REPORT OF THE
GEOTECHNICAL INVESTIGATION

SUBURBAN PIPELINE PROJECT - PHASE II
WATER DISTRIBUTION SYSTEM
MANATEE COUNTY, FLORIDA

Driggers Engineering Services Incorporated

DRIGGERS ENGINEERING SERVICES INCORPORATED
Geotechnical Engineering & Construction Materials Testing

December 16, 2009

Manatee County Government
1022 - 26th Avenue East
Bradenton, Florida 34208

Attention: Mr. Chuck Froman
Project Manager

RE: Report of the Geotechnical Investigation
Suburban Pipeline Project - Phase II
Water Distribution System
Manatee County, Florida
Our File: DES 096393
Work Assignment #9
IFAS # WO900254

Dear Chuck:

Pursuant to prior authorization and the above referenced Work Assignment #9, **DRIGGERS ENGINEERING SERVICES, INC.** has completed the geotechnical investigation for Phase II of the subject project. Presented herein are the results of our field and laboratory studies together with a general discussion of subsurface soil and groundwater conditions along the proposed pipeline alignments. Results of our geotechnical studies for Phase I of the project were submitted in our report dated July 8, 2009.

GEOTECHNICAL INVESTIGATION PROGRAM

A program of shallow depth exploratory borings and laboratory classification testing was undertaken to characterize the general nature of the subsurface soils and potential impacts with respect to the planned potable water distribution system.

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FIELD INVESTIGATION - Plates I-A through I-DD of the report attachments identify the respective positioning of forty-two (42) shallow classification borings which were generally spaced at the requested nominal 500 feet apart to investigate soil and groundwater conditions. The classification borings were typically advanced to the requested depth of 8 feet below existing grade. The locations of the classification borings were selected in the field by our personnel utilizing the 60% Design Submittal pipeline alignment plans, dated September, 2009, recently provided by CH_2M Hill, and the marked locations of existing buried utility lines. The boring locations depicted are considered approximate since they were not surveyed. While some ground surface spot elevations are shown on the plans provided to us, ground surface elevations at the boring locations were not provided and no estimates were made from the available data.

The classification borings were conducted utilizing hand auger equipment wherein the soils were classified virtually continuously below existing grades to the termination depth. Logs of the classification borings are presented in the report attachments reflecting visual together with estimated Unified Soil Classification. Groundwater depths measured during the course of our field investigation are noted on each respective boring log.

LABORATORY CLASSIFICATION TESTS - A limited laboratory classification testing program was undertaken to aid in characterizing the engineering properties of the subsurface soils. Our laboratory tests included grainsize analyses, Atterberg liquid and plastic limits and organic content tests. Selected samples were also tested for corrosivity potential. Results are presented on the Summary of Laboratory Test Results in the appendix. Results of the grainsize analyses are included in the report attachments reflecting the percent finer (by weight) versus the equivalent grain diameter or U.S. Standard Sieve size.

GENERALIZED SUBSURFACE CONDITIONS

The results of our classification borings indicate that the subsurface soils typically consist of fine sands comprising the SP to SP-SM Unified Soil Classifications. Also penetrated were occasional zones of silty to clayey sands (SM to SC soils) interbedded with the relatively cleaner sands. Based upon our laboratory testing program, the fine sands typically contain minimal silt and clay fines, less than 10% by weight. However, some of the silty to clayey sand seams exhibited fines contents of up to nearly 40 percent, with the clayey sands exhibiting low to moderate plasticity characteristics. Some of the sands also contained traces to various concentrations of shell and occasional rock fragments.

Note also that thin seams of organic sands and peat (muck) were encountered within a depth range of about 1.5 to 5.5 feet at boring locations HA-2-7 and HA-2-9. Results of organic content testing suggest that these soils have organic contents in the range of 9.7 to 11.9 percent, by weight. Other zones of organic stained sands with organic contents less than 5 percent were also penetrated at boring locations HA-2-10, HA-2-11, HA-2-27, HA-2-32 through HA-2-38 and HA-2-40.

An exception to the general trend occurred at boring location HA-2-3 where refusal to hand auger penetration was encountered at a depth of 4.0 feet. Note that at several boring locations in Phase I of the project, a discontinuous, thin rock unit was first encountered at varying depths ranging from about 0.8 to 5 feet beneath present grades. Review of the Manatee County Soil Survey indicates some areas of Broward and Wabasso Variant soils within the project limits. The typical profile of these soil types indicates that shallow depth limestone, limestone boulders or gravel may exist.

Groundwater was typically measured within a depth range of 3.3 to 7.9 feet below existing grade at the time of our geotechnical studies. At several locations, groundwater was not evident within the boring completion depth of 8 feet beneath present grade. It should be noted that these classification borings were conducted from the middle of November to early December, following the typical wet season. There is certainly the potential for groundwater to occur at shallower depths in response to more frequent or prolonged rainfall. Water may also occur in a temporarily perched state above the low permeability silty to clayey sand zones.

The Soil Survey indicates the presence of EauGallie-Myakka, Felda, Chobee, Okeelanta and Canova soils, in addition to the aforementioned Broward and Wabasso Variant soils, in the project area. Under natural conditions, seasonal high groundwater levels for EauGallie-Myakka soils would be between 0.5 and 1.5 feet below grade. Seasonal high groundwater for Felda, Chobee and Okeelanta soils may occur within a foot of the ground surface. Depressional soils such as Canova soils may, under natural conditions, have water levels above the ground surface. It should be noted that the Soil Survey estimates do not consider the effects of development and drainage improvements, all of which can affect groundwater levels. It appears that any depressional areas were filled during development of the area. In consideration of the time of year, the antecedent rainfall and the Soil Survey information, we would anticipate no more than a nominal 1.5 foot rise in groundwater above current water levels during the normal wet season. Confirmation of potential seasonal fluctuations would necessitate installing shallow piezometers and monitoring groundwater levels during the wet season.

GEOTECHNICAL EVALUATION AND RECOMMENDATIONS

PLANNED CONSTRUCTION - The project area is west of U. S. 41 and is bounded roughly by 26th Street West on the west, 53rd Avenue West on the north and 58th Avenue Drive on the South. We understand that the project will include the construction of 6-inch and 8-inch diameter HDPE potable water mains. Based upon plans provided and discussions with Mr. Bob Cannarella, P.E. with CH_2M Hill, the water mains will generally be constructed utilizing either directional drilling or standard cut and cover construction, with a minimum of 3 feet of cover and a burial depth of no more than about 5 feet in order to facilitate service and other connections. The main pipelines will generally be located outside of existing pavements, with services crossing beneath the existing streets.

PIPELINE SUBGRADE CONDITIONS - Our geotechnical studies suggest that the subgrade soils within the depth of exploration typically consist of fine sands containing some to minimal silt fines. These soil types should generally be suitable for pipe support provided that the subgrade is prepared in accordance with project specifications. In general, this will necessitate appropriate compaction at the bottom of excavation and throughout backfill soils required to re-establish existing grades in accordance with Manatee County specifications.

SUITABILITY OF EXCAVATED SOILS FOR USE AS BACKFILL - Fine sands indicated in our geotechnical studies will represent suitable materials for replacement and compaction as backfill following pipeline installation. These fine sands comprising the SP to SP-SM Unified Soil Classification should respond effectively to conventional vibratory compaction. Results of corrosivity testing suggest that the soils along the pipeline routes fall within the "Moderately Aggressive" FDOT corrosivity classification.

Where silty to clayey sands were evidenced, these soils typically occurred in relatively thin layers. Accordingly, the soils with increased fines and some plasticity can probably be mixed with the cleaner sands during the excavation and backfilling process to improve the workability of these soils. Similarly, the thin organic zones evidenced in several of the borings can probably be mixed with the overlying and underlying sands and incorporated in the backfill. Where highly organic soils or plastic soils may exist near the bottom of the excavation or in greater thickness than suggested by the program of borings, it may be necessary to undercut the highly organic or plastic soils at least 2 feet and replace these materials with properly compacted granular backfill or gravel so as to produce a firm and unyielding subgrade for subsequent pipeline construction and backfilling operations.

While refusal to hand auger penetration was encountered at only a single location, the exploratory borings conducted for Phase I of the project and the Soil Survey information indicate that shallow depth limestone, limestone boulders and limestone gravel could be present in some areas. Gravel sized material may be incorporated within the sandy backfill soils. Rocks larger than about 3 inches should be excluded. Of course, rocks and oversize materials should be excluded from the pipe zone to minimize the potential for damage to the pipe.

It is important to recognize that the soils may exist in a very low natural moisture content depending upon the rainfall occurring at the time of construction or at high moisture contents when excavated below the water table. Accordingly, the soils may require some adjustment in moisture content to achieve efficient and effective compaction. In general, it is beneficial to adjust moisture contents to within ±2% of the optimum moisture as established by the Standard Proctor moisture-density relationship as set forth in AASHTO T-99.

CONSTRUCTION CONSIDERATIONS - We understand that much of the pipeline may be installed utilizing directional drilling. Care must be exercised during the directional drilling process in order to appropriately stabilize the horizontal borehole with drilling slurry so as to avoid potential caving of overlying soils that could cause unacceptable settlements to overlying or adjacent utilities, structures and pavements. Conversely, one must avoid over-pressuring the drilling slurry that could result in unacceptable discharge of drilling slurry to the ground surface. Shallow depth rock zones, which the Soil Survey suggests may exist in some areas, could also affect directionally drilled pipeline construction.

Portions of the pipeline, and certainly connections, will be constructed utilizing open-cutting and backfilling following pipeline installation. Depending on the depth of the cut, it may be necessary to adjust the excavation slope ratios to no steeper than about 1.5 horizontal to 1.0 vertical in order to minimize sloughing or caving during the backfilling operations. Utilization of this slope ratio will necessitate proper dewatering, where necessary, and protection of the slope with respect to erosion and sloughing. Alternatively, trench-box construction would be considered in lieu of a sloped excavation. Naturally, the contractor must comply with applicable OSHA requirements with respect to trench safety.

In anticipation of cut depths typically 4 to 5 feet or less, we would not anticipate the need for a significant amount of construction dewatering throughout the project. Of course, abnormal rainfall could produce higher than expected groundwater levels and necessitate some local management of groundwater during pipeline construction. In that event, we would envision that the dewatering could be effectively

accomplished by the application of a nominal 12 inch gravel drainage blanket of durable, washed limerock, granite or crushed concrete having a grading of no coarser than an FDOT No. 89. The gravel drainage blanket could then be used in conjunction with interior sumping in order to control groundwater levels below the invert of the pipeline and allow appropriate placement and compaction of the subgrade and backfill.

CONSTRUCTION INSPECTION AND TESTING - The authorized geotechnical investigation consisted of a series of relatively widely spaced, hand advanced classification borings intended to identify generalized subsurface conditions that may be expected throughout the project limits. Clearly, the potential exists that localized variations or unexpected conditions may occur that would warrant modifications in construction procedures. Accordingly, it will be important to implement an appropriate program of geotechnical inspection of any open cuts during the construction stage to assist in identifying any such anomalous conditions and to provide economical recommendations for any necessary remediation. Inspection should be performed by a qualified geotechnical inspector familiar with the detailed contents of this report.

Additionally, additional more closely spaced borings are suggested particularly in the vicinity of boring HA-2-3 where refusal to hand auger penetration was encountered, to aid in identifying the limits of the shallow depth rock zone. As noted, the Soil Survey suggests that this rock zone cold be more widespread than suggested by the authorized soil boring program.

Compaction testing will also be required during the subgrade preparation and backfilling operations to check that the soils are being compacted in accordance with Manatee County compaction requirements. The compaction tests should be conducted in such a manner so as to check that all of the backfill soils are being uniformly densified to project specification requirements.

LIMITATIONS - The geotechnical investigation program was undertaken to provide general information to assist in the design and construction of the planned facilities. Our investigation may not have included all information that the prospective contractor may require in the preparation of his bid proposal. The contractor is certainly encouraged to conduct such additional studies as he may deem necessary to qualify his proposal.

Our geotechnical investigation was limited to an examination of subsurface soil and groundwater conditions so as to address geotechnical design and construction issues. Studies relative to environmental issues or impacts was not within the authorized scope of services.

DRIGGERS ENGINEERING SERVICES, INC. appreciates the opportunity to serve you during this phase of the design stage of the water distribution system. Should you have any questions concerning our report, please do not hesitate to contact the undersigned at your convenience.

Respectfully submitted,
DRIGGERS ENGINEERING SERVICES, INC.

Nicholas T. Korecki

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NTK
NTK-REP\096393-II
Copies submitted: (3) Manatee County Government.; Attn: Chuck Froman
(2) CH_2M Hill.; Attn: Mr. Bob Cannarella, P.E.

APPENDIX

PLATES I-A THROUGH 1-DD - TEST BORING LOCATION PLANS

HAND AUGER BORING LOGS

SUMMARY OF LABORATORY TEST RESULTS

GRAINSIZE ANALYSES

PLATES I-A THROUGH 1-DD - TEST BORING LOCATION PLANS

HAND AUGER BORING LOGS

DRIGGERS ENGINEERING SERVICES INCORPORATED

HAND AUGER BORING LOG

PROJECT: Suburban Pipeline Project - Phase II Manatee County, Florida Project No.: DES 096393		**CLIENT:** Manatee County	
		WATER TABLE: 6.8'	**DATE:** 11/30/09
TECHNICIAN: M.B.		**DATE:** 11/30/09	**COMPLETION DEPTH:** 8.0'
LOCATION: See Plate I-DD		**TEST NUMBER:** HA2-1	

ELEV. (FT)	DESCRIPTION	DEPTH (FT)	SYMBOL	REMARKS
	Brown Fine SAND with trace of shell and limestone fragments (SP)	0		
	Brown and light brown Fine SAND with trace of shell fragments (SP)			
	Tan and light gray Fine SAND with trace of roots (SP)	2		
	Gray slightly silty Fine SAND with shell fragments (SP-SM)	4		
	Very light gray Fine SAND with trace of shell fragments (SP)			
	Dark grayish-brown slightly silty Fine SAND (SP-SM)	6		
	Dark grayish-brown clayey Fine SAND (SC)			
	Brown Fine SAND (SP)	8		
		10		
		12		
		14		

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HAND AUGER BORING LOG

PROJECT: Suburban Pipeline Project - Phase II Manatee County, Florida Project No.: DES 096393	**CLIENT:** Manatee County **WATER TABLE:** See "Note"	**DATE:** 11/17/09
TECHNICIAN: M.M.	**DATE:** 11/17/09	**COMPLETION DEPTH:** 8.0'
LOCATION: See Plate I-A	**TEST NUMBER:** HA2-2	

ELEV. (FT)	DESCRIPTION	DEPTH (FT)	SYMBOL	REMARKS
	Grayish-brown Fine SAND with some roots (SP)	0		
	Gray Fine SAND with limestone fragments (SP)	2		
	Brown Fine SAND (SP)			
	Brownish-gray slightly silty Fine SAND with shell and limestone fragments (SP-SM)	4		
	Brown Fine SAND (SP)			
	Brownish-gray Fine SAND with some shell fragments and trace of dark brown Fine SAND (SP)	6		
		8		Note: Water Table not encountered within depth of 8.0'.
		10		
		12		
		14		

DRIGGERS ENGINEERING SERVICES INCORPORATED

HAND AUGER BORING LOG

PROJECT: Suburban Pipeline Project - Phase II Manatee County, Florida Project No.: DES 096393		**CLIENT:** Manatee County **WATER TABLE:** See "Note"	**DATE:** 11/17/09
TECHNICIAN: J.R.		**DATE:** 11/17/09	**COMPLETION DEPTH:** 4.0' *
LOCATION: See Plate I-X		**TEST NUMBER:** HA2-3	

ELEV. (FT)	DESCRIPTION	DEPTH (FT)	SYMBOL	REMARKS
	Brownish-gray Fine SAND with some roots and shell fragments (SP)	0		
	Dark gray Fine SAND (SP)			
	Brown Fine SAND (SP)	2		
	Light brown clayey Fine SAND with light orange veins (SC)			
	Light brownish-gray slightly silty, slightly clayey Fine SAND (SP-SM)	4		* Encountered refusal at depth 4.0'. Attempted Boring at 4 Locations. Note: Water Table not encountered within depth of 4.0'.
		6		
		8		
		10		
		12		
		14		

DRIGGERS ENGINEERING SERVICES INCORPORATED

HAND AUGER BORING LOG

PROJECT: Suburban Pipeline Project - Phase II Manatee County, Florida Project No.: DES 096393		**CLIENT:** Manatee County	
		WATER TABLE: 6.0'	**DATE:** 11/17/09
TECHNICIAN: M.M.		**DATE:** 11/17/09	**COMPLETION DEPTH:** 8.0'
LOCATION: See Plate I-B		**TEST NUMBER:** HA2-4	

ELEV. (FT)	DESCRIPTION	DEPTH (FT)	SYMBOL	REMARKS
	Dark gray Fine SAND with roots (SP)	0		
	Dark gray Fine SAND with some pockets of weakly cemented, clayey Fine SAND (SP/SC)	2		
	Brown Fine SAND with seams of dark gray clayey Fine SAND (SP/SC)	4		
	Grayish-brown silty, slightly clayey Fine SAND (SM)	6		
	Tan and light brown Fine SAND (SP)	8		
	Light grayish-brown Fine SAND with shell fragments (SP)	10		
		12		
		14		

DRIGGERS ENGINEERING SERVICES INCORPORATED

HAND AUGER BORING LOG

PROJECT: Suburban Pipeline Project - Phase II Manatee County, Florida Project No.: DES 096393	**CLIENT:** Manatee County **WATER TABLE:** 5.6'	**DATE:** 11/17/09
TECHNICIAN: M.M.	**DATE:** 11/17/09	**COMPLETION DEPTH:** 8.0'
LOCATION: See Plate I-B	**TEST NUMBER:** HA2-5	

ELEV. (FT)	DESCRIPTION	DEPTH (FT)	SYMBOL	REMARKS
	Dark gray Fine SAND with roots (SP)	0		
	Gray Fine SAND (SP)			
	Dark brown Fine SAND (SP)	2		
	Brown Fine SAND (SP)	4		
	Dark brown Fine SAND (SP)	6		
	Light brown Fine SAND (SP)	8		
		10		
		12		
		14		

DRIGGERS ENGINEERING SERVICES INCORPORATED

HAND AUGER BORING LOG

PROJECT: Suburban Pipeline Project - Phase II Manatee County, Florida Project No.: DES 096393		**CLIENT:** Manatee County	
		WATER TABLE: 4.9'	**DATE:** 11/17/09
TECHNICIAN: M.M.	**DATE:** 11/17/09		**COMPLETION DEPTH:** 8.0'
LOCATION: See Plate I-C		**TEST NUMBER:** HA2-6	

ELEV. (FT)	DESCRIPTION	DEPTH (FT)	SYMBOL	REMARKS
	Brown Fine SAND with roots (SP)	0		
	Dark reddish-brown Fine SAND (SP)	2		
	Light brown Fine SAND (SP)			
	Brown Fine SAND (SP)	4		
	Light brown Fine SAND (SP)	6		
	Tan Fine SAND (SP)	8		
		10		
		12		
		14		

DRIGGERS ENGINEERING SERVICES INCORPORATED

HAND AUGER BORING LOG

PROJECT: Suburban Pipeline Project - Phase II Manatee County, Florida Project No.: DES 096393		**CLIENT:** Manatee County	
		WATER TABLE: 5.7'	**DATE:** 11/17/09
TECHNICIAN: M.M.		**DATE:** 11/17/09	**COMPLETION DEPTH:** 8.0'
LOCATION: See Plate I-C		**TEST NUMBER:** HA2-7	

ELEV. (FT)	DESCRIPTION	DEPTH (FT)	SYMBOL	REMARKS
	Dark grayish-brown Fine SAND with roots (SP)	0		
	Very dark brown organic, slightly silty Fine SAND (SP-SM/Pt)	2		
	Dark brown Fine SAND with some roots (SP)	4		
		6		
		8		
		10		
		12		
		14		

DRIGGERS ENGINEERING SERVICES INCORPORATED

HAND AUGER BORING LOG

PROJECT: Suburban Pipeline Project - Phase II Manatee County, Florida Project No.: DES 096393	**CLIENT:** Manatee County **WATER TABLE:** 5.8'	**DATE:** 11/17/09
TECHNICIAN: M.M.	**DATE:** 11/17/09	**COMPLETION DEPTH:** 8.0'
LOCATION: See Plate I-D	**TEST NUMBER:** HA2-8	

ELEV. (FT)	DESCRIPTION	DEPTH (FT)	SYMBOL	REMARKS
	Brown Fine SAND with roots (SP)	0		
	Grayish-brown Fine SAND (SP)	2		
	Brown Fine SAND (SP)			
	Mottled gray and brown Fine SAND (SP)	4		
	Brown Fine SAND (SP)	6		
		8		
		10		
		12		
		14		

DRIGGERS ENGINEERING SERVICES INCORPORATED

HAND AUGER BORING LOG

PROJECT: Suburban Pipeline Project - Phase II Manatee County, Florida Project No.: DES 096393	**CLIENT:** Manatee County **WATER TABLE:** 7.1' **DATE:** 11/17/09
TECHNICIAN: M.M.	**DATE:** 11/17/09 **COMPLETION DEPTH:** 8.0'
LOCATION: See Plate I-D	**TEST NUMBER:** HA2-9

ELEV. (FT)	DESCRIPTION	DEPTH (FT)	SYMBOL	REMARKS
	Brown Fine SAND (SP)	0		
	Brownish-gray Fine SAND (SP)	2		
	Light gray Fine SAND (SP)			
	Very dark brown organic Fine SAND with trace of roots (SP-SM/Pt)	4		
	Dark reddish-brown Fine SAND (SP)	6		
	Very dark brown slightly organic Fine SAND (SP)	8		
		10		
		12		
		14		

DRIGGERS ENGINEERING SERVICES INCORPORATED

HAND AUGER BORING LOG

PROJECT: Suburban Pipeline Project - Phase II Manatee County, Florida Project No.: DES 096393		**CLIENT:** Manatee County	
		WATER TABLE: 7.7'	**DATE:** 11/17/09
TECHNICIAN: J.R.		**DATE:** 11/17/09	**COMPLETION DEPTH:** 8.0'
LOCATION: See Plate I-F		**TEST NUMBER:** HA2-10	

ELEV. (FT)	DESCRIPTION	DEPTH (FT)	SYMBOL	REMARKS
	Dark gray Fine SAND with some roots (SP)	0		
	Gray Fine SAND (SP)	2		
	Very dark brown slightly organic Fine SAND (SP)	4		
	Dark reddish-brown Fine SAND (SP)	6		
	Dark brown Fine SAND (SP)			
	Reddish-brown Fine SAND (SP)	8		
		10		
		12		
		14		

DRIGGERS ENGINEERING SERVICES INCORPORATED

HAND AUGER BORING LOG

PROJECT: Suburban Pipeline Project - Phase II Manatee County, Florida Project No.: DES 096393		**CLIENT:** Manatee County	
		WATER TABLE: 5.3'	**DATE:** 11/17/09
TECHNICIAN: J.R.	**DATE:** 11/17/09		**COMPLETION DEPTH:** 8.0'
LOCATION: See Plate I-F		**TEST NUMBER:** HA2-11	

ELEV. (FT)	DESCRIPTION	DEPTH (FT)	SYMBOL	REMARKS
	Dark gray Fine SAND with some roots (SP)	0		
	Light brown Fine SAND (SP)	2		
	Tan Fine SAND (SP)			
	Dark brown slightly silty Fine SAND with finely divided organic material (SP-SM)	4		
	Brown Fine SAND (SP)	6		
	Light brown Fine SAND (SP)	8		
		10		
		12		
		14		

DRIGGERS ENGINEERING SERVICES INCORPORATED

HAND AUGER BORING LOG

PROJECT: Suburban Pipeline Project - Phase II Manatee County, Florida Project No.: DES 096393		**CLIENT:** Manatee County	
		WATER TABLE: 5.5'	**DATE:** 11/17/09
TECHNICIAN: J.R.		**DATE:** 11/17/09	**COMPLETION DEPTH:** 8.0'
LOCATION: See Plate I-E		**TEST NUMBER:** HA2-12	

ELEV. (FT)	DESCRIPTION	DEPTH (FT)	SYMBOL	REMARKS
	Mottled gray and brown Fine SAND with trace of roots (SP)	0		
	Tan Fine SAND (SP)	2		
	Grayish-brown Fine SAND (SP)	4		
	Dark grayish-brown Fine SAND (SP)	6		
	Brown Fine SAND (SP)	8		
		10		
		12		
		14		

DRIGGERS ENGINEERING SERVICES INCORPORATED

HAND AUGER BORING LOG

PROJECT: Suburban Pipeline Project - Phase II Manatee County, Florida Project No.: DES 096393		**CLIENT:** Manatee County **WATER TABLE:** 6.0'	**DATE:** 11/17/09
TECHNICIAN: J.R.		**DATE:** 11/17/09	**COMPLETION DEPTH:** 8.0'
LOCATION: See Plate I-G		**TEST NUMBER:** HA2-13	

ELEV. (FT)	DESCRIPTION	DEPTH (FT)	SYMBOL	REMARKS
	Brown Fine SAND with trace of roots (SP)	0		
	Light grayish-brown Fine SAND (SP)	2		
	Light brown slightly silty Fine SAND with light orange veins (SP-SM)	4		
	Light brown Fine SAND (SP)	6		
		8		
		10		
		12		
		14		

DRIGGERS ENGINEERING SERVICES INCORPORATED

HAND AUGER BORING LOG

PROJECT: Suburban Pipeline Project - Phase II Manatee County, Florida Project No.: DES 096393		**CLIENT:** Manatee County	
		WATER TABLE: 6.6'	**DATE:** 11/17/09
TECHNICIAN: M.M.		**DATE:** 11/17/09	**COMPLETION DEPTH:** 8.0'
LOCATION: See Plate I-H		**TEST NUMBER:** HA2-14	

ELEV. (FT)	DESCRIPTION	DEPTH (FT)	SYMBOL	REMARKS
	Light brown Fine SAND with trace of roots (SP)	0		
	Tan Fine SAND with limestone fragments (SP)	2		
	Tan Fine SAND (SP)			
	Light brown slightly silty Fine SAND (SP-SM)			
	Light grayish-brown Fine SAND (SP)	4		
	Tan Fine SAND (SP)	6		
		8		
		10		
		12		
		14		

DRIGGERS ENGINEERING SERVICES INCORPORATED

HAND AUGER BORING LOG

PROJECT: Suburban Pipeline Project - Phase II Manatee County, Florida Project No.: DES 096393		**CLIENT:** Manatee County	
		WATER TABLE: 7.8'	**DATE:** 11/17/09
TECHNICIAN: M.M.		**DATE:** 11/17/09	**COMPLETION DEPTH:** 8.0'
LOCATION: See Plate I-J		**TEST NUMBER:** HA2-15	

ELEV. (FT)	DESCRIPTION	DEPTH (FT)	SYMBOL	REMARKS
	Dark grayish-brown Fine SAND with roots (SP)	0		
	Light brown Fine SAND (SP)	2		
		4		
	Tan Fine SAND (SP)	6		
	Light grayish-brown slightly silty Fine SAND with shell fragments (SP-SM)	8		
		10		
		12		
		14		

DRIGGERS ENGINEERING SERVICES INCORPORATED

HAND AUGER BORING LOG

PROJECT: Suburban Pipeline Project - Phase II Manatee County, Florida Project No.: DES 096393		**CLIENT:** Manatee County	
		WATER TABLE: 7.4'	**DATE:** 11/17/09
TECHNICIAN: J.R.		**DATE:** 11/17/09	**COMPLETION DEPTH:** 8.0'
LOCATION: See Plate I-J		**TEST NUMBER:** HA2-16	

ELEV. (FT)	DESCRIPTION	DEPTH (FT)	SYMBOL	REMARKS
	Brownish-gray Fine SAND with some roots (SP)	0		
	Light brown Fine SAND (SP)	2		
	Light brown clayey Fine SAND with light orange veins (SC)			
	Light brown Fine SAND (SP)	4		
	Tan Fine SAND (SP)	6		
		8		
		10		
		12		
		14		

DRIGGERS ENGINEERING SERVICES INCORPORATED

HAND AUGER BORING LOG

PROJECT: Suburban Pipeline Project - Phase II Manatee County, Florida Project No.: DES 096393		**CLIENT:** Manatee County	
		WATER TABLE: 6.3'	**DATE:** 11/17/09
TECHNICIAN: J.R.		**DATE:** 11/17/09	**COMPLETION DEPTH:** 8.0'
LOCATION: See Plate I-I		**TEST NUMBER:** HA2-17	

ELEV. (FT)	DESCRIPTION	DEPTH (FT)	SYMBOL	REMARKS
	Dark brownish-gray Fine SAND with some roots (SP)	0		
	Light brown Fine SAND (SP)			
	Light brown Fine SAND with some shell fragments (SP)	2		
		4		
	Light brown Fine SAND with thin seams of dark brown Fine SAND (SP)	6		
	Light brown Fine SAND with abundant shell fragments (SP)			
	Light grayish-brown Fine SAND (SP)	8		
		10		
		12		
		14		

DRIGGERS ENGINEERING SERVICES INCORPORATED

HAND AUGER BORING LOG

PROJECT: Suburban Pipeline Project - Phase II Manatee County, Florida Project No.: DES 096393		**CLIENT:** Manatee County	
		WATER TABLE: 7.2'	**DATE:** 11/17/09
TECHNICIAN: M.M.		**DATE:** 11/17/09	**COMPLETION DEPTH:** 8.0'
LOCATION: See Plate I-K		**TEST NUMBER:** HA2-18	

