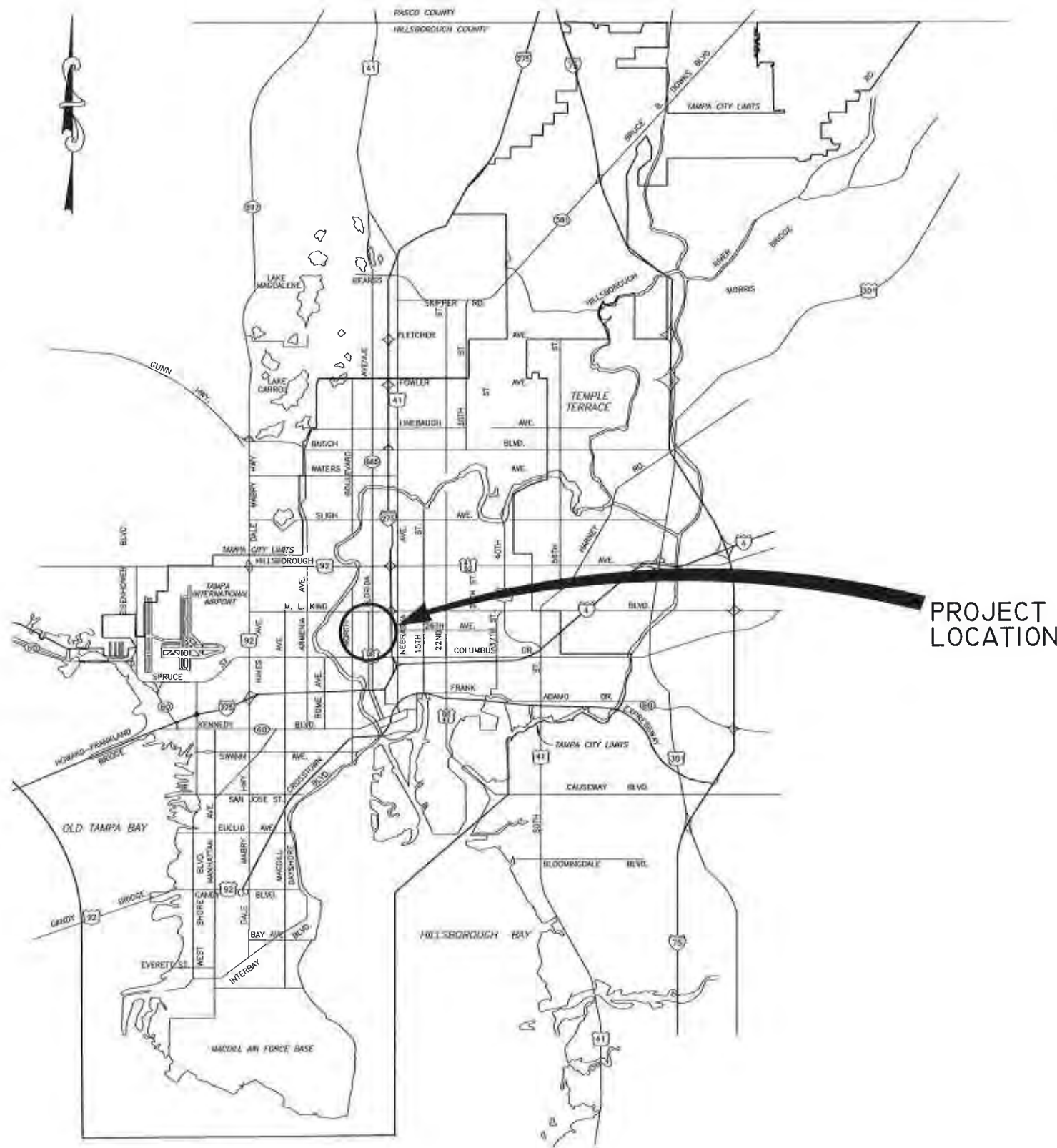


The Enclosed Document Is Provided For Your Convenience.

Please Email ALL Questions:
[MailTo:ContractAdministration@TampaGov.net](mailto:ContractAdministration@TampaGov.net)

Please Let Us Know If You Plan To Bid

City of Tampa
Contract Administration Department
306 E. Jackson St. #280A4N
Tampa, FL 33602
(813)274-8456



CITY of TAMPA



DEPARTMENT OF
TRANSPORTATION AND STORMWATER SERVICES
STORMWATER ENGINEERING DIVISION

PLANS FOR
ROBLES PARK PUMP STATION REPLACEMENT
CONTRACT No. 17-C-00029

Richard Alfred Hoel
RICHARD ALFRED HOEL, P.E. #41026
CHIEF ENGINEER

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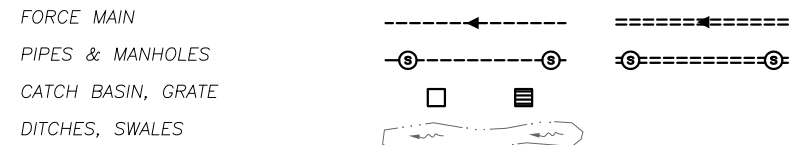
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CITY of TAMPA
Department of Transportation and
Stormwater Services
Stormwater Engineering Division

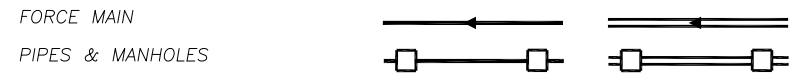
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LEGEND

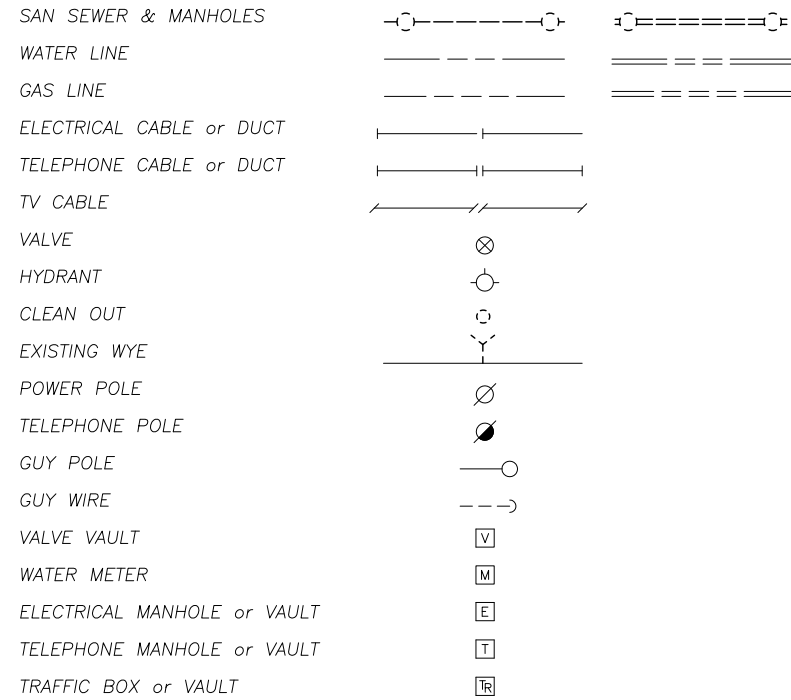
EX STORMWATER



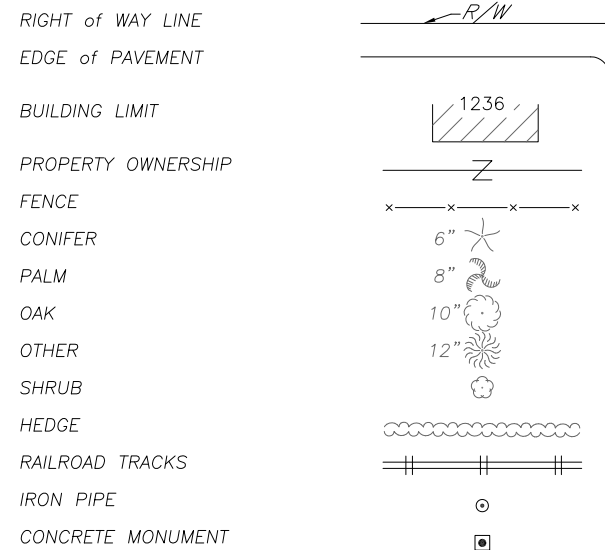
PROP STORMWATER



OTHER UTILITIES



OTHER FEATURES

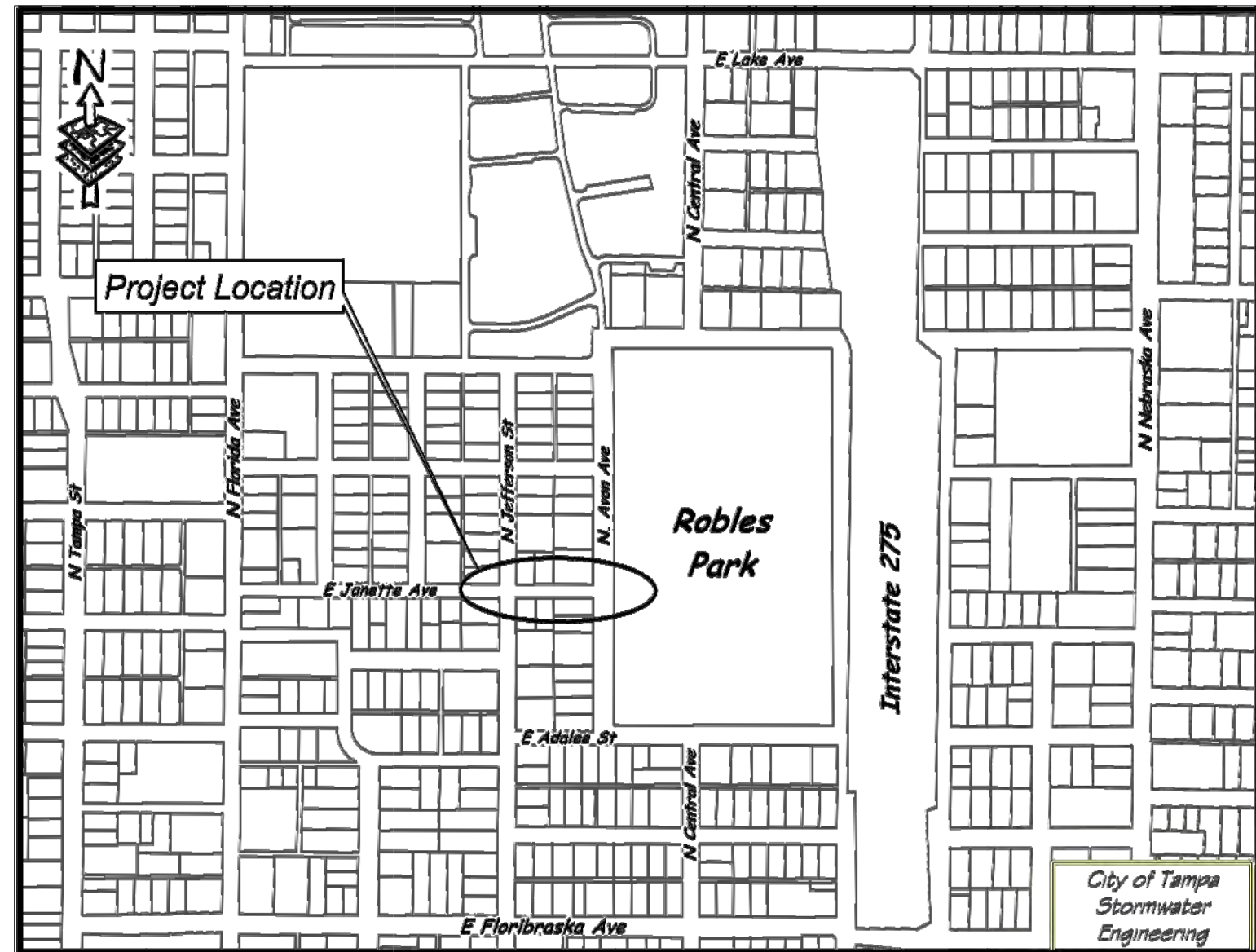


ABBREVIATIONS

TOP of PIPE	TP
INVERT ELEVATION	IE or INV EL
RIGHT of WAY	R/W
MANHOLE	MH
POLYVINYL CHLORIDE PIPE	PVC
VITRIFIED CLAY PIPE	VCP
ADVANCED DRAINAGE SYSTEM	ADS
DUCTILE IRON PIPE	DIP
REINFORCED CONCRETE PIPE	RCP
CONCRETE PIPE	CP
APPROXIMATE LOCATION	AL
BENCH MARK	BM
POINT of INTERSECTION	PI

INDEX

No.	DESCRIPTION
1	COVER SHEET
2	LEGEND, INDEX, AND MAP
3-4	GENERAL AND STRUCTURAL NOTES
C1-C2	EXISTING CONDITION
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C5-C8	CONSTRUCTION PLAN & PROFILE
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C14-C21	DETAIL SHEETS
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LOCATION MAP

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ROBLES PARK PUMP STATION REPLACEMENT
 LEGEND, INDEX & MAP

ROBLES PARK PUMPING STATION

SW

GENERAL NOTES

1. EXISTING DIMENSIONS ARE BASED ON THE BEST INFORMATION AVAILABLE. TRUE DIMENSIONS SHALL BE DETERMINED IN THE FIELD PRIOR TO LAYOUT AND SHOP DRAWING SUBMITTALS.
2. LOCATION OF EXISTING FORCE MAIN AND OTHER UTILITIES TO BE VERIFIED BY CONTRACTOR AT TIME OF CONSTRUCTION. CONTRACTOR SHALL RELOCATE ALL UTILITIES ON SITE THAT ARE IN THE PATH OF CONSTRUCTION. CONTRACTOR SHALL COORDINATE RELOCATIONS WITH THE DEPARTMENT AND WITH EACH UTILITY AS NECESSARY.
3. ALL SUBMITTALS AND SHOP DRAWINGS SHALL BE ORIGINALS OR HIGH QUALITY COPIES (EASILY READABLE). NO FAXED SHEETS OR POOR QUALITY COPIES WILL BE ACCEPTED FOR SUBMITTAL REVIEW.
4. CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL NECESSARY RIGHT-OF-WAY PERMITS FOR WORK WITHIN THE RIGHT OF WAYS.
5. INSTALL THREE FLYGT NP3202 PUMPS, 45 HP, 3 PHASE, 480 VOLTS, AND ASSOCIATED ELECTRICAL CONTROL SYSTEM.
6. A STAINLESS STEEL TYPE 316 WELDED LINK CHAIN HAVING ONE INCH LINKS AND A WORKLOAD CAPACITY OF TWICE THE PUMP WEIGHT SHALL BE FASTENED TO PUMP. CONTRACTOR TO SUBMIT CERTIFICATION OF WORKLOAD CAPACITIES FOR APPROVAL. THE BITTER END OF CHAIN SHALL BE FASTENED TO CONCRETE TOP SLAB WITH STAINLESS ANCHORS. LENGTH OF CHAIN SHALL BE FROM THE PUMP TO THE SLAB PLUS SIX FEET.
7. INSTALL A STAINLESS STEEL BRACKET WITH STAINLESS STEEL "J" HOOKS ON CONCRETE SURFACE BELOW ALUMINUM HATCH TO SUPPORT VARIOUS CABLES. ALL "J" HOOKS SHALL BE MADE OF 3/8" DIAMETER ROD (MINIMUM). CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR APPROVAL.
8. BACKFILL (NO CLAY OR CLAYEY MATERIAL) SHALL BE COMPACTED IN 12 INCH LAYERS TO 98% MAXIMUM DRY DENSITY OF MODIFIED PROCTOR IN CONFORMANCE WITH AASHTO T-180, METHOD A.
9. CONTRACTOR SHALL RESTORE ALL LANDSCAPING, SODDING AND PAVEMENT THAT MAY HAVE BEEN DAMAGED DURING CONSTRUCTION TO ITS ORIGINAL CONDITION OR BETTER. CONTRACTOR SHALL SOD ALL UNPAVED AREAS.
10. ALUMINUM ACCESS COVERS SHALL BE U.S. FOUNDRY, OR EQUAL. ACCESS COVERS SHALL HAVE STAINLESS STEEL HARDWARE AND SHALL OPEN IN THE DIRECTION CORRESPONDING TO THE HINGES SHOWN ON PLANS. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS DETAILING THE INSTALLATION AND CONFIGURATION.
11. PUMP STATION PIPING SHALL BE CLASS 53 FLANGED DIP CEMENT LINED. FORCE MAIN SHALL BE CLASS 52 DUCTILE IRON.
12. FORCE MAIN FITTINGS SHALL BE RMJ. RESTRAINING DEVICES SHALL BE "MEGA-LUG" OR EQUAL. ALL RESTRAINING DEVICES AND RELATED PARTS SHALL BE COATED WITH THE MEGA-BOND RESTRAINT COATING SYSTEM OR APPROVED EQUAL.
13. CHECK VALVES SHALL BE APCO, RUBBER FLAPPER SWING CHECK VALVES, SERIES 100. PLUG VALVES SHALL BE DeZURIK, 100% PORT, ECCENTRIC VALVES.
14. BOLTS, WASHERS, NUTS, SCREWS, HOOKS, BRACKETS, HINGES, ETC. INSTALLED WITHIN STRUCTURES SHALL BE TYPE 316 STAINLESS STEEL UNLESS OTHERWISE SPECIFIED.

15. SPOOL PIECE USED TO PENETRATE WET WELL OR VALVE VAULT WALL SHALL BE PROVIDED AT ONE END WITH SERIES 2100 MEGA-FLANGE RESTRAINED FLANGE ADAPTER" WITH ALL STAINLESS STEEL HARDWARE.
16. ALL PIPE PENETRATIONS FOR PIPE LARGER THAN 12" DIAMETER SHALL BE PROVIDED WITH GPT LINK SEAL® MODULAR SEAL LS-316 OR A-LOK FIBERGLASS. FIELD SLEEVE W/A-LOK PREMIUM CONNECTOR. FILL ALL OPENINGS AROUND PIPES 12" DIAMETER OR SMALLER WITH NON-SHRINK GROUT. EXCEPTION IS 36" INTAKE PIPE.
17. CONTRACTOR SHALL COORDINATE WITH TECO REGARDING THE PROPOSED ELECTRICAL SERVICE EQUIPMENT (SEE SPECIFICATIONS).
18. ALL METAL PIPE, FITTINGS, SUPPORTS, VALVES, ETC. SHALL RECEIVE:
 - A) SHOP COAT - ONE COAT, 4 MILS, PORTER GLAZE 4300 EPOXY PRIMER, MADE BY PORTER PAINTS - GRAY IN COLOR.
 - B) FIELD COAT - TWO COATS, 10 MILS, PORTERTUF 2000 HB COAL TAR EPOXY, MADE BY PORTER PAINTS - BLACK IN COLOR.
19. ALL METAL SURFACES COMING IN CONTACT WITH CONCRETE SHALL BE PROVIDED WITH NEOPRENE PADS OR 2 COATS OF COAL TAR EPOXY WITH PROPER SURFACE PREPARATION. CONTRACTOR SHALL SUBMIT SYSTEM(S) FOR APPROVAL.
20. BRICK ROADWAY ON JANETTE AVE. WILL BE REBUILT FROM THE EXISTING HEADER CURB AT JEFFERSON AVE. TO AND INCLUDING THE INTERSECTION AT AVON AVE. BRICKS SHALL BE REMOVED, SECURED AND REUSED AFTER INSTALLATION OF FORCE MAIN AND ROAD BASE MATERIAL.

TREE NOTES

1. ALL WORK WITHIN THE PROTECTIVE RADIUS OF THE TREES MUST BE COORDINATED WITH PLANNING AND DEVELOPMENT, IN ACCORDANCE WITH CHAPTER 13 OF THE CITY OF TAMPA CODE AND NATURAL RESOURCES SECTION WHO CAN BE REACHED AT (813) 274-3100.
2. PRIOR TO ANY CONSTRUCTION ACTIVITIES, PROTECTIVE BARRICADES SHALL BE INSTALLED AROUND ALL PROTECTED TREES AND GRAND TREES WITHIN FIFTEEN FEET OF THE FORCE MAIN OR PUMP STATION.
 - a) BARRICADES SHALL BE INSTALLED A MINIMUM OF TEN (10) FEET FROM A PROTECTIVE TREE AND A MINIMUM OF TWENTY (20) FEET FROM A GRAND TREE.
3. NO CHANGES SHALL TAKE PLACE TO THE PREDEVELOPMENT CONDITIONS WITHIN THE PROTECTIVE ROOT ZONE DURING THE CONSTRUCTION PROCESS, UNLESS NOTED ON THE PLANS.
4. NO PARKING OR STORAGE OF VEHICLES, EQUIPMENT, OR MATERIALS IS ALLOWED WITHIN THE PROTECTIVE ROOT ZONE.
5. ALL TREE TRIMMING AND ROOT PRUNING MUST BE SUPERVISED BY A CERTIFIED ARBORIST AND PERFORMED CLEANLY WITH APPROVED CUTTING TYPE EQUIPMENT, SUCH AS A CHAINSAW, HAND SAW, OR OTHER CUTTING EQUIPMENT.

SURVEY NOTES

1. FIELD WORK PERFORMED BY POLARIS ASSOCIATES DATE OF SURVEY: NOVEMBER 15, 2016.
2. ELEVATIONS ARE BASED ON CITY OF TAMPA BENCHMARK "HV 02-0187" HAVING AN ELEVATION OF 36.161 AND CITY OF TAMPA BENCHMARK "HV 02-0186" HAVING AN ELEVATION OF 42.16 NORTH AMERICAN VERTICAL DATUM 1988 (NAVD 88).

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CITY of TAMPA
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 and Stormwater Services
 Stormwater Engineering Division

ROBLES PARK PUMP STATION REPLACEMENT

GENERAL NOTES

STRUCTURAL CONSTRUCTION NOTES:

SW

1.0 GENERAL

1.1 ALL WORK IS TO BE PERFORMED IN A GOOD, WORKMANLIKE AND PROFESSIONAL MANNER.

1.2 ALL CONSTRUCTION SHALL BE IN STRICT COMPLIANCE WITH THE REQUIREMENTS OF THE FLORIDA STATE BUILDING CODE, LATEST EDITION, LOCAL BUILDING CODES. FDOT SPECIFICATIONS AND INDICES AND COT SPECIFICATIONS, IF MORE STRINGENT.

1.3 THESE DRAWINGS DO NOT SHOW PROVISIONS FOR SAFETY DURING CONSTRUCTION. IT IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR TO PROVIDE THE REQUIRED BRACING, SHORING, AND SAFETY DEVICES THROUGHOUT THE CONSTRUCTION OF THIS PROJECT.

2.0 COORDINATION

2.1 STRUCTURAL DRAWINGS SHALL BE USED IN CONJUNCTION WITH AND COORDINATED WITH GENERAL, ARCHITECTURAL, CIVIL, ELECTRICAL AND MECHANICAL DRAWINGS AND OTHER CONTRACT DOCUMENTS. IF COORDINATION OF INFORMATION PRESENTED ON DRAWINGS CONFLICTS w/ THE PROJECT SPECIFICATIONS, THE DRAWINGS WILL TAKE PRECEDENCE.

2.2 COORDINATE THE EXACT SIZE AND LOCATION OF ALL PIPES, SLEEVES AND OPENINGS THROUGH SLABS AND WALLS w/ GENERAL, ARCHITECTURAL, CIVIL, ELECTRICAL AND MECHANICAL DRAWINGS AND OTHER CONTRACT DOCUMENTS.

2.3 ANY DISCREPANCIES BETWEEN ACTUAL CONDITIONS AND THOSE SHOWN ON THESE DRAWINGS ARE TO BE BROUGHT TO THE ATTENTION OF THE STRUCTURAL ENGINEER BEFORE CONSTRUCTION WORK PROCEEDS, INCLUDING ORDERING AND FABRICATING MATERIALS.

3.0 FOUNDATIONS

3.1 FOOTING & SLAB ELEVATIONS SHALL NOT BE RAISED OR LOWERED WITHOUT APPROVAL OF THE STRUCTURAL ENGINEER.

3.2 ALL EXCAVATIONS SHALL BE ADEQUATELY DEWATERED BEFORE PLACEMENT OF CONCRETE. NO CONCRETE OR CONCRETE FILL SHALL BE PLACED IN STANDING WATER. WATER ACCUMULATION EXCEEDING 1 INCH SHALL BE PUMPED OUT.

3.3 FOOTING EXCAVATIONS AND FORMS SHALL BE REVIEWED BY AN OWNER'S CONSTRUCTION REPRESENTATIVE PRIOR TO PLACEMENT OF CONCRETE.

3.4 ALL FOOTINGS SHALL BE CENTERED UNDER THE SUPPORTING MEMBER UNLESS NOTED OTHERWISE.

3.5 CONSTRUCTION JOINTS IN SLABS, WALLS & FOOTINGS SHALL BE MADE AT LOCATIONS SHOWN ON DRAWINGS.

3.6 CONTRACTOR IS TO VERIFY THE ELEVATION AND LOCATION OF ALL EXISTING AND PROPOSED UTILITIES PRIOR TO CONSTRUCTION. ANY "KNOWN" UTILITY LINES DAMAGED WILL BE REPLACED AT THE CONTRACTOR'S EXPENSE. IF ANY "UNKNOWN" UTILITY LINES ARE ENCOUNTERED WHEN EXCAVATING THE CONTRACTOR IS TO CEASE ALL EXCAVATION ACTIVITY UNTIL THE ENGINEER AND OWNER ARE NOTIFIED AND INSTRUCTIONS ARE PROVIDED ABOUT HOW TO PROCEED.

3.8 THE CONTRACTOR SHALL OBTAIN THE OWNER'S PERMISSION BEFORE ENCASING OR BACK FILLING AROUND ANY EXISTING UNDERGROUND STRUCTURE, PIPING, ELECTRICAL, OR OTHER UNDERGROUND WORK.

4.0 REINFORCING STEEL

4.1 BARS SHALL BE ROLLED FROM NEW BILLET-STEEL OF DOMESTIC MANUFACTURE CONFORMING TO "STANDARD SPECIFICATION FOR DEFORMED AND PLAIN BILLET STEEL BARS FOR CONCRETE REINFORCEMENT," ASTM A 615, GRADE 60 AND SUPPLEMENTARY REQUIREMENT S-1.

4.2 DETAIL AND FABRICATE REINFORCING STEEL IN ACCORDANCE WITH THE AMERICAN CONCRETE INSTITUTE "ACI DETAILING MANUAL," LATEST PUBLICATION.

4.3 REINFORCING STEEL IN PLACE SHALL BE REVIEWED BY THE OWNER'S CONSTRUCTION REPRESENTATIVE PRIOR TO PLACEMENT OF CONCRETE. GENERAL "CLR" DISTANCES FOR CONCRETE COVER ARE PROVIDED ON THE DRAWINGS IN THE SECTIONS & DETAILS. FOR SECTIONS & DETAILS w/OUT CONCRETE COVER FOR REINFORCING BARS REFERENCE THE PROJECTS SPECIFICATIONS.

4.4 WELDED WIRE FABRIC SHALL CONFORM TO "STANDARD SPECIFICATION FOR WELDED STEEL WIRE FABRIC FOR CONCRETE REINFORCEMENT," ASTM A-185.

4.5 PLACE WELDED WIRE FABRIC AT CENTER OF SLABS-ON-GRADE UNLESS NOTED OTHERWISE.

4.6 PROVIDE BARS AT CORNERS AND INTERSECTIONS OF WALLS & FOOTINGS OF THE SAME NUMBER AND SIZE AS LONGITUDINAL BARS, U.N.O. ON THE DRAWINGS.

4.7 FABRICATE CONTINUOUS BARS IN SLABS, WALLS & FOOTINGS TO THE LONGEST PRACTICABLE LENGTHS.

4.8 REINFORCING STEEL SHALL NOT BE BENT AFTER BEING PARTIALLY EMBEDDED IN HARDENED CONCRETE.

4.9 BARS SHALL BE COLD BENT AND SHALL NOT BE HEATED FOR ANY REASON.

4.10 REINFORCING BARS SHALL NOT BE WELDED UNLESS NOTED OTHERWISE ON THE DRAWINGS.

4.11 REFERENCE DRAWINGS FOR REQUIREMENTS FOR LAP REINFORCING STEEL IN CONCRETE. ALL "LCS" SHALL CONFORM TO CLASS B SPLICE CRITERIA. IT IS ACCEPTABLE TO LAP REINFORCING IN NON "LCS" STRUCTURES A MINIMUM 50 BAR DIAMETERS, UNLESS NOTED OTHERWISE.

4.12 LAP SPLICED BARS IN CONCRETE ARE TO BE WIRE TIED.

5.0 CONCRETE

5.1 CONCRETE SHALL BE TYPE III 5000 PSI COMPRESSIVE STRENGTH AT 28 DAYS, UNLESS NOTED BELOW. CONCRETE FOR PRECAST STRUCTURES SHALL BE CLASS II 4000 PSI COMPRESSIVE STRENGTH AT 28 DAYS. CONCRETE FOR SIDEWALKS & DRIVEWAYS SHALL BE CLASS I 3000 PSI COMPRESSIVE STRENGTH AT 28 DAYS. REFERENCE FDOT SPECIFICATION 346, EXCEPT SECTION 346.6.1, FOR APPLICATION & SPECIFIC CONCRETE MIX DESIGN REQUIREMENTS.

5.2 CONCRETE WORK SHALL CONFORM TO "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE", ACI 318 & TO "CODE REQUIREMENTS FOR ENVIRONMENTAL ENGINEERING CONCRETE STRUCTURES", ACI 350 (LATEST EDITIONS).

5.3 PLACE 1 /2 INCH EXPANSION JOINT MATERIAL BETWEEN EDGES OF SLABS AND VERTICAL SURFACES UNLESS NOTED OTHERWISE.

5.4 PROVIDE CONSTRUCTION OR CONTROL JOINTS IN SLABS & WALLS AT LOCATIONS SHOWN ON DRAWINGS, AT OFFSETS AND CHANGES IN DIRECTION AND AT THIRTY (30) FEET MAXIMUM U.N.O.. GENERAL CONTRACTOR TO PROVIDE CONSTRUCTION JOINT LAYOUT PLAN PER THE PROJECT SPECIFICATIONS PRIOR TO CONSTRUCTION, INCLUDING ORDERING & FABRICATING MATERIALS.

5.5 CHAMFER EXPOSED EDGES OF CONCRETE 3/4 INCH, UNLESS NOTED OTHERWISE.

5.6 CONTRACTOR SHALL BE RESPONSIBLE FOR PROPER CURING OF ALL CONCRETE. CURING METHODS SHALL CONFORM TO "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE", ACI 318, "CODE REQUIREMENTS FOR ENVIRONMENTAL ENGINEERING CONCRETE STRUCTURES" ACI 350 AND "STANDARD PRACTICE FOR CURING CONCRETE," ACI 308, LATEST EDITIONS.

5.7 UNLESS NOTED OTHERWISE DOWELS SHALL BE THE SAME NUMBER AND SIZE AS THE LARGEST VERTICAL BAR TO WHICH THEY ARE SPLICED.

5.8 REFERENCE PROJECT SPECIFICATIONS FOR REQUIRED FINISHES.

5.9 BONDING AGENT TO BE STRUCTURAL EPOXY ADHESIVE CONFORMING TO ASTM C-881 TYPE I AND II, GRADE 2, CLASS B AND C WITH A MINIMUM BOND STRENGTH OF 1900 PSI.

5.10 CONTRACTOR SHALL SUBMIT REBAR SHOP DRAWINGS FOR APPROVAL TO OWNER PRIOR TO FABRICATION. DO NOT FABRICATE REINFORCING PRIOR TO RECEIPT OF APPROVED SHOP DRAWINGS.

5.11 CONCRETE MIXES TO BE REVIEWED BY THE OWNER'S CONSTRUCTION REPRESENTATIVE PRIOR TO PLACEMENT OF CONCRETE. COMPRESSIVE STRENGTH TEST CYLINDERS TO BE REVIEWED BY THE OWNER'S CONSTRUCTION REPRESENTATIVE THROUGHOUT CONCRETE CONSTRUCTION OF THE PROJECT.

6.0 GROUT

6.1 PROVIDE NON-SHRINK GROUT UNDER ALL COLUMN BASE PLATES AND BEAM BEARING PLATES AND ELSEWHERE AS INDICATED ON DRAWINGS. NON-SHRINK GROUT SHALL CONFORM TO ASTM C 1107.

6.2 GROUT SHALL BE NON-METALLIC AND NON-STAINING AND HAVE A MINIMUM COMPRESSIVE STRENGTH OF 7000

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Stormwater Engineering Division

ROBLES PARK PUMP STATION REPLACEMENT

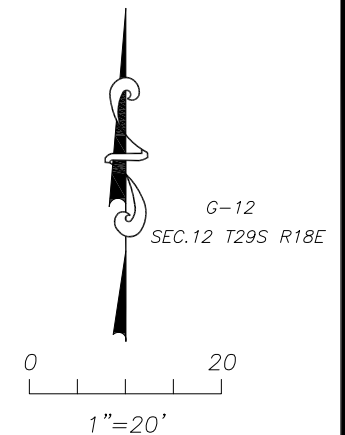
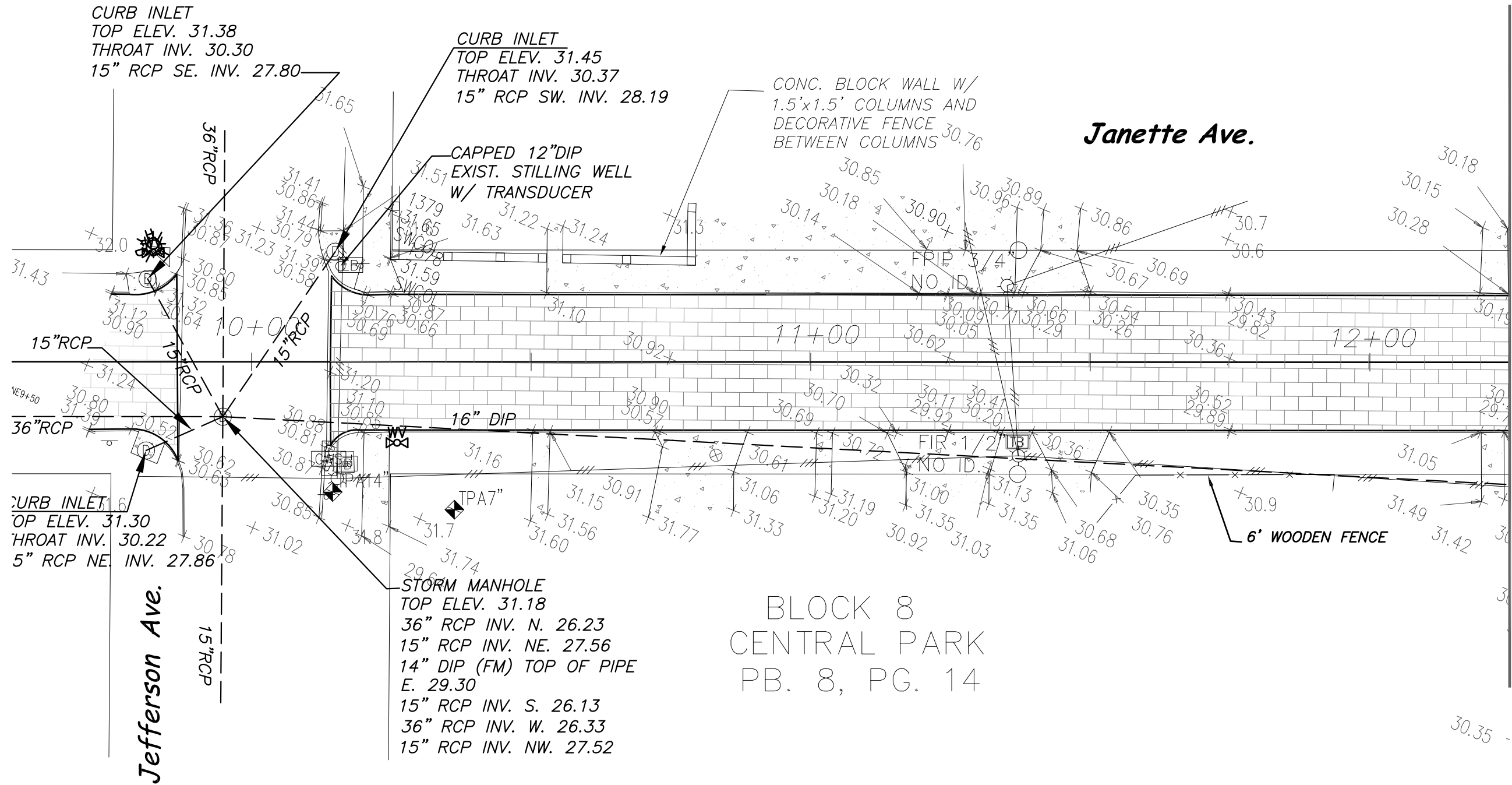
STRUCTURAL NOTES

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BLOCK 13
CENTRAL PARK
PB. 8, PG. 14

SW



TREE LEGEND

- ◆ = BAY TREE
- ⊗ = BOTTLE BRUSH TREE
- ⊙ = CAMPHOR TREE
- ▲ = CEDAR
- ⊖ = CHINABERRY TREE
- ◆ = CITRUS TREE
- △ = CYPRESS TREE
- ▽ = ELM TREE
- ◇ = EUCALYPTUS TREE
- ◆ = MAGNOLIA TREE
- ▲ = MAPLE TREE
- = MULBERRY TREE
- ⊙ = OAK TREE
- ▽ = OTHER SPECIES
- ◆ = PALM TREE
- = PECAN TREE
- ◇ = PERSIMMON TREE
- ▲ = PINE TREE
- ◆ = SYCAMORE TREE
- ▽ = WAX MYRTLE TREE
- ⊖ = WILLOW TREE

- ☐ = BOX, CABLE TELEVISION
- ☐ = BOX, ELECTRIC UTILITY
- ☐ = BOX, ELECTRIC UTILITY (TRANSFORMER)
- ☐ = BOX, TELEPHONE
- ☼ = FIRE HYDRANT
- ☐ = GRATE INLET
- ← = GUY ANCHOR
- ☼ = LIGHT POLE, WOOD
- ☐ = MAILBOX
- ⊙ = MANHOLE, SANITARY SEWER
- ⊙ = STORM SEWER STRUCTURE
- ⊙ = MANHOLE, TELEPHONE
- ☐ = MITERED END SECTION
- ⊗ = SANITARY CLEANOUT
- ☐ = TRAFFIC SIGN
- ☐ = UTILITY POLE, WOOD
- GV ☐ = VALVE, GAS
- RV ☐ = VALVE, RECLAIMED WATER
- SV ☐ = VALVE, SANITARY
- WV ☐ = VALVE, WATER

*Existing conditions
from survey by Polaris
Associates, Inc. on
11/15/2016*

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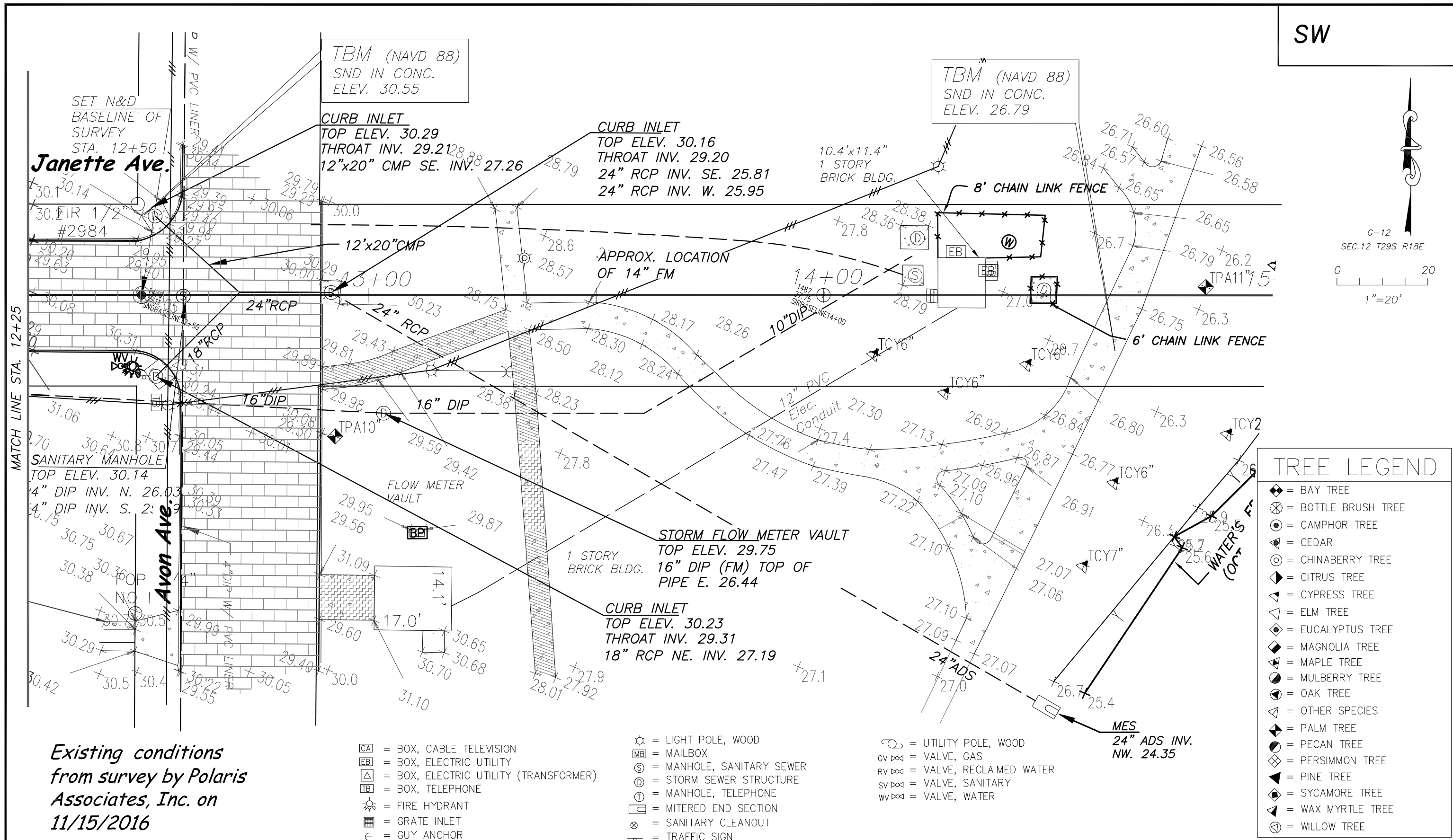
ROBLES PARK PUMP STATION REPLACEMENT
EXISTING CONDITIONS

SHEET
C-1
OF 65

SW



G-12
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Existing conditions
from survey by Polaris
Associates, Inc. on
11/15/2016

- ☐ = BOX, CABLE TELEVISION
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 - ◆ = MAGNOLIA TREE
 - ◆ = MAPLE TREE
 - = MULBERRY TREE
 - = OAK TREE
 - △ = OTHER SPECIES
 - ◆ = PALM TREE
 - = PECAN TREE
 - ◆ = PERSIMMON TREE
 - ▲ = PINE TREE
 - ◆ = SYCAMORE TREE
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 - ⊙ = WILLOW TREE

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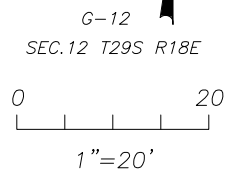
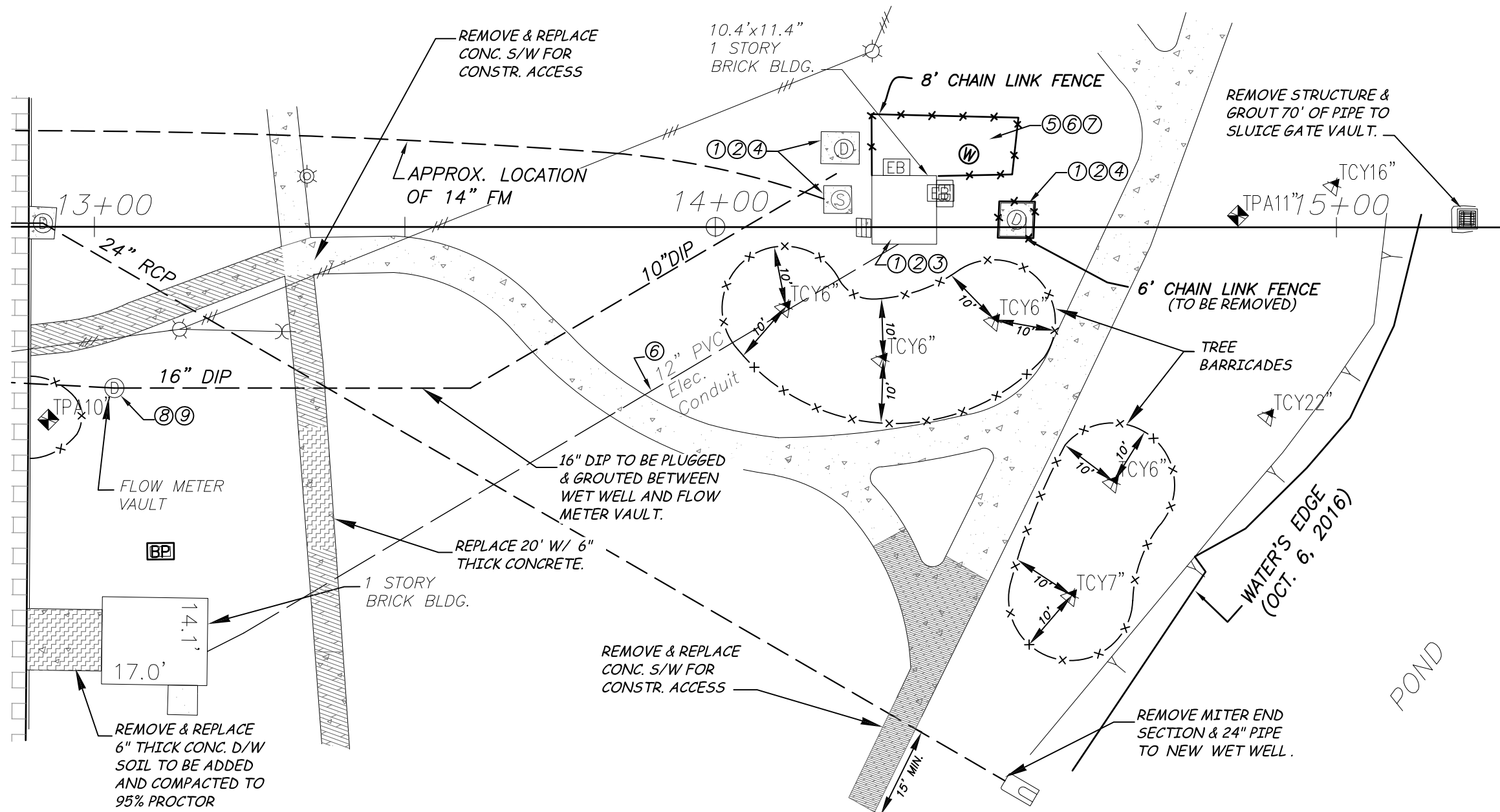
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ROBLES PARK PUMP STATION REPLACEMENT
 EXISTING CONDITIONS

SHEET
C-2
 OF 65

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DEMOLITION NOTES

- ① STRUCTURES TO BE REMOVED TO AT LEAST TWO(2) FEET BELOW GRADE AND FILLED WITH SOIL TO THE SURFACE.
- ② ALL PIPES, VALVES, PUMPS, AND FITTINGS TO BE REMOVED.
- ③ LEVEL FLOATS AND TRANSDUCER TO BE SALVAGED. SIEMENS LOAD CENTER W1224L3125CU AND STARTER JUC1023 TO BE RELOCATED TO CONTROL BUILDING.
- ④ PLUG PIPE FOR GROUTING.
- ⑤ CHAIN LINK FENCE TO REMAIN AND GAP IN FENCE CREATED BY STRUCTURE REMOVAL TO BE REPLACED WITH FENCE OF LIKE KIND AND SIZE.
- ⑥ ALL OUTSIDE ELECTRICAL EQUIPMENT AND PIPING TO REMAIN UNDISTURBED.
- ⑦ ANTENNA AND CONTROL PANEL TO BE RELOCATED BY OTHERS.
- ⑧ REMOVE & SALVAGE RING AND COVER. (SEE SH. 19)
- ⑨ REMOVE & SALVAGE FLOW METER TRANSMITTERS AND CABLE. (SEE SH. 19)

ALL DEMOLITION ASSOCIATED TO THE EXISTING PUMPING SYSTEM MUST BE SCHEDULED AFTER NEW PUMPING SYSTEM IS COMPLETE AND ACCEPTED BY THE CITY. EXISTING PUMPING SYSTEM MUST REMAIN OPERATIONAL THROUGHOUT CONSTRUCTION OF NEW PUMPING SYSTEM. SALVAGED ITEMS SHALL BE DELIVERED TO ENGINEER OR REPRESENTATIVE.

