



**City of Tampa**  
*Jane Castor, Mayor*

**Contract Administration**  
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**ADDENDUM 2**

**Via E-Mail**

**DATE: February 22, 2023**

Contract: 22-C-00044; Hyde Park Groundwater Diversion Underdrains

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.

1. The bid opening date is hereby changed to March 1, 2023.
2. Replace the Proposal Form, Page P-2, with the attached Proposal Form Page P-2R.
3. In Specification Section "W440-30, Horizontal Directional Drilling with HDPE Pipe", add the following paragraph to the end of Article 2.3 PIPE:

F. Mechanical Coupling Joints may be approved to connect to corrugated polyethylene underdrain pipe. Couplings shall be shielded Fernco 1070 series flexible couplings or as approved all stainless steel with plain rubber gaskets suitable for stormwater service.

4. In Specification Section "W440-30, Horizontal Directional Drilling with HDPE Pipe", delete Article 3.6 FIELD TESTING in its entirety and replace with the following Article:

**3.6 FINAL ACCEPTANCE**

- A. Upon completion of the installation of any pipe specified to be installed to line and grade, as-built elevations shall be obtained by a licensed surveyor to confirm that the pipe has been installed to the specified tolerance of 2" from true line and grade. Location and invert elevations at each end of the HDD section shall be provided.
- B. A video inspection of the entire length of the pipe installed via HDD shall be conducted at the conclusion of the work. Prior to video inspection, the pipe shall be filled with clean water up to the invert of the lowest end of the pipe. The camera shall proceed through the bored section of pipe to the other end. If the bored section of pipe holds water deeper than one-half of the pipe diameter at any location along the length of the bore the contractor will notify Engineer and Engineer may require the contractor to pull back the pipe and redrill to achieve this specified tolerance.

5. In the Contract Items – Water, Section C-2.00 [0010-Open Cut Operations], A) 2.10 [0-Ductile Iron Pipe Installation] & [1-PVC Pipe Installation], delete the first full paragraph on Page CP-4 beginning with “Cover over pipe shall...” and all subsequent paragraphs and text up to and including the final paragraph of that section on Page CP-5 beginning with “The pipe quantities to be paid...” and replace with the following paragraph:

“Payment for Potable and Reclaimed Water Main Offsets, as detailed in the plans, will be made utilizing the contract pay item for each offset by size and type. Payment shall include all costs for labor, materials and equipment to locate the existing pipe, coordinate shut down of offset location via existing valves or installed linestops (paid for separately), trench excavation and backfill, removal of existing pipe, assembly and installation of offset consisting of new pipes and fittings, restraints on new and existing pipe joints, as required, hydrostatic testing, flushing, disinfection, bacteriological testing and final connection all in accordance with these specifications and Water Department standards.”

6. Replace the Plan set with the attached set which contains revisions to Sheet Nos 1-3, 5-6, 8-10, and 12-13.
7. Attached is a collection of responses to questions.
8. Attached is a copy of the Survey.
9. Attached is a copy of the Madrid Geotech Report - Hyde Park Drainage Improvement.
10. Attached are copies of SUE Field Work Sheets.

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](mailto:ContractAdministration@tampagov.net).

*Jim Greiner*

Jim Greiner, P.E., Contract Management Supervisor

## Hyde Park Ground Water Diversion Contract: 22-C-00044

Item No.	Description	Unit	Est	Unit Price in Words	Unit Price	Total Price
0104-1	Erosion & Sediment Control and Tree Protection	LS	1		\$	
0105-1	Tree Root Pruning	LF	5000		\$	
0108-1	Dewatering	LS	1		\$	
0110-1	Clearing and Grubbing	LS	1		\$	
0142-1	Imported Select Soil Material - Sand	CY	1000		\$	
0142-2	Removal of Unsuitable Soil	CY	1000		\$	
0190-0	Tree Removal, 4" DBH and Larger	EA	14		\$	
0193-0	Tree Installation, Live Oak	EA	14		\$	
0193-1	Root Barrier Installation	LF	630		\$	
0316-10	Pavement Restoration of Roadway	SY	300		\$	
0350-30	4-Inch Concrete Sidewalk Replacement	SY	4000		\$	
0350-35	6-Inch Concrete Sidewalk Replacement	SY	600		\$	
0350-38	Brick Walks/Driveways - Removal and replacement	SY	100		\$	
0350-40	Concrete ADA Pedestrian Ramps	EA	15		\$	
0350-45	Preservation of Cartouches in Concrete	EA	13		\$	
0440-10	8-Inch Underdrain	LF	6500		\$	
0440-20	8-Inch PVC Cleanout	EA	17		\$	
0440-30	8" Directional Bore Pipe	LF	497		\$	
0440-40	Connection to Existing Inlets	EA	9		\$	
0440-50	18" Inspection Manholes	EA	18		\$	
0520-10	Concrete Curb Type D	LF	175		\$	
0520-20	Remove/Reset Granite Curb	LF	50		\$	
0570-1	Sod Replacement	SY	7000		\$	
0590-1	Irrigation Repairs	LS	1		\$	
0010-11	6" Water Main (WM) DIP Offset (all inclusive)	EA	3		\$	
0060-006	6" Water Main (WM) Line Stop on Existing Water Main	EA	6		\$	
0020-208	6" Reclaimed Water (RCW) DIP Offset (all inclusive)	EA	3		\$	
0060-006	6" Reclaimed Water (RCW) Line Stop on Existing RCW Main	EA	6		\$	
0100-1	Contingency	LS	1		\$	200,000.00
0101-1	Mobilization	LS	1		\$	
0102-1	Maintenance of Traffic	LS	1		\$	
<b>Total</b>						

**Hyde Park Groundwater Diversion Underdrains  
Responses to Bidder Questions  
2/22/23**

**2/8/23**

1. Your plan sheets call out "Jack & Bore" (Sheet #3) but you have you have no Jack & Bore Bid items. Are these "Jack & Bore" Locations where you bid item #0440-30 8" HDPE Directional Bore is supposed to go?

**Response:** Yes

2. For Bid Items 0010-11 Through 0060-002, I can not locate on the provide plan sets.

**Response:** See "POTABLE & RECLAIMED WATER MAIN RELOCATION" detail on sheet 2 of the construction plans. Offset locations are shown in the profile views of the plan/profile sheets. Line stop locations will be determined during construction.

**2/9/23**

1. Can you direct me to where the directional boring can be found on the plans? It is listed on Line 18 of the bid tab.

**Response:** See Addendum No. 2, Items No. 3 and 4. 8" Pipe will be installed by directional bore. Locations are more clearly shown in the revised drawings.

2. Can you explain what RCW water main piping, as listed on Lines 31, 33, 35 of the bid tab, is and clarify?

**Response:** See Addendum No. 2, Item No. 2. The proposal form has been updated to clarify the RCW abbreviation.

3. Can you confirm there isn't a "Buy America" or "AIS" material requirement?

**Response:** There are no Buy America provisions

4. Can you provide more detail on the specifications for Line 5 on the bid tab?

**Response:** See reference to specification Section 2.04 in Contract Item No. 0142-1 in the Contract Items – Stormwater Section.

**2/10/23**

1. Bid Item 0100-1 (Contingency 10%), is this supposed to be a fixed amount of \$200,000.00? The description states 10%, 10% of what?

**Response:** See Addendum No. 2, Item No. 2. The proposal form has been updated to remove the 10% note.

2. Can a SF item for ADA Tiles be Added? We understand that there are ADA Tiles to be installed in the curb ramps but what about ADA tiles required in the sidewalk?

**Response:** All costs associated with curb ramps, including ADA tiles, shall be included in Contract Item No. 0350-40. No other ADA tiles are required.

3. Is there a specific specification for the replacement sand?

**Response:** See reference to specification Section 2.04 in Contract Item No. 0142-1 in the Contract Items – Stormwater Section.

4. Will unsuitable removal and replacement be quantified by truck tickets?

**Response:** See measurement description in Contract Item No. 0142-1 in the Contract Items – Stormwater Section.

5. Can each road, where work is being performed, be closed to Local Traffic Only?

**Response:** Yes, to the extent allowed by SP-15, Sequence of Operations and SP-21, Maintenance of Traffic, Specific Provisions Pages SP-3 and SP-5, respectively.

6. Can a detail be provided for connecting the 8" HDPE to the 8" underdrain?

**Response:** See Addendum No. 2, Item No. 3. Couplings are approved for this connection.

7. Just to confirm, the 8" HDPE will be installed by direct Jack & Bore, there will be no casing pipe?

**Response:** See Addendum No. 2, Items No. 3 and 4. 8" Pipe will be installed by directional bore. Locations are more clearly shown in the revised drawings.

8. Per the pre-bid meeting, it was stated that Jack & Bores need to be on grade. HDPE is a flexible pipe and will have minor low or high spots within the installed length. Please acknowledge that the City is aware of this. The only way to be on grade is to use DIP or a casing pipe with spacers. Please advise.

**Response:** See Addendum No. 2, Item No. 4. Tolerances for final acceptance have been specified.

9. The removal of the sidewalk on each of the plan sheets does not account for the Jack & Bore Jacking and Receiving Pits. The jacking pits will need to be large enough to put the machine inside of them which require a larger excavation area which will require additional restoration of sidewalk, curb, road, sod, etc... Will these restoration items be paid for under the unit bid items?

**Response:** See Addendum No. 2, Items No. 3 and 4. 8" Pipe will be installed by directional bore. Locations are more clearly shown in the revised drawings.

10. Per Section I-1.20 "Apprenticeship Requirements & Reporting Forms" Are apprenticeships required for this project?

**Response:** Apprenticeship requirements are applicable to this project.

11. Will all base and asphalt, removal, and replacement, that is required for the underdrain installation be paid for under pay item 316-10 Pavement Restoration?

**Response:** Yes.

12. Does the City have any available yard locations for materials?

**Response:** No. Storage of materials is the contractor's responsibility in accordance with SP-22, Work in Streets and Highways, and SP-45, Storage of Materials, Specific Provisions Pages SP-6 and SP-11, respectively.

13. Do SWPPP Plans have to be Signed & Sealed?

**Response:** Contractor shall comply with the requirements of the NPDES Generic Permit.

14. Pay Item 350-40 calls for 35 Concrete ADA Pedestrian Ramps. There are not 35 ramps within this project. Can the quantity be revised to the correct amount?

**Response:** See Addendum No. 2, Item No. 2. The quantity on the proposal form has been updated.

15. Per Note 2 under the dewatering activities on plans sheet 1, it states that discharge from dewatering shall be 75' from the nearest property boundary, wetland jurisdictional or surface water area. This is impossible due to the location of the project in reference to the homes. The discharge from the dewatering will need to be discharged into existing storm inlets. Is this method acceptable to the City of Tampa if proper dewatering bags are used?

**Response:** See Addendum No. 2, Item No. 6. The dewatering note has been revised on Sheet 1.

16. On Dakota Ave. there are properties with decorative block walls that are next to the sidewalk. The sidewalk will be removed and the underdrain installed beneath it. How will wall replacement be paid for? Several of these walls have significant structure damage already, are leaning and have multiple cracks. There is no way to protect/stop the walls from continuing to crack/move with an excavation taking place next to them.

**Response:** It is acknowledged that several private walls exist directly adjacent to the work. It is the intent of contract documents that the Contractor is to protect these walls as directed by Article 3.05, Preservation of Property, of the Agreement, Page A-4, as well as several other locations within the contract documents.

17. Are we to assume that all the existing WM and RCW lines are restrained? If they are not, can a pay item for reverse deadman be added? It would take an excessive amount of restoration, sidewalk, roads, driveways, etc..., to dig up each joint and install bell restraints on the existing mains.

**Response:** See Addendum No. 2, Item No. 5. Water mains should be assumed to be unrestrained. Required joint restraints on existing adjacent pipe shall be included in the cost of each offset.

18. The EBO has a 21% goal to utilize a combination of U-WMBE/SLBEs. If using a SLBE, do they need to be a BBE to count towards this goal?

**Response:** All SLBE subcontracts will count toward the goal.

## **2/13/23**

1. Do the water main offsets need to be chlorinated and Bact T samples pulled?

**Response:** See Addendum No. 2, Item No. 5. Water main offsets shall be hydrostatically tested per S-50.01 "HYDROSTATIC TESTING" and disinfected per S-50.01S-50.02 "DISINFECTION AND BACTERIOLOGICAL TESTING" of the Specific Provisions Water, page SPW-5 and SPW-7, respectively.

## **2/14/23**

1. Could you please provide more explanation or specifications for this line item, including type of material?

**Response:** See detail titled "18" Inspection Manhole" on Sheet 2 of the plans.

**2/21/23**

1. Rim elevations and inverts for inspection manholes. I can probably estimate using the profiles for now.

**Response:** Refer to elevations on the topographic survey for existing elevations which are to be matched in the restored condition and therefore are to be used to establish inspection manhole top elevations.

2. Steel Casing specifications for jack and bores. What nominal size of steel casing and what minimum wall thickness is required?

**Response:** See Addendum No. 2, Items No. 3 and 4. 8" Pipe will be installed by directional bore. Locations are more clearly shown in the revised drawings.

April 6, 2021

City of Tampa Stormwater Division  
306 E. Jackson St.  
Tampa, FL 33602  
Attn: Saad Bakkouri

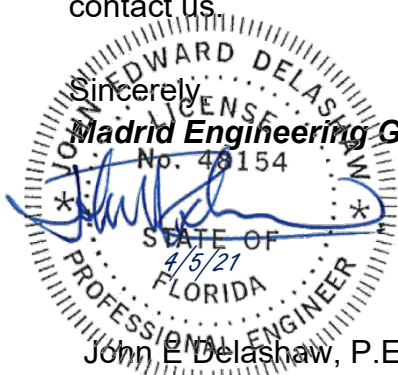
**Re: Madrid Project No. 13378.3  
Geotechnical Engineering Report  
Hyde Park Drainage Improvement  
Tampa, Florida**

Dear Mr. Bakkouri:

Madrid Engineering Group, Inc., dba Madrid CPWG, (Madrid) is pleased to submit this Geotechnical Engineering Report summarizing the results of our limited geotechnical subsurface exploration and engineering evaluation services completed for the above referenced project. The work was completed in general accordance with the authorized scope of work in our cost estimate proposal dated February 9, 2021 and provides general geotechnical recommendations regarding the proposed design and construction.

We appreciate the opportunity to be of service to you on this project and look forward to working with you on future projects. If you have any questions, please do not hesitate to contact us.

Sincerely,  
**Madrid Engineering Group, Inc. (EB 6509)**



John E. Delashaw, P.E.  
Vice President  
Florida P.E. No. 48154



Thomas B. Anyintuo, EI  
Geotech Engineer

**Attachment:** Geotechnical Engineering Report



# Geotechnical Engineering Report

## Hyde Park Drainage Support, Lakeland, Florida



Prepared for:

**City of Tampa**

Prepared by:

**MADRID ENGINEERING GROUP, INC., dba MADRID CPWG**  
2030 State Road 60 East  
Bartow, FL 33830  
863-533-9007

**Project No. 13378.3**  
April 2021

## EXECUTIVE SUMMARY

### Project Description

Madrid understands the planned improvements include an underdrain system along portions of Bayshore Blvd and six (6) intersecting streets to promote better subsurface drainage in an effort to prevent seepage upwelling to the surface. Madrid collected geotechnical data and performed a simplified seepage analysis on a generalized but representative cross-section to assist with establishing the design invert and size of the underdrain pipe as well as to estimate a general drawdown profile as presented herein.

### Field Activities

- Fourteen (14) hand augers (HA) borings (HA-1 through HA-14) to depths of 5 to 7 feet below ground surface (bgs) a maximum depth of 7 feet in the green (grassed/lawn) areas between pavement and sidewalk
- Two (2) shallow test pits (TP-1 and TP-2) within the grass areas adjacent to HA-6 and HA-11
- Five (5) pavement cores (C-1 through C-5) in the existing residential roads

### Findings and Recommendations

Based on the results of the exploration completed at the site and our professional opinion, the proposed drainage improvements should be able to reduce the seepage that persists at the surface long after rain events. Soil conditions include primarily sand with some organic silt. Organic material was mostly encountered within the surficial 12 inches and is not anticipated to be a problem for the proposed underdrain installation. Recommendations for excavation, bedding and backfilling associated with the pipe installation is beyond the scope of this report. However, Madrid recommends that if organic material is encountered at the proposed bedding depth during installation, it should be removed and replaced with more suitable material by over-excavating at least 1-foot below the proposed pipe bed and replacing with select fill. The water table is shallow at this site (as shallow as 8 inches during the soil borings). The water table depth primarily ranged from about 0.6 to 1.5 feet bgs and we estimate the SHWT to range from about 12 inches bgs at the north end of the site to ground surface at the south end with potential for ponding. Permeability in the sandy soil at TP-1 was about 0.2 in/hr (Vert.) and 0.3 in/hr (Hor.) and at TP-2 it was about 1.5 in/hr (Vert.) and 0.9 in/hr (Hor.). The proposed underdrain system should attract seepage water associated with surface water infiltration (usually groundwater but also likely fed by irrigation water) and accelerate drainage from the area. A challenge for this site with a passive underdrain system (passive equals gravity fed with no pumping) is that the low end of the system is only slightly above sea level and the bay is immediately adjacent to the project site. This limits how deep an effective underdrain can be installed at the lower elevations of the study area.

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### FIGURES

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- Figure 2 USGS Topographic Map
- Figure 3 NRCS/USDA Soil Map
- Figure 4 Boring Location Plan

### APPENDICES

- Appendix A Soil Boring Logs
- Appendix B Laboratory Test Results
- Appendix C Core Photo Log

## 1.0 INTRODUCTION AND PROJECT DESCRIPTION

### 1.1 General

Madrid Engineering Group, Inc., dba Madrid CPWG, (Madrid) is pleased to submit this report summarizing the results from our limited subsurface soil exploration, consistent with the instructions provided by The City of Tampa (Client), and geotechnical engineering evaluation to support proposed drainage improvements in the Hyde Park area in Tampa, Florida. Our conclusions and recommendations are based on the results of our field exploration, laboratory testing, and appropriate engineering analyses.

Madrid understands the planned improvements include an underdrain system along portions of Bayshore Blvd and six (6) intersecting streets to promote better subsurface drainage in an effort to prevent seepage upwelling to the surface. Madrid will provide geotechnical data with a simplified seepage analysis on a generalized but representative cross-section to assist with establishing the design invert and size of the underdrain pipe as well as to estimate a general drawdown profile.

The purpose of the exploration was to collect subsurface soil and groundwater information in order to provide an evaluation of the existing subsurface conditions at the boring/test locations and to provide shallow drainage conditions for the soils encountered to support on the design of the planned improvements. Pavement cores were performed to provide information regarding existing pavement and base conditions along portions of the roads that may be impacted by the planned improvements. Project location and plan drawings with project extents were provided to Madrid, and this plan was used to locate the soil borings.

The scope of work for this investigation included review of existing geological data, a field exploration and laboratory testing program, evaluation of soil testing results, simplified drainage analysis, and providing general geotechnical recommendations including estimated flow in the drainage pipes and drawdown profile for the proposed improvement.

### 1.2 Site Location and Description

The subject site is generally located about 0.3 miles southeast of the intersection of Selmon Expressway and W. Swann Avenue in Hyde Park, Tampa, Florida as shown on **Figure 1, Site Location Map**. The area of interest is generally bounded by Bayshore Blvd. on the south, S. Dakota Ave. on the west, S. Delaware Ave. on the east and W. Inman Ave. on the north sides. Specifically, the site is within Section 26, Township 29 South, and Range 18 East in Hillsborough County, Florida. The proposed sites primarily consist of active residential roads and the associated sidewalks and green areas.

The site is generally gently sloping north to south towards the water (Hillsborough Bay) with elevations estimated at the boring locations ranging between about 3.0 to 19.4 feet. GIS topographic information is provided on **Figure 2, USGS Topographic Map**. Boring/test elevations provided in this report were estimated based on the more accurate survey data provided by the client; no surveying was completed by Madrid.

### 1.3 Soil Survey Review

The Natural Resources Conservation Services (NRCS) Soil Survey reports provide a general description of the typical shallow soil strata (about 6 feet) encountered within each particular soil mapping unit and reports typical depth to seasonal high water levels. The NRCS defines seasonal high water as “a zone of saturation at the highest average depth during the wettest season that is at least six inches thick, persists for more than a few weeks, and is within six feet of the soil surface.” The Soil Survey for Polk County indicates shallow soils at the site are comprised of **Tavares fine sand- Urban land complex, 0 to 5 percent slopes** (map unit 55) and **Malabar fine sand, 0 to 2 percent slopes** (map unit 27), as shown on **Figure 3, NRCS/USDA Soil Map**. The NRCS provides the following descriptions for the soil units.

**Tavares fine sand- Urban land complex, 0 to 5 percent slopes:** *According to the NRCS, this soil is nearly level to gently sloping and moderately well drained and of areas of Urban land. Slopes are 0 to 5 percent. Typically, the surface layer of Tavares soil is very dark gray fine sand about 6 inches thick. The upper part of the underlying material, to a depth of about 18 inches, is light yellowish brown fine sand. The middle part, to a depth of about 46 inches, is very pale brown fine sand. The lower part to a depth of about 80 inches is white, mottled fine sand. In some areas, the surface layer is more than 9 inches thick. In places, the lower part of the underlying material is brown or dark brown. In some of the lower parts of the landscape, the soil is somewhat poorly drained. The undrained areas have a seasonal high water table at a depth of 40 to 80 inches for more than 6 months. The high water table recedes to a depth of more than 80 inches during prolonged dry periods.*

**Malabar fine sand, 0 to 2 percent slopes:** *According to the NRCS, Malabar fine sand is described as a nearly level and poorly drained soil, in low-lying sloughs and shallow depressions on the flatwoods. Slopes are 0 to 2 percent. Typically, the surface layer of the Malabar soil is dark gray fine sand about 4 inches thick. The subsurface layer, to a depth of about 12 inches, is light brownish gray fine sand. The upper part of the subsoil, to a depth of about 30 inches, is brownish yellow fine sand. The next layer, to a depth of about 50 inches, is pale brown fine sand. The lower part, to a depth of about 66 inches, is gray, mottled fine sandy loam. The substratum, to a depth of about 80 inches, is grayish brown fine sand. Under natural conditions, the Malabar fine sand soils have a seasonal high water table that fluctuates from the ground surface to a depth of*

about 10 inches for 2 to 6 months in most years. The available water capacity is very low or low.

**Table 1.3: Summary of Soil Map Units**

Map Unit	Name	Location	Soil Types by Depth (in.)	Reported SHWT Depth (in.)
55	Tavares fine sand- Urban land complex, 0 to 5 percent slopes	Most of the site	Tavares 0-80 Sand	40-80
27	Malabar fine sand, 0 to 2 percent slopes	Narrow section along the south boundary	0-50 Sand 50-66 Sandy Loam 66-80 Sand	0-10

## 2.0 FIELD EXPLORATION

### 2.1 Test Pits and Undisturbed Sample Collection

Madrid completed two test pits (TP-1 and TP-2) at the locations of HA-6 and HA-11 to a depth of approximately 2 feet below ground surface (bgs). The test pits were performed in order to look for historical indicators of seasonal high groundwater levels and to collect relatively undisturbed samples (Shelby tubes), one vertical and one horizontal, at the base of each test pit for laboratory permeability testing.

### 2.2 Hand Auger Borings

During the field program, fourteen (14) hand auger borings, HA-1 through HA-14, were completed in the green areas between the pavement and sidewalk, approximately at the locations shown on **Figure 4**. The borings were advanced to depths of 5 to 7 feet bgs using a bucket auger and were completed in general accordance with ASTM D 1452. Hand auger boring logs are included in **Appendix A**.

### 2.3 Pavement Coring

The pavement coring program was completed on March 4, 2021. Maintenance of traffic consisted of cones around the work area while the coring was being completed. During the coring program, asphalt cores were extracted at five (5) locations, one each, along S Dakota Ave, S Oregon Ave, S Orleans Ave, S Newport Ave, and S Delaware Ave. A hand auger was used to remove the base material so that the thickness of the base layer could be measured. These cores were completed at the approximate locations shown on **Figure 4, Boring location Plan**. Photographs of the individual cores are presented in **Appendix C**. **Table 2.3** below indicates the core locations including distance

from edge of pavement (EOP), asphaltic concrete (AC) thickness, base thickness, and base type.

**Table 2.3 Core Summary**

Core ID	Street	Distance from EOP	AC Thickness (in)	Base Thickness (in)	Base Material
Core 1	S Dakota Ave	5 feet East	5.5	16.0	Limerock
Core 2	S Oregon Ave	3 feet East	5.5	6.0	Sand, Roots, Shells
Core 3	S Orleans Ave	5 feet West	3.4	6.5	Rock Sand Mix
Core 4	S Newport Ave	3 feet West	5.5	9.0	Rock Sand Mix
Core 5	S Delaware Ave	3 feet East	5.0	7.0	Rock Sand Mix

The pavement cores were returned to our laboratory for review and documentation. Upon completion, the cores and boreholes were backfilled and patched in general accordance with industry standards. Soil samples will be stored for a period of 6 months from the date of this report unless other arrangements are made. The core program demonstrated a high degree of variability and thicker than typical structural course thickness for residential side streets. Limerock base was only found at C-1 which also was the only core location above elevation +10 feet. Limerock base does not perform well where there is shallow water table.

### 3.0 SUBSURFACE CONDITIONS AND LABORATORY TESTING

#### 3.1 Subsurface Soil Conditions

In general, the HA borings (HA-1 to HA-14) primarily encountered sand (SP) with occasional slightly silty sand and some layers of organic silty sand (SM-OL) encountered at variable depths. HA-1, HA-9, HA-10, HA-13 and HA-14 all encountered organic silty sand in the surficial 1 foot. In addition, boring HA-10 encountered deeper organic silty sand between about 2 to 4 feet bgs. No highly organic soil or highly plastic clays were observed in the borings other than the organic rich topsoil seen at several locations.

The general soil profiles described above and as presented on the boring logs are based on our interpretation of subsurface conditions encountered at the boring locations only. Boundaries between soil layers are approximate and for illustration purposes only. Variations in soil conditions in both horizontal and vertical directions different from those presented are likely to exist between boring locations.

### 3.2 Groundwater Conditions and Seasonal High Ground Water

The project site is generally gently sloping from north to south towards the water. We note that the water table was primarily encountered in the HA borings at depths ranging from 8 to 24 inches bgs except in HA-3 where the water table was encountered at a depth of 64 inches. HA-3 was at one of the higher elevations and encountered clean well-draining sands throughout its depth of exploration. Seasonal fluctuations in the groundwater level should be anticipated due to variations in rainfall. It is noted the field exploration was completed toward the middle portion of the drier season of the year.

The Soil Survey for Hillsborough County, Florida describes the seasonal high water table (SHWT) for the map units to be between 40 to 80 inches for most of the site but within 10 inches of the surface for a narrow section along the south end (closer to the water body). Based upon the published survey information and our findings during the exploration, Madrid recommends a design high water table level at about 12 inches near the north end and at ground surface near the south end with potential for surface ponding depending on rainfall.

### 3.3 Laboratory Testing

Laboratory tests for natural water content (ASTM D2216), percent passing the No. 200 sieve (ASTM D1140), and organic content (ASTM D2974) were performed on selected samples retrieved during the field exploration from the HA borings and Test Pits to verify the visual and tactile soil classifications. Laboratory test reports are included in **Appendix B**.

**Table 3.3a**

Lab Summary	
<b>&lt;#200 Sieve</b>	1.3% - 8.0%
<b>% Moisture</b>	4.8% - 156.2%
<b>% Organic</b>	3.3% - 18.2%

- During the field visit, Madrid obtained two sets of undisturbed soil samples for laboratory permeability analysis. These samples were collected from within the excavated test pits (TP-1 and TP-2), at the locations shown on **Figure 4**. Vertical samples were obtained from a depth of about 24 to 30 inches bgs, and horizontal samples were obtained at a depth of about 24 inches bgs. The results of the laboratory permeability testing are summarized in the table below. Detailed **Constant Head Permeability Reports** have been included with this report in **Appendix B**.



**Table 3.3b: Shallow Permeability Data**

Test Sample Location	Orientation	Average Permeability (in/hr)	Water Table Depth (in)	Estimated SHWT Depth (in)	Existing Ground Elev. (ft)
HA-6 / TP-1	Horizontal	0.2	12	0	~3.6
	Vertical	0.3			
HA-11 / TP-2	Horizontal	1.5	24	0	~3.0
	Vertical	0.9			

*NOTE: The permeability rates presented herein are absolute values with no safety factor applied. The designer should choose a conservative rate based on this data and their experience with similar conditions.*

## 4.0 EVALUATION AND GENERAL RECOMMENDATIONS

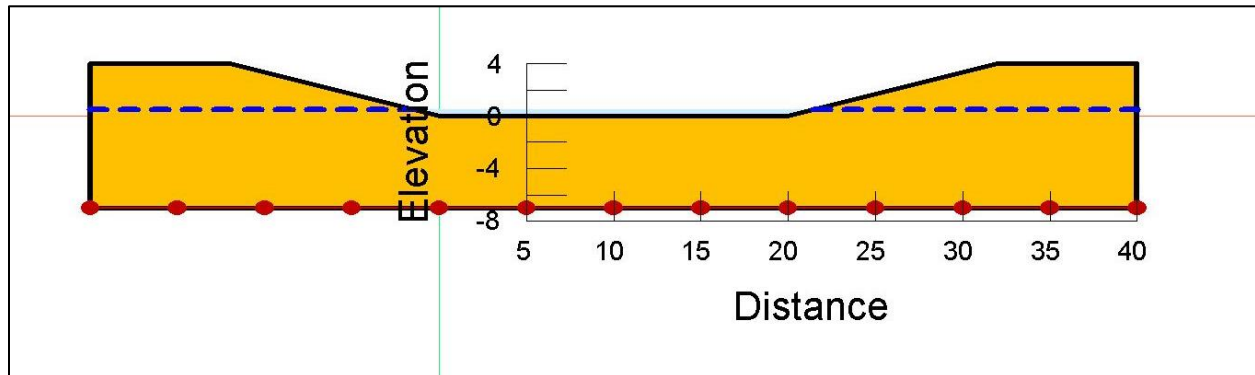
### 4.1 General Considerations

The following conclusions and recommendations are based on our understanding of the proposed project, the data obtained from the field exploration, experience with similar conditions, and generally accepted principles and practices of geotechnical engineering. Based on the results of the exploration completed at the site and our professional opinion, the proposed drainage improvements should be able to reduce the seepage that persists at the surface long after rain events. Soil conditions include primarily sand with some organic silt. Organic material was mostly encountered within the surficial 12 inches and is not anticipated to be a problem for the proposed underdrain installation. Recommendations for excavation, bedding and backfilling associated with the pipe installation is beyond the scope of this report. However, Madrid recommends that if organic material is encountered at the proposed bedding depth during installation, it should be removed and replaced with more suitable material by over-excavating at least 1-foot below the proposed pipe bed and replacing with select fill.

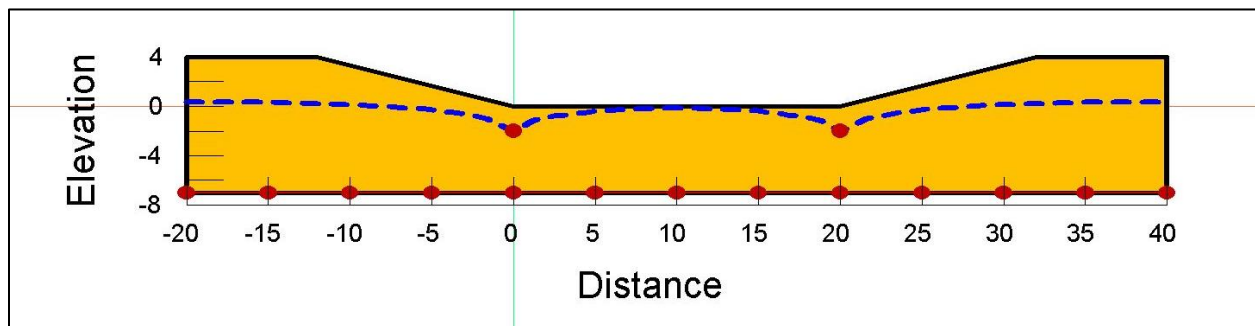
The water table is shallow at this site (as shallow as 8 inches during the soil borings). The water table depth primarily ranged from about 0.6 to 1.5 feet bgs and we estimate the SHWT to range from about 12 inches bgs at the north end of the site to ground surface at the south end with potential for ponding. Permeability in the sandy soil at TP-1 was about 0.2 in/hr (Vert.) and 0.3 in/hr (Hor.) and at TP-2 it was about 1.5 in/hr (Vert.) and 0.9 in/hr (Hor.). The proposed underdrain system should attract seepage water associated with surface water infiltration (usually groundwater but also likely fed by irrigation water) and accelerate drainage from the area. A challenge for this site with a passive underdrain system (passive equals gravity fed with no pumping) is that the low end of the system is only slightly above sea level and the bay is immediately adjacent to the project site. This limits how deep an effective underdrain can be installed at the lower elevations of the study area. Our analysis and evaluation assume all recommendations are implemented during construction.

#### 4.2 Drawdown Profile and drainage analysis

Madrid completed simplified drainage analysis to estimate the drawdown profile that will be created by the proposed drainage pipe as well as to estimate the flow rate in the pipe (this information will be useful in sizing the pipe). An assumed depth of 3 feet bgs was used for the analysis. A generalized section which is representative of anticipated site conditions was analyzed. Based on the results of the drainage analysis, Madrid estimates volumetric flow rate in the pipe to be on the order of 0.01 ft<sup>3</sup>/sec per foot of run and the final drawdown surface is as shown on the image below. This equates to a flowrate of ft<sup>3</sup>/sec per 100 foot or 45 gallons/min with no safety factor.



Existing water table.



Drawdown profile with drainage pipe installed.

As shown on the modeled cross-section the passive underdrain system does draw the water table down to the underdrain invert but the lateral extent at just 3' depth does not extend much beyond 10 to 15 feet away from the pipe centerline. This should improve the seepage breakouts that are observed near the edge-of-pavement and in the green spaces between the road and sidewalks. It is recommended that an underdrain system be constructed in accordance with a Type II systems as detailed on FDOT Standard Index 440-001. It is noted that the overall effectiveness of the system depends on the ability of the drains to discharge to a water conveyance that routes water away from the area at an elevation at or below the underdrain invert elevation. If this is not feasible consideration of an active system (pumping) may have to be given.

### 4.3 Shallow Excavations and Dewatering

It is assumed that the pipe will be installed by open trench method. The following general recommendations may be useful for open excavation and dewatering during installation. Open-cut methods appear suitable for shallow excavations, but dewatering will be required, and very loose sand may slough at shallow slopes. Temporary side slopes for the open-cut excavations should be stable in the short term at slopes of one and one-half feet horizontal to one foot vertical (1.5:1 H:V). All excavations should conform to the Occupational Safety and Health Act (OSHA) requirements for Type C soils as described Federal Register 29 CFR Part 1926. Design of a shoring system is the responsibility of the selected contractor. A number of variable factors, such as nature and strength of excavated soils, depth of excavation and groundwater, proximity of adjacent structures, and economics of construction method, etc., will affect the choice of support method. It is likely that a trench box may prove to be the more cost effective approach to this excavation.

All vertical shoring or prefabricated trench lining systems should be continuous and maintained in place to assure adequate temporary stability during backfilling of the trench as recommended subsequently. Excavated soils should not be stockpiled within 15 feet (horizontally) of the shored excavations unless specific provisions for surcharge loading have been included in the design of the shoring system. The final decision on appropriate excavation methods and design of shoring systems is the responsibility of the contractor.

Based upon our recommended design water table and depending upon the time of year, it appears that groundwater should be anticipated for excavations. We recommend that a dewatering system be designed and installed to draw the groundwater table down to a depth sufficient to allow excavation in the dry; this typically requires lowering the water to 2 to 3 feet below the proposed pipe bed. The contractor should employ a registered professional engineer to design all shoring and dewatering systems.

## 5.0 LIMITATIONS

This report has been prepared for The City of Tampa for the proposed Hyde Park drainage improvement project in Tampa, Florida. The information in this report is intended for the sole use of the addressees and their assigns/agents and may not be relied upon or used by any third party without expressed written consent. The evaluations and recommendations presented herein are based on Madrid's interpretation and understanding of site conditions and information provided by the Client. This report is not a specification document and is not intended for use as a part of the specifications. Varying degrees of non-uniformity of the horizontal and vertical soil conditions may exist at the site. This study is not intended to be an evaluation of sinkhole risk. This study does not include an evaluation of the environmental (ecological or hazardous/toxic material related) condition of the site and subsurface. The study reported herein has been conducted in accordance with the generally accepted standards, principles and practices in the geotechnical engineering profession. No other warranty, expressed or implied, is made. Madrid is not responsible for the independent conclusions, opinions, and/or recommendations made by others based on the field investigation and laboratory testing data presented in this report. Soil samples will be stored at our Bartow Office for a period of 3 months from the date of this report unless other arrangements are made.