ELEV. (FT)	DESCRIPTION	DEPTH (FT)	SYMBOL	REMARKS
	Grayish-brown Fine SAND with some roots (SP)	0		
	Light gray Fine SAND (SP)			
	Brown Fine SAND (SP)	2		
	Light brown Fine SAND (SP)			
	Light brown silty, slightly clayey Fine SAND with light orange veins (SM)	4		
	Light brown Fine SAND (SP)			
	Tan Fine SAND with abundant shell fragments (SP)	6		
	Light brownish-gray Fine SAND with shell fragments (SP)	8		
		10		
		12		
		14		

DRIGGERS ENGINEERING SERVICES INCORPORATED

HAND AUGER BORING LOG

PROJECT: Suburban Pipeline Project - Phase II Manatee County, Florida Project No.: DES 096393	**CLIENT:** Manatee County **WATER TABLE:** 7.5'	**DATE:** 11/17/09
TECHNICIAN: J.R.	**DATE:** 11/17/09	**COMPLETION DEPTH:** 8.0'
LOCATION: See Plate I-L	**TEST NUMBER:** HA2-19	

ELEV. (FT)	DESCRIPTION	DEPTH (FT)	SYMBOL	REMARKS
	Brownish-gray Fine SAND with trace of roots (SP)	0		
	Light grayish-brown Fine SAND (SP)	2		
	Light brown Fine SAND (SP)	4		
	Light tan Fine SAND (SP)	6		
	Grayish-brown Fine SAND (SP)	8		
		10		
		12		
		14		

DRIGGERS ENGINEERING SERVICES INCORPORATED

HAND AUGER BORING LOG

PROJECT: Suburban Pipeline Project - Phase II Manatee County, Florida Project No.: DES 096393	**CLIENT:** Manatee County **WATER TABLE:** See "Note" — **DATE:** 11/17/09
TECHNICIAN: M.M.	**DATE:** 11/17/09 — **COMPLETION DEPTH:** 8.0'
LOCATION: See Plate I-N	**TEST NUMBER:** HA2-20

ELEV. (FT)	DESCRIPTION	DEPTH (FT)	SYMBOL	REMARKS
	Grayish-brown Fine SAND with trace of roots (SP)	0		
	Mottled light brown and tan Fine SAND (SP)	2		
	Brown slightly silty Fine SAND (SP-SM)	4		
	Brown Fine SAND (SP)	6		
	Light brown Fine SAND (SP)			
	Tan Fine SAND with abundant shell fragments (SP)	8		Note: Water Table not encountered within depth of 8.0'.
		10		
		12		
		14		

DRIGGERS ENGINEERING SERVICES INCORPORATED

HAND AUGER BORING LOG

PROJECT: Suburban Pipeline Project - Phase II Manatee County, Florida Project No.: DES 096393		**CLIENT:** Manatee County **WATER TABLE:** 7.3'	**DATE:** 11/17/09
TECHNICIAN: J.R.		**DATE:** 11/17/09	**COMPLETION DEPTH:** 8.0'
LOCATION: See Plate I-N		**TEST NUMBER:** HA2-21	

ELEV. (FT)	DESCRIPTION	DEPTH (FT)	SYMBOL	REMARKS
	Grayish-brown Fine SAND with trace of roots (SP)	0		
		2		
	Brown silty, slightly clayey Fine SAND (SM)	4		
	Light brown Fine SAND (SP)			
	Tan Fine SAND (SP)	6		
		8		
		10		
		12		
		14		

DRIGGERS ENGINEERING SERVICES INCORPORATED

HAND AUGER BORING LOG

PROJECT: Suburban Pipeline Project - Phase II Manatee County, Florida Project No.: DES 096393		**CLIENT:** Manatee County	
		WATER TABLE: 6.9'	**DATE:** 11/17/09
TECHNICIAN: J.R.		**DATE:** 11/17/09	**COMPLETION DEPTH:** 8.0'
LOCATION: See Plate I-M		**TEST NUMBER:** HA2-22	

ELEV. (FT)	DESCRIPTION	DEPTH (FT)	SYMBOL	REMARKS
	Brownish-gray Fine SAND with trace of roots (SP)	0		
	Light brown Fine SAND (SP)	2		
	Light brownish-gray slightly clayey Fine SAND (SP-SM)			
	Tan Fine SAND (SP)	4		
	Tan Fine SAND with abundant shell fragments (SP)	6		
		8		
		10		
		12		
		14		

DRIGGERS ENGINEERING SERVICES INCORPORATED

HAND AUGER BORING LOG

PROJECT: Suburban Pipeline Project - Phase II Manatee County, Florida Project No.: DES 096393		**CLIENT:** Manatee County	
		WATER TABLE: 7.3'	**DATE:** 11/17/09
TECHNICIAN: M.M.		**DATE:** 11/17/09	**COMPLETION DEPTH:** 8.0'
LOCATION: See Plate I-O		**TEST NUMBER:** HA2-23	

ELEV. (FT)	DESCRIPTION	DEPTH (FT)	SYMBOL	REMARKS
	Brown Fine SAND with trace of roots (SP)	0		
	Mottled brown and gray Fine SAND with trace of cemented sand (SP)	2		
	Dark brown clayey Fine SAND (SC)	4		
	Light brownish-gray CLAY with seams of brown Fine SAND (CH/SP)			
	Light brownish-gray clayey Fine SAND with trace of roots (SC)	6		
	Light brown Fine SAND (SP)	8		
		10		
		12		
		14		

DRIGGERS ENGINEERING SERVICES INCORPORATED

HAND AUGER BORING LOG

PROJECT: Suburban Pipeline Project - Phase II Manatee County, Florida Project No.: DES 096393		**CLIENT:** Manatee County **WATER TABLE:** 7.4'	**DATE:** 11/17/09
TECHNICIAN: J.R.		**DATE:** 11/17/09	**COMPLETION DEPTH:** 8.0'
LOCATION: See Plate I-P		**TEST NUMBER:** HA2-24	

ELEV. (FT)	DESCRIPTION	DEPTH (FT)	SYMBOL	REMARKS
	Dark grayish-brown Fine SAND with some roots (SP)	0		
	Brown Fine SAND (SP)	2		
	Light brown and brown clayey Fine SAND (SC)			
	Tannish-brown slightly silty Fine SAND (SP-SM)	4		
	Brown and light brown Fine SAND (SP)	6		
	Tan Fine SAND (SP)	8		
		10		
		12		
		14		

DRIGGERS ENGINEERING SERVICES INCORPORATED

HAND AUGER BORING LOG

PROJECT: Suburban Pipeline Project - Phase II Manatee County, Florida Project No.: DES 096393		**CLIENT:** Manatee County	
		WATER TABLE: See "Note"	**DATE:** 11/17/09
TECHNICIAN: M.M.		**DATE:** 11/17/09	**COMPLETION DEPTH:** 8.0'
LOCATION: See Plate I-P		**TEST NUMBER:** HA2-25	

ELEV. (FT)	DESCRIPTION	DEPTH (FT)	SYMBOL	REMARKS
	Brownish-gray Fine SAND with trace of roots (SP)	0		
	Brownish-gray Fine SAND (SP)	2		
	Light gray Fine SAND (SP)	4		
	Dark reddish-brown Fine SAND (SP)			
	Dark brown Fine SAND (SP)	6		
		8		Note: Water Table not encountered within depth of 8.0'.
		10		
		12		
		14		

DRIGGERS ENGINEERING SERVICES INCORPORATED

HAND AUGER BORING LOG

PROJECT: Suburban Pipeline Project - Phase II Manatee County, Florida Project No.: DES 096393	**CLIENT:** Manatee County **WATER TABLE:** 7.9'	**DATE:** 11/30/09
TECHNICIAN: M.B.	**DATE:** 11/30/09	**COMPLETION DEPTH:** 8.0'
LOCATION: See Plate I-R	**TEST NUMBER:** HA2-26	

ELEV. (FT)	DESCRIPTION	DEPTH (FT)	SYMBOL	REMARKS
	Tan and light brown Fine SAND with trace of roots (SP)	0		
		2		
	Dark brown slightly silty Fine SAND (SP-SM)	4		
	Brown and light brown Fine SAND (SP)			
	Tan and light brown Fine SAND (SP)	6		
		8		
		10		
		12		
		14		

DRIGGERS ENGINEERING SERVICES INCORPORATED

HAND AUGER BORING LOG

PROJECT: Suburban Pipeline Project - Phase II Manatee County, Florida Project No.: DES 096393		**CLIENT:** Manatee County	
		WATER TABLE: 7.9'	**DATE:** 11/30/09
TECHNICIAN: M.B.		**DATE:** 11/30/09	**COMPLETION DEPTH:** 8.0'
LOCATION: See Plate I-Q		**TEST NUMBER:** HA2-27	

ELEV. (FT)	DESCRIPTION	DEPTH (FT)	SYMBOL	REMARKS
	Dark brown Fine SAND with roots and trace of finely divided organic material (SP)	0		
	Light grayish-brown Fine SAND with trace of roots (SP)	2		
	Tan silty Fine SAND with cemented sand fragments (SM)	4		
	Tan clayey Fine SAND (SC)			
	Tan Fine SAND with shell fragments (SP)	6		
	Tan Fine SAND with shell fragments and trace of cemented sand fragments (SP)	8		
	Light gray Fine SAND (SP)	10		
		12		
		14		

DRIGGERS ENGINEERING SERVICES INCORPORATED

HAND AUGER BORING LOG

PROJECT: Suburban Pipeline Project - Phase II Manatee County, Florida Project No.: DES 096393	**CLIENT:** Manatee County **WATER TABLE:** 6.9'	**DATE:** 11/30/09
TECHNICIAN: M.B.	**DATE:** 11/30/09	**COMPLETION DEPTH:** 8.0'
LOCATION: See Plate I-S	**TEST NUMBER:** HA2-28	

ELEV. (FT)	DESCRIPTION	DEPTH (FT)	SYMBOL	REMARKS
	Gray Fine SAND with roots (SP)	0		
	Light gray Fine SAND (SP)			
	Brown Fine SAND (SP)			
	Brown and light brown silty, slightly clayey Fine SAND (SM)	2		
	Light brown slightly silty, slightly clayey Fine SAND (SP-SM)			
	Light brown Fine SAND with shell fragments (SP)	4		
	Tan and light brown Fine SAND (SP)			
	Light tan and light brown Fine SAND with trace of shell fragments (SP)	6		
	Light brown Fine SAND with shell fragments (SP)			
		8		
		10		
		12		
		14		

DRIGGERS ENGINEERING SERVICES INCORPORATED

HAND AUGER BORING LOG

PROJECT: Suburban Pipeline Project - Phase II Manatee County, Florida Project No.: DES 096393		**CLIENT:** Manatee County	
		WATER TABLE: 6.8'	**DATE:** 11/30/09
TECHNICIAN: M.B.		**DATE:** 11/30/09	**COMPLETION DEPTH:** 8.0'
LOCATION: See Plate I-T		**TEST NUMBER:** HA2-29	

ELEV. (FT)	DESCRIPTION	DEPTH (FT)	SYMBOL	REMARKS
	Dark brown and light gray Fine SAND (SP)	0		
	Light tan Fine SAND (SP)			
	Brown silty, slightly clayey Fine SAND (SM)	2		
	Light brown Fine SAND (SP)			
	Tan Fine SAND with shell fragments (SP)	4		
	Light gray Fine SAND with trace of shell fragments (SP)	6		
	Gray Fine SAND with shell fragments (SP)	8		
		10		
		12		
		14		

DRIGGERS ENGINEERING SERVICES INCORPORATED

HAND AUGER BORING LOG

PROJECT: Suburban Pipeline Project - Phase II Manatee County, Florida Project No.: DES 096393		**CLIENT:** Manatee County	
		WATER TABLE: 6.3'	**DATE:** 11/30/09
TECHNICIAN: S.F.		**DATE:** 11/30/09	**COMPLETION DEPTH:** 8.0'
LOCATION: See Plate I-AA		**TEST NUMBER:** HA2-30	

ELEV. (FT)	DESCRIPTION	DEPTH (FT)	SYMBOL	REMARKS
	Dark gray and brown Fine SAND with roots (SP)	0		
	Gray and tan slightly silty, slightly clayey Fine SAND (SP-SM)	2		
	Tan and light gray Fine SAND with brown veins (SP)	4		
		6		
		8		
		10		
		12		
		14		

DRIGGERS ENGINEERING SERVICES INCORPORATED

HAND AUGER BORING LOG

PROJECT: Suburban Pipeline Project - Phase II Manatee County, Florida Project No.: DES 096393		**CLIENT:** Manatee County	
		WATER TABLE: 5.3'	**DATE:** 11/30/09
TECHNICIAN: S.F.		**DATE:** 11/30/09	**COMPLETION DEPTH:** 8.0'
LOCATION: See Plate I-T		**TEST NUMBER:** HA2-31	

ELEV. (FT)	DESCRIPTION	DEPTH (FT)	SYMBOL	REMARKS
	Dark brown and gray slightly silty Fine SAND with roots (SP-SM)	0		
	Brown slightly silty Fine SAND with rock and shell fragments (SP-SM)			
	Orangish-brown Fine SAND with trace of shell fragments (SP)			
	Light tan Fine SAND (SP)	2		
	Brown silty, slightly clayey Fine SAND (SM)	4		
	Tan Fine SAND with trace of shell fragments (SP)			
		6		
		8		
		10		
		12		
		14		

DRIGGERS ENGINEERING SERVICES INCORPORATED

HAND AUGER BORING LOG

PROJECT: Suburban Pipeline Project - Phase II Manatee County, Florida Project No.: DES 096393		**CLIENT:** Manatee County	
		WATER TABLE: 6.0'	**DATE:** 11/30/09
TECHNICIAN: S.F.		**DATE:** 11/30/09	**COMPLETION DEPTH:** 8.0'
LOCATION: See Plate I-S		**TEST NUMBER:** HA2-32	

ELEV. (FT)	DESCRIPTION	DEPTH (FT)	SYMBOL	REMARKS
	Dark gray slightly organic Fine SAND with roots (SP)	0		
	Gray Fine SAND (SP)			
	Dark brown slightly silty Fine SAND (SP-SM)			
	Brown Fine SAND (SP)	2		
		4		
	Dark brown slightly silty Fine SAND (SP-SM)			
	Gray and tan Fine SAND (SP)	6		
		8		
		10		
		12		
		14		

DRIGGERS ENGINEERING SERVICES INCORPORATED

HAND AUGER BORING LOG

PROJECT: Suburban Pipeline Project - Phase II Manatee County, Florida Project No.: DES 096393		**CLIENT:** Manatee County	
		WATER TABLE: 4.9'	**DATE:** 12/4/09
TECHNICIAN: J.D.		**DATE:** 12/4/09	**COMPLETION DEPTH:** 8.0'
LOCATION: See Plate I-U		**TEST NUMBER:** HA2-33	

ELEV. (FT)	DESCRIPTION	DEPTH (FT)	SYMBOL	REMARKS
	Dark brown Fine SAND with trace of roots (SP)	0		
	Light brown Fine SAND with shell (SP)			
	Gray Fine SAND (SP)			
	Dark brown Fine SAND with finely divided organic material (SP)	2		
	Brown slightly silty Fine SAND (SP-SM)			
	Light brown Fine SAND (SP)	4		
	Brown Fine SAND (SP)			
		6		
	Very light grayish-brown Fine SAND (SP)			
		8		
		10		
		12		
		14		

DRIGGERS ENGINEERING SERVICES INCORPORATED

HAND AUGER BORING LOG

PROJECT: Suburban Pipeline Project - Phase II Manatee County, Florida Project No.: DES 096393		**CLIENT:** Manatee County	
		WATER TABLE: 5.9'	**DATE:** 12/4/09
TECHNICIAN: J.D.		**DATE:** 12/4/09	**COMPLETION DEPTH:** 8.0'
LOCATION: See Plate I-U		**TEST NUMBER:** HA2-34	

ELEV. (FT)	DESCRIPTION	DEPTH (FT)	SYMBOL	REMARKS
	Grayish-brown Fine SAND with roots (SP)	0		
	Gray Fine SAND (SP)			
	Light gray Fine SAND (SP)	2		
	Dark brown Fine SAND with finely divided organic material (SP)			
	Dark reddish-brown Fine SAND (SP)	4		
		6		
	Dark brown slightly silty Fine SAND (SP-SM)	8		
		10		
		12		
		14		

DRIGGERS ENGINEERING SERVICES INCORPORATED

HAND AUGER BORING LOG

PROJECT: Suburban Pipeline Project - Phase II Manatee County, Florida Project No.: DES 096393		**CLIENT:** Manatee County	
		WATER TABLE: 7.3'	**DATE:** 12/4/09
TECHNICIAN: J.D.		**DATE:** 12/4/09	**COMPLETION DEPTH:** 8.0'
LOCATION: See Plate I-AA		**TEST NUMBER:** HA2-35	

ELEV. (FT)	DESCRIPTION	DEPTH (FT)	SYMBOL	REMARKS
	Dark grayish-brown slightly silty Fine SAND with trace of roots and gravel (SP-SM)	0		
	Gray Fine SAND with trace of roots (SP)	2		
	Dark brown Fine SAND with finely divided organic material (SP)	4		
	Reddish-brown Fine SAND (SP)	6		
	Light brown Fine SAND (SP)	8		
		10		
		12		
		14		

DRIGGERS ENGINEERING SERVICES INCORPORATED

HAND AUGER BORING LOG

PROJECT: Suburban Pipeline Project - Phase II Manatee County, Florida Project No.: DES 096393		**CLIENT:** Manatee County	
		WATER TABLE: 6.9'	**DATE:** 12/4/09
TECHNICIAN: J.D.		**DATE:** 12/4/09	**COMPLETION DEPTH:** 8.0'
LOCATION: See Plate I-AA		**TEST NUMBER:** HA2-36	

ELEV. (FT)	DESCRIPTION	DEPTH (FT)	SYMBOL	REMARKS
	Dark brown Fine SAND with roots (SP)	0		
	Gray Fine SAND (SP)			
	Dark brown Fine SAND with roots and finely divided organic material (SP)	2		
	Brown to light brown Fine SAND (SP)			
	Light brown Fine SAND (SP)	4		
	Brown Fine SAND (SP)	6		
		8		
		10		
		12		
		14		

DRIGGERS ENGINEERING SERVICES INCORPORATED

HAND AUGER BORING LOG

PROJECT: Suburban Pipeline Project - Phase II Manatee County, Florida Project No.: DES 096393		**CLIENT:** Manatee County	
		WATER TABLE: 5.9'	**DATE:** 12/4/09
TECHNICIAN: J.D.		**DATE:** 12/4/09	**COMPLETION DEPTH:** 8.0'
LOCATION: See Plate I-W		**TEST NUMBER:** HA2-37	

ELEV. (FT)	DESCRIPTION	DEPTH (FT)	SYMBOL	REMARKS
	Gray and brown Fine SAND with roots (SP)	0		
	Gray Fine SAND (SP)			
	Dark brown Fine SAND with finely divided organic material (SP)	2		
	Brown Fine SAND (SP)			
	Light brown Fine SAND (SP)	4		
		6		
	Very light grayish-brown Fine SAND (SP)	8		
		10		
		12		
		14		

DRIGGERS ENGINEERING SERVICES INCORPORATED

HAND AUGER BORING LOG

PROJECT: Suburban Pipeline Project - Phase II Manatee County, Florida Project No.: DES 096393		**CLIENT:** Manatee County	
		WATER TABLE: 4.0'	**DATE:** 12/4/09
TECHNICIAN: J.D.		**DATE:** 12/4/09	**COMPLETION DEPTH:** 8.0'
LOCATION: See Plate I-V		**TEST NUMBER:** HA2-38	

ELEV. (FT)	DESCRIPTION	DEPTH (FT)	SYMBOL	REMARKS
	Dark grayish-brown Fine SAND with roots (SP)	0		
	Gray Fine SAND (SP)			
	Dark brown Fine SAND with trace of finely divided organic material (SP)	2		
	Light brown Fine SAND with trace of roots (SP)			
		4		
	Orangish-brown slightly silty Fine SAND (SP-SM)			
		6		
	Very light grayish-brown Fine SAND (SP)			
		8		
		10		
		12		
		14		

DRIGGERS ENGINEERING SERVICES INCORPORATED

HAND AUGER BORING LOG

PROJECT: Suburban Pipeline Project - Phase II Manatee County, Florida Project No.: DES 096393		**CLIENT:** Manatee County	
		WATER TABLE: 3.5'	**DATE:** 12/4/09
TECHNICIAN: J.D.		**DATE:** 12/4/09	**COMPLETION DEPTH:** 8.0'
LOCATION: See Plate I-V		**TEST NUMBER:** HA2-39	

ELEV. (FT)	DESCRIPTION	DEPTH (FT)	SYMBOL	REMARKS
	Dark gray Fine SAND with roots (SP)	0		
	Grayish-brown Fine SAND (SP)			
	Brown Fine SAND (SP)	2		
	Light brown Fine SAND (SP)	4		
		6		
		8		
		10		
		12		
		14		

DRIGGERS ENGINEERING SERVICES INCORPORATED

HAND AUGER BORING LOG

PROJECT: Suburban Pipeline Project - Phase II Manatee County, Florida Project No.: DES 096393		**CLIENT:** Manatee County	
		WATER TABLE: 5.5'	**DATE:** 12/4/09
TECHNICIAN: J.D.		**DATE:** 12/4/09	**COMPLETION DEPTH:** 8.0'
LOCATION: See Plate I-W		**TEST NUMBER:** HA2-40	

ELEV. (FT)	DESCRIPTION	DEPTH (FT)	SYMBOL	REMARKS
	Dark gray Fine SAND with roots and finely divided organic material (SP)	0		
	Gray Fine SAND (SP)			
	Light gray Fine SAND (SP)			
	Dark brown slightly silty Fine SAND with finely divided organic material (SP-SM)	2		
	Brown Fine SAND (SP)	4		
	Light brown Fine SAND (SP)			
	Very light grayish-brown Fine SAND (SP)	6		
		8		
		10		
		12		
		14		

DRIGGERS ENGINEERING SERVICES INCORPORATED

HAND AUGER BORING LOG

PROJECT: Suburban Pipeline Project - Phase II Manatee County, Florida Project No.: DES 096393	**CLIENT:** Manatee County
	WATER TABLE: 3.3' / **DATE:** 12/4/09
TECHNICIAN: J.D.	**DATE:** 12/4/09 / **COMPLETION DEPTH:** 8.0'
LOCATION: See Plate I-BB	**TEST NUMBER:** HA2-41

ELEV. (FT)	DESCRIPTION	DEPTH (FT)	SYMBOL	REMARKS
	Grayish-brown Fine SAND with trace of roots (SP)	0		
	Light brown Fine SAND with shell (SP)			
	Gray Fine SAND (SP)			
	Brown Fine SAND (SP)	2		
	Orangish-brown clayey Fine SAND (SC)			
	Light brown slightly silty Fine SAND with shell (SP-SM)	4		
	Very light grayish-brown Fine SAND (SP)	6		
	Brown Fine SAND (SP)	8		
		10		
		12		
		14		

DRIGGERS ENGINEERING SERVICES INCORPORATED

HAND AUGER BORING LOG

PROJECT: Suburban Pipeline Project - Phase II Manatee County, Florida Project No.: DES 096393	**CLIENT:** Manatee County **WATER TABLE:** 3.9'	**DATE:** 12/4/09
TECHNICIAN: J.D.	**DATE:** 12/4/09	**COMPLETION DEPTH:** 8.0'
LOCATION: See Plate I-CC	**TEST NUMBER:** HA2-42	

ELEV. (FT)	DESCRIPTION	DEPTH (FT)	SYMBOL	REMARKS
	Dark gray slightly silty Fine SAND with trace of roots and gravel (SP-SM)	0		
	Grayish-brown Fine SAND with Crushed Limestone and pieces of asphalt (SP)			
	Gray Fine SAND (SP)	2		
	Dark brown slightly silty Fine SAND (SP-SM)			
	Orangish-brown clayey Fine SAND (SC)	4		
	Light tan cemented Fine SAND and shell (SP)			
	Light brown Fine SAND with shell (SP)	6		
	Light grayish-brown Fine SAND with trace of shell (SP)			
		8		
		10		
		12		
		14		

SUMMARY OF LABORATORY TEST RESULTS

SUMMARY OF LABORATORY TEST RESULTS

BORING NO.	DEPTH (ft)	DESCRIPTION	W %	Y_d (pcf)	G_s	ATTERBERG LIMITS			P.P. (tsf)	U.C.	CON	G.S.	ORG (%)	pH	Cl. (ppm)	SO_4 (ppm)	RES. (Ohm-cm)
						LL	PL	SL									
HA-2-2	3.0' - 4.3'	Brownish-gray slightly silty Fine SAND with shell and limestone fragments										*					
HA-2-4	3.9' - 6.2'	Grayish-brown silty, slightly clayey Fine SAND										*					
HA-2-5	2.0' - 4.5'	Brown Fine SAND										*		6.3	38.9	60	17,000
HA-2-7	1.8' - 3.3'	Very dark brown organic slightly silty Fine SAND											11.9				
HA-2-8	3.1' - 4.2'	Mottled grayish-brown Find SAND										*					
HA-2-9	4.5' - 5.7'	Very dark brown organic Fine SAND with trace roots											9.7				
HA-2-10	3.0' - 4.7'	Very dark brown slightly organic Find SAND											3.9				
HA-2-11	4.0' - 6.0'	Dark brown slightly silty Fine SAND with finely divided organic material										*	1.2				
HA-2-12	1.0' - 3.5'	Tan Fine SAND										*					
HA-2-14	1.0' - 2.5'	Tan Fine SAND with limestone fragments										*					
HA-2-16	3.0' - 4.0'	Light brown clayey Fine SAND with light orange veins	8.8			28	20					*					
HA-2-18	3.7' - 4.3'	Light brown silty, slightly clayey Fine SAND with light orange veins	7.6			NP	NP					*					
HA-2-20	4.0' - 5.2'	Brown slightly silty Fine SAND										*		6.5	51.6	78	3,400
HA-2-21	0.0' - 3.5'	Grayish-brown Fine SAND with trace roots										*					
HA-2-23	4.5' - 6.3'	Light brownish-gray clayey Fine SAND with trace roots	16.3			25	11					*					
HA-2-26	0.0' - 3.7'	Light tan and brown Fine SAND with trace roots										*					
HA-2-27	0.0' - 0.8'	Dark brown Fine SAND with trace finely divided organic material and roots											2.9				
HA-2-27	2.8' - 4.0'	Tan silty Fine SAND with cemented sand fragments										*					

W % = Water Content
Y_d (pcf) = Dry Density
G_S = Specific Gravity
LL = Liquid Limit
PL = Plastic Limit
SL = Shrinkage Limit
P.P. (tsf) = Pocket Penetrometer
U.C. = Unconfined Compression

Con. = Consolidation Test
G.S. (H) = Grainsize Analysis (Hydrometer)
ORG. (%) = Organic Content
Cl. (ppm) = Total Chloride
SO_4 (ppm) = Total Sulfate
RES. (ohm-cm) = Lab Resistivity
* = See Test Curves
** = Percent Passing No. 200 Sieve

CLIENT: Manatee County Government

PROJECT: Suburban Pipeline, Phase II
Manatee County, Florida

FILE: DES 096393

SUMMARY OF LABORATORY TEST RESULTS

BORING NO.	DEPTH (ft)	DESCRIPTION	W %	Y_d (pcf)	G_s	ATTERBERG LIMITS			P.P. (tsf)	U.C.	CON	G.S.	ORG (%)	pH	Cl. (ppm)	SO_4 (ppm)	RES. (Ohm-cm)
						LL	PL	SL									
HA-2-28	3.0' - 3.8'	Light brown slightly silty, slightly clayey Fine SAND										*		6.3	42.2	45	8,400
HA-2-30	4.0' - 8.0'	Tan and light gray Fine SAND with brown veins										*					
HA-2-31	1.0' - 3.5'	Light tan Fine SAND										*					
HA-2-33	2.5' - 4.5'	Light brown Fine SAND										*					
HA-2-35	2.4' - 3.0'	Dark brown Fine SAND with finely divided organic material										*					
HA-2-36	1.7' - 2.3'	Dark brown Fine SAND with roots and finely divided organic material											3.3				
HA-2-38	1.5' - 2.5'	Dark brown Fine SAND with trace finely divided organic material										*	1.7				
HA-2-39	3.0' - 4.8'	Light brown Fine SAND										*		6.0	63.1	54	27,500
HA-2-40	2.5' - 3.6'	Dark brown Fine SAND with finely divided organic material											2.1				
HA-2-41	2.8' - 4.0'	Orangish-brown clayey Fine SAND	27.7			37	18					*					

W % = Water Content
Y_d (pcf) = Dry Density
G_S = Specific Gravity
LL = Liquid Limit
PL = Plastic Limit
SL = Shrinkage Limit
P.P. (tsf) = Pocket Penetrometer
U.C. = Unconfined Compression

Con. = Consolidation Test
G.S. (H) = Grainsize Analysis (Hydrometer)
ORG. (%) = Organic Content
Cl. (ppm) = Total Chloride
SO_4 (ppm) = Total Sulfate
RES. (ohm-cm) = Lab Resistivity
* = See Test Curves
** = Percent Passing No. 200 Sieve

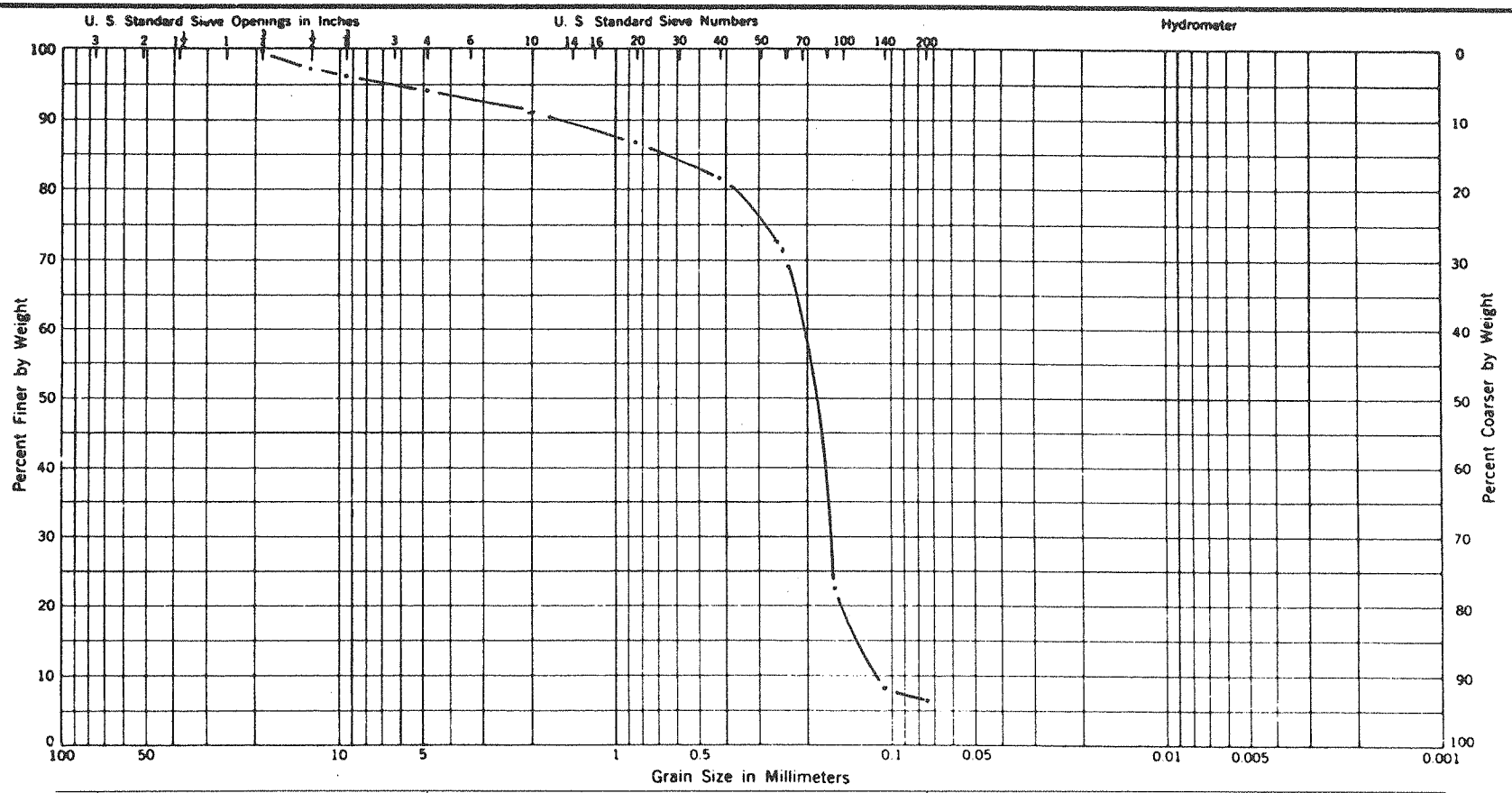
CLIENT: Manatee County Government

PROJECT: Suburban Pipeline, Phase II
Manatee County, Florida

FILE: DES 096393

GRAINSIZE ANALYSES

DRIGGERS ENGINEERING SERVICES, INC.



