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AT A MINIMUM, CONSTRUCTION SHALL COMPLY WITH THE FOLLOWING:

2017 (6th Ed.) FLORIDA BUILDING CODE  
2017 (6th Ed.) FLORIDA BUILDING CODE – FUEL GAS  
2014 NEC/NFPA

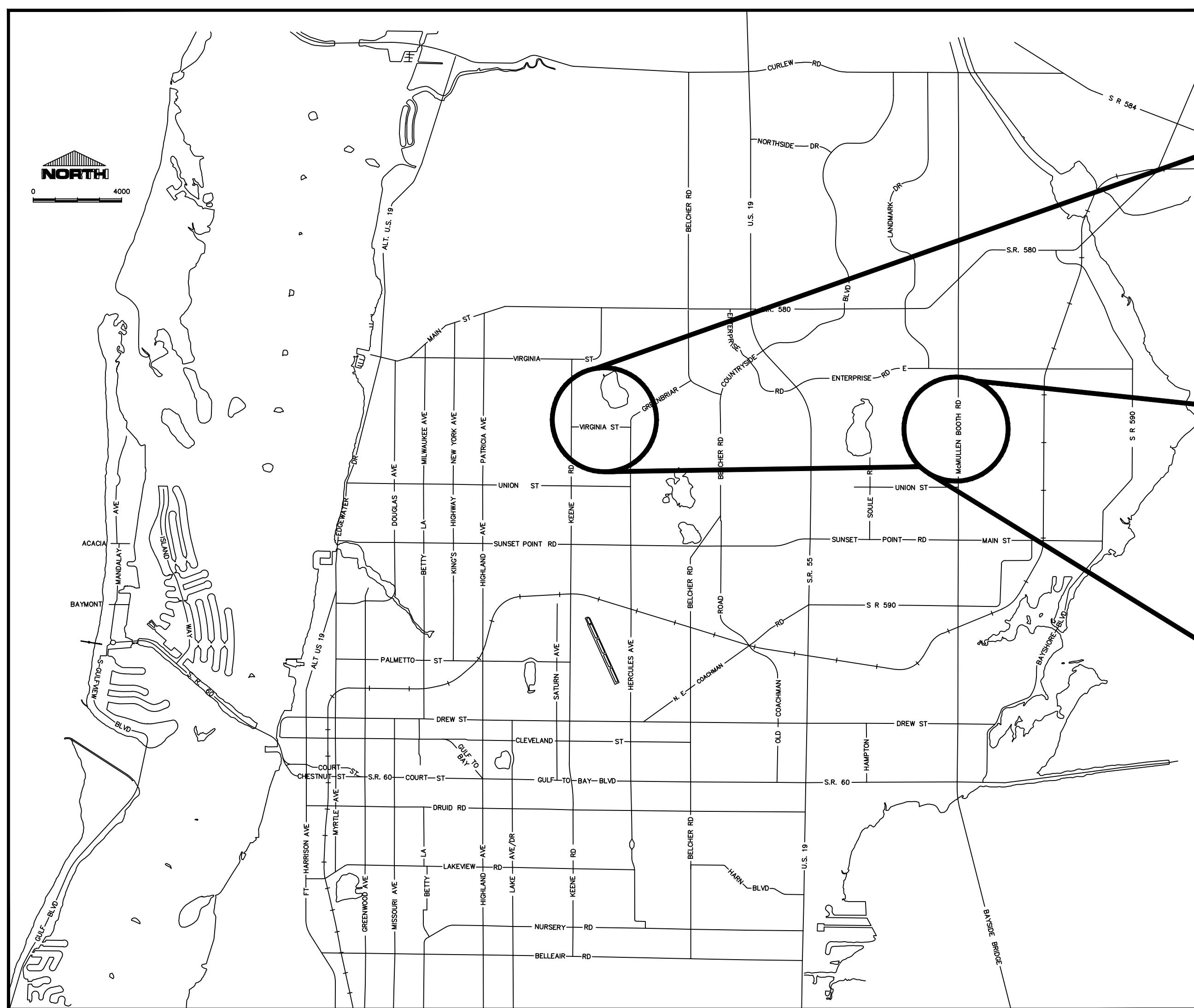


# CLEARWATER

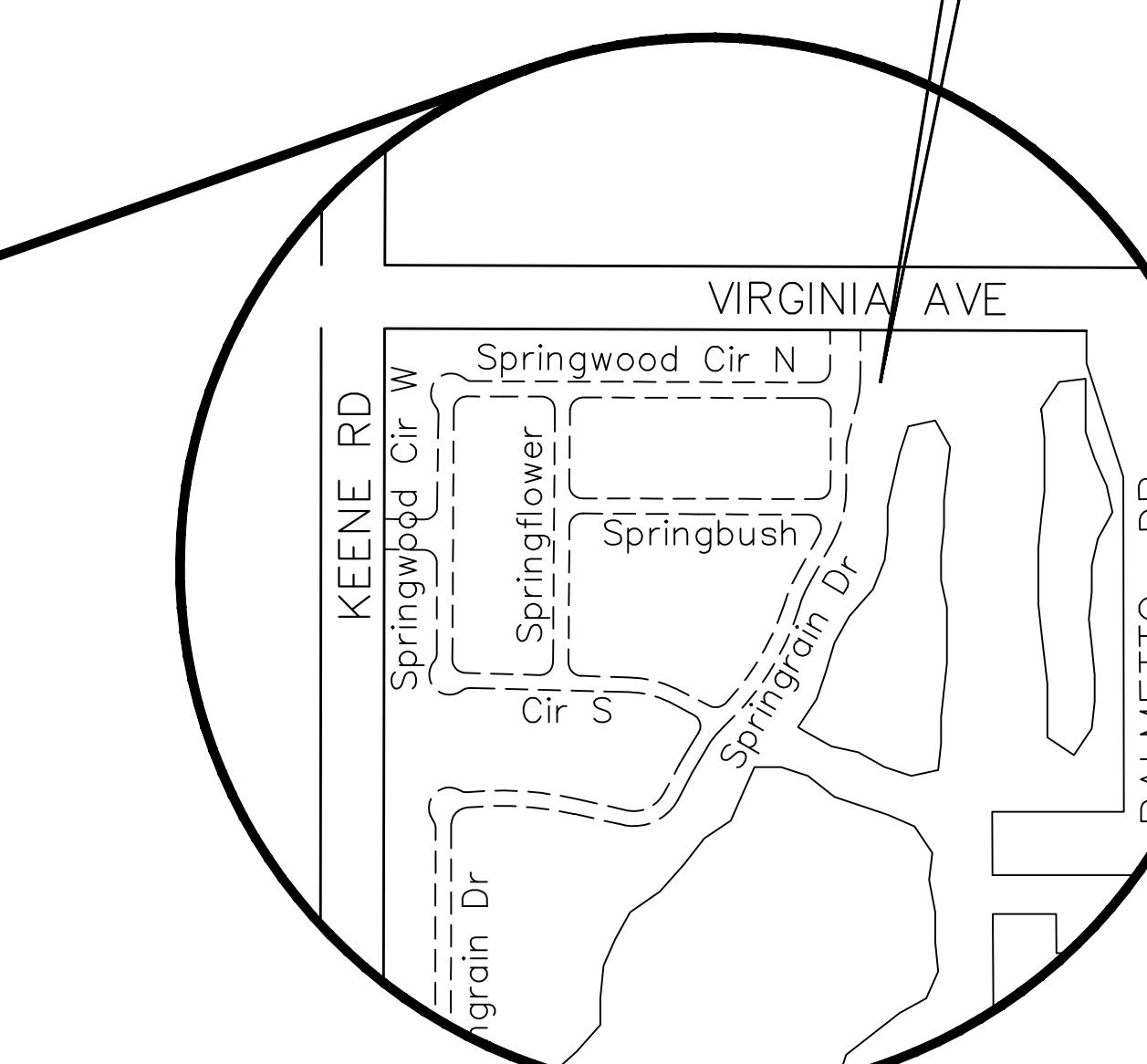
BRIGHT AND BEAUTIFUL • BAY TO BEACH



## REHAB OF LS 54 & 65



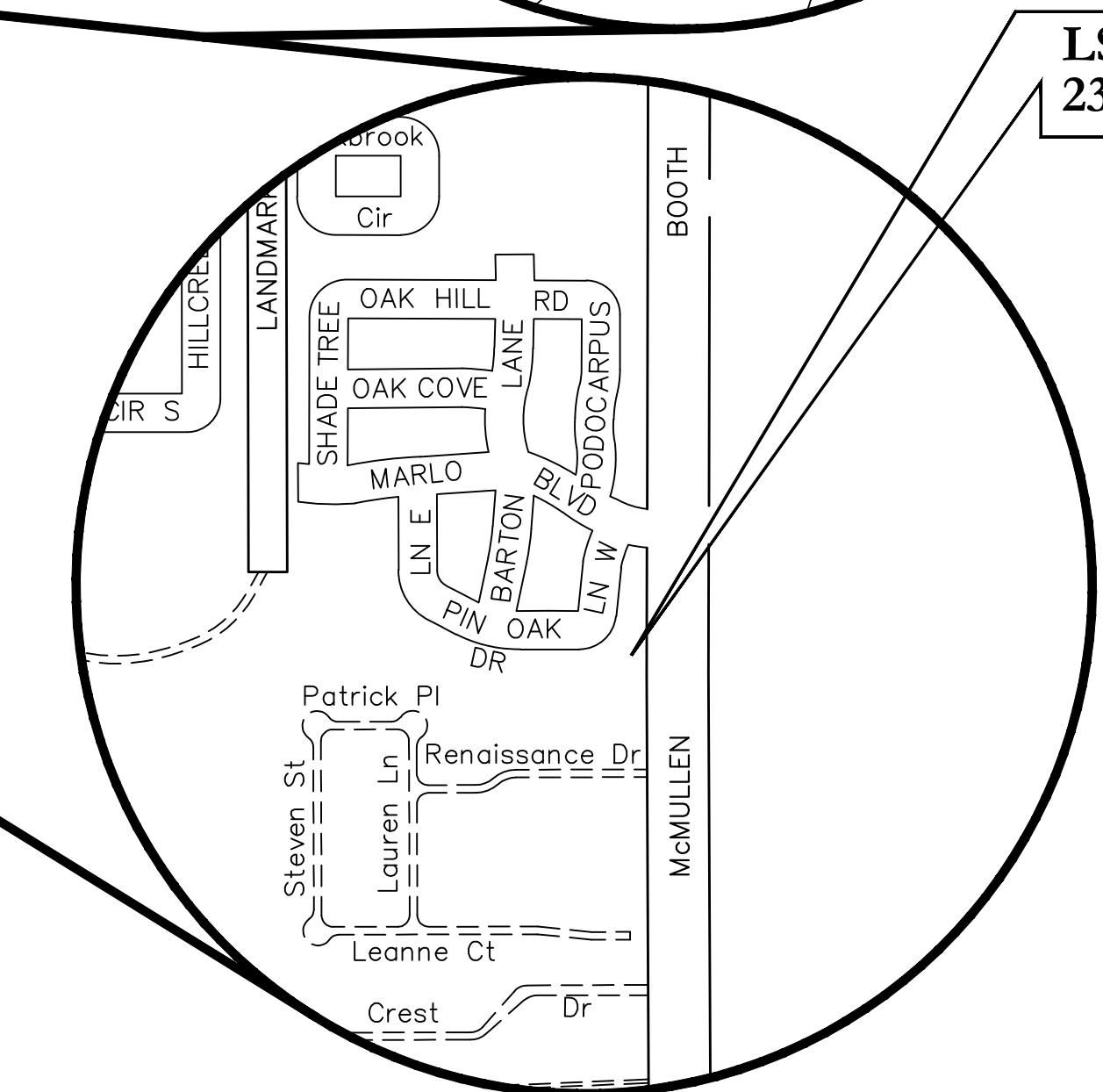
LS 65 Project Location  
1881 Virginia Ave.



### CITY OFFICIALS

Frank Hibbard  
Mark Bunker  
Kathleen Beckman  
David Allbritton  
Hoyt Hamilton  
William B. Horne II

Mayor  
Councilmember  
Councilmember  
Councilmember  
Councilmember  
City Manager



LS 54 Project Location  
2304 McMullen Booth Rd.

Tara Kivett, P.E.  
City Engineer

Approved For  
Construction

Date Approved

CITY ENGINEER D. TARA KIVETT, P.E. #8661

2/17/2021

100% BID PLANS

City Project No. 18-0058-UT  
City Plan Set No. 2020011

GENERAL NOTES

1. All work performed shall comply with the regulations and ordinances of the various governmental agencies having jurisdiction over the work.
2. All workmanship and materials used in the construction of this project shall conform to the latest City of Clearwater standards, contract documents and specifications unless otherwise noted.
3. Specific requirements of the Florida Department of Transportation (FDOT) "Design Standards" and "Standard Specifications for Road and Bridge Construction", most current editions, are incorporated into the contract documents by reference.
4. The Contractor shall obtain all required permits prior to construction.
5. The Contractor shall notify all utility companies at least forty eight (48) hours prior to start of construction, demolition and/or excavation in accordance with Florida Statutes.
6. The Contractor shall call Sunshine 811, previously known as Sunshine State One Call of Florida, at 1-800-432-4770 or 811, a minimum of two (2) days and a maximum of five (5) days prior to start of construction.
7. Locations, elevations and dimensions of existing utilities, structures and other features are shown according to the best information available at the time of the preparation of these plans, but do not purport to be absolutely correct. The Contractor shall verify the location, elevations and dimensions of all existing utilities, structures and other features affecting the work prior to construction.
8. The Contractor shall be responsible to review the site to determine existing conditions. Anything not shown on these plans shall be brought to the attention of the City's Engineering Representative and shall not constitute additional scope of work approved by the Engineer.
9. The Contractor shall contact the City's Engineering Representative immediately concerning any conflicts arising during construction.
10. All construction activities must conform to the local noise ordinance.
11. Hours of work shall be in accordance with the local governmental agency.
12. These drawings do not include necessary components for construction safety. The Contractor is solely responsible for construction safety. Special precautions may be required in the vicinity of power lines and other utilities.
13. The Contractor shall furnish, erect and maintain all necessary traffic control and safety devices in accordance with the U.S. Department of Transportation, "Manual on Uniform Traffic Control Devices" and the latest Florida Department of Transportation "Design Standards".
14. The Contractor shall provide, erect and maintain effective barricades, danger signals, signs and pedestrian detours in all areas where required for the protection of the work and the safety of the public.
15. Maintenance of Traffic (MOT): if it becomes necessary for the Contractor to close any street to through traffic within the limits of construction, access for local traffic with destination within the project limits of construction shall be maintained. If during construction, access for local traffic is changed, the property owners affected shall be given at least three (3) days advance notice. The Contractor shall submit to the City's Engineering Representative the Traffic Control Plan for approval prior to implementation.
16. A registered Land Surveyor, at the Contractor's expense, shall reset all section corners or property corners dislocated or disturbed by any construction related activities.
17. Any National Geodetic Survey (NGS) Monument within the limits of construction is to be protected. If in danger of damage, contractor shall notify the city's field representative immediately and contact the National Geodetic Survey information center.
18. Unless noted on the plans, final grade is to generally be the same as existing grade. Restore uniformly and for proper yard drainage grade toward roadway.
19. All new utilities shall be installed with the minimum thirty six (36) inches of cover.
20. Where utilities cross the lowest pipe shall be installed first.
21. The Contractor shall be responsible for testing of all newly constructed utilities in accordance with current standards of local jurisdiction. The Contractor shall notify the local jurisdiction and the Owner or an authorized representative at least forty eight (48) hours in advance of performing tests.
22. The Contractor shall provide all sheeting, shoring and bracing required to protect adjacent structures or to minimize trench width. Where a separate pay item is not provided, the cost of all sheeting and bracing required shall be included in the contract price for the item of work for which sheeting, shoring and bracing is anticipated to be required in accordance with local, state, or federal regulations for construction.
23. All concrete shall have a minimum compressive strength of 3,000 psi (28-day strength), unless otherwise noted on drawings.
24. No surfacing material is to be applied to any manhole covers, frames, valve boxes, gas drops, etc. All existing and proposed utility and storm sewer structures whose tops will be exposed within any paved area shall be adjusted so that the top surface of covers or frames shall be flush with the pavement surface.
25. Materials interfering with construction shall be disposed of as directed by the City's Engineering Representative, unless otherwise noted on plans.
26. All excess soil resulting from construction activities that is not claimed by the Owner shall become the property of the Contractor and disposed of by the Contractor.
27. All disturbed landscaped and/or grassed areas shall be restored uniformly and be generally at the same elevation as existing grades.
28. All disturbed areas shall be replaced within fifteen (15) days to a condition equal to or better than existing conditions.
29. All voids after placement of sod shall be filled with prepared soil mix. The sod shall be rolled to meet the proposed grades. Sod placed on slopes 3:1 or steeper shall be pegged.
30. Areas of exposed earth resulting from construction shall be sodded in kind as directed by the City's Engineering Representative unless otherwise noted on plans.
31. The Contractor shall maintain an accurate set of marked-up drawings (As-Builts) at the construction site.
32. A CCTV inspection of the new sewer system in digital format utilizing the industry standard Pipeline Assessment and Certification Program (PACP) coding system shall be provided to the City. The video shall be taken prior to placing the new sewer system into service. Data will be collected utilizing CUES Granite software.
33. Installation of gravity sewer pipe shall be in conformance with recommended practices contained in Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications ASTM D2321. Connections to manholes with sanitary pipe shall use a joint two (2) feet in length and shall use an approved water stop around pipe joint entry.
34. The bottom trench width in an unsupported trench shall be limited to the minimum practicable width allowing working space to place and compact the hunching material. The use of trench boxes and movable sheeting shall be performed in such a manner that removal, backfill and compaction will not disturb compacted hunching material or pipe alignment. Dewatering of the trench bottom shall be accomplished using adequate means to allow preparation of bedding, placement of the hunching material and pipe in the trench without standing water. Dewatering shall continue until sufficient backfill is placed above the pipe to prevent flotation or misalignment.
35. The Contractor shall dispose of all unsuitable materials, construction debris, and other waste materials offsite in accordance with applicable regulatory agency requirements at the Contractor's expense. All backfill shall be free of unsuitable materials.

36. The Contractor shall be responsible for providing a Hurricane Preparation Plan to the City's Engineering Representative for review and approval prior to commencing construction activities.

37. Any damage to city, county, or state roads caused by the Contractor shall be repaired by the Contractor in a timely manner and to the satisfaction of the City's Engineering Representative. Payment shall not be made for this work.
38. The Contractor shall protect private property.

SURVEY NOTES

1. The City of Clearwater Control Network's Horizontal Datum is: North American Datum (N.A.D.), Florida State Plane Coordinates, Florida West Zone 83(1999).
2. The City of Clearwater Control Network's Vertical Datum is: North American Vertical Datum (N.A.V.D.) 1988.
3. The survey was provided by the City of Clearwater.

TREE PROTECTION

1. The Contractor will be responsible for adhering to all Tree Protection measures required by the City of Clearwater codes, ordinances and Standard Specifications. This will include all tree barricades, root pruning and tree trimming/pruning activities. These requirements will apply within the specified "limits of work" and will also be applicable in all areas where the Contractor and/or his subcontractors stage, store or park vehicles, equipment, materials and debris.
2. All tree pruning and/or root pruning on existing trees to be preserved will only be performed by or under the direct supervision of an International Society of Arboriculture (ISA) Certified Arborist. Furthermore, all tree work shall conform to the American National Standards Institute (ANSI) 2001, American National Standard for Tree Care Operations — Tree, Shrub and Other Woody Plant Maintenance — Standard Practices (Pruning). ANSI A-300.
3. Where called for on the plans, install tree barricades, erosion control/silt fencing or other approved protective barriers around all trees to be preserved, per City Standard Detail. Where applicable, and specifically approved by the City's Engineering Representative protective barriers may be placed in root prune trenches.
4. Prior to any field changes taking place, it will be the Contractor's responsibility to review the potential impacts to existing trees with his Certified Arborist, and include any and all recommended tree protection measures in his proposal to modify the approved design. The City's Engineering Representative must approve, in writing, any changes to the approved design prior to implementation of said change.
5. The Contractor will avoid any open excavations, fill or other construction activities whenever possible within the "critical root zone" of any existing tree (i.e., under the drip line/canopy).
6. No vehicles, equipment or materials shall be parked or stored under/within the drip line/protective barrier area of any tree.
7. Where construction activities are anticipated to last for an extended period of time near existing trees, the Contractor shall install and maintain City approved tree barricades as shown in the Standard Details and as approved by the City's Engineering Representative.
8. Woodchips, mulch or another cushioning surface material approved by the City's Engineering Representative shall be placed to a minimum depth of ten (10) inches over areas where roots are present and construction traffic occurs.
9. All tree protection measures shall remain in place at all times during construction until the City's Engineering Representative authorizes removal.
10. The Contractor will coordinate with the City's Engineering Representative, Tim Kurtz, at (727) 562-4737, to obtain approval in advance of any and all work within the critical root zone of any existing tree.

SEDIMENT & EROSION CONTROL

1. It is the responsibility of the Contractor to control and prevent erosion and the transportation of sediment to surface drains and outfalls.
2. The Contractor shall prepare and submit a Stormwater Pollution Prevention Plan (SWPPP) in accordance with Florida Department of Environmental Protection (FDEP) Criteria for a National Pollution Discharge Elimination System (NPDES) Activities Permit.
3. The Contractor must obtain a FDEP Generic Permit for the Discharge of Produced Ground Water, if dewatering with offsite discharge will be required. The Contractor is responsible for all required preliminary water samples to satisfy the FDEP Generic Permit for the Discharge of Produced Ground Water. Sampling shall occur thirty (30) days prior to the start of dewatering.
4. Construction operations shall be carried out in such a manner that erosion and pollution shall be minimized. The submitted SWPPP shall be compiled with. All applicable federal, state, and local laws shall be complied with at all times. Please note that no hay bales are allowed on City of Clearwater projects.

ROOT PRUNING

1. Root pruning shall only be performed by or under the direct supervision of an International Society of Arboriculture (ISA) Certified Arborist.
2. Any proposed root pruning trenches shall be identified (i.e., staked or painted) on site, inspected and approved by the City's Engineering Representative prior to actual root pruning.
3. Root pruning shall be performed as far in advance of other construction activities as is feasible, but at a minimum shall be performed prior to any impacts to the soil. Associated tree protection measures should be implemented upon completion of said root pruning.
4. If there is a likelihood of excessive wind and/or rain, an exceptional care shall be taken on any root pruning activities.
5. Root pruning shall be limited to a minimum of twelve inches per one inch trunk diameter from the tree base. Any exception must be approved by the City's Engineering Representative prior to said root pruning.
6. Roots shall be cut cleanly, as far from the trunk of the tree as possible. Root pruning shall be done to a minimum depth of eighteen (18) inches from existing grade, or to the depth of the disturbance if less than eighteen (18) inches.
7. Root pruning shall be performed using a root cutting machine designed specifically for this purpose. Alternate equipment or techniques must be approved by the City's Engineering Representative, prior to any work adjacent to trees to be preserved.
8. Root pruning shall be completed, inspected and accepted prior to the commencement of any excavation or other impacts to the critical root zones of trees to be protected.
9. Excavations in an area where root are present shall not cause the tearing or ripping of tree roots. Roots must first be cleanly severed prior to continuing with the excavation, or tunneled around to prevent damage to the root.
10. Tree roots shall not be exposed to drying out. Root ends shall be covered with native soil or burlap and kept moist until final backfill or final grades have been established.
11. When deemed appropriate (e.g. during periods of drought) the city representative may require a temporary irrigation system be utilized in the remaining critical root zones of root pruned trees.

UTILITY OWNERS

Spectrum  
Attention: Mr. Ted Bingham  
700 Carillon Parkway, Suite 6  
St. Petersburg, Florida 33716-1123  
Phone: (727) 329-2847

Frontier Communications, Inc.  
Attention: Mr. Chris Blauvelt  
MC: FLCW5033  
1280 Cleveland Street  
Clearwater, Florida 33782  
Phone: (727) 562-1130

Wide Open West (WOW!)  
FLSP2144  
Attention: Mr. Jay Young, Lead Field Support Tech  
3001 Gandy Boulevard North  
Pinellas Park, Florida 33782  
Phone: (727) 239-0156 Office

Duke Energy  
Attention: Mr. Rico Ashley  
2166 Palmetto Street, Bldg. F  
Clearwater, Florida 33765  
Phone: (727) 562-5767  
City of Clearwater

Clearwater Gas System  
Attention: Mr. Bobby Morig  
401 North Myrtle Avenue  
Clearwater, Florida 33755  
Phone: (727) 562-4900 Ext. 7423

City of Clearwater  
Engineering Department — Traffic Division  
Attention: Mr. Paul Bertels  
100 South Myrtle Avenue, Room 220  
Clearwater, Florida 33756-4748  
Phone: (727) 562-4794

City of Clearwater  
Engineering Department — Public Utilities  
Attention: Mr. Glenn Daniel  
1650 North Arcturus Avenue  
Clearwater, Florida 33755  
Phone: (727) 562-4960

City of Clearwater  
Engineering Department — Construction Management  
Attention: Mr. Tim Kurtz  
100 South Myrtle Avenue, Room 220  
Clearwater, Florida 33756  
Phone: (727) 562-4737

RECORD DRAWINGS					
SURVEYED BY:	DRAWN BY:				
REVIEWED BY:					
PROJECT ENGINEER	DATE				
APPROVED BY:					
ENGINEER	DATE	REVISION	BY	DATE	

CITY OF CLEARWATER, FLORIDA  
ENGINEERING DEPARTMENT  
100 S. MYRTLE AVE.  
CLEARWATER, FL 33756

GENERAL NOTES

DWG NAME:	FIELD BOOK:	SURVEYED BY:	SCALE:
CONTRACT NO.:	N/A	CLEARWATER	VERT. N/A
JOB NO.:	####	DRAWN BY:	HORIZ. N/A
18-0058-UT	####	JMS	
22609.19	MJM	CHECKED BY: SGM	sheet no: 2 OF 40
		APPROVED BY:	

# STRUCTURAL NOTES

## GENERAL

- 1.- SEE SPECIFICATIONS FOR DATA NOT INCLUDED HERE.  
ALL DRAWINGS SHALL BE USED IN CONJUNCTION WITH EACH OTHER TO COORDINATE WITH MECHANICAL, ELECTRICAL, PLUMBING AND SITE PLANS.
- 2.- CHECK ALL SHOP DRAWINGS FOR SLEEVES, DEPRESSIONS, AND PLUMBING DETAILS NOT SHOWN ON THESE DRAWINGS.
- 3.- AS A MINIMUM, CONSTRUCTION SHALL COMPLY WITH CITY OF CLEARWATER REGULATIONS, THE 2017 FLORIDA BUILDING CODE, ACI 318, AND ACI 350.
- 4.- ALL DETAILS AND SECTIONS SHOWN ON THE DRAWINGS ARE INTENDED TO BE TYPICAL AND SHALL BE CONSTRUED TO APPLY TO ANY SIMILAR SITUATION ELSEWHERE ON THE PROJECT, EXCEPT WHERE A DIFFERENT DETAIL IS SHOWN.
- 5.- ALL DIMENSIONS AND CONDITIONS MUST BE VERIFIED IN THE FIELD. DO NOT SCALE THE DRAWINGS. FOLLOW WRITTEN DIMENSIONS ONLY. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO PROCEEDING WITH THE AFFECTED PART OF THE WORK.
- 6.- FIELD VERIFY EXISTING BUILDING CONDITIONS, DIMENSIONS, SIZE, VOLTAGE, AND LOCATION OF UTILITIES PRIOR TO NEW OR REMODELING WORK.
- 7.- DEVIATIONS FROM DRAWINGS SHALL BE APPROVED BY THE ENGINEER.
- 8.- INFORM ENGINEER OF CONSTRUCTION CONFLICTS FOUND AMONG TRADES FOR ANY REQUIRED CHANGES FROM THESE DRAWINGS.
- 9.- REFER TO GENERATOR MANUFACTURER'S INSTALLATION INSTRUCTIONS FOR ANCHORAGE TO CONCRETE SLAB.

## DESIGN LOADS

- 1.- WIND LOADS SHALL BE 150 MPH, APPLIED AS PER THE 2017 (6TH ED.) FLORIDA BUILDING CODE, SECTION 1609, FOR EXPOSURE C, RISK CATEGORY IV, DESIGN WIND PRESSURE = 42.4 PSF (ULTIMATE)

## SHOP DRAWING REVIEW

- 1.- SHOP DRAWINGS SHALL BE REVIEWED FOR GENERAL COMPLIANCE WITH THE DESIGN INTENT OF THE CONTRACT DOCUMENTS ONLY.
- 2.- IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY COMPLIANCE WITH THE CONTRACT DOCUMENTS AS TO QUANTITY, LENGTH, ELEVATIONS, DIMENSIONS, ETC.
- 3.- IN ALL INSTANCES, THE CONTRACT DOCUMENTS SHALL GOVERN THE SHOP DRAWINGS UNLESS OTHERWISE SPECIFIED IN WRITING BY THE ENGINEER.

## FORMWORK

- 1.- FORMWORK, SHORING, AND BRACING FOR ALL CONCRETE BEAMS, SLABS, COLUMNS, AND WALLS SHALL BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH ACI 347, "RECOMMENDED PRACTICE FOR CONCRETE FORMWORK".

## REINFORCING STEEL

- 1.- REBAR SHALL BE ASTM A615 GRADE 60 DEFORMED BARS, FREE FROM OIL, SCALE, AND RUST.
- 2.- REINFORCING BARS SHALL BE PLACED IN ACCORDANCE WITH THE TYPICAL BENDING DIAGRAM AND PLACING DETAILS OF THE ACI STANDARDS AND SPECIFICATIONS.
- 3.- HORIZONTAL AND VERTICAL BARS SHALL LAP A MINIMUM OF 5 X BAR NO. = INCHES, (40 BAR DIAMETERS) UNLESS OTHERWISE NOTED.

## WELDED WIRE MESH FIBERS

- 1.- WELDED WIRE MESH IF USED, SHALL BE ASTM A185, GRADE 65, FREE FROM OIL, SCALE, AND RUST.
- 2.- WIRE MESH SHALL BE PLACED IN ACCORDANCE WITH ACI DETAILS.
- 3.- MINIMUM WIRE MESH LAP SHALL BE ONE WIRE SPACE PLUS TWO INCHES.

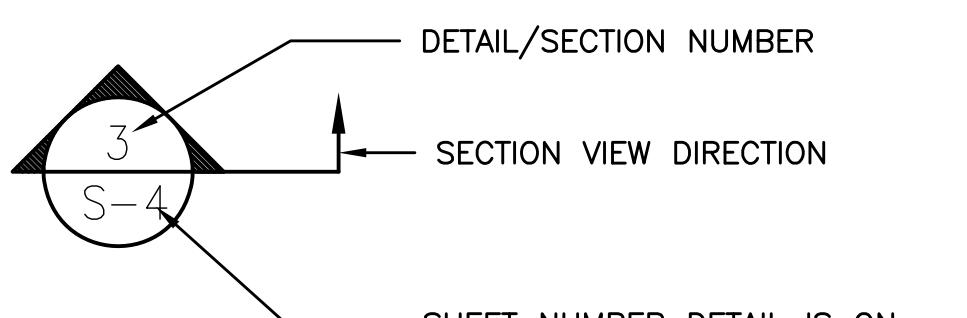
## FOUNDATION/SITE PREPARATION

- 1.- FOOTINGS ARE DESIGNED FOR AN ASSUMED ALLOWABLE SOIL BEARING PRESSURE OF 2000 PSF.
- 2.- FOUNDATIONS AND SITE PREPARATION SHALL BE COMPLETED IN SUBSTANTIAL ACCORDANCE WITH STANDARD PRACTICES AND WITH THE RECOMMENDATIONS OF THE SUBSURFACE EXPLORATION SOILS REPORT.
- 3.- FOOTING EXCAVATIONS AND SLAB SUBGRADE SHALL BE COMPAKTED TO A DRY DENSITY OF AT LEAST 98% OF THE MODIFIED PROCTOR MAXIMUM DRY DENSITY, DETERMINED IN ACCORDANCE WITH ASTM D1557 OR AS INDICATED IN THE SOILS REPORT.
- 4.- THE CONTRACTOR SHALL RETAIN THE SERVICES OF AN INDEPENDENT GEOTECHNICAL ENGINEER TO VERIFY SUCCESSFUL COMPLETION OF SITE / FOUNDATION PREPARATION EFFORTS.
- 5.- LOCATIONS FAILING TO MEET THE GEOTECHNICAL ENGINEER'S REQUIREMENTS SHALL BE RECOMPACTED AND RETESTED AT THE CONTRACTOR'S EXPENSE, AND AS DIRECTED BY THE ENGINEER.
- 6.- WRITTEN CERTIFICATION THAT THE MINIMUM DESIGN BEARING CAPACITY, AND THAT THE COMPACTION REQUIREMENTS HAVE BEEN MET SHALL BE MADE BY THE GEOTECHNICAL ENGINEER.
- 7.- ALL SLABS AND FOOTINGS SHALL BE PLACED OVER A 6 MIL THICK VAPOR BARRIER MEMBRANE.

## CONCRETE

- 1.- CONCRETE SHALL ACHIEVE MINIMUM 28 DAY COMPRESSIVE STRENGTHS AS LISTED IN THE SPECIFICATIONS.  
4000 PSI FOR WALLS, SLABS ON GRADE, AND FOOTINGS.
- 2.- CONCRETE SLUMP SHALL NOT EXCEED SPECIFICATIONS.
- 3.- CONCRETE SHALL COMPLY WITH ALL THE REQUIREMENTS OF ACI 301 AND ASTM C94 FOR MEASURING, MIXING, TRANSPORTING, ETC.
- 4.- CONCRETE TICKETS SHALL BE STAMPED WHEN CONCRETE IS BATCHED.
- 5.- THE MAXIMUM TIME ALLOWED FROM THE TIME THE WATER IS ADDED TO CONCRETE UNTIL IT IS DEPOSITED IN ITS FINAL POSITION SHALL NOT EXCEED ONE AND ONE-HALF (1-1/2) HOURS.
- 6.- IF FOR ANY REASON THERE IS A LONGER DELAY THAN THAT STATED ABOVE, THE CONCRETE SHALL BE DISCARDED.
- 7.- IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR'S RETAINED TESTING LAB TO NOTIFY THE OWNER'S REPRESENTATIVE AND THE ENGINEER OF ANY NONCOMPLIANCE WITH THE ABOVE.
- 8.- ALL CONCRETE SHALL BE CURED USING CURING COMPOUND MEETING ASTM STANDARD C309 TYPE 1 AND SHALL HAVE A FUGITIVE DYE.
- 9.- THE CURING COMPOUND SHALL BE PLACED AS SOON AS THE FINISHING IS COMPLETED OR AS SOON AS THE VISIBLE WATER HAS LEFT THE UNFINISHED CONCRETE.
- 10.- ALL SCUFFED OR BROKEN AREAS IN THE CURING MEMBRANE SHALL BE RECOATED DAILY.
- 11.- CALCIUM CHLORIDES SHALL NOT BE UTILIZED; SEE SPECIFICATIONS FOR SPECIFIC ADMIXTURES, OTHER ADMIXTURES MAY BE USED ONLY WITH THE APPROVAL OF THE ENGINEER. ONLY CONCRETE MIXES APPPLICABLE TO ENVIRONMENTAL STRUCTURES, TYPE II, V OR K CEMENT, TYPE F FLY ASH, ASR RESISTIVE ADDITIVES, SHALL BE USED IN THIS PROJECT.
- 12.- CONCRETE AT NEW WET WELLS AND VALVE VAULTS SHALL CONTAIN XYPEX B10-SAN C500 ADMIXTURE.
- 13.- REQUIRED CONCRETE COVERAGE OVER REBAR SHALL BE AS FOLLOWS:  
  - A: 3" FOR CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH.
  - B: FOR CONCRETE EXPOSED TO EARTH AND/OR WEATHER:  
1-1/2" FOR #5 AND SMALLER  
2" FOR #6 AND LARGER
  - C: FOR CONCRETE NOT EXPOSED TO EARTH OR WEATHER:  
3/4" FOR SLABS, WALLS, AND JOISTS  
1-1/2" FOR BEAM AND COLUMN PRIMARY REINF., TIES, AND STIRRUPS.
- 14.- EXPANSION/CONTRACTION JOINTS IN CONCRETE SHALL BE SEALED.

## SYMBOLS



RECORD DRAWINGS	DRAWN BY:		
SURVEYED BY:			
REVIEWED BY:			
PROJECT ENGINEER	DATE		
APPROVED BY:			
ENGINEER	DATE		
REVISION	BY DATE		

CITY OF CLEARWATER, FLORIDA  
ENGINEERING DEPARTMENT  
100 S. MYRTLE AVE.  
CLEARWATER, FL 33756



## STRUCTURAL NOTES

DWG NAME: SHET 03	FIELD BOOK: N/A	SURVEYED BY: CLEARWATER	SCALE: VERT. N/A
CONTRACT NO: 18-0058-UT	DATE DRAWN: 06/22/2010	DRAWN BY: DEC	HORIZ. N/A
JOB NO: 22609.19	DESIGNED BY: EAB	CHECKED BY: EAB	SHEET NO: 3 OF 40
APPROVED BY:			



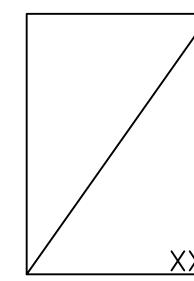
CONDUIT RUN EXPOSED  
CONDUIT RUN CONCEALED OR UNDERGROUND  
CONDUIT RUN CONCEALED IN FLOOR OR SLAB  
G GROUNDING ELECTRODE CONDUCTOR  
E CONDUIT STUB OUT AND CAP  
G GROUND ROD  
P GROUND TEST WELL  
J JUNCTION BOX  
J JUNCTION BOX WITH FLEXIBLE CONNECTION

480V  
15 KVA, 1\*  
120/240V

TRANSFORMER, 480V INDICATED PRIMARY VOLTAGE,  
120/240V INDICATES SECONDARY VOLTAGE, 15 KVA  
REPRESENTS POWER RATING, AND 1\* INDICATES  
SINGLE PHASE (THREE PHASE IF NOT INDICATED)

3P  
30A

THERMAL MAGNETIC CIRCUIT BREAKER WITH NUMBER  
OF POLES AND AMPERE RATING



COMBINATION MAGNETIC STARTER WITH CONTROL  
POWER TRANSFORMER (SIZED FOR LOAD). LETTERS  
INDICATE TYPE :  
N - NON-REVERSING  
R - REVERSING  
2S - TWO-SPEED  
C - CONTACTOR  
SS - SOLID STATE SOFT START

XXX

XXX DEVICE

HLS  
HOA  
LDA  
LLS  
LOR  
PBR  
RTU  
SS  
SS/B  
TS  
TVSS  
ZS

HIGH LEVEL SWITCH  
HAND-OFF-AUTO  
LEAK DETECTION  
LOW LEVEL SWITCH  
LOCAL-OFF-REMOTE  
PUSH BUTTON  
REMOTE TERMINAL UNIT  
SOFT STARTER  
SOFT START OR BYPASS  
TEMPERATURE SWITCH  
TRANSIENT VOLTAGE SURGE SUPPRESSOR  
POSITION SENSOR (LIMIT SWITCH)

UTILITY METER  
TRANSFER SWITCH  
ELECTRIC PANELBOARD  
DISCONNECT OR SAFETY SWITCH

CHAIN HUNG 8' INDUSTRIAL FLUORESCENT  
LIGHTING FIXTURE. REFER TO FIXTURE SCHEDULE.

\$ SINGLE POLE SWITCH, 20A, 120/277V. MOUNT 44" AFF OR AS NOTED.  
⊖ DUPLEX RECEPTACLE, 20A 125VAC. MOUNT 18" AFF OR AS NOTED.  
⊕ LB CONDUIT BODY/FITTING.  
— HOME RUN TO PANELBOARD. CIRCUIT(S) AS INDICATED.

WIRES INDICATED AS FOLLOWS :  
— TWO WIRES:  
—/— THREE WIRES:  
—/—/— FOUR WIRES ETC:  
—/— NEUTRAL WIRE  
—/— ISOLATED GROUND WIRE

PROVIDE 2-#12 THWN CU IN 1/2" C. UNLESS OTHERWISE NOTED, AND GROUND  
WIRE (NOT INDICATED) IN ALL POWER AND LIGHTING RACEWAYS.

