

CONTRACT PLANS COMPONENTS
DRAINAGE PLANS

INDEX OF DRAINAGE PLANS

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SQ-1 TO SQ-4	SUMMARY OF QUANTITIES

CTL 1 - CTL 5* PROJECT SURVEY

* THESE SHEETS ARE INCLUDED IN THE INDEX OF ROADWAY PLANS ONLY TO SHOW THEY ARE A PART OF THE ROADWAY PLANS. THESE SHEETS ARE CONTAINED IN A SEPARATE SIGNED AND SEALED DOCUMENT.

GOVERNING STANDARD PLANS:

Florida Department of Transportation, FY2019-20 Standard Plans for Road and Bridge Construction and applicable Interim Revisions (IRs).

Standard Plans for Road Construction and associated IRs are available at the following website: <https://www.fdot.gov/design/standardplans>

APPLICABLE IRs IR536-001-01, IR521-001-01

GOVERNING STANDARD SPECIFICATIONS:

Florida Department of Transportation, July 2019 Standard Specifications for Road and Bridge Construction at the following website: <http://www.fdot.gov/programmanagement/Implemented/SpecBooks>

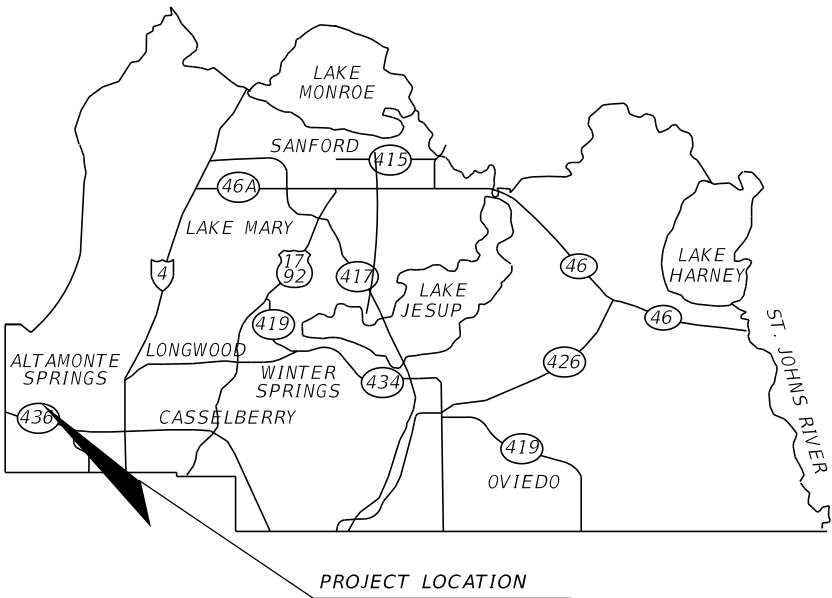
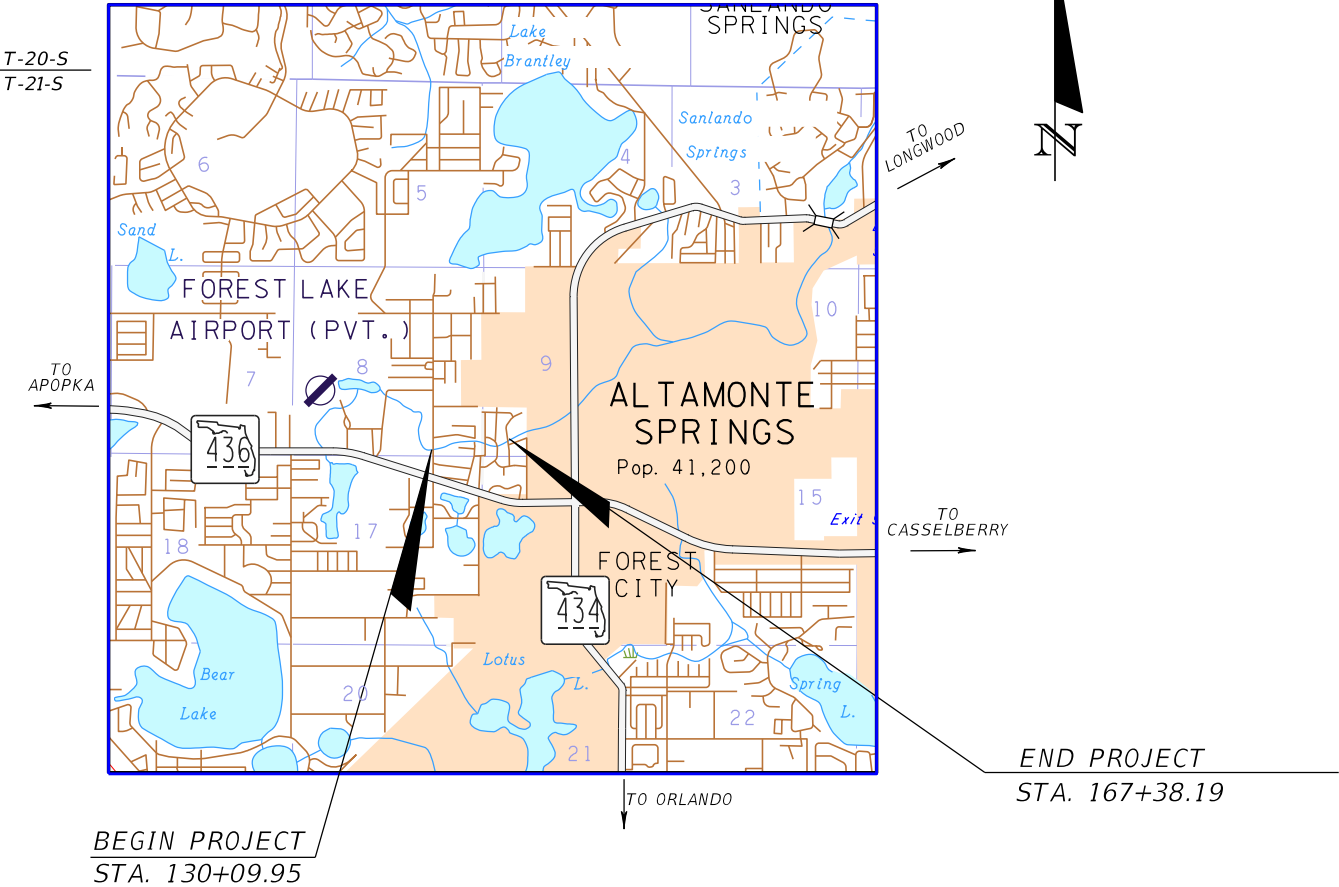
BOARD OF COUNTY COMMISSIONERS

