



City of Tampa
Jane Castor, Mayor

Contract Administration
Richard Mutterback, Director
306 East Jackson Street, 4N
Tampa, FL 33602

Office (813) 274-8116
Fax: (813) 274-7368

ADDENDUM 3

Via E-Mail

DATE: July 20, 2023

Contract: 22-C-00046; Northwest Ground Storage Tank Improvements

Bidders on the above referenced project are hereby notified that the following addendum is made to the Contract Documents. BIDS TO BE SUBMITTED SHALL CONFORM TO THIS NOTICE.

Item 1: The Bid Opening date is hereby changed to August 1, 2023.

Item 2: Replace PlansU with PLANSUR1 (Mar 2023)

Item 3: 22-C-00046 SECTION 16000 - 16950

Item 4: Questions and Answers

1. On Bid Item 4: Investigation Beneath Tank Floors, is the intent to produce a report similar in fashion and scope to the previous investigation at Morris Bridge, should this investigation survey the entire floor?
 - a. The entire floor should be surveyed. See prior addendum regarding the investigation at Morris Bridge.

2. Is the city covering the cost for the lead/asbestos testing? If not please specify a line item to carry the amount on the bid form.
 - a. The standard "upfront" documents for the City of Tampa speak to testing being performed by the City unless otherwise noted (G-5.01). We note otherwise within Specific Provision 18 Testing on Page SP-3 which states that all testing required shall be borne by the Contractor. If lead/asbestos testing is required, the cost shall be borne by the contractor.

3. What is the anticipated start date on the project?
 - a. The specifications included in the advertisement speak to required timing for topics such as the pre-construction meeting, mobilization, and substantial completion.

4. Please provide as built or quantify the linear feet of pipe requiring coatings of the Northwest GST Building carried in Line Item 21 of the Bid Form.
 - a. See Appendix A.

5. Please specify which permits/ authorizations are required for the project.
 - a. See G-1.02 WORK INCLUDED. Please note that this project site is within Hillsborough County's Jurisdiction, and they determined that no building permit is required. The specifications included in this advertisement speak to other testing and clearance requirements.

6. I do not see any advertisement for a prebid meeting. I assume there was not a mandatory prebid meeting. Also, is it possible to schedule a site visit to see the exterior of the tank?
 - a. No.

7. I assume there is no requirement for Davis Bacon Wage Rates. If so please attached wage determination.
 - a. No.

8. In spec section 09920 Table 3.07-1 Coating Systems for Interior Concrete, the DFT was not indicated. Please specify the required milage of each coating.
 - a. Adhere to Manufacturer Requirements.

9. Please revise bid form quantities to reflect the omission of the East GST at Morris Bridge PS.
 - a. The specific quantities associated with this comment are not clear.

10. Should the lead/asbestos testing prove their presence, will abatement costs be covered by the contingency fund?
 - a. Yes.

11. Is the existing coating and age known?
 - a. This information is not available. However, we do not believe the interior has been coated.

12. Please provide dimensions on the Northwest GST building- the height is needed to price lifts, etc.
 - a. Issued for Bid Plans dated March 2022 were included in the original advertisement. Please see the Issued for Bid Set dated March 2023.

13. Please indicate what electrical work is required per Bid Item 26.
 - a. See plans and note the addendum which includes Division 16 specifications which were accidentally omitted when the project was originally advertised.

14. 120 days is a short time frame for the work. Please allow an additional 60 days to compensate for repairs within the tank.
 - a. The 120-day requirement will remain due to operational constraints.

15. Will the tank be taken offline, drained, and cleaned by the city before the NTP?
 - a. After the pre-construction meeting and prior to mobilization to the site, the tank will be taken offline and drained as much as possible.

All other provisions of the Contract Documents and Specifications not in conflict with this Addendum shall remain in full force and effect. Questions are to be e-mailed to ContractAdministration@tampagov.net.

Jim Greiner

Jim Greiner, P.E., Contract Management Supervisor

CONSTRUCTION DRAWINGS
FOR THE

NORTHWEST GROUND STORAGE TANK
GROUND STORAGE TANK IMPROVEMENTS

MORRIS BRIDGE SECTION 23 TOWNSHIP 27 RANGE 19
NORTHWEST SECTION 30 TOWNSHIP 28 RANGE 18
TAMPA, HILLSBOROUGH COUNTY, FLORIDA

PREPARED FOR

CITY OF TAMPA WATER DEPARTMENT

City of Tampa Water Department
306 E. Jackson Street, 5N
Tampa, FL 33602

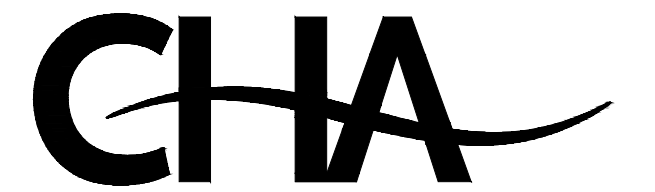


ISSUED FOR BID

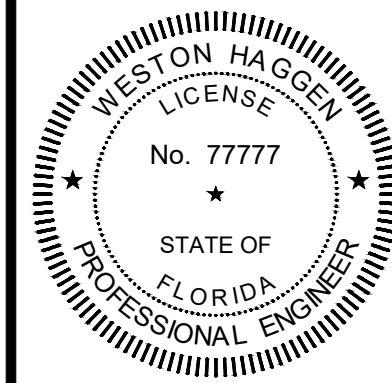
MARCH 2023

REI Project No. 0818

PROJECT TEAM



CHA CONSULTING, INC.
CERTIFICATE OF AUTHORIZATION #28386
3507 EAST FRONTAGE ROAD
TAMPA, FL 33607
TEL: (813) 549-0919
FAX: (813) 549-0922



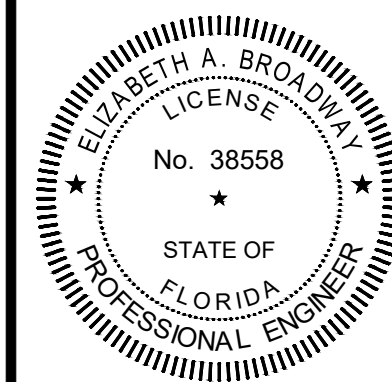
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THE ABOVE NAMED PROFESSIONAL ENGINEER SHALL BE RESPONSIBLE FOR THE FOLLOWING SHEETS IN ACCORDANCE WITH THE PROVISIONS OF SECTION 471.025, F.S., AND RULE 61G15-23, F.A.C.

GENERAL
G01, G02, G03, G04
CIVIL
C01, C02, C03, C04
DETAILS
C05, C06

B BROADWAY ENGINEERING, P.A.
CIVIL, MECHANICAL, STRUCTURAL AND BUILDING DESIGN
See Us At www.Broadway-Eng.Com
1335 W. Cass Street
Tampa, Florida 33606 813-251-9244
Fax 813-251-9330 Bus. Email: Info@Broadway-Eng.Com
Cadd. Email: DGorr@Broadway-Eng.Com
BE-5230 Certificate of Authorization No. 4599



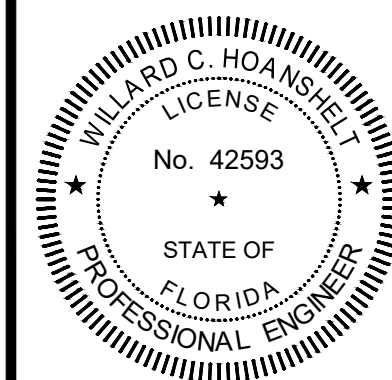
THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY ELIZABETH A. BROADWAY ON THE DATE ADJACENT TO THE SEAL.

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STRUCTURAL
S01, S02, S03, S04

EMI EMI CONSULTING SPECIALTIES, INC.
5742 River Bed Road
Groveland, FL 34736
COA# 6160 (407) 322-0500



THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY WILLARD C. HOANSHELTON ON THE DATE ADJACENT TO THE SEAL.

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ELECTRICAL
E01
INSTRUMENTATION
I01, I02

Parent Sheet Set: 0818_NW Rev/Plot by: MILLER, JAY Rev on: 3/10/2022 11:07 AM Individual File Path: G01

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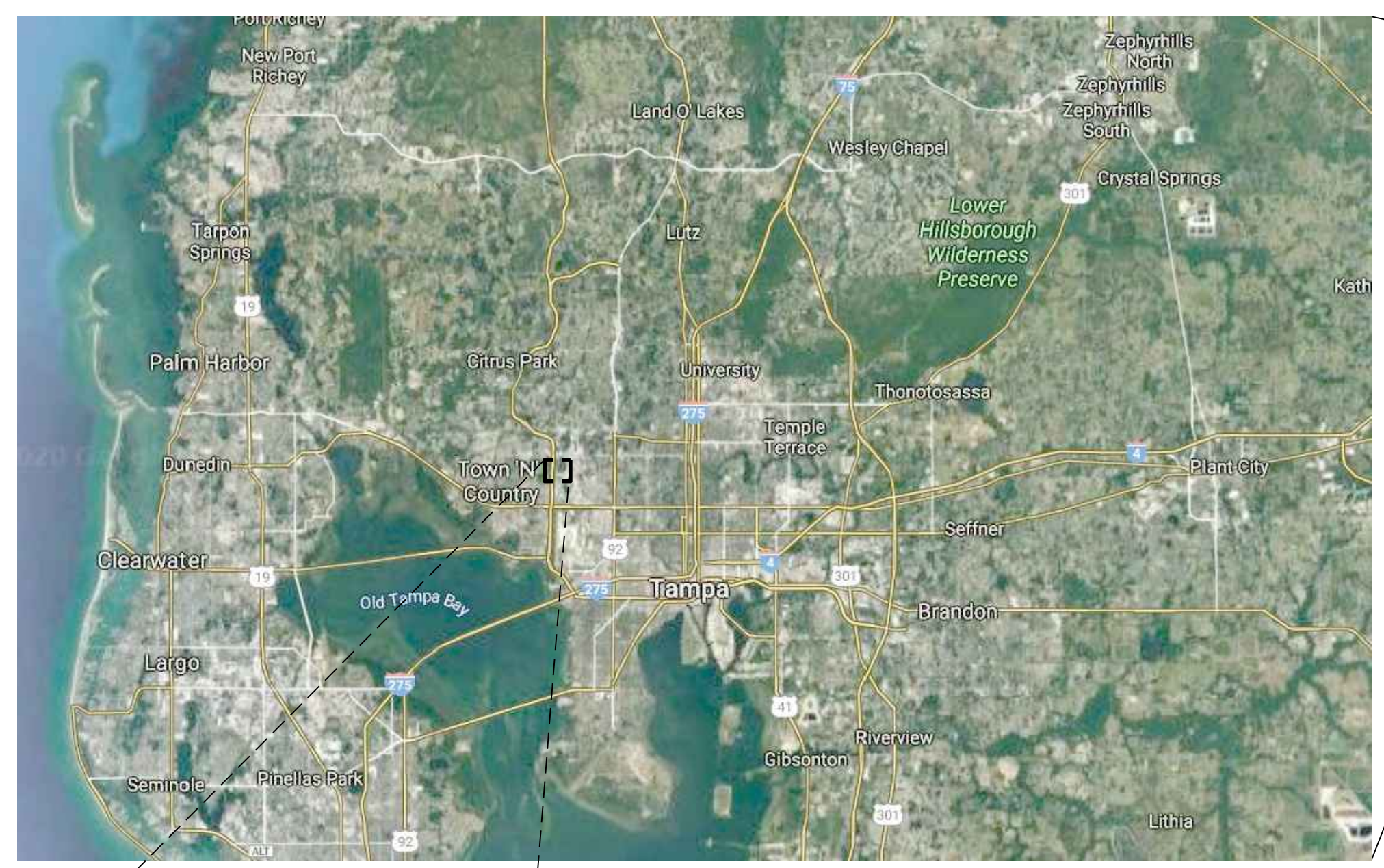


GENERAL NOTES

1. LOCATION, ELEVATIONS, AND DIMENSIONS OF EXISTING UTILITIES, STRUCTURES, AND OTHER FEATURES ARE SHOWN IN ACCORDANCE WITH THE BEST INFORMATION AVAILABLE AT TIME OF THE PREPARATION OF THESE PLANS, BUT DO NOT PURPORT TO BE ABSOLUTELY CORRECT.
2. THE CONTRACTOR SHALL VERIFY THE LOCATION, ELEVATION AND DIMENSIONS OF EXISTING UTILITIES, STRUCTURES AND OTHER FEATURES AFFECTING HIS WORK AND SHALL COMPLY WITH ALL STATE, AND LOCAL ORDINANCES AND OBTAIN ANY NECESSARY WORK PERMITS THAT MAY BE REQUIRED PRIOR TO CONSTRUCTION.
3. CONTRACTOR'S OPERATIONS, INCLUDING STAGING, PARKING, STORAGE OF MATERIALS, ETC, SHALL BE CONFINED TO THE PROJECT SITE. THE PROVISION OF ADDITIONAL SPACE FOR SUCH USE SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
4. THE CONTRACTOR SHALL ENDEAVOR TO PROTECT PRIVATE PROPERTY. ANY DAMAGE CAUSED BY THE CONTRACTOR IN THE PERFORMANCE OF HIS WORK SHALL BE CORRECTED TO THE SATISFACTION OF THE OWNER AT THE CONTRACTOR'S EXPENSE. PAYMENT SHALL NOT BE MADE FOR THIS WORK.
5. ANY DISTURBANCE CAUSED BY CONTRACTOR'S OPERATIONS TO ROADS, SIDEWALKS, GUTTERS OR OTHER STRUCTURES SHALL BE REPAIRED BY THE CONTRACTOR TO THE SATISFACTION OF THE OWNER. NO PAYMENT SHALL BE MADE FOR SUCH WORK.
6. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY WHEN CONFLICTS BETWEEN DRAWINGS AND ACTUAL CONDITIONS ARE DISCOVERED.
7. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS TO THE ENGINEER FOR REVIEW PRIOR TO ORDERING EQUIPMENT OR MATERIALS. ALL SUBMITTALS SHALL BE STAMPED AND SIGNED BY THE CONTRACTOR TO INDICATE CONFORMANCE WITH THE DRAWINGS AND SPECIFICATIONS. SUBMITTALS THAT ARE NOT STAMPED AND SIGNED WILL BE RETURNED WITHOUT REVIEW. PROCUREMENT OF ANY EQUIPMENT OR MATERIALS PRIOR TO ENGINEER'S REVIEW AND ACCEPTANCE OF SHOP DRAWINGS SHALL BE AT CONTRACTOR'S OWN RISK.
8. "SCREENED" (LIGHT) DELINEATION INDICATED ON THE DRAWINGS DENOTES EXISTING FACILITIES. "SCREENED" INFORMATION WAS TAKEN FROM EXISTING CONSTRUCTION DRAWINGS AND DATA, IS FOR REFERENCE ONLY, AND SHALL BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO THE ORDERING OF MATERIALS AND BEGINNING OF CONSTRUCTION. "BOLD" DELINEATION IS NEW WORK TO BE CONSTRUCTED UNDER THIS CONTRACT.
9. THE CONTRACTOR'S OPERATIONS SHALL CONFORM TO THE RULES AND REGULATIONS OF THE STATE CONSTRUCTION SAFETY ORDERS PERTAINING TO EXCAVATION AND TRENCHING.
10. THE DRAWINGS INDICATE TYPES OF PIPE SUPPORT SYSTEMS AT VARIOUS LOCATIONS. HOWEVER, ALL PIPE SUPPORTS, HANGERS, BRACKETS, INSERTS OR BRACES ARE NOT SHOWN. CONTRACTOR SHALL REFER TO THE SPECIFICATIONS AND PROVIDE A COMPLETE SUPPORT SYSTEM AS REQUIRED.
11. PRIOR TO COMMENCING WITH WORK ASSOCIATED WITH CONNECTIONS TO EXISTING INFRASTRUCTURE, CONTRACTOR SHALL FIELD VERIFY PRECISE LOCATION, ELEVATION, AND REQUIRED ARRANGEMENT OF CONNECTIONS. THIS SHALL INCLUDE EXPOSING EXISTING INFRASTRUCTURE TO THE EXTENT NECESSARY TO CONDUCT THESE INVESTIGATIONS. CONTRACTOR SHALL PROVIDE ALL FITTINGS, ADAPTERS, CLOSURE ASSEMBLIES, OFFSETS (TO ACCOUNT FOR DIFFERING CENTERLINE ELEVATIONS), ETC REQUIRED TO SUCCESSFULLY MAKE THE SUBJECT CONNECTION AS PER THE DESIGN INTENT.
12. ALL WORK ON THE CITY OF TAMPA'S POTABLE WATER INFRASTRUCTURE SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT'S TECHNICAL SPECIFICATIONS, CONSTRUCTION DETAILS, AND THE TAMPA WATER DEPARTMENT TECHNICAL MANUAL (LATEST EDITION). IN THE EVENT OF A DISCREPANCY, THE MOST STRINGENT CRITERIA SHALL APPLY.
13. NORMAL WORKING HOURS SHALL BE WEEKDAYS FROM 7:30 AM TO 4:00 PM UNLESS OTHERWISE APPROVED BY THE ENGINEER/INSPECTOR.
14. CONSTRUCTION OF POTABLE WATER INFRASTRUCTURE SHALL BE COORDINATED WITH THE WATER DEPARTMENT PRIOR TO THE START OF THE CONSTRUCTION. CONTRACTOR TO CONTACT CITY OF TAMPA CONTRACT ADMINISTRATION DEPARTMENT @ 813-635-3432 TO COORDINATE/SCHEDULE A PRE-CONSTRUCTION MEETING WITH THE CITY FOR REVIEW OF INSTALLATION TECHNIQUES AND PROCEDURES A MINIMUM OF 10 WORKING DAYS PRIOR TO THE PLANNED CONSTRUCTION.
15. VALVES ON EXISTING PUBLIC WATER MAINS TO BE OPERATED BY CITY PERSONNEL ONLY.
16. THE CONTRACTOR WILL BE RESPONSIBLE FOR SALVAGING EXISTING INFRASTRUCTURE TO THE CITY IF REQUESTED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DISPOSAL OF ALL MATERIAL NOT RETURNED TO THE CITY.
17. CONTRACTOR SHALL CONFORM TO 2020 FLORIDA BUILDING CODE, 7TH EDITION.



HILLSBOROUGH COUNTY



DRAWING INDEX

| SHEET | DRAWING | DESCRIPTION |
|---------------------------------------|---------|---|
| GENERAL | | |
| 01 | G01 | COVER |
| 02 | G02 | LOCATION MAP, GENERAL NOTES, AND DRAWING INDEX |
| 03 | G03 | ABBREVIATIONS |
| 04 | G04 | SYMBOLS AND LEGENDS |
| CIVIL | | |
| 05 | C01 | EXISTING SITES |
| 06 | C02 | NORTHWEST GST DEMOLITION PLAN AND PROFILE |
| 07 | C03 | NORTHWEST GST PLAN AND PROFILE |
| 08 | C04 | NORTHWEST GST STORAGE TANK COATING PLAN AND SECTION |
| DETAILS | | |
| 09 | C05 | DETAILS |
| 10 | C06 | DETAILS |
| STRUCTURAL | | |
| 11 | S01 | STORAGE TANK STRUCTURAL REPAIR PLAN |
| 12 | S02 | STORAGE TANK STRUCTURAL PLAN & ELEVATIONS |
| 13 | S03 | STORAGE TANK STRUCTURAL DETAILS |
| 14 | S04 | STORAGE TANK STRUCTURAL GENERAL NOTES |
| ELECTRICAL | | |
| 15 | E01 | NORTHWEST GST PLANS |
| INSTRUMENTATION & CONTROLS | | |
| 15 | I01 | SYMBOLS |
| 17 | I02 | GST P&ID |



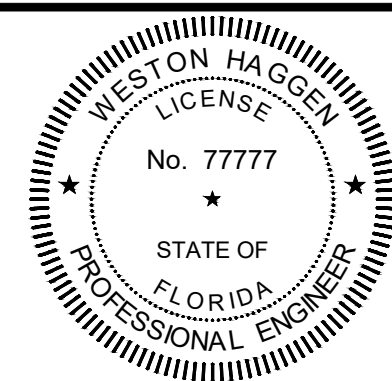
NORTHWEST GST
5600 W SITKA ST
TAMPA, FL 33614

LOCATION MAP
SCALE: N.T.S.

Parent Sheet Set:0818_NW Rev/Plot by: MILLER, JAY Rev on: 3/10/2022 10:14 AM Individual File Path: G02



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| Designed | ESW |
| Drawn | PFH |
| Checked | WTH |
| Reviewed | GWD |
| Approved | WTH |

CITY OF TAMPA WATER DEPARTMENT
GROUND STORAGE TANKS IMPROVEMENTS

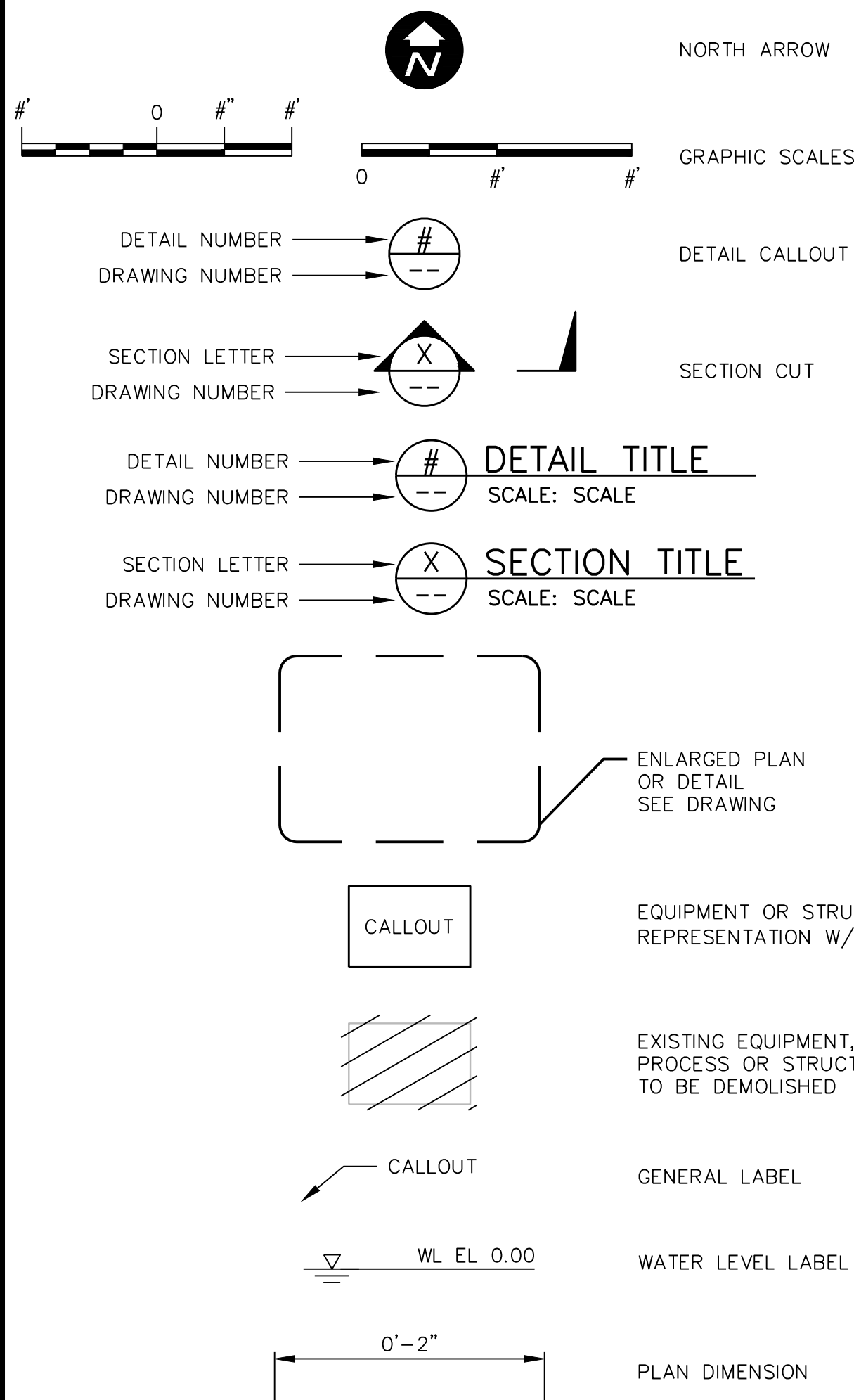
GENERAL

LOCATION MAP, GENERAL NOTES, AND DRAWING INDEX

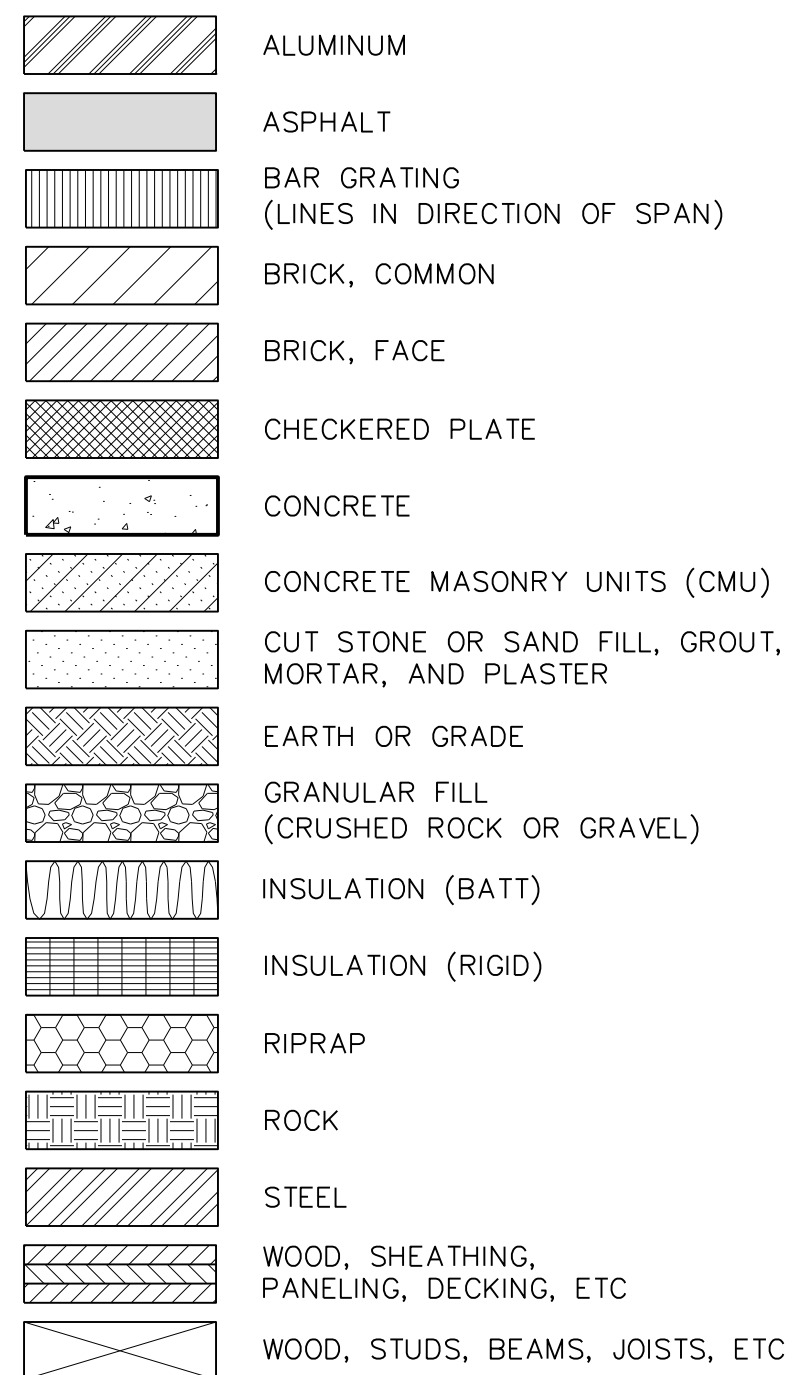
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| SCALE: | NOTED | REVISION: 0 |
| DRAWING NO.: | G02 | SHEET NO.: 02 OF 17 |