XX  
MOTOR  
— THERMAL OVERLOAD

FUSE

CITY OF CLEARWATER, FLORIDA  
ENGINEERING DEPARTMENT  
100 S. MYRTLE AVE.  
CLEARWATER, FL 33756

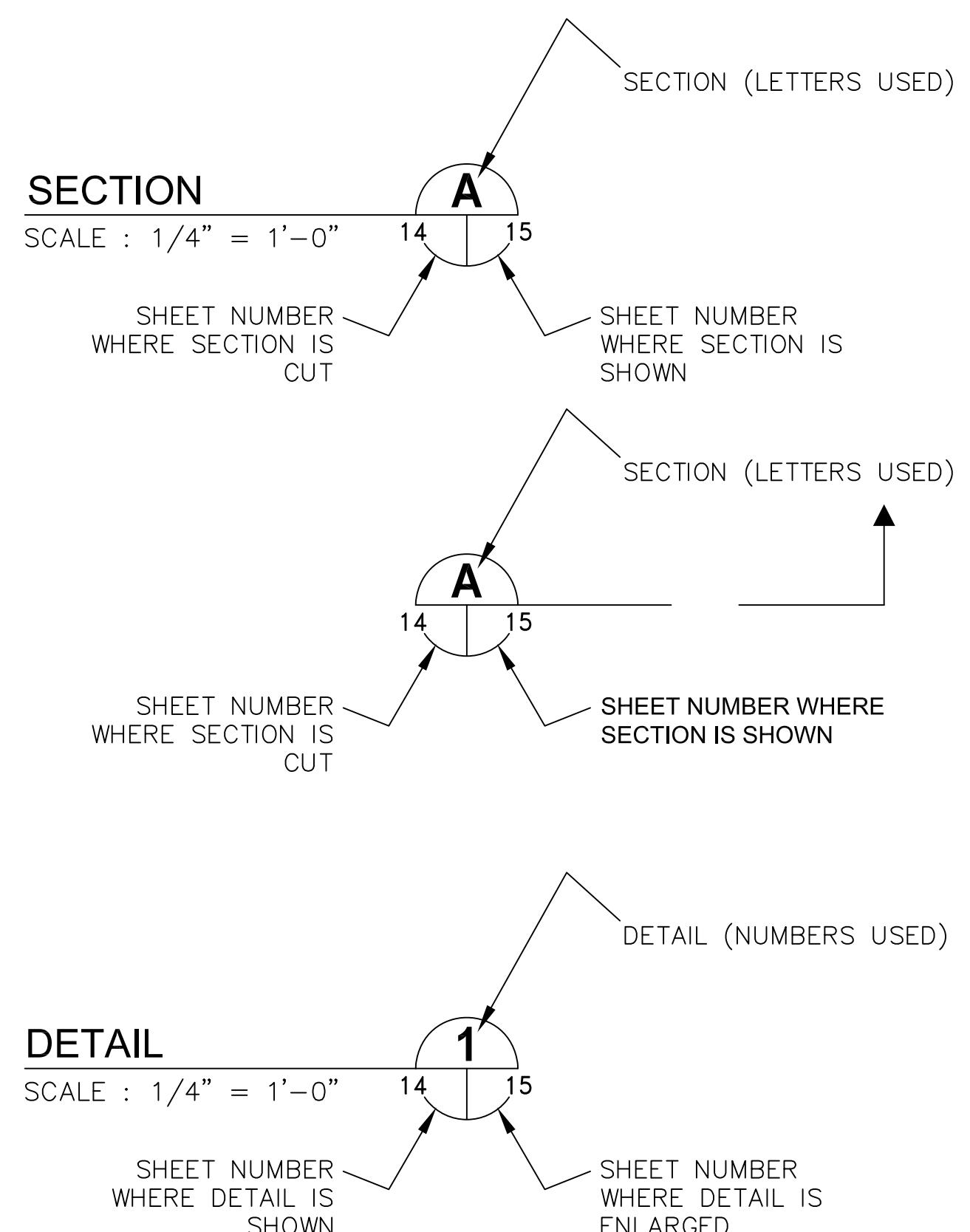


INVESTIGATE BEFORE YOU EXCAVATE  
CALL 811  
SUNSHINE STATE  
ONE CALL  
OF FLORIDA  
[www.fl811.com](http://www.fl811.com)  
(800) 432-4770  
MIN. 48 HOURS  
BEFORE YOU EXCAVATE

## ELECTRICAL LEGEND AND ABBREVIATIONS

ABBREVIATIONS:	
A	AMPS
AFF	ABOVE FINISHED FLOOR
AGF	ABOVE FINISHED GRADE
C	CONDUIT
EXIST	EXISTING
ELEC	ELECTRICAL
GFI	GROUND FAULT INTERRUPTER
GND	GROUNDING CONDUCTOR
HP	HORSEPOWER
HZ	HERTZ
IG	ISOLATED GROUND
KVA	KILOVOLT AMPERES
KW	KILOWATTS
MAX	MAXIMUM
MIN	MINIMUM
N/A	NOT APPLICABLE
PH	PHASE
RECP	RECEPTACLE
RGSC	RIGID GALVANIZED STEEL CONDUIT
RPM	REVOLUTIONS PER MINUTE
RTU	REMOTE TERMINAL UNIT
TYP	TYPICAL
V	VOLTAGE
WP	WEATHERPROOF

## EXAMPLE OF SECTION CUT AND DETAIL



TIMOTHY THOMAS P.E. No. 47079

**TRICON**  
ENGINEERING

777 S. Harbour Island Blvd.  
Suite 350  
Tampa, FL 33602  
(813) 227-9190  
Certificate of Authorization No. 31028

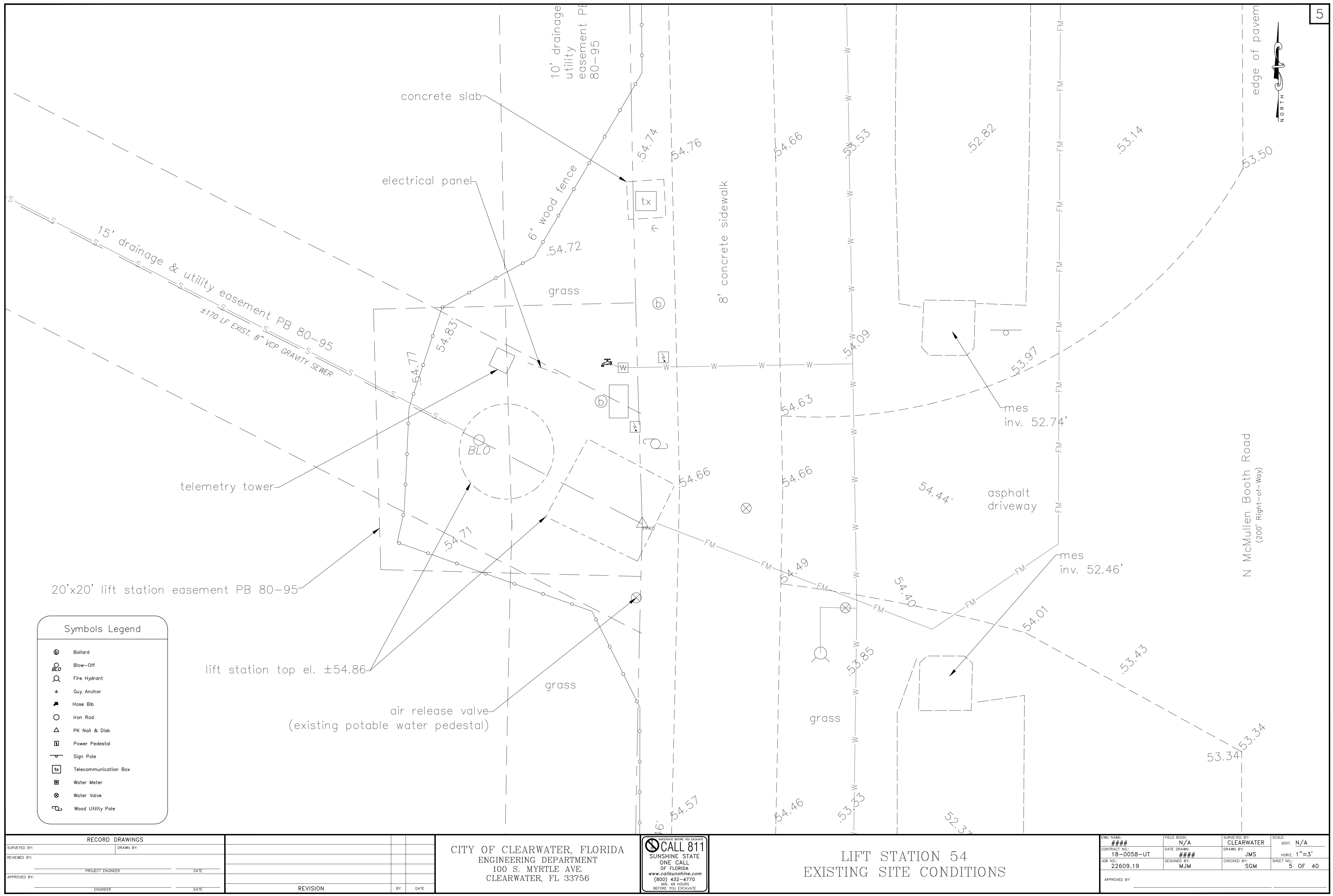
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SURVEYED BY:			
REVIEWED BY:			
PROJECT ENGINEER	DATE		
APPROVED BY:			
CITY ENGINEER MICHAEL D. QUILLEN, P.E. # 33721	DATE		

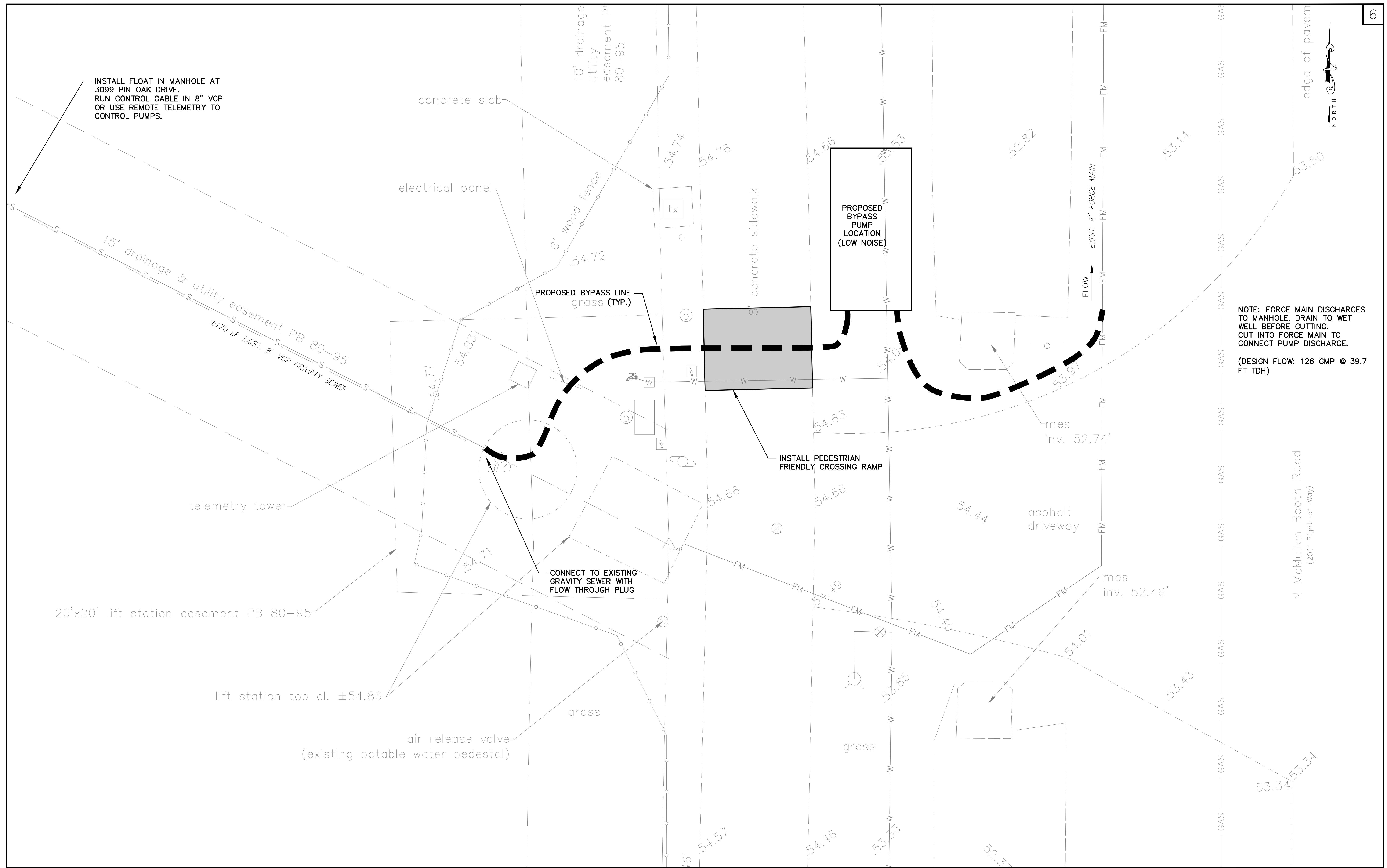
REVISION	BY	DATE

INVESTIGATE BEFORE YOU EXCAVATE	
CALL 811	SUNSHINE STATE ONE CALL OF FLORIDA <a href="http://www.fl811.com">www.fl811.com</a> (800) 432-4770 MIN. 48 HOURS BEFORE YOU EXCAVATE

DWG NAME:	FIELD BOOK:	SURVEYED BY:	SCALE:
####	N/A	CLEARWATER	VERT. N/A
CONTRACT NO:	DATE DRAWN:	DRAWN BY:	
18-0058-UT	# ####	JMS	HORIZ. N/A
JOB NO:	DESIGNED BY:	CHECKED BY:	SHEET NO:
22609.19	MJM	SGM	4 OF 40
APPROVED FOR CONSTRUCTION			

CITY ENGINEER MICHAEL D. QUILLEN, P.E. # 33721	DATE





RECORD DRAWINGS			
SURVEYED BY:	DRAWN BY:		
REVIEWED BY:			
PROJECT ENGINEER	DATE		
APPROVED BY:			
ENGINEER	DATE		

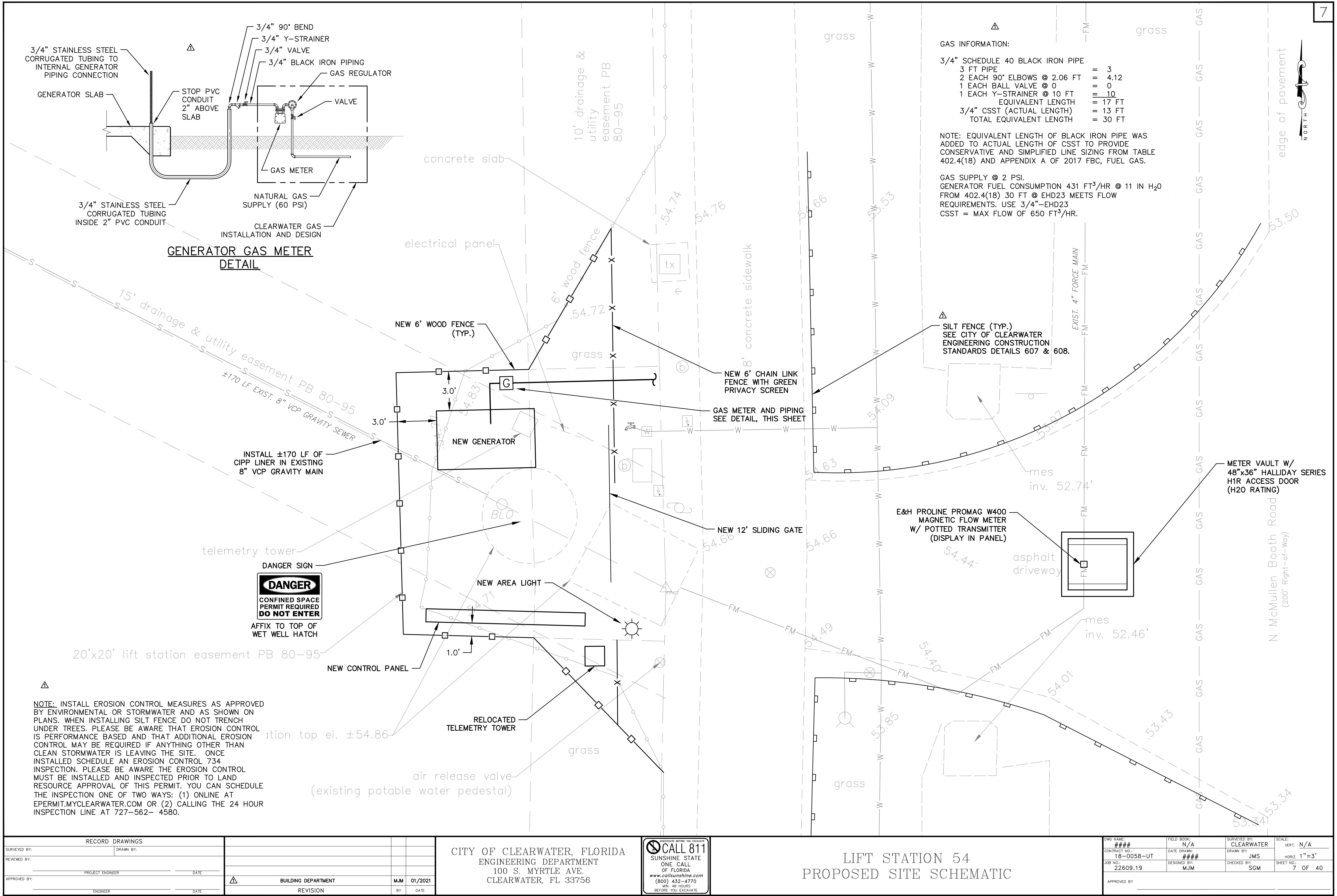
REVISION	BY	DATE

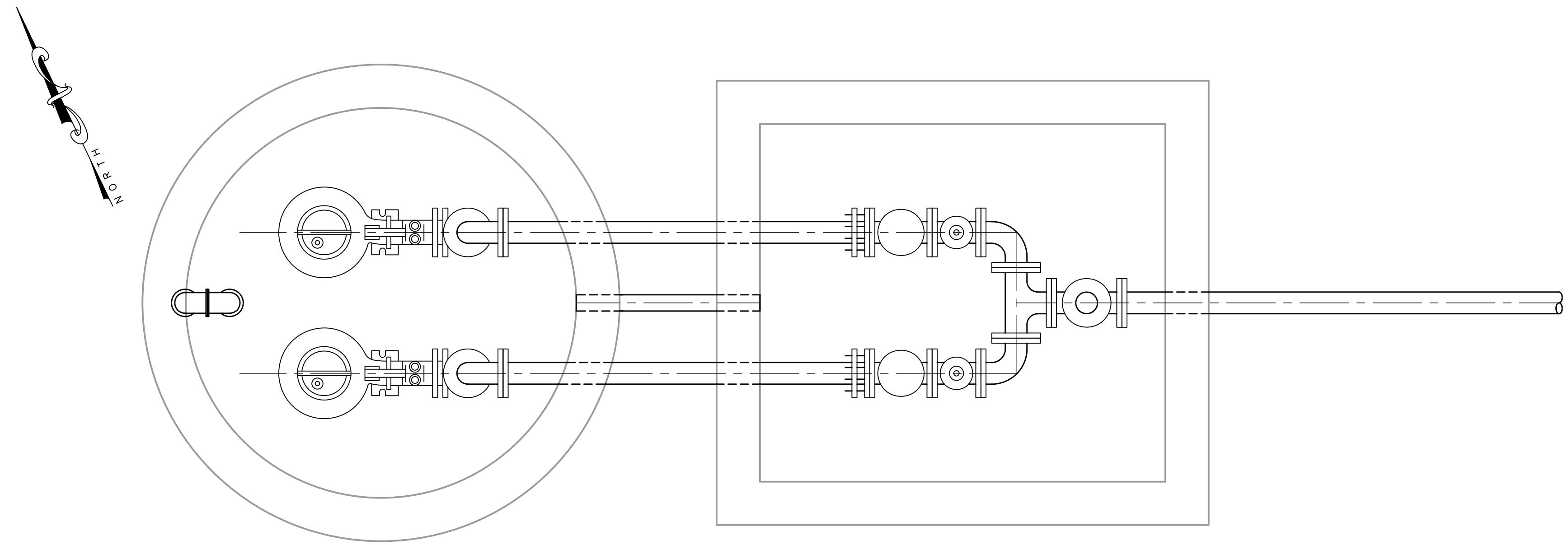
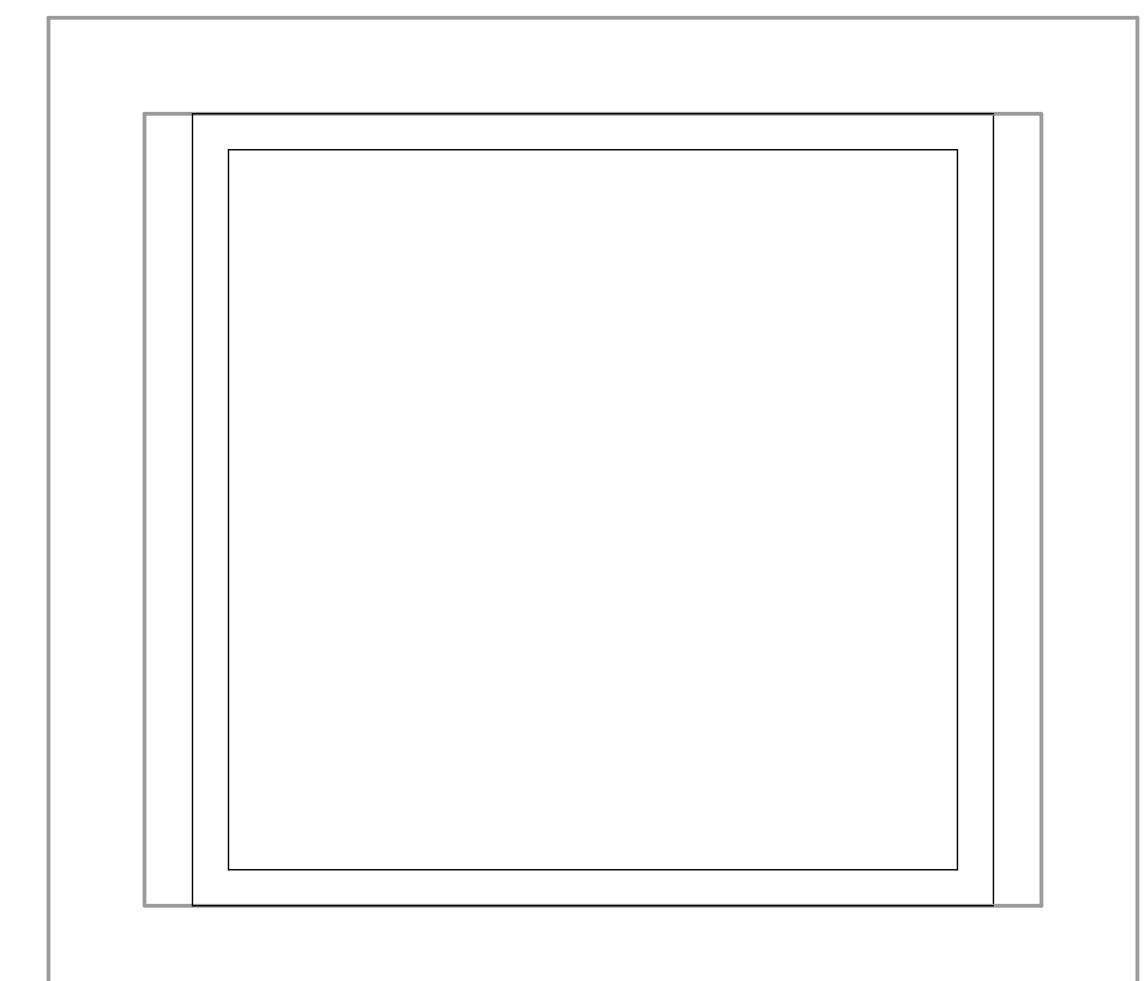
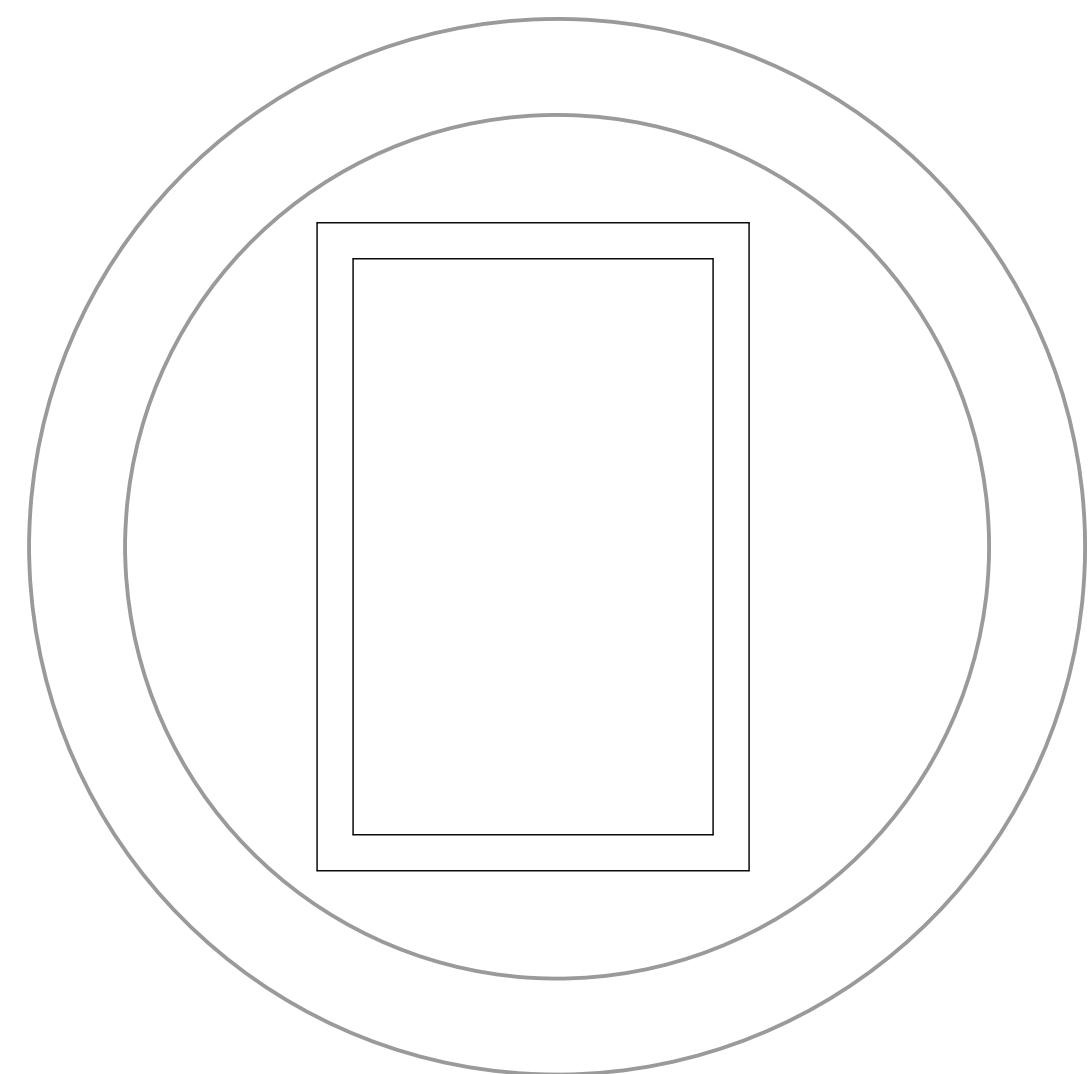
CITY OF CLEARWATER, FLORIDA  
ENGINEERING DEPARTMENT  
100 S. MYRTLE AVE.  
CLEARWATER, FL 33756



**LIFT STATION 54  
PROPOSED BYPASS PLAN**

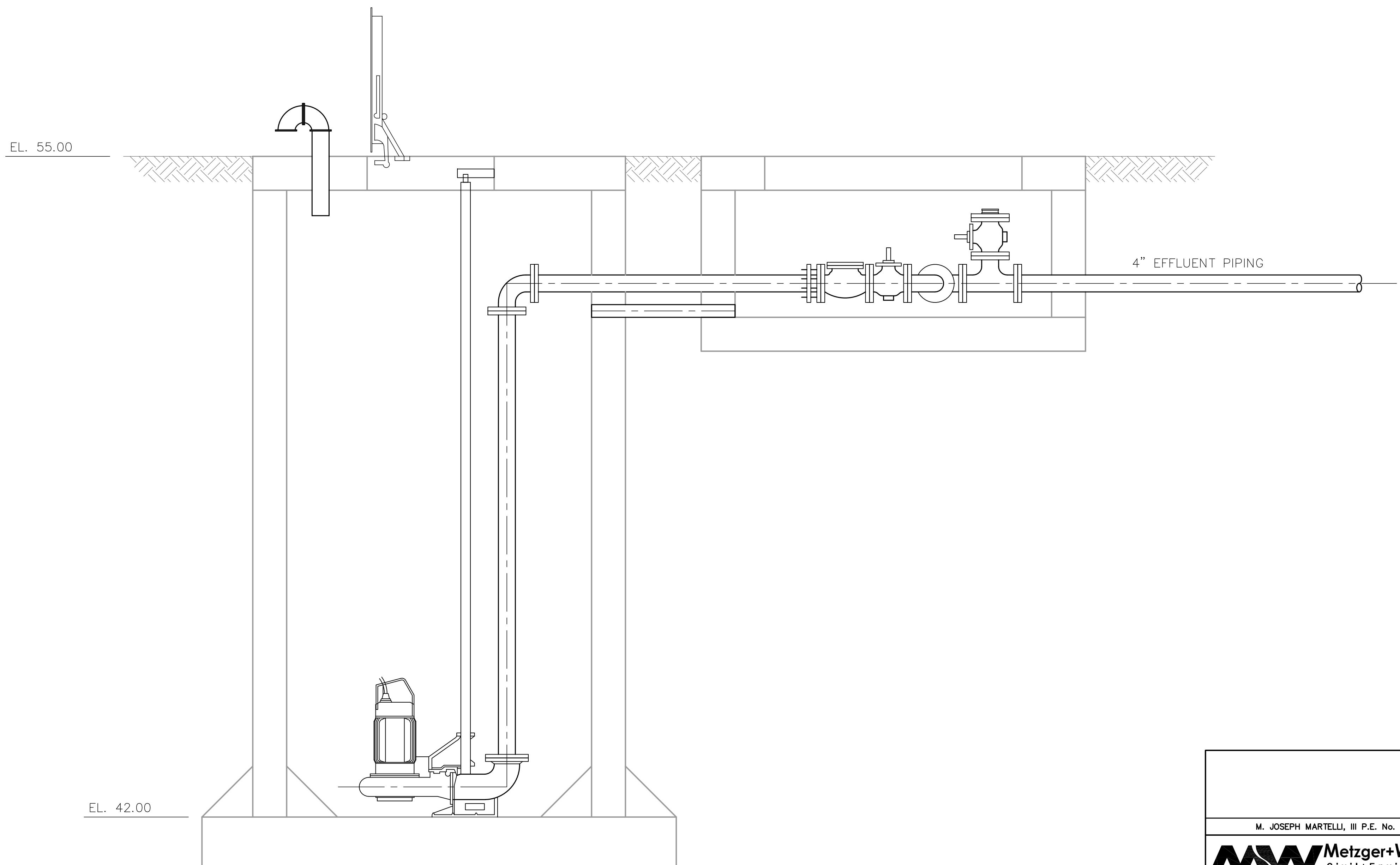
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CONTRACT NO.: 18-0058-UT	DATE DRAWN: ####	DRAWN BY: JMS	HORIZ. 1" = 3'
JOB NO.: 22609.19	DESIGNED BY: MJM	CHECKED BY: SGM	SCALE: SHEET NO. 6 OF 40
APPROVED BY:			





PLAN - TOP - SLAB

PLAN BELOW GRADE



CITY OF CLEARWATER, FLORIDA  
ENGINEERING DEPARTMENT  
100 S. MYRTLE AVE.  
CLEARWATER, FL 33756



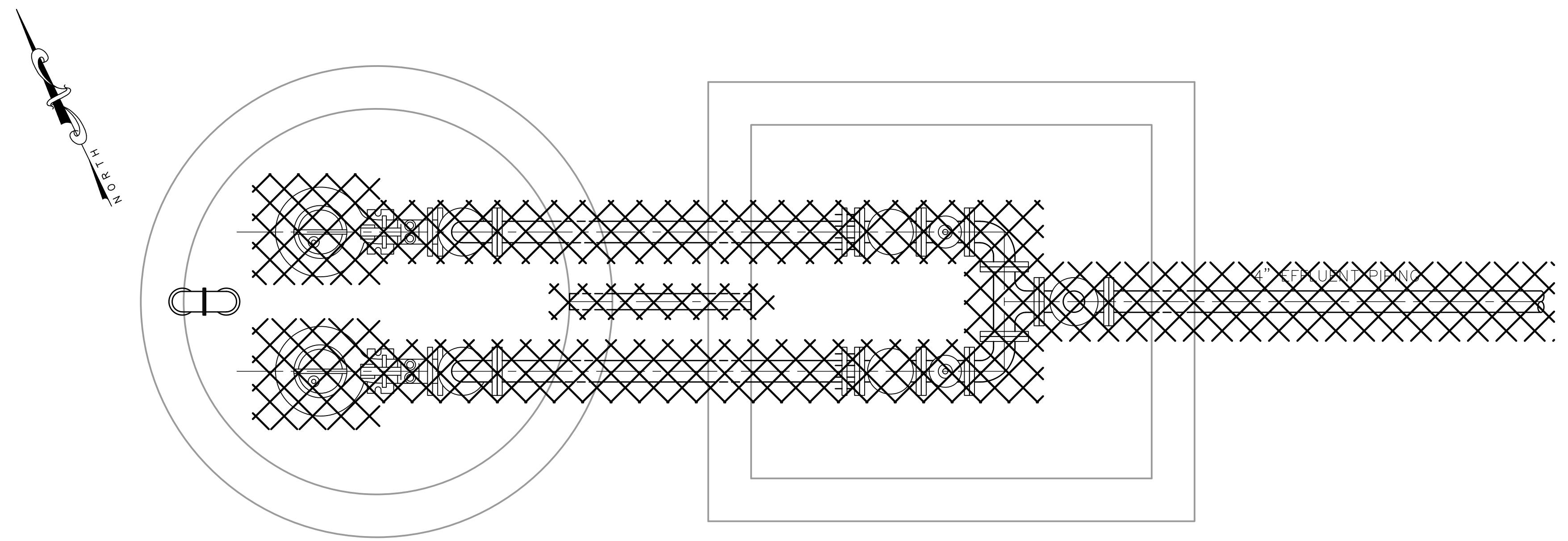
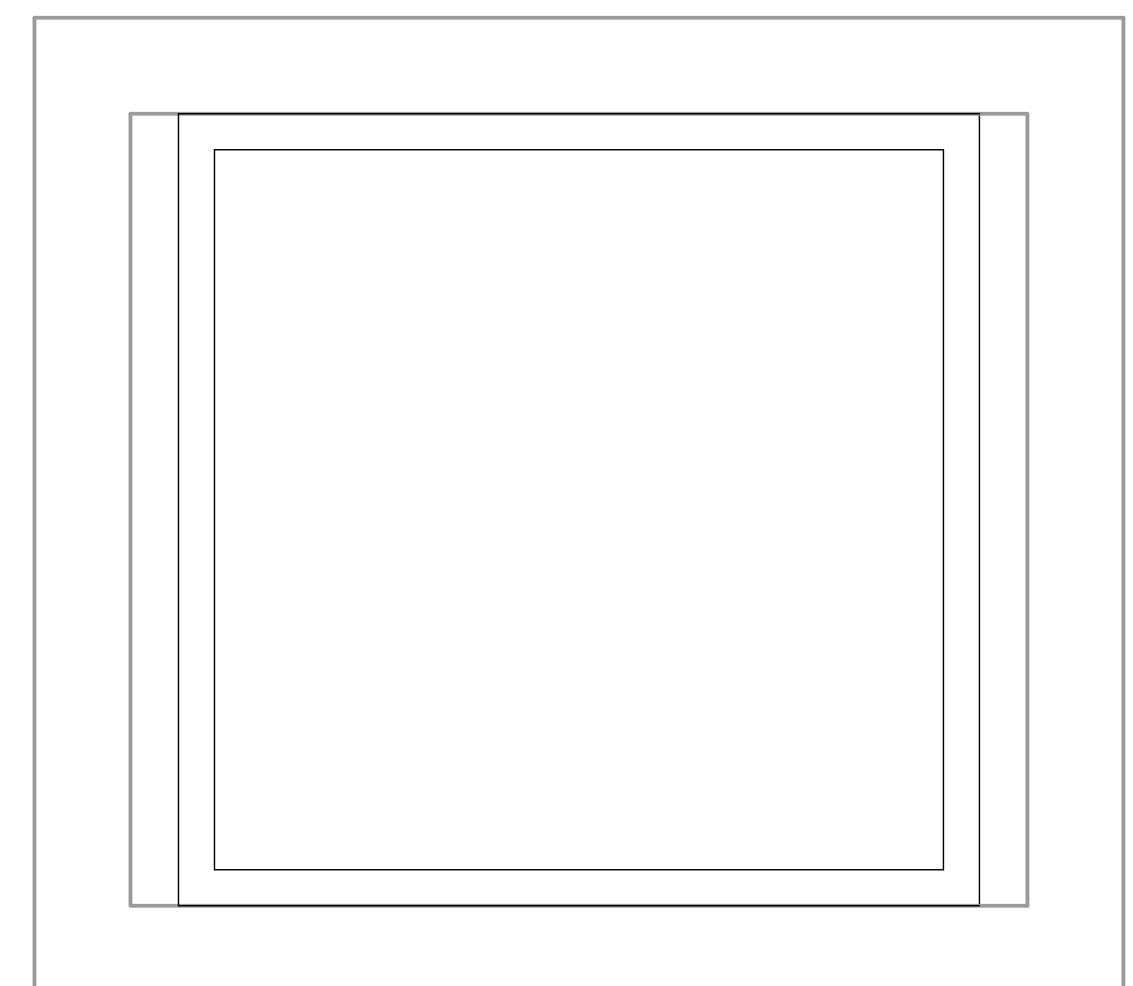
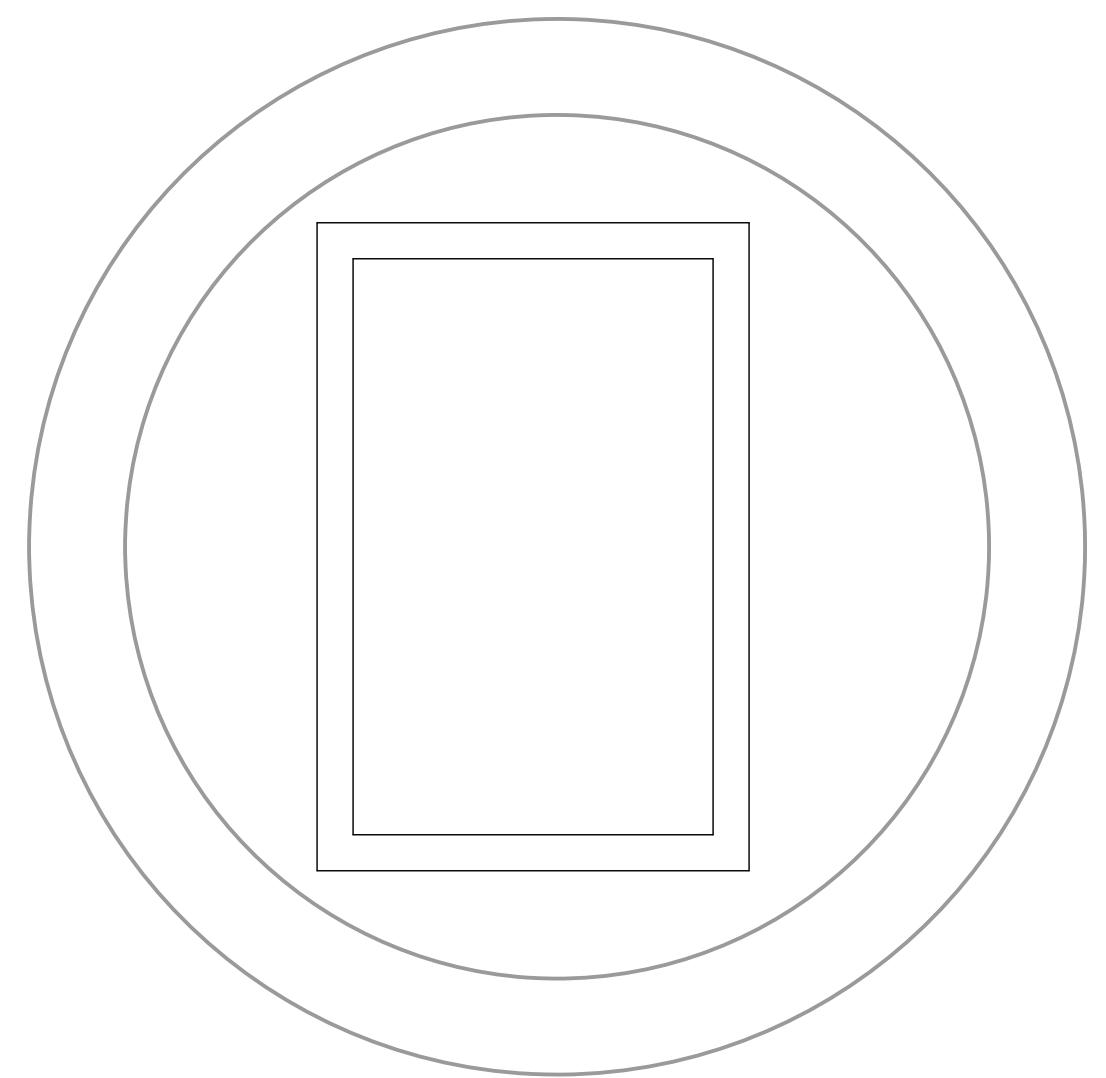
### LIFT STATION 54 EXISTING CONDITIONS

RECORD	DRAWINGS		
SURVEYED BY:	DRAWN BY:		
REVIEWED BY:			
PROJECT ENGINEER	DATE		
APPROVED BY:			
ENGINEER	DATE		

REVISION	BY	DATE

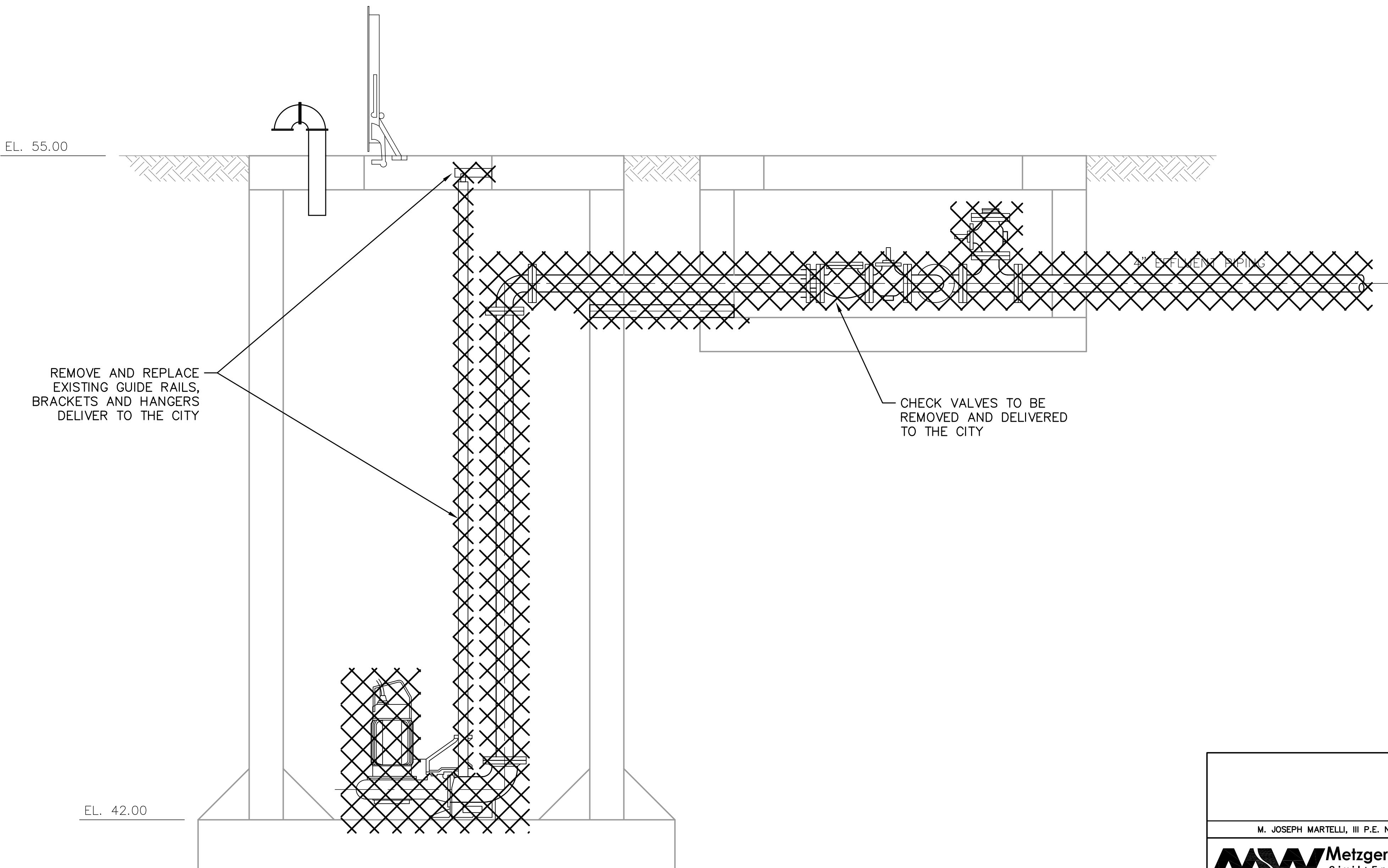
M. JOSEPH MARTELLI, III P.E. No. 74038  
**Metzger+Willard, INC.**  
 CIVIL + Environmental  
 Engineers + Surveyors  
 8600 Hidden River Parkway, Suite 550  
 Tampa, Florida 33637 (813) 977-6005  
 Certificate of Authorization No. 2886 - L.B. #7302

DWG NAME:	FIELD BOOK:	SURVEYED BY:	SCALE:
####	N/A	CLEARWATER	VERT. N/A
CONTRACT NO:	DATE DRAWN:	DRAWN BY:	
18-0058-UT	####	JMS	HORIZ. 3/4" = 1'-0"
JOB NO:	DESIGNED BY:	CHECKED BY:	SHEET NO:
22609.19	MJM	SGM	8 OF 40
APPROVED BY:			



PLAN - TOP - SLAB

PLAN BELOW GRADE



ELEVATION VIEW

CITY OF CLEARWATER, FLORIDA  
ENGINEERING DEPARTMENT  
100 S. MYRTLE AVE.  
CLEARWATER, FL 33756



### LIFT STATION 54 DEMOLITION

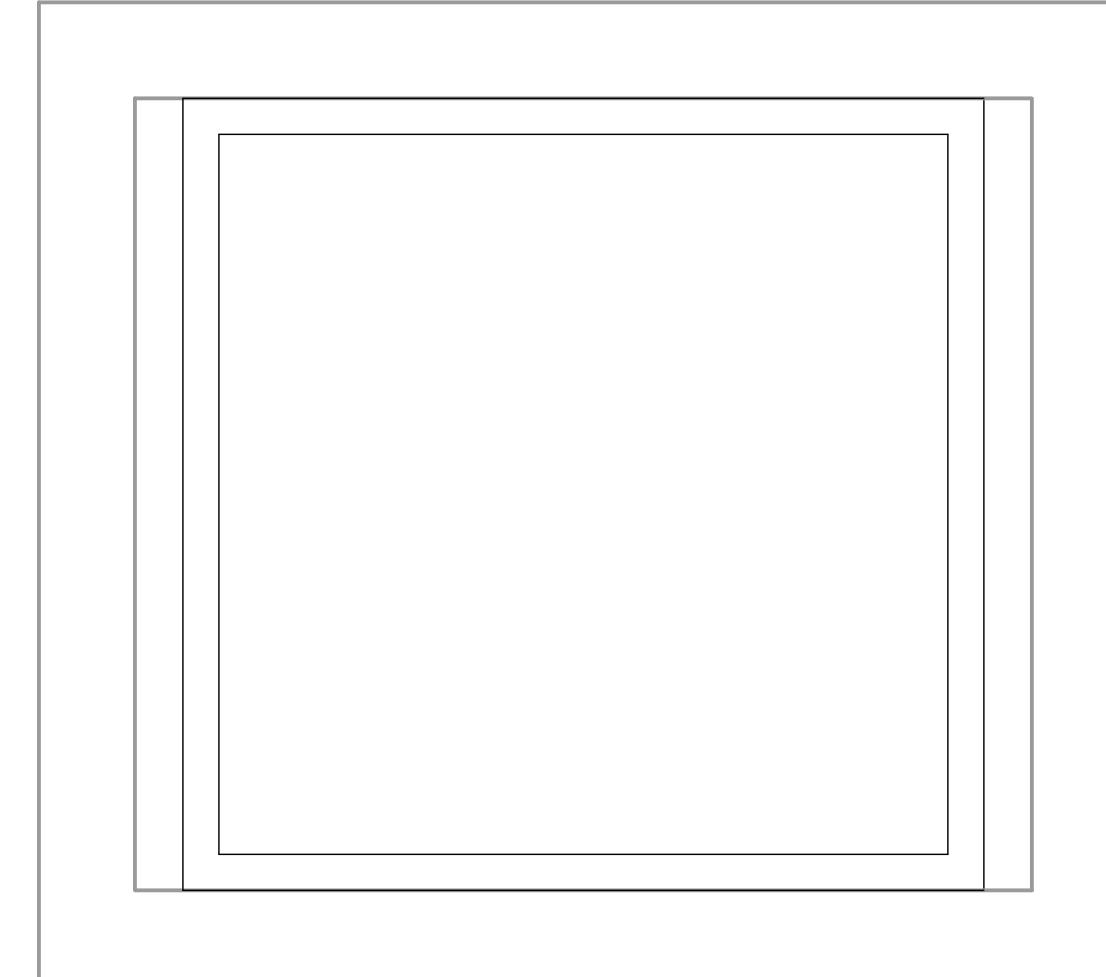
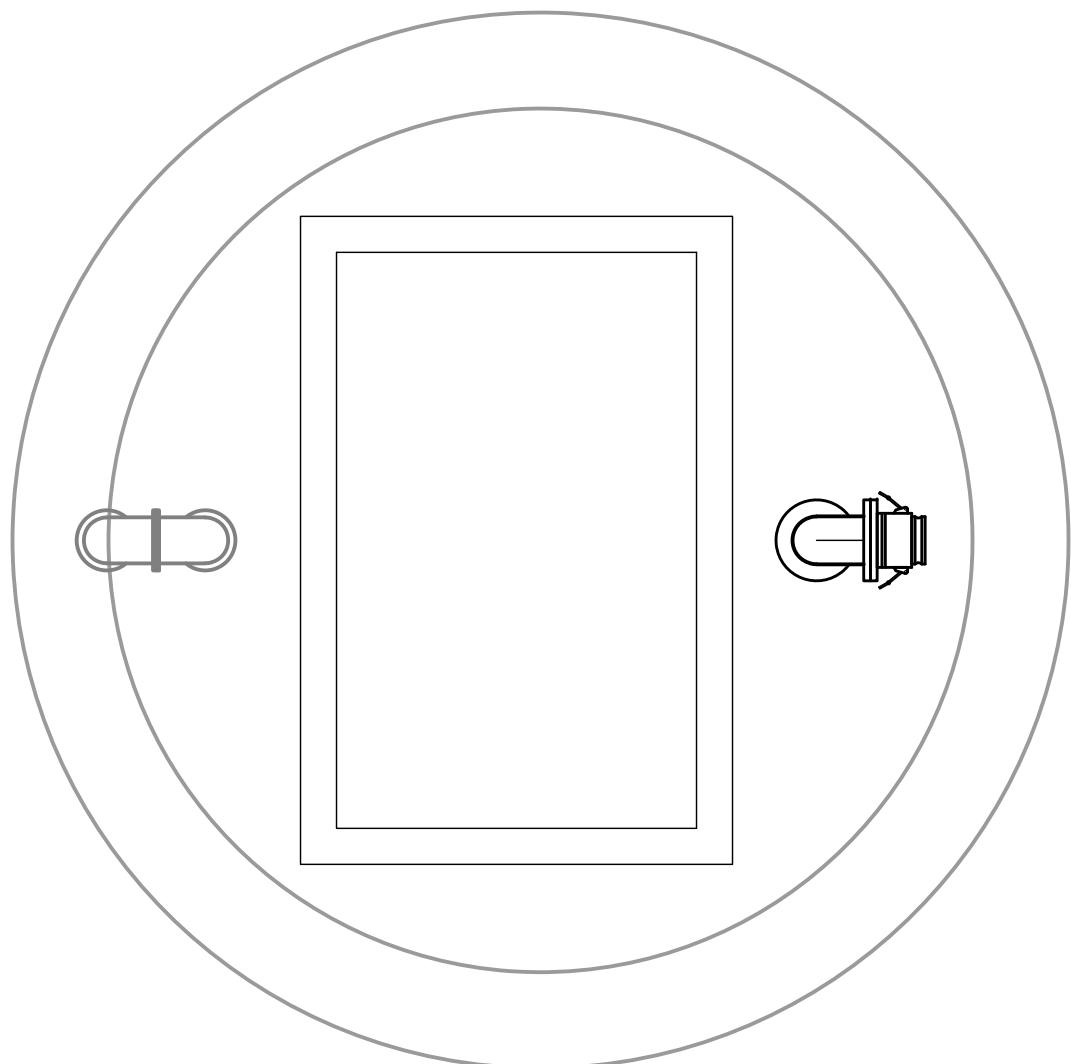
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SURVEYED BY:			
REVIEWED BY:			
PROJECT ENGINEER	DATE		
APPROVED BY:			
ENGINEER	DATE		

