The Enclosed Document Is Provided For Your Convenience.

Please Email ALL Questions:

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

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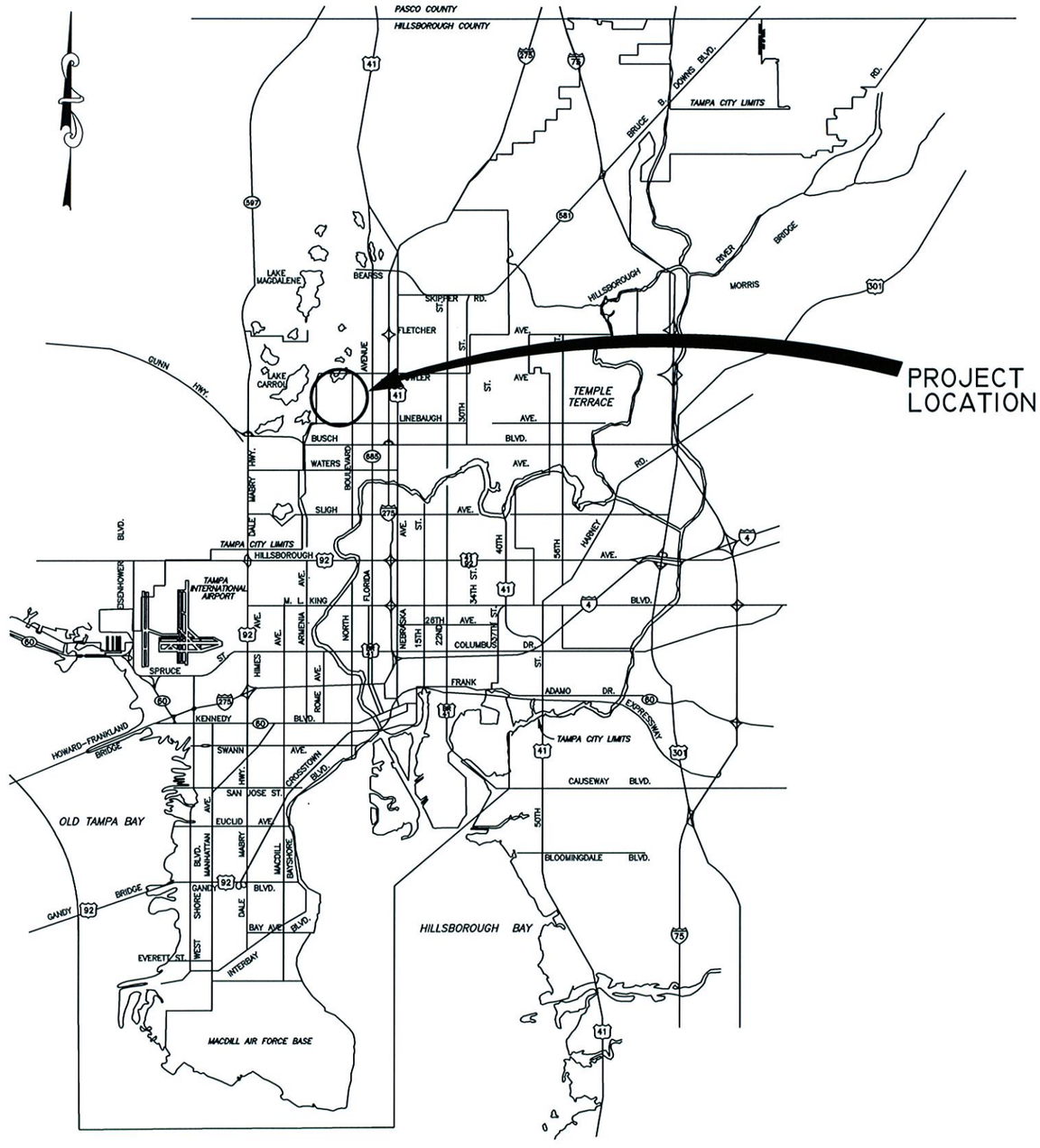


CITY of TAMPA

CITY OF TAMPA FLORIDA • ORGANIZED JULY 15 1887 • MASCOTTE

DEPARTMENT OF PUBLIC WORKS
STORMWATER ENGINEERING DIVISION

PLANS FOR

LAKE ECKLES PUMP STATION & FORCE MAIN REPLACEMENT

CONTRACT No. 14-C-00006

RICHARD ALFRED HOEL, P.E. #41026
CHIEF ENGINEER

DES: MTM
DRN: MP
CKD:
DATE:

No.	DATE	REVISIONS
3		
2		
1		

CITY of TAMPA
Department of Public Works
Stormwater Engineering

COVER SHEET

W.O. 510H
SHEET 1 OF 53

SW

LEGEND

	UP to 18" & SMALLER	24" & LARGER
EX STORMWATER		
FORCE MAIN		
PIPES & MANHOLES		
CATCH BASIN, GRATE		
DITCHES, SWALES		
PROP STORMWATER		
FORCE MAIN		
PIPES & MANHOLES		
OTHER UTILITIES		
SAN SEWER & MANHOLES		
WATER LINE		
GAS LINE		
ELECTRICAL CABLE or DUCT		
TELEPHONE CABLE or DUCT		
TV CABLE		
VALVE		
HYDRANT		
CLEAN OUT		
EXISTING WYE		
POWER POLE		
TELEPHONE POLE		
GUY POLE		
GUY WIRE		
VALVE VAULT	V	
WATER METER	M	
ELECTRICAL MANHOLE or VAULT	E	
TELEPHONE MANHOLE or VAULT	T	
TRAFFIC BOX or VAULT	TR	

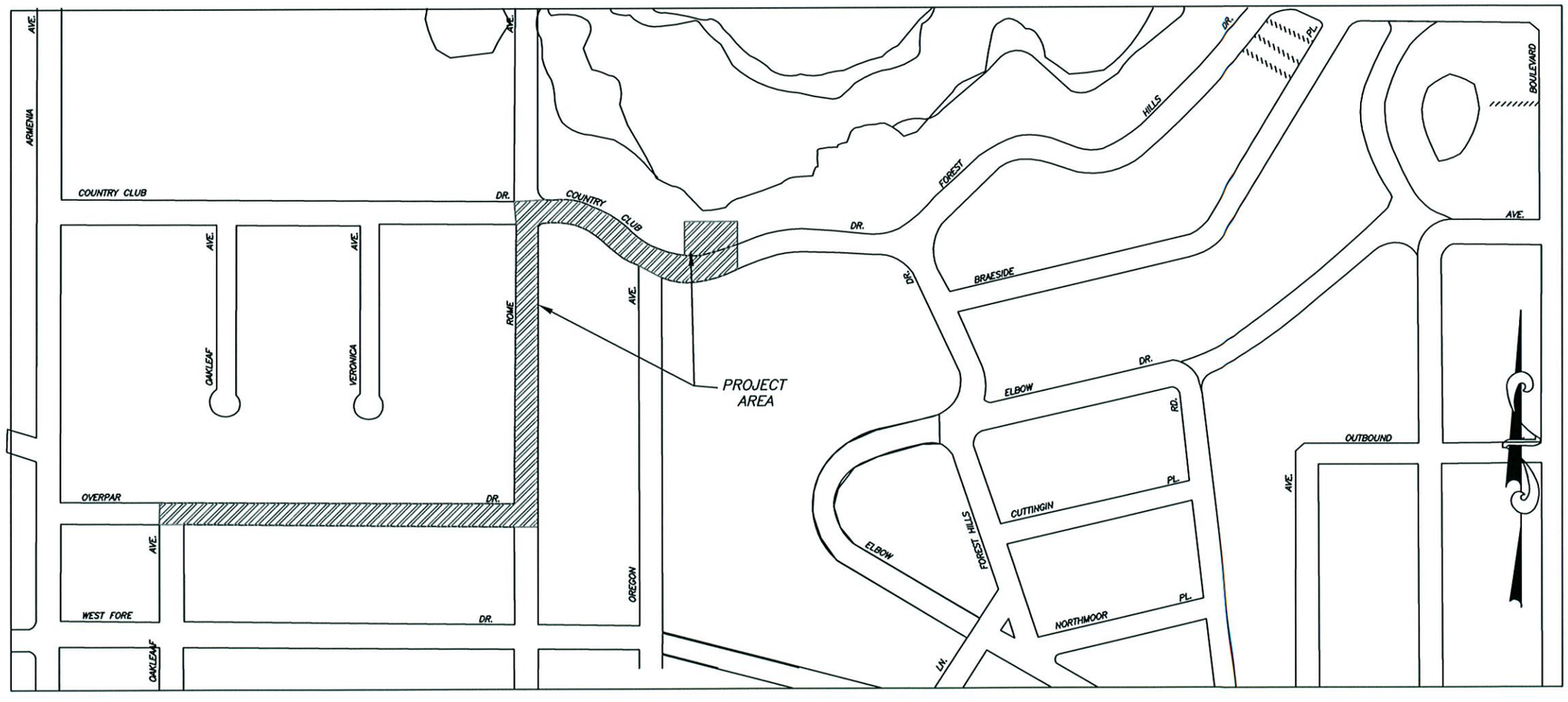
OTHER FEATURES

RIGHT of WAY LINE	R/W
EDGE of PAVEMENT	
BUILDING LIMIT	1236
PROPERTY OWNERSHIP	Z
FENCE	
CONIFER	6"
PALM	8"
OAK	10"
OTHER	12"
SHRUB	
HEDGE	
RAILROAD TRACKS	
IRON PIPE	
CONCRETE MONUMENT	

ABBREVIATIONS

TOP of PIPE	TP
INVERT ELEVATION	IE or INV EL
RIGHT of WAY	R/W
MANHOLE	MH
POLYVINYL CHLORIDE PIPE	PVCP
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



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3			6		
2			5		
1			4		

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LEGEND, INDEX, & PROJECT LOCATION MAP

W.O. 510H
SHEET 2 OF 53

LAKE ECKLES 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. EARLY IN THE CONTRACT TIME, THE CONTRACTOR WILL EXPOSE THE INTAKE STRUCTURE IN LAKE ECKLES AND SLUICE GATE VALVE IN WETWELL FOR VISUAL INSPECTION AND EVALUATION. INSPECTION TO INCLUDE VIDEO TO DOCUMENT CONDITION.

5. CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL NECESSARY RIGHT-OF-WAY PERMITS FOR WORK WITHIN THE RIGHT OF WAYS.

6. INSTALL TWO FLYGT NP3153 PUMPS WITH NO. 227 IMPELLER, 20 HP, 1755 RPM, 3 PHASE, 460 VOLTS, RATED AT 1234 GPM @ 38.7 FEET TDH ON BOTH PUMPS, INSTALL A FLYGT MIX- FLUSH. SYSTEM, MODEL 4901 WITH 90° DISCHARGE ELBOW.

7. TWO STAINLESS STEEL TYPE 316 WELDED LINK CHAINS HAVING ONE INCH LINKS AND A WORKLOAD CAPACITY OF TWICE THE PUMP WEIGHT SHALL BE FASTENED TO PUMPS. CONTRACTOR TO SUBMIT CERTIFICATION OF WORKLOAD CAPACITIES FOR APPROVAL. THE BITTER ENDS OF CHAINS SHALL BE FASTENED TO CONCRETE TOP SLAB WITH STAINLESS ANCHORS. LENGTH OF CHAINS SHALL BE FROM THE PUMPS TO THE SLAB PLUS SIX FEET.

8. INSTALL A STAINLESS STEEL "J" HOOK ALONG THE SIDE OF EACH GUIDE BRACKET TO SUPPORT PROPOSED LIFTING CHAINS. INSTALL A STAINLESS STEEL BRACKET WITH FOUR STAINLESS STEEL "J" HOOKS ON OPPOSITE SIDE OF PUMP GUIDE BRACKETS TO SUPPORT VARIOUS CABLES. ALL "J" HOOKS SHALL BE MADE OF 3/8" DIAMETER ROD (MINIMUM). CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR APPROVAL.

9. CONTRACTOR SHALL CAST 6" DUCTILE IRON PIPE VERTICALLY THROUGH TOP SLAB FOR VENTILATION. CONTRACTOR SHALL TURN DOWN WITH TWO 90° BENDS AND INSTALL A NON-METALLIC BIRD SCREEN AT TOP OPENING. VENT PIPE SHALL EXTEND 4" (MINIMUM) INTO WET WELL.

10. 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.

11. 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.

12. CONTRACTOR SHALL PROVIDE A REDUCED-PRESSURE BACKFLOW- PREVENTION DEVICE IN WATER SERVICE LINE, AS SHOWN IN DETAIL S-12, AT A PLACE TO BE SPECIFIED DURING CONSTRUCTION. BACKFLOW PREVENTION DEVICE SHALL BE 1" WILKINS, MODEL # 975 XL, OR EQUAL.

13. 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.

14. PUMP STATION PIPING SHALL BE CLASS 53 DIP.

15. 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.

16. CHECK VALVES SHALL BE APCO, RUBBER FLAPPER SWING CHECK VALVES, SERIES 100.

17. ECCENTRIC PLUG VALVES SHALL BE DEZURIK, PEF 100% PORT ECCENTRIC VALVES.

18. BOLTS, WASHERS, NUTS, SCREWS, HOOKS, BRACKETS, HINGES, ETC. INSTALLED WITHIN STRUCTURES SHALL BE TYPE 316 STAINLESS STEEL UNLESS OTHERWISE SPECIFIED. PUMP GUIDE RAILS SHALL BE TYPE 304 STAINLESS STEEL.

19. SPOOL PIECE USED TO PENETRATE WET WELL OR VALVE VAULT WALL SHALL BE PROVIDED AT ONE END WITH SCREW-ON FLANGE OR "SERIES 2100 MEGA-FLANGE RESTRAINED FLANGE ADAPTER" WITH ALL STAINLESS STEEL HARDWARE.

20. FILL ALL OPENINGS AROUND PIPES (OR SLEEVES) AND ALL VOIDS IN STRUCTURAL WALLS WITH NON-SHRINK GROUT EXCEPT WHERE OTHERWISE SPECIFIED.

21. CONTRACTOR SHALL COORDINATE WITH TECO REGARDING THE REMOVAL OF EXISTING POWER SERVICE, PLACEMENT OF TEMPORARY SERVICE (IF NEEDED) AND PROPOSED ELECTRCAL SERVICE EQUIPMENT (SEE SPECIFICATIONS).

22. NEW ELECTRICAL METER SOCKET SHALL BE PROVIDED AND INSTALLED ON THE PROPOSED ELECTRICAL CABINET. CONTRACTOR SHALL COORDINATE REQUIREMENTS WITH TECO.

23. 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.

24. 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.

SURVEY NOTES

1. FIELD WORK PERFORMED BY SUNCOAST LAND SURVEYING, INC. SURVEY CREW: DAN MCINTURFF DATE OF SURVEY: 8-30-12

2. ELEVATIONS SHOWN HEREON ARE IN FEET AND REFER TO THE NORTH AMERICAN VERTICAL DATUM OF 1988. (N.A.V.D.)

3. REFERENCE BENCHMARK IS CITY OF TAMPA BM. HV-02 0152 ELEVATION = 40.73' AND CITY OF TAMPA BM. HV-02 0153 ELEVATION = 39.01'

4. STATE PLANE VALUES ARE TIED TO THE FLORIDA STATE PLANE COORDINATE SYSTEM (GRID), WEST ZONE NORTH AMERICAN DATUM 1983-1991,ADJUSTMENT 1990, AND WERE DERIVED FROM COORDINATES PUBLISHED BY N.G.S. FOR STATIONS "RAILS" PID-DG 8957 AND "KINGSBURY" PID-DG 8950.

DEMOLITION NOTES

1. PRIOR TO BEGINNING CONSTRUCTION ACTIVITIES, THE CONTRACTOR SHALL VIDEO TAPE THE ENTIRE PUMPING STATION SITE AND FORCE MAIN ROUTE TO RECORD THE EXISTING CONDITIONS OF ALL PERTINENT ITEMS WITHIN THE AREA. THE CONTRACTOR SHALL DELIVER A COPY OF THE PRE-CONSTRUCTION VIDEO TO THE CONSTRUCTION INSPECTION OFFICE PRIOR TO BEGINNING ON-SITE ACTIVITIES. VIDEO SHALL BE NARRATED, DATED AND INCLUDE A WRITTEN LOG AS SPECIFIED.

2. NON-SALVAGABLE MATERIALS ARE TO BE REMOVED FROM THE SITE AND PROPERLY DISPOSED OF AT THE CONTRACTOR'S EXPENSE.

3. CONTRACTOR SHALL REMOVE ALL LANDSCAPING ON PUMP STATION SITE AS NECESSARY TO PERFORM REQUIRED EXCAVATIONS. CONTRACTOR SHALL REPLACE ALL REMOVED LANDSCAPING ITEMS WITH LIKE KIND IN EQUAL OR BETTER CONDITION EXCEPT AS OTHERWISE SPECIFIED.

4. THE CONSTRUCTION SITE SHALL BE MAINTAINED IN AS NEAT AND ORDERLY CONDITION AS POSSIBLE DURING CONSTRUCTION OPERATIONS. SITE SHALL BE SECURED WITH TEMPORARY FENCING AND STRUCTURES DURING HOURS WHEN CONTRACTOR IS NOT PRESENT TO ENSURE SAFETY OF CITY EMPLOYEES AND THE PUBLIC.

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.

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

DES: MTM
DRN: MP
CKD:
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Stormwater Engineering

LAKE ECKLES FORCE MAIN
GENERAL NOTES

W.O. 510H
SHEET 3 OF 53

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 ANCHOR BOLTS SHALL BE SET BY MEANS OF TEMPLATE. "FLOATING" ANCHOR BOLTS INTO PLACE IS PROHIBITED.

3.7 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 IN GENERAL CONCRETE SHALL BE TYPE II 3400 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 ROUGHEN THE "BASE" CONCRETE POUR SURFACE TO A FULL AMPLITUDE OF 1/4" MINIMUM, WHERE NOTED ON THE CONSTRUCTION DRAWINGS.

5.12 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

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

DES: MTM
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CKD:
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LAKE ECKLES FORCE MAIN
GENERAL NOTES

W.O. 510H
SHEET 4 OF 53

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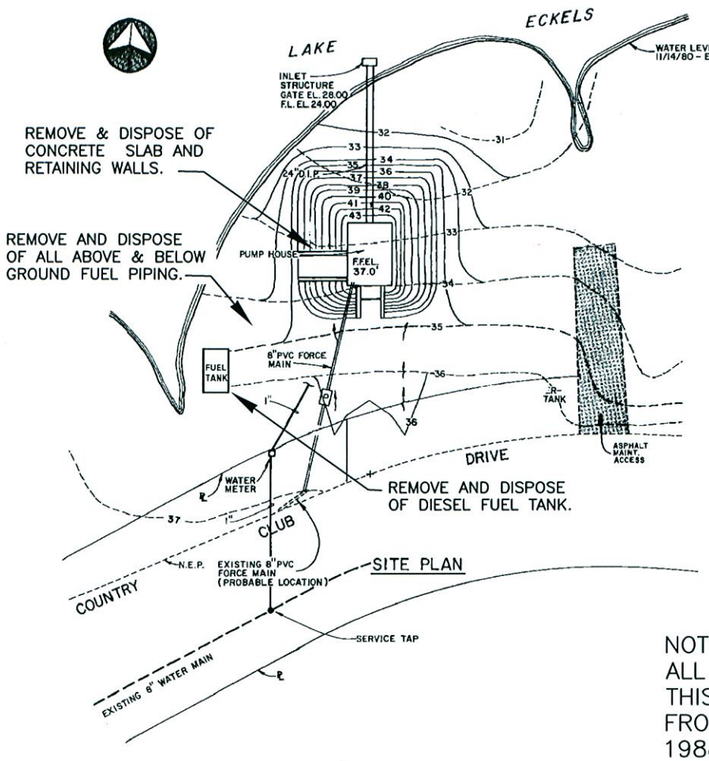
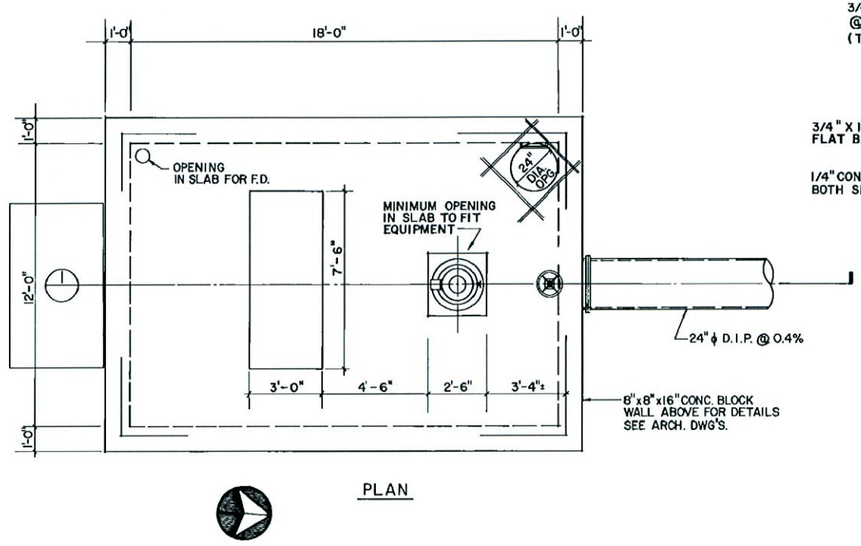
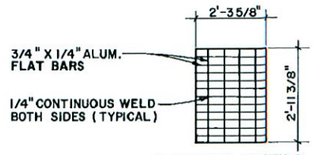




PLAN

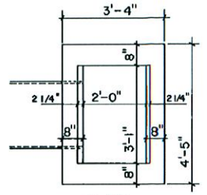
3/4" X 1/4" ALUMINUM FLAT BARS BOTH WAYS @ 1 1/2" O.C. WELDED WITH 1/4" WELD BOTH SIDES (TYPICAL)



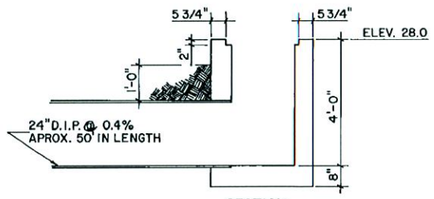
ALUMINUM GRATING

DETAIL-A

NO SCALE



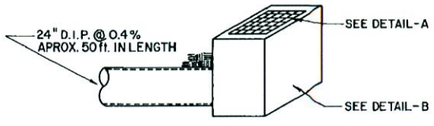
PLAN



SECTION

DETAIL - B

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



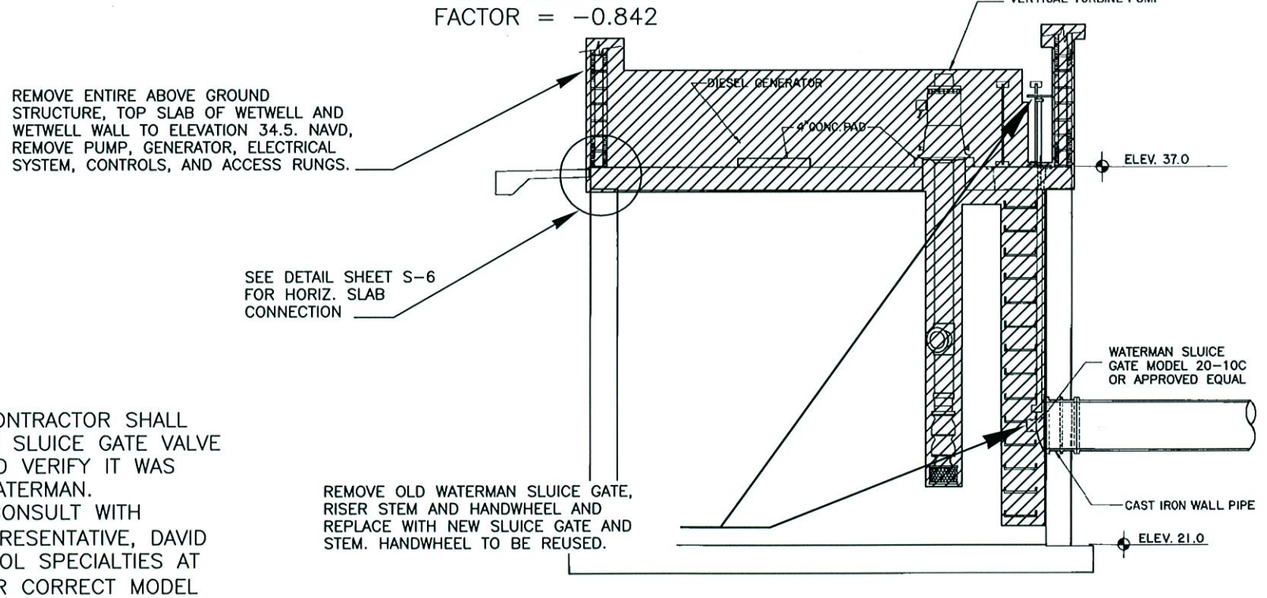
INLET STRUCTURE TYPE C

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

NOTE:

1. INLET STRUCTURE DETAILS ARE PROVIDED FOR REFERENCE.
2. INLET STRUCTURE MUST BE EXPOSED AND ITS CONDITION ASSESSED.
3. REMOVAL AND REPLACEMENT TO BE DETERMINED.

NOTE:
ALL ELEVATIONS ON THIS SHEET ARE FROM 1929 DATUM 1988 CONVERSION FACTOR = −0.842



EARLY IN PROJECT CONTRACTOR SHALL EXPOSE THE EXISTING SLUICE GATE VALVE IN THE WET WELL AND VERIFY IT WAS MANUFACTURED BY WATERMAN. CONTRACTOR SHALL CONSULT WITH MANUFACTURER'S REPRESENTATIVE, DAVID KELLER, FLUID CONTROL SPECIALTIES AT (585) 789-0122, FOR CORRECT MODEL NUMBER AND AVAILABILITY.

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3			6		
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LAKE ECKLES PUMP STATION
DEMOLITION PLAN

W.O. 510H
SHEET C-1 OF 53

SW

B-11
SEC.14 T28S R18E

0 10
1"=10'

4' ch link

4:1 SLOPE MEET EX. GRADE

VALVE VAULT TOP EL.= 37.0

WET WELL

TOP SLAB OF PUMP STATION EL.=37.0

4:1 SLOPE MEET EX. GRADE

CONTROL PANEL

R.O.W.

PROP. HOSE BIB

METER VAULT TOP EL.= 36.8

TBM AT N RIM OF SAN MH EL=36.15'

E.O.P.

TECO POWER POLE

T

36.7 36.7 36.7 36.7 36.4 36.4 35.98 35.24 35.41 35.96 36.84 36.37 36.30 36.13 36.25 36.64 36.33

No.	DATE	REVISIONS	No.	DATE	REVISIONS
3			6		
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DES: MTM
DRN: MP
CKD:
DATE:

CITY of TAMPA
Department of Public Works
Stormwater Engineering

LAKE ECKLES PUMP STATION
SITE GRADING PLAN

W.O. 510H
SHEET C-2 OF 53

User: ss17 Drawing Name: K:\Stormwater Drafting\Active Projects\510H (Lake Eckles)\Lake Eekles Force Main.dwg
Layout- Oct 02, 2013 - 9:48am CTB - Monochrome.ctb

SW

10" D.I. 45° BEND
@STA 10+65.6, 21.5' LT.
I.E.=38.8

10" D.I. 45° BEND
@STA 10+62.6, 21.5' LT.
I.E.=38.5

10" D.I. 45° BEND
@STA 10+60.5, 19.3' LT.
I.E.=38.2

10" D.I. 22.5° BEND
ROLLED UP
@STA 10+67.7, 19.3' LT.
I.E.=39.0

10" D.I. 22.5° BEND
ROLLED DOWN
@STA 10+71.2, 15.8' LT.
I.E.=41.1

10" D.I. 45° BEND
@STA 10+82.4, 8.6' LT.
I.E.=41.1

3'±
3'±
3'±
5'±
5'±
11'±
RESTRAIN D.I.P.

