

**CONSTRUCTION DRAWINGS  
FOR THE**

**EASTERN WATER RECLAMATION FACILITY (EWRF)  
HYPOCHLORITE STORAGE IMPROVEMENTS  
ORANGE COUNTY, FLORIDA**

**PROJECT TEAM**



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**PREPARED FOR:**



**EWRF - 1621 S. ALAFAYA TRAIL  
(PARCEL ID 02-023-31-0000-00-002)  
ORANGE COUNTY, FLORIDA**

**BUILDING ID#  
ORANGE COUNTY CONTRACT # Y11-902B  
SEQUENCE #07126  
CAP #1538-09**

**REI Project No. 110004**



**ORANGE COUNTY UTILITIES  
ENGINEERING DIVISION**

**9150 CURRY FORD ROAD, 2ND FLOOR  
ORLANDO, FL 32825 PHONE:407-254-9900**

**BOARD OF COUNTY COMMISSIONERS**

**ORANGE COUNTY MAYOR TERESA JACOBS  
DISTRICT 1 : COMMISSIONER SCOTT BOYD  
DISTRICT 2 : COMMISSIONER FRED BRUMMER  
DISTRICT 3 : COMMISSIONER PETE CLARKE  
DISTRICT 4 : COMMISSIONER JENNIFER THOMPSON  
DISTRICT 5 : COMMISSIONER TED EDWARDS  
DISTRICT 6 : COMMISSIONER TIFFANY MOORE RUSSELL**

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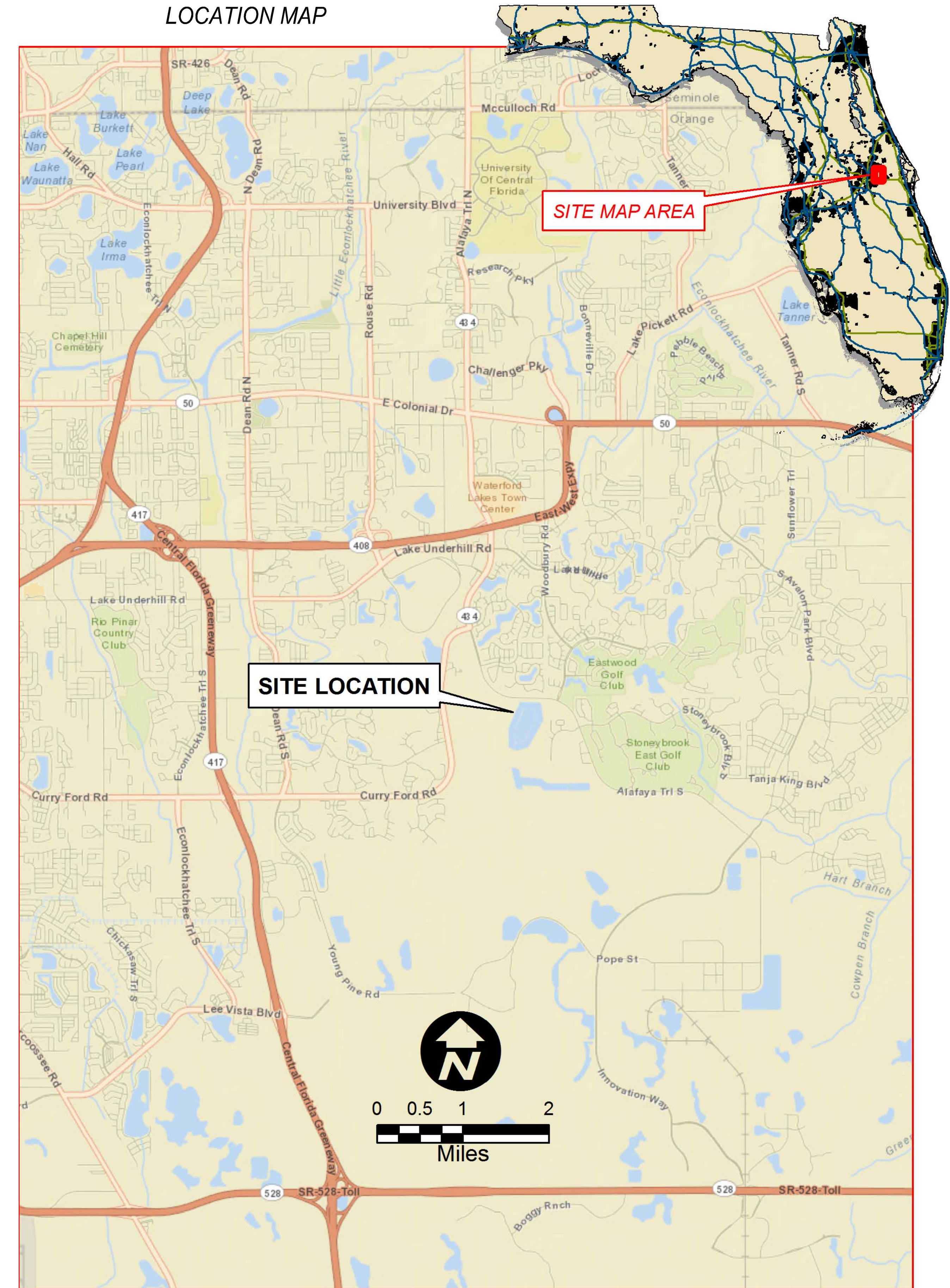
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**OCU GENERAL NOTES:**

1. THE CONTRACTOR SHALL EXERCISE EXTREME CAUTION WHEN EXCAVATING IN PROXIMITY OF WATER MAINS, WASTEWATER FORCE MAINS, GRAVITY MAINS, RECLAIMED WATER MAINS, HYPOCHLORITE PIPING, ELECTRICAL DUCTBANKS, CONTROL AND COMMUNICATION CONDUITS, AND OTHER BURIED UTILITIES. MAIN LOCATIONS SHOWN ON PLANS MAY NOT BE EXACT. THE CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFYING EXISTING UTILITY LOCATIONS. HAND DIGGING IS REQUIRED FOR INSTALLATION OF HYPOCHLORITE YARD PIPING.
2. SHOULD A PIPE EMERGENCY OCCUR, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE OCU DISPATCH OPERATOR (407-836-2777) AND THE OCU INSPECTOR, AND THE EWRf PLANT MANAGER (407-254-7724).
3. THE CONTRACTOR SHALL NOTIFY THE OCU CONSTRUCTION DIVISION AT LEAST SEVEN DAYS PRIOR TO COMMENCEMENT OF THE CONSTRUCTION PROJECT BY CALLING (407) 254-9798.
4. THE CONTRACTOR SHALL NOTIFY THE OCU CONSTRUCTION DIVISION AT LEAST 48 HOURS PRIOR TO ANY UTILITIES CONSTRUCTION BY CALLING (407) 254-9798.
5. THE MATERIALS, PRODUCTS, AND CONSTRUCTION OF ALL UTILITIES CONNECTING TO THE OCU SYSTEM SHALL BE IN CONFORMANCE WITH THE ORANGE COUNTY UTILITIES STANDARDS AND CONSTRUCTION SPECIFICATIONS MANUAL.
6. ALL OCU MAINS AND FACILITIES WITHIN THE LIMITS OF THE PROJECT SHALL BE SUPPORTED AND PROTECTED AGAINST DAMAGE DURING CONSTRUCTION.
7. THE CONTRACTOR, AT THE CONTRACTOR'S EXPENSE, SHALL IMMEDIATELY REPAIR ALL DAMAGES TO OCU MAINS AND FACILITIES. IF THE REPAIR IS NOT MADE IN A TIMELY MANNER, AS DETERMINED BY OCU, OCU MAY PERFORM REQUIRED REPAIRS AND CLEANUP. THE CONTRACTOR WILL BE CHARGED FOR ALL EXPENSES ASSOCIATED WITH THE REPAIR.
8. ONLY OCU SHALL OPERATE OCU WATER, WASTEWATER, AND RECLAIMED WATER VALVES. THE CONTRACTOR SHALL COORDINATE VALVE OPERATION WITH THE OCU INSPECTOR. FOR OPERATION OF MAINS NOT OWNED BY OCU, IT IS THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE WITH THE APPROPRIATE UTILITY REPRESENTATIVE.
9. CONSTRUCTION ACTIVITIES SHALL NOT CAUSE INTERRUPTIONS IN WATER, WASTEWATER, OR RECLAIMED WATER SERVICE WITHOUT PRIOR APPROVAL FROM OCU. THE CONTRACTOR SHALL COORDINATE PRE-APPROVED INTERRUPTIONS OF SERVICE WITH THE OCU INSPECTOR A MINIMUM OF 7 WORKING DAYS IN ADVANCE.
10. ALL VALVES INSTALLED AS PART OF THIS CONSTRUCTION PROJECT SHALL REMAIN CLOSED DURING CONSTRUCTION UNLESS APPROVED BY OCU.
11. THE CONTRACTOR SHALL PROVIDE A JUMPER ASSEMBLY WITH A BACKFLOW PREVENTER FOR MAKING TEMPORARY CONNECTIONS TO AN EXISTING POTABLE WATER SOURCE IN ORDER TO CHLORINATE AND FLUSH NEW PIPELINES WITH POTABLE WATER.
12. FOR PIPE THAT WILL BE OWNED AND MAINTAINED BY OCU, NO PIPE BENDING IS ALLOWED. THE MAXIMUM ALLOWABLE TOLERANCE FOR JOINT DEFLECTION IS 0.75 DEGREES (3-INCHES PER JOINT PER 20 FT STICK OF PIPE.) ALIGNMENT CHANGE SHALL BE MADE ONLY WITH SLEEVES AND FITTINGS.
13. FOR NON-PVC PIPE THAT WILL BE OWNED AND MAINTAINED BY OCU. MAXIMUM DEFLECTIONS AT PIPE JOINTS, FITTINGS AND LAYING RADIUS FOR THE VARIOUS PIPE LENGTHS SHALL NOT EXCEED 75 PERCENT OF THE PIPE MANUFACTURER'S RECOMMENDATION.

**LOCATION MAP**



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Designed DNN  
 Drawn RLL  
 Checked \_\_\_\_\_  
 Reviewed DNN  
 Approved CLK  
 Date 10/2014

ORANGE COUNTY EASTERN WATER RECLAMATION FACILITY (EWRf)  
 HYPOCHLORITE STORAGE IMPROVEMENTS  
 GENERAL  
 GENERAL NOTES AND LOCATION MAP

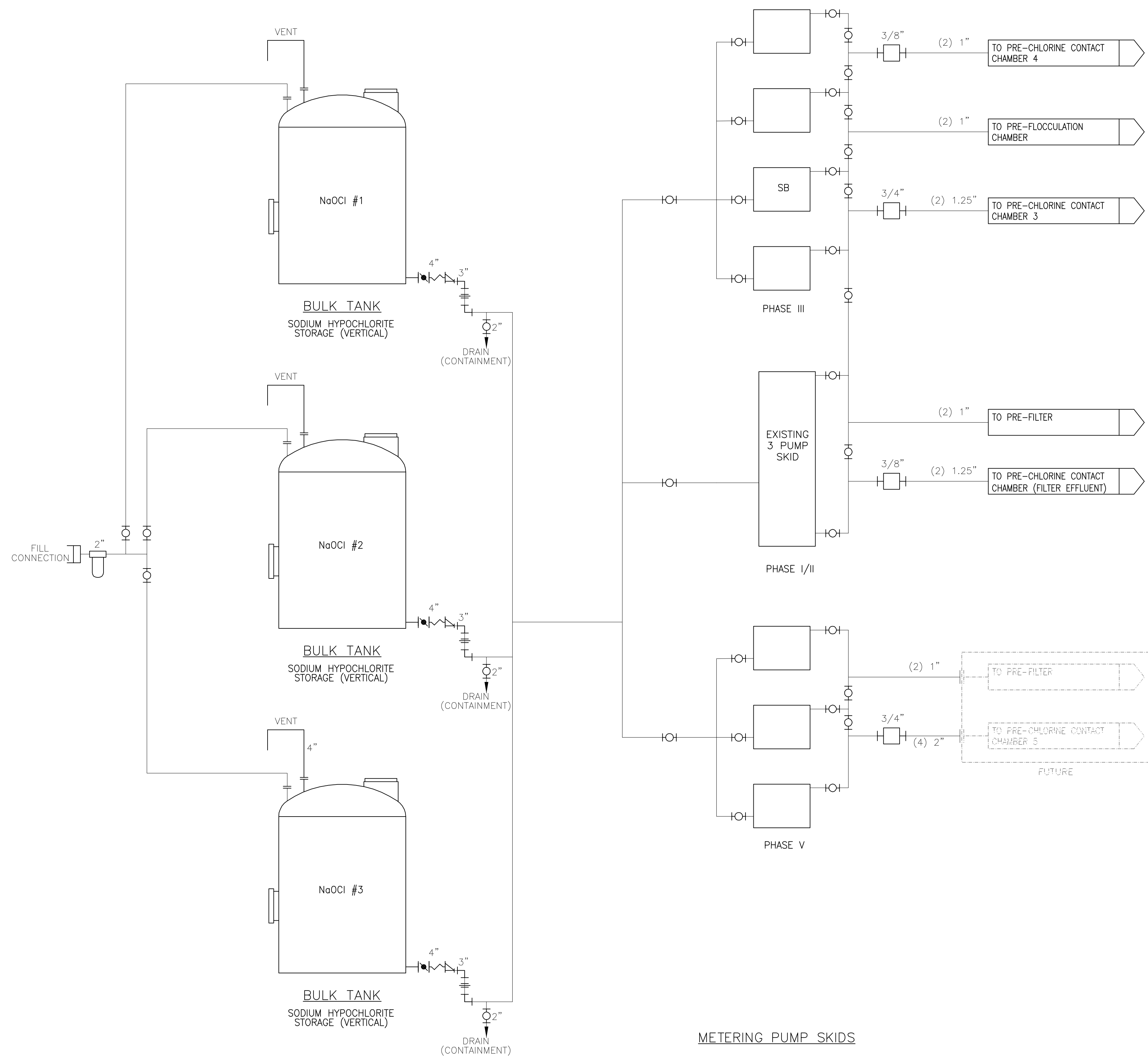
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ORANGE COUNTY EASTERN WATER RECLAMATION FACILITY (EWRF)  
 HYPOCHLORITE STORAGE IMPROVEMENTS

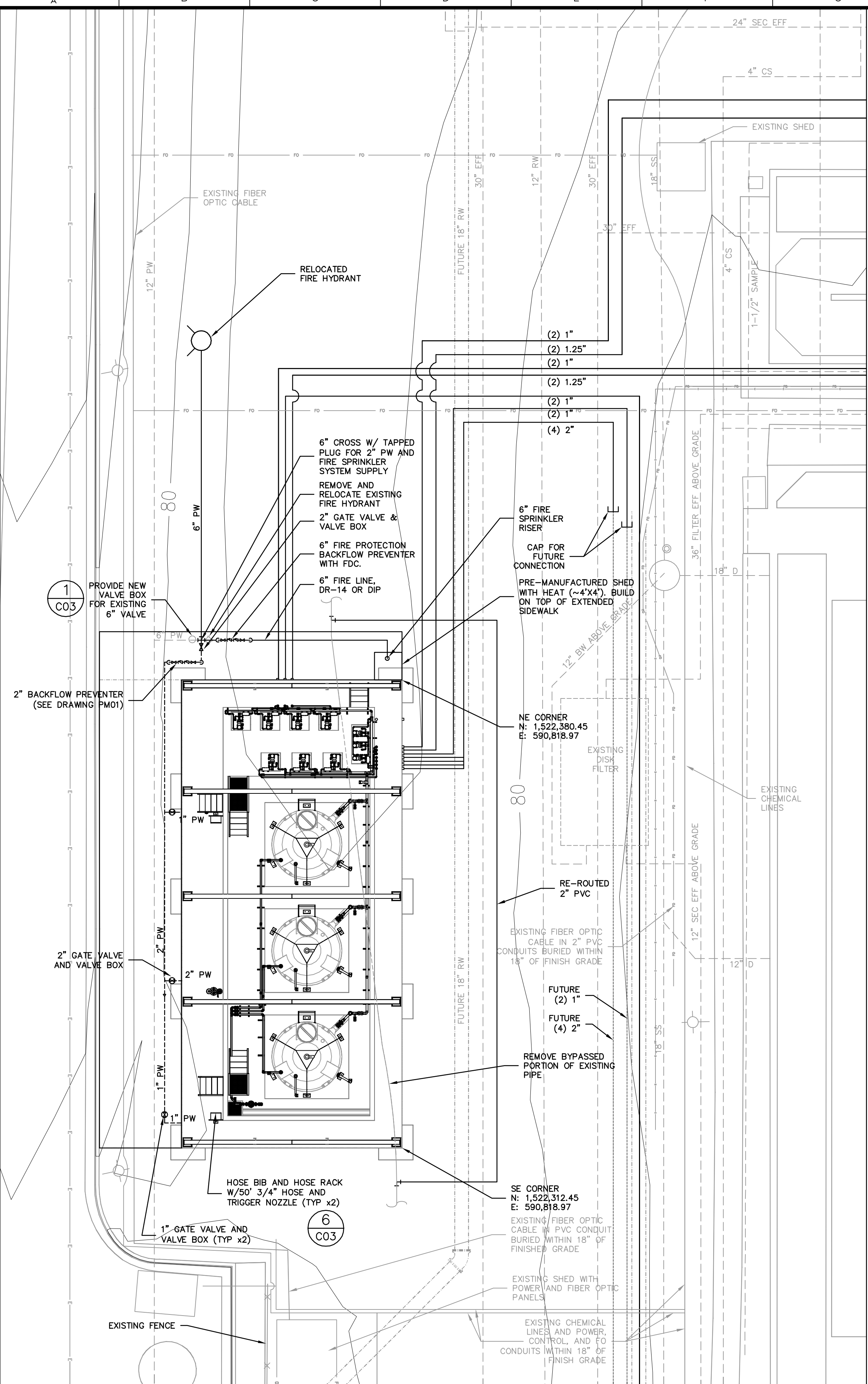
GENERAL  
 PROCESS FLOW DIAGRAM

|                        |                        |
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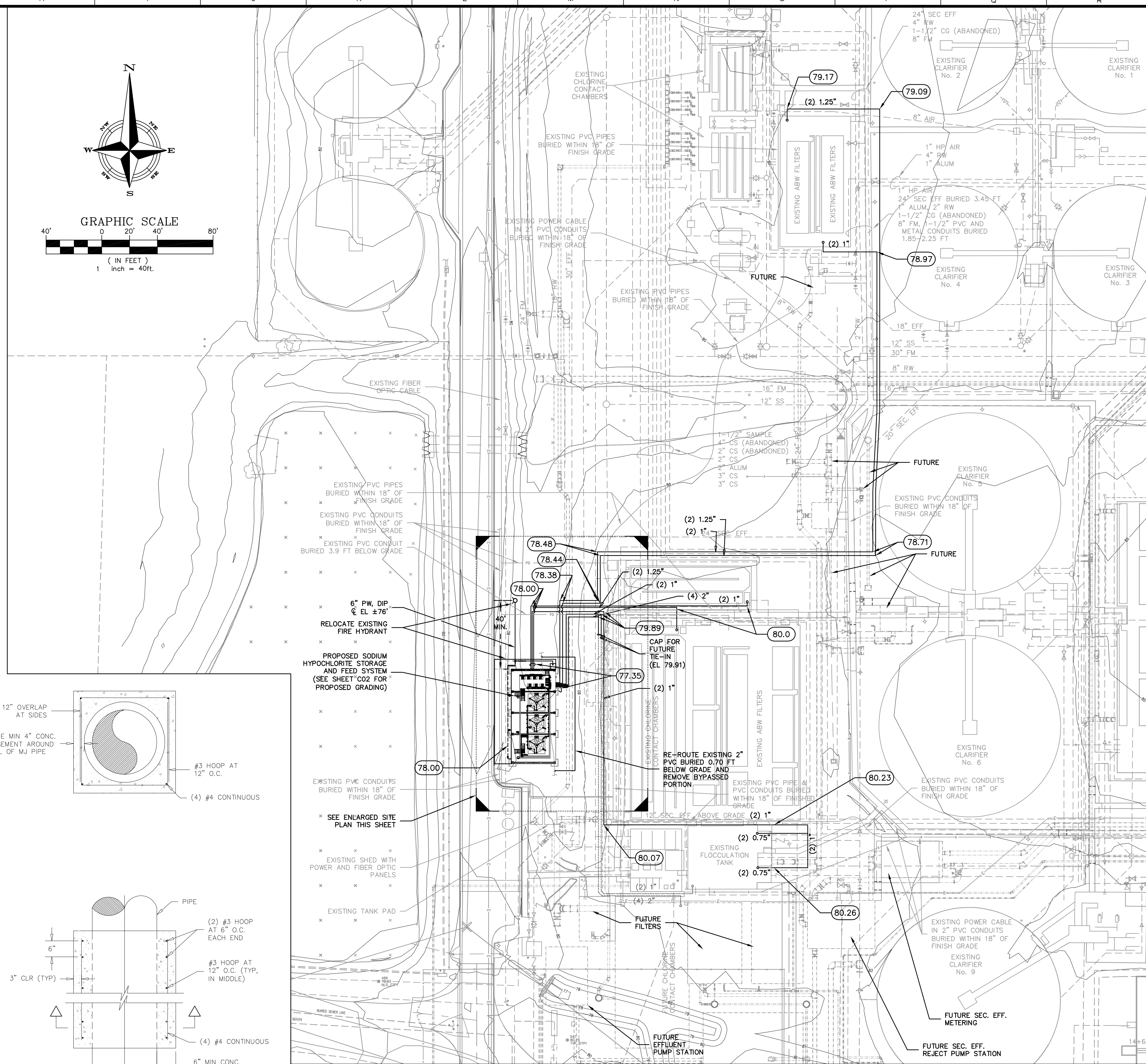




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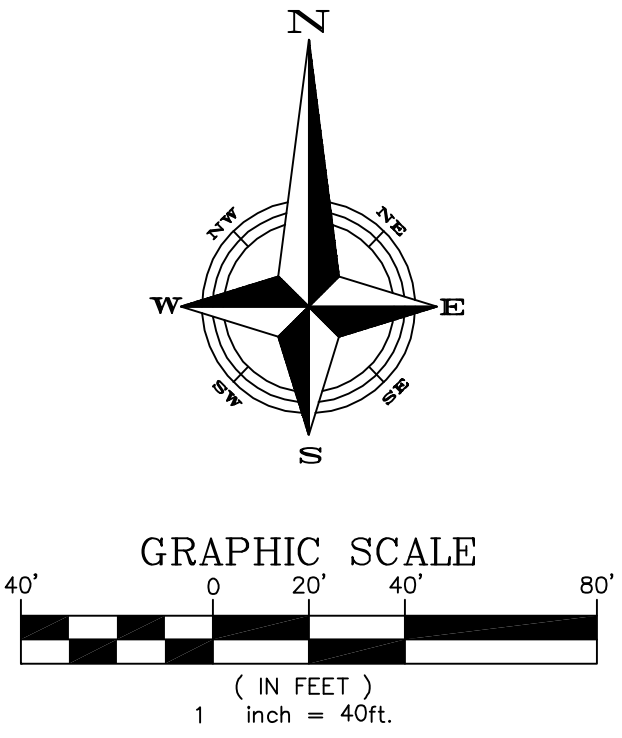
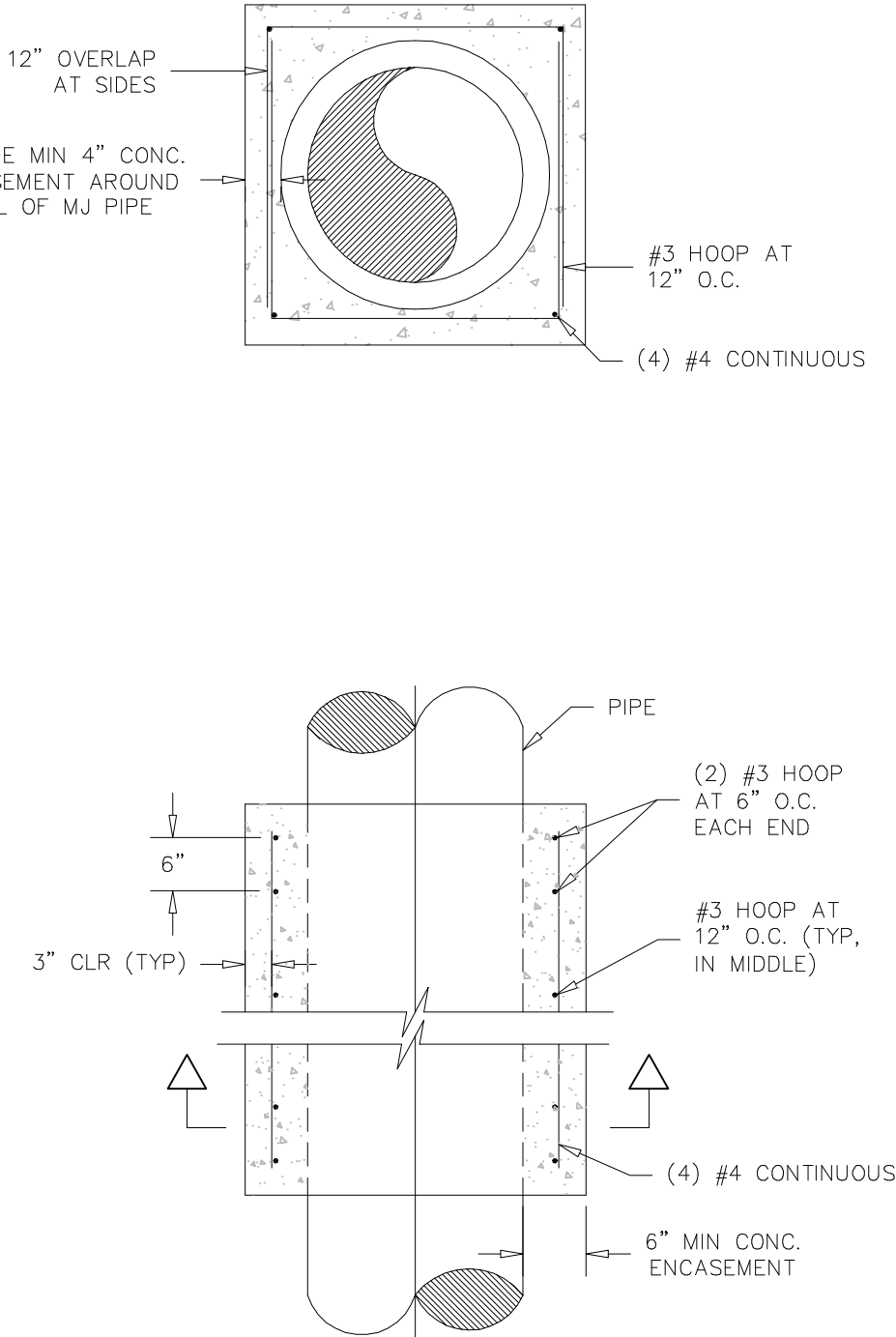


1 SITE PLAN  
SCALE: 1"=10'



2 SITE PLAN  
SCALE: 1"=40'

2A CONCRETE ENCASEMENT DETAIL  
SCALE: N.T.S.



SHEET LEGEND  
76.59 PIPE INVERT ELEVATION, NGVD  
PIPE HAS INCREASING SLOPE OF 0.1% OR MORE TO DOSAGE POINTS.  
ALL HYPOCHLORITE YARD PIPING SHALL BE SCH80 PVC



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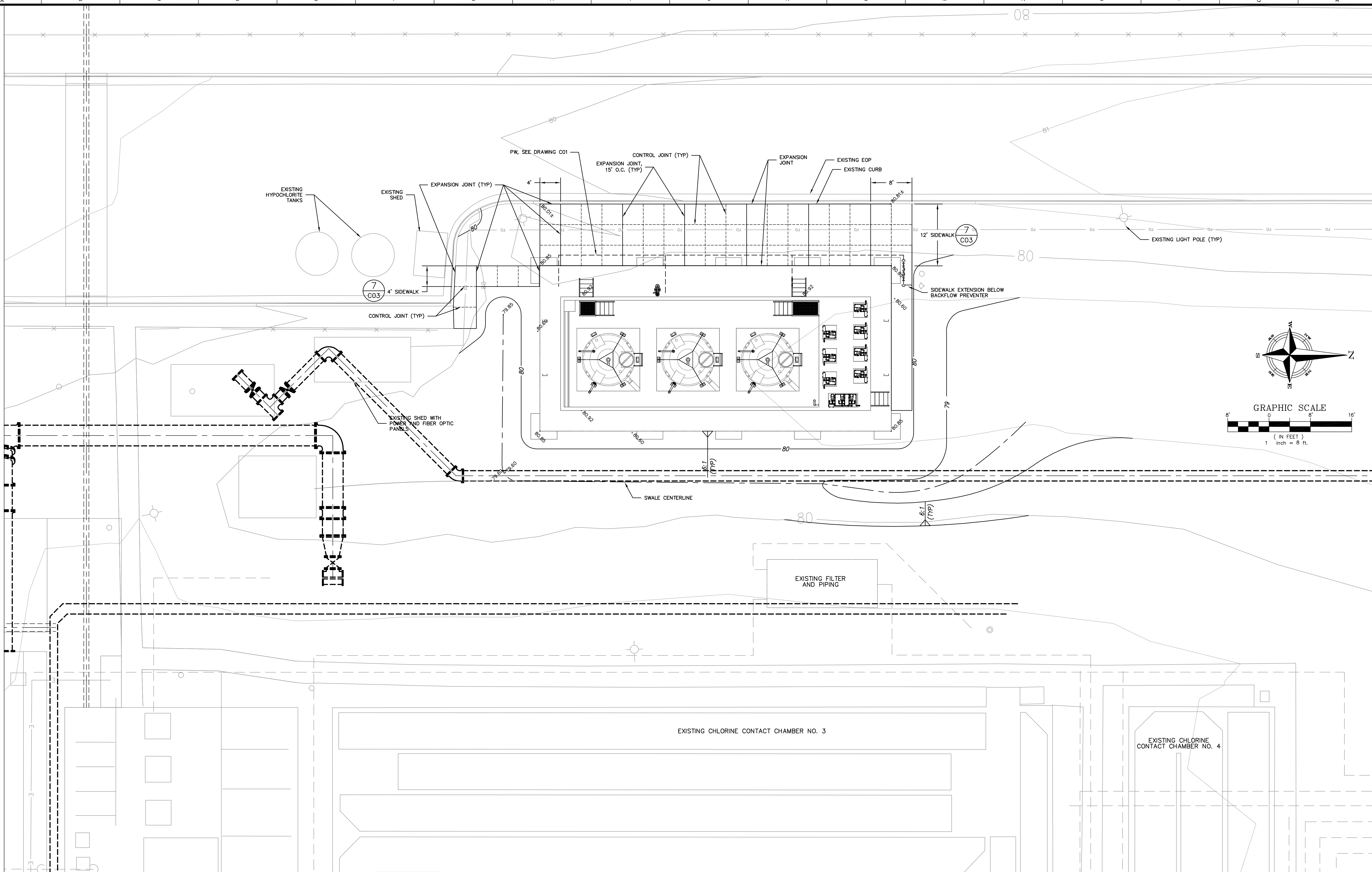
ORANGE COUNTY EASTERN WATER RECLAMATION FACILITY (EWRF)  
HYPOCHLORITE STORAGE IMPROVEMENTS  
CIVIL  
SITE PLAN AND YARD PIPING

|                        |                        |
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 Date 10/2014

ORANGE COUNTY EASTERN WATER RECLAMATION FACILITY (EWRF)  
 HYPOCHLORITE STORAGE IMPROVEMENTS

CIVIL

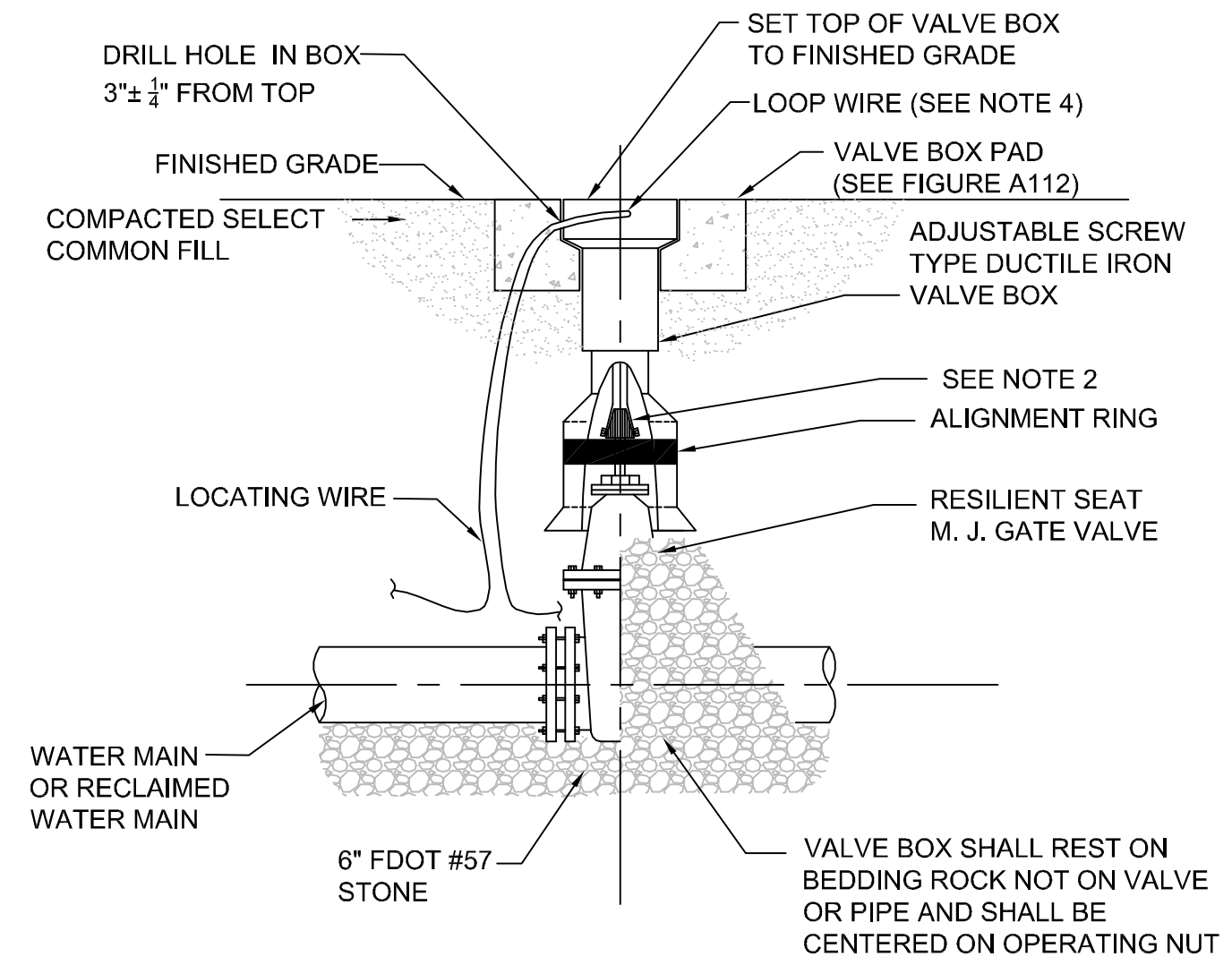
PAVING, GRADING, AND DRAINAGE

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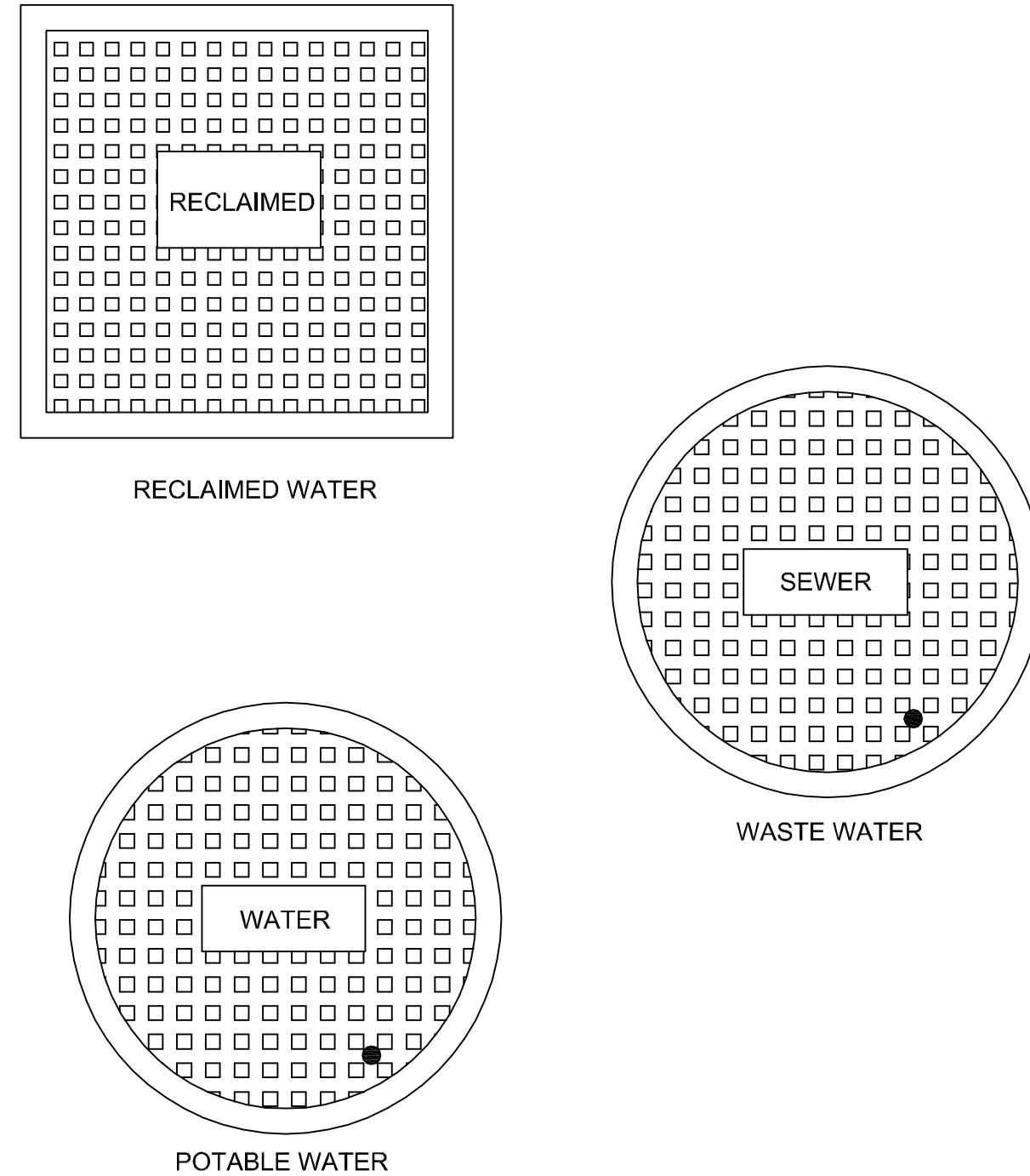
DATE: February 11, 2011 **GATE VALVE AND BOX WATER AND RECLAIMED WATER MAINS** **FIGURE A107**



- NOTES:**
1. PVC PIPE OR DUCTILE IRON PIPE EXTENSIONS SHALL NOT BE USED ON VALVE BOX INSTALLATION.
  2. THE VALVE ACTUATING NUT SHALL BE EXTENDED TO BE WITHIN 3' OF FINISHED GRADE.
  3. PROVIDE A PLASTIC DEBRIS SHIELD / ALIGNMENT RING WHICH INSTALLS BELOW THE VALVE ACTUATING NUT. THIS SHIELD SHALL CENTER THE RISER PIPE BOX OVER THE ACTUATING NUT AND MINIMIZE INFILTRATION.
  4. LOCATING WIRE SHALL BE CONTINUOUS WITH NO SPLICES AND SHALL EXTEND 12" ABOVE TOP OF COLLAR. WIRE SHALL BE COLOR CODED TO MATCH THE UTILITY INSTALLED.
  5. FOR NEW CONSTRUCTION, THE VALVE BOX SHALL BE ADJUSTED TO MIDRANGE TO ALLOW FOR FUTURE BOX ADJUSTMENTS.
  6. REFER TO FIGURE A111 FOR INSTALLATIONS AT A DEPTH OF 6' OR GREATER.

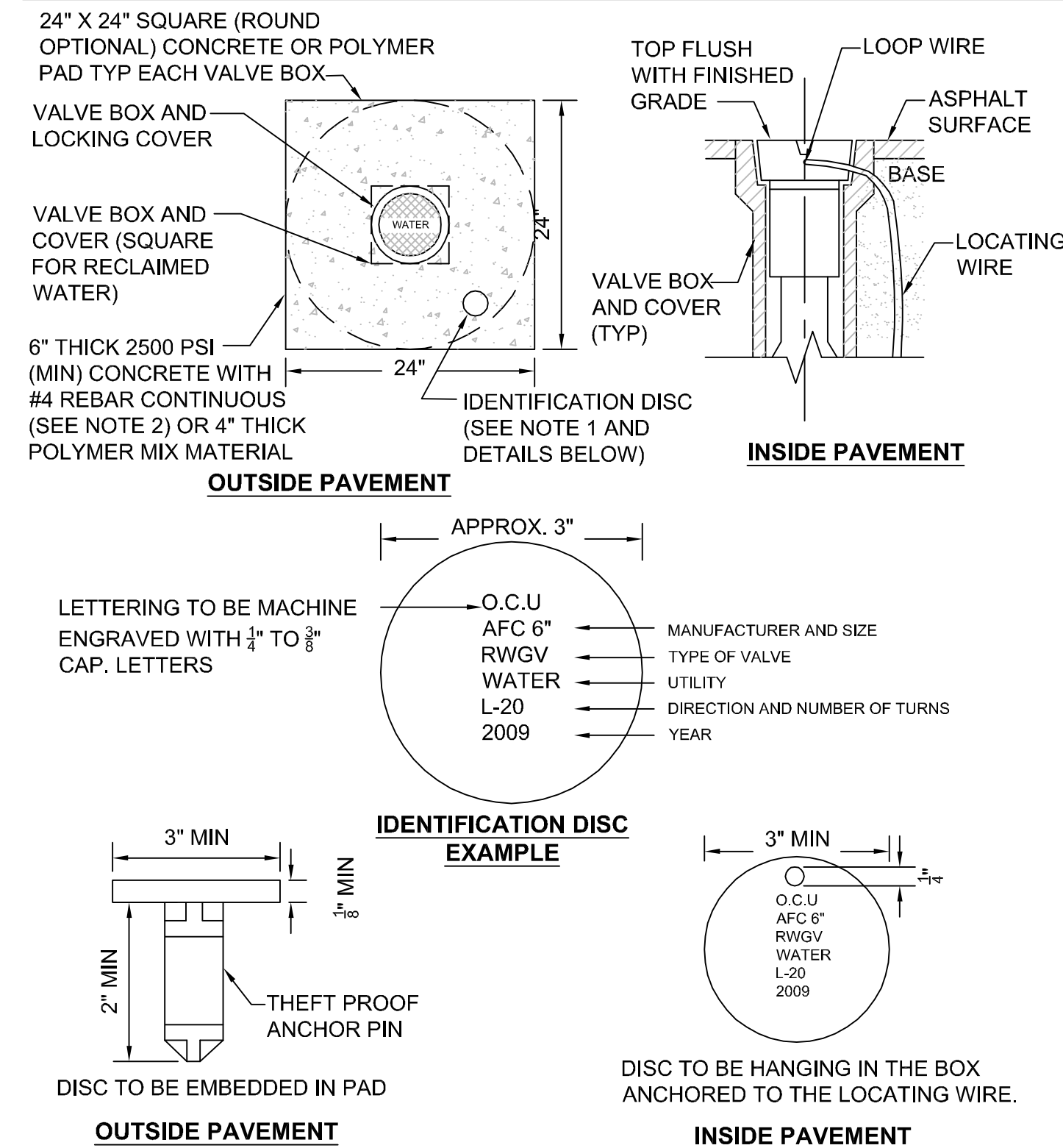
**1** A107 GATE VALVE AND BOX WATER AND RECLAIMED WATER MAINS  
SCALE: N.T.S.

DATE: February 11, 2011 **TYPICAL VALVE BOX COVER** **FIGURE A110**



**2** A110 TYPICAL VALVE BOX COVER  
SCALE: N.T.S.

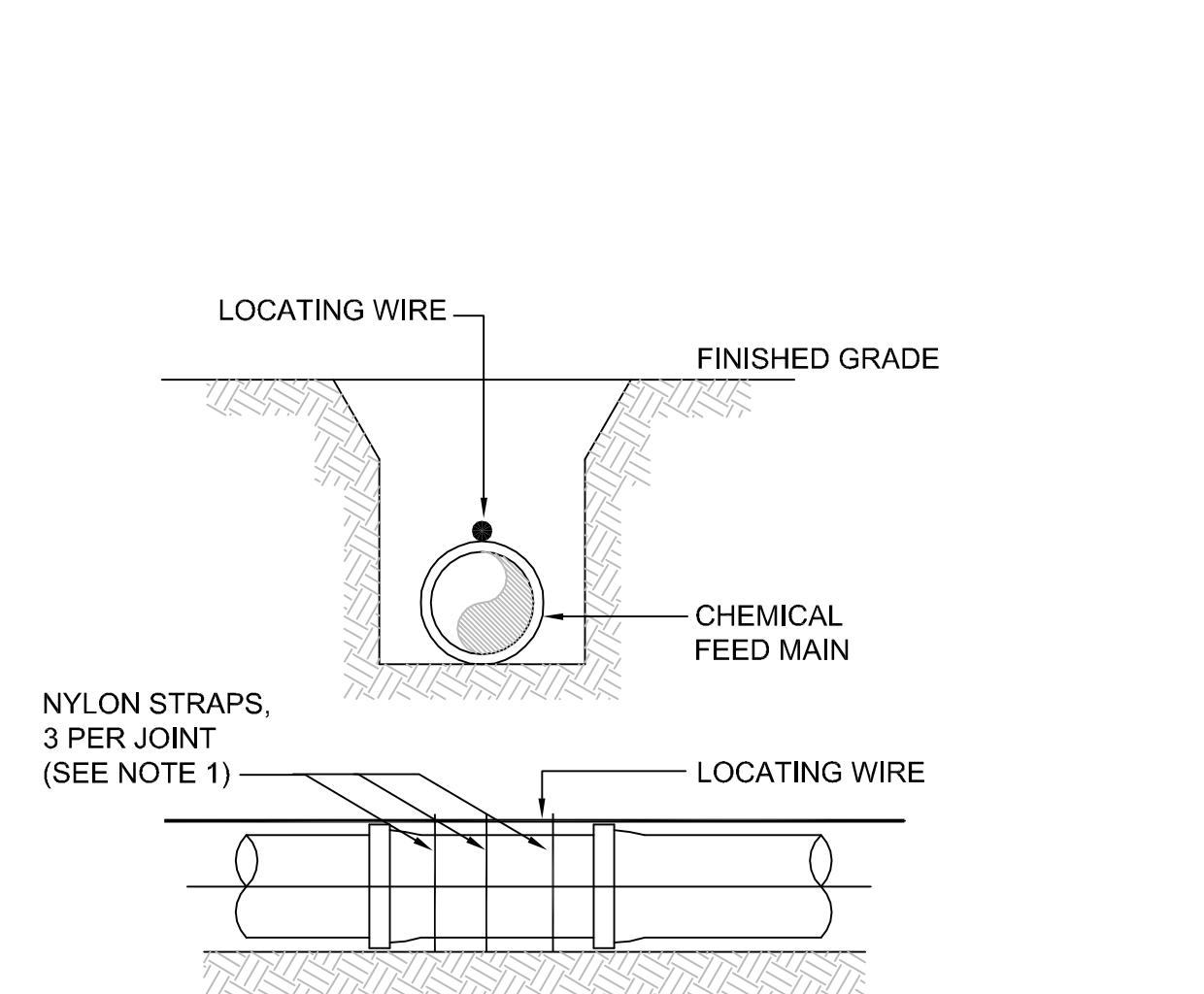
DATE: February 11, 2011 **VALVE BOX PAD** **FIGURE A112**



- NOTES:**
1. BRONZE (OR STAINLESS STEEL) IDENTIFICATION DISC SHALL BE REQUIRED FOR ALL VALVES, EXCEPT HYDRANT VALVES.
  2. IN LIEU OF PRECAST CONCRETE PAD, A 6" THICK X 24" (ROUND OR SQUARE) POURED CONCRETE PAD WITH TWO #4 REBAR AROUND PERIMETER MAY BE USED.

