PART 2 PRODUCTS

2.01 GENERAL

All enclosures shall comply with the standard detail for shape and size and shall include a 24"W x 24"H access door with a hasp for a padlock. The enclosure shall be securely attached to a concrete base with anchor brackets installed on the interior of the enclosure, through the flange base of the enclosure itself or through a stainless steel anchor hinge.

2.02 ALUMINUM ENCLOSURE

A. The roof, walls and access panels shall be constructed of mill finish aluminum, ASTM B209, solid sheet construction, with a wall thickness of one eighth inch.

B. All structural members shall be aluminum. No wood or "particle board" shall be allowed in assembly.

C. Multi-sectional enclosures shall fit together with overlapping "tongue and groove" joints and be secured internally with mechanical fasteners.

D. All assembly fasteners shall be stainless steel or aluminum.

2.03 STAINLESS STEEL ENCLOSURE

A. The roof, walls and access panels shall be constructed stainless steel, type 316, solid sheet construction, with a wall thickness of one eighth inch.

B. All structural members shall be stainless steel. No wood or "particle board" shall be allowed in assembly.

C. Multi-sectional enclosures shall fit together with overlapping "tongue and groove" joints and be secured internally with mechanical fasteners.

C. All assembly fasteners shall be stainless steel.

FIBERGLASS ENCLOSURE

A. Enclosure shall be a 1 piece molded fiberglass enclosure with a base flange for mounting to the concrete slab and a full recessed door opening with a lip. Enclosure shall be by Allied Molded Products, or approved equal. Color shall be as directed by the Engineer.

B. Full length piano style hinge, door latch, padlock hasp and all bolts and other hardware shall be of stainless steel.

PART 3 EXECUTION

3.01 INSTALLATION

A. Enclosure shall be assembled and mounted on the concrete pad according to the manufacturer's instructions and the contract drawings.

B. Enclosure shall be installed plumb, level and square.

END OF SECTION

APPENDICES

REPORT OF THE
GEOTECHNICAL INVESTIGATION

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

Driggers Engineering Services Incorporated

DRIGGERS ENGINEERING SERVICES INCORPORATED
Geotechnical Engineering & Construction Materials Testing

July 8, 2009

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

Attention: Mr. Paul Schamell
Project Manager

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

Dear Paul:

Pursuant to your request and authorization, **DRIGGERS ENGINEERING SERVICES, INC.** has completed the requested geotechnical investigation for Phase I 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 pipeline alignments. Results of our studies for Phase II will be presented in a separate report.

GEOTECHNICAL INVESTIGATION PROGRAM

A combined field and laboratory investigation program 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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12220 49th Street North • Clearwater, Florida 33762
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clwoffice@driggers-eng.com

Tampa
Phone: 813.948.6027
Fax: 813.948.7645
tpaoffice@driggers-eng.com

FIELD INVESTIGATION - Plates I-A through I-R of the report attachments identify the respective positioning of thirty-three (33) shallow classification borings that were typically advanced to the requested depth of 8 feet below existing grade, where feasible. In accordance with your request, the classification borings were generally spaced a nominal 500 feet apart. The locations of the classification borings were identified in the field by our personnel with the assistance of the pipeline alignment plans provided by CH_2M Hill. The locations depicted are considered approximate since they were not surveyed. Ground surface elevation information was not available.

The classification borings were conducted utilizing hand auger equipment wherein the soils were classified virtually continuously below existing grades to the termination depth. Where difficulties were encountered in advancing the borings, a small power auger was utilized in an attempt to advance the borings. 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. Selected samples were also tested for corrosivity potential. Atterberg limits, corrosivity and organic content 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 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 about 18 percent, with the clayey sands exhibiting moderate plasticity characteristics. Some of the sands also contained traces to various concentrations of shell. Note that a thin seam of organic peat was encountered at a depth of about 3.0 to 3.4 feet at boring location HA-29.

Exceptions to the general trend occurred at nine (9) of the boring locations where a variably weathered limestone caprock was encountered. This generally thin rock unit was first encountered at depths ranging from about 0.8 to 5 feet beneath present grades. Where it was possible to penetrate below the limestone with a hand auger or small power auger, the unit was about generally about 6 inches to 2 feet in thickness. Note that at boring locations HA-1, HA-25 and HA-27 it was not possible to penetrate through the rock and boulders. Review of the Manatee County Soil Survey indicates the presence of Broward, Hallandale and Wabasso Variant soils in the project vicinity. The typical profile of each of these soil types includes shallow depth limestone, limestone boulders or gravel.

Groundwater was typically measured within a depth range of 5.8 to 7.6 feet below existing grade at the time of our geotechnical studies. At several locations, groundwater was not evident within the boring completion depth. It should be noted that these classification borings were conducted in middle to late June in the early part of the normal wet season. While there had been periods of heavy rainfall preceding our field investigation, there is the potential for groundwater to occur at shallower depths in response to intense or prolonged rainfall. Water may also occur in a temporarily perched state above the low permeability silty to clayey sand zones or discontinuous limestone caprock.

The Soil Survey information indicates that, under natural conditions, seasonal high groundwater levels for Broward, Hallandale and Wabasso Variant soils may occur within a foot of the ground surface. EauGallie-Myakka soils, which the Soil Survey map indicates in the southwester portion of the project area, have an indicated seasonal high groundwater level between 0.5 and 1.5 feet below grade. 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. Inconsideration of the above, we would anticipate no more than a nominal 2 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 remainder of the wet season.

GEOTECHNICAL EVALUATION AND RECOMMENDATIONS

PLANNED FACILITIES - We understand that the subject project consists of the construction of potable water mains of varying diameters and probably of HDPE construction. Based upon plans provided and discussions with Mr. Bob Cannarella, P.E. with CH_2M Hill, the water mains will generally be constructed outside of existing pavements utilizing either directional drilling or standard cut and cover construction, with a burial depth of no more than about 5 feet.

PIPELINE SUBGRADE CONDITIONS - Our geotechnical studies suggest that the subgrade soils typically consist of fine sands containing 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 certainly 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 "Slightly 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 zone evidenced in boring HA-29 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.

The exploratory borings and Soil Survey information indicate that the pipeline construction will encounter shallow depth limestone, limestone boulders and limestone gravel 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, these soil types 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 - Portions of the pipeline may be constructed utilizing open-cutting and rapid backfilling following pipeline installation. Depending on the depth of the cut, it may be necessary to adjust the 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 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.

We understand that portions of the pipeline may be installed utilizing directional drilling. Care, of course, 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 or structures. Conversely, one must avoid over-pressuring the drilling slurry that could result in unacceptable discharge of drilling slurry to the ground surface. The apparently discontinuous limestone caprock will also impact the utilization of directional drilling. Excavations may be needed where rock may exist at drilling entry and exit points. Where the rock layer is relatively shallow, the pipeline could be installed at a greater depth. However, this may force the pipe deeper than the intended maximum depth of 5 feet in some locations. The caprock will also present difficulties with excavations for service line connections.

Where rock was encountered and could not be penetrated during our authorized investigation, deeper borings are recommended to check the thickness of the rock which would affect both directional drilling and pipe direct burial depths. Additional more closely spaced borings would also be informative to help delineate the extent, thickness and nature of the limestone unit.

CONSTRUCTION INSPECTION AND TESTING - The authorized geotechnical investigation consisted of a series of relatively widely spaced, hand advanced classification borings intended to define 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.

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 SERVICE, 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 7-9-09

Nicholas T. Korecki, P.E.
Senior Geotechnical Engineer
FL Registration No. 45529

F. Jaime Driggers, P.E.
President
FL Registration No. 16989

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

APPENDIX

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

HAND AUGER BORING LOGS

SUMMARY OF LABORATORY TEST RESULTS

GRAINSIZE ANALYSES

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

EXISTING 20" WATER MAIN

NEW WATER SERVICE CONNECTION WITH NEW METER BOX TYP. SEE NOTES AND DETAILS

53rd AVENUE WEST

25th STREET WEST

INSTALL 1-20"X6" TAPPING SLEEVE AND VALVE

CUT AND PLUG EXISTING 3" WATER MAIN

INSTALL 6" GVA 5 LF SOUTH OF CURB

INSTALL 594 LF OF 6" WATERMAIN

GROUT ABANDONED 3" WATER MAIN

INSTALL F.H. ASS'Y 45 LF NORTH OF DRIVEWAY AND WEST OF SIDEWALK

18" RECLAIMED WATERMAIN

18" RCP

PROPOSED 6" WATERMAIN

18" MIN

INSTALL 4-6" 45° BENDS

HA-1

MATCH LINE A - A

MATCH LINE B - B

LEGEND:

▲ HAND AUGER BORING LOCATION

SCALE: 1" = 40'

HA-2

INSTALL F.H. ASS'Y 7' FROM EOP AND 1' FROM EAST EDGE OF SIDEWALK

INSTALL 6" GV 7 LF SOUTH OF F.H. ASS'Y

HA-3

PLATE I-A

DSGN	BJK	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.
DR	BJK						
CHK	RAC						
APVD	RAC						

ROBERT A. CANNARELLA, P.E.
Fla. P.P 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 1
MANATEE COUNTY, FLORIDA
PROJECT No. 60747.70

PLAN SHEET WATER LINE
25th ST W FROM 53rd AVE W TO 5423 25TH ST W

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

W:\Manatee County Waterline\Drawings\Tlcover.dwg Plotted: 2/18/2009 @ 1:19 pm By: bklein1 Model Plot Scale: 1=1.0 Xref Dwg's:

FOR CONTINUATION SEE SHEET C18

NEW WATER SERVICE CONNECTION WITH SHELL DRWY NEW METER BOX TYP. SEE NOTES AND DETAILS

INSTALL PLUG

CIP

INSTALL 60 LF OF 8" PIPE

INSTALL F.H. ASSY 34 LF EAST OF CROSS

CUT AND PLUG EXISTING 3" WATER MAIN

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

REMOVE EXISTING HYDRANT AND VALVE BOX

25th STREET WEST

55th AVENUE WEST

MATCH LINE B - B

MATCH LINE C - C

SCALE: 1" = 40'

INSTALL 511 LF OF 6" WATERMAIN

HA-4

GROUT ABANDONED 3" WATER MAIN

PROPOSED 6" WATERMAIN

12"X18" RCP

12" SANITARY SEWER

18" MIN

3' MIN

INSTALL 4-6" 45° BENDS

INSTALL 20 LF OF 8" PIPE AND PLUG

INSTALL 8"X6" CROSS

GAS LINE

INSTALL 6" GV

PROPOSED 6" WATERMAIN

INSTALL 4-6" 45° BENDS

6" WATERMAIN

FOR CONTINUATION SEE SHEET C18

LEGEND:

▲ HAND AUGER BORING LOCATION

SCALE: 1" = 40'

INSTALL F.H. ASSY 2 LF NORTH OF PROP LINE KEEP WITHIN ROW

INSTALL 6" GV 11 LF NORTH OF DRIVEWAY

25th STREET WEST

HA-5

INSTALL 530 LF OF 6" WATERMAIN

GROUT ABANDONED 3" WATER MAIN

MATCH LINE C - C

MATCH LINE D - D

LEGEND:

▲ HAND AUGER BORING LOCATION

PLATE I-B

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

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Fla. P.E. No. 17367

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

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LB 0002934 AA C000656

MANATEE COUNTY
SUBURBAN SYSTEM
WATER LINE REPLACEMENT PROJECT
PHASE 1
MANATEE COUNTY, FLORIDA
PROJECT No. 60747.70

PLAN SHEET NEW WATER MAIN
25th ST W FROM 5427 TO 5619

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

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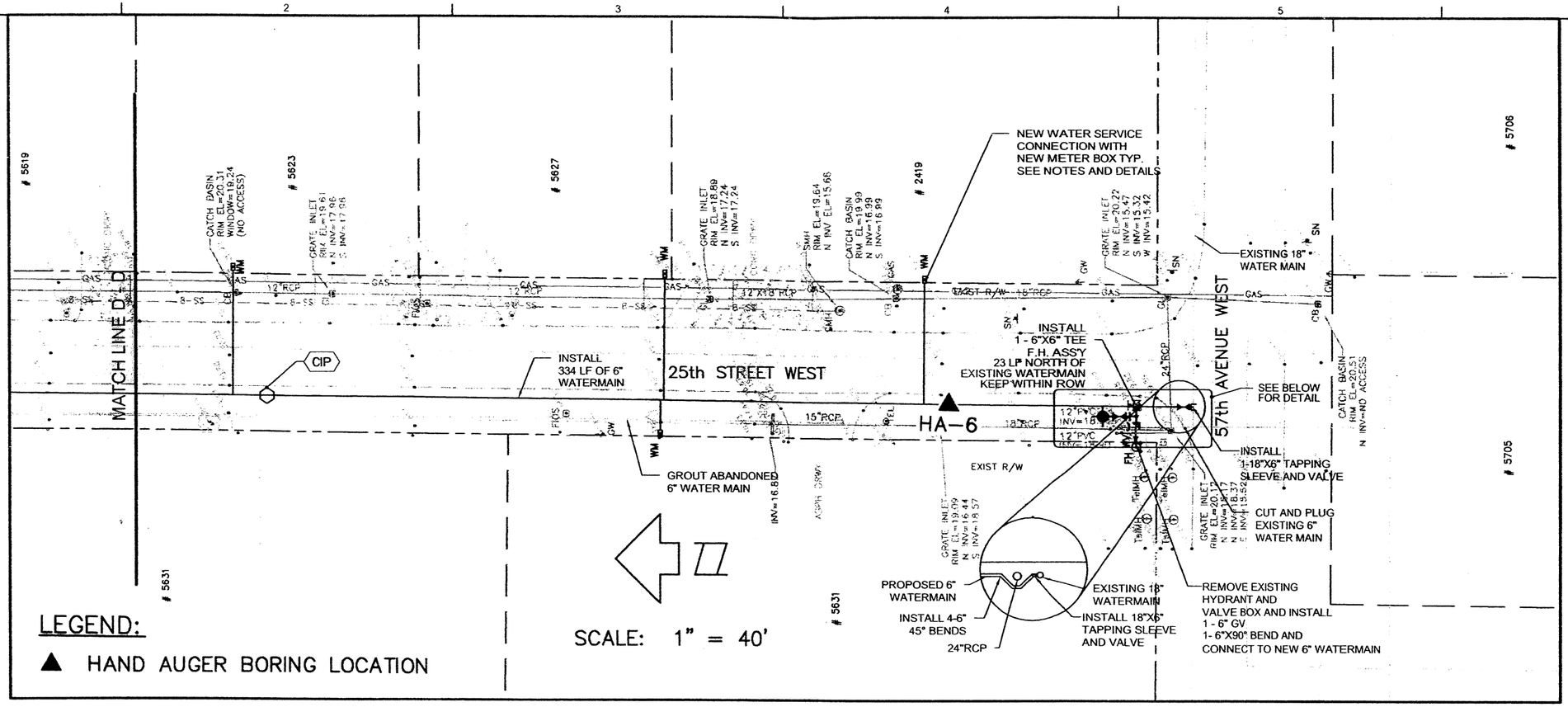

LEGEND:

▲ HAND AUGER BORING LOCATION

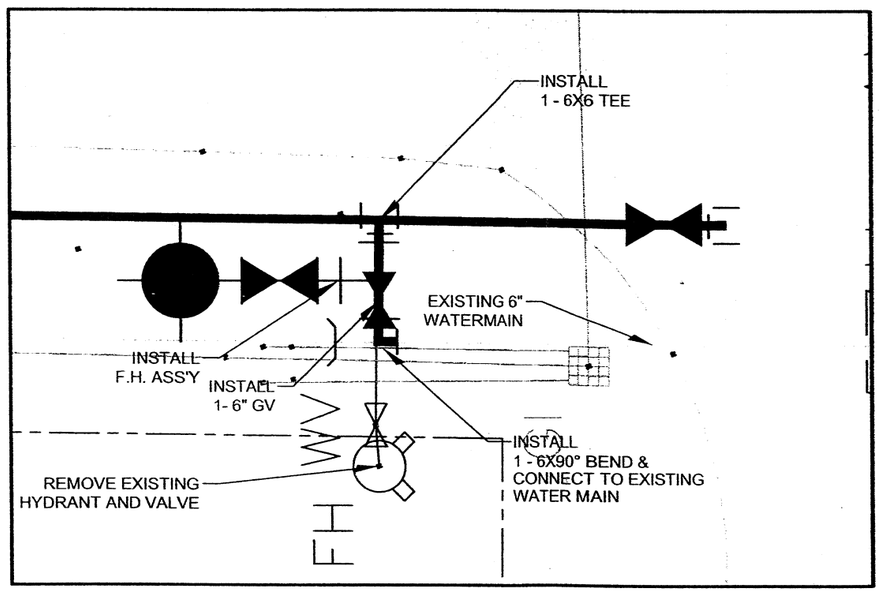

PLATE I-C

ROBERT A. CANNARELLA, P.E. Fla. P.P 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.

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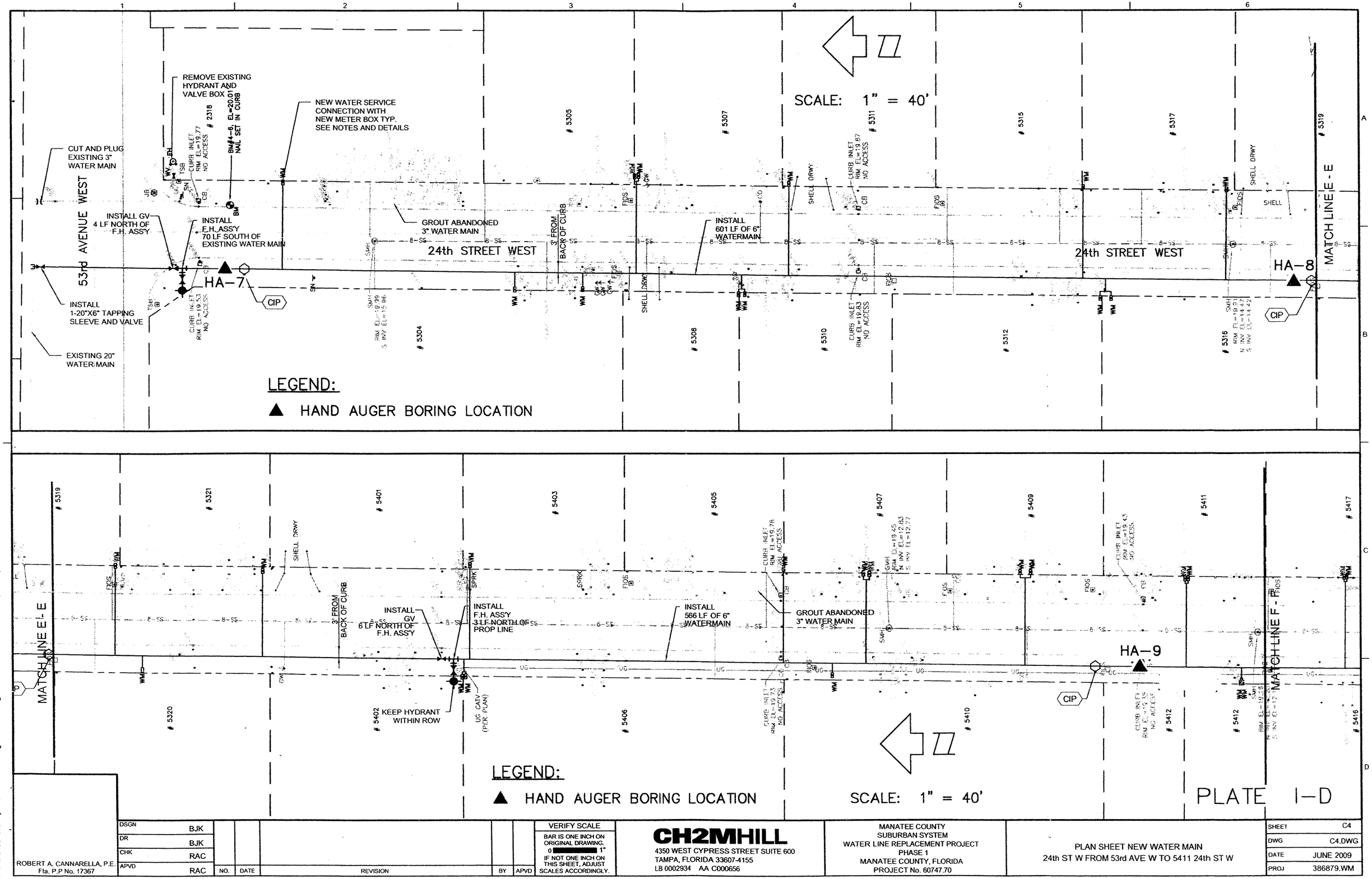
LB 0002934 AA C000656

MANATEE COUNTY
SUBURBAN SYSTEM
WATER LINE REPLACEMENT PROJECT
PHASE 1
MANATEE COUNTY, FLORIDA
PROJECT No. 60747.70

PLAN SHEET NEW WATER MAIN
25th ST W FROM 5623 TO 57th AVE W

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



DSGN	BJK	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.
DR	BJK						
CHK	RAC						
APVD	RAC						

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

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MANATEE COUNTY
SUBURBAN SYSTEM
WATER LINE REPLACEMENT PROJECT
PHASE 1
MANATEE COUNTY, FLORIDA
PROJECT No. 60747.70

PLAN SHEET NEW WATER MAIN
24th ST W FROM 53rd AVE W TO 5411 24th ST W

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

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FOR CONTINUATION SEE SHEET C18

NEW WATER SERVICE CONNECTION WITH NEW METER BOX TYP. SEE NOTES AND DETAILS

GROUT ABANDONED 3" WATER MAIN

INSTALL 551 LF OF 6" WATERMAIN

3' FROM BACK OF CURB

MATCH LINE F - F

24th STREET WEST

55th AVENUE WEST

CUT AND PLUG EXISTING WATER MAIN

BM#3-19 EL=19.92' TOP BOLT FIRE HYDRANT

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

INSTALL F.H. ASS'Y 2 LF SOUTH OF PROP LINE KEEP WITHIN ROW

HA-10

CIP

18" RCP

PROPOSED 6" WATER MAIN

UG CATV (PER PLAN)

INSTALL 4 - 6"X45° BENDS

18" MIN

18" SANITARY SEWER

EXISTING GROUND

INSTALL 8"X6" CROSS

INSTALL 6" GV GAS LINE

18"X24" ERCP

6" WATERMAIN

6" PROPOSED WATER MAIN

INSTALL 4 - 6"X45° BENDS

SCALE: 1" = 40'

GROUT ABANDONED 3" WATER MAIN

MATCH LINE G - G

LEGEND:

▲ HAND AUGER BORING LOCATION

FOR CONTINUATION SEE SHEET C18

HA-11

CIP

INSTALL 601 LF OF 6" WATERMAIN

INSTALL 6" GV 2 LF SOUTH OF DRIVEWAY

INSTALL F.H. ASS'Y 2 LF SOUTH OF PROP LINE KEEP WITHIN ROW

MATCH LINE H - H

LEGEND:

▲ HAND AUGER BORING LOCATION

SCALE: 1" = 40'

PLATE I-E

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.P No. 17367

MANATEE COUNTY SUBURBAN SYSTEM WATER LINE REPLACEMENT PROJECT PHASE 1 MANATEE COUNTY, FLORIDA PROJECT No. 60747.70

PLAN SHEET NEW WATER MAIN 24th ST W FROM 5417 TO 5615 24th ST W

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

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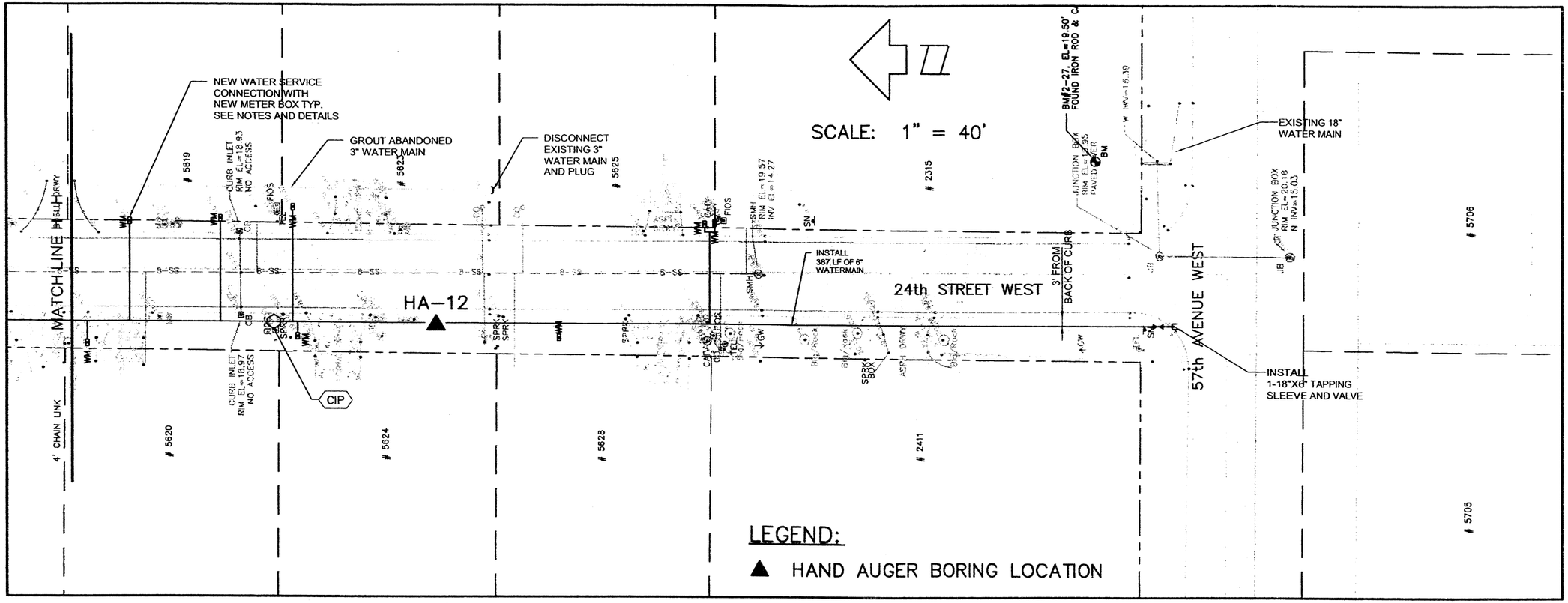

PLATE I-F

ROBERT A. CANNARELLA, P.E. Fla. P.P.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.

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LB 0002934 AA C000656

MANATEE COUNTY
SUBURBAN SYSTEM
WATER LINE REPLACEMENT PROJECT
PHASE 1
MANATEE COUNTY, FLORIDA
PROJECT No. 60747.70

PLAN SHEET NEW WATER MAIN
24th ST W FROM 5719 24th ST W TO 57th AVE W

SHEET	C6
DWG	C6.DWG
DATE	JUNE 2009
PROJ	386879.WM

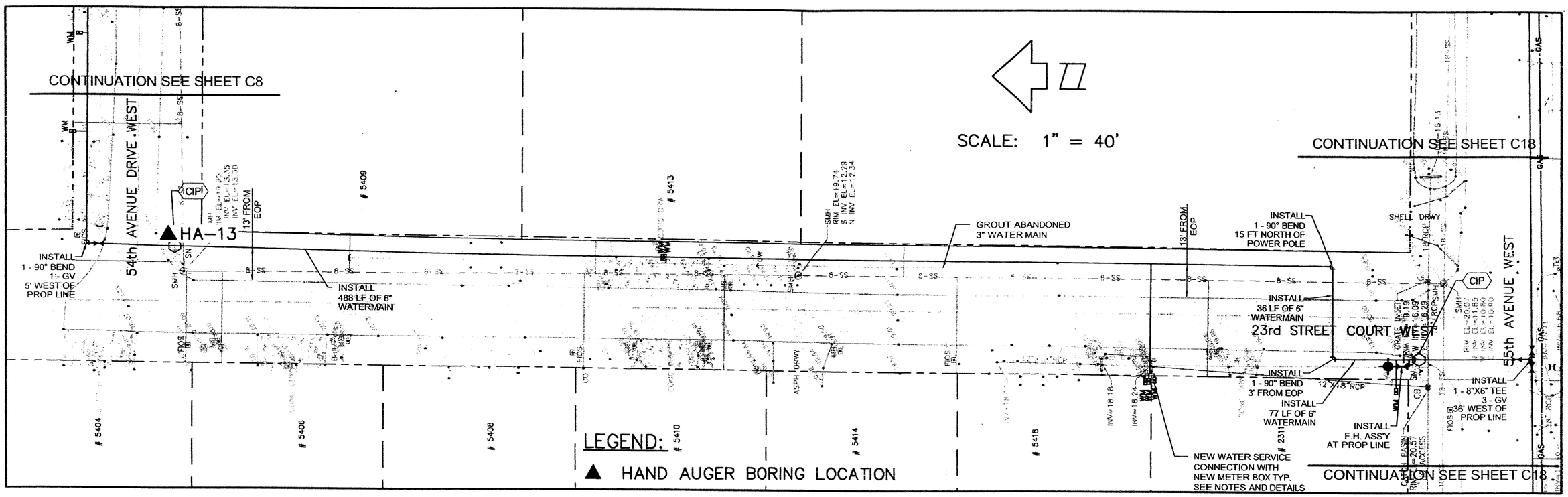

PLATE I-G

ROBERT A. CANNARELLA, P.E. Fla. P.P 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 1 MANATEE COUNTY, FLORIDA PROJECT No. 60747.70	PLAN SHEET NEW WATER MAIN 23rd ST CT W FROM 54th AVE DR W TO 55th AVE W	SHEET C7 DWG C7.DWG DATE JUNE 2009 PROJ 386879.WM

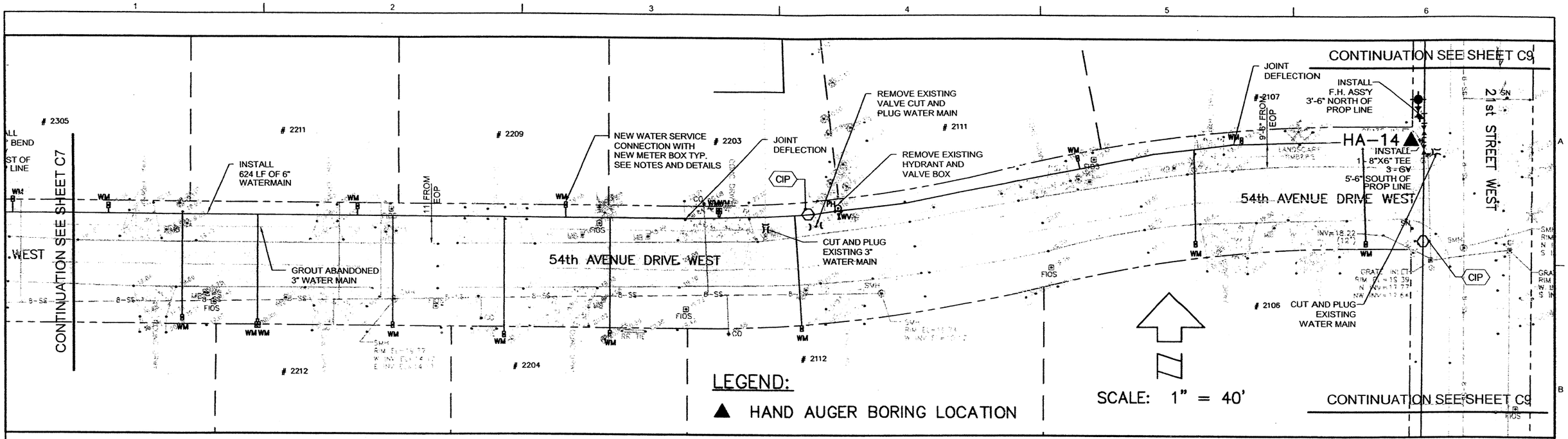

PLATE I-H

ROBERT A. CANNARELLA, P.E.
Fla. P.P 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
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TAMPA, FLORIDA 33607-4155
LB 0002934 AA C000656

MANATEE COUNTY
SUBURBAN SYSTEM
WATER LINE REPLACEMENT PROJECT
PHASE 1
MANATEE COUNTY, FLORIDA
PROJECT No. 60747.70

PLAN SHEET NEW WATER MAIN
55th AVE DR W FROM 23rd ST CT W & 21st ST W

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

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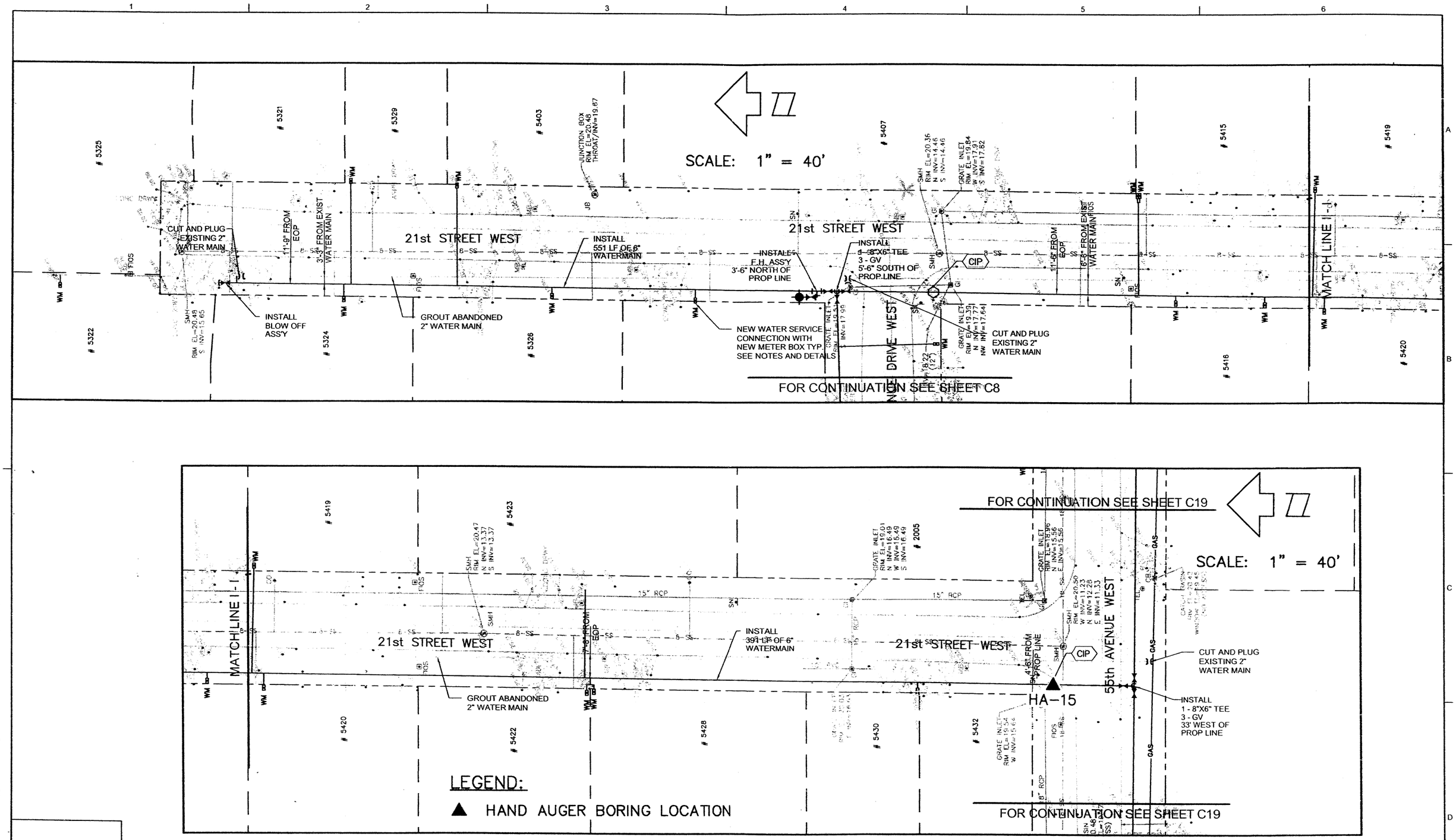


PLATE I-I

ROBERT A. CANNARELLA, P.E.
Fla. P.P 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.

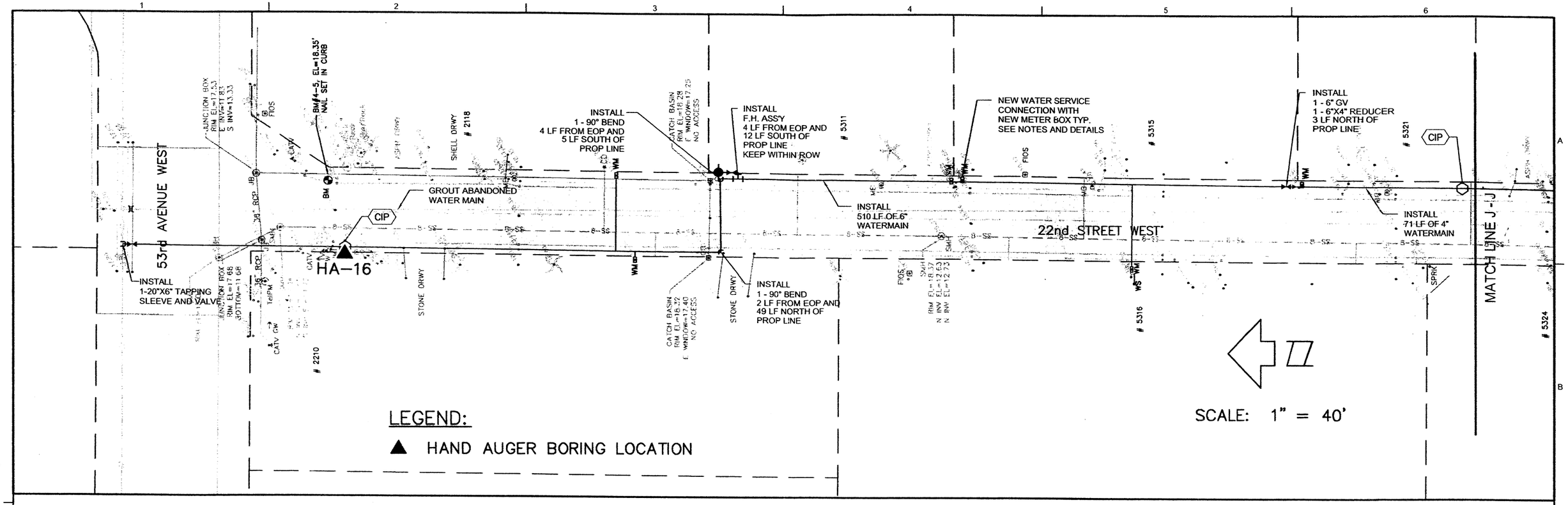
CH2MHILL
4350 WEST CYPRESS STREET SUITE 600
TAMPA, FLORIDA 33607-4155
LB 0002934 AA C000656

MANATEE COUNTY
SUBURBAN SYSTEM
WATER LINE REPLACEMENT PROJECT
PHASE 1
MANATEE COUNTY, FLORIDA
PROJECT No. 60747.70

PLAN SHEET NEW WATER MAIN
21st ST W FROM 5325 TO 55th AVE W

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

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



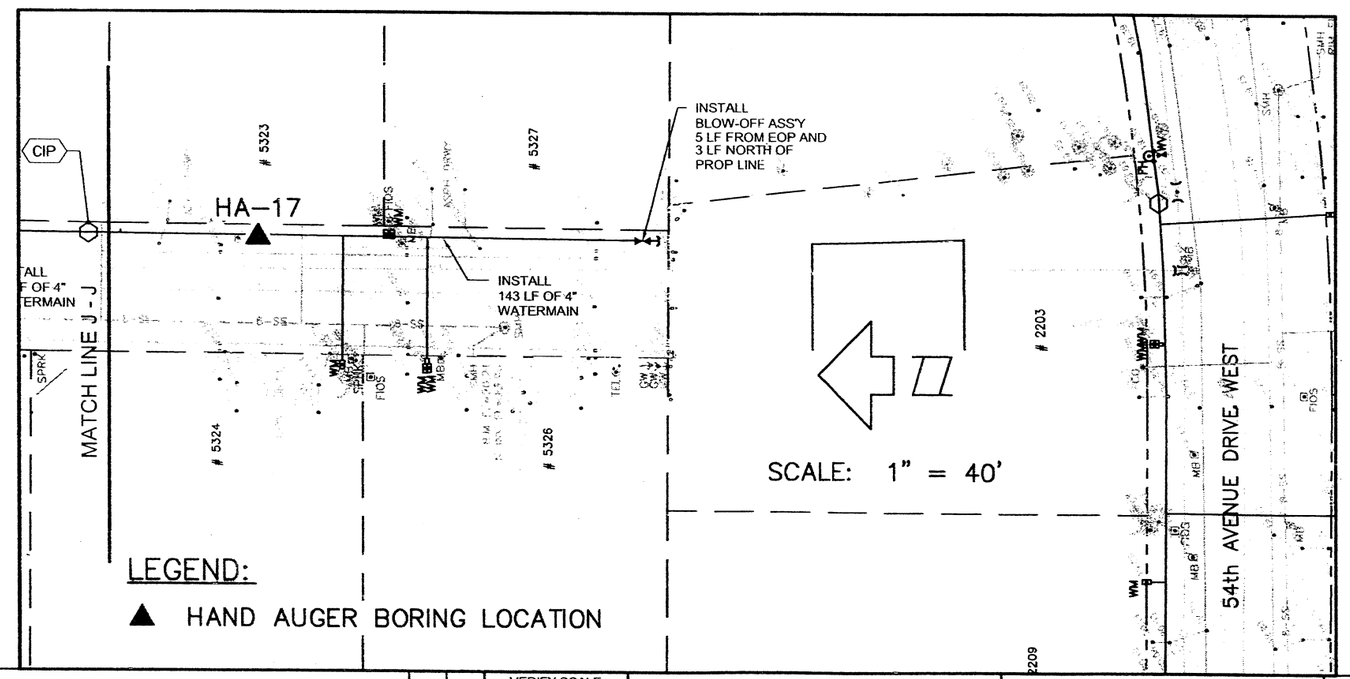


PLATE I–J

ROBERT A. CANNARELLA, P.E.
Fla. P.P 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.

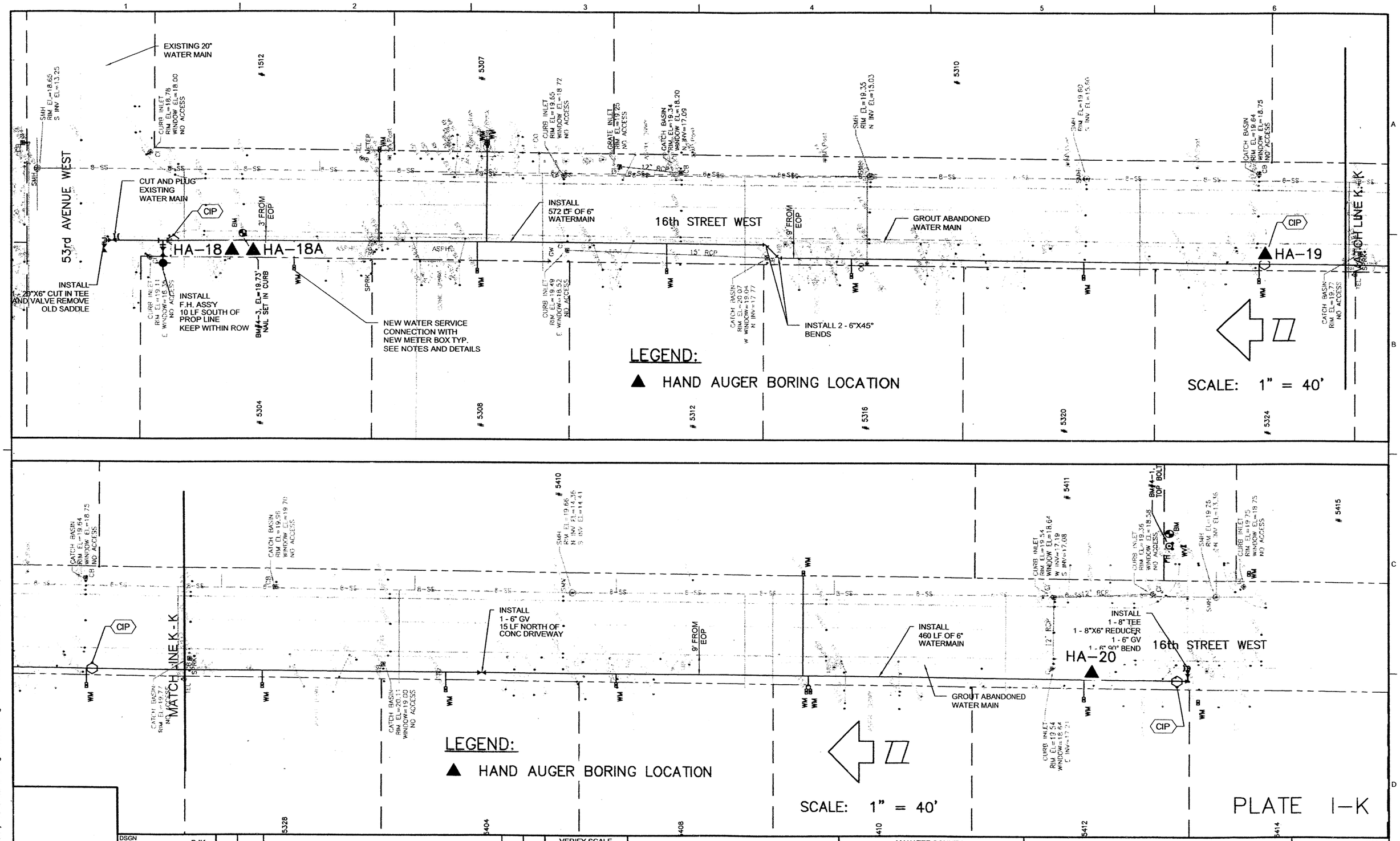
CH2MHILL
4350 WEST CYPRESS STREET SUITE 600
TAMPA, FLORIDA 33607-4155
LB 0002934 AA C000656

MANATEE COUNTY
SUBURBAN SYSTEM
WATER LINE REPLACEMENT PROJECT
PHASE 1
MANATEE COUNTY, FLORIDA
PROJECT No. 60747.70

PLAN SHEET WATER LINE
22nd ST W FROM 53rd AVE W TO 5327 22nd ST W

SHEET	C10
DWG	C10.DWG
DATE	JUNE 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:



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

ROBERT A. CANNARELLA, P.E.
Fla. P.P 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 1
MANATEE COUNTY, FLORIDA
PROJECT No. 60747.70

PLAN SHEET NEW WATER MAIN
16th ST W FROM 53rd AVE W TO 54th AVE DR W

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

FOR CONTINUATION SEE SHEET C18

55th AVENUE WEST

23rd STREET WEST

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

HA-21

CIP

CUT AND PLUG EXISTING WATER MAIN

BM#3-10, EL=20.62
NAIL SET IN PAVEMENT

GROUT ABANDONED 3" WATER MAIN

NEW WATER SERVICE CONNECTION WITH NEW METER BOX TYP. SEE NOTES AND DETAILS

INSTALL
556 LF OF 6"
WATERMAIN

8'-6" FROM EOP

3' FROM EXIST WATERLINE

INSTALL
F.H. ASS'Y
2' NORTH OF
~~PROP LINE~~
KEEP WITHIN ROW

INSTALL
GV
4' NORTH OF
DRIVE WAY

HA-22

CIP

MATCH LINE L - L

FOR CONTINUATION SEE SHEET C18

LEGEND:

▲ HAND AUGER BORING LOCATION

SCALE: 1" = 40'

MATCH LINE L - L

23rd STREET WEST

INSTALL
590 LF OF 6"
WATERMAIN

3' FROM EXIST WATERLINE

5' FROM EOP

GROUT ABANDONED
3" WATER MAIN

CIP

HA-23

MATCH LINE M - M

LEGEND:

▲ HAND AUGER BORING LOCATION

SCALE: 1" = 40'

PLATE I-L

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

ROBERT A. CANNARELLA, P.E.
Fla. P.P 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 1
MANATEE COUNTY, FLORIDA
PROJECT No. 60747.70

PLAN SHEET NEW WATER MAIN
23rd ST W FROM 55th AVE W TO 5628

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

V:\Manatee County Waterline\Drawings\Tlcover.dwg Plotted: 2/18/2009 013 pm By: bklehnl Model Plot Scale: 1=1.0 Xref Dwg's:

FOR CONTINUATION SEE SHEET C18

INSTALL
F.H. ASS'Y
2 LF NORTH OF
PROP LINE

CIP

CUT AND PLUG
EXISTING
WATER MAIN

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

55th AVENUE WEST

21st STREET COURT WEST

GROUT ABANDONED
3" WATER MAIN

NEW WATER SERVICE
CONNECTION WITH
NEW METER BOX TYP.
SEE NOTES AND DETAILS

INSTALL
585 LF OF 6"
WATERMAIN

HA-24

SCALE: 1" = 40'

MATCH LINE N - N

FOR CONTINUATION SEE SHEET C18

LEGEND:

▲ HAND AUGER BORING LOCATION

INSTALL
F.H. ASS'Y
3 LF SOUTH OF
PROP LINE
KEEP WITHIN ROW

GROUT ABANDONED
3" WATER MAIN

HA-25

INSTALL
6" GV
9 LF SOUTH OF
DRIVEWAY

21st STREET COURT WEST

INSTALL
544 LF OF 6"
WATERMAIN

CIP

MATCH LINE N - N

MATCH LINE O - O

SCALE: 1" = 40'

LEGEND:

▲ HAND AUGER BORING LOCATION

PLATE I-M

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.P.No. 17367

MANATEE COUNTY
SUBURBAN SYSTEM
WATER LINE REPLACEMENT PROJECT
PHASE 1
MANATEE COUNTY, FLORIDA
PROJECT No. 60747.70

PLAN SHEET NEW WATER MAIN
21st ST CT W FROM 55th AVE W TO 5622

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

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

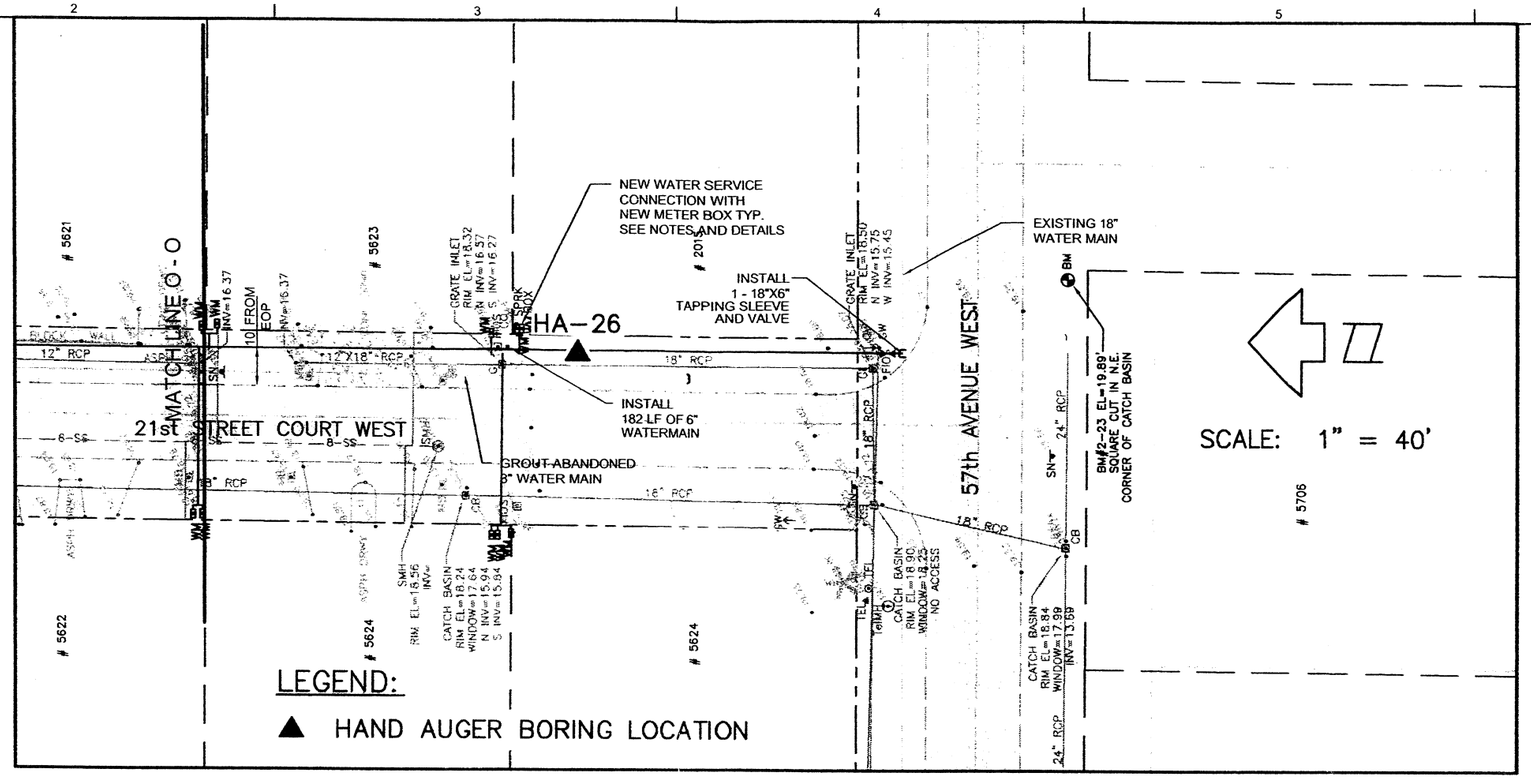


PLATE I-N

ROBERT A. CANNARELLA, P.E.
Fla. P.P 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 1
MANATEE COUNTY, FLORIDA
PROJECT No. 60747.70

PLAN SHEET NEW WATER MAIN
21st ST CT W FROM 5624 TO 57th AVE W

SHEET	C15
DWG	C15.DWG
DATE	JUNE 2009
PROJ	386879.WM

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

FOR CONTINUATION SEE SHEET C19

LEGEND:

▲ HAND AUGER BORING LOCATION

SCALE: 1" = 40'

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

EXISTING GAS LINE

EXISTING 6" WATER LINE

PROPOSED 6" WATERMAIN

INSTALL 4 - 45° BENDS

REMOVE EXISTING HYDRANT AND VALVE BOX

CUT AND PLUG EXISTING 3" WATER MAIN

GROUT ABANDONED 3" WATER MAIN

INSTALL 515 LF OF 6" WATERMAIN

INSTALL F.H. ASSY 6 LF NORTH OF PROP LINE KEEP WITHIN ROW

NEW WATER SERVICE CONNECTION WITH NEW METER BOX TYP. SEE NOTES AND DETAILS

HA-27

HA-28

55th AVENUE WEST

20th STREET WEST

20th ST

MATCH LINE P - P

BM #3-8, EL=20.12' NAIL & DISK SET IN PAVEMENT

CIP

9'-3" FROM PROP LINE

10' FROM PROP LINE

INSTALL 179 LF OF 4" WATERMAIN

INSTALL 158 LF OF 6" WATERMAIN

INSTALL 1 - 6" GV 1 - 6"X4" REDUCER 11 LF SOUTH OF PROP LINE

INSTALL 1 - 4" BLOW OFF ASS'Y 10 LF NORTH OF PROP LINE

INSTALL 1 - 4"X45° BEND

INSTALL 1 - 4"X22.5° BEND

LEGEND:

▲ HAND AUGER BORING LOCATION

PLATE 1-0

DSGN	BJK
DR	BJK
CHK	RAC
APVD	RAC

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

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 1
MANATEE COUNTY, FLORIDA
PROJECT No. 60747.70

PLAN SHEET NEW WATER MAIN
20th ST W FROM 55th AVE W TO 5612 20th ST W

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

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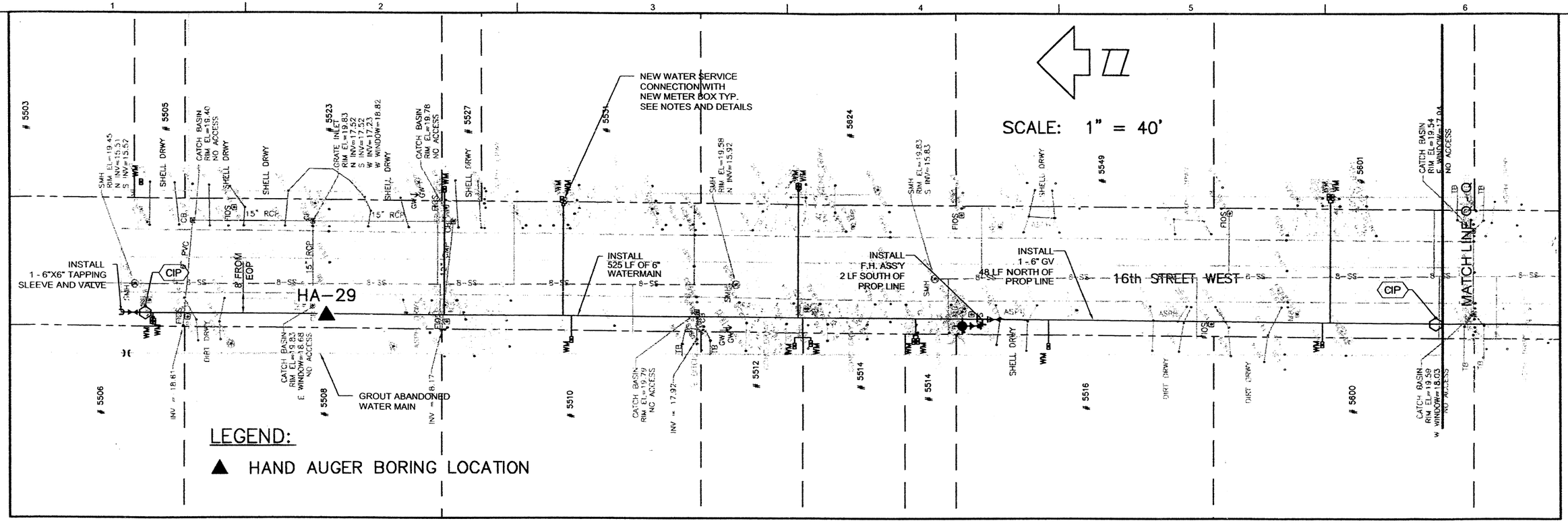


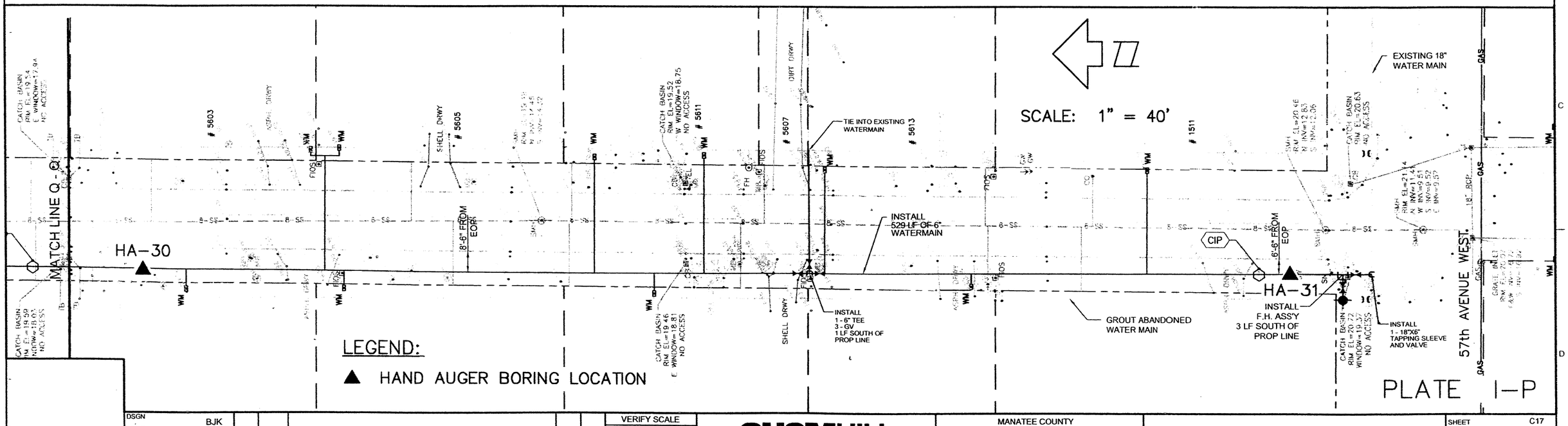


PLATE I-P

ROBERT A. CANNARELLA, P.E.
Fla. P.P. 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.