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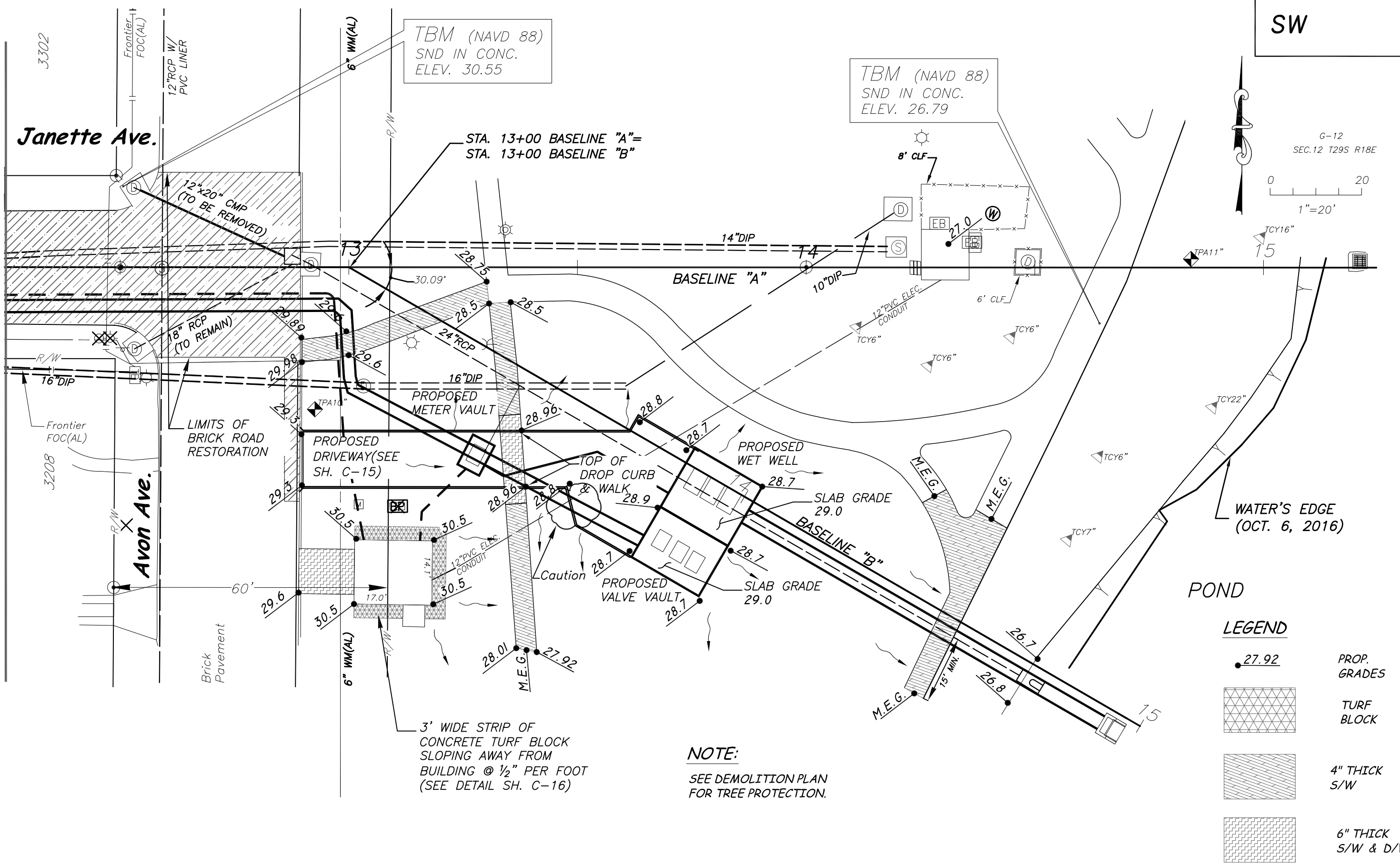
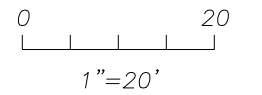
CITY of TAMPA
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 Stormwater Engineering Division

ROBLES PARK PUMP STATION REPLACEMENT
 DEMOLITION PLAN

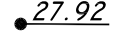
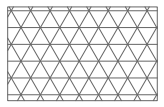
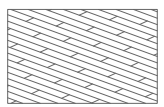
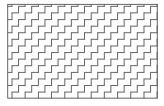
SHEET
C-3
 OF 65

SW

G-12
SEC.12 T29S R18E



LEGEND

-  27.92 PROP. GRADES
-  TURF BLOCK
-  4" THICK S/W
-  6" THICK S/W & D/W

NOTE:

SEE DEMOLITION PLAN FOR TREE PROTECTION.

3' WIDE STRIP OF CONCRETE TURF BLOCK SLOPING AWAY FROM BUILDING @ 1/2" PER FOOT (SEE DETAIL SH. C-16)

TBM (NAVD 88)
SND IN CONC.
ELEV. 30.55

TBM (NAVD 88)
SND IN CONC.
ELEV. 26.79

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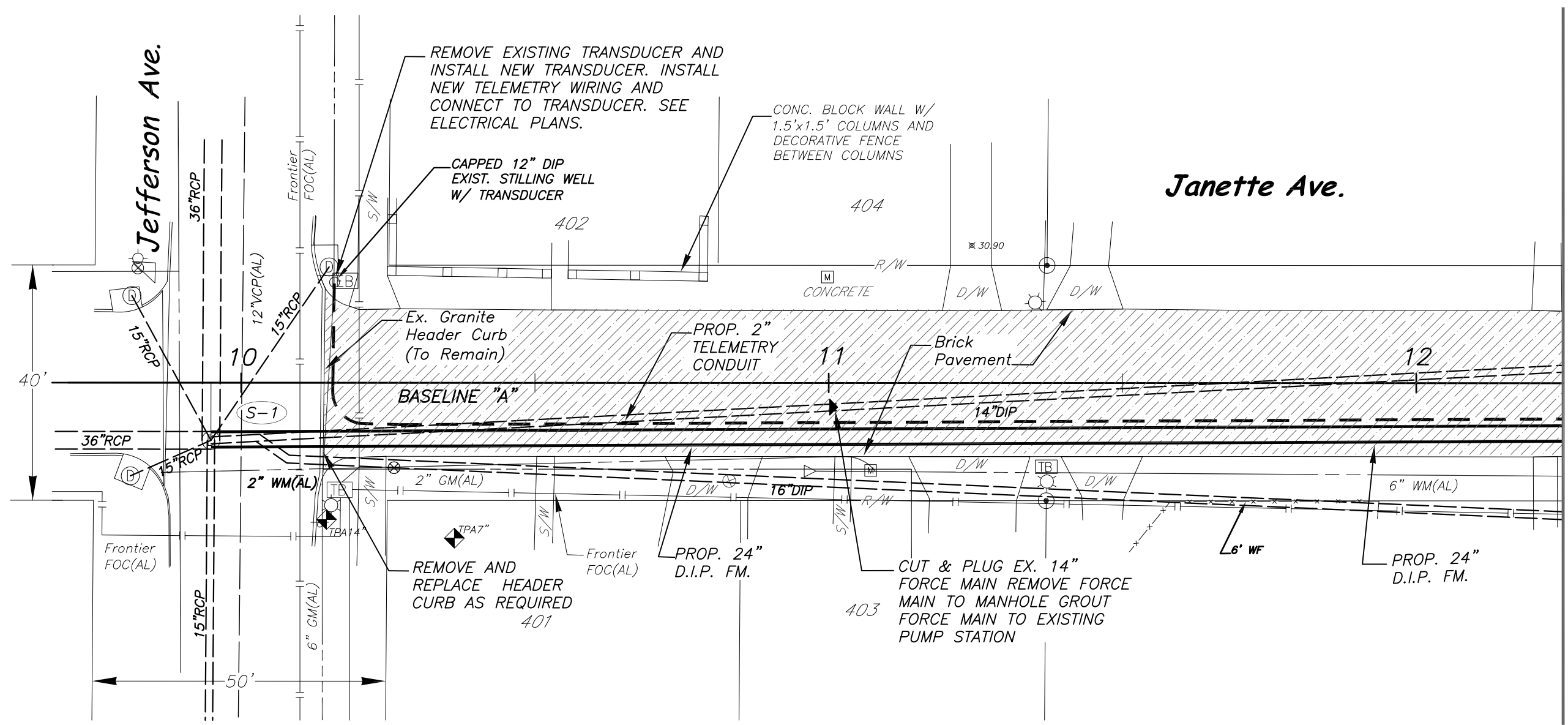
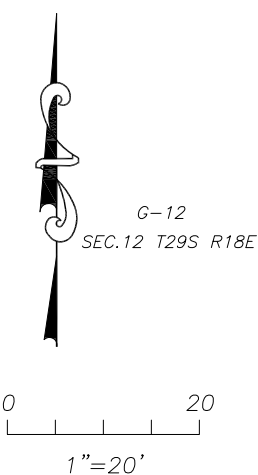
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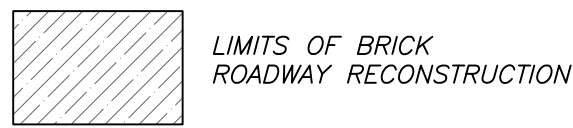
ROBLES PARK PUMP STATION REPLACEMENT
GRADING PLAN

SHEET
C-4
OF 65

SW



S-1 STA 9+94.87, 10'± RT BASELINE "A"
 TIE IN TO EXISTING MH
 24" D.I.P. FM TOP= 29.20(E)
 Ex. 36" RCP INV.= 26.23(N)
 Ex. 15" RCP INV.= 27.56(NE)
 Ex. 14" DIP (FM) TOP OF PIPE= 29.30(E)
 Ex. 15" RCP INV.= 26.13(S)
 Ex. 36" RCP INV.= 26.33(W)
 Ex. 15" RCP INV.= 27.52(NW)



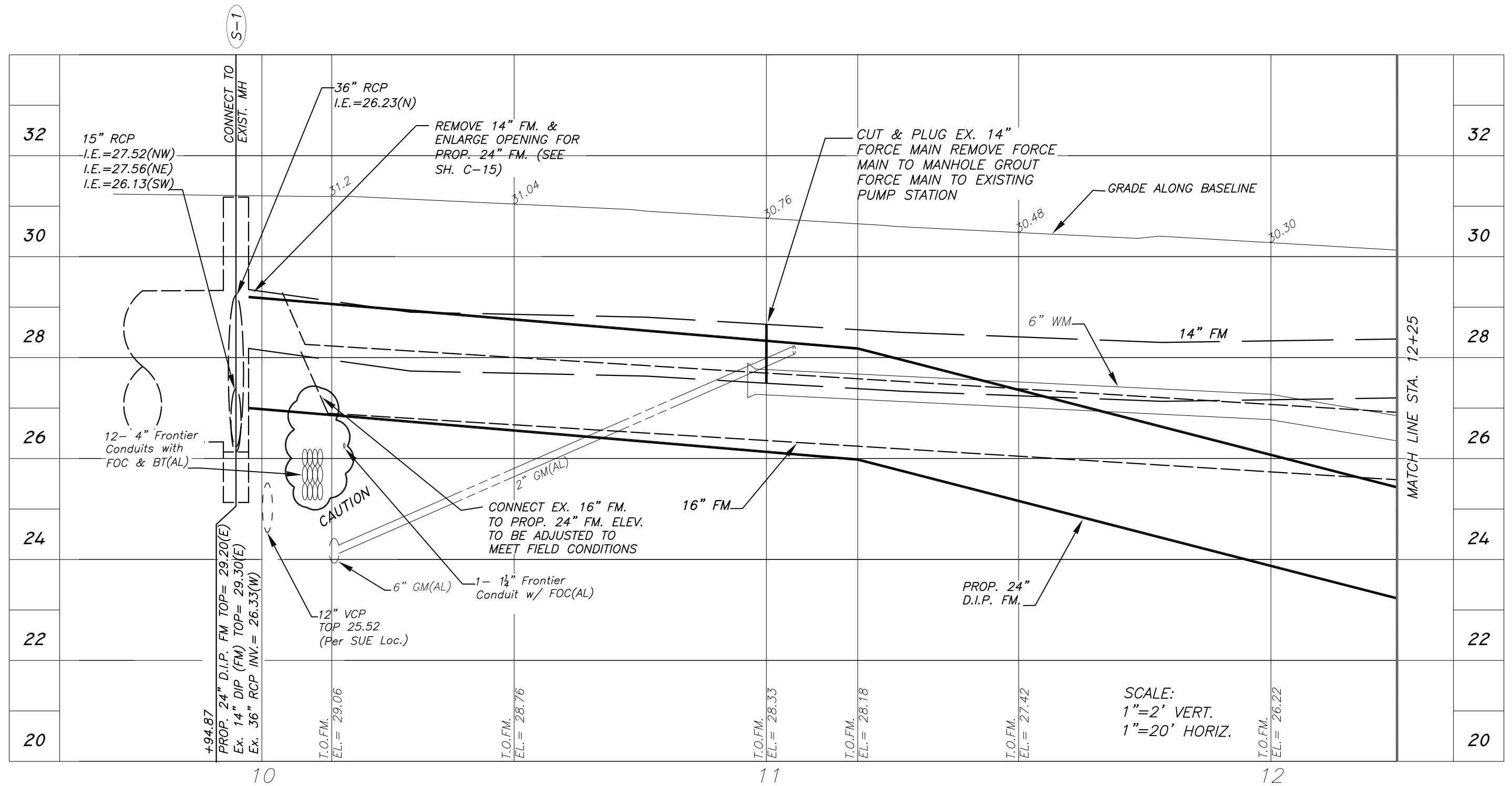
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ROBLES PARK PUMP STATION REPLACEMENT
FORCE MAIN CONSTRUCTION

SHEET
C-5
 OF 65



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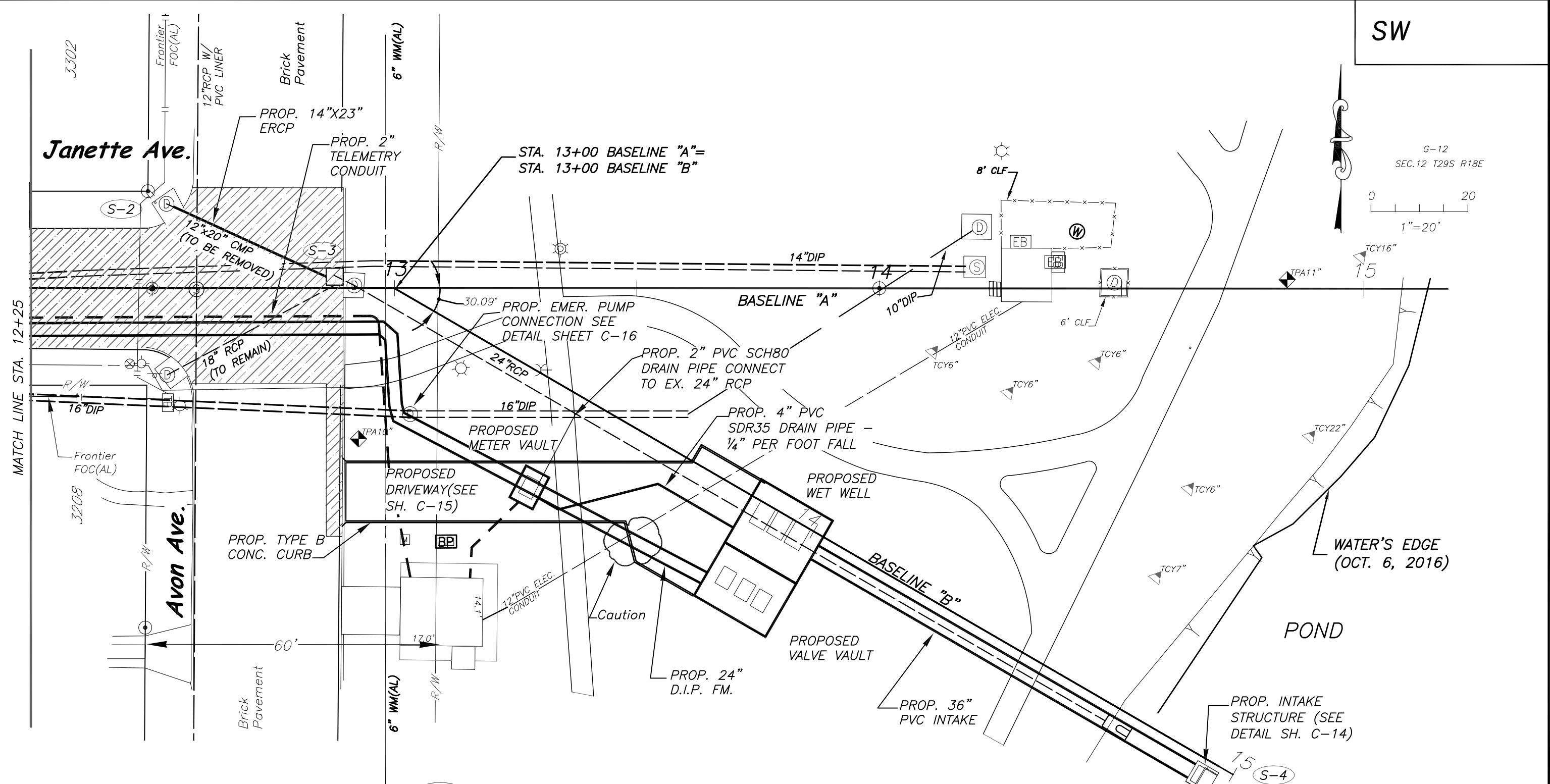
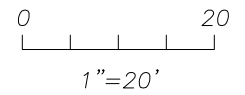
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ROBLES PARK PUMP STATION REPLACEMENT
FORCE MAIN CONSTRUCTION

SW

G-12
SEC.12 T29S R18E



S-2 STA 12+53, 17'± LT BASELINE "A"
REPLACE TOP SLAB OF EXIST. INLET WITH 8"
THICK HEAVY LOAD DESIGN
PROP. 14"X23" ERCP INV.= 27.26(SE)

S-3 STA 12+87.7, 2.5'± LT BASELINE "A"
EXIST. JUNCTION BOX-BURIED
INSTALL USF 575/AO RING & COVER
TOP. EL.= 29.6±
EXIST. 24" RCP INV.= UNKNOWN
EXIST. 18" RCP INV.= UNKNOWN
PROP. 14"X23" ERCP INV.= 26.2±(NW)

S-4 STA 14+94.75, 4'± RT BASELINE "B"
PROP. INTAKE STRUCTURE
PROP. 36" RCP INV.= 19.0(W)

LIMITS OF BRICK
ROADWAY RECONSTRUCTION

FLOWMETER VAULT MUST BE LOCATED AT LEAST
30 FEET UPSTREAM & 20 FEET DOWNSTREAM
FROM ANY VALVE OR FITTING

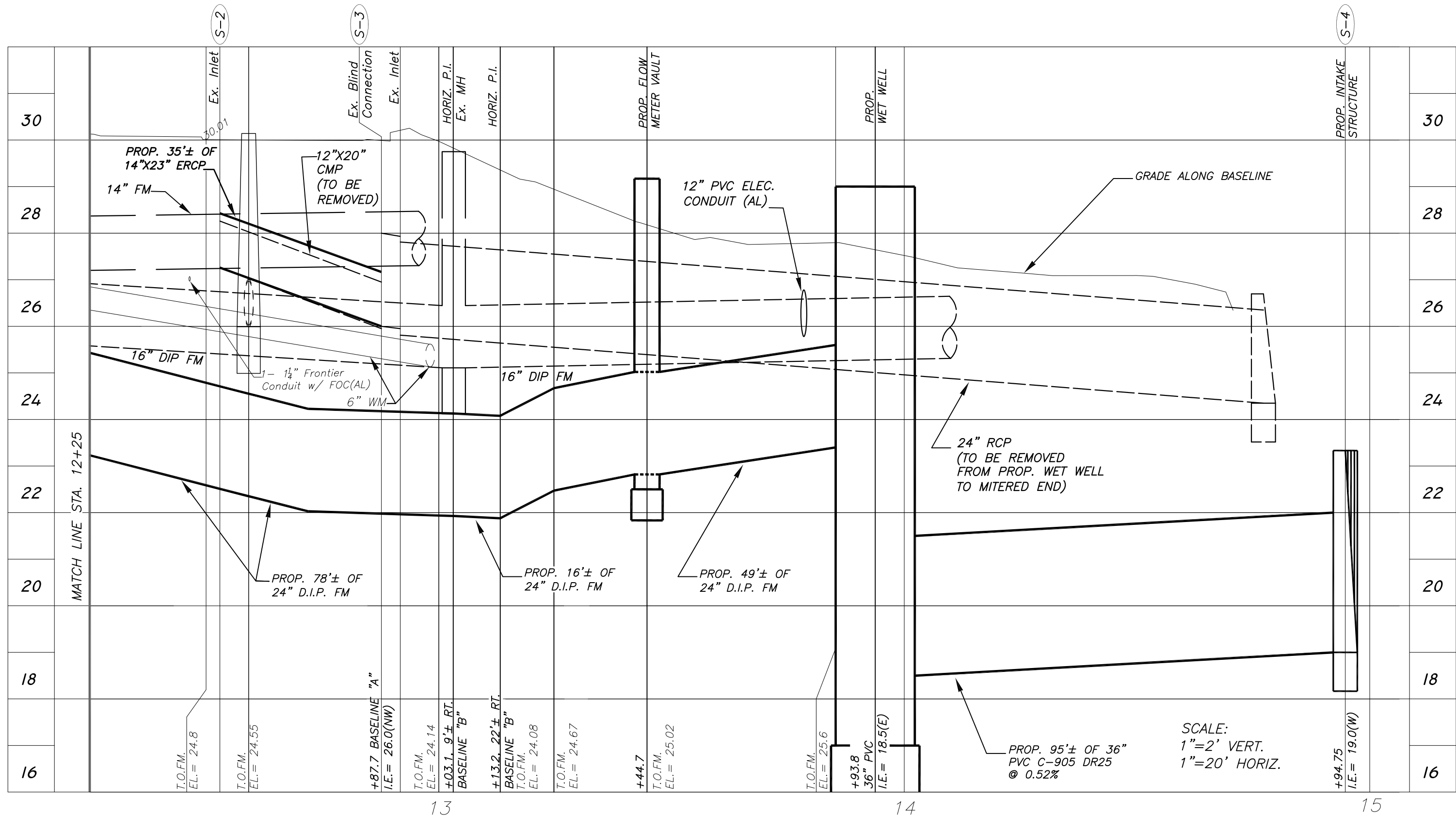
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Stormwater Engineering Division

ROBLES PARK PUMP STATION REPLACEMENT
FORCE MAIN CONSTRUCTION

SHEET
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14

15

No.	DATE	REVISIONS	No.	DATE	REVISIONS
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ROBLES PARK PUMP STATION REPLACEMENT
FORCE MAIN CONSTRUCTION

SHEET
C-8
 OF 65

SCALE:
 1"=2' VERT.
 1"=20' HORIZ.

PROP. 95'± OF 36"
 PVC C-905 DR25
 @ 0.52%

24" RCP
 (TO BE REMOVED
 FROM PROP. WET WELL
 TO MITERED END)

PROP. 49'± OF
 24" D.I.P. FM

PROP. 16'± OF
 24" D.I.P. FM

PROP. 78'± OF
 24" D.I.P. FM

MATCH LINE STA. 12+25

PROP. 35'± OF
 14"x23" ERCP

12"x20"
 CMP
 (TO BE
 REMOVED)

12" PVC ELEC.
 CONDUIT (AL)

16" DIP FM

16" DIP FM

1- 1 1/2" Frontier
 Conduit w/ FOC(AL)
 6" WM

GRADE ALONG BASELINE

T.O.FM.
 EL.= 24.8

T.O.FM.
 EL.= 24.55

+87.7 BASELINE "A"
 I.E.= 26.0(NW)

T.O.FM.
 EL.= 24.14

+03.1 9'± RT.
 BASELINE "B"

+13.2 22'± RT.
 BASELINE "B"
 T.O.FM.
 EL.= 24.08

T.O.FM.
 EL.= 24.67

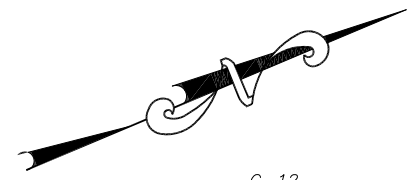
+44.7
 T.O.FM.
 EL.= 25.02

T.O.FM.
 EL.= 25.6

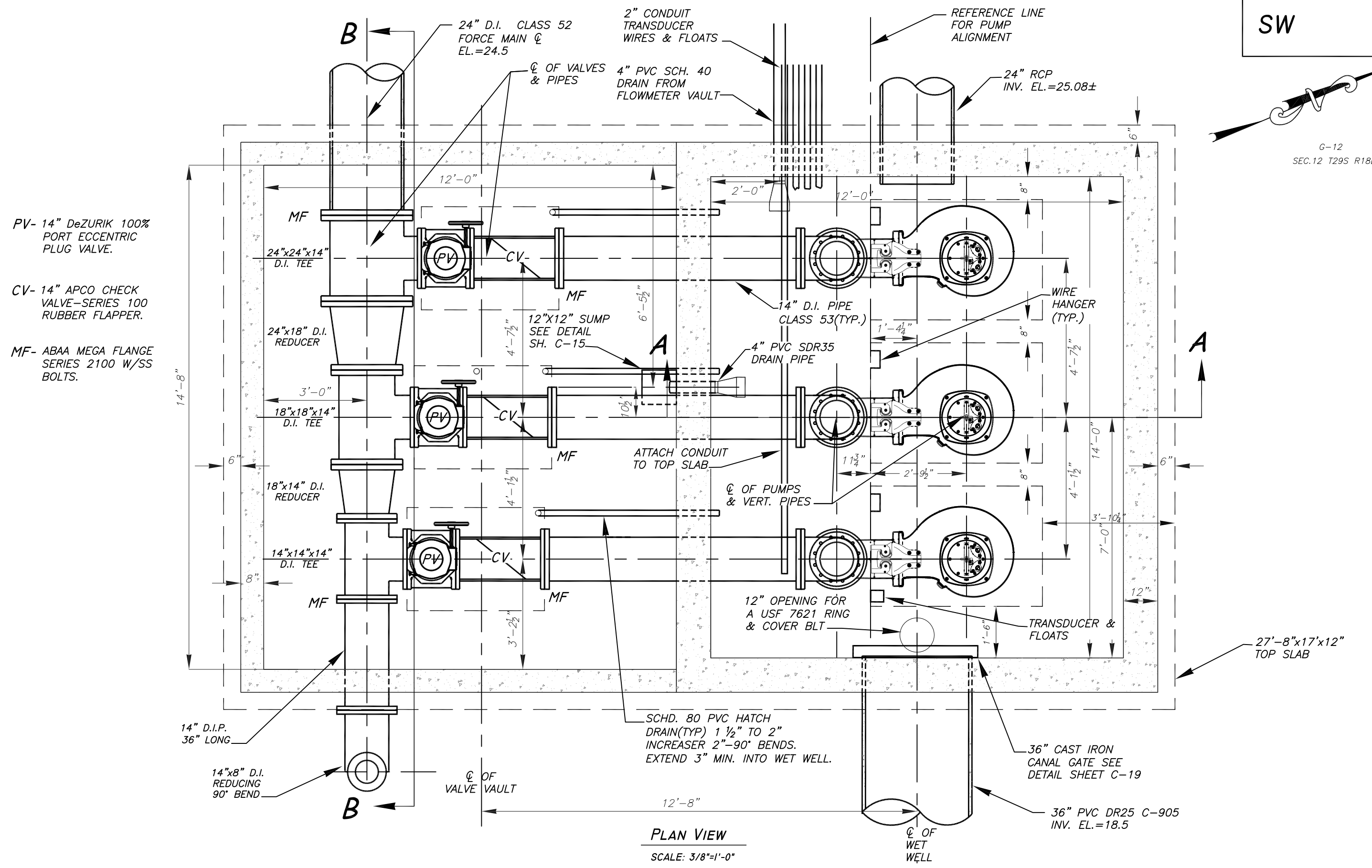
+93.8
 36" PVC
 I.E.= 18.5(E)

+94.75
 I.E.= 19.0(W)

SW



G-12
SEC.12 T29S R18E



- PV- 14" DeZURIK 100% PORT ECCENTRIC PLUG VALVE.
- CV- 14" APCO CHECK VALVE-SERIES 100 RUBBER FLAPPER.
- MF- ABAA MEGA FLANGE SERIES 2100 W/SS BOLTS.

PLAN VIEW
SCALE: 3/8"=1'-0"

No.	DATE	REVISIONS	No.	DATE	REVISIONS
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Stormwater Engineering Division

ROBLES PARK PUMP STATION REPLACEMENT
WET WELL & VALVE VAULT

SHEET
C-9
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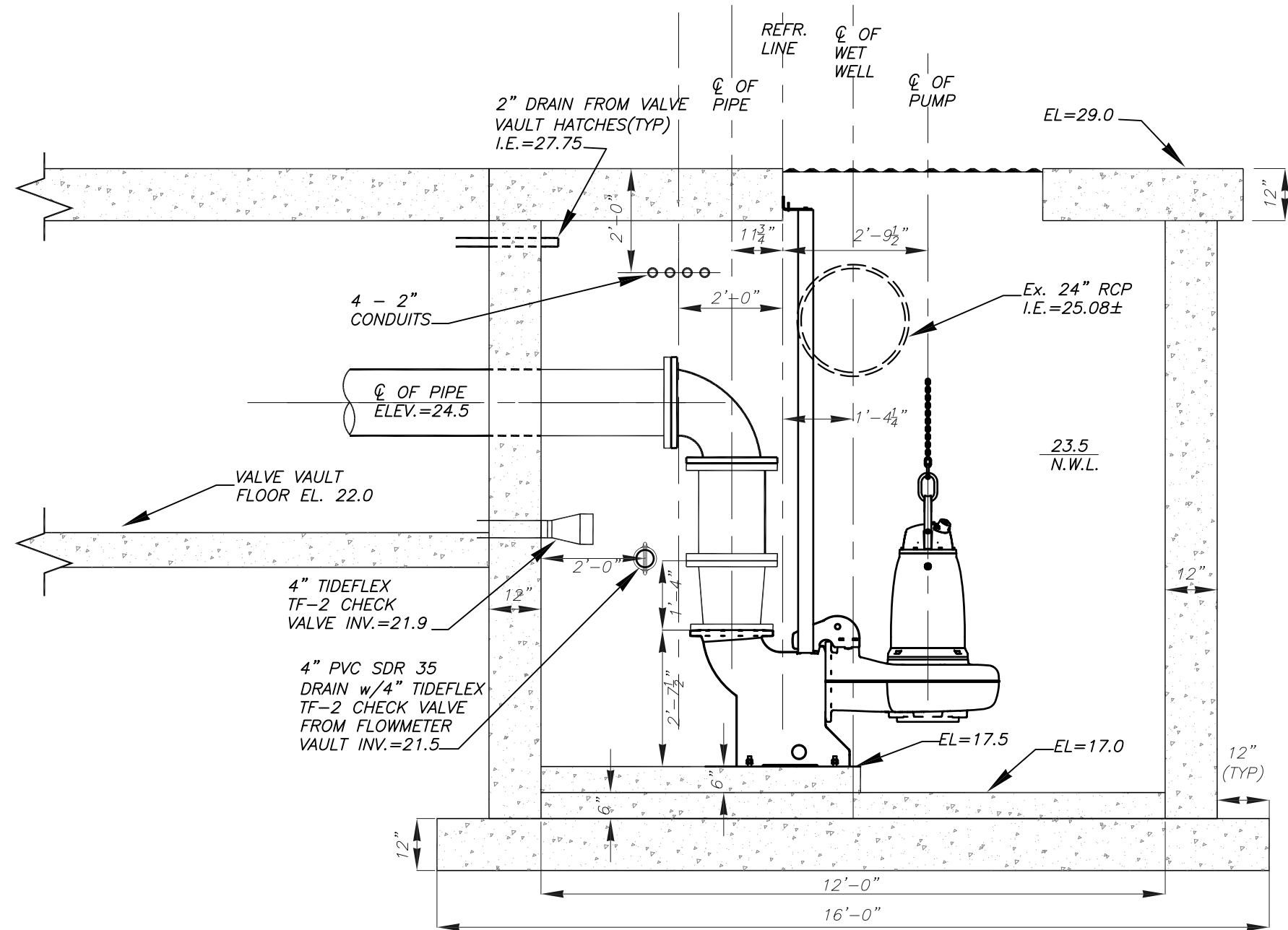
SW

PUMP OPERATION LEVELS

1st PUMP ON 24.0
 2nd PUMP ON 24.5
 ALL PUMPS OFF 23.5
 HIGH LEVEL ALARM 26.0

PUMP STATION SEQUENCING

ELEVATION IN MANHOLE @ JANETTE AVE.
 & JEFFERSON ST.
 2 PUMPS RUNNING - 28.0-29.0
 1 PUMP RUNNING ONLY - 29.1-29.9
 PUMPS OFF - 30.0



SECTION A-A

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

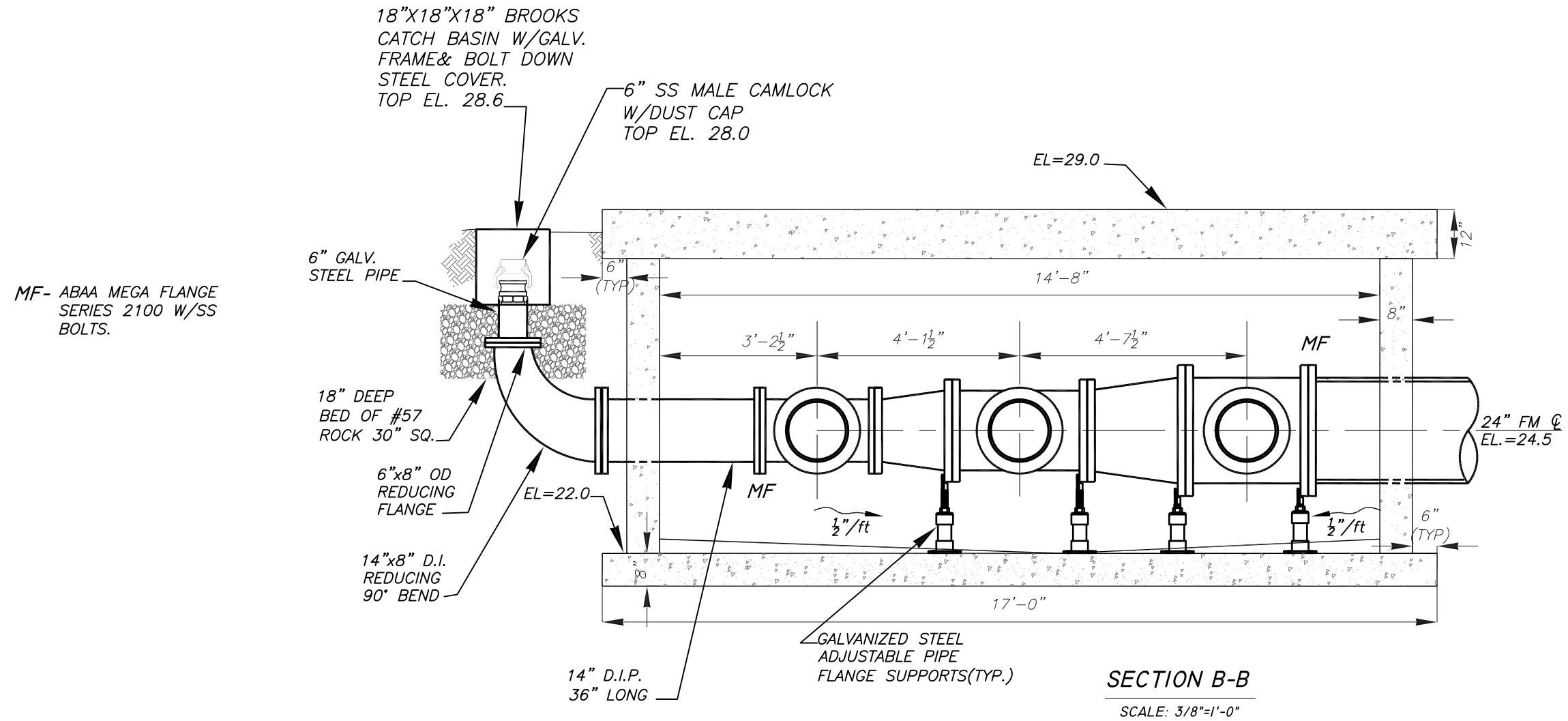
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ROBLES PARK PUMP STATION REPLACEMENT
WET WELL SECTION

SHEET
C-10
 OF 65



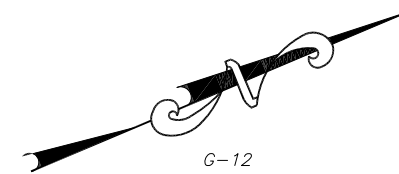
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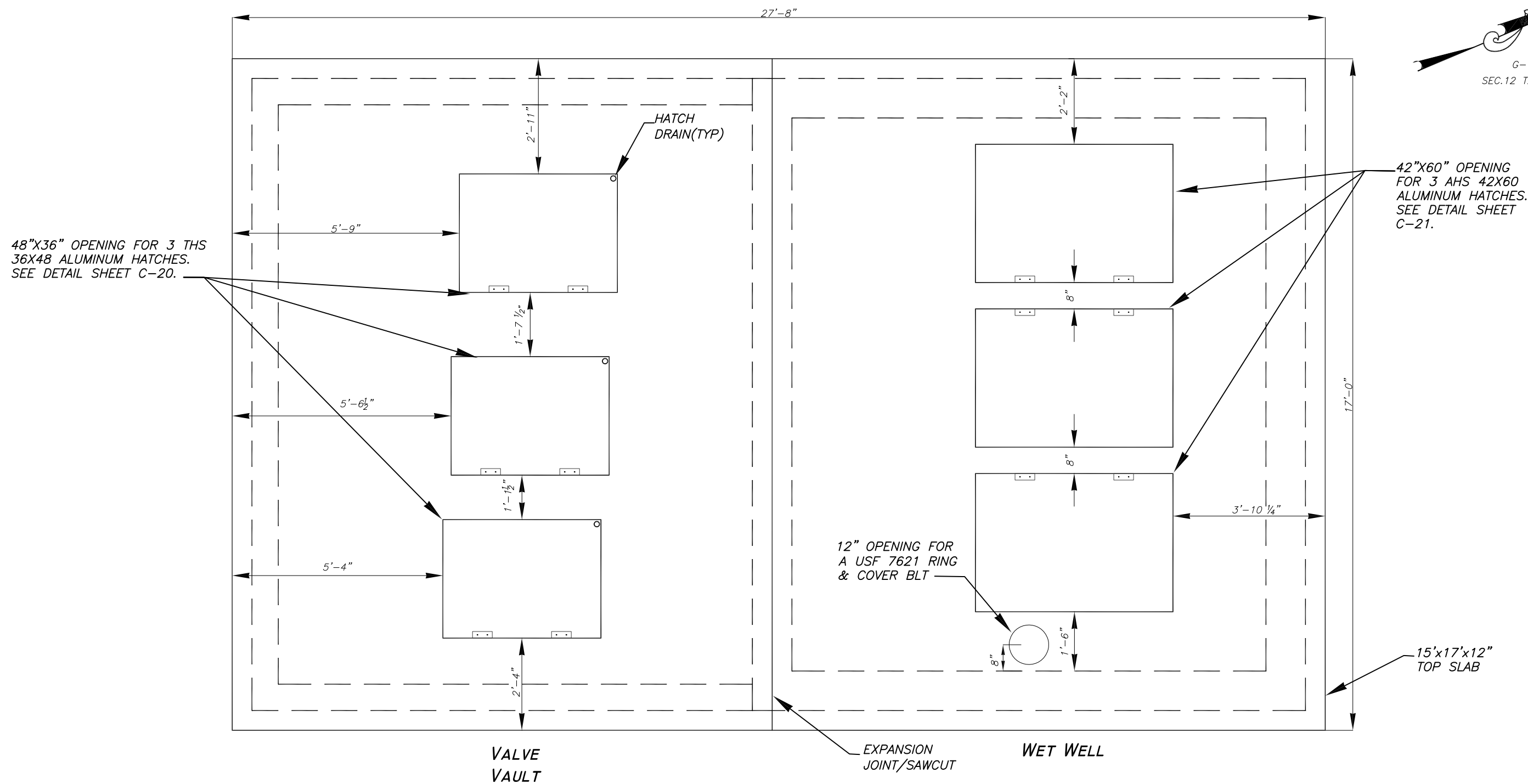
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ROBLES PARK PUMP STATION REPLACEMENT
 VALVE VAULT SECTION

SW



G-12
SEC.12 T29S R18E



TOP SLAB

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

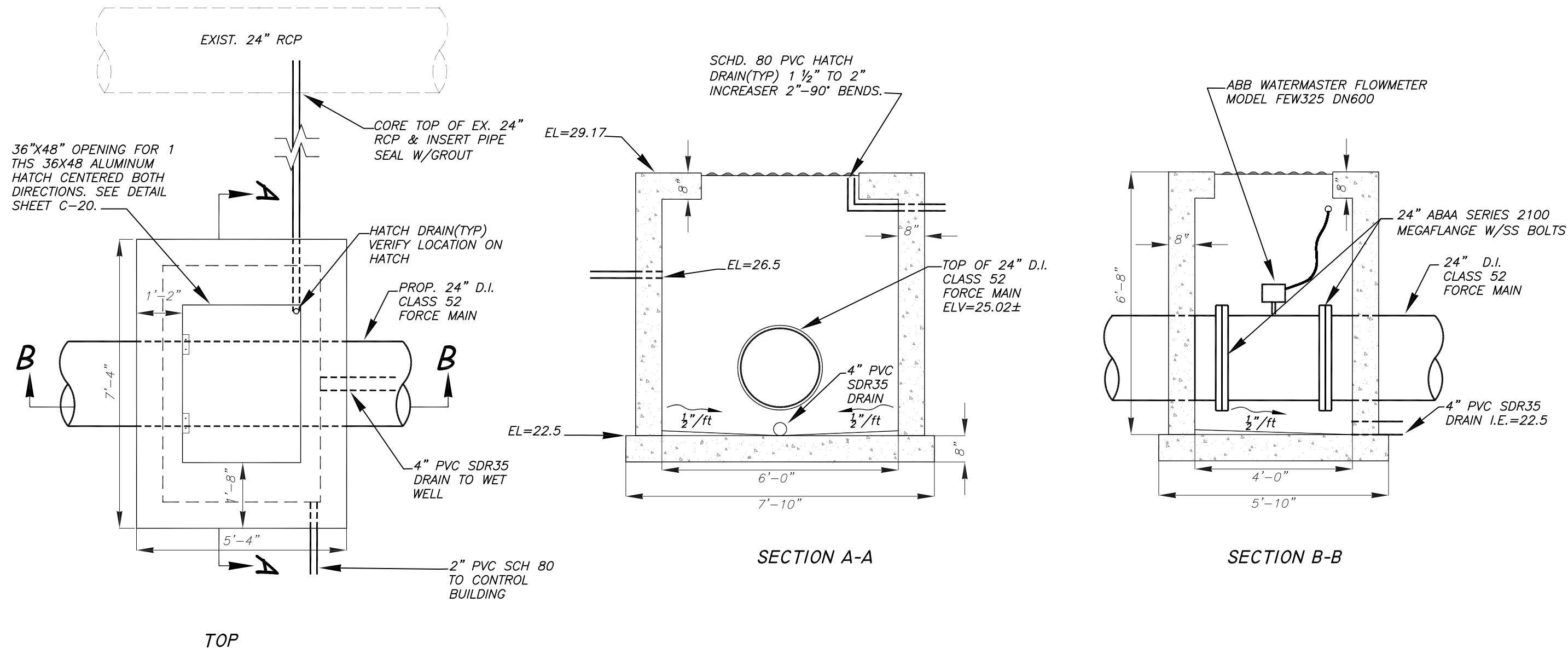
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Stormwater Engineering Division

ROBLES PARK PUMP STATION REPLACEMENT
WET WELL & VALVE VAULT

SHEET
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OF 65



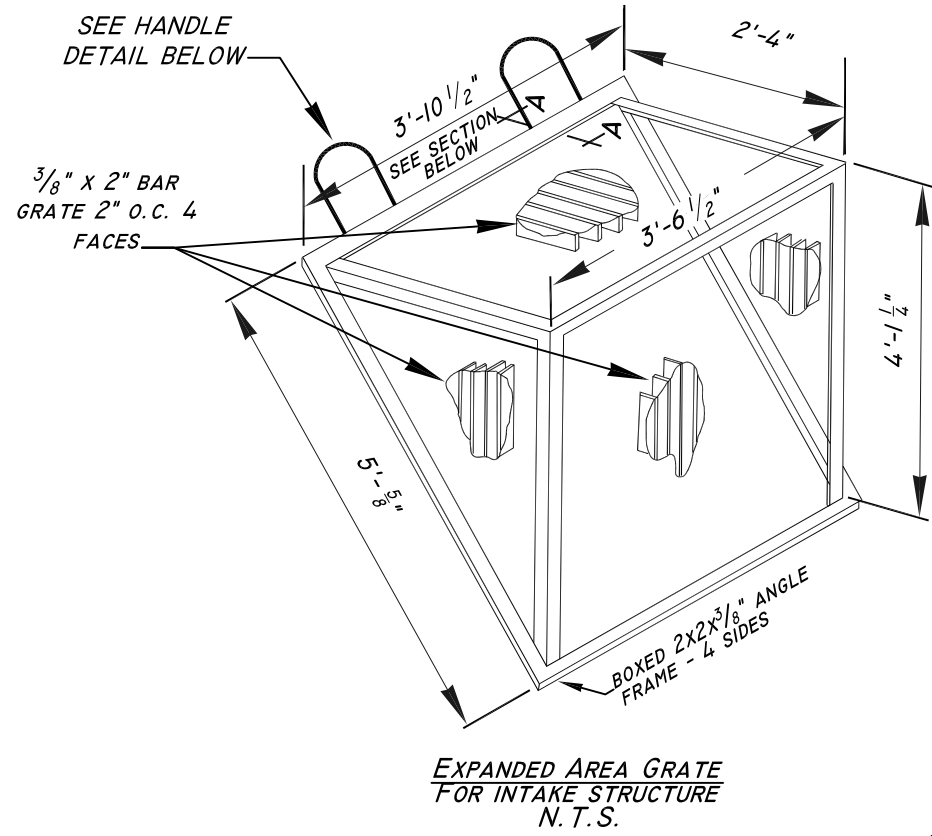
FLOW METER VAULT
SCALE: 3/8"=1'-0"

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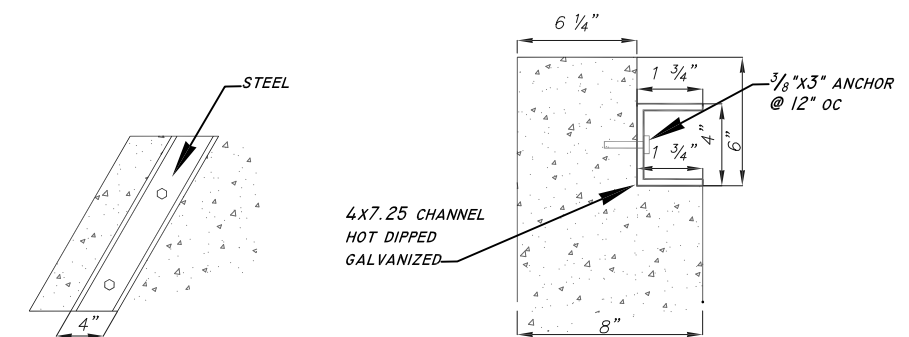
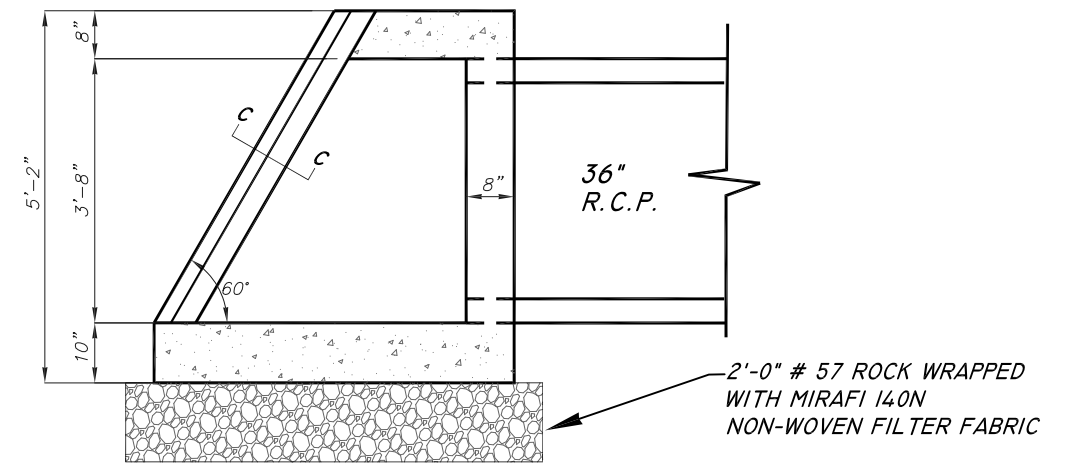
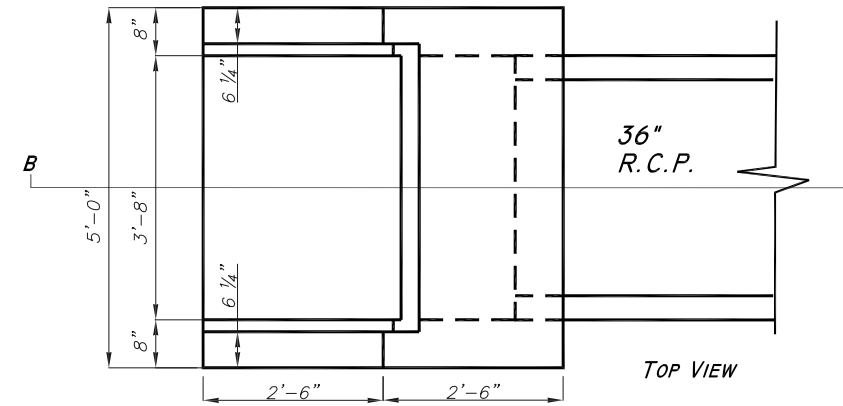
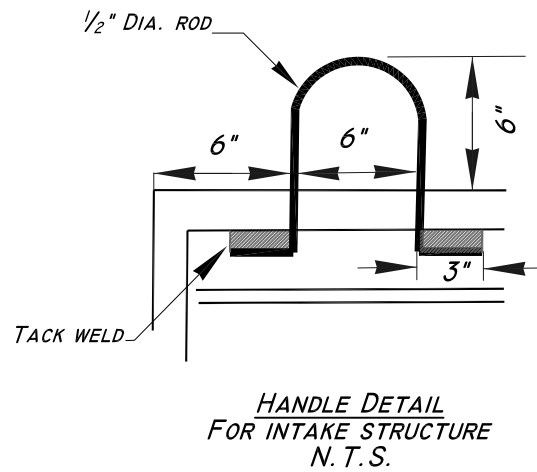
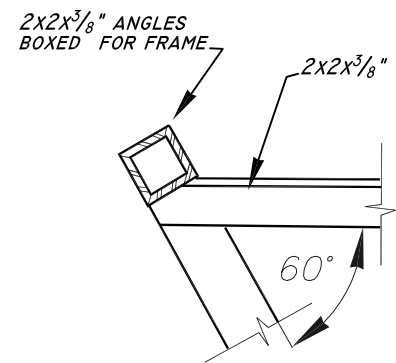
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Stormwater Engineering Division

ROBLES PARK PUMP STATION REPLACEMENT
FLOW METER VAULT



NOTES:

1. VERIFY DIMENSIONS IN THE FIELD.
2. HOT DIP GALV. AFTER FABRICATION.

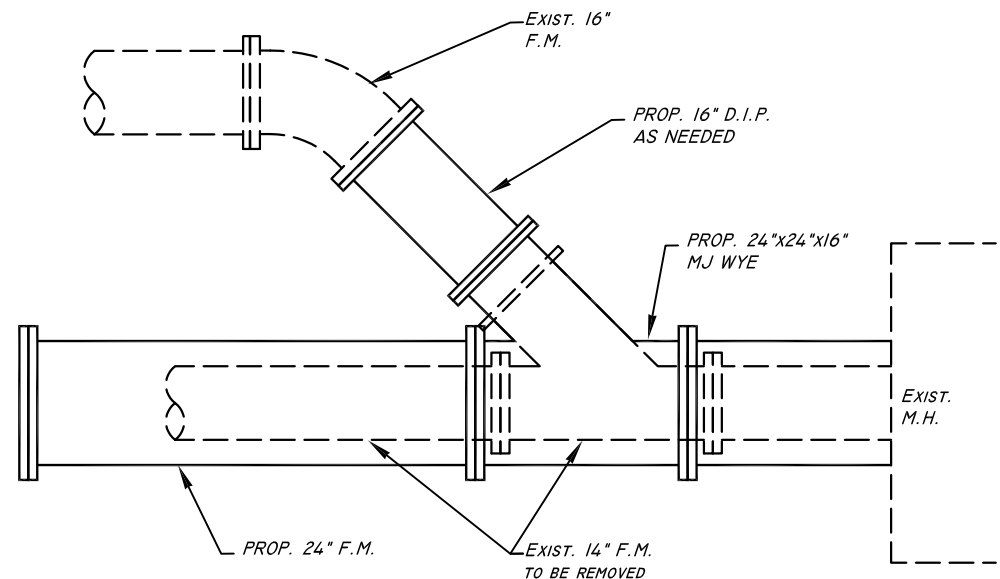


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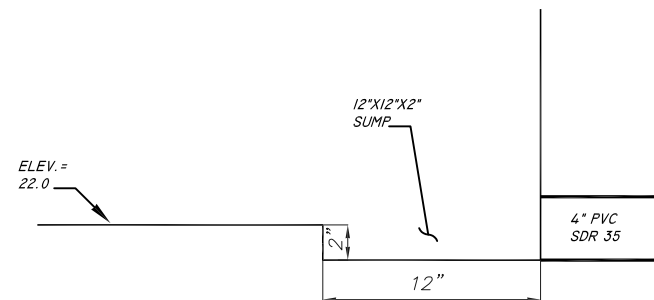
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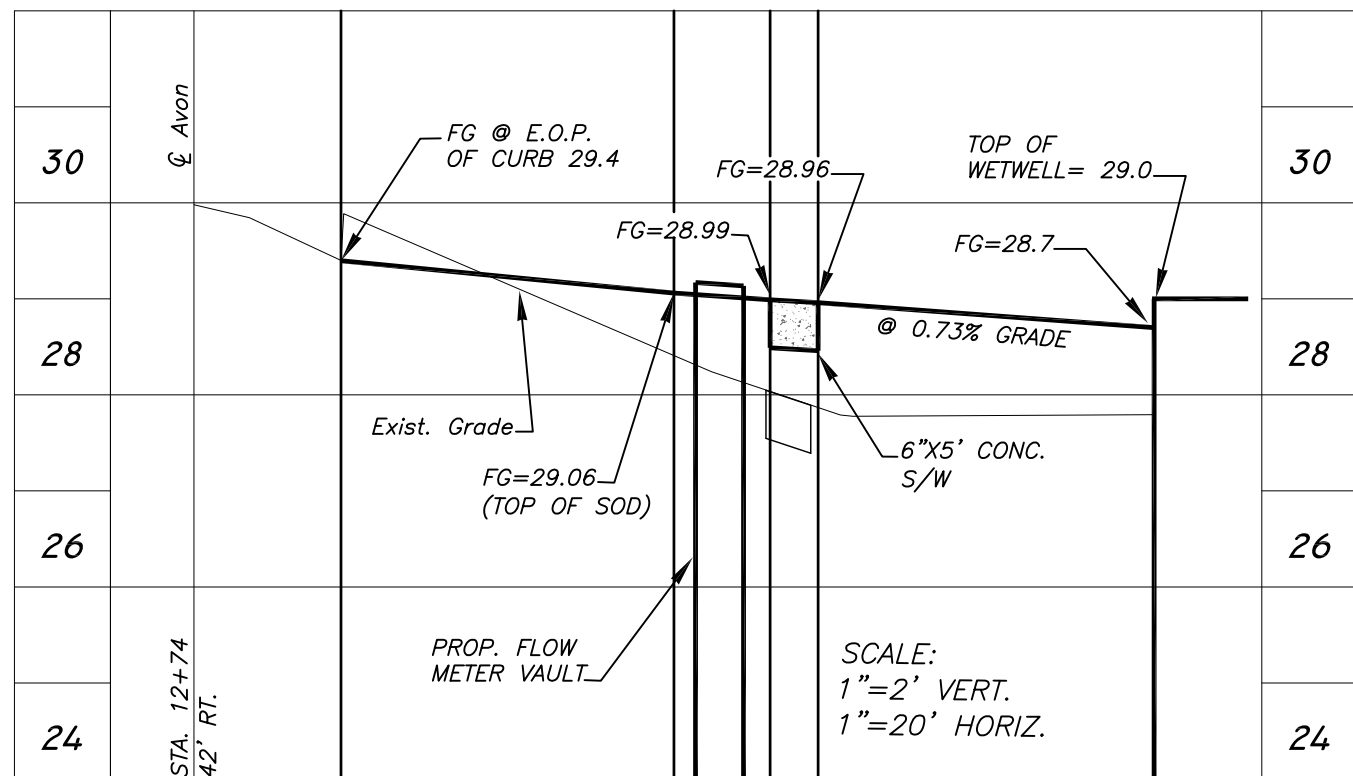
ROBLES PARK PUMP STATION REPLACEMENT
INTAKE STRUCTURE DETAILS



16" FM TO 24" FM CONNECTION
N.T.S.