BOB DALLARI	DISTRICT 1
JAY ZEMBOWER	DISTRICT 2
LEE CONSTANTINE	DISTRICT 3
AMY LOCKHART	DISTRICT 4
ANDRIA HERR	DISTRICT 5
NICOLE GUILLET	COUNTY MANAGER

SEMINOLE COUNTY
ENGINEERING DIVISION

CONTRACT PLANS

WILLOW AVE - ALHAMBRA AVE
NORTH OF LAKE HARRIET
DRAINAGE IMPROVEMENTS
SEMINOLE COUNTY CIP No. 02007124



NOTE: THE SCALE OF THESE PLANS MAY HAVE CHANGED DUE TO REPRODUCTION

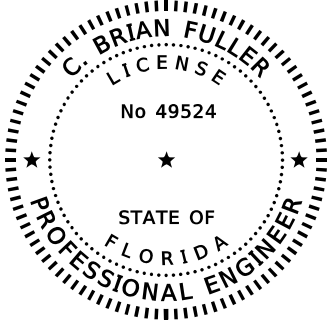
DRAINAGE PLANS
ENGINEER OF RECORD:

MICHAEL A. HOLT, P.E. 76111
METRIC ENGINEERING, INC.
525 TECHNOLOGY PARK, SUITE 153
LAKE MARY, FLORIDA 32746
TEL. (407) 644-1898
FAX. (407) 644-2376
VENDOR NO.: F-59-1685550

SEMINOLE COUNTY
PUBLIC WORKS ENGINEERING
PROJECT MANAGER:
TUAN HUYNH, P.E.