**3** A112 VALVE BOX PAD  
SCALE: N.T.S.

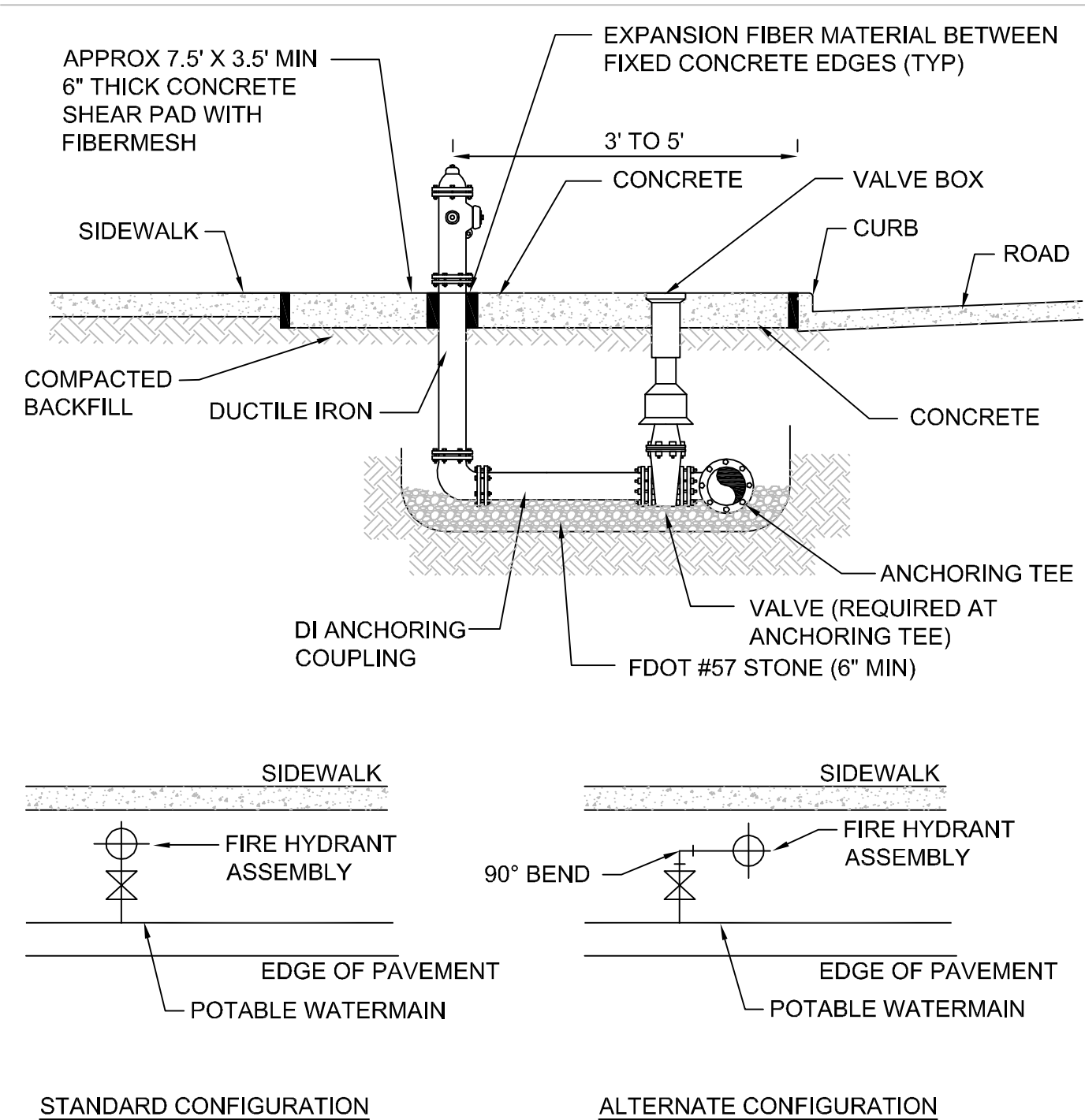
DATE: February 11, 2011 **PIPE LOCATING WIRE** **FIGURE A114**



- NOTES:**
1. ALL PIPE SHALL REQUIRE INSULATED LOCATING WIRE (10 GAUGE SOLID COPPER) CAPABLE OF DETECTION BY A CABLE LOCATOR AND SHALL BE WRAPPED WITH NYLON STRAPS TO TOP CENTERLINE OF THE PIPE.
  2. LOCATING WIRE SHALL BE CONTINUOUS INSIDE VALVE BOXES AND SHALL EXTEND 12" ABOVE TOP OF COLLAR.
  3. WIRE INSULATION SHALL BE COLOR CODED FOR THE TYPE OF PIPE BEING INSTALLED.

**4** A114 PIPE LOCATING WIRE  
SCALE: N.T.S.

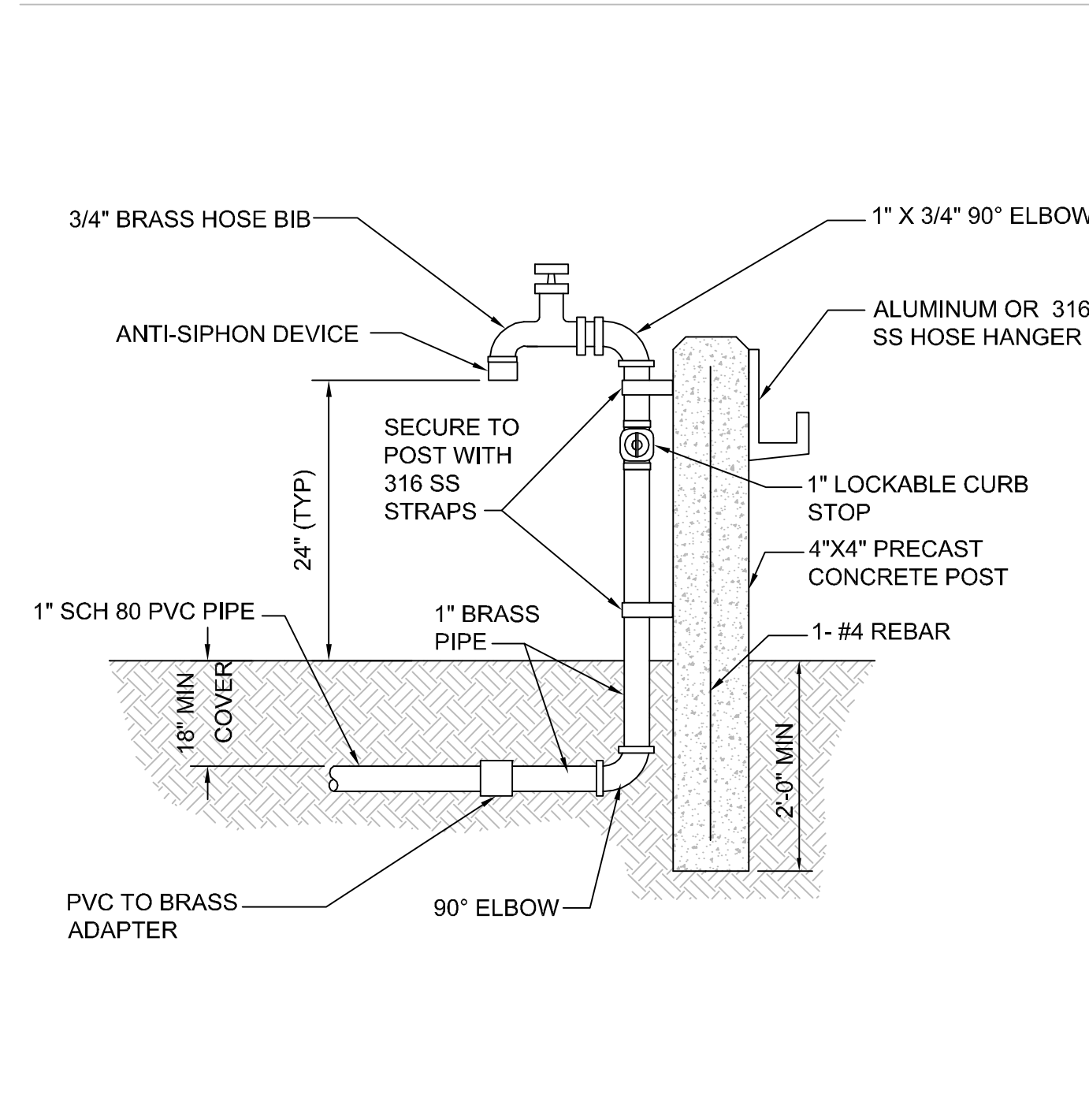
DATE: February 11, 2011 **FIRE HYDRANT ASSEMBLY** **FIGURE A203**



- NOTES:**
1. CENTER OF THE FLANGE CONNECTION SHALL BE 5" FROM THE TOP OF THE SLAB.

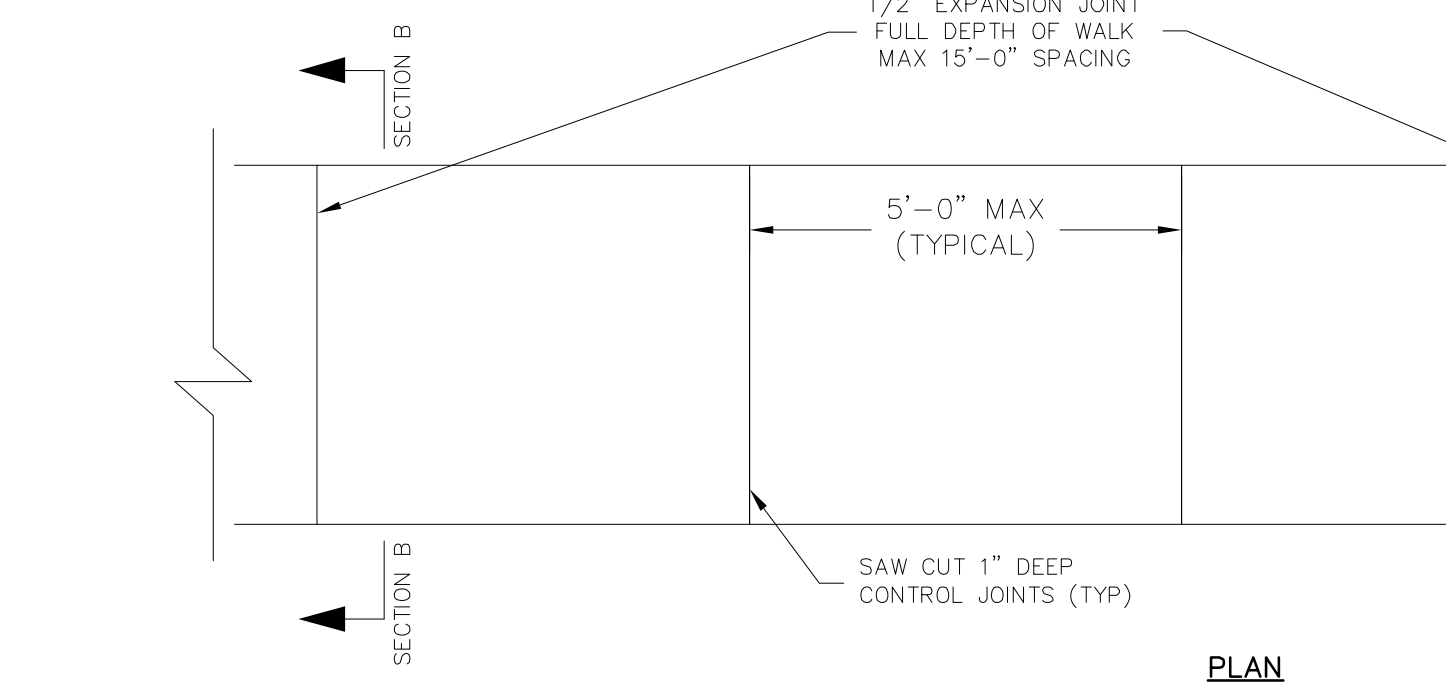
**5** A203 FIRE HYDRANT ASSEMBLY  
SCALE: N.T.S.

DATE: February 11, 2011 **HOSE BIBB** **FIGURE A408**

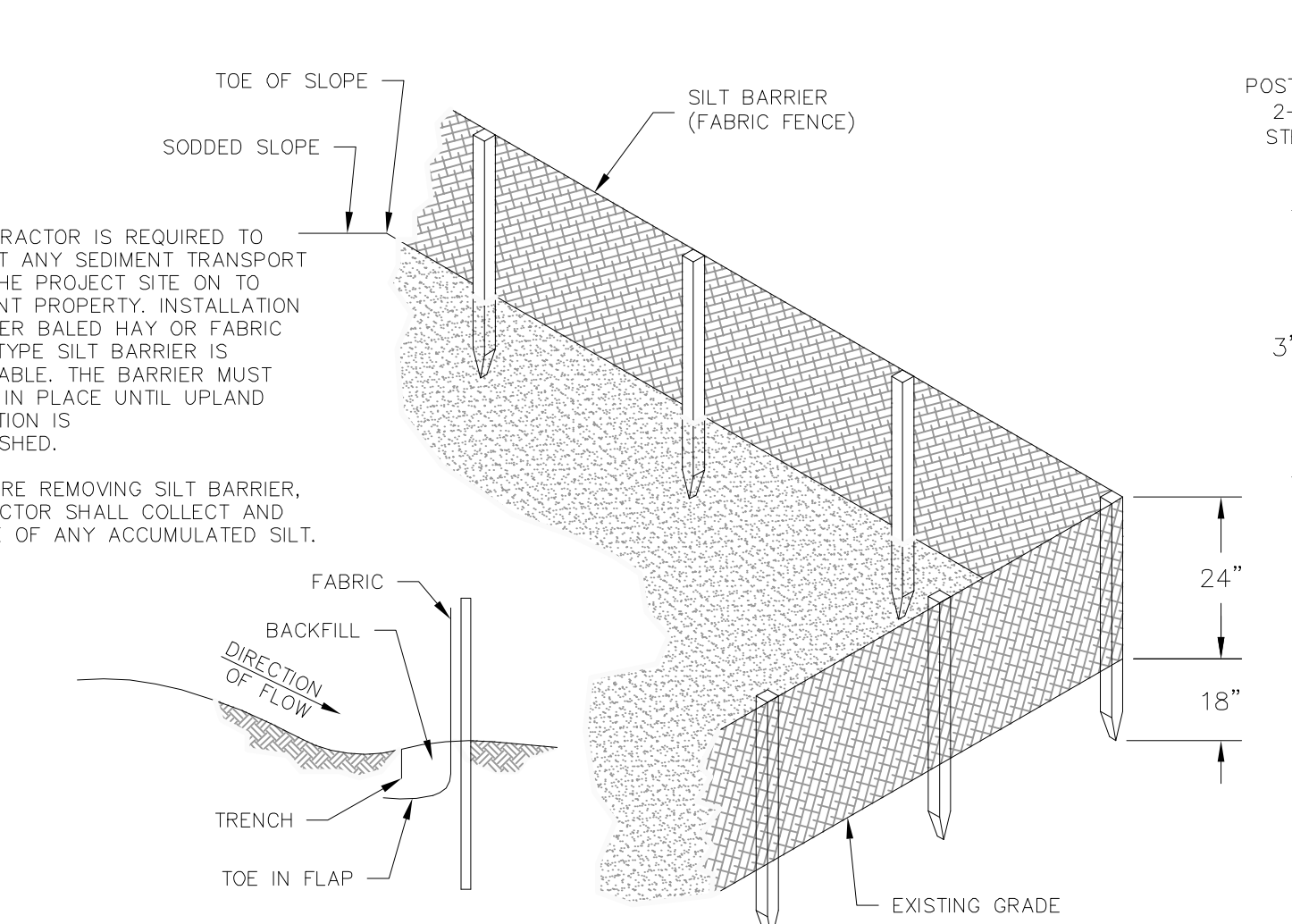


- NOTES:**
1. PROVIDE 50' LONG 3/4" HOSE, GILMOUR FLEXOGEN OR APPROVED EQUAL.
  2. PROVIDE HOSE NOZZLE, GILMOUR MODEL 483GF OR APPROVED EQUAL.

**6** A408 HOSE BIBB  
SCALE: N.T.S.



**7** SIDEWALK DETAIL  
SCALE: N.T.S.



**8** EROSION CONTROL DETAILS  
SCALE: 1" = 1'-0"



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Date 10/2014

ORANGE COUNTY EASTERN WATER RECLAMATION FACILITY (EWRF)  
HYPOCHLORITE STORAGE IMPROVEMENTS

CIVIL  
CIVIL DETAILS

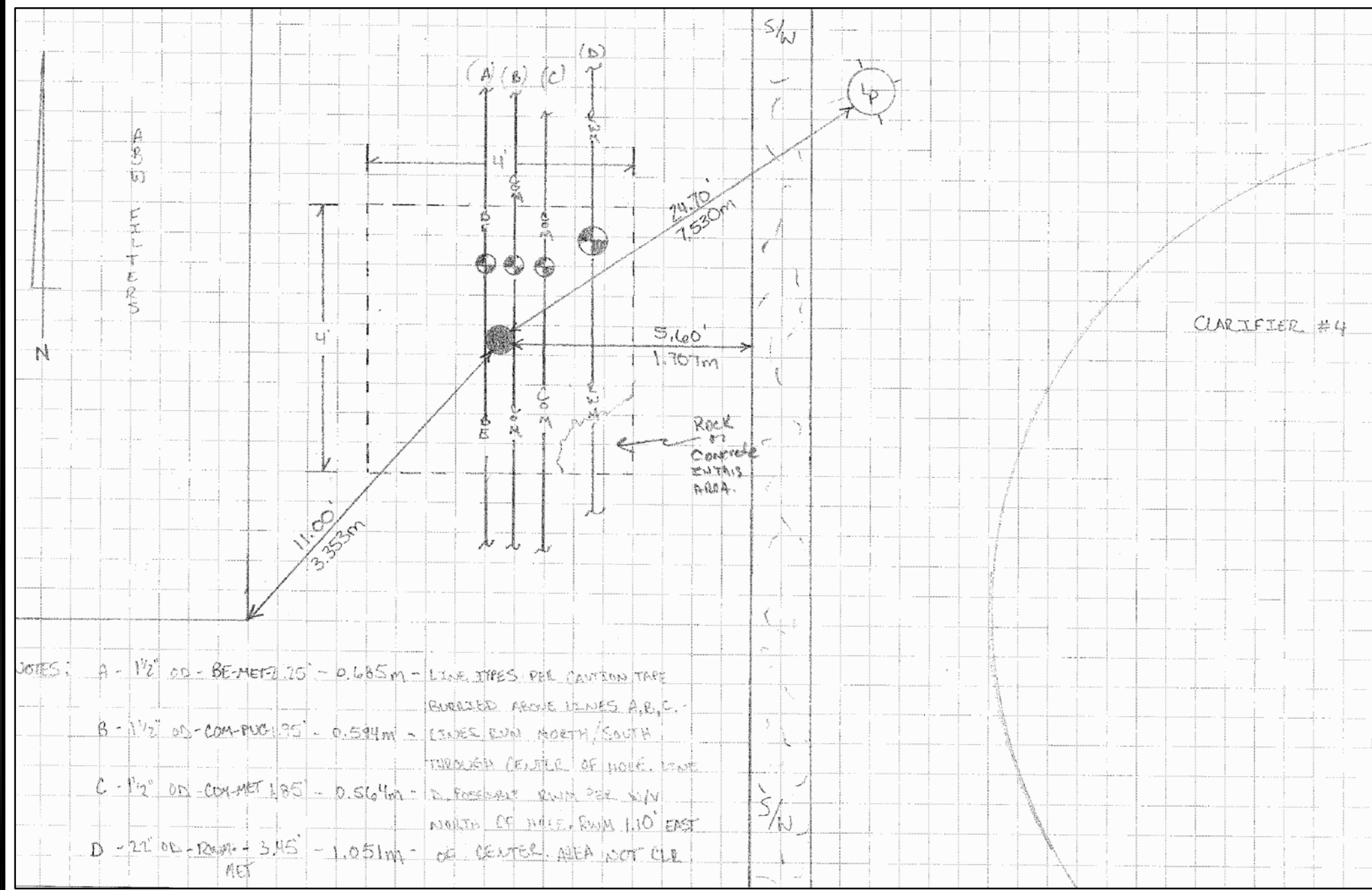
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| SHEET NO.:   | 07 OF 28 |



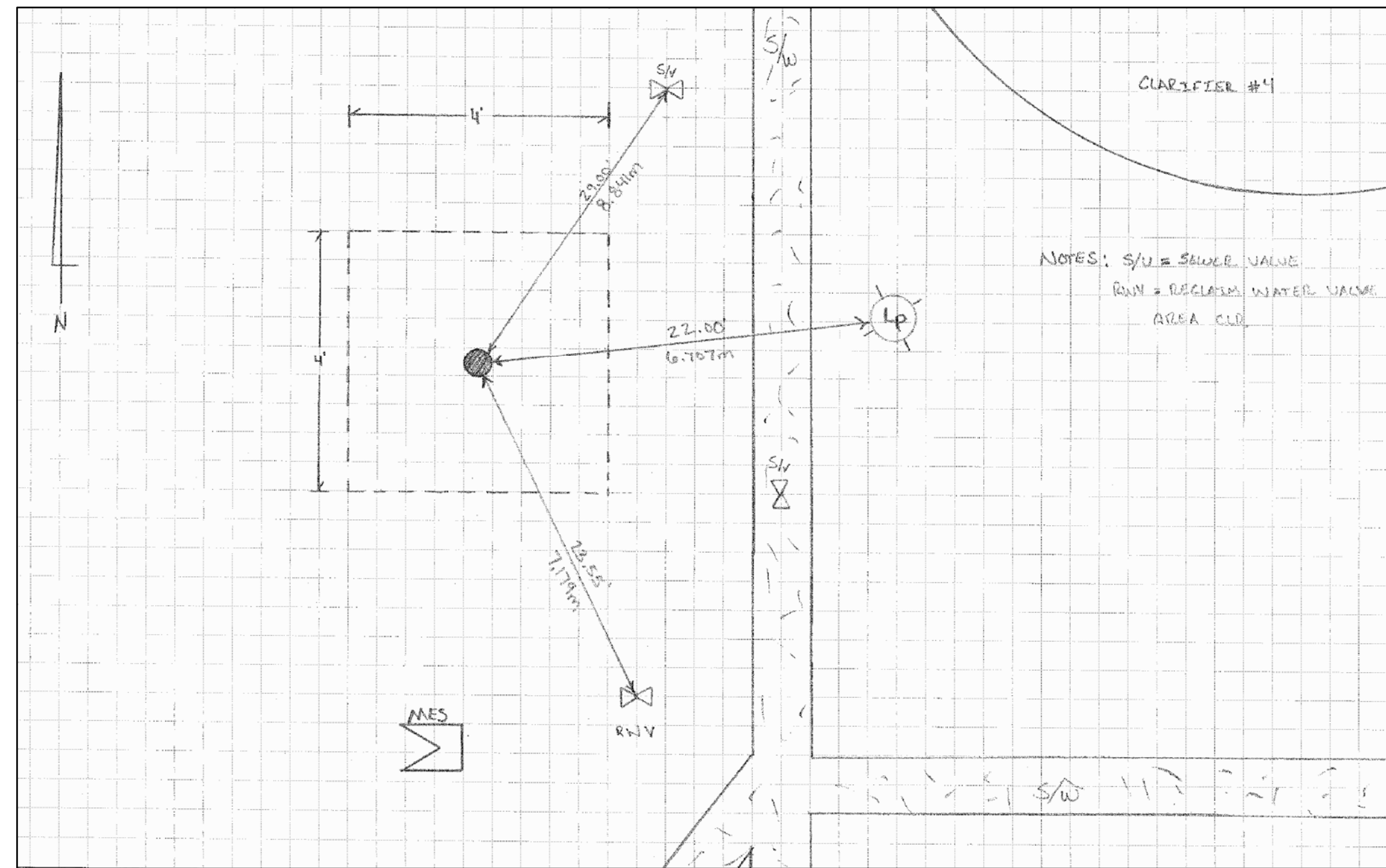
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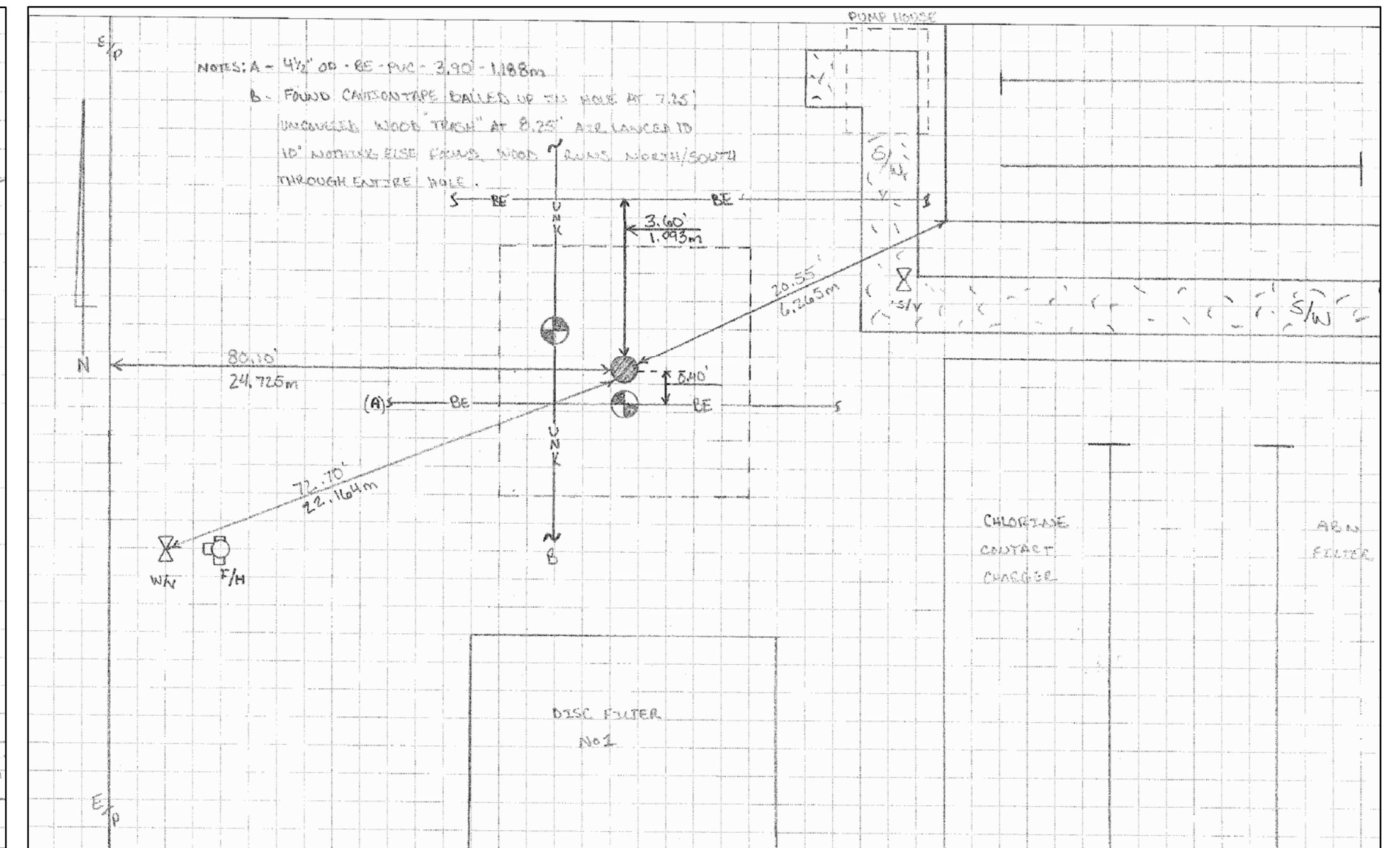
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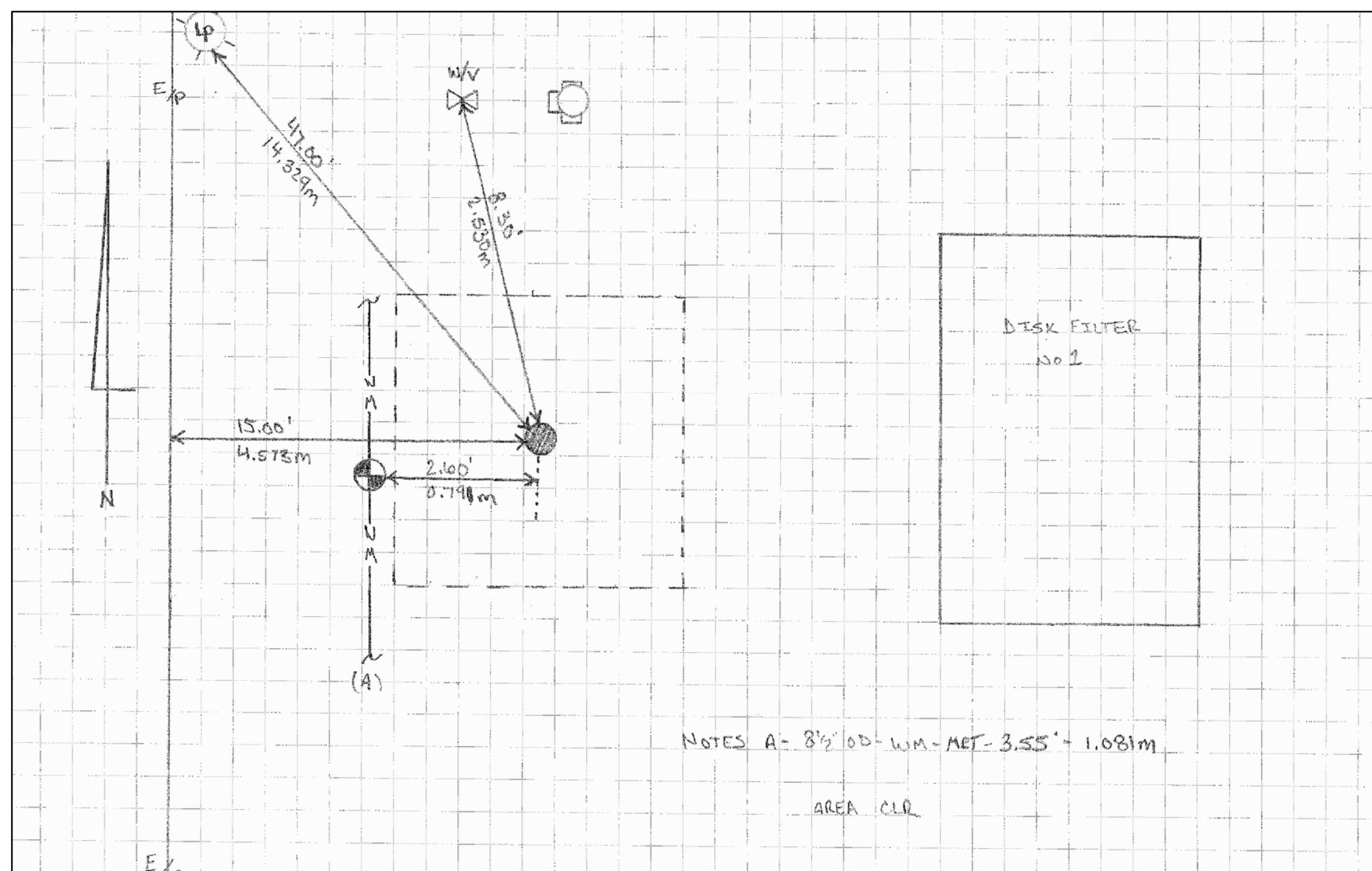
9 SOFT DIG DETAIL - PIT NO 1  
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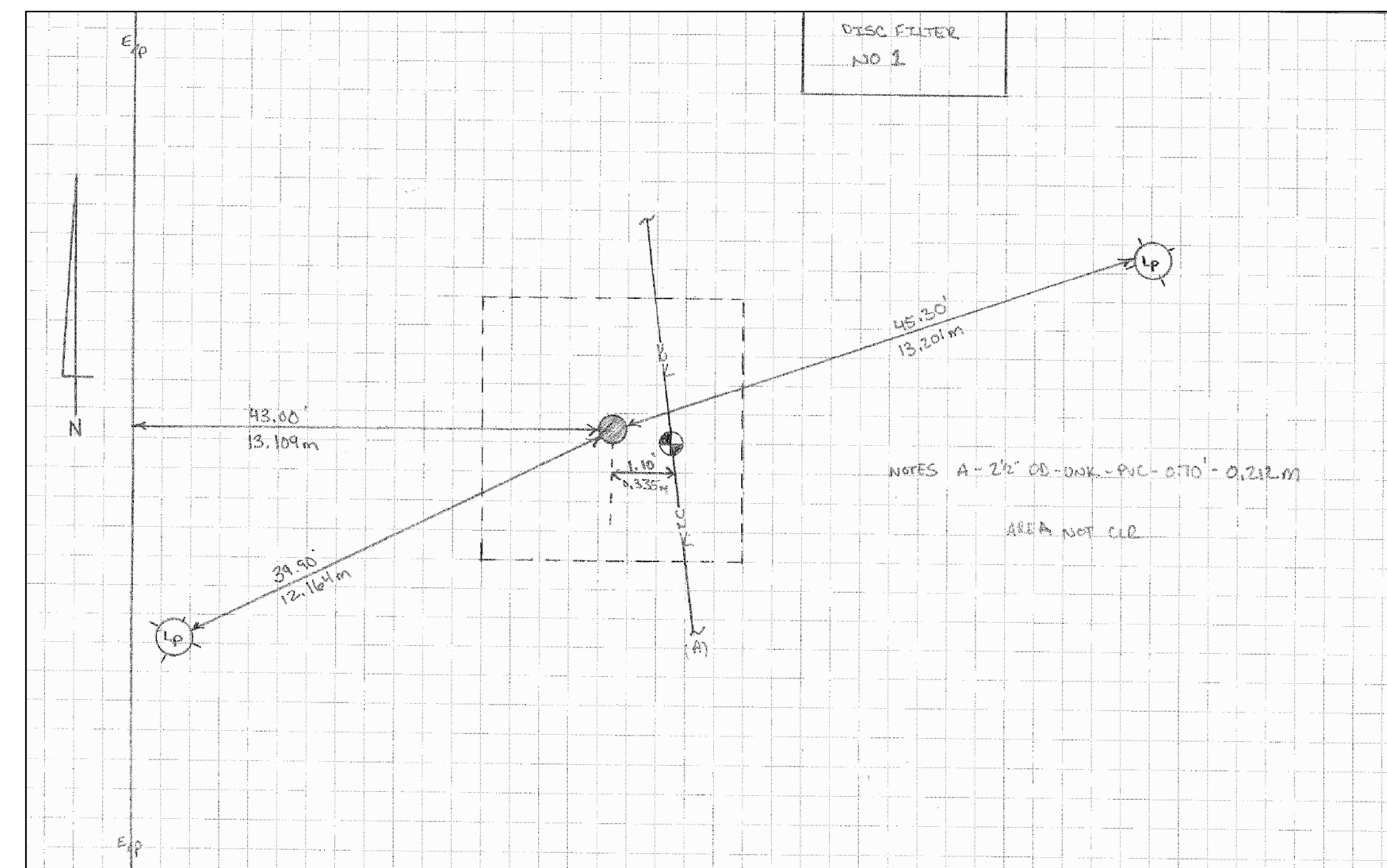
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11 SOFT DIG DETAIL - PIT NO 3  
SCALE: N.T.S.



12 SOFT DIG DETAIL - PIT NO 4  
SCALE: N.T.S.



13 SOFT DIG DETAIL - PIT NO 5  
SCALE: N.T.S.



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HYPOCHLORITE STORAGE IMPROVEMENTS

CIVIL  
CIVIL DETAILS

|                        |                        |
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| PROJECT NO.:<br>110004 |                        |
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| DRAWING NO.<br>C04     | SHEET NO.:<br>08 OF 28 |



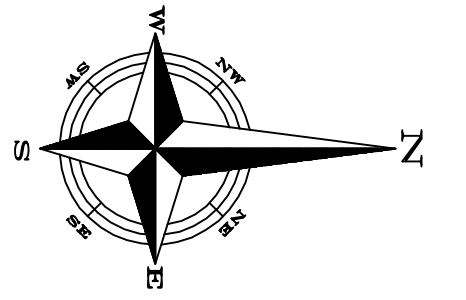


SUMMARY OF CHEMICALS BEING STORED

| CHEMICAL BEING STORED              | CLASSIFICATION | QUANTITIES BEING STORED                           | MAXIMUM ALLOWABLE QUANTITY (MAQ) PER CONTROL AREA   | EXCEEDS (MAQ) PER CONTROL AREA |
|------------------------------------|----------------|---|---|--------------------------------|
| SODIUM HYPOCHLORITE 12.5% SOLUTION | CORROSIVE      | (3) 7,300 GALLON TANKS<br>TOTAL OF 21,900 GALLONS | 975 LIQUID GALLONS (FBC TABLE 414.2.5(1))<br>1,950 LIQUID GALLONS (NFPA-1 TABLE 60.2.5.5) | YES                            |

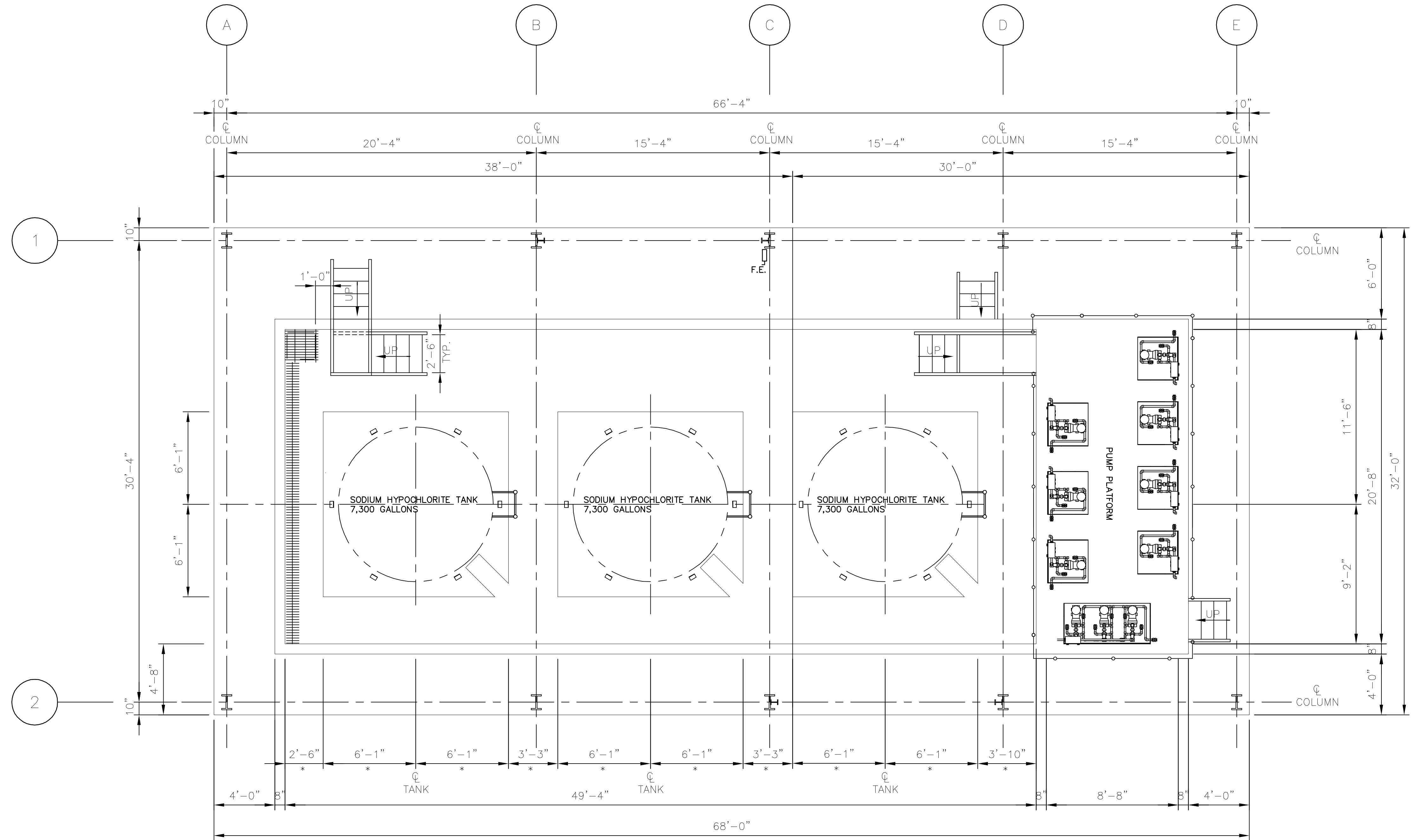
NOTES TO CODE REQUIREMENTS:

- QUANTITIES OF SODIUM HYPOCHLORITE BEING STORED EXCEED MAXIMUM ALLOWABLE QUANTITIES (MAQ) PER FBC2010-B, TABLE 307.1(2), CORROSIVE, REQUIRING GROUP H-4 HIGH HAZARD.
- BUILDING IS UNMANNED, BUT FOR PURPOSES OF CALCULATING EGRESS REQUIREMENTS, USE "INDUSTRIAL" FROM FBC2010-B, TABLE 1004.1.1.
- THIS STRUCTURE IS EXEMPT FROM ACCESSIBILITY REQUIREMENTS PER FBC2010-B, ACCESSIBILITY, 203 GENERAL EXCEPTIONS, 203.5 MACHINERY SPACES.