REVISION BY DATE

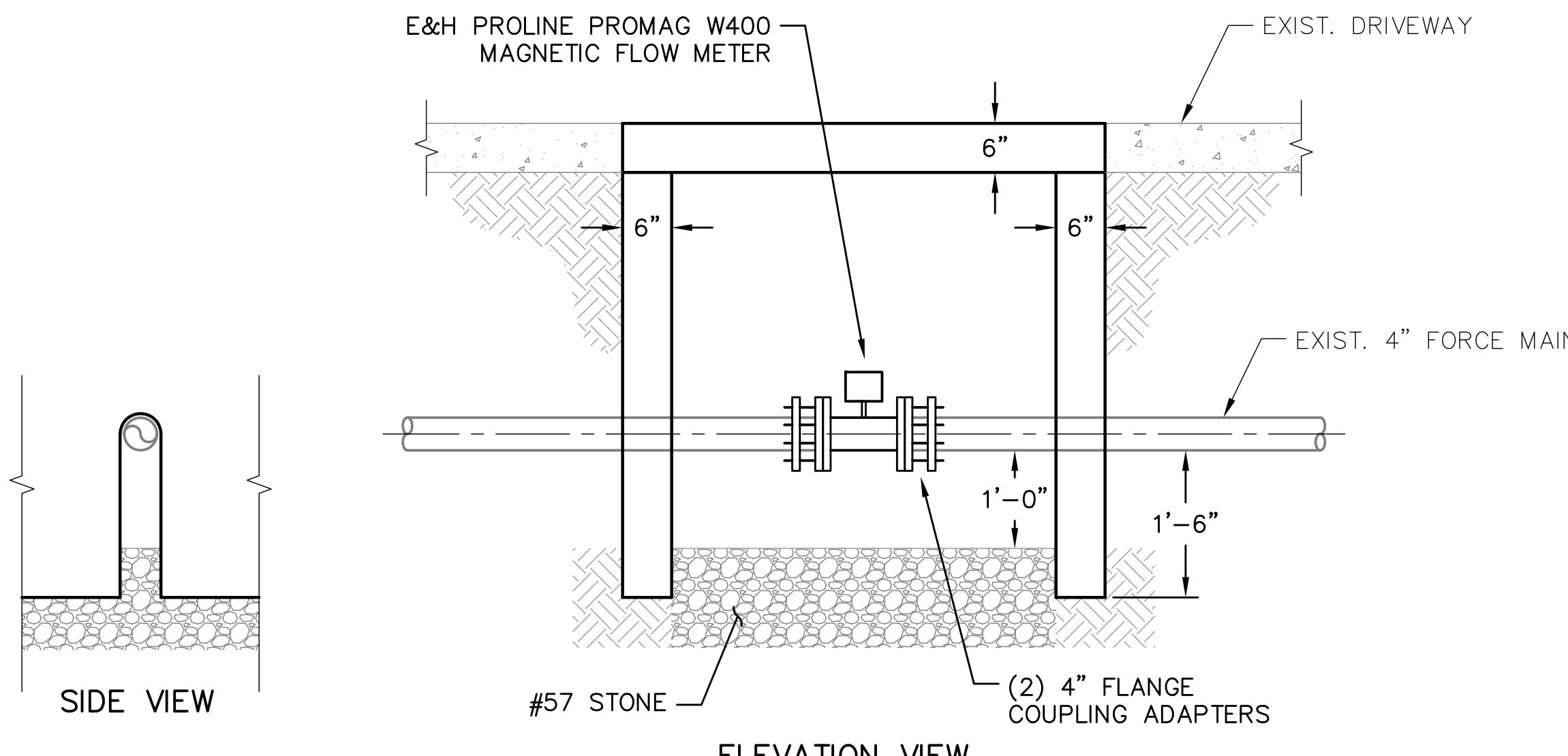
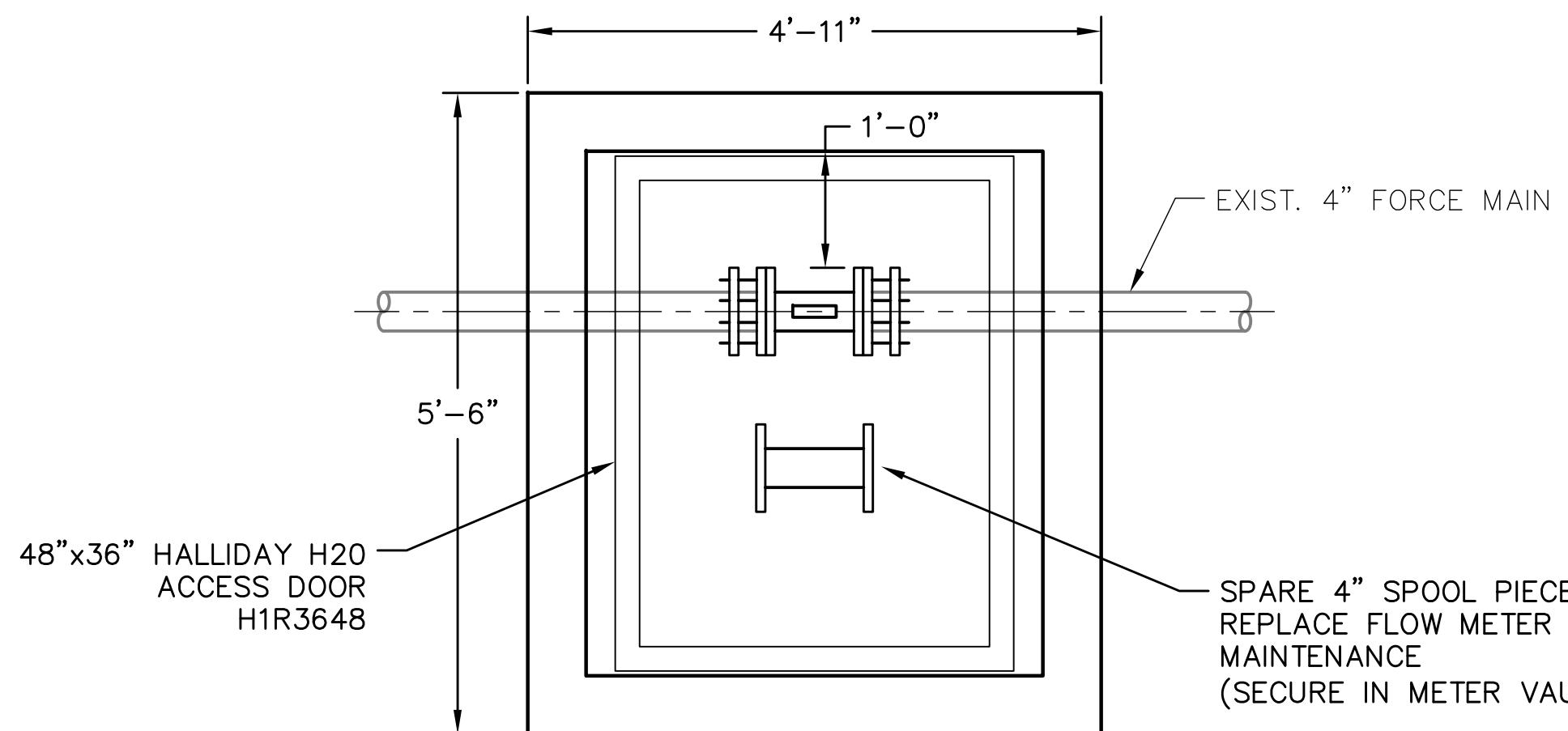
M. JOSEPH MARTELLI, III P.E. No. 74038  
**Metzger+Willard, INC.**  
Civil + Environmental  
Engineers + Surveyors  
8600 Hidden River Parkway, Suite 550  
Tampa, Florida 33637 (813) 977-6005  
Certificate of Authorization No. 2886 - L.B. #7302

DWG NAME: <b>####</b>	FIELD BOOK: <b>N/A</b>	SURVEYED BY: <b>CLEARWATER</b>	SCALE: <b>VERT. N/A</b>
CONTRACT NO: <b>18-0058-UT</b>	DATE DRAWN: <b>####</b>	DRAWN BY: <b>JMS</b>	HORIZ. <b>3/4" = 1'-0"</b>
JOB NO: <b>22609.19</b>	DESIGNED BY: <b>MJM</b>	CHECKED BY: <b>SGM</b>	SHEET NO: <b>9 OF 40</b>

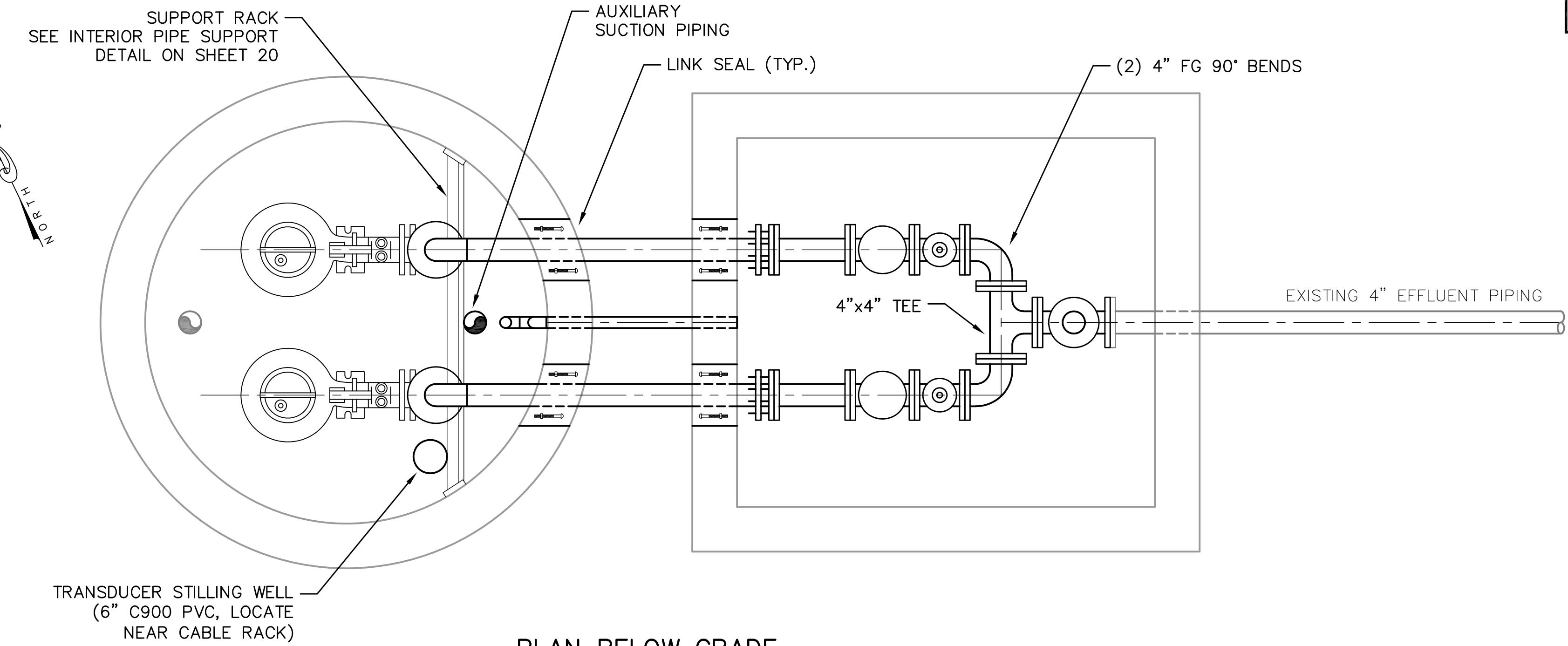
APPROVED BY \_\_\_\_\_



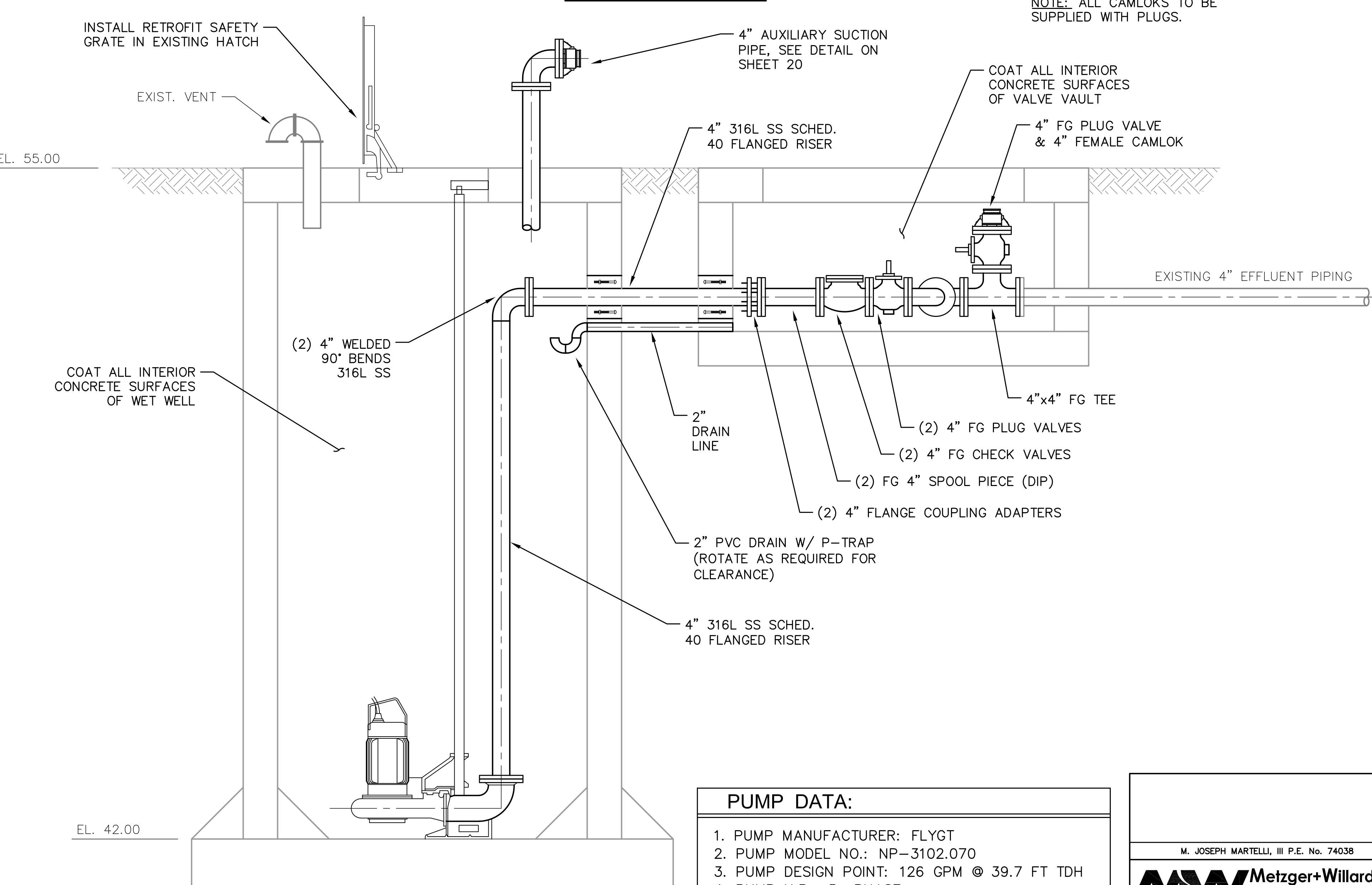
PLAN - TOP - SLAB



METER VAULT DETAIL



PLAN BELOW GRADE



M. JOSEPH MARTELLI, III P.E. No. 74038

**Metzger+Willard, INC.**  
Civil + Environmental  
Engineers + Surveyors  
8600 Hidden River Parkway, Suite 550  
Tampa, Florida 33637 (813) 977-6005  
Certificate of Authorization No. 2886 - L.B. #7302

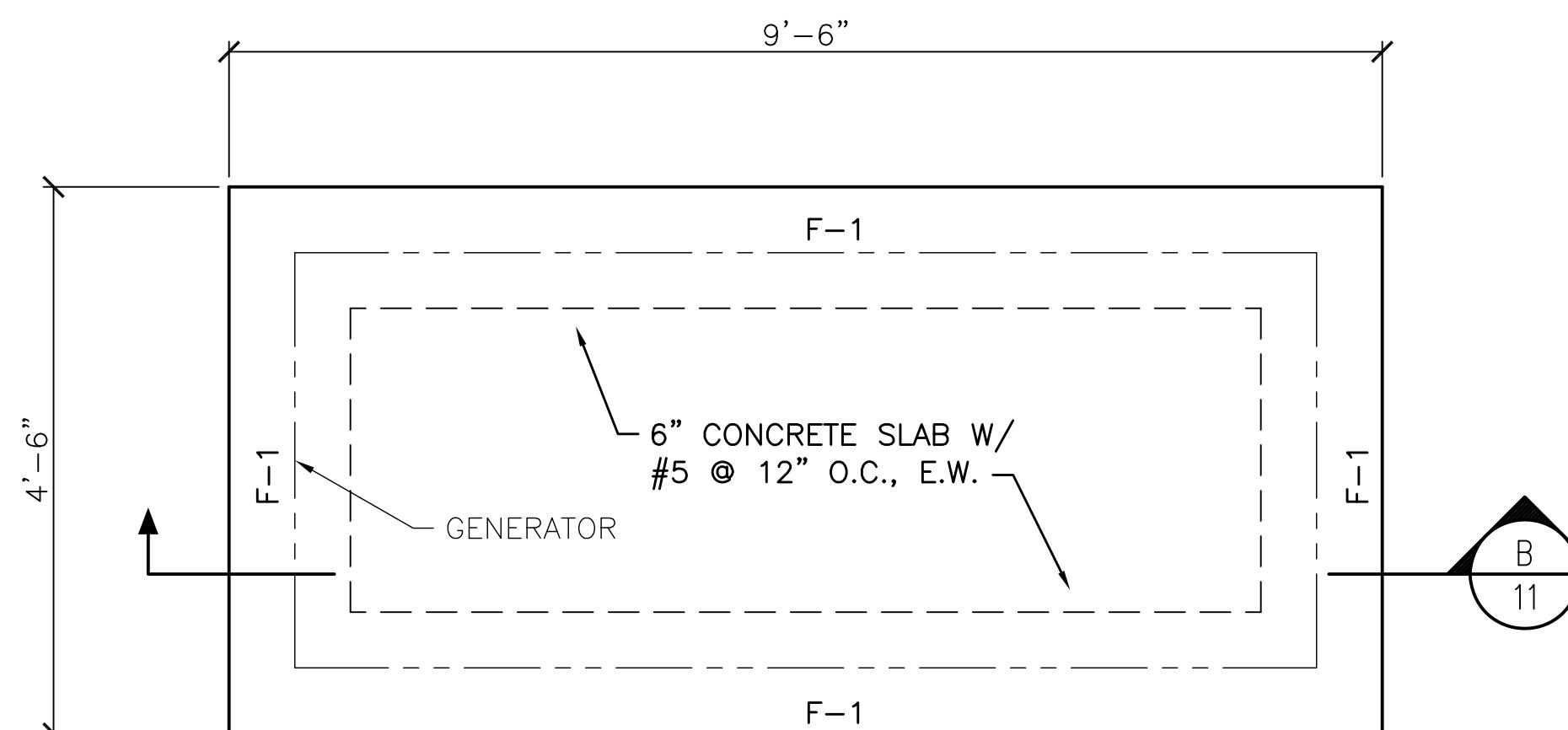
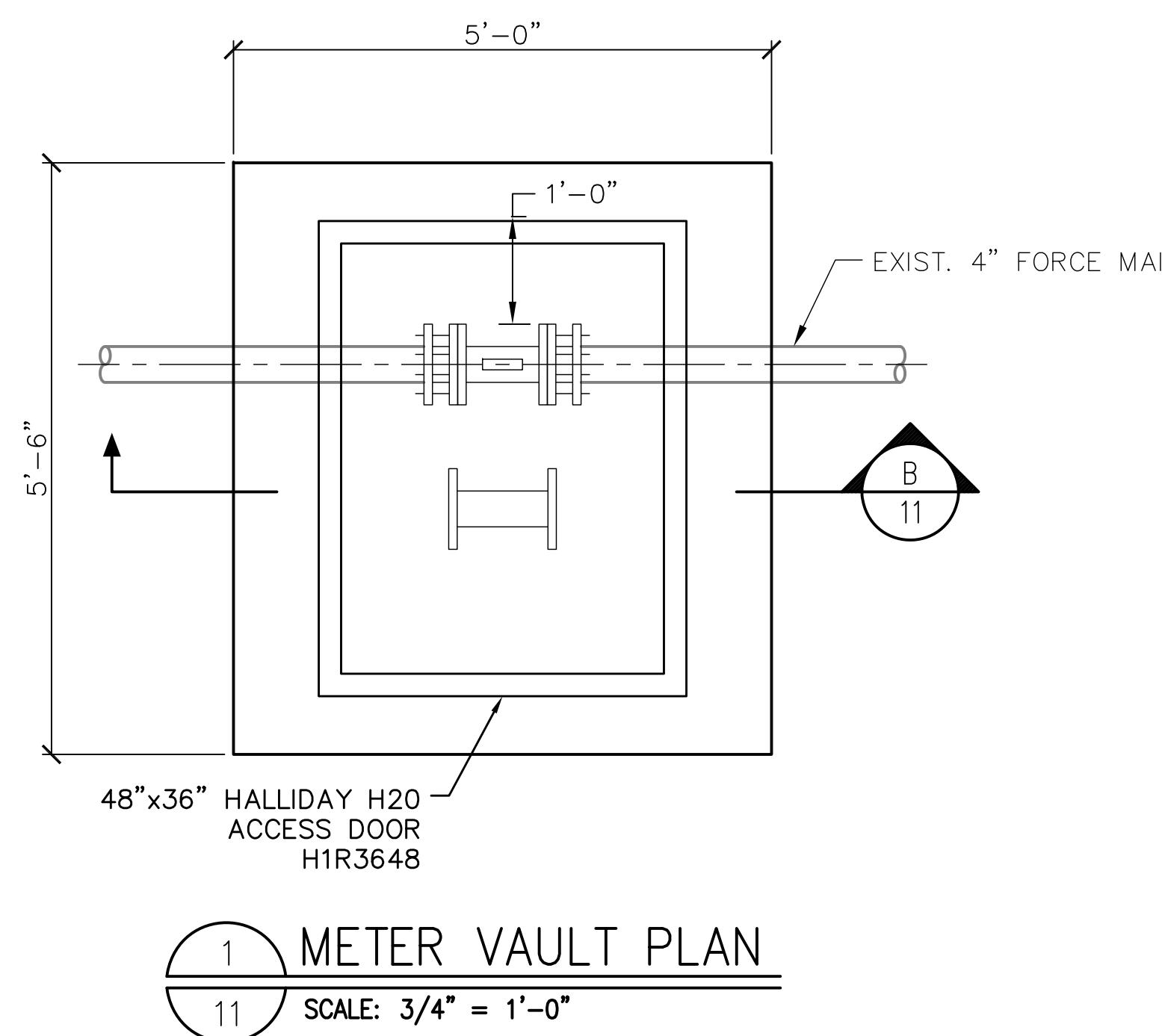
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SURVEYED BY:			
REVIEWED BY:			
PROJECT ENGINEER	DATE		
APPROVED BY:			
ENGINEER	DATE		
REVISION	BY DATE		

CITY OF CLEARWATER, FLORIDA  
ENGINEERING DEPARTMENT  
100 S. MYRTLE AVE.  
CLEARWATER, FL 33756



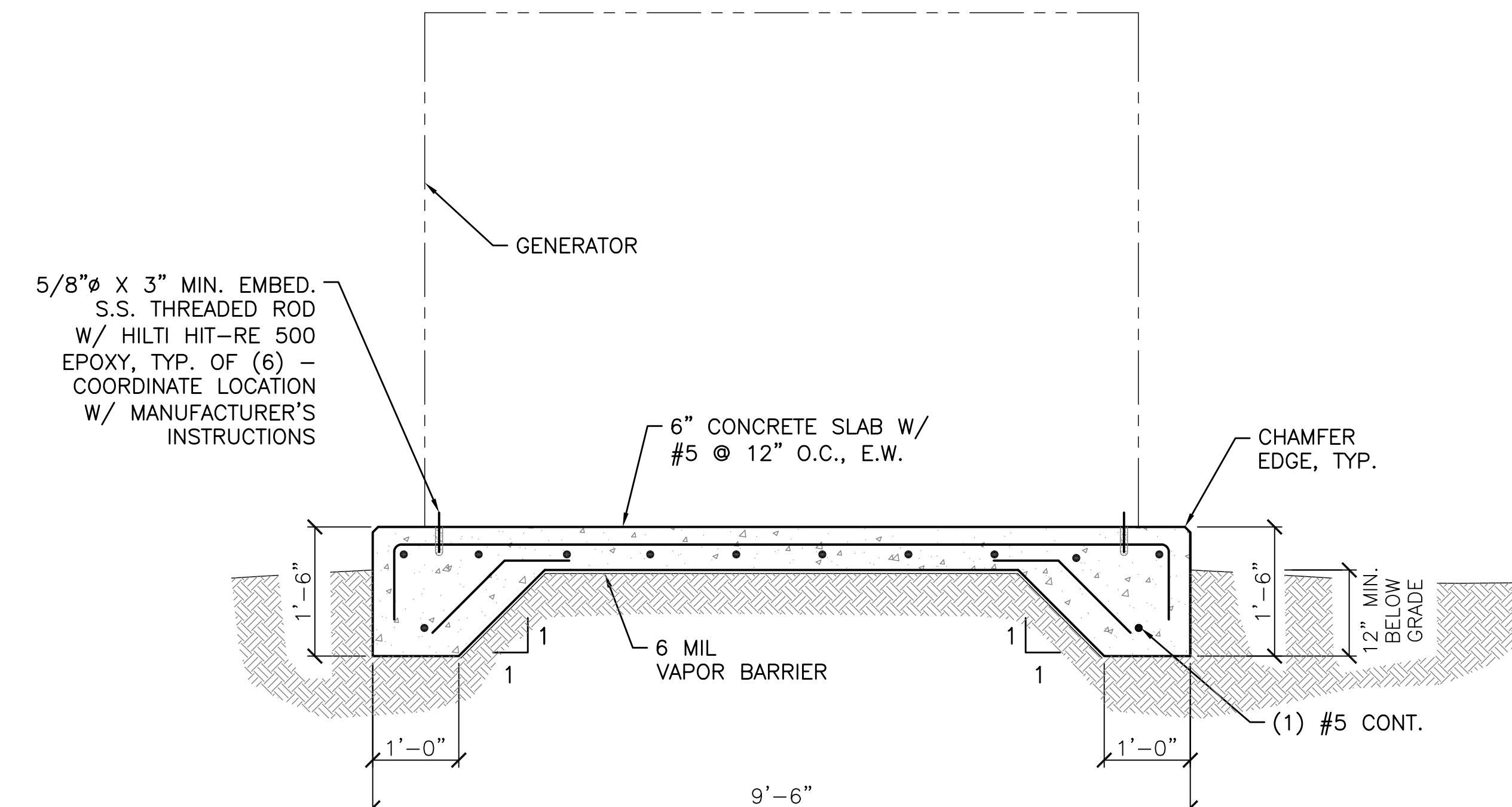
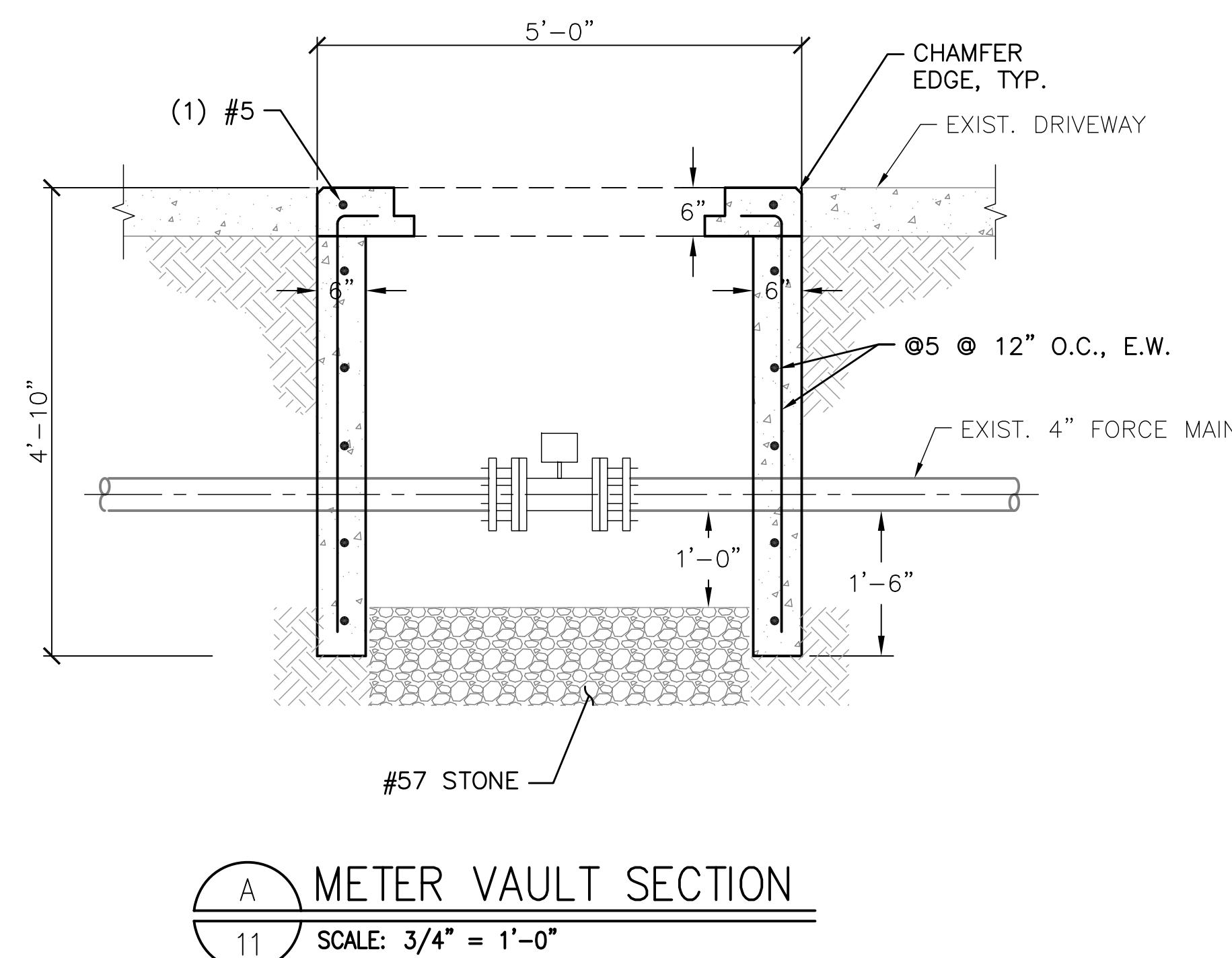
## LIFT STATION 54 PROPOSED LAYOUT

DWG NAME:	FIELD BOOK:	SURVEYED BY:	SCALE:
####	N/A	CLEARWATER	VERT. N/A
CONTRACT NO: 18-0058-UT	DATE DRAWN: ####	DRAWN BY: JMS	HORIZ. 3/4" = 1'-0"
JOB NO: 22609.19	DESIGNED BY: MJM	CHECKED BY: SGM	sheet no: 10 OF 40
APPROVED BY:			



#### FOOTING SCHEDULE

NO.	SIZE	REINFORCEMENT	REMARKS
F-1	1'-6" X 1'-0" X CONT.	(1) #5 CONT.	EDGE FOOTING



RECORD DRAWINGS	DRAWN BY:
SURVEYED BY:	
REVIEWED BY:	
PROJECT ENGINEER	DATE
APPROVED BY:	
ENGINEER	DATE

REVISION	BY	DATE
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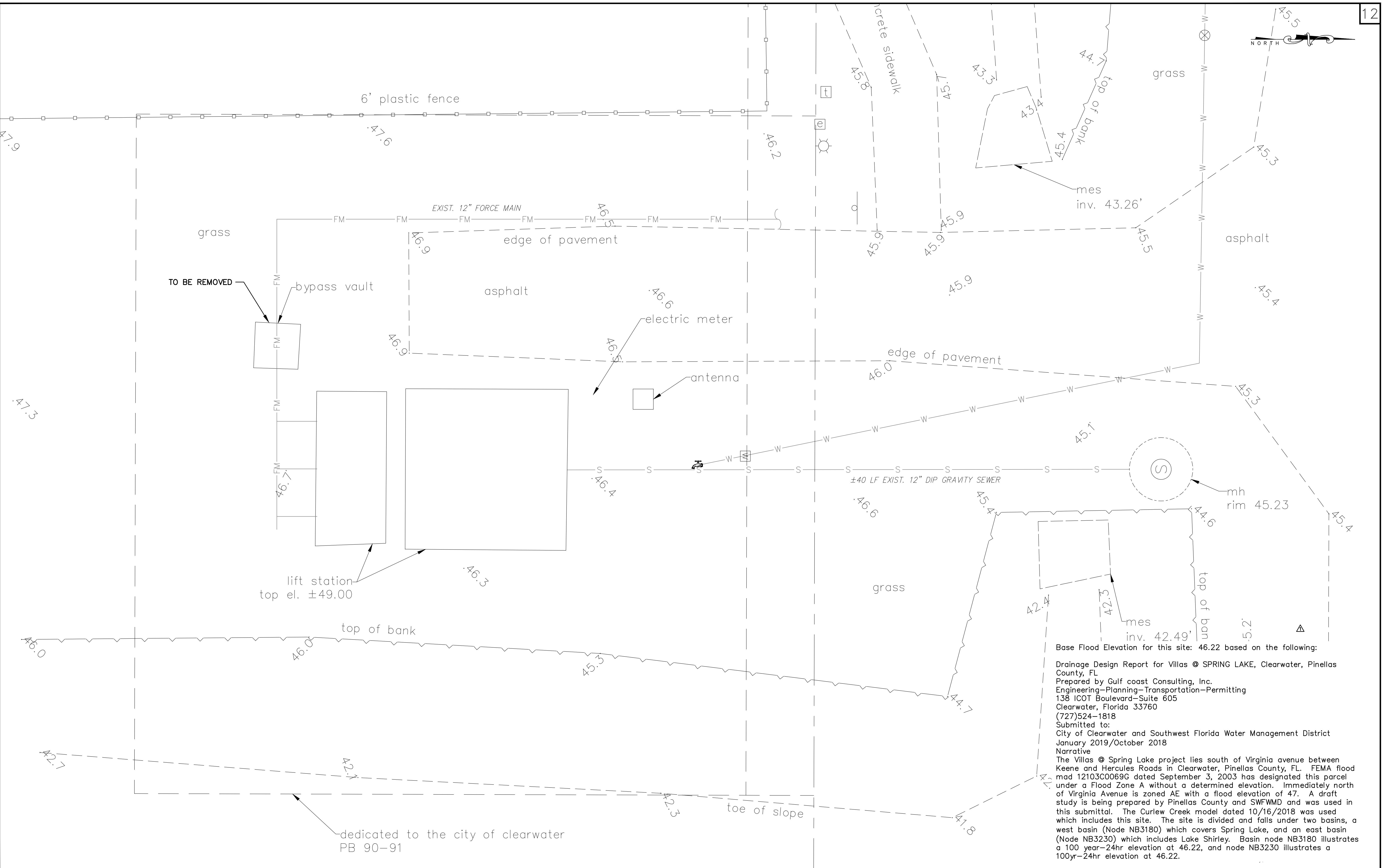
CITY OF CLEARWATER, FLORIDA  
ENGINEERING DEPARTMENT  
100 S. MYRTLE AVE.  
CLEARWATER, FL 33756



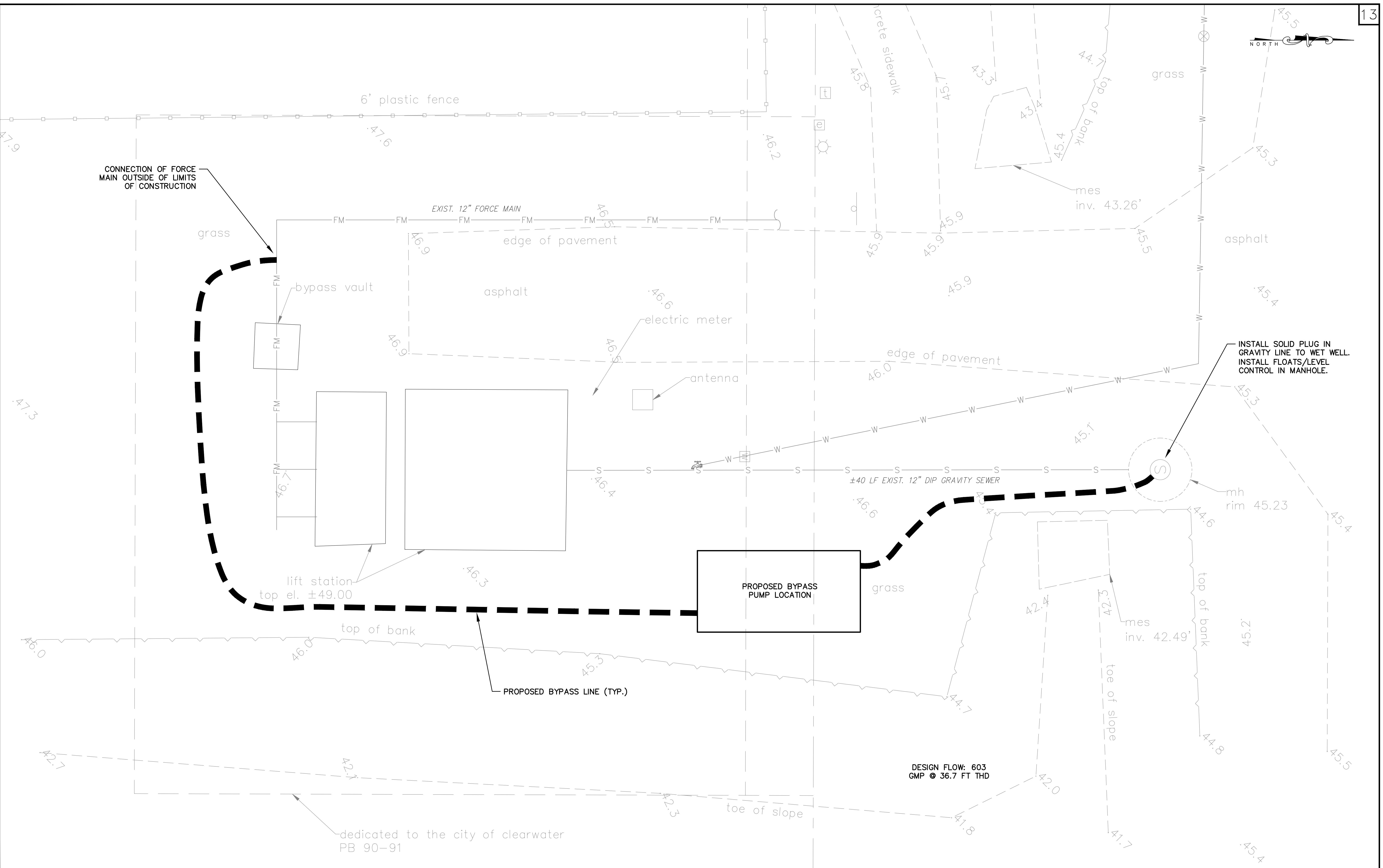
#### LIFT STATION 54 PROPOSED STRUCTURAL DETAILS

DWG NAME: <b>SHEET 11</b>	FIELD BOOK: <b>N/A</b>	SURVEYED BY: <b>CLEARWATER</b>	SCALE: <b>VERT. N/A</b>
CONTRACT NO: <b>18-0058-UT</b>	DATE DRAWN: <b>06/22/2010</b>	DRAWN BY: <b>DEC</b>	SCALE: <b>HORIZ. 3/4" = 1'-0"</b>
JOB NO: <b>22609.19</b>	DESIGNED BY: <b>EAB</b>	CHECKED BY: <b>EAB</b>	SHEET NO: <b>11 OF 40</b>
APPROVED BY _____			





RECORD DRAWINGS	DRAWN BY:	FIELD BOOK: ####	SURVEYED BY: CLEARWATER	SCALE: VERT. N/A
SURVEYED BY:		CONTRACT NO. 18-0058-UT	DRAWN BY: JMS	DATE DRAWN: ####
REVIEWED BY:		JOB NO. 22609.19	DESIGNED BY: MJM	HORIZ. 1" = 3'
PROJECT ENGINEER	DATE		CHECKED BY: SGM	sheet no. 12 OF 40
APPROVED BY:			APPROVED FOR CONSTRUCTION	
ENGINEER	DATE			



RECORD DRAWINGS	
SURVEYED BY:	DRAWN BY:
REVIEWED BY:	
PROJECT ENGINEER	DATE

REVISION	BY	DATE

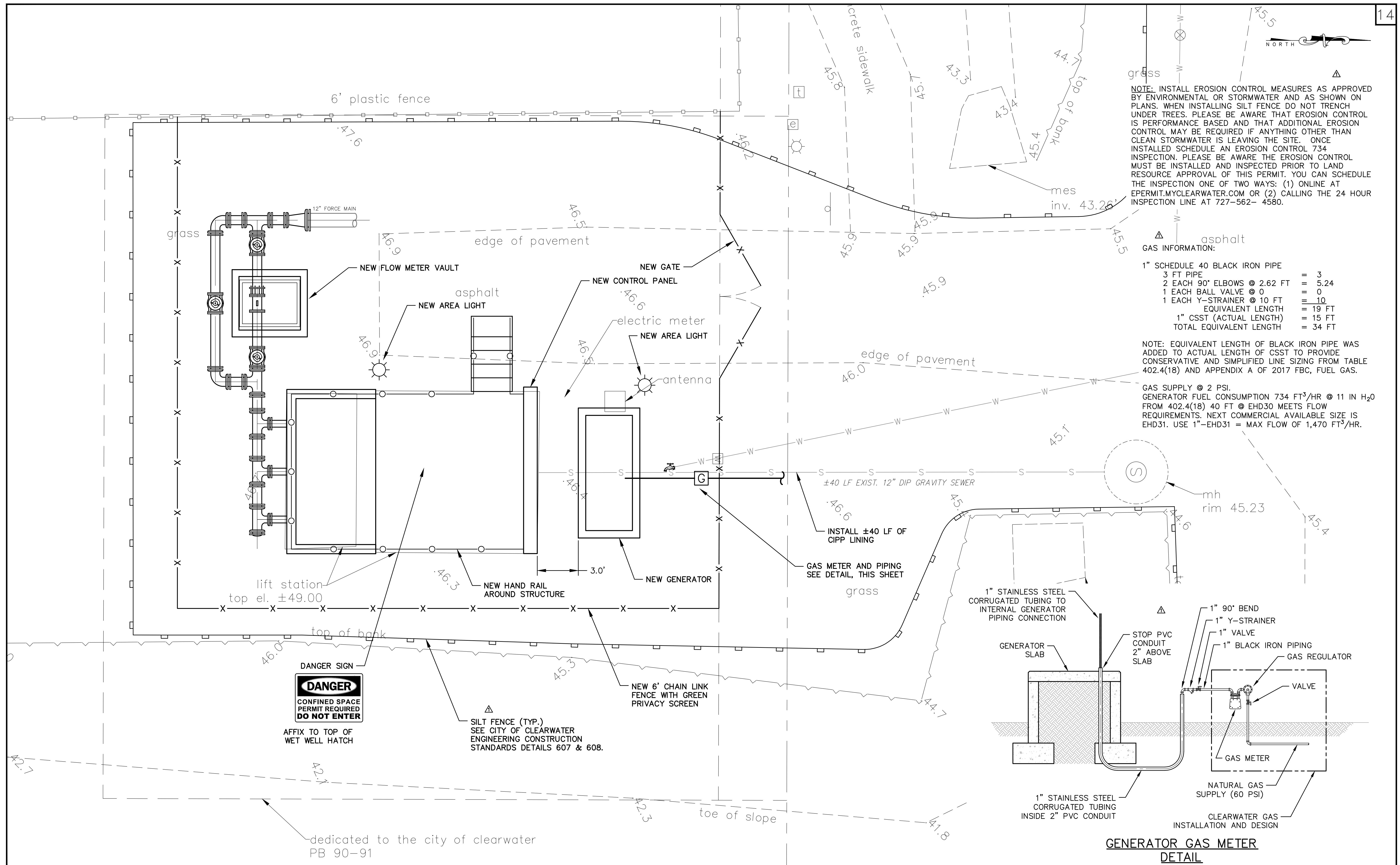
CITY OF CLEARWATER, FLORIDA  
ENGINEERING DEPARTMENT  
100 S. MYRTLE AVE.  
CLEARWATER, FL 33756