PUBLIC WORKS DIRECTOR: JEAN JREIJ, P.E.

FISCAL YEAR	SHEET NO.
20	1



THIS DOCUMENT HAS BEEN DIGITALLY
SIGNED AND SEALED BY:

Charles B
Fuller

Digitally signed by
Charles B Fuller
Date: 2021.03.26
15:42:45 -04'00'

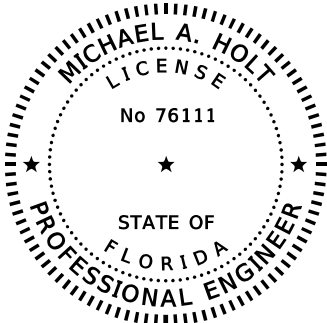
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METRIC ENGINEERING, INC.
525 TECHNOLOGY PARK
SUITE 153
LAKE MARY, FLORIDA 32746
TEL. (407) 644-1898
FAX. (407) 644-2376
CERTIFICATE OF AUTHORIZATION 2294

THE ABOVE NAMED PROFESSIONAL ENGINEER SHALL BE RESPONSIBLE FOR THE
FOLLOWING SHEETS IN ACCORDANCE WITH RULE 61G15-23.004, F.A.C.

ROADWAY PLANS

SHEET NO.	SHEET DESCRIPTION
1	KEY SHEET
2	SIGNATURE SHEET
3	SUMMARY OF PAY ITEMS
4	GENERAL/ TRAFFIC CONTROL NOTES
5-7	TYPICAL SECTION
10	ROADWAY PLAN
23-25	CROSS SECTIONS
SQ1-SQ?	SUMMARY OF QUANTITIES



THIS DOCUMENT HAS BEEN DIGITALLY
SIGNED AND SEALED BY:

Michael A
Holt

Digitally signed by
Michael A Holt
Date: 2021.03.26
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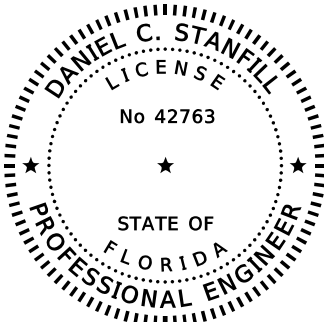
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ROADWAY PLANS

SHEET NO.	SHEET DESCRIPTION
2	SIGNATURE SHEET
8	PROJECT LAYOUT
9	SUMMARY OF DRAINAGE
11-14	DRAINAGE PLANS
15-19	DRAINAGE STRUCTURES
28	UTILITY DETAILS



THIS DOCUMENT HAS BEEN DIGITALLY
SIGNED AND SEALED BY:

Daniel C
Stanfill

Digitally signed by
Daniel C Stanfill
Date: 2021.03.26
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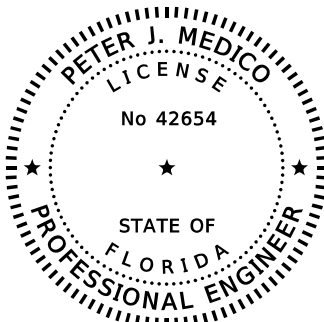
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GEOTHECNICAL AND ENVIRONMENTAL CONSULTANTS INC.
919 LAKE BALDWIN LANE
ORLANDO, FLORIDA 32814
TEL. (407) 898-1818
FAX. (407) 898-1837
CERTIFICATE OF AUTHORIZATION 5882

THE ABOVE NAMED PROFESSIONAL ENGINEER SHALL BE RESPONSIBLE FOR THE
FOLLOWING SHEETS IN ACCORDANCE WITH RULE 61G15-23.004, F.A.C.

ROADWAY PLANS

SHEET NO.	SHEET DESCRIPTION
2	SIGNATURE SHEET
20-22	SOIL BORING RESULTS



THIS DOCUMENT HAS BEEN DIGITALLY
SIGNED AND SEALED BY:

Peter Medico

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Date: 2021.03.26 15:12:56 -04'00'

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METRIC ENGINEERING, INC.
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FOLLOWING SHEETS IN ACCORDANCE WITH RULE 61G15-23.004, F.A.C.

