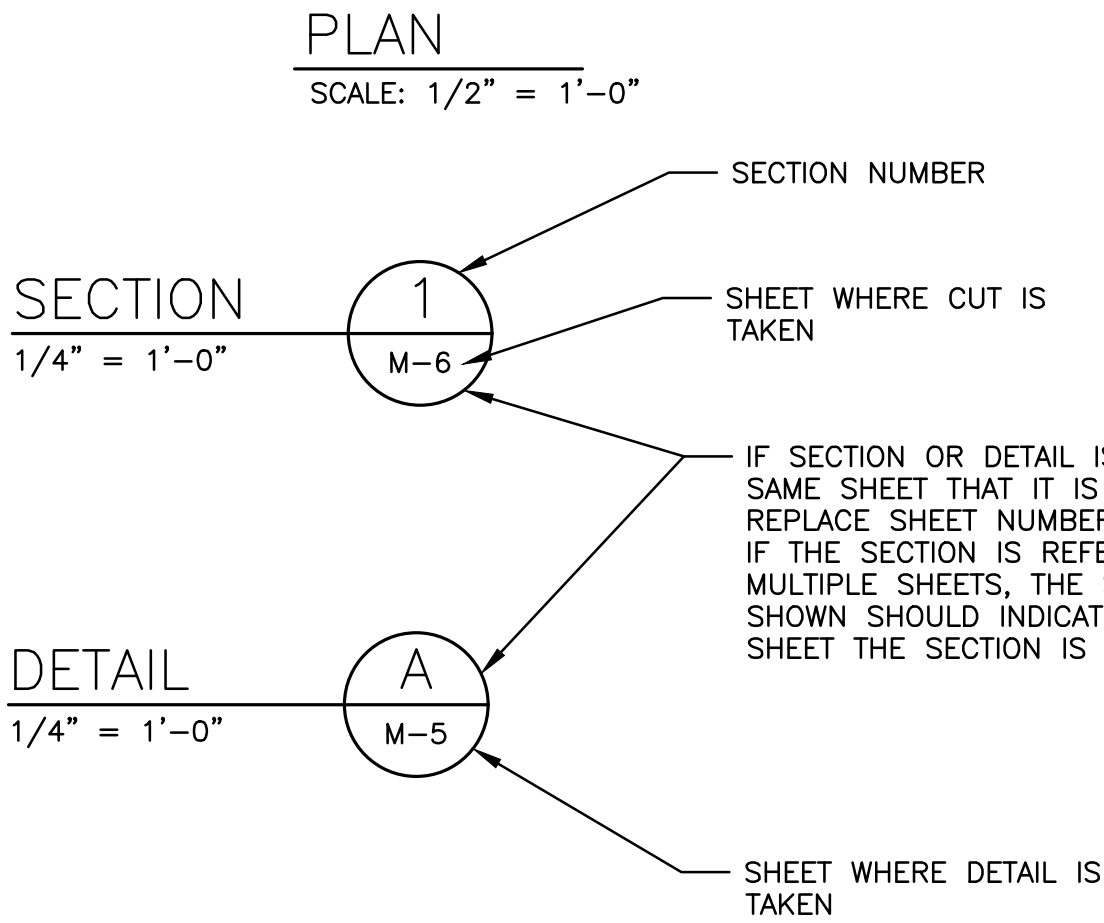


DETAIL CALL OUT SYMBOLS



DRAWING, SECTION AND DETAIL TITLES

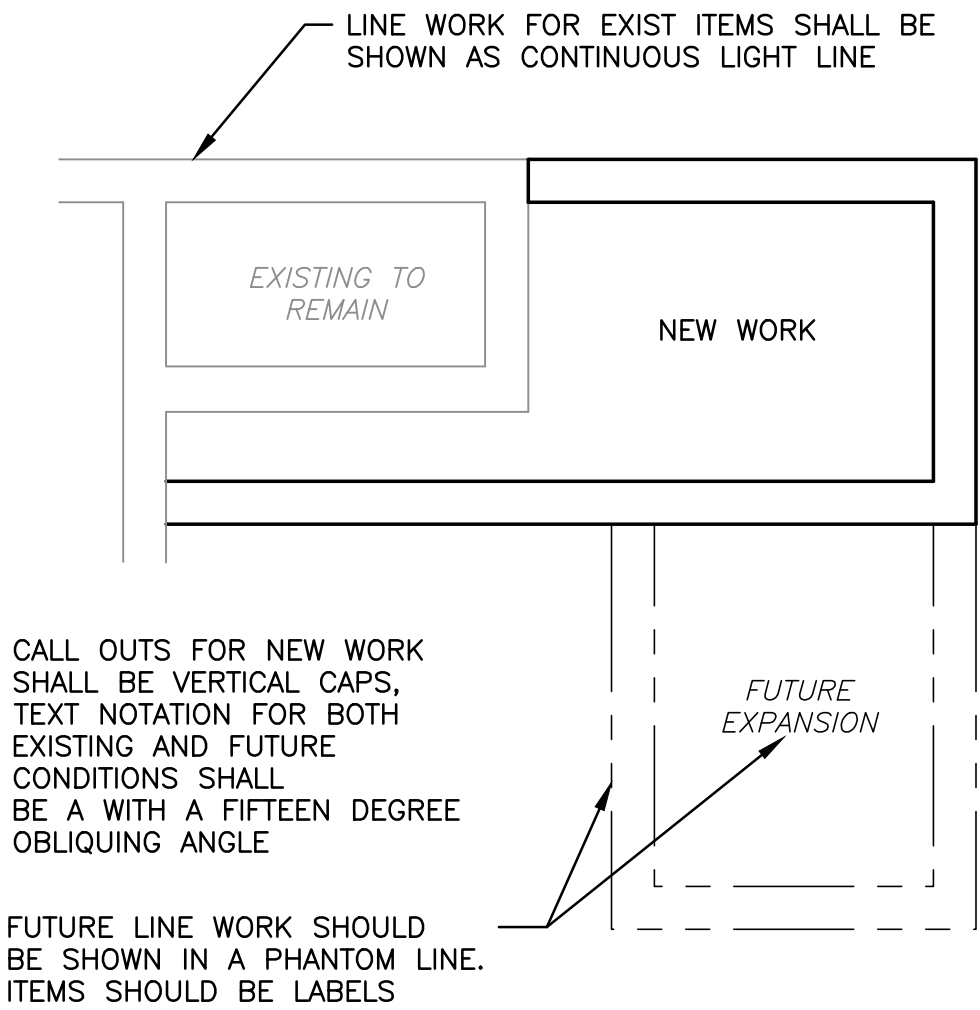
SUBTITLE OR DESCRIPTION (AS REQ'D)



ABBREVIATIONS:

ABE A.G. A.T.S. B.M. B.F.P B.O.C B.G. CATV C.B CCC C.I.P. C CLF CV C.O. CONC CONST. C.M.P. CUL.V. C&G C A D.B.I. DR DW DWL DI EOC ECB EG E.O.P ELEC. EL E.R.C.P	ARATION BASIN EFFLUENT ABOVE GROUND AUTOMATIC TRANSFER SWITCH BENCH MARK BACK FLOW PREVENTER BACK OF CURB BELOW GROUND CABLE TELEVISION CATCH BASIN CHLORINE CONTACT CHAMBER CAST IRON PIPE CENTER LINE CHAIN LINK FENCE CHECK VALVE CLEAN OUT CONCRETE CONSTRUCTION CORRUGATED METAL PIPE CURB & GUTTER OUT DELTA ANGLE DITCH BOTTOM INVERT DRAIN DRIVEWAY DESIGN WATER LEVEL DUCTILE IRON EDGE OF CONCRETE ELECTRICAL CONTROL BOX EDGE OF GRAVEL EDGE OF PAVEMENT ELECTRIC ELEVATION ELLIPTICAL REINFORCED CONC. PIPE	F.F.E. F.H. F.L. FLC FLANGE F.M. GALV./GLV G G.P. GPM GSR GV HDPE HW H/W INT. INV. IPF L LE LW LWL LES M/H N.C. N.T.S. O.E. ORV O.T. PE PG PLW P.T. PV PVC R	FINISH FLOOR ELEVATION FIRE HYDRANT FLOW LINE FLANGE FORCE MAIN GALVANIZED GAS LINE GUARD POST GALLONS PER MINUTE GROUND STORAGE RESERVOIR GAS VALVE HIGH DENSITY POLYETHYLENE PIPE HIGH WATER LEVEL HEAD WALL INTERSECTION INVERT ELEVATION IRON PIPE FOUND ARC LENGTH LINEAR FOOT LEFT LOW WATER LEVEL MITERED END SECTION (SIZE INDICATED) MANHOLE (TYPE INDICATED) NORMALLY CLOSED NOT TO SCALE OVERHEAD ELECTRIC OFFICIAL RECORD VOLUME OVERHEAD TELEPHONE PLAIN END PAGE PLANT WATER POINT OF AGENCY PLUG VALVE POLYVINYL CHLORIDE RADIUS	(R) RAS RCP RCP R/W R.D. SCI SS S/W SWPP STA T TBM TOB TOS T.W U.G.E. U.G.C. U.S.C. & G.S. VCP WAS W.L. WM W.V. W.L.P WPP WWF	RECORD RETURN ACTIVATED SLUDGE REINFORCED CONCRETE PIPE RIGHT RIGHT OF WAY ROOF DRAIN SECONDARY CLARIFIER INFLUENT STAINLESS STEEL SIDE WALK STORMWATER POLLUTION PREVENTION PLAN STATION TANGENT TEMPORARY BENCHMARK TOP OF BERM TOP OF SLAB TOP OF WALL UNDERGROUND ELECTRIC UNDERGROUND TELEPHONE UNITED STATES COASTAL & GEODETIC SURVEY VITRIFIED CLAY PIPE WASTE ACTIVATED SLUDGE WATER LEVEL WATER METER WATER VALVE WOOD LIGHT POLE WOOD POWER POLE WELDED WIRE FABRIC
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EXISTING OR FUTURE CONDITION DESIGNATION



SHEET LIST	
SHEET NUMBER	SHEET TITLE
	GENERAL
G-1	COVER SHEET
G-2	SHEET INDEX, GENERAL NOTES, AND SYMBOLOGY
G-3	PROCESS FLOW DIAGRAM
G-4	HYDRAULIC PROFILE
	CIVIL
C-1	EXISTING SITE PLAN - NORTH
C-2	EXISTING SITE PLAN - SOUTH
C-3	CLARIFIER AREA EXISTING SITE SURVEY
C-4	CLARIFIER AREA DEMOLITION PLAN
C-5	CLARIFIER AREA PROPOSED SITE AND YARD PIPING PLAN
C-6	CLARIFIER AREA GRADING, DRAINAGE, AND EROSION CONTROL PLAN
C-7	CCC AND REJECT POND PROPOSED SITE AND YARD PIPING PLAN
C-8	EXISTING TOPOGRAPHIC SITE SURVEY - NORTH
C-9	EXISTING TOPOGRAPHIC SITE SURVEY - SOUTH
C-10	PROPOSED DRAINAGE MODIFICATIONS PLAN - NORTH
C-11	PROPOSED DRAINAGE MODIFICATIONS PLAN - SOUTH
C-12	PROPOSED DRAINAGE MODIFICATIONS PLAN AND PROFILE
C-13	PROPOSED DRAINAGE MODIFICATION PLAN AND PROFILE
C-14	PROPOSED DRAINAGE MODIFICATIONS DITCH PROFILES
C-15	PROPOSED DRAINAGE MODIFICATIONS DITCH PROFILES
CD-1	REJECT POND DETAILS
CD-2	EROSION CONTROL DETAILS AND NOTES
CD-3	MISCELLANEOUS DETAILS
CD-4	FOOT DETAILS
	STRUCTURAL
S-1	GENERAL STRUCTURAL NOTES, ABBREVIATIONS, LEGEND AND SYMBOLS
S-2	HEADWORKS MODIFICATIONS PLAN AND DETAILS
S-3	CLARIFIER SPLITTER BOX AND RAS / WAS PUMP STATION PLANS
S-4	CLARIFIER SPLITTER BOX AND RAS / WAS PUMP STATION SECTIONS
S-5	CLARIFIER SPLITTER BOX AND RAS / WAS PUMP STATION SECTIONS AND SLAB-ON-GRADE PLAN
S-6	ALUMINUM ACCESS STAIRS PLAN, SECTION, AND DETAILS
S-7	STANDARD DETAILS 1 OF 2
S-8	STANDARD DETAILS 2 OF 2
	MECHANICAL
M-1	HEADWORKS DEMOLITION PLAN
M-2	HEADWORKS MODIFICATIONS PLANS AND DETAILS
M-3	HEADWORKS MODIFICATIONS SECTIONS AND DETAILS
M-4	EXISTING RAS/WAS DEMOLITION PLAN AND DETAIL
M-5	CLARIFIER SPLITTER BOX AND RAS/WAS PUMP STATION PLAN
M-6	CLARIFIER SPLITTER BOX AND RAS/WAS PUMP STATION SECTIONS
M-7	CLARIFIER SPLITTER BOX AND RAS/WAS PUMP STATION SECTIONS
M-8	CLARIFIER SPLITTER BOX AND RAS/WAS PUMP STATION SECTIONS AND DETAIL
M-9	SCUM PUMP PLAN, SECTION AND DETAIL
M-10	CHLORINE CONTACT CHAMBER PLAN
M-11	CHLORINE CONTACT CHAMBER SECTIONS
MD-1	MECHANICAL DETAILS
MD-2	MECHANICAL DETAILS
	ELECTRICAL
E-1	ELECTRICAL LEGEND AND SCHEDULES
E-2	SINGLE LINE DIAGRAM
E-3	SINGLE LINE DIAGRAM
E-4	SINGLE LINE DIAGRAM
E-5	SINGLE LINE DIAGRAM
E-6	CONTROL WIRING DIAGRAMS
E-7	CONTROL WIRING DIAGRAMS
E-8	INSTRUMENTATION SCHEMATIC DIAGRAM
E-9	INSTRUMENTATION NETWORK DIAGRAM
E-10	INSTRUMENTATION CONTROL PANEL DETAILS
E-11	ELECTRICAL SITE PLAN
E-12	ELECTRICAL PLAN MAIN ELECTRICAL BUILDING MODIFICATIONS
E-13	ELECTRICAL PLAN HEADWORKS MODIFICATIONS
E-14	ELECTRICAL PLAN CLARIFIER SPLITTER BOX AND RAS/WAS PUMP STATION
E-15	ELECTRICAL PLAN SCUM PUMPS AND CLARIFIER MODIFICATIONS
ED-1	CONDUIT AND CABLE SCHEDULE
ED-2	ELECTRICAL DETAILS
ED-3	ELECTRICAL DETAILS

NO.	BY	DATE	SYMBOL	REVISIONS
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4.				
5.				
6.				

DESIGNER:	DAR
DRAWN BY:	DRS
CHECKED BY:	CEH
APPROVED BY:	DAR
DATE:	APRIL 2020

DESIGN ENGINEER	DAVID A. RASMUSSEN P.E.
FLORIDA REGISTRATION NO.	77561



100 CENTER CREEK RD., STE 108  
ST. AUGUSTINE, FL. 32084  
PH. 904-562-2185

FLORIDA  
CERTIFICATE OF AUTHORIZATION  
# 9816



ST. JOHNS COUNTY  
UTILITY DEPARTMENT

1205 STATE ROAD 16  
ST AUGUSTINE, FLORIDA 32084-8646  
Phone (904) 209-2700 • Fax (904) 209-2702

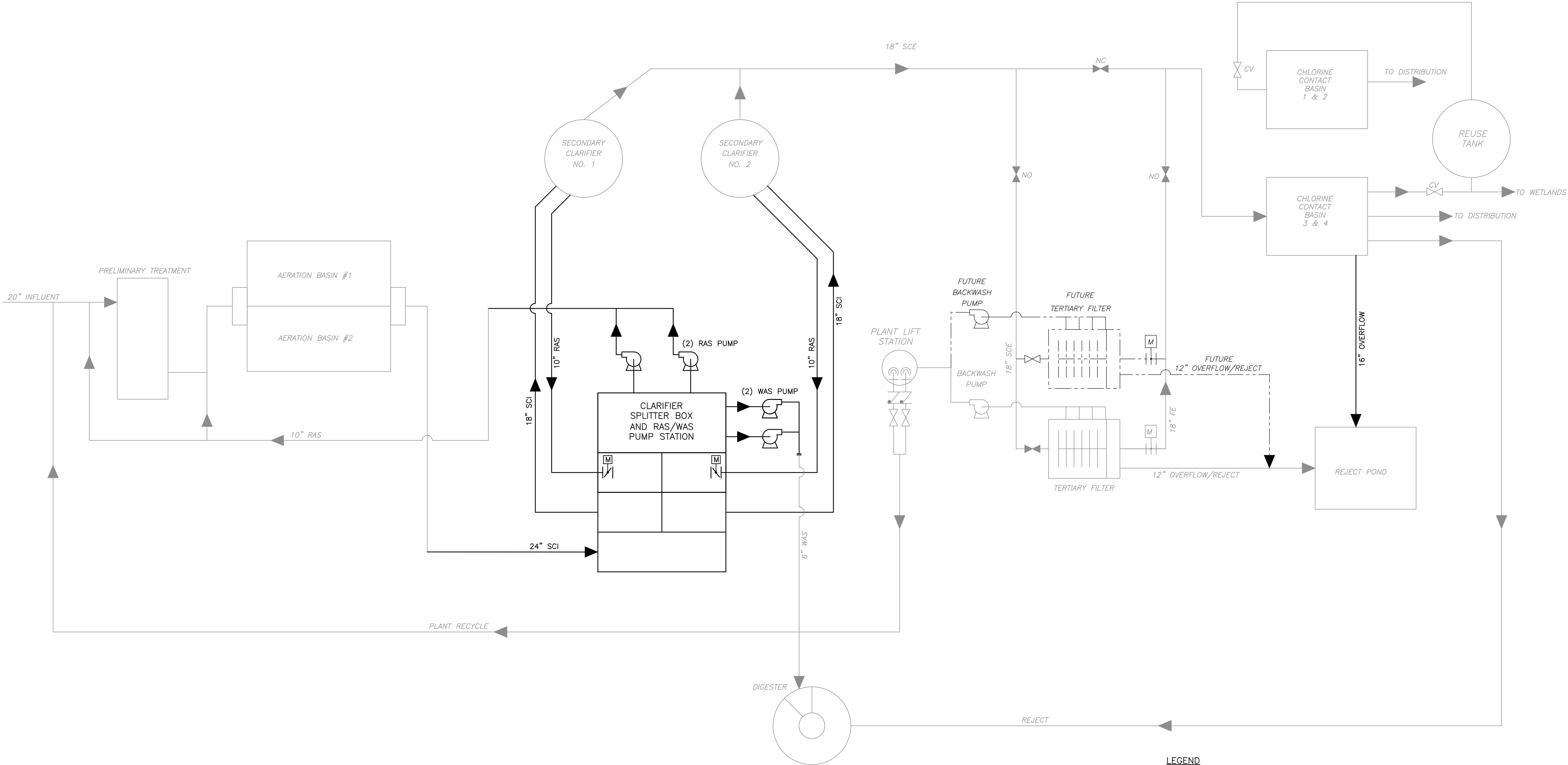
STATE ROAD 16 WASTEWATER TREATMENT FACILITY HEADWORKS & RAS / WAS IMPROVEMENTS

SHEET INDEX, GENERAL NOTES, AND SYMBOLOGY

PROJECT NO. 100408.24

FILE NAME G-2

SHEET NO. G-2



LEGEND

EXISTING	18" SCE
PROPOSED	10" RAS
FUTURE	10" RAS

NO.	BY	DATE	SYMBOL	REVISIONS
6				
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4				
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2				
1				

DESIGNER:	DAR	DESIGN ENGINEER	
DRAWN BY:	DRS	DAVID A. RASMUSSEN P.E.	
CHECKED BY:	CEH		
APPROVED BY:	DAR	FLORIDA REGISTRATION NO.	77561
DATE:	APRIL 2020		



100 CENTER CREEK RD., STE 108  
ST. AUGUSTINE, FL. 32084  
PH. 904-562-2185  
FLORIDA  
CERTIFICATE OF AUTHORIZATION  
# 98316

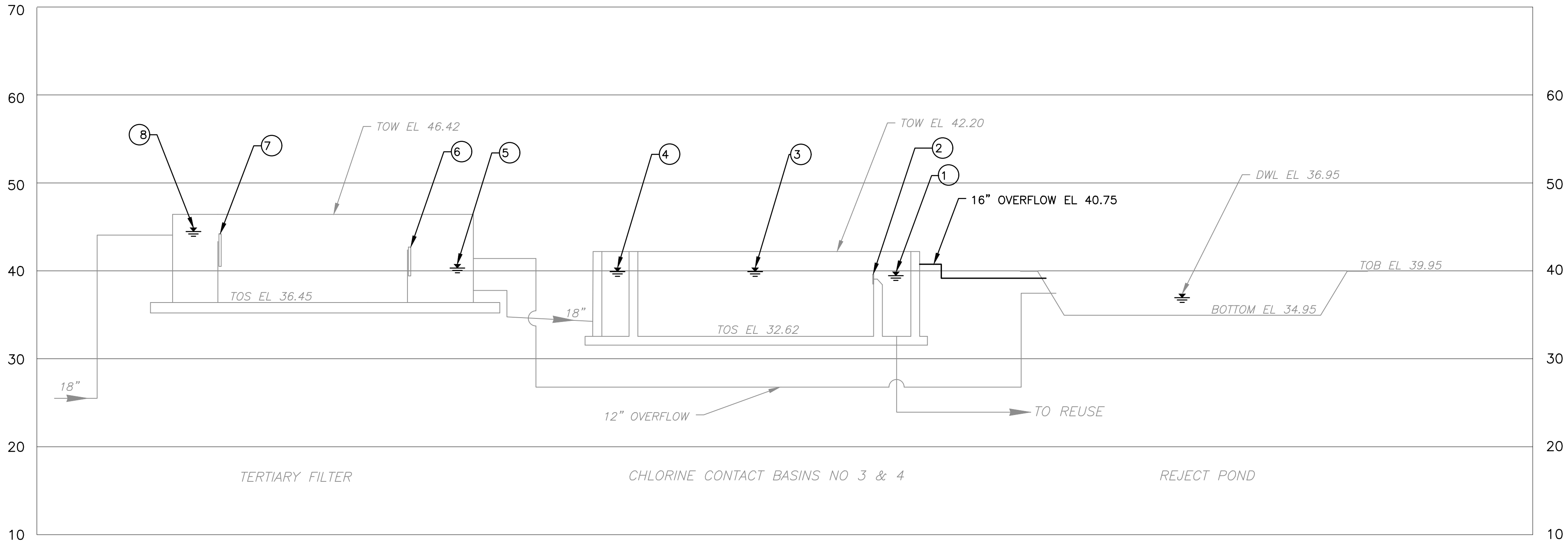
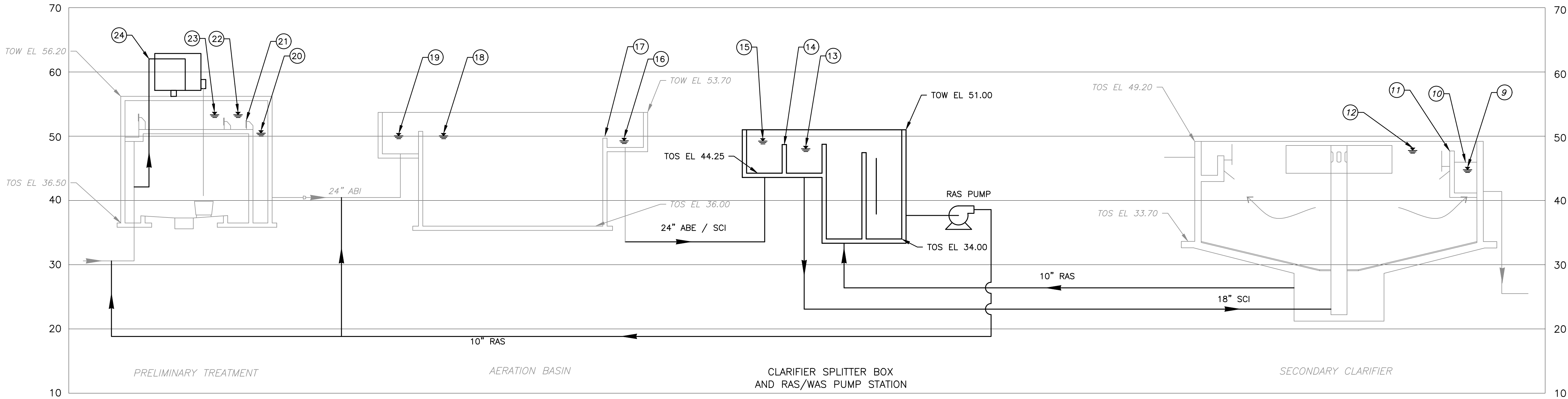


ST. JOHNS COUNTY  
UTILITY DEPARTMENT  
1205 STATE ROAD 16  
ST. AUGUSTINE, FLORIDA 32084-8646  
Phone (904) 209-2700 • Fax (904) 209-2702

STATE ROAD 16 WASTEWATER TREATMENT FACILITY HEADWORKS & RAS / WAS IMPROVEMENTS	PROJECT NO. 100408.24
	FILE NAME G-3
	SHEET NO. G-3

PROJECT NO. 100408.24
FILE NAME G-3
SHEET NO. G-3

H:\Project Files\100408 St Johns County Utilities\100408.24 SR 16 WWP Improvements\3 Design\Issued For Bid\01 General\01 Drawings\10 CAD\G-4.dwg      User: Dave Smith      Plot: 4/7/2020 2:16 PM      Saved: 4/7/2020 2:16 PM      Current Layout Tab = plot  
REUSE OF DOCUMENTS: THIS DOCUMENT AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF CONSTANTINE ENGINEERING. HOWEVER, THIS SHALL NOT PROHIBIT THE REUSE OF THIS DOCUMENT BY THE CLIENT AS PROVIDED FOR BY THE CONTRACT.

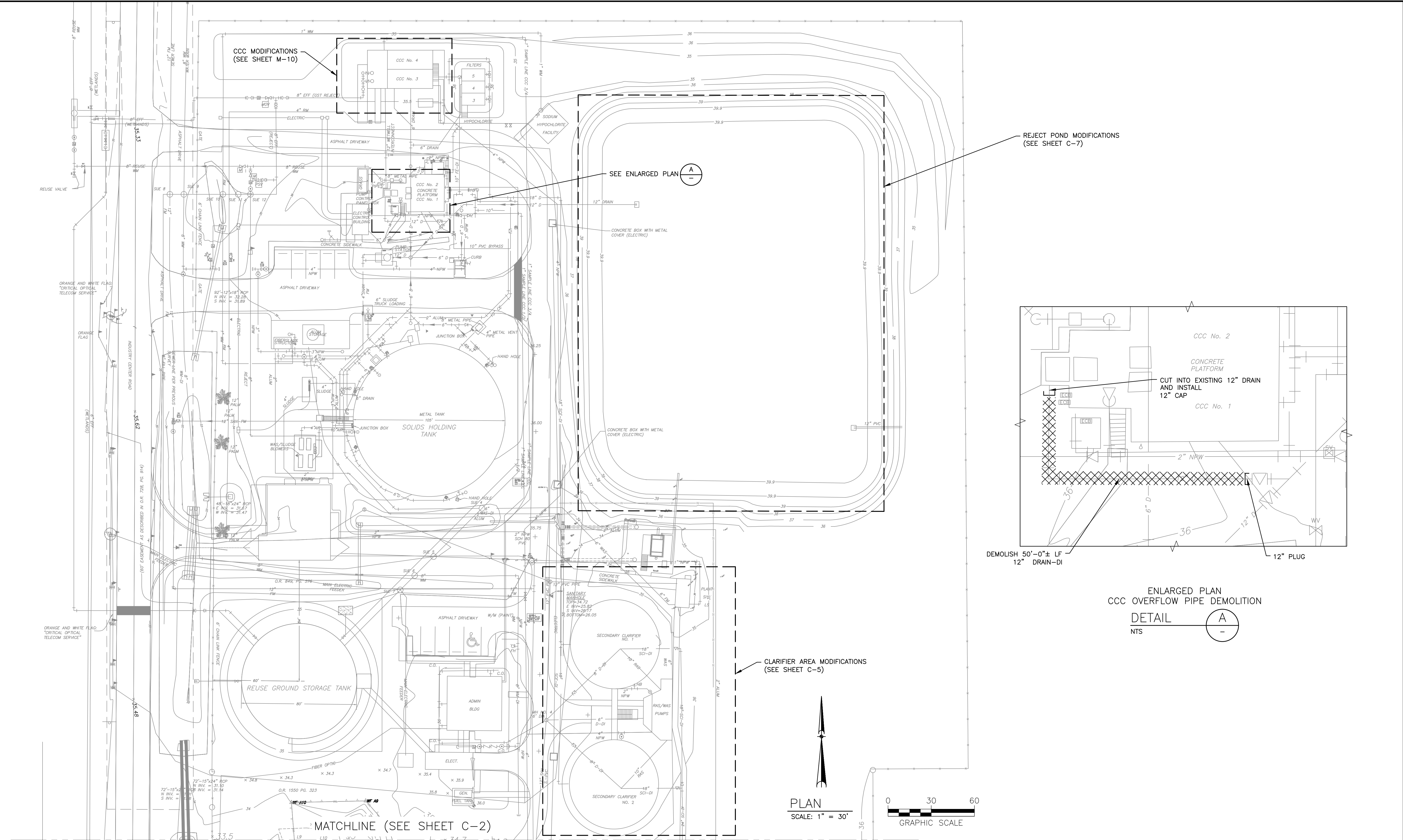


	24 (See Note 1)	23	22	21(Weir)	20	19	18	17(Weir)	16	15	14(Weir)	13	12	11 (Weir)	10	9	8	7 (Weir)	6 (Weir)	5	4	3	2 (Weir)	1
Minimum Daily Flow = 0.25 MGD + 0.25 RAS + 0.15 Return	62.03	53.12	53.12	52.45	49.89	49.85	49.85	49.70	48.94	48.93	48.70	47.77	47.74	47.70	45.84	44.37	44.33	44.21	42.71	39.81	39.76	39.76	39.62	39.45
Average Daily Flow = 1 MGD + 1 MGD RAS + 0.25 MGD Return	62.03	53.33	53.33	52.45	50.47	50.04	50.04	49.70	49.28	49.23	48.70	48.04	47.77	47.70	45.95	44.77	44.47	44.21	42.71	40.32	39.92	39.92	39.62	39.45
Peak Hourly Flow = 3 MGD + 1 MGD RAS + 0.25 MGD Return	62.03	53.54	53.53	52.45	51.67	50.23	50.22	49.70	49.70	49.53	48.70	48.74	47.80	47.70	46.70	46.65	44.69	44.21	42.71	42.68	40.19	40.18	39.62	39.45

- NOTES:
1. INFLUENT PIPE CENTERLINE ELEVATION.

NO. 6 5 4 3 2 1	BY	DATE	SYMBOL	REVISIONS	DESIGNER:	DAR	DESIGN ENGINEER	DAVID A. RASMUSSEN P.E.		100 CENTER CREEK RD., STE 108 ST. AUGUSTINE, FL. 32084 PH. 904-562-2185 FLORIDA CERTIFICATE OF AUTHORIZATION # 9816		ST. JOHNS COUNTY UTILITY DEPARTMENT 1205 STATE ROAD 16 ST AUGUSTINE, FLORIDA 32084-8646 Phone (904) 209-2700 • Fax (904) 209-2702	STATE ROAD 16 WASTEWATER TREATMENT FACILITY HEADWORKS & RAS / WAS IMPROVEMENTS	PROJECT NO.	100408.24		
														FILE NAME	G-4		
															SHEET NO.		
															G-4		
														HYDRAULIC PROFILE			





NO.	BY	DATE	SYMBOL	REVISIONS
6				
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DESIGNER:	DAR	DESIGN ENGINEER	
DRAWN BY:	DRS	DAVID A. RASMUSSEN P.E.	
CHECKED BY:	CEH	FLORIDA REGISTRATION NO.	77561
APPROVED BY:	DAR		
DATE:	APRIL 2020		



100 CENTER CREEK RD., STE 108  
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PH. 904-562-2185  
FLORIDA  
CERTIFICATE OF AUTHORIZATION  
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1205 STATE ROAD 16  
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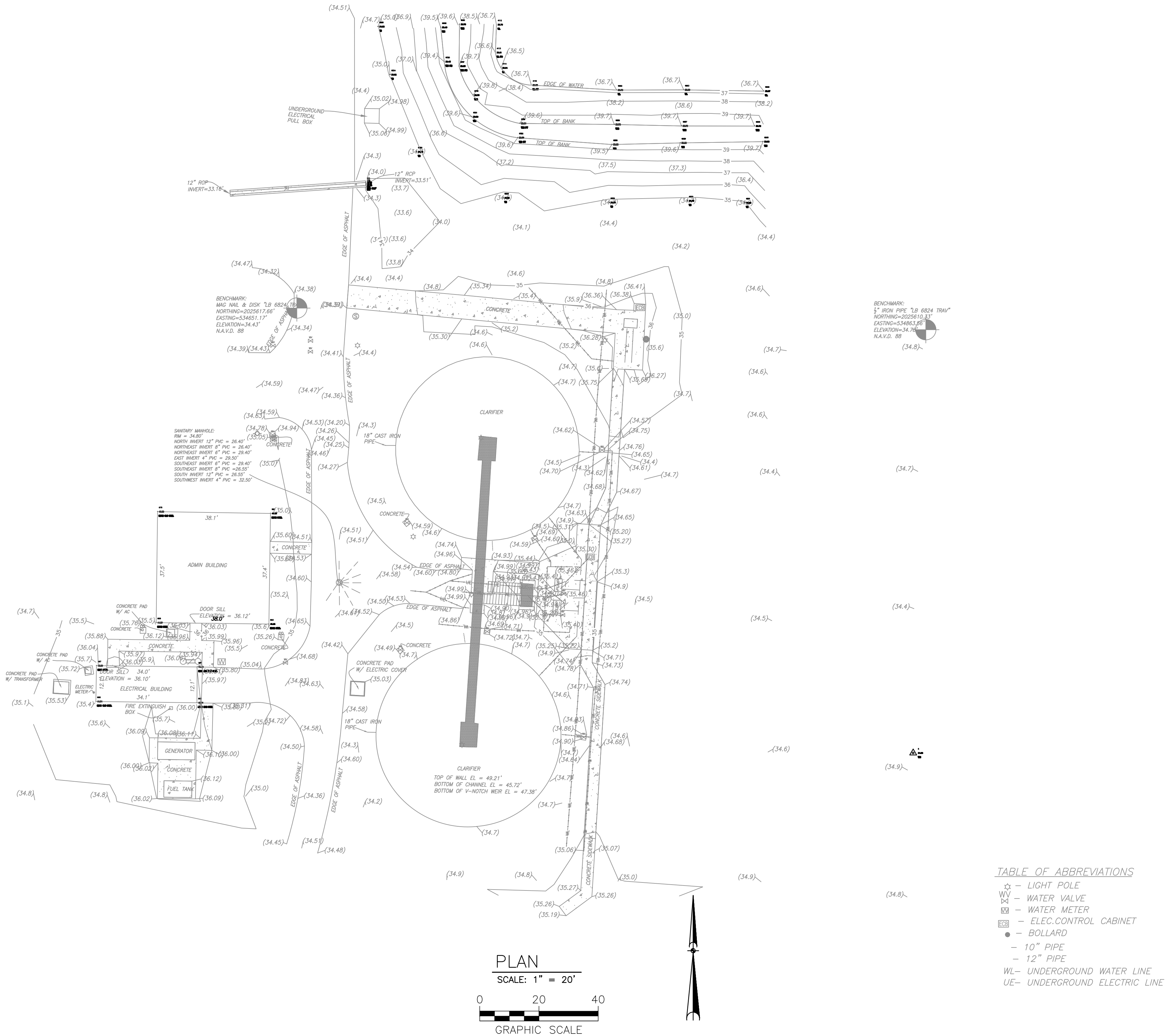
PROJECT NO.	100408.24
FILE NAME	C-1
SHEET NO.	C-1
STATE ROAD 16 WASTEWATER TREATMENT FACILITY HEADWORKS & RAS / WAS IMPROVEMENTS	
EXISTING SITE PLAN - NORTH	






ISSUED FOR BID







BRADSHAW-NILES & ASSOCIATES, INC.  
SURVEYING AND MAPPING CONSULTANTS  
LICENSED BUSINESS NO. 6824  
280 BUSINESS PARK CIRCLE, SUITE 410  
ST. AUGUSTINE, FLORIDA 32095  
(904) 829-2591 FAX: (904) 829-5070

CERTIFIED TO:  
CONSTANTINE ENGINEERING

THIS SURVEY IS CERTIFIED FOR THE EXCLUSIVE USE OF THE CLIENT NAMED HEREON AND IS NOT VALID WITHOUT THE SIGNATURE AND RAISED SEAL OF THE PROFESSIONAL SURVEYOR AND MAPPER OF FLORIDA SHOWN HEREON.  
DRAWN BY: A.D.B. & T.C.H.  
CHECKED BY: A.D.B.  
FIELD BOOK/PAGE(S): 395/41-43B, 395/72,74,77  

REV	DATE	BY	CKD	DESCRIPTION


GENERAL NOTES:  
1. ALL COORDINATES AND BEARINGS SHOWN HEREON 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 APP"      "GAINESVILLE CORS APP"  
N 30°29'02.515"      N 29°41'11.557"  
W 081°42'05.130"      W 082°16'38.735"  
SCALE FACTOR CONVERGENCE=0.99999711      SCALE FACTOR CONVERGENCE=0.99996208  
(THIS IS A GPS CONTINUOUSLY OPERATING REFERENCE STATION)      (THIS IS A GPS CONTINUOUSLY OPERATING REFERENCE STATION)  
2. 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.  
3. NOT ABSTRACTED FOR EASEMENTS. NO ABSTRACT OF TITLE FURNISHED.  
4. ELEVATIONS ARE IN U.S. SURVEY FEET AND ARE BASED IN N.A.V.D. 88. PRIMARY BENCHMARK UTILIZED TO 482 ELEVATION=35.90'

02/20/2019  
FIELD WORK COMPLETED


03/4/2019  
DATE OF SIGNATURE

ALBERT D. BRADSHAW, P.S.M., FLORIDA CERTIFICATION NO. 5257

NO.	BY	DATE	SYMBOL	REVISIONS	DESIGNER:	DAR	DESIGN ENGINEER	DAVID A. RASMUSSEN P.E.	100 CENTER CREEK RD., STE 108 ST. AUGUSTINE, FL. 32084 PH. 904-562-2185	ST. JOHNS COUNTY UTILITY DEPARTMENT	STATE ROAD 16 WASTEWATER TREATMENT FACILITY HEADWORKS & RAS / WAS IMPROVEMENTS	PROJECT NO. 100408.24 FILE NAME C-3
6					DRAWN BY:	DRS						
5					CHECKED BY:	CEH						
4					APPROVED BY:	DAR						
3					DATE:	APRIL 2020						
2												
1												



1205 STATE ROAD 16  
ST. AUGUSTINE, FLORIDA 32084-8646  
Phone (904) 209-2700 • Fax (904) 209-2702



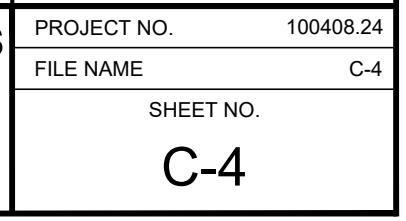
ST. JOHNS COUNTY  
UTILITY DEPARTMENT

CLARIFIER AREA EXISTING SITE SURVEY

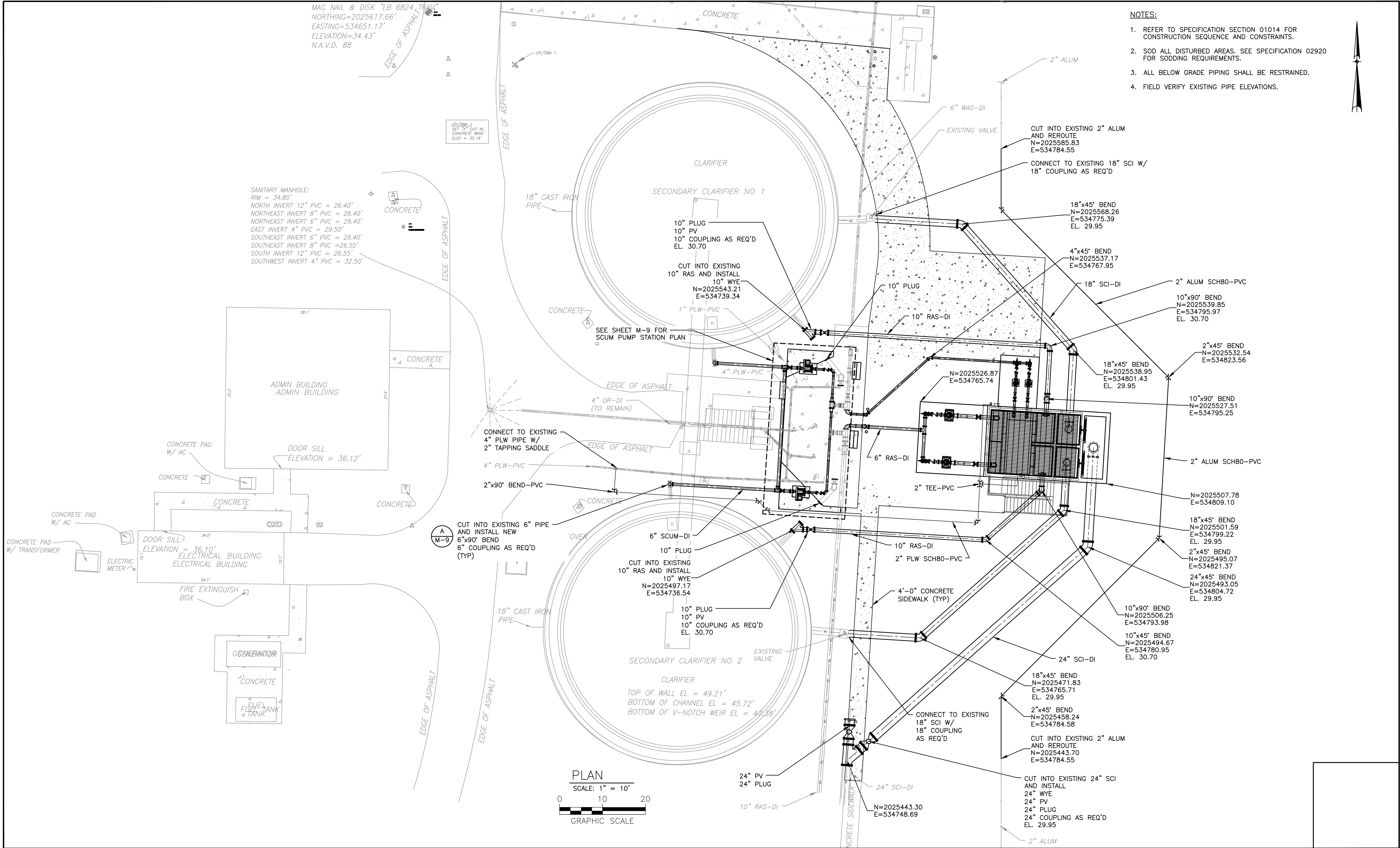
PROJECT NO. 100408.24  
FILE NAME C-3  
SHEET NO. C-3

ISSUED FOR BID



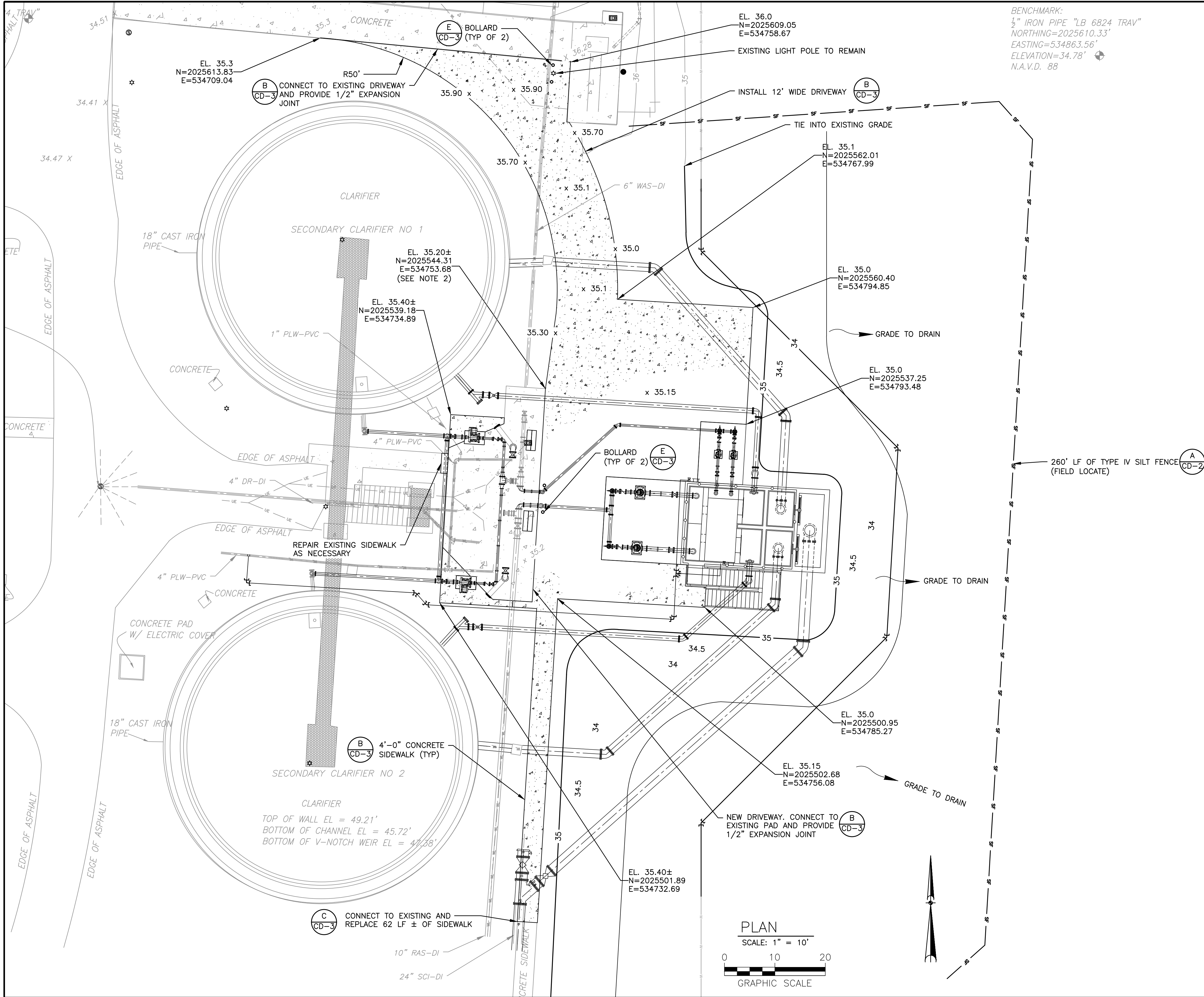






NO.				BY				DATE				SYMBOL				REVISIONS				DESIGNER				DAR				DESIGN ENGINEER				DAVID A. RASMUSSEN P.E.				DRAWN BY:				DRS				CHECKED BY:				CEH				APPROVED BY:				DAR				DATE:				APRIL 2020				FLORIDA REGISTRATION NO.				77561				100 CENTER CREEK RD., STE 108 ST. AUGUSTINE, FL. 32084 PH. 904-562-2185				ST. JOHNS COUNTY UTILITY DEPARTMENT				1205 STATE ROAD 16 ST. AUGUSTINE, FLORIDA 32084-8646 Phone (904) 209-2700 • Fax (904) 209-2702				STATE ROAD 16 WASTEWATER TREATMENT FACILITY HEADWORKS & RAS / WAS IMPROVEMENTS				PROJECT NO.				100408.24				FILE NAME				C-5				SHEET NO.				C-5				ISSUED FOR BID			
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H:\Project Files\100408 St Johns County Utilities\100408.24 SR 16 WWP Improvements\3 Design\Issued For Bid\02 Civil\01 Drawings\10 CADD\C-6.dwg    User: Kathryn Stephens    Plot: 11/6/2020 11:59 AM    Saved: 4/9/2020 1:02 PM  
REUSE OF DOCUMENTS: THIS DOCUMENT AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF CONSTANTINE ENGINEERING. HOWEVER, THIS SHALL NOT PROHIBIT THE REUSE OF THIS DOCUMENT BY THE CLIENT AS PROVIDED FOR BY THE CONTRACT.



- NOTES:
1. REFER TO SHEET C-3 FOR EXISTING CLARIFIER AREA SURVEY INFORMATION.
  2. MATCH EXISTING PAD ELEVATION.
  3. SEE SHEET CD-2 FOR EROSION CONTROL DETAILS AND STORMWATER POLLUTION PREVENTION PLAN REQUIREMENTS.

NO.	BY	DATE	SYMBOL	REVISIONS
6				
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DESIGNER:	DAR	DESIGN ENGINEER:	DAVID A. RASMUSSEN P.E.
DRAWN BY:	MSC		
CHECKED BY:	CEH	FLORIDA REGISTRATION NO.	77561
APPROVED BY:	DAR		
DATE:	APRIL 2020		



100 CENTER CREEK RD., STE 108  
ST. AUGUSTINE, FL. 32084  
PH. 904-562-2185  
FLORIDA  
CERTIFICATE OF AUTHORIZATION  
# 9816

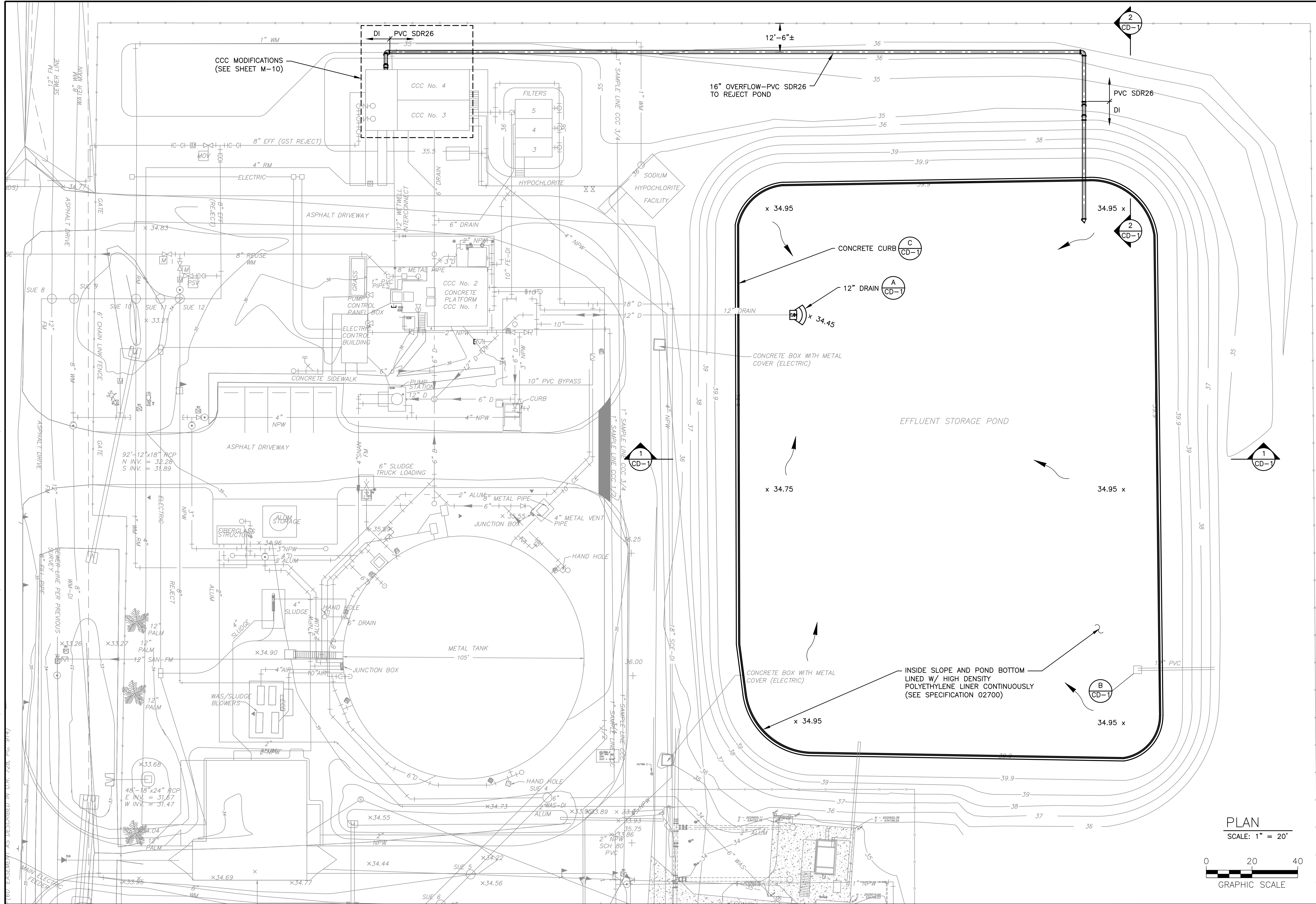


**ST. JOHNS COUNTY  
UTILITY DEPARTMENT**  
1205 STATE ROAD 16  
ST. AUGUSTINE, FLORIDA 32084-8646  
Phone (904) 209-2700 • Fax (904) 209-2702

STATE ROAD 16 WASTEWATER TREATMENT FACILITY HEADWORKS & RAS / WAS IMPROVEMENTS
CLARIFIER AREA GRADING, DRAINAGE, AND EROSION CONTROL PLAN

PROJECT NO.	100408.24
FILE NAME	C-6
SHEET NO.	C-6





- NOTES:
1. PROVIDE PVC SDR26 PIPE AS PER SUCUD STANDARDS & SPECIFICATIONS.

NO.	BY	DATE	SYMBOL	REVISIONS
6				
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4				
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2				
1				

DESIGNER:	DAR
DRAWN BY:	DRS
CHECKED BY:	CEH
APPROVED BY:	DAR
DATE:	APRIL 2020

DESIGN ENGINEER	DAVID A. RASMUSSEN P.E.
FLORIDA REGISTRATION NO.	77561



100 CENTER CREEK RD., STE 108  
ST. AUGUSTINE, FL 32084  
PH. 904-562-2185  
FLORIDA  
CERTIFICATE OF AUTHORIZATION  
# 9816



**ST. JOHNS COUNTY  
UTILITY DEPARTMENT**  
1205 STATE ROAD 16  
ST AUGUSTINE, FLORIDA 32084-8646  
Phone (904) 209-2700 • Fax (904) 209-2702

STATE ROAD 16 WASTEWATER TREATMENT FACILITY HEADWORKS & RAS / WAS IMPROVEMENTS

CCC AND REJECT POND PROPOSED SITE AND YARD PIPING PLAN

PROJECT NO.	100408.24
FILE NAME	C-7
SHEET NO.	C-7

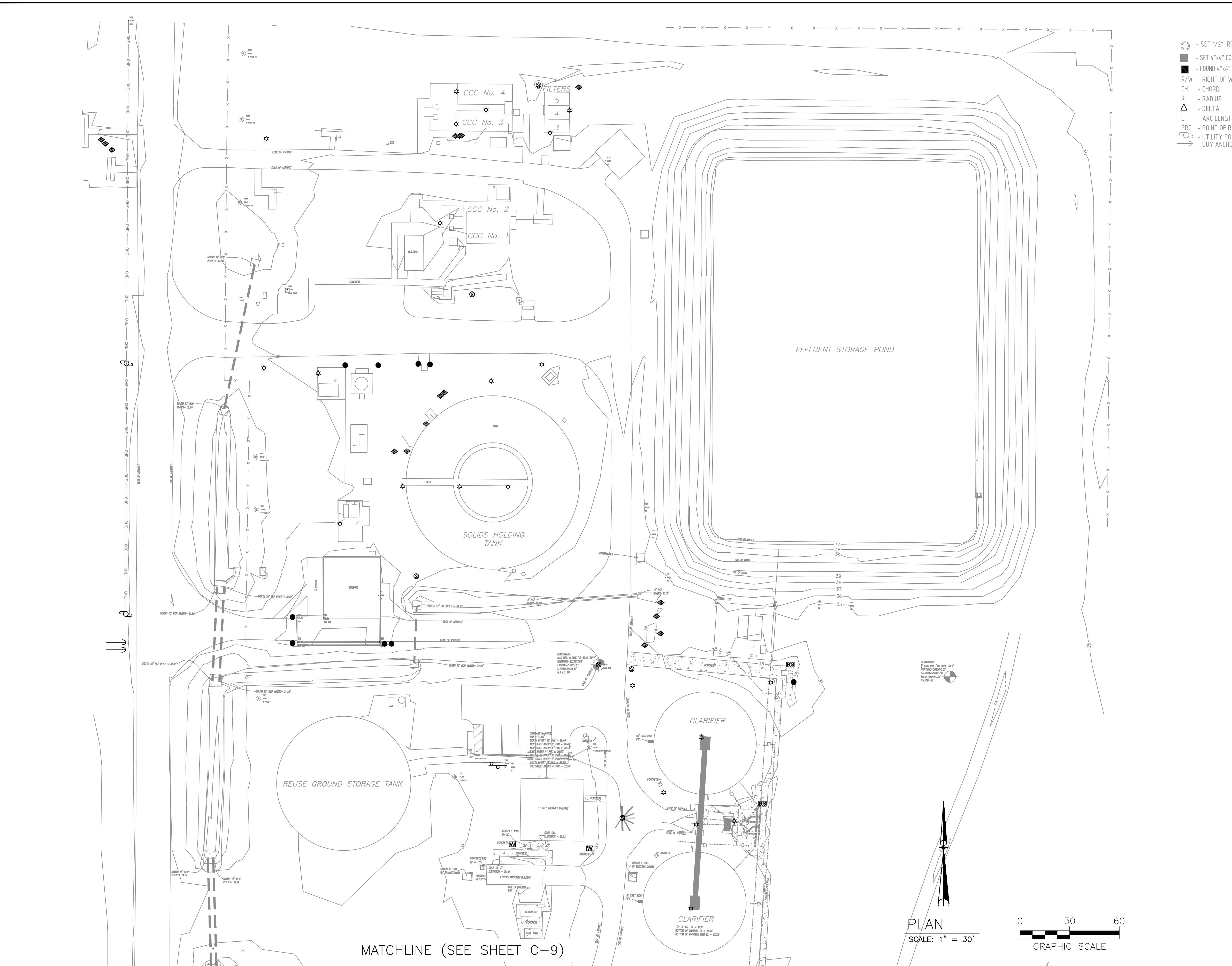







TABLE OF ABBREVIATIONS	
	- SET 1/2" IRON PIPE, LB 6824
	- SET 4"x4" CONCRETE MONUMENT, LB 6824
	- FOUND 4"x4" CONCRETE MONUMENT, LB 6888, UNLESS OTHERWISE NOTED
R/W	- RIGHT OF WAY
CH	- CHORD
R	- RADIUS
Δ	- DELTA
L	- ARC LENGTH
PRC	- POINT OF REVERSE CURVE
	- UTILITY POLE
OHE	- OVERHEAD ELECTRIC
	- SEWER CLEAN OUT
BTU	- UNDERGROUND TV LINE
VEV	- UNDERGROUND ELECTRIC LINE
FOC	- UNDERGROUND FIBER OPTIC LINE
FM	- UNDERGROUND FORCE MAIN LINE
WL	- UNDERGROUND WATER LINE
UT	- UNDERGROUND TELEPHONE LINE
TS	- UNDERGROUND TRAFFIC SIGNAL LINE
IRR	- UNDERGROUND IRRIGATION LINE
WLRU	- UNDERGROUND RE-USE WATER LINE

PROJECT NUMBER
996-013-02
DATE: 08/11/20
SCALE: 1"=40'
DRAWING No.: TOPO
SHEET No. 1/1

GENERAL NOTES:

1. 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 CORP AR"

N 307202.5157"

W 081676.3350"

SCALE FACTOR CONVERGENCE=0.99999711

(THIS IS A GPS CONTINUOUSLY OPERATING REFERENCE STATION)

2. 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, COMMISSION OR OTHER ENTITY.

3. NOT ABSTRACTED FOR EXEMPTION; NO ABSTRACT OF TITLE A.W.H.D.

4. ELEVATIONS ARE IN U.S. SURVEY FEET AND ARE BASED IN N.A.S.88. PRIMARY BENCHMARK UTILIZED "T 482"ELEVATION=35.90'

THIS SURVEY MEETS THE STANDARDS OF PRACTICE FOR PROFESSIONAL  
SURVEYORS AND MAPPERS PURSUANT TO CHAPTERS 5J-17.051 & 5J-17.052  
F.A.C.

02/20/2015 02/24/2015  
FIELD WORK COMPLETED DATE OF SIGNATURE

ALBERT D. BRADSHAW, P.S.M., FLORIDA CERTIFICATION NO. 5257

CERTIFIED TO:


**CONSTANTINE ENGINEERING**

THIS SURVEY IS CERTIFIED FOR THE EXCLUSIVE USE OF THE CLIENT NAMED HEREON AND IS NOT VALID WITHOUT THE SIGNATURE AND RAISED SEAL OF THE PROFESSIONAL SURVEYOR AND MAPPER OF FLORIDA SHOWN HEREON.

DRAWN BY: A.D.B. & C.L.N.
CHECKED BY: A.D.B.
FIELD BOOK/PAGE(S): 360/15-75, 362/1-13, 364/15-18

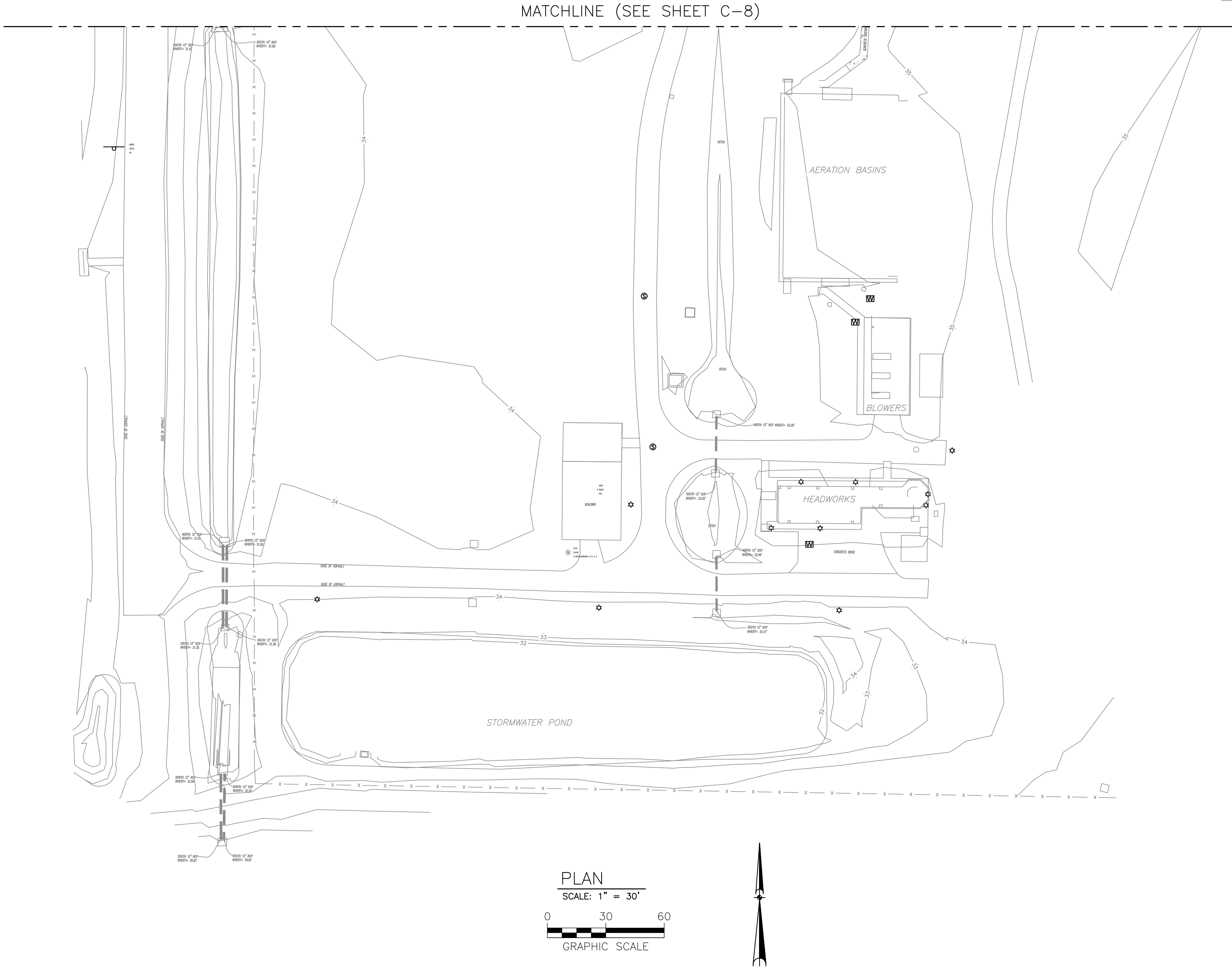
REV	DATE	BY	CKD	DESCRIPTION

BRADSHAW-NILES & ASSOCIATES, INC.

 SURVEYING AND MAPPING CONSULTANTS  
LICENSED BUSINESS NO. 6824  
280 BUSINESS PARK CIRCLE, SUITE 410  
ST. AUGUSTINE, FLORIDA 32095  
(904) 829-2591 FAX: (904) 829-5070

[illegible]





- TABLE OF ABBREVIATIONS
- - SET 1/2" IRON PIPE, LB 6824
  - - SET 4"x4" CONCRETE MONUMENT, LB 6824
  - - FOUND 4"x4" CONCRETE MONUMENT, LB 6888, UNLESS OTHERWISE NOTED
  - R/W - RIGHT OF WAY
  - CH - CHORD
  - R - RADIUS
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  - PRC - POINT OF REVERSE CURVE
  - ↗ - UTILITY POLE
  - - GUY ANCHOR

- OHE - OVERHEAD ELECTRIC
- CO - SEWER CLEAN OUT
- BTU - UNDERGROUND TV LINE
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- FM - UNDERGROUND FORCE MAIN LINE
- WL - UNDERGROUND WATER LINE
- UT - UNDERGROUND TELEPHONE LINE
- TS - UNDERGROUND TRAFFIC SIGNAL LINE
- IRR - UNDERGROUND IRRIGATION LINE
- WLUR - UNDERGROUND RE-USE WATER LINE

PROJECT NUMBER  
996-013-02

DATE: 08/11/20

SCALE:

DRAWING No.: TOPO

SHEET No.

GENERAL NOTES:  
1. ALL COORDINATES AND BEARINGS SHOWN HEREIN ARE REFERENCED TO THE FLORIDA STATE PLANE COORDINATE SYSTEM, NORTH AMERICAN DATUM OF 1983-1989 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"  
"GAINESVILLE CORS ARP" N 29°41'11.557" W 082°16'36.736"  
SCALE FACTOR CONVERGENCE=-0.999989711 (THIS IS A GPS CONTINUOUSLY OPERATING REFERENCE STATION)  
2. 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.  
3. NOT ABSTRACTED FOR EASEMENTS, NO ABSTRACT OF TITLE FURNISHED.  
4. ELEVATIONS ARE IN U.S. SURVEY FEET AND ARE BASED IN N.A.V.D. 88. PRIMARY BENCHMARK UTILIZED "D 482"ELEVATION=35.90'

THIS SURVEY MEETS THE STANDARDS OF PRACTICE FOR PROFESSIONAL SURVEYORS AND MAPPERS PURSUANT TO CHAPTERS 5J-17.051 & 5J-17.052 F.A.C.

02/20/2015  
FIELD WORK COMPLETED

02/24/2015  
DATE OF SIGNATURE

ALBERT D. BRADSHAW, P.S.M., FLORIDA CERTIFICATION NO. 5257

CERTIFIED TO:

CONSTANTINE ENGINEERING

THIS SURVEY IS CERTIFIED FOR THE EXCLUSIVE USE OF THE CLIENT NAMED HEREON AND IS NOT VALID WITHOUT THE SIGNATURE AND RAISED SEAL OF THE PROFESSIONAL SURVEYOR AND MAPPER OF FLORIDA SHOWN HEREON.

DRAWN BY: A.D.B. & C.L.N.

CHECKED BY: A.D.B.

FIELD BOOK/PAGE(S): 360/15-75, 362/1-13, 364/15-18

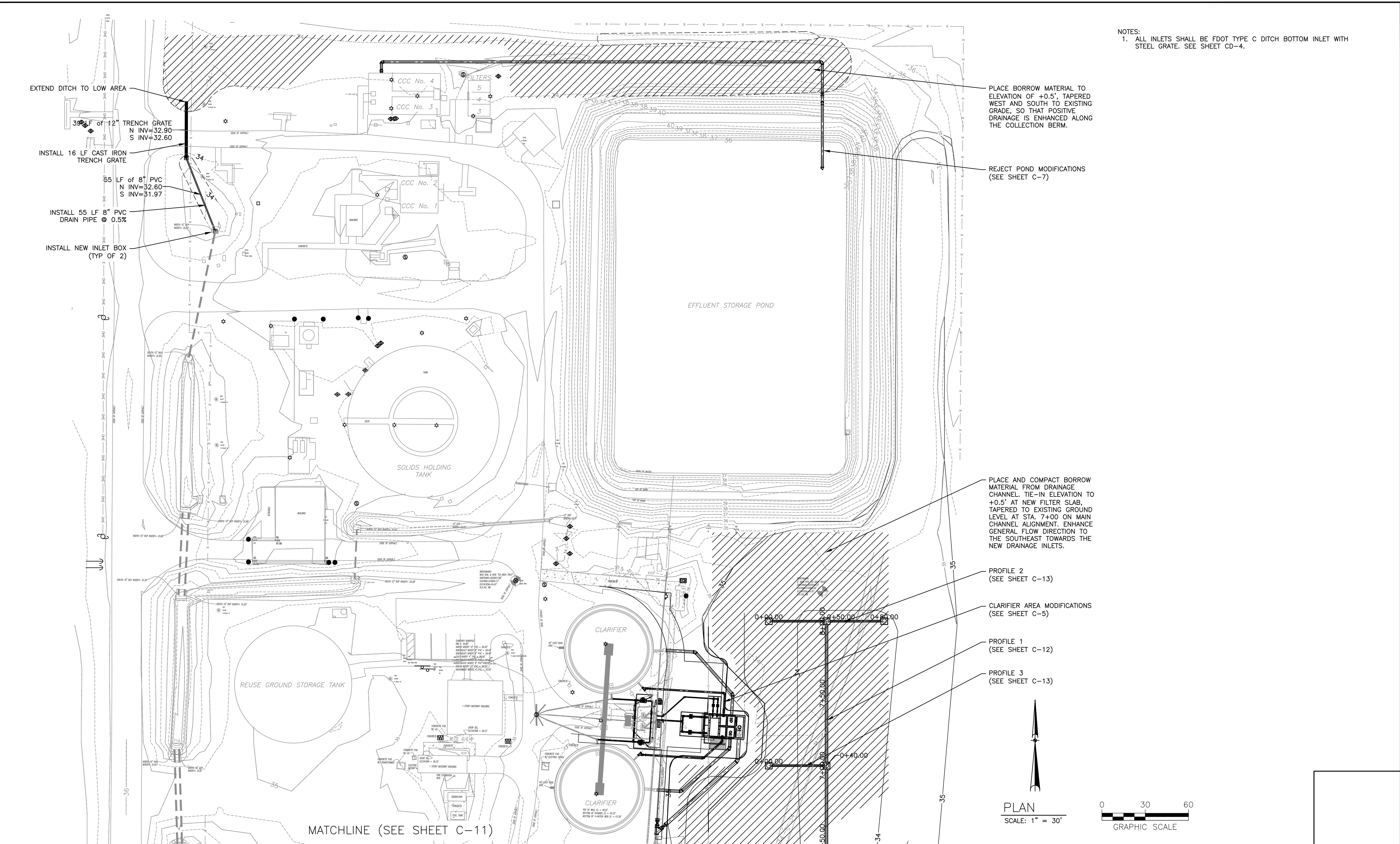
REV	DATE	BY	CKD	DESCRIPTION

BRADSHAW-NILES & ASSOCIATES, INC.

SURVEYING AND MAPPING CONSULTANTS  
LICENSED BUSINESS NO. 6824  
280 BUSINESS PARK CIRCLE, SUITE 410  
ST. AUGUSTINE, FLORIDA 32095  
(904) 829-2591 FAX: (904) 829-5070

NO.	BY	DATE	SYMBOL	REVISIONS	DESIGNER:	DESIGN ENGINEER	ST. JOHNS COUNTY UTILITY DEPARTMENT	STATE ROAD 16 WASTEWATER TREATMENT FACILITY HEADWORKS & RAS / WAS IMPROVEMENTS	PROJECT NO.
6					DRAWN BY: KWS		1205 STATE ROAD 16	STORMWATER IMPROVEMENTS	100408.24
5					CHECKED BY: --		ST. AUGUSTINE, FLORIDA 32084	EXISTING TOPOGRAPHIC SITE SURVEY - SOUTH	FILE NAME
4					APPROVED BY: DAR		PH. 904-562-2185		C-9
3					DATE: APRIL 2020		FLORIDA CERTIFICATE OF AUTHORIZATION # 9816		SHEET NO.
2									C-9
1									

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REUSE OF DOCUMENTS: THIS DOCUMENT AND THE IDEAS AND DESIGNS INCORPORATED HEREIN ARE AN INSTRUMENT OF PROFESSIONAL SERVICE. IT IS THE PROPERTY OF CONSTANTINE ENGINEERING. HOWEVER, THIS SHALL NOT PROHIBIT THE REUSE OF THIS DOCUMENT BY THE CLIENT AS PROVIDED FOR BY THE CONTRACT.



NOTES:  
1. ALL INLETS SHALL BE FDOT TYPE C DITCH BOTTOM INLET WITH STEEL GRATE. SEE SHEET CD-4.

PLACE BORROW MATERIAL TO ELEVATION OF +0.5', TAPERED WEST AND SOUTH TO EXISTING GRADE, SO THAT POSITIVE DRAINAGE IS ENHANCED ALONG THE COLLECTION BERM.

REJECT POND MODIFICATIONS (SEE SHEET C-7)

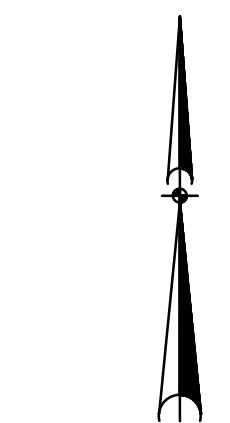
PLACE AND COMPACT BORROW MATERIAL FROM DRAINAGE CHANNEL. TIE-IN ELEVATION TO +0.5' AT NEW FILTER SLAB, TAPERED TO EXISTING GROUND LEVEL AT STA. 7+00 ON MAIN CHANNEL ALIGNMENT. ENHANCE GENERAL FLOW DIRECTION TO THE SOUTHEAST TOWARDS THE NEW DRAINAGE INLETS.