# FIGURES





Source: GIS Information (ESRI), Topographic Information (USGS)



**MADRID CPWG**

2030 State Road 60 East  
 Bartow, Florida 33830  
 863 533-9007 Fax: 863 533-8997  
 EB-0006509

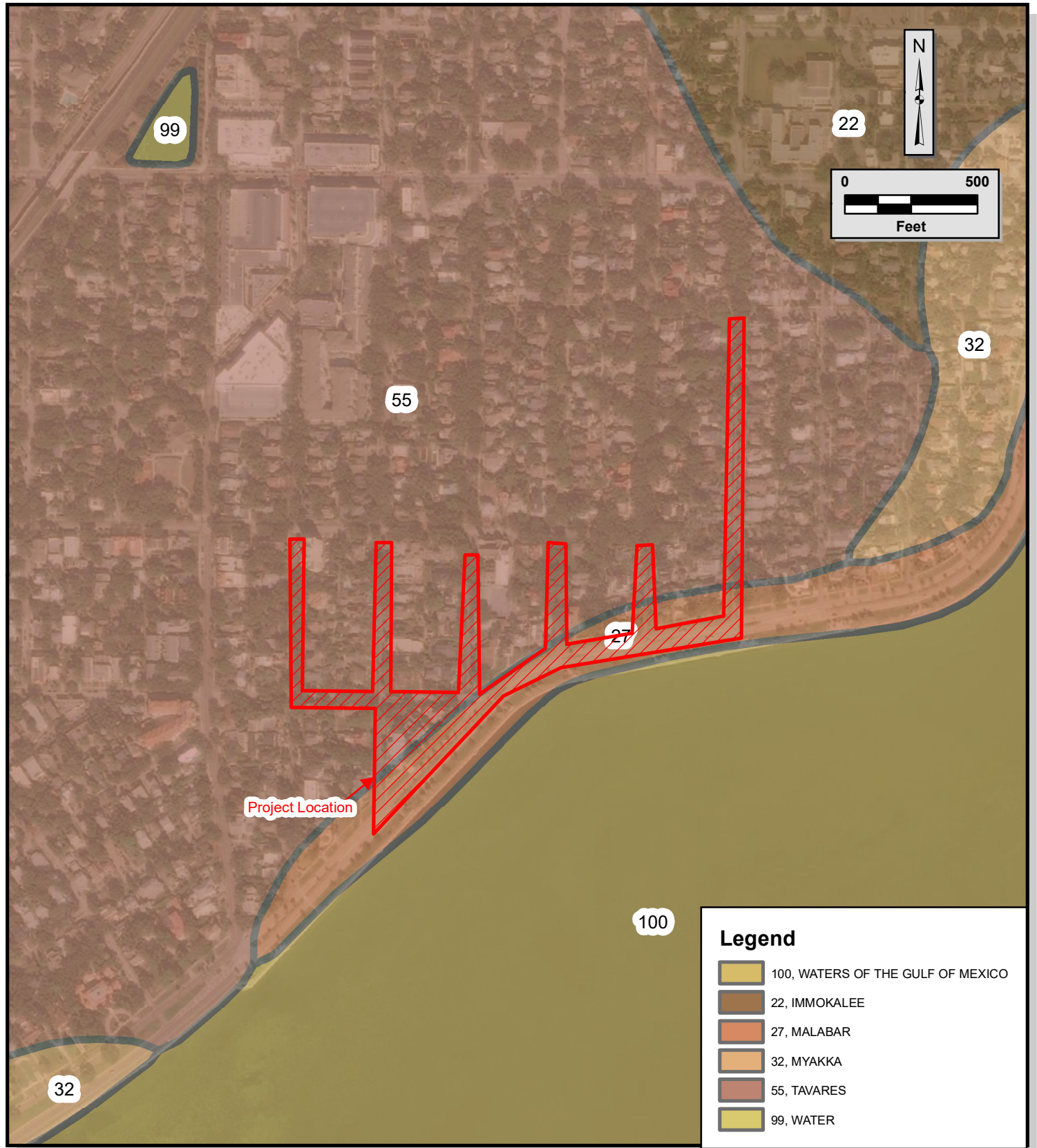
**City of Tampa**

**FIGURE 2**  
**USGS Topographic Map**  
**Hyde Park Drainage Improvements**  
**Tampa, Florida**

**Project Number:**  
**13378.3**

Drawn By: MZ

Checked By: JD



Source: GIS Information (ESRI), Topographic Information (USGS)



**MADRID CPWG**

2030 State Road 60 East  
 Bartow, Florida 33830  
 863 533-9007 Fax: 863 533-8997  
 EB-0006509

**City of Tampa**

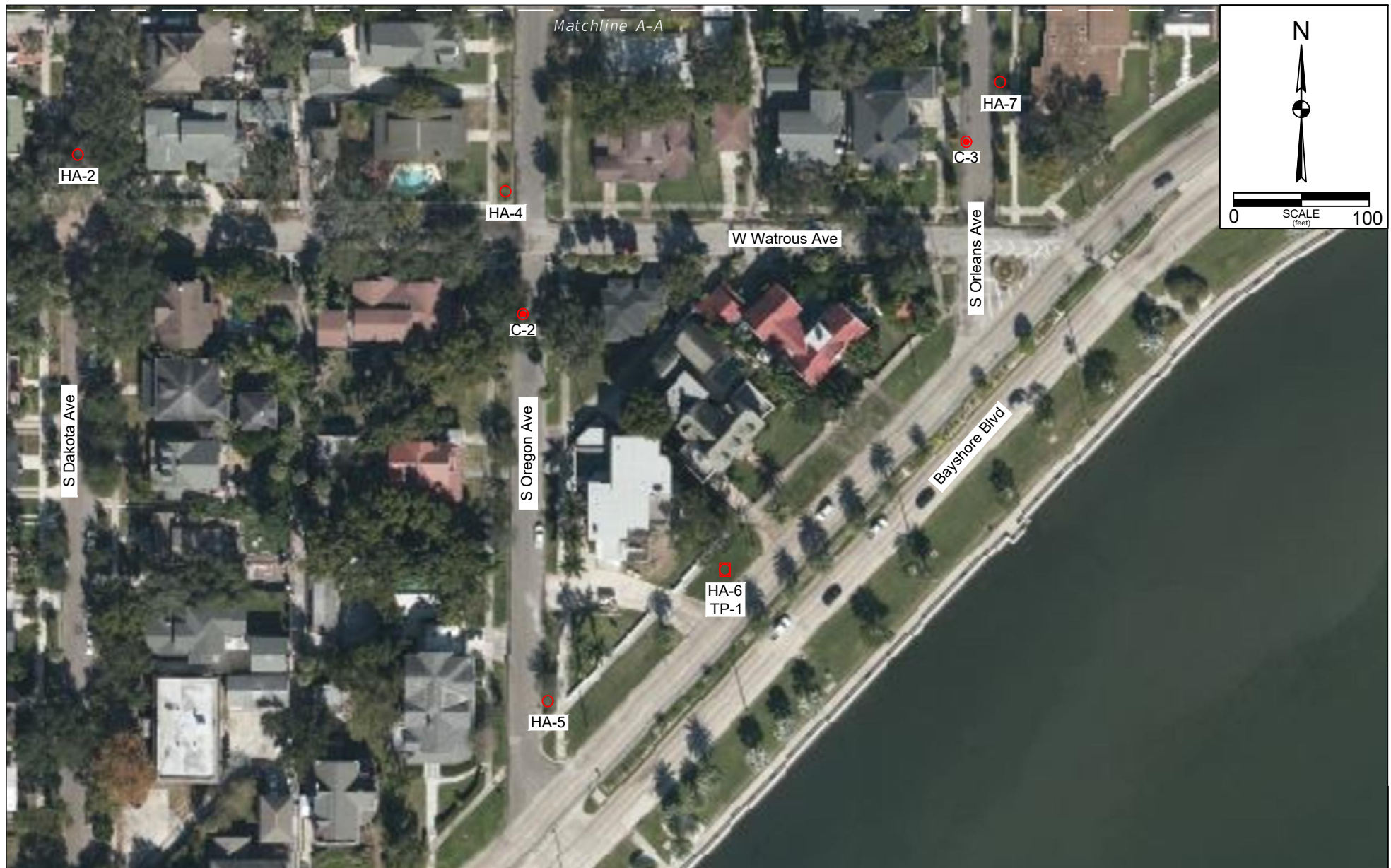
**FIGURE 3**  
**USGS Topographic Map**  
**Hyde Park Drainage Improvements**  
**Tampa, Florida**

**Project Number:**  
**13378.3**

Drawn By: MZ




Checked By: JD





Aerial Data Source – 2019 Microsoft Corporation, 2019 DigitalGlobe, 2019 CNES Distribution Airbus DS.

**Legend**

- C-1  Pavement Core
- HA-1  Hand Auger Boring Location
- TP-1  Test Pit Location



**MADRID CPWG**

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**City of Tampa**

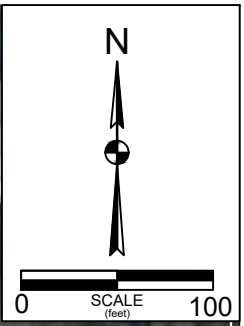
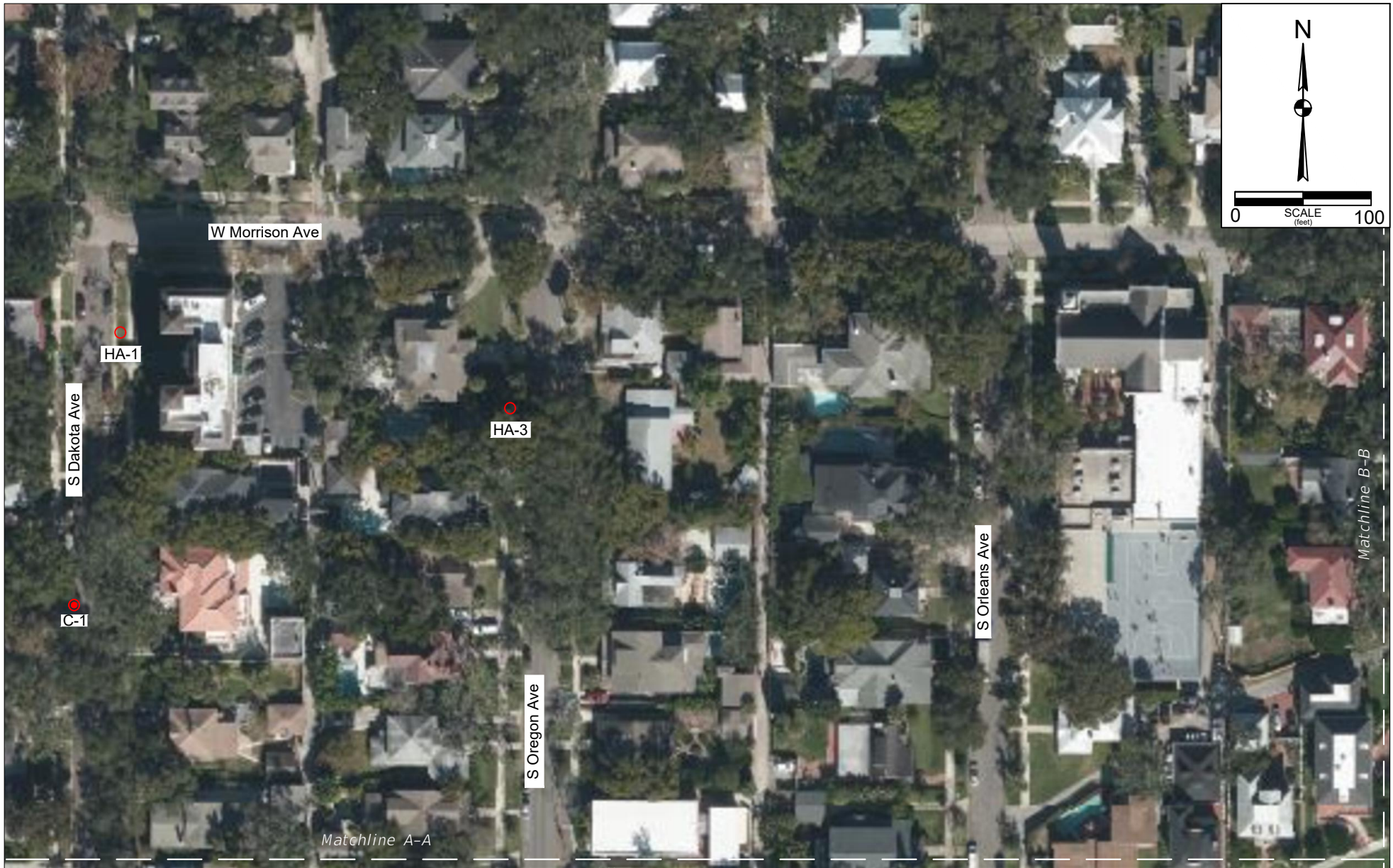
**FIGURE 4A**  
**Boring Location Plan**  
**Hyde Park Drainage Improvements**  
**Tampa, Florida**

Project Number:  
**13378.3**

Notes: Boring locations are approximate.



Drawn By: MZ

Checked By: JD

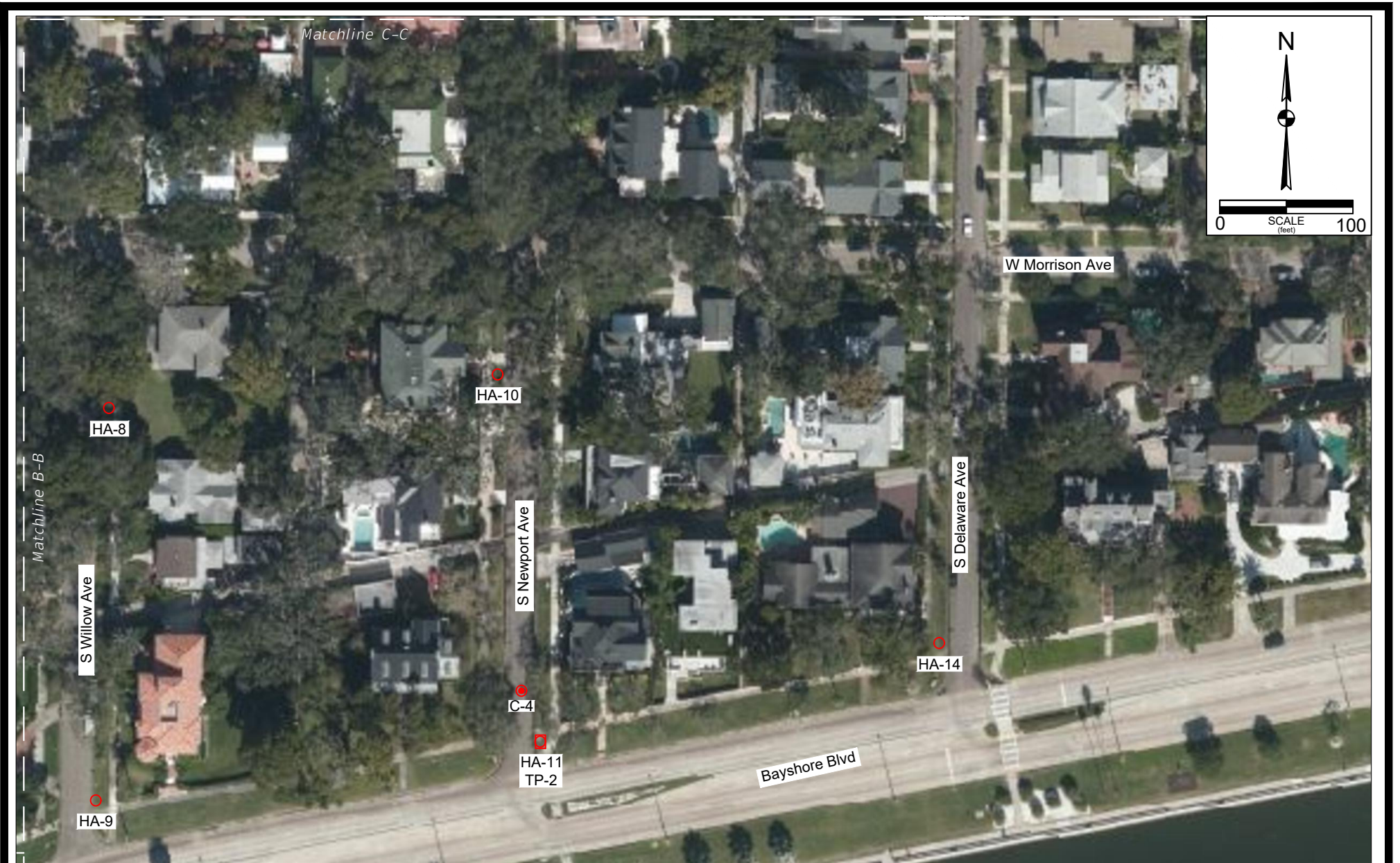


Aerial Data Source – 2019 Microsoft Corporation, 2019 DigitalGlobe, 2019 CNES Distribution Airbus DS.

<b>Legend</b>	
C-1	● Pavement Core
HA-1	○ Hand Auger Boring Location
TP-1	□ Test Pit Location



 			<p><b>MADRID CPWG</b>          2030 State Road 60 East          Bartow, Florida 33830          863 533-9007 Fax: 863 533-8997          EB-0006509</p>		
			<p>Notes: Boring locations are approximate.</p>		

<p><b>City of Tampa</b></p> <p><b>FIGURE 4B</b>  <b>Boring Location Plan</b>  <b>Hyde Park Drainage Improvements</b>  <b>Tampa, Florida</b></p>
<p>Project Number:  <b>13378.3</b></p>

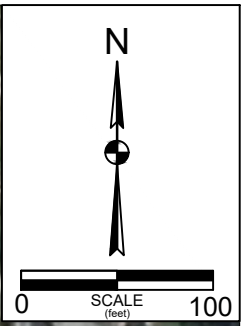
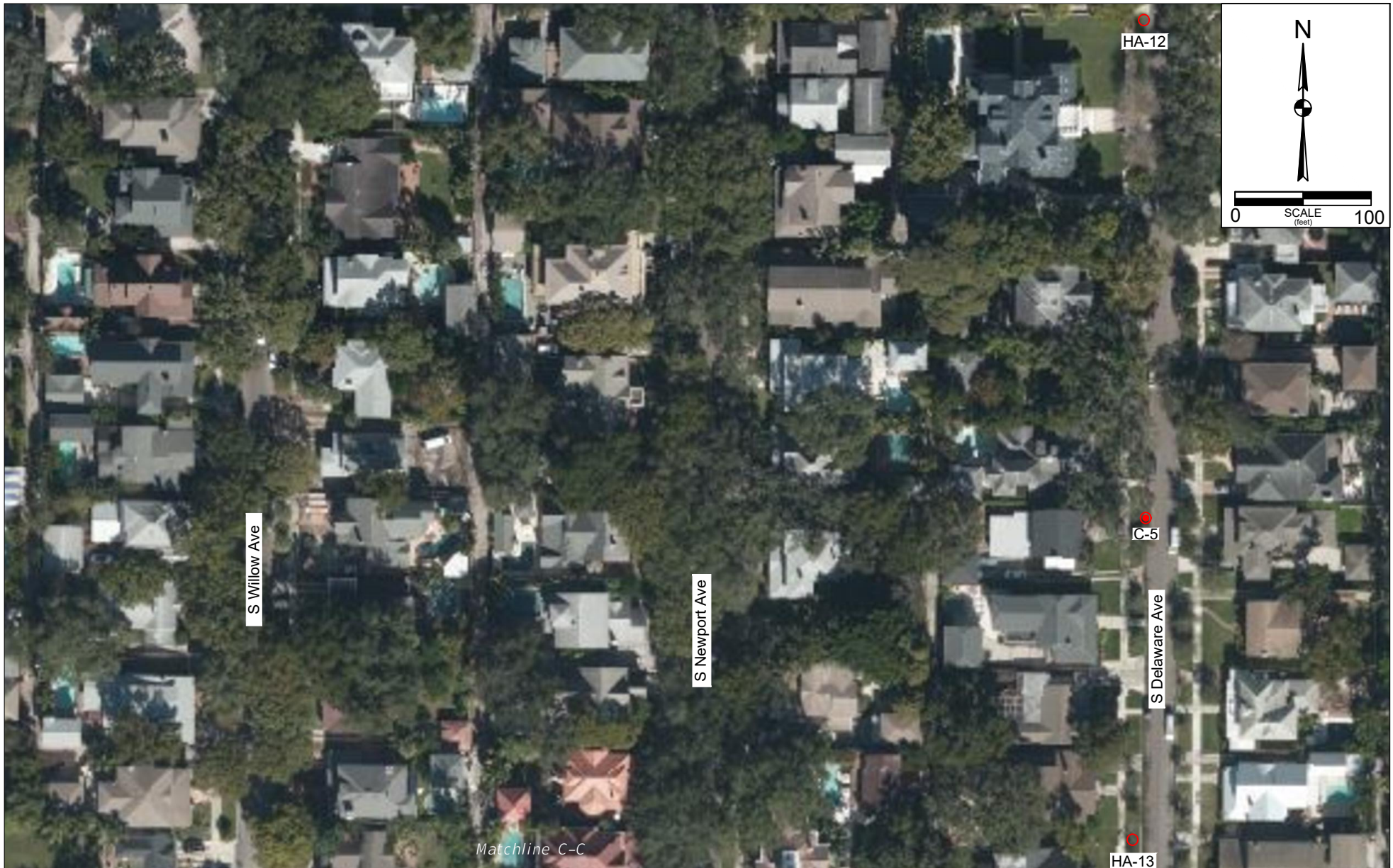


Aerial Data Source – 2019 Microsoft Corporation, 2019 DigitalGlobe, 2019 CNES Distribution Airbus DS.

Legend	
C-1	Pavement Core
HA-1	Hand Auger Boring Location
TP-1	Test Pit Location



 	<p><b>MADRID CPWG</b>                  2030 State Road 60 East                  Bartow, Florida 33830                  863 533-9007 Fax: 863 533-8997                  EB-0006509</p>	
	Notes: Boring locations are approximate.	Drawn By: MZ Checked By: JD

<p><b>City of Tampa</b>  <b>FIGURE 4C</b>  <b>Boring Location Plan</b>  <b>Hyde Park Drainage Improvements</b>  <b>Tampa, Florida</b></p>
Project Number: <b>13378.3</b>



Aerial Data Source – 2019 Microsoft Corporation, 2019 DigitalGlobe, 2019 CNES Distribution Airbus DS.

Legend	
C-1	Pavement Core
HA-1	Hand Auger Boring Location
TP-1	Test Pit Location

 		
<p><b>MADRID CPWG</b>          2030 State Road 60 East          Bartow, Florida 33830          863 533-9007 Fax: 863 533-8997          EB-0006509</p>		
Notes: Boring locations are approximate.		
Drawn By: MZ	Checked By: JD	

<p><b>City of Tampa</b></p> <p><b>FIGURE 4D</b>  <b>Boring Location Plan</b>  <b>Hyde Park Drainage Improvements</b>  <b>Tampa, Florida</b></p>
<p>Project Number:  <b>13378.3</b></p>

# **APPENDIX A**

# BORING NO. HA-01

DATE DRILLED 3/9/2021  
 PROJECT NUMBER 13378.3  
 PROJECT Hyde Park Drainage Improvements

## TEST BORING RECORD Madrid Engineering Group

REMARKS: Water table encountered at 8" bgs.



Depth (ft)	DESCRIPTION	Depth (ft)	Elev. (ft)	Blows	N-Value	● STANDARD PENETRATION TEST														
						0	10	20	30	40	60	80	100							
0	Black organic silty sand (SM-OL) organic content = 12.0%	0																		
1	Pale brown sand (SP)  <#200 = 2.0%	1																		
	Gray				HA	HA														
	Grayish brown	5																		
	Brown																			

MEG WITH BLOW COUNTS TOP - 13378.3 BORING LOG.GPJ NEW MEG TEMPLATE.GDT 4/5/21

# BORING NO. HA-02

DATE DRILLED 3/9/2021  
 PROJECT NUMBER 13378.3  
 PROJECT Hyde Park Drainage Improvements

## TEST BORING RECORD Madrid Engineering Group

REMARKS: Water table encountered at 8" bgs.



Depth (ft)	DESCRIPTION	Depth (ft)	Elev. (ft)	Blows	N-Value	● STANDARD PENETRATION TEST														
						0	10	20	30	40	60	80	100							
0	Dark gray sand (SP)	0																		
			10																	
	Light gray																			
	Grayish brown <#200 = 1.5%			HA	HA															
		5																		

MEG WITH BLOW COUNTS TOP - 13378.3 BORING LOG.GPJ NEW MEG TEMPLATE.GDT 4/5/21





# BORING NO. HA-04

DATE DRILLED 3/4/2021  
 PROJECT NUMBER 13378.3  
 PROJECT Hyde Park Drainage Improvements

## TEST BORING RECORD Madrid Engineering Group

REMARKS: Water table encountered at 11" bgs.



Depth (ft)	DESCRIPTION	Depth (ft)	Elev. (ft)	Blows	N-Value	● STANDARD PENETRATION TEST														
						0	10	20	30	40	60	80	100							
0	Gray sand (SP)	0																		
	Light gray		▼																	
			5																	
	Very dark gray																			
	Black			HA	HA															
	Dark gray <#200 = 2.2%																			
		5																		

MEG WITH BLOW COUNTS TOP - 13378.3 BORING LOG.GPJ NEW MEG TEMPLATE.GDT 4/5/21





# BORING NO. HA-07

DATE DRILLED 3/4/2021  
 PROJECT NUMBER 13378.3  
 PROJECT Hyde Park Drainage Improvements

## TEST BORING RECORD Madrid Engineering Group

REMARKS: Water table encountered at 16" bgs.



Depth (ft)	DESCRIPTION	Depth (ft)	Elev. (ft)	Blows	N-Value	● STANDARD PENETRATION TEST														
						0	10	20	30	40	60	80	100							
0	Dark gray sand (SP)	0																		
5		5																		
	Light gray																			
	Dark gray																			
	Gray organic content = 3.3%																			
	Gray			HA	HA															
	Dark gray <#200 = 2.8%																			
	Gray	5																		
5.5																				

MEG WITH BLOW COUNTS TOP - 13378.3 BORING LOG.GPJ NEW MEG TEMPLATE.GDT 4/5/21



# BORING NO. HA-09

DATE DRILLED 3/9/2021  
 PROJECT NUMBER 13378.3  
 PROJECT Hyde Park Drainage Improvements

## TEST BORING RECORD Madrid Engineering Group

REMARKS: Water table encountered at 10" bgs.



Depth (ft)	DESCRIPTION	Depth (ft)	Elev. (ft)	Blows	N-Value	● STANDARD PENETRATION TEST														
						0	10	20	30	40	60	80	100							
0	Dark gray organic silty sand (SM-OL) organic content = 11.1%	0																		
1	Dark gray sand (SP)																			
	Gray																			
	Dark gray <#200 = 3.2%		0	HA	HA															
		5																		

MEG WITH BLOW COUNTS TOP 13378.3 BORING LOG.GPJ NEW MEG TEMPLATE.GDT 4/5/21

# BORING NO. HA-10

DATE DRILLED 3/9/2021  
 PROJECT NUMBER 13378.3  
 PROJECT Hyde Park Drainage Improvements

## TEST BORING RECORD Madrid Engineering Group

REMARKS: Water table encountered at 16" bgs.



Depth (ft)	DESCRIPTION	Depth (ft)	Elev. (ft)	Blows	N-Value	● STANDARD PENETRATION TEST														
						0	10	20	30	40	60	80	100							
0	Black silty organic silty sand (SM-OL) organic content = 12.8%	0																		
1	Dark gray slightly silty sand (SP-SM) <#200 = 8.0%	1																		
4		4																		
5		5																		

MEG WITH BLOW COUNTS TOP - 13378.3 BORING LOG.GPJ NEW MEG TEMPLATE.GDT 4/5/21

# BORING NO. HA-11

DATE DRILLED 3/4/2021  
 PROJECT NUMBER 13378.3  
 PROJECT Hyde Park Drainage Improvements

## TEST BORING RECORD Madrid Engineering Group

REMARKS: Water table encountered at 24" bgs.



Depth (ft)	DESCRIPTION	Depth (ft)	Elev. (ft)	Blows	N-Value	● STANDARD PENETRATION TEST														
						0	10	20	30	40	60	80	100							
0	Gray sand (SP)	0																		
	Dark gray																			
	Light gray		▼	HA	HA															
	Gray <#200 = 2.2%		0																	

MEG WITH BLOW COUNTS TOP - 13378.3 BORING LOG.GPJ NEW MEG TEMPLATE.GDT 4/5/21



# BORING NO. HA-12

DATE DRILLED 3/9/2021  
 PROJECT NUMBER 13378.3  
 PROJECT Hyde Park Drainage Improvements

## TEST BORING RECORD Madrid Engineering Group

REMARKS: Water table encountered at 11" bgs.



Depth (ft)	DESCRIPTION	Depth (ft)	Elev. (ft)	Blows	N-Value	● STANDARD PENETRATION TEST														
						0	10	20	30	40	60	80	100							
0	Black slightly silty sand (SP)	0																		
	Gray																			
	Light gray																			
	<#200 = 3.3%																			
		10		HA	HA															
		5																		

MEG WITH BLOW COUNTS TOP - 13378.3 BORING LOG.GPJ NEW MEG TEMPLATE.GDT 4/5/21

# BORING NO. HA-13

DATE DRILLED 3/9/2021  
 PROJECT NUMBER 13378.3  
 PROJECT Hyde Park Drainage Improvements

## TEST BORING RECORD Madrid Engineering Group

REMARKS: Water table encountered at 16" bgs.



Depth (ft)	DESCRIPTION	Depth (ft)	Elev. (ft)	Blows	N-Value	● STANDARD PENETRATION TEST														
						0	10	20	30	40	60	80	100							
0	Very dark gray organic silty sand (SM-OL)  organic content = 18.2%	0																		
2																				
	Very dark gray sand (SP) <#200 = 2.6%	2																		
			5		HA	HA														
		5																		

MEG WITH BLOW COUNTS TOP - 13378.3 BORING LOG.GPJ NEW MEG TEMPLATE.GDT 4/5/21

# BORING NO. HA-14

DATE DRILLED 3/9/2021  
 PROJECT NUMBER 13378.3  
 PROJECT Hyde Park Drainage Improvements

## TEST BORING RECORD Madrid Engineering Group

REMARKS: Water table encountered at 10" bgs.



Depth (ft)	DESCRIPTION	Depth (ft)	Elev. (ft)	Blows	N-Value	● STANDARD PENETRATION TEST														
						0	10	20	30	40	60	80	100							
0	Black organic silty sand (SM-OL)	0																		
1	Gray sand (SP) <#200 = 1.3%			HA	HA															

MEG WITH BLOW COUNTS TOP - 13378.3 BORING LOG.GPJ NEW MEG TEMPLATE.GDT 4/5/21

## **APPENDIX B**







2030 State Road 60 East  
 Bartow, Florida 33830  
 (863) 533-9007

**ASTM D2434-68 CONSTANT HEAD PERMEABILITY**

**Project Number:** 13378.3  
**Project Name:** Hyde Park Drainage  
**Project Location:** Tampa, FL  
**Client:** City of Tampa

**Date Tested:** 3/11/2021  
**Tested By:** MAG

**Boring Number:** TP-1 (Hor)  
**Soil Description:** Brown sand

**Sample Interval:** 2 TO 2'  
**USCS Code:** SP  
 < #200 sieve: 2.4 %  
**Post-Test Moisture:** 20.6 %  
**Natural Moisture:** 26.9 %

**Unit weight determination** (input in yellow)

Weight in-situ soil + Shelby tube: 1771.58 g  
 Weight post-test soil + Shelby: 1745.15 g  
 Weight of Shelby tube: 448.31 g  
 Weight of in-situ soil: 1323.27 g  
 Weight of post-test (sat.) soil: 1296.84 g  
 Weight of soil dry: 1042.77 g  
 Diameter of Permeameter: 7.17 cm  
 Height of soil in Permeameter: 16.38 cm  
 Area of soil in Permeameter: 40.38 cm<sup>2</sup>  
 Post-Test Unit Weight of soil: 1.96 g/cm<sup>3</sup>

**Sample Density**

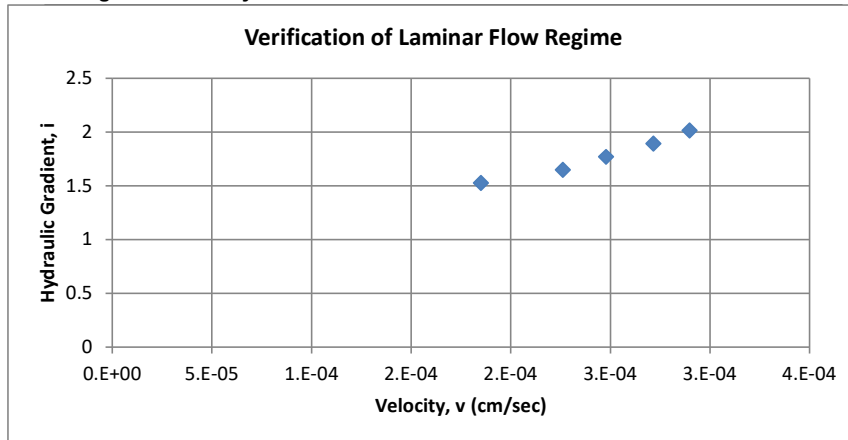
122.4 pcf (post-test)  
 124.9 pcf (in-situ)  
 98.4 pcf (dry)

**Permeability determination**

Length of soil in Permeameter, *l*: 16.38 cm  
 Cross sectional Area, *A*: 40.38 cm<sup>2</sup>

Trial No.	Head, <i>h</i> (cm)	Flow, <i>Q</i> <sub>out</sub> (cm <sup>3</sup> )	Time, <i>t</i> (s)	Temp, <i>T</i> (°C)	Permeability at <i>T</i> , <i>k<sub>T</sub></i> (cm/s)	Ratio of Viscosity, $\eta_{T-\eta_{20^{\circ}\text{C}}}$	Hydraulic Gradient, <i>i</i>	Velocity, <i>v</i> (cm/sec)	Permeability at 20°C, <i>k</i> <sub>20°C</sub> (cm/s)
1	25	2.24	300	23	1.21E-04	0.9311	1.52625153	1.85E-04	1.13E-04
2	27	2.74	300	23	1.37E-04	0.9311	1.64835165	2.26E-04	1.28E-04
3	29	3	300	23	1.40E-04	0.9311	1.77045177	2.48E-04	1.30E-04
4	31	3.29	300	23	1.44E-04	0.9311	1.89255189	2.72E-04	1.34E-04
5	33	3.51	300	23	1.44E-04	0.9311	2.01465201	2.90E-04	1.34E-04

**Average Permeability:** 1.28E-04 cm/s      **0.2 in/hr**





**ASTM D2434-68 CONSTANT HEAD PERMEABILITY**

**Project Number:** 13378.3  
**Project Name:** Hyde Park Drainage  
**Project Location:** Tampa, FL  
**Client:** City of Tampa

**Date Tested:** 3/11/2021  
**Tested By:** MAG

**Boring Number:** TP-1 (Vert)  
**Soil Description:** Brown sand

**Sample Interval:** 2 TO 2.5'  
**USCS Code:** SP  
 < #200 sieve: 2.4 %  
**Post-Test Moisture:** 27.8 %  
**Natural Moisture:** 24.0 %

**Unit weight determination** (input in yellow)

Weight in-situ soil + Shelby tube: 1612.93 g  
 Weight post-test soil + Shelby: 1768.87 g  
 Weight of Shelby tube: 430.59 g  
 Weight of in-situ soil: 1182.34 g  
 Weight of post-test (sat.) soil: 1338.28 g  
 Weight of soil dry: 953.50 g  
 Diameter of Permeameter: 7.25 cm  
 Height of soil in Permeameter: 16.00 cm  
 Area of soil in Permeameter: 41.28 cm<sup>2</sup>  
 Post-Test Unit Weight of soil: 2.03 g/cm<sup>3</sup>

**Sample Density**

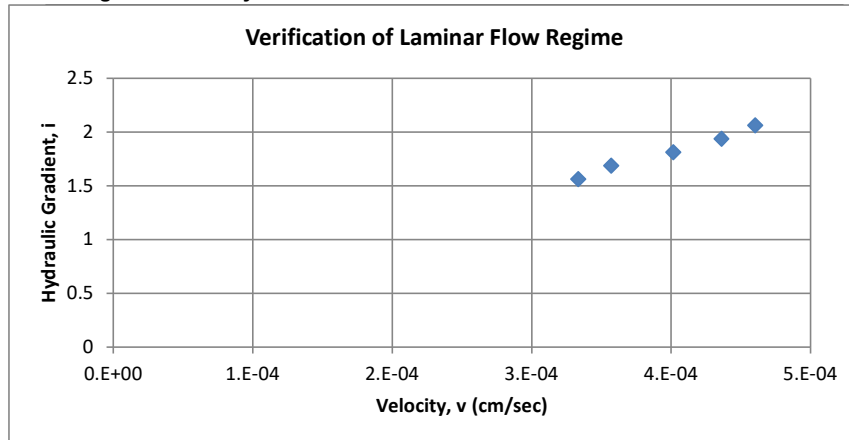
126.5 pcf (post-test)  
 111.8 pcf (in-situ)  
 90.1 pcf (dry)

**Permeability determination**

Length of soil in Permeameter, *l*: 16.00 cm  
 Cross sectional Area, *A*: 41.28 cm<sup>2</sup>