10" D.I.P.
I.E.=38.0

10" C900
PVC

Note:
Wastewater services are shown in approximate locations and depths have not been determined.

B-11
SEC.14 T28S R18E

0 30
1"=30'

LOT 2 #1733
LOT 3 #1731
LOT 4 #1729
LOT 5
LOT 6 #1719
#1725

W. OVERPAR DR.

R/W
D/W
60'
16"
15"
11"
PROP. 10" C900 PVC FORCE MAIN
18" RCP
TBM N RIM OF SAN MH EL=44.93'
17"18"18"20"
TO BE ROOT PRUNED
30.2' LT.
8" PVC FM
Verizon Buried F.O.C./Cable(AL)
10+00
11+00
12+00
13+00
8" VCP
7'±
STA. 14+00
MATCHLINE
2" WM(AL)
15" loquat
SEE DETAILS THIS SHEET
30" RCP
15" RCP
ONE PIPE LENGTH OF 10" D.I.P. UNDER 15" R.C.P.
CUT & PLUG EXISTING F.M. HOLE IN INLET TO BE BULKHEADED, REMAINDER OF FM TO BE ABANDONED
+19.7
15.1' LT.
PROP. 10" C900 PVC FORCE MAIN
14"
M/S

OAKLEAF AVE.

#11307
#11305
#1720
#1718
#1716
LOT 18
LOT 19
LOT 20
LOT 21
LOT 22
LOT 23

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3			6		
2			5		
1			4		

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CITY of TAMPA
Department of Public Works
Stormwater Engineering

LAKE ECKLES
FORCE MAIN

W.O. 510H
SHEET C-3
OF 53

User: ss17 Drawing Name: K:\Stormwater Drafting\Active Projects\510H (Lake Eckles)\Lake Eekles Force Main.dwg
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SW

RESTRAIN ALL JOINTS
SEE SHEET C-17

San. MH

CONNECT TO EXISTING M.H.

45° BEND

45° BEND

Ex. Inlets

45° BEND

45° BEND

San. MH

SEE SHEET C-3
FOR F.M. DETAIL

CUT & PLUG
EXISTING F.M.
HOLE IN INLET TO
BE BULKHEADED

PROP. 88± LF
OF 10" C900
PVC FORCE MAIN

44.31

44.41

43.85

44.32

STA. 14+00

2" WM(AL)

8"PVC SWFM

Ex. 15" R.C.P.

18" RCP

PROP. 211± LF OF
10" C900 PVC
FORCE MAIN

Verizon Buried
F.O.C./Cable(AL)

PROP. 10" F.M.
I.E. = 33.0

8" VCP

8" VCP

MATCHLINE

+60.5

+82.4
IE=41.1

+67
IE=40.8

+69
IE=39.2

+87
IE=39.2

+89
IE=40.7

+00
IE=40.1

+00
IE=40.0

49 46 43 40 37 34 31 28

10 11 12 13 14

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3			6		
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CITY of TAMPA
Department of Public Works
Stormwater Engineering

LAKE ECKLES
FORCE MAIN

W.O. 510H
SHEET C-4
OF 53

User: ss17 Drawing Name: K:\Stormwater Drafting\Active Projects\510H (Lake Eckles)\Lake Eckles Force Main.dwg
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SW

Note:
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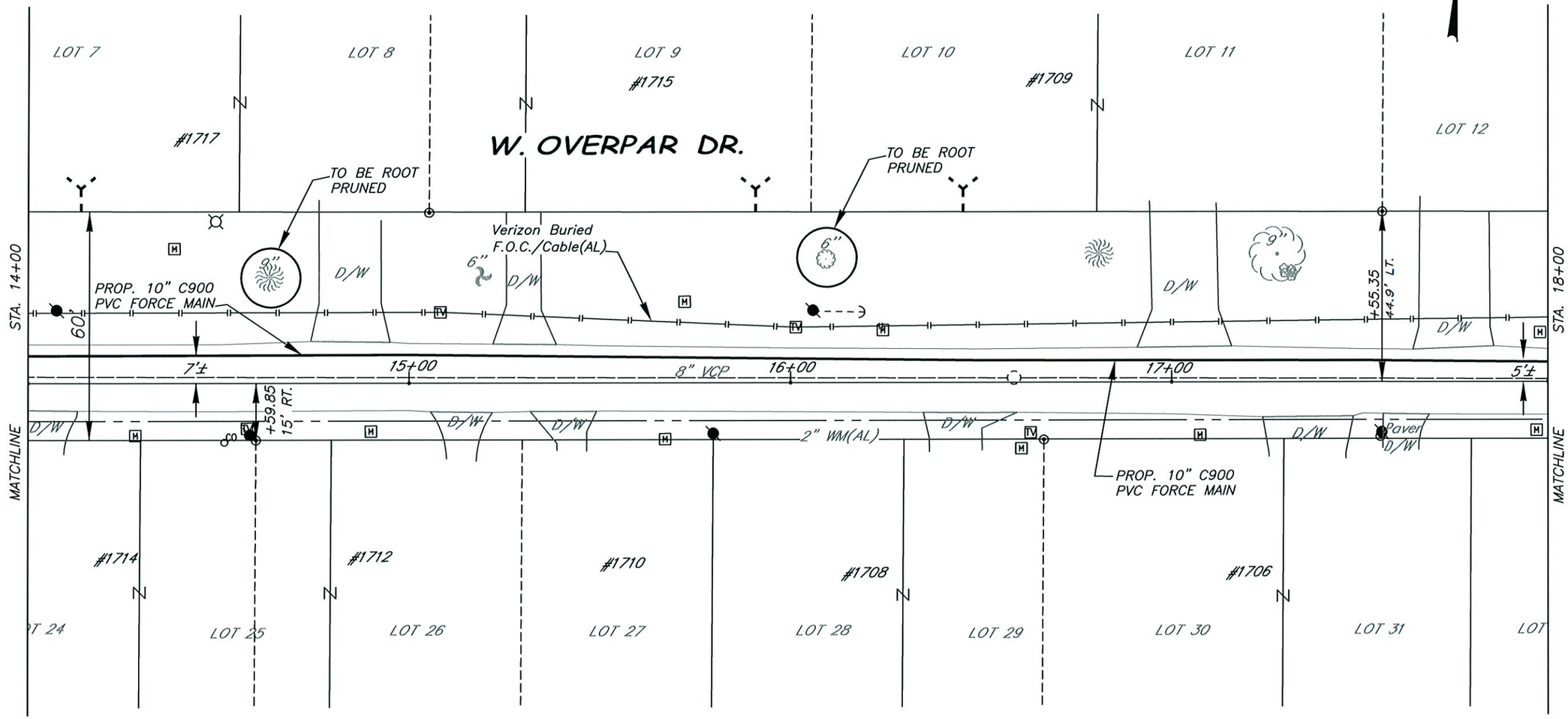
B–11
SEC.14 T28S R18E

0 30
1"=30'



No.	DATE	REVISIONS	No.	DATE	REVISIONS
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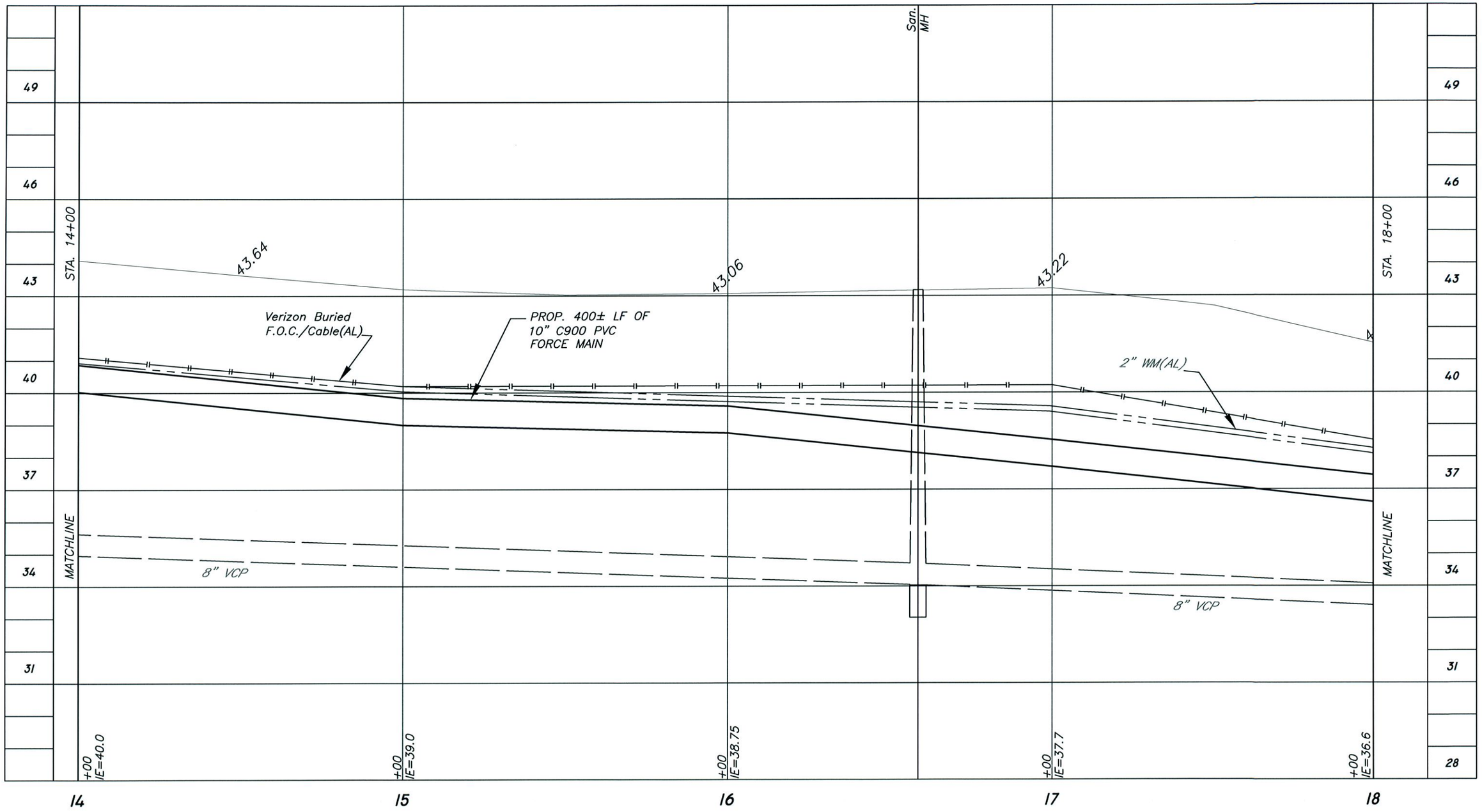
CITY of TAMPA
Department of Public Works
Stormwater Engineering

LAKE ECKLES FORCE MAIN

W.O. 510H
SHEET C-5 OF 53

SW



No.	DATE	REVISIONS	No.	DATE	REVISIONS
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CITY of TAMPA
Department of Public Works
Stormwater Engineering

LAKE ECKLES FORCE MAIN

W.O. 510H
SHEET C-6 OF 53

SW

Note:
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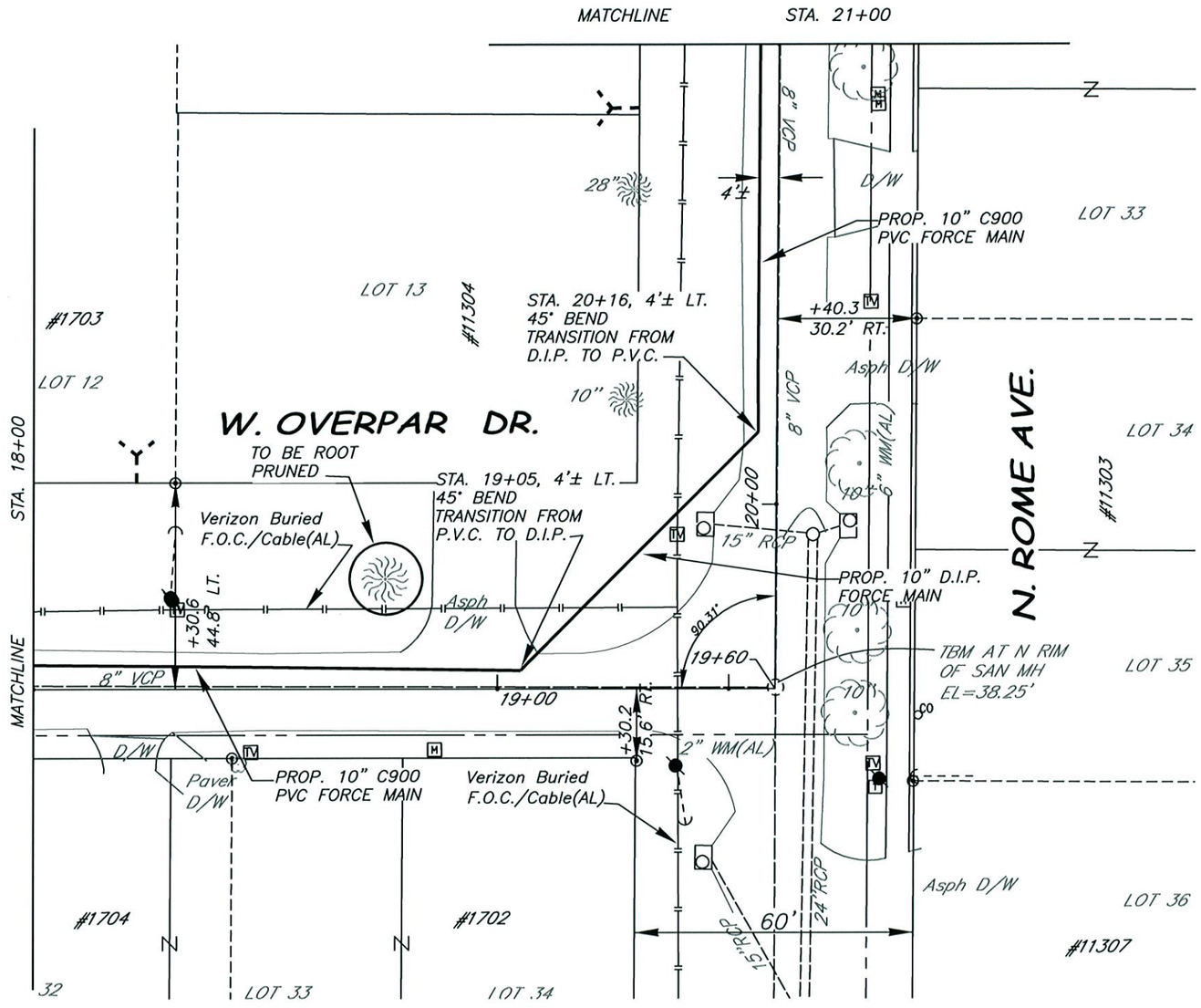

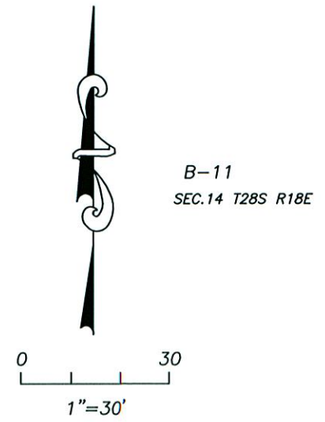

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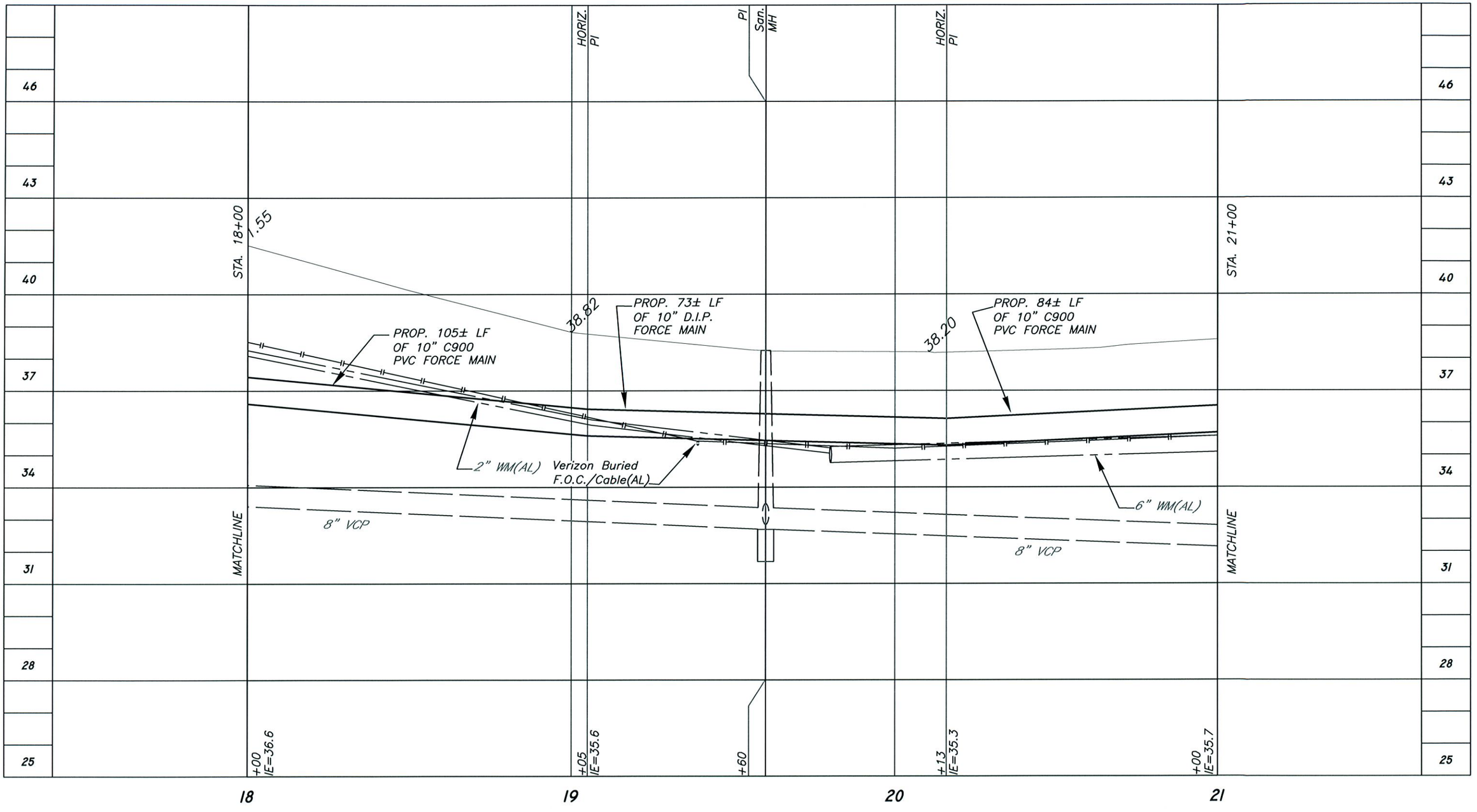
CITY of TAMPA
Department of Public Works
Stormwater Engineering

LAKE ECKLES FORCE MAIN

W.O. 510H
SHEET C-7 OF 53

SW



No.	DATE	REVISIONS	No.	DATE	REVISIONS
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CITY of TAMPA
Department of Public Works
Stormwater Engineering

LAKE ECKLES
FORCE MAIN

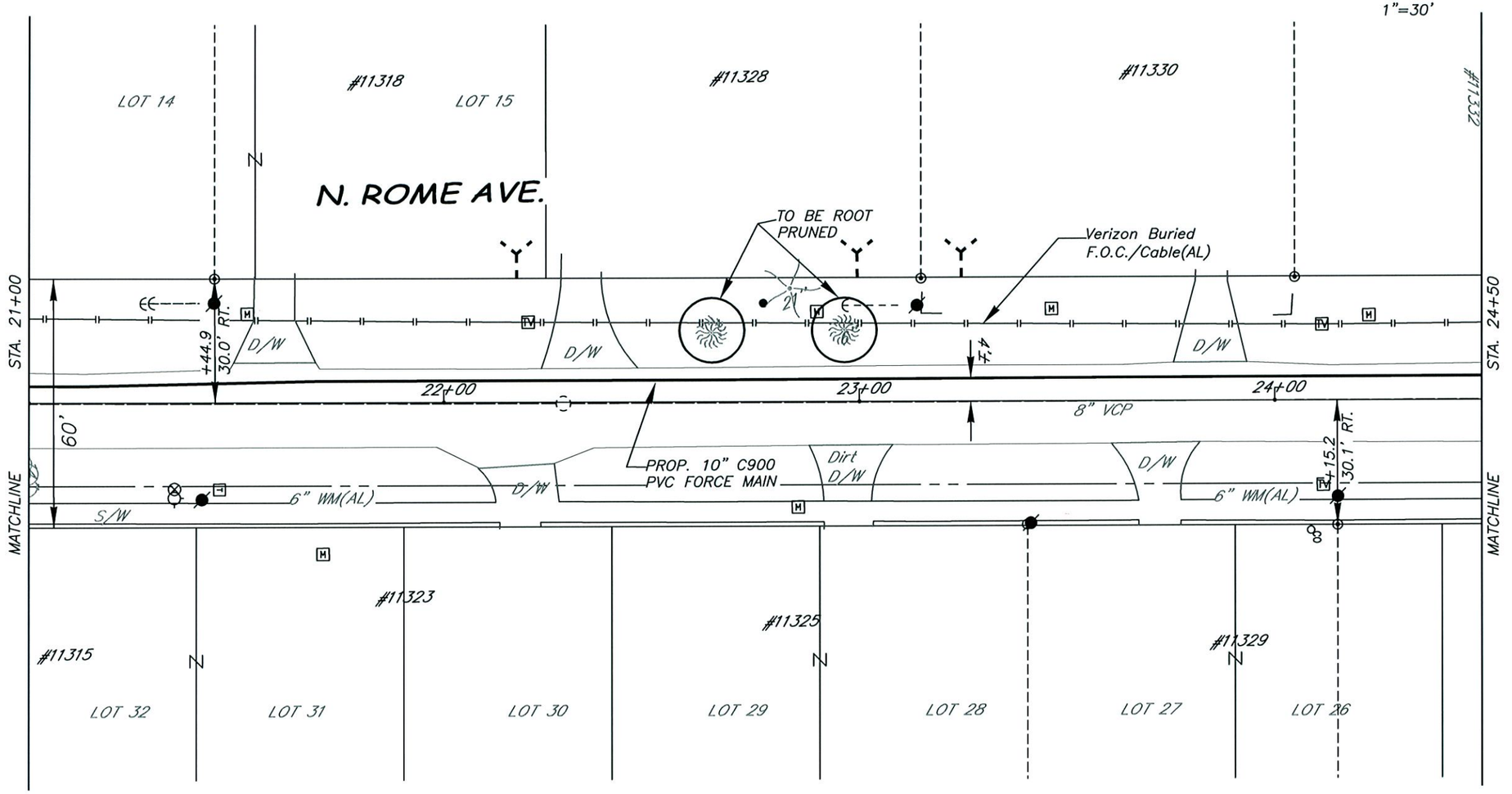
W.O. 510H
SHEET C-8 OF 53

SW

Note:
Wastewater services are shown in approximate locations and depths have not been determined.

B–11
SEC.14 T28S R18E

0 30
1"=30'



No.	DATE	REVISIONS	No.	DATE	REVISIONS
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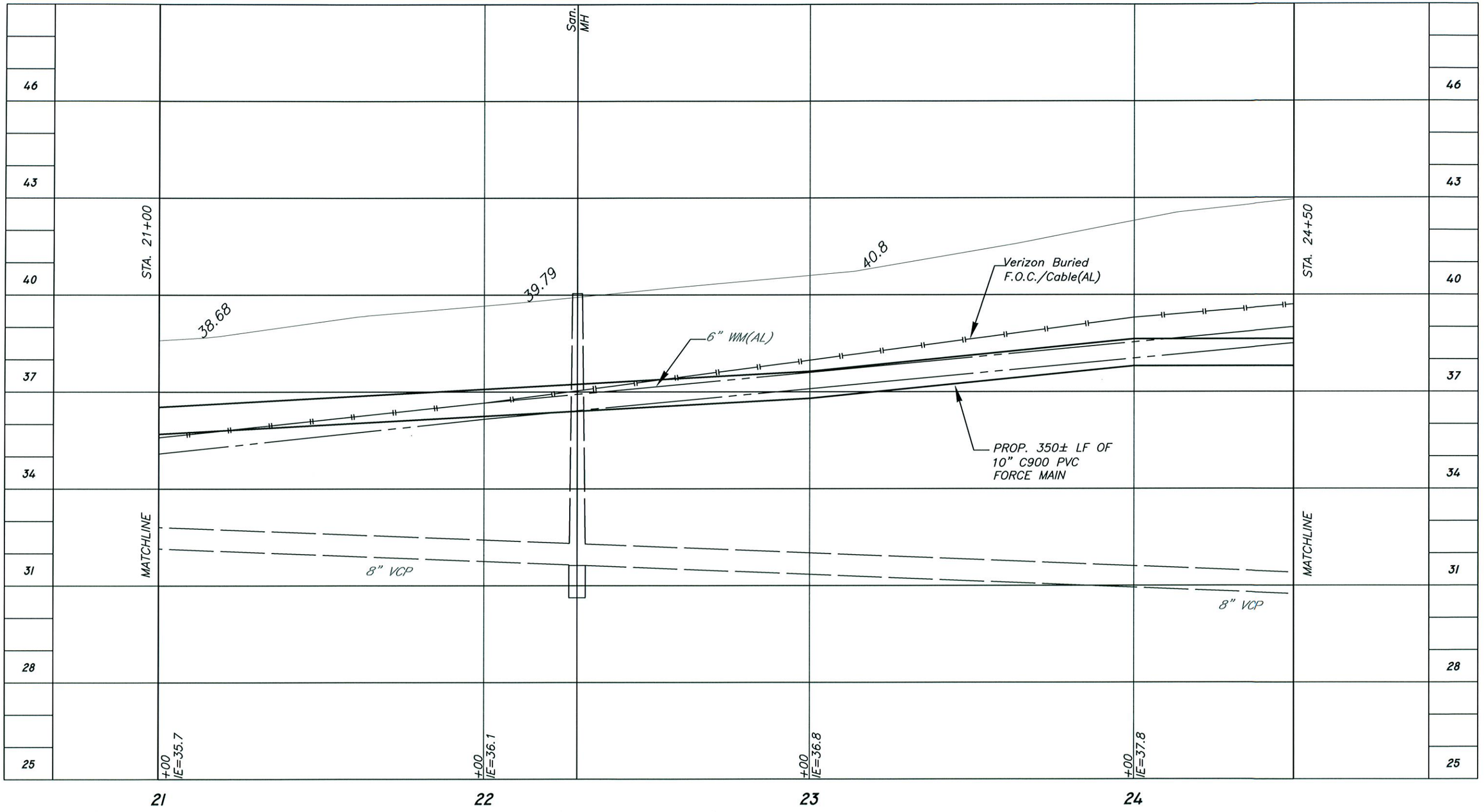
CITY of TAMPA
Department of Public Works
Stormwater Engineering

LAKE ECKLES
FORCE MAIN

W.O. 510H
SHEET C-9 OF 53

SW



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CITY of TAMPA
Department of Public Works
Stormwater Engineering