PROFILE 2  
(SEE SHEET C-13)

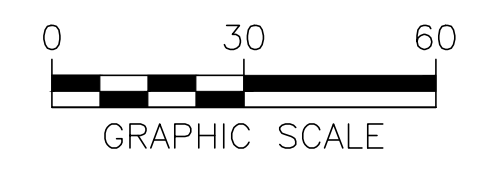
CLARIFIER AREA MODIFICATIONS  
(SEE SHEET C-5)

PROFILE 1  
(SEE SHEET C-12)

PROFILE 3  
(SEE SHEET C-13)

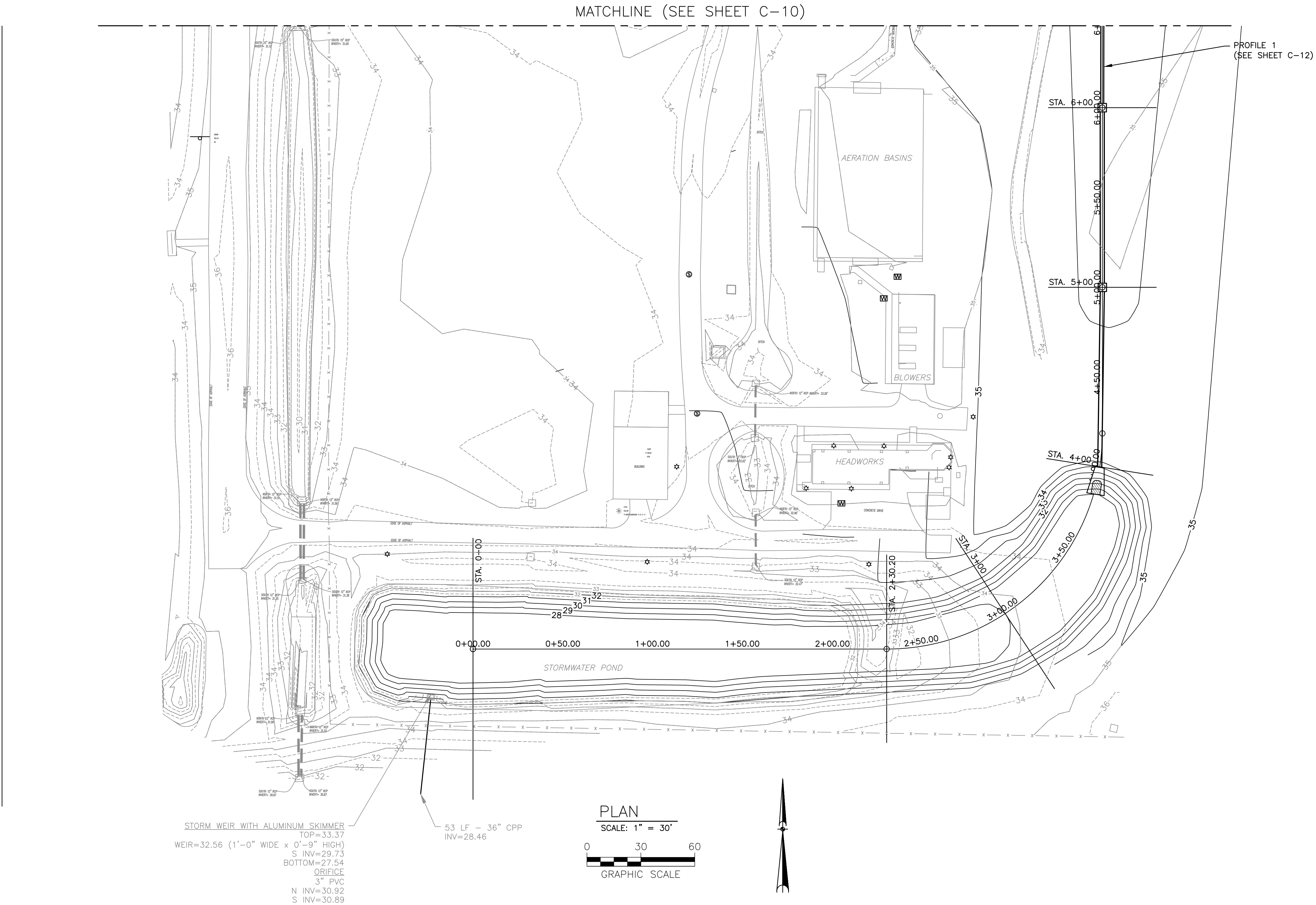


PLAN  
SCALE: 1" = 30'



NO.				BY				DATE				SYMBOL				REVISIONS				DESIGNER:				WB				DESIGN ENGINEER				DAVE RASMUSSEN, P.E.				DRAWN BY:				KWS				CHECKED BY:				---				APPROVED BY:				DAR				DATE:				APRIL 2020				FLORIDA REGISTRATION NO.				77561				Constantine Engineering				100 CENTER CREEK RD., STE 108 ST. AUGUSTINE, FL. 32084 PH. 904-562-2185 FLORIDA CERTIFICATE OF AUTHORIZATION # 9816				ST. JOHN'S COUNTY UTILITY DEPARTMENT				1205 STATE ROAD 16 ST. AUGUSTINE, FLORIDA 32084-8646 Phone (904) 209-2700 • Fax (904) 209-2702				STATE ROAD 16 WASTEWATER TREATMENT FACILITY HEADWORKS & RAS / WAS IMPROVEMENTS STORMWATER IMPROVEMENTS PROPOSED DRAINAGE MODIFICATIONS PLAN - NORTH				PROJECT NO.				100408.24				FILE NAME				C-10				SHEET NO.				C-10				ISSUED FOR BID			
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NO.	BY	DATE	SYMBOL	REVISIONS
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DESIGNER:	WB
DRAWN BY:	KWS
CHECKED BY:	--
APPROVED BY:	--
DATE:	APRIL 2020

DESIGN ENGINEER	DAVE RASMUSSEN, P.E.
FLORIDA REGISTRATION NO.	77561



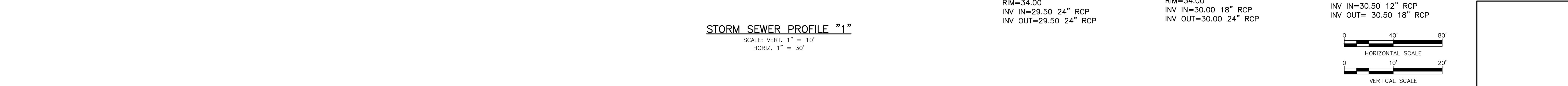
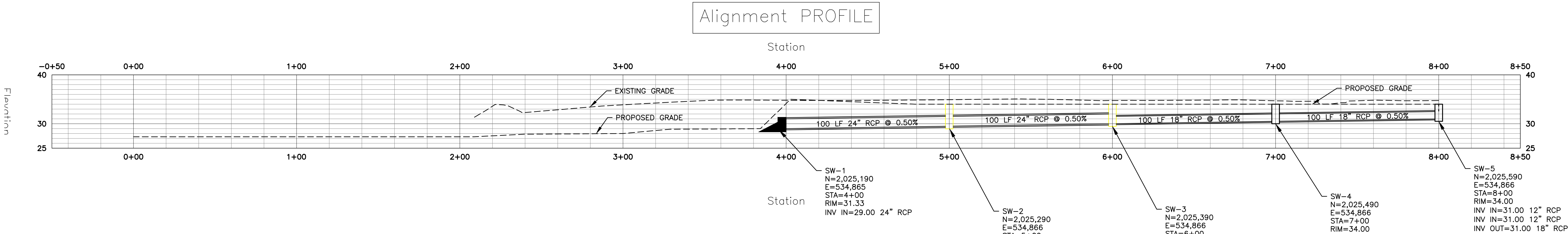
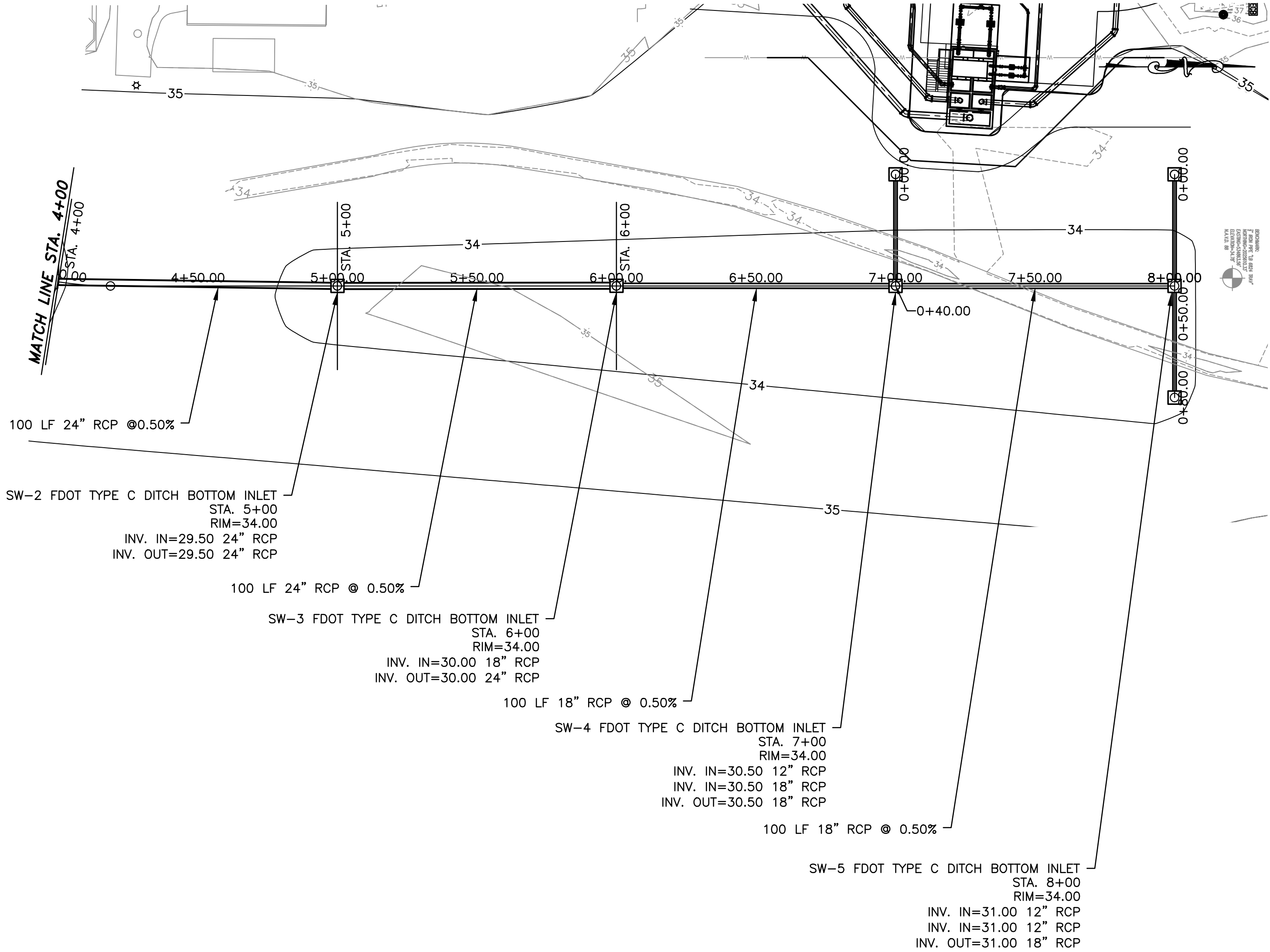
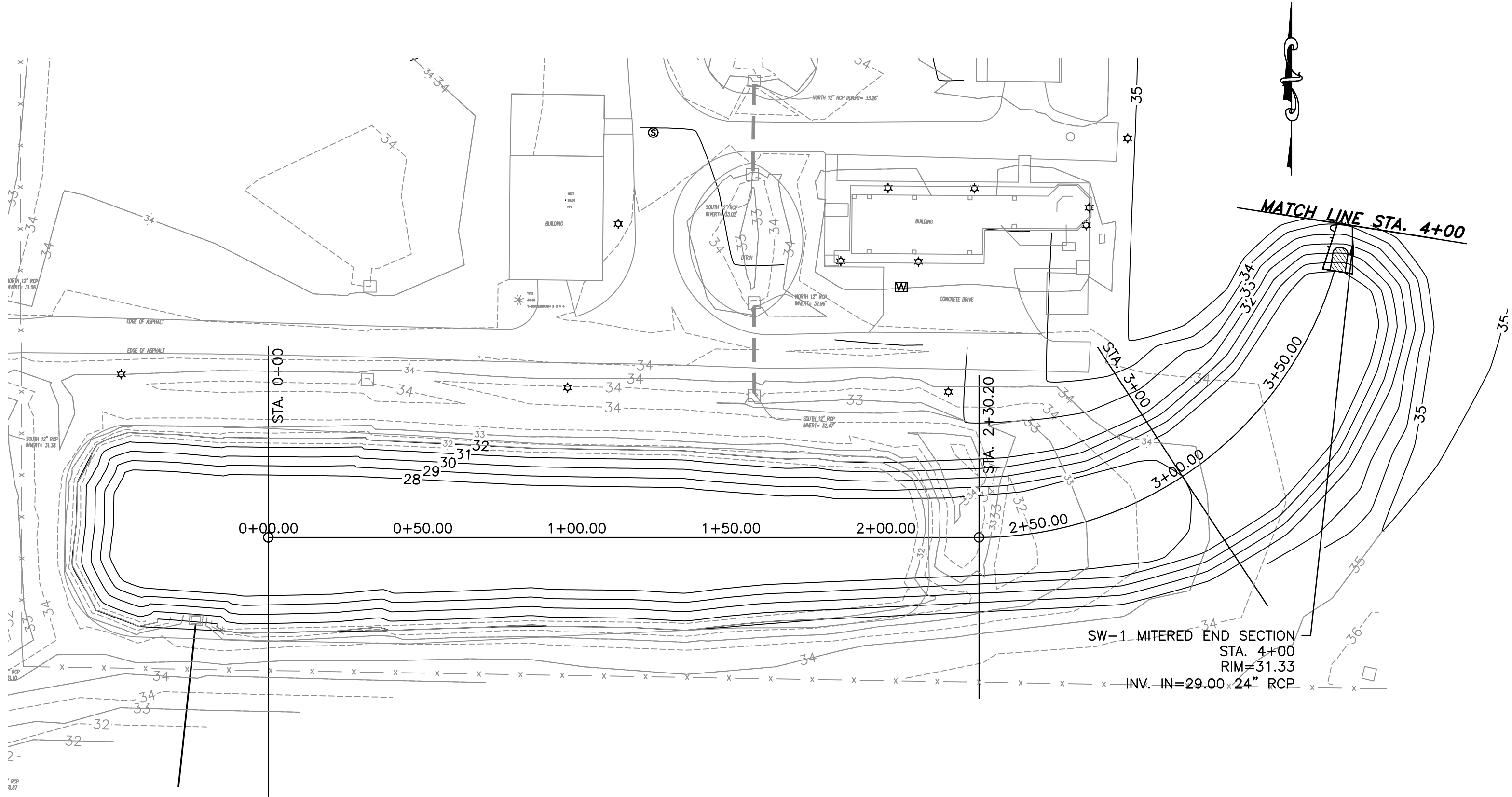
100 CENTER CREEK RD., STE 108  
ST. AUGUSTINE, FL. 32084  
PH. 904-562-2185  
FLORIDA  
CERTIFICATE OF AUTHORIZATION  
# 9816



ST. JOHNS COUNTY  
UTILITY DEPARTMENT  
1205 STATE ROAD 16  
ST. AUGUSTINE, FLORIDA 32084-8646  
Phone (904) 209-2700 • Fax (904) 209-2702

STATE ROAD 16 WASTEWATER TREATMENT FACILITY HEADWORKS & RAS / WAS IMPROVEMENTS  
STORMWATER IMPROVEMENTS  
PROPOSED DRAINAGE MODIFICATIONS PLAN - SOUTH

PROJECT NO.	100408.24
FILE NAME	C-11
SHEET NO.	C-11



NO.	BY	DATE	SYMBOL	REVISIONS
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DESIGNER:	WB	DESIGN ENGINEER
DRAWN BY:	KWS	DAVE RASMUSSEN, P.E.
CHECKED BY:	--	FLORIDA REGISTRATION NO. 77561
APPROVED BY:	--	
DATE:	APRIL 2020	



100 CENTER CREEK RD., STE 108  
ST. AUGUSTINE, FL. 32084  
PH. 904-562-2185  
FLORIDA  
CERTIFICATE OF AUTHORIZATION  
# 9816

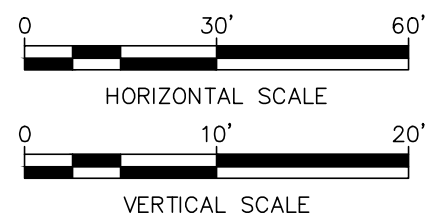
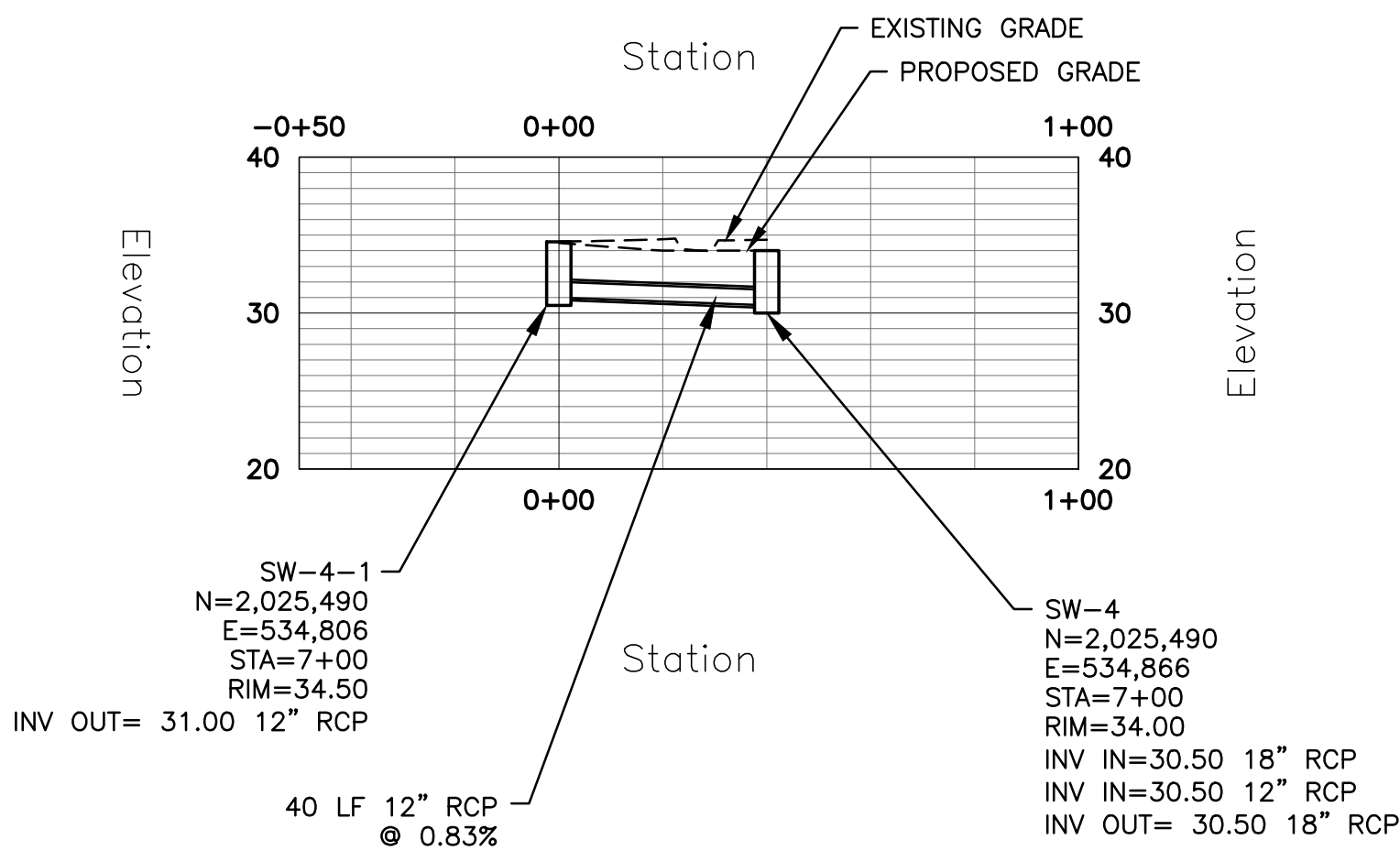
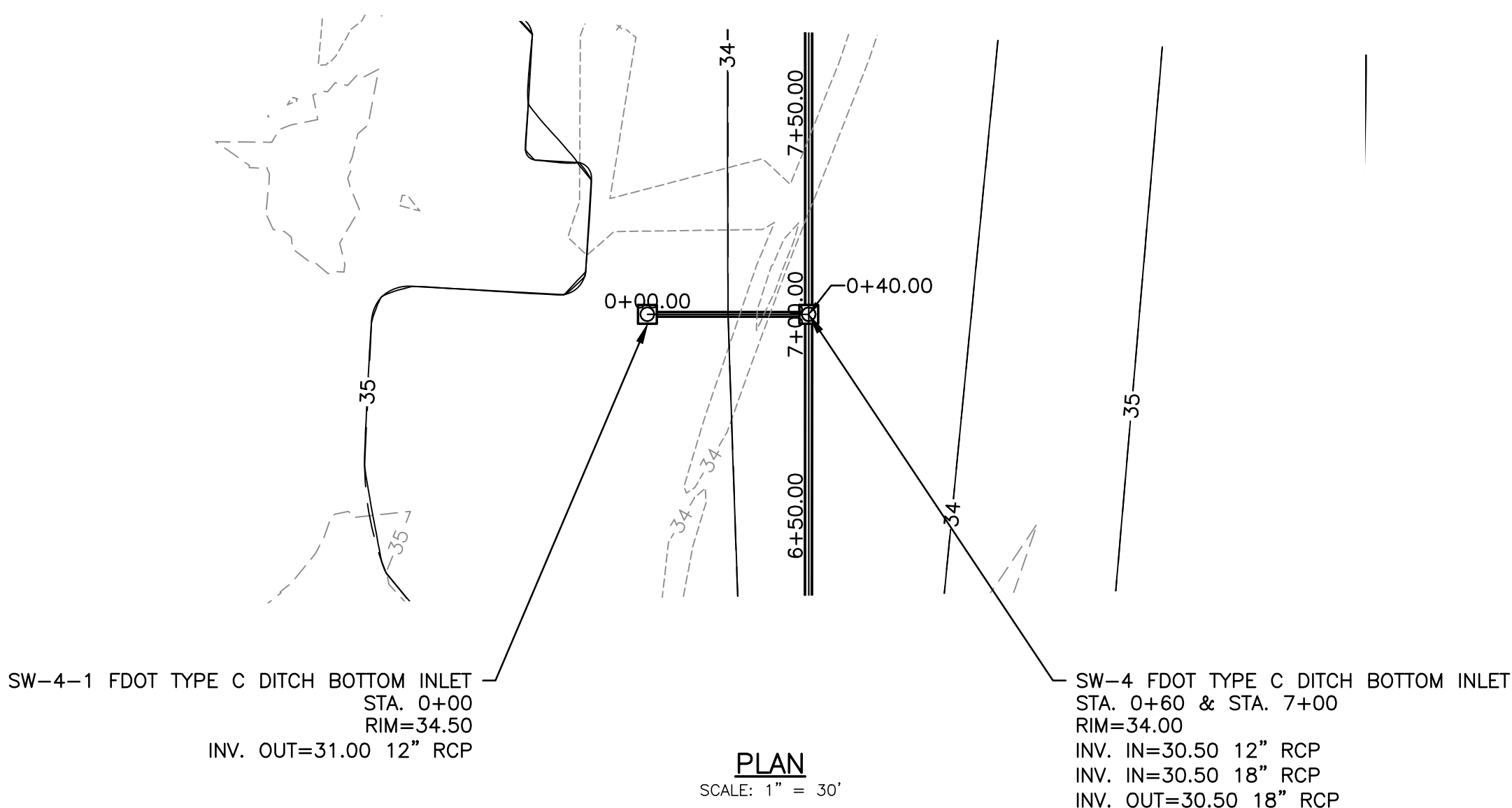
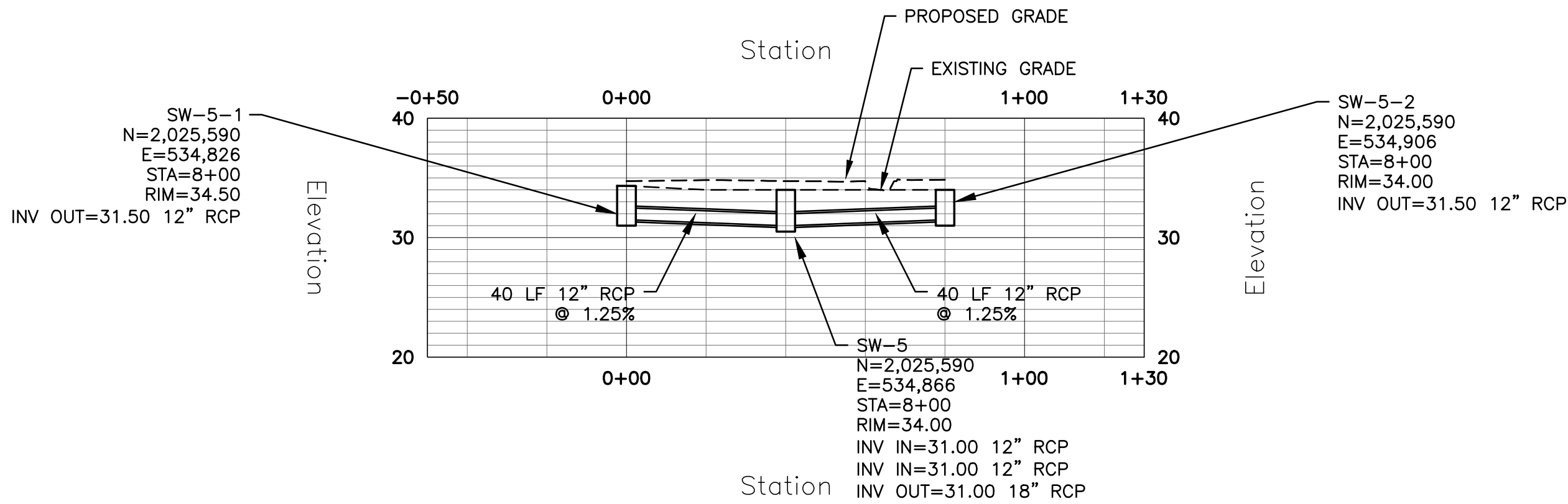
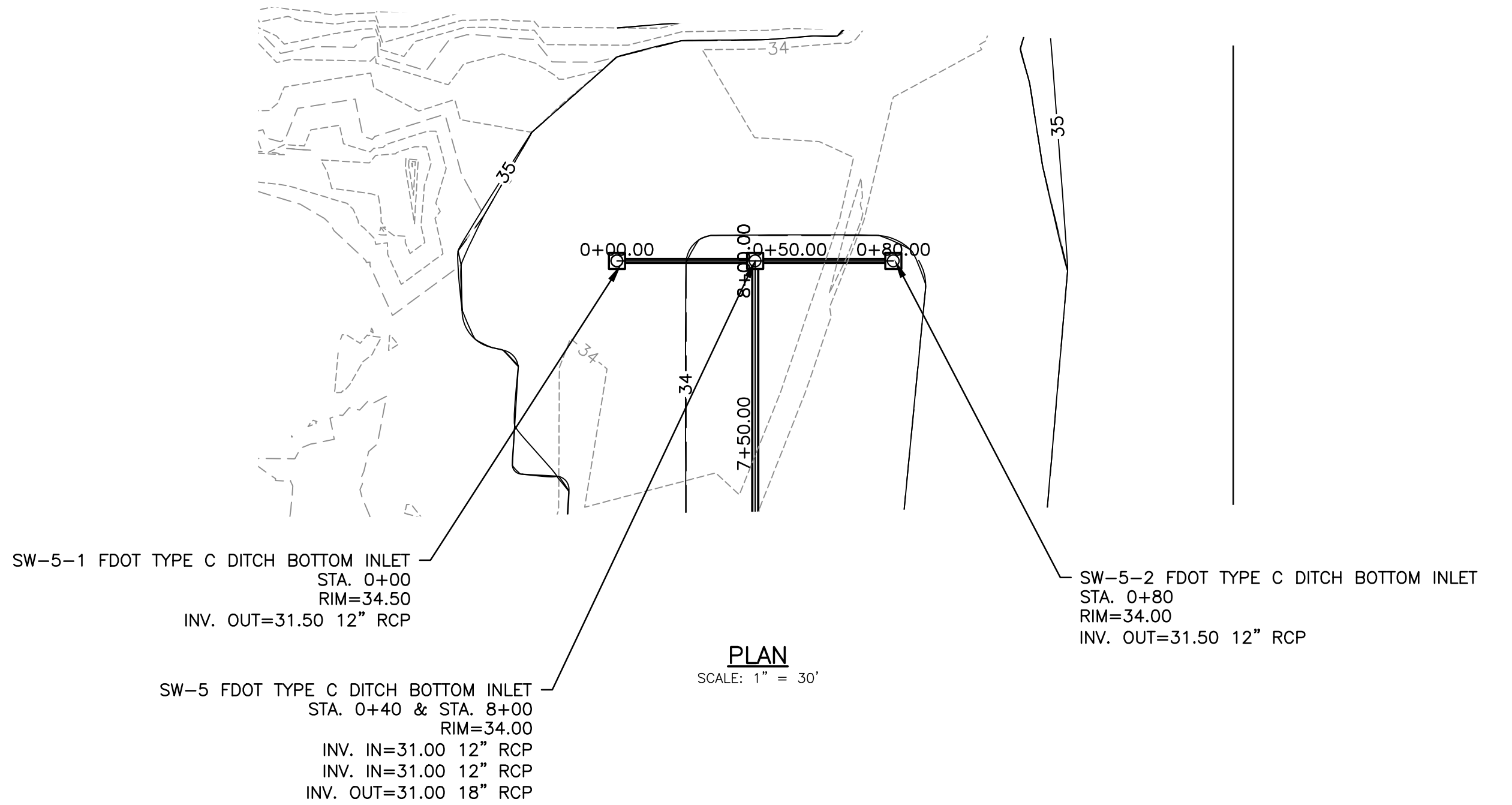


ST. JOHNS COUNTY  
UTILITY DEPARTMENT  
1205 STATE ROAD 16  
ST AUGUSTINE, FLORIDA 32084-8646  
Phone (904) 209-2700 • Fax. (904) 209-2702

STATE ROAD 16 WASTEWATER TREATMENT FACILITY HEADWORKS & RAS / WAS IMPROVEMENTS  
STORMWATER IMPROVEMENTS  
PROPOSED DRAINAGE MODIFICATIONS  
PLAN AND PROFILE

PROJECT NO.	100408.24
FILE NAME	C-12
SHEET NO.	C-12





NO.	BY	DATE	SYMBOL	REVISIONS
6				
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DESIGNER:	WB
DRAWN BY:	KWS
CHECKED BY:	--
APPROVED BY:	--
DATE:	APRIL 2020

DESIGN ENGINEER	DAVE RASMUSSEN, P.E.
FLORIDA REGISTRATION NO.	77561



100 CENTER CREEK RD., STE 108  
ST. AUGUSTINE, FL. 32084  
PH. 904-562-2185  
FLORIDA  
CERTIFICATE OF AUTHORIZATION  
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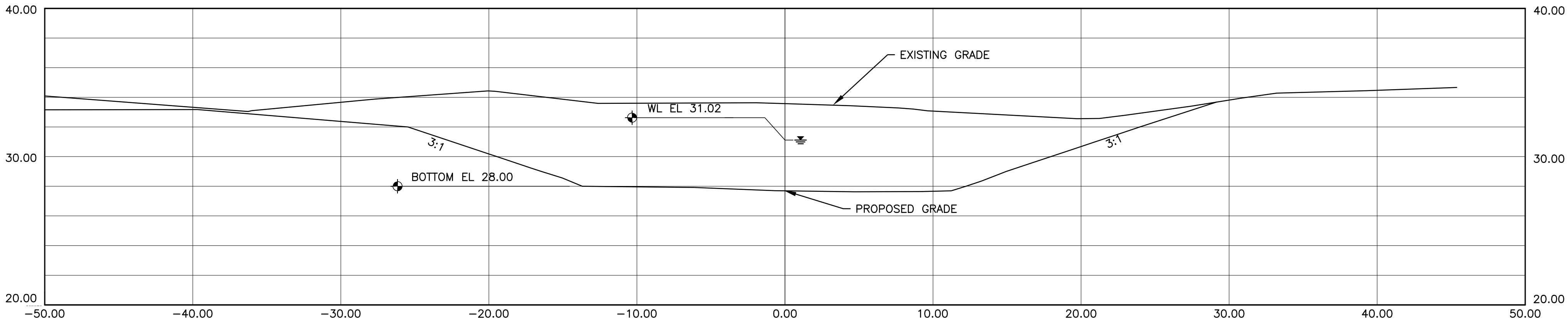


**ST. JOHNS COUNTY  
UTILITY DEPARTMENT**  
1205 STATE ROAD 16  
ST AUGUSTINE, FLORIDA 32084-8646  
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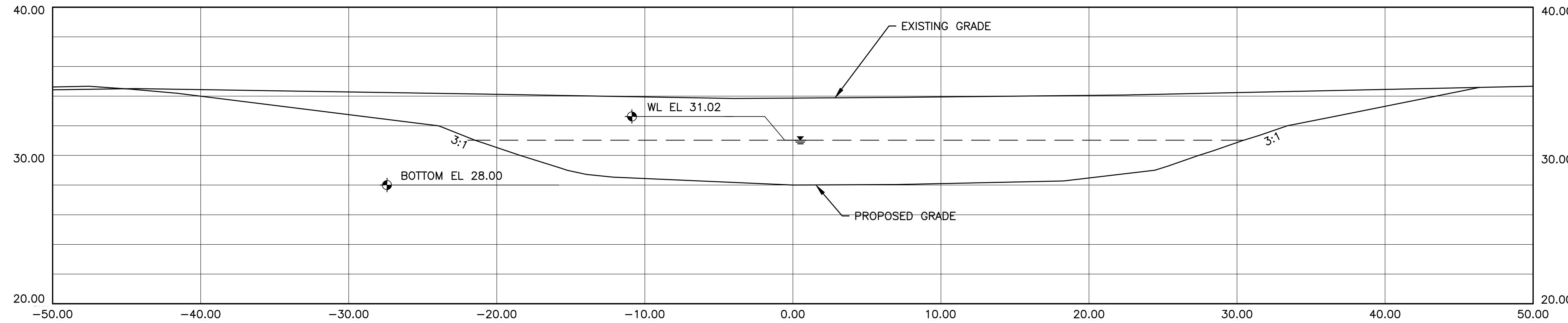
STATE ROAD 16 WASTEWATER TREATMENT FACILITY HEADWORKS & RAS / WAS IMPROVEMENTS  
STORMWATER IMPROVEMENTS  
PROPOSED DRAINAGE MODIFICATIONS  
PLAN AND PROFILE

PROJECT NO.	100408.24
FILE NAME	C-13
SHEET NO.	C-13

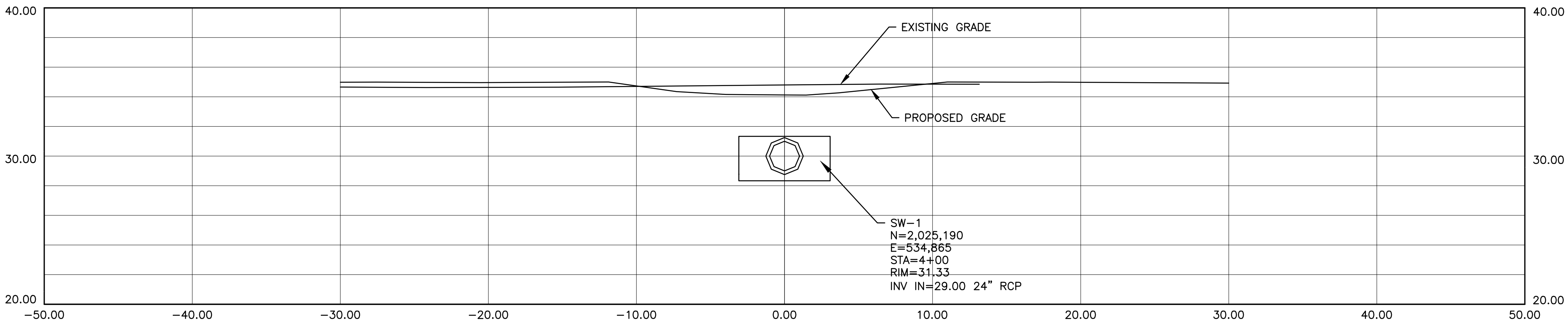
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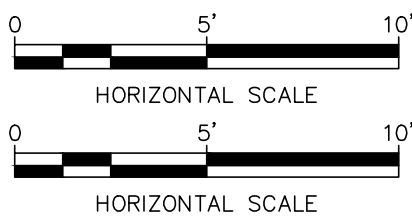
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HORIZ. 1" = 5'



STA. 3+00.00  
SCALE: VERT. 1" = 5'  
HORIZ. 1" = 5'



STA. 4+00.00  
SCALE: VERT. 1" = 5'  
HORIZ. 1" = 5'



NO.	BY	DATE	SYMBOL	REVISIONS
5				
4				
3				
2				
1				

DESIGNER:	WB
DRAWN BY:	KWS
CHECKED BY:	--
APPROVED BY:	--
DATE:	APRIL 2020

DESIGN ENGINEER	DAVE RASMUSSEN, P.E.
FLORIDA REGISTRATION NO.	77561



100 CENTER CREEK RD., STE 108  
ST. AUGUSTINE, FL. 32084  
PH. 904-562-2185  
FLORIDA  
CERTIFICATE OF AUTHORIZATION  
# 9816



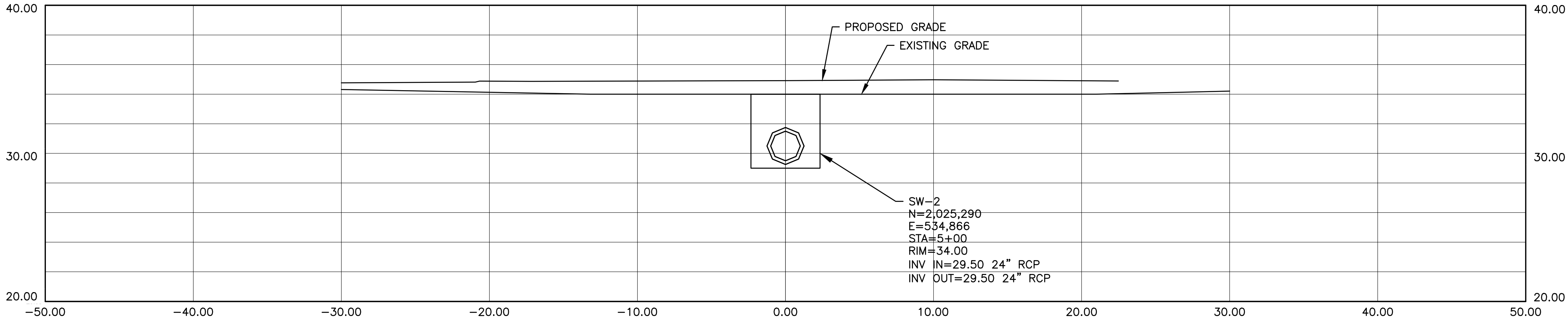
ST. JOHNS COUNTY  
UTILITY DEPARTMENT  
1205 STATE ROAD 16  
ST. AUGUSTINE, FLORIDA 32084-8646  
Phone (904) 209-2700 • Fax (904) 209-2702

STATE ROAD 16 WASTEWATER TREATMENT FACILITY HEADWORKS & RAS / WAS IMPROVEMENTS  
STORMWATER IMPROVEMENTS  
PROPOSED DRAINAGE MODIFICATIONS  
DITCH PROFILES

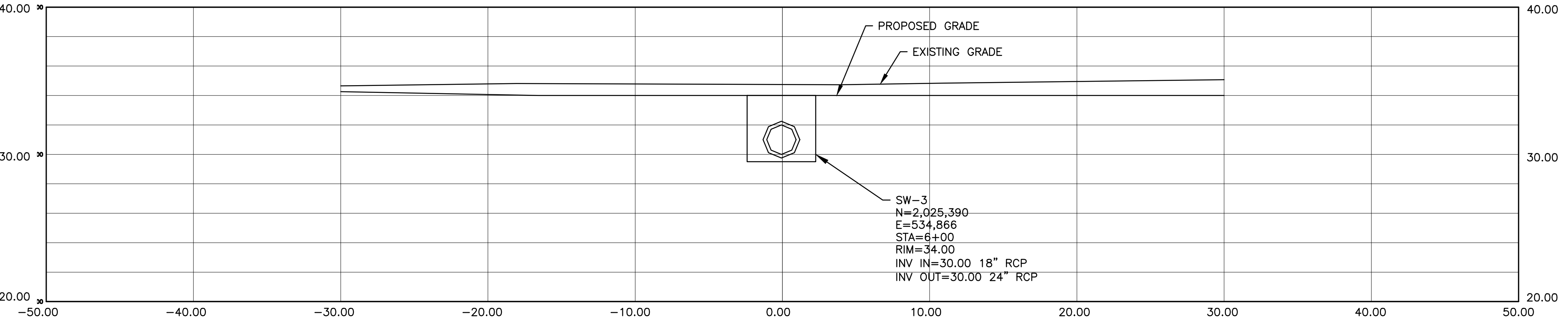
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FILE NAME	C-14
SHEET NO.	C-14



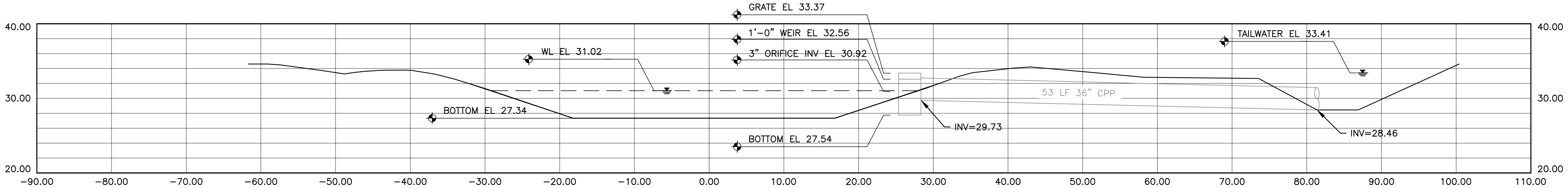
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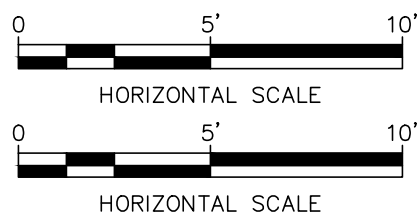
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HORIZ. 1" = 5'



STA. 6+00.00  
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HORIZ. 1" = 5'



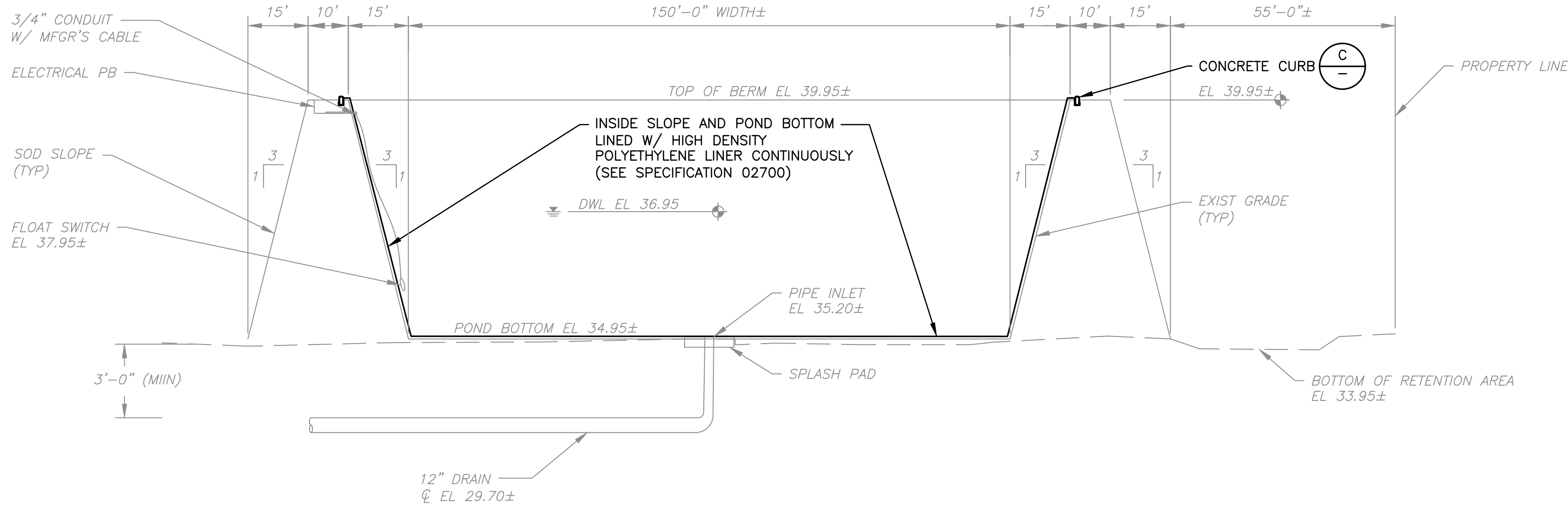
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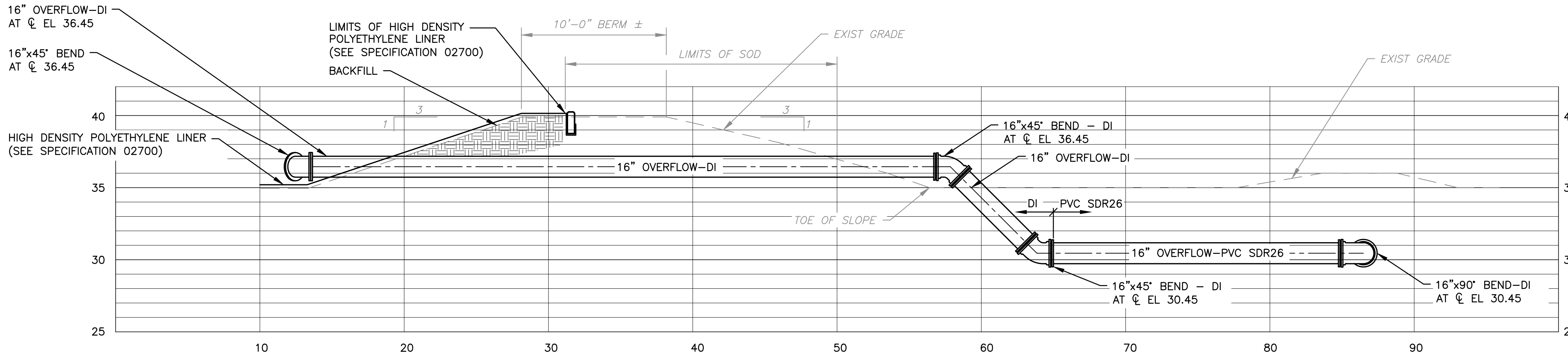
NO.	BY	DATE	SYMBOL	REVISIONS	DESIGNER:	WB	DESIGN ENGINEER	100 CENTER CREEK RD., STE 108 ST. AUGUSTINE, FL. 32084 PH. 904-562-2185	ST. JOHNS COUNTY UTILITY DEPARTMENT	STATE ROAD 16 WASTEWATER TREATMENT FACILITY HEADWORKS & RAS / WAS IMPROVEMENTS	PROJECT NO. 100408.24
5					DRAWN BY:	KWS	DAVE RASMUSSEN, P.E.	FLORIDA CERTIFICATE OF AUTHORIZATION # 9816		STORMWATER IMPROVEMENTS	FILE NAME C-15
4					CHECKED BY:	--	FLORIDA REGISTRATION NO. 77561			PROPOSED DRAINAGE MODIFICATIONS	SHEET NO.
3					APPROVED BY:	--				DITCH PROFILES	C-15
2					DATE:	APRIL 2020					
1											



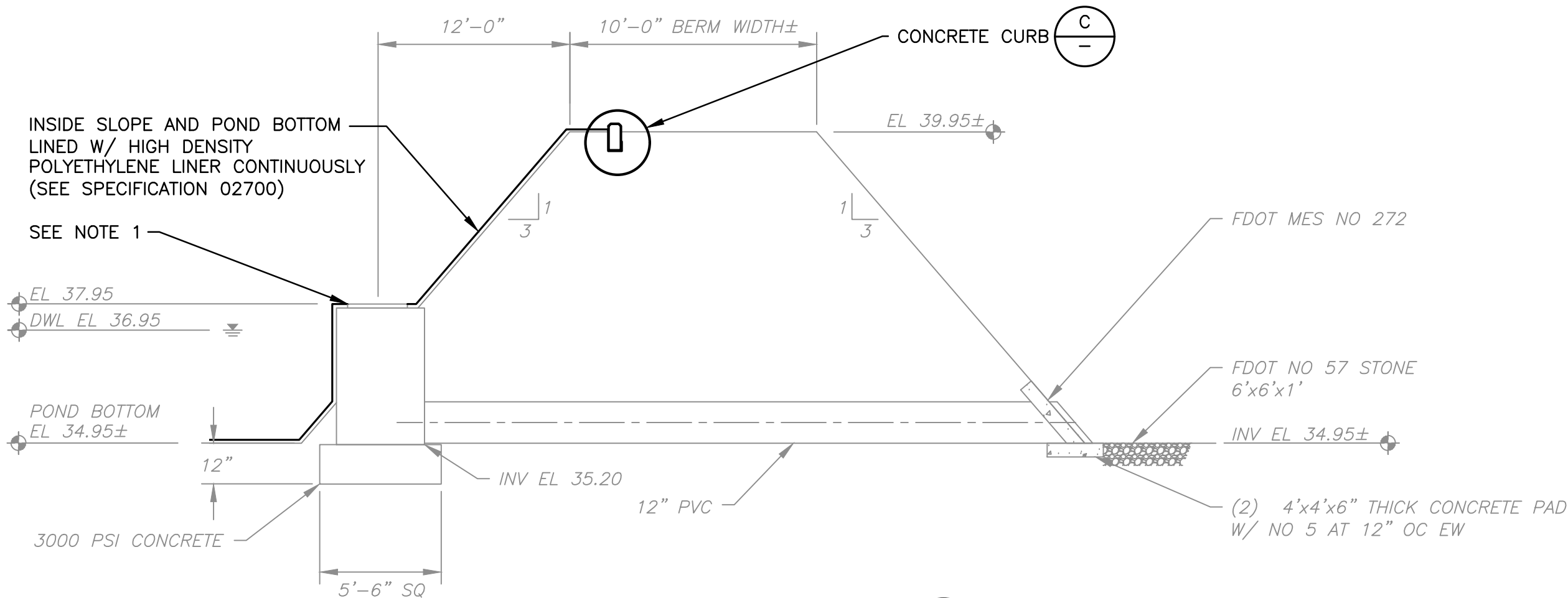
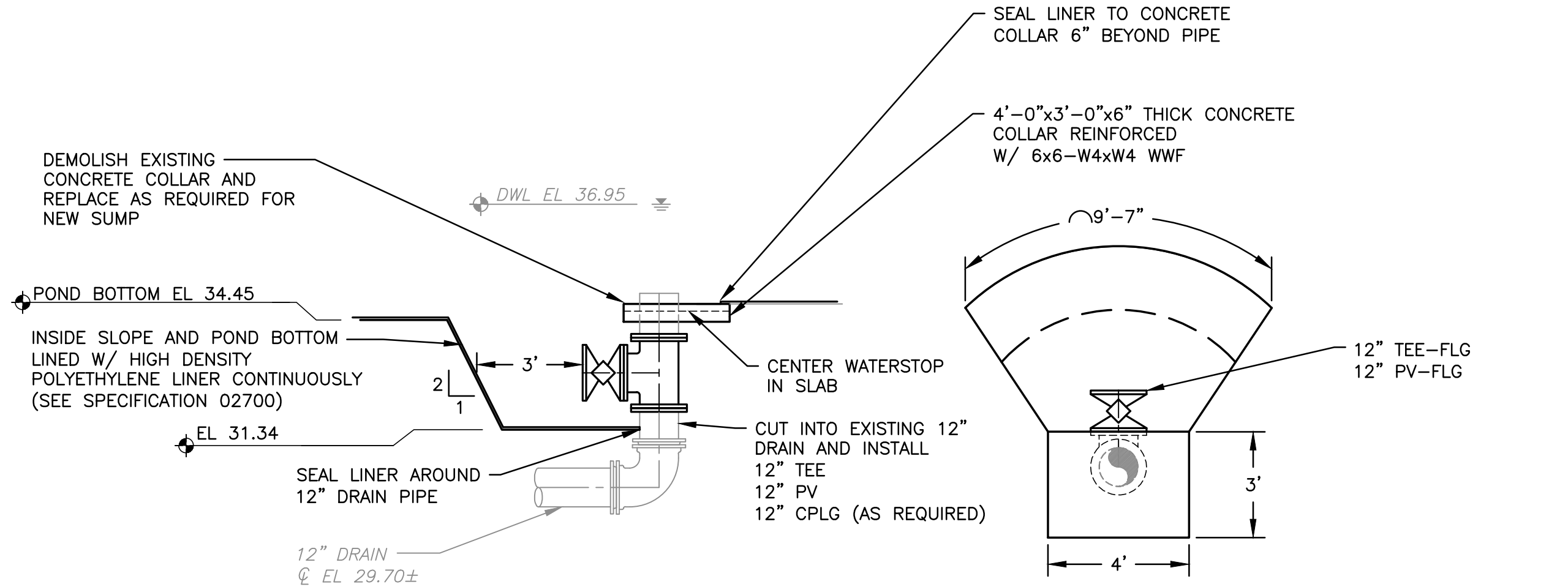
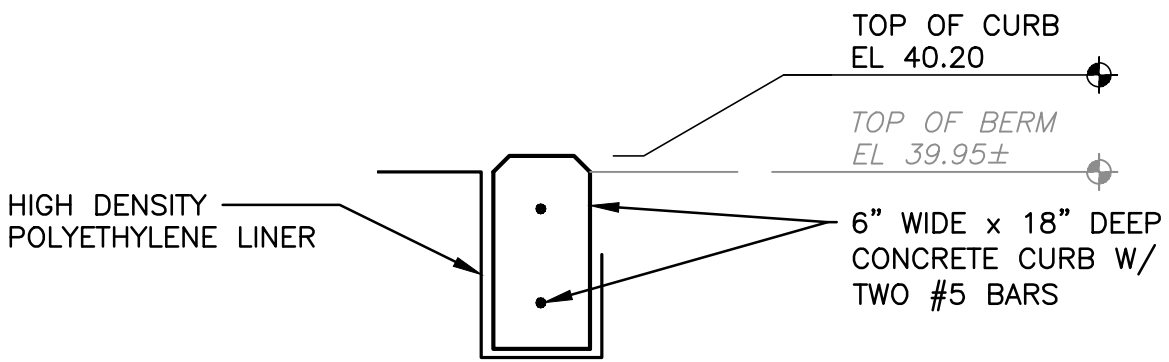
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REJECT POND  
NTS



OVERFLOW PIPING THROUGH BERM



NOTES:

1. THE EXISTING OVERFLOW BOX IS COVERED AND NOT AVAILABLE FOR USE.

NO.	BY	DATE	SYMBOL	REVISIONS
6				
5				
4				
3				
2				
1				

DESIGNER:	DAR	DESIGN ENGINEER	DAVID A. RASMUSSEN P.E.
DRAWN BY:	DRS		
CHECKED BY:	CEH	FLORIDA REGISTRATION NO.	77561
APPROVED BY:	DAR		
DATE:	APRIL 2020		



100 CENTER CREEK RD., STE 108  
ST. AUGUSTINE, FL 32084  
PH. 904-562-2185  
FLORIDA  
CERTIFICATE OF AUTHORIZATION  
# 9816



ST. JOHNS COUNTY  
UTILITY DEPARTMENT  
1205 STATE ROAD 16  
ST. AUGUSTINE, FLORIDA 32084-8646  
Phone (904) 209-2700 • Fax (904) 209-2702

STATE ROAD 16 WASTEWATER TREATMENT FACILITY HEADWORKS & RAS / WAS IMPROVEMENTS	PROJECT NO. 100408.24 FILE NAME CD-1 SHEET NO. CD-1
--	---

REJECT POND DETAILS
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H:\Project Files\100408 St Johns County Utilities\100408.24 SR 16 WWP Improvements\3 Design\Issued For Bid\02 Civil\01 Drawings\10 CADD\CD-2.dwg      User: Dave Smith    Plot: 4/8/2020 8:37 AM    Saved: 4/8/2020 8:36 AM      Current Layout Tab = PLOT      REUSE OF DOCUMENTS: THIS DOCUMENT AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF CONSTANTINE ENGINEERING. HOWEVER, THIS SHALL NOT PROHIBIT THE REUSE OF THIS DOCUMENT BY THE CLIENT AS PROVIDED FOR BY THE CONTRACT.

SWPPP NOTES:

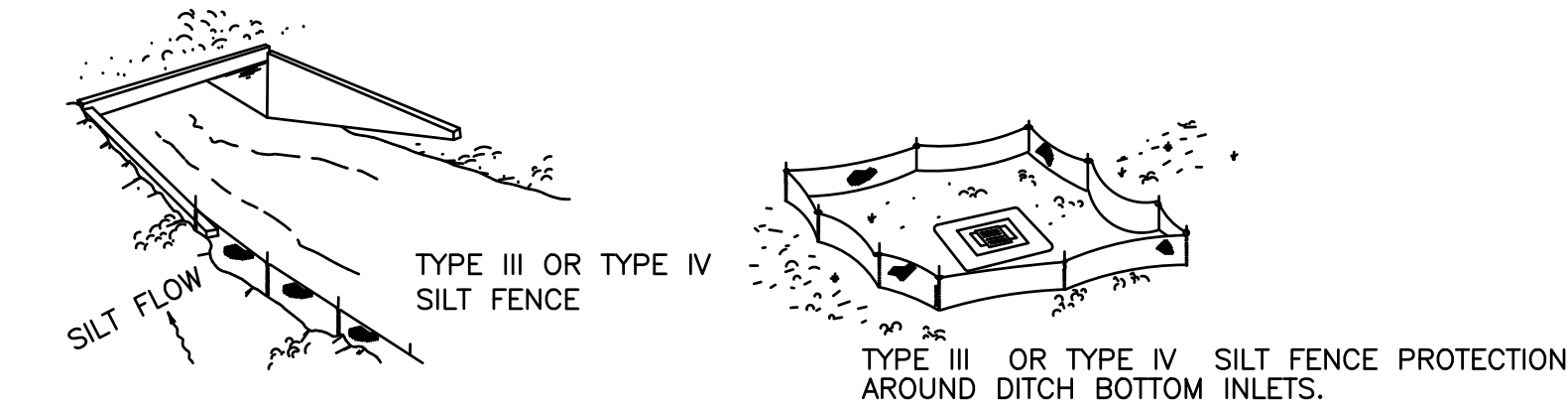
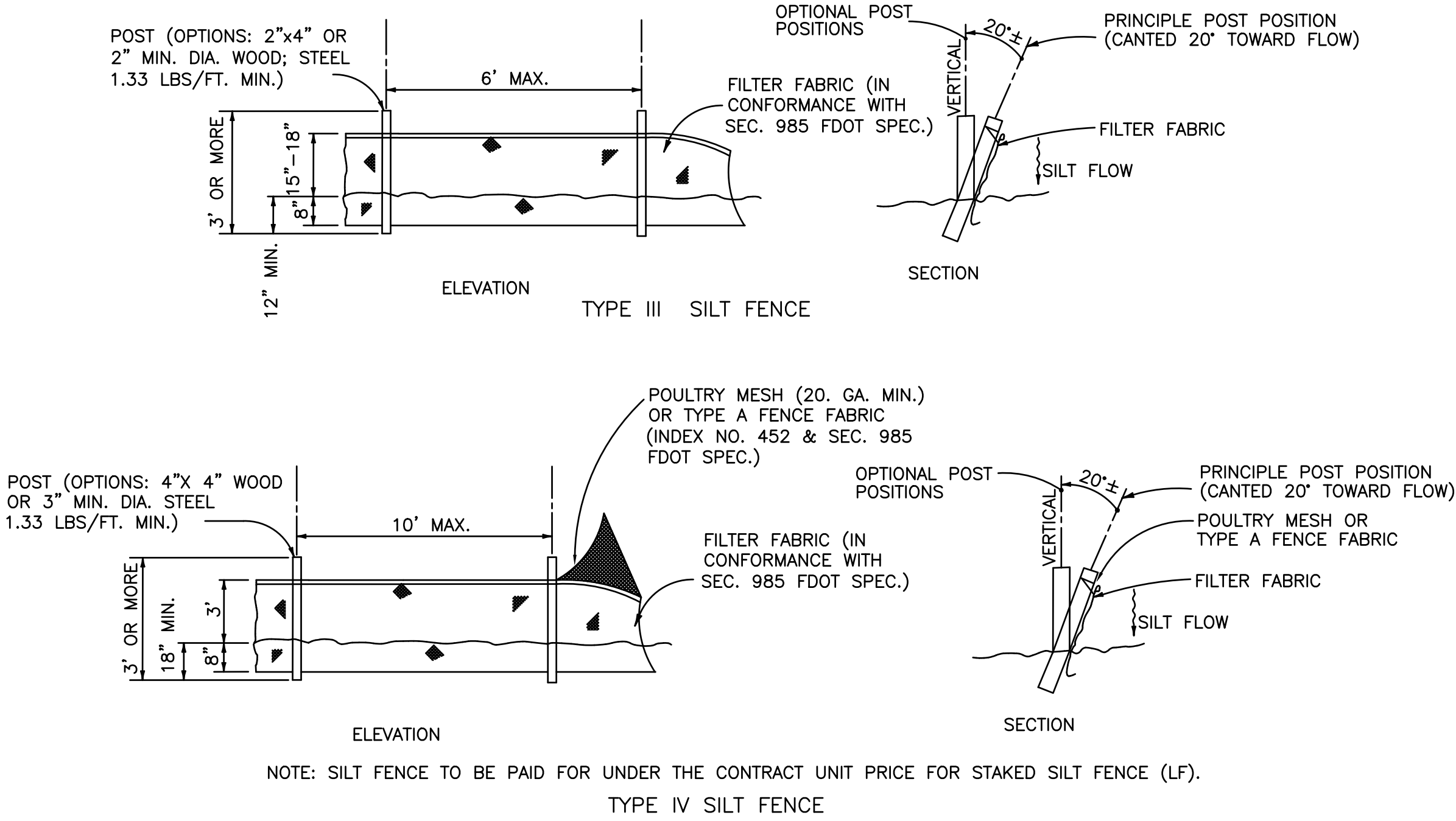
**NARRATIVE**

**DESCRIPTION**

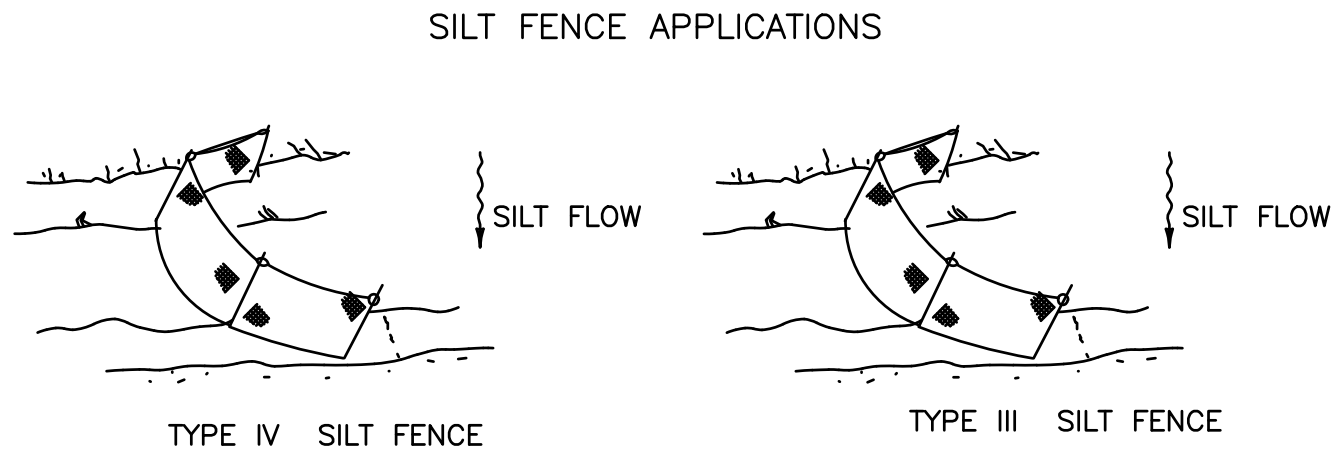
CONSTRUCTION OF A RAS/WAS PUMPING STATION IMPACTING APPROXIMATELY 850 FT<sup>2</sup> (0.019 ACRES) OF GRASSED COVER ON AN EXISTING PLANT SITE OCCUPYING APPROXIMATELY 10.84 ACRES EXCLUDING THE ACCESS ROAD. THE PUMPING STATION SITE WILL BE EXCAVATED TO VARYING DEPTHS ALONG THE PUMPING STATION TO ACCOMMODATE THE REQUIRED FOOTINGS, AND WILL RESULT IN APPROXIMATELY 1250 FT<sup>3</sup> OF SOIL THAT WILL BE REMOVED AND PLACED ALONG THE BANK OF THE EXISTING REJECT POND BERM, EXTENDING THAT BERM BY APPROXIMATELY 5 FEET IN WIDTH FOR A 125 FOOT LENGTH. THE NEWLY PLACED MATERIAL WILL BE STABILIZED WITH A JUTE MAT AND THEN OVERSEEDED TO PROVIDE A RESTORED GRASS COVER. THE SIGHT IS RELATIVELY FLAT, AND WATER SHEET FLOWS AWAY FROM THE CENTER OF THE CONSTRUCTION AREA AND EXTENDS TO THE EAST AND NORTH, WHERE IT IS GATHERED IN AN AREA DRAIN PIPE AND CONVEYED ACROSS THE MAIN ENTRANCE ROAD. THE AREA TO THE EAST WILL BE PROTECTED BY PERIMETER SILT FENCE. THE SITE HAS AN EXISTING STORMWATER POND ON THE SOUTHERN END OF THE PROPERTY, WHICH DRAINS SOUTH BY DRAINAGE CANALS TO COWAN SWAMP. THE DISCHARGE POINT FROM THE SITE IS APPROXIMATELY 29.9035N, 81.3842W. AT THE CONCLUSION OF CONSTRUCTION, PERMANENT GRASS COVER SHALL BE RESTORED AND EXISTING PERIMETER SEDIMENT CONTROLS WILL BE REMOVED. THE SITE CURRENTLY HAS AN EXISTING NPDES PERMIT FOR THE WASTEWATER OPERATIONS.

**OPERATIONS**

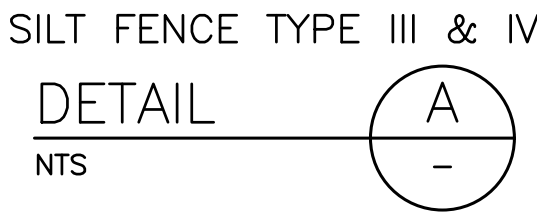
THE PROPOSED SITE BMPS WILL BE EVALUATED WITHIN 7 DAYS OF INITIAL INSTALLATION. THE SILT FENCE, WILL BE CONSTRUCTED FIRST. THE SITE SHALL BE INSPECTED WEEKLY FOR PROPER FUNCTION OF EACH BMP, AS WELL AS AFTER EACH RAIN EVENT IN EXCESS OF 0.50" IN THE EVENT THAT SITE CONDITIONS CHANGE THEN THE PROPOSED BMPS WILL BE RE-EVALUATED.



DO NOT DEPLOY IN A MANNER THAT SILT FENCES WILL ACT AS A DAM ACROSS PERMANENT FLOWING WATERCOURSES. SILT FENCES ARE TO BE USED AT UPLAND LOCATIONS AND TURBIDITY BARRIERS USED AT PERMANENT BODIES OF WATER.

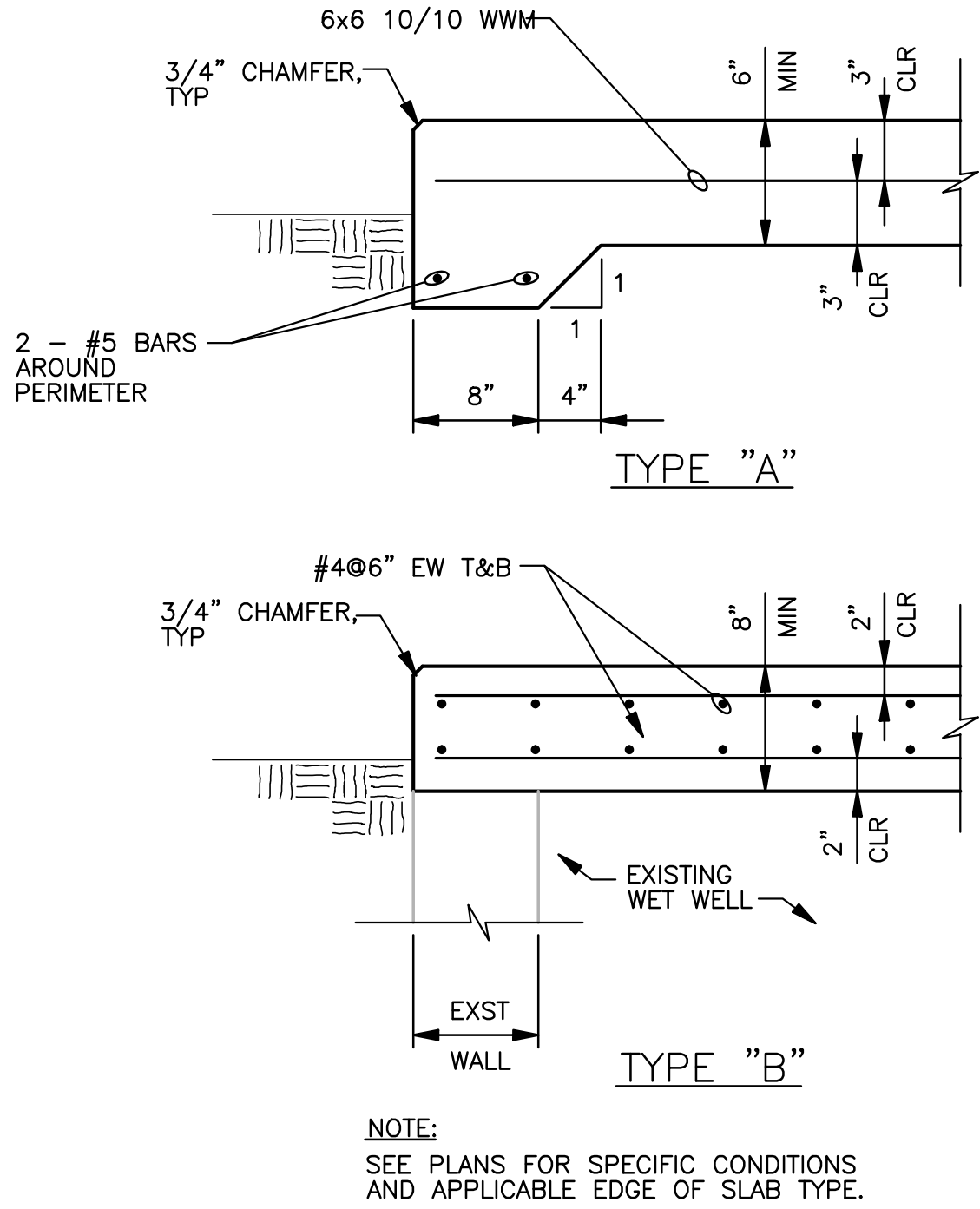


NOTE: SPACING FOR TYPE III FENCE TO BE IN ACCORDANCE WITH CHART I, PLATE D-906 AND DITCH INSTALLATIONS AT DRAINAGE STRUCTURES ABOVE.



NO.	BY	DATE	SYMBOL	REVISIONS	DESIGNER:	DAR	DESIGN ENGINEER	100 CENTER CREEK RD., STE 108 ST. AUGUSTINE, FL. 32084 PH. 904-562-2185 FLORIDA CERTIFICATE OF AUTHORIZATION # 9816	ST. JOHNS COUNTY UTILITY DEPARTMENT 1205 STATE ROAD 16 ST AUGUSTINE, FLORIDA 32084-8646 Phone (904) 209-2700 • Fax (904) 209-2702	STATE ROAD 16 WASTEWATER TREATMENT FACILITY HEADWORKS & RAS / WAS IMPROVEMENTS	PROJECT NO. 100408.24 FILE NAME CD-2 SHEET NO. CD-2
6.					DRAWN BY:	MSC	DAVID A. RASMUSSEN P.E.				
5.					CHECKED BY:	CEH	FLORIDA REGISTRATION NO. 77561				
4.					APPROVED BY:	DAR					
3.					DATE:	APRIL 2020					
2.											
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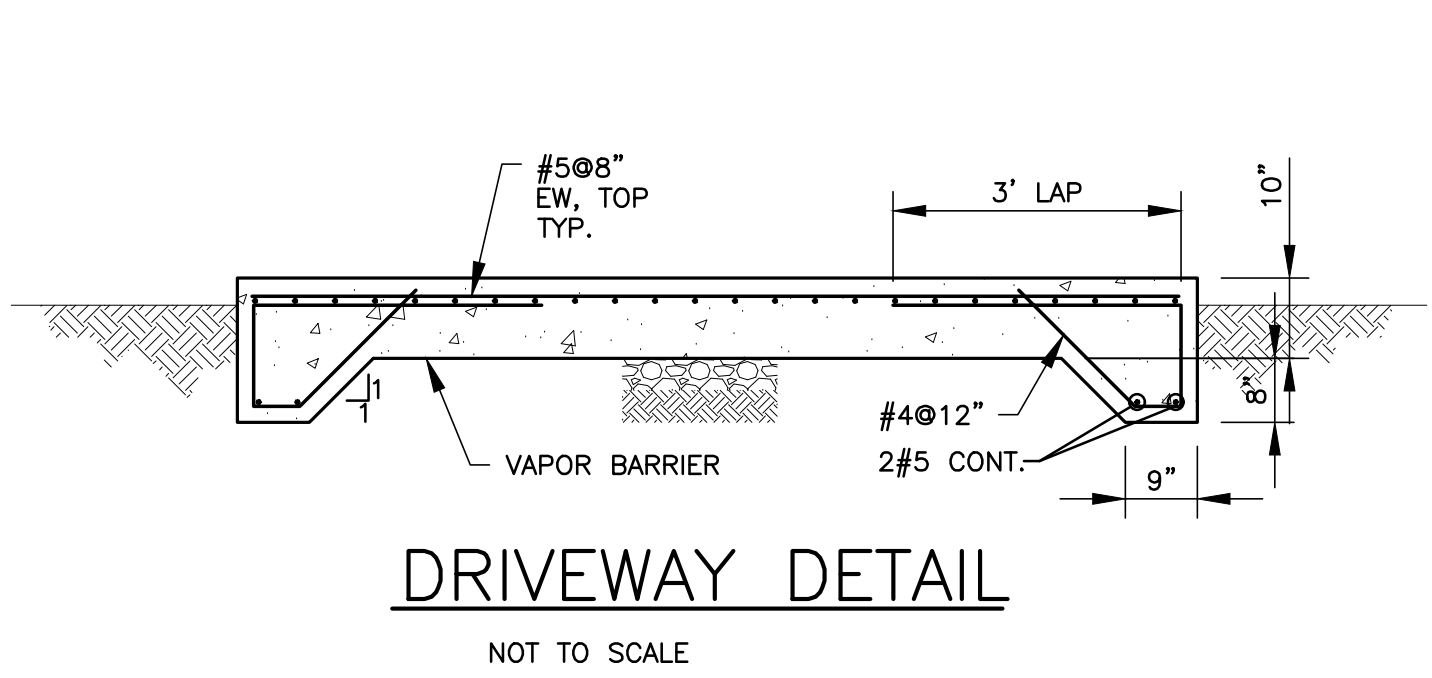
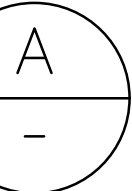
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TYPICAL SLAB AND EDGE DETAILS

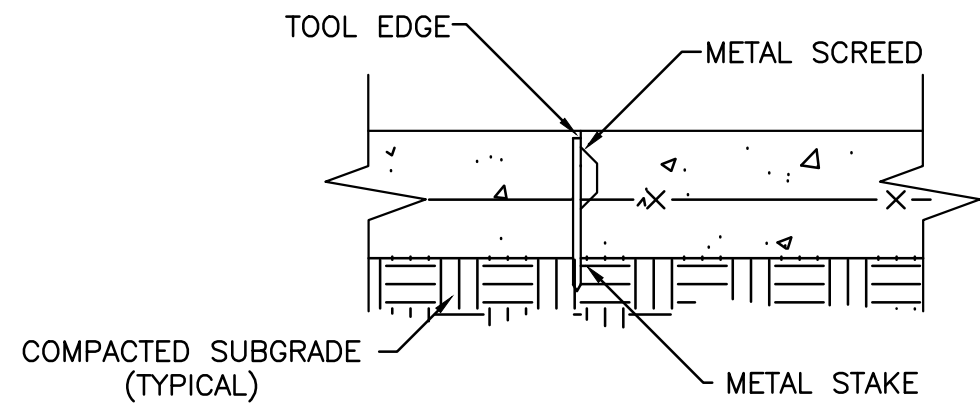
DETAIL

NTS



DRIVEWAY DETAIL

NOT TO SCALE

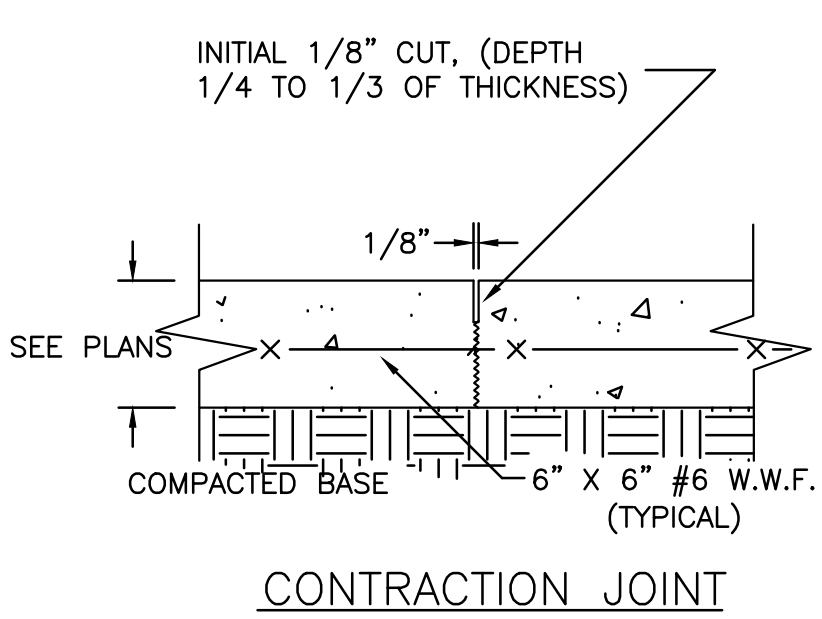
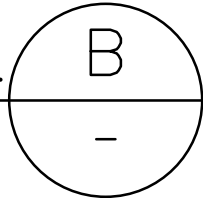


CONSTRUCTION JOINT

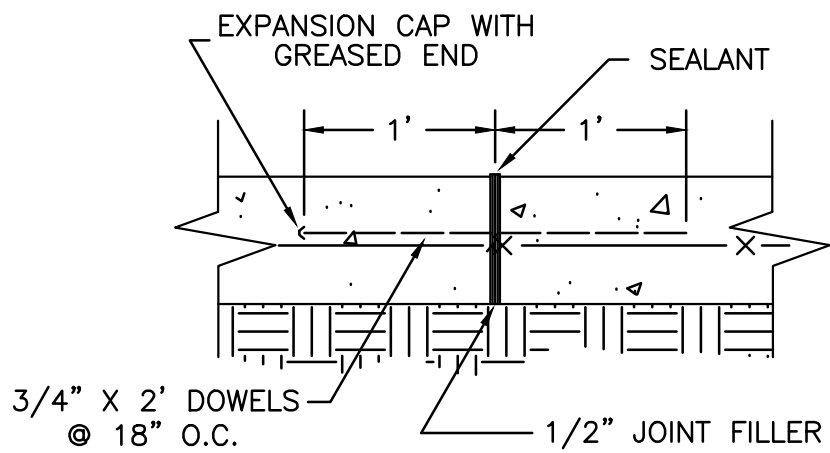
NOTE: APPLY CONSTRUCTION JOINT EVERY 20'-0".