### LIFT STATION 65 PROPOSED BYPASS PLAN

DWG NAME: ####	FIELD BOOK: N/A	SURVEYED BY: CLEARWATER	SCALE: VERT. N/A
CONTRACT NO.: ####	DATE DRAWN: 12/2019	DRAWN BY: JMS	HORIZ. 1" = 3'
JOB NO.: 22609.19	DESIGNED BY: MJM	CHECKED BY: SGM	SHEET NO.: 13 OF 40

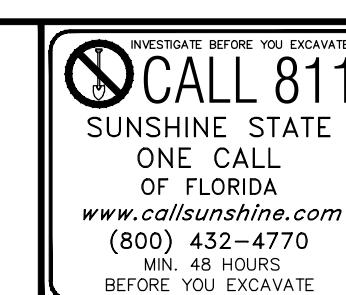
APPROVED FOR CONSTRUCTION



RECORD DRAWINGS	
SURVEYED BY:	DRAWN BY:
REVIEWED BY:	
PROJECT ENGINEER	DATE
APPROVED BY:	
ENGINEER	DATE

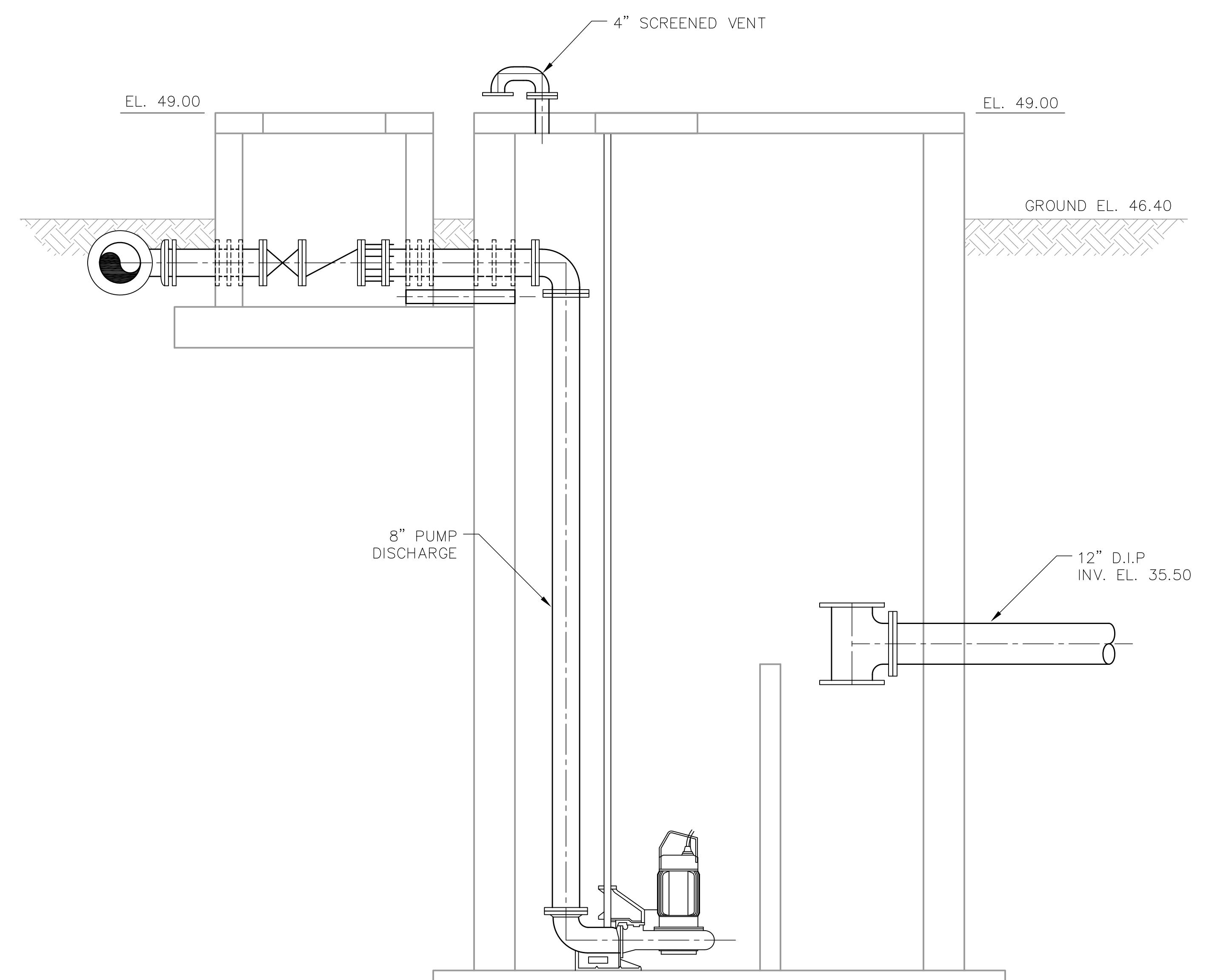
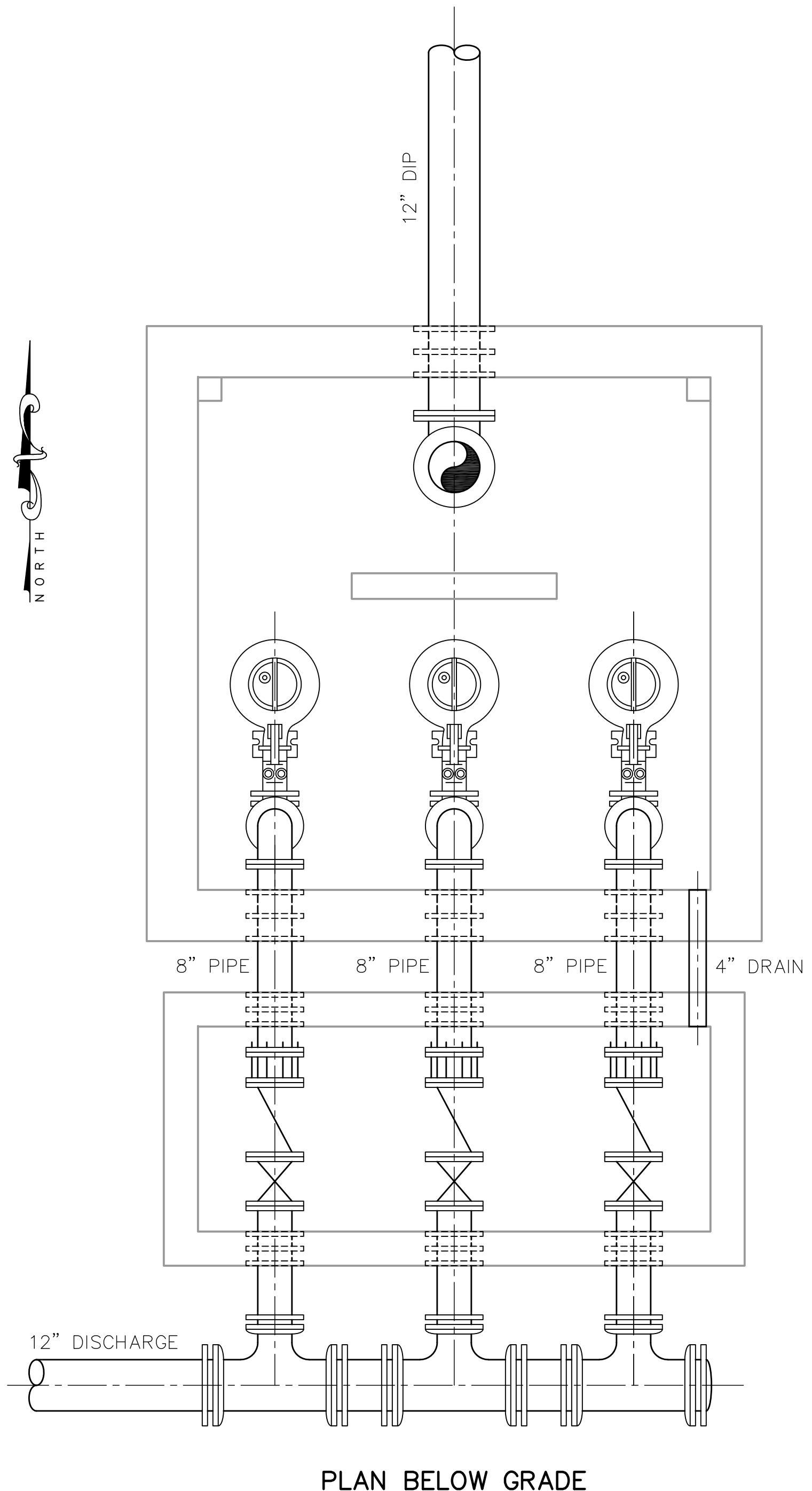
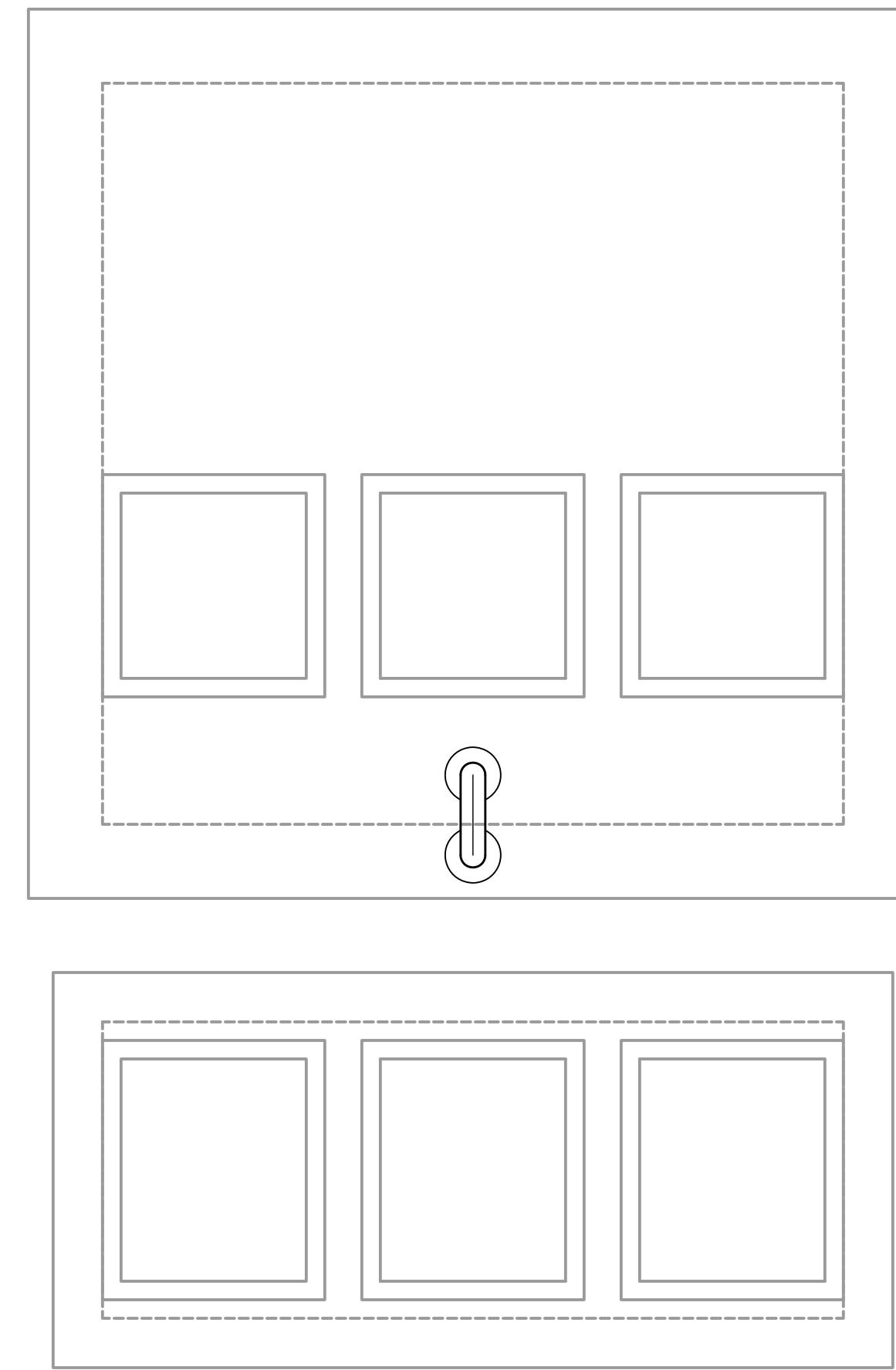
△	BUILDING DEPARTMENT	MJM	01/2021
	REVISION	BY	DATE

CITY OF CLEARWATER, FLORIDA  
ENGINEERING DEPARTMENT  
100 S. MYRTLE AVE.  
CLEARWATER, FL 33756



## LIFT STATION 65 PROPOSED SITE SCHEMATIC

DWG NAME: ###	FIELD BOOK: N/A	SURVEYED BY: CLEARWATER	SCALE: VERT. N/A
CONTRACT NO.: ###	DATE DRAWN: 12/2019	DRAWN BY: JMS	HORIZ. 1" = 3'
JOB NO.: 22609.19	DESIGNED BY: MJM	CHECKED BY: SGM	SHEET NO. 14 OF 40
APPROVED FOR CONSTRUCTION			



RECORD	DRAWINGS		
SURVEYED BY:	DRAWN BY:		
REVIEWED BY:			
PROJECT ENGINEER	DATE		
APPROVED BY:			
ENGINEER	DATE		

REVISION	BY	DATE

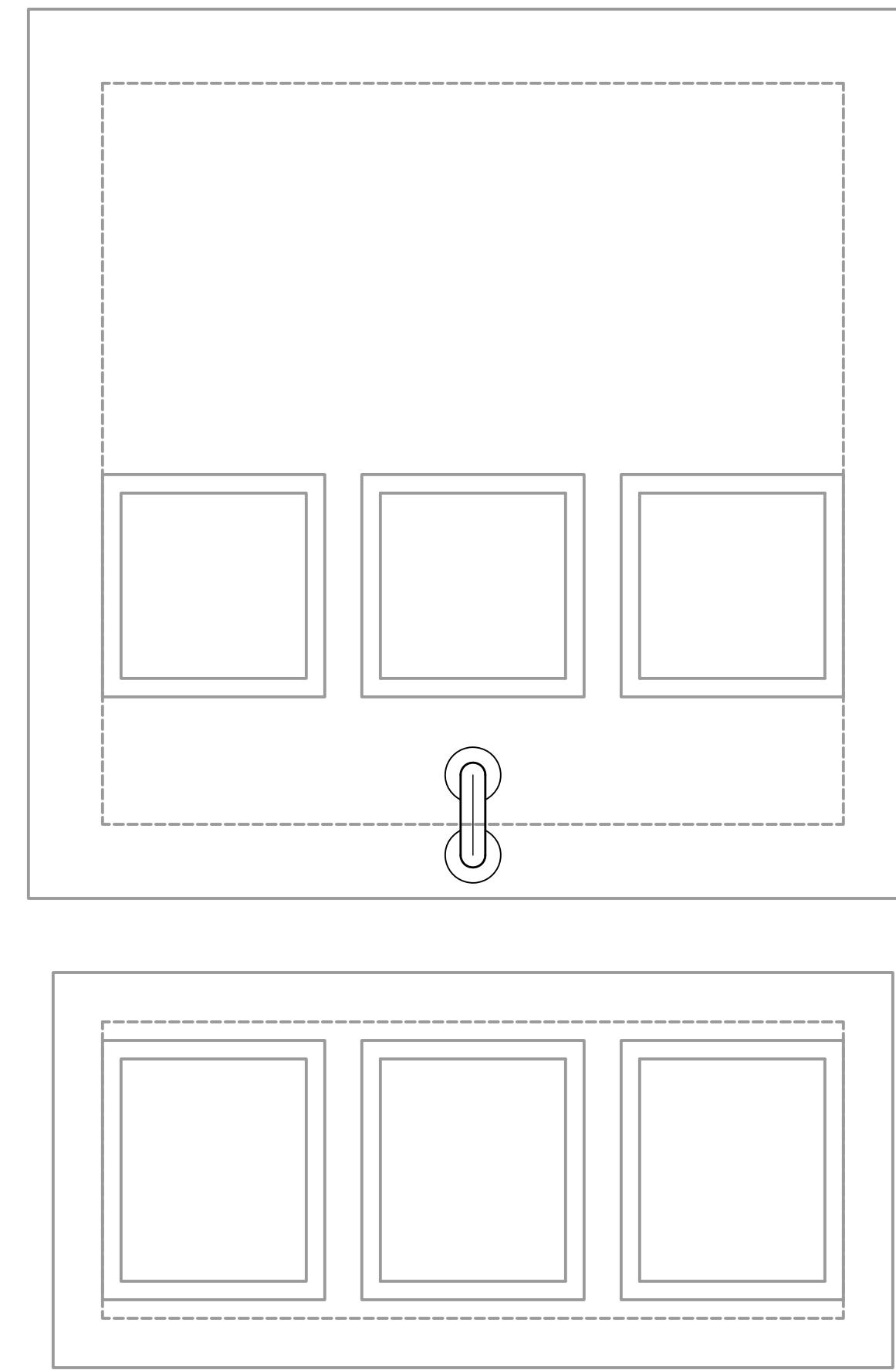
CITY OF CLEARWATER, FLORIDA  
ENGINEERING DEPARTMENT  
100 S. MYRTLE AVE.  
CLEARWATER, FL 33756



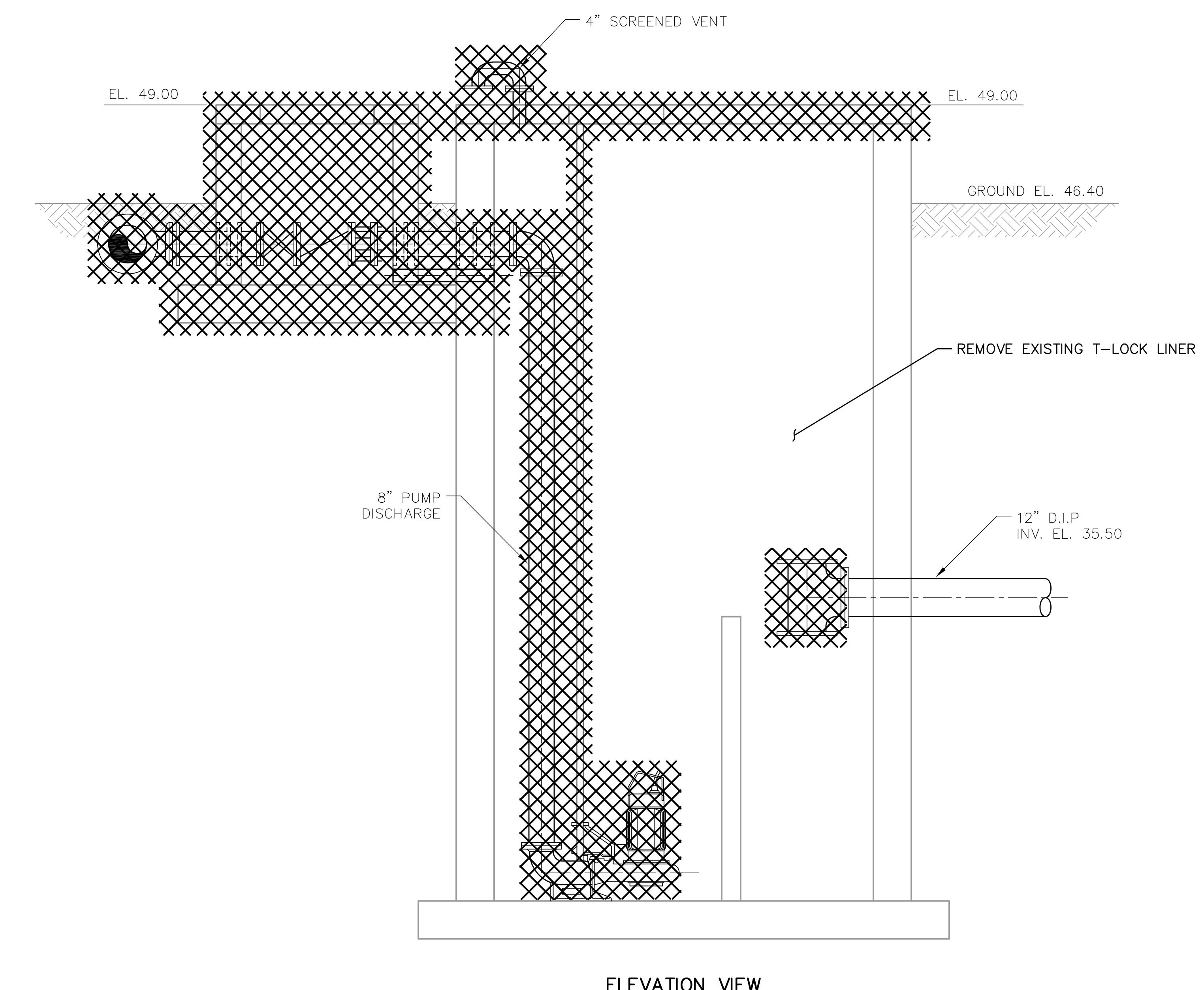
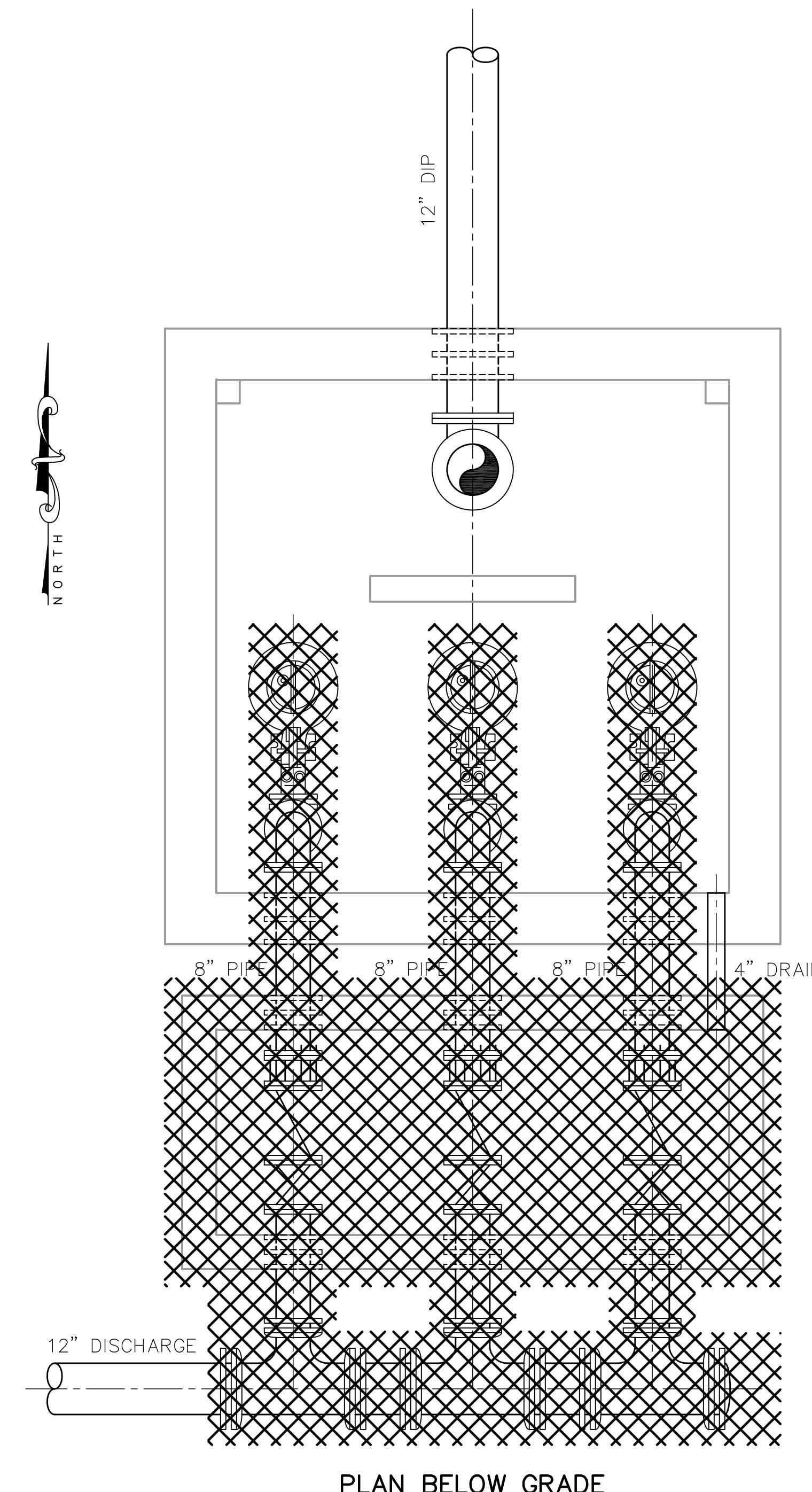
## LIFT STATION 65 EXISTING CONDITIONS

DWG NAME: ####	FIELD BOOK: N/A	SURVEYED BY: CLEARWATER	SCALE: VERT. N/A
CONTRACT NO: 18-0058-UT	DATE DRAWN: ####	DRAWN BY: JMS	DRAWN BY: JMS
JOB NO: 22609.19	DESIGNED BY: MJM	CHECKED BY: SGM	HORIZ. 1/2" = 1'-0"
APPROVED BY: _____			SHEET NO: 15 OF 40

CONFIRM DISPOSITION OF  
DEMOLISHED ITEMS WITH CITY OF  
CLEARWATER PROJECT MANAGER  
BEFORE DISPOSAL.



PLAN - TOP - SLAB



CITY OF CLEARWATER, FLORIDA  
ENGINEERING DEPARTMENT  
100 S. MYRTLE AVE.  
CLEARWATER, FL 33756



## LIFT STATION 65 DEMOLITION

RECORD	DRAWINGS		
SURVEYED BY:	DRAWN BY:		
REVIEWED BY:			
PROJECT ENGINEER	DATE		
APPROVED BY:			
ENGINEER	DATE		

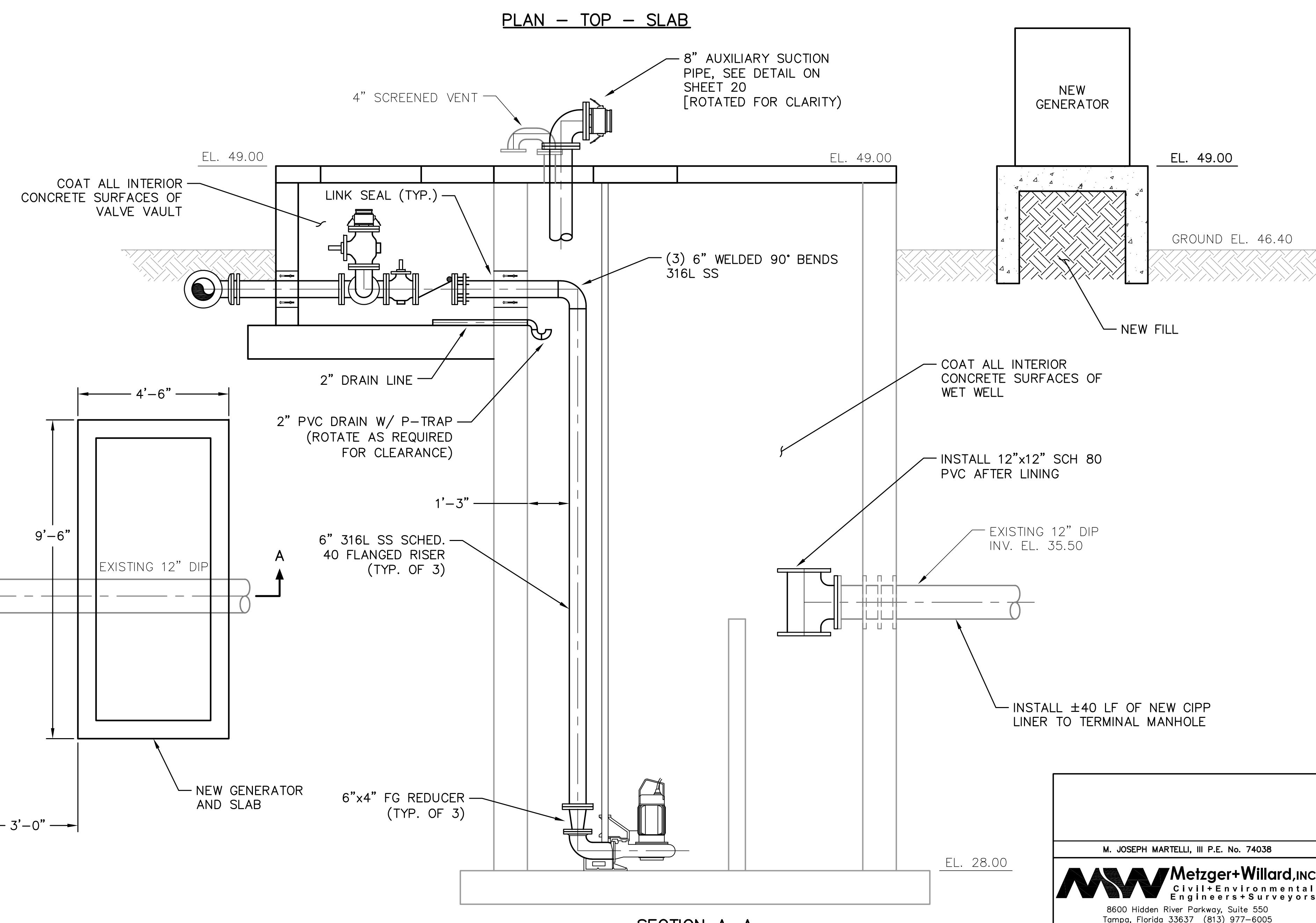
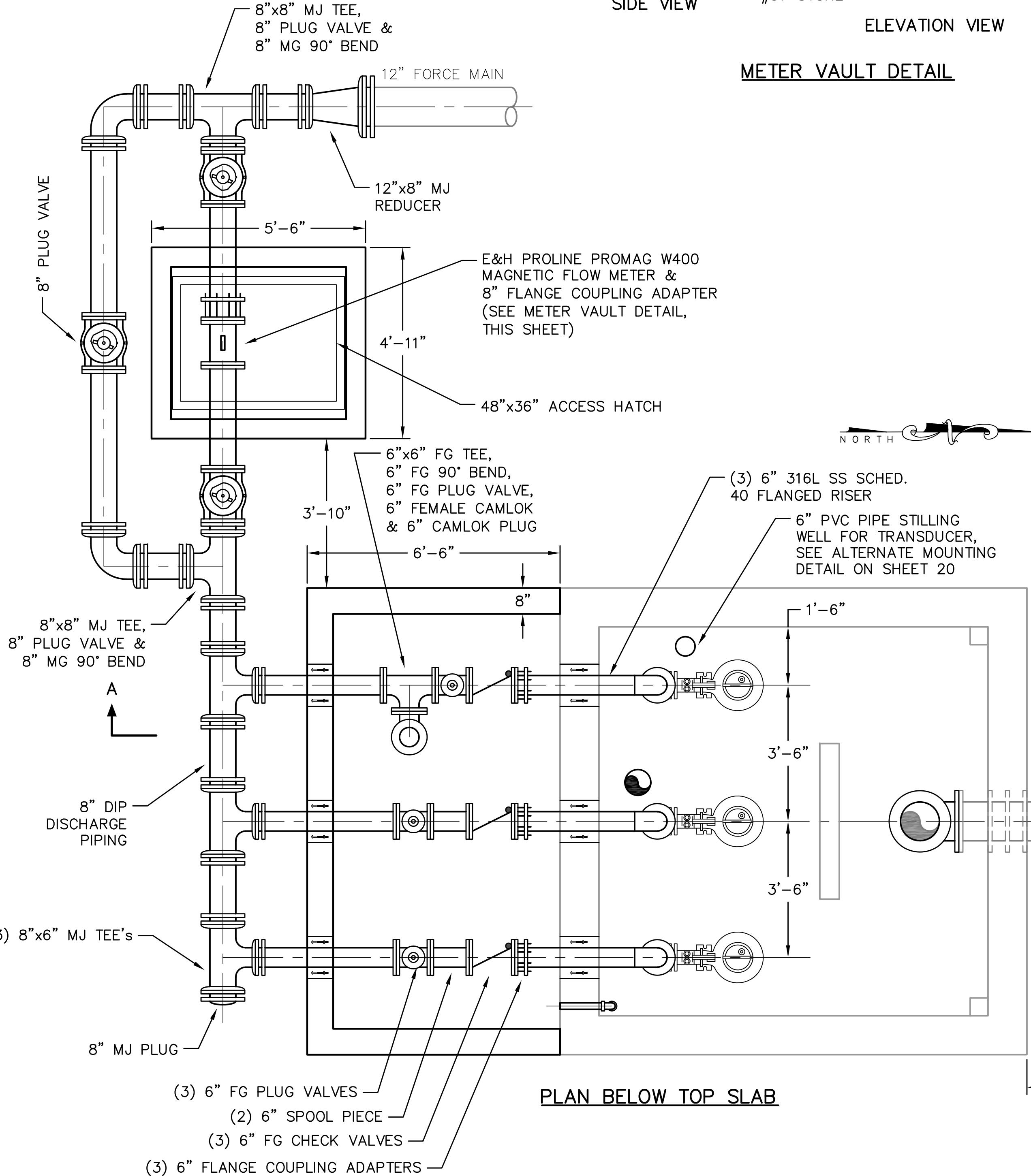
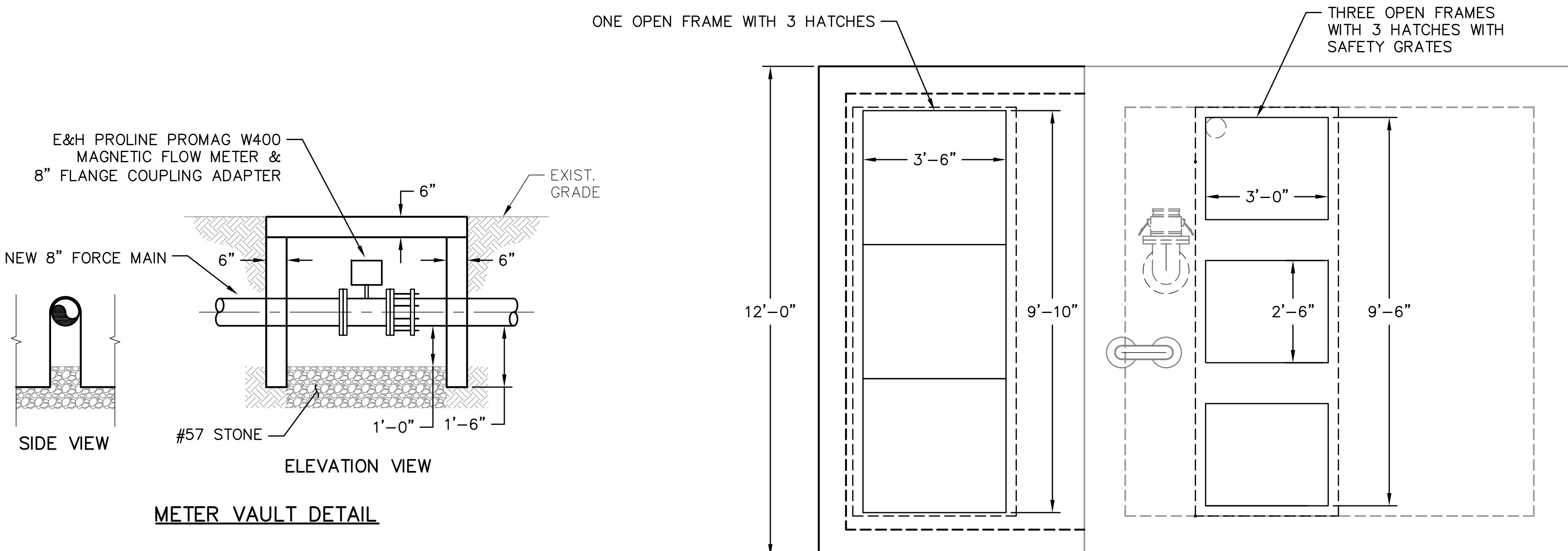
REVISION

BY DATE

M. JOSEPH MARTELLI, III P.E. No. 74038  
**Metzger+Willard, INC.**  
Civil + Environmental  
Engineers + Surveyors  
8600 Hidden River Parkway, Suite 550  
Tampa, Florida 33637 (813) 977-6005  
Certificate of Authorization No. 2886 - L.B. #7302

DWG NAME:	FIELD BOOK:	SURVEYED BY:	SCALE:
####	N/A	CLEARWATER	VERT. N/A
CONTRACT NO:	DATE DRAWN:	DRAWN BY:	
18-0058-UT	####	JMS	# ## H
JOB NO:	DESIGNED BY:	CHECKED BY:	HORIZ. 1/2" = 1'-0"
22609.19	MJM	SGM	16 OF 40
APPROVED BY:			

PUMP DATA:	
1. PUMP MANUFACTURER: FLYGT	
2. PUMP MODEL NO.: NP-3127.070	
3. PUMP DESIGN POINT: 600 GPM @ 42 FT TDH	
4. PUMP H.P.: 10 PHASE	
5. THREE INSTALLED, ONE SPARE	



RECORD DRAWINGS	DRAWN BY:
SURVEYED BY:	
REVIEWED BY:	
PROJECT ENGINEER	DATE
APPROVED BY:	
ENGINEER	DATE

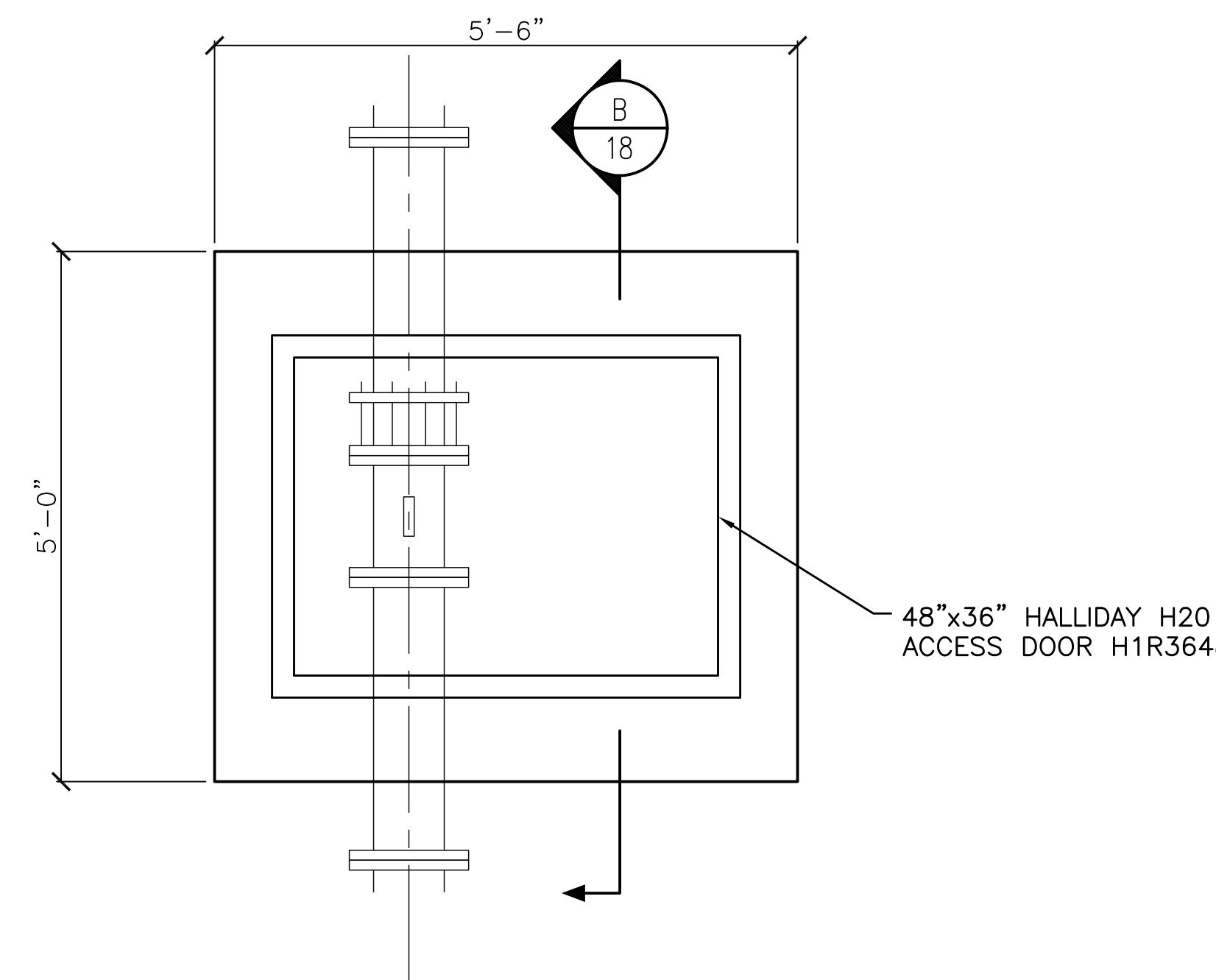
REVISION	BY DATE
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CITY OF CLEARWATER, FLORIDA  
ENGINEERING DEPARTMENT  
100 S. MYRTLE AVE.  
CLEARWATER, FL 33756

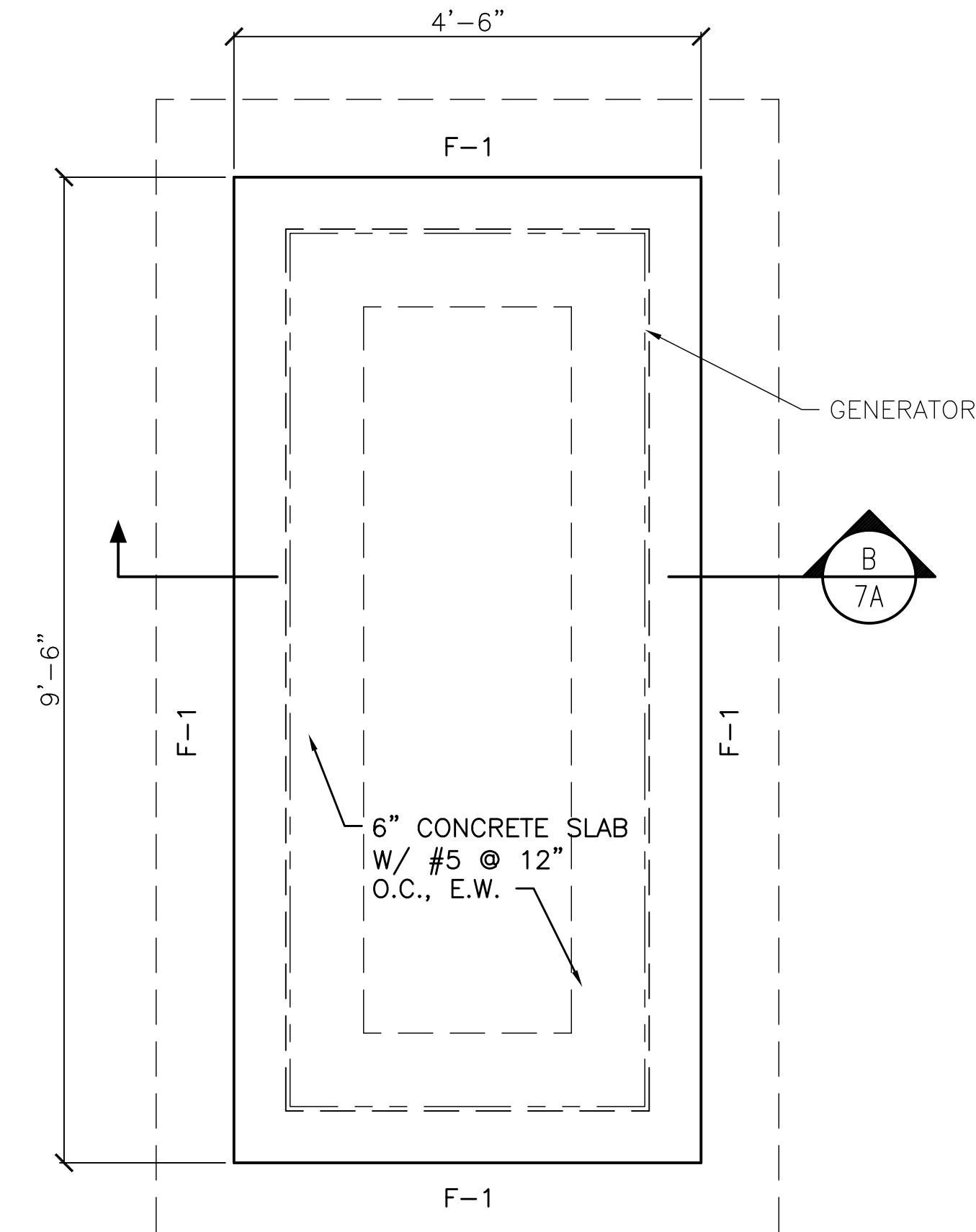


## LIFT STATION 65 PROPOSED LAYOUT

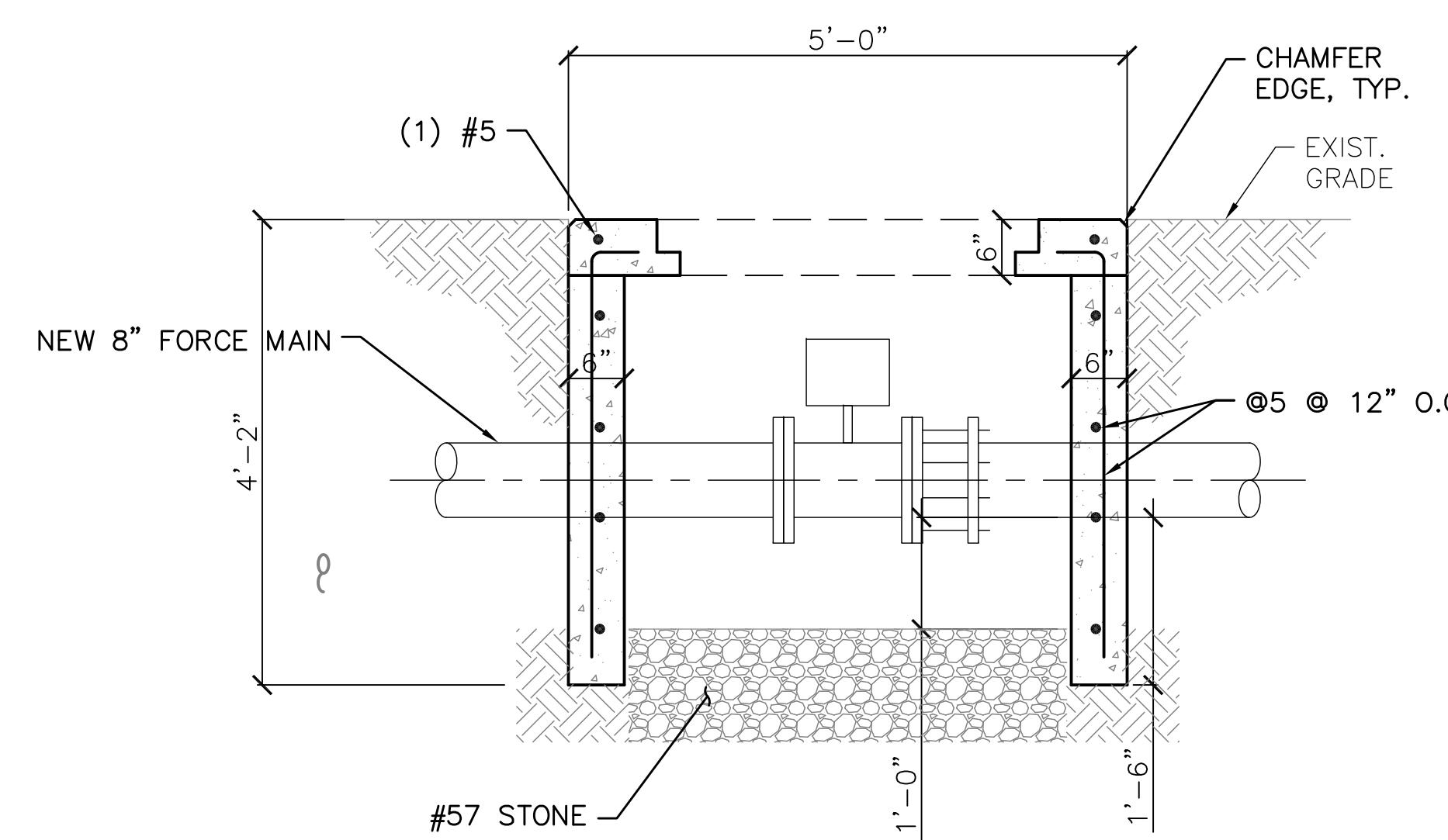
DWG NAME: ####	FIELD BOOK: N/A	SURVEYED BY: CLEARWATER	SCALE: VERT. N/A
CONTRACT NO: 18-0058-UT	DRAWN BY: JMS	DATE DRAWN: ####	HORIZ. 1/2" = 1'-0"
JOB NO: 22609.19	DESIGNED BY: MJM	CHECKED BY: SGM	SHEET NO: 17 OF 40
APPROVED BY: _____			