SUMMARY OF CODE REQUIREMENTS

|  | FLORIDA BUILDING CODE 2010, BUILDING (FBC2010-B) | FLORIDA FIRE PREVENTION CODE 2010 - NFPA 101, L.S.C. (FFPC2010-NFPA101) |
|--|--|---|
| <b>BUILDING</b>  |  |   |
| CLASSIFICATION OF OCCUPANCY (SEE NOTE #1)                    | GROUP H-4, HIGH HAZARD (307.6)                   | HIGH HAZARD INDUSTRIAL (CHAPTER 40) (40.1.4.1.3)                        |
| MINIMUM TYPE OF CONSTRUCTION                                 | TYPE II-B (TABLE 503) (TABLE 601)                | NO REQUIREMENT (40.1.6)   |
| MAXIMUM AREA PER FLOOR                                       | 17,500 SQ. FT. (TABLE 503)                       | N/A   |
| MAXIMUM HEIGHT   | 3 STORIES<br>55 FEET (TABLE 503)                 | N/A   |
| DETAILED CONSTRUCTION REQUIREMENTS - TABLE 601 FOR TYPE II-B |  | N/A   |
| REQUIRED FIRE RESISTANCE RATINGS OF VARIOUS MEMBERS          |  |   |
| STRUCTURAL FRAME   | 0 HOURS  |   |
| EXTERIOR BEARING WALLS                                       | 0 HOURS  |   |
| INTERIOR BEARING WALLS                                       | 0 HOURS  |   |
| EXTERIOR NON-BEARING WALLS                                   | 0 HOURS  |   |
| INTERIOR NON-BEARING WALLS                                   | 0 HOURS  |   |
| FLOORS   | N/A  |   |
| ROOF   | 0 HOURS  |   |
| OCCUPANCY SEPARATION   | N/A<br>ALL ONE OCCUPANCY                         | N/A<br>ALL ONE OCCUPANCY  |
| <b>EGRESS</b>  |  |   |
| MINIMUM OCCUPANT LOAD (SEE NOTE #2)                          | 100 SQ. FT. PER PERSON (TABLE 1004.1)            | 100 SQ. FT. PER PERSON (TABLE 7.3.1.2, HIGH HAZARD INDUSTRIAL)          |
| NUMBER OF EXITS  | TWO (TABLE 1015.1)                               | TWO (7.4.1.1, 40.2.4.1.1)   |
| MAXIMUM TRAVEL DISTANCE - NOT SPRINKLED                      | NO LISTING (TABLE 1016.1)                        | 75 FEET (TABLE 40.2.6)  |
| MAXIMUM DEAD END   | N/A  | NOT PERMITTED (TABLE 40.2.5)  |
| MAXIMUM COMMON PATH OF TRAVEL                                | N/A  | NOT PERMITTED (TABLE 40.2.5)  |
| EGRESS WIDTH PER PERSON LEVEL STAIRS                         | (1005.1)<br>0.2" / PERSON<br>N/A                 | (TABLE 7.3.3.1)<br>0.2" / PERSON<br>N/A                                 |
| MINIMUM EXIT DOOR WIDTH                                      | N/A<br>NO DOORS                                  | N/A<br>NO DOORS   |
| <b>FIRE PROTECTION</b>                                       |  |   |
| FIRE ALARM   | NOT REQUIRED (907)                               | NOT REQUIRED (40.3.4.1)   |
| FIRE SPRINKLERS  | REQUIRED (903.2.5)                               | NOT REQUIRED (40.3.5)   |
| CLASSIFICATION OF HAZARD OF CONTENTS                         | N/A  | LOW HAZARD (40.1.5) (6.2.2.2)   |
| INTERIOR FINISHES  | N/A  | N/A   |



1 LIFE SAFETY PLAN  
A01 SCALE: 1/4" = 1'-0"

APPLICABLE CODES:

- FLORIDA BUILDING CODE 2010, BUILDING (FBC2010-B) WITH SUPPLEMENTS
  - FLORIDA FIRE PREVENTION CODE 2010, INCLUDING NFPA 101, LIFE SAFETY CODE (FFPC2010-NFPA101)
- SEE ELECTRICAL AND M/E/P PLANS FOR OTHER APPLICABLE CODES

GROSS BUILDING AREA: 2,176 SQUARE FEET (BUILDING "A")  
TYPE OF CONSTRUCTION: TYPE II-B, NON-COMBUSTIBLE  
OCCUPANCY: GROUP H-4, HIGH HAZARD

F.E. PORTABLE FIRE EXTINGUISHER  
HALOTRON  
2A:10B:C

NOTE: THIS DRAWING IS FOR CODE INFORMATION AND LIFE SAFETY ISSUES. SEE STRUCTURAL DRAWINGS FOR ALL DETAILS OF CONSTRUCTION, STAIRS, RAILINGS, CURBS, ETC. AND DIMENSIONS.



| REV | DATE    | DESCRIPTION    | BY  |
|-----|---------|----------------|-----|
| 0   | 10/2014 | ISSUED FOR BID | TEC |

Issue Certification  
Thomas E. Cunningham, AIA  
LEED AP-BD+C  
Florida AR14116, ID5018  
1350 Lexington Parkway  
Apopka, Florida 32712

Designed\_TEC  
Drawn\_TEC  
Checked\_DNN  
Reviewed\_CIK  
Approved\_TEC  
Date 10/2014

ORANGE COUNTY EASTERN WATER RECLAMATION FACILITY (EWRf)  
HYPOCHLORITE STORAGE IMPROVEMENTS

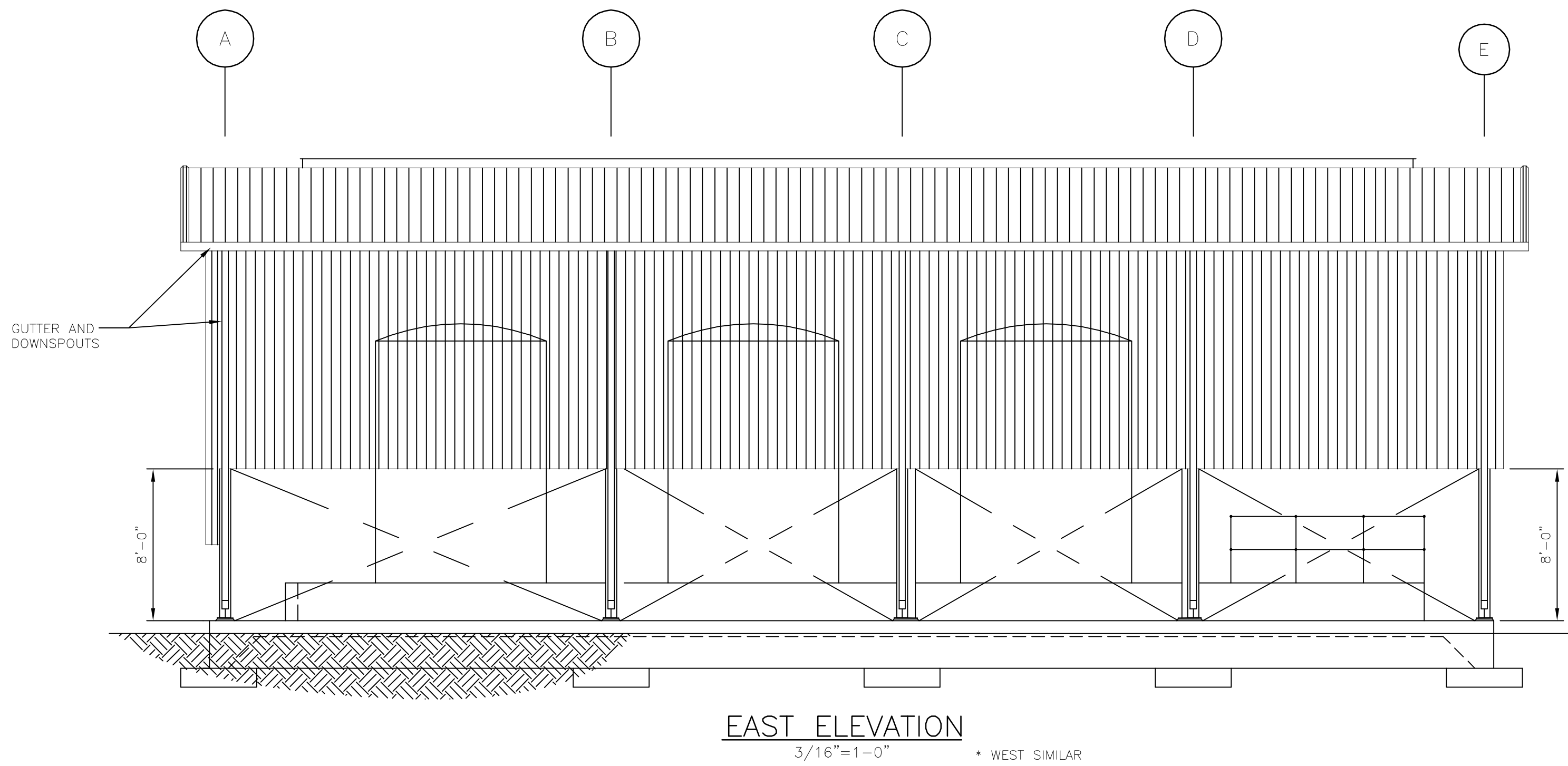
ARCHITECTURAL  
CODE REVIEW AND LIFE SAFETY PLAN

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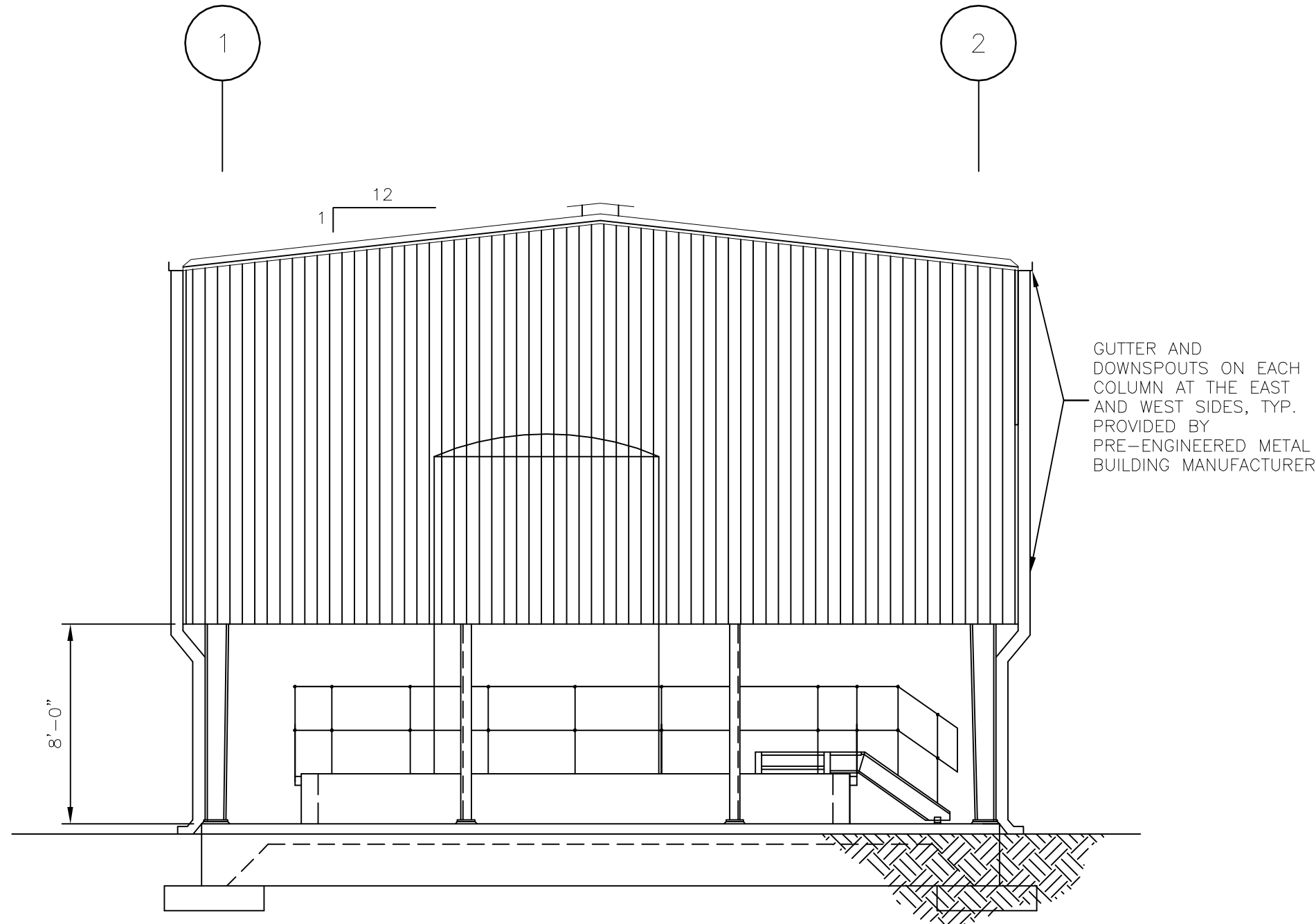




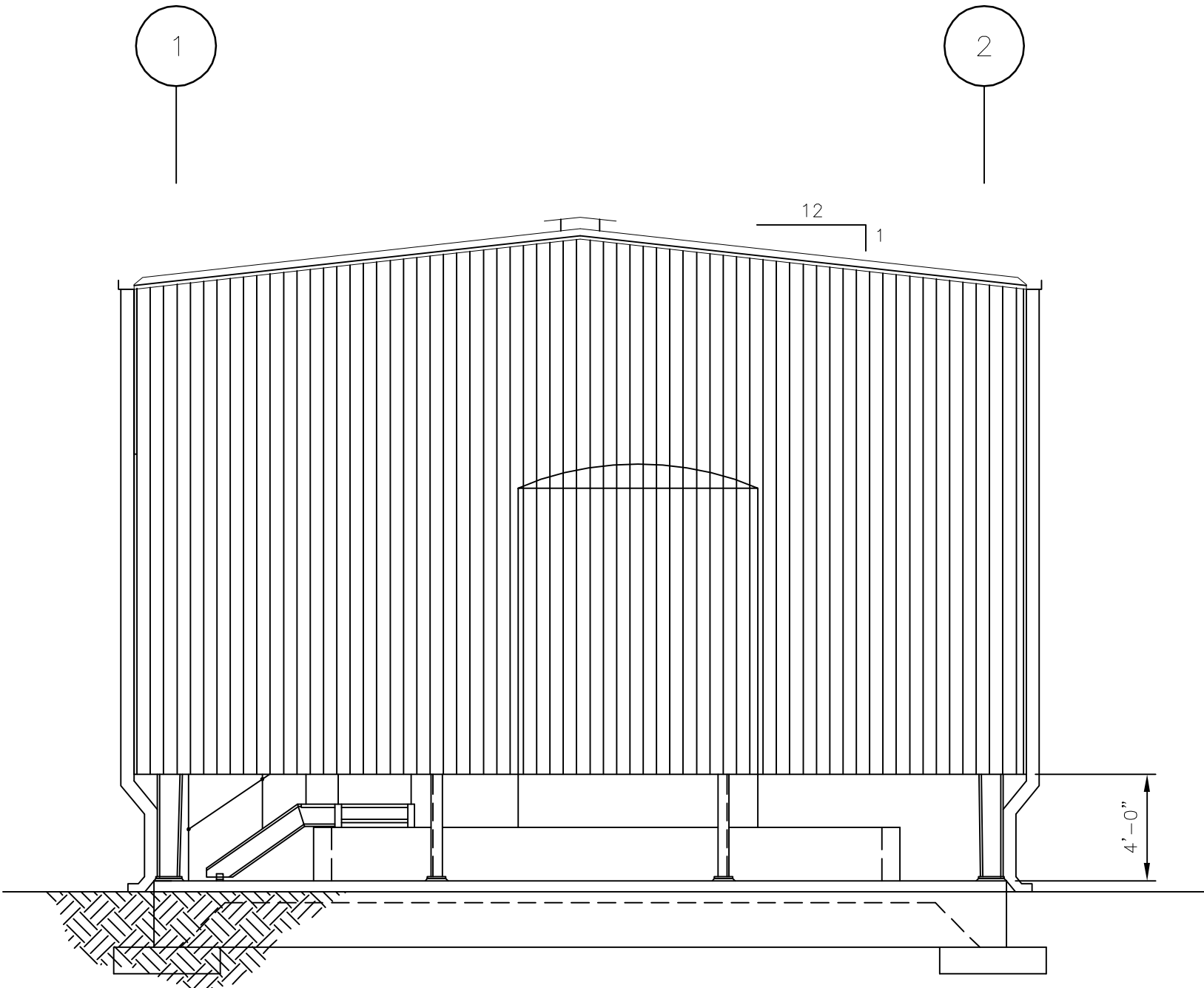
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**EAST ELEVATION**  
3/16"=1'-0" \* WEST SIMILAR



**NORTH ELEVATION**  
3/16"=1'-0"



**SOUTH ELEVATION**  
3/16"=1'-0"

### GENERAL STRUCTURAL NOTES

**DESIGN CRITERIA**

2010 FLORIDA BUILDING CODE

**REINFORCED CONCRETE:**

WATER RETAINING STRUCTURES: ACI 350-06 "CODE REQUIREMENTS FOR ENVIRONMENTAL ENGINEERING CONCRETE STRUCTURES"

ALL OTHER STRUCTURES: ACI 318 "BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE"

**DESIGN LIVE LOADS:**

|                        |         |
|------------------------|---------|
| STAIRWAYS AND LANDINGS | 100 PSF |
| SLABS ON GRADE         | 300 PSF |

**CONCRETE**

ALL MATERIALS AND METHODS OF CONSTRUCTION SHALL BE IN ACCORDANCE WITH ACI 318 REQUIREMENTS (LATEST EDITION)

ALL CONCRETE SHALL BE AIR-ENTRAINED WITH 4000 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 SPECIFICATIONS, SHALL BE TREATED WITH AN APPROPRIATE CURING COMPOUND AS SOON AS CEMENT 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, ASTM A185, ALL ACCESSORIES SHALL BE IN CONFORMANCE WITH ACI 315 REQUIREMENTS. REINFORCING STEEL SHALL HAVE THE FOLLOWING CLEAR COVER UNLESS OTHERWISE NOTED:

|   |        |
|---|--------|
| - CONCRETE CAST AGAINST EARTH   | 3"     |
| - FORMED SURFACES IN CONTACT WITH SOIL, SEWAGE, WATER OR EXPOSED TO WEATHER | 2"     |
| - FORMED SURFACES NOT EXPOSED TO WEATHER OR IN CONTACT WITH SOIL:           |        |
| - SLABS, WALLS, AND JOIST   | 3/4"   |
| - BEAMS AND COLUMNS   | 1-1/2" |

LAP SPLICES SHALL BE AS SHOWN ON THE DRAWINGS. FOR LAP SPLICES NOT SHOWN ON THE DRAWINGS, THE CONTRACTOR SHALL OBTAIN ENGINEER'S APPROVAL.

THE CONTRACTOR SHALL PREPARE PLACING DRAWINGS AND SCHEDULES IN CONFORMANCE WITH ACI 315 REQUIREMENTS.

**PRE-ENGINEERED METAL BUILDING**

FURNISH ALL LABOR, MATERIALS, EQUIPMENT AND INCIDENTALS REQUIRED TO DESIGN, FABRICATE, DELIVER TO JOB SITE AND ERECT THE PRE-ENGINEERED METAL BUILDING AS SHOWN ON THE DRAWINGS.

PRE-ENGINEERED METAL BUILDING MANUFACTURER TO PROVIDE WALL PANELS AND WALL GIRTS TO BE REMOVABLE, WITHOUT AFFECTING THE REMAINING STRUCTURE, ON THE WEST SIDE BETWEEN COLUMN LINES A-B, C-D AND D-E AND ON THE EAST SIDE BETWEEN COLUMN LINES B-C FOR THE PURPOSE OF REMOVAL OF THE TANKS FOR FUTURE REPAIR OR REPLACEMENT. PROVIDE WATERTIGHT SIDELAPS/EDGES AT EACH REMOVABLE SECTION. PRIMARY AND SECONDARY FRAMING SHOWN ON THE DRAWINGS TO BE MODIFIED AS REQUIRED.

SUBMIT TO THE ENGINEER AS PROVIDED COMPLETE PLANS SHOWING SUPERSTRUCTURE COLUMN LINES SET TO COORDINATE WITH CONCRETE DIMENSIONS SHOWN. INDICATE ANCHOR BOLT SIZE AND LOCATIONS AND FOUNDATION REACTIONS IN KIPS AT ALL COLUMNS.

SUBMIT LETTER AND CALCULATIONS SIGNED AND SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF FLORIDA CERTIFYING THAT THE STRUCTURAL FRAMING AND COVERING PANELS PROPOSED MEET THE DESIGN CRITERIA.

PRIOR TO FOUNDATION CONSTRUCTION, PRE-ENGINEERED METAL BUILDING SUBMITTAL MUST BE APPROVED. CONSTRUCTION DETAILS MAY BE VARIED TO SUITE MANUFACTURER'S STANDARD DESIGN.

**DESIGN CRITERIA:**

|                         |             |
|-------------------------|-------------|
| ROOF DEAD LOAD:         | SELF WEIGHT |
| SUPERIMPOSED DEAD LOAD: | 8 PSF       |
| ROOF LIVE LOAD:         | 20 PSF      |

**WIND LOADS:**

|  |                    |
|--|--------------------|
| - ULTIMATE DESIGN WIND SPEED, V <sub>ult</sub> (3-SECOND GUST) | 150 MPH            |
| - NOMINAL DESIGN WIND SPEED, V <sub>50</sub>                   | 117 MPH            |
| - RISK CATEGORY  | III                |
| - EXPOSURE CATEGORY  | B                  |
| - DESIGN PRESSURES: PER ASCE 7-10                              |                    |
| - ENCLOSURE CLASSIFICATION                                     | PARTIALLY ENCLOSED |
| - INTERNAL PRESSURE COEFFICIENT, C <sub>pi</sub>               | ±0.55              |

ALL BUILDING COLUMNS SHALL BE DESIGNED AS "PIN" CONNECTED. COLUMN ENDS SHALL NOT TRANSFER MOMENTS TO FOUNDATION.

COLUMN AND BASE PLATE SIZE SHALL ALLOW FOR A MINIMUM ANCHOR BOLT DISTANCE OF 8" TO ANY VERTICAL EDGE OF CONCRETE UNLESS SPECIFICALLY APPROVED BY ENGINEER. THE MINIMUM ANCHOR ROD EMBEDMENT DEPTH IS 1'-0".

**MANUFACTURERS:**

BUTLER MANUFACTURING COMPANY, KANSAS CITY, MISSOURI; VARCO PRUDEN BUILDINGS, MEMPHIS, TENNESSEE; OR EQUAL.

**MATERIALS:**

FRAMING - PRIMARY AND SECONDARY FRAMING SHALL CONSIST OF SHOP FABRICATED WELDED UP PLATE SECTION COLUMNS AND ROOF BEAMS COMPLETE WITH NECESSARY SPLICE, BASE, CAP, COMPRESSION, AND STIFFENER PLATES WITH BOLT CONNECTION HOLES FOR FIELD ASSEMBLY. PURLINS AND GIRTS SHALL BE 8-IN MIN. DEEP "Z" SECTIONS. EAVE STRUTS SHALL BE 8-IN MIN. DEEP "C" SECTIONS. LATERAL BRACING SHALL BE DESIGNED BY THE BUILDING MANUFACTURER. ALL BOLTS FOR STRUCTURAL FRAMING CONNECTIONS SHALL BE HIGH STRENGTH BOLTS CONFORMING TO ASTM A325.

WALL SYSTEM - EXTERIOR WALL PANELS SHALL BE BUTLERBIB PANELS AS FURNISHED BY BUTLER MANUFACTURING COMPANY OR EQUAL. PANEL MATERIAL SHALL BE ASTM A448, GRADE C, 28 GAUGE GALVANIZED STEEL G90 COATING CONFORMING TO ASTM A525. FURNISH EXTERIOR AND INTERIOR TRIM AS REQUIRED FOR ALL DOORS, FLASHINGS, CLOSURES.

ROOF SYSTEM - THE BUILDING ROOF PANELS SHALL BE PRECISION ROLL FORMED MR-20 PANELS AS FURNISHED BY BUTLER MANUFACTURING COMPANY OR EQUAL. PANEL MATERIAL AS SPECIFIED SHALL BE 20 GAUGE GALVANIZED STEEL (80,000 PSI YIELD) G90 COATING CONFORMING TO ASTM A525. GUTTERS, DOWNSPOUTS AND TRIM PIECES ARE TO BE STANDARD PRODUCTS INSTALLED PER THE MANUFACTURER'S INSTRUCTIONS.

FASTENERS - FASTENERS FOR WALL AND ROOF SYSTEM SHALL BE HOT DIPPED GALVANIZED AND FURNISHED WITH AN INTEGRAL GALVANIZED STEEL-BACKED NEOPRENE WASHER. ALL EXPOSED FASTENERS SHALL BE PREPARED TO MATCH WALL COLOR.

ANCHOR BOLTS - ANCHOR BOLTS SHALL BE F1554 GRADE 36 HOT DIPPED GALV. HEAVY HEX HEADED. ANCHOR BOLTS SHALL BE DESIGNED BY THE BUILDING MANUFACTURER AND FURNISHED BY THE CONTRACTOR.

**PAINTING:**

ALL STRUCTURAL STEEL SHALL BE SHOP PREPARED AND FIELD PAINTED PRIOR TO ERECTION. PRIOR TO PAINTING, ALL STEEL SHALL BE CLEANED OF LOOSE RUST, LOOSE MILL SCALE, DIRT AND OTHER FOREIGN MATERIAL. COAT ALL STRUCTURAL STEEL WITH THE FOLLOWING COATING SYSTEM BY TNEPEC (OR ENGINEER APPROVED EQUAL BY PPG PROTECTIVE & MARINE COATINGS OR CARBOLINE).

PRIMER - TNEPEC SERIES 66-1211 @3.0-5.0 MILS DFT  
INTERMEDIATE - TNEPEC SERIES 66-COLOR @4.0-6.0 MILS DFT  
FINISH - TNEPEC SERIES 73-COLOR @2.5-4.0 MILS DFT

INTERIOR/EXTERIOR ROOF AND WALL PANEL FINISH SHALL BE STANDARD BUTLER COTE 500 FP PAINT (70% KYNAR 500 FLUOROPOLYMER).

PAINT COLOR TO BE APPROVED BY THE OWNER.



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Florida P.E. No. 34053  
e/T Engineering Technologies, Inc.  
Certificate of Authorization No. 8414  
3551 W. Lake Mary Blvd, Suite 210  
Lake Mary, FL 32746

Designed JS  
Drawn JS  
Checked\_DNN  
Reviewed\_CIK  
Approved\_BE  
Date 10/2014

ORANGE COUNTY EASTERN WATER RECLAMATION FACILITY (EWRF)  
HYPOCHLORITE STORAGE IMPROVEMENTS

STRUCTURAL

HYPOCHLORITE STORAGE BUILDING ELEVATIONS AND GENERAL NOTES

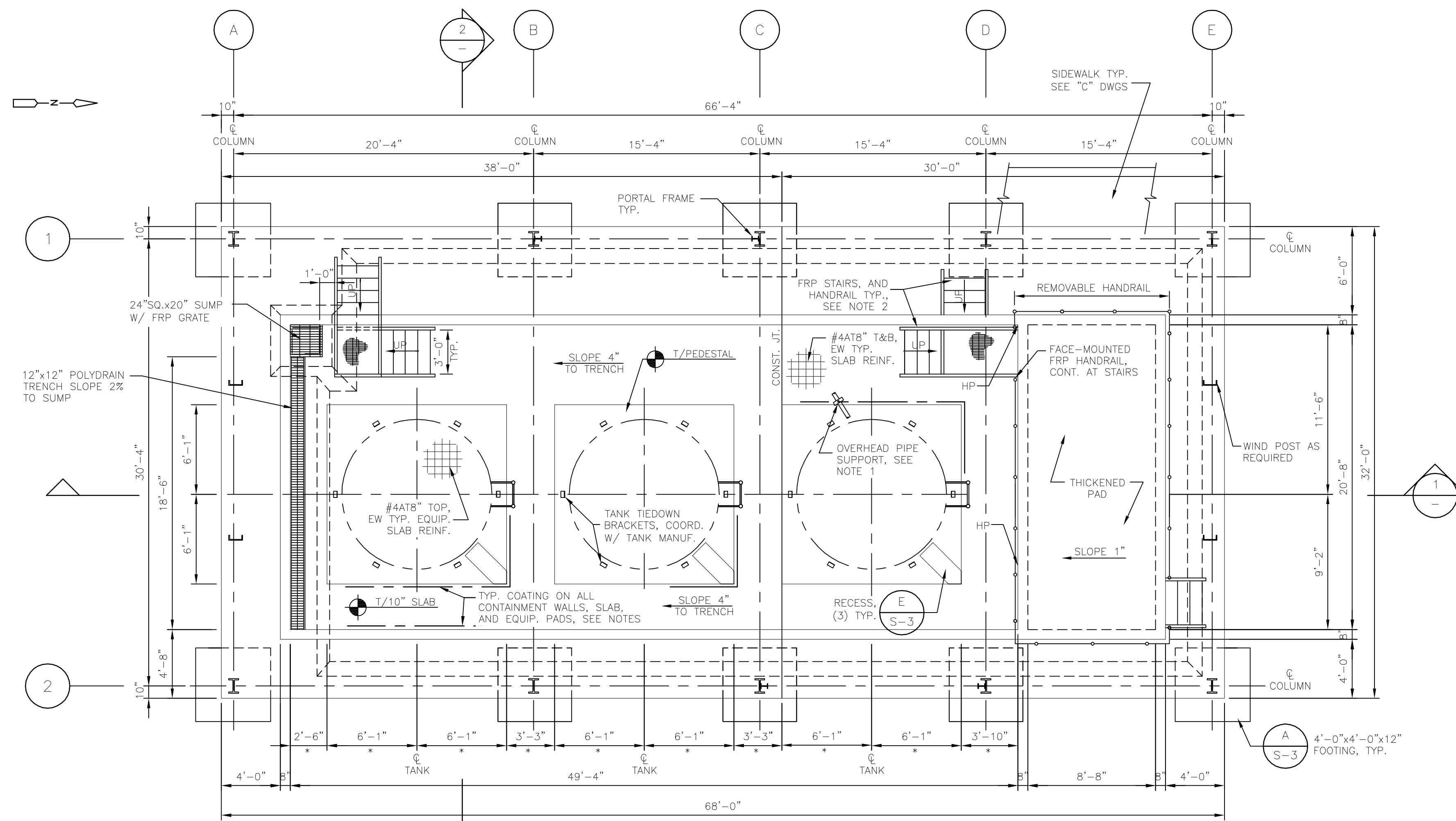
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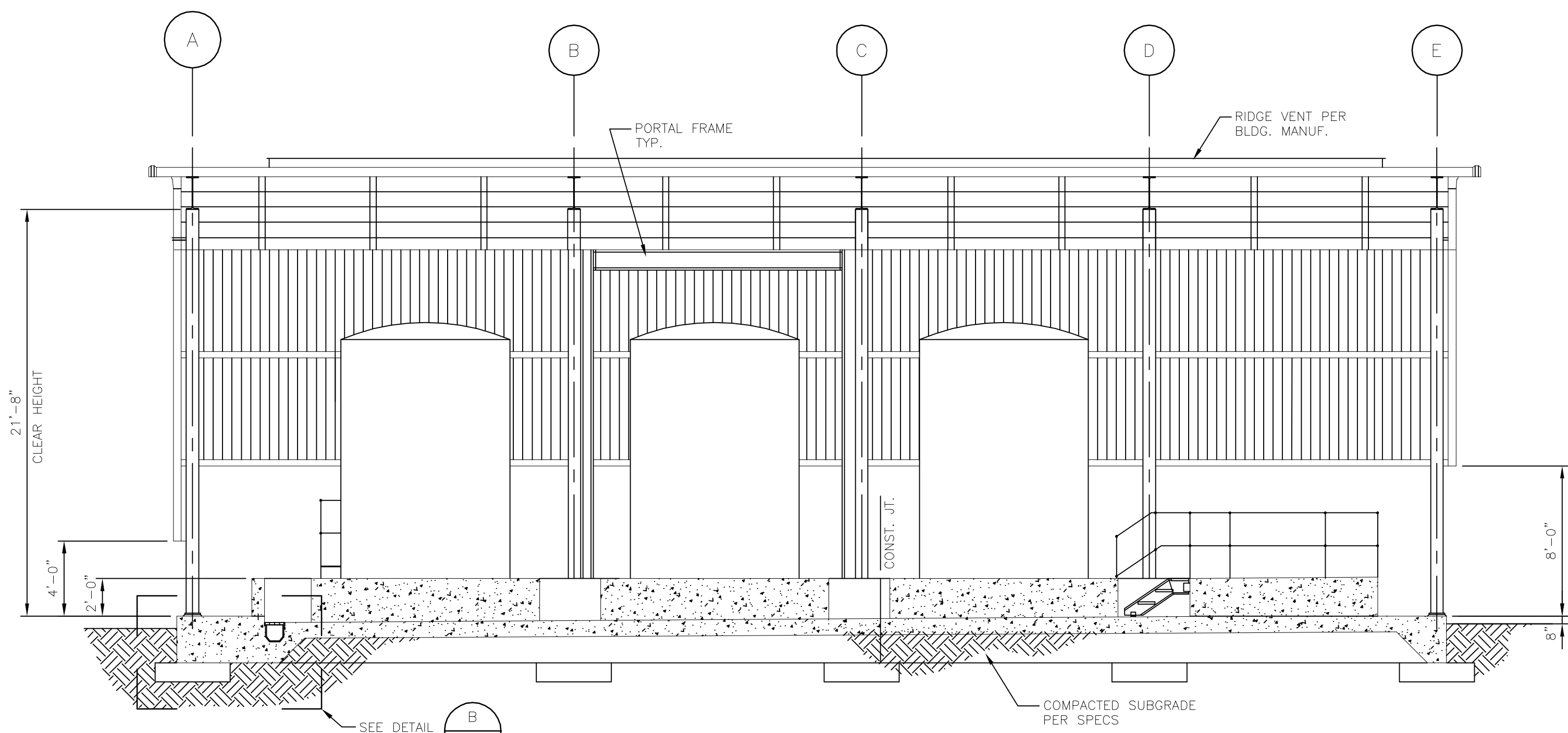
REISS ENGINEERING, INC.  
1016 SPRING VILLAS PT  
WINTER SPRINGS, FL 32708  
(407) 679-5358



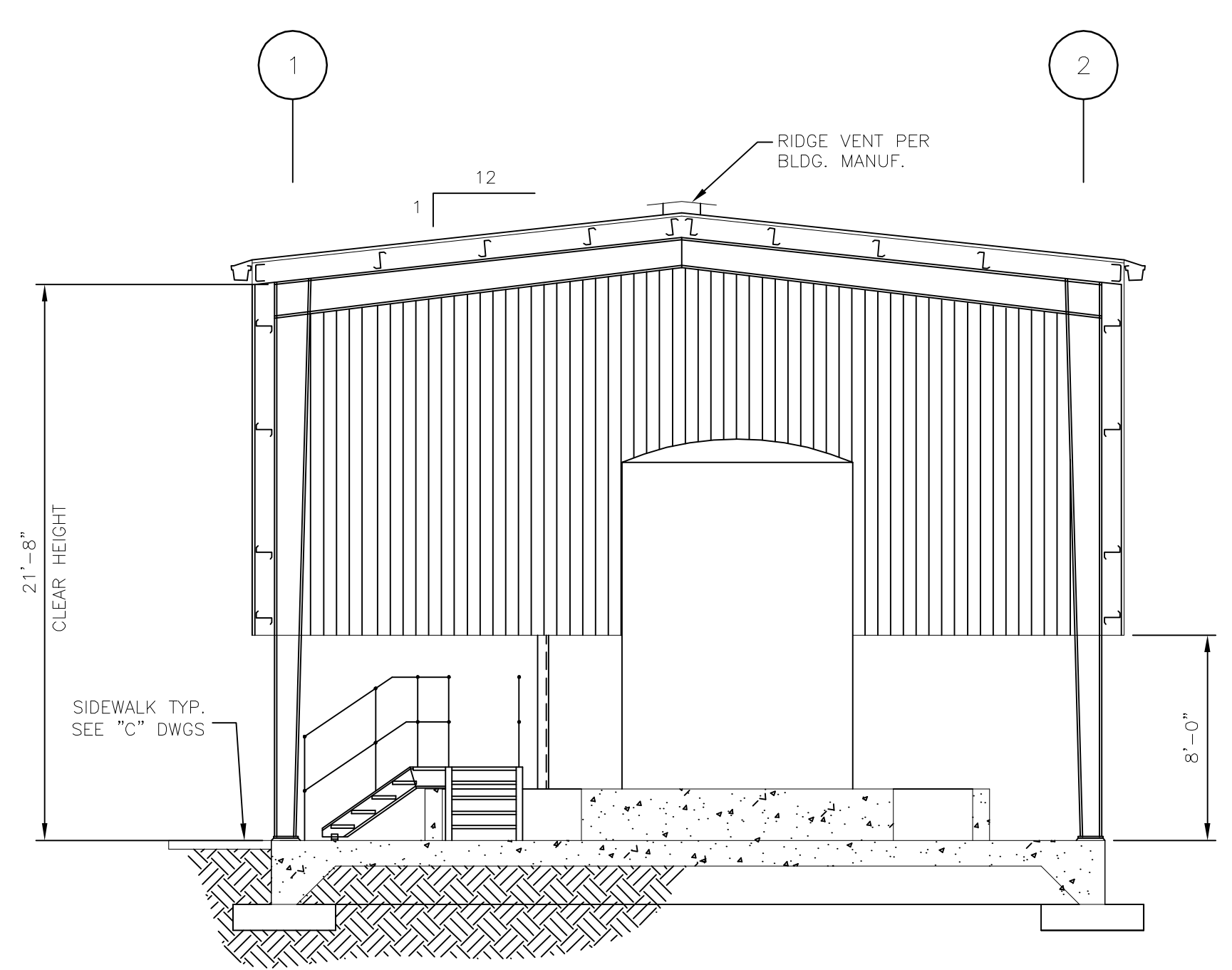
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 Rev by: ROBERT L. LUPU



BASE SLAB  
 PLAN  
 3/16"=1'-0"



SECTION  
 1  
 3/16"=1'-0"



SECTION  
 2  
 3/16"=1'-0"

- GENERAL NOTES**
1. PROVIDE GALVANIZED ROD AND PIPE CLEVIS HANGER SUPPORT AT EACH FILL PIPING BENT (TYP. 3) AND VENT LOCATION. ATTACH TO UNISTRUT SPANNING TO PURLINS.
  2. FRP STAIRS AND PLATFORM TO USE ALL FRP SHAPES FOR FRAMING AND HANDRAILS. ALL BOLTED CONNECTIONS BETWEEN STRUCTURAL MEMBERS TO USE VINYL ESTER NUTS AND BOLTS. USE A MINIMUM C8X2-3/16X3/8 CHANNEL FOR ALL STRINGERS. ALL STAIR TREADS TO BE FRP. SEE STANDARD DETAILS ON S03 FOR GENERAL GEOMETRY OF FRP HANDRAIL. SEE SPECIFICATION 06615.
- COATING NOTES**
- COAT ELEVATED PUMP PAD FLOOR SLAB AND ALL INTERIOR CONTAINMENT WALL, FLOOR SLAB AND TANKS PAD SURFACES WITH THE FOLLOWING COATING SYSTEM BY TNEMEC (OR ENGINEER APPROVED EQUAL BY PPG PROTECTIVE & MARINE COATINGS OR CARBOLINE):
- 1.) PRIME COAT - EPOXOPRIME SERIES 201 AT 6 MILS
  - 2.) INTERMEDIATE COAT - STRANLOK SERIES 270 AT 30 MILS
  - 3.) TOP COAT - TNEME-GLAZE SERIES 282 AT 10 MILS
- ABRASIVE BLAST SURFACES TO ICRI CSP-5 MINIMUM. WHERE BUG HOLES ARE REVEALED THEY SHALL BE FILLED WITH TNEMEC SERIES 218. ALL ADDITIONAL SURFACE PREPARATION SHALL BE PER MANUFACTURER'S RECOMMENDATIONS. FLOOR SURFACE SHALL HAVE A HEAVY ORANGE PEEL SURFACE PROFILE. COATING COLOR SHALL BE CHOSEN BY OWNER.
- COAT ALL ANCHOR BOLTS AND CONCRETE FASTENERS INSIDE CONTAINMENT AREA WITH THE FOLLOWING COATING SYSTEM BY TNEMEC (OR ENGINEER APPROVED EQUAL BY PPG PROTECTIVE & MARINE COATINGS OR CARBOLINE):
- 1.) PRIME COAT - EPOXOPRIME SERIES 201 AT 6 MILS
  - 2.) TOP COAT - TNEME-GLAZE SERIES 282 AT 6 MILS
- PRIOR TO APPLICATION OF ANY COATINGS ALL SURFACES MUST BE CLEAN, DRY AND ABRADED. REMOVE ALL GREASE, OIL, DIRT, DUST, MOLD, MILDEW, AND OTHER SOLUBLE CONTAMINANTS. SCARIFY THE SURFACE BY HAND OR POWER SANDING.



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Designed JS  
 Drawn JS  
 Checked DNN  
 Reviewed CLK  
 Approved BE  
 Date 10/2014