DRIVEWAY DETAIL

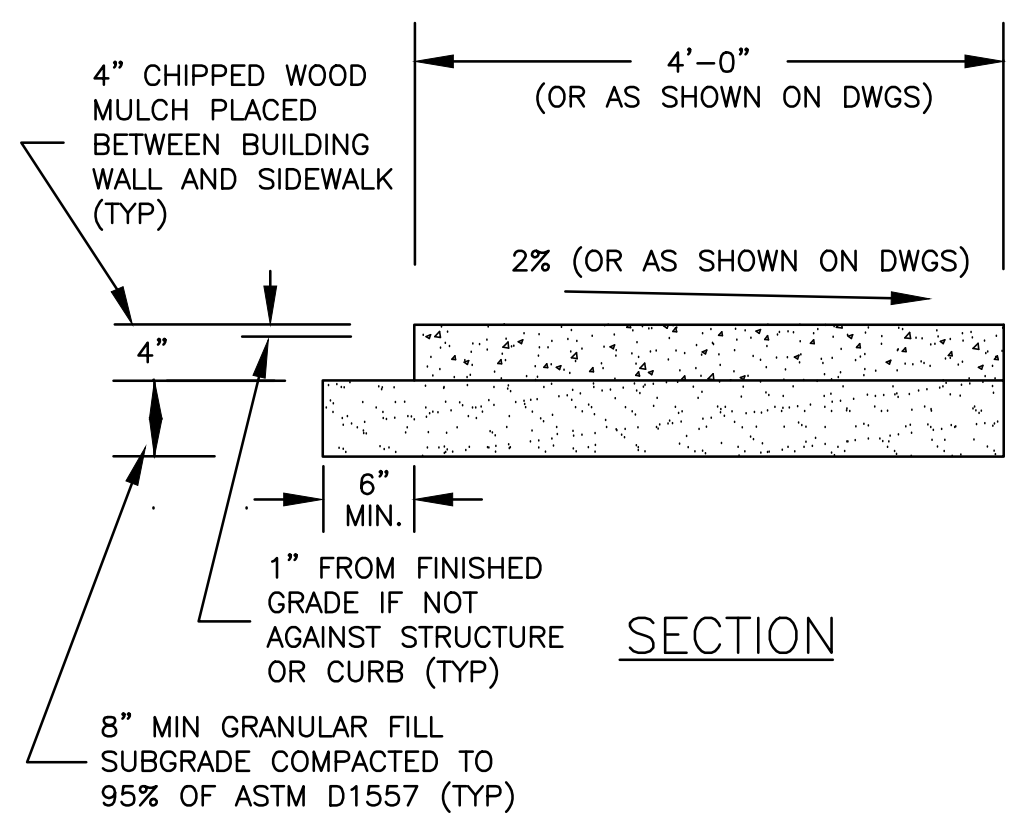
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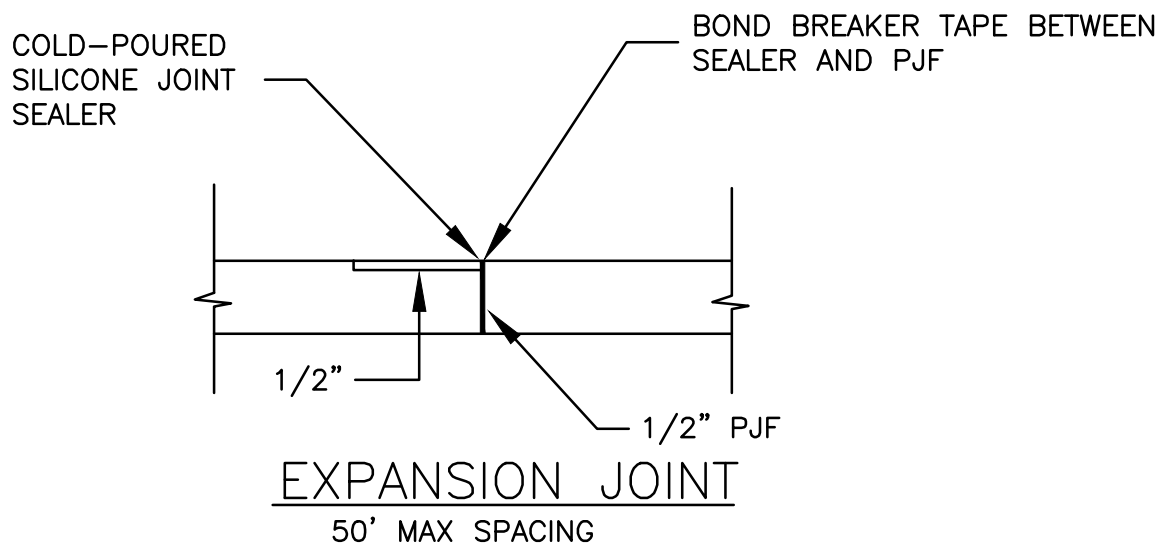
CONTRACTION JOINT



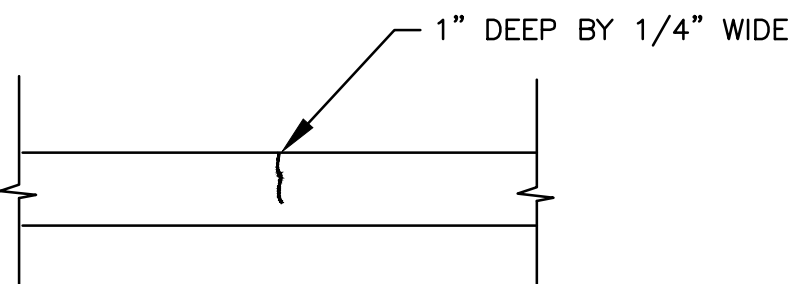
EXPANSION JOINT



SECTION



EXPANSION JOINT

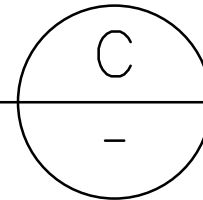


CONTROL JOINT

5' MAX SPACING

CONCRETE SIDEWALK DETAIL

NTS



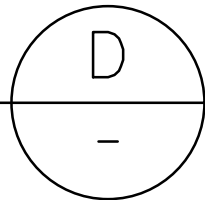
NOM. PIPE SIZE (IN.)	RESTRAINT JOINT TABLE MINIMUM LENGTH TO BE RESTRAINED ON EACH SIDE OF FITTINGS (FEET)																	
	TEES (*) (BRANCH SIDE ONLY)									REDUCERS (**) (REDUCED SIDE)								
	4	6	8	10	12	14	16	18	20	4	6	8	10	12	14	16	18	20
4	25									51								
6	25	25								93	54							
8	25	25	35							126	95	52						
10	25	25	25	54						158	132	97	54					
12	25	25	25	40	75					187	165	135	98	53				
14	25	25	25	25	62	94				215	196	170	138	99	53			
16	25	25	25	25	49	84	114			242	225	202	174	140	99	53		
18	25	25	25	25	36	72	104	133		268	253	232	207	177	141	99	53	
20	25	25	25	25	25	60	94	124	151									53

NOTES:

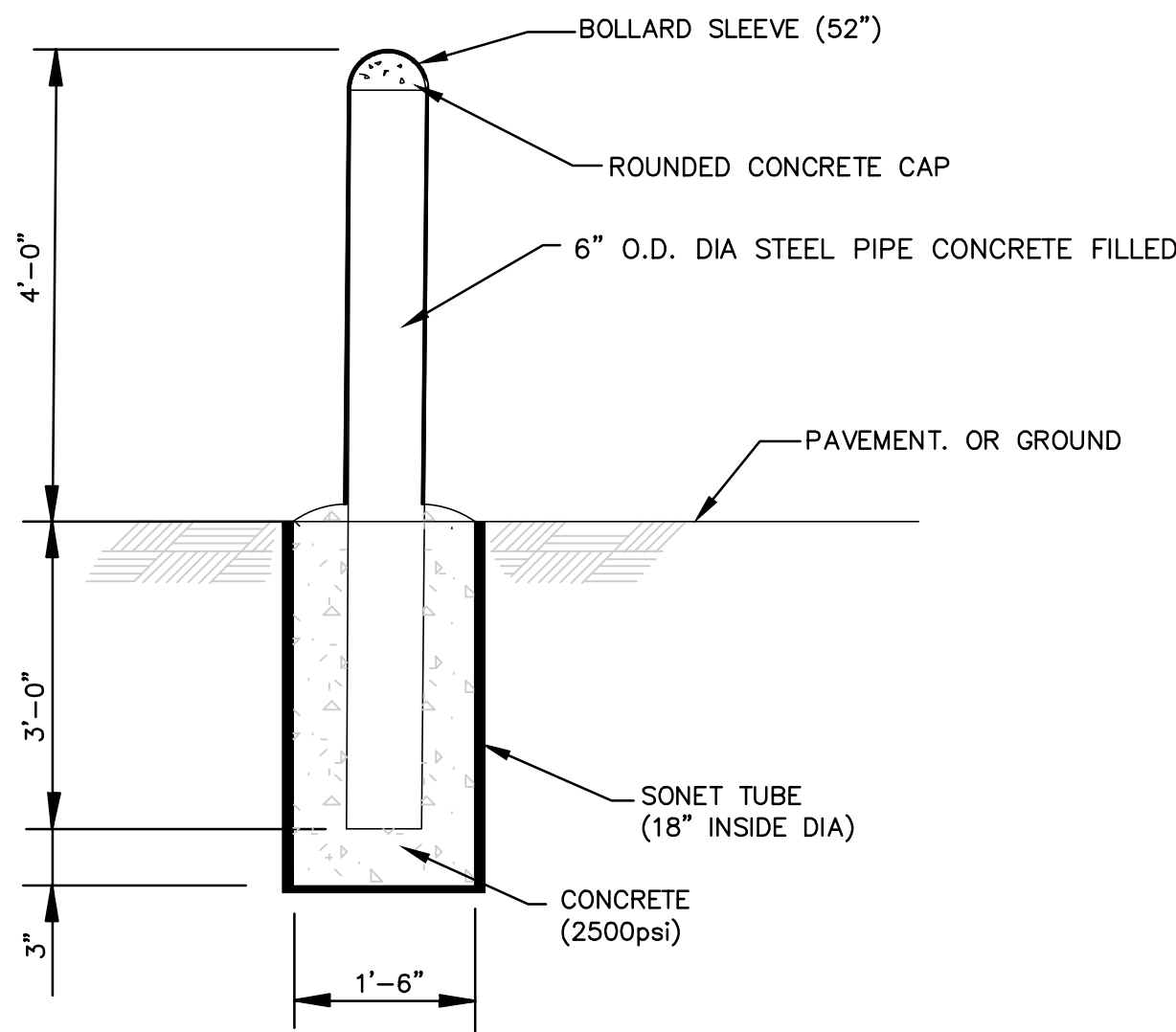
- (\*) 25' MIN. EACH RUN SIDE OF TEES.
- (\*\*) LENGTH SHOWN IS FOR LARGE SIDE OF REDUCER, 25' MIN. ON SMALL SIDE.
- RESTRAINED LENGTHS DETERMINED USING EBAA IRON - RESTRAINT LENGTH CALCULATOR 6.3 WITH THE FOLLOWING CONSTANTS AS INPUT / ASSUMPTIONS:
  - PIPE MATERIAL = PVC
  - SAFETY FACTOR = 2:1
  - TRENCH TYPE = 3
  - DEPTH OF BURY = 3'
  - TEST PRESSURE = 150 PSI
  - GATE VALVES = DEAD ENDS
  - LENGTH ALONG RUN FOR TEES = 20'
  - SOIL TYPE = ML
- IF THE ANY OF THE ASSUMPTIONS / INPUTS STATED IN NOTE 3 NEED TO BE REVISED TO FIT PROJECT CONDITIONS, THE ENGINEER OF RECORD SHALL SUBMIT A REVISED MECHANICAL JOINT TABLE TO BE USED ON THE PROJECT. HOWEVER, THE ENGINEER OF RECORD MUST SUBMIT SIGNED AND SEALED CALCULATIONS TO SJUCD FOR REVIEW AND APPROVAL.

RESTRAINED JOINT TABLE

NTS



NOM. PIPE SIZE (IN.)	RESTRAINT JOINT TABLE MINIMUM LENGTH TO BE RESTRAINED ON EACH SIDE OF FITTINGS (FEET)																	
	ELBOWS (DEG.)						PLUG	VALVE	VERTICAL BENDS (DEG.)									
	11.25	22.5	45	90					11.25	22.5	45							
4	3	7	13	31	70	70	70	7	14	29								
6	5	9	18	43	99	99	99	10	20	41								
8	6	12	23	56	129	129	129	13	26	54								
10	7	14	28	66	154	154	154	16	31	64								
12	8	16	32	78	182	182	182	18	37	76								
14	9	18	37	88	207	207	207	21	42	86								
16	10	20	41	99	233	233	233	23	47	97								
18	11	22	45	109	258	258	258	26	52	107								
20	12	24	49	118	282	282	282	28	56	117								

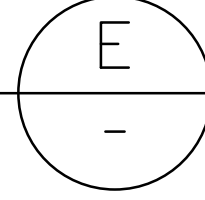


NOTES:

- PROVIDE A SAFETY YELLOW SLEEVE COVER.
- COORDINATE FINAL LOCATION OF BOLLARDS WITH SJUCD.

BOLLARD

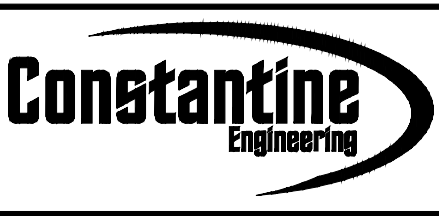
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NO.	BY	DATE	SYMBOL	REVISIONS
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DESIGNER:	DAR
DRAWN BY:	MSC
CHECKED BY:	CEH
APPROVED BY:	DAR
DATE:	APRIL 2020

DESIGN ENGINEER	DAVID A. RASMUSSEN P.E.
FLORIDA REGISTRATION NO.	77561



100 CENTER CREEK RD., STE 108  
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FLORIDA  
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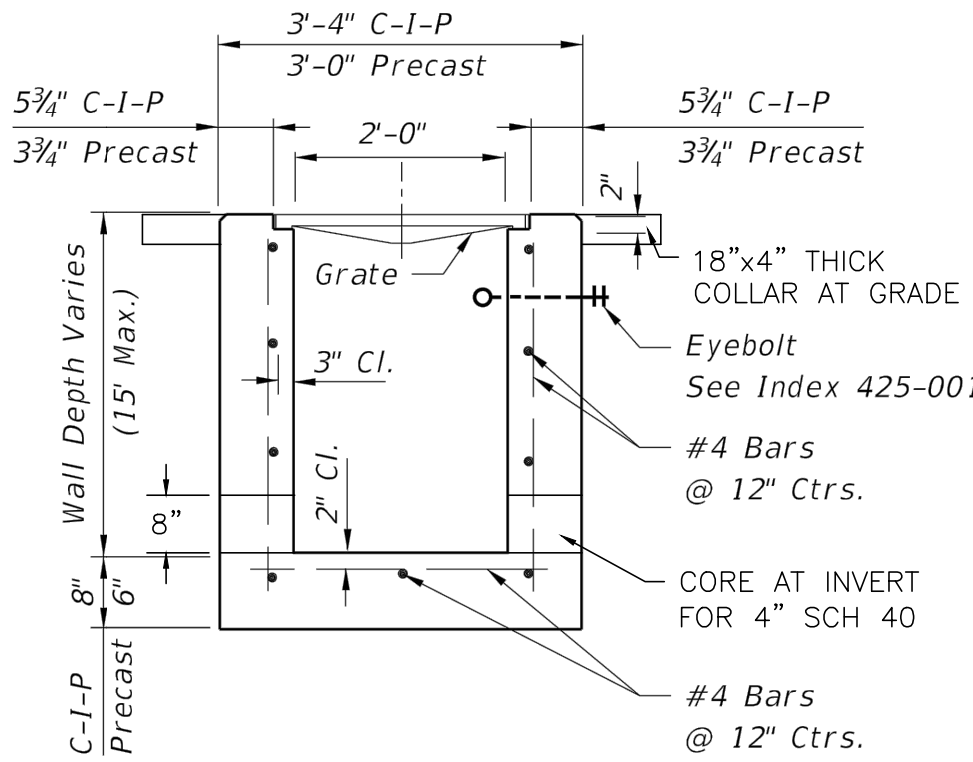
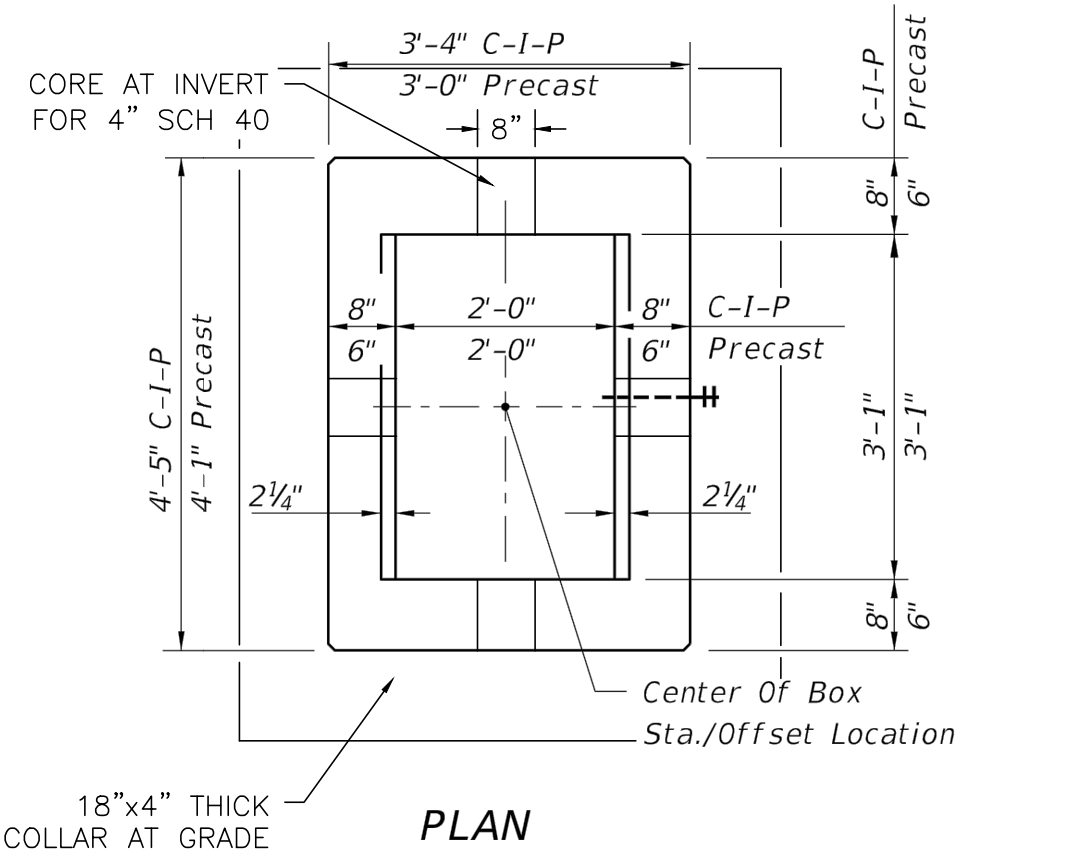


ST. JOHNS COUNTY  
UTILITY DEPARTMENT  
1205 STATE ROAD 16  
ST. AUGUSTINE, FLORIDA 32084-8646  
Phone (904) 209-2700 • Fax (904) 209-2702

STATE ROAD 16 WASTEWATER TREATMENT FACILITY HEADWORKS & RAS / WAS IMPROVEMENTS	PROJECT NO. 100408.24 FILE NAME CD-3 SHEET NO. CD-3
--	---

MISCELLANEOUS DETAILS





HORIZONTAL WALL REINFORCING  
SCHEDULES (TABLE 1)

WALL DEPTH	SCHEDULE	AREA (in. <sup>2</sup> /ft.)	MAX. SPACING	
			BARS	WWR
0'-15'	A12	0.20	12"	8"

TYPE C

Recommended Maximum Pipe Size:

- 2'-0" Wall - 18" Pipe
- 3'-1" Wall - 24" Pipe (18" where an 18" pipe enters a 2'-0" wall)

GENERAL STRUCTURAL NOTES

GENERAL CONDITIONS

- ALL STRUCTURAL DRAWINGS SHALL BE USED IN CONJUNCTION WITH THE MECHANICAL, CIVIL, ELECTRICAL, PLUMBING AND SHOP DRAWINGS AND SPECIFICATIONS.
- THE CONTRACTOR SHALL REVIEW AND VERIFY DIMENSIONS SHOWN IN ALL PLANS AND REVIEW ALL FIELD CONDITIONS THAT MAY AFFECT THE WORK DEPICTED ON THE DRAWINGS. SHOULD DISCREPANCIES APPEAR, THE CONTRACTOR SHALL NOTIFY THE ENGINEER IN WRITING TO OBTAIN ENGINEER'S CLARIFICATION BEFORE COMMENCING WITH THE WORK.
- FOR ALL ITEMS EMBEDDED IN OR PASSING THROUGH CONCRETE, THE CONTRACTOR SHALL INITIALLY REFER TO MECHANICAL, AND PLUMBING DRAWINGS FOR TYPE, SIZE, LOCATION, AND SPECIAL INSTALLATION REQUIREMENTS FOR THESE ITEMS.
- THE CONTRACTOR SHALL TAKE ALL NECESSARY MEASURES TO PROTECT EXISTING STRUCTURES FROM DAMAGE WHEN WORKING IN AND AROUND EXISTING STRUCTURES PERFORMING WORK SUCH AS DEMOLITION, FOUNDATION EXCAVATIONS, AND OTHERS.
- SIZE AND LOCATION OF EQUIPMENT PADS AND ANCHOR BOLTS SHALL BE PER EQUIPMENT MANUFACTURER'S REQUIREMENTS.
- ANY EQUIPMENT THAT MAY INDUCE VIBRATION TO THE STRUCTURE SHALL BE ADEQUATELY ISOLATED FROM THE STRUCTURE.
- ALL DETAILS AND SECTIONS SHOWN ON THE DRAWINGS ARE INTENDED TO BE TYPICAL AND SHALL BE CONSTRUED TO APPLY TO ANY SIMILAR SITUATION ELSEWHERE ON THE PROJECT, EXCEPT WHERE A DIFFERENT DETAIL IS SHOWN.

DESIGN CRITERIA

BUILDING CODES AND REFERENCES:

- 2017 FLORIDA BUILDING CODE (FBC) SIXTH EDITION
- REINFORCED CONCRETE: ACI 350-06 "CODE REQUIREMENTS FOR ENVIRONMENTAL ENGINEERING CONCRETE STRUCTURES"
- ALUMINUM: ADM1-2015, ALUMINUM DESIGN MANUAL
- LIVE LOADS:

-PROCESS RELATED STRUCTURES:

WALKWAYS, STAIRWAYS AND LANDINGS:

100 PSF

SLABS ON GRADE

300 PSF
- WIND DESIGN CRITERIA:

RISK CATEGORY

III

ULTIMATE DESIGN WIND SPEED, V<sub>ULT</sub>

140 MPH

NOMINAL DESIGN WIND SPEED, V<sub>ASD</sub>

108 MPH

EXPOSURE CATEGORY

C

FOUNDATIONS

GEOTECHNICAL REPORT:

- GEOTECHNICAL REPORT "REPORT OF GEOTECHNICAL EXPLORATION SR 16 WWTf IMPROVEMENTS" PREPARED BY ECS FLORIDA, LLC, DATED APRIL 9, 2019. ANY INTERPRETATION OF THE CONTENTS OF THE GEOTECHNICAL REPORT IS THE RESPONSIBILITY OF THE CONTRACTOR.

FOUNDATION DESIGN:

- ALLOWABLE NET BEARING PRESSURE FOR FOUNDATION SLAB: 1,000 PSF

CONCRETE (CAST-IN-PLACE)

- ALL MATERIALS AND METHODS OF CONSTRUCTION SHALL BE IN ACCORDANCE WITH ACI 318 REQUIREMENTS.
- ALL CONCRETE SHALL BE AIR-ENTRANED WITH A MINIMUM OF 4,000 PSI COMPRESSIVE STRENGTH AT 28 DAYS UNLESS OTHERWISE NOTED.
- WATER REDUCING AGENT SHALL BE IN ACCORDANCE WITH ASTM C494.
- ALL CONCRETE SURFACES EXPOSED TO AIR, UNLESS OTHERWISE NOTED IN THE SPECIFICATIONS, SHALL BE TREATED WITH AN APPROPRIATE CURING COMPOUND AS SOON AS FINISHING IS COMPLETED OR FORMS ARE REMOVED.
- ALL EXPOSED CORNERS SHALL HAVE A MINIMUM CHAMFER OF 3/4" UNLESS OTHERWISE NOTED.
- THE CONTRACTOR SHALL OBTAIN ENGINEER'S APPROVAL FOR THE LOCATIONS OF CONSTRUCTION JOINTS THAT ARE NOT SHOWN ON THE DRAWINGS.

REINFORCING STEEL

- REINFORCEMENT SHALL CONFORM TO ASTM A615, GRADE 60 REQUIREMENTS. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A1064 REQUIREMENTS. ALL ACCESSORIES SHALL BE IN CONFORMANCE WITH ACI 315 REQUIREMENTS.
- REINFORCING STEEL SHALL HAVE THE FOLLOWING CLEAR COVER UNLESS OTHERWISE NOTED:

a.

CONCRETE CAST AGAINST EARTH

3"

b.

FORMED SURFACE IN CONTACT WITH SOIL, SEWAGE, WATER OR EXPOSED TO WEATHER

2"
- LAP SPLICES SHALL BE AS SHOWN ON THE DRAWINGS. FOR LAP SPLICES NOT SHOWN ON THE DRAWINGS, THE CONTRACTOR SHALL OBTAIN ENGINEERS APPROVAL.
- THE CONTRACTOR SHALL PREPARE PLACING DRAWINGS AND SCHEDULES IN CONFORMANCE WITH ACI 315 REQUIREMENTS.
- UNLESS OTHERWISE NOTED, THE MINIMUM REINFORCING FOR WALLS AND SLABS SHALL BE AS FOLLOWS.

MINIMUM REINFORCING						
THICKNESS	6"	8"	10"	12" - 16"	18" - 22"	24"
REINF. EACH WAY	#4 @ 12"	#5 @ 12"	#5 @ 12"	#5 @ 12"	#6 @ 12"	#7 @ 12"
LOCATION	CTR	CTR	EF	EF	EF	EF

ALUMINUM

- ALUMINUM DESIGN, DETAILING, FABRICATION, AND ERECTION SHALL CONFORM TO THE LATEST EDITION OF THE ALUMINUM DESIGN MANUAL.
- ALUMINUM IN CONTACT WITH OR EMBEDDED IN CONCRETE OR MASONRY SURFACES SHALL BE COATED WITH A HEAVY COATING OF ALKALI RESISTANT BITUMINOUS PAINT.
- ALL BOLTS USED IN CONNECTIONS WITH ALUMINUM MEMBERS SHALL BE STAINLESS STEEL A316, UNLESS NOTED OTHERWISE.
- ALL WELDING OF ALUMINUM STRUCTURES SHALL CONFORM TO "STRUCTURAL WELDING CODE - ALUMINUM", AWS D1.2, LATEST EDITION.

STAINLESS STEEL

- STAINLESS STEEL PLATES, SHEETS AND STRUCTURAL SHAPES SHALL BE IN ACCORDANCE TO ASTM A240.
- STAINLESS STEEL MATERIALS SHALL BE AS FOLLOWS UNLESS NOTED OTHERWISE:

a.

EXTERIOR AND SUBMERGED USE:

TYPE 316

TYPE 316L (WHERE WELDED)

a.

INTERIOR AND ARCHITECTURAL USE :

TYPE 304

TYPE 304L (WHERE WELDED)
- ALL WELDING OF STRUCTURAL STAINLESS STEEL SHALL CONFORM TO "STRUCTURAL WELDING CODE - STAINLESS STEEL", ASW D1.6, LATEST EDITION.
- STAINLESS STEEL BOLTS, NUTS AND WASHERS SHALL BE TYPE 316 IN ACCORDANCE TO ASTM F593 UNLESS NOTED OTHERWISE.

WATERTIGHTNESS OF REINFORCED CONCRETE WATER RETAINING STRUCTURES

- HYDROSTATICALLY TEST REINFORCED CONCRETE STRUCTURES WHICH WILL CONTAIN WATER PER SPECIFICATIONS AND IN ACCORDANCE TO ACI 350.1-TIGHTNESS TESTING OF ENVIRONMENTAL ENGINEERING STRUCTURES. ALL REPAIRS AND RETESTING OF TANKS SHALL BE ACCOMPLISHED AT NO ADDITIONAL COST TO THE OWNER.

STRUCTURAL ABBREVIATIONS

&	AND	EQ	EQUAL	OH	OPPOSITE HAND
@	AT	EW	EACH WAY	OPNG	OPENING
#	NUMBER	EXIST	EXISTING	PCS	PIECES
ADDTL	ADDITIONAL	EXP	EXPANSION	PEMB	PRE-ENGINEERED
AFF	ABOVE FINISHED	FE	FIRE EXTINGUISHER	PERP	METAL BUILDING
	FLOOR	FF	FAR FACE, FINISHED FLOOR	PL	PERPENDICULAR
ALUM	ALUMINUM	FG	FINISHED GRADE	PLF	POUND PER LINEAR
AEWS	AUTOMATIC END WELDED STUD(S)	FRP	FIBER REINFORCED PLASTIC		FOOT
ALT	ALTERNATE	FT	FOOT	PT	PRESSURE TREATED
APROX	APPROXIMATE(LY)	FTG	FOOTING	PROJ	PROJECTION
BLD	BUILDING	FV	FIELD VERIFY	PSF	POUNDS PER SQUARE
BM	BEAM	GA	GAGE		FOOT
BOT	BOTTOM	GALV	GALVANIZED	PSI	POUNDS PER SQUARE
CJ	CONTROL JOINT	HK	HOOK		INCH
CL	CENTER LINE	HORIZ	HORIZONTAL	PVC	POLYVINYL CHLORIDE
CLR	CLEAR	HSS	HOLLOW STRUCTURAL SECTION	R	RADIUS
CMU	CONCRETE MASONRY UNIT	HP	HIGH POINT	REINF	REINFORCING
		ID	INSIDE DIAMETER	REQD	REQUIRED
COL	COLUMN	JT	JOINT	RO	ROUGH OPENING
CONC	CONCRETE	LB(S)	POUND(S)	SCHED	SCHEDULE(D)
CONN	CONNECTION	LONG	LONGITUDINAL	SIM	SIMILAR
CONST JT	CONSTRUCTION JOINT	LP	LOW POINT	SJ	SAWCUT JOINT
CONT	CONTINUOUS	MANUF	MANUFACTURER	SMS	SHEET METAL SCREW
DIA	DIAMETER	MATL	MATERIAL	SPECS	SPECIFICATIONS
DIM	DIMENSION	MAX	MAXIMUM	SQ	SQUARE
DEG	DEGREE(S)	MECH	MECHANICAL	SS	STAINLESS STEEL
DO	DITTO	MFR	MANUFACTURER	STD	STANDARD
DWG	DRAWING	MIN	MINIMUM	STL	STEEL
DWL	DOWEL(S)	MISC	MISCELLANEOUS	T/	TOP OF
(E)	EXISTING	MO	MASONRY OPENING	TB	TIE BEAM
EA	EACH	MTL	METAL	T&B	TOP AND BOTTOM
EF	EACH FACE	NO	NUMBER	THK	THICK
EJ	EXPANSION JOINT	NTS	NOT TO SCALE	THRU	THROUGH
EL	ELEVATION	OC	ON CENTER	TOC	TOP OF CONCRETE
ELEC	ELECTRICAL	OD	OUTSIDE DIAMETER	TOS	TOP OF STEEL
EMBED	EMBEDMENT			TYP	TYPICAL
				UNO	UNLESS NOTED OTHERWISE
				VERT	VERTICAL
				WT	WEIGHT
				WWF	WELDED WIRE FABRIC

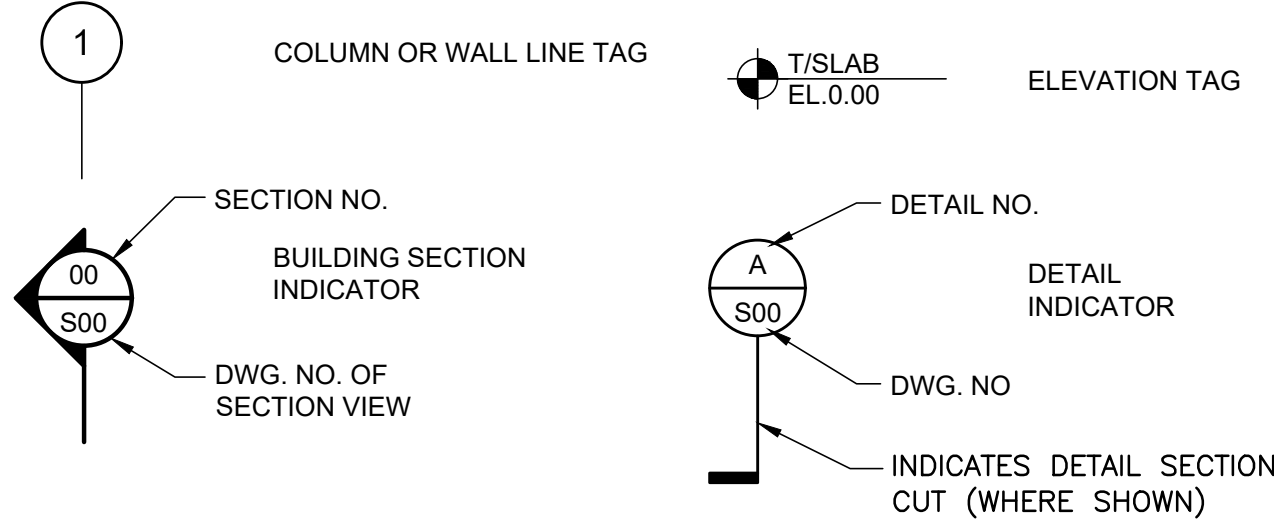
LEGEND

STRUCTURAL LEGEND APPLIES TO "S" SHEETS ONLY

	EARTH FILL		CONCRETE
	UNDISTURBED EARTH		EXISTING CONCRETE
	COMPACTED GRANULAR FILL		DEMOLITION
	GROUT OR SAND (AS NOTED)		STEEL
	GRATING		PRECAST CONCRETE

SYMBOLS

SYMBOLS APPLY TO "S" SHEETS ONLY



NO.	BY	DATE	SYMBOL	REVISIONS
6				
5				
4				
3				
2				
1				

DESIGNER:	JVS
DRAWN BY:	JC
CHECKED BY:	DSM
APPROVED BY:	JVS
DATE:	APRIL 2020

DESIGN ENGINEER	
JOHN SOBCZAK, P.E.	
FLORIDA REGISTRATION NO.	71407

100 CENTER CREEK RD., STE 108  
ST. AUGUSTINE, FL. 32084  
PH. 904-562-2185

FLORIDA  
CERTIFICATE OF AUTHORIZATION  
# 9816



ST. JOHNS COUNTY  
UTILITY DEPARTMENT

1205 STATE ROAD 16  
ST AUGUSTINE, FLORIDA 32084-8646  
Phone (904) 209-2700 • Fax (904) 209-2702

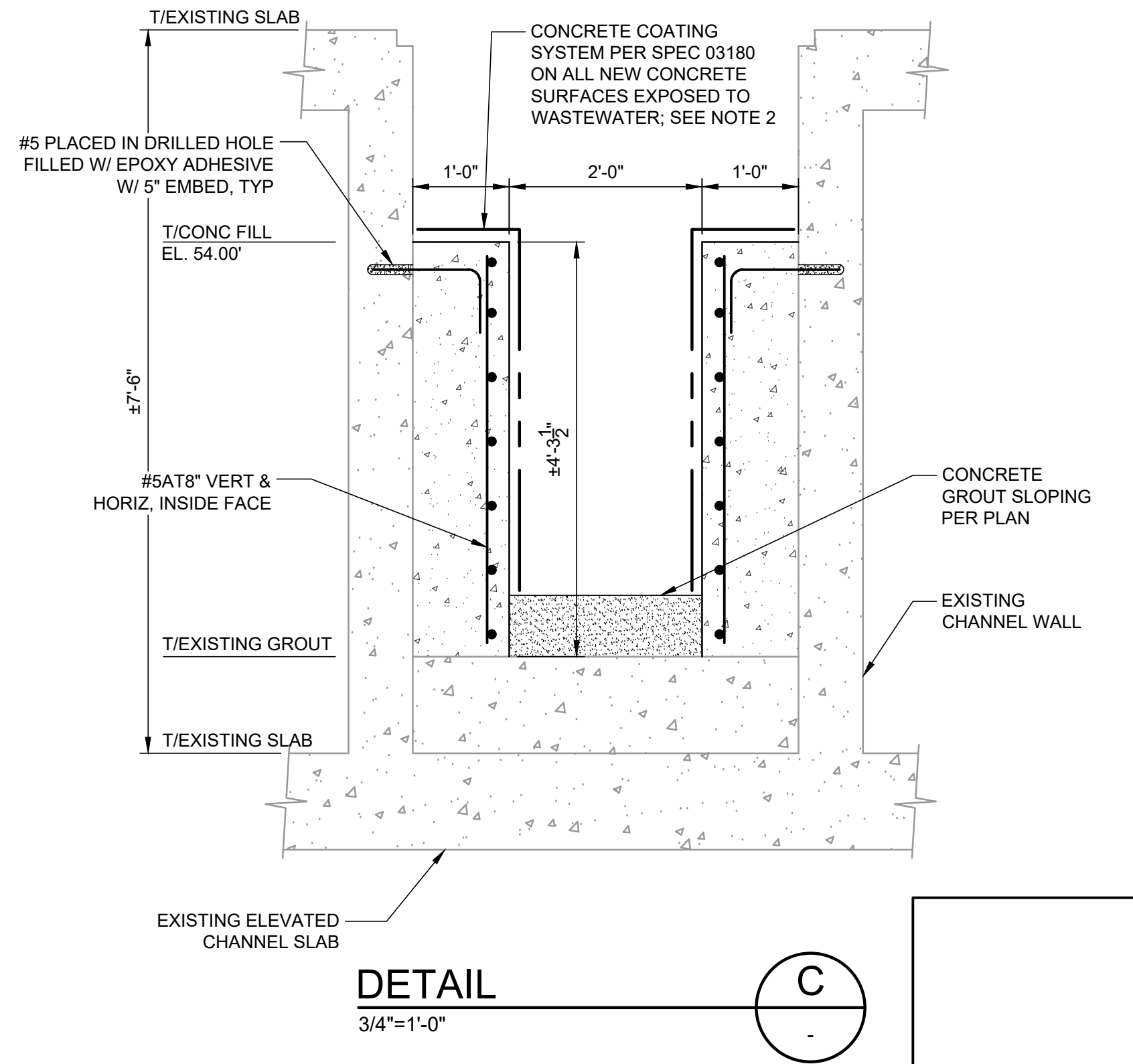
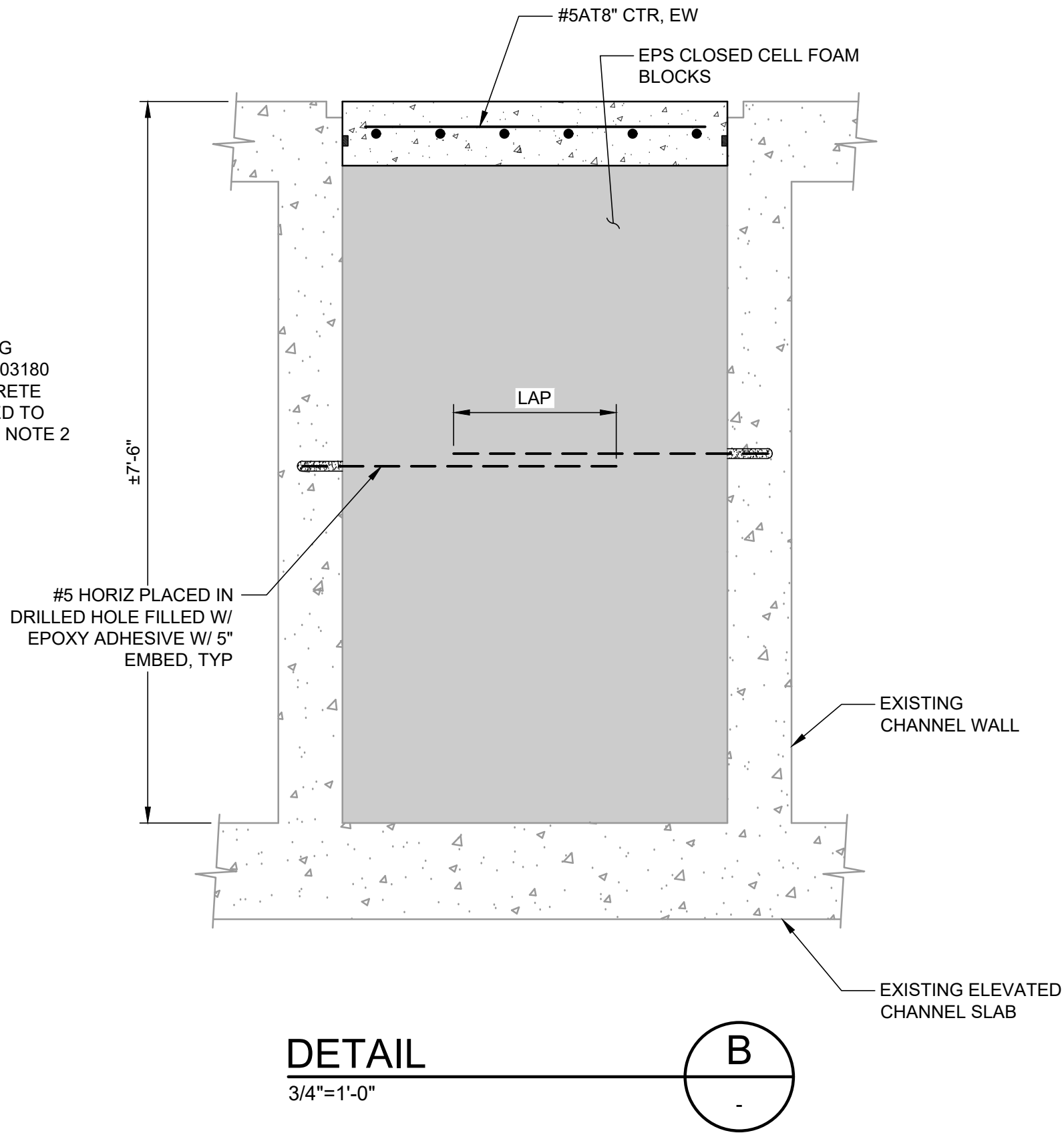
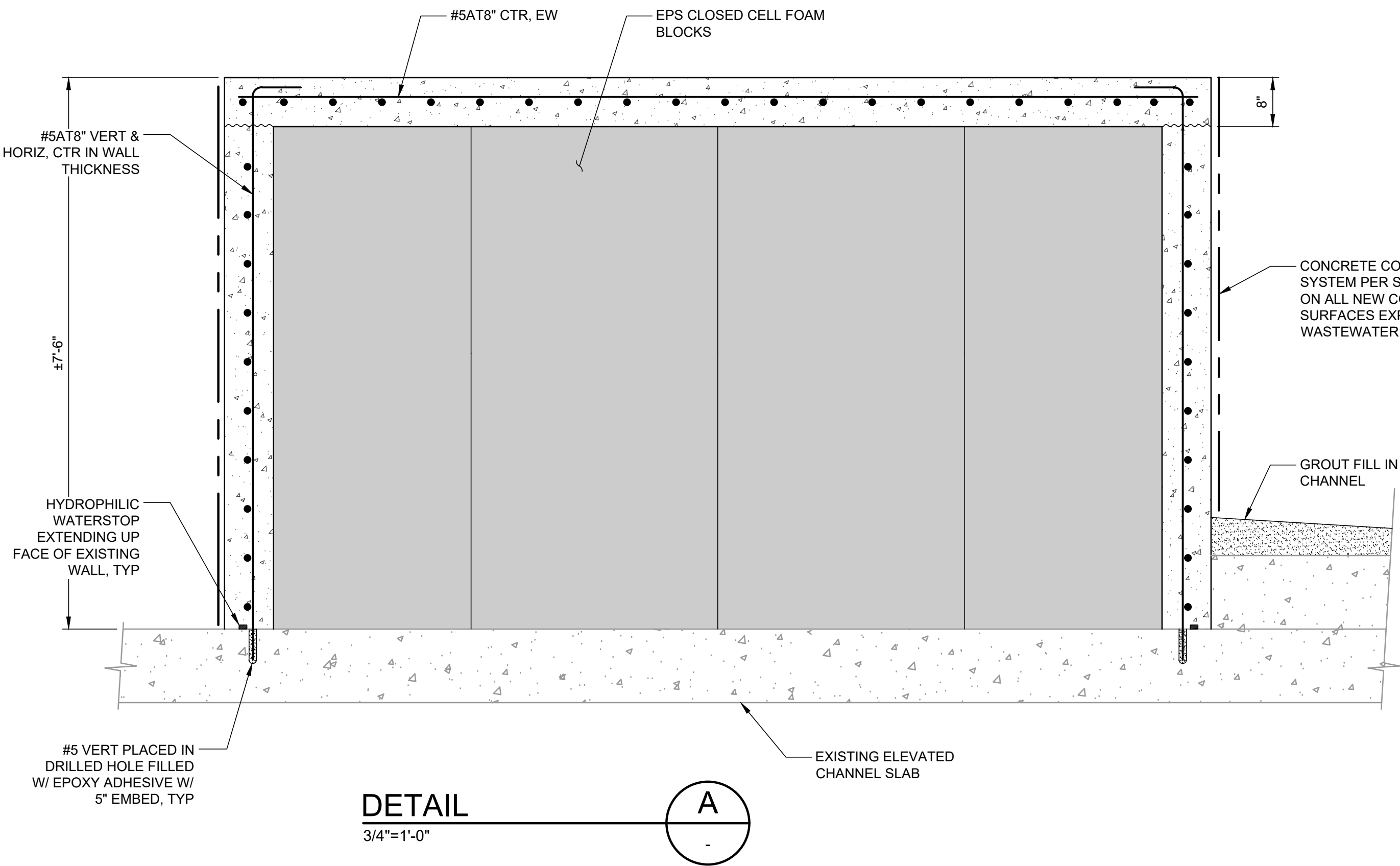
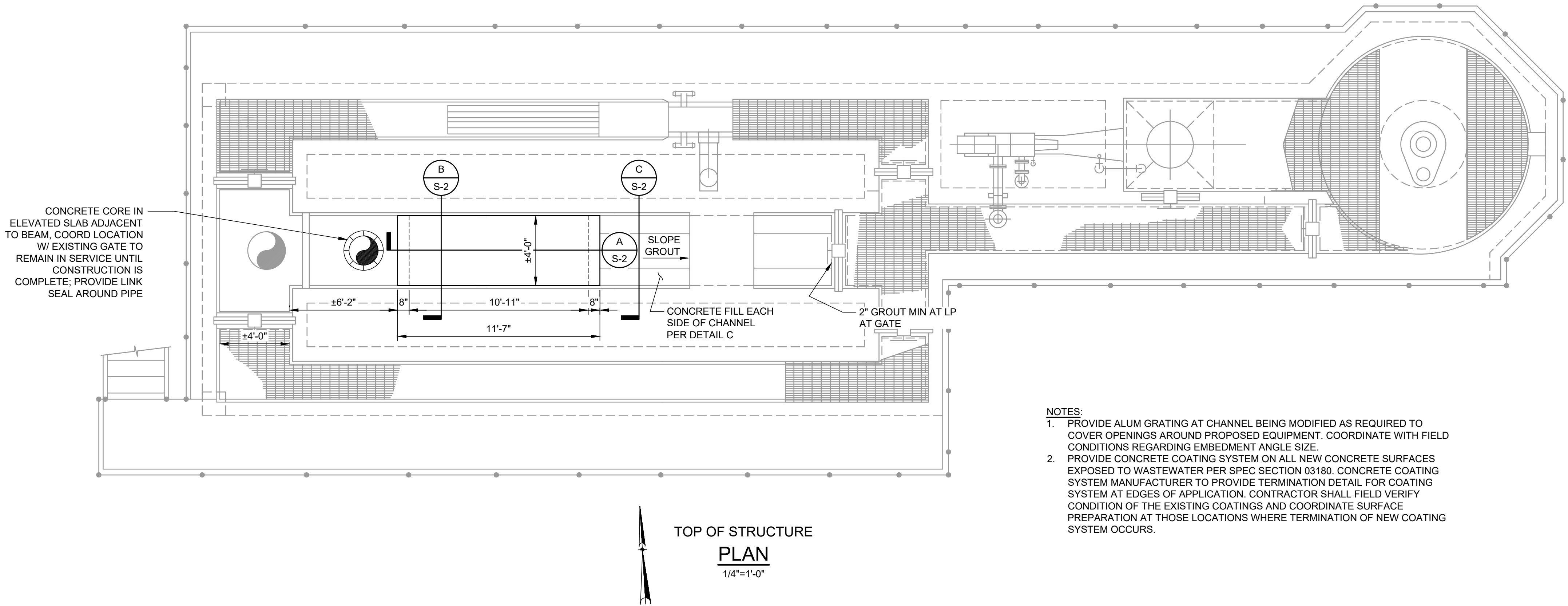
STATE ROAD 16 WASTEWATER TREATMENT FACILITY HEADWORKS & RAS / WAS IMPROVEMENTS

GENERAL STRUCTURAL NOTES, ABBREVIATIONS,  
LEGEND AND SYMBOLS

PROJECT NO.	100408.24
FILE NAME	S-1
SHEET NO.	S-1



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FLORIDA REGISTRATION NO.	71407



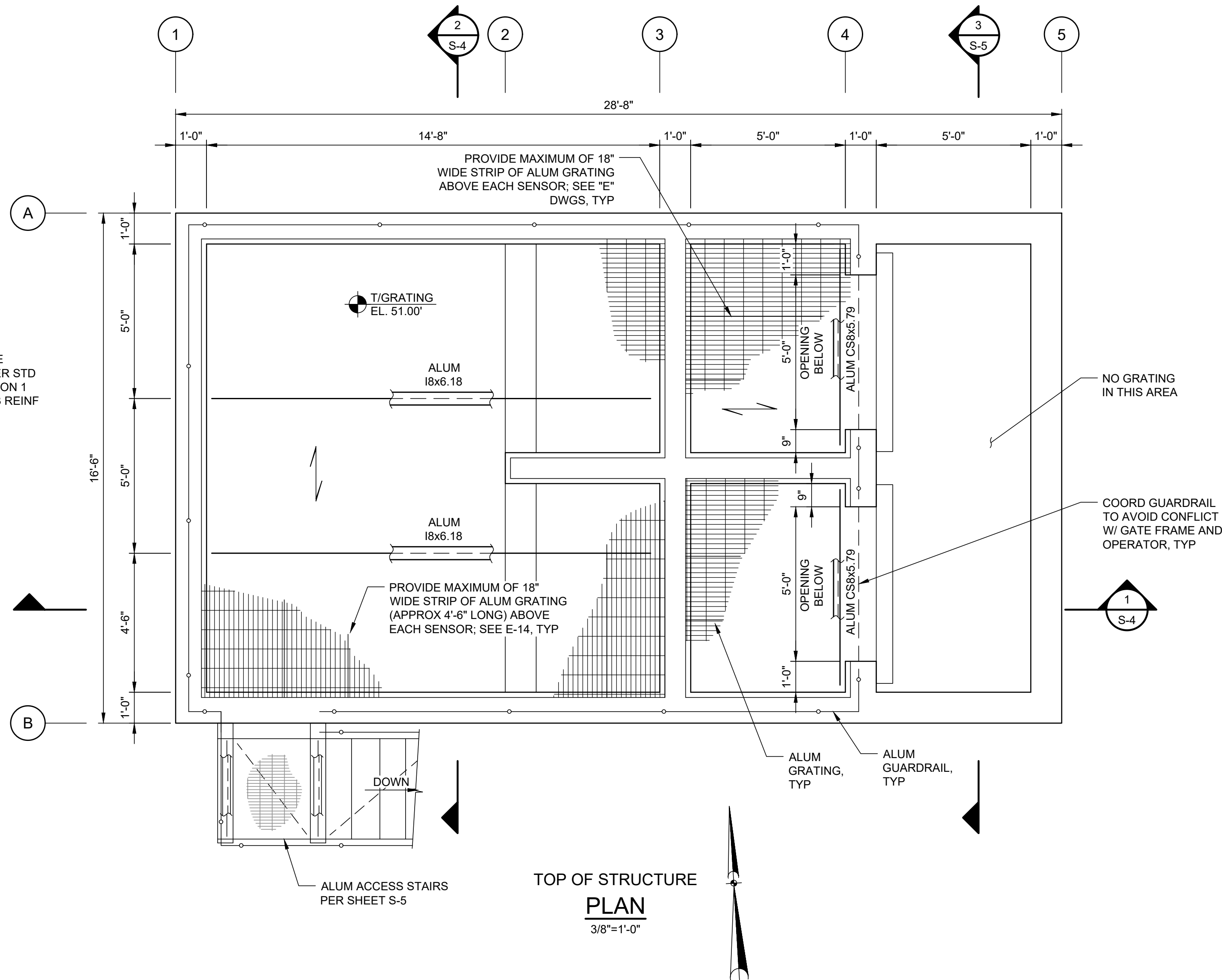
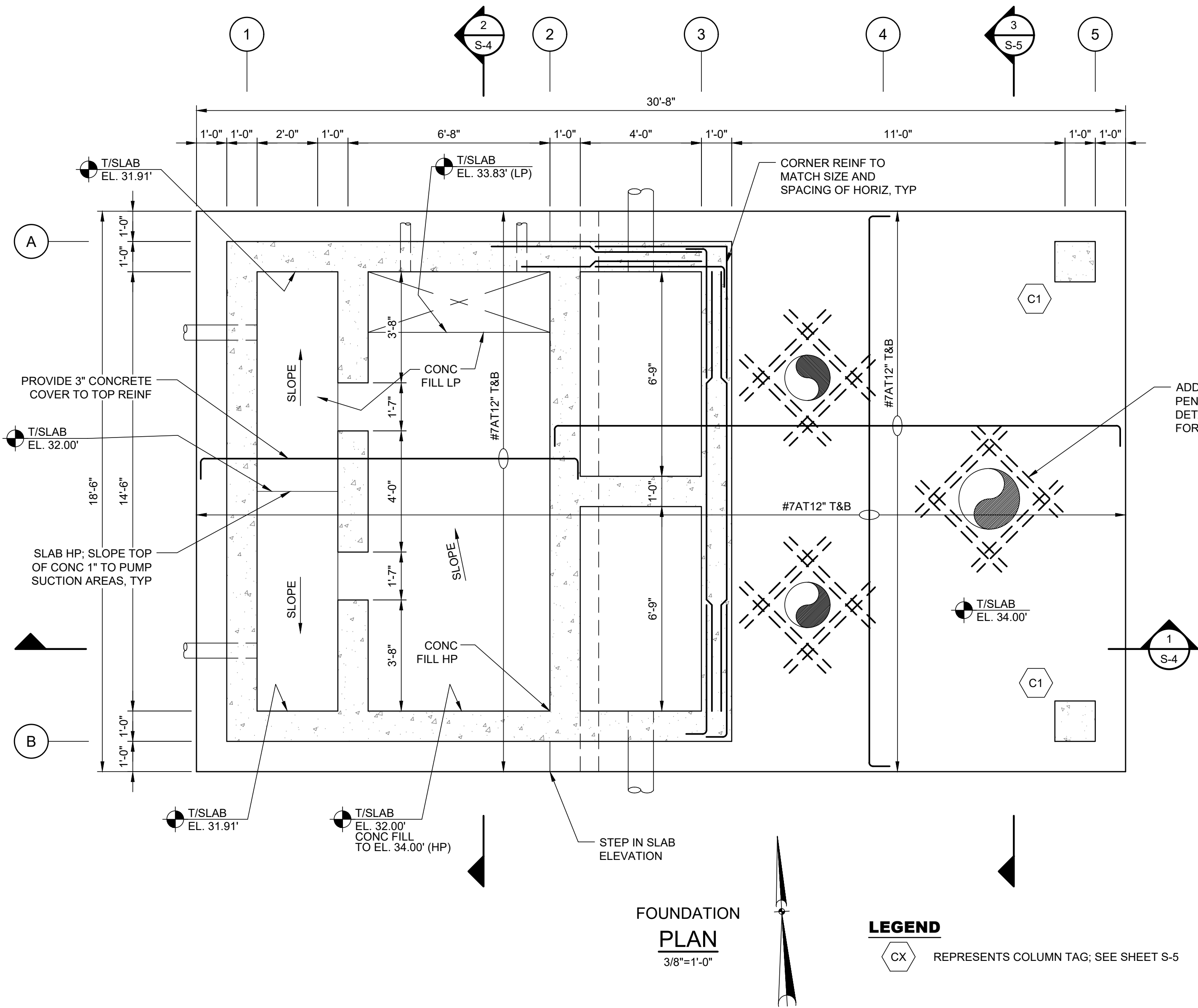
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UTILITY DEPARTMENT  
1205 STATE ROAD 16  
ST. AUGUSTINE, FLORIDA 32084-8646  
Phone (904) 209-2700 • Fax (904) 209-2702

STATE ROAD 16 WASTEWATER TREATMENT FACILITY HEADWORKS & RAS / WAS IMPROVEMENTS HEADWORKS MODIFICATIONS PLAN AND DETAILS
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PROJECT NO.	100408.24
FILE NAME	S-2
SHEET NO.	S-2



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6				
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DESIGN ENGINEER	JOHN SOBCZAK, P.E.
FLORIDA REGISTRATION NO.	71407



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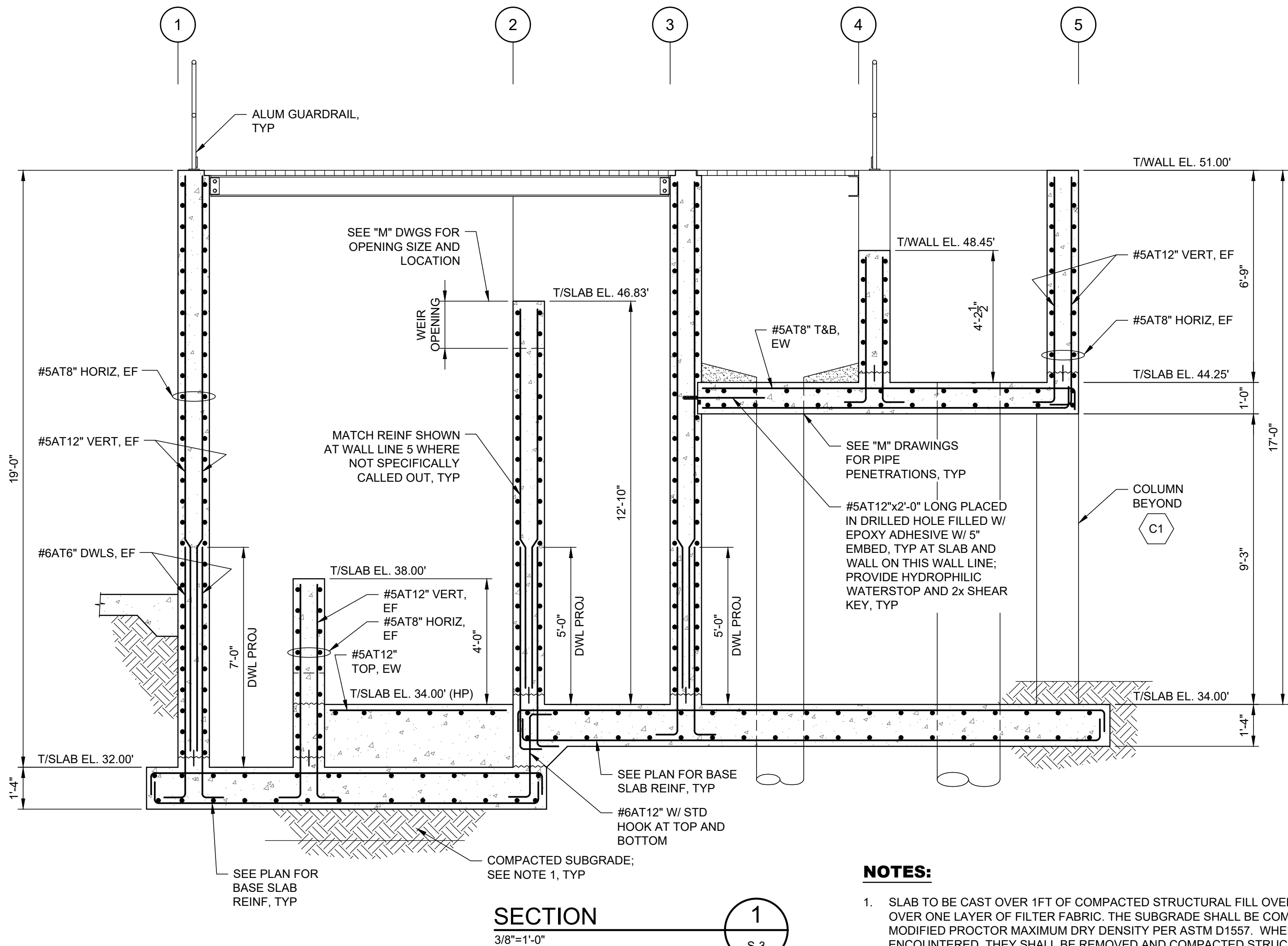
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ST. AUGUSTINE, FLORIDA 32084-8646  
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STATE ROAD 16 WASTEWATER TREATMENT FACILITY HEADWORKS & RAS / WAS IMPROVEMENTS CLARIFIER SPLITTER BOX AND RAS / WAS PUMP STATION PLANS
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PROJECT NO.	100408.24
FILE NAME	S-3
SHEET NO.	S-3

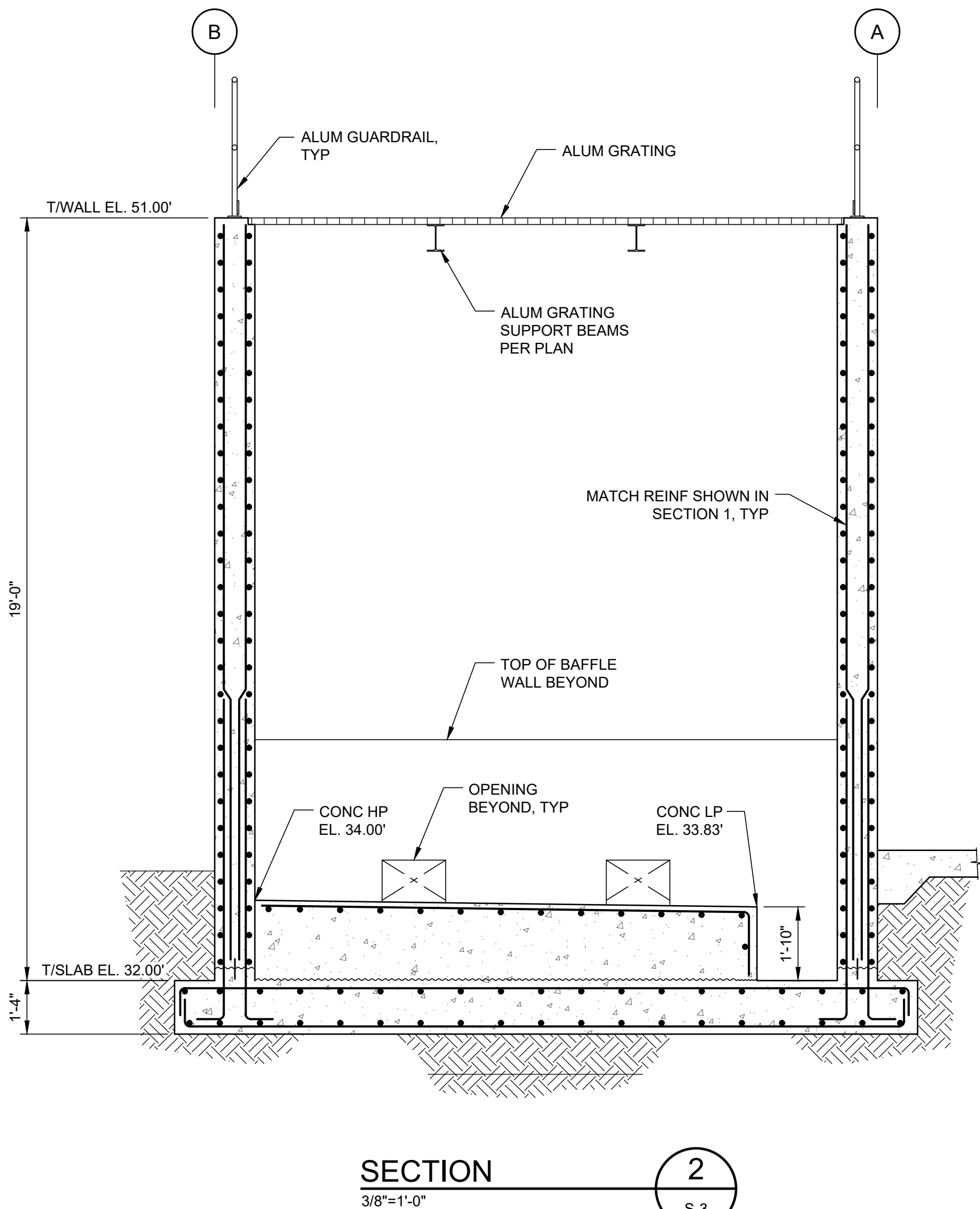


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**NOTES:**

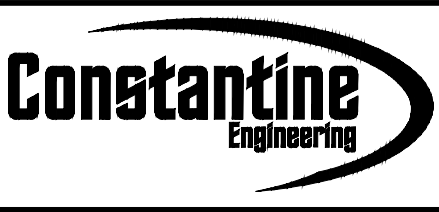
1. SLAB TO BE CAST OVER 1FT OF COMPACTED STRUCTURAL FILL OVER COMPACTED NATIVE SUBGRADE OVER ONE LAYER OF FILTER FABRIC. THE SUBGRADE SHALL BE COMPACTED TO 98 PERCENT OF THE MODIFIED PROCTOR MAXIMUM DRY DENSITY PER ASTM D1557. WHERE SOFT OR LOOSE SOILS ARE ENCOUNTERED, THEY SHALL BE REMOVED AND COMPACTED STRUCTURAL BACKFILL SHALL BE PROVIDED. CONTRACTOR SHALL PROVIDE DEWATERING AS REQUIRED TO ENSURE THE MINIMUM COMPACTION REQUIREMENTS ARE MET.