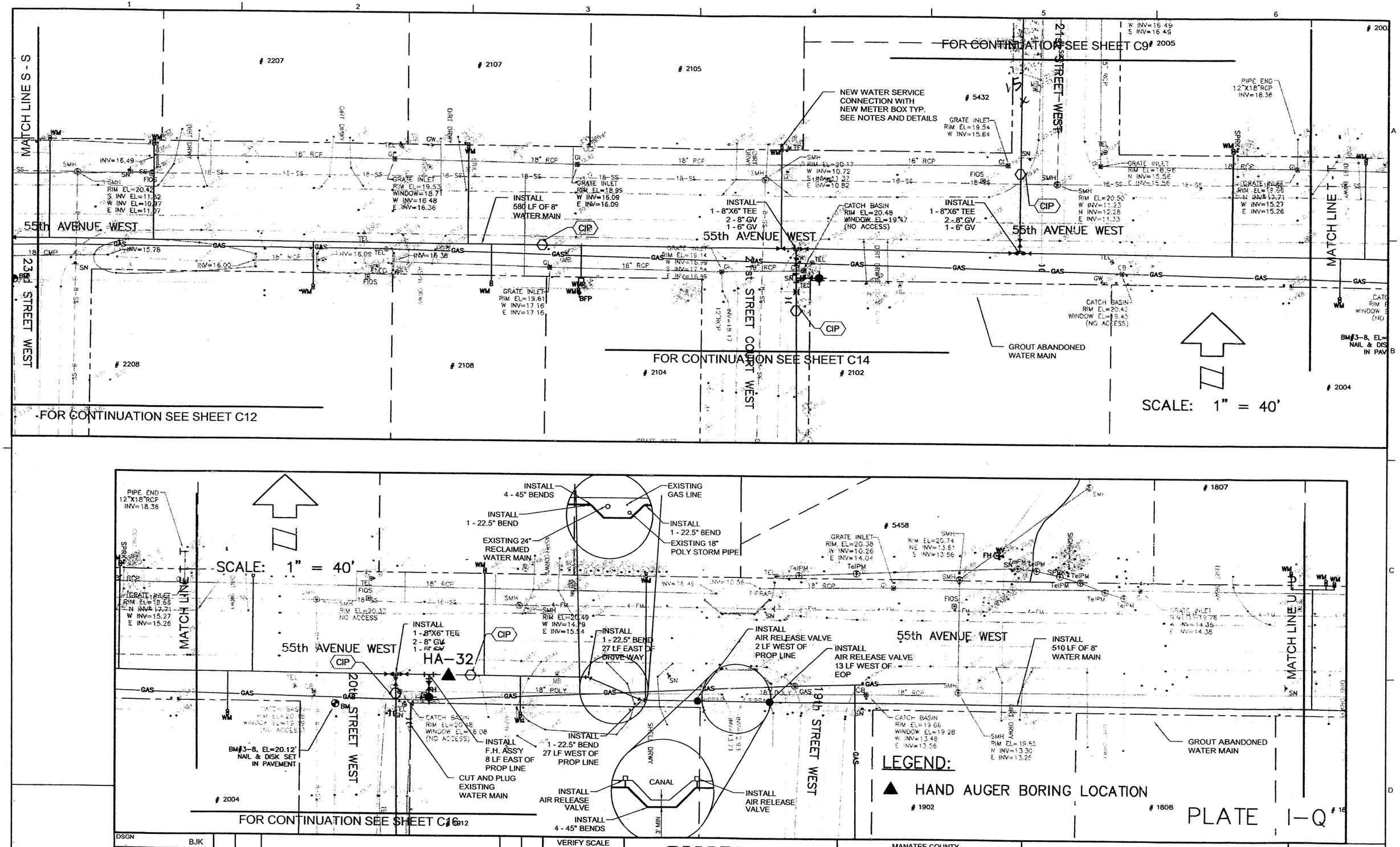
CH2MHILL
4350 WEST CYPRESS STREET SUITE 600
TAMPA, FLORIDA 33607-4155
LB 0002934 AA C000656

MANATEE COUNTY
SUBURBAN SYSTEM
WATER LINE REPLACEMENT PROJECT
PHASE 1
MANATEE COUNTY, FLORIDA
PROJECT No. 60747.70

PLAN SHEET NEW WATER MAIN
16th ST W FROM 5506 TO 57th AVE W

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

W:\Manatee County Waterline\Drawings\Tlcover.dwg Plotted: 2/18/2009 0:13 pm By: bklein1 Model Plot Scale: 1=1.0 Xref Dwgs:



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

ROBERT A. CANNARELLA, P.E.
Fla. P.P 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 1
MANATEE COUNTY, FLORIDA
PROJECT No. 60747.70

PLAN SHEET NEW WATER MAIN
55th AVE W FROM CENTERLINE OF 23rd ST W TO 1807

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

W:\Manatee County Waterline\Drawings\Tlcover.dwg Plotted: 2/18/2009 0:13 pm By: bklein1 Model Plot Scale: 1=1.0 Xref Dep'ds:

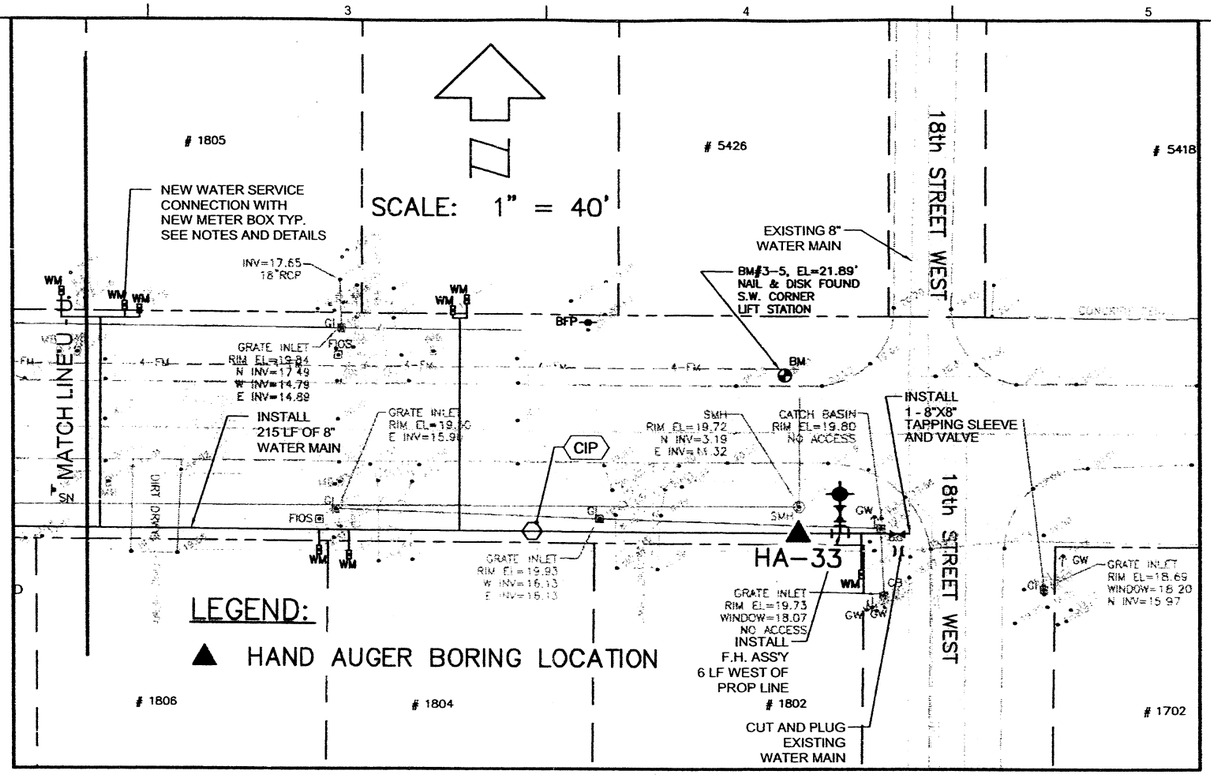


PLATE I-R

ROBERT A. CANNARELLA, P.E. Fla. P.P 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 1
MANATEE COUNTY, FLORIDA
PROJECT No. 60747.70

PLAN SHEET NEW WATER MAIN
55th AVE W FROM 1805 TO 18th ST W

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

HAND AUGER BORING LOGS

DRIGGERS ENGINEERING SERVICES INCORPORATED

HAND AUGER BORING LOG

PROJECT: Suburban Pipeline Project - Phase I Manatee County, Florida Project No.: DES 096393	**CLIENT:** Manatee County **WATER TABLE:** See "Note"	**DATE:** 6/23/09
TECHNICIAN: S.F.	**DATE:** 6/23/09	**COMPLETION DEPTH:** 6.0' *
LOCATION: See Plate I-A	**TEST NUMBER:** HA-1	

ELEV. (FT)	DESCRIPTION	DEPTH (FT)	SYMBOL	REMARKS
	Brownish-gray Fine SAND with roots and rock fragments (SP)	0		
	Light brown Fine SAND with rock fragments (SP)			
	Grayish-brown Fine SAND with trace of shell fragments (SP)	2		
	Light brownish-gray Fine SAND (SP)			
	Light brown Fine SAND (SP)			
	Brown and light brown clayey Fine SAND (SC)	4		
	Grayish-brown Fine SAND with large pieces of cream colored LIMESTONE (SP)			
		6		* Could not penetrate below depth 6.0' due to LIMESTONE. Note: Water Table not encountered within depth of 6.0'.
		8		
		10		
		12		
		14		

DRIGGERS ENGINEERING SERVICES INCORPORATED

HAND AUGER BORING LOG

PROJECT: Suburban Pipeline Project - Phase I Manatee County, Florida Project No.: DES 096393	**CLIENT:** Manatee County
WATER TABLE: 6.5'	**DATE:** 6/23/09
TECHNICIAN: S.F.	**DATE:** 6/23/09
COMPLETION DEPTH: 7.5' *	
LOCATION: See Plate I-A	**TEST NUMBER:** HA-2

ELEV. (FT)	DESCRIPTION	DEPTH (FT)	SYMBOL	REMARKS
	Brownish-gray Fine SAND with shell fragments and trace of roots (SP)	0		
	Tan Fine SAND (SP)			
	Tan and light orange Fine SAND with pockets of clayey Fine SAND (SP/SC)	2		
	Tan Fine SAND with shell fragments (SP)			
	Light grayish-brown Fine SAND with abundant shell fragments (SP)	4		
		6		
		8		* Could not penetrate below depth 7.5' due to abundant shell fragments.
		10		
		12		
		14		

DRIGGERS ENGINEERING SERVICES INCORPORATED

HAND AUGER BORING LOG

PROJECT: Suburban Pipeline Project - Phase I Manatee County, Florida Project No.: DES 096393		**CLIENT:** Manatee County	
		WATER TABLE: 6.8'	**DATE:** 6/23/09
TECHNICIAN: S.F.		**DATE:** 6/23/09	**COMPLETION DEPTH:** 8.0'
LOCATION: See Plate I-A		**TEST NUMBER:** HA-3	

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

DRIGGERS ENGINEERING SERVICES INCORPORATED

HAND AUGER BORING LOG

PROJECT: Suburban Pipeline Project - Phase I Manatee County, Florida Project No.: DES 096393		**CLIENT:** Manatee County **WATER TABLE:** 6.9'	**DATE:** 6/23/09
TECHNICIAN: S.F.		**DATE:** 6/23/09	**COMPLETION DEPTH:** 8.0'
LOCATION: See Plate I-B		**TEST NUMBER:** HA-4	

ELEV. (FT)	DESCRIPTION	DEPTH (FT)	SYMBOL	REMARKS
	Brownish-gray Fine SAND with surficial roots and trace of rock fragments (SP)	0		
	Gray Fine SAND with trace of roots (SP)			
	Light grayish-brown Fine SAND (SP)	2		
	Light brown Fine SAND with trace of Limestone Gravel (SP)			
	Tan Fine SAND (SP)	4		
	Light grayish-tan Fine SAND (SP)	6		
	Grayish-brown Fine SAND with shell fragments (SP)	8		
		10		
		12		
		14		

DRIGGERS ENGINEERING SERVICES INCORPORATED

HAND AUGER BORING LOG

PROJECT: Suburban Pipeline Project - Phase I Manatee County, Florida Project No.: DES 096393		**CLIENT:** Manatee County	
		WATER TABLE: 6.9'	**DATE:** 6/23/09
TECHNICIAN: S.F.		**DATE:** 6/23/09	**COMPLETION DEPTH:** 8.0'
LOCATION: See Plate I-B		**TEST NUMBER:** HA-5	

ELEV. (FT)	DESCRIPTION	DEPTH (FT)	SYMBOL	REMARKS
	Brownish-gray Fine SAND with roots, shell and rock fragments (SP)	0		
	Light grayish-brown Fine SAND (SP)	2		
	Tan Fine SAND with some cemented sand (SP)			
	Brownish-gray clayey Fine SAND with trace of shell fragments (SC)	4		
	Light brown Fine SAND (SP)			
	Light grayish-brown Fine SAND with 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 I Manatee County, Florida Project No.: DES 096393		**CLIENT:** Manatee County	
		WATER TABLE: 7.1'	**DATE:** 6/23/09
TECHNICIAN: S.F.		**DATE:** 6/23/09	**COMPLETION DEPTH:** 8.0'
LOCATION: See Plate I-C		**TEST NUMBER:** HA-6	

ELEV. (FT)	DESCRIPTION	DEPTH (FT)	SYMBOL	REMARKS
	Brownish-gray Fine SAND with trace of roots and trace of rock fragments (SP)	0		
	Light brown Fine SAND (SP)	2		
	Tan Fine SAND (SP)			
	Brown silty Fine SAND (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 I Manatee County, Florida Project No.: DES 096393	**CLIENT:** Manatee County
	WATER TABLE: 7.4' / **DATE:** 6/23/09
TECHNICIAN: M.H.	**DATE:** 6/23/09 / **COMPLETION DEPTH:** 8.0'
LOCATION: See Plate I-D	**TEST NUMBER:** HA-7

ELEV. (FT)	DESCRIPTION	DEPTH (FT)	SYMBOL	REMARKS
	Brownish-gray Fine SAND with shell fragments (SP)	0		
	Grayish-brown Fine SAND with trace of cream colored calcareous, clayey Fine SAND (SP)	2		
	Grayish-brown Fine SAND with small shell fragments and trace of clayey Fine SAND pockets (SP)			
	Tan Fine SAND with shell fragments (SP)	4		
	Light orange and tan Fine SAND with shell fragments (SP)	6		
	Very light gray Fine SAND with some shell fragments (SP)			
	Light grayish-brown Fine SAND with shell fragments (SP)	8		
		10		
		12		
		14		

DRIGGERS ENGINEERING SERVICES INCORPORATED

HAND AUGER BORING LOG

PROJECT: Suburban Pipeline Project - Phase I Manatee County, Florida Project No.: DES 096393	**CLIENT:** Manatee County
	WATER TABLE: 7.2' / **DATE:** 6/23/09
TECHNICIAN: M.H.	**DATE:** 6/23/09 / **COMPLETION DEPTH:** 8.0'
LOCATION: See Plate I-D	**TEST NUMBER:** HA-8

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

DRIGGERS ENGINEERING SERVICES INCORPORATED

HAND AUGER BORING LOG

PROJECT: Suburban Pipeline Project - Phase I Manatee County, Florida Project No.: DES 096393		**CLIENT:** Manatee County	
		WATER TABLE: 6.2'	**DATE:** 6/23/09
TECHNICIAN: M.H.		**DATE:** 6/23/09	**COMPLETION DEPTH:** 8.0'
LOCATION: See Plate I-D		**TEST NUMBER:** HA-9	

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

DRIGGERS ENGINEERING SERVICES INCORPORATED

HAND AUGER BORING LOG

PROJECT: Suburban Pipeline Project - Phase I Manatee County, Florida Project No.: DES 096393		**CLIENT:** Manatee County	
		WATER TABLE: 7.6'	**DATE:** 6/23/09
TECHNICIAN: M.H.		**DATE:** 6/23/09	**COMPLETION DEPTH:** 8.0'
LOCATION: See Plate I-E		**TEST NUMBER:** HA-10	

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

DRIGGERS ENGINEERING SERVICES INCORPORATED

HAND AUGER BORING LOG

PROJECT: Suburban Pipeline Project - Phase I Manatee County, Florida Project No.: DES 096393		**CLIENT:** Manatee County **WATER TABLE:** 6.9'	**DATE:** 6/23/09
TECHNICIAN: M.H.		**DATE:** 6/23/09	**COMPLETION DEPTH:** 8.0'
LOCATION: See Plate I-E		**TEST NUMBER:** HA-11	

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

DRIGGERS ENGINEERING SERVICES INCORPORATED

HAND AUGER BORING LOG

PROJECT: Suburban Pipeline Project - Phase I Manatee County, Florida Project No.: DES 096393	**CLIENT:** Manatee County
	WATER TABLE: 7.2' — **DATE:** 6/23/09
TECHNICIAN: M.H.	**DATE:** 6/23/09 — **COMPLETION DEPTH:** 8.0'
LOCATION: See Plate I-F	**TEST NUMBER:** HA-12

ELEV. (FT)	DESCRIPTION	DEPTH (FT)	SYMBOL	REMARKS
	Dark brownish-gray Fine SAND with surficial roots (SP)	0		
	Tannish-brown Fine SAND (SP)			
	Light brown Fine SAND with pockets of clayey Fine SAND (SP/SC)	2		
	Brown clayey Fine SAND with light orange veins (SC)			
	Brown and light brown Fine SAND (SP)	4		
	Light grayish-brown Fine SAND with shell fragments (SP)	6		
		8		
		10		
		12		
		14		

DRIGGERS ENGINEERING SERVICES INCORPORATED

HAND AUGER BORING LOG

PROJECT: Suburban Pipeline Project - Phase I Manatee County, Florida Project No.: DES 096393	**CLIENT:** Manatee County
TECHNICIAN: M.B.	**WATER TABLE:** See "Note" / **DATE:** 6/23/09
LOCATION: See Plate I-G	**DATE:** 6/23/09 / **COMPLETION DEPTH:** 8.0'
	TEST NUMBER: HA-13

ELEV. (FT)	DESCRIPTION	DEPTH (FT)	SYMBOL	REMARKS
	Brownish-gray Fine SAND with some roots and some shell fragments (SP)	0		
	Light grayish-brown Fine SAND with shell fragments (SP)	2		
	Cream colored LIMESTONE			
	Light brownish-gray clayey Fine SAND (SC)	4		
	Tan Fine SAND with shell fragments (SP)	6		
	Light grayish-brown Fine SAND with 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 I Manatee County, Florida Project No.: DES 096393	**CLIENT:** Manatee County
TECHNICIAN: M.H.	**WATER TABLE:** See "Note"
DATE: 6/22/09	**COMPLETION DEPTH:** 8.0'
LOCATION: See Plate I-H	**TEST NUMBER:** HA-14

ELEV. (FT)	DESCRIPTION	DEPTH (FT)	SYMBOL	REMARKS
	Gray Fine SAND with roots (SP)	0		
	Grayish-brown Fine SAND with shell fragments (SP)	2		
	Light brown Fine SAND with trace of clayey Fine SAND pockets (SP)			
	Light grayish-brown Fine SAND with shell fragments (SP)	4		
	Brown clayey Fine SAND (SC)	6		
	Brown Fine SAND with trace of shell fragments (SP)	8		Note: Borehole caved in to depth of 7.1'.
		10		
		12		
		14		

DRIGGERS ENGINEERING SERVICES INCORPORATED

HAND AUGER BORING LOG

PROJECT: Suburban Pipeline Project - Phase I Manatee County, Florida Project No.: DES 096393	**CLIENT:** Manatee County **WATER TABLE:** See "Note"	**DATE:** 6/22/09
TECHNICIAN: M.H.	**DATE:** 6/22/09	**COMPLETION DEPTH:** 8.0'
LOCATION: See Plate I-I	**TEST NUMBER:** HA-15	

ELEV. (FT)	DESCRIPTION	DEPTH (FT)	SYMBOL	REMARKS
	Brownish-gray Fine SAND with shell and rock fragments (SP)	0		
	Brown Fine SAND (SP)	2		
		4		
	Brown Fine SAND with Limestone Gravel (SP)			
	Grayish-brown Fine SAND with Limestone Gravel (SP)	6		
	Light brown Fine SAND with some shell fragments (SP)			
	Tan Fine SAND with trace of shell fragments (SP)	8		Note: Borehole caved in to depth of 7.7'. Soils wet at approximate depth of 6.7' - Water Table measured at depth of 7.6'.
		10		
		12		
		14		

DRIGGERS ENGINEERING SERVICES INCORPORATED

HAND AUGER BORING LOG

PROJECT: Suburban Pipeline Project - Phase I Manatee County, Florida Project No.: DES 096393	**CLIENT:** Manatee County **WATER TABLE:** 7.2' — **DATE:** 6/22/09
TECHNICIAN: M.H.	**DATE:** 6/22/09 — **COMPLETION DEPTH:** 8.0'
LOCATION: See Plate I-J	**TEST NUMBER:** HA-16

ELEV. (FT)	DESCRIPTION	DEPTH (FT)	SYMBOL	REMARKS
	Brownish-gray Fine SAND with roots (SP)	0		
	Tan Fine SAND (SP)	2		
	Brown clayey Fine SAND (SC)			
	Light brown slightly clayey Fine SAND with pockets of clayey Fine SAND (SP-SM/SC)	4		
	Light brownish-tan Fine SAND (SP)			
	Brown 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 I Manatee County, Florida Project No.: DES 096393		**CLIENT:** Manatee County	
		WATER TABLE: See "Note"	**DATE:** 6/22/09
TECHNICIAN: M.H.		**DATE:** 6/22/09	**COMPLETION DEPTH:** 8.0'
LOCATION: See Plate I-J		**TEST NUMBER:** HA-17	

ELEV. (FT)	DESCRIPTION	DEPTH (FT)	SYMBOL	REMARKS
	Brownish-gray Fine SAND with roots and rock fragments (SP)	0		
	Light brown Fine SAND (SP)	2		
	Tan Fine SAND (SP)	4		
	Light brown Fine SAND with trace of cream colored calcareous, clayey Fine SAND (SP)			
	Brownish-gray slightly clayey Fine SAND with some shell fragments (SP-SM)	6		
	Light grayish-brown Fine SAND with shell fragments (SP)	8		Note: Water Table not encountered within depth of 8.0'. Soils wet at approximate depth of 7.0'.
		10		
		12		
		14		

DRIGGERS ENGINEERING SERVICES INCORPORATED

HAND AUGER BORING LOG

PROJECT: Suburban Pipeline Project - Phase I Manatee County, Florida Project No.: DES 096393		**CLIENT:** Manatee County	
		WATER TABLE: See "Note"	**DATE:** 6/22/09
TECHNICIAN: M.H.		**DATE:** 6/22/09	**COMPLETION DEPTH:** 5.0' *
LOCATION: See Plate I-K		**TEST NUMBER:** HA-18	

ELEV. (FT)	DESCRIPTION	DEPTH (FT)	SYMBOL	REMARKS
	Brownish-gray Fine SAND with some shell fragments and trace of roots (SP)	0		
	Brownish-gray Fine SAND with shell fragments and trace of dark brown cemented sand (SP)	2		
	Tan Fine SAND (SP)	4		
	Light orangish-brown Fine SAND (SP)			
	Light brown and brown Fine SAND (SP)	6		* Could not penetrate below depth 5.0' due to LIMESTONE. Note: Water Table not encountered within depth of 5.0'.
		8		
		10		
		12		
		14		

DRIGGERS ENGINEERING SERVICES INCORPORATED

HAND AUGER BORING LOG

PROJECT: Suburban Pipeline Project - Phase I Manatee County, Florida Project No.: DES 096393		**CLIENT:** Manatee County	
		WATER TABLE: See "Note"	**DATE:** 6/22/09
TECHNICIAN: M.H.		**DATE:** 6/22/09	**COMPLETION DEPTH:** 3.0' *
LOCATION: See Plate I-R		**TEST NUMBER:** HA-18A	

ELEV. (FT)	DESCRIPTION	DEPTH (FT)	SYMBOL	REMARKS
	Brownish-gray Fine SAND with roots and shell fragments (SP)	0		
	Light grayish-brown Fine SAND (SP)			
	Light grayish-brown Fine SAND with shell fragments (SP)	2		
		4		*Could not penetrate below depth 3.0' due to LIMESTONE. Note: Water Table not encountered within depth of 3.0'.
		6		
		8		
		10		
		12		
		14		

DRIGGERS ENGINEERING SERVICES INCORPORATED

HAND AUGER BORING LOG

PROJECT: Suburban Pipeline Project - Phase I Manatee County, Florida Project No.: DES 096393		**CLIENT:** Manatee County	
		WATER TABLE: 7.2'	**DATE:** 6/22/09
TECHNICIAN: M.H.		**DATE:** 6/22/09	**COMPLETION DEPTH:** 8.0'
LOCATION: See Plate I-K		**TEST NUMBER:** HA-19	

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

DRIGGERS ENGINEERING SERVICES INCORPORATED

HAND AUGER BORING LOG

PROJECT: Suburban Pipeline Project - Phase I Manatee County, Florida Project No.: DES 096393	**CLIENT:** Manatee County		
	WATER TABLE: 5.8'	**DATE:** 6/22/09	
TECHNICIAN: M.H.	**DATE:** 6/22/09	**COMPLETION DEPTH:** 8.0'	
LOCATION: See Plate I-K	**TEST NUMBER:** HA-20		

ELEV. (FT)	DESCRIPTION	DEPTH (FT)	SYMBOL	REMARKS
	Brownish-gray Fine SAND with roots (SP)	0		
	Grayish-brown Fine SAND with trace of shell fragments (SP)			
	Gray Fine SAND with shell fragments (SP)	2		
	Dark brown slightly silty Fine SAND with trace of roots (SP-SM)			
	Gray and light gray Fine SAND with trace of shell fragments (SP)			
	Dark 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 I Manatee County, Florida Project No.: DES 096393		**CLIENT:** Manatee County	
		WATER TABLE: 7.5'	**DATE:** 6/23/09
TECHNICIAN: M.H.		**DATE:** 6/23/09	**COMPLETION DEPTH:** 8.0'
LOCATION: See Plate I-L		**TEST NUMBER:** HA-21	

ELEV. (FT)	DESCRIPTION	DEPTH (FT)	SYMBOL	REMARKS
	Brownish-gray Fine SAND with shell and rock fragments (SP)	0		
		2		
	Light brownish-tan Fine SAND (SP)			
	Light brownish-gray clayey Fine SAND with light orange veins and shell fragments (SC)	4		
	Light tannish-gray slightly silty Fine SAND (SP-SM)	6		
	Tan Fine SAND with trace of shell fragments (SP)			
	Light grayish-brown Fine SAND with abundant shell fragments (SP)	8		
		10		
		12		
		14		

DRIGGERS ENGINEERING SERVICES INCORPORATED

HAND AUGER BORING LOG

PROJECT: Suburban Pipeline Project - Phase I Manatee County, Florida Project No.: DES 096393		**CLIENT:** Manatee County	
		WATER TABLE: See "Note"	**DATE:** 6/22/09
TECHNICIAN: M.B.		**DATE:** 6/22/09	**COMPLETION DEPTH:** 8.0'
LOCATION: See Plate I-L		**TEST NUMBER:** HA-22	

ELEV. (FT)	DESCRIPTION	DEPTH (FT)	SYMBOL	REMARKS
	Grayish-brown Fine SAND with roots (SP)	0		
	Light gray Fine SAND with trace of rock fragments (SP)			
	Light tannish-brown Fine SAND with trace of cream colored calcareous, weakly cemented sand (SP)	2		
	Light grayish-brown clayey Fine SAND with light orange veins (SC)	4		
	Light grayish-brown Fine SAND (SP)	6		
	Tan Fine SAND with abundant shell fragments (SP)			
	Light tannish-gray Fine SAND with some shell fragments (SP)	8		Note: Borehole caved in to depth of 6.5'.
		10		
		12		
		14		

DRIGGERS ENGINEERING SERVICES INCORPORATED

HAND AUGER BORING LOG

PROJECT: Suburban Pipeline Project - Phase I Manatee County, Florida Project No.: DES 096393	**CLIENT:** Manatee County **WATER TABLE:** See "Note"	**DATE:** 6/22/09
TECHNICIAN: M.B.	**DATE:** 6/22/09	**COMPLETION DEPTH:** 8.0'
LOCATION: See Plate I-L	**TEST NUMBER:** HA-23	

ELEV. (FT)	DESCRIPTION	DEPTH (FT)	SYMBOL	REMARKS
	Light brown Fine SAND with trace of roots and trace of shell fragments (SP)	0		
	Brownish-gray Fine SAND with trace of roots (SP)			
	Tan Fine SAND (SP)	2		
	Brown and light brown clayey Fine SAND (SC)			
	Brown Fine SAND (SP)	4		
	Light brown Fine SAND (SP)	6		
		8		Note: Borehole caved in to depth of 6.8'. Water Table measured at depth of 6.7'.
		10		
		12		
		14		

DRIGGERS ENGINEERING SERVICES INCORPORATED

HAND AUGER BORING LOG

PROJECT: Suburban Pipeline Project - Phase I Manatee County, Florida Project No.: DES 096393		**CLIENT:** Manatee County	
		WATER TABLE: See "Note"	**DATE:** 6/22/09
TECHNICIAN: M.B.		**DATE:** 6/22/09	**COMPLETION DEPTH:** 8.0'
LOCATION: See Plate I-M		**TEST NUMBER:** HA-24	

ELEV. (FT)	DESCRIPTION	DEPTH (FT)	SYMBOL	REMARKS
	Brownish-gray Fine SAND with shell fragments (SP)	0		
	Light gray Fine SAND with trace of orangish-brown clayey Fine SAND (SP)	2		
	Brown Fine SAND with trace of slightly clayey Fine SAND pockets and trace of Limestone Gravel (SP)			
	Tan Fine SAND with limestone fragments (SP)	4		
	Light tannish-brown Fine SAND (SP)			
	Light brown Fine SAND with shell fragments (SP)			
	Light tan Fine SAND with trace of shell fragments (SP)	6		
		8		Note: Borehole caved in to depth of 7.4'.
		10		
		12		
		14		

DRIGGERS ENGINEERING SERVICES INCORPORATED

HAND AUGER BORING LOG

PROJECT: Suburban Pipeline Project - Phase I Manatee County, Florida Project No.: DES 096393		**CLIENT:** Manatee County	
		WATER TABLE: See "Note"	**DATE:** 6/22/09
TECHNICIAN: M.B.		**DATE:** 6/22/09	**COMPLETION DEPTH:** 2.5' *
LOCATION: See Plate I-M		**TEST NUMBER:** HA-25	

ELEV. (FT)	DESCRIPTION	DEPTH (FT)	SYMBOL	REMARKS
	Gray Fine SAND (SP)	0		
	Light grayish-brown Fine SAND with large pieces of cream colored LIMESTONE (SP)	2		* Could not penetrate below depth 2.5' due to LIMESTONE. Note: Water Table not encountered within depth of 2.5'.
		4		
		6		
		8		
		10		
		12		
		14		

DRIGGERS ENGINEERING SERVICES INCORPORATED

HAND AUGER BORING LOG

PROJECT: Suburban Pipeline Project - Phase I Manatee County, Florida Project No.: DES 096393		**CLIENT:** Manatee County	
		WATER TABLE: See "Note"	**DATE:** 6/22/09
TECHNICIAN: M.B.		**DATE:** 6/22/09	**COMPLETION DEPTH:** 8.0'
LOCATION: See Plate I-N		**TEST NUMBER:** HA-26	

ELEV. (FT)	DESCRIPTION	DEPTH (FT)	SYMBOL	REMARKS
	Brown Fine SAND with surficial roots (SP)	0		
	Tan Fine SAND (SP)	2		
		4		
	Tannish-brown Fine SAND with shell fragments (SP)	6		
	Light brown Fine SAND with shell fragments (SP)	8		Note: Borehole caved in to depth of 7.3'.
		10		
		12		
		14		

DRIGGERS ENGINEERING SERVICES INCORPORATED

HAND AUGER BORING LOG

PROJECT: Suburban Pipeline Project - Phase I Manatee County, Florida Project No.: DES 096393	**CLIENT:** Manatee County
TECHNICIAN: M.B.	**WATER TABLE:** See "Note" / **DATE:** 6/22/09
LOCATION: See Plate I-O	**DATE:** 6/22/09 / **COMPLETION DEPTH:** 2.0' *
	TEST NUMBER: HA-27

ELEV. (FT)	DESCRIPTION	DEPTH (FT)	SYMBOL	REMARKS
	Brownish-gray Fine SAND with surficial roots (SP)	0		* Could not penetrate below depth 2.0' due to LIMESTONE.
	Light brown Fine SAND (SP)			
	Cream colored LIMESTONE	2		Note: Water Table not encountered within depth of 2.0'.
		4		
		6		
		8		
		10		
		12		
		14		

DRIGGERS ENGINEERING SERVICES INCORPORATED

HAND AUGER BORING LOG

PROJECT: Suburban Pipeline Project - Phase I Manatee County, Florida Project No.: DES 096393		**CLIENT:** Manatee County	
		WATER TABLE: See "Note"	**DATE:** 6/22/09
TECHNICIAN: M.B.		**DATE:** 6/22/09	**COMPLETION DEPTH:** 8.0'
LOCATION: See Plate I-O		**TEST NUMBER:** HA-28	

ELEV. (FT)	DESCRIPTION	DEPTH (FT)	SYMBOL	REMARKS
	Brownish-gray Fine SAND with trace of roots and trace of rock fragments (SP)	0		
	Large Pieces of Cream Colored LIMESTONE	2		
	Gray Fine SAND with trace of roots (SP)			
	Light grayish-brown Fine SAND with trace of roots (SP)	4		
	Light tan Fine SAND with shell fragments (SP)	6		
	Light grayish-brown Fine SAND with seams of dark brown Fine SAND (SP)			
	Light grayish-brown Fine SAND with shell fragments (SP)	8		Note: Borehole caved in to depth of 7.5'.
		10		
		12		
		14		

DRIGGERS ENGINEERING SERVICES INCORPORATED

HAND AUGER BORING LOG

PROJECT: Suburban Pipeline Project - Phase I Manatee County, Florida Project No.: DES 096393		**CLIENT:** Manatee County	
		WATER TABLE: 5.8'	**DATE:** 6/22/09
TECHNICIAN: M.B.		**DATE:** 6/22/09	**COMPLETION DEPTH:** 8.0'
LOCATION: See Plate I-P		**TEST NUMBER:** HA-29	

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

DRIGGERS ENGINEERING SERVICES INCORPORATED

HAND AUGER BORING LOG

PROJECT: Suburban Pipeline Project - Phase I Manatee County, Florida Project No.: DES 096393		**CLIENT:** Manatee County	
		WATER TABLE: 5.8'	**DATE:** 6/22/09
TECHNICIAN: M.B.		**DATE:** 6/22/09	**COMPLETION DEPTH:** 8.0'
LOCATION: See Plate I-P		**TEST NUMBER:** HA-30	

ELEV. (FT)	DESCRIPTION	DEPTH (FT)	SYMBOL	REMARKS
	Gray Fine SAND with some surficial roots (SP)	0		
	Light brown Fine SAND with shell fragments (SP)			
	Light gray Fine SAND with trace of roots (SP)	2		
	Brown Fine SAND (SP)			
	Light orangish-brown clayey Fine SAND (SC)			
	Tan and light orange Fine SAND with abundant shell fragments (SP)	4		
	Light grayish-tan Fine SAND with shell fragments (SP)	6		
	Light brown Fine SAND with abundant shell fragments (SP)	8		
		10		
		12		
		14		

DRIGGERS ENGINEERING SERVICES INCORPORATED

HAND AUGER BORING LOG

PROJECT: Suburban Pipeline Project - Phase I Manatee County, Florida Project No.: DES 096393		**CLIENT:** Manatee County **WATER TABLE:** 6.4'	**DATE:** 6/22/09
TECHNICIAN: M.B.		**DATE:** 6/22/09	**COMPLETION DEPTH:** 8.0'
LOCATION: See Plate I-P		**TEST NUMBER:** HA-31	

ELEV. (FT)	DESCRIPTION	DEPTH (FT)	SYMBOL	REMARKS
	Brownish-gray Fine SAND with shell and rock fragments (SP)	0		
	Light gray Fine SAND (SP)			
	Dark brown slightly organic Fine SAND (SP)	2		
	Light gray, gray and dark brown Fine SAND (SP)			
	Brown Fine SAND (SP)	4		
	Light brown Fine SAND (SP)	6		
		8		Note: Borehole caved in to depth of 6.5'.
		10		
		12		
		14		

DRIGGERS ENGINEERING SERVICES INCORPORATED

HAND AUGER BORING LOG

PROJECT: Suburban Pipeline Project - Phase I Manatee County, Florida Project No.: DES 096393		**CLIENT:** Manatee County	
		WATER TABLE: See "Note"	**DATE:** 6/22/09
TECHNICIAN: M.B.		**DATE:** 6/22/09	**COMPLETION DEPTH:** 8.0'
LOCATION: See Plate I-Q		**TEST NUMBER:** HA-32	

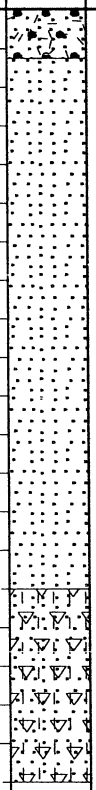
ELEV. (FT)	DESCRIPTION	DEPTH (FT)	SYMBOL	REMARKS
	Brownish-gray Fine SAND with shell fragments and trace of roots (SP)	0		
	Grayish-brown Fine SAND with trace of shell fragments (SP)	2		
	Brown Fine SAND with shell fragments (SP)	4		
	Light tan Fine SAND (SP)	6		
		8		Note: Water Table not encountered within depth of 8.0'. Soils damp at depth of 7.8'.
		10		
		12		
		14		

DRIGGERS ENGINEERING SERVICES INCORPORATED

HAND AUGER BORING LOG

PROJECT: Suburban Pipeline Project - Phase I Manatee County, Florida Project No.: DES 096393	**CLIENT:** Manatee County	
	WATER TABLE: See "Note"	**DATE:** 6/22/09
TECHNICIAN: M.B.	**DATE:** 6/22/09	**COMPLETION DEPTH:** 8.0'
LOCATION: See Plate I-R	**TEST NUMBER:** HA-33	

ELEV. (FT)	DESCRIPTION	DEPTH (FT)	SYMBOL	REMARKS
	Brown Fine SAND with cemented sand and some roots (SP)	0		
	Dark brown Fine SAND (SP)	2		
		4		
	Dark brown slightly silty Fine SAND with shell fragments (SP-SM)	6		
		8		Note: Water Table not encountered within depth of 8.0'. Soils moist at depth of 6.9'.
		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-1	2.5-3.3	Light brownish-gray Fine SAND										*					
HA-3	5.1-5.8	Brown slightly silty Fine SAND										*					
HA-3	5.8-8.0	Light brown Fine SAND with shell fragments										*		6.9	65	54	8,200
HA-5	5.3-7.3	Light grayish-brown Fine SAND with shell fragments										*					
HA-6	3.9-5.0	Brown silty Fine SAND	15.7			NP	NP					** 12.8					
HA-7	7.7-8.0	Light grayish-brown Fine SAND with shell fragments										*					
HA-8	5.0-7.3	Tan Fine SAND with shell fragments										*					
HA-9	0.5-2.5	Brown Fine SAND										*					
HA-11	2.5-5.5	Light grayish-brown Fine SAND with some shell fragments										*					
HA-12	6.0-8.0	Light grayish-brown Fine SAND with shell fragments										*					
HA-13	0.5-3.0	Light grayish-brown Fine SAND with shell fragments										*					
HA-14	4.3-6.0	Brown clayey Fine SAND	19.8			34	17					** 16.8					
HA-15	0.5-5.0	Brown Fine SAND										*		7.1	35	60	19,000
HA-17	1.1-4.0	Light brown Fine SAND										*					
HA-19	5.0-8.0	Dark brown slightly silty Fine SAND										*					
HA-20	1.3-2.5	Dark brown slightly silty Fine SAND with trace of roots										*					
HA-21	4.3-6.4	Light tannish-gray slightly silty Fine SAND										*					
HA-22	6.1-7.2	Tan Fine SAND with abundant shell 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. (+1) = 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

PROJECT: Suburban Pipeline Project - Phase I, 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-23	2.8-3.5	Brown and light brown clayey Fine SAND	18.4			31	18					** 18.6					
HA-24	5.5-8.0	Light tan Fine SAND with trace of shell fragments										*					
HA-26	1.4-4.9	Tan Fine SAND										*		6.9	65	51	23,500
HA-28	4.2-6.7	Light tan Fine SAND with shell fragments										*					
HA-29	2.7-3.2	Dark brown organic Fine SAND											5.5				
HA-29	5.6-8.0	Dark brown Fine SAND										*					
HA-30	2.9-3.5	Light orangish-brown clayey Fine SAND	16.7			31	18					** 17.8					
HA-30	3.5-4.6	Tan and light orange Fine SAND with abundant shell fragments										*					
HA-31	1.7-2.8	Dark brown slightly organic Fine SAND											3.1				
HA-31	5.9-8.0	Light brown Fine SAND										*					
HA-32	0.5-4.1	Grayish-brown Fine SAND with trace of shell fragments										*					
HA-33	0.5-6.0	Dark brown Fine SAND										*					

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. (+1) = 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

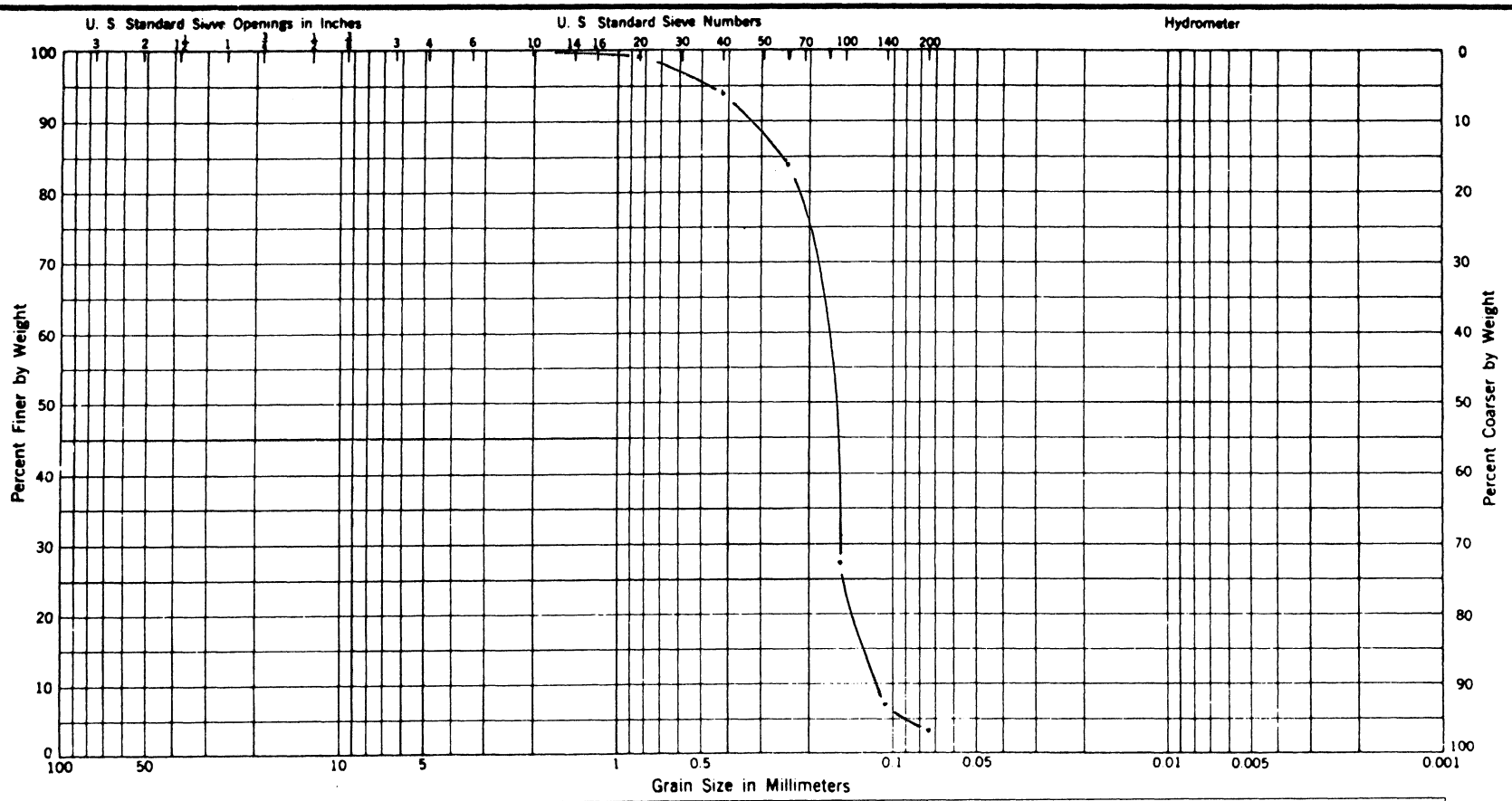
CLIENT: Manatee County

PROJECT: Suburban Pipeline Project - Phase I, Manatee County, Florida

FILE: DES 096393

GRAINSIZE ANALYSES

DRIGGERS ENGINEERING SERVICES, INC.