Trial No.	Head, <i>h</i> (cm)	Flow, <i>Q</i> <sub>out</sub> (cm <sup>3</sup> )	Time, <i>t</i> (s)	Temp, <i>T</i> (°C)	Permeability at <i>T</i> , <i>k<sub>T</sub></i> (cm/s)	Ratio of Viscosity, $\eta_{T \cdot \eta_{20^\circ C}}$	Hydraulic Gradient, <i>i</i>	Velocity, <i>v</i> (cm/sec)	Permeability at 20°C, <i>k</i> <sub>20°C</sub> (cm/s)
1	25	4.13	300	23	2.13E-04	0.9311	1.5625	3.33E-04	1.99E-04
2	27	4.42	300	23	2.11E-04	0.9311	1.6875	3.57E-04	1.97E-04
3	29	4.97	300	23	2.21E-04	0.9311	1.8125	4.01E-04	2.06E-04
4	31	5.4	300	23	2.25E-04	0.9311	1.9375	4.36E-04	2.10E-04
5	33	5.7	300	23	2.23E-04	0.9311	2.0625	4.60E-04	2.08E-04

**Average Permeability:** 2.04E-04 cm/s      **0.3 in/hr**







2030 State Road 60 East  
 Bartow, Florida 33830  
 (863) 533-9007

**ASTM D2434-68 CONSTANT HEAD PERMEABILITY**

**Project Number:** 13378.3  
**Project Name:** Hyde Park Drainage  
**Project Location:** Tampa, FL  
**Client:** City of Tampa

**Date Tested:** 3/11/2021  
**Tested By:** MAG

**Boring Number:** TP-2 (Hor)  
**Soil Description:** Brown sand

**Sample Interval:** 2 TO 2'  
**USCS Code:** SP  
 < #200 sieve: 2.4 %  
**Post-Test Moisture:** 19.9 %  
**Natural Moisture:** 22.5 %

**Unit weight determination** (input in yellow)

Weight in-situ soil + Shelby tube: 1893.41 g  
 Weight post-test soil + Shelby: 1953.50 g  
 Weight of Shelby tube: 455.36 g  
 Weight of in-situ soil: 1438.05 g  
 Weight of post-test (sat.) soil: 1498.14 g  
 Weight of soil dry: 1173.92 g  
 Diameter of Permeameter: 7.21 cm  
 Height of soil in Permeameter: 16.40 cm  
 Area of soil in Permeameter: 40.83 cm<sup>2</sup>  
 Post-Test Unit Weight of soil: 2.24 g/cm<sup>3</sup>

**Sample Density**

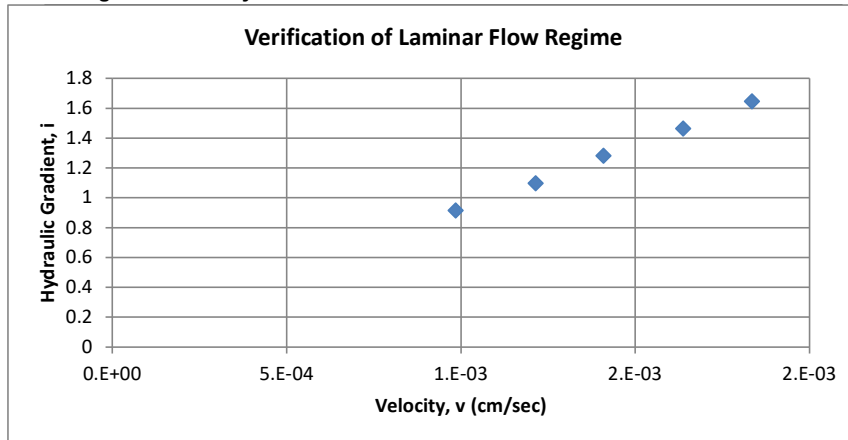
139.7 pcf (post-test)  
 134.1 pcf (in-situ)  
 109.5 pcf (dry)

**Permeability determination**

Length of soil in Permeameter, *l*: 16.40 cm  
 Cross sectional Area, *A*: 40.83 cm<sup>2</sup>

Trial No.	Head, <i>h</i> (cm)	Flow, <i>Q</i> <sub>out</sub> (cm <sup>3</sup> )	Time, <i>t</i> (s)	Temp, <i>T</i> (°C)	Permeability at <i>T</i> , <i>k<sub>T</sub></i> (cm/s)	Ratio of Viscosity, $\eta_{T/\eta_{20^{\circ}\text{C}}}$	Hydraulic Gradient, <i>i</i>	Velocity, <i>v</i> (cm/sec)	Permeability at 20°C, <i>k</i> <sub>20°C</sub> (cm/s)
1	15	4.46	111	22	1.08E-03	0.9531	0.91463415	9.84E-04	1.03E-03
2	18	4.51	91	22	1.11E-03	0.9531	1.09756098	1.21E-03	1.05E-03
3	21	4.14	72	22	1.10E-03	0.9531	1.2804878	1.41E-03	1.05E-03
4	24	4.48	67	22	1.12E-03	0.9531	1.46341463	1.64E-03	1.07E-03
5	27	4.27	57	22	1.11E-03	0.9531	1.64634146	1.83E-03	1.06E-03

**Average Permeability:** 1.05E-03 cm/s      **1.5 in/hr**





2030 State Road 60 East  
 Bartow, Florida 33830  
 (863) 533-9007

**ASTM D2434-68 CONSTANT HEAD PERMEABILITY**

**Project Number:** 13378.3  
**Project Name:** Hyde Park Drainage  
**Project Location:** Tampa, FL  
**Client:** City of Tampa

**Date Tested:** 3/11/2021  
**Tested By:** MAG

**Boring Number:** TP-2 (Vert)  
**Soil Description:** Brown sand

**Sample Interval:** 2 TO 2.5'  
**USCS Code:** SP  
 < #200 sieve: 1.5 %  
**Post-Test Moisture:** 21.2 %  
**Natural Moisture:** 23.6 %

**Unit weight determination** (input in yellow)

Weight in-situ soil + Shelby tube: 1810.96 g  
 Weight post-test soil + Shelby: 1878.85 g  
 Weight of Shelby tube: 445.31 g  
 Weight of in-situ soil: 1365.65 g  
 Weight of post-test (sat.) soil: 1433.54 g  
 Weight of soil dry: 1104.89 g  
 Diameter of Permeameter: 7.29 cm  
 Height of soil in Permeameter: 16.35 cm  
 Area of soil in Permeameter: 41.74 cm<sup>2</sup>  
 Post-Test Unit Weight of soil: 2.10 g/cm<sup>3</sup>

**Sample Density**

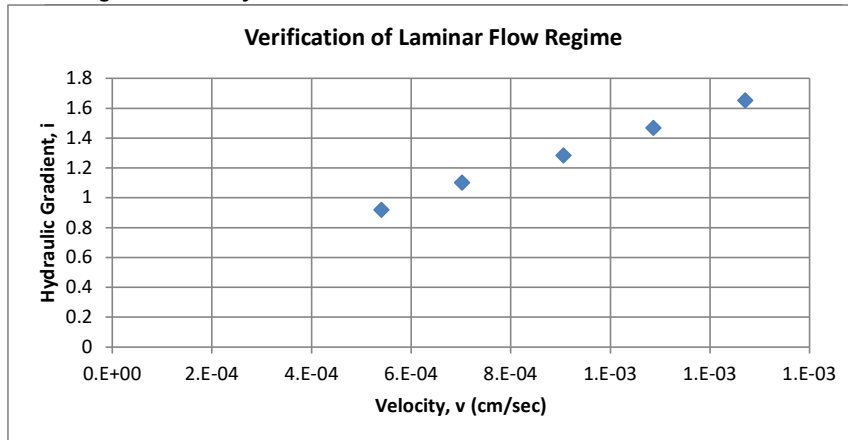
131.1 pcf (post-test)  
 124.9 pcf (in-situ)  
 101.1 pcf (dry)

**Permeability determination**

Length of soil in Permeameter, *l*: 16.35 cm  
 Cross sectional Area, *A*: 41.74 cm<sup>2</sup>

Trial No.	Head, <i>h</i> (cm)	Flow, <i>Q</i> <sub>out</sub> (cm <sup>3</sup> )	Time, <i>t</i> (s)	Temp, <i>T</i> (°C)	Permeability at <i>T</i> , <i>k<sub>T</sub></i> (cm/s)	Ratio of Viscosity, $\frac{\eta_T}{\eta_{20^\circ C}}$	Hydraulic Gradient, <i>i</i>	Velocity, <i>v</i> (cm/sec)	Permeability at 20°C, <i>k</i> <sub>20°C</sub> (cm/s)
1	15	6.76	300	22	5.88E-04	0.9531	0.91743119	5.40E-04	5.61E-04
2	18	8.79	300	22	6.38E-04	0.9531	1.10091743	7.02E-04	6.08E-04
3	21	11.34	300	22	7.05E-04	0.9531	1.28440367	9.06E-04	6.72E-04
4	24	13.6	300	22	7.40E-04	0.9531	1.46788991	1.09E-03	7.05E-04
5	27	15.91	300	22	7.69E-04	0.9531	1.65137615	1.27E-03	7.33E-04

**Average Permeability:** 6.56E-04 cm/s      **0.9 in/hr**



## **APPENDIX C**

# Pavement Core Photo Log

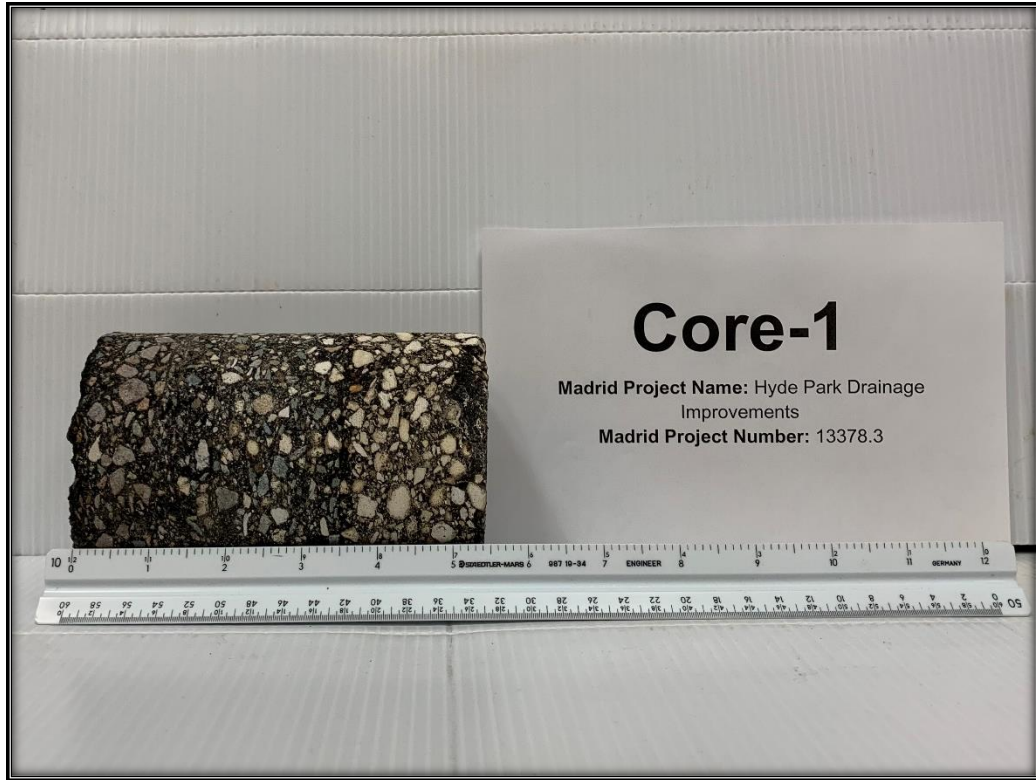
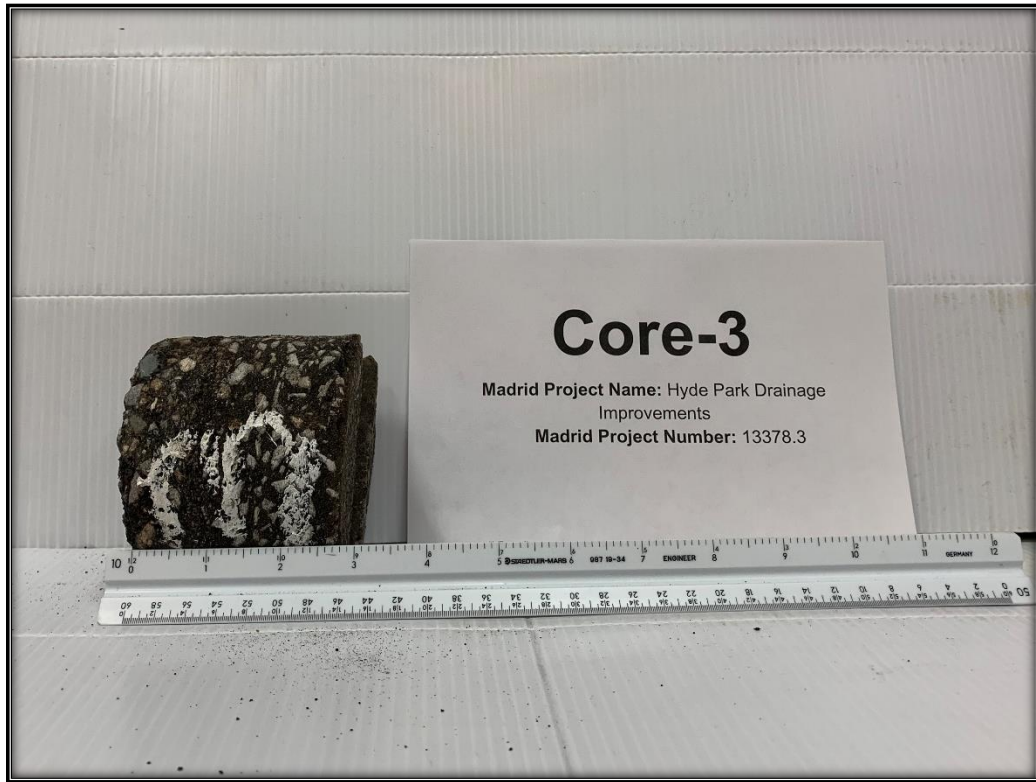


Photo 1: Core 1

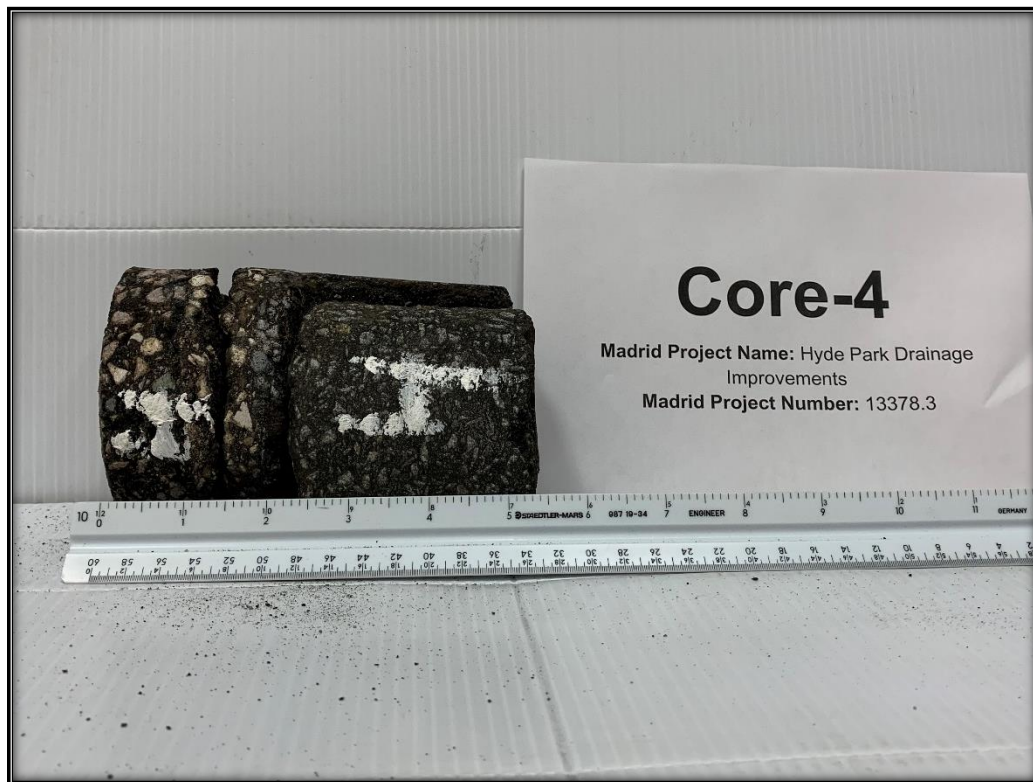


Photo 2: Core 2

# Pavement Core Photo Log

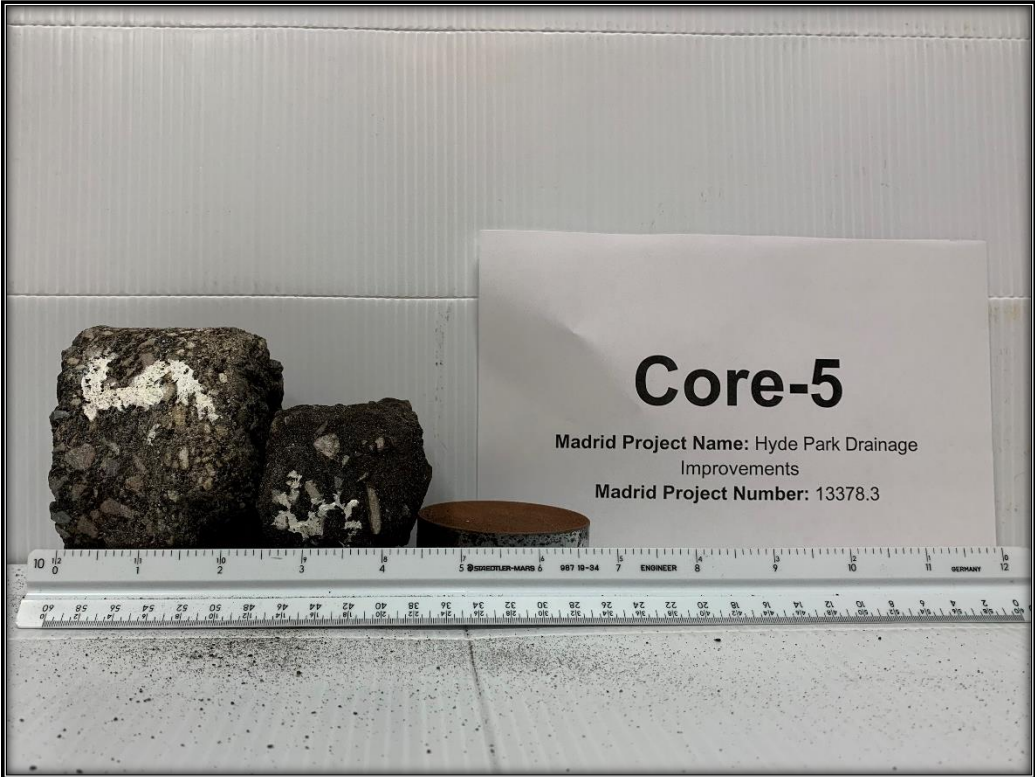


**Photo 3:** Core 3

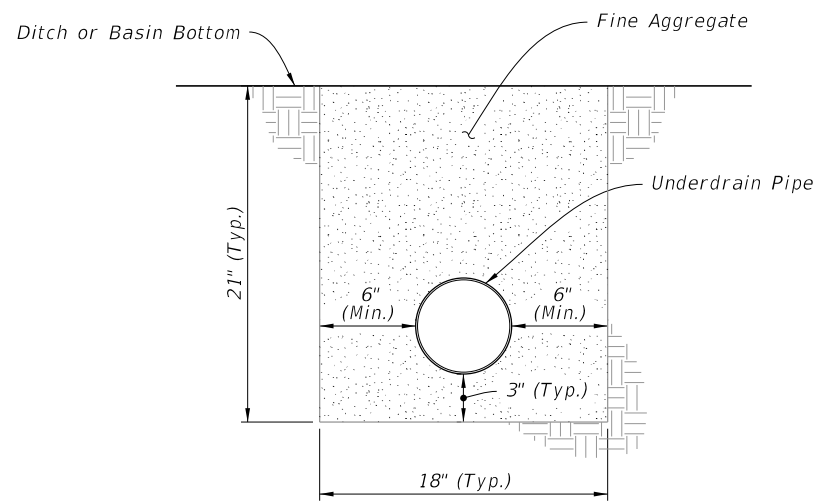


**Photo 4:** Core 4

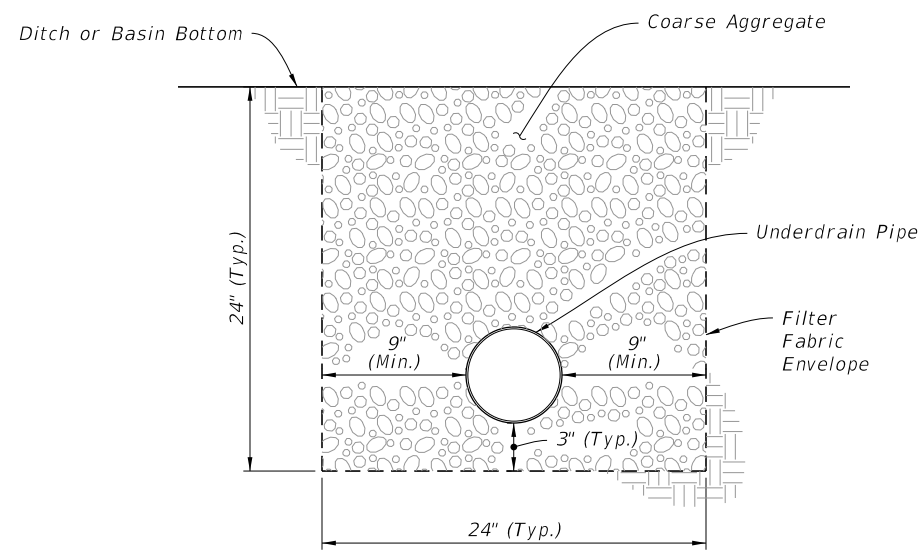
**Pavement Core Photo Log**



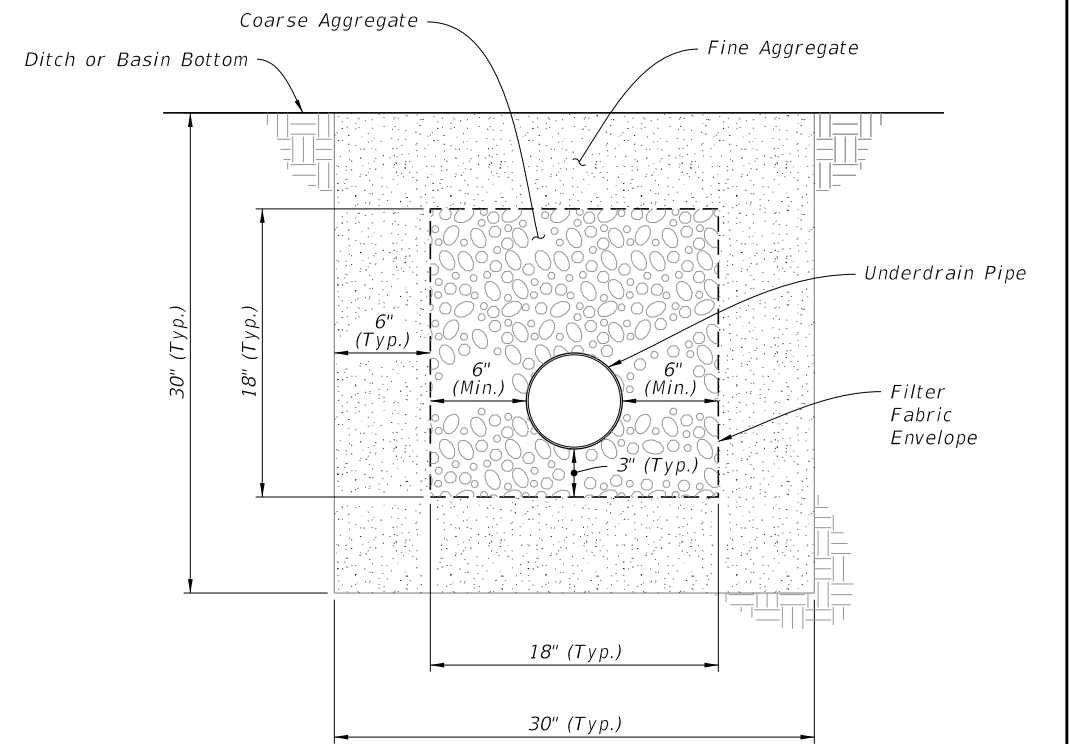
**Photo 5: Core 5**



TYPE I



TYPE II



TYPE III

10/29/2019 8:17:01 AM

TYPE I, II, AND III

LAST REVISION 11/01/19	REVISION	DESCRIPTION:
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FY 2020-21  
STANDARD PLANS

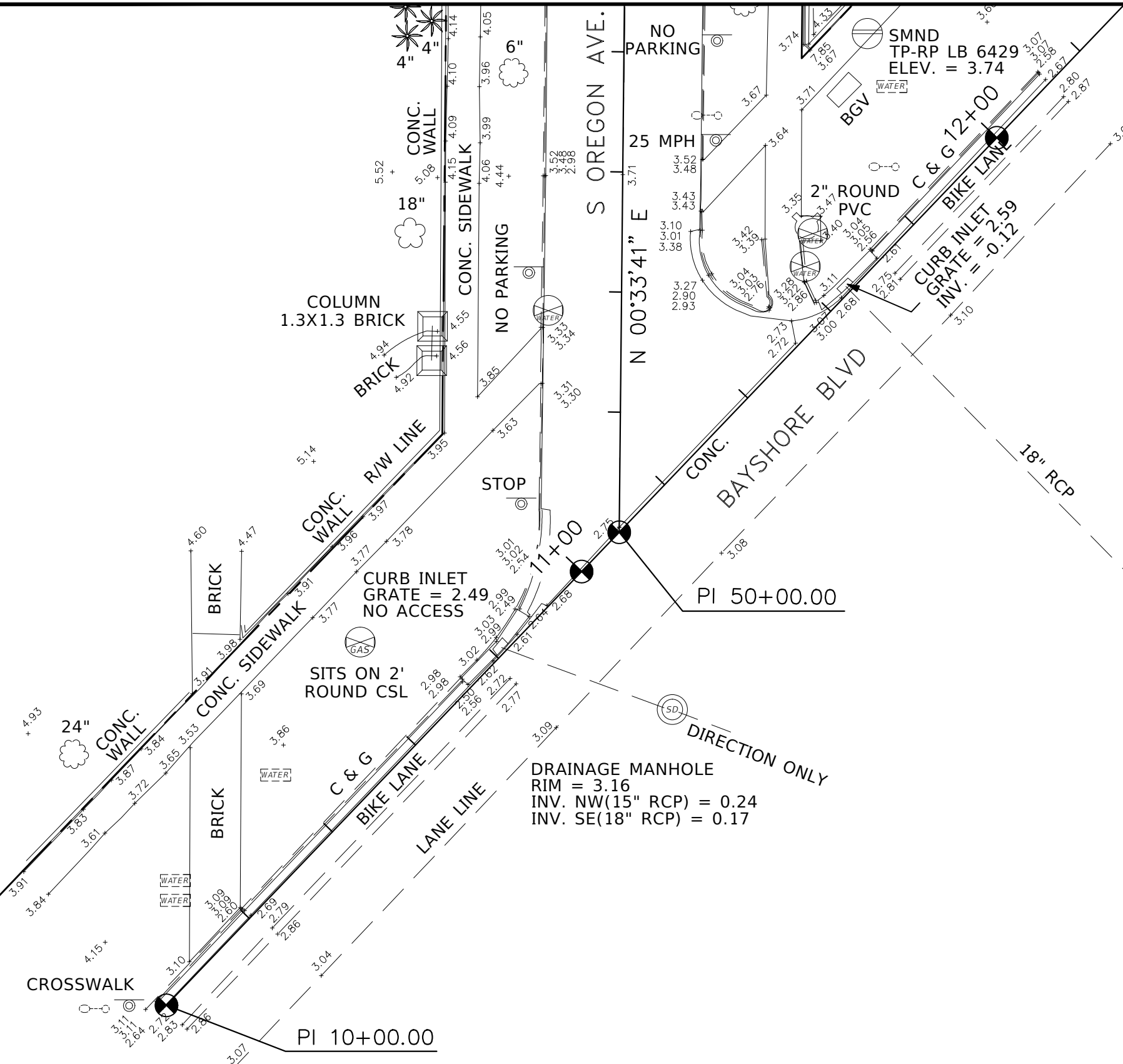
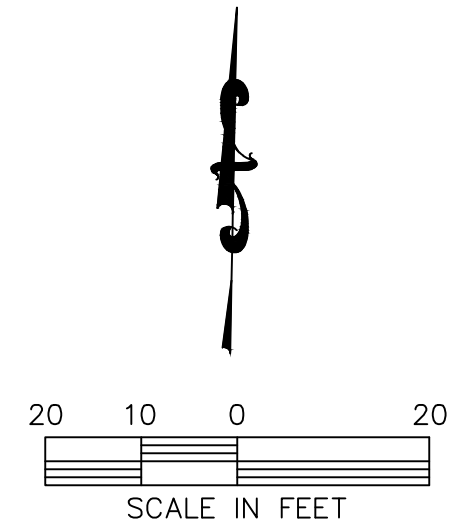
UNDERDRAIN

INDEX  
440-001

SHEET  
2 of 3

Bayshore Blvd.  
Topographic Survey

SEE SHEET 2



LEGEND	
	SPOT GRADE
	OAK TREE
	PALM TREE
	PINE TREE
	STUMP
	SHRUB
	UTILITY POLE
	SHARED POLE W/ TRANS
	SHARED POLE
	SPRINKLER
	GAS VALVE COVER
	GAS VALVE
	GAS METER
	TELEPHONE PEDESTAL
	BOLLARD
	CLEANOUT
	SANITARY MANHOLE
	CABLE TV SERVICE BOX
	WIRING PULL BOX
	DRILL HOLE
	FENCE
	CONCRETE SLAB
	BACK OF CURB
	EDGE OF PAVEMENT
	FACE OF CURB
	STORM PIPE
	EXIST R/W LINE
	POST
	GUY ANCHOR
	FLOOD LIGHT
	SERVICE CABINET
	SIGN
	FIRE HYDRANT
	WATER VALVE COVER
	WATER METER
	LIGHT POLE
	SET NAIL & TIN TAB

**SURVEYOR'S NOTES:**

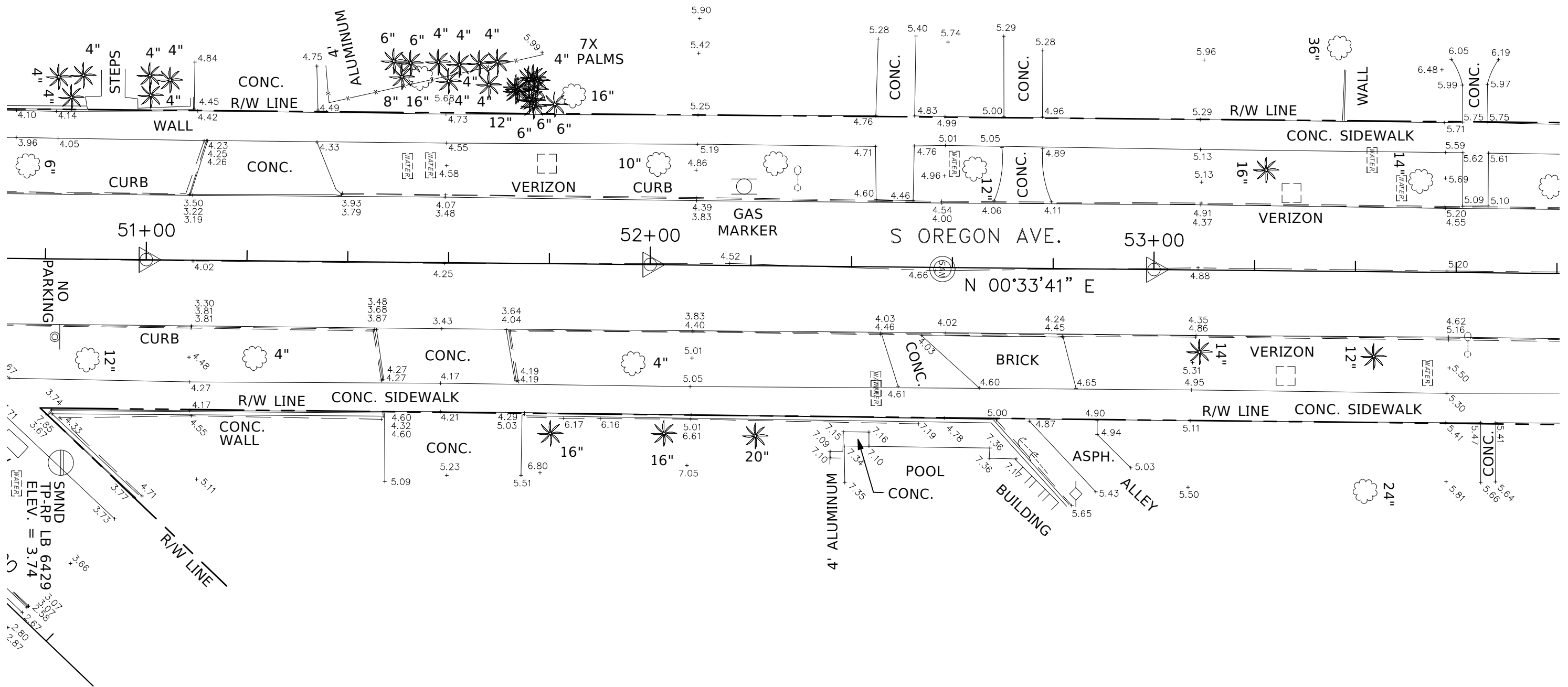
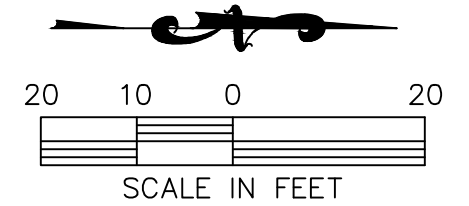
1. TYPE OF SURVEY: TOPOGRAPHIC SURVEY PREPARED FOR DRAINAGE.
2. ELEVATIONS SHOWN HEREON ARE REFERENCED TO NAVD 1988 VERTICAL DATUM AND BASED ON CITY OF TAMPA BENCH MARK HV-02 170 WITH AN ELEVATION OF 12.83.
3. FIELD WORK WAS COMPLETED ON 2/06/2020 AND WAS RECORDED IN FIELD BOOK # COT 46.
4. ECHEZABAL AND ASSOCIATES, INC. MAKES NO REPRESENTATIONS OR GUARANTEES PERTAINING TO EASEMENTS, RIGHT-OF-WAY, SET BACK LINES, RESERVATIONS, AGREEMENT AND OTHER SIMILAR MATTERS.
5. NO EXCAVATION WAS PERFORMED TO VERIFY THE LOCATION OR EXISTENCE OF ANY UNDERGROUND UTILITIES, ENCROACHMENTS, IMPROVEMENTS, STRUCTURES OR FOUNDATIONS.
6. NOT VALID WITHOUT THE SIGNATURE AND THE ORIGINAL RAISED SEAL OF A FLORIDA REGISTERED SURVEYOR AND MAPPER.
7. ADDITIONS OR DELETIONS TO SURVEY MAPS OR REPORTS BY OTHER THAN THE SIGNING PARTY OR PARTIES IS PROHIBITED WITHOUT WRITTEN CONSENT OF THE SIGNING PARTY OR PARTIES.
8. RIGHT OF WAY IS BASED ON RECORD PLATS FROM HILLSBOROUGH COUNTY.
9. ALL BASELINES HAVE BEEN SET AT 100' STATIONS.