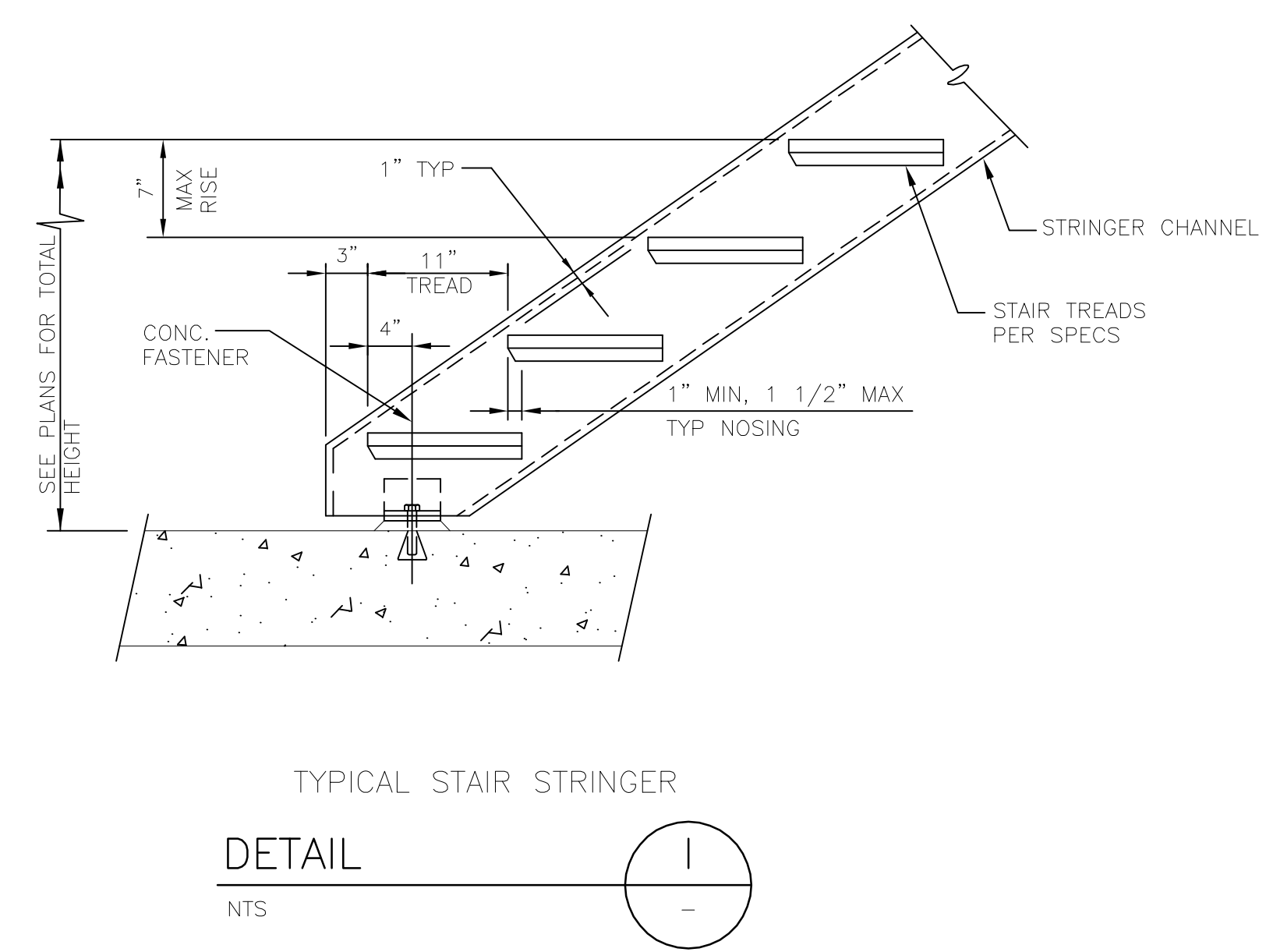
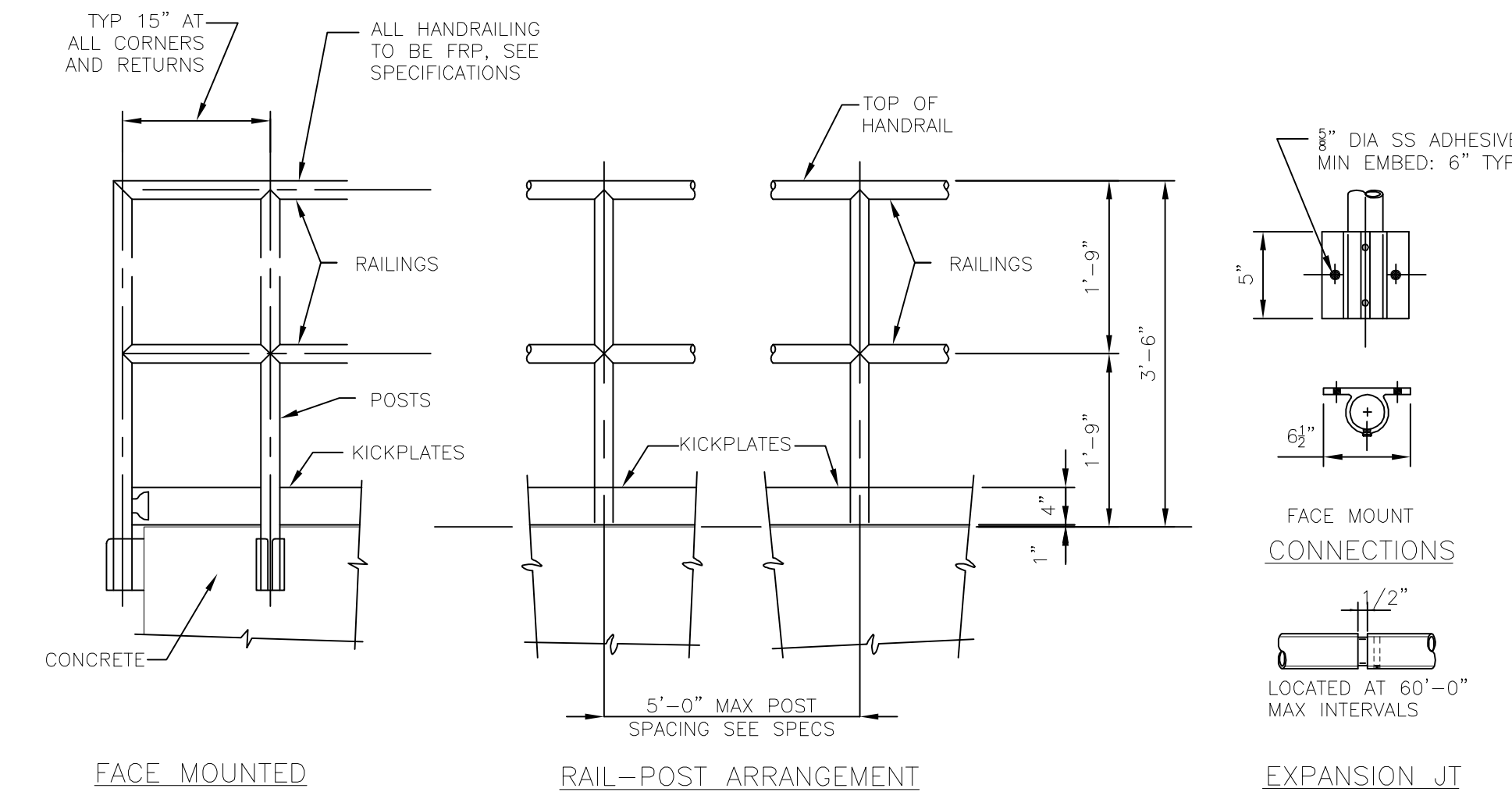
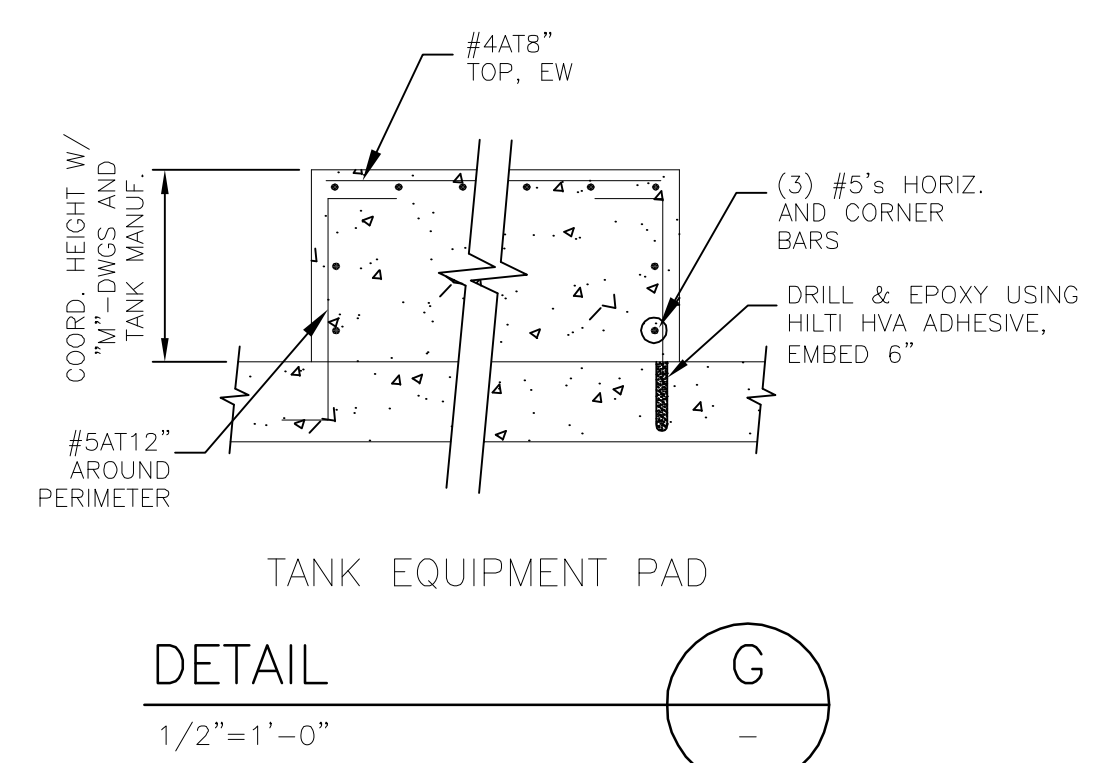
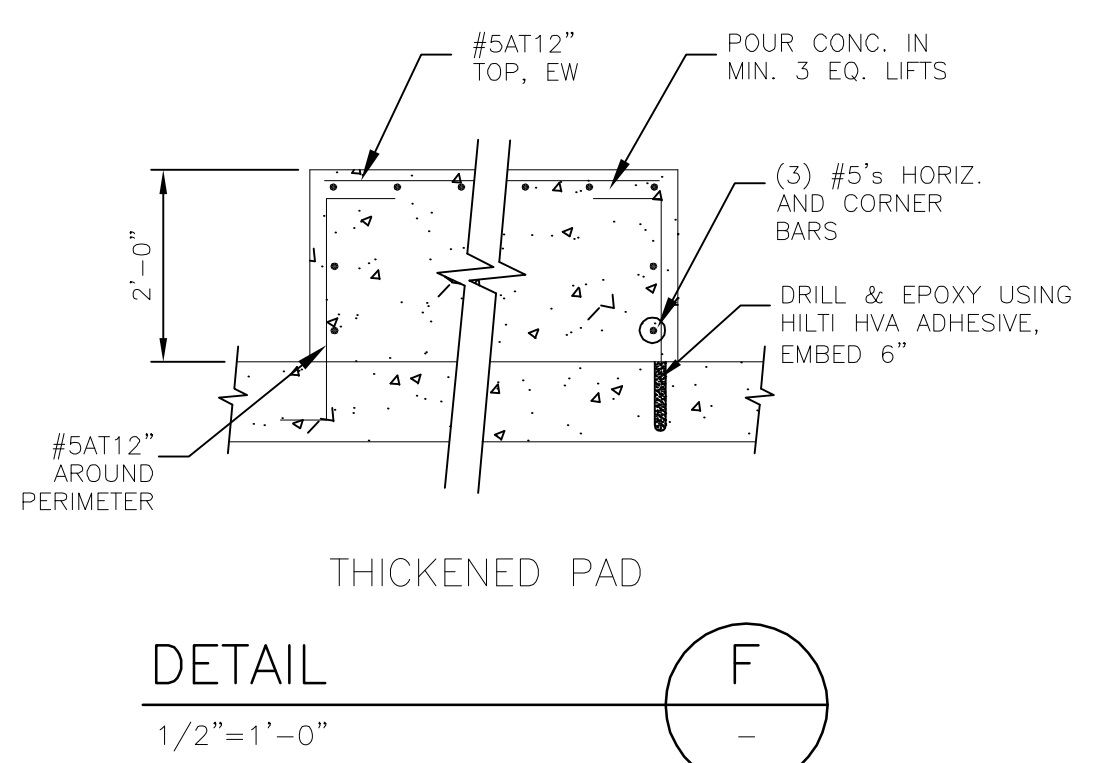
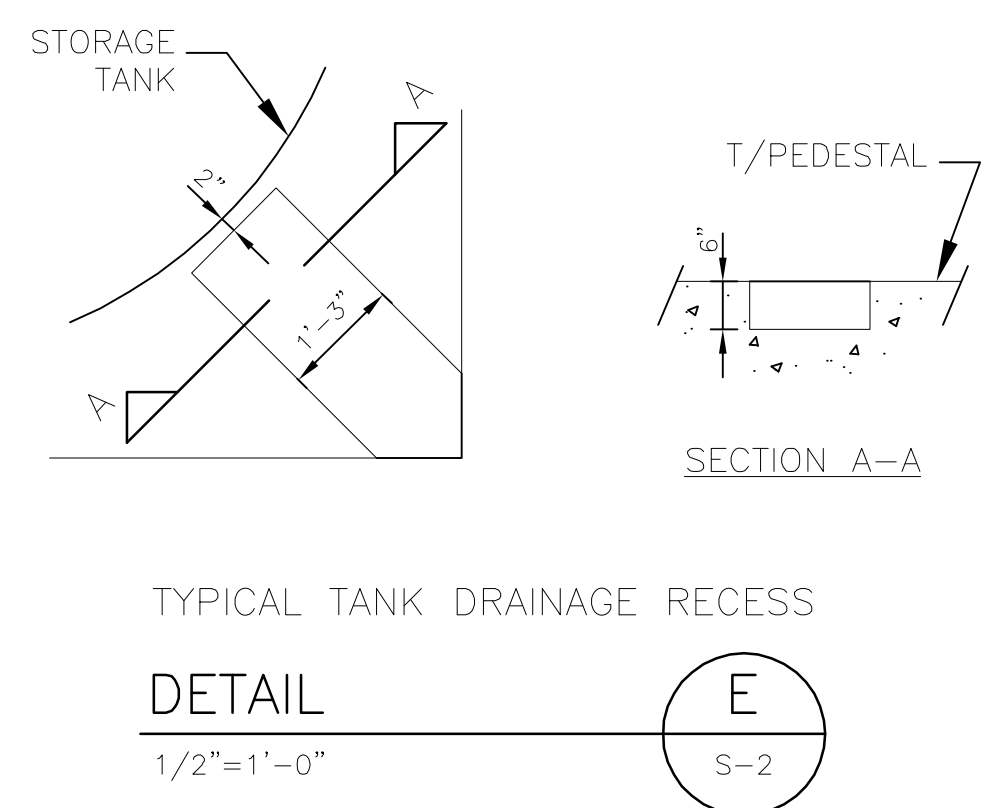
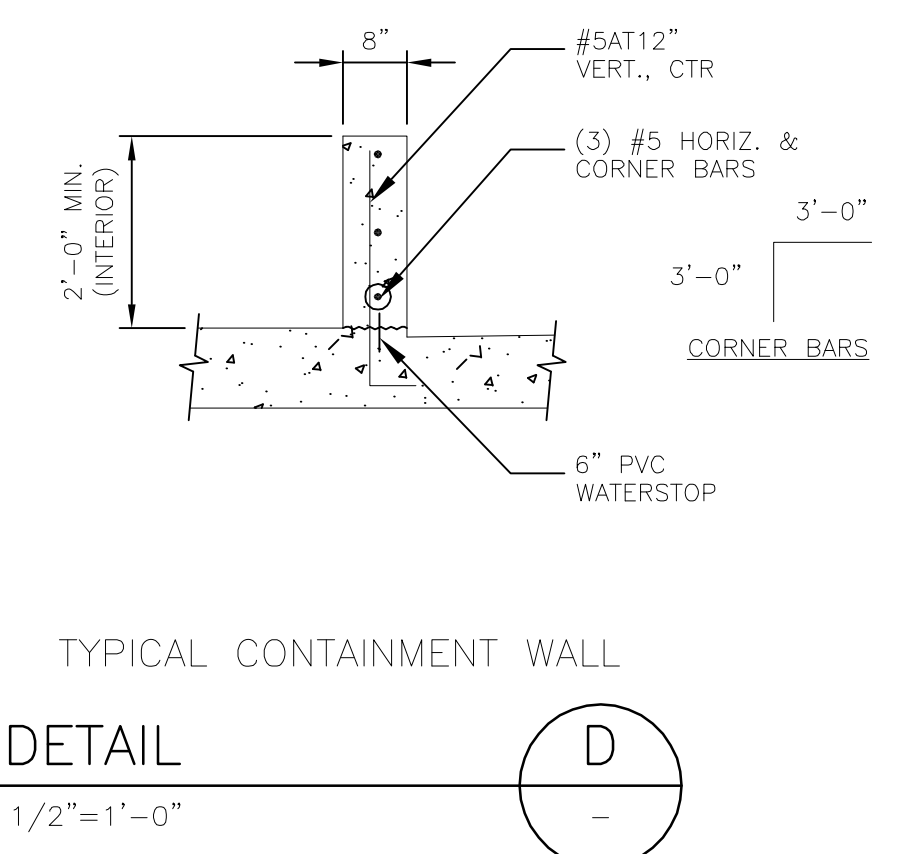
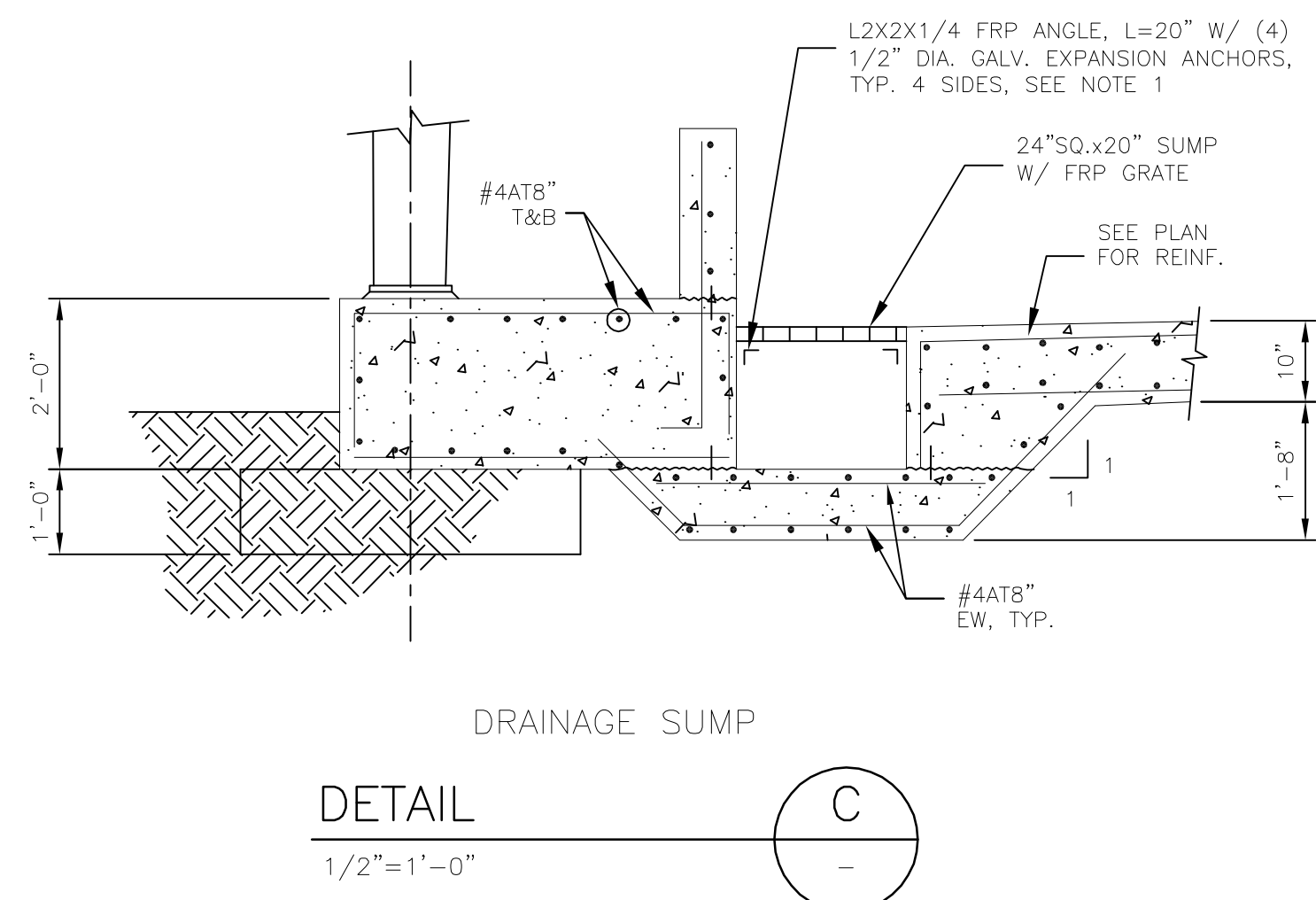
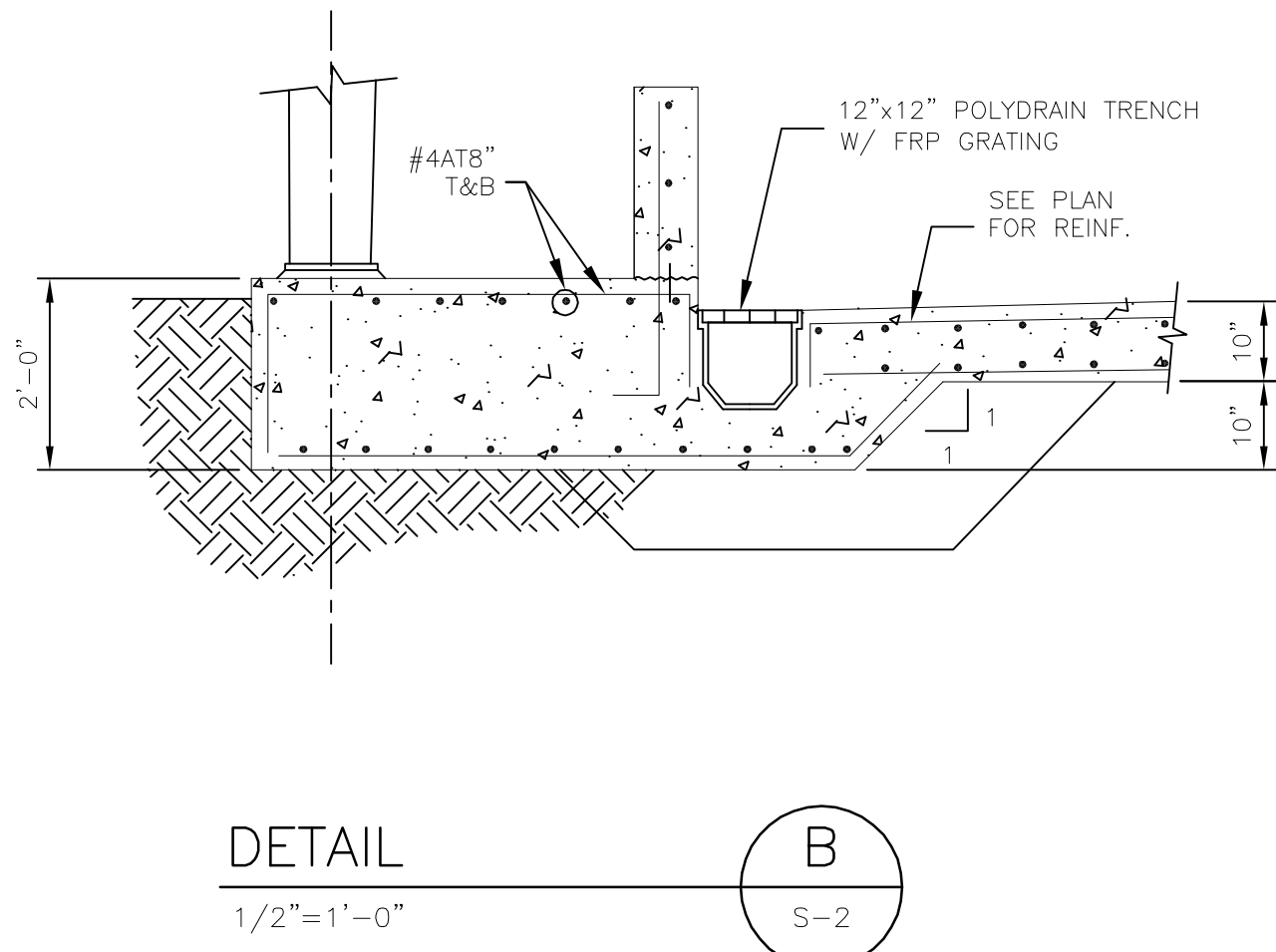
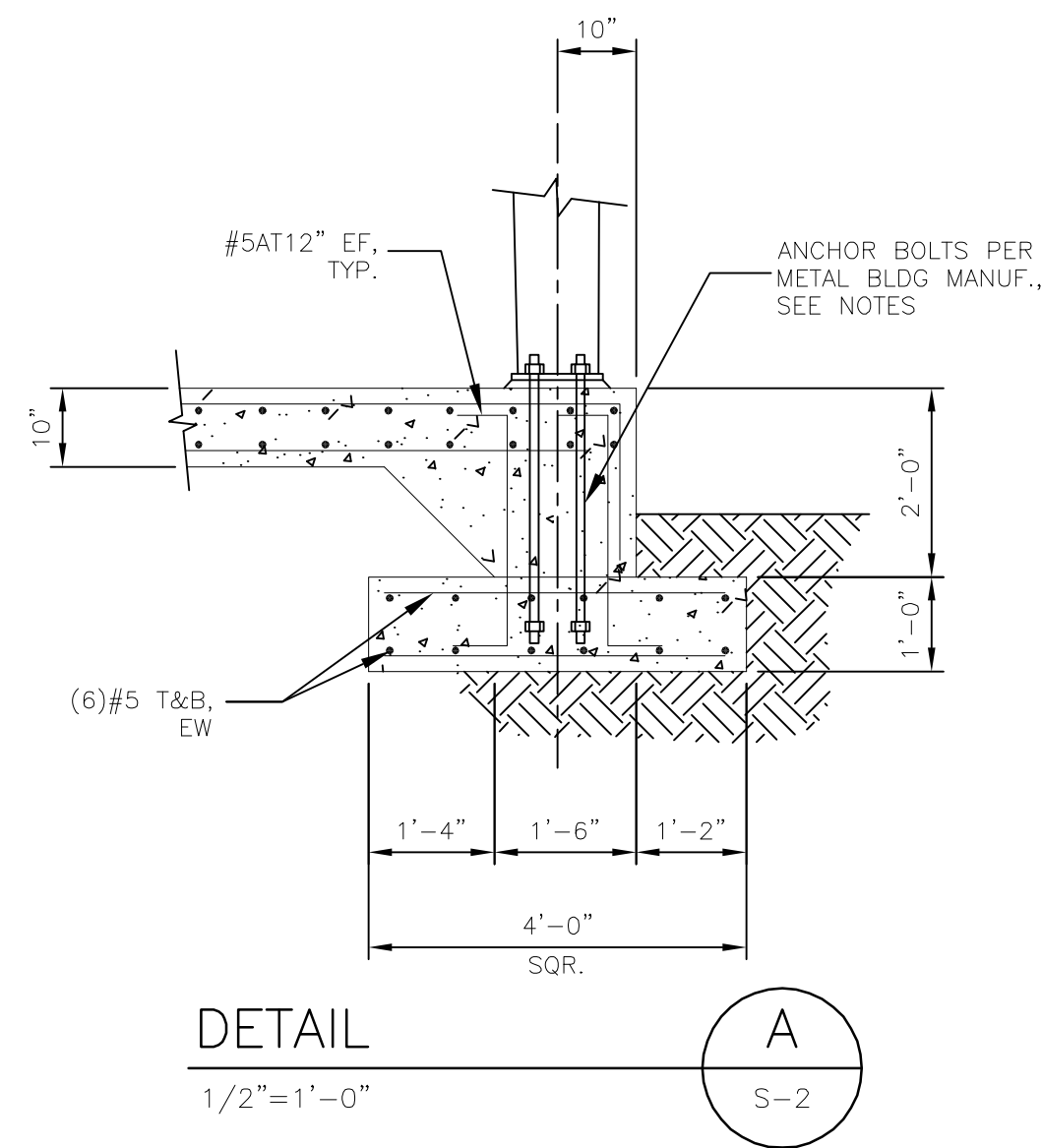
ORANGE COUNTY EASTERN WATER RECLAMATION FACILITY (EWRF)  
 HYPOCHLORITE STORAGE IMPROVEMENTS  
 STRUCTURAL  
 HYPOCHLORITE STORAGE BUILDING PLAN AND SECTIONS

|                        |                        |
|------------------------|------------------------|
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| SCALE:<br>NOTED        | REVISION:<br>0         |
| DRAWING NO.<br>S02     | SHEET NO.:<br>11 OF 28 |





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NOTE:  
1. ALL EXPANSION ANCHORS AND CONCRETE FASTENERS WITHIN THE CONTAINMENT AREA ARE TO BE COATED WITH MASTERSEAL CP 150 BY BASF UPON FINAL INSTALLATION.



| REV | DATE    | DESCRIPTION    | BY |
|-----|---------|----------------|----|
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Designed JS  
Drawn JS  
Checked DNN  
Reviewed CLK  
Approved BE  
Date 10/2014

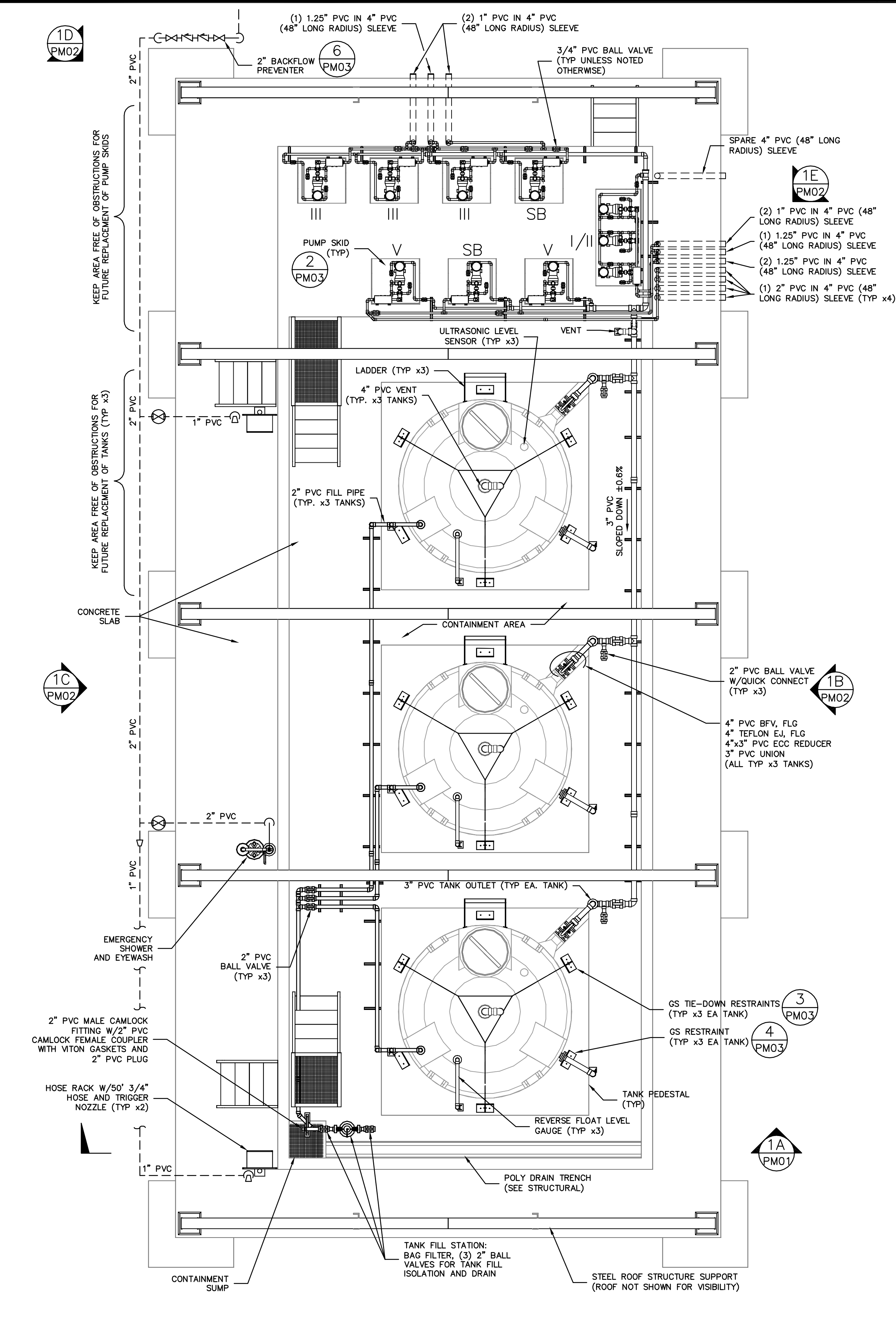
ORANGE COUNTY EASTERN WATER RECLAMATION FACILITY (EWRF)  
HYPOCHLORITE STORAGE IMPROVEMENTS  
STRUCTURAL  
STRUCTURAL DETAILS

|              |          |
|--------------|----------|
| PROJECT NO.: | 110004   |
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| REVISION:    | 0        |
| DRAWING NO.: | S03      |
| SHEET NO.:   | 12 OF 28 |





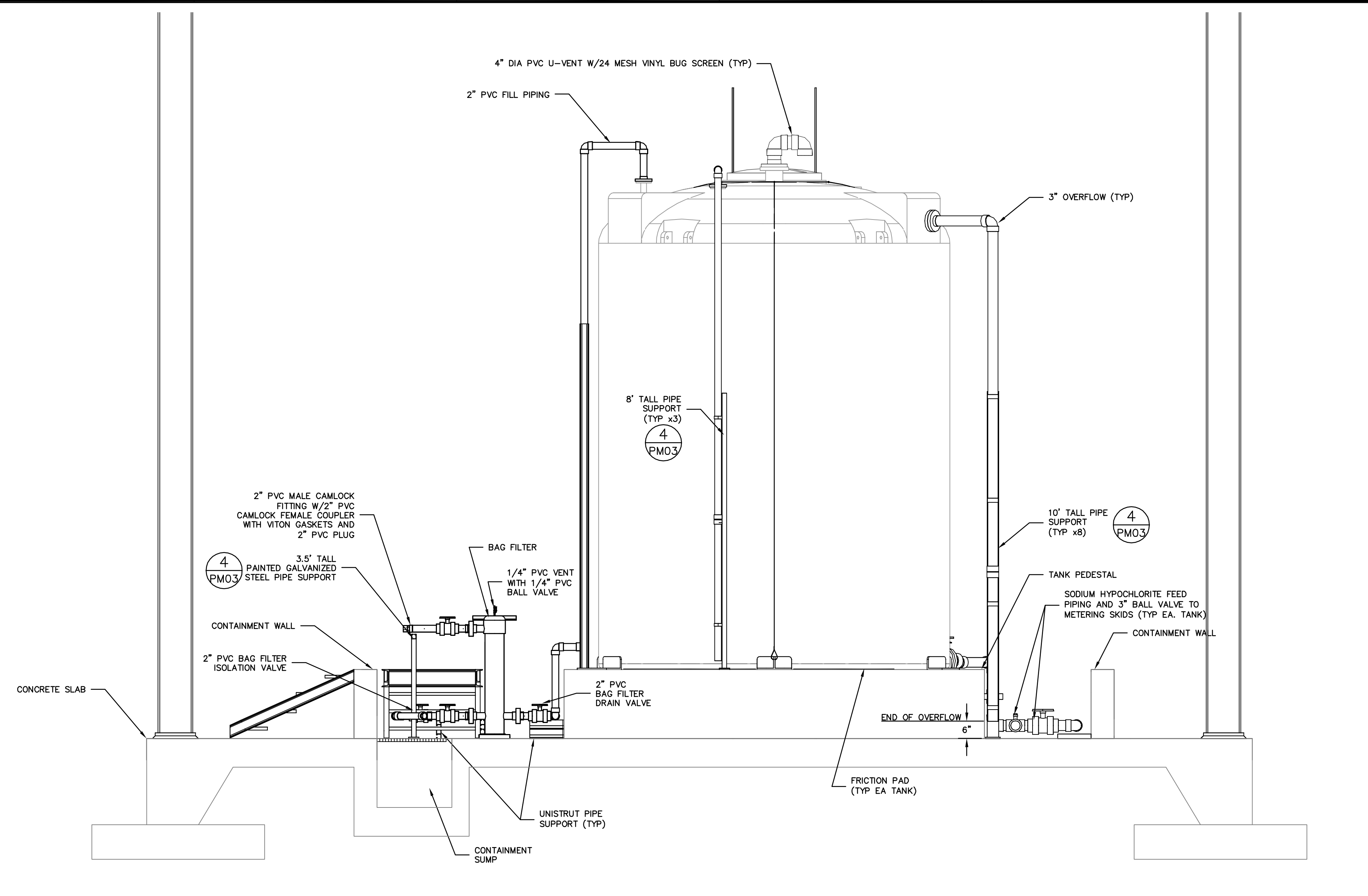
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NOTE:  
 1. ONE OF THE TWO 3/4\"/>

1 HYPOCHLORITE STORAGE BUILDING - PLAN  
 SCALE: 1/4\"/>

NOTES:  
 1. BAG FILTER SHALL BE ALL PVC SIMPLEX BAG FILTER, DOUBLE LENGTH, W/VITON SEALS BY HAYWARD FLOW CONTROL SYSTEMS, OR APPROVED EQUAL, W/1 MICRON TEFLON FELT FILTER BAG, SIZE #2 W/TITANIUM RING AND TEFLON THREAD.  
 2. PROVIDE 1\"/>



1A HYPOCHLORITE STORAGE BUILDING - SECTION  
 PMO1 SCALE: 1/2\"/>



| REV | DATE    | DESCRIPTION    | BY  |
|-----|---------|----------------|-----|
| 0   | 10/2014 | ISSUED FOR BID | RLI |

Issue Certification  
 Curtis I. Kunihiro, P.E.  
 Florida P.E. No. 33688  
 Reiss Engineering, Inc.  
 Certificate of Authorization No. 8181  
 1016 Spring Villas Pt.  
 Winter Springs, FL 32708

Designed DNN  
 Drawn RLL  
 Checked \_\_\_\_\_  
 Reviewed DNN  
 Approved CLK  
 Date 10/2014

ORANGE COUNTY EASTERN WATER RECLAMATION FACILITY (EWRF)  
 HYPOCHLORITE STORAGE IMPROVEMENTS  
 PROCESS MECHANICAL  
 HYPOCHLORITE STORAGE PLAN & SECTION

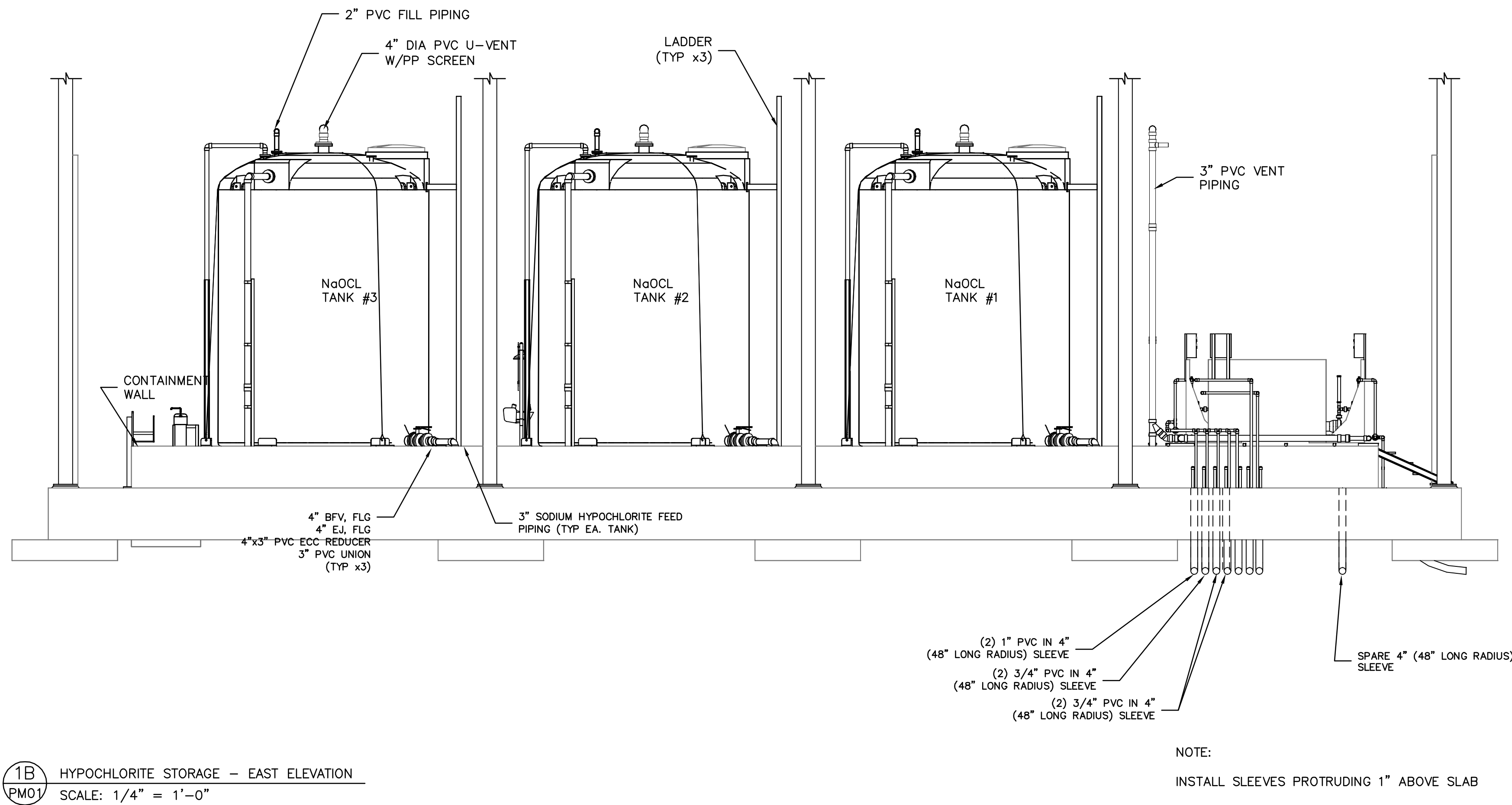
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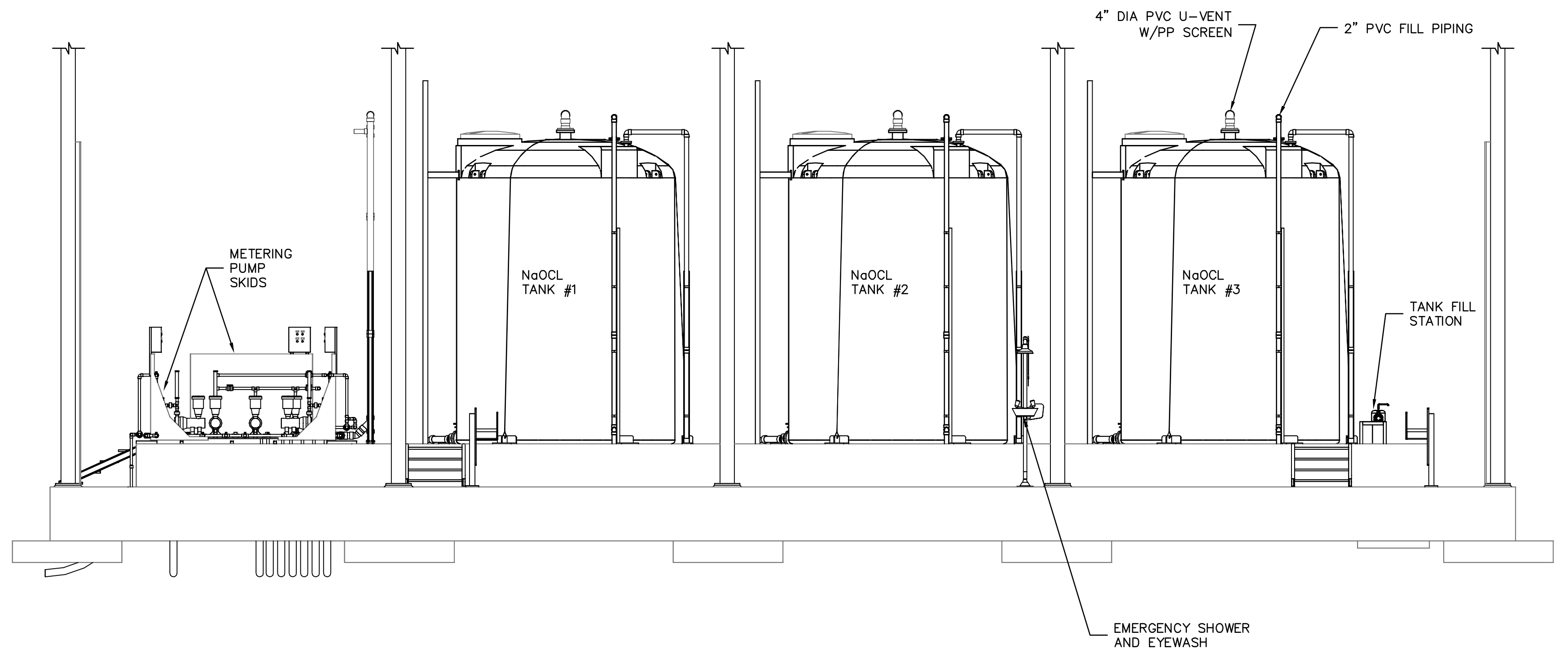
REISS ENGINEERING, INC.  
 1016 SPRING VILLAS PT  
 WINTER SPRINGS, FL 32708  
 (407) 679-5358



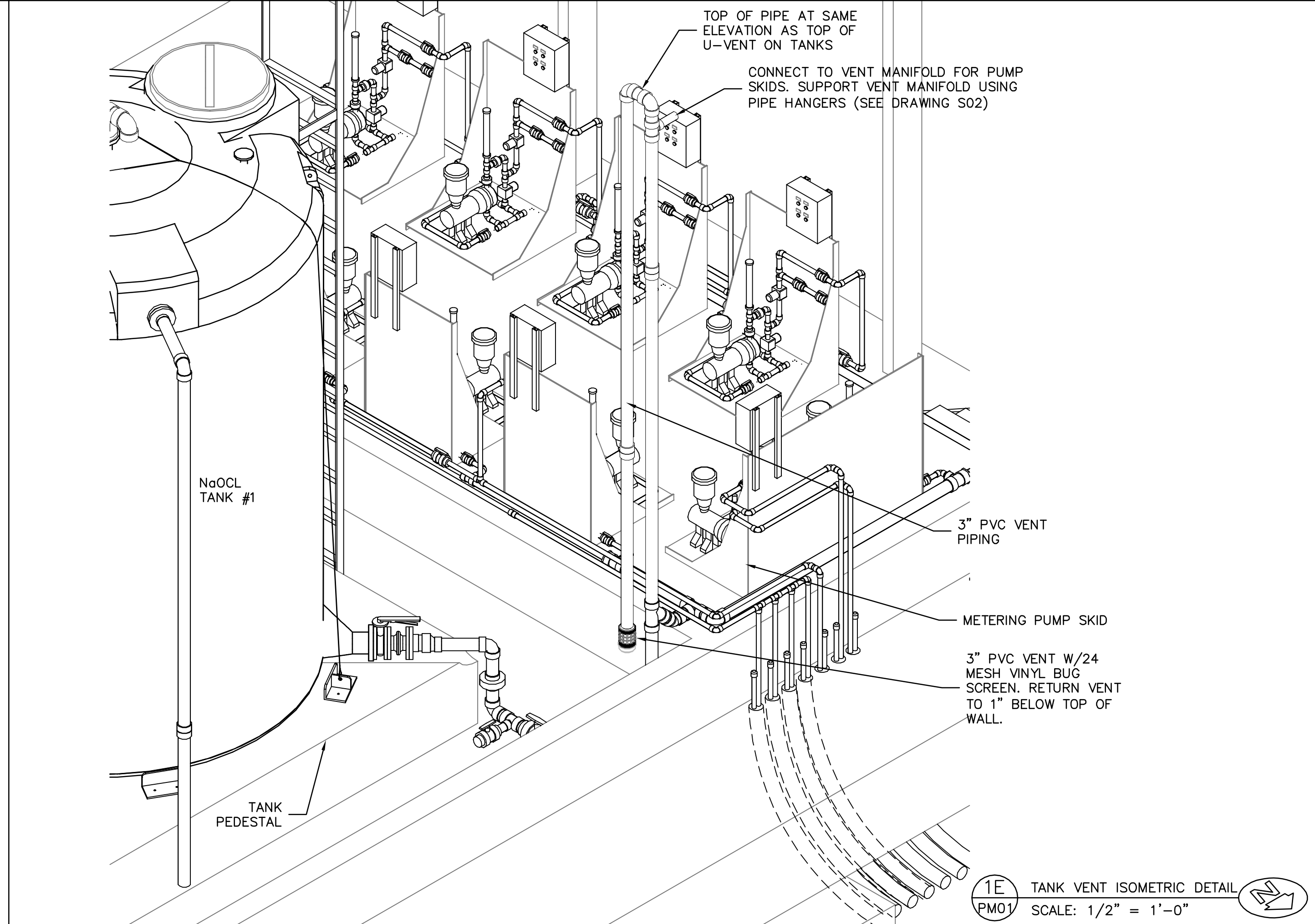
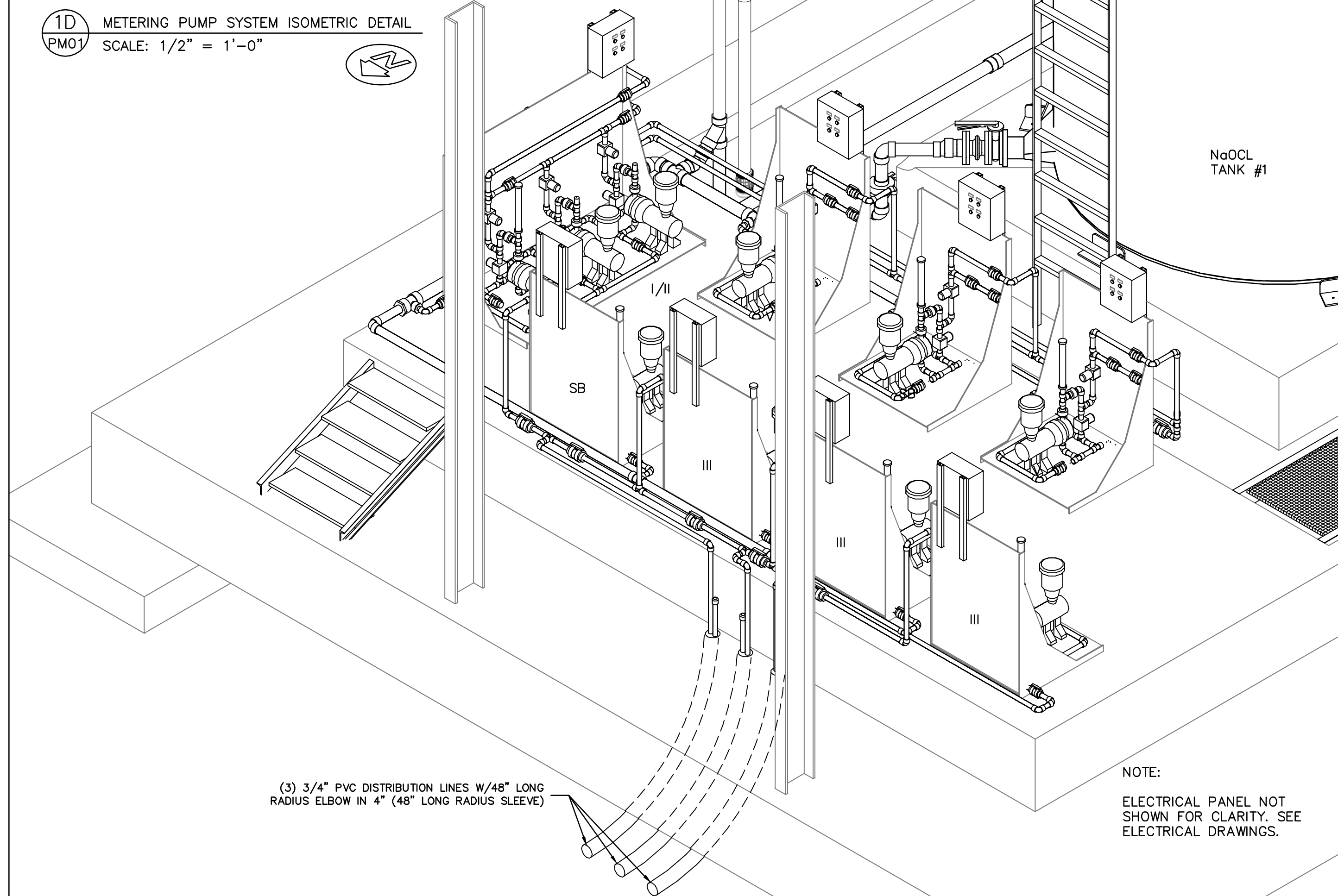
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1B HYPOCHLORITE STORAGE - EAST ELEVATION  
PM01 SCALE: 1/4" = 1'-0"



1C HYPOCHLORITE STORAGE - WEST ELEVATION  
PM01 SCALE: 1/4" = 1'-0"



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1016 Spring Villas Pt.  
Winter Springs, FL 32708