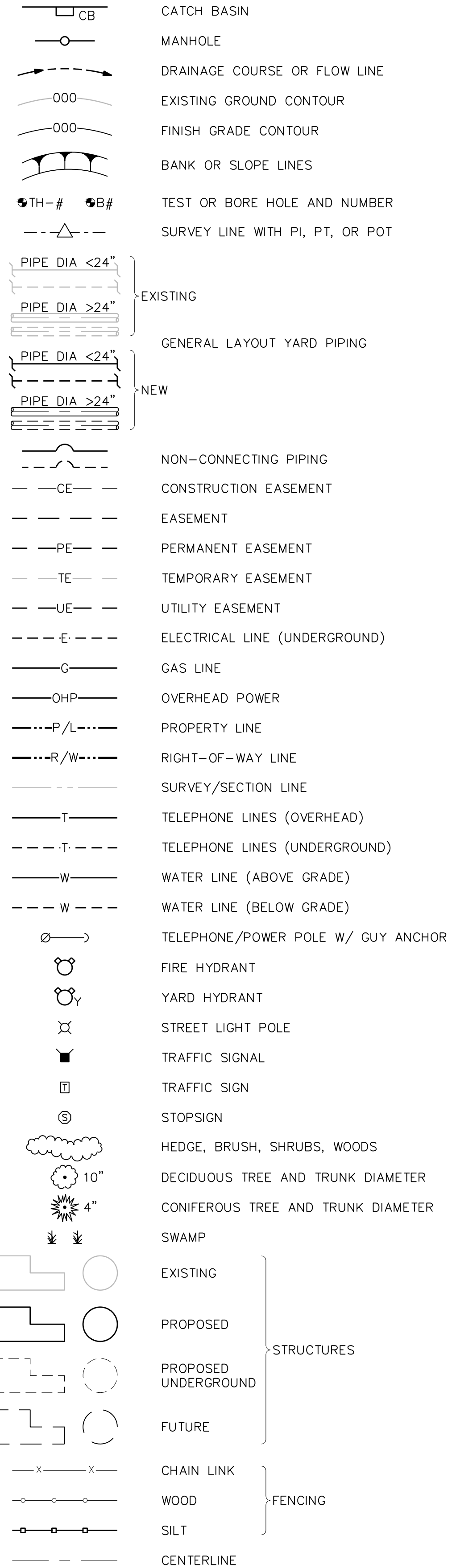
GENERAL DRAFTING LEGEND



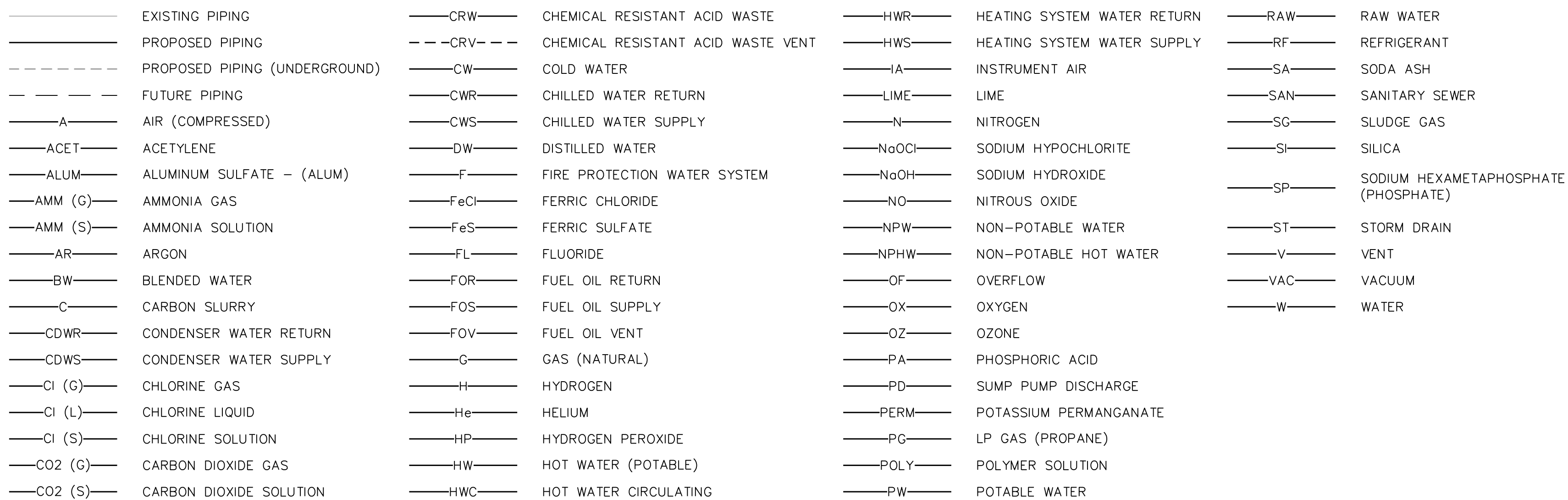
MATERIALS LEGEND



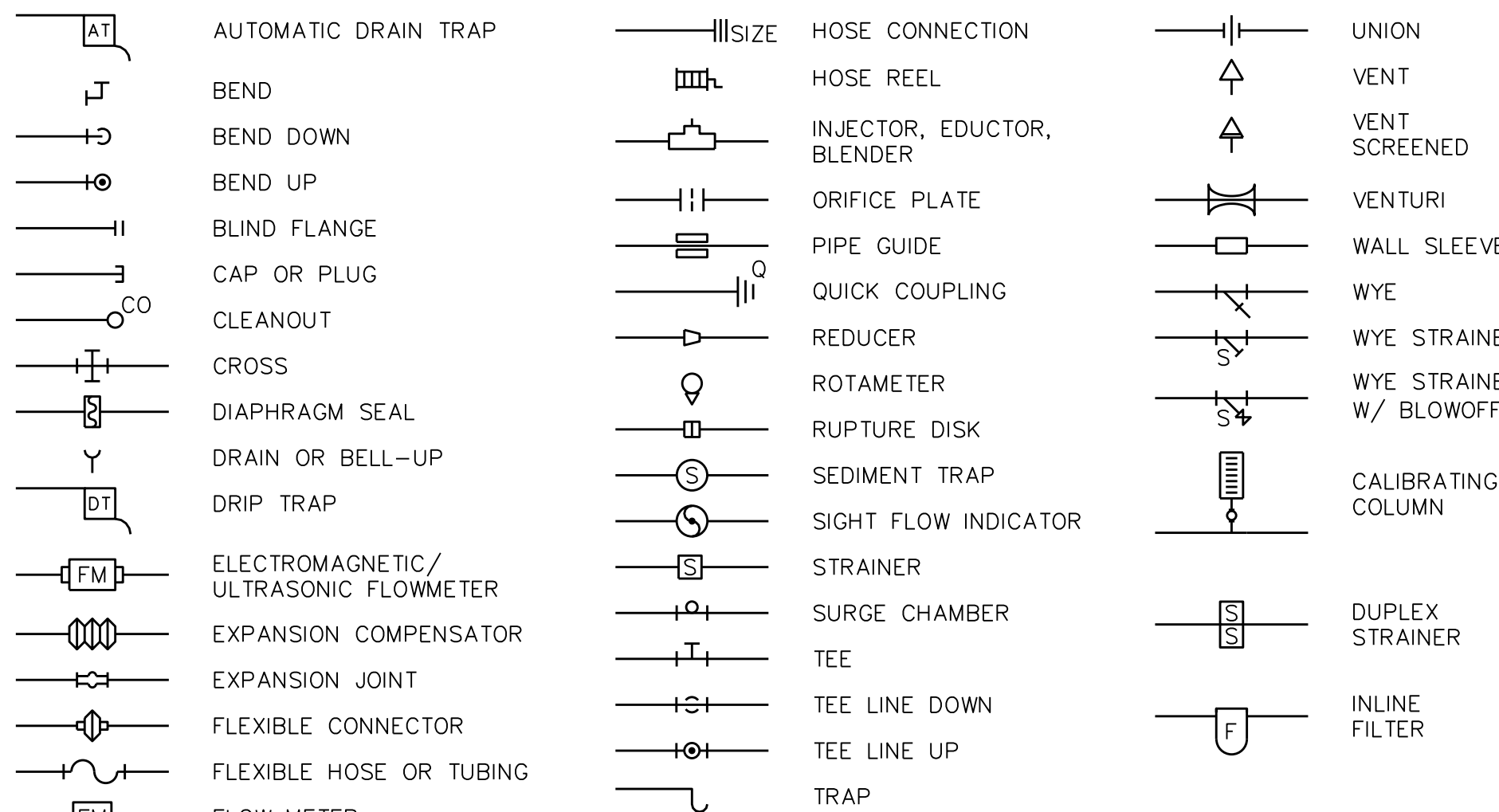
CIVIL LEGEND



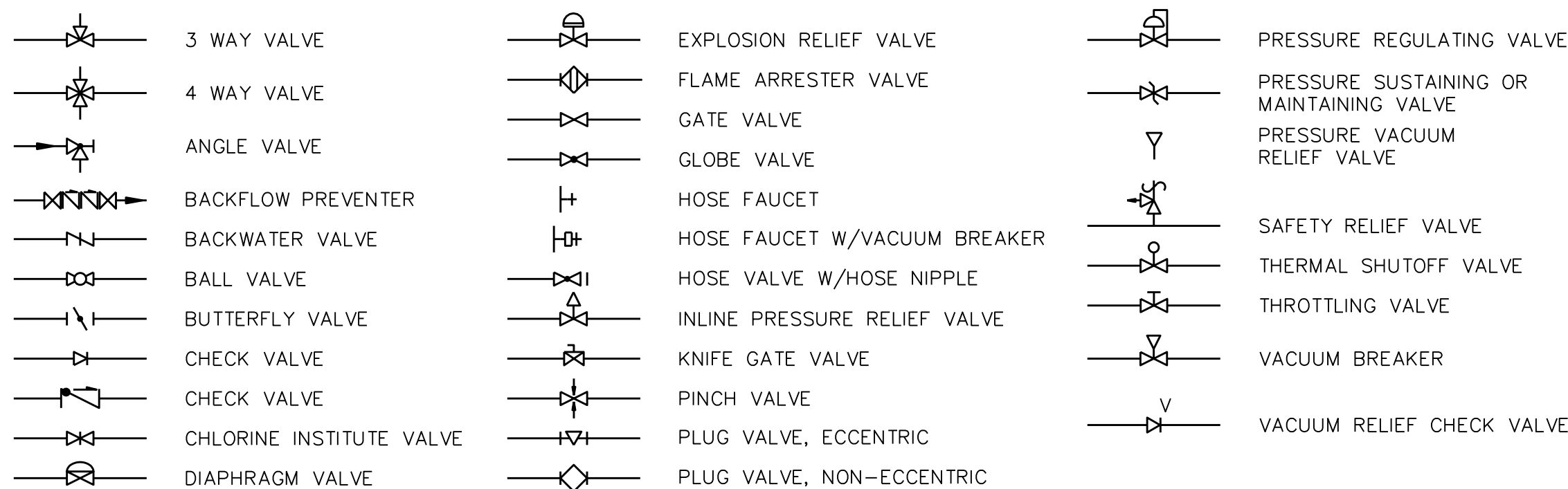
PIPING SYSTEMS LEGEND



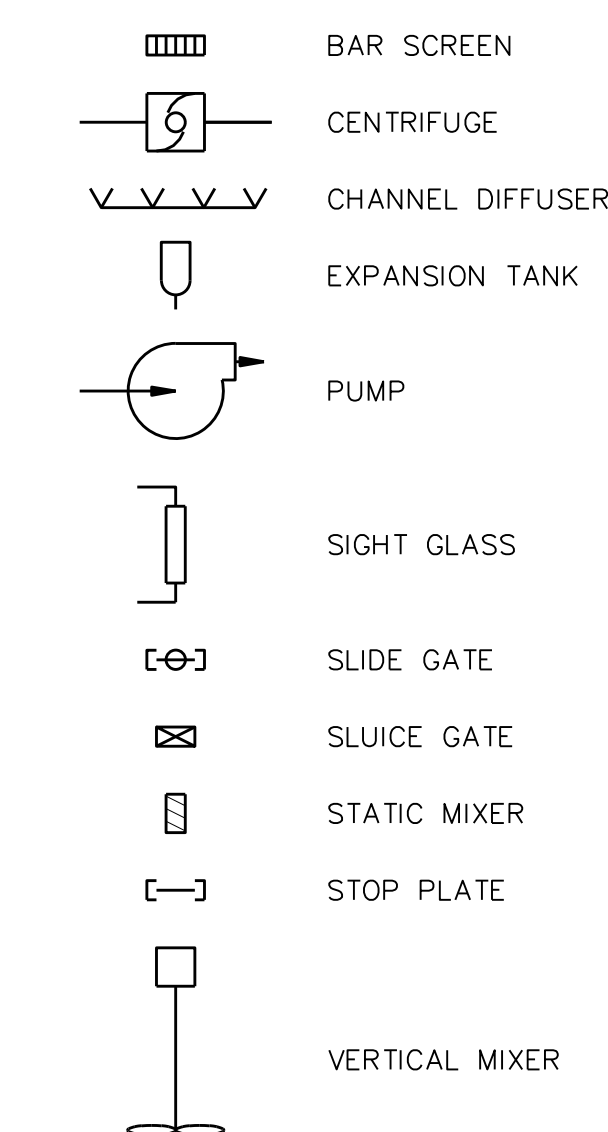
PIPING ACCESSORIES LEGEND



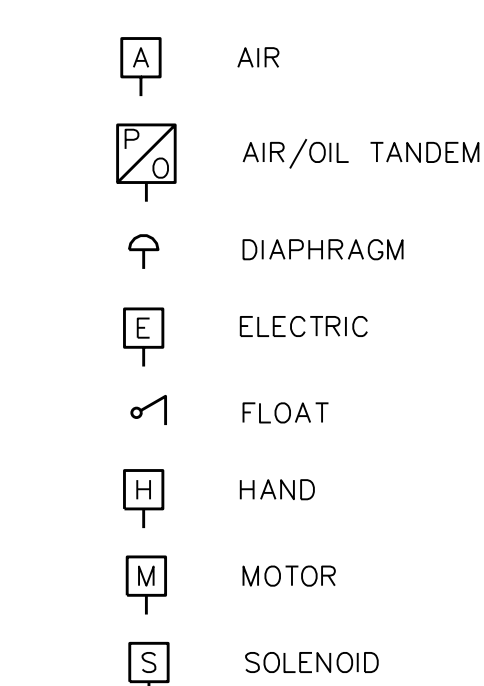
VALVE LEGEND



MISCELLANEOUS EQUIPMENT LEGEND



ACTUATOR LEGEND

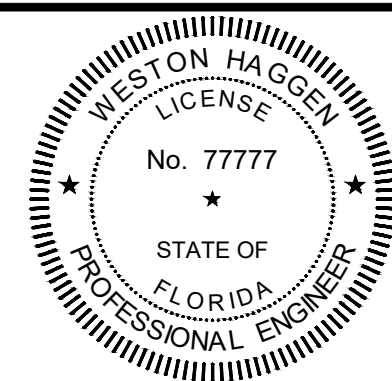


NOTE: THIS LEGEND IS FOR GENERAL REFERENCE. NOT ALL SYMBOLS, PROCESSES, MATERIALS, OR FITTINGS MAY BE USED IN THIS DESIGN, NOR IS THIS LEGEND COMPREHENSIVE. REFER TO INDIVIDUAL DRAWING LEGEND(S), IF SYMBOLS ARE NOT LISTED. INDIVIDUAL DISCIPLINE STANDARD LEGENDS SUPERCEDE THIS GENERAL LEGEND, IF PROVIDED.

Rev on: 3/10/2022 10:32 AM Individual File Path: G04



| 0 | 03/2022 | ISSUED FOR BID | AJM |
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| | |
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| Designed | ESW |
| Drawn | PFH |
| Checked | WTH |
| Reviewed | GWD |
| Approved | WTH |

CITY OF TAMPA WATER DEPARTMENT
GROUND STORAGE TANKS IMPROVEMENTS

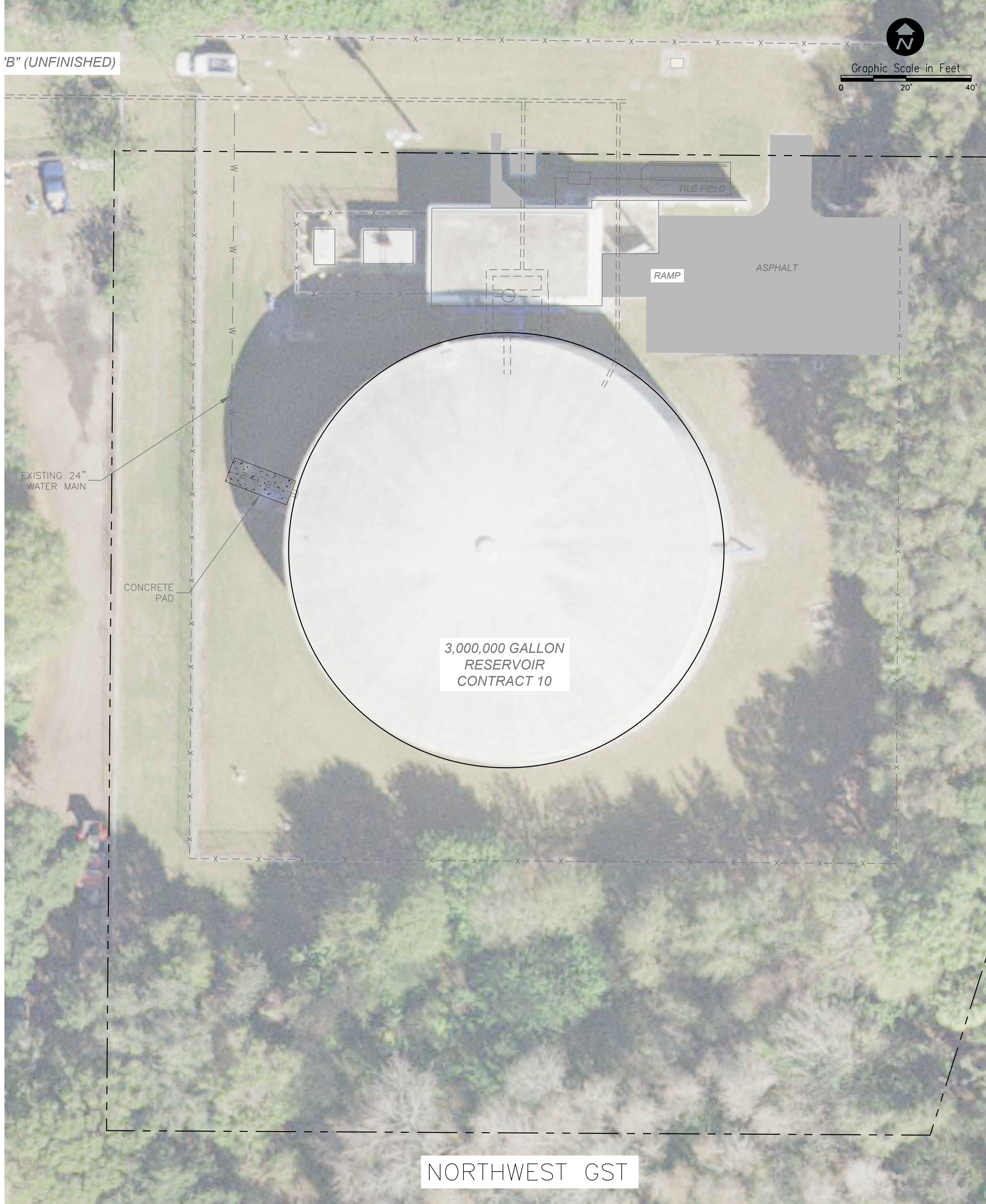
GENERAL

SYMBOLS AND LEGENDS

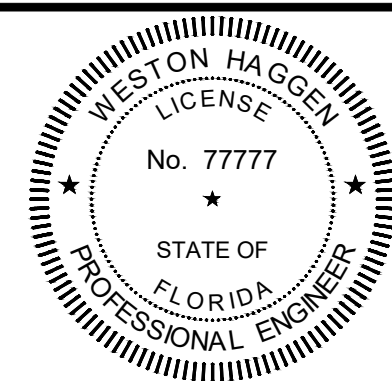
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| DRAWING NO.: | G04 |
| SHEET NO.: | 04 OF 17 |



Parent Sheet Set: 0818_NW Rev/Plot by: MILLER, JAY Rev on: 3/10/2022 10:59 AM Individual File Path: C01



| REV | DATE | DESCRIPTION | BY |
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Designed ESW
 Drawn PFH
 Checked WTH
 Reviewed ---
 Approved WTH

LINE IS 1" AT FULL SIZE

CITY OF TAMPA WATER DEPARTMENT
 GROUND STORAGE TANKS IMPROVEMENTS

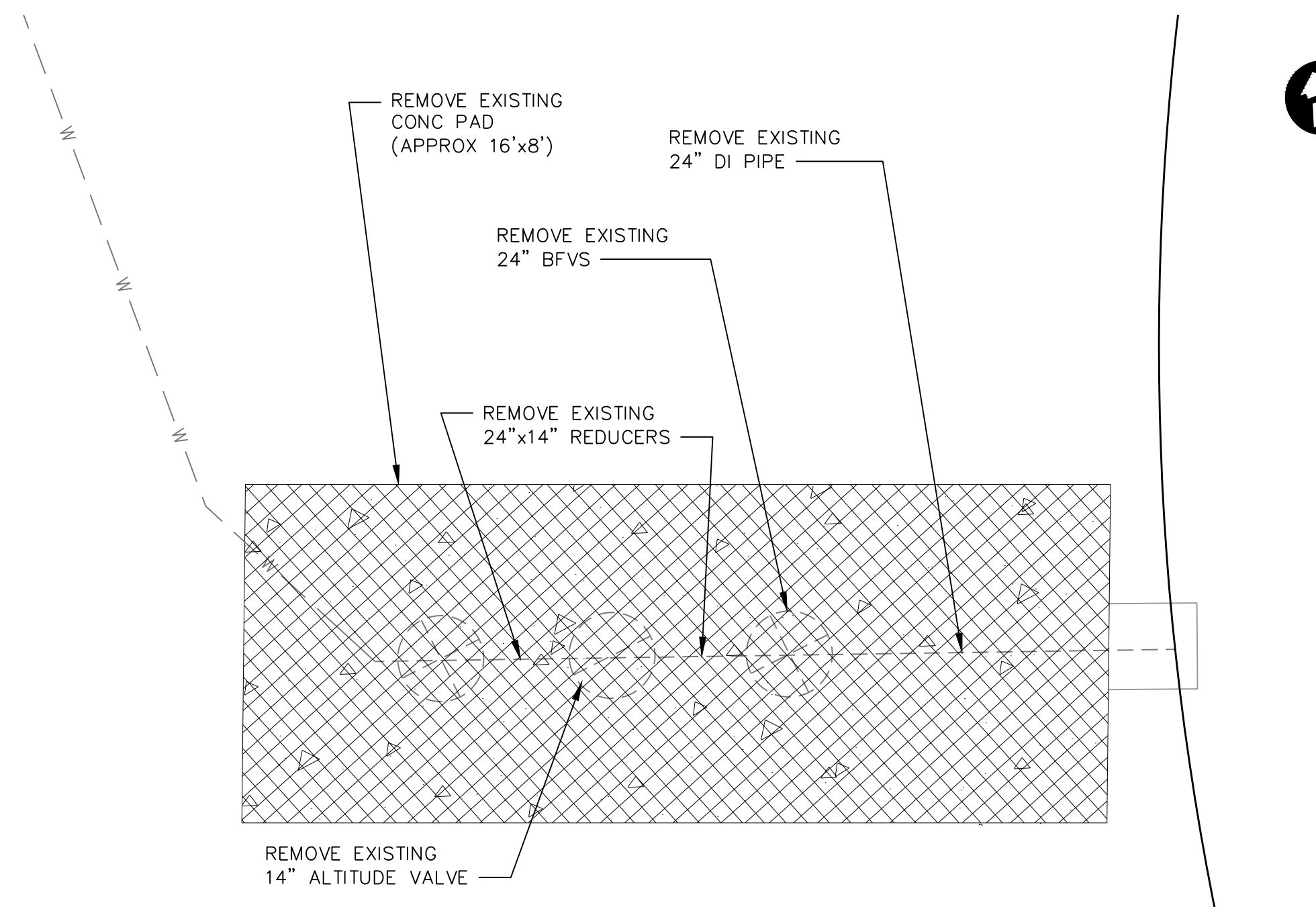
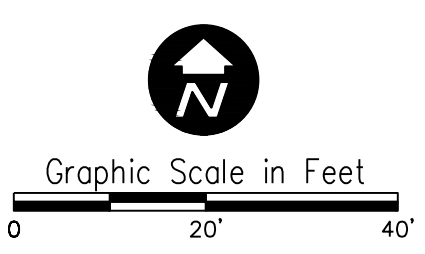
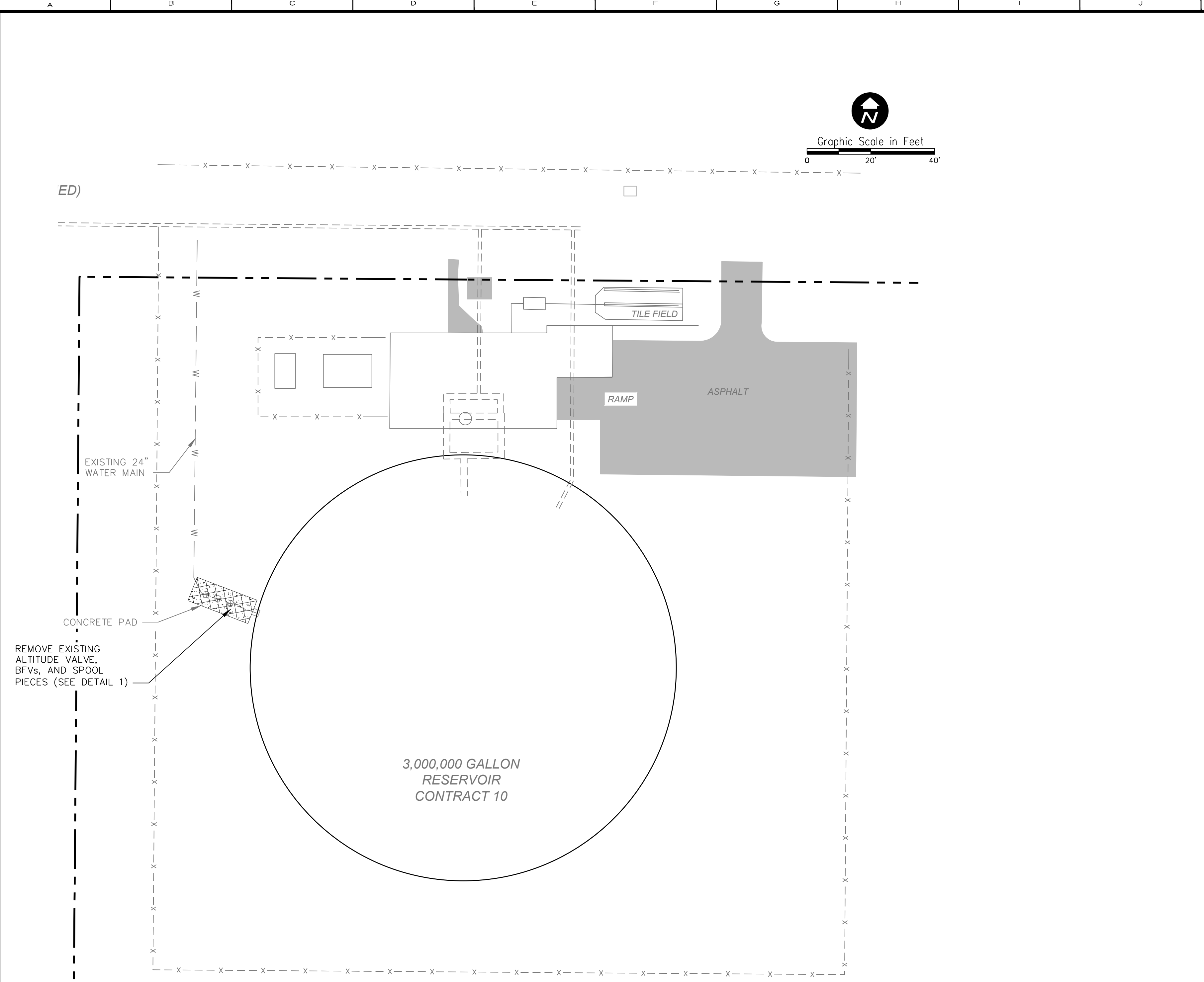
CIVIL