ROADWAY PLANS

SHEET NO.	SHEET DESCRIPTION
2	SIGNATURE SHEET
26-27A	STRUCTURAL DETAILS

REVISIONS				METRIC ENGINEERING, INC. 525 TECHNOLOGY PARK, SUITE 153 LAKE MARY, FLORIDA 32746	SEMINOLE COUNTY ENGINEERING DIVISION	SIGNATURE SHEET		SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION					
								2

PAY ITEM NOTES

- 102-1

ALL ITEMS NECESSARY FOR TRAFFIC CONTROL NOT SPECIFICALLY INCLUDED IN THE SUMMARY OF PAY ITEMS ARE INCIDENTAL TO THE COST OF THIS PAY ITEM, I.E. SIGNS, BARRICADES, FLAGMAN, OFF-DUTY POLICE OFFICER AS NEEDED, ALL NECESSARY DETOUR FACILITIES, FURNISH AND INSTALL ALL TEMPORARY PAVEMENT AND TEMPORARY PAVEMENT MARKINGS, ETC. IN ACCORDANCE WITH FDOT STANDARD SPECIFICATIONS, STANDARD PLANS 102 SERIES & MUTCD LATEST PUBLISHED EDITION. ALSO INCLUDES THE COST OF THE MAINTENANCE OF TRAFFIC PLAN, SIGNED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF FLORIDA. THE CONTRACTOR SHALL MAINTAIN VEHICULAR ACCESS TO RESIDENCES, BUSINESSES AND SCHOOLS AT ALL TIMES. INCLUDES TEMPORARY PAINT PAVEMENT MARKINGS INSTALLATION DURING ASPHALT CURE PERIOD.
- 104-14

INCLUDES THE COST OF ARTIFICAL COVERINGS, SANDBAGGING, TURBIDITY BARRIERS, SILT FENCE AND ANY OTHER ITEMS REQUIRED FOR THE PREVENTATION, CONTROL, AND ABATEMENT OF EROSION AND WATER POLLUTION. ALL WORK SHALL BE INCIDENTAL TO THE ITEM. ALL WORK TO BE IN ACCORDANCE WITH FEDERAL, STATE, AND LOCAL CODE REQUIREMENTS AND PERMITS.
- 110-1-1

THE REMOVAL AND DISPOSAL OF ALL OBSTRUCTIONS, VEGETATION, DEBRIS, FENCES, ASPHALT, TREE RELOCATION, TRIMING OF TREES AND SHRUBS AS NECESSARY AND ALL OTHER ITEMS IN ORDER TO CONSTRUCT THE PROJECT ARE INCIDENTAL TO THE COST OF THIS PAY ITEM. THE ADJUSTMENT OF THE EXISTING VALVE BOXES AND SEWER TOPS NOT SPECIFICALLY INCLUDED IN THE SUMMARY OF PAY ITEMS, RELOCATION OF THE EXISTING IRRIGATION HEADS AND LINES THAT IN CONFLICT WITH THE CONSTRUCTION ARE ALSO INCIDENTAL TO THE COST OF THIS PAY ITEM. CONTRACTOR TO COORDINATE LOCATION OF IRRIGATION SYSTEM WITH THE PROPERTY OWNER AND THE COUNTY. MAILBOX RELOCATION IS ALSO INCIDENTAL TO THE COST OF THIS PAY ITEM. NO TREES ARE TO BE REMOVED WITHOUT APPROVAL FROM THE COUNTY.