Designed DNN  
Drawn RLL  
Checked  
Reviewed DNN  
Approved CLK  
Date 10/2014

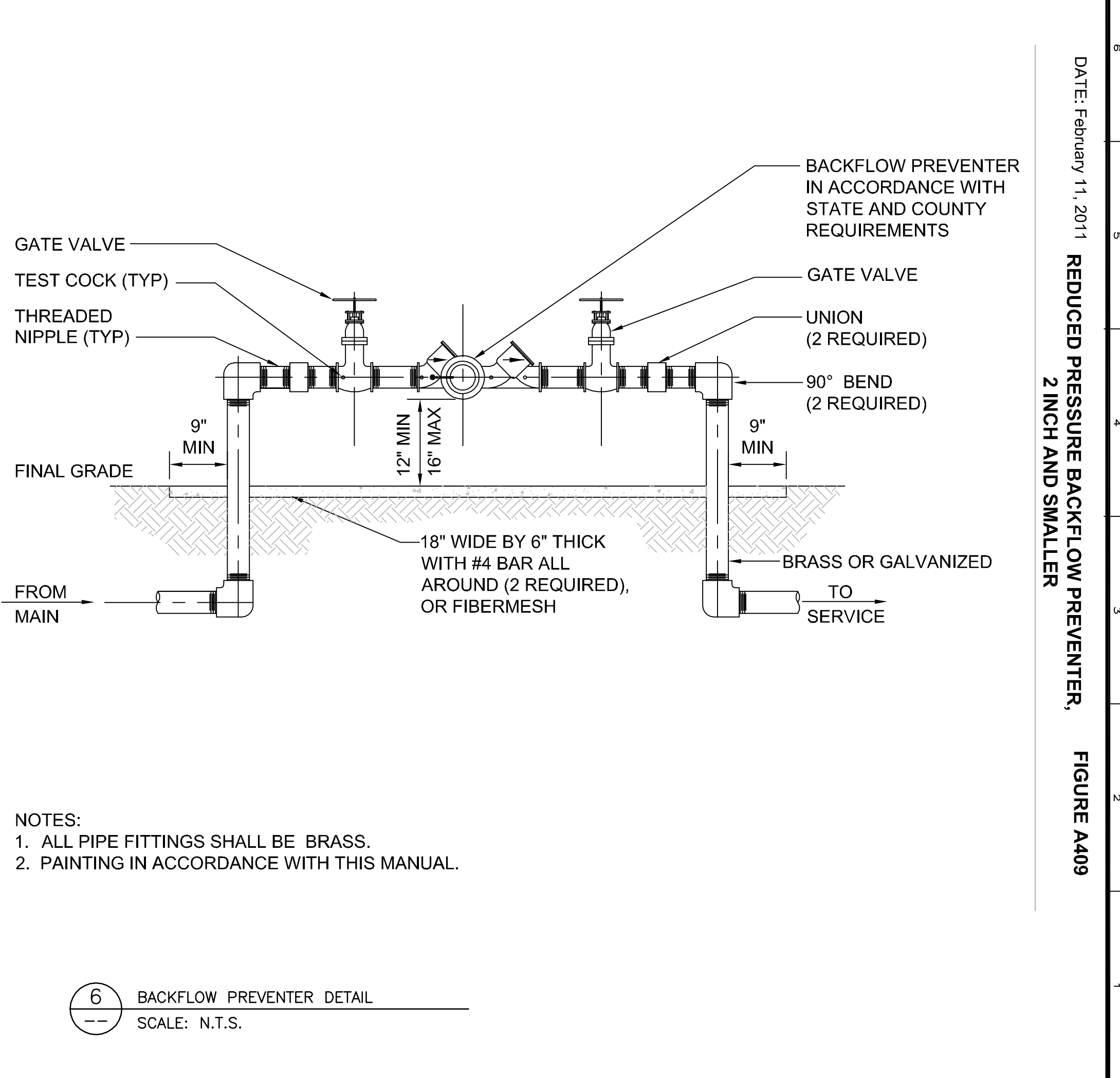
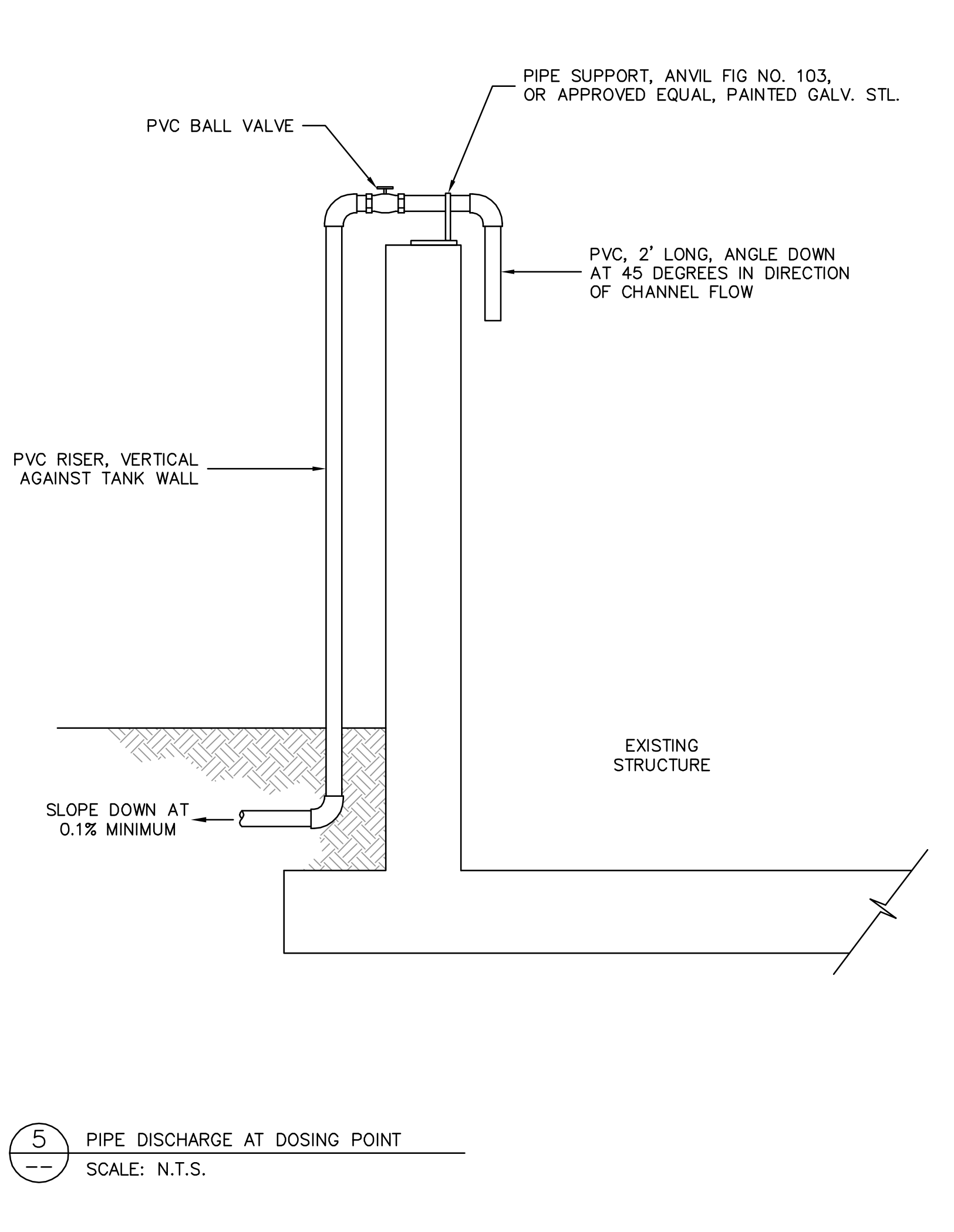
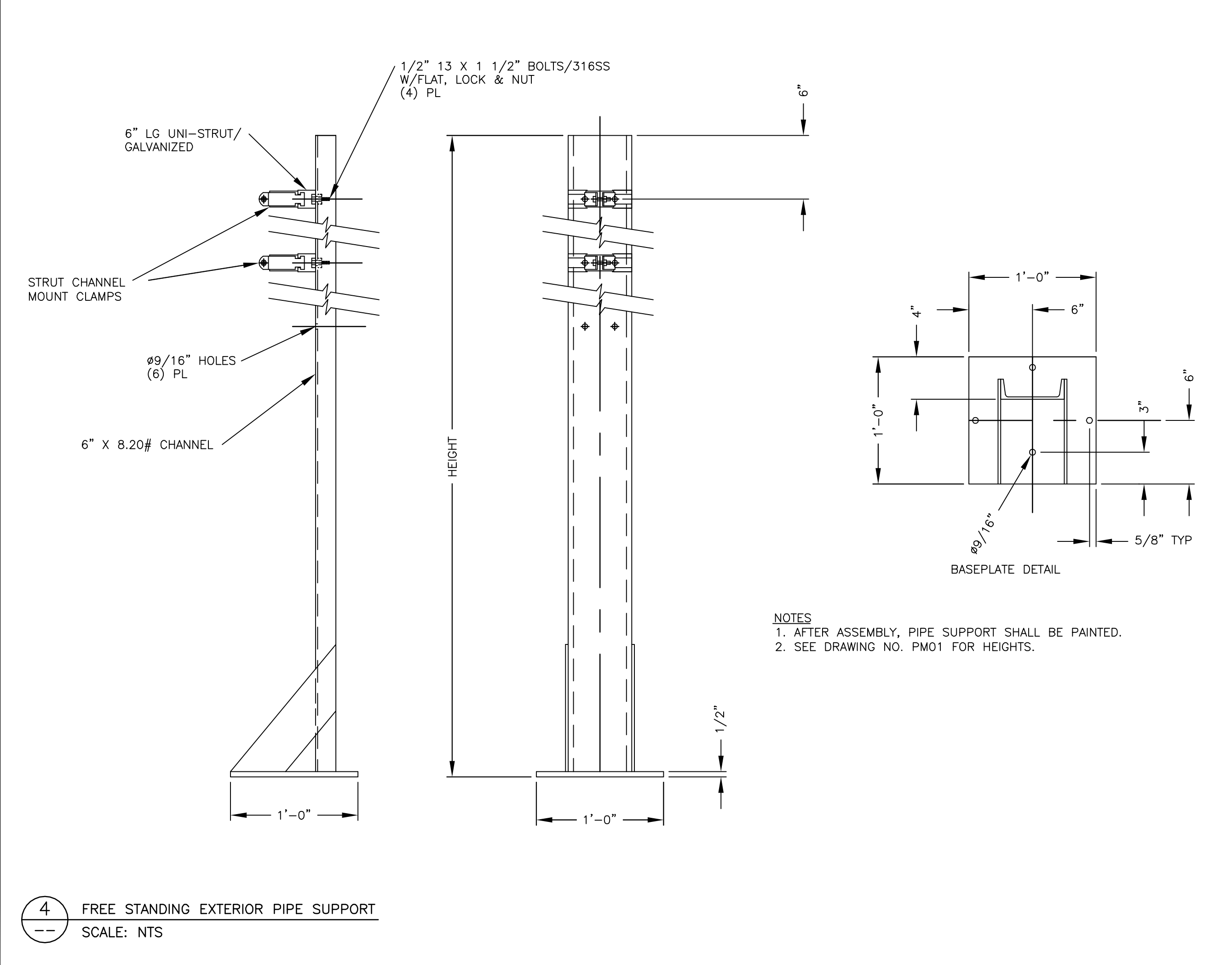
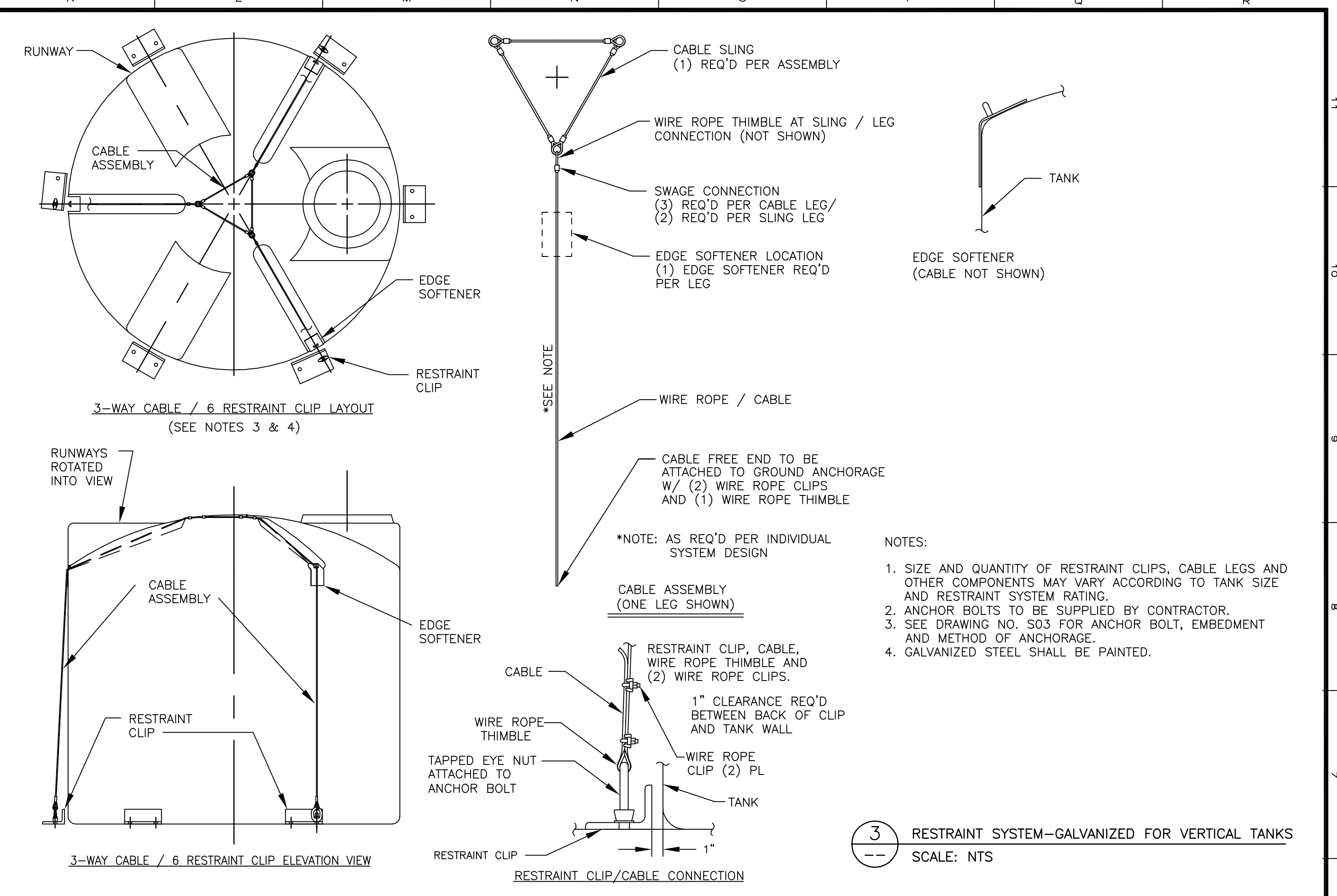
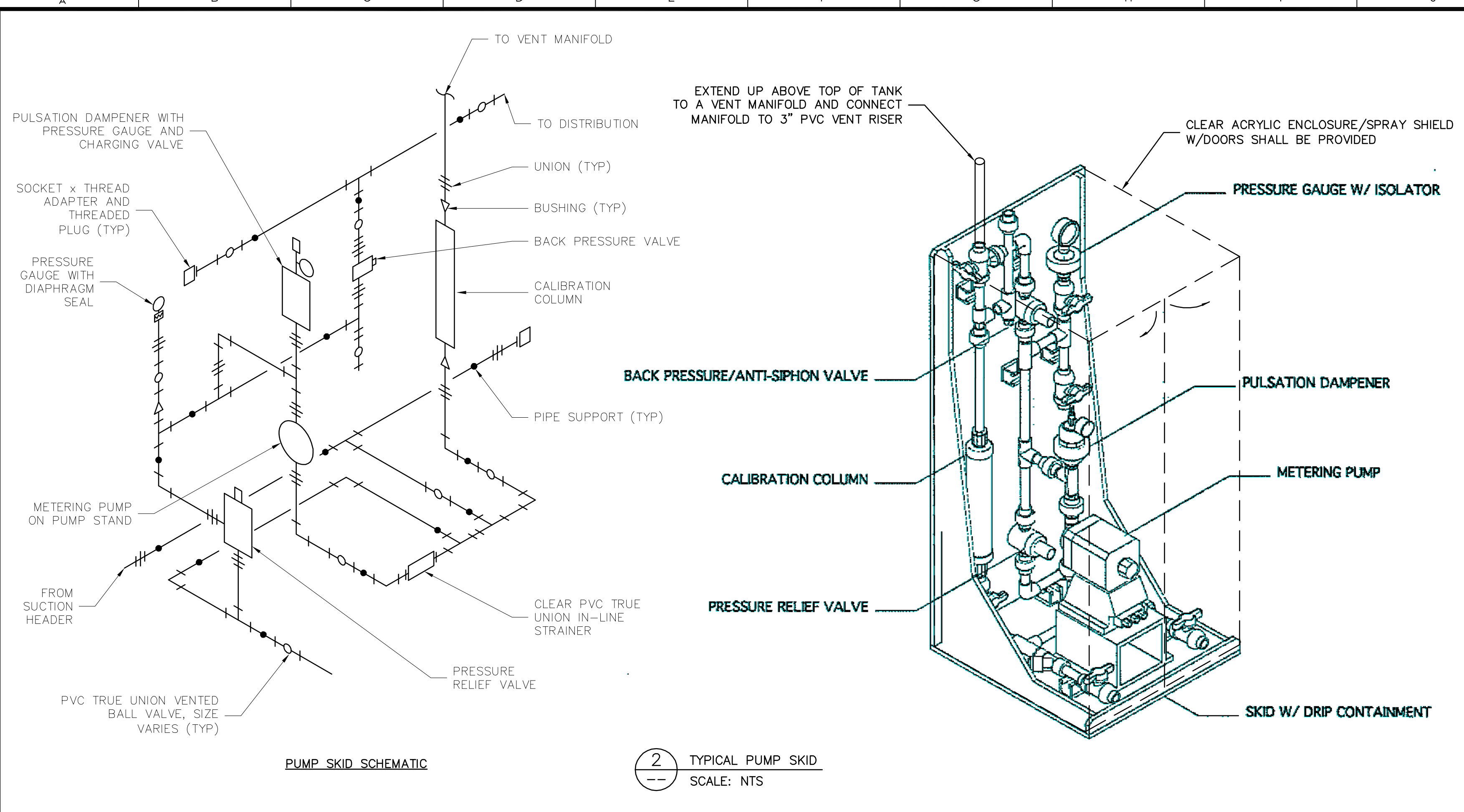
ORANGE COUNTY EASTERN WATER RECLAMATION FACILITY (EWRF)  
HYPOCHLORITE STORAGE IMPROVEMENTS  
PROCESS MECHANICAL  
HYPOCHLORITE STORAGE SECTIONS

|              |          |
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| PROJECT NO.: | 110004   |
| SCALE:       | NOTED    |
| REVISION:    | 0        |
| DRAWING NO.: | PM02     |
| SHEET NO.:   | 14 OF 28 |





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DATE: February 11, 2011 REDUCED PRESSURE BACKFLOW PREVENTER, 2 INCH AND SMALLER FIGURE A409



|     |         |                |     |
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| REV | DATE    | DESCRIPTION    | BY  |

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Certificate of Authorization No. 8181  
1016 Spring Villas Pt.  
Winter Springs, FL 32708

Designed DNN  
Drawn RL  
Checked \_\_\_\_\_  
Reviewed DNN  
Approved CLK  
Date 10/2014

ORANGE COUNTY EASTERN WATER RECLAMATION FACILITY (EWRF)  
HYPOCHLORITE STORAGE IMPROVEMENTS  
PROCESS MECHANICAL  
PROCESS MECHANICAL DETAILS

|              |          |
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| PROJECT NO.: | 110004   |
| SCALE:       | NOTED    |
| REVISION:    | 0        |
| DRAWING NO.: | PM03     |
| SHEET NO.:   | 15 OF 28 |



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1016 SPRING VILLAS PT  
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Parent Sheet Set: 110004\_EWRF\_HYPO Rev/Plot by: RYAN MEEKS Rev on: 10/22/2014 5:36 PM Individual File Path: F:\ACTIVE PROJECTS\REISS ENGINEERING\ORANGE COUNTY Y11-902-PH\EWRF HYPOCHLORITE IMPROVEMENTS\7-10-BIDSET\DWG\16 E-01 NOTE.DWG

| PLAN SYMBOLS  | PLAN SYMBOLS (CONTINUED)  | CONTROL DIAGRAM SYMBOLS   | ABBREVIATIONS   | NOTES  |
|---|---|---|---|--|
| <p>HOME RUN TO PANELBOARD. NO. OF ARROWS INDICATE NO. OF CIRCUITS, HASH MARKS INDICATE NO. OF #12 AWG. CONDUCTORS. NO HASH MARKS INDICATE 2#12 CONDUCTORS &amp; 1#12 GND IN 3/4" CONDUIT.</p> <p>CONDUIT CONCEALED IN WALL, IN SLAB ABOVE, OR ABOVE CEILING</p> <p>CONDUIT CONCEALED IN OR BELOW FLOOR OR UNDERGROUND.</p> <p>CONDUIT RUN EXPOSED. RUN PARALLEL OR PERPENDICULAR TO STRUCTURE OR WALL.</p> <p>FLEXIBLE CONDUIT WITH EQUIPMENT CONNECTION.</p> <p>CONCRETE ENCASED DUCTBANK.</p> <p>WALL MOUNTED LIGHTING FIXTURE.</p> <p>FLUORESCENT LIGHTING FIXTURE, CEILING MOUNTED.</p> <p>EXTERIOR LUMINAIRE AND MOUNTING STANDARD.</p> <p>EXISTING EXTERIOR LIGHTING.</p> <p>EMERGENCY BATTERY PACK LIGHTING FIXTURE.</p> <p>JUNCTION BOX N.E.C. SURFACE MOUNTED UNLESS INDICATED OTHERWISE.</p> <p>NEMA 4X STAINLESS STEEL JUNCTION BOX PER N.E.C., FLUSH MOUNTED UNLESS INDICATED OTHERWISE.</p> <p>FLUSH OR SURFACE MOUNTED LIGHTING PANELBOARD.</p> <p>FLUSH OR SURFACE MOUNTED POWER PANELBOARD.</p> <p>DRY TYPE TRANSFORMER. NO. INDICATES KVA RATING.</p> <p>LIQUID FILLED TRANSFORMER, KVA RATING AS SHOWN</p> <p>SINGLE RECEPTACLE, RATING AS SHOWN</p> <p>20A, 125V, 3W DUPLEX RECEPTACLE IN FLUSH OUTLET BOX, 18" ABOVE FINISHED FLOOR.</p> <p>20A, 125V, 3W DUPLEX RECEPTACLE IN FLUSH OUTLET BOX, 48" ABOVE FINISHED FLOOR OR 6" ABOVE FINISHED COUNTER AS REQUIRED (AFC)</p> <p>20A, 125V, 3W DUPLEX RECEPTACLE IN FLUSH, FLOOR MOUNTED OUTLET BOX.</p> <p>20A, 125V, 3W DUPLEX RECEPTACLE, SURFACE MOUNTED.</p> <p>SURFACE MOUNTED GROUND FAULT DUPLEX WEATHERPROOF RECEPTACLE 20A, 125V, 3W - MOUNTED 48" ABOVE FINISHED GRADE, UNLESS OTHERWISE NOTED.</p> <p>20A, 125, 3W DOUBLE DUPLEX RECEPTACLE IN FLUSH OUTLET BOX.</p> <p>FLUSH MOUNTED GROUND FAULT DUPLEX RECEPTACLE 20A, 125V, 3W -MOUNTED 48" ABOVE FINISHED FLOOR.</p> <p>DISCONNECT RACK MOUNTED.</p> <p>HANDS/OFF/AUTOMATIC &amp; DISCONNECT RACK MOUNTED WITH JUNCTION BOX MOUNTED BELOW OFF REMOTE</p> <p>S SINGLE POLE SWITCH IN FLUSH OUTLET BOX, 48" ABOVE FINISHED FLOOR, UNLESS OTHERWISE NOTED (TYPICAL).</p> <p>S SINGLE POLE SWITCH, SURFACE MOUNTED.</p> <p>S<sub>3</sub> THREE-WAY SWITCH IN FLUSH OUTLET BOX.</p> <p>S<sub>4</sub> FOUR-WAY SWITCH IN FLUSH OUTLET BOX.</p> <p>NON-FUSIBLE DISCONNECT SWITCH, 30A,3P UNLESS OTHERWISE INDICATED.</p> <p>30/20 NON-FUSIBLE DISCONNECT SWITCH, 30A,3P UNLESS OTHERWISE INDICATED, WITH REMOTE CONTROL STATION AS REQUIRED BY ELEMENTARY DIAGRAMS OR SPECS.</p> <p>10 ELECTRIC A.C. MOTOR, NO. INDICATES HORSEPOWER.</p> <p>FUSED DISCONNECT SWITCH(30/20: 30=SWITCH RATING, 20=FUSE RATING) 3 POLE-UNLESS NOTED OTHERWISE.</p> <p>MOTORIZED VALVE</p> <p>COMBINATION MOTOR STARTER, DISCONNECT SWITCH</p> <p>VARIABLE FREQUENCY DRIVE</p> <p>CONTROL PULLBOX</p> <p>POWER MANHOLE</p> <p>FIBER PATCH PANEL</p> | <p>FS FLOW SWITCH</p> <p>FE FLOW ELEMENT</p> <p>LE LEVEL ELEMENT</p> <p>LS LIMIT SWITCH</p> <p>PS PRESSURE SWITCH</p> <p>PSL PRESSURE SWITCH LOW</p> <p>SV SOLENOID VALVE</p> <p>LLS LIQUID LEVEL SWITCH</p> <p>FSL LOW PRESSURE SWITCH</p> <p>AIT ANALYZING INDICATING TRANSMITTER</p> <p>FIT FLOW INDICATING TRANSMITTER</p> <p>LIT LEVEL INDICATING TRANSMITTER</p> <p>TS TEMPERATURE SWITCH</p> <p>XS TORQUE SWITCH</p> <p>SH SPACE HEATER</p> <p>SF SEAL FAIL</p> <p>TS TEMPERATURE SWITCH</p> <p>AE ANALYTICAL ELEMENT</p> <p>O/R OFF/REMOTE</p> <p>HOA HAND/OFF/AUTO</p> <p>LOS LOCKOUT SWITCH</p> <p>POS PRESSURE DIFFERENTIAL SWITCH</p> | <p>DUPLEX RECEPTACLE</p> <p>NORMALLY OPEN CONTACT</p> <p>NORMALLY CLOSED CONTACT</p> <p>LIMIT SWITCH, NORMALLY OPEN</p> <p>LIMIT SWITCH, NORMALLY CLOSED</p> <p>PRESSURE SWITCH, NORMALLY OPEN</p> <p>PRESSURE SWITCH, NORMALLY CLOSED</p> <p>FLOAT SWITCH, NORMALLY OPEN</p> <p>FLOAT SWITCH, NORMALLY CLOSED</p> <p>FLOW SWITCH, NORMALLY OPEN</p> <p>FLOW SWITCH, NORMALLY CLOSED</p> <p>TEMPERATURE SWITCH, NORMALLY OPEN</p> <p>TEMPERATURE SWITCH, NORMALLY CLOSED</p> <p>NORMALLY OPEN, TIMED TO CLOSE CONTACT</p> <p>NORMALLY CLOSED, TIMED TO OPEN CONTACT</p> <p>NORMALLY CLOSED, TIMED TO CLOSE CONTACT</p> <p>NORMALLY OPEN, TIMED TO OPEN CONTACT</p> <p>SEAL FAIL</p> <p>LIMIT SWITCH</p> <p>FLOW SWITCH</p> <p>PRESSURE SWITCH</p> <p>SOLENOID VALVE</p> <p>LIQUID LEVEL SWITCH</p> <p>VIBRATION SWITCH</p> <p>ALARM RELAY</p> <p>ALARM TIMER</p> <p>CONTROL RELAY</p> <p>MOTOR STARTER</p> <p>TIMING RELAY</p> <p>TORQUE SWITCH</p> <p>ALARM INDICATING LIGHT</p> <p>RUN INDICATING LIGHT</p> <p>MOMENTARY CONTACT PUSHBUTTON</p> <p>MOMENTARY BREAK PUSHBUTTON OR RESET</p> <p>EMERGENCY LOCKOUT SWITCH. LOCKABLE IN THE OFF POSITION</p> <p>KEYED SWITCH</p> <p>MAINTAINED CONTACT ON-OFF SWITCH</p> <p>START/STOP(S/S) CONTROL SWITCH</p> <p>MAINTAINED CONTACT</p> <p>FUSE</p> <p>MOLDED CASE CIRCUIT BREAKER</p> <p>CONTROL POWER TRANSFORMER</p> <p>REMOTE TERMINAL BLOCK POINT</p> | <p>A AMPERES</p> <p>AFF ABOVE FINISHED FLOOR</p> <p>AIC AMPS INTERRUPTING CURRENT</p> <p>ATS AUTOMATIC TRANSFER SWITCH</p> <p>BKR BREAKER</p> <p>BLDG BUILDING</p> <p>CCC CHLORINE CONTACT CHAMBER</p> <p>CKT CIRCUIT</p> <p>CMH CONTROL MANHOLE</p> <p>CPT CONTROL POWER TRANSFORMER</p> <p>CT CURRENT TRANSFORMER</p> <p>DH DATA HIGHWAY</p> <p>DISC DISCONNECT</p> <p>EFF EFFLUENT</p> <p>ELEC ELECTRICAL</p> <p>EM EMERGENCY</p> <p>ENCL ENCLOSURE</p> <p>ESB ENERGY SAVING BALLAST</p> <p>ETM ELAPSED TIME METER</p> <p>EUH ELECTRIC UNIT HEATER</p> <p>EXH EXHAUST</p> <p>EXIST EXISTING</p> <p>FACP FIRE ALARM CONTROL PANEL</p> <p>FO FIBER OPTIC</p> <p>FPP FIBER PATCH PANEL</p> <p>FVNR FULL VOLTAGE NON-REVERSING</p> <p>GFR GROUND FAULT RECEPTACLE</p> <p>GFI GROUND FAULT INTERRUPTER</p> <p>GND GROUND</p> <p>GRS GALVANIZED RIGID STEEL</p> <p>HOA HAND-OFF-AUTOMATIC</p> <p>HOR HAND-OFF-REMOTE</p> <p>HP HORSEPOWER</p> <p>HPS HIGH PRESSURE SODIUM</p> <p>HWY HIGHWAY</p> <p>KVA KILO VOLT-AMPERES</p> <p>KW KILOWATT</p> <p>LA LIGHTNING ARRESTOR</p> <p>LCP LOCAL CONTROL PANEL</p> <p>LED LIGHT EMITTING DIODE</p> <p>LF LINEAR FEET</p> <p>LTG LIGHTING</p> <p>LOS LOCK OUT SWITCH</p> <p>MAX MAXIMUM</p> <p>MCB MAIN CIRCUIT BREAKER</p> <p>MDP MAIN DISTRIBUTION PANEL</p> <p>MFR MANUFACTURER</p> <p>MIN MINIMUM</p> <p>MLO MAIN LUGS ONLY</p> <p>MOV MOTORIZED VALVE</p> <p>MTD MOUNTED</p> <p>NEC NATIONAL ELECTRICAL CODE</p> <p>N NEUTRAL</p> <p>NTS NOT TO SCALE</p> <p>OH OVERHEAD</p> <p>P POLE</p> <p>PCP PROCESS CONTROL PANEL</p> <p>PLC PROGRAMMABLE LOGIC CONTROLLER</p> <p>PM PHASE MONITOR</p> <p>PMH POWER MANHOLE</p> <p>PNL PANEL</p> <p>PS PUMP STATION</p> <p>PVC POLYVINYL CHLORIDE</p> <p>RTU REMOTE TELEMETRY UNIT</p> <p>SC SURGE CAPACITOR</p> <p>SCADA SUPERVISORY CONTROL &amp; DATA ACQUISITION</p> <p>SH SHIELDED</p> <p>SLD SINGLE LINE DIAGRAM</p> <p>SLG SLUICE GATE</p> <p>SPD SURGE PROTECTIVE DEVICE</p> <p>SS STAINLESS STEEL</p> <p>SSS SOLID STATE STARTER</p> <p>STR STARTER</p> <p>SW SWITCH</p> <p>TBR TO BE REMOVED</p> <p>TC TERMINATION CABINET</p> <p>TYP TYPICAL</p> <p>UG UNDERGROUND</p> <p>UPS UNINTERRUPTABLE POWER SUPPLY</p> <p>V VOLT</p> <p>VFD VARIABLE FREQUENCY DRIVE</p> <p>W WATT</p> <p>W/ WITH</p> <p>WP WEATHERPROOF</p> <p>XFMR TRANSFORMER</p> <p>ø PHASE</p> | <ol style="list-style-type: none"> <li>ELECTRICAL CONTRACTOR SHALL SUPPLY AND INSTALL ALL NEW ELECTRICAL WORK INDICATED.</li> <li>ELECTRICAL CONTRACTOR SHALL VISIT JOB SITE AND FAMILIARIZE HIMSELF WITH ALL CONDITIONS AFFECTING ELECTRICAL INSTALLATION AND MAKE PROVISIONS AS TO THE COST THEREOF. EXISTING CONDITIONS OF ELECTRICAL EQUIPMENT, LIGHT FIXTURES, ETC... THAT ARE PART OF THE FINAL SYSTEM SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO SUBMITTING HIS BID.</li> <li>ALL WORK SHALL BE DONE IN ACCORDANCE WITH NATIONAL ELECTRICAL CODE, ORANGE COUNTY STANDARDS, THE FLORIDA BUILDING CODE AND SHALL COMPLY WITH ALL LOCAL RULES AND ORDINANCES.</li> <li>MINIMUM WIRE SIZE SHALL BE #12 A.W.G. EXCLUDING CONTROL WIRING, UNLESS OTHERWISE NOTED. ALL CONDUCTORS SHALL BE COPPER.</li> <li>IT IS NOT THE INTENT OF THESE PLANS TO SHOW EVERY MINOR DETAIL OF CONSTRUCTION. THE CONTRACTOR IS EXPECTED TO FURNISH AND INSTALL ALL ITEMS FOR A COMPLETE ELECTRICAL SYSTEM AND PROVIDE ALL REQUIREMENTS NECESSARY FOR THE EQUIPMENT TO BE PLACED IN PROPER WORKING ORDER.</li> <li>ELECTRICAL SYSTEM SHALL BE COMPLETE AND EFFECTIVELY GROUNDED AS REQUIRED BY THE LATEST EDITION OF THE N.E.C. OR LOCAL CODES. ALL CONDUITS SHALL HAVE A BOND WIRE SIZED PER TABLE 250 OF THE NATIONAL ELECTRICAL CODE.</li> <li>ALL MATERIALS SHALL BE NEW AND BEAR UNDERWRITERS' LABELS WHERE APPLICABLE.</li> <li>ALL WORK SHALL BE PERFORMED BY A LICENSED ELECTRICAL CONTRACTOR IN A FIRST CLASS WORKMANLIKE MANNER. THE COMPLETED SYSTEM SHALL BE FULLY OPERATIVE AND ACCEPTED BY ENGINEER/OWNER.</li> <li>CONTRACTOR SHALL GUARANTEE ALL MATERIALS AND WORKMANSHIP FREE FROM DEFECTS FOR A PERIOD OF NOT LESS THAN TWO YEARS FROM DATE OF ACCEPTANCE.</li> <li>CORRECTION OF ANY DEFECTS SHALL BE COMPLETED WITHOUT ADDITIONAL CHARGE AND SHALL INCLUDE REPLACEMENT OR REPAIR OF ANY OTHER PHASE OF THE INSTALLATION WHICH MAY HAVE BEEN DAMAGED.</li> <li>CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CUTTING AND PATCHING REQUIRED OF HIS WORK.</li> <li>ELECTRICAL CONTRACTOR SHALL LABEL ALL PANELS W/ TYPE WRITTEN DIRECTORIES (NEW &amp; EXISTING).</li> <li>ALL ELECTRICAL WIRING SHALL BE THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR.</li> <li>REFER TO THE MECHANICAL DRAWINGS AND THE APPROVED MANUFACTURER'S SHOP DRAWINGS FOR THE EXACT LOCATION OF ALL EQUIPMENT.</li> <li>SHADED/SLANTED TEXT DENOTES EXISTING EQUIPMENT OR STRUCTURES. NON-SHADED TEXT DENOTES NEW EQUIPMENT, STRUCTURES AND WORK. SLANTED TEXT (NOT SHADED) DENOTES FUTURE EQUIPMENT, STRUCTURES AND WORK.</li> </ol> |
| <b>SINGLE LINE DIAGRAM SYMBOLS</b>  |   | <p>COMBINATION MOTOR STARTER</p> <p>VOLTMETER</p> <p>AMMETER</p> <p>THREE PHASE VOLT SWITCH</p> <p>THREE PHASE AMP SWITCH</p> <p>GROUND FAULT INTERRUPTER</p> <p>WATT HOUR METER</p> <p>FUSE</p> <p>CAPACITOR</p> <p>DRAW-OUT CIRCUIT BREAKER</p> <p>MOLDED CASE CIRCUIT BREAKER</p> <p>TYPICAL SELECTOR SWITCH AND CONTROL SEE ELEMENTARY DIAGRAMS FOR EXACT TYPE.</p> <p>10 ELECTRIC A.C. MOTOR, NO. INDICATES HORSEPOWER.</p> <p>SERVICE OR EQUIPMENT GROUND.</p> <p>NON-FUSIBLE DISCONNECT SWITCH, 30A,3P UNLESS OTHERWISE INDICATED.</p> <p>NON-FUSIBLE DISCONNECT SWITCH, 30A,3P UNLESS OTHERWISE INDICATED, WITH REMOTE CONTROL STATION AS REQUIRED BY ELEMENTARY DIAGRAMS OR SPECS.</p> <p>CROUSE HINDS EYSR FITTING</p> <p>CURRENT TRANSFORMERS</p> <p>POTENTIAL TRANSFORMERS.</p>   | <p>KEYED SWITCH</p> <p>START/STOP(S/S) CONTROL SWITCH</p> <p>MAINTAINED CONTACT</p> <p>FUSE</p> <p>MOLDED CASE CIRCUIT BREAKER</p> <p>CONTROL POWER TRANSFORMER</p> <p>REMOTE TERMINAL BLOCK POINT</p>  |  |



Electrical Design Associates  
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 FAX: (407) 745-5603  
 C.O.A. No. 8079  
 LILLIAN M. REYES, P.E.  
 Florida P.E. No. 50780

**BID SUBMITTAL**



|     |         |                |     |  |  |  |  |  |  |
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Issue Certification  
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 Florida P.E. No. 50780  
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 4763 South Conway Rd., Suite E  
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Designed DD  
 Drawn RRM  
 Checked LMR  
 Reviewed DD  
 Approved LMR  
 Date 10/2014

ORANGE COUNTY EASTERN WATER RECLAMATION FACILITY (EWRF)  
 HYPOCHLORITE STORAGE IMPROVEMENTS

ELECTRICAL SYMBOLS, NOTES & ABBREVIATIONS

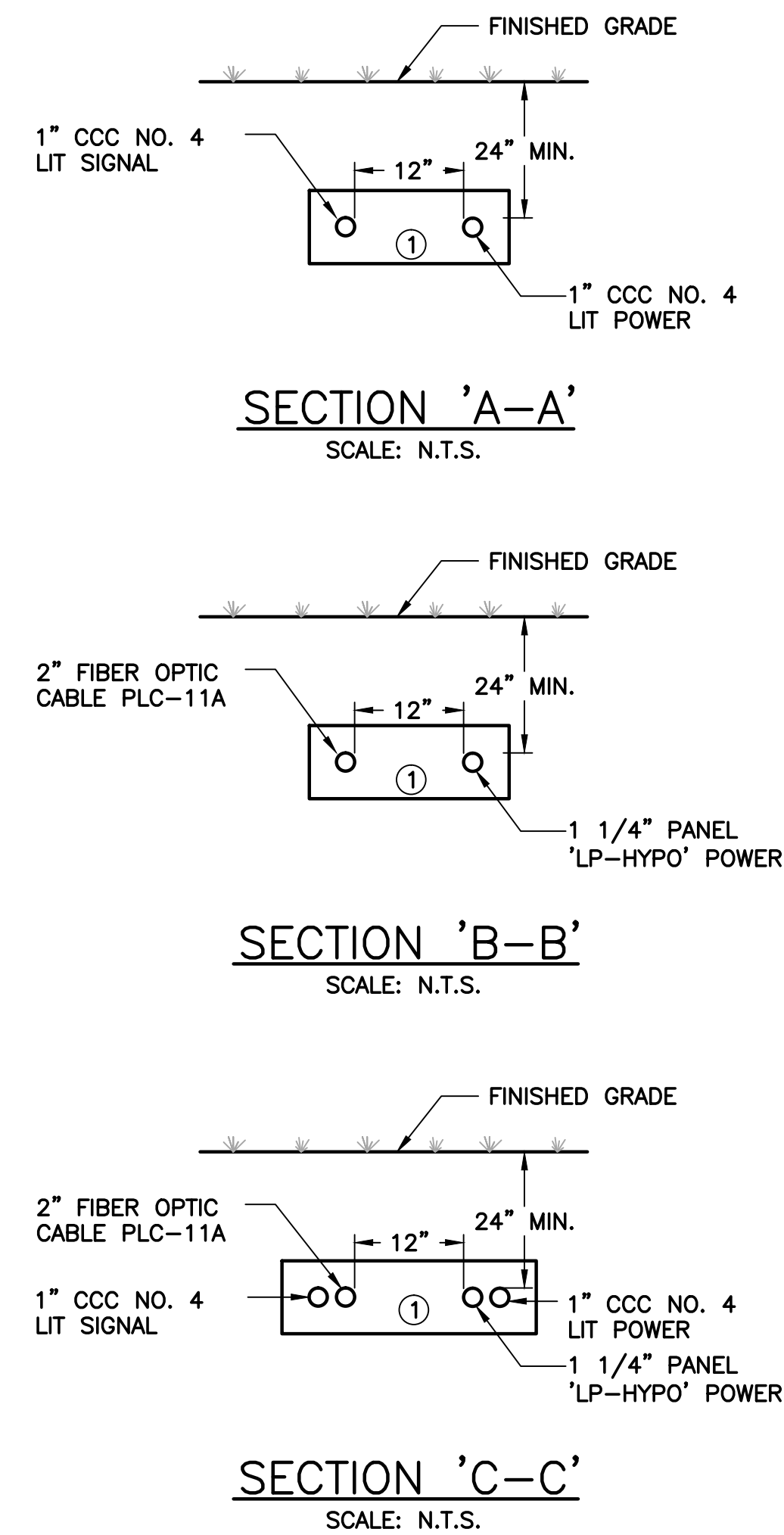
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| SCALE: NOTED        | REVISION: 0         |
| DRAWING NO. E01     | SHEET NO.: 16 OF 28 |



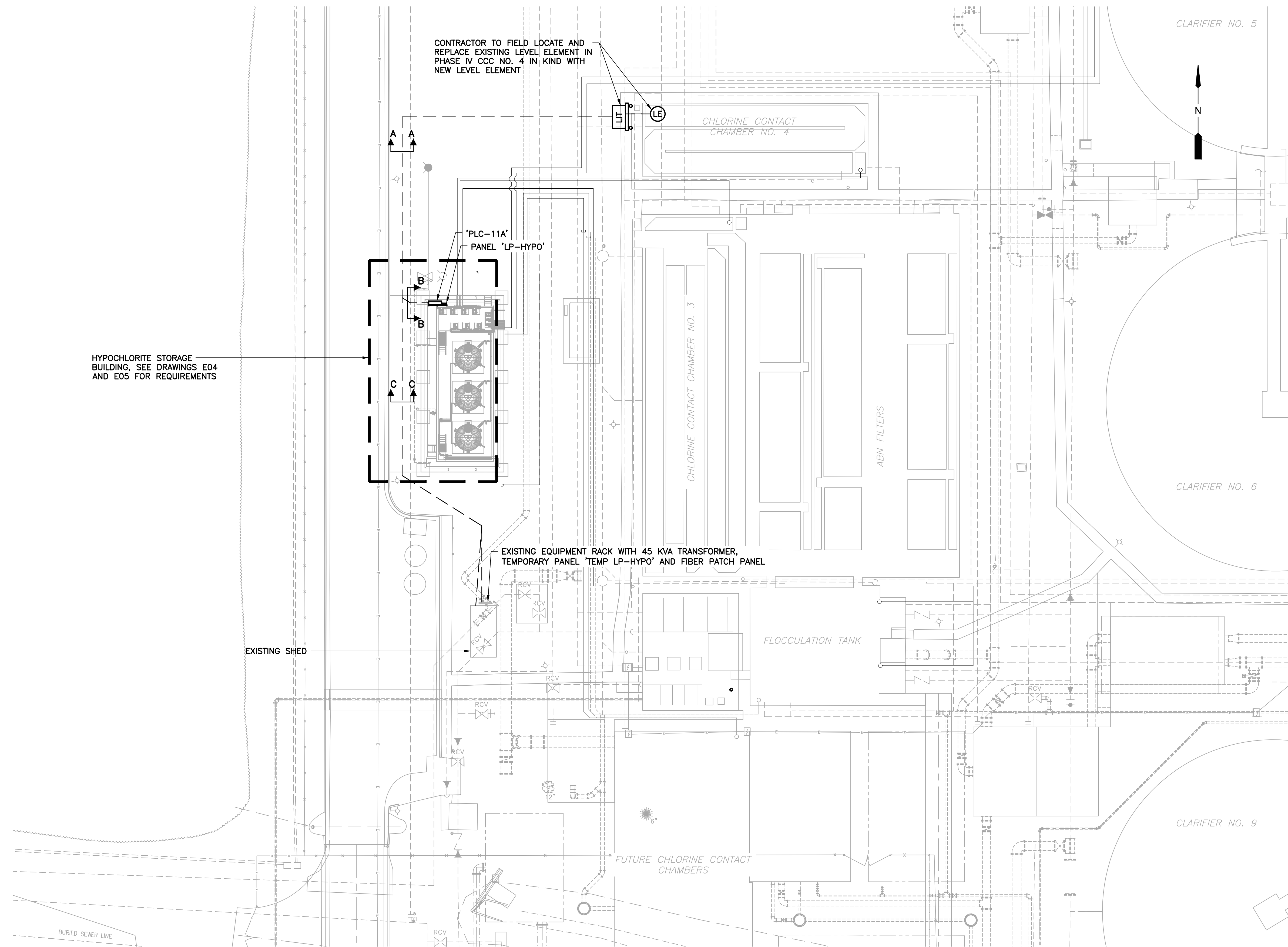
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**NOTES:**  
 ① ALL UNDERGROUND CONDUITS SHALL BE CONCRETE ENCASED, INCLUDING INDIVIDUAL CONDUITS.



**ELECTRICAL SITE PLAN**  
 SCALE: 1"=20'-0"  
 20 10 0 20'

**EDA**  
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Designed DD  
 Drawn RRM  
 Checked LMR  
 Reviewed DD  
 Approved LMR  
 Date 10/2014

ORANGE COUNTY EASTERN WATER RECLAMATION FACILITY (EWRF)  
 HYPOCHLORITE STORAGE IMPROVEMENTS  
 ELECTRICAL  
 ELECTRICAL SITE PLAN & CONDUIT SECTIONS

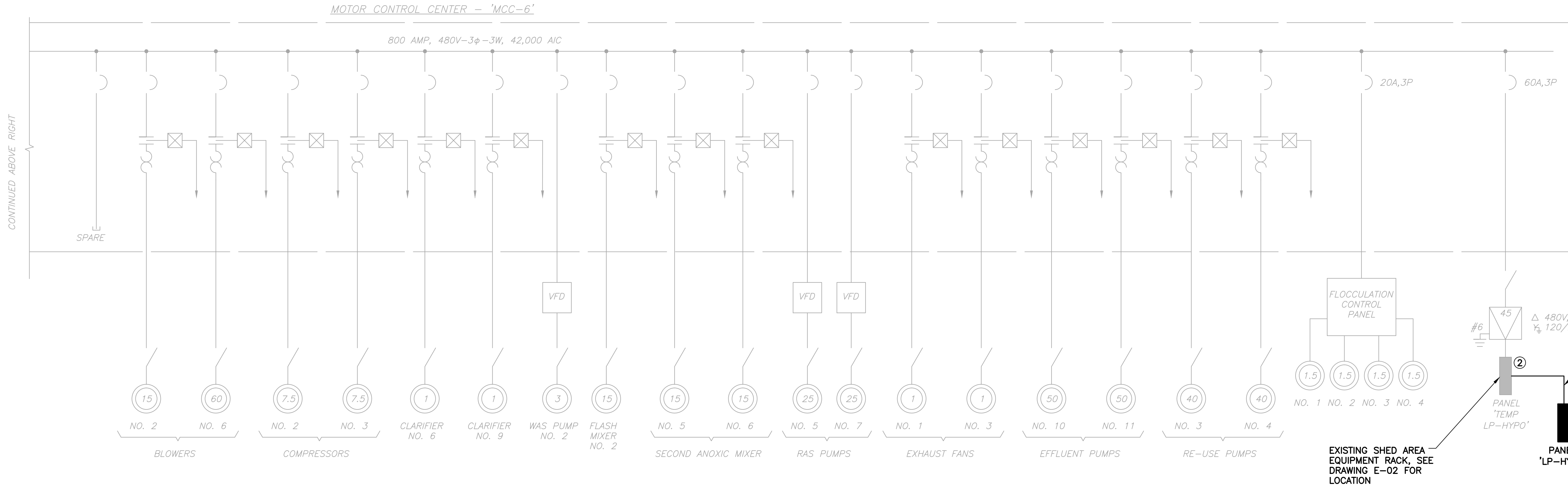
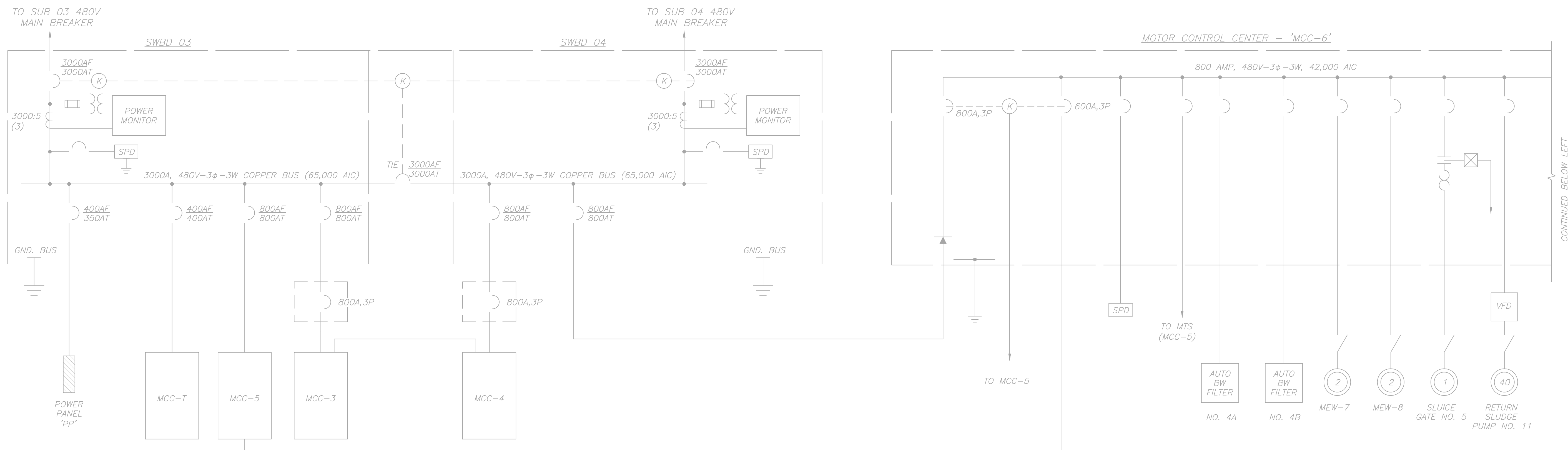
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| PROJECT NO.: | 110004   |
| SCALE:       | NOTED    |
| REVISION:    | 0        |
| DRAWING NO.: | E02      |
| SHEET NO.:   | 17 OF 28 |



REISS ENGINEERING, INC.  
 1016 SPRING VILLAS PT  
 WINTER SPRINGS, FL 32708  
 (407) 679-5358

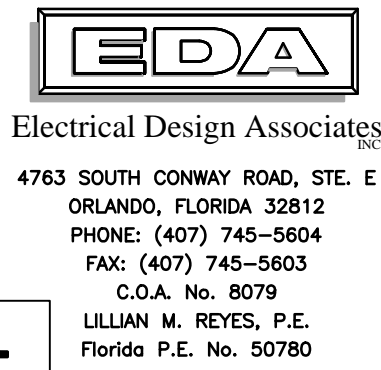


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- NOTES:**
- SEE CONTROL INTERFACE WIRING DIAGRAM ON DRAWING E04 FOR ADDITIONAL REQUIREMENTS.
  - CONTRACTOR TO FURNISH AND INSTALL A 40A,3P BREAKER IN EXISTING SPACE.