VALVE VAULT SUMP DETAIL
N.T.S.



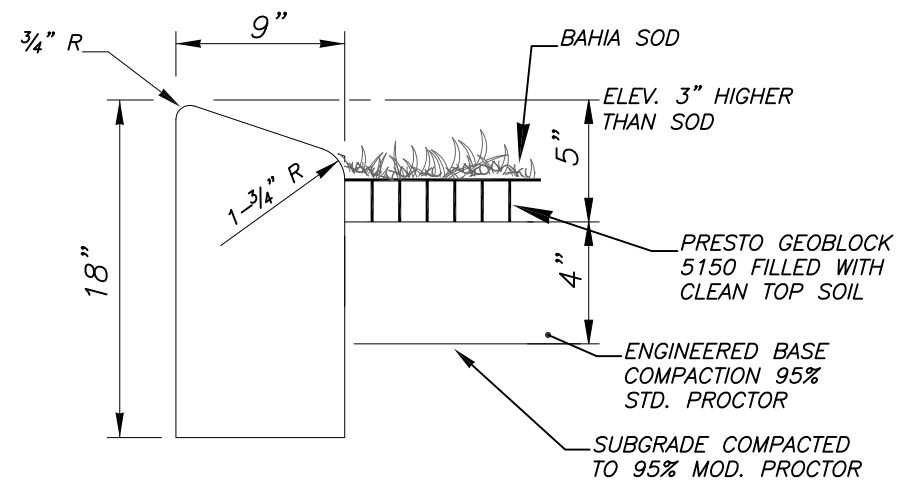
ACCESS DRIVE DETAIL

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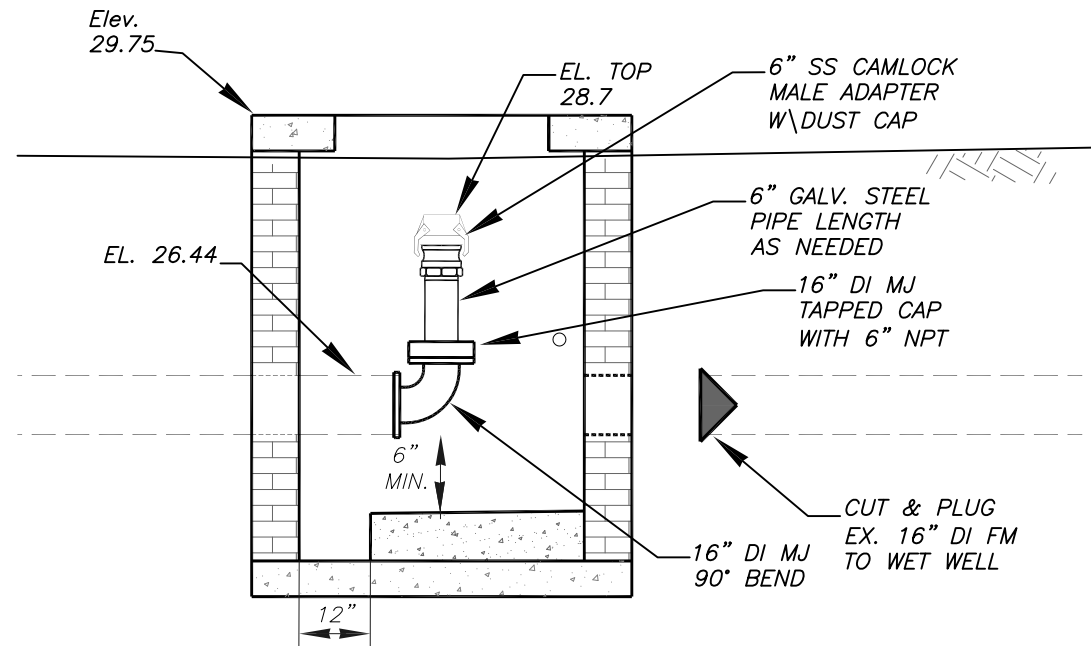
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ROBLES PARK PUMP STATION REPLACEMENT
MISCELLANEOUS DETAILS

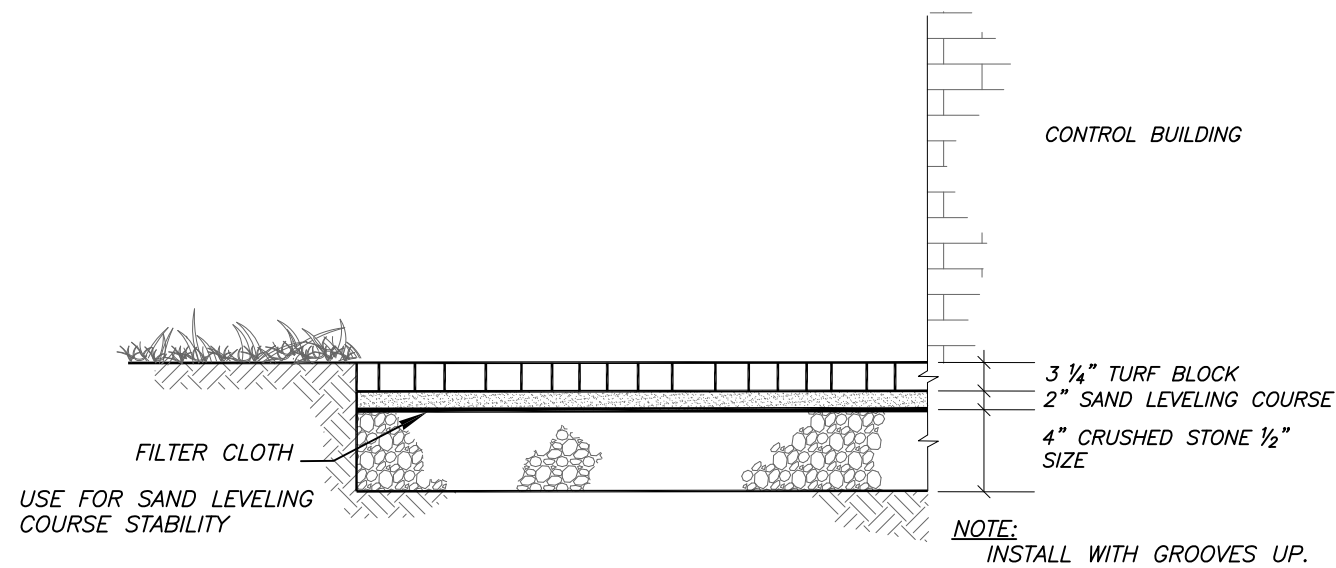


TYPE B CONCRETE CURB DETAIL
N.T.S.

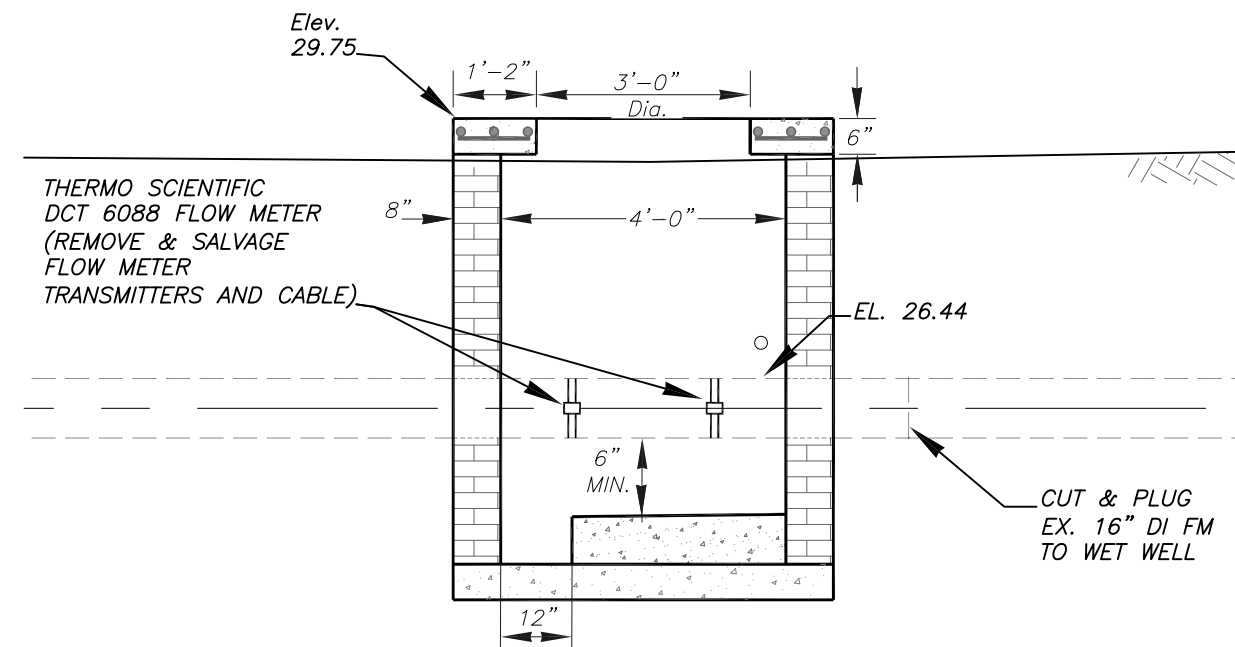


**PROFILE VIEW W/
CAMLOCK ADAPTER**
N.T.S.

PROPOSED EMERGENCY PUMP CONNECTION TO BE INSTALLED IN EXISTING FLOW METER VAULT. IF VAULT IS IN CONFLICT WITH FORCE MAIN INSTALLATION OR TOO SMALL TO ACCOMMODATE NEW PIPING, THEN REMOVE VAULT IN ITS ENTIRETY AND INSTALL 18"x18"x18" BROOKS CATCH BASIN AS SHOWN ON SH. C-11



TURF BLOCK INSTALLATION
N.T.S.



PROFILE VIEW
N.T.S.

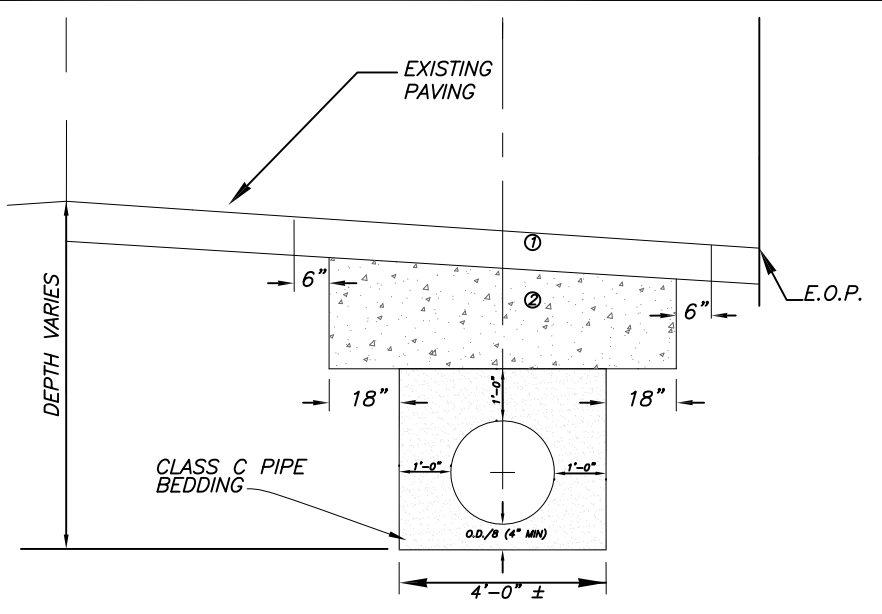
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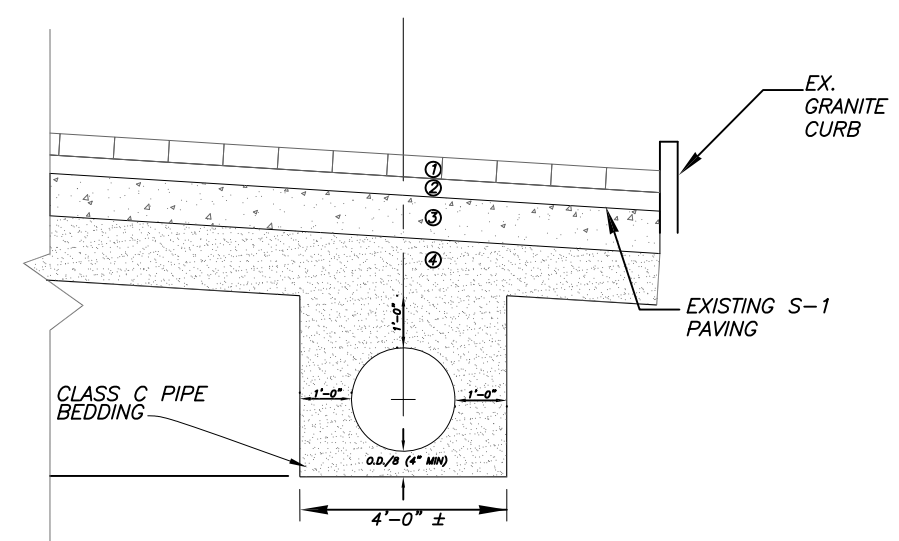
ROBLES PARK PUMP STATION REPLACEMENT
MISCELLANEOUS DETAILS

SW



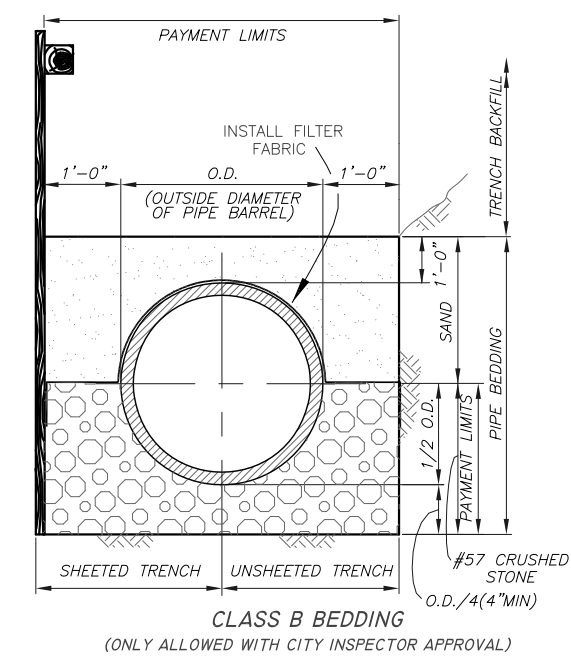
PAVEMENT LAYERS (SEE SPECIFICATIONS)

- ① TYPE SP-9.5 ASPHALT (2")
 - ② CRUSHED CONCRETE BASE (8")
- (ASPHALT)
N.T.S.



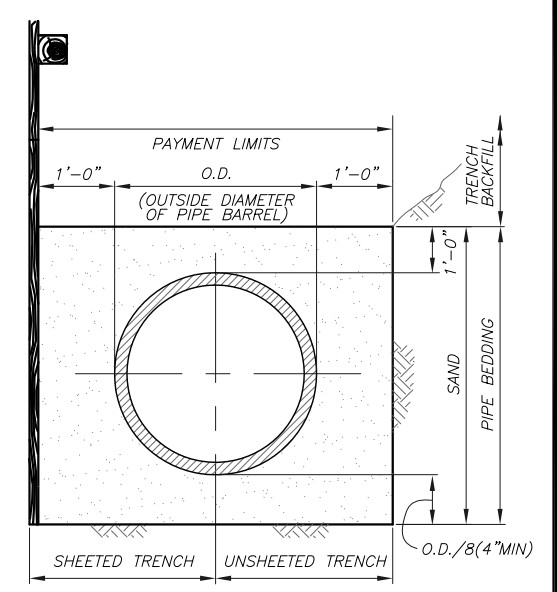
PAVEMENT LAYERS (SEE SPECIFICATIONS)

- ① REUSED RED BRICK
 - ② 1 1/2" CLEAN SAND
 - ③ 8" CRUSHED CONCRETE
 - ④ COMPACTED SOIL - 98% MOD. PROCTOR
- (BRICK)
N.T.S.

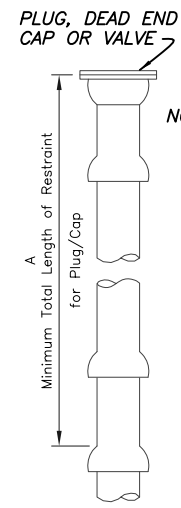


CLASS B BEDDING

(ONLY ALLOWED WITH CITY INSPECTOR APPROVAL)

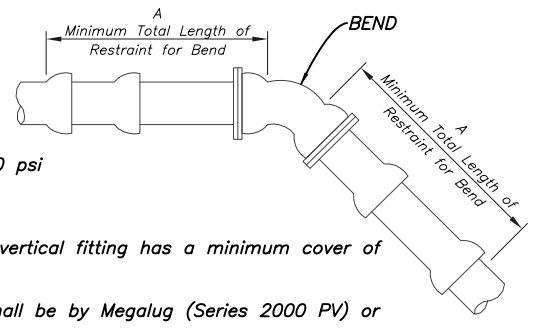


CLASS C BEDDING



NOTES:

1. These tables are based on:
 - a. Maximum test pressure of 100 psi
 - b. Class "C" pipe bedding
 - c. Poor soil conditions
 - d. PVC pipe
 - e. For vertical offsets, shallower vertical fitting has a minimum cover of 3 feet.
2. Restraining devices for PVC pipe shall be by Megalug (Series 2000 PV) or equal, meeting ASTM F1674.
3. Any additional fittings within the restrained section shall be restrained accordingly.
4. One standard length of PVC pipe (20 feet) shall be laid on either side of the fitting where possible.



HORIZONTAL OFFSET:

FITTING TYPE	RESTRAIN "A" (LF)*									
	4"	6"	8"	10"	12"	16"	18"	20"	24"	
11-1/4"	1*	2*	2*	2*	3*	3*	3*	4*	4*	
22-1/2"	2*	3*	4*	4*	5*	6*	6*	7*	8*	
45°	4*	5*	7*	8*	9*	11*	13*	14*	16*	
90°	9*	12*	15*	18*	21*	27*	29*	32*	37*	
PLUG / CAP / ISOLATION VALVE	26*	36*	47*	56*	66*	85*	94*	102*	119*	

A = MINIMUM FOOTAGE OF PIPE TO BE RESTRAINED
* MINIMUM ONE PIPE JOINT UPSTREAM AND DOWNSTREAM OF EACH FITTING SHALL BE RESTRAINED

VERTICAL OFFSET:

FITTING TYPE	RESTRAIN "A" (LF)*									
	4"	6"	8"	10"	12"	16"	18"	20"	24"	
11-1/4"	3*	4*	5*	6*	7*	9*	10*	11*	12*	
22-1/2"	5*	8*	10*	12*	14*	17*	19*	21*	24*	
45°	11*	15*	20*	23*	28*	35*	39*	43*	50*	

A = MINIMUM FOOTAGE OF PIPE TO BE RESTRAINED
* MINIMUM ONE PIPE JOINT UPSTREAM AND DOWNSTREAM OF EACH FITTING SHALL BE RESTRAINED

FITTING RESTRAINT DETAIL

NOTES:

1. All bends, fittings, and valves installed on the force main shall have restrained mechanical joints.
2. Additional pipe joints upstream and downstream of all bends, fittings, and valves installed on the force main shall also be restrained. the required lengths of the restrained pipe shall meet the lengths specified in the Restrained Pipe Table shown at left.
3. Thrust blocks are not permitted force mains.
4. Force mains located in the right of way shall be constructed with Ductile Iron Class 52 pipe, cement lined.
5. Deflections at standard pipe joints shall not exceed 1". Deflections up to a maximum of 3" may be accomplished at a pipe joint utilizing twin gasket high deflection coupling instead of a standard bell and spigot joint. Standard bends shall be used for deflections greater than 3".
6. Factory fabricated bends shall be used to accomplish bends greater than 3".
7. Pipe bends and fittings shall be D.I.P. bends and fittings meeting the requirements of AWWAC 110. Pipe deflections at these bends shall not exceed 3". All bends and fittings shall have restrained mechanical joints and cement lining.
8. Restraining devices shall accommodate the full working pressure rating of the pipe plus surge allowance. Restrainers shall be EBAA Iron "Megalug" or approved equal.
9. All pipes shall be installed using Class C bedding, unless otherwise instructed or advised by the Department. Backfill shall be clean soil free of debris, organics, rocks, and deleterious material.

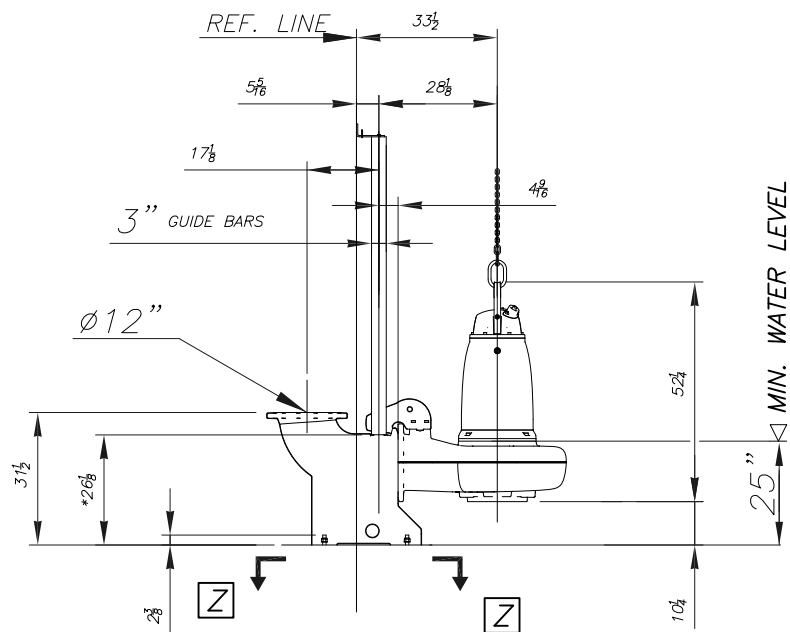
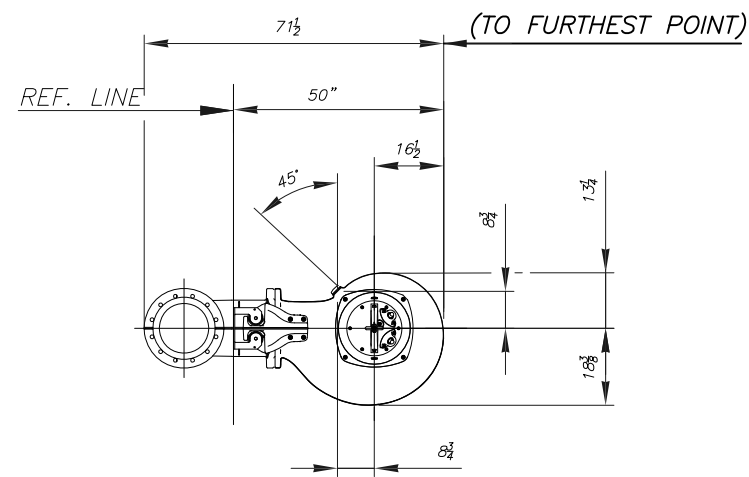
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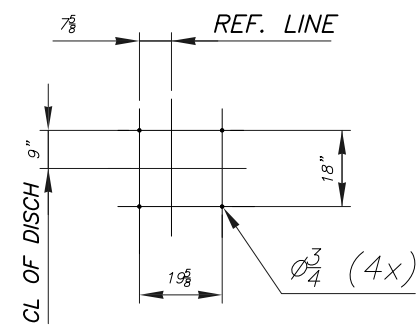
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ROBLES PARK PUMP STATION REPLACEMENT
FORCEMAIN & BEDDING DETAILS

SHEET
C-17
OF 65

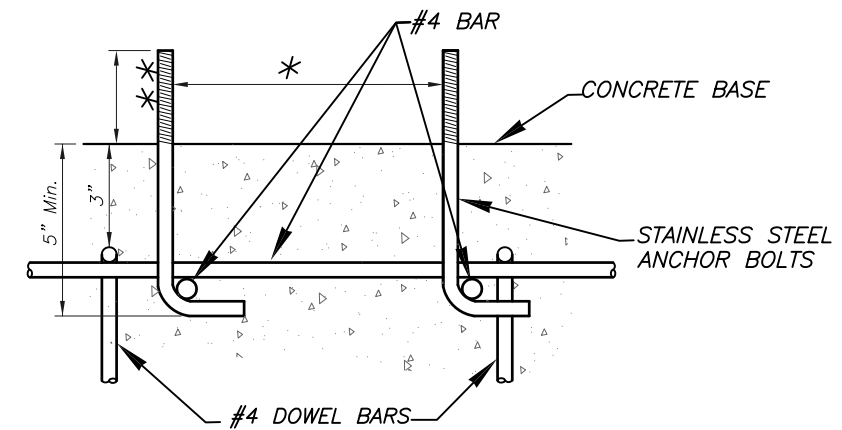


* DIMENSION TO ENDS OF GUIDE BARS



VIEW Z-Z

N.T.S.

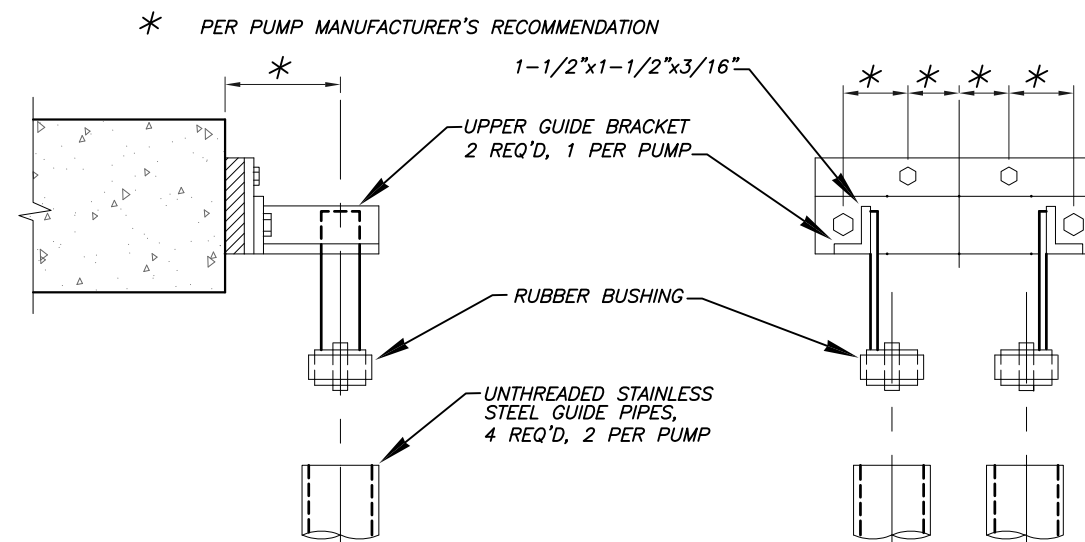


* ALIGNMENT OF ANCHOR BOLTS SHALL BE AS RECOMMENDED BY PUMP MANUFACTURER.

** CONTRACTOR SHALL PROVIDE A MINIMUM 1/2 INCH BOLT PROTRUSION ABOVE THE FINAL NUT LOCATION AFTER THE NUT IS TIGHTENED TO MANUFACTURER'S RECOMMENDATION.

ANCHOR BOLT DETAIL

NOT TO SCALE



GUIDE BRACKET DETAIL (SUPPLIED WITH PUMPS)

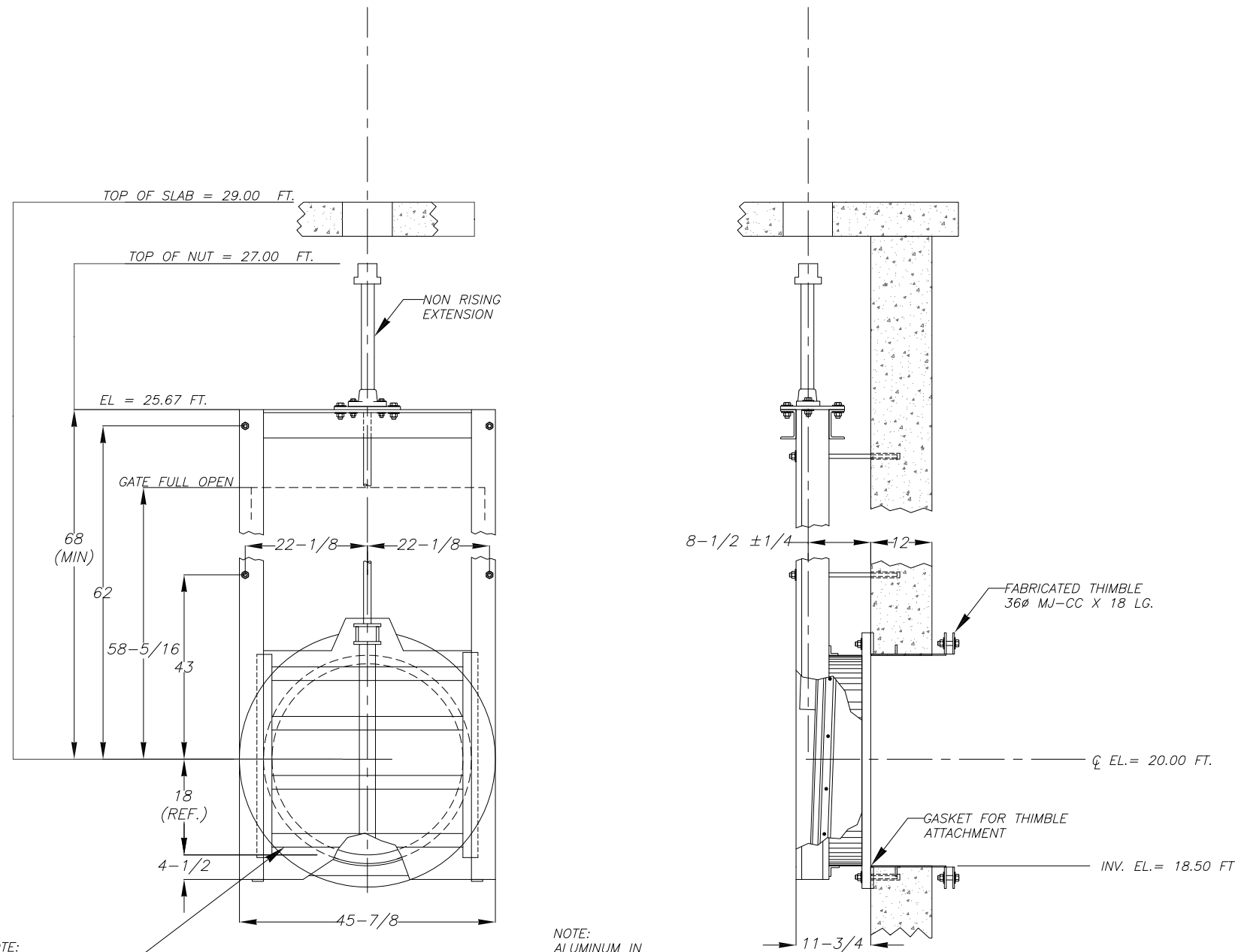
NOT TO SCALE

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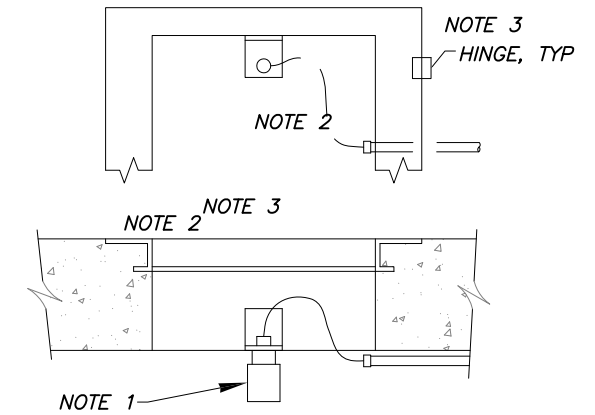
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ROBLES PARK PUMP STATION REPLACEMENT
PUMP, ANCHOR BOLTS & GUIDE BRACKET DETAILS



SHOP NOTE:
 DRILL FLANGE WITH 125
 LB. STANDARD DRILLING
 PATTERN
 DRILL 5/8 DIA HOLES
 (16) PLACES EQUALLY
 SPACED ON ϕ ON A
 42-1/4 DIA. BOLT
 CIRCLE.

NOTE:
 ALUMINUM IN
 CONTACT
 WITH CONCRETE TO
 BE FIELD PAINTED
 BY OTHERS.



- NOTES:
1. ULTRASONIC LEVEL TRANSMITTER, SEE INSTRUMENTATION SPECIFICATIONS.
 2. 4"x4" TYPE 316 STAINLESS STEEL MOUNTING BRACKET SUPPLIED BY ULTRASONIC LEVEL TRANSMITTER MANUFACTURER. MOUNT TO OPENING WITH TYPE 316 STAINLESS STEEL EPOXY ADHESIVE ANCHOR BOLTS/NUTS.
 3. PROVIDE SIGNAL CABLE FACTORY ASSEMBLED (WATER PROOF) TO SENSOR. RUN CONTINUOUSLY WITH NO SPLICES TO TERMINALS IN CONTROL BOX

ULTRASONIC LEVEL TRANSMITTER
 NOT TO SCALE

**36" DIA. WATERMAN MODEL
 AC-31-F-NRS-Y CANAL GATE**

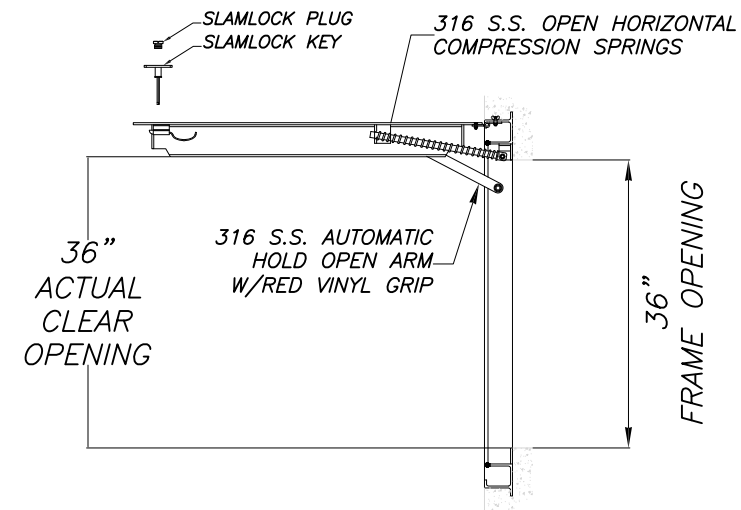
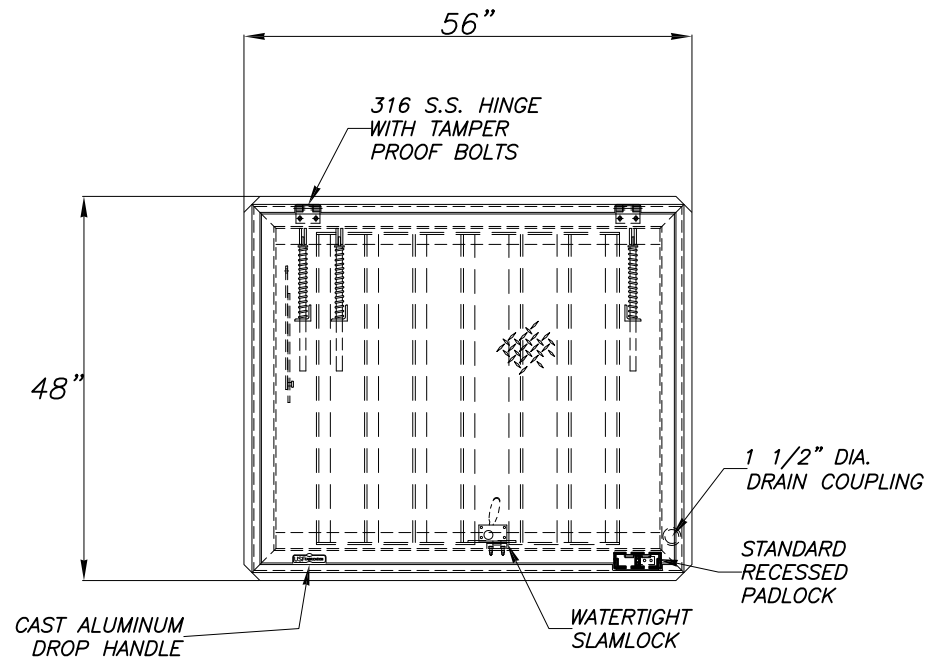
NOT TO SCALE

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ROBLES PARK PUMP STATION REPLACEMENT
CANAL GATE & TRANSDUCER DETAIL

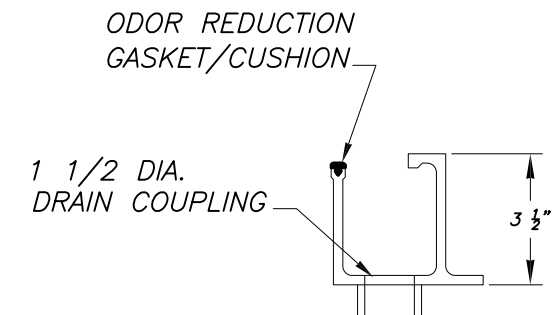
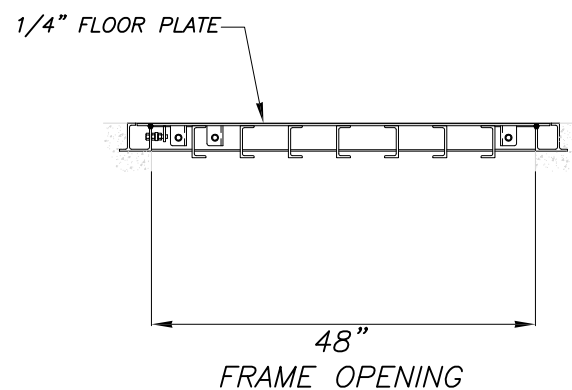


SELECTED FEATURES

1. OPEN HORIZONTAL SPRINGS
2. SLAMLOCK
3. STD. RECESSED PADLOCK
4. BITUMINOUS COATING

NOTES

1. MATERIAL: ALUMINUM
2. FINISH: MILL
3. LOADING: DESIGNED FOR AASHTO H20 WHEEL LOADS WITH MAX DEFL OF 1/150 OF THE SPAN.
4. DESIGNED FOR OCCASSIONAL TRAFFIC ONLY
5. AREA OF FRAME IN CONTACT WITH CONCRETE TO BE PAINTED WITH BITUMINOUS COATING
6. APPROX HATCH WT: 190.86 LBS



1/4" EXTRUDED TROUGH SECTION W/INTEGRAL CONT. ANCHOR FLANGE & GROOVE FOR GASKET/CUSHION
 FRAME MAT'L: ALUMINUM 6063-T5

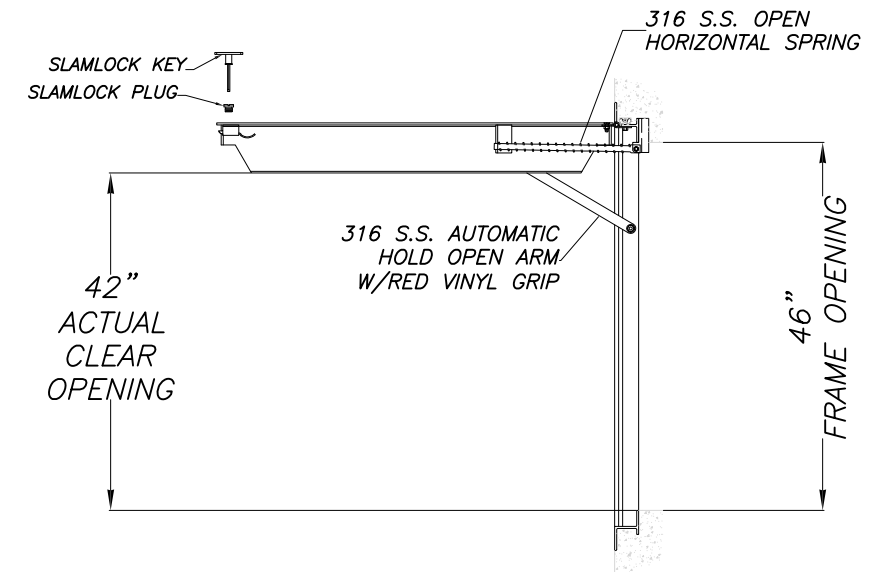
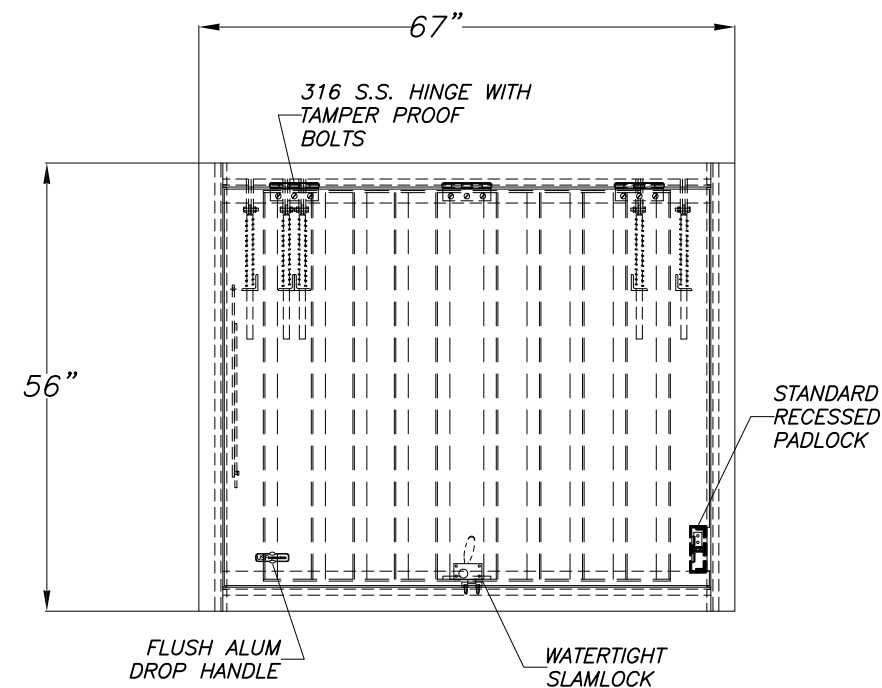
FRAME DETAIL

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ROBLES PARK PUMP STATION REPLACEMENT
THS 36 X 48 ALUMINUM HATCH

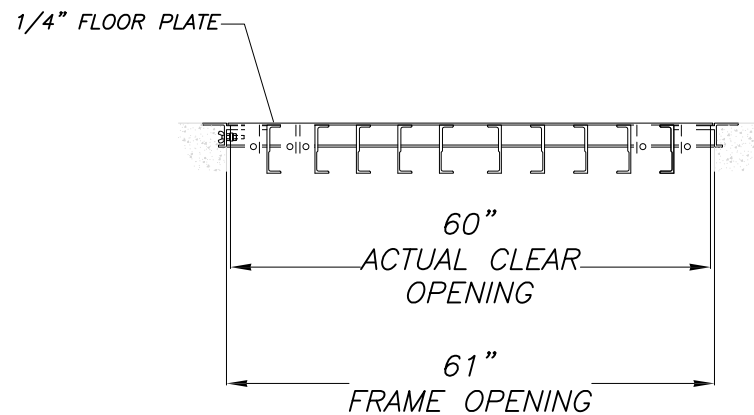


SELECTED FEATURES

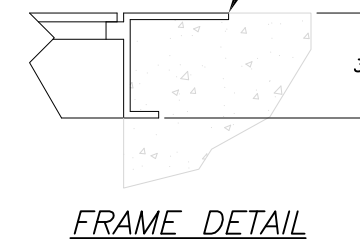
1. OPEN HORIZONTAL SPRINGS
2. SLAMLOCK
3. STD. RECESSED PADLOCK
4. BITUMINOUS COATING

NOTES

1. MATERIAL: ALUMINUM
2. FINISH: MILL
3. LOADING: DESIGNED FOR AASHTO H20 WHEEL LOADS WITH MAX DEFL OF 1/150 OF THE SPAN.
4. DESIGNED FOR OCCASSIONAL TRAFFIC ONLY
5. AREA OF FRAME IN CONTACT WITH CONCRETE TO BE PAINTED WITH BITUMINOUS COATING
6. APPROX HATCH WT: 284.60 LBS



1/4" EXTRUDED ANGLE SECTION W/INTEGRAL SEAT & CONT. ANCHOR FLANGE MAT'L ALUM. 6063-T5

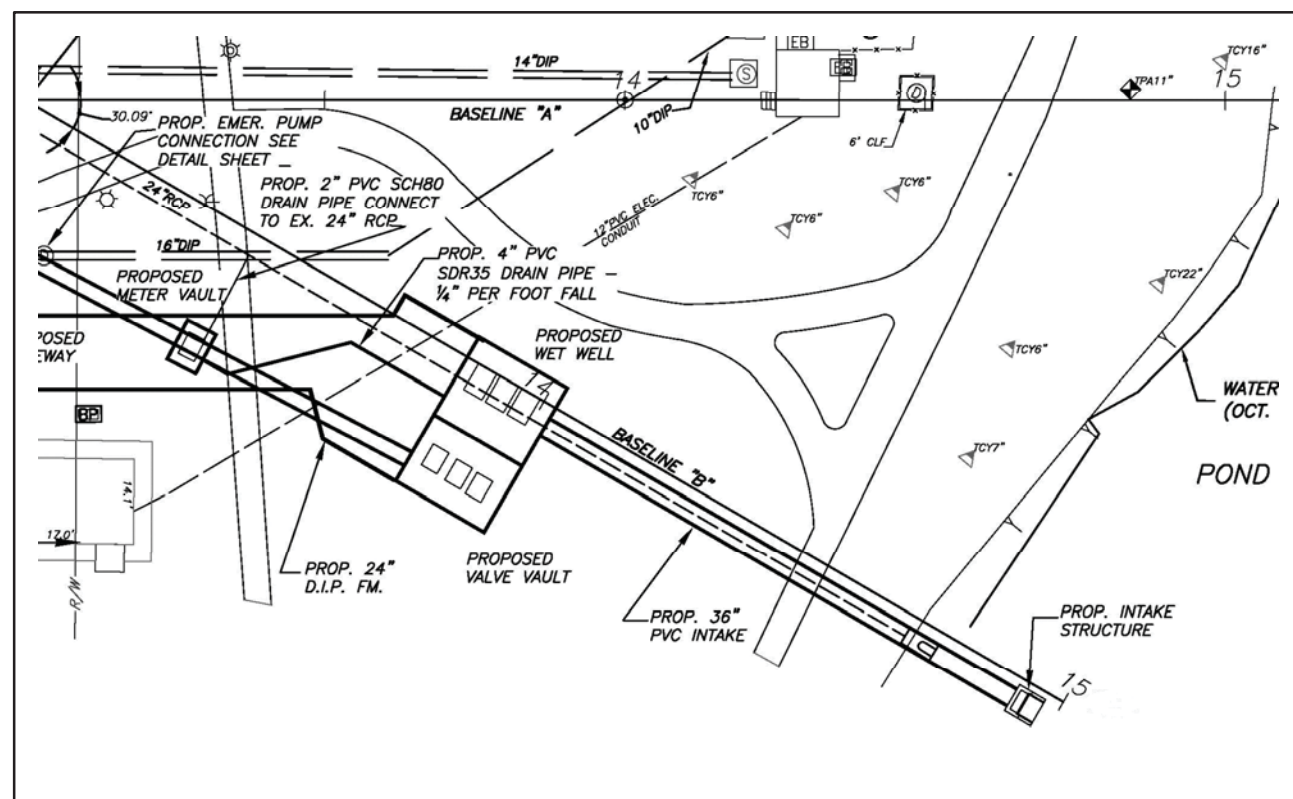


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ROBLES PARK PUMP STATION REPLACEMENT
AHS 46 X 61 ALUMINUM HATCH



SITE KEY

GENERAL NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR AND SHALL VERIFY AND COORDINATE ALL DIMENSIONS AND DETAILS BEFORE PROCEEDING WITH WORK. ANY DISCREPANCIES SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE ENGINEERS.
2. DETAILS SHOWN IN ANY SECTION APPLY TO ALL SIMILAR SECTIONS AND CONDITIONS UNLESS NOTED OTHERWISE.
3. ALL STRUCTURAL ITEMS FOR THIS PROJECT HAVE BEEN DESIGNED IN ACCORDANCE WITH APPROPRIATE PROVISIONS OF EACH OF THE FOLLOWING:
 - A. ACI STANDARD 318-11 BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE.
 - B. ASCE 7-10 "MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES".
 - C. AASHTO H-20 WHEEL LOADS = 16,000 LBS OVER 8"x20" AREA + 30% IMPACT FACTOR.
4. THE STRUCTURAL DRAWINGS SHALL BE USED IN CONJUNCTION WITH THE SPECIFICATIONS AND MECHANICAL DRAWINGS. IF THERE IS A DISCREPANCY BETWEEN DRAWINGS, IT IS THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY THE ENGINEER PRIOR TO PERFORMING WORK. IN CASE OF CONFLICT THE MOST STRINGENT CONDITION SHALL APPLY.
5. ALL DIMENSIONS MUST BE COORDINATED WITH CITY OF TAMPA PUMP STATION DRAWINGS AND WITH EQUIPMENT MANUFACTURER. CONTRACTOR MUST OBTAIN AN CITY OF TAMPA, STORMWATER ENGINEERING DIRECTIVE IN CASE OF ANY CONFLICT. REFER TO CITY OF TAMPA DRAWINGS FOR DIMENSIONS NOT SHOWN IN STRUCTURAL DRAWINGS.