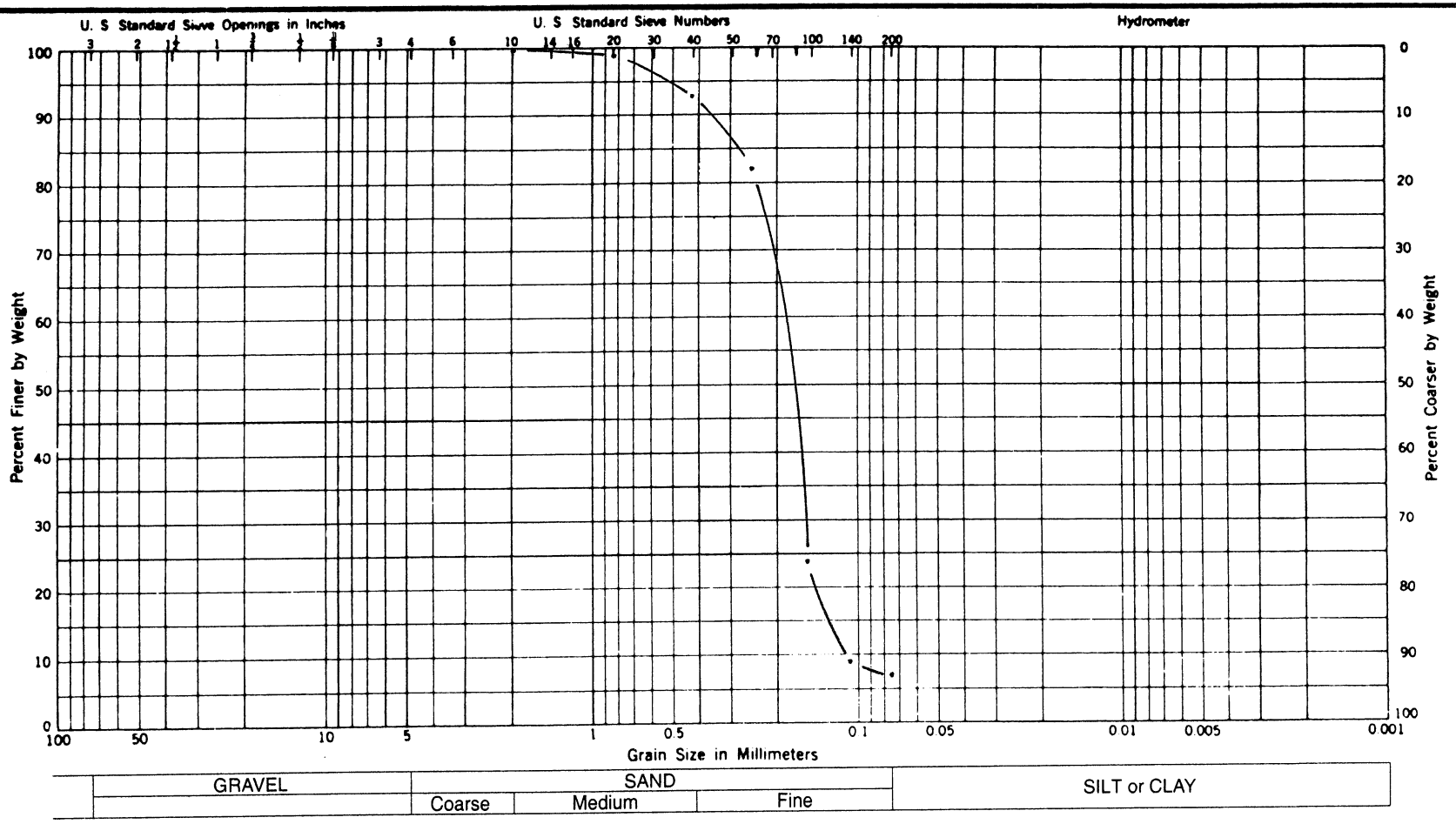
Number	Depth	Natural Moisture	L. L.	P. L.	P. I.	Classification
HA-1	2.5' - 3.3'					Light brownish-gray Fine SAND

CLIENT: Manatee County

PROJECT: Suburban Pipeline Project - Phase I, Manatee County, Florida

FILE: DES 096393

DRIGGERS ENGINEERING SERVICES, INC.



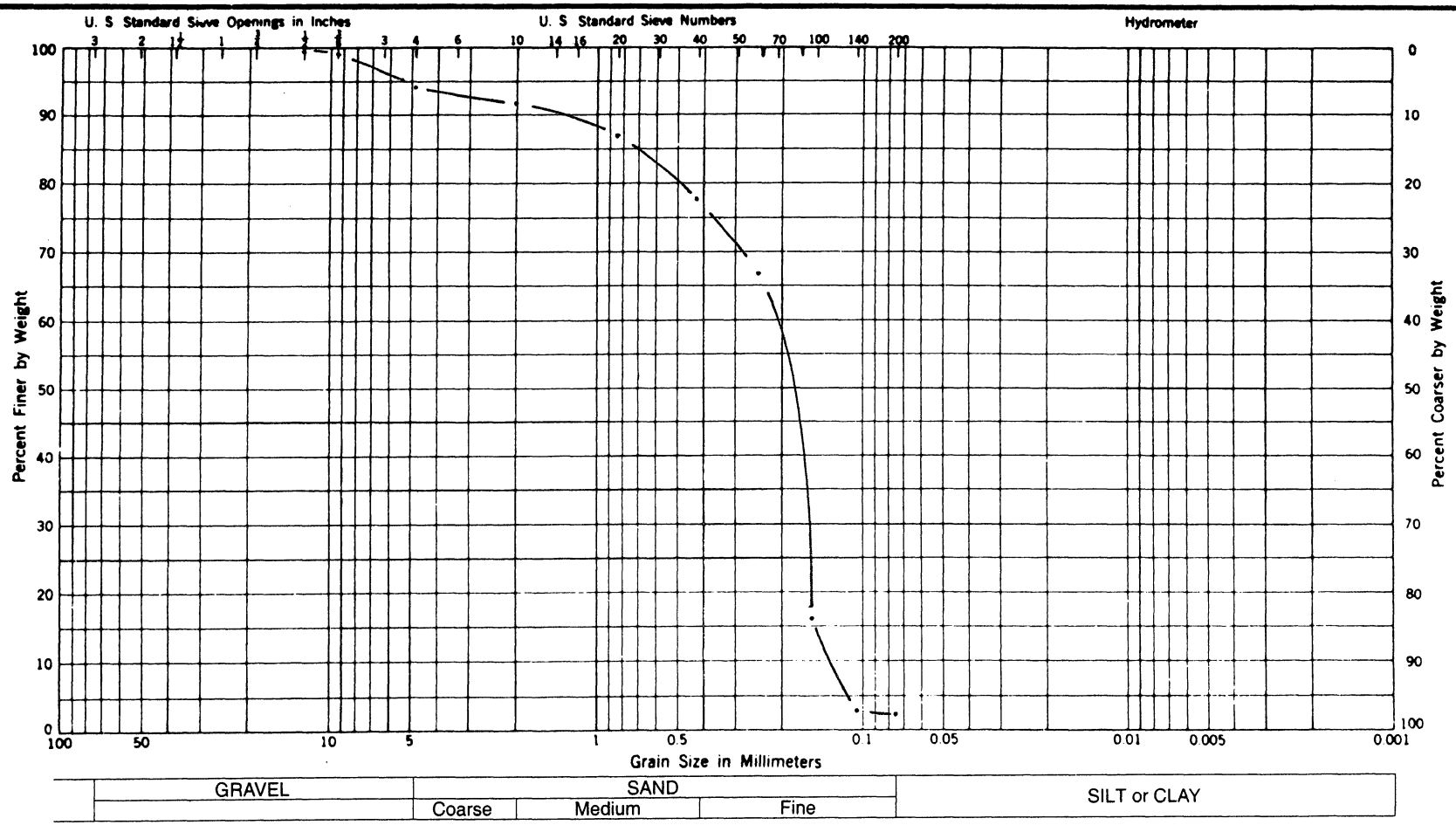
Number	Depth	Natural Moisture	L. L.	P. L.	P. I.	Classification
HA-3	5.1' - 5.8'					Brown slightly silty Fine SAND

CLIENT: Manatee County

PROJECT: Suburban Pipeline Project - Phase I, Manatee County, Florida

FILE: DES 096393

DRIGGERS ENGINEERING SERVICES, INC.



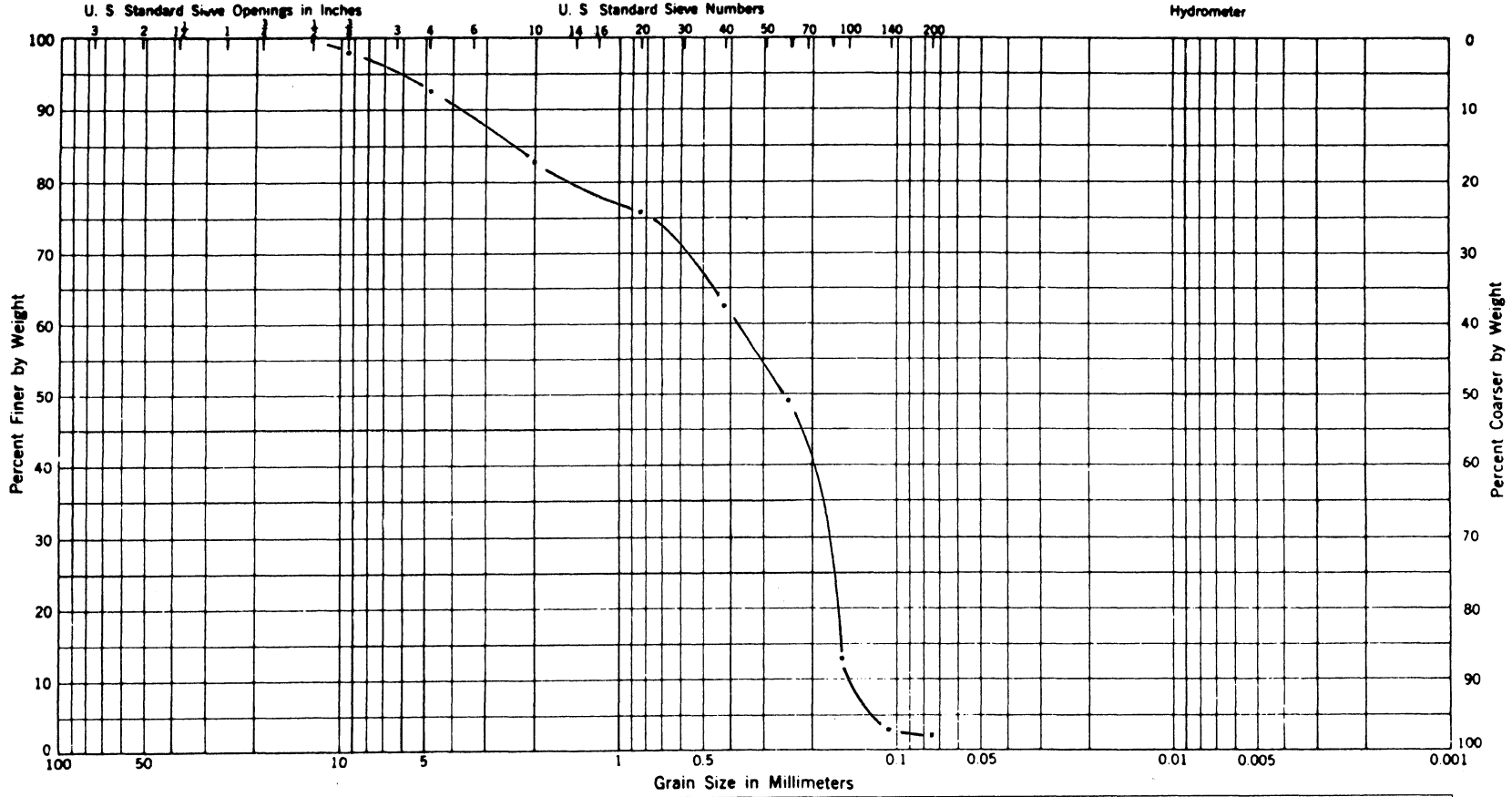
Number	Depth	Natural Moisture	L. L.	P. L.	P. I.	Classification
HA-3	5.8' - 8.0'					Light brown Fine SAND with shell fragments

CLIENT: Manatee County

PROJECT: Suburban Pipeline Project - Phase I, Manatee County, Florida

FILE: DES 096393

DRIGGERS ENGINEERING SERVICES, INC.



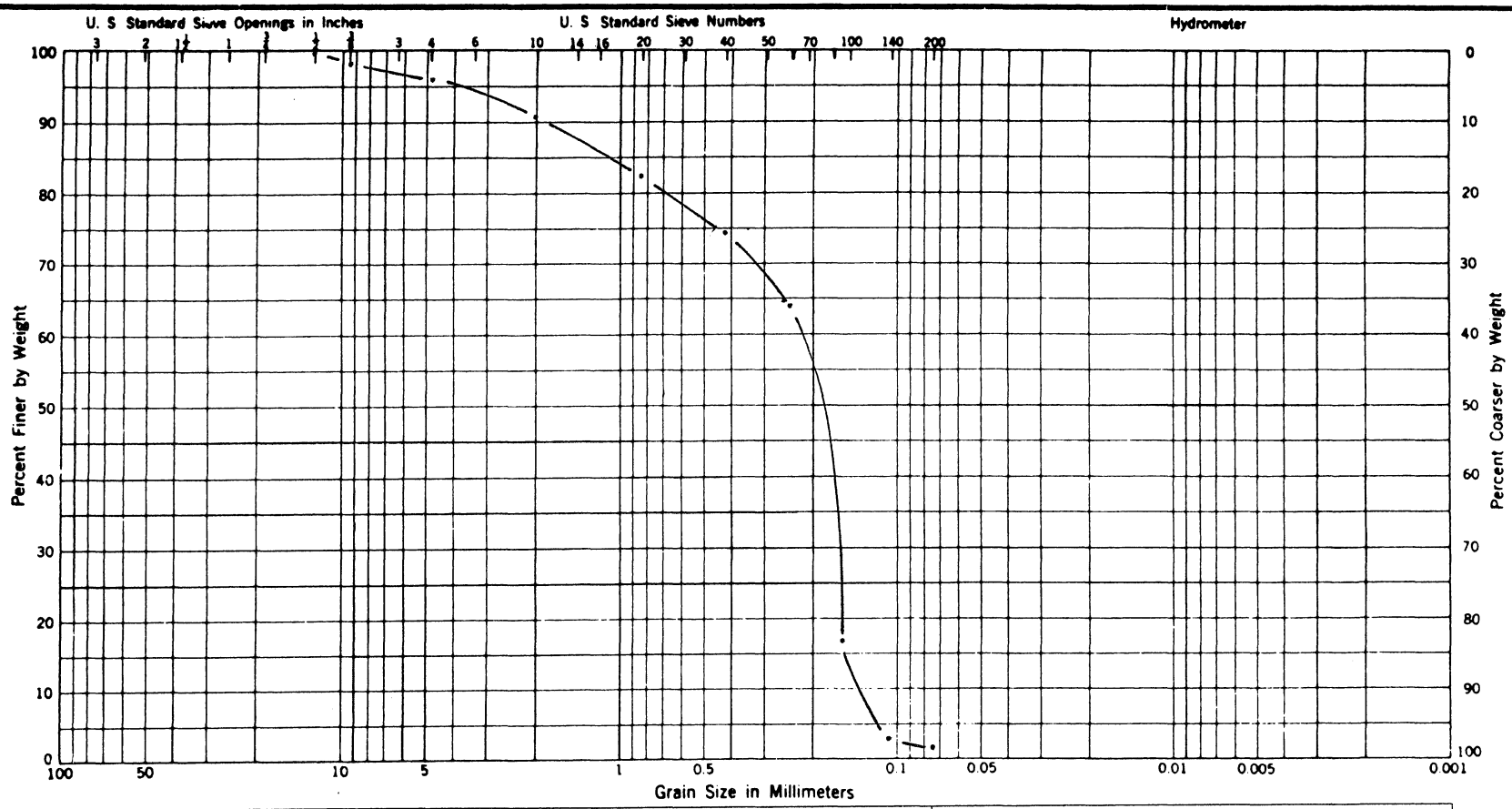
Number	Depth	Natural Moisture	L. L.	P. L.	P. I.	Classification
HA-5	5.3' - 7.3'					Light grayish-brown Fine SAND with shell fragments

CLIENT: Manatee County

PROJECT: Suburban Pipeline Project - Phase I, Manatee County, Florida

FILE: DES 096393

DRIGGERS ENGINEERING SERVICES, INC.



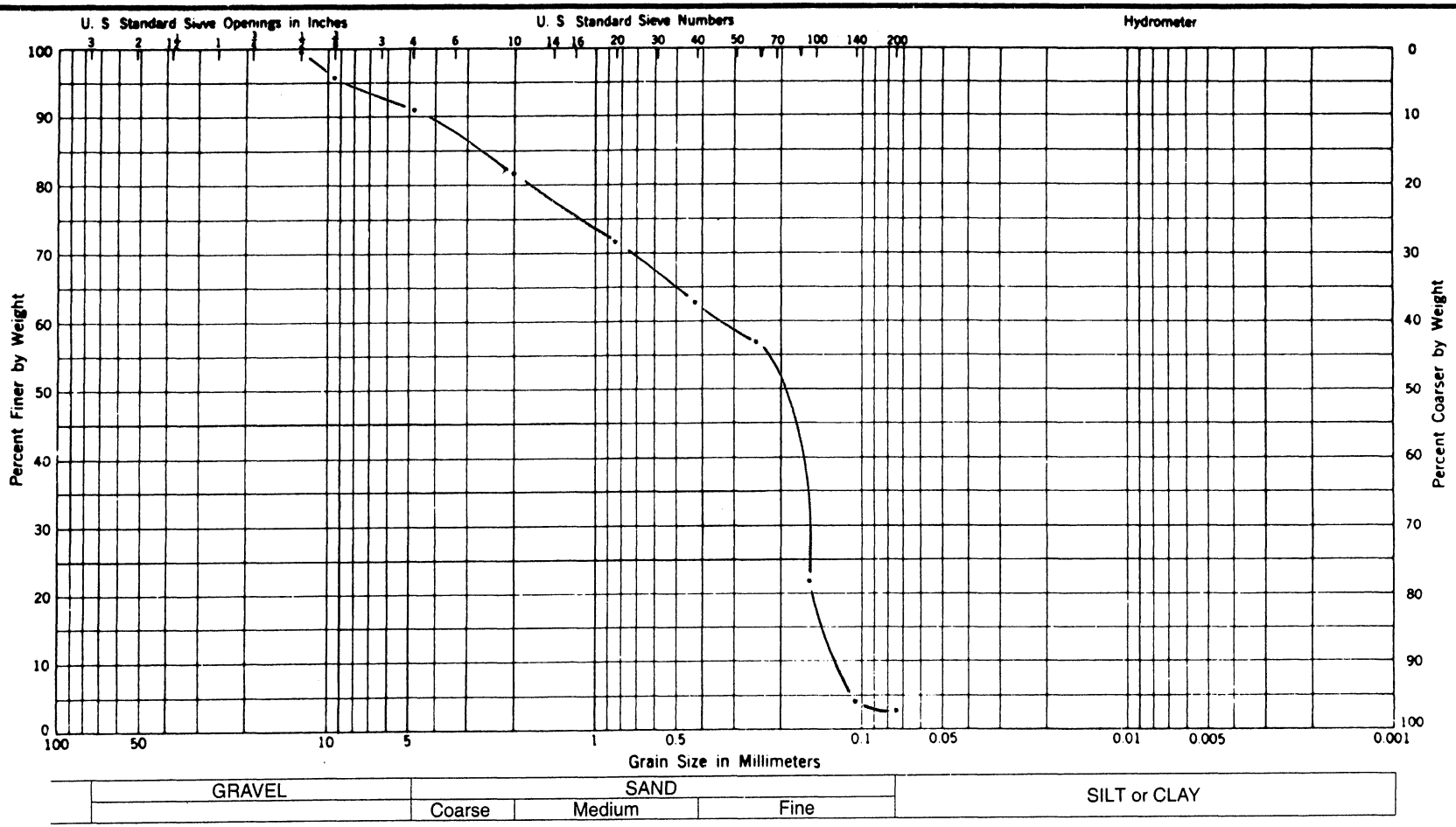
Number	Depth	Natural Moisture	L. L.	P. L.	P. I.	Classification
HA-7	7.7' - 8.0'					Light grayish-brown Fine SAND with shell fragments

CLIENT: Manatee County

PROJECT: Suburban Pipeline Project - Phase I, Manatee County, Florida

FILE: DES 096393

DRIGGERS ENGINEERING SERVICES, INC.



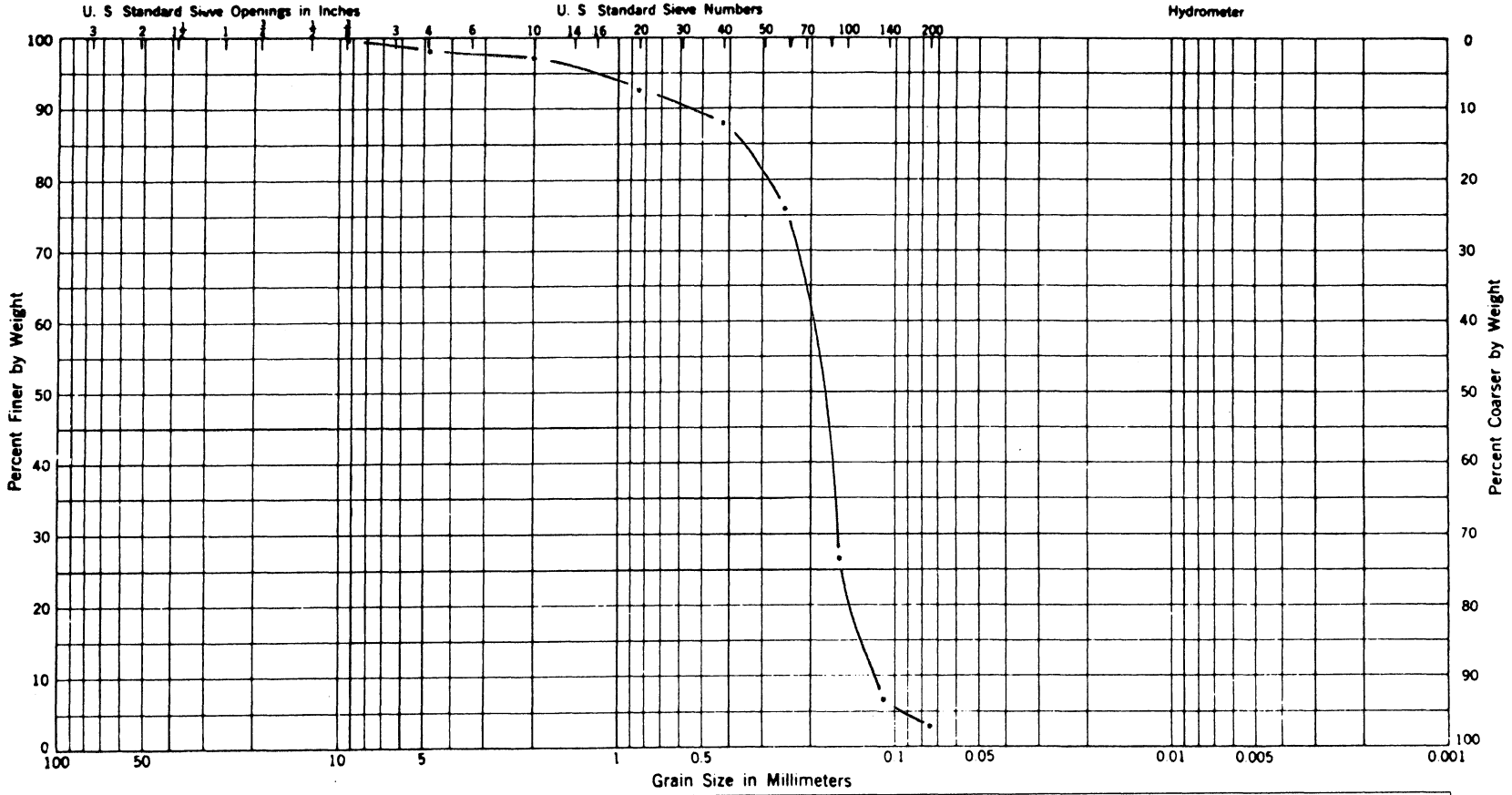
Number	Depth	Natural Moisture	L. L.	P. L.	P. I.	Classification
HA-8	5.0' - 7.3'					Tan Fine SAND with shell fragments

CLIENT: Manatee County

PROJECT: Suburban Pipeline Project - Phase I, Manatee County, Florida

FILE: DES 096393

DRIGGERS ENGINEERING SERVICES, INC.



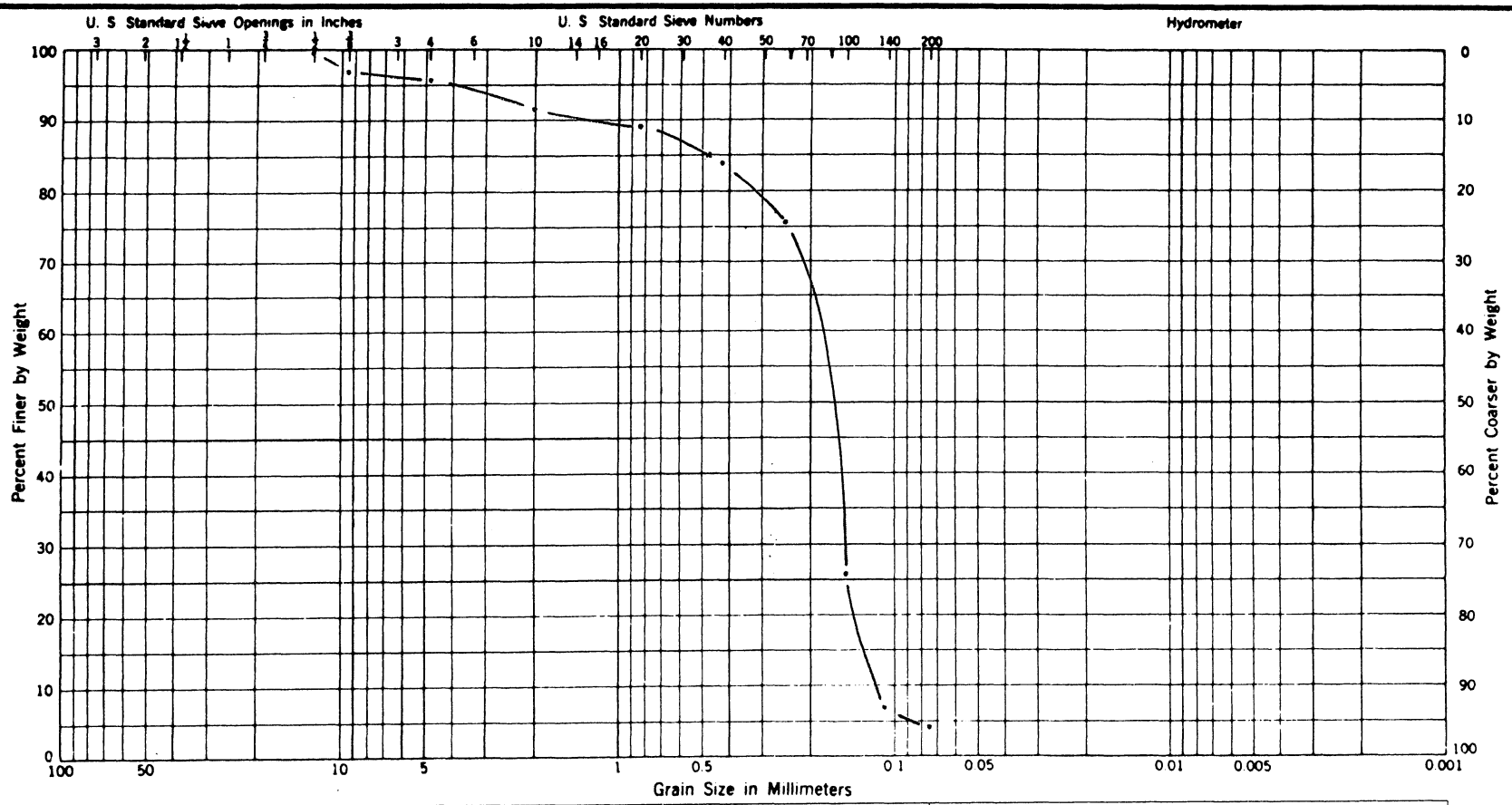
Number	Depth	Natural Moisture	L L.	P. L	P. I.	Classification
HA-9	0.5' - 2.5'					Brown Fine SAND

CLIENT: Manatee County

PROJECT: Suburban Pipeline Project - Phase I, Manatee County, Florida

FILE: DES 096393

DRIGGERS ENGINEERING SERVICES, INC.



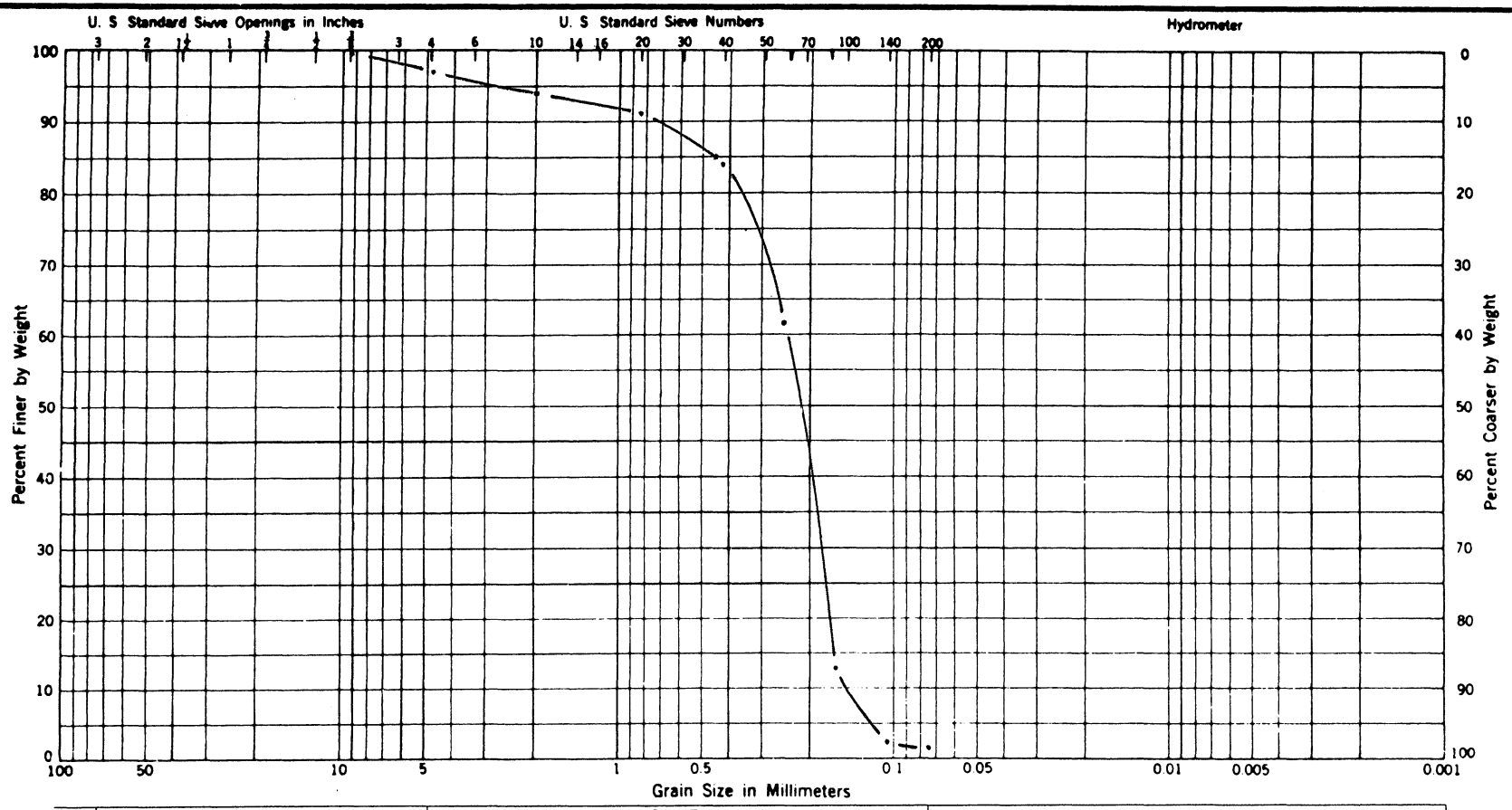
Number	Depth	Natural Moisture	L. L.	P. L.	P. I.	Classification
HA-11	2.5' - 5.5'					Light grayish-brown Fine SAND with some shell fragments

CLIENT: Manatee County

PROJECT: Suburban Pipeline Project - Phase I, Manatee County, Florida

FILE: DES 096393

DRIGGERS ENGINEERING SERVICES, INC.



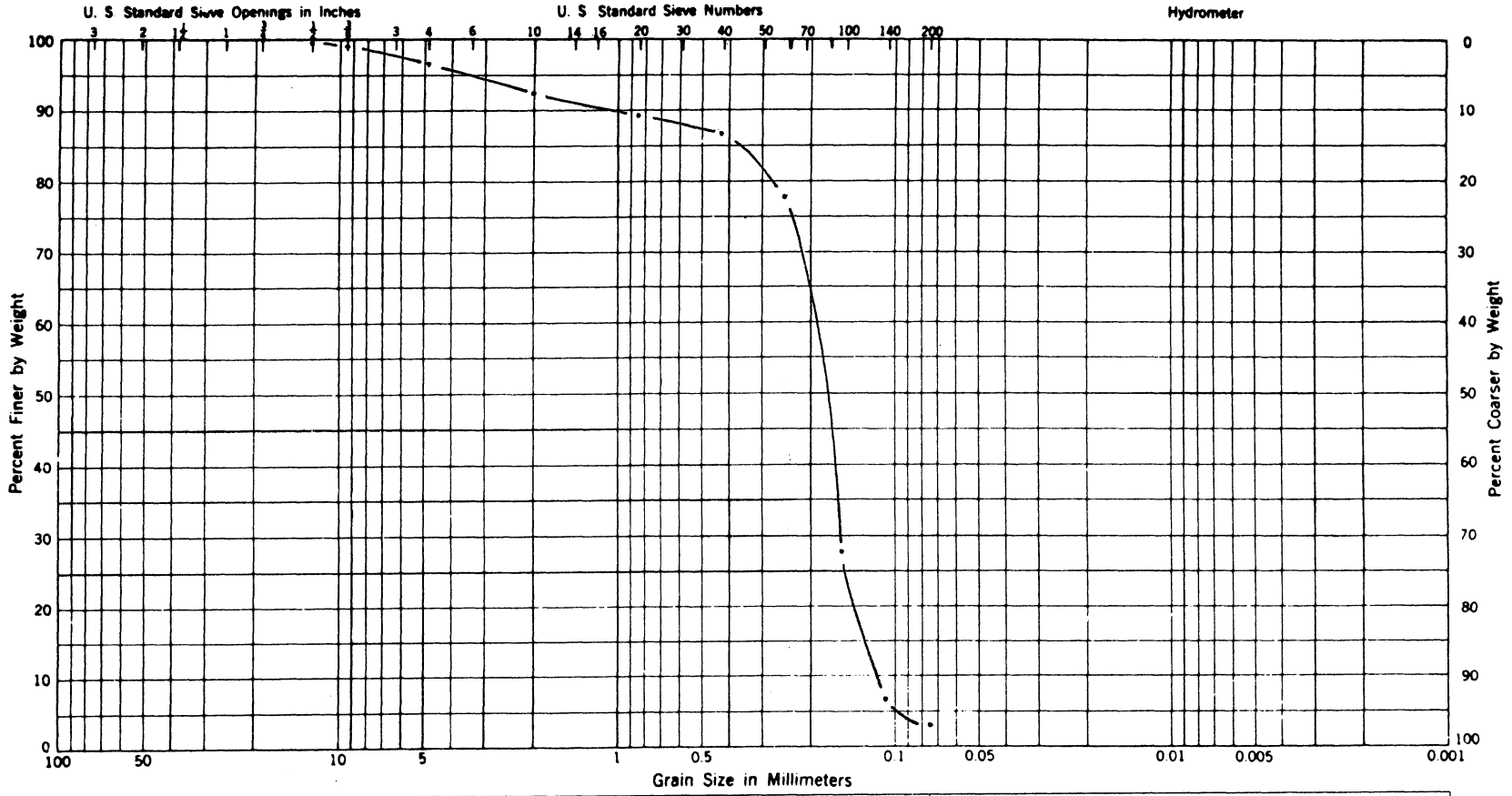
Number	Depth	Natural Moisture	L L.	P. L	P. I.	Classification
HA-12	6.0' - 8.0'					Light grayish-brown Fine SAND with shell fragments

CLIENT: Manatee County

PROJECT: Suburban Pipeline Project - Phase I, Manatee County, Florida

FILE: DES 096393

DRIGGERS ENGINEERING SERVICES, INC.



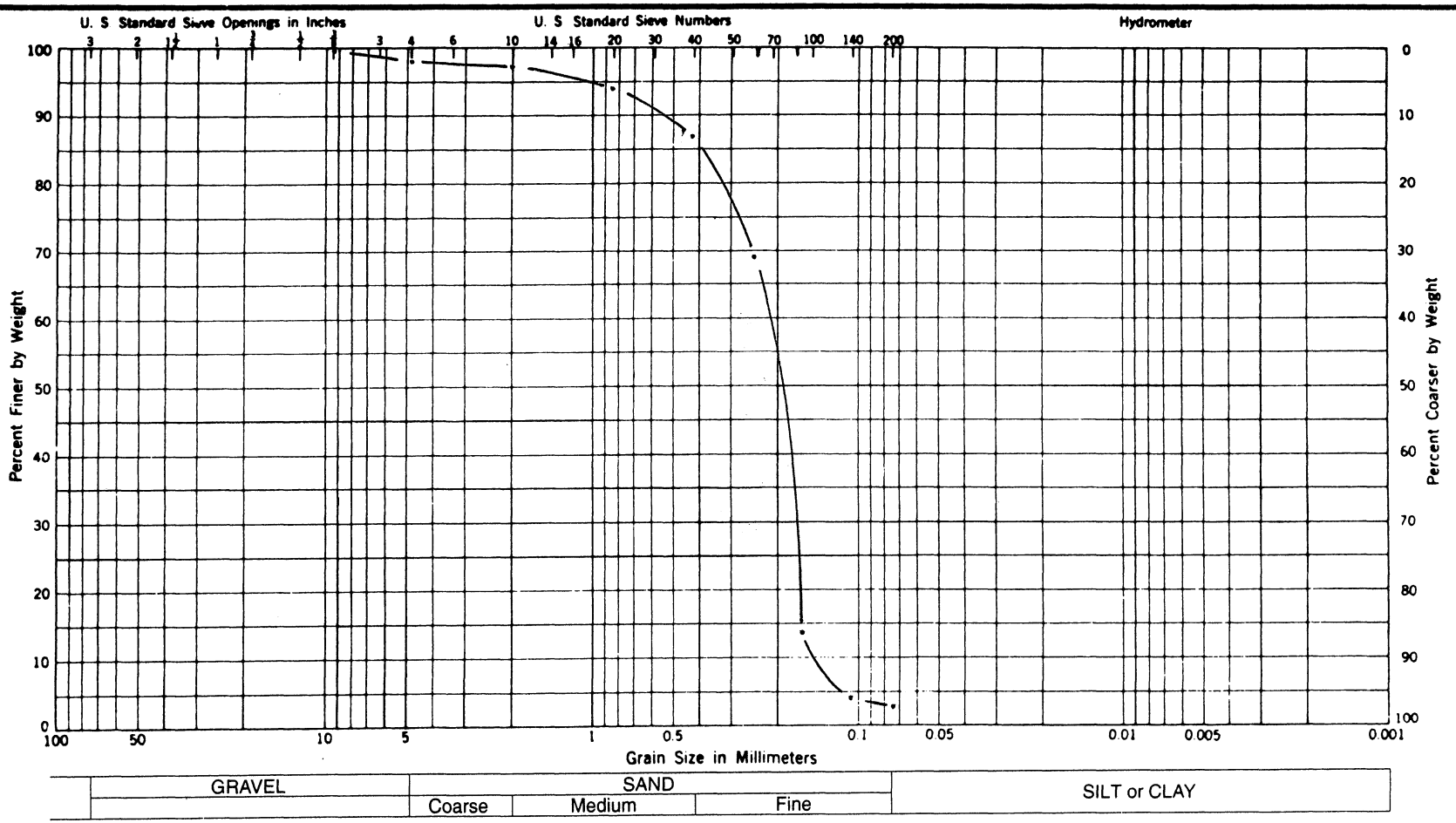
Number	Depth	Natural Moisture	L. L.	P. L.	P. I.	Classification
HA-13	0.5' - 3.0'					Light grayish-brown Fine SAND with shell fragments

CLIENT: Manatee County

PROJECT: Suburban Pipeline Project - Phase I, Manatee County, Florida

FILE: DES 096393

DRIGGERS ENGINEERING SERVICES, INC.



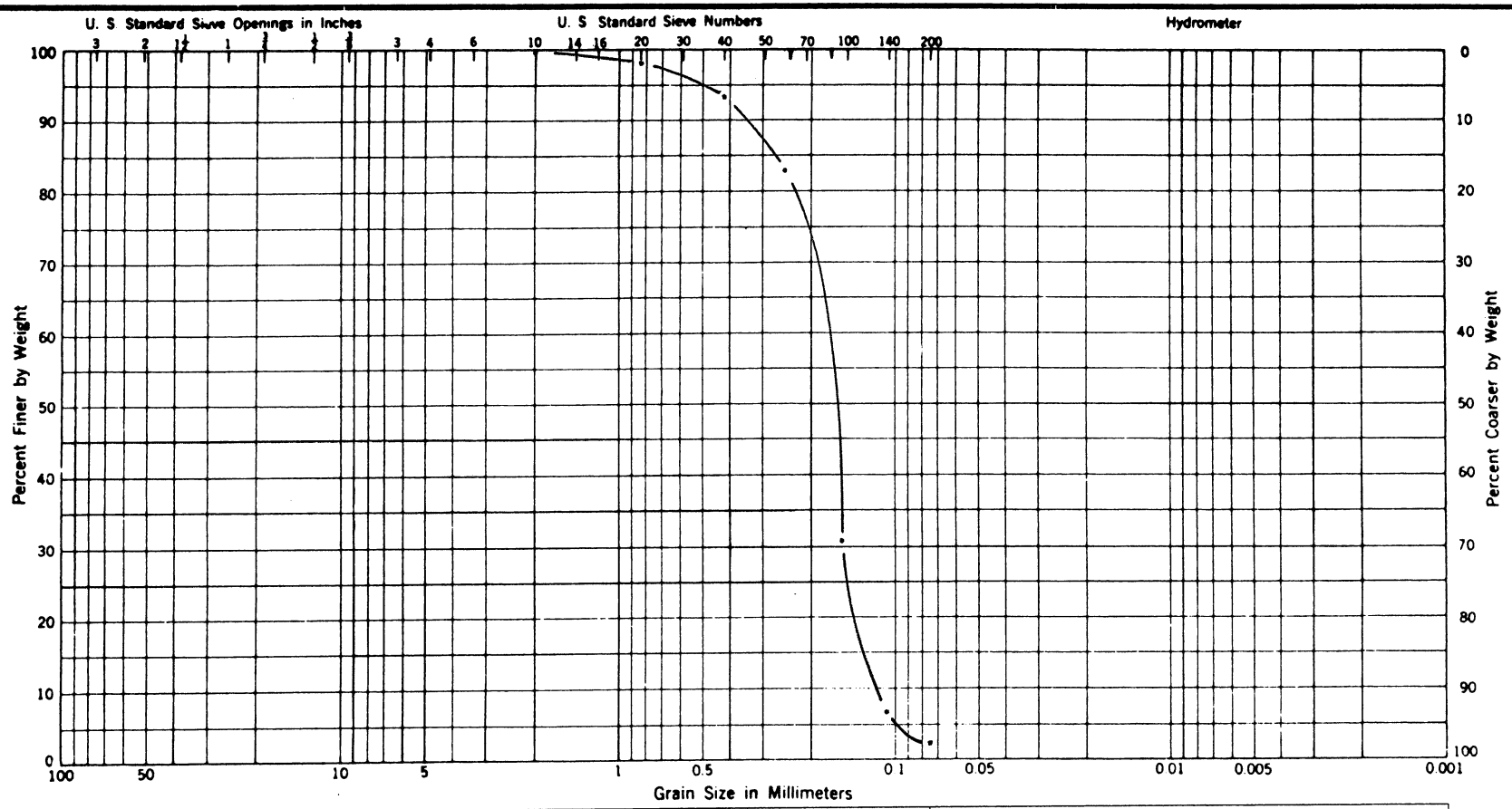
Number	Depth	Natural Moisture	L. L.	P. L.	P. I.	Classification
HA-15	0.5' - 5.0'					Brown Fine SAND

CLIENT: Manatee County

PROJECT: Suburban Pipeline Project - Phase I, Manatee County, Florida

FILE: DES 096393

DRIGGERS ENGINEERING SERVICES, INC.



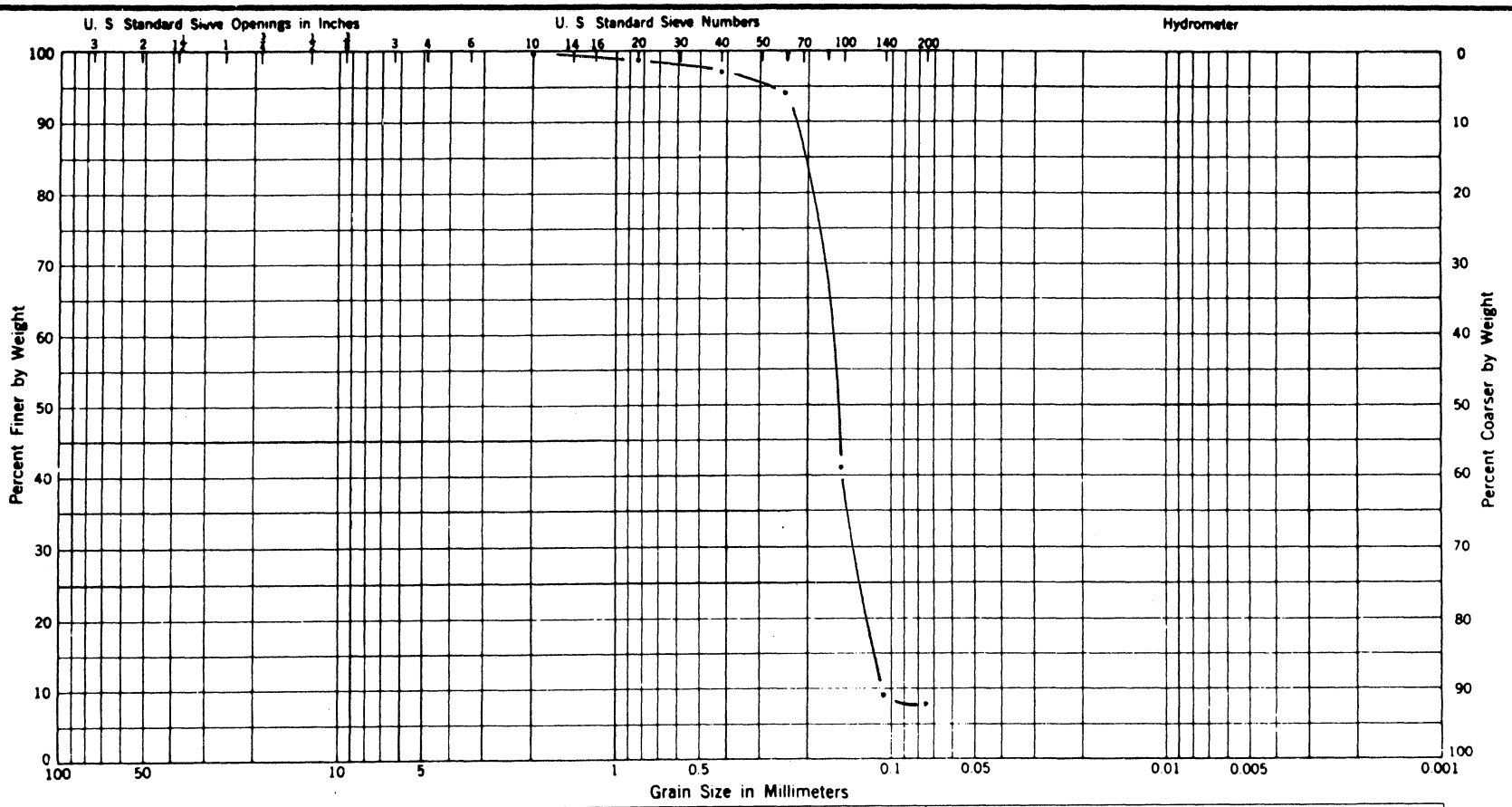
Number	Depth	Natural Moisture	L. L.	P. L.	P. I.	Classification
HA-17	1.1' - 4.0'					Light brown Fine SAND

CLIENT: Manatee County

PROJECT: Suburban Pipeline Project - Phase I, Manatee County, Florida

FILE: DES 096393

DRIGGERS ENGINEERING SERVICES, INC.



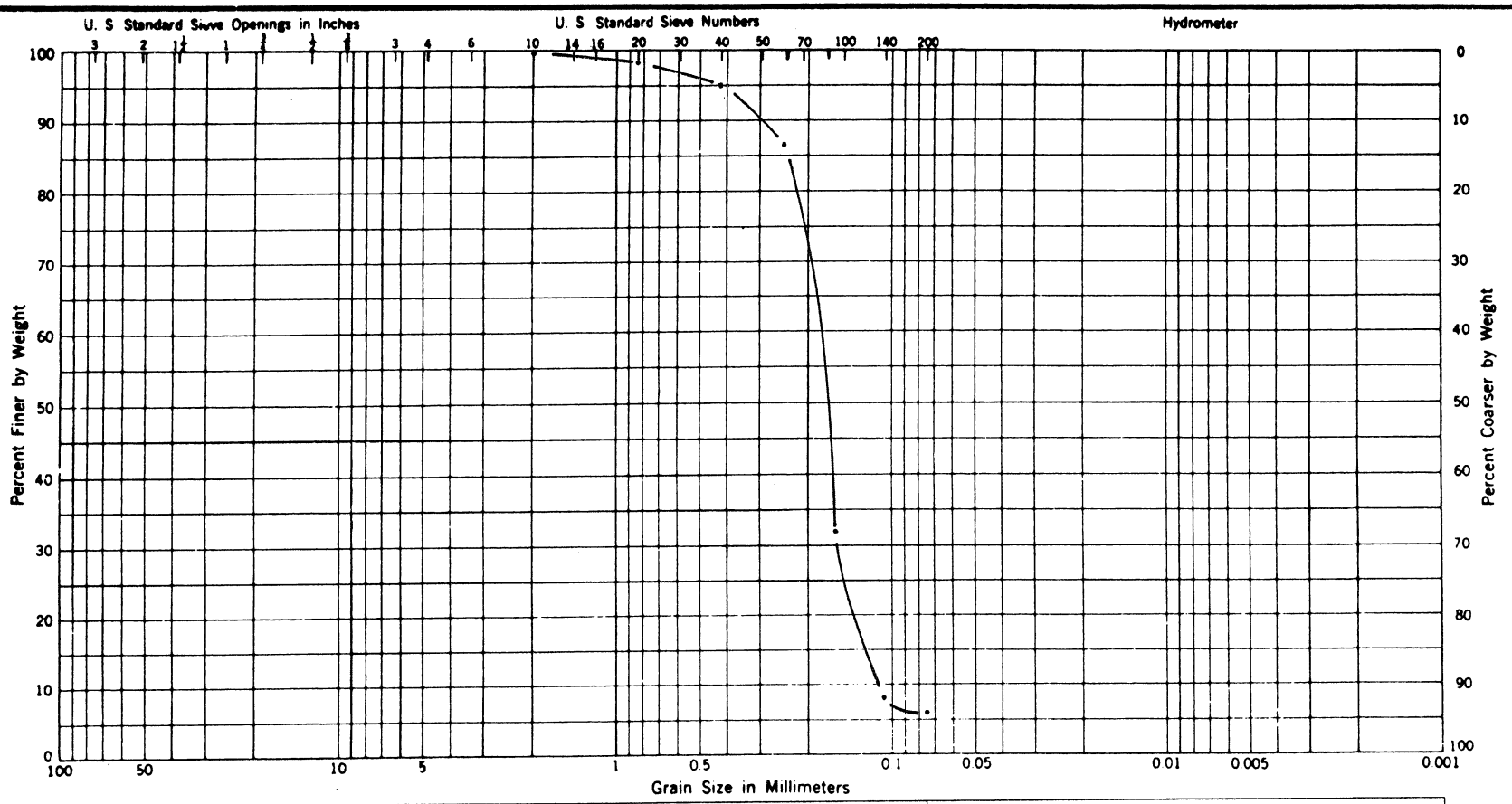
Number	Depth	Natural Moisture	L. L.	P. L.	P. I.	Classification
HA-19	5.0' - 8.0'					Dark brown slightly silty Fine SAND

CLIENT: Manatee County

PROJECT: Suburban Pipeline Project - Phase I, Manatee County, Florida

FILE: DES 096393

DRIGGERS ENGINEERING SERVICES, INC.