Number	Depth	Natural Moisture	L. L.	P. L.	P. I.	Classification
HA-2 -2	3.0'-4.3'					Brownish-gray slightly silty Fine SAND with shell and limestone
						fragments

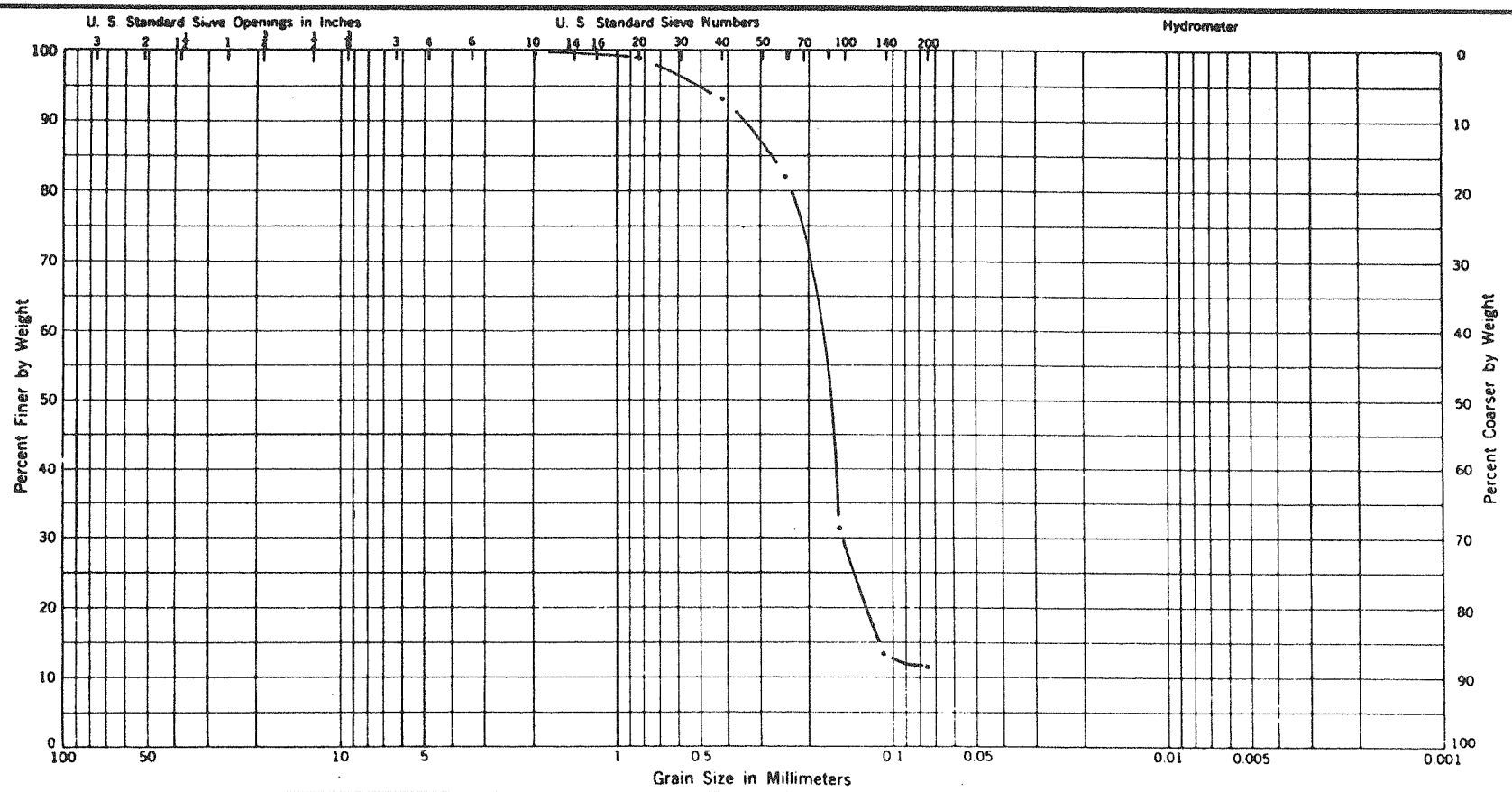
CLIENT: Manatee County Government

PROJECT: Suburban Pipeline, Phase II

Manatee County, Florida

FILE: DES 096393

DRIGGERS ENGINEERING SERVICES, INC.



Number	Depth	Natural Moisture	L. L.	P. L.	P. I.	Classification
HA-2 -4	3.9'-6.2'					Grayish-brown silty, slightly clayey Fine SAND

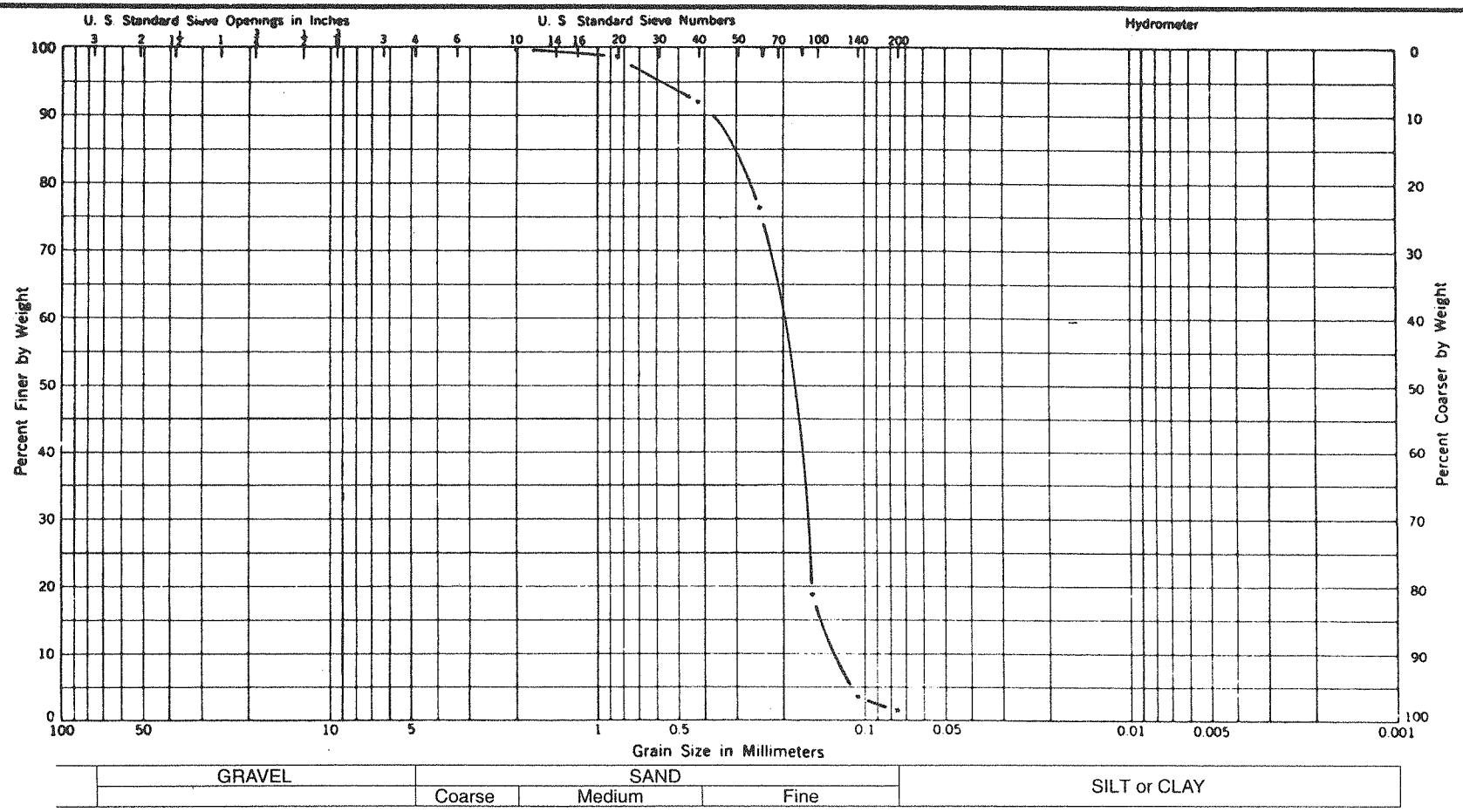
CLIENT: Manatee County Government

PROJECT: Suburban Pipeline, Phase II

Manatee County, Florida

FILE: DES 096393

DRIGGERS ENGINEERING SERVICES, INC.



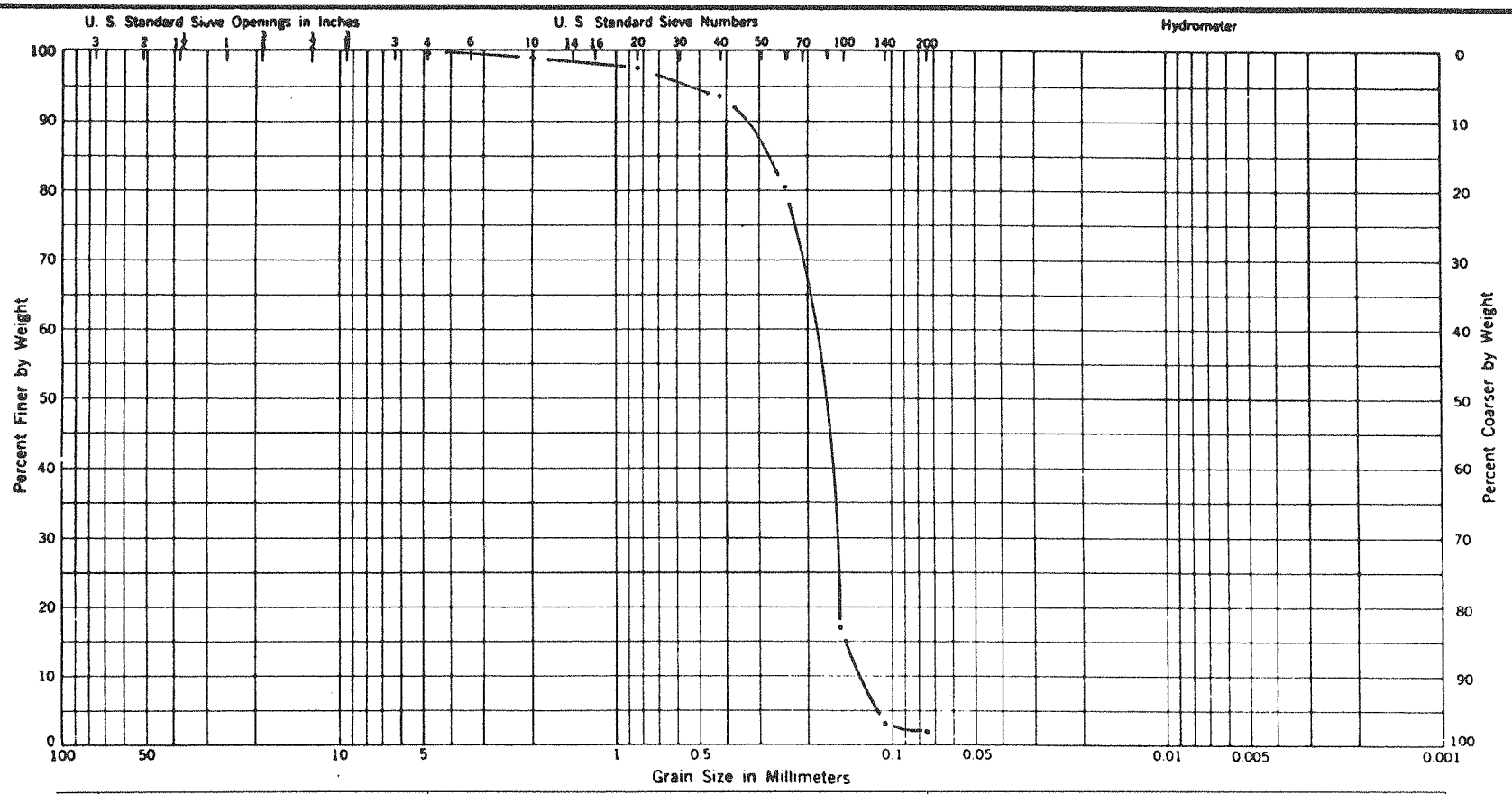
Number	Depth	Natural Moisture	L. L.	P. L.	P. I.	Classification
HA-2 -5	2.0'-4.5'					Brown Fine SAND

CLIENT: Manatee County Government

PROJECT: Suburban Pipeline, Phase II
Manatee County, Florida

FILE: DES 096393

DRIGGERS ENGINEERING SERVICES, INC.



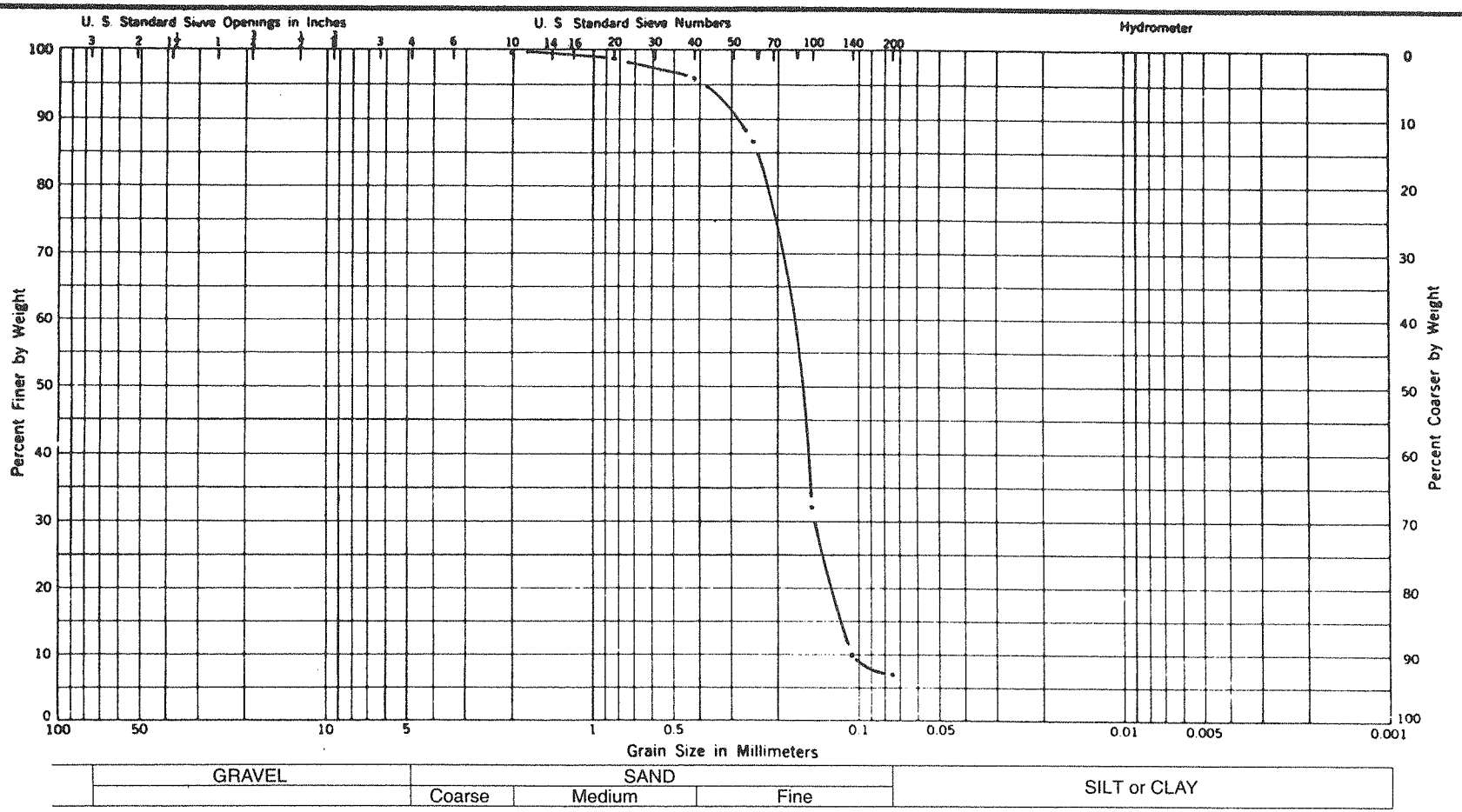
Number	Depth	Natural Moisture	L. L.	P. L.	P. I.	Classification
HA-2 -8	3.1'-4.2'					Mottled grayish-brown Fine SAND

CLIENT: Manatee County Government

PROJECT: Suburban Pipeline, Phase II
Manatee County, Florida

FILE: DES 096393

DRIGGERS ENGINEERING SERVICES, INC.



Number	Depth	Natural Moisture	L. L.	P. L.	P. I.	Classification
HA-2-11	4.0'-6.0'					Dark brown slightly silty Fine SAND with finely divided organic materials

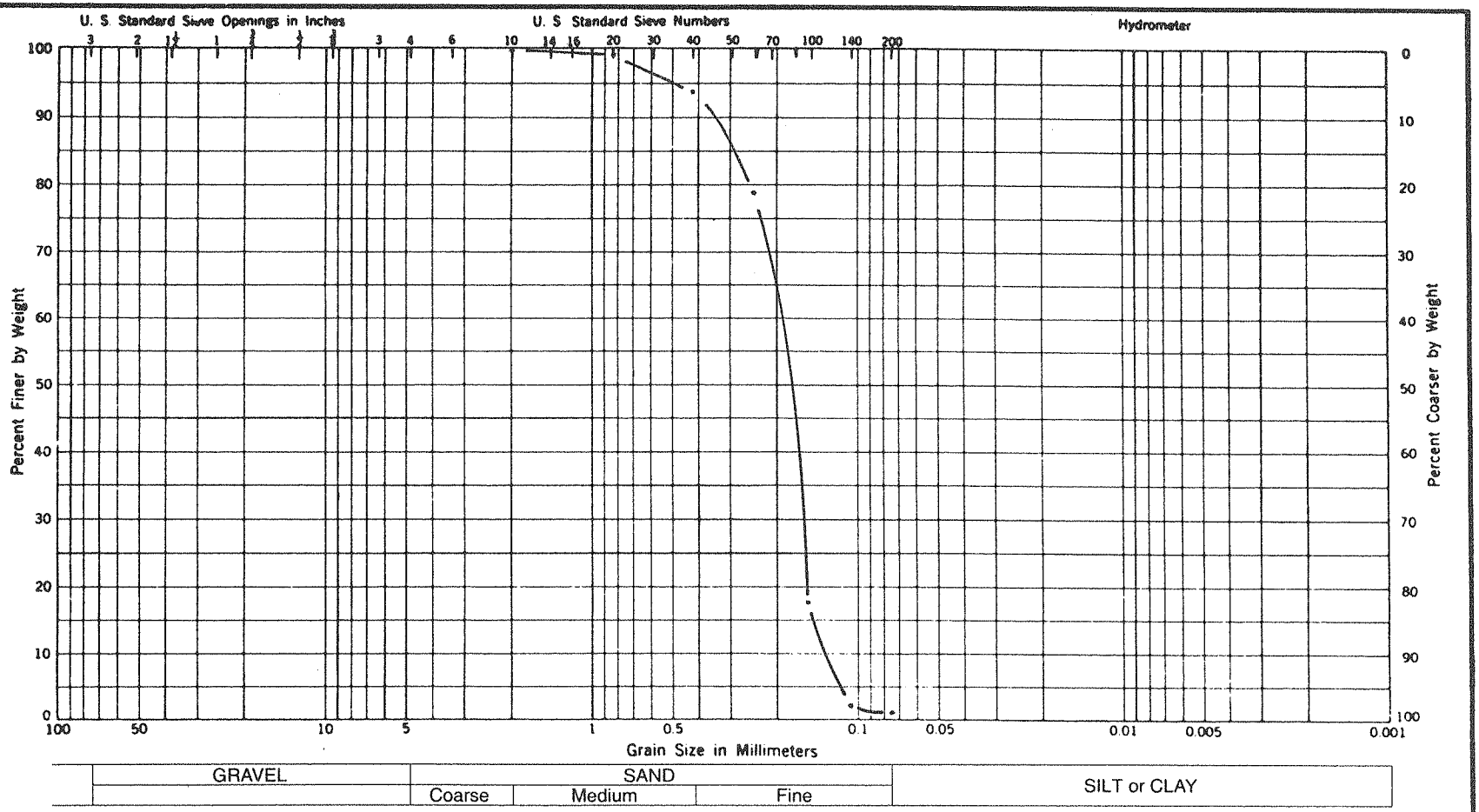
CLIENT: Manatee County Government

PROJECT: Suburban Pipeline, Phase II

Manatee County, Florida

FILE: DES 096393

DRIGGERS ENGINEERING SERVICES, INC.



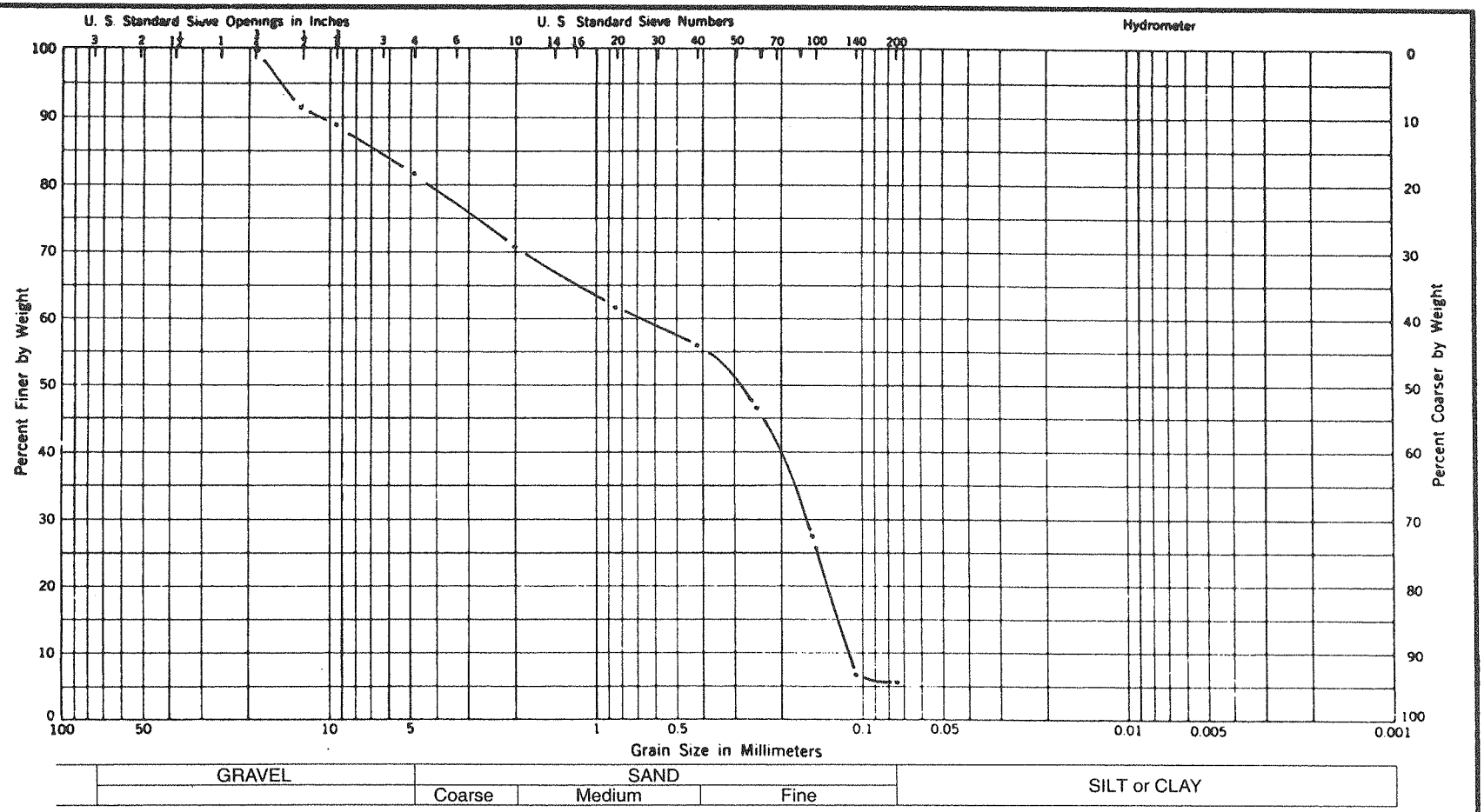
Number	Depth	Natural Moisture	L. L.	P. L.	P. I.	Classification
HA-2 -12	1.0'-3.5'					Tan Fine SAND

CLIENT: Manatee County Government

PROJECT: Suburban Pipeline, Phase II
Manatee County, Florida

FILE: DES 096393

DRIGGERS ENGINEERING SERVICES, INC.