EXISTING SITES

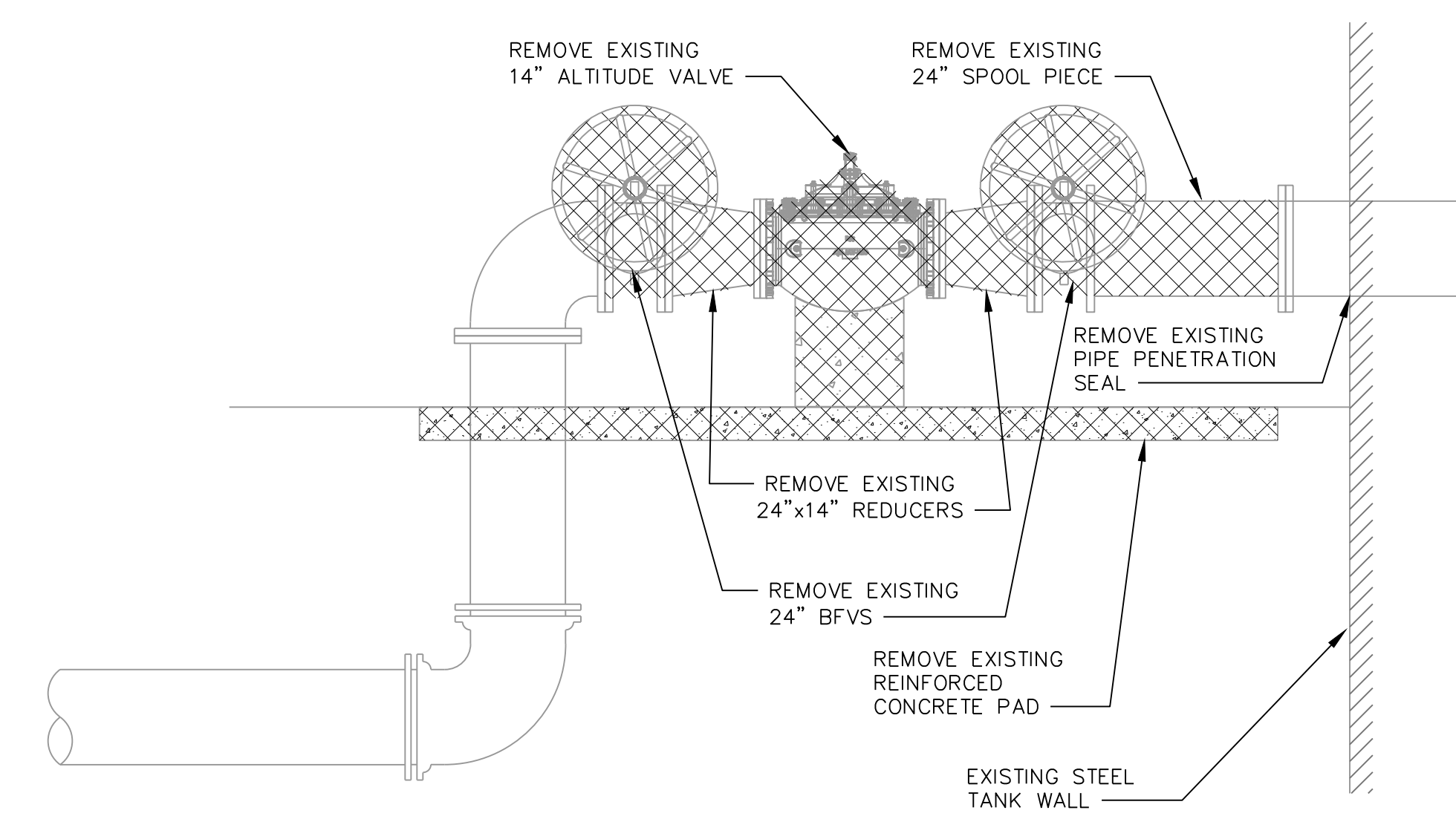
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| SCALE: NOTED | REVISION: 0 |
| DRAWING NO. C01 | SHEET NO.: 05 OF 17 |



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 Rev/Plot by: MILLER, JAY
 Rev on: 3/10/2022 10:50 AM
 Individual File Path: C02



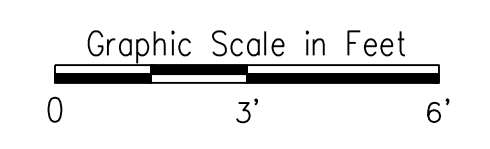
PLAN



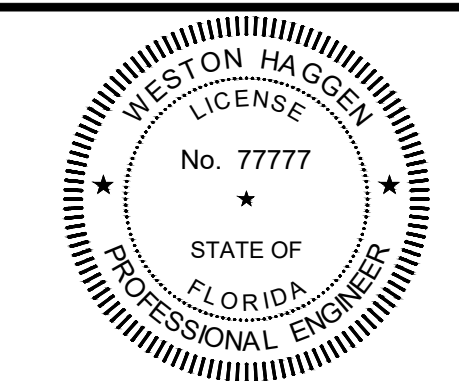
PROFILE

- NOTES:
- CONTRACTOR SHALL PROVIDE CITY OF TAMPA WATER DEPARTMENT STAFF WITH A MINIMUM OF 2 WEEKS NOTICE PRIOR TO DEMOLITION OR ISOLATION OF EXISTING PIPING SO THAT THE CITY CAN MAKE APPROPRIATE PREPARATIONS.
 - DEMOLITION SHOWN ON THIS SHEET SHALL NOT BE PERFORMED UNTIL THE REQUIRED DEAD-MAN THRUST COLLAR AND TWO ISOLATION VALVES ARE INSTALLED.

1 DEMOLITION PLAN AND PROFILE DETAIL
 SCALE: ---



| REV | DATE | DESCRIPTION | BY |
|-----|---------|----------------|-----|
| 0 | 03/2022 | ISSUED FOR BID | AJM |



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Designed ESW
 Drawn PFH
 Checked WTH
 Reviewed GWD
 Approved WTH
 SCALE: 1" = 12' AT FULL SIZE

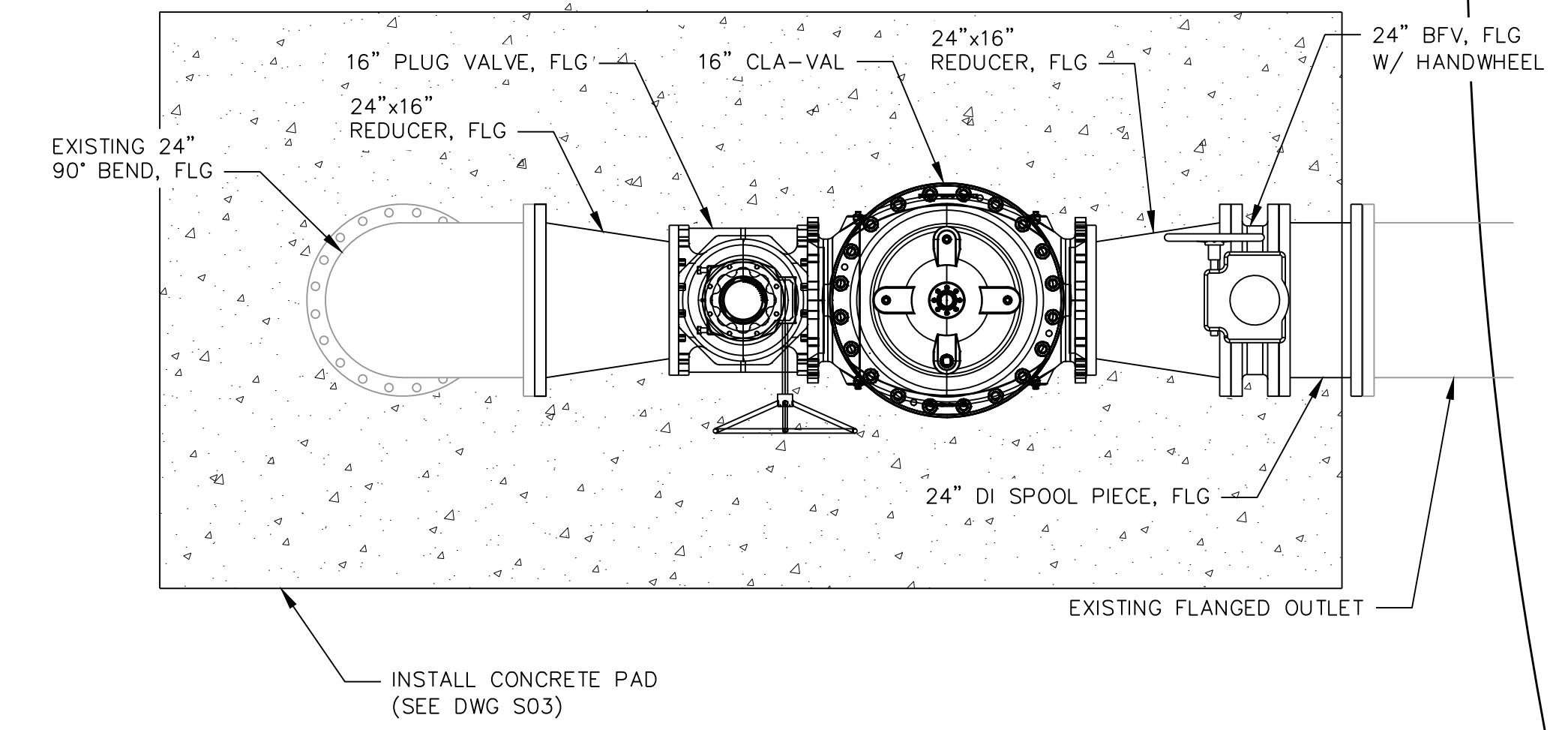
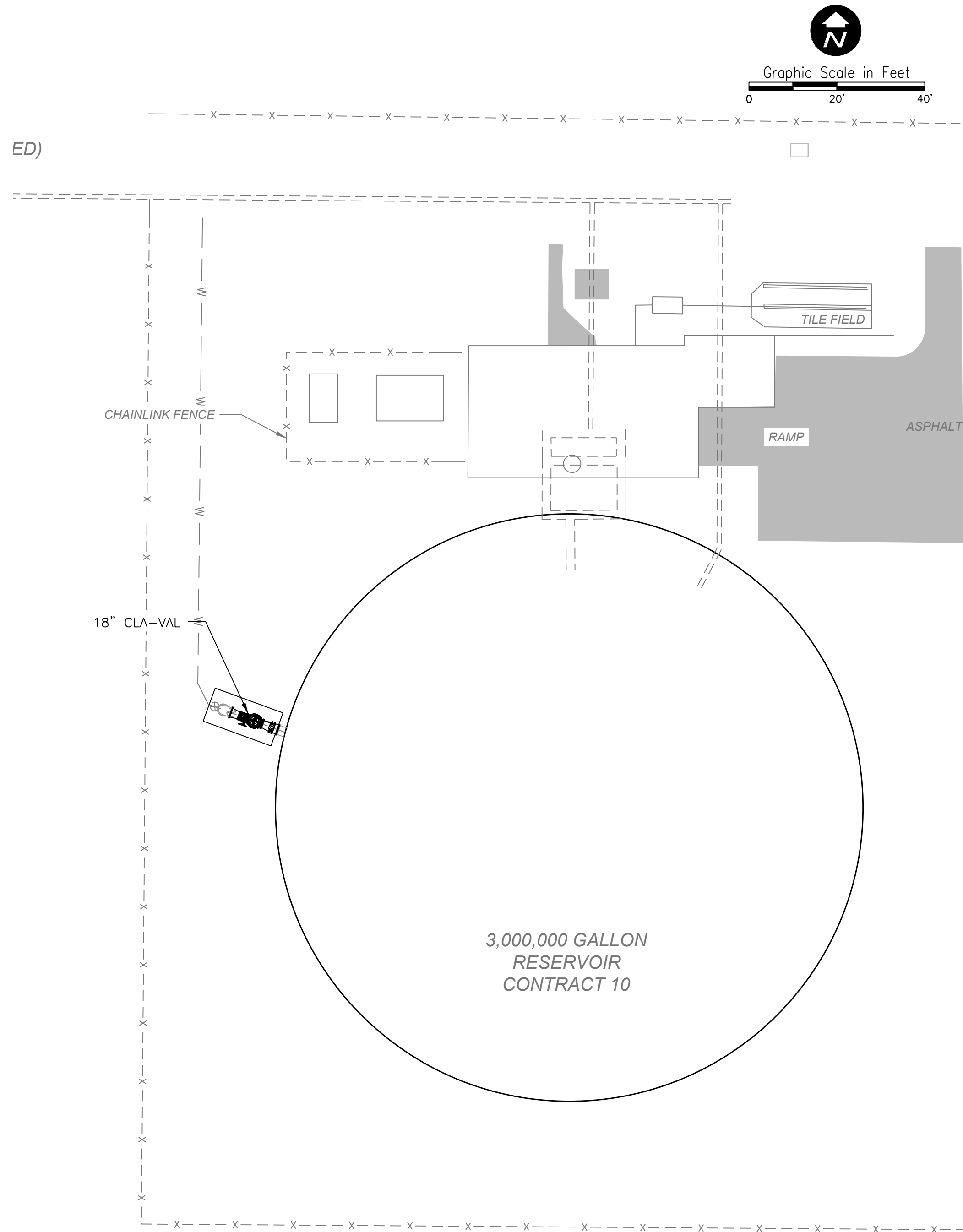
CITY OF TAMPA WATER DEPARTMENT
 GROUND STORAGE TANKS IMPROVEMENTS
 CIVIL
NORTHWEST GST DEMOLITION PLAN AND PROFILE

| | |
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| PROJECT NO.: 0818 | |
| SCALE: NOTED | REVISION: 0 |
| DRAWING NO. C02 | SHEET NO.: 06 OF 17 |

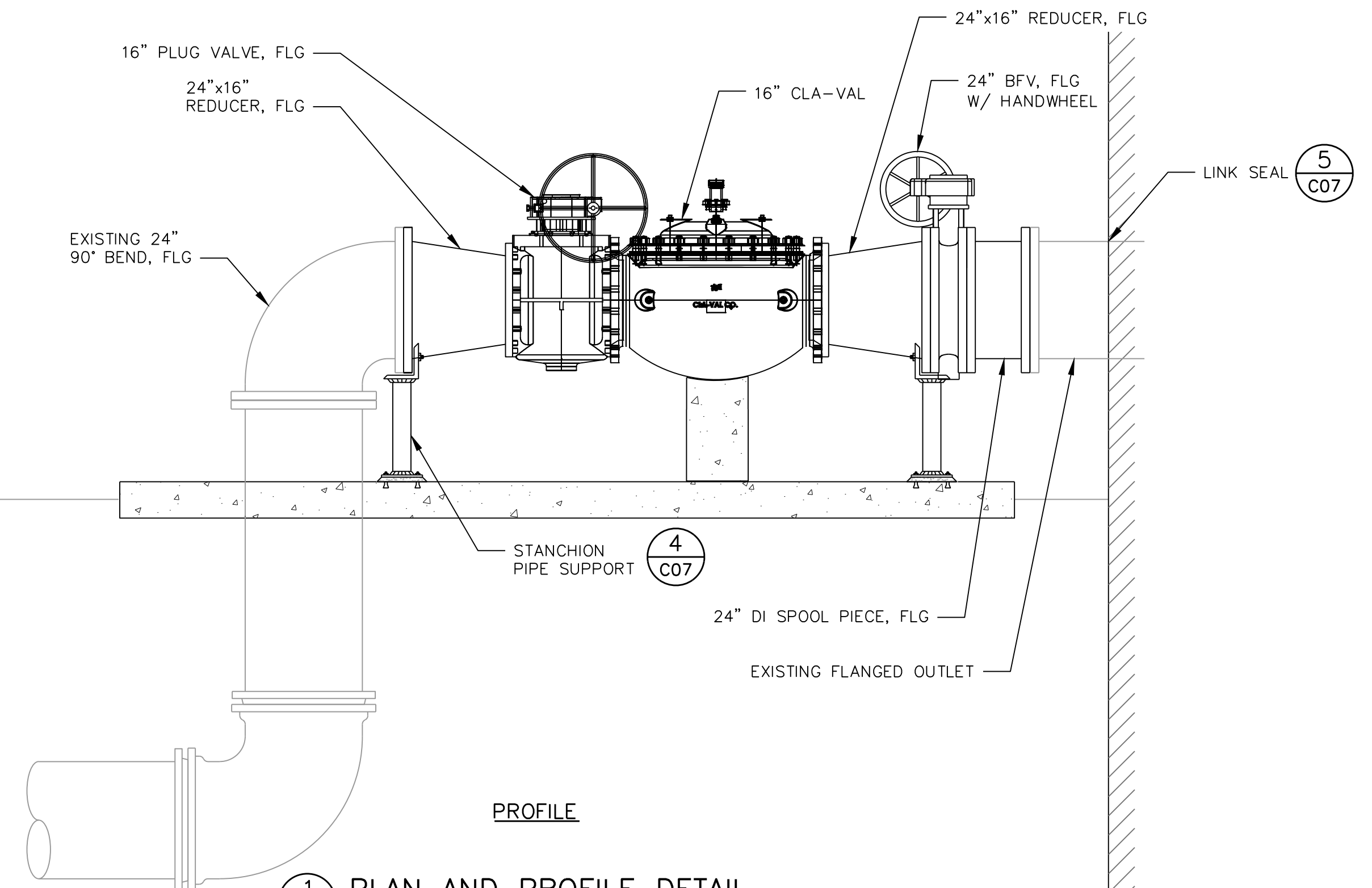


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ED)



PLAN



PROFILE

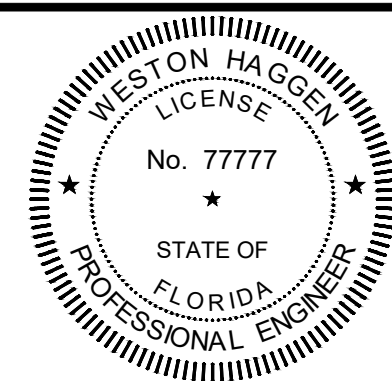
1 PLAN AND PROFILE DETAIL

SCALE: Graphic Scale in Feet
0 2' 4'

- NOTES:
- CONTRACTOR SHALL PROVIDE THE TAMPA WATER DEPARTMENT STAFF WITH A MINIMUM OF 2 WEEKS NOTICE PRIOR TO DEMOLITION OR ISOLATION OF EXISTING PIPING SO THAT THE CITY CAN MAKE APPROPRIATE PREPARATIONS.
 - CONCRETE THRUST COLLAR SHALL BE INSTALLED AND DEEMED FULLY FUNCTIONAL PRIOR TO COMMENCEMENT OF ANY EXCAVATION OR PIPE MODIFICATION.
 - ALL BELOW GRADE JOINTS SHALL BE MECHANICAL JOINT AND RESTRAINED. ALL ABOVE GRADE JOINTS SHALL BE FLANGED UNLESS OTHERWISE NOTED.
 - ALL BURIED DUCTILE IRON PIPE SHALL BE POLY WRAPPED AS PER THE SPECIFICATIONS.
 - ALL ABOVE GRADE PIPING, FITTING AND ISOLATION VALVES SHALL BE FACTORY PRIMED COATED AND PAINTED IN FIELD PER THE SPECIFICATIONS.



| REV | DATE | DESCRIPTION | BY |
|-----|---------|----------------|-----|
| 0 | 03/2022 | ISSUED FOR BID | AJM |



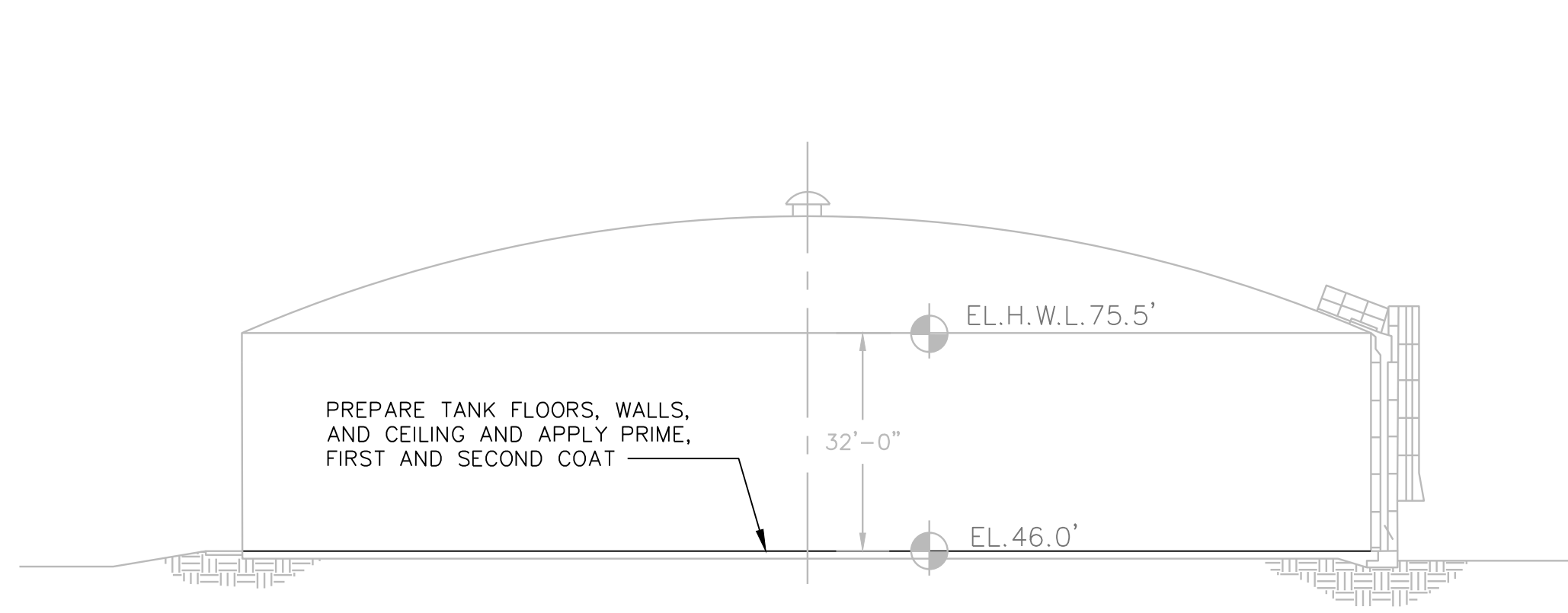
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| Approved | WTH |

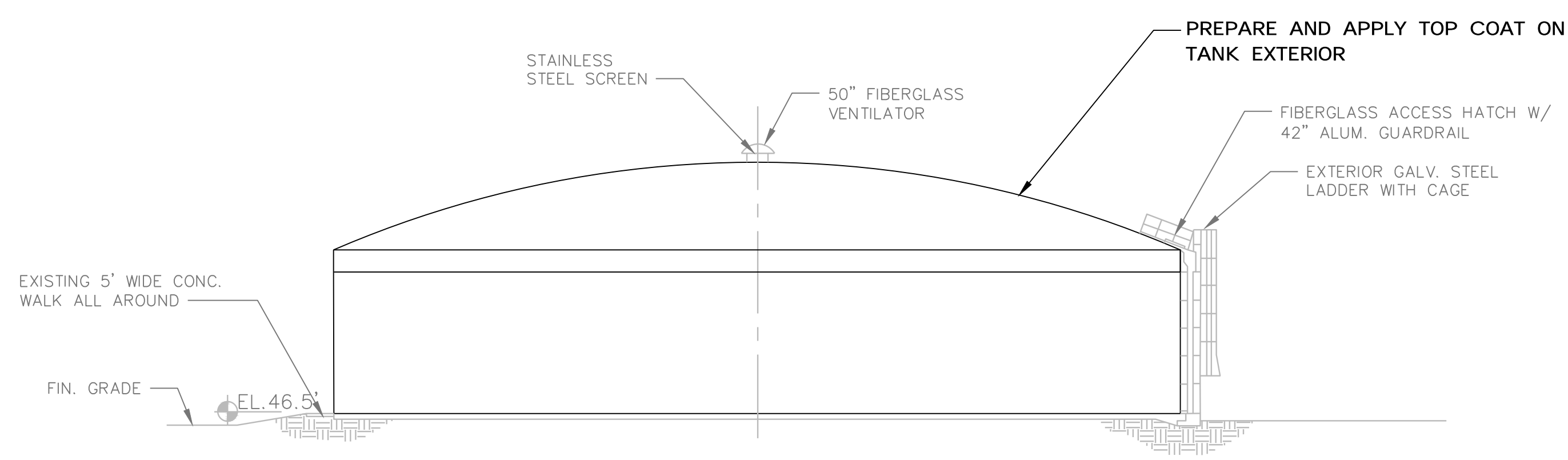
CITY OF TAMPA WATER DEPARTMENT
GROUND STORAGE TANKS IMPROVEMENTS
CIVIL
NORTHWEST GST PLAN AND PROFILE

| | |
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| PROJECT NO.: | 0818 |
| SCALE: | NOTED |
| REVISION: | 0 |
| DRAWING NO.: | C03 |
| SHEET NO.: | 07 OF 17 |