SHOP DRAWINGS:

1. NO STRUCTURAL DRAWINGS SHALL BE REPRODUCED FOR USE AS SHOP DRAWINGS.
2. ALL DIMENSIONAL COORDINATION SHALL BE DONE BY THE CONTRACTOR AND/OR HIS DETAILER.
3. DETAILER SHALL CHECK ALL CIVIL AND MECHANICAL DRAWINGS FOR ALL ATTACHMENTS, CLIPS, OPENINGS, OR DUCT WORK AFFECTING STRUCTURAL MEMBERS. ALL ITEMS SHALL BE SHOWN ON SHOP DRAWINGS.

CONCRETE AND REINFORCING:

1. ALL CONCRETE WORK SHALL CONFORM TO THE LATEST ACI "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE, ACI-318".
2. ALL CONCRETE SHALL HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 5000 PSI.
3. ALL REINFORCING STEEL SHALL BE INTERMEDIATE GRADE, NEW BILLET STEEL, DEFORMED BARS, CONFORMING TO ASTM A-615, GRADE 60. ALL BARS SHALL BE SECURELY SUPPORTED AND WIRED IN PLACE. PRIOR TO POURING CONCRETE. ALL REINFORCING STEEL TO BE WELDED SHALL CONFORM TO ASTM A-706.
4. UNLESS NOTED, ALL BARS MARKED CONTINUOUS SHALL BE SPLICED AT ALL LAP POINTS AND CORNERS AND DEVELOPED AT NON-CONTINUOUS ENDS AS PER TYPICAL DETAILS. SPLICE CONTINUOUS TOP BARS AT CENTER BETWEEN SUPPORTS AND SPLICE CONTINUOUS BOTTOM BARS AT SUPPORTS.
5. CONCRETE COVER FOR REINFORCING BARS SHOWN IN TYPICAL DETAILS.
6. ALL CONSTRUCTION JOINTS SHALL BE THOROUGHLY CLEANED JUST BEFORE PLACING NEW CONCRETE IN ACCORDANCE WITH THE BUILDING CODE.
7. FLY ASH - ASTM C618, TYPE C OR TYPE F SHOULD BE USED BUT NOT TO EXCEED 20% CEMENTITIOUS CONTENT.
8. ALL EXPOSED CONCRETE SLABS SHALL RECEIVE A CURING COMPOUND. THE CURING COMPOUND SHALL CONFORM TO ASTM C309 AND SHALL HAVE 30% SOLIDS MINIMUM. WATER/BLANKET CURING AS PER ACI RECOMMENDATION MAY BE USED AS ALTERNATE.

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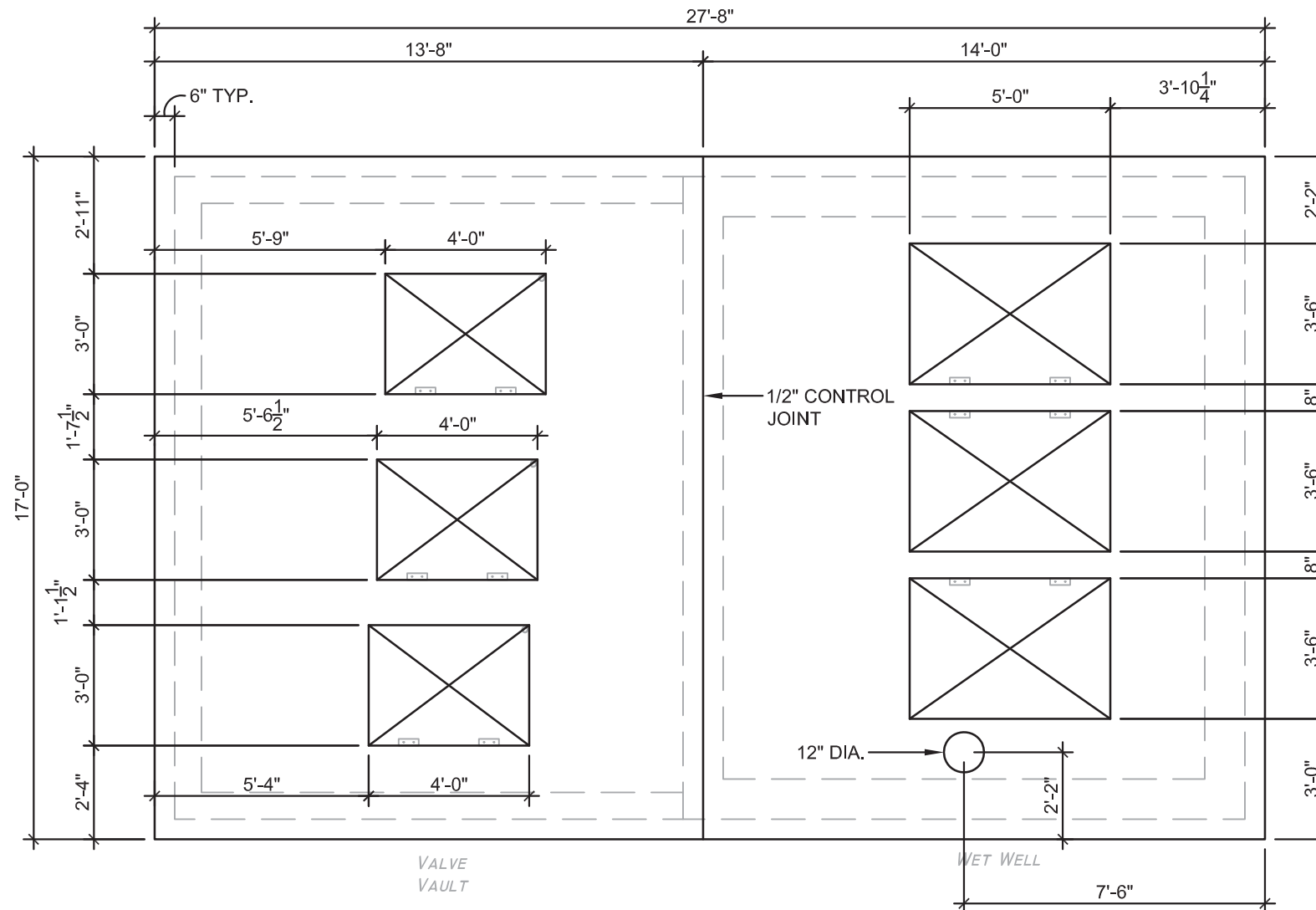
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 DATE: 3/31/17

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 and Stormwater Services
 Stormwater Engineering Division

ROBLES PARK PUMP STATION REPLACEMENT
 STRUCTURAL NOTES AND SITE KEY



WET WELL & VALVE VAULT TOP SLAB - DIMENSION PLAN

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

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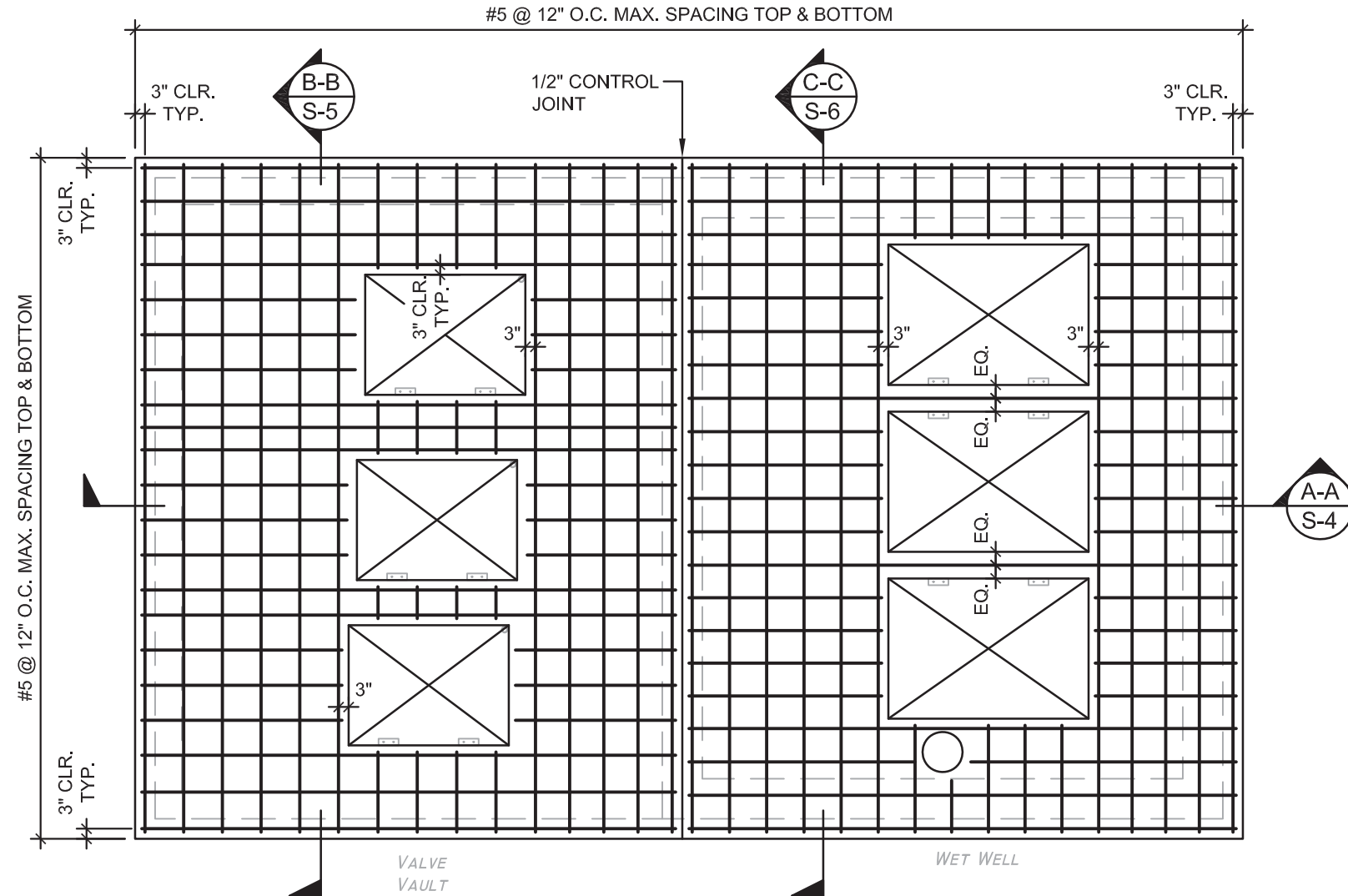
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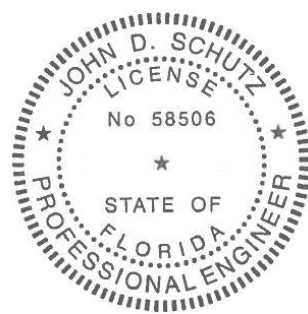
ROBLES PARK PUMP STATION REPLACEMENT
 WET WELL & VALVE VAULT TOP SLAB - DIMENSION PLAN

SHEET
S-2
 OF 8



WET WELL & VALVE VAULT TOP SLAB - REINFORCING PLAN
 SCALE: 1/4" = 1'-0"

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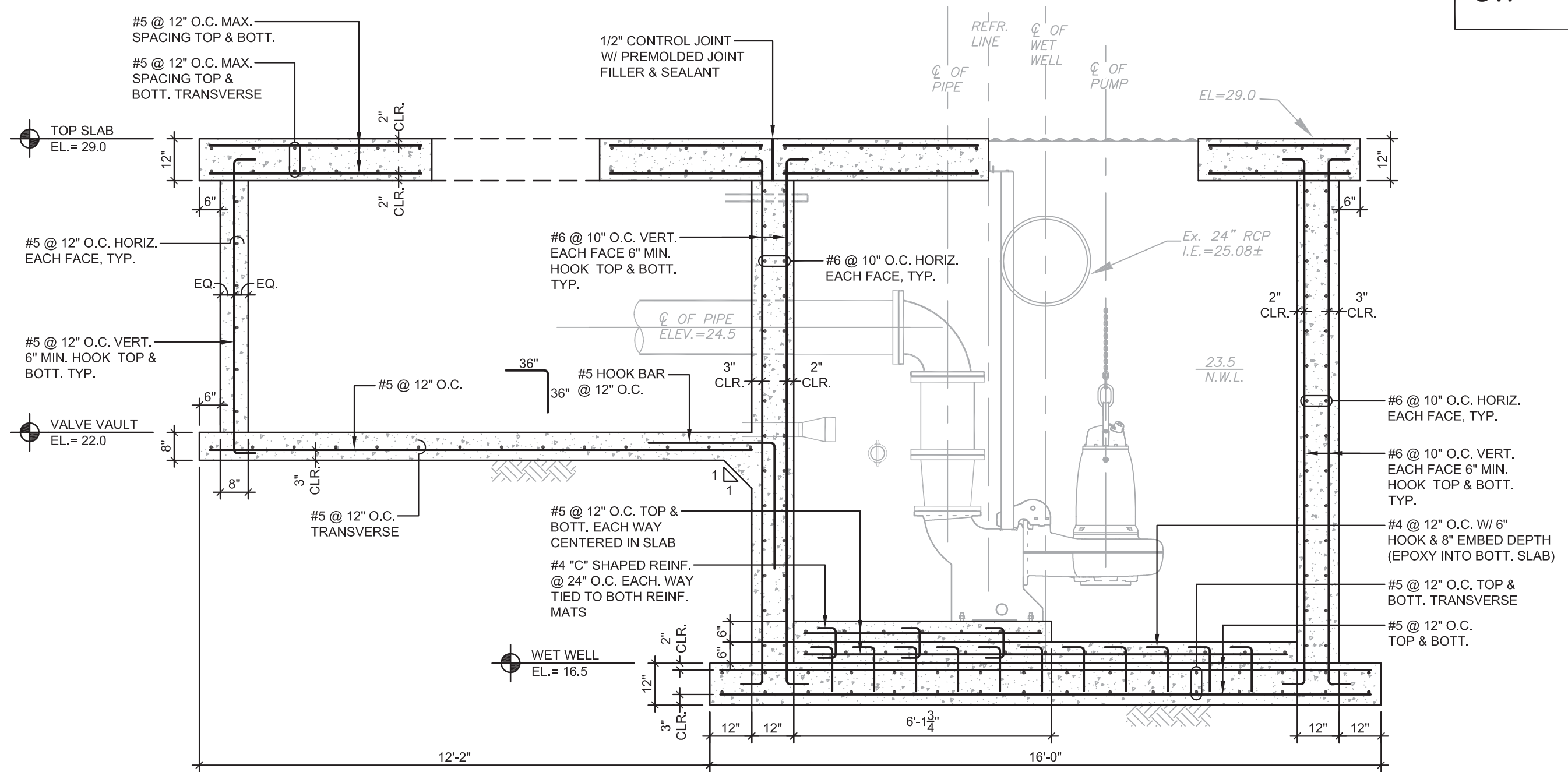
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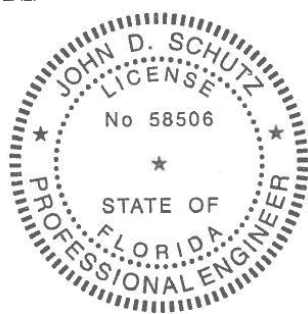
ROBLES PARK PUMP STATION REPLACEMENT
 WET WELL & VALVE VAULT TOP SLAB - REINFORCING PLAN

SHEET
S-3
 OF 8



A-A WET WELL & VALVE VAULT - SECTION
 S-4 SCALE: 3/8" = 1'-0"

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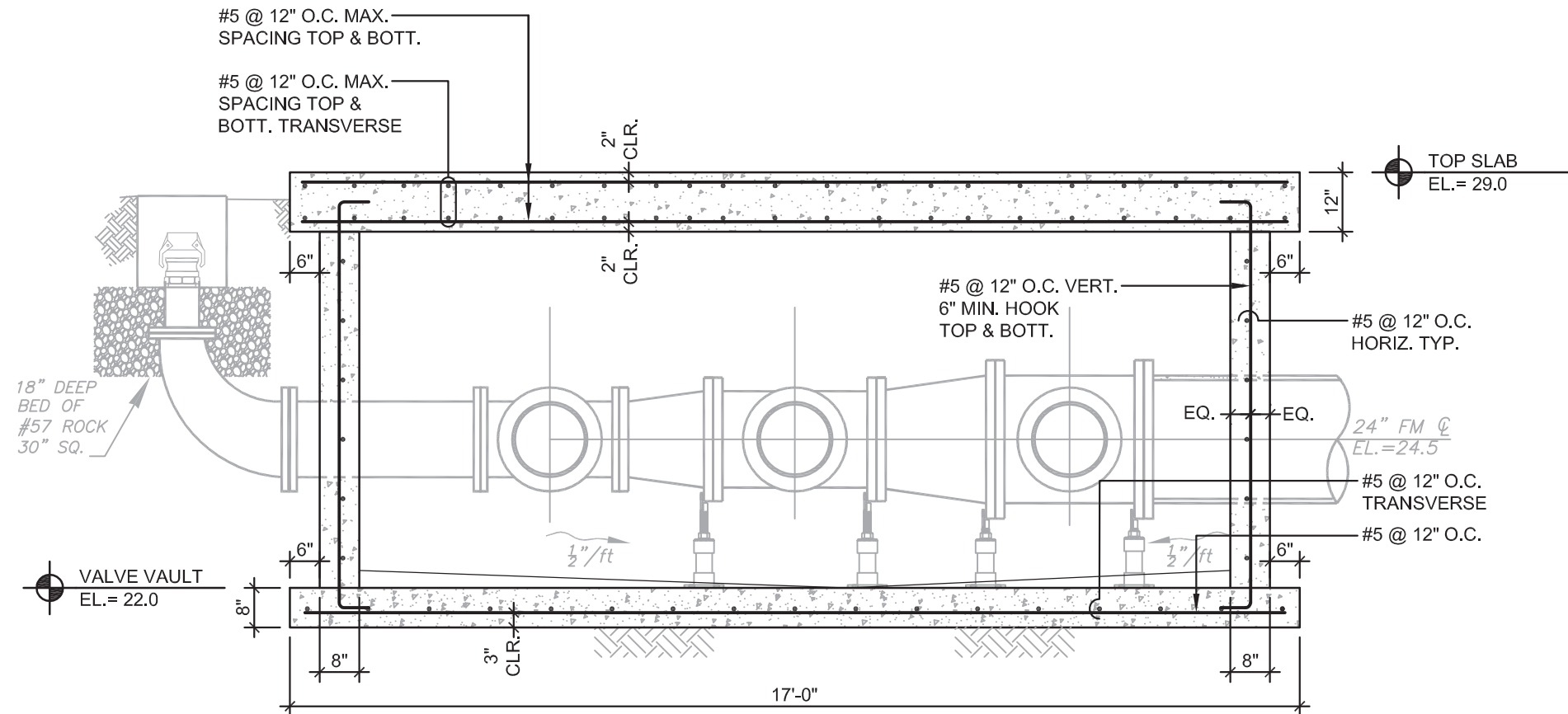
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ROBLES PARK PUMP STATION REPLACEMENT
 WET WELL & VALVE VAULT - SECTION

SHEET
S-4
 OF 8



B-B VALVE VAULT - SECTION
S-5 SCALE: 3/8" = 1'-0"

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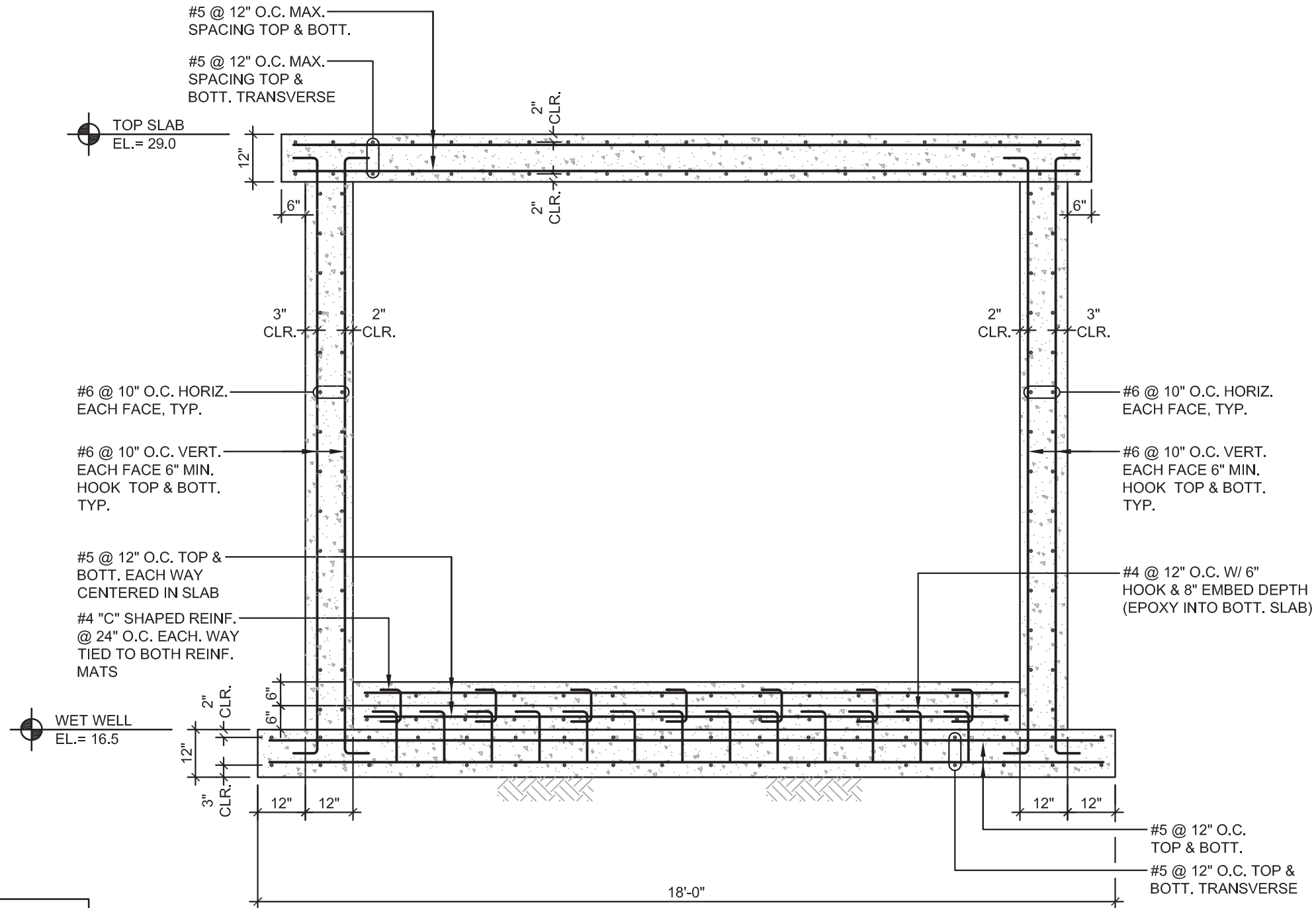
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ROBLES PARK PUMP STATION REPLACEMENT

VALVE VAULT - SECTION

SHEET
S-5
 OF 8



C-C WET WELL - SECTION
S-6 SCALE: 3/8" = 1'-0"

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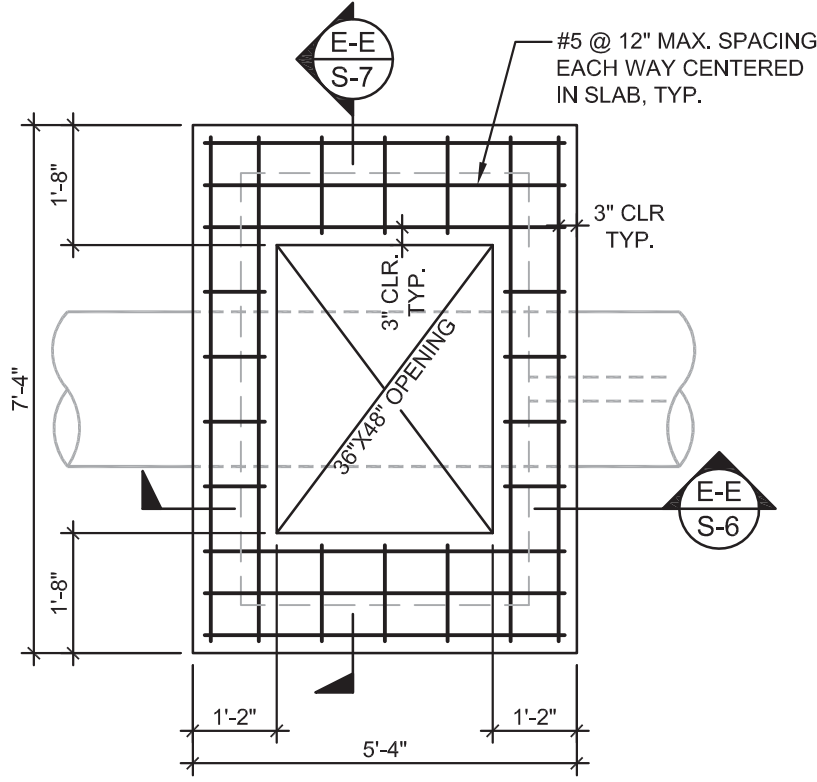
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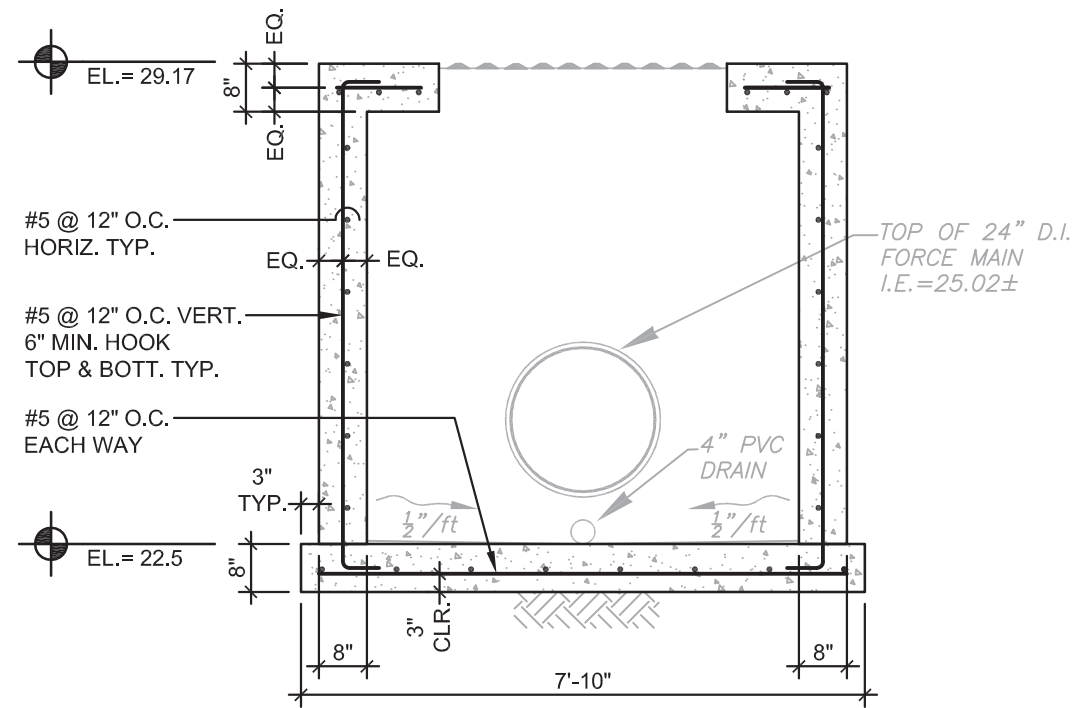
ROBLES PARK PUMP STATION REPLACEMENT
WET WELL - SECTION

SHEET
S-6
OF 8

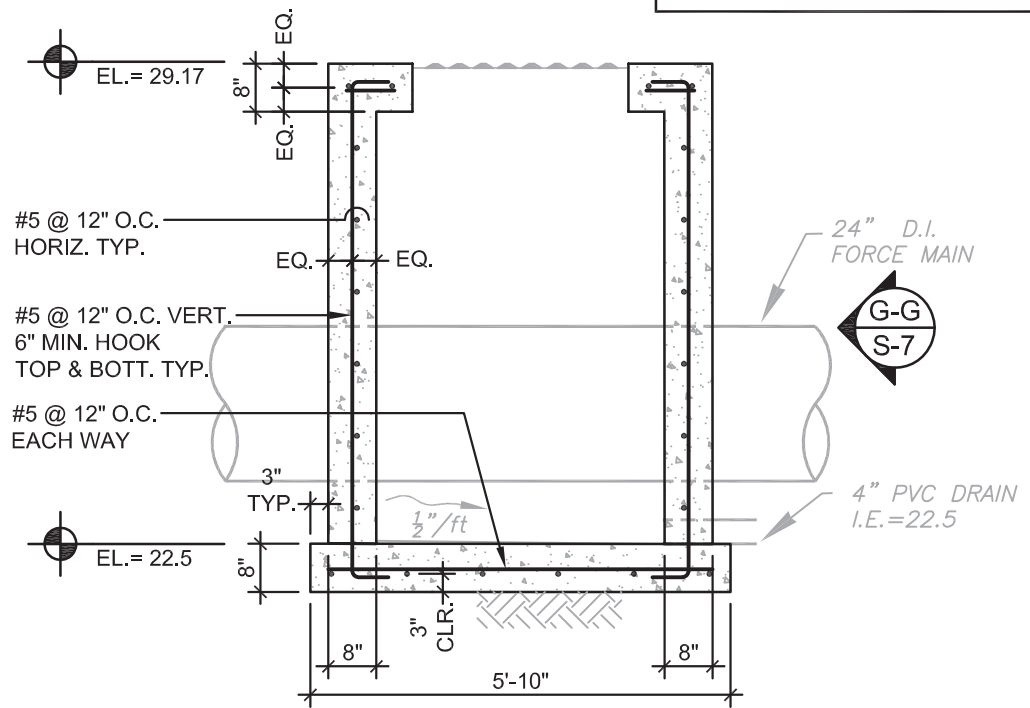
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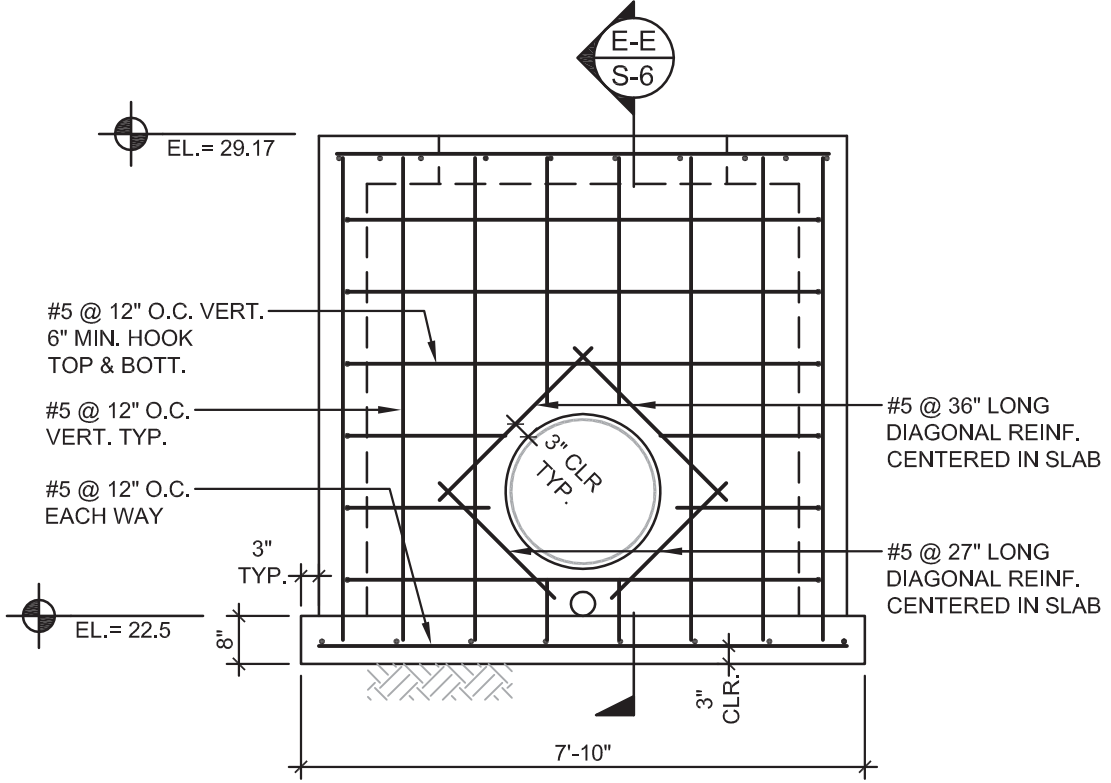
(D-D) FLOW METER VAULT - PLAN
(S-7) SCALE: 3/8" = 1'-0"



(E-E) FLOW METER VAULT - SECTION
(S-7) SCALE: 3/8" = 1'-0"



(F-F) FLOW METER VAULT - SECTION
(S-7) SCALE: 3/8" = 1'-0"



(G-G) FLOW METER VAULT - ELEVATION
(S-7) SCALE: 3/8" = 1'-0"

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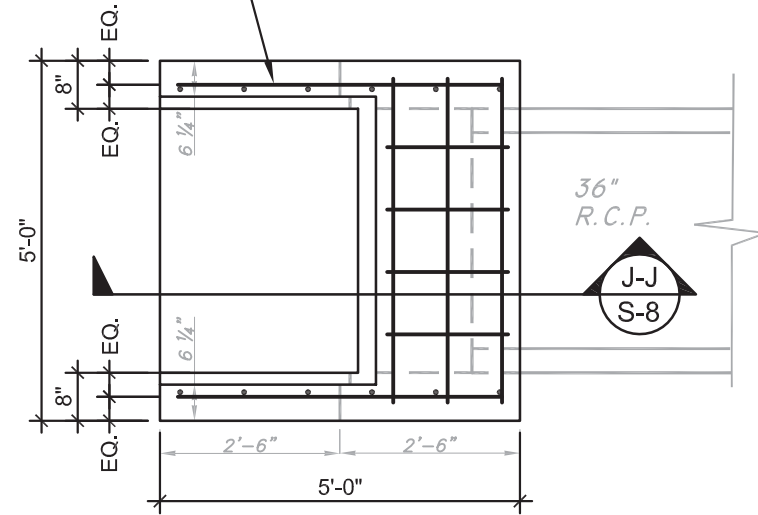
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ROBLES PARK PUMP STATION REPLACEMENT
 FLOW METER VAULT - SECTIONS

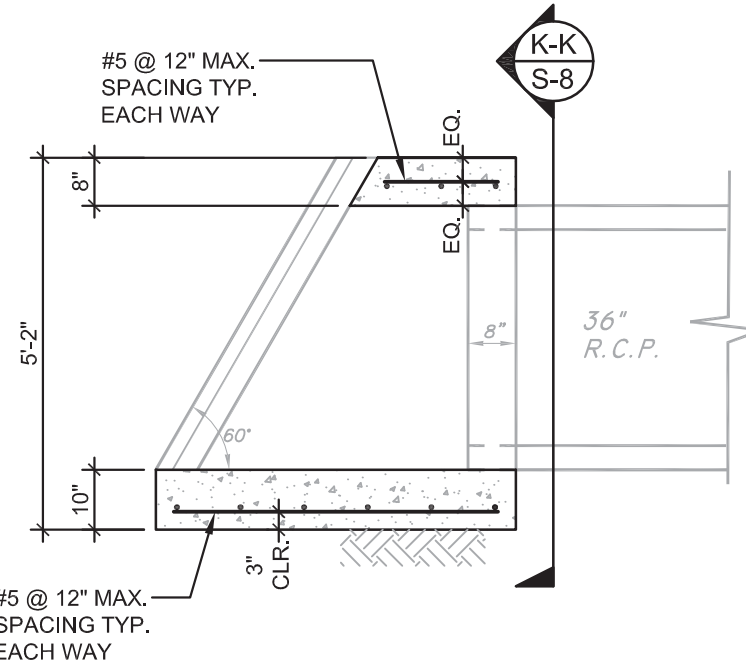
SHEET
S-7
 OF 8

#5 @ 12" MAX.
SPACING HORIZ.
& VERT. TYP.



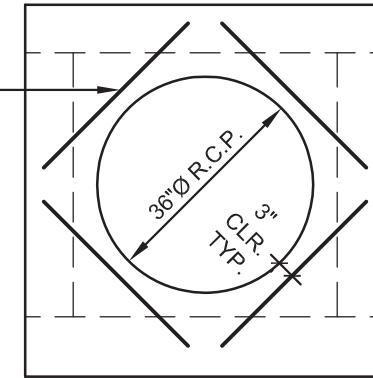
(H-H) INTAKE STRUCTURE - PLAN
(S-8) SCALE: 3/8" = 1'-0"

#5 @ 12" MAX.
SPACING TYP.
EACH WAY



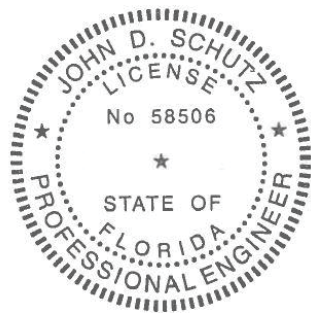
(J-J) INTAKE STRUCTURE - SECTION
(S-8) SCALE: 3/8" = 1'-0"

(4) #5 x 34" LONG
DIAGONAL REINF.
CENTERED IN SLAB



(K-K) INTAKE STRUCTURE - SECTION
(S-8) SCALE: 3/8" = 1'-0"

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ROBLES PARK PUMP STATION REPLACEMENT
INTAKE STRUCTURE - SECTIONS

SHEET
S-8
OF 8

LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	HEAVY DUTY SAFETY SWITCH		LIMIT SWITCH – NORMALLY CLOSED
	TRANSFORMER		LEVEL SWITCH
	FLUORESCENT FIXTURE – CEILING MTD.		LIQUID LEVEL SWITCH – NORMALLY OPEN
	INCAND. OR HID FIXTURE – CEILING MTD.		LIQUID LEVEL SWITCH – NORMALLY CLOSED
	INCAND. OR FLUORESCENT FIXTURE – STANCHION MTD.		PRESSURE SWITCH – NORMALLY OPEN
	INCAND. OR HID FIXTURE – WALL MTD.		PRESSURE SWITCH – NORMALLY CLOSED
	EMERGENCY EXIT LIGHT		JUNCTION BOX, PULL BOX – SIZED PER NEC
	EMERGENCY LIGHT		CONDUIT – DOWN
	20A, 125V, 3-WIRE DUPLEX RECEPT.		CONDUIT – UP
	BRANCH CIRCUIT PANELBOARD		SELECTOR SWITCH – NORMALLY OPEN
	120V, 1Ø CIRCUIT HOMERUN TO 1-POLE BRKR.		MOTOR STARTER COIL, x DESIGNATES MOTOR ID. NO.
	SLASH MARKS DENOTE NO. OF WIRES; LONG – NEUTRAL, X – GROUND.		RELAY COIL, x DESIGNATES ID. NO.
	MOTOR, 75 HP		RELAY CONTACT – NORMALLY OPEN, xx DESIGNATES RELAY ID. NO. & y DESIGNATES CONTACT NO.
	LIMIT SWITCH – NORMALLY OPEN		RELAY CONTACT – NORMALLY CLOSED, xx DESIGNATES RELAY ID. NO. & y DESIGNATES CONTACT NO.
	MOTOR SPACE HEATER		MOTOR OVERLOAD RELAY – x DESIGNATES MOTOR I.D. NO.
	KEYED NOTE		SOLENOID VALVE
			FUSE

ABBREVIATIONS

A	AMPERES	HP	HORSEPOWER	THRU	THROUGH
AFF	ABOVE FINISHED FLOOR	JB, JBOX	JUNCTION BOX	TR	TRIP
C	CONDUIT	KW	KILOWATTS	TT	TEMPERATURE TRANSMITTER
CAT	CATALOG	LPX	LIGHTING PANEL X	TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSOR
CLG	CEILING	MLO	MAIN LUGS ONLY	TYP	TYPICAL
CKT	CIRCUIT	MNTD	MOUNTED	UON	UNLESS OTHERWISE NOTED
CTR	CENTER	∅	PHASE	V	VOLT
DISC	DISCONNECT	PB	PUSH BUTTON	W	WIRE
DT	DOUBLE THROW	PT	PRESSURE TRANSMITTER	w/	WITH
DWG	DRAWING	PWR	POWER	XFMR	TRANSFORMER
ELEC	ELECTRICAL, ELECTRIC	RECEPT	RECEPTACLE	XFR	TRANSFER
EXH	EXHAUST	SW	SWITCH	XMTR	TRANSMITTER
GFCI	GROUND FAULT CIRCUIT INTERRUPTER	SWBD	SWITCHBOARD		



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No.	DATE	REVISIONS	No.	DATE	REVISIONS
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2			5		
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DES: STK
 DRN: RWB
 CKD:
 DATE: 04/17/17

CITY of TAMPA
 Department of Transportation and Stormwater Services
 Stormwater Engineering Division

ROBLES PARK PUMP STATION REPLACEMENT
ELECTRICAL LEGEND & ABBREVIATIONS

GENERAL NOTES:

1. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR APPROVAL PRIOR TO PURCHASING EQUIPMENT OR COMMENCING CONSTRUCTION.
2. ALL CONDUCTORS SHALL BE STRANDED COPPER, AWG 12 MIN. w/ THHN INSULATION. UNLESS OTHERWISE NOTED.
3. ALL WIRING SHALL BE IDENTIFIED w/ NUMBERS AT ALL TERMINALS AND ON WIRING DIAGRAMS.
4. VERIFY ALL MECHANICAL EQUIPMENT SIZES AND RATINGS PRIOR TO CONNECTING.
5. FIELD VERIFY ALL EQUIPMENT LOCATIONS AND CONNECTIONS PRIOR TO COMMENCING CONSTRUCTION.
6. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE w/ THE LATEST EDITION OF THE NEC AND ALL APPLICABLE LOCAL ORDINANCES.
7. ALL THREADED CONNECTIONS SHALL BE COATED w/ COPPER SHIELD ANTI-SEIZE COMPOUND MANUFACTURED BY THOMAS & BETTS (T & B).
8. ALL PANELS, DISCONNECTS, SWITCHES AND EQUIPMENT COVERPLATES SHALL BE LABELED w/ NAMEPLATES. NAMEPLATES SHALL BE THREE-PLY PHENOLIC BLACK-WHITE-BLACK ENGRAVED THROUGH THE FIRST BLACK LAYER. LETTERING SHALL BE 0.5 CM (3/16") MIN. EDGE OF NAMEPLATE SHALL BE BEVELED 45 DEG.
9. ALL CONDUIT SHALL BE SUPPORTED AT MAXIMUM 5'-0" INTERVALS.
10. ALL CIRCUITS SHALL HAVE A GROUNDING CONDUCTOR ROUTED INSIDE EACH CONDUIT w/ POWER CONDUCTORS.
11. ALL CONDUCTOR LENGTHS SHALL BE CONTINUOUS. NO SPLICES OR CONDUCTOR TERMINATIONS SHALL BE PERMITTED UNLESS SPECIFICALLY DESIGNATED IN THE DRAWINGS.
12. NEATLY COIL ALL SPARE CONDUCTORS & TAPE w/ VINYL ELECTRICAL TAPE (SCOTCH 33+). U.O.N.
13. PROVIDE A MINIMUM OF 3'-0" CLEARANCE IN FRONT OF ALL ELECTRICAL EQUIPMENT IN ACCORDANCE w/ ARTICLE 110 OF THE NEC. CLEARANCE SHALL NOT BE LESS THAN 42" FOR VOLTAGES GREATER THAN 150V TO GROUND.
14. ALL EQUIPMENT SHALL BE INSTALLED AT AN ELEVATION ABOVE THE 100 YEAR FLOOD ELEVATION ESTABLISHED BY FEMA AND/OR LOCAL AUTHORITIES.