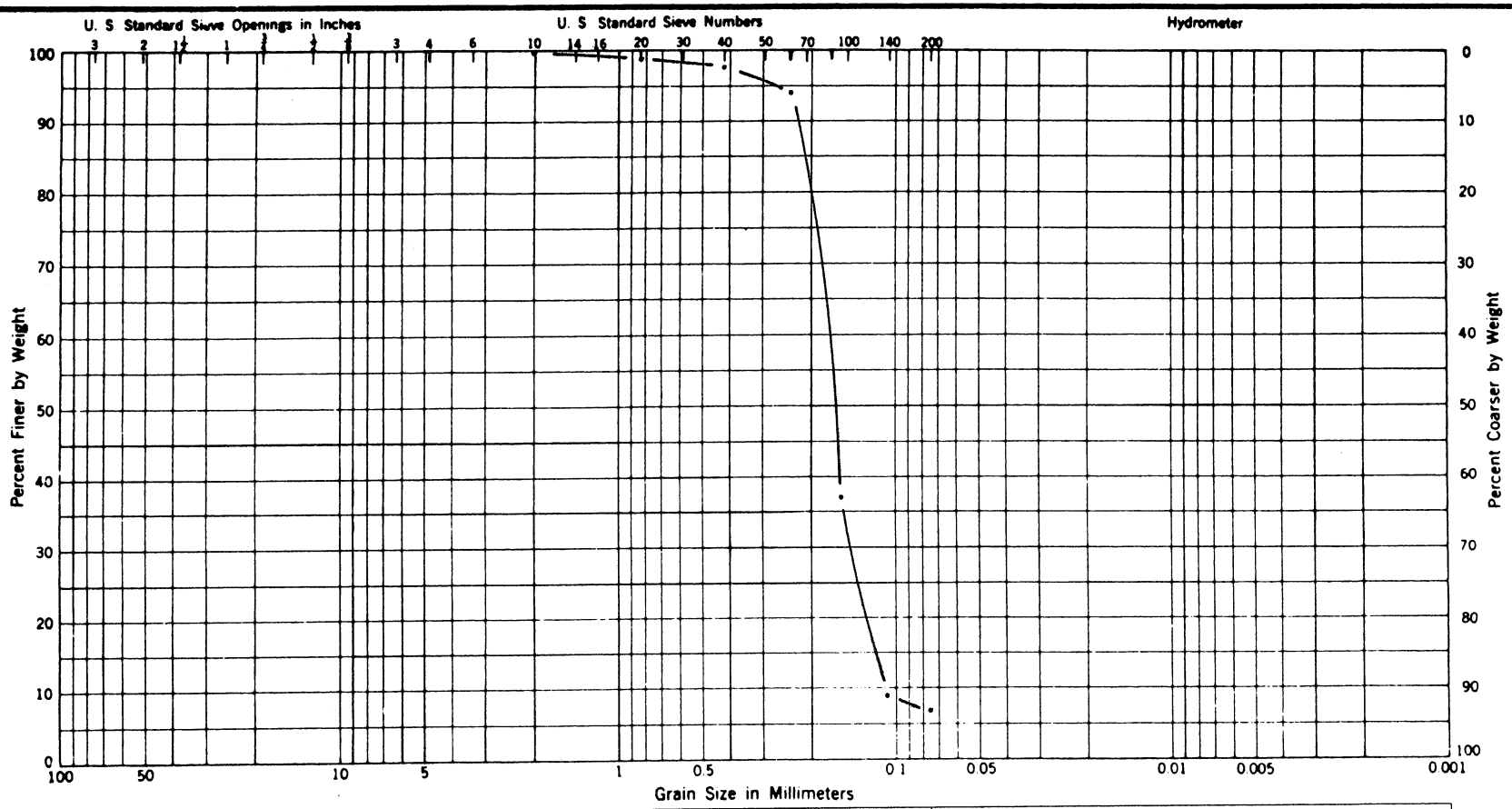
Number	Depth	Natural Moisture	L. L.	P. L.	P. I.	Classification
HA-20	1.3' - 2.5'					Dark brown slightly silty Fine SAND with trace of roots

CLIENT: Manatee County

PROJECT: Suburban Pipeline Project - Phase I, Manatee County, Florida

FILE: DES 096393

DRIGGERS ENGINEERING SERVICES, INC.



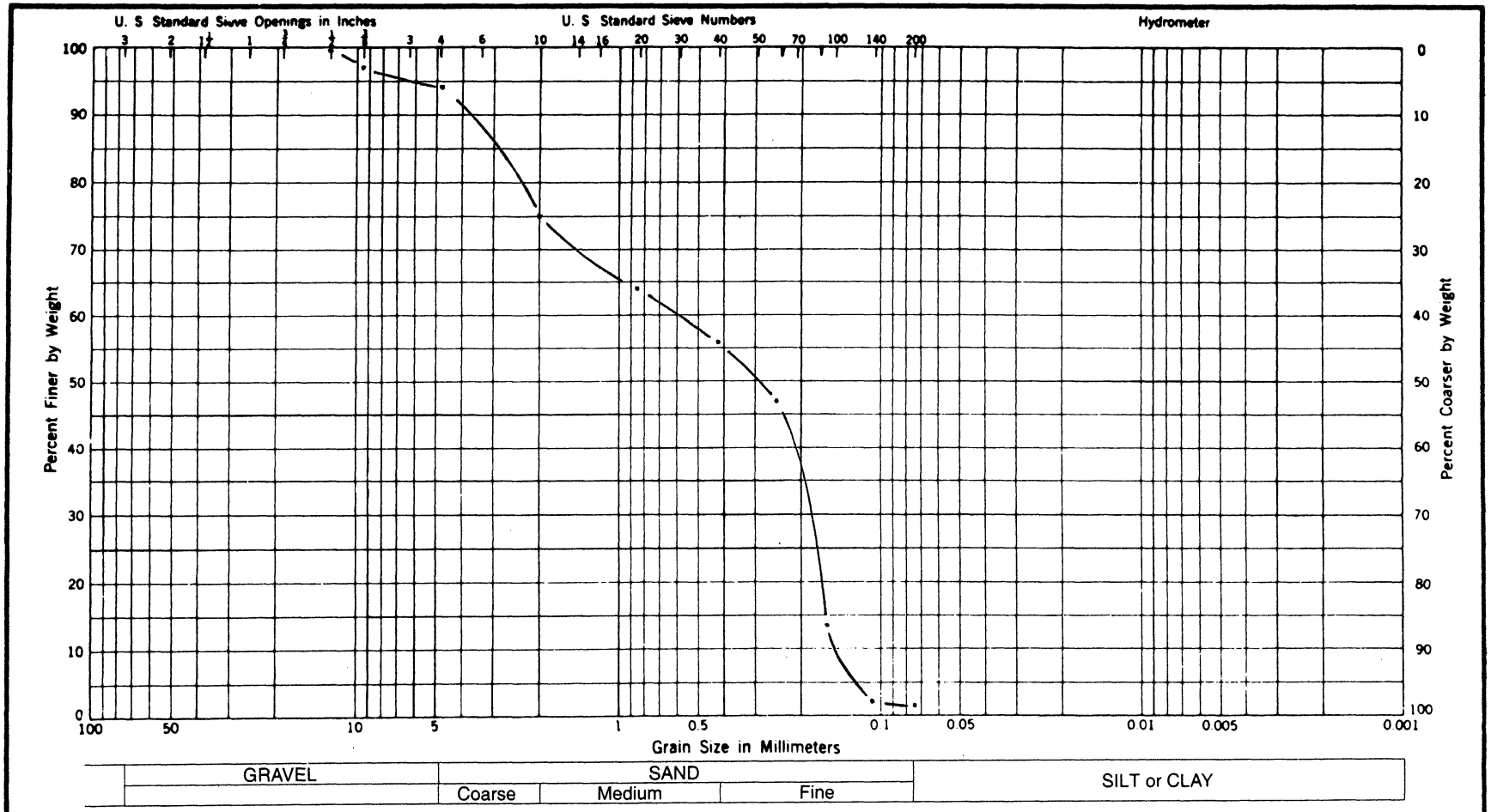
Number	Depth	Natural Moisture	L L.	P. L.	P. I.	Classification
HA-21	4.3' - 6.4'					Light tannish-gray slightly silty Fine SAND

CLIENT: Manatee County

PROJECT: Suburban Pipeline Project - Phase I, Manatee County, Florida

FILE: DES 096393

DRIGGERS ENGINEERING SERVICES, INC.



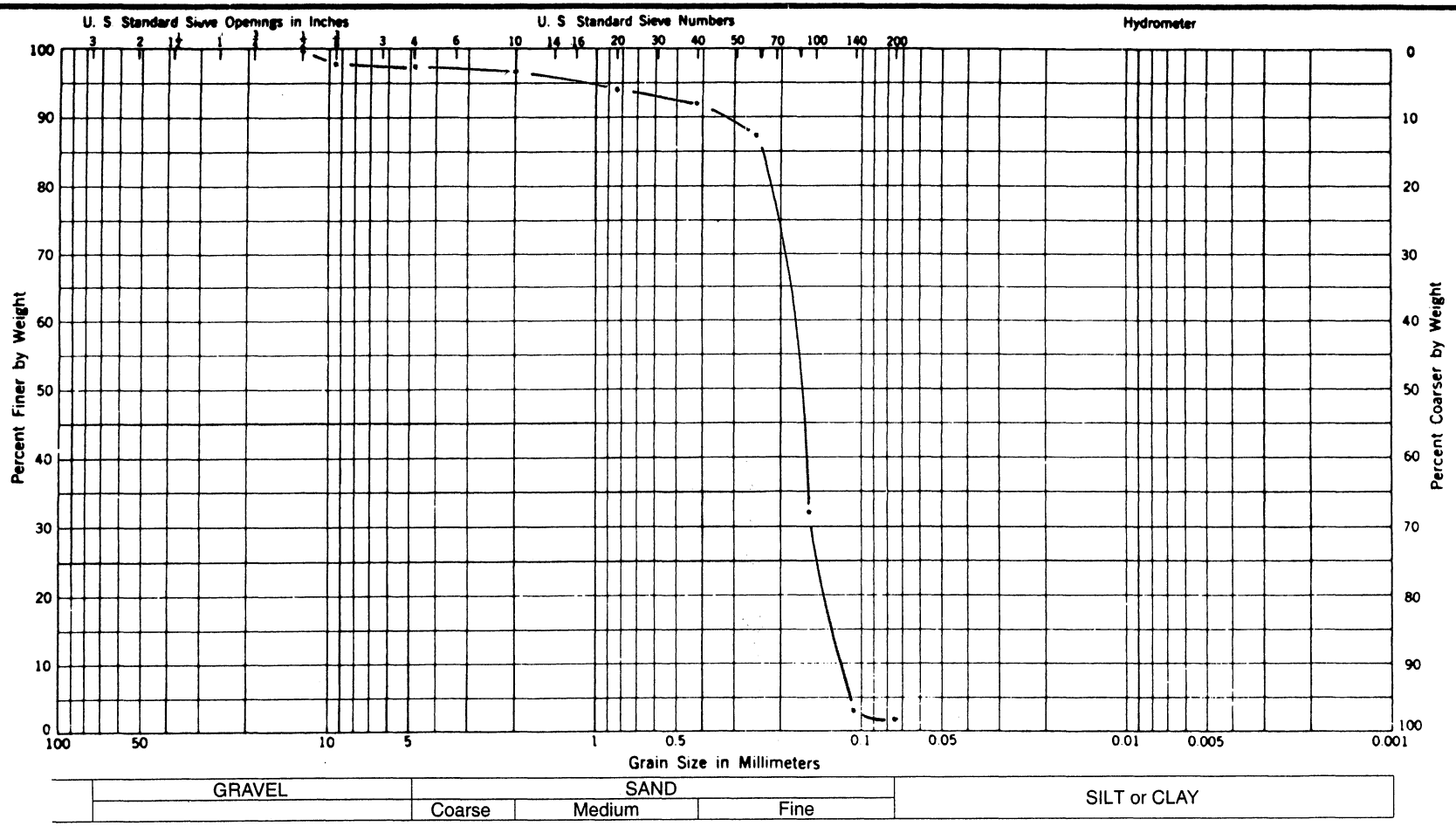
Number	Depth	Natural Moisture	L. L.	P. L.	P. I.	Classification
HA-22	6.1' - 7.2'					Tan Fine SAND with abundant shell fragments

CLIENT: Manatee County

PROJECT: Suburban Pipeline Project - Phase I, Manatee County, Florida

FILE: DES 096393

DRIGGERS ENGINEERING SERVICES, INC.



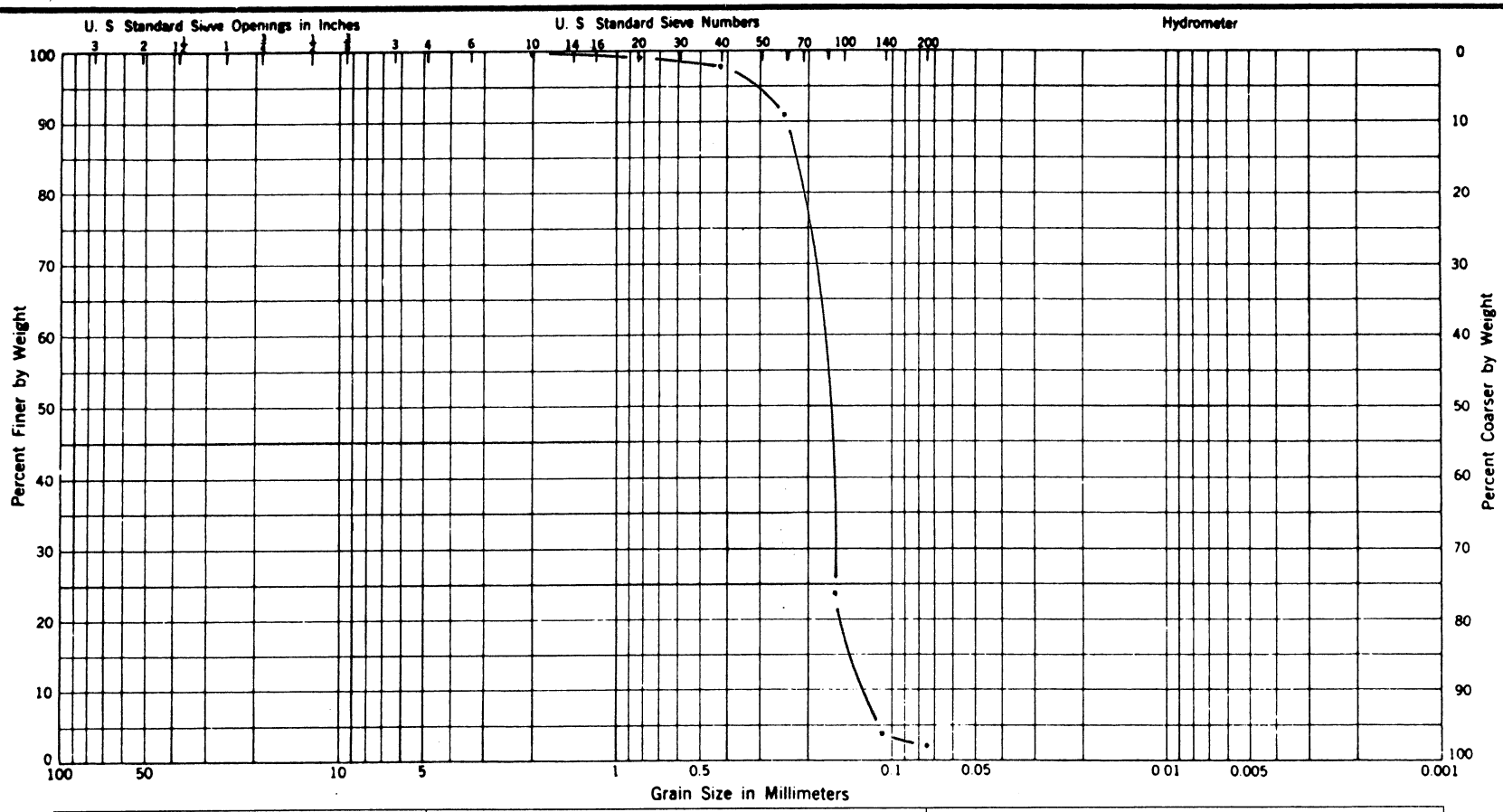
Number	Depth	Natural Moisture	L. L.	P. L.	P. I.	Classification
HA-24	5.5' - 8.0'					Light tan Fine SAND with trace of shell fragments

CLIENT: Manatee County

PROJECT: Suburban Pipeline Project - Phase I, Manatee County, Florida

FILE: DES 096393

DRIGGERS ENGINEERING SERVICES, INC.



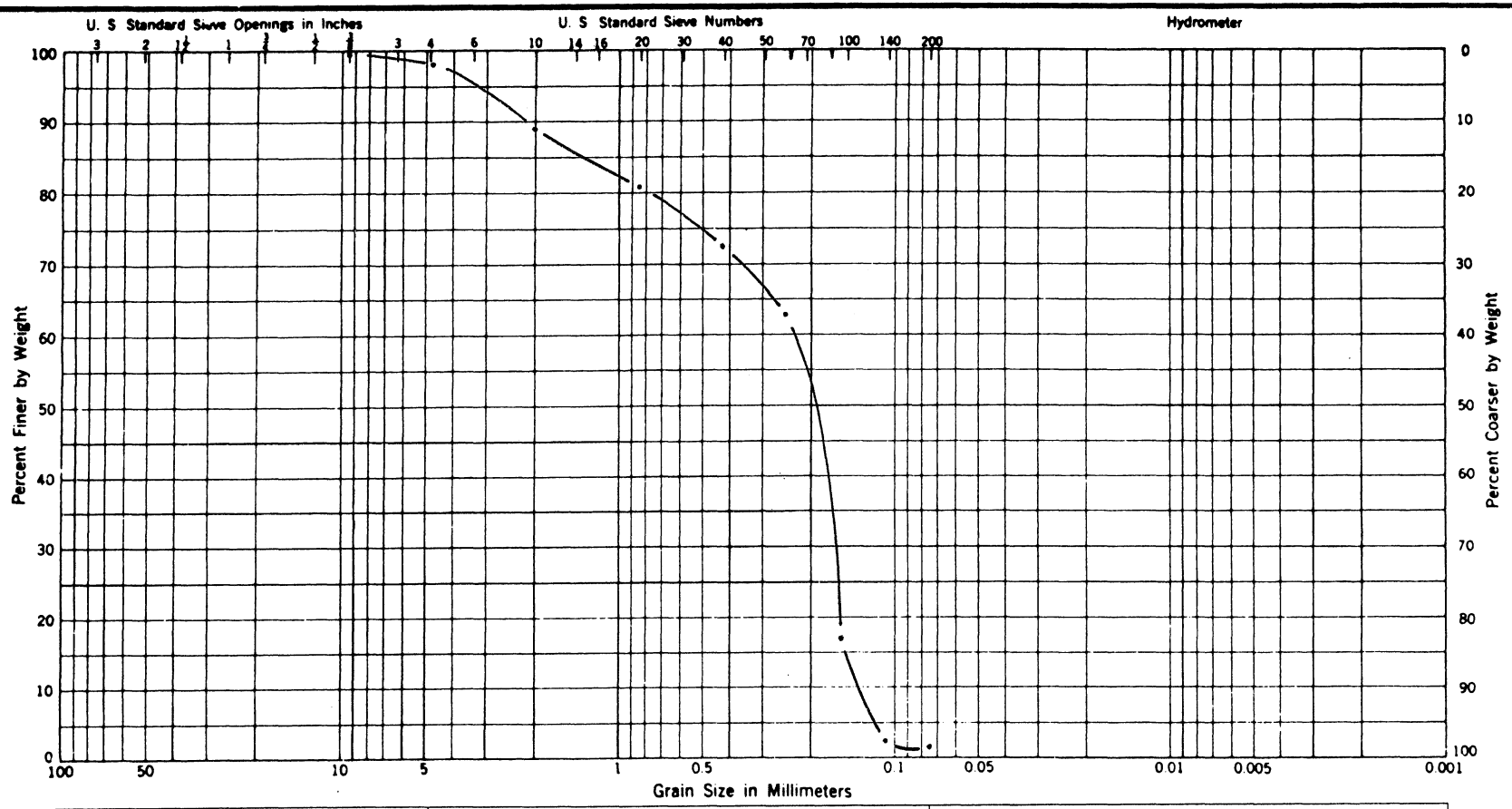
Number	Depth	Natural Moisture	L. L.	P. L.	P. I.	Classification
HA-26	1.4' - 4.9'					Tan Fine SAND

CLIENT: Manatee County

PROJECT: Suburban Pipeline Project - Phase I, Manatee County, Florida

FILE: DES 096393

DRIGGERS ENGINEERING SERVICES, INC.



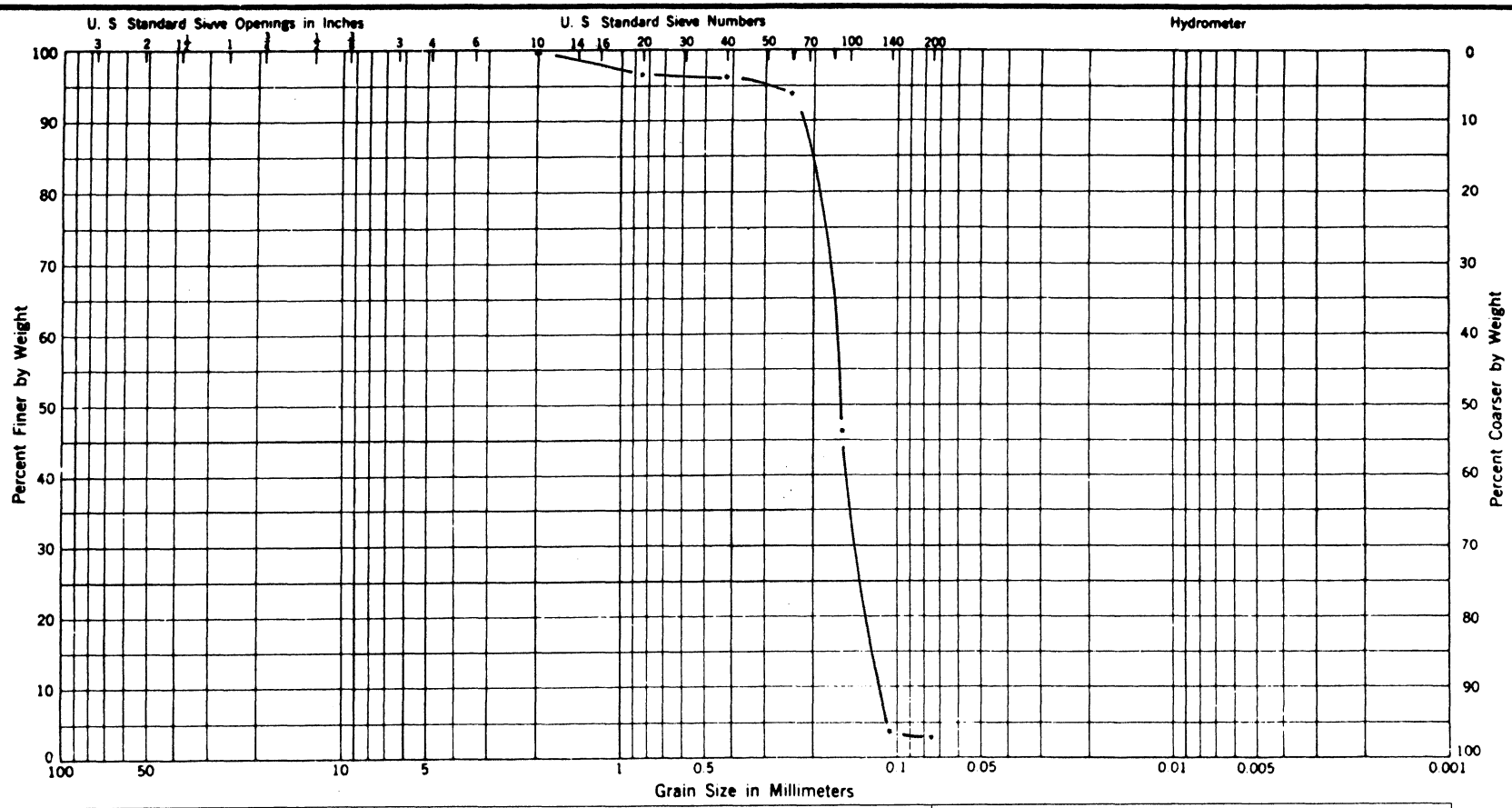
Number	Depth	Natural Moisture	L L.	P. L.	P. I.	Classification
HA-28	4.2' - 6.7'					Light tan Fine SAND with shell fragments

CLIENT: Manatee County

PROJECT: Suburban Pipeline Project - Phase I, Manatee County, Florida

FILE: DES 096393

DRIGGERS ENGINEERING SERVICES, INC.



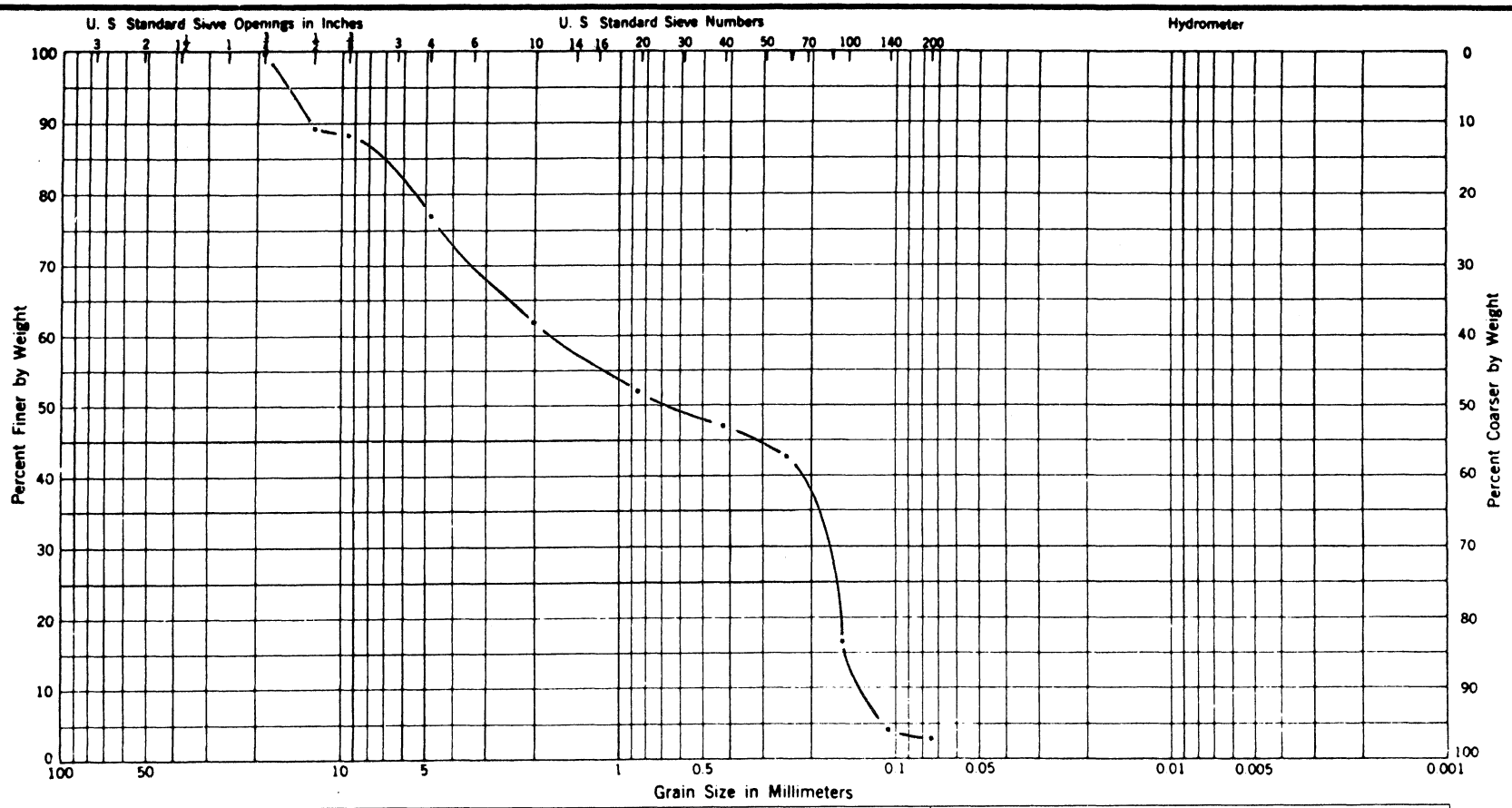
Number	Depth	Natural Moisture	L. L.	P. L.	P. I.	Classification
HA-29	5.6' - 8.0'					Dark brown Fine SAND

CLIENT: Manatee County

PROJECT: Suburban Pipeline Project - Phase I, Manatee County, Florida

FILE: DES 096393

DRIGGERS ENGINEERING SERVICES, INC.



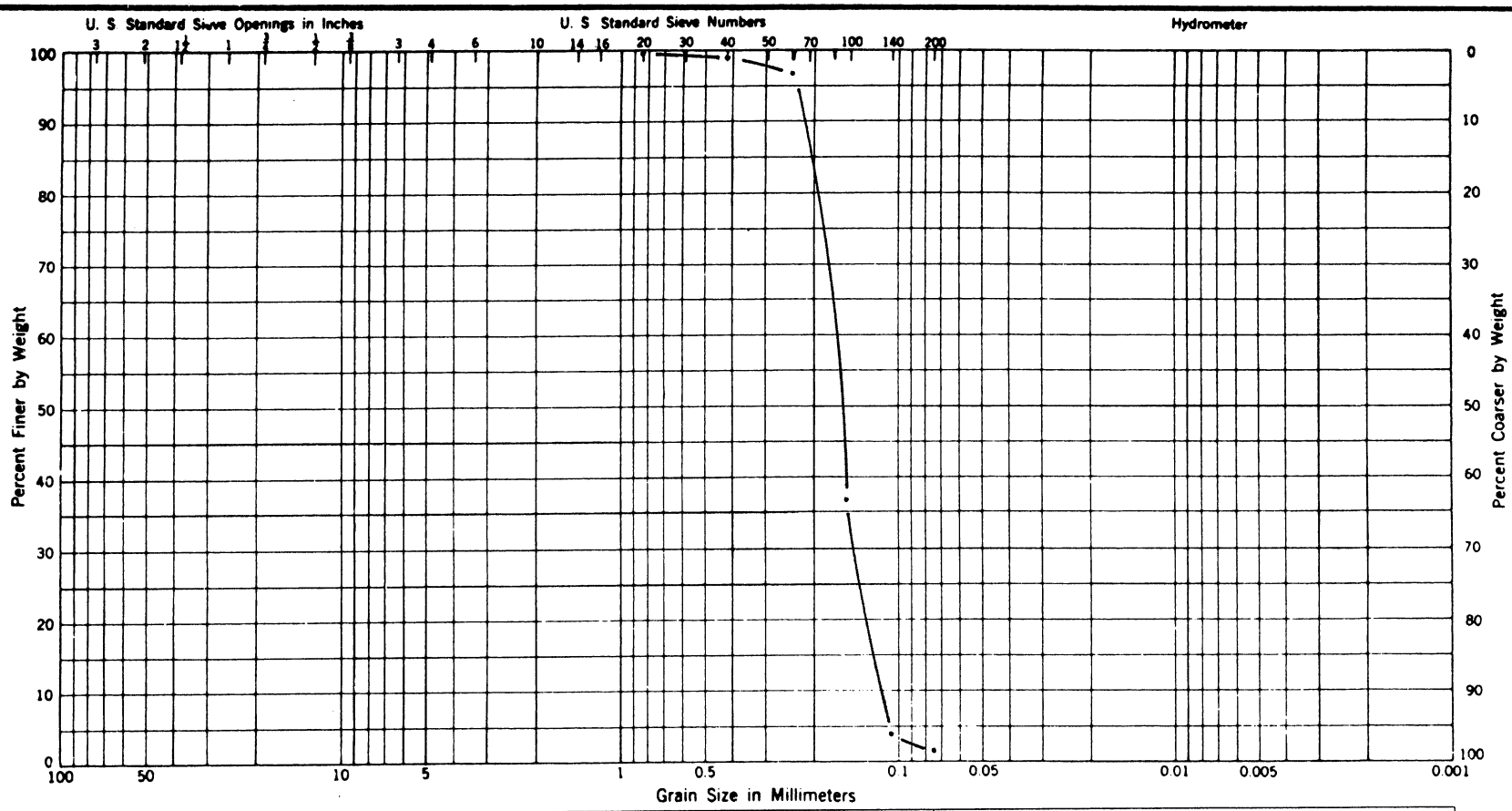
Number	Depth	Natural Moisture	L. L.	P. L.	P. I.	Classification
HA-30	3.5' - 4.6'					Tan and light orange Fine SAND with abundant shell fragments

CLIENT: Manatee County

PROJECT: Suburban Pipeline Project - Phase I, Manatee County, Florida

FILE: DES 096393

DRIGGERS ENGINEERING SERVICES, INC.



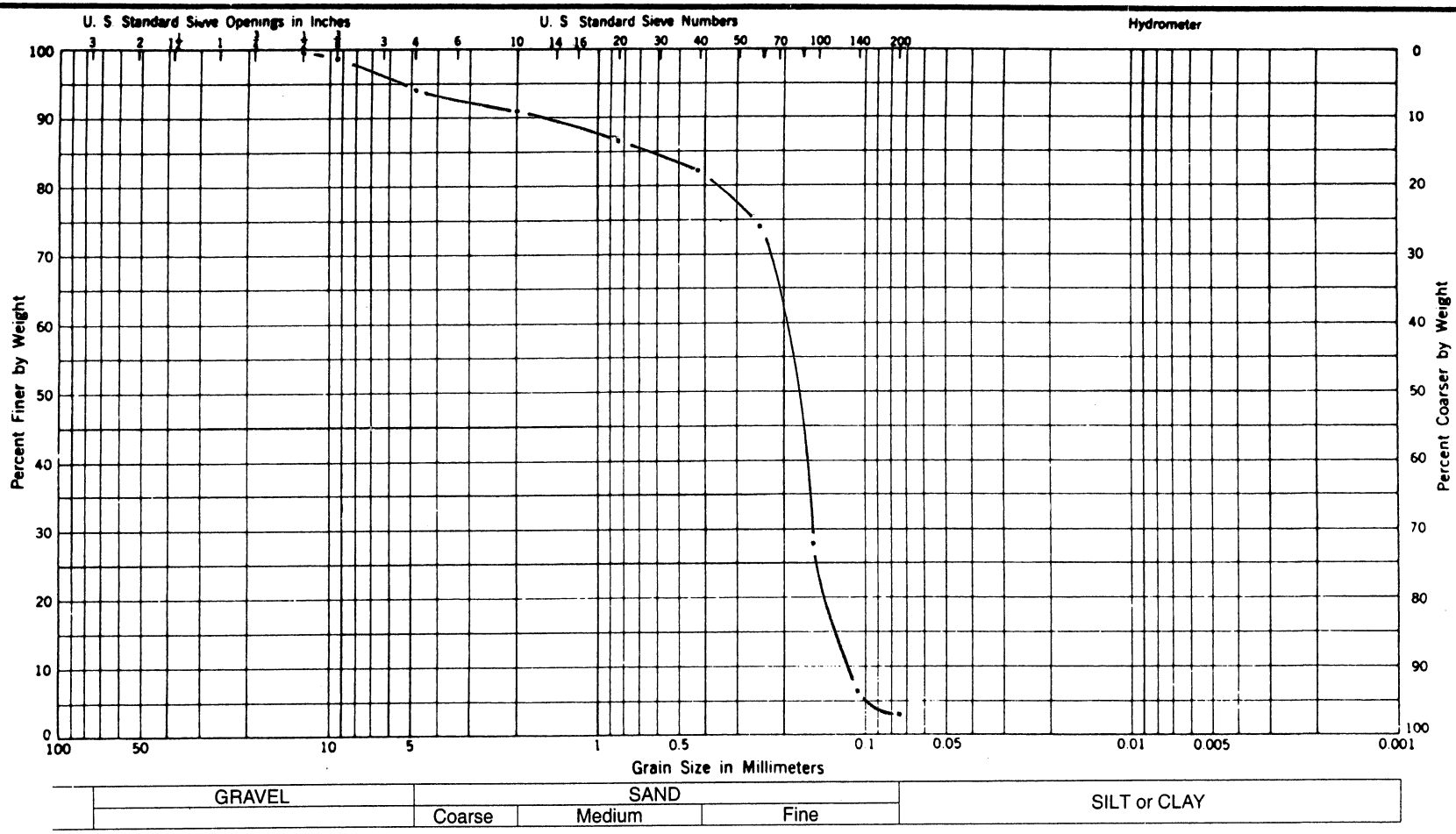
Number	Depth	Natural Moisture	L L.	P. L	P. I.	Classification
HA-31	5.9' - 8.0'					Light brown Fine SAND

CLIENT: Manatee County

PROJECT: Suburban Pipeline Project - Phase I, Manatee County, Florida

FILE: DES 096393

DRIGGERS ENGINEERING SERVICES, INC.



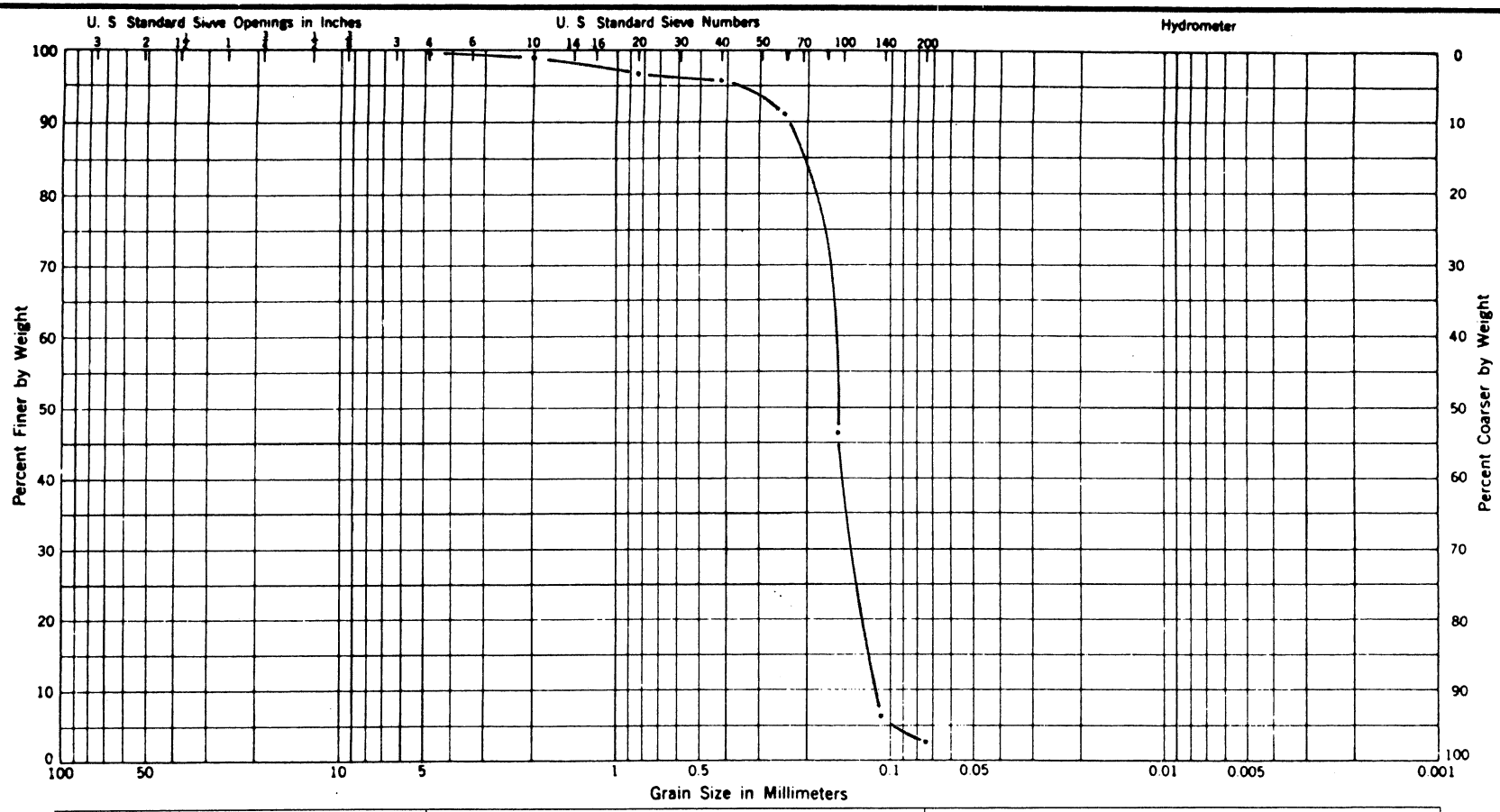
Number	Depth	Natural Moisture	L. L.	P. L.	P. I.	Classification
HA-32	0.5' - 4.1'					Grayish-brown Fine SAND with trace of shell fragments

CLIENT: Manatee County

PROJECT: Suburban Pipeline Project - Phase I, manatee County, Florida

FILE: DES 096393

DRIGGERS ENGINEERING SERVICES, INC.



Number	Depth	Natural Moisture	L. L.	P. L.	P. I.	Classification
HA-33	0.5' - 6.0'					Dark brown Fine SAND

CLIENT: Manatee County

PROJECT: Suburban Pipeline Project - Phase I, Manatee County, Florida

FILE: DES 096393

Xerox WorkCentre 5655
Configuration Report

XEROX

Network Setup(cont.)

HTTP: Enabled
- Port Number: 80
- Max Connections: 32
- Secure HTTP (SSL): Disabled
- Secure HTTP Port Number: 443

WINS: Enabled
- WINS Server Addresses:

SMTP
- SMTP Server Address:

LDAP
- Primary LDAP Address:
- Alternate LDAP Address:
- Maximum LDAP Search Results: 25

POP3
- POP3 Server Address:
- Login Name:
- Receipt of E-mail via POP3: Enabled
- Send Confirm on Request: Enabled
- Incoming E-mail cover sheet: Enabled

FTP: Passive

Web Services
- Scan Template Mgmt: Disabled
- SMart eSolutions: Not Enrolled
- Validation Client: Disabled

Network Scanning Setup
- Network Scanning Enabled: Enabled
- Confirmation Sheet Enabled: Disabled

Network Scanning (Default Repository)
- Protocol: FTP
- Server Name:
- Path:
- Login Name:
- Volume:
- NDS Context:
- NDS Tree:

Network Scanning (Template Pool)
- Protocol: FTP
- Server Name:
- Path:
- Login Name:
- Volume:
- NDS Context:
- NDS Tree:

Network Scanning (Alternate Repository 1)
- Protocol: FTP
- Server Name:
- Path:
- Login Name:
- Volume:
- NDS Context:
- NDS Tree:

Network Scanning (Alternate Repository 2)
- Protocol: FTP
- Server Name:
- Path:
- Login Name:
- Volume:
- NDS Context:
- NDS Tree:

Network Scanning (Alternate Repository 3)
- Protocol: FTP
- Server Name:
- Path:
- Login Name:
- Volume:
- NDS Context:
- NDS Tree:

Network Scanning (Alternate Repository 4)
- Protocol: FTP
- Server Name:
- Path:
- Login Name:
- Volume:
- NDS Context:
- NDS Tree:

Port Setup

Ethernet Profile
- Ethernet Card: pci card
- MAC Address: 00:00:aa:cf:69:d9
- Speed: auto
- 802.1x: Disabled

USB Printer Port Settings
- USB Port Enabled: Enabled
- USB Timeout: 5 seconds

Server Fax Setup
- Server Fax Enabled: Disabled
- Protocol: FTP
- Server Name: 0.0.0.0 0
- Path:
- Volume:
- NDS Context:
- NDS Tree:

Media Trays
- Media Name: standard, white and x=432mm, y=279mm
  - Media Type: standard
  - Media Color: white
  - Media Size: x=432mm, y=279mm
- Media Name: standard, white and x=356mm, y=216mm
  - Media Type: standard
  - Media Color: white
  - Media Size: x=356mm, y=216mm
- Media Name: standard, white and x=216mm, y=279mm
  - Media Type: standard
  - Media Color: white
  - Media Size: x=216mm, y=279mm
- Media Name: standard, white and x=216mm, y=279mm
  - Media Type: standard
  - Media Color: white
  - Media Size: x=216mm, y=279mm
- Media Name: standard, white and x=216mm, y=279mm
  - Media Type: standard
  - Media Color: white
  - Media Size: x=216mm, y=279mm
- Media Name: not present
  - Media Type:
  - Media Color:
  - Media Size:
- Media Name: not present
  - Media Type:
  - Media Color:
  - Media Size:

Network Authentication Setup

Kerberos
- Primary Realm:
- Primary KDC Address:
- Backup KDC Address:
- Alternate1 Realm:
- Alternate1 KDC Address:
- Backup1 KDC Address:
- Alternate2 Realm:
- Alternate2 KDC Address:
- Backup2 KDC Address:

Server Message Block (SMB)
- NT Domain:
- Alternate1 NT Domain:
- Alternate2 NT Domain:

Novell Directory Services (NDS)
- Default Tree:
- Default Context:
- Alternate1 Tree:
- Alternate1 Context:
- Alternate2 Tree:
- Alternate2 Context:

Accounting Setup
- Accounting Mode: None
- Authentication Mode: n/a

Xerox WorkCentre 5655
Configuration Report

XEROX

Report Profile

Profile Date:	Sep 23, 2009 at 07:03 AM
Profile Time:	07:03 AM

Device Profile

Device Name:	XRX0000AACF69D9
Device Serial Number:	WTD074514E
Service Phone Number:	
Fax Line1:	0000000
Fax Line2:	----------
Geographic Region:	unknown
Xerox Asset Tag:	
Customer Asset Tag:	

Installed Options

Internet Fax (S/W):	installed/enabled
Network Server Fax (S/W):	installed/disabled
Scan to File (S/W):	installed/enabled
Scan to E-mail (S/W):	installed/enabled
Save Job for Reprint (S/W):	Disabled and Deleted
Searchable File Formats:	installed/enabled
Custom Services(S/W):	installed/disabled
Network Accounting (S/W):	not installed
OnDemand Img. Overwrite (S/W):	installed/disabled
Immed. Img. Overwrite (S/W):	installed/disabled
User Data Encryption:	installed/enabled
Embedded Fax (S/W):	installed/enabled
Fax Card:	present
Extended Fax Card:	not present
Fax Memory Size:	507 MB
USB Printer Port:	present
Image Processing Card:	not present
Foreign Interface Board:	not present
Net Controller RAM Size:	640 MB
Net Controller Disk Size:	used=812MB/total=80026MB
EPC Memory Size:	384 MB
Image Disk:	not present
Finisher Type:	Office Finisher (LCSS) with Hole Punch
Finisher Punch:	Present
Finisher Folder:	not present

Printer Setup

System Software Version:	025.054.039.00000
Net Controller Software Version:	060.069.10508
UI Software Version:	025.060.047
IOT Software Version:	092.008.000
SIP Software Version:	025.054.054
DADH Software Version:	025.018.000
Paper Feeder Software Version:	000.040.000
High Cap. Trays Software Version:	000.010.009
PFP Software Version:	----------
Finisher Software Version:	003.051.000
Fax Software Version:	003.008.002
Scanner Software Version:	017.005.000
Network Controller OS:	060.069.15311
Tray Priority:	4,3,1,2,5
Low Power Mode Timer:	8 minutes
Sleep Mode Timer:	45 minutes
Startup Config Report Enabled:	Enabled
Paper Substitution Enabled:	Enabled
Error Sheets Enabled:	Enabled
Banner Sheet Enabled:	Enabled
Document Defaults:	
Size:	x= 216mm, y= 279mm
Type:	System-Default
Color:	unspecified
Copies:	1
2 Sided Printing:	1 Sided
Collated Sets:	Enabled
Output Tray:	Top Tray

Interpreter Profiles

Language Description:	PCL
Language Level:	6
Language Version:	6
Default Orientation:	portrait
Default X-Resolution:	600
Default Y-Resolution:	600
Current X-Resolution:	600
Current Y-Resolution:	600

Interpreter Profile(cont.)