**EXISTING MCC-6 SINGLE LINE DIAGRAM**  
N.T.S.



**BID SUBMITTAL**



| REV | DATE    | DESCRIPTION    | BY  |
|-----|---------|----------------|-----|
| 0   | 10/2014 | ISSUED FOR BID | LMR |

**Issue Certification**  
Lillian M. Reyes, P.E.  
Florida P.E. No. 50780  
Electrical Design Associates  
Certificate of Authorization No. 8079  
4763 South Conway Rd., Suite E  
Orlando, FL 32812

Designed DD  
Drawn RRM  
Checked LMR  
Reviewed DD  
Approved LMR  
Date 10/2014

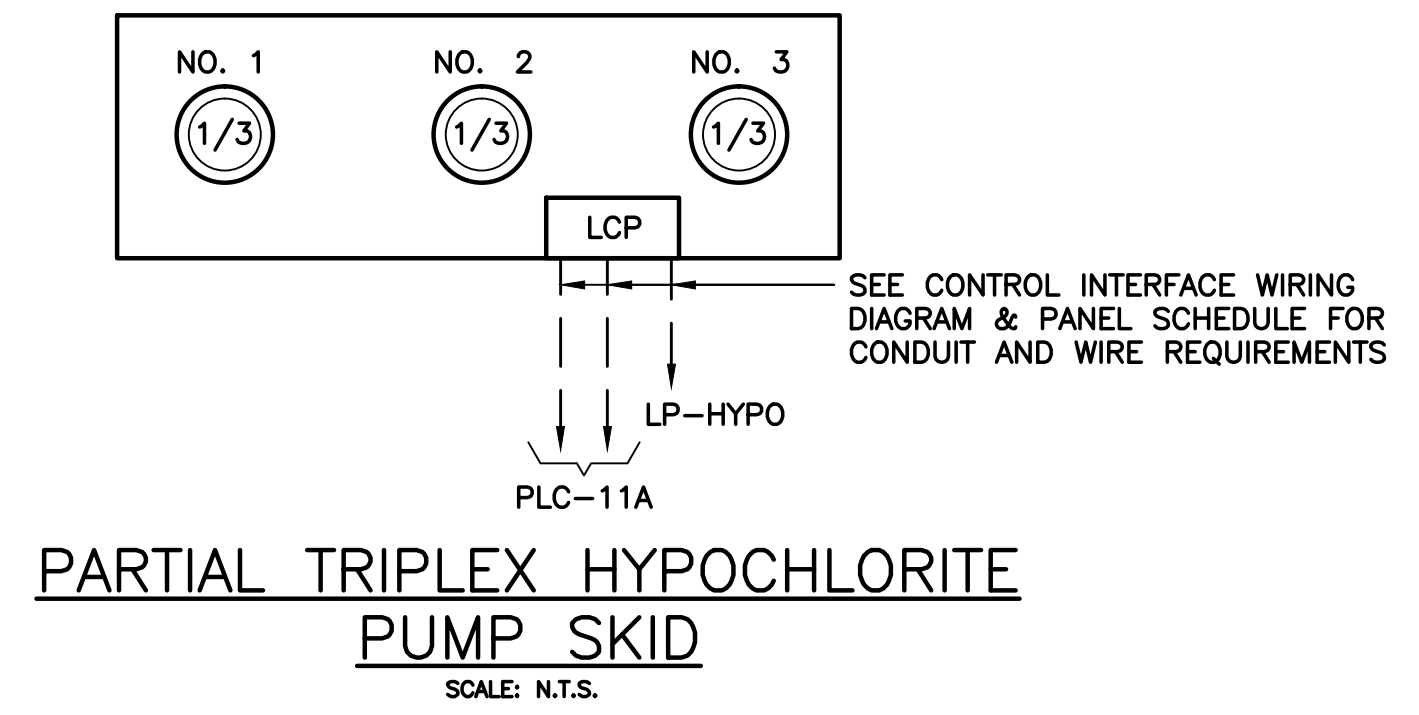
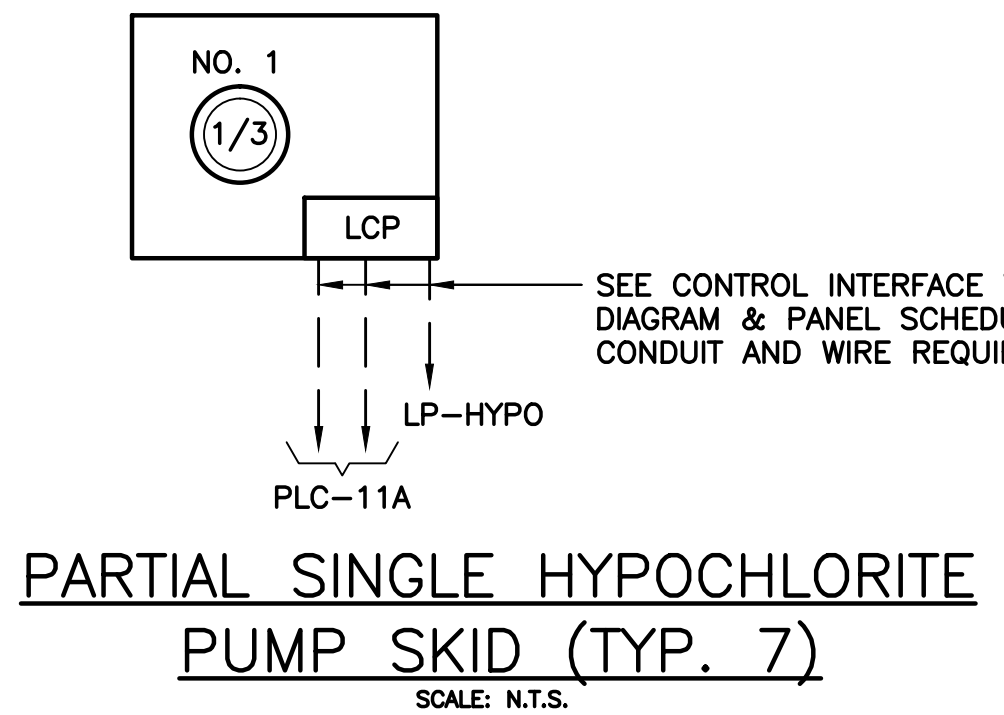
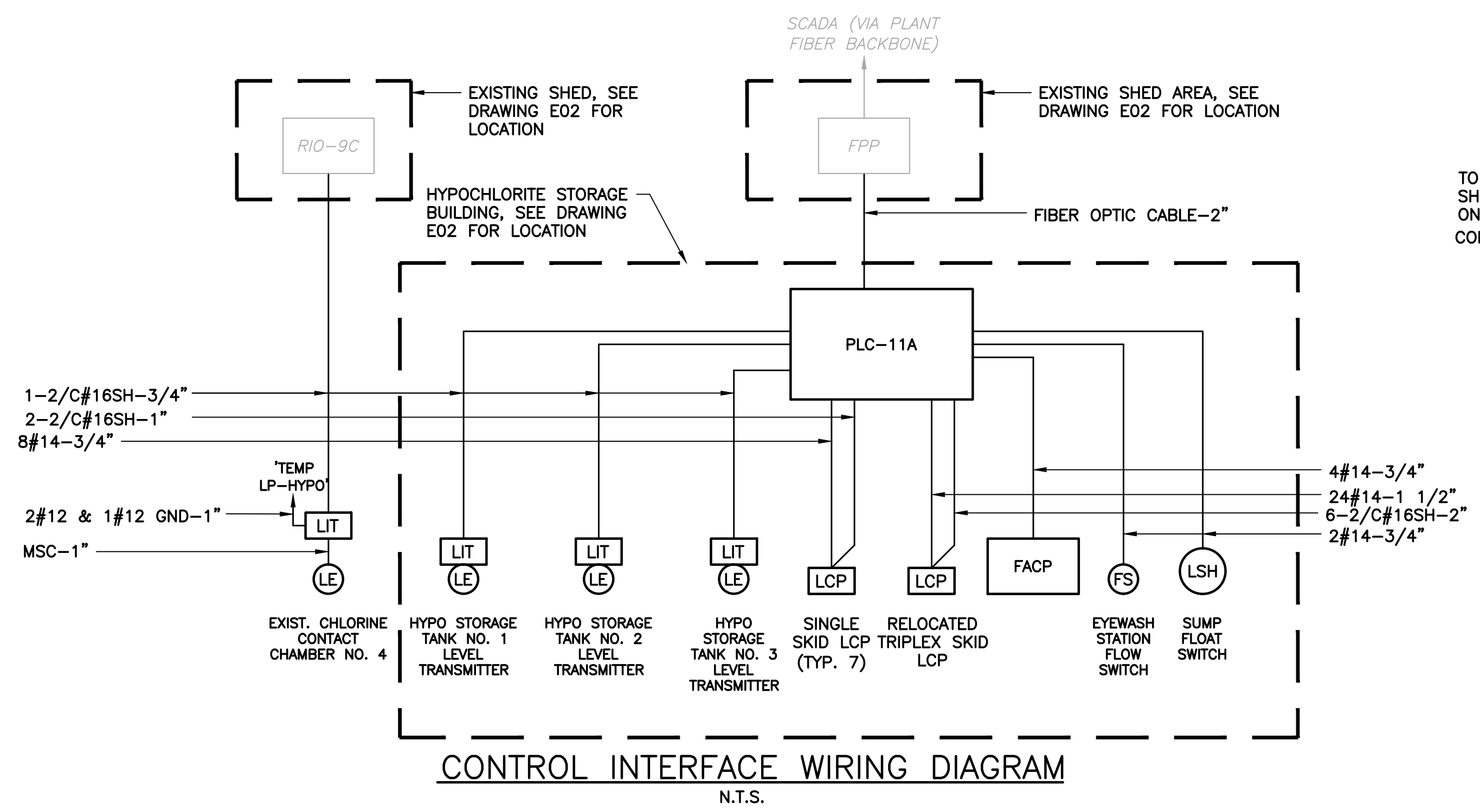
ORANGE COUNTY EASTERN WATER RECLAMATION FACILITY (EWRF)  
HYPOCHLORITE STORAGE IMPROVEMENTS  
ELECTRICAL  
SINGLE LINE DIAGRAM

|              |          |
|--------------|----------|
| PROJECT NO.: | 110004   |
| SCALE:       | NOTED    |
| DRAWING NO.: | E03      |
| REVISION:    | 0        |
| SHEET NO.:   | 18 OF 28 |



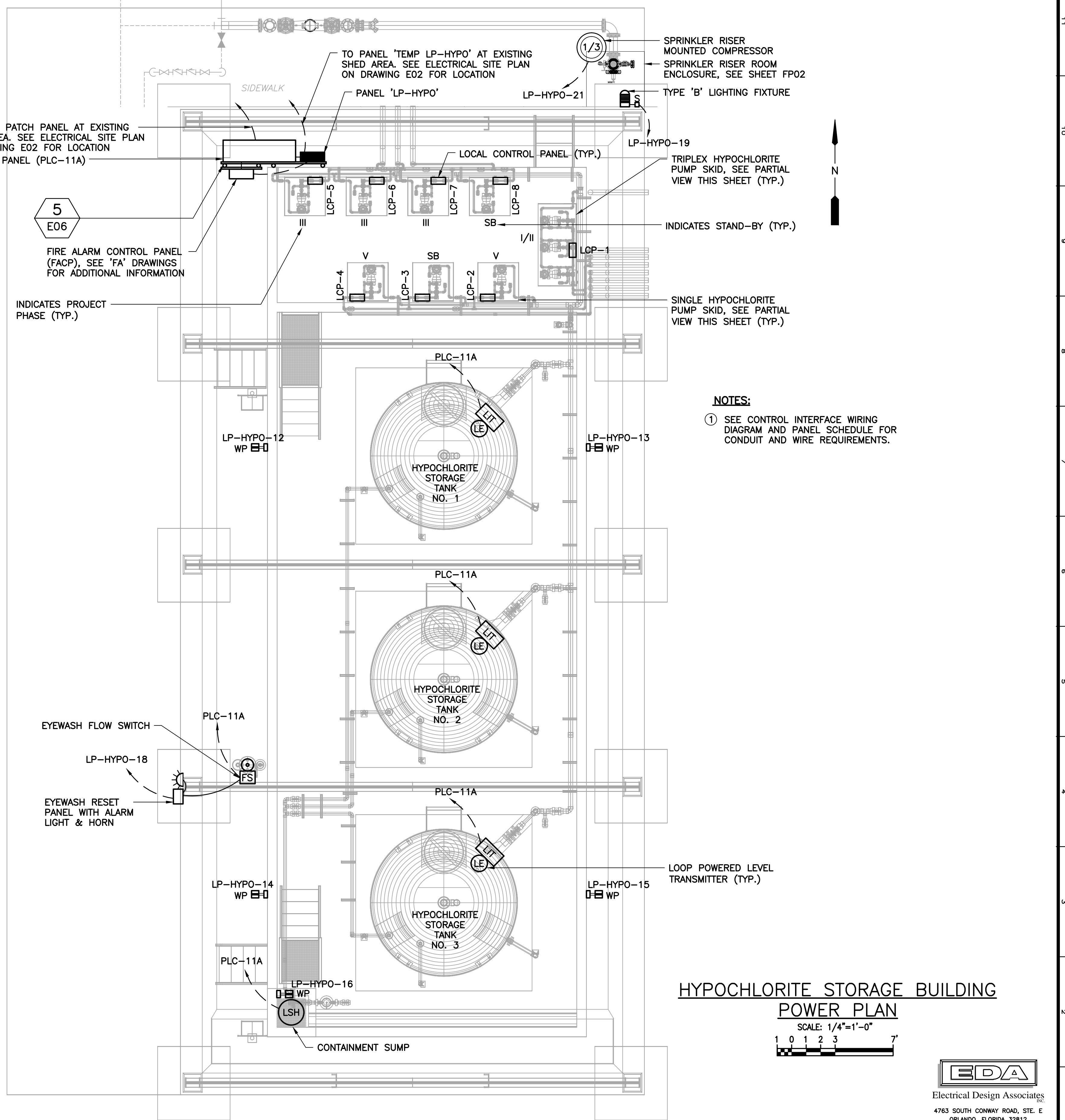


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| PANEL: LP-HYPO                          |      | BUS: 100 AMP  |      | VOLT: 120/208V-3φ-4W              |                                 |   |           |         |       |                        |      |      |       |      |      |
|---|------|---------------|------|-----------------------------------|---------------------------------|---|-----------|---------|-------|------------------------|------|------|-------|------|------|
| LOCATION: HYPOCHLORITE STORAGE BUILDING |      | MAINS: 40A,3P |      | REMARKS: PROVIDE SURGE SUPPRESSOR |                                 |   |           |         |       |                        |      |      |       |      |      |
| MOUNTING: EQUIPMENT RACK                |      | POLES: 30     |      | A.I.C. SYMM: 10,000               |                                 |   |           |         |       |                        |      |      |       |      |      |
| AMPS                                    | POLE | WIRE          | GND. | COND.                             | LOAD SERVED                     | BUS KVA   | BUS A B C | BUS KVA | A B C | LOAD SERVED            | WIRE | GND. | COND. | POLE | AMPS |
| 20                                      | 1    | 12            | 12   | 3/4"                              | LCP-1                           | 0.27  | 1         | 0.50    | 2     | FIRE ALARM CNTRL PANEL | 12   | 12   | 3/4"  | 1    | 20   |
| 20                                      | 1    | 12            | 12   | 3/4"                              | EXTERIOR LTG                    | 0.45  | 3         | 0.27    | 4     | LCP-2                  | 12   | 12   | 3/4"  | 1    | 20   |
| 20                                      | 1    | 12            | 12   | 3/4"                              | LCP-3                           |   | 5         | 0.27    | 6     | LCP-4                  | 12   | 12   | 3/4"  | 1    | 20   |
| 20                                      | 1    | 12            | 12   | 3/4"                              | LCP-5                           | 0.27  | 7         | 0.27    | 8     | LCP-6                  | 12   | 12   | 3/4"  | 1    | 20   |
| 20                                      | 1    | 12            | 12   | 3/4"                              | LCP-7                           |   | 9         | 0.27    | 10    | LCP-8                  | 12   | 12   | 3/4"  | 1    | 20   |
| 20                                      | 1    | 12            | 12   | 3/4"                              | PLC-11A                         |   | 11        | 0.50    | 12    | RECEPTACLE             | 12   | 12   | 3/4"  | 1    | 20   |
| 20                                      | 1    | 12            | 12   | 3/4"                              | RECEPTACLE                      | 1.44  | 13        | 1.44    | 14    | RECEPTACLE             | 12   | 12   | 3/4"  | 1    | 20   |
| 20                                      | 1    | 12            | 12   | 3/4"                              | RECEPTACLE                      | 1.44  | 15        | 0.18    | 16    | RECEPTACLE             | 12   | 12   | 3/4"  | 1    | 20   |
| 20                                      | 1    | 12            | 12   | 3/4"                              | HYPO TANK AREA LIGHTING         |   | 17        | 1.28    | 18    | EYEWASH RESET PANEL    | 12   | 12   | 3/4"  | 1    | 20   |
| 20                                      | 1    | 12            | 12   | 3/4"                              | SPRINKLER RISER ENCL. LTG.      | 0.10  | 19        | 0.32    | 20    | PUMP SKID AREA LTG     | 12   | 12   | 3/4"  | 1    | 20   |
| 20                                      | 1    | 12            | 12   | 3/4"                              | SPRINKLER RISER MTD. COMPRESSOR | 1.00  | 21        |         | 22    | SPARE                  |      |      |       | 1    | 20   |
| 20                                      | 1    | -             | -    | -                                 | SPARE                           |   | 23        |         | 24    | SPARE                  |      |      |       | -    | -    |
| 20                                      | 1    | -             | -    | -                                 | SPARE                           |   | 25        | 0.10    | 26    | SURGE SUPPRESSOR       | 8    | 8    |       | 3    | 40   |
| -                                       | -    | -             | -    | -                                 | SPACE                           |   | 27        | 0.10    | 28    |                        |      |      |       | -    | -    |
| -                                       | -    | -             | -    | -                                 | SPACE                           |   | 29        |         | 30    |                        |      |      |       | -    | -    |
| TOTAL (PHASE):                          |      | 2.08          | 3.16 | 2.05                              |                                 |   | 2.63      | 0.82    | 2.01  | NOTES:                 |      |      |       |      |      |
| TOTAL KVA:                              |      |               |      |                                   | 12.30                           | ① BREAKER SHALL BE PAINTED RED AND LOCKED ON THE CLOSED POSITION. |           |         |       |                        |      |      |       |      |      |
| TOTAL AMPS:                             |      |               |      |                                   | 34.14                           |   |           |         |       |                        |      |      |       |      |      |
| TOTAL DEMAND AMPS:                      |      |               |      |                                   | 34.14                           |   |           |         |       |                        |      |      |       |      |      |

MINIMUM 40KA/MODE → SPD



| REV | DATE    | DESCRIPTION    | BY  |
|-----|---------|----------------|-----|
| 0   | 10/2014 | ISSUED FOR BID | LMR |

Issue Certification  
Lillian M. Reyes, P.E.  
Florida P.E. No. 50780  
Electrical Design Associates  
Certificate of Authorization No. 8079  
4763 South Conway Rd., Suite E  
Orlando, FL 32812

Designed DD  
Drawn RRM  
Checked LMR  
Reviewed DD  
Approved LMR

LINE IS 1" AT FULL SIZE

Date 10/2014

ORANGE COUNTY EASTERN WATER RECLAMATION FACILITY (EWRF)  
HYPOCHLORITE STORAGE IMPROVEMENTS

ELECTRICAL

HYPOCHLORITE STORAGE BUILDING POWER PLAN AND WIRING DIAGRAMS

|              |          |
|--------------|----------|
| PROJECT NO.: | 110004   |
| SCALE:       | NOTED    |
| DRAWING NO.: | E04      |
| REVISION:    | 0        |
| SHEET NO.:   | 19 OF 28 |

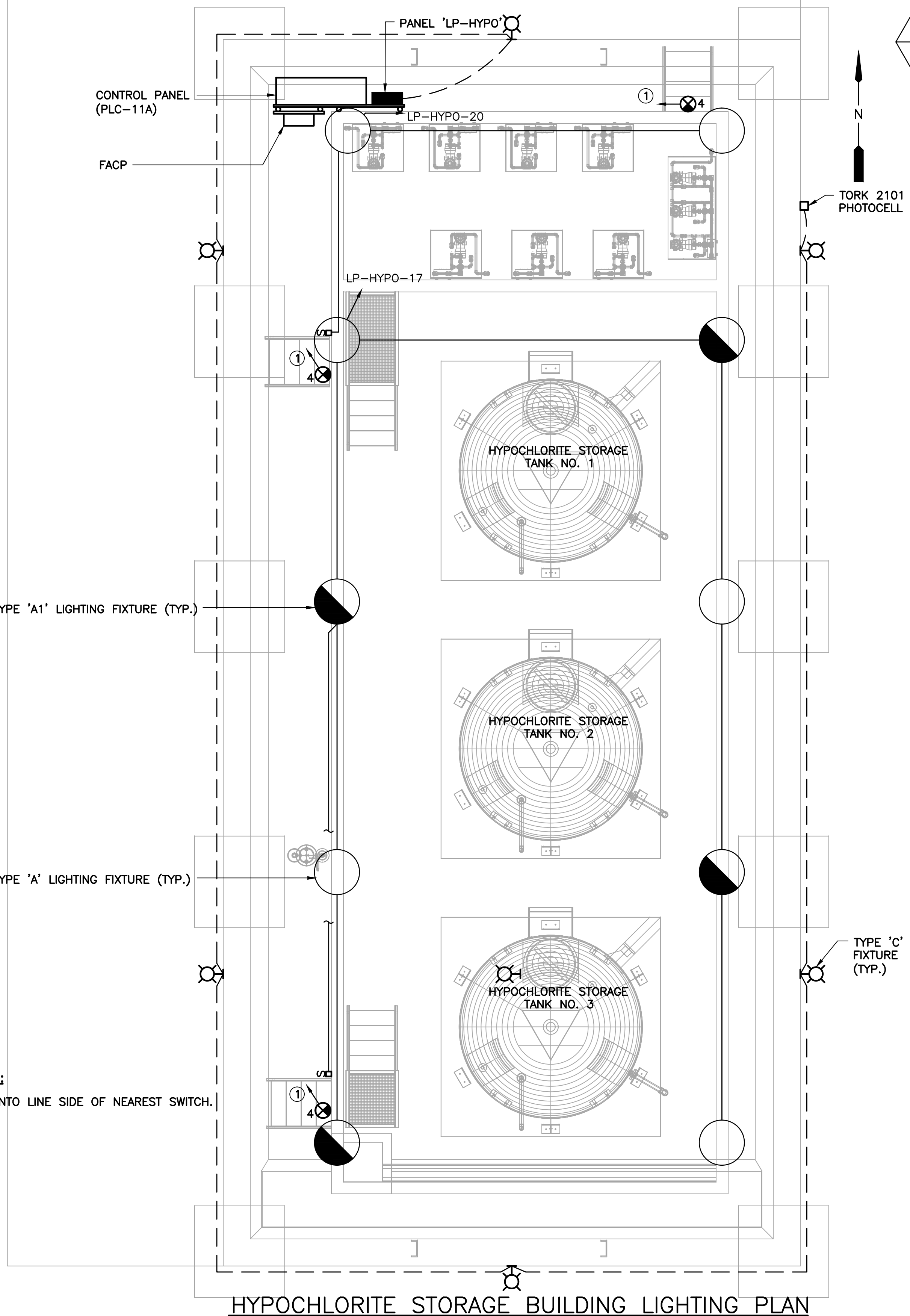
**EDA**  
Electrical Design Associates  
4763 SOUTH CONWAY ROAD, STE. E  
ORLANDO, FLORIDA 32812  
PHONE: (407) 745-5604  
FAX: (407) 745-5603  
C.O.A. No. 8079  
LILLIAN M. REYES, P.E.  
Florida P.E. No. 50780

**BID SUBMITTAL**

**RE**  
REISS ENGINEERING, INC.  
1016 SPRING VILLAS PT  
WINTER SPRINGS, FL 32708  
(407) 679-5358

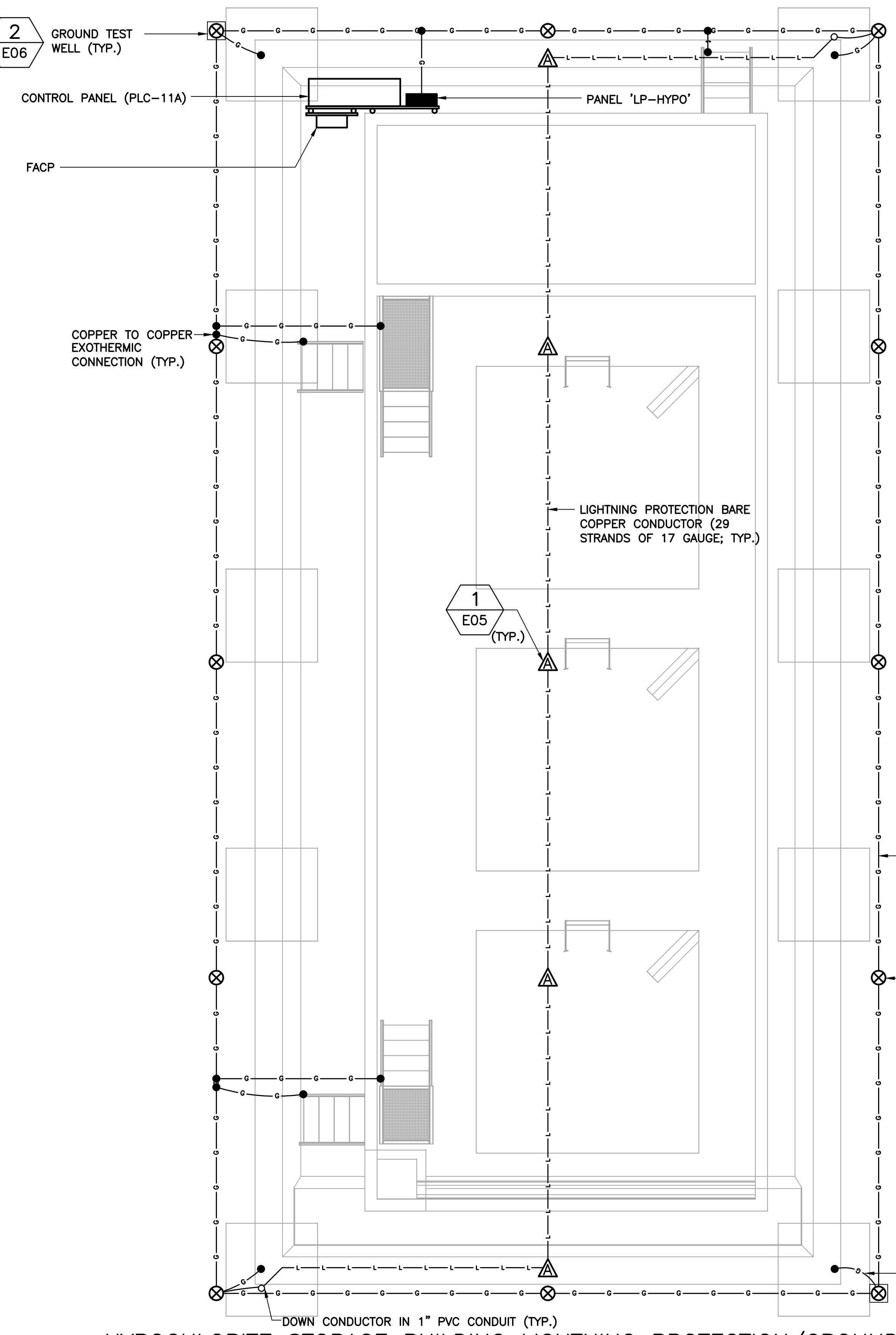


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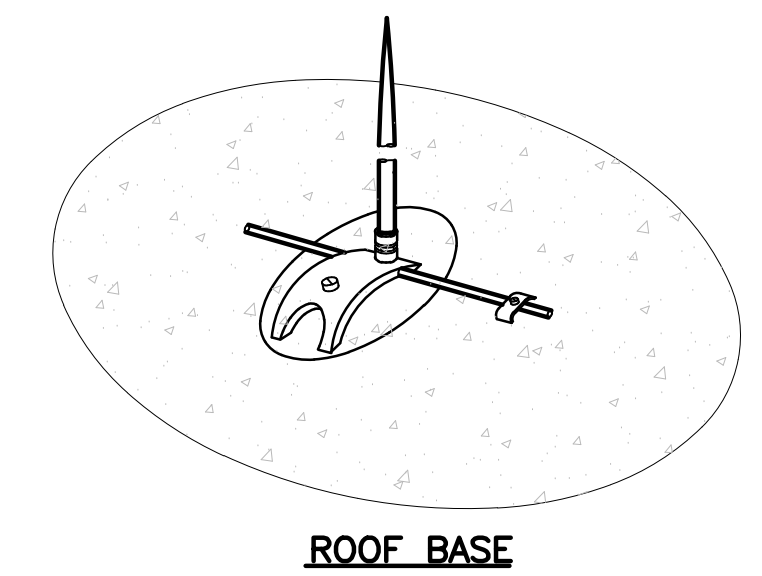
HYPOCHLORITE STORAGE BUILDING LIGHTING PLAN

SCALE: 1/4"=1'-0"  
1 0 1 2 3 7



HYPOCHLORITE STORAGE BUILDING LIGHTNING PROTECTION/GROUNDING PLAN

SCALE: 1/4"=1'-0"  
1 0 1 2 3 7



1 E05 AIR TERMINAL DETAILS  
N.T.S.

- LEGEND:**  
 ▲ - 5/8" X 12" SOLID COPPER AIR TERMINAL WITH ADHESIVE BASE.
- LIGHTNING PROTECTION INSTALLATION NOTES:**
1. INSTALLATION SHALL COMPLY IN ALL RESPECTS TO L.P.I. CODE 175. INSTALLATION SHALL BE MADE BY OR UNDER THE SUPERVISION OF AN L.P.I. CERTIFIED MASTER INSTALLER. COMPLETED INSTALLATION TO RECEIVE SYSTEM CERTIFICATION INCLUDING SUBMITTAL OF FORMS L.P.I. 175-A AND 175-B.
  2. ALL MATERIALS SHALL BE UNDERWRITERS LABORATORIES APPROVED WITH "A" LABEL ON EACH AIR TERMINAL AND "B" LABEL AT 10'-0" ALONG ALL MAIN CONDUCTORS. COMPLETED INSTALLATION AS SHOWN SHALL BEAR U.L. MASTER LABEL "C" AS PER U.L. CODE 96A.
  3. INTERCONNECT LIGHTNING PROTECTION GROUND TO ELECTRIC, TELEPHONE, AND OTHER BUILDING GROUND SYSTEMS AS SHOWN OR AS REQUIRED BY CODES.
  4. ALL CABLE TO CABLE, CABLE TO LUG & CABLE TO GROUND ROD CONNECTIONS SHALL BE MADE WITH CADWELD.

**NOTES:**  
 1 TIE INTO LINE SIDE OF NEAREST SWITCH.



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 Electrical Design Associates  
 Certificate of Authorization No. 8079  
 4763 South Conway Rd., Suite E  
 Orlando, FL 32812

Designed\_DD  
 Drawn\_RRM  
 Checked\_LMR  
 Reviewed\_DD  
 Approved\_LMR  
 LINE IS 1" AT FULL SIZE  
 Date\_10/2014

ORANGE COUNTY EASTERN WATER RECLAMATION FACILITY (EWRF)  
 HYPOCHLORITE STORAGE IMPROVEMENTS  
 ELECTRICAL  
 HYPOCHLORITE STORAGE BUILDING LIGHTING AND LIGHTNING PROTECTION PLANS

|              |          |
|--------------|----------|
| PROJECT NO.: | 110004   |
| SCALE:       | NOTED    |
| REVISION:    | 0        |
| DRAWING NO.: | E05      |
| SHEET NO.:   | 20 OF 28 |

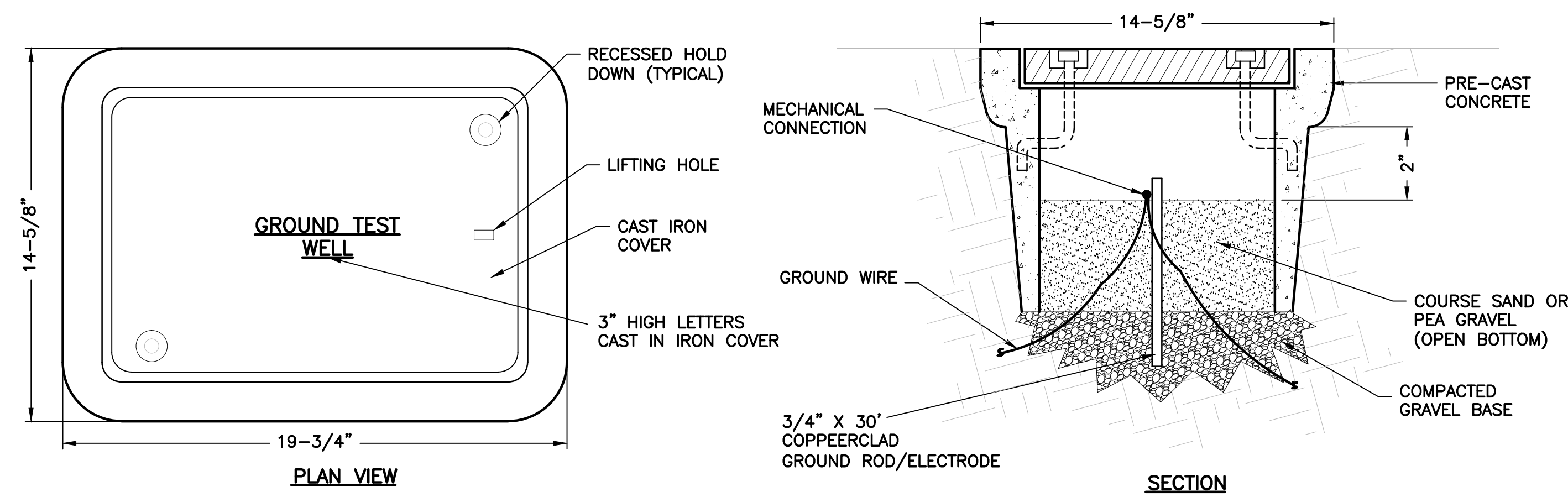
**BID SUBMITTAL**

**EDA**  
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 4763 SOUTH CONWAY ROAD, STE. E  
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 PHONE: (407) 745-5604  
 FAX: (407) 745-5603  
 C.O.A. No. 8079  
 LILLIAN M. REYES, P.E.  
 Florida P.E. No. 50780

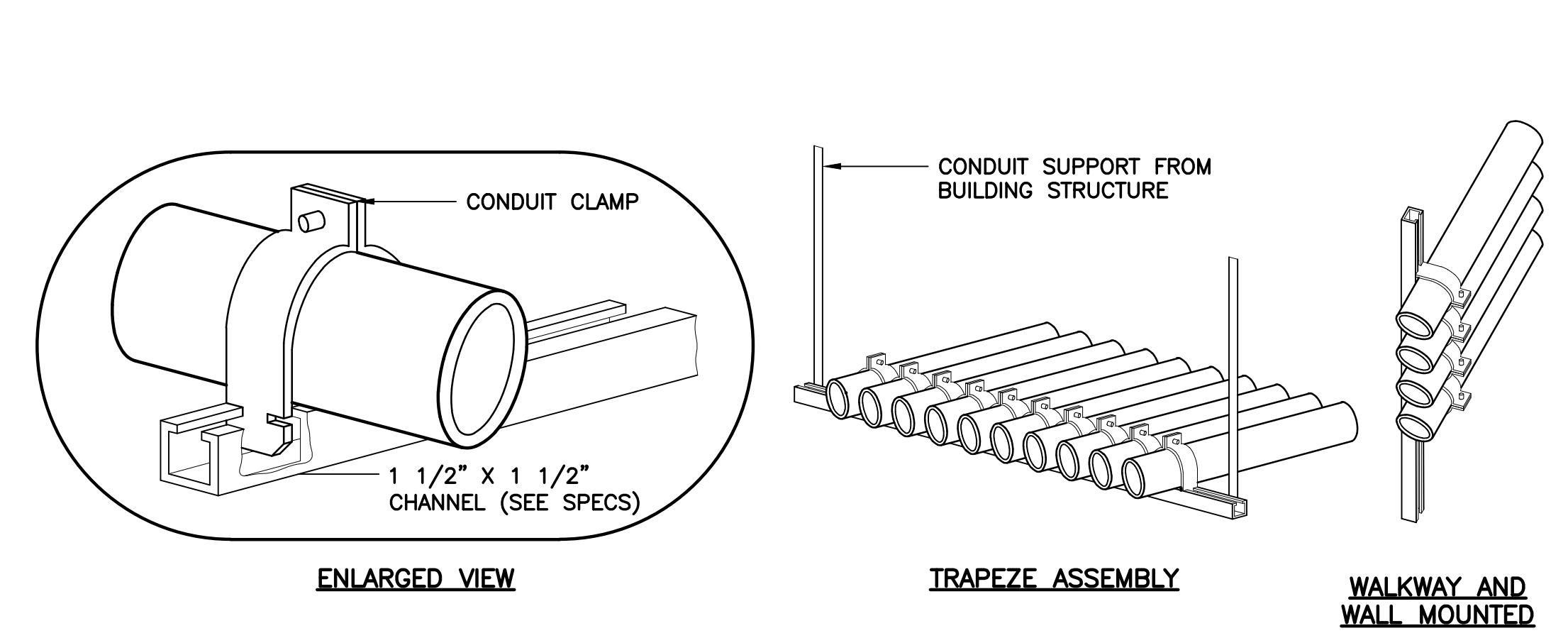
**RE**  
 REISS ENGINEERING, INC.  
 1016 SPRING VILLAS PT  
 WINTER SPRINGS, FL 32708  
 (407) 679-5358



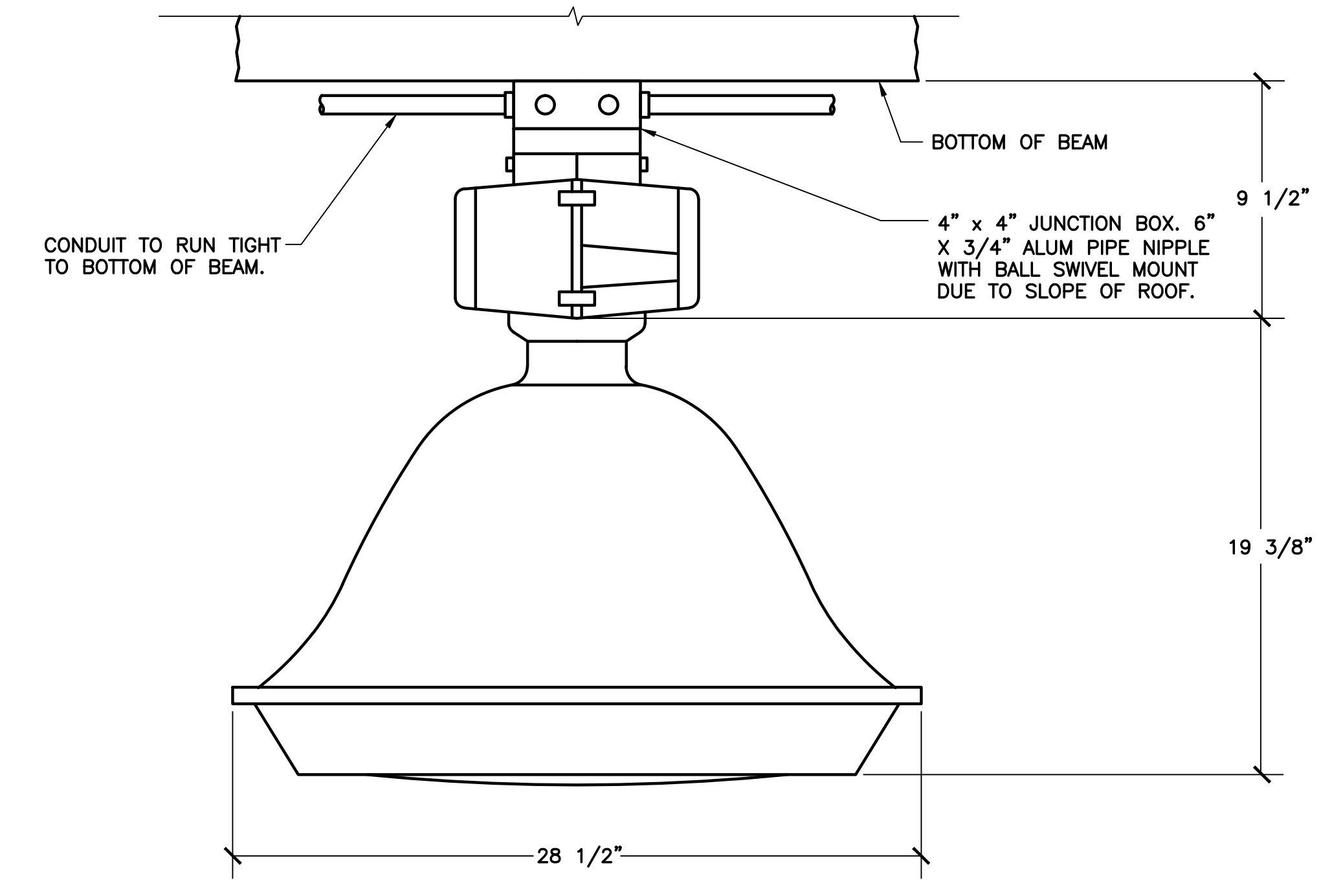
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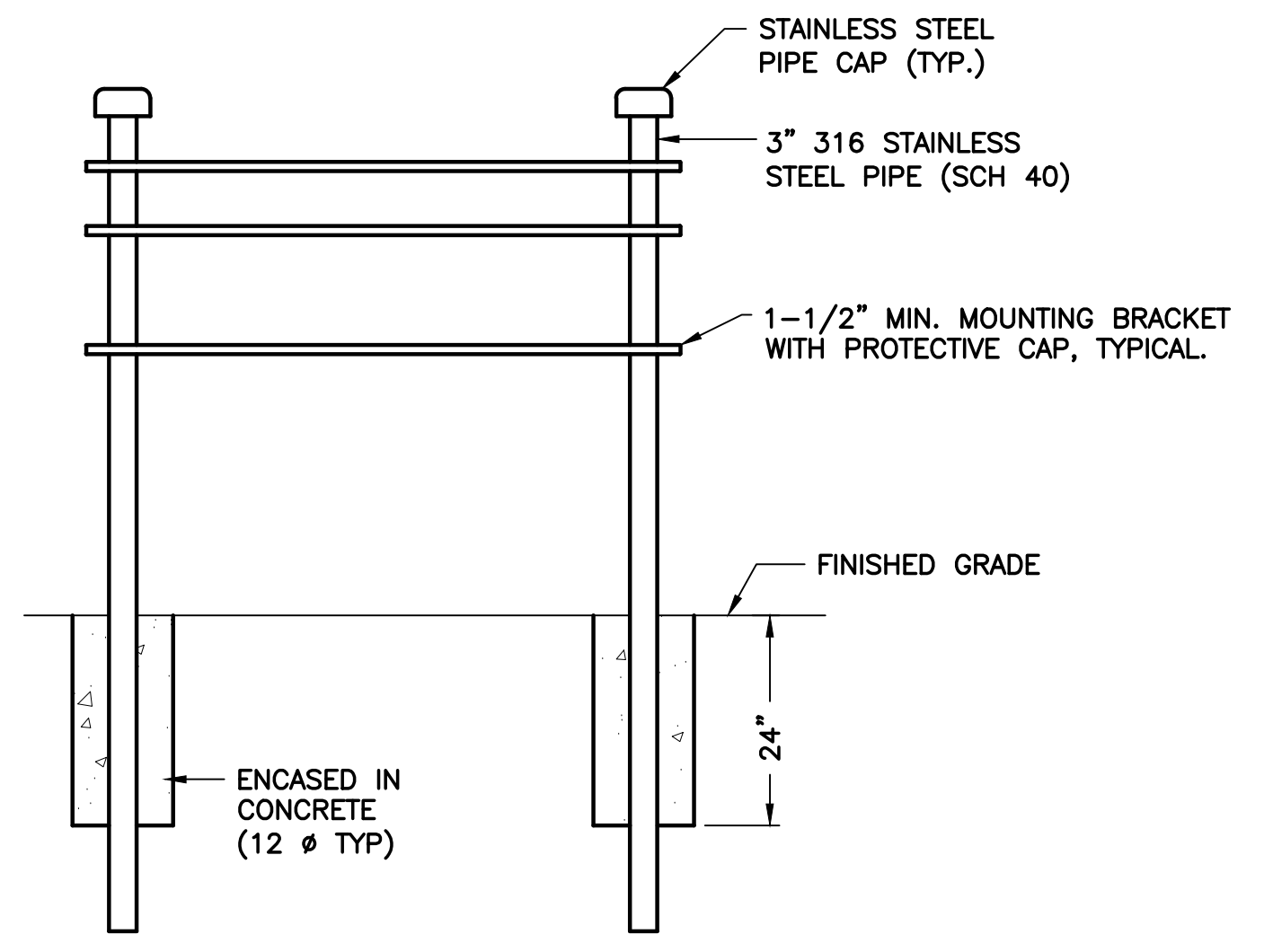
**2**  
TYP.  
**GROUND TEST WELL**  
SCALE: N.T.S.



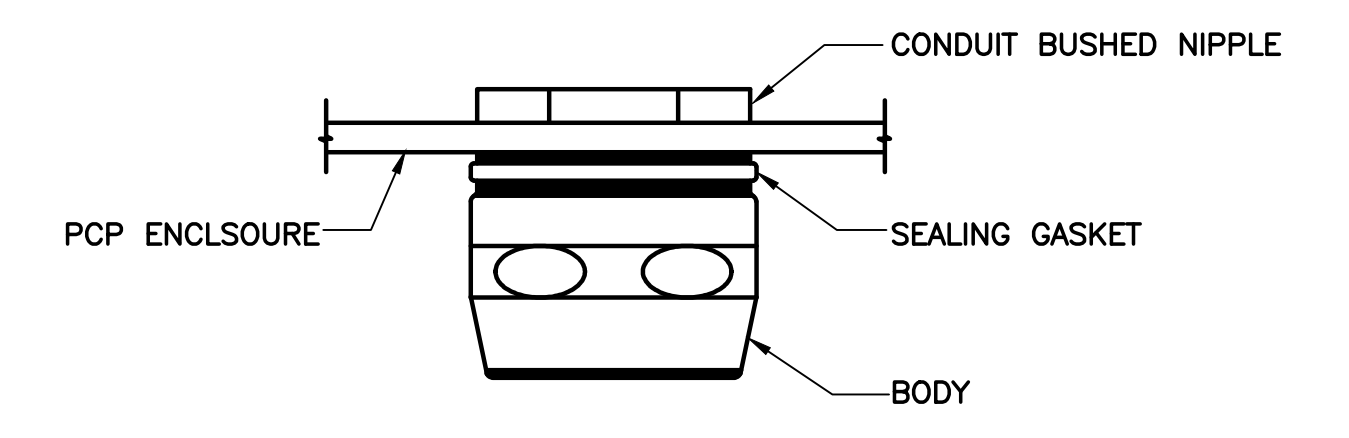
**3**  
TYP.  
**CONDUIT PIPE STRAP MOUNTING DETAILS**  
SCALE: N.T.S.