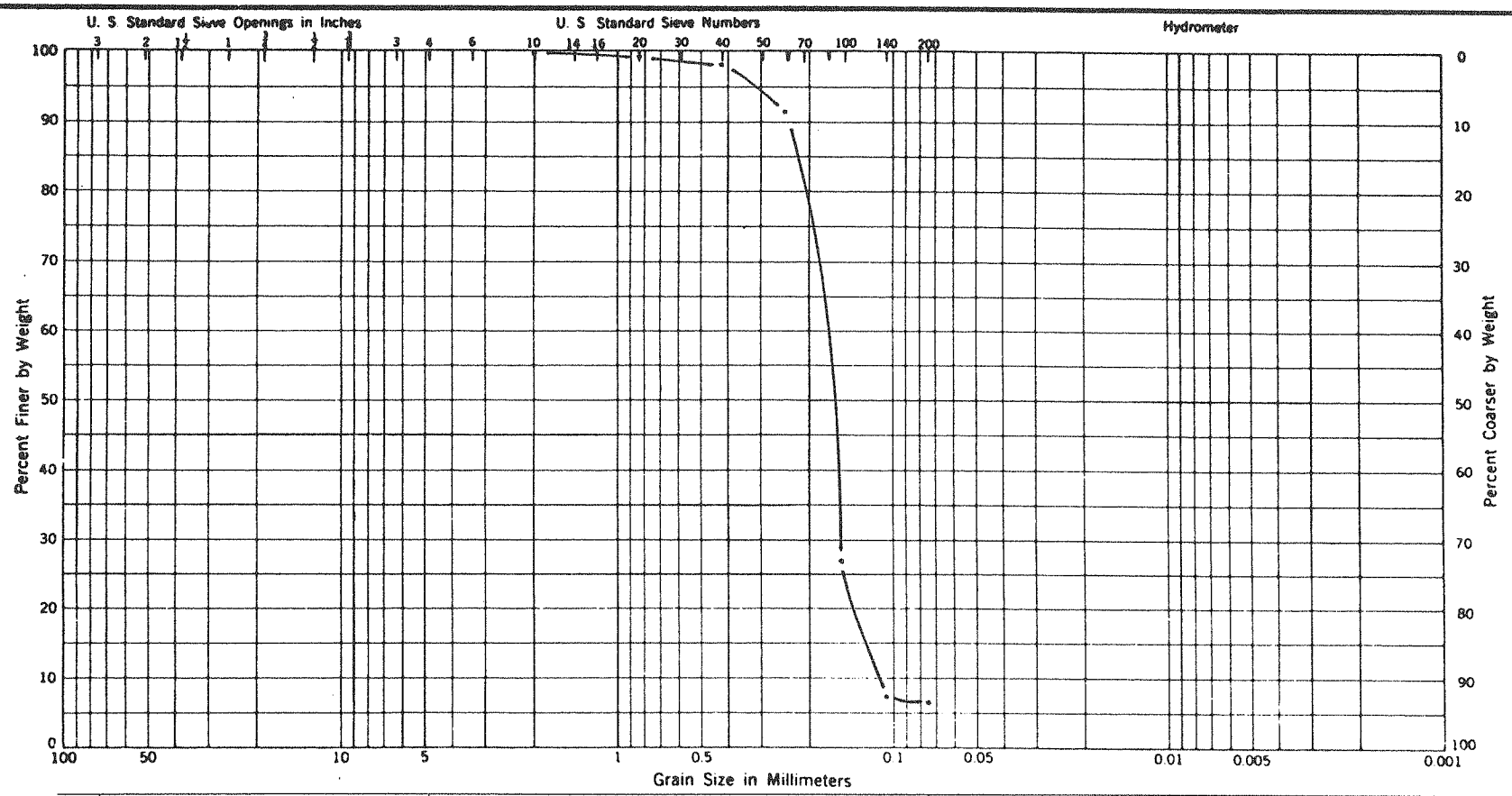
Number	Depth	Natural Moisture	L. L.	P. L.	P. I.	Classification
HA-2 -14	1.0'-2.5'					Tan Fine SAND with limestone fragments

CLIENT: Manatee County Government

PROJECT: Suburban Pipeline, Phase II
Manatee County, Florida

FILE: DES 096393

DRIGGERS ENGINEERING SERVICES, INC.



Number	Depth	Natural Moisture	L. L.	P. L.	P. I.	Classification
HA-2 -20	4.0'-5.2'					Brown slightly silty Fine SAND

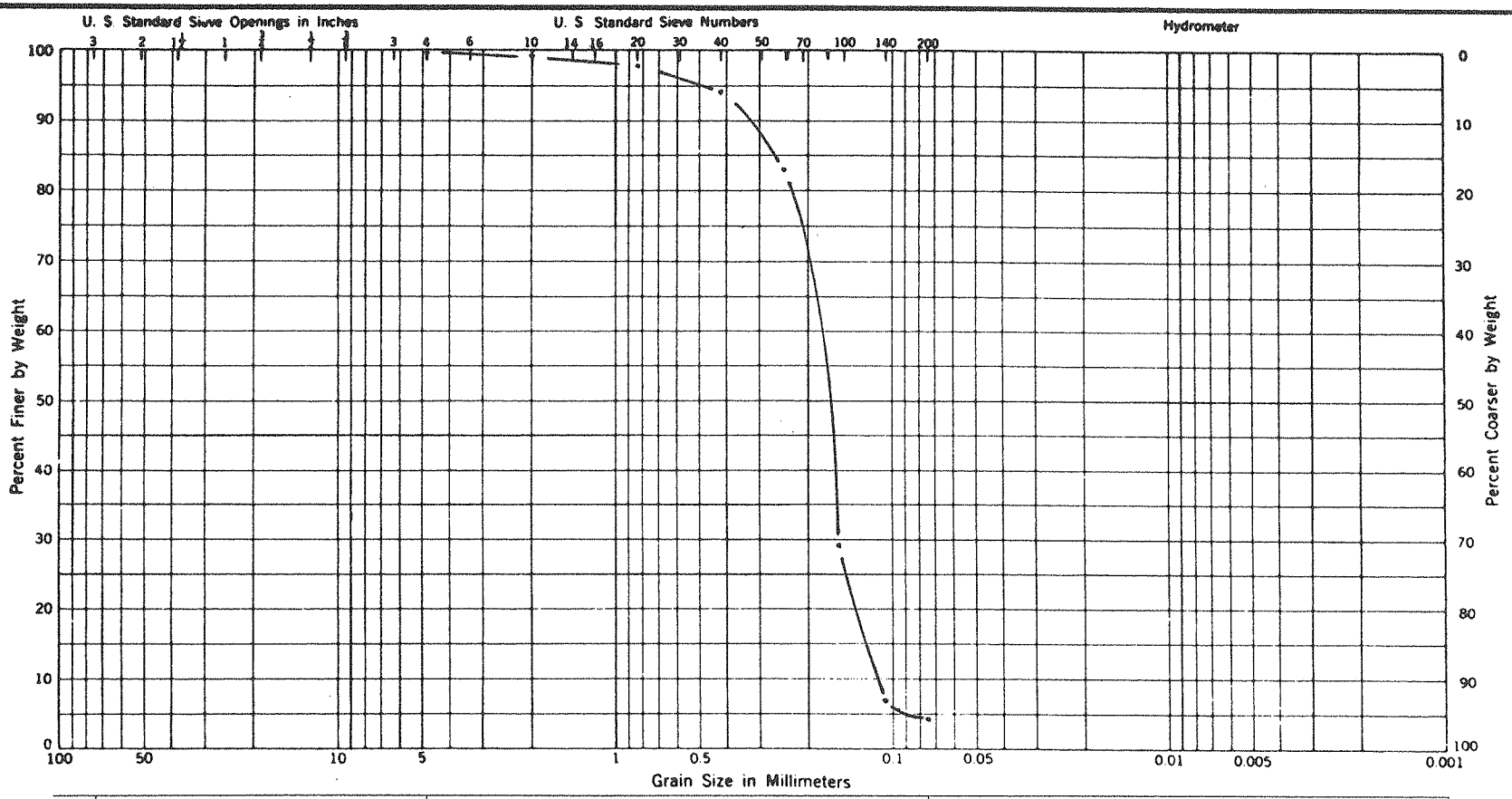
CLIENT: Manatee County Government

PROJECT: Suburban Pipeline, Phase II

Manatee County, Florida

FILE: DES 096393

DRIGGERS ENGINEERING SERVICES, INC.



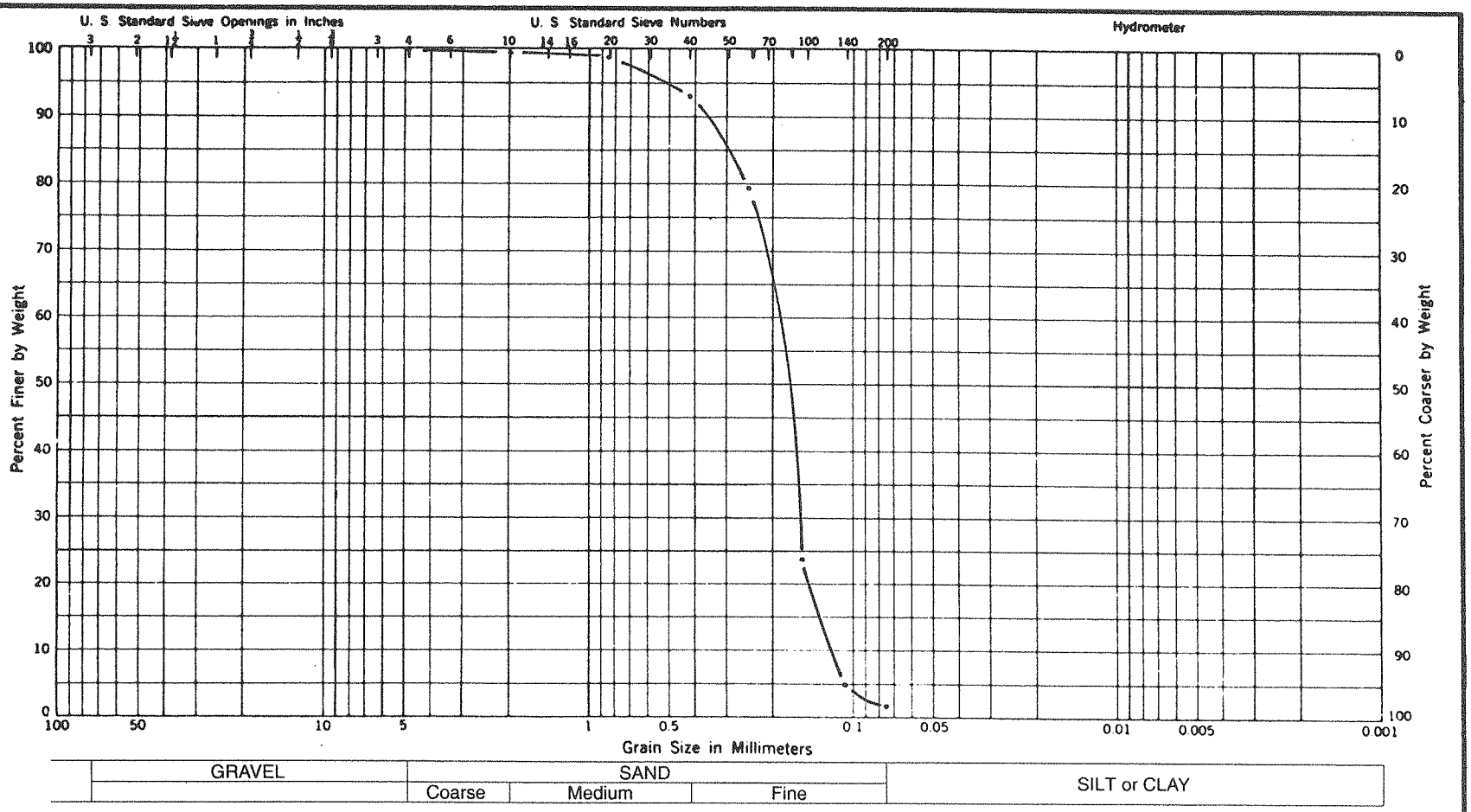
Number	Depth	Natural Moisture	L. L.	P. L.	P. I.	Classification
HA-2 -21	0.0'-3.5'					Grayish-brown Fine SAND with trace roots

CLIENT: Manatee County Government

PROJECT: Suburban Pipeline, Phase II
Manatee County, Florida

FILE: DES 096393

DRIGGERS ENGINEERING SERVICES, INC.



Number	Depth	Natural Moisture	L. L.	P. L.	P. I.	Classification
HA-2 -26	0.0'-3.7'					Light tan and brown Fine SAND with trace roots

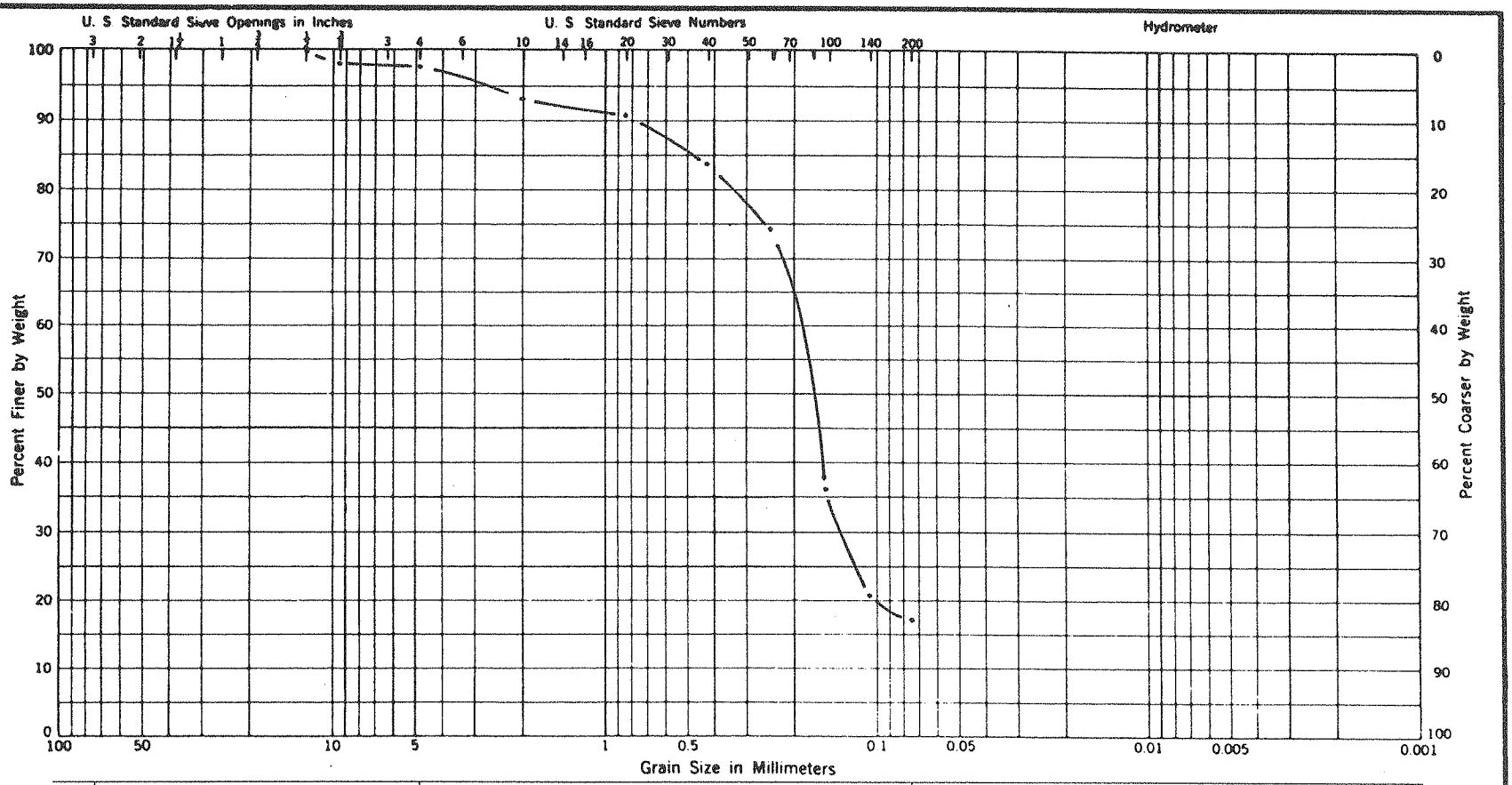
CLIENT: Manatee County Government

PROJECT: Suburban Pipeline, Phase II

Manatee County, Florida

FILE: DES 096393

DRIGGERS ENGINEERING SERVICES, INC.



Number	Depth	Natural Moisture	L. L.	P. L.	P. I.	Classification
HA-2 -27	2.8'-4.0'					Tan silty Fine SAND with cemented sand fragments

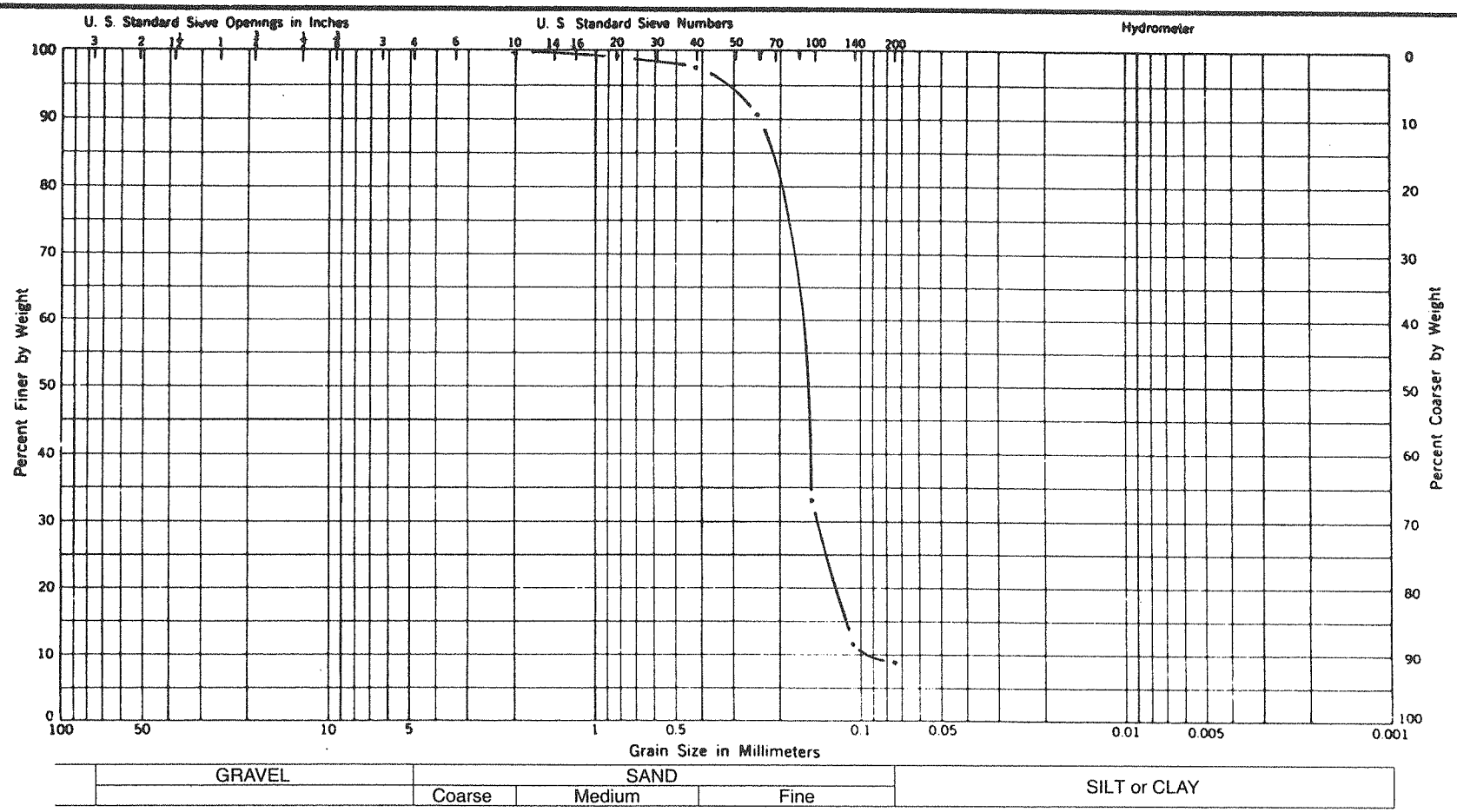
CLIENT: Manatee County Government

PROJECT: Suburban Pipeline, Phase II

Manatee County, Florida

FILE: DES 096393

DRIGGERS ENGINEERING SERVICES, INC.



Number	Depth	Natural Moisture	L. L.	P. L.	P. I.	Classification
HA-2 -28	3.0'-3.8'					Light brown slightly silty, slightly clayey Fine SAND

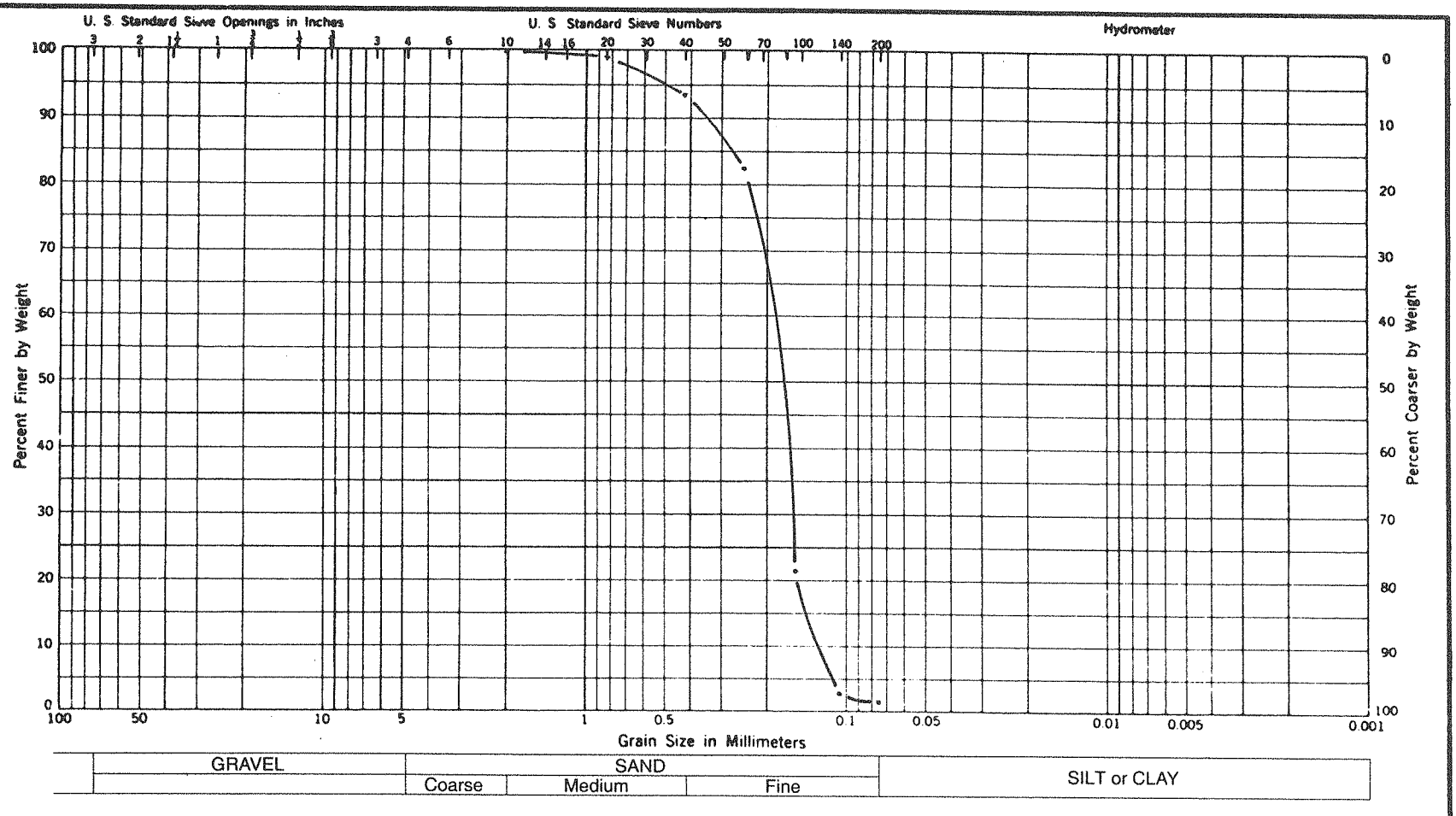
CLIENT: Manatee County Government

PROJECT: Suburban Pipeline, Phase II

Manatee County, Florida

FILE: DES 096393

DRIGGERS ENGINEERING SERVICES, INC.



Number	Depth	Natural Moisture	L. L.	P. L.	P. I.	Classification
HA-2-30	4.0'-8.0'					Tan and light gray Fine SAND with brown veins

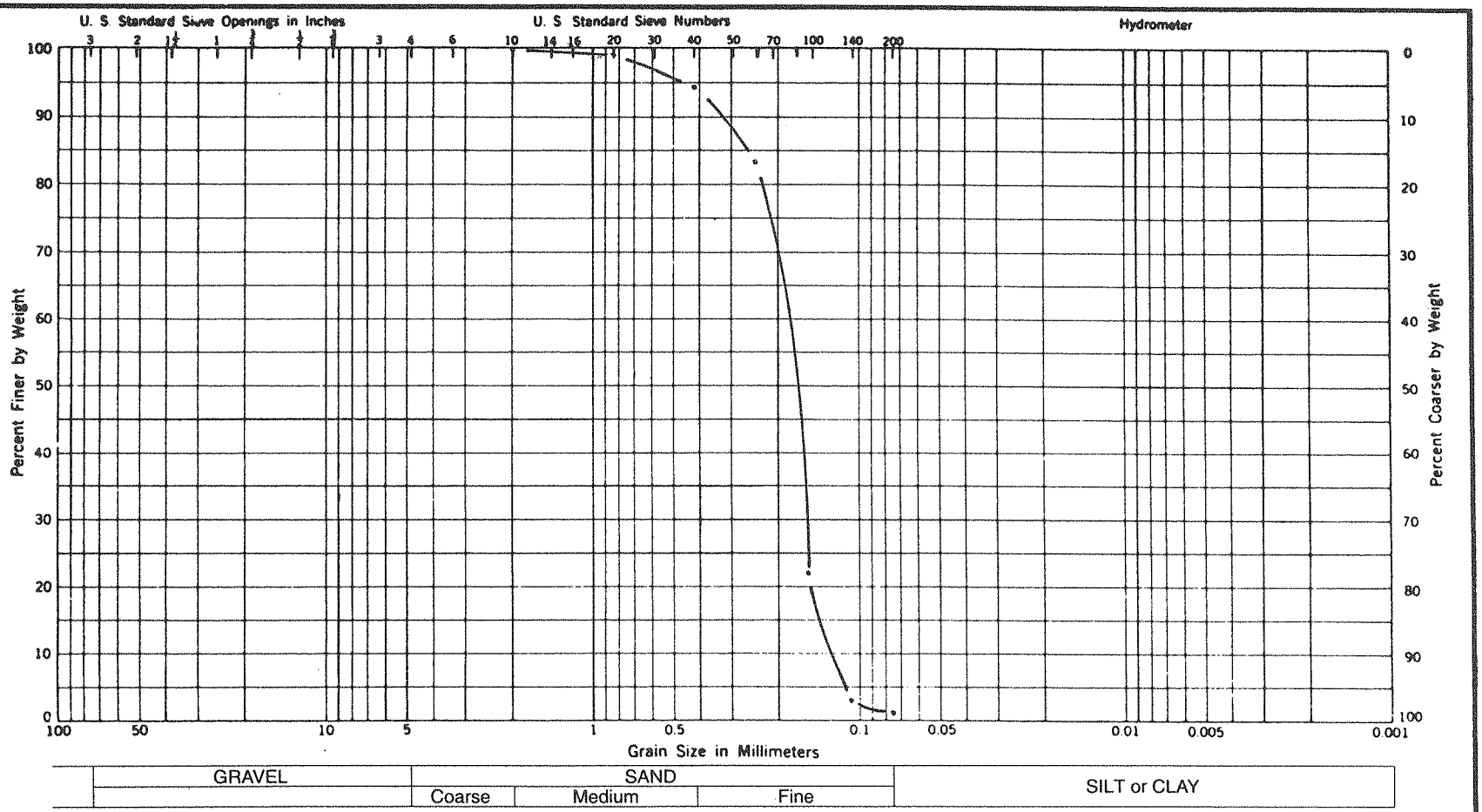
CLIENT: Manatee County Government

PROJECT: Suburban Pipeline, Phase II

Manatee County, Florida

FILE: DES 096393

DRIGGERS ENGINEERING SERVICES, INC.



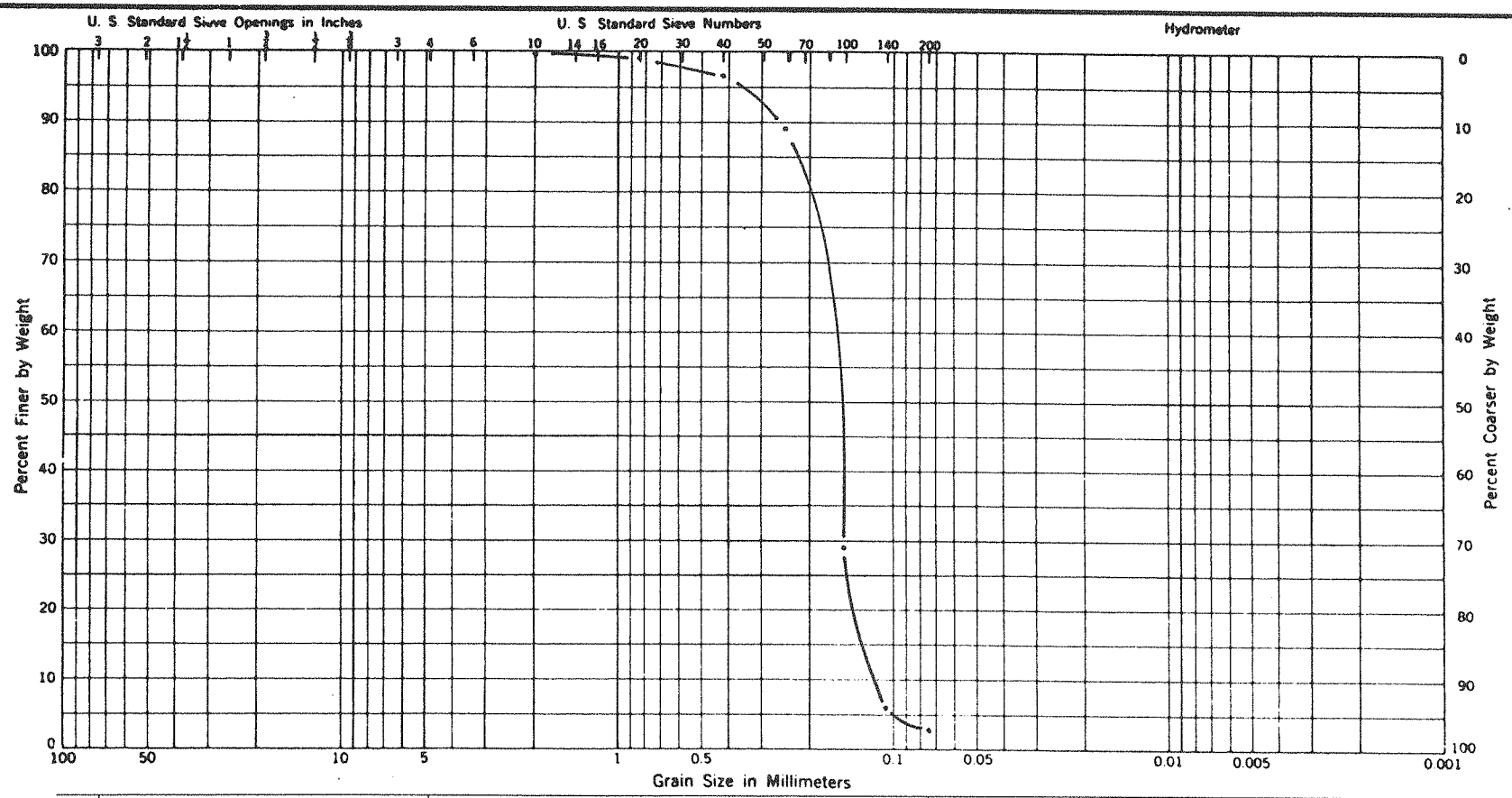
Number	Depth	Natural Moisture	L. L.	P. L.	P. I.	Classification
HA-2 -31	1.9'-3.5'					Light tan Fine SAND

CLIENT: Manatee County Government

PROJECT: Suburban Pipeline, Phase II
Manatee County, Florida

FILE: DES 096393

DRIGGERS ENGINEERING SERVICES, INC.