NO.	BY	DATE	SYMBOL	REVISIONS
6				
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CHECKED BY:	DSM
APPROVED BY:	JVS
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DESIGN ENGINEER	JOHN SOBCZAK, P.E.
FLORIDA REGISTRATION NO.	71407



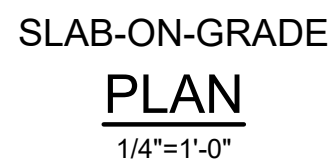
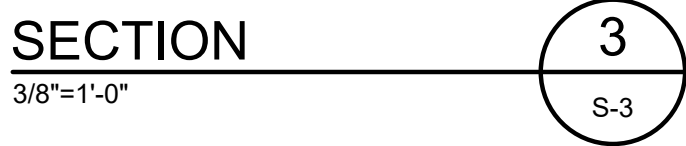
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FLORIDA  
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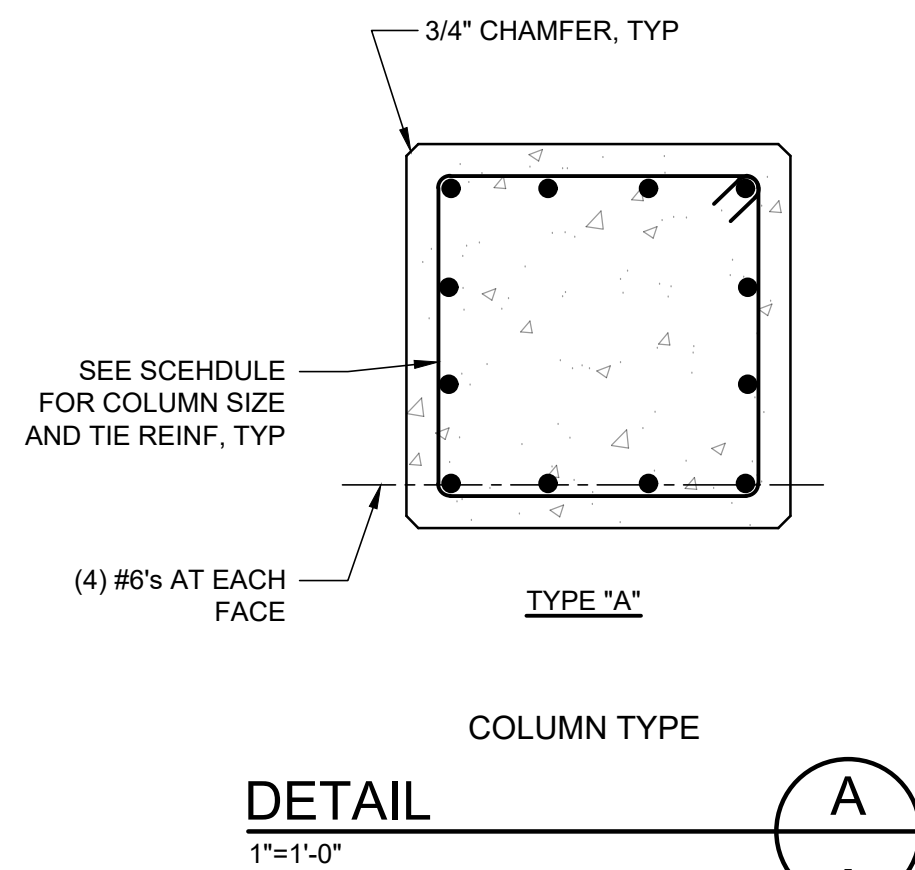
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STATE ROAD 16 WASTEWATER TREATMENT FACILITY HEADWORKS & RAS / WAS IMPROVEMENTS  
CLARIFIER SPLITTER BOX AND  
RAS / WAS PUMP STATION  
SECTIONS

PROJECT NO.	100408.24
FILE NAME	S-4
SHEET NO.	S-4



PROVIDE LENTON BAR  
TERMINATOR AT THE TOP  
OF (4) CORNER VERT  
BARS. TYP



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CHECKED BY:	DSM	
APPROVED BY:	JVS	
DATE:	APRIL 2020	

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APPROVED BY:	JVS	
DATE:	APRIL 2020	

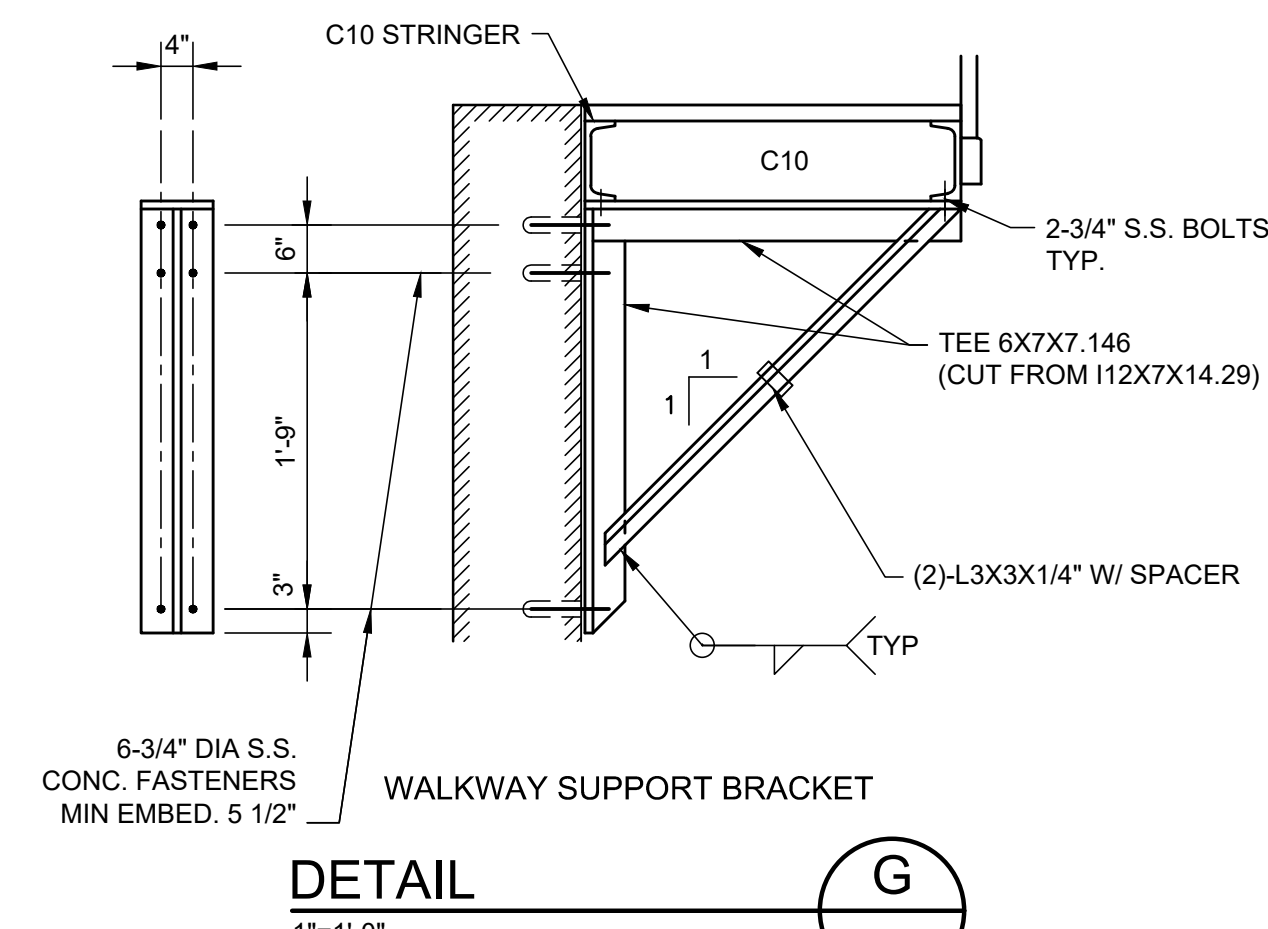
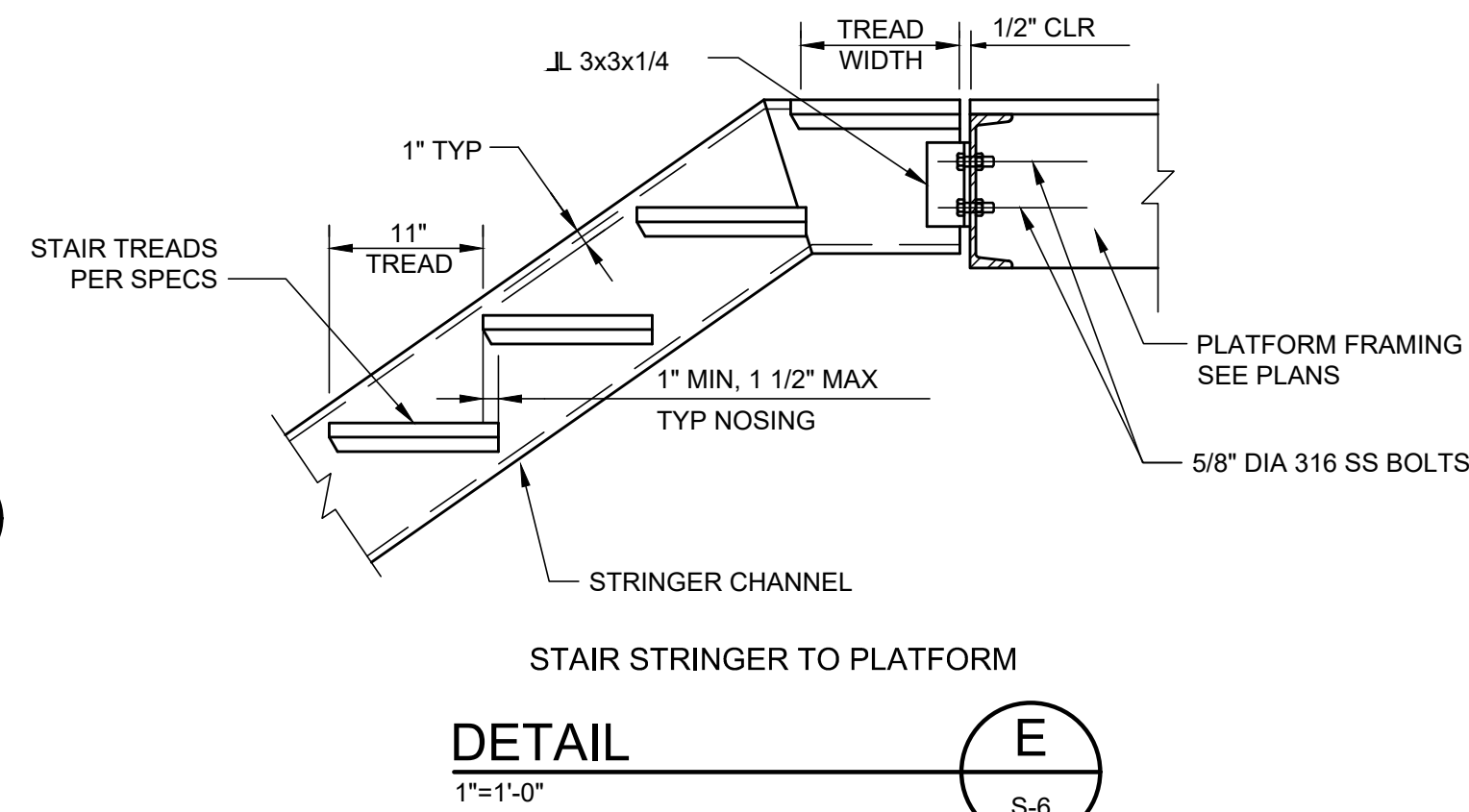
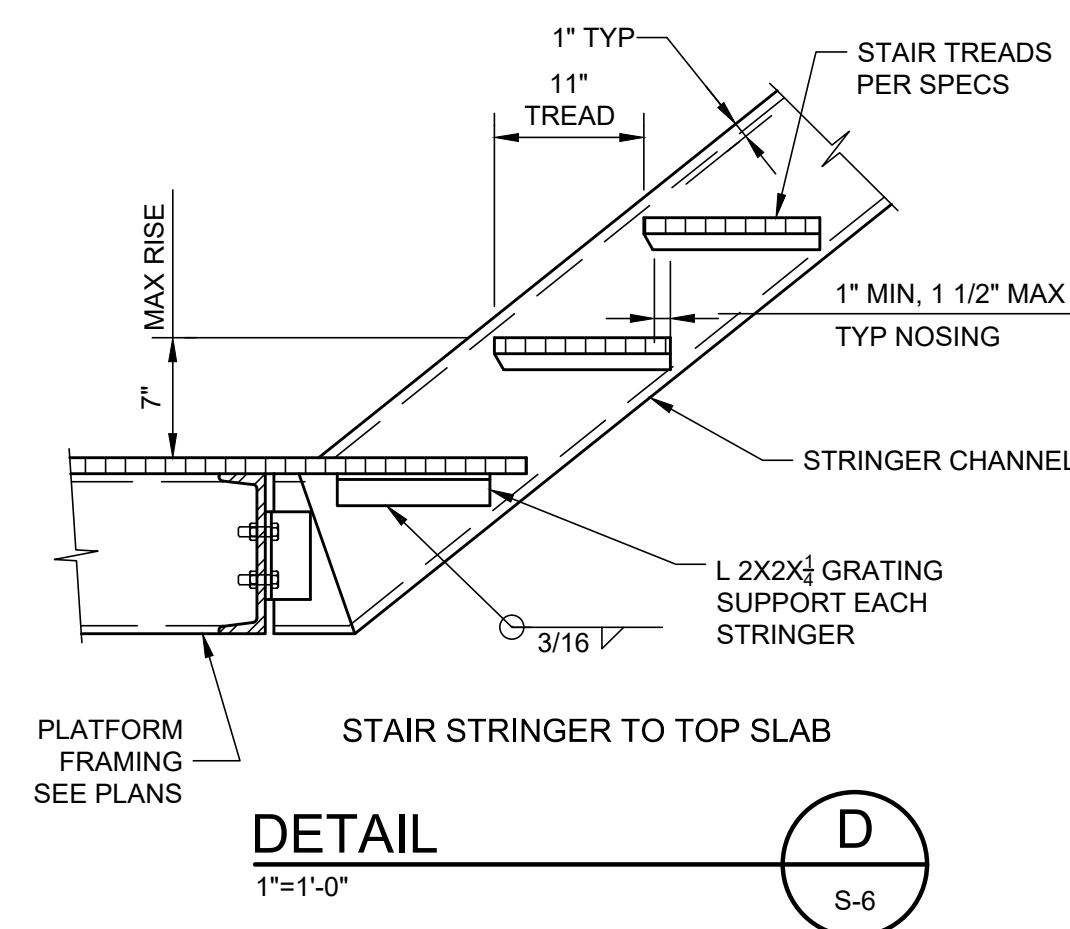
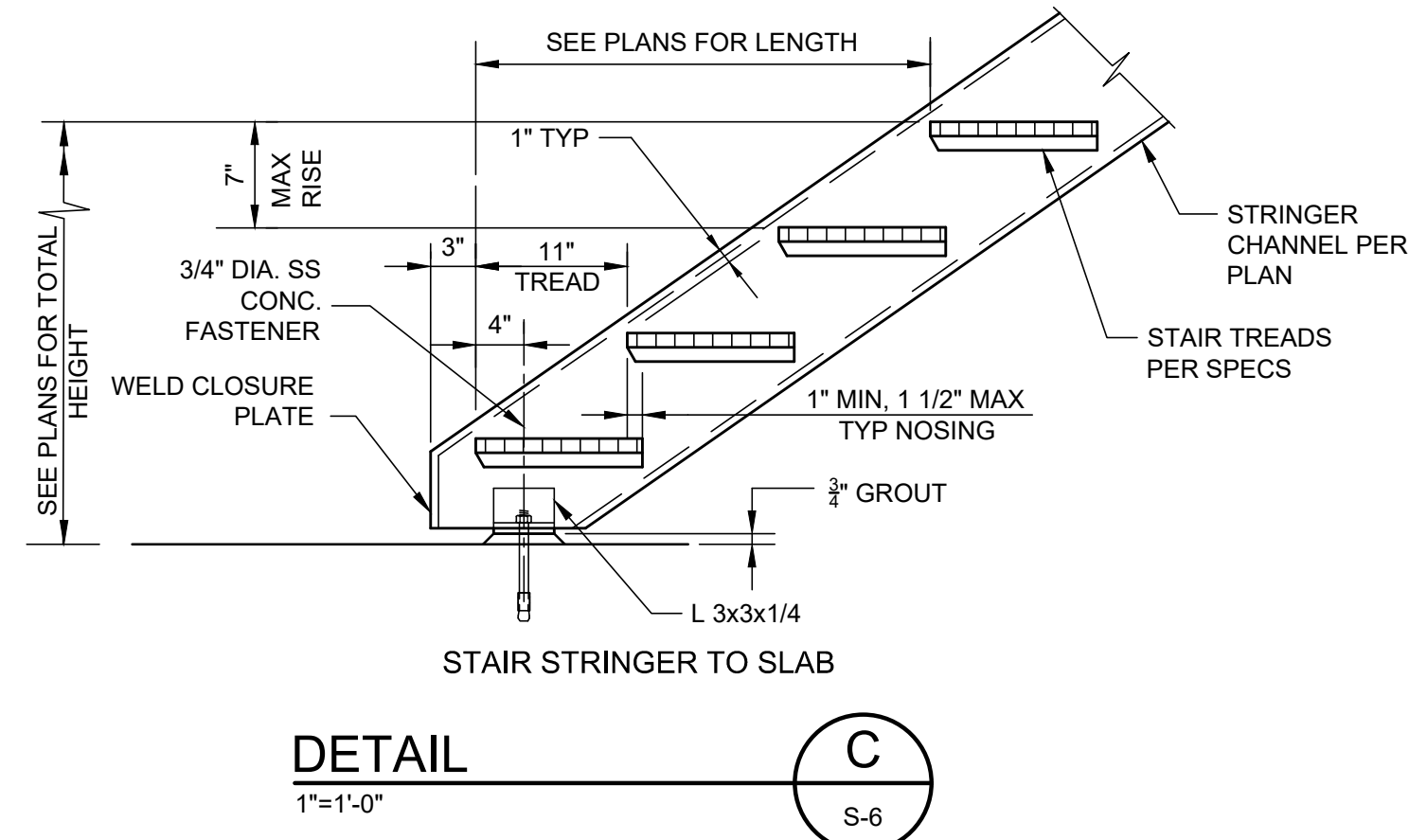
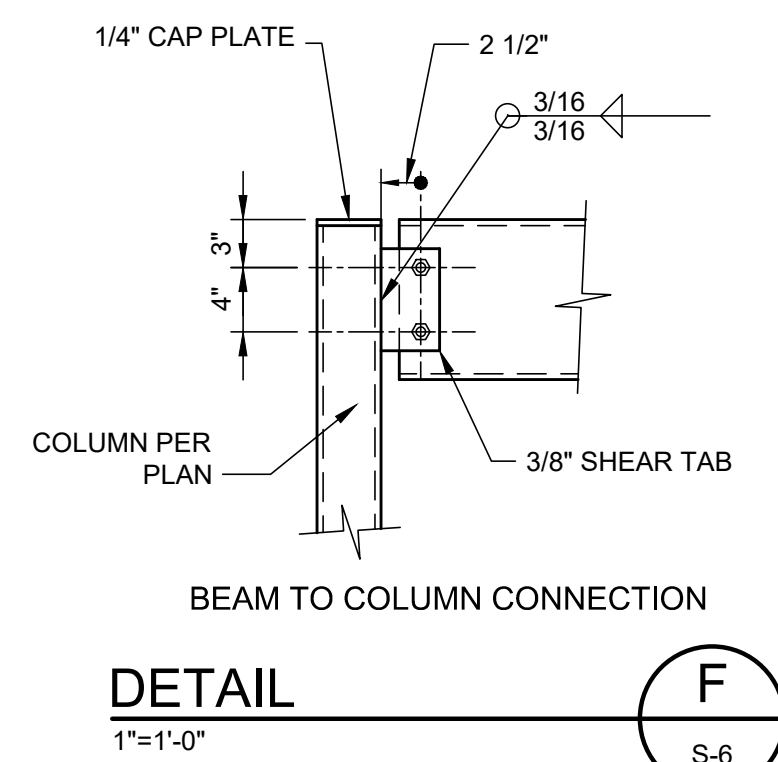
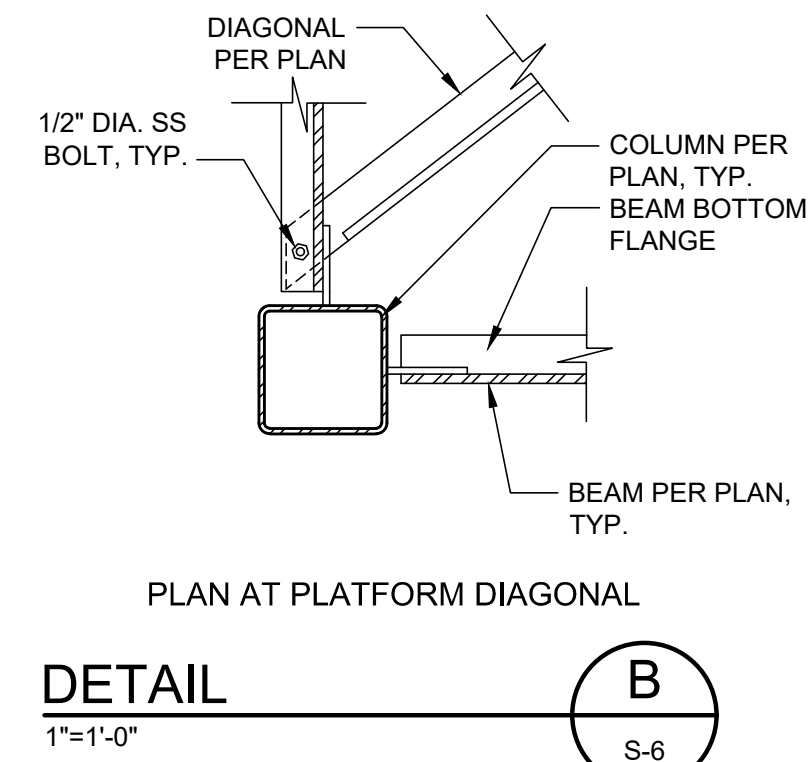
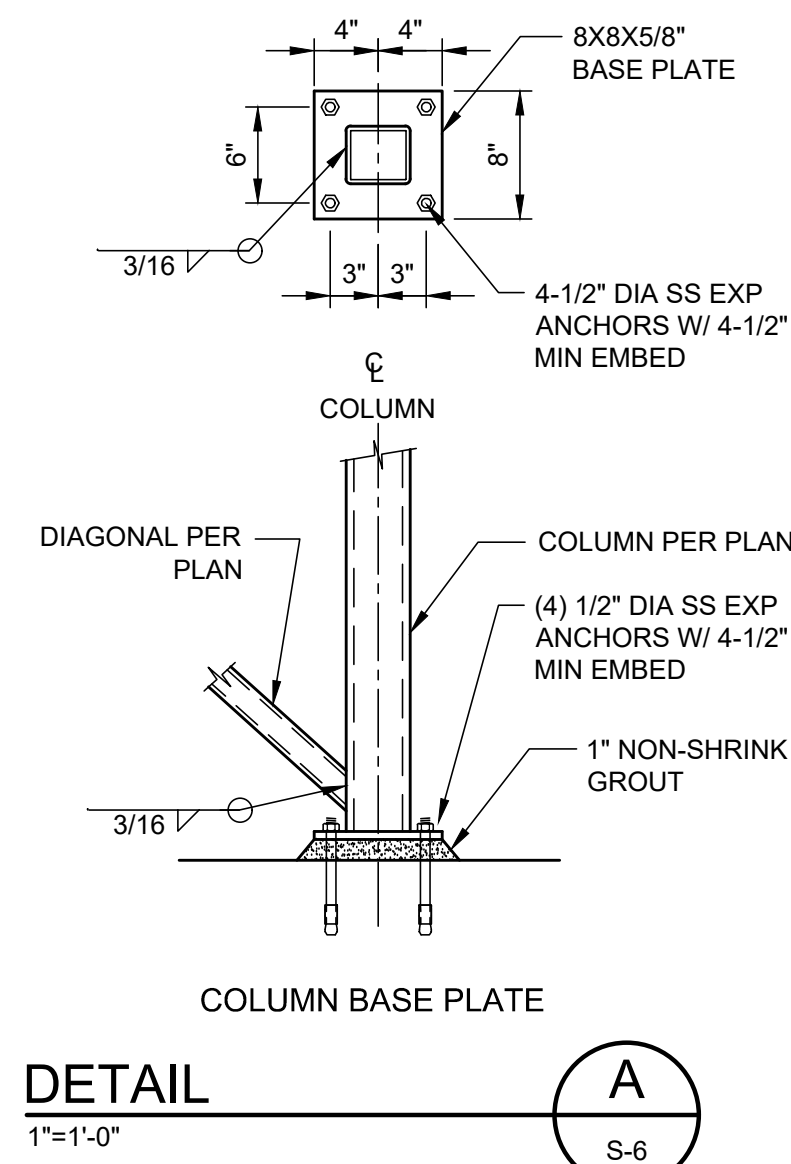
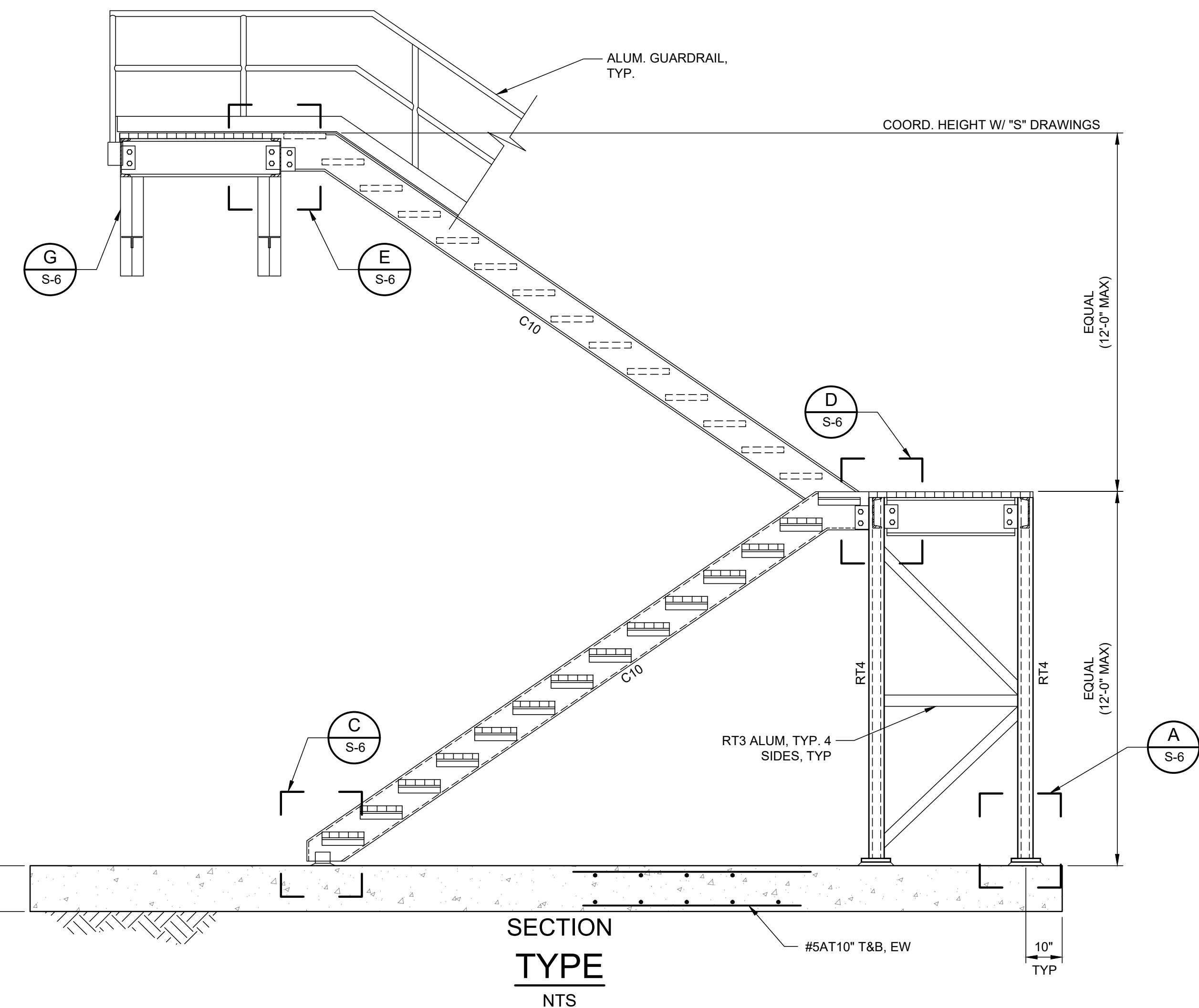
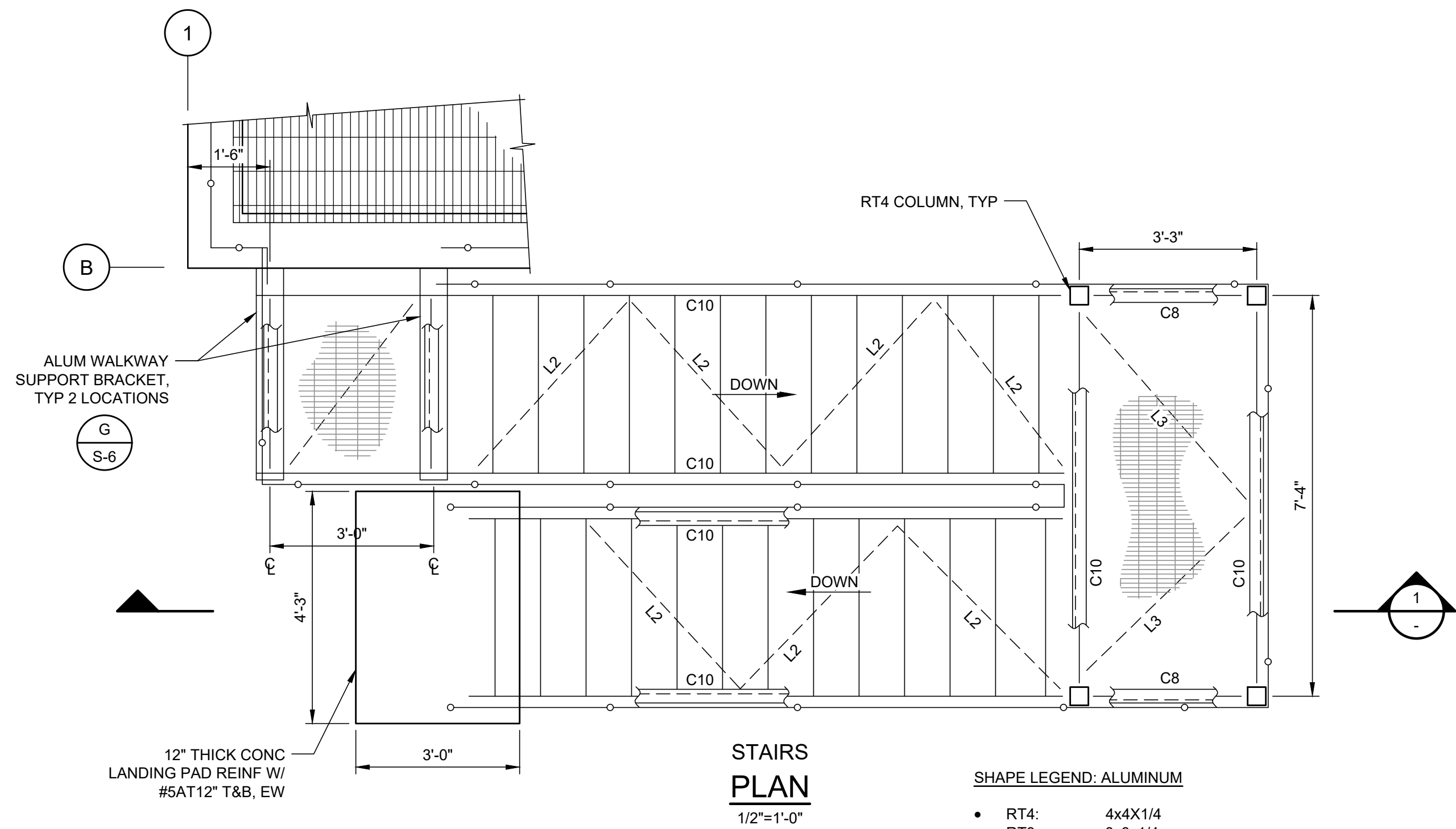


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STATE ROAD 16 WASTEWATER TREATMENT FACILITY HEADWORKS & RAS / WAS IMPROVEMENTS  
CLARIFIER SPLITTER BOX AND  
RAS / WAS PUMP STATION SECTIONS  
AND SLAB-ON-GRADE PLAN

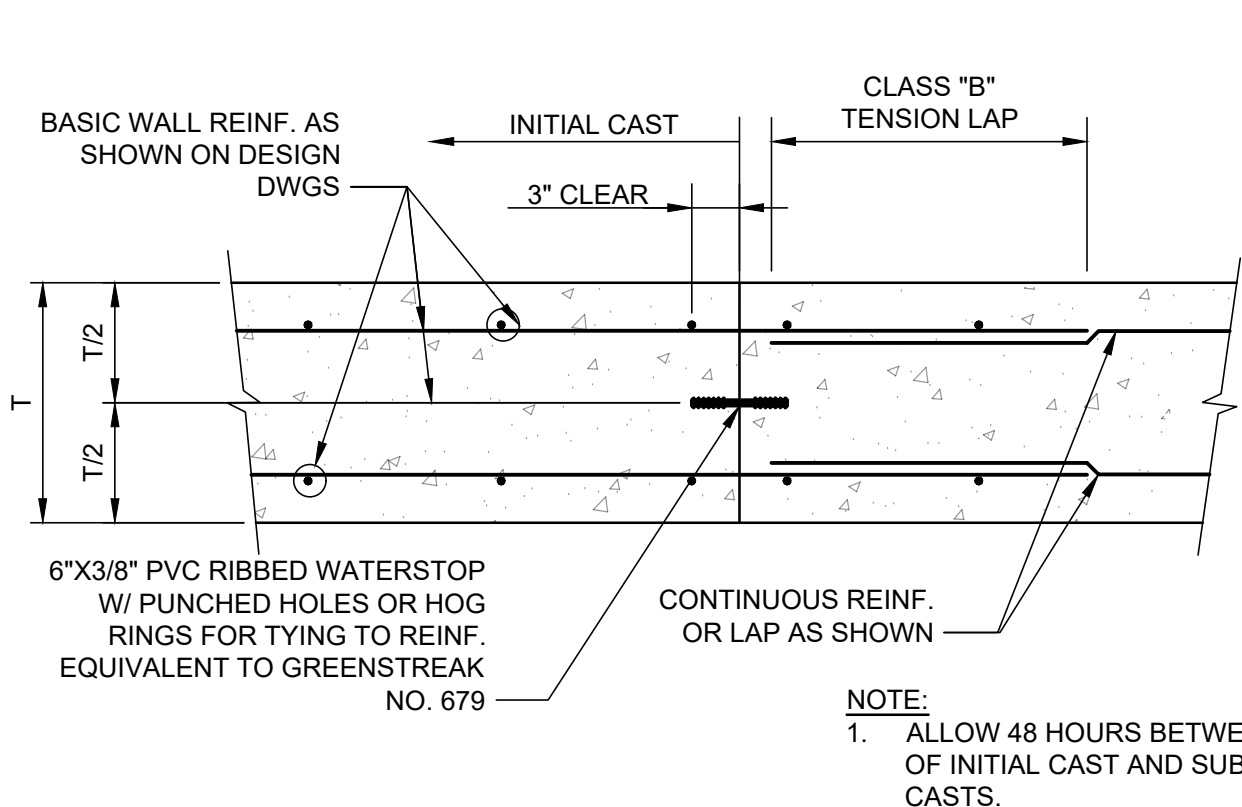
PROJECT NO.	100408.24
FILE NAME	S-5
SHEET NO.	S-5



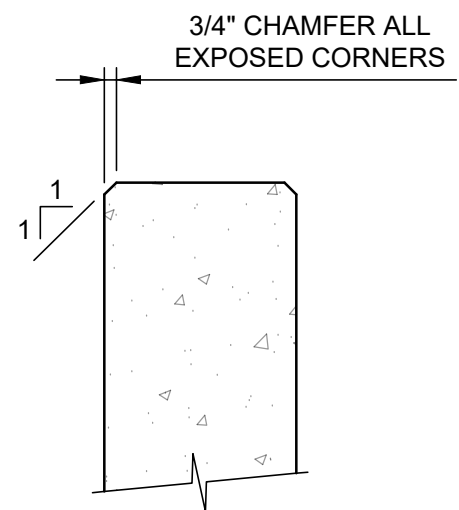


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6.				DRAWN BY:	JC	JOHN SOBCZAK, P.E.				FILE NAME	S-6	
5.				CHECKED BY:	DSM	FLORIDA REGISTRATION NO.				71407	SHEET NO.	
4.				APPROVED BY:	JVS						S-6	
3.				DATE:	APRIL 2020							
2.												
1.												

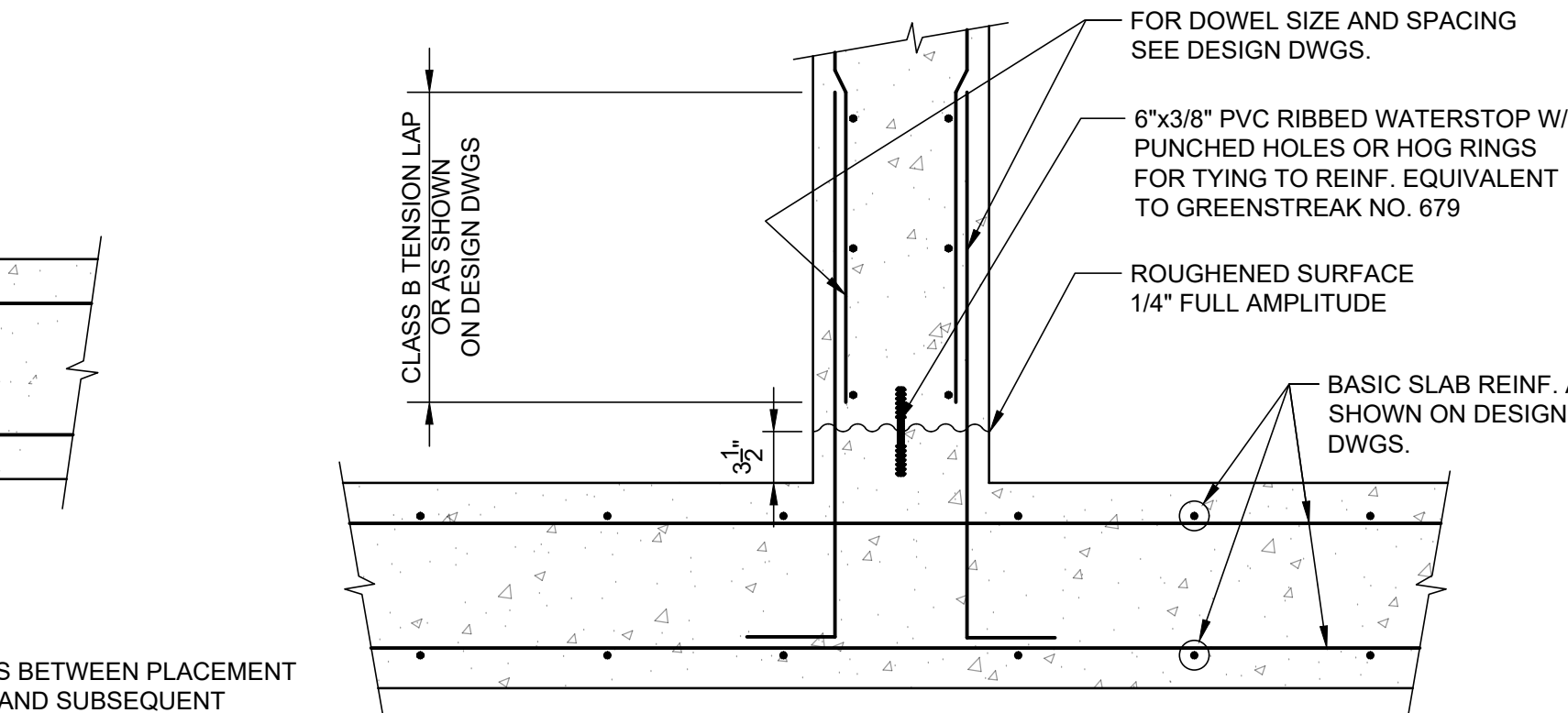
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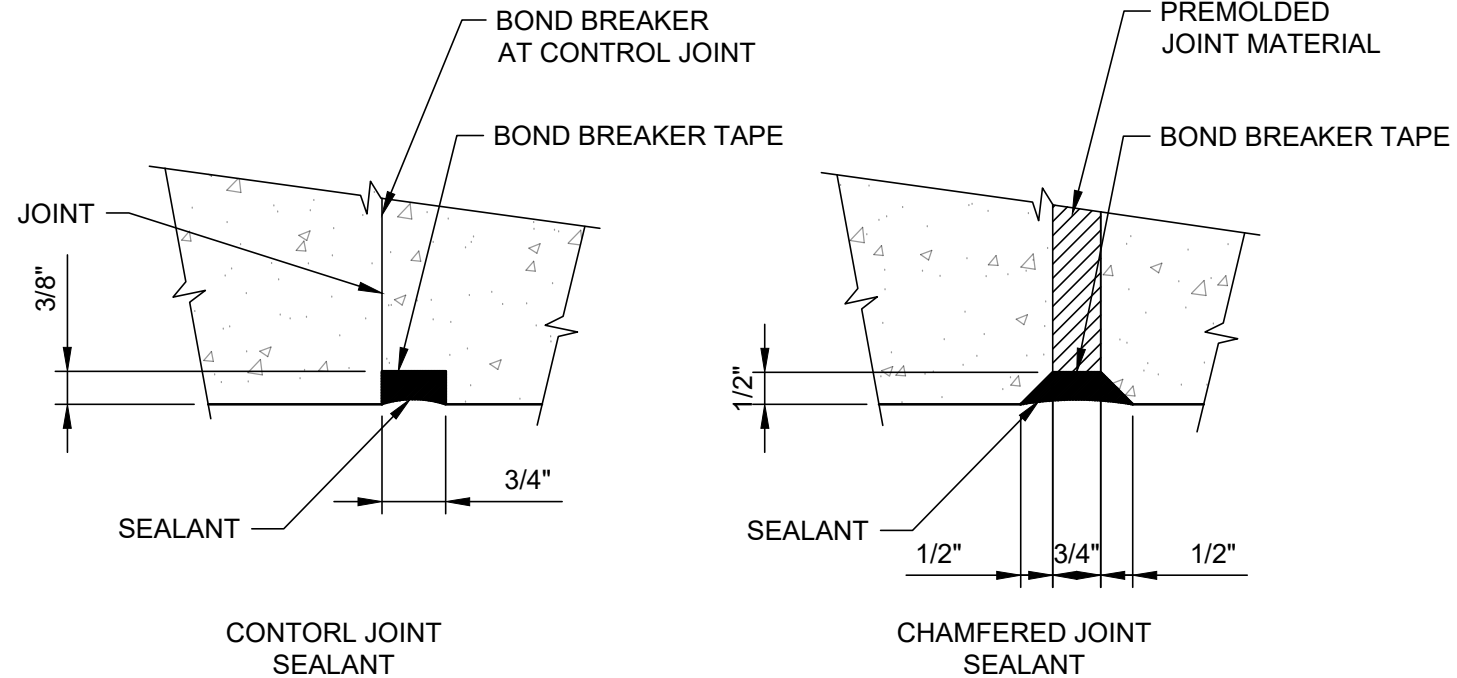
WALL CONSTRUCTION JOINT  
DETAIL A  
NTS



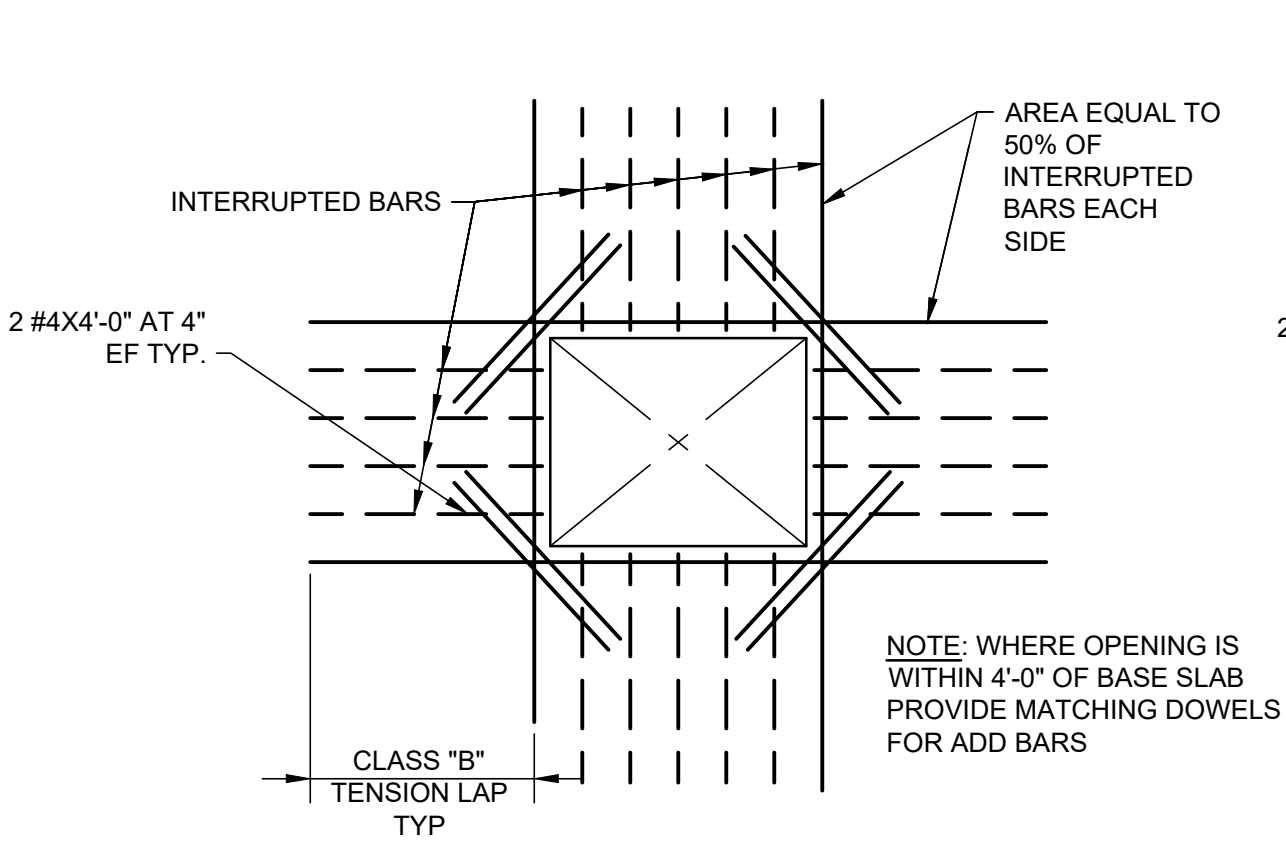
CHAMFER  
DETAIL D  
NTS



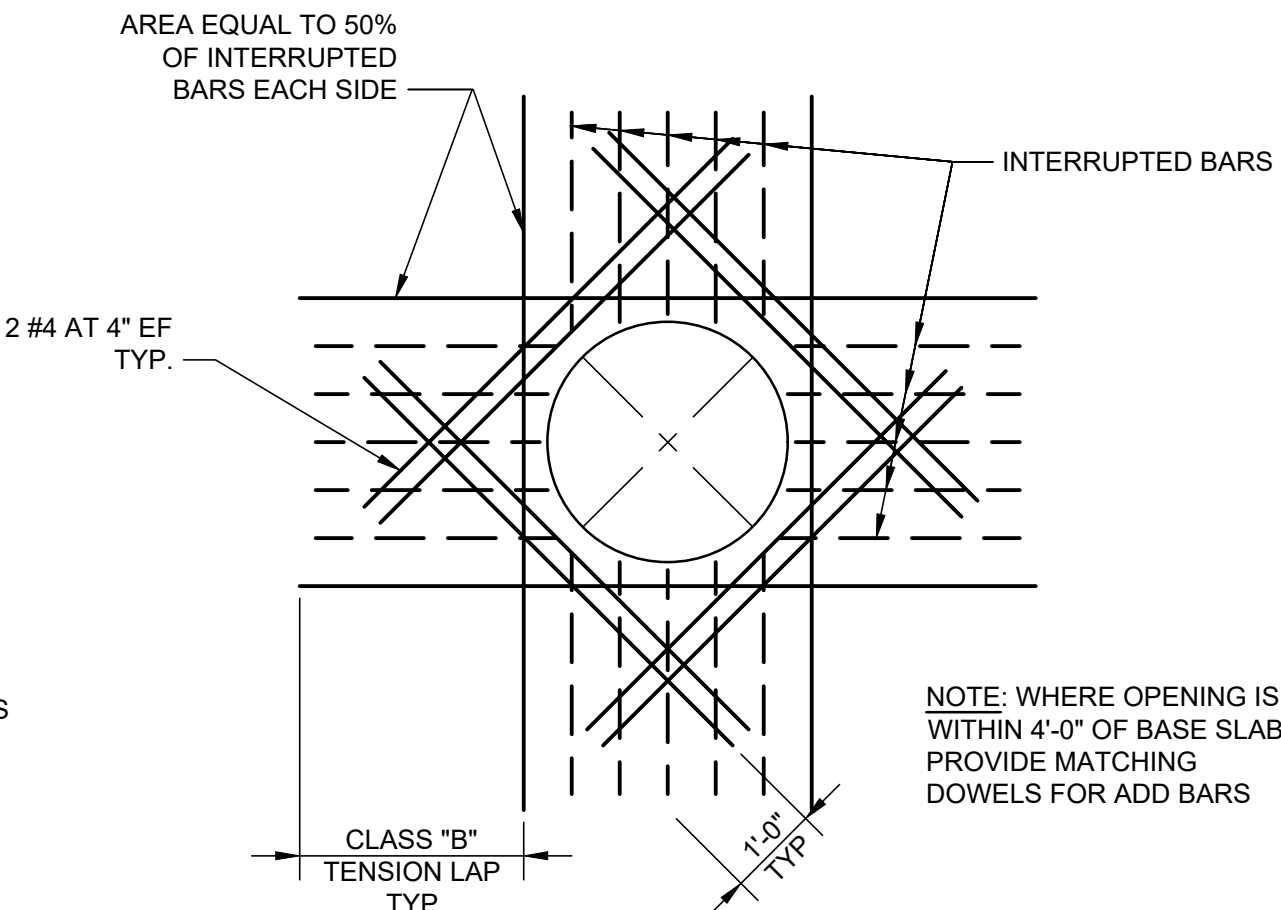
WALL BASE CONSTRUCTION JOINT  
DETAIL B  
NTS



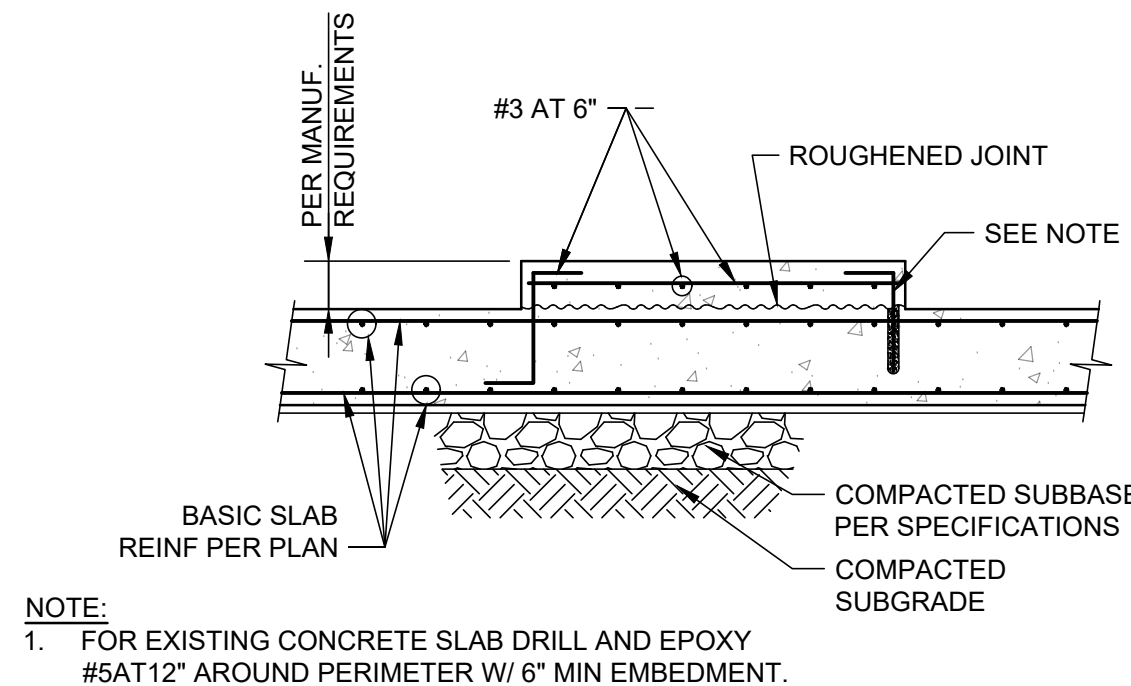
JOINT SEALANTS  
DETAIL C  
NTS



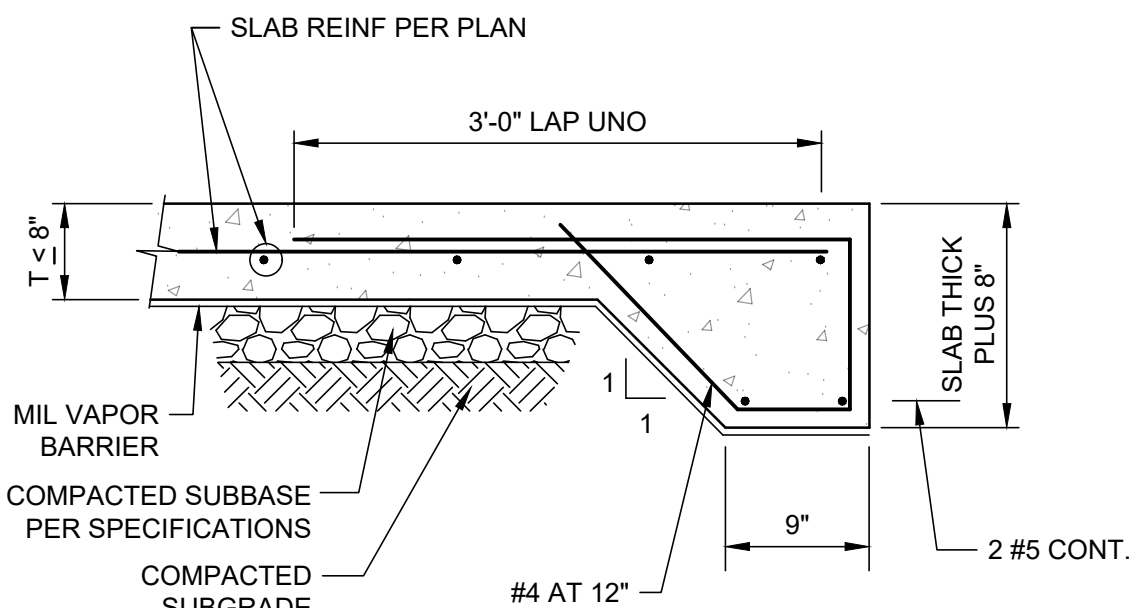
REIN AT RECTANGULAR OPENINGS GREATER THAN 12"  
DETAIL E  
NTS



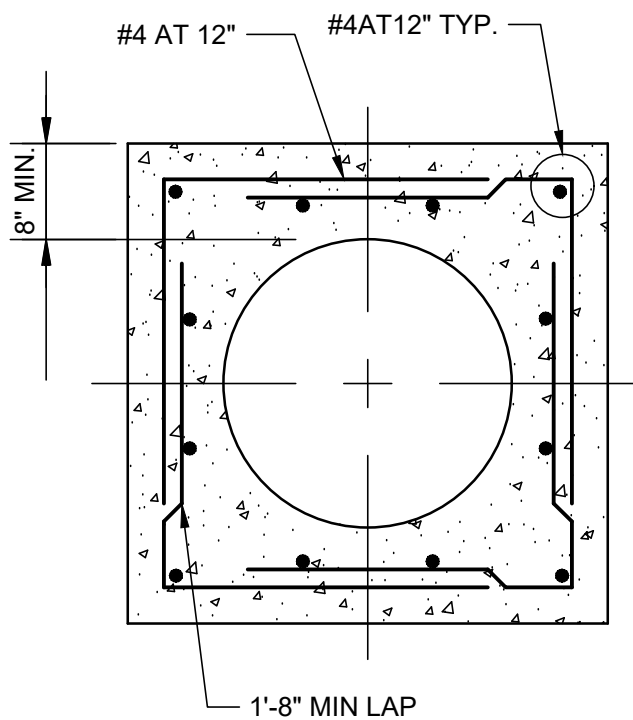
REIN AT CIRCULAR OPENINGS GREATER THAN 12"  
DETAIL F  
NTS



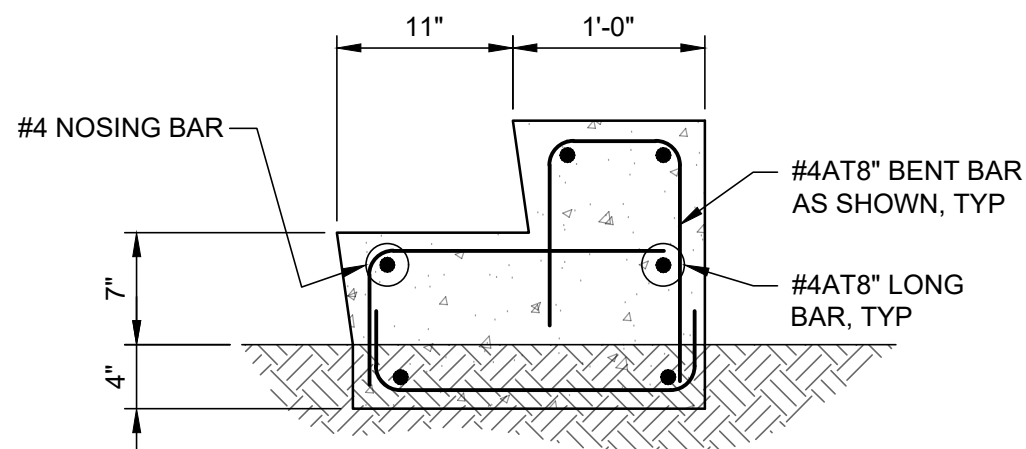
EQUIPMENT PAD  
DETAIL G  
NTS



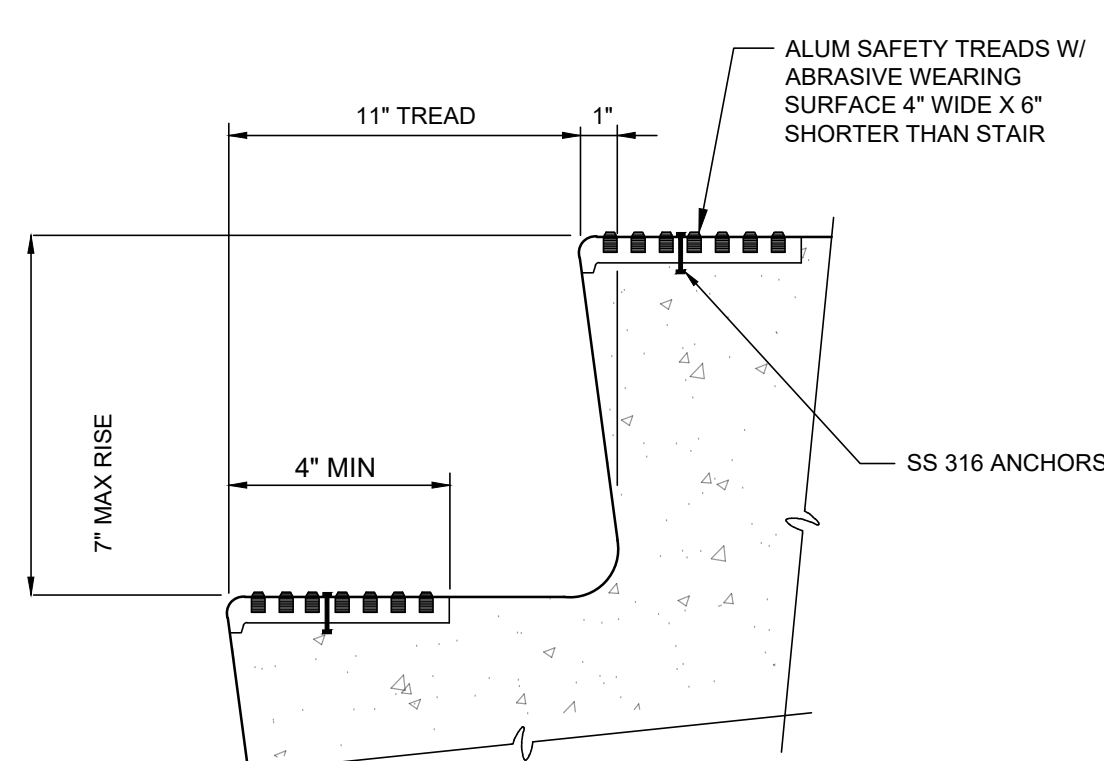
THICKENED EDGE SLAB  
DETAIL H  
NTS



PIPE ENCASEMENT  
DETAIL I  
NTS



CONCRETE STAIR  
DETAIL K  
NTS

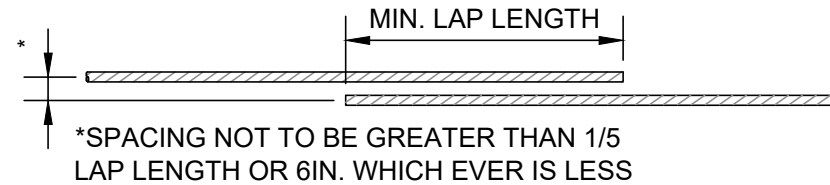


CONCRETE STAIR SAFETY TREADS  
DETAIL L  
NTS

REBAR MINIMUM TENSION DEVELOPMENT & LAP LENGTHS					
CONCRETE STRENGTH f'c= 4,000 PSI OR GREATER					
BAR SIZE	DEVELOPMENT LENGTH, ld		LAP LENGTH (CLASS B SPLICE)		BAR SIZE
	TOP BARS	OTHER BARS	TOP BARS	OTHER BARS	
#3	1'-7"	1'-3"	2'-0"	1'-7"	#3
#4	2'-1"	1'-7"	2'-8"	2'-0"	#4
#5	2'-7"	2'-0"	3'-4"	2'-7"	#5
#6	3'-1"	2'-4"	4'-0"	3'-1"	#6
#7	4'-6"	3'-6"	5'-10"	4'-6"	#7
#8	5'-2"	3'-11"	6'-8"	5'-2"	#8
#9	5'-10"	4'-6"	7'-6"	5'-10"	#9
#10	6'-6"	5'-0"	8'-6"	6'-6"	#10
#11	7'-3"	5'-7"	9'-6"	7'-3"	#11

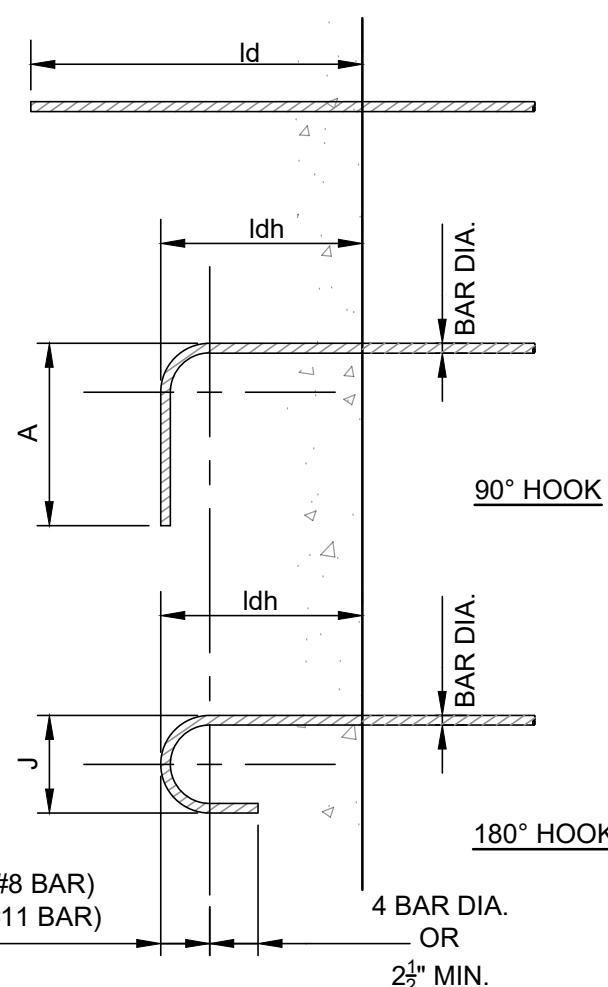
NOTES:  
1. GRADE 60 UNCOATED REINFORCEMENT  
2. SPLICE LENGTHS GIVEN ABOVE ARE TO BE USED UNLESS NOTED OTHERWISE ON DESIGN DRAWINGS.

MAXIMUM BAR SPACING AT NON-CONTACT LAPS:



STANDARD HOOK DEVELOPMENT LENGTH			
BAR SIZE	90° STD HOOK "A"	180° STD HOOK "J"	DEVELOPMENT LENGTH, ldh
#3	6"	3"	6"
#4	8"	4"	7"
#5	10"	5"	9"
#6	1'-0"	6"	10"
#7	1'-2"	7"	1'-0"
#8	1'-4"	8"	1'-2"
#9	1'-7"	11 1/2"	1'-3"
#10	1'-10"	1'-1 1/2"	1'-5"
#11	2'-0"	1'-2 3/4"	1'-7"

\*FOR STD HOOK BAR GEOMETRY NOT SHOWN REFER TO MINIMUM ACI REQUIREMENTS



STANDARD REINFORCEMENT DETAILS

DETAIL J  
NTS

NO.	BY	DATE	SYMBOL	REVISIONS
1.				
2.				
3.				
4.				
5.				

DESIGNER:	JVS
DRAWN BY:	JC
CHECKED BY:	DSM
APPROVED BY:	JVS
DATE:	APRIL 2020

DESIGN ENGINEER	JOHN SOBCZAK, P.E.
FLORIDA REGISTRATION NO.	71407



100 CENTER CREEK RD., STE 108  
ST. AUGUSTINE, FL. 32084  
PH. 904-562-2185  
FLORIDA  
CERTIFICATE OF AUTHORIZATION  
# 98316

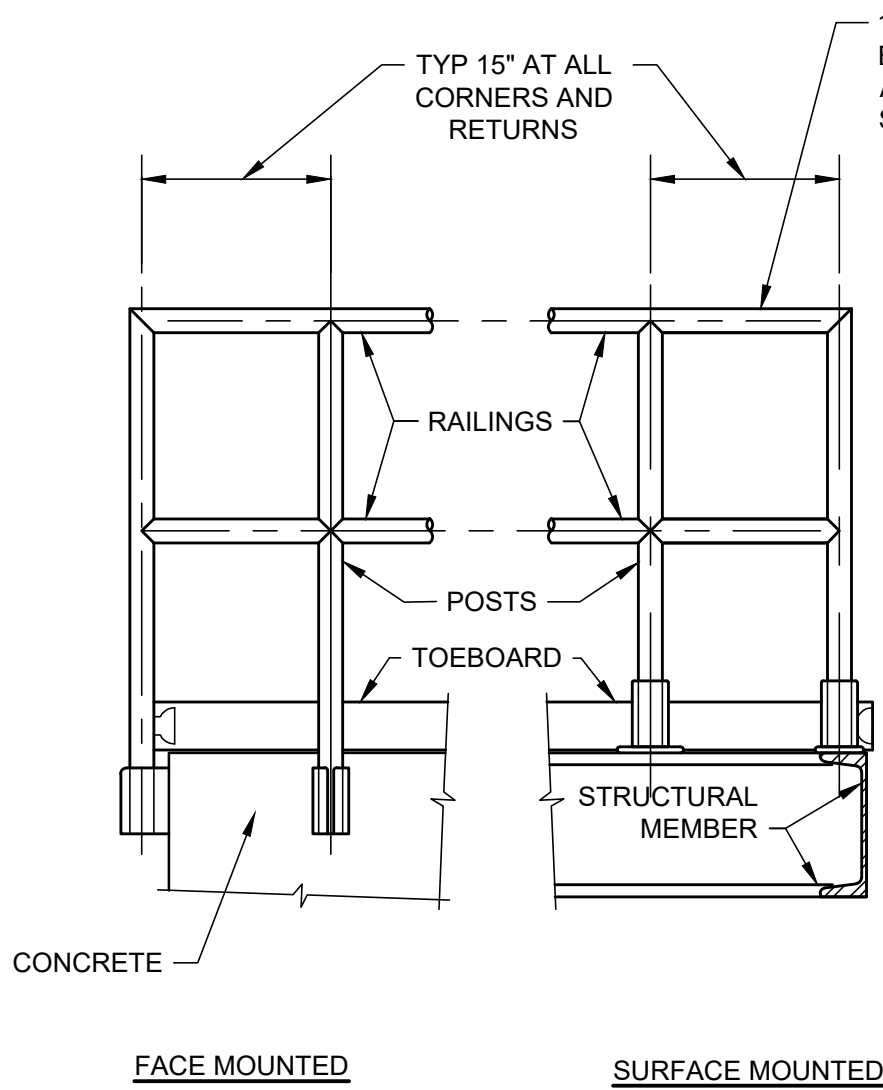


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1205 STATE ROAD 16  
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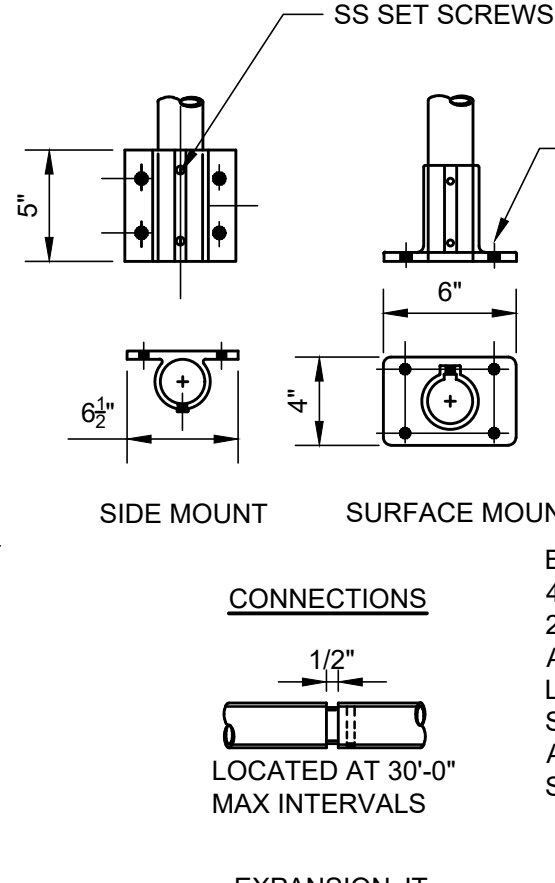
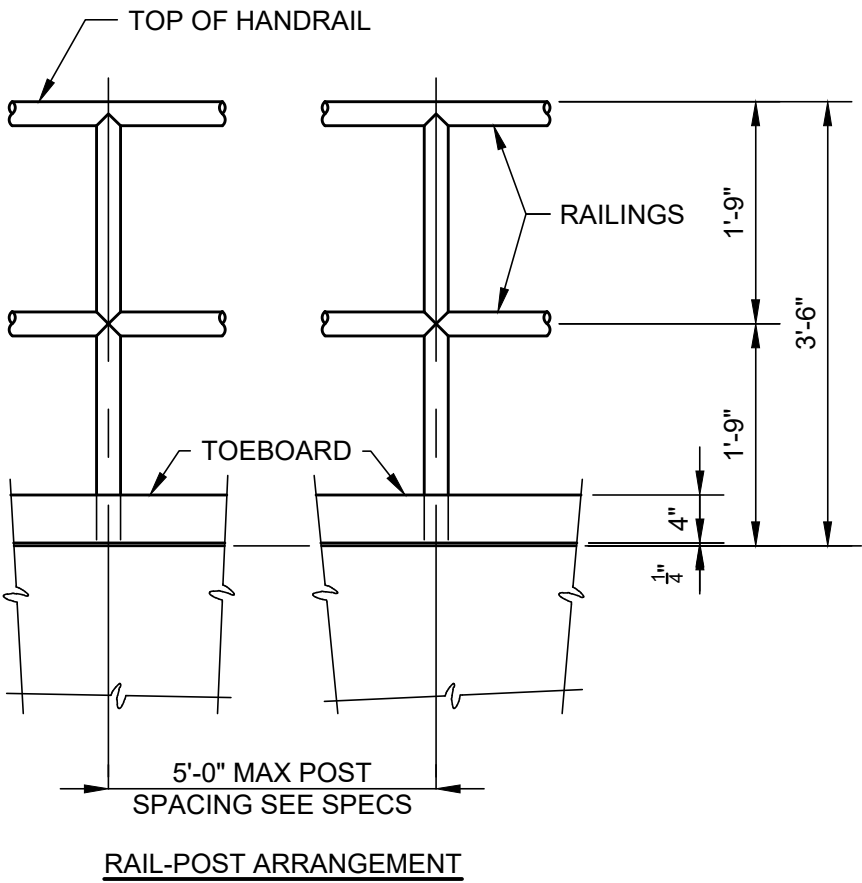
STATE ROAD 16 WASTEWATER TREATMENT FACILITY HEADWORKS & RAS / WAS IMPROVEMENTS STANDARD DETAILS 1 OF 2
---

PROJECT NO.	100408.24
FILE NAME	S-8
SHEET NO.	S-7



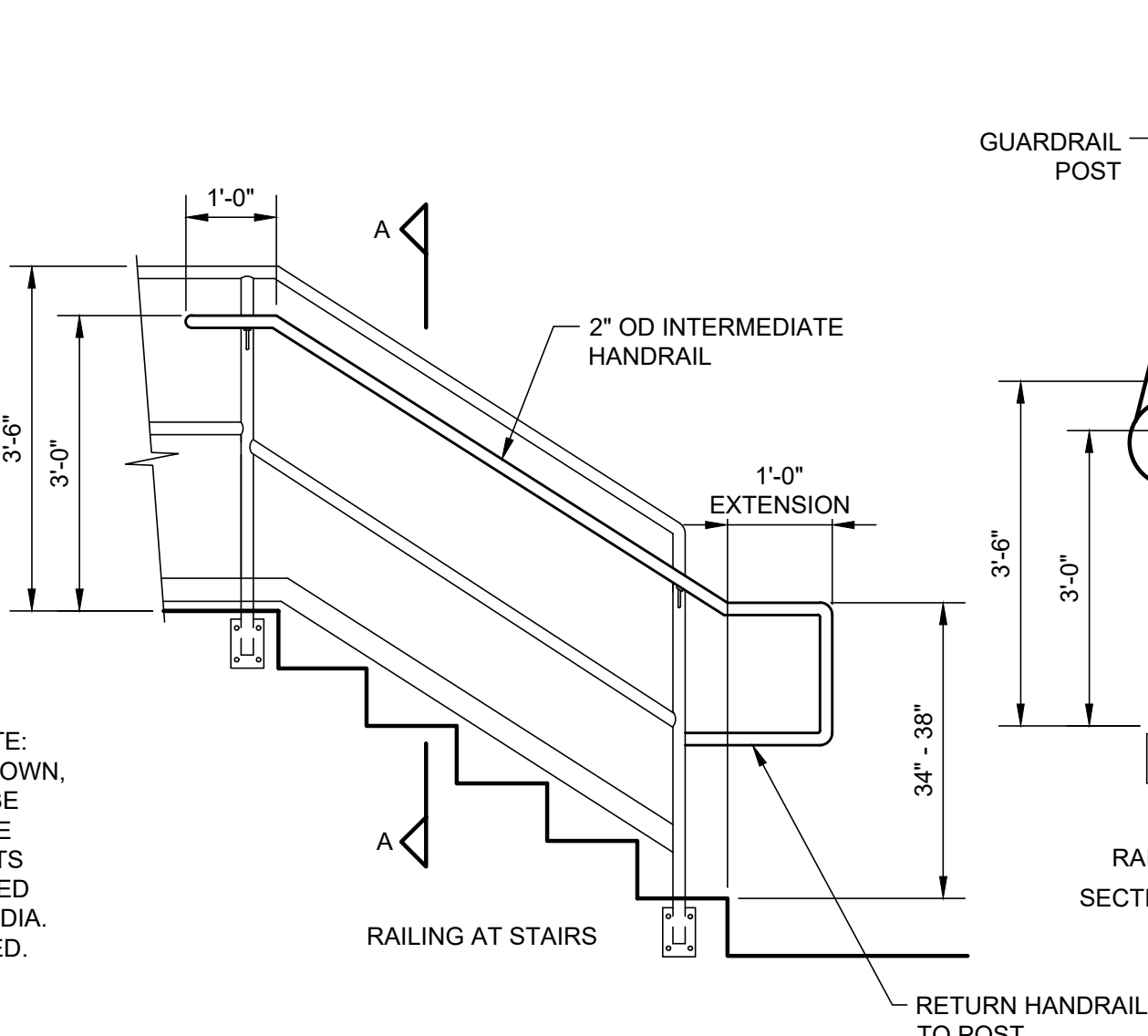


GUARDRAILS  
**DETAIL A**  
NTS

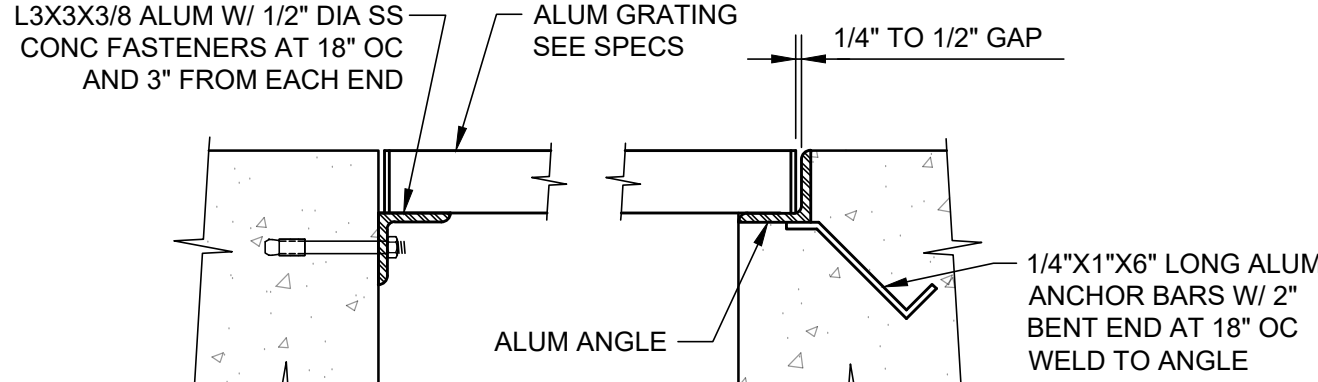
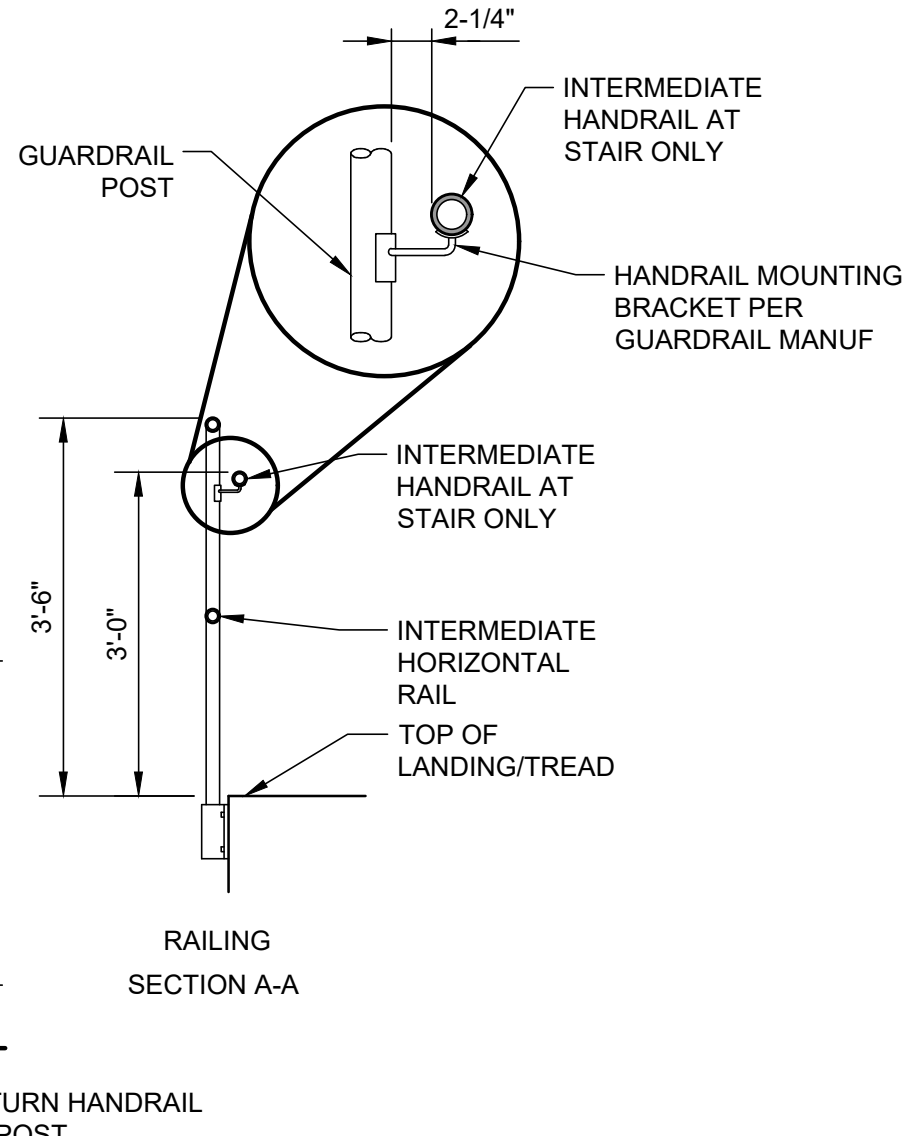


BASE CONNECTION NOTE:  
4 ANCHOR PATTERN SHOWN.  
2 BOLT PATTERN WILL BE  
ACCEPTABLE GIVEN THE  
LOADING REQUIREMENTS  
SPECIFIED ARE SATISFIED  
AND A MINIMUM OF 1/2" DIA.  
SS BOLTS ARE PROVIDED.