This Survey Prepared For: <b>CITY OF TAMPA</b>		<b>ECHEZABAL &amp; ASSOCIATES, INC.</b> Surveying & Mapping LB #6429		108 Country Club Drive Tampa, Florida 33612 (813) 933-2505 FAX (813) 933-2721		<b>SURVEYOR'S CERTIFICATE</b> This certifies that a survey of the hereon shown property was made under my supervision and meets the Standards of Practice set forth by the Board of Professional Surveyors and Mappers in Chapter 5J-17, Florida Administrative Code pursuant to Section 472.027, Florida Statutes.	
Drawn: R.T.B.    Checked: S.M.T.    Crew: S.D.				REVISIONS		Stephen M. Tate FLORIDA PROFESSIONAL SURVEYOR AND MAPPER NO. 5242	
Date: 3/31/20    Dwg: 1803904.DWG    SCALE: 1" = 20'		File Name C:\Users\Ryan Bouffard\appdata\local\temp\AcPublish_12164\1803904.dwg		THIS SURVEY NOT VALID UNLESS IMPRINTED WITH AN EMBOSSED SURVEYOR'S SEAL			
SECTION 26, TOWNSHIP 29 SOUTH, RANGE 18 EAST							



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Topographic Survey

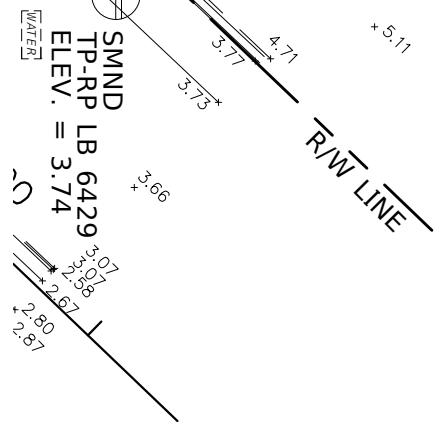
SECTION 26, TOWNSHIP 29 SOUTH, RANGE 18 EAST  
HILLSBOROUGH COUNTY, FLORIDA




SEE SHEET 1

SEE SHEET 3

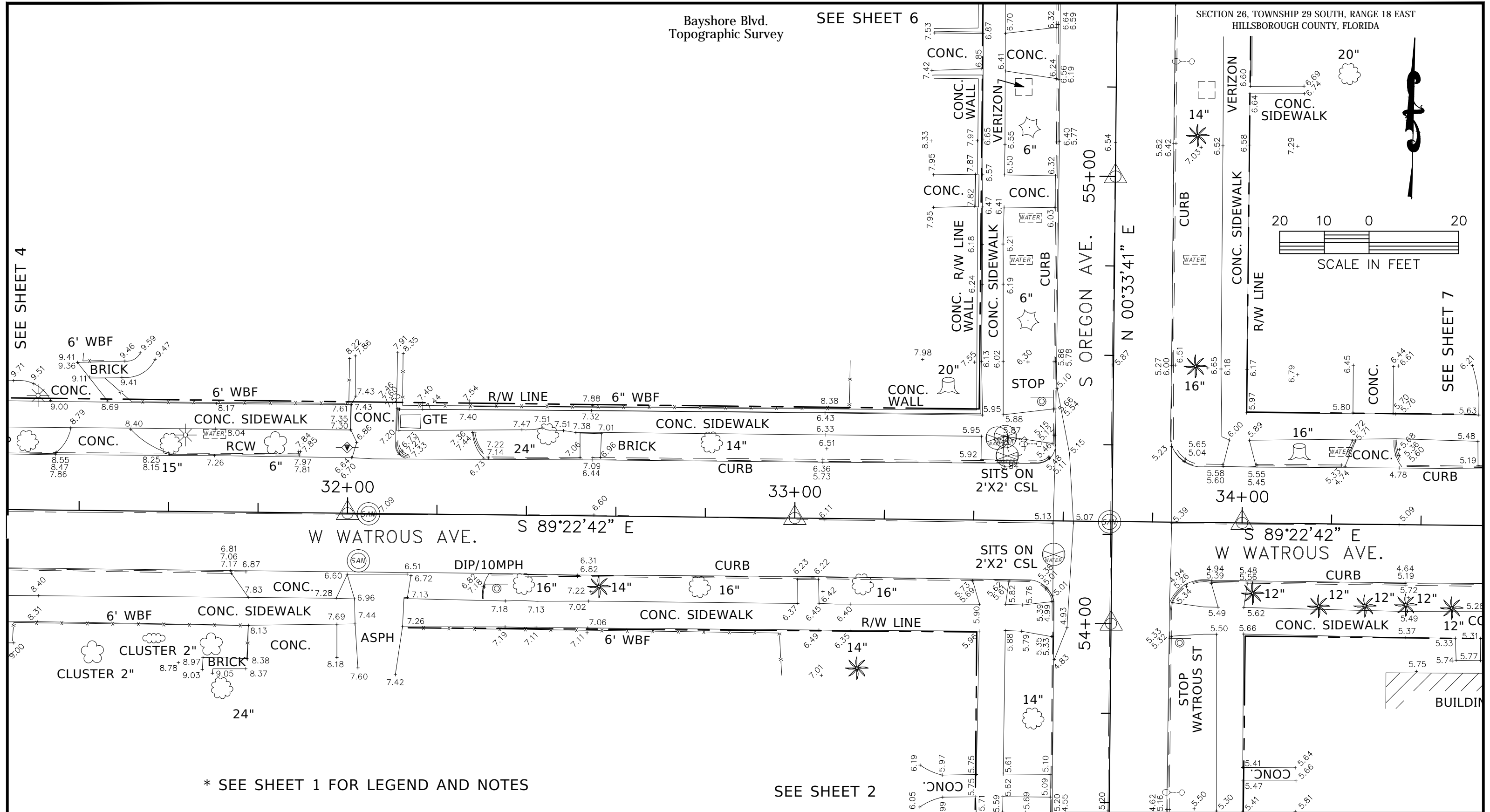
\* SEE SHEET 1 FOR LEGEND AND NOTES



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		REVISIONS			
Drawn: R.T.B.	Checked: S.M.T.	Crew: S.D.	Description	Date	Date
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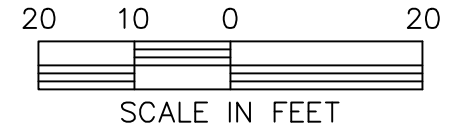
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SEE SHEET 7



\* SEE SHEET 1 FOR LEGEND AND NOTES

SEE SHEET 2

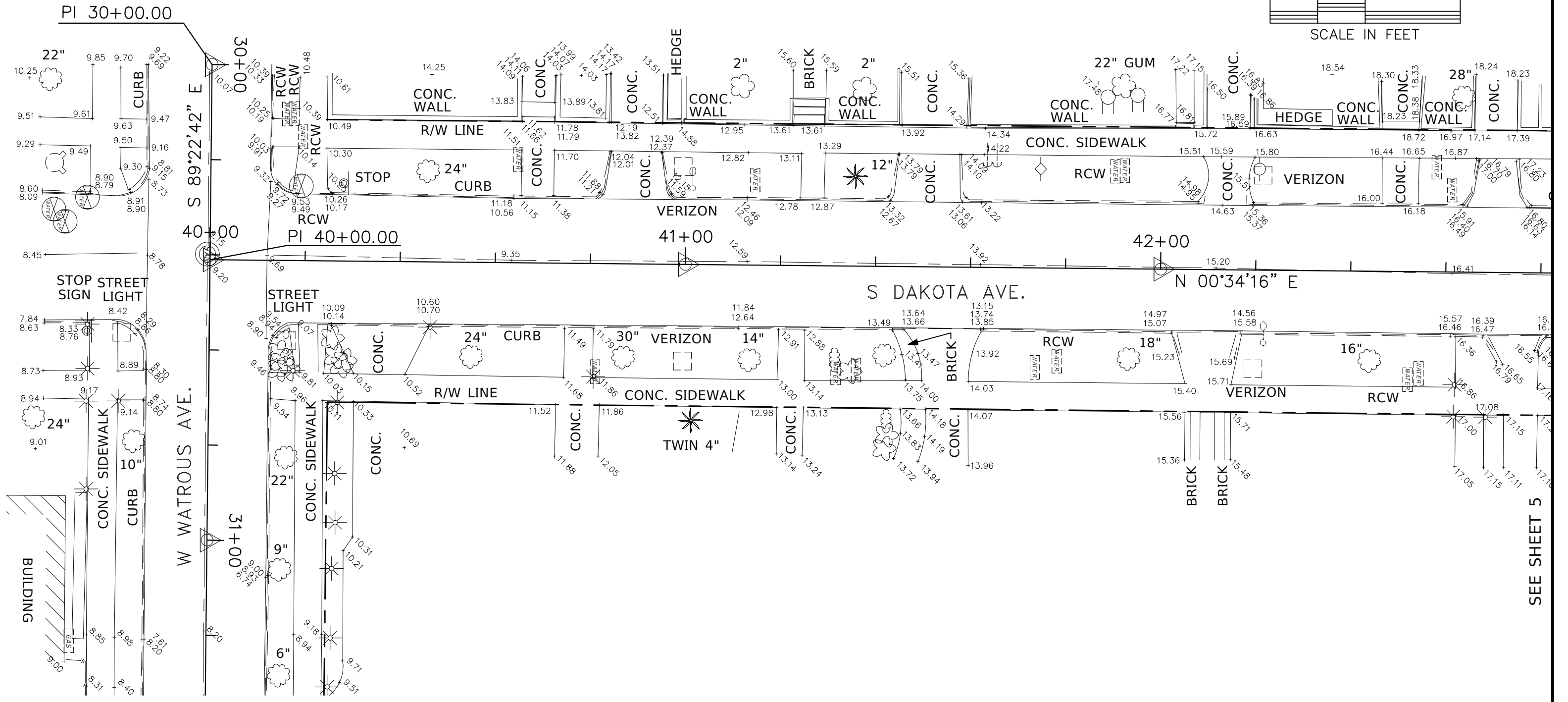
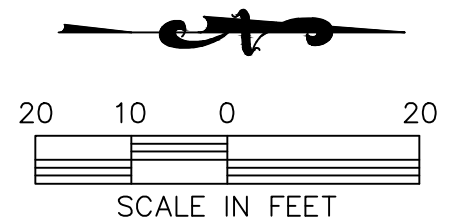


This Survey Prepared For: **CITY OF TAMPA**

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	REVISIONS					
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SECTION 26, TOWNSHIP 29 SOUTH, RANGE 18 EAST						

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SECTION 26, TOWNSHIP 29 SOUTH, RANGE 18 EAST  
HILLSBOROUGH COUNTY, FLORIDA



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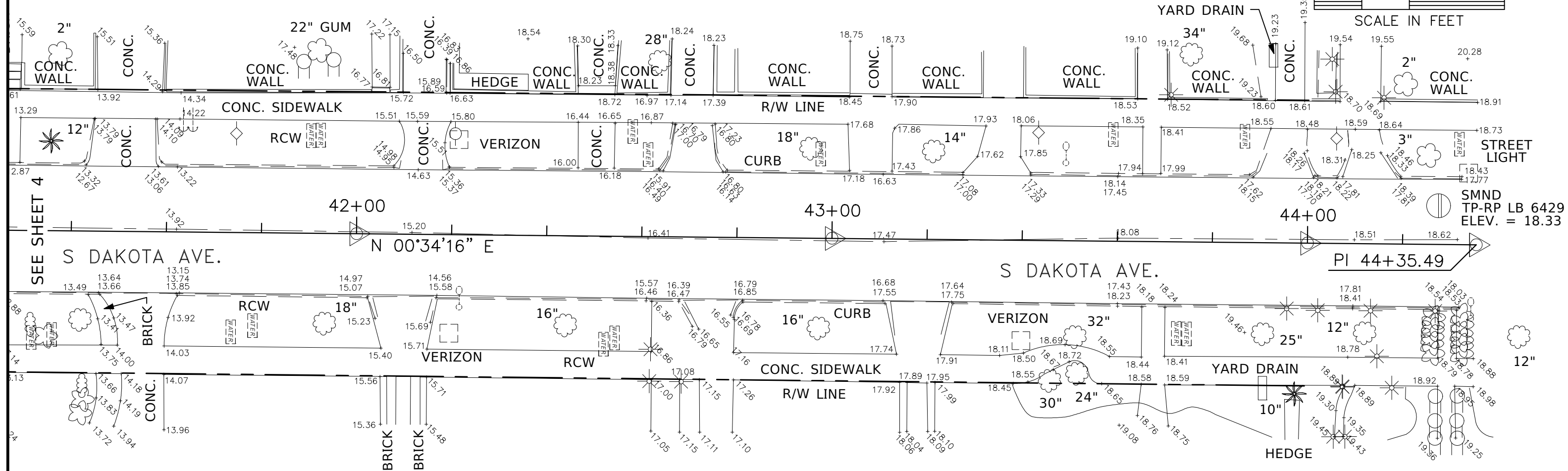
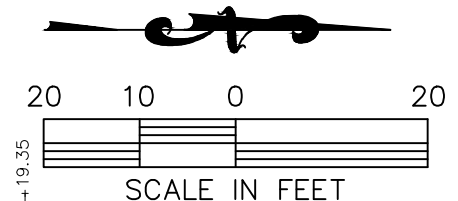
\* SEE SHEET 1 FOR LEGEND AND NOTES

SEE SHEET 5

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		REVISIONS			
Drawn: R.T.B.	Checked: S.M.T.	Crew: S.D.	Description	Date	Date
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HILLSBOROUGH COUNTY, FLORIDA



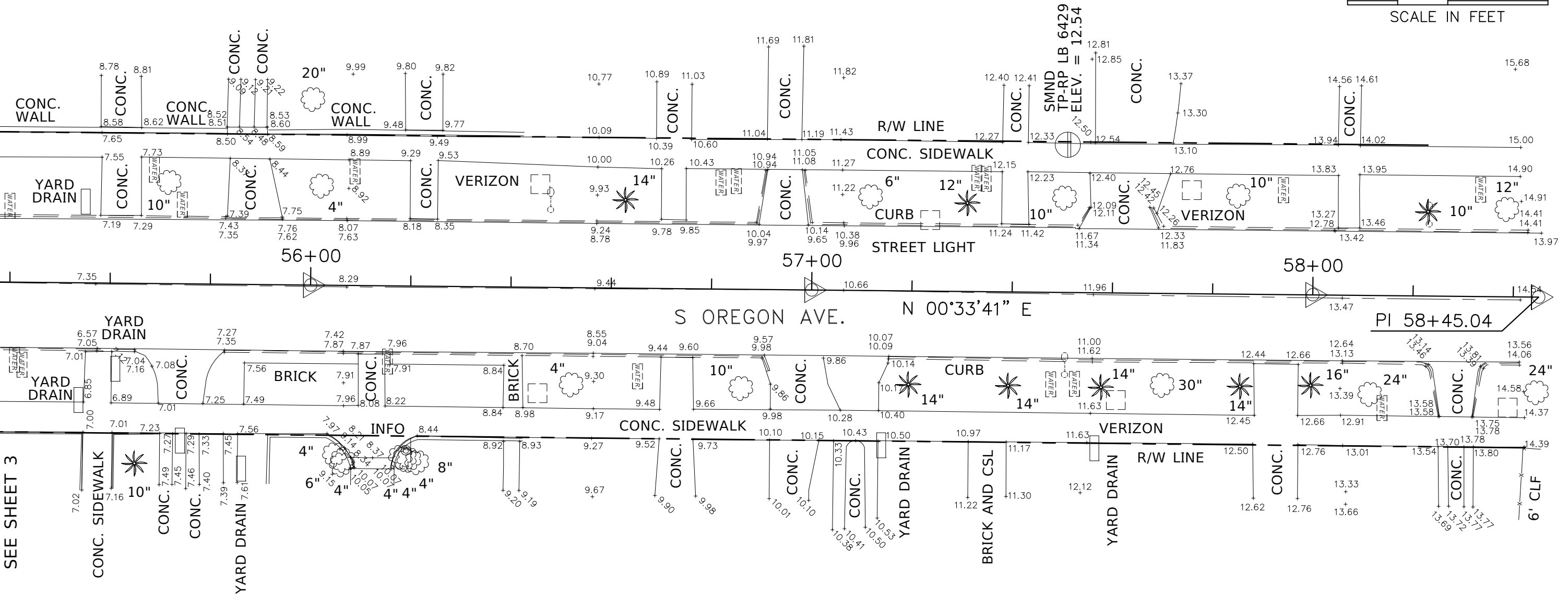
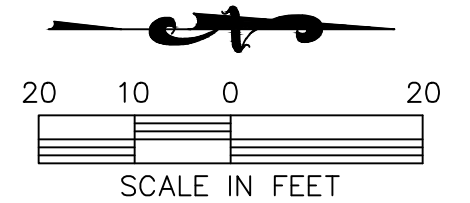
SEE SHEET 4

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Drawn: R.T.B.	Checked: S.M.T.	Crew: S.D.	Description	Date	Description
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HILLSBOROUGH COUNTY, FLORIDA



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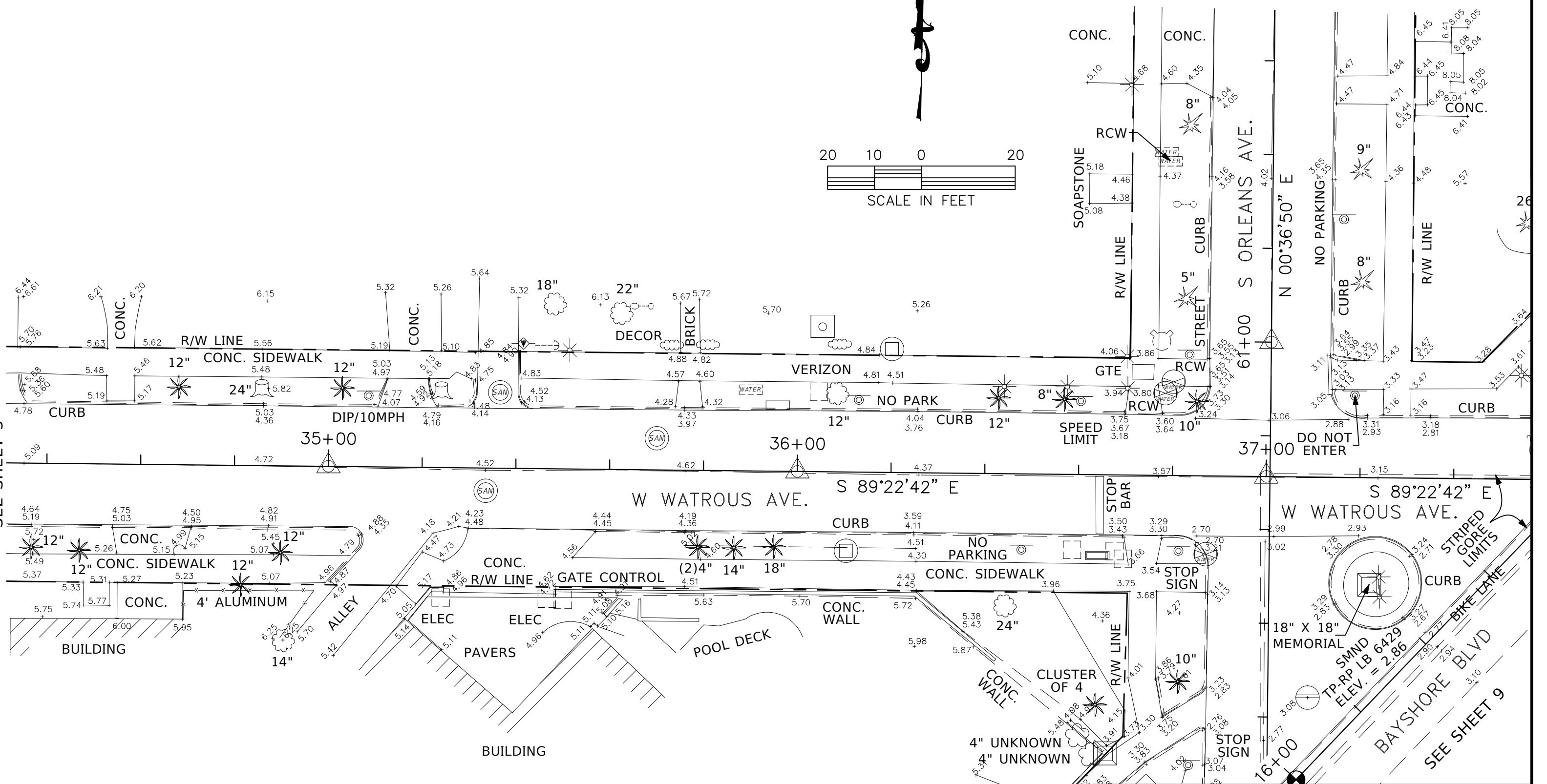
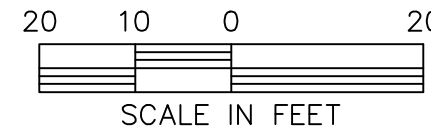
\* SEE SHEET 1 FOR LEGEND AND NOTES

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		<b>ECHENZABAL &amp; ASSOCIATES, INC.</b> Surveying & Mapping LB #6429		108 Country Club Drive Tampa, Florida 33612 (813) 933-2505 FAX (813) 933-2721		
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Drawn: R.T.B.	Checked: S.M.T.	Crew: S.D.	Description	Date	Description	Date
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SECTION 26, TOWNSHIP 29 SOUTH, RANGE 18 EAST  
HILLSBOROUGH COUNTY, FLORIDA

SEE SHEET 8



\* SEE SHEET 1 FOR LEGEND AND NOTES

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**E**  
**A**  
**A**

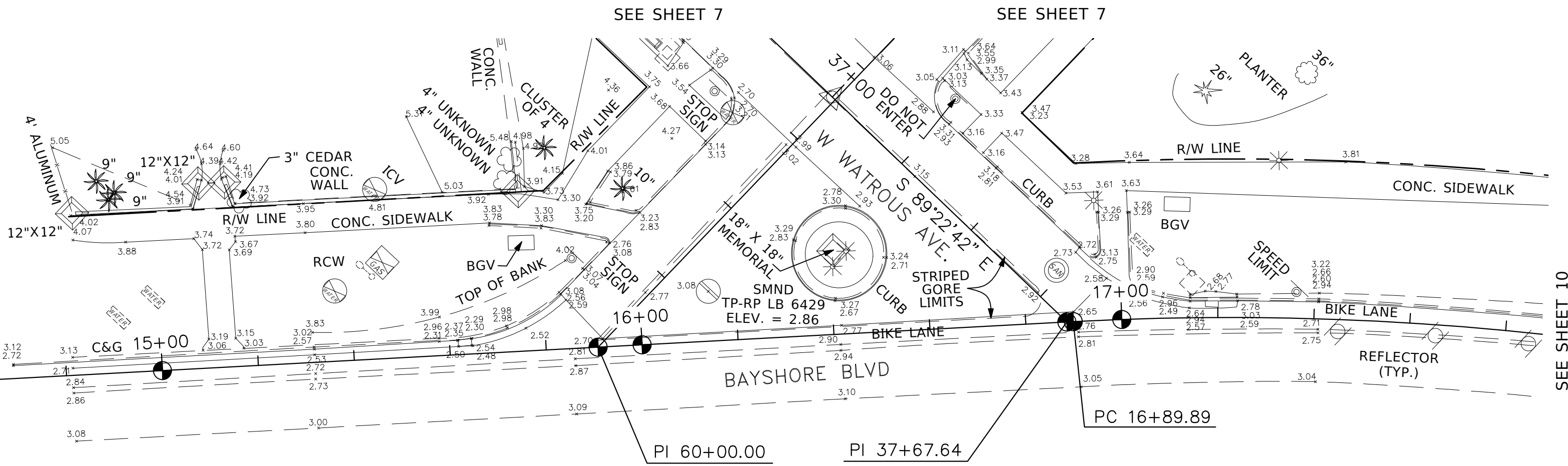
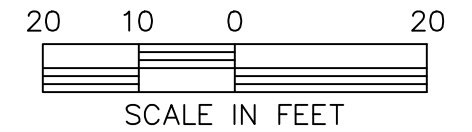
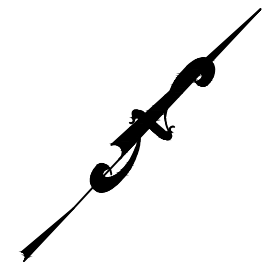
**ECHEZABAL & ASSOCIATES, INC.** 108 Country Club Drive  
Tampa, Florida 33612  
(813) 933-2505  
Surveying & Mapping LB #6429 FAX (813) 933-2721

REVISIONS					
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Topographic Survey

SECTION 26, TOWNSHIP 29 SOUTH, RANGE 18 EAST  
HILLSBROUGH COUNTY, FLORIDA



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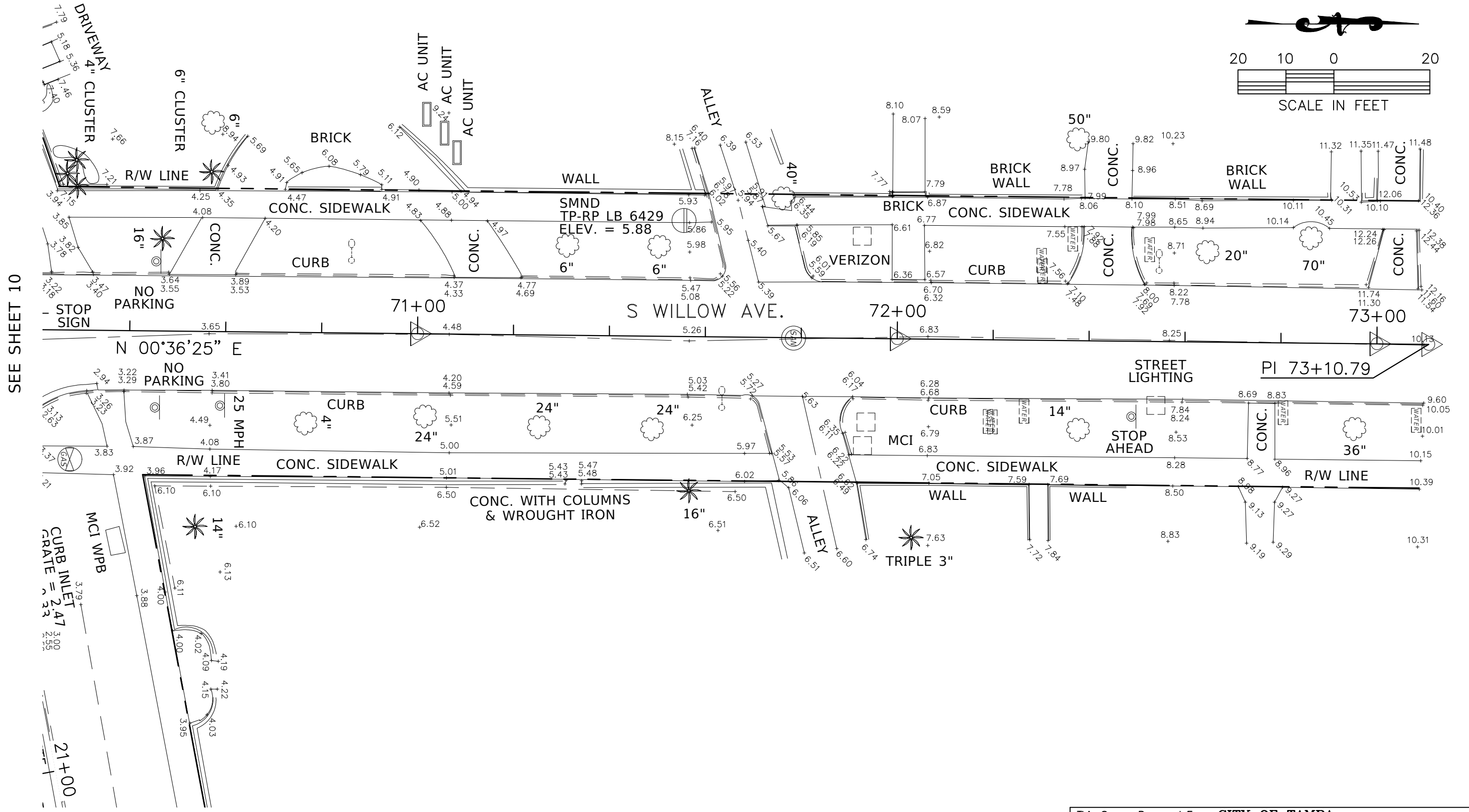
This Survey Prepared For: <b>CITY OF TAMPA</b>					
		<b>ECHENZABAL &amp; ASSOCIATES, INC.</b> Surveying & Mapping LB #6429		108 Country Club Drive Tampa, Florida 33612 (813) 933-2505 FAX (813) 933-2721	
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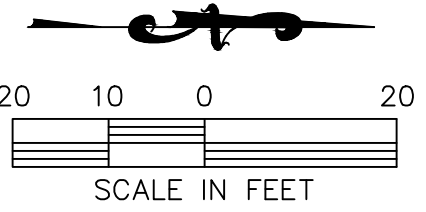


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SECTION 26, TOWNSHIP 29 SOUTH, RANGE 18 EAST  
HILLSBOROUGH COUNTY, FLORIDA




SEE SHEET 10



SEE SHEET 12

\* SEE SHEET 1 FOR LEGEND AND NOTES

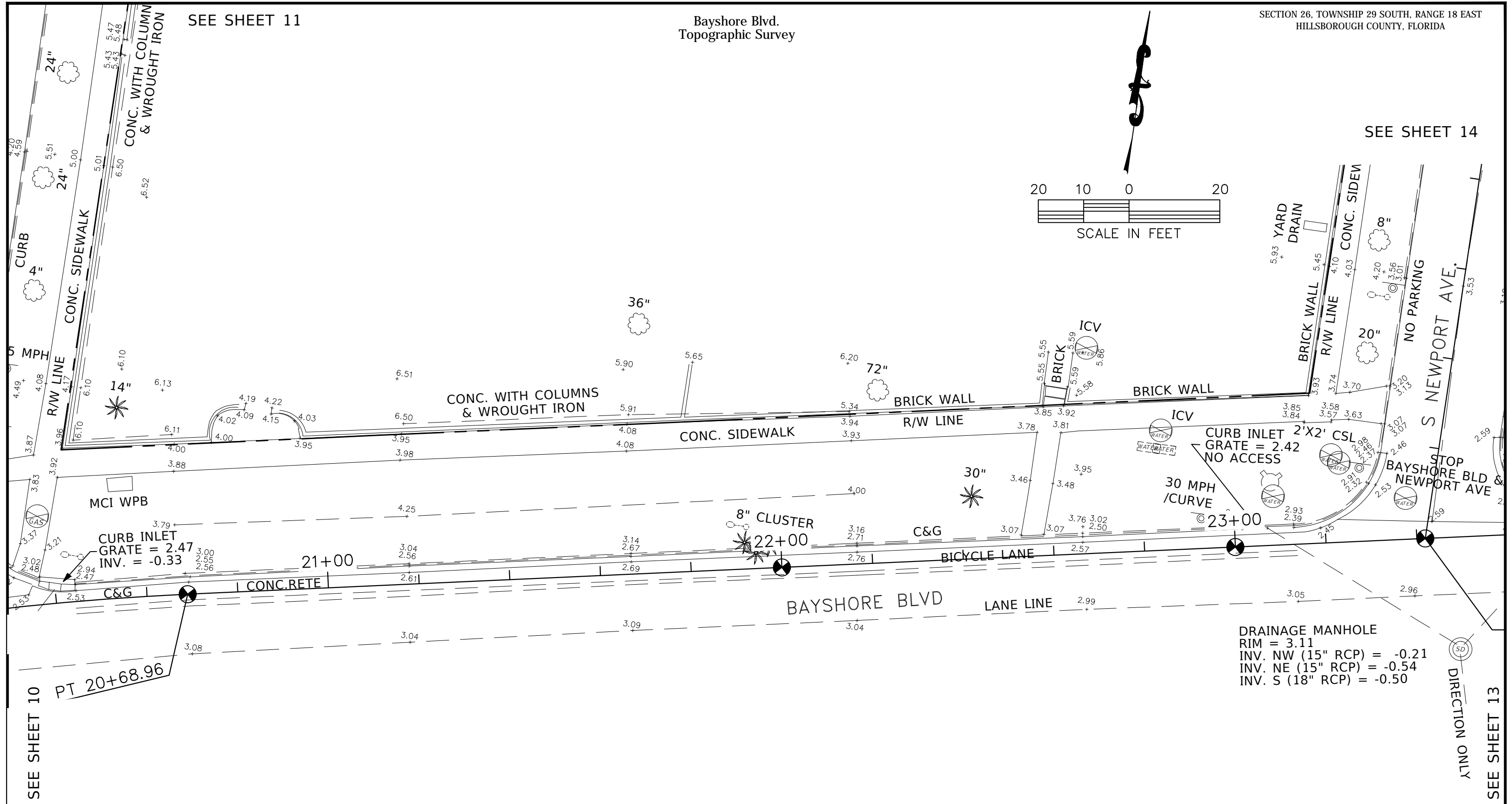
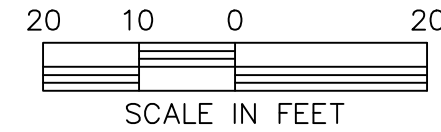
This Survey Prepared For: <b>CITY OF TAMPA</b>					
		<b>ECHENZABAL &amp; ASSOCIATES, INC.</b> Surveying & Mapping		108 Country Club Drive Tampa, Florida 33612 (813) 933-2505 FAX (813) 933-2721	
		LB #6429			
REVISIONS					
Drawn: R.T.B.	Checked: S.M.T.	Crew: S.D.	Description	Date	Date
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File Name C:\Users\Ryan Bouffard\appdata\local\temp\AcPublish_12164\1803904.dwg					
SECTION 26, TOWNSHIP 29 SOUTH, RANGE 18 EAST					

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SECTION 26, TOWNSHIP 29 SOUTH, RANGE 18 EAST  
HILLSBOROUGH COUNTY, FLORIDA


SEE SHEET 11

SEE SHEET 14



DRAINAGE MANHOLE  
RIM = 3.11  
INV. NW (15" RCP) = -0.21  
INV. NE (15" RCP) = -0.54  
INV. S (18" RCP) = -0.50

\* SEE SHEET 1 FOR LEGEND AND NOTES

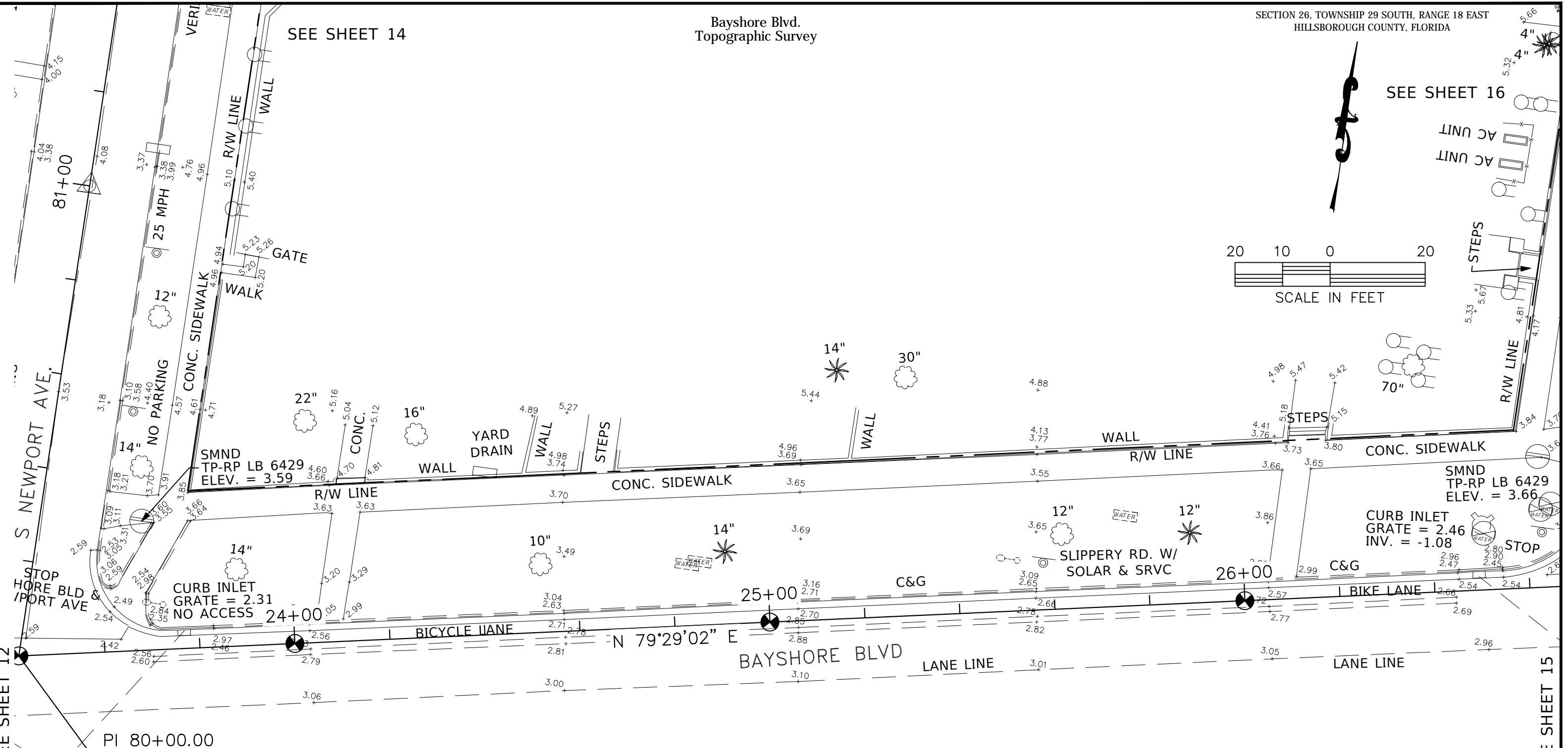
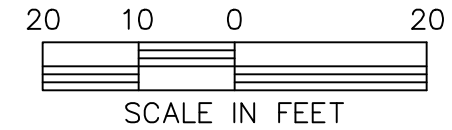
This Survey Prepared For: <b>CITY OF TAMPA</b>					
		<b>ECHENZABAL &amp; ASSOCIATES, INC.</b> Surveying & Mapping LB #6429		108 Country Club Drive Tampa, Florida 33612 (813) 933-2505 FAX (813) 933-2721	
		REVISIONS			
Drawn: R.T.B.	Checked: S.M.T.	Crew: S.D.	Description	Date	Date
Date: 3/31/20	Dwg: 1803904.DWG	SCALE: 1" = 20'			
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SECTION 26, TOWNSHIP 29 SOUTH, RANGE 18 EAST					