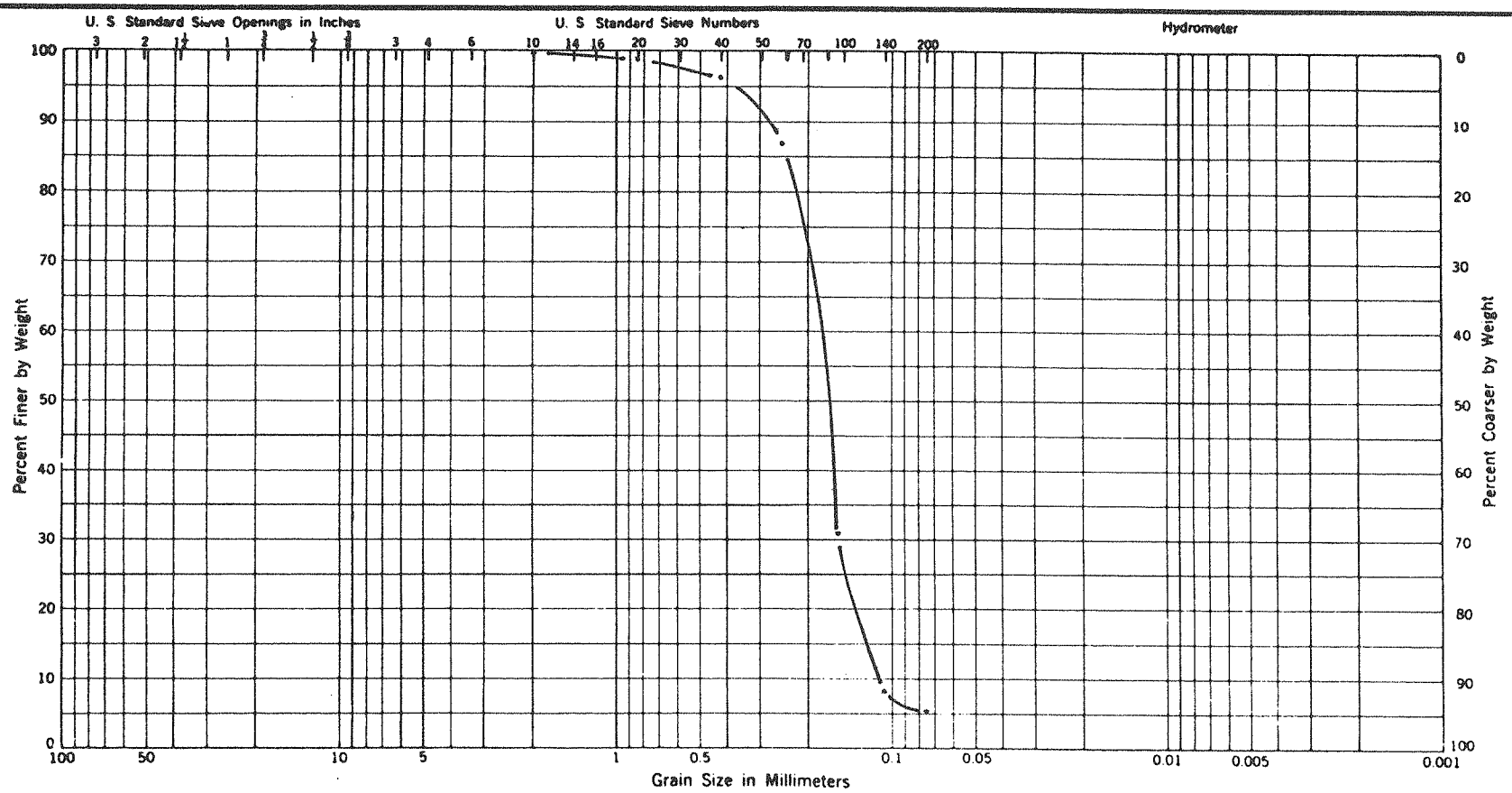
Number	Depth	Natural Moisture	L. L.	P. L.	P. I.	Classification
HA-2 -33	2.5'-4.5'					Light brown Fine SAND

CLIENT: Manatee County Government

PROJECT: Suburban Pipeline, Phase II
Manatee County, Florida

FILE: DES 096393

DRIGGERS ENGINEERING SERVICES, INC.



Number	Depth	Natural Moisture	L. L.	P. L.	P. I.	Classification
HA-2 -35	2.4'-3.0'					Dark brown Fine SAND with finely divided organic materials

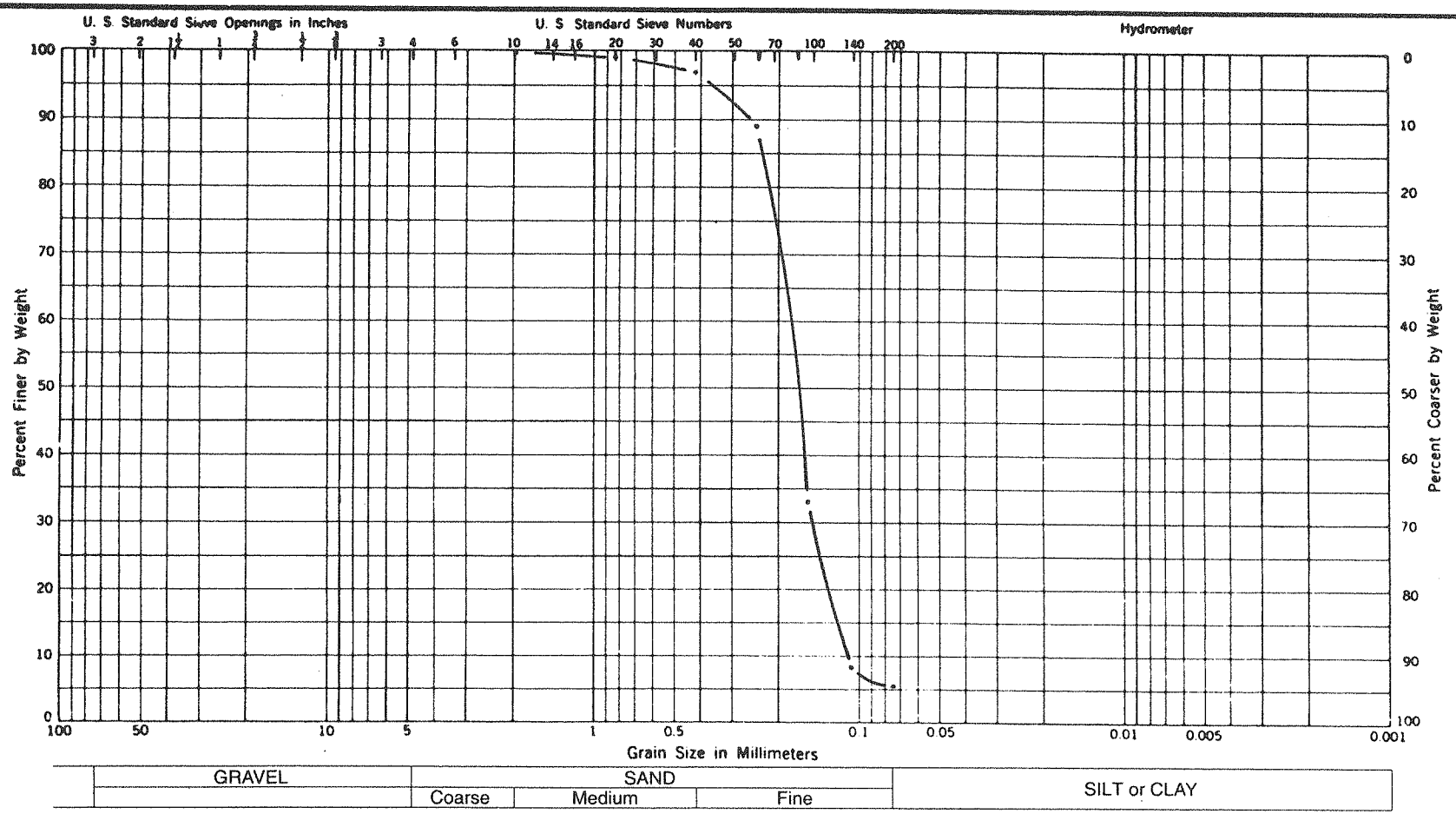
CLIENT: Manatee County Government

PROJECT: Suburban Pipeline, Phase II

Manatee County, Florida

FILE: DES 096393

DRIGGERS ENGINEERING SERVICES, INC.



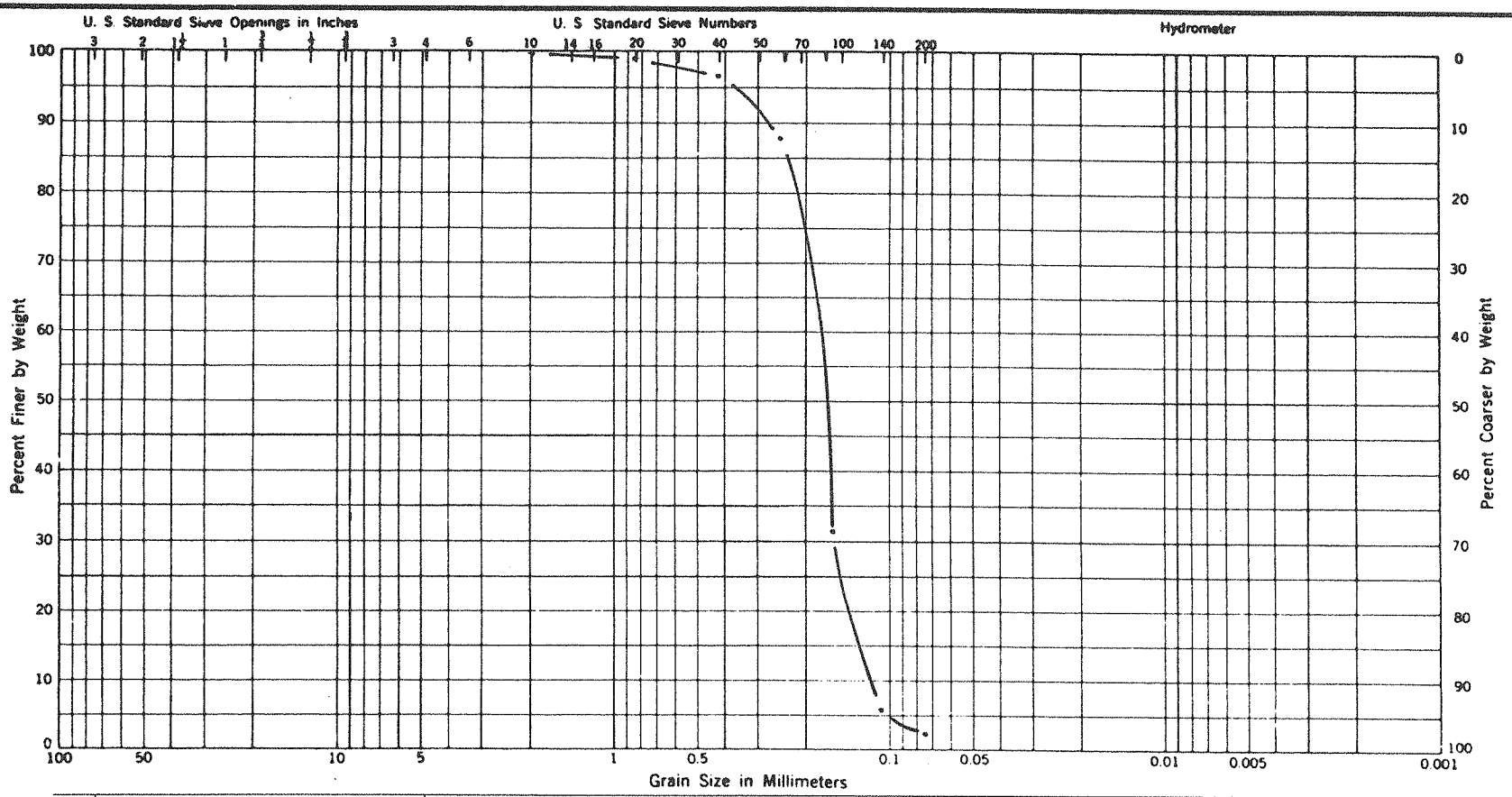
Number	Depth	Natural Moisture	L. L.	P. L.	P. I.	Classification
HA-2 -38	1.5'-2.5'					Dark brown Fine SAND with trace finely divided organic materials

CLIENT: Manatee County Government

PROJECT: Suburban Pipeline, Phase II
Manatee County, Florida

FILE: DES 096393

DRIGGERS ENGINEERING SERVICES, INC.



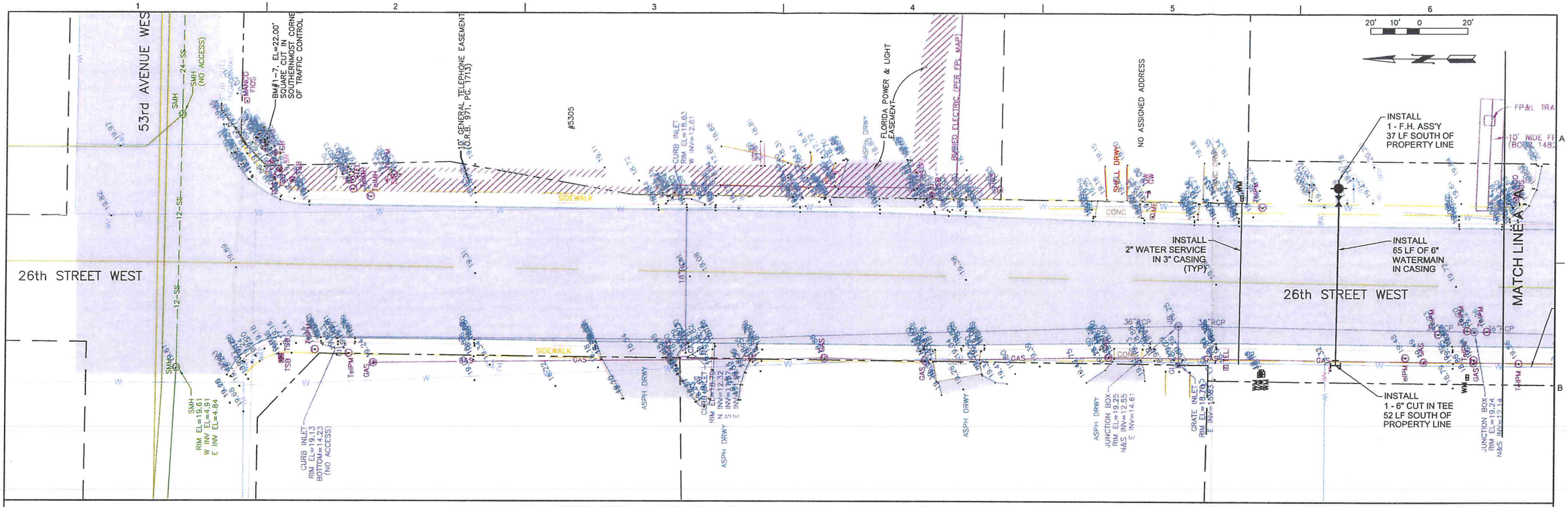
Number	Depth	Natural Moisture	L. L.	P. L.	P. I.	Classification
HA-2 -39	3.0'-4.8'					Light brown Fine SAND

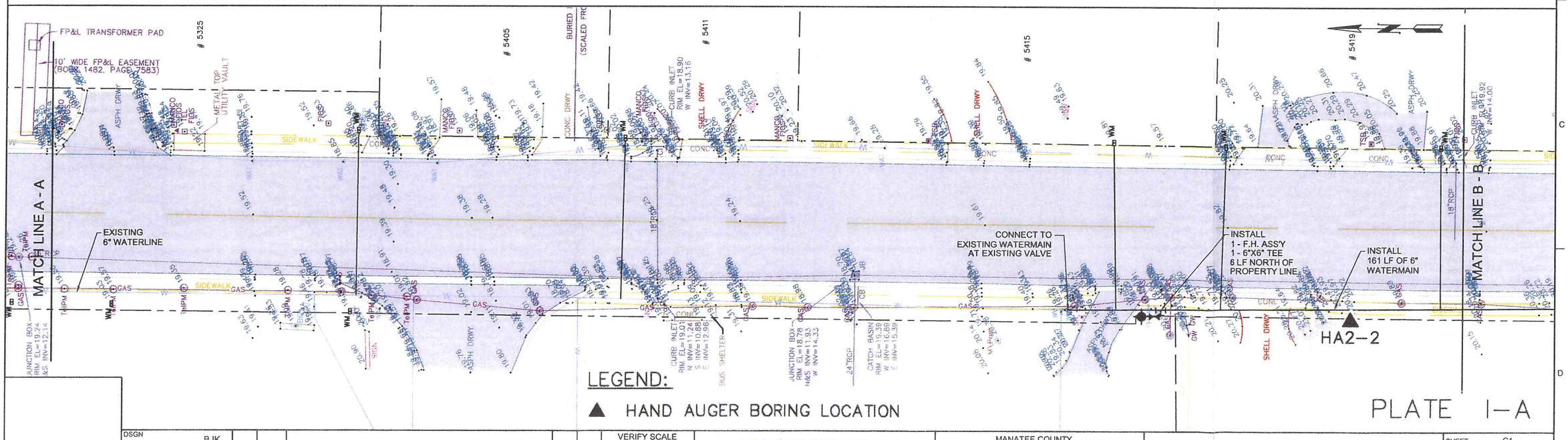
CLIENT: Manatee County Government

PROJECT: Suburban Pipeline, Phase II

Manatee County, Florida

FILE: DES 096393





LEGEND:

▲ HAND AUGER BORING LOCATION

PLATE 1-A

DSGN	BJK						
DR	BJK						
CHK	RAC						
APVD	RAC	NO.	DATE	REVISION	BY	APVD	

ROBERT A. CANNARELLA, P.E.
Fla. P.E No. 17367

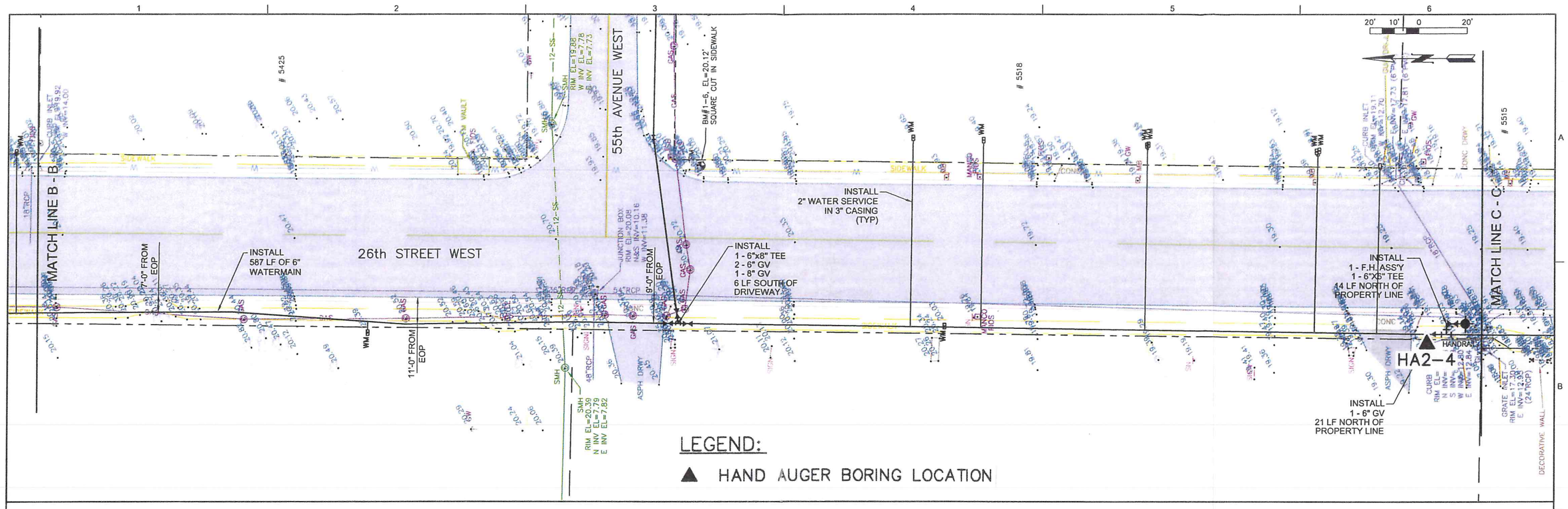
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

CH2MHILL
4350 WEST CYPRESS STREET SUITE 600
TAMPA, FLORIDA 33607-4155
LB 0002934 AA C000656

MANATEE COUNTY
SUBURBAN SYSTEM
WATER LINE REPLACEMENT PROJECT
PHASE 2
MANATEE COUNTY, FLORIDA
PROJECT No. 60747.70

PLAN SHEET WATER LINE
26th ST W FROM 53rd AVE W TO 5419

SHEET	C1
DWG	C1.DWG
DATE	SEPTEMBER 2009
PROJ	386879.WM



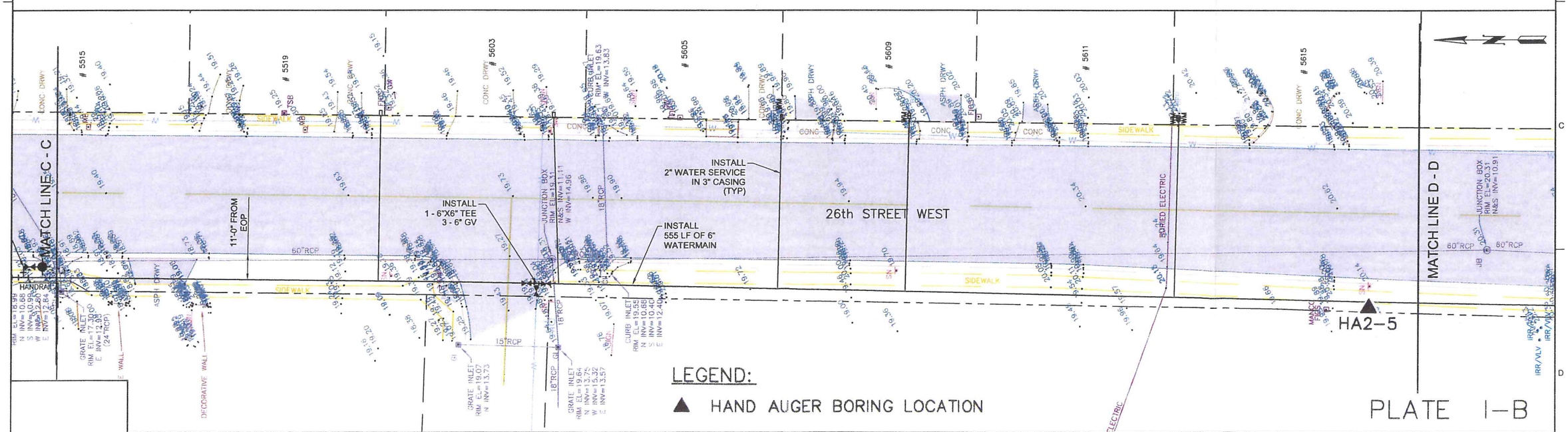


PLATE I-B

DSGN	BJK						
DR	BJK						
CHK	RAC						
APVD	RAC	NO.	DATE	REVISION	BY	APVD	

ROBERT A. CANNARELLA, P.E.
Fla. P.E No. 17367

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

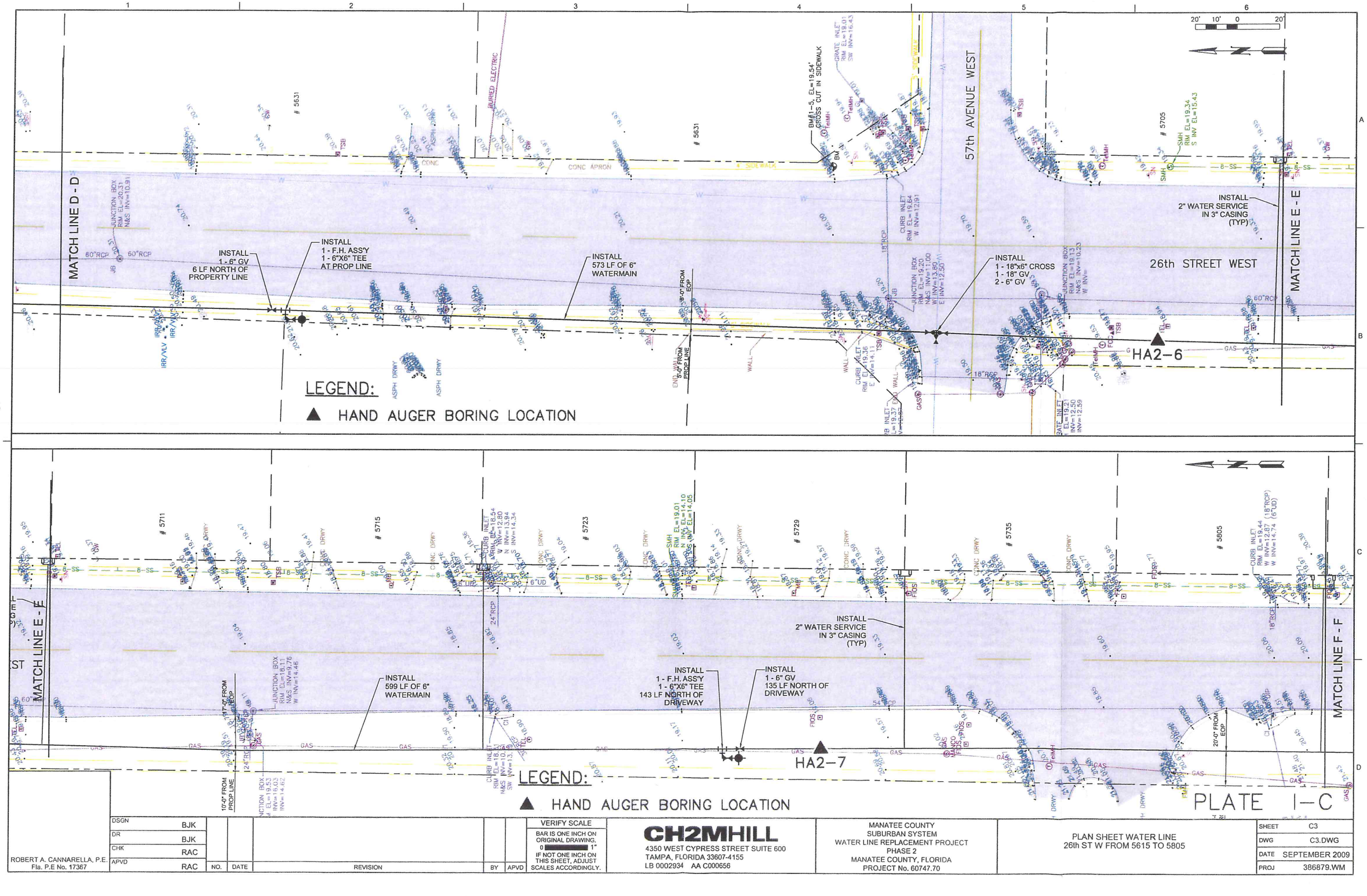
CH2MHILL
4350 WEST CYPRESS STREET SUITE 600
TAMPA, FLORIDA 33607-4155
LB 0002934 AA C000656

MANATEE COUNTY
SUBURBAN SYSTEM
WATER LINE REPLACEMENT PROJECT
PHASE 2
MANATEE COUNTY, FLORIDA
PROJECT No. 60747.70

PLAN SHEET WATER LINE
26th ST W FROM 5419 TO 5615

SHEET	C2
DWG	C2.DWG
DATE	SEPTEMBER 2009
PROJ	386879.WM

V:\Manatee County Waterline\Drawings\TIcover.dwg Plotted: 2/18/2009 0:13 pm By: bkleinl Model Plot Scale: 1=1.0 Xref Dwg's:



DSGN	BJK						VERIFY SCALE	CH2MHILL
DR	BJK						BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1" IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.	4350 WEST CYPRESS STREET SUITE 600 TAMPA, FLORIDA 33607-4155 LB 0002934 AA C000656
CHK	RAC							
APVD	RAC	NO.	DATE	REVISION	BY	APVD		

ROBERT A. CANNARELLA, P.E.
Fla. P.E No. 17367

MANATEE COUNTY
SUBURBAN SYSTEM
WATER LINE REPLACEMENT PROJECT
PHASE 2
MANATEE COUNTY, FLORIDA
PROJECT No. 60747.70

PLAN SHEET WATER LINE
26th ST W FROM 5615 TO 5805

SHEET	C3
DWG	C3.DWG
DATE	SEPTEMBER 2009
PROJ	386879.WM

PLATE I-C

W:\Manatee County Waterline\Drawings\11cover.dwg Plotted: 2/18/2009 0:13 pm By: kkelml Model Plot Scale: 1=1.0 Xref Dwg's:

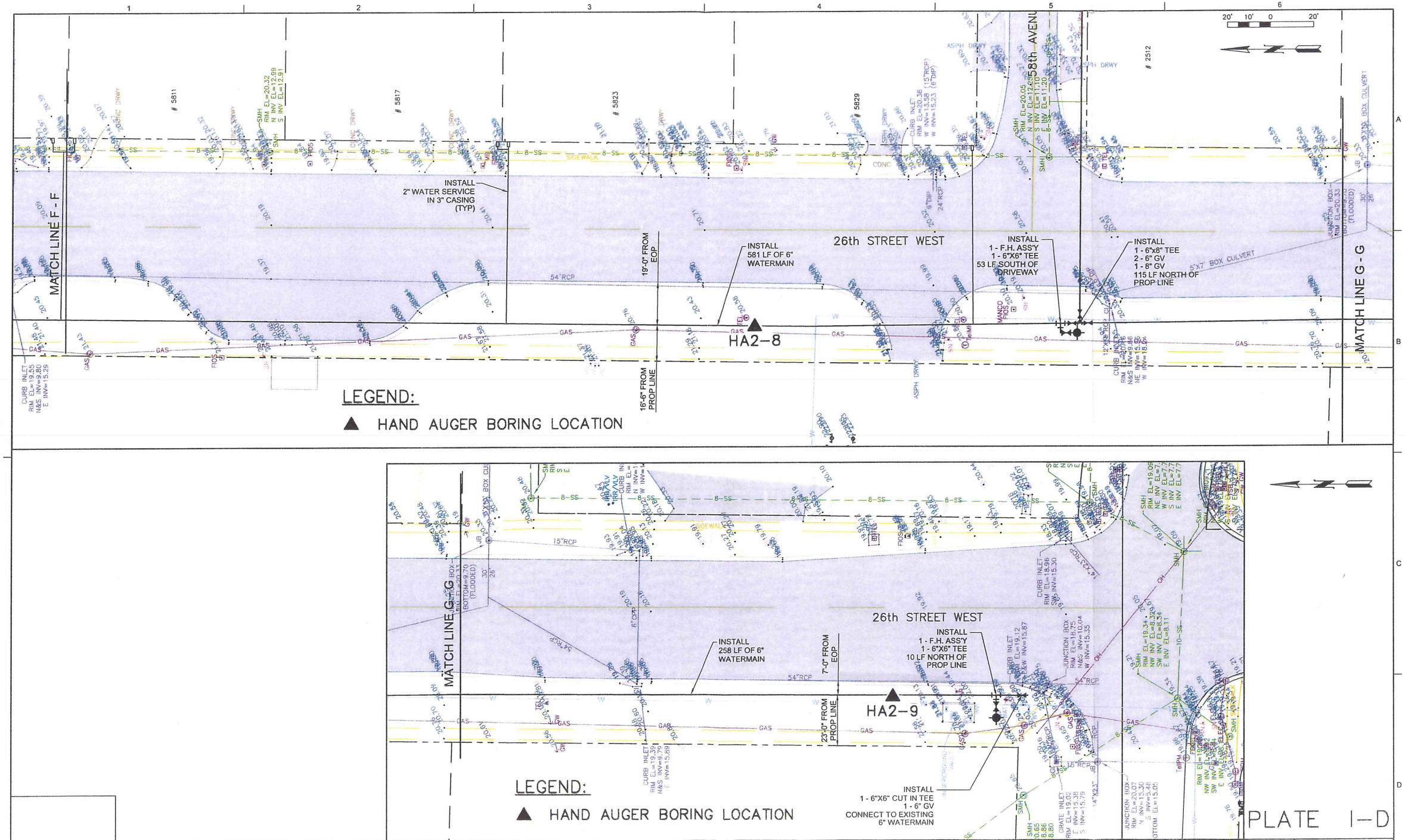


PLATE I-D

DSGN	BJK						
DR	BJK						
CHK	RAC						
APVD	RAC	NO.	DATE	REVISION	BY	APVD	

ROBERT A. CANNARELLA, P.E.
Fla. P.E No. 17367

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

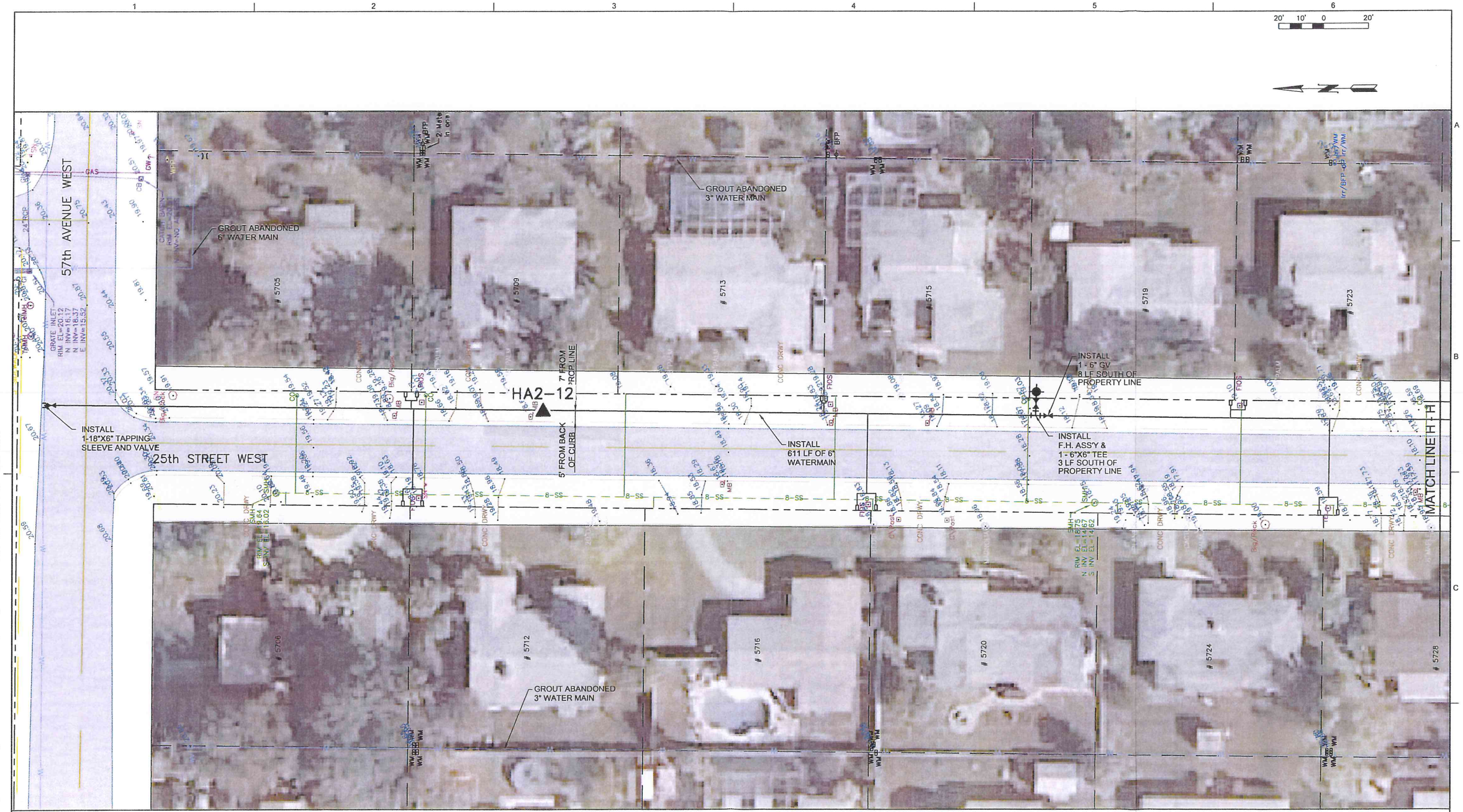
CH2MHILL
4350 WEST CYPRESS STREET SUITE 600
TAMPA, FLORIDA 33607-4155
LB 0002934 AA C000656

MANATEE COUNTY
SUBURBAN SYSTEM
WATER LINE REPLACEMENT PROJECT
PHASE 2
MANATEE COUNTY, FLORIDA
PROJECT No. 60747.70

PLAN SHEET WATER LINE
26th ST W FROM 5811 TO

SHEET	C4
DWG	C4.DWG
DATE	SEPTEMBER 2009
PROJ	386879.WM

V:\Manatee County Waterline\Drawings\Ticover.dwg Plotted: 2/18/2009 0:13 pm By: bkleinl Model Plot Scale: 1=1.0 Xref



LEGEND:

▲ HAND AUGER BORING LOCATION

PLATE I-E

ROBERT A. CANNARELLA, P.E.
Fla. P.E No. 17367

DSGN	BJK						
DR	BJK						
CHK	RAC						
APVD	RAC	NO.	DATE	REVISION	BY	APVD	

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

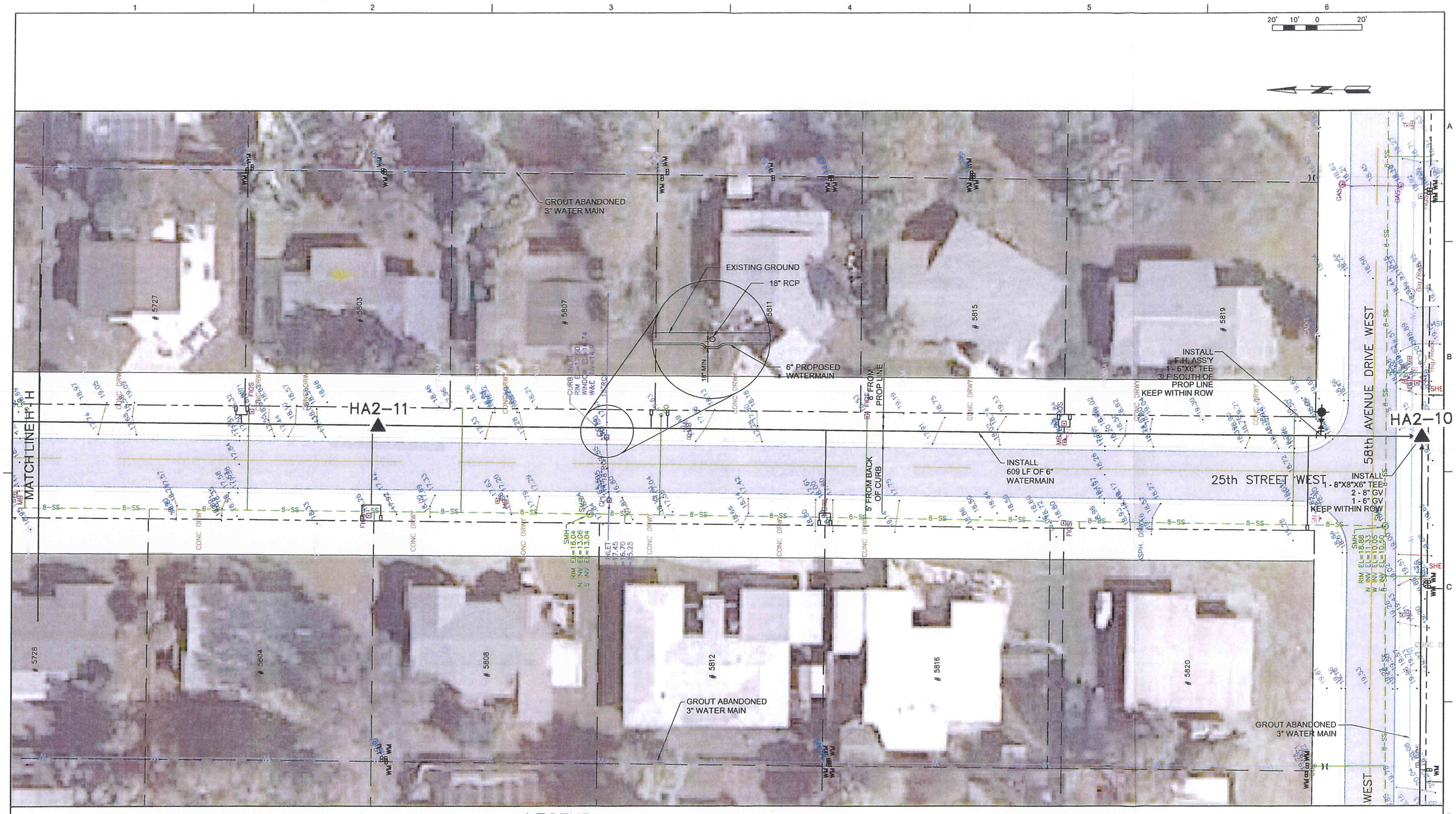
CH2MHILL
4350 WEST CYPRESS STREET SUITE 600
TAMPA, FLORIDA 33607-4155
LB 0002934 AA C000656

MANATEE COUNTY
SUBURBAN SYSTEM
WATER LINE REPLACEMENT PROJECT
PHASE 2
MANATEE COUNTY, FLORIDA
PROJECT No. 60747.70

PLAN SHEET WATER LINE
25th ST W FROM 57th AVE W TO 5724

SHEET	C5
DWG	C5.DWG
DATE	SEPTEMBER 2009
PROJ	386879.WM

V:\Manatee County Waterline\Drawings\Tlcover.dwg Plotted: 2/18/2009 0:13 pm By: bkleinl Model Plot Scale: 1=1.0 Xref Dwg's:



LEGEND:

▲ HAND AUGER BORING LOCATION

PLATE I-F

ROBERT A. CANNARELLA, P.E. Fla. P.E No. 17367	DSGN BJK DR BJK CHK RAC APVD RAC	NO.	DATE	REVISION	BY	APVD	VERIFY SCALE: BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.	CH2MHILL 4350 WEST CYPRESS STREET SUITE 600 TAMPA, FLORIDA 33607-4155 LB 0002934 AA C000656	MANATEE COUNTY SUBURBAN SYSTEM WATER LINE REPLACEMENT PROJECT PHASE 2 MANATEE COUNTY, FLORIDA PROJECT No. 60747.70	PLAN SHEET WATER LINE 25th ST W FROM 5728 TO 58th AVE DR W	SHEET C6 DWG C6.DWG DATE SEPTEMBER 2009 PROJ 386879.WM

W:\Manatee County Waterline\Drawings\Tlcover.dwg Plotted: 9/18/2009 0:13 pm By: bklein1 Model Plot Scale: 1=1.0 Xref Dwg's:

LEGEND:

▲ HAND AUGER BORING LOCATION

PLATE I-G

ROBERT A. CANNARELLA, P.E.
Fla. P.E No. 17367

DSGN	BJK
DR	BJK
CHK	RAC
APVD	RAC

NO.	DATE	REVISION	BY	APVD

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

CH2MHILL
4350 WEST CYPRESS STREET SUITE 600
TAMPA, FLORIDA 33607-4155
LB 0002934 AA C000656

MANATEE COUNTY
SUBURBAN SYSTEM
WATER LINE REPLACEMENT PROJECT
PHASE 2
MANATEE COUNTY, FLORIDA
PROJECT No. 60747.70

PLAN SHEET WATER LINE
24th ST COURT W FROM 57th AVE W TO 5728

SHEET	C7
DWG	C7.DWG
DATE	SEPTEMBER 2009
PROJ	386879.WM

V:\Manatee County Waterline\Drawings\Tlcover.dwg Plotted: 2/18/2009 0:13 pm By: bkleinl Model Plot Scale: 1=1.0 Xref Dwg's:

LEGEND:

▲ HAND AUGER BORING LOCATION

PLATE I-H

ROBERT A. CANNARELLA, P.E.
Fla. P.E No. 17367

DSGN	BJK
DR	BJK
CHK	RAC
APVD	RAC

NO.	DATE	REVISION	BY	APVD

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

CH2MHILL
4350 WEST CYPRESS STREET SUITE 600
TAMPA, FLORIDA 33607-4155
LB 0002934 AA C000656

MANATEE COUNTY
SUBURBAN SYSTEM
WATER LINE REPLACEMENT PROJECT
PHASE 2
MANATEE COUNTY, FLORIDA
PROJECT No. 60747.70

PLAN SHEET WATER LINE
24th ST COURT W FROM 5804 TO 58th AVE DR W

SHEET	C8
DWG	C8.DWG
DATE	SEPTEMBER 2009
PROJ	386879.WM

LEGEND:

▲ HAND AUGER BORING LOCATION

PLATE 1-1

ROBERT A. CANNARELLA, P.E.
Fla. P.E No. 17367

DSGN	BJK
DR	BJK
CHK	RAC
APVD	RAC

NO.	DATE	REVISION	BY	APVD

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

CH2MHILL
4350 WEST CYPRESS STREET SUITE 600
TAMPA, FLORIDA 33607-4155
LB 0002934 AA C000656

MANATEE COUNTY
SUBURBAN SYSTEM
WATER LINE REPLACEMENT PROJECT
PHASE 2
MANATEE COUNTY, FLORIDA
PROJECT No. 60747.70

PLAN SHEET WATER LINE
23rd ST W FROM 57th AVE W TO 5736

SHEET	C9
DWG	C9.DWG
DATE	SEPTEMBER 2009
PROJ	386879.WM

LEGEND:

▲ HAND AUGER BORING LOCATION

PLATE I-J

DSGN	BJK					VERIFY SCALE	CH2MHILL
DR	BJK					BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"	4350 WEST CYPRESS STREET SUITE 600
CHK	RAC					IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.	TAMPA, FLORIDA 33607-4155
APVD	RAC	NO.	DATE	REVISION	BY APVD		LB 0002934 AA C000656

ROBERT A. CANNARELLA, P.E.
Fla. P.E No. 17367

MANATEE COUNTY
SUBURBAN SYSTEM
WATER LINE REPLACEMENT PROJECT
PHASE 2
MANATEE COUNTY, FLORIDA
PROJECT No. 60747.70

PLAN SHEET WATER LINE
24th ST W FROM 5615 TO 58th AVE DR W

SHEET	C10
DWG	C10.DWG
DATE	SEPTEMBER 2009
PROJ	386879.WM

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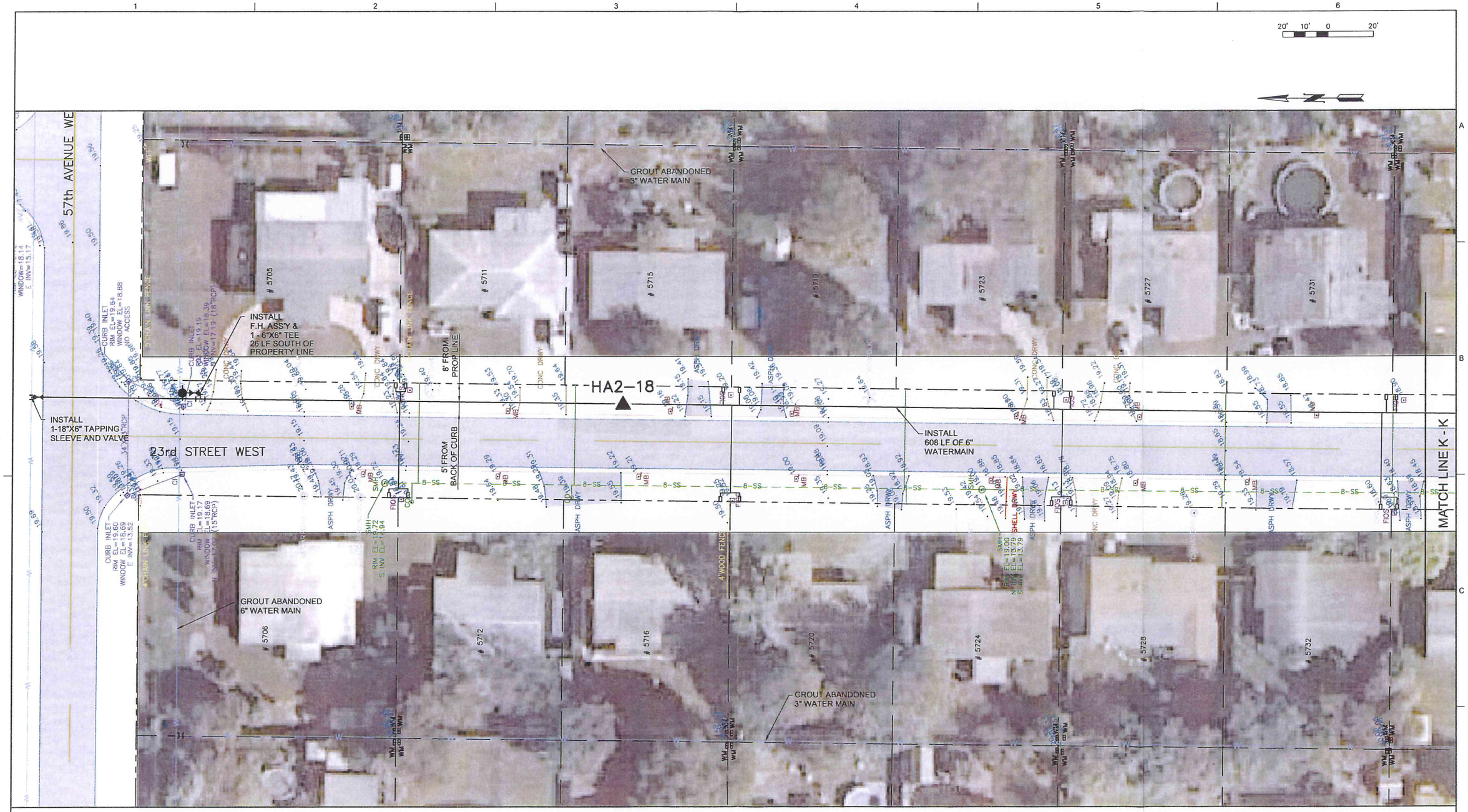

LEGEND:

▲ HAND AUGER BORING LOCATION

PLATE I-K

DSGN	BJK						VERIFY SCALE
DR	BJK						BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1" IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.
CHK	RAC						
APVD	RAC	NO.	DATE	REVISION	BY	APVD	

ROBERT A. CANNARELLA, P.E.
Fla. P.E No. 17367

CH2MHILL
4350 WEST CYPRESS STREET SUITE 600
TAMPA, FLORIDA 33607-4155
LB 0002934 AA C000656

MANATEE COUNTY
SUBURBAN SYSTEM
WATER LINE REPLACEMENT PROJECT
PHASE 2
MANATEE COUNTY, FLORIDA
PROJECT No. 60747.70

PLAN SHEET WATER LINE
23rd ST W FROM 57th AVE W TO 5736

SHEET	C11
DWG	C11.DWG
DATE	SEPTEMBER 2009
PROJ	386879.WM

W:\Manatee County Waterline\Drawings\TIcover.dwg Plotted: 2/18/2009 0:13 pm By: bkleinl Model Plot Scale: 1=1.0 Xref Dwg's:

LEGEND:

▲ HAND AUGER BORING LOCATION

PLATE I-L

ROBERT A. CANNARELLA, P.E.
Fla. P.E No. 17367

DSGN	BJK
DR	BJK
CHK	RAC
APVD	RAC

NO.	DATE	REVISION	BY	APVD

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

CH2MHILL
4350 WEST CYPRESS STREET SUITE 600
TAMPA, FLORIDA 33607-4155
LB 0002934 AA C000656

MANATEE COUNTY
SUBURBAN SYSTEM
WATER LINE REPLACEMENT PROJECT
PHASE 2
MANATEE COUNTY, FLORIDA
PROJECT No. 60747.70

PLAN SHEET WATER LINE
23rd ST W FROM 5736 TO 58th AVE DR W

SHEET	C12
DWG	C12.DWG
DATE	SEPTEMBER 2009
PROJ	386879.WM

LEGEND:

▲ HAND AUGER BORING LOCATION

PLATE I–M

ROBERT A. CANNARELLA, P.E.
Fla. P.E No. 17367

DSGN	BJK
DR	BJK
CHK	RAC
APVD	RAC

NO.	DATE	REVISION	BY	APVD

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

CH2MHILL
4350 WEST CYPRESS STREET SUITE 600
TAMPA, FLORIDA 33607-4155
LB 0002934 AA C000656

MANATEE COUNTY
SUBURBAN SYSTEM
WATER LINE REPLACEMENT PROJECT
PHASE 2
MANATEE COUNTY, FLORIDA
PROJECT No. 60747.70

PLAN SHEET WATER LINE
22nd ST W FROM 57th AVE W TO 5736

SHEET	C13
DWG	C13.DWG
DATE	SEPTEMBER 2009
PROJ	386879.WM

LEGEND:

▲ HAND AUGER BORING LOCATION

PLATE I-N

DSGN	BJK						VERIFY SCALE
DR	BJK						BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1" IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.
CHK	RAC						
APVD	RAC	NO.	DATE	REVISION	BY	APVD	

ROBERT A. CANNARELLA, P.E.
Fla. P.E No. 17367

CH2MHILL
4350 WEST CYPRESS STREET SUITE 600
TAMPA, FLORIDA 33607-4155
LB 0002934 AA C000656

MANATEE COUNTY
SUBURBAN SYSTEM
WATER LINE REPLACEMENT PROJECT
PHASE 2
MANATEE COUNTY, FLORIDA
PROJECT No. 60747.70

PLAN SHEET WATER LINE
22nd ST W FROM 5736 TO 58th AVE DR W

SHEET	C14
DWG	C14.DWG
DATE	SEPTEMBER 2009
PROJ	386879.WM

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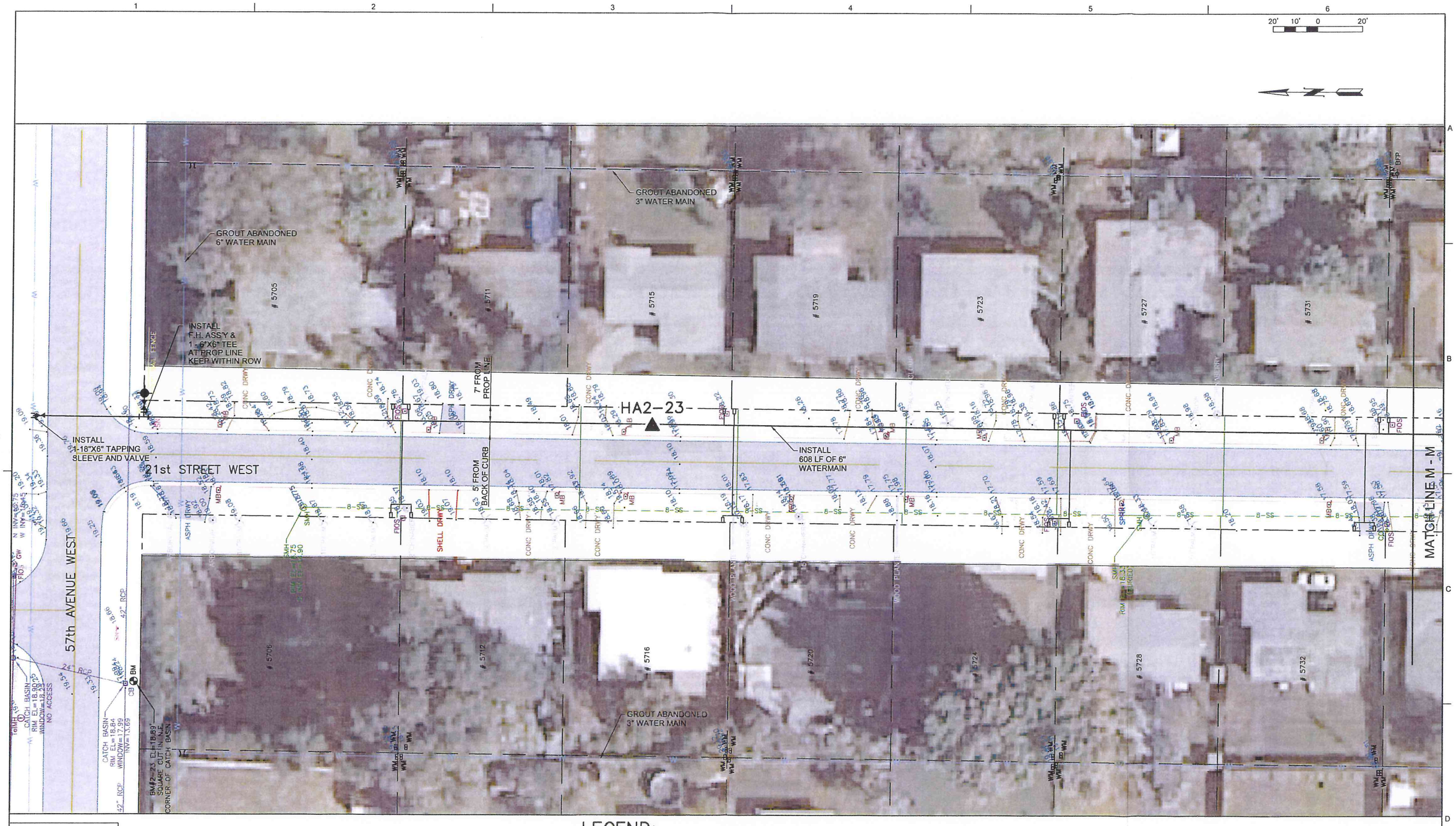