LAKE ECKLES
FORCE MAIN

W.O. 510H
SHEET C-10 OF 53

SW

Note:
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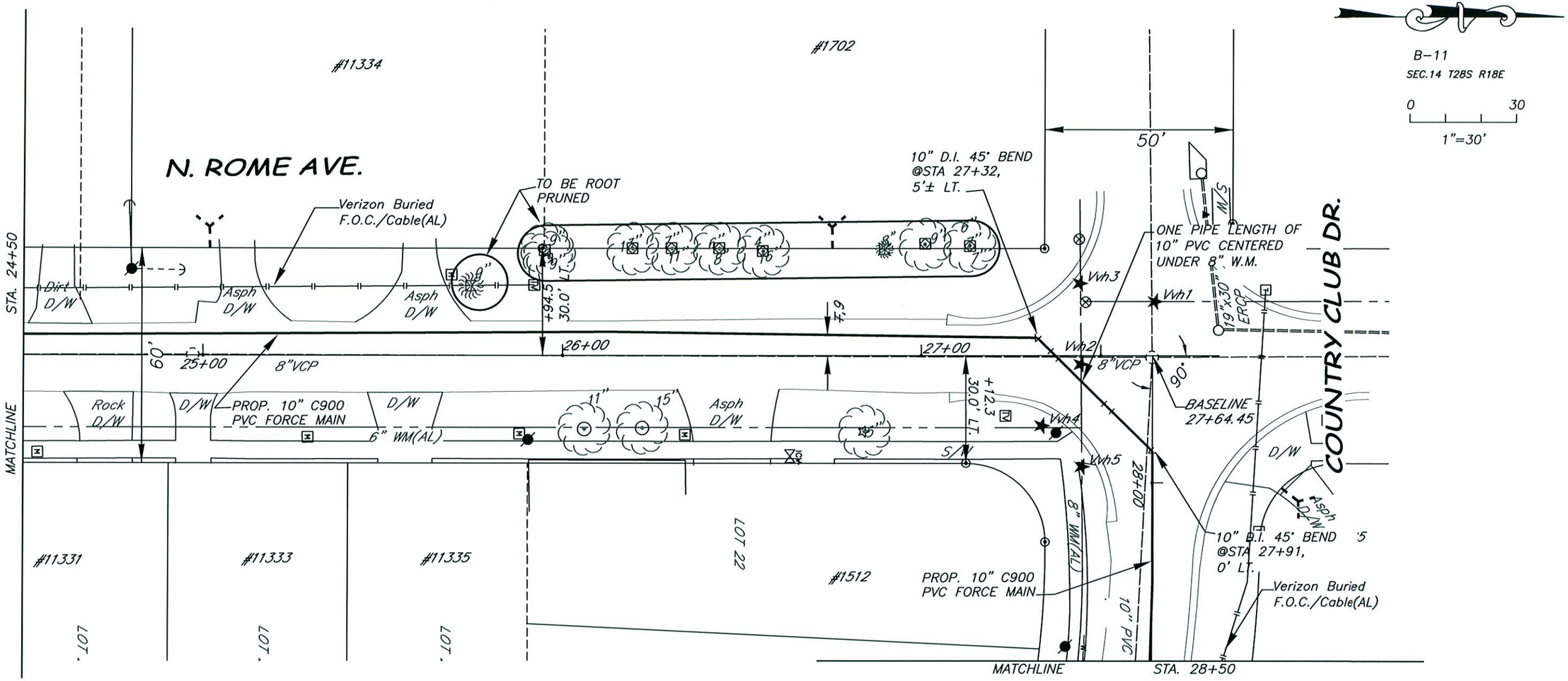

★ SUE LOCATIONS

Name	Northing	Easting	Surface Elev.	Top of Utility Elev.	Cover/Depth	Description
Vvh 1	1352343.09	502675.33	38.93	36.13	2.80	8" Metal (Water Main)
Vvh 2	1352322.26	502692.76	39.45	35.98	3.47	8" Metal (Water Main)
Vvh 3	1352322.14	502670.11	39.32	35.84	3.48	8" Metal (Water Main)
Vvh 4	1352311.16	502709.80	39.98	35.98	4.00	6" Metal (Water Main)
Vvh 5	1352322.36	502721.37	39.77	36.22	3.55	8" Metal (Water Main)

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3			6		
2			5		
1			4		

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DATE:

CITY of TAMPA
Department of Public Works
Stormwater Engineering

LAKE ECKLES
FORCE MAIN

W.O. 510H
SHEET C-11
OF 53

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SW

RESTRAIN ALL JOINTS
SEE SHEET C-17

HORIZ. PI
45° BEND
45° BEND
22.5° BEND
22.5° BEND
BASE LINE PI
HORIZ. PI

San. MH

STA. 24+50

STA. 28+50

MATCHLINE

MATCHLINE

43.03
42.29
40.56
38.92

Verizon Buried
F.O.C./Cable(AL)

6" WM(AL)

PROP. 286± LF OF
10" C900 PVC
FORCE MAIN

PROP. 90± LF OF
10" C900 PVC
FORCE MAIN

Verizon Buried
F.O.C./Cable(AL)

PROP. 18± LF
OF 10" PVC
FORCE MAIN

8" VCP

8" VCP

10"PVC

+00 IE=37.8

+00 IE=36.8

+00 IE=35.9

+32 IE=35.9
+36 IE=35.9
+39 IE=33.4
+51 IE=35.4
+53 IE=35.3
+64.45

+91 IE=35.3

46
43
40
37
34
31
28
25

25 26 27 28

No.	DATE	REVISIONS	No.	DATE	REVISIONS
3			6		
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DATE:

CITY of TAMPA
Department of Public Works
Stormwater Engineering

LAKE ECKLES
FORCE MAIN

W.O. 510H
SHEET C-12
OF 53

User: ss17 Drawing Name: K:\Stormwater Drafting\Active Projects\510H (Lake Eckles)\Lake Eeekles Force Main.dwg
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SW

B–11
SEC.14 T28S R18E

0 30
1"=30'

Note:
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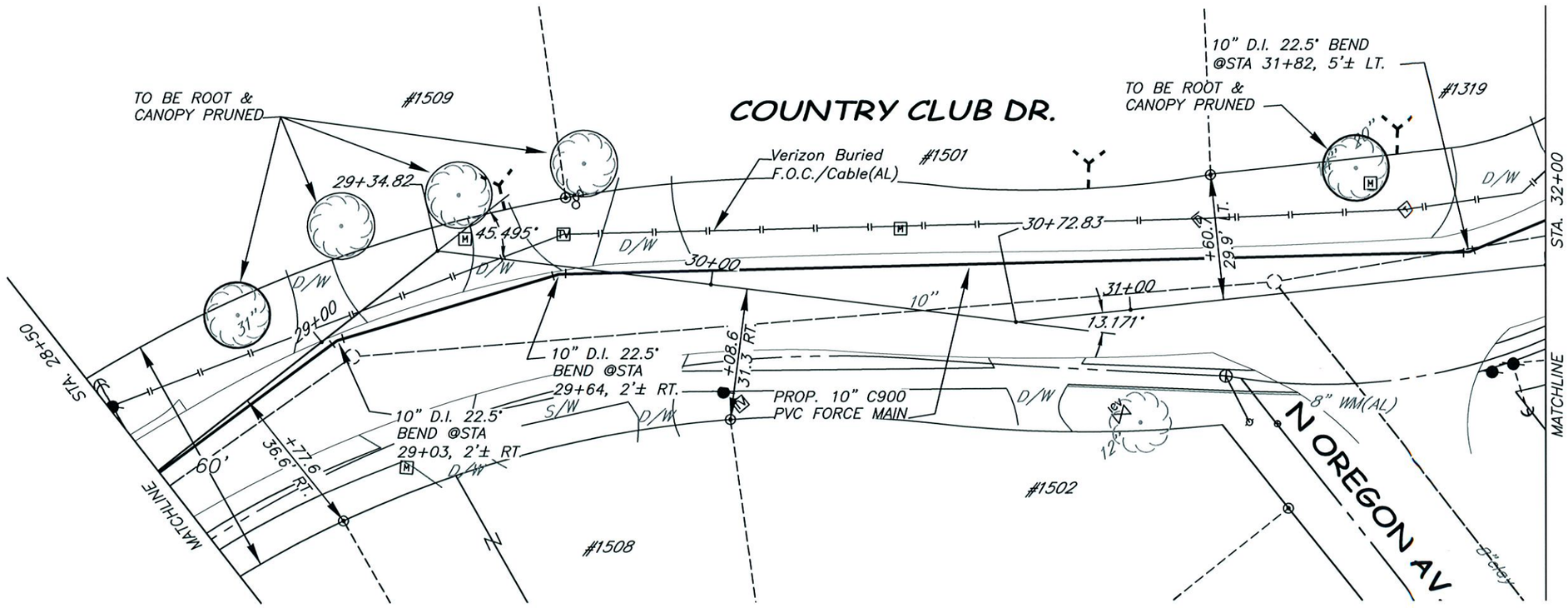

No.	DATE	REVISIONS	No.	DATE	REVISIONS
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CKD:
DATE:

CITY of TAMPA
Department of Public Works
Stormwater Engineering

LAKE ECKLES
FORCE MAIN

W.O. 510H
SHEET C-13 OF 53

User: ss17 Drawing Name: K:\Stormwater Drafting\Active Projects\510H (Lake Eckles)\Lake Eeckles Force Main.dwg
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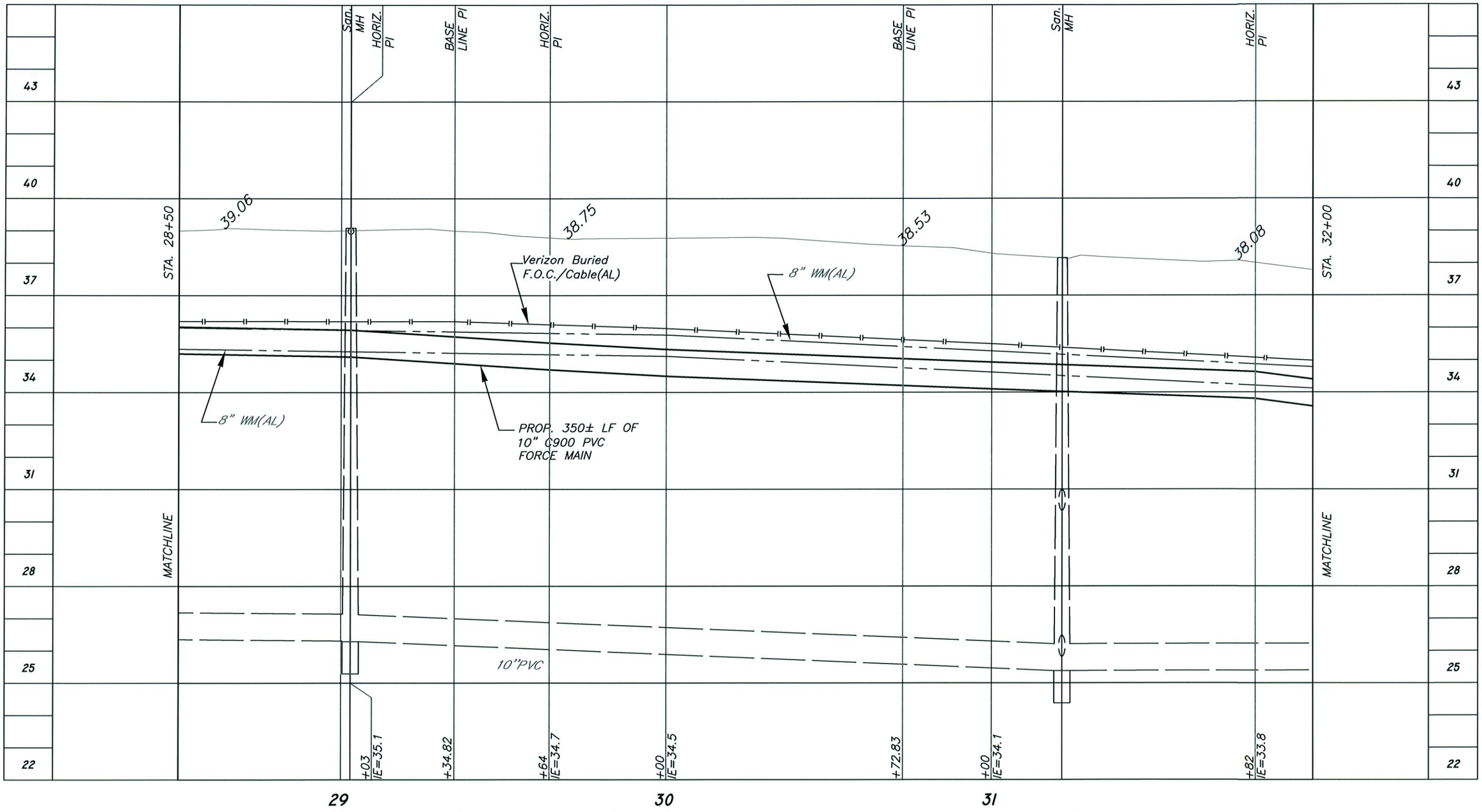
SW



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Department of Public Works
Stormwater Engineering

LAKE ECKLES FORCE MAIN

W.O. 510H
SHEET C-14 OF 53

SW

Note:
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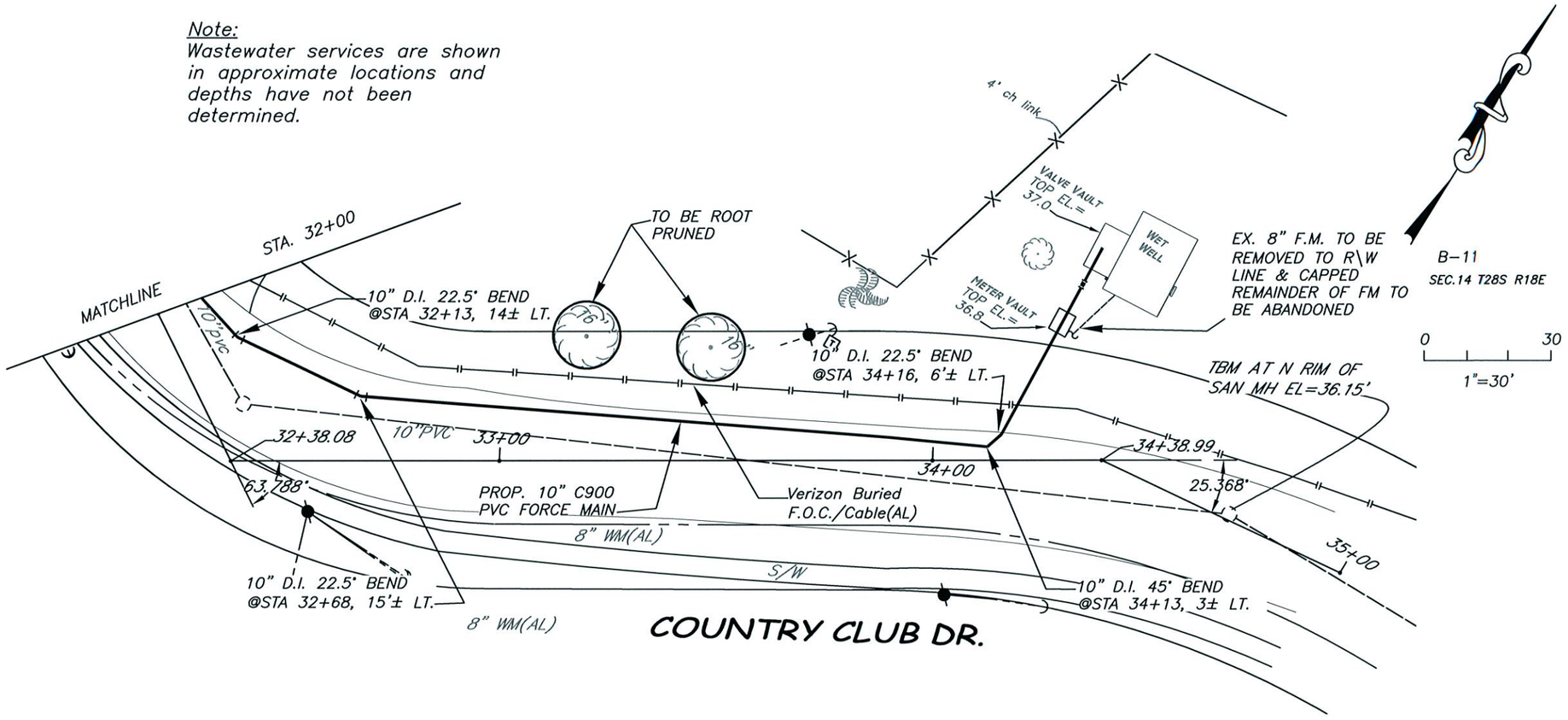
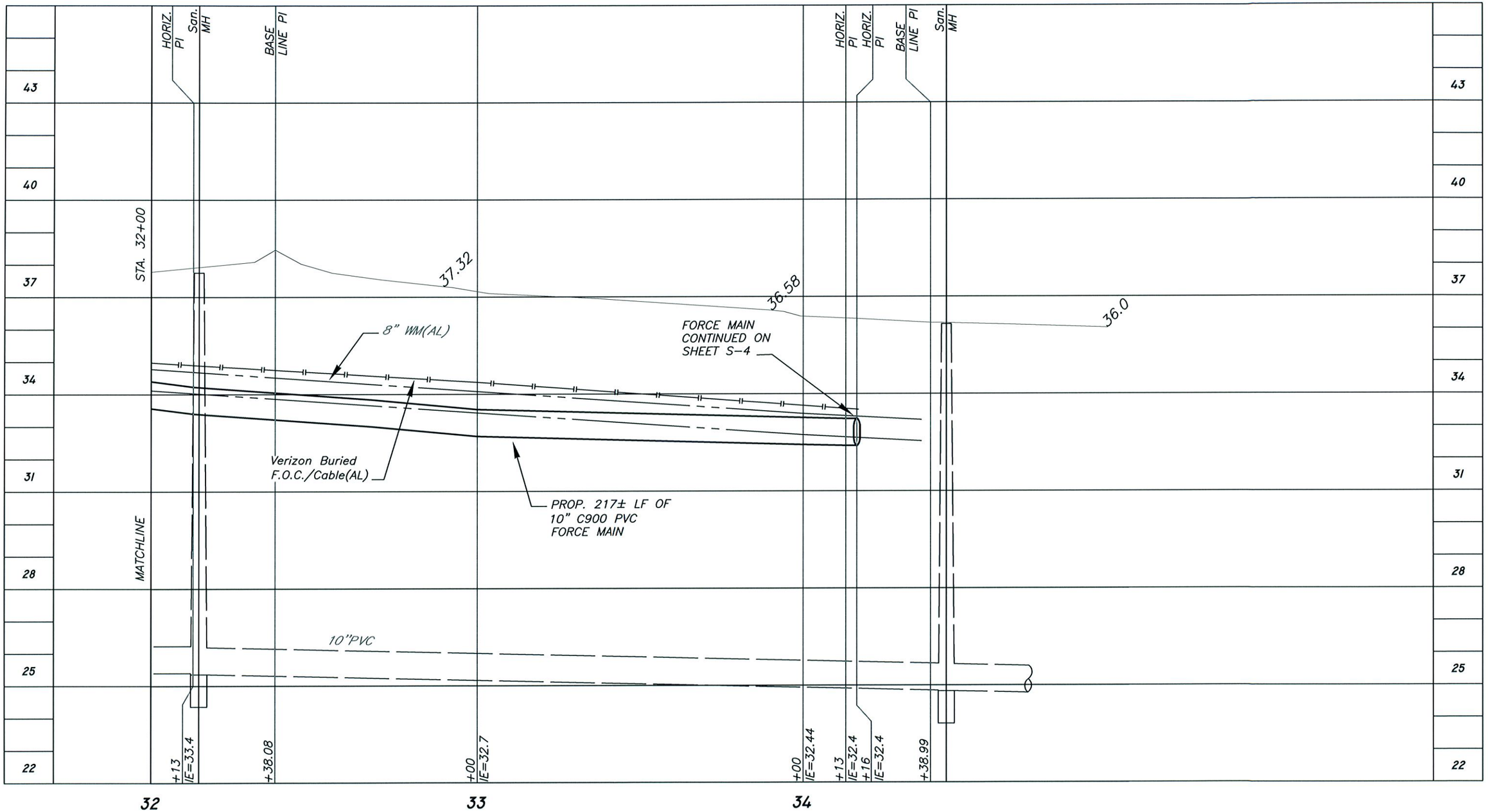


No.	DATE	REVISIONS	No.	DATE	REVISIONS	DES: MTM DRN: MP CKD: DATE:	CITY of TAMPA Department of Public Works Stormwater Engineering	LAKE ECKLES FORCE MAIN	W.O. 510H SHEET C-15 OF 53
3			6						
2			5						
1			4						

SW



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DRN: MP
CKD:
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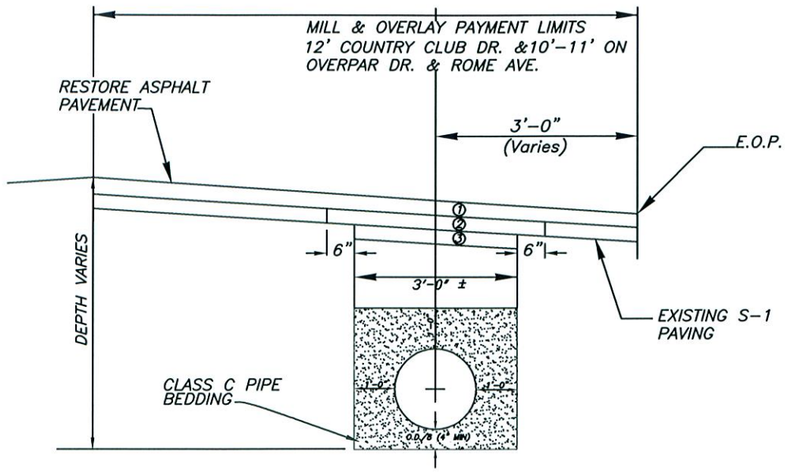
Department of Public Works
Stormwater Engineering

LAKE ECKLES
FORCE MAIN

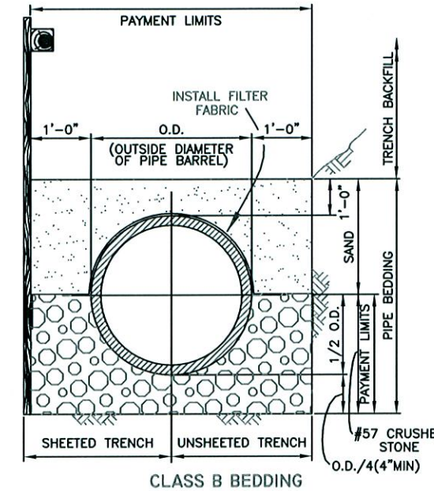
W.O. 510H
SHEET C-16
OF 53



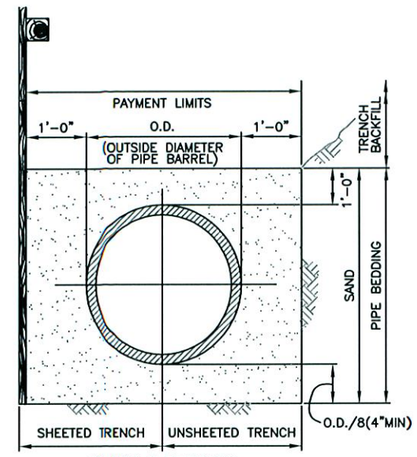
PAVEMENT LAYERS (SEE SPECIFICATIONS)

① TYPE S-3 ASPHALT (1") MILL & OVERLAY
② TYPE S-1 ASPHALT (1-1/2")
③ CRUSHED CONCRETE BASE (8")

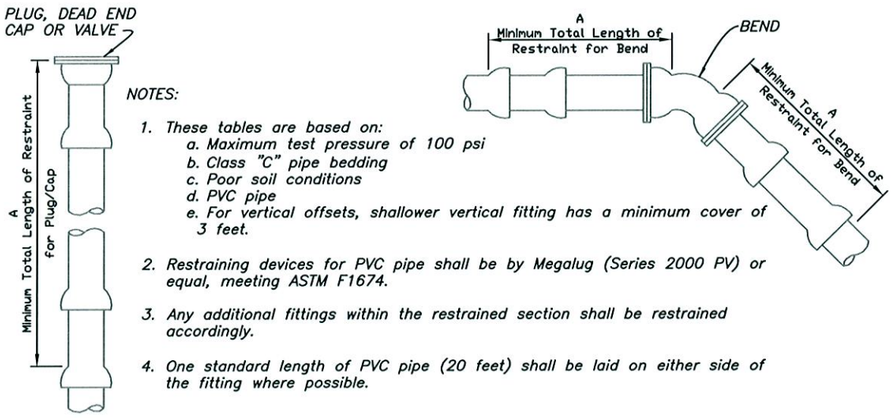
(ASPHALT)
N.T.S.



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*	5*
22-1/2°	2*	3*	3*	4*	5*	6*	7*	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*	6*	6*	7*	9*	10*	11*	12*
22-1/2°	5*	7*	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 with a diameter of 14 inches or less shall be constructed with white, ASTM C900 DR 18, P.V.C. pipe.
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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3			6		
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Department of Public Works
Stormwater Engineering

LAKE ECKLES
FORCE MAIN

W.O. 510H
SHEET
C-17
OF 53

SW

B-11
SEC.14 T28S R18E

8"x10" D.I. CONCENTRIC REDUCER
TAP FOR PRESSURE GAUGE
10"x10"x8" D.I. TEE
4'-0"
6"
10'-0"
2'-4"
7'-0"
6"
12"x12"x8" SUMP CENTERED BETWEEN PIPES
SCHEDULE 80 PVC HATCH DRAIN
1½" x 2" INCREASER
2"- 90° ELBOW
2"-45° BEND
EXTEND 3" MIN. INTO WETWELL
(SEE HATCH DETAIL SHEET S-9)
6" D.I. VENT (SEE DETAIL SHEET S-5)
10"x10"x6" TEE
6' D.I. NIPPLE- 3' LONG
6" D.I. 90°,
6" COMPANION FLANGE
6" MALE THREAD/MALE ADAPTER TYPE F KAMLOCK
6" DUST CAP
STAINLESS STEEL ADJUSTABLE THREADED PIPE SUPPORT & CRADLE WITH STAINLESS STEEL U-BOLT CLAMP
6'-0"
4'-0"
6'-0"
8"
12"
3'-0"
6"x6"x6' REINFORCED CONCRETE POST WITH HOSE BIB
#4 DOWELS @ 6" OC EPOXY INTO WET WELL (SEE DETAIL SHEET S-6)
CORE EXISTING WET WELL(SEE DETAIL SHEET S-6)
℄ OF VERT. PIPE
6" PVC DRAINS (TYP)
4'-0"
5'-0"
3'-0"
SLUICE GATE
℄ WET WELL/ PUMPS
14'-0"
6'-0"
7¾"
2'-4¼"
B
B
ULTRASONIC LEVEL TRANSDUCER
4'-0"
4'-0"
4'-0"
4'-0"
4'-0"
4'-4"
8'-0"
2'-4"
4"
EX. 24" D.I.P.
Ex. Wet Well
HINGES(TYP)
3'-9"
HATCHES(TYP)
3'x3' ACCESS
4" DIA. HOLE FOR SLUICE GATE VALVE STEM (CONTRACTOR TO VERIFY LOCATION)
12" (Typ.)
CONTROL PANEL
12"
12"
36"X36" ALUMINUM HATCH (SEE DETAIL SHEET S-8)
8"
20'-0"
A
A

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

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

DES: MTM
DRN: MP
CKD:
DATE:

CITY of TAMPA
Department of Public Works
Stormwater Engineering

LAKE ECKLES PUMPING STATION
PROPOSED PLAN VIEW

W.O. 510H
SHEET S-1 OF 53

SW

48"X72" ALUMINUM HATCH (SEE DETAIL SHEET S-10)

6" VENT (SEE DETAIL SHEET S-5)

Handwheel Operator

℄ WET WELL

48"x96" ALUMINUM HATCH (SEE DETAIL SHEET S-11)

PROPOSED 12" CONCRETE TOP SLAB (SEE DETAIL SHEET S-5 FOR REINFORCEMENT)

Elev. 37.00

STAINLESS STEEL PRESSURE GAUGE 0-60 psi

4'-0"

4'-3"

4'-0"

12"

SEE DETAIL SHEET S-6

SCHEDULE 80 PVC HATCH DRAIN
1½" x 2" INCREASER
2"- 90° ELBOW
2"-45° BEND
EXTEND 3" MIN. INTO WETWELL (SEE HATCH DETAIL SHEET S-9)

6'-0"

6'-0"

6'-0"

12" MIN.