EXPANSION JT



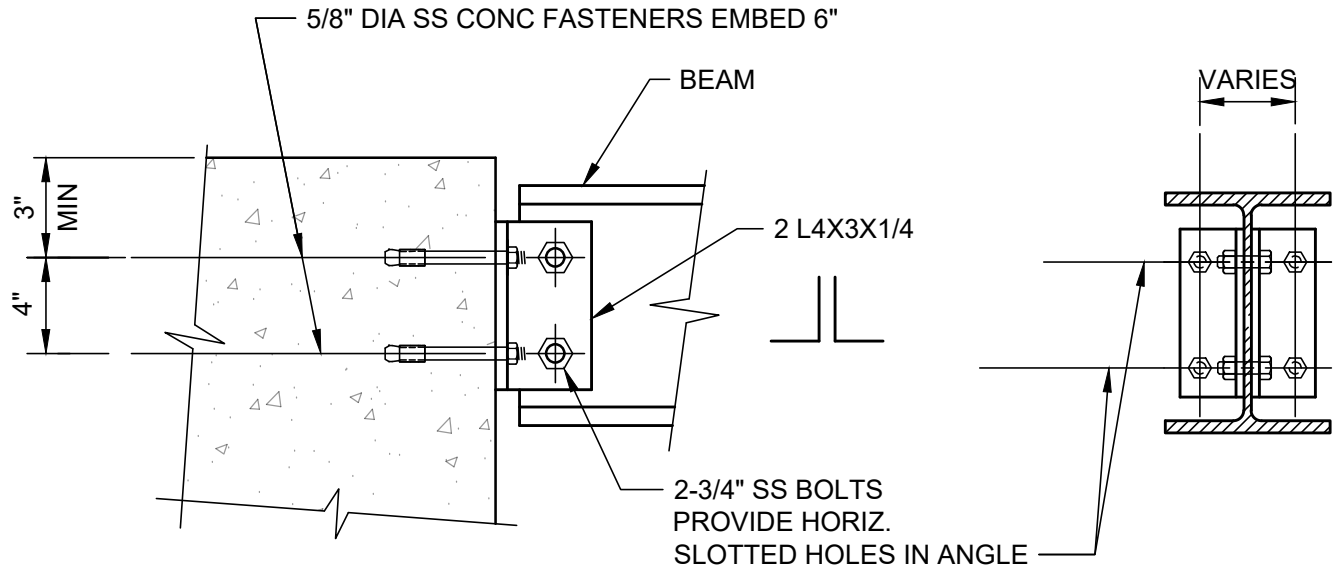
HANDRAIL ATTACHED TO GUARDRAIL SYSTEM  
**DETAIL B**  
NTS



MAXIMUM SPAN	DEPTH	BEARING BAR	
		THICKNESS	SPACING
3'-0"	1 1/4"	3/16"	1 3/16"
4'-0"	1 1/2"	3/16"	1 3/16"
5'-0"	2"	3/16"	1 3/16"
6'-0"	2 1/4"	3/16"	1 3/16"

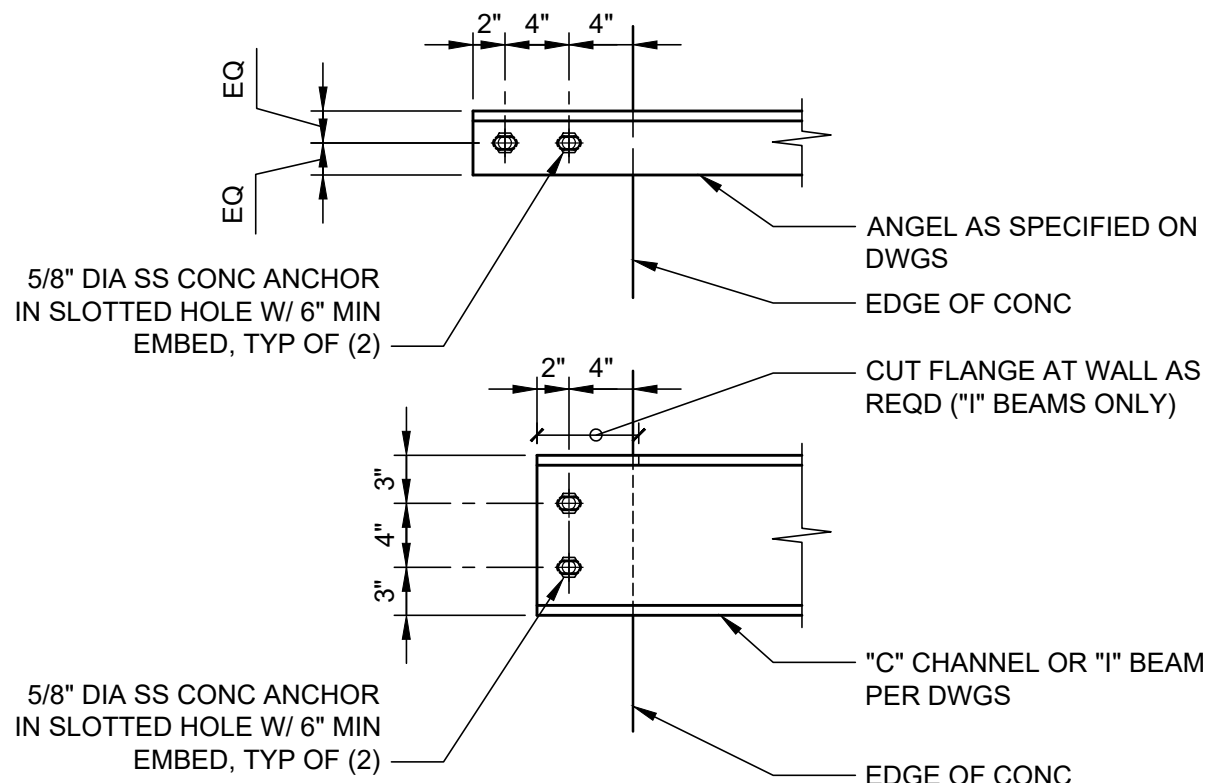
ALUM GRATING AND GRATING SUPPORT

**DETAIL C**  
NTS

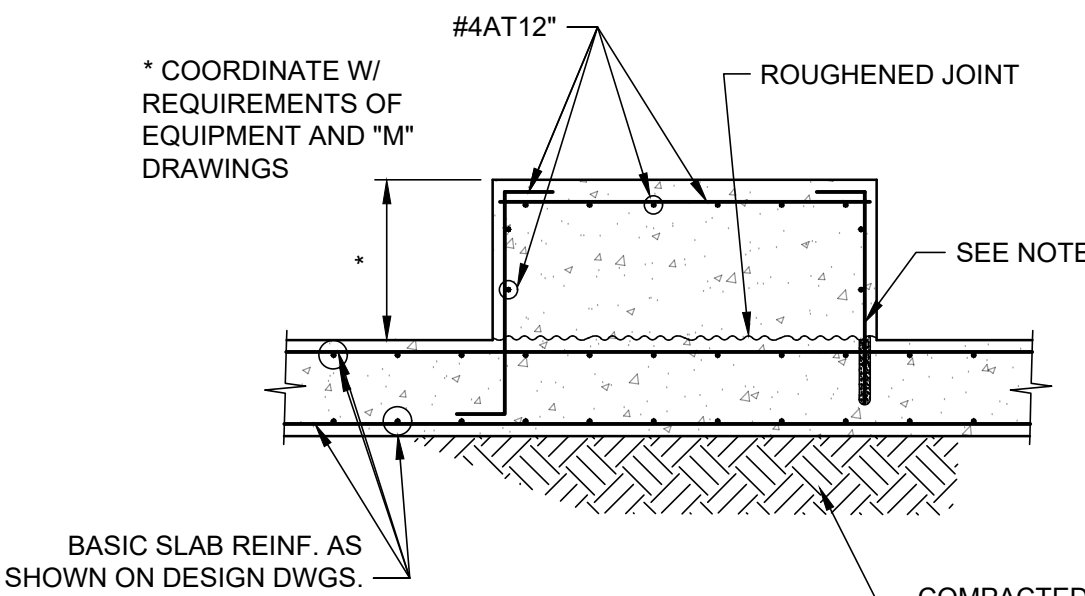


BEAM DEPTH	8, 10, 12	14, 16, 18
NO. OF ANCHORS	4	6

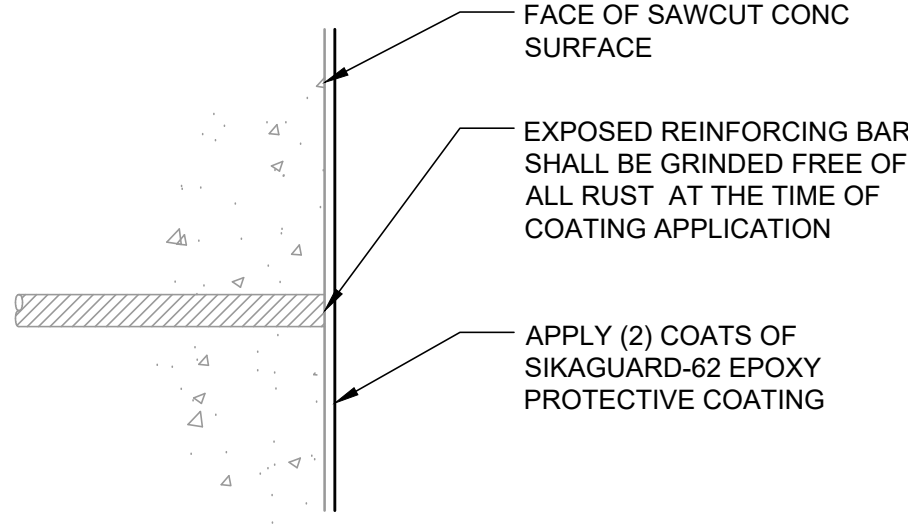
BEAM TO CONCRETE  
**DETAIL D**  
NTS



BEAM CONNECTION TO CONCRETE FACE  
**DETAIL E**  
NTS



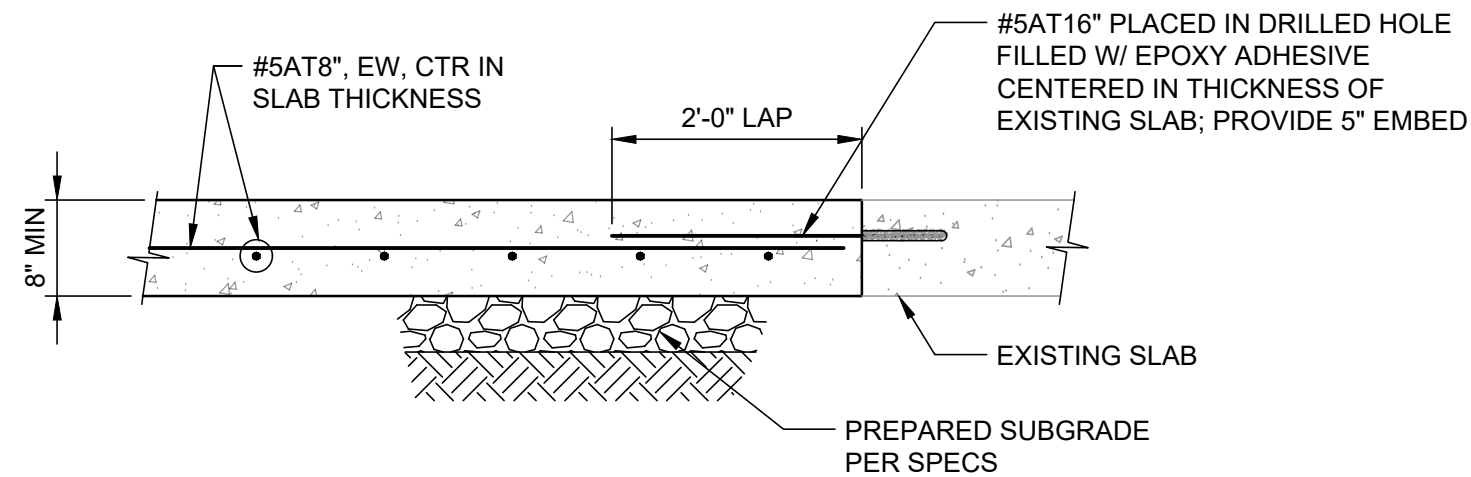
EQUIPMENT PEDESTAL  
**DETAIL F**  
NTS



NOTES:

1. DETAIL IS APPLICABLE TO VERTICAL AND HORIZONTAL SURFACES.
2. APPLY PROTECTIVE COATING ACCORDING TO MANUFACTURER'S WRITTEN INSTRUCTIONS AND RECOMMENDATIONS.

CONCRETE REPAIR  
**DETAIL G**  
NTS



PROPOSED SLAB AT SCUM PUMPS  
**DETAIL H**  
NTS

NO.	BY	DATE	SYMBOL	REVISIONS
6				
5				
4				
3				
2				
1				

DESIGNER:	JVS
DRAWN BY:	JC
CHECKED BY:	DSM
APPROVED BY:	JVS
DATE:	APRIL 2020

DESIGN ENGINEER	JOHN SOBCHAK, P.E.
FLORIDA REGISTRATION NO.	71407

**Constantine Engineering**  
100 CENTER CREEK RD., STE 108  
ST. AUGUSTINE, FL. 32084  
PH. 904-562-2185  
FLORIDA  
CERTIFICATE OF AUTHORIZATION  
# 9816



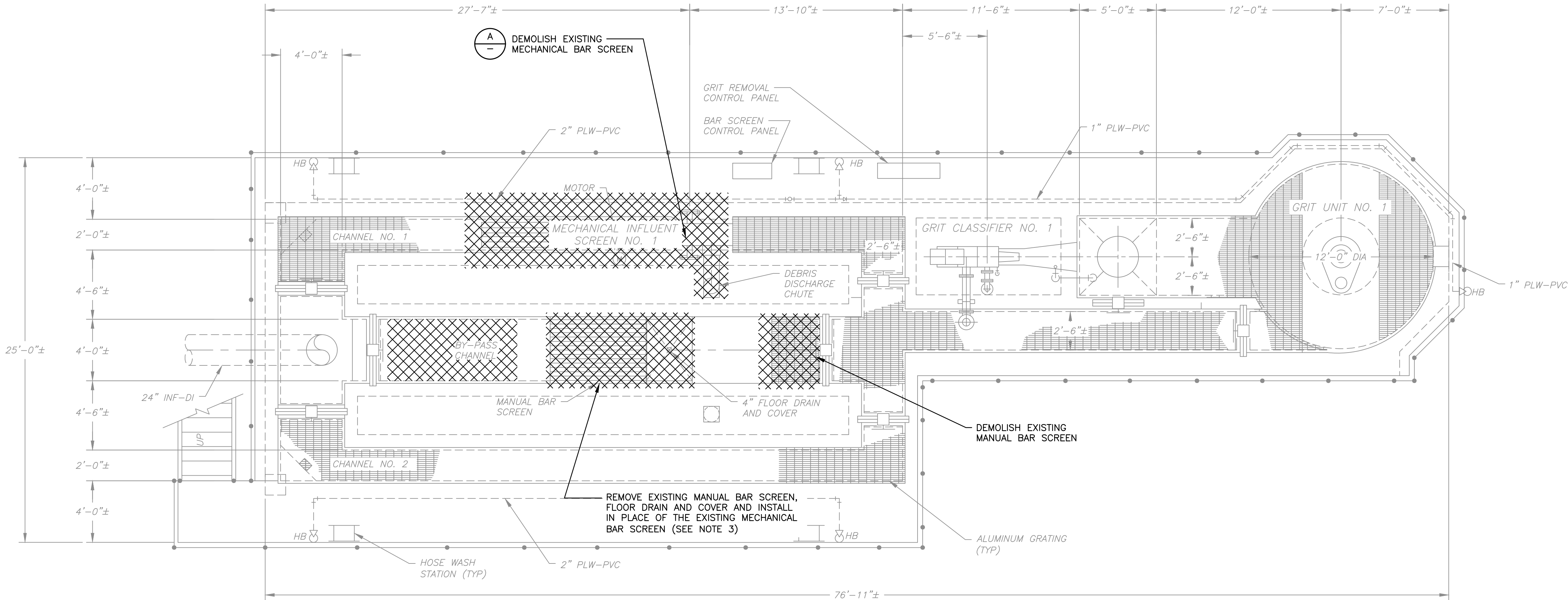
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1205 STATE ROAD 16  
ST. AUGUSTINE, FLORIDA 32084-8646  
Phone (904) 209-2700 • Fax (904) 209-2702

STATE ROAD 16 WASTEWATER TREATMENT FACILITY HEADWORKS & RAS / WAS IMPROVEMENTS STANDARD DETAILS 2 OF 2
---

PROJECT NO.	100408.24
FILE NAME	S-8
SHEET NO.	S-8



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TOP PLAN AT ELEVATION 56.20

PLAN

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

LEGEND

 TO BE DEMOLISHED

NOTES:

1. REFER TO SPECIFICATION 01014 FOR HEADWORKS SEQUENCE OF CONSTRUCTION REQUIREMENTS.
2. REFER TO SPECIFICATION 01010 FOR EQUIPMENT SALVAGE REQUIREMENTS.
3. THE MANUAL BAR SCREEN WILL BE RELOCATED FROM THE BYPASS CHANNEL WHICH IS 4'-0" WIDE TO CHANNEL NO. 1 WHICH IS 2'-0" WIDE. THE MANUAL SCREEN, DEBRIS PLATFORM AND DRAIN SHALL BE MODIFIED AS REQUIRED TO FIT INSIDE THE CHANNEL AND SECURED IN PLACE USING 316 SST HARDWARE.

DEMOLISH

REMOVE EXISTING MANUAL BAR SCREEN AND INSTALL IN PLACE OF THE EXISTING MECHANICAL BAR SCREEN (SEE NOTE 3)

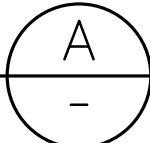
EXISTING CHUTE TO REMAIN

REMOVE 4" FLOOR DRAIN AND COVER

MECHANICAL BAR SCREEN

DETAIL

NTS



NO.	BY	DATE	SYMBOL	REVISIONS
6				
5				
4				
3				
2				
1				

DESIGNER:	DAR
DRAWN BY:	DRS
CHECKED BY:	CEH
APPROVED BY:	DAR
DATE:	APRIL 2020

DESIGN ENGINEER	DAVID A. RASMUSSEN P.E.
FLORIDA REGISTRATION NO.	77561



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PH. 904-562-2185  
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CERTIFICATE OF AUTHORIZATION  
# 98316



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UTILITY DEPARTMENT  
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STATE ROAD 16 WASTEWATER TREATMENT FACILITY HEADWORKS & RAS / WAS IMPROVEMENTS

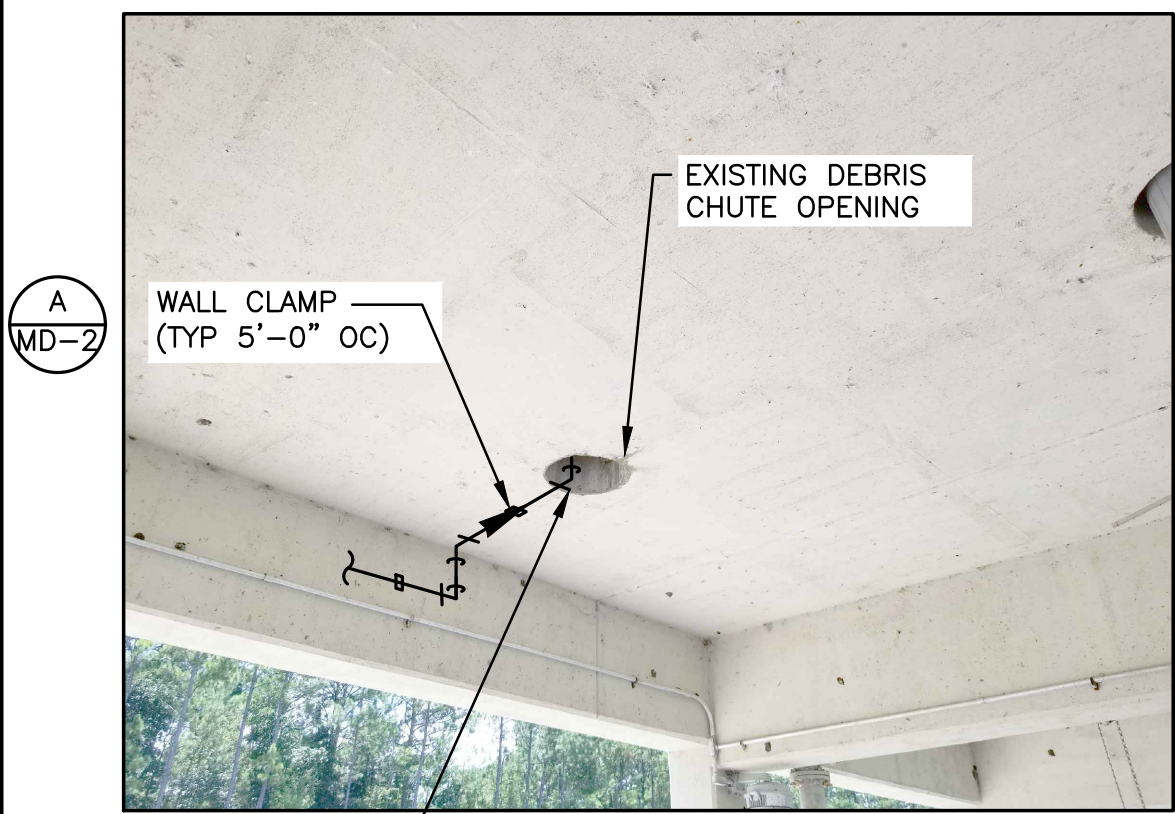
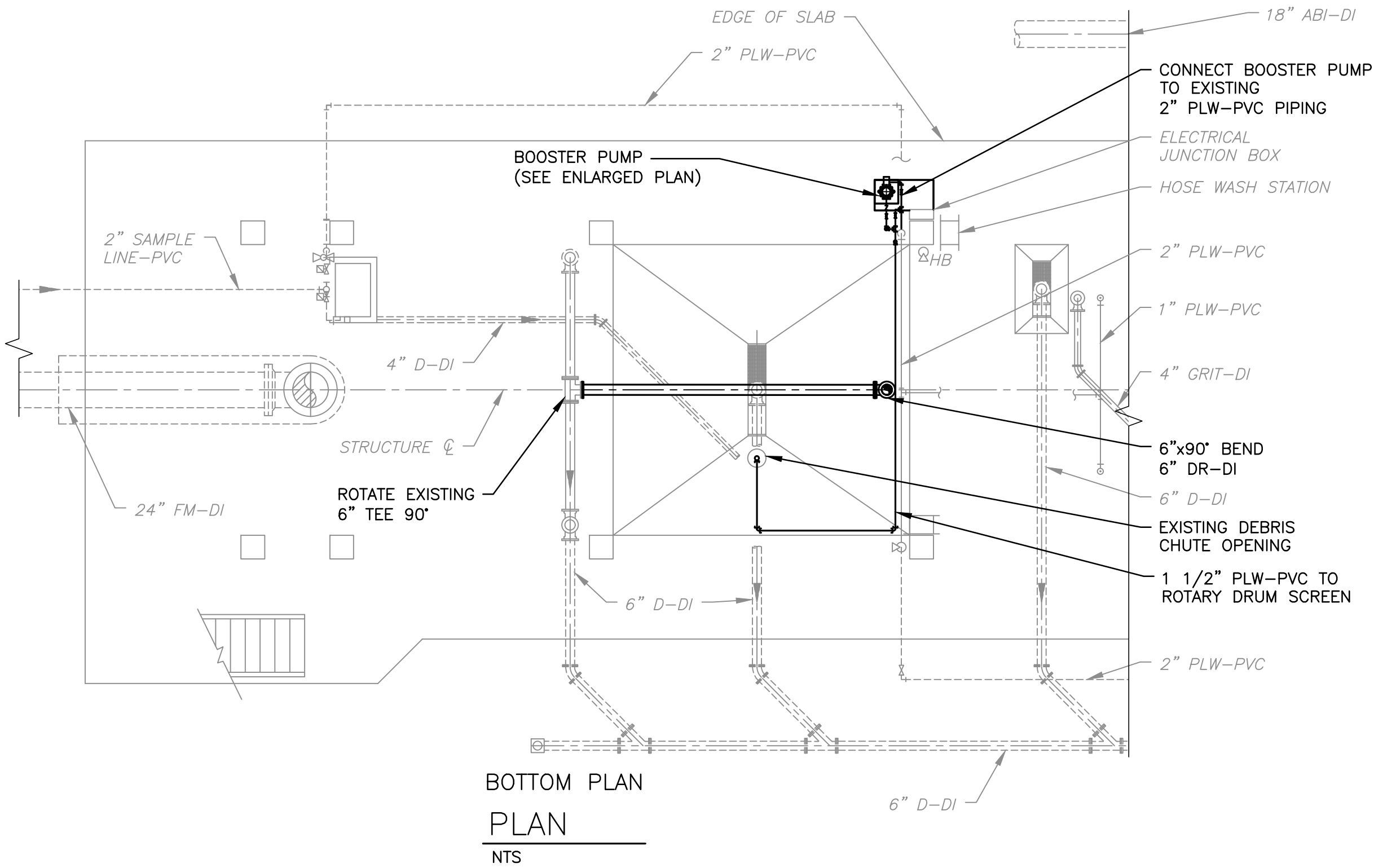
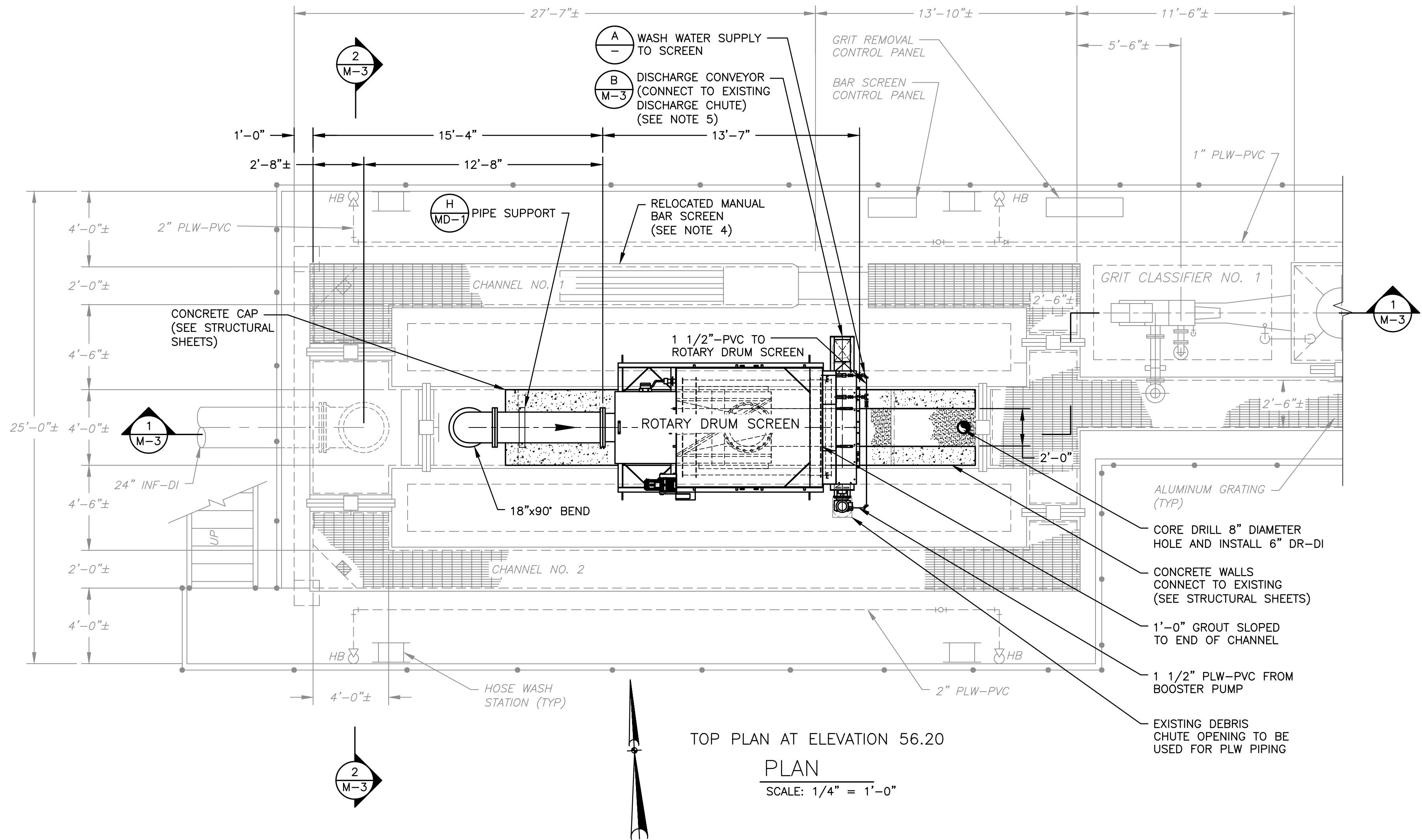
HEADWORKS DEMOLITION PLAN

PROJECT NO.	100408.24
FILE NAME	M-1
SHEET NO.	M-1

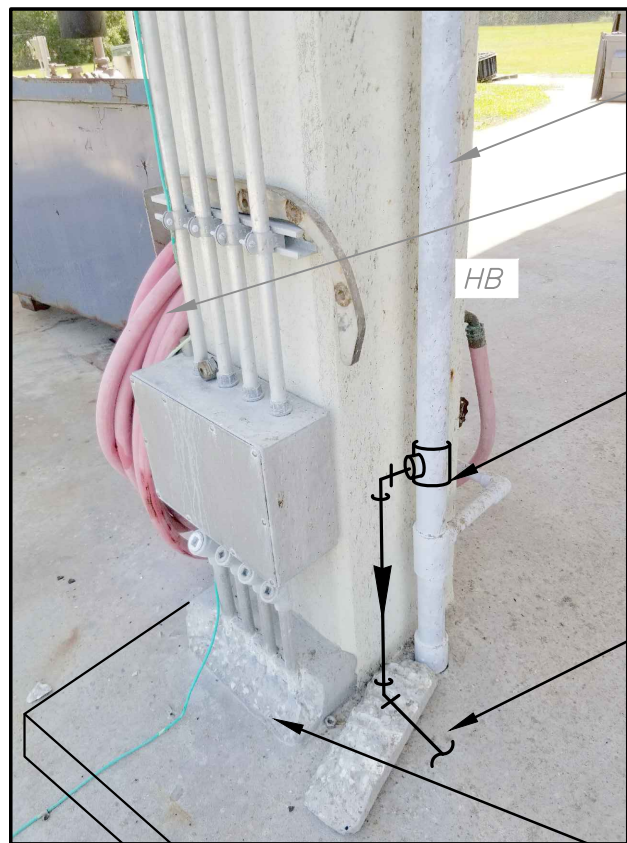
ISSUED FOR BID



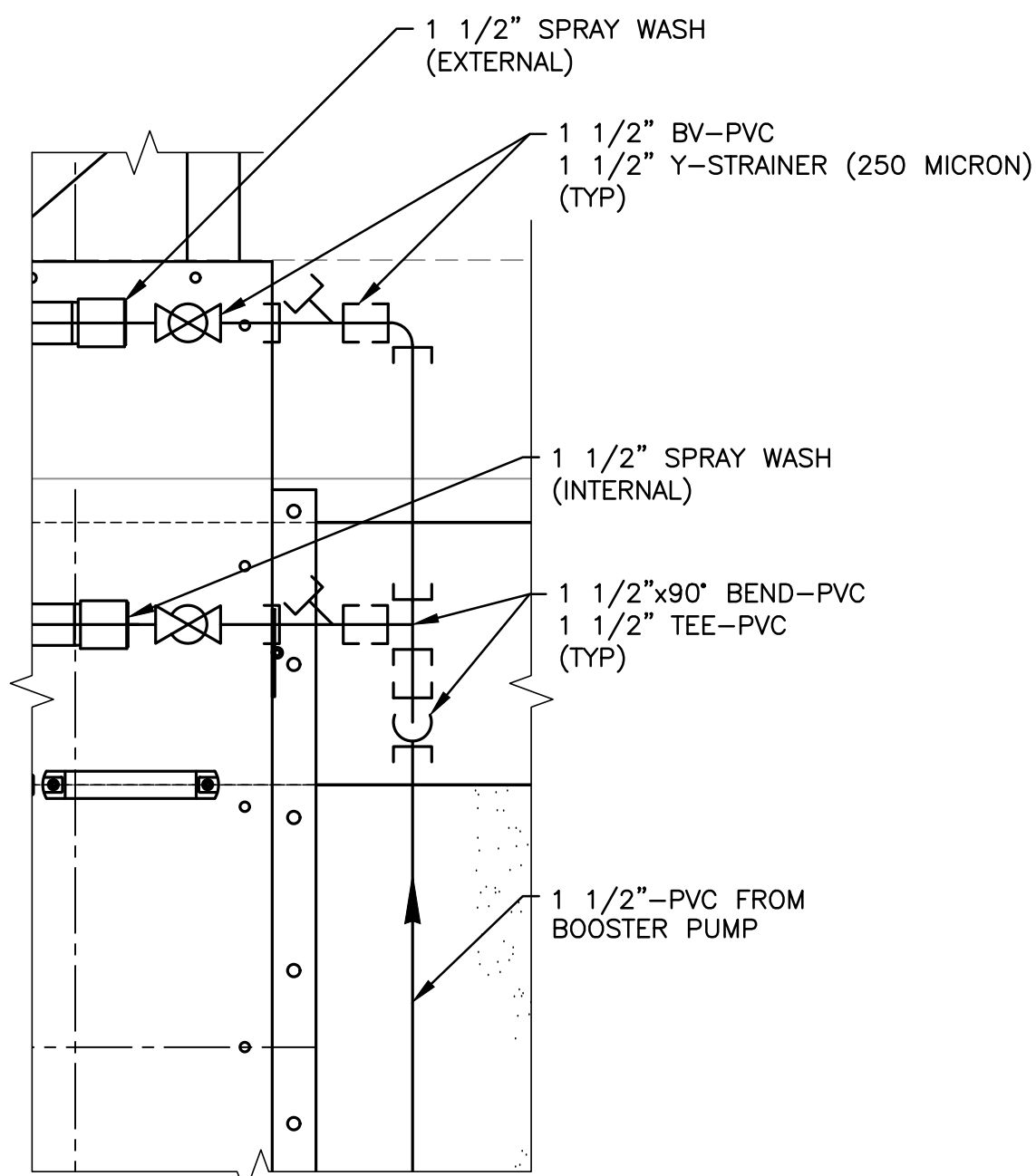
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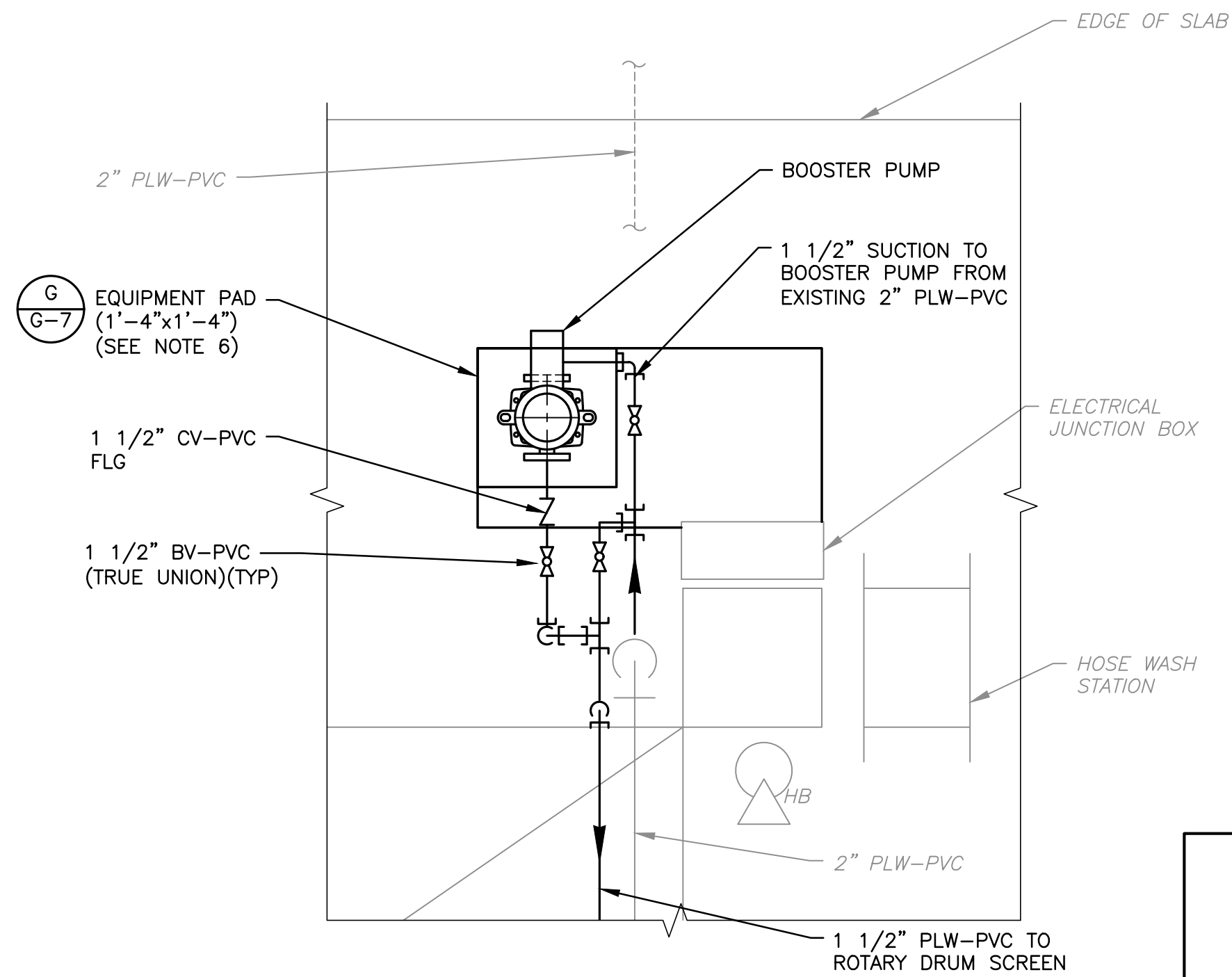
BOOSTER PUMP PIPING  
NTS



- 2" PLW-PVC
- HOSE WASH STATION
- CUT INTO EXISTING 2" PLW-PVC AND INSTALL 2"x1 1/2" TEE (2) 1 1/2"x90" BEND
- 1 1/2"-PVC TO BOOSTER PUMP
- EQUIPMENT PAD (SEE NOTE 6)



DETAIL  
NTS



ENLARGED PLAN  
PLAN  
NTS

- NOTES:
- REFER TO SPECIFICATION SECTION 01014 FOR CONSTRUCTION SEQUENCE REQUIREMENTS.
  - COORDINATE SOLIDS TRANSITION PIECE WITH THE SCREEN MANUFACTURER.
  - ALL PVC PIPING SHALL BE SCHEDULE 80 AND FIELD PAINTED. COORDINATE WITH OWNER FOR PAINT COLOR.
  - THE MANUAL BAR SCREEN WILL BE RELOCATED FROM THE BYPASS CHANNEL WHICH IS 4'-0" WIDE TO CHANNEL NO. 1 WHICH IS 2'-0" WIDE. THE MANUAL SCREEN DEBRIS PLATFORM AND DRAIN SHALL BE MODIFIED AS REQUIRED TO FIT INSIDE THE CHANNEL AND SECURED IN PLACE USING 316 SST HARDWARE.
  - INCLINE THE CONVEYOR AT A 1 DEGREE ANGLE SO THAT WATER DISCHARGES OUT OF THE DRAIN AND NOT THE DISCHARGE OF THE CONVEYOR.
  - INCORPORATE CONDUIT SEAL IN EQUIPMENT PAD.

NO.	BY	DATE	SYMBOL	REVISIONS
6				
5				
4				
3				
2				
1				

DESIGNER:	DAR
DRAWN BY:	DRS
CHECKED BY:	CEH
APPROVED BY:	DAR
DATE:	APRIL 2020

DESIGN ENGINEER	DAVID A. RASMUSSEN P.E.
FLORIDA REGISTRATION NO.	77561

**Constantine Engineering**

100 CENTER CREEK RD., STE 108  
ST. AUGUSTINE, FL. 32084  
PH. 904-562-2185

FLORIDA  
CERTIFICATE OF AUTHORIZATION  
# 9816



**ST. JOHNS COUNTY  
UTILITY DEPARTMENT**

1205 STATE ROAD 16  
ST. AUGUSTINE, FLORIDA 32084-8646  
Phone (904) 209-2700 • Fax (904) 209-2702

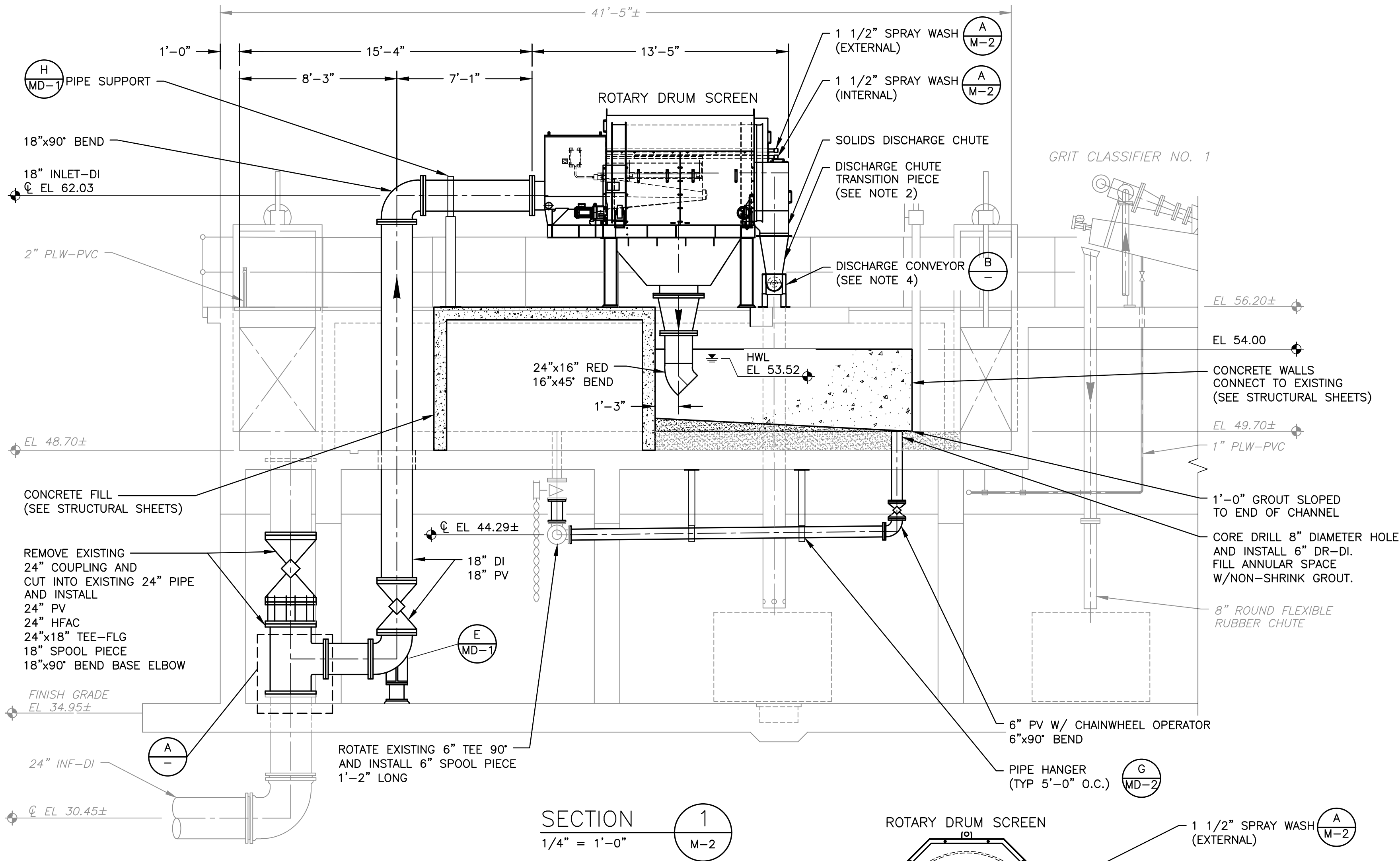
STATE ROAD 16 WASTEWATER TREATMENT FACILITY HEADWORKS & RAS / WAS IMPROVEMENTS

HEADWORKS MODIFICATIONS PLANS AND DETAILS

PROJECT NO.	100408.24
FILE NAME	M-2
SHEET NO.	M-2

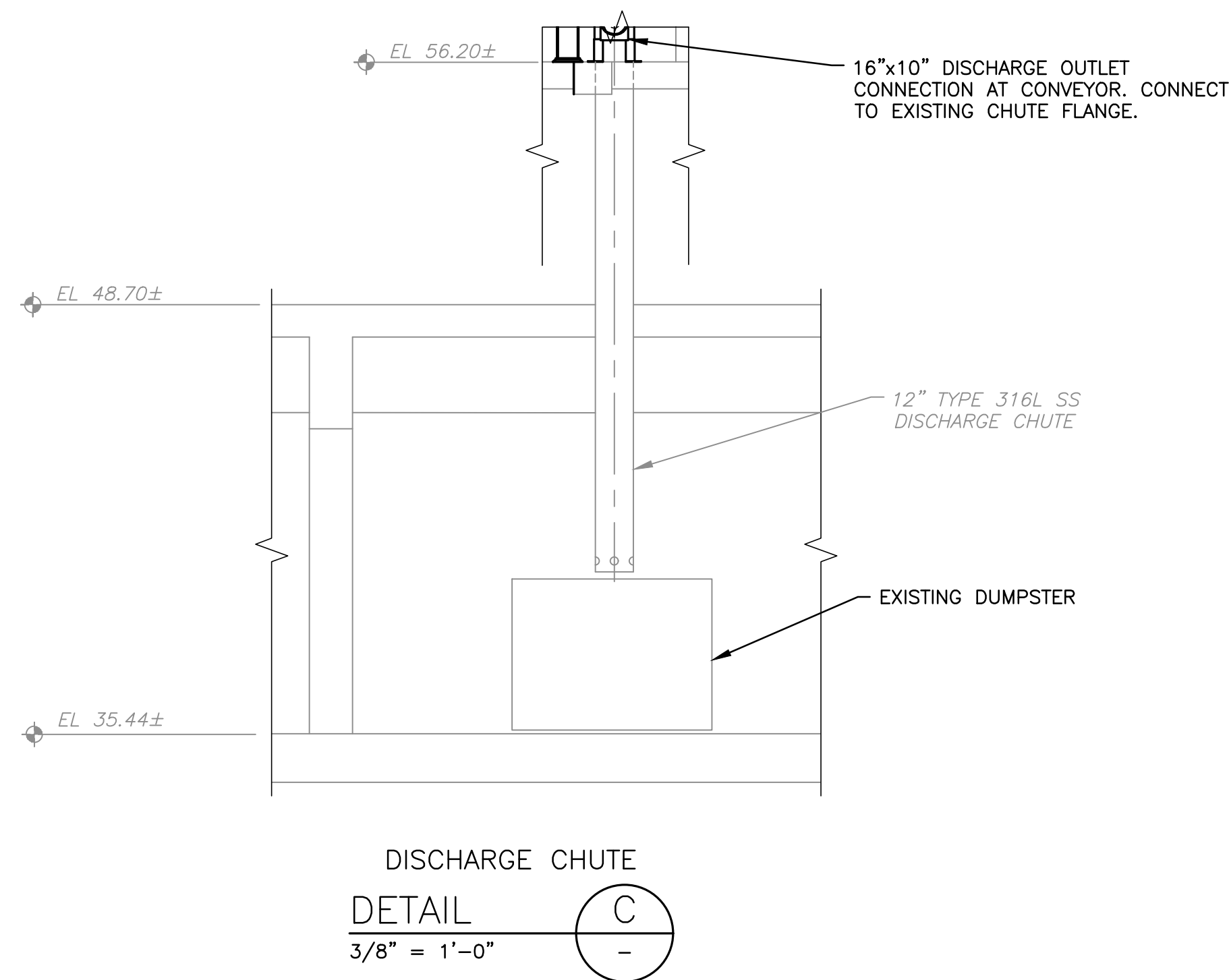
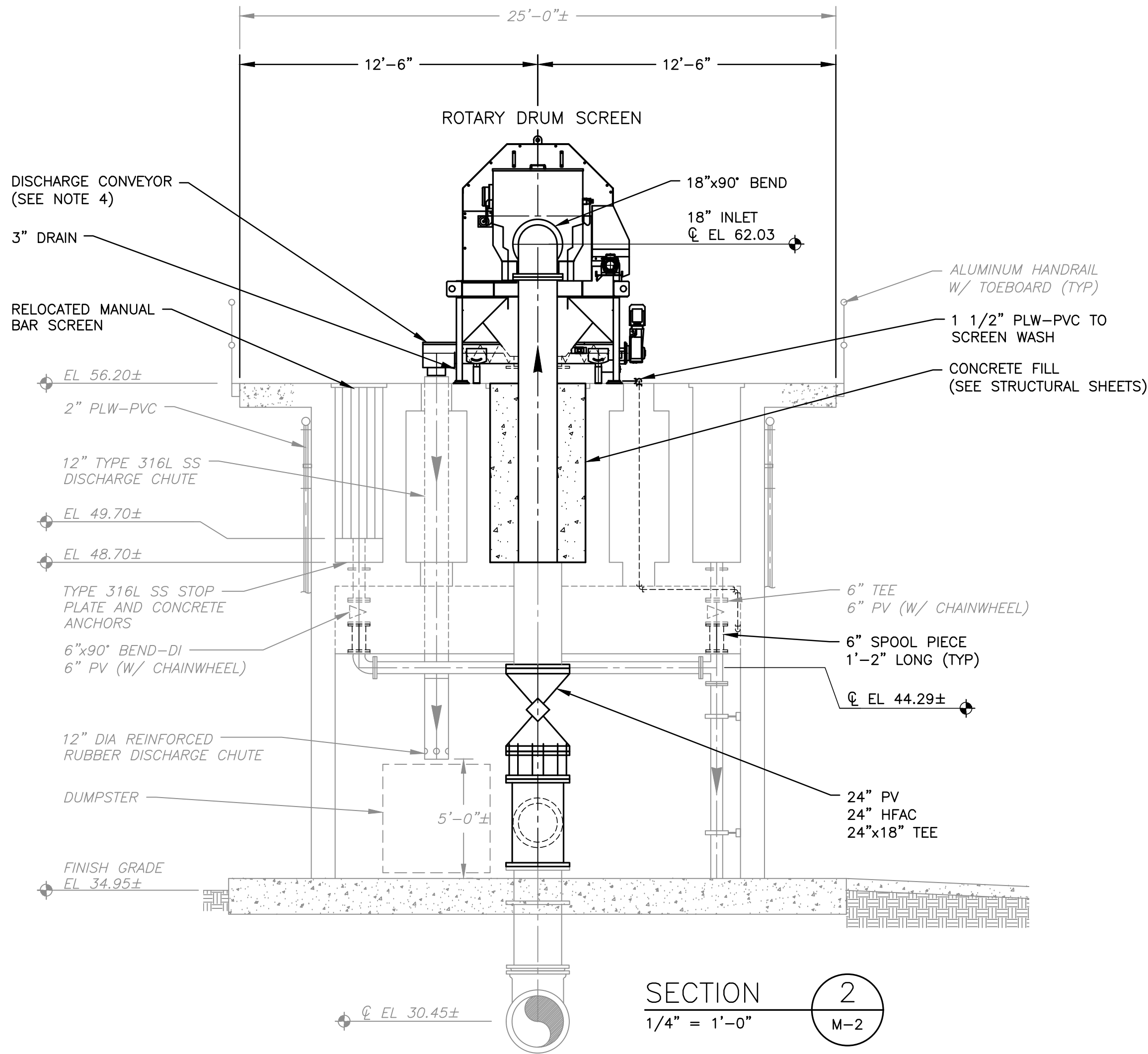
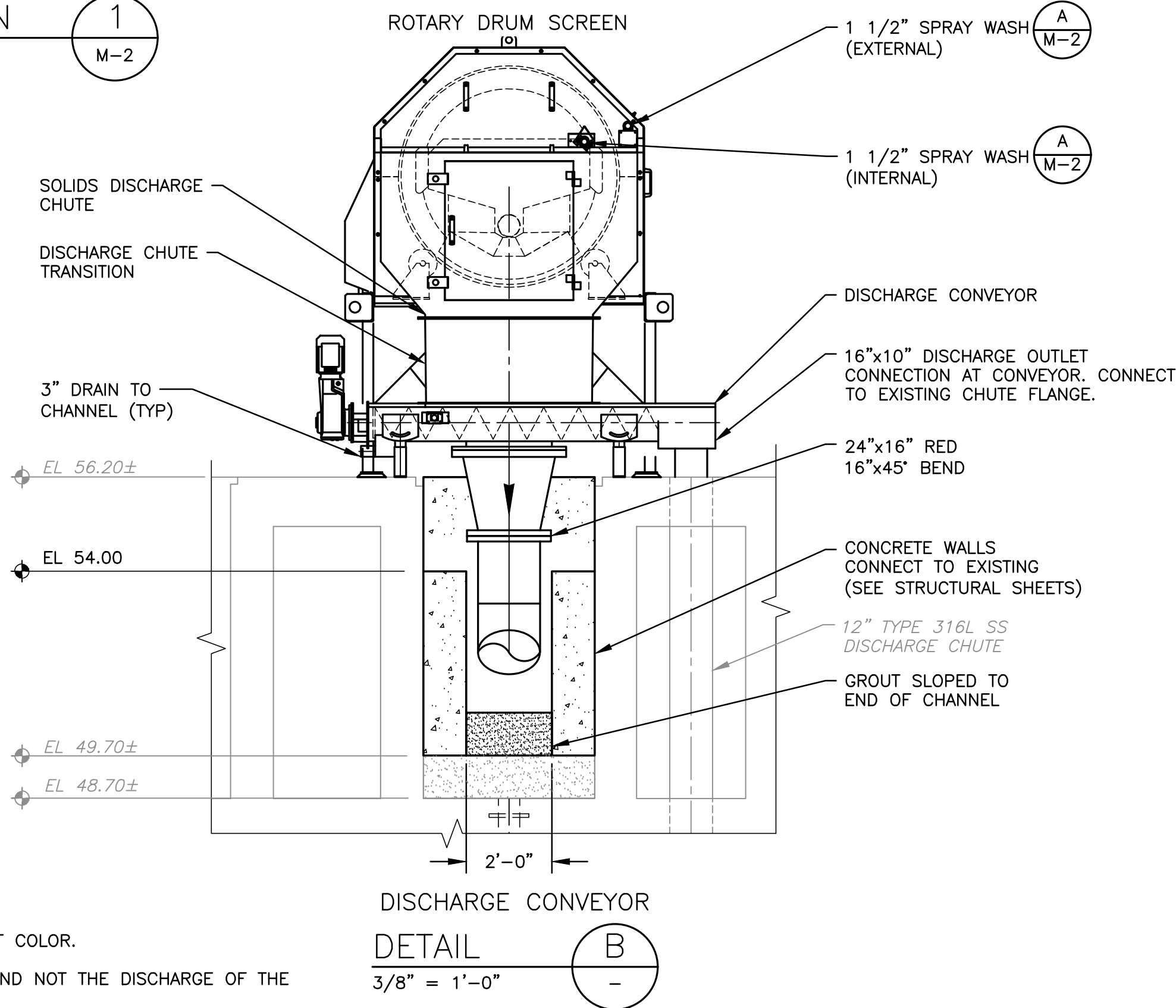


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24" INFLUENT PIPE  
DETAIL  
NTS

- NOTES:
1. REFER TO SPECIFICATION SECTION 01014 FOR CONSTRUCTION SEQUENCE REQUIREMENTS.
  2. COORDINATE SOLIDS TRANSITION PIECE WITH THE SCREEN MANUFACTURER.
  3. ALL PVC PIPING SHALL BE SCHEDULE 80 AND FIELD PAINTED. COORDINATE WITH OWNER FOR PAINT COLOR.
  4. INCLINE THE CONVEYOR AT A 1 DEGREE ANGLE SO THAT WATER DISCHARGES OUT OF THE DRAIN AND NOT THE DISCHARGE OF THE CONVEYOR.



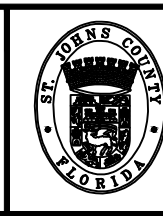
NO.	BY	DATE	SYMBOL	REVISIONS
6				
5				
4				
3				
2				
1				

DESIGNER:	DAR
DRAWN BY:	DRS
CHECKED BY:	CEH
APPROVED BY:	DAR
DATE:	APRIL 2020

DESIGN ENGINEER	DAVID A. RASMUSSEN P.E.
FLORIDA REGISTRATION NO.	77561



100 CENTER CREEK RD., STE 108  
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FLORIDA  
CERTIFICATE OF AUTHORIZATION  
# 9816



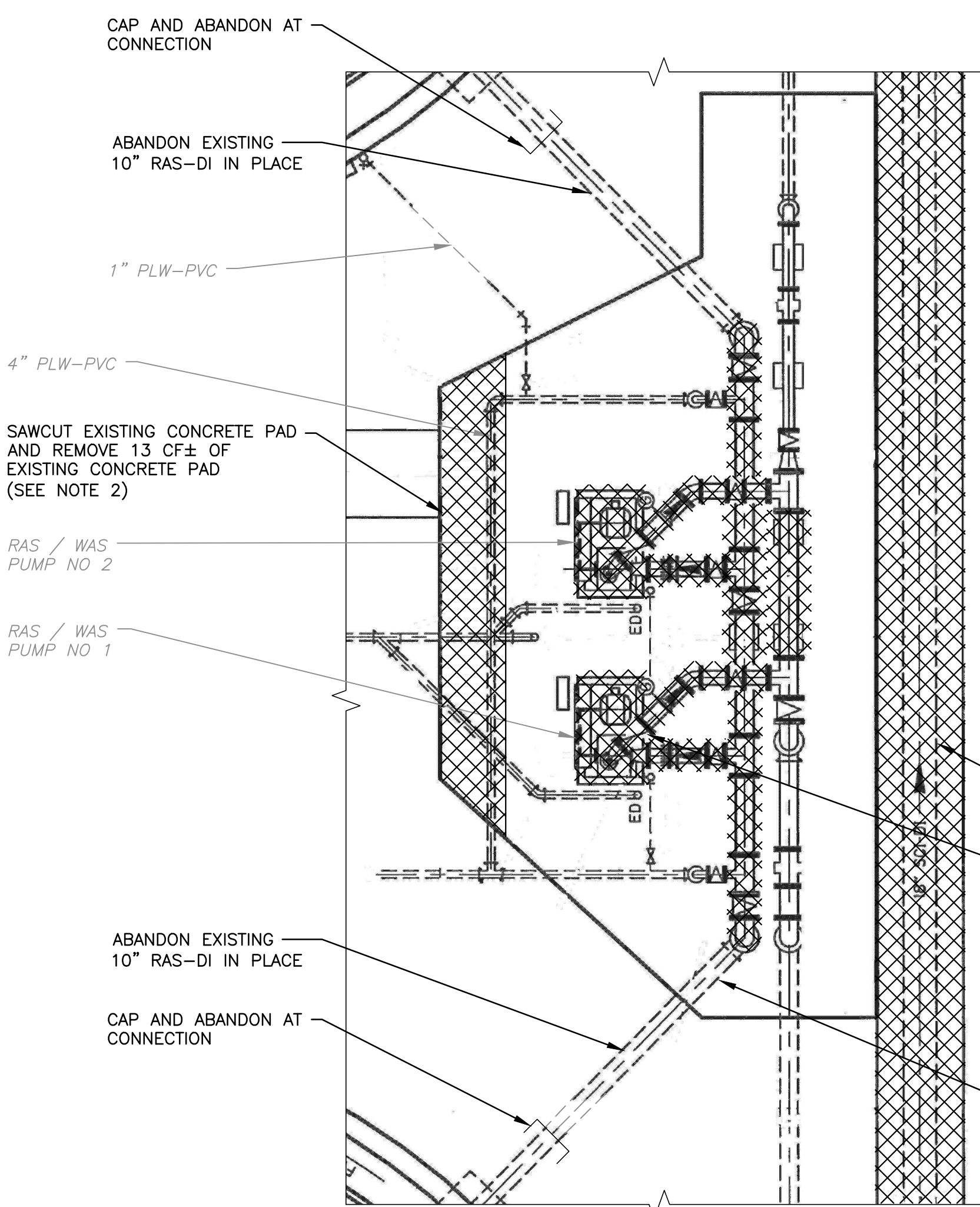
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1205 STATE ROAD 16  
ST. AUGUSTINE, FLORIDA 32084-8646  
Phone (904) 209-2700 • Fax (904) 209-2702

STATE ROAD 16 WASTEWATER TREATMENT FACILITY HEADWORKS & RAS / WAS IMPROVEMENTS  
HEADWORKS MODIFICATIONS SECTIONS AND DETAILS

PROJECT NO.	100408.24
FILE NAME	M-3
SHEET NO.	M-3



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PLAN  
SCALE: 3/16" = 1'-0"

DEMOLISH EXISTING  
LIGHT POLE AND FOUNDATION  
(SEE ELECTRICAL SHEETS)

6" WAS-DI  
TO DIGESTER

6" TEE  
6" PV  
4" QUICK-CONNECT

10" RAS-DI  
FROM CLARIFIER NO 2

4" PLW-DI

DEMOLISH EXISTING  
18" SCI-DI

DEMOLISH EXISTING RAS/WAS PUMP  
(TYP OF 2) (SEE NOTE 1)

ABANDON EXISTING  
10" RAS-DI IN PLACE



EXISTING RAS/WAS PUMP STATION DEMOLITION

DETAIL  
NTS

LEGEND

TO BE DEMOLISHED

NOTES:

1. SEE SPECIFICATION SECTION 01014 FOR CONSTRUCTION SEQUENCE AND CONSTRAINTS.
2. REMOVE EXISTING CONCRETE PAD TO FACILITATE THE INSTALLATION OF THE 6" SCUM INTERCONNECT PIPE.

NO.	BY	DATE	SYMBOL	REVISIONS
6.				
5.				
4.				
3.				
2.				
1.				

DESIGNER:	DAR	DESIGN ENGINEER	
DRAWN BY:	DRS	DAVID A. RASMUSSEN P.E.	
CHECKED BY:	CEH		
APPROVED BY:	DAR	FLORIDA REGISTRATION NO.	77561
DATE:	APRIL 2020		

**Constantine**  
Engineering

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ST. AUGUSTINE, FL. 32084  
PH. 904-562-2185  
FLORIDA  
CERTIFICATE OF AUTHORIZATION  
# 98316



**ST. JOHNS COUNTY  
UTILITY DEPARTMENT**

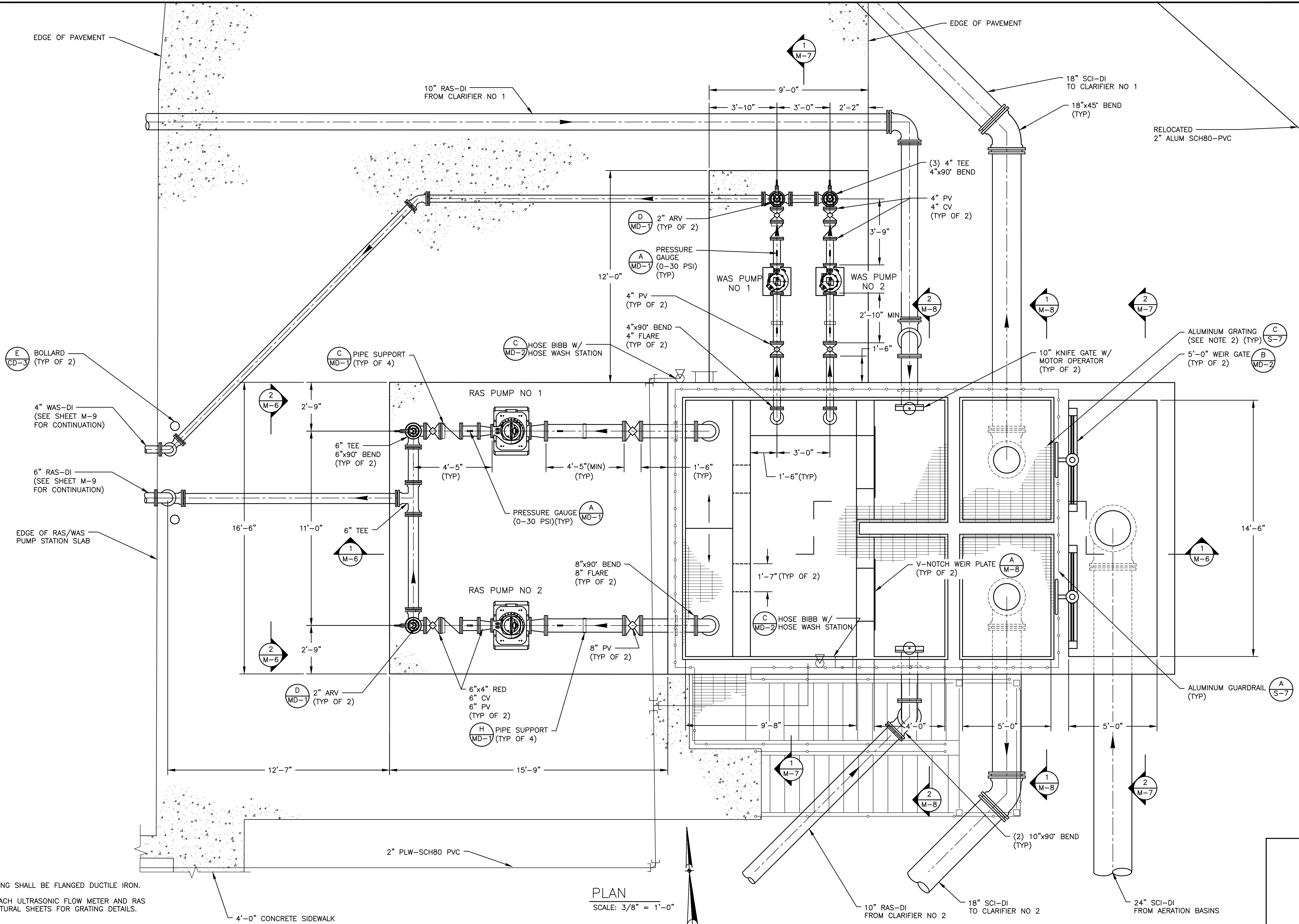
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STATE ROAD 16 WASTEWATER TREATMENT FACILITY HEADWORKS & RAS / WAS IMPROVEMENTS

EXISTING RAS/WAS DEMOLITION PLAN AND DETAIL

PROJECT NO.	100408.24
FILE NAME	M-4
SHEET NO.	M-4





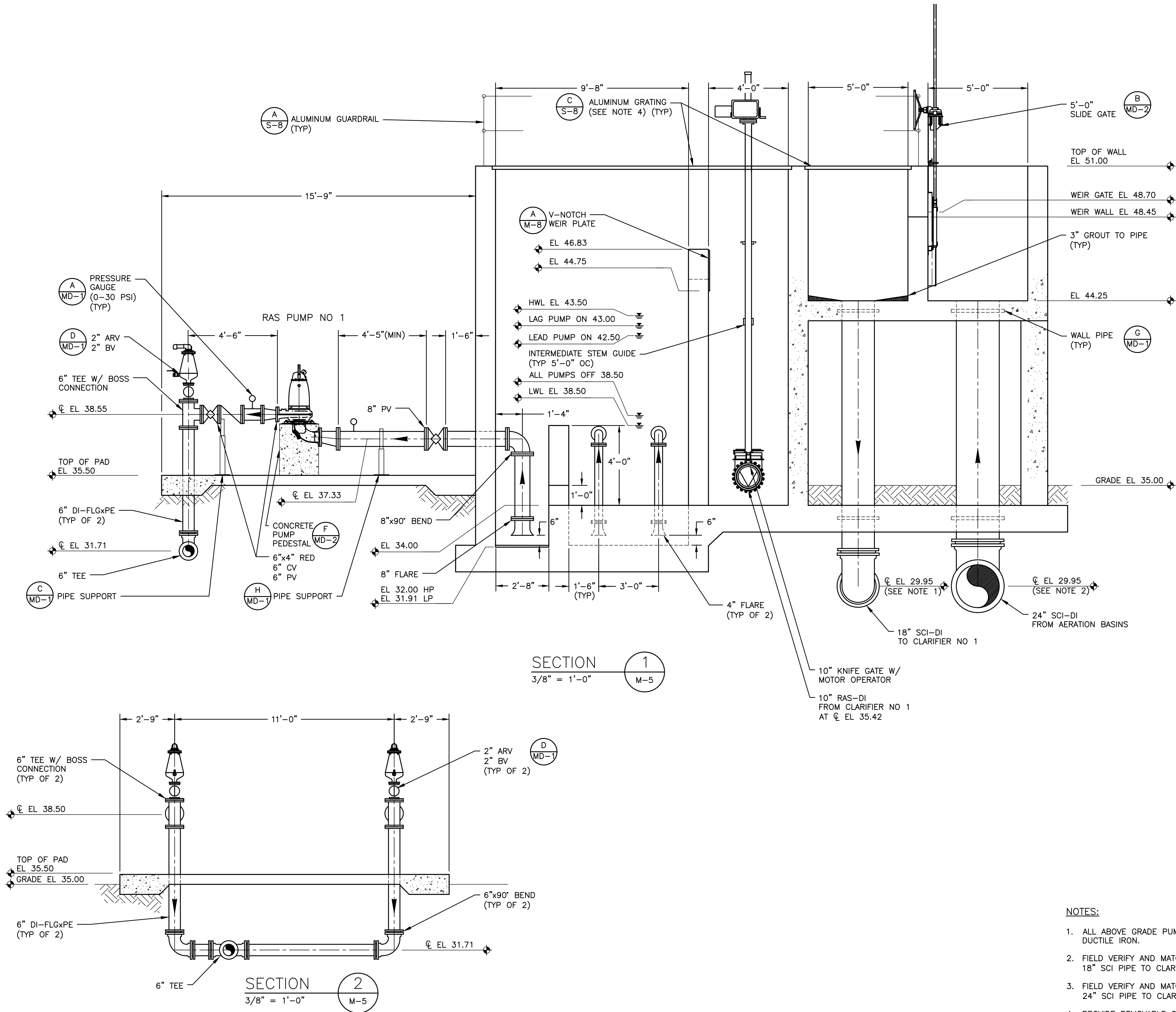
NOTES:

1. ALL ABOVE GRADE PUMP STATION PIPING SHALL BE FLANGED DUCTILE IRON.
2. PROVIDE REMOVABLE GRATING OVER EACH ULTRASONIC FLOW METER AND RAS WETWELL LEVEL SENSORS. SEE STRUCTURAL SHEETS FOR GRATING DETAILS.

## PLAN

SCALE:  $3/8" = 1'-0"$

[illegible]



NO.	BY	DATE	SYMBOL	REVISIONS
5				
4				
3				
2				
1				

DESIGNER:	DAR
DRAWN BY:	DRS
CHECKED BY:	CEH
APPROVED BY:	DAR
DATE:	APRIL 2020

DESIGN ENGINEER	DAVID A. RASMUSSEN P.E.
FLORIDA REGISTRATION NO.	77561

**Constantine Engineering**

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CERTIFICATE OF AUTHORIZATION  
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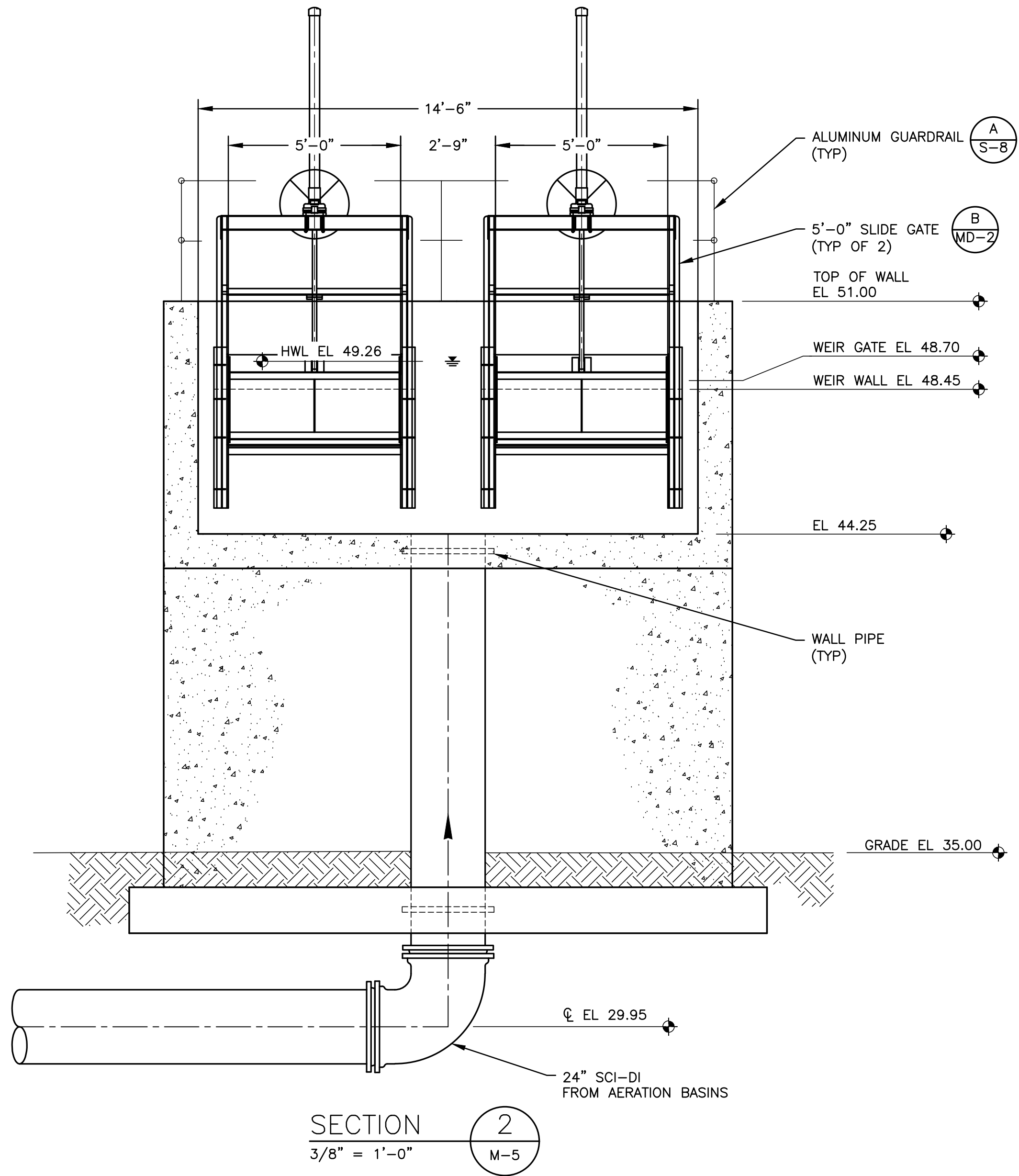
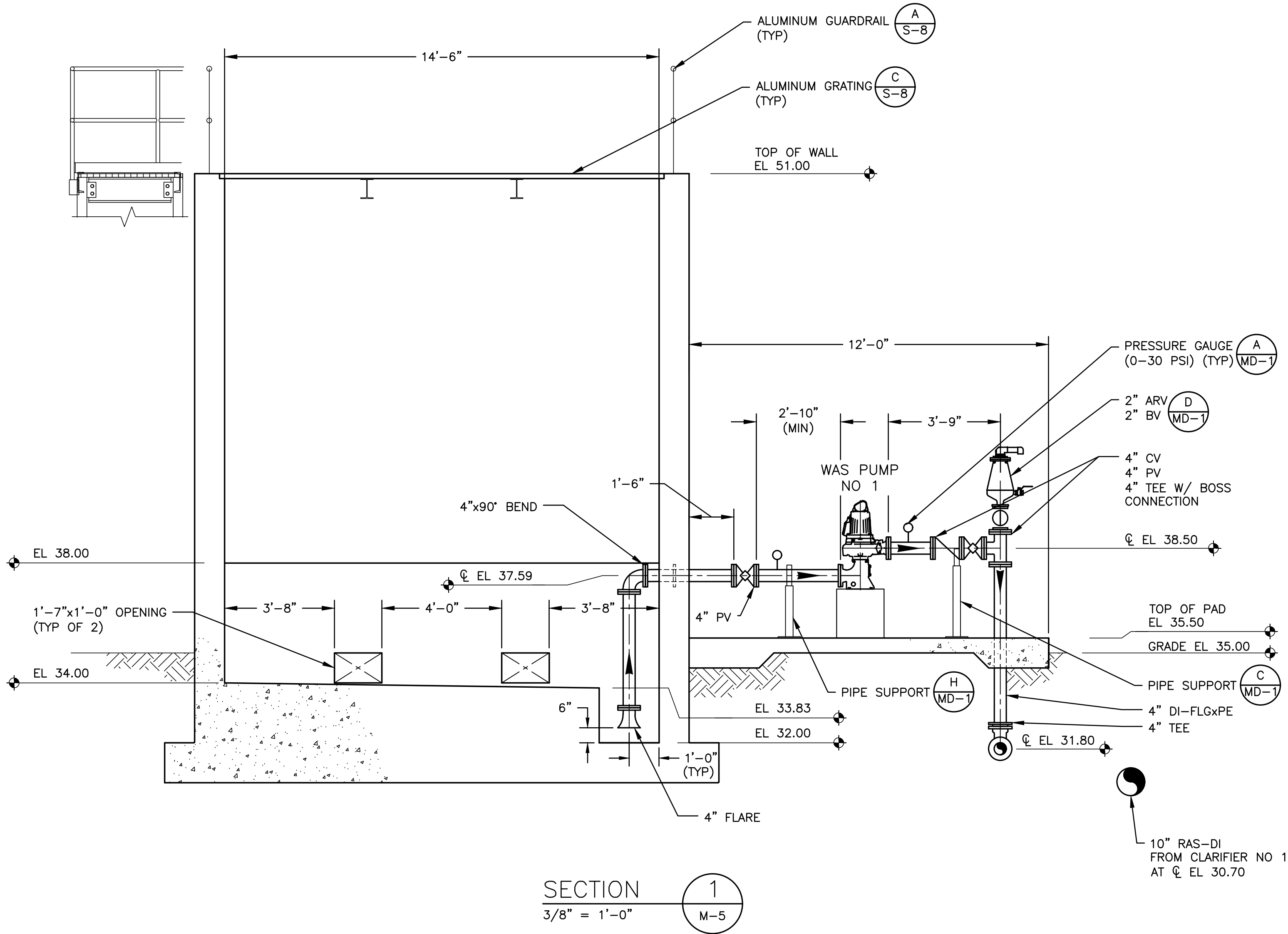
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Phone (904) 209-2700 • Fax (904) 209-2702

STATE ROAD 16 WASTEWATER TREATMENT FACILITY HEADWORKS & RAS / WAS IMPROVEMENTS
CLARIFIER SPLITTER BOX AND RAS / WAS PUMP STATION SECTIONS

PROJECT NO.	100408.24
FILE NAME	M-6
SHEET NO.	M-6



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NO.	BY	DATE	SYMBOL	REVISIONS
6				
5				
4				
3				
2				
1				

DESIGNER:	DAR	DESIGN ENGINEER	
DRAWN BY:	DRS	DAVID A. RASMUSSEN P.E.	
CHECKED BY:	CEH		
APPROVED BY:	DAR	FLORIDA REGISTRATION NO.	77561
DATE:	APRIL 2020		



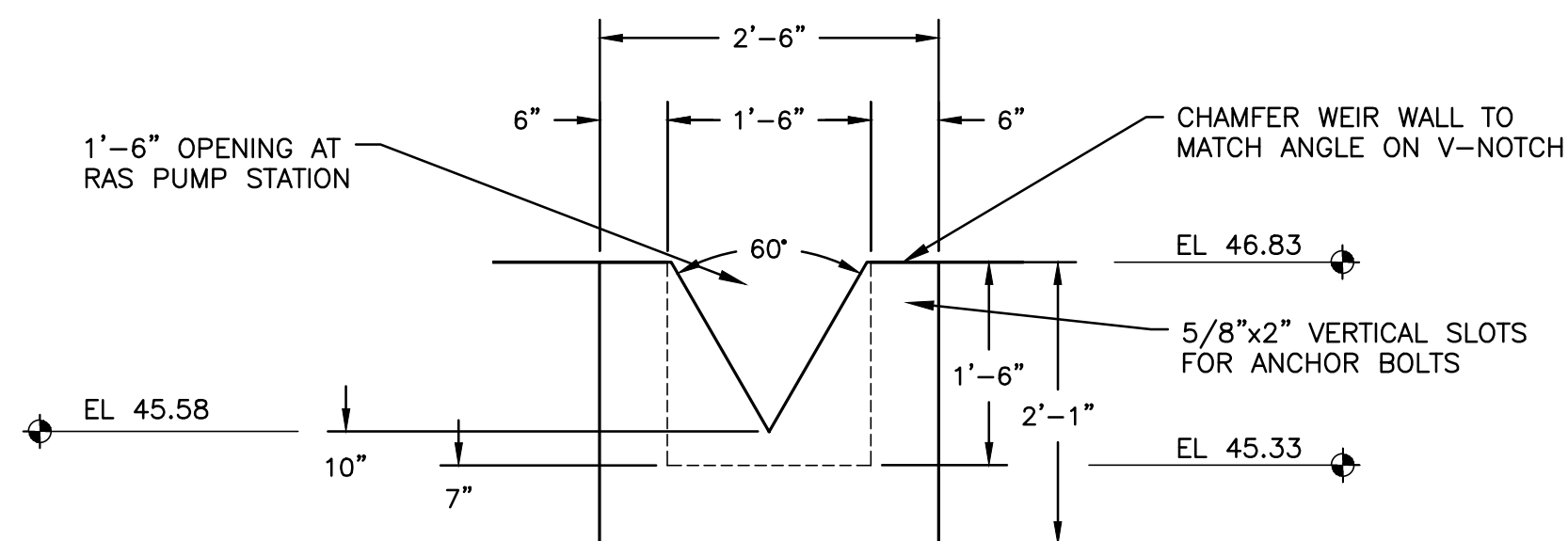
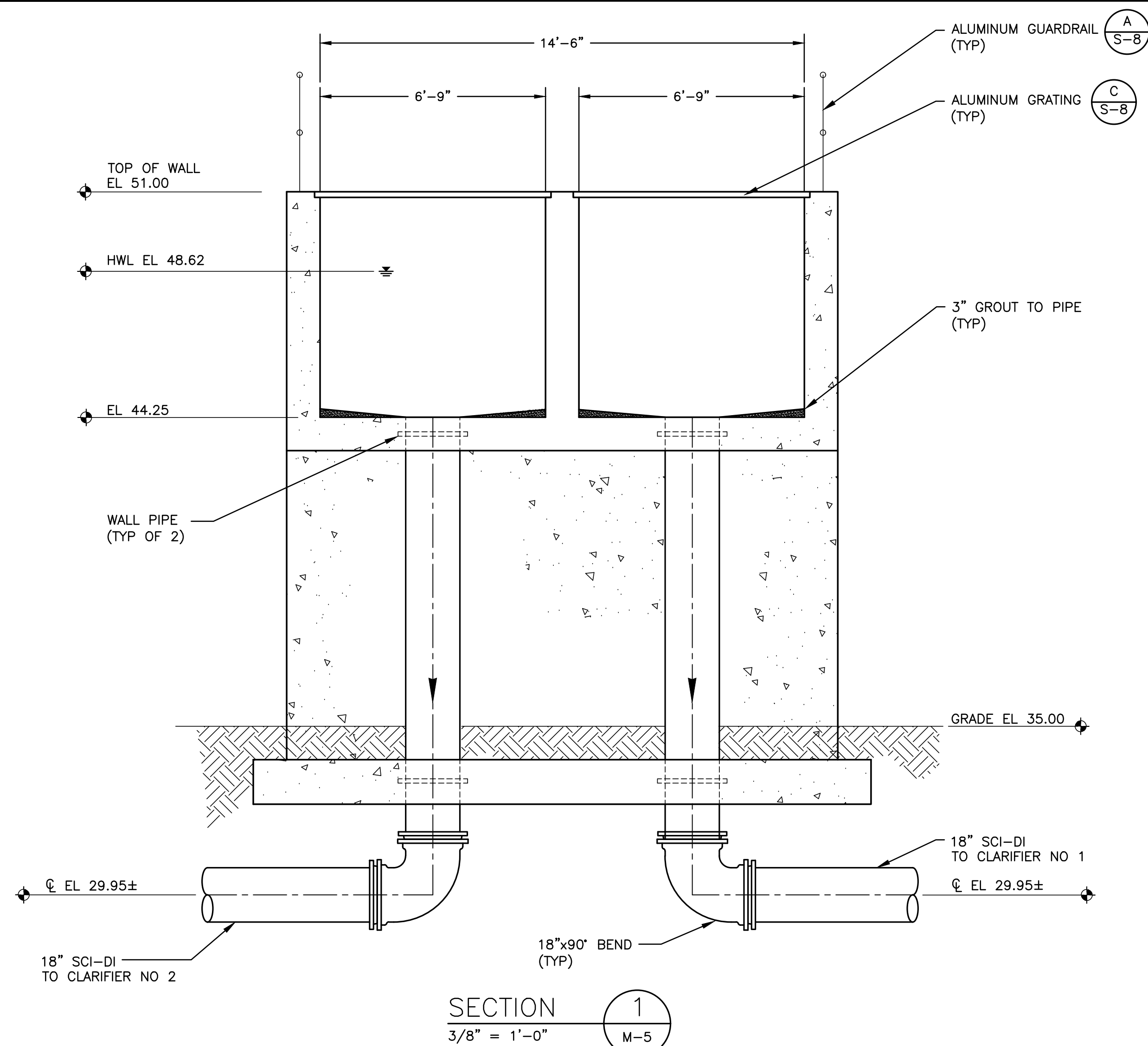
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PH. 904-562-2185  
FLORIDA  
CERTIFICATE OF AUTHORIZATION  
# 9816