SUMMARY OF ROADWAY			
ITEM NUMBER	ITEM DESCRIPTION	UNIT	QUANTITY TOTAL
101 1	MOBILIZATION	LS	1.0
102 1	MAINTENANCE OF TRAFFIC	LS	1.0
104 14	EROSION CONTROL	LS	1.0
110 1 1	CLEARING AND GRUBBING	LS	1.0
120 1	REGULAR EXCAVATION	CY	376.0
120 6	EMBANKMENT	CY	16.0
160 4	TYPE B STABILIZATION	SY	1,735.0
173 77 1	SUBSURFACE PRESSURE GROUTING	CY	107.0
285 709	OPTIONAL BASE GROUP 9	SY	1,444.0
334 1 12	TYPE SP STRUCTURAL COURSE, (TRAFFIC B)	TN	177.6
337 7 80	FRICTION COURSE, FC - 9.5 (TRAFFIC C) (PG 76-22) (1")	TN	16.2
400 0 11	CONCRETE CLASS NS, GRAVITY WALL	CY	11.2
400 3 1	CONCRETE CLASS III, CULVERTS	CY	945.8
415 1 6	REINFORCING STEEL	LB	189,160.0
425 1 341	INLETS, CURB, TYPE P-4, <10'	EA	2.0
425 1 345	INLETS, CURB, TYPE P-4, PARTIAL	EA	4.0
425 1 541	INLETS, DT BOT, TYPE D, <10'	EA	1.0
425 1 910	INLETS, CLOSED FLUME	EA	1.0
425 2 63	MANHOLES, P-8, PARTIAL	EA	4.0
430 174 115	PIPE CULVERT, OPT. MATERIAL, ROUND, 15" STORM	LF	11.0
430 174 118	PIPE CULVERT, OPT. MATERIAL, ROUND, 18" STORM	LF	77.0
515 1 2	PIPE HANDRAIL - GUIDERAIL, ALUMINUM	LF	166.0
520 1 10	CONCRETE CURB AND GUTTER, TYPE F	LF	368.0
522 1	SIDEWALK CONCRETE, 4" THICK	SY	211.0
522 2	SIDEWALK CONCRETE, 6" THICK	SY	409.0
524 1 22	CONCRETE DITCH PAVEMENT, NON REINFORCED, 4"	SY	1,367.5
550 1 22	FENCING, TYPE B	LF	105.0
570 1 2	PERFORMANCE TURF, SOD	SY	857.0
1050-16-002	UTILITY PIPE,REMOVE & DISPOSE, 2-4.9"	LF	105.0
1050-16-003	UTILITY PIPE, REMOVE & DISPOSE, 5.0 - 7.9"	LF	35.0
1050-11-422	UTILITY PIPE, F&I, DI/CI, WATER / SEWER, 2 - 4.9"	LF	105.0
1050-11-423	UTILITY PIPE, F&I, DI/CI, WATER / SEWER, 5 - 7.9"	LF	35.0
1080-27-110	UTILITY FIXTURE, F&I, LINE STOP ASSEMBLY, 8"	EA	1.0

REVISIONS				C. BRIAN FULLER, P.E. P.E. LICENSE NUMBER 49524 METRIC ENGINEERING, INC. 525 TECHNOLOGY PARK, SUITE 153 LAKE MARY, FLORIDA 32746	SEMINOLE COUNTY ENGINEERING DIVISION		SUMMARY OF PAY ITEMS	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		PROJECT NAME	PROJECT ID		
					WILLOW AVENUE-ALHAMBRA AVENUE	CIP 02007124		3

GENERAL NOTES:

1. EXISTING DRAINAGE STRUCTURES AND FACILITIES SHALL BE MAINTAINED AND FULLY FUNCTIONAL DURING THE CONSTRUCTION.
2. EXISTING DRAINAGE STRUCTURES AND PIPE WITHIN CONSTRUCTION LIMITS SHALL BE REMOVED UNLESS OTHERWISE NOTED.
3. ANY PUBLIC LAND CORNER OR COUNTY MONUMENT WITHIN THE LIMITS OF CONSTRUCTION IS TO BE PROTECTED. IF A CORNER MONUMENT IS IN DANGER OF BEING DESTROYED AND HAS NOT BEEN PROPERLY REFERENCED, THE CONTRACTOR SHOULD NOTIFY THE SEMINOLE COUNTY SURVEYOR IMMEDIATELY BY TELEPHONE.