6"

Elev.= 33.73

HIGH LEVEL ALARM ELV. 33.6'

B-11
SEC.14 T28S R18E

8" D.I.P. 90° BEND (FL-FL)

ULTRASONIC LEVEL TRANSDUCER (SEE DETAIL SHEET S-7)

Elev.= 32.00

8" PLUG VALVE

6"

8" CHECK VALVE

8" D.I.P.

PUMP ORIENTATION REFERENCE LINE

EX. 12" THICK CONCRETE WALL

12"

STAINLESS STEEL ADJUSTABLE TREADED PIPE SUPPORT & CRADLE WITH STAINLESS STEEL U-BOLT CLAMP

MEGA FLANGE W/ SS BOLTS

SEE DETAIL SHEET S-6

12'-0"

12"

TOP OF BAFFLE WALL 25.11 (SEE DETAIL SHEET S-5)

OPERATING RANGE

DRY SEASON (10/1 TO 4/30)
PUMP ON @ 33.3'
PUMP OFF @ 32.8

WET SEASON (5/1 TO 9/30)
PUMP ON @ 31.8
PUMP OFF @ 30.6

8"x6" ECCENTRIC INCREASER

PROP. FILLET AT BOTTOM OF WETWELL TO HAVE 45° ANGLED SURFACE (ROUND ALL CORNERS WITH 13" RADIUS MIN.)

4'-4"

Bottom Elev.= 20.78

Elev.= 20.11

8"

1'-2"

Existing Slab

#4 BARS @ 8" O.C.E.W.

PROP. 8" OF TYPE "II" CONC. POURED IN PLACE

10" X 6" #4 L-BARS EPOXY 6" (MIN.) IN BOTTOM SLAB @ 24" O.C.E.W. PLUS ONE BAR ON EACH OF FOUR CORNERS UNDER PUMP BASE

SECTION A-A

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

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

DES: MTM
DRN: MP
CKD:
DATE:

CITY of TAMPA
Department of Public Works
Stormwater Engineering

LAKE ECKLES FORCE MAIN
PUMP STATION

W.O. 510H
SHEET S-2
OF 53

SW

6" VENT (SEE DETAIL SHEET S-5)

INSTAL A ½" EYEBOLT IN TOP SLAB

℄ OF 4" DIA. HOLE FOR VALVE STEM (CONTRACTOR TO VERIFY LOCATION)

Elev. 37.00

3'-0"

8'-0"

1'4"

12"

B-11
SEC.14 T28S R18E

℄ OF PUMPS & VERT. PIPES

2" HATCH DRAIN SEE HATCH DETAIL SHEET S-9

PROPOSED 12" CONCRETE TOP SLAB (SEE DETAIL SHEET S-5 FOR REINFORCEMENT)

Elev.= 33.73

EX. 12" THICK CONCRETE WALL

8" D.I.P.

12"

12"

18'-0"

PROP. SLUICE GATE- CONTRACTOR TO CONFIRM MODEL AND AVAILABILITY EARLY IN PROJECT

4'-0"

4'-4"

8"

Top Of Baffle 25.11 (SEE DETAIL SHEET S-5)

PROP. FILLET AT BOTTOM OF WETWELL TO HAVE 45° ANGLED SURFACE (ROUND ALL CORNERS WITH 13" RADIUS MIN.)

EXIST. 24" RCP IE= 23.79

#4 BARS @ 8" O.C.E.W.

2'-0"

2'-0"

4'-4"

5'-0"

Bottom Elev.= 20.78

Elev.= 20.11

8"

1'-2"

PROP. 8" OF TYPE "II" CONC. POURED IN PLACE

TWO 6" PVC DRAIN PIPES EXTENDING THROUGH FILLET

Existing Slab

10" X 6" #4 L-BARS EPOXY 6" (MIN.) IN BOTTOM SLAB @ 24" O.C.E.W. PLUS ONE BAR ON EACH OF FOUR CORNERS UNDER PUMP BASE

SECTION B-B

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

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

DES: MTM
DRN: MP
CKD:
DATE:

CITY of TAMPA
Department of Public Works
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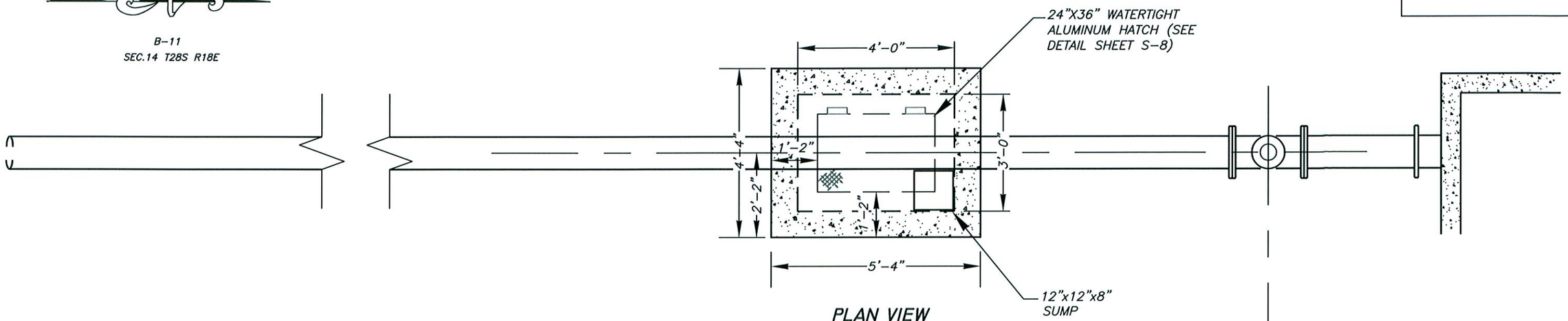
LAKE ECKLES FORCE MAIN
PUMP STATION

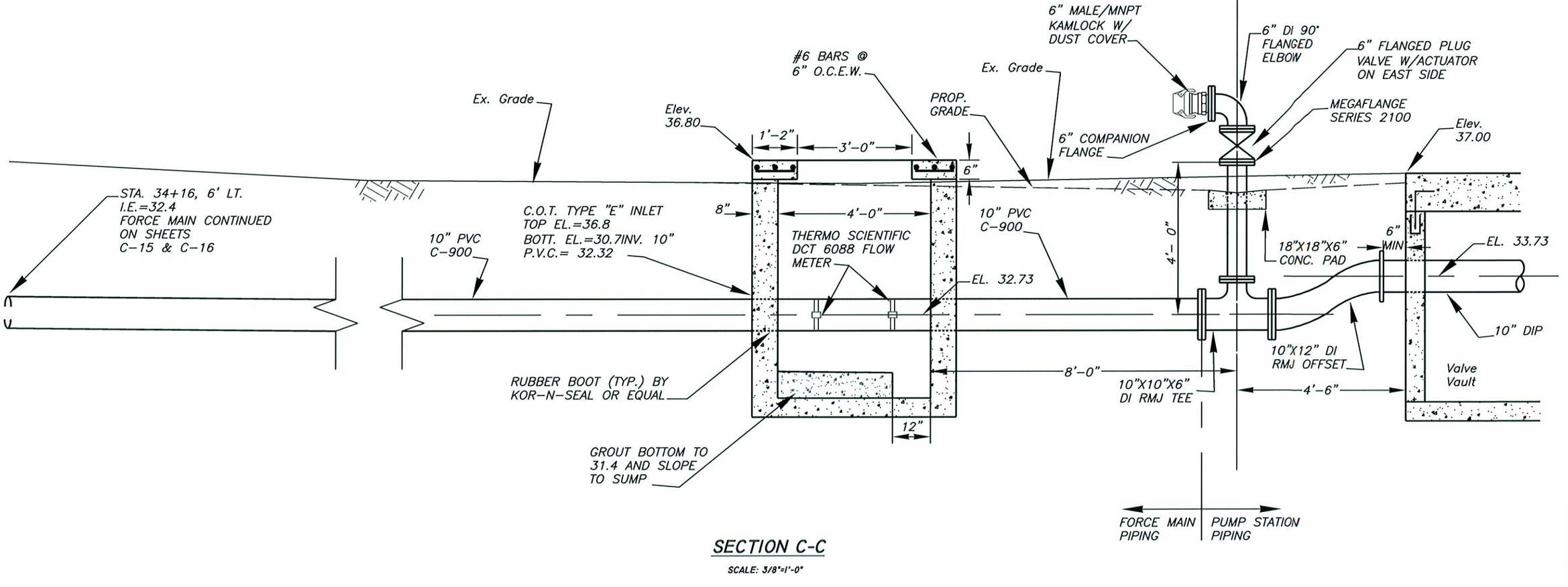
W.O. 510H
SHEET S-3 OF 53

SW

B–11
SEC.14 T28S R18E



PLAN VIEW



SECTION C-C

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

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

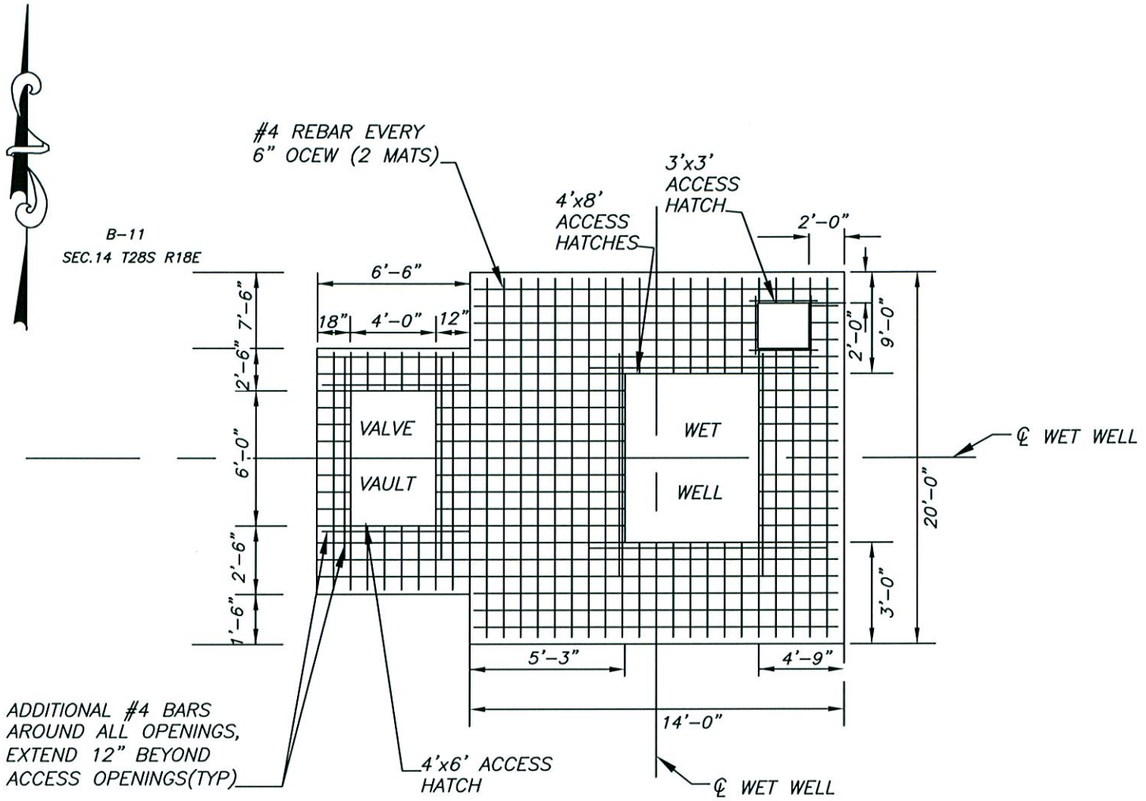
DES: MTM
DRN: MP
CKD:
DATE:

CITY of TAMPA
Department of Public Works
Stormwater Engineering

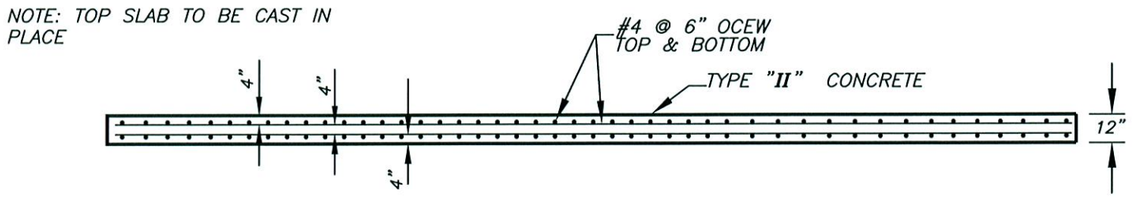
LAKE ECKLES FORCE MAIN
PUMP STATION

W.O. 510H
SHEET S-4
OF 53

SW



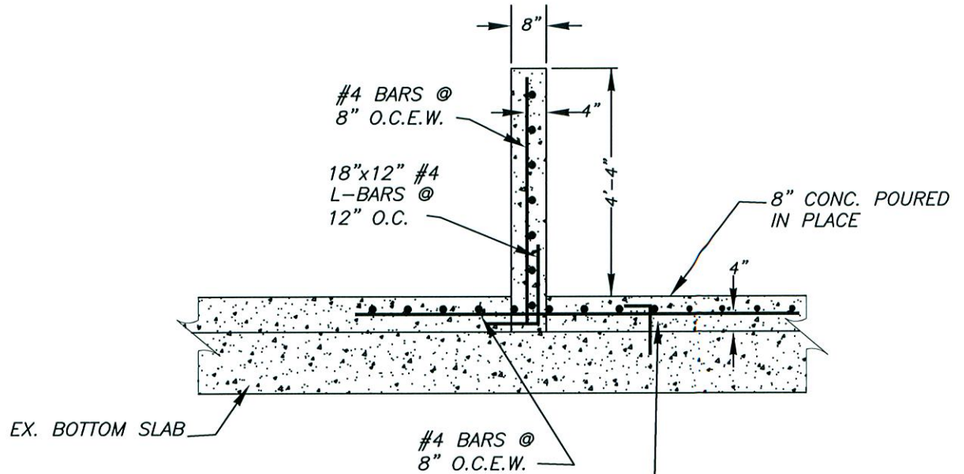
PLAN



SECTION

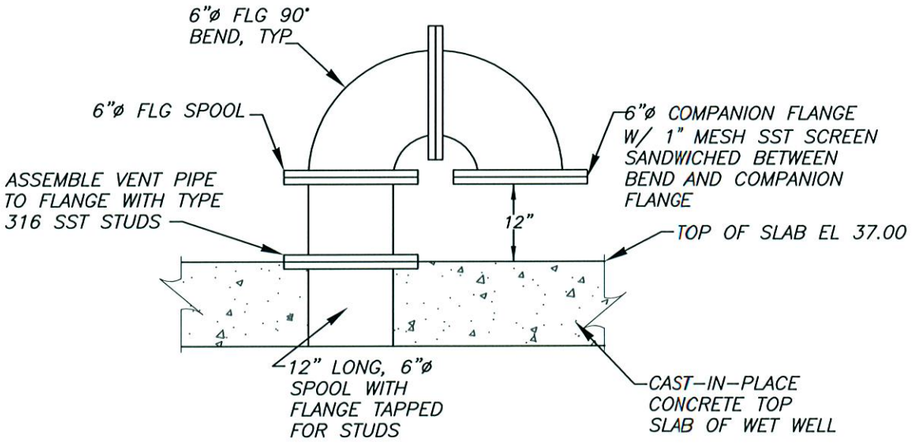
TOP SLAB REINFORCING DETAIL

NOT TO SCALE



BAFFLE WALL/FLOOR DETAIL

NOT TO SCALE



VENT PIPE DETAIL

NOT TO SCALE

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

DES: MTM
DRN: MP
CKD:
DATE:

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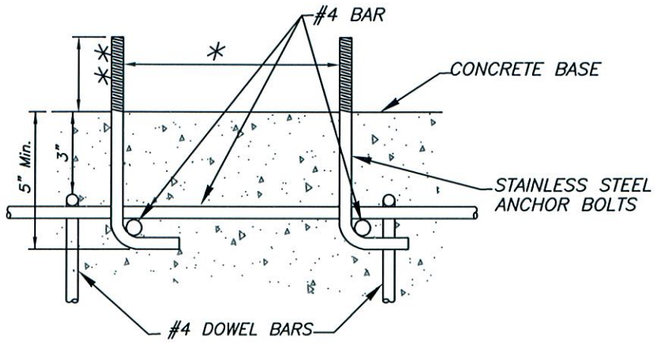
Department of Public Works
Stormwater Engineering

LAKE ECKLES FORCE MAIN
PUMP STATION

W.O. 510H
SHEET
S-5
OF 53

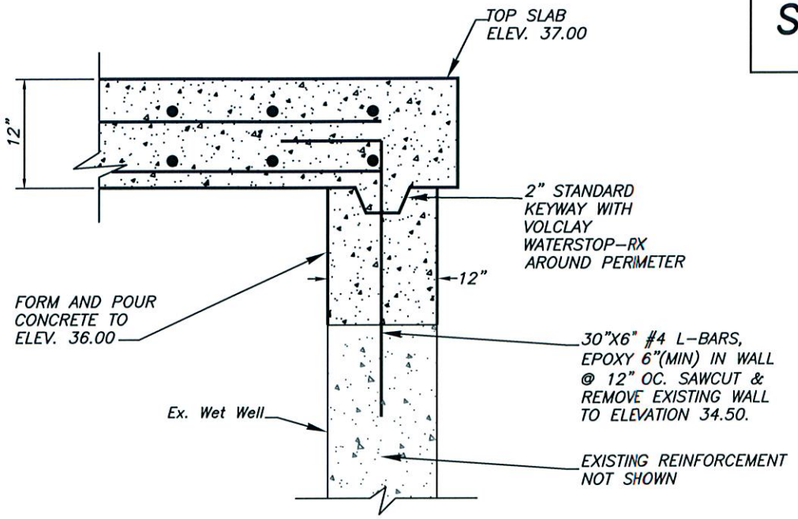


* ALIGNMENT OF ANCHOR BOLTS SHALL BE AS RECOMMENDED BY PUMP MANUFACTURER.

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

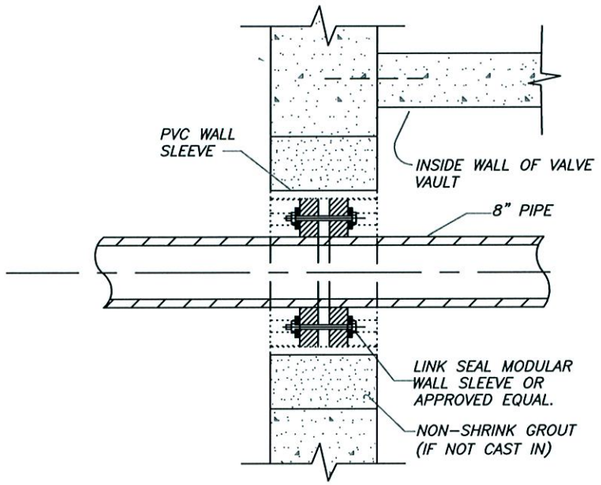
ANCHOR BOLT DETAIL

NOT TO SCALE



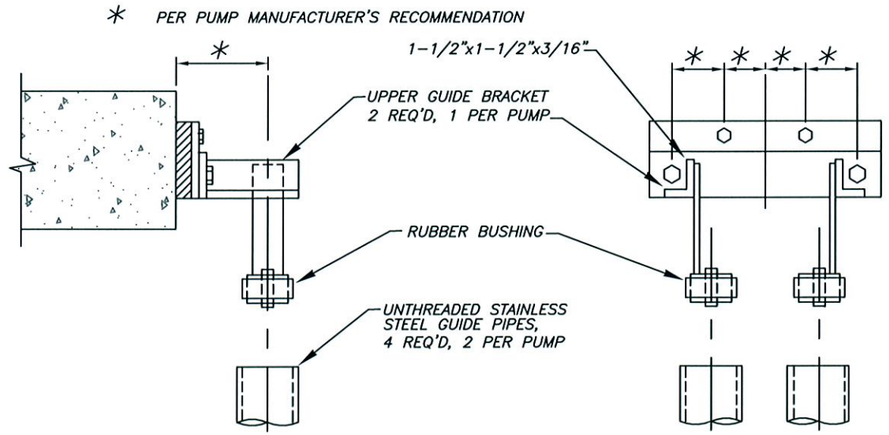
HORIZONTAL SLAB CONNECTION

NOT TO SCALE



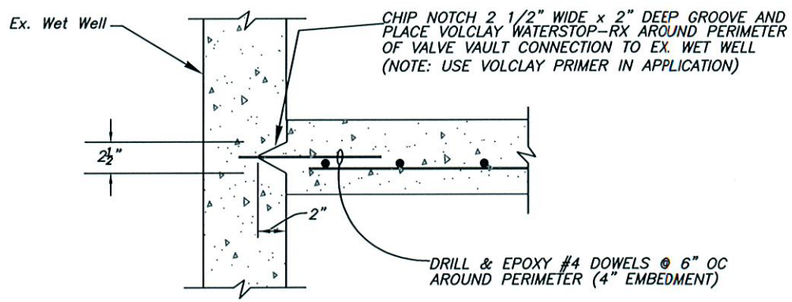
WALL SLEEVE DETAIL

NOT TO SCALE



GUIDE BRACKET DETAIL (SUPPLIED WITH PUMPS)

NOT TO SCALE



VAULT CONNECTION DETAIL

NOT TO SCALE

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

DES: MTM
DRN: MP
CKD:
DATE:

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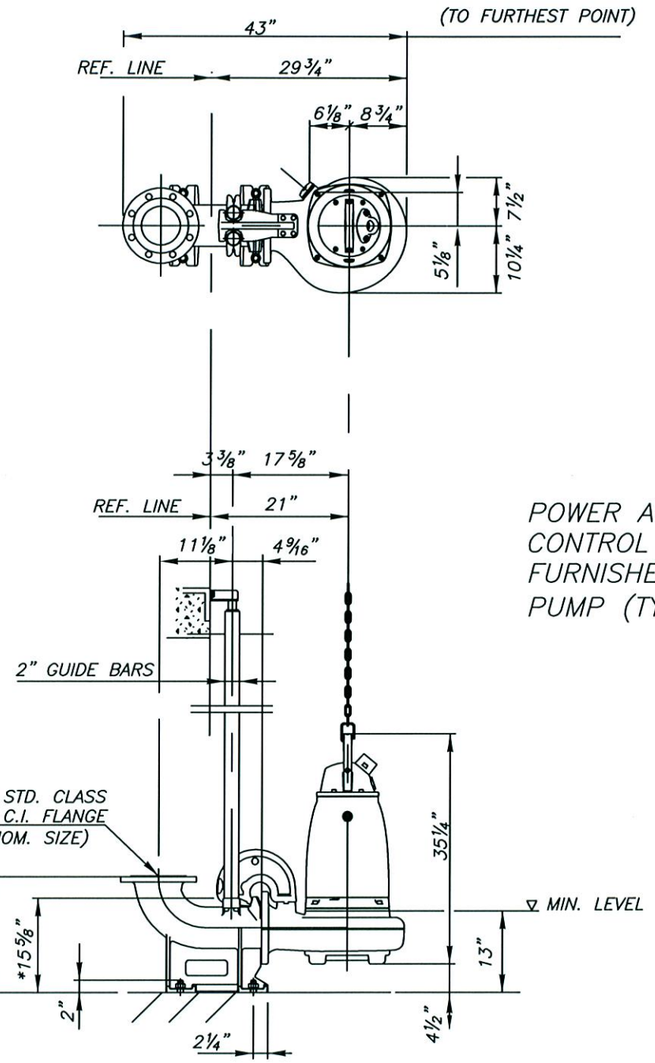
Department of Public Works
Stormwater Engineering

LAKE ECKLES FORCE MAIN
PUMP STATION

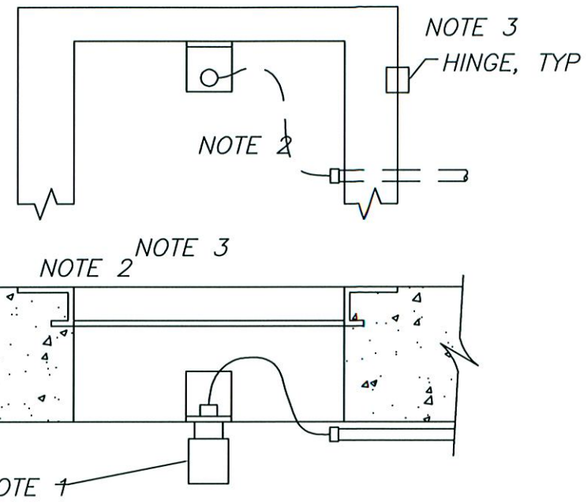
W.O. 510H
SHEET S-6 OF 53

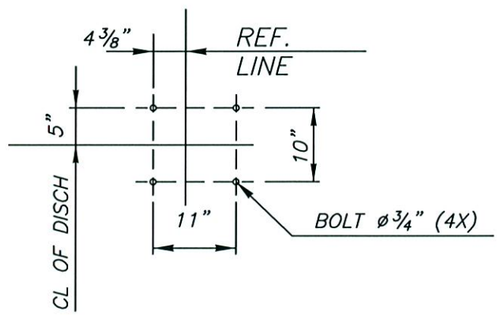


* DIMENSION TO ENDS OF GUIDE BARS

SUBMERSIBLE PUMP
NOT TO SCALE

POWER AND CONTROL CABLE FURNISHED WITH PUMP (TYP.)