Interpreter Memory:	16106240
Language Description:	PostScript
Language Level:	3
Language Version:	3016
Default Orientation:	portrait
Default X-Resolution:	600
Default Y-Resolution:	600
Current X-Resolution:	600
Current Y-Resolution:	600
Interpreter Memory:	16106240

Network Setup

NetWare: Disabled

Print Server Name:	XRX_0000AACF69D9
NDS Tree:	Xerox_DS_Tree
NDS Context:	Xerox_DS_Context
Primary NDS Server:	0.0.0.0
Novell Filing Transport:	IP
IPX Frame Type:	ethernet_auto
Poll Interval:	5
SAP Rate:	60
Primary Bindery File Server 1:	
Primary Bindery File Server 2:	
Primary Bindery File Server 3:	
Primary Bindery File Server 4:	
IPX Network Number:	

TCP/IPv4: Enabled

Host Name:	XRX0000AACF69D9
IP Address:	127.0.0.1
Broadcast Address:	127.255.255.255
Subnet Mask:	255.255.0.0
Default Gateway:	0.0.0.0
Automatic Addressing:	DHCP
LPD Enabled:	Enabled
LPD Port Number:	515
Raw TCP/IP Printing Enabled:	Enabled
Raw TCP/IP Port Number:	9100
TCP/IP Self AssignAddr Enabled:	Enabled
TCP/IP Self Assigned Address:	169.254.200.160
Multicast DNS Enabled:	Enabled
Domain Name:	
Primary DNS Server:	
Alternate DNS Server 1:	
Dynamic DNS Enabled:	Disabled

TCP/IPv6: Enabled

Host Name:	XRX0000AACF69D9
Link Local Address:	
Use Router Supplied Prefix:	Enabled
Stateless Global Address 1:	::
Stateless Global Address 2:	0Vq0
Manual Address:	::
DHCP Addressing:	Use DHCP as directed by a router
DHCP Address:	
Default Gateway:	
Prefer IPv6 DNS over IPv4:	Enabled
IPv6 Domain Name:	
Primary DNS Server:	::
Alternate DNS Server 1:	::
Alternate DNS Server 2:	::

SLP: Disabled

Version:	1
Port Number:	427
Character Set:	ASCII
Directory Agent:	
Scope 1:	DEFAULT
Scope 2:	
Scope 3:	
Message Type:	1
Multicast Radius:	255
MTU:	1400

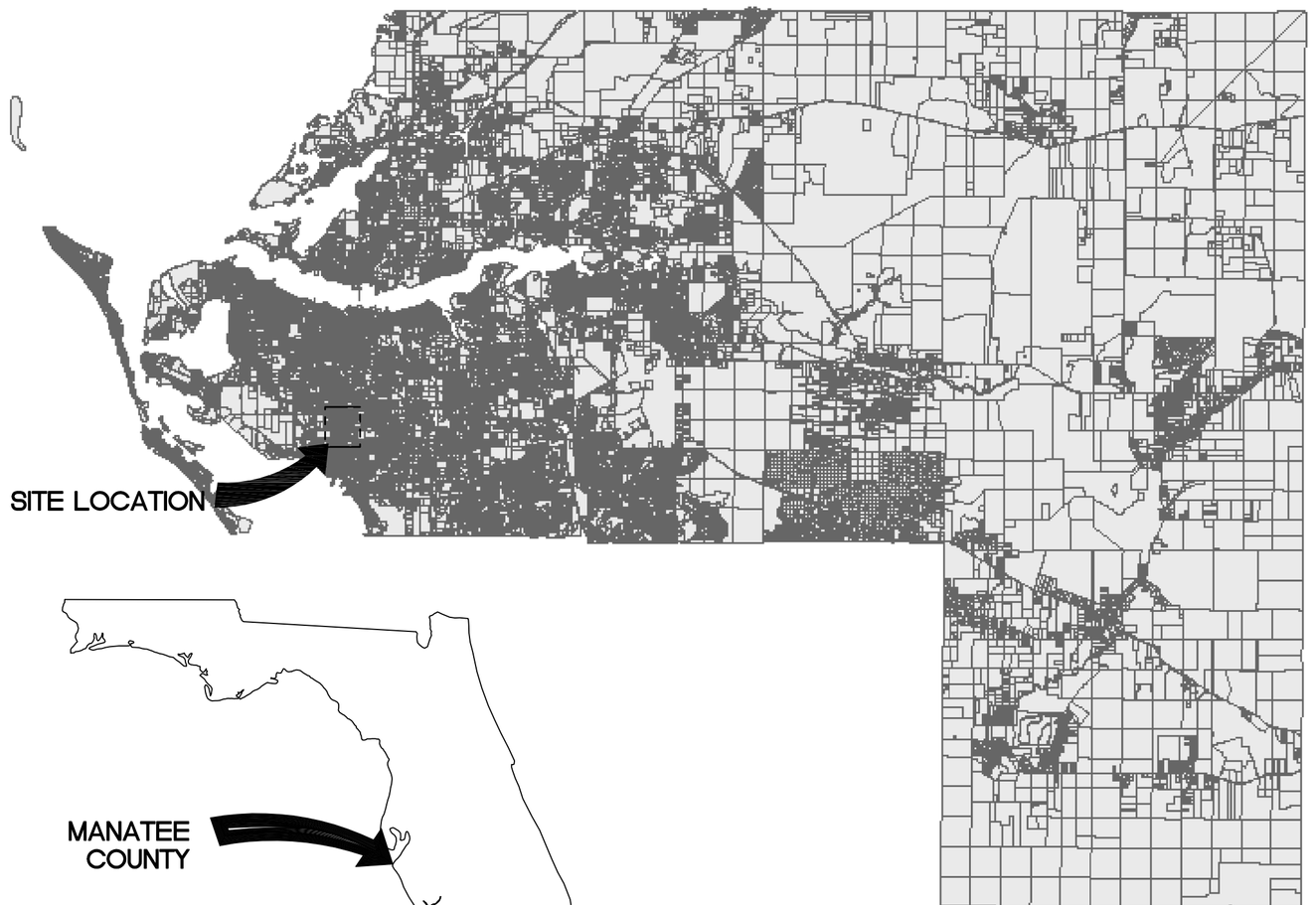
AppleTalk: Disabled

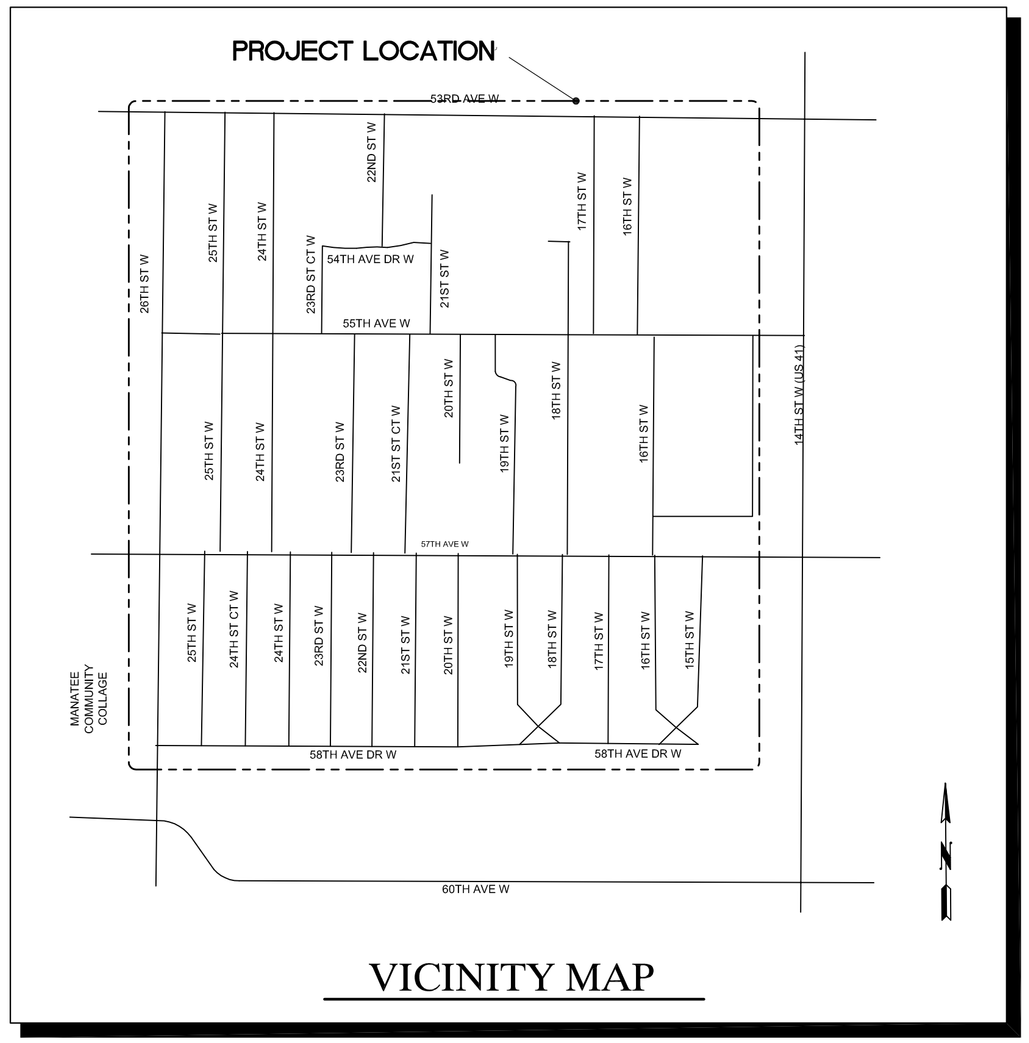
Name:	XRX_0000AACF69D9
Zone:	*
Printer Type:	LaserWriter

Microsoft Networking: Disabled

SMB Host Name:	XRX0000AACF69D9
Printer (Share) Name:	PRINTER
Workgroup:	WORKGROUP
Number of Connections:	30
Connection Timeout:	600
Transport:	IP/Ethernet

Suburban System
Water Line Replacement Project Phase 1
Manatee County, Florida
Project No. 60747.70





VICINITY MAP

INDEX OF DRAWINGS

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

DSGN	BJK
DR	BJK
CHK	RAC
APVD	RAC

NO.	DATE	REVISION	BY	APVD
		BID DOCUMENTS		

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 1
MANATEE COUNTY, FLORIDA
PROJECT No. 60747.70

TITLE SHEET

SHEET	G1
DWG	GICOVER.DWG
DATE	JULY 2009
PROJ	386879.WM

CONTACTS

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MANATEE COUNTY UTILITIES
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SUPERINTENDENT
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941–792–8811 EXT.5401

TECO/PEOPLES GAS CO.
DAN SHANAHAN
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(941) 342–4030
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EMERGENCY: 1–877–832–6911

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1–(800) 432–4770

VERIZON FLORIDA INC.
STEVE RICKERT
1701 RINGLING BLVD.
SARASOTA, FL. 34236
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FLORIDA POWER & LIGHT
GREG COKER
1253 12TH AVENUE EAST
PALMETTO, FL 34221
(941) 723–4430
FAX: (941) 723–4444
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1–800–4–OUTAGE

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6750 FRUITVILLE ROAD
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DAN BARBER
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BRADENTON, FL. 34208–5535
(941) 748–3816 EXT. 21345

811 Know what's below. Call before you dig.

GENERAL NOTES

1. THE CONSTRUCTION DOCUMENTS HAVE BEEN PREPARED USING AVAILABLE INFORMATION PERTAINING TO EXISTING UTILITY SYSTEMS AND OTHER IMPROVEMENTS LOCATED WITHIN THE RIGHT–OF–WAY IN THE VICINITY OF THE NEW WORK. THE CONTRACTOR SHALL PERFORM ADDITIONAL INVESTIGATIONS OR FIELD EVALUATION PRIOR TO AND DURING CONSTRUCTION TO CONFIRM THE EXISTING CONDITIONS IN THE FIELD THAT MAY IMPACT CONSTRUCTION OF THE WORK TO VERIFY THE EXISTING LOCATION OF ALL ABOVE GRADE AND BELOW GRADE IMPROVEMENTS THAT MAY IMPACT CONSTRUCTION OF THE WORK.

2. SURVEY INFORMATION USED TO PREPARE THE CONSTRUCTION DOCUMENTS WAS COMPILED BY ZNS ENGINEERING, 201 5TH AVE. DR. EAST, BRADENTON, FLORIDA 34208 (941) 748–8080, LEAD SURVEYOR JIM GATCH, P.S.M.

3. ELEVATIONS SHOWN ON THE CONSTRUCTION DOCUMENTS ARE BASE UPON NATIONAL GEODETIC VERTICAL DATUM, 1929 (N.G.V.D. – 1929). MANATEE COUNTY BENCHMARK # 110–29–18, ELEVATION = 20.557.

4. HORIZONTAL DATUM IS BASED ON THE NORTH AMERICAN DATUM (NAD) OF 1983 (1990 ADJUSTMENT), FLORIDA STATE PLANE, WEST ZONE, AND WAS DERIVED FROM REDUNDANT REAL–TIME KINEMATIC GPS OBSERVATIONS UTILIZING NGS CONTROL POINT M 087 (NGS PID AG9192) AND ADHERES TO THE ACCURACY REQUIREMENTS OF FLORIDA'S MINIMUM TECHNICAL STANDARDS (61G17–6.003, F.A.C.).

5. IN THE EVENT A PUBLIC OR PRIVATE SURVEY MARKER, PROPERTY CORNER OR RIGHT–OF–WAY MARKER OR SIMILAR SURVEYED POINT IS DAMAGED OR MOVED BY CONSTRUCTION, THE CONTRACTOR SHALL ENGAGE A FLORIDA REGISTERED LAND SURVEYOR TO RESTORE SUCH ITEMS IMPACTED BY CONSTRUCTION.

6. THE PROJECT INVOLVES THE CONSTRUCTION OF BURIED POTABLE WATER PIPELINES. THE CONTRACTOR SHALL USE CAUTION IN PERFORMING THE WORK TO PREVENT DAMAGE TO EXISTING UTILITY SYSTEMS AND SHALL COORDINATE WITH UTILITY COMPANIES LISTED AND OTHER UTILITY COMPANIES PRIOR TO AND DURING CONSTRUCTION. THE CONTRACTOR SHALL PROVIDE A MINIMUM OF 48 HOURS NOTICE TO UTILITY COMPANIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL OBTAIN FIELD LOCATES OF EXISTING UNDERGROUND UTILITIES IN THE VICINITY OF NEW CONSTRUCTION.

7. THE CONTRACTOR SHALL PERFORM WORK IN ACCORDANCE WITH THE REQUIREMENTS OF THE SUNSHINE STATE ONE CALL OF FLORIDA, EXCAVATION GUIDE, LATEST EDITION. THE CONTRACTOR SHALL CONTACT THE ONE CALL CENTER AT 1–800–432–4770 A MINIMUM OF 48 HOURS PRIOR TO THE PLANNED EXCAVATION OR CONSTRUCTION DATE TO ARRANGE FOR THE FIELD LOCATION OF BURIED UTILITIES WITHIN THE CONSTRUCTION AREA.

8. THE CONTRACTOR SHALL FOLLOW ALL FEDERAL, STATE AND LOCAL RULES, STATUTES, ORDINANCES AND GUIDELINES RELATED TO PERFORMING ALL WORK ASSOCIATED WITH THE PROJECT. OF SPECIAL INTEREST ON THIS PROJECT IS THE REQUIREMENT TO PERFORM TRENCH EXCAVATION AND THE CONTRACTOR'S REQUIREMENT TO PERFORM ALL EXCAVATION IN STRICT ACCORDANCE WITH THE REQUIREMENTS OF THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATIONS (OHSA) TRENCH EXCAVATION SAFETY STANDARDS.

9. THE CONTRACTOR SHALL PERFORM THE WORK TO MINIMIZE IMPACT AND DAMAGE PRIVATE PROPERTY. DAMAGE TO PRIVATE PROPERTY CAUSED BY THE CONTRACTOR SHALL BE REPAIRED AND RESTORED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE COUNTY.

10. THE WORK IS TO TAKE PLACE WITHIN PUBLIC RIGHT–OF–WAY AND WITHIN PUBLIC ROADWAYS. THE CONTRACTOR SHALL PERFORM WORK TO MINIMIZE IMPACT AND DAMAGE TO PUBLIC ROADWAYS, ROADWAY FEATURES, SIGNS, DRAINAGE FEATURES, PUBLIC AND PRIVATE UTILITIES LOCATED WITHIN THE RIGHT–OF–WAY AND ALL OTHER FEATURES ADJOINING THE WORK AREA. DAMAGE TO PUBLIC RIGHT–OF–WAY, ROADWAY, PUBLIC OR PRIVATE UTILITIES OR OTHER FEATURES LOCATED WITHIN THE MANATEE COUNTY RIGHT–OF–WAY SHALL BE REPAIRED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE COUNTY.

11. THE CONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS THAT ARE LOCATED ADJACENT TO THE NEW WORK AND ARE SHOWN TO NOT TO BE RELOCATED.

12. THE CONTRACTOR SHALL RELOCATE ALL FACILITIES OR IMPROVEMENTS THAT ARE IN CONFLICT WITH THE NEW WORK AND SUCH RELOCATION SHALL BE IN ACCORDANCE WITH COUNTY OR THE OWNING PARTIES STANDARDS.

13. THE CONTRACTOR SHALL PROVIDE TEMPORARY EROSION AND SEDIMENTATION CONTROL AS REQUIRED DURING CONSTRUCTION OF THE WORK. SPECIFIC EROSION CONSTROL AND SEDIMENTATION CONTROL REQUIREMENTS ARE PROVIDED IN THE SPECIFICATIONS AND SHALL BE FOLLOWED TO COMPLY WITH ALL FEDERAL, STATE AND LOCAL ENVIRONMENTAL AND CONSTRUCTION STANDARDS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL EROSION AND SEDIMENTATION CONTROL OR SEDIMENTATION IMPACTS THAT RESULT FROM ACTIVITIES AT THE WORK SITE OR WHILE TRANSPORTING FILL OR OVER–EXCATION MATERIAL TO OR FROM THE WORK SITE. THE CONTRACTOR SHALL PROVIDE PERIODIC MAINTENANCE OF ALL EROSION AND SEDIMENTATION CONTROL DEVICES INSTALLED AND SHALL CLEAN–UP AND RESTORE ALL AREAS IMPACTED BY EROSION CONTROL ACTIVITIES AS THE WORK PROCEEDS.

14. THE CONTRACTOR SHALL MAINTAIN EXISTING DRAINAGE SYSTEMS WITHIN THE AREA OF THE WORK AND SHALL NOT IMPARE OR IMPACT THE ABILITY OF EXISTING DRAINAGE FEATURES TO PERFORM THEIR INTENDED FUNCTION. IMPACTS TO EXISTING DRAINAGE FEATURES CAUSED BY THE WORK OF THE CONTRACTOR SHALL BE REPAIRED WHEN NOTED AND SHALL NOT IMPACT AREA DRAINAGE CAPACITY.

15. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING DAMAGE TO EXISTING ABOVE GROUND AND BELOW GROUND FACILITIES THAT RESULT FROM A RESULT OF THE CONTACTOR WORK UNDER THIS CONTACT. ALL RESTORATION WORK SHALL RESULT IN A REPAIR THAT IS EQUAL TO OR BETTER THAN THE UTILITY SYSTEM, ABOVE GROUND FEATURE OR BELOW GROUND FEATURE DAMAGED. REPAIRS SHALL BE MADE WITH NEW MATERIALS EQUAL IN QUALITY TO THAT DAMAGED. IN THE EVENT OF DAMAGE TO AN EXISTING RECLAIMED WATER SERVICE OR POTABLE WATER SERVICE LINE, THE REPAIR SHALL INCLUDED COMPLETE REPLACEMENT OF THE LINE FROM SERVICE CONNECTION TO CUSTOMER SERVICE WITH NO PATCH/SPLICE REPAIRS ALLOWED.

16. THE CONTRACTOR SHALL BACKFILL TRENCHES AND/OR EXCAVATIONS AT THE END OF EACH WORK DAY. MAINTAINING EXCAVATIONS OPEN OVER–NITE SHOULD BE THE EXCEPTION NOT THE RULE. SHOULD AN EXCAVATION NEED TO BE MAINTAINED OVERNIGHT, THE CONTRACTOR SHALL COVER THE EXCAVATION WITH A TRAFFIC BEARING STEEL PLATE AND PROPERLY PLACE BARRICADES, LIGHTING AND SIGNAGE AROUND THE PLATED EXCAVATION PREVENTING THE ENTRY OF VEHICLES OR PEDESTRIANS.

17. THE CONTRACTOR SHALL PERFORM CLEAN–UP OF THE WORK SITE AND RESTORATION OF SURFACE AND SUBSURFACE IMPROVEMENTS DAMAGED AS A PART OF THE WORK AS THE PROJECT PROCEDES. SURFACE RESTORATION, RE–GRADING, GRASSING, REPLACEMENT OF PAVEMENT, REPLACEMENT OF DRIVEWAYS, REPLACEMENT OF SIDEWALKS, REPLACEMENT OF STREET SIGNS, REPLACEMENT OR RESTORATION OF PRIVATE PROPERTY AND SIMILAR ITEMS SHALL BE COMPLETED ON A STREET SEGMENT BY STEET SEGMENT BASIS AS THE WORK PROCEDS.

18. MAINTENANCE OF TRAFFIC AND PEDESTRIAN SAFETY SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR SHALL DEVELOP SPECIFIC TRAFFIC CONTROL PLANS (TCP) AND PEDESTRIAN WALKING PLANS TO PROTECT THE PUBLIC IN THE AREA OF CONSTRUCTION. TRAFFIC CONTROL AND PEDESTRIAN CONTROL PLANS SHALL FOLLOW THE REQUIREMENTS OF FLORIDA DEPARTMENT OF TRANSPORTATION (FDOT) INDEX DRAWINGS AND STANDARDS. ACCESS TO EXISTING RESIDENCES SHALL BE MAINTAINED DURING THE WORK. SHORT TERM TEMPORARY BLOCKAGE OF RESIDENTIAL DRIVEWAYS WILL BE APPROVED BY THE HOMEOWNER. ALL TRAFFIC CONTROL AND PEDESTRIAN CONTROL PLANS SHALL BE DEVELOPED BY AN INDIVIDUAL OR COMPANY WHO SPECIALIZES IN COMPLIANCE WITH FDOT TCP REQUIREMENTS.

19. THE CONTRACTOR'S WORK PLAN OR EXECUTION OF THE WORK SHALL NOT IMPACT THE PROVISION OF WATER SERVICE TO MANATEE COUNTY CUSTOMERS EXCEPT AS REQUIRED TO MAKE METER CHANGE–OUTS OR SERVICE LINE TRANSFERS. THE CONTRACTOR SHALL COORDINATE WITH THE CUSTOMER AND THE MANATEE COUNTY FIELD PROJECT MANAGER PRIOR TO ALL ACTIVITIES WHICH MAY IMPACT THE AVAILABILITY OF WATER SERVICE TO CUSTOMERS.

20. ALL PIPING, VALVES, FITTINGS, APPURTENANCES AND UTILITY CONSTRUCTION SHALL BE IN ACCORDANCE WITH THESE PLANS AND MANATEE COUNTY PUBLIC WORKS DEPARTMENT UTILITY STANDARDS DATED MARCH 2009. THE CONTRACTOR MAY UTILIZE OPEN CUT CONSTRUCTION OR DIRECTIONAL DRILLING CONSTRUCTION TECHNIQUES CONSISTENT WITH THE SPECIFIC REQUIREMENTS OF THE MANATEE COUNTY STANDARD SPECIFICATIONS AND STANDARD DETAILS UNLESS OTHERWISE SHOWN ON THE DRAWINGS.

21. NEW WATER PIPELINES SHALL BE INSTALLED WITH A MINIUMUM OF 3 FEET OF COVER. PRIOR TO CONSTRUCTION OF PIPELINE ALONG EACH STREET SEGMENT, THE CONTRACTOR SHALL VERIFY THE ELEVATION AND LOCATION OF ALL UNDERGROUND CROSSING UTILITIES THAT MAY INTERFER WITH THE CONSTRUCTION OF THE NEW PIPELINES AND SERVICES. (EG: WATER SERVICS, SANITARY SEWER SERVICES, GAS SERVICES, COMMUNICATION SERVICES ETC.) THE CONTRACTOR SHALL ADJUST THE ELEVATION OF THE NEW PIPELINE BASED UPON SUCH VERIFICATIONS TO A MINIMUM DEPTH OF COVER TO PROVIDE CLEARANCE AS REQUIRED BY MANATEE COUNTY SPECIFICATIONS BETWEEN EXISTING UTILITIES.

22. THE CONTRACTOR SHALL CONSTRUCT NEW WATER MAINS USING HDD WITH HDPE PIPE WITH THE FOLLOWING EXCEPTIONS: FIRE HYDRANT ASSEMBLY PIPING SHALL BE AS SHOWN ON DETAIL UW–5; THE NEW 6 INCH WATER MAIN TO BE INSTALLED ON 21ST STREET COURT WEST FROM THE CONNECTION ON 55TH AVE WEST SOUTH TO THE CONNECTION WITH THE EXISTING 18 INCH WATER MAIN ON 57TH AVE. WEST SHALL BE PVC CONSTRUCTED USING OPEN–CUT CONSTRUCTION; THE NEW 8 INCH AND 4 INCH WATER MAIN TO BE INSTALLED ON 20TH STREET WEST FROM THE CONNECTION ON 55TH AVE WEST SOUTH TO THE END OF THE CUL–DE–SAC SHALL BE PVC CONSTRUCTED USING OPEN–CUT CONSTRUCTION; THE NEW 6 INCH WATER MAIN TO BE INSTALLED ON 16TH STREET WEST FROM THE CONNECTION TO THE EXISTING 20 INCH WATER MAIN ON 53RD AVE WEST SOUTH TO THE SOUTH PROPERTY LINE OF 5324 16TH STREET WEST SHALL BE PVC CONSTRUCTED USING OPEN–CUT CONSTRUCTION.

23. THE CONTRACTOR SHALL ESTABLISH A PIPE DRILLING OR LAYING PLAN FOR EACH STREET SEGMENT PRIOR TO CONSTRUCTION. THE DRILLING OR LAYING PLAN SHALL TAKE INTO CONSIDERATION THE ELEVATION OF CROSSING UTILITIES, AS NOTED ABOVE, SUCH THAT THE DEPTH OF THE PIPELINE IS ESTABLISHED TO MINIMIZE DEPTH OF BURY GREATER THAN THREE (3) FEET, AND MINIMIZE ELEVATION CHANGES ALONG THE ALIGNMENT WHILE TAKING INTO CONSIDERATION THE ELEVATION OF CROSSING UTILITIES AND OTHER ROW STRUCTURES, MANATEE COUNTY DEPTH OF BURY STANDARDS AND WATER LINE CONNECTION POINTS. THE CONTRACTOR SHALL INSTALL AUTOMATIC AIR RELEASE VALVES, ON EACH SIDE OF A LOW POINT IN THE LINE, WHEN THE PIPELINE ELEVATION CHANGES WITHIN A STREET SEGMENT BY MORE THAN 3 FEET VERTICALLY WITHIN A 200 LINEAR DISTANCE.

24. RESTRAINED PIPE JOINTS SHALL BE USED AT ALL FITTINGS, BENDS AND VALVES IN ACCORDANCE WITH THE REQUIREMENTS OF MANATEE COUNTY STANDARD DETAILS UG–8, UG–9, UG–10 AND PROJECT SPECIFICATIONS. THRUST BLOCKS AS SHOWN IN COUNTY STANDARD DETAIL UG–7 SHALL ONLY BE USED ONLY WHEN SPECIFICALLY APPROVED BY THE COUNTY OR WHEN SHOWN ON COUNTY STANDARD DETAILS FOR THE PARTICULAR PIPING INSTALLATION IN QUESTION.

25. THE CONTRACTOR IS CAUTIONED TO CAREFULLY COORDINATE THE PIPING MATERIALS USED FOR CONSTRUCTION UNDER PAVEMENT WITH THE CONSTRUCTION METHOD AND MATERIALS THAT ARE ELECTED FOR USE. THE CONTRACTORS ATTENTION IS DIRECTED TO SECTION 02609 INSTALLATION OF PIPELINES PERTAINING TO THIS ISSUE.

26. A LATERAL SEPARATION OF A MINIMUM OF 10 FEET EDGE TO EDGE SHALL BE MAINTAINED BETWEEN NEW WATER MAINS AND SANITARY SEWER GRAVITY LINES OR FORCE MAINS. PLEASE REFER TO THE SPECIFICATION SECTION 02609 INSTALLATION OF PIPELINES FOR SPECIFIC REQUIREMENTS REGARDING PIPELINE INSTALLATION.

27. IF A NEW WATER MAIN PARALLELS A SEWER MAIN WITH LESS THAN 10 FEET OF LATERAL CLEARANCE, EDGE TO EDGE, THE JOINTS OF THE NEW WATER MAIN SHALL BE STAGGERED WITH THE JOINTS OF THE EXISTING SEWER LINE TO ACHIEVE A MINIMUM 10 FEET OF SEPARATION BETWEEN THE JOINTS OF THE LINES IF POSSIBLE. PLEASE REFER TO THE SPECIFICATION SECTION 02609 INSTALLATION OF PIPELINES FOR SPECIFIC REQUIREMENTS REGARDING PIPELINE INSTALLATION.

28. A LATERAL SEPARATION OF A MINIMUM OF 3 FEET EDGE TO EDGE SHALL BE MAINTAINED BETWEEN NEW WATER MAINS AND STORMWATER SEWERS OR MAINS OR, RECLAIMED WATER MAINS. PLEASE REFER TO THE SPECIFICATION SECTION 02609 INSTALLATION OF PIPELINES FOR SPECIFIC REQUIREMENTS REGARDING PIPELINE INSTALLATION.

29. A VERTICAL CLEARANCE OF NOT LESS THAN 18 INCHES SHALL BE MAINTAINED BETWEEN ALL NEW WATER MAIN CROSSINGS WITH EXISTING SEWER MAINS, RECLAIMED WATER MAINS, STORM SEWERS, SANITARY SERVICE LINES, GAS LINES AND OTHER UTILITIES. PLEASE REFER TO THE SPECIFICATION SECTION 02609 INSTALLATION OF PIPELINES – FOR SPECIFIC REQUIREMENTS REGARDING PIPELINE INSTALLATION.

30. THIS PROJECT WILL REQUIRE THAT EXISTING WATER MAINS BE CONNECTED TO THE NEW WATER MAINS BEING INSTALLED AS A PART OF THIS PROJECT TO MAINTAIN WATER SERVICE TO EXISTING CUSTOMERS. CONTINUOUS WATER SERVICE TO ALL CUSTOMERS WITHIN THE PROJECT AREA SHALL BE PROVIDED EXCEPT FOR THE SCHEDULED CHANGE–OUT OF WATER METERS AND SERVICES AND THE DISCONNECTION AND RECONNECTION OF OTHER WATER MAINS TO THE NEW WATER MAINS BEING CONSTRUCTED AS A PART OF THIS PROJECT. THE CONTRACTOR SHALL PERFORM EXPLORATORY WORK AND COORDINATE THE DISCONNECTION AND RECONNECTION OF WATER SERVICES AND EXISTING WATER MAINS SERVING OTHER CUSTOMERS WITHIN THE TIME FRAME LIMITS ESTABLISHED BY THE COUNTY. THE CONTRACTOR SHALL COMPILE ALL FIELD EXPLORATORY INFORMATION AND CONFIRM THE IMPACTS OF PLANNED DISCONNECTION/RECONNECTION ACTIVITIES PRIOR TO INITIATING WORK TO INSURE THAT WATER SERVICE TO ALL CUSTOMERS IN RESTORED IN A TIME FRAME CONSISTENT WITH THE REQUIREMENTS OF THE PROJECT.

31. THE CONTRACTOR SHALL INSTALL NEW WATER SERVICES, WATER METER BOX ASSEMBLIES AS A PART OF THIS PROJECT, COMPLETE. THE COUNTY WILL PROVIDE NEW METERS FOR THE CONTRACTOR TO INSTALL UNDER THIS PROJECT IN THE NEW METER BOXES. THE CONTRACTOR SHALL REMOVE ALL EXISTING METERS, METER BOXES AND APPURTENANCES PRIOR TO INSTALLING THE NEW WATER METER SYSTEM. THE CONTRACTOR SHALL COORDINATE WITH MIKE HOOEY OF THE COUNTY METER DEPARTMENT (941) 792–8811 PERTAINING TO METER REPLACEMENT. AT THE BEGINNING OF THE PROJECT, THE CONTRACTOR SHALL PROVIDE A LIST TO THE COUNTY OF ALL METERS TO BE REPLACED NOTING THE STREET ADDRESS, SIZE AND SERIAL NUMBER OF THE METER CURRENTLY IN PLACE. THE CONTRACTOR SHALL DEVELOP A SCHEDULE FOR METER REPLACEMENT THAT WILL ASSURE CONTINUOUS WATER SERVICE TO CUSTOMERS WITH SHUT DOWNS REQUIRED FOR METER INSTALLATION LIMITED TO NOT MORE THAN 30 MINUTES. THE CONTRACTOR SHALL NOTIFY THE COUNTY METER DEPARTMENT 2 WORKING DAYS PRIOR TO NEEDING METERS FOR REPLACEMENT AND SHALL PROVIDE THE COUNTY A LIST OF ADDRESSES WHERE METERS WILL BE REPLACED.

32. MOST NEW WATER METER BOXES WITH METERS WILL BE INSTALLED AT THE SAME LOCATION AS THE EXISTING WATER METERS. MOST METERS ARE LOCATED EITHER WITHIN THE PUBLIC ROW OR NOT MORE THAN 2 TO 3 FEET WITHIN PRIVATE PROPERTY ADJACENT TO THE PUBLIC ROW. FOR THESE LOCATIONS, THE NEW METERS AND METER BOXES WILL BE INSTALLED AT THE SAME LOCATION AS THE EXISTING METERS AND RECONNECTED TO THE EXISTING CUSTOMER SERVICE LINE WITH MINIMAL CUSTOMER SIDE SERVICE PIPING ADJUSTMENT WITHOUT ADDITIONAL COST TO THE COUNTY. THERE ARE SEVERAL LOCATIONS ON THE PROJECT WHERE THE EXISTING WATER METERS ARE LOCATED DEEP WITHIN PRIVATE PROPERTY (APPROXIMATELY 4 FEET OR MORE INSIDE THE PROPERTY LINE) AND MUST BE RELOCATED TO A LOCATION WITHIN THE PUBLIC ROW. THESE WORK LOCATIONS WILL REQUIRE THAT A RIGHT–OF–ENTRY APPROVAL BE GRANTED FOR PERFORMING WORK SUBSTANTIALLY WITHIN PRIVATE PROPERTY. IN ADDITION, AT THESE LOCATIONS, CUSTOMER SIDE SERVICE PIPING MODIFICATIONS WILL BE REQUIRED TO RE–PIPE THE CUSTOMER SERVICE FROM THE NEW METER LOCATION TO THE CUSTOMER HOUSE CONNECTION. THE LOCATION WHERE CUSTOMER RIGHT–OF–ENTRY APPROVAL AND CUSTOMER PIPING RELOCATION WILL BE REQUIRED AS NOTED ON THE DRAWINGS. COMPENSATION FOR REPLACEMENT OF METERS AS THESE LOCATIONS SHALL BE IN ACCORDANCE WITH THE SPECIFICATIONS AND THE BID ITEMS ESTABLISHED FOR THESE PROJECT LOCATIONS. THE CONTRACTOR SHALL NOT PERFORM WORK ON RIGHT–OF–ENTRY PROPERTIES UNTIL THE COUNTY HAS PROVIDED THE CONTRACTOR WITH SPECIFIC RIGHT–OF–ENTRY APPROVAL DOCUMENTATION FOR THE LOCATION IN QUESTION.

33. ALL COMPONENTS OF THE NEWLY INSTALLED WATER SYSTEM SHALL BE TESTED IN ACCORDANCE WITH SECTION 02608 TESTING AND INSPECTIONS. TESTING AND INSPECTIONS SHALL INCLUDE COMPACTION TESTING FOR PIPELINE INSTALLATIONS; HYDROSTATIC TESTING OF PIPELINE VALVES AND FITTINGS; BACTERIOLOGICAL TESTING OF PIPING, FITTINGS, VALVES AND APPURTENANCES; TRACER WIRE TESTING AND OTHER SUCH TESTS AS REQUIRED BY THE SPECIFICATION AND MANATEE COUNTY STANDARDS. THE CONTRACTOR SHALL PERFORM ALL TESTING AND PROVIDE TESTING RESULTS AS SPECIFIED AND WHEN REQUIRED PRIOR TO PLACING NEW WATER LINE COMPONENTS INTO SERVICE.

34. ALL PIPELINES SHALL BE CLEANED, DISINFECTED AND BACTERIOLOGICAL TESTS OF THE DISINFECTED PIPELINE SHALL BE APPROVED BY THE MANATEE COUNTY DEPARTMENT OF HEALTH BEFORE THE PIPELINES CAN BE PLACED INTO SERVICE. CHLORINE INJECTION POINTS AND SAMPLING POINTS SHALL BE LOCATED TO COMPLY WITH THE SPECIFICATIONS, MANATEE COUNTY HEALTH DEPARTMENT REQUIREMENTS AND THE REQUIREMENTS OF AWWA C651 LATEST EDITION. THE SPECIFIC LOCATION FOR THE CHLORINE INJECTION POINTS SHOWN ON THE DRAWINGS SHALL BE MODIFIED TO COMPLY WITH THE FOREGOING SPECIFICATIONS, HEALTH DEPARTMENT AND AWWA REGULATIONS AND THE CONTRACTORS SPECIFIC PLAN FOR SEQUENCING CONSTRUCTION OF THE PIPELINES. SAMPLING POINTS FOR BACTERIOLOGICAL TESTING WILL BE ESTABLISHED BY THE MANATEE COUNTY HEALTH DEPARTMENT BASED UPON THE CONTRACTORS PIPE INSTALLATION PLAN AND THE FOREGOING REQUIREMENTS. THE CONTRACTOR SHALL INSTALL AND REMOVE SAMPLING POINTS REQUIRED TO PERFORM BACTERIOLOGICAL SAMPLING OF EACH PIPE SEGMENT AT THE LOCATIONS DEFINED BY THE MANATEE COUNTY HEALTH DEPARTMENT AS A PART OF THE PROJECT.

35. ALL ABANDONED WATER MAINS SHALL BE FILLED WITH SAND WITH SAND/CEMENT GROUT IN ACCORDANCE WITH MANATEE COUNTY STANDARDS. ALL ABANDONED WATER MAINS SHALL BE DISCONNECTED FROM EXISTING ACTIVE WATER MAINS BACK TO THE NEAREST ISOLATION VALVE. THE DISCHARGE SIDE OF EXISTING VALVES WHICH REMAIN CONNECTED TO EXISTING ACTIVE WATER MAINS SHALL BE PLUGGED WITH A PLUG SUITABLE FOR LINE TEST PRESSURE AS REQUIRED BY THE CONTRACT DOCUMENTS FOR NEW PIPING. (FIELD TESTING WILL NOT BE REQUIRED). VALVE BOXES SHALL BE REMOVED ON VALVES WHICH ARE PLUGGED AND REMOVED FROM SERVICE. IT SHALL BE THE RESPONSIBILITY OF THE CONTACTOR TO PROPERLY DISPOSE OF SECTIONS OF ABANDONED WATER MAIN, AND ALL OTHER MATERIALS AND APPURTENANCES, WHICH MUST BE CUT–OUT AND REMOVED FROM THE PROJECT SITE. DISPOSAL OF ALL PIPE, PIPELINE MATERIALS, EXCESS EXCAVATION AND OTHER ABANDONED MATERIALS SHALL BE IN ACCORDANCE WITH APPROPRIATE ENVIRONMENTAL AND REGULATORY REQUIREMENTS FOR THE MATERIALS IN QUESTION.

36. THE CONTRACTOR SHALL MAINTAIN AS–BUILT DRAWING OF THE WORK AS CONSTRUCTED. AS–BUILT DRAWINGS SHALL INCLUDE THE LOCATION OF ABANDONED WATER MAIN CUT AND PLUG POINTS. AS BUILT DRAWINGS SHALL BE ANNOTED EACH DAY AS THE WORK PROCEEDS AND SHALL BE AVAILABLE TO THE COUNTY PROJECT MANAGER FOR REVIEW ON AN ONGOING BASIS. AS BUILT DRAWINGS SHALL PROVIDE THE HORIZONTAL AND VERTICAL INSTALLED LOCATION OF ALL NEW PIPELINES, FITTINGS, VALVES SERVICE LINES AND WATER SYSTEM APPURTENANCES REFERENCED TO FIXED SURFACE FEATURES THAT ARE SHOWN ON THE CONSTRUCTION DRAWINGS AND/OR RIGHT–OF–WAY LINES, PROPERTY CORNERS OR OTHER SURVEYED POINTS. THE CONTRACTOR SHALL ABLE TO PRESENT THE RECORD DRAWINGS TO THE COUNTY PROJECT MANAGER ON DEMAND AS THE WORK PROCEEDS.

LEGEND

EXISTING

BM	Bench mark	REF	Reflector	TSB	Traffic Signal Box
CM	Concrete Monument	SPRK	Sprinkler	WPP	Wood Power Pole
IP	Iron Pipe	GM	Gas Marker	JB	Junction Box
IR	Iron Rod	BFP	Back Flow Preventer	RV	Reclaim Valve
HUB	Hub	BO	Blow Off Valve	RM	Reclaim Meter
N&D	Nail & Disk	FH	Fire Hydrant	GI	Grate Inlet
1234	Elevation	WV	Water Valve	CB	Curb Inlet
1234 1678	Parcel ID No.	RED	Reducer	CI	Catch Basin
1234	Parcel ID No.	WM	Water Meter		Bush
12	Lot No.	ARV	Air Release Valve	TREE	Ornamental Tree
GW	Guy Wire	SMH	Sanitary Sewer Manhole	OAK	Oak Tree
PP	Power Pole	CO	Sanitary Sewer Clean–out	PALM	Palm Tree
LP	Light Pole	SB#1	Soil Boring Location	PINE	Pine Tree
MB	Mail Box	TEL	Telephone Service Box		Edge of Vegetation
SN	Sign	CPP	Concrete Power Pole		Guard Rail

	Chain Link Fence		Headwall
	Wood Fence		Drainage Structure
8–FM	Force Main		Mitered End Section
W	Potable Water	GI	Grate Inlet
RE	Reclaimed Water		Sewer Flow Direction
8–SS	Sanitary Sewer	CONC	Concrete
12–SD	Storm Drain	ASPH	Asphalt
GAS	Gas Line	DRWY	Driveway
OH	Overhead Utility	SWK	Sidewalk
UG	Underground utility	EP	Edge of Pavement
	Edge of Concrete	TB	Top of Bank
	Edge of Road	R/W	Right of Way
	Ditch–Toe of Slope	GD–RL	Guard Rail
	Property Line / Lot Line	RMJ	Restrained Mechanical Joint
	Right of Way	GV	Gate Valve

PROPOSED

	Water Main
	Water Service
	Proposed Easement
	Fire Hydrant Assembly
	Gate, Plug, or Butterfly Valve
	Sanitary Sewer Manhole
	Blow–off Assembly
	Reducer
	Tee
	Bend (Horizontal)
	Bend (Vertical)
	Plug or Cap
	Master Meter Assembly
	Water Service Line & Meter
	Double Service
	Cross
CIP	CHLORINE INJECTION POINT
SP	BACTERIOLOGICAL SAMPLE POINT
	RIGHT–OF–ENTRY (ROE) METER REPLACEMENT
ROEMR #5312 TYPE X	ROE LOCATION & TYPE
HA–XX	HAND AUGER BORING LOCATION

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

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

BID DOCUMENTS

VERIFY SCALE
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0 1"
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4350 WEST CYPRESS STREET SUITE 600
TAMPA, FLORIDA 33607–4155
LB 0002934 AA C000656

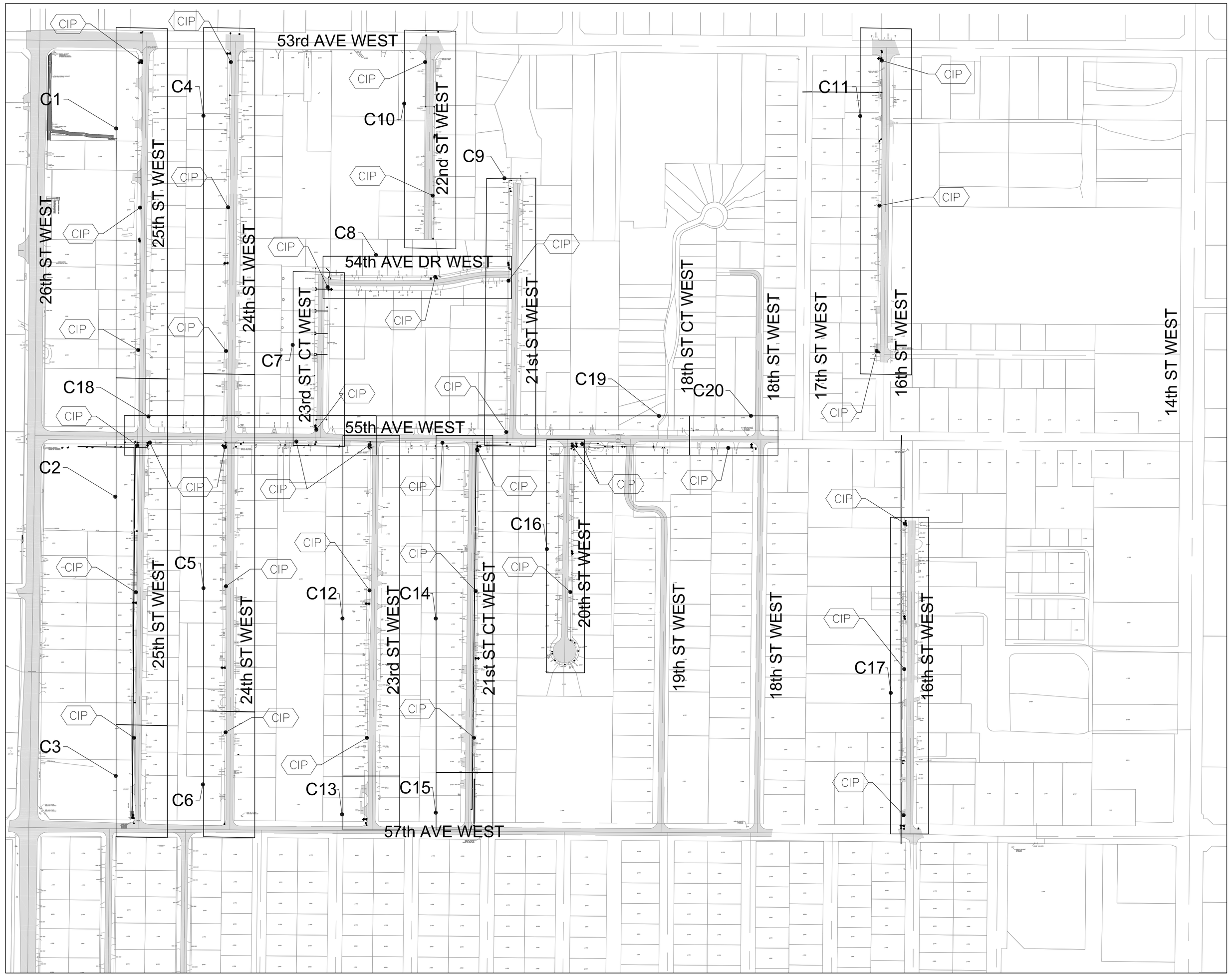
MANATEE COUNTY
SUBURBAN SYSTEM
WATER LINE REPLACEMENT PROJECT
PHASE 1
MANATEE COUNTY, FLORIDA
PROJECT No. 60747.70

INDEX AND NOTES

SHEET	G2
DWG	G2NOTES.DWG
DATE	JULY 2009
PROJ	386879.WM

W:\Manatee County Waterline\Drawings\Ticover.dwg Plotted: 2/18/2009 013 pm By: kklein1 Model Plot Scale: 1=1.0 Xref Dwg's:

CIP CHLORINE INJECTION POINT



N

200' 100' 0 200'
1" = 200'-0"

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APVD	RAC

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MANATEE COUNTY
SUBURBAN SYSTEM
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PHASE 1
MANATEE COUNTY, FLORIDA
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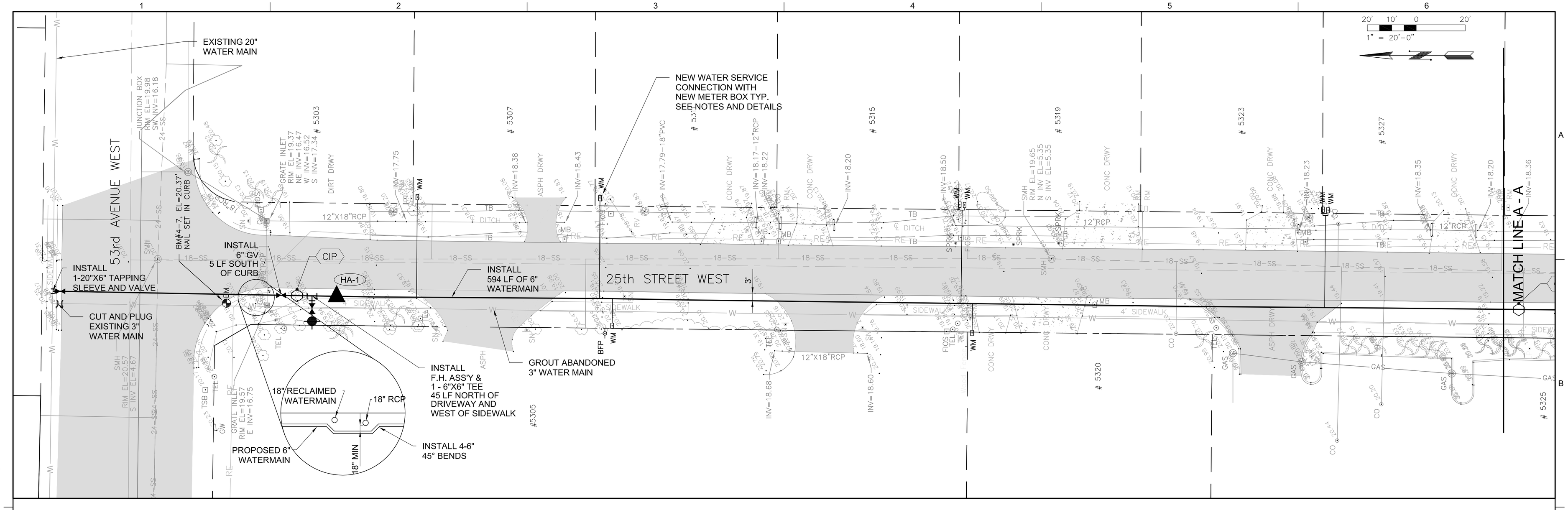
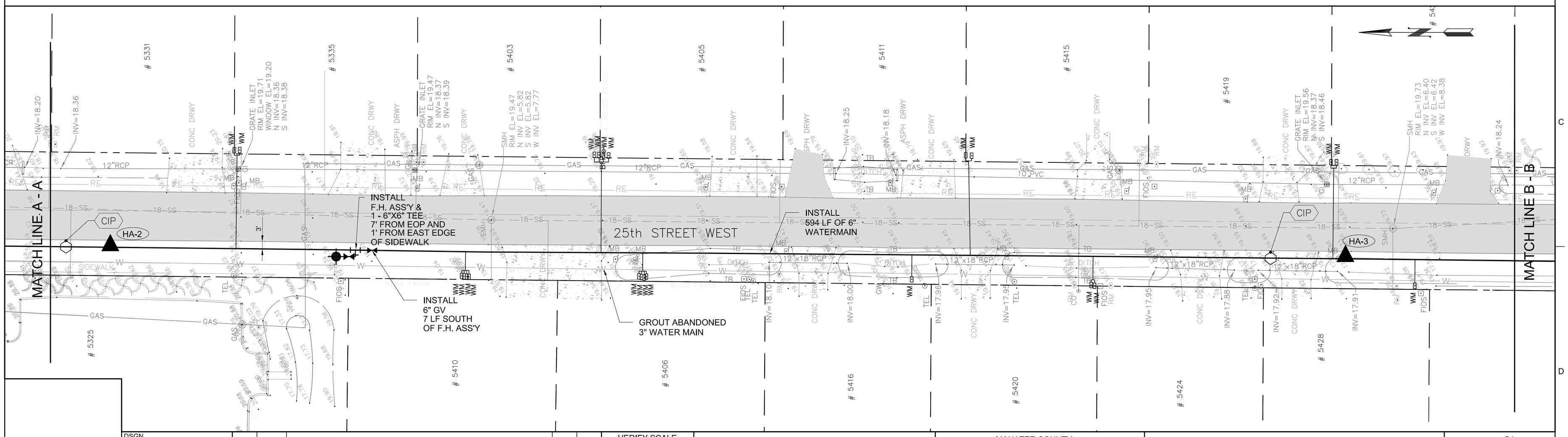
KEY PLAN

SHEET	G3
DWG	G3.DWG
DATE	JULY 2009
PROJ	386879.WM





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

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MANATEE COUNTY
SUBURBAN SYSTEM
WATER LINE REPLACEMENT PROJECT
PHASE 1
MANATEE COUNTY, FLORIDA
PROJECT No. 60747.70

PLAN SHEET WATER LINE
25th ST W FROM 53rd AVE W TO 5423

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

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

FOR CONTINUATION SEE SHEET C18

MATCH LINE B - B

MATCH LINE C - C

NEW WATER SERVICE CONNECTION WITH NEW METER BOX TYP. SEE NOTES AND DETAILS

INSTALL PLUG

INSTALL 60 LF OF 8" PIPE

INSTALL F.H. ASS'Y & 1 - 8"X6" TEE 34 LF EAST OF CROSS

CUT AND PLUG EXISTING 3" WATER MAIN

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

REMOVE EXISTING HYDRANT AND VALVE BOX

PROPOSED 6" WATERMAIN

GROUT ABANDONED 3" WATER MAIN

12"X18" RCP

12" SANITARY SEWER

INSTALL 4-6" 45° BENDS

INSTALL 20 LF OF 8" PIPE AND PLUG

INSTALL 8"X6" CROSS

INSTALL 6" GV

GAS LINE

PROPOSED 6" WATERMAIN

INSTALL 4-6" 45° BENDS

6" WATERMAIN

NEW 6" WATERMAIN

EXISTING 6" WATERMAIN

NORTH VALVE LOCATION

EOP

EXISTING 2" PVC

2" DIST CONNECTION - 1 - 6"X6" TEE 1 - 6" PLUG TAPPED 2" 1 - 2" GV

SOUTH VALVE LOCATION

INSTALL 582 LF OF 6" WATERMAIN

HA-4

GROUT ABANDONED 6" WATER MAIN

2" DIST CONNECTION - INSTALL 1 - 6"X6" TEE 1 - 6" PLUG TAPPED 2" 1 - 2" GV 9 LF OF 2" WATERMAIN & CONNECT TO EXISTING SEE SHEET D4 FOR DETAILS & NOTES

20' 10' 0 20'
1" = 20'-0"

FOR CONTINUATION SEE SHEET C18

MATCH LINE C - C

MATCH LINE D - D

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

INSTALL 6" GV 11 LF NORTH OF DRIVEWAY

APPROXIMATE LOCATION OF SOUTH VALVE SEE SHEET D4 FOR DETAILS & NOTES

HA-5

GROUT ABANDONED 6" WATER MAIN

INSTALL 598 LF OF 6" WATERMAIN

1-1/2" DIST CONNECTION - INSTALL 1 - 6"X6" TEE 1 - 6" PLUG TAPPED 1-1/2" 1 - 1-1/2" GV 7 LF OF 1-1/2" WATERMAIN & CONNECT TO EXISTING SEE SHEET D4 FOR DETAILS & NOTES

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

ROBERT A. CANNARELLA, P.E.
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MANATEE COUNTY
SUBURBAN SYSTEM
WATER LINE REPLACEMENT PROJECT
PHASE 1
MANATEE COUNTY, FLORIDA
PROJECT No. 60747.70

PLAN SHEET NEW WATER MAIN
25th ST W FROM 5427 TO 5619

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

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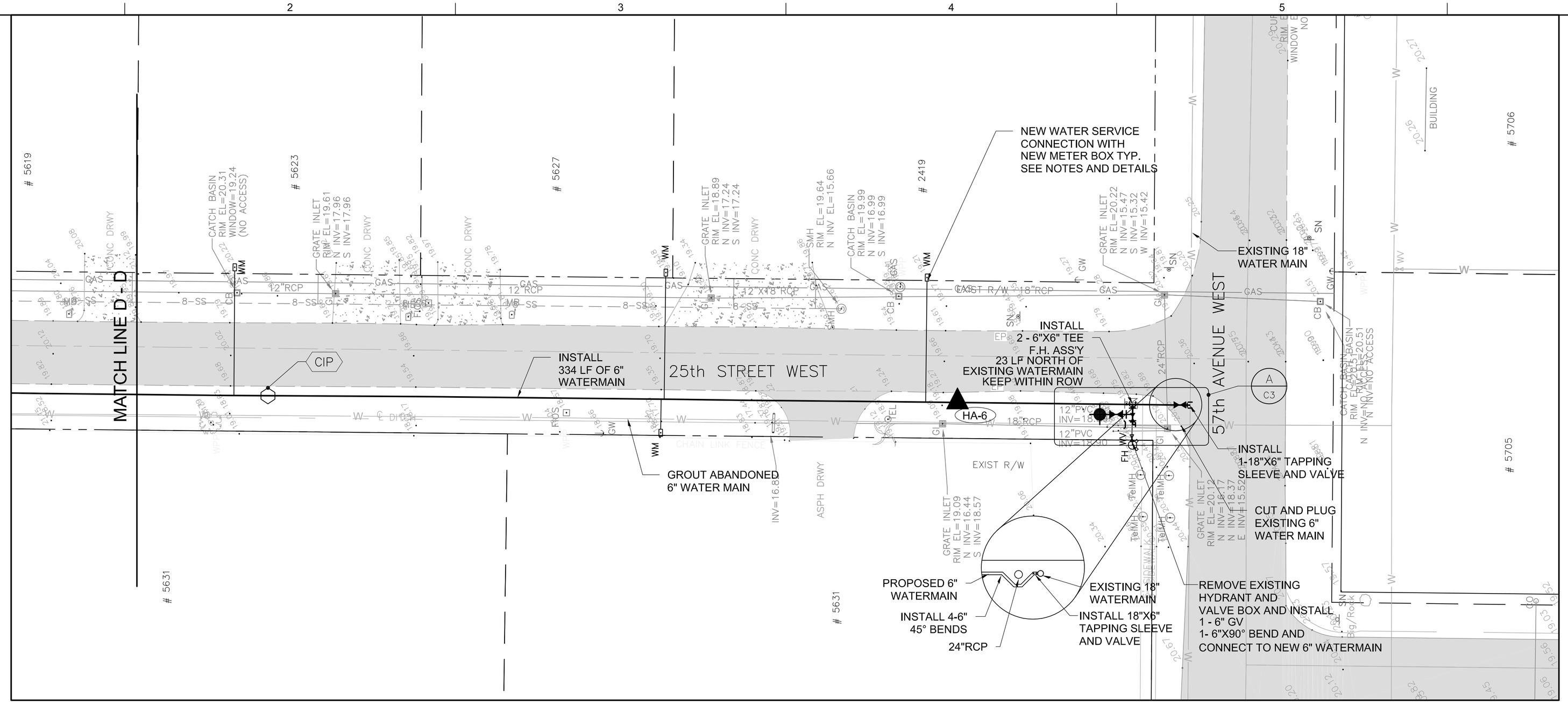