ALL INSTALLATIONS SHALL BE IN ACCORDANCE WITH CITY OF TAMPA CODE CHAPTER 5.
15. ALL FASTENING HARDWARE (SCREWS, BOLTS, NUTS, ETC.) SHALL BE 316 STAINLESS STEEL. FASTENING HARDWARE CONSTRUCTED OF FERROUS MATERIAL ARE NOT ACCEPTABLE.
16. ALL CONDUIT EXPOSED ABOVE GRADE SHALL BE RIGID HEAVY WALL ALUMINUM, UNLESS OTHERWISE NOTED. CONDUITS EXTENDING BELOW GRADE SHALL BE RIGID HEAVY WALL ALUMINUM CONDUIT THROUGH AND INCLUDING THE FIRST 90 DEGREE ELBOW (OR EQUIVALENT SET OF FITTINGS) INSTALLED BELOW GRADE. ALL PVC CONDUIT SHALL BE SCHEDULE 80. CONNECTIONS TO PVC CONDUIT SHALL BE MADE w/ A RIGID ALUMINUM TO PVC CONDUIT ADAPTER. ALL BELOW GRADE CONDUIT SHALL BE PVC.
17. A 316 STAINLESS STEEL CHANNEL ERECTOR SYSTEM SHALL BE USED TO SUPPORT ALL CONDUITS, BOXES, ETC. USE 316 STAINLESS STEEL MOUNTING HARDWARE.
18. THE CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS AND MAKE ADJUSTMENTS AS NECESSARY TO EXECUTE THE PROPOSED INSTALLATIONS.
19. ALL EXISTING INSTALLATIONS DENOTED ON THE DRAWINGS ARE FOR THE CONTRACTORS REFERENCE ONLY. ALL EXISTING INSTALLATIONS SHALL BE FIELD VERIFIED PRIOR TO SUBMITTING A BID AND PRIOR TO COMMENCING CONSTRUCTION.
20. PULL BOXES SHALL BE INSTALLED AS NECESSARY TO FACILITATE WIRE PULLS AND TO AVOID EXCESSIVE PULLING TENSION ON WIRING. IN NO CASE SHALL CONDUIT LENGTHS EXCEED 150' OR THE EQUIVALENT OF FOUR QUARTER BENDS (360 DEGREES TOTAL) WITHOUT A PULL BOX. PULL BOXES SHALL BE SIZED IN ACCORDANCE WITH ARTICLE 314 OF THE NEC.
21. CONDUIT ROUTING SHOWN IS DIAGRAMMATIC UNLESS OTHERWISE NOTED. CONTRACTOR SHALL OPTIMIZE THE CONDUIT ROUTING, TAKING INTO ACCOUNT THE FIELD CONDITIONS AND THE FINAL EQUIPMENT SELECTED AND APPROVED IN THE SUBMITTALS.
22. SHOP DRAWINGS SUBMITTED FOR REVIEW MORE THAN TWICE WILL BE REVIEWED BY THE ENGINEER AT THE CONTRACTOR'S EXPENSE. CHARGES FOR THE REVIEW OF SHOP DRAWINGS AFTER THE SECOND SUBMITTAL WILL BE INVOICED TO THE CONTRACTOR. SUCH CHARGES WILL BE BILLED AT THE ENGINEER'S STANDARD HOURLY RATE.
23. SHIELD AND DRAIN WIRE FOR EACH ANALOG SIGNAL (4-20 mA) CABLE SHALL BE GROUNDED AT THE PLC ONLY. THE SHIELD AND DRAIN WIRE AT EACH FIELD DEVICE SHALL BE NEATLY TRIMMED & TAPED w/ (2) LAYERS OF VINYL ELECTRICAL TAPE (SCOTCH 33+).
24. ALL POWER CONDUCTORS AND MOTOR WINDINGS SHALL BE TESTED WITH A 600 VOLT INSULATION RESISTANCE TESTER "MEGGER". INSULATION READINGS SHALL BE A MINIMUM OF 20 MEGOHMS TO GROUND (DO NOT TEST LOW-VOLTAGE CONTROLS). INSULATION READINGS THAT ARE LESS THAN 20 MEGOHMS SHALL REQUIRE THE REPLACEMENT OF THE CONDUCTOR OR MOTOR AS APPLICABLE.
25. ALL CONDUIT TRENCHES SHALL BE DUG BY HAND TO AVOID DAMAGING UNDERGROUND PIPING AND UTILITIES.
26. ALL UNDERGROUND CONDUITS SHALL BE ENCASED IN STEEL REINFORCED CONCRETE. CONCRETE ENCASEMENT SHALL BE IN ACCORDANCE w/ THE DUCT BANK DETAIL.
27. ALL INSTALLED COMPONENTS SHALL BE LISTED BY UNDERWRITERS LABORATORY (UL), OR SIMILAR NATIONALLY RECOGNIZED TESTING LABORATORY.
28. ALL "AS BUILT" DRAWINGS PROVIDED BY THE CONTRACTOR SHALL BE SIGNED AND DATED WITH CHANGES CLEARLY NOTED IN RED. ADDITIONALLY, THE PRINTED NAME OF THE INDIVIDUAL SIGNING THE "AS BUILT" DRAWINGS ALONG WITH THAT PERSON'S COMPANY AFFILIATION SHALL BE INCLUDED. IF NO CHANGES WERE MADE DURING CONSTRUCTION, A NOTE DESIGNATING "NO CHANGES" SHALL BE INCLUDED ON THE "AS BUILT" DRAWINGS.
29. ALL CONDUITS ROUTED IN CONCRETE SHALL BE INSTALLED WITH A SEPARATION BETWEEN CONDUITS OF NOT LESS THAN 3 DIAMETERS (CENTER-TO-CENTER) & IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE STANDARD NO. 318-89.



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CKD:
DATE: 04/17/17

CITY of TAMPA
Department of Transportation and
Stormwater Services
Stormwater Engineering Division

ROBLES PARK PUMP STATION REPLACEMENT

ELECTRICAL GENERAL NOTES

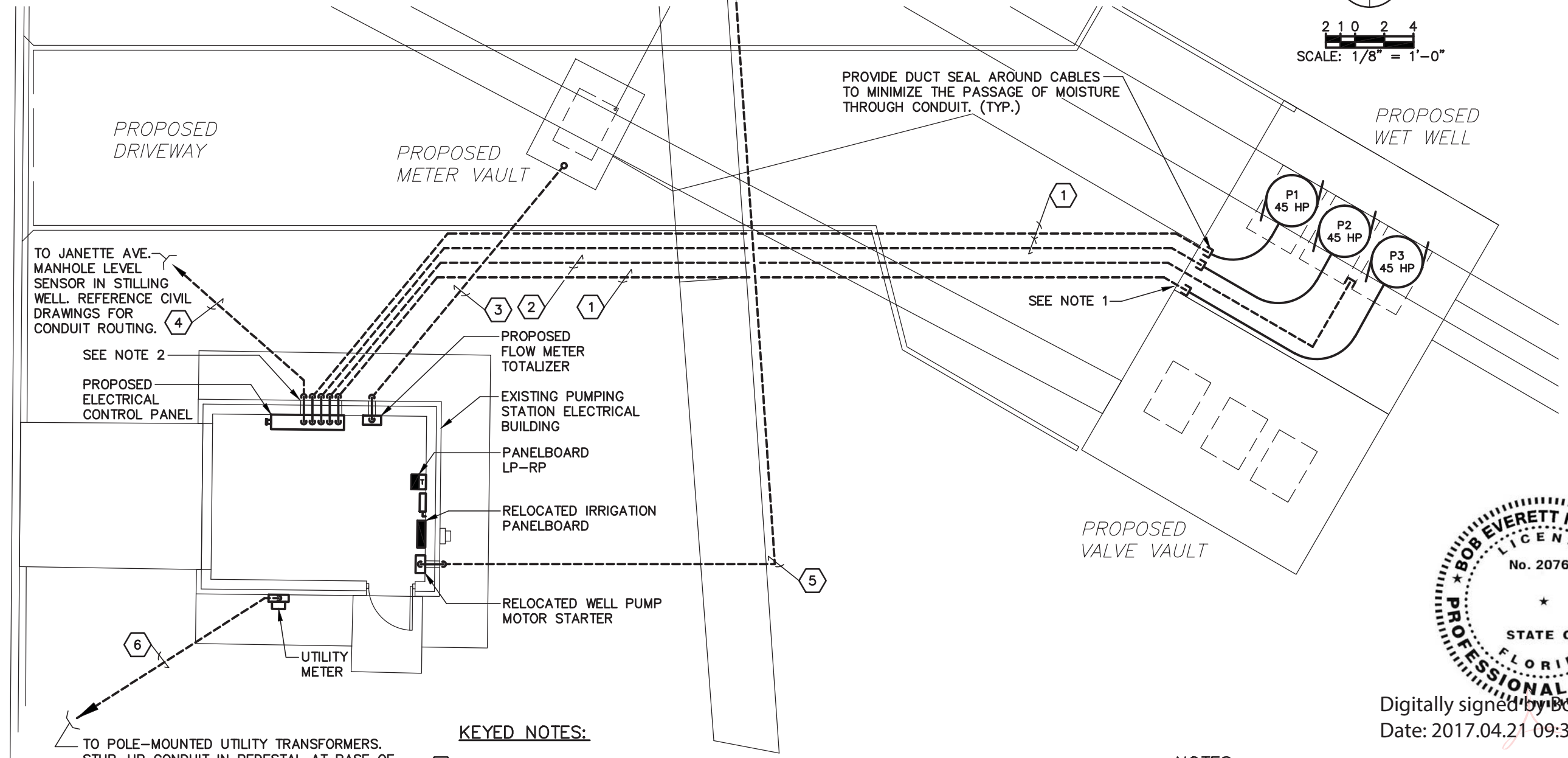
W.O. ----
SHEET
E-2

SW



2 1 0 2 4
SCALE: 1/8" = 1'-0"

MATCHLINE - REFERENCE SHEET E-4 FOR CONTINUATION



TO JANETTE AVE. MANHOLE LEVEL SENSOR IN STILLING WELL. REFERENCE CIVIL DRAWINGS FOR CONDUIT ROUTING.

SEE NOTE 2
PROPOSED ELECTRICAL CONTROL PANEL

PROPOSED FLOW METER TOTALIZER
EXISTING PUMPING STATION ELECTRICAL BUILDING
PANELBOARD LP-RP
RELOCATED IRRIGATION PANELBOARD

RELOCATED WELL PUMP MOTOR STARTER

UTILITY METER

PROPOSED VALVE VAULT

PROPOSED WET WELL

TO POLE-MOUNTED UTILITY TRANSFORMERS. STUB-UP CONDUIT IN PEDESTAL AT BASE OF POLE. PROVIDE 3'-0" FOR EACH CONDUCTOR CONNECTION TO POLE MOUNTED TRANSFORMERS. COORDINATE w/ UTILITY COMPANY.

KEYED NOTES:

- ① PUMP MOTOR CABLE PROVIDED BY PUMP SUPPLIER: 3-#4 (POWER), 4-#12 (SENSORS), & 1-#6 GND., 2 1/2" C. SEE NOTE 3.
- ② 2-3/C #12 (FLOAT SWITCH CABLES) & 1-4/C #16 (LEVEL TRANSDUCER CABLE), 2" C. SEE NOTE 3.
- ③ FLOW METER CABLE PROVIDED BY FLOW METER MANUFACTURER. COORDINATE CABLE, DETAILS & INSTALLATION w/ FLOW METER MANUFACTURER. 1 1/2" C.
- ④ 1-4/C #16 (LEVEL TRANSDUCER CABLE), 2" C. SEE NOTE 3.
- ⑤ 3-#6 (WELL PUMP 240V POWER), 1-#6 & 1-#6 NEUT. (IRRIGATION CONTROL PANEL DISCONNECT), 2-#12 (PRESSURE SWITCH STATUS) & 1-#8 GND., 1 1/2" C.
- ⑥ 3-#3/0 & 1-#3/0 NEUT., 2 1/2" C.

NOTES:

- 1. COORDINATE ENTRY LOCATION INTO WET WELL PRIOR TO ROUTING CONDUITS.
- 2. ALL PENETRATIONS THROUGH BUILDING WALLS SHALL BE SEALED WITH GROUT & CAULK TO PROVIDE WATERTIGHT SEAL. REFERENCE TYPICAL BUILDING CONDUIT ENTRY DETAIL. (TYP.)
- 3. NO SPLICES WILL BE PERMITTED IN THE FLEXIBLE CABLES ROUTED FROM THE CONTROL PANEL TO THE SUBMERSIBLE PUMPS, FLOAT SWITCHES & LEVEL TRANSDUCERS. COORDINATE CABLE LENGTHS REQUIRED PRIOR TO ORDERING OF EQUIPMENT.



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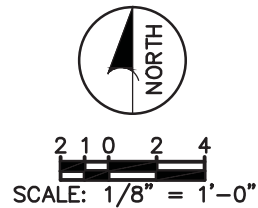
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CITY of TAMPA
Department of Transportation and Stormwater Services
Stormwater Engineering Division

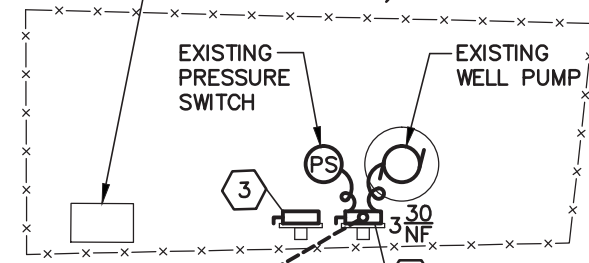
ROBLES PARK PUMP STATION REPLACEMENT
ELECTRICAL PLAN VIEW
(SHEET 1 OF 2)

W.O. ----
SHEET
E-3

SW



EXISTING IRRIGATION CONTROL PANEL. PRESENTLY MOUNTED ON BUILDING WALL. ELECTRICAL CONNECTIONS TO THE IRRIGATION CONTROL WILL BE MADE BY THE CITY. MOUNT BOTTOM OF ENCLOSURE AT AN ELEVATION ABOVE THE FLOODPLAIN. (5'-0" ABOVE FINISHED GRADE).



KEYED NOTES:

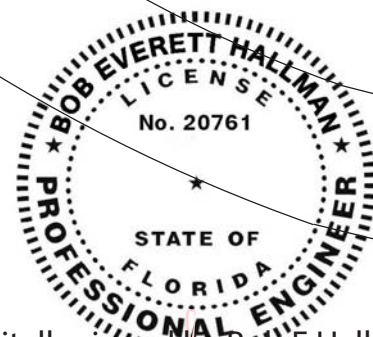
- ① 3-#6 (WELL PUMP 240V POWER), 1-#6 & 1-#6 NEUT. (IRRIGATION CONTROL PANEL DISCONNECT), 2-#12 (PRESSURE SWITCH STATUS) & 1-#8 GND., 1 1/2" C.
- ② WELL PUMP DISCONNECT. 3P, 30A, 600 VAC, HEAVY DUTY, SINGLE THROW, NON-FUSIBLE SAFETY SWITCH c/w EQUIPMENT GROUND BAR KIT, MOUNTED IN A NEMA 4X SS ENCLOSURE. SQUARE D CAT. NO. HU361DS. MOUNT BOTTOM OF ENCLOSURE AT AN ELEVATION ABOVE THE FLOODPLAIN (5'-0" ABOVE FINISHED GRADE). MOUNT DISCONNECT ON 6" SQUARE CONCRETE POST. SECURE DISCONNECT TO CONCRETE POST w/ STAINLESS STEEL UNISTRUT.
- ③ IRRIGATION CONTROL PANEL DISCONNECT. 3P, 30A, 600 VAC, HEAVY DUTY, SINGLE THROW, NON-FUSIBLE SAFETY SWITCH c/w EQUIPMENT GROUND BAR KIT, MOUNTED IN A NEMA 4X SS ENCLOSURE. SQUARE D CAT. NO. HU361DS. MOUNT BOTTOM OF ENCLOSURE AT AN ELEVATION ABOVE THE FLOODPLAIN (5'-0" ABOVE FINISHED GRADE). MOUNT DISCONNECT ON 6" SQUARE CONCRETE POST. SECURE DISCONNECT TO CONCRETE POST w/ STAINLESS STEEL UNISTRUT.

PULL BOX. REFERENCE PULL BOX DETAIL.

MATCHLINE — REFERENCE SHEET E-3 FOR CONTINUATION

NOTES:

- 1. ALL EQUIPMENT SHALL BE INSTALLED AT AN ELEVATION ABOVE THE 100 YEAR FLOOD ELEVATION ESTABLISHED BY FEMA AND/OR LOCAL AUTHORITIES.



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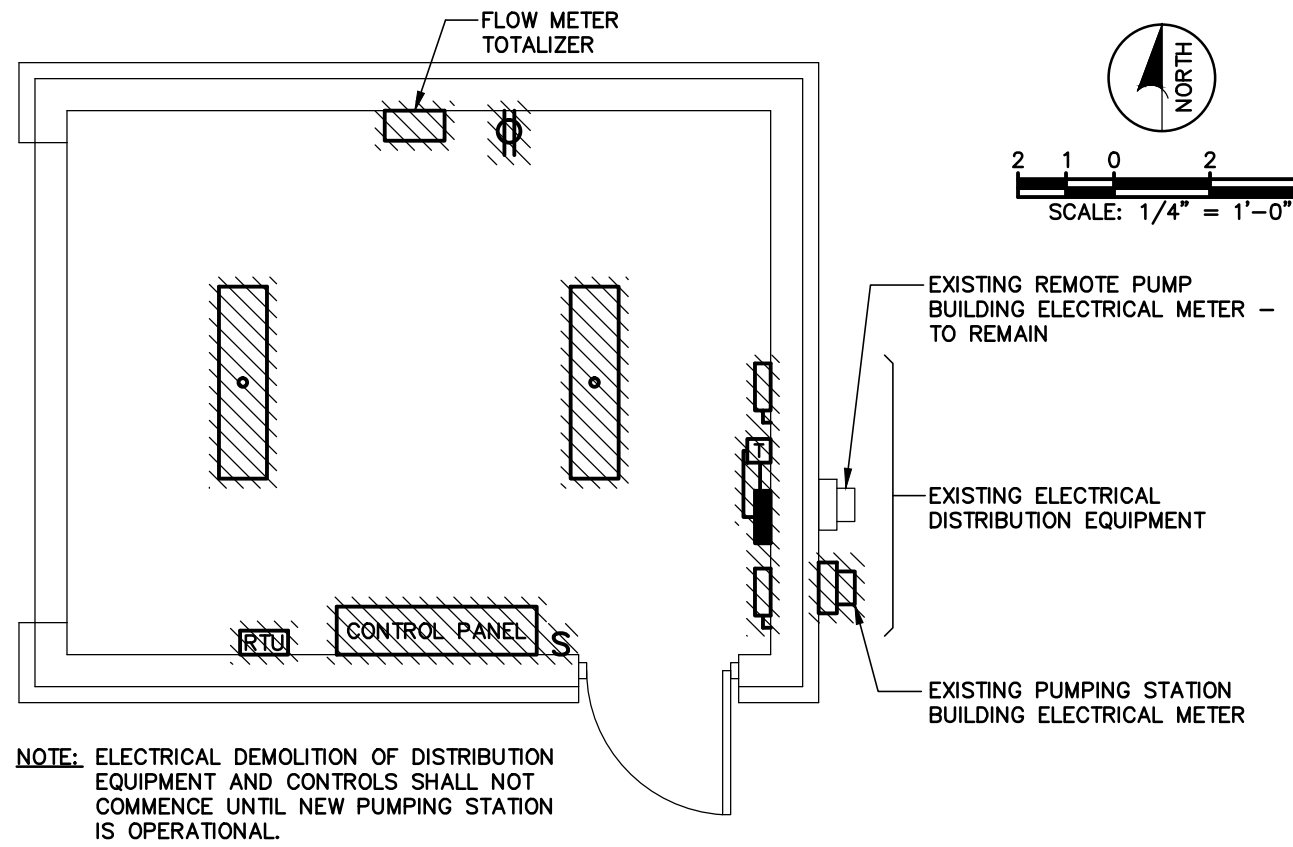
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CITY of TAMPA
Department of Transportation and Stormwater Services
Stormwater Engineering Division

ROBLES PARK PUMP STATION REPLACEMENT
ELECTRICAL PLAN VIEW
(SHEET 2 OF 2)

W.O. ----
SHEET
E-4



NOTE: ELECTRICAL DEMOLITION OF DISTRIBUTION EQUIPMENT AND CONTROLS SHALL NOT COMMENCE UNTIL NEW PUMPING STATION IS OPERATIONAL.

EXISTING PUMPING STATION BUILDING DEMOLITION PLAN

NOTES:

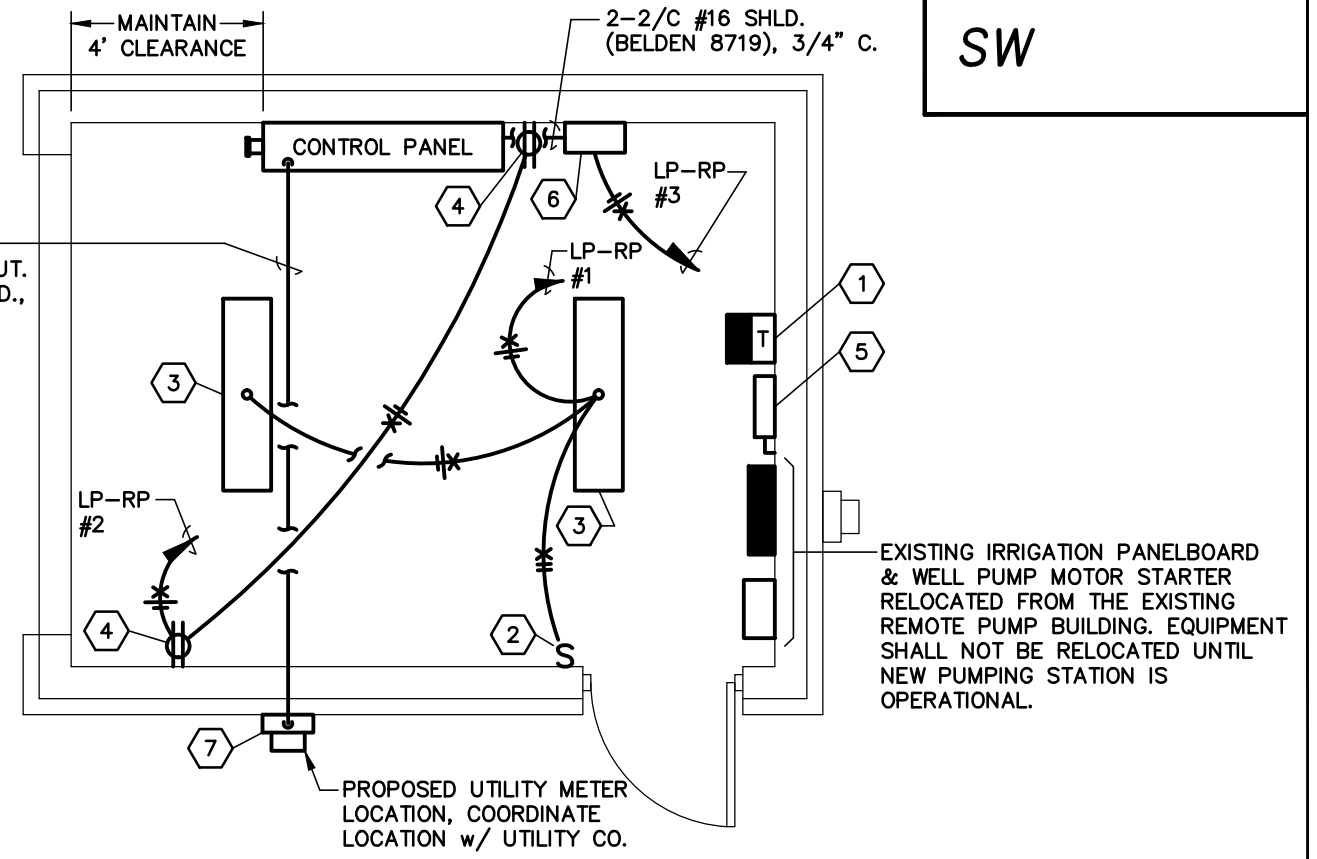
- DENOTES EXISTING EQUIPMENT TO BE REMOVED AT THE COMPLETION OF THE PROJECT. ITEM SHALL BE REMOVED FROM PREMISES AND DISPOSED OF PROPERLY. UNLESS OTHERWISE NOTED, REMOVE ALL ASSOCIATED CONDUIT & WIRING CONNECTED TO EQUIPMENT TO BE REMOVED, INCLUDING ABANDONED CONDUIT & WIRING.

1. ALL EQUIPMENT, CONDUIT & WIRING INCLUDED ON THIS DRAWING ARE EXISTING. CONTRACTOR SHALL VISIT THE SITE & FAMILIARIZE HIMSELF WITH THE EXISTING CONDITIONS BEFORE SUBMITTING A BID OR COMMENCING CONSTRUCTION.
2. ALL EXISTING INSTALLATIONS DENOTED ON THE DRAWINGS ARE FOR CONTRACTOR'S REFERENCE ONLY. ALL EXISTING INSTALLATIONS SHALL BE FIELD VERIFIED PRIOR TO SUBMITTING A BID AND PRIOR TO COMMENCING CONSTRUCTION.

3. COORDINATE ALL DEMOLITION ACTIVITIES WITH OWNER AND ALL TRADES.
4. EACH ABANDONED CONDUIT, EXTENDING THROUGH THE PUMPING STATION BUILDING FLOOR & REMAINING AFTER EQUIPMENT REMOVAL SHALL BE CUT OFF 6" BELOW THE TOP OF THE CONCRETE SLAB. PATCH WITH GROUT THE AREA AROUND THE REMOVED CONDUIT & PLUG REMAINING CONDUIT WITH NOT LESS THAN A 6" THICKNESS OF GROUT.
5. EACH ABANDONED CONDUIT EXTENDING BELOW GRADE SHALL BE CUT OFF 12" BELOW GRADE & ABANDONED IN PLACE.

KEYED NOTES:

- 1 PANELBOARD LP-RP: INDOOR/OUTDOOR PACKAGED POWER SUPPLY w/ 480 VAC PRIMARY, 120/240 VAC, 1 ϕ SECONDARY, 10 KVA TRANSFORMER, TRANSFORMER PRIMARY & SECONDARY CIRCUIT BREAKER, 10 CKT. PANELBOARD, UL LISTED & MOUNTED IN A NEMA 3R SS ENCLOSURE. SQUARE D MINI POWER-ZONE CAT. NO. MPZ10S4OFSS. MOUNT TOP OF ENCLOSURE 6'-0". ABOVE FINISHED FLOOR. REFERENCE TRANSFORMER NEUTRAL GROUNDING DETAIL. PROVIDE CIRCUIT BREAKERS PER PANELBOARD SCHEDULE.
- 2 1P, 20A, 120 VAC LIGHT SWITCH w/ ALUMINUM COVERPLATE MNTD. IN A CAST ALUMINUM BACK BOX. LEVITON CAT. NO. 1221-2I (SWITCH), 83001 (COVERPLATE) & BELL CAT. NO. 5324-0 (BACK BOX). CENTER 50" AFF.
- 3 4', 47W, 120V LED LIGHTING FIXTURE IN A UL5VA FIBERGLASS HOUSING w/ LONG LIFE MEDIUM LUMEN LED'S, LINEAR RIBBED FROSTED ACRYLIC LENS, WHITE PHOSPHATE BONDING BAKED ENAMEL FINISH. COLUMBIA CAT. NO. LXEM4-40-ML-RFA-E-U-SSL.



EXISTING PUMPING STATION BUILDING ELECTRICAL PLAN

- 4 20A, 125V, DUPLEX RECEPTACLE w/ ALUMINUM COVERPLATE MNTD. IN A CAST ALUMINUM BACK BOX. LEVITON CAT. NO. 5362-1 (DUPLEX RECEPTACLE), 83003 (COVERPLATE) & BELL CAT. NO. 5324-0 (BACK BOX). CENTER 30" AFF.
- 5 IRRIGATION SYSTEM CIRCUIT BREAKER: 3P, 100A CIRCUIT BREAKER MOUNTED IN A NEMA 1 ENCLOSURE, SUITABLE FOR USE AS SERVICE EQUIPMENT AND RATED FOR 25K AIC. SQUARE D CAT. NO. HDL36100 (CIRCUIT BREAKER) & J250S (ENCLOSURE). MOUNT TOP OF ENCLOSURE 6'-0" ABOVE FINISHED FLOOR. REFERENCE IRRIGATION SYSTEM ELECTRICAL ONE-LINE DIAGRAM.
- 6 ELECTROMAGNETIC (MAG METER) FLOW METER TOTALIZER MOUNTED IN A NEMA 4X WALL MOUNT ENCLOSURE. TOTALIZER SHALL HAVE 100-230 VAC POWER INPUT, 4-20 mA SIGNAL OUTPUT & PULSE TOTALIZED OUTPUT. FLOW METER TUBE, MOUNTED IN METER VAULT, SHALL HAVE A HARD RUBBER LINER MATERIAL, STAINLESS STEEL MEASURING ELECTRODES & STAINLESS STEEL POTENTIAL EQUALIZING RINGS. FLOW METER TUBE & TOTALIZER SHALL BE AN ABB WATERMASTER MODEL FEW325.600.H.1.S.4.A1.B.1.A.1.A.3.G.3.B.3.A.1.M5.V3.CWM. REFERENCE FLOW METER CONNECTION DETAIL
- 7 METER SOCKET: MILBANK 320A, SELF CONTAINED ALUMINUM METER SOCKET, 277/480 VAC, 3 ϕ , 7-TERMINAL. COORDINATE WITH TECO.

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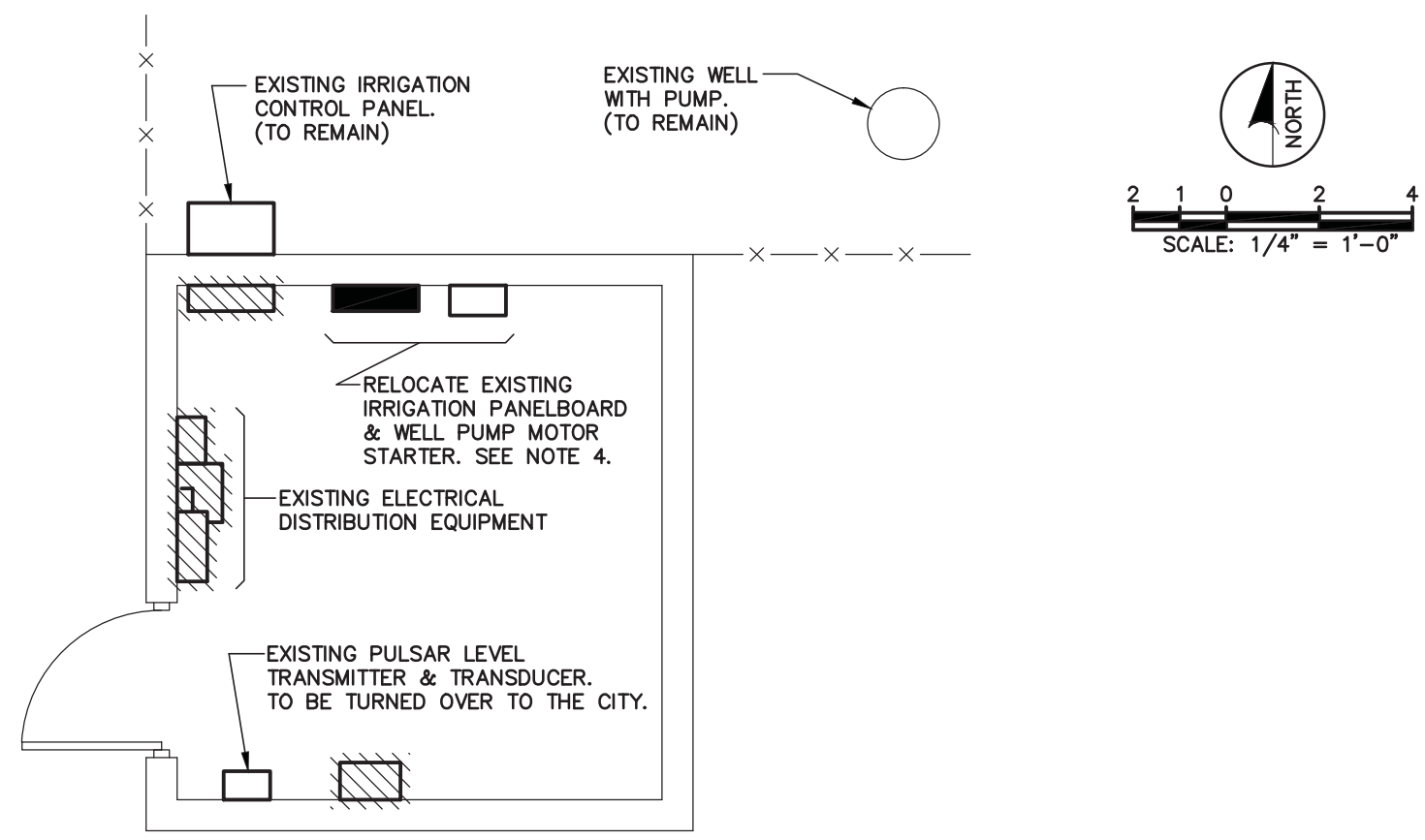
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No.	DATE	REVISIONS	No.	DATE	REVISIONS	DES: STK DRN: RWB CKD: DATE: 06/21/17	CITY of TAMPA Department of Transportation and Stormwater Services Stormwater Engineering Division	ROBLES PARK PUMP STATION REPLACEMENT EXISTING PUMP STATION BUILDING PLANS	W.O. ---- SHEET E-5
3			6						
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SW



EXISTING REMOTE PUMP BUILDING DEMOLITION PLAN

NOTES:

- DENOTES EXISTING EQUIPMENT TO BE REMOVED AT THE COMPLETION OF THE PROJECT. ITEM SHALL BE REMOVED FROM PREMISES AND DISPOSED OF PROPERLY. UNLESS OTHERWISE NOTED, REMOVE ALL ASSOCIATED CONDUIT & WIRING CONNECTED TO EQUIPMENT TO BE REMOVED, INCLUDING ABANDONED CONDUIT & WIRING.
- 1. ALL EQUIPMENT, CONDUIT & WIRING INCLUDED ON THIS DRAWING ARE EXISTING. CONTRACTOR SHALL VISIT THE SITE & FAMILIARIZE HIMSELF WITH THE EXISTING CONDITIONS BEFORE SUBMITTING A BID OR COMMENCING CONSTRUCTION.
- 2. COORDINATE ALL DEMOLITION ACTIVITIES, INCLUDING ITEMS TO BE SALVAGED, WITH CITY & ALL TRADES.
- 3. ALL EXISTING INSTALLATIONS DENOTED ON THE DRAWINGS ARE FOR CONTRACTOR'S REFERENCE ONLY. ALL EXISTING INSTALLATIONS SHALL BE FIELD VERIFIED PRIOR TO SUBMITTING A BID AND PRIOR TO COMMENCING CONSTRUCTION.
- 4. THE EXISTING IRRIGATION PANELBOARD & WELL PUMP MOTOR STARTER SHALL BE RELOCATED TO THE EXISTING PUMP STATION BUILDING.

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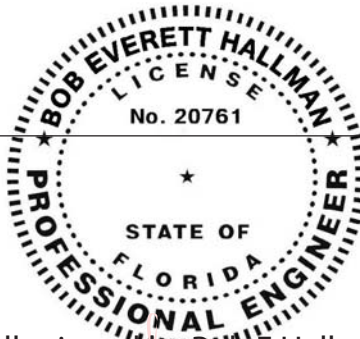
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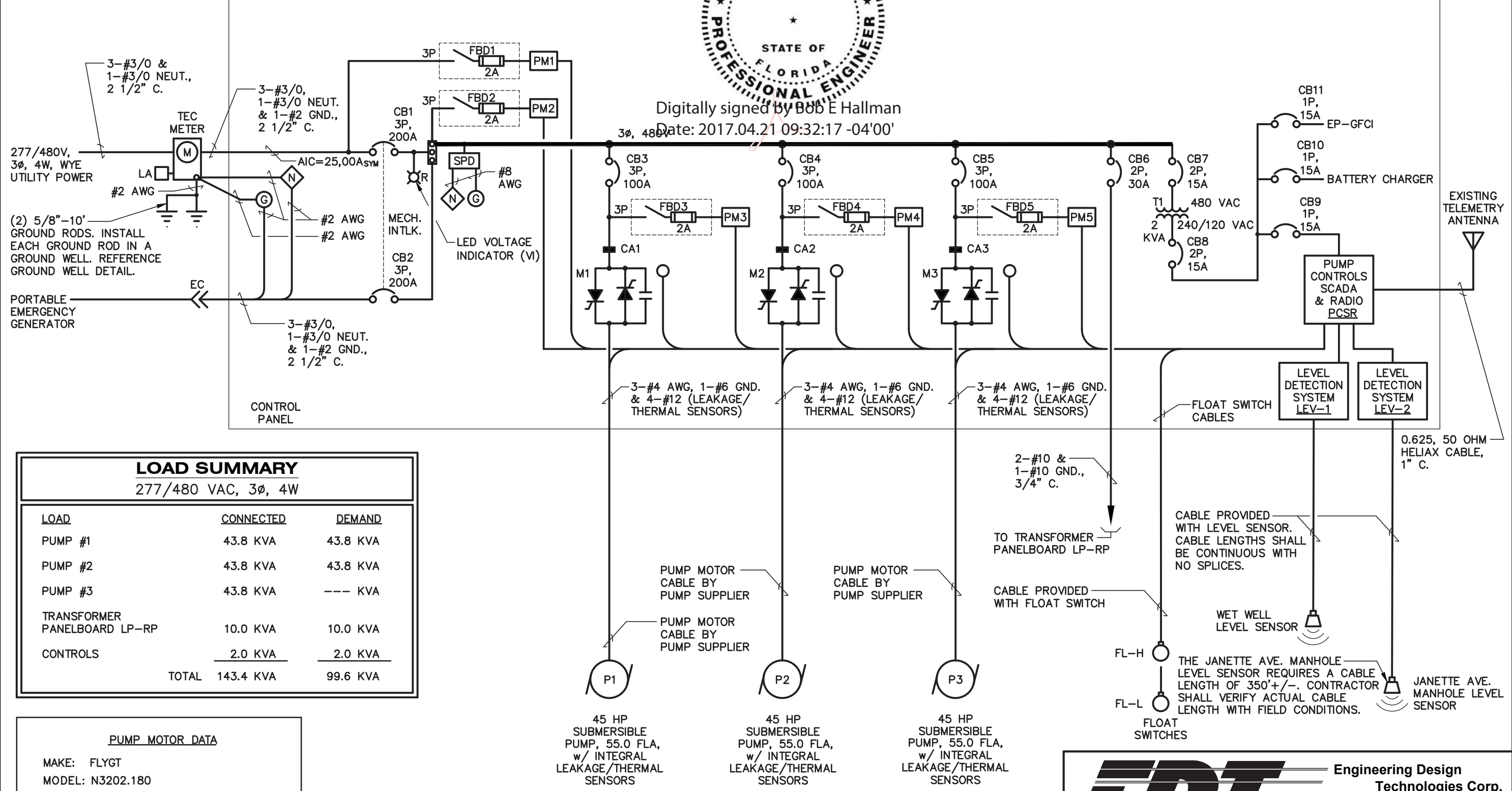
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No.	DATE	REVISIONS	No.	DATE	REVISIONS	DES: STK DRN: RWB CKD: DATE: 04/17/17	CITY of TAMPA Department of Transportation and Stormwater Services Stormwater Engineering Division	ROBLES PARK PUMP STATION REPLACEMENT EXISTING REMOTE PUMP BUILDING DEMOLITION PLAN	W.O. ---- SHEET E-6
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LOAD SUMMARY		
277/480 VAC, 3φ, 4W		
LOAD	CONNECTED	DEMAND
PUMP #1	43.8 KVA	43.8 KVA
PUMP #2	43.8 KVA	43.8 KVA
PUMP #3	43.8 KVA	--- KVA
TRANSFORMER PANELBOARD LP-RP	10.0 KVA	10.0 KVA
CONTROLS	2.0 KVA	2.0 KVA
TOTAL	143.4 KVA	99.6 KVA

PUMP MOTOR DATA	
MAKE:	FLYGT
MODEL:	N3202.180
HP :	45
460 V, 3 PHASE, 55.0 FLA	
TOTAL ESTIMATED LOAD: 110.0 AMPS, 87.6 KVA	

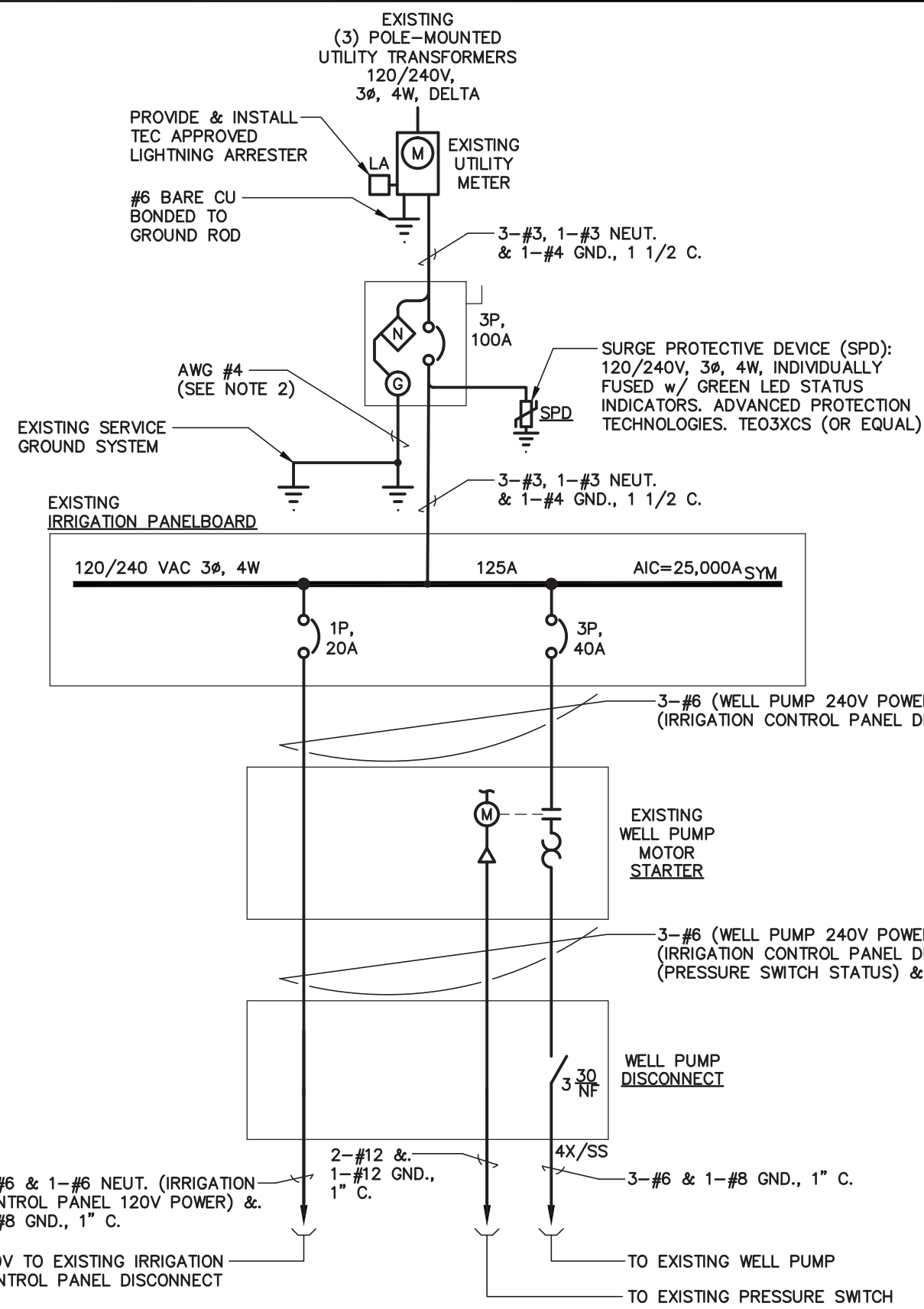
NOTE: AVAILABLE FAULT CURRENT AT TRANSFORMER LUGS FOR ANTICIPATED 3-50 KVA POLE-MOUNTED TRANSFORMERS (Z=2%) IS 9,720A; AIC RATING - 25,000A SYMMETRICAL.

ELECTRICAL ONE-LINE DIAGRAM

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3			6						
2			5						
1			4						



LOAD SUMMARY		
120/240 VAC, 3Ø, 4W		
LOAD	CONNECTED	DEMAND
IRRIGATION PANELBOARD:		
WELL PUMP	8.8 KVA	8.8 KVA
IRRIGATION CONTROL PANEL	1.2 KVA	1.2 KVA
TOTAL	10.0 KVA	10.0 KVA



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IRRIGATION SYSTEM ELECTRICAL ONE-LINE DIAGRAM

- NOTES:**
- HIGH LEG OF DELTA SHALL BE COLOR CODED ORANGE PER NEC ARTICLE 230-56.
 - CONTRACTOR SHALL VERIFY THE NEUTRAL IS NOT BONDED TO GROUND INSIDE THE EXISTING UTILITY METER.

No.	DATE	REVISIONS	No.	DATE	REVISIONS	DES: STK DRN: RWB CKD: DATE: 04/17/17	CITY of TAMPA Department of Transportation and Stormwater Services Stormwater Engineering Division	ROBLES PARK PUMP STATION REPLACEMENT IRRIGATION SYSTEM ELECTRICAL ONE-LINE DIAGRAM	W.O. ---- SHEET E-8
3			6						
2			5						
1			4						

SW

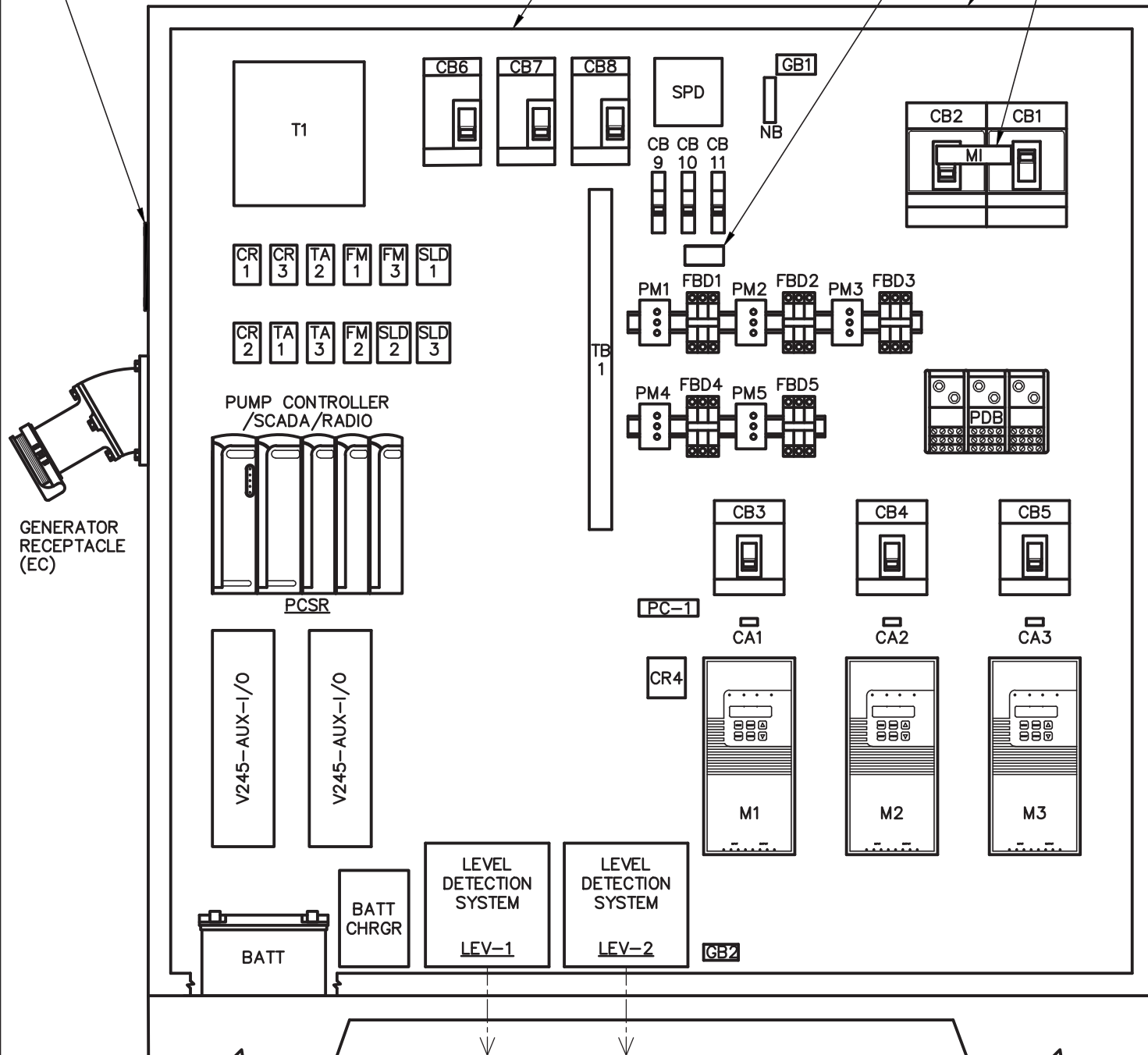
PROVIDE THREE PLY RED-WHITE-RED PHENOLIC LABEL ENGRAVED THROUGH THE FIRST RED LAYER. MOUNT LABEL ABOVE GENERATOR RECEPTACLE. LABEL SHALL READ: "WARNING - EMERGENCY GENERATOR FRAME SHALL BE GROUNDED TO THE CONTROL PANEL BEFORE CONNECTING EMERGENCY GENERATOR TO RECEPTACLE." LETTERING SHALL BE 0.5 CM (3/16") MIN. EDGE OF LABEL SHALL BE BEVELED 45°.