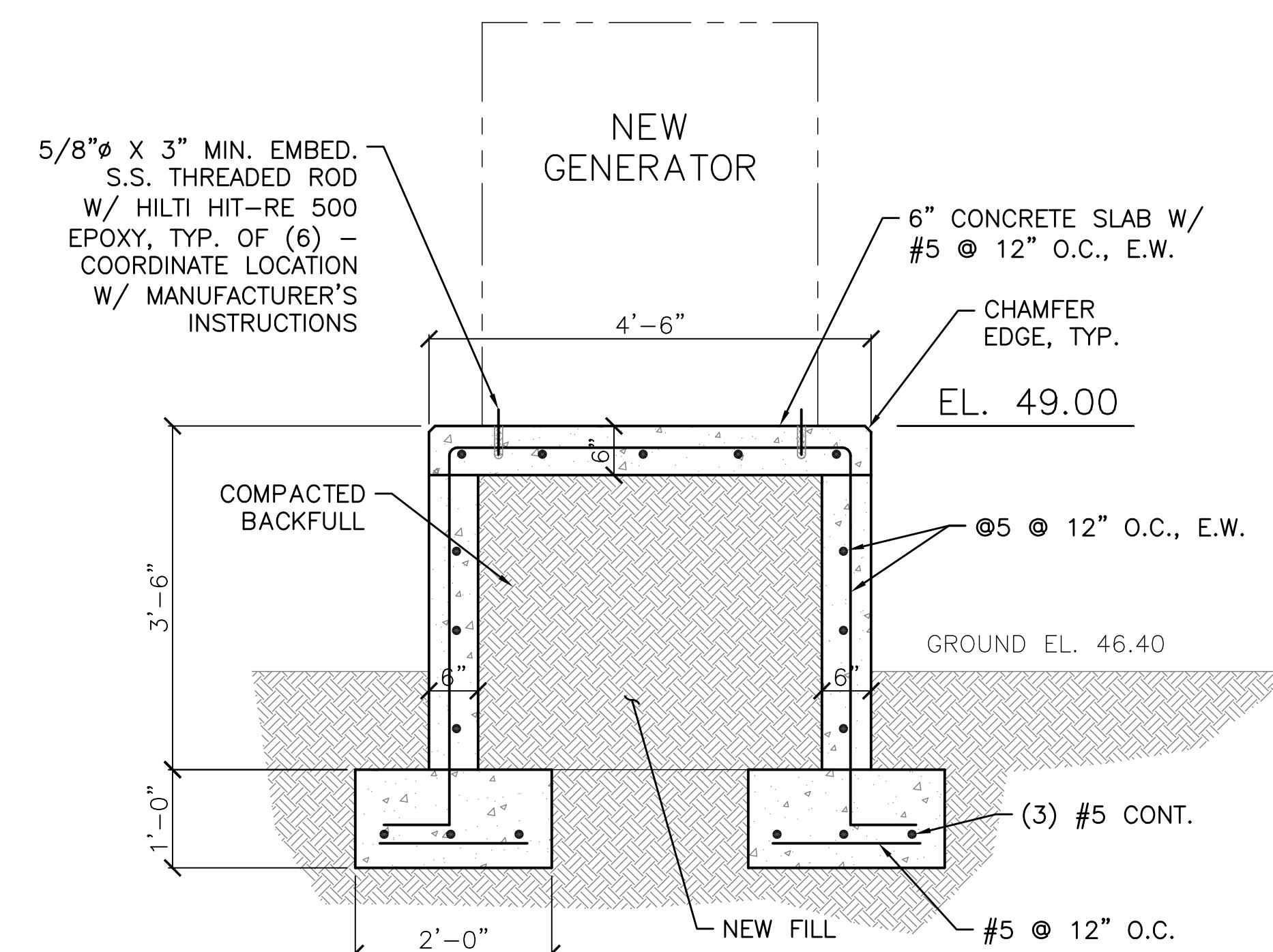
**METER VAULT PLAN**  
18 SCALE: 3/4" = 1'-0"



**GENERATOR PAD FOUNDATION PLAN**  
18 SCALE: 3/4" = 1'-0"



**METER VAULT SECTION**  
18 SCALE: 3/4" = 1'-0"



**GENERATOR PAD SECTION**  
18 SCALE: 3/4" = 1'-0"

FOOTING SCHEDULE			
NO.	SIZE	REINFORCEMENT	REMARKS
F-1	2'-0" X 1'-0" X CONT.	(3) #5 CONT. & #5 @ 12" O.C.	FOOTING

RECORD DRAWINGS	DRAWN BY:		
SURVEYED BY:			
REVIEWED BY:			
PROJECT ENGINEER	DATE		
APPROVED BY:			
ENGINEER	DATE		

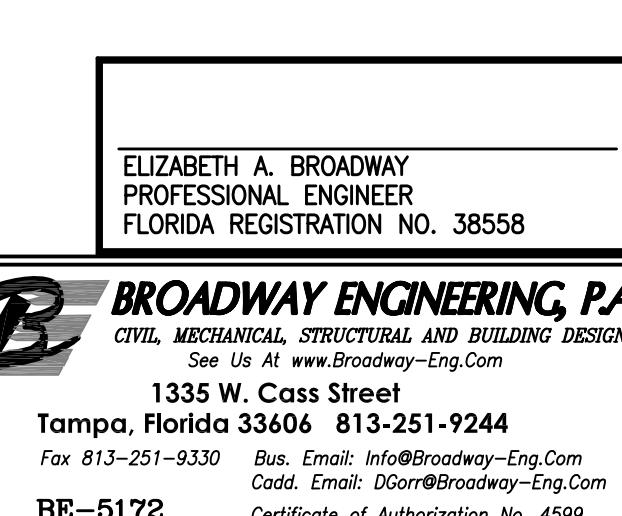
REVISION	BY	DATE
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CITY OF CLEARWATER, FLORIDA  
ENGINEERING DEPARTMENT  
100 S. MYRTLE AVE.  
CLEARWATER, FL 33756

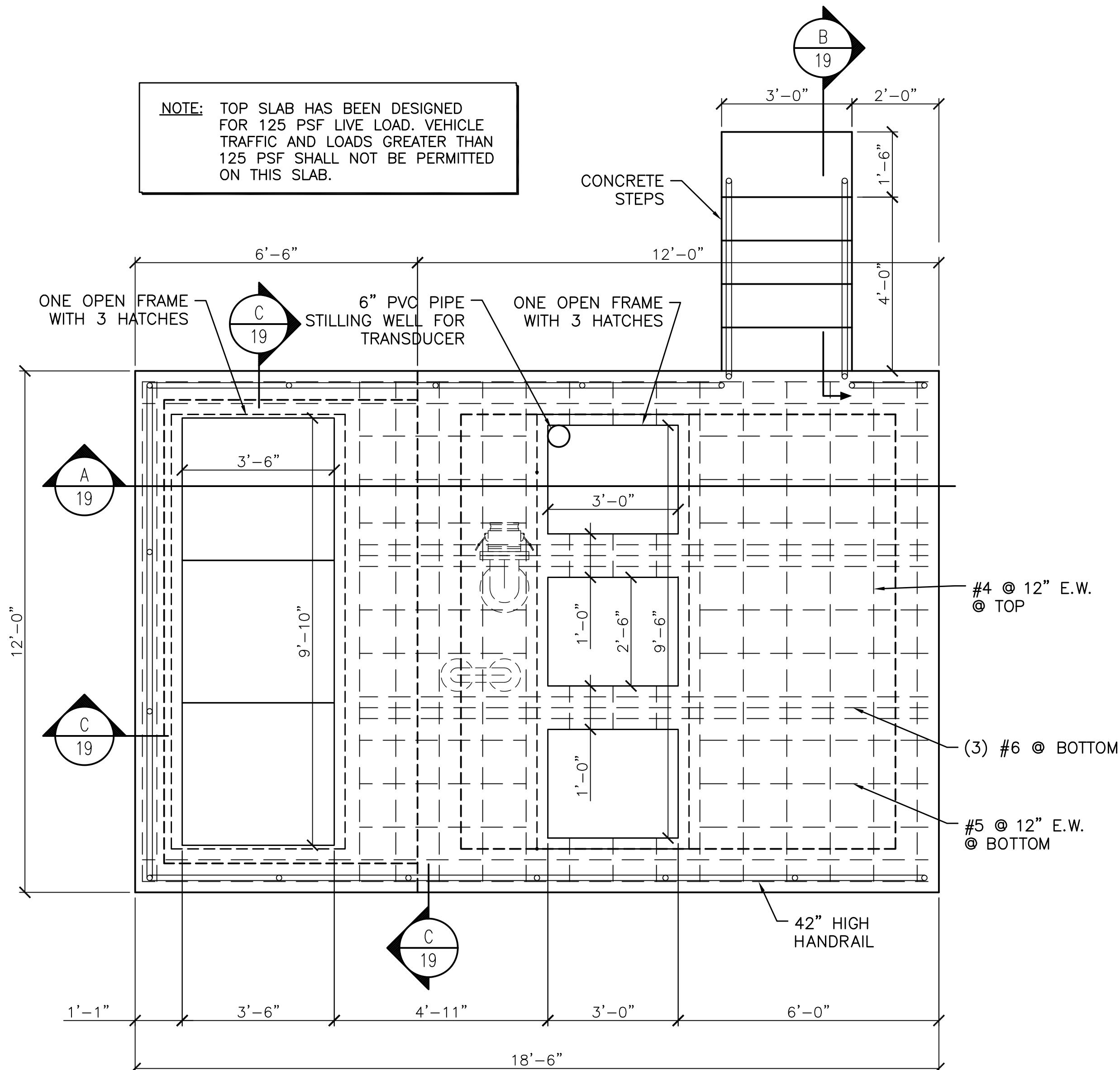


## LIFT STATION 65 STRUCTURAL DETAILS

DWG NAME: <b>SHEET 18</b>	FIELD BOOK: <b>N/A</b>	SURVEYED BY: <b>CLEARWATER</b>	SCALE: <b>VERT. N/A</b>
CONTRACT NO: <b>18-0058-UT</b>	DATE DRAWN: <b>####</b>	DRAWN BY: <b>DEC</b>	SCALE: <b>3/4" = 1'-0"</b>
JOB NO: <b>22609.19</b>	DESIGNED BY: <b>EAB</b>	CHECKED BY: <b>EAB</b>	sheet no: <b>18 OF 40</b>
APPROVED BY _____			



NOTE: TOP SLAB HAS BEEN DESIGNED FOR 125 PSF LIVE LOAD. VEHICLE TRAFFIC AND LOADS GREATER THAN 125 PSF SHALL NOT BE PERMITTED ON THIS SLAB.

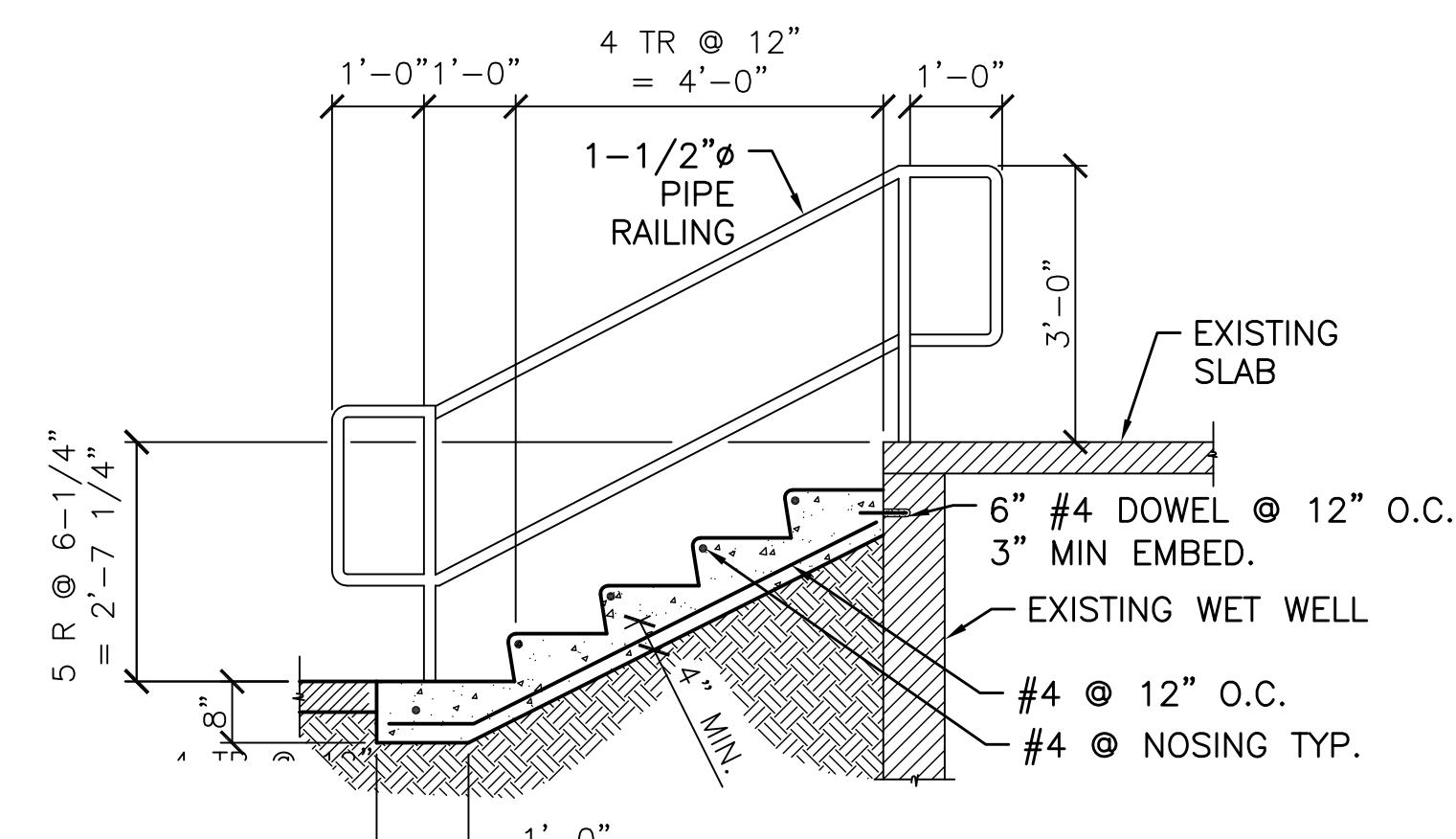


1 TOP SLAB PLAN

---

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

19 ) SCALE:  $1/2'' = 1'-0''$



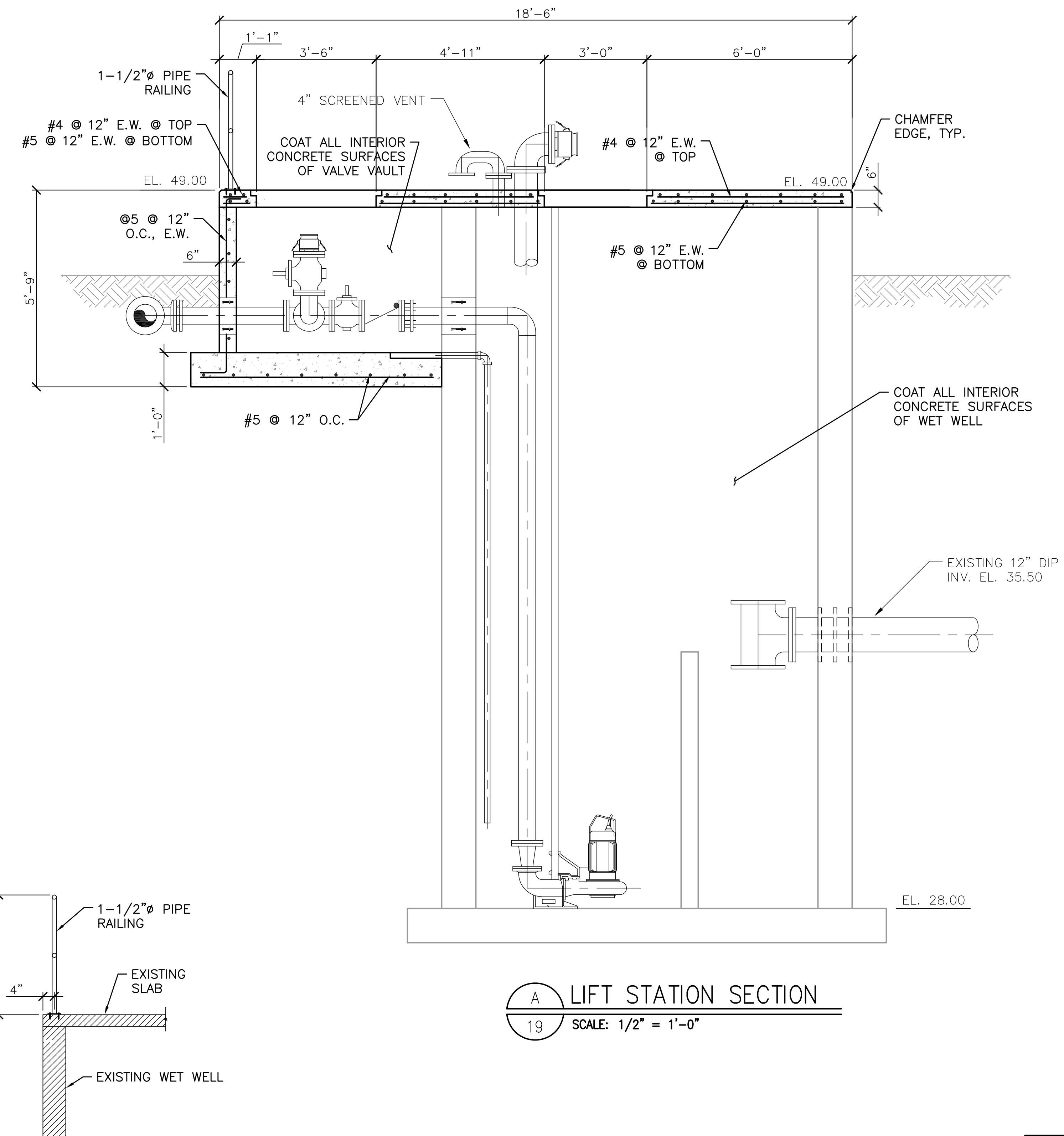


# STEP SECTION

---

19      SCALE: 1/2" = 1'-0"

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



**C HAN**RAIL DETAIL

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

CITY OF CLEARWATER, FLORIDA  
ENGINEERING DEPARTMENT  
100 S. MYRTLE AVE.  
CLEARWATER, FL 33756



# LIFT STATION 65

## STRUCTURAL DETAILS

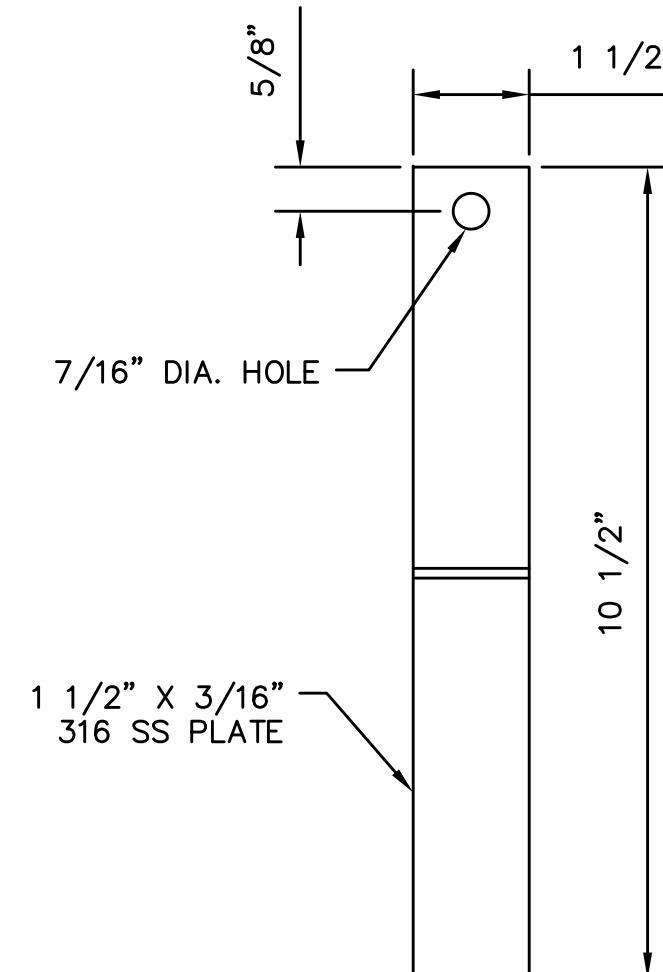
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SURVEYED BY:	DRAWN BY:
REVIEWED BY:	
PROJECT ENGINEER	
APPROVED BY:	
ENGINEER	

REVISION	BY
	DATE

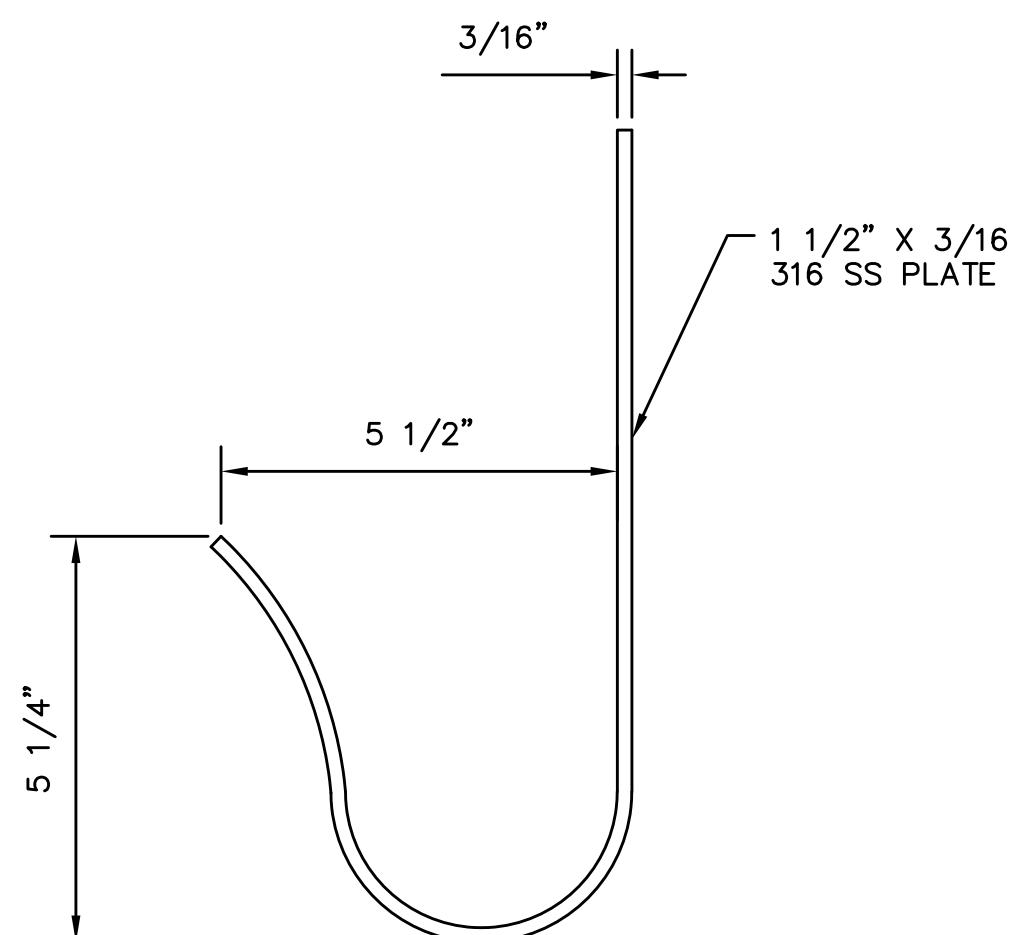
ELIZABETH A. BROADWAY  
PROFESSIONAL ENGINEER  
FLORIDA REGISTRATION NO. 38558



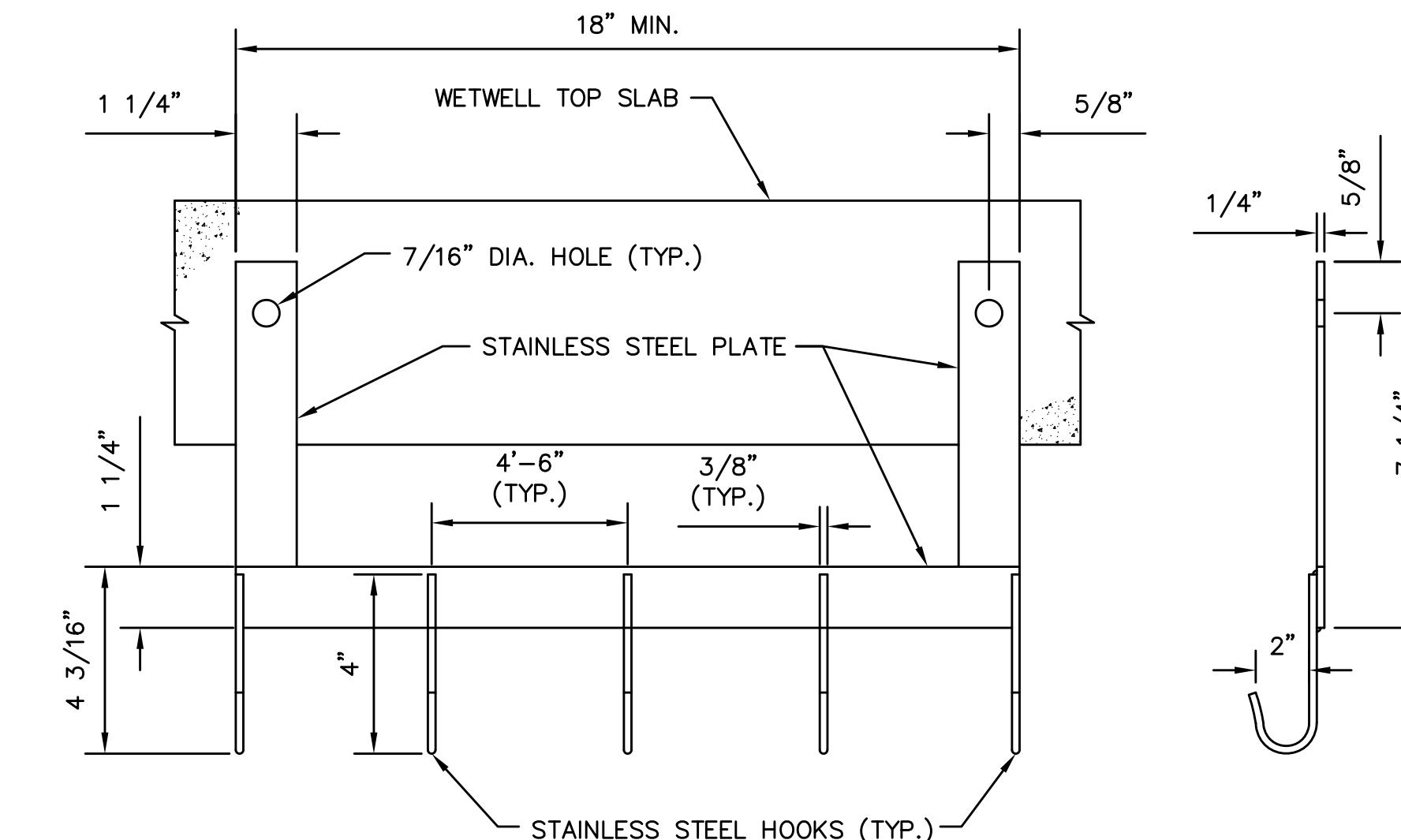
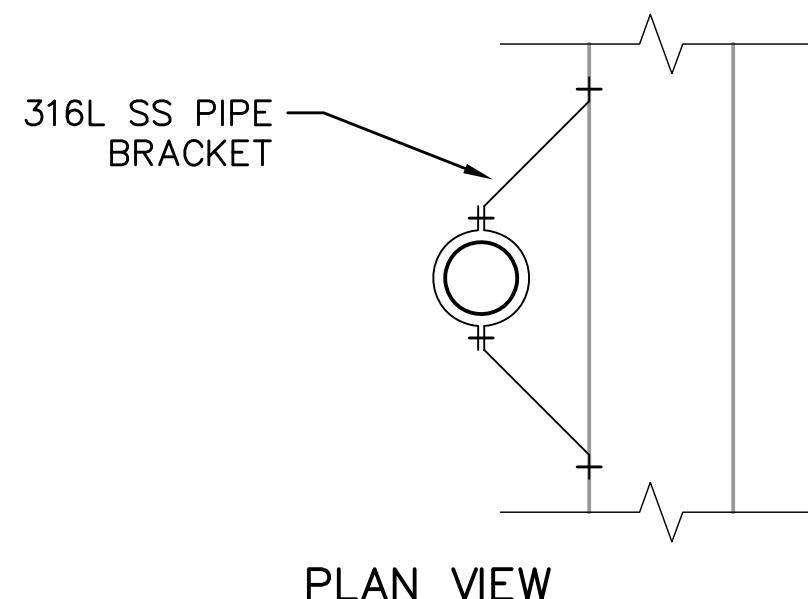
Certificate of Authorization No. 2888 E.D. #7502			
NAME: <b>SHEET 19</b>	FIELD BOOK: <b>N/A</b>	SURVEYED BY: <b>CLEARWATER</b>	SCALE: VERT. <b>N/A</b>
TRACT NO.: <b>18-0058-UT</b>	DATE DRAWN: <b>#####</b>	DRAWN BY: <b>DEG</b>	HORIZ. <b>1/2" = 1'-0"</b>
NO.: <b>22609.19</b>	DESIGNED BY: <b>EAB</b>	CHECKED BY: <b>EAB</b>	SHEET NO.: <b>19 OF 40</b>
APPROVED BY _____ _____			



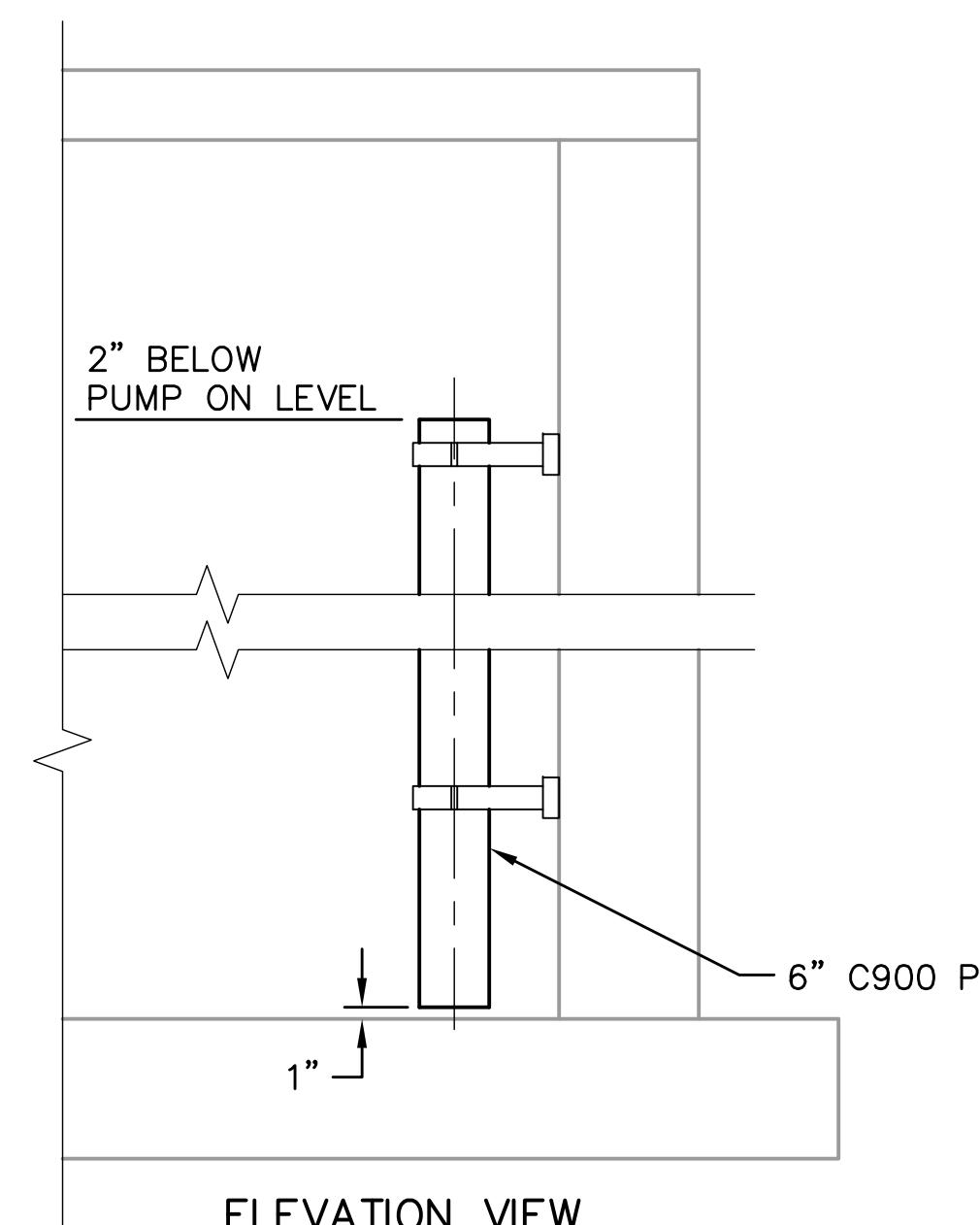
FRONT VIEW



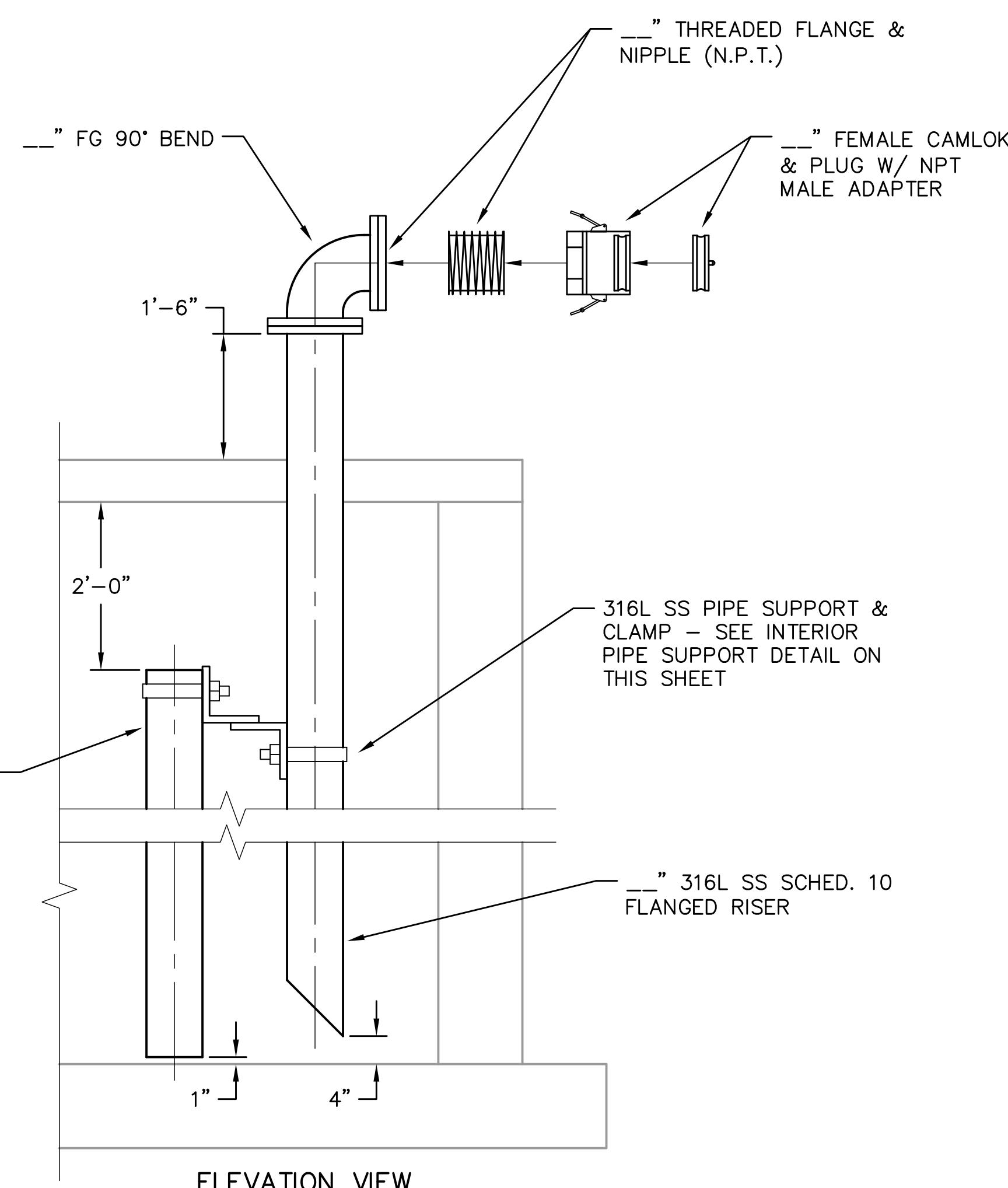
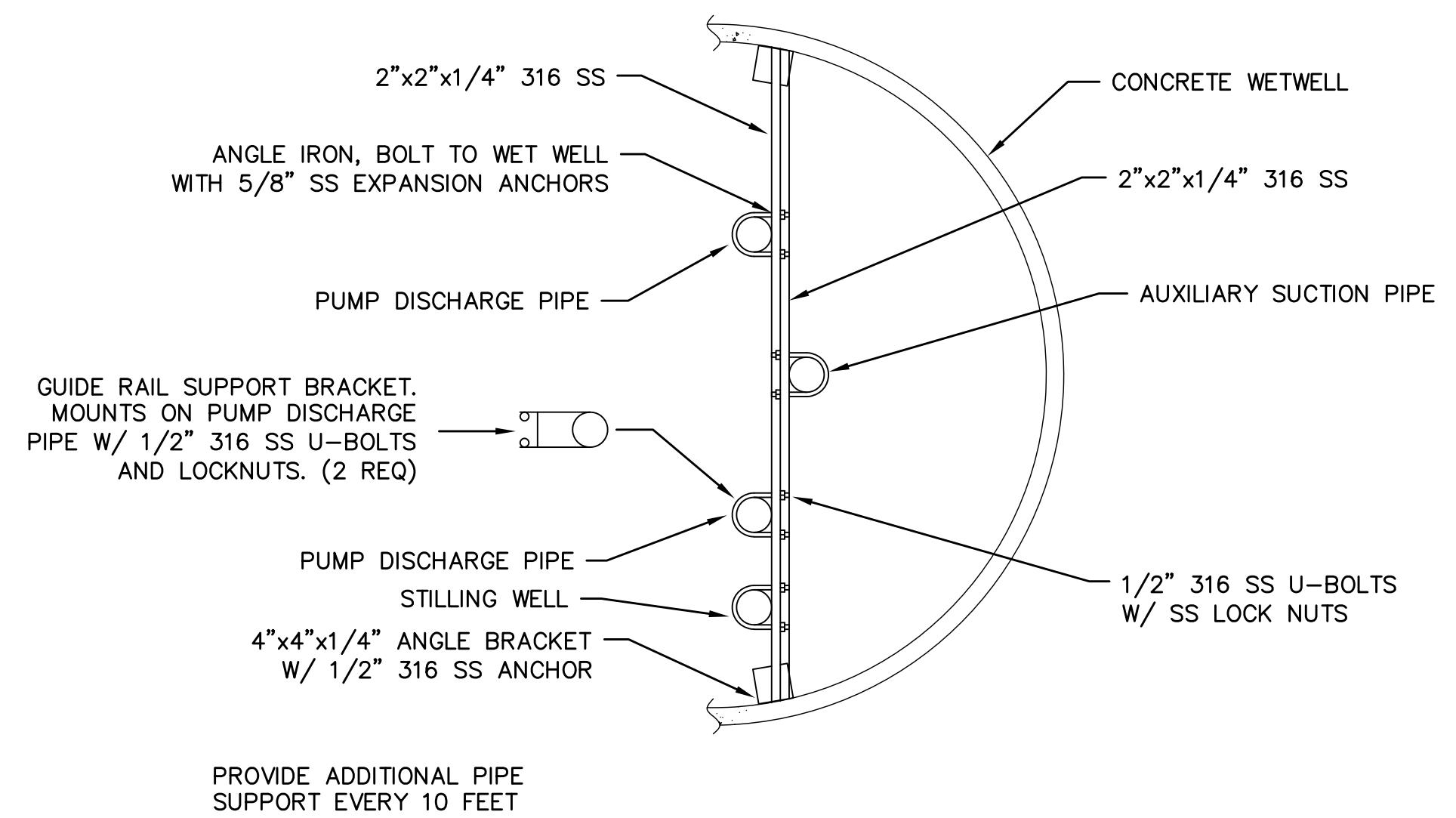
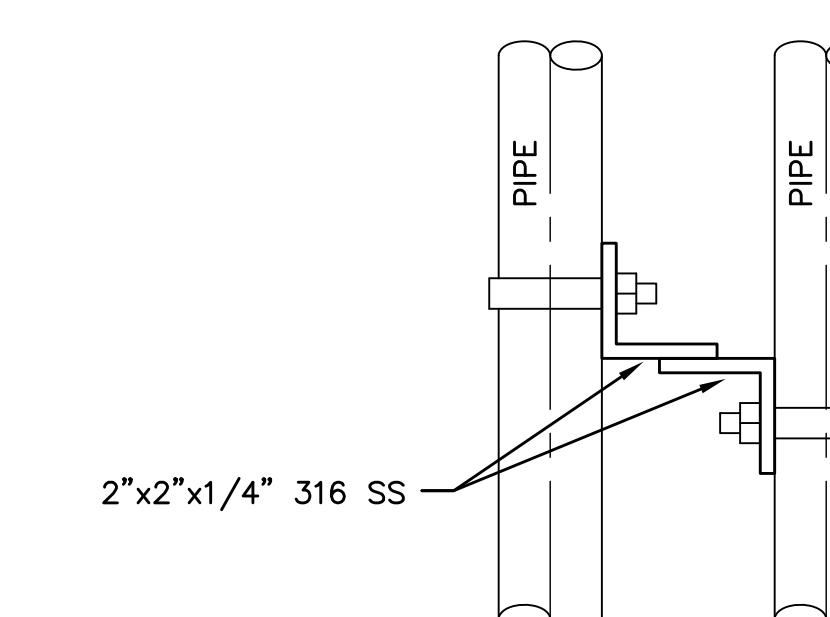
SIDE VIEW

ELECTRICAL CABLE HANGER DETAILFLOAT CABLE HANGER DETAIL

PLAN VIEW



ELEVATION VIEW

TRANSDUCER STILLING WELL  
ALTERNATE MOUNTING DETAILTRANSDUCER STILLING WELL &  
AUXILIARY SUCTION PIPE DETAILINTERIOR PIPE SUPPORT DETAIL – TOP VIEWINTERIOR PIPE SUPPORT DETAIL  
ELEVATION VIEW