Bayshore Blvd.  
Topographic Survey

SECTION 26, TOWNSHIP 29 SOUTH, RANGE 18 EAST  
HILLSBOROUGH COUNTY, FLORIDA

SEE SHEET 14

SEE SHEET 16

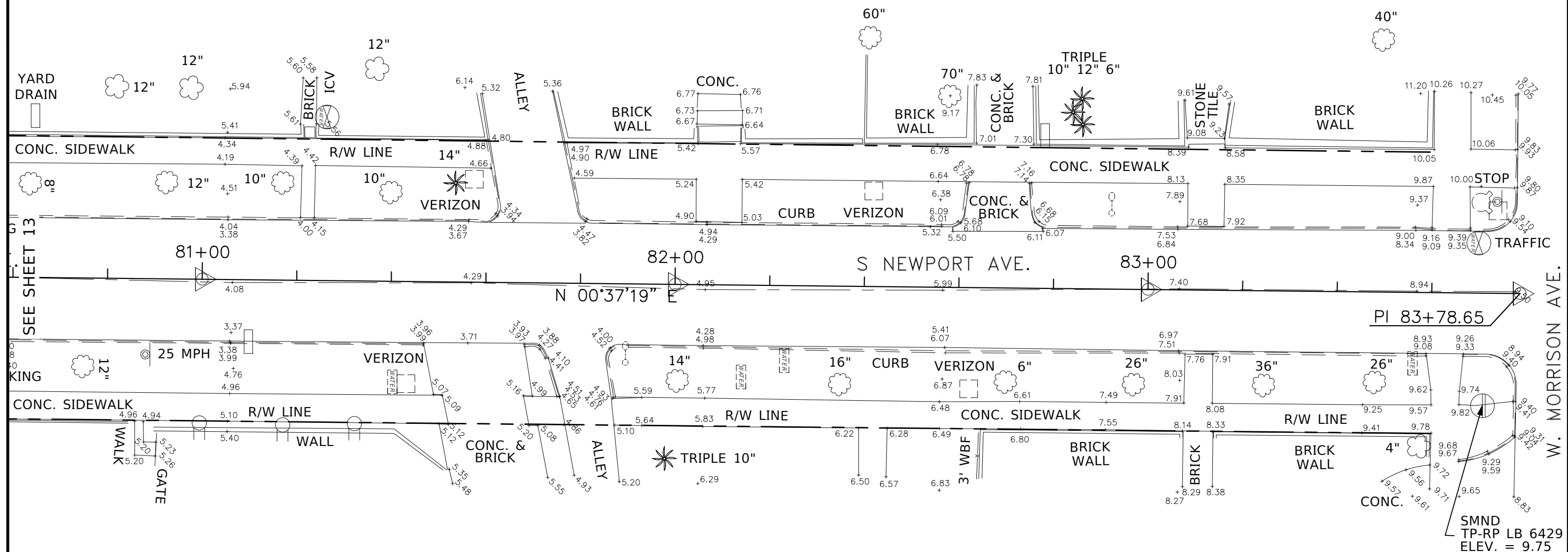
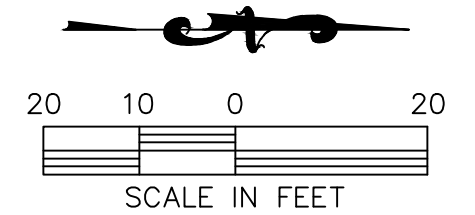


\* SEE SHEET 1 FOR LEGEND AND NOTES

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		<b>ECHENZABAL &amp; ASSOCIATES, INC.</b> Surveying & Mapping LB #6429		108 Country Club Drive Tampa, Florida 33612 (813) 933-2505 FAX (813) 933-2721	
		REVISIONS			
Drawn: R.T.B.	Checked: S.M.T.	Crew: S.D.	Description	Date	Date
Date: 3/31/20	Dwg: 1803904.DWG	SCALE: 1" = 20'			
File Name C:\Users\Ryan Bouffard\appdata\local\temp\AcPublish_12164\1803904.dwg					
SECTION 26, TOWNSHIP 29 SOUTH, RANGE 18 EAST					

Bayshore blvd.  
Topographic Survey

SECTION 26, TOWNSHIP 29 SOUTH, RANGE 18 EAST  
HILLSBOROUGH COUNTY, FLORIDA



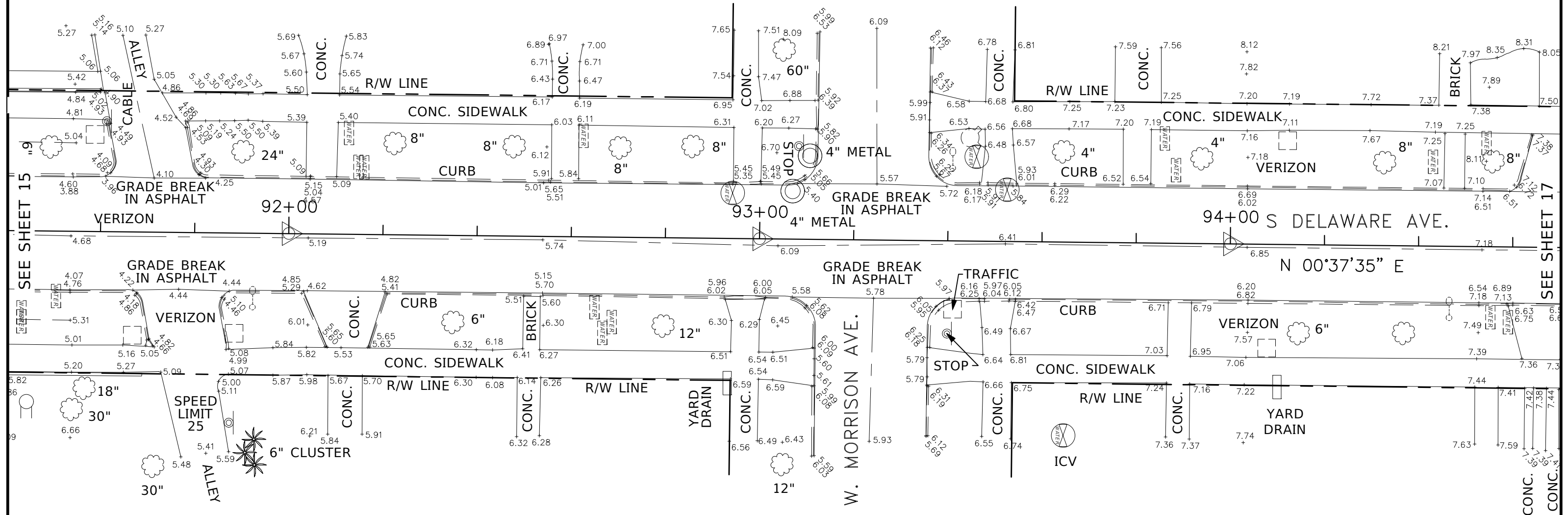
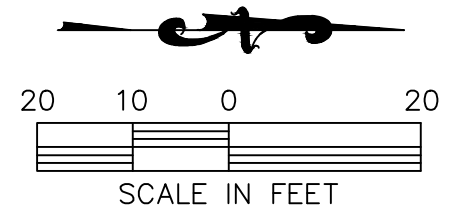
\* SEE SHEET 1 FOR LEGEND AND NOTES

This Survey Prepared For: <b>CITY OF TAMPA</b>					
		<b>ECHENZABAL &amp; ASSOCIATES, INC.</b> Surveying & Mapping		108 Country Club Drive Tampa, Florida 33612 (813) 933-2505 FAX (813) 933-2721	
		LB #6429			
REVISIONS					
Drawn: R.T.B.	Checked: S.M.T.	Crew: S.D.	Description	Date	Date
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SECTION 26, TOWNSHIP 29 SOUTH, RANGE 18 EAST  
HILLSBOROUGH COUNTY, FLORIDA



SEE SHEET 15

SEE SHEET 17

\* SEE SHEET 1 FOR LEGEND AND NOTES

This Survey Prepared For: **CITY OF TAMPA**

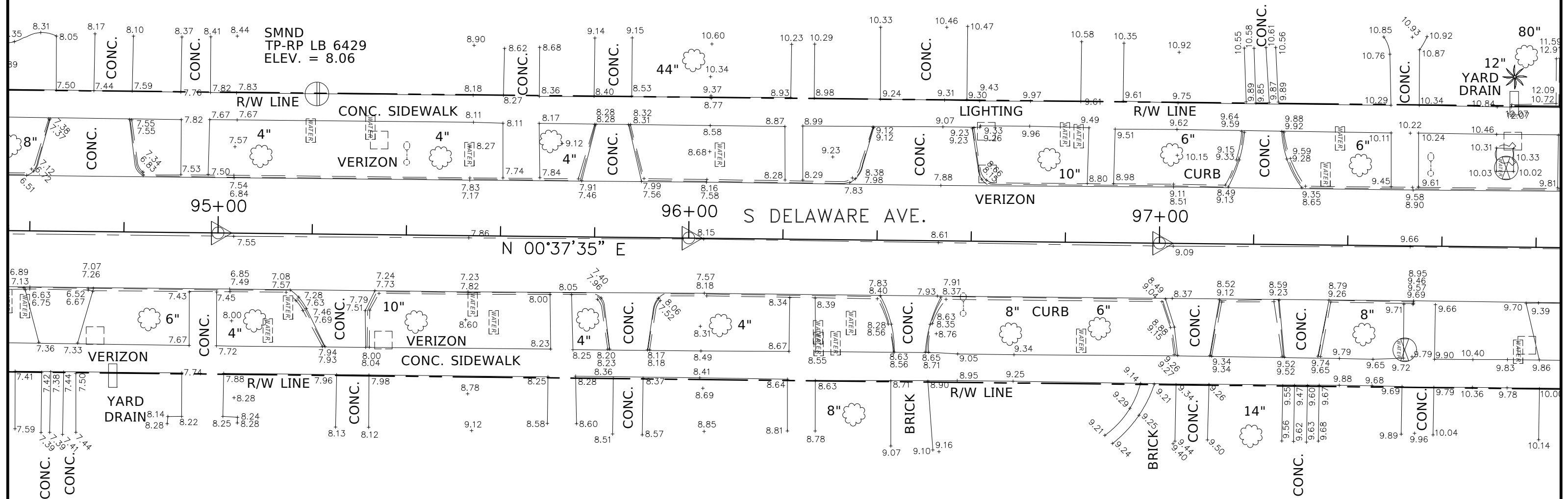
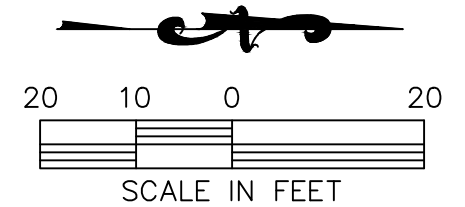
**ECHENZABAL & ASSOCIATES, INC.** 108 Country Club Drive  
Tampa, Florida 33612  
(813) 933-2505

Surveying & Mapping LB #6429 FAX (813) 933-2721

REVISIONS						
Drawn	Checked	Crew	Description	Date	Description	Date
R.T.B.	S.M.T.	S.D.				
Date: 3/31/20			Dwg: 1803904.DWG SCALE: 1" = 20'			
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SECTION 26, TOWNSHIP 29 SOUTH, RANGE 18 EAST						

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SECTION 26, TOWNSHIP 29 SOUTH, RANGE 18 EAST  
HILLSBOROUGH COUNTY, FLORIDA



SEE SHEET 16

SEE SHEET 18

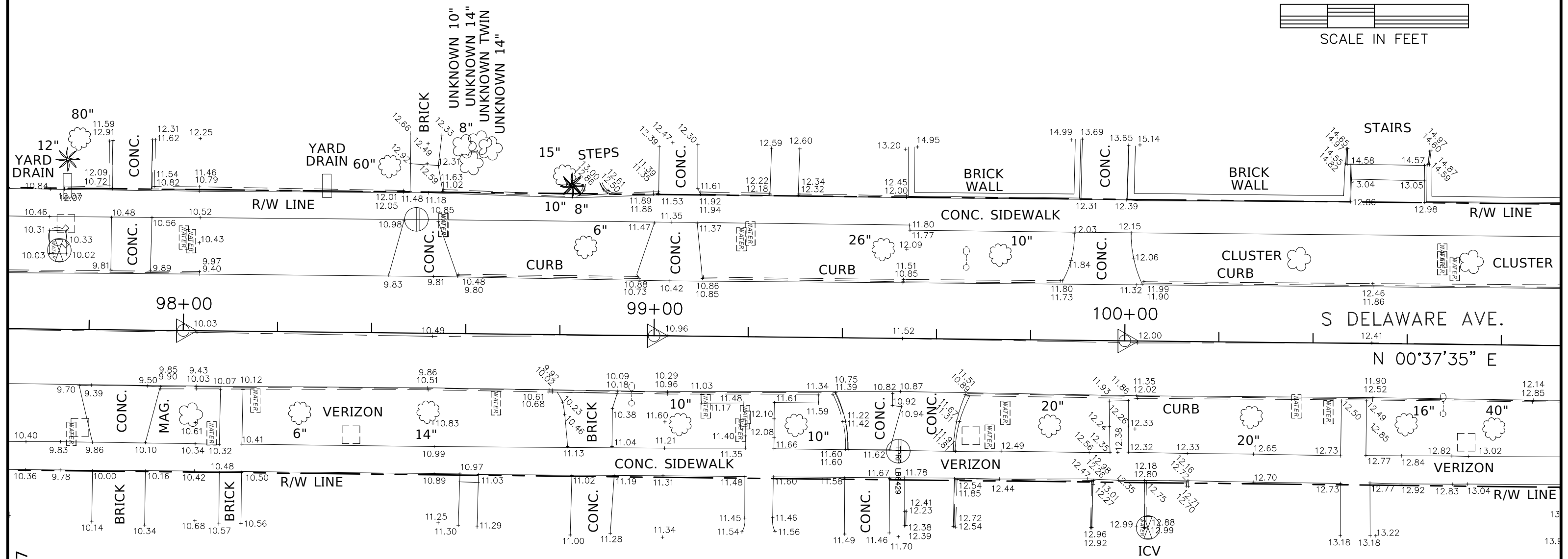
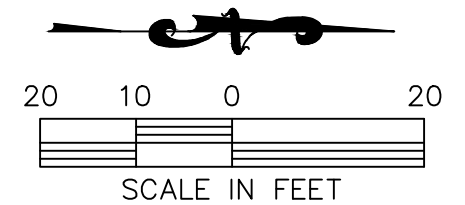
\* SEE SHEET 1 FOR LEGEND AND NOTES

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		REVISIONS				
Drawn: R.T.B.	Checked: S.M.T.	Crew: S.D.	Description	Date	Description	Date
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SECTION 26, TOWNSHIP 29 SOUTH, RANGE 18 EAST						



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Topographic Survey


SECTION 26, TOWNSHIP 29 SOUTH, RANGE 18 EAST  
HILLSBOROUGH COUNTY, FLORIDA



SEE SHEET 17

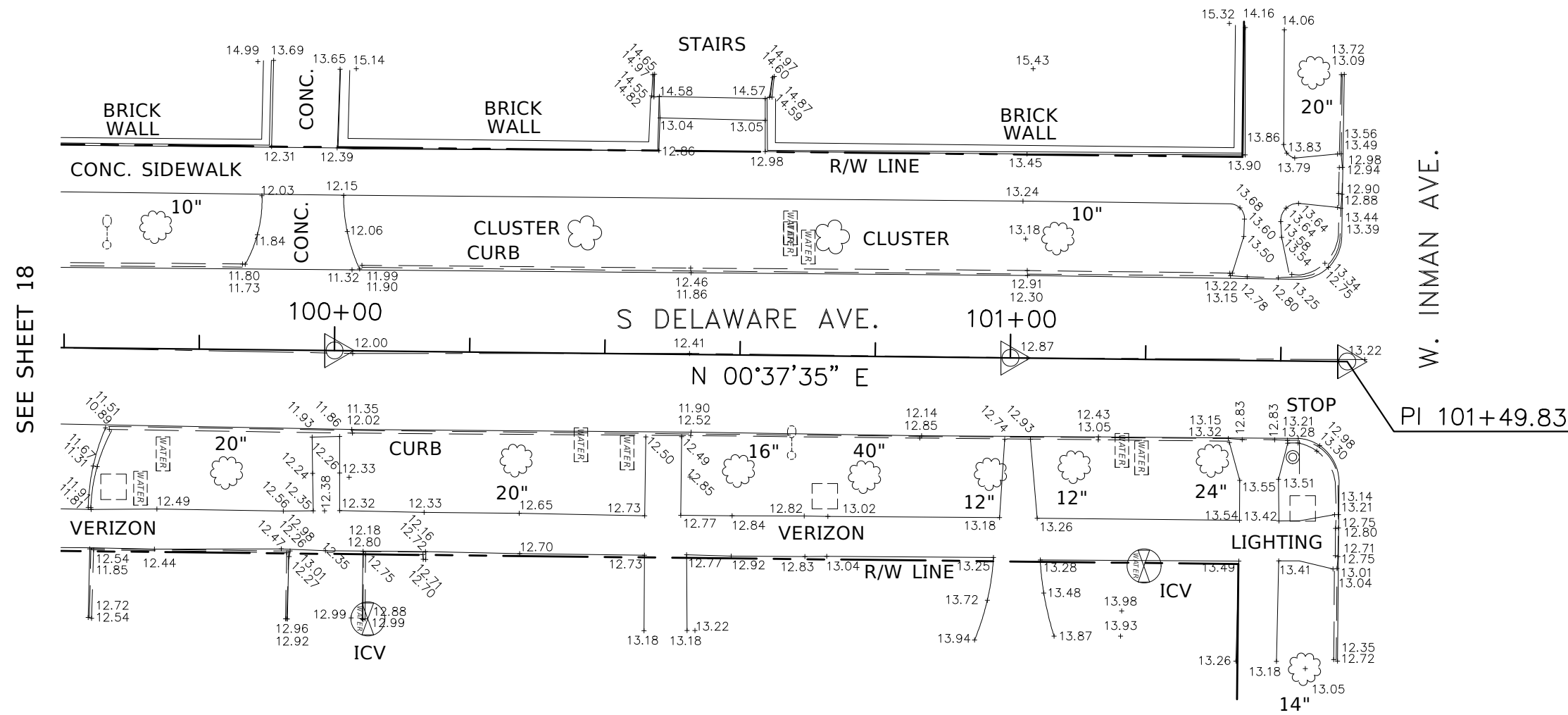
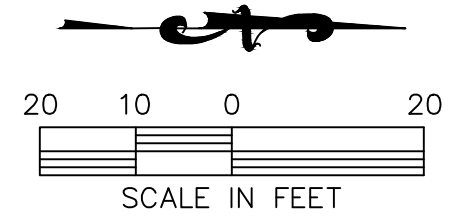
SEE SHEET 19

\* SEE SHEET 1 FOR LEGEND AND NOTES

This Survey Prepared For: <b>CITY OF TAMPA</b>						
		<b>ECHENZABAL &amp; ASSOCIATES, INC.</b> Surveying & Mapping LB #6429			108 Country Club Drive Tampa, Florida 33612 (813) 933-2505 FAX (813) 933-2721	
		REVISIONS				
Drawn: R.T.B.	Checked: S.M.T.	Crew: S.D.	Description	Date	Description	Date
Date: 3/31/20	Dwg: 1803904.DWG	SCALE: 1" = 20'				
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SECTION 26, TOWNSHIP 29 SOUTH, RANGE 18 EAST						

Bayshore Blvd.  
Topographic Survey

SECTION 26, TOWNSHIP 29 SOUTH, RANGE 18 EAST  
HILLSBOROUGH COUNTY, FLORIDA



SEE SHEET 18

\* SEE SHEET 1 FOR LEGEND AND NOTES

This Survey Prepared For: <b>CITY OF TAMPA</b>					
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		Surveying & Mapping LB #6429			
REVISIONS					
Drawn: R.T.B.	Checked: S.M.T.	Crew: S.D.	Description	Date	Description
Date: 3/31/20	Dwg: 1803904.DWG	SCALE: 1" = 20'			
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SECTION 26, TOWNSHIP 29 SOUTH, RANGE 18 EAST					



# S.U.E. (Vvh) TEST HOLE - FIELD WORK SHEET

**PROJECT:** HYDE PARK GROUNDWATER      **TEST HOLE NUMBER:** 1  
**EAI JOB No.:** 21042.03      **DATE:** 11.9.21  
**LOCATE BY:** ZW AW SS      **SURVEY BY:** \_\_\_\_\_      **CHECKED BY:** \_\_\_\_\_

**REQUESTED LOCATE:** GAS STORM SANITARY CATV F.O.C. RECLAIMED  
 FORCE MAIN ELEC TELECOM TRAFFIC SIG. (WATER) ST. LIGHTS  
 ITS UNKNOWN OTHER \_\_\_\_\_

**MEASURED DEPTH:** 4.34 ft. 1.323 m  
(SURVEY MARKER TO TOP OF UTILITY)

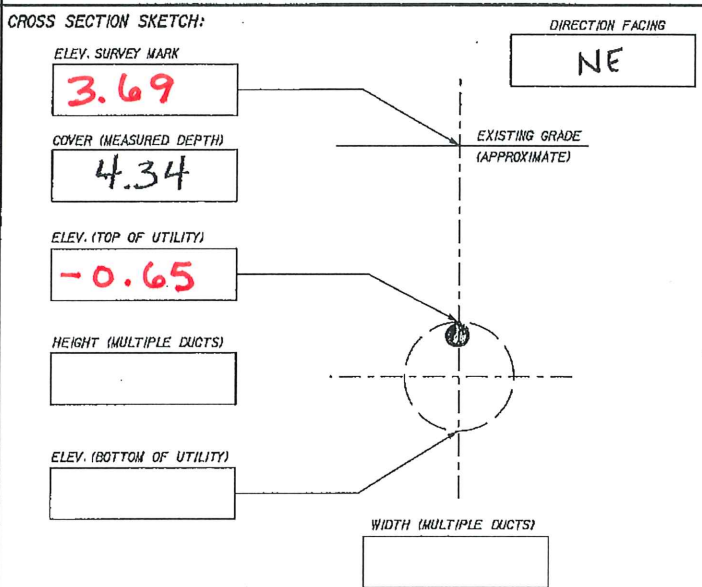
**LOCATED UTILITY:** GAS STORM SANITARY CATV F.O.C. RECLAIMED  
 FORCE MAIN ELEC TELECOM TRAFFIC SIG. (WATER) ST. LIGHTS  
 ITS UNKNOWN OTHER \_\_\_\_\_

**NOTES:**  
 (1) 6" BLACK D.I.P. WATER LINE.  
 \* Did catch a glimpse of pipe, ground is really wet did have trench collapse.

**MATERIAL FOUND:** DBC (DIRECT BURY CABLE) CONC. VCP (DIP) CIP POLY  
 LEAD PVC WRAPPED STEEL EPOXY STEEL CONCRETE STEEL  
 RCP CMP UNKNOWN OTHER \_\_\_\_\_

**SIZE / TYPE EXPECTED:**  
**SIZE FOUND:** 6.90 I.D. (O.D.) NOMINAL SIZE: 6"

**COLOR:** WHITE GRAY BLUE GREEN PURPLE (BLACK) ORANGE  
 YELLOW PINK PEACH OTHER \_\_\_\_\_



**UTILITY OWNER:** \_\_\_\_\_  
**FIELD REP.:** \_\_\_\_\_ **PHONE #:** \_\_\_\_\_  
**HOW WAS OWNER DETERMINED?:** PAINT MARKS SIGN FIELD REP.

**NAME ON MH / HAND HOLE / PEDESTAL OTHER:** \_\_\_\_\_  
**DESIGNATED BY:** EAI UTIL. OWNER UNK. OTHER \_\_\_\_\_

**WAS UTILITY TONABLE?:** (YES) NO

**TRACER FOUND:** PLASTIC TAPE METAL TAPE WIRE (NONE) OTHER \_\_\_\_\_  
**VISUAL CONFIRMATION OF UTILITY:** (YES) NO

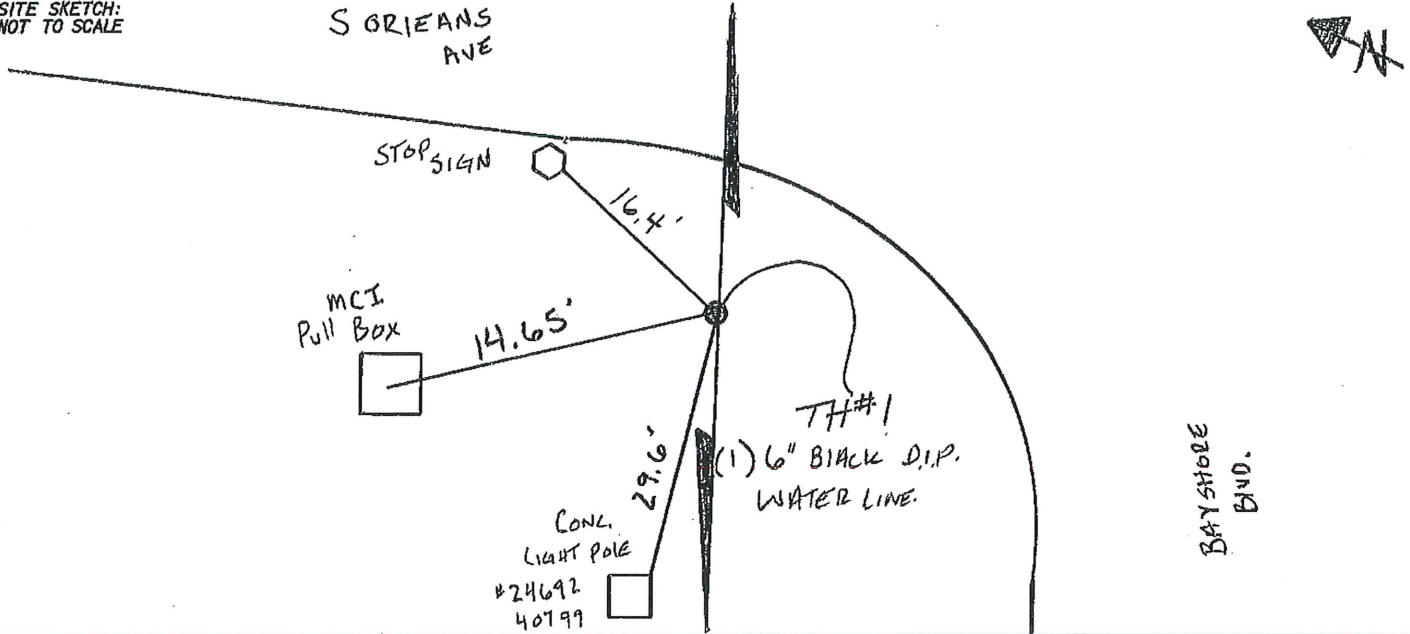
**REASON FOR NO VISUAL CONFIRMATION OF UTILITY:** WATER INTRUSION DEPTH SOIL TYPE OTHER \_\_\_\_\_

**IF NOT VISUAL HOW WAS LOCATION DETERMINED:** RADIO DETECTION GPR HAND PROBE WATER PROBE ASPH. PATCH OTHER \_\_\_\_\_

**SURFACE TYPE:** ASPH. CONC. BRICK MANHOLE (GRASS) LIMEROCK  
 DIRT GRAVEL VAULT SHELL PULL BOX OTHER \_\_\_\_\_

**SOIL CONDITION:** HARD SOFT (WET) MOIST DRY SAND CLAY  
 ROCK SOLID ROCK LIMEROCK NOT NOTED

**MARKER SET:** (3/8" ROD) NAIL/FLASHER 60d NAIL HUB PAINT DOT X-CUT OTHER \_\_\_\_\_



**SURVEY DATA:** SURVEY PT. # \_\_\_\_\_ STATION \_\_\_\_\_ SURVEYED \_\_\_\_\_  
 ROADWAY \_\_\_\_\_ OFFSET \_\_\_\_\_ ft. LT. RT. \_\_\_\_\_ PLAN \_\_\_\_\_  
 BASELINE: SURVEY CONSTR. OTHER \_\_\_\_\_ SURVEY PT. ELEV. \_\_\_\_\_ SCALED \_\_\_\_\_



# S.U.E. (Vvh) TEST HOLE - FIELD WORK SHEET

PROJECT: HYDE PARK GROUNDWATER TEST HOLE NUMBER 2  
 EAI JOB No.: 21042.03 DATE: 11.9.21  
 LOCATE BY: ZW, AW, SS SURVEY BY: \_\_\_\_\_ CHECKED BY: \_\_\_\_\_

REQUESTED LOCATE: GAS STORM SANITARY CATV F.O.C. RECLAIMED  
 FORCE MAIN ELEC TELECOM TRAFFIC SIG. WATER ST. LIGHTS  
 ITS UNKNOWN OTHER \_\_\_\_\_

LOCATED UTILITY: GAS STORM SANITARY CATV F.O.C. RECLAIMED  
 FORCE MAIN ELEC TELECOM TRAFFIC SIG. WATER ST. LIGHTS  
 ITS UNKNOWN OTHER \_\_\_\_\_

MATERIAL FOUND: DBC (DIRECT BURY CABLE) CONC. VCP DIP CIP POLY  
 LEAD PVC WRAPPED STEEL EPOXY STEEL CONCRETE STEEL  
 RCP CMP UNKNOWN OTHER \_\_\_\_\_

SIZE / TYPE EXPECTED: \_\_\_\_\_  
 SIZE FOUND: 6.90 I.D. O.D. NOMINAL SIZE: 6

COLOR: WHITE GRAY BLUE GREEN PURPLE BLACK ORANGE  
 YELLOW PINK PEACH OTHER \_\_\_\_\_

UTILITY OWNER: \_\_\_\_\_  
 FIELD REP.: \_\_\_\_\_ PHONE #: \_\_\_\_\_  
 HOW WAS OWNER DETERMINED?: PAINT MARKS SIGN FIELD REP.

NAME ON MH / HAND HOLE / PEDESTAL OTHER \_\_\_\_\_  
 DESIGNATED BY: EAI UTIL. OWNER UNK. OTHER \_\_\_\_\_

WAS UTILITY TONABLE?: YES NO

TRACER FOUND: PLASTIC TAPE METAL TAPE WIRE NONE OTHER

VISUAL CONFIRMATION OF UTILITY: YES NO

REASON FOR NO VISUAL CONFIRMATION OF UTILITY: WATER INTRUSION DEPTH  
 SOIL TYPE OTHER \_\_\_\_\_

IF NOT VISUAL HOW WAS LOCATION DETERMINED: RADIO DETECTION GPR  
 HAND PROBE WATER PROBE ASPH. PATCH OTHER \_\_\_\_\_

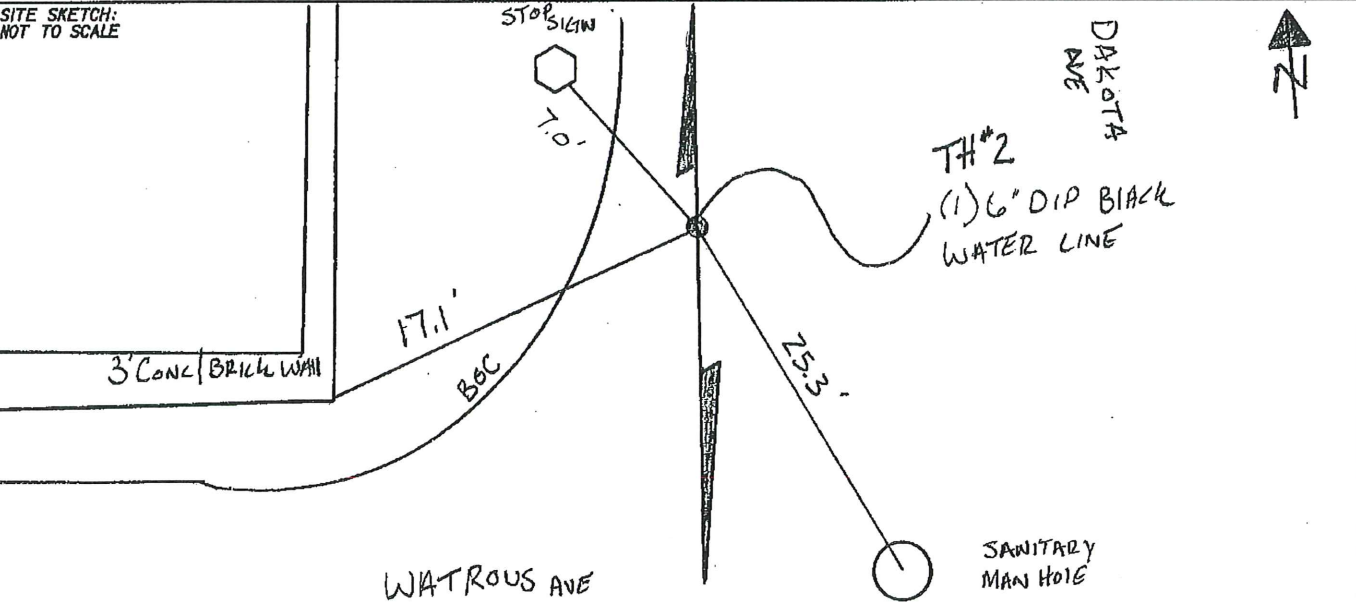
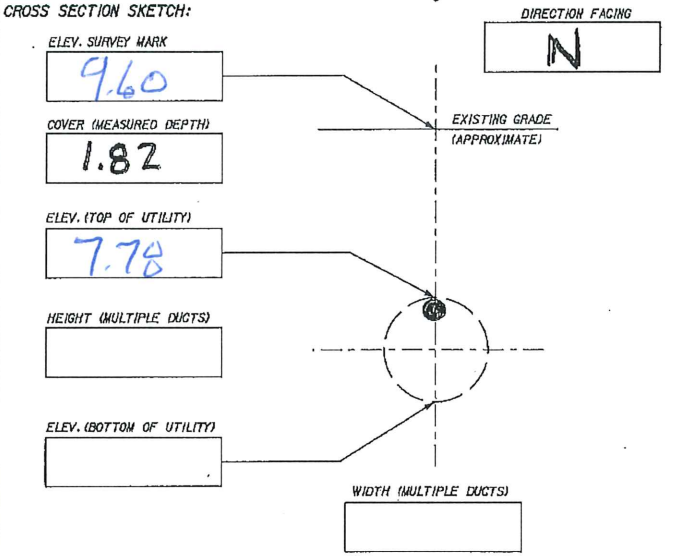
SURFACE TYPE: ASPH. CONC. BRICK MANHOLE GRASS LIMEROCK  
 DIRT GRAVEL VAULT SHELL PULL BOX OTHER \_\_\_\_\_

SOIL CONDITION: HARD SOFT WET MOIST DRY SAND CLAY  
 ROCK SOLID ROCK LIMEROCK NOT NOTED

MARKER SET: 3/8" ROD NAIL/FLASHER 60d NAIL HUB PAINT DOT  
 X-CUT OTHER \_\_\_\_\_

MEASURED DEPTH: 1.82 ft. 0.554 m  
(SURVEY MARKER TO TOP OF UTILITY)

NOTES:  
 (1) 6" D.I.P. BLACK, WATER LINE  
 \* Did dig and uncover pipe at the joint from a 12" to a 6", did take pictures, but couldn't verify size due to water intrusion. Did measure down to highest point on pipe.



SURVEY DATA: SURVEY PT. # \_\_\_\_\_ STATION \_\_\_\_\_ SURVEYED  
 ROADWAY \_\_\_\_\_ OFFSET \_\_\_\_\_ ft. LT. RT. \_\_\_\_\_ PLAN  
 BASELINE: SURVEY CONSTR. OTHER \_\_\_\_\_ SURVEY PT. ELEV. \_\_\_\_\_ SCALED



# S.U.E. (Vvh) TEST HOLE - FIELD WORK SHEET

**PROJECT:** HYDE PARK GROUNDWATER      **TEST HOLE NUMBER:** 3  
**EAI JOB No.:** 21042.03      **DATE:** 11/1/21  
**LOCATE BY:** ZW, AW, SS      **SURVEY BY:** \_\_\_\_\_      **CHECKED BY:** \_\_\_\_\_

**REQUESTED LOCATE:** GAS STORM SANITARY CATV F.O.C. RECLAIMED  
 FORCE MAIN ELEC TELECOM TRAFFIC SIG. WATER ST. LIGHTS  
 ITS UNKNOWN OTHER \_\_\_\_\_

**LOCATED UTILITY:** GAS STORM SANITARY CATV F.O.C. RECLAIMED  
 FORCE MAIN ELEC TELECOM TRAFFIC SIG. WATER ST. LIGHTS  
 ITS UNKNOWN OTHER \_\_\_\_\_

**MATERIAL FOUND:** DBC (DIRECT BURY CABLE) CONC. VCP DIP CIP POLY  
 LEAD PVC WRAPPED STEEL EPOXY STEEL CONCRETE STEEL  
 RCP CMP UNKNOWN OTHER \_\_\_\_\_

**SIZE / TYPE EXPECTED:** \_\_\_\_\_  
**SIZE FOUND:** 6.90 I.D. O.D. NOMINAL SIZE: 6"

**COLOR:** WHITE GRAY BLUE GREEN PURPLE BLACK ORANGE  
 YELLOW PINK PEACH OTHER N/A

**UTILITY OWNER:** \_\_\_\_\_  
**FIELD REP.:** \_\_\_\_\_ **PHONE #:** \_\_\_\_\_  
**HOW WAS OWNER DETERMINED?:** PAINT MARKS SIGN FIELD REP.