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UTILITY DEPARTMENT  
1205 STATE ROAD 16  
ST. AUGUSTINE, FLORIDA 32084-8646  
Phone (904) 209-2700 • Fax (904) 209-2702

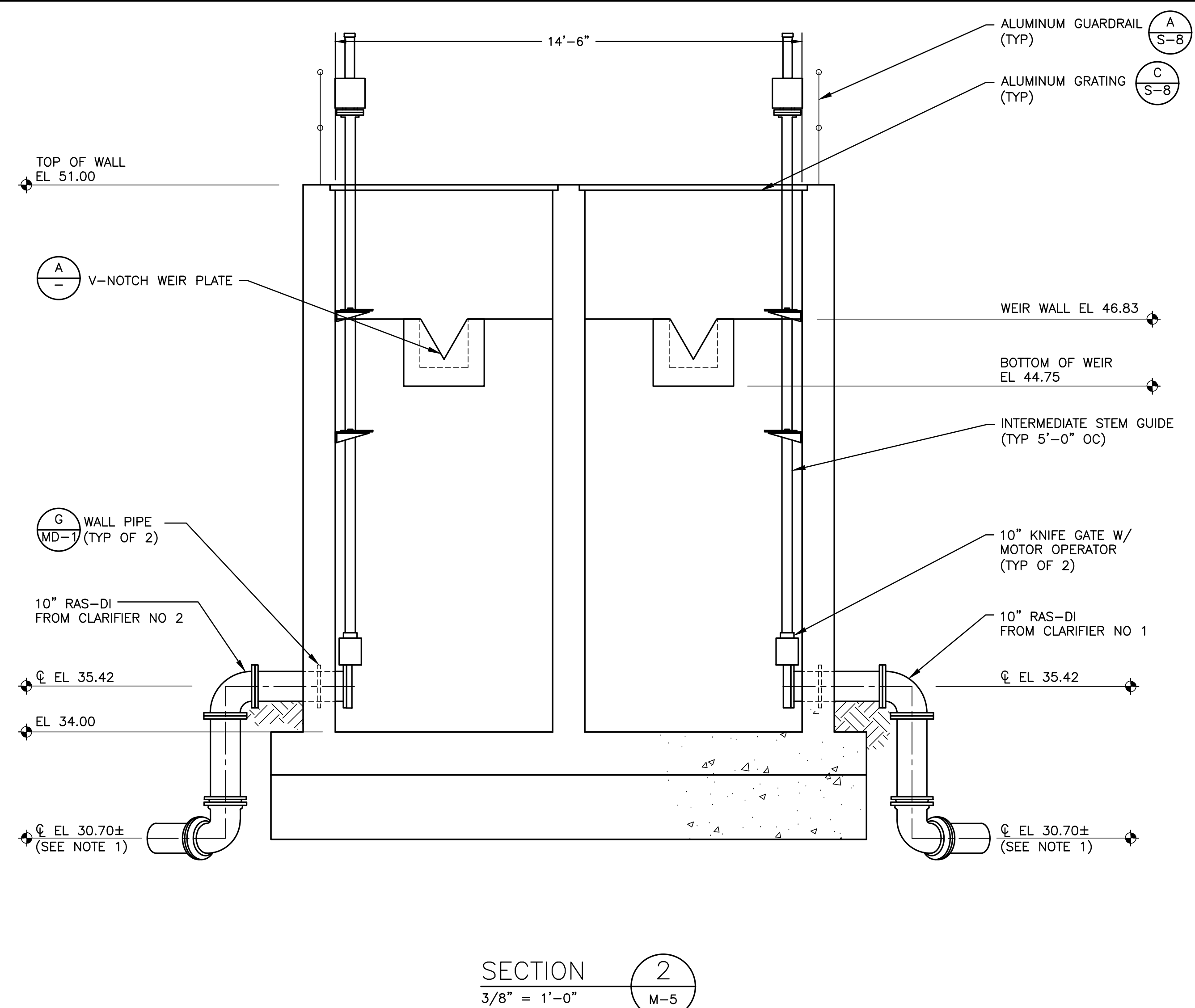
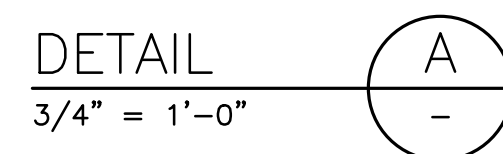
STATE ROAD 16 WASTEWATER TREATMENT FACILITY HEADWORKS & RAS / WAS IMPROVEMENTS  
CLARIFIER SPLITTER BOX AND  
RAS / WAS PUMP STATION SECTIONS

PROJECT NO.	100408.24
FILE NAME	M-7
SHEET NO.	M-7



NOTE:

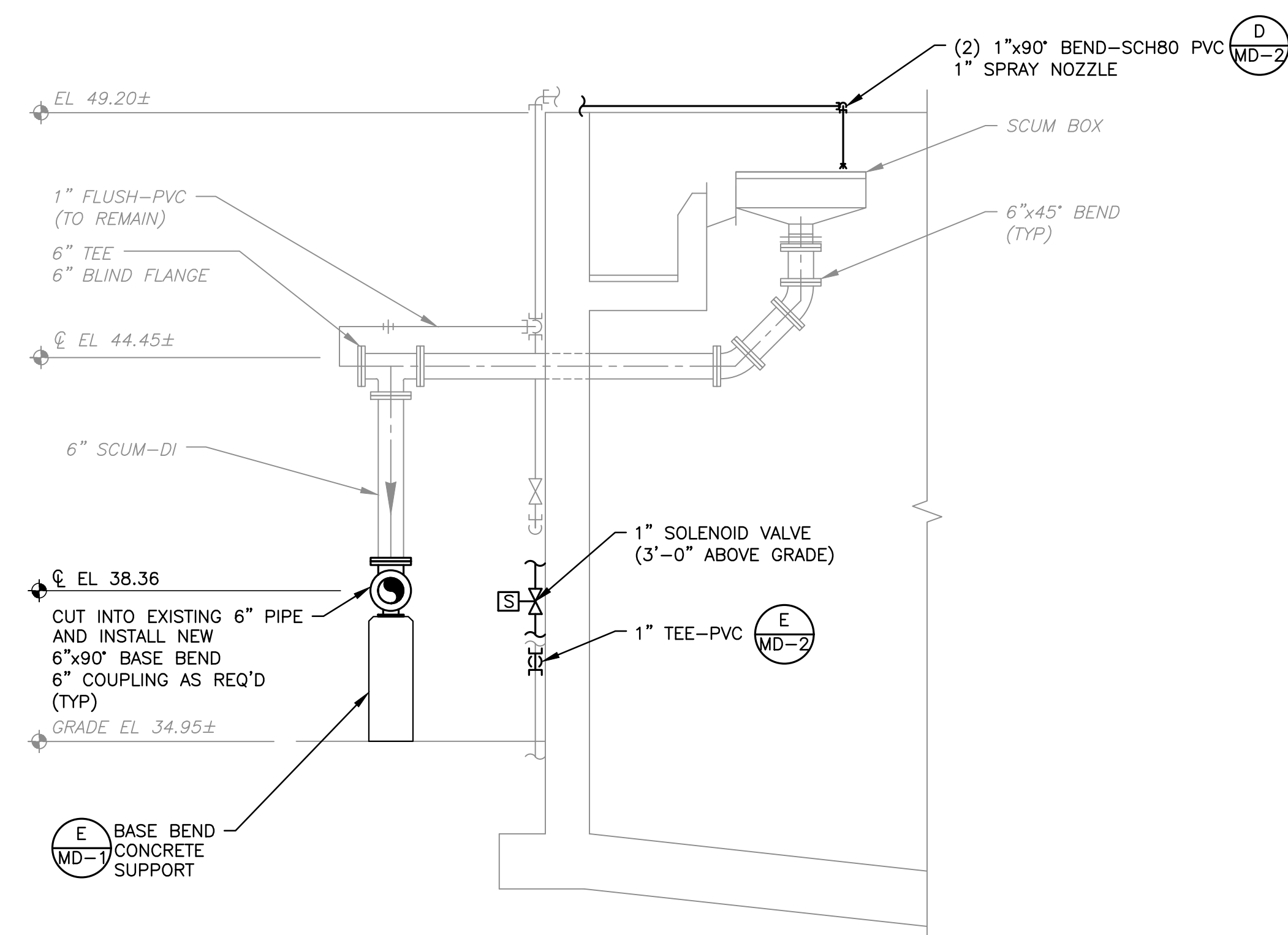
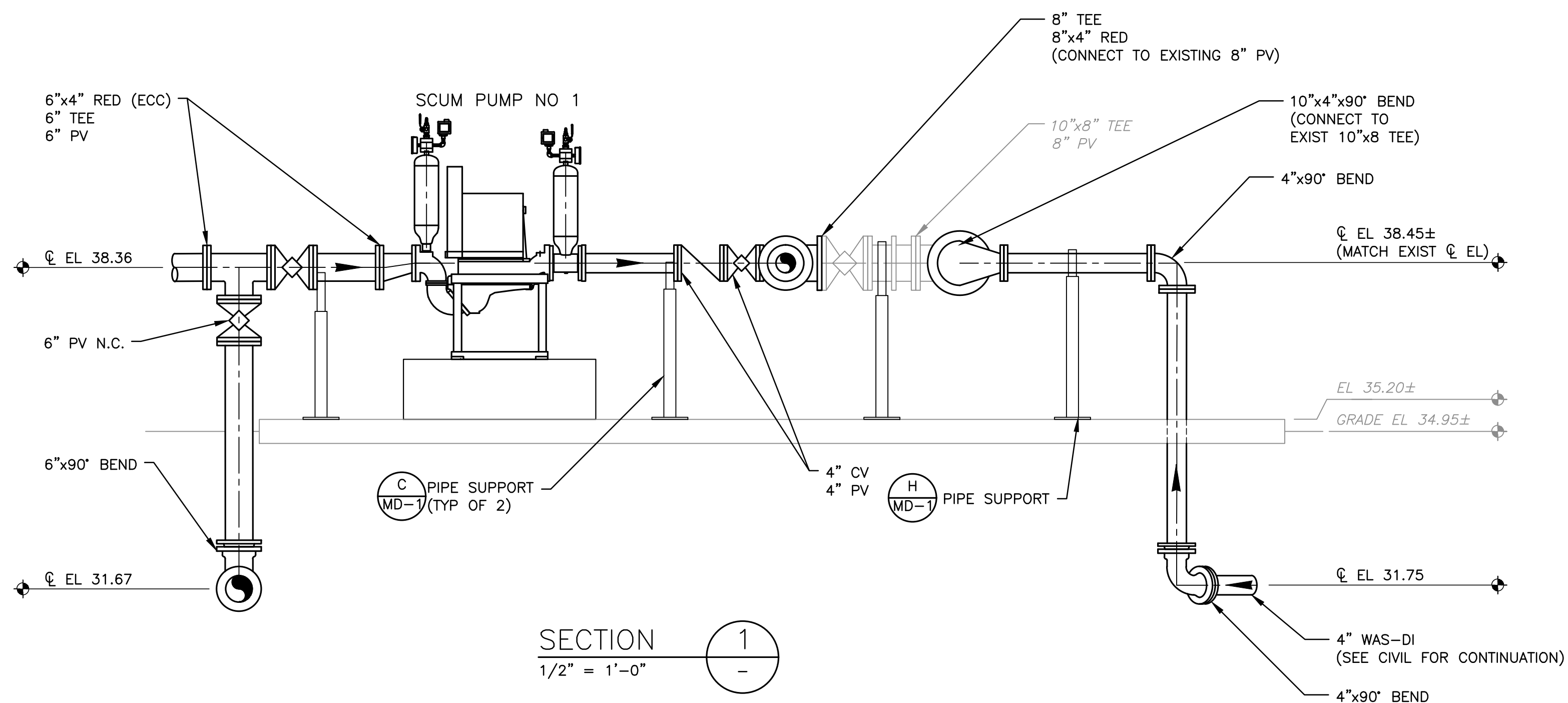
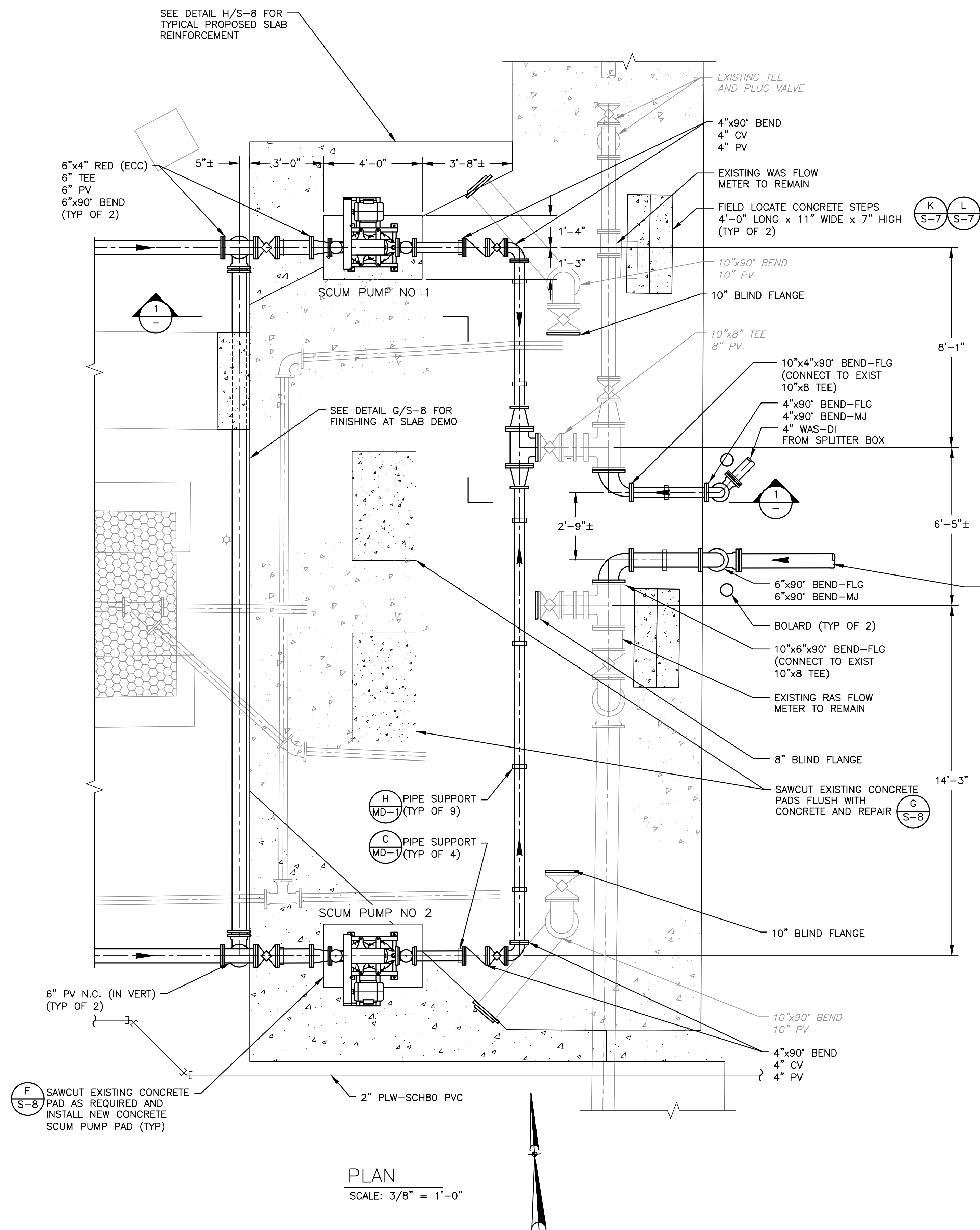
1. MATERIAL: 5/8" THICK TYPE 316 STAINLESS STEEL PLATE.



NOTES:

1. FIELD VERIFY AND MATCH CENTERLINE ELEVATION OF EXISTING 10" RAS PIPE FROM CLARIFIER.

[illegible]



NO.	BY	DATE	SYMBOL	REVISIONS
6.				
5.				
4.				
3.				
2.				
1.				

DESIGNER:	DAR	DESIGN ENGINEER  DAVID A. RASMUSSEN P.E.  FLORIDA REGISTRATION NO. 77561
DRAWN BY:	DRS	
CHECKED BY:	CEH	
APPROVED BY:	DAR	
DATE:	APRIL 2020	





**ST. JOHNS COUNTY**  
**UTILITY DEPARTMENT**

1205 STATE ROAD 16  
 ST AUGUSTINE, FLORIDA 32084-8646  
 Phone (904) 209-2700 • Fax. (904) 209-2702

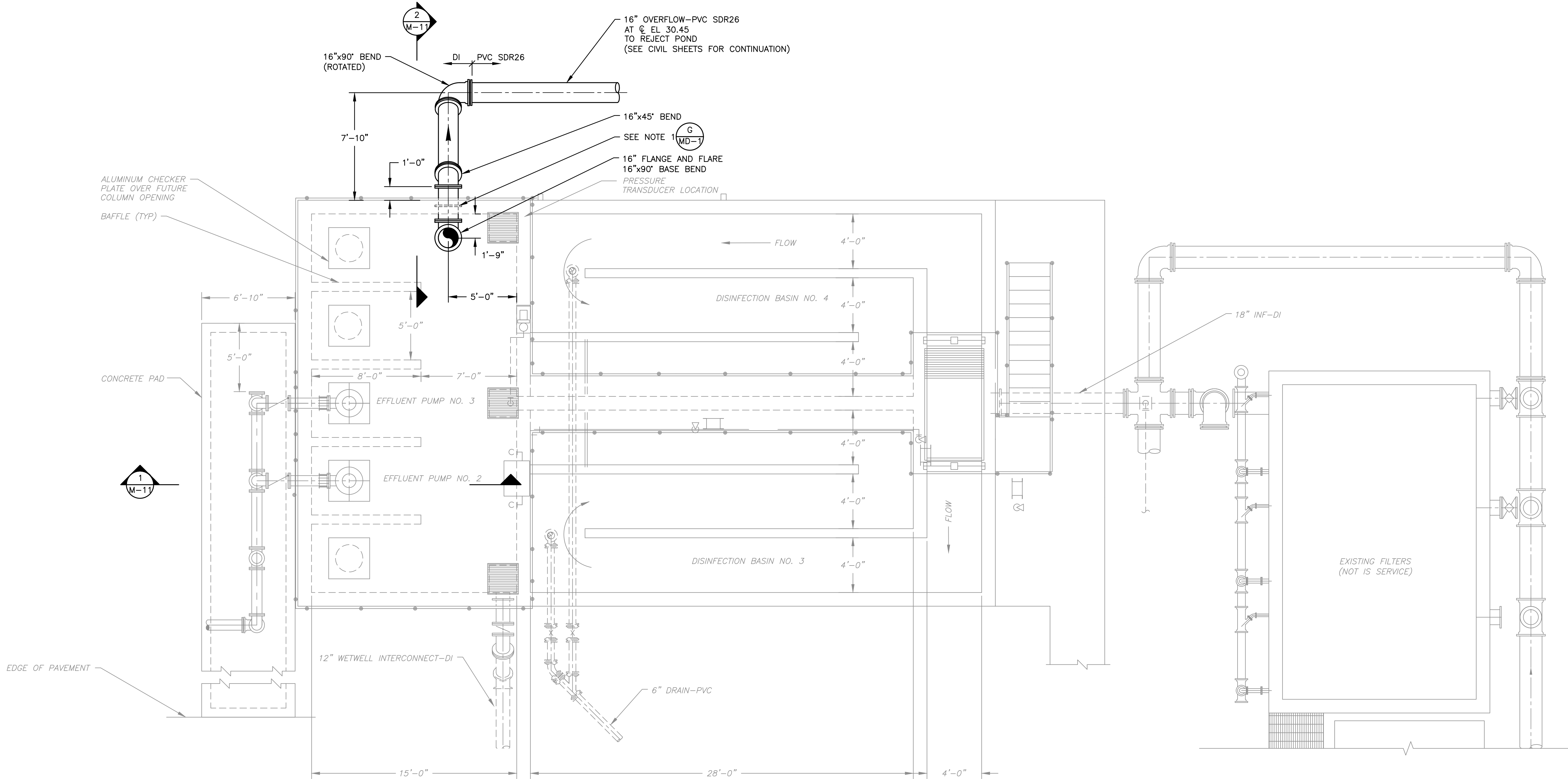
STATE ROAD 16 WASTEWATER TREATMENT FACILITY HEADWORKS & RAS / WAS IMPROVEMENTS

SCUM PUMP PLAN, SECTION AND DETAIL

PROJECT NO.	100408.24
FILE NAME	M-9.dwg
SHEET NO.	
M-9	



H:\Project Files\100408 St Johns County Utilities\100408.24 SR 16 WWP Improvements\3 Design\Issued For Bid\05 Process Mechanical\01 Drawings\10 CAD\M-10.dwg      Current Layout Tab = BLDGMECHANICAL      Plot 3/15/2021 12:33 PM      Saved 3/11/2021 1:01 PM  
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NOTES:

1. CORE DRILL 20" DIAMETER HOLE AND INSTALL 16" PIPE THRU WALL. REPAIR WALL USING MECHANICAL SEAL.
2. REFER TO SPECIFICATION SECTION 01014 FOR CONSTRUCTION SEQUENCE AND CONSTRAINTS.
3. PROVIDE PVC SDR26 PIPE AS PER SJCUD STANDARDS & SPECIFICATIONS.

PLAN

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

NO.	BY	DATE	SYMBOL	REVISIONS
6				
5				
4				
3				
2				
1				

DESIGNER:	DAR
DRAWN BY:	DRS
CHECKED BY:	CEH
APPROVED BY:	DAR
DATE:	APRIL 2020

DESIGN ENGINEER	DAVID A. RASMUSSEN P.E.
FLORIDA REGISTRATION NO.	77561



100 CENTER CREEK RD., STE 108  
ST. AUGUSTINE, FL. 32084  
PH. 904-562-2185  
FLORIDA  
CERTIFICATE OF AUTHORIZATION  
# 9816

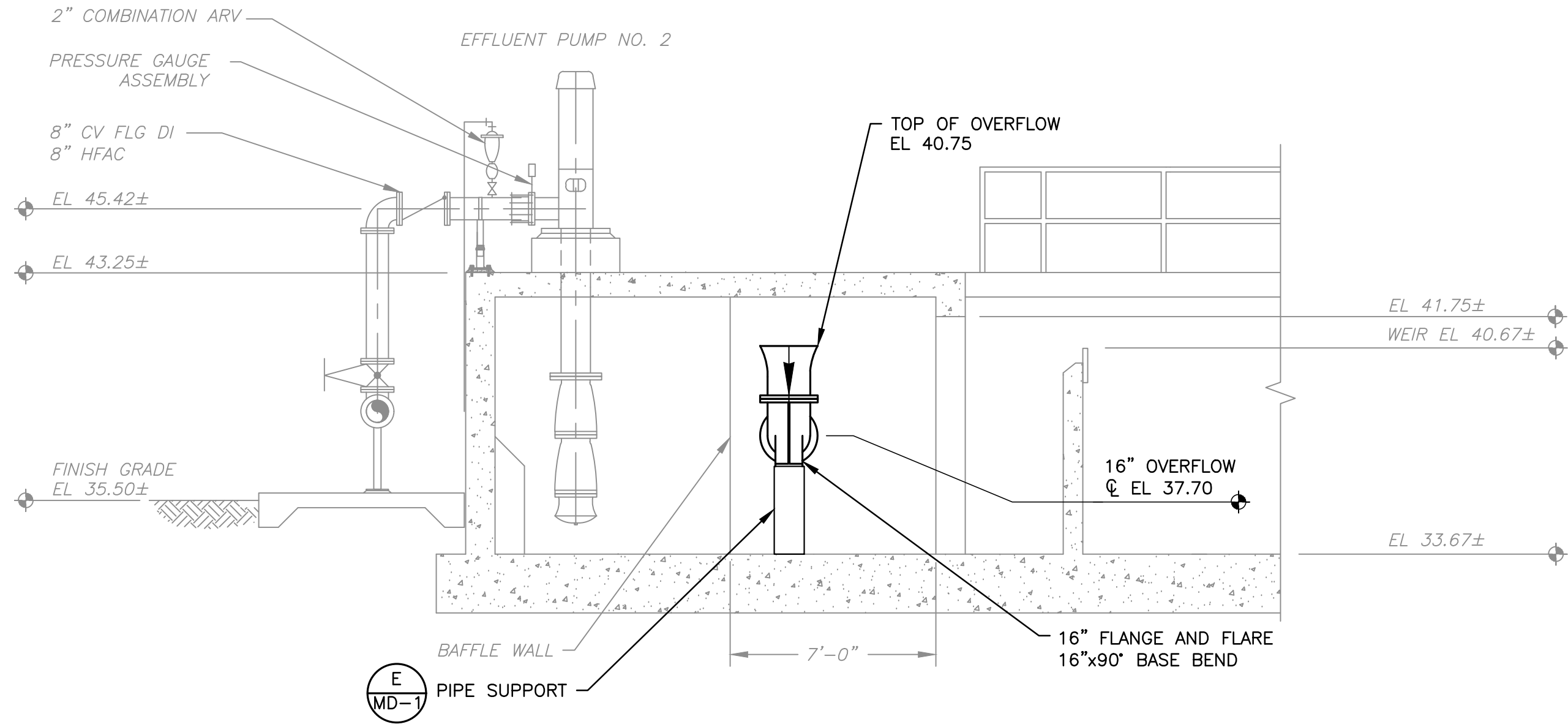


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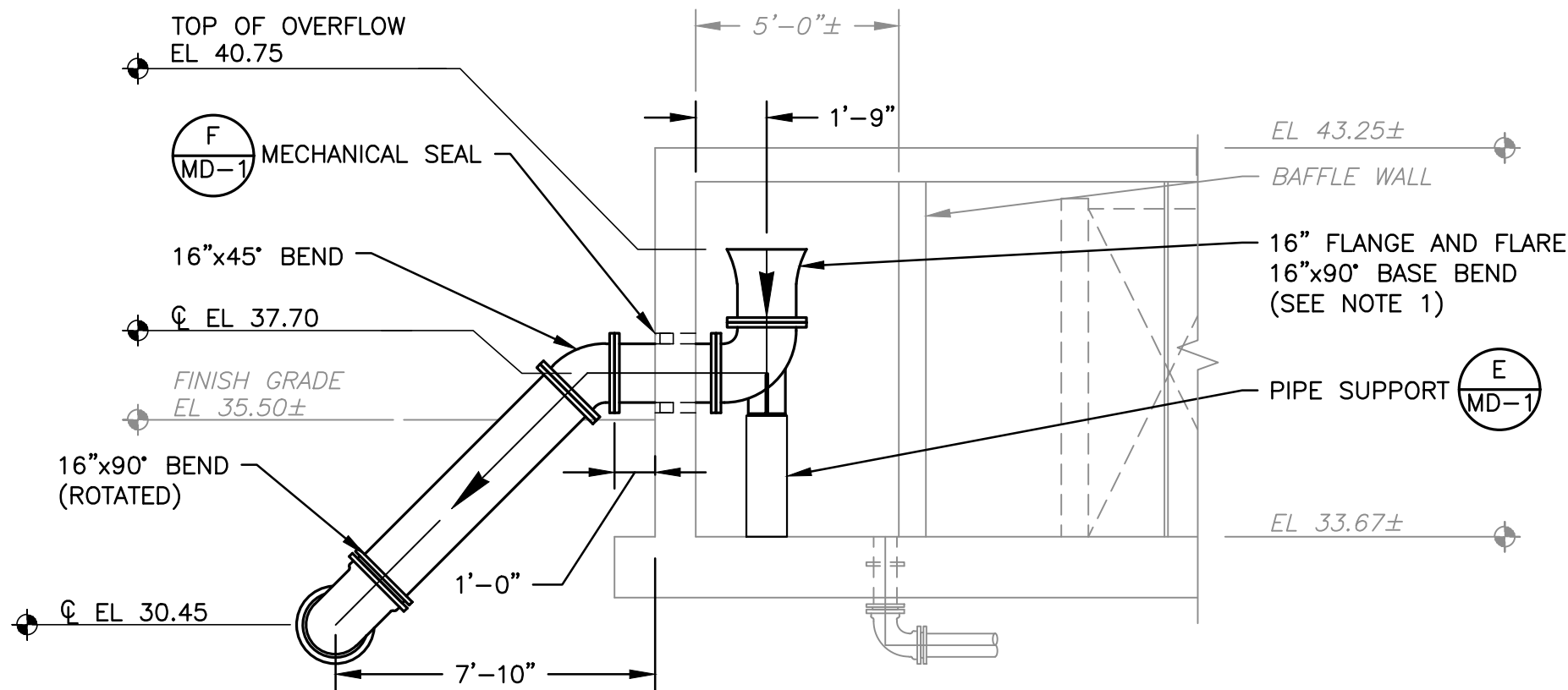
STATE ROAD 16 WASTEWATER TREATMENT FACILITY HEADWORKS & RAS / WAS IMPROVEMENTS
CHLORINE CONTACT CHAMBER PLAN

PROJECT NO.	100408.24
FILE NAME	M-10
SHEET NO.	M-10

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



SECTION 2  
1/4" = 1'-0"

- NOTES:
1. 16" FLANGE AND FLARE SHALL BE 14" LONG.

NO.	BY	DATE	SYMBOL	REVISIONS
6				
5				
4				
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2				
1				

DESIGNER:	DAR	DESIGN ENGINEER	
DRAWN BY:	DRS	DAVID A. RASMUSSEN P.E.	
CHECKED BY:	CEH		
APPROVED BY:	DAR	FLORIDA REGISTRATION NO.	77561
DATE:	APRIL 2020		



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ST. AUGUSTINE, FL. 32084  
PH. 904-562-2185  
FLORIDA  
CERTIFICATE OF AUTHORIZATION  
# 98316



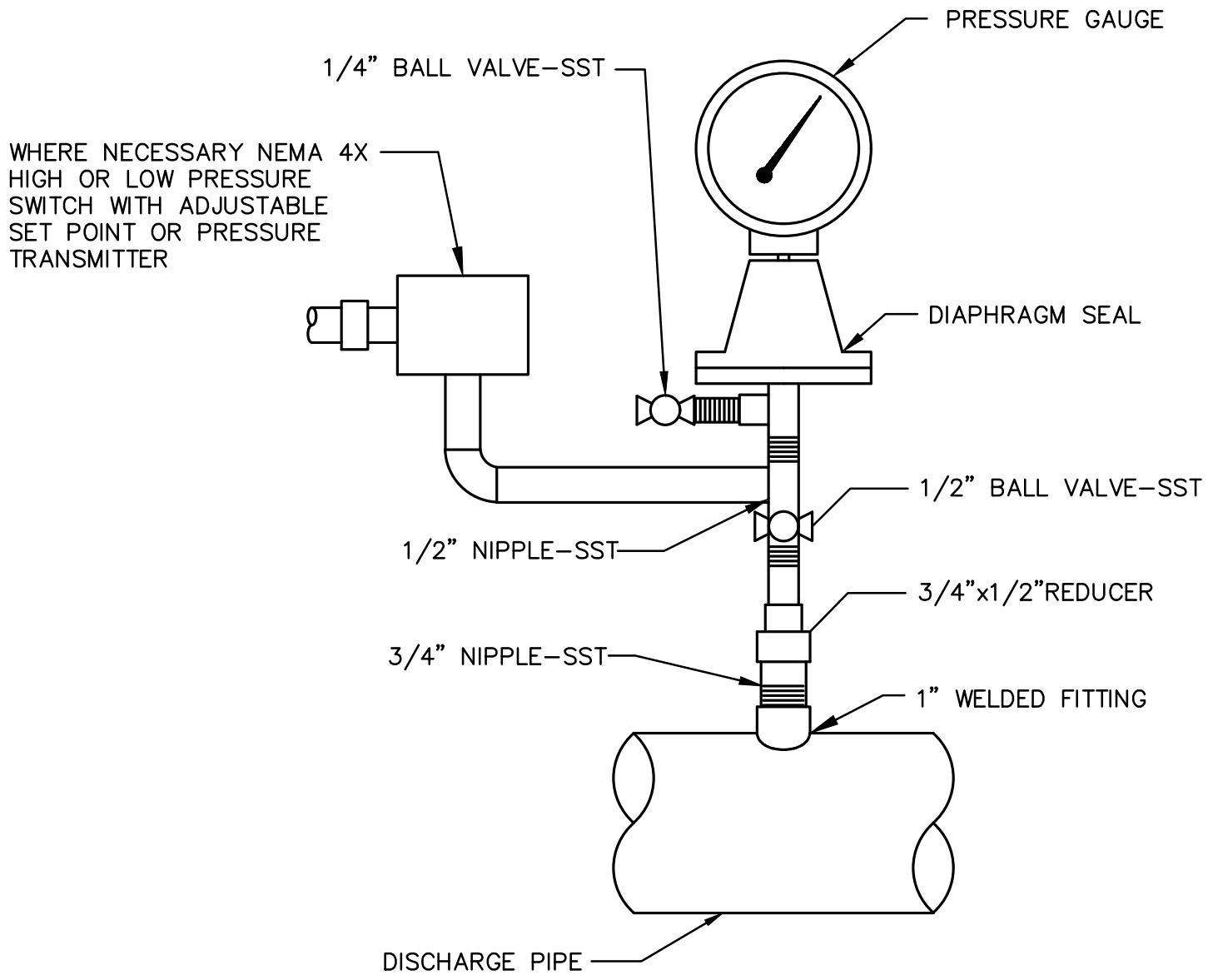
ST. JOHNS COUNTY  
UTILITY DEPARTMENT  
1205 STATE ROAD 16  
ST. AUGUSTINE, FLORIDA 32084-8646  
Phone (904) 209-2700 • Fax (904) 209-2702

STATE ROAD 16 WASTEWATER TREATMENT FACILITY HEADWORKS & RAS / WAS IMPROVEMENTS	PROJECT NO. 100408.24
CHLORINE CONTACT CHAMBER SECTIONS	FILE NAME M-11
	SHEET NO. M-11

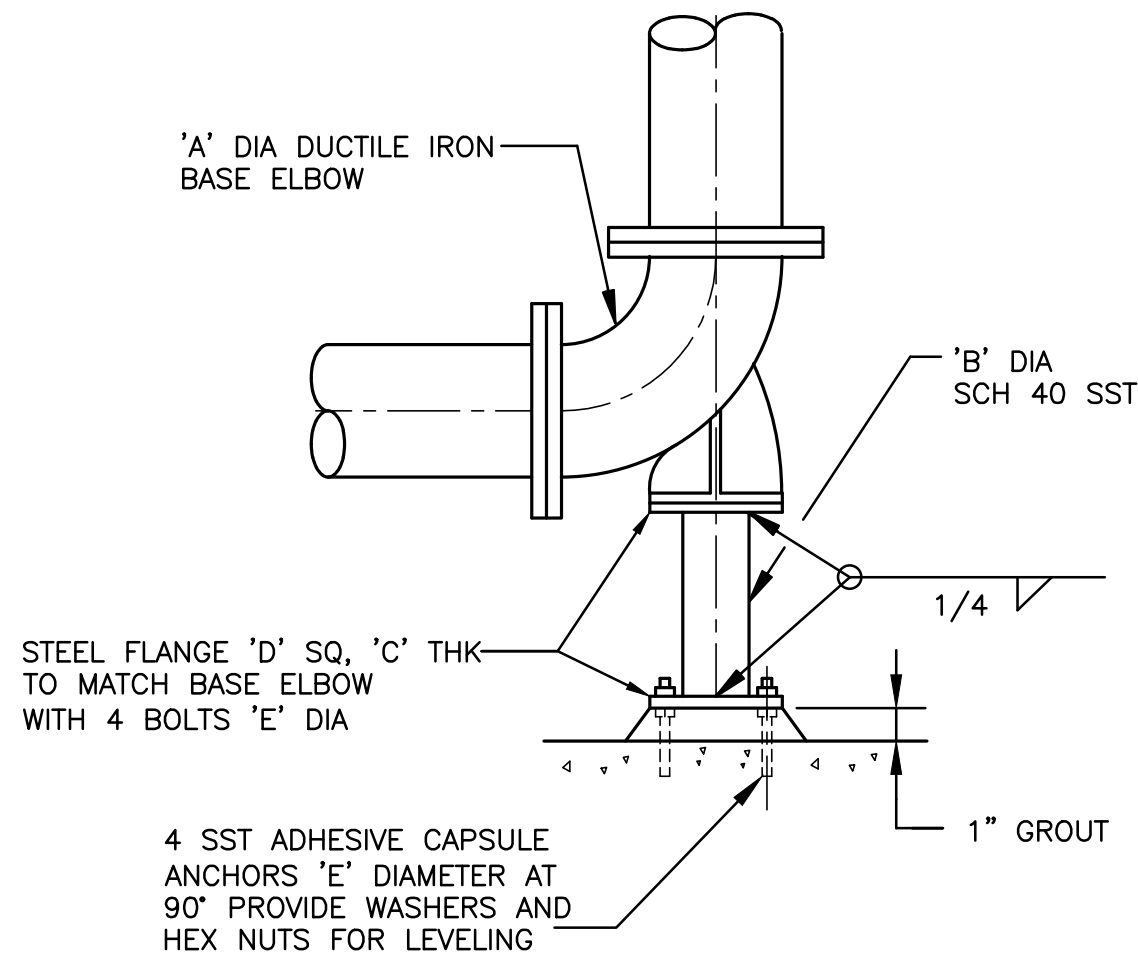
PROJECT NO. 100408.24
FILE NAME M-11
SHEET NO. M-11



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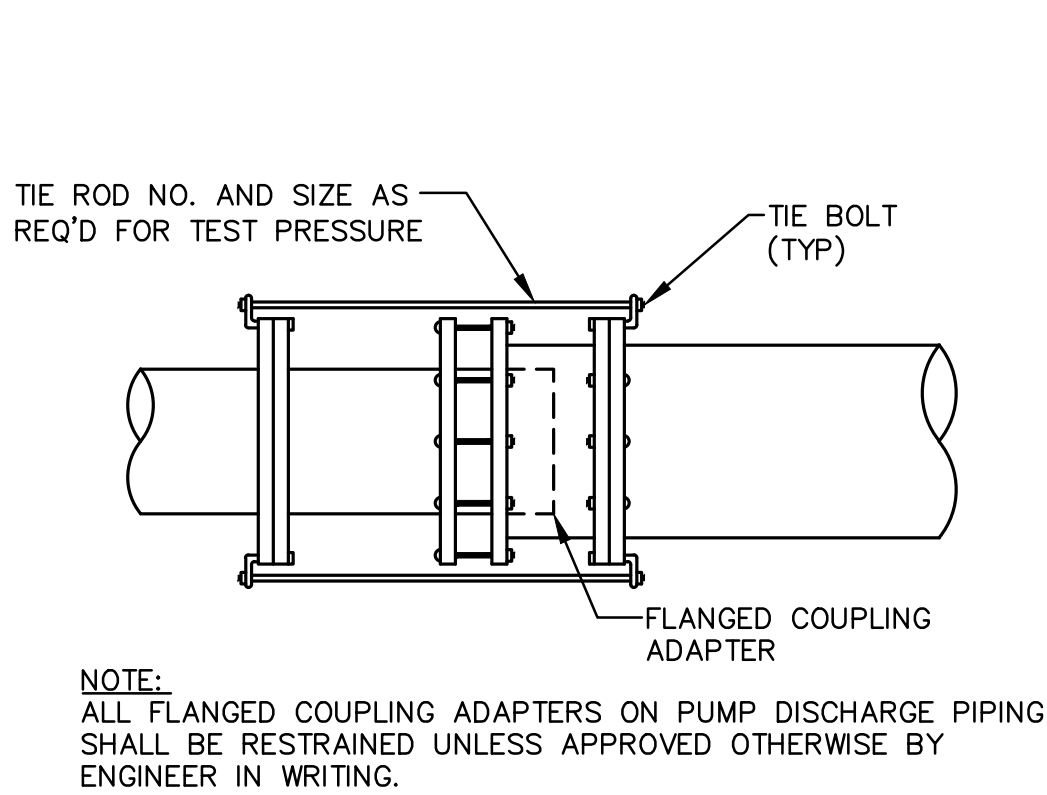


PRESSURE GAUGE  
DETAIL A  
NTS

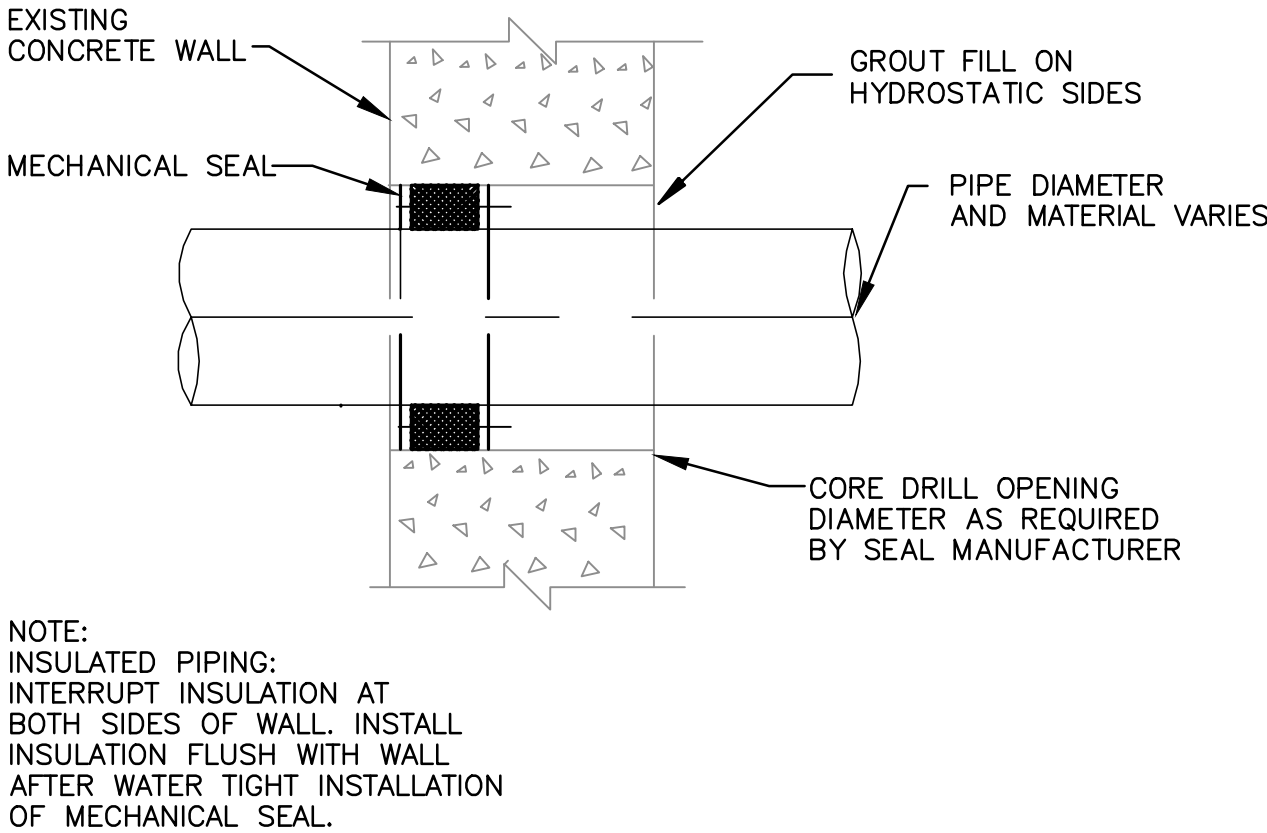


ELBOW 'A' DIA	DIMENSIONS IN INCHES			
	'B' DIA	'C' THICK	'D' SQ	'E' DIA
4	2	3/8	6	5/8
6	2 1/2	3/8	7	5/8
8	4	1/2	9	5/8
10	4	1/2	9	5/8
12	6	1/2	11	3/4
14	6	1/2	11	3/4
16	6	1/2	11	3/4
18	8	1/2	13 1/2	3/4
20	8	1/2	13 1/2	3/4
24	8	1/2	13 1/2	3/4
30	10	3/4	16	7/8
36	12	3/4	19	7/8
42	16	3/4	23 1/2	1
48	18	3/4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

DUCTILE IRON ELBOW  
DETAIL E  
NTS



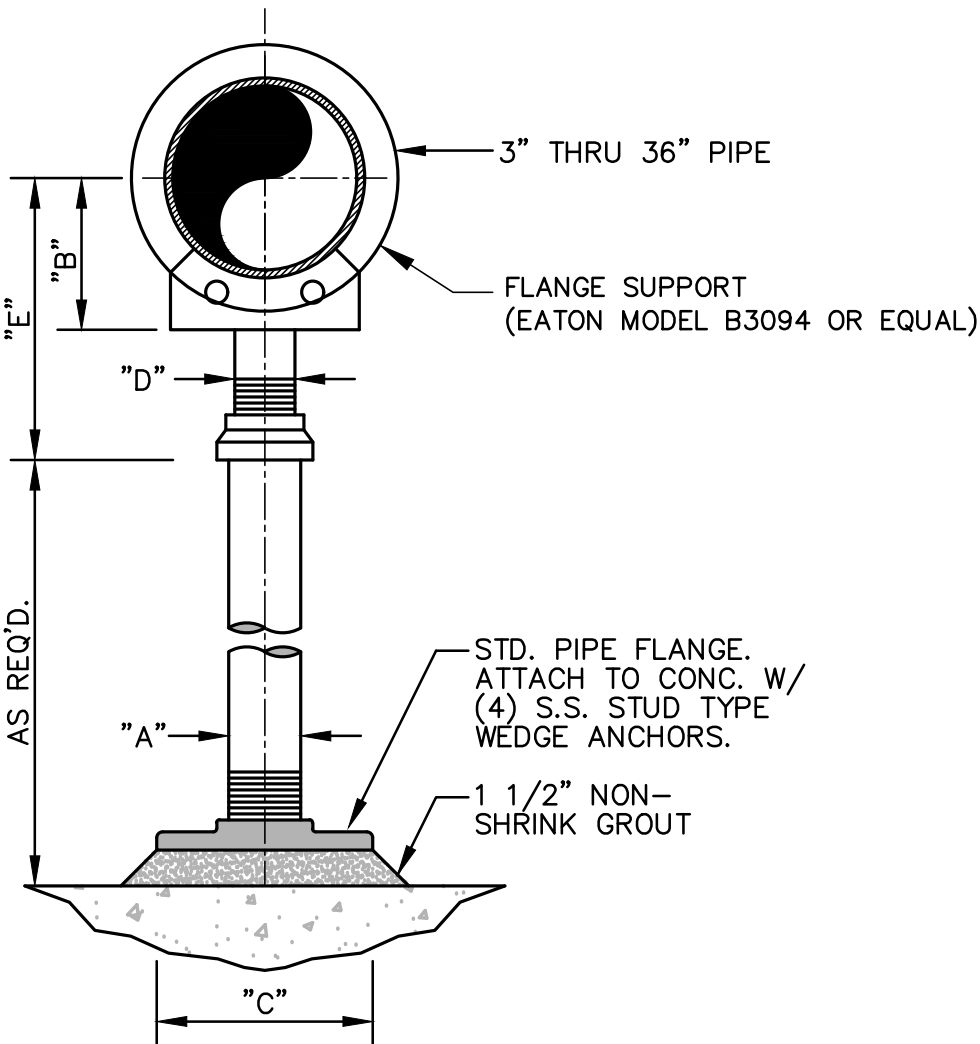
316 SST RESTRAINED FLANGED COUPLING ADAPTER  
DETAIL B  
NTS



CORE DRILLED OPENING AND MECHANICAL SEAL  
PENETRATION THROUGH EXISTING CONCRETE  
DETAIL F  
NTS

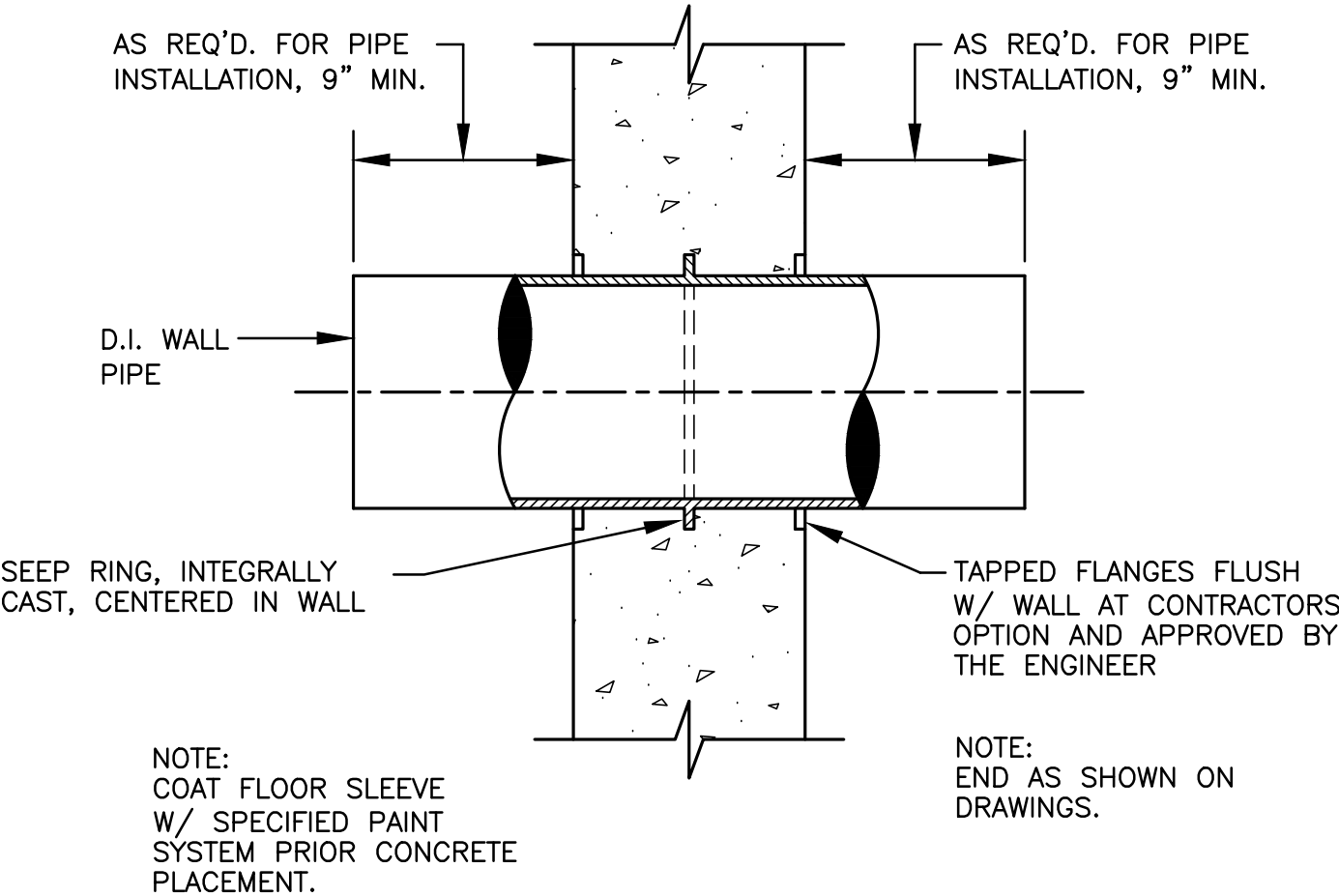
NOTES:

1. PROVIDE HALF ROUND RIGID INSULATION & INSULATION PROTECTION SHIELD.
2. PROVIDE NEOPRENE WAFFLE ISOLATION PAD UNDER SUPPORT FOOT WHEN PIPING IS ISOLATED OR SUPPORT IS ADJACENT TO MECHANICAL EQUIPMENT.
3. FOR BASE, HEIGHT, AND FLANGE DIMENSIONS, SEE TABLE.
4. PIPE SUPPORT TO BE PAINTED SAME AS PIPING.



DIMENSION TABLE						
PIPE SIZE	"A"	"B"	"C"	"D"	"E" MIN.	"E" MAX.
3"	2"	4 1/4"	8"	1 1/2"	8 1/2"	13 1/4"
4"	2"	4 1/2"	8"	1 1/2"	9 3/4"	14 1/2"
6"	3"	5 1/2"	9"	2 1/2"	10 1/2"	15 1/4"
8"	3"	6 7/8"	9"	2 1/2"	11 3/4"	16 1/2"
10"	3"	8 1/2"	9"	2 1/2"	13 1/2"	18 1/4"
12"	3"	9 15/16"	9"	2 1/2"	15"	19 3/4"
14"	4"	10 15/16"	11"	3"	16 1/4"	20 3/4"
16"	4"	12 3/8"	11"	3"	17 3/4"	22 1/4"
18"	6"	13 7/8"	13 1/2"	3 1/2"	19 1/2"	24"
20"	6"	15 3/8"	13 1/2"	3 1/2"	21"	25 1/2"
24"	6"	17 15/16"	13 1/2"	4"	23 3/4"	28 1/4"
30"	6"	21 5/16"	13 1/2"	4"	27"	31 1/2"
32"	6"	22 1/2"	13 1/2"	4"	28 1/4"	32 3/4"
36"	6"	24 1/2"	13 1/2"	4"	30 1/4"	34 3/4"

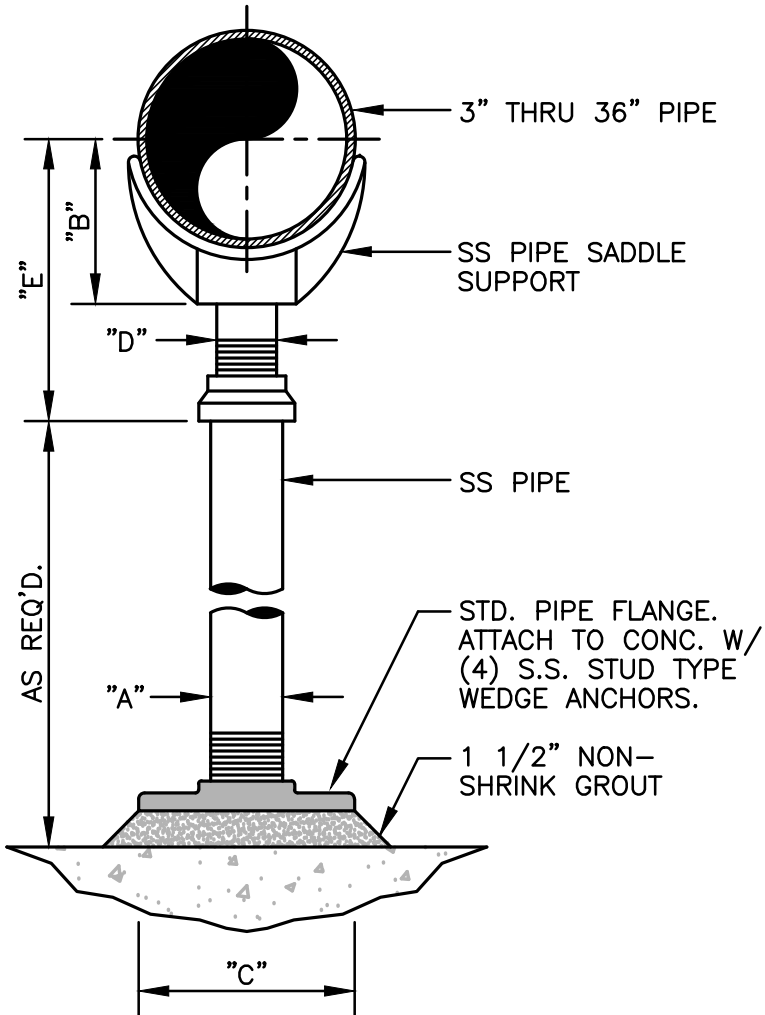
3" THRU 36" PIPE SUPPORT  
(FLANGE TYPE)  
DETAIL C  
NTS



DUCTILE IRON WALL PIPE DETAIL  
DETAIL G  
NTS

NOTES:

1. PROVIDE HALF ROUND RIGID INSULATION & INSULATION PROTECTION SHIELD.
2. PROVIDE NEOPRENE WAFFLE ISOLATION PAD UNDER SUPPORT FOOT WHEN PIPING IS ISOLATED OR SUPPORT IS ADJACENT TO MECHANICAL EQUIPMENT.
3. FOR BASE, HEIGHT, AND FLANGE DIMENSIONS, SEE TABLE.
4. PIPE SUPPORT TO BE PAINTED SAME AS PIPING.



DIMENSION TABLE						
PIPE SIZE	"A"	"B"	"C"	"D"	"E" MIN.	"E" MAX.
3"	2"	4 1/4"	8"	1 1/2"	8 1/2"	13 1/4"
4"	2"	4 1/2"	8"	1 1/2"	9 3/4"	14 1/2"
6"	3"	5 1/2"	9"	2 1/2"	10 1/2"	15 1/4"
8"	3"	6 7/8"	9"	2 1/2"	11 3/4"	16 1/2"
10"	3"	8 1/2"	9"	2 1/2"	13 1/2"	18 1/4"
12"	3"	9 15/16"	9"	2 1/2"	15"	19 3/4"
14"	4"	10 15/16"	11"	3"	16 1/4"	20 3/4"
16"	4"	12 3/8"	11"	3"	17 3/4"	22 1/4"
18"	6"	13 7/8"	13 1/2"	3 1/2"	19 1/2"	24"
20"	6"	15 3/8"	13 1/2"	3 1/2"	21"	25 1/2"
24"	6"	17 15/16"	13 1/2"	4"	23 3/4"	28 1/4"
30"	6"	21 5/16"	13 1/2"	4"	27"	31 1/2"
32"	6"	22 1/2"	13 1/2"	4"	28 1/4"	32 3/4"
36"	6"	24 1/2"	13 1/2"	4"	30 1/4"	34 3/4"

3" THRU 36" PIPE SUPPORT  
(SADDLE TYPE)  
DETAIL H  
NTS

AIR RELEASE VALVE  
DETAIL D  
NTS

NOTES:

1. ALL PIPE AND FITTINGS ON AIR ASSEMBLY VALVE SHALL BE 316 SST.
2. SEE SPECIFICATION SECTION 15200 FOR ADDITIONAL REQUIREMENTS.
3. ALL PIPE AND FITTINGS SHALL BE SAME NOMINAL SIZE AS THE ASSOCIATED AIR VALVE ASSEMBLY.
4. ARV'S SHALL BE LOW PRESSURE TYPE.

NO.	BY	DATE	SYMBOL	REVISIONS
6				
5				
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3				
2				
1				

DESIGNER:	DAR
DRAWN BY:	DRS
CHECKED BY:	CEH
APPROVED BY:	DAR
DATE:	APRIL 2020

DESIGN ENGINEER	DAVID A. RASMUSSEN P.E.
FLORIDA REGISTRATION NO.	77561

**Constantine Engineering**

100 CENTER CREEK RD., STE 108  
ST. AUGUSTINE, FL 32084  
PH. 904-562-2185

FLORIDA  
CERTIFICATE OF AUTHORIZATION  
# 9816



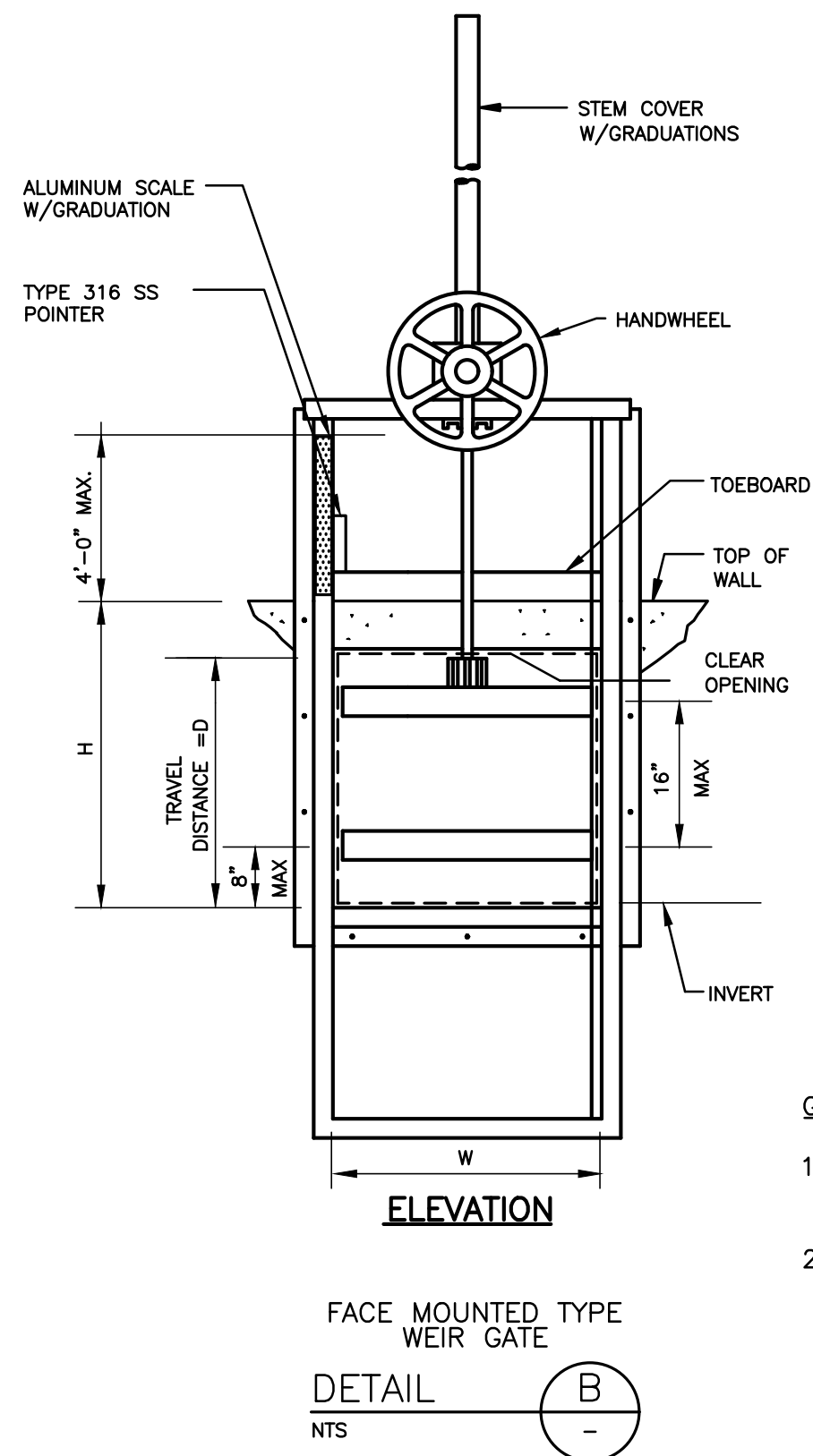
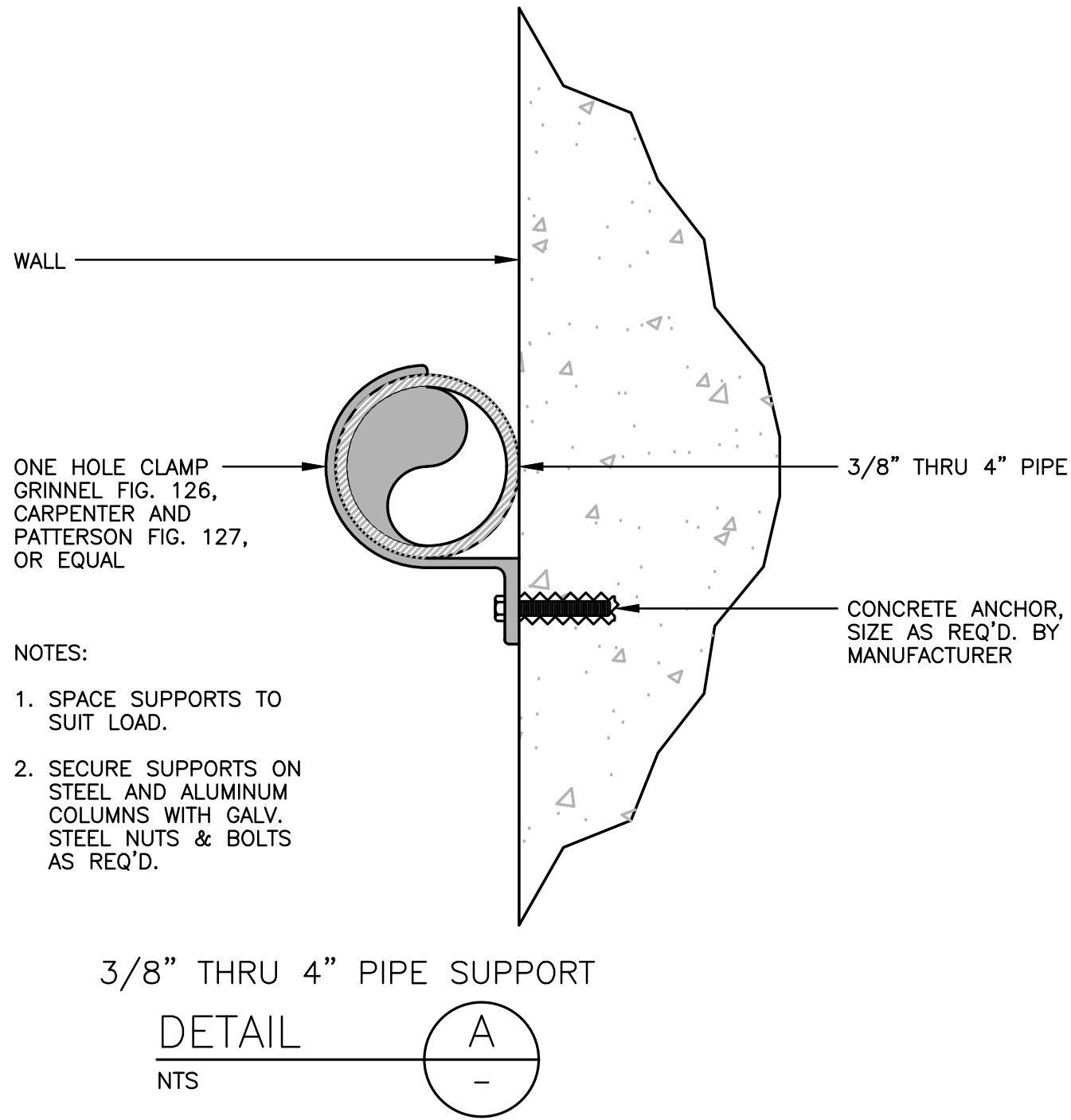
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UTILITY DEPARTMENT**

1205 STATE ROAD 16  
ST. AUGUSTINE, FLORIDA 32084-8646  
Phone (904) 209-2700 • Fax (904) 209-2702

STATE ROAD 16 WASTEWATER TREATMENT FACILITY HEADWORKS & RAS / WAS IMPROVEMENTS

MECHANICAL DETAILS

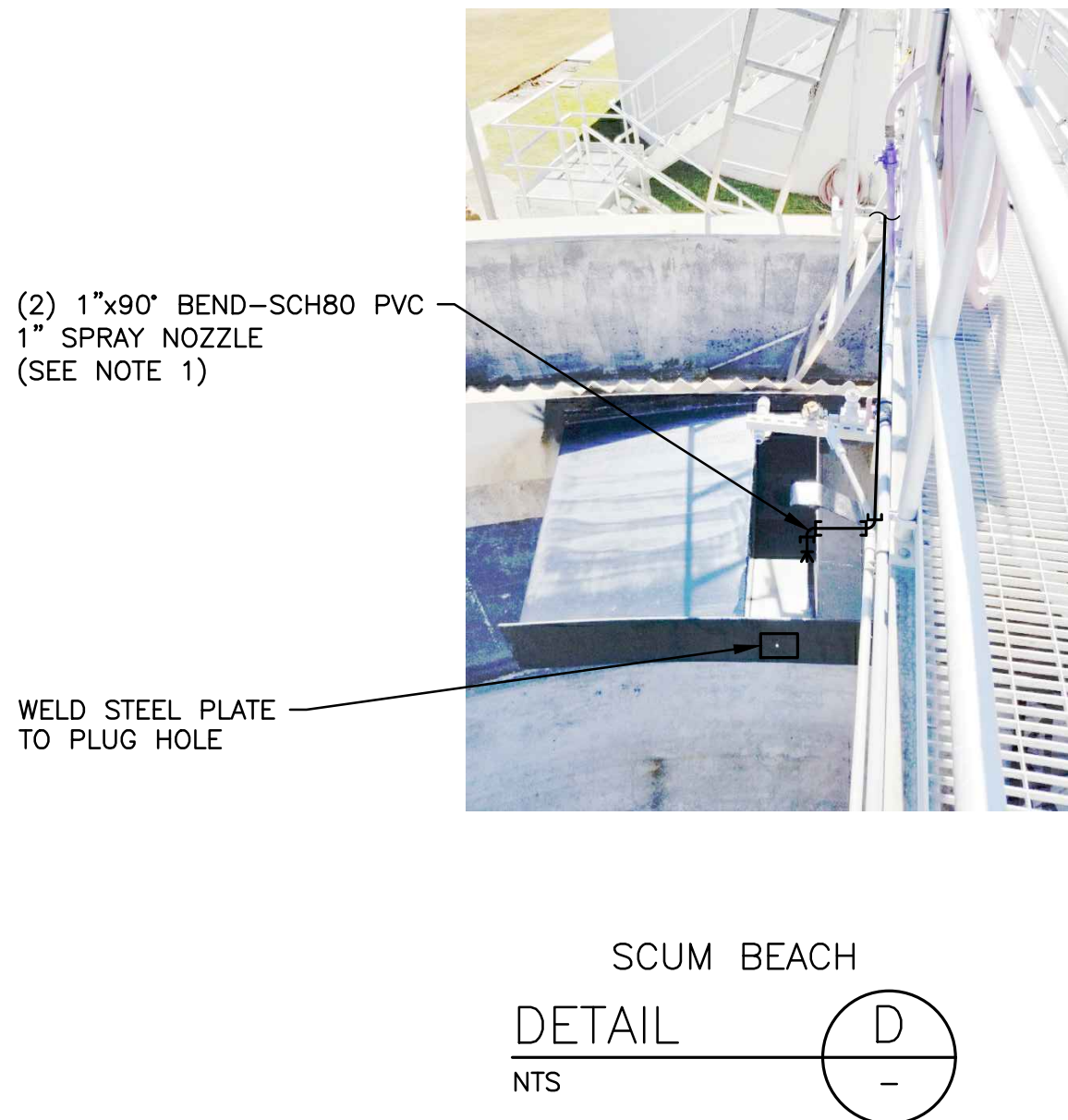
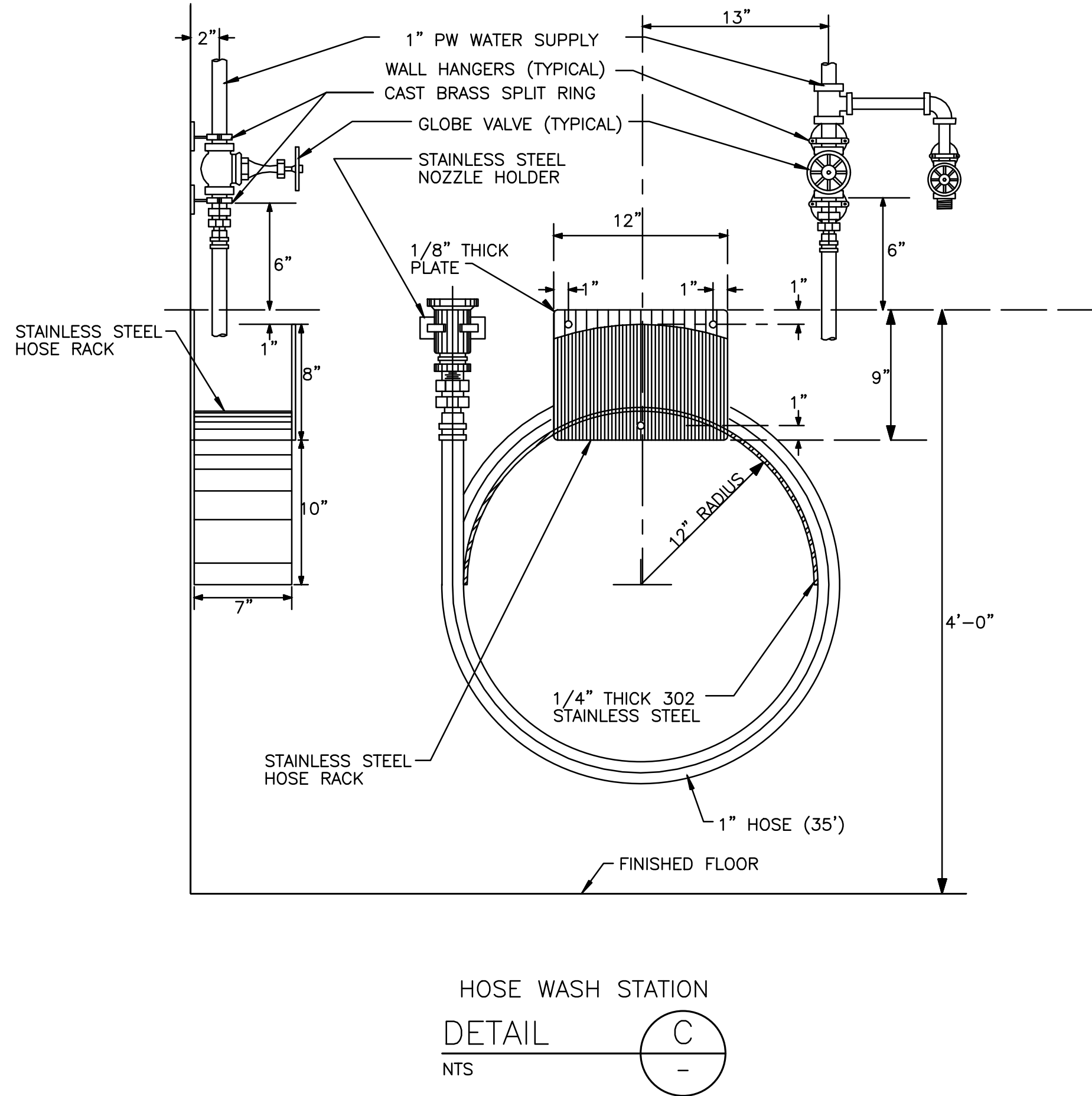
PROJECT NO.	100408.24
FILE NAME	MD-1.dwg
SHEET NO.	MD-1



GATE NOTES:

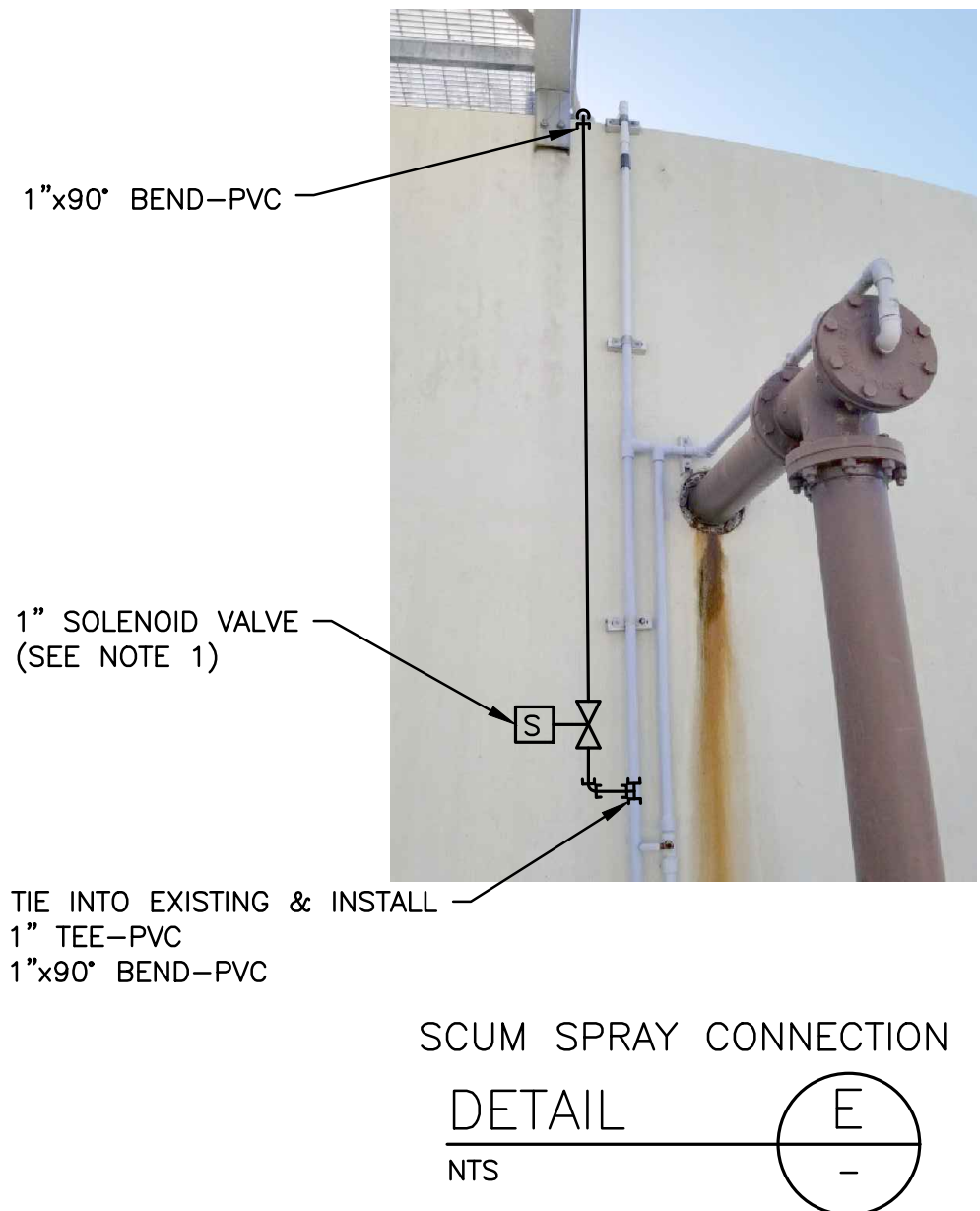
1. SET ALL FRAME MOUNTED OPERATORS 3'-6" ABOVE THE  
(WORKING) SLAB ELEVATION, UNLESS NOTED OTHERWISE.
2. PROVIDE A SEATING HEAD OF 10' AND UNSEATING HEAD OF 10'  
ON ALL WEIR GATES.