RECORD DRAWINGS	DRAWN BY:		
SURVEYED BY:			
REVIEWED BY:			
PROJECT ENGINEER	DATE		
APPROVED BY:	DATE		

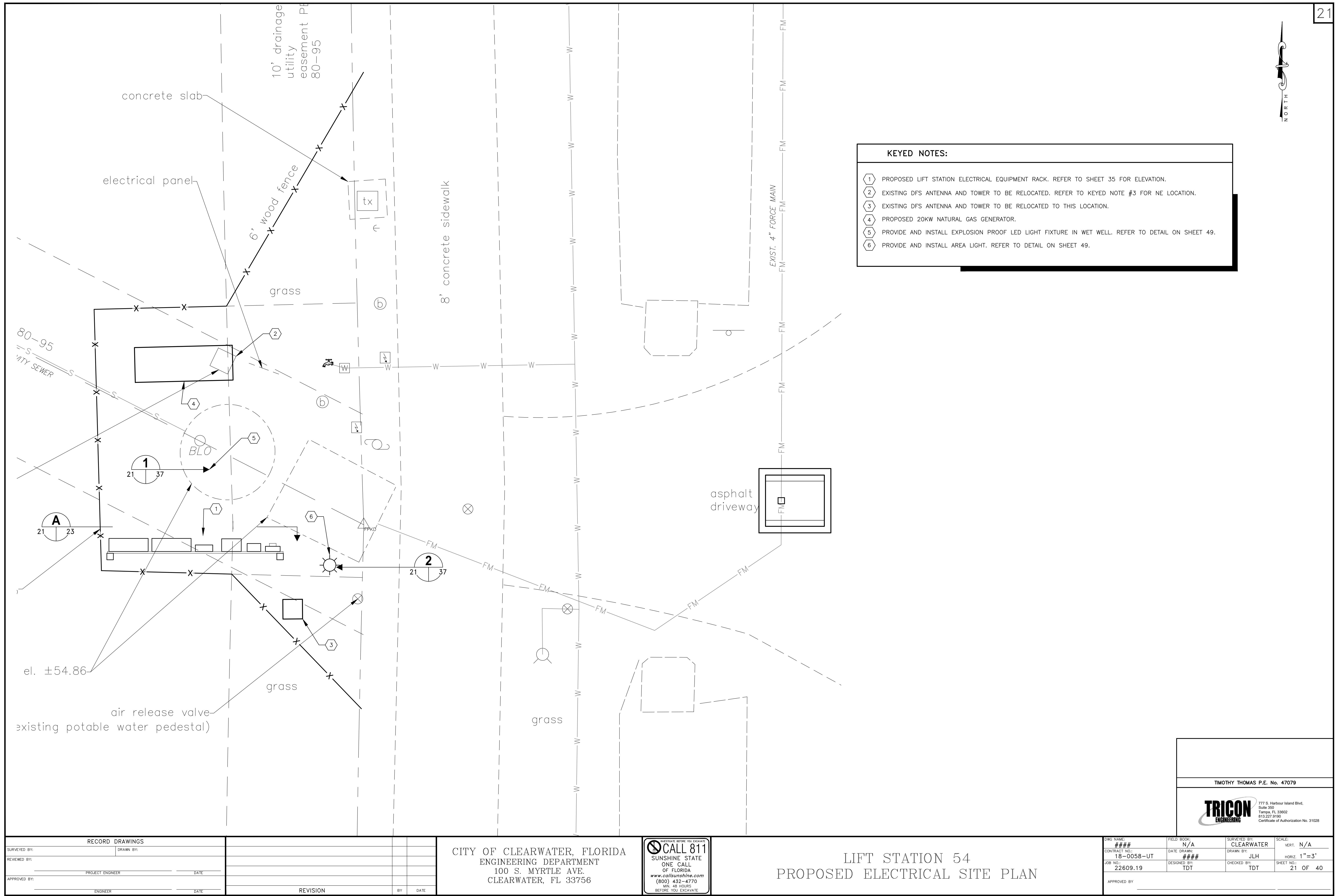
REVISION	BY	DATE

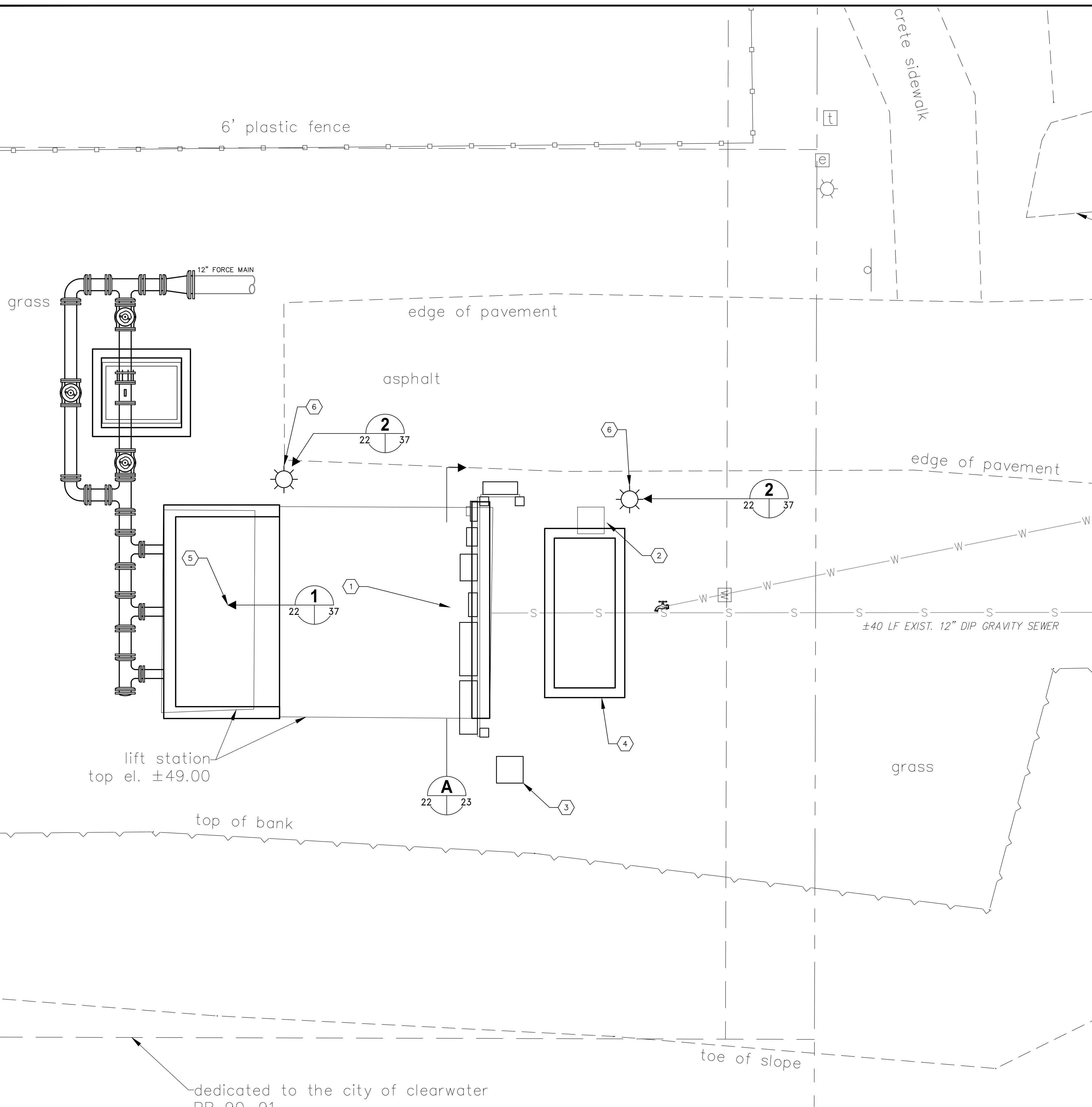
CITY OF CLEARWATER, FLORIDA  
ENGINEERING DEPARTMENT  
100 S. MYRTLE AVE.  
CLEARWATER, FL 33756

LIFT STATION 54 & 65  
LIFT STATION DETAILS

M. JOSEPH MARTELLI, III P.E. No. 74038  
**Metzger+Willard, INC.**  
Civil + Environmental  
Engineers + Surveyors  
8600 Hidden River Parkway, Suite 550  
Tampa, Florida 33637 (813) 977-6005  
Certificate of Authorization No. 2886 - L.B. #7302

DWG NAME:	FIELD BOOK:	SURVEYED BY:	SCALE:
CONTRACT NO.:	N/A	CLEARWATER	VERT. N/A
DATE DRAWN:	# ####	DRAWN BY:	
JOB NO.:	# ####	HORIZ. N/A	
DESIGNED BY:	JMS	CHECKED BY:	
22609.19	MJM	SGM	20 OF 40
APPROVED BY:			





TIMOTHY THOMAS P.E. No. 47079

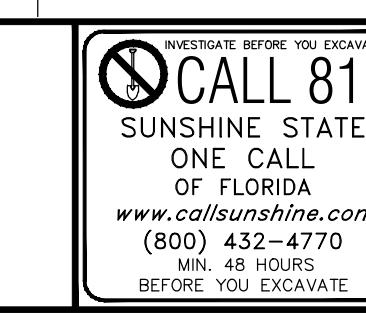
**TRICON**  
ENGINEERING

777 S. Harbour Island Blvd,  
Suite 350  
Tampa, FL 33602  
(813) 221-9190  
Certificate of Authorization No. 31028

RECORD DRAWINGS	
SURVEYED BY:	DRAWN BY:
REVIEWED BY:	
PROJECT ENGINEER	DATE
APPROVED BY:	
ENGINEER	DATE

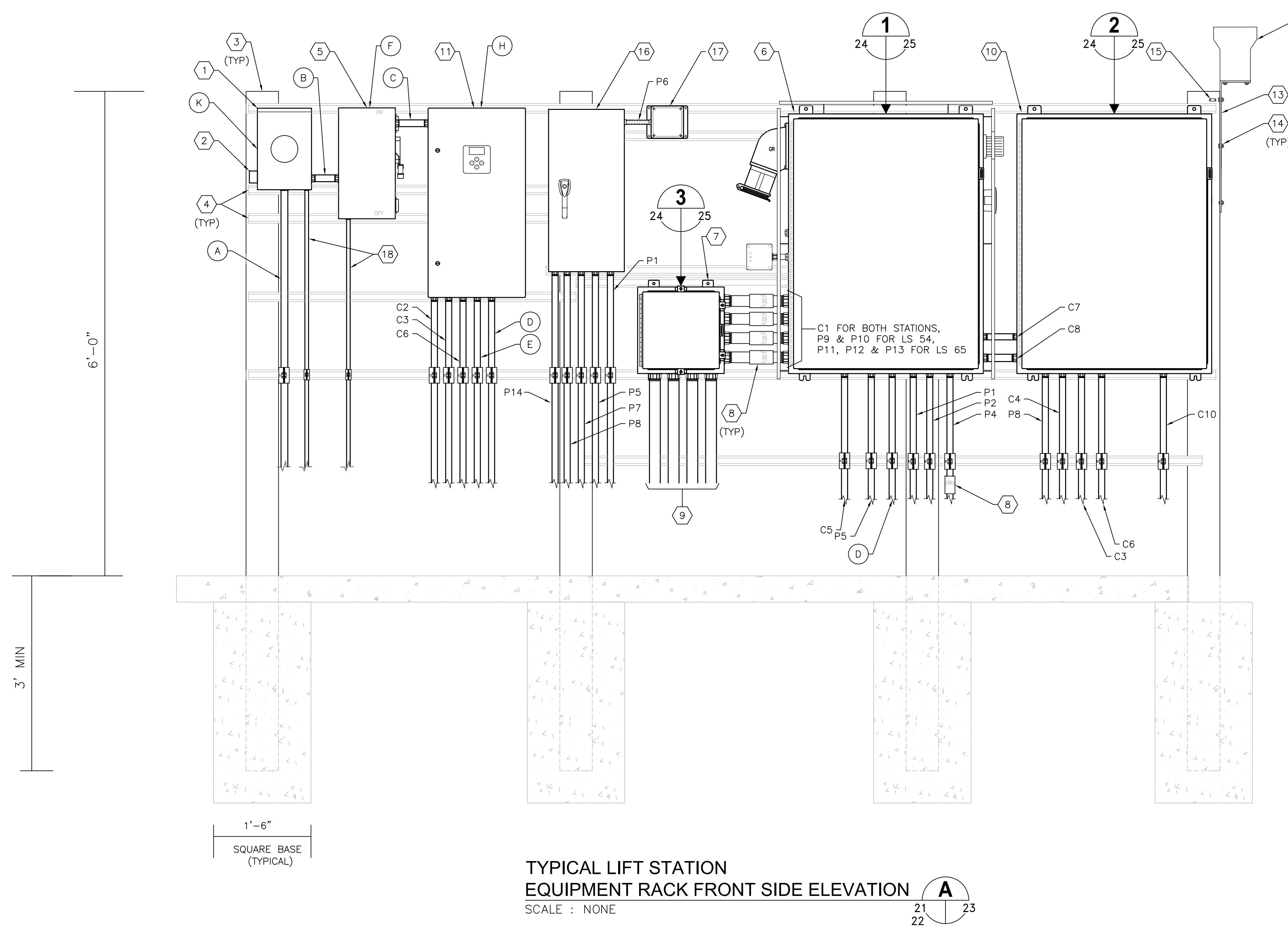
REVISION	BY	DATE

CITY OF CLEARWATER, FLORIDA  
ENGINEERING DEPARTMENT  
100 S. MYRTLE AVE.  
CLEARWATER, FL 33756



## LIFT STATION 65 PROPOSED ELECTRICAL SITE PLAN

DWG NAME: CONTRACT NO.: JOB NO.:	FIELD BOOK: DATE DRAWN: DESIGNED BY:	SURVEYED BY: DRAWN BY: CHECKED BY:	SCALE: VERT. 1"=3' HORIZ. 1"=3' SHEET NO.: 22 OF 40
### 18-0058-UT 22609.19	N/A 12/2019 TDT	CLEARWATER JLM TDT	1" / 3' 22 OF 40



**TYPICAL LIFT STATION  
EQUIPMENT RACK FRONT SIDE ELEVATION A**

SCALE : NONE

21 23

**KEYED NOTES:**

- ① PROVIDE AND INSTALL METER SOCKET. REFER TO EQUIPMENT SCHEDULE FOR SIZE/TYPE REQUIRED. COORDINATE REQUIREMENTS WITH UTILITY.
- ② PROVIDE AND INSTALL UTILITY APPROVED LIGHTNING PROTECTION DEVICE.
- ③ PROVIDE AND INSTALL 6" X 6" X 9' REINFORCED SQUARE CONCRETE POST.
- ④ PROVIDE AND INSTALL 1-5/8" X 1-5/8" 316 STAINLESS STEEL UNISTRUT WITH STAINLESS STEEL HARDWARE. NOTE: INSTALL ALL BOLTS FOR UNISTRUT COMPLETELY THROUGH CONCRETE POSTS.
- ⑤ PROVIDE AND INSTALL 3-POLE, 240V, FUSED DISCONNECT IN NEMA 4X STAINLESS STEEL ENCLOSURE. REFER TO EQUIPMENT SCHEDULE FOR SIZE/TYPE REQUIRED. DISCONNECT SHALL BE PAD-LOCKABLE.
- ⑥ PROVIDE AND INSTALL NEW PUMP CONTROL PANEL. REFER TO DETAIL ON SHEET 36.
- ⑦ PROVIDE AND INSTALL NEW 16" x 16" x 6" NEMA 4X 316 STAINLESS STEEL JUNCTION BOX WITH STEEL BACKPANEL. REFER TO DETAIL ON SHEET 36.
- ⑧ PROVIDE AND INSTALL CROUSE-HINDS EYS TYPE SEALS W/CHICO COMPOUNDS.
- ⑨ 2" CONDUITS TO WET WELL. QUANTITY AS REQUIRED. CABLES FOR PUMP MOTORS, LEVEL TRANSMITTER AND FLOATS ARE ALL BY RESPECTIVE MANUFACTURER.
- ⑩ DATA FLOW SYSTEMS (DFS) CABINET. REFER TO DETAIL ON SHEET 36.
- ⑪ PROVIDE AND INSTALL NEW 240V, 3-POLE, SOLID NEUTRAL AUTOMATIC TRANSFER SWITCH (ATS). REFER TO EQUIPMENT SCHEDULE FOR SIZE/TYPE REQUIRED.
- ⑫ PROVIDE AND INSTALL NEW 8" RAIN GAUGE. XYLEM RG600 WITH 4-20MA 00 4-20MA OUTPUT TIPPING BUCKET CONVERTER MODULE, XYLEM ELA000.
- ⑬ PROVIDE AND INSTALL 10" SQUARE 1/4" ALUMINUM BRACKET, OVERFLOW LIGHT ALUMINUM BRACKET.
- ⑭ PROVIDE AND INSTALL 3/4" STAINLESS STEEL NUT AND BOLT (TYP).
- ⑮ PROVIDE AND INSTALL STAINLESS STEEL WEDGE ANCHOR IN CONCRETE POST TO SECURE RAIN GAUGE BRACKET (TYP).
- ⑯ PROVIDE AND INSTALL 240V, 60A, SINGLE-PHASE LOADCENTER IN NEMA 3R STAINLESS STEEL ENCLOSURE. REFER TO SHEET 49 FOR PANEL SCHEDULE.
- ⑰ PROVIDE AND INSTALL SURGE PROTECTION DEVICE (SPD) UNIT, 120/240V, 3Ø, TYPE 1, ASCO SERIES 400, IN NEMA 4X ENCLOSURE.
- ⑲ REFER TO ONE LINE DIAGRAM FOR REQUIRED GROUNDING ELECTRODE CONDUCTORS. ALL CONDUCTORS SHALL BE INSTALLED IN DIN CONDUIT.

**GENERAL NOTES:**

1. ALL PANELS SHALL BE LABELED FOR THE ARC FLASH RISK HAZARD PRESENT AT EACH PIECE OF EQUIPMENT.
2. PROVIDE CONDUIT AND CONDUCTOR BETWEEN PUMP CONTROL PANEL AND NEW DFS RTU ENCLOSURE AS REQUIRED (NOT SHOWN FOR CLARITY).

TIMOTHY THOMAS P.E. No. 47079

**TRICON**  
ENGINEERING

777 S. Harbour Island Blvd.  
Suite 350  
Tampa, FL 33602  
(813) 227-5196  
Certificate of Authorization No. 31028

RECORD DRAWINGS	DRAWN BY:		
SURVEYED BY:			
REVIEWED BY:			
PROJECT ENGINEER	DATE		

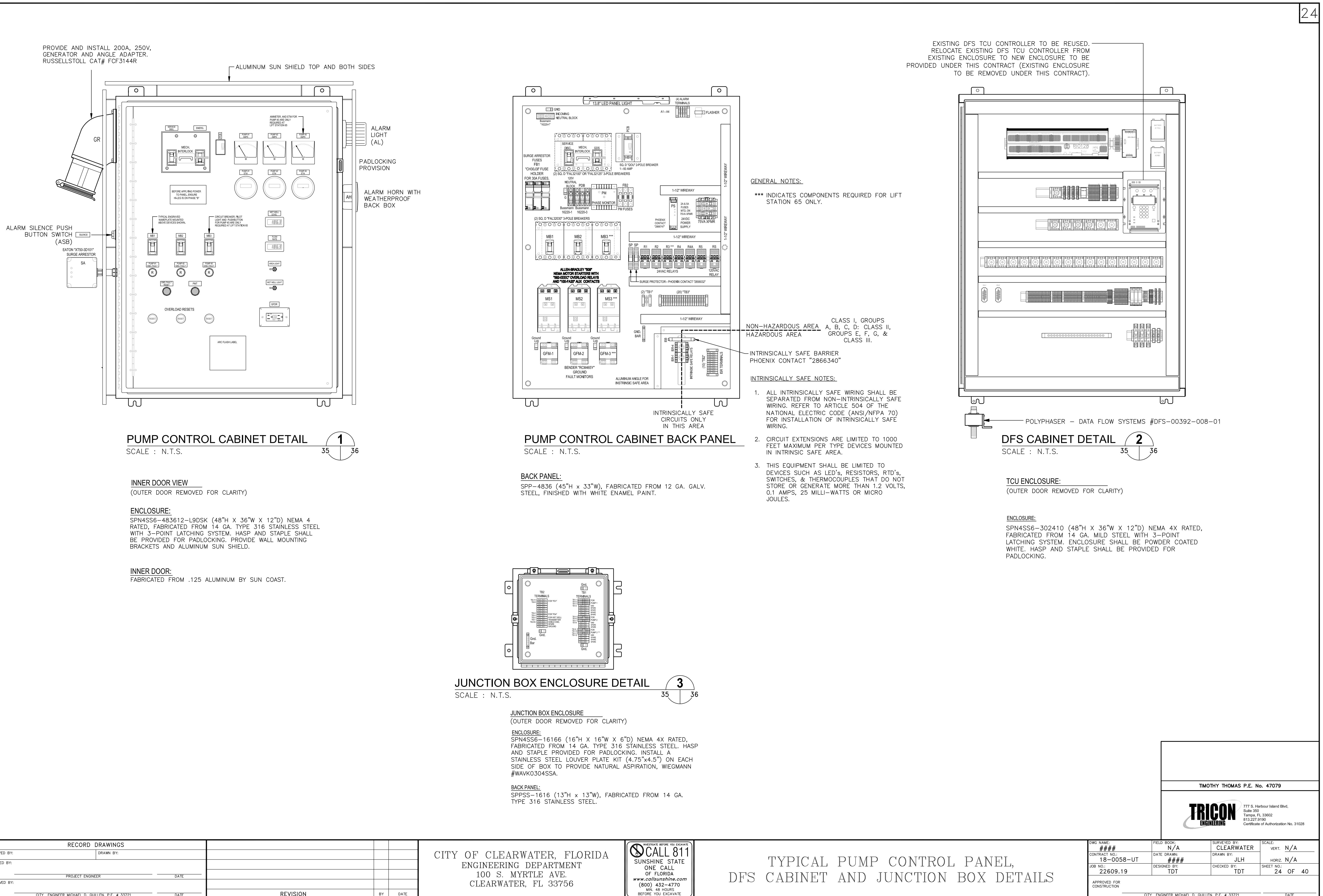
REVISION	BY	DATE

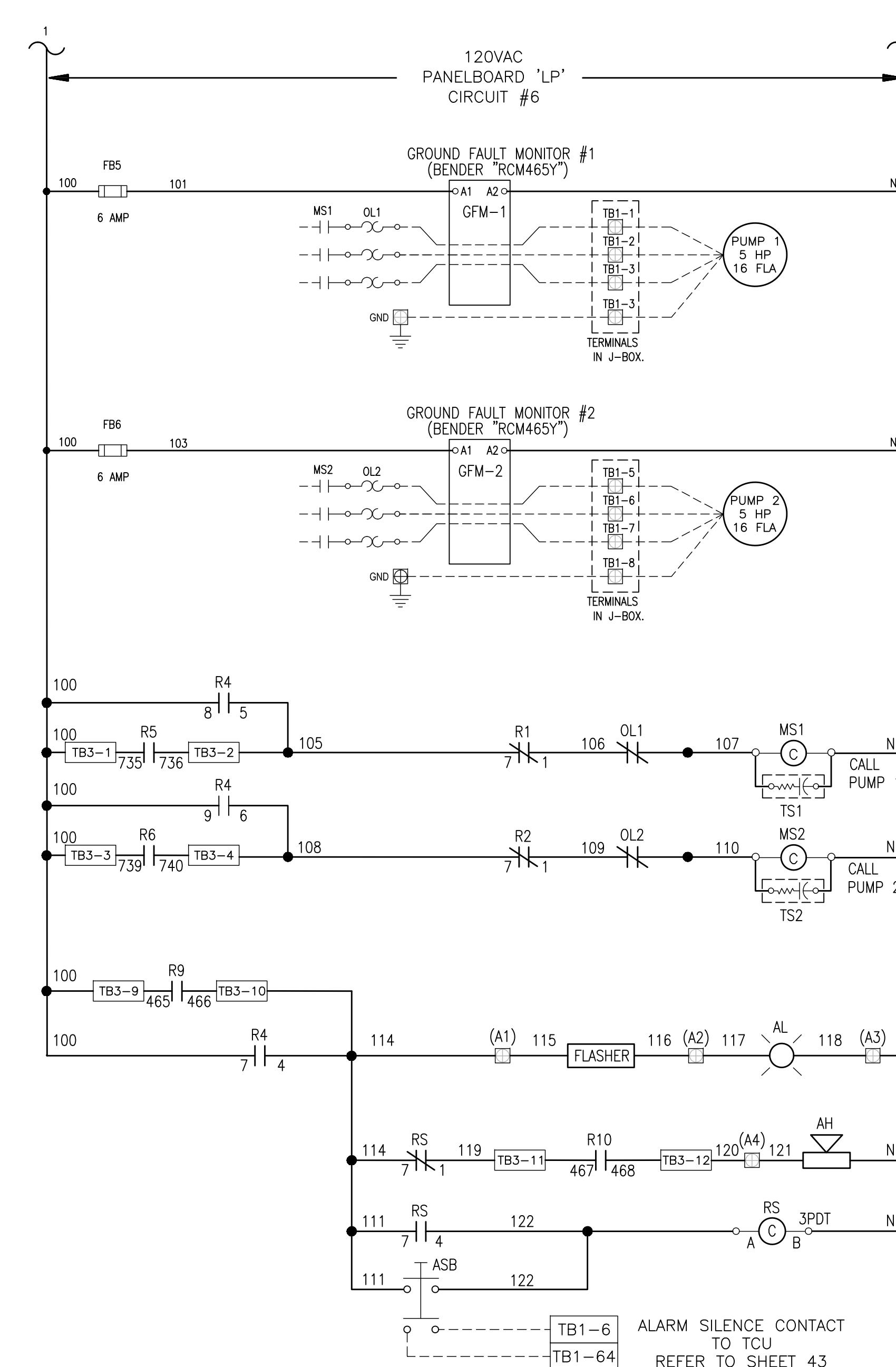
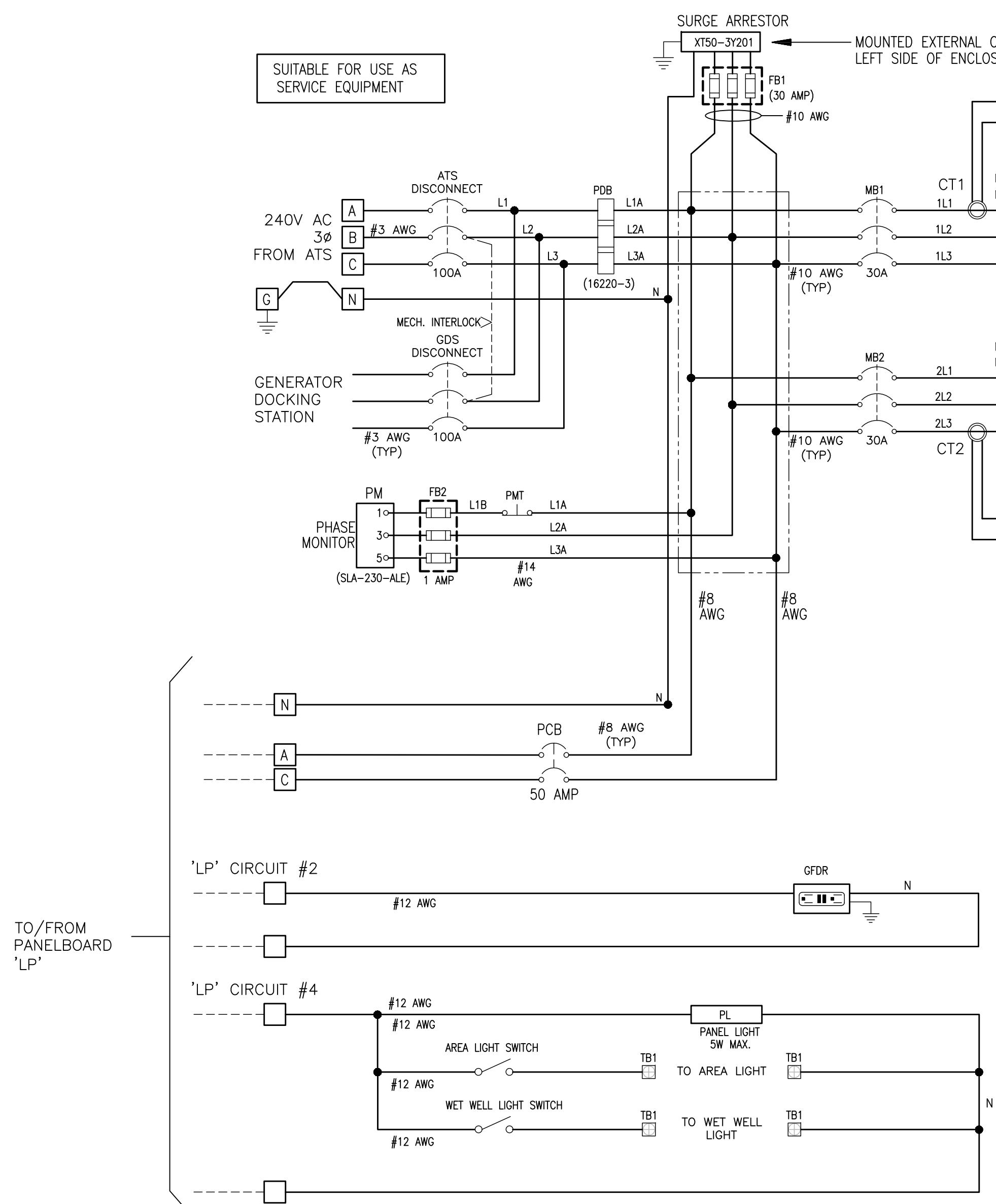
CITY OF CLEARWATER, FLORIDA  
ENGINEERING DEPARTMENT  
100 S. MYRTLE AVE.  
CLEARWATER, FL 33756



**PUMP STATION  
PROPOSED STRUCTURAL LAYOUT**

DWG NAME:	FIELD BOOK:	SURVEYED BY:	SCALE:
####	N/A	CLEARWATER	VERT. N/A
CONTRACT NO:	####	DRAWN BY:	
18-0058-UT	####	JLH	HORIZ. N/A
JOB NO:	####	DESIGNED BY:	
22609.19	####	TDT	
		CHECKED BY:	
		TDT	23 OF 40
APPROVED BY:			





- NOTES:
- PANEL SHALL BE U.L. 698A LABELED FOR HAZARDOUS LOCATIONS AND SERVICE ENTRANCE RATED.
  - ANTENNA CABLE SURGE SUPPRESSOR SHALL NOT BE LOCATED OR MOUNTED IN THE INTRINSICALLY SAFE AREA.
  - CONTROL WIRING SHALL BE #14 AWG.
  - INTRINSICALLY SAFE WIRING TO BE LIGHT BLUE IN COLOR.
  - REFER TO MANUFACTURER'S TECHNICAL DATA SHEET FOR PROPER WIRING OF THIS DEVICE PER INTRINSICALLY SAFE DEVICES.
  - ALL POINT CONTACTS TO BE PROTECTED BY ANTIODANT COMPOUND.

RECORD DRAWINGS	DRAWN BY:		
SURVEYED BY:			
REVIEWED BY:			
PROJECT ENGINEER	DATE		
APPROVED BY:			
CITY ENGINEER MICHAEL D. QUILLIN, P.E. # 33721	DATE		

REVISION	BY	DATE

CITY OF CLEARWATER, FLORIDA  
ENGINEERING DEPARTMENT  
100 S. MYRTLE AVE.  
CLEARWATER, FL 33756



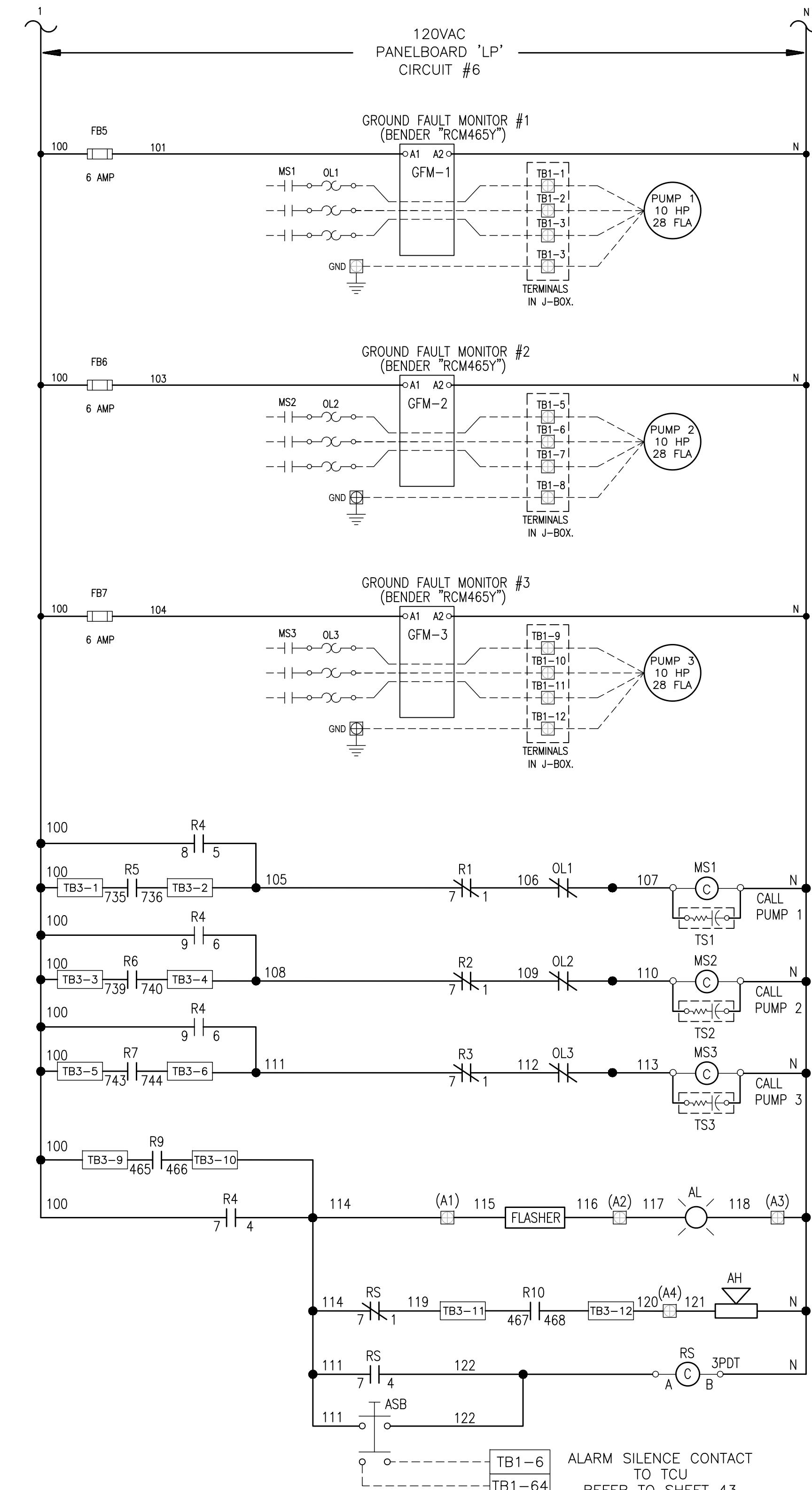
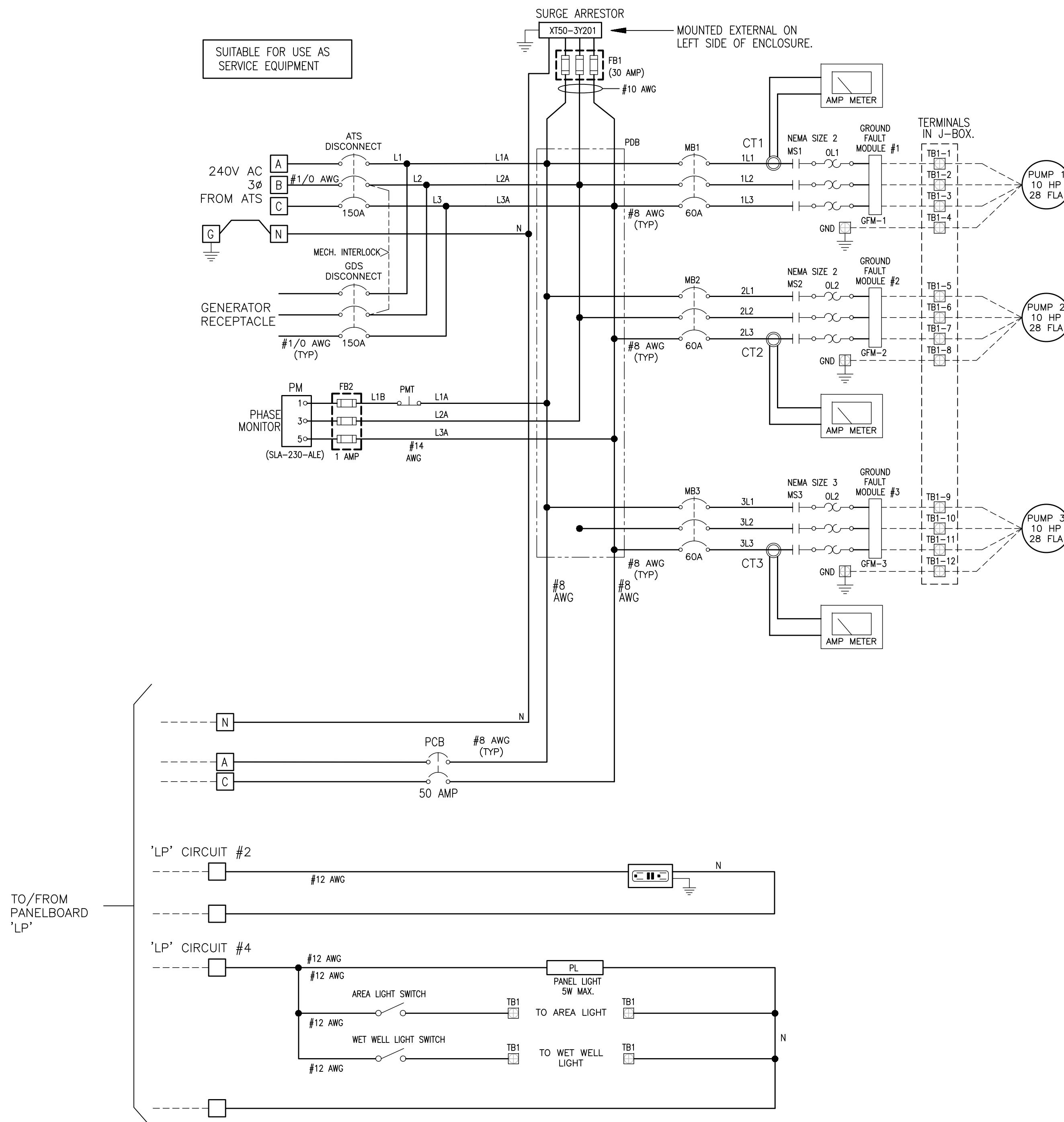
## LIFT STATION 54 PUMP CONTROL PANEL SCHEMATIC WIRING DIAGRAM

DWG NAME: #####	FIELD BOOK: N/A	SURVEYED BY: CLEARWATER	SCALE: VERT. N/A
CONTRACT NO: 18-0058-UT	DATE DRAWN: #####	DRAWN BY: JLH	HORIZ. N/A
JOB NO: 22609.19	DESIGNED BY: TDT	CHECKED BY: TDT	SHEET NO: 25 OF 40
	APPROVED FOR CONSTRUCTION		
	CITY ENGINEER MICHAEL D. QUILLIN, P.E. # 33721		DATE

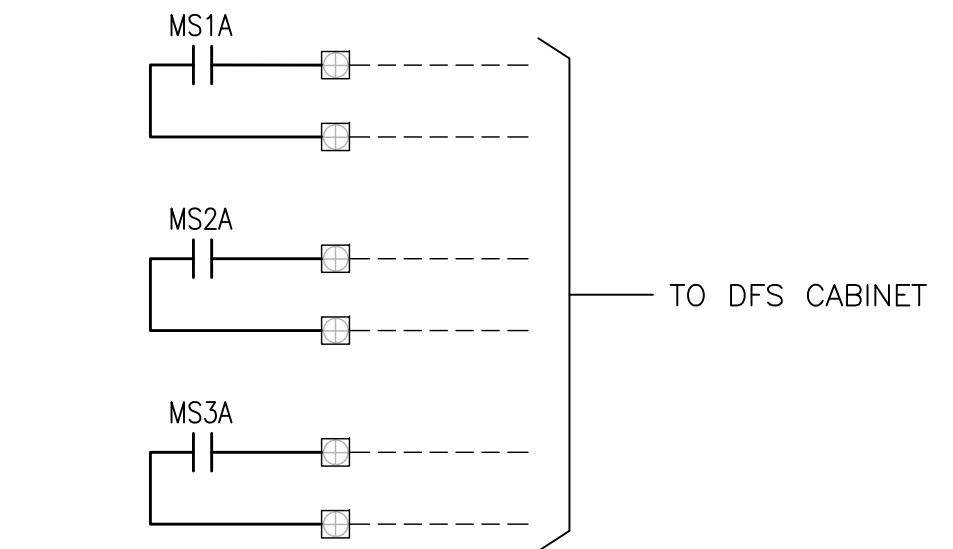
TIMOTHY THOMAS P.E. No. 47079

TRICON  
ENGINEERING

777 S. Harbour Island Blvd,  
Suite 350  
Tampa, FL 33602  
(813) 227-9196  
Certificate of Authorization No. 31028



- NOTES:**
1. PANEL SHALL BE U.L. 698A LABELED FOR HAZARDOUS LOCATIONS AND SERVICE ENTRANCE RATED.
  2. ANTENNA CABLE SURGE SUPPRESSOR SHALL NOT BE LOCATED OR MOUNTED IN THE INTRINSICALLY SAFE AREA.
  3. CONTROL WIRING SHALL BE #14 AWG.
  4. INTRINSICALLY SAFE WIRING TO BE LIGHT BLUE IN COLOR.
  5. REFER TO MANUFACTURER'S TECHNICAL DATA SHEET FOR PROPER WIRING OF THIS DEVICE PER INTRINSICALLY SAFE DEVICES.
  6. ALL POINT CONTACTS TO BE PROTECTED BY ANTIODANT COMPOUND.