**NAME ON MH / HAND HOLE / PEDESTAL:** OTHER KCI

**DESIGNATED BY:** EAI UTIL. OWNER UNK. OTHER KCI

**WAS UTILITY TONABLE?:** YES NO

**TRACER FOUND:** PLASTIC TAPE METAL TAPE WIRE NONE OTHER

**VISUAL CONFIRMATION OF UTILITY:** YES NO

**REASON FOR NO VISUAL CONFIRMATION OF UTILITY:** WATER INTRUSION DEPTH  
 SOIL TYPE OTHER WET

**IF NOT VISUAL HOW WAS LOCATION DETERMINED:** RADIO DETECTION GPR  
 HAND PROBE WATER PROBE ASPH. PATCH OTHER

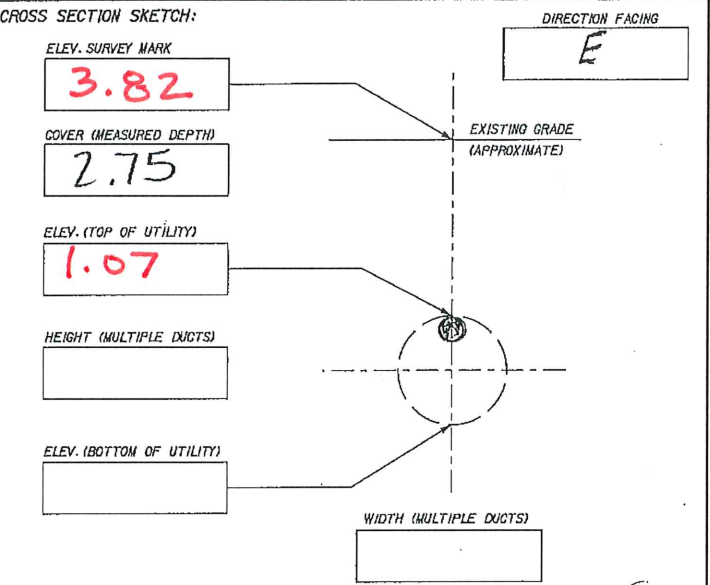
**SURFACE TYPE:** ASPH. CONC. BRICK MANHOLE GRASS LIMEROCK  
 DIRT GRAVEL VAULT SHELL PULL BOX OTHER

**SOIL CONDITION:** HARD SOFT WET MOIST DRY SAND CLAY  
 ROCK SOLID ROCK LIMEROCK NOT NOTED

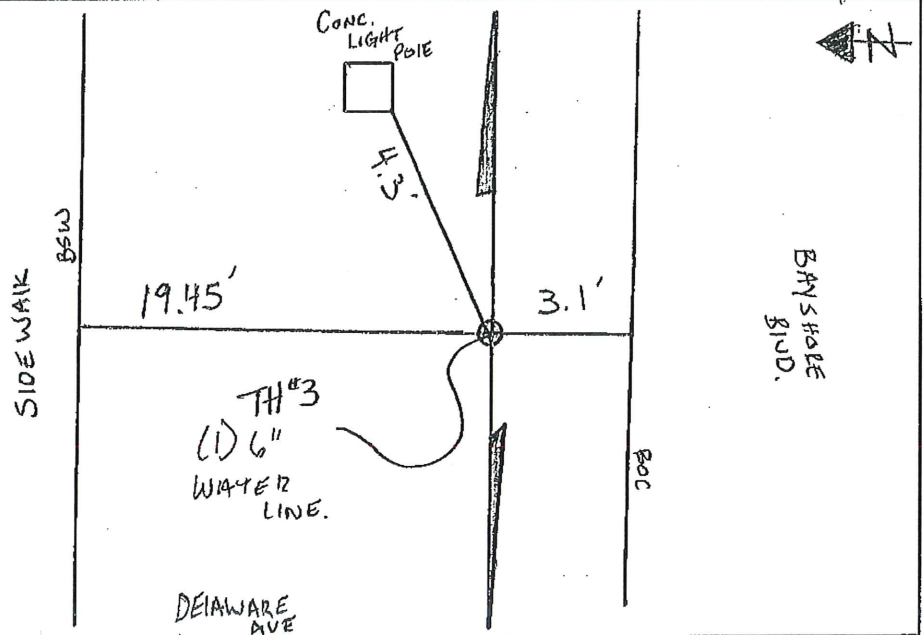
**MARKER SET:** 3/8" ROD NAIL/FLASHER 60d NAIL HUB PAINT DOT  
 X-CUT OTHER

**MEASURED DEPTH:** 2.75 ft. 0.838 m  
(SURVEY MARKER TO TOP OF UTILITY)

**NOTES:**  
 (1) 6" WATER LINE.  
 \*ADRIA was too wet to dig, due to saturated soil, WATER probed to find and determine SIZE, could not determine material, but sounds metal as some sort.



**SITE SKETCH:**  
NOT TO SCALE



**SURVEY DATA:** SURVEY PT. # \_\_\_\_\_ STATION \_\_\_\_\_ SURVEYED \_\_\_\_\_  
 ROADWAY \_\_\_\_\_ OFFSET \_\_\_\_\_ ft. LT. RT. \_\_\_\_\_ PLAN \_\_\_\_\_  
 BASELINE: SURVEY CONSTR. OTHER \_\_\_\_\_ SURVEY PT. ELEV. \_\_\_\_\_ SCALED \_\_\_\_\_



# S.U.E. (Vvh) TEST HOLE - FIELD WORK SHEET

PROJECT: HYDE PARK GROUNDWATER TEST HOLE NUMBER: 4  
 EAI JOB No.: 21042.03 DATE: 11.11.21  
 LOCATE BY: ZW, AW, SS SURVEY BY: \_\_\_\_\_ CHECKED BY: \_\_\_\_\_

REQUESTED LOCATE: GAS STORM SANITARY CATV F.O.C. RECLAIMED  
 FORCE MAIN ELEC TELECOM TRAFFIC SIG. WATER ST. LIGHTS  
 ITS UNKNOWN OTHER \_\_\_\_\_

LOCATED UTILITY: GAS STORM SANITARY CATV F.O.C. RECLAIMED  
 FORCE MAIN ELEC TELECOM TRAFFIC SIG. WATER ST. LIGHTS  
 ITS UNKNOWN OTHER \_\_\_\_\_

MATERIAL FOUND: DBC (DIRECT BURY CABLE) CONC. VCP DIP CIP POLY  
 LEAD PVC WRAPPED STEEL EPOXY STEEL CONCRETE STEEL  
 RCP CMP UNKNOWN OTHER \_\_\_\_\_

SIZE / TYPE EXPECTED: \_\_\_\_\_  
 SIZE FOUND: 6.90 I.D. 0.0 NOMINAL SIZE: 6"

COLOR: WHITE GRAY BLUE GREEN PURPLE BLACK ORANGE  
 YELLOW PINK PEACH OTHER N/A

UTILITY OWNER: \_\_\_\_\_  
 FIELD REP.: \_\_\_\_\_ PHONE #: \_\_\_\_\_  
 HOW WAS OWNER DETERMINED?: PAINT MARKS SIGN FIELD REP.  
 NAME ON MH / HAND HOLE / PEDESTAL OTHER \_\_\_\_\_

DESIGNATED BY: EAI UTIL. OWNER UNK. OTHER KCI

WAS UTILITY TONABLE?: YES NO

TRACER FOUND: PLASTIC TAPE METAL TAPE WIRE NONE OTHER \_\_\_\_\_

VISUAL CONFIRMATION OF UTILITY: YES NO

REASON FOR NO VISUAL CONFIRMATION OF UTILITY: WATER INTRUSION DEPTH  
 SOIL TYPE OTHER WET

IF NOT VISUAL HOW WAS LOCATION DETERMINED: RADIO DETECTION GPR  
 HAND PROBE WATER PROBE ASPH. PATCH OTHER \_\_\_\_\_

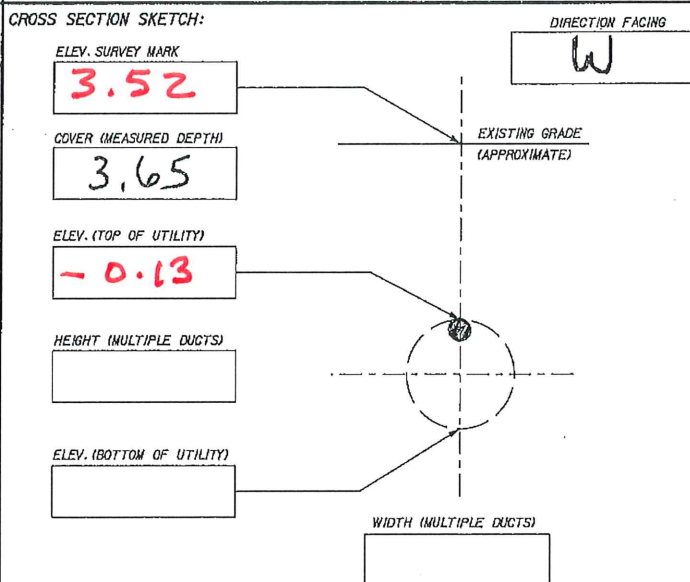
SURFACE TYPE: ASPH. CONC. BRICK MANHOLE GRASS LIMEROCK  
 DIRT GRAVEL VAULT SHELL PULL BOX OTHER \_\_\_\_\_

SOIL CONDITION: HARD SOFT WET MOIST DRY SAND CLAY  
 ROCK SOLID ROCK LIMEROCK NOT NOTED

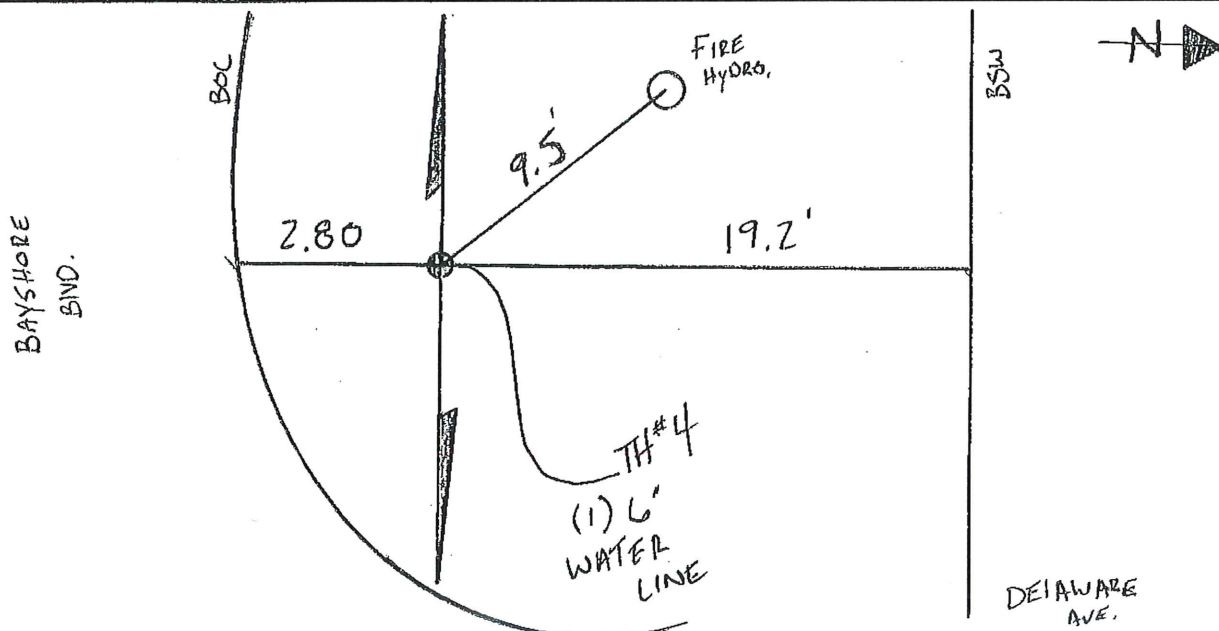
MARKER SET: 3/8" ROD NAIL/FLASHER 60d NAIL HUB PAINT DOT  
 X-CUT OTHER \_\_\_\_\_

MEASURED DEPTH: 3.65 ft. 1.113 m  
 (SURVEY MARKER TO TOP OF UTILITY)

NOTES:  
 (1) 6" WATER LINE.  
 \* AREA too wet to get to, WATER probed to find PIPE,



SITE SKETCH: NOT TO SCALE



SURVEY DATA: SURVEY PT. # \_\_\_\_\_ STATION \_\_\_\_\_ SURVEYED  
 ROADWAY \_\_\_\_\_ OFFSET \_\_\_\_\_ ft. LT. RT. \_\_\_\_\_ PLAN  
 BASELINE: SURVEY CONSTR. OTHER \_\_\_\_\_ SURVEY PT. ELEV. \_\_\_\_\_ SCALED



# S.U.E. (Vvh) TEST HOLE - FIELD WORK SHEET

PROJECT: HYDE PARK GROUNDWATER TEST HOLE NUMBER 5  
 EAI JOB No.: 21042.03 DATE: 11-11-21  
 LOCATE BY: ZWAW, SS SURVEY BY: \_\_\_\_\_ CHECKED BY: \_\_\_\_\_

REQUESTED LOCATE: GAS STORM SANITARY CATV F.O.C. RECLAIMED  
 FORCE MAIN ELEC TELECOM TRAFFIC SIG. WATER ST. LIGHTS  
 ITS UNKNOWN OTHER \_\_\_\_\_

MEASURED DEPTH: 2.68 ft. 0.818 m  
(SURVEY MARKER TO TOP OF UTILITY)

LOCATED UTILITY: GAS STORM SANITARY CATV F.O.C. RECLAIMED  
 FORCE MAIN ELEC TELECOM TRAFFIC SIG. WATER ST. LIGHTS  
 ITS UNKNOWN OTHER \_\_\_\_\_

NOTES:

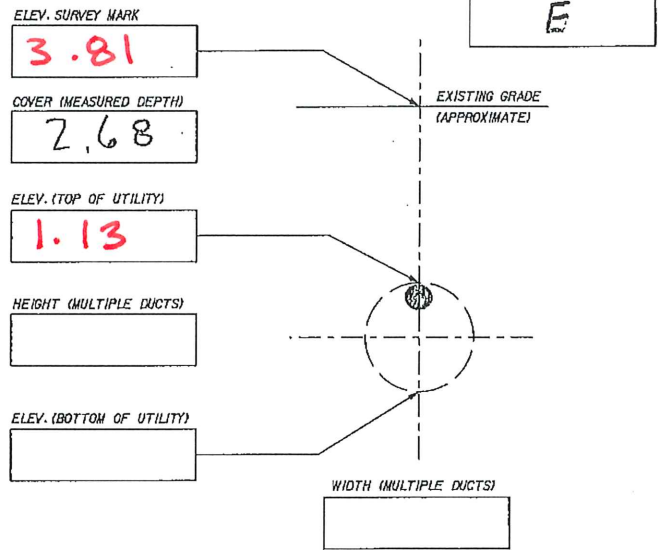
(1) 6" WATER LINE  
 \*AREA was too wet, water probed to find pipe.

MATERIAL FOUND: DBC (DIRECT BURY CABLE) CONC. VCP DIP CIP POLY  
 LEAD PVC WRAPPED STEEL EPOXY STEEL CONCRETE STEEL  
 RCP CMP UNKNOWN OTHER \_\_\_\_\_

SIZE / TYPE EXPECTED: \_\_\_\_\_  
 SIZE FOUND: 6.90 I.D. 0.0 NOMINAL SIZE: 6"

COLOR: WHITE GRAY BLUE GREEN PURPLE BLACK ORANGE  
 YELLOW PINK PEACH OTHER N/A

CROSS SECTION SKETCH:



UTILITY OWNER: \_\_\_\_\_  
 FIELD REP.: \_\_\_\_\_ PHONE #: \_\_\_\_\_  
 HOW WAS OWNER DETERMINED?: PAINT MARKS SIGN FIELD REP.

NAME ON MH / HAND HOLE / PEDESTAL OTHER \_\_\_\_\_  
 DESIGNATED BY: EAI UTIL. OWNER UNK. OTHER KCI

WAS UTILITY TONABLE?: YES NO

TRACER FOUND: PLASTIC TAPE METAL TAPE WIRE NONE OTHER

VISUAL CONFIRMATION OF UTILITY: YES NO

REASON FOR NO VISUAL CONFIRMATION OF UTILITY: WATER INTRUSION DEPTH  
 SOIL TYPE OTHER \_\_\_\_\_

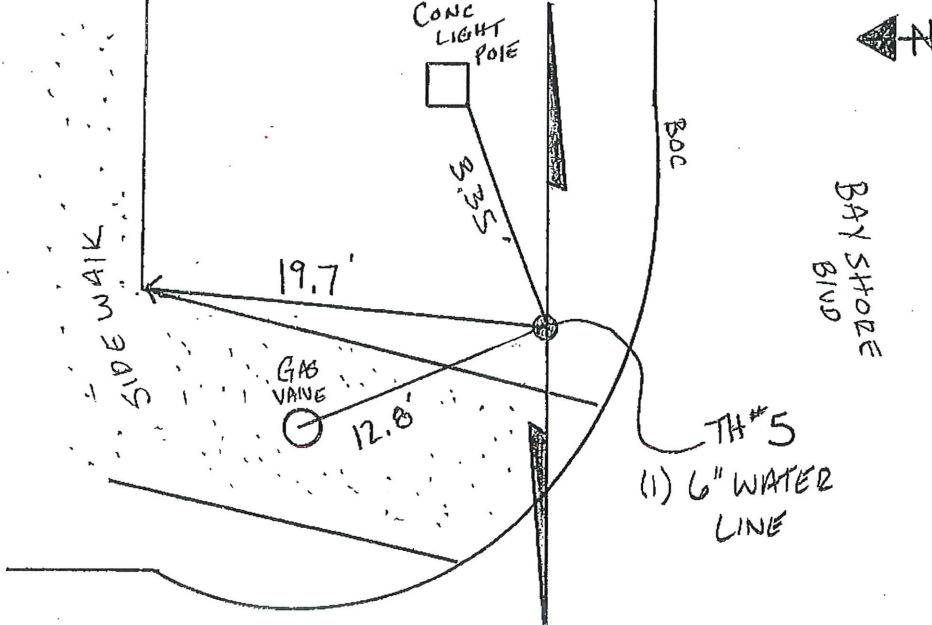
IF NOT VISUAL HOW WAS LOCATION DETERMINED: RADIO DETECTION GPR  
 HAND PROBE WATER PROBE ASPH. PATCH OTHER \_\_\_\_\_

SURFACE TYPE: ASPH. CONC. BRICK MANHOLE GRASS LIMEROCK  
 DIRT GRAVEL VAULT SHELL PULL BOX OTHER \_\_\_\_\_

SOIL CONDITION: HARD SOFT WET MOIST DRY SAND CLAY  
 ROCK SOLID ROCK LIMEROCK NOT NOTED

MARKER SET: 3/8" ROD NAIL/FLASHER 60d NAIL HUB PAINT DOT  
 X-CUT OTHER \_\_\_\_\_

SITE SKETCH:  
 NOT TO SCALE



SURVEY DATA: SURVEY PT. # \_\_\_\_\_ STATION \_\_\_\_\_ SURVEYED  
 ROADWAY \_\_\_\_\_ OFFSET \_\_\_\_\_ ft. LT. RT. PLAN  
 BASELINE: SURVEY CONSTR. OTHER \_\_\_\_\_ SURVEY PT. ELEV. \_\_\_\_\_ SCALED





# S.U.E. (Vvh) TEST HOLE - FIELD WORK SHEET

PROJECT: HYDE PARK GROUNDWATER TEST HOLE NUMBER: 6  
 EAI JOB No.: 21042.03 DATE: 11.11.21  
 LOCATE BY: ZW, AW, SS SURVEY BY: \_\_\_\_\_ CHECKED BY: \_\_\_\_\_

REQUESTED LOCATE: GAS STORM SANITARY CATV F.O.C. RECLAIMED  
 FORCE MAIN ELEC TELECOM TRAFFIC SIG. WATER ST. LIGHTS  
 ITS UNKNOWN OTHER \_\_\_\_\_

LOCATED UTILITY: GAS STORM SANITARY CATV F.O.C. RECLAIMED  
 FORCE MAIN ELEC TELECOM TRAFFIC SIG. WATER ST. LIGHTS  
 ITS UNKNOWN OTHER \_\_\_\_\_

MATERIAL FOUND: DBC (DIRECT BURY CABLE) CONC. VCP DIP CIP POLY  
 LEAD PVC WRAPPED STEEL EPOXY STEEL CONCRETE STEEL  
 RCP CMP UNKNOWN OTHER \_\_\_\_\_

SIZE / TYPE EXPECTED: \_\_\_\_\_  
 SIZE FOUND: 6.90 I.D. O.D. NOMINAL SIZE: 6"

COLOR: WHITE GRAY BLUE GREEN PURPLE BLACK ORANGE  
 YELLOW PINK PEACH OTHER N/A

UTILITY OWNER: \_\_\_\_\_  
 FIELD REP.: \_\_\_\_\_ PHONE #: \_\_\_\_\_  
 HOW WAS OWNER DETERMINED?: PAINT MARKS SIGN FIELD REP.

NAME ON MH / HAND HOLE / PEDESTAL OTHER \_\_\_\_\_  
 DESIGNATED BY: EAI UTIL. OWNER UNK. OTHER KCI

WAS UTILITY TONABLE?: YES NO

TRACER FOUND: PLASTIC TAPE METAL TAPE WIRE NONE OTHER

VISUAL CONFIRMATION OF UTILITY: YES NO

REASON FOR NO VISUAL CONFIRMATION OF UTILITY: WATER INTRUSION DEPTH  
 SOIL TYPE OTHER \_\_\_\_\_

IF NOT VISUAL HOW WAS LOCATION DETERMINED: RADIO DETECTION GPR  
 HAND PROBE WATER PROBE ASPH. PATCH OTHER

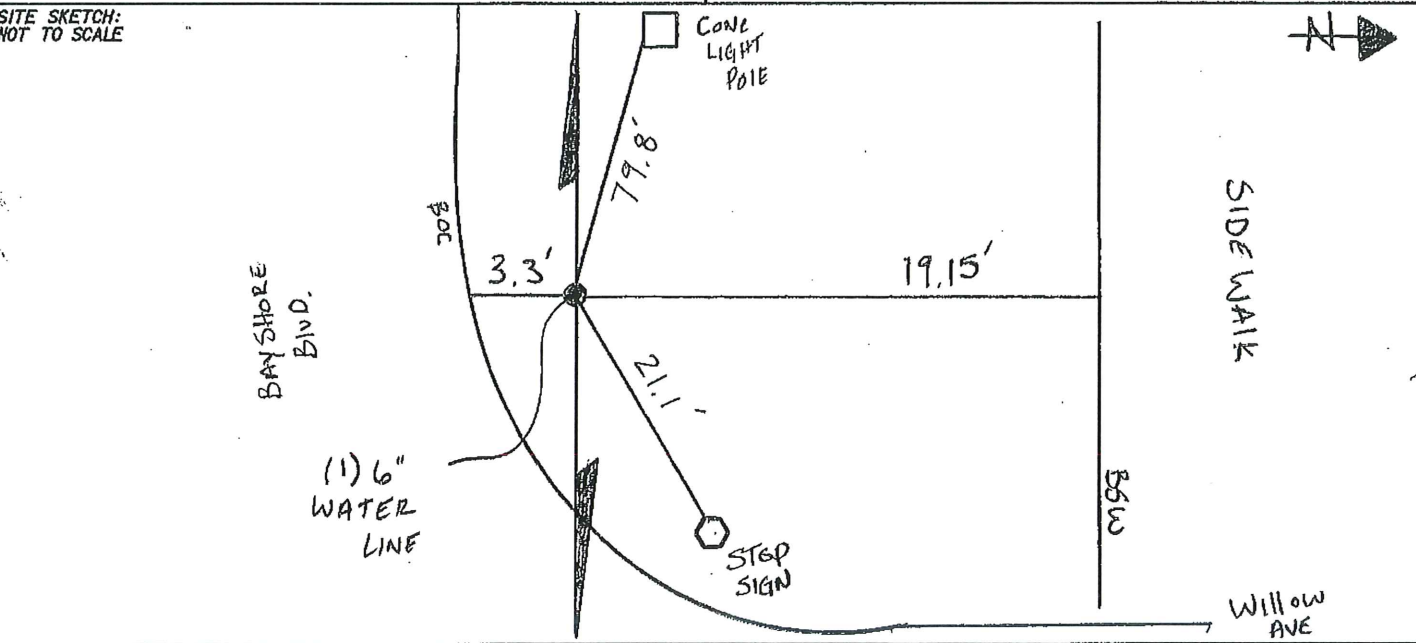
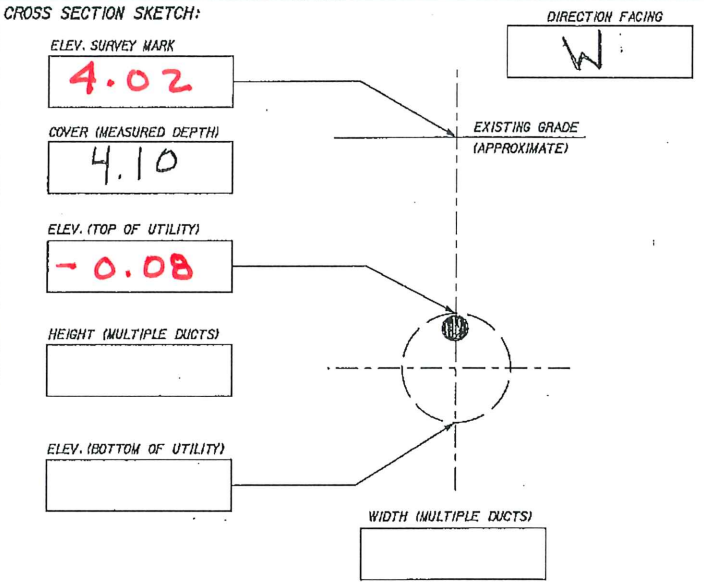
SURFACE TYPE: ASPH. CONC. BRICK MANHOLE GRASS LIMEROCK  
 DIRT GRAVEL VAULT SHELL PULL BOX OTHER \_\_\_\_\_

SOIL CONDITION: HARD SOFT WET MOIST DRY SAND CLAY  
 ROCK SOLID ROCK LIMEROCK NOT NOTED

MARKER SET: 3/8" ROD NAIL/FLASHER 60d NAIL HUB PAINT DOT  
 X-CUT OTHER \_\_\_\_\_

MEASURED DEPTH: 4.10 ft. 1.250 m  
(SURVEY MARKER TO TOP OF UTILITY)

NOTES:  
 (1) 6" WATER LINE  
 \* AREA WAS TOO WET, WATER PROBED TO FIND PIPE.



SURVEY DATA: SURVEY PT. # \_\_\_\_\_ STATION \_\_\_\_\_ SURVEYED  
 ROADWAY \_\_\_\_\_ OFFSET \_\_\_\_\_ ft. LT. RT. PLAN  
 BASELINE: SURVEY CONSTR. OTHER \_\_\_\_\_ SURVEY PT. ELEV. \_\_\_\_\_ SCALED







# S.U.E. (Vvh) TEST HOLE - FIELD WORK SHEET

PROJECT: HYDE PARK GROUNDWATER TEST HOLE NUMBER 7  
 EAI JOB No.: 21042.03 DATE: 11.11.21  
 LOCATE BY: ZW, AW, SS SURVEY BY: \_\_\_\_\_ CHECKED BY: \_\_\_\_\_

REQUESTED LOCATE: GAS STORM SANITARY CATV F.O.C. RECLAIMED  
 FORCE MAIN ELEC TELECOM TRAFFIC SIG. WATER ST. LIGHTS  
 ITS UNKNOWN OTHER \_\_\_\_\_

MEASURED DEPTH: (SURVEY MARKER TO TOP OF UTILITY) 1.83 ft. 0.555 m

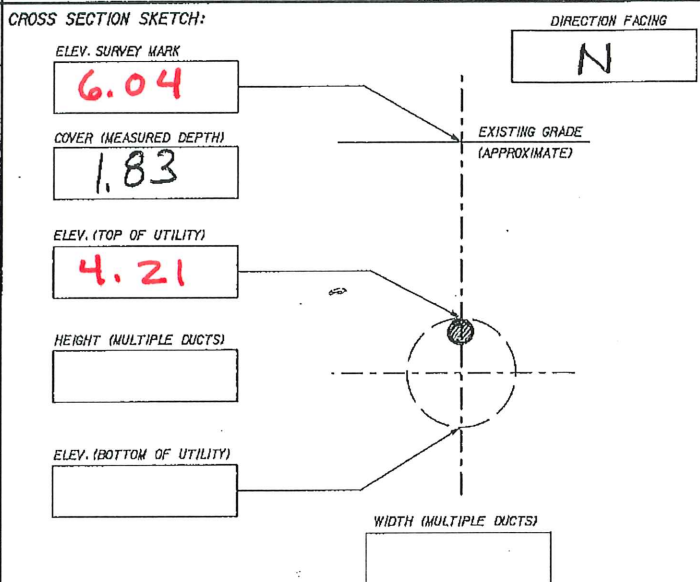
LOCATED UTILITY: GAS STORM SANITARY CATV F.O.C. RECLAIMED  
 FORCE MAIN ELEC TELECOM TRAFFIC SIG. WATER ST. LIGHTS  
 ITS UNKNOWN OTHER \_\_\_\_\_

NOTES:  
(1) 10" BLACK D.I.P. WATER LINE

MATERIAL FOUND: DBC (DIRECT BURY CABLE) CONC. VCP DIP CIP POLY  
 LEAD PVC WRAPPED STEEL EPOXY STEEL CONCRETE STEEL  
 RCP CMP UNKNOWN OTHER \_\_\_\_\_

SIZE / TYPE EXPECTED:  
 SIZE FOUND: 11.10 I.D. O.D. NOMINAL SIZE: 10"

COLOR: WHITE GRAY BLUE GREEN PURPLE BLACK ORANGE  
 YELLOW PINK PEACH OTHER \_\_\_\_\_



UTILITY OWNER: \_\_\_\_\_  
 FIELD REP.: \_\_\_\_\_ PHONE #: \_\_\_\_\_  
 HOW WAS OWNER DETERMINED?: PAINT MARKS SIGN FIELD REP.  
 NAME ON MH / HAND HOLE / PEDESTAL OTHER \_\_\_\_\_

DESIGNATED BY: EAI UTIL. OWNER UNK. OTHER \_\_\_\_\_

WAS UTILITY TONABLE?: YES NO

TRACER FOUND: PLASTIC TAPE METAL TAPE WIRE NONE OTHER

VISUAL CONFIRMATION OF UTILITY: YES NO

REASON FOR NO VISUAL CONFIRMATION OF UTILITY: WATER INTRUSION DEPTH SOIL TYPE OTHER

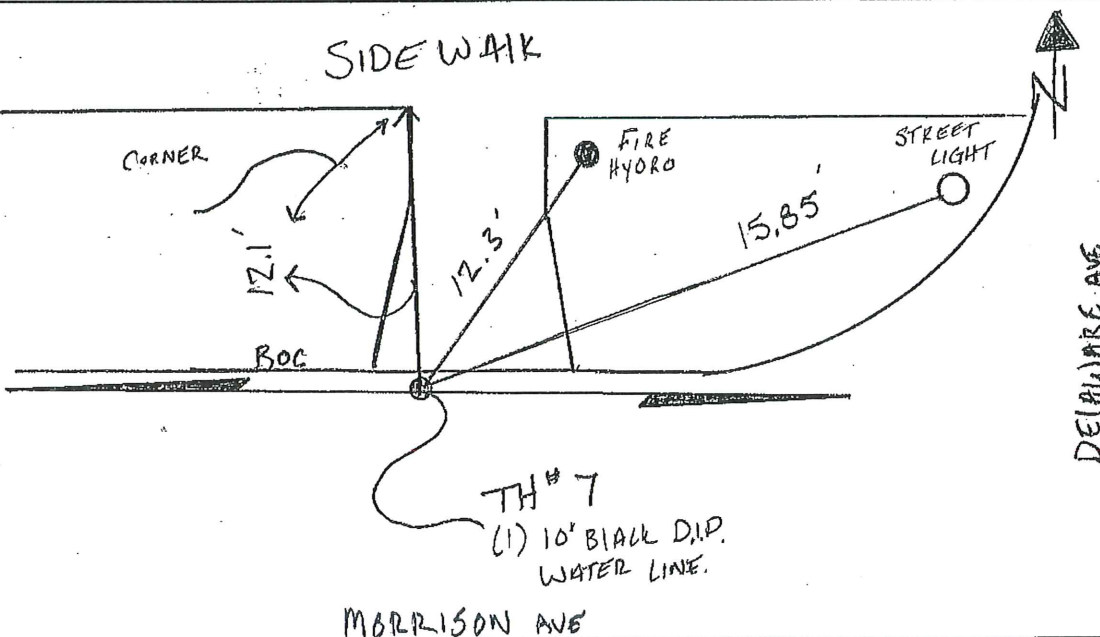
IF NOT VISUAL HOW WAS LOCATION DETERMINED: RADIO DETECTION GPR HAND PROBE WATER PROBE ASPH. PATCH OTHER

SURFACE TYPE: ASPH. CONC. BRICK MANHOLE GRASS LIMEROCK DIRT GRAVEL VAULT SHELL PULL BOX OTHER

SOIL CONDITION: HARD SOFT WET MOIST DRY SAND CLAY ROCK SOLID ROCK LIMEROCK NOT NOTED

MARKER SET: 3/8" ROD NAIL/FLASHER 60d NAIL HUB PAINT DOT X-CUT OTHER

SITE SKETCH: NOT TO SCALE



SURVEY DATA: SURVEY PT. # \_\_\_\_\_ STATION \_\_\_\_\_ SURVEYED  
 ROADWAY \_\_\_\_\_ OFFSET \_\_\_\_\_ ft. LT. RT. PLAN  
 BASELINE: SURVEY CONSTR. OTHER \_\_\_\_\_ SURVEY PT. ELEV. \_\_\_\_\_ SCALE

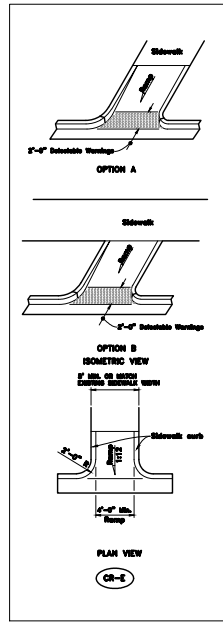




EXAMPLE OF DRIVEWAY RECONSTRUCTION

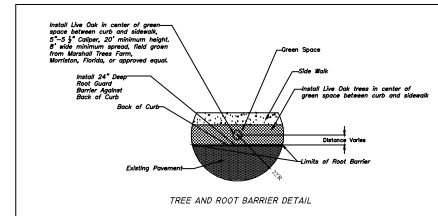


EXAMPLE OF SIDEWALK RECONSTRUCTION



FDOT INDEX 522-002  
SIDEWALK DETAIL  
N.T.S.

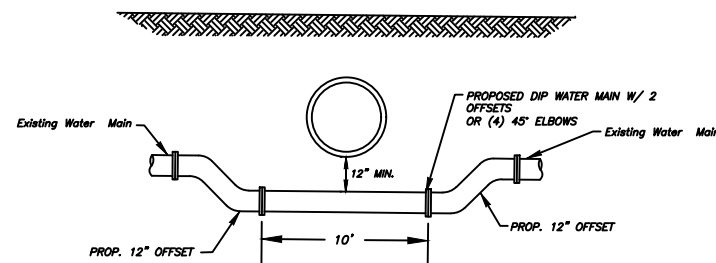
- NOTES:
1. INSTALL A LINEAR ROOT BARRIER, 24" DEEP AND EXTENDING TO THE LIMITS SHOWN ON THE ROOT BARRIER DETAIL FROM EACH SIDE OF THE CENTER OF THE TREE ALONG THE LENGTH OF THE ADJACENT CURB.
  2. TOP OF BARRIER MUST BE BELOW TOP OF CURB.
  3. POSITION BARRIER AGAINST THE BACK OF CURB OR AS CLOSE TO STRUCTURE AS POSSIBLE.
  4. TRENCH SHALL BE BACKFILLED WITH SELECT NATIVE BACKFILL MATERIAL.
  5. CONNECT ROOT BARRIER PANELS PER MANUFACTURER RECOMMENDATIONS.
  6. RESTORE THE SITE TO PRE-EXISTING CONDITIONS OR BETTER. DAMAGE CURB SHALL BE REPLACED IN KIND AT NO COST TO THE CITY.
  7. TREES FOR THIS PROJECT SHALL BE IDENTIFIED AND TAGGED BY THE PROJECT ARCHITECT PRIOR TO SHOPPING.
  8. MEASUREMENTS OF THE TREES SHALL BE CONDUCTED IN ACCORDANCE WITH THE CITY OF TAMPA'S TREE ORDINANCE AND TREE AND LANDSCAPE TECHNICAL MANUAL.



**DIRECTIONAL BORING**

BORE LOCATION	BEGIN STATION	END STATION	BORE LENGTH
1	40+24	40+68	43
2	40+40	41+03	63
3	42+30	42+60	30
4	95+82	96+22	40
5	30+74	30+98	24
6	32+25	32+65	40
7	32+25	32+93	68
8	35+92	36+24	32
9	91+45	91+65	20
10	80+25	80+78	53

- (1) CENTER A FULL JOINT OF WATER PIPE WHEN CROSSING UNDER UNDERDRAIN PIPE.
- (2) CHLORINE INJECTION & SAMPLE TAP LOCATION TO BE DETERMINED BY ENGINEER.
- (3) ALL WATER PIPE JOINTS TO BE MECHANICALLY RESTRAINED.
- (4) COORDINATE ALL WORK WITH C.O.T. WATER DEPT.