PROVIDE WARNING LABEL ABOVE FBD1. LABEL TO READ "WARNING - OPENING MAIN CIRCUIT BREAKER DOES NOT DE-ENERGIZE VOLTAGE TO THIS DISCONNECT".

ENCLOSURE ME 60" x 60" x 12" (ADJUST SIZE AS NECESSARY TO SUIT FINAL COMPONENT SELECTION-TYP.)

MECHANICAL INTERLOCK (MI)

PANEL MP 56" x 56"



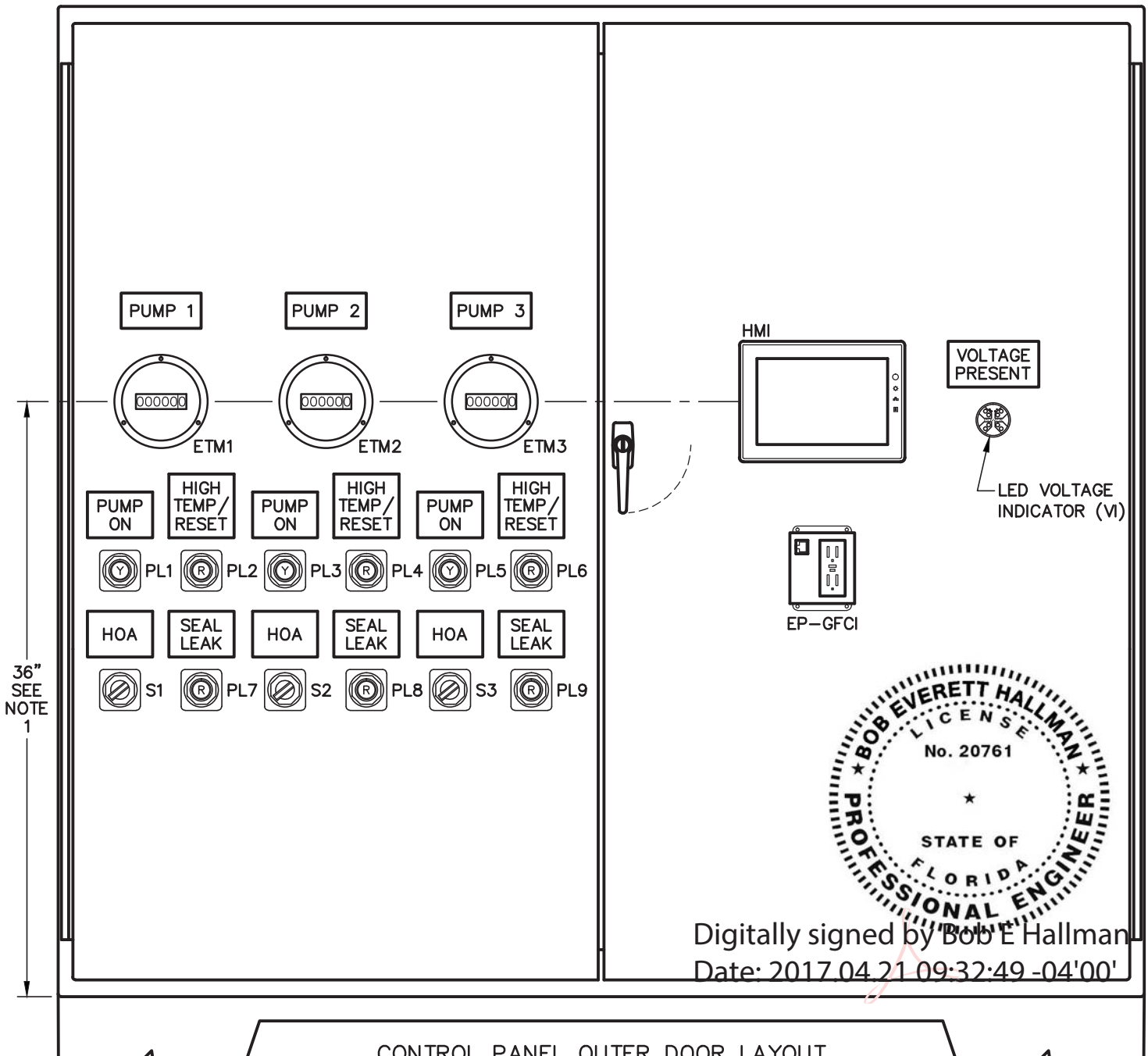
TO WET WELL LEVEL SENSOR
TO JANETTE AVE. LEVEL SENSOR

CONTROL PANEL BACK PANEL LAYOUT
NOT TO SCALE

SEE NOTES ON SHEET E-16

NOTES:

1. THE CONTROL PANEL SHALL BE MOUNTED ON A 14 1/2" HIGH CONCRETE PAD AS SHOWN ON E-19. THE MAXIMUM MOUNTING HEIGHT OF DEVICES ON THE FRONT DOOR OF THE ENCLOSURE SHALL BE CENTERED 36", AS SHOWN, TO COMPENSATE FOR THE MOUNTING HEIGHT OF THE ENCLOSURE.



CONTROL PANEL OUTER DOOR LAYOUT
NOT TO SCALE



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Stormwater Engineering Division

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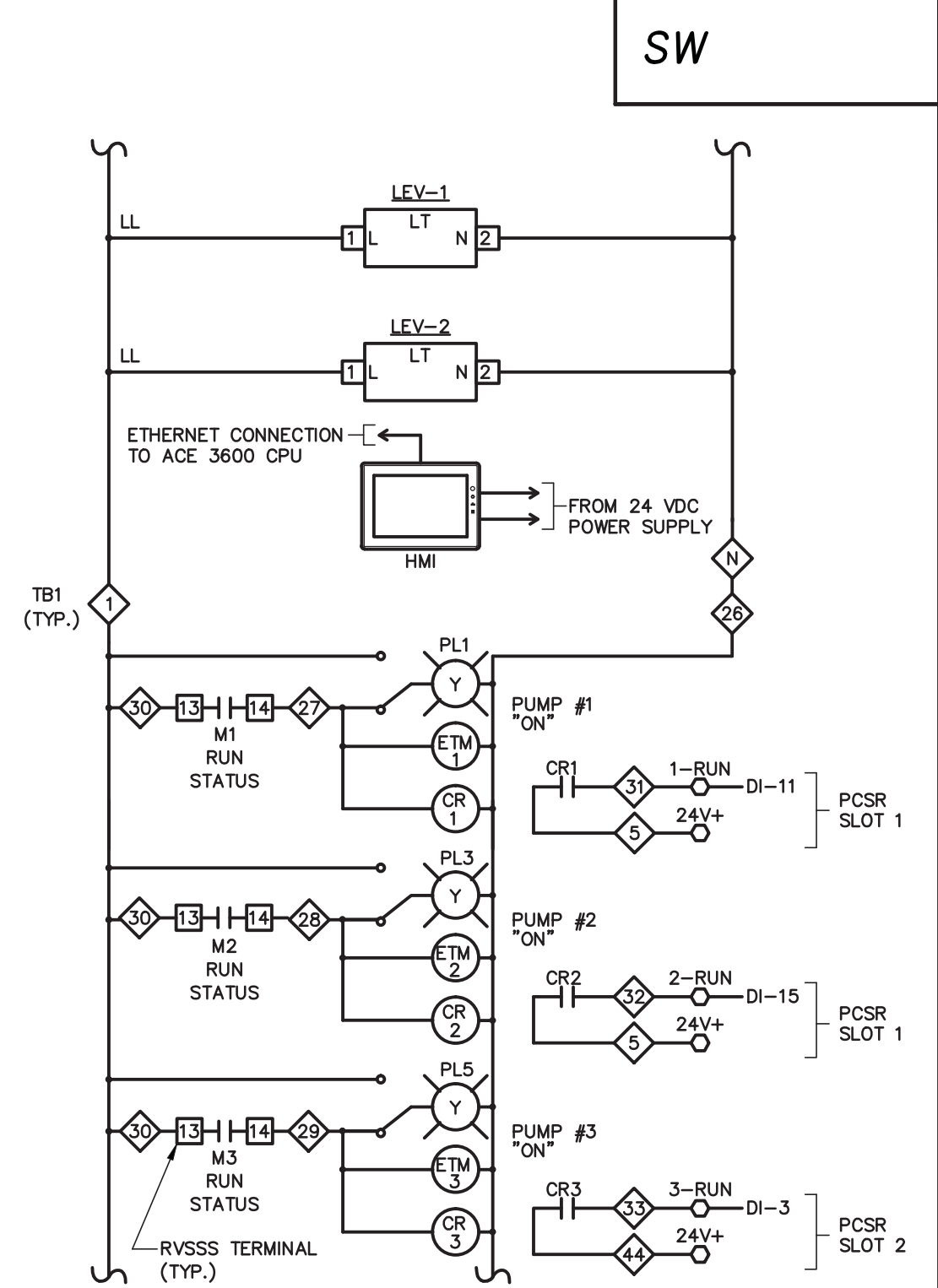
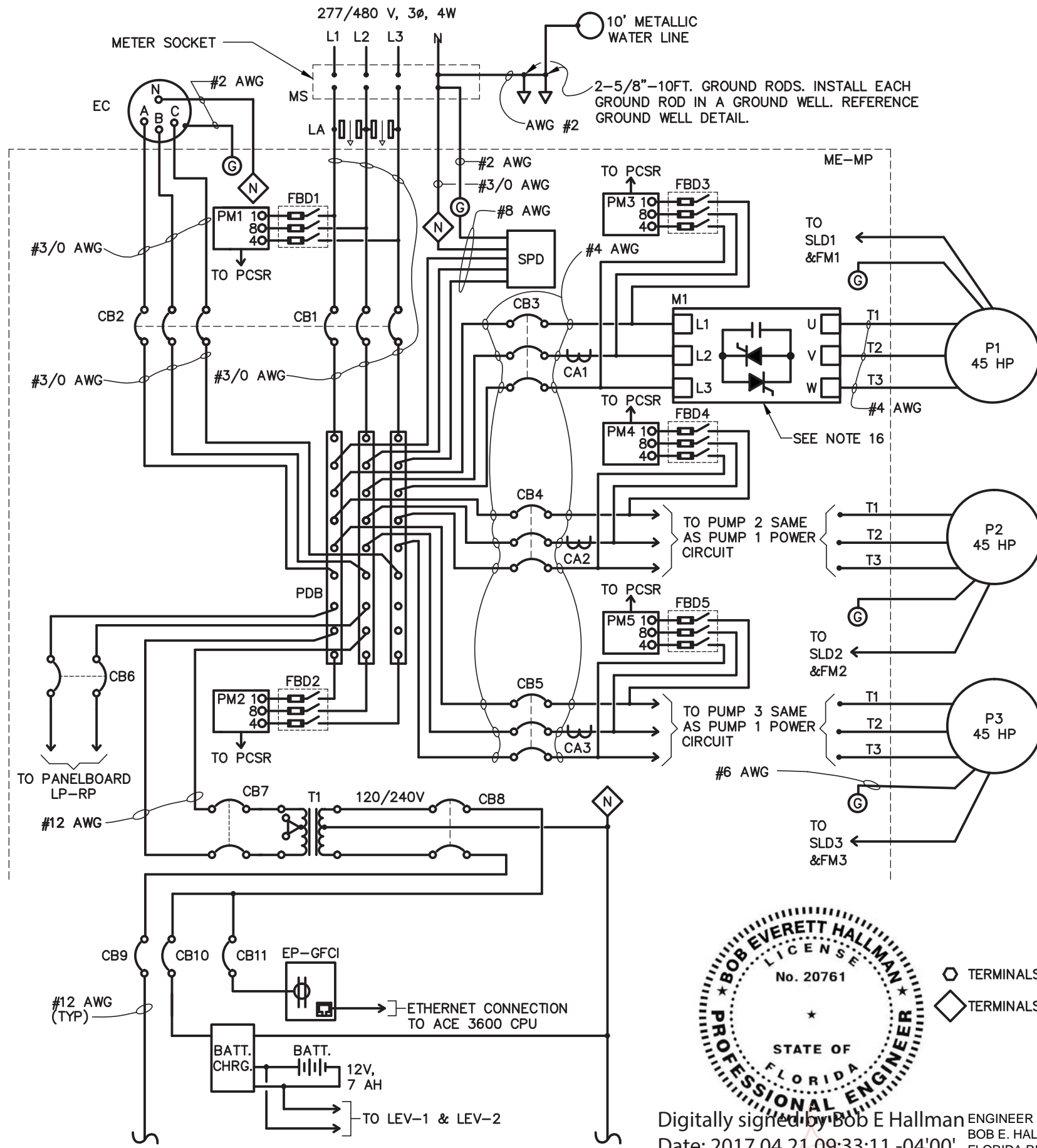
ROBLES PARK PUMP STATION REPLACEMENT
ELECTRICAL CONTROL PANEL LAYOUT



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W.O. ----
SHEET
E-9



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○ TERMINALS ON ACE I/O MODULE (GENERAL)
 ◇ TERMINALS IN PUMP CONTROL PANEL

SEE NOTES ON SHEET E-16

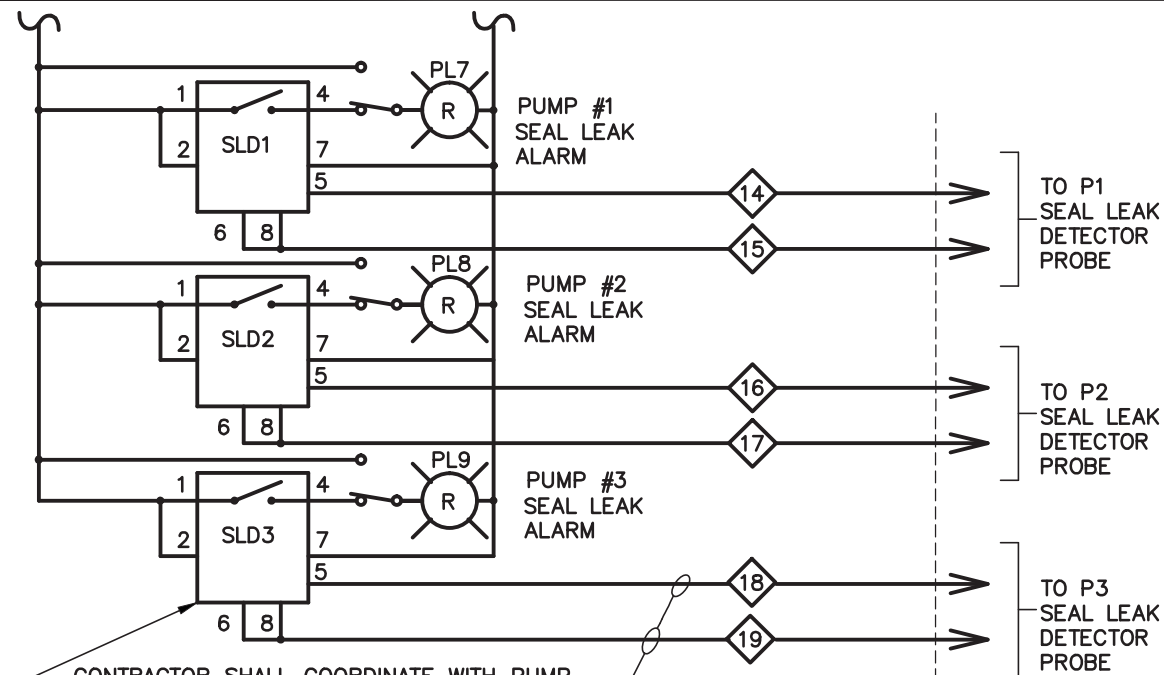
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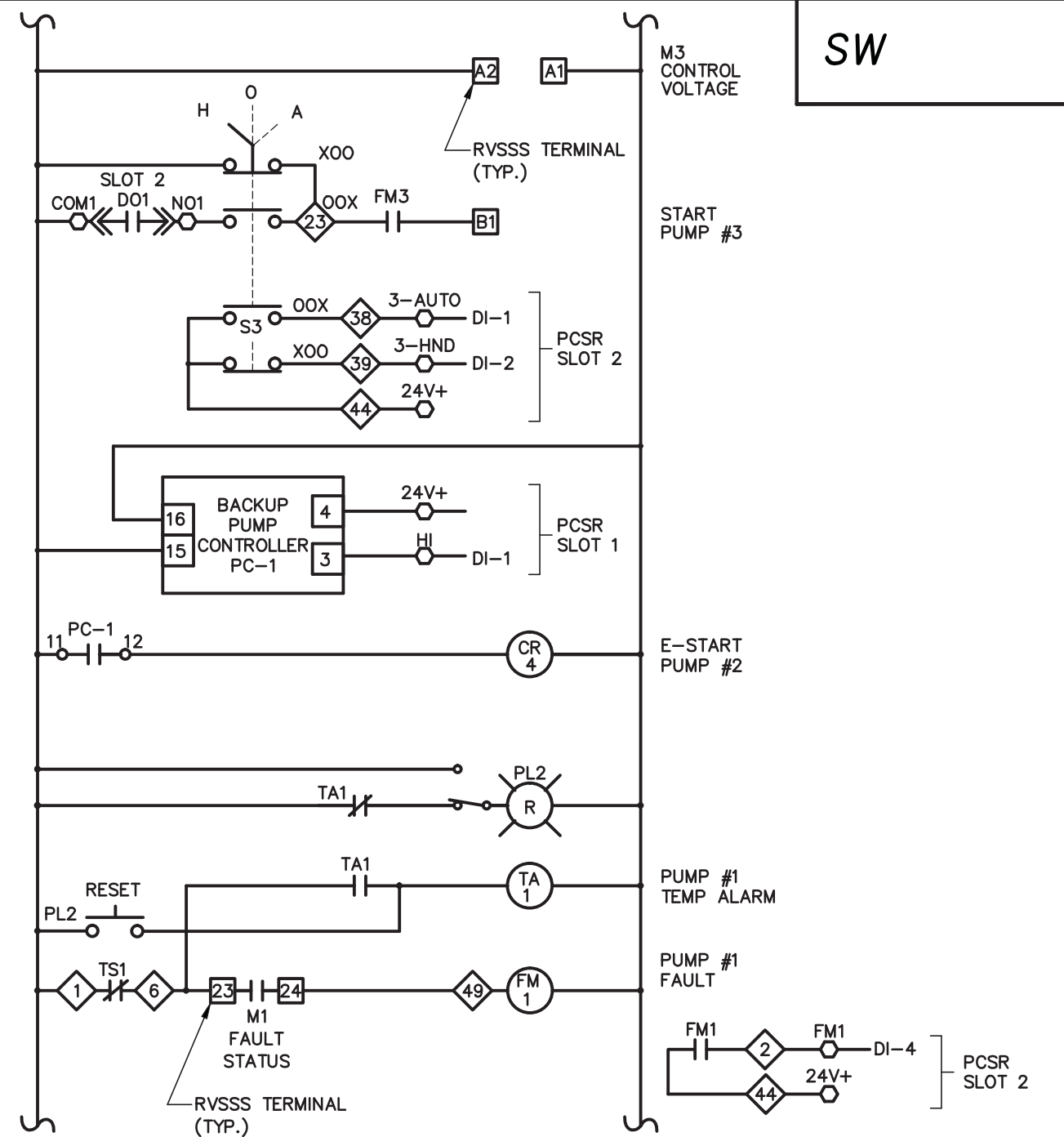
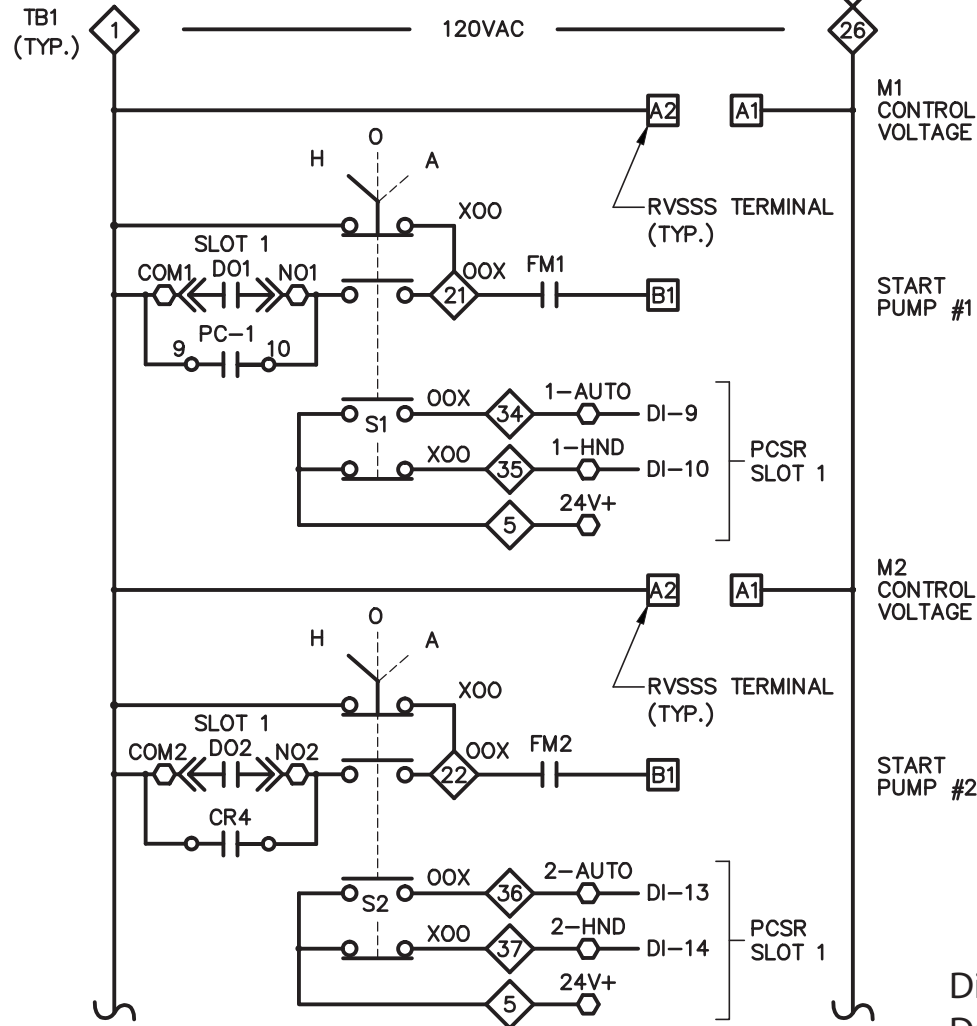
ROBLES PARK PUMP STATION REPLACEMENT
ELECTRICAL SCHEMATIC DIAGRAM
 (SHEET 1 OF 5)

W.O. ----
 SHEET
E-10



CONTRACTOR SHALL COORDINATE WITH PUMP MANUFACTURER TO DETERMINE SPECIFIC HARDWARE REQUIRED FOR STATOR TEMP AND SEAL-LEAK DETECTION (E.G. MINI-CAS 120 FOR FLYGT PUMPS).

SEE NOTE 7



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○ TERMINALS ON ACE I/O MODULE (GENERAL)
◇ TERMINALS IN PUMP CONTROL PANEL

SEE NOTES ON SHEET E-16

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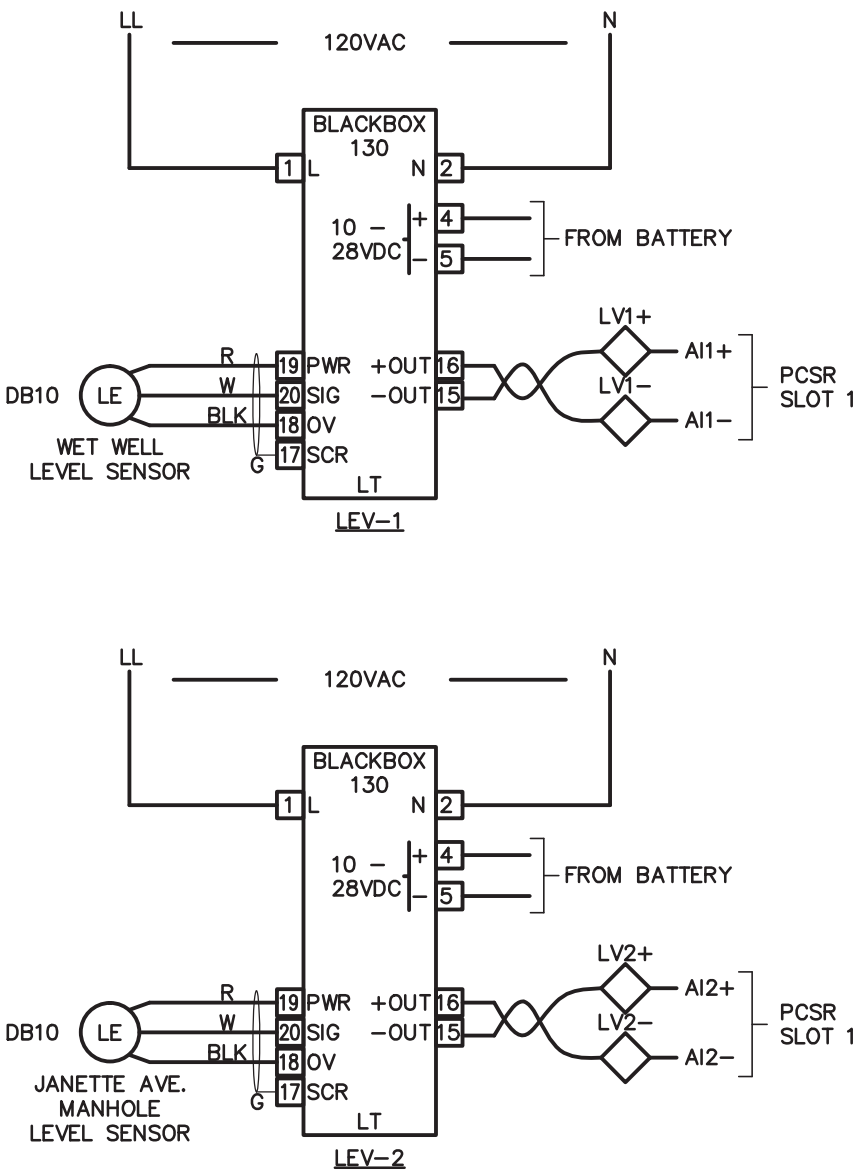
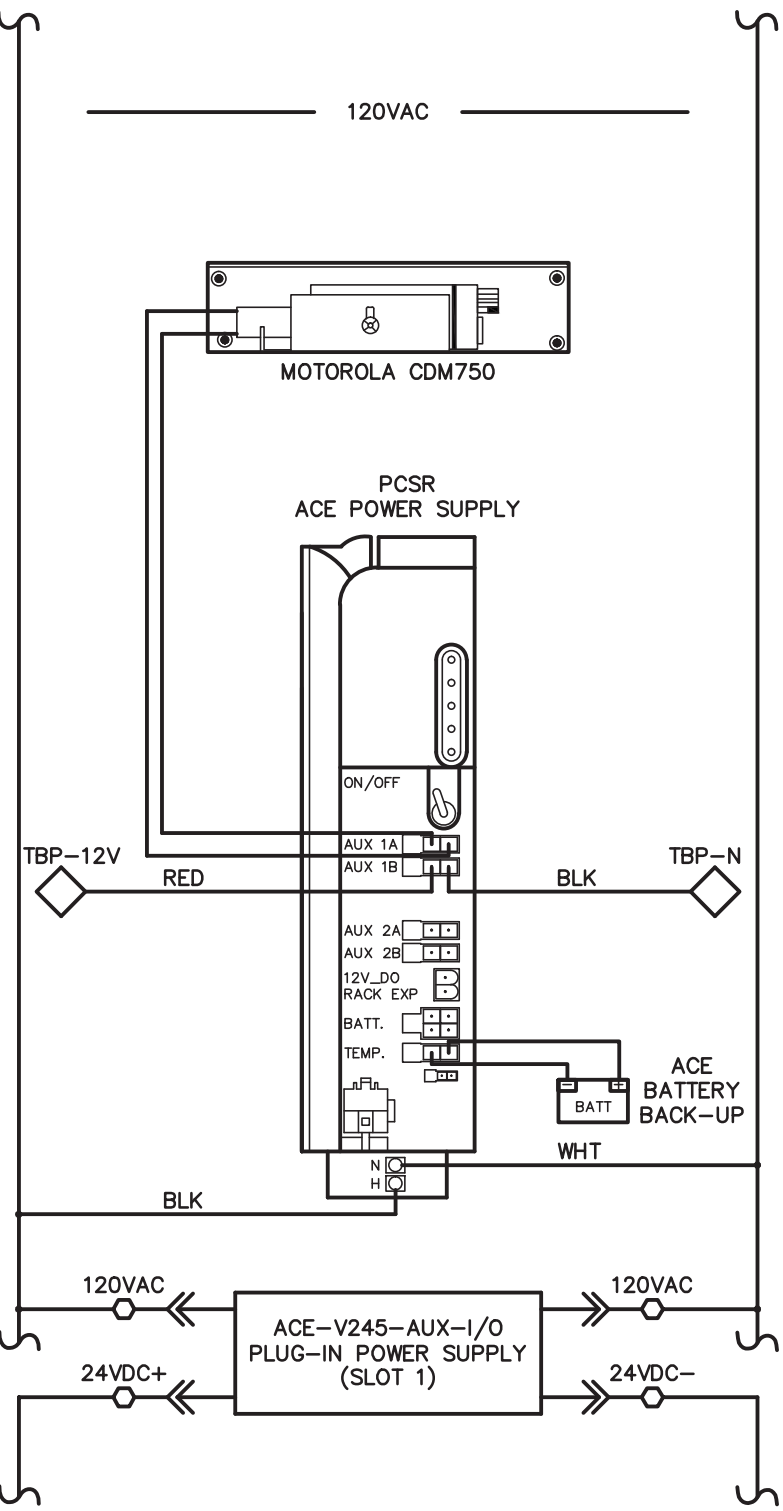
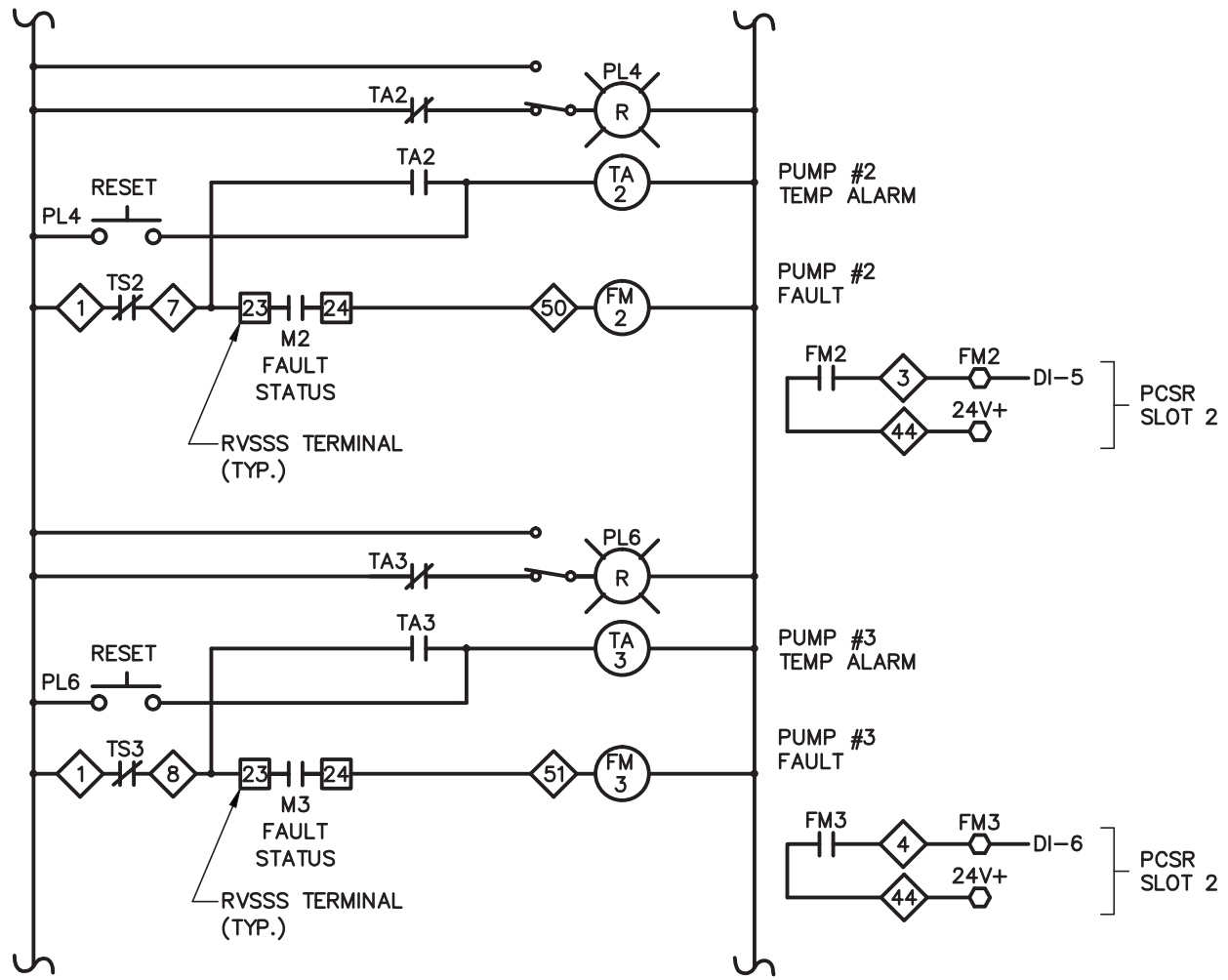
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DATE: 04/17/17

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Department of Transportation and Stormwater Services
Stormwater Engineering Division

ROBLES PARK PUMP STATION REPLACEMENT
ELECTRICAL SCHEMATIC DIAGRAM
(SHEET 2 OF 5)

W.O. ----
SHEET
E-11

SW



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- TERMINALS ON ACE I/O MODULE (GENERAL)
- ◇ TERMINALS IN PUMP CONTROL PANEL

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SEE NOTES ON SHEET E-16

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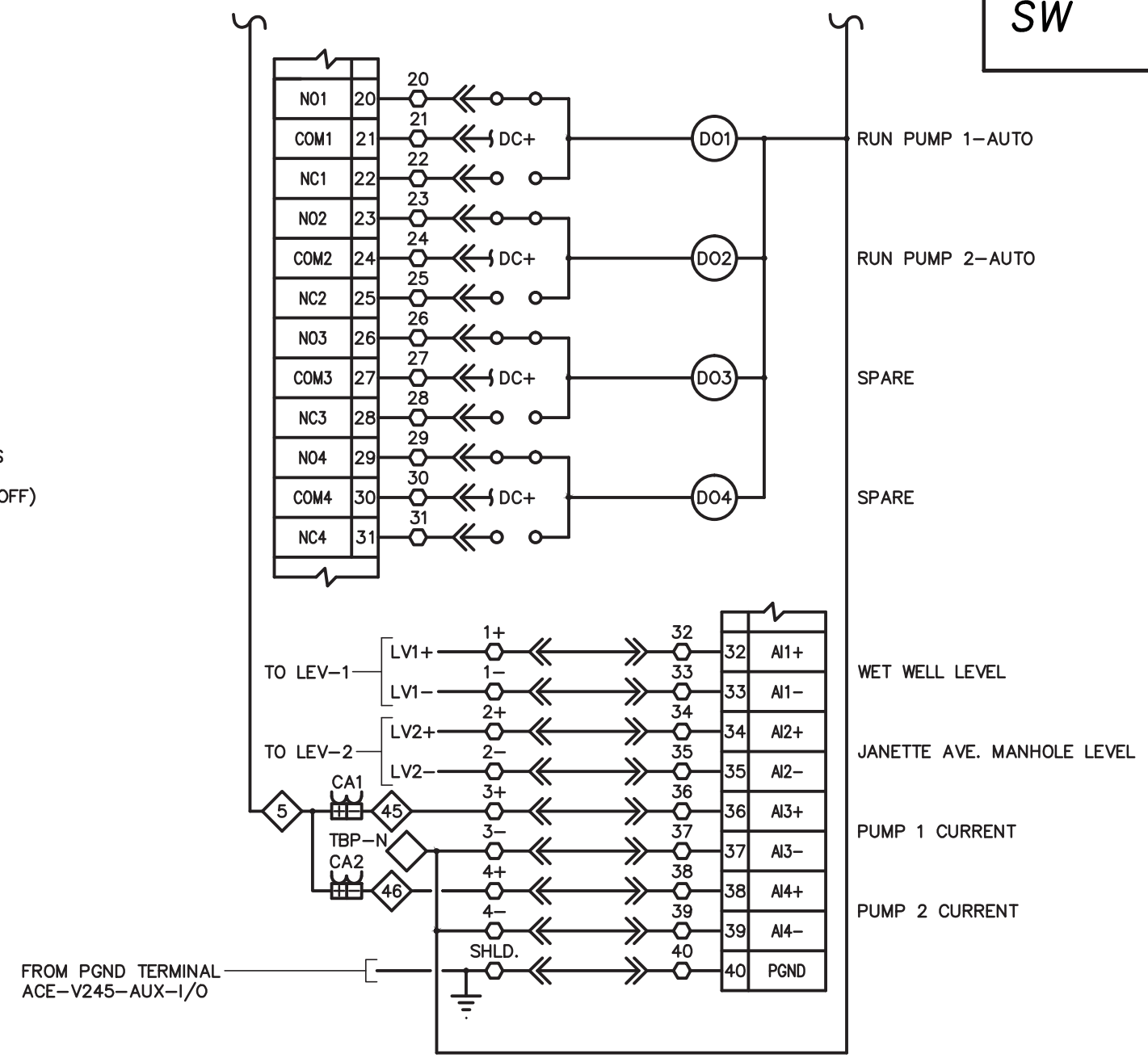
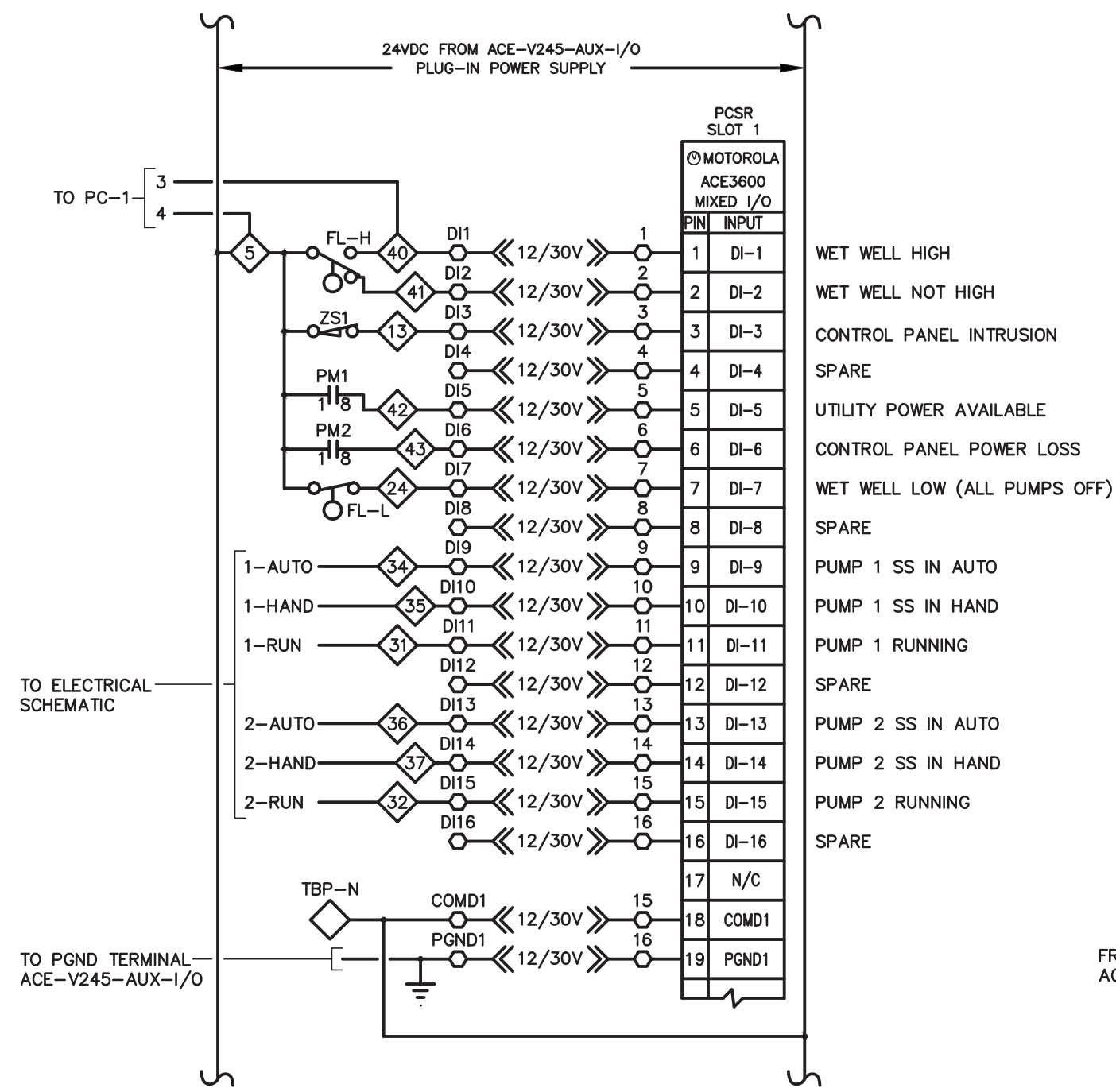
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Stormwater Engineering Division

ROBLES PARK PUMP STATION REPLACEMENT
ELECTRICAL SCHEMATIC DIAGRAM
(SHEET 3 OF 5)

W.O. ----
SHEET
E-12

SW



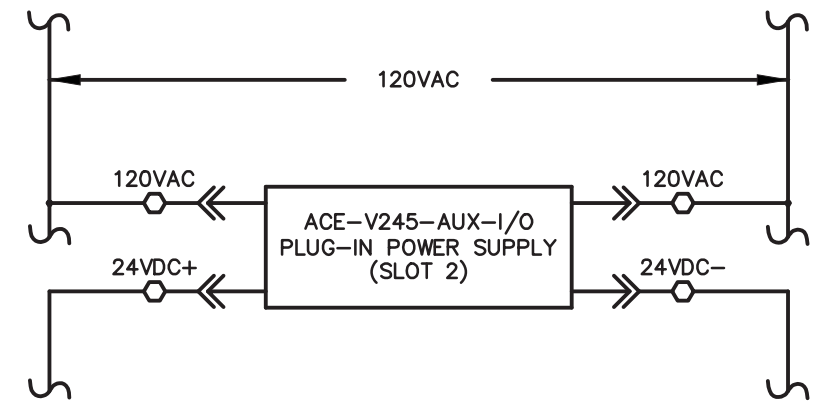
SEE NOTES ON SHEET E-16

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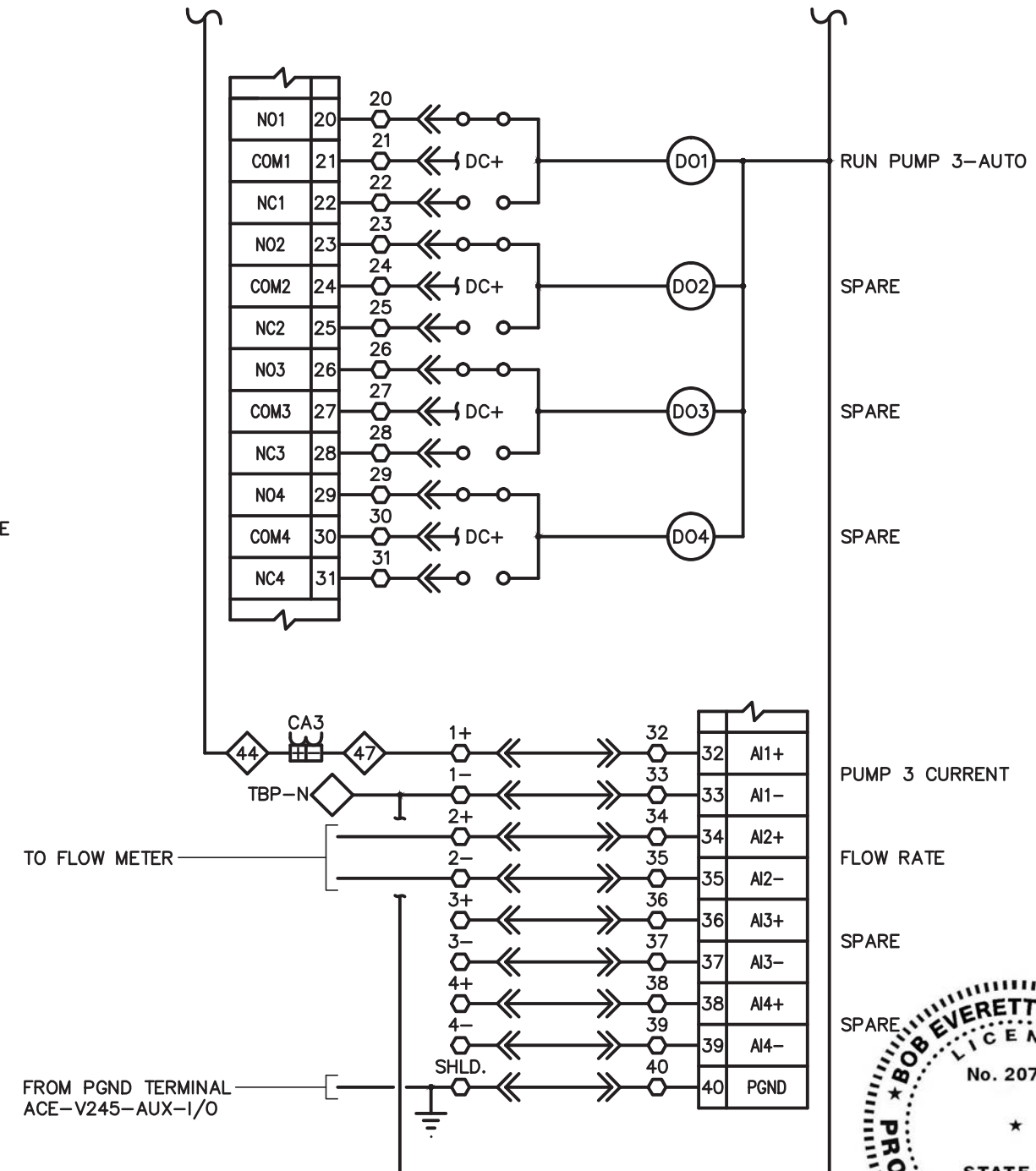
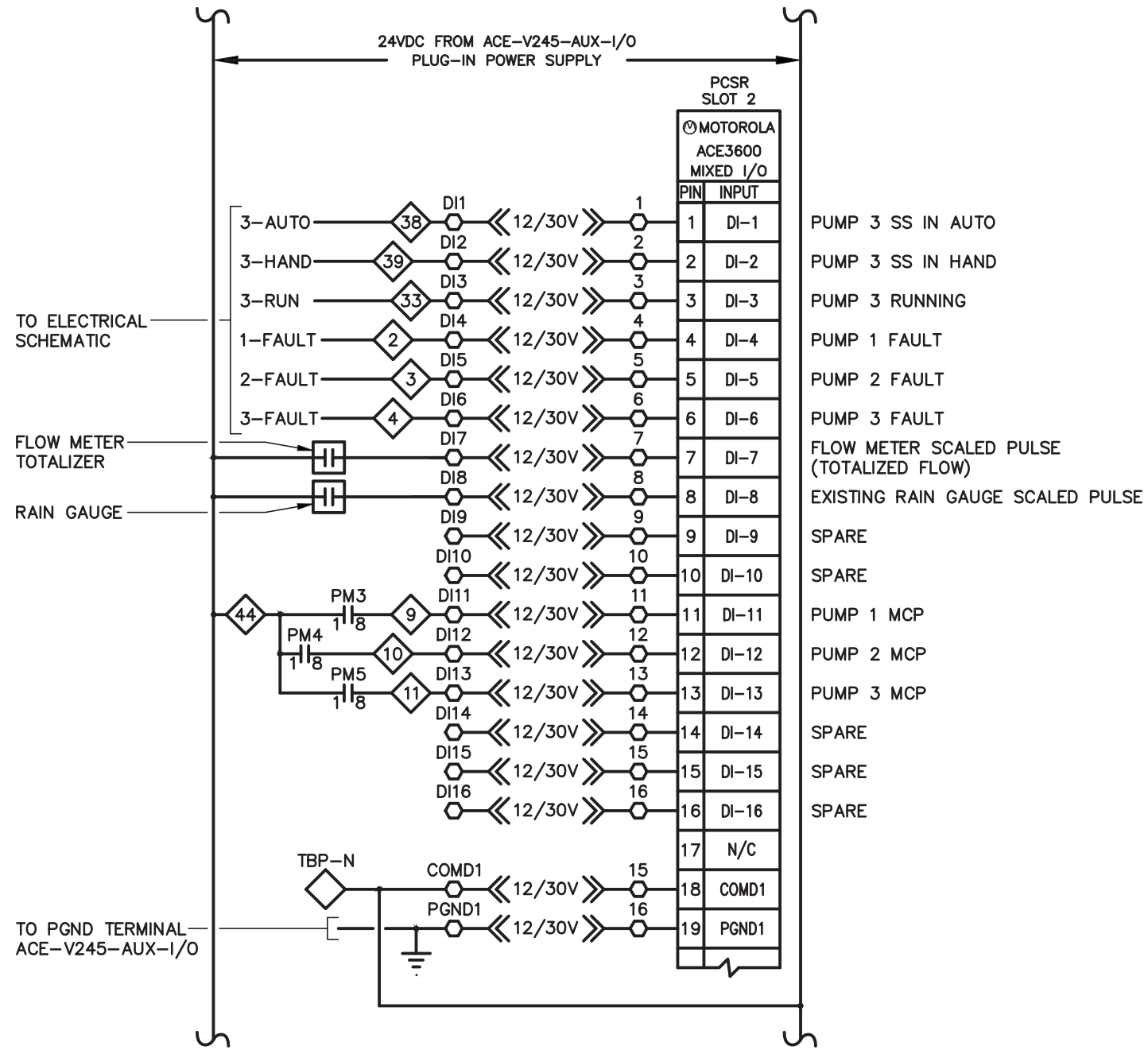
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- TERMINALS ON ACE I/O MODULE (GENERAL)
- ◇ TERMINALS IN PUMP CONTROL PANEL