UTILITY NOTES:

1. THE LOCATION(S) OF THE UTILITIES SHOWN IN THE PLANS (INCLUDING THOSE DESIGNATED Vv, Vh, AND Vvh.) ARE BASED ON LIMITED INVESTIGATION TECHNIQUES AND SHOULD BE CONSIDERED APPROXIMATE ONLY. THE VERIFIED LOCATIONS/ELEVATIONS APPLY ONLY AT THE POINTS SHOWN. INTERPOLATIONS BETWEEN THESE POINTS HAVE NOT BEEN VERIFIED.

2. UTILITY/AGENCY OWNERS:	COMPANY	CONTACT	TELEPHONE NUMBERS
	BLACK & VEATCH ORLANDO	JOHN WALKER	913-458-2516
	CENTURY LINK FKA SPRINT FLORIDA	MARLON BROWN	407-830-3359
	DUKE ENERGY DISTRIBUTION	ROBB BROWN	352-459-4671
	CHARTER/SPECTRUM	LAZLO WAGNER	407-215-5716;
			407-467-6187
	CITY OF ALTAMONTE SPRINGS	FRANKLIN CABRERA	407-571-8342
	VERIZON BUSINESS/MCI	TIM COLE	407-506-8635
	TECO PEOPLES GAS ORLANDO	SHAWN WINSOR	407-420-6663
	SEMINOLE COUNTY UTILITIES	PAUL ZIMMERMAN	407-497-3179
	SEMINOLE COUNTY WATER	DAVID MCBROOM	407-416-1575

3. *UNLESS SPECIFIED IN THESE PLANS, UTILITIES ARE TO BE ADJUSTED BY OTHERS AND COORDINATED BY THE CONTRACTOR.*
4. *UTILITIES SHALL REMAIN UNLESS OTHERWISE NOTED.*
5. *ALL STAKING OF PROPOSED CONSTRUCTION TO ALLOW FOR PROPER INSTALLATION/RELOCATION OF UTILITY FACILITIES, AS INDICATED ON THE UTILITY WORK SCHEDULE, SHALL BE PERFORMED BY THE CONTRACTOR. THE CONTRACTOR SHALL COORDINATE WITH THE IMPACTED UTILITIES AND STAKE THE ITEMS REQUESTED. THIS STAKING SHALL BE SEPARATE AND IN ADDITION TO THE NORMAL STAKING FOR THE PROJECT.*
6. *THE SEMINOLE COUNTY ENVIRONMENTAL SERVICES DEPARTMENT (SCESD) SHALL BE NOTIFIED 72 HOURS IN ADVANCE OF WORK ADJACENT TO COUNTY FACILITIES. CONTACT CONSTRUCTION MANAGER DAVID MACBROOM (407-416-1575) FOR COORDINATION OF ONSITE MONITORING PERSONNEL.*
7. *THE FIRE DEPARTMENT MUST BE NOTIFIED 48 HOURS IN ADVANCE OF ANY WORK AFFECTING OR POTENTIALLY AFFECTING WATER MAINS AND/OR FIRE SERVICE IN THE PROJECT AREA.*
8. *THE 6" WATER MAIN ALONG ALHAMBRA AVENUE IS VITAL FOR FIRE SERVICE IN THE AREA. SERVICE SHALL BE MAINTAINED AT ALL TIMES DURING THE INSTALLATION/ACTIVATION OF THE PROPOSED LINESSTOP. LINE PRESSURE SHALL BE MONITORED, AND IF PRESSURE FALLS BELOW 20 PSI AT ANY TIME, CONTRACTOR SHALL COORDINATE WITH SCESD TO ISSUE A "BOIL WATER NOTICE" TO AFFECTED RESIDENTS.*
9. *EXISTING WATER MAINS WITHIN THE WORK AREA ARE EXPECTED TO INCLUDE ASBESTOS CONCRETE WATER MAINS. CARE SHALL BE TAKEN TO FOLLOW ALL APPLICABLE ENVIRONMENTAL STANDARDS FOR AVOIDANCE/MINIMIZATION OF EXPOSURE AND/OR CONTAMINATION DURING REMOVAL OPERATIONS.*