POTABLE & RECLAIMED  
WATER MAIN RELOCATION (TYP.)  
NTS

NOTE: SEE PLAN/PROFILE SHEETS FOR LOCATIONS, WATER MAIN DIAMETER & DEPTH OR ELEVATIONS OF WATER MAIN & UNDERDRAIN.

A.2. TREE PROTECTION DETAILS

Protection Standards for Construction Activities proximate to Protective Root Zone (Secs. 27-43, 27-284.2)

Specific Conditions

- Minimum protection standards shall be met for all protected trees, prior to commencement of any construction activities on a development site and/or private right-of-way, in accordance with the tree protection graphic below.
- No changes to the predevelopment conditions within the approved protective root zone during the construction process.
- Protective barricades may be removed only to prepare the development site for final landscaping activities. During this activity only non-mechanical techniques may occur within the designated protective root zone. No alteration(s), of any kind, shall be made to any part of the tree (rots, trunk, canopy/crown), other than those that are approved by the Natural Resources Coordinator or designee, as part of the related permit.
- No parking or storing of vehicles, equipment, or materials is permitted within the minimum protective area, at any time.
- No site clearing or grading is permitted within the minimum protective area, other than those changes that are approved by the Natural Resources Coordinator or designee, as part of the related permit.

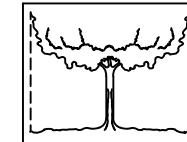


Fig. A

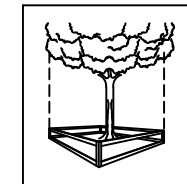


Fig. B

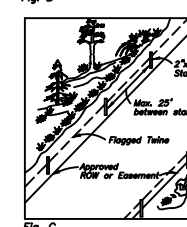


Fig. C

1. TREES - To restrict access into the area within the DRIPLINE of a tree, a physical structure not less than 3 feet in height, comprised of wood or other suitable material, is placed around the tree at the DRIPLINE, except where land alteration or construction activities are approved within the dripline.
2. The DRIPLINE of a tree is the imaginary, vertical line that extends downward from the outermost tips of the tree's branches to the ground. Fig. A.
3. NATURAL AREAS - To restrict access into areas where land alteration and construction activities are not authorized, a physical structure not less than 3 feet in height is placed along the perimeter of such areas.

**BARRIER SPECIFICATIONS FOR TREES:**  
Four corner upright stakes of no less than 2" x 2" lumber connected by horizontal members of no less than 1" x 4" lumber; or upright stakes spaced at 4'-5" intervals of no less than 2" x 2" lumber connected by SILT FENCING.

**BARRIER SPECIFICATIONS FOR NATURAL AREAS:**  
Upright stakes of no less than 2" x 2" lumber spaced no more than 25' apart and connected by twine flagged with plastic surveying tape at regular intervals of 5'-10'. Fig. C. Other methods of demarcation will be considered depending upon the characteristics of the site.

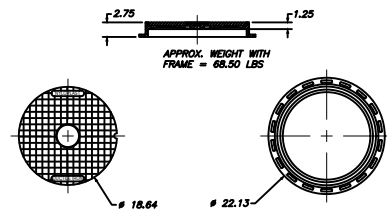
**WHY A BARRIER:**  
1. To protect all above ground portions of trees and other significant vegetation from mechanical damage.  
2. To protect root systems from compaction.  
3. To provide awareness of protected areas to equipment operators.

**WHY IT WORKS:**  
A tree's chance for survival is greatly enhanced if no construction material, heavy equipment or stockpiling of soil is allowed inside the barrier; only hand labor.

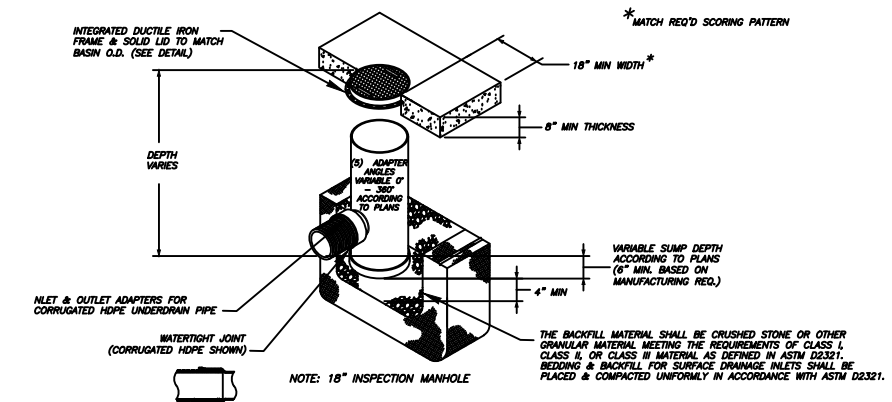
Protective barriers are used during land alteration natural areas to be retained on a site.

Protective barriers must be erected around TREES to construction activities will occur as well as along permitted land alteration and construction activities, land alteration and construction activities are sodding. No ground disturbance must occur within the barricaded area.

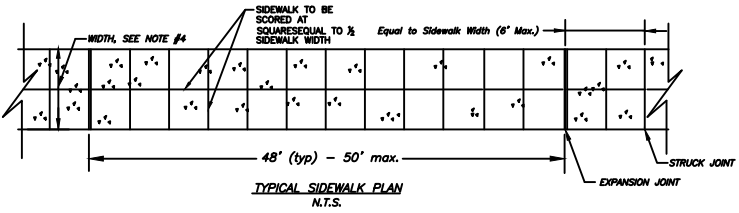
PROTECTIVE BARRICADE DETAIL  
N.T.S.



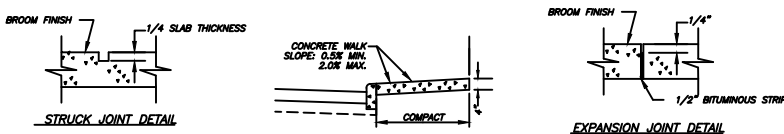
18" SOLID LID  
N.T.S.



18" INSPECTION MANHOLE  
N.T.S.

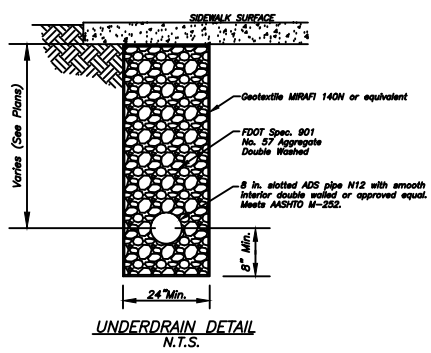


TYPICAL SIDEWALK PLAN  
N.T.S.

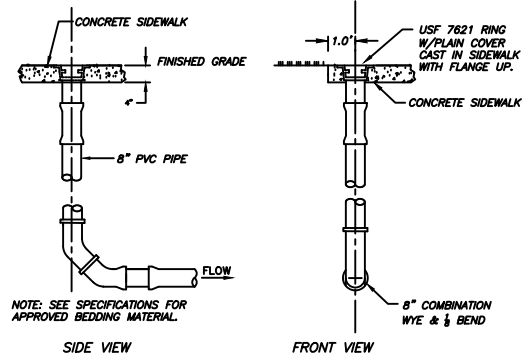


CONCRETE SIDEWALK CONSTRUCTION  
N.T.S.

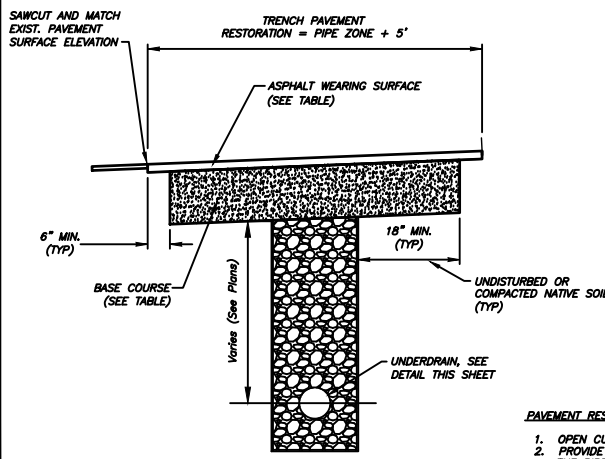
- NOTES:
1. SIDEWALKS SHALL HAVE TOOLED EDGES.
  2. CONSTRUCTION JOINTS SHALL BE LOCATED AT STRUCK JOINTS OR EXPANSION JOINTS ONLY.
  3. EXPANSION JOINTS SHALL BE INSTALLED AS SHOWN AT 80' MAX. INTERVALS AND ABUTTING CURB & DRIVEWAYS. EXPANSION JOINTS SHALL CONSIST OF CONTINUOUS 1/2" X 4" BITUMINOUS EXPANSION STRIP, AS SHOWN.
  4. SIDEWALKS TO MATCH EXISTING WIDTHS. JOINTS IN NEW SIDEWALKS SHALL ALIGN W/JOINTS IN EXISTING SIDEWALKS.
  5. CONCRETE SIDEWALK TO BE 4" THICK.
  6. CONCRETE DRIVEWAYS TO BE 6" THICK.
  7. CONCRETE SIDEWALK WITHIN DRIVEWAYS TO BE 6" THICK.
  8. ALL CONCRETE TO BE FDOT CLASS III, 3,000 P.S.I.
  9. ALL H.C. RAMPS TO BE REPLACED AND DETECTABLE WARNING STRIPS SHALL BE INSTALLED PER FDOT STANDARD PLANS INDEX 522-002
  10. DAMAGED DRIVEWAYS AND SIDEWALKS TO BE RECONSTRUCTED TO THEIR ORIGINAL DIMENSIONS.



UNDERDRAIN DETAIL  
N.T.S.



ONE WAY CLEAN-OUT  
CLEAN OUT DETAIL  
NTS



ROAD RESTORATION DETAIL  
N.T.S.

- PAVEMENT RESTORATION NOTES:**
1. OPEN CUT TRENCH FOR UTILITY INSTALLATION. PROVIDE BEDDING AND PIPE BACKFILL WITHIN THE PIPE ZONE AS OTHERWISE REQUIRED.
  2. ROAD BASE AND ASPHALT WEARING COURSES SHALL BE CONSTRUCTED IN ACCORDANCE WITH C.O.T. TRANSPORTATION TECHNICAL STANDARDS

**PAVEMENT REQUIREMENTS:**

STREET CLASSIFICATION	BASE MATERIAL/THICKNESS (IN.)	ASPHALT MATERIAL/THICKNESS (IN.)
ALLEY (A)	CRUSHED CONC. / 8"	1"
RESIDENTIAL (I)	CRUSHED CONC. / 8"	2"
COLLECTOR / ARTERIAL (II)	CRUSHED CONC. / 12"	3"

PAVEMENT RESTORATION DETAIL  
N.T.S.

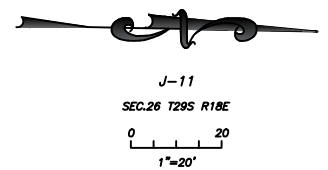
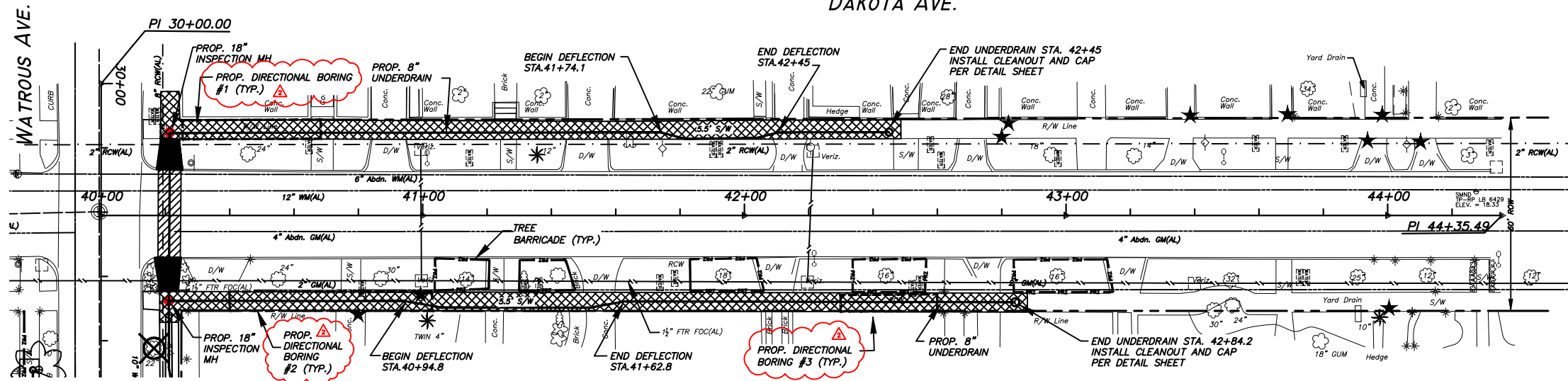
**RESTRAINED JOINT STANDARD FOR BENDS, PLUGS, CAPS, AND VALVES**

FITTING SIZE	RESTRAIN (R.F.)	UNRESTRAINED STRAIGHT RUN (U.F.)
1/2"	10	10
3/4"	10	10
1"	10	10
1 1/4"	10	10
1 1/2"	10	10
2"	10	10
2 1/2"	10	10
3"	10	10
3 1/2"	10	10
4"	10	10
4 1/2"	10	10
5"	10	10
5 1/2"	10	10
6"	10	10
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99"	10	10
99 1/2"	10	10
100"	10	10

No.	DATE	REVISIONS	No.	DATE	REVISIONS
3			6		
2	2/14/23	ADDENDUM NO. 2	5		
1	9/8/22	FINAL REVISIONS	4		

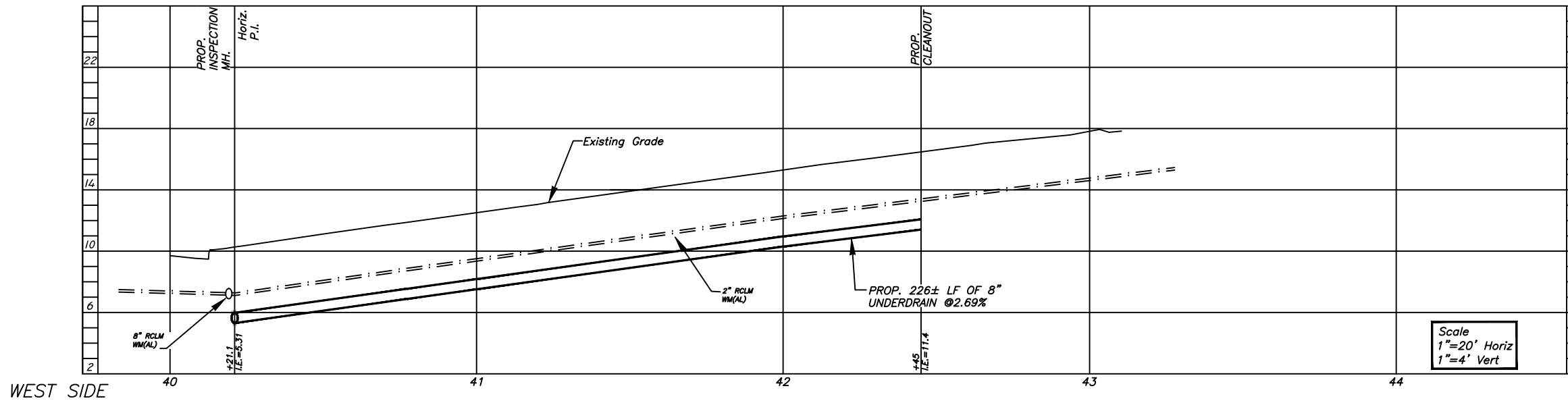
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DRN: JDM  
CKD: BG  
DATE: 9/22/22

DAKOTA AVE.



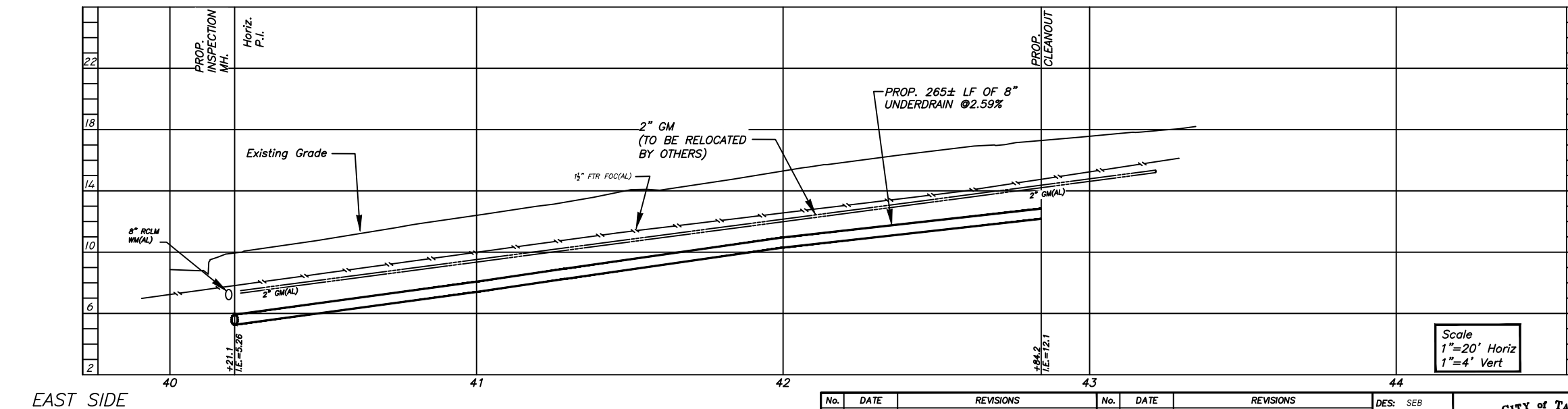
NOTES:

1. RESTORE DAMAGED OR REMOVED DRIVEWAYS & CURBS TO PRE-CONSTRUCTION CONDITIONS.
2. CAREFULLY REMOVE AND REPLACE ALL CARTOUCHE SIDEWALK PANELS, INCLUDING THE ONES NOT SHOWN ON PLANS.
3. FILL ALL DISTURBED AREAS TO MATCH ADJACENT GRADE AND INSTALL SOD IN KIND.



- REMOVE AND REPLACE CONCRETE SIDEWALKS FOR UNDERDRAIN INSTALLATION(TYP.) SEE NOTE 2
- CONSTRUCT FDOT TYPE CR-E ADA RAMPS PER FDOT INDEX 522-002
- TYPICAL ROAD CROSSING WITH 7' WIDE PAVEMENT RECONSTRUCTION (TYP.)

Scale  
1"=20' Horiz  
1"=4' Vert



Scale  
1"=20' Horiz  
1"=4' Vert

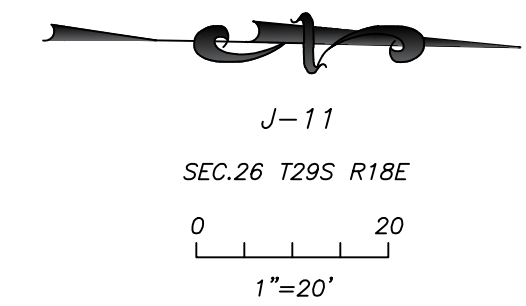
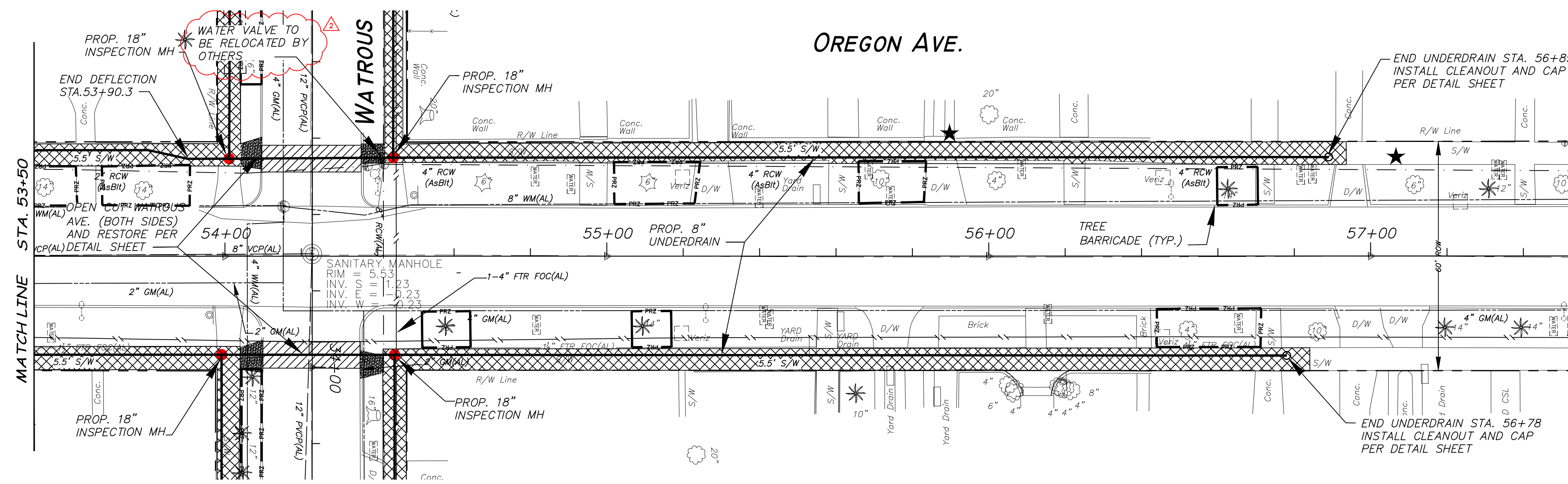
No.	DATE	REVISIONS	No.	DATE	REVISIONS
3			6		
2	2/14/23	ADDENDUM NO. 2	5		
1	9/8/22	FINAL REVISIONS	4		

DES: SEB  
DRN: J/JDM  
CKD: BG  
DATE: 9/22/22

**CITY of TAMPA**  
Mobility Department  
Stormwater Engineering Division

**HYDE PARK**  
**GROUNDWATER DIVERSION**

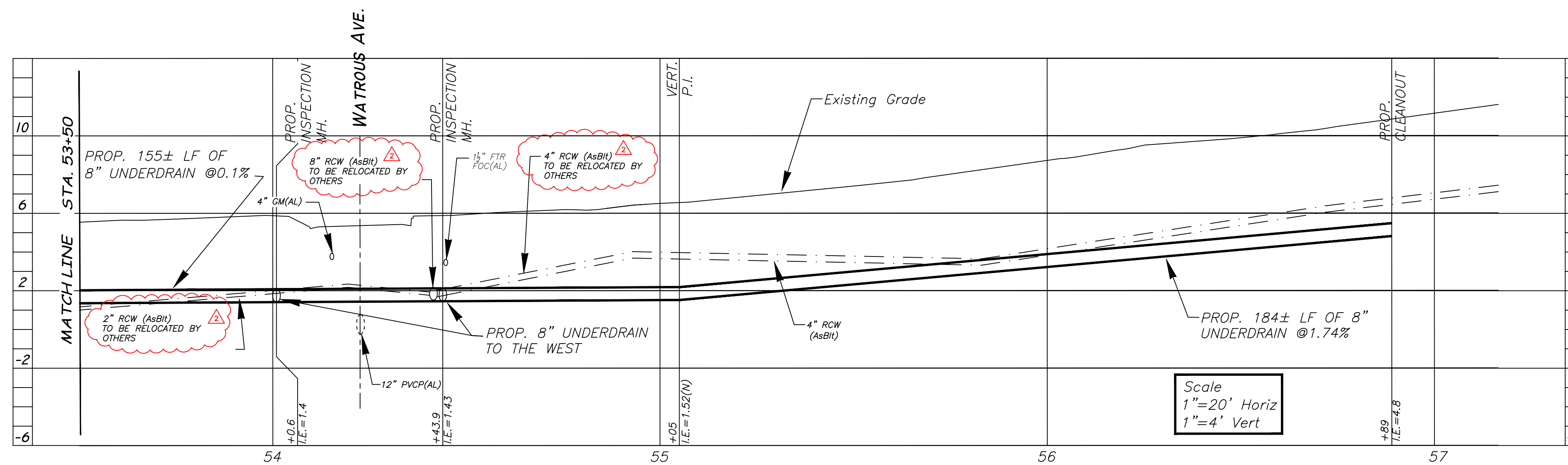
SHEET  
3  
OF 14



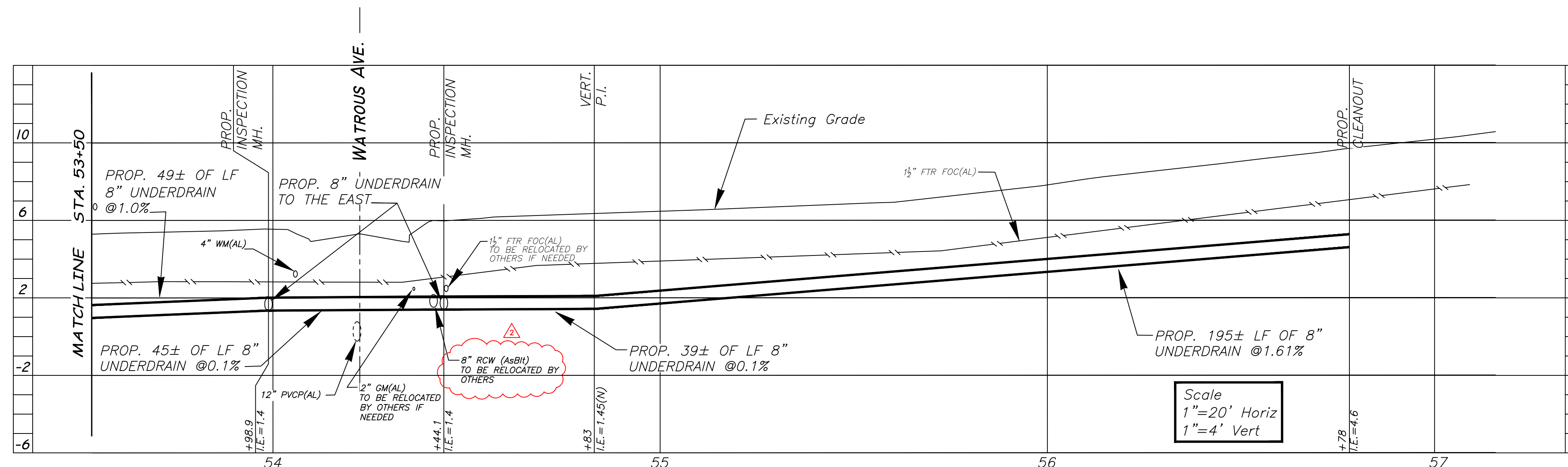
**NOTES:**

1. RESTORE DAMAGED OR REMOVED DRIVEWAYS & CURBS TO PRE-CONSTRUCTION CONDITIONS.
2. CAREFULLY REMOVE AND REPLACE ALL CARTOUCHE SIDEWALK PANELS, INCLUDING THE ONES NOT SHOWN ON PLANS.
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- REMOVE AND REPLACE CONCRETE SIDEWALKS FOR UNDERDRAIN INSTALLATION(TYP.) SEE NOTE 2
- CONSTRUCT FDOT TYPE CR-E ADA RAMP PER FDOT INDEX 522-002
- TYPICAL ROAD CROSSING WITH 7' WIDE PAVEMENT RECONSTRUCTION (TYP.)



WEST SIDE



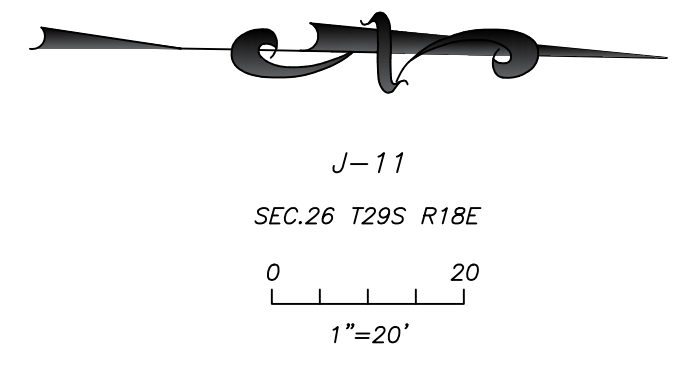
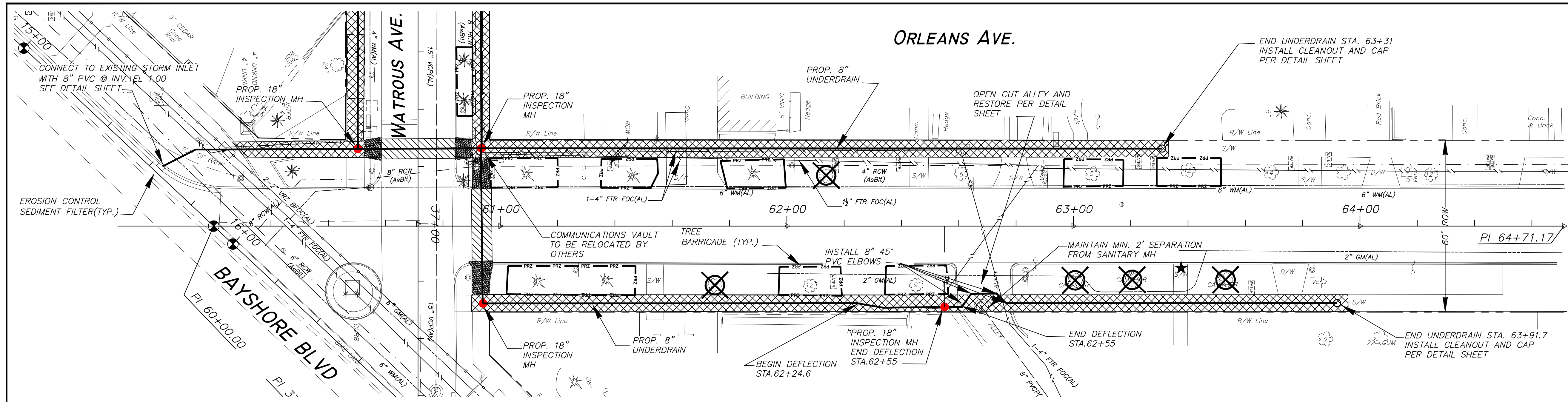
EAST SIDE

No.	DATE	REVISIONS	No.	DATE	REVISIONS
3			6		
2	2/14/23	ADDENDUM NO. 2	5		
1	9/8/22	FINAL REVISIONS	4		

DES: SEB  
DRN: PE/JDM  
CKD: BG  
DATE: 9/22/22

CITY of TAMPA  
Mobility Department  
Stormwater Engineering Division

**HYDE PARK**  
**GROUNDWATER DIVERSION**




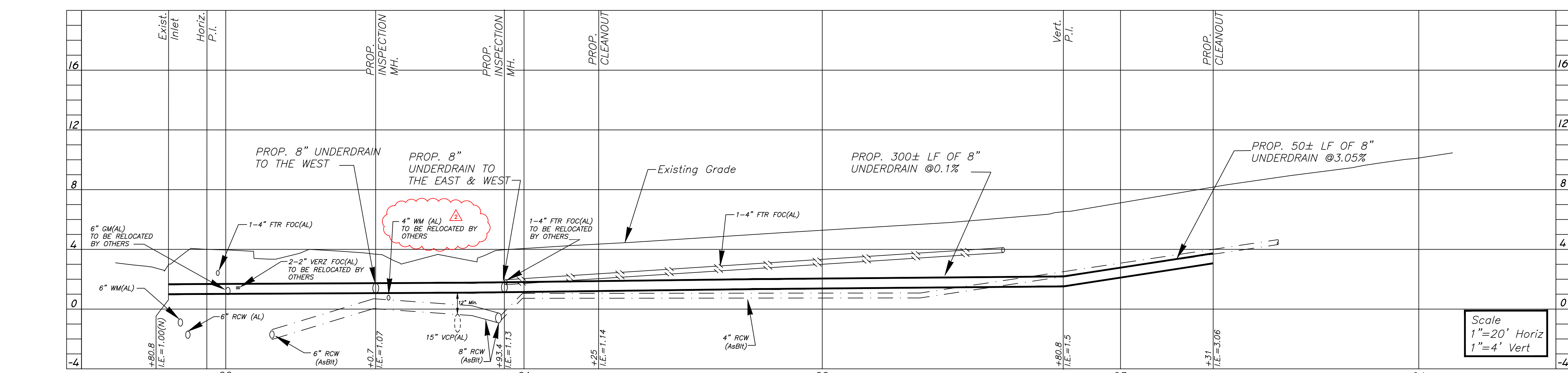
- NOTES:**
1. RESTORE DAMAGED OR REMOVED DRIVEWAYS & CURBS TO PRE-CONSTRUCTION CONDITIONS.
  2. CAREFULLY REMOVE AND REPLACE ALL CARTOUCHE SIDEWALK PANELS, INCLUDING THE ONES NOT SHOWN ON PLANS.
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 REMOVE AND REPLACE CONCRETE SIDEWALKS FOR UNDERDRAIN INSTALLATION(TYP.) SEE NOTE 2

 CONSTRUCT FDOT TYPE CR-E ADA RAMP PER FDOT INDEX 522-002

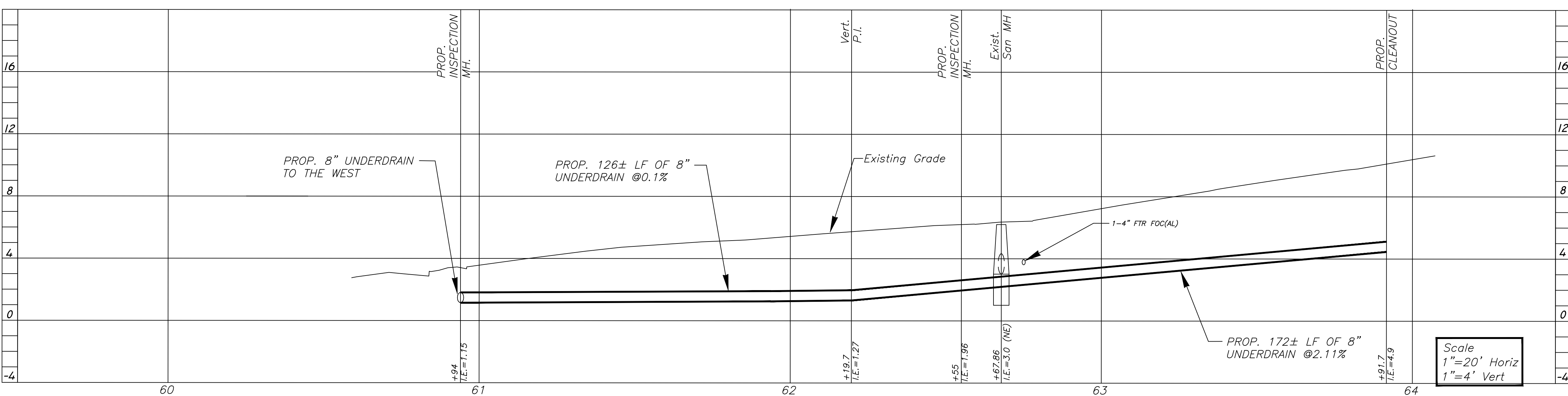
 TYPICAL ROAD CROSSING WITH 7' WIDE PAVEMENT RECONSTRUCTION (TYP.)

 REMOVE EXISTING TREES AND REPLACE WITH LIVE OAK TREES PER DETAIL AND SPECIFICATIONS.