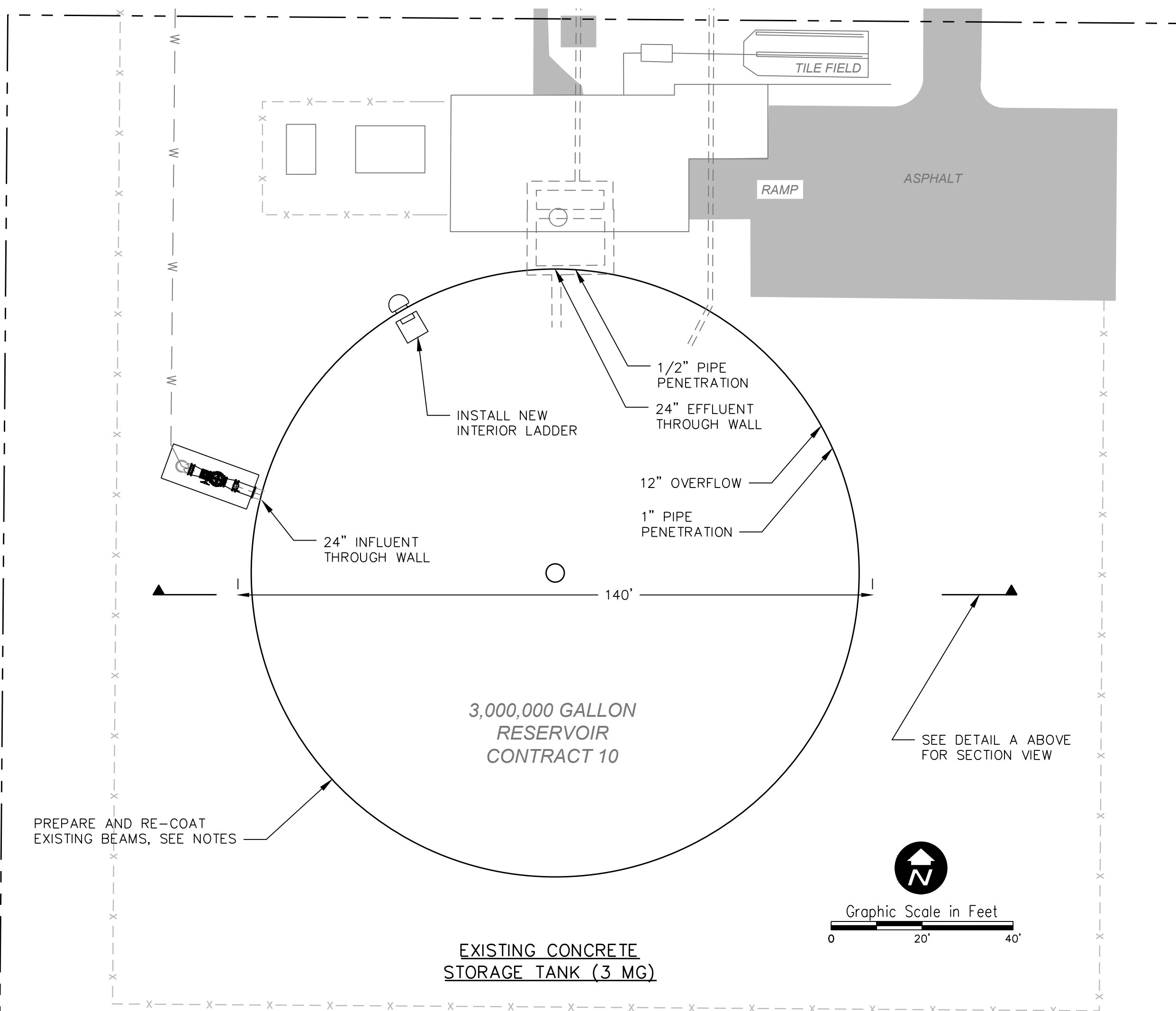




TYPICAL INTERIOR SECTION



TYPICAL EXTERIOR SECTION



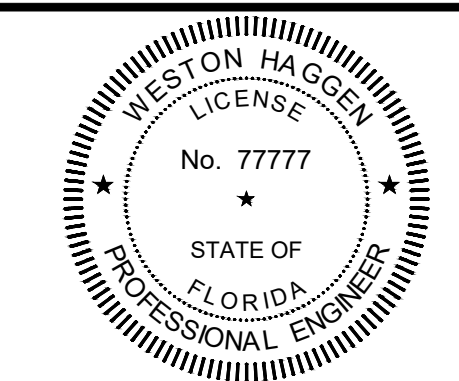
(B) PLAN VIEW
SCALE: 1"=20'

NOTES

1. NOTES ARE INTENDED TO COMPLEMENT THE EXTERIOR AND INTERIOR COATING SPECIFICATIONS AND ARE FURNISHED IN THE DRAWINGS FOR CONVENIENCE. THE CONTRACTOR SHALL REFER TO THE TECHNICAL SPECIFICATIONS.
2. ALL WORK PERFORMED SHALL BE IN ACCORDANCE WITH OSHA REQUIREMENTS.
3. THE CONTRACTOR SHALL PERFORM OR OBTAIN AN ASBESTOS SURVEY PER NESHAP REGULATIONS PRIOR TO MOBILIZING.
4. THE CONTRACTOR SHALL PERFORM LEAD BASED PAINT SURVEY PER NLLAP REQUIREMENTS PRIOR TO MOBILIZING.
5. THE CONTRACTOR SHALL PROVIDE A DETAILED PROJECT SUMMARY TO INCLUDE BUT NOT BE LIMITED TO THE PROVISION OF ALL SAFETY LOGS SHOWING NAMES OF PERSONS WHO ENTERED THE WORKSPACE INCLUDING DATE AND TIMES OF ENTRY AND EXIT. RECORDS OF ANY EMERGENCIES, SAFETY, OR HEALTH INCIDENTS, WASTE MANIFESTS, ETC.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROPERLY PROTECTING AREAS NOT TO BE COATED DURING ALL PHASES OF THE PROJECT INCLUDING REPAIR, WASHING, BLASTING, AND PAINTING. ITEMS NOT TO BE COATED SHALL BE RELOCATED IF POSSIBLE OR PROTECTED AS REQUIRED. ANY DAMAGE CAUSED BY NOT PROPERLY PROTECTING SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.
7. SURFACES TO BE COATED SHALL BE CLEANED AND PREPARED IN ACCORDANCE WITH SSPC REQUIREMENTS BEFORE APPLYING COATING OR SURFACE TREATMENTS. ANY OIL, GREASE, RUST, LOOSE MILL SCALE, OLD WEATHERING COATING, AND ALL OTHER FOREIGN SUBSTANCES SHALL BE REMOVED EXCEPT AS SPECIFIED.
8. INTERIOR COATING:
 - a) ALL MOLD, MILDEW, CHALK, LOOSE PAINT, ORGANIC DEPOSITS, OR OTHER SURFACE CONTAMINATION FROM THE ENTIRE WET AREA SHALL BE REMOVED USING LOW PRESSURE WASHER CLEANING (MIN 4000 PSI) PRIOR TO ABRASIVE CLEANING.
 - b) ALL SPECIFIED INTERIOR SURFACES SHALL BE PRESSURE WASHED, PREPARED, AND COATED IN ACCORDANCE WITH THE SPECIFICATIONS.
 - c) ALL PIPING AND DRAINS SHALL BE SUFFICIENTLY COVERED TO KEEP BLAST MATERIAL FROM ENTERING THE PIPING.
9. EXTERIOR COATING:
 - a) ALL SPECIFIED EXTERIOR SURFACES SHALL BE PRESSURE WASHED, PREPARED, AND COATED IN ACCORDANCE WITH THE SPECIFICATIONS.
10. REFER TO SPECIFICATIONS FOR ADDITIONAL DETAIL AND INFORMATION FOR RESULTS OF METALS TESTING.

Parent Sheet Set: 0818_NW Rev/Plot by: MILLER, JAY Rev on: 3/10/2022 10:52 AM Individual File Path: C04

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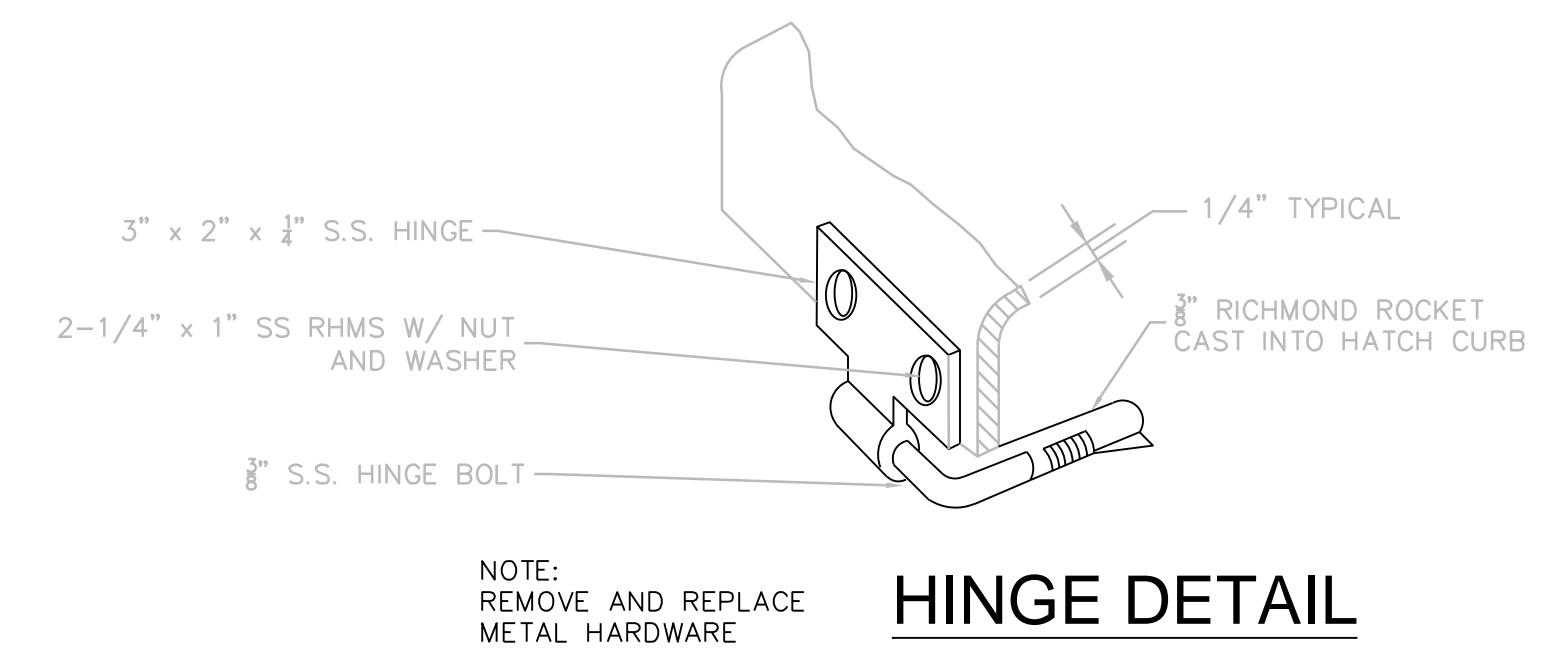
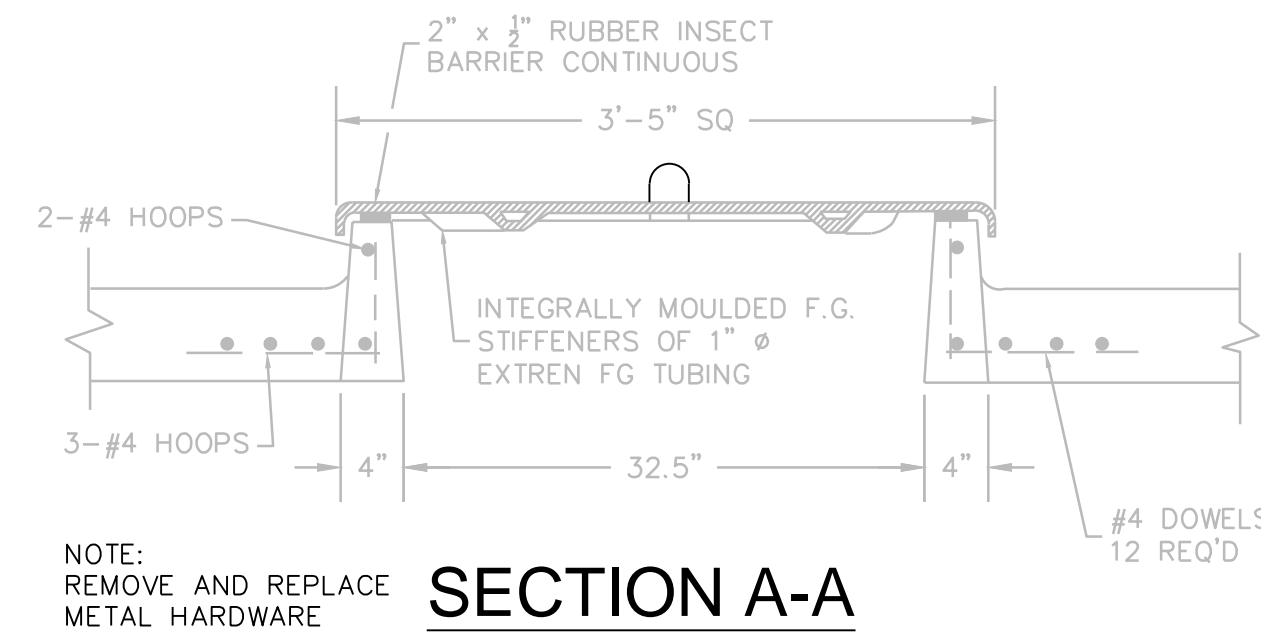
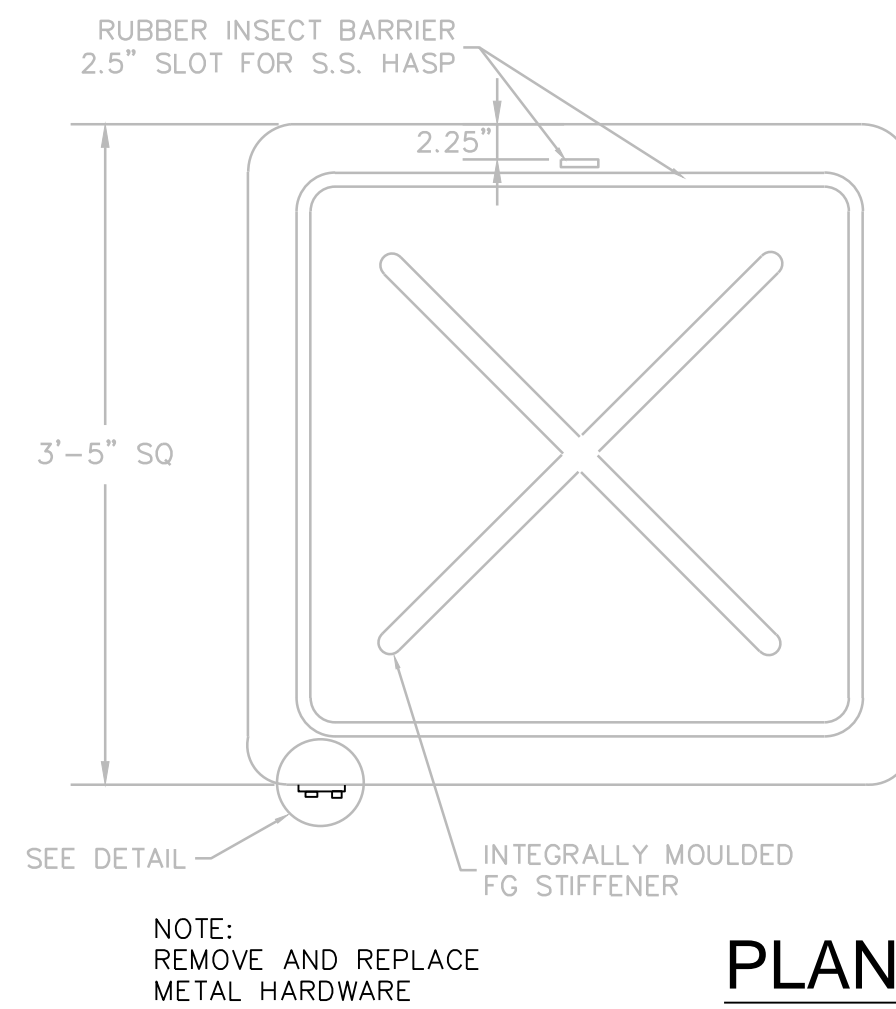
CITY OF TAMPA WATER DEPARTMENT
GROUND STORAGE TANKS IMPROVEMENTS

CIVIL

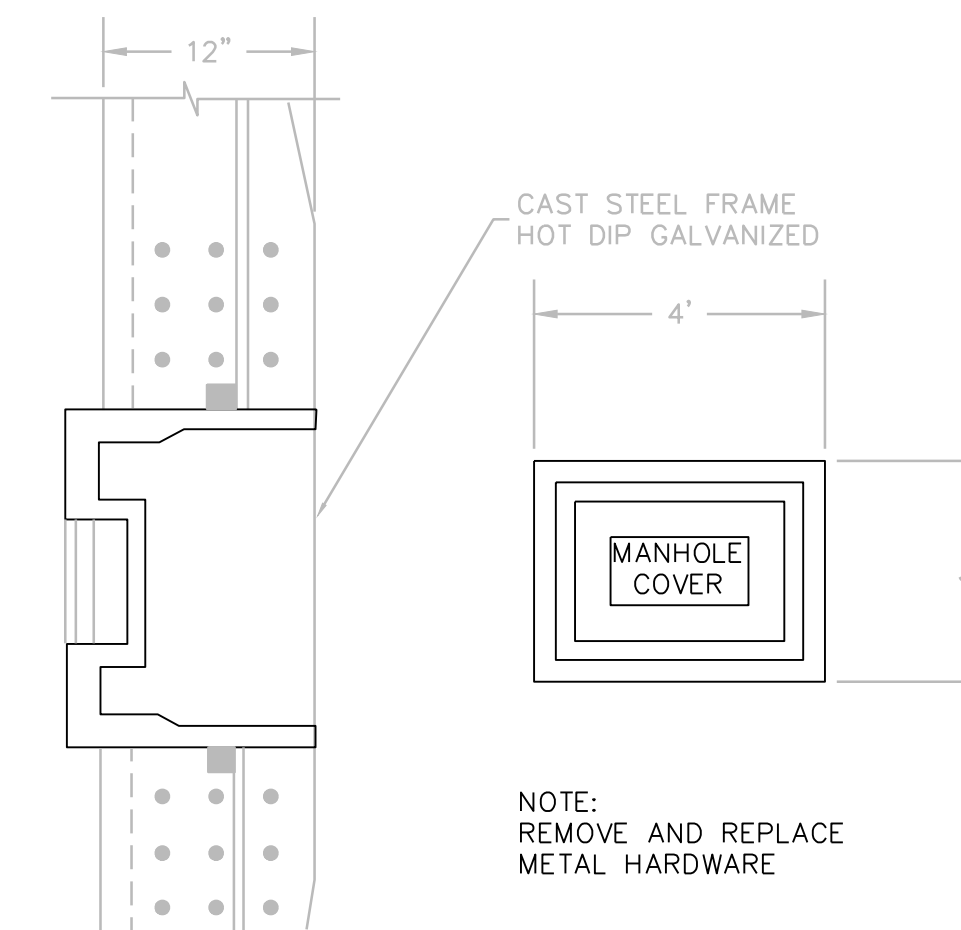
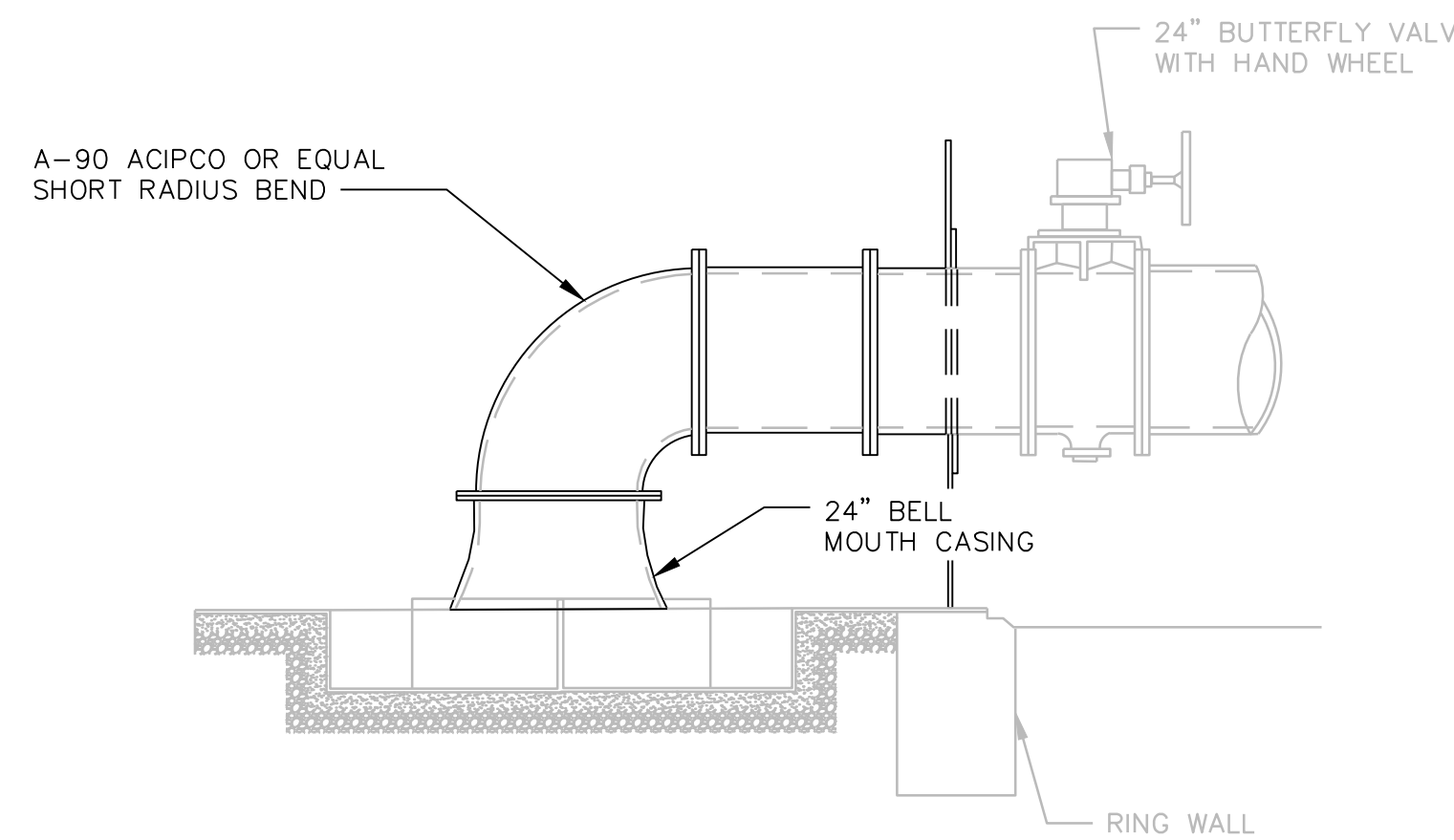
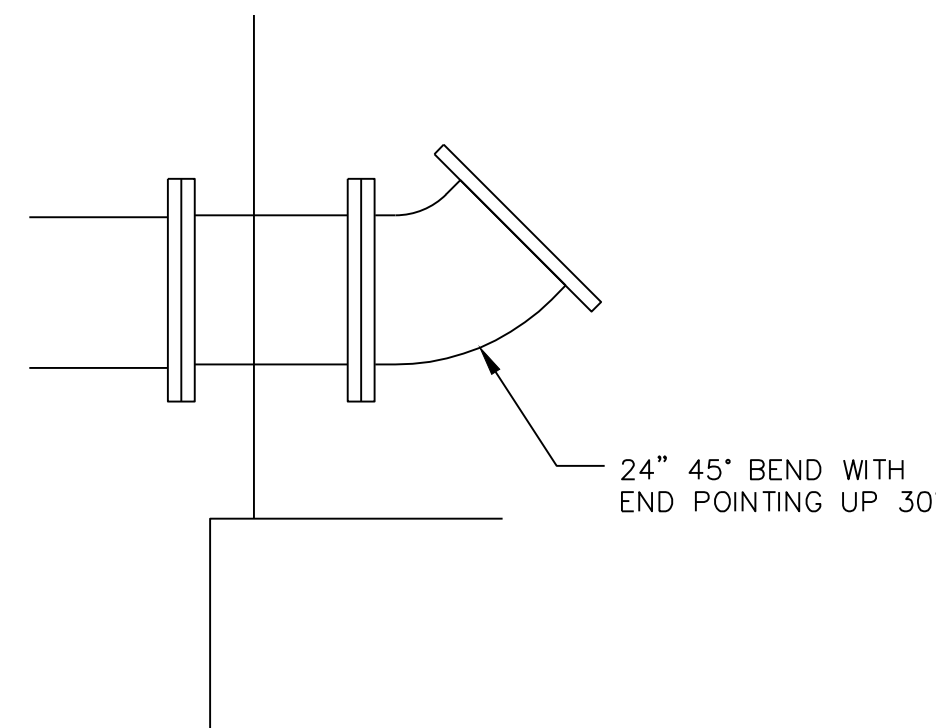
NORTHWEST GST STORAGE TANK COATING PLAN AND SECTION

| | |
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| PROJECT NO.: 0818 | |
| SCALE: NOTED | REVISION: 0 |
| DRAWING NO. C04 | SHEET NO.: 08 OF 17 |

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CERTIFICATE OF AUTH. 28386
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1 FIBERGLASS HATCH AND CURB DETAILS
SCALE: N.T.S.



NOTES:

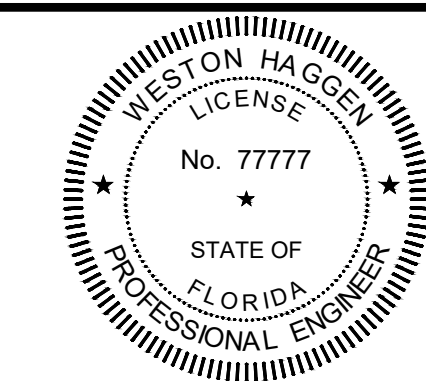
1. Prepare interior ductile iron surfaces in accordance with NAPF 500-03 Surface Preparation Standard or Ductile Iron Pipe and Fittings in Exposed Locations Receiving Special External Coatings and/or Special Internal Linings.
2. Prepare interior carbon steel surfaces for painting in accordance with SSPC SP-1 Solvent Cleaning and SSPC-SP-10 Near White Abrasive Blast Cleaning.
3. Apply three coats of an NSF/ANSI 61 approved epoxy coating system to all metal surfaces per specifications. Each coat should be of a contrasting color and applied in accordance with the coating manufacturer's published recommendations.
4. Following application of the epoxy coating system apply an approved, flexible caulk compatible with the coating and concrete at seams, crevices caulk edges. The caulk shall be one approved product recommended by the coating manufacturer.