LEGEND:

▲ HAND AUGER BORING LOCATION

PLATE 1-0

ROBERT A. CANNARELLA, P.E. Fla. P.E No. 17367	DSGN BJK DR BJK CHK RAC APVD RAC	NO.	DATE	REVISION	BY	APVD	VERIFY SCALE BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1" IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.	CH2MHILL 4350 WEST CYPRESS STREET SUITE 600 TAMPA, FLORIDA 33607-4155 LB 0002934 AA C000656	MANATEE COUNTY SUBURBAN SYSTEM WATER LINE REPLACEMENT PROJECT PHASE 2 MANATEE COUNTY, FLORIDA PROJECT No. 60747.70	PLAN SHEET WATER LINE 21st ST W FROM 57th AVE W TO 5736	SHEET C15 DWG C15.DWG DATE SEPTEMBER 2009 PROJ 386879.WM

V:\Manatee County Waterline\Drawings\Tlcover.dwg Plotted: 2/18/2009 0:13 pm By: bklein1 Model Plot Scale: 1:1.0 Xref Dwg's:

1 2 3 4 5 6

20' 10' 0 20'

A B C D

GROUT ABANDONED 3" WATER MAIN

EXISTING GROUND

36" RCP

6" PROPOSED WATERMAIN

18" MIN

INSTALL 1 - 6" GV 5 LF NORTH OF PROPERTY LINE

INSTALL F.H. ASS'Y & 1 - 6"X6" TEE AT PROP LINE KEEP WITHIN ROW

HA2-24

HA2-25

INSTALL 1 - 8"X8"X6" TEE 2 - 8" GV 1 - 6" GV 1 - 6" 22.5° BEND 8LF EAST OF CONC DRIVE

INSTALL 1 - 6" 22.5° BEND 2LF NORTH OF PROP LINE

7' FROM PROP LINE

INSTALL 616 LF OF 6" WATERMAIN

6' FROM BACK OF CURB

MATCH LINE M-M

21st STREET WEST

58th AVENUE DRIVE WEST

5735 # 5803 # 5807 # 5811 # 5815 # 5819 # 5823 # 5827

5736 # 5804 # 5808 # 5812 # 5816 # 5820 # 5824 # 5828

GROUT ABANDONED 3" WATER MAIN

GROUT ABANDONED 3" WATER MAIN

LEGEND:

▲ HAND AUGER BORING LOCATION

PLATE I-P

V:\Manatee County Waterline\Drawings\Tlcover.dwg Plotted: 2/18/2009 0:13 pm By: bkleinl Model Plot Scale: 1=1.0 Xref Dwg's:

ROBERT A. CANNARELLA, P.E.
Fla. P.E No. 17367

DSGN	BJK
DR	BJK
CHK	RAC
APVD	RAC

NO.	DATE	REVISION	BY	APVD

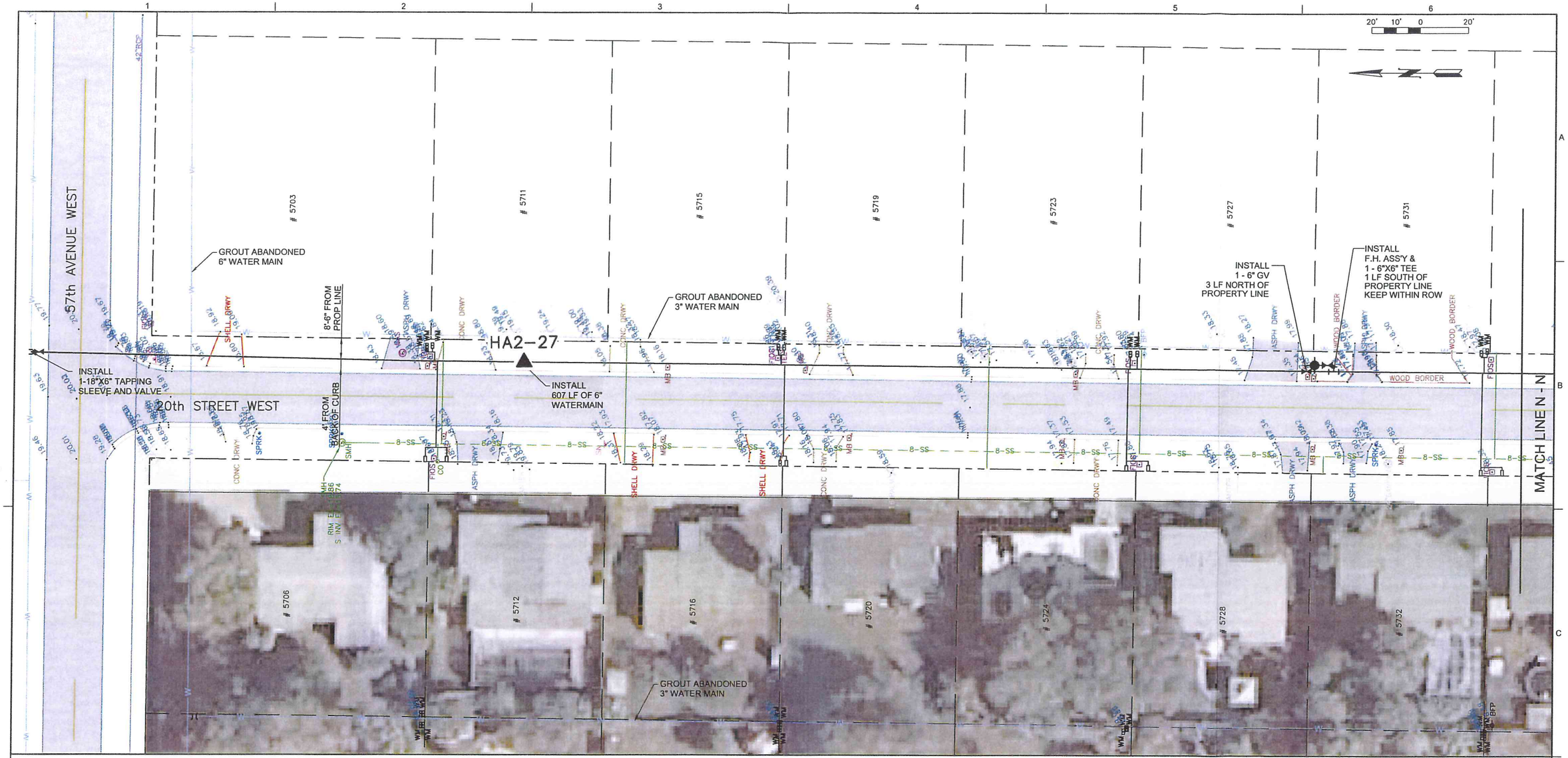
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

CH2MHILL
4350 WEST CYPRESS STREET SUITE 600
TAMPA, FLORIDA 33607-4155
LB 0002934 AA C000656

MANATEE COUNTY
SUBURBAN SYSTEM
WATER LINE REPLACEMENT PROJECT
PHASE 2
MANATEE COUNTY, FLORIDA
PROJECT No. 60747.70

PLAN SHEET WATER LINE
21st ST W FROM 5736 TO 58th AVE DR W

SHEET	C16
DWG	C16.DWG
DATE	SEPTEMBER 2009
PROJ	386879.WM



LEGEND:

▲ HAND AUGER BORING LOCATION

PLATE I-Q

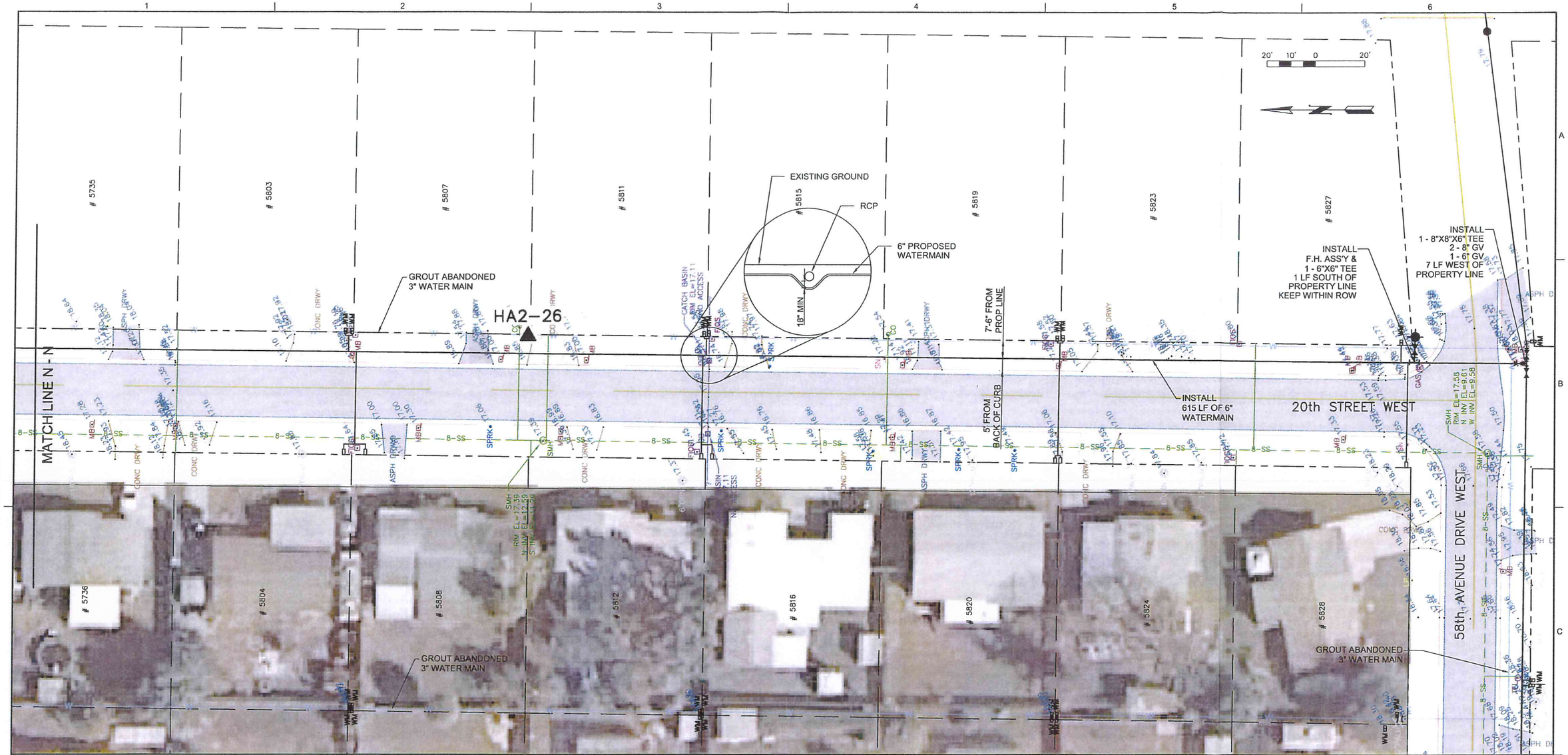
ROBERT A. CANNARELLA, P.E. Fla. P.E No. 17367	DSGN BJK DR BJK CHK RAC APVD RAC	NO.	DATE	REVISION	BY	APVD	VERIFY SCALE: BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.	

CH2MHILL
4350 WEST CYPRESS STREET SUITE 600
TAMPA, FLORIDA 33607-4155
LB 0002934 AA C000656

MANATEE COUNTY
SUBURBAN SYSTEM
WATER LINE REPLACEMENT PROJECT
PHASE 2
MANATEE COUNTY, FLORIDA
PROJECT No. 60747.70

PLAN SHEET WATER LINE
20th ST W FROM 57th AVE W TO 5736

SHEET	C17
DWG	C17.DWG
DATE	SEPTEMBER 2009
PROJ	386879.WM



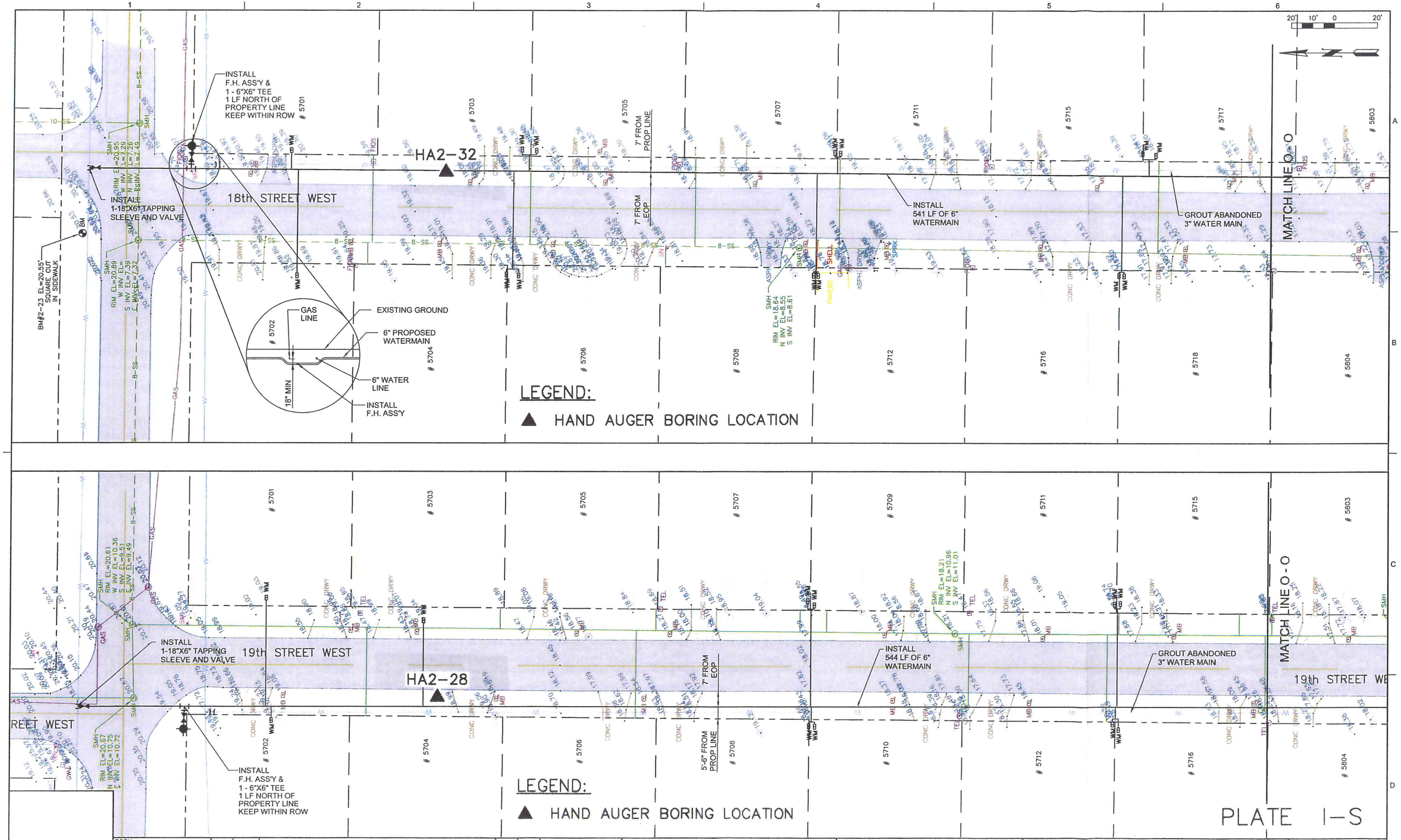
LEGEND:

▲ HAND AUGER BORING LOCATION

PLATE I-R

ROBERT A. CANNARELLA, P.E. Fla. P.E No. 17367	DSGN BJK DR BJK CHK RAC APVD RAC	NO.	DATE	REVISION	BY	APVD	VERIFY SCALE BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1" IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.	CH2MHILL 4350 WEST CYPRESS STREET SUITE 600 TAMPA, FLORIDA 33607-4155 LB 0002934 AA C000656	MANATEE COUNTY SUBURBAN SYSTEM WATER LINE REPLACEMENT PROJECT PHASE 2 MANATEE COUNTY, FLORIDA PROJECT No. 60747.70	PLAN SHEET WATER LINE 20th ST W FROM 5736 TO 58th AVE DR W	SHEET C18 DWG C18.DWG DATE SEPTEMBER 2009 PROJ 386879.WM

V:\Manatee County Waterline\Drawings\TIcover.dwg Plotted: 2/18/2009 0:13 pm By: bkleinl Model Plot Scale: 1=1.0 Xref Dwg's:



V:\Manatee County Waterline\Drawings\Tlcover.dwg Plotted: 2/18/2009 0:13 pm By: bkleinl Model Plot Scale: 1=1.0 Xref

DSGN	BJK						
DR	BJK						
CHK	RAC						
APVD	RAC	NO.	DATE	REVISION	BY	APVD	

ROBERT A. CANNARELLA, P.E.
Fla. P.E No. 17367

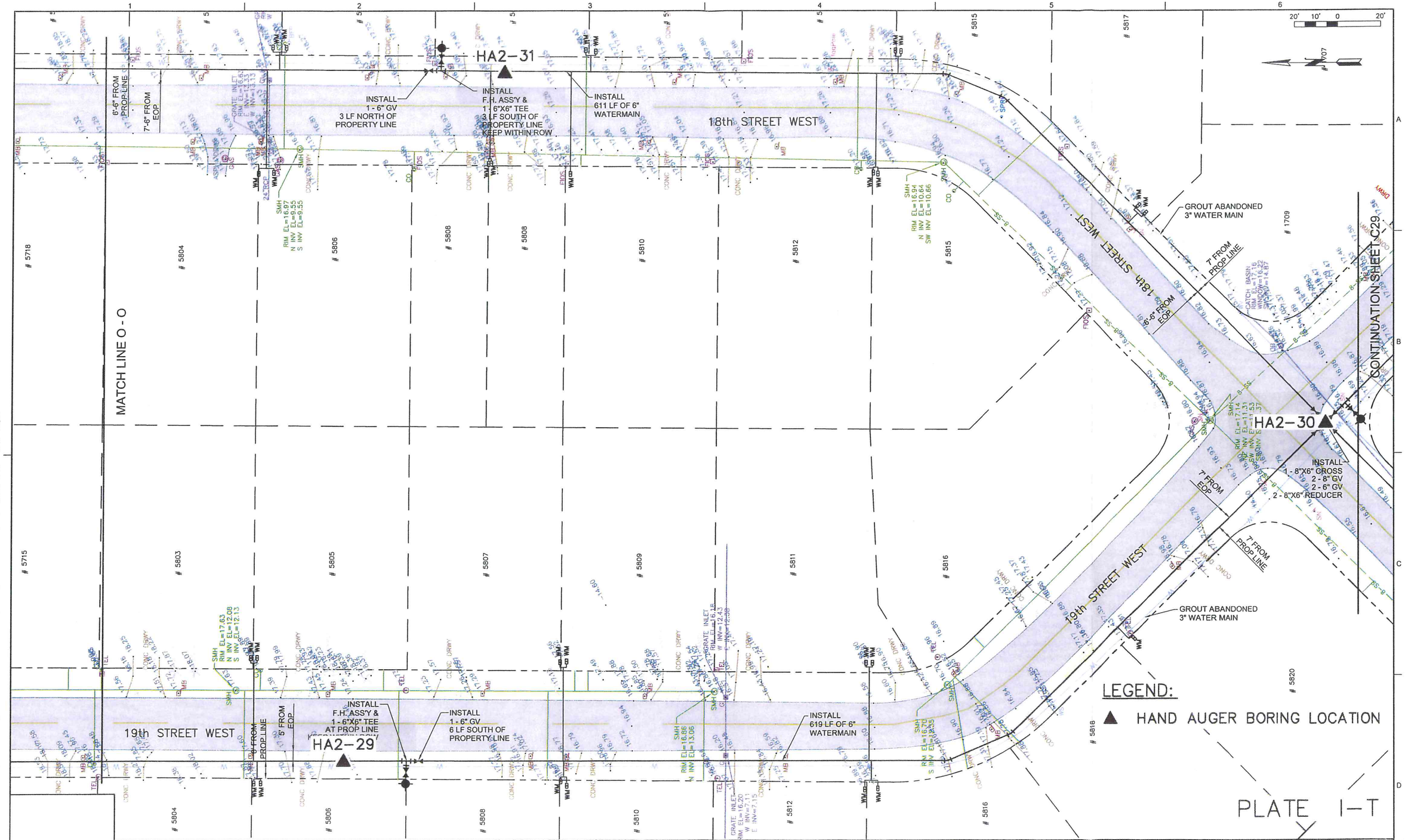
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

CH2MHILL
4350 WEST CYPRESS STREET SUITE 600
TAMPA, FLORIDA 33607-4155
LB 0002934 AA C000656

MANATEE COUNTY
SUBURBAN SYSTEM
WATER LINE REPLACEMENT PROJECT
PHASE 2
MANATEE COUNTY, FLORIDA
PROJECT No. 60747.70

PLAN SHEET WATER LINE
18th ST W & 19th ST W FROM 57th AVE W TO 5716

SHEET	C19
DWG	C19.DWG
DATE	SEPTEMBER 2009
PROJ	386879.WM



DSGN	BJK						
DR	BJK						
CHK	RAC						
APVD	RAC	NO.	DATE	REVISION	BY	APVD	

ROBERT A. CANNARELLA, P.E.
Fla. P.E No. 17367

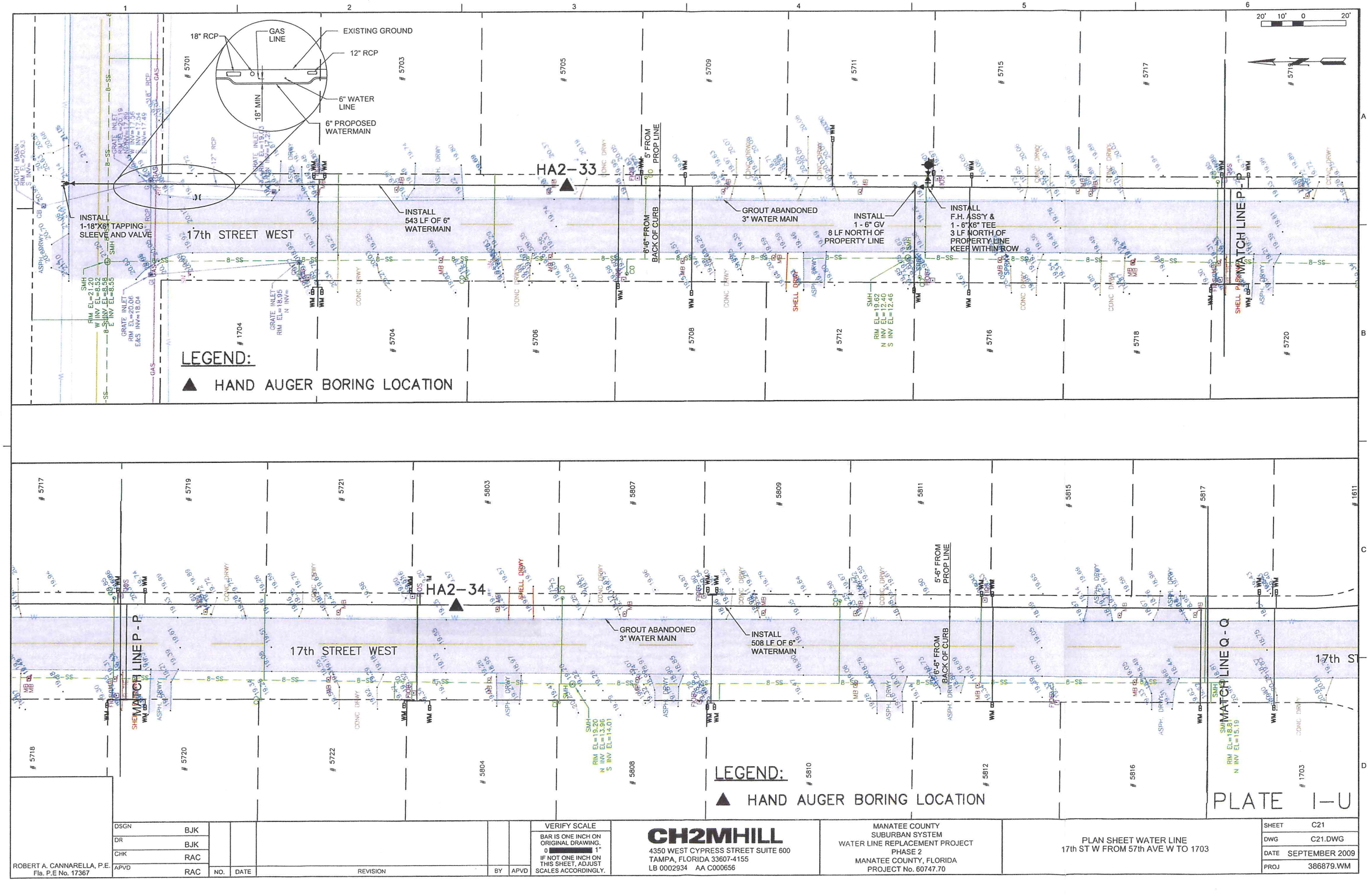
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

CH2MHILL
4350 WEST CYPRESS STREET SUITE 600
TAMPA, FLORIDA 33607-4155
LB 0002934 AA C000656

MANATEE COUNTY
SUBURBAN SYSTEM
WATER LINE REPLACEMENT PROJECT
PHASE 2
MANATEE COUNTY, FLORIDA
PROJECT No. 60747.70

PLAN SHEET WATER LINE
18th ST W & 19th ST W FROM 5804 TO INTERSECTION

SHEET	C20
DWG	C20.DWG
DATE	SEPTEMBER 2009
PROJ	386879.WM



DSGN	BJK	NO.	DATE	REVISION	BY	APVD	VERIFY SCALE
DR	BJK						BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1" IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.
CHK	RAC						
APVD	RAC						

ROBERT A. CANNARELLA, P.E.
Fla. P.E No. 17367

CH2MHILL
4350 WEST CYPRESS STREET SUITE 600
TAMPA, FLORIDA 33607-4155
LB 0002934 AA C000656

MANATEE COUNTY
SUBURBAN SYSTEM
WATER LINE REPLACEMENT PROJECT
PHASE 2
MANATEE COUNTY, FLORIDA
PROJECT No. 60747.70

PLAN SHEET WATER LINE
17th ST W FROM 57th AVE W TO 1703

SHEET	C21
DWG	C21.DWG
DATE	SEPTEMBER 2009
PROJ	386879.WM

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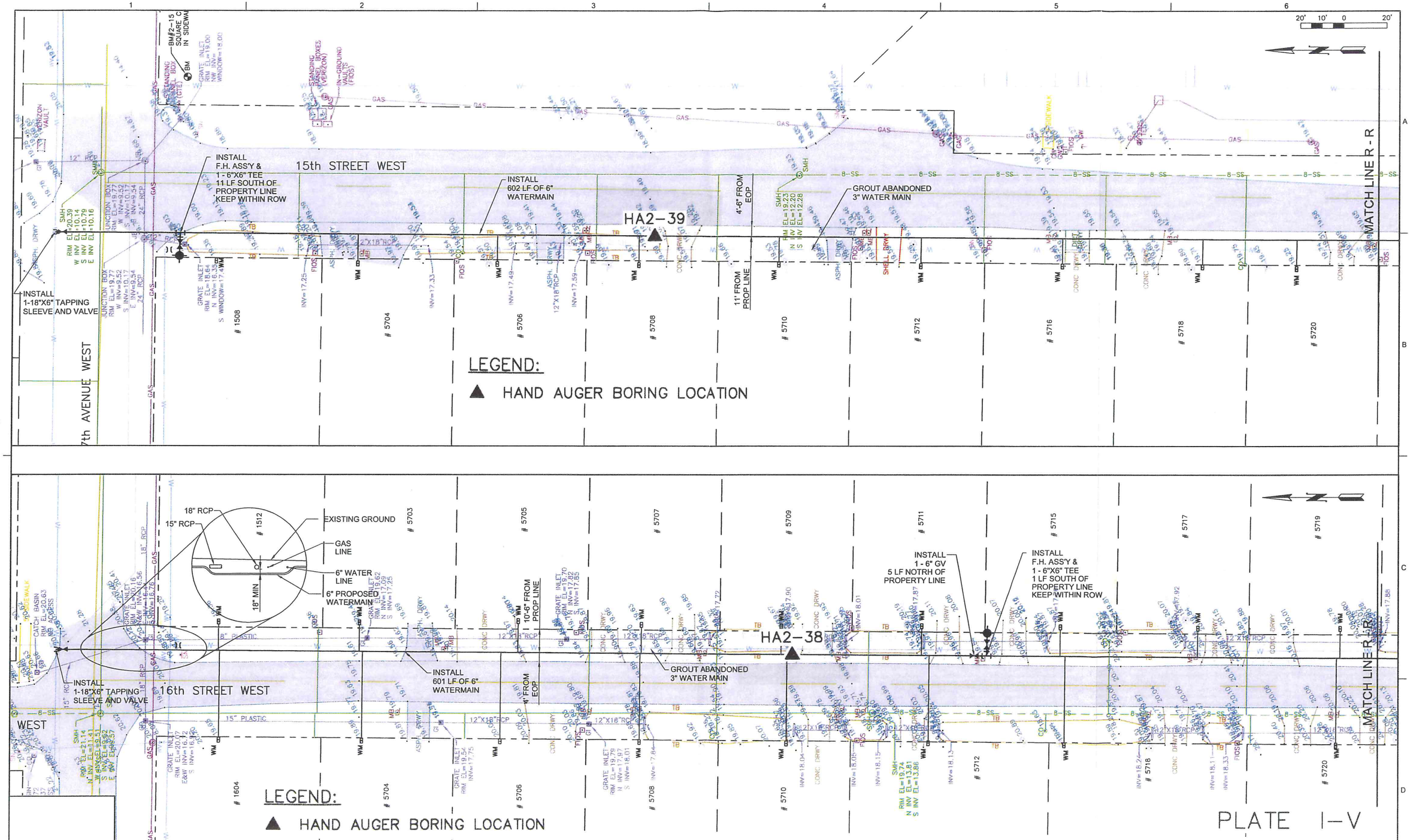