TIMOTHY THOMAS P.E. No. 47079



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SURVEYED BY:			
REVIEWED BY:			
PROJECT ENGINEER	DATE		
APPROVED BY:			
CITY ENGINEER MICHAEL D. QUILLIN, P.E. # 33721	DATE		

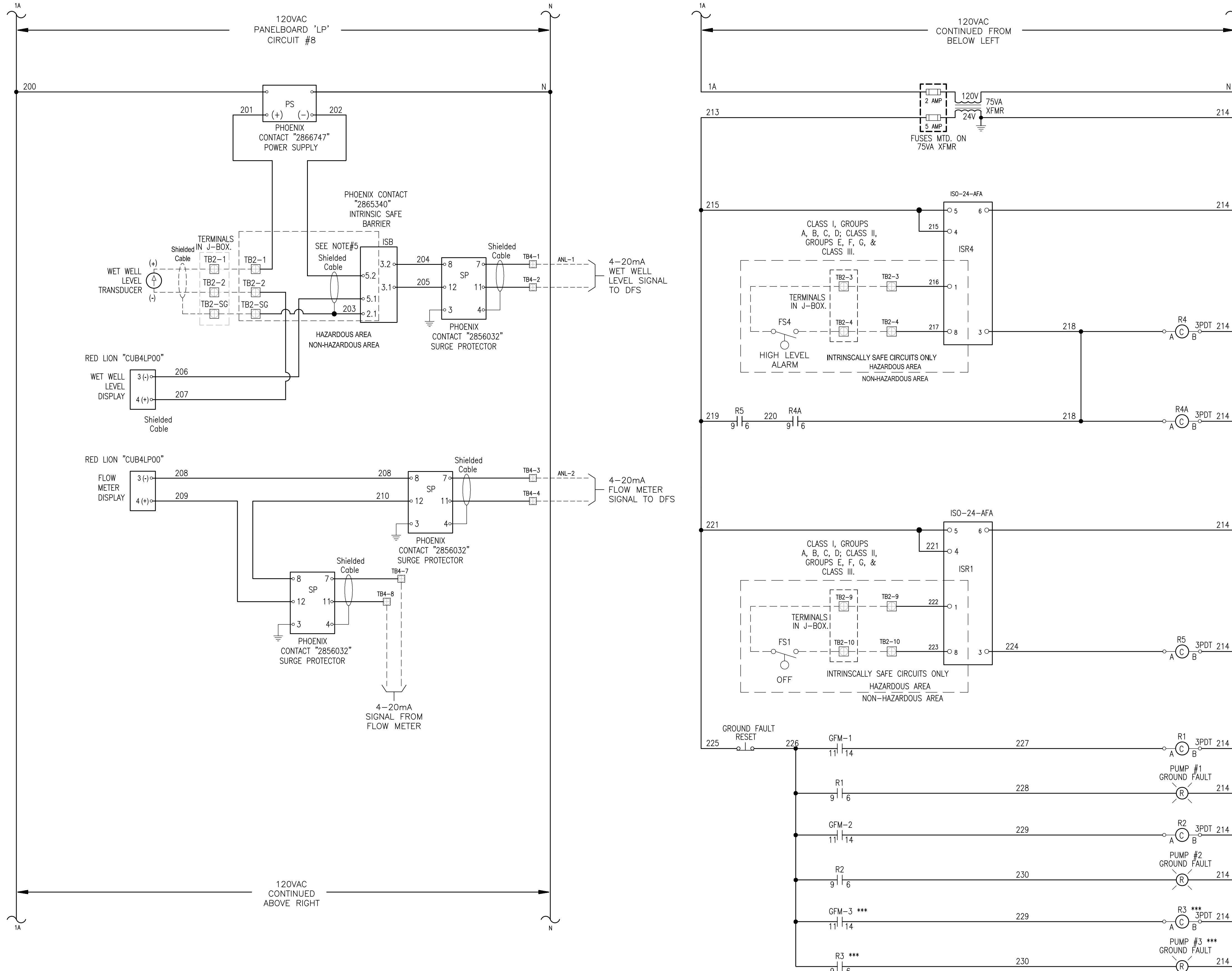
REVISION	BY	DATE

CITY OF CLEARWATER, FLORIDA  
ENGINEERING DEPARTMENT  
100 S. MYRTLE AVE.  
CLEARWATER, FL 33756



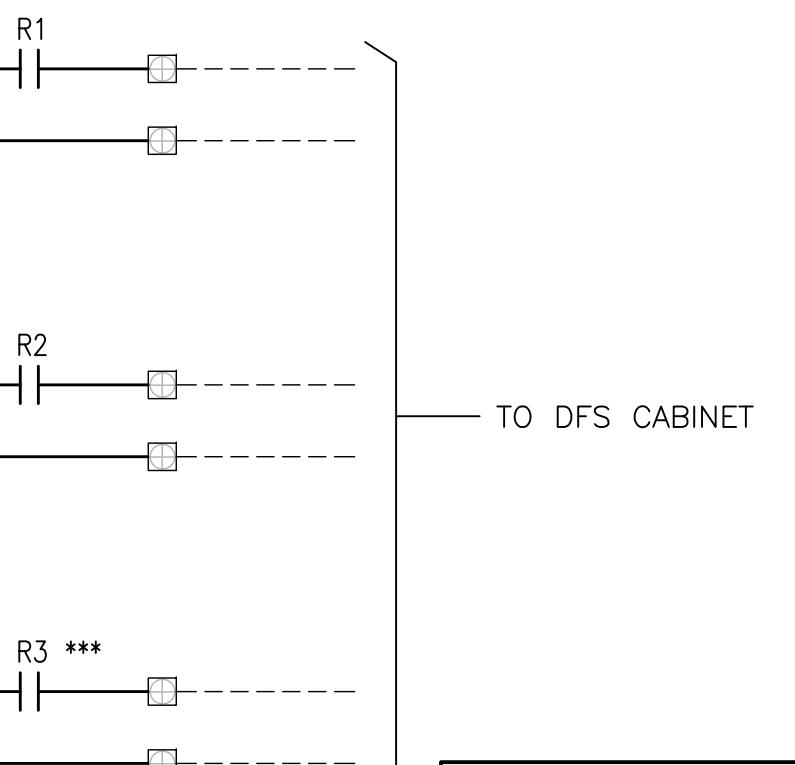
## LIFT STATION 65 PUMP CONTROL PANEL SCHEMATIC WIRING DIAGRAM

DWG NAME:	FIELD BOOK:	SURVEYED BY:	SCALE:
####	N/A	CLEARWATER	VERT. N/A
CONTRACT NO:	DATE DRAWN:	DRAWN BY:	
18-0058-UT	####	JLH	####
JOB NO:	DESIGNED BY:	CHECKED BY:	SHEET NO:
22609.19	TDT	TDT	26 OF 40
APPROVED FOR CONSTRUCTION			
	CITY ENGINEER MICHAEL D. QUILLIN, P.E. # 33721		DATE

**LEGEND**

AH - ALARM HORN  
 AL - ALARM LIGHT  
 ASB - ALARM SILENCE BUTTON  
 CCB - CONTROL CIRCUIT BREAKER  
 CB - CIRCUIT BREAKER  
 DRB - DUPLEX RECEPTACLE BREAKER  
 ECB - EMERGENCY CIRCUIT BREAKER  
 F - FUSE  
 FB - FUSE BLOCK  
 FL - FLASHER  
 FS - FLOAT SWITCH  
 GFDR - GROUND FAULT DUPLEX RECEP.  
 GFM - GROUND FAULT MONITOR  
 GR - GENERATOR RECEPTACLE  
 ISB - INTRINSIC SAFE BARRIER  
 ISR - INTRINSIC SAFE RELAY  
 MB - MOTOR BREAKER  
 MCB - MAIN CIRCUIT BREAKER  
 MS - MOTOR STARTER  
 OL - OVERLOAD  
 PM - PHASE MONITOR  
 PMT - PHASE MONITOR TEST  
 PS - POWER SUPPLY  
 R - RELAY  
 RES - RESISTER  
 SCB - SPARE CIRCUIT BREAKER  
 SLB - SITE LIGHT BREAKER  
 SP - SURGE PROTECTOR  
 TB - TERMINAL BLOCK  
 TCU - TELEMETRY CONTROL UNIT  
 TS - TRANSIENT SUPPRESSOR  
 XFMER - TRANSFORMER  
 3PDT - THREE-POLE, DOUBLE-THROW

NOTES:  
 \*\*\* INDICATES ITEM REQUIRED AT LIFT STATION 65



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 Certificate of Authorization No. 31028

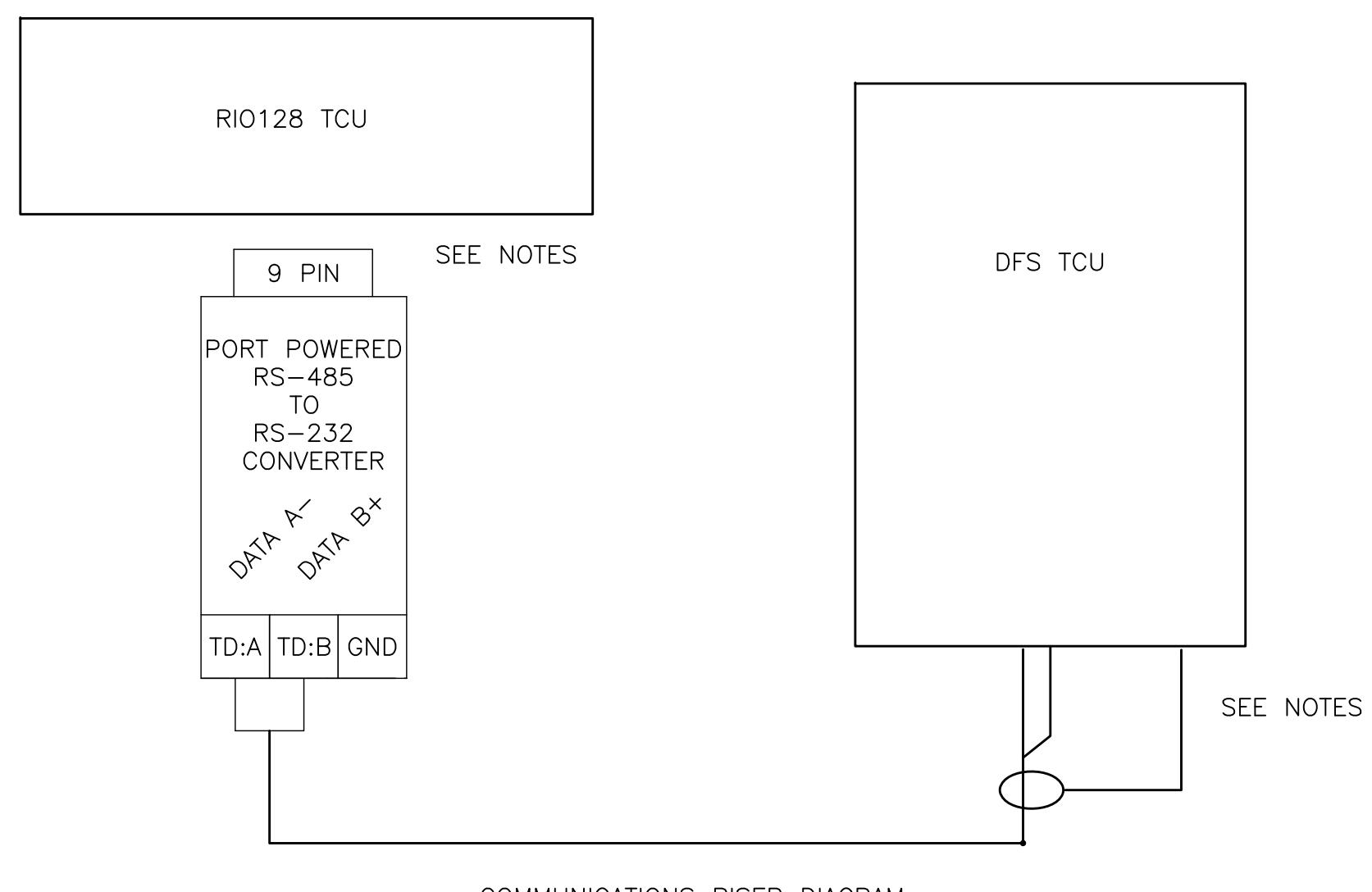
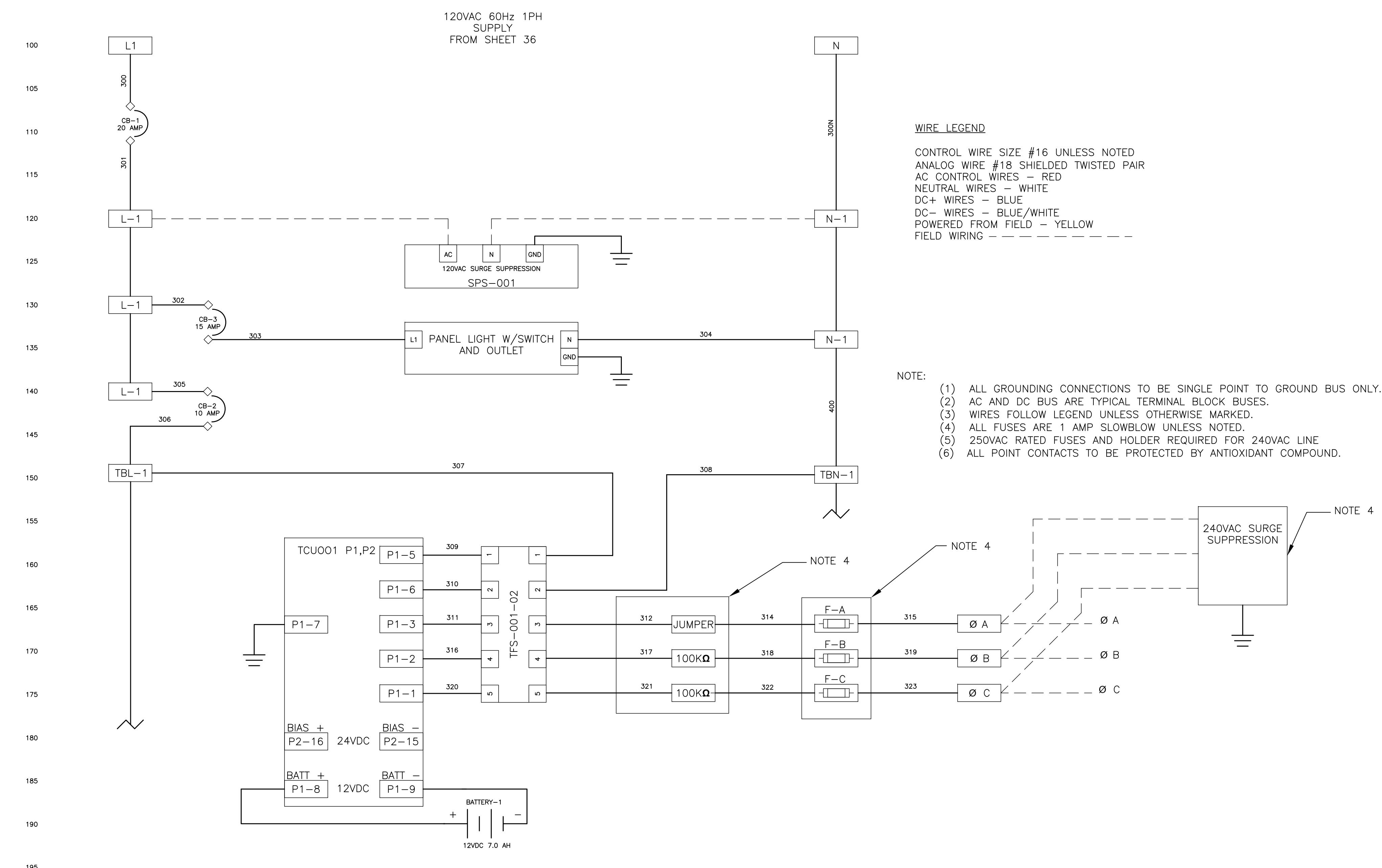
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SURVEYED BY:			
REVIEWED BY:			
PROJECT ENGINEER	DATE		
APPROVED BY:			
CITY ENGINEER MICHAEL D. QUILLIN, P.E. # 33721	DATE		

REVISION	BY	DATE

CITY OF CLEARWATER, FLORIDA  
 ENGINEERING DEPARTMENT  
 100 S. MYRTLE AVE.  
 CLEARWATER, FL 33756

**TYPICAL PUMP CONTROL PANEL SCHEMATIC WIRING DIAGRAMS**

DWG NAME: ####	FIELD BOOK: N/A	SURVEYED BY: CLEARWATER	SCALE: VERT. N/A
CONTRACT NO: 18-0058-UT	DATE DRAWN: #####	DRAWN BY: JLH	HORIZ. N/A
JOB NO: 22609.19	DESIGNED BY: TDT	CHECKED BY: TDT	SHEET NO: 27 OF 40
	APPROVED FOR CONSTRUCTION		
	CITY ENGINEER MICHAEL D. QUILLIN, P.E. # 33721		DATE



NOTE:

- (1) RIO-128 CONNECTOR J1 (RS-232) CONNECT RS-485 PORT POWERED CONNECTOR
- (2) RS-485 TERMINAL BLOCK TD:B (DATA B+) TERMINATES TO TCU CONNECTOR P4-3
- (3) RS-485 TERMINAL BLOCK TD:A (DATA A-) TERMINATES TO TCU CONNECTOR P4-4
- (4) TERMINATE THE SHIELD OF THE COMMUNICATION CABLE TO TCU CONNECTOR P4-5

TIMOTHY THOMAS P.E. No. 47079

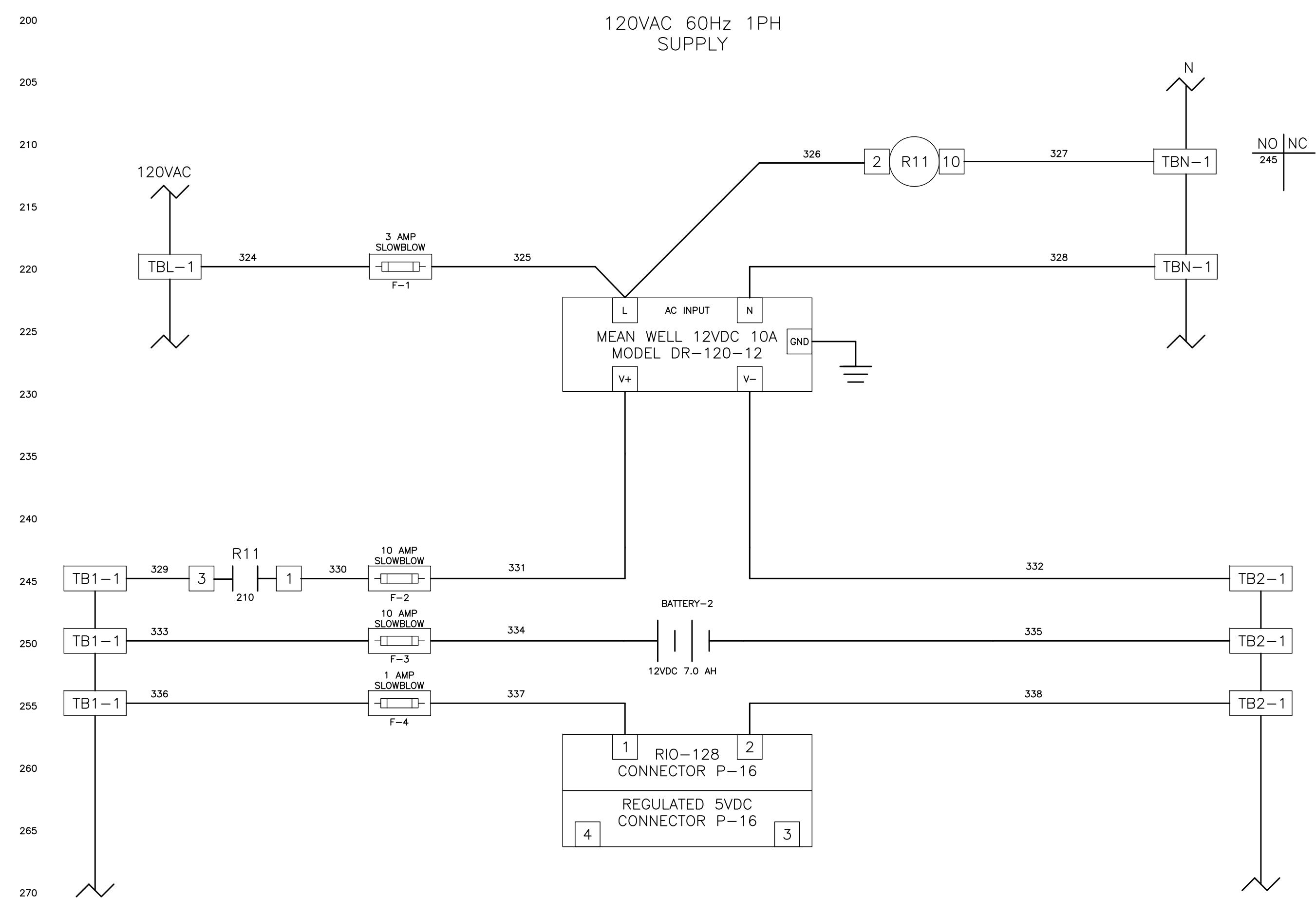


RECORD	DRAWINGS		
SURVEYED BY:	DRAWN BY:		
REVIEWED BY:			
PROJECT ENGINEER	DATE		
APPROVED BY:			
CITY ENGINEER MICHAEL D. QUILLEN, P.E. # 33721	DATE		

REVISION	BY	DATE	INVESTIGATE BEFORE YOU EXCAVATE	CALL 811	FIELD BOOK: N/A	SURVEYED BY: CLEARWATER	SCALE: VERT. N/A
				SUNSHINE STATE ONE CALL OF FLORIDA www.fl811.org (800) 432-4770 MIN. 48 HOURS BEFORE YOU EXCAVATE	CONTRACT NO: 18-0058-UT	DATE DRAWN: #####	DRAWN BY: JLH HORIZ. N/A
					JOB NO: 22609.19	DESIGNED BY: TDT	CHECKED BY: TDT SHEET NO: 28 OF 40
					APPROVED FOR CONSTRUCTION		

CITY OF CLEARWATER, FLORIDA  
ENGINEERING DEPARTMENT  
100 S. MYRTLE AVE.  
CLEARWATER, FL 33756

### TYPICAL DFS CABINET SCHEMATIC WIRING DIAGRAM

WIRE LEGEND

CONTROL WIRE SIZE #16 UNLESS NOTED  
 ANALOG WIRE #18 SHIELDED TWISTED PAIR  
 AC CONTROL WIRES - RED  
 NEUTRAL WIRES - WHITE  
 DC+ WIRES - BLUE  
 DC- WIRES - BLUE/WHITE  
 POWERED FROM FIELD - YELLOW  
 FIELD WIRING - - - - -

## NOTE:

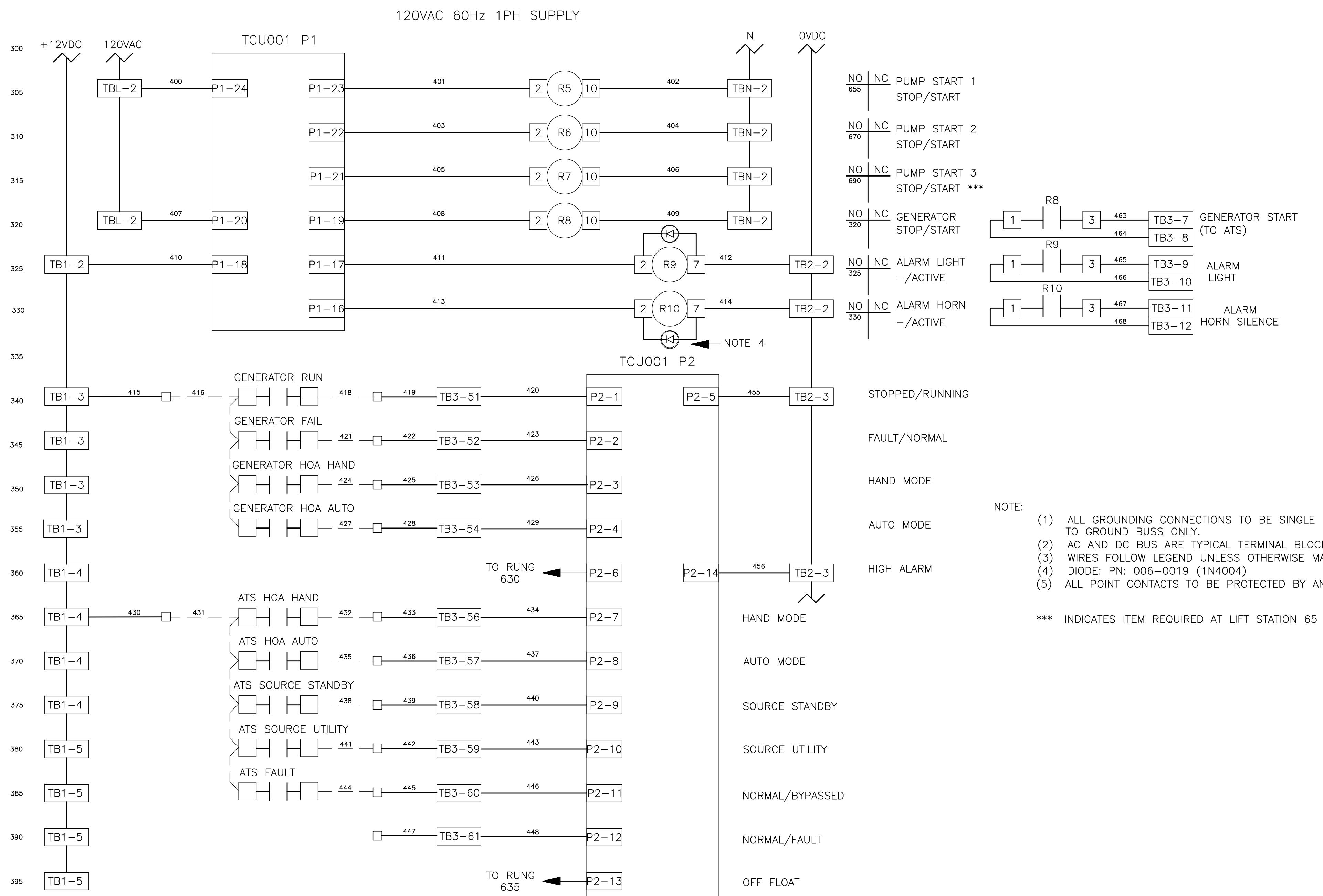
- (1) ALL GROUNDING CONNECTIONS TO BE SINGLE POINT TO GROUND BUS ONLY.
- (2) AC AND DC BUS ARE TYPICAL TERMINAL BLOCK BUSES.
- (3) WIRES FOLLOW LEGEND UNLESS OTHERWISE MARKED.
- (4) ALL POINT CONTACTS TO BE PROTECTED BY ANTIODDUCTANT COMPOUND.

TIMOTHY THOMAS P.E. No. 47079



RECORD	DRAWINGS			
SURVEYED BY:	DRAWN BY:			
REVIEWED BY:				
PROJECT ENGINEER	DATE			
APPROVED BY:				
CITY ENGINEER MICHAEL D. QUILLIN, P.E. # 33721	DATE			

REVISION	BY	DATE	CITY OF CLEARWATER, FLORIDA			INVESTIGATE BEFORE YOU EXCAVATE <b>CALL 811</b> SUNSHINE STATE ONE CALL OF FLORIDA <a href="http://www.fl811.org">www.fl811.org</a> (800) 432-4770 MIN. 48 HOURS BEFORE YOU EXCAVATE	TYPICAL DFS CABINET SCHEMATIC WIRING DIAGRAM			DWG NAME: 18-0058-UT JOB NO. 22609.19	FIELD BOOK: N/A	SURVEYED BY: CLEARWATER	SCALE: VERT. N/A
			ENGINEERING DEPARTMENT 100 S. MYRTLE AVE. CLEARWATER, FL 33756										



TIMOTHY THOMAS P.E. No. 47079



RECORD	DRAWINGS		
SURVEYED BY:	DRAWN BY:		
REVIEWED BY:			
PROJECT ENGINEER	DATE		
APPROVED BY:			
CITY ENGINEER MICHAEL D. QUILLEN, P.E. # 33721	DATE		

REVISION	BY	DATE

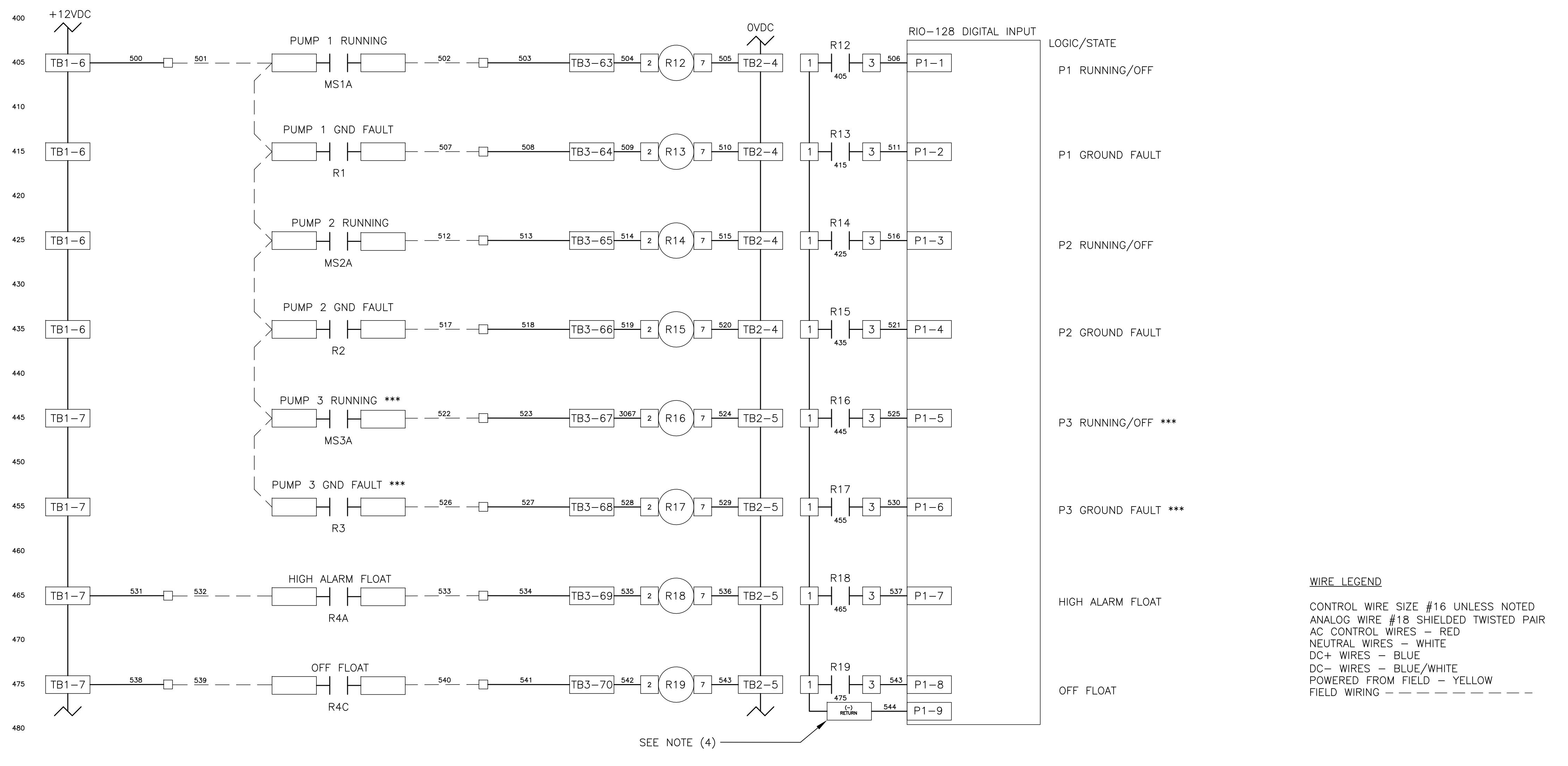
CITY OF CLEARWATER, FLORIDA  
ENGINEERING DEPARTMENT  
100 S. MYRTLE AVE.  
CLEARWATER, FL 33756



### TYPICAL DFS CABINET SCHEMATIC WIRING DIAGRAM

DWG NAME:	FIELD BOOK:	SURVEYED BY:	SCALE:
####	N/A	CLEARWATER	VERT. N/A
CONTRACT NO:	DATE DRAWN:	DRAWN BY:	
18-0058-UT	####	JLH	HORIZ. N/A
JOB NO:	DESIGNED BY:	CHECKED BY:	SHEET NO:
22609.19	TDT	TDT	30 OF 40
APPROVED FOR CONSTRUCTION			

CITY ENGINEER MICHAEL D. QUILLEN, P.E. # 33721 DATE



NOTE:  
 (1) ALL GROUNDING CONNECTIONS TO BE SINGLE POINT TO GROUND BUS ONLY.  
 (2) AC AND DC BUS ARE TYPICAL TERMINAL BLOCK BUSES.  
 (3) WIRES FOLLOW LEGEND UNLESS OTHERWISE MARKED.  
 (4) TERMINAL BLOCKS ARE FOR THE DC RETURN (-) BUS FOR THE RIO-128 DIGITAL INPUTS.  
 (5) ALL POINT CONTACTS TO BE PROTECTED BY ANTI-OXIDANT COMPOUND.

\*\*\* INDICATES ITEM REQUIRED AT LIFT STATION 65

TIMOTHY THOMAS P.E. No. 47079

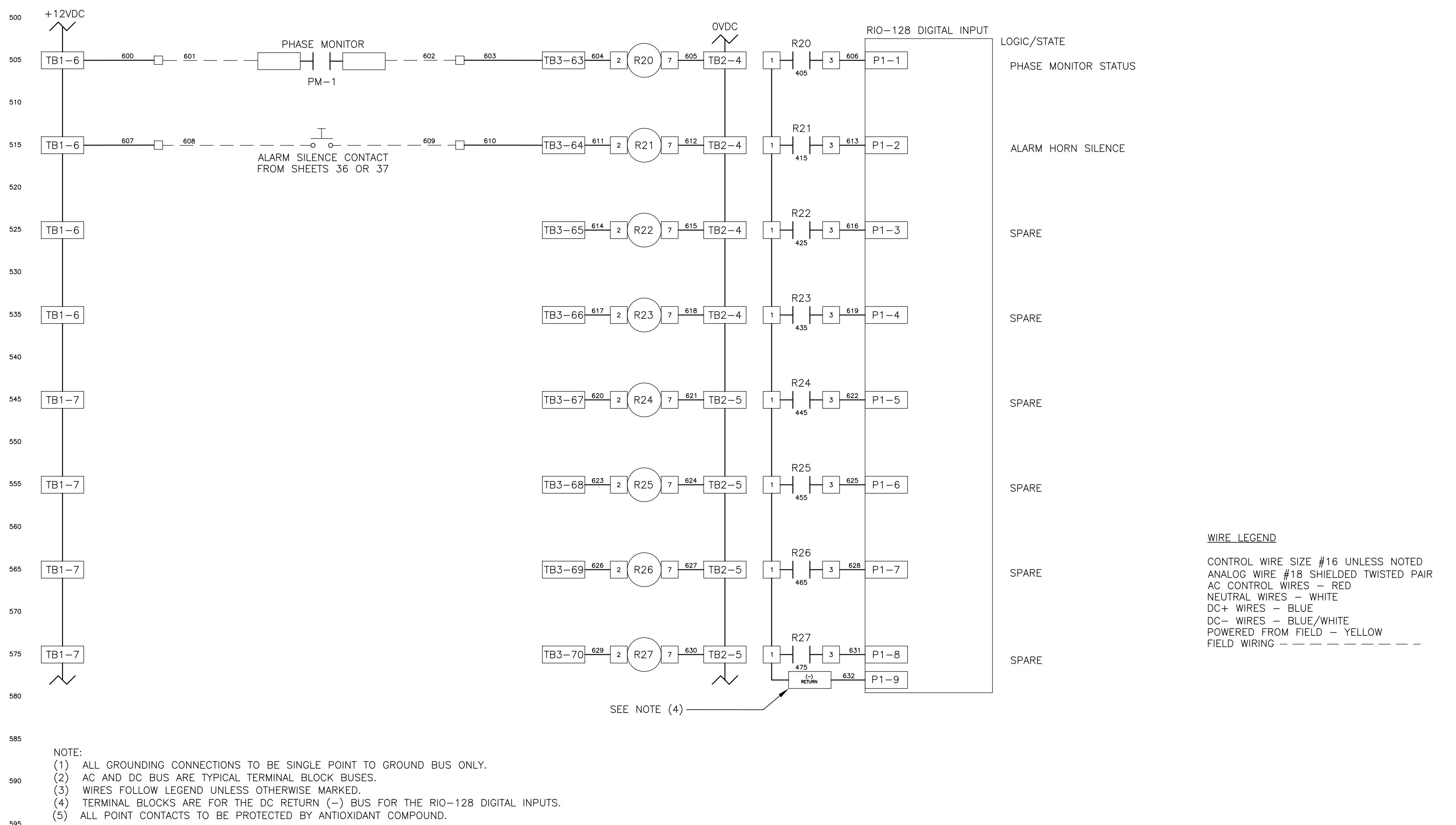


RECORD	DRAWINGS		
SURVEYED BY:	DRAWN BY:		
REVIEWED BY:			
PROJECT ENGINEER	DATE		
APPROVED BY:			
CITY ENGINEER MICHAEL D. QUILLIN, P.E. # 33721	DATE		

REVISION	BY	DATE	INVESTIGATE BEFORE YOU EXCAVATE CALL 811 SUNSHINE STATE ONE CALL OF FLORIDA <a href="http://www.fl811.com">www.fl811.com</a> (800) 432-4770 MIN. 48 HOURS BEFORE YOU EXCAVATE	DWG NAME: ####	FIELD BOOK: N/A	SURVEYED BY: CLEARWATER	SCALE: VERT. N/A
				CONTRACT NO: 18-0058-UT	DATE DRAWN: ####	DRAWN BY: JLH	HORIZ. N/A
				JOB NO: 22609.19	DESIGNED BY: TDT	CHECKED BY: TDT	SHEET NO: 31 OF 40
				APPROVED FOR CONSTRUCTION			
						CITY ENGINEER MICHAEL D. QUILLIN, P.E. # 33721	DATE

CITY OF CLEARWATER, FLORIDA  
ENGINEERING DEPARTMENT  
100 S. MYRTLE AVE.  
CLEARWATER, FL 33756

### TYPICAL DFS CABINET SCHEMATIC WIRING DIAGRAM



TIMOTHY THOMAS P.E. No. 47079



RECORD	DRAWINGS		
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REVIEWED BY:			
PROJECT ENGINEER	DATE		
APPROVED BY:			
CITY ENGINEER MICHAEL D. QUILLIN, P.E. # 33721	DATE		

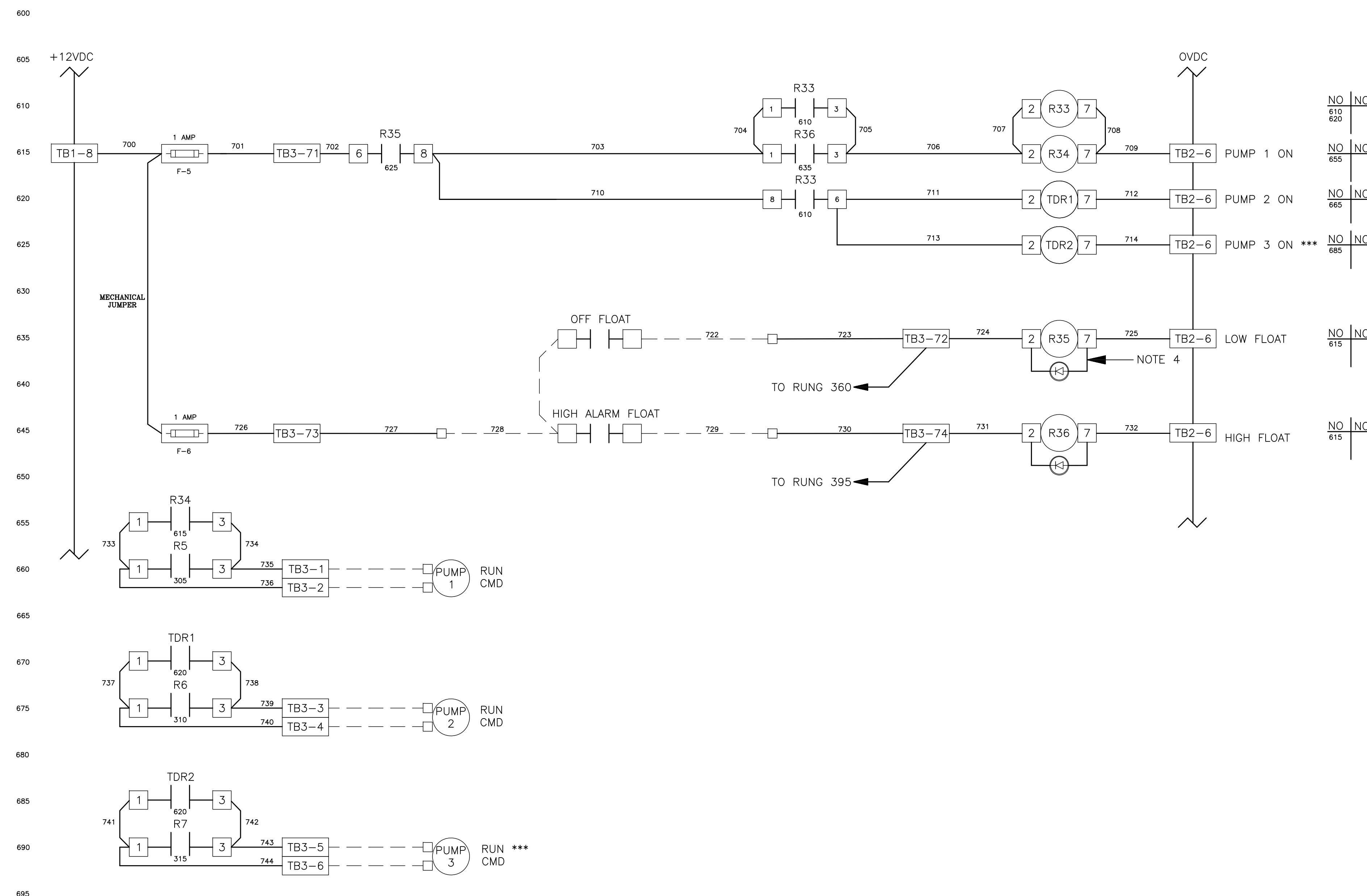
REVISION	BY	DATE

CITY OF CLEARWATER, FLORIDA  
ENGINEERING DEPARTMENT  
100 S. MYRTLE AVE.  
CLEARWATER, FL 33756



### TYPICAL DFS CABINET SCHEMATIC WIRING DIAGRAM

DWG NAME:	FIELD BOOK:	SURVEYED BY:	SCALE:
####	N/A	CLEARWATER	VERT. N/A
CONTRACT NO:	DATE DRAWN:	DRAWN BY:	
18-0058-UT	####	JLH	HORIZ. N/A
JOB NO:	DESIGNED BY:	CHECKED BY:	SHEET NO:
22609.19	TDT	TDT	32 OF 40
APPROVED FOR CONSTRUCTION			
	CITY ENGINEER MICHAEL D. QUILLIN, P.E. # 33721		DATE



## NOTE:

- (1) ALL GROUNDING CONNECTIONS TO BE SINGLE POINT TO GROUND BUS ONLY.
- (2) AC AND DC BUS ARE TYPICAL TERMINAL BLOCK BUSES.
- (3) WIRES FOLLOW LEGEND UNLESS OTHERWISE MARKED.
- (4) DIODE: PN: 006-0019 (1N4004)
- (5) ALL POINT CONTACTS TO BE PROTECTED BY ANTIODANT COMPOUND.

\*\*\* INDICATES ITEM REQUIRED AT LIFT STATION 65

TIMOTHY THOMAS P.E. No. 47079



777 S. Harbour Island Blvd.  
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1-813-227-9196  
Certificate of Authorization No. 31028

RECORD	DRAWINGS		
SURVEYED BY:	DRAWN BY:		
REVIEWED BY:			
PROJECT ENGINEER	DATE		
APPROVED BY:			
CITY ENGINEER MICHAEL D. QUILLEN, P.E. # 33721	DATE		

REVISION	BY	DATE

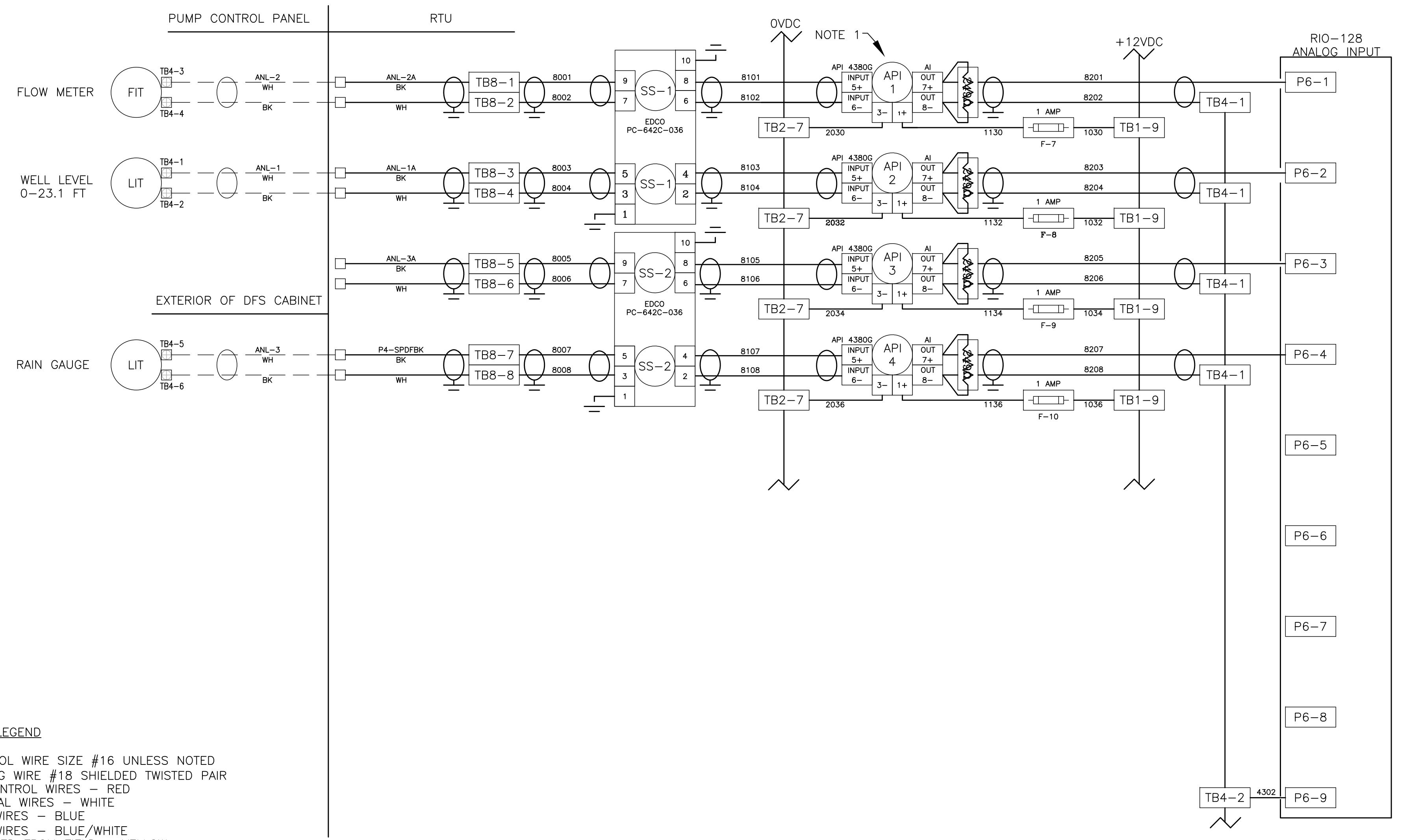
CITY OF CLEARWATER, FLORIDA  
ENGINEERING DEPARTMENT  
100 S. MYRTLE AVE.  
CLEARWATER, FL 33756



### TYPICAL DFS CABINET SCHEMATIC WIRING DIAGRAM

DWG NAME:	FIELD BOOK:	SURVEYED BY:	SCALE:
####	N/A	CLEARWATER	N/A
18-0058-UT	####	JLH	
22609.19	DESIGNED BY: TDT	CHECKED BY: TDT	33 OF 40
APPROVED FOR CONSTRUCTION			

CITY ENGINEER MICHAEL D. QUILLEN, P.E. # 33721 DATE



**NOTE:**  
(1) LOOP ISOLATORS ON ANALOG INPUTS MUST BE CORRECTLY CONFIGURED FOR 4-20mA INPUT & 4-20mA OUTPUT BEFORE INSTALLING; FAILURE TO DO SO WILL RESULT IN EQUIPMENT DAMAGE AND Voids FACTORY WARRANTY.  
(2) DO NOT EXCEED 5.5 VOLTS ON ANALOG INPUTS.  
(3) LOOP ISOLATORS ARE RECOMMENDED FOR CIRcUIT PROTECTION.  
(4) STATIC SENSITIVE DEVICES; OBSERVE PROPER ESD PROCEDURES DURING INSTALLATION.  
(5) ALL POINT CONTACTS TO BE PROTECTED BY ANTIOXIDANT COMPOUND.