2 COATING DETAIL
SCALE: N.T.S.

Parent Sheet Set: 0818_NW Rev/Plot by: MILLER, JAY Rev on: 3/10/2022 10:55 AM Individual File Path: C05



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SCALE: 1" = 1' AT FULL SIZE

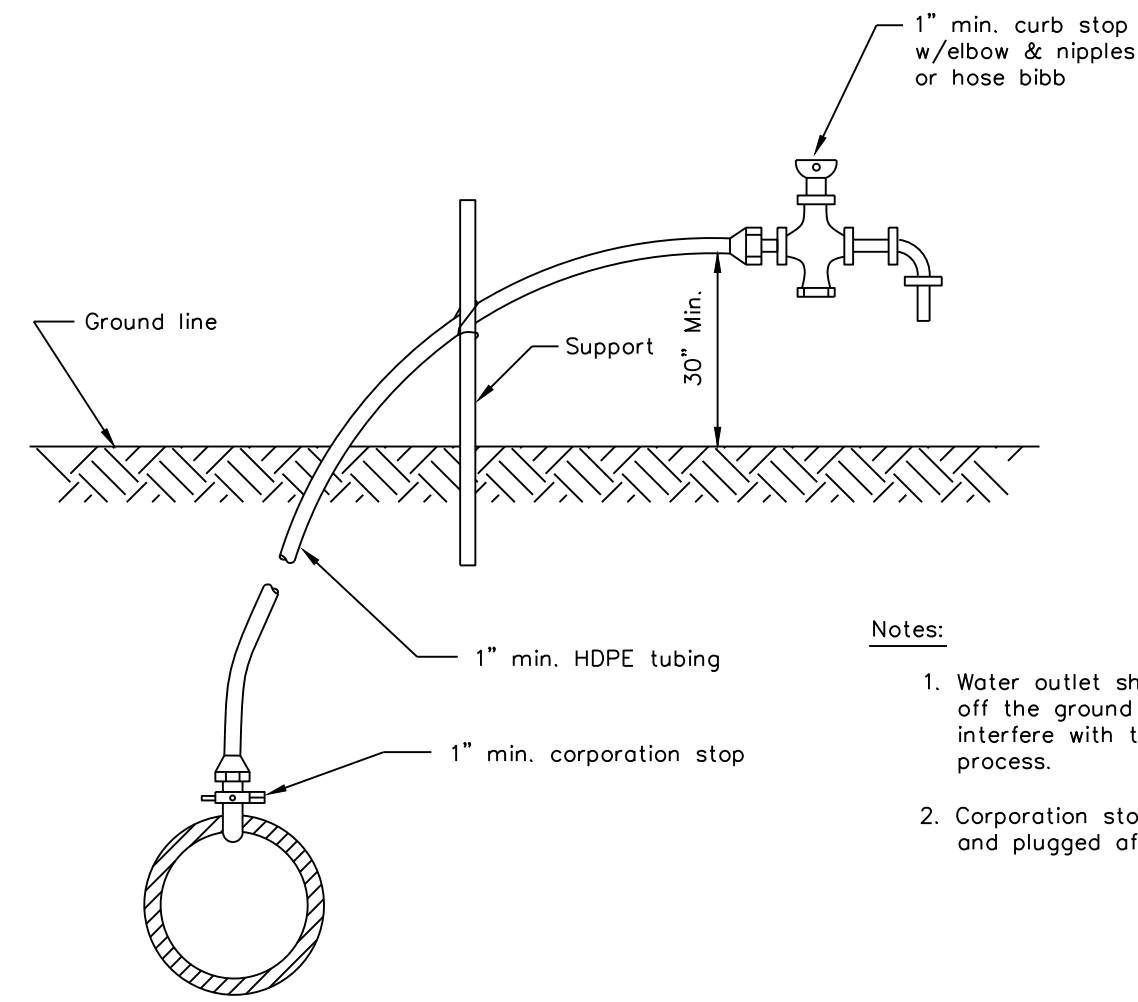
CITY OF TAMPA WATER DEPARTMENT
 GROUND STORAGE TANKS IMPROVEMENTS

DETAILS

DETAILS

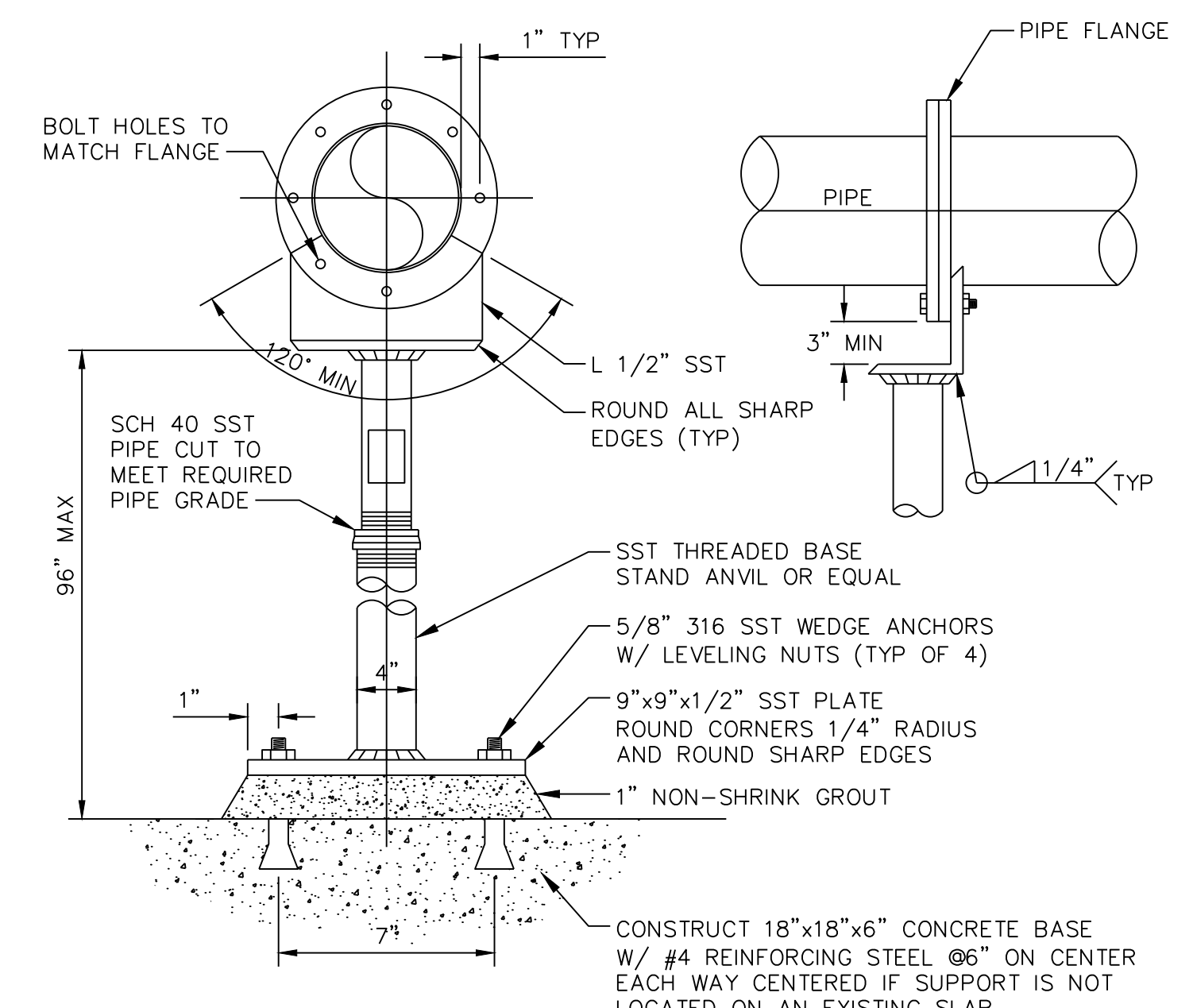
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| DRAWING NO.: | C05 |
| SHEET NO.: | 09 OF 17 |





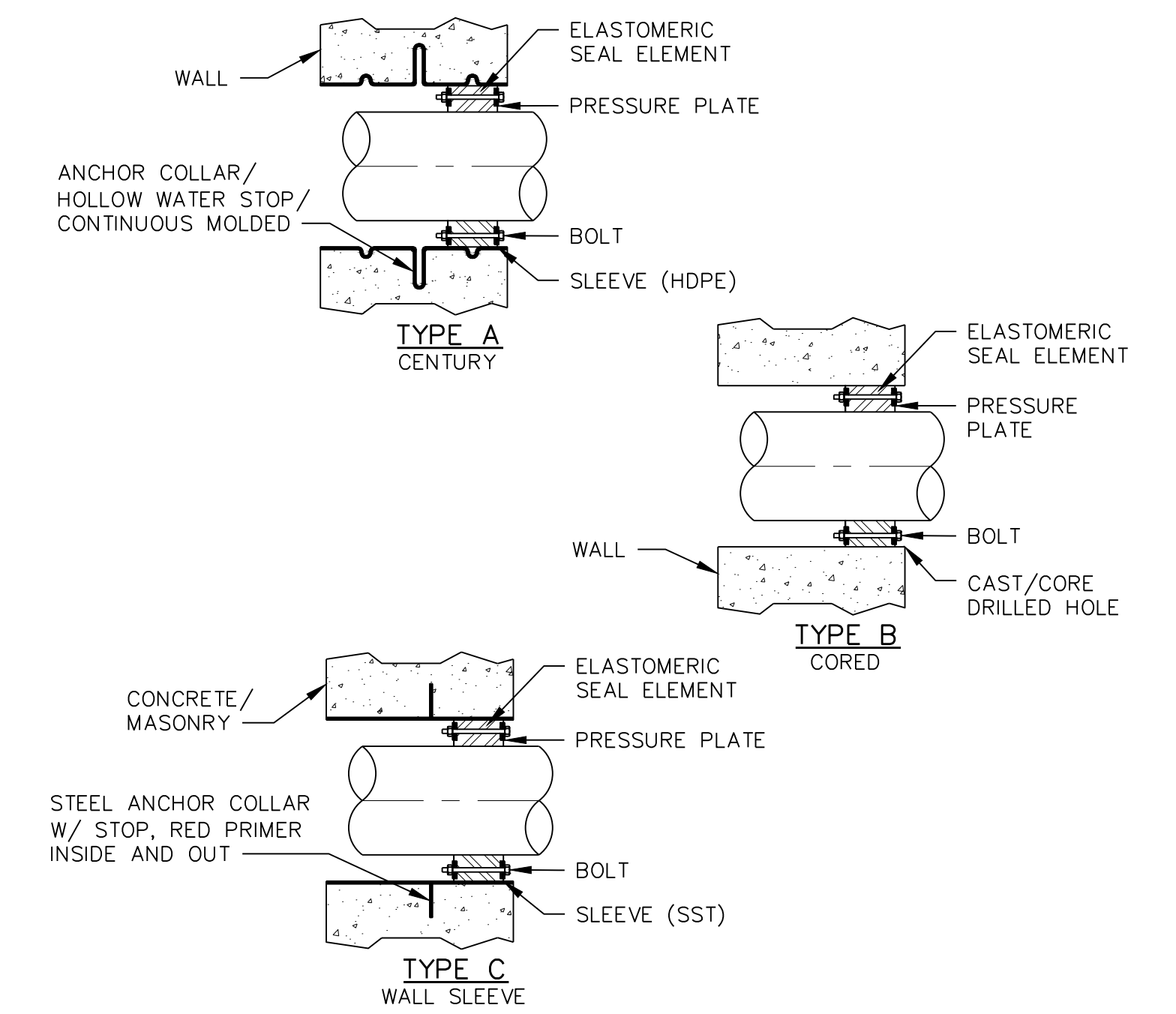
- Notes:
1. Water outlet shall be held up off the ground so as not to interfere with the sampling process.
 2. Corporation stop to be removed and plugged after operation.

3 TEMPORARY SAMPLE TAP INSTALLATION FOR DISINFECTION
SCALE: N.T.S.



- NOTES:
1. THE DRAWINGS INDICATE SUPPORTS FOR DEPICTION ONLY. ALL SUPPORT SPACING AND TYPE SHALL BE IN ACCORDANCE WITH THE SPECIFICATIONS. SUPPORT SPACING SHOWN ON THE DRAWINGS SHALL NOT RELIEVE THE CONTRACTOR OF SUPPLYING AND INSTALLING ADEQUATE SUPPORTS PER THE SPECIFICATIONS.
 2. SEE PLANS AND SECTIONS FOR PIPE GRADE REQUIREMENT.
 3. PIPE SUPPORT SUITABLE FOR PIPE SIZES 3" THROUGH 24" DIAMETER.

4 STANCHION FLANGE PIPE SUPPORT
SCALE: N.T.S.

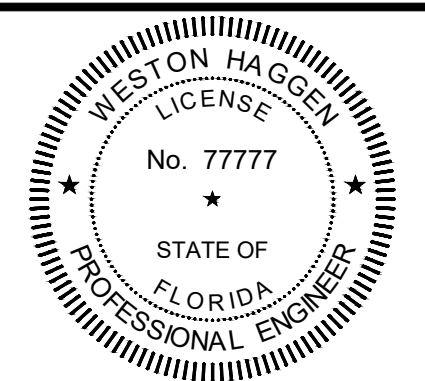


- NOTES:
1. PENETRATIONS SHALL BE LINK SEAL MODEL S-316 OR EQUAL.
 2. WALL SLEEVES SHALL BE SUPPLIED BY THE SAME OR LS 316 MANUFACTURER AS THE PENETRATION SEAL.
 3. ALL SEAL ELEMENTS SHALL BE EPDM.
 4. ALL BOLTS AND NUTS SHALL BE 316 STAINLESS STEEL.
 5. COORDINATE WALL PENETRATION DIAMETER WITH PENETRATION SEAL MANUFACTURER AND PIPE OUTSIDE DIAMETER.

5 WALL PENETRATION DETAILS
SCALE: N.T.S.

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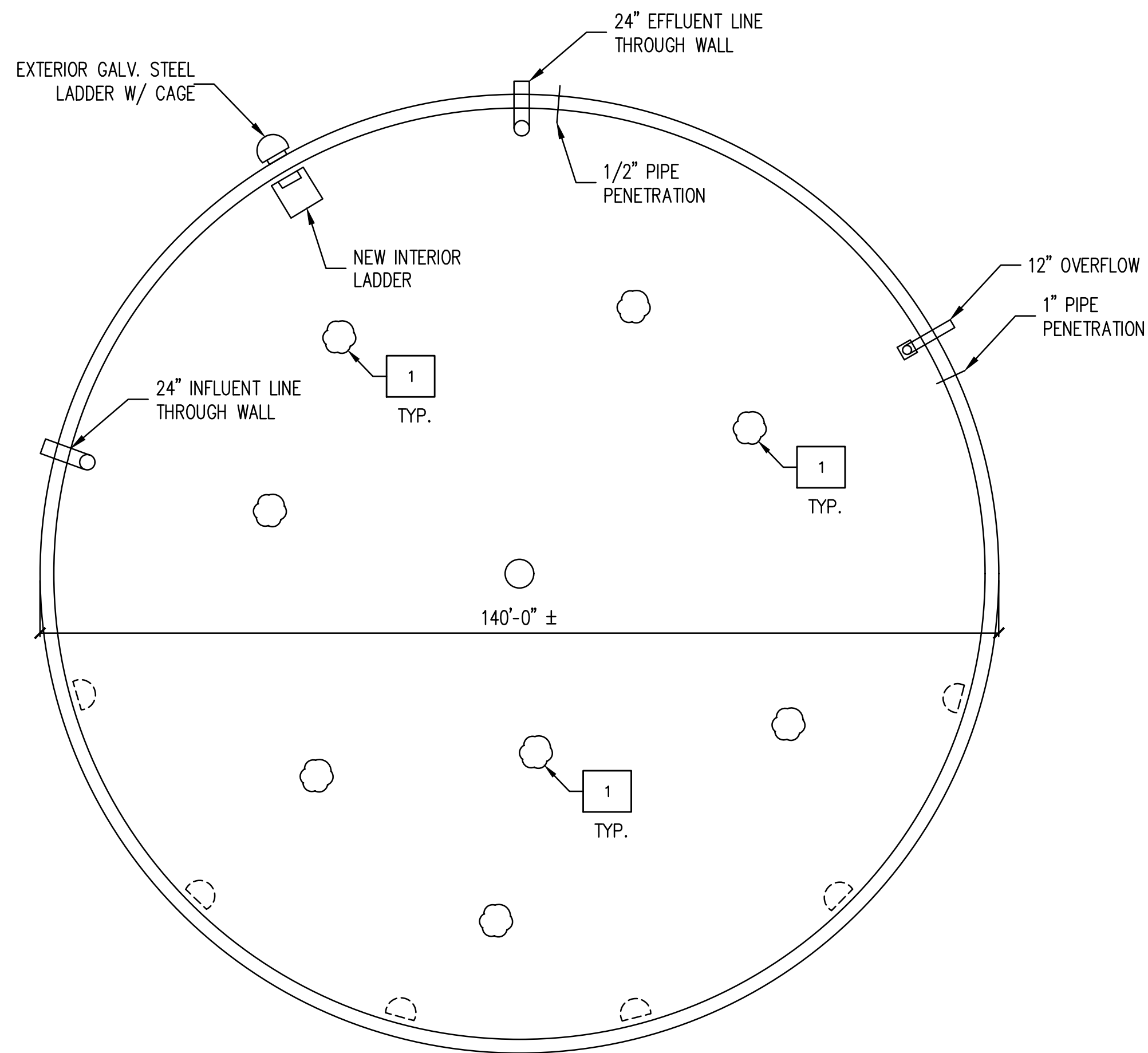
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CITY OF TAMPA WATER DEPARTMENT
GROUND STORAGE TANKS IMPROVEMENTS

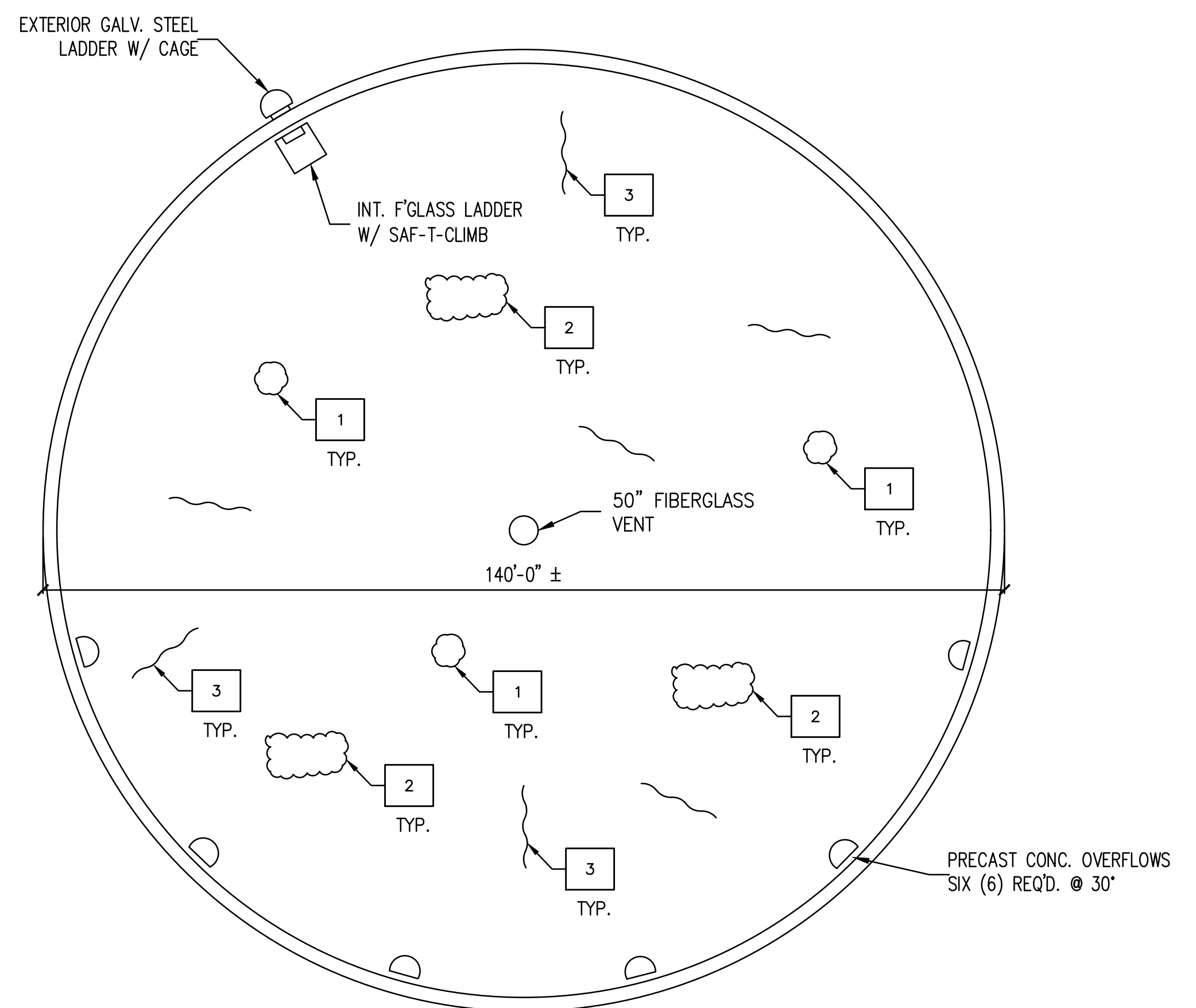
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| PROJECT NO.: | 0818 |
| SCALE: | NOTED |
| REVISION: | 0 |
| DRAWING NO.: | C06 |
| SHEET NO.: | 10 OF 17 |





1 GROUND STORAGE TANK – INTERIOR CONCRETE FLOOR PLAN
 S01 SCALE: 1/16" = 1'-0"



2 GROUND STORAGE TANK – INTERIOR REFLECTED DOME PLAN
 S01 SCALE: 1/16" = 1'-0"

KEY NOTES

- 1 AREAS REQUIRING PATCHING – SEE CONCRETE PATCHING NOTES
- 2 AREAS REQUIRING RESTORATION – SEE CONCRETE RESTORATION NOTES
- 3 CRACKS REQUIRING REPAIR – SEE CRACK REPAIR NOTES
- 4 AREAS REQUIRING GROUT – SEE GROUT NOTES

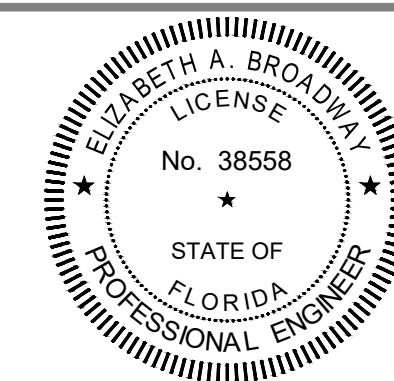
NOTES:

1. REPAIR AREAS SHOWN ARE FOR REFERENCE ONLY AND DO NOT REPRESENT ACTUAL LOCATIONS AND QUANTITIES.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD VERIFYING ALL TYPES OF REPAIRS, LOCATIONS AND QUANTITIES.

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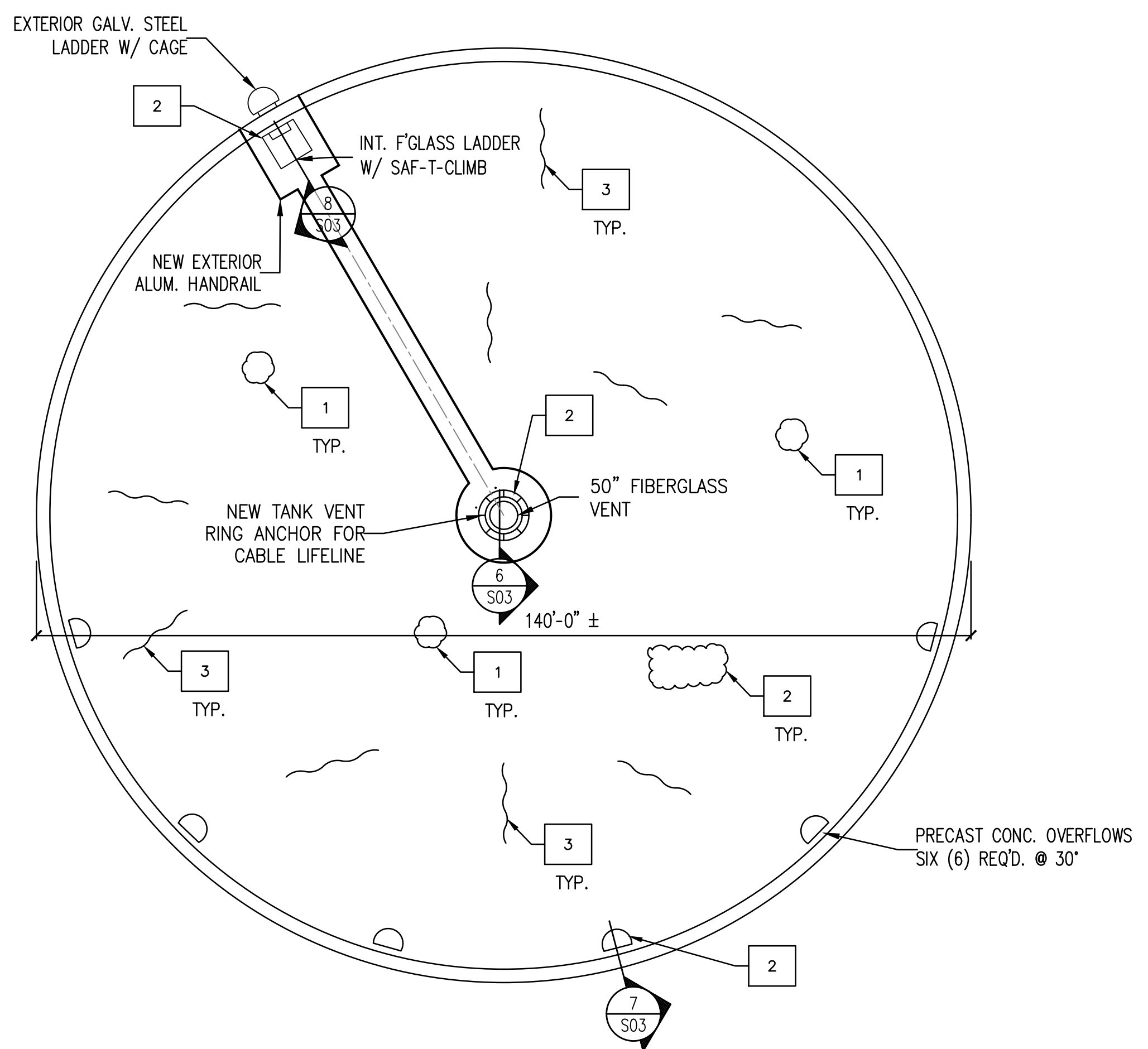
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CITY OF TAMPA WATER DEPARTMENT
 GROUND STORAGE TANKS IMPROVEMENTS
 STRUCTURAL
 NORTHWEST GST STORAGE TANK STRUCTURAL REPAIR PLAN