WEIR GATE SCHEDULE								
NO.	LOCATION	SIZE (W x H)	OPERATING ELEV.		TYPE	TYPE LIFT	MATERIAL OF CONSTRUCTION	COMMENTS
			LOW	HIGH				
1	SPLITTER BOX	5'-0" x 3'-6"	48.45	50.00	SELF- CONTAINED	MANUALLY OPERATED FACE MOUNTED	316L STAINLESS STEEL	NOTES 1, 2
2	SPLITTER BOX	5'-0" x 3'-6"	48.45	50.00	SELF- CONTAINED	MANUALLY OPERATED FACE MOUNTED	316L STAINLESS STEEL	NOTES 1, 2



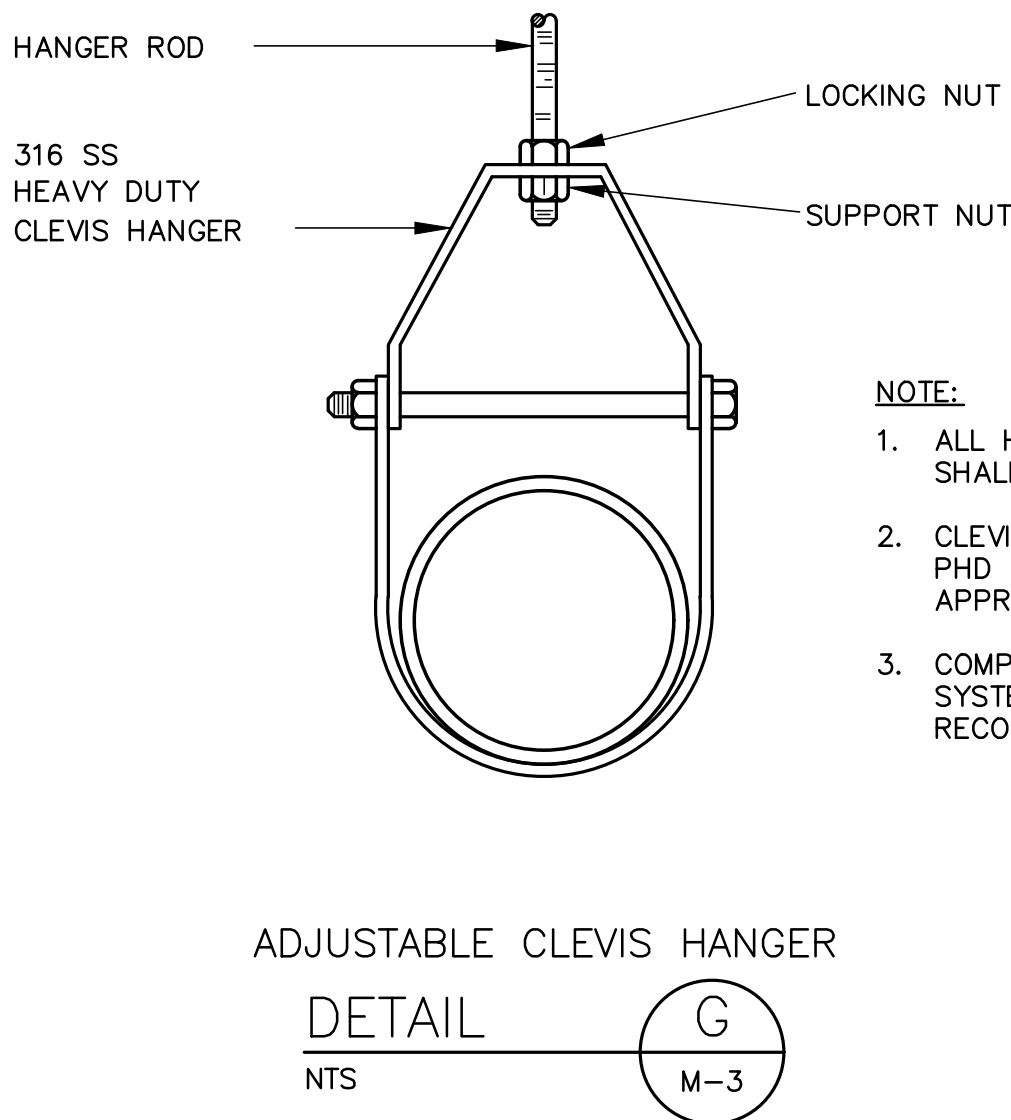
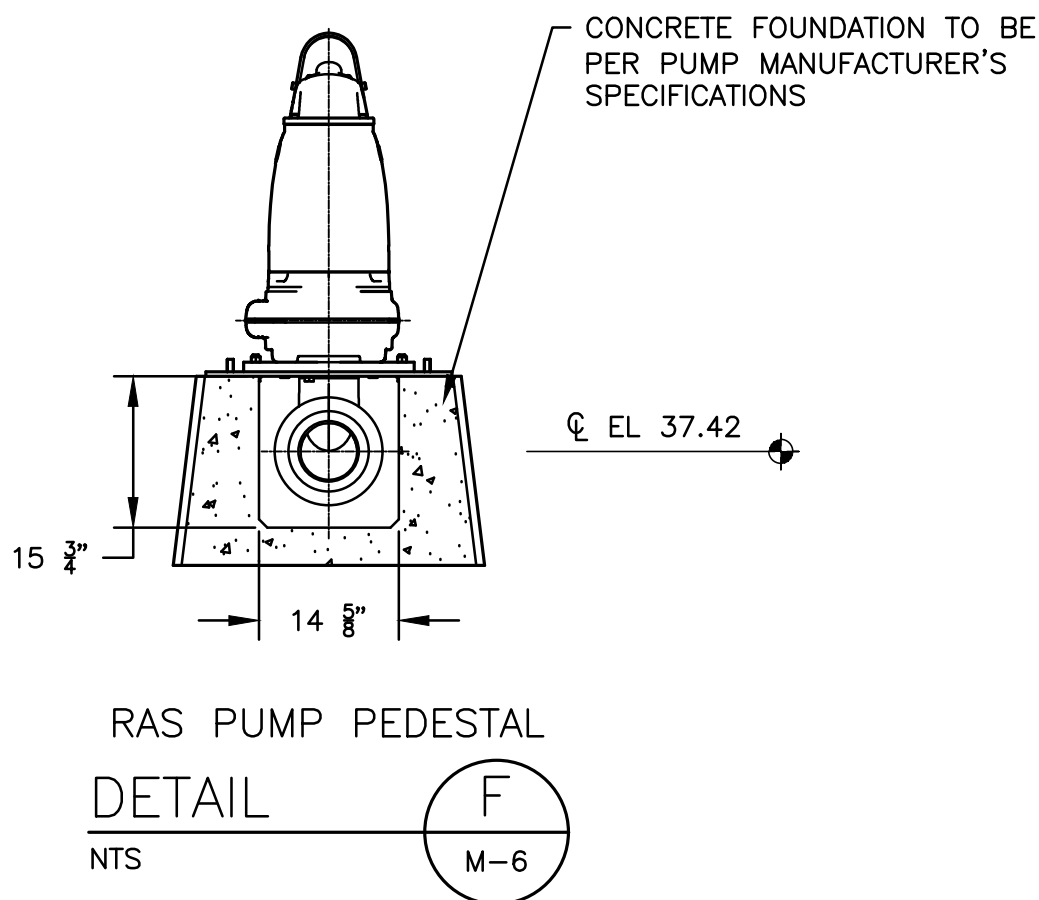
NOTES:

1. POSITION SPRAY NOZZLE AT FAR END OF SCUM  
BEACH TO DIRECT SCUM INTO THE COLLECTION  
PIPE. THE NOZZLE SHALL BE BETE NF8030.



NOTES:

1. LOCATE SOLENOID VALVE 3'-0" ABOVE GRADE.



NOTE:

1. ALL HANGER COMPONENTS AND FASTENERS  
SHALL BE TYPE 316 STAINLESS STEEL.
2. CLEVIS HANGERS SHALL BE FIGURE 426 BY  
PHD MANUFACTURING, IN. OR ENGINEER  
APPROVED EQUAL.
3. COMPONENT DIMENSIONS AND ANCHORING  
SYSTEM SHALL BE AS MANUFACTURERS  
RECOMMENDATIONS.

NO.	BY	DATE	SYMBOL	REVISIONS
6				
5				
4				
3				
2				
1				

DESIGNER:	DAR
DRAWN BY:	DRS
CHECKED BY:	CEH
APPROVED BY:	DAR
DATE:	APRIL 2020

DESIGN ENGINEER	DAVID A. RASMUSSEN P.E.
FLORIDA REGISTRATION NO.	77561

**Constantine**  
Engineering

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PH. 904-562-2185  
FLORIDA  
CERTIFICATE OF AUTHORIZATION  
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UTILITY DEPARTMENT**

1205 STATE ROAD 16  
ST. AUGUSTINE, FLORIDA 32084-8646  
Phone (904) 209-2700 • Fax (904) 209-2702

STATE ROAD 16 WASTEWATER TREATMENT FACILITY HEADWORKS & RAS / WAS IMPROVEMENTS	PROJECT NO. 100408.24 FILE NAME MD-2.dwg SHEET NO. MD-2
MECHANICAL DETAILS	



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ELECTRICAL LEGEND

	P101 CONDUIT "P101" (SEE CONDUIT AND CABLE SCHEDULE)		MCP 100 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		VARIABLE FREQUENCY DRIVE
	CONDUIT RUNS IN DUCT BANKS OR BELOW GRADE		MOTOR (NUMERAL INDICATES HORSEPOWER – "H" SPACE HEATER, "T" WINDING THERMOSTAT, "M" MOISTURE DETECTOR)
	CONDUIT TURNING UP		POTENTIAL TRANSFORMER; CURRENT TRANSFORMER
	CONDUIT TURNING DOWN		PILOT LIGHT ("A" AMBER, "B" BLUE, "C" CLEAR, "G" GREEN, "R" RED, "W" WHITE)
	CHANGE IN CONDUIT ELEVATIONS USING CONDUIT OUTLET BODIES.		ALARM SIGNAL OR ANNUNCIATOR POINT
	CONDUIT TERMINATED WITH WATERTIGHT CABLE CONNECTOR		ASSOCIATED DEVICE "REMOTE" FROM MOTOR CONTROL CENTER OR CONTROL PANEL
	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).		HAND/OFF/AUTOMATIC SELECTOR SWITCH CONTROL STATION
	HANDHOLE, OR PULLBOX AS INDICATED ("E" ELECTRICAL, "C" COMMUNICATION))		SAFE OFF MOMENTARY PUSHBUTTON CONTROL STATION WITH LOCKING DEVICE
	TYPICAL WIRING DEVICE NOTATIONS ("W" WEATHERPROOF OR "X" EXPLOSION PROOF DEVICE CONNECTED TO PANEL "L" CIRCUIT "5". ENCLOSING SQUARE DENOTES FLOORBOX)		EMERGENCY STOP CONTROL STATION WITH SAFETY CABLES
	RECEPTACLE		AMMETER AND AMMETER SWITCH
	SPECIAL PURPOSE OUTLET		HOURS OF OPERATION; ELAPSED TIME METER
	JUNCTION BOX, PULL BOX		VOLTMETER AND VOLTMETER SWITCH
	SINGLE POLE SWITCH CONTROLS FIXTURES MARKED "b" ("2" 2 POLE, "3" 3 WAY, "T" TIME SWITCH, "M" MANUAL MOTOR STARTER)		CONTROL RELAY, INTERPOSING CONTROL RELAY
	THERMOSTAT (LINE VOLTAGE TYPE WITH ON-OFF-AUTO SWITCH UNLESS NOTED).		GROUND FAULT PROTECTION SYSTEM
	SAFETY DISCONNECT SWITCH (AMPERAGE RATING/POLES/FUSE RATING – "NF" NON-FUSED, "DT" DOUBLE-THROW)		POWER MONITOR
	TELEPHONE OUTLET		TIME DELAY RELAY
	TELEPHONE BACKBOARD		PRESSURE CONTROLLER
	LOW VOLTAGE PANELBOARD (208/120V)		OVERLOAD DEVICE; SURGE CONTROL PANEL
	HIGH VOLTAGE PANELBOARD (480/277V)		LEVEL SWITCH
	TYPICAL LIGHTING FIXTURE NOTATIONS (TYPE "E" CONNECTED TO CIRCUIT "2" AND SWITCH "b". SHADING DENOTES EMERGENCY UNIT. BRACKET DENOTES WALL MOUNTING)		ZERO SPEED SWITCH; POSITION SWITCH
	LINEAR/LAY-IN LIGHT FIXTURE		PRESSURE SWITCH
	WALL MOUNTED LIGHT FIXTURE		SOLENOID VALVE; VALVE CONTROL ACTUATOR
	CEILING/PENDANT MOUNTED LIGHT FIXTURE		ALARM HORN
	REFERENCE TO NOTE "#"		SURGE PROTECTION DEVICE
	TYPICAL SELECTOR SWITCH CONFIGURATION		TIME CLOCK (CYCLE TIME/TYPE/MIN. SETTING – "AC" ADJUSTABLE CYCLE, "M" MOMENTARY, "P" PULSE, "RC" REPEAT CYCLE)
	"XOO" DENOTES SELECTOR SWITCH CONTACT CLOSED IN THE FIRST (HAND) POSITION		MOTOR OPERATED VALVE
	"OOX" DENOTES SELECTOR SWITCH CONTACT CLOSED IN THE THIRD (AUTO) POSITION		

INSTRUMENTATION LEGEND

	FIELD MOUNTED INSTRUMENT		PANEL MOUNTED INSTRUMENT		BACK OF PANEL MOUNTED DEVICE
--	--------------------------	--	--------------------------	--	------------------------------

"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

P&ID SIGNAL DESIGNATIONS

FIELD DEVICE		DISCRETE INPUT SIGNAL
		DISCRETE OUTPUT SIGNAL
		ANALOG INPUT SIGNAL
		ANALOG OUTPUT SIGNAL
		MODBUS TCP COMMUNICATIONS

"XYZ"	MISCELLANEOUS ABBREVIATIONS
ACM	ANALOG CONTROL MODULE
AI	ANALOG INPUT SIGNAL
AMM	ANALOG MONITOR MODULE
AO	ANALOG OUTPUT SIGNAL
ARV	AIR RELEASE VALVE
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
MCC	MOTOR CONTROL CENTER
MIP	MAIN INSTRUMENTATION PANEL
OI	OPERATOR INTERFACE
PCM	PUMP CONTROL MODULE
RTU	PROGRAMMABLE LOGIC CONTROLLER MODULE
PSM	POWER SUPPLY MODULE
RIM	RADIO INTERFACE MODULE
RTU	REMOTE TELEMETRY UNIT
S/C	SIGNAL CONVERTER
S/I	SIGNAL ISOLATOR
S/P	SURGE PROTECTOR
VFD	VARIABLE FREQUENCY DRIVE
XLPE	CROSS-LINKED POLYETHYLENE

MOTOR CONTROL CENTER 1 LOAD CALCULATIONS

EFFL PUMP 1 REUSE	50 HP	65 AMPS
EFFL PUMP 2 REUSE	50 HP	65 AMPS
EFFL PUMP 3 WETLANDS	60 HP	77 AMPS
EFFL PUMP 4 WETLANDS	60 HP	77 AMPS
DIGESTER BLOWER 1	15 HP	21 AMPS
DIGESTER BLOWER 2	15 HP	21 AMPS
DIGESTER BLOWER 3	20 HP	27 AMPS
SITE PUMP STATION PUMP 1	5 HP	8 AMPS
SITE PUMP STATION PUMP 2	5 HP	8 AMPS
BFP WASHWATER PUMP	15 HP	21 AMPS
BFP SLUDGE FEED PUMP	15 HP	21 AMPS
BFP DRIVE	3 HP	5 AMPS
BFP HYDRAULIC PUMP	1 HP	2 AMPS
BFP SLUDGE CONVEYOR	2 HP	4 AMPS

TOTAL CONNECTED MOTOR LOAD	422 AMPS
MOTOR DEMAND FACTOR	100 %

MCC-1 MOTOR PEAK DEMAND	422 AMPS
LIGHTING PANEL LE	30 KVA
PROCESS TANK PANEL	15 KVA
BELT PRESS BLDG HEATER	7.5 KVA
	9 AMPS

MCC-1 TOTAL CONNECTED LOAD	485 AMPS
----------------------------	----------

POWER PANEL PP1 LOAD CALCULATIONS

GRIT PUMP	10 HP	14 AMPS
GRIT DRIVE	1 HP	2 AMPS
GRIT CLASSIFIER	0.5 HP	1 AMPS
SCREEN DRIVE MOTOR	1 HP	2 AMPS
CONVEYOR DRIVE MOTOR	1 HP	2 AMPS
WATER BOOSTER PUMP	3 HP	5 AMPS

TOTAL CONNECTED MOTOR LOAD	26 AMPS
MOTOR DEMAND FACTOR	100 %

PP-1 MOTOR PEAK DEMAND	26 AMPS
MAINTENANCE SHED	45 KVA
	54 AMPS

PP-1 TOTAL CONNECTED LOAD	80 AMPS
---------------------------	---------

MOTOR CONTROL CENTER 2 LOAD CALCULATIONS

BLOWER 1	125 HP	156 AMPS
BLOWER 3	75 HP	96 AMPS
RAS PUMP 1	12 HP	21 AMPS
WAS PUMP 1	3.7 HP	8 AMPS
SCUM PUMP 1	3 HP	5 AMPS
REUSE PUMP 1	5 HP	8 AMPS
REUSE PUMP 2	5 HP	8 AMPS
SECONDARY CLARIFIER 1	0.5 HP	1 AMPS
SLUDGE VALVE 1	0.5 HP	1 AMPS
FILTER 1 DRIVE MOTOR	1.5 HP	3 AMPS
FILTER 1 BACKWASH PUMP	5 HP	8 AMPS
FILTER 1 EFFLUENT VALVE	0.5 HP	1 AMPS

TOTAL CONNECTED MOTOR LOAD	316 AMPS
MOTOR DEMAND FACTOR	100 %

MCC-2 MOTOR PEAK DEMAND	316 AMPS
MCC-1 MOTOR PEAK DEMAND	422 AMPS
OPERATIONS BUILDING	45 KVA
MAIN ELECTRICAL BUILDING	30 KVA
	36 AMPS

TOTAL CONNECTED LOAD	828 AMPS
----------------------	----------

NON-COINCIDENTAL LOAD CALCULATIONS

BLOWER	75 HP	96 AMPS
EFFLUENT PUMP REUSE	50 HP	65 AMPS
EFFLUENT PUMP WETLANDS	60 HP	77 AMPS
DIGESTER BLOWER	15 HP	21 AMPS
PLANT LIFT STATION PUMP	10 HP	14 AMPS
RAS PUMP	12 HP	21 AMPS
WAS PUMP	3.7 HP	8 AMPS
SCUM PUMP	3 HP	5 AMPS
SITE PUMP STATION PUMP	5 HP	8 AMPS

NON-COINCIDENTAL MOTOR LOAD	315 AMPS
MOTOR DEMAND FACTOR	100 %

NON-COINCIDENTAL PEAK DEMAND	315 AMPS
------------------------------	----------

MOTOR CONTROL CENTER 3 LOAD CALCULATIONS

BLOWER 2	125 HP	156 AMPS
PLANT LIFT STATION PUMP 1	10 HP	14 AMPS
PLANT LIFT STATION PUMP 2	10 HP	14 AMPS
RAS PUMP 2	12 HP	21 AMPS
WAS PUMP 2	3.7 HP	8 AMPS
SCUM PUMP 2	3 HP	5 AMPS
SECONDARY CLARIFIER 2	0.5 HP	1 AMPS
SLUDGE VALVE 2	0.5 HP	1 AMPS
HYPOCHLORITE PUMP 1	0.33 HP	1 AMPS
HYPOCHLORITE PUMP 2	0.33 HP	1 AMPS

TOTAL CONNECTED MOTOR LOAD	222 AMPS
MOTOR DEMAND FACTOR	100 %

MCC-3 MOTOR PEAK DEMAND	222 AMPS
OPERATIONS BUILDING	45 KVA
MAIN ELECTRICAL BUILDING	30 KVA
	36 AMPS

TOTAL CONNECTED LOAD	312 AMPS
----------------------	----------

ELECTRICAL SERVICE LOAD CALCULATIONS

MOTOR CONTROL CENTER 1	485 AMPS
MOTOR CONTROL CENTER 2	316 AMPS
MOTOR CONTROL CENTER 3	222 AMPS
POWER PANEL PP-1	80 AMPS
OPERATIONS BUILDING	45 KVA
MAIN ELECTRICAL BUILDING	30 KVA
	36 AMPS

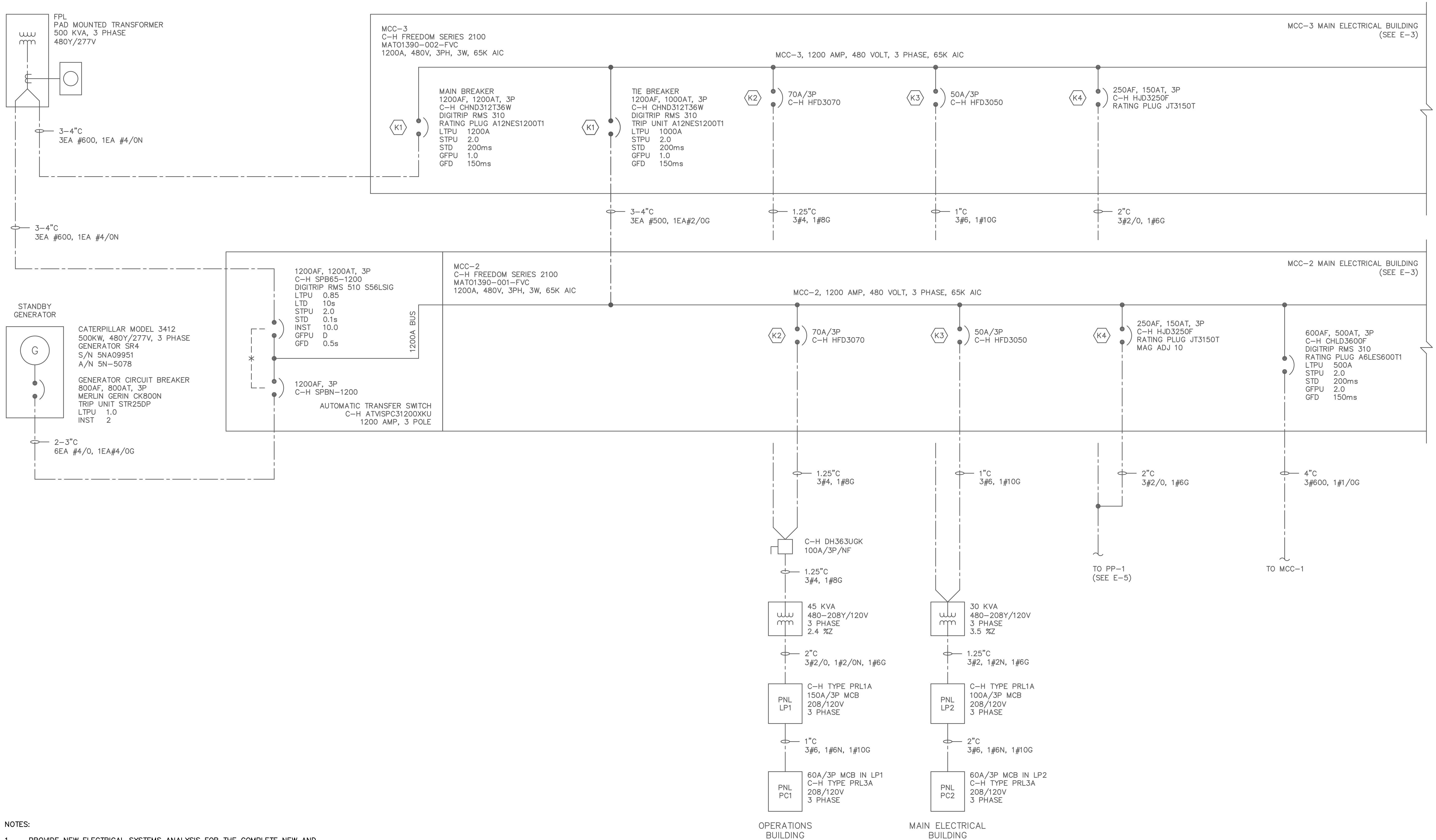
TOTAL CONNECTED LOAD	1193 AMPS
TOTAL NON-COINCIDENTAL LOAD	315 AMPS

PEAK DEMAND LOAD	878 AMPS
0.25 X LARGEST MOTOR	39 AMPS
MIN SERVICE AMPACITY	917 AMPS

EXISTING ELECTRICAL SERVICE:  
1200 AMP, 480 VOLT, 3 PHASE

NO.	BY	DATE	SYMBOL	REVISIONS	DESIGNER:	WDL	DESIGN ENGINEER	W. DAVID LASSETTER, P.E.	100 CENTER CREEK RD., STE 108 ST. AUGUSTINE, FL 32084 PH. 904-562-2185	ST. JOHNS COUNTY UTILITY DEPARTMENT	STATE ROAD 16 WASTEWATER TREATMENT FACILITY HEADWORKS & RAS / WAS IMPROVEMENTS	PROJECT NO.	100408.24
6.					DRAWN BY:	TCG						FILE NAME	834E00P4.DWG
5.					CHECKED BY:	WDL	FLORIDA REGISTRATION NO.	37971				SHEET NO.	E-1
4.					APPROVED BY:	TCG							
3.					DATE:	APRIL 2020							
2.													
1.													

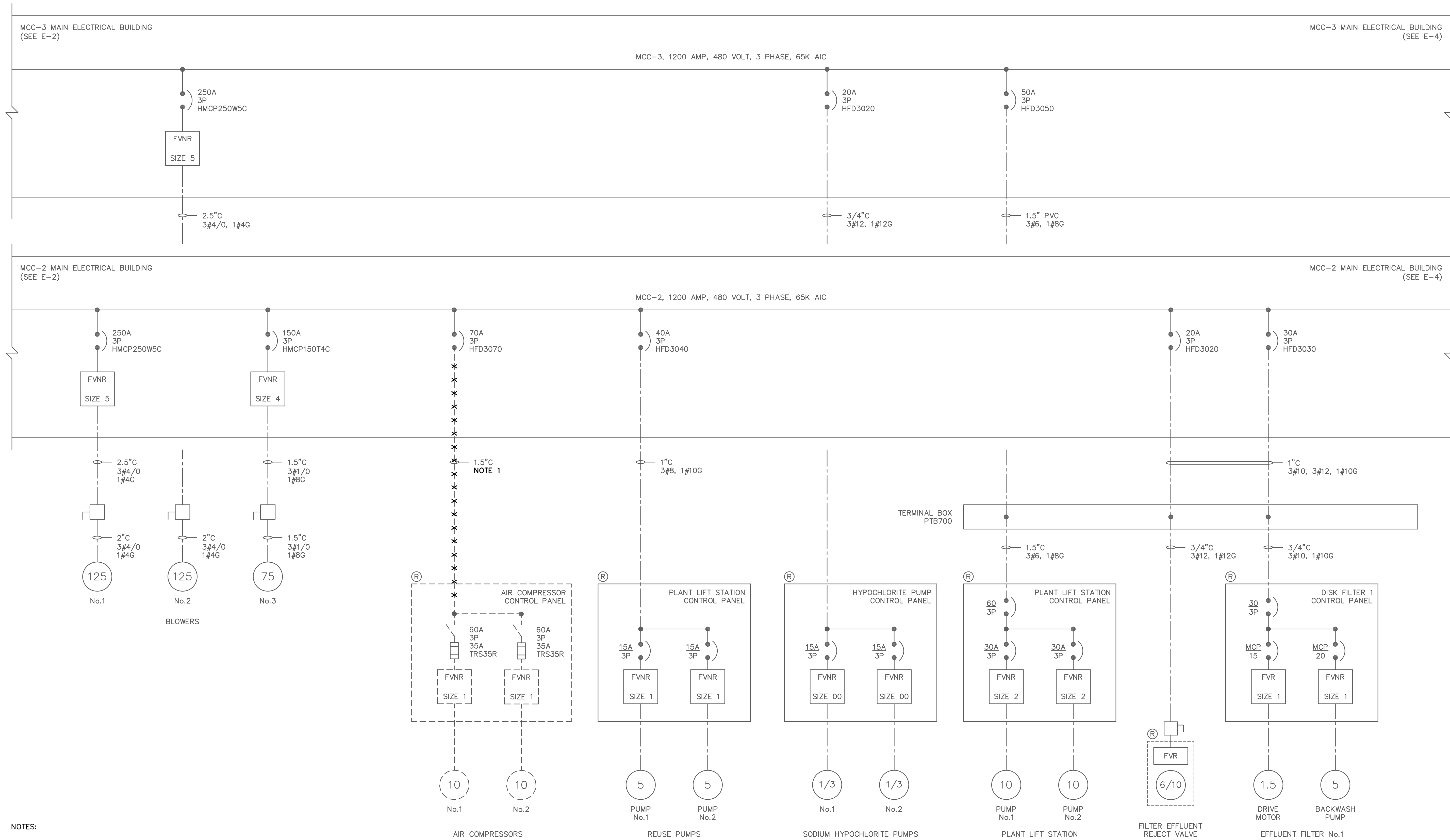
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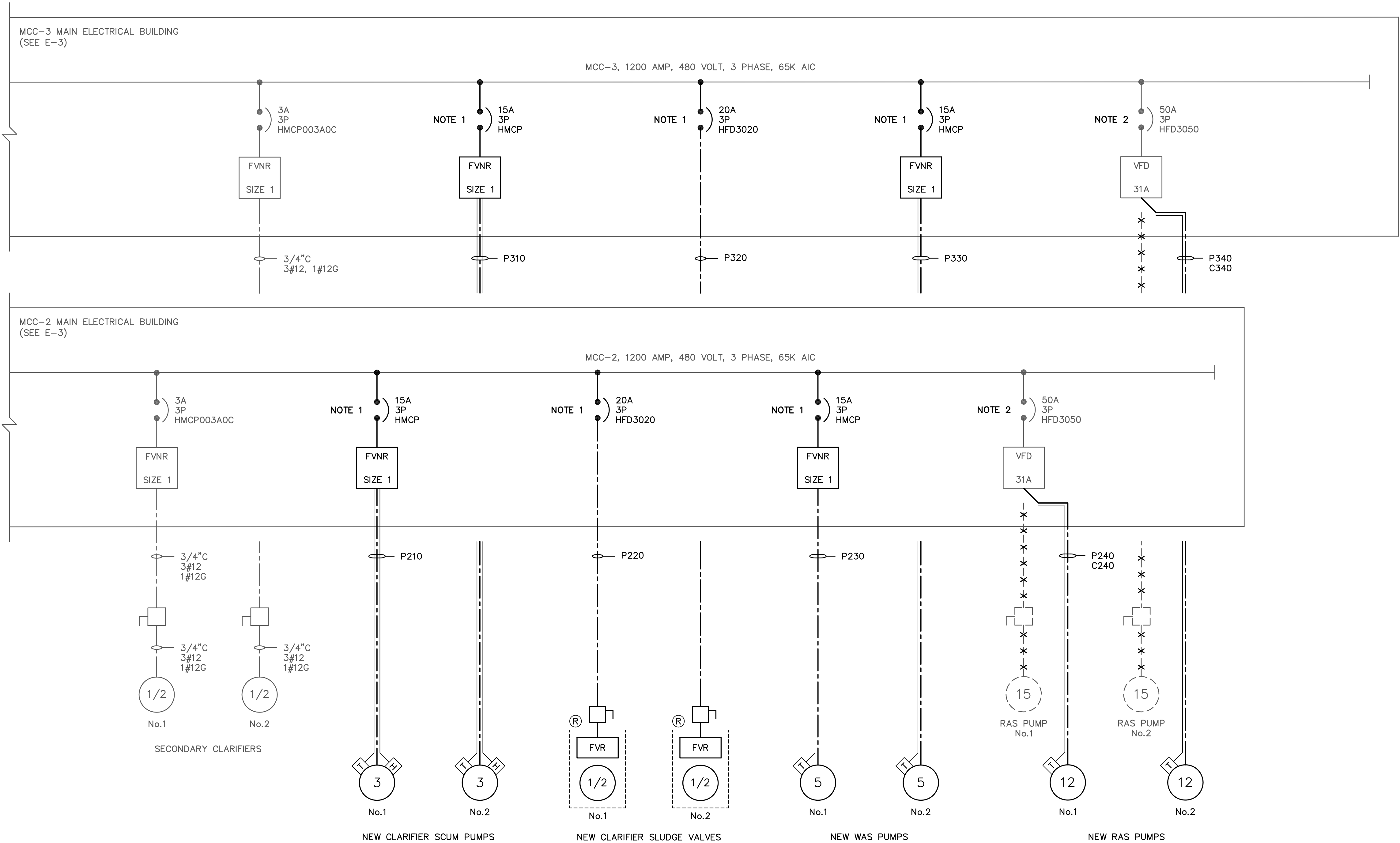


- NOTES:
- DISCONNECT AND REMOVE THE EXISTING SAND FILTER AIR COMPRESSOR CONTROL PANEL POWER AND CONTROL CONDUCTORS. RE-USE THE RESULTING SPARE 1.5" CONDUIT.
  - USE A CONDUIT MANDREL TO TEST AND CLEAR EXISTING CONDUITS THAT ARE TO BE REUSED.

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SINGLE LINE DIAGRAM

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- NOTES:
1. PROVIDE COMPLETE NEW FEEDER BREAKER UNIT COMPARTMENTS AND MOTOR STARTER UNIT COMPARTMENTS MOUNTED WITHIN THE EXISTING MCC. ADJUST EXISTING UNIT COMPARTMENTS AND PROVIDE NEW EMPTY SPACE UNIT DOORS AS REQUIRED TO MAKE SPACE FOR THE NEW EQUIPMENT.
  2. DISCONNECT AND REMOVE THE EXISTING RAS PUMP MOTOR POWER AND CONTROL CONDUCTORS. CUT OFF AND SEAL EXISTING CONDUITS AT THE PUMPS FLUSH WITH THE SLAB. RE-USE THE EXISTING VFD FOR THE NEW RAS PUMP. REPLACE THE EXISTING VFD CIRCUIT BREAKER WITH NEW MCP.

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3.					DATE:	APRIL 2020					
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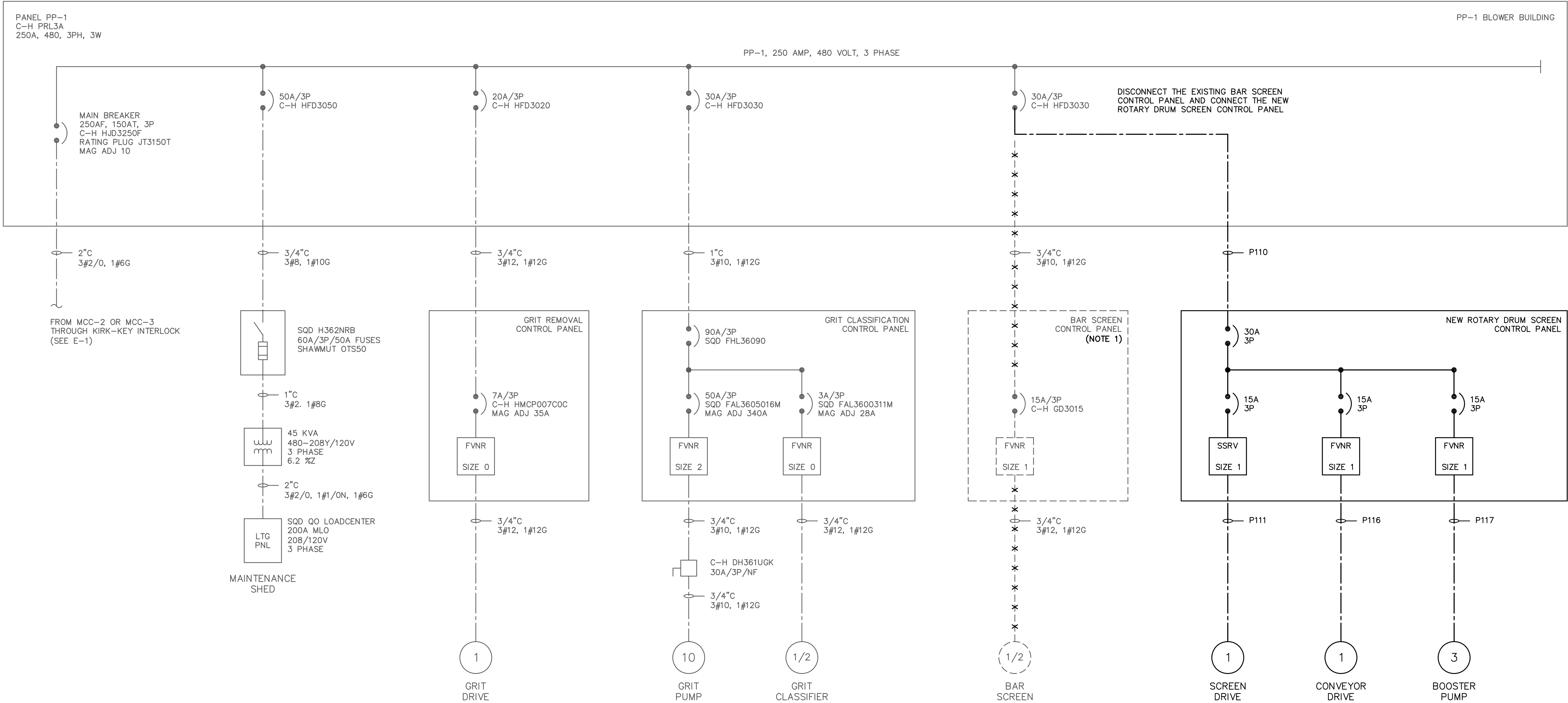
1205 STATE ROAD 16  
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Phone (904) 209-2700 • Fax (904) 209-2702

SINGLE LINE DIAGRAM

ISSUED FOR BID



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NOTES:

1. DISCONNECT AND REMOVE THE EXISTING BAR SCREEN CONTROL PANEL AND ALL ASSOCIATED CONDUCTORS.

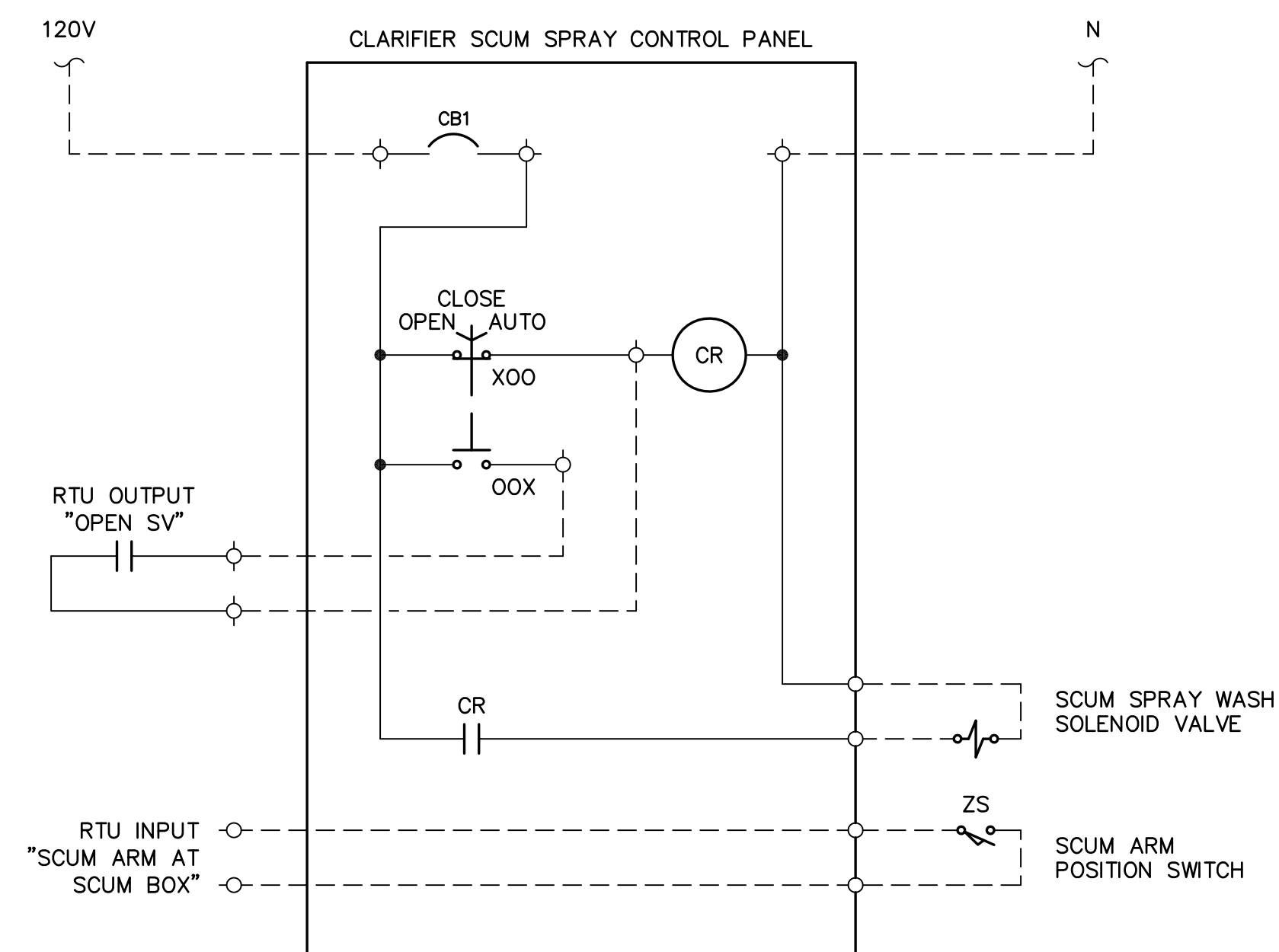
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5.					CHECKED BY:	WDL	FLORIDA REGISTRATION NO. 37971				SHEET NO.
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3.					DATE:	APRIL 2020					
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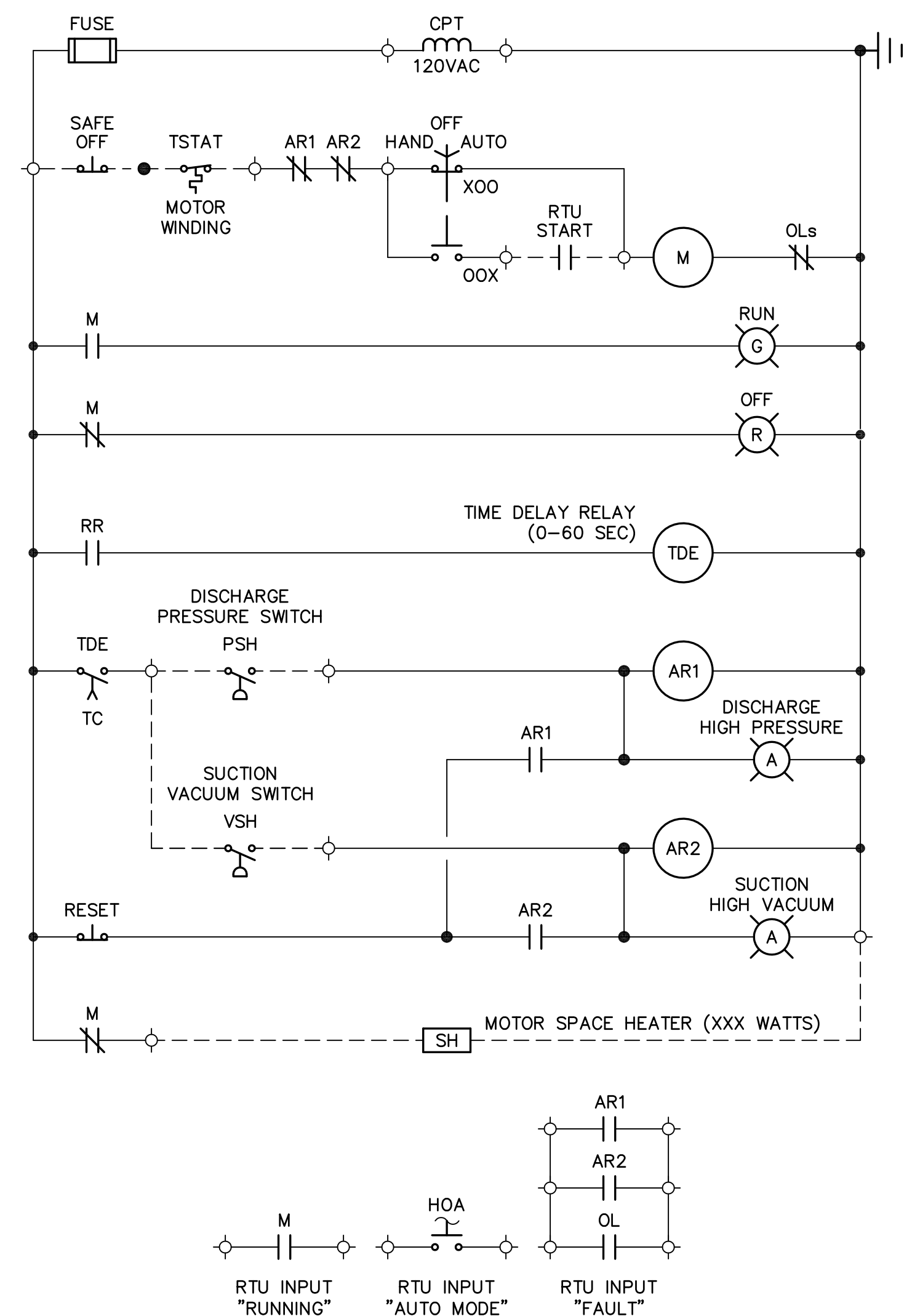
## ROTARY DRUM SCREEN CONTROL PANEL CONTROL WIRING DIAGRAM



### TYPICAL CLARIFIER SCUM SPRAY VALVE CONTROL STATON DIAGRAM

## CLARIFIER SCUM SPRAY CONTROL NOTES:

1. WHEN THE CLARIFIER SKIMMER ARM REACHES THE SCUM BOX, FOLLOWING AN ADJUSTABLE TIME DELAY, THE SCUM SPRAY SOLENOID VALVE SHALL OPEN FOR AN ADJUSTABLE TIME DURATION AS CONTROLLED BY THE PLANT SCADA SYSTEM.



### TYPICAL SCUM PUMP CONTROL WIRING DIAGRAM

## SCUM PUMP CONTROL NOTES:

1. OPERATION OF EACH SCUM PUMP SHALL BE CONTROLLED BY THE SCADA SYSTEM BASED ON THE OPERATION OF THE ASSOCIATED CLARIFIER.
2. THE SCADA SYSTEM SHALL MONITOR EACH TIME THE CLARIFIER ARM REACHES THE SCUM BOX TO MAINTAIN A COUNT OF CLARIFIER REVOLUTIONS.
3. WHEN THE CLARIFIER ARM REACHES THE SCUM BOX FOLLOWING AN OPERATOR ADJUSTABLE NUMBER OF CLARIFIER REVOLUTIONS, AN OPERATOR ADJUSTABLE SCUM PUMP START TIME DELAY SHALL BEGIN.
4. FOLLOWING THE SCUM PUMP START TIME DELAY THE SCUM PUMP SHALL START AND RUN FOR AN OPERATOR ADJUSTABLE TIME DURATION.

NO.	BY	DATE	SYMBOL	REVISIONS
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DESIGNER:	WDL	DESIGN ENGINEER  W. DAVID LASSETTER, P.E.  FLORIDA REGISTRATION NO. 37971
DRAWN BY:	TCG	
CHECKED BY:	WDL	
APPROVED BY:	TCG	
DATE:	APRIL 2020	



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**ST. JOHNS COUNTY  
UTILITY DEPARTMENT**

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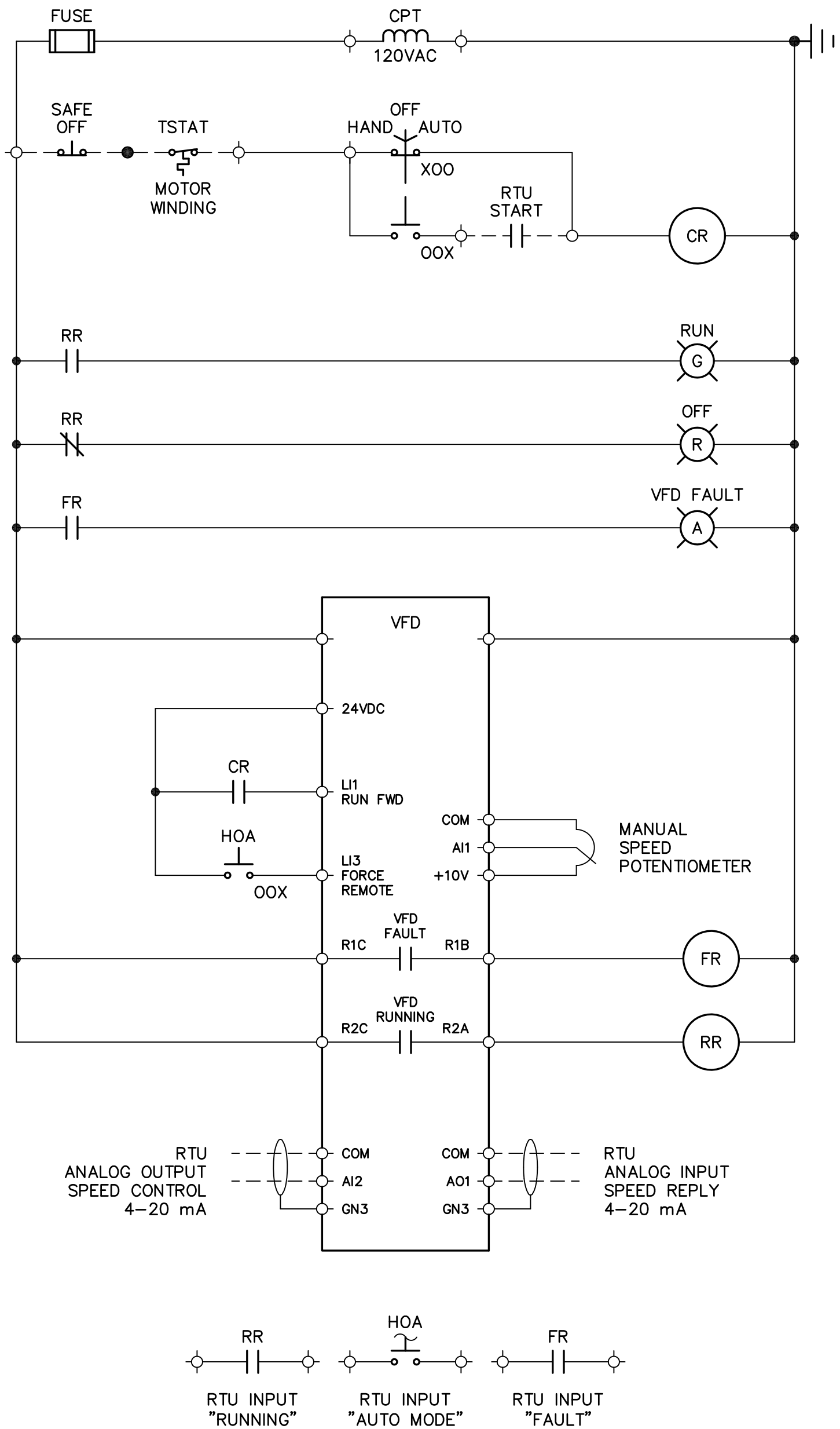
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STATE ROAD 16 WASTEWATER TREATMENT FACILITY HEADWORKS & RAS / WAS IMPROVEMENTS
CONTROL WIRING DIAGRAMS

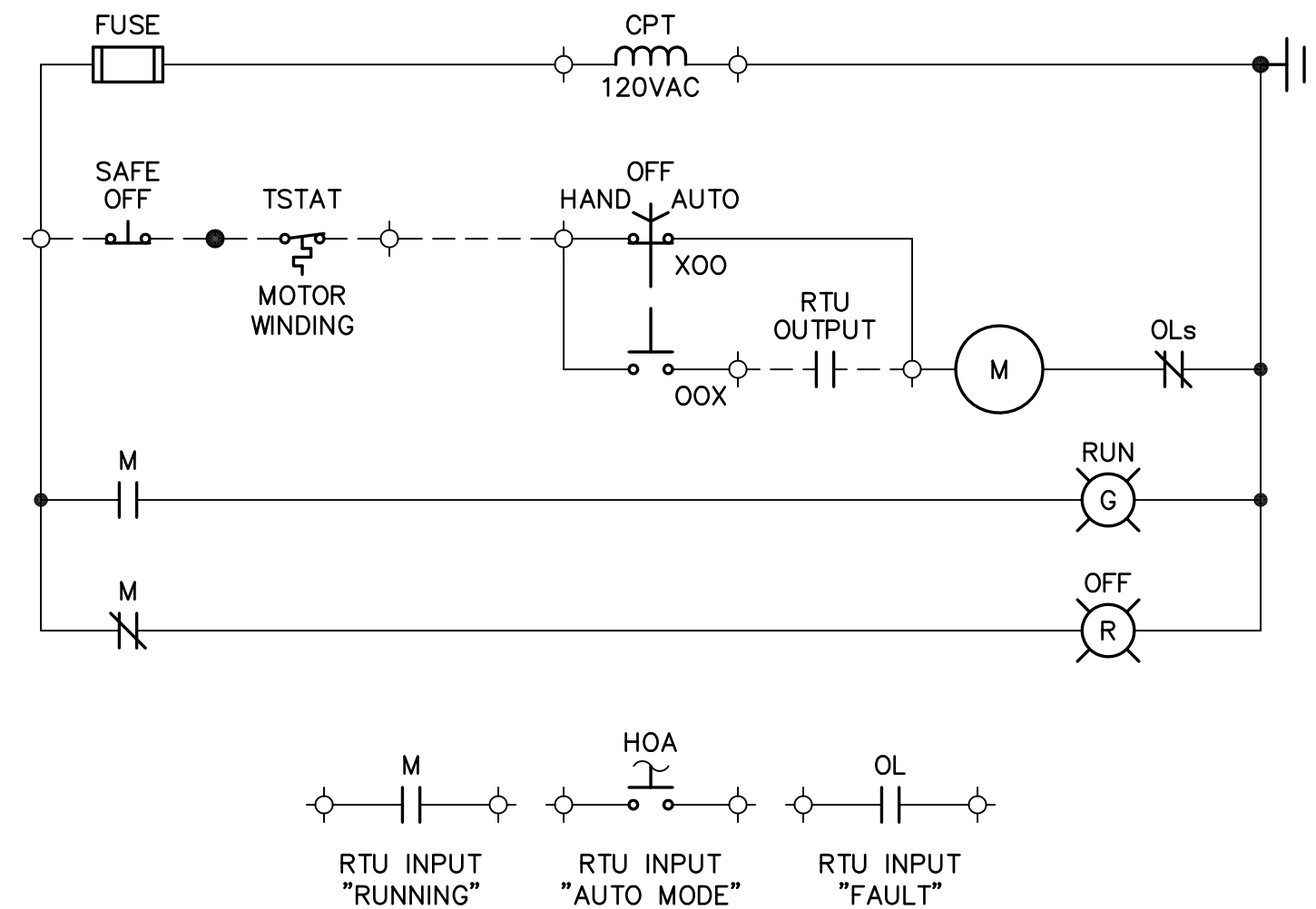
PROJECT NO.	100408.24
FILE NAME	834E00P4.DWG
SHEET NO.	
E-6	



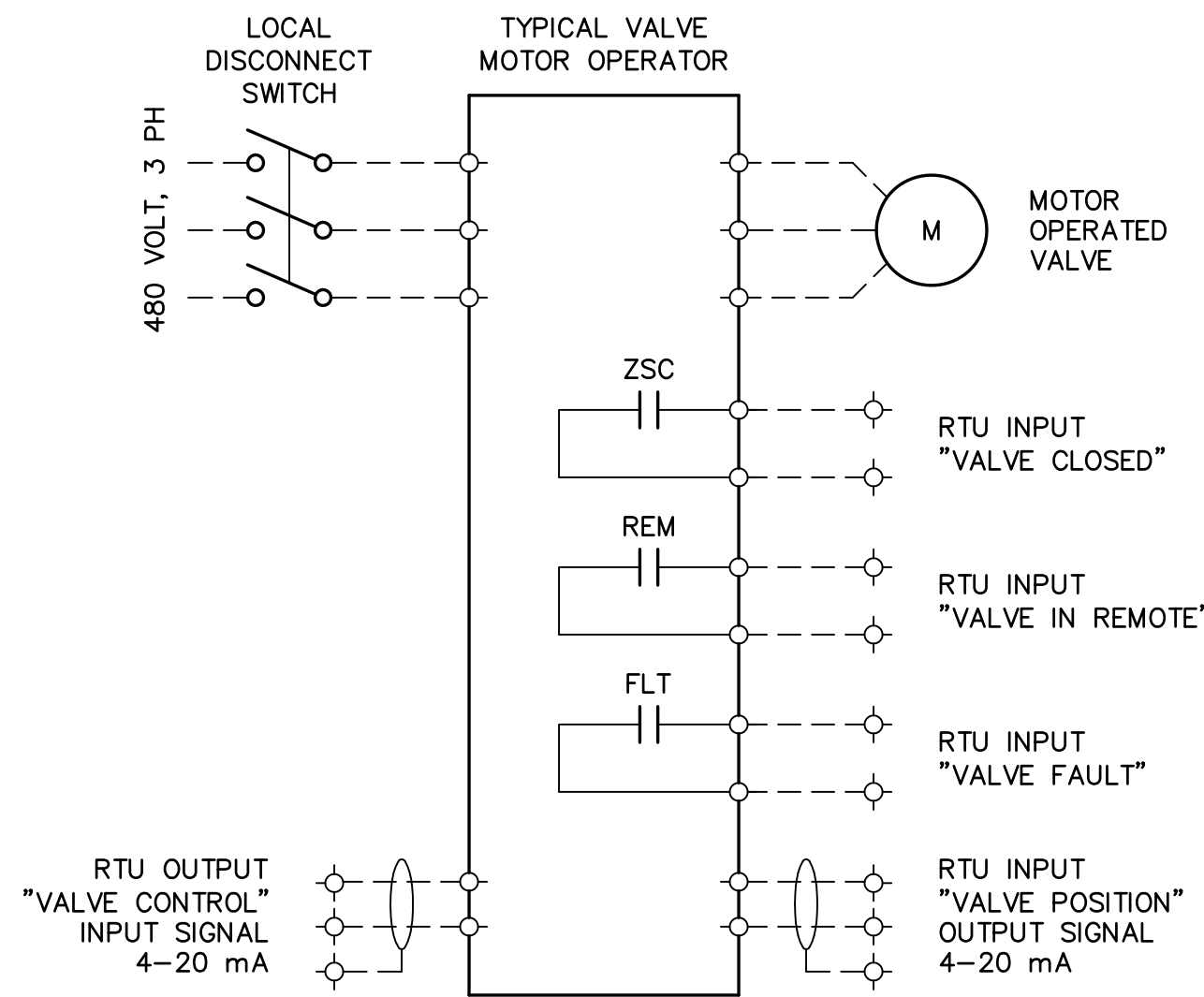
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TYPICAL RAS PUMP CONTROL WIRING DIAGRAM



TYPICAL WAS PUMP CONTROL WIRING DIAGRAM



TYPICAL CLARIFIER SLUDGE VALVE CONTROL WIRING DIAGRAM

NOTES:

1. VALVE FULL CLOSED POSITION CONTACT SHALL BE FROM A MECHANICAL SWITCH.

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6.					DRAWN BY:	TCG	W. DAVID LASSETTER, P.E.				FILE NAME 834E00P4.DWG
5.					CHECKED BY:	WDL	FLORIDA REGISTRATION NO. 37971				SHEET NO.
4.					APPROVED BY:	TCG					E-7
3.					DATE:	APRIL 2020					
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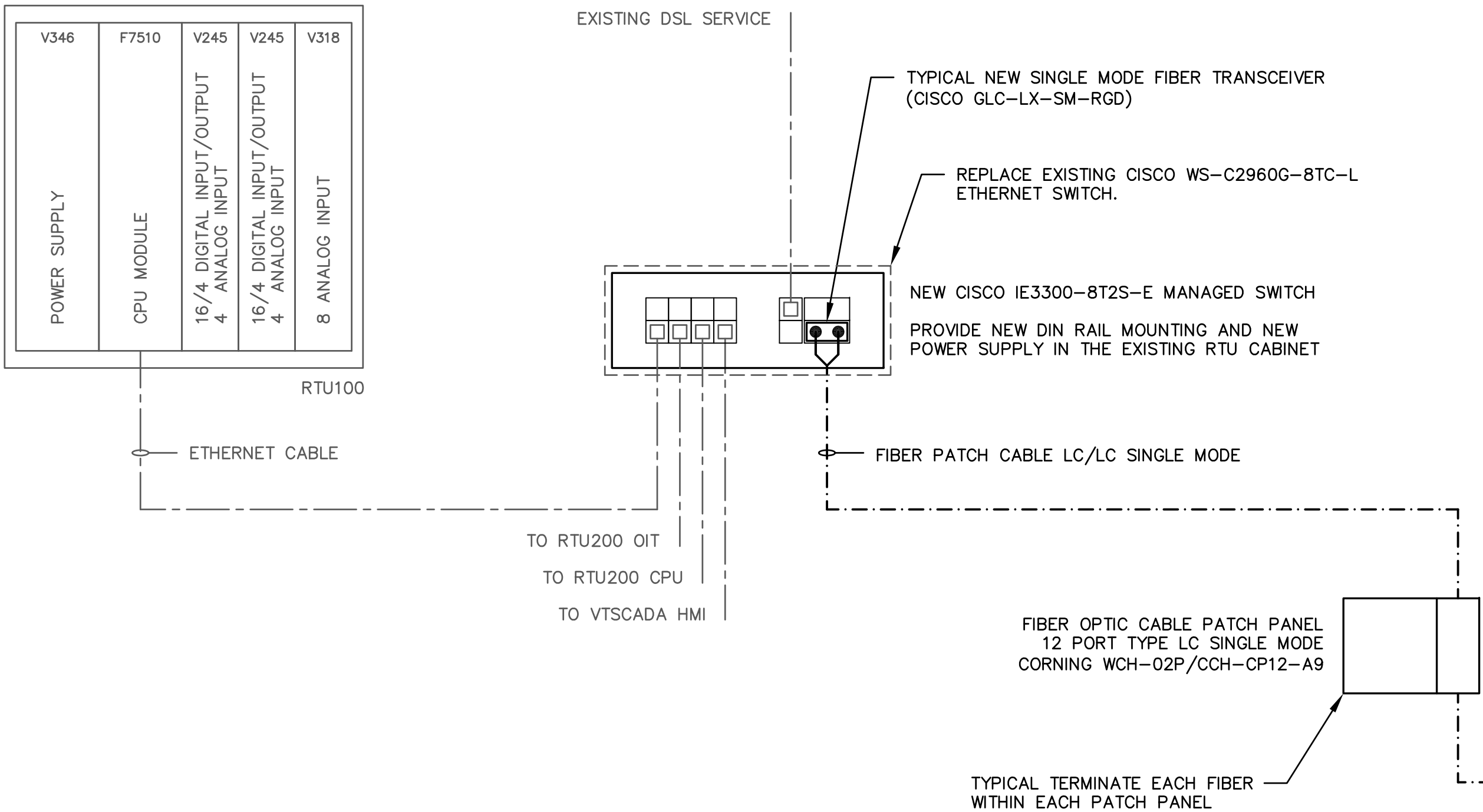




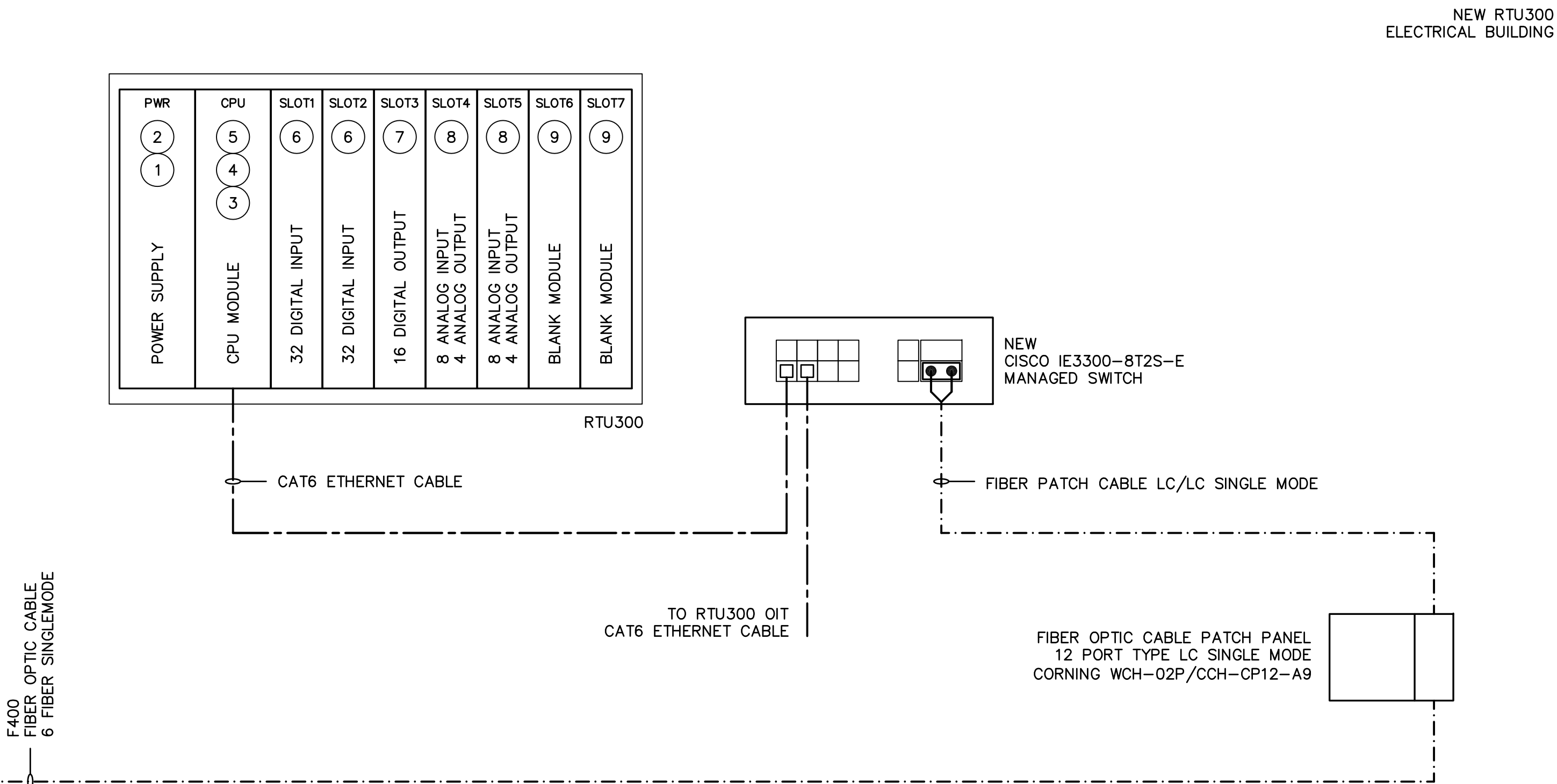
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32 DIGITAL INPUT MODULE		32 DIGITAL INPUT MODULE		16 DIGITAL OUTPUT MODULE		MIXED ANALOG I/O MODULE		MIXED ANALOG I/O MODULE	
DI	SIGNAL DESCRIPTION	DI	SIGNAL DESCRIPTION	DI	SIGNAL DESCRIPTION	AI	SIGNAL DESCRIPTION	AI	SIGNAL DESCRIPTION
01	CLARIFIER 1 RUNNING	01	CLARIFIER 2 RUNNING	01	CLARIFIER 1 OPEN SCUM SPRAY SV	01	CLARIFIER 1 VALVE POSITION	01	CLARIFIER 2 VALVE POSITION
02	CLARIFIER 1 ARM AT SCUM BOX	02	CLARIFIER 2 ARM AT SCUM BOX	02	CLARIFIER 2 OPEN SCUM SPRAY SV	02	CLARIFIER 1 SLUDGE FLOW	02	CLARIFIER 2 SLUDGE FLOW
03	SCUM PUMP 1 AUTO MODE	03	SCUM PUMP 2 AUTO MODE	03	SCUM PUMP 1 START/STOP	03	RAS PUMP 1 SPEED REPLY	03	RAS PUMP 2 SPEED REPLY
04	SCUM PUMP 1 RUNNING	04	SCUM PUMP 2 RUNNING	04	SCUM PUMP 2 START/STOP	04	RAS WET WELL LEVEL	04	SPARE
05	SCUM PUMP 1 FAULT	05	SCUM PUMP 2 FAULT	05	WAS PUMP 1 START/STOP	05	SPARE	05	SPARE
06	CLARIFIER 1 SLUDGE VALVE AUTO	06	CLARIFIER 2 SLUDGE VALVE AUTO	06	WAS PUMP 2 START/STOP	06	SPARE	06	SPARE
07	CLARIFIER 1 SLUDGE VALVE CLOSED	07	CLARIFIER 2 SLUDGE VALVE CLOSED	07	RAS PUMP 1 START/STOP	07	SPARE	07	SPARE
08	CLARIFIER 1 SLUDGE VALVE FAULT	08	CLARIFIER 2 SLUDGE VALVE FAULT	08	RAS PUMP 2 START/STOP	08	SPARE	08	SPARE
09	WAS PUMP 1 IN AUTO	09	WAS PUMP 2 IN AUTO	09	SPARE	A0	SIGNAL DESCRIPTION	A0	SIGNAL DESCRIPTION
10	WAS PUMP 1 RUNNING	10	WAS PUMP 2 RUNNING	10	SPARE	01	RAS PUMP 1 SPEED CONTROL	01	RAS PUMP 2 SPEED CONTROL
11	WAS PUMP 1 FAULT	11	WAS PUMP 2 FAULT	11	SPARE	02	SPARE	02	SPARE
12	RAS PUMP 1 IN AUTO	12	RAS PUMP 2 IN AUTO	12	SPARE	03	SPARE	03	SPARE
13	RAS PUMP 1 RUNNING	13	RAS PUMP 2 RUNNING	13	SPARE	04	SPARE	04	SPARE
14	RAS PUMP 1 FAULT	14	RAS PUMP 2 FAULT	14	SPARE				
15	SPARE	15	RAS WET WELL HIGH LEVEL	15	SPARE				
16	SPARE	16	RAS WET WELL LOW LEVEL	16	HEADWORKS SCREEN START/STOP				
17	SPARE	17	SPARE						
18	SPARE	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						
25	SPARE	25	SPARE						
26	SPARE	26	SPARE						
27	HEADWORKS SCREEN RUNNING	27	SPARE						
28	HEADWORKS SCREEN FAULT	28	SPARE						
29	HEADWORKS CONVEYOR RUNNING	29	SPARE						
30	HEADWORKS CONVEYOR FAULT	30	SPARE						
31	SCREEN BOOSTER PUMP RUNNING	31	SPARE						
32	SCREEN BOOSTER PUMP FAULT	32	SPARE						

MOTOROLA ACE3600 PLC COMPONENT SCHEDULE		
ITEM	DESCRIPTION	
①	7 I/O SLOT FRAME	V107
②	AC POWER SUPPLY	V346
③	CPU3680	V448
④	SECURITY ENABLE OPTION	VA00360AA
⑤	PLUG-IN ETHERNET 10/100 M PORT	V212
⑥	32 DIGITAL INPUT MODULE FAST 24VDC	V379
⑦	16 DIGITAL OUTPUT MODULE EE RELAY 2A	V616
⑧	8 ANALOG INPUT/4 ANALOG OUTPUT MODULE 4–20mA	V562
⑨	BLANK I/O MODULE	V20



EXISTING RTU100 MODIFICATIONS DIAGRAM



NEW RTU300 CONFIGURATION DIAGRAM

NO.	BY	DATE	SYMBOL	REVISIONS
6.				
5.				
4.				
3.				
2.				
1.				