ANCHOR BOLT CONFIGURATION
NOT TO SCALE
VERIFY WITH MANUFACTURER

ULTRASONIC LEVEL TRANSDUCER
NOT TO SCALE

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

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

DES: MTM
DRN: MP
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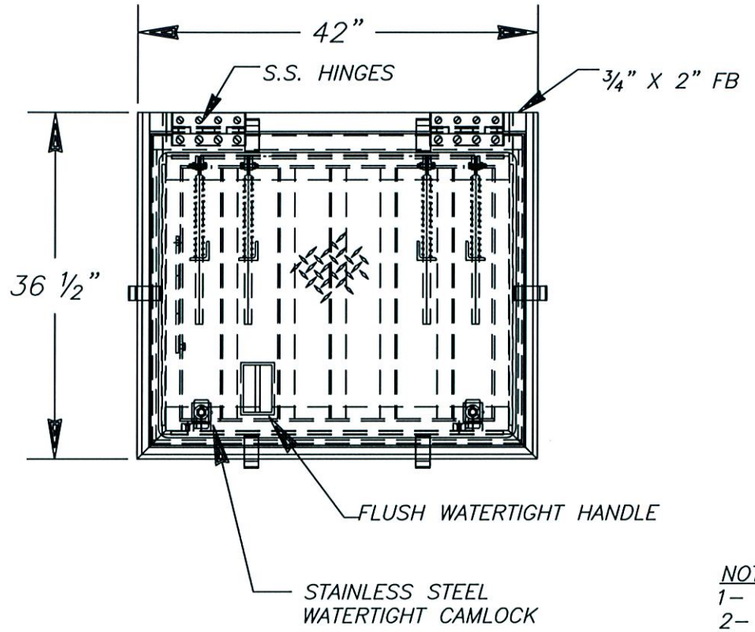
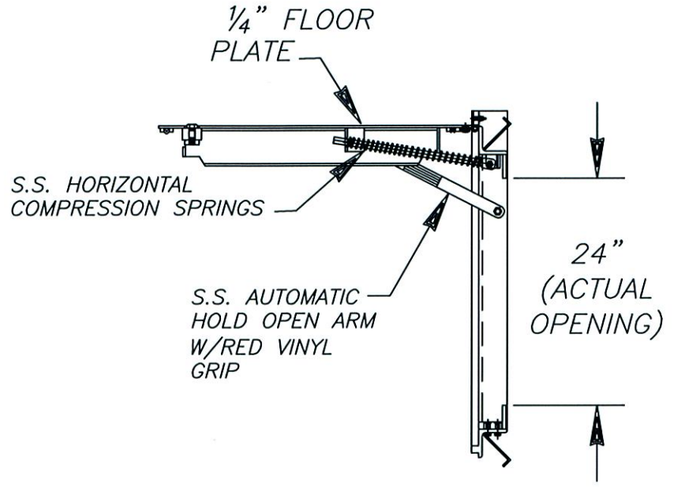
Stormwater Engineering

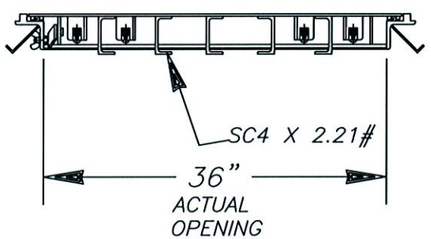
LAKE ECKLES FORCE MAIN
PUMP STATION

W.O. 510H
SHEET S-7 OF 53

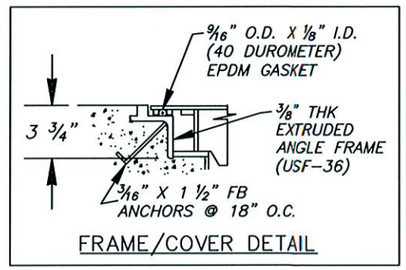
SW







NOTES:
1– MATERIAL: ALUMINUM
2– LOADING: DESIGNED FOR OFF STREET LOCATIONS WHICH MAY OCCASIONALLY RECEIVE H–20 WHEEL LOADS. (CAPABLE OF HOLDING UP TO 25 FEET HEAD OF WATER)
3– 316 STAINLESS STEEL BOLTS & NUTS
4– APPROX. HATCH WEIGHT: 140 LBS.
5– AREA OF FRAME IN CONTACT WITH CONCRETE TO BE PAINTED WITH BITUMINOUS COATING.
6–USE U.S. FOUNDRY W–AHS 24X36 OR EQUAL.



FRAME/COVER DETAIL

24" X 36" WATERTIGHT HATCH DETAIL

N.T.S.

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

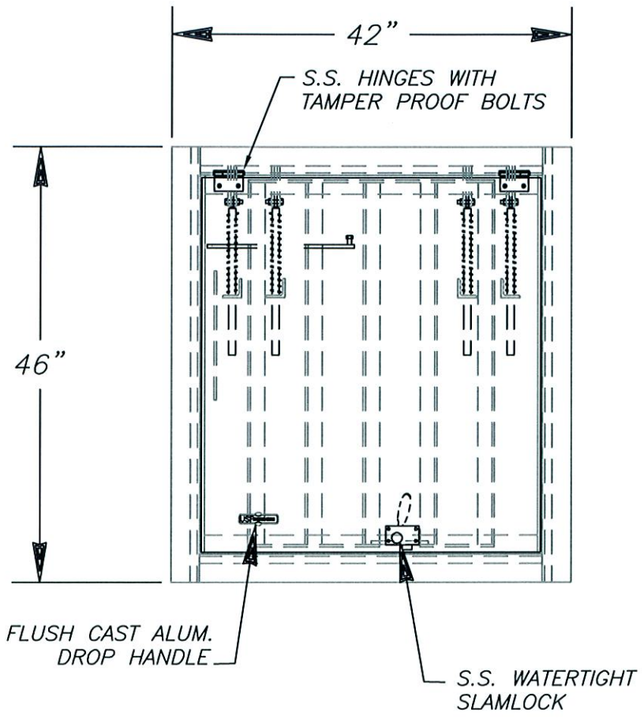
DES: MTM
DRN: MP
CKD:
DATE:

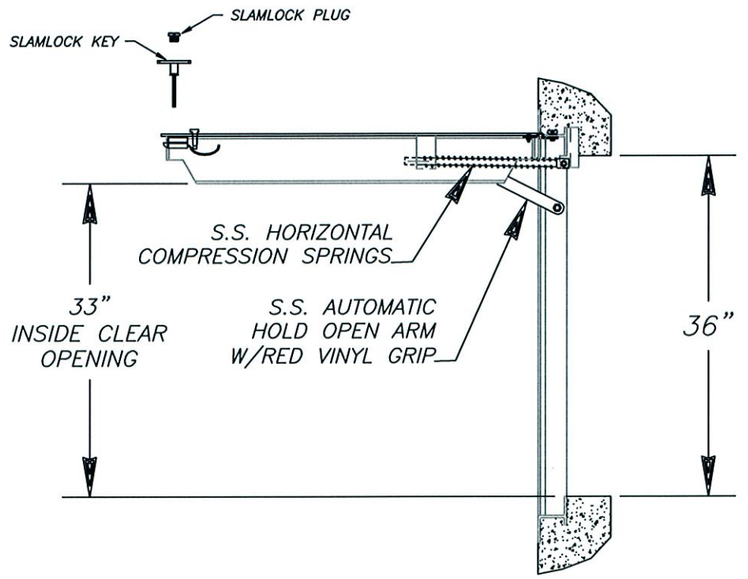
CITY of TAMPA
Department of Public Works
Stormwater Engineering

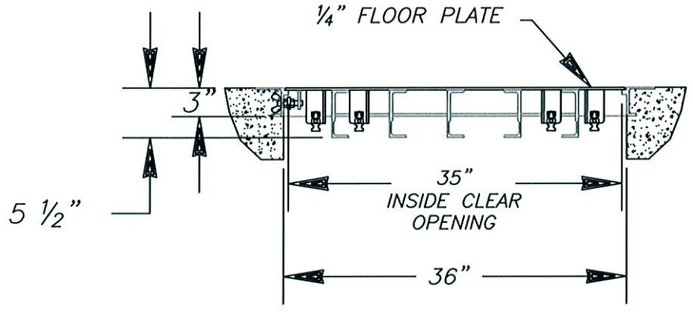
LAKE ECKLES PUMP STATION

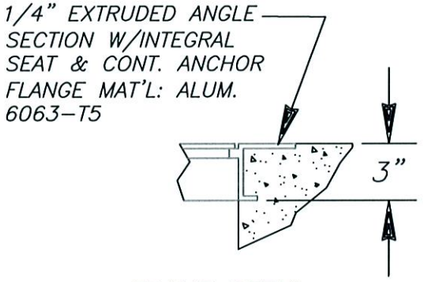
W.O. 510H
SHEET S-8 OF 53

SW









FRAME DETAIL

NOTES:
1–MATERIAL: ALUMINUM
2–LOADING: DESIGNED FOR OFF STREET LOCATIONS WHICH MAY OCCASIONALLY RECEIVE H–20 WHEEL LOADS.
3–316 STAINLESS STEEL BOLTS & NUTS.
4–AREA OF FRAME IN CONTACT WITH CONCRETE TO BE PAINTED WITH BITUMINOUS COATING.
5–APPROX. WEIGHT = 122 LBS.
6–USE U.S. FOUNDRY AHS 36X36 OR EQUAL.

36" x 36" HATCH DETAIL

N.T.S.

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

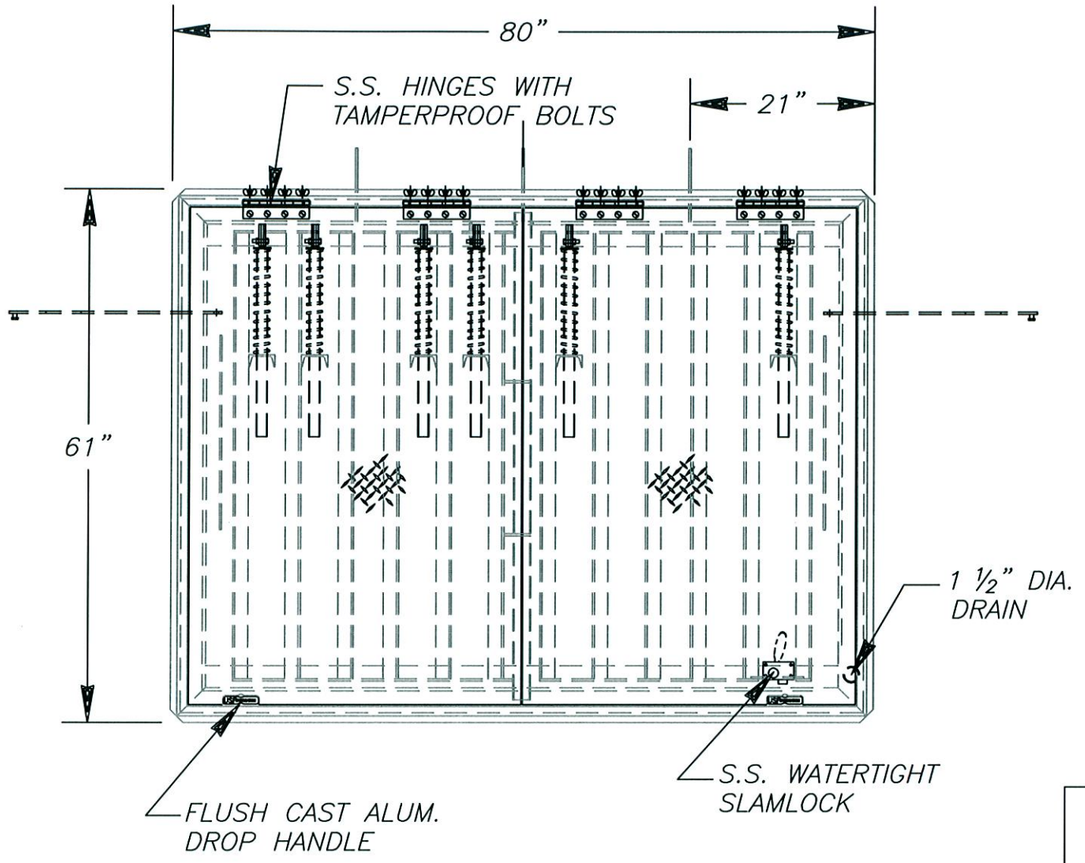
DES: MTM
DRN: MP
CKD:
DATE:

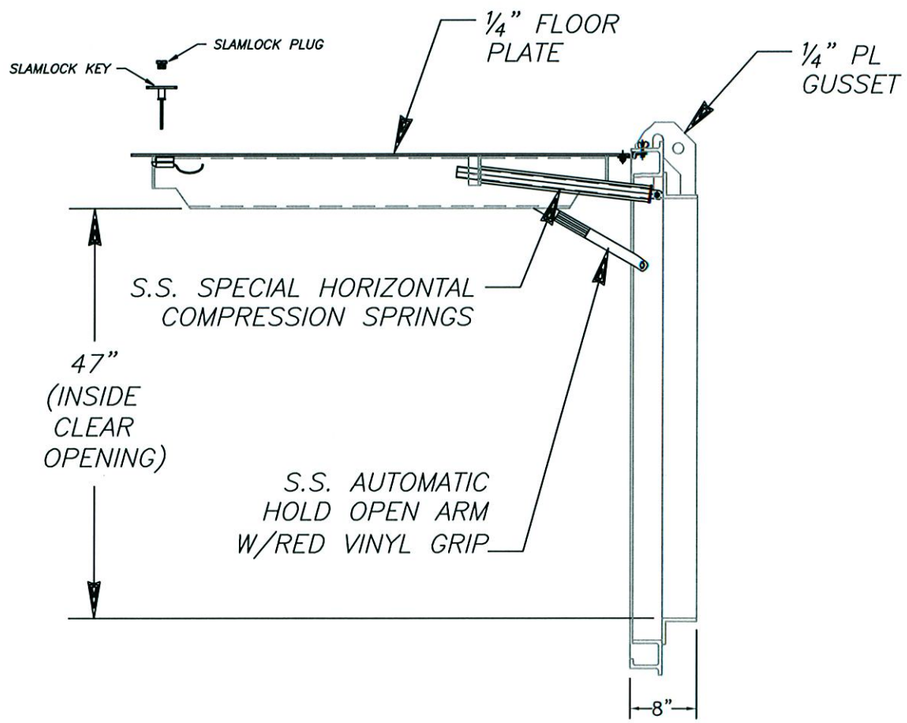
CITY of TAMPA
Department of Public Works
Stormwater Engineering

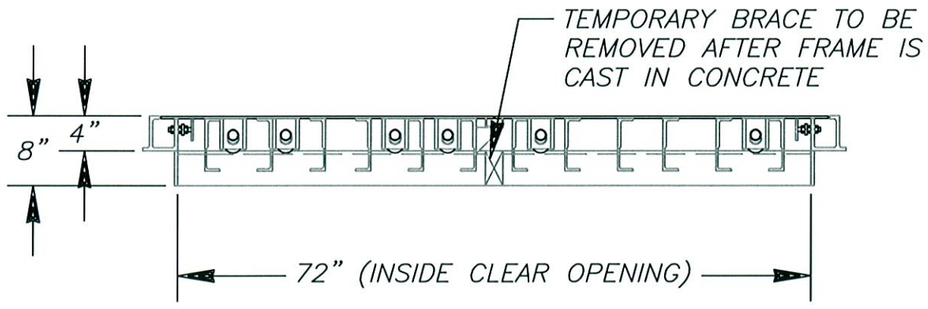
LAKE ECKLES PUMP STATION

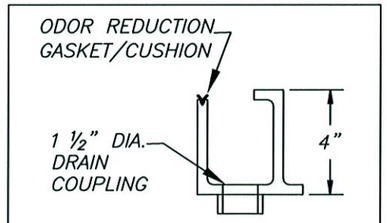
W.O. 510H
SHEET S-9 OF 53

SW









3/8" EXTRUDED TROUGH SECTION W/INTEGRAL CONT. ANCHOR FLANGE & GROOVE FOR GASKET/CUSHION FRAME MAT'L: ALUMINUM 6063–T5

FRAME DETAIL

NOTES:
1– MATERIAL: ALUMINUM
2– LOADING: DESIGNED FOR OFF STREET LOCATIONS WHICH MAY OCCASIONALLY RECEIVE H–20 WHEEL LOADS.
3– 316 STAINLESS STEEL BOLTS & NUTS
4– APPROX. HATCH WEIGHT: 515 LBS.
5– AREA OF FRAME IN CONTACT WITH CONCRETE TO BE PAINTED WITH BITUMINOUS COATING.
6–USE U.S. FOUNDRY THD 48X72 OR EQUAL.

48" x 72" HATCH DETAIL

N.T.S.

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

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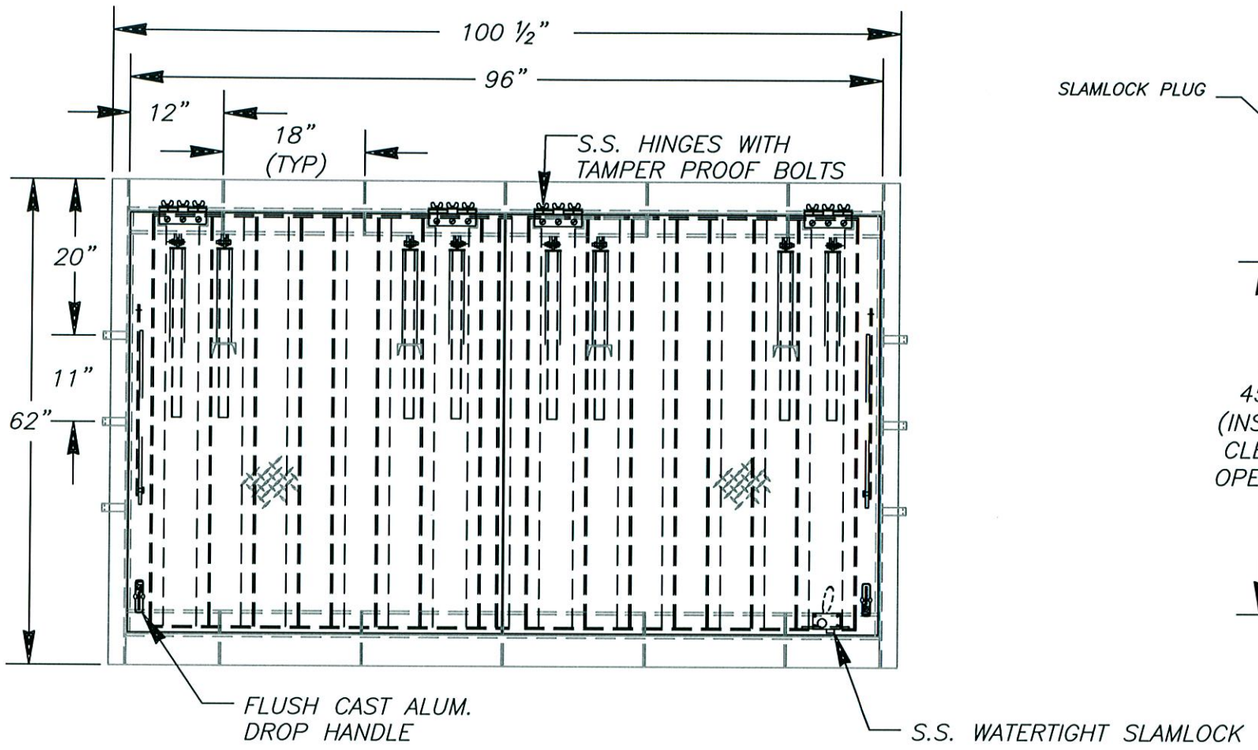
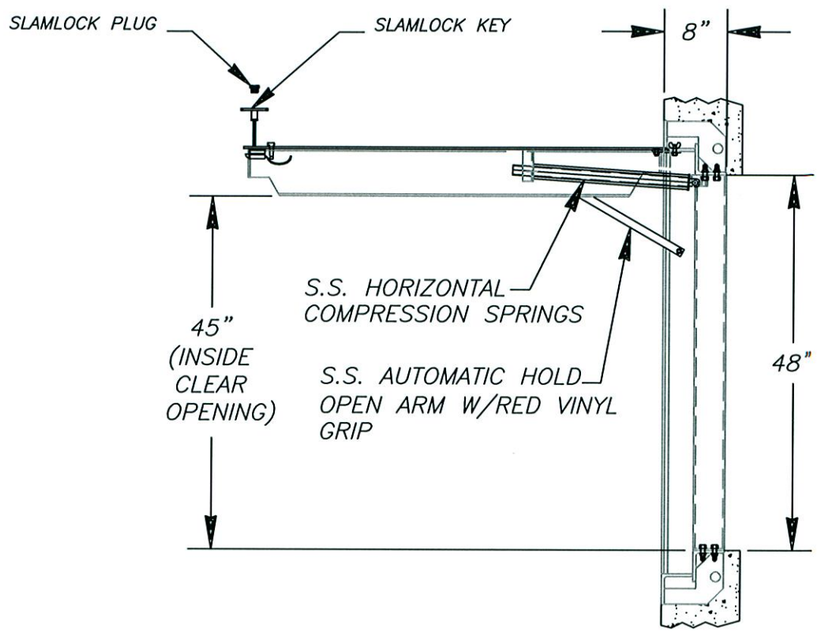
CITY of TAMPA
Department of Public Works
Stormwater Engineering

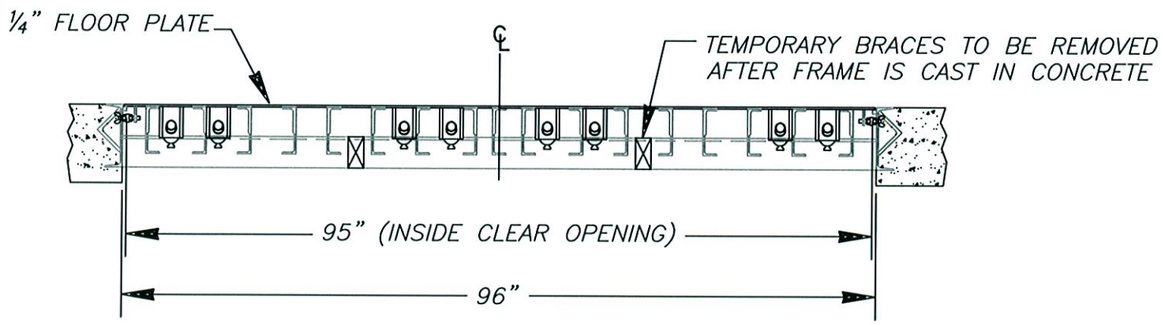
LAKE ECKLES PUMP STATION

W.O. 510H
SHEET S-10 OF 53

SW







NOTES:
1– MATERIAL: ALUMINUM
2– LOADING: DESIGNED FOR OFF STREET LOCATIONS WHICH MAY OCCASIONALLY RECEIVE H–20 WHEEL LOADS
3– 316 STAINLESS STEEL NUTS & BOLTS
4– APPROXIMATE WEIGHT: 575 LBS.
5– AREA OF FRAME IN CONTACT WITH CONCRETE TO BE PAINTED WITH BITUMINOUS COATING.
6–USE U.S. FOUNDRY AHD 48X96 OR EQUAL.

48" X 96" HATCH DETAIL

N.T.S.

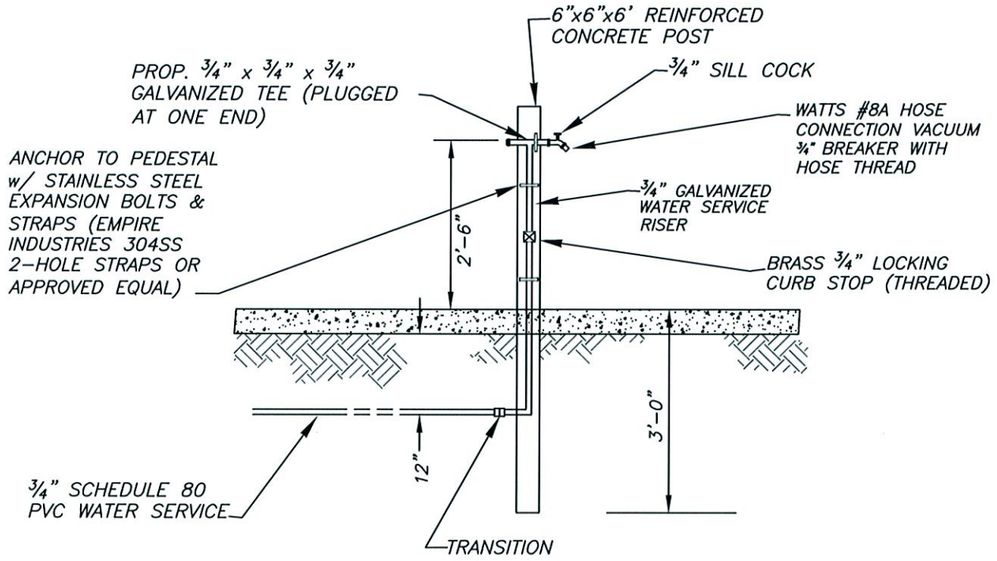
No.	DATE	REVISIONS	No.	DATE	REVISIONS
3			6		
2			5		
1			4		

DES: MTM
DRN: MP
CKD:
DATE:

CITY of TAMPA
Department of Public Works
Stormwater Engineering

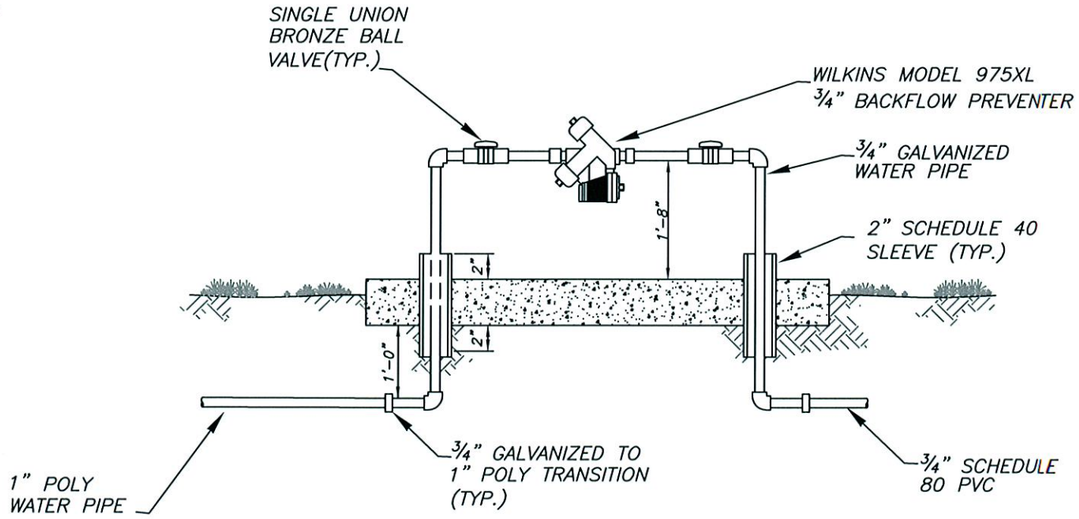
LAKE ECKLES PUMP STATION

W.O. 510H
SHEET S-11
OF 53



WATER SERVICE RISER DETAIL

NOT TO SCALE



BACKFLOW PREVENTER DETAIL

NOT TO SCALE

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

DES: MTM
DRN: MP
CKD:
DATE:

CITY of TAMPA
Department of Public Works
Stormwater Engineering

LAKE ECKLES FORCE MAIN
PUMP STATION

W.O. 510H
SHEET S-12 OF 53

LEGEND

SYMBOL	DESCRIPTION
	HEAVY DUTY SAFETY SWITCH
	TRANSFORMER
	FLUORESCENT FIXTURE – CEILING MTD.
	INCAND. OR HID FIXTURE – CEILING MTD.
	INCAND. OR FLUORESCENT FIXTURE – STANCHION MTD.
	INCAND. OR HID FIXTURE – WALL MTD.
	EMERGENCY EXIT LIGHT
	EMERGENCY LIGHT
	20A, 125V, 3–WIRE DUPLEX RECEPT.
	BRANCH CIRCUIT PANELBOARD
	120V, 1ø CIRCUIT HOMERUN TO 1–POLE BRKR.
	SLASH MARKS DENOTE NO. OF WIRES; LONG – NEUTRAL, X – GROUND.
75	MOTOR, 75 HP
	LIMIT SWITCH – NORMALLY OPEN
MSH	MOTOR SPACE HEATER
	KEYED NOTE

SYMBOL	DESCRIPTION
	LIMIT SWITCH – NORMALLY CLOSED
LS	LEVEL SWITCH
	LIQUID LEVEL SWITCH – NORMALLY OPEN
	LIQUID LEVEL SWITCH – NORMALLY CLOSED
	PRESSURE SWITCH – NORMALLY OPEN
	PRESSURE SWITCH – NORMALLY CLOSED
J	JUNCTION BOX, PULL BOX – SIZED PER NEC
	CONDUIT – DOWN
	CONDUIT – UP
	SELECTOR SWITCH – NORMALLY OPEN
xM	MOTOR STARTER COIL, x DESIGNATES MOTOR ID. NO.
Rx	RELAY COIL, x DESIGNATES ID. NO.
xxR–y	RELAY CONTACT – NORMALLY OPEN, xx DESIGNATES RELAY ID. NO. & y DESIGNATES CONTACT NO.
xxR–y	RELAY CONTACT – NORMALLY CLOSED, xx DESIGNATES RELAY ID. NO. & y DESIGNATES CONTACT NO.
xMOL	MOTOR OVERLOAD RELAY – x DESIGNATES MOTOR I.D. NO.
	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		
CKT	CIRCUIT	MNTD	MOUNTED	TYP	TYPICAL
CTR	CENTER	ø	PHASE	UON	UNLESS OTHERWISE NOTED
DISC	DISCONNECT	PB	PUSH BUTTON	V	VOLT
DT	DOUBLE THROW	PT	PRESSURE TRANSMITTER	W	WIRE
DWG	DRAWING	PWR	POWER	w/	WITH
ELEC	ELECTRICAL, ELECTRIC	RECEPT	RECEPTACLE	XFMR	TRANSFORMER
EXH	EXHAUST	SW	SWITCH	XFR	TRANSFER
GFCI	GROUND FAULT CIRCUIT INTERRUPTER	SWBD	SWITCHBOARD	XMTR	TRANSMITTER

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 INSTALLATIONS SHALL BE IN ACCORDANCE w/ CITY OF TAMPA CODE 5–111.6.1.5 CITY OF TAMPA CODE CHAPTER 5 ISSUED 10/01/2005.
15. ALL FASTENING HARDWARE (SCREWS, BOLTS, NUTS, ETC.) SHALL BE 316 STAINLESS STEEL. FASTENING HARDWARE CONSTRUCTED OF FERROUS MATERIAL ARE NOT ACCEPTABLE.
16. ALL CONDUITS SHALL BE RIGID HEAVY WALL ALUMINUM CONDUIT, UNLESS OTHERWISE NOTED.
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.