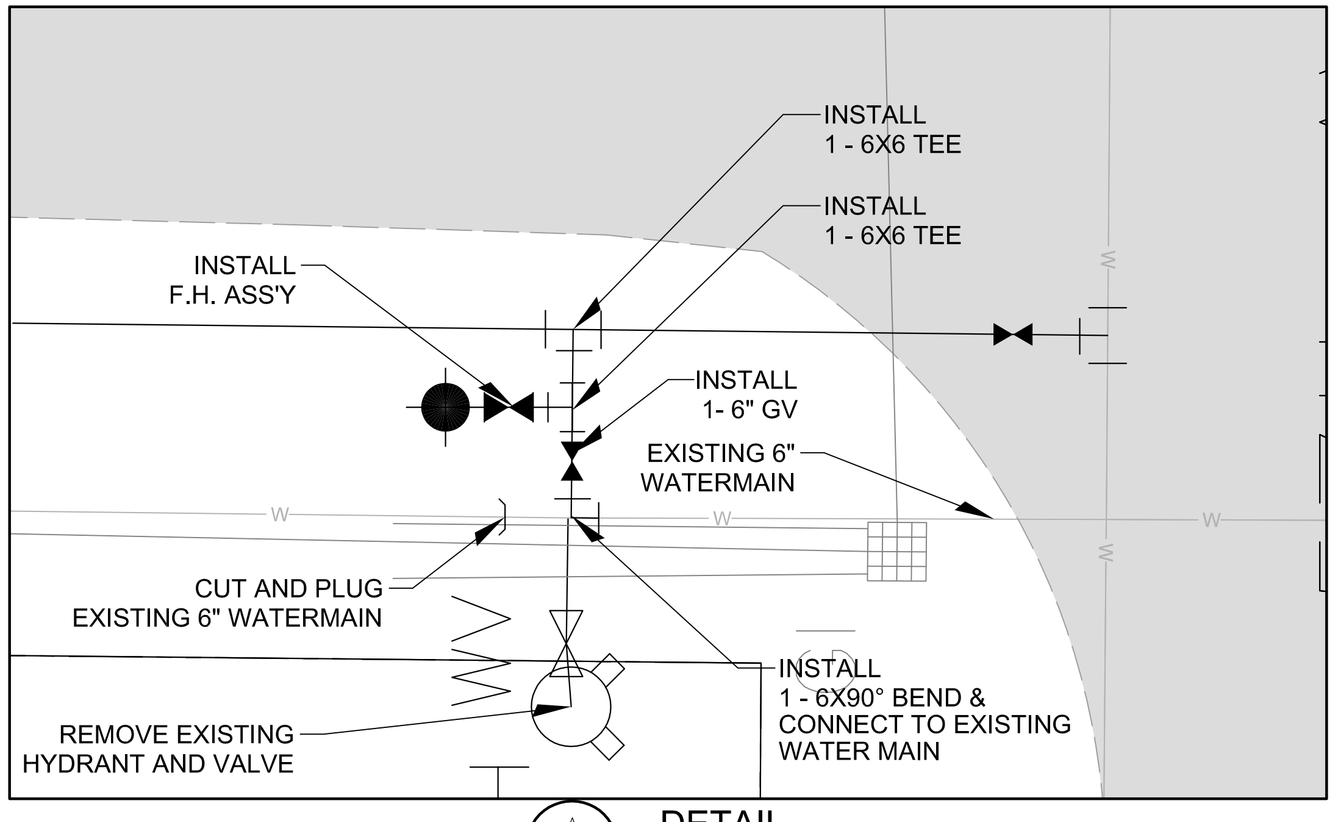

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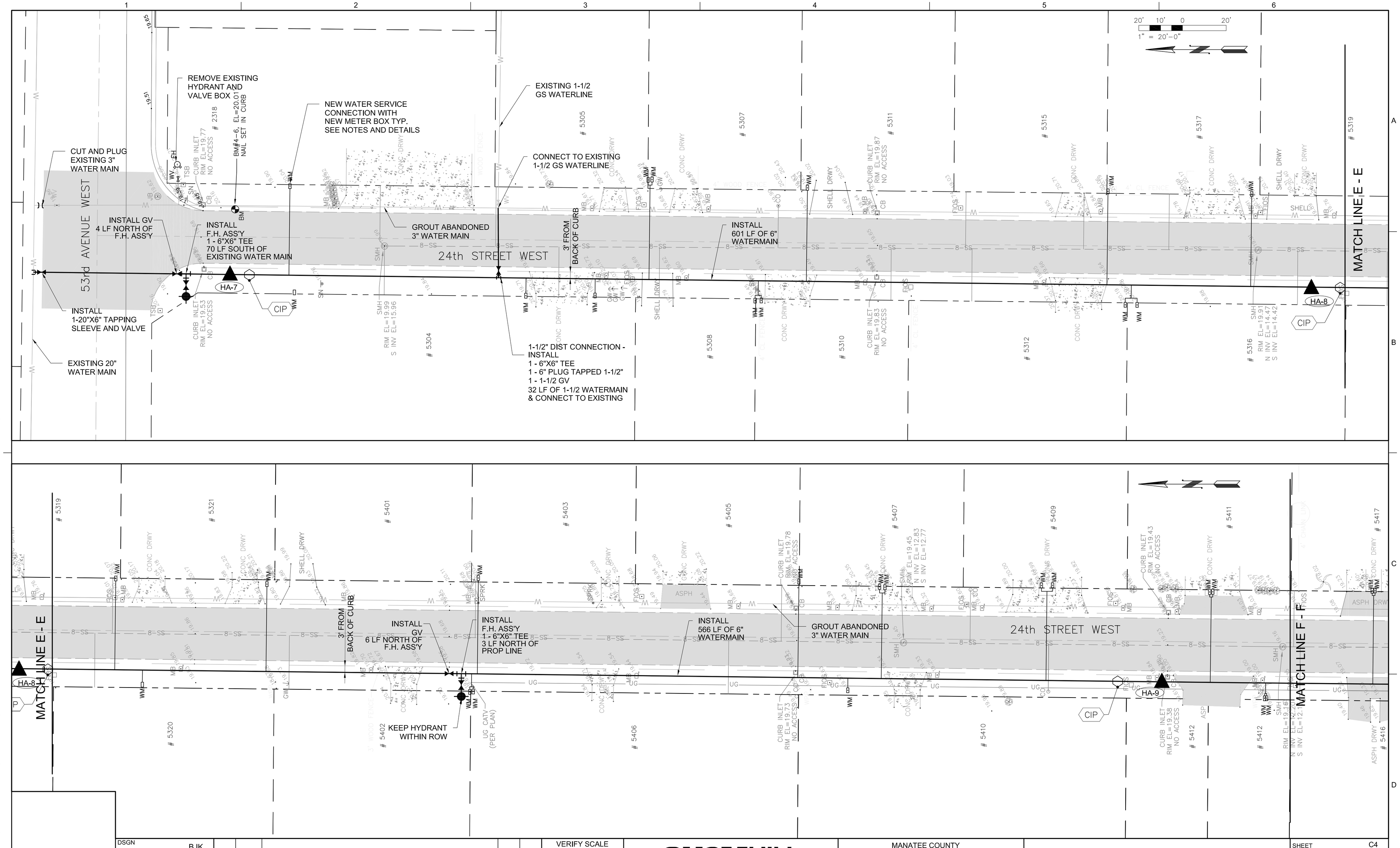
MANATEE COUNTY
SUBURBAN SYSTEM
WATER LINE REPLACEMENT PROJECT
PHASE 1
MANATEE COUNTY, FLORIDA
PROJECT No. 60747.70

PLAN SHEET NEW WATER MAIN
25th ST W FROM 5623 TO 57th AVE W

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



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MANATEE COUNTY
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PHASE 1
MANATEE COUNTY, FLORIDA
PROJECT No. 60747.70

PLAN SHEET NEW WATER MAIN
24th ST W FROM 53rd AVE W TO 5411

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

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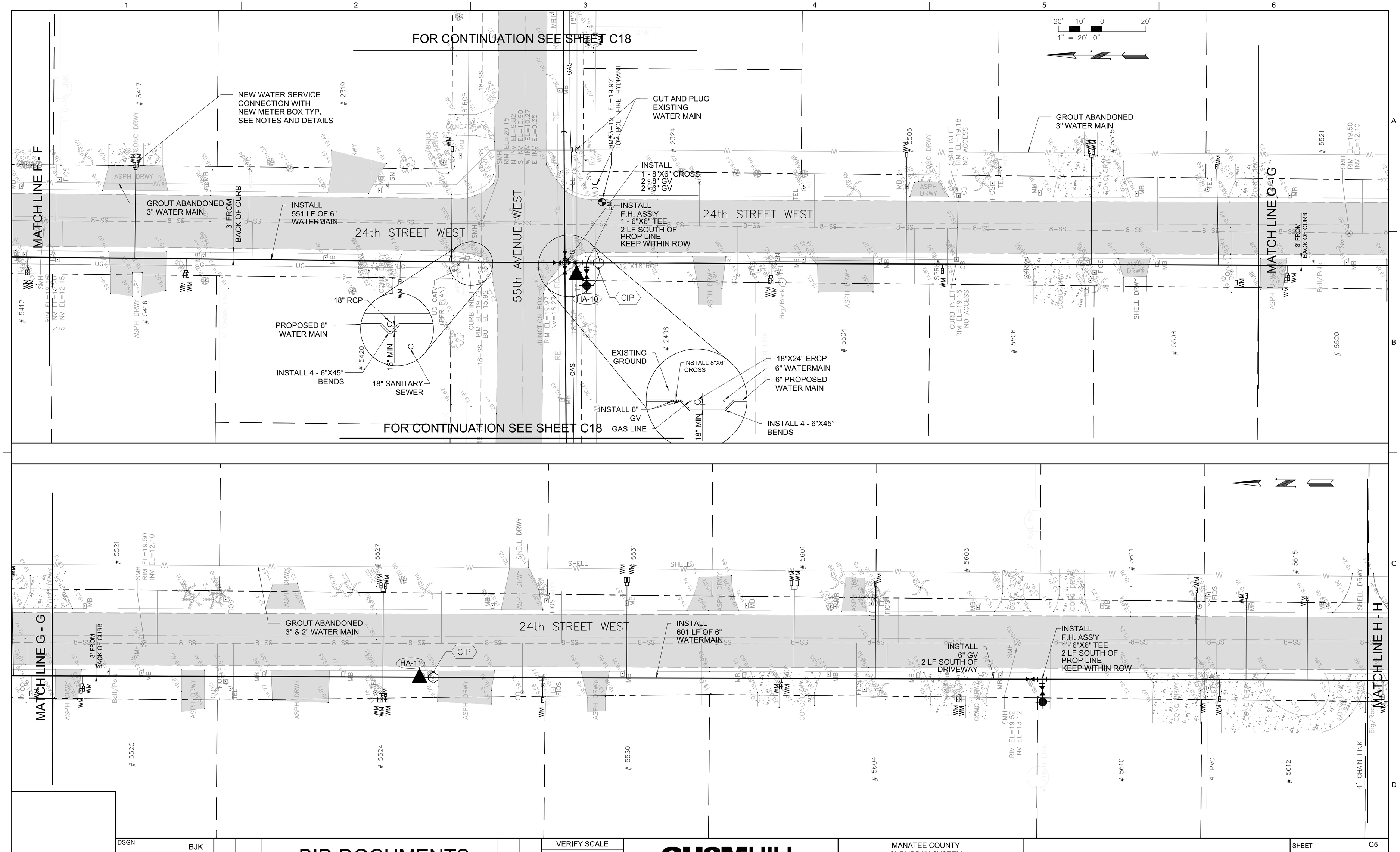

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MANATEE COUNTY
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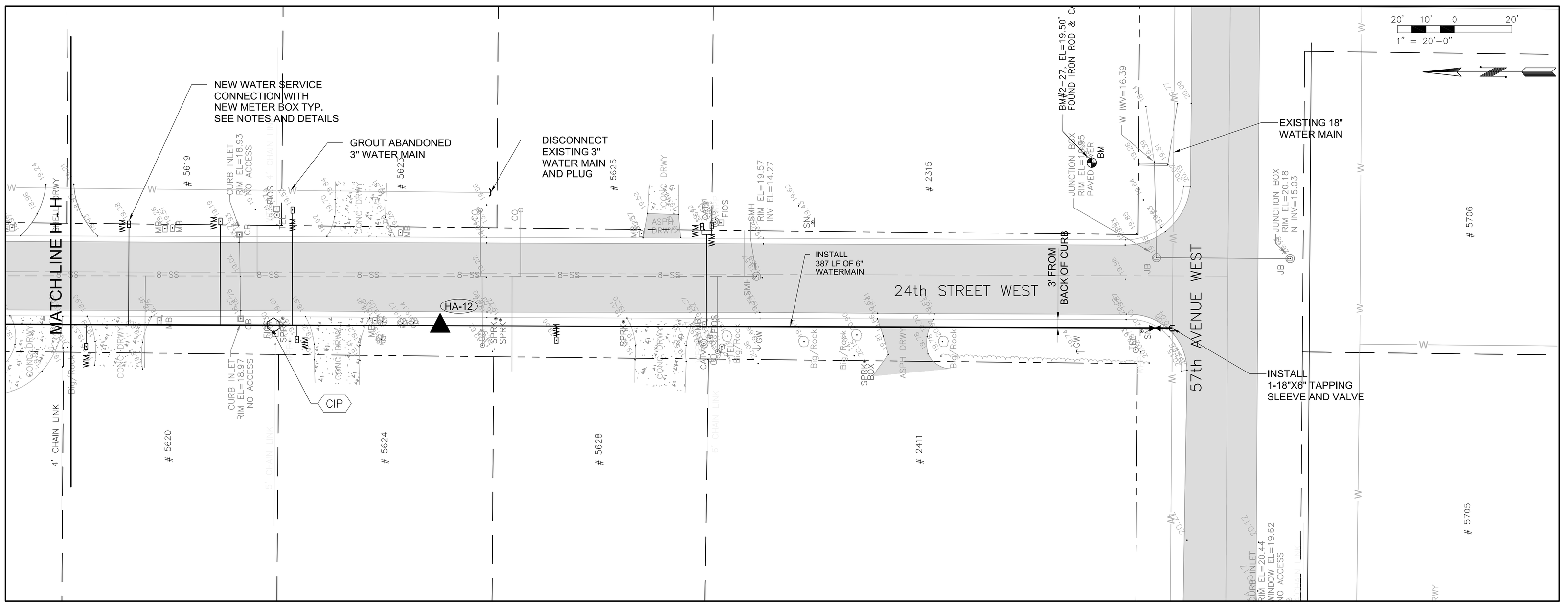
PLAN SHEET NEW WATER MAIN
24th ST W FROM 5417 TO 5615

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



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MANATEE COUNTY
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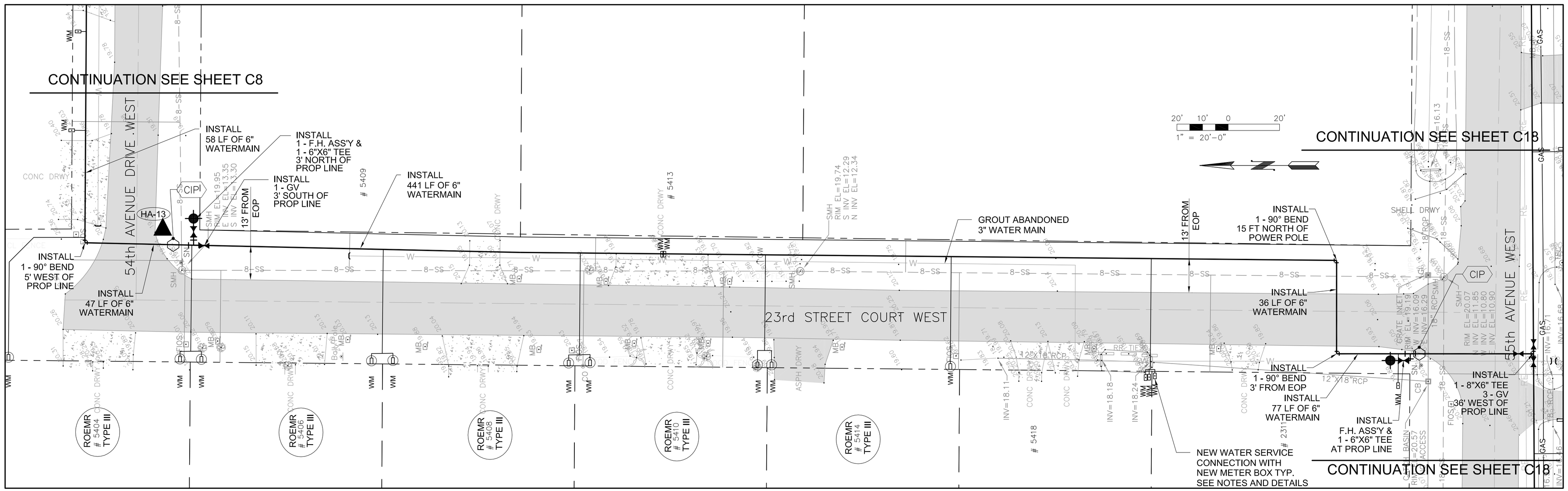
WATER LINE REPLACEMENT PROJECT
PHASE 1
MANATEE COUNTY, FLORIDA
PROJECT No. 60747.70

PLAN SHEET NEW WATER MAIN
24th ST W FROM 5719 TO 57th AVE W

SHEET	C6
DWG	C6.DWG
DATE	JULY 2009
PROJ	386879.WM



NOTES: RIGHT-OF-ENTRY METER CONNECTIONS FOR 5404 23RD ST. COURT W THROUGH 5414 23RD ST. COURT W. RELOCATE METERS FROM BACK OF PROPERTIES IN QUESTION TO THE LOCATION SHOWN ON THE DRAWINGS FOR THE NEW METER. RIGHT-OF-ENTRY REQUIRED FOR THIS WORK. CONSTRUCT NEW 1 INCH SERVICE LINE ON PRIVATE PROPERTY FROM EXISTING HOUSE SERVICE CONNECTION TO PLANNED LOCATION OF NEW METER WITHIN ROW, COMPLETE INCLUDING ALL RESTORATION. ALL WORK TO BE COMPLETED BY A MANATEE COUNTY LICENSED PLUMBER. ALL WORK SHALL BE COMPLETED IN ACCORDANCE WITH THE SPECIFICATIONS AND PAYMENT FOR CUSTOMER SIDE RIGHT-OF-ENTRY SERVICE LINE SHALL BE IN ACCORDANCE WITH THE APPROPRIATE BID ITEM.

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

DSGN	BJK
DR	BJK
CHK	RAC
APVD	RAC

NO.	DATE	REVISION	BY	APVD
		BID DOCUMENTS		

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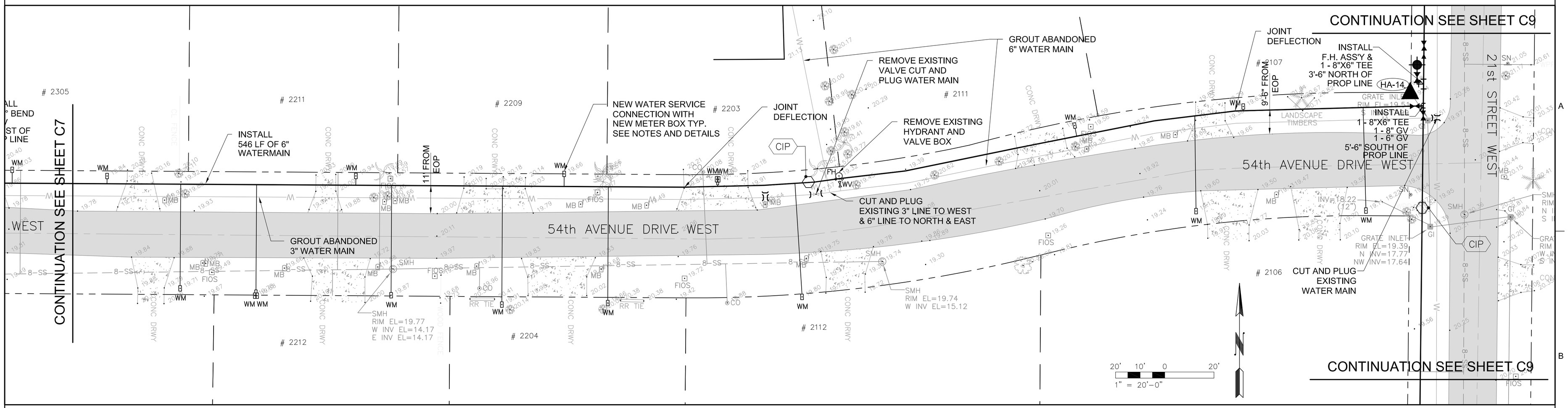
MANATEE COUNTY
SUBURBAN SYSTEM
WATER LINE REPLACEMENT PROJECT
PHASE 1
MANATEE COUNTY, FLORIDA
PROJECT No. 60747.70

PLAN SHEET NEW WATER MAIN
23rd ST CT W FROM 54th AVE DR W TO 55th AVE W

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



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BID DOCUMENTS

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MANATEE COUNTY
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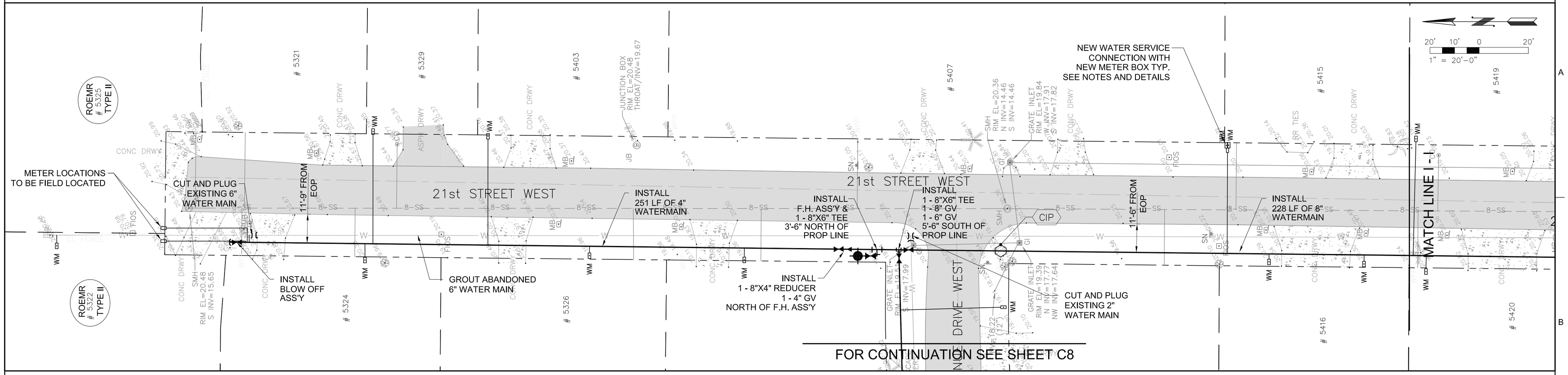
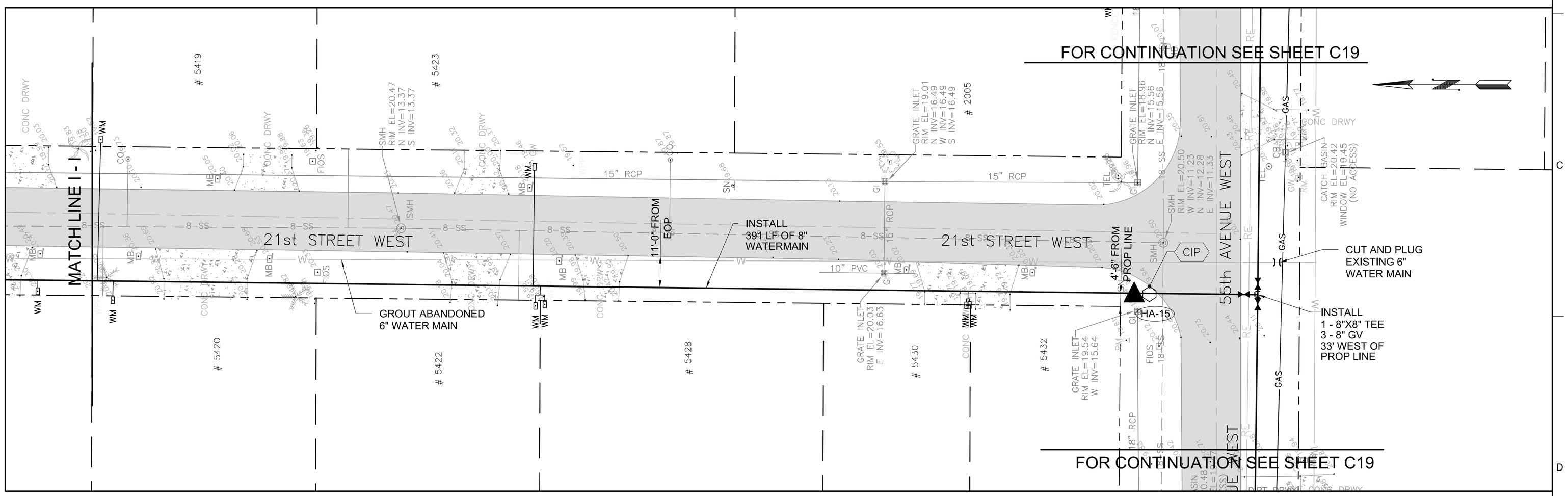
WATER LINE REPLACEMENT PROJECT
PHASE 1
MANATEE COUNTY, FLORIDA
PROJECT No. 60747.70

PLAN SHEET NEW WATER MAIN
55th AVE DR W FROM 23rd ST CT W & 21st ST W

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





NOTES: RIGHT-OF-ENTRY METER CONNECTIONS FOR 5322 AND 5525 21RD ST. W. RELOCATE METERS FROM LOCATION ON PROPERTIES IN QUESTION TO THE LOCATION SHOWN ON THE DRAWINGS FOR THE NEW METER. RIGHT-OF-ENTRY REQUIRED FOR THIS WORK. CONSTRUCT NEW 1 INCH SERVICE LINE ON PRIVATE PROPERTY FROM EXISTING METER LOCATION TO PLANNED LOCATION OF NEW METER WITHIN ROW, COMPLETE INCLUDING ALL RESTORATION. ALL WORK TO BE COMPLETED BY A MANATEE COUNTY LICENSED PLUMBER. ALL WORK SHALL BE COMPLETED IN ACCORDANCE WITH THE SPECIFICATIONS AND PAYMENT FOR CUSTOMER SIDE RIGHT-OF-ENTRY SERVICE LINE SHALL BE IN ACCORDANCE WITH THE APPROPRIATE BID ITEM.

W:\Manatee County Waterline\Drawings\Tlcover.dwg Plotted: 2/18/2009 0:13 pm By: bklein1 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

BID DOCUMENTS

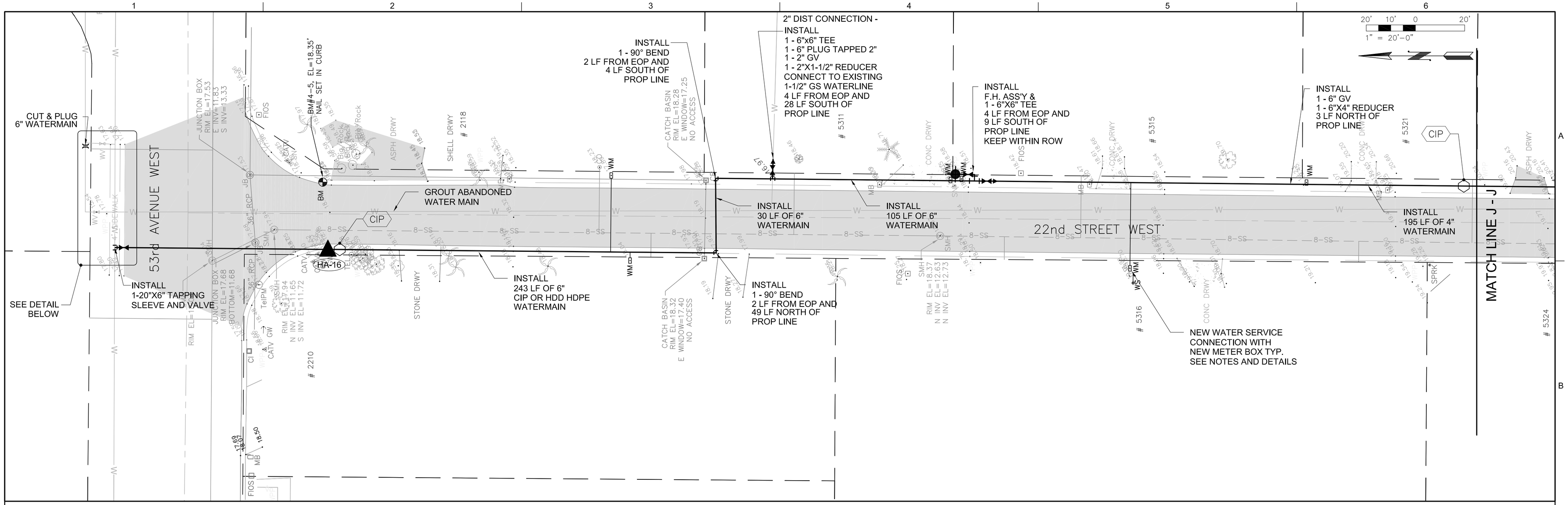
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

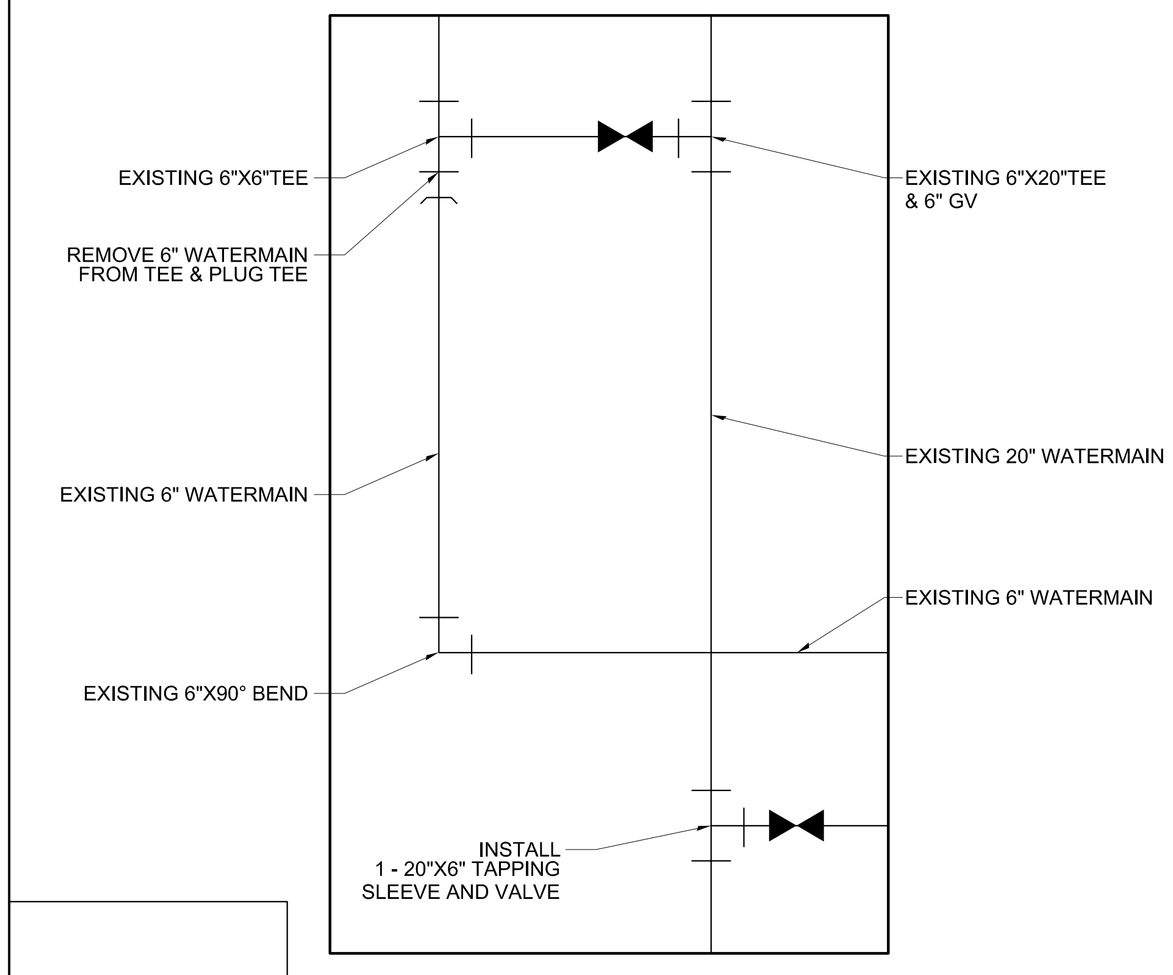
CH2MHILL
4350 WEST CYPRESS STREET SUITE 600
TAMPA, FLORIDA 33607-4155
LB 0002934 AA C000656

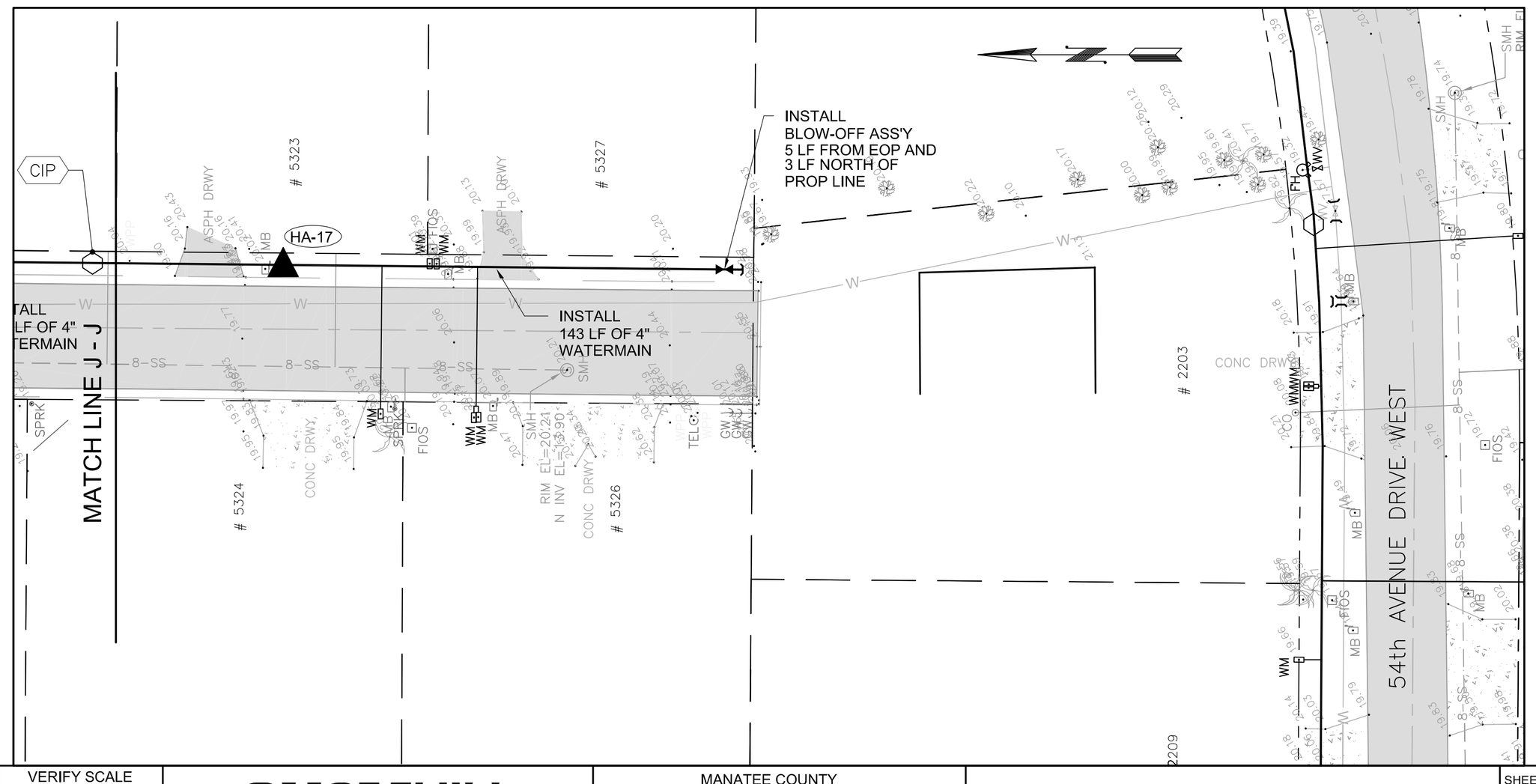
MANATEE COUNTY
SUBURBAN SYSTEM
WATER LINE REPLACEMENT PROJECT
PHASE 1
MANATEE COUNTY, FLORIDA
PROJECT No. 60747.70

PLAN SHEET NEW WATER MAIN
21st ST W FROM 5325 TO 55th AVE W

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







DSGN	BJK			BID DOCUMENTS			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	NO.	DATE	REVISION	BY	APVD	

ROBERT A. CANNARELLA, P.E.
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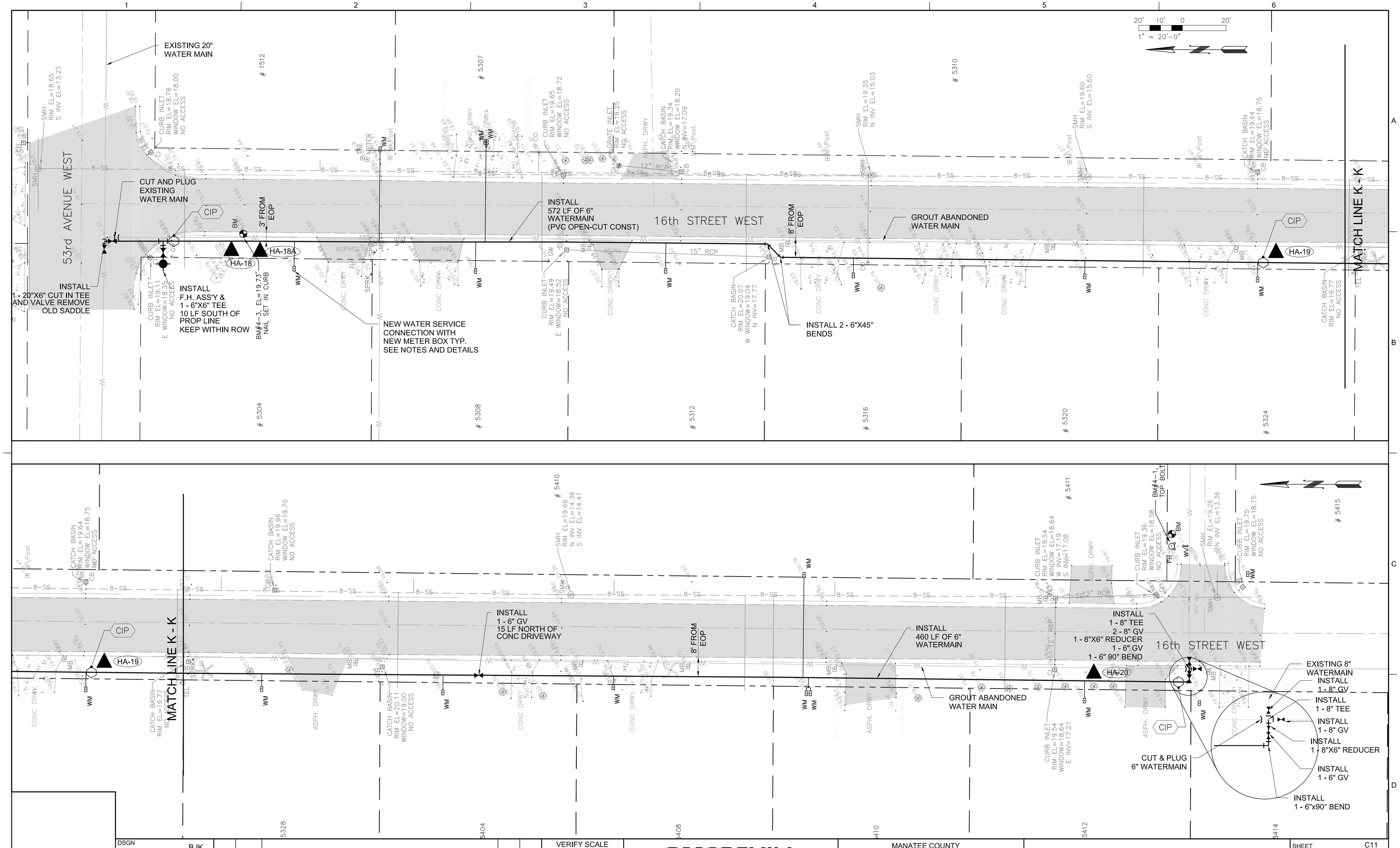
CH2MHILL
4350 WEST CYPRESS STREET SUITE 600
TAMPA, FLORIDA 33607-4155
LB 0002934 AA C000656

MANATEE COUNTY
SUBURBAN SYSTEM
WATER LINE REPLACEMENT PROJECT
PHASE 1
MANATEE COUNTY, FLORIDA
PROJECT No. 60747.70

PLAN SHEET WATER LINE
22nd ST W FROM 53rd AVE W TO 5327

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

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



DSGN	BJK			BID DOCUMENTS			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 1
MANATEE COUNTY, FLORIDA
PROJECT No. 60747.70

PLAN SHEET NEW WATER MAIN
16th ST W FROM 53rd AVE W TO 54th AVE DR W

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

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

FOR CONTINUATION SEE SHEET C18

20' 10' 0 20'
1" = 20'-0"

55th AVENUE WEST

23rd STREET WEST

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

CUT AND PLUG
EXISTING
WATER MAIN

HA-21

CIP

BM#3 - 10, EL=20.53'
NAIL SET IN PAVEMENT

GRATE INLET
RIM EL=20.05
WINDOW=19.03
W INV=16.55
E INV=16.50

GROUT ABANDONED
3" WATER MAIN

NEW WATER SERVICE
CONNECTION WITH
NEW METER BOX TYP.
SEE NOTES AND DETAILS

INSTALL
556 LF OF 6"
WATERMAIN

8'-6" FROM
EOP

3' FROM EXIST
WATERLINE

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

INSTALL
GV
4' NORTH OF
DRIVE WAY

HA-22

MATCH LINE L - L

FOR CONTINUATION SEE SHEET C18

MATCH LINE L - L

23rd STREET WEST

3' FROM EXIST
WATERLINE

5' FROM
EOP

INSTALL
590 LF OF 6"
WATERMAIN

GROUT ABANDONED
3" WATER MAIN

CIP

HA-23

CURB INLET
RIM EL= 18.77
WINDOW=17.87
E INV=16.07

MATCH LINE M - M

DSGN	BJK			BID DOCUMENTS			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

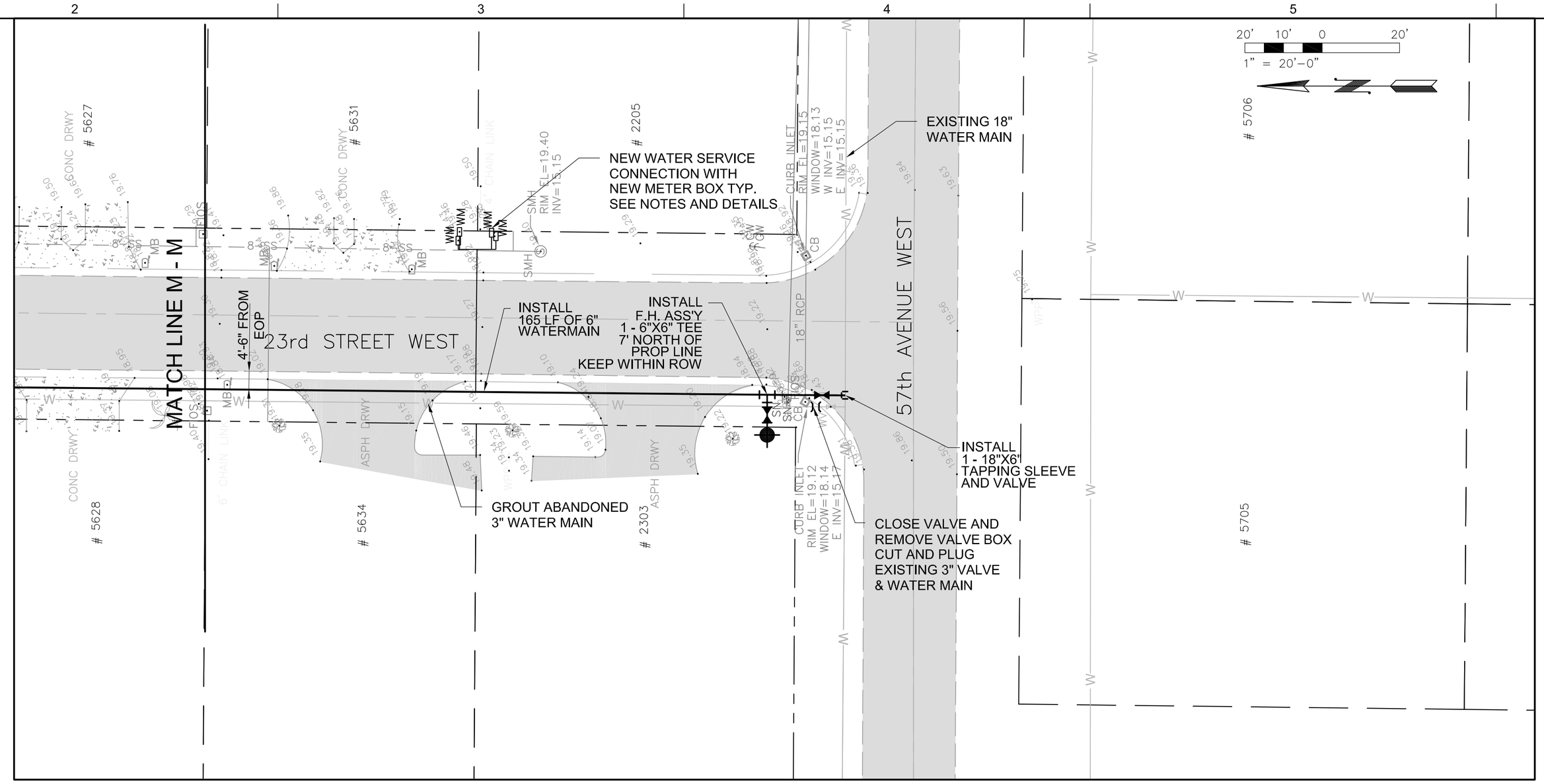
ROBERT A. CANNARELLA, P.E.
Fla. P.E No. 17367

MANATEE COUNTY
SUBURBAN SYSTEM
WATER LINE REPLACEMENT PROJECT
PHASE 1
MANATEE COUNTY, FLORIDA
PROJECT No. 60747.70

PLAN SHEET NEW WATER MAIN
23rd ST W FROM 55th AVE W TO 5628

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

W:\Manatee County Waterline\Drawings\Tlcover.dwg Plotted: 2/18/2009 0:13 pm By: bklein1 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
		BID DOCUMENTS		

VERIFY SCALE
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0 1"
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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 1
MANATEE COUNTY, FLORIDA
PROJECT No. 60747.70

PLAN SHEET NEW WATER MAIN
23rd ST W FROM 5634 TO 57th AVE W

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

FOR CONTINUATION SEE SHEET C18

20' 10' 0 20'
1" = 20'-0"

55th AVENUE WEST

1st STREET COURT WEST

INSTALL
F.H. ASS'Y
1 - 6"X6" TEE
2 LF NORTH OF
PROP LINE

CIP

CUT AND PLUG
EXISTING
WATER MAIN

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

NEW WATER SERVICE
CONNECTION WITH
NEW METER BOX TYP.
SEE NOTES AND DETAILS

GROUT ABANDONED
3" WATER MAIN

INSTALL
585 LF OF 6"
WATERMAIN
(PVC OPEN-CUT CONST)

HA-24

9' FROM EOP

10' FROM EOP

MATCH LINE N - N

FOR CONTINUATION SEE SHEET C18

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

INSTALL
6" GV
9 LF SOUTH OF
DRIVE WAY

GROUT ABANDONED
3" WATER MAIN

HA-25

INSTALL
544 LF OF 6"
WATERMAIN
(PVC OPEN-CUT CONST)

21st STREET COURT WEST

MATCH LINE N - N

MATCH LINE O - O

DSGN	BJK
DR	BJK
CHK	RAC
APVD	RAC

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

NO.	DATE	REVISION	BY	APVD

BID DOCUMENTS

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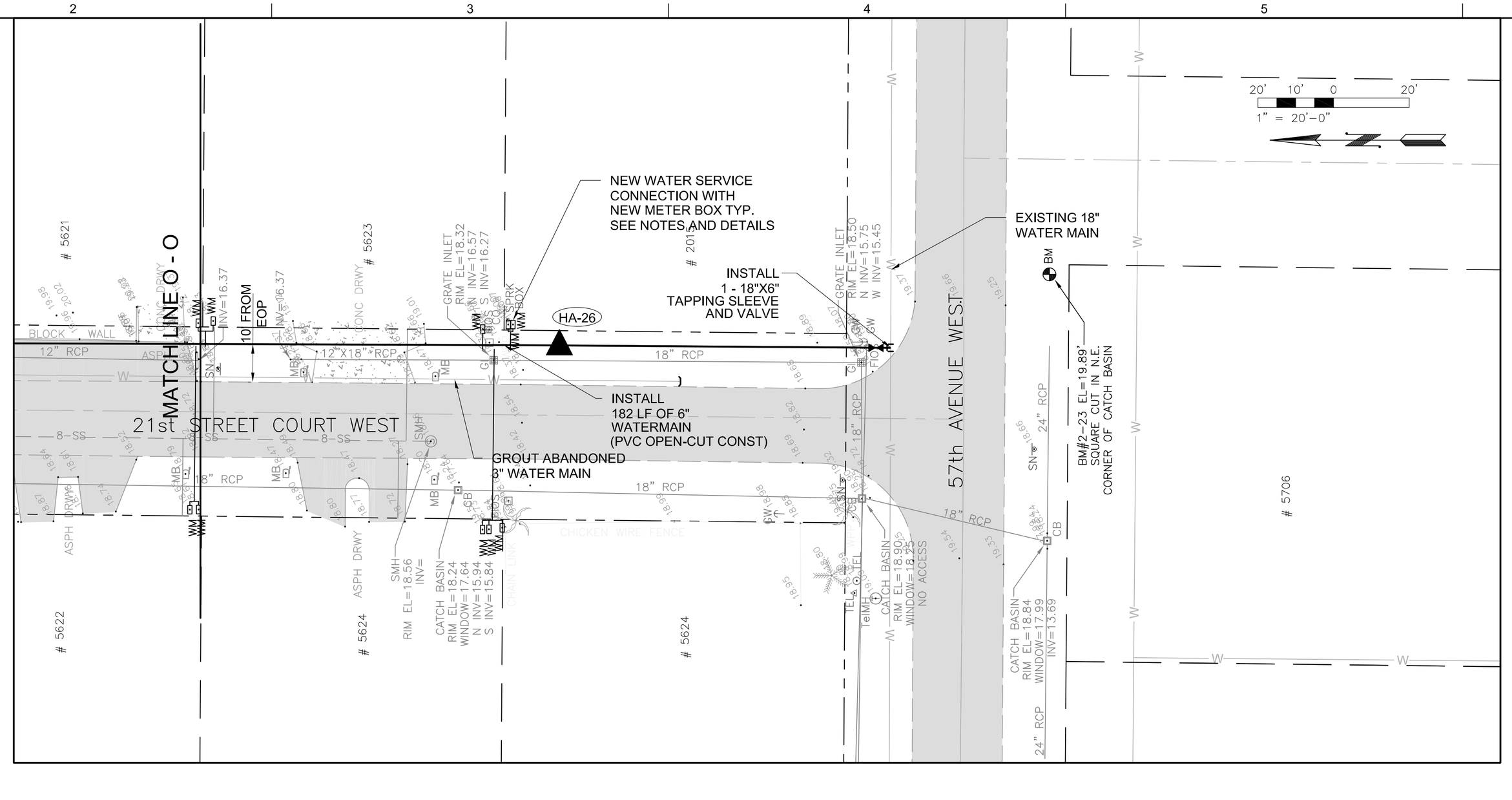
CH2MHILL
4350 WEST CYPRESS STREET SUITE 600
TAMPA, FLORIDA 33607-4155
LB 0002934 AA C000656