DESIGNER:	WDL	DESIGN ENGINEER	
DRAWN BY:	TCG	W. DAVID LASSETTER, P.E.	
CHECKED BY:	WDL	FLORIDA REGISTRATION NO.	37971
APPROVED BY:	TCG		
DATE:	APRIL 2020		



100 CENTER CREEK RD., STE 108  
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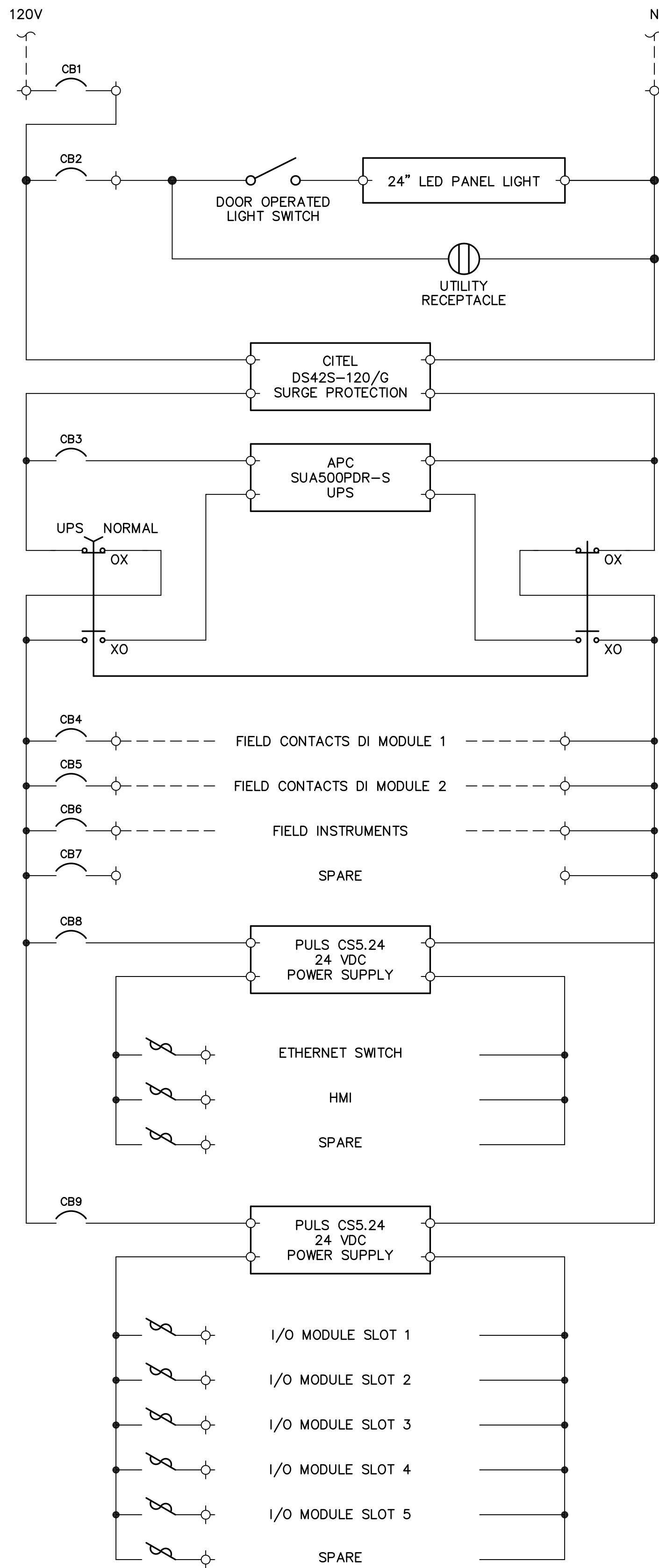


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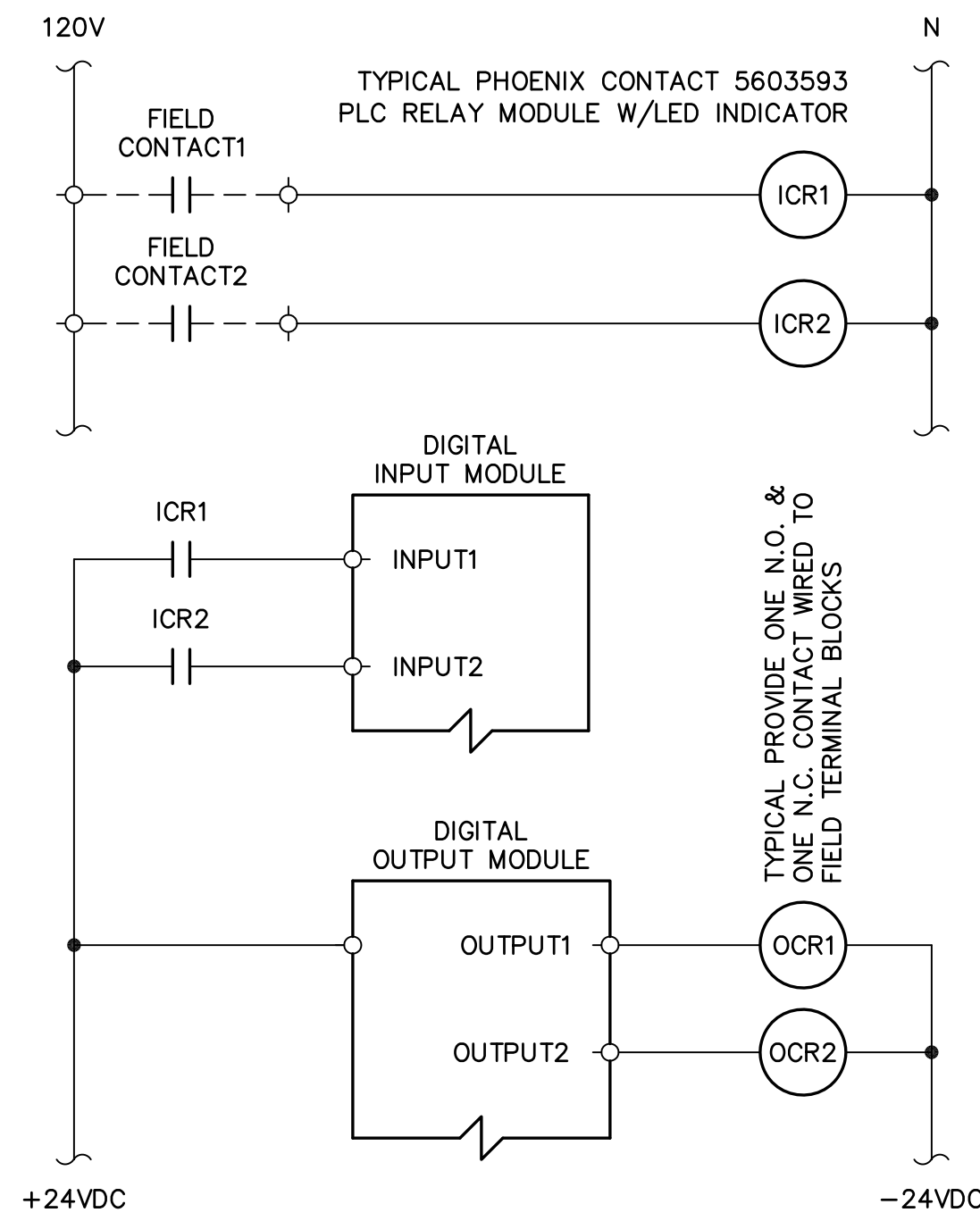
STATE ROAD 16 WASTEWATER TREATMENT FACILITY HEADWORKS & RAS / WAS IMPROVEMENTS	PROJECT NO. 100408.24
	FILE NAME 834E00P4.DWG
	SHEET NO.
	E-9

INSTRUMENTATION NETWORK DIAGRAM

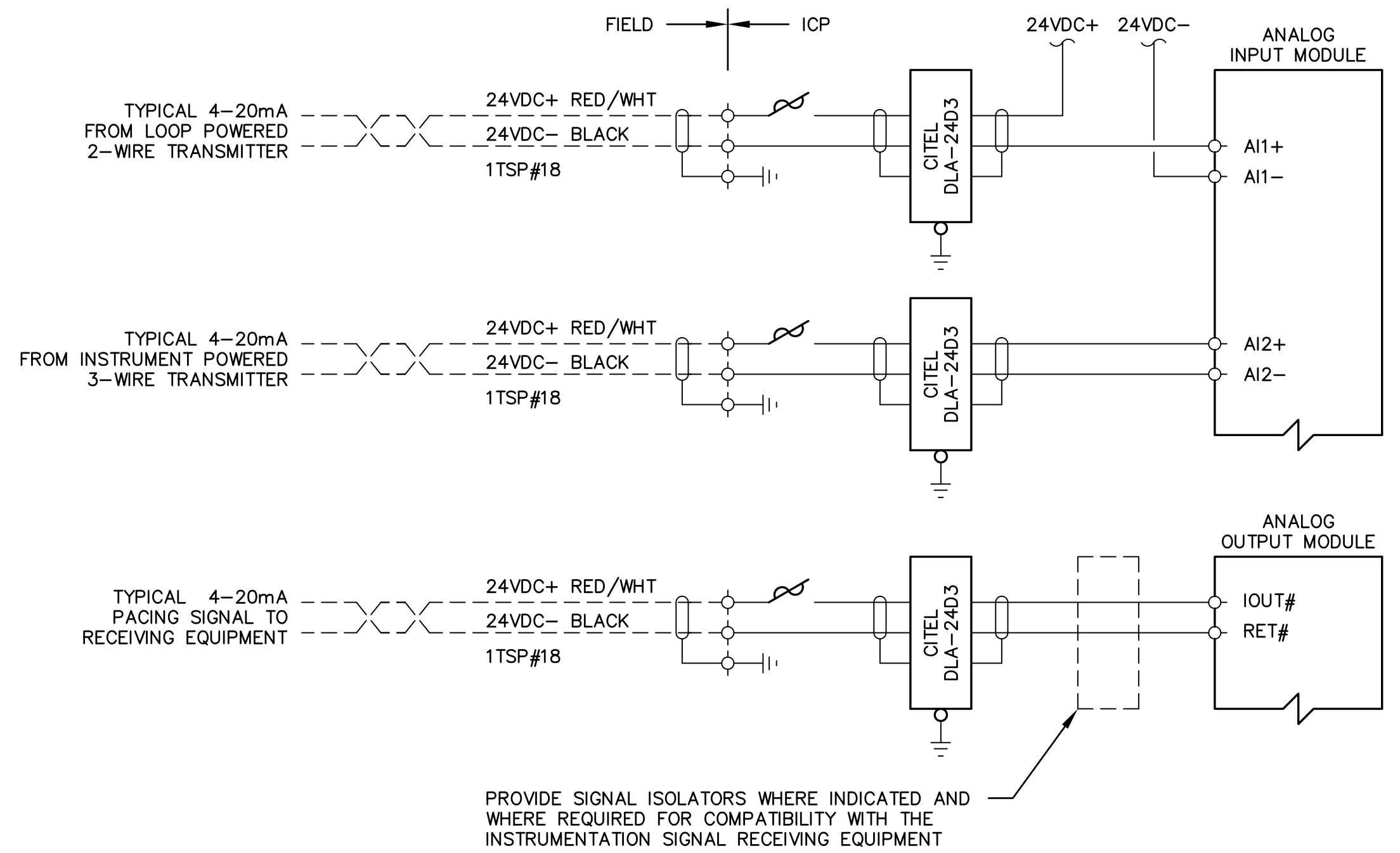
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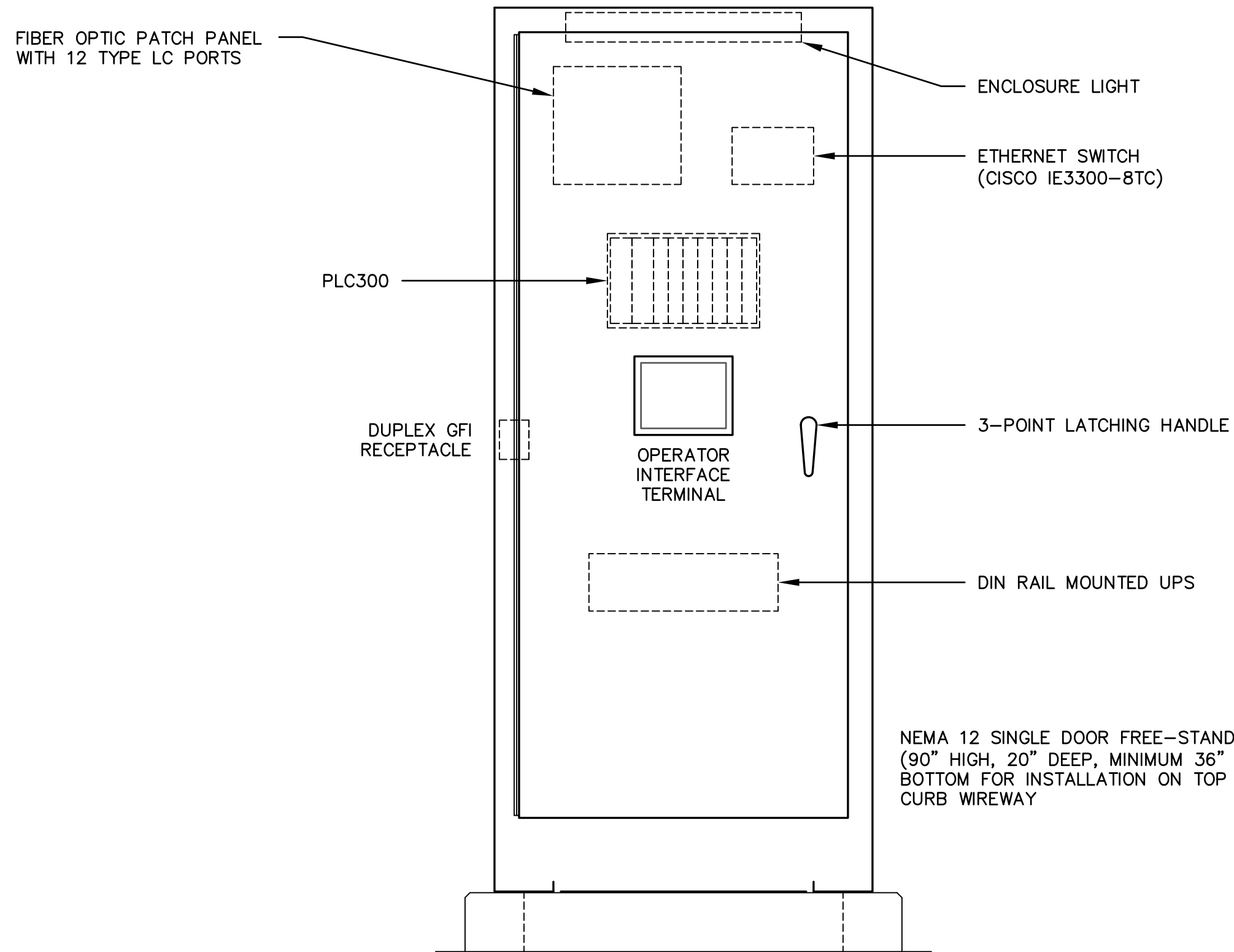
INSTRUMENTATION CONTROL PANEL POWER DISTRIBUTION



TYPICAL PLC DIGITAL I/O SIGNAL CONNECTIONS



TYPICAL PLC ANALOG I/O SIGNAL CONNECTIONS



INSTRUMENTATION CONTROL PANEL "ICP300, RTU300" DETAIL  
NOT TO SCALE

NOTES:

1. THE CONTRACTOR SHALL EMPLOY THE SERVICES OF A SJUCD APPROVED SCADA SYSTEM INTEGRATOR TO MODIFY AND UPGRADE THE EXISTING SJUCD SR16 WWTF SCADA SYSTEM, AND THE COUNTY MASTER SCADA SYSTEM, AS REQUIRED TO ACCOMMODATE THE NEW FACILITIES.
2. THE SCADA SYSTEM INTEGRATOR SHALL PERFORM ALL SCADA SYSTEM ADDITIONS AND MODIFICATIONS INCLUDING: NEW RTU AND NEW ETHERNET COMMUNICATIONS CONNECTION TO THE EXISTING SR16 WWTF SCADA SYSTEM NETWORK.
3. ALL INSTRUMENTATION, INCLUDING FLOW METERS, SURGE PROTECTORS, INSTRUMENTATION AND CONTROL TERMINAL BOXES, ETC. SHALL BE PROVIDED AND INSTALLED BY THE SCADA SYSTEM INTEGRATOR.
4. THE SCADA SYSTEM INTEGRATOR SHALL PROVIDE COMPLETE MONITORING AND CONTROL OF THE NEW FACILITIES FROM THE EXISTING SR16 WWTF VTSCADA SYSTEM HMI, AND FROM THE COUNTY CENTRAL SCADA SYSTEM.
5. THE SCADA SYSTEM RTU SHALL BE A SJUCD STANDARD MOTOROLA ACE3600 RTU CONFIGURED WITH MODULES AS INDICATED. PROVIDE POWER AND SIGNAL LINE SURGE PROTECTION FOR ALL I/O POINTS.
6. ALL NETWORK COMPONENTS FOR CONNECTION TO THE EXISTING SR16 WWTF SCADA SYSTEM NETWORK, INCLUDING ETHERNET SWITCHES, FIBER OPTIC CABLE, FIBER OPTIC CABLE TERMINATIONS, FIBER OPTIC CABLE PATCH PANELS, AND ALL MODIFICATIONS TO THE EXISTING SCADA SYSTEM NETWORK, SHALL BE PROVIDED BY THE SCADA SYSTEM INTEGRATOR.
7. THE CONTRACTOR AND THE SCADA SYSTEM SUPPLIER SHALL COORDINATE ALL SCADA SYSTEM INSTALLATION WITH THE SJUCD SCADA SYSTEM SUPERVISOR.
8. THE FOLLOWING SCADA SYSTEM INTEGRATORS ARE APPROVED BY SJUCD:
  - CDM SMITH
  - CURRY CONTROLS
  - REVERE CONTROL SYSTEMS
  - STAR CONTROLS

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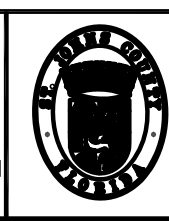
DESIGNER:	WDL
DRAWN BY:	TCG
CHECKED BY:	WDL
APPROVED BY:	TCG
DATE:	APRIL 2020

DESIGN ENGINEER	W. DAVID LASSETTER, P.E.
FLORIDA REGISTRATION NO.	37971

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FLORIDA  
CERTIFICATE OF AUTHORIZATION  
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**ST. JOHNS COUNTY  
UTILITY DEPARTMENT**

1205 STATE ROAD 16  
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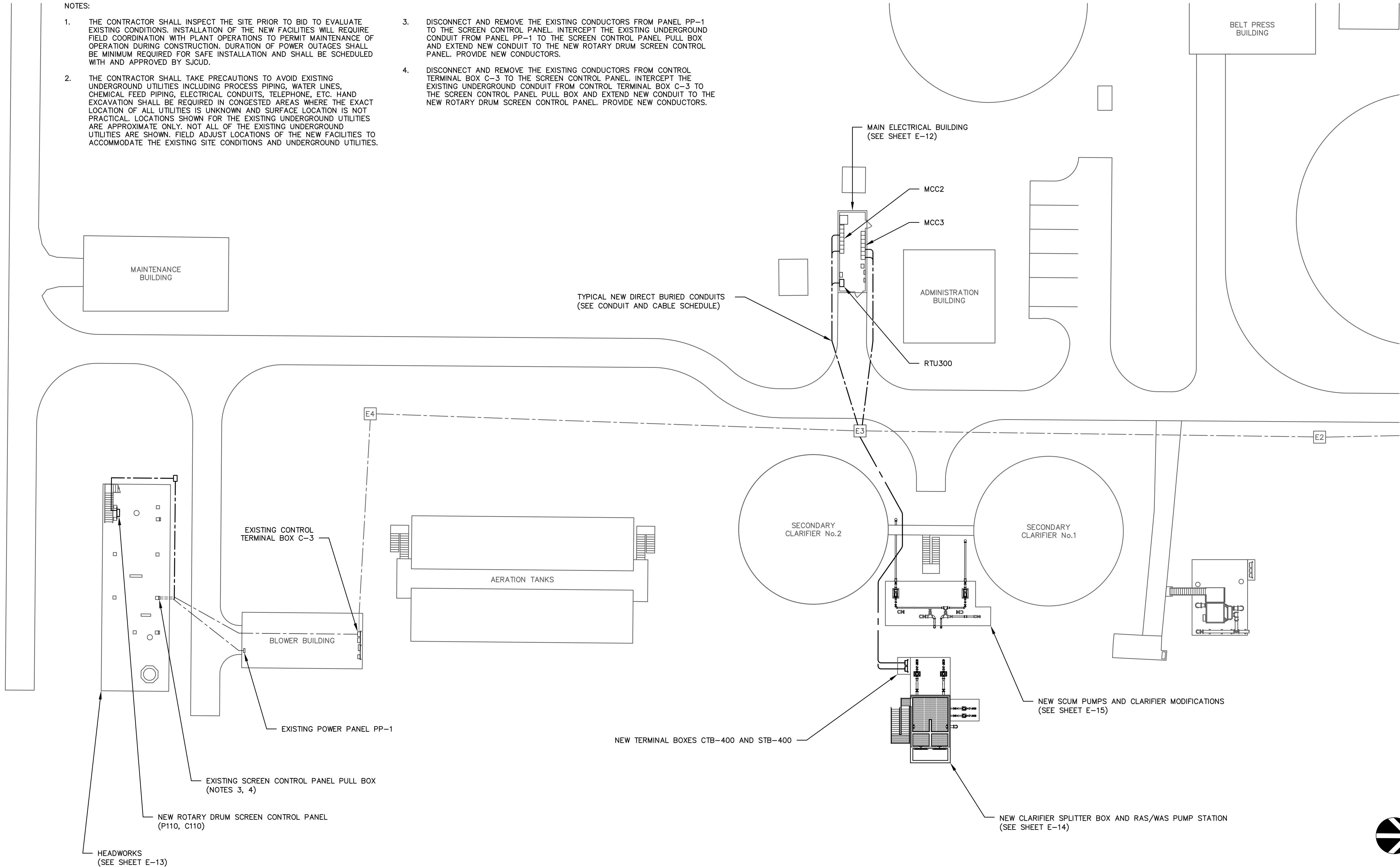
STATE ROAD 16 WASTEWATER TREATMENT FACILITY HEADWORKS & RAS / WAS IMPROVEMENTS	PROJECT NO. 100408.24
INSTRUMENTATION CONTROL PANEL DETAILS	FILE NAME 834E00P4.DWG
	SHEET NO. E-10



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NOTES:

1. 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 SJCUD.
2. 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.
3. DISCONNECT AND REMOVE THE EXISTING CONDUCTORS FROM PANEL PP-1 TO THE SCREEN CONTROL PANEL. INTERCEPT THE EXISTING UNDERGROUND CONDUIT FROM PANEL PP-1 TO THE SCREEN CONTROL PANEL PULL BOX AND EXTEND NEW CONDUIT TO THE NEW ROTARY DRUM SCREEN CONTROL PANEL. PROVIDE NEW CONDUCTORS.
4. DISCONNECT AND REMOVE THE EXISTING CONDUCTORS FROM CONTROL TERMINAL BOX C-3 TO THE SCREEN CONTROL PANEL. INTERCEPT THE EXISTING UNDERGROUND CONDUIT FROM CONTROL TERMINAL BOX C-3 TO THE SCREEN CONTROL PANEL PULL BOX AND EXTEND NEW CONDUIT TO THE NEW ROTARY DRUM SCREEN CONTROL PANEL. PROVIDE NEW CONDUCTORS.



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DESIGNER:	WDL	DESIGN ENGINEER	
DRAWN BY:	TCG	W. DAVID LASSETTER, P.E.	
CHECKED BY:	WDL		
APPROVED BY:	TCG	FLORIDA REGISTRATION NO.	37971
DATE:	APRIL 2020		

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STATE ROAD 16 WASTEWATER TREATMENT FACILITY HEADWORKS & RAS / WAS IMPROVEMENTS

ELECTRICAL SITE PLAN

PROJECT NO. 100408.24  
FILE NAME 834E00P4.DWG  
SHEET NO.  
**E-11**

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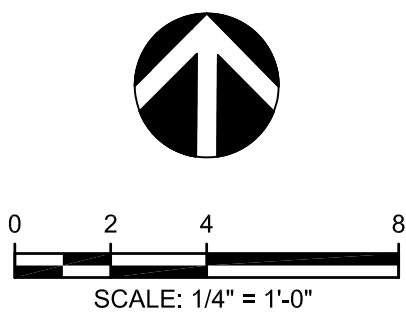
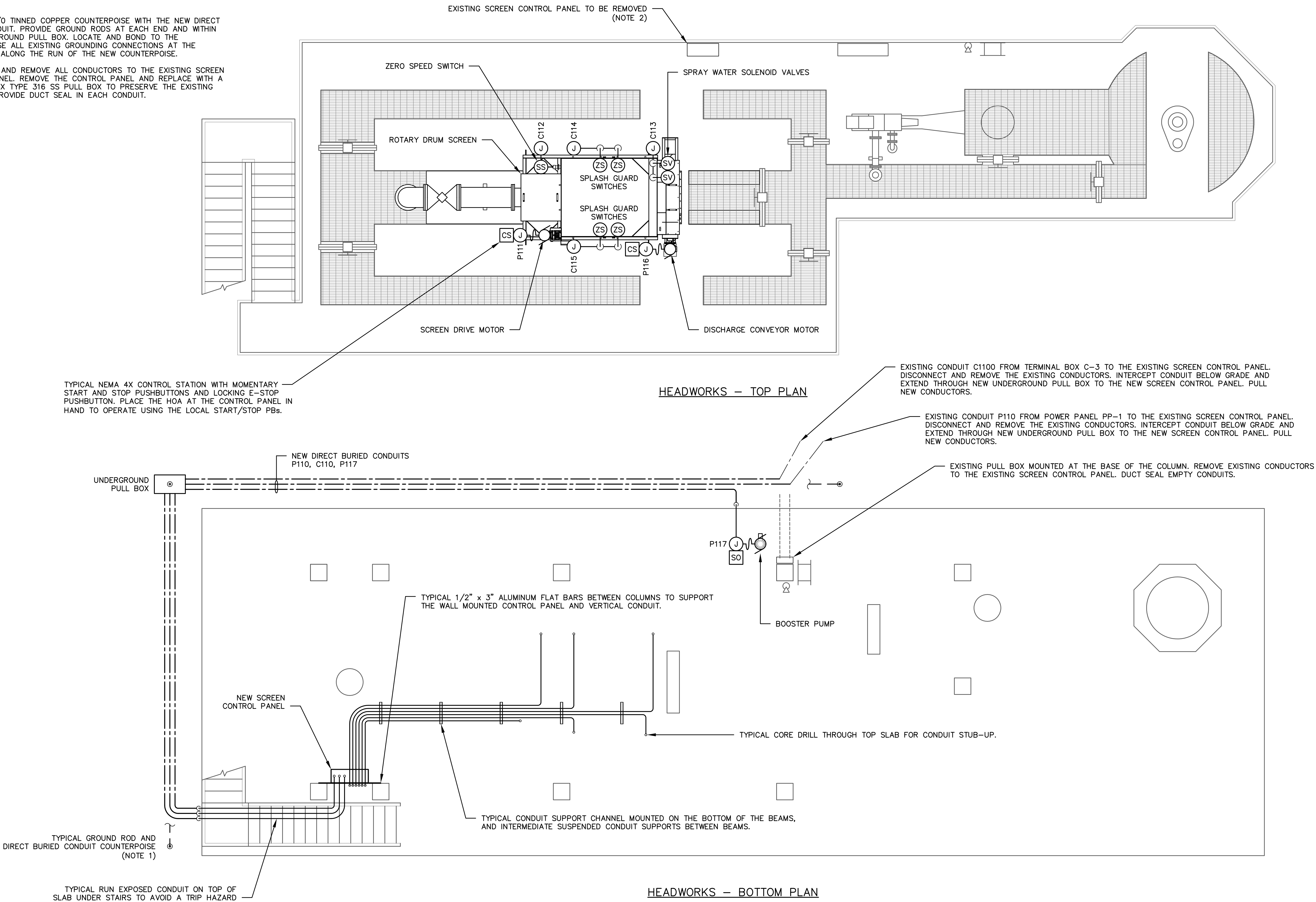
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NOTES:

1. PROVIDE #4/0 TINNED COPPER COUNTERPOISE WITH THE NEW DIRECT BURIED CONDUIT. PROVIDE GROUND RODS AT EACH END AND WITHIN THE UNDERGROUND PULL BOX. LOCATE AND BOND TO THE COUNTERPOISE ALL EXISTING GROUNDING CONNECTIONS AT THE HEADWORKS ALONG THE RUN OF THE NEW COUNTERPOISE.
2. DISCONNECT AND REMOVE ALL CONDUCTORS TO THE EXISTING SCREEN CONTROL PANEL. REMOVE THE CONTROL PANEL AND REPLACE WITH A NEW NEMA 4X TYPE 316 SS PULL BOX TO PRESERVE THE EXISTING CONDUITS. PROVIDE DUCT SEAL IN EACH CONDUIT.



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APPROVED BY:	TCG
DATE:	APRIL 2020

DESIGN ENGINEER	
W. DAVID LASSETTER, P.E.	
FLORIDA REGISTRATION NO.	37971



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STATE ROAD 16 WASTEWATER TREATMENT FACILITY HEADWORKS & RAS / WAS IMPROVEMENTS

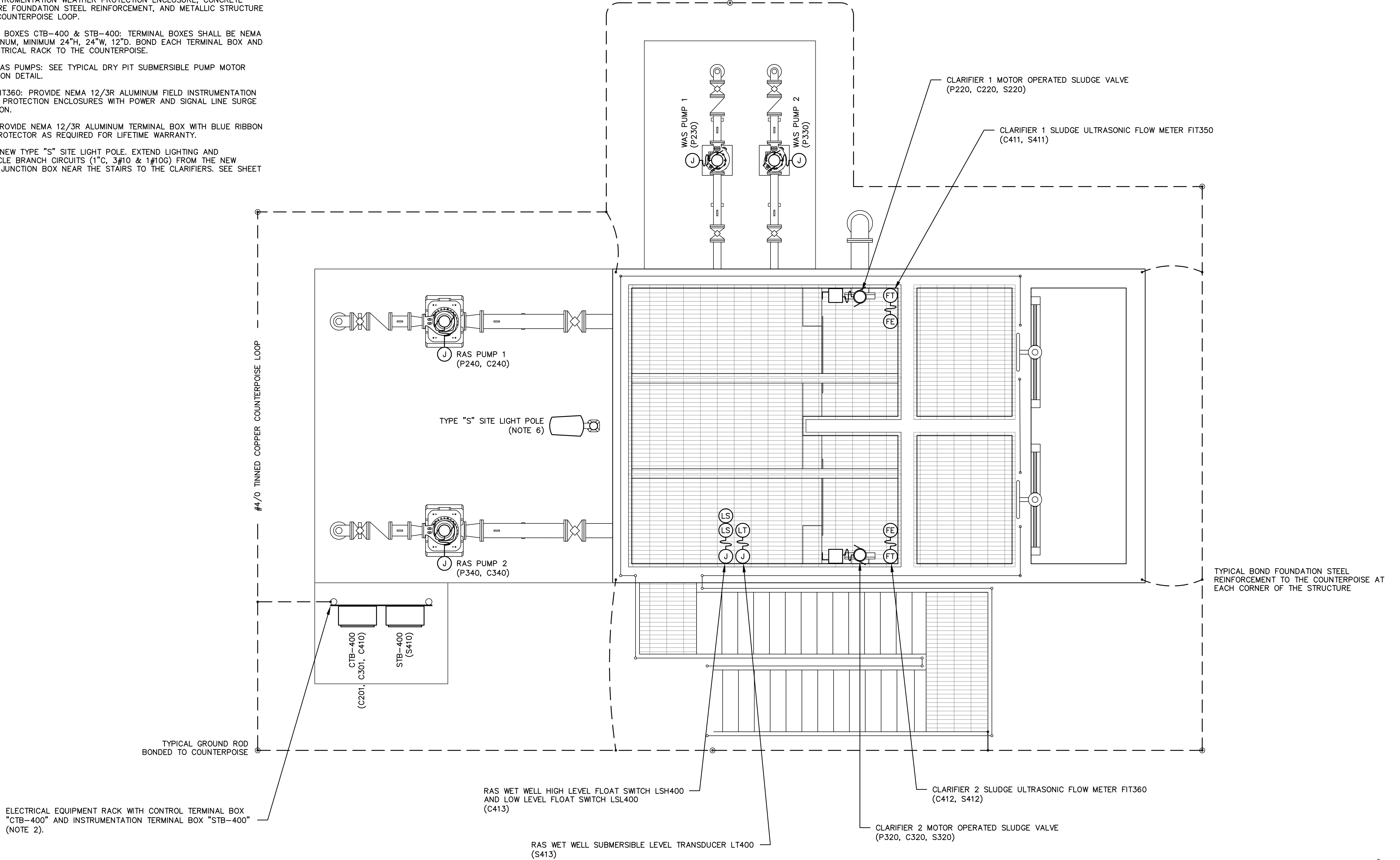
ELECTRICAL PLAN  
HEADWORKS MODIFICATIONS

PROJECT NO.	100408.24
FILE NAME	834E00P4.DWG
SHEET NO.	E-13

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NOTES:

1. PROVIDE CONTINUOUS UNDERGROUND GROUNDING COUNTERPOISE LOOP. BOND EACH EQUIPMENT PULL BOX, TERMINAL BOX, DISCONNECT SWITCH, FIELD INSTRUMENTATION WEATHER PROTECTION ENCLOSURE, CONCRETE STRUCTURE FOUNDATION STEEL REINFORCEMENT, AND METALLIC STRUCTURE TO THE COUNTERPOISE LOOP.
2. TERMINAL BOXES CTB-400 & STB-400: TERMINAL BOXES SHALL BE NEMA 4X ALUMINUM, MINIMUM 24"H, 24"W, 12"D. BOND EACH TERMINAL BOX AND THE ELECTRICAL RACK TO THE COUNTERPOISE.
3. RAS & WAS PUMPS: SEE TYPICAL DRY PIT SUBMERSIBLE PUMP MOTOR CONNECTION DETAIL.
4. FIT350, FIT360: PROVIDE NEMA 12/3R ALUMINUM FIELD INSTRUMENTATION WEATHER PROTECTION ENCLOSURES WITH POWER AND SIGNAL LINE SURGE PROTECTION.
5. LT400: PROVIDE NEMA 12/3R ALUMINUM TERMINAL BOX WITH BLUE RIBBON SURGE PROTECTOR AS REQUIRED FOR LIFETIME WARRANTY.
6. PROVIDE NEW TYPE "S" SITE LIGHT POLE. EXTEND LIGHTING AND RECEPTACLE BRANCH CIRCUITS (1"C, 3#10 & 1#10G) FROM THE NEW LIGHTING JUNCTION BOX NEAR THE STAIRS TO THE CLARIFIERS. SEE SHEET E-15.



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W. DAVID LASSETTER, P.E.	
FLORIDA REGISTRATION NO.	37971

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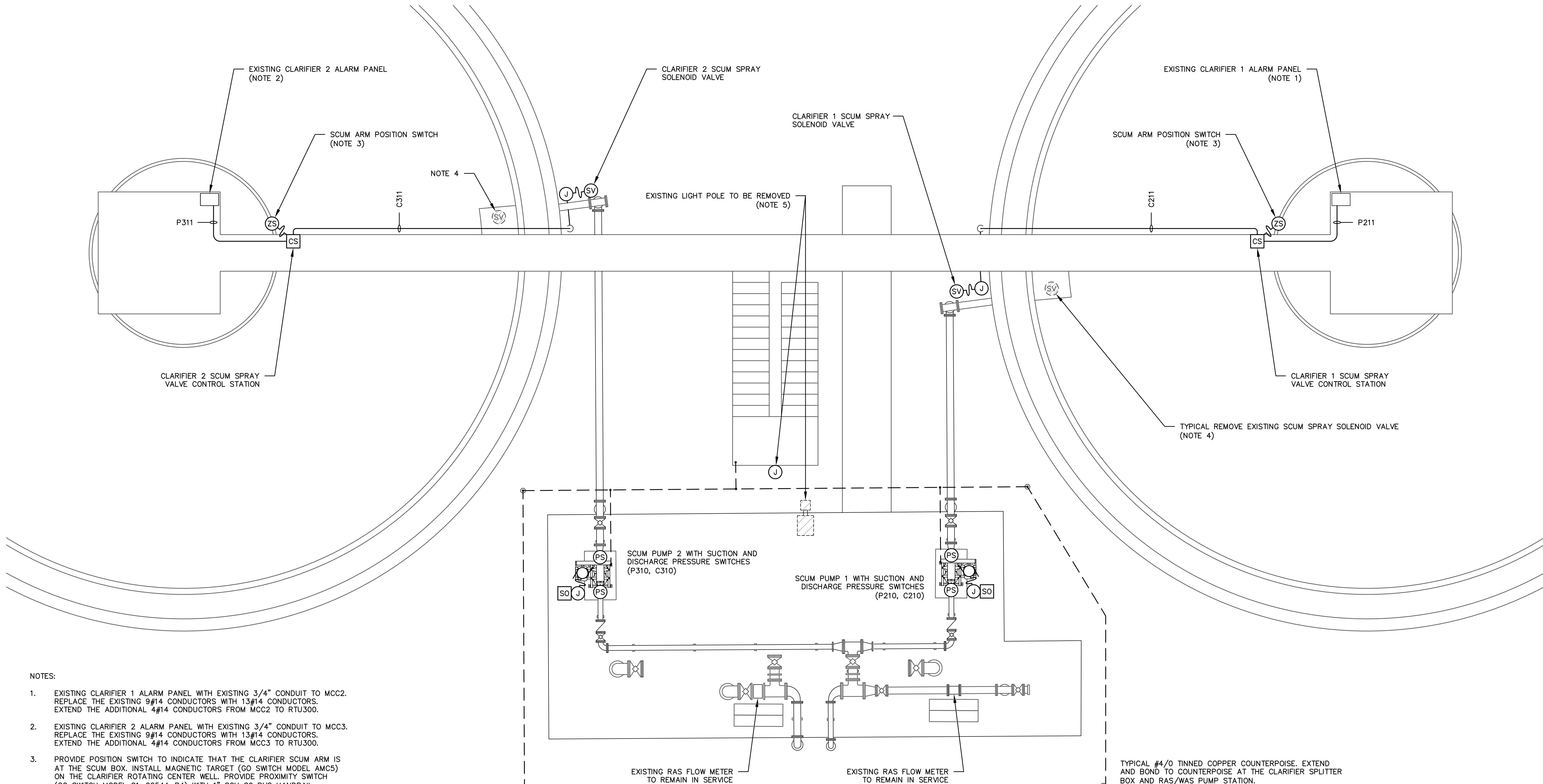
STATE ROAD 16 WASTEWATER TREATMENT FACILITY HEADWORKS & RAS / WAS IMPROVEMENTS

**ELECTRICAL PLAN**  
CLARIFIER SPLITTER BOX AND RAS/WAS PUMP STATION

PROJECT NO.	100408.24
FILE NAME	834E00P4.DWG
SHEET NO.	E-14




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- NOTES:
- EXISTING CLARIFIER 1 ALARM PANEL WITH EXISTING 3/4" CONDUIT TO MCC2. REPLACE THE EXISTING 9#14 CONDUCTORS WITH 13#14 CONDUCTORS. EXTEND THE ADDITIONAL 4#14 CONDUCTORS FROM MCC2 TO RTU300.
  - EXISTING CLARIFIER 2 ALARM PANEL WITH EXISTING 3/4" CONDUIT TO MCC3. REPLACE THE EXISTING 9#14 CONDUCTORS WITH 13#14 CONDUCTORS. EXTEND THE ADDITIONAL 4#14 CONDUCTORS FROM MCC3 TO RTU300.
  - PROVIDE POSITION SWITCH TO INDICATE THAT THE CLARIFIER SCUM ARM IS AT THE SCUM BOX. INSTALL MAGNETIC TARGET (GO SWITCH MODEL AMC5) ON THE CLARIFIER ROTATING CENTER WELL. PROVIDE PROXIMITY SWITCH (GO SWITCH MODEL 81-20544-B4) WITH 1" SCH 80 PVC HANDRAIL MOUNTED EXTENSION PIPE ADJUSTED TO POSITION THE SWITCH 1/2" ABOVE THE MAGNETIC TARGET. EXTEND THE PROXIMITY SWITCH CABLE TO THE CLARIFIER SCUM SPRAY VALVE CONTROL STATION. SEE DETAIL ON SHEET ED-3.
  - DISCONNECT AND REMOVE THE EXISTING CLARIFIER SCUM SPRAY SOLENOID VALVES THAT ARE NO LONGER IN SERVICE, INCLUDING ALL ASSOCIATED CONDUIT AND CONDUCTORS.
  - DISCONNECT AND REMOVE THE EXISTING LIGHT POLE AND FOUNDATION. INTERCEPT THE EXISTING BRANCH CIRCUIT CONDUITS BELOW GRADE AND EXTEND TO NEW ABOVE GRADE NEMA 4X TYPE 316 SS "LIGHTING" JUNCTION BOX WITHIN REACH OF THE EXISTING CONDUCTORS.

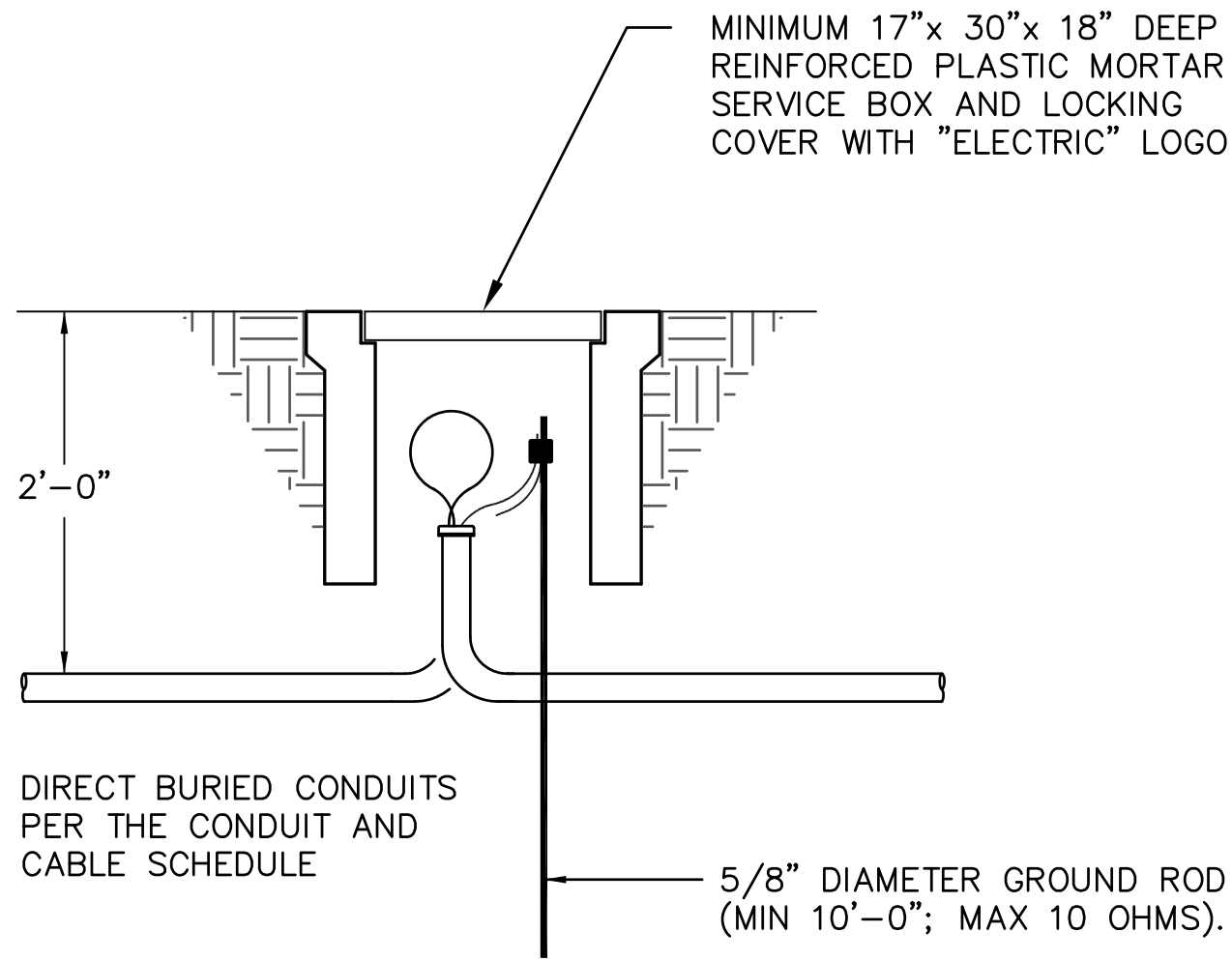
NO.	BY	DATE	SYMBOL	REVISIONS	DESIGNER:	WDL	DESIGN ENGINEER	100 CENTER CREEK RD., STE 108 ST. AUGUSTINE, FL 32084 PH. 904-562-2185	ST. JOHNS COUNTY UTILITY DEPARTMENT	STATE ROAD 16 WASTEWATER TREATMENT FACILITY HEADWORKS & RAS / WAS IMPROVEMENTS	PROJECT NO. 100408.24
6.					DRAWN BY:	TCG	W. DAVID LASSETTER, P.E.				FILE NAME 834E00P4.DWG
5.					CHECKED BY:	WDL	FLORIDA REGISTRATION NO. 37971				SHEET NO.
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O. BY DATE SYMBOL	REVISIONS			DESIGNER:	WDL	DESIGN ENGINEER  W. DAVID LASSETTER, P.E.  FLORIDA REGISTRATION NO. 37971	
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				APPROVED BY:	TCG		
				DATE:	APRIL 2020		

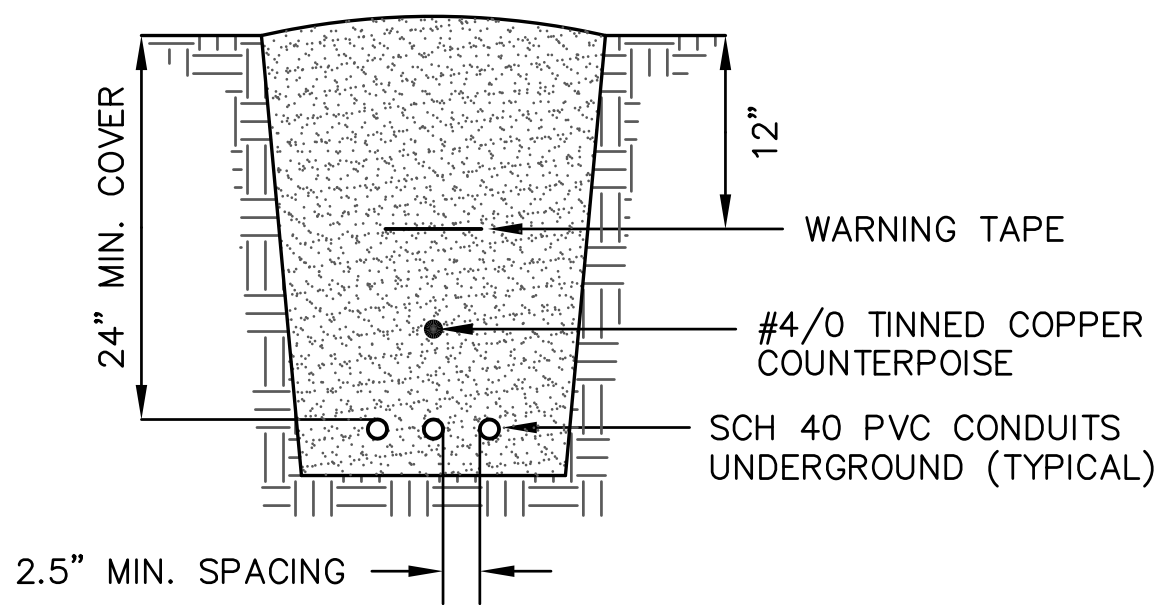
ENTER CREEK RD., STE 108 ST AUGUSTINE, FL. 32084 (904)-562-2185  STATE OF FLORIDA CERTIFICATE OF AUTHORIZATION 6	 <div>ST. JOHNS COUNTY <u>UTILITY DEPARTMENT</u>  1205 STATE ROAD 16 ST AUGUSTINE, FLORIDA 32084-8646 Phone (904) 209-2700 • Fax. (904) 209-2702</div>	STATE ROAD 16 WASTEWATER TREATMENT FACILITY HEADWORKS & RAS / WAS IMPROVEMENTS  CONDUIT AND CABLE SCHEDULE	PROJECT NO. 1004030
			FILE NAME 834E00P4.D
			SHEET NO. ED-1



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TYPICAL UNDERGROUND PULL BOX DETAIL  
NOT TO SCALE

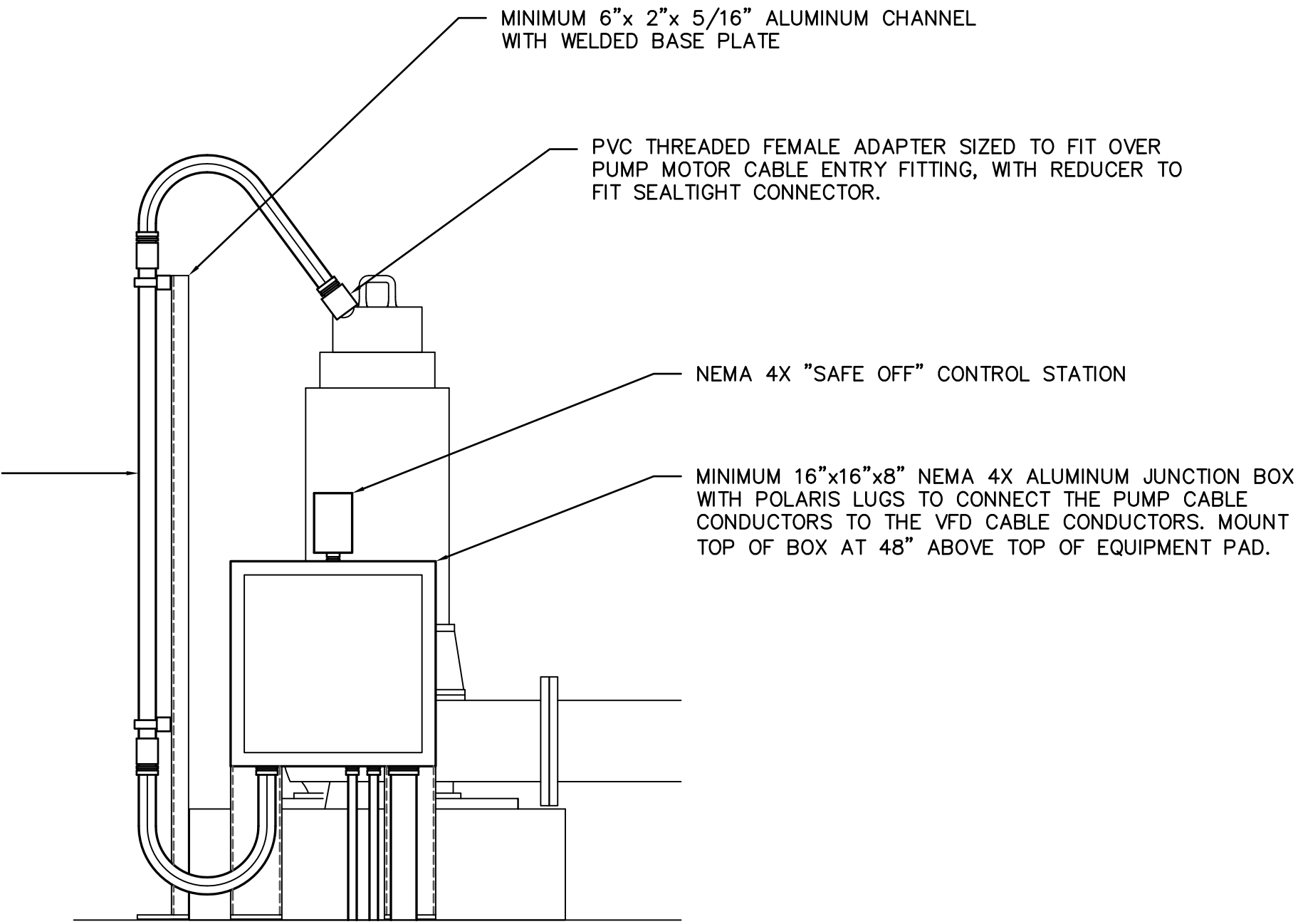


TYPICAL DIRECT BURIED CONDUIT DETAIL  
NOT TO SCALE

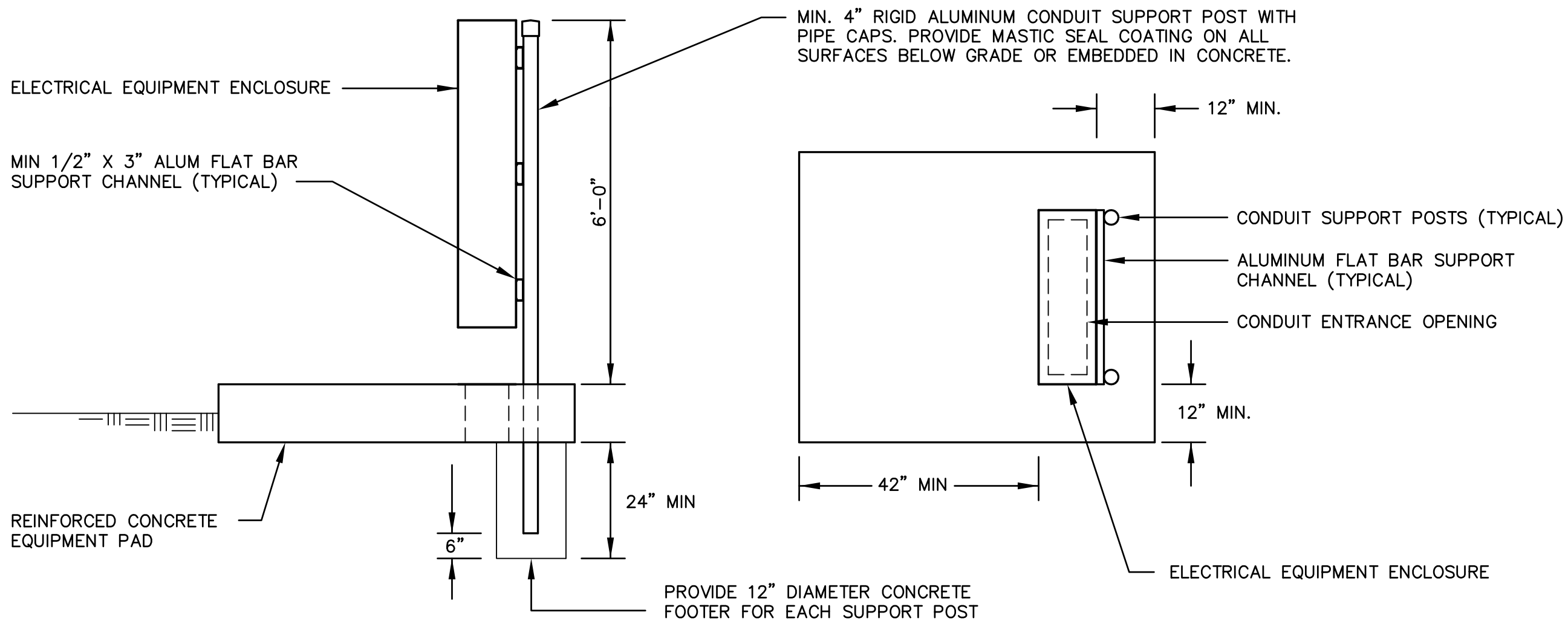
NOTE: SEE ELECTRICAL SITE PLAN AND CONDUIT AND CABLE SCHEDULE FOR NUMBER AND SIZE OF CONDUITS

TYPICAL PUMP MOTOR CABLE SUPPORT ASSEMBLY FOR EACH MOTOR CABLE. MINIMUM 2" PVC CONDUIT WITH SEALTIGHT ON EACH END.

TO REMOVE PUMP: DISCONNECT MOTOR CABLE CONDUCTORS IN THE JUNCTION BOX, DISCONNECT SEALTIGHT FROM THE JUNCTION BOX, DISCONNECT UNISTRUT CLAMPS, AND SLIDE THE COMPLETE CONDUIT AND SEALTIGHT ASSEMBLY OFF THE END OF THE MOTOR CABLE.



TYPICAL DRY PIT SUBMERSIBLE PUMP MOTOR CONNECTION DETAIL  
NOT TO SCALE



TYPICAL ELECTRICAL EQUIPMENT MOUNTING DETAIL  
NOT TO SCALE

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DESIGN ENGINEER	W. DAVID LASSETTER, P.E.
FLORIDA REGISTRATION NO.	37971



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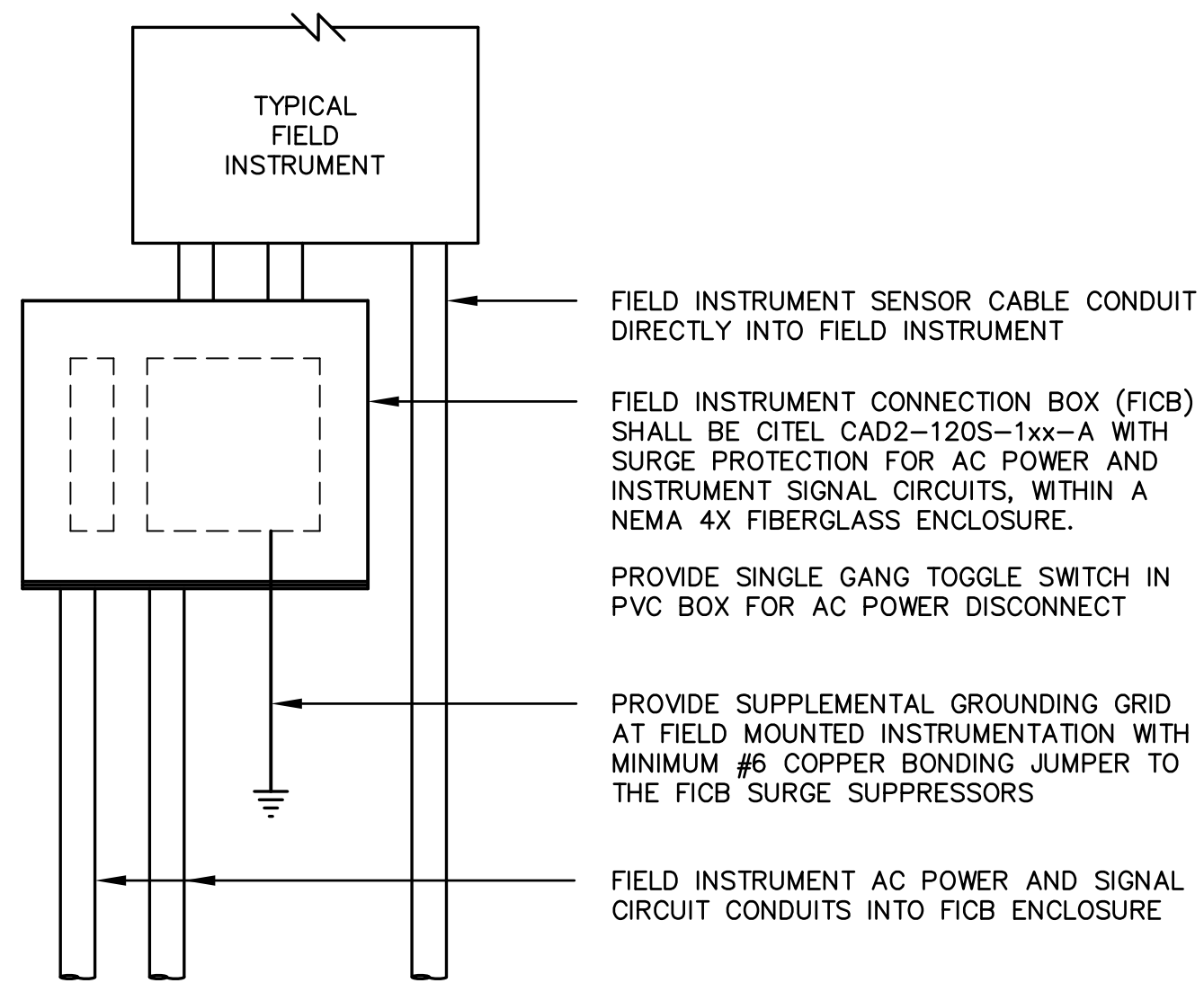
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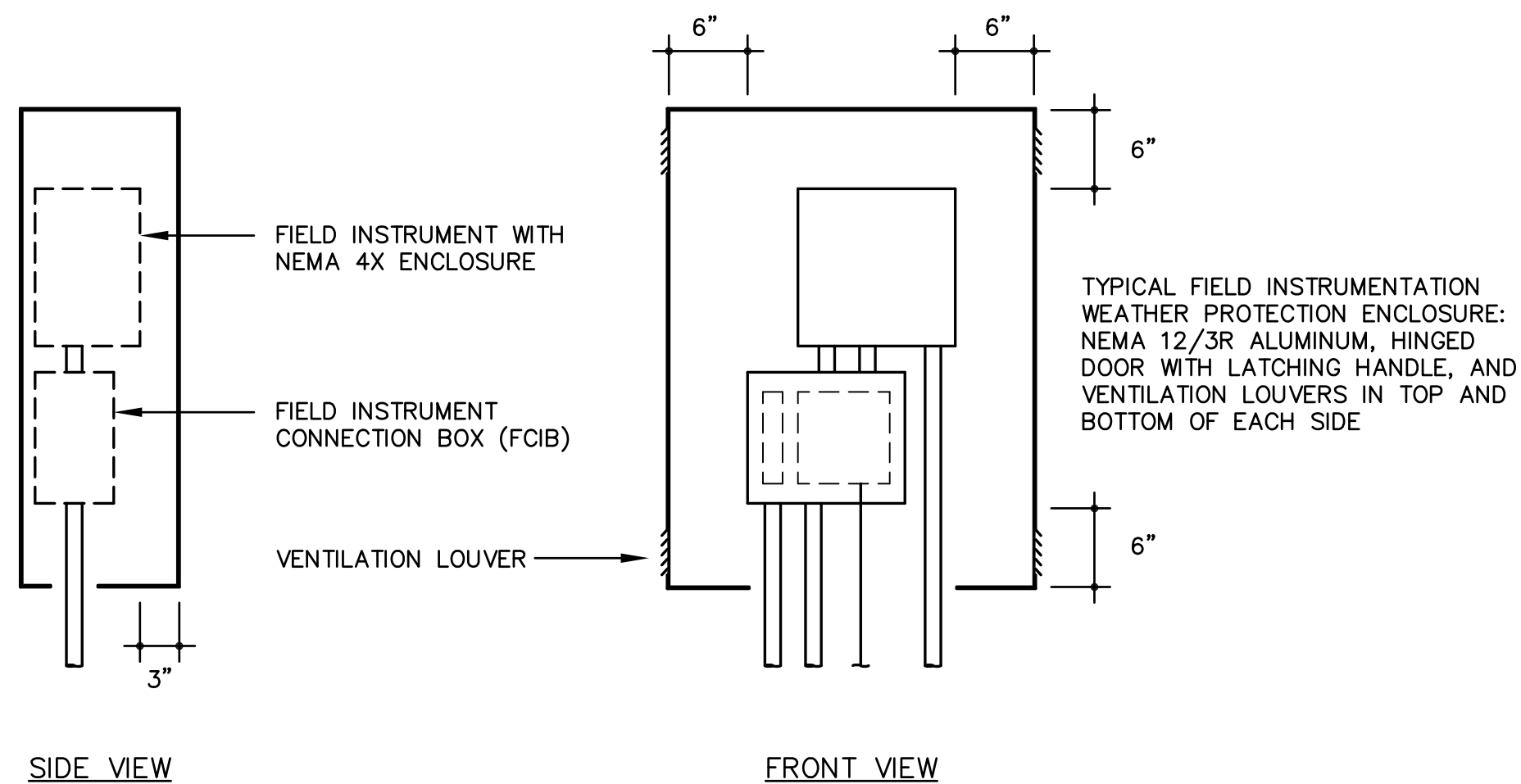
STATE ROAD 16 WASTEWATER TREATMENT FACILITY HEADWORKS & RAS / WAS IMPROVEMENTS	ELECTRICAL DETAILS
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PROJECT NO.	100408.24
FILE NAME	834E00P4.DWG
SHEET NO.	ED-2

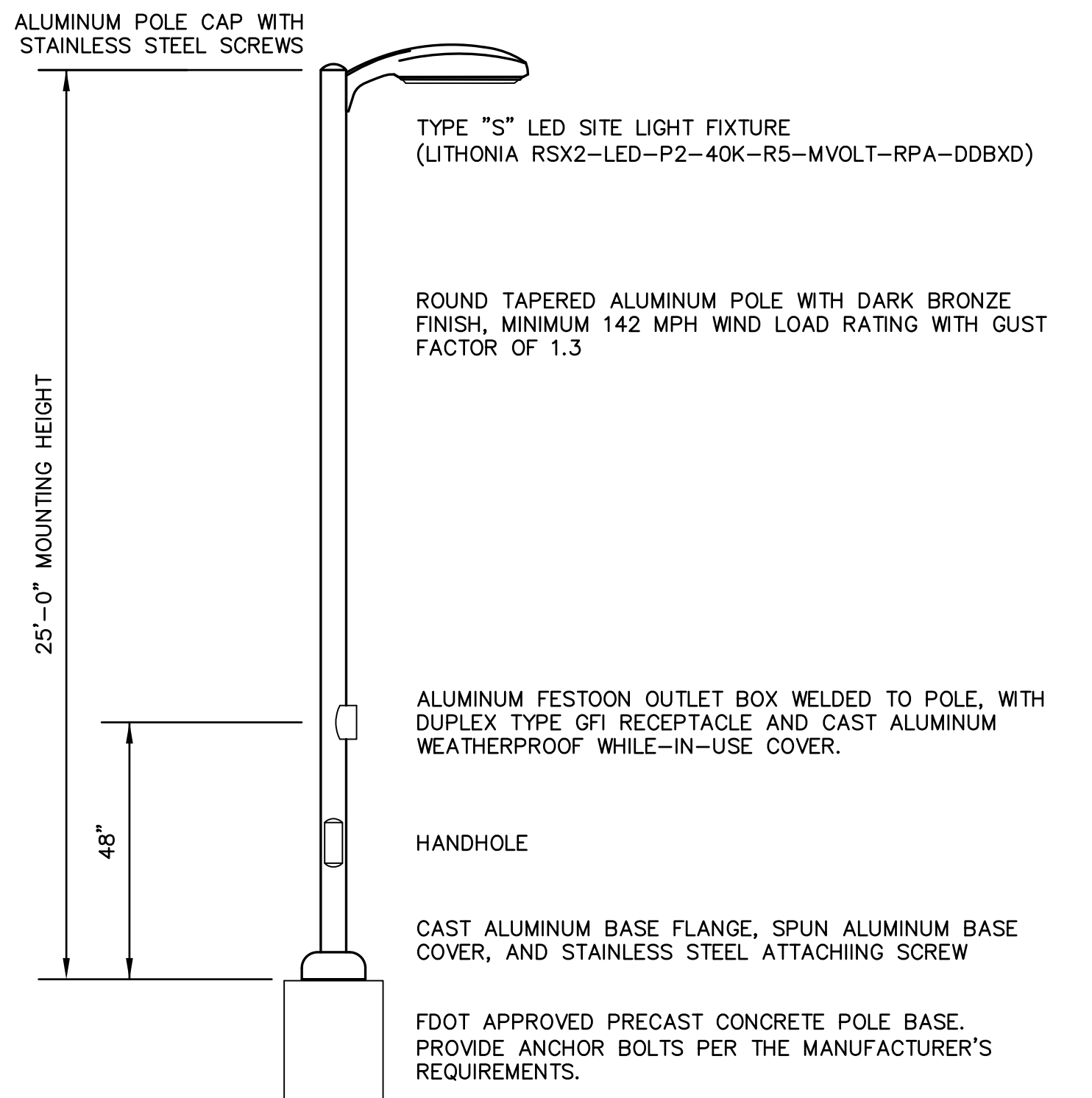
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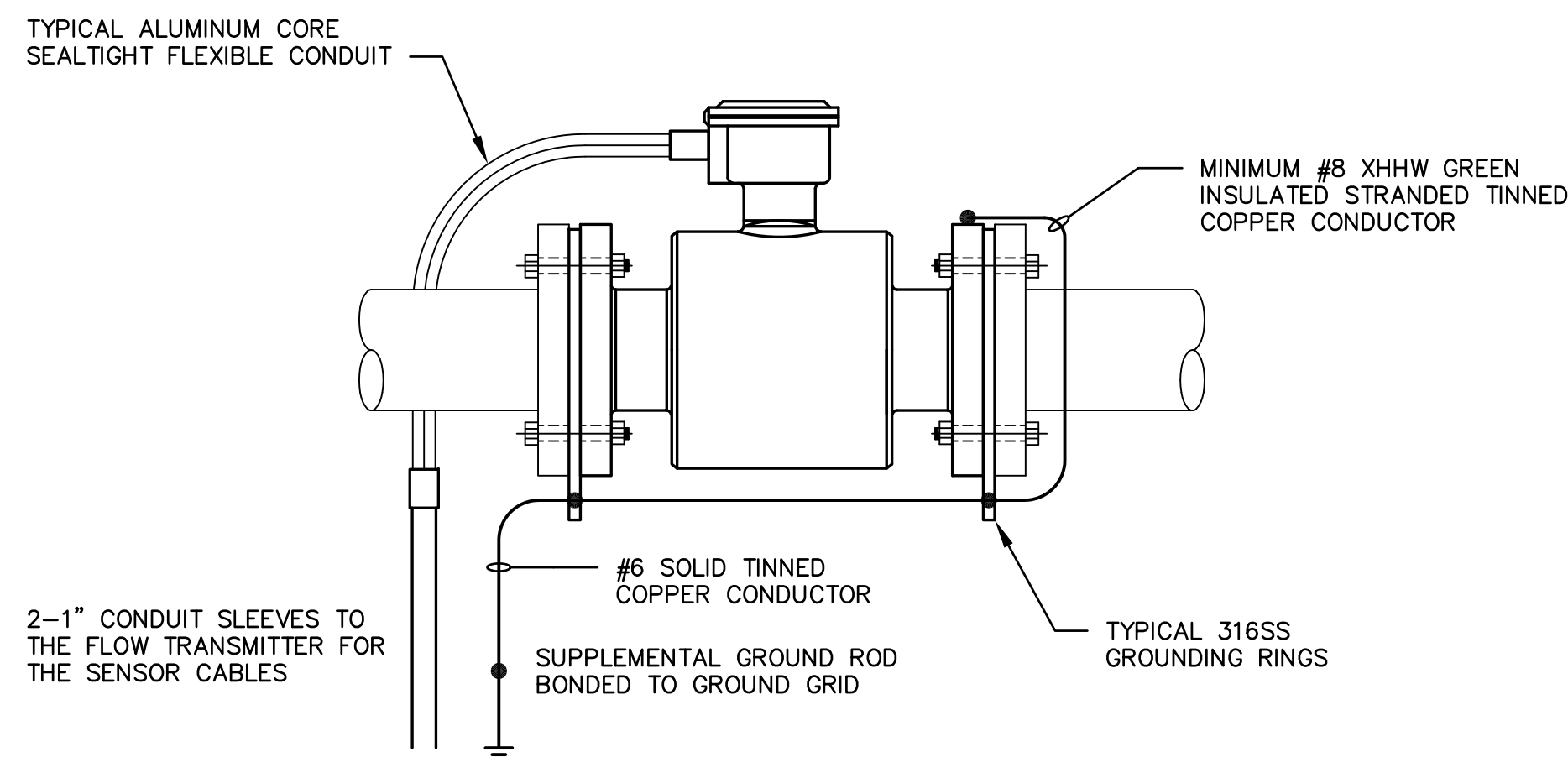
TYPICAL FIELD INSTRUMENT CONNECTION BOX (FICB)  
NOT TO SCALE



TYPICAL OUTDOOR FIELD INSTRUMENT MOUNTING DETAIL  
NOT TO SCALE



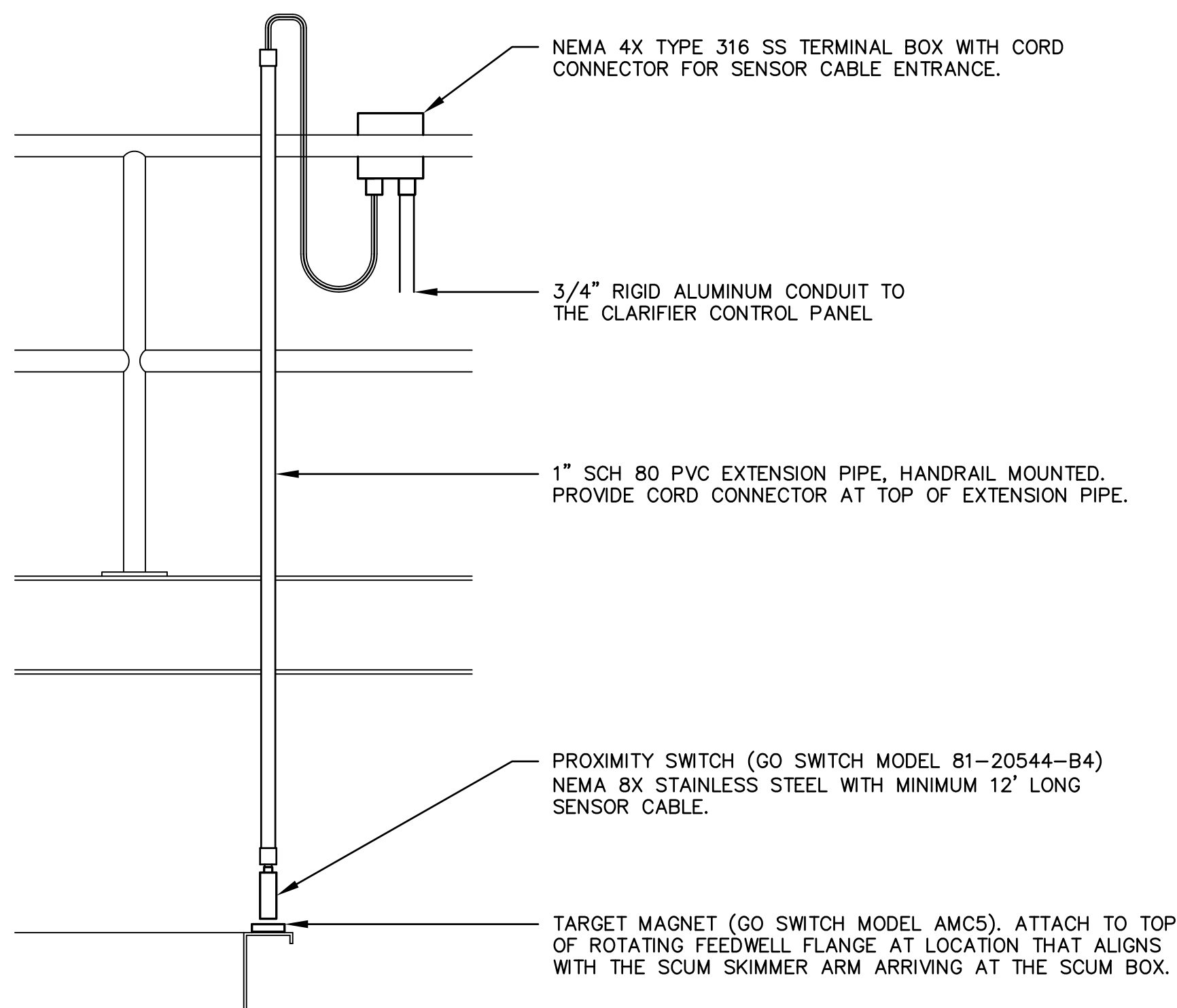
TYPICAL TYPE "S" AREA LIGHT POLE DETAIL  
NOT TO SCALE



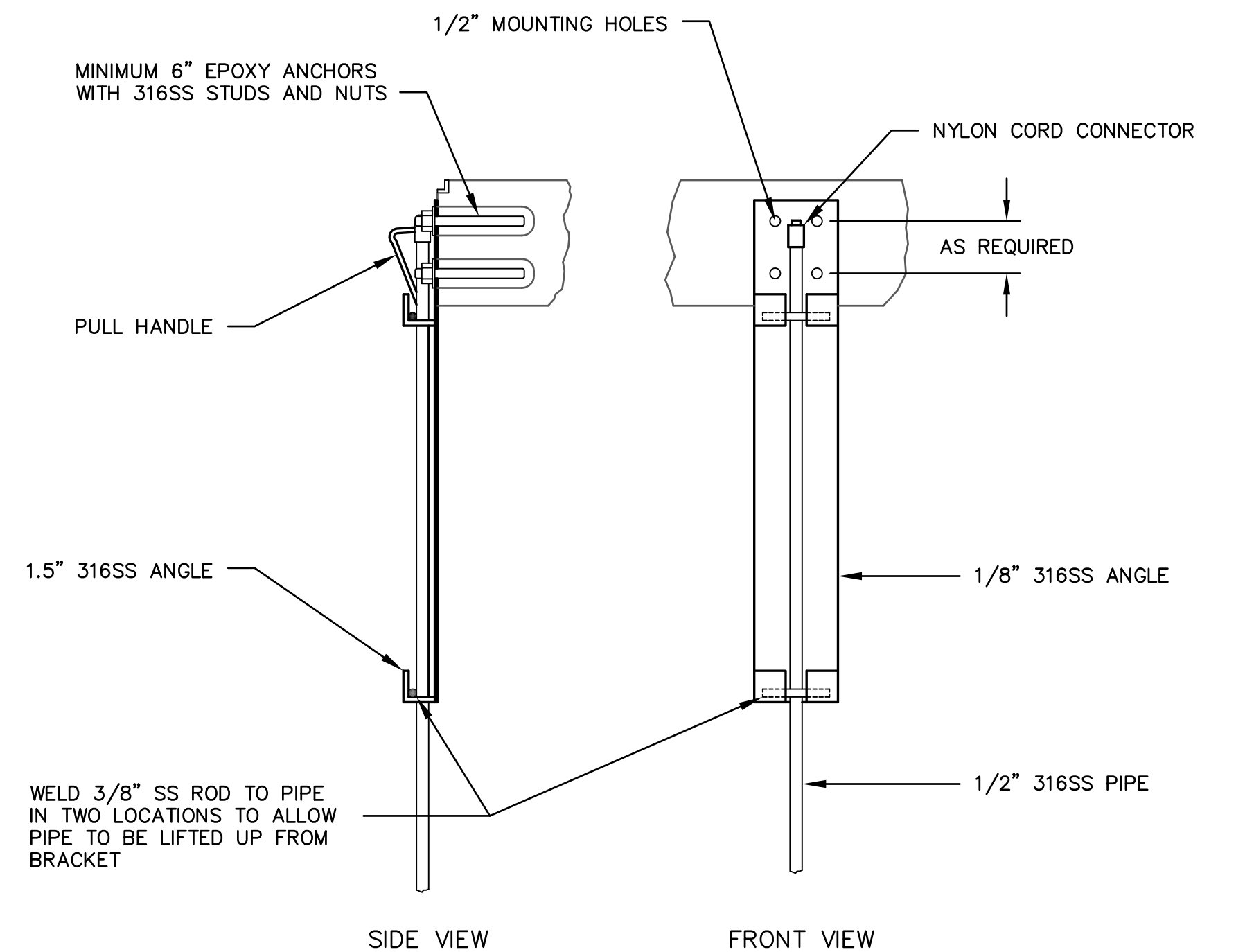
TYPICAL MAGNETIC FLOW METER DETAIL  
NOT TO SCALE

NOTES:

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



TYPICAL CLARIFIER SCUM SKIMMER ARM PROXIMITY SWITCH DETAIL  
NOT TO SCALE



TYPICAL SUBMERSIBLE PRESSURE TRANSDUCER MOUNTING DETAIL  
NOT TO SCALE

NO.	BY	DATE	SYMBOL	REVISIONS	DESIGNER:	WDL	DESIGN ENGINEER	W. DAVID LASSETTER, P.E.	Constantine Engineering	100 CENTER CREEK RD., STE 108 ST. AUGUSTINE, FL 32084 PH. 904-562-2185	ST. JOHNS COUNTY UTILITY DEPARTMENT	STATE ROAD 16 WASTEWATER TREATMENT FACILITY HEADWORKS & RAS / WAS IMPROVEMENTS	PROJECT NO. 100408.24
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