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3			6					E-13
2			5					
1			4					



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- TERMINALS ON ACE I/O MODULE (GENERAL)
- ◇ TERMINALS IN PUMP CONTROL PANEL

No.	DATE	REVISIONS	No.	DATE	REVISIONS	DES: STK DRN: RWB CKD: DATE: 04/17/17	CITY of TAMPA Department of Transportation and Stormwater Services Stormwater Engineering Division	ROBLES PARK PUMP STATION REPLACEMENT ELECTRICAL SCHEMATIC DIAGRAM (SHEET 5 OF 5)	W.O. ---- SHEET E-14
3			6						
2			5						
1			4						

TBI- 

MOUNTED ON MAIN PANEL (MP)















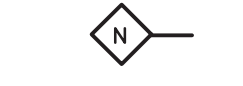







TERM.	DESCRIPTION
1	CB9 OUT PUMPS CONTROL POWER
2	PUMP 1 FAULT CONTROL INTERLOCK
3	PUMP 2 FAULT CONTROL INTERLOCK
4	PUMP 3 FAULT CONTROL INTERLOCK
5	SLOT-1 PCSR 24V +
6	STATOR TEMP SWITCH FROM P1
7	STATOR TEMP SWITCH FROM P2
8	STATOR TEMP SWITCH FROM P3
9	PM3 (PUMP 1 MCP)
10	PM4 (PUMP 2 MCP)
11	PM5 (PUMP 3 MCP)
12	BACK-UP PUMP BATTERY CHARGER, SPACE HEATER & CONTROLS
13	PANEL INTRUSION
14	P1 SEAL LEAK PROBE
15	
16	P2 SEAL LEAK PROBE
17	
18	P3 SEAL LEAK PROBE
19	
20	SPARE
21	M1 "RUN" CMD
22	M2 "RUN" CMD
23	M3 "RUN" CMD
24	WET WELL - LOW LEVEL FLOAT SWITCH
25	SPARE
26	NEUTRAL

TB1 CONT'D

27	P1 "ON" DISCRETE
28	P2 "ON" DISCRETE
29	P3 "ON" DISCRETE
30	P1, P2, P3 "ON" EXCITATION
31	P1 "ON" TO PCSR
32	P2 "ON" TO PCSR
33	P3 "ON" TO PCSR
34	P1 "AUTO" TO PCSR
35	P1 "HAND" TO PCSR
36	P2 "AUTO" TO PCSR
37	P2 "HAND" TO PCSR
38	P3 "AUTO" TO PCSR
39	P3 "HAND" TO PCSR
40	WET WELL - HIGH LEVEL FLOAT SWITCH
41	
42	PM1 (UTILITY POWER)
43	PM2 (CONTROL PANEL POWER)
44	SLOT-2 PCSR 24V +
45	PUMP 1 CURRENT
46	PUMP 2 CURRENT
47	PUMP 3 CURRENT
48	SPARE
49	M1 FAULT
50	M2 FAULT
51	M3 FAULT
52	SPARE
53	SPARE

SW

CONTROL SCHEMATIC SYMBOLS

	TRANSFORMER		AIR LINE
	PUSH BUTTON		CIRCUIT BREAKER (SINGLE-POLE)
	115 V, 60 Hz, DUPLEX RECEPTACLE		CIRCUIT BREAKER (THREE-POLE)
	SWITCH		CONTACT NORMALLY OPEN (CLOSED)
	CONNECTED		SPLIT BOLT SPLICE
	OVERLOAD HEATER COIL		NOT CONNECTED
	COIL		GROUND BUS
	TD - TIME DELAY RELAY CR - CONTROL RELAY ETI - TIMEMETER M - MOTOR STARTER		NEUTRAL BUS (INSULATED)
	PILOT LIGHT - RED (PRESS-TO-TEST)		FUSE
	PRESSURE LEVEL SWITCH CONTACT		TB2 TERM STRIP MTD ON MP-- (PCSR INTERFACE)
	"ON DELAY" CONTACT		TERMINAL STRIP IN PCSR
	INSTANT CLOSE CONTACT		



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CITY of TAMPA
Department of Transportation and Stormwater Services
Stormwater Engineering Division

ROBLES PARK PUMP STATION REPLACEMENT
ELECTRICAL SCHEMATIC LEGEND

W.O. ----
SHEET
E-15

NOTES:

1. TEC SERVICE: 277/480V, 250A, 3Ø, 4W, WYE. CALCULATED FAULT CURRENT - 9,720A; CB1 AIC RATING - 25,000A SYMMETRICAL.
2. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE LATEST EDITION OF THE NEC AND CITY OF TAMPA/HILLSBOROUGH COUNTY CODES AND SHALL BE INSPECTED BY CITY OF TAMPA/HILLSBOROUGH COUNTY ELECTRICAL INSPECTORS AS APPLICABLE.
3. ALL ELECTRICAL COMPONENTS SHALL BE UL LISTED AND AS SPECIFIED, OR AS APPROVED BY THE ENGINEER.
4. THE ENCLOSURE SHALL BE NEMA 3, SHALL BE CONSTRUCTED OF MINIMUM 14 GAUGE 304 SS, SHALL HAVE BRUSH FINISHED SURFACE, AND THE CLOSING SURFACE SHALL HAVE ROLLED LIPS. PROVIDE HINGED DOOR WITH 3-POINT AND LOCKABLE HANDLE. REFERENCE PARTS SCHEDULE.
5. ALL COMPONENTS TO BE MOUNTED ON PANEL USING TAPPED HOLES.
6. ALL WIRING SHALL BE COPPER. ALL CONTROL WIRING SHALL BE STRANDED THWN COPPER, MINIMUM AWG #14, AND SHALL HAVE SPADE LUG TERMINATIONS.
7. DIMENSIONS, ITEMS, OR ELEVATIONS MARKED '*' TO BE DETERMINED AFTER EQUIPMENT SELECTION.
8. ALL MECHANICAL CONNECTORS SHALL BE TORQUED PER NEC, UL OR MANUFACTURERS SPECIFICATIONS.
9. INSTALL LAMINATED SCHEMATIC AND LAMINATED DATA SHEET ON BACK FACE OF THE DOOR INSIDE THE ENCLOSURE.
10. ENSURE THAT LINE CONNECTIONS TO METER SOCKET PROVIDE CORRECT METER ROTATION.
11. ROUTE AND SECURE SERVICE ENTRANCE CONDUCTORS SO AS NOT TO INTERFERE WITH OR CONTACT EQUIPMENT AND COMPONENTS IN THE PANEL. ALSO, PROVIDE SPACING BETWEEN THE ENCLOSURE AND ALL CONDUCTORS.
12. CONDUCTORS WITHIN THE ENCLOSURE AND NOT ROUTED IN WIREWAYS, SHALL BE SECURED TO THE BACK PANEL WITH MECHANICAL FASTENERS. FASTENERS SECURED WITH ADHESIVE ARE NOT ACCEPTABLE.
13. ALL HINGED SURFACES SHALL BE GROUNDED WITH A BONDING JUMPER SECURED TO THE ENCLOSURE OR BACKPANEL.
14. THE PCSR SHALL BE A MOTOROLA ACE3600 PACKAGE. THE CONTRACTOR SHALL EMPLOY DCR ENGINEERING SERVICES INC. OR SCADAONE, LLC TO SUPPLY THE MOTOROLA ACE3600 PACKAGE, COORDINATE THE INSTALLATION AND PROGRAM THE CONTROL SYSTEM. ALL WORK RELATED TO, INCLUDING THE INSTALLATION, PROGRAMMING AND TESTING OF THE PCSR AND THE MOTOROLA ACE3600, SHALL BE PROVIDED BY DCR ENGINEERING SERVICES INC. OR SCADAONE, LLC. THE CONTRACTOR SHALL COORDINATE ALL WORK EFFORTS WITH THE INSTALLATION OF THE PCSR.
15. LEVEL DETECTION SYSTEMS FOR THE WET WELL & THE MANHOLE AT JANETTE AVE. SHALL BE PROVIDED AND INSTALLED BY THE CONTRACTOR. THE OUTPUT SHALL BE A LINEAR 4-20mA SIGNAL WITH RANGE AND CALIBRATION SUITABLE FOR THIS APPLICATION. THE SYSTEM SHALL BE OF THE ULTRASONIC TYPE, PULSAR, INC. MODEL dB10 W/ BLACKBOX 130 TRANSMITTER. CITY INSTRUMENTATION PERSONNEL WILL ASSIST THE CONTRACTOR WITH TRANSDUCER MOUNTING AND CALIBRATION.
16. THE RVSSS PROTECTION FEATURES SHALL INCLUDE:
 - PHASE LOSS
 - PHASE SEQUENCE AND UNDER/OVER FREQUENCY
 - UNDER/OVER AND NO VOLTAGE
 - LOAD LOSS (MOTOR NOT CONNECTED)
 - SHORTED SCR
17. NO SPLICES WILL BE PERMITTED IN THE FLEXIBLE CABLES ROUTED FROM THE CONTROL PANEL TO THE SUBMERSIBLE PUMPS, FLOAT SWITCHES & LEVEL TRANSDUCERS. COORDINATE CABLE LENGTHS REQUIRED PRIOR TO ORDERING OF EQUIPMENT.

SW

LEGEND PLATE SCHEDULE

SYMBOL	DEVICE	LEGEND
ETM1	ELAPSED TIME METER	PUMP NO. 1 HOURS
ETM2	ELAPSED TIME METER	PUMP NO. 2 HOURS
ETM3	ELAPSED TIME METER	PUMP NO. 3 HOURS
PL1	YELLOW PILOT LIGHT	PUMP NO. 1 ON
PL2	RED ILLUMINATED PUSH BUTTON	PUMP NO. 1 HIGH TEMPERATURE
PL3	YELLOW PILOT LIGHT	PUMP NO. 2 ON
PL4	RED ILLUMINATED PUSH BUTTON	PUMP NO. 2 HIGH TEMPERATURE
PL5	YELLOW PILOT LIGHT	PUMP NO. 3 ON
PL6	RED ILLUMINATED PUSH BUTTON	PUMP NO. 3 HIGH TEMPERATURE
PL7	RED PILOT LIGHT	PUMP NO. 1 SEAL LEAK
PL8	RED PILOT LIGHT	PUMP NO. 2 SEAL LEAK
PL9	RED PILOT LIGHT	PUMP NO. 3 SEAL LEAK
S1	3-POSITION SWITCH	PUMP NO 1 HAND-OFF-AUTO
S2	3-POSITION SWITCH	PUMP NO. 2 HAND-OFF-AUTO
S3	3-POSITION SWITCH	PUMP NO. 3 HAND-OFF-AUTO



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CITY of TAMPA
 Department of Transportation and Stormwater Services
 Stormwater Engineering Division

ROBLES PARK PUMP STATION REPLACEMENT
 ELECTRICAL CONTROLS LEGEND PLATES

W.O. ----
 SHEET
 E-16

CONTROL PANEL PARTS SCHEDULE

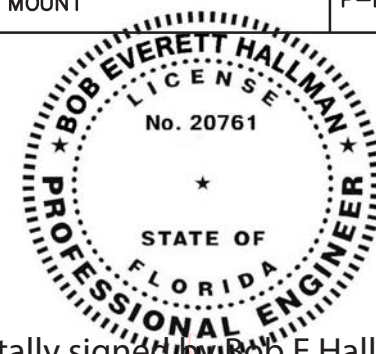
SYMBOL	NAME	CONTROL PANEL PARTS SCHEDULE				REMARKS
		MAKE	TYPE	MODEL or CAT. #	RATING	
CB1	CIRCUIT BREAKER	SQUARE D	3 POLE	JGL36250	600V, 200A	SET SENSOR FOR 200A. PROVIDE MECHANICAL INTERLOCK.
CB2	CIRCUIT BREAKER	SQUARE D	3 POLE	JGL36250	600V, 200A	
CB3, CB4, CB5	CIRCUIT BREAKER	SQUARE D	3 POLE	FAL34100	480V, 100A	
CB6	CIRCUIT BREAKER	SQUARE D	2 POLE	FAL24030	480V, 30A	
CB7	CIRCUIT BREAKER	SQUARE D	2 POLE	FAL24015	480V, 15A	
CB8	CIRCUIT BREAKER	SQUARE D	2 POLE	FAL22015	240V, 15A	
CB9, CB10, CB11	CIRCUIT BREAKER	SQUARE D	1 POLE	QOU115	120V, 15A	
M1, M2, M3	MOTOR STARTER	SOLCON	RVSSS	RVS-DX72-480-115-3M-8-D-U-S	72A (50 HP)	
FBD1, FBD2, FBD3, FBD4, FBD5	FUSE BLOCK/DISCONNECT	ABB SSAC	THREE PHASE - HIGH INTER. CAP.	P0700-241 BLOCK, P0600-11 FUSE	500 VAC, 2A FUSE	100,000 AIC KLK TYPE FUSES
PM1, PM2, PM3, PM4, PM5	3 PHASE VOLTAGE MONITOR	ATC DIVERSIFIED	DISCRETE	SLA-440-ASA	480 VAC	DIN RAIL MOUNTING
PC-1	BACKUP PUMP CONTROLLER	WILKERSON	DUPLEX LIFT STATION	DR1920	10A CONTACTS	DIN RAIL MOUNTING
T1	TRANSFORMER	SQUARE D	DRY TYPE	CLASS 7400-2S1F	480//240/120 V 2 KVA	
PL1, PL3, PL5	INDICATOR LIGHT	SQUARE D	CLASS 9001	SKT38LYY9	120V LED TYPE	YELLOW LENS & PRESS TEST
PL7, PL8, PL9	INDICATOR LIGHT	SQUARE D	CLASS 9001	SKT38LRR9	120V LED TYPE	RED LENS & PRESS TEST
PL2, PL4, PL6	ILLUM. PUSH BUTTON	SQUARE D	CLASS 9001	SK2L38LRRH13	120V LED TYPE	RED LENS & 1 N.O., 1 N.C.
S1, S2, S3	HOA SWITCH ASSEMBLY	SQUARE D	OILTIGHT CLASS 9001	SKS - 43B H2	10A @ 120V	
ETM1, ETM2, ETM3	ELAPSE TIME METER	CRAMER	NON-RESET	635	120V	
SPD	SURGE SUPPRESSOR	ADVANCE PROTECTION TECHNOLOGIES	MAIN PANEL SPD	TE04XDS104X	277/480 VAC, 3Ø, WYE	
FL-H, FL-L	FLOAT SWITCH	ANCHOR SCIENTIFIC	SPDT	S2NONC	10A @ 120V	
LA	LIGHTNING ARRESTER	GENERAL ELECTRIC	TRANQUELL	9L15ECC001	650V	
HMI	HUMAN MACHINE INTERFACE	MAPLE SYSTEMS	7", ETHERNET	HMI5070NL	24 VDC	FOR PUMP SETTINGS
EP-GFCI	ETHERNET PORT/GFCI	GRACE ENGINEERING	DOOR MOUNT	P-R2-K3RFO	120V, 5A	PROVIDE ETHERNET CONNECTION

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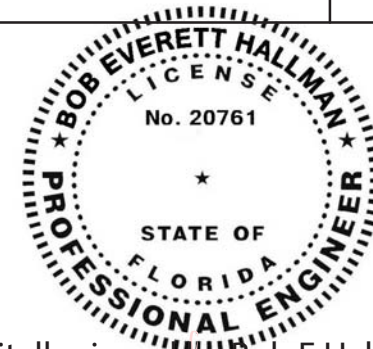
No.	DATE	REVISIONS	No.	DATE	REVISIONS	DES: STK DRN: RWB CKD: DATE: 04/17/17	CITY of TAMPA Department of Transportation and Stormwater Services Stormwater Engineering Division	ROBLES PARK PUMP STATION REPLACEMENT CONTROL PANEL PARTS SCHEDULE (SHEET 1 OF 2)	W.O. ---- SHEET E-17
3			6						
2			5						
1			4						

CONTROL PANEL PARTS SCHEDULE

SYMBOL	NAME	CONTROL PANEL PARTS SCHEDULE				REMARKS
		MAKE	TYPE	MODEL or CAT. #	RATING	
TB1	TERMINALS	PHOENIX CONTACT		UK5N TERMINALS	30A w/ ALUMINUM DIN RAIL	41 CONTACTS (MIN)
CA1, CA2, CA3	CURRENT SENSOR	ENERCORP INSTRUMENTS	4-20 mA OUTPUT	200-2	0-100A	ADJUSTABLE RANGE
NB	INSULATED TERMINAL STRIP	ALLEN-BRADLEY	STYLE AA	1492-15T	600 VAC, NEUTRAL BLOCK	4 CONTACTS (MIN) w/ SHORTING BARS
ME	CONTROL ENCLOSURE *	HOFFMAN	60" x 60" x 12" NEMA 12 SS	A606012SSLP	304 SS, 12 GAUGE	w/ DOOR STOP KIT
MP	ENCLOSURE PANEL *	HOFFMAN	56" x 56", STEEL	A60P60 PAINTED WHITE	STEEL, 10 GAUGE	
GB1, GB2	GROUNDING BLOCK	ILSCO	AS REQUIRED			
SLD1, SLD2, SLD3	SEAL LEAK DETECTOR	SYRELEC	8 PIN PLUG-IN	PNRU110	110V INPUT, 10A CONTACTS	SPDT w/ SOCKET
TA1, TA2, TA3, FM1, FM2, FM3, CR1, CR2, CR3, CR4	CONTROL RELAY	POTTER & BRUMFIELD	8 PIN PLUG-IN	KRPA-11AG-120	120V COIL, 10A CONTACTS	DPDT w/ SOCKET AND HOLD DOWN SPRING
LEV-1, LEV-2	LEVEL DETECTION SYSTEM	PULSAR INC.	CONTROLLER	BLACKBOX 130 (TROPICALIZED) w/ KEYPAD & DISPLAY 130-110-300-OOP-KP-TROP	120V, 5 WATT	PROVIDE TRANSDUCER MODEL DB10 w/ SUBMERSION SHIELD
BATT.	BATTERY	POWERSONIC AGM		PS-1270 F2	12V, 7.0 AH	
BATT. CHR.G.	BATTERY CHARGER	DELTRAN CORP.		WATERPROOF 800	12V, 0.800A OUTPUT	
PCSR	PLC BASED PUMP CONTROLLER, SCADA & RADIO SYSTEM	MOTOROLA CORPORATION	TRIPLEX PUMP CONTROLLER BASED ON ACE 3600 PROG. CONTROLLER	ACE 3600 RTU w/ CONVENTIONAL UHF RADIO CDM 750, 403-470, 450-512 MHZ & ACE-V245-AUX-I/O INTERFACE BOARD	24 VDC w/ 10A/HR BATTERY BACKUP	COORDINATE w/ DCR ENG. SERVICES OR SCADAONE LLC
	SLOTS 1 & 2	I/O MODULE FOR ACE 3600 RTU	MOTOROLA CORPORATION	MIXED I/O	ACE 3600 MIXED I/O	(4) 4-20 mA ANALOG IN, (16) DIGITAL IN, (4) DIGITAL OUT
PDB	POWER DIST. BLOCK	ILSCO	3 POLE	PDB-212-4/0-3	600V, 460A	
EC	EMERGENCY CONNECTOR	CROUSE-HINDS	ARKTITE	AR2042/S22	600V, 200A	PROVIDE AN AJA6 ANGLE ADAPTER
VI	VOLTAGE INDICATOR	GRACE ENGINEERING	LED, FLASHING	SAFESIDE R-3W-KB	40-750 VAC/30-1000 VDC	

NOTES:

- 1. ITEMS MARKED "*" TO BE DETERMINED AFTER EQUIPMENT SELECTION.



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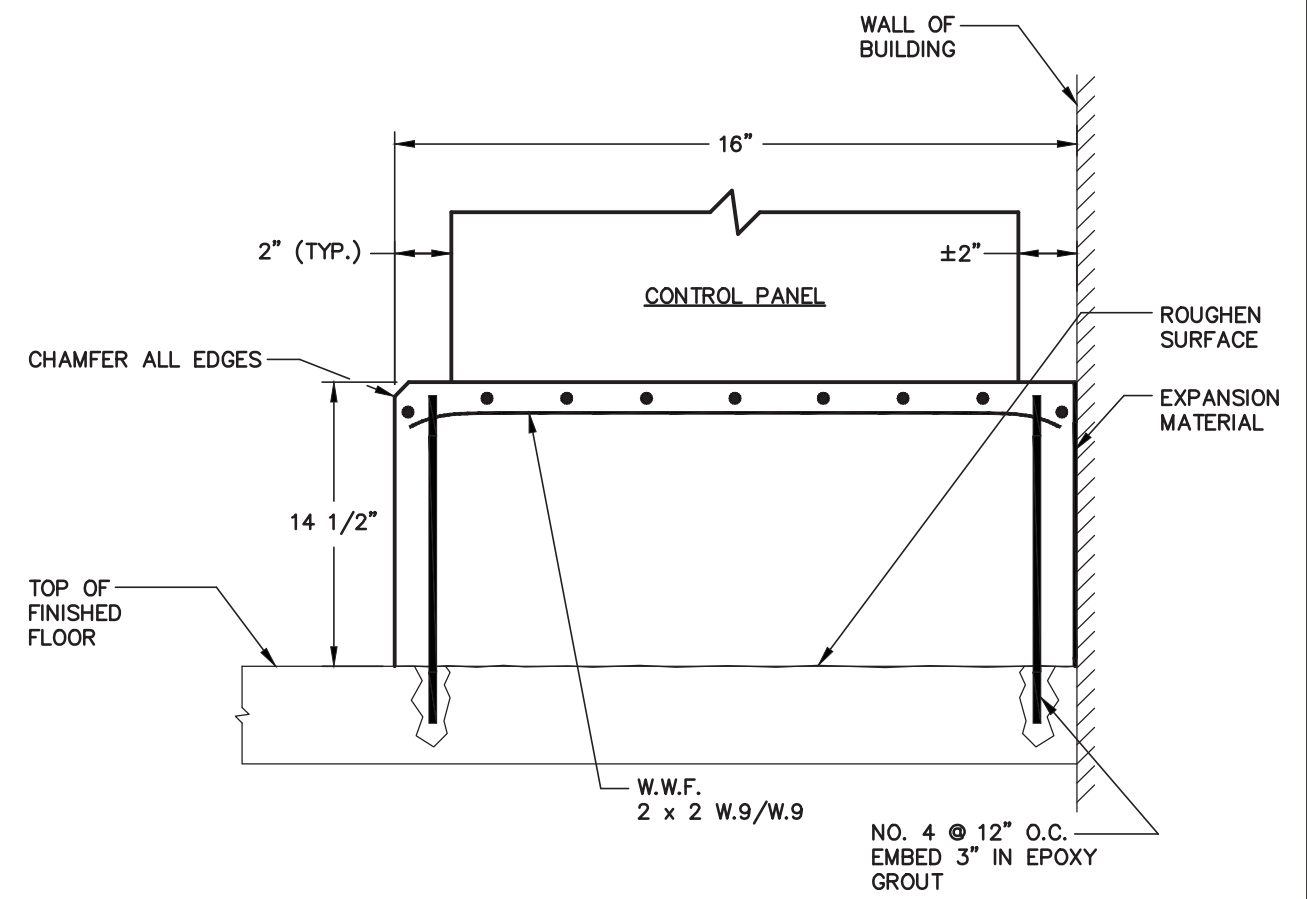
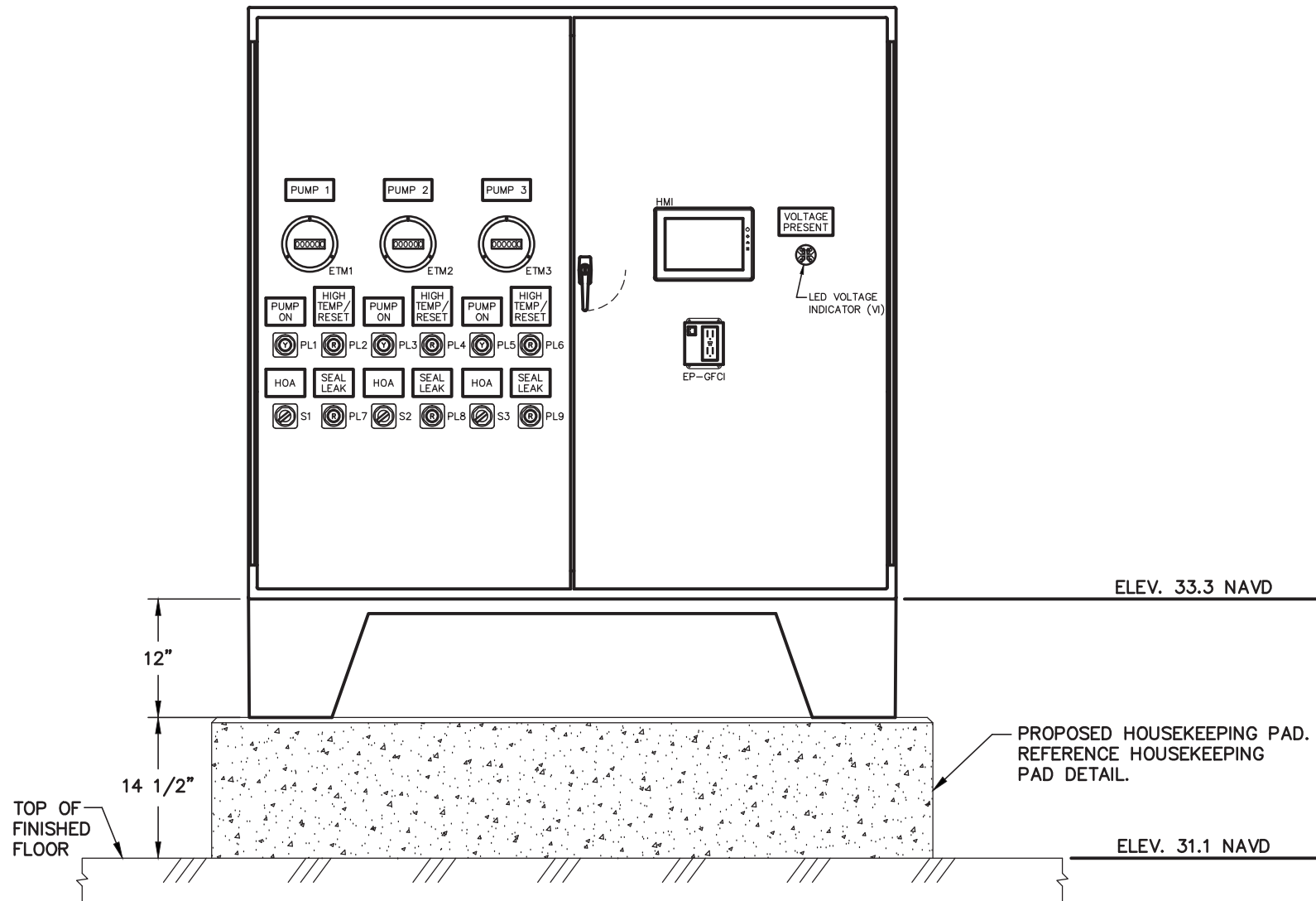
EDT Engineering Design Technologies Corp.
 P.O. Box 152403
 Tampa, FL 33684-2403
 813.289.8080
 813.282.9184 FAX
 engineering@edt1.com
 Certificate of Authorization Number: 4795

No.	DATE	REVISIONS	No.	DATE	REVISIONS
3			6		
2			5		
1			4		

DES: STK
 DRN: RWB
 CKD:
 DATE: 04/17/17
 CITY of TAMPA
 Department of Transportation and Stormwater Services
 Stormwater Engineering Division

ROBLES PARK PUMP STATION REPLACEMENT
CONTROL PANEL PARTS SCHEDULE
 (SHEET 2 OF 2)

SW



HOUSEKEEPING PAD DETAIL
(NOT TO SCALE)

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NOTES:

1. ALL EQUIPMENT SHALL BE INSTALLED AT AN ELEVATION ABOVE THE 100 YEAR FLOOD ELEVATION ESTABLISHED BY FEMA AND/OR LOCAL AUTHORITIES.

No.	DATE	REVISIONS	No.	DATE	REVISIONS
3			6		
2			5		
1			4		

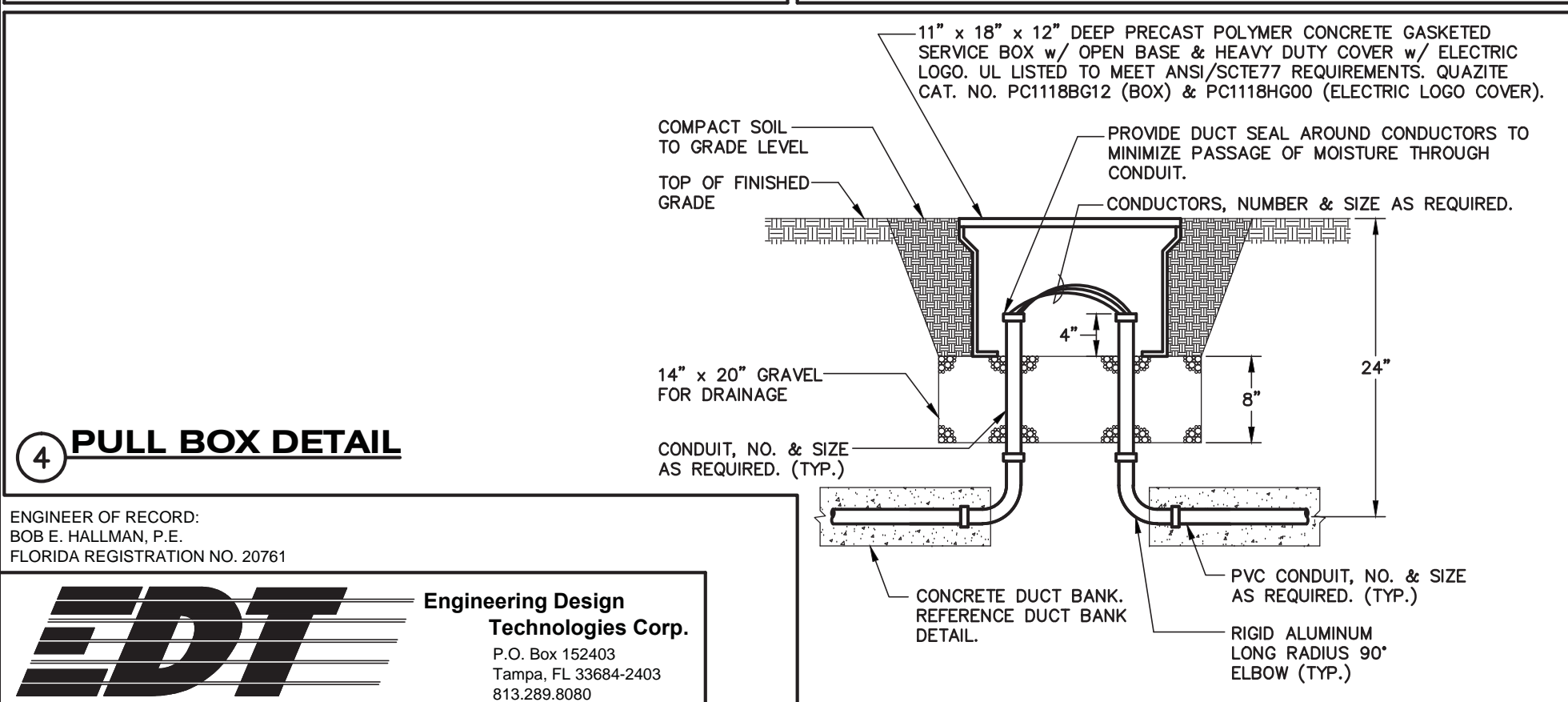
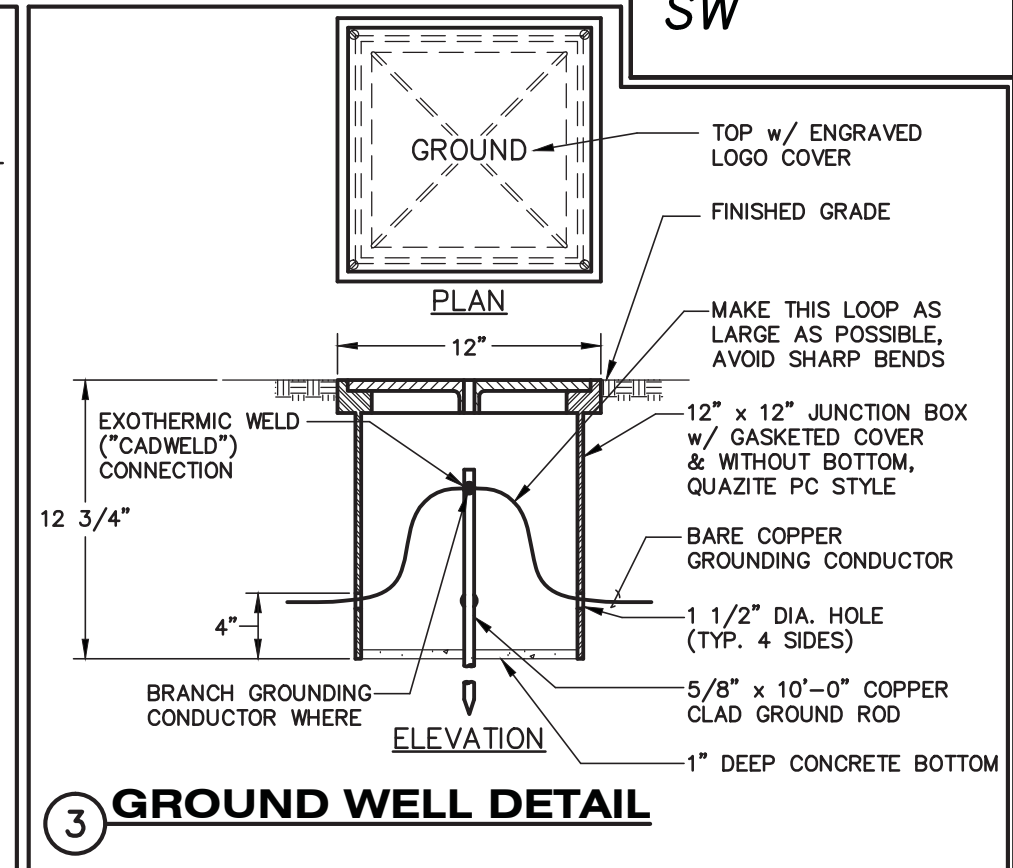
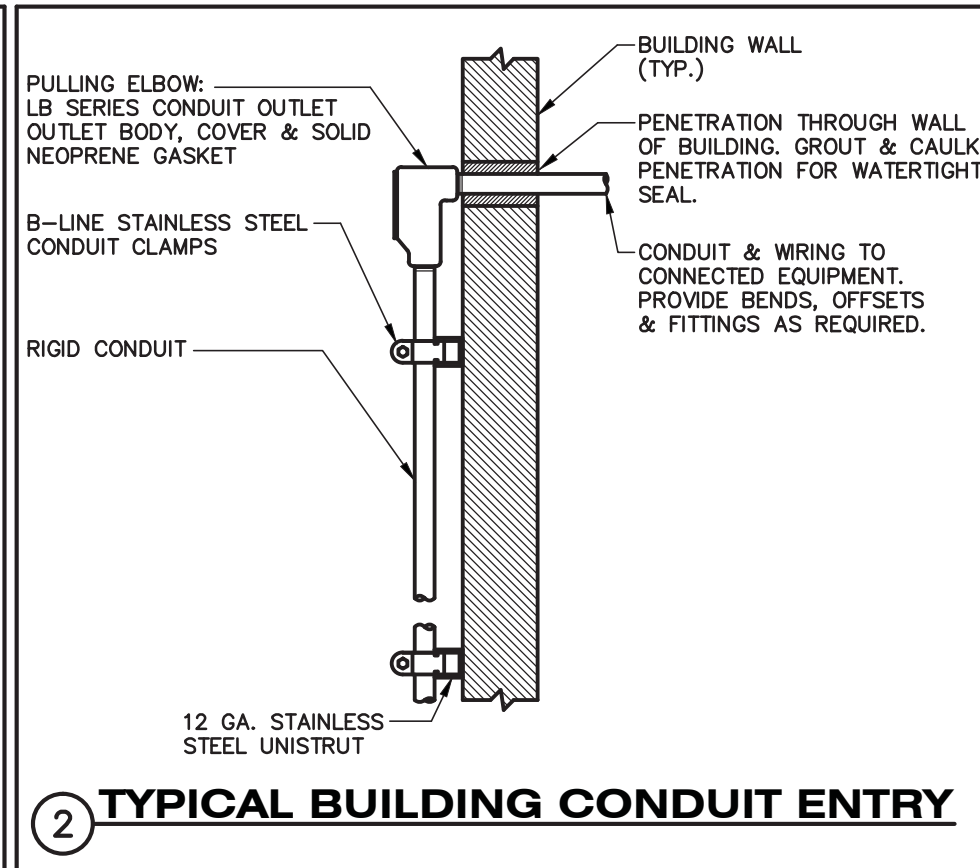
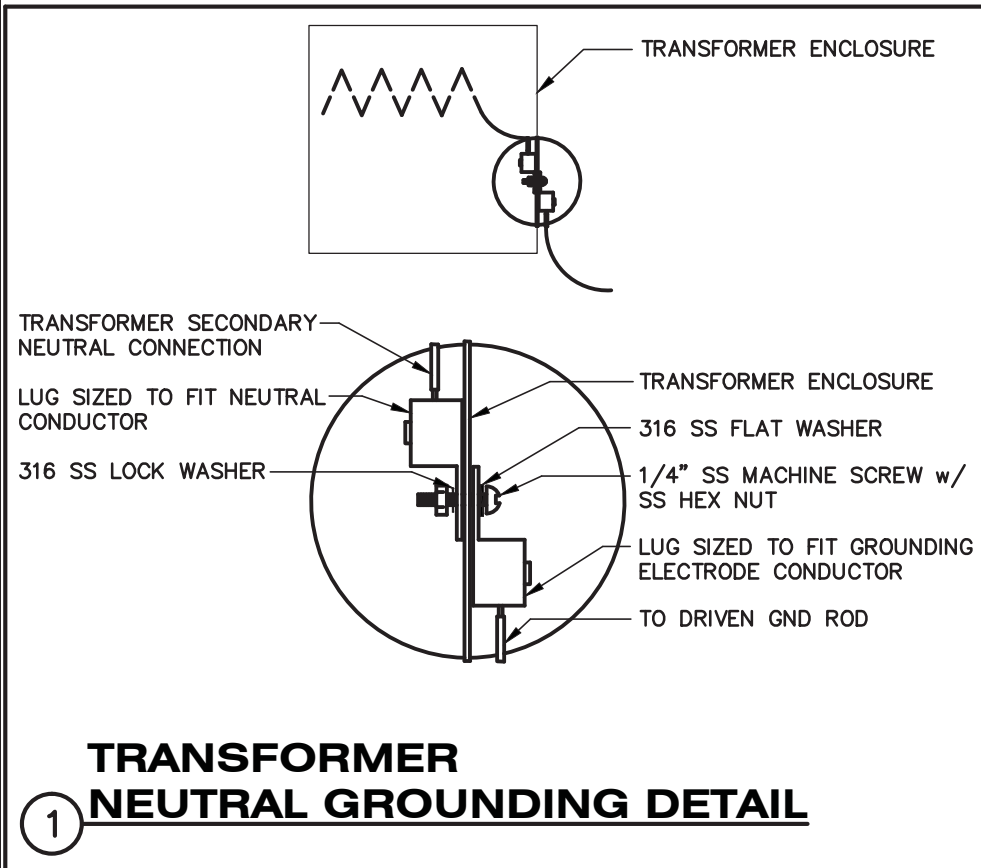
DES: STK
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CKD:
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CITY of TAMPA
Department of Transportation and Stormwater Services
Stormwater Engineering Division

ROBLES PARK PUMP STATION REPLACEMENT
CONTROL PANEL MOUNTING DETAILS

W.O. ----
SHEET
E-19

SW



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6

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PROFESSIONAL ENGINEER
STATE OF FLORIDA
LICENSE No. 20761
BOB EVERETT HALLMAN

No.	DATE	REVISIONS	No.	DATE	REVISIONS
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2			5		
1			4		

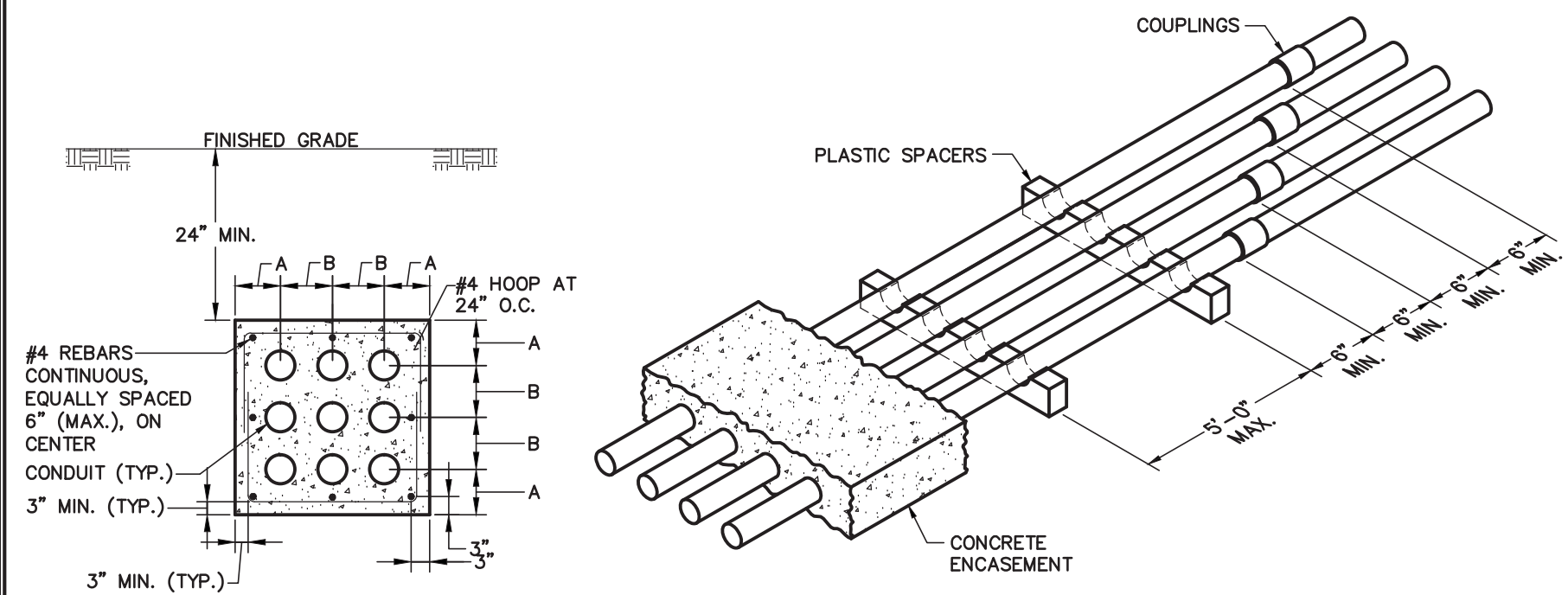
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DRN: RWB
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DATE: 04/17/17

CITY of TAMPA
Department of Transportation and Stormwater Services
Stormwater Engineering Division

ROBLES PARK PUMP STATION REPLACEMENT

ELECTRICAL DETAILS

W.O. ----
SHEET
E-20



		DUCT BANK CONDUIT SPACING DIMENSIONS									
CONDUIT SIZE	DIMENSION A	CONDUIT SIZE									
		3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	3 1/2"	4"	
		DIMENSION B									
3/4"	3 5/8"	3 1/8"	3 1/4"	3 3/8"	3 1/2"	3 3/4"	4"	4 3/8"	4 5/8"	4 7/8"	
1"	3 3/4"	3 1/4"	3 3/8"	3 1/2"	3 5/8"	3 7/8"	4 1/4"	4 1/2"	4 3/4"	5"	
1 1/4"	3 7/8"	3 3/8"	3 1/2"	3 3/4"	3 7/8"	4 1/8"	4 3/8"	4 5/8"	4 7/8"	5 1/8"	
1 1/2"	4"	3 1/2"	3 5/8"	3 7/8"	4"	4 1/4"	4 1/2"	4 3/4"	5"	5 1/4"	
2"	4 1/4"	3 3/4"	3 7/8"	4 1/8"	4 1/4"	4 3/8"	4 5/8"	5"	5 1/4"	5 1/2"	
2 1/2"	4 1/2"	4"	4 1/8"	4 3/8"	4 1/2"	4 5/8"	4 7/8"	5 1/4"	5 1/2"	5 3/4"	
3"	4 3/4"	4 3/8"	4 1/2"	4 5/8"	4 3/4"	5"	5 1/4"	5 1/2"	5 3/4"	6"	
3 1/2"	5"	4 5/8"	4 3/4"	4 7/8"	5"	5 1/4"	5 1/2"	5 3/4"	6"	6 1/4"	
4"	5 1/4"	4 7/8"	5"	5 1/8"	5 1/4"	5 1/2"	5 3/4"	6"	6 1/4"	6 1/2"	

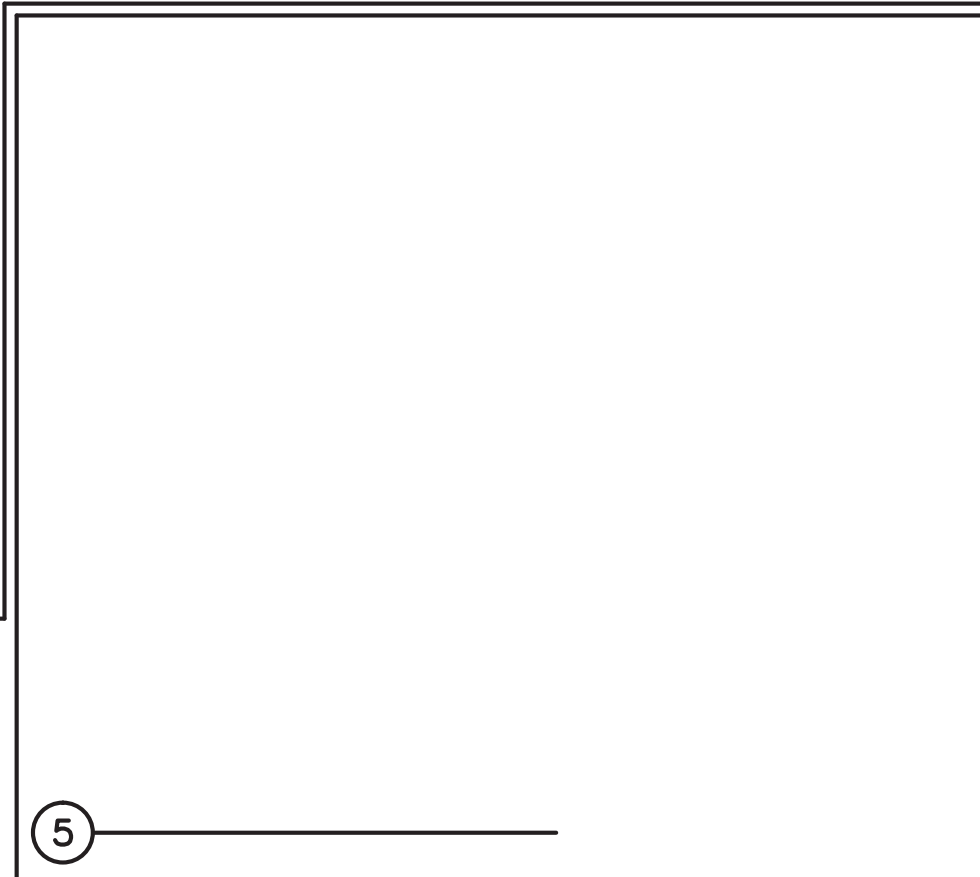
HORIZONTAL STAGGERING OF SPACERS & JOINTS

- NOTES:**
1. CONCRETE SHALL BE 3000 PSI. MINIMUM COMPRESSION STRENGTH.
 2. TOP OF DUCT BANK SHALL BE DYED RED.
 3. TOP OF DUCT BANK SHALL BE 24" BELOW FINISHED GRADE.
 4. 4" CONDUIT BEND RADIUS SHALL BE A MINIMUM OF 48".
 5. ALL EMPTY CONDUITS SHALL INCLUDE A PULL WIRE AND SHALL BE CAPPED.
 6. DUCT BANKS MAY BE RE-ARRANGED FOR CONVENIENCE OF EGRESS.
 7. REFERENCE ELECTRICAL DRAWINGS FOR CONDUIT SIZE.
 8. THIS DETAIL IS FOR LAYOUT PURPOSES ONLY. FOR THE ACTUAL NUMBER OF CONDUITS & FEEDERS SEE PLAN DRAWINGS.