SW

10/4/13

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1			4		

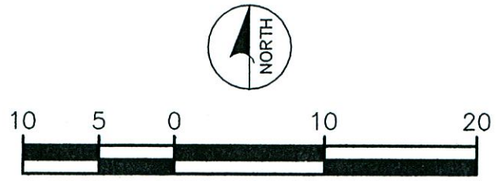
DES: STK
DRN: RWB
CKD:
DATE: 09/27/13

CITY of TAMPA
Department of Public Works
Stormwater Engineering

LAKE ECKLES STORMWATER PUMP STATION
ELECTRICAL
LEGEND & ABBREVIATIONS

W.O. 510H
SHEET E-1

SW



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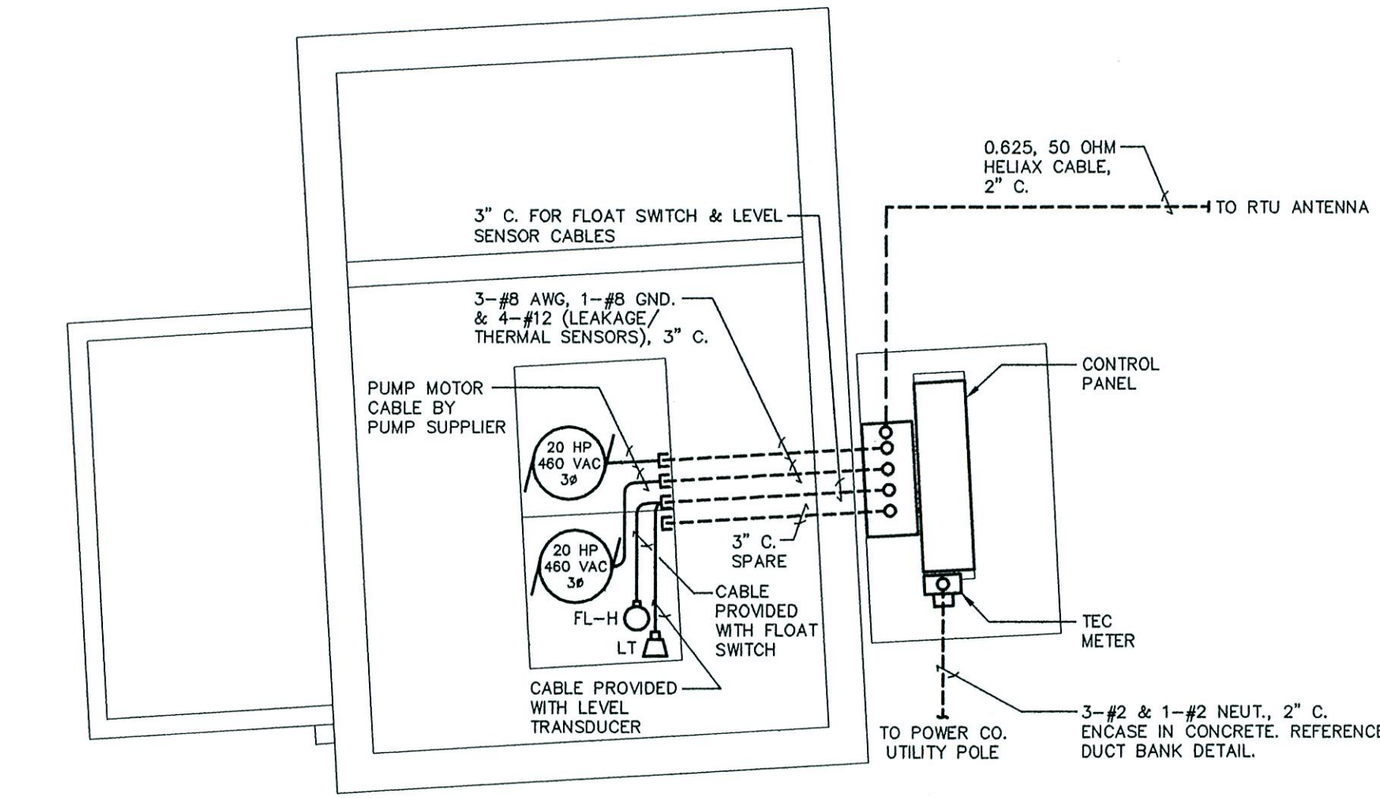
Stormwater Engineering

LAKE ECKLES STORMWATER PUMP STATION
ELECTRICAL
SITE PLAN

W.O. 510H
SHEET E-2

SW



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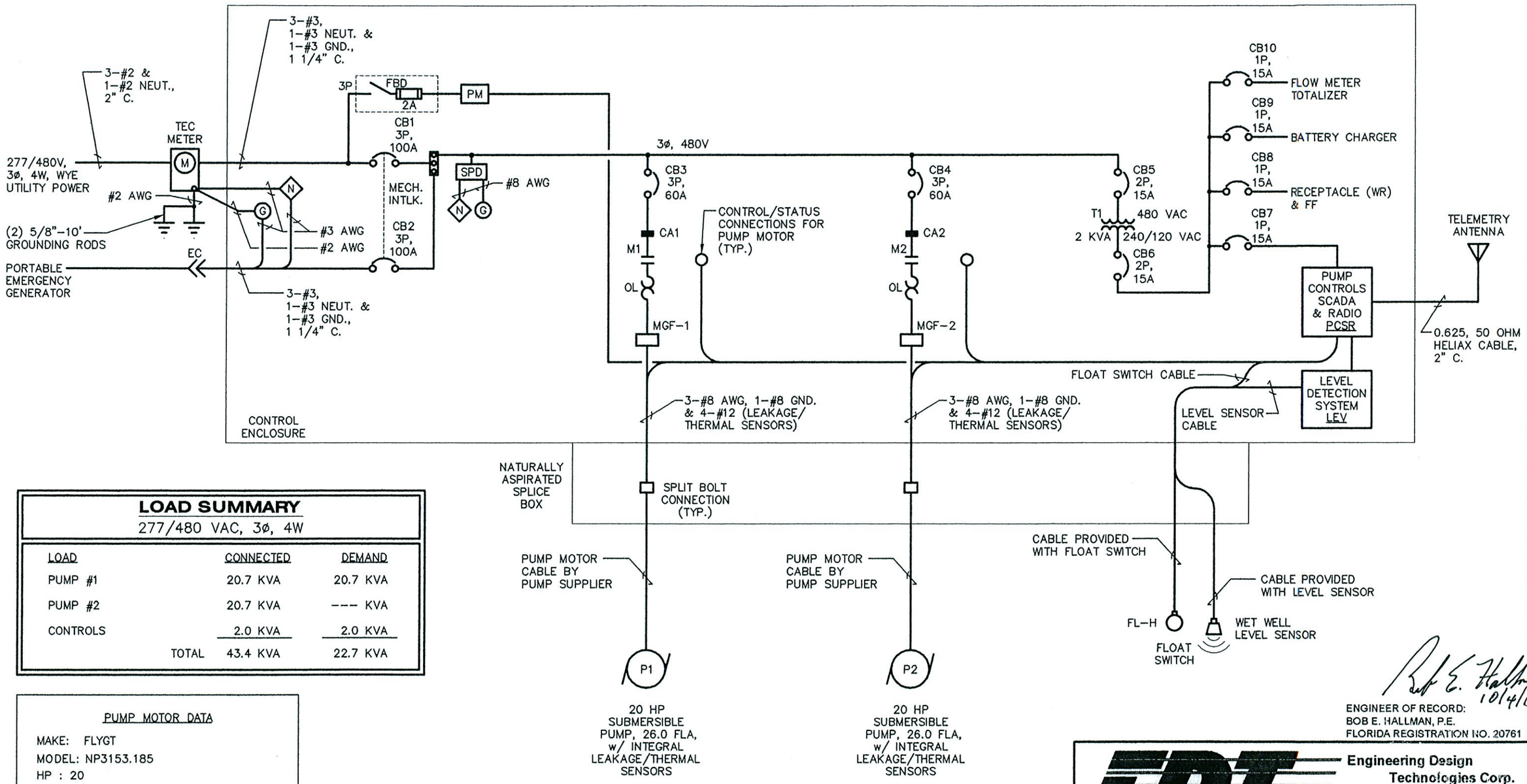
Stormwater Engineering

LAKE ECKLES STORMWATER PUMP STATION
ELECTRICAL
BUILDING PLAN

W.O. 510H
SHEET E-3

SW



LOAD SUMMARY

277/480 VAC, 3ø, 4W

LOAD	CONNECTED	DEMAND
PUMP #1	20.7 KVA	20.7 KVA
PUMP #2	20.7 KVA	--- KVA
CONTROLS	2.0 KVA	2.0 KVA
TOTAL	43.4 KVA	22.7 KVA

PUMP MOTOR DATA

MAKE: FLYGT
MODEL: NP3153.185
HP : 20
460 V, 3 PHASE, 26.0 FLA

TOTAL ESTIMATED LOAD: 52.0 AMPS, 41.4 KVA

NOTE: AVAILABLE FAULT CURRENT AT TRANSFORMER LUGS FOR ANTICIPATED 3-25 KVA POLE-MOUNTED TRANSFORMERS (Z=2%) IS 4,860A; AIC RATING - 25,000A SYMMETRICAL.

ELECTRICAL ONE-LINE DIAGRAM

Bob E. Hallman 10/4/13

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CITY of TAMPA
Department of Public Works
Stormwater Engineering

LAKE ECKLES STORMWATER PUMP STATION
ELECTRICAL
ONE-LINE DIAGRAM

W.O. 510H
SHEET E-4

SW

277/480 V, 3ø, 4W
L1 L2 L3 N
METER SOCKET
10' METALLIC WATER LINE
2-5/8"-10fT. GROUNDING RODS
AWG #2
EC
#3 AWG
MS
LA
ME-MP
#2 AWG
#3 AWG
#8 AWG
FBD
PM 10 8 4
SPD
CB2
CB1
CB3
CB4
M1
M2
F4
F5
CR3
CR4
SOLID STATE O/L
CA1
CA2
MGF-1
MGF-2
T1
T2
T3
P1 20 HP
P2 20 HP
TO SLD1 & FM1
TO SLD2 & FM2
SPLIT BOLT CONNECTION (TYP.)
PDB
#12 AWG
CB5
T1
120/240V
CB6
TB
CB8
TS
FF
WR
CB7
CB9
#12 AWG (TYP)

BATT. CHRG.
BATT. 12V, 7 AH
TO BLACKBOX 130
CB10
33
FLOW METER TOTALIZER
34
LEV
LT
LL
1 L
N 2
TB1 (TYP.)
PL1
Y
PUMP #1 "ON"
ETM 1
CR 1
CR1
17
1-RUN
DI-11
24V+
4
PCSR SLOT 1
PL3
PUMP #2 "ON"
ETM 2
CR 2
CR2
18
2-RUN
DI-15

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

SEE NOTES ON SHEET E-14

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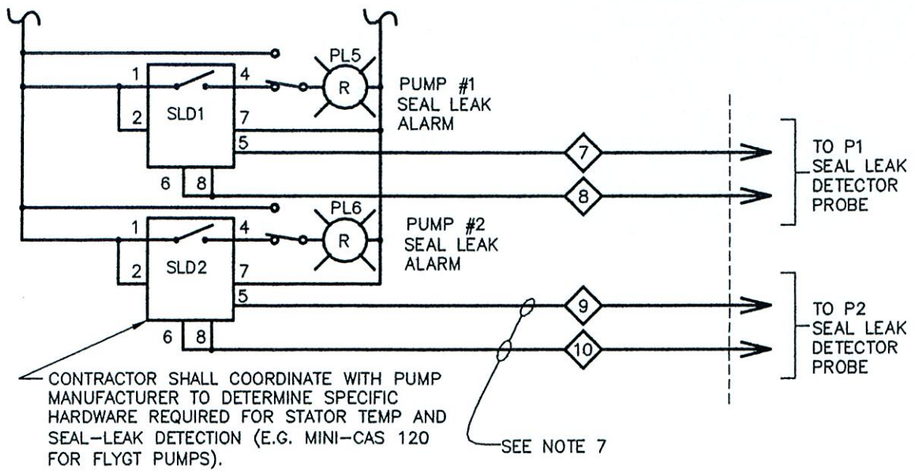
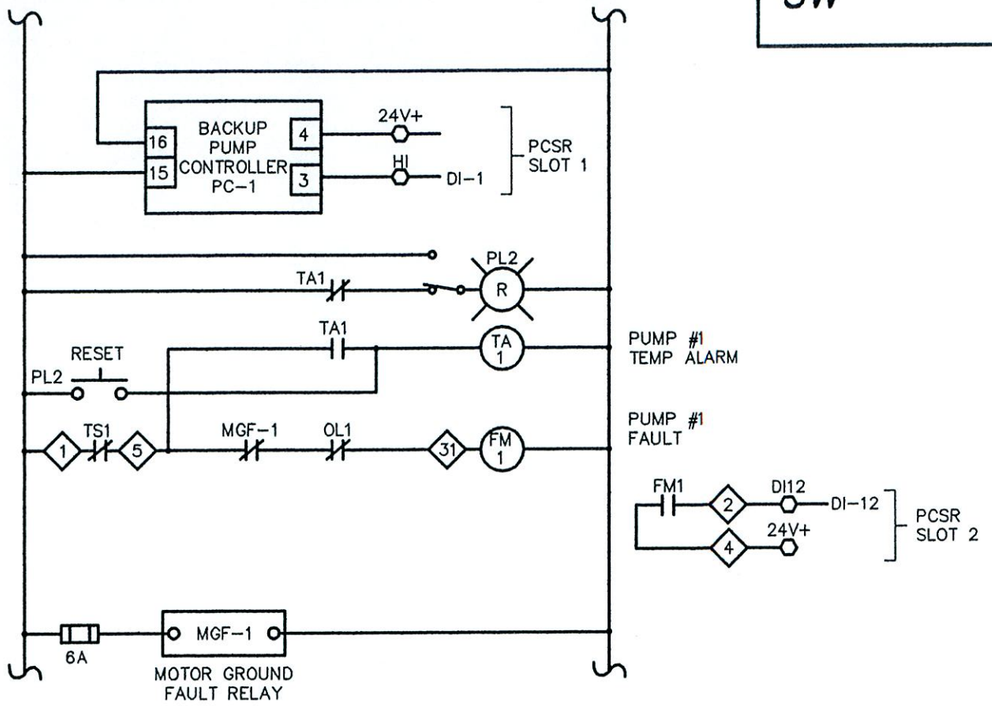
Stormwater Engineering

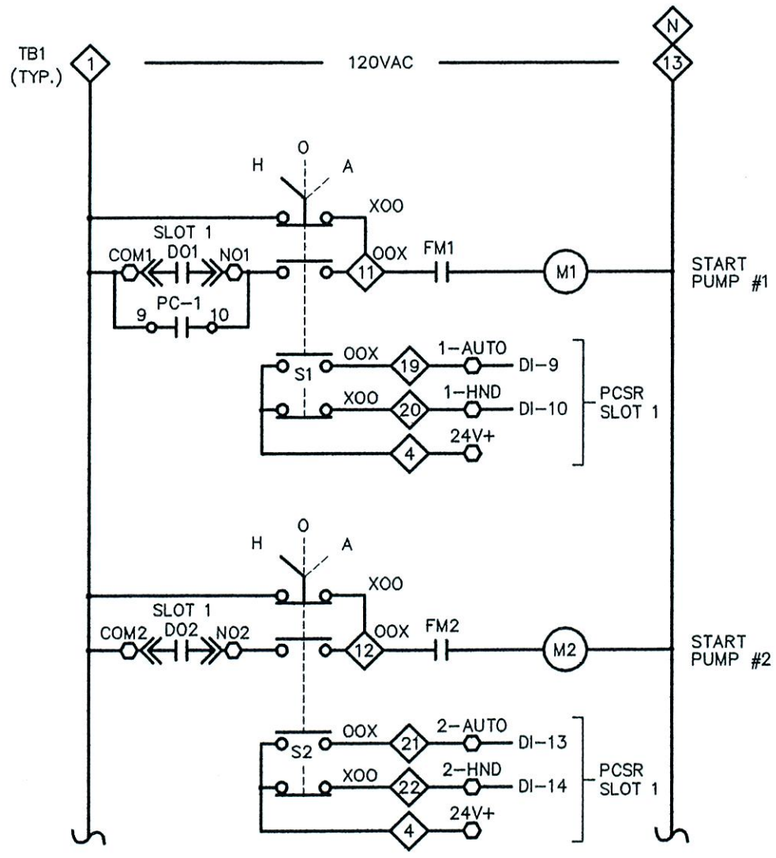
LAKE ECKLES STORMWATER PUMP STATION
ELECTRICAL SCHEMATIC DIAGRAM
(SHEET 1 OF 5)

W.O. 510H
SHEET E-5

SW







SEE NOTES ON SHEET E-14

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TERMINALS ON ACE I/O MODULE (GENERAL)

TERMINALS IN PUMP CONTROL PANEL

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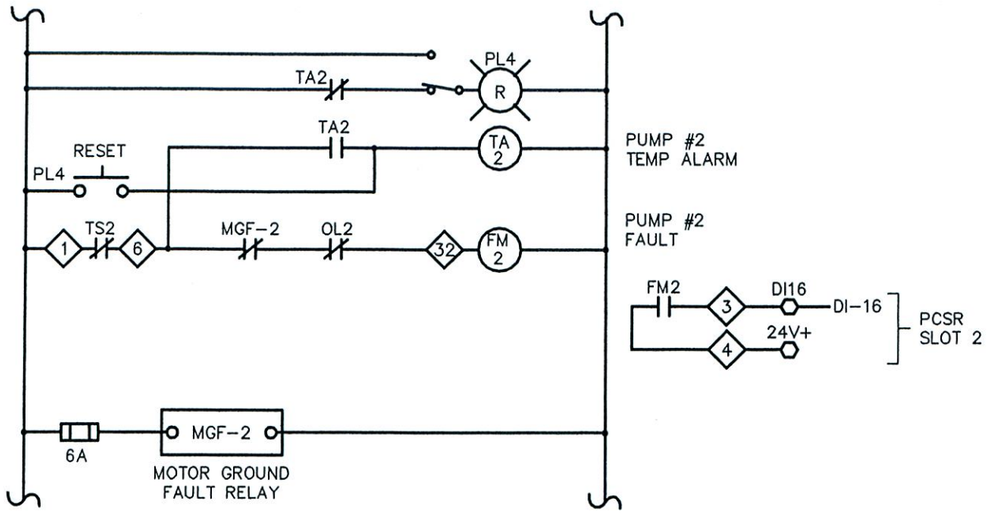
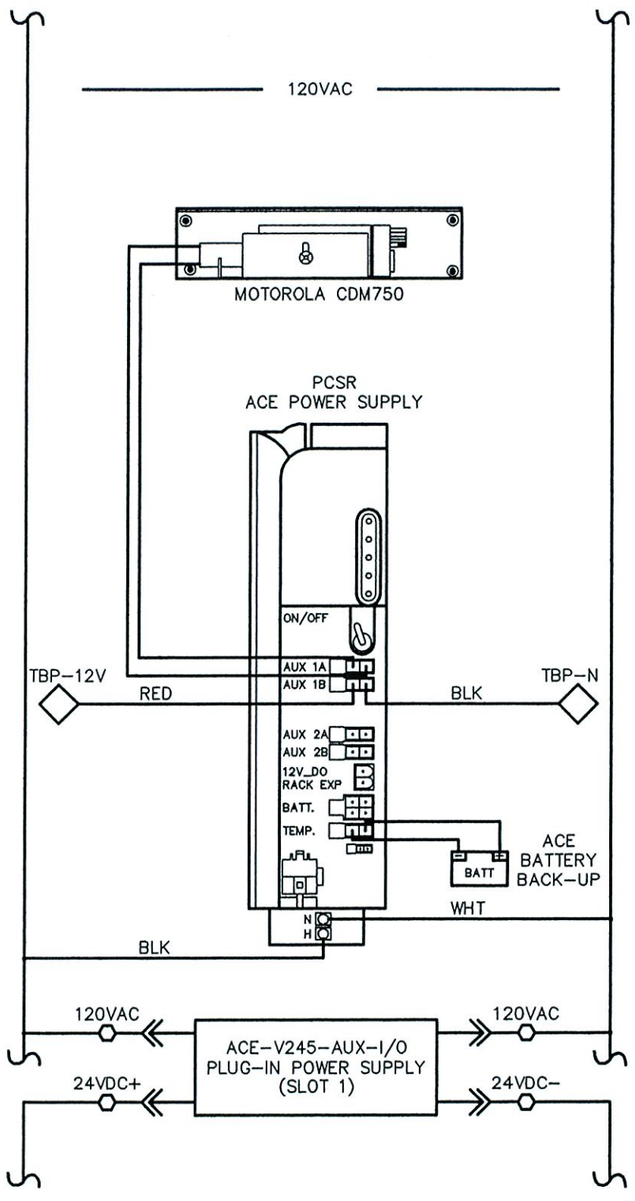
Department of Public Works
Stormwater Engineering

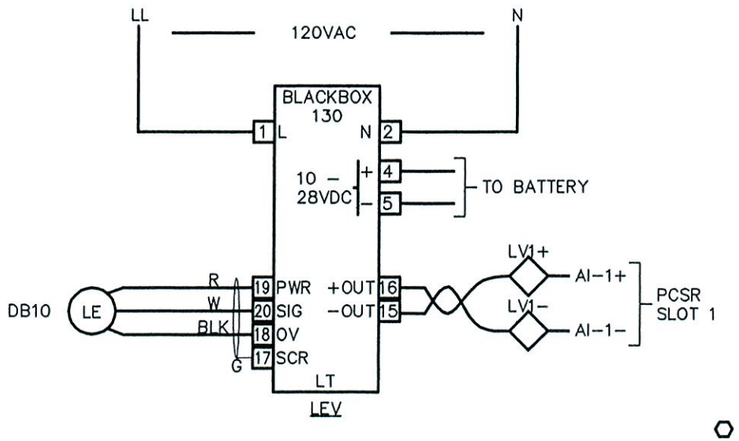
LAKE ECKLES STORMWATER PUMP STATION
ELECTRICAL SCHEMATIC DIAGRAM
(SHEET 2 OF 5)

W.O. 510H
SHEET E-6

SW







TERMINALS ON ACE I/O MODULE (GENERAL)

TERMINALS IN PUMP CONTROL PANEL

SEE NOTES ON SHEET E-14

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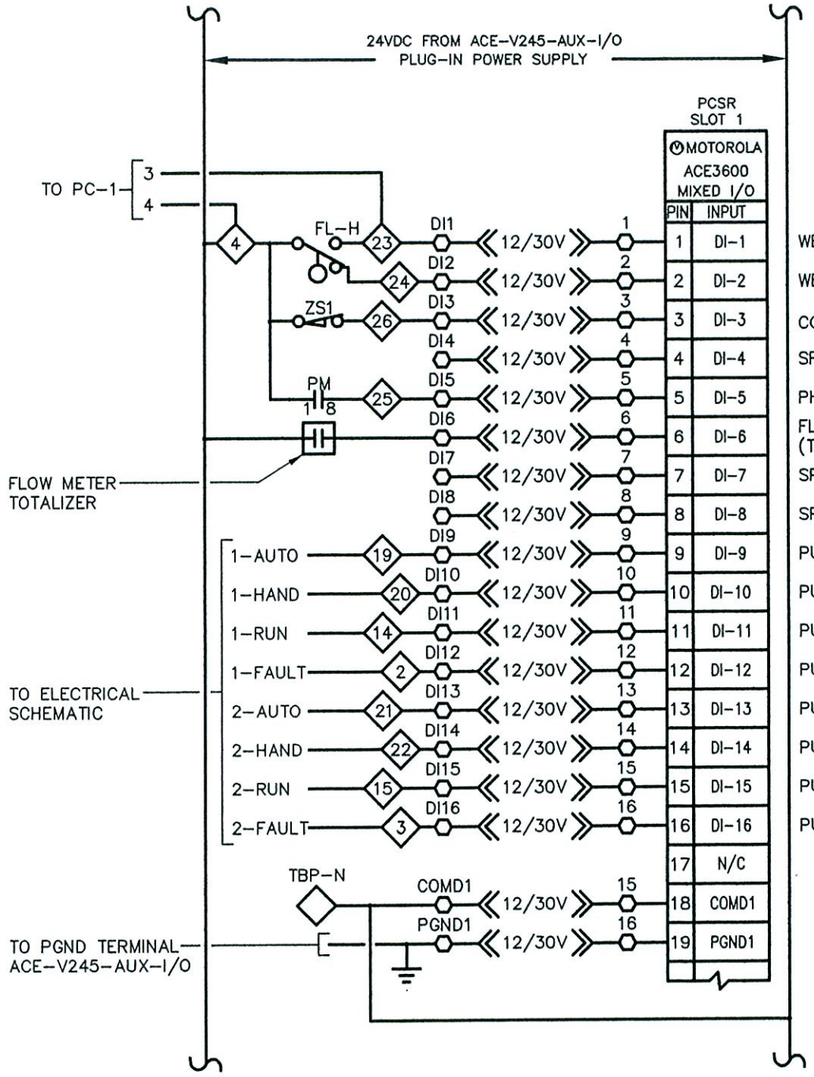
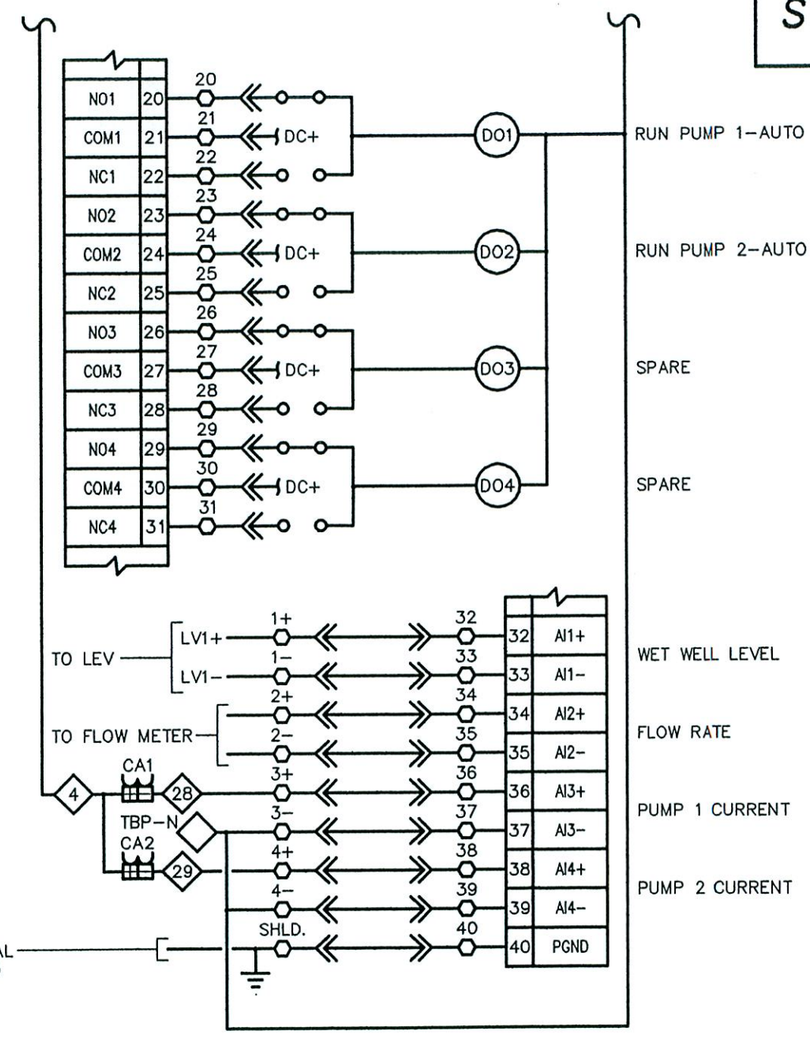
Stormwater Engineering