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DSGN	BJK						
DR	BJK						
CHK	RAC						
APVD	RAC	NO.	DATE	REVISION	BY	APVD	

ROBERT A. CANNARELLA, P.E.
Fla. P.E No. 17367

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

CH2MHILL
4350 WEST CYPRESS STREET SUITE 600
TAMPA, FLORIDA 33607-4155
LB 0002934 AA C000656

MANATEE COUNTY
SUBURBAN SYSTEM
WATER LINE REPLACEMENT PROJECT
PHASE 2
MANATEE COUNTY, FLORIDA
PROJECT No. 60747.70

PLAN SHEET WATER LINE
15th ST W & 16th ST W FROM 57th AVE W TO 5722

SHEET	C23
DWG	C23.DWG
DATE	SEPTEMBER 2009
PROJ	386879.WM

LEGEND:

▲ HAND AUGER BORING LOCATION

15th STREET WEST

16th STREET WEST

58th AVENUE DRIVE WEST

MATCH LINE R - R

HA2-40

HA2-37

HA2-36

INSTALL 518 LF OF 6" WATERMAIN

INSTALL 1 - 6" GV 6 LF NORTH OF PROPERTY LINE

INSTALL F.H. ASS'Y & 1 - 6"X6" TEE AT PROP LINE KEEP WITHIN ROW

GROUT ABANDONED 3" WATER MAIN

INSTALL 451 LF OF 6" WATERMAIN

INSTALL 1 - 6"X6" TEE 3 - 6" GV

INSTALL F.H. ASS'Y & 1 - 6"X6" TEE AT PROP LINE KEEP WITHIN ROW

INSTALL 2 - 8"X8"X6" TEE 2 - 8" GV 1 - 6" GV 12 LF EAST OF PROP LINE

4' FROM EOP

11'-6" FROM PROP LINE

10'-6" FROM PROP LINE

PLATE I-W

DSGN	BJK	NO.	DATE	REVISION	BY	APVD	VERIFY SCALE	
DR	BJK						BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"	
CHK	RAC						IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.	
APVD	RAC							

ROBERT A. CANNARELLA, P.E.
Fla. P.E No. 17367

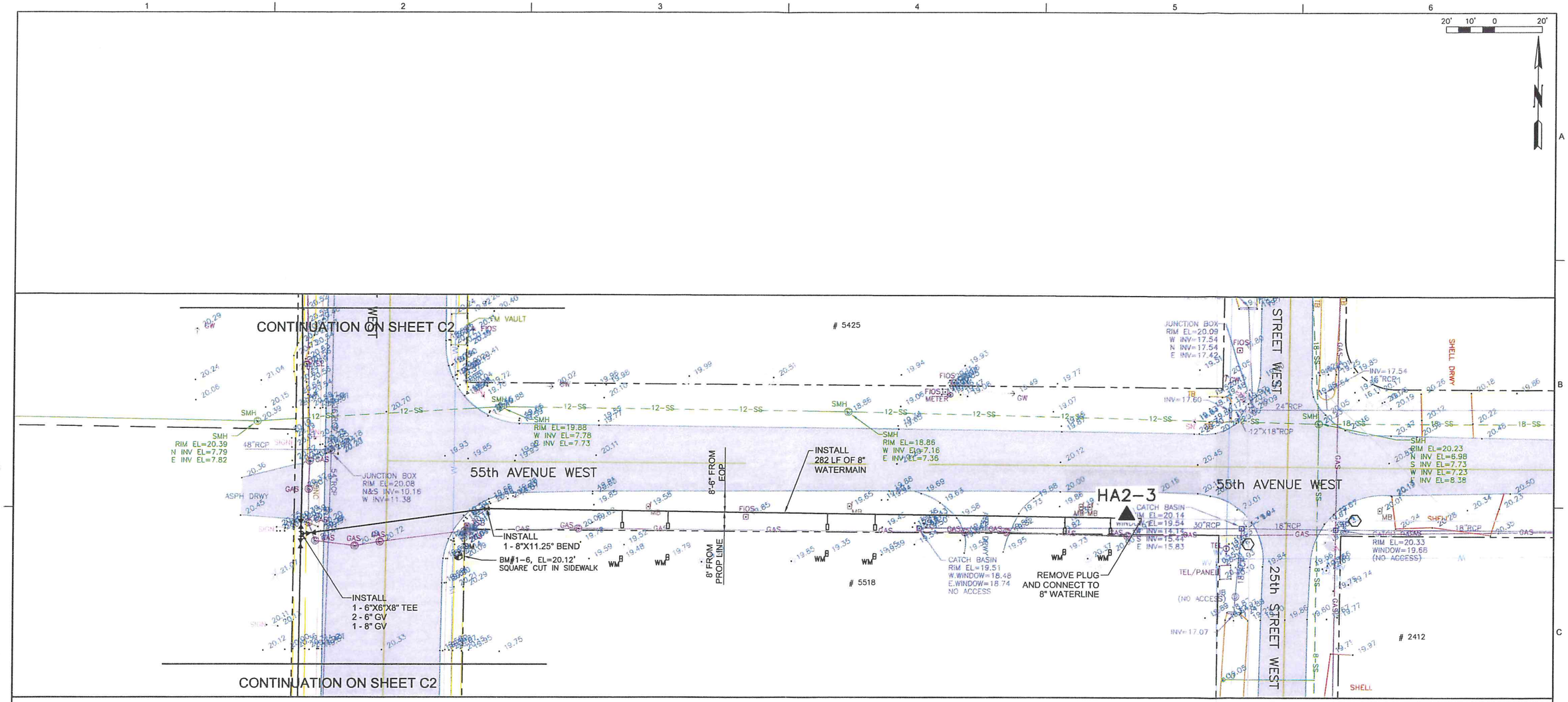
CH2MHILL
4350 WEST CYPRESS STREET SUITE 600
TAMPA, FLORIDA 33607-4155
LB 0002934 AA C000656

MANATEE COUNTY
SUBURBAN SYSTEM
WATER LINE REPLACEMENT PROJECT
PHASE 2
MANATEE COUNTY, FLORIDA
PROJECT No. 60747.70

PLAN SHEET WATER LINE
15th ST W & 16th ST W FROM 5718 TO INTERSECTION

SHEET	C24
DWG	C24.DWG
DATE	SEPTEMBER 2009
PROJ	386879.WM

V:\Manatee County Waterline\Drawings\TIcover.dwg Plotted: 2/18/2009 0:13 pm By: bkleinl Model Plot Scale: 1=1.0 Xref Dwg's:



LEGEND:

▲ HAND AUGER BORING LOCATION

PLATE I-X

DSGN	BJK						VERIFY SCALE	CH2MHILL
DR	BJK						BAR IS ONE INCH ON ORIGINAL DRAWING. 0 ——— 1" IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.	4350 WEST CYPRESS STREET SUITE 600 TAMPA, FLORIDA 33607-4155 LB 0002934 AA C000656
CHK	RAC							
APVD	RAC	NO.	DATE	REVISION	BY	APVD		

ROBERT A. CANNARELLA, P.E. Fla. P.E No. 17367

MANATEE COUNTY
SUBURBAN SYSTEM
WATER LINE REPLACEMENT PROJECT
PHASE 2
MANATEE COUNTY, FLORIDA
PROJECT No. 60747.70

PLAN SHEET WATER LINE
55th AVE W FROM 26th ST W TO 25th ST W

SHEET	C25
DWG	C25.DWG
DATE	SEPTEMBER 2009
PROJ	386879.WM

W:\Manatee County Waterline\Drawings\Ticover.dwg Plotted: 2/18/2009 0:13 pm By: bkleinl Model Plot Scale: 1=1.0 Xref Dwg's:

CONTINUATION ON SHEET C4

CONTINUATION ON SHEET C6

CONTINUATION ON SHEET C8

CONTINUATION ON SHEET C4

26th STREET WEST

25th STREET WEST

24th STREET COURT WEST

58th AVENUE DRIVE WEST

58th AVENUE DRIVE WEST

MATCH LINE S - S

MATCH LINE T - T

20' 10' 0 20'

N

INSTALL
F.H. ASS'Y
1 - 6"X6" TEE
3LF SOUTH OF
PROP LINE
KEEP WITHIN ROW

GROUT ABANDONED
3" WATER MAIN

9' FROM
BACK OF CURB

2'-6" FROM
PROP LINE

INSTALL
1 - 8"X8" TEE
3 - 8" GV

INSTALL
1 - 8"X8"X6" TEE
2 - 8" GV
1 - 6" GV

HA2-10

INSTALL
528 LF OF 8"
WATERMAIN

3'-6" FROM
PROP LINE

INSTALL
1 - 8"X8"X6" TEE
2 - 8" GV
1 - 6" GV

15" RCP

EXISTING
GROUND

18" MIN

6" WATER
MAIN

INSTALL
1 - 8"X8"X6" TEE
2 - 8" GV

5829
5820
5819
5824
2512
2508
2504
2424
2420
2416

LEGEND:

▲ HAND AUGER BORING LOCATION

CONTINUATION ON SHEET C10

CONTINUATION ON SHEET C12

24th STREET WEST

INSTALL
F.H. ASSY
1 - 6"X6" TEE
2LF SOUTH OF
PROP LINE
KEEP WITHIN ROW

GROUT ABANDONED
3" WATER MAIN

7'-6" FROM
BACK OF CURB

5' FROM
PROP LINE

INSTALL
1 - 8"X8"X6" TEE
2 - 8" GV
1 - 6" GV

HA2-15

INSTALL
565 LF OF 8"
WATERMAIN

INSTALL
1 - 8"X8"X6" TEE
2 - 8" GV
1 - 6" GV

5823
5828
5827
2412
2408
2402
2312
2308
2304
2212
2208

LEGEND:

▲ HAND AUGER BORING LOCATION

PLATE I-Y

ROBERT A. CANNARELLA, P.E.
Fla. P.E No. 17367

DSGN	BJK
DR	BJK
CHK	RAC
APVD	RAC

NO.	DATE	REVISION	BY	APVD

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

CH2MHILL
4350 WEST CYPRESS STREET SUITE 600
TAMPA, FLORIDA 33607-4155
LB 0002934 AA C000656

MANATEE COUNTY
SUBURBAN SYSTEM
WATER LINE REPLACEMENT PROJECT
PHASE 2
MANATEE COUNTY, FLORIDA
PROJECT No. 60747.70

PLAN SHEET WATER LINE
58th AVE DR W FROM 26th ST W TO 2208

SHEET	C26
DWG	C26.DWG
DATE	SEPTEMBER 2009
PROJ	386879.WM

V:\Manatee County Waterline\Drawings\Tlcover.dwg Plotted: 2/18/2009 0:13 pm By: bkleinl Model Plot Scale: 1=1.0 Xref Dwg's:

CONTINUATION ON SHEET C14

CONTINUATION ON SHEET C16

MATCH LINE T - T

MATCH LINE U - U

22nd STREET WEST

21st STREET WEST

58th AVENUE DRIVE WEST

INSTALL
F.H. ASS'Y
1 - 6"X6" TEE
2LF SOUTH OF
PROP LINE
KEEP WITHIN ROW

INSTALL
1 - 6" 22.5° BEND
2LF NORTH OF
PROP LINE

GROUT ABANDONED
3" WATER MAIN

INSTALL
519 LF OF 8"
WATERMAIN

INSTALL
1 - 8"X8"X6" TEE
2 - 8" GV
1 - 6" GV
7LF WEST OF
ASPH DRIVE

INSTALL
1 - 8"X8"X6" TEE
2 - 8" GV
1 - 6" GV
1 - 6" 22.5° BEND
8LF EAST OF
CONC DRIVE

8' FROM BACK OF CURB

5' FROM PROP LINE

9' FROM BACK OF CURB

3' FROM PROP LINE

HA2-20

HA2-25

LEGEND:

▲ HAND AUGER BORING LOCATION

CONTINUATION ON SHEET C18

20th STREET WEST

INSTALL
F.H. ASS'Y &
1 - 6"X6" TEE
1 LF SOUTH OF
PROPERTY LINE
KEEP WITHIN ROW

INSTALL
604 LF OF 8"
WATERMAIN

INSTALL
AIR RELEASE
VALVE

INSTALL
1 - 8"X8"X6" TEE
2 - 8" GV
1 - 6" GV
7 LF WEST OF
PROPERTY LINE

CANAL

3' MIN

INSTALL
AIR RELEASE
VALVE

INSTALL 8"
HDD HDPE

LIFT STATION

GRATE INLET
RIM EL=15.45
SE INV=14.22

GRATE INLET
RIM EL=15.48
NW INV=13.75
SW INV=13.70

PLATE I-Z

DSGN	BJK						
DR	BJK						
CHK	RAC						
APVD	RAC	NO.	DATE	REVISION	BY	APVD	

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CH2MHILL
4350 WEST CYPRESS STREET SUITE 600
TAMPA, FLORIDA 33607-4155
LB 0002934 AA C000656

MANATEE COUNTY
SUBURBAN SYSTEM
WATER LINE REPLACEMENT PROJECT
PHASE 2
MANATEE COUNTY, FLORIDA
PROJECT No. 60747.70

PLAN SHEET WATER LINE
58th AVE DR W FROM 2208 TO 1902

SHEET	C27
DWG	C27.DWG
DATE	SEPTEMBER 2009
PROJ	386879.WM

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CONTINUATION ON SHEET C20

CONTINUATION ON SHEET C21

LEGEND:

▲ HAND AUGER BORING LOCATION

HA2–30

INSTALL
1 - 8"X6" CROSS
2 - 8" GV
2 - 6" GV
2 - 8"X6" REDUCER

INSTALL
F.H. ASSY
1 - 8"X6" TEE
16 LF NW OF
CONC DRIVE
KEEP IN ROW

INSTALL
126 LF OF 8"
WATERMAIN

7' FROM EOP

5' FROM EOP

6'-6" FROM PROP LINE

6'-6" FROM PROP LINE

MATCH LINE V - V

MATCH LINE W - W

58th AVENUE DRIVE WEST

17th STREET WEST

6' FROM EOP

7' FROM PROP LINE

GROUT ABANDONED
3" WATER MAIN

GROUT ABANDONED
3" WATER MAIN

INSTALL
468 LF OF 8"
WATERMAIN

INSTALL
2 - 8"X8"X6" TEE
2 - 8" GV
1 - 6" GV

INSTALL
2 - 8"X8"X6" TEE
2 - 8" GV
1 - 6" GV
1 - F.H. ASSY
1 - 6" 22.5° BEND
16LF WEST OF
CONC DRIVE

INSTALL
2 - 8"X8"X6" TEE
1 - 6" GV

CONTINUATION ON SHEET C22

CONTINUATION ON SHEET C24

LEGEND:

▲ HAND AUGER BORING LOCATION

HA2–35

HA2–36

INSTALL
2 - 8"X8"X6" TEE
2 - 8" GV
1 - 6" GV
12 LF EAST OF
PROP LINE

INSTALL
603 LF OF 8"
WATERMAIN

INSTALL
1 - 8"X8"
CUT IN TEE
AND VALVE

PLATE I–AA

DSGN	BJK						
DR	BJK						
CHK	RAC						
APVD	RAC	NO.	DATE	REVISION	BY	APVD	

ROBERT A. CANNARELLA, P.E.
Fla. P.E No. 17367

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CH2MHILL
4350 WEST CYPRESS STREET SUITE 600
TAMPA, FLORIDA 33607-4155
LB 0002934 AA C000656

MANATEE COUNTY
SUBURBAN SYSTEM
WATER LINE REPLACEMENT PROJECT
PHASE 2
MANATEE COUNTY, FLORIDA
PROJECT No. 60747.70

PLAN SHEET WATER LINE
58th AVE DR W FROM 1902 TO 1502

SHEET	C28
DWG	C28.DWG
DATE	SEPTEMBER 2009
PROJ	386879.WM

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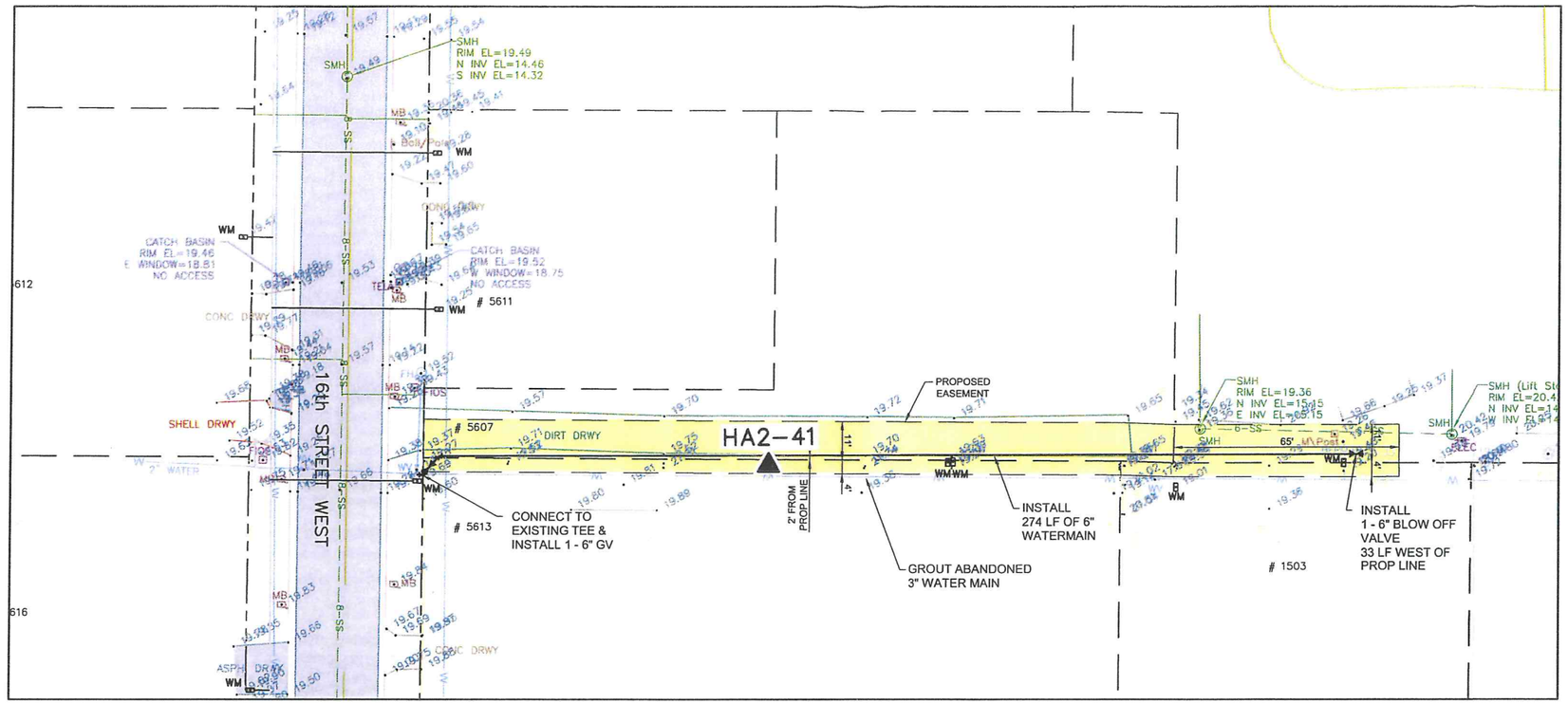
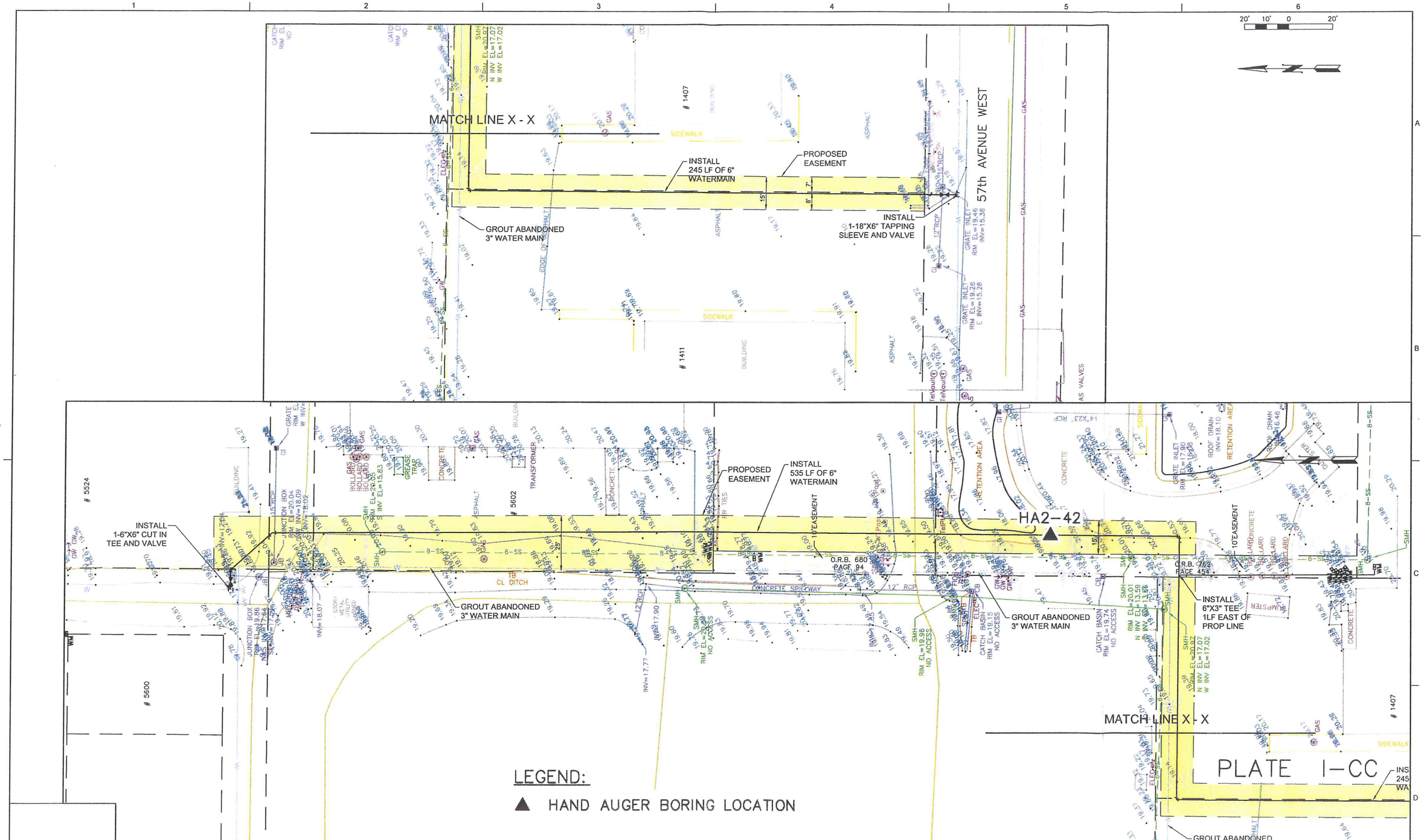


LEGEND:

▲ HAND AUGER BORING LOCATION

PLATE I-BB

ROBERT A. CANNARELLA, P.E. Fla. P.E No. 17367	DSGN BJK DR BJK CHK RAC APVD RAC	NO.	DATE	REVISION	BY	APVD	VERIFY SCALE BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1" IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.	CH2MHILL 4350 WEST CYPRESS STREET SUITE 600 TAMPA, FLORIDA 33607-4155 LB 0002934 AA C000656	MANATEE COUNTY SUBURBAN SYSTEM WATER LINE REPLACEMENT PROJECT PHASE 2 MANATEE COUNTY, FLORIDA PROJECT No. 60747.70	PLAN SHEET WATER LINE 16th ST W TO TRI MOR TRAILER PARK	SHEET C29 DWG C29.DWG DATE SEPTEMBER 2009 PROJ 386879.WM



ROBERT A. CANNARELLA, P.E.
Fla. P.E No. 17367

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DR	BJK
CHK	RAC
APVD	RAC

NO.	DATE	REVISION	BY	APVD

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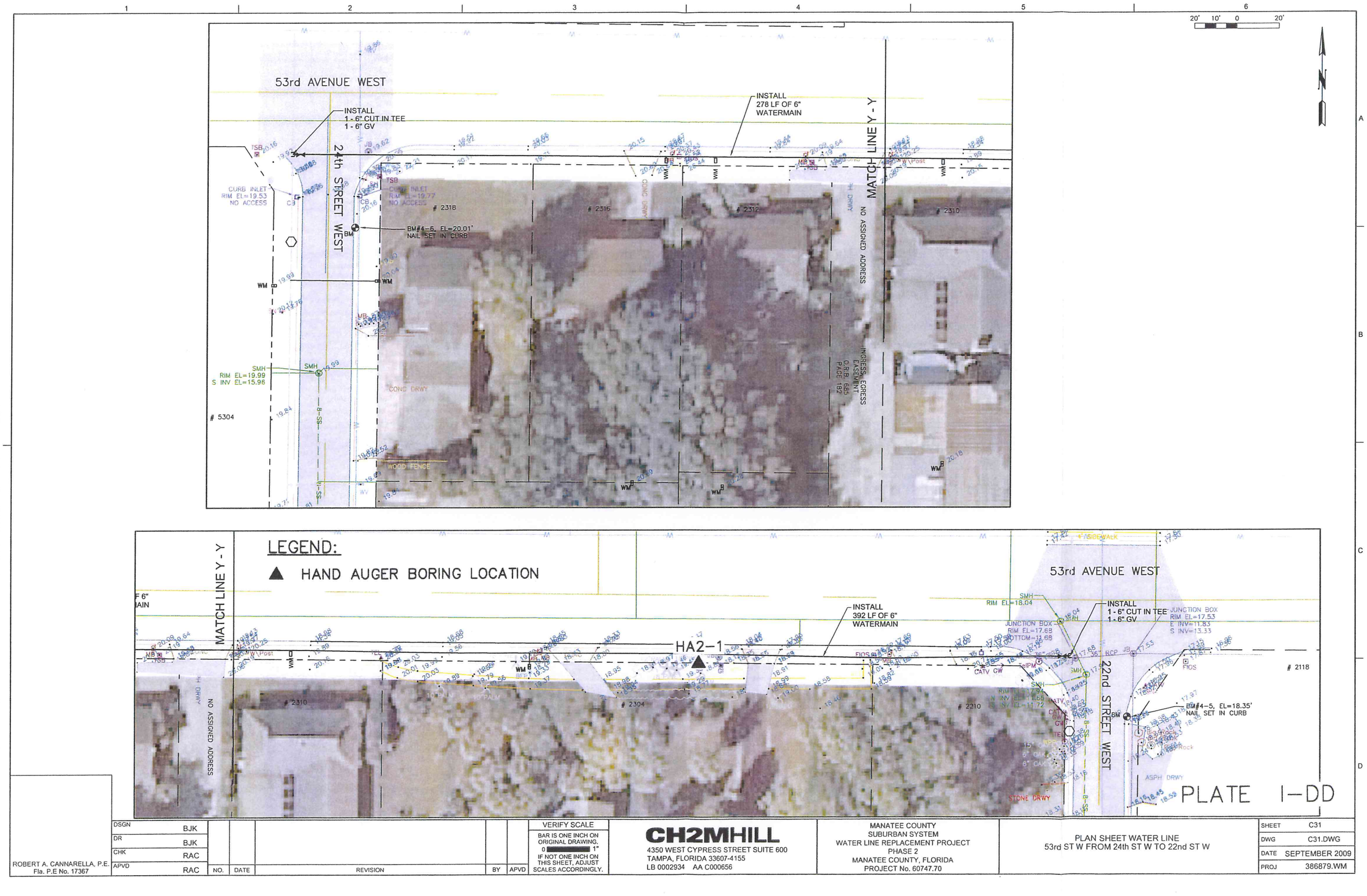
CH2MHILL
4350 WEST CYPRESS STREET SUITE 600
TAMPA, FLORIDA 33607-4155
LB 0002934 AA C000656

MANATEE COUNTY
SUBURBAN SYSTEM
WATER LINE REPLACEMENT PROJECT
PHASE 2
MANATEE COUNTY, FLORIDA
PROJECT No. 60747.70

PLAN SHEET WATER LINE
57th AVE W TO GREGORY LN

SHEET	C30
DWG	C30.DWG
DATE	SEPTEMBER 2009
PROJ	386879.WM



DSGN	BJK						
DR	BJK						
CHK	RAC						
APVD	RAC	NO.	DATE	REVISION	BY	APVD	

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Fla. P.E No. 17367

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CH2MHILL
4350 WEST CYPRESS STREET SUITE 600
TAMPA, FLORIDA 33607-4155
LB 0002934 AA C000656

MANATEE COUNTY
SUBURBAN SYSTEM
WATER LINE REPLACEMENT PROJECT
PHASE 2
MANATEE COUNTY, FLORIDA
PROJECT No. 60747.70

PLAN SHEET WATER LINE
53rd ST W FROM 24th ST W TO 22nd ST W

SHEET	C31
DWG	C31.DWG
DATE	SEPTEMBER 2009
PROJ	386879.WM

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