**4**  
TYP.  
**TYPE "A/A1" FIXTURE**  
SCALE: N.T.S.



**5**  
TYP.  
**EQUIPMENT RACK**  
N.T.S.



**6**  
TYP.  
**CONDUIT HUB CONNECTION DETAIL**  
N.T.S.

| LIGHTING FIXTURE SCHEDULE |      |   |
|---------------------------|------|---|
| TYPE                      | WATT | DESCRIPTION   |
| A                         | 175  | 175 WATT METAL HALIDE, ENCLOSED LOW BAY INDUSTRIAL TYPE, ENERGY SAVING BALLAST, REMOTE MOUNTING, HEAVY DUTY, FIBERGLASS HOUSING, PRISMATIC BOROSILICATE GLASS, CEILING MOUNTED w/ QUARTZ RESTRIKE LAMP. 120V BALLAST. FIXTURE TO BE CORROSIVE RESISTANT.                          |
| A1                        | 175  | SAME AS TYPE 'A'. EXCEPT WITH EMERGENCY BATTERY PACK  |
| B                         | 42   | UTILITY WALL MOUNTED FLUORESCENT FIXTURE. RUGGED, DIE-CAST ALUMINUM HOUSING WITH HEAVY DUTY GLASS GLOBE, GRAY FINISH, U.L. LISTED FOR WET LOCATIONS, 120V   |
| C                         | 71   | FULL CUT-OFF WALLPACK. DECORATIVE, DIE-CAST ALUMINUM HOUSING AND DOOR. WHITE POWDER PAINT FINISHES PROVIDING A LASTING APPEARANCE IN OUTDOOR ENVIRONMENTS. 30 HIGH POWER LEDS, 4673 LUMENS. 5000K/70 CRI. 120V, TYPE III DISTRIBUTION. HUBBELL OR EQUAL LAREDO SERIES LMC-30-LEDS |
| ⊗ <sub>4</sub>            | 5    | NEMA 4X LED EXIT SIGN, SUITABLE FOR USE IN DAMP LOCATIONS, WATERTIGHT AND DUST TIGHT SEAL, CORROSION RESISTANT POLYCARBONATE HOUSING AND COVER, RED HIGH OUTPUT LEDS, MAINTENANCE FREE NICKEL CADMIUM BATTERY, 120V.  |

**EDA**  
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 4763 SOUTH CONWAY ROAD, STE. E  
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 Florida P.E. No. 50780

**BID SUBMITTAL**



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| 0   | 10/2014 | ISSUED FOR BID | LMR |

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ORANGE COUNTY EASTERN WATER RECLAMATION FACILITY (EWRF)  
 HYPOCHLORITE STORAGE IMPROVEMENTS  
 ELECTRICAL  
**ELECTRICAL DETAILS**

|              |          |
|--------------|----------|
| PROJECT NO.: | 110004   |
| SCALE:       | NOTED    |
| REVISION:    | 0        |
| DRAWING NO.: | E06      |
| SHEET NO.:   | 21 OF 28 |

**RE**  
 REISS ENGINEERING, INC.  
 1016 SPRING VILLAS PT  
 WINTER SPRINGS, FL 32708  
 (407) 679-5358



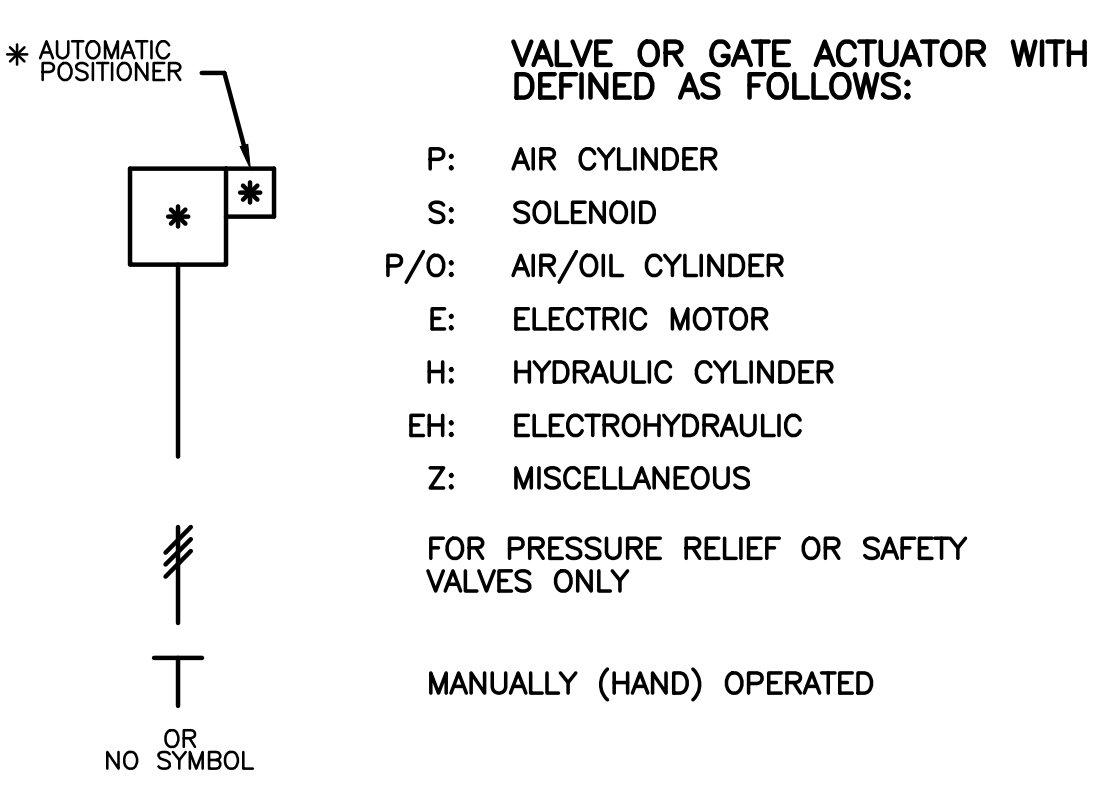
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| GENERAL INSTRUMENT OR FUNCTION SYMBOLS |   | PROCESS DEVICE SYMBOLS |  | PROCESS DEVICE SYMBOLS (CONTINUED) |   | FUNCTION SYMBOLS & ABBREVIATIONS |   |   |
|--|---|------------------------|--|------------------------------------|---|----------------------------------|---|---|
|  | DISCRETE INSTRUMENT - FIELD MOUNTED   |                        | REDUCER OR ENLARGER                                    |                                    | VALVE: GLOBE OR OTHER IN-LINE TYPE, UNLESS OTHERWISE INDICATED. | <b>k</b>                         | PROPORTIONAL GAIN OR ATTENUATE (INPUT:OUTPUT)         | HAND SWITCH ABBREVIATIONS:<br>A AUTOMATIC<br>C COMPUTER OR CLOSE<br>H HAND<br>L LOCAL<br>M MODULATE<br>O OFF OR OPEN<br>R REMOTE<br>S START OR STOP |
|  | DISCRETE INSTRUMENT - PRIMARY LOCATION NORMALLY ACCESSIBLE TO OPERATOR ①  |                        | PRIMARY ELEMENT VENTURI TUBE                           |                                    | BUTTERFLY VALVE   | <b>-k</b>                        | REVERSE PROPORTIONAL GAIN OR ATTENUATE (INPUT:OUTPUT) |   |
|  | DISCRETE INSTRUMENT - AUXILIARY LOCATION NORMALLY ACCESSIBLE TO OPERATOR ①  |                        | PRIMARY ELEMENT MAGNETIC FLOWMETER                     |                                    | CHECK VALVE WITH FLOW DIRECTION AS INDICATED                    | $\Sigma$                         | SUMMING   |   |
|  | INSTRUMENTS SHARING COMMON HOUSING  |                        | PRIMARY ELEMENT ULTRASONIC DOPPLER FLOWMETER           |                                    | PLUG VALVE  | $\Sigma/n$                       | AVERAGING   |   |
|  | HATCHED ITEMS INDICATE TO BE PROVIDED BY OTHERS   |                        | PRIMARY ELEMENT PARSCHALL FLUME                        |                                    | BALL VALVE  | $\Delta$                         | SUBTRACTING   |   |
|  | NORMALLY INACCESSIBLE OR BEHIND-THE-PANEL DEVICES OR FUNCTIONS MAY BE DEPICTED BY USING THE SAME SYMBOL, BUT WITH DASHED HORIZONTAL BARS. |                        | PRIMARY ELEMENT ORIFICE PLATE                          |                                    | PRESSURE REGULATING VALVE - SELF CONTAINED                      | $\sqrt{\quad}$                   | EXACT SQUARE ROOT                                     |   |
|  | CONTROL INTERLOCK   |                        | PRIMARY ELEMENT WEIR FLOWMETER                         |                                    | FLOW CONTROL GATE OR GATE VALVE                                 | <b>+</b>                         | DIVIDE  |   |
|  | CONTROL SYSTEM I/O INTERFACE - ANALOG SIGNAL. DIRECTION OF TRIANGLE DENOTES WHETHER INPUT OR OUTPUT.                                      |                        | PRIMARY ELEMENT TURBINE OR PROPELLER TYPE METER        |                                    | CENTRIFUGAL BLOWER  | <b>x</b>                         | MULTIPLY  |   |
|  | CONTROL SYSTEM I/O INTERFACE - DISCRETE SIGNAL. DIRECTION OF TRIANGLE DENOTES WHETHER INPUT OR OUTPUT.                                    |                        | PRIMARY ELEMENT PITOT TUBE                             |                                    | CENTRIFUGAL PUMP  | <b>S</b>                         | INTEGRATE   |   |
|  | PNEUMATIC SIGNAL  |                        | PRIMARY ELEMENT STRAP ON ULTRASONIC TRANSIT TIME METER |                                    | SUBMERSIBLE PUMP  | <b>+</b>                         | BIAS POSITIVE   |   |
|  | EXISTING EQUIPMENT  |                        | PRIMARY ELEMENT STRAP ON ULTRASONIC DOPPLER METER      |                                    | DIAPHRAGM PUMP & MOTOR  | <b>-</b>                         | BIAS NEGATIVE   |   |
|  | FUTURE EQUIPMENT  |                        | PRIMARY ELEMENT ULTRASONIC FLOW OR LEVEL METER         |                                    | DISC FLOW OR PROGRESSIVE CAVITY PUMP                            | <b>(X)</b>                       | NONLINEAR OR UNSPECIFIED FUNCTION                     |   |
|  | DIAPHRAGM SEAL  |                        | FLOAT SWITCH   |                                    | VERTICAL PUMP   | <b>&gt;</b>                      | HIGH SELECT   |   |
|  | BUBBLER SYSTEM  |                        | DRAIN  |                                    | MIXER   | <b>&lt;</b>                      | LOW SELECT  |   |
|  | PURGE OR FLUSHING DEVICE  |                        | CHEMICAL INJECTION POINT                               |                                    |   | <b>}</b>                         | HIGH LIMIT  |   |
|  |   |                        | MIXER  |                                    |   | <b>†</b>                         | LOW LIMIT   |   |

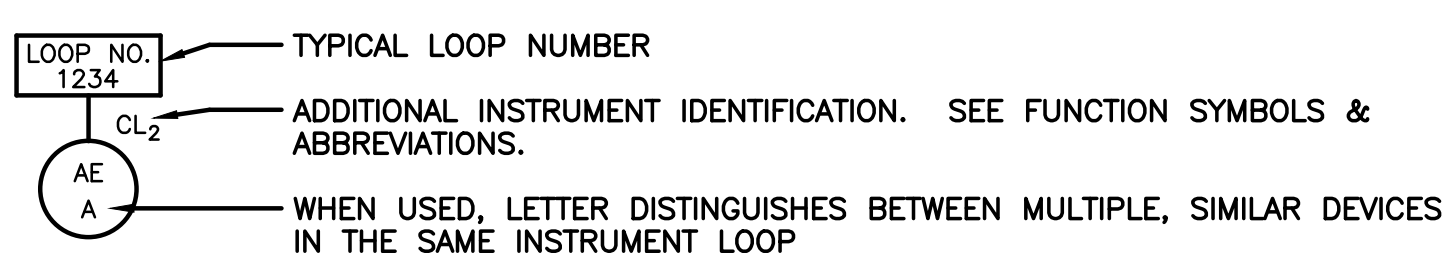
**GENERAL NOTES**

- THIS IS A GENERAL LEGEND SHEET. SOME SYMBOLS & ABBREVIATIONS MAY NOT APPLY TO THIS SPECIFIC PROJECT.
- THIS LEGEND APPLIES TO INSTRUMENTATION DIAGRAMS ONLY, & ITS SYMBOLS MAY NOT BE APPLICABLE TO NON-INSTRUMENTATION DRAWINGS.
- THIS LEGEND SHEET & THE INSTRUMENTATION DIAGRAMS & I-DRAWINGS ARE GENERALLY BASED ON THE INTERNATIONAL SOCIETY OF AUTOMATION STANDARDS FOR PRACTICES IN INSTRUMENTATION. SOME MODIFICATIONS, ADDITIONS, & ALTERATIONS MAY HAVE BEEN MADE TO ACCOMMODATE INDIVIDUAL PROJECT REQUIREMENTS.
- SOME PROCESS ITEMS (SUCH AS EQUIPMENT ISOLATION VALVES, BYPASS LINES, ETC.) WHICH ARE NOT CRITICAL FOR AN UNDERSTANDING OF THE INSTRUMENTATION FUNCTIONS ARE NOT SHOWN ON THE INSTRUMENTATION SHEETS.
- SEE ELECTRICAL SHEETS & SPECIFICATIONS FOR ADDITIONAL CONTROL & INTERLOCK REQUIREMENTS FOR EQUIPMENT NOT SHOWN OR NOT PROVIDED BY THE INSTRUMENTATION SUPPLIER.
- SLANTED TEXT DENOTES EXISTING EQUIPMENT OR STRUCTURES. NON-SLANTED TEXT DENOTES NEW EQUIPMENT, STRUCTURES, & WORK. SLANTED TEXT (NOT SHADED) DENOTES FUTURE EQUIPMENT STRUCTURES & WORK.

**VALVE ACTUATOR SYMBOLS**



**TAG NUMBER & DESIGNATION EXAMPLE**



**INSTRUMENTATION IDENTIFICATION LETTERS**

| FIRST LETTER | SUCCEEDING LETTERS                 |                       |
|--------------|------------------------------------|-----------------------|
|              | MEASURED OR INITIATING VARIABLE    | MODIFIER              |
| A            | ANALYSIS                           |                       |
| B            | BURNER, COMBUSTION                 |                       |
| C            | USER'S CHOICE                      |                       |
| D            | DENSITY (MASS) OR SPECIFIC GRAVITY | DIFFERENTIAL          |
| E            | VOLTAGE (EMF)                      |                       |
| F            | FLOW RATE                          | RATIO (FRACTION)      |
| G            | GAUGING (DIMENSIONAL)              |                       |
| H            | HAND (MANUALLY INITIATED)          |                       |
| I            | CURRENT (ELECTRICAL)               | SCAN                  |
| J            | POWER                              |                       |
| K            | TIME OR TIME SCHEDULE              |                       |
| L            | LEVEL                              |                       |
| M            | USER'S CHOICE                      | MOMENTARY             |
| N            | USER'S CHOICE                      |                       |
| O            | USER'S CHOICE                      |                       |
| P            | PRESSURE OR VACUUM                 |                       |
| Q            | QUANTITY                           | INTEGRATE OR TOTALIZE |
| R            | RUN                                |                       |
| S            | SPEED OR FREQUENCY                 | SAFETY                |
| T            | TEMPERATURE                        |                       |
| U            | MULTIVARIABLE                      |                       |
| V            | VISCOSITY, VIBRATION               |                       |
| W            | WEIGHT OR TORQUE                   |                       |
| X            | FAILURE                            | X AXIS                |
| Y            | EVENT, STATE, OR PRESENCE          | Y AXIS                |
| Z            | POSITION, DIMENSION                | Z AXIS                |



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Issue Certification  
Lillian M. Reyes, P.E.  
Florida P.E. No. 50780  
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Certificate of Authorization No. 8079  
4763 South Conway Rd., Suite E  
Orlando, FL 32812

Designed DD  
Drawn RRM  
Checked LMR  
Reviewed DD  
Approved LMR

LINE IS 1" AT FULL SIZE

Date 10/2014

ORANGE COUNTY EASTERN WATER RECLAMATION FACILITY (EWRF)  
HYPOCHLORITE STORAGE IMPROVEMENTS

INSTRUMENTATION & CONTROLS

INSTRUMENTATION NOTES, SYMBOLS AND ABBREVIATIONS

|              |          |
|--------------|----------|
| PROJECT NO.: | 110004   |
| SCALE:       | NOTED    |
| REVISION:    | 0        |
| DRAWING NO.: | 101      |
| SHEET NO.:   | 22 OF 28 |

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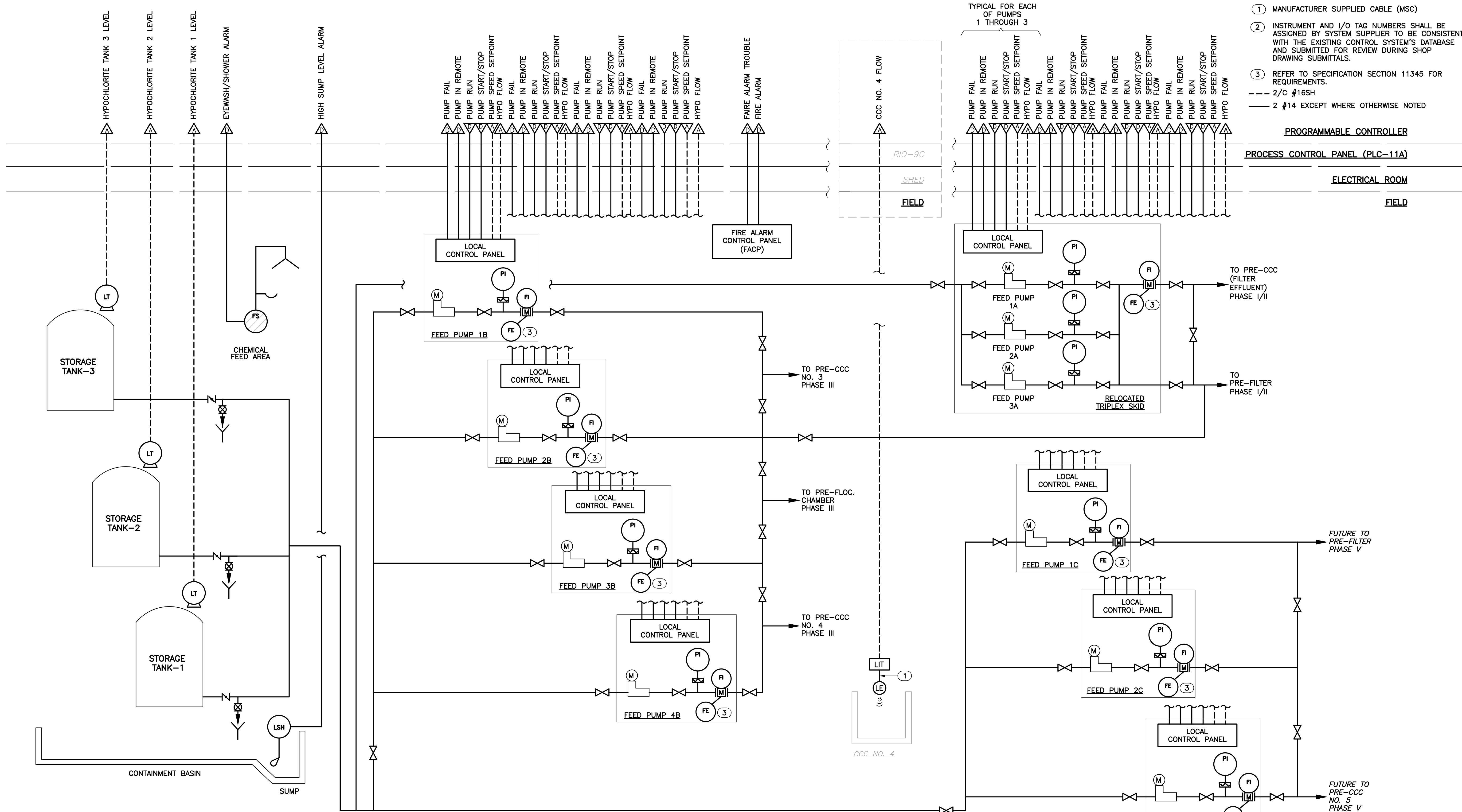
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1016 SPRING VILLAS PT  
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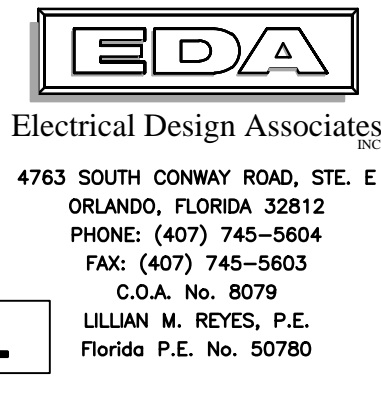
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- NOTES**
- MANUFACTURER SUPPLIED CABLE (MSC)
  - INSTRUMENT AND I/O TAG NUMBERS SHALL BE ASSIGNED BY SYSTEM SUPPLIER TO BE CONSISTENT WITH THE EXISTING CONTROL SYSTEM'S DATABASE AND SUBMITTED FOR REVIEW DURING SHOP DRAWING SUBMITTALS.
  - REFER TO SPECIFICATION SECTION 11345 FOR REQUIREMENTS.
- 2/C #16SH  
 — 2 #14 EXCEPT WHERE OTHERWISE NOTED

PROGRAMMABLE CONTROLLER  
 PROCESS CONTROL PANEL (PLC-11A)  
 ELECTRICAL ROOM  
 FIELD

**SODIUM HYPOCHLORITE SYSTEM**  
 N.T.S.



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Designed DD  
 Drawn RRM  
 Checked LMR  
 Reviewed DD  
 Approved LMR  
 Date 10/2014

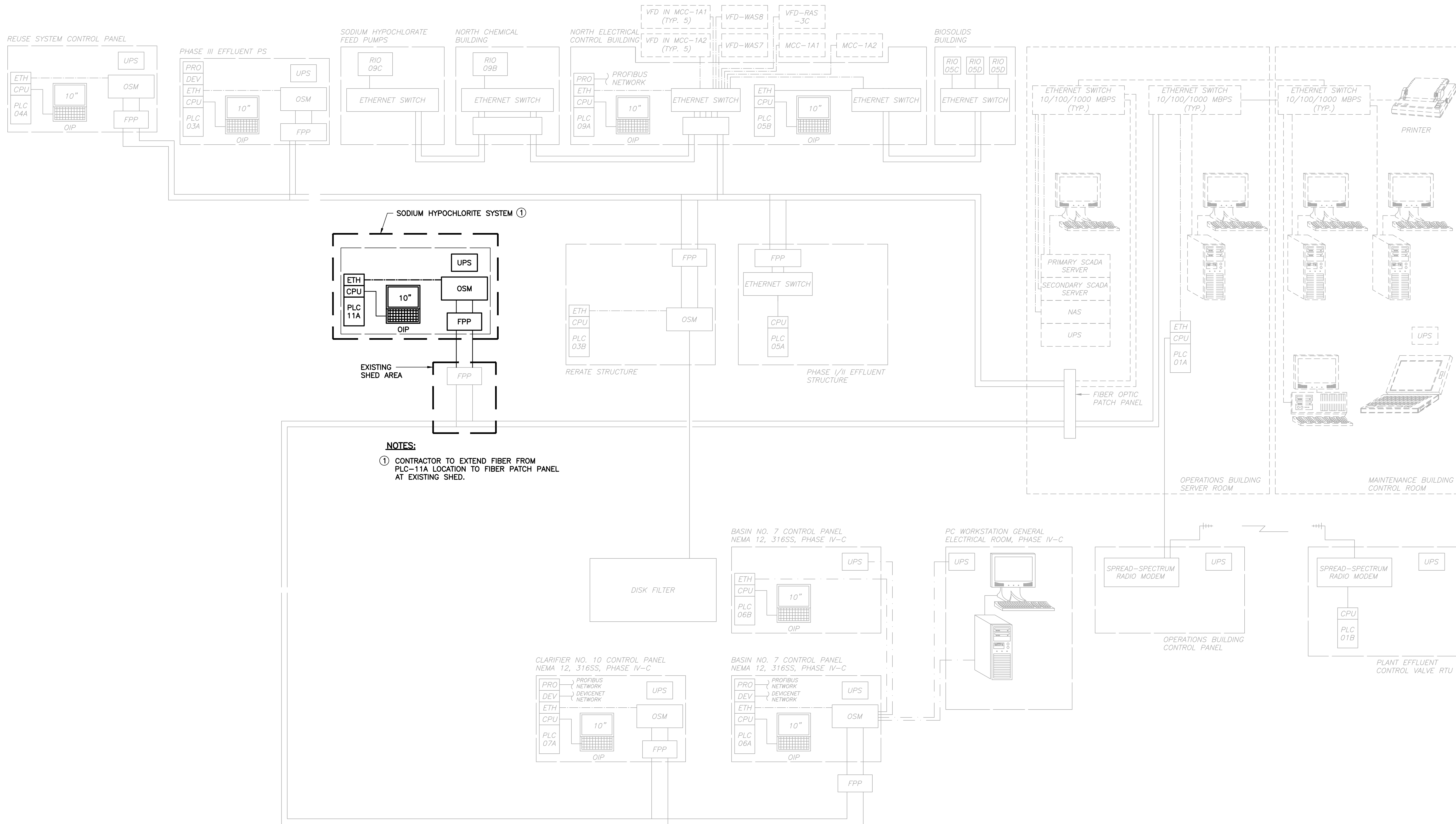
ORANGE COUNTY EASTERN WATER RECLAMATION FACILITY (EWRF)  
 HYPOCHLORITE STORAGE IMPROVEMENTS  
 INSTRUMENTATION & CONTROLS  
 P & ID - HYPOCHLORITE STORAGE

|              |          |
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| PROJECT NO.: | 110004   |
| SCALE:       | NOTED    |
| DRAWING NO.: | 102      |
| REVISION:    | 0        |
| SHEET NO.:   | 23 OF 28 |



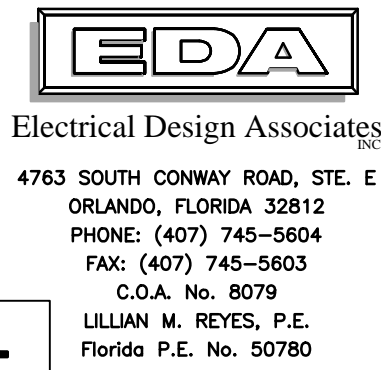


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**NOTES:**  
 ① CONTRACTOR TO EXTEND FIBER FROM PLC-11A LOCATION TO FIBER PATCH PANEL AT EXISTING SHED.

**SYSTEM NETWORK DIAGRAM**  
 SCALE: N.T.S.



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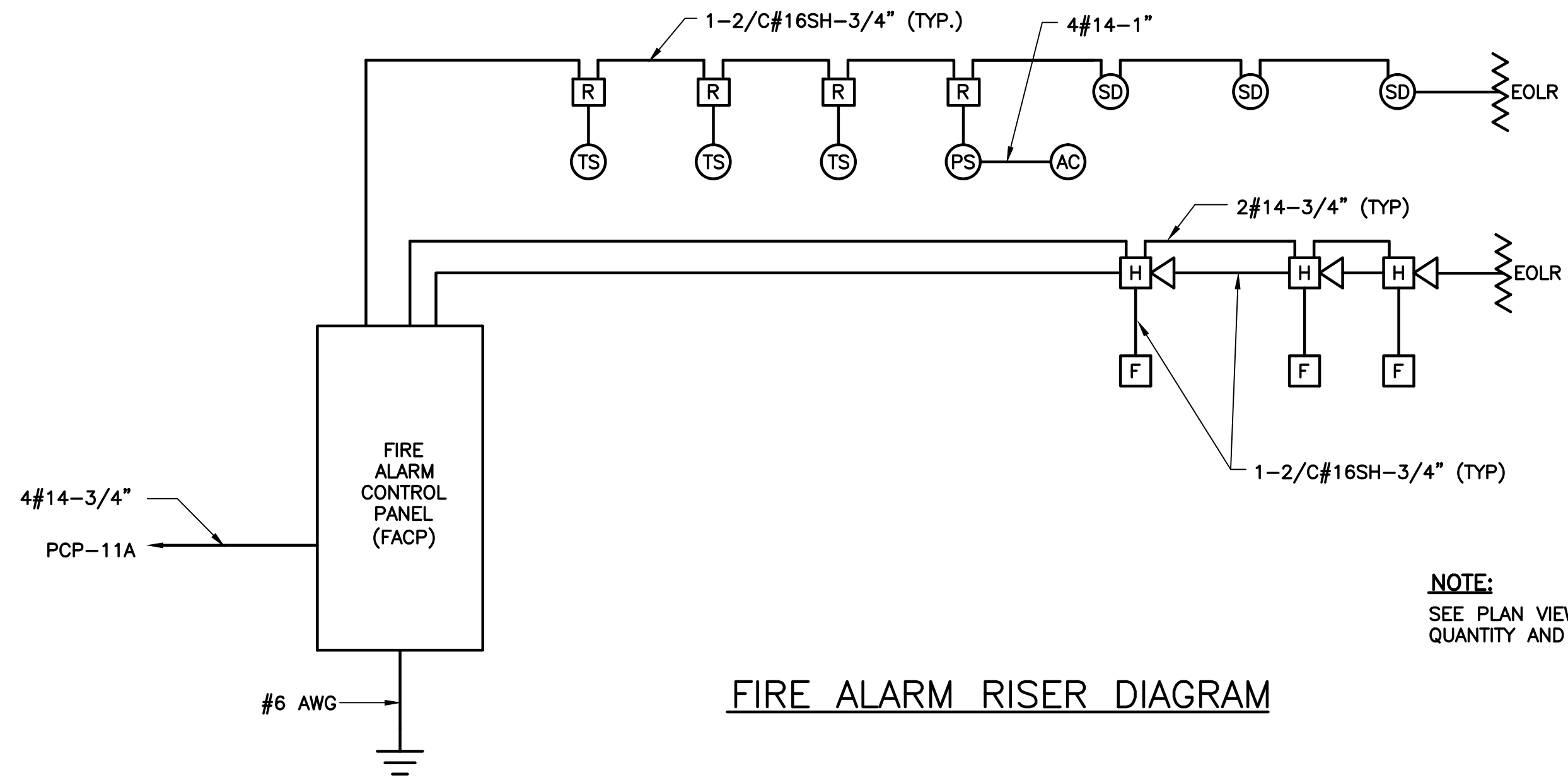
ORANGE COUNTY EASTERN WATER RECLAMATION FACILITY (EWRW)  
 HYPOCHLORITE STORAGE IMPROVEMENTS  
 INSTRUMENTATION & CONTROLS  
 SYSTEM NETWORK DIAGRAM

|              |          |
|--------------|----------|
| PROJECT NO.: | 110004   |
| SCALE:       | NOTED    |
| REVISION:    | 0        |
| DRAWING NO.: | 103      |
| SHEET NO.:   | 24 OF 28 |



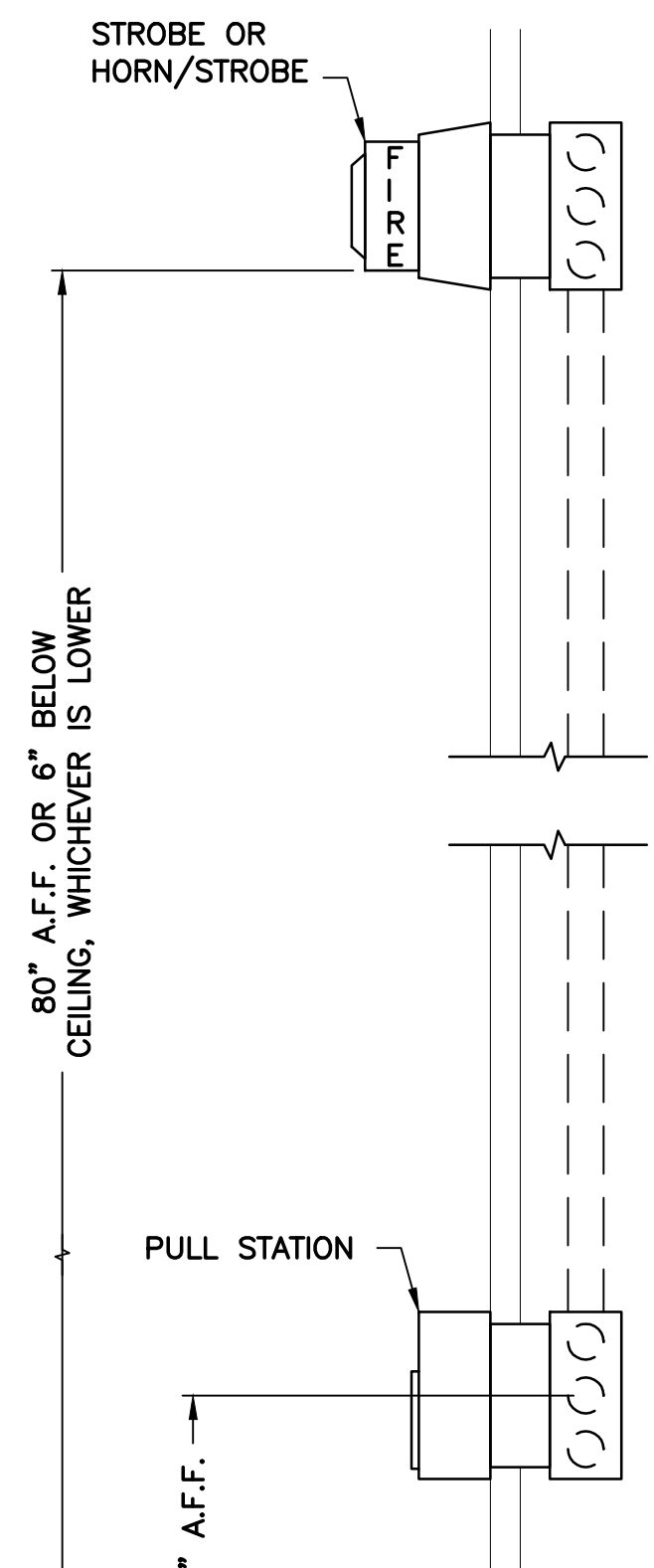


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**NOTE:**  
SEE PLAN VIEW ON DRAWING FA02 FOR QUANTITY AND DEVICE LOCATIONS.

**FIRE ALARM RISER DIAGRAM**



**HEIGHT REQUIREMENTS**

SCALE: N.T.S.

**FIRE EQUIPMENT FUNCTION SYMBOLS**

|             |                              |             |                                      |
|-------------|------------------------------|-------------|--------------------------------------|
| <b>FACP</b> | FIRE ALARM CONTROL PANEL     | <b>I</b>    | ISOLATION MODULE                     |
| <b>FAAP</b> | FIRE ALARM ANNUNCIATOR PANEL | <b>CR</b>   | ADDRESSABLE RELAY MODULE AS REQUIRED |
| <b>H</b>    | HORN / STROBE                | <b>MX</b>   | ADDRESSABLE INPUT MODULE AS REQUIRED |
| <b>L</b>    | STROBE LIGHT                 | <b>R</b>    | CONTROL RELAY                        |
| <b>F</b>    | PULL STATION                 | <b>FAJB</b> | FIRE ALARM JUNCTION BOX              |
| <b>SD</b>   | SMOKE DETECTOR               | <b>EOLR</b> | END OF LINE RESISTOR                 |
| <b>DD</b>   | DUCT DETECTOR                | <b>AC</b>   | AIR COMPRESSOR                       |
| <b>FS</b>   | FLOW SWITCH                  |             |                                      |
| <b>TS</b>   | TAMPER SWITCH                |             |                                      |
| <b>PS</b>   | PRESSURE SWITCH              |             |                                      |

**FUNCTION SYMBOLS AND ABBREVIATIONS**

ELOR END OF LINE RESISTOR  
TP TWISTED PAIR CABLE  
TSP TWISTED SHIELDED PAIR CABLE  
TYP TYPICAL

**FIRE ALARM SYSTEM NOTES:**

- ① PROVIDE FULLY OPERABLE ADDRESSABLE, ANALOG FIRE ALARM SYSTEM IN ACCORDANCE TO N.F.P.A. 2010 EDITION CODE AND ANY APPLICABLE LOCAL CODES AND ORDINANCES.
- ② CONTRACTOR SHALL OBTAIN APPROVAL FROM THE ORANGE COUNTY FIRE MARSHAL.
- ③ PROVIDE ANNUNCIATION AS FOLLOWS:  
A. EACH DEVICE SHALL HAVE A SEPARATE ADDRESS WITH AN ENGLISH READ OUT AT THE LOCAL FIRE ALARM PANEL AND SHALL COMMUNICATE WITH THE MAIN FIRE ALARM PANEL.
- ④ SYSTEM SHALL BE CONTINUOUSLY SUPERVISED ELECTRICALLY AGAINST COMPONENT-FAILURE, SHALL DETECT OPEN OR SHORT WHICH MIGHT IMPAIR THE FUNCTION OF THE SYSTEM, AND SHALL BE POWER LIMITING.
- ⑤ ON ALARM INITIATION MANUAL OR AUTOMATIC, THE FOLLOWING FUNCTIONS SHALL OCCUR:  
A. SOUND ALL AUDIBLE/VISIBLE STROBE LIGHTING ALARMS IN BUILDING.  
B. INDICATE WHICH DEVICE INITIATED ALARM.  
C. ACTIVATE ALARM TO MAIN FIRE ALARM PANEL.
- ⑥ SYSTEM SHALL BE FIELD PROGRAMMABLE.
- ⑦ HORN STROBE SHALL BE AT LEAST 15 DBA ABOVE THE AMBIENT SOUND AND SHALL HAVE A DURATION OF NO LESS THAN 60 SECONDS MEASURED 5 FOOT ABOVE THE FLOOR IN THE OCCUPIED AREA, INCLUDING RESTROOMS, AND STORAGE AREAS. THE CONTRACTOR IS REQUIRED TO CERTIFY THE DBA LEVEL WITH AN APPROVED DBA METER PRIOR TO THE ISSUANCE OF THE CERTIFICATE OF OCCUPANCY.
- ⑧ ALL COMPONENTS SHALL BEAR UL LABEL FOR FIRE SERVICE USE AND SHALL BE COMPATIBLE.
- ⑨ BEFORE THIS INSTALLATION SHALL BE CONSIDERED COMPLETE AND ACCEPTABLE TO THE CITY AND ENGINEER, A COMPLETE TEST ON THE SYSTEM SHALL BE PERFORMED, AND A NFPA 72 CERTIFICATE OF COMPLETION SHALL BE RECEIVED FROM THE MANUFACTURER'S REPRESENTATIVE.
- ⑩ PROVIDE SIX (6) SETS OF POINT-TO-POINT WIRING DIAGRAMS, OWNER MANUALS, INSTALLATION INSTRUCTIONS, BATTERY CALCULATIONS, AND RECORD DRAWINGS.
- ⑪ DEALER SHALL INCLUDE AT NO CHARGE TO THE OWNER A ONE-YEAR FULL MAINTENANCE SERVICE CONTRACT TO PROVIDE ALL MANUFACTURER'S RECOMMENDED SERVICES WITH A MINIMUM OF FOUR INSPECTIONS PER YEAR. THE DEALER SHALL MAKE AVAILABLE TO THE OWNER AFTER THE FIRST YEAR AN EXTENSION OF THE CONTRACT AT THE DEALER'S REGULAR RATE.
- ⑫ SIGNALS (HORN/STROBE AND STROBES) TO BE MOUNTED AT 80" AFF. TO BOTTOM OF DEVICE TO MEET ADA.
- ⑬ PULL STATIONS TO BE MOUNTED AT 48" AFF.
- ⑭ MANUFACTURER SHALL PROVIDE A THREE YEAR WARRANTY ON ALL FIRE ALARM PARTS.

**GENERAL NOTES:**

- ① SEE ELECTRICAL DRAWINGS FOR ADDITIONAL CONDUIT AND CABLE REQUIREMENTS AND INSTALLATION DETAILS.
- ② EACH SYSTEM SHALL BE SUPPLIED WITH ALL HARDWARE, SOFTWARE, PROGRAMMING, INTERCONNECTING CABLES, POWER SUPPLIES, WIRING, TERMINATION AND INSTALLATION FOR A COMPLETE AND WORKING SYSTEM.
- ③ CONTRACTOR SHALL REVIEW THE DRAWINGS OF ALL DISCIPLINES AND APPROVED SHOP DRAWINGS AND COORDINATE THE INSTALLATION OF PANELS, CONDUIT, CABLE AND TERMINATION REQUIREMENTS FOR EQUIPMENT BEING SUPPLIED AS PART OF OTHER SPECIFICATION SECTION.
- ④ ADJUST LOCATION OF FIRE ALARM DEVICES TO PROVIDE MAXIMUM COVERAGE AND MEET THE REQUIREMENTS OF THE LATEST CODES FOR FIRE ALARM SYSTEMS.
- ⑤ PROVIDE CONDUIT AND CABLES AS PER MANUFACTURERS REQUIREMENTS AND APPROVED SHOP DRAWINGS. CABLES SHALL BE RATED FOR THE ENVIRONMENT INSTALLED. WET LOCATION FOR ALL CABLES INSTALLED IN BELOW GRADE CONDUIT SYSTEMS. MINIMUM SIZE CONDUIT 3/4", SEE ELECTRICAL SPECIFICATIONS FOR CONDUIT APPLICATIONS.
- ⑥ PROVIDE AND INSTALL FIRE ALARM SYSTEM AS SHOWN ON THE PLANS AND SPECIFICATIONS.
- ⑦ PROVIDE ALL HARDWARE, SOFTWARE AND PROGRAMMING REQUIRED FOR COMPLETE AND WORKING SYSTEMS.
- ⑧ PROVIDE AND INSTALL ALL PANELS, DEVICES, POWER SUPPLIES, CONDUIT, CABLE AND TERMINATIONS AS REQUIRED FOR COMPLETE AND WORKING SYSTEMS.
- ⑨ THE FIRE ALARM SYSTEM SHALL BE COORDINATED WITH THE COUNTY AND THE FIRE MARSHAL AND SHALL MEET THE REQUIREMENTS OF EACH OFFICE. CONTRACTOR SHALL INCLUDE IN HIS BID ALL HARDWARE AND SOFTWARE REQUIRED FOR U.L. CERTIFICATION OF THE SYSTEM.

**SCOPE:**



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LILLIAN M. REYES, P.E.  
Florida P.E. No. 50780

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| 0   | 10/2014 | ISSUED FOR BID | LMR |

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Orlando, FL 32812

Designed DD  
Drawn RRM  
Checked LMR  
Reviewed DD  
Approved LMR  
Date 10/2014

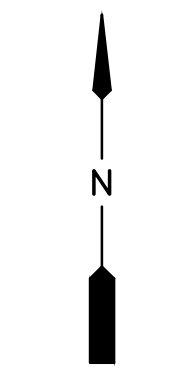
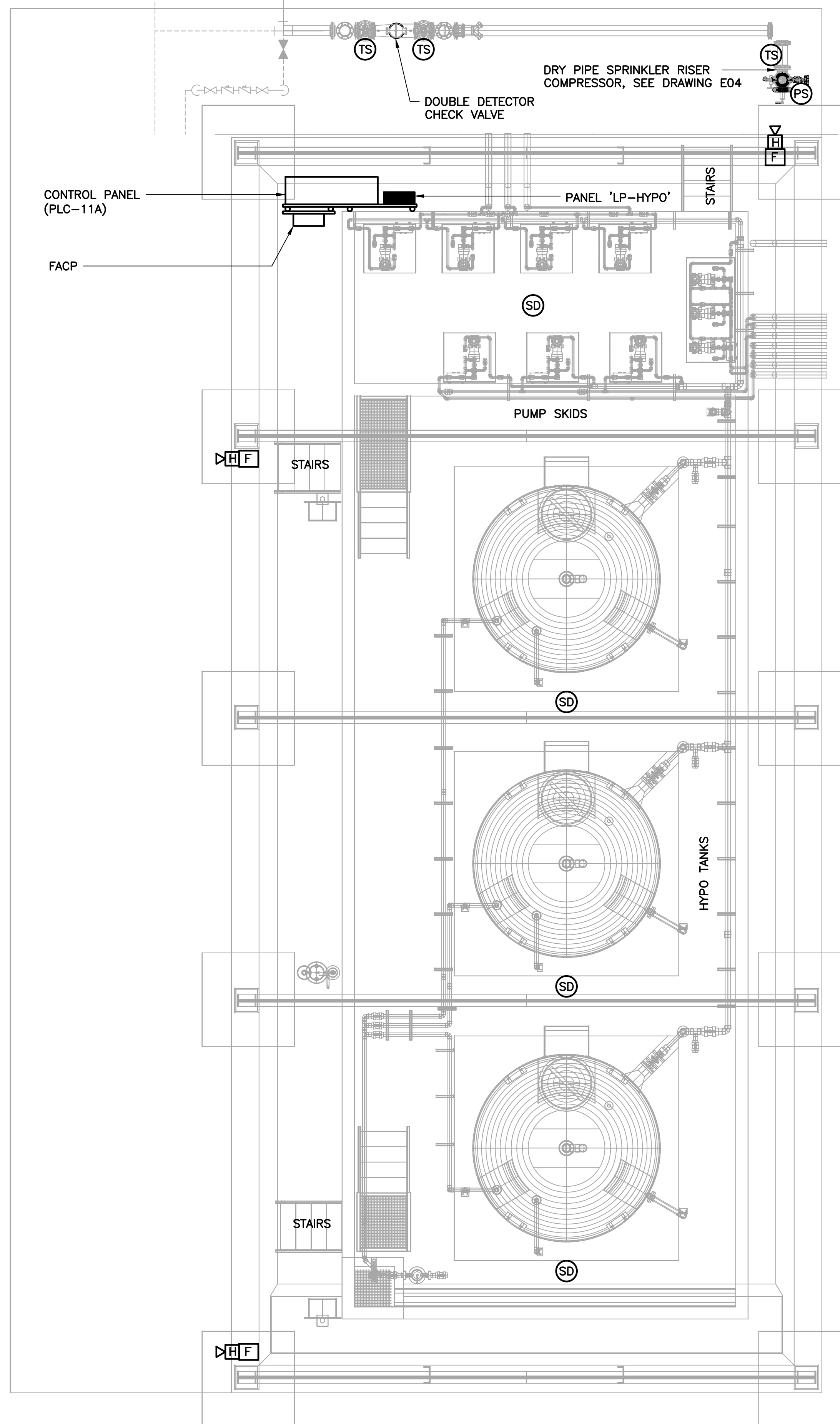
ORANGE COUNTY EASTERN WATER RECLAMATION FACILITY (EWRF)  
HYPOCHLORITE STORAGE IMPROVEMENTS  
FIRE ALARM  
HYPOCHLORITE STORAGE BUILDING FIRE ALARM RISER DIAGRAM,  
LEGEND AND NOTES

|              |          |
|--------------|----------|
| PROJECT NO.: | 110004   |
| SCALE:       | NOTED    |
| REVISION:    | 0        |
| DRAWING NO.: | FA01     |
| SHEET NO.:   | 25 OF 28 |



REISS ENGINEERING, INC.  
1016 SPRING VILLAS PT  
WINTER SPRINGS, FL 32708  
(407) 679-5358





**NOTES:**  
 ① SEE DRAWING FA01 FOR CONDUIT AND WIRE REQUIREMENTS.

**HYPOCHLORITE STORAGE BUILDING  
 FIRE ALARM PLAN**  
 SCALE: 1/4"=1'-0"



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 LILLIAN M. REYES, P.E.  
 Florida P.E. No. 50780

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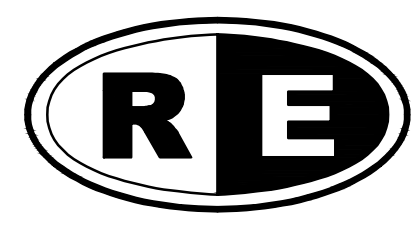
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 Drawn RRM  
 Checked LMR  
 Reviewed DD  
 Approved LMR  
 Date 10/2014

ORANGE COUNTY EASTERN WATER RECLAMATION FACILITY (EWRF)  
 HYPOCHLORITE STORAGE IMPROVEMENTS  
 FIRE ALARM  
 HYPOCHLORITE STORAGE BUILDING FIRE ALARM PLAN

|              |          |
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| PROJECT NO.: | 110004   |
| SCALE:       | NOTED    |
| REVISION:    | 0        |
| DRAWING NO.: | FA02     |
| SHEET NO.:   | 26 OF 28 |

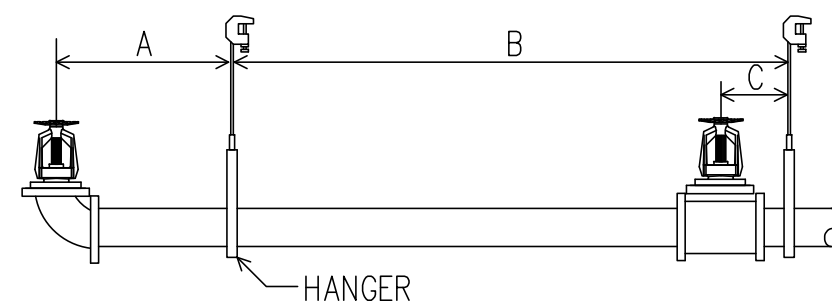


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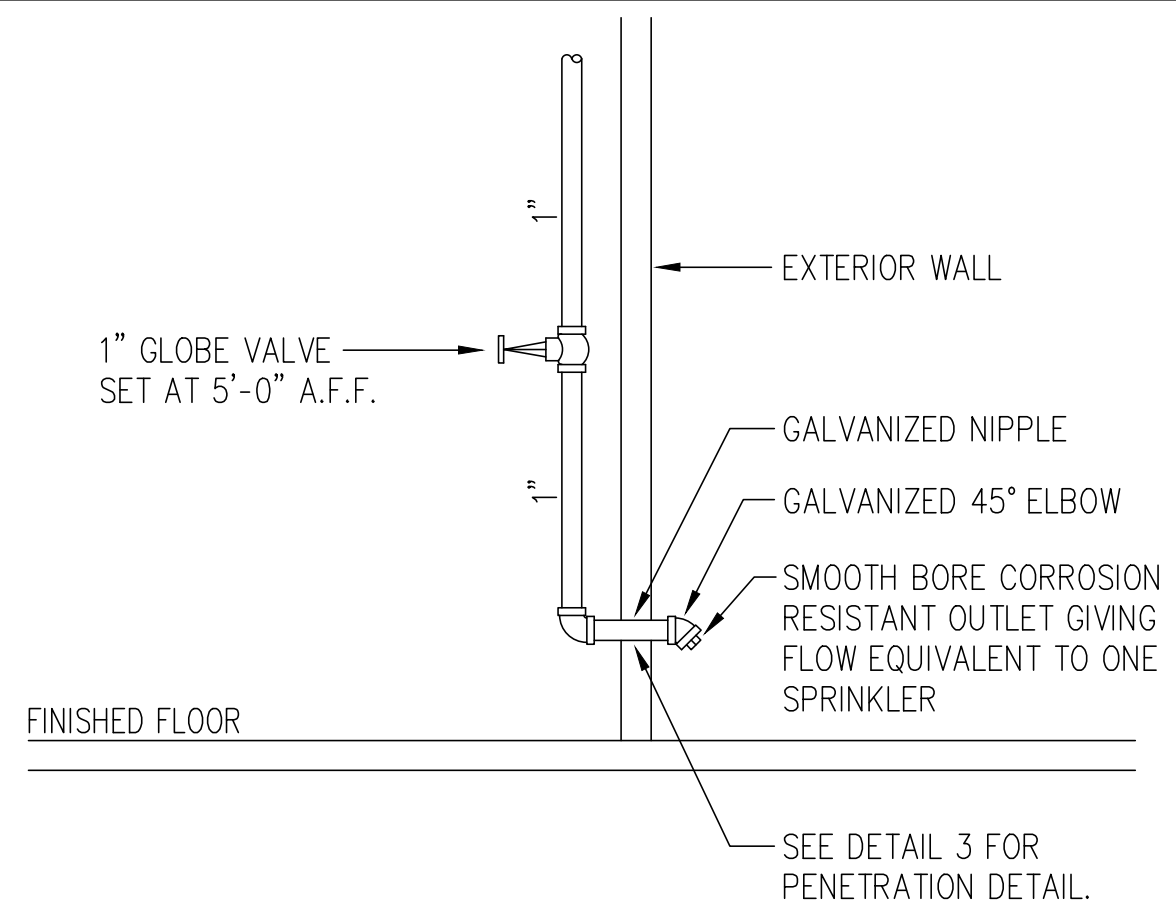
**STEEL PIPE HANGER LOCATION DETAIL**

| PIPE SIZE   | A         | B          | C      |
|-------------|-----------|------------|--------|
| 1"          | 3'-0" MAX | 12'-0" MAX | 3" MIN |
| 1 1/4"      | 4'-0" MAX | 12'-0" MAX | 3" MIN |
| 1 1/2" - 8" | 5'-0" MAX | 12'-0" MAX | 3" MIN |



THE UNSUPPORTED LENGTH BETWEEN THE END SPRINKLER AND THE LAST HANGER ON THE LINE SHALL NOT EXCEED 36" FOR 1" PIPE, 48" FOR 1 1/4" PIPE AND 60" FOR 1 1/2" PIPE OR LARGER.