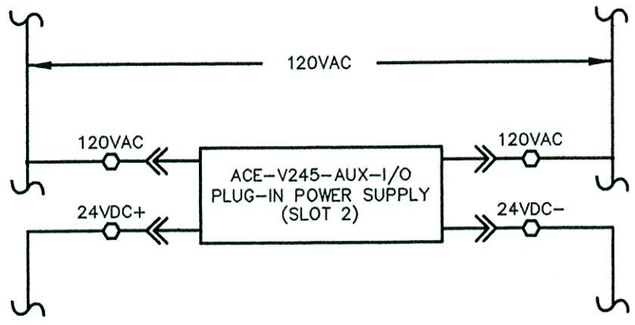
LAKE ECKLES STORMWATER PUMP STATION
ELECTRICAL SCHEMATIC DIAGRAM
(SHEET 3 OF 5)

W.O. 510H
SHEET E-7

SW







SEE NOTES ON SHEET E-14

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

No.	DATE	REVISIONS	No.	DATE	REVISIONS
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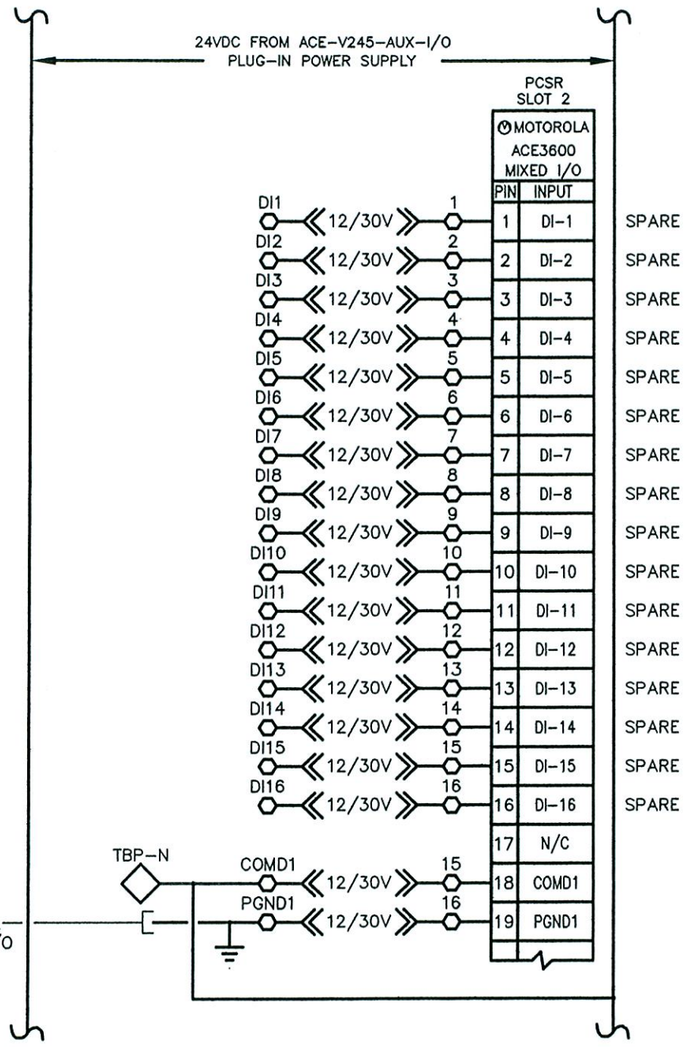
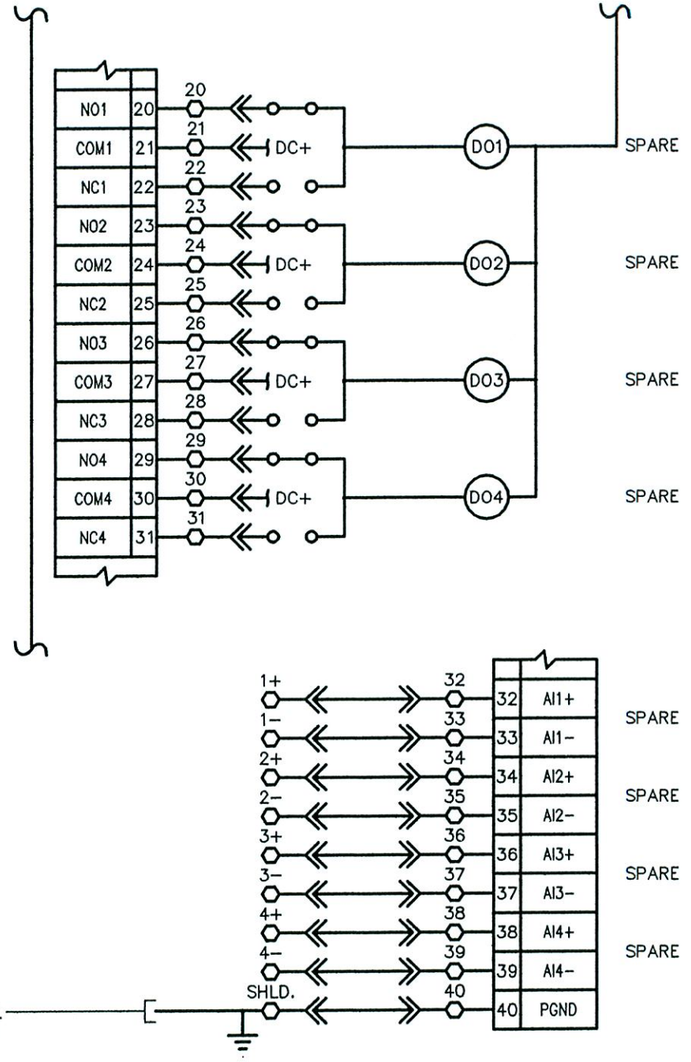
Stormwater Engineering

LAKE ECKLES STORMWATER PUMP STATION ELECTRICAL SCHEMATIC DIAGRAM (SHEET 4 OF 5)

W.O. 510H
SHEET E-8

SW





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TERMINALS ON ACE I/O MODULE (GENERAL)

TERMINALS IN PUMP CONTROL PANEL

SEE NOTES ON SHEET E-14

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LAKE ECKLES STORMWATER PUMP STATION
ELECTRICAL SCHEMATIC DIAGRAM
(SHEET 5 OF 5)

W.O. 510H
SHEET
E-9

TBI- ◇ MOUNTED ON MAIN PANEL (MP)

TERM.	DESCRIPTION
1	CB7 OUT PUMPS CONTROL POWER
2	PUMP 1 FAULT CONTROL INTERLOCK
3	PUMP 2 FAULT CONTROL INTERLOCK
4	SLOT–1 PCSR 24V +
5	STATOR TEMP SWITCH FROM P1
6	STATOR TEMP SWITCH FROM P2
7	P1 SEAL LEAK PROBE
8	
9	P2 SEAL LEAK PROBE
10	
11	M1 "RUN" CMD
12	M2 "RUN" CMD
13	NEUTRAL
14	P1 "ON" DISCRETE
15	P2 "ON" DISCRETE
16	P1, P2 "ON" EXCITATION
17	P1 "ON" TO PCSR
18	P2 "ON" TO PCSR
19	P1 "AUTO" TO PCSR
20	P1 "HAND" TO PCSR
21	P2 "AUTO" TO PCSR
22	P2 "HAND" TO PCSR
23	HIGH WATER FLOAT SWITCH
24	
25	PM

TB1 CONT'D

26	PANEL INTRUSION
27	SLOT–2 PCSR 24V +
28	PUMP 1 CURRENT
29	PUMP 2 CURRENT
30	SPARE
31	M1 FAULT
32	M2 FAULT
33	FLOW METER
34	
35	SPARE
36	SPARE
37	SPARE
38	SPARE
39	SPARE
40	SPARE
41	SPARE
42	SPARE
43	SPARE
44	SPARE
45	SPARE
46	SPARE
47	SPARE
48	SPARE
49	SPARE
50	SPARE

SW

CONTROL SCHEMATIC SYMBOLS

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

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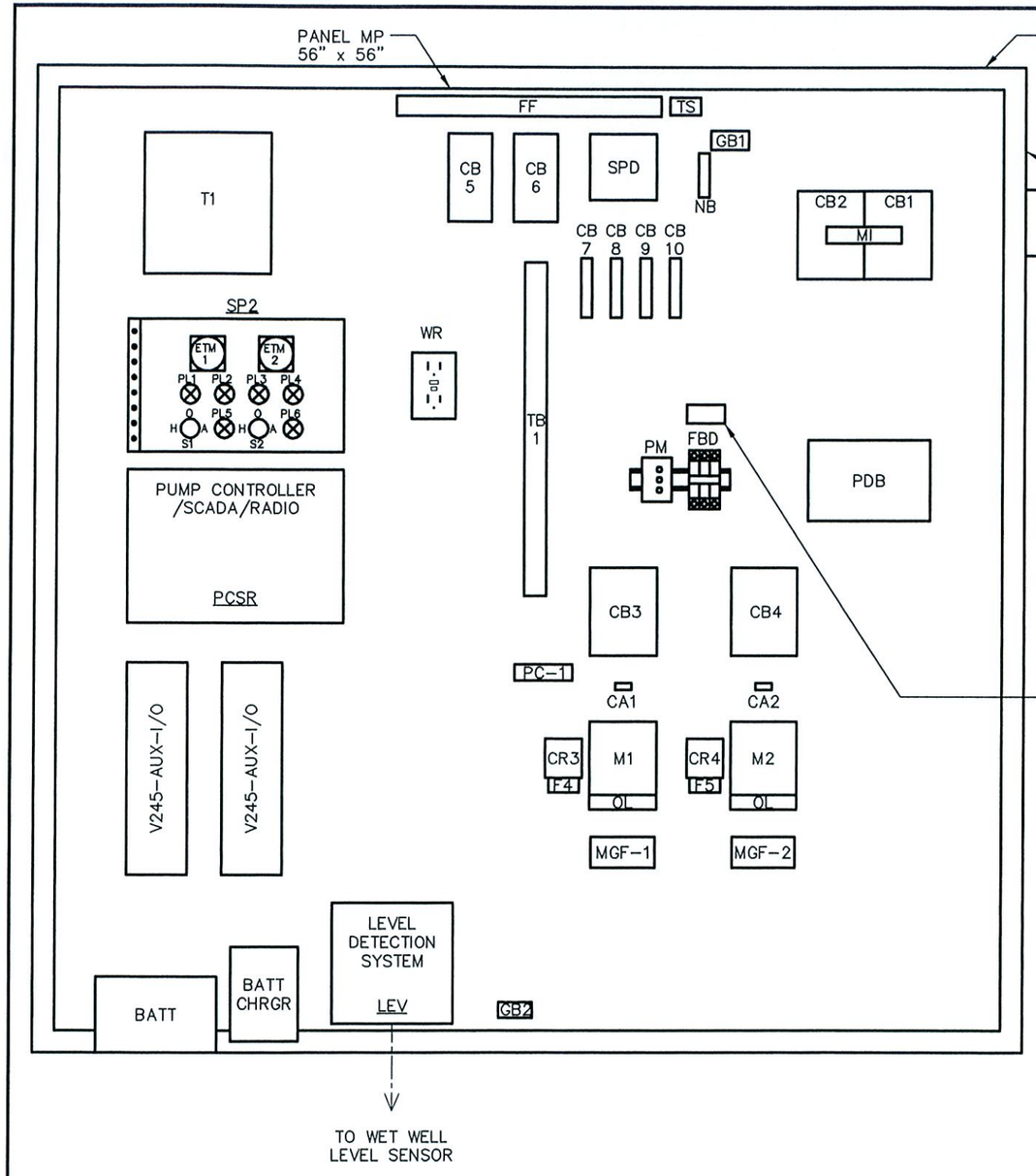
LAKE ECKLES STORMWATER PUMP STATION
ELECTRICAL
SCHEMATIC LEGEND

W.O. 510H
SHEET E-10

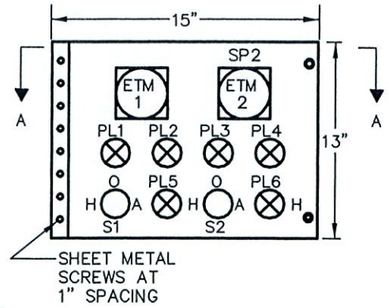


CONTROL PANEL ENCLOSURE* – FRONT VIEW

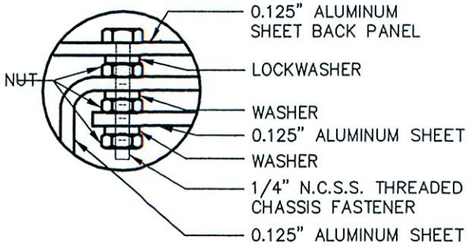
NOT TO SCALE

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

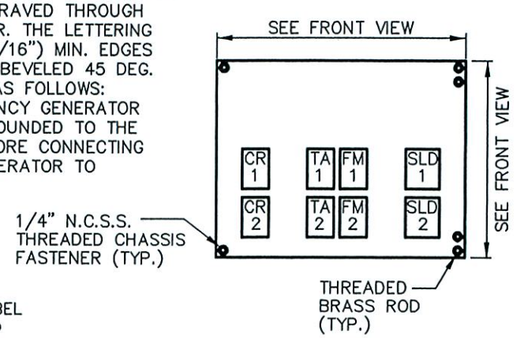
PROVIDE WARNING LABEL ABOVE FBD. LABEL TO READ "WARNING – OPENING MAIN CIRCUIT BREAKER DOES NOT DE–ENERGIZE VOLTAGE TO THIS DISCONNECT".



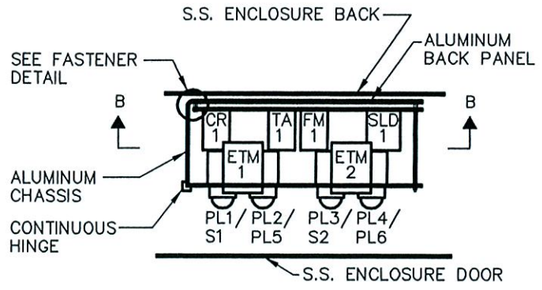
FRONT VIEW



FASTENER DETAIL



SECTION B–B



SECTION A–A

CONTROL CHASSIS LAYOUT

SEE NOTES ON SHEET E-14

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DRN: RWB
CKD:
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CITY of TAMPA
Department of Public Works
Stormwater Engineering

LAKE ECKLES STORMWATER PUMP STATION
ELECTRICAL
CONTROL PANEL LAYOUT

W.O. 510H
SHEET
E-11

SW

SW

PARTS SCHEDULE

SYMBOL	NAME	MAKE	TYPE	MODEL or CAT. #	RATING	REMARKS
CB1	CIRCUIT BREAKER	SQUARE D	3 POLE	FHL36100	600V, 100A	
CB2	CIRCUIT BREAKER	SQUARE D	2 POLE	FAL34100	480V, 100A	
CB3, CB4	CIRCUIT BREAKER	SQUARE D	3 POLE	FAL34060	480V, 60A	
CB5	CIRCUIT BREAKER	SQUARE D	2 POLE	FAL24015	480V, 15A	
CB6	CIRCUIT BREAKER	SQUARE D	2 POLE	FAL22015	240V, 15A	
CB7, CB8, CB9, CB10	CIRCUIT BREAKER	SQUARE D	1 POLE	QOU115	120V, 15A	
M1, M2	MOTOR STARTER	SQUARE D	NEMA SIZE 2	CLASS 8536, TYPE SD01	120 VAC (COIL)	25 HP (MAX), 1 N.O.
FBD	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
PM	3 PHASE VOLTAGE MONITOR	MOTOR CONTROLS CORP.	DISCRETE/ANALOG	PM-440-118A	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	INDICATOR LIGHT	SQUARE D	CLASS 9001	SKT38LYY9	120V LED TYPE	YELLOW LENS & PRESS TEST
PL2, PL4	ILLUM. PUSH BUTTON	SQUARE D	CLASS 9001	SK2L38LRRH13	120V LED TYPE	RED LENS & 1 N.O., 1 N.C.
PL5, PL6	INDICATOR LIGHT	SQUARE D	CLASS 9001	SKT38LRR9	120V LED TYPE	RED LENS & PRESS TEST
S1, S2	HOA SWITCH ASSEMBLY	SQUARE D	OILTIGHT CLASS 9001	SKS - 43B H2	10A @ 120V	
ETM1, ETM2	ELAPSE TIME METER	CRAMER	NON-RESET	635	120V	
FF & TS	FLUORESCENT FIXTURE	DAYTON	INDUSTRIAL	2 V 811	120V, 20W	w/ TOGGLE SWITCH-TS AND TUBE GUARD
WR	RECEPTACLE	HUBBELL	DUPLEX w/ GFI	GF 5262	125 VAC, 15A GFI	w/ CAST ALUMINUM BOX AND COVER
SPD	SURGE SUPPRESSOR	ADVANCE PROTECTION TECHNOLOGIES	MAIN PANEL SPD	TE04XDS104X	277/480 VAC, 3ø, WYE	
FL	FLOAT SWITCH	ANCHOR SCIENTIFIC	SPDT	S20NONC	10A @ 120V	
LA	LIGHTNING ARRESTER	GENERAL ELECTRIC	TRANQUELL	9L15ECC001	650V	
TB1	TERMINAL BOARD	ALLEN-BRADLEY	STYLE AA	1492-15T	600V	30 CONTACTS (MIN)

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Department of Public Works
Stormwater Engineering

LAKE ECKLES STORMWATER PUMP STATION
PARTS SCHEDULE
(SHEET 1 OF 2)

W.O. 510H
SHEET
E-12

SW

PARTS SCHEDULE

SYMBOL	NAME	MAKE	TYPE	MODEL or CAT. #	RATING	REMARKS
CA1, CA2	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 *	QUALITY METALS	NEMA 3R THREE POINT LATCH	60" x 60" x 16" SS 3R	304 SS, 14 GAUGE	w/ DOOR STOP KIT – # A–DSTOPK
MP	ENCLOSURE PANEL *	QUALITY METALS	56" x 56", STEEL	S56 P56, WHITE AS REQUIRED	STEEL, 12 GAUGE	
GB1, GB2	GROUNDING BLOCK	ILSCO	AS REQUIRED			
SLD1, SLD2	SEAL LEAK DETECTOR	SYRELEC	8 PIN PLUG–IN	PNRU110	110V INPUT, 10A CONTACTS	SPDT w/ SOCKET
TA1, TA2, FM1, FM2, CR1, CR2	CONTROL RELAY	POTTER & BRUMFIELD	8 PIN PLUG–IN	KRPA–11AG–120	120V COIL, 10A CONTACTS	DPDT w/ SOCKET AND HOLD DOWN SPRING
LEV	LEVEL DETECTION SYSTEM	PULSAR INC.	CONTROLLER	BLACKBOX 130 (TROPICALIZED) w/ KEYPAD & DISPLAY 130–110–300–00P–KP–TROP	120V, 5 WATT	PROVIDE TRANSDUCER MODEL DB10
BATT.	BATTERY	POWERSONIC AGM		PS–1270 F2	12V, 7.0 AH	
BATT. CHRG.	BATTERY CHARGER	DELTRAN CORP.		WATERPROOF 800	12V, 0.800A OUTPUT	
PCSR	PLC BASED PUMP CONTROLLER, SCADA & RADIO SYSTEM	MOTOROLA CORPORATION	DUPLEX 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/ 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	
MS	METER SOCKET	MILBANK	7–TERMINAL	SELF CONTAINED	277/480 VAC, 3ø, 200A	COORD. w/ TECO
PDB	POWER DIST. BLOCK	ILSCO	3 POLE	PDB–26–2/0–3	600V, 350A	
CR3 & CR4	CONTROL RELAY	SQUARE D	TYPE "X" (IND. CONTROL RELAY)	CL 8501 X20–V04	277V (COIL)	2 N.O.
F4 & F5	FUSE BLOCK	SQUARE D	CLASS 9999	SF3	600V	SCREW TERMINALS
WITH	FUSE	BUSSMANN		KTK	600V, 1A	

NOTES:

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

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Department of Public Works
Stormwater Engineering

LAKE ECKLES STORMWATER PUMP STATION
PARTS SCHEDULE
(SHEET 2 OF 2)

W.O. 510H
SHEET E-13

SW

NOTES:

1. TEC SERVICE: 277/480V, 100A, 3ø, 4W, WYE. CALCULATED FAULT CURRENT – 4,860A; 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 BACK PANEL.
14. THE PCSR SHALL BE A MOTOROLA ACE 3600 MOSCAD PACKAGE AS DISTRIBUTED BY DCR ENGINEERING SERVICES INC. OR SCADAONE, LLC. THE PUMPING STATION CONTRACTOR SHALL COORDINATE HIS EFFORTS WITH DCR OR SCADAONE, LLC TO ENSURE SYSTEM COMPATIBILITY. THE CONTRACTOR SHALL PROVIDE AND INSTALL A COMPLETE DUPLEX CONTROL SYSTEM PACKAGE, AS ASSEMBLED AND PROGRAMMED BY DCR OR SCADAONE, LLC.
15. A WET WELL LEVEL DETECTION SYSTEM 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.

LEGEND PLATE SCHEDULE

SYMBOL	DEVICE	LEGEND
ETM1	ELAPSED TIME METER	PUMP NO. 1 HOURS
ETM2	ELAPSED TIME METER	PUMP NO. 2 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	RED PILOT LIGHT	PUMP NO. 1 SEAL LEAK
PL6	RED PILOT LIGHT	PUMP NO. 2 SEAL LEAK
S1	3–POSITION SWITCH	PUMP NO 1 HAND–OFF–AUTO
S2	3–POSITION SWITCH	PUMP NO. 2 HAND–OFF–AUTO

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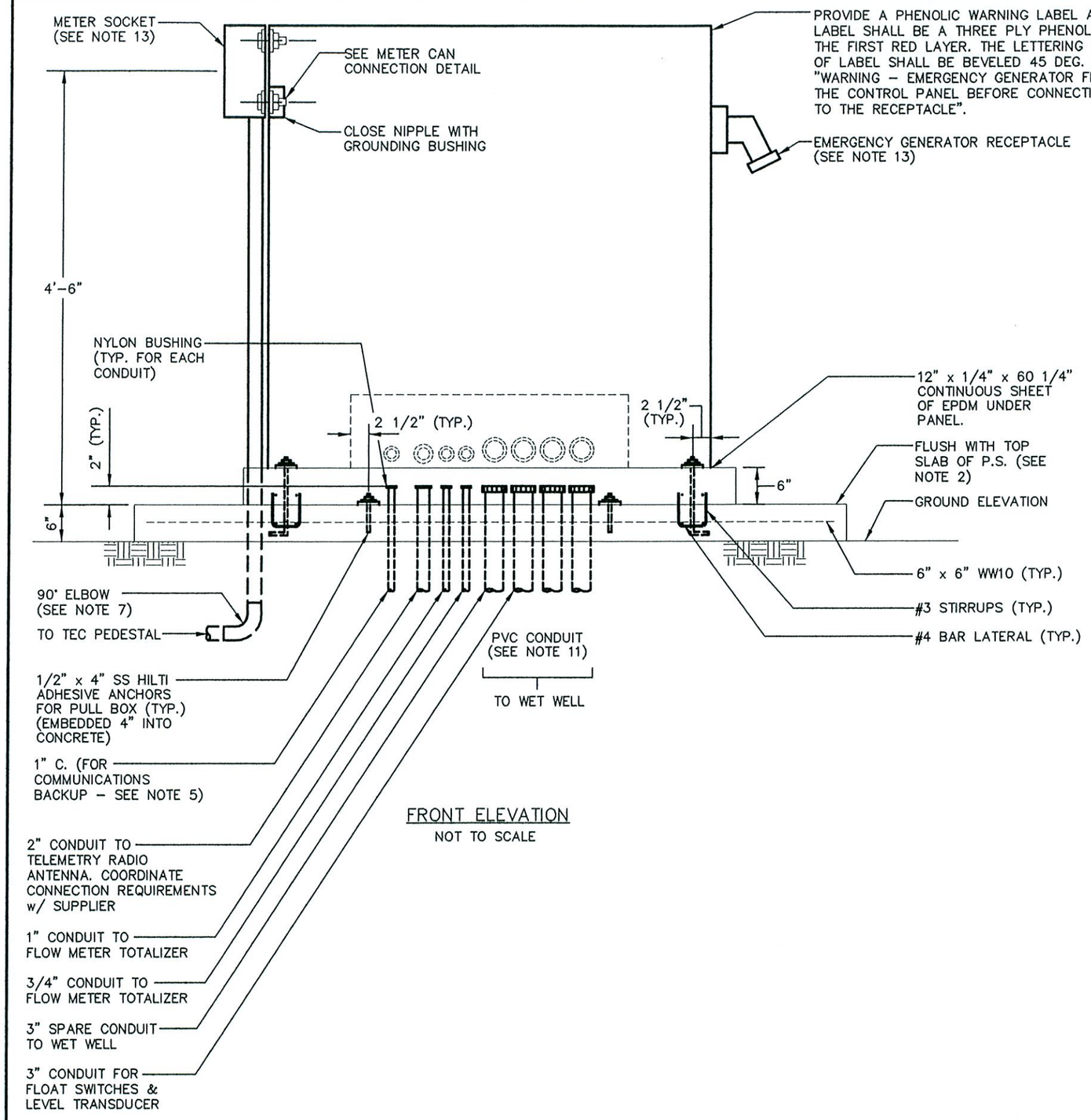
CITY of TAMPA
Department of Public Works
Stormwater Engineering