TIMOTHY THOMAS P.E. No. 47079



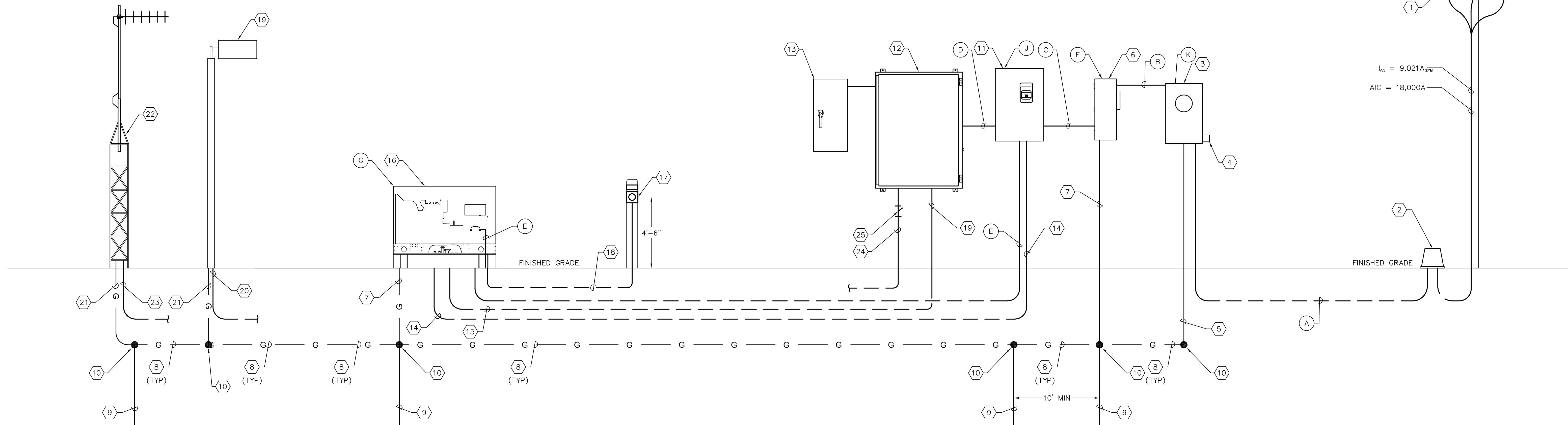
RECORD	DRAWINGS		
SURVEYED BY:	DRAWN BY:		
REVIEWED BY:			
PROJECT ENGINEER	DATE		
APPROVED BY:			
CITY ENGINEER MICHAEL D. QUILLEN, P.E. # 33721	DATE		

CITY OF CLEARWATER, FLORIDA  
ENGINEERING DEPARTMENT  
100 S. MYRTLE AVE.  
CLEARWATER, FL 33756



## PUMP STATION PROPOSED STRUCTURAL LAYOUT

DWG NAME:	FIELD BOOK:	SURVEYED BY:	SCALE:
####	N/A	CLEARWATER	VERT. N/A
CONTRACT NO:	DATE DRAWN:	DRAWN BY:	
18-0058-UT	####	JLH	HORZ. N/A
JOB NO:	DESIGNED BY:	CHECKED BY:	SHEET NO:
22609.19	TDT	TDT	34 OF 40
APPROVED FOR CONSTRUCTION			
CITY ENGINEER MICHAEL D. QUILLEN, P.E. # 33721	DATE		



## SHORT CIRCUIT CALCULATIONS – LS #54

AVAILABLE SHORT-CIRCUIT CURRENT AT 240V UTILITY SERVICE IS 5,413 AMPERES.

UTILITY SERVICE: 240V, 3 PH, 45 KVA PAD MOUNTED  
TRANSFORMER AVAILABLE FAULT CURRENT AT SECONDARY  
SIDE OF UTILITY TRANSFORMER: 5,413 AMP RMS SYM.  
SERVICE CONDUCTOR LENGTH: 130 FEET  
SERVICE CONDUCTOR SIZE: #4 THWN

$$ISCA = \left[ 1 + \frac{1}{\frac{(1.73)(130)(5,413)}{(3,090)(240)}} \right] * 5,413 = 2,049A$$

SHORT CIRCUIT CURRENT AVAILABLE AT LINE SIDE  
LUGS OF MAIN CIRCUIT BREAKER =  
2,049 AMPS RMS SYMMETRICAL

MAIN CIRCUIT BREAKER INTERRUPTING RATING =  
10,000 AIC

## SHORT CIRCUIT CALCULATIONS – LS #65

AVAILABLE SHORT-CIRCUIT CURRENT AT 240V UTILITY SERVICE IS 5,413 AMPERES.

UTILITY SERVICE: 240V, 3 PH, 45 KVA PAD MOUNTED  
TRANSFORMER AVAILABLE FAULT CURRENT AT SECONDARY  
SIDE OF UTILITY TRANSFORMER: 5,413 AMP RMS SYM.  
SERVICE CONDUCTOR LENGTH: 90 FEET  
SERVICE CONDUCTOR SIZE: #4 THWN

$$ISCA = \frac{1}{1 + \left[ \frac{(1.73)(90)(5,413)}{(3,090)(240)} \right]} * 5,413 = 2,534A$$

SHORT CIRCUIT CURRENT AVAILABLE AT LINE SIDE  
LUGS OF MAIN CIRCUIT BREAKER =  
2,534 AMPS RMS, SYMMETRICAL

MAIN CIRCUIT BREAKER INTERRUPTING RATING =  
10,000 AIC

## ONE LINE DIAGRAM NOTES:

- 1 EXISTING UTILITY TRANSFORMERS ON EXISTING DISTRIBUTION POLE (TYPICAL FOR BOTH LIFT STATION 54 AND LIFT STATION 65).

2 PROVIDE AND INSTALL UTILITY APPROVED PEDESTAL.

3 PROVIDE AND INSTALL NEW 240V, 3Ø, METER SOCKET. GROUND METER SOCKET PER UTILITY SPECIFICATIONS. COORDINATE NEW ELECTRICAL SERVICE ENTRANCE REQUIREMENTS WITH UTILITY. REFER TO SCHEDULE FOR SIZE REQUIRED PER SITE.

4 PROVIDE AND INSTALL UTILITY APPROVED LIGHTNING PROTECTION DEVICE.

5 PROVIDE AND INSTALL #4 CU GROUNDING ELECTRODE CONDUCTOR. COORDINATE REQUIREMENTS WITH UTILITY.

6 PROVIDE AND INSTALL NEW 240, 3-POLE DISCONNECT IN NEMA 4X STAINLESS STEEL ENCLOSURE. PROVIDE SOLID NEUTRAL AND GROUND LUG KITS. REFER TO SCHEDULE FOR AMPERE AND FUSING REQUIREMENTS.

7 PROVIDE AND INSTALL #4 CU GROUNDING ELECTRODE CONDUCTOR.

8 PROVIDE AND INSTALL 1/0 AWG CU GROUNDING ELECTRODE CONDUCTOR.

9 PROVIDE AND INSTALL 5/8" X 20'-0" GROUNDING ELECTRODE.

0 EXOTHERMIC WELD.

1 PROVIDE AND INSTALL 3-POLE, S/N, 240V, TRANSFER SWITCH IN NEMA 3R STAINLESS STEEL ENCLOSURE. REFER TO SCHEDULE FOR SIZE.

2 PROVIDE AND INSTALL PUMP CONTROL CABINET.

3 PROVIDE AND INSTALL PANELBOAD 'LP'.

4 PROVIDE AND INSTALL 4-#12 THWN CU + 1-#12 THWN CU GND IN 3/4"C. FOR GENERATOR START CONTROL. VERIFY/COORDINATE REQUIREMENTS WITH TRANSFER SWITCH/GENERATOR MANUFACTURER.

15 PROVIDE AND INSTALL THE FOLLOWING CIRCUITS FOR GENERATOR AUXILIARY EQUIPMENT : 2#12 THWN CU + 1-#12 THWN CU GND IN 3/4"C. FOR GENERATOR ALTERNATOR HEATER. 2#12 THWN CU + 1-#12 THWN CU GND IN 3/4"C. FOR GENERATOR BLOCK HEATER. 2-#12 THWN CU + 1-#12 THWN CU GND IN 3/4"C. FOR GENERATOR BATTERY CHARGER. CONFIRM/COORDINATE REQUIREMENTS WITH GENERATOR MANUFACTURER.

16 PROVIDE AND INSTALL NEW 240V, 3Ø, 4-WIRE GENERATOR IN WEATHERPROOF ENCLOSURE. REFER TO SCHEDULE FOR SIZE. REFER ALSO TO SPECIFICATIONS.

17 GENERATOR EMERGENCY SHUT DOWN PUSH BUTTON STATION. MAINTAINED 2 POSITION SWITCH w/ 1-5/8" DIA. OPERATOR, 1 N.O. & 1 N.C. CONTACT MOUNTED IN A NEMA 4X SS ENCLOSURE, 4'-6" ABOVE FINISHED GRADE ON 6" X 6" X 9' CONCRETE POST. PROVIDE PHENOLIC NAMEPLATE ABOVE PUSH BUTTON STATION. NAMEPLATE SHALL BE THREE-PLY PHENOLIC RED-WHITE-RED ENGRAVED THROUGH THE FIRST RED LAYER. LETTERING SHALL BE 1/2" MIN., EDGES OF NAMEPLATE SHALL BE BEVELED 45 DEG. NAMEPLATE SHALL READ AS FOLLOWS: "GENERATOR EMERGENCY SHUT DOWN".

18 PROVIDE AND INSTALL 2#12 THWN CU + 1-#12 THWN CU GND IN 3/4"C. FOR GENERATOR EMERGENCY SHUT DOWN CIRCUIT.

19 PROVIDE AND INSTALL AREA LIGHT. NOTE: LIFT STATION 65 REQUIRES 2 AREA LIGHT FIXTURES.

20 PROVIDE AND INSTALL 2-#12 THWN CU + 1-#12 THWN CU GND IN 3/4"C. TO PUMP CONTROL CABINET FOR AREA LIGHT POWER.

21 PROVIDE AND INSTALL #8 CU BONDING CONDUCTOR.

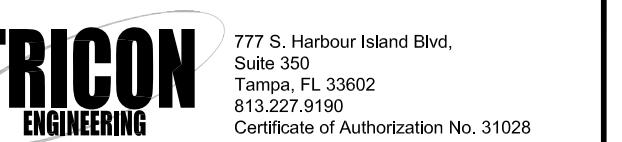
22 RELOCATE EXISTING DFS ANTENNA.

23 PROVIDE AND INSTALL COAXIAL CABLE IN 2"C. TO DFS CONTROL CABINET.

24 2-#12 THWN + 1-#12 THWN CU GND IN 3/4" C. TO WET WELL LIGHT. 3/4" CONDUIT SHALL BE A CONTINUOUS RUN OF RIGID ALUMINUM CONDUIT. THE RIGID ALUMINUM CONDUIT EXTENDING BELOW GRADE SHALL BE COATED WITH TWO COATS OF AN ASPHALTUM-TYPE PAINT ALONG ITS ENTIRE LENGTH BELOW GRADE, EXTENDING 6" ABOVE GRADE (OR ABOVE THE TOP OF THE FINISHED SLAB) AND IN ITS ENTIRETY WITHIN THE WET WELL.

25 PROVIDE AND INSTALL 3/4" EYS SEAL FOR CONDUIT TO WET WELL FOR WET WELL LIGHT

TIMOTHY THOMAS P.E. No. 47079



ur Island Blvd,  
602  
Authorization No. 31028

RECORD DRAWINGS	
SURVEYED BY:	DRAWN BY:
REVIEWED BY:	
PROJECT ENGINEER	
APPROVED BY:	
CITY ENGINEER MICHAEL D. QUILLEN, P.E. # 33721	

CITY OF CLEARWATER, FLORIDA  
ENGINEERING DEPARTMENT  
100 S. MYRTLE AVE.  
CLEARWATER, FL 33756



# LIFT STATION 54 AND LIFT STATION 65 ONE LINE DIAGRAMS

WORK NAME: ####	FIELD BOOK: N/A	SURVEYED BY: CLEARWATER	SCALE: VERT. N/A
CONTRACT NO.: ####	DATE DRAWN: ####	DRAWN BY: JLH	HORIZ. 1/2" = 1'-0"
JOB NO.: 22609.19	DESIGNED BY: TDT	CHECKED BY: TDT	SHEET NO.: 35 OF 40
APPROVED FOR CONSTRUCTION			
CITY ENGINEER MICHAEL D. QUILLEN, P.E. # 33721			DATE

EQUIPMENT, CONDUIT AND CONDUCTOR SCHEDULES							
	LIFT STATION 54		LIFT STATION 65		FROM:	TO:	NOTES:
CONDUIT/CONDUCTORS	CONDUCTORS	CONDUIT	CONDUCTORS	CONDUIT			
(A)	3-#3 THWN CU + 1-#3 THWN CU NEUTRAL	1-1/4" C.	3-1/0 THWN CU + 1-1/0 THWN CU NEUTRAL	2" C.	UTILITY	METER	
(B)	3-#3 THWN CU + 1-#3 THWN CU NEUTRAL + 1-#8 THWN CU GND	1-1/4" C.	3-1/0 THWN CU + 1-1/0 THWN CU NEUTRAL + 1-#6 THWN CU GND	2" C.	METER	MAIN DISCONNECT	
(C)	3-#3 THWN CU + 1-#3 THWN CU NEUTRAL + 1-#8 THWN CU GND	1-1/4" C.	3-1/0 THWN CU + 1-1/0 THWN CU NEUTRAL + 1-#6 THWN CU GND	2" C.	MAIN DISCONNECT	AUTOMATIC TRANSFER SWITCH	
(D)	3-#3 THWN CU + 1-#3 THWN CU NEUTRAL + 1-#8 THWN CU GND	1-1/4" C.	3-1/0 THWN CU + 1-1/0 THWN CU NEUTRAL + 1-#6 THWN CU GND	2" C.	AUTOMATIC TRANSFER SWITCH	PUMP CONTROL CABINET	
(E)	3-#3 THWN CU + 1-#3 THWN CU NEUTRAL + 1-#8 THWN CU GND	1-1/4" C.	3-1/0 THWN CU + 1-1/0 THWN CU NEUTRAL + 1-#6 THWN CU GND	2" C.	AUTOMATIC TRANSFER SWITCH	GENERATOR SET	
EQUIPMENT					NOTES:		
(F)	100 AMPERE DISCONNECT FUSED AT 100 AMPERES	200 AMPERE DISCONNECT FUSED AT 150 AMPERES					
(G)	20 KW GENERATOR WITH 60 AMPERE MAIN CIRCUIT BREAKER	50 KW GENERATOR WITH 125 AMPERE MAIN CIRCUIT BREAKER					
(H)	100 AMPERE TRANSFER SWITCH	150 AMPERE TRANSFER SWITCH					
(K)	100 AMPERE, 240V, 3-PHASE METER	200 AMPERE, 240V, 3-PHASE METER					

LOAD CALCULATION: L.S. 54	
<b>MOTORS:</b>	
PUMP NO. 1:	5.0 HP, 240 VAC, 3 Ø, 15.2 A
PUMP NO. 2:	5.0 HP, 240 VAC, 3 Ø, 15.2 A
MOTOR SUB-TOTAL	30.4 A
+ 25% OF LARGEST MOTOR	3.8 A
SUB-TOTAL	34.2 A
AUXILIARY EQUIPMENT	20.0 A
TOTAL MAXIMUM PHASE AMPERES	54.2 A
<b>SERVICE SIZE:</b>	
100 A, 240 VAC, 3 Ø, 4 - WIRE MINIMUM.	

LOAD CALCULATION: L.S. 65	
<b>MOTORS:</b>	
PUMP NO. 1:	10.0 HP, 240 VAC, 3 Ø, 28.0 A
PUMP NO. 2:	10.0 HP, 240 VAC, 3 Ø, 28.0 A
PUMP NO. 3:	10.0 HP, 240 VAC, 3 Ø, 28.0 A
MOTOR SUB-TOTAL	84.0 A
+ 25% OF LARGEST MOTOR	7.0 A
SUB-TOTAL	91.0 A
AUXILIARY EQUIPMENT	20.0 A
TOTAL MAXIMUM PHASE AMPERES	111.0 A
<b>SERVICE SIZE:</b>	
125 A, 240 VAC, 3 Ø, 4 - WIRE MINIMUM.	

TIMOTHY THOMAS P.E. No. 47079



RECORD DRAWINGS	DRAWN BY:		
SURVEYED BY:			
REVIEWED BY:			
PROJECT ENGINEER	DATE		
APPROVED BY:			
CITY ENGINEER MICHAEL D. QUILLIN, P.E. # 33721	DATE		

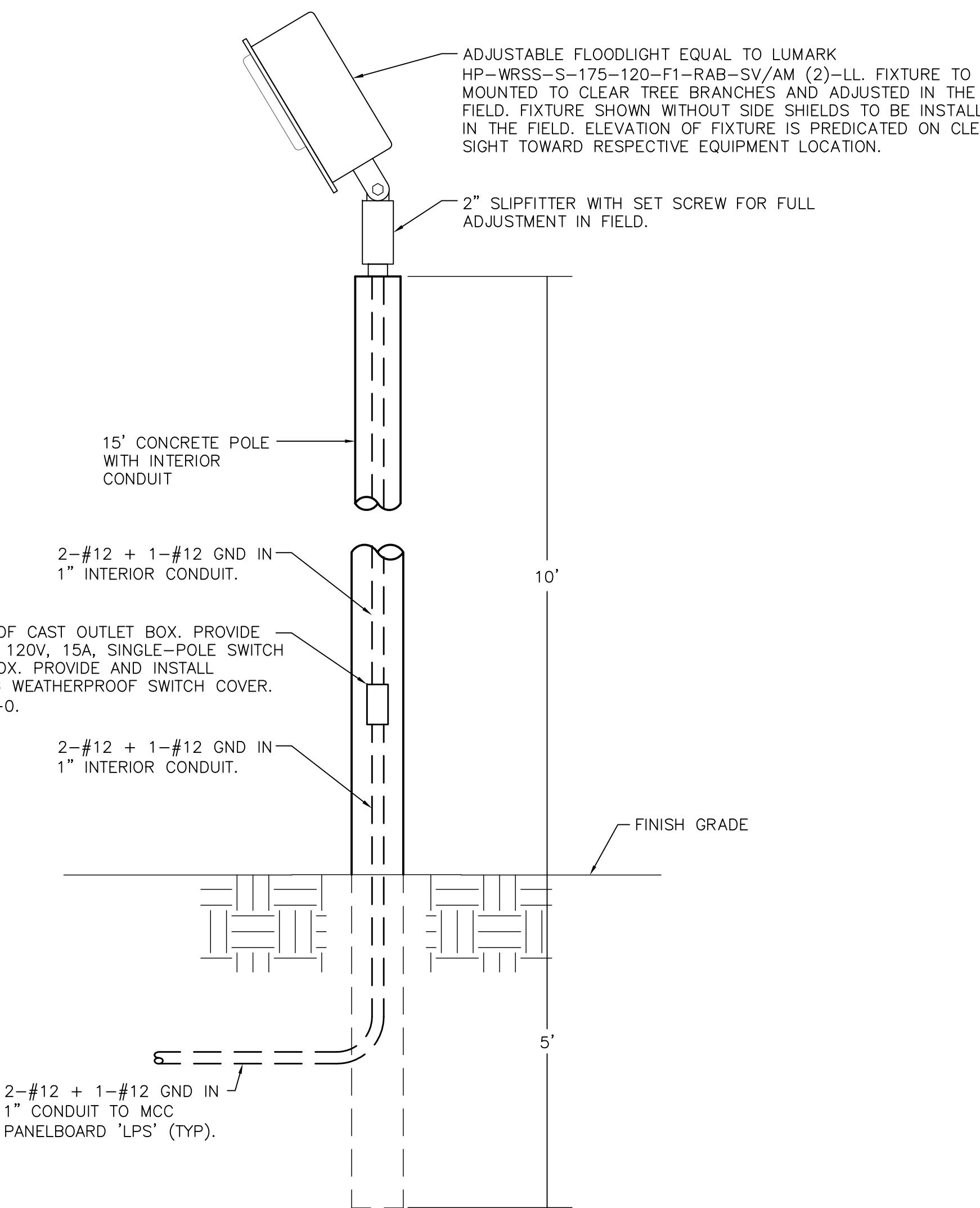
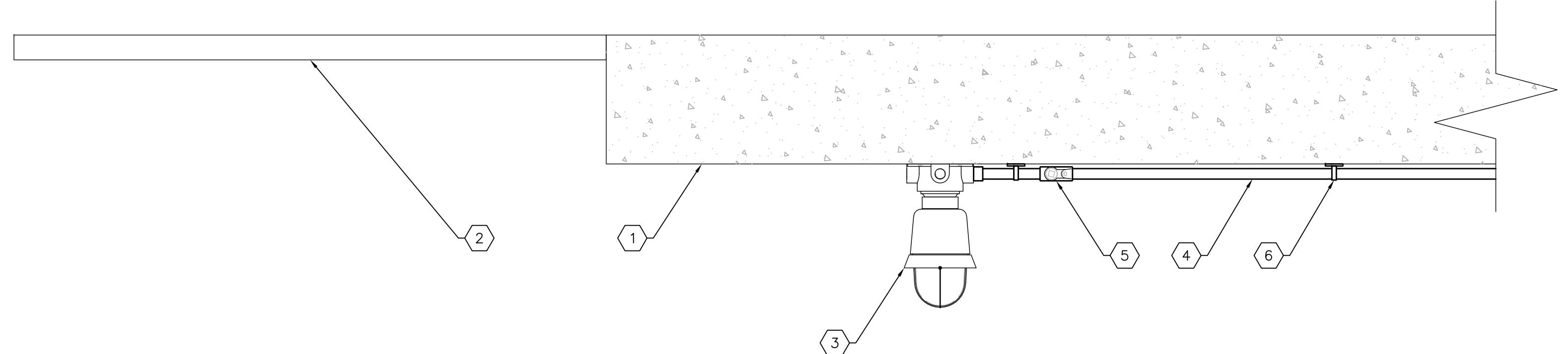
REVISION	BY	DATE
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CITY OF CLEARWATER, FLORIDA  
ENGINEERING DEPARTMENT  
100 S. MYRTLE AVE.  
CLEARWATER, FL 33756



## ELECTRICAL SCHEDULES AND LOAD CALCULATIONS

DWG NAME: <b>#</b>	FIELD BOOK: N/A	SURVEYED BY: CLEARWATER	SCALE: VERT. N/A
CONTRACT NO.: <b>#</b>	DATE DRAWN: <b>#</b>	DRAWN BY: JLH	HORIZ. N/A
JOB NO.: <b>#</b>	DESIGNED BY: TDT	CHECKED BY: TDT	SHEET NO: 36 OF 40
22609.19			
APPROVED FOR CONSTRUCTION			
CITY ENGINEER MICHAEL D. QUILLIN, P.E. # 33721	DATE		



**TYPICAL AREA LIGHT DETAIL**

SCALE : NONE

RECORD	DRAWINGS		
SURVEYED BY:	DRAWN BY:		
REVIEWED BY:			
PROJECT ENGINEER	DATE		
APPROVED BY:			
CITY ENGINEER MICHAEL D. QUILLEN, P.E. # 33721	DATE		

CITY OF CLEARWATER, FLORIDA  
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100 S. MYRTLE AVE.  
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## ELECTRICAL DETAILS

TIMOTHY THOMAS P.E. No. 47079

**TRICON**  
ENGINEERING

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Tampa, FL 33602  
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Certificate of Authorization No. 31028

DWG NAME:	FIELD BOOK:	SURVEYED BY:	SCALE:
####	N/A	CLEARWATER	VERT. N/A
CONTRACT NO.:	DATE DRAWN:	DRAWN BY:	
####	####	JLH	HORZ. N/A
JOB NO.:	DESIGNED BY:	CHECKED BY:	SHEET NO.:
22609.19	TDT	TDT	37 OF 40
APPROVED FOR CONSTRUCTION			
	CITY ENGINEER MICHAEL D. QUILLEN, P.E. # 33721		DATE

POWER CONDUIT AND CABLE SCHEDULE						
CONDUIT No.	QTY/SIZE	NUMER OF CONDUCTORS/SIZE	FROM	TO	REMARKS	
P1	1-1/4"	2-#6 + 1-#6 NEU + 1-#8 GND	PUMP CONTROL PANEL	PANELBOARD 'LP'		
P2	3/4"	2-#12 + 1-#12 GND	PUMP CONTROL PANEL	AREA LIGHT(S)	QUANTITY OF AREA LIGHTS DIFFERS BETWEEN LS 54 AND LS 65.	
P3	3/4"	2-#12 + 1-#12 GND	1ST AREA LIGHT	2ND AREA LIGHT	REFERS TO LS 65 ONLY.	
P4	3/4"	2-#12 + 1-#12 GND	PUMP CONTROL PANEL	WET WELL LIGHT		
P5	3/4"	4-#12 + 4-#12 NEU + 1-#12 GND	PANELBOARD 'LP'	PUMP CONTROL PANEL	120V POWER CIRCUITS FOR RECEPTACLE, LIGHTS AND CONTROLS.	
P6	3/4"	2-#10 + 1-#10 NEU + 1-#10 GND	PANELBOARD 'LP'	PANELBOARD 'LP' SURGE PROT	CONNECT SURGE PROTECTION DEVICE VIA NON-METALLIC FLEXIBLE CONDUIT.	
P7	1"	4-#12 + 2-#12 NEU + 1-#12 GND	PANELBOARD 'LP'	GENERATOR	120V POWER FOR GENERATOR BLOCK HEATER, ALTERNATOR HEATER AND BATTERY CHARGER.	
P8	3/4"	2-#12 + 1-#12 GND	PANELBOARD 'LP'	DFS CABINET	120V POWER FOR DFS CABINET.	
P9	2"	3-#10 + 1-#10 GND	PUMP CONTROL PANEL	WET WELL JUNCTION BOX	PUMP #1 POWER (LIFT STATION 54).	
P10	2"	3-#10 + 1-#10 GND	PUMP CONTROL PANEL	WET WELL JUNCTION BOX	PUMP #2 POWER (LIFT STATION 54).	
P11	2"	3-#8 + 1-#10 GND	PUMP CONTROL PANEL	WET WELL JUNCTION BOX	PUMP #1 POWER (LIFT STATION 65).	
P12	2"	3-#8 + 1-#10 GND	PUMP CONTROL PANEL	WET WELL JUNCTION BOX	PUMP #2 POWER (LIFT STATION 65).	
P13	2"	3-#8 + 1-#10 GND	PUMP CONTROL PANEL	WET WELL JUNCTION BOX	PUMP #3 POWER (LIFT STATION 65).	
P14	3/4"	2-#12 + 1-#12 GND	PANELBOARD 'LP'	FLOW METER TRANSMITTER	120V POWER FOR FLOW METER TRANSMITTER. COORDINATE CONNECTION REQUIREMENTS WITH FLOW METER MANUFACTURER.	
C1	2"	2/C-#16 TW + 4-#12 + 1-#12 GND	PUMP CONTROL PANEL	WET WELL JUNCTION BOX	LEVEL TRANSMITTER SIGNAL CABLE SHALL BE BELDEN 8719. REMAINING CONDUCTORS FOR FLOATS.	
C2	3/4"	4-#12 + 1-#12 GND	ATS	GENERATOR	GENERATOR STOP/START SIGNAL. COUNT INCLUDES SPARES.	
C3	1"	12-#12 + 1-#12 GND	ATS	DFS CABINET	SIGNALS FOR ATS IN AUTO, ATS IN MANUAL, UTILITY AVAILABLE, GENERATOR AVAILABLE AND ATS FAIL. COUNT INCLUDES SPARES.	
C4	1"	12-#12 + 1-#12 GND	GENERATOR	DFS CABINET	SIGNALS FOR GENERATOR RUNNING, GENERATOR IN AUTO, GENERATOR IN MANUAL AND GENERATOR FAIL. COUNT INCLUDES SPARES.	
C5	3/4"	2/C-#16 TWISTED SHIELDED	PUMP CONTROL CABINET	FLOW METER TRANSMITTER	4-20mA FLOW METER SIGNAL.	
C6	3/4"	2-#12 + 1-#12 GND	ATS	DFS CABINET	GENERATOR STOP/START SIGNAL FROM DFS (SCADA REMOTE START SIGNAL).	
C7	1"	TWO (2) 2/C-#16 TWISTED SHIELDED	PUMP CONTROL CABINET	DFS CABINET	4-20mA FLOW METER SIGNAL AND LEVEL TRANSMITTER SIGNAL. BOTH CABLES SHALL BE BELDEN 8719.	
C8	1-1/4"	30-#14 + 1-#14 GND	PUMP CONTROL PANEL	DFS CABINET	I/O SIGNALS BETWEEN PUMP CONTROL PANEL AND DFS CABINET. REFER TO DFS SCHEMATIC WIRING DIAGRAMS. COUNT INCLUDES SPARES.	
C9		2/C-#16 TWISTED SHIELDED	DFS CABINET	RAIN GAUGE	CABLE BY RAIN GAUGE MANUFACTURER. CABLE NOT SHOWN ON PLANS FOR CLARITY. PROVIDE CABLE GROMMET FOR DFS CABINET.	
C10	2"	EMPTY	DFS CABINET	DFS ANTENNA	CONDUIT FOR ANTENNA COAXIAL CABLE. CABLE TO BE INSTALLED BY DFS.	

PROPOSED PANEL SCHEDULE									
PANEL 'LP'	SQUARE D CO. QQ	120/240 VOLTS, 1Ø, 3W	60 AMP MAIN CIRCUIT BREAKER	35K AIC RATING	SURFACE ENCLOSURE TOP AT 5'-6" AFF				
EQUIPMENT SERVED		CIRCUIT BREAKER POLE AMPS FRAME	KVA/PHASE A B	CIRC. NO. 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16	CIRCUIT BREAKER POLE AMPS FRAME				EQUIPMENT SERVED
SURGE PROTECTION DEVICE		2 30 QOB		1 2 0.8 1.0 1 20 QOB	PUMP CONTROL PANEL RECEPTACLE				
" "		- - -		3 4 1.0 1 20 QOB	PUMP CONTROL PANEL LIGHTS				
GENERATOR BLOCK HEATER		2 20 QOB	1.2	5 6 0.4 1 20 QOB	PUMP CONTROL PANEL CONTROLS				
" "		- - -		1.2 7 8 0.4 1 20 QOB	PUMP CONTROL PANEL CONTROLS				
GENERATOR ALTERNATOR HEATER		1 20 QOB	0.8	9 10 0.6 1 20 QOB	DFS CABINET				
BATTERY CHARGER		1 20 QOB		1.0 11 12	SPACE				
FLOW METER TRANSMITTER		1 20 QOB	0.2	13 14	---	---	---	---	SPACE
SPARE		1 20 QOB		15 16	---	---	---	---	SPACE
SUB-TOTAL KVA		2.2 2.2		0.0 0.0					
TOTAL CONNECTED LOAD = 0.0 KVA					TOTAL DEMAND LOAD = 0.0 KVA				

TIMOTHY THOMAS P.E. No. 47079



RECORD DRAWINGS	DRAWN BY:									
SURVEYED BY:										
REVIEWED BY:										
PROJECT ENGINEER	DATE									
APPROVED BY:										
CITY ENGINEER MICHAEL D. QUILLIN, P.E. # 33721	DATE									
REVISION	BY	DATE								
CITY OF CLEARWATER, FLORIDA ENGINEERING DEPARTMENT 100 S. MYRTLE AVE. CLEARWATER, FL 33756					INVESTIGATE BEFORE YOU EXCAVATE <b>CALL 811</b> SUNSHINE STATE ONE CALL OF FLORIDA <a href="http://www.floridastateonecall.com">www.floridastateonecall.com</a> (800) 432-4770 MIN. 48 HOURS BEFORE YOU EXCAVATE	CONDUIT AND CABLE SCHEDULE AND PANEL SCHEDULE				
DWG NAME: ####	FIELD BOOK: N/A	SURVEYED BY: CLEARWATER	SCALE: VERT. N/A							
CONTRACT NO: ####	DATE DRAWN: ####	DRAWN BY: JLH	HORIZ. N/A							
JOB NO: 22609.19	DESIGNED BY: TDT	CHECKED BY: TDT	SHEET NO: 38 OF 40							
APPROVED FOR CONSTRUCTION										
CITY ENGINEER MICHAEL D. QUILLIN, P.E. # 33721 DATE										

### FUNCTION SYMBOL SCHEDULE

IDENTIFICATION LETTERS		
	FIRST LETTER	SUCCEEDING LETTERS
A	ANALYSIS	
B	BURNER, COMBUSTION	
C	CONDUCTIVITY	
D	DENSITY	DIFFERENTIAL
E	VOLTAGE	
F	FLOW RATE	RATIO (FRACTION)
G	GAGING	
H	HAND	
I	CURRENT (ELECTRICAL)	
J	POWER	SCAN
K	TIME, TIME SCHEDULE	TIME RATE OF CHANGE
L	LEVEL	
M	MOTOR	MOMENTARY
N	VIBRATION	
O	OPERATION	OFFSET
P	PRESSURE, VACUUM	
Q	QUANTITY, EVENT	INTEGRATE, TOTALIZE
R	RADIATION	
S	SPEED, FREQUENCY	SAFETY
T	TEMPERATURE	
U	MULTIVARIABLE	TREND
V	VISCOSITY	VACUUM
W	WEIGHT, FORCE, TORQUE	
X	UNCLASSIFIED	
Y		
Z	POSITION	

### LINE DESIGNATIONS

INSTRUMENTATION SIGNAL \_\_\_\_\_  
 ELECTRICAL POWER \_\_\_\_\_  
 DATA LINK —D— D—  
 RADIO LINK —R— R—  
 FIBER OPTIC DATA —F— F—

### MISCELLANEOUS NOTATIONS

S/D = SHUTDOWN  
 O/R = OVERRIDE  
 MCS = MASTER CONTROL STATION  
 VFD = VARIABLE FREQUENCY DRIVE  
 PCC = PROCESS CONTROL CABINET  
 LCP = LOCAL CONTROL PANEL  
 ES = ELECTRICAL SUPPLY (120VAC)

### CONTROLLER NOTATION

PV = PROCESS VARIABLE INPUT  
 SP = SET POINT INPUT  
 C = CONTROL OUTPUT

### INPUT/OUTPUT NOTATIONS

AI = ANALOG INPUT  
 AO = ANALOG OUTPUT  
 DI = DISCRETE INPUT  
 DO = DISCRETE OUTPUT

### HAND SWITCH NOTATION

HOA = HAND-OFF-AUTO

S/S = START/STOP

SEL = SELECTOR

O/C = OPEN/CLOSE

O/O = ON/OFF

LOS = LOCKOUT-START

LOR = LOCAL-OFF-REMOTE

OAC = OPEN-AUTO CLOSE

CAO = CLOSED-AUTO OPEN

### VALVE DESIGNATIONS

MOV = MOTOR OPERATED VALVE

### GENERAL ABBREVIATIONS

SCADA = SUPERVISORY CONTROL AND DATA ACQUISITION.

PLC = PROGRAMMABLE LOGIC CONTROL

SA = SURGE SUPPRESSOR DEVICE



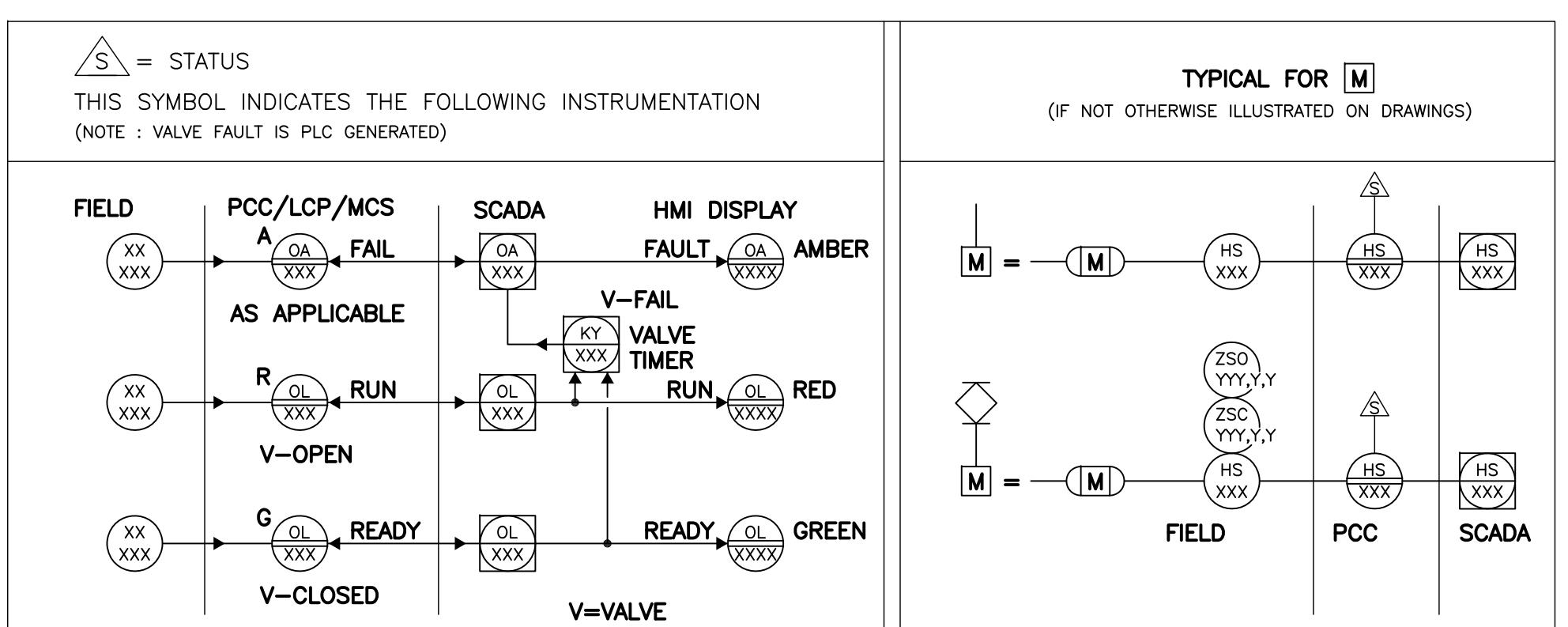
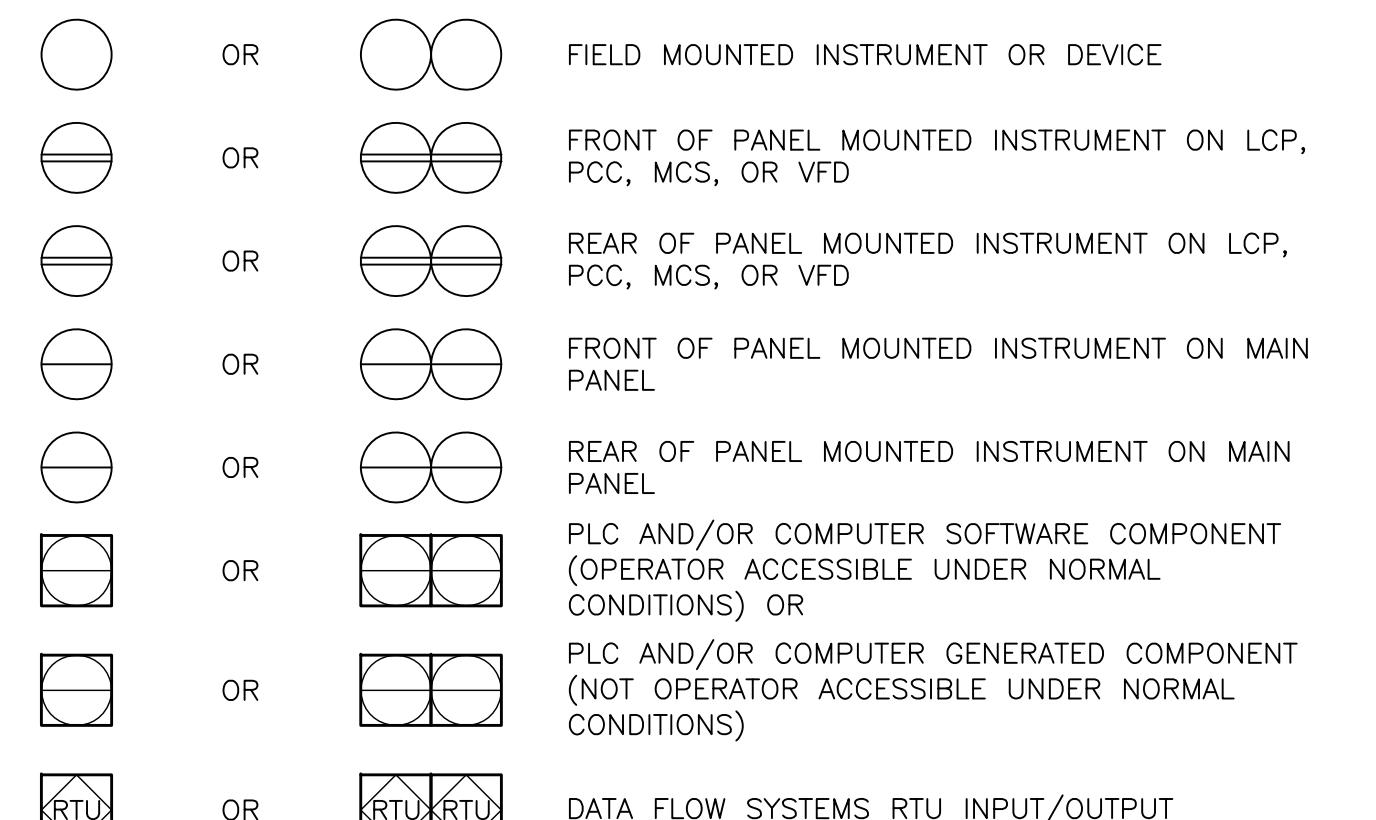
INTERLOCK

— I-3 —> CONTINUATION OF SIGNAL OR DATA  
TO/FROM SHEET NUMBER INDICATED

### BASIC SYMBOLS

SINGLE  
FUNCTION

MUTIPLE  
FUNCTION



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REVIEWED BY:			
PROJECT ENGINEER	DATE		
APPROVED BY:			
CITY ENGINEER MICHAEL D. QUILLEN, P.E. # 33721		DATE	

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 ENGINEERING DEPARTMENT  
 100 S. MYRTLE AVE.  
 CLEARWATER, FL 33756



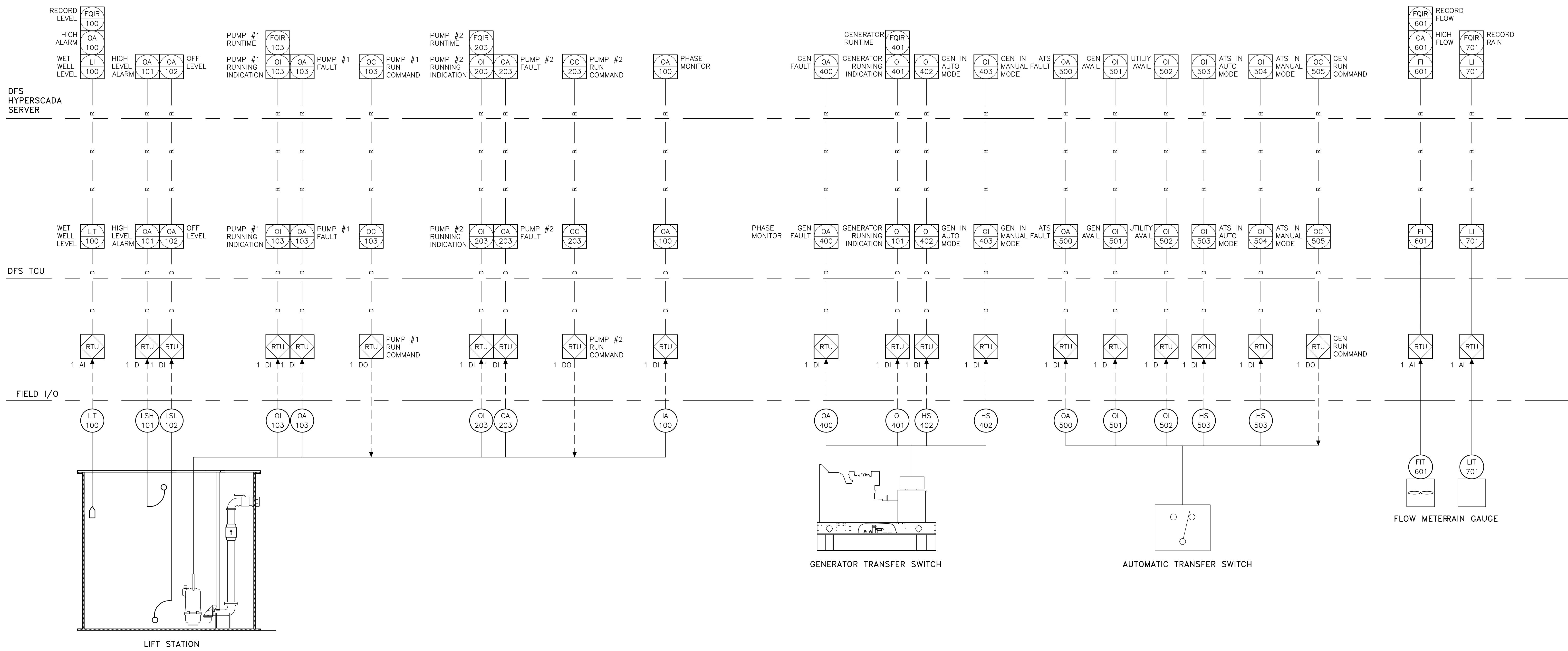
### INSTRUMENTATION LEGEND ABBREVIATIONS AND SYMBOLS

DWG NAME: <b>#</b>	FIELD BOOK: N/A	SURVEYED BY: CLEARWATER	SCALE: VERT. N/A
CONTRACT NO.: <b>#</b>	DATE DRAWN: <b>#</b>	DRAWN BY: JLH	HORIZ. N/A
JOB NO.: <b>#</b>	DESIGNED BY: TDT	CHECKED BY: TDT	39 OF 40
APPROVED FOR CONSTRUCTION			
CITY ENGINEER MICHAEL D. QUILLEN, P.E. # 33721 DATE			

TIMOTHY THOMAS P.E. No. 47079

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REVISION	BY	DATE

 CITY OF CLEARWATER, FLORIDA  
 ENGINEERING DEPARTMENT  
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 CLEARWATER, FL 33756


## LIFT STATION P&amp;ID'S

DWG NAME:	FIELD BOOK:	SURVEYED BY:	SCALE:
####	N/A	CLEARWATER	VERT. N/A
CONTRACT NO.:	DATE DRAWN:	DRAWN BY:	
####	####	JLH	HORIZ. N/A
JOB NO.:	DESIGNED BY:	CHECKED BY:	40 OF 40
22609.19	TDT	TDT	
APPROVED FOR CONSTRUCTION			
	CITY ENGINEER MICHAEL D. QUILLIN, P.E. # 33721		DATE