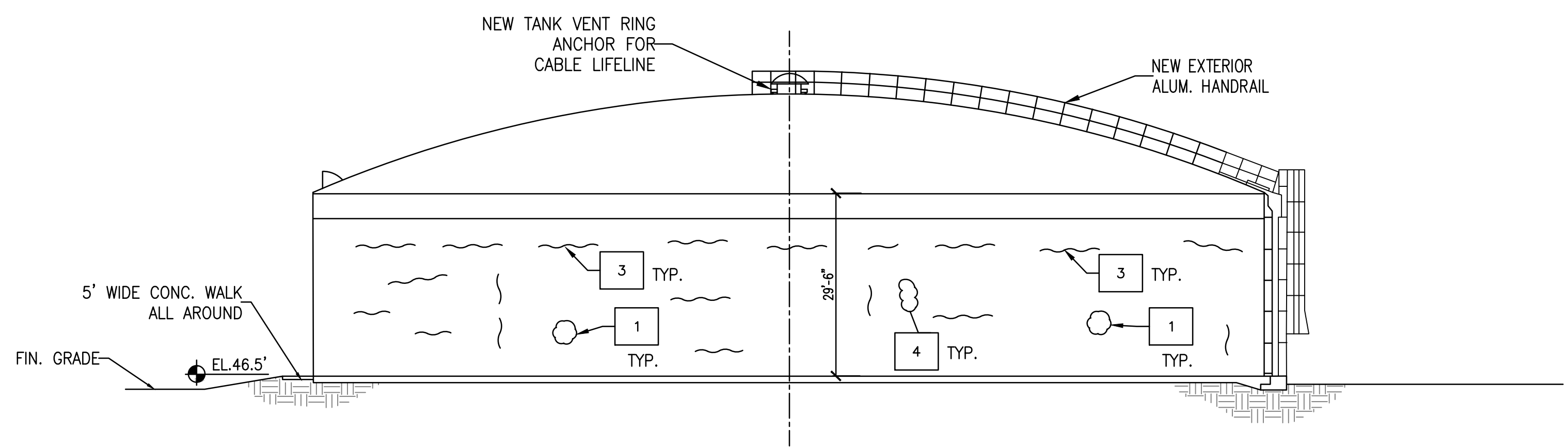
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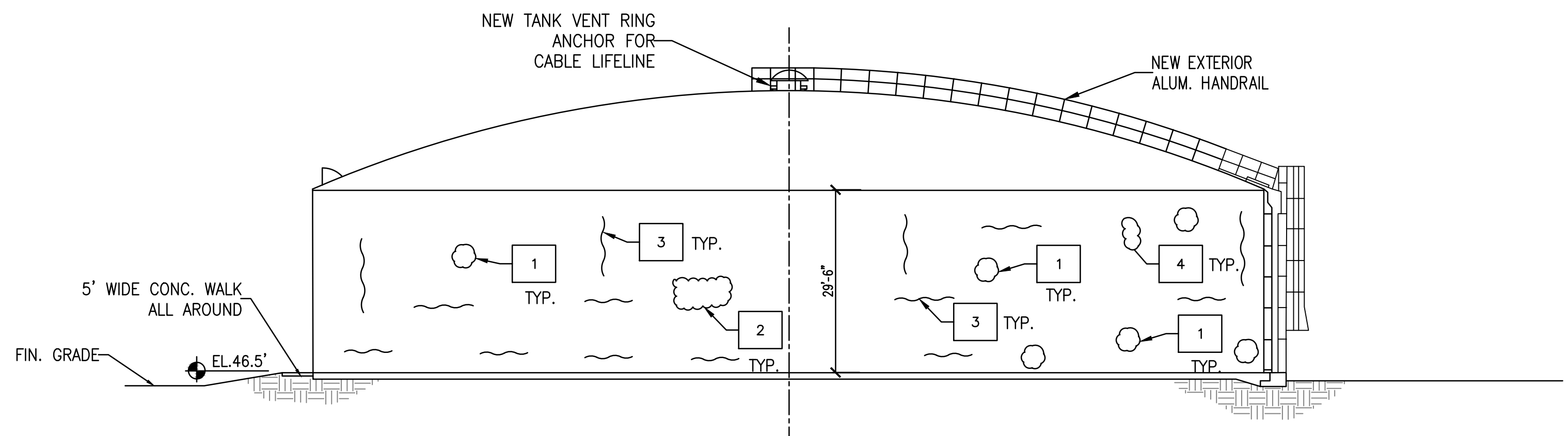
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3 GROUND STORAGE TANK - EXTERIOR DOME PLAN
 S02 SCALE: 1/16" = 1'-0"



4 GROUND STORAGE TANK - TYPICAL EXTERIOR SIDE ELEVATION
 S02 SCALE: 1/16" = 1'-0"



5 GROUND STORAGE TANK - TYPICAL INTERIOR ELEVATION
 S02 SCALE: 1/16" = 1'-0"

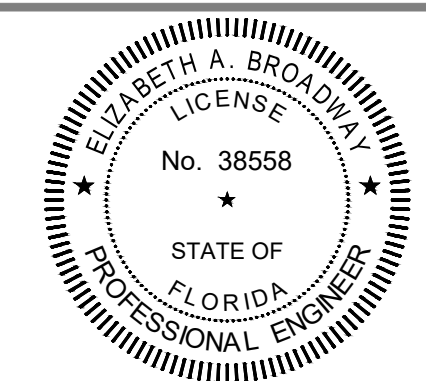
KEY NOTES

- 1 AREAS REQUIRING PATCHING - SEE CONCRETE PATCHING NOTES
- 2 AREAS REQUIRING RESTORATION - SEE CONCRETE RESTORATION NOTES
- 3 CRACKS REQUIRING REPAIR - SEE CRACK REPAIR NOTES
- 4 AREAS REQUIRING GROUT - SEE GROUT NOTES

NOTES:

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2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD VERIFYING ALL TYPES OF REPAIRS, LOCATIONS AND QUANTITIES.

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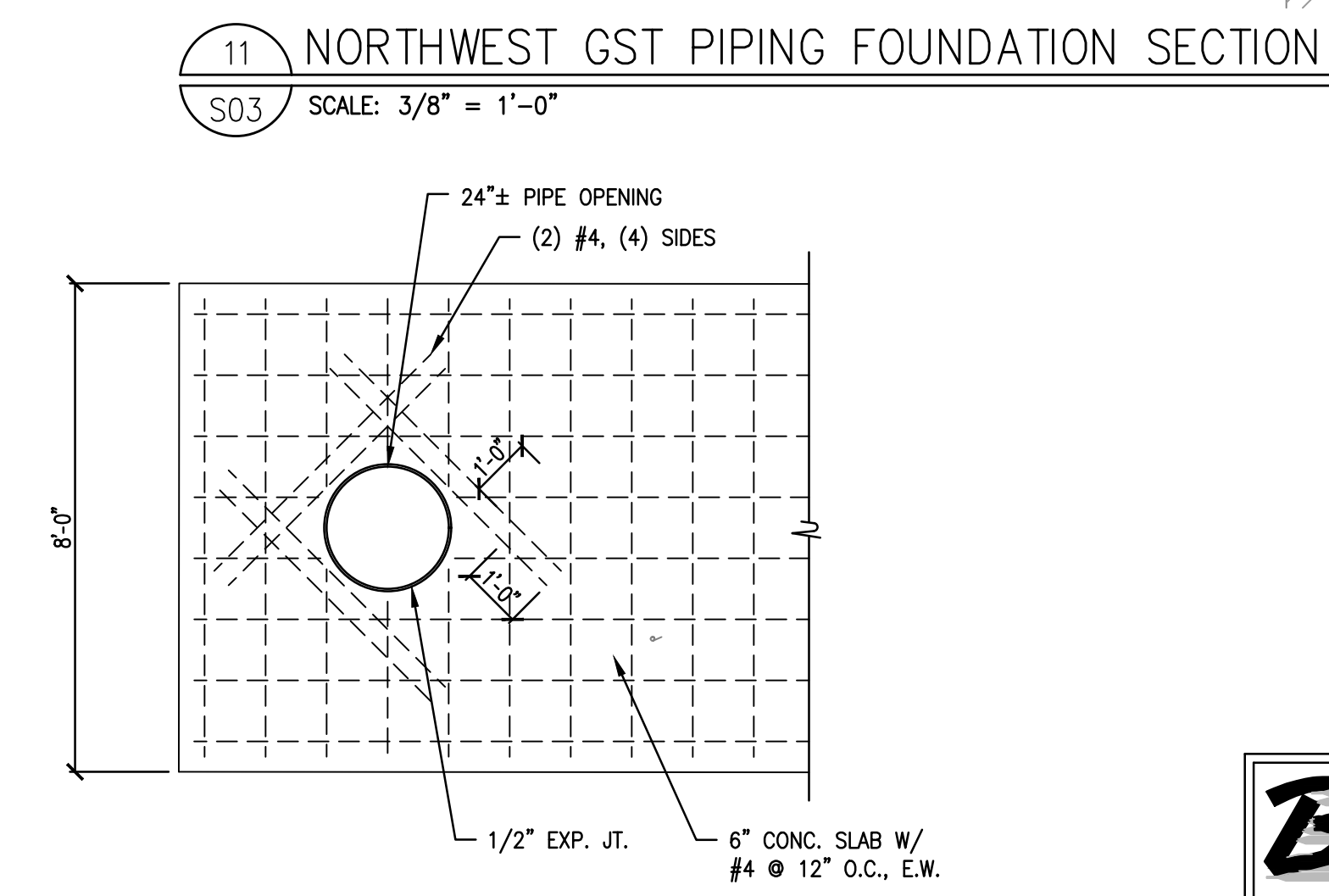
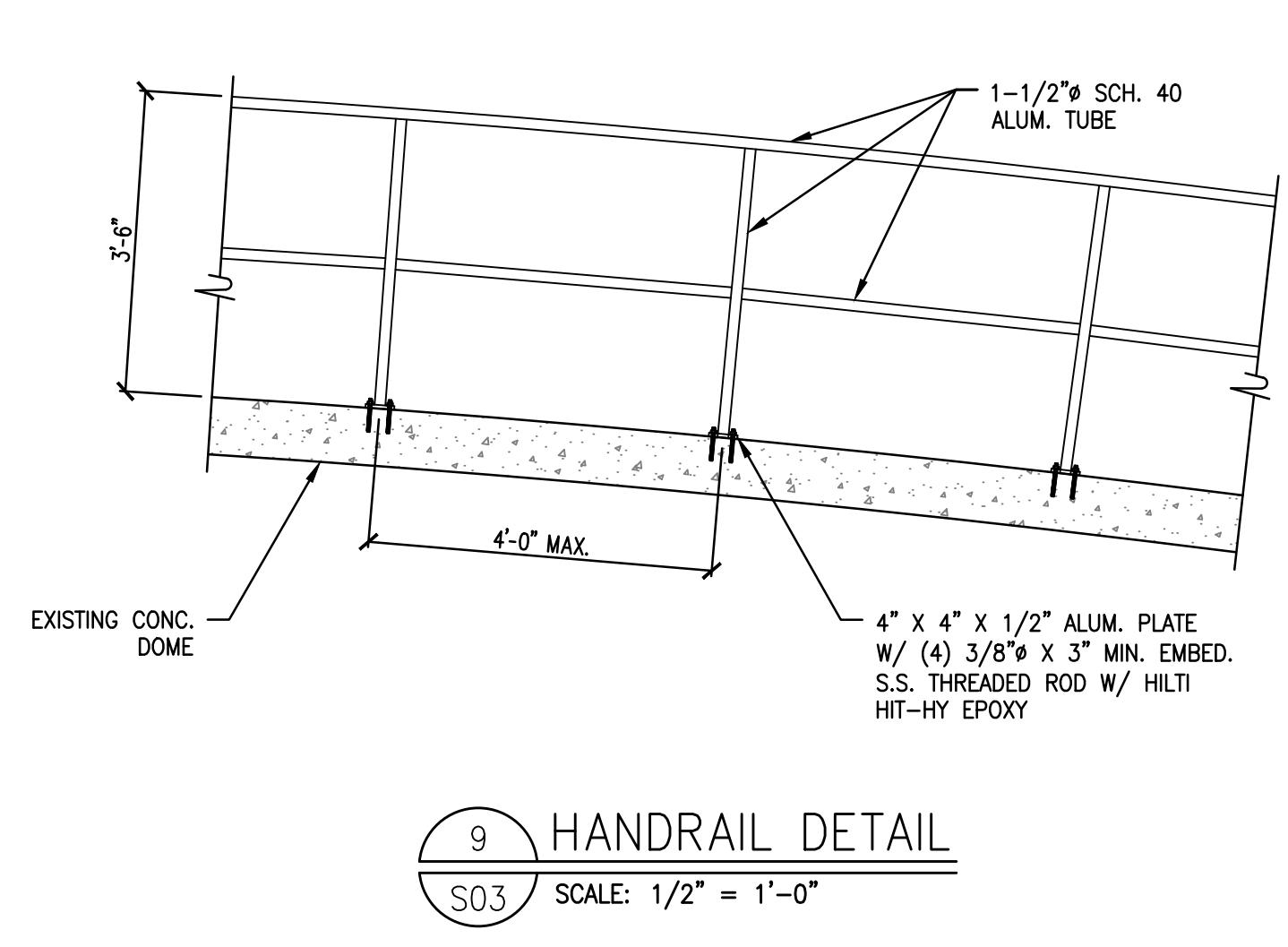
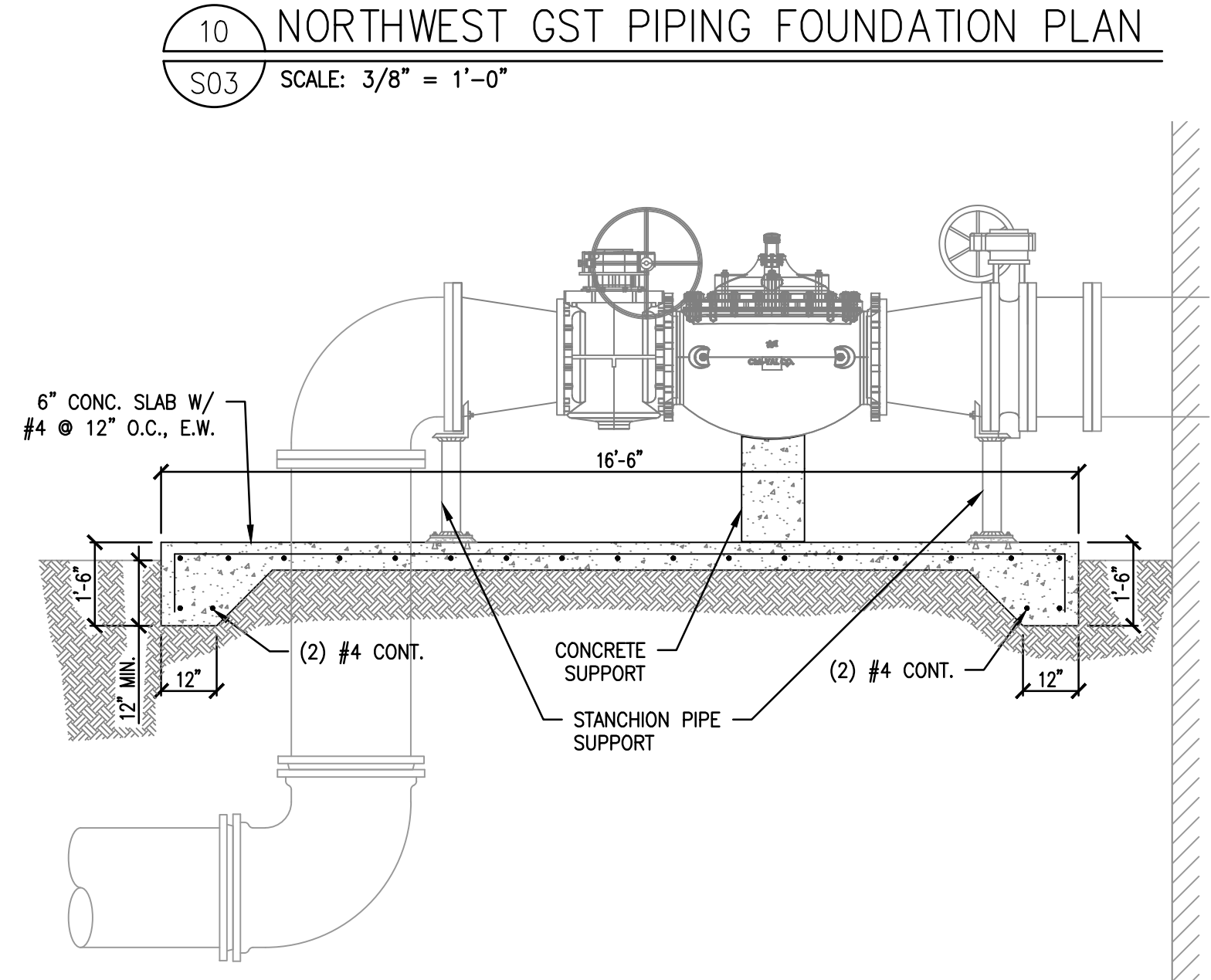
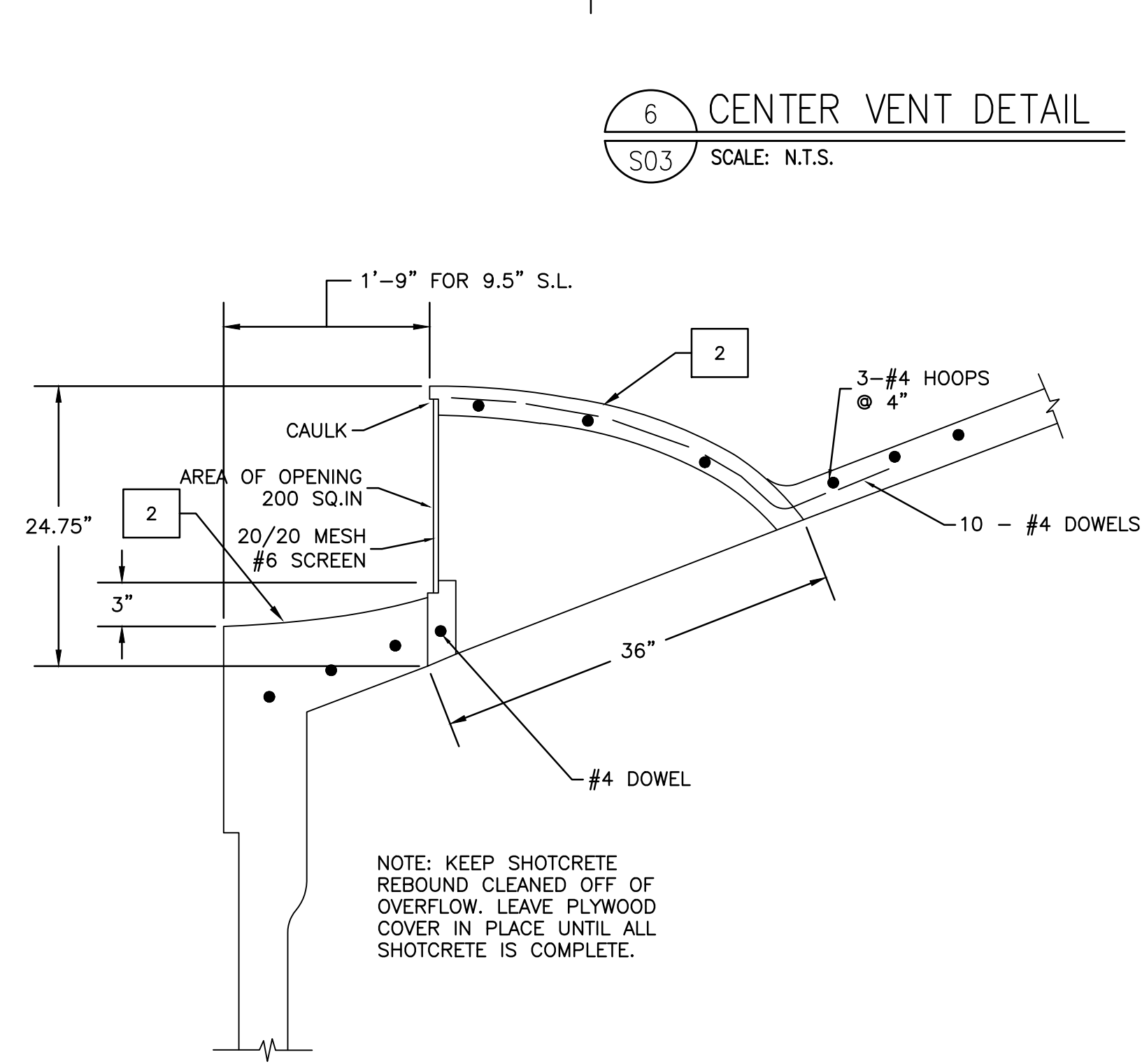
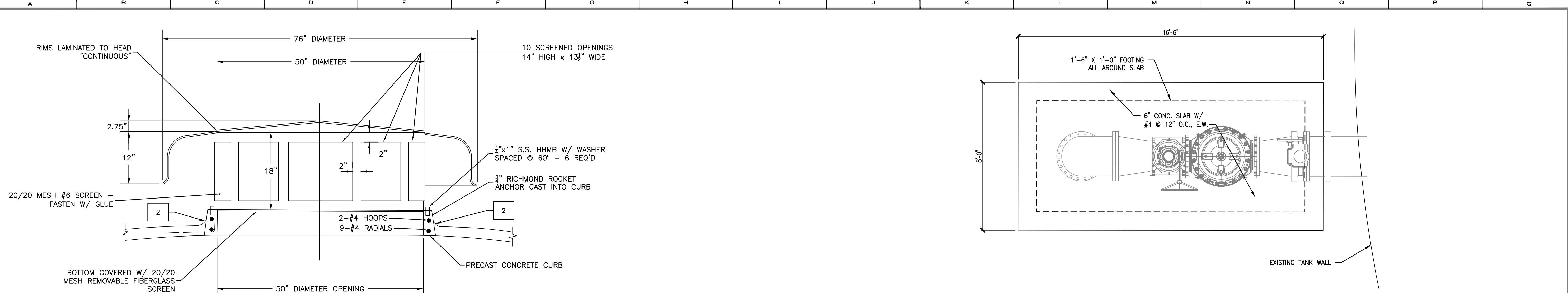
CITY OF TAMPA WATER DEPARTMENT
 GROUND STORAGE TANKS IMPROVEMENTS
 STRUCTURAL
 NORTHWEST GST STORAGE TANK STRUCTURAL PLAN & ELEVATIONS

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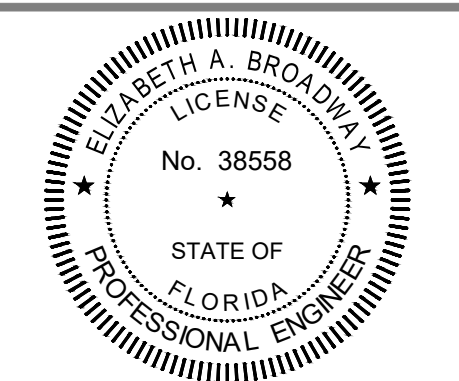
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- KEY NOTES**
- 1 AREAS REQUIRING PATCHING - SEE CONCRETE PATCHING NOTES
 - 2 AREAS REQUIRING RESTORATION - SEE CONCRETE RESTORATION NOTES
 - 3 CRACKS REQUIRING REPAIR - SEE CRACK REPAIR NOTES
 - 4 AREAS REQUIRING GROUT - SEE GROUT NOTES
- NOTES:**
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 Approved EAB

CITY OF TAMPA WATER DEPARTMENT
 GROUND STORAGE TANKS IMPROVEMENTS
 STRUCTURAL
 NORTHWEST GST STORAGE TANK STRUCTURAL DETAILS

PROJECT NO.: 0818
 SCALE: NOTED
 REVISION: 0
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GENERAL NOTES

GENERAL

- 1.- 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 TAMPA, THE 2020 (7TH ED.) FLORIDA BUILDING CODE, AND LATEST ACI SPECIFICATIONS.
- 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.- ALL EXISTING STRUCTURES NOT DESIGNED BY BROADWAY ENGINEERING ARE ASSUMED TO BE ADEQUATE AND NOT THE RESPONSIBILITY OF BROADWAY ENGINEERING.
- 7.- CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO MINIMIZE DAMAGE TO EXISTING STRUCTURES. ANY DAMAGE CAUSED BY CONTRACTOR SHALL BE REPAIRED AT NO EXTRA COST TO OWNER.
- 8.- MEANS, METHODS, TECHNIQUES, SEQUENCES OR PROCEDURES, AND SAFETY PRECAUTIONS ARE SOLELY THE RESPONSIBILITY OF THE CONTRACTOR.
- 9.- FIELD VERIFY EXISTING CONDITIONS, DIMENSIONS, SIZE, VOLTAGE, AND LOCATION OF UTILITIES PRIOR TO NEW OR REMODELING WORK.
- 10.- DEVIATIONS FROM DRAWINGS SHALL BE APPROVED BY THE ENGINEER.
- 11.- INFORM ENGINEER OF CONSTRUCTION CONFLICTS FOUND AMONG TRADES FOR ANY REQUIRED CHANGES FROM THESE DRAWINGS.
- 12.- REFER TO "TANK INSPECTION REPORT" PREPARED BY CROM ENGINEERING & CONSTRUCTION SERVICES, DATED MAY 13, 2016, FOR ADDITIONAL INFORMATION.

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 (IF REQUIRED)

- 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 (IF REQUIRED)

- 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 (IF REQUIRED)

- 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.

CONCRETE PATCHING

- 1.- CONCRETE PATCHING SHALL BE PERFORMED AT LOCATIONS THAT ARE DEFINED AS AREAS OF CONCRETE ON THE FLOOR, WALLS, OR DOME, INTERIOR OR EXTERIOR, THAT ARE CHIPPED OR SPALLED WITHOUT EXPOSED REBAR OR WIRE MESH.
- 2.- CONCRETE RESTORATION PRODUCT SHALL BE MASTEREMACO N424 AS MANUFACTURED BY BASF OR APPROVED EQUAL.
- 3.- BONDING AGENT FOR CONCRETE SHALL BE LIQUID EPOXY SUCH AS MASTEREMACO ADH 326 AS MANUFACTURED BY BASF OR APPROVED EQUAL.
- 4.- SURFACES TO BE REPAIRED SHALL BE PREPARED IN ACCORDANCE WITH CONCRETE RESTORATION PRODUCT MANUFACTURER'S RECOMMENDATIONS AND SHALL INCLUDE, BUT NOT BE LIMITED TO, THE FOLLOWING:
 - A. SAW CUT THE PERIMETER OF THE AREA BEING REPAIRED INTO A SQUARE OR RECTANGLE WITH A MINIMUM DEPTH OF 1/4".
 - B. THE SURFACE MUST BE CLEAN AND FREE OF ALL DUST, DIRT, OR GREASE.
- 5.- BONDING AGENT SHALL BE APPLIED TO CONCRETE PRIOR TO PATCHING IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
- 6.- CONCRETE RESTORATION PRODUCT SHALL BE MIXED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
- 7.- CONCRETE RESTORATION PRODUCT SHALL BE APPLIED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
- 8.- CONCRETE RESTORATION PRODUCT SHALL BE APPLIED WITHIN THE TEMPERATURE RANGE RECOMMENDED BY THE MANUFACTURER. FOLLOW ACI 305 AND 306 IF PRODUCT WILL BE APPLIED OUTSIDE OF THE MANUFACTURER'S RECOMMENDED TEMPERATURE RANGE.
- 9.- ALLOW CONCRETE RESTORATION PRODUCT TO CURE IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS PRIOR TO SANDING, COATING, OR PAINTING.