THE CUMULATIVE HORIZONTAL LENGTH OF AN UNSUPPORTED ARMOR TO A SPRINKLER, SPRINKLER DROP, OR SPRIG-UP SHALL NOT EXCEED 24".



SEE DETAIL 3 FOR PENETRATION DETAIL.

**FAC 61G15-32.003 NOTES**

32.003(1) THE FIRE SPRINKLER CONTRACTOR SHALL PREPARE DETAILED WORKING PLANS IN ACCORDANCE WITH NFPA 13, 2007 EDITION, CHAPTER 14. THE FIRE PROTECTION SYSTEM LAYOUT SHALL FOLLOW THE DESIGN GUIDELINES SET FORTH IN THESE FIRE PROTECTION ENGINEERING DOCUMENTS.

32.003(2) THE FIRE SPRINKLER CONTRACTOR SHALL OBTAIN THE ACCEPTANCE TESTS FROM THE LOCAL AUTHORITY. THE ACCEPTANCE TEST FOR THE OVERHEAD SPRINKLER SYSTEM PIPING SHALL BE IN ACCORDANCE WITH NFPA 13, 2007 EDITION CHAPTER 16, SECTION 16.2 USING THE MATERIAL AND TEST CERTIFICATE FOR ABOVEGROUND PIPING IN FIGURE 16.1. THE ACCEPTANCE TEST FOR THE UNDERGROUND PIPING SHALL BE IN ACCORDANCE WITH NFPA 13, 2007 EDITION CHAPTER 10, SECTION 10.10 USING THE MATERIAL AND TEST CERTIFICATE FOR UNDERGROUND PIPING IN FIGURE 10.10.1.

**FAC 61G15-32.004 NOTES**

32.004(2)(a) THE POINT OF SERVICE IS INDICATED AT THE BACKFLOW PREVENTER. AT THIS POINT, THE SYSTEM IS DEDICATED SOLELY FOR FIRE PROTECTION PURPOSES. NO DOMESTIC WATER SHALL BE TAKEN FROM THE SYSTEM BEYOND THIS POINT FOR OTHER PURPOSES.

32.004(2)(b) THE FOLLOWING ARE APPLICABLE STANDARDS:  
 FLORIDA FIRE PREVENTION CODE, 2010 EDITION.  
 NFPA 13, 2007 EDITION, INSTALLATION OF SPRINKLER SYSTEMS.  
 NFPA 24, 2007 EDITION, STANDARD FOR THE INSTALLATION OF PRIVATE FIRE SERVICE MAINS AND THEIR APPURTENANCES.  
 NFPA 25, 2008 EDITION, INSPECTION, TESTING AND MAINTENANCE OF WATER-BASED FIRE PROTECTION SYSTEMS.

32.004(2)(c) CLASSIFICATIONS OF HAZARD OCCUPANCIES FOR THE AREAS OF DESIGN ARE AS FOLLOWS: (HYPOCHLORITE ROOM) ORDINARY HAZARD GROUP 2 PER NFPA 13, 2007 EDITION.

32.004(2)(d) THE SPRINKLER SYSTEM SHALL BE WET PIPE FOR ORDINARY HAZARD GROUP 2 OCCUPANCY AND SHALL BE HYDRAULICALLY CALCULATED PER NFPA 13, 2007 EDITION, 0.20gpm/sq.ft. OVER THE MOST REMOTE 1950sq.ft. SPRINKLERS SHALL HAVE A TEMPERATURE RATING OF 155°F AND THE SPACING SHALL BE 130sq.ft. INCLUDE A FIRE HOSE ALLOWANCE OF 250gpm.

32.004(2)(e) WATER SUPPLY: THIS BUILDING WILL HAVE A NEW 6" WATER SUPPLY FOR FIRE SPRINKLER PROTECTION BY ORANGE COUNTY.

32.004(2)(f) FLOW TEST - STATIC: 52psi, RESIDUAL 39psi FLOWING 540gpm. TEST WAS TAKEN ON 09-03-2014 AT 8:10am OFF A 12" WATER MAIN AT THE LOCATION OF THE NEW BUILDING. TEST WAS TAKEN BY ORANGE COUNTY UTILITIES.

32.004(2)(g) VALVE AND ALARM REQUIREMENTS: ALL CONTROL VALVES ON SPRINKLER RISERS AND FIRE PROTECTION BACKFLOW PREVENTERS SHALL HAVE A TAMPER SWITCH.

32.004(2)(h) THE LOCAL WATER PURVEYOR IS REQUESTED TO ADVISE THE ENGINEER OF RECORD IF CONDITIONS EXIST IN THEIR WATER SUPPLY THAT COULD LEAD TO MIC, SO THAT THE ENGINEER CAN DESIGN CORRECTIVE MEASURES. THERE ARE NO KNOWN MIC CONDITIONS IN THE ORANGE COUNTY WATER SYSTEMS.

32.004(2)(i) BACKFLOW PREVENTER AND METERING SPECIFICATIONS SHALL MEET OR EXCEED REQUIREMENTS OF ORANGE COUNTY.

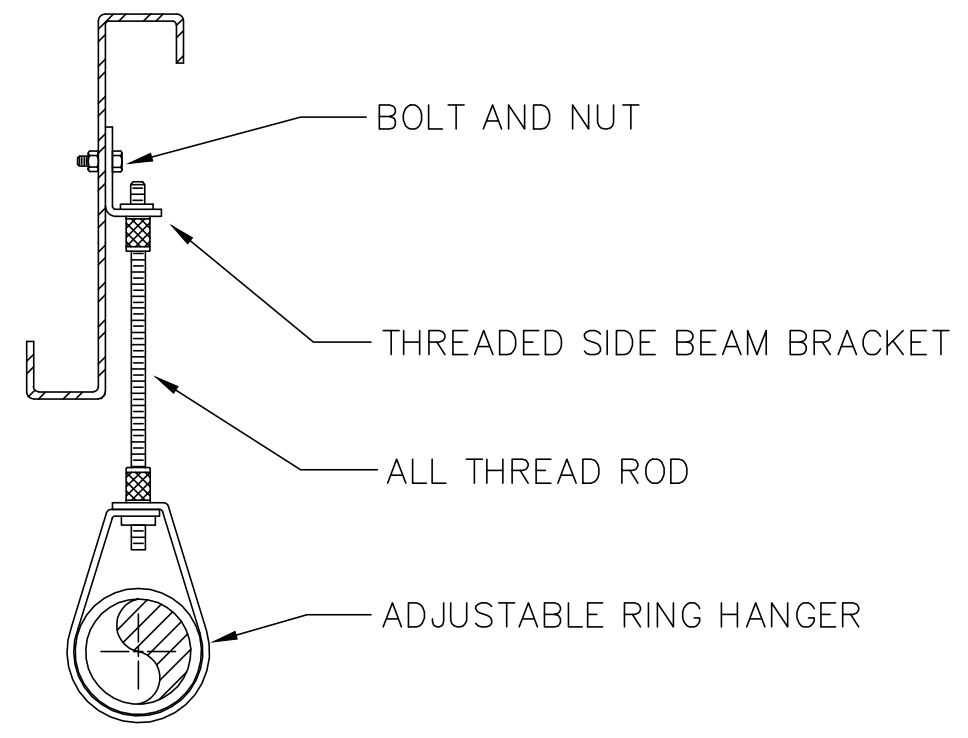
32.004(2)(j) YARD AND INTERIOR FIRE PROTECTION COMPONENTS: PRODUCT DATA SHEETS SHALL BE SUBMITTED BY THE SPRINKLER CONTRACTOR ALONG WITH THEIR SHOP DRAWINGS. ALL FIRE PROTECTION DEVICES AND COMPONENTS SHALL BE UL LISTED AND FM APPROVED.

**FIRE PROTECTION GENERAL NOTES**

- DRY PIPE SPRINKLER SYSTEM DESIGNED PER NFPA 13, 2007 EDITION. ORDINARY HAZARD GROUP 2 OCCUPANCY (HYPOCHLORITE ROOM) USING 20gpm OVER THE MOST REMOTE 1950 sq.ft., 130 sq.ft. MAXIMUM HEAD SPACING & 250gpm HOSE STREAM TO MEET OR EXCEED THE REQUIREMENTS OF NFPA 13, 2007 EDITION AND LOCAL AUTHORITIES.
- ALL FIRE SPRINKLERS SHALL BE IN ACCORDANCE WITH NFPA 13, 2007 EDITION.
- ALL WORK SHALL BE DONE IN ACCORDANCE WITH NFPA 13, 2007 EDITION.
- ALL HANGERS & MATERIALS TO BE IN ACCORDANCE WITH NFPA 13, 2007 EDITION.
- ALL CROSS MAINS & RISERS TO BE SCHEDULE 10 GALVANIZED PIPE, U.N.O. ALL BRANCH LINE PIPING TO BE SCHEDULE 40 GALVANIZED PIPE, U.N.O.
- ALL FIRE PROTECTION EQUIPMENT IN HYPOCHLORITE BUILDING, INCLUDING PIPING, FITTINGS, VALVES, AND HANGERS, SHALL BE SUITABLE FOR USE IN A CORROSIVE ENVIRONMENT. PROVIDE CORROSION PROTECTION FOR ALL FIRE PROTECTION ELEMENTS, USING GALVANIZED OR STAINLESS STEEL MATERIALS WHERE POSSIBLE.
- ALL EXPOSED CROSS MAIN PIPING TO HANG TIGHT TO THE BOTTOM OF THE BEAMS. ALL UPRIGHT SPRINKLER DEFLECTORS SHALL BE 2" TO 12" BELOW FINISHED ROOF DECK. COORDINATE ALL PIPING WITH STRUCTURAL ELEMENTS AND ABIDE BY ALL OBSTRUCTION RULES PER NFPA 13, 2007 EDITION AND FIRE SPRINKLER MANUFACTURER'S SPECIFICATIONS.
- SPRINKLER HEAD SPACING IS PER NFPA 13, 2007 EDITION.
- THE CONSTRUCTION MANAGER SHALL PROVIDE, OR HAVE PROVIDED, A SET OF COORDINATION DRAWINGS FOR ALL SYSTEMS AND FEATURES THAT OCCUR ABOVE THE CEILING PLANE. THE COORDINATION DRAWINGS SHALL INCLUDE, BUT NOT BE LIMITED TO, STRUCTURAL MEMBERS, HVAC DUCTWORK, HYDRONIC PIPING, PLUMBING SUPPLY AND WASTE PIPING, FIRE PROTECTION PIPING, ELECTRICAL POWER CONDUITS AND RACEWAYS, AND ELECTRICAL LOW VOLTAGE CONDUITS AND RACEWAYS. THE COORDINATION DRAWINGS SHALL PROVIDE, APPORTION, AND COORDINATE SPACE FOR ALL SYSTEMS, HORIZONTALLY AND VERTICALLY ABOVE THE CEILING PLANE TO THE STRUCTURAL DECK ABOVE ALLOWING EACH TRADE CONTRACTOR THE SPACE TO PROPERLY EXECUTE HIS PORTION OF THE WORK.
- ALL GROOVED FITTINGS TO BE "VICTAULIC" FITTINGS OR APPROVED EQUAL.
- ALL PENETRATIONS THRU 1-HOUR RATED WALLS TO BE PATCHED AS NECESSARY.
- ALL DIMENSIONS TO BE VERIFIED DURING FIELD CHECK OF SPRINKLER SYSTEM.
- THE FOLLOWING ARE ACCEPTABLE SPRINKLER MATERIAL MANUFACTURERS: RELIABLE, TYCO, VICTAULIC, VIKING
- ALL FIRE SPRINKLERS IN CHEMICAL ROOMS SHALL BE UL LISTED AS CORROSION RESISTANT.
- SPRINKLER SYSTEMS, INCLUDING ALL ASSOCIATED FIRE PROTECTION SIGNALS, SHALL BE SUPERVISED BY AN APPROVED CENTRAL, PROPRIETARY, AUXILIARY, OR REMOTE STATION SYSTEM IN ACCORDANCE WITH NFPA.
- FIRE PROTECTION SHOP DRAWINGS, HYDRAULIC CALCULATIONS, AND MATERIAL DATA SUBMITTALS ARE TO BE SUBMITTED TO ENGINEER OF RECORD FOR REVIEW AND APPROVAL.
- CORROSION PROTECTION FOR ALL UNDERGROUND BOLTED JOINT ACCESSORIES SHALL BE CLEANED AND THOROUGHLY COATED WITH ASPHALT OR OTHER CORROSION-RETARDING MATERIAL AFTER INSTALLATION IN ACCORDANCE WITH NFPA 13, 2007 EDITION, SECTION 10.3.6.2.
- THE UNDERGROUND MAIN STARTING AT THE PUBLIC WATER UTILITY POINT OF CONNECTION HAS BEEN DESIGNED TO NFPA 24, 2007 EDITION. INSTALLATION AND TESTING MUST BE IN ACCORDANCE WITH NFPA 24, 2007 EDITION.
- ALL FIRE SPRINKLER COMPONENTS ARE TO BE RATED FOR THE MAXIMUM SYSTEM WORKING PRESSURE TO WHICH THEY ARE EXPOSED IN ACCORDANCE WITH NFPA 13, 2007 EDITION, SECTION 6.1.3.
- THE COMPONENTS OF THE FIRE PROTECTION SYSTEM(S) FURNISHED UNDER THIS DIVISION OF THE SPECIFICATIONS SHALL BE GUARANTEED FOR A PERIOD OF ONE (1) YEAR FROM THE DATE OF ACCEPTANCE THEREOF, EITHER FOR BENEFICIAL USE OR FINAL ACCEPTANCE, WHICHEVER IS EARLIER, AGAINST DEFECTIVE MATERIALS, DESIGN, AND WORKMANSHIP. UPON RECEIPT OF NOTICE FROM THE ARCHITECT OF FAILURE OF ANY PART OF THE EQUIPMENT DURING THE GUARANTEE PERIOD, THE AFFECTED PART OR PARTS SHALL BE REPLACED PROMPTLY WHICH INCLUDES REMOVING THE DEFECTIVE PART OR PARTS, REPLACING AND INSTALLING THE NEW PART OR PARTS AND AT THE EXPENSE OF THE CONTRACTOR.
- OPERATING AND MAINTENANCE INSTRUCTIONS, PRINTED AND BOUND IN HARD COVER THREE-RING LOOSE LEAF NOTEBOOKS, SHALL BE PROVIDED TO THE OWNER.

**PIPE HANGER SCHEDULE** NTS 5

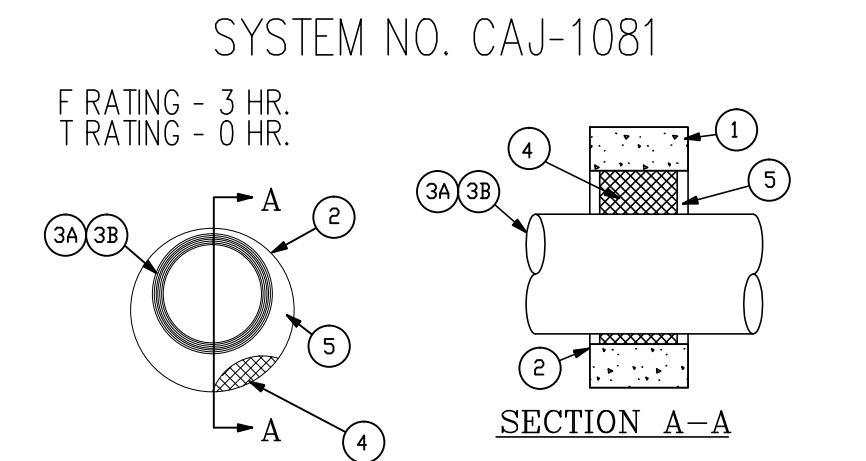
**INSPECTOR'S TEST DETAIL** NTS 2



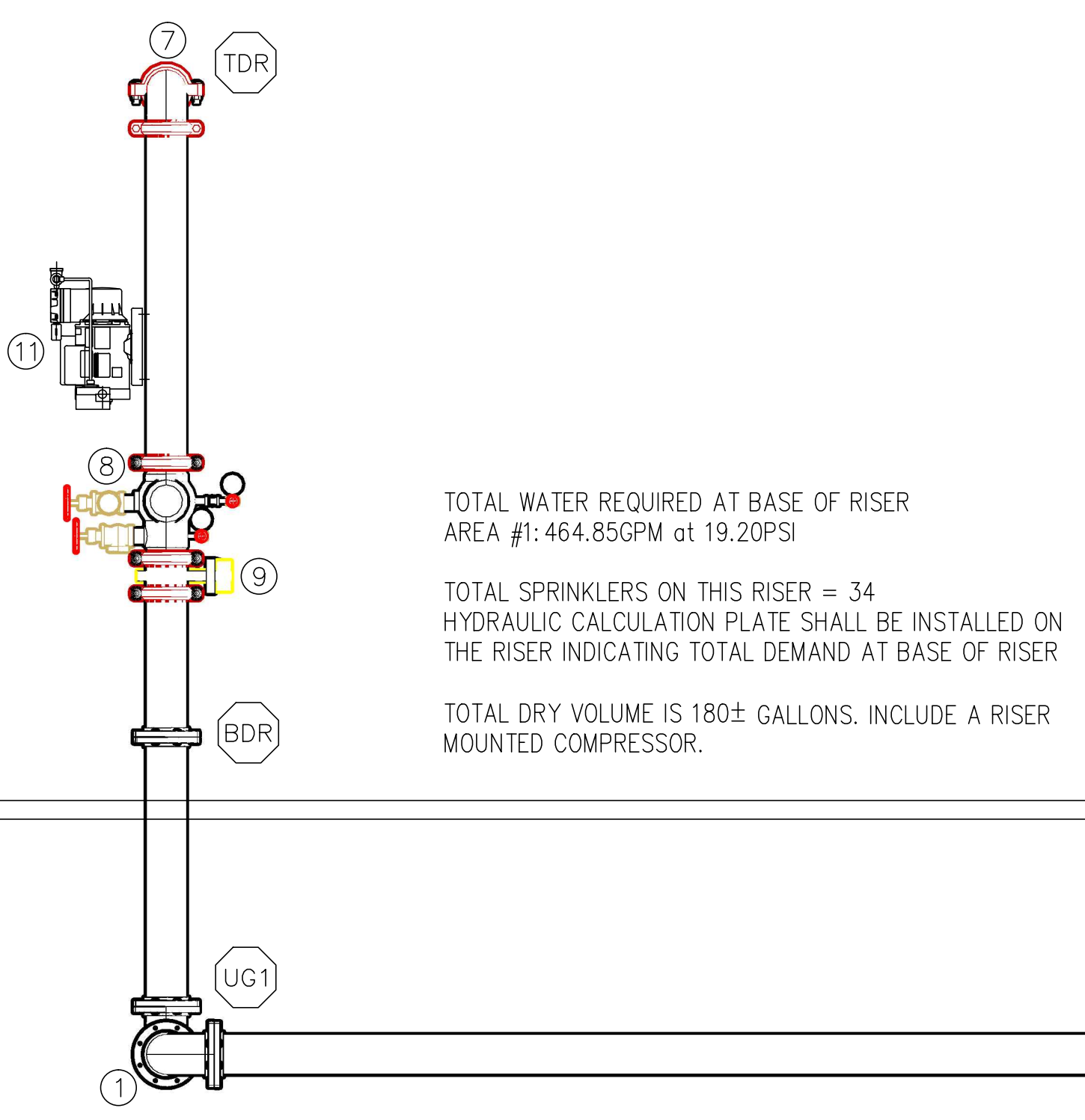
COORDINATE ALL HANGER LOCATIONS WITH THE STRUCTURAL ENGINEER AND THE STRUCTURAL PLANS.

| Legend |                                  |
|--------|----------------------------------|
| ID     | Description                      |
| 1      | 6" MECHANICAL JOINT ELBOW        |
| 2      | 6" DOUBLE DETECTOR CHECK 3000SS  |
| 3      | BRASS FIRE DEPARTMENT CONNECTION |
| 4      | 4" KENNEDY WAFER CHECK VALVE     |
| 5      | 6"x4"x6" FLANGED REDUCED TEE     |
| 6      | 6" FLANGED ELBOW                 |
| 7      | 6" GROOVED ELBOW                 |
| 8      | 6" GROOVED DRY VALVE W/TRIM      |
| 9      | 6" GROOVED B'FLY VALVE W/TAMPER  |
| 10     | 6" OS&Y VALVE W/TAMPER SWITCH    |
| 11     | RISER MOUNTED COMPRESSOR         |

**PURLIN HANGER DETAIL** NTS 4



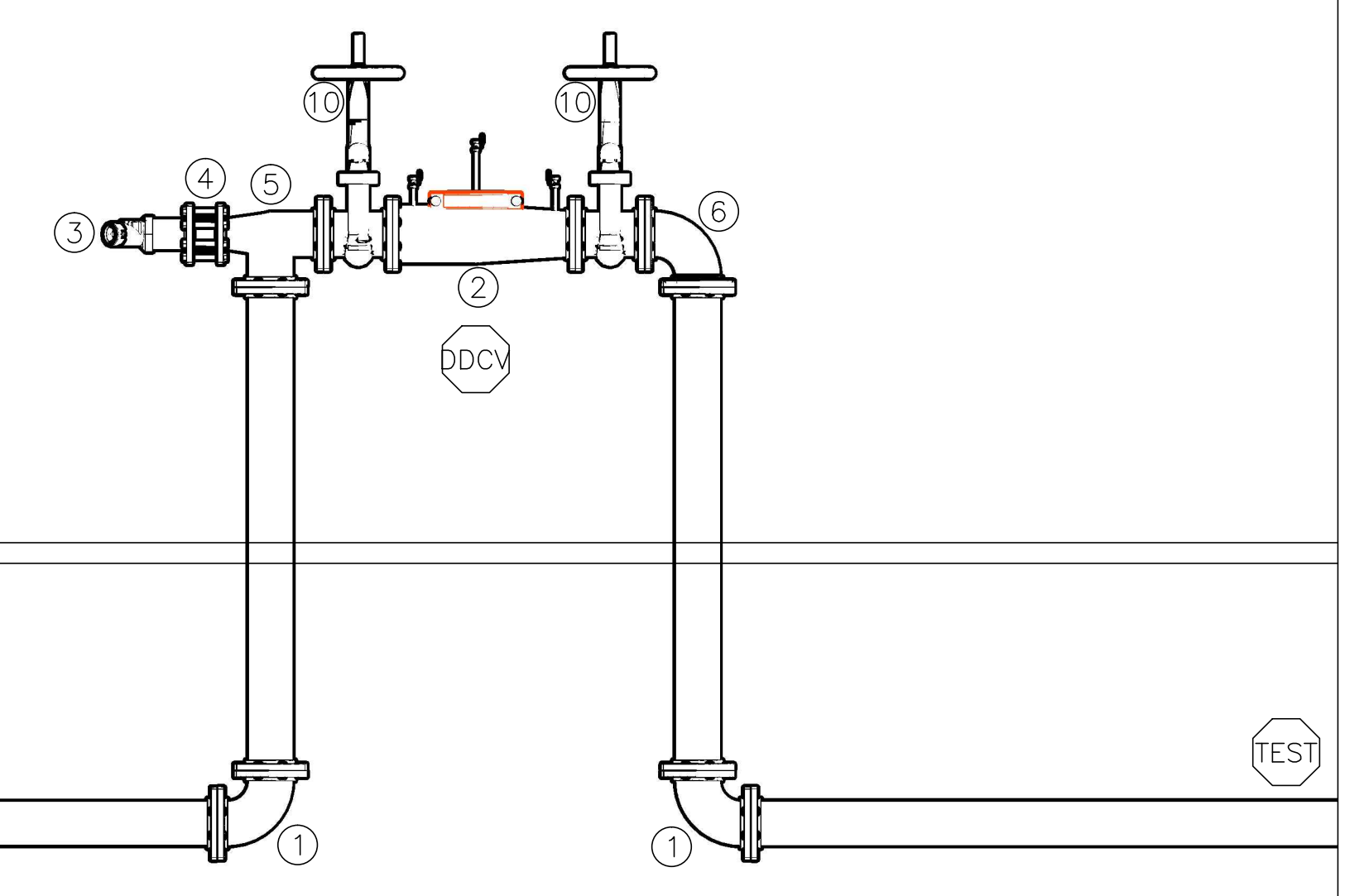
- FLOOR OR WALL ASSEMBLY - MINIMUM 4 1/2" THICK LIGHTWEIGHT OR NORMAL WEIGHT CONCRETE (100-150 PCF) FLOOR OR MINIMUM 5" THICK CONCRETE WALL. WALL MAY ALSO BE CONSTRUCTED OF ANY U.L. CLASSIFIED CONCRETE BLOCKS.
- STEEL SLEEVE - (OPTIONAL) MAXIMUM 16" DIAMETER STEEL SLEEVE WITH LENGTH EQUAL TO THICKNESS OF FLOOR OR WALL.
- METALLIC PIPE - ANY OF THE FOLLOWING MAY BE USED:  
 -NOMINAL 10" DIAMETER (OR SMALLER) SCHEDULE 10 (OR HEAVIER) STEEL PIPE. A MINIMUM 1/4" TO MAXIMUM 4" ANNULAR SPACE.  
 -NOMINAL 4" DIAMETER (OR SMALLER) ELECTRICAL METALLIC TUBING (EMT) OR NOMINAL 6" DIAMETER (OR SMALLER) GALVANIZED STEEL RIGID CONDUIT. A MINIMUM OF 1/4" TO MAXIMUM 4" ANNULAR SPACE.  
 -NOMINAL 14" DIAMETER (OR SMALLER) SCHEDULE 10 (OR HEAVIER) STEEL PIPE. A MINIMUM 1/4" TO MAXIMUM 1 15/16" ANNULAR SPACE.  
 -NOMINAL 6" DIAMETER (OR SMALLER) TYPE M COPPER TUBING. A MINIMUM 1/4" TO MAXIMUM 1 13/16" ANNULAR SPACE.  
 -NOMINAL 4" DIAMETER (OR SMALLER) TYPE M COPPER TUBING OR REGULAR COPPER PIPE. A MINIMUM 1/4" TO MAXIMUM 4" ANNULAR SPACE.
- CABLES - MINIMUM 10% TO MAXIMUM 40% FILL OF 100 PAIR NO. 24 AWG TELEPHONE CABLES WITH POLYVINYL CHLORIDE INSULATION AND JACKET. CABLES TO BE RIGIDLY SUPPORTED ON BOTH SIDE OF WALL ASSEMBLY. MINIMUM 1/4" TO A MAXIMUM 4" ANNULAR SPACE.
- FORMING MATERIAL - MINIMUM 2 3/4" THERMAFIBER SAFING INSULATION OR "APPROVED EQUAL".
- FILL, VOID OR CAVITY MATERIAL - MINIMUM 1" DEPTH OF FIRECODE COMPOUND INSTALLED ON TOP SURFACE OF FLOOR AND ON EACH SIDE OF THE WALL.



TOTAL WATER REQUIRED AT BASE OF RISER  
 AREA #: 464.85GPM at 19.20PSI

TOTAL SPRINKLERS ON THIS RISER = 34  
 HYDRAULIC CALCULATION PLATE SHALL BE INSTALLED ON THE RISER INDICATING TOTAL DEMAND AT BASE OF RISER

TOTAL DRY VOLUME IS 180± GALLONS. INCLUDE A RISER MOUNTED COMPRESSOR.



**PENETRATION FIRESTOP DETAIL** NTS 3

**FIRE SPRINKLER RISER DETAIL** NTS 1



| REV | DATE    | DESCRIPTION    | BY |
|-----|---------|----------------|----|
| 0   | 10/2014 | ISSUED FOR BID | WP |

Issue Certification  
 Fadi K. Ghumrawi, P.E.  
 Florida P.E. No. 67330  
 G&P Engineering LLC  
 Cert. of Authorization No. 29937  
 P.O. Box 196725  
 Winter Springs, FL 32719-6725

Designed\_WP  
 Drawn\_WP  
 Checked\_FKG  
 Reviewed\_FKG  
 Approved\_FKG

LINE IS 1" AT FULL SIZE

Date 10/2014

ORANGE COUNTY EASTERN WATER RECLAMATION FACILITY (EWRF)  
 HYPOCHLORITE STORAGE IMPROVEMENTS

FIRE PROTECTION

FIRE PROTECTION NOTES AND DETAILS

|              |          |
|--------------|----------|
| PROJECT NO.: | 110004   |
| SCALE:       | NOTED    |
| REVISION:    | 0        |
| DRAWING NO.: | FPO1     |
| SHEET NO.:   | 27 OF 28 |

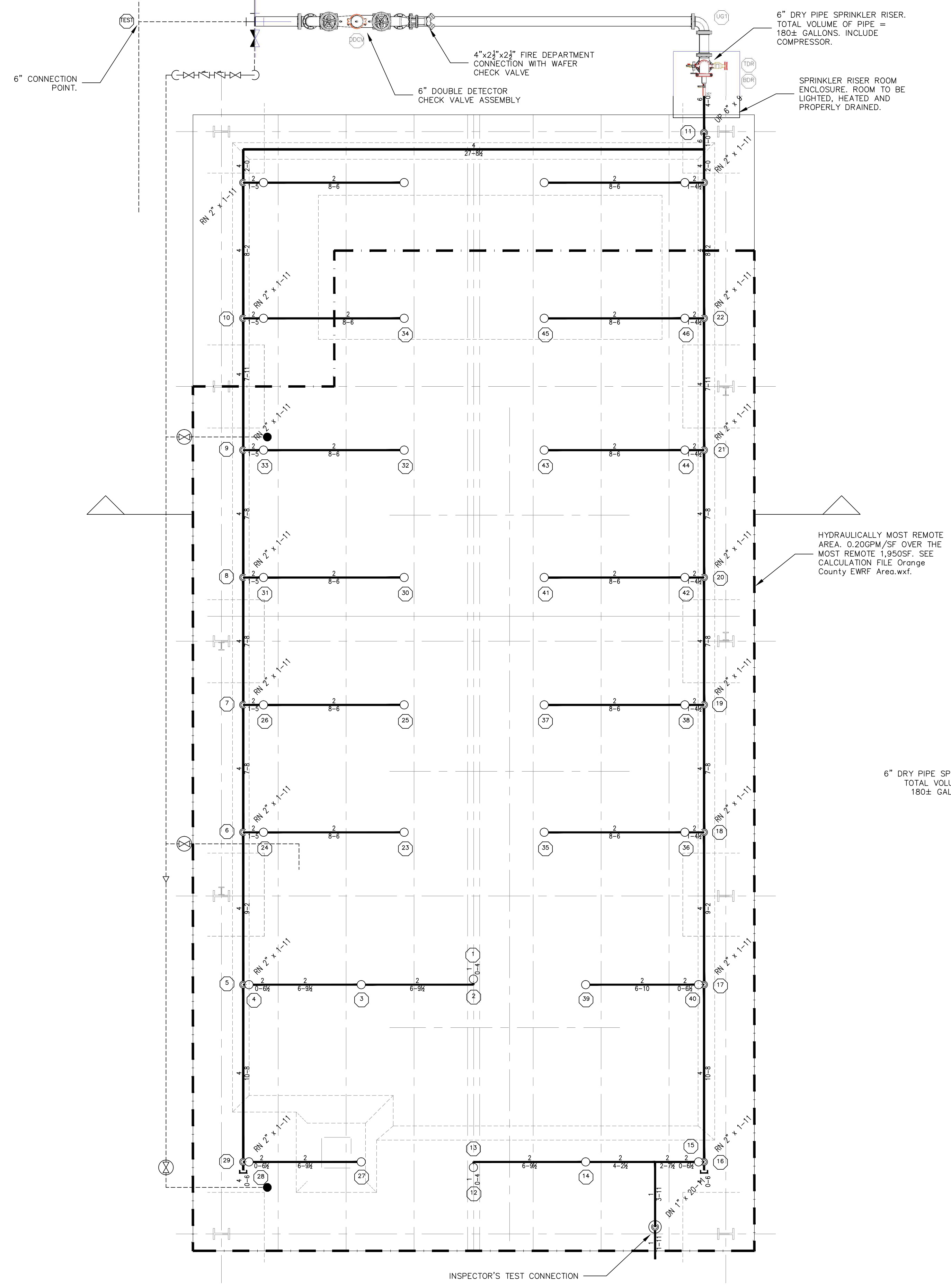
**G & P Engineering LLC**  
 P.O. Box 196725  
 Winter Springs, FL 32719-6725  
 (407) 476-3031  
 Florida PE License #67330  
 C.A. #29937

**REISS ENGINEERING, INC.**  
 1018 SPRING VILLAS PT  
 WINTER SPRINGS, FL 32708  
 (407) 679-5358

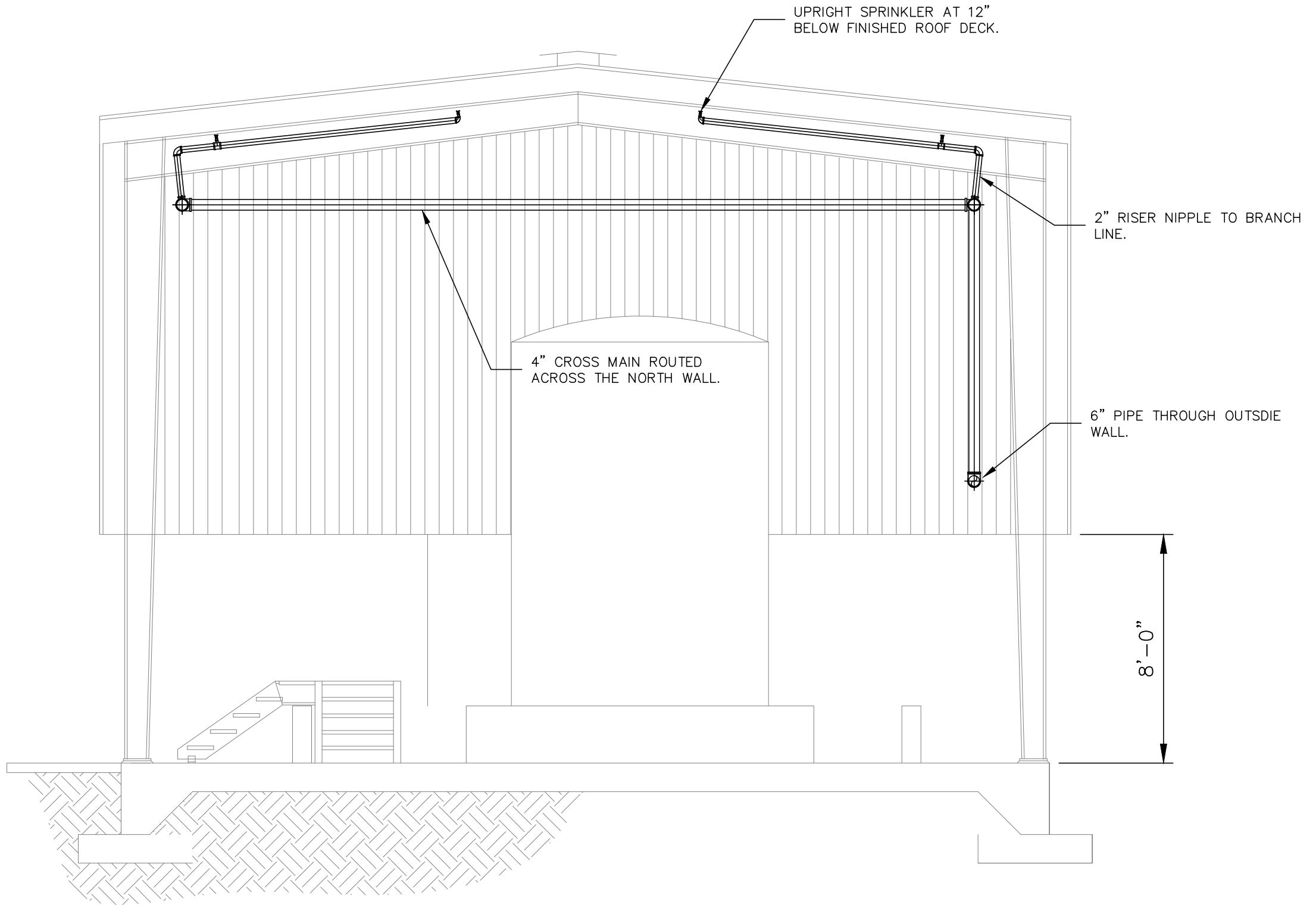
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 Rev. on: 10/16/2014 8:26 AM  
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 Rev on: 9/23/2014 2:15 PM  
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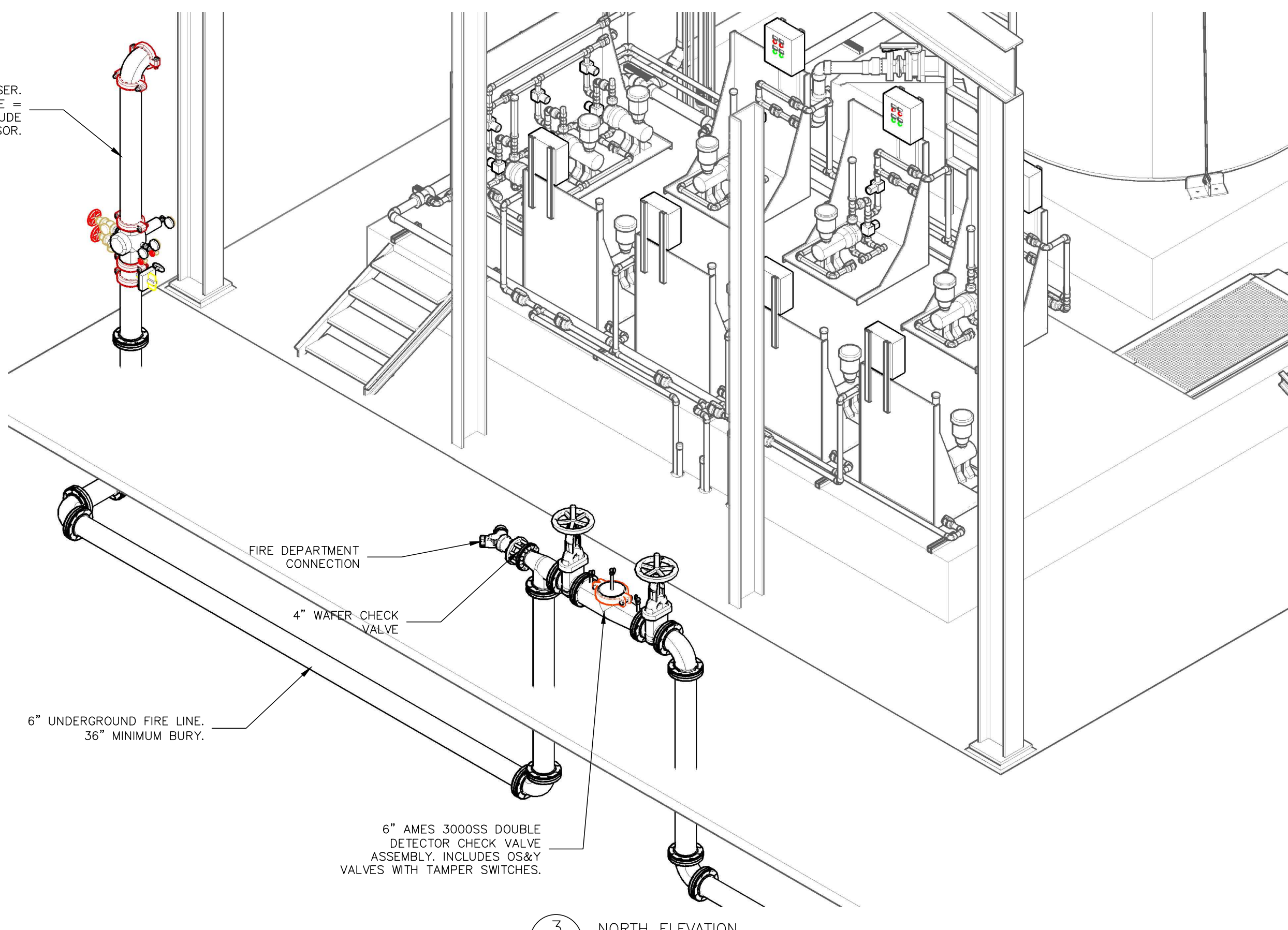
1 HYPOCHLORITE STORAGE BUILDING - PLAN  
 FP02 SCALE: 1/4"=1'-0"



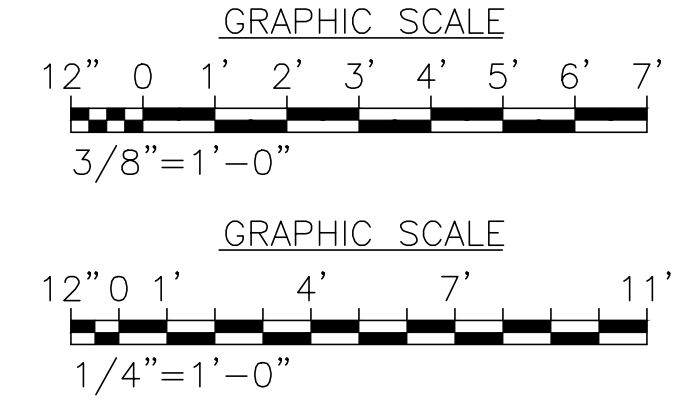
2 BUILDING CROSS SECTION  
 FP02 SCALE: 1/4"=1'-0"

| Sprinkler Head Schedule               |       |        |          |  |      |
|---------------------------------------|-------|--------|----------|--|------|
| Symbol                                | Count | Thread | K-Factor | Description  | Note |
| o                                     | 34    | 1/2"   | 5.6      | TYCO TY3151 1/2" STANDARD RESPONSE 200' WAX COATED UPRIGHT |      |
| 34 = Total Number of Heads This Floor |       |        |          |  |      |

6" DRY PIPE SPRINKLER RISER. TOTAL VOLUME OF PIPE = 180± GALLONS. INCLUDE COMPRESSOR.



3 NORTH ELEVATION  
 FP02 SCALE: 3/8"=1'-0"



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| REV | DATE    | DESCRIPTION    | BY |
|-----|---------|----------------|----|
| 0   | 10/2014 | ISSUED FOR BID | WP |

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Designed WP  
 Drawn WP  
 Checked FKG  
 Reviewed FKG  
 Approved FKG  
 Date 10/2014

ORANGE COUNTY EASTERN WATER RECLAMATION FACILITY (EWRF)  
 HYPOCHLORITE STORAGE IMPROVEMENTS  
 FIRE PROTECTION  
 FIRE PROTECTION PLAN AND DETAILS

|                        |                        |
|------------------------|------------------------|
| PROJECT NO.:<br>110004 |                        |
| SCALE:<br>NOTED        | REVISION:<br>0         |
| DRAWING NO.<br>FP02    | SHEET NO.:<br>28 OF 28 |

**RE** REISS ENGINEERING, INC.  
 1018 SPRING VILLAS, PT  
 WINTER SPRINGS, FL 32708  
 (407) 679-5358