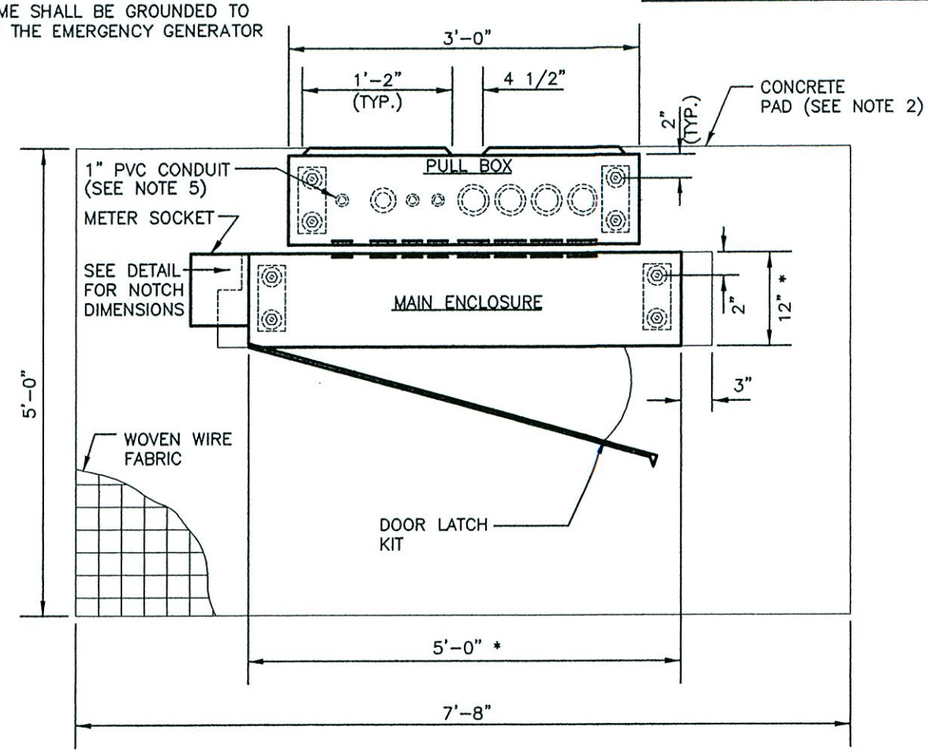
LAKE ECKLES STORMWATER PUMP STATION ELECTRICAL CONTROLS LEGEND PLATES

W.O. 510H
SHEET E-14

SW



FRONT ELEVATION
NOT TO SCALE



PLAN VIEW
NOT TO SCALE

SEE NOTES ON SHEET E-17

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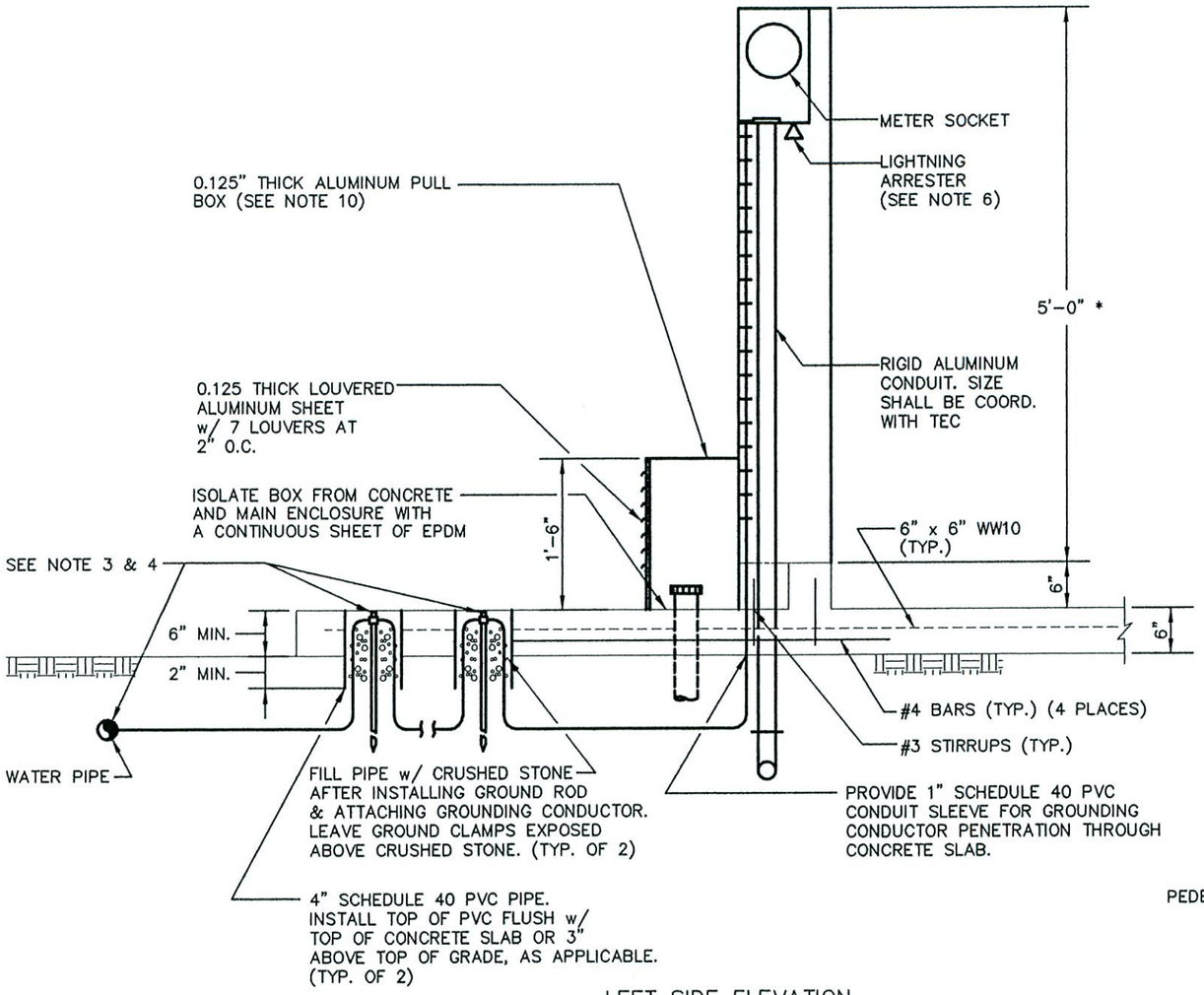
Department of Public Works
Stormwater Engineering

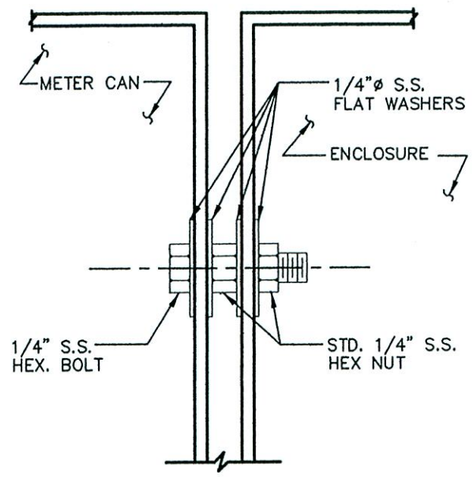
LAKE ECKLES STORMWATER PUMP STATION CONTROL PANEL PEDESTAL DETAILS (SHEET 1 OF 3)

W.O. 510H
SHEET E-15

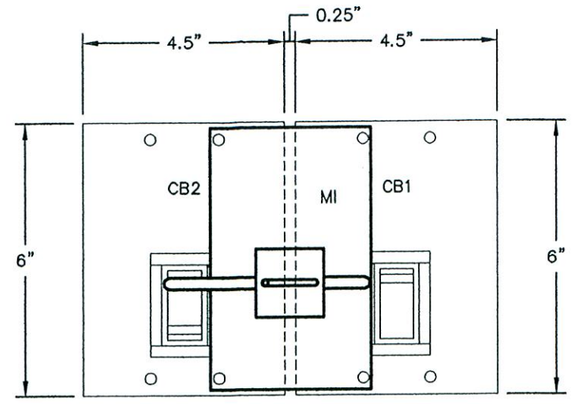
SW

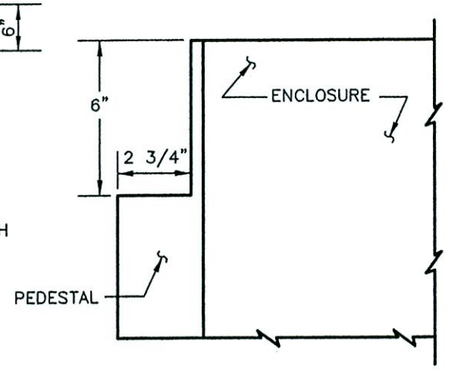


LEFT SIDE ELEVATION
NOT TO SCALE

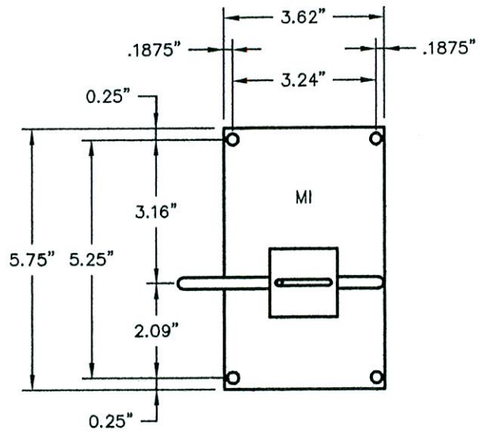


METER CAN CONNECTION
NOT TO SCALE





NOTCH IN PEDESTAL DETAIL
NOT TO SCALE



INTERLOCK NOTES:

1. FABRICATE ALL PIECES FROM COPPER FREE ALUMINUM. PROVIDE STAINLESS STEEL FASTENING HARDWARE.
2. GRIND ALL EDGES SMOOTH.
3. VERIFY ALL DIMENSIONS PRIOR TO FABRICATION.

CB1 & CB2 INTERLOCK DETAILS
NOT TO SCALE

SEE NOTES ON SHEET E-17

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Stormwater Engineering

LAKE ECKLES STORMWATER PUMP STATION CONTROL PANEL PEDESTAL DETAILS (SHEET 2 OF 3)

W.O. 510H
SHEET E-16

SW

NOTES:

1. THWN CONDUCTORS (3–AWG #8 & 1–AWG #8 GND. COPPER EACH PUMP) SHALL EXTEND FROM THE CONTROL PANEL OUT OF THE NYLON BUSHING A MINIMUM OF 18". WHEN INSTALLING THE PUMPS, THE MOTOR CONDUCTORS SHALL BE SPLICED USING SPLIT BOLTS. FOR INSULATION USE MATERIALS THAT ARE RECOMMENDED BY THE MANUFACTURER TO EQUAL INSULATION ON CONDUCTORS. FOLLOW THE SAME PROCEDURE FOR THE LEAKAGE AND THERMAL SENSOR CONDUCTORS.
2. CONCRETE PAD TOP ELEVATION SHALL BE ADJUSTED TO EQUAL TOP ELEVATION OF P. S. TOP SLAB.
3. GROUNDING ELECTRODE CONDUCTOR SHALL BE AWG #2 STRANDED COPPER MINIMUM. SEE SERVICE CONDUCTOR SIZE ON ELECTRICAL SCHEMATIC DRAWING.
4. APPROVED GROUND CLAMPS SHALL BE ATTACHED TO TWO APPROVED 5/8" DIA. x 10'–0" GROUNDING RODS (MINIMUM SPACING 6'–0") AND THE METAL WATER PIPE (IF AVAILABLE ON PREMISES). CONDUCTOR SHALL BE AWG #4 MIN. BARE STRANDED COPPER. SEE CONDUCTOR SIZE ON ELECTRICAL SCHEMATIC DRAWING.
5. 1" PVC CONDUIT w/ PULL WIRE BURIED IN TRENCH WITH POWER CONDUITS. THE CONDUIT SHALL EXTEND FROM THE CONTROL PANEL 3' BEYOND EDGE OF SLAB, CAP & STAKE LOCATION.
6. CITY APPROVED LIGHTNING ARRESTER SHALL BE INSTALLED ON LOAD SIDE OF METER SOCKET.
7. ELBOWS TO BE LONG BUSHED AND THE HORIZONTAL PVC CONDUIT SHALL EXTEND TO A TAMPA ELECTRIC COMPANY HAND–HOLE AT THE BASE OF THE POWER POLE. COORDINATE THIS WORK WITH TEC.
8. ALL CONDUIT TERMINATIONS SHALL BE FITTED WITH NYLON BUSHINGS.
9. WATER SERVICE RISER SHALL BE LOCATED ON SIDE OF PANEL OPPOSITE TO THE TEC METER SOCKET, OR AS INDICATED IN THE DRAWINGS.
10. FRONT OF PULL BOX IS TO BE COVERED BY A LOUVERED ALUMINUM METAL SHEET (MIN. THICKNESS 0.125") AND FASTENED WITH MIN. OF FOUR 1/2" STAINLESS STEEL BOLTS ANCHORED IN THE CONCRETE. LOUVERED PANEL TO BE REMOVABLE AND ATTACHED TO PULL BOX WITH STAINLESS STEEL BOLTS.
11. MINIMUM 3" PVC CONDUITS SIZED FOR NO MORE THAN 35% FILL SHALL BE INSTALLED.
12. REINFORCEMENT SHALL BE AT LEAST 3" FROM EDGE OF PEDESTAL.
13. TEC PREFERS STRAIGHT UNDERGROUND SERVICE CONNECTION TO THE METER BOX. TO AVOID ANY CONFIGURATION CHANGES, THE ENCLOSURE HOLES FOR THE METER BOX AND EMERGENCY CONNECTOR SHALL BE CUT AFTER THE TEC ROUTING IS VERIFIED AT THE TIME OF INSTALLATION.
14. POSITION CONTROL PANEL 90° TO WET WELL HATCH OPENING.
15. COORDINATE WITH CONTROL PANEL MANUFACTURER CONDUIT NIPPLE INSTALLATION IN REAR OF PANEL.
16. DIMENSIONS, ITEMS OR ELEVATIONS MARKED "*" SHALL BE DETERMINED AFTER EQUIPMENT SELECTION.
17. CONDUIT THAT IS IN CONCRETE SHALL BE COATED WITH TWO COATS ASPHALT VARNISH (FED. SPEC. TT–V–51) TO 4" ABOVE AND BELOW CONCRETE.

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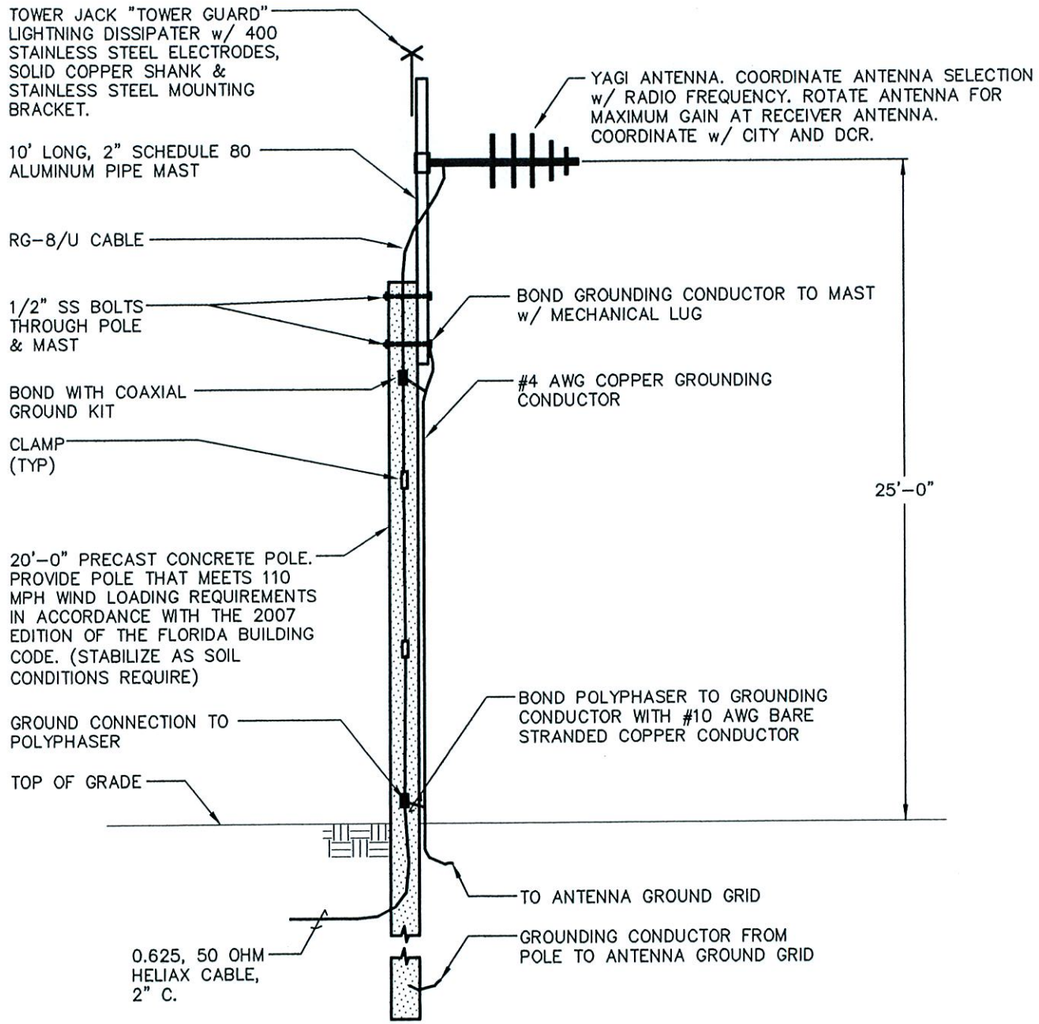
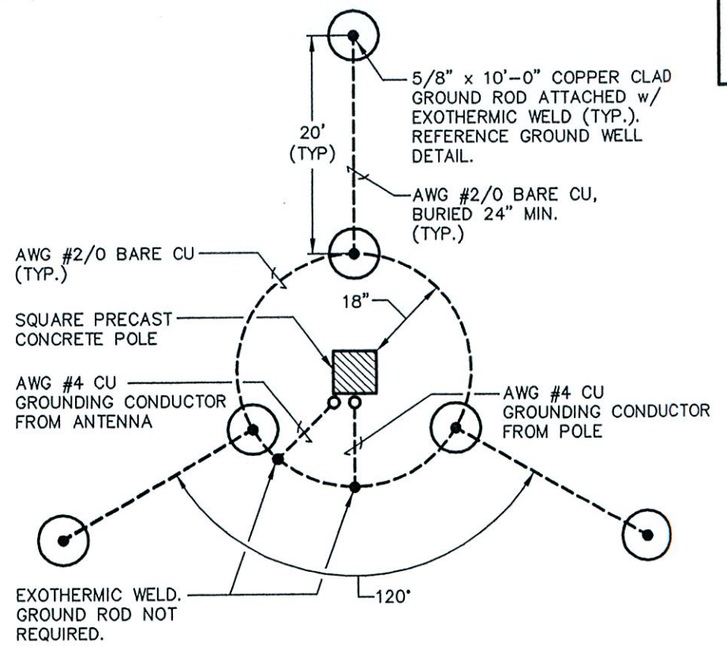
LAKE ECKLES STORMWATER PUMP STATION CONTROL PANEL PEDESTAL DETAILS (SHEET 3 OF 3)

W.O. 510H
SHEET E-17

SW





ANTENNA GROUND GRID DETAIL

NOTES:

1. CONTRACTOR SHALL DETERMINE FINAL TOWER HEIGHT & WIND LOADING REQUIREMENTS. BURIAL DEPTH OF POLE SHALL BE SUITABLE FOR SOIL CONDITIONS TO ENDURE A 120 MPH WIND SPEED w/ A 3 SECOND GUST OF 140 MPH AS DETERMINED BY A REGISTERED PROFESSIONAL CIVIL ENGINEER. PROVIDE CALCULATIONS.

   SHOP DRAWINGS SHALL BE IN CONFORMANCE WITH CHAPTER 16, SECTION 1609 OF THE FBC2004 FOR A BASIC WIND SPEED OF 120 MPH AS SHOWN IN FIGURE 1609 OF THE CODE. THE SHOP DRAWINGS SHALL BE SIGNED AND SEALED BY A STRUCTURAL ENGINEER LICENSED IN THE STATE OF FLORIDA.

2. ADJUST PLACEMENT OF GROUND RODS AS NECESSARY SO GROUND GRID DOES NOT EXTEND BEYOND PROPERTY LINE OF PUMPING STATION.

3. A RADIO COMMUNICATION PATH SHALL LINK THE STORMWATER PUMPING STATION WITH RECIEVER ANTENNA. THE CONTRACTOR SHALL PERFORM A RADIO PATH SURVEY TO ESTABLISH THE RADIO FREQUENCY, POWER, ANTENNA REQUIREMENTS & ANTENNA HEIGHT FOR THIS COMMUNICATION PATH.

ANTENNA DETAILS

ENGINEER OF RECORD:
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10/4/13

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

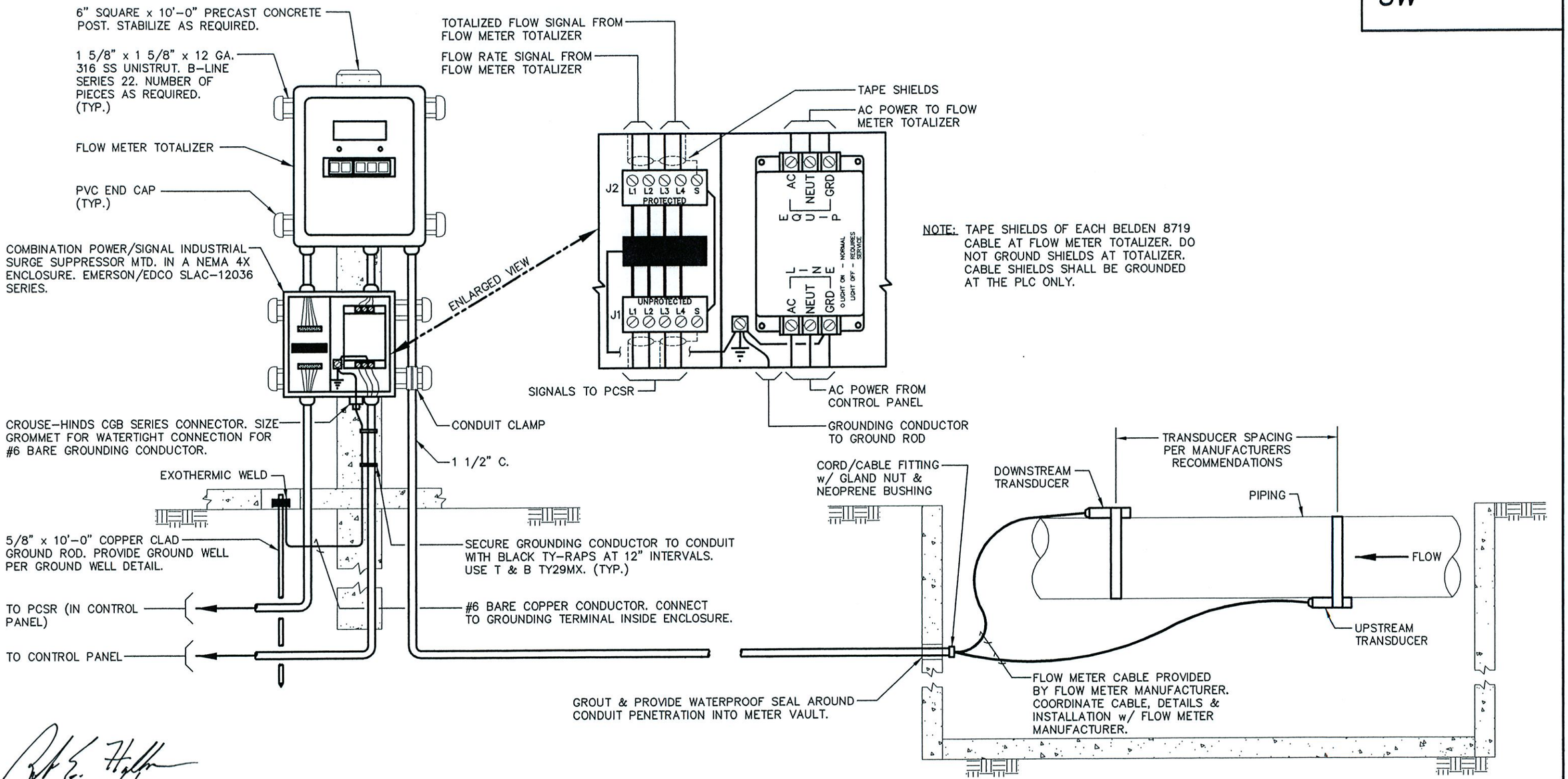
DES: STK
DRN: RWB
CKD:
DATE: 09/27/13

CITY of TAMPA
Department of Public Works
Stormwater Engineering

LAKE ECKLES STORMWATER PUMP STATION
ANTENNA DETAILS

W.O. 510H
SHEET E-18

SW



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 PLC ONLY.

Robert E. Hallman 10/4/13

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CLAMP-ON ULTRASONIC TRANSIT TIME FLOW METER CONNECTION DETAIL

NOTES:

1. ALL EDGES OF UNISTRUT SHALL BE FILED SMOOTH.
2. ALL FASTENING AND MOUNTING HARDWARE SHALL BE 316 SS.

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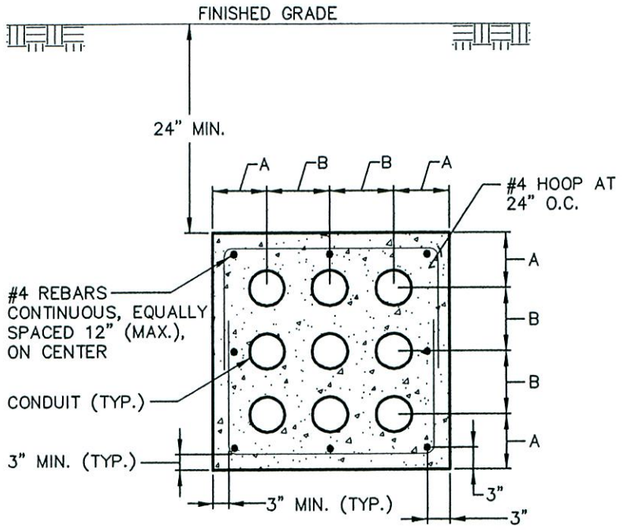
LAKE ECKLES STORMWATER PUMP STATION
CLAMP-ON ULTRASONIC TRANSIT
TIME FLOW METER CONNECTION DETAIL

W.O. 510H
SHEET E-19

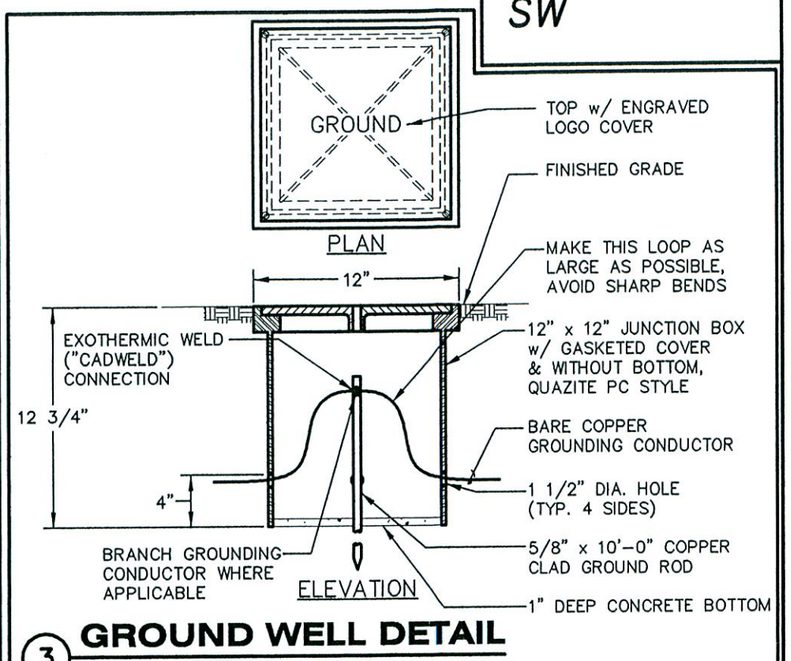


DUCT BANK CONDUIT SPACING DIMENSIONS									
CONDUIT SIZE	DIMENSION A	CONDUIT SIZE							
		3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	3 1/2"	4"
		DIMENSION B							
3/4"	3 5/8"	3 1/8"	3 1/4"	3 3/8"	3 1/2"	3 3/4"	4"	4 3/8"	4 5/8"	4 7/8"
1"	3 3/4"	3 1/4"	3 3/8"	3 1/2"	3 5/8"	3 7/8"	4 1/4"	4 1/2"	4 3/4"	5"
1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

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



(3) GROUND WELL DETAIL

(5)

(6)

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ELECTRICAL
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E-20