MANATEE COUNTY
SUBURBAN SYSTEM
WATER LINE REPLACEMENT PROJECT
PHASE 1
MANATEE COUNTY, FLORIDA
PROJECT No. 60747.70

PLAN SHEET NEW WATER MAIN
21st ST CT W FROM 55th AVE W TO 5622

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

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



W:\Manatee County Waterline\Drawings\Tlcover.dwg Plotted: 2/18/2009 0:13 pm By: bklein1 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
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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 1
MANATEE COUNTY, FLORIDA
PROJECT No. 60747.70

PLAN SHEET NEW WATER MAIN
21st ST CT W FROM 5624 TO 57th AVE W

SHEET	C15
DWG	C15.DWG
DATE	JULY 2009
PROJ	386879.WM

FOR CONTINUATION SEE SHEET C19

20' 10' 0 20'
1" = 20'-0"

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

EXISTING GAS LINE

EXISTING 6"
WATER LINE

PROPOSED 8"
WATERMAIN

INSTALL 4 - 8"
45° BENDS

REMOVE EXISTING
HYDRANT AND
VALVE BOX

INSTALL
1 - F.H. ASS'Y
1 - 8"X6" TEE
8 LF EAST OF
PROP LINE

CUT AND PLUG
EXISTING 3"
WATER MAIN

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

GROUT ABANDONED
3" WATER MAIN

NEW WATER SERVICE
CONNECTION WITH
NEW METER BOX TYP.
SEE NOTES AND DETAILS

INSTALL
1 - F.H. ASS'Y

INSTALL 8"
WATERMAIN

INSTALL
1 - 8"X6" TEE

INSTALL
1 - 8"X4" REDUCER

INSTALL
1 - 4" GV

INSTALL 4"
WATERMAIN

INSTALL
367 LF OF 8"
WATERMAIN
(PVC OPEN-CUT CONST)

INSTALL
F.H. ASS'Y
1 - 8"X6" TEE
1 - 8"X4" REDUCER
1 - 4" GV
6 LF NORTH OF
PROP LINE
KEEP WITHIN ROW

INSTALL
135 LF OF 4"
WATERMAIN
(PVC OPEN-CUT CONST)

55th AVENUE WEST

20th STREET WEST

20th STR

MATCH LINE P - P

9'-3" FROM
PROP LINE

HA-27

BM#3-8, EL=20.12'
NAIL & DISK SET
IN PAVEMENT

FOR CONTINUATION SEE SHEET C19

MATCH LINE P - P

INSTALL
135 LF OF 4"
WATERMAIN
(PVC OPEN-CUT CONST)

GROUT ABANDONED
3" WATER MAIN

20th STREET WEST

INSTALL
158 LF OF 4"
WATERMAIN
(PVC OPEN-CUT CONST)

10' FROM
PROP LINE

INSTALL
1 - 4"X45° BEND

INSTALL
1 - 4"X45° BEND

INSTALL
1 - 4"X45° BEND

HA-28

INSTALL
179 LF OF 4"
WATERMAIN
(PVC OPEN-CUT CONST)

INSTALL
1 - 4"X45° BEND

INSTALL
1 - 4"X45° BEND

INSTALL
1 - 4" BLOW OFF ASS'Y
10 LF NORTH OF
PROP LINE

INSTALL
1 - 4"X22.5° BEND

INSTALL
1 - 4"X45° BEND

DSGN	BJK			BID DOCUMENTS		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

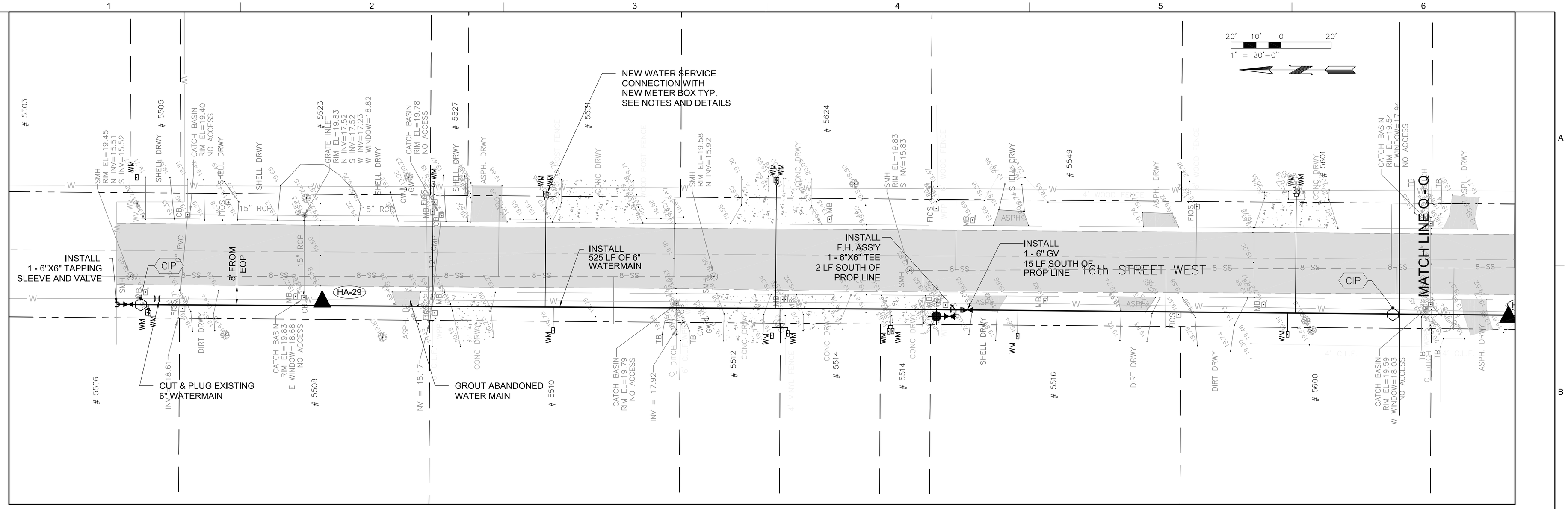
ROBERT A. CANNARELLA, P.E.
Fla. P.E No. 17367

MANATEE COUNTY
SUBURBAN SYSTEM
WATER LINE REPLACEMENT PROJECT
PHASE 1
MANATEE COUNTY, FLORIDA
PROJECT No. 60747.70

PLAN SHEET NEW WATER MAIN
20th ST W FROM 55th AVE W TO 5612

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

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



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

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

BID DOCUMENTS

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0 1"
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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 1
MANATEE COUNTY, FLORIDA
PROJECT No. 60747.70

PLAN SHEET NEW WATER MAIN
16th ST W FROM 5506 TO 57th AVE W

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

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

W:\Manatee County Waterline\Drawings\T1cover.dwg Plotted: 2/18/2009 0:13 pm By: bklein1 Model Plot Scale: 1=1.0 Xref Dwg's:

FOR CONTINUATION SEE SHEET C2
55th AVENUE WEST
25th STREET WEST
NOTE: RIGHT-OF-ENTRY METER CONNECTIONS FOR SOUTH SIDE OF ROW ON 55TH AVE W, FROM 2210 55TH AVE W TO 2316 55TH AVE. W. RELOCATE METERS FROM LOCATION ON PROPERTIES IN QUESTION TO THE LOCATION SHOWN ON THE DRAWINGS FOR THE NEW METER. RIGHT-OF-ENTRY REQUIRED FOR THIS WORK. CONSTRUCT NEW 1 INCH SERVICE LINE ON PRIVATE PROPERTY FROM EXISTING METER LOCATION TO PLANNED LOCATION OF NEW METER WITHIN ROW, COMPLETE INCLUDING ALL RESTORATION. ALL WORK TO BE COMPLETED BY A MANATEE COUNTY LICENSED PLUMBER. ALL WORK SHALL BE COMPLETED IN ACCORDANCE WITH THE SPECIFICATIONS AND PAYMENT FOR CUSTOMER SIDE RIGHT-OF-ENTRY SERVICE LINE SHALL BE IN ACCORDANCE WITH THE APPROPRIATE BID ITEM.
BM#1-6, EL=20.12' SQUARE CUT IN SIDEWALK
INSTALL 40 LF OF 8" WATERMAIN & 8" PLUG
CUT AND PLUG EXISTING WATER MAIN
INSTALL 1 - 8"X6" CROSS 2 - 8" GV 2 - 6" GV
INSTALL F.H. ASS'Y & 1 - 8"X6" TEE 34 LF EAST OF CROSS
GROUT ABANDONED WATER MAIN
INSTALL 226 LF OF 8" WATERMAIN
NEW WATER SERVICE CONNECTION WITH NEW METER BOX TYP. SEE NOTES AND DETAILS
ROEMR # 2405
1" = 20'-0"
MATCH LINE R - R
FOR CONTINUATION SEE SHEET C5
24th STREET WEST
FOR CONTINUATION SEE SHEET C7
MATCH LINE S - S
INSTALL 1 - 8"X6" CROSS 2 - 8" GV 2 - 6" GV
BM#3-12, EL=19.92' TOP BOLT FIRE HYDRANT
CUT AND PLUG EXISTING WATER MAIN
GROUT ABANDONED WATER MAIN
ROEMR # 2316 TYPE I
ROEMR # 2314 TYPE I
ROEMR # 2310 TYPE I
ROEMR # 2312 TYPE I
INSTALL 1 - 8"X6" TEE 2 - 8" GV 1 - 6" GV
INSTALL 589 LF OF 8" WATER MAIN
INSTALL 1 - 8"X6" TEE 2 - 8" GV 1 - 6" GV
CUT AND PLUG EXISTING WATER MAIN
BM#3-10, EL=20.53' NAIL SET IN PAVEMENT
ROEMR # 2306
23rd STREET W
FOR CONTINUATION SEE SHEET C12

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

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

BID DOCUMENTS

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 1
MANATEE COUNTY, FLORIDA
PROJECT No. 60747.70

PLAN SHEET NEW WATER MAIN
55th AVE W FROM 26th ST W TO CENTERLINE OF 23rd ST W

SHEET	C18
DWG	C18.DWG
DATE	JULY 2009
PROJ	386879.WM

NOTE: RIGHT-OF-ENTRY METER CONNECTIONS FOR THE NORTH AND SOUTH SIDE OF ROW ON 55TH AVE W, AT 1807, 1808, 1902, 1912, 2004, 2104, 2108 AND 2208 55TH AVE W. RELOCATE METERS FROM LOCATION ON PROPERTIES IN QUESTION TO THE LOCATION SHOWN ON THE DRAWINGS FOR THE NEW METER. RIGHT-OF-ENTRY REQUIRED FOR THIS WORK. CONSTRUCT NEW 1 INCH SERVICE LINE ON PRIVATE PROPERTY FROM EXISTING METER LOCATION TO PLANNED LOCATION OF NEW METER WITHIN ROW, COMPLETE INCLUDING ALL RESTORATION. ALL WORK TO BE COMPLETED BY A MANATEE COUNTY LICENSED PLUMBER. ALL WORK SHALL BE COMPLETED IN ACCORDANCE WITH THE SPECIFICATIONS AND PAYMENT FOR CUSTOMER SIDE RIGHT-OF-ENTRY SERVICE LINE SHALL BE IN ACCORDANCE WITH THE APPROPRIATE BID ITEM.

MATCH LINE S - S
MATCH LINE T - T
MATCH LINE U - U
FOR CONTINUATION SEE SHEET C9
FOR CONTINUATION SEE SHEET C12
FOR CONTINUATION SEE SHEET C14
FOR CONTINUATION SEE SHEET C16
55th AVENUE WEST
23rd STREET WEST
21st STREET COURT WEST
21st STREET WEST
20th STREET WEST
19th STREET WEST
NEW WATER SERVICE CONNECTION WITH NEW METER BOX TYP. SEE NOTES AND DETAILS
INSTALL 580 LF OF 8" WATER MAIN
INSTALL 1 - 8"X6" TEE 2 - 8" GV 1 - 6" GV
INSTALL 1 - 8"X8" TEE 3 - 8" GV
GROUT ABANDONED WATER MAIN
ROEMR # 2208 TYPE I
ROEMR # 2108 TYPE I
ROEMR # 2104 TYPE I
ROEMR # 2004 TYPE I
ROEMR # 1807 TYPE I
ROEMR # 1912 TYPE I
ROEMR # 1902 TYPE III
ROEMR # 1808 TYPE III
INSTALL 4 - 45° BENDS
INSTALL 1 - 22.5° BEND
EXISTING 24" RECLAIMED WATER MAIN
EXISTING GAS LINE
INSTALL 1 - 22.5° BEND EXISTING 18" POLY STORM PIPE
INSTALL 1 - 8"X8" TEE 3 - 8" GV
INSTALL 1 - 22.5° BEND 27 LF EAST OF DRIVE WAY
INSTALL AIR RELEASE VALVE 2 LF WEST OF PROP LINE
INSTALL AIR RELEASE VALVE 13 LF WEST OF EOP
INSTALL 510 LF OF 8" WATER MAIN
INSTALL F.H. ASS'Y 1 - 8"X6" TEE 8 LF EAST OF PROP LINE
CUT AND PLUG EXISTING WATER MAIN
INSTALL 1 - 22.5° BEND 27 LF WEST OF PROP LINE
INSTALL AIR RELEASE VALVE
CANAL
3' MIN
INSTALL AIR RELEASE VALVE
INSTALL 8" HDD HDPE
INSTALL 8"X6" TEE & 2 - 8" GV 4 LF OF 6" WATERMAIN & CONNECT TO EXISTNG VALVE
REMOVE 6" WATERMAIN OVER DITCH CROSSING TO 10 FEET EAST & WEST OF TOP OF SLOPE
INSTALL 1 - 8"X6" TEE 1 - 6" GV CONNECT TO EXISTNG MAIN
BM#3-8, EL=20.12' NAIL & DISK SET IN PAVEMENT
1" = 20'-0"

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

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

BID DOCUMENTS

BY | APVD

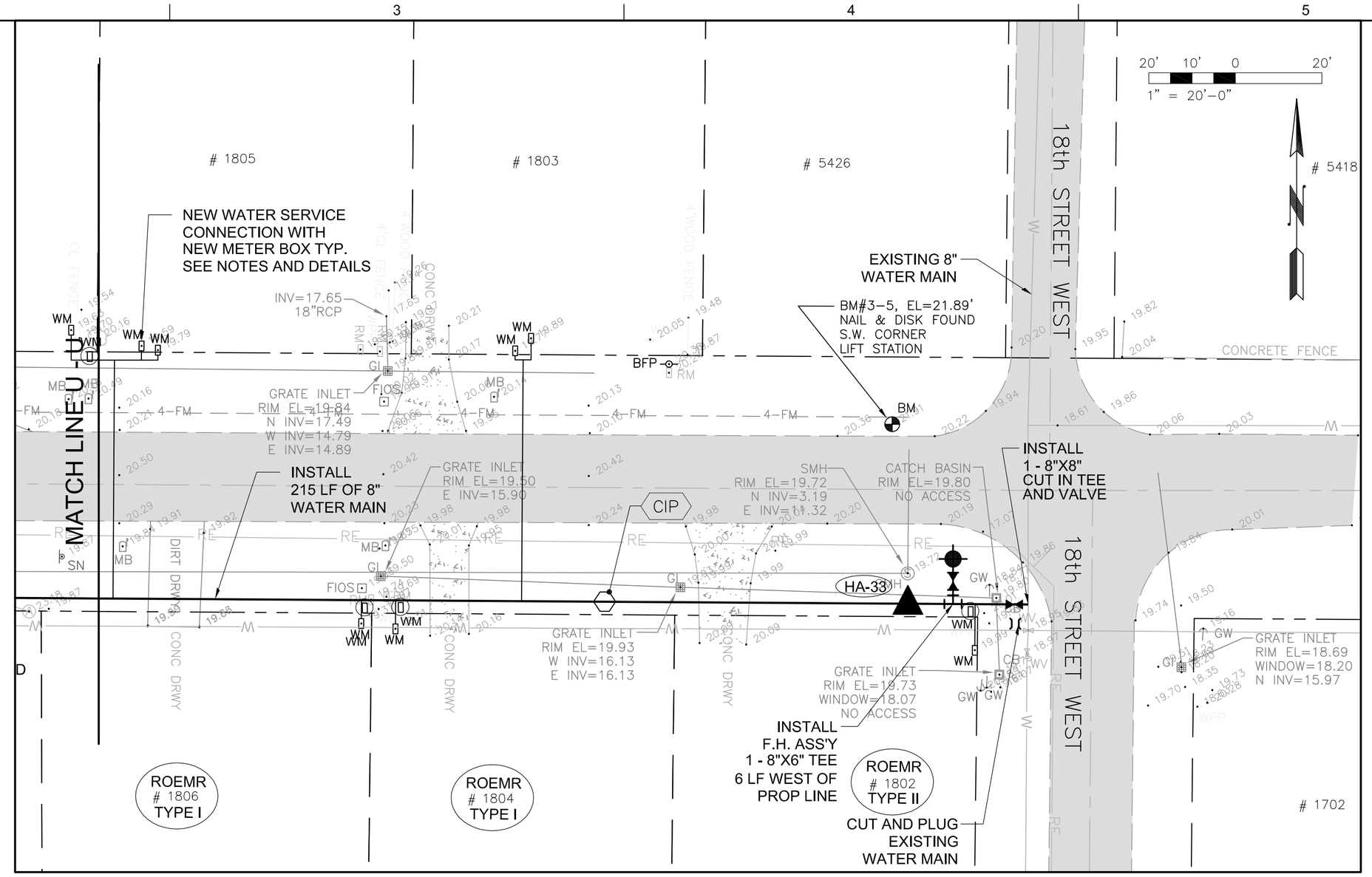
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 ▬▬ 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

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

MANATEE COUNTY
SUBURBAN SYSTEM
WATER LINE REPLACEMENT PROJECT
PHASE 1
MANATEE COUNTY, FLORIDA
PROJECT No. 60747.70

PLAN SHEET NEW WATER MAIN
55th AVE W FROM CENTERLINE OF 23rd ST W TO 1807

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



NOTES: RIGHT-OF-ENTRY METER CONNECTIONS FOR THE SOUTH SIDE OF ROW ON 55TH AVE W, AT 1802, 1804 AND 1806 55TH AVE W. RELOCATE METER FROM LOCATION ON PROPERTIES IN QUESTION TO THE LOCATION SHOWN ON THE DRAWINGS FOR THE NEW METER. RIGHT-OF-ENTRY REQUIRED FOR THIS WORK. CONSTRUCT NEW 1 INCH SERVICE LINE ON PRIVATE PROPERTY FROM EXISTING METER LOCATION TO PLANNED LOCATION OF NEW METER WITHIN ROW, COMPLETE INCLUDING ALL RESTORATION. ALL WORK TO BE COMPLETED BY A MANATEE COUNTY LICENSED PLUMBER. ALL WORK SHALL BE COMPLETED IN ACCORDANCE WITH THE SPECIFICATIONS AND PAYMENT FOR CUSTOMER SIDE RIGHT-OF-ENTRY SERVICE LINE SHALL BE IN ACCORDANCE WITH THE APPROPRIATE BID ITEM.

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

DSGN	BJK
DR	BJK
CHK	RAC
APVD	RAC

NO.	DATE	REVISION	BY	APVD
		BID DOCUMENTS		

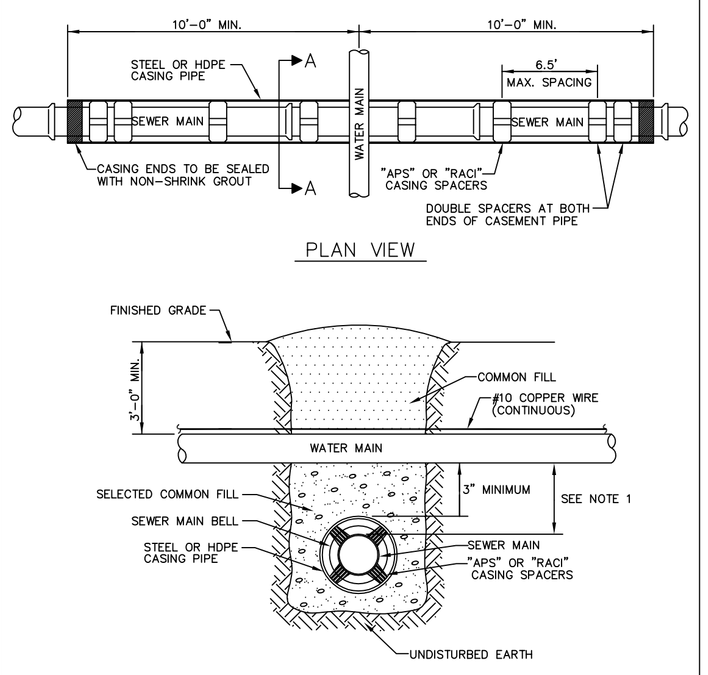
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

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

MANATEE COUNTY
SUBURBAN SYSTEM
WATER LINE REPLACEMENT PROJECT
PHASE 1
MANATEE COUNTY, FLORIDA
PROJECT No. 60747.70

PLAN SHEET NEW WATER MAIN
55th AVE W FROM 1805 TO 18th ST W

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



PLAN VIEW

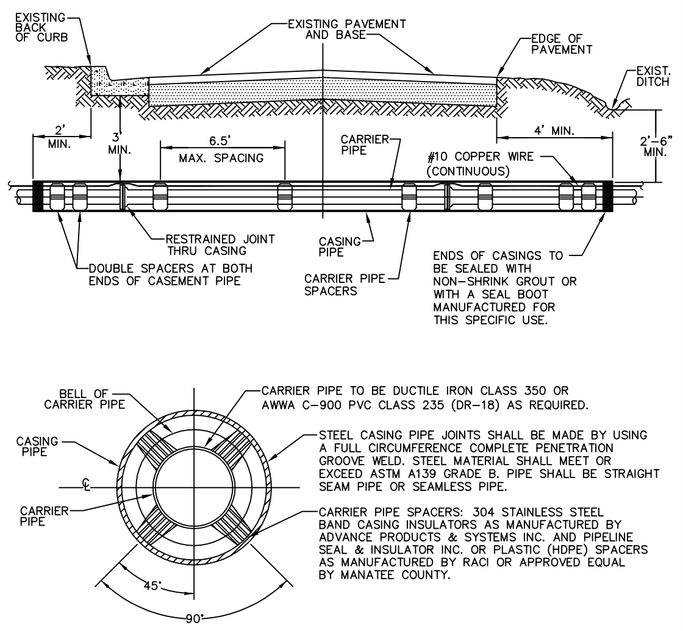
SECTION A-A

NOTE:

1. WHERE CLEARANCE IS LESS THAN 18", SEWER MAIN SHALL BE ENCASED AS DETAILED. FOR VERTICAL CLEARANCE OF 18" OR GREATER NO CASEMENT IS REQUIRED.
2. NEW WATER MAIN AND SEWER MAIN PIPE SECTIONS ARE TO BE CENTERED AT THE CROSSING POINT REGARDLESS OF THE VERTICAL CLEARANCE.
3. REFER TO STANDARD DETAIL UG-3 FOR ADDITIONAL CASING AND SPACER DETAILS.

MANATEE COUNTY PUBLIC WORKS DEPARTMENT			
REV.BY	DATE		
CLB/KE	8/05	MARCH 17, 2009	UG-2
JAA/JB	02/09		

TYPICAL WATER & SEWER CROSSING



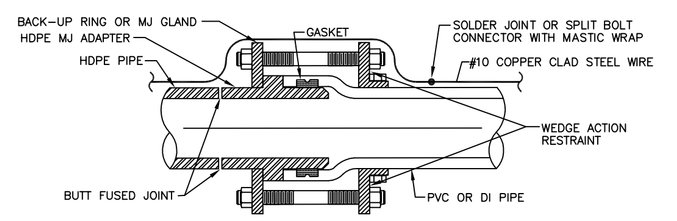
CARRIER SIZE & MINIMUM CASING SIZE									
CARRIER	4"	6"	8"	10"	12"	14"	16"	18"	20"
CASING	12"	14"	18"	20"	24"	30"	30"	36"	36"
CASING / WALL THICKNESS	0.188	0.188	0.250	0.250	0.344	0.406	0.406	0.406	0.406

NOTES:

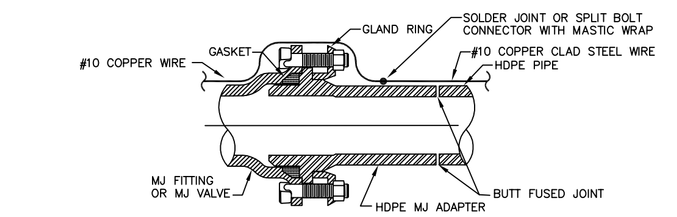
1. THE ENGINEER OF RECORD MAY SELECT LARGER CASING DIAMETERS.
2. FOR JACK & BORE SPECIFICATIONS UNDER STATE ROADS AND RAILROADS REFER TO THE F.D.O.T. UTILITY ACCOMMODATION MANUAL, LATEST EDITION.

MANATEE COUNTY PUBLIC WORKS DEPARTMENT			
REV.BY	DATE		
CLB/KE	06/05	MARCH 17, 2009	UG-3
JAA/BWM	02/09		

JACK & BORE CROSSING

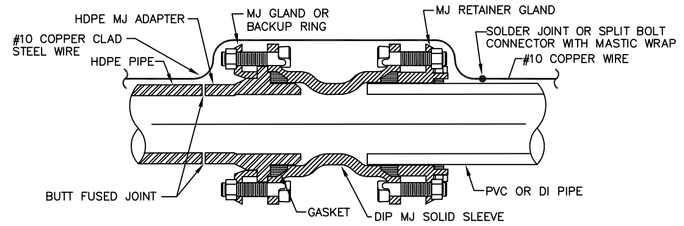


HDPE PIPE TO PVC PIPE / SPIGOT TO BELL CONNECTION



NOTE: SCHEMATIC SHOWN FOR STANDARD MJ FITTINGS AND GATE VALVES.

HDPE PIPE TO MJ FITTING TRANSITION

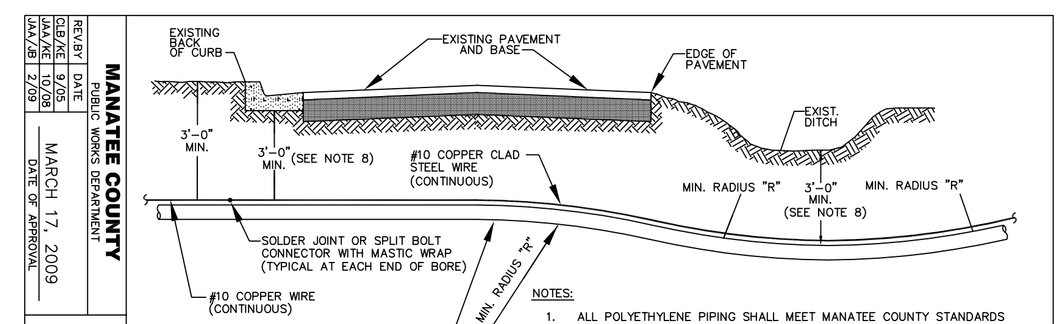


HDPE PIPE TO PVC PIPE SPIGOT TO SPIGOT CONNECTION

1. ONE # 10 GAUGE EXTRA HIGH STRENGTH COPPER CLAD STEEL TRACER WIRE SHALL BE PULLED AND SECURED TO THE PIPE FOR PIPELINES THAT ARE INSTALLED BY TRENCHLESS HORIZONTAL DIRECTIONAL DRILLING METHOD. IN NON-DIRECTIONAL BORE (TRENCHES AND BORE & JACK) APPLICATIONS, A # 10 GAUGE SOLID INSULATED COPPER WIRE SHALL BE ATTACHED TO THE PIPE. TRACER WIRES SHALL HAVE A MINIMUM 30-MILS OF POLYETHYLENE INSULATION.

MANATEE COUNTY PUBLIC WORKS DEPARTMENT			
REV.BY	DATE		
CLB/KE	8/05	MARCH 17, 2009	UG-6
JAA/JB	10/08	DATE OF APPROVAL	
	2/09		

HDPE TO PVC OR DI PIPE ADAPTER



NOTES:

1. ALL POLYETHYLENE PIPING SHALL MEET MANATEE COUNTY STANDARDS AND SPECIFICATIONS. DR-11, CLASS 160 OR GREATER PRESSURE CLASS SHALL BE USED FOR POTABLE, RECLAIMED WATER OR SANITARY FORCE MAINS. DR-9 MAY BE REQUIRED BASED ON THE ENGINEERS CALCULATIONS. SEE NOTE #2.
2. THE ENGINEER SHALL SUBMIT CALCULATIONS FOR THE MAXIMUM PULLING LENGTH, TOTAL PULL FORCE AND THE ALLOWABLE TENSILE LOAD, IN ACCORDANCE WITH AWWA M55 & ASTM F1804. DESIGN SHALL ALSO BE IN ACCORDANCE WITH ASTM F1962.
3. THE PIPE STRING SHALL BE ATTACHED TO THE BACKREAMER THROUGH A "WEAK-LINK" DEVICE TO ENSURE THAT THE PULLING FORCE DOES NOT EXCEED THE PIPE'S ALLOWABLE TENSILE LOAD RATING.
4. ONE # 10 GAUGE EXTRA HIGH STRENGTH COPPER CLAD STEEL TRACER WIRE SHALL BE PULLED AND SECURED TO THE PIPE FOR PIPELINES THAT ARE INSTALLED BY TRENCHLESS HORIZONTAL DIRECTIONAL DRILLING METHOD. IN TRENCHLESS/NON-DIRECTIONAL BORE APPLICATIONS, A # 10 GAUGE SOLID INSULATED COPPER WIRE SHALL BE ATTACHED TO THE PIPE. TRACER WIRES SHALL HAVE A MINIMUM 30-MILS OF POLYETHYLENE INSULATION.
5. COLOR CODED BLUE FOR POTABLE WATER MAINS.
6. COLOR CODED PURPLE (PANTONE 522 C) FOR RECLAIMED WATER MAINS.
7. COLOR CODED GREEN FOR SANITARY FORCE MAINS.
8. PIPE DEPTHS MAY NEED TO BE DEEPER TO AVOID FRACKOUTS. PIPE ALIGNMENT SHALL BE AS SHOWN ON THE CONSTRUCTION DRAWINGS.
9. FDOT CRITERIA SHALL BE MET FOR PIPES UNDER STATE ROADS.

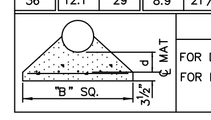
PIPE DIAMETER "D" IN INCHES	MIN. RADIUS FOR PE PIPE IN FEET		
	MIN. RADIUS "R" FOR DR-11	MIN. RADIUS "R" FOR DR-9
2	4	5.5
3	6	8.3
4	8	11.0
6	12	16.5
8	16	22.0
10	20	27.5
12	24	33.0
16	32	44.0
18	36	49.5
20	40	55.0

DATE OF APPROVAL JAA/JB

MANATEE COUNTY PUBLIC WORKS DEPARTMENT			
REV.BY	DATE		
CLB/KE	8/05	MARCH 17, 2009	UG-4
JAA/JB	10/08	DATE OF APPROVAL	
	2/09		

DIRECTIONAL BORE ROADWAY CROSSING

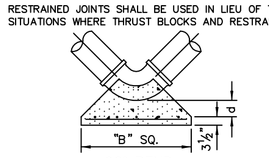
THRUST BLOCK DIMENSIONS B ft. x d inches												
PIPE SIZE	90°BEND		45°BEND		22.5°BEND		11.25°BEND		DEAD END & TEE		45° WYE	
(IN.)	B	d	B	d	B	d	B	d	B	d	B	d
4	1.5	3½	1.1	3½	0.8	3½	0.6	3½	1.3	3½	1.1	3½
6	2.2	5¼	1.6	3¾	1.2	3½	0.8	3½	1.9	4½	1.6	3¾
8	2.9	7	2.1	5	1.5	3½	1.1	3½	2.4	5¾	2.0	4¾
10	3.5	8½	2.6	6¼	1.9	4½	1.3	3½	3.0	7¼	2.5	6
12	4.2	10	3.1	7½	2.2	5¼	1.6	3¾	3.5	8½	3.0	7¼
14	4.9	11¾	3.6	8¾	2.6	6¼	1.8	4¼	4.1	9¾	3.4	8¼
16	5.5	13¼	4.1	9¾	2.9	7	2.1	5	4.7	11¼	3.9	9¼
18	6.2	15	4.6	11	3.3	8	2.3	5½	5.2	12½	4.4	10½
20	6.9	16½	5.0	12	3.6	8¾	2.6	6¼	5.8	14	4.9	11¾
24	8.2	19¾	6.0	14½	4.3	10¼	3.1	7½	6.9	16½	5.8	14
30	10.1	24¼	7.5	18	5.3	12¾	3.8	9	8.5	20½	7.2	17¼
36	12.1	29	8.9	21¼	6.4	15¼	4.5	10¾	10.2	24½	8.6	20¾



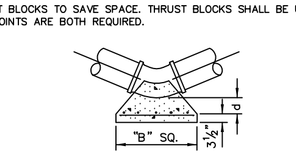
REINFORCEMENT MAT SCHEDULE
FOR DIM. "B" BETWEEN 5.75' & 12.5'USE #4 @ 8" EACH WAY
FOR DIM. "B" LESS THAN 5.75' USE #3 @ 8" EACH WAY

NOTES:

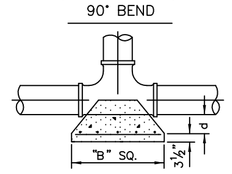
1. ALL THRUST BLOCKS SHALL BE CAST IN PLACE. FITTINGS ADJACENT TO THRUST BLOCKS SHALL BE WRAPPED IN POLYETHYLENE.
2. THIS TABLE IS BASED ON WATER PRESSURE=180 PSI WITH AN ALLOWABLE SOIL BEARING PRESSURE=2000 PSF, CONCRETE STRENGTH f_c=3000 PSI, REINFORCEMENT f_y=60.0 KSI. THRUST BLOCK SHALL BE CAST AGAINST FIRM UNDISTURBED SOIL.
3. FOR LARGER "B" DIMENSIONS IT IS NECESSARY TO CHECK THAT PIPE IS SUFFICIENTLY DEEP TO ALLOW 15" MIN. SOIL COVER OVER TOP EDGE OF THRUST BLOCK.
4. RESTRAINED JOINTS SHALL BE USED IN LIEU OF THRUST BLOCKS TO SAVE SPACE. THRUST BLOCKS SHALL BE USED IN SITUATIONS WHERE THRUST BLOCKS AND RESTRAINED JOINTS ARE BOTH REQUIRED.



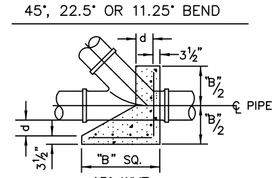
90° BEND



45°, 22.5° OR 11.25° BEND



TEE OR DEAD END



45° WYE

MANATEE COUNTY PUBLIC WORKS DEPARTMENT			
REV.BY	DATE		
CLB/KE	2/05	MARCH 17, 2009	UG-7
JAA/JB	2/09	DATE OF APPROVAL	

CONCRETE THRUST BLOCKS

REQUIRED LENGTH OF RESTRAINED JOINT PIPE FOR DR-18 PVC PIPE

MAIN PIPE SIZE	HORIZ. BENDS			TEES						REDUCERS				PLUGS	VALVES
	90°	45°	22.5°	SIZE / LENGTH						SIZE / LENGTH					
24	90	38	18	X24 169	X20 32	X16 90	X12 38	X10 6		X20 64	X16 117	X12 58		214	107
20	78	32	16	X20 141	X16 101	X12 53	X10 24	X8 1		X16 65	X12 115	X10 149		184	92
16	66	27	13	X16 111	X12 67	X10 41	X8 12			X12 64	X10 107	X8 111		151	76
12	52	22	10	X12 80	X10 56	X8 31	X6 1			X10 58	X8 62	X6 86		118	59
10	44	18	9	X10 63	X8 40	X6 7				X8 33	X6 61	X4 81		100	50
8	37	15	7	X8 49	X6 18	X4 1				X6 35	X4 60			83	42
6	29	12	6	X6 29	X4 1					X4 33				63	32
4	21	8	4	X4 12										45	23

NOTES:

1.) RESTRAIN 11.25° BENDS 50% OF LENGTH FOR 22.5° BENDS.

2.) ALL VALVES AND FITTINGS SHALL BE RESTRAINED TO THE CONNECTING SECTIONS OF PIPE.

3.) ALL ISOLATION VALVES MUST BE PROPERLY ANCHORED OR RESTRAINED TO RESIST A 180 PSI TEST PRESSURE IN EITHER DIRECTION.

4.) PIPE SIZES ARE GIVEN IN INCHES.

5.) RESTRAINED PIPE LENGTHS ARE GIVEN IN FEET.

6.) LENGTHS SHOWN ARE FOR A TEST PRESURE OF 180 PSI.

7.) THE RESTRAINED LENGTHS SHOWN IN THESE TABLES ARE BASED ON SOIL CLASSIFICATION SP WITH AWWA TYPE 3 TRENCH CONDITIONS, 180 PSI TEST PRESSURE, 3 FEET OF COVER AND 1.5 FACTOR OF SAFTEY. ACTUAL BURY CONDITIONS MUST BE DETERMINED BY THE ENGINEER OF RECORD AND THE RESTRAINED LENGTHS MODIFIED ACCORDINGLY.

8.) SEE RESTRAINED LENGTHS FOR PIPE STD. DETAIL UG-10.

MANATEE COUNTY PUBLIC WORKS DEPARTMENT			
REV.BY	DATE		
CLB/KE	2/05	MARCH 17, 2009	UG-8
JAA/JB	10/08	DATE OF APPROVAL	

RESTRAINED LENGTHS FOR PVC PIPE

REQUIRED LENGTH OF RESTRAINED JOINT PIPE FOR DIP (POLY-WRAPPED)

MAIN PIPE SIZE	HORIZ. BENDS			TEES						REDUCERS				PLUGS	VALVES
	90°	45°	22.5°	SIZE / LENGTH						SIZE / LENGTH					
36	142	59	28	X36 228	X30 161	X24 85	X20 39	X16 14	X12 1	X30 137	X24 247	X20 309	X16 359	453	227
30	124	51	25	X30 333	X24 252	X20 188	X16 115	X12 53	X10 23	X24 137	X20 213	X16 276		391	196
24	106	44	21	X24 270	X20 211	X16 143	X12 81	X10 32	X8 10	X20 98	X16 178	X12 241		327	164
20	92	38	18	X20 228	X16 161	X12 105	X10 65	X8 39	X6 1	X16 98	X12 176	X10 227		280	140
16	77	32	15	X16 177	X12 107	X10 65	X8 39	X6 19	X4 1	X12 98	X10 163	X8 169		231	116
12	61	25	12	X12 117	X10 89	X8 50	X6 1			X10 88	X8 86	X6 131		181	91
10	52	22	10	X10 89	X8 64	X6 11				X8 61	X6 94	X4 125		153	77
8	44	18	9	X8 78	X6 30	X4 1				X6 54	X4 92			128	64
6	34	14	7	X6 46	X4 1					X4 50				98	49
4	24	10	5	X4 19										69	35

REQUIRED LENGTH OF RESTRAINED JOINT PIPE FOR DIP (NON-WRAPPED)

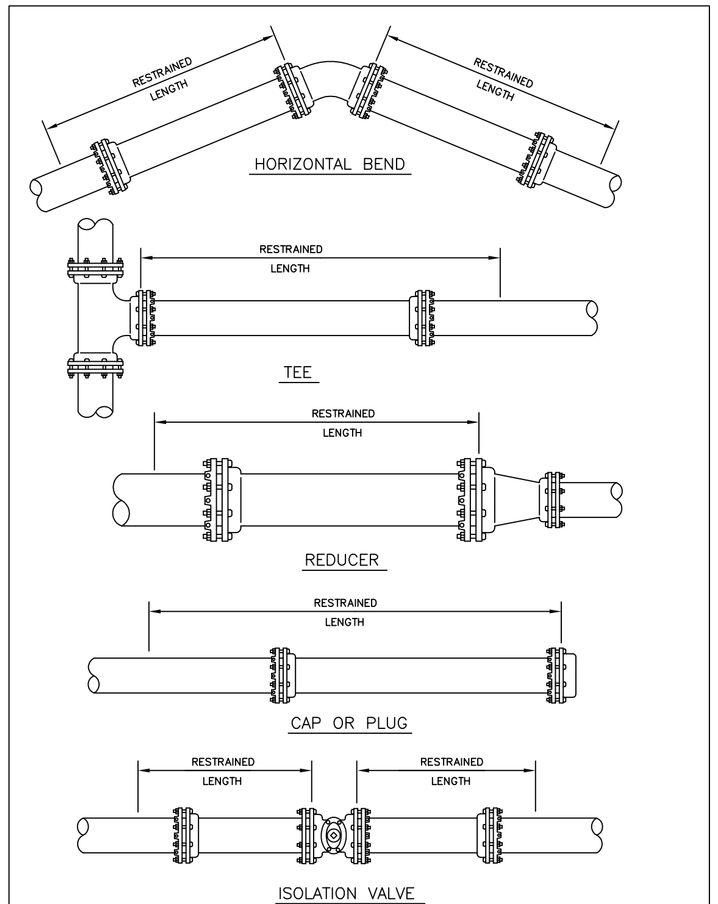
MAIN PIPE SIZE	HORIZ. BENDS			TEES						REDUCERS				PLUGS	VALVES
	90°	45°	22.5°	SIZE / LENGTH						SIZE / LENGTH					
36	100	42	20	X36 61	X30 32	X24 95	X20 68	X16 35	X12 1	X30 57	X24 103	X20 128	X16 149	188	94
30	88	37	18	X30 38	X24 104	X20 78	X16 48	X12 10	X10 1	X24 57	X20 88	X16 114		162	81
24	75	31	15	X24 112	X20 87	X16 59	X12 25	X10 4	X8 1	X20 40	X16 74	X12 100		135	68
20	65	27	13	X20 83	X16 62	X12 35	X10 18	X8 1		X16 41	X12 73	X10 94		116	58
16	54	22	11	X16 73	X12 44	X10 27	X8 8	X6 1		X12 41	X10 68	X8 70		96	48
12	43	18	8	X12 53	X10 37	X8 21	X6 1			X10 37	X8 40	X6 54		75	38
10	37	15	7	X10 42	X8 28	X6 5				X8 21	X6 39	X4 52		63	32
8	30	13	6	X8 32	X6 12	X4 1				X6 22	X4 38			53	27
6	24	10	5	X6 19	X4 1					X4 21				41	21
4	17	7	3	X4 8										29	15

NOTE:

SEE "RESTRAINED LENGTHS FOR PVC PIPE" DETAIL FOR NOTES 1 THROUGH 8 THAT ARE ALSO APPLICABLE TO RESTRAINED LENGTHS FOR DIP.

MANATEE COUNTY PUBLIC WORKS DEPARTMENT			
REV.BY	DATE		
CLB/KE	8/05	MARCH 17, 2009	UG-9
JAA/JB	10/08	DATE OF APPROVAL	

RESTRAINED LENGTHS FOR DIP



MANATEE COUNTY PUBLIC WORKS DEPARTMENT			
REV.BY	DATE		
CLB/KE	8/05	MARCH 17, 2009	UG-10
JAA/JB	10/08	DATE OF APPROVAL	

RESTRAINED LENGTHS FOR PIPE

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

DSGN	BJK
DR	BJK
CHK	RAC
APVD	RAC

NO.	DATE	REVISION	BY	APVD

BID DOCUMENTS

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 1
MANATEE COUNTY, FLORIDA
PROJECT No. 60747.70

DETAILS

SHEET	D1
DWG	D1.DWG
DATE	JULY 2009
PROJ	386879.WM

W:\Manatee County Waterline\Drawings\Tlcover.dwg Plotted: 2/18/2009 0:13 pm By: bklein1 Model: Plot Scale: 1=1.0 Xref Dwgs:

NOTES:

1.) USE OF TYPE A-2 AND A-3 PIPE BEDDING TO BE DETERMINED IN THE FIELD BY THE ENGINEER.

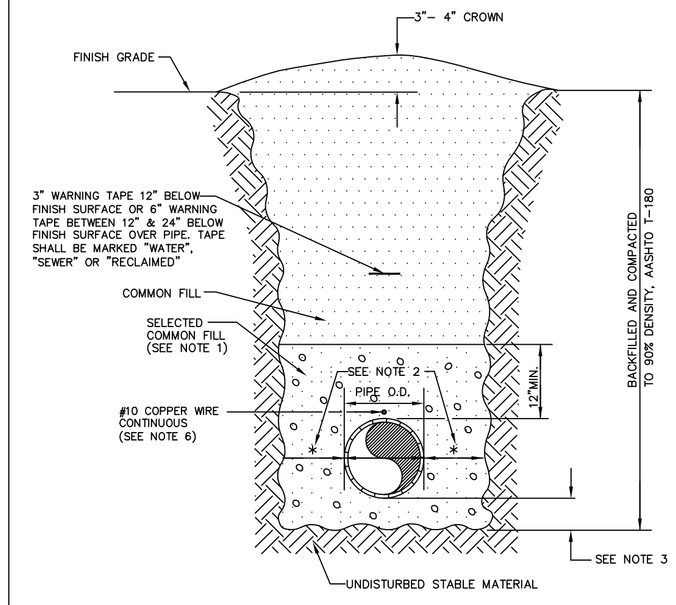
2.) 10" MAX. FOR PIPE DIAMETER LESS THAN 24"; 12" MAX. FOR PIPE DIAMETER 24" AND LESS THAN 42"; 24" MAX. FOR PIPE DIAMETER 42" AND OVER.

3.) 4" MAX. FOR PIPE 16" DIAMETER & LESS; 6" MAX. FOR PIPE 18" TO 36" DIAMETER; AND 9" MAX FOR PIPE 42" DIAMETER AND LARGER.

4.) PIPE INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS.

5.) BACKFILL AASHTO M-145 SHALL BE PLACED IN LAYERS NOT TO EXCEED 6 INCHES FOR SELECTED COMMON FILL AND NOT TO EXCEED 12 INCHES FOR COMMON FILL. EACH LAYER SHALL BE THOROUGHLY TAMPED AND/OR ROLLED TO 98% AASHTO T-180 DENSITY.

6.) TRACER WIRE NOT REQUIRED FOR GRAVITY SEWERS.



MANATEE COUNTY
PUBLIC WORKS DEPARTMENT

REV.BY	DATE
CLB/KE	02/05
JAA/JB	10/08
JAA/JEA	02/09

MARCH 17, 2009
DATE OF APPROVAL

TRENCH WITH UNIMPROVED SURFACE TYPE A-1 PIPE BEDDING

UG-11

NOTES:

1.) USE OF TYPE A-2 AND A-3 PIPE BEDDING TO BE DETERMINED IN THE FIELD BY THE ENGINEER.

2.) 10" MAX. FOR PIPE DIAMETERS LESS THAN 24"; 12" MAX. FOR PIPE DIAMETER 24" AND LESS THAN 42"; 24" MAX. FOR PIPE DIAMETER 42" AND OVER.

3.) 4" MAX. FOR PIPE 16" DIAMETER & LESS; 6" MAX. FOR PIPE 18" TO 36" DIAMETER; AND 9" MAX. FOR PIPE 42" DIAMETER AND LARGER.

4.) PIPE INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS.

5.) ASPHALTIC CONCRETE FRICTION COURSE WITH PRIME COAT SHALL BE THE SAME DEPTH AND TYPE AS EXISTING OR A MINIMUM OF ONE INCH, WHICHEVER IS GREATER.

6.) SHEETING ORDERED LEFT IN PLACE TO BE CUT OFF 24" BELOW FINISHED GRADE OR 12" BELOW SUBGRADE.

7.) BASE SHALL BE 8" MINIMUM THICKNESS CRUSHED CONCRETE. SAND ASPHALT BASE WILL BE AN ACCEPTABLE ALTERNATIVE.

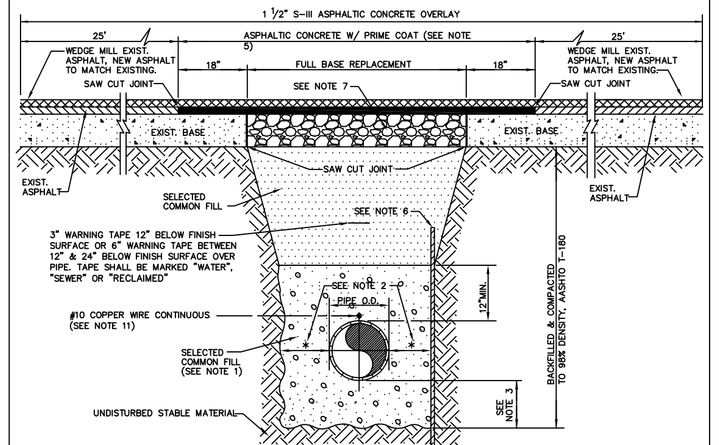
8.) BACKFILL AASHTO M-145 SHALL BE PLACED IN LAYERS NOT TO EXCEED 6 INCHES. EACH LAYER SHALL BE THOROUGHLY TAMPED AND/OR ROLLED TO 98% AASHTO T-180 DENSITY.

9.) TEMPORARY PATCHES WILL BE INSTALLED TO PROVIDE A SMOOTH ALL WEATHER SURFACE AT ALL TIME. PERMANENT REPLACEMENT TO BE MADE AS SOON AS POSSIBLE.

10.) RESTORE SIGNAGE & MARKING WITH THERMOPLASTIC PER FDOT STANDARDS, LATEST EDITION.

11.) TRACER WIRE NOT REQUIRED FOR GRAVITY SEWERS.

12.) NOTES 5.) THRU 11.) ARE MINIMUM REQUIREMENTS. REFER TO MANATEE COUNTY HIGHWAY AND TRAFFIC STANDARDS FOR ADDITIONAL REQUIREMENTS.



MANATEE COUNTY
PUBLIC WORKS DEPARTMENT

REV.BY	DATE
CLB/KE	02/05
JAA/JB	10/08
JAA/JEA	02/09

MARCH 17, 2009
DATE OF APPROVAL

TRENCH WITH ASPHALT PAVEMENT SURFACE TYPE A-1 PIPE BEDDING

UG-12

NOTES:

1.) USE OF TYPE A-2 AND A-3 PIPE BEDDING TO BE DETERMINED IN THE FIELD BY THE ENGINEER.

2.) 10" MAX. FOR PIPE DIAMETERS LESS THAN 24"; 12" MAX. FOR PIPE DIAMETER 24" AND LESS THAN 42"; 24" MAX. FOR PIPE DIAMETER 42" AND OVER.

3.) 4" MAX. FOR PIPE 16" DIAMETER & LESS; 6" MAX. FOR PIPE 18" TO 36" DIAMETER; AND 9" MAX FOR PIPE 42" DIAMETER AND LARGER.

4.) PIPE INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS.

5.) THICKNESS TO MATCH EXISTING OR BE 8" MINIMUM, WHICHEVER IS GREATER.

6.) SHEETING ORDERED LEFT IN PLACE TO BE CUT OFF 24" BELOW FINISHED GRADE OR 12" BELOW SUBGRADE.

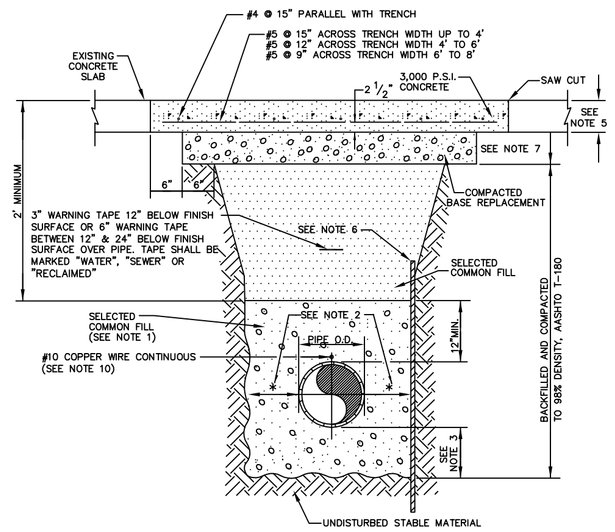
7.) BASE SHALL BE 8" MINIMUM THICKNESS CRUSHED CONCRETE. SAND ASPHALT BASE WILL BE AN ACCEPTABLE ALTERNATIVE.

8.) BACKFILL AASHTO M-145 SHALL BE PLACED IN LAYERS NOT TO EXCEED 6 INCHES. EACH LAYER SHALL BE THOROUGHLY TAMPED AND/OR ROLLED TO 98% AASHTO T-180 DENSITY.

9.) TEMPORARY PATCHES WILL BE INSTALLED TO PROVIDE A SMOOTH ALL WEATHER SURFACE AT ALL TIME. PERMANENT REPLACEMENT TO BE MADE AS SOON AS POSSIBLE.

10.) TRACER WIRE NOT REQUIRED FOR GRAVITY SEWERS.

11.) NOTES 5.) THRU 10.) ARE MINIMUM REQUIREMENTS. REFER TO MANATEE COUNTY HIGHWAY AND TRAFFIC STANDARDS FOR ADDITIONAL REQUIREMENTS.



MANATEE COUNTY
PUBLIC WORKS DEPARTMENT

REV.BY	DATE
CLB/KE	6/05
JAA/JB	10/08
JAA/JEA	02/09

MARCH 17, 2009
DATE OF APPROVAL

TRENCH WITH CONCRETE PAVEMENT SURFACE TYPE A-1 PIPE BEDDING

UG-13

NOTES:

1.) USE OF TYPE A-2 AND A-3 PIPE BEDDING TO BE DETERMINED IN THE FIELD BY THE ENGINEER.