4 DUCT BANK DETAIL

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3			6						
2			5						
1			4						

SW

1 1/2 C. CONTAINING FLOW METER CABLE. CABLE PROVIDED BY FLOW METER MANUFACTURER. COORDINATE CABLE, DETAILS & INSTALLATION w/ FLOW METER MANUFACTURER.

FLOW METER TOTALIZER.
ABB WATERMASTER FEW325.600
SERIES (OR EQUAL)

COMBINATION POWER/SIGNAL INDUSTRIAL
SURGE SUPPRESSOR MTD. IN A NEMA 4X
ENCLOSURE. EMERSON/EDCO SLAC-12036
SERIES.

2-2/C #16 SHLD.
(BELDEN 8719), 1" C.

TO CONTROL PANEL

TO PANELBOARD

CROUSE-HINDS CGB SERIES CONNECTOR. SIZE
GROMMET FOR WATERTIGHT CONNECTION FOR
#6 BARE GROUNDING CONDUCTOR.

EXOTHERMIC WELD

#6 BARE COPPER CONDUCTOR. CONNECT
TO GROUNDING TERMINAL INSIDE ENCLOSURE.

5/8" x 10'-0" COPPER CLAD
GROUND ROD. INSTALL GROUND
ROD IN A GROUND WELL. REFERENCE
GROUND WELL DETAIL.

TOTALIZED FLOW SIGNAL FROM
FLOW METER TOTALIZER

FLOW RATE SIGNAL FROM
FLOW METER TOTALIZER

TAPE SHIELDS

AC POWER TO FLOW
METER TOTALIZER

ENLARGED VIEW

SIGNALS TO
CONTROL PANEL

AC POWER FROM
PANELBOARD

GROUNDING CONDUCTOR
TO GROUND ROD

NOTE: TAPE SHIELDS OF EACH BELDEN 8719
CABLE AT FLOW METER TOTALIZER. DO
NOT GROUND SHIELDS AT TOTALIZER.
CABLE SHIELDS SHALL BE GROUNDED
AT THE RTU ONLY.

MAGNETIC FLOW METER
(MAG METER)

BONDING STRAP (TYP.)

MECHANICAL LUG w/ HOLES
SIZED TO FIT FLANGE BOLTS
(TYP. OF 4)

PVC SLEEVE (TYP. OF 2)

EXTEND CONDUIT THROUGH
PIPE SLEEVE

GROUT & CAULK TO PROVIDE
WATERPROOF SEAL AROUND CONDUIT
PENETRATION INTO METER VAULT.
(TYP.)

FLUID CONTACT RING (TYP. OF 2)

CLASS K STRANDED, AWG #2 BARE
COPPER CONDUCTOR OR BRAIDED
GROUNDING STRAP. BOND TO MATING
FLANGES OF MAGNETIC FLOW METER &
TO 5/8" x 10'-0" COPPER CLAD
GROUND ROD. COORDINATE GROUNDING
REQUIREMENTS w/ FLOW METER
MANUFACTURER.

EXOTHERMIC WELD

5/8" x 10'-0" COPPER CLAD
GROUND ROD. INSTALL GROUND
ROD IN A GROUND WELL.
REFERENCE GROUND WELL
DETAIL.

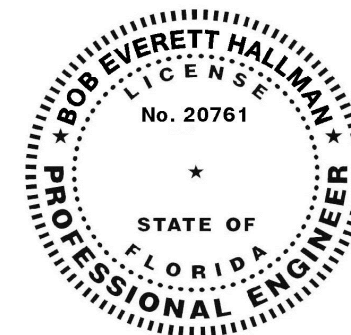
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FLOW METER CONNECTION DETAIL



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3			6		
2			5		
1			4		

DES: STK
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CKD:
DATE: 06/21/17

CITY of TAMPA
Department of Transportation and
Stormwater Services
Stormwater Engineering Division

ROBLES PARK PUMP STATION REPLACEMENT

FLOW METER CONNECTION DETAIL

W.O. ----
SHEET
E-22

SW

PANELBOARD SCHEDULE

PANEL "LP-RP"

bus amps		LOAD	poles	amps	bus		poles	amps	LOAD	bus amps		
A	B				A	B				A	B	
2		BUILDING LIGHTING	1	20	1		2	1	20	BUILDING RECEPTACLES	5	
	5	PROPOSED FLOW METER TOTALIZER	1	15	3							

RATED VOLTAGE: 120/240 VAC, 1 ϕ , 3W				BRANCH POLES: 10			
RATED AMPS: 60				CABINET: SURFACE			
FULL NEUTRAL BUS	GROUND BUS	HINGED DOOR	KEYED DOOR LATCH	MAIN LUGS ONLY			
CIRCUIT BREAKER (PLUG-IN) BRANCH DEVICES				FEED IS TO BE TOP			
ALL BRKRS. MUST BE RATED TO INTERRUPT A SHORT CIRCUIT I _{sc} OF 22,000 AMPS SYMMETRICAL							
APPROVED MANUFACTURERS: SQUARE D				MAIN LUGS: 1 SET; SIZE #6			
TOTAL AMPS: BUS A 7, BUS B 5, CONNECTED KVA 1.4, DEMAND KVA 1.4							

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3			6						
2			5						
1			4						

LEGEND

PROPOSED	EXISTING	DESCRIPTION	PROPOSED	EXISTING	DESCRIPTION
		BASE LINE (SURVEY LINE)			CURB INLET
		CENTER LINE			GRATE INLET
		R/W LINE			CULVERT WITH HEADWALL
		LIMITED ACCESS R/W LINE			MITERED END SECTION
		PROPERTY LINE			UTILITIES IN PROFILE
		EASEMENT LINE			TELEPHONE POLE
		IRON PIPE			ELECTRIC POLE
		CONCRETE MONUMENT			COMBINATION POLE
		GAS MAIN			LIGHT POLE
		STORM SEWER			GUY WIRE
		SANITARY SEWER			GUY POLE & WIRE
		SANITARY FORCE MAIN			MAILBOX
		FUEL LINE			POLYWRAP
		ELECTRIC CABLE			ASPHALT ROADWAY & DRIVES
		TELEVISION CABLE			BRICK ROADWAYS & DRIVES
		WATER MAIN			CURB OR CURB & GUTTER
		RECLAIMED WATER MAIN			CONCRETE DRIVES & SIDEWALKS
		FIRE HYDRANT ASSEMBLY (INCLUDES VALVE & TEE)			BUILDING LIMIT
		WATER VALVE			FENCE
		DETECTOR CHECK VALVE			RAILROAD TRACKS
		DOUBLE DETECTOR CHECK VALVE - IN VAULT			SHORELINE
		DOUBLE DETECTOR CHECK VALVE - ABOVE GROUND			SWALE
		VAULT			NARROW DITCH
		CASING PIPE (JACK & BORE)			WIDE DITCH
		WATER METER			SPRINKLER HEAD
		METER TO BE TRANSFERRED			PINE
		BACK FLOW PREVENTER			TREE
		WET TAP			PALM
		SLEEVE, BEND, TEE, CROSS, PLUG, REDUCER, BLOW-OFF			OAK
		ELECTRIC MANHOLE OR PULL BOX			ROOT PRUNE
		TELEPHONE MANHOLE OR UTILITY BOX			SHRUB
		MANHOLE - SANITARY, STORM			HEDGE
		VALVE			WOODS/HEAVY BRUSH
		SANITARY LATERAL WITH DEPTH AT R/W LINE.			MARSH
		SAMPLE TAP LOCATION			BENCH MARK & NUMBER
		CHLORINE INJECTION POINT			TEMPORARY BENCH MARK & NUMBER
		RECLAIM WATER METER			SPOT ELEVATIONS
		SIGN			SIGN

GENERAL NOTES

1. POLYWRAP ALL DUCTILE IRON PIPE (D.I.P) FITTINGS AND APPURTENANCES.
2. CENTER ONE FULL JOINT OF PIPE UNDER/OVER ALL SANITARY, STORM, OR RECLAIMED WATER CROSSING.
3. RESTRAIN ALL JOINTS AND FITTINGS.
4. RESTRAIN ALL JOINTS ON EXISTING WATER MAIN WITH EXTERIOR BELL RESTRAINTS.
5. ALL BELOW GROUND BENDS TO BE MECHANICAL JOINT (M.J.)
6. EXISTING UTILITIES, BUILDINGS, GROUND ELEVATIONS, AND OTHER FEATURES ARE SHOWN ACCORDING TO THE BEST INFORMATION AVAILABLE. ALL CONDITIONS AND DIMENSIONS AFFECTING REQUIRED WORK SHALL BE VERIFIED BY CONTRACTORS.
7. CONTRACTOR TO FIELD VERIFY LOCATION & DEPTH OF EXISTING WATER MAIN PRIOR TO CONSTRUCTION.
8. SEE STORMWATER PLANS FOR INVERT INFORMATION ON PROPOSED STORM STRUCTURE.



RORY A JONES, P.E.
CITY OF TAMPA WATER DEPT.
306 E. JACKSON ST., 5E
TAMPA, FLA. 33602
P.E. #79453

No.	Date	REVISION	By

Approved Date

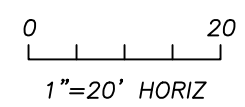
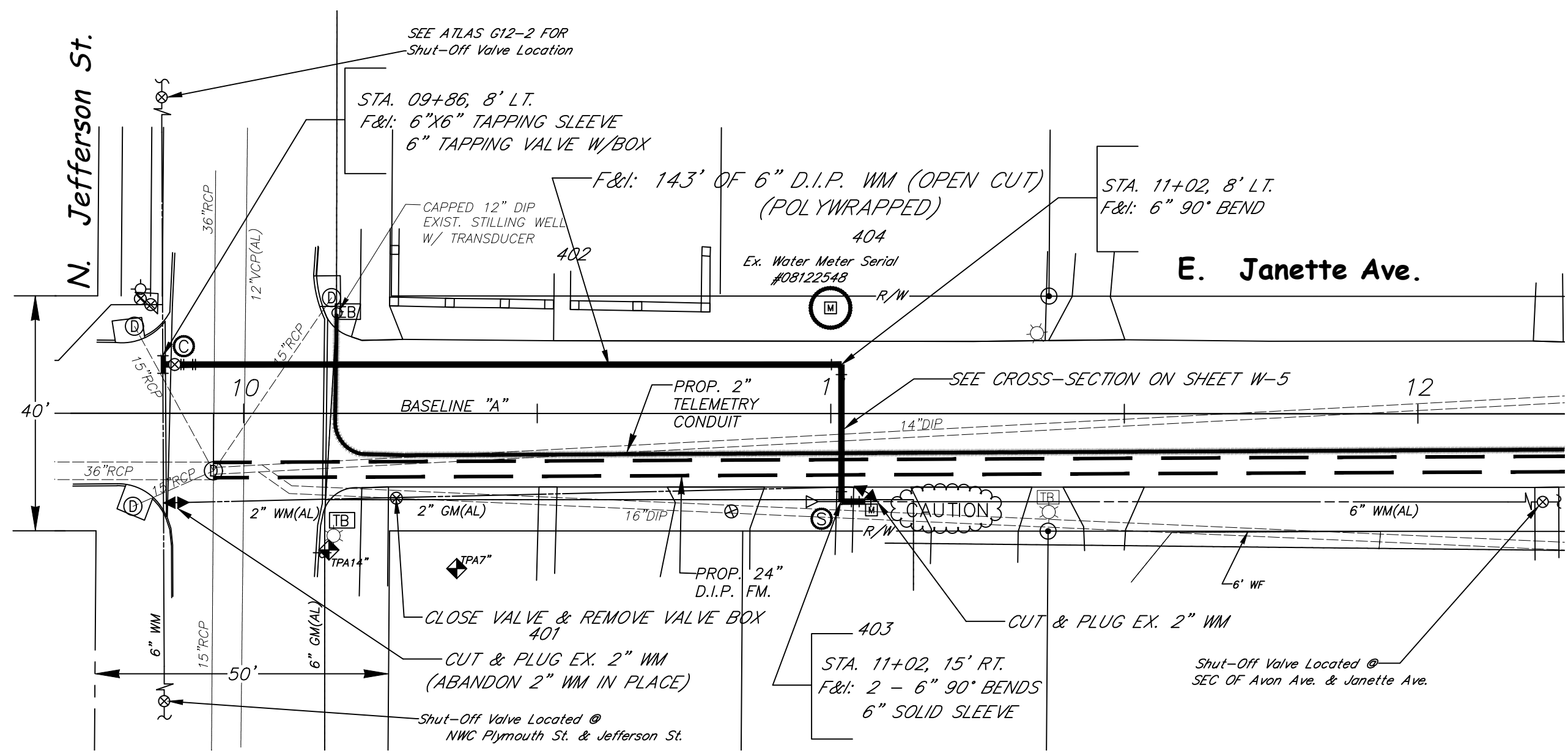
Des: ABA
Dwn: PF
Ckd: RAJ

**JANETTE AVENUE
WATER MAIN REPLACEMENT**

Atlas Page	W.O. 8477
G12-2	SHEET W-2



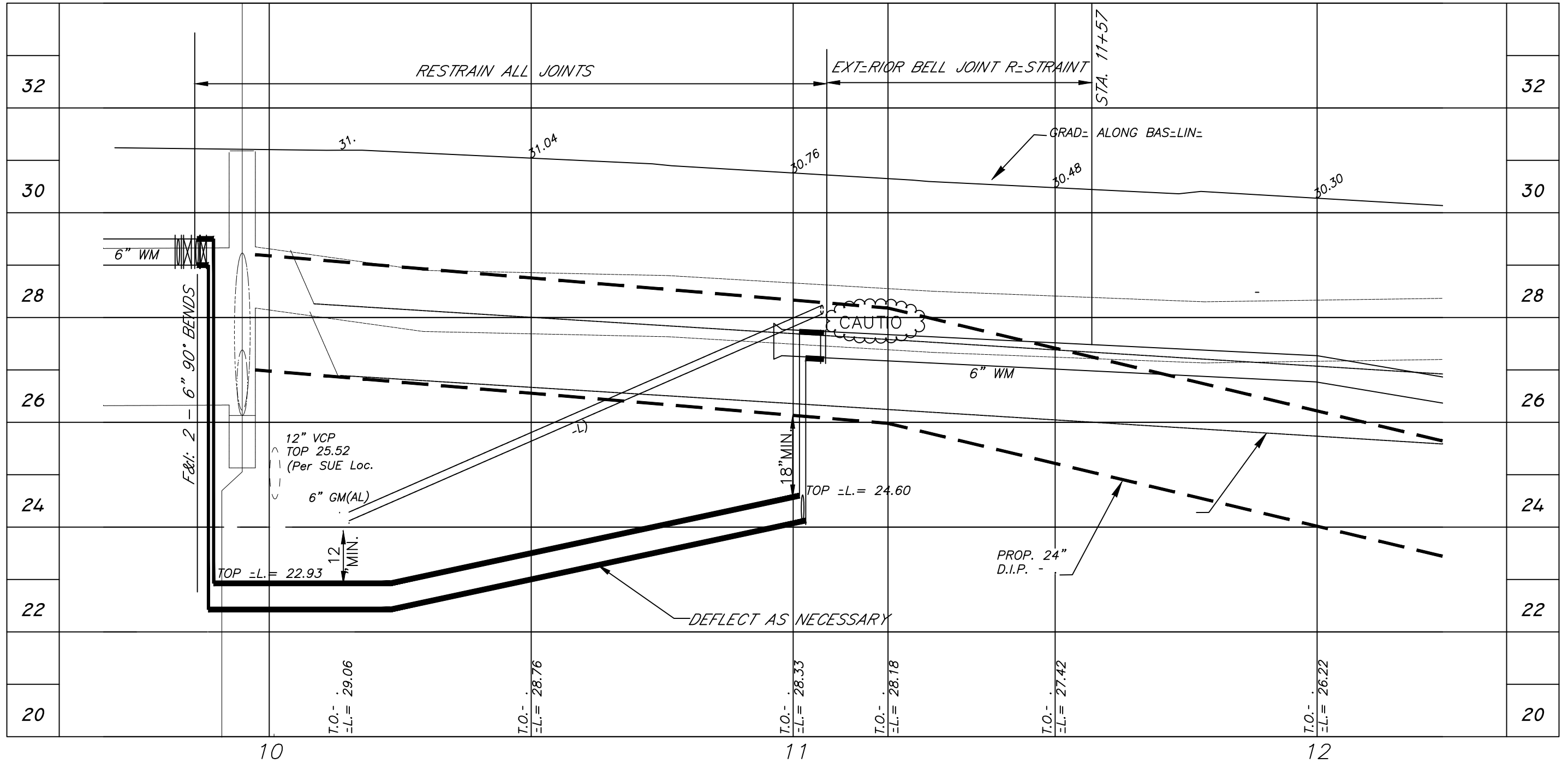
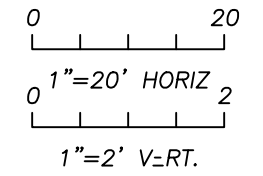
SEC.12 T29S R18E



NOTE:

1. TRANSFER EX. METER #08122548 TO NEW 6" DIP WM.

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						Dwn: PF		G12-2	SHEET
		Approved Date		Ckd: RAJ		W-3			



RORY A JONES, P.E.
CITY OF TAMPA WATER DEPT.
306 N. JACKSON ST., 5F
TAMPA, FL 33602
P.E. #79453

Da	REVISION	By

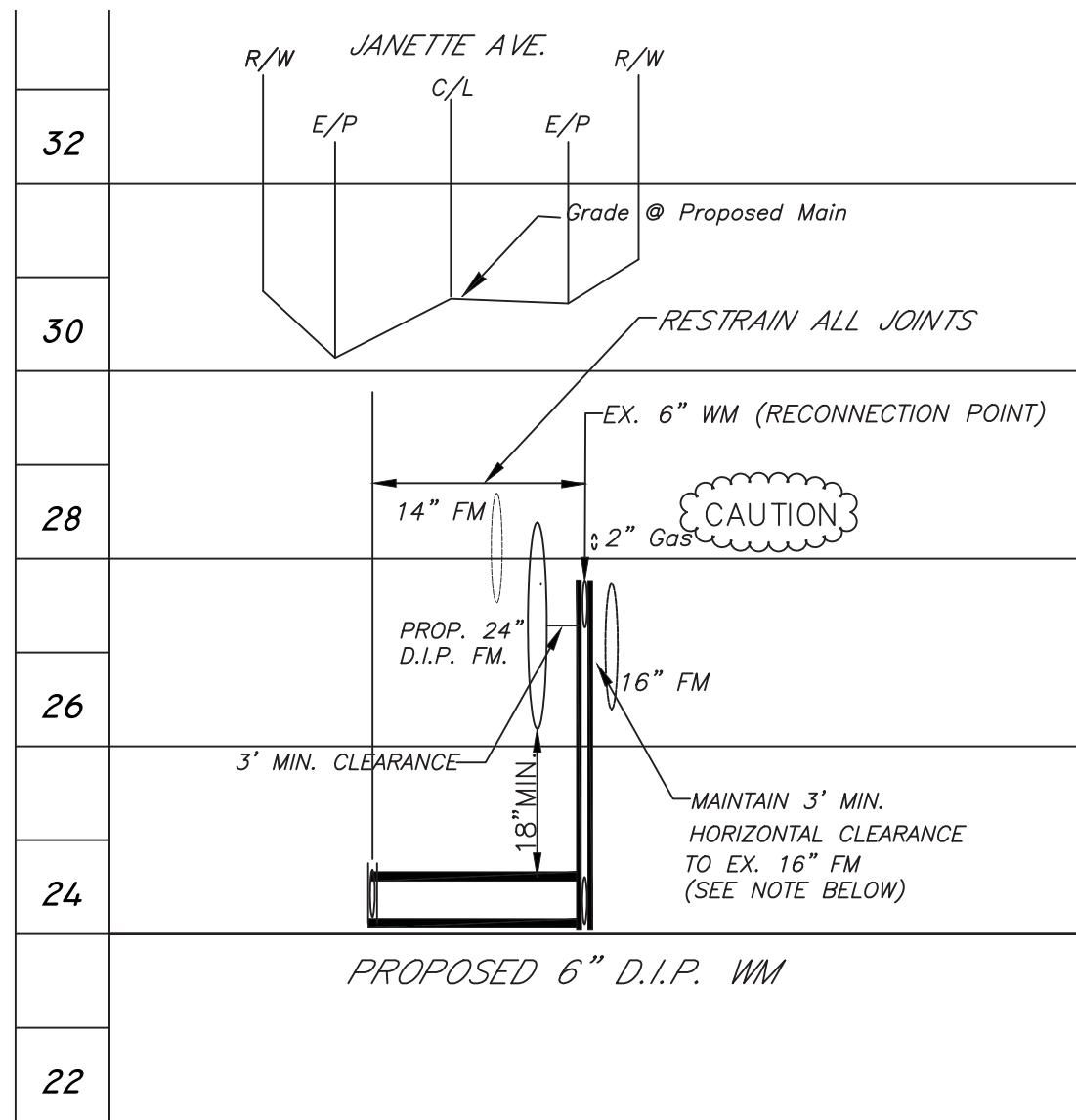
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Dwn: PF
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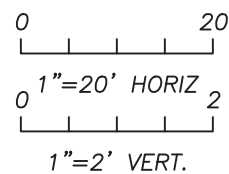
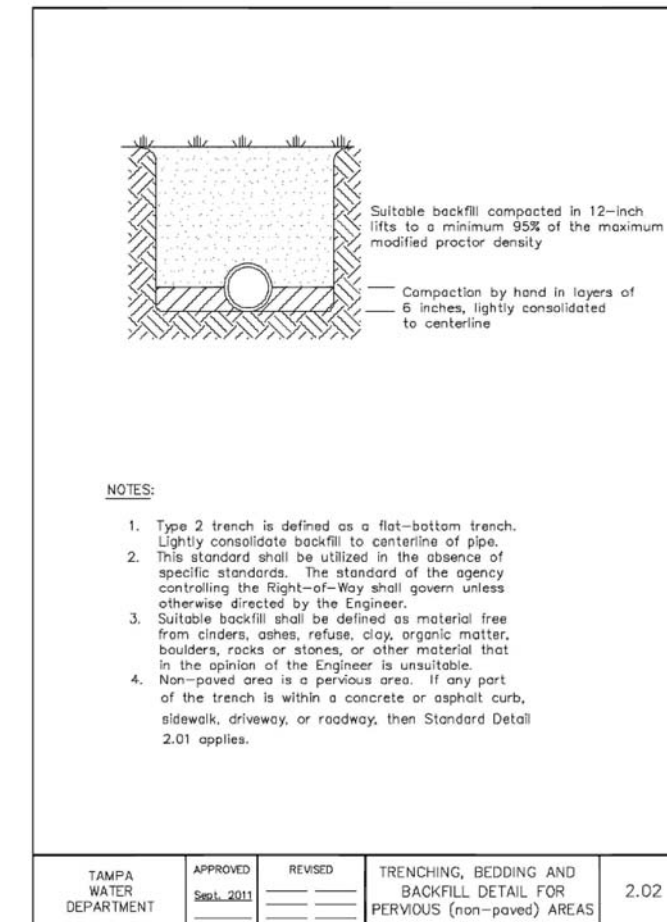
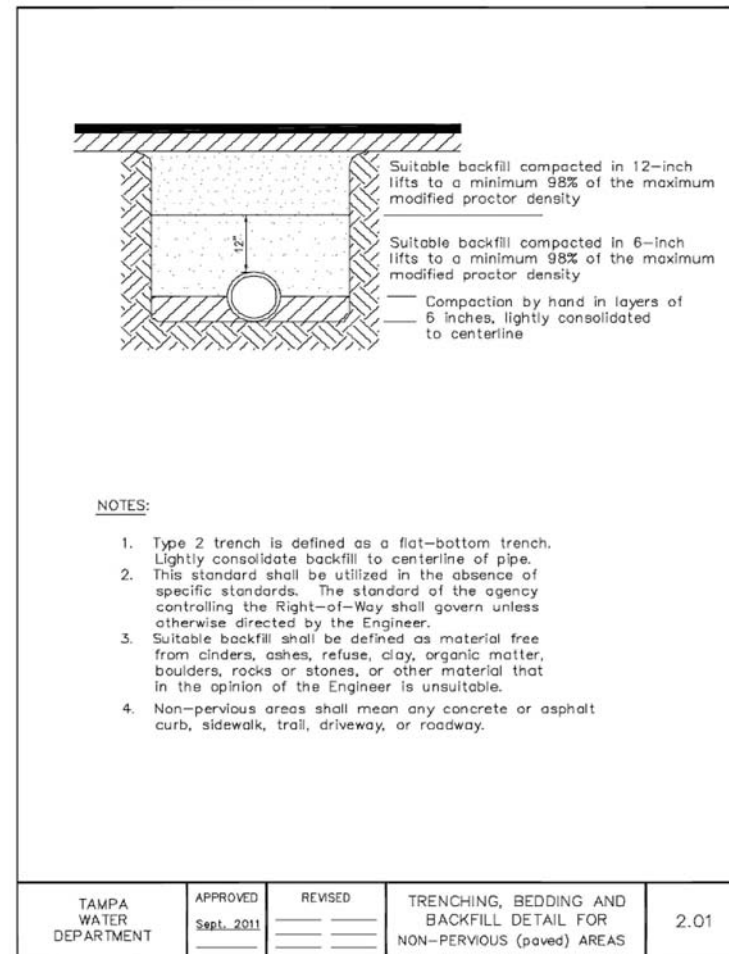
JANETTE AVENUE
WATER MAIN REPLACEMENT

Atlas Page
G12-2

W.O. 8477
SHEET
W-4



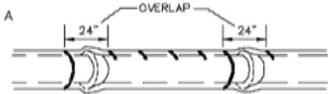
CROSS-SECTION
LOOKING EAST ON JANETTE AVE.
STA. 11+02



NOTE:
AFTER FIELD VERIFICATION, IF EXISTING CLEARANCE IS NOT ADEQUATE BETWEEN THE EXISTING 6" WM AND 16" FM, CONTRACTOR SHALL MOVE RECONNECTION POINT EASTWARD SUCH THAT 3' MIN. HORIZONTAL CLEARANCE IS PROVIDED TO BOTH PROPOSED 24" FM AND THE EXISTING 16" FM.

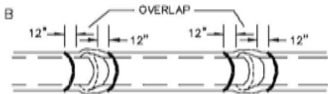
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						Dwn: PF		G12-2	SHEET
		Approved Date				Ckd: RAJ		W-5	

METHOD A



Polyethylene tube is cut into lengths approximately two feet longer than the pipe section and placed around it. After the pipe joint is assembled, the polyethylene tube is made to overlap the joint and the overlap secured in place. Since the tube is considerably larger than the barrel of pipe, it is made to fit snugly by folding over at the top and securing with tape every 24" along the pipe section.

METHOD B



Polyethylene tube is cut one foot shorter than the length of the pipe section. After placement of the pipe, it is folded and secured snugly overall. A three foot length of polyethylene tube placed over the end of the preceding section is then pulled in place over the joint after assembly and secured.

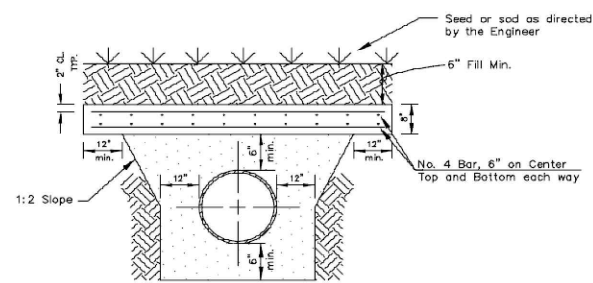
METHOD C



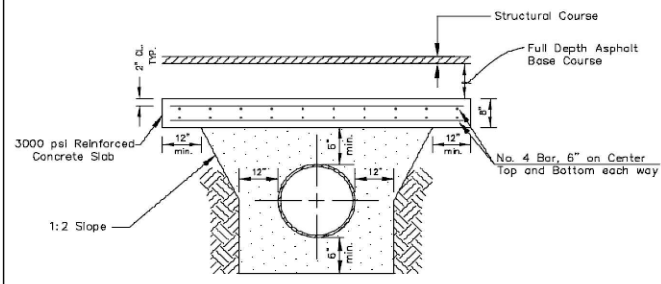
Polyethylene sheet is cut to a length two feet longer than the pipe section. The sheet is wrapped around the pipe so that it overlaps circumferentially over the top quadrant of the pipe, then secured. After joint assembly, the surplus length of polyethylene film is secured around the joint, providing an overlap of each joint. Tape at each joint and at 3' intervals in between.

- NOTES: 1. Use blue polyethylene film and tape only.
2. Polyethylene film shall be a minimum of 8 mil. thickness.
3. Spiral Wrap not required with polywrap.

TAMPA WATER DEPARTMENT	APPROVED Sept. 2011	REVISED JRD 4/09 JRD 9/2011	POLYETHYLENE ENCASEMENT INSTALLATION DETAIL	2.05
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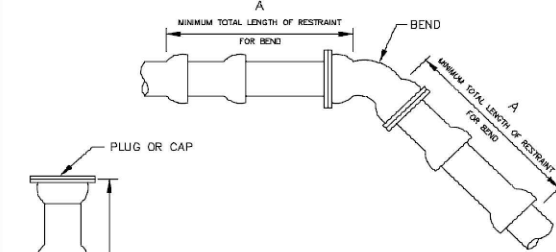
GRASSED SECTION



ROADWAY SECTION

- NOTES:
1. Structural course and base course requirement shall be established by the agency having jurisdiction.
2. Shock pads for mains too shallow for the above configuration shall be designed on a case-by-case basis.

TAMPA WATER DEPARTMENT	APPROVED Sept. 2011	REVISED	REINFORCED CONCRETE SHOCK PAD (FOR COVER LESS THAN 2.5')	2.06
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Fitting/OD	RESTRAIN "A" (LF)								
	4"	6"	8"	12"	16"	20"	24"	30"	36"
11-1/4"	3	4	6	8	9	10	12	15	17
22-1/2"	6	9	12	16	17	21	25	30	35
45'/Offset	13	18	24	34	36	44	52	62	73
90"	31	44	58	82	87	106	125	151	176
Plug/Cap	55	78	102	143	143	174	204	245	285

- A=Minimum footage of pipe to be restrained.
- NOTES: 1. This table is based on:
a) maximum test pressure of 190 psi
b) laying condition type 2 (see Details 2.01 and 2.02)
c) poor soil conditions
d) using D.I.P.
e) 3 feet of cover for 12" and smaller mains;
4 feet of cover for 16" and larger mains
f) Horizontal bends only - Engineer to submit calculations for vertical restraints.
2. For polywrapped D.I.P., increase the footage to restrain by 25%.
3. For PVC pipe, increase the footage to restrain by 20%.
4. "Restrained" pipe shall be Manufactured Restrained Joint pipe, push-on joint pipe restrained w/gasket-type "Grip Restrainers", or mechanical joint pipe restrained by Megalug (or approved equivalent).
5. Any additional fittings within the restrained section shall be restrained accordingly.

TAMPA WATER DEPARTMENT	APPROVED Sept. 2011	REVISED	RESTRAINED JOINT STANDARD FOR BENDS, PLUGS, AND CAPS	2.11
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JANETTE AVENUE
WATER MAIN REPLACEMENT

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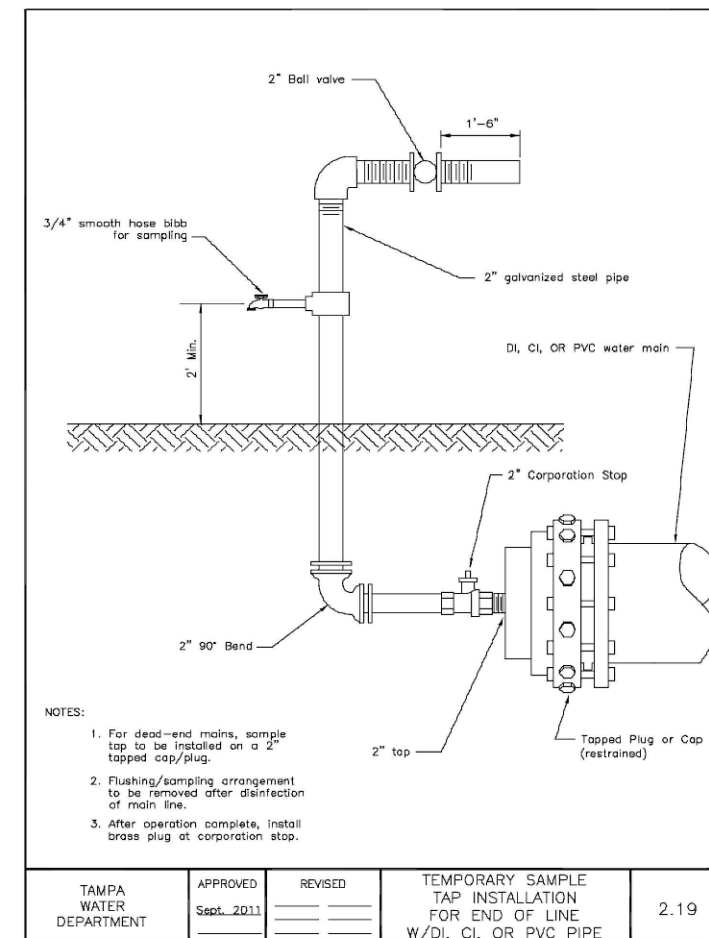
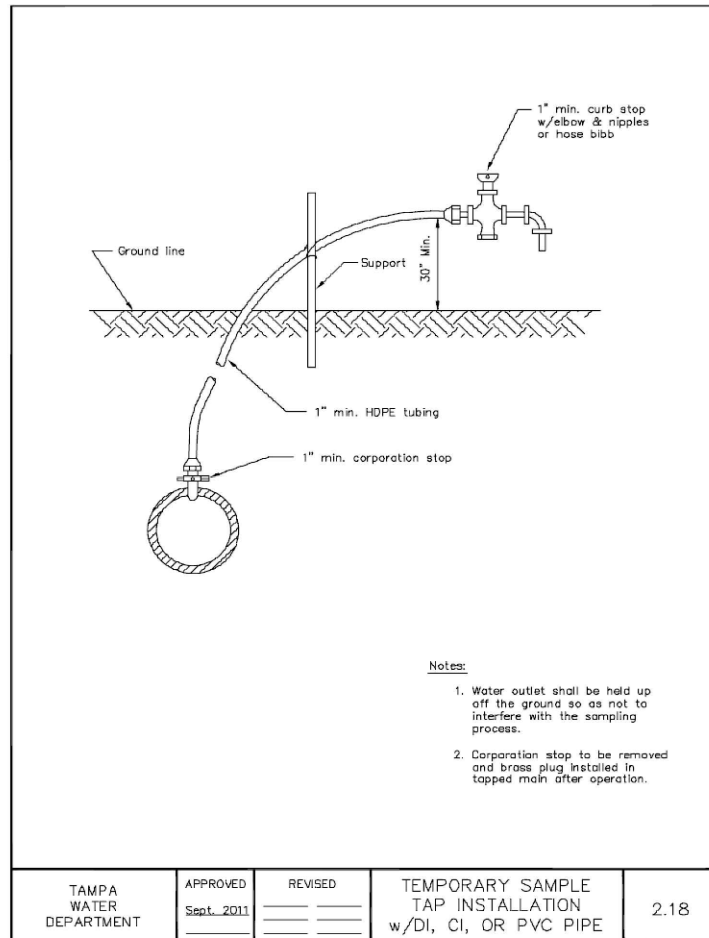
Fitting Size	Restrain (LF)			Unrestrained Straight Run (LF)
	Tee "A"	Reducer "B"	Reducer "C"	
4x4	25	*	*	
6x4	11	40	59	
6x6	48	*	*	
8x4	A.T.	73	142	
8x6	38	43	56	
8x8	72	*	*	
12x4	A.T.	124	364	
12x6	19	104	208	
12x8	57	76	115	
12x12	114	*	*	
16x6	A.T.	121	321	
16x8	27	104	212	
16x12	77	61	82	
16x16	118	*	*	
20x6	A.T.	156	527	
20x8	14	144	369	
20x12	88	109	186	
20x16	111	61	77	
20x20	149	*	*	
24x6	A.T.	189	777	
24x8	A.T.	179	560	
24x12	59	150	313	
24x16	104	111	172	
24x20	144	61	74	
24x24	179	*	*	
30x6	A.T.	234	1227	
30x8	A.T.	226	904	
30x12	45	204	542	
30x16	94	173	341	
30x20	135	134	208	
30x24	172	86	110	
30x30	220	*	*	
36x6	A.T.	276	1784	
36x8	A.T.	269	1328	
36x12	30	251	824	
36x16	83	226	551	
36x20	127	195	375	
36x24	165	156	245	
36x30	210	86	106	
36x36	261	*	*	

A.T.—Restrain required at Tee only.
*—not applicable

NOTES: 1. This table is based on:
a) maximum test pressure of 190 psi
b) laying condition type 2 (see Details 2.01 and 2.02)
c) poor soil conditions
d) using D.I.P.
e) 3 feet of cover for 12" and smaller mains;
4 feet of cover for 18" and larger mains
f) Horizontal bends only — Engineer to submit calculations for vertical restraints

2. Restraint For Reducers: If "C" straight run of pipe downstream of reducer not available, then restrain "B" upstream of reducer.
3. For polywrapped D.I.P., increase the footage to restrain by 25%.
4. For PVC pipe, increase the footage to restrain by 20%.
5. "Restrained" pipe shall be Manufactured Restrained Joint pipe, push-on joint pipe restrained w/gasket-type Gripper Restraints, or mechanical joint pipe restrained by Megalug (or approved equivalent).
6. Any additional fittings within the restrained section shall be restrained accordingly.

TAMPA WATER DEPARTMENT	APPROVED Sept. 2011	REVISED	RESTRAINED JOINT STANDARD FOR TEES AND REDUCERS	2.12
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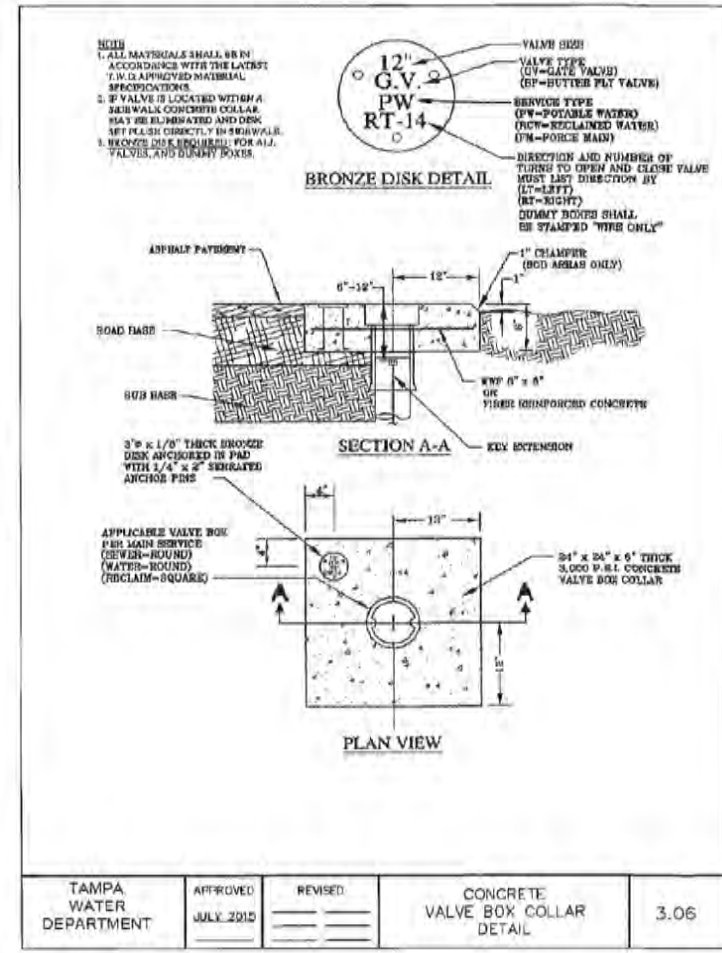
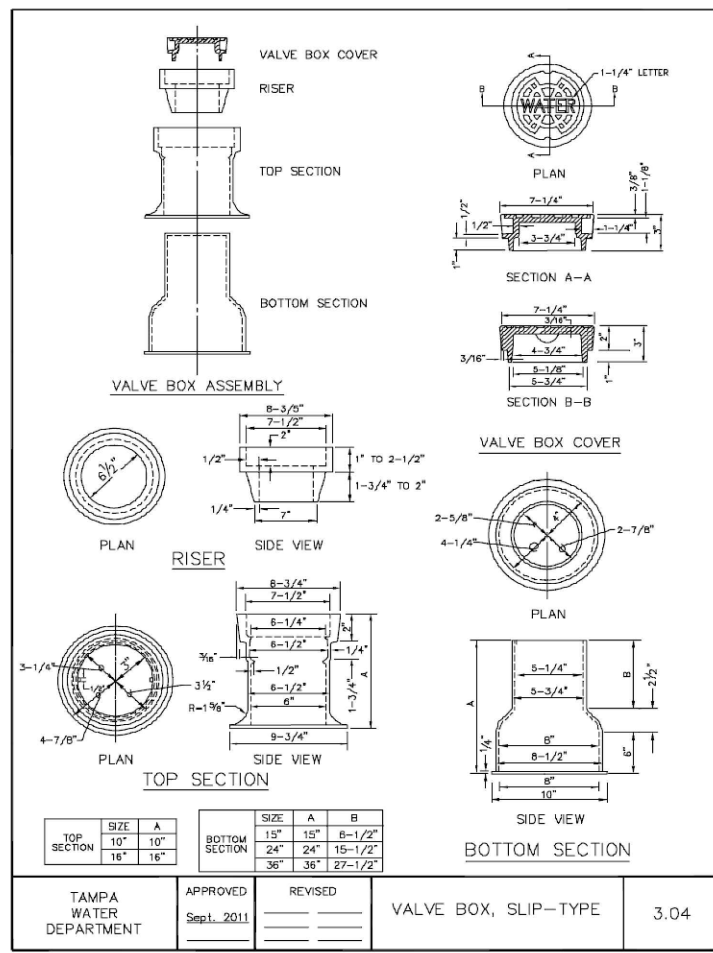
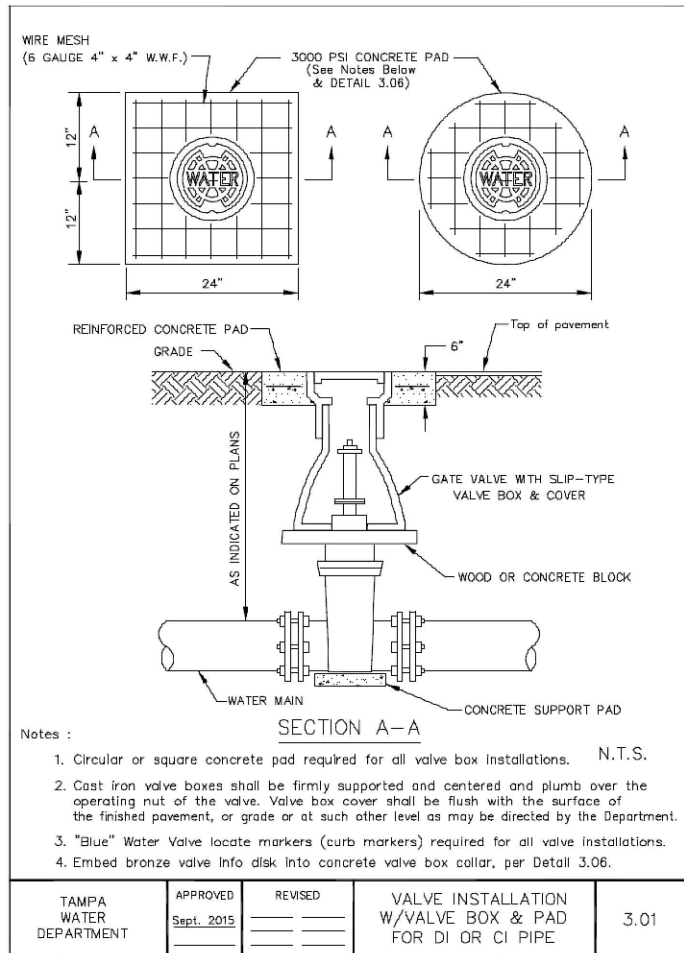


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WATER MAIN REPLACEMENT

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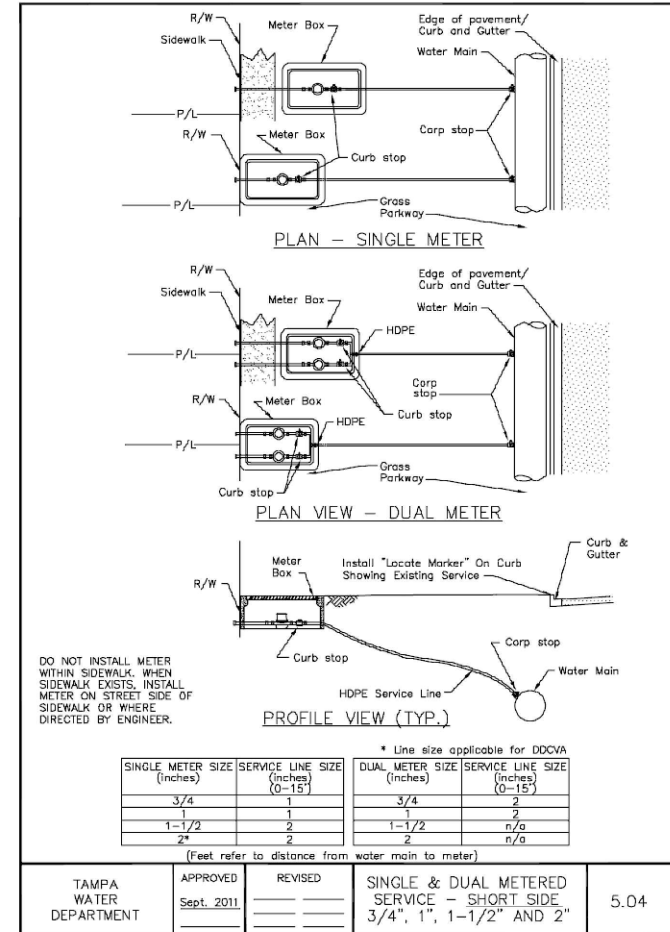
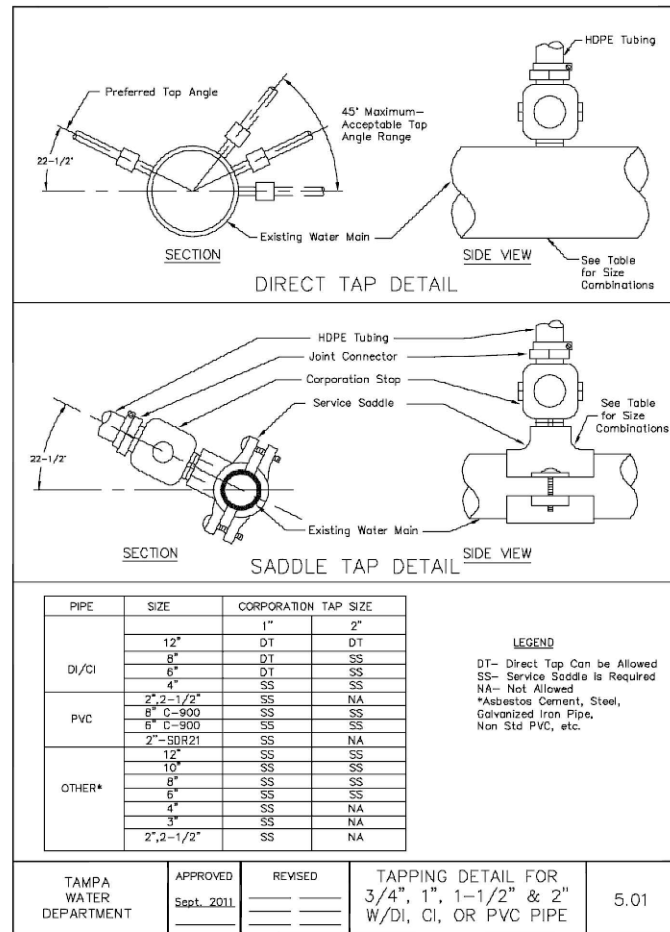


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TAMPA WATER DEPARTMENT	APPROVED Sept. 2011	REVISED	TAPPING DETAIL FOR 3/4", 1", 1-1/2" & 2" W/DI, CI, OR PVC PIPE	5.01
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TAMPA WATER DEPARTMENT	APPROVED Sept. 2011	REVISED	SINGLE & DUAL METERED SERVICE - SHORT SIDE 3/4", 1", 1-1/2" AND 2"	5.04
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 WATER MAIN REPLACEMENT**

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