CONCRETE RESTORATION

- 1.- CONCRETE RESTORATION SHALL BE PERFORMED AT LOCATIONS THAT ARE DEFINED AS AREAS OF CONCRETE ON THE FLOOR, WALLS, OR DOME, INTERIOR OR EXTERIOR, THAT ARE CHIPPED OR SPALLED AND HAVE EXPOSED REBAR OR WIRE MESH.
- 2.- CONCRETE RESTORATION PRODUCT SHALL BE MASTEREMACO N424 AS MANUFACTURED BY BASF OR APPROVED EQUAL.
- 3.- PRIMER FOR STEEL REINFORCEMENT SHALL BE ONE-COMPONENT ZINC-RICH EPOXY SUCH AS MASTERPROTECT P8100AP AS MANUFACTURED BY BASF OR APPROVED EQUAL.
- 4.- BONDING AGENT FOR CONCRETE SHALL BE LIQUID EPOXY SUCH AS MASTEREMACO ADH 326 AS MANUFACTURED BY BASF OR APPROVED EQUAL.
- 5.- SURFACES TO BE REPAIRED SHALL BE PREPARED IN ACCORDANCE WITH CONCRETE RESTORATION PRODUCT AND PRIMER MANUFACTURER'S RECOMMENDATIONS AND SHALL INCLUDE, BUT NOT BE LIMITED TO, THE FOLLOWING:
 - A. SAW CUT THE PERIMETER OF THE AREA BEING REPAIRED INTO A SQUARE OR RECTANGLE WITH A MINIMUM DEPTH OF 1/4".
 - B. FULLY EXPOSE ANY CORRODED STEEL IN THE REPAIR AREA.
 - C. REMOVE ALL LOOSE SCALE AND CORROSION DEPOSITS, PAYING PARTICULAR ATTENTION TO THE BACK OF EXPOSED STEEL.
 - D. MECHANICALLY ABRAD ALL EXPOSED STEEL TO REMOVE CORROSION FROM PITS AND IMPERFECTIONS WITHIN THE SURFACE.
 - E. THE SURFACE MUST BE CLEAN AND FREE OF ALL DUST, DIRT, RUST, OR GREASE.
- 6.- PRIMER SHALL BE MIXED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
- 7.- PRIMER SHALL BE APPLIED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
- 8.- PRIMER SHALL BE ALLOWED TO COMPLETELY DRY PRIOR TO APPLYING CONCRETE RESTORATION PRODUCT.
- 9.- CONCRETE RESTORATION PRODUCT SHALL BE APPLIED TO EXPOSED STEEL WITHIN 7 DAYS OF THE PRIMER APPLICATION.
- 10.- BONDING AGENT SHALL BE APPLIED TO CONCRETE PRIOR TO PATCHING IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
- 11.- CONCRETE RESTORATION PRODUCT SHALL BE MIXED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.

- 12.- CONCRETE RESTORATION PRODUCT SHALL BE APPLIED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
- 13.- CONCRETE RESTORATION PRODUCT SHALL BE APPLIED WITHIN THE TEMPERATURE RANGE RECOMMENDED BY THE MANUFACTURER. FOLLOW ACI 305 AND 306 IF PRODUCT WILL BE APPLIED OUTSIDE OF THE MANUFACTURER'S RECOMMENDED TEMPERATURE RANGE.
- 14.- ALLOW CONCRETE RESTORATION PRODUCT TO CURE IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS PRIOR TO SANDING, COATING, OR PAINTING.

CRACK REPAIR

- 1.- CRACK REPAIR SHALL BE PERFORMED AT LOCATIONS THAT ARE DEFINED AS AREAS OF CONCRETE ON THE FLOOR, WALLS, OR DOME, INTERIOR OR EXTERIOR, THAT ARE CRACKED LESS THAN 1/4" WIDE WITHOUT EXPOSED REBAR OR WIRE MESH.
- 2.- EPOXY CAULK SHALL BE SIKADUR AS MANUFACTURED BY SIKA OR APPROVED EQUAL.
- 3.- SURFACES TO BE REPAIRED SHALL BE PREPARED IN ACCORDANCE WITH CAULK MANUFACTURER'S RECOMMENDATIONS AND SHALL INCLUDE, BUT NOT BE LIMITED TO, THE FOLLOWING:
 - A. ROUT ALL CRACKS TO A SMOOTH EVEN FINISH.
 - B. THE SURFACE MUST BE CLEAN AND FREE OF ALL DUST, DIRT, OR GREASE.
- 4.- CAULK SHALL BE MIXED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
- 5.- CAULK SHALL BE APPLIED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
- 6.- ALLOW CAULK TO CURE IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS PRIOR TO COATING OR PAINTING.

GROUT

- 1.- GROUTING SHALL BE PERFORMED AT LOCATIONS THAT ARE DEFINED AS AREAS OF CONCRETE ON THE WALLS THAT HAVE VOIDS WHERE THE SHOTCRETE HAS DELAMINATED.
- 2.- EPOXY GROUT SHALL BE MASTERFLOW 647 AS MANUFACTURED BY BASF OR APPROVED EQUAL.
- 3.- SURFACES TO BE REPAIRED SHALL BE PREPARED IN ACCORDANCE WITH GROUT MANUFACTURER'S RECOMMENDATIONS AND SHALL INCLUDE, BUT NOT BE LIMITED TO, THE FOLLOWING:
 - A. THE CONCRETE MUST BE AS CLEAN, SOUND, AND AS OIL- AND WATER-FREE AS POSSIBLE.
- 4.- GROUT SHALL BE MIXED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
- 5.- GROUT SHALL BE APPLIED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
- 6.- CONCRETE RESTORATION PRODUCT SHALL BE APPLIED WITHIN THE TEMPERATURE RANGE RECOMMENDED BY THE MANUFACTURER.
- 7.- ALLOW GROUT TO CURE IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.

ALUMINUM HANDRAIL

- 1.- THE MATERIAL, FABRICATION, AND ERECTION OF STRUCTURAL ALUMINUM SHALL COMPLY WITH THE ALUMINUM DESIGN MANUAL BY THE ALUMINUM ASSOCIATION.
- 2.- STRUCTURAL ALUMINUM PIPE SHALL BE MIN. ASTM B529, 6063-T5 ALLOY, Fty = 16 KSI.
- 3.- THREADED ROD ANCHOR BOLTS SHALL BE AISI 316 STAINLESS STEEL.
- 4.- WELDING SHALL BE DONE BY AWS CERTIFIED WELDERS USING THE MOST RECENT AWS APPROVED TECHNIQUES.
- 5.- HANDRAIL DESIGN SHALL COMPLY WITH THE REQUIREMENTS OF 2017 (6TH ED.) FLORIDA BUILDING CODE, CHAPTER 16, TO RESIST A LINEAR LOAD OF 50 PLF AND A CONCENTRATED LOAD OF 200 LB. HANDRAIL SHALL ALSO COMPLY WITH ALL APPLICABLE OSHA REQUIREMENTS.

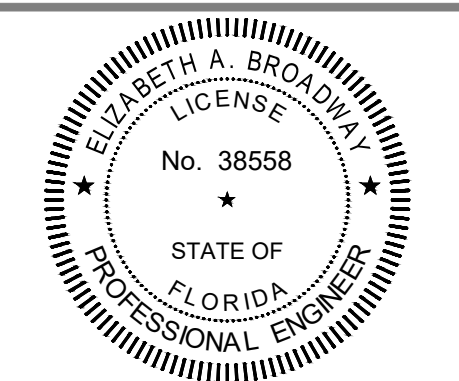
CONCRETE

- 1.- CONCRETE SHALL ACHIEVE MINIMUM 28 DAY COMPRESSIVE STRENGTHS AS LISTED BELOW:
 - 4000 PSI FOR SLABS ON GRADE, AND FOOTINGS.
- 2.- CONCRETE SLUMP SHALL NOT EXCEED 4±1" (EXCEPT FOR GROUTS).
- 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; OTHER ADMIXTURES MAY BE USED ONLY WITH THE APPROVAL OF THE ENGINEER.
- 12.- 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.

Rev on: 3/22/2022 8:03 AM Individual File Path: S04 Parent Sheet Set: 0818_NW Rev/Plot by: MILLER, JAY



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| Reviewed | --- |
| Approved | EAB |

CITY OF TAMPA WATER DEPARTMENT
GROUND STORAGE TANKS IMPROVEMENTS

STRUCTURAL

NORTHWEST GST STORAGE TANK STRUCTURAL GENERAL NOTES

| | |
|--------------|-------|
| PROJECT NO.: | 0818 |
| SCALE: | NOTED |
| REVISION: | 0 |
| DRAWING NO.: | S04 |
| SHEET NO.: | 14 17 |

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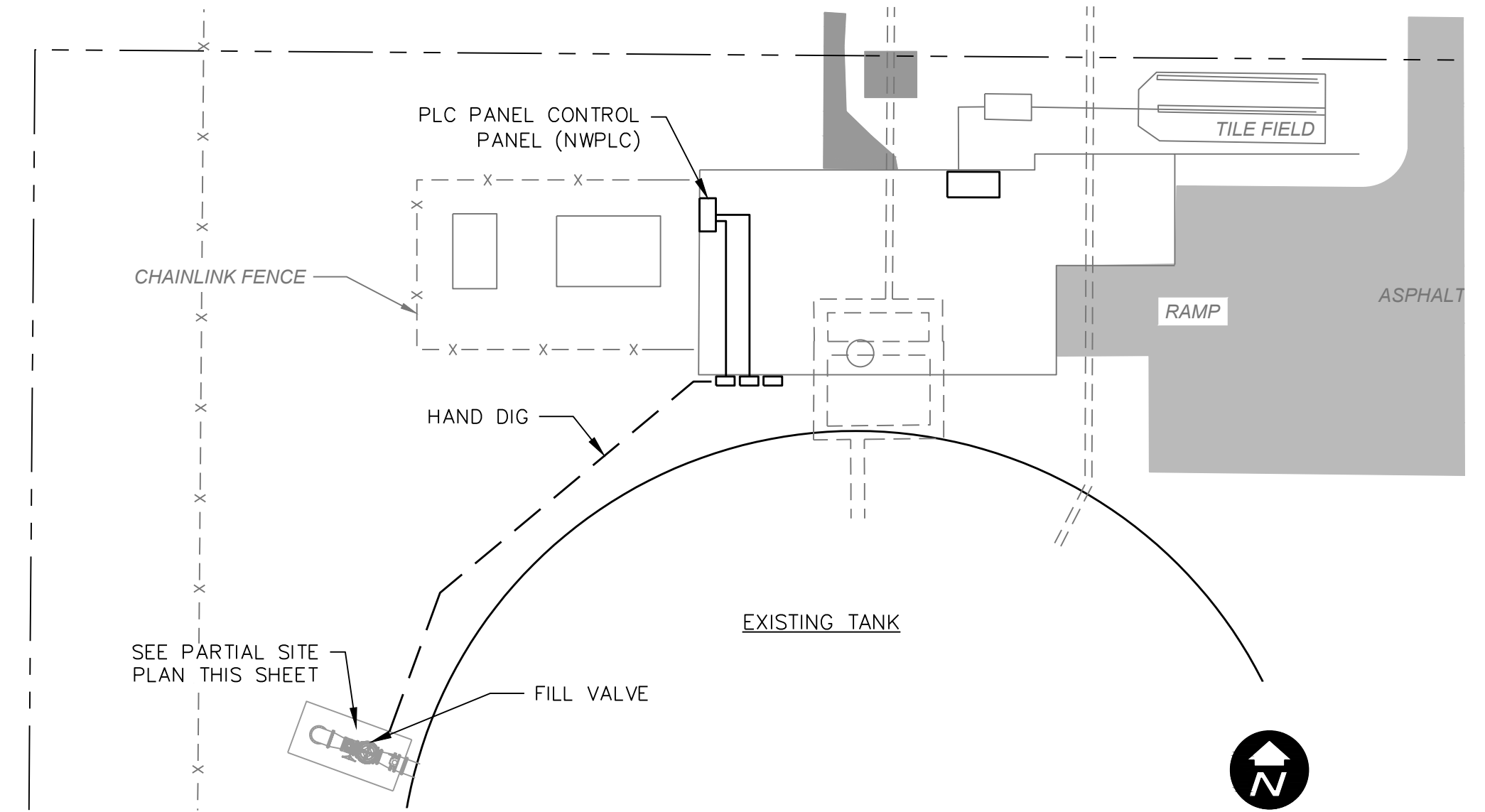
- SYMBOLS**
- HOME RUN TO PANELBOARD. NO. OF ARROWS INDICATE NO. OF CIRCUITS, HASH MARKS INDICATE NO. OF #12 AWG. CONDUCTORS. NO HASH MARKS INDICATE 2 #12 CONDUCTORS.
 - CONDUIT CONCEALED IN WALL OR ABOVE CEILING.
 - CONDUIT CONCEALED IN OR BELOW FLOOR OR UNDERGROUND.
 - CONDUIT RUN EXPOSED. RUN PARALLEL OR PERPENDICULAR TO STRUCTURE OR WALL.
 - FLEXIBLE CONDUIT WITH EQUIPMENT CONNECTION.
 - FUSE
 - MOLDED CASE CIRCUIT BREAKER

GENERAL NOTES

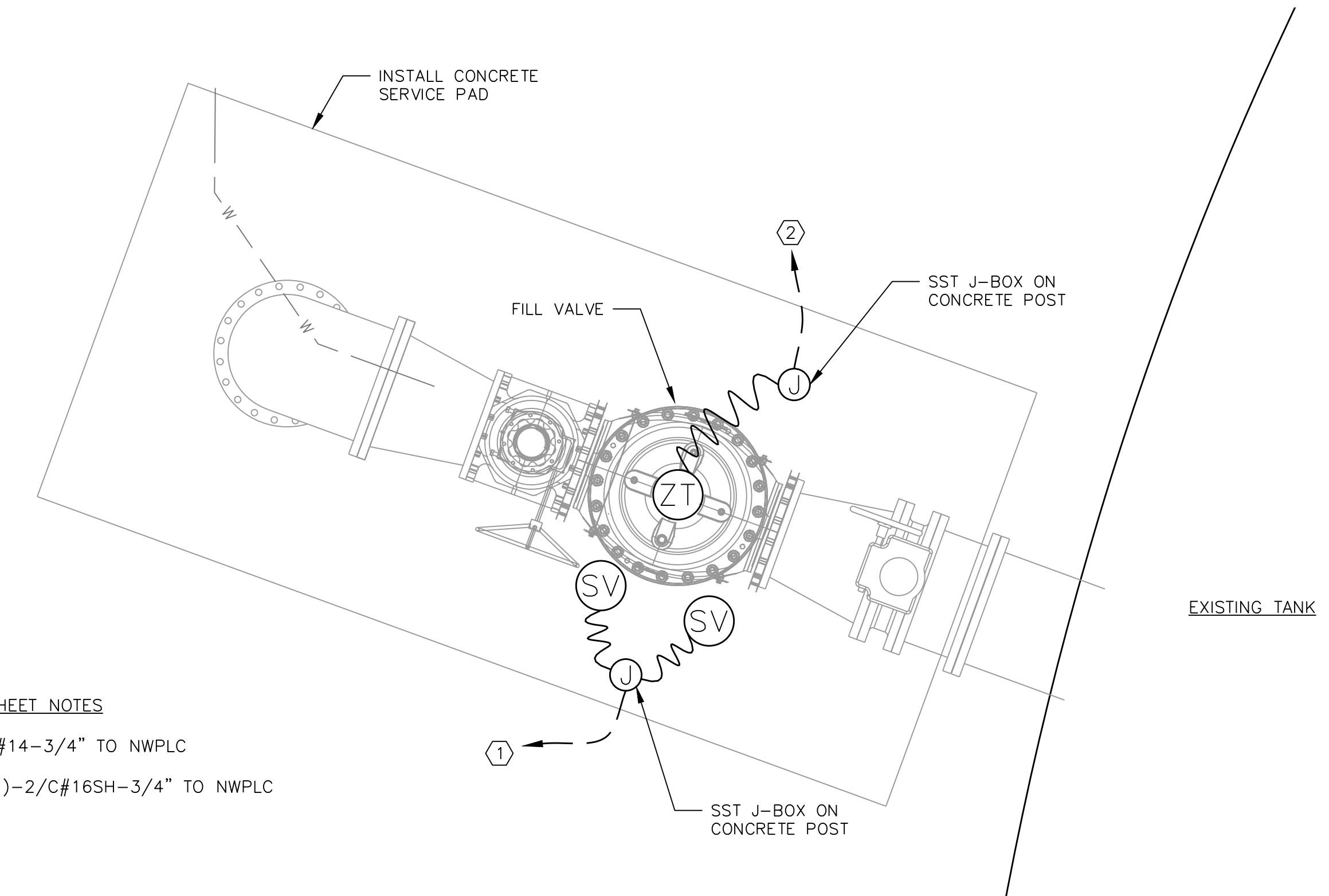
1. ALL WORK SHALL COMPLY WITH 2017 N.E.C. AND LOCAL CODES.
2. REFER TO EQUIPMENT SHOP DRAWINGS FOR EXACT LOCATION OF CONDUITS.
3. INSTALL BOND WIRE IN ALL RACEWAYS PER 2017 N.E.C.
4. DO NOT SCALE THE ELECTRICAL DRAWINGS. REFER TO THE MECHANICAL, CIVIL AND STRUCTURAL DRAWINGS FOR DETAILED LOCATIONS OF ALL PIPING AND EQUIPMENT.

ABBREVIATIONS

- A AMPERES
- AI ANALOG INPUT
- AIC ASYMMETRICAL INTERRUPTING CURRENT
- BKR BREAKER
- BLDG BUILDING
- CAB CABINET
- CIR CIRCUIT
- CONT CONTROL
- CP CONTROL PANEL
- CPT CONTROL POWER TRANSFORMER
- CT CURRENT TRANSFORMER
- EC EMPTY CONDUIT
- ELEC ELECTRICAL
- EM EMERGENCY
- ENCL ENCLOSURE
- ETM ELAPSE TIME METER
- EXIST EXISTING
- GEN GENERATOR
- GND GROUND
- HOA HAND-OFF-AUTOMATIC
- HP HORSEPOWER
- HPS HIGH PRESSURE SODIUM
- KCMIL THOUSAND CIRCULAR MILS
- KVA KILOVOLT-AMPERES
- LS LIMIT SWITCH
- LSCP LIFT STATION CONTROL PANEL
- LT LEVEL TRANSMITTER
- MAX MAXIMUM
- MB MAIN BREAKER
- MCC MOTOR CONTROL CENTER
- MCP MOTOR CIRCUIT PROTECTOR
- MFR MANUFACTURER
- MIN MINIMUM
- MTD MOUNTED
- NEC NATIONAL ELECTRIC CODE
- NEMA NATIONAL ELECTRICAL MANUFACTURES ASSOCIATION
- P POLE
- PNL PANEL
- RTU REMOTE TELEMETRY UNIT
- SW SWITCH
- SS STAINLESS STEEL
- TYP TYPICAL
- UG UNDERGROUND
- V VOLT
- VAC VOLTS ALTERNATING CURRENT
- W WIRE
- WP WEATHER PROOF
- XMFR TRANSFORMER



OVERALL SITE PLAN

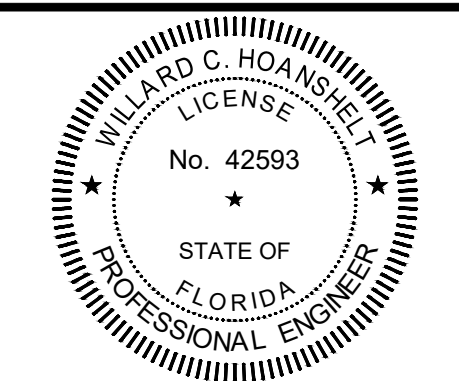


PARTIAL SITE PLAN

- SHEET NOTES**
- ① 5#14-3/4" TO NWPLC
 - ② (1)-2/C#16SH-3/4" TO NWPLC

Parent Sheet Set:0818_NW Rev/Plot by: MILLER, JAY Rev on: 3/10/2022 11:02 AM Individual File Path:E01

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 Reviewed WCH
 Approved WCH

CITY OF TAMPA WATER DEPARTMENT
 GROUND STORAGE TANKS IMPROVEMENTS
 ELECTRICAL
NORTHWEST GST PLANS

| | |
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| PROJECT NO.: | 0818 |
| SCALE: | NOTED |
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| DRAWING NO.: | E01 |
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- SCADA DISPLAY OR CONTROL
- PANEL MOUNTED (MAIN OR REMOTE)
- PANEL BEHIND (MAIN OR REMOTE)
- PANEL MOUNTED (LOCAL)
- LOCALLY MOUNTED
- SINGLE LINE TAG
- MOUNTED BEHIND PANEL (LOCAL)
- PILOT LIGHT
- PANEL PILOT LIGHT
- SHEET NOTE
- CONTROL TYPE (DI, DO, AI, AO)
- (I) DATA LINK
- INTERLOCKING FUNCTION
- PANEL
- DIAPHRAGM CONTROL
- GROUND
- POLYMER FEED HOPPER
- POLYMER FEED SYSTEM (DRY)
- DRY FEEDER
- PROGRESSIVE CAVITY PUMP
- ULTRA SONIC SENSOR
- ELECTRICAL SIGNAL
- 3 PHASE AC POWER
- DATALINK
- 24VDC SIGNAL
- DC POWER

- GLOBE VALVE
- BALL VALVE
- HALF SIZE BALL VALVE
- GATE VALVE
- PLUG VALVE
- CHECK VALVE
- NEEDLE VALVE
- PINCH VALVE
- FOOT VALVE
- DIAPHRAGM
- BUTTERFLY VALVE
- FILL VALVE
- REDUCER
- FLEXIBLE CONNECTOR
- INLINE STATIC MIXER
- CENTRIFUGAL PUMP
- BLOWER PUMP
- SUBMERSIBLE PUMP
- METERING PUMP
- ROTAMETER
- MOTOR
- MIXER
- FLANGE
- VACUUM BREAKER
- RELIEF AND/OR SAFETY
- SOLENOID VALVE
- 3-WAY SOLENOID
- 4-WAY SOLENOID
- DRAIN

- DOUBLE LEAF CHECK VALVE
- WYE STRAINER
- VIC COUPLING
- 3-WAY VALVE
- 4-WAY VALVE
- HOSE CONNECTION
- VENT WITH SCREEN
- LEVEL GAUGE
- GAS CYLINDERS
- EDUCTOR
- AIR RELEASE VALVE
- BACK PRESSURE VALVE
- HOSE PUMP
- ANALOG SIGNAL
- DISCRETE SIGNAL
- ANALOG & DISCRETE SIGNALS

- SIMPLEX RECEPTACLE
- DUPLEX RECEPTACLE
- TIE POINT
- SELF ACTUATED REGULATOR
- PILOT OPERATED PRESSURE REGULATOR
- PILOT OPERATED BACKPRESSURE REGULATOR
- MOTOR OPERATED
- CYLINDER OR PISTON OPERATED
- DIAPHRAGM ACTUATOR W/DOUBLE ACTING OPERATOR W/O ACCESSORIES
- DIAPHRAGM ACTUATOR W/DOUBLE ACTING OPERATOR WITH HANDWHEEL
- DIAPHRAGM ACTUATOR W/DOUBLE ACTING OPERATOR WITH ADJUSTABLE OPENING LIMIT STOP
- VANE TYPE ACTUATOR
- AIR OPERATOR W/POSITIONER
- FAIL OPEN
- FAIL CLOSED
- FAIL LAST POSITION
- STEAM TRAP
- RESIN OR MEDIA TRAP
- DESICCANT BREATHING
- VENT PIPE
- RUPTURE DISC
- DIAPHRAGM SEAL
- SPECTACLE BLIND
- PULSATION DAMPENING
- TURBINE DRIVE
- PNEUMATIC PISTON
- PADDLE WHEEL FLOW SENSOR
- END CLOSURE (CLEANING CONNECTION)
- EJECTOR

- VACUUM PUMP
- POSITIVE DISPLACEMENT PUMP W/MANUAL STROKE ADJUSTMENT
- POSITIVE DISPLACEMENT PUMP W/PNEUMATIC STROKE ADJUSTMENT
- POSITIVE DISPLACEMENT PUMP W/ELECTRIC STROKE ADJUSTMENT
- HEAT EXCHANGER
- VENT TO ATMOSPHERE
- ROTARY COMPRESSOR OR BLOWER
- VENTURI
- VORTEX SENSOR
- FLOW NOZZLE
- SONIC FLOW SENSOR
- INJECTION SPARGER
- RO BLOCK OR TUBE
- DOUBLE SKIN UP CARTRIDGE
- FLOW SIGHT GLASS
- SIGHTGLASS (ON VESSEL)
- LEVEL GAUGE
- AIR SUPPLY
- NITROGEN SUPPLY
- FLOW ELEMENT (ORIFICE PLATE)
- INLINE FLOW INDICATOR (ROTAMETER)
- FLOW ELEMENT (ANNUBAR)
- FLOW TOTALIZING INDICATOR (TURBINE METER)
- FLOW ELEMENT (MAGNETIC)
- FLOW ELEMENT (VENTURI)

INTERNATIONAL SOCIETY OF AUTOMATION

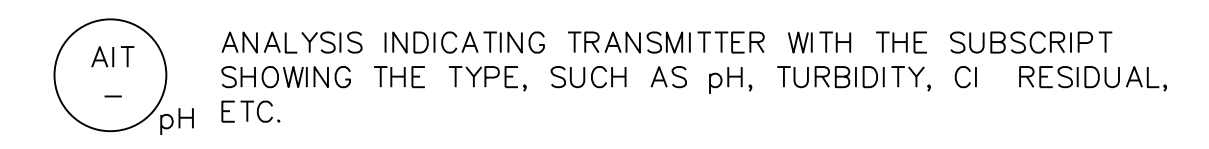
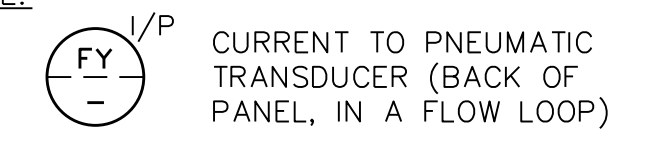
| LETTER | FIRST LETTER (S) | | SUCCEEDING LETTERS | | |
|--------|--------------------------------|---------------------|-----------------------------|--|---------------------|
| | PROCESS OF INITIATING VARIABLE | MODIFIER | READOUT OR PASSIVE FUNCTION | OUTPUT FUNCTION | MODIFIER |
| A | ANALYSIS (+) | | ALARM | | |
| B | BURNER FLAME | | USERS CHOICE (+) | USERS CHOICE (+) | USERS CHOICE (+) |
| C | USERS CHOICE (+) | | | CONTROL | |
| D | USERS CHOICE | DIFFERENTIAL | | | |
| E | VOLTAGE | | PRIMARY ELEMENT/SENSOR | | |
| F | FLOW RATE | RATIO/FRACTION | | | |
| G | USERS CHOICE | | GLASS/VIEWING DEVICE | | |
| H | HAND (MANUAL) | | | | HIGH |
| I | CURRENT (ELECTRIC) | | INDICATE | | |
| J | POWER/TORQUE | SCAN | | | |
| K | TIME OR SCHEDULE | TIME RATE OF CHANGE | | CONTROL STATION | |
| L | LEVEL | | LIGHT (PILOT) | | LOW |
| M | MOTOR | MOMENTARY | | | MIDDLE/INTERMEDIATE |
| N | DATA | | USERS CHOICE (+) | USERS CHOICE (+) | USERS CHOICE (+) |
| O | USERS CHOICE (+) | | ORIFICE | | |
| P | PRESSURE (OR VACUUM) | | POINT (TEST CONNECTION) | | |
| Q | QUANTITY | INTEGRATE | | | INTEGRATE/TOTALIZE |
| R | RADIATION | | RECORD OR PRINT | | |
| S | SPEED OR FREQUENCY | SAFETY | | SWITCH | STARTER |
| T | TEMPERATURE | | | TRANSMIT | |
| U | MULTIVARIABLE (+) | | MULTIFUNCTION (+) | MULTIFUNCTION (+) | MULTIFUNCTION (+) |
| V | VIBRATION MECHANICAL ANALYSIS | | | VALVE, DAMPER, LOUVER | |
| W | WEIGHT OR FORCE | | WELL | | |
| X | MALFUNCTION/FAULT | X AXIS | UNCLASSIFIED (+) | UNCLASSIFIED (+) | UNCLASSIFIED (+) |
| Y | EVENT STATE OR PRESENCE | Y AXIS | | RELAY OR COMPUTE (+) | |
| Z | POSITION | Z AXIS | | DRIVE, ACTUATE OR UNCLASSIFIED FINAL CONTROL ELEMENT | |

(+) WHEN USED, EXPLANATION IS SHOWN ADJACENT TO INSTRUMENT SYMBOL. SEE ABBREVIATIONS AND LETTERS SYMBOLS.