WEST SIDE

Scale  
1"=20' Horiz  
1"=4' Vert



EAST SIDE

Scale  
1"=20' Horiz  
1"=4' Vert

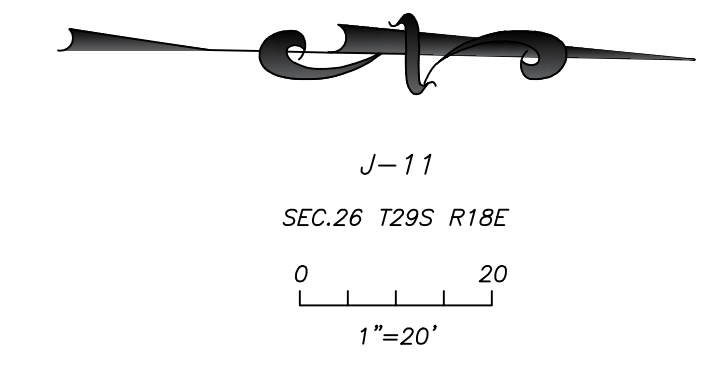
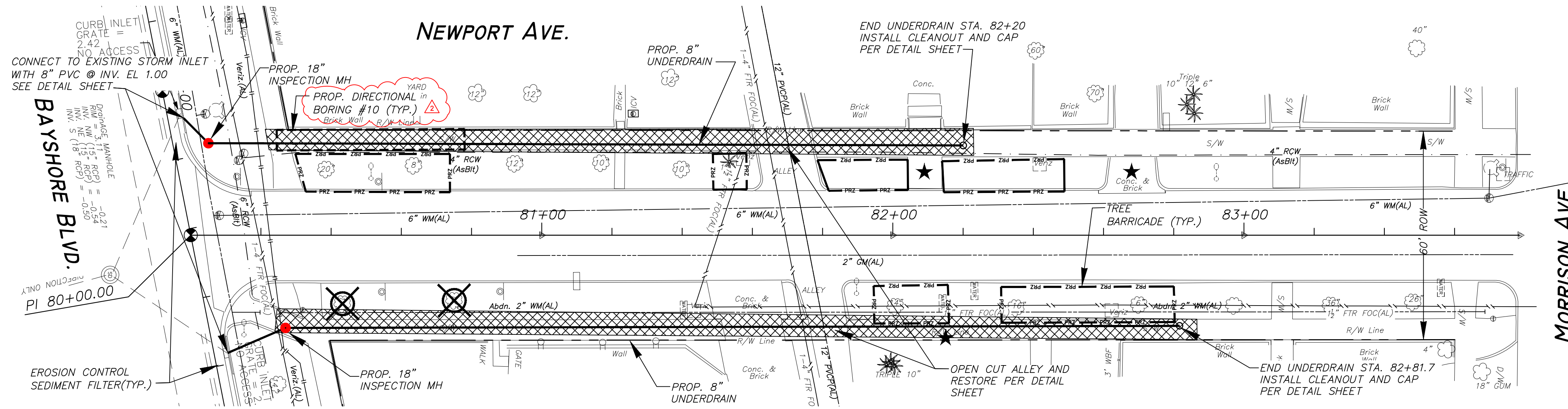
No.	DATE	REVISIONS	No.	DATE	REVISIONS
3			6		
2	2/14/23	ADDENDUM NO. 2	5		
1	9/8/22	FINAL REVISIONS	4		

DES: SEB  
DRN: R/JDM  
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**CITY of TAMPA**  
Mobility Department  
Stormwater Engineering Division

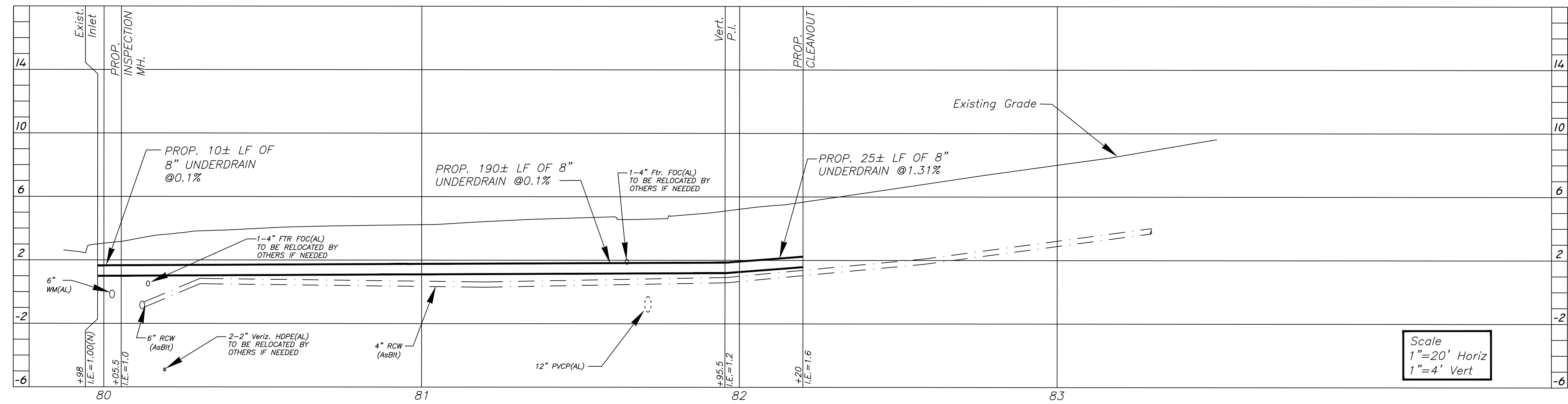
**HYDE PARK**  
**GROUNDWATER DIVERSION**

Plot Date: Thursday, February 16, 2023

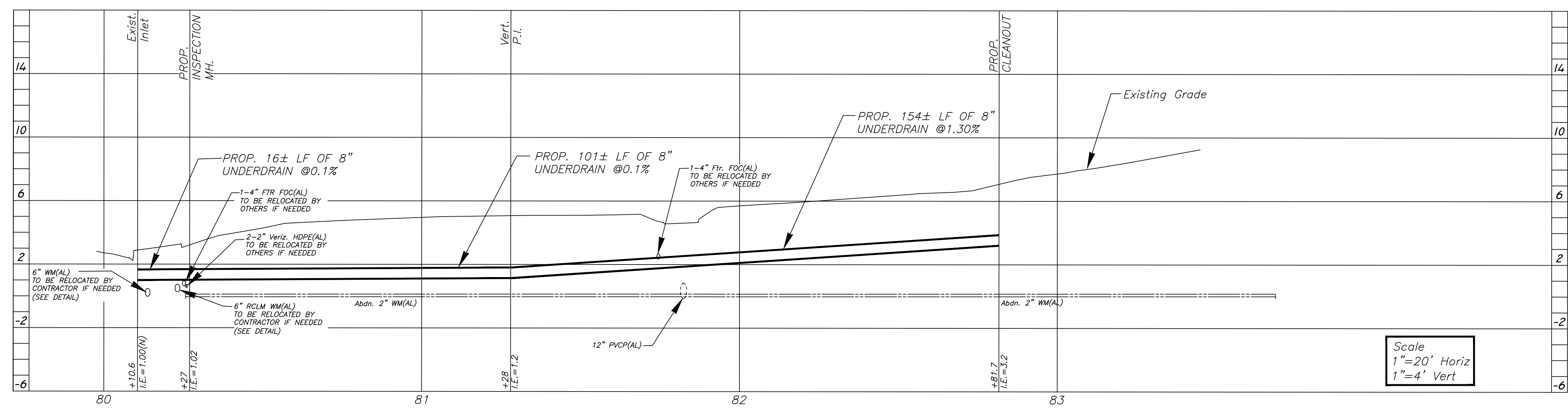


- NOTES:**
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- TYPICAL ROAD CROSSING WITH 7' WIDE PAVEMENT RECONSTRUCTION (TYP.)
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WEST SIDE



EAST SIDE

No.	DATE	REVISIONS	No.	DATE	REVISIONS
3			6		
2	2/14/23	ADDENDUM NO. 2	5		
1	9/8/22	FINAL REVISIONS	4		

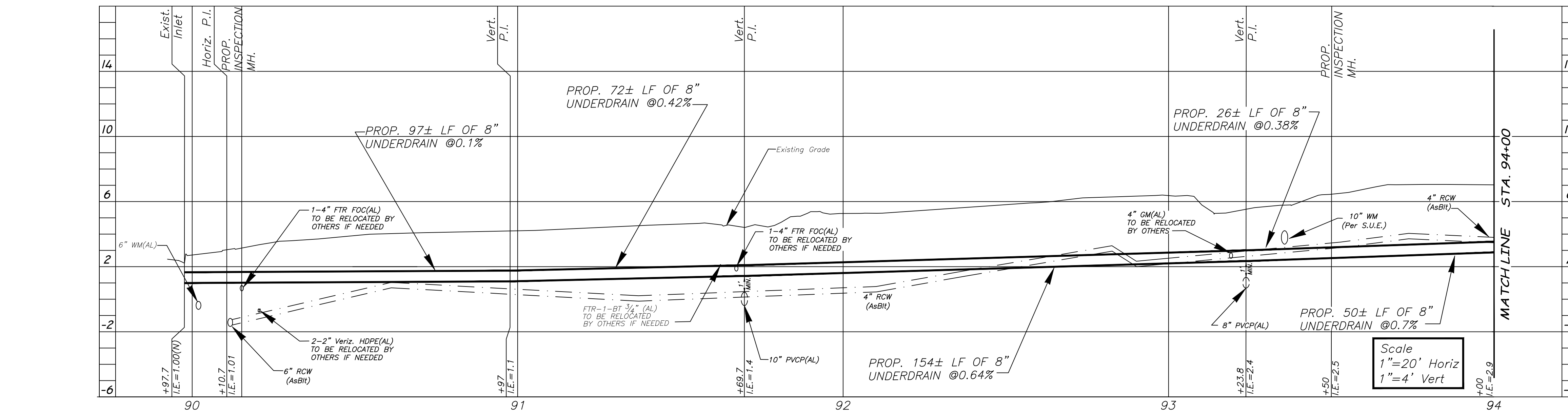
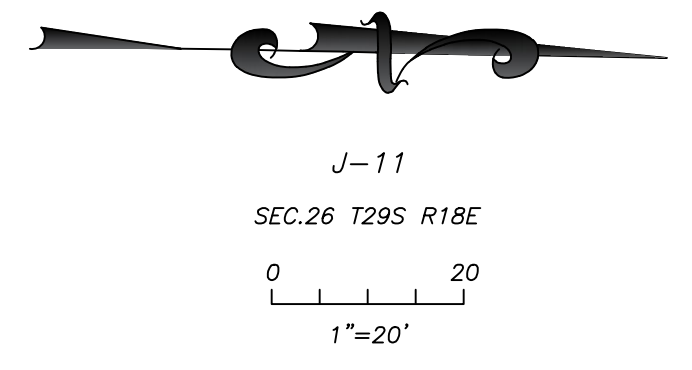
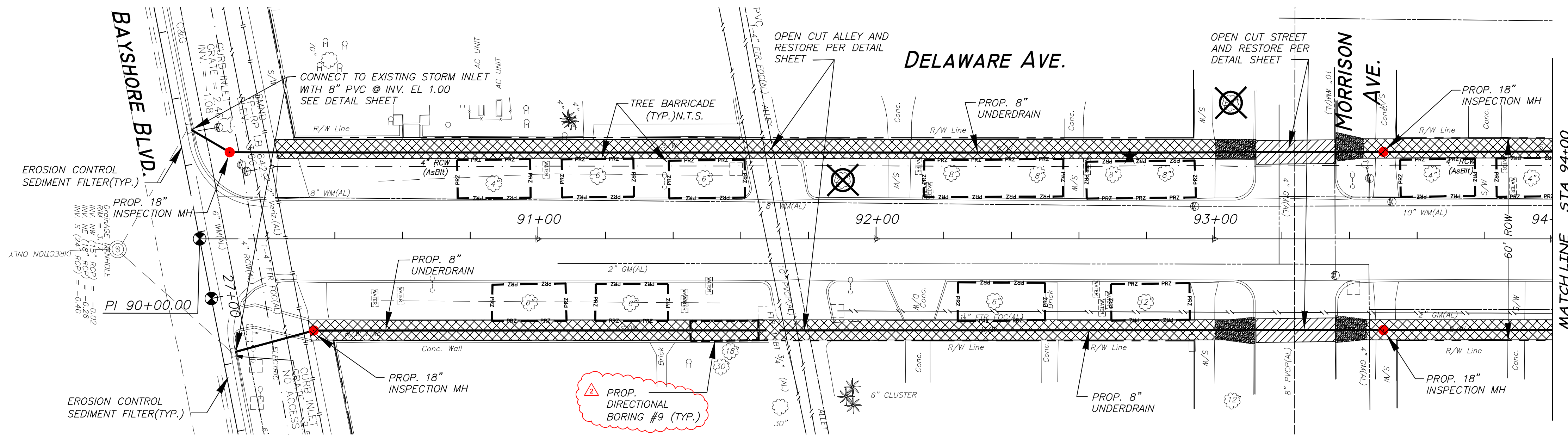
DES: SEB  
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CITY OF TAMPA  
Mobility Department  
Stormwater Engineering Division

HYDE PARK  
GROUNDWATER DIVERSION

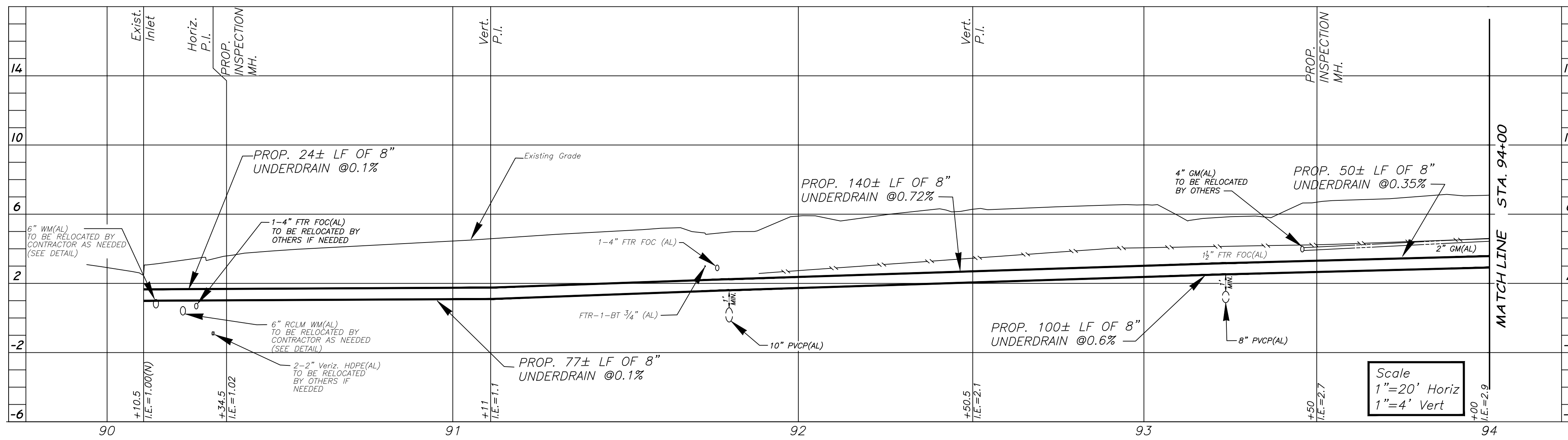
Plot Date: Friday, February 17, 2023

DELAWARE AVE.



WEST SIDE

- NOTES:**
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EAST SIDE

No.	DATE	REVISIONS	No.	DATE	REVISIONS
3			6		
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1	9/8/22	FINAL REVISIONS	4		

DES: SEB  
DRN: ME/JDM  
CKD: BG  
DATE: 9/22/22

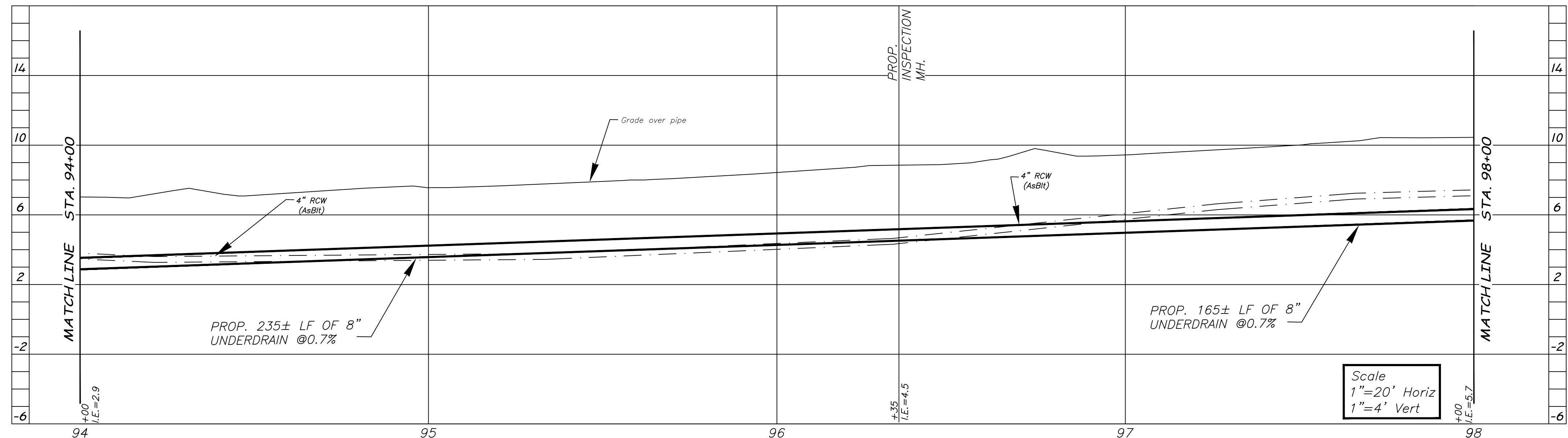
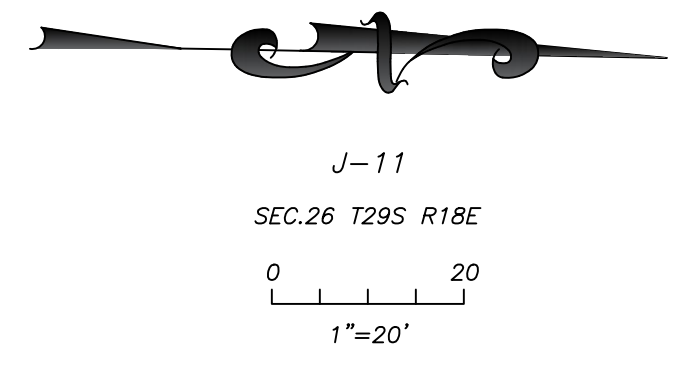
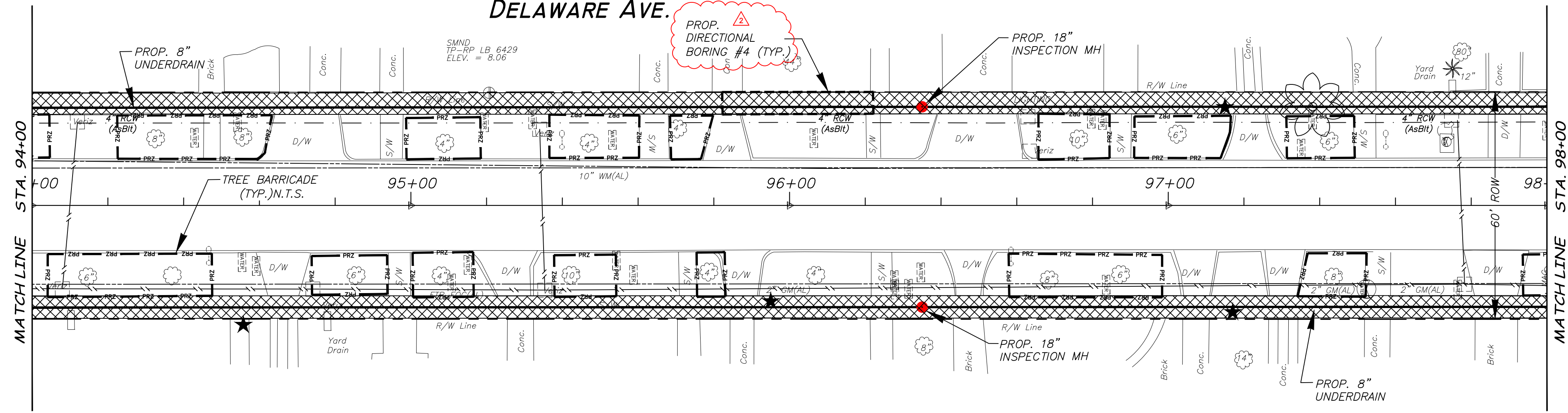
CITY of TAMPA  
Mobility Department  
Stormwater Engineering Division

HYDE PARK  
GROUNDWATER DIVERSION

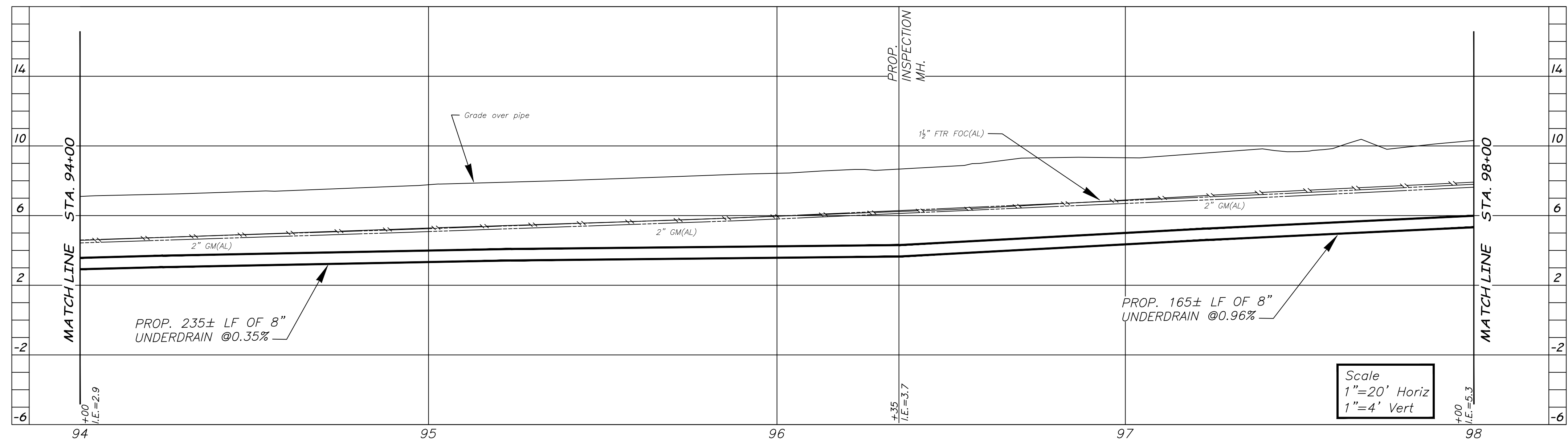
Plot Date: Friday, February 17, 2023



DELAWARE AVE.



WEST SIDE



EAST SIDE

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- CONSTRUCT FDOT TYPE CR-E ADA RAMPS PER FDOT INDEX 522-002
- TYPICAL ROAD CROSSING WITH 7' WIDE PAVEMENT RECONSTRUCTION (TYP.)

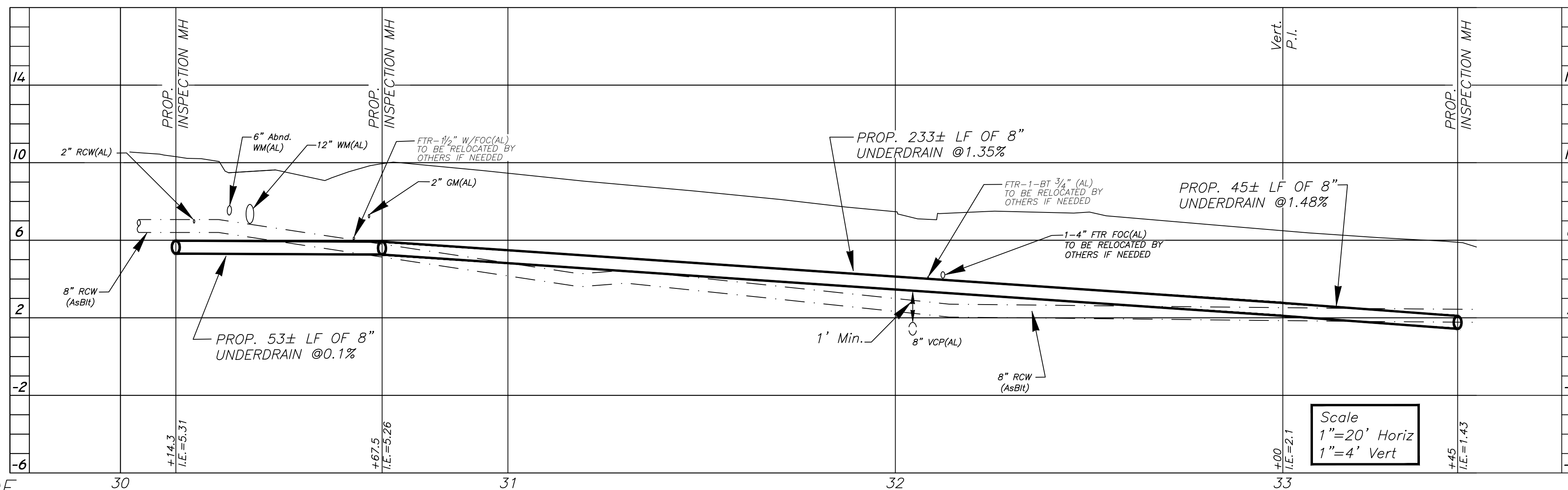
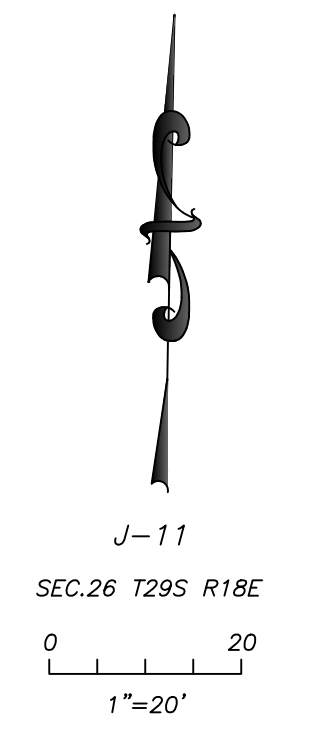
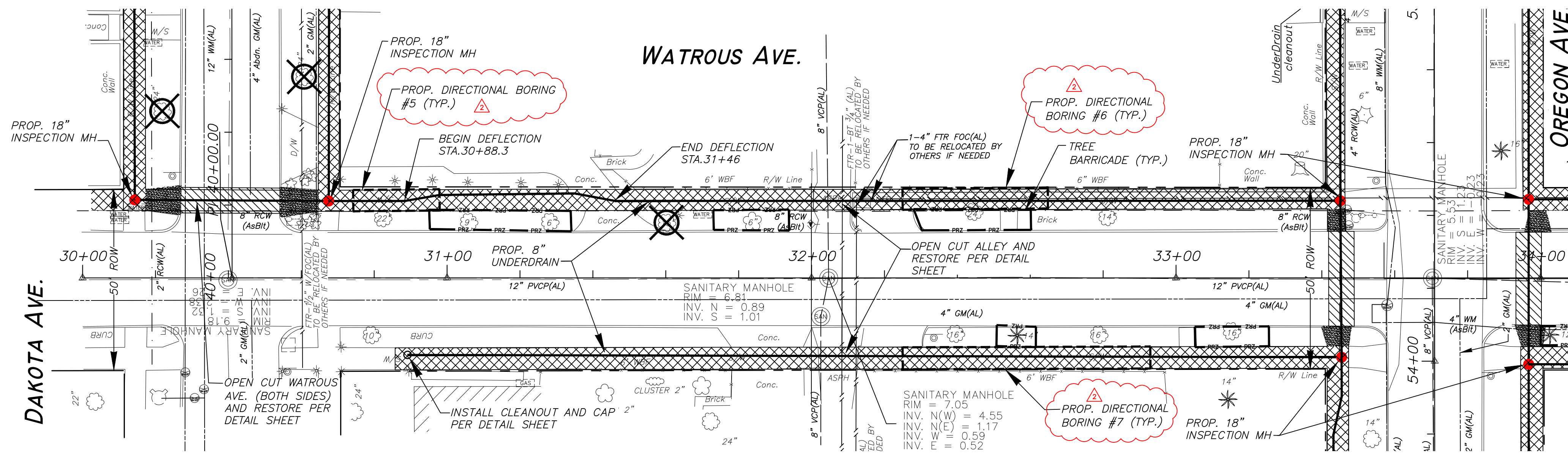
No.	DATE	REVISIONS	No.	DATE	REVISIONS
3			6		
2	2/14/23	ADDENDUM NO. 2	5		
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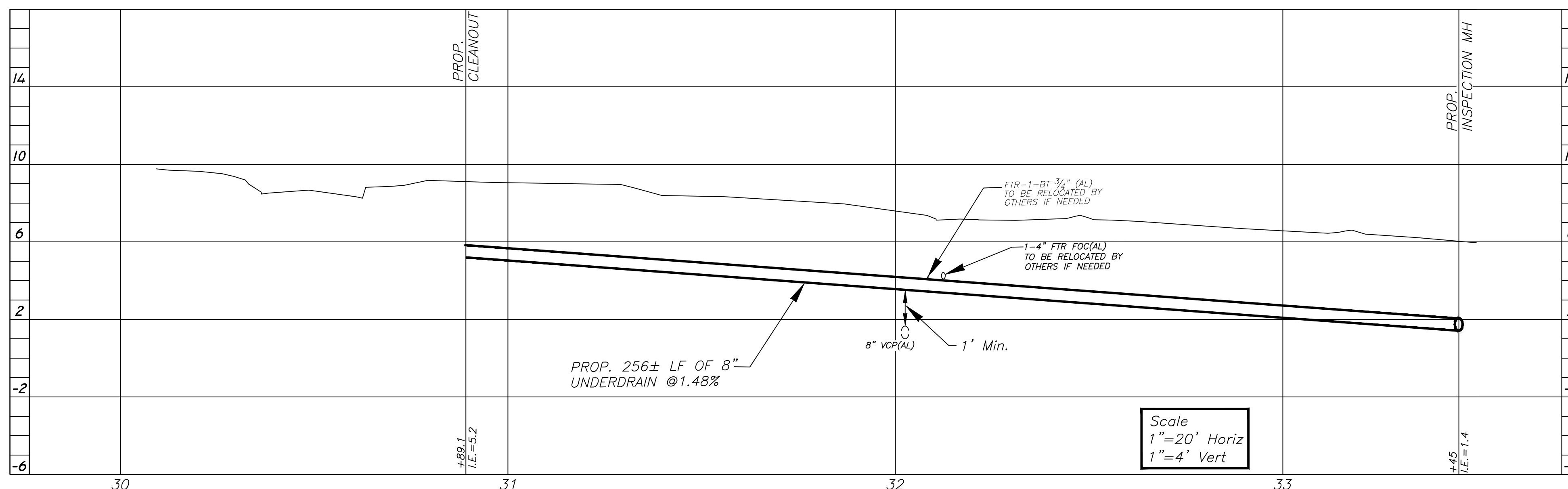
CITY of TAMPA  
 Mobility Department  
 Stormwater Engineering Division

HYDE PARK  
 GROUNDWATER DIVERSION

Plot Date: Thursday, February 16, 2023



NORTH SIDE



SOUTH SIDE

NOTES:

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- TYPICAL ROAD CROSSING WITH 7' WIDE PAVEMENT RECONSTRUCTION (TYP.)
- REMOVE EXISTING TREES AND REPLACE WITH LIVE OAK TREES PER DETAIL AND SPECIFICATIONS.

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1	9/8/22	FINAL REVISIONS	4		

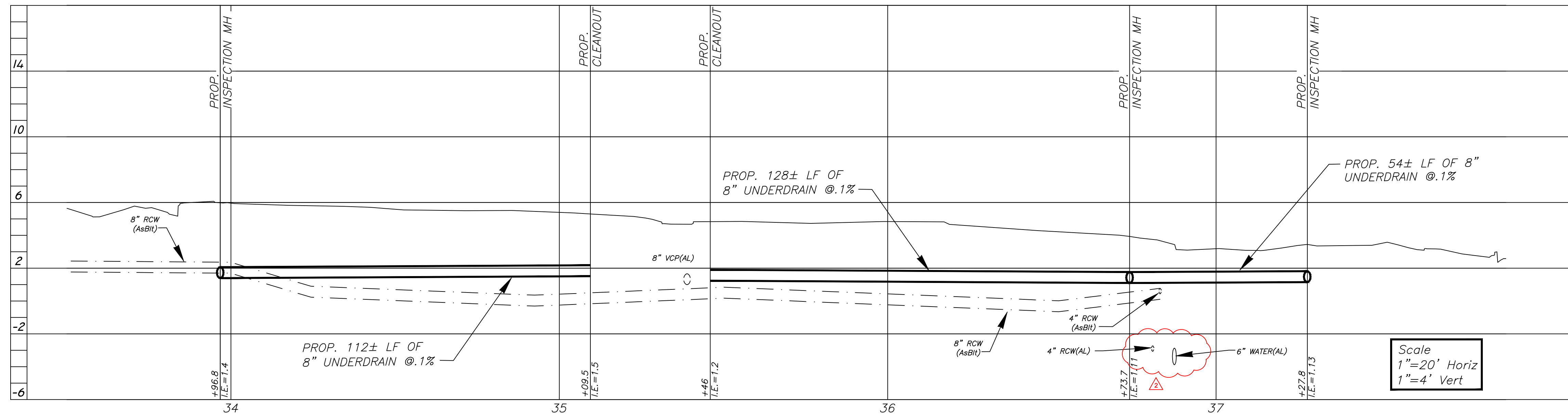
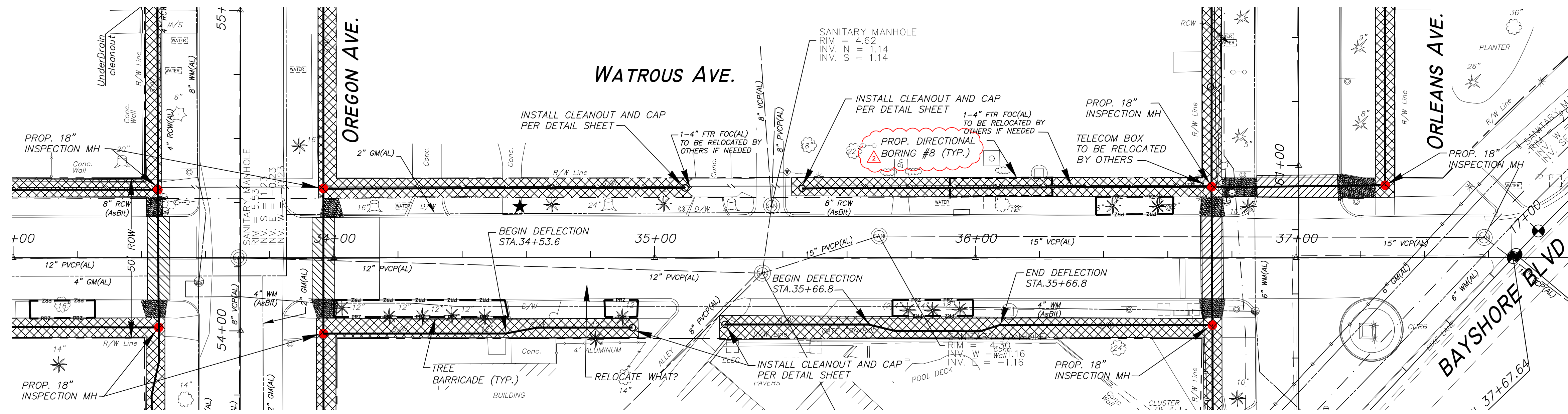
DES: SEB  
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CITY of TAMPA  
 Mobility Department  
 Stormwater Engineering Division

HYDE PARK  
 GROUNDWATER DIVERSION

SHEET  
 12  
 OF 14

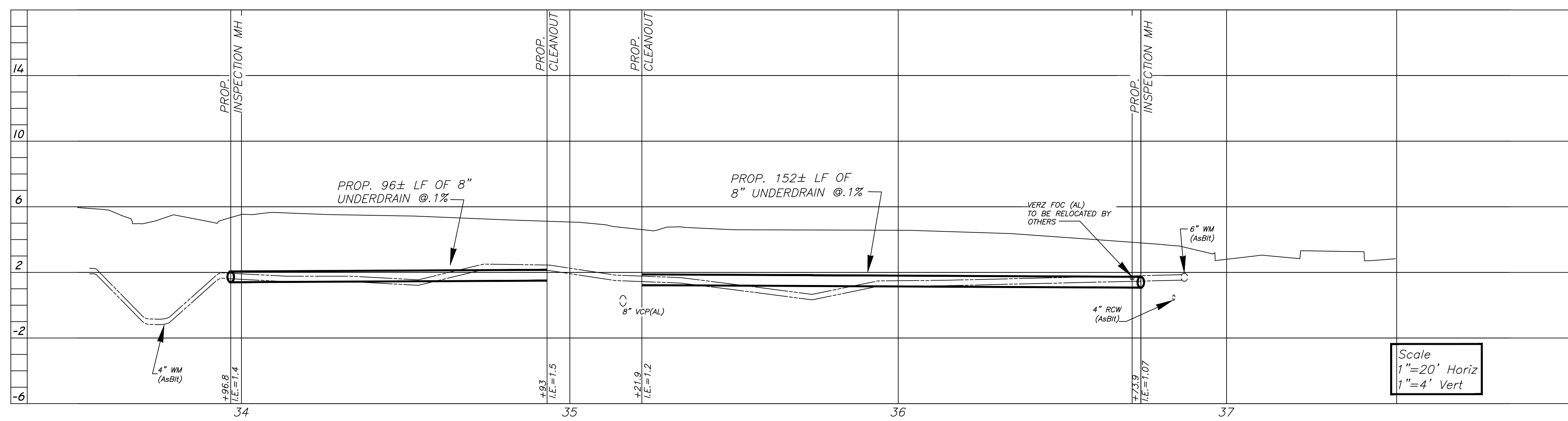
Plot Date: Thursday, February 16, 2023



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- TYPICAL ROAD CROSSING WITH 7' WIDE PAVEMENT RECONSTRUCTION (TYP.)

NORTH SIDE



SOUTH SIDE

No.	DATE	REVISIONS	No.	DATE	REVISIONS
3			6		
2	2/14/23	ADDENDUM NO. 2	5		
1	9/8/22	FINAL REVISIONS	4		

DES: SEB  
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CITY of TAMPA  
 Mobility Department  
 Stormwater Engineering Division

HYDE PARK  
 GROUNDWATER DIVERSION

Plot Date: Friday, February 17, 2023