2.) 10" MAX. FOR PIPE DIAMETER LESS THAN 24"; 12" MAX. FOR PIPE DIAMETER 24" AND LESS THAN 42"; 24" MAX. FOR PIPE DIAMETER 42" AND OVER.

3.) 4" MAX. FOR PIPE 16" DIAMETER & LESS; 6" MAX. FOR PIPE 18" TO 36" DIAMETER; AND 9" MAX. FOR PIPE 42" DIAMETER AND LARGER.

4.) PIPE INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS.

5.) THICKNESS TO MATCH EXISTING OR BE 6" MINIMUM, WHICHEVER IS GREATER.

6.) SHEETING ORDERED LEFT IN PLACE TO BE CUT OFF 24" BELOW FINISHED GRADE OR 12" BELOW SUBGRADE.

7.) BASE SHALL BE COMPACTED 6" MINIMUM THICKNESS OF APPROVED MATERIAL.

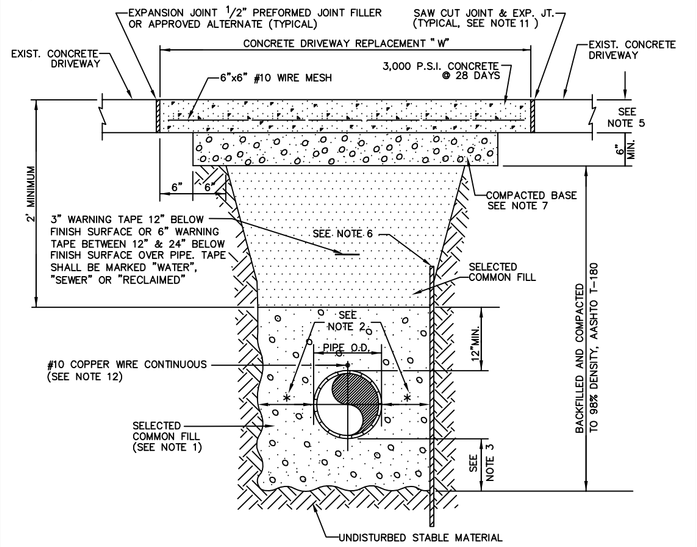
8.) BACKFILL AASHTO M-145 SHALL BE PLACED IN LAYERS NOT TO EXCEED 6 INCHES. EACH LAYER SHALL BE THOROUGHLY TAMPED AND/OR ROLLED TO 98% AASHTO T-180 DENSITY.

9.) DRIVEWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE LATEST ADOPTED CONSTRUCTION STANDARDS OF THE MANATEE COUNTY TRANSPORTATION DEPARTMENT.

10.) IF THE DRIVEWAY IS 12' OR WIDER, SAWCUT AN EXPANSION JOINT ALONG THE CENTER OF THE DRIVEWAY (3/16" WIDE AND 1 1/2" DEEP) AFTER THE CONCRETE HAS SET.

11.) IF THERE IS AN EXISTING EXPANSION JOINT WITHIN 3' OF THE PROPOSED JOINT, EXTEND DRIVEWAY REPLACEMENT TO THE EXISTING JOINT.

12.) TRACER WIRE NOT REQUIRED FOR GRAVITY SEWERS.



MANATEE COUNTY
PUBLIC WORKS DEPARTMENT

REV.BY	DATE
CLB/KE	6/05
JAA/JB	10/08
JAA/JEA	02/09

MARCH 17, 2009
DATE OF APPROVAL

TRENCH WITH CONCRETE DRIVEWAY SURFACE TYPE A-1 PIPE BEDDING

UG-14

NOTES:

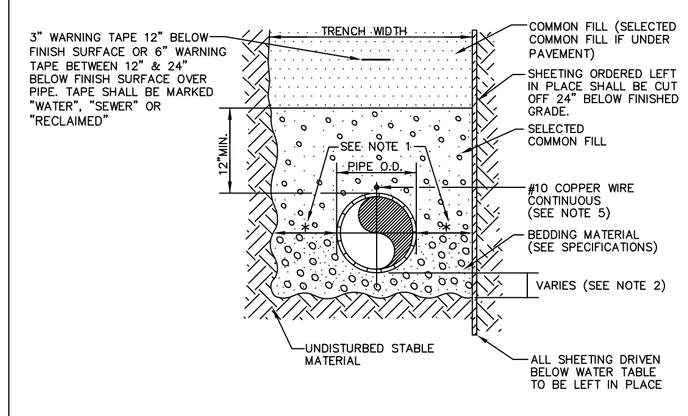
1.) 10" MAX. FOR PIPE DIAMETER LESS THAN 24"; 12" MAX. FOR PIPE DIAMETER 24" AND LESS THAN 42"; 24" MAX. FOR PIPE DIAMETER 42" AND OVER.

2.) 4" MAX. FOR PIPE 16" DIAMETER & LESS; 6" MAX. FOR PIPE 18" TO 36" DIAMETER; AND 9" MAX FOR PIPE 42" DIAMETER AND LARGER.

3.) PIPE INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS.

4.) BACKFILL AASHTO M-145 SHALL BE PLACED IN LAYERS NOT TO EXCEED 6 INCHES. EACH LAYER SHALL BE THOROUGHLY TAMPED AND/OR ROLLED TO 98% AASHTO T-180 DENSITY.

5.) TRACER WIRE NOT REQUIRED FOR GRAVITY SEWERS.



MANATEE COUNTY
PUBLIC WORKS DEPARTMENT

REV.BY	DATE
CLB/KE	08/05
JAA/JB	10/08
JAA/JEA	02/09

MARCH 17, 2009
DATE OF APPROVAL

TRENCH WITH TYPE A-2 PIPE BEDDING

UG-15

NOTES:

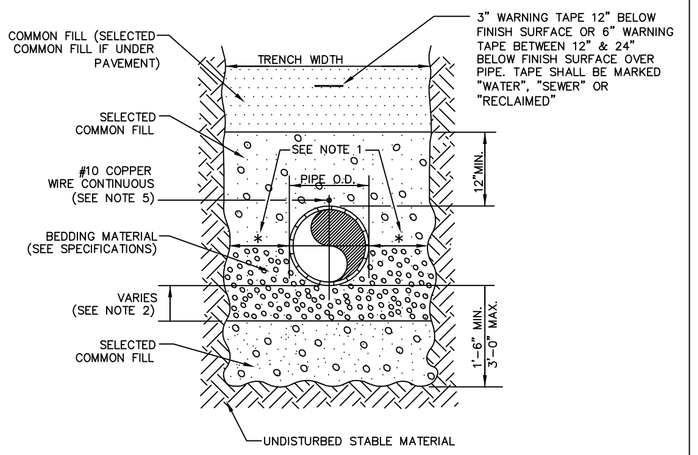
1.) 10" MAX. FOR PIPE DIAMETER LESS THAN 24"; 12" MAX. FOR PIPE DIAMETER 24" AND LESS THAN 42"; 24" MAX. FOR PIPE DIAMETER 42" AND OVER.

2.) 4" MAX. FOR PIPE 16" DIAMETER & LESS; 6" MAX. FOR PIPE 18" TO 36" DIAMETER; AND 9" MAX FOR PIPE 42" DIAMETER AND LARGER.

3.) PIPE INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS.

4.) BACKFILL AASHTO M-145 SHALL BE PLACED IN LAYERS NOT TO EXCEED 6 INCHES. EACH LAYER SHALL BE THOROUGHLY TAMPED AND/OR ROLLED TO 98% AASHTO T-180 DENSITY.

5.) TRACER WIRE NOT REQUIRED FOR GRAVITY SEWERS.



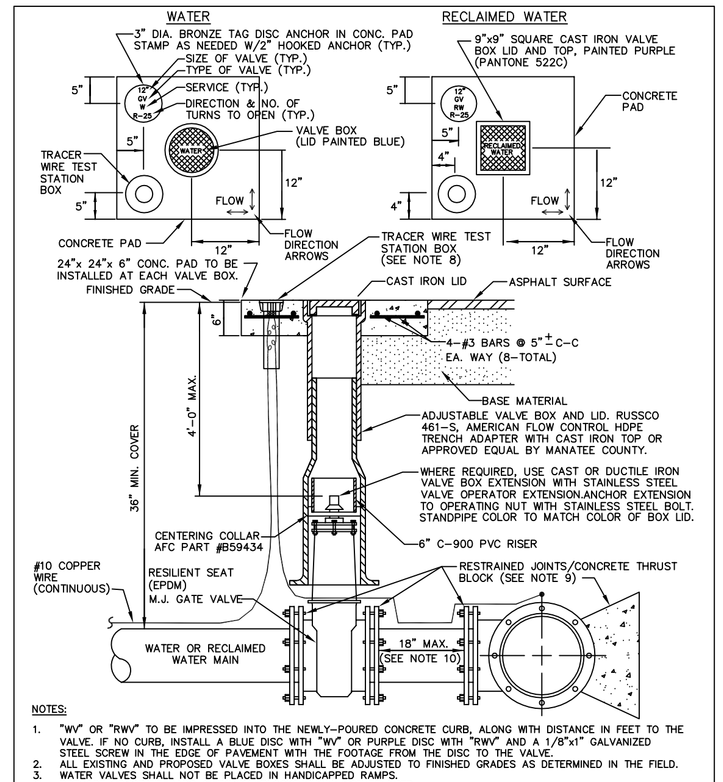
MANATEE COUNTY
PUBLIC WORKS DEPARTMENT

REV.BY	DATE
CLB/KE	02/05
JAA/JB	10/08
JAA/JEA	02/09

MARCH 17, 2009
DATE OF APPROVAL

TRENCH WITH TYPE A-3 PIPE BEDDING

UG-16



NOTES:

1. "WV" OR "RWV" TO BE IMPRESSED INTO THE NEWLY-POURED CONCRETE CURB, ALONG WITH DISTANCE IN FEET TO THE VALVE. IF NO CURB, INSTALL A BLUE DISC WITH "WV" OR PURPLE DISC WITH "RWV" AND A 1/8"x1" GALVANIZED STEEL SCREW IN THE EDGE OF PAVEMENT WITH THE FOOTAGE FROM THE DISC TO THE VALVE.
2. ALL EXISTING AND PROPOSED VALVE BOXES SHALL BE ADJUSTED TO FINISHED GRADES AS DETERMINED IN THE FIELD.
3. WATER VALVES SHALL NOT BE PLACED IN HANDICAPPED RAMPS.
4. PRECAST CONCRETE PADS & THRUST BLOCKS SHALL NOT BE USED.
5. ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 1/2".
6. FOR VALVES 16" AND LARGER, USE BUTTERFLY VALVES.
7. "FLOW" AND FLOW DIRECTION ARROWS TO BE IMPRESSED INTO NEWLY POURED CONCRETE PAD.
8. TRACER WIRE TEST STATION BOX IS NOT REQUIRED IN VALVE BOX PAD IF THE GATE VALVE IS LOCATED WITHIN 200 FEET OF A WATER SERVICE, BLOW-OFF, BACKFLOW PREVENTER OR FIRE HYDRANT THAT HAS A TRACER WIRE BOX. A TRACER WIRE BOX IS REQUIRED IN THE CONCRETE PAD AT ALL GATE VALVES AT CONNECTIONS TO EXISTING MAINS.
9. CONCRETE THRUST BLOCK IS ALSO REQUIRED UNLESS RESTRAINED JOINT LENGTH IS TREATED AS A PLUG SHOWN IN STANDARD DETAIL UG-8
10. SHOULD THERE BE AN OBSTACLE/CONFLICT IN INSTALLING THE VALVE, THE ENGINEER OF RECORD MAY PROPOSE A REVERSE TAP, ETC. AND SEPARATE APPROVAL SHALL BE OBTAINED FROM MANATEE COUNTY.

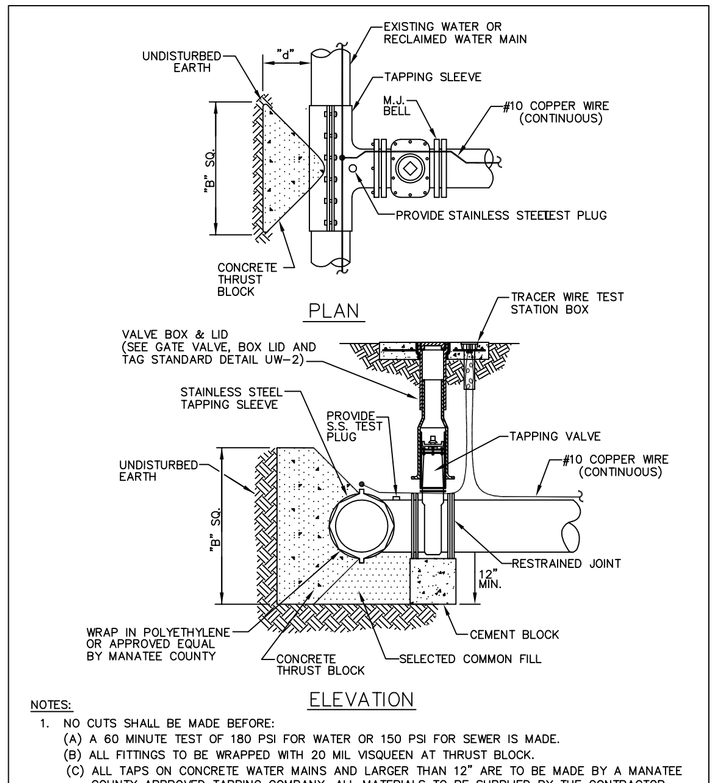
MANATEE COUNTY
PUBLIC WORKS DEPARTMENT

REV.BY	DATE
CLB/KE	03/06
JAA/JB	09/08
JAA/JEA	02/09

MARCH 17, 2009
DATE OF APPROVAL

GATE VALVE, BOX, LID AND TAG

UW-2



NOTES:

1. NO CUTS SHALL BE MADE BEFORE:
   (A) A 60 MINUTE TEST OF 180 PSI FOR WATER OR 150 PSI FOR SEWER IS MADE.
   (B) ALL FITTINGS TO BE WRAPPED WITH 20 MIL VISQUEEN AT THRUST BLOCK.
   (C) ALL TAPS ON CONCRETE WATER MAINS AND LARGER THAN 12" ARE TO BE MADE BY A MANATEE COUNTY APPROVED TAPPING COMPANY. ALL MATERIALS TO BE SUPPLIED BY THE CONTRACTOR.
2. ALL TAPS MUST BE OF A SMALLER SIZE THAN THE MAIN BEING TAPPED & PLACED NO CLOSER THAN 30" OR A DISTANCE EQUAL TO (1) MAIN PIPE DIAMETER PLUS (2) TAP PIPE DIAMETERS (WHICHEVER IS LARGER) FROM A JOINT OR FITTING.
3. CONTRACTOR TO SUPPLY A DRY HOLE FOR TAPPING CREW TO WORK IN AND A BACK-HOE TO LOWER TAPPING MACHINE INTO THE HOLE.
4. THRUST BLOCK IS REQUIRED AND INCLUDED IN EVERY TAP. SEE CONCRETE THRUST BLOCK DETAIL FOR DIMENSIONS "B" & "d".
5. TRACER WIRE TEST STATION BOX IS REQUIRED AT CONNECTIONS TO EXISTING MAINS.

MANATEE COUNTY
PUBLIC WORKS DEPARTMENT

REV.BY	DATE
CLB/KE	08/05
JAA/JB	10/08
JAA/KE	02/09

MARCH 17, 2009
DATE OF APPROVAL

TAPPING SLEEVE AND VALVE

UW-4

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

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

BID DOCUMENTS

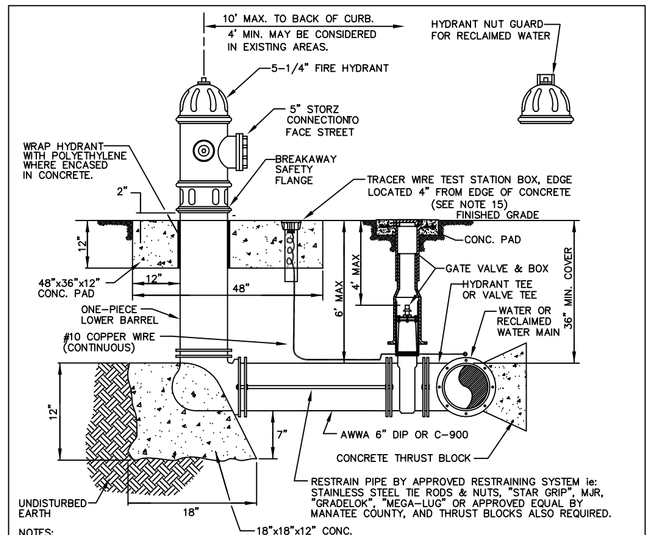
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 ——— 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

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

MANATEE COUNTY
SUBURBAN SYSTEM
WATER LINE REPLACEMENT PROJECT
PHASE 1
MANATEE COUNTY, FLORIDA
PROJECT No. 60747.70

DETAILS

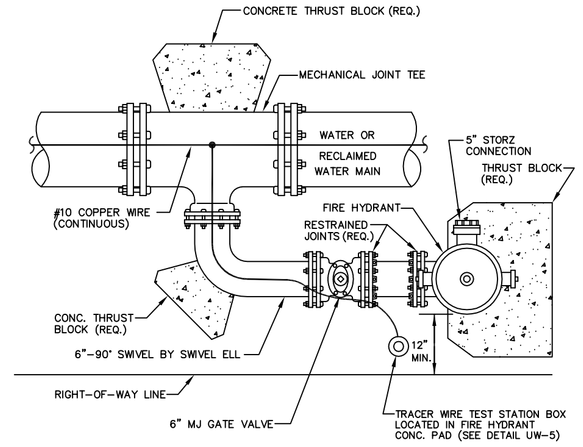
SHEET	D2
DWG	D2.DWG
DATE	JULY 2009
PROJ	386879.WM



NOTES:

1. WEEPHOLES SHALL BE EXCLUDED FROM THE FIRE HYDRANT.
2. FIRE HYDRANTS SHALL BE A MINIMUM OF 6' OFF EDGE OF PAVEMENT AND 10' MAX. FROM BACK OF CURB. WHERE POSSIBLE AND WHERE SIDEWALK IS TO BE INSTALLED, FIRE HYDRANT SHALL BE LOCATED BETWEEN SIDEWALK AND RIGHT-OF-WAY LINE.
3. HYDRANTS SHALL BE FUSION BONDED EPOXY COATED SAFETY YELLOW FOR WATER AND PURPLE (PANTONE 522C) FOR RECLAIMED WATER. HYDRANT SHALL BE DUCTILE IRON CONSTRUCTION.
4. FIRE HYDRANTS SHALL BE PLACED SO THAT STORM WATER FLOWS AWAY FROM THE HYDRANT.
5. FIRE HYDRANTS SHALL BE CONSTRUCTED WITH "GROUND LINE" SET TO FINISHED GRADES AS ESTABLISHED IN THE FIELD. NORMAL BURY IS 3 FEET OF COVER FOR ALL WATER LINES.
6. FIRE HYDRANTS MAY BE CONSTRUCTED WITH "GRADELOK" OFFSET FITTING.
7. RAISED REFLECTIVE PAVEMENT MARKER (BLUE) FOR POTABLE WATER(PURPLE) FOR RECLAIMED WATER SHALL BE INSTALLED AT CENTERLINE OF PAVEMENT ADJACENT TO EACH HYDRANT.
8. PRECAST CONCRETE THRUST BLOCKS & PADS SHALL NOT BE USED.
9. ALL EXPOSED EDGES OF CONCRETE SHALL HAVE 1/2" CHAMFER.
10. FIRE HYDRANT VALVE SHALL BE FASTENED DIRECTLY TO TEE.
11. IN-LINE VALVES SHOULD BE LOCATED AT HYDRANT TEES.
12. HYDRANTS SHALL BE LOCATED ON SAME SIDE OF ROAD AS WATER MAIN UNLESS APPROVED BY M.C.U.O.D.
13. THERE MUST BE A CLEARANCE OF 7 1/2 FEET FROM FRONT AND BOTH SIDES, AND FOUR FEET TO THE REAR OF THE HYDRANT, TO ABOVE GRADE OBSTRUCTIONS INCLUDING POSTS, FENCES, TREES, ETC, PER THE FLORIDA FIRE PREVENTION CODE.
14. SEE GATE VALVE, BOX AND LID STANDARD DETAIL UW-2.
15. SHOULD THE FIRE HYDRANT'S CONCRETE PAD OVERLAP THE SIDEWALK; THE TRACER WIRE TEST STATION BOX SHALL NOT BE LOCATED WITHIN THE SIDEWALK.

MANATEE COUNTY PUBLIC WORKS DEPARTMENT				
REV.BY	DATE		FIRE HYDRANT ASSEMBLY	UW-5
CLB/KE	03/06			
JAA/JB	10/08	MARCH 17, 2009		
JAA/KE	02/09	DATE OF APPROVAL		

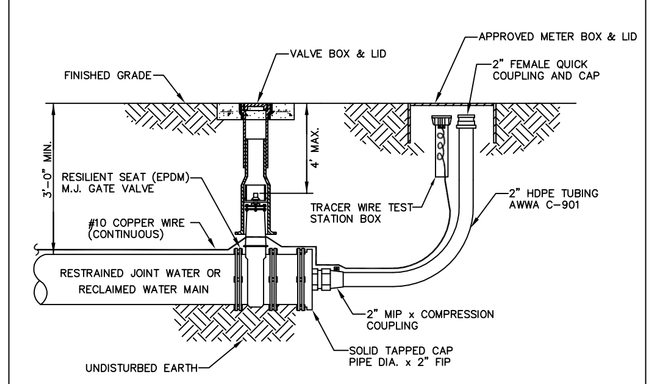


PLAN

NOTE:

1. THIS DETAIL FOR USE ONLY WHEN THE WATER MAIN IS LOCATED TOO CLOSE TO THE RIGHT-OF-WAY LINE TO USE THE FIRE HYDRANT ASSEMBLY DETAIL.
2. SEE GATE VALVE, BOX AND LID STANDARD DETAIL UW-2.

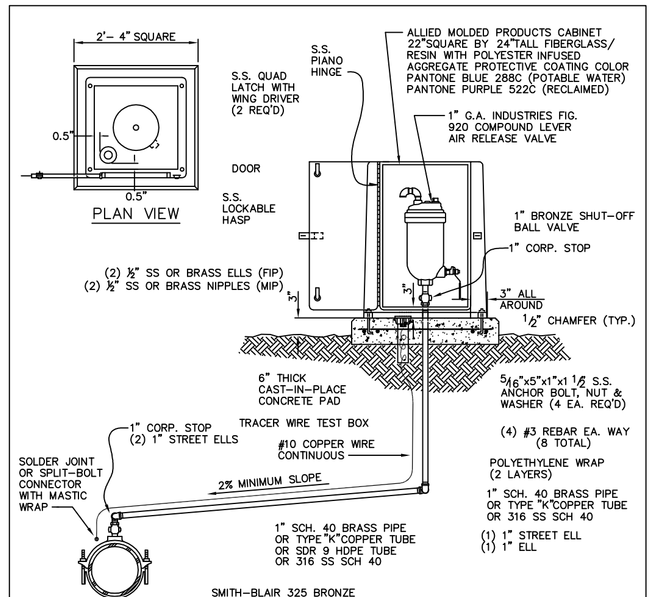
MANATEE COUNTY PUBLIC WORKS DEPARTMENT				
REV.BY	DATE		FIRE HYDRANT WITH LOCKED 90° BEND	UW-6
CLB/KE	6/05			
JAA/JB	10/08	MARCH 17, 2009		
JAA/JB	02/09	DATE OF APPROVAL		



NOTES:

1. SEE GATE VALVE, BOX AND LID STANDARD DETAIL UW-2.
2. SEE MANATEE COUNTY PUBLIC WORKS UTILITY CONSTRUCTION STANDARD SPECIFICATIONS.

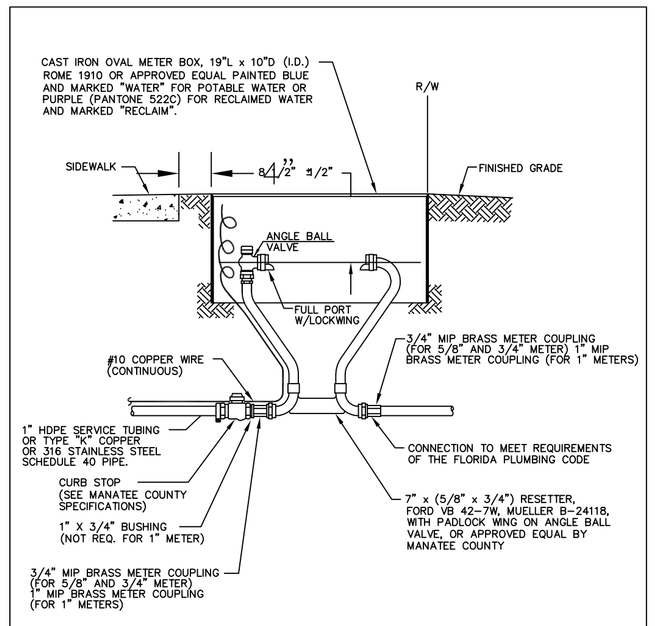
MANATEE COUNTY PUBLIC WORKS DEPARTMENT				
REV.BY	DATE		2" BLOW-OFF ASSEMBLY FOR 10" MAINS AND SMALLER	UW-7
CLB/KE	2/05			
JAA/JB	10/08	MARCH 17, 2009		
JAA/JB	02/09	DATE OF APPROVAL		



NOTES:

1. AIR RELEASE VALVES TO BE INSTALLED AT HIGH POINTS ALONG WATER MAINS WHERE SPECIFICALLY INDICATED ON THE PLAN.
2. ARV VENT ORIFICE TO BE SIZED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATION FOR WATER MAIN SIZE.
3. ALL INCIDENTAL FITTINGS AND HARDWARE TO BE STAINLESS STEEL.
4. ALL PIPE THREADS TO BE SEALED AIR TIGHT.
5. VENT PIPE TO BE LAID ACCURATELY ON SLOPE, WITHOUT HIGH OR LOW POINTS.

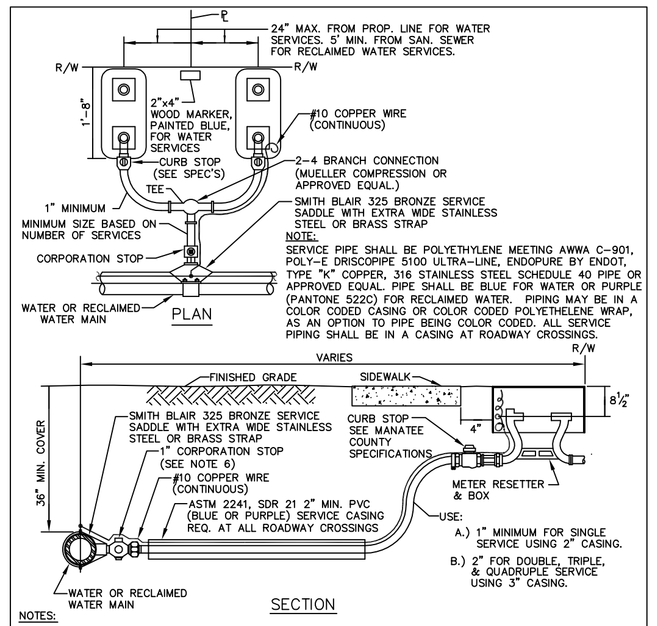
MANATEE COUNTY PUBLIC WORKS DEPARTMENT				
REV.BY	DATE		ABOVE-GROUND AIR RELEASE VALVE ASSY. FOR 12-INCH AND SMALLER WATER MAINS	UW-9
JA/DB/JB	10/08			
JAA/JB	02/09	MARCH 17, 2009		
		DATE OF APPROVAL		



NOTES:

1. FORD 40 SERIES RESETTERS VB43 AND VB44 OR EQUAL FOR 3/4" OR 1" METERS ALSO ALLOWED.
2. METER BOX AND RESETTER ARE TO BE INSTALLED BY THE INFRASTRUCTURE CONTRACTOR AND SHALL NOT BE SET IN DRAINAGE SWALES, SIDEWALKS OR DRIVEWAYS.
3. SEE TYPICAL SERVICE CONNECTION STANDARD DETAIL UW-19.
4. A RESETTER IS NOT REQUIRED ON EXISTING SERVICE LINE REPLACEMENT THAT INITIALLY DID NOT HAVE A RESETTER, UNLESS THE EXISTING SERVICE LINE IS TO BE RELOCATED.
5. WHEN THE DISTANCE BETWEEN THE EDGE OF THE SIDEWALK AND THE R/W IS ONE FOOT (CUL-DE-SAC W/ MEDIAN) A 10 FOOT PUBLIC UTILITY EASEMENT SHALL BE LOCATED IN THE FRONT OF THE LOTS, ADJACENT TO THE R/W.

MANATEE COUNTY PUBLIC WORKS DEPARTMENT				
REV.BY	DATE		METER BOX ASSEMBLY FOR 5/8" x 3/4", 3/4" & 1" METERS	UW-17
MH/KE	3/07			
JAA/JB	10/08	MARCH 17, 2009		
		DATE OF APPROVAL		



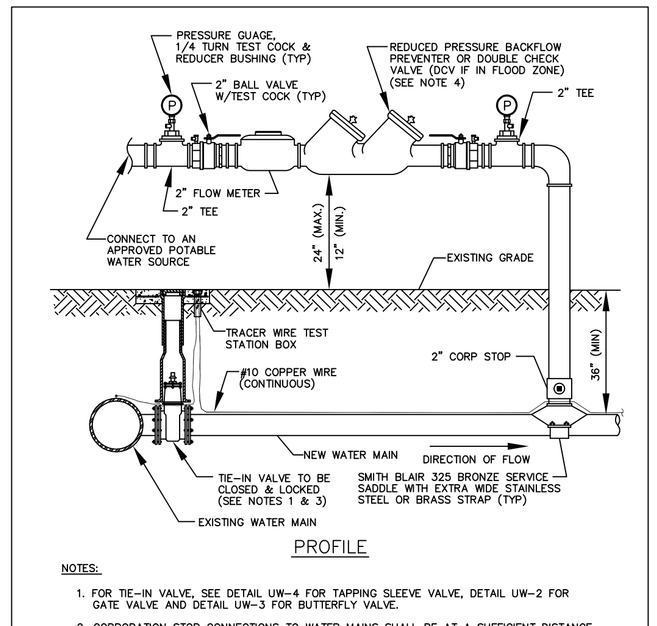
PLAN

SECTION

NOTES:

1. ALL SERVICE TAPS TO BE LOCATED IN THE FIELD. TAPS SHALL BE NO CLOSER THAN 2'-0" STAGGERED INTERVALS OR WITHIN 2'-0" FROM BELL OR SPIGOT ENDS.
2. METER BOXES & RESETTERS ARE TO BE INSTALLED BY THE INFRASTRUCTURE CONTRACTOR AND SHALL NOT BE SET IN DRAINAGE SWALES, SIDEWALKS OR DRIVEWAYS.
3. "WM" OR "RWM" TO BE IMPRESSED INTO THE NEWLY POURED CONCRETE CURB ALONG WITH DISTANCE IN FEET TO THE METER. IF NO CURB, INSTALL A BLUE DISC WITH "WM" OR A PURPLE DISC WITH "RWM" AND A 1/8"x 1" GALVANIZED STEEL SCREW IN THE EDGE OF PAVEMENT WITH THE DISTANCE (IN FEET) FROM THE DISC TO THE METER.
4. #10 COPPER WIRE SHALL BE INSTALLED WITH WATER AND RECLAIMED MAIN AND ALL SERVICES. SERVICE WIRE SHALL BE CONNECTED TO THE TRACER WIRE ALONG THE MAIN.
5. WATER AND RECLAIMED WATER SERVICE LINES TO BE 5' MINIMUM FROM SEWER SERVICE PIPES.
6. FOR 2" SERVICES REPLACE CORPORATION STOP WITH 2" RESILIENT WEDGE GATE VALVE W/BOX, LID & TAG. SEE STANDARD DETAIL UW-2. MJ GATE VALVE IN DETAIL UW-2 SHALL BE SUBSTITUTED WITH THREADED FIP GATE VALVE AND BRASS NIPPLE. CENTERING COLLAR NOT REQUIRED ON 2" GATE VALVES.
7. WHEN THE DISTANCE BETWEEN THE EDGE OF THE SIDEWALK AND THE R/W IS ONE FOOT (CUL-DE-SAC W/ MEDIAN) A 10 FOOT PUBLIC UTILITY EASEMENT SHALL BE LOCATED IN THE FRONT OF THE LOTS, ADJACENT TO THE R/W.

MANATEE COUNTY PUBLIC WORKS DEPARTMENT				
REV.BY	DATE		TYPICAL SERVICE CONNECTION	UW-19
MH/KE	09/06			
JAA/KE	10/08	MARCH 17, 2009		
JAA/KE	02/09	DATE OF APPROVAL		



PROFILE

NOTES:

1. FOR TIE-IN VALVE, SEE DETAIL UW-4 FOR TAPPING SLEEVE VALVE, DETAIL UW-2 FOR GATE VALVE AND DETAIL UW-3 FOR BUTTERFLY VALVE.
2. CORPORATION STOP CONNECTIONS TO WATER MAINS SHALL BE AT A SUFFICIENT DISTANCE FROM NEW TAPPING SLEEVE & VALVE (TIE-IN VALVE), ALL CORPORATION STOP TAPS SHALL BE PLACED NO CLOSER THAN 30" OR A DISTANCE EQUAL TO (1) MAIN PIPE DIAMETER PLUS (2) TAP DIAMETERS (WHICHEVER IS LARGER) FROM THE NEW TIE-IN VALVE (TAPPING VALVE & SLEEVE). A CROSS MAY BE INSTALLED IF THE EXISTING WATER MAIN IS NOT LARGER THAN THE NEW WATER MAIN.
3. IF THE EXISTING WATER MAIN IS LOCATED UNDER PAVEMENT OR CLOSE TO THE ROADWAY, BOTH JUMPER CORPORATION STOPS MAY CONNECT TO THE NEW WATER MAIN LOCATED OUTSIDE OF THE PAVEMENT. AN ADDITIONAL GATE VALVE OR BUTTERFLY VALVE SHALL BE INSTALLED AND THE VALVE MAY BE LOCATED AT THE ROW LINE. PIPING AND APPURTENANCES BETWEEN THE EXISTING MAIN AND ISOLATION VALVE AND JUMPER SHALL BE DISINFECTED BY SPRAYING OR SWABBING.
4. BACKFLOW PREVENTER SHALL BE STRUCTURALLY SUPPORTED.
5. SEE DETAIL UW-22 FOR ADDITIONAL JUMPER CONNECTION NOTES.

MANATEE COUNTY PUBLIC WORKS DEPARTMENT				
REV.BY	DATE		TEMPORARY JUMPER CONNECTION	UW-21
JAA/JEA	02/09			
		MARCH 17, 2009		
		DATE OF APPROVAL		

1. A temporary jumper connection is required at all connections between existing active potable water mains and proposed new water main improvements with the following exceptions:
   A. Projects that include a permanent backflow preventer at the right-of-way which is adjacent to the existing water main;
   B. Projects that include new water mains that are less than or equal to 18 linear feet in length; or
   C. Other proposed cases that are approved by Manatee County and the construction drawings specifically state that a temporary jumper connection is not required.
2. A temporary jumper shall be used and be connected to an approved potable water source (e.g., existing fire hydrant, existing main, existing service tap or tank truck, etc.) as shown in the standard temporary jumper detail UW-21. A temporary jumper shall be used for filling any new water main of any size, for flushing of new mains up to 6 inches in diameter (3.0 fps minimum velocity, preferably 3.5 fps) and for disinfection of any new main of any size. Water mains with a pipe diameter greater than or equal to 6 inches shall be pigged in lieu of preliminary flushing. The jumper connection shall be maintained until after the filling, flushing, testing and disinfection of the new main has been successfully completed and clearance for use from the Florida Department of Environmental Protection (FDEP) or the Florida Department of Health (FDOH) has been obtained.
3. Locations and orientation of jumpers associated with connections to existing water mains that are located under the roadway pavement shall be approved on a case-by-case basis.
4. Pipe and fittings used for connecting the new pipe to the existing pipe shall be disinfected prior to installation in accordance with AWWA C651, latest edition. Unless approved otherwise, the tapping sleeve, and exterior of the existing main to be tapped, piping within the jumper, and new piping shown on standard temporary jumper detail UW-21 shall be disinfected by spraying or swabbing per Section 4.6 of AWWA C651, Unless approved otherwise, the remainder of the new main shall be disinfected in accordance with Section 4.4.3.3 of AWWA C651. The use of tablets is prohibited.
5. A separate and successful hydrostatic test on the new system shall occur between the tie-in valve and the closest downstream gate valve or butterfly valve before performing a hydrostatic test on the remainder of the newly-constructed water main. The tie-in valve and the closest downstream gate valve or butterfly valve shall be closed during the hydrostatic test of the remainder of the newly constructed water main.
6. The jumper shall include a flow meter to ensure that the flow from the supply source is at a constant measured rate while chlorinating the new main. The chlorine concentration shall be measured at regular intervals to ensure that it is fed at a constant rate of not less than 25 milligrams per liter (mg/L) of free chlorine.
7. After preliminary flushing (watermains with diameters less than 6 inches) and pigging (watermains with diameters greater than or equal to 6 inches) of the new water main, a minimum feed concentration of 25 mg/L of free chlorine is required. The chlorinated water shall be retained in the main for at least 24 hours and all portions of the main shall have a residual of not less than 10 mg/L of free chlorine at the end of this 24-hour period. The Contractor shall provide the Inspector documentation that the aforementioned concentrations have been achieved. Final flushing of the mains shall occur prior to performing bacteriological evaluations and the total chlorine residual in the mains shall be no more than 4.0 mg/L in any bacteriological sample. If the chlorine residual exceeds 4.0 mg/L, a sample shall be obtained at the test cock located upstream of the backflow preventer, to ensure that the total chlorine residual of the new main does not exceed the residual of the existing system.
8. The jumper connection shall also be used to maintain a minimum pressure of 20 psi in the new mains continuously after disinfection and until FDEP/FDOH clearance letter is obtained.
9. All temporary backflow devices or "jumpers" utilized during pipeline construction must show certification that they have been tested annually according to the Florida Building Code, Plumbing Section, Chapter 3, Section 312.9.1, 312.9.2, Chapter 6, Section 608, and Resolution R87-125. Annual certification must be valid at time of installation and provided to the Manatee County Inspector upon request.
10. Except as required to flush lines greater than 6 inches in diameter, the lockable tie-in valve shall remain closed and shall be locked in the closed position by Manatee County. The tie-in valve shall remain closed and locked until the new system has been cleared for use by the FDEP/FDOH and all other pertinent agencies.
11. After receipt of clearance for use by FDEP/FDOH, Manatee County, and all other pertinent agencies, the Contractor shall remove the temporary jumper connection. The corporation stops are to be closed and plugged with 2-inch brass or PVC stops.
12. All installation and maintenance of the temporary jumper connection and associated backflow prevention device, flow meter, fittings, valves, etc., shall be the responsibility of the Contractor.
13. If the water main to receive final flushing is greater than 6 inches in diameter or such length that a full pipe flush at the minimum velocity cannot be accomplished, the following procedure shall be utilized:
   A. Check the pressure on the upstream side of the jumper to ensure that there is adequate pressure on the existing system.
   B. Open downstream valves in the new system prior to flush.
   C. Partially open the tie-in valve and maintain a lower pressure on the downstream side of the jumper than the pressure on the upstream side of the jumper while flushing/pigging the new water main.
   D. Manatee County personnel shall operate the tie-in valve to ensure that a pressure differential is maintained.
   E. Close tie-in valve and then close all downstream valves in the new system.
14. The tie-in valve shall remain closed if the potable water source is a tank truck.

MANATEE COUNTY PUBLIC WORKS DEPARTMENT				
REV.BY	DATE		TEMPORARY JUMPER CONNECTION NOTES	UW-22
JAA/JEA	02/09			
		MARCH 17, 2009		
		DATE OF APPROVAL		

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

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

BID DOCUMENTS

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

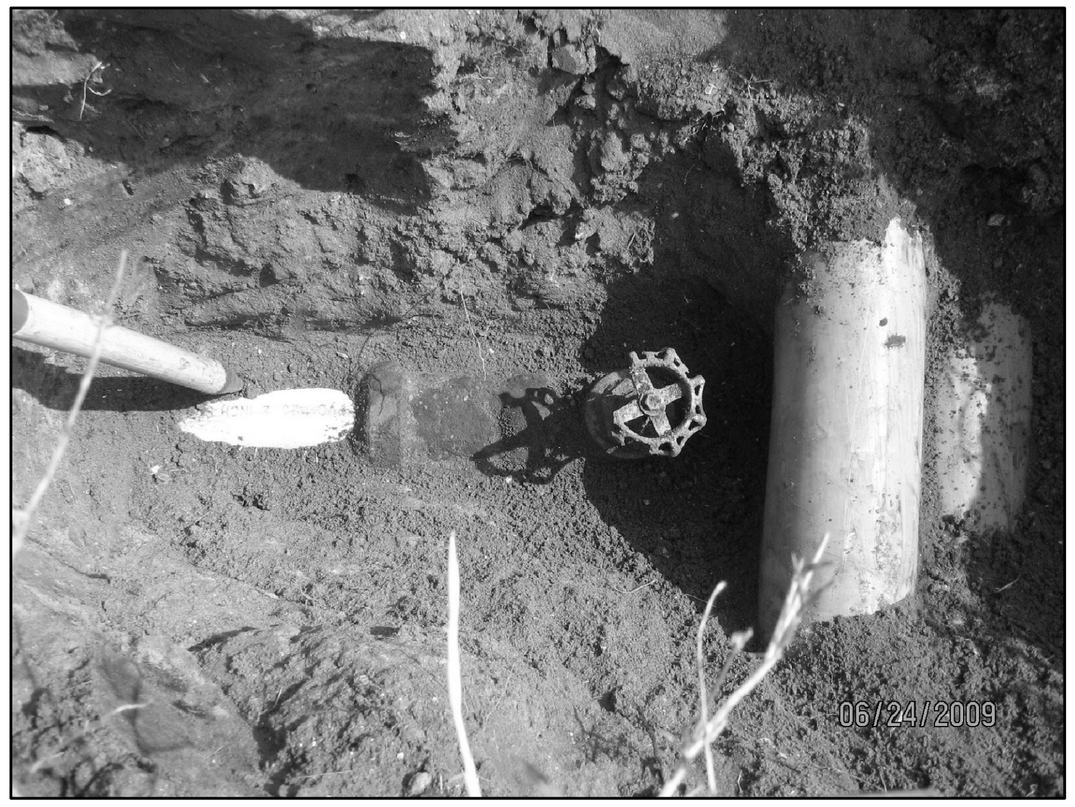
MANATEE COUNTY
SUBURBAN SYSTEM
WATER LINE REPLACEMENT PROJECT
PHASE 1
MANATEE COUNTY, FLORIDA
PROJECT No. 60747.70

DETAILS

SHEET	D3
DWG	D3.DWG
DATE	JULY 2009
PROJ	386879.WM

W:\Manatee County Waterline\Drawings\Tlcover.dwg Plotted: 2/18/2009 0:13 pm By: bklein1 Model: Plot Scale: 1=1.0 Xref Dwgs:

EXCAVATION – NORTH VALVE LOCATION ON 25th ST W
AT SOUTH PROP LINE OF 5518 25TH ST W

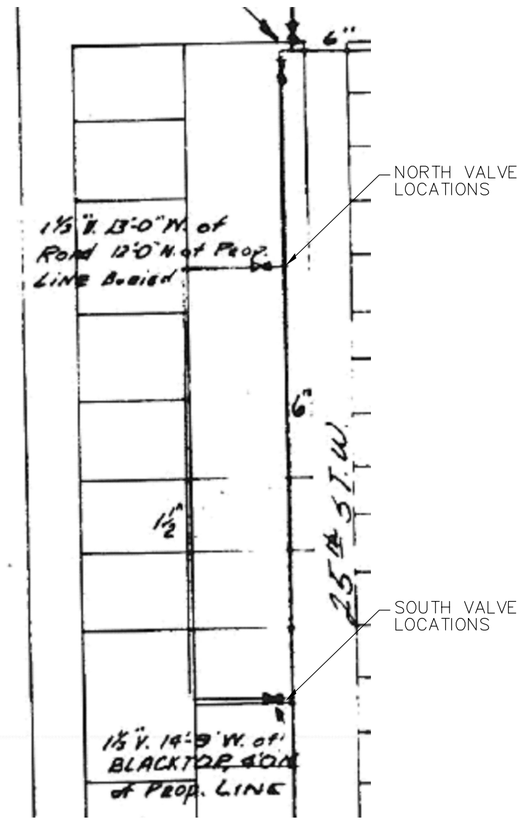


EXCAVATION – NORTH VALVE LOCATION ON 25th ST W
AT SOUTH PROP LINE OF 5518 25TH ST W

EXCAVATION – NORTH VALVE LOCATION ON 25th ST W
AT SOUTH PROP LINE OF 5518 25TH ST W

EXCAVATION AT SOUTH PROP LINE
OF 5612 25th ST W

EXCAVATION AT SOUTH PROP LINE
OF 5612 25th ST W



PARTIAL PLAN – AS–BUILT
DRAWINGS 25th ST W BETWEEN
55th AVE W & 57th AVE W

NOTE. 1: A 1 ½ INCH WATER LINE RUNS ALONG THE BACK PROPERTY LINE FROM APPROXIMATELY THE NORTH PROPERTY LINE OF 5524 25TH ST W TO THE SOUTH PROPERLY LINE OF 5612 25TH ST. W. THIS LINE PROVIDES WATER SERVICE TO CUSTOMERS ON 26TH ST W. DRAWING C–2 AND THE INFORMATION ON THIS DETAIL SHEET PROVIDE AVAILABLE INFORMATION REGARDING THE LOCATION AND CONFIGURATION OF THIS 1 ½ INCH LINE AND IT'S CONNECTION TO EXISTING WATER LINES. THE CONTACTOR SHALL LOCATE THE EXISTING CONNECTION POINTS OF THE 1 ½ INCH LINE AND TRANSFER CONNECTION OF THIS 1 ½ INCH WATER LINE TO THE NEW 6 INCH WATER LINE TO BE CONSTRUCTED ON 25TH ST. W.

NOTE 2: THE CONTRACTOR SHALL PERFORM SUCH EXPLORATORY WORK AS REQUIRED TO CONFIRM THE LOCATION OF THE EXISTING NORTH AND SOUTH CONNECTION POINTS OF THE 1 ½ INCH WATER LINE AND CONFIRM THE REQUIRED CONNECTION POINTS TO THE NEW 6 INCH WATER LINE TO BE CONSTRUCTED ON 25TH ST. W.

NOTE 3: THE SPECIFIC LOCATION AND SIZE OF CONNECTION POINTS AT THE NORTH AND SOUTH VALVE LOCATIONS SHALL BE VERIFIED PRIOR TO COMMENCING CONSTRUCTION TO INSURE THAT SERVICE TIME INTERRUPTION IS MINIMIZED.

ROBERT A. CANNARELLA, P.E.
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CHK	RAC
APVD	RAC

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BID DOCUMENTS

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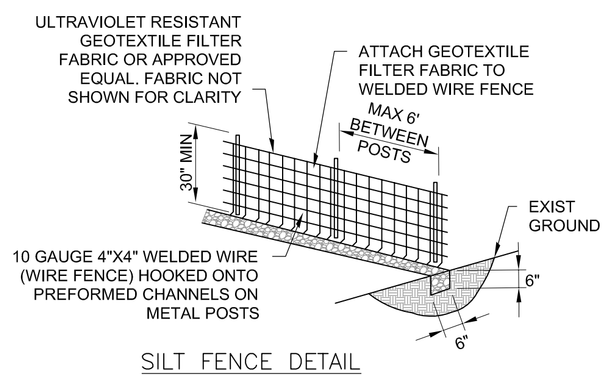
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

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

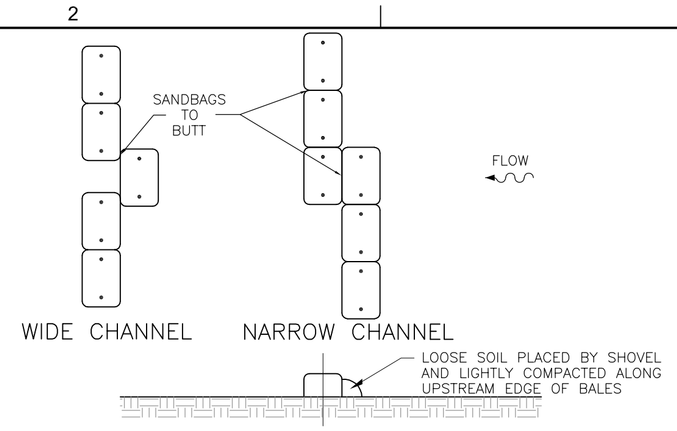
MANATEE COUNTY
SUBURBAN SYSTEM
WATER LINE REPLACEMENT PROJECT
PHASE 1
MANATEE COUNTY, FLORIDA
PROJECT No. 60747.70

25th ST W BACK LOT CONNECTIONS TO
26th ST W SERVICES

SHEET	D4
DWG	D4.DWG
DATE	JULY 2009
PROJ	386879.WM

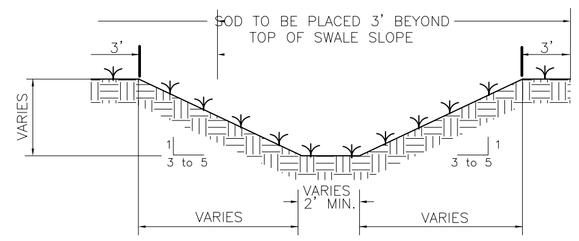


SILT FENCE DETAIL
N.T.S.



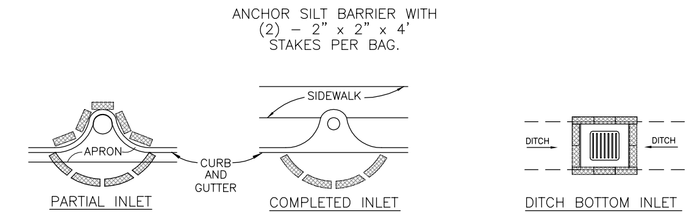
TYPICAL SANDBAG SILT BARRIER
N.T.S.

FIGURE 3



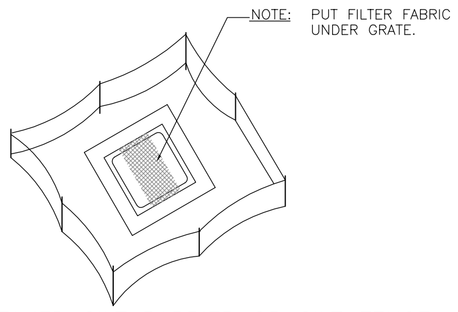
TYPICAL SWALE SECTION
N.T.S.

FIGURE 5



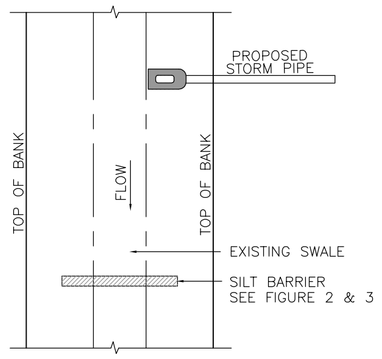
PROTECTION AROUND INLETS OR SIMILAR STRUCTURES
N.T.S.

FIGURE 7



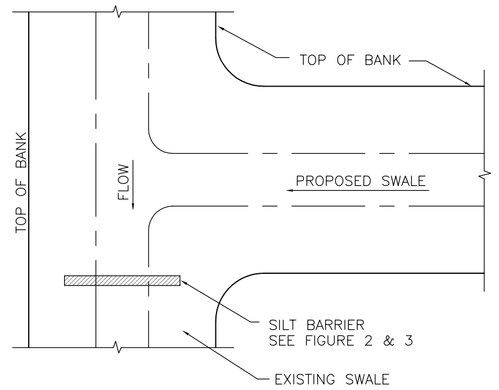
STAKED SILT BARRIER OR SILT FENCE PROTECTION AROUND DITCH BOTTOM INLETS
N.T.S.

FIGURE 8



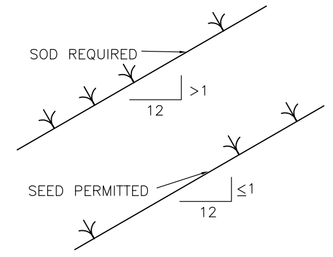
SILT BARRIER AT CONNECTION OF STORM PIPE TO EXISTING SWALE
N.T.S.

FIGURE 10



SILT BARRIER AT CONNECTION OF SWALE TO EXISTING SWALE
N.T.S.

FIGURE 11



GRASS SLOPES
N.T.S.

FIGURE 13

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

ROBERT A. CANNARELLA, P.E.
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MANATEE COUNTY
SUBURBAN SYSTEM
WATER LINE REPLACEMENT PROJECT
PHASE 1
MANATEE COUNTY, FLORIDA
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BEST MANAGEMENT PRACTICES

SHEET	D5
DWG	BMP.DWG
DATE	JULY 2009
PROJ	386879.WM