TRANSDUCER SUBSCRIPTS

- A ANALOG
- D DIGITAL
- E VOLTAGE
- F FREQUENCY
- H HYDRAULIC
- I CURRENT
- P PNEUMATIC
- PF PULSE FREQUENCY
- PD PULSE DURATION
- R RESISTANCE
- POT POTENTIOMETER

EXAMPLE:



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Reviewed WCH
Approved WCH

CITY OF TAMPA WATER DEPARTMENT
GROUND STORAGE TANKS IMPROVEMENTS

INSTRUMENTATION & CONTROLS

SYMBOLS

PROJECT NO.: 0818

SCALE: NOTED

DRAWING NO.: 101

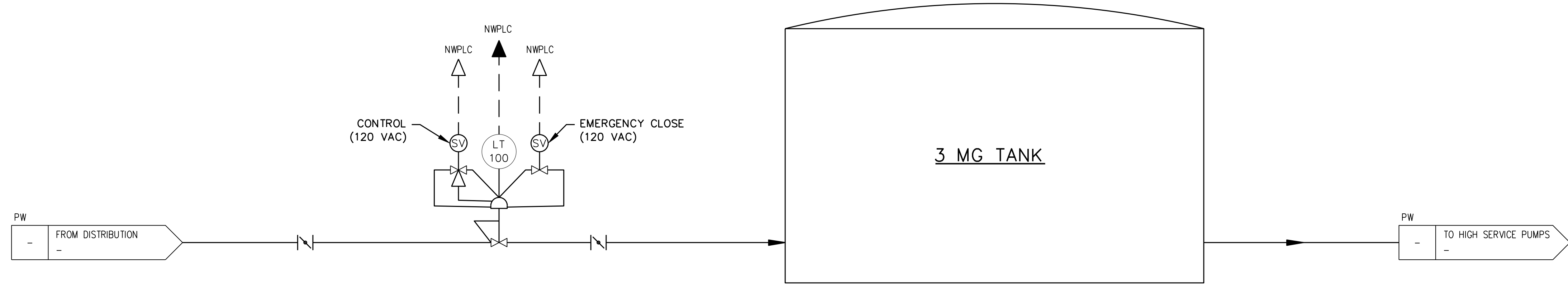
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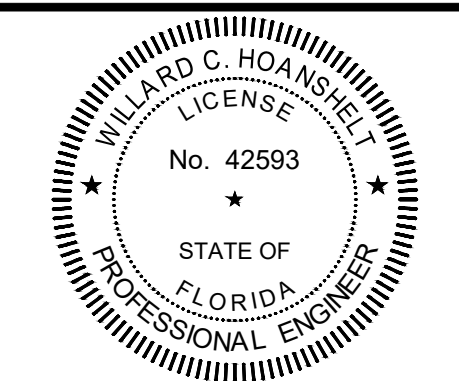
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Designed WCH
 Drawn JPH
 Checked WCH
 Reviewed WCH
 Approved WCH

CITY OF TAMPA WATER DEPARTMENT
 GROUND STORAGE TANKS IMPROVEMENTS

INSTRUMENTATION & CONTROLS

GST P&ID

| | |
|-------------------|---------------------|
| PROJECT NO.: 0818 | |
| SCALE: NOTED | REVISION: 0 |
| DRAWING NO. 102 | SHEET NO.: 17 OF 17 |

CHA
 CHA CONSULTING, INC.
 3507 EAST FRONTAGE ROAD
 SUITE 180
 TAMPA, FL 33607
 (813) 549-0919

SECTION 16000
BASIC ELECTRICAL REQUIREMENTS

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Work included in Section 16 consists of furnishing all labor, materials, equipment and transportation and performing all testing and demonstration operations of all system features required for electrical work in accordance with these specifications and drawings which includes, but is not limited to the following:
1. Complete electrical wiring of power and control as shown on the drawings and herein specified.
 2. Electrical permits, fees, tests, inspection and guarantees.
 3. Connection of all electrical equipment, including complete ground system.
 4. Submit shop drawings.
 5. Provide record drawings.

1.02 PROPRIETARY NAMES

- A. For convenience of description and as a standard for grade, type, quality, and performance characteristics, proprietary names are included with some descriptions. This does not imply preference to specific manufacturers (except where multiple choice is specified), but minimum requirements with approval to be made by the Engineer.

1.03 QUALITY ASSURANCE

- A. Standards: All materials shall be new and free of defects, and shall be U.L. listed, bear the U.L. label of be labeled or listed with an approved, nationally recognized Electrical Testing Agency. Where no labeling or listing service is available for certain types of equipment, test data shall be submitted to prove to the Engineer that equipment meets or exceeds available standards.
- B. Codes: Install in accordance with latest edition of the National Electric Code and the regulations of governing local, State, County, and other applicable codes, including the Utilities Company. Pay for all required licenses, fees, and inspections.
- C. Contract Documents: The drawings are generally diagrammatic; therefore, the Contractor shall make use of all the data in all of the contract documents and shall verify all information at the site. During execution of the contract, the location of

electrical apparatus shall be coordinated with the owner. Owner or his representative prior to installation shall approve all questionable locations.

- D. Inspections: During the course of construction, the engineer will observe the work. The Contractor shall call for inspections by the local building inspector during the normal phases of installation and, following each inspection phase, the engineer shall be furnished with Certificates of Inspection from all authorities having jurisdiction. After the completion of the work, the Contractor shall deliver all certifications or letters of approval from such bodies to the engineer. Following the successful completion of the final inspection, furnish the owner with a certificate of final approval.
- E. Tests: The Contractor shall provide all necessary instruments and special apparatus to conduct any test that may be required to insure system performance and that control wiring and power cables are free of all improper grounds and short circuits. These tests shall be conducted in the presence of the owner's representative prior to final acceptance.
- F. After service, feeders, and mechanical equipment feeder wires or cables are in place, but before being connected to devices and equipment, the system shall be tested for shorts, opens, intentional and unintentional grounds by means of an approved type of constant "megger". All wires in conduit that are shorted or unintentionally grounded shall be replaced.
- G. With the system energized, line-to-line voltage and line current measurements shall be made under full load conditions. Should measured values deviate $\pm 10\%$ from the nameplate rating, the condition shall be corrected. Notify the engineer immediately should deviations occur.
- H. The resistance between ground and absolute earth shall not exceed 5 ohms and shall be measured by the Electrical Contractor before equipment is placed in operation. Testing shall be performed on all ground rod installations. Testing shall be three-(3) point method in accordance with IEEE recommended practice.

1.04 SUBMITTAL

A. Shop Drawings:

- 1. Before submittal to the Engineer, all shop drawings shall be perused, corrected and verified by signature, or stamp and signature as approved by the applicable subcontractor to be in accordance with the requirements of the drawings and specification. Shop drawings that have not been signed or stamped and signed as approved but have not been perused for compliance with the drawings and specifications and have not been coordinated with other equipment and other trades, will be returned to the Contractor without being reviewed by the engineer. All component manufacturers' names shall be clearly visible on each submittal

sheet. Dimensions, material lists, wiring diagrams, capacities, catalog numbers/cuts and other such pertinent data shall be submitted for approval of all equipment, disconnect switch, including circuit breakers, safety switches, and controls, and all wiring and control devices. Approval of material will be based on the manufacturer's published ratings or on test results where specified. All data shall be submitted in a single package. No partial list will be reviewed.

2. If any required items are omitted from this submittal, the engineer shall select each such item indicating manufacturer, model, etc., and such decision shall be final. The term "Per Specifications" will not be acceptable. Samples shall be required as requested by the engineer to further substantiate any substitutions.
3. Any deviation from the specifications pertinent to shop drawings shall be listed separately and submitted with shop drawings. Failure to list all deviations in this manner shall be grounds for requiring removal of such items and installation of new items in exact accordance with specifications at no extra cost to the owner. No material shall be purchased or installed before written approval of any submission.
4. In addition to the shop drawings, which must be submitted for approval before ordering equipment, the Contractor shall furnish four copies of complete installation drawings, instruction books, maintenance manuals, and parts lists for each major item of electrical equipment, and similar data on minor items of equipment if requested by the engineer. This information must be submitted before the installation of the equipment.

B. Permits, Fees, Inspection Certificates, and Tests:

1. Permits: All required permits, fees and inspection certificates shall be obtained, paid for, and be made available by the Contractor during the progress of the work.
2. The Contractor shall perform or secure such tests as may be required, supplying all labor and instruments needed, or paying such costs as may be involved.
3. All tests required establishing the adequacy and quality of all systems shall be made by this Division in the presence of and to the satisfaction of the engineer.
4. All concealed work must remain uncovered until approved. All tests shall be made in strict accordance to code requirements. Defects disclosed by tests shall be made good and the defective materials replaced without additional cost to the owner. Tests shall be repeated after repairs or replacements have been made.

C. Record Drawings:

1. During the progress of the work, the job superintendent for this Division shall record daily on his complete field set of electrical drawings the exact location as

installed of all underground and otherwise concealed conduits that were not installed exactly as shown on the contract drawings.

2. This work must be kept up-to-date and verified by the engineer's field representative before the payment is made. The complete marked set shall be delivered to the owner before the final acceptance of the work.

1.05 GUARANTEE

- A. All equipment materials and workmanship shall be guaranteed to conform with the specifications and accepted alternates. Parts, defective or not in accordance with the specifications or accepted alternates, shall be replaced in the system and tested free of cost to the owner; and for a period of one year after final acceptance of the completed system, shall be fully guaranteed.
- B. In the event that a repetition of any one material defect occurs, indicating the probability of repeated failures which can be traced to faulty manufacture, manufacturer's design of material or item, or Contractor's method of installation, the Contractor shall not continue to replace with the same material, part or method, but shall take steps to remedy the fault through replacement of all such defective material or revise completely the method of installation.
- C. Manufacturer's guarantees, which extend beyond the guarantee period specified, shall be transferred to the owner before request for final payment.
- D. All equipment, accessories and connections shall be guaranteed to operate without undue heating, noise or voltage drop; and the Contractor shall correct or adjust any items, should such conditions be found to exist after system has been put into operation. The engineer shall decide whether or not a condition or noise is objectionable.
- E. Certification must be provided stating that all materials and equipment used on the project are new.

1.06 SUPERVISION AND WORKMANSHIP

- A. All work under this Division shall be performed under the immediate direction of fully qualified foremen. Insofar as possible and unless approved by the engineer, there shall be no change in supervision during the course of construction.
- B. All workmanship shall be of the highest quality, and the right to require immediate removal from the project of any personnel for cause is reserved to the engineer.
- C. It is the intent and of the essence of the specifications that all personnel furnished for this Division shall cooperate with all other personnel at all times to insure the furnishing of highest quality workmanship.

PART 2 – PRODUCTS

2.01 MATERIALS AND EQUIPMENT

A. General: All electrical materials and equipment shall be new, of recent manufacture, shall bear the manufacturer's name, date of manufacture, trademark and be approved by the Underwriters' Laboratories, Inc., except as otherwise specified herein. Material or equipment damaged in the course of installation or test shall be replaced or repaired in a manner meeting with the approval of the engineer. All equipment shall be complete and in operating condition unless otherwise specified herein, fusible equipment shall be equipped with fuses, a 100-percent of spare fuses of each type shall be supplied. Equipment and materials shall be delivered to the site and stored in original containers, suitably sheltered from the elements, but readily accessible for inspection.

B. Raceways:

1. PVC conduit shall be schedule 40 composed of High Impact PVC (polyvinyl chloride (C-200 Compound), and shall conform to industry standards, and be UL listed in accordance with Article 347 of National Electrical Code for underground and exposed use. Materials must have tensile strength of 55 PSI, at 70 degrees F, flexural strength of 11,000 PSI, compression strength of 8600 PSI. Manufacturer shall have five years' extruding PVC experience.
2. ALUM conduit shall contain less than 0.1-percent copper and conform to Federal Specification WW-C-540C.
3. Liquidtight flexible conduits shall be aluminum cord, PVC coated with aluminum fittings.
4. All mounting hardware shall be 316 stainless steel, anchors shall be expansion type, 316 stainless steel

C. Conductors:

1. All power conductors shall be copper Type THHW cross-linked polyethylene, 600 volts insulation, or approved equal. No. 10 and smaller may be single strand. No. 9 through No. 2 shall be 7 strands and No. 1 through 4/0 shall be 19 strands. 250 MCM through 500 MCM shall be 37 strands.
2. Connectors and lugs shall be Burndy series YA, YS YSV, applied with Burndy recommended tools. Taps in gutters shall be Burndy KSU, tin-plated. All connectors shall be insulated with PVC tape and made watertight. Scotchlock insulated spring type connectors shall be used for fixture connections.

3. Pull compound, if used, shall conform to the recommendations of the wire manufacturer.
- D. Nameplates: The following items shall be equipped with nameplates: All safety switches, motors, and control panels. Special electrical systems shall be identified at junction and pull boxes, and equipment and cable racks. Nameplates shall adequately describe the function of the particular equipment involved. Nameplates for panel shall include the panel designation, voltage, and phase of the supply. For example, "Pump Control Panel, 240V, 3-phase, 3-wire". The name of the machine on the nameplates for a particular machine shall be the same as the one used on all motor starters and for that machine branch circuit breakers. Nameplates shall be laminated phenolic plastic, black front and back with white core, with lettering etched through the outer covering. White engraved letters on black background. Attach with plated self-tapping screws or brass bolts.
- E. Boxes: All outlet and switch boxes and fittings used throughout the job, except where electric metallic tubing is permitted, shall be 316 stainless steel. Boxes shall be minimum size as required by the National Electric Code and large enough to permit a satisfactory installation of the required conductors.
- F. Ground Rod: Ground rods shall be a copper clad steel rod 5/8-inch diameter by 20 feet long, approved for that use.
- G. Lightning Arrestors: Secondary lightning protection shall be provided on each phase on the line side of main service as shown on the Drawings.

PART 3 - EXECUTION

3.01 INSTALLATIONS

- A. All work shall be executed in a neat and workmanlike manner by experienced and licensed and certified electricians so as to present a neat installation upon completion. Electrical work shall be coordinated so as not to interfere with other construction operations. All work under each section of this Division shall be laid out and installed in advance of pouring concrete floors or walls.
- B. The Contractor shall perform or be responsible for all necessary cutting, sleeving, excavating and backfilling and compacting for the installation of the equipment and the patching thereafter. Metal conduits installed underground or in concrete slabs shall be coated with two coats of asphalt paints.
- C. The Contractor shall furnish and install all inserts, and hangers required to support conduit, cables, pull boxes, etc. The Contractor shall furnish and install all sleeves or openings through floors or walls required for passage of all conduits or ducts installed. Sleeves shall be of 18-gauge galvanized sheet steel rigidly supported and suitably packed to prevent ingress of wet concrete. If sleeves, hangers, inserts, etc.,

are improperly installed, all necessary cutting and patching to rectify such error shall be performed.

- D. The Contractor shall permanently and effectively ground service neutral and all raceways, devices, and utilization equipment in accordance with requirements of National Electrical code, and as shown or required. All grounding electrodes shall have rigid clamp jaws.
- E. The Contractor shall install control devices furnished by equipment manufacturers with their equipment and complete the wiring in accordance with manufacturer's recommendations and approved wiring diagrams.
- F. Feeders and Branch Circuitry: Sizing of main feeders and branch feeders is fully delineated on the drawings. The Contractor shall provide all feeders in accordance with the indications of the drawings and shall connect them for correct phase sequence and the proper operation of the equipment they serve.
- G. Conductors: Conductors pulled in raceways shall be greased to reduce strains on the conductor and on the insulation. Conductors that are nicked or scarred during installation shall be removed. The raceways will be cleaned and freed from any burrs or abrasions and new conductors installed. Conductors shall be laced and trained in all panelboards, control panels, and terminal cabinets. Color coding of conductors is mandatory. The phase conductors of all feeder circuits and the control conductors of all control circuits shall be grouped as such, laced, and identified where installed in the pull boxes.
- H. Grounding:
 - 1. In general, all electrical equipment (metallic conduit, motor frames, panelboards, etc.) shall be bonded together with a green insulated or bare copper system-grounding conductor in accordance with specific rules of Article 250 of the NEC. Bonding conductor through the raceway system shall be continuous from main panel grounding bar to branch circuit equipment and devices.
 - 2. Equipment grounding conductors shall be so installed as to permit shortest and most direct path from equipment to ground and be installed in conduit with both conductor and conduit bonded at each end and have connections accessible for inspection and be made with approved solderless connectors brazed (or bolted) to the equipment or structure to be grounded. Equipment grounding conductors in NO case be a current carrying conductor, have green jacket. The grounding electrode conductor shall be exothermically welded to grounding electrode.
 - 3. All contact surfaces shall be thoroughly cleaned before connections are made to insure good metal-to-metal contact.

4. Mechanical lugs or wire terminals shall be used to bond ground wires together or to junction boxes and panel cabinets and shall be manufactured by Anderson, Buchanan, Thomas and Betts Co., or Burndy.
 5. All exterior grade mounted equipment shall have their enclosures grounded directly to a separate driven ground at the equipment.
 6. All raceways shall have an insulated copper system ground conductor throughout the entire length of circuit installed within conduit in strict accordance with NEC.
- I. Raceways:
1. General: All above grade conduits shall be aluminum, below grade shall be PVC-40. Conduits shall be installed to insure against the collection of trapped condensation, and all runs shall be arranged to be devoid of all traps wherever possible. Precautions shall be taken to prevent the lodging of dirt, plaster, or trash in conduit, tubing, fittings, and boxes during construction. A run that has been or becomes clogged shall be entirely cleared or replaced. All metallic conduits installed in concrete or below grade shall be painted with two coats of black asphalt paint. Where conduits leave or enter a slab, a flush coupling shall be installed.
 2. Size: Minimum size for all conduits is ¾-inch.
 3. Rigid Aluminum Conduit: Rigid conduit shall be securely fastened to all enclosures; care being taken to see that the full number of threads project into the hub. All field cut threads shall be coated with a zinc compound.
 4. Flexible Conduit: 18 inches maximum
- J. Devices: Devices shall be set plumb with the footing or floor and at locations indicated. Where devices must be moved because of conflict, approval of the engineer shall be obtained prior to relocation.
- K. Electrical Work Required for the Installation of Equipment Under Other Divisions of these Specifications: The Contractor shall provide all conduit, conductors, boxes, safety switches, and all necessary hardware required for the installation of equipment.
- L. Surfaces disturbed during the installation of duct, conduit or direct burial cable shall be restored to their original elevation and condition and for new work to new elevations and conditions specified. Sod or topsoil shall be preserved carefully and replaced after the backfilling is completed. Sod that is damaged shall be replaced by sod of quality equal to that removed. Where the surface is disturbed in a newly seeded area, the restored surface shall be re-seeded with the same quantity and formula of seed as that used in the original seeding.

- M. Backfilling around and below structures shall consist of earth, loam, sand-clay or sand and gravel, free from large clods of earth or stones over one inch in size. Backfill materials shall be placed symmetrically on all sides in loose layers not more than nine inches deep. Each layer shall be moistened, if necessary, and compacted with mechanical or hand tampers to 95 percent compaction (AASHTO T- 180 proctor).
- N. All electric service support channels shall be manufactured by a reputable firm having experience in rating and construction of such equipment. All support channels, hereinafter called strut, shall be cold worked roll formed A.I.S.I. Type 316 stainless steel or extruded 6063-T6 Aluminum. The minimum allowable stainless-steel strut shall be 1-5/8" x 1-5/8", 12-gauge thickness. The stainless strut shall have no holes drilled larger than 5/8" and no closer than 1-1/2" in spacing. No holes shall be drilled or enlarged in pre-punched strut. All attachments to the stainless struts shall be made with the appropriate clamping devices, made of Type 316 stainless steel. The minimum allowable aluminum strut shall be 1-5/8" x 2-3/8". Attachments to aluminum strut shall be made with appropriate clamping devices made of 5052-H32 alloy. All loading of strut materials shall have a 15 percent load safety factor.

END OF SECTION

**SECTION 16950
CONTROL DESCRIPTIONS**

A. SUMMARY

1. Furnish and install a one-way flow altitude high level shutoff valve, with solenoid electrical control and back pressure throttling while filling. Cla-Val model 16" 210-13BPCY KCO DS SSB 150AG. Provide sensing line to the CDS6A altitude pilot and provide percent open of valve. The Contractor shall provide conduit and wire to provide power and tie to SCADA. The Tampa Water Department will provide programing for the Cla-Val.
2. Emergency System
 - a. The control shall include a relay system that will close the fill valve. The relay system shall be independent of the PLC operation. The relay system will detect the emergency high level and will close the fill valve utilizing the fill valve emergency solenoid valve. A local manual reset will be required to restore automatic control. The control system shall maintain utility voltage to the emergence close solenoid valve. Upon loss of voltage i.e., loss of utility voltage, the emergency solenoid shall close the fill valve.

B. FUNCTIONAL DESCRIPTIONS

1. General:

- a. The existing 3.0 MG ground storage tank shall be programed for automatic filling by a local PLC. The working volume of the tank is 0-30 feet. Currently the tank level is monitored by a single level transducer. The proposed fill valve is hydraulically operated with pilot controls. The pilot controls utilize a 3-way solenoid and emergency close solenoid valves.

2. Ground Storage Tank Control Description

- a. The PLC programming shall allow for automatic filling of the ground storage tank as a function of time, level, and operator adjustable setpoints. The sequence of automatic control shall be as follows:
 - 1) The operator sets the time for filling over 24 hours, 7 days.
 - 2) The operator sets the start fill level.
 - 3) The operator sets the stop fill level.
 - 4) The operator sets the restore pumping level.
 - 5) The operator sets the impending low-level alarm setpoint.
 - 6) The operator sets the impending high-level alarm setpoint.
 - 7) The operator sets the emergency low-level alarm setpoint.
 - 8) The operator sets the emergency high-level alarm setpoint

- 9) The operator sets the tank fill system, Manual/Off/Auto selector switch in the AUTO position.
 - 10) After operator prompt to start, the control system shall confirm equipment status and shall prompt the operator if there is a condition where automatic control is not possible. The control system shall provide error messages to alert the operator of a problem. If the control system determines acceptable operating parameters, the control system shall automatically control the tank level to maintain setpoints.
- b. Automatic Operation
 - 1) The SCADA system shall keep the tank full as directed by operator level and time of day setpoints.
 - c. Manual Operation
 - 1) The PLC programming shall allow the manual operation of the GSR. The sequence of control shall be as follows:
 - a. The operator sets the Manual/Off/Auto selector switch in the MANUAL position.
 - b. For opening, operator sets the OPEN/OFF/CLOSE selector switch in the OPEN position. An operator prompt is required for confirmation, once confirmed, the valve will open.
 - c. For closing, operator sets the OPEN/OFF/CLOSE selector switch in the CLOSE position. An operator prompt is required for confirmation, once confirmed, the valve will close.
 - d. Interlocks
 - 1) On emergency ground storage tank high level: Close the fill valve
 - 2) On emergency ground storage tank low level: Stop all booster pumps
 - 3) On retore pump level setpoint: Restart booster pumps.
 - 4) Upon loss of a healthy GSR level signal: Close the fill valve
 - 5) On loss of utility power: Close the fill valve the fill valve.
 - e. Alarms
 - 1) Emergency High Wetwell Level
 - 2) Emergency Low Wetwell Level
 - 3) Impeding High Wetwell Level
 - 4) Impeding Low Wetwell Level
 - 5) Fill valve Failed to Move
 - 6) Loss of GST Level Signal
 - 7) Loss of Communication
 - f. Emergency System:

- 1) The control shall include a relay system that will close the fill valve. The relay system shall be independent of the PLC operation. The relay system will detect the emergency high level and will close the fill valve utilizing the fill valve emergency solenoid valve. A local manual reset will be required to restore automatic control.
 - 2) The control system shall maintain utility voltage to the emergence close solenoid valve. Upon loss of voltage i.e., loss of utility voltage, the emergency solenoid shall close the fill valve.
- g. Furnish one HMI display page for this system.
- h. Fill Valve PLC I/O
- 1) DO: Fill Valve Open/Close Command
 - 2) AI: Fill Valve Position (0-100%)

Questions and Answers

1. On Bid Item 4: Investigation Beneath Tank Floors, is the intent to produce a report similar in fashion and scope to the previous investigation at Morris Bridge, should this investigation survey the entire floor?
 - a. The entire floor should be surveyed. See prior addendum regarding the investigation at Morris Bridge.

2. Is the city covering the cost for the lead/asbestos testing? If not please specify a line item to carry the amount on the bid form.
 - a. The standard “upfront” documents for the City of Tampa speak to testing being performed by the City unless otherwise noted (G-5.01). We note otherwise within Specific Provision 18 Testing on Page SP-3 which states that all testing required shall be borne by the Contractor. If lead/asbestos testing is required, the cost shall be borne by the contractor.

3. What is the anticipated start date on the project?
 - a. The specifications included in the advertisement speak to required timing for topics such as the pre-construction meeting, mobilization, and substantial completion.

4. Please provide as built or quantify the linear feet of pipe requiring coatings of the Northwest GST Building carried in Line Item 21 of the Bid Form.
 - a. See Appendix A.

5. Please specify which permits/ authorizations are required for the project.
 - a. See G-1.02 WORK INCLUDED. Please note that this project site is within Hillsborough County’s Jurisdiction, and they determined that no building permit is required. The specifications included in this advertisement speak to other testing and clearance requirements.

6. I do not see any advertisement for a prebid meeting. I assume there was not a mandatory prebid meeting. Also, is it possible to schedule a site visit to see the exterior of the tank?
 - a. No.

7. I assume there is no requirement for Davis Bacon Wage Rates. If so please attached wage determination.
 - a. No.

8. In spec section 09920 Table 3.07-1 Coating Systems for Interior Concrete, the DFT was not indicated. Please specify the required milage of each coating.
 - a. Adhere to Manufacturer Requirements.

9. Please revise bid form quantities to reflect the omission of the East GST at Morris Bridge PS.
 - a. The specific quantities associated with this comment are not clear.

10. Should the lead/asbestos testing prove their presence, will abatement costs be covered by the contingency fund?
 - a. Yes.

11. Is the existing coating and age known?
 - a. This information is not available. However, we do not believe the interior has been coated.

12. Please provide dimensions on the Northwest GST building- the height is needed to price lifts, etc.
 - a. Issued for Bid Plans dated March 2022 were included in the original advertisement. Please see the Issued for Bid Set dated March 2023.

13. Please indicate what electrical work is required per Bid Item 26.
 - a. See plans and note the addendum which includes Division 16 specifications which were accidentally omitted when the project was originally advertised.

14. 120 days is a short time frame for the work. Please allow an additional 60 days to compensate for repairs within the tank.
 - a. The 120-day requirement will remain due to operational constraints.

15. Will the tank be taken offline, drained, and cleaned by the city before the NTP?
 - a. After the pre-construction meeting and prior to mobilization to the site, the tank will be taken offline and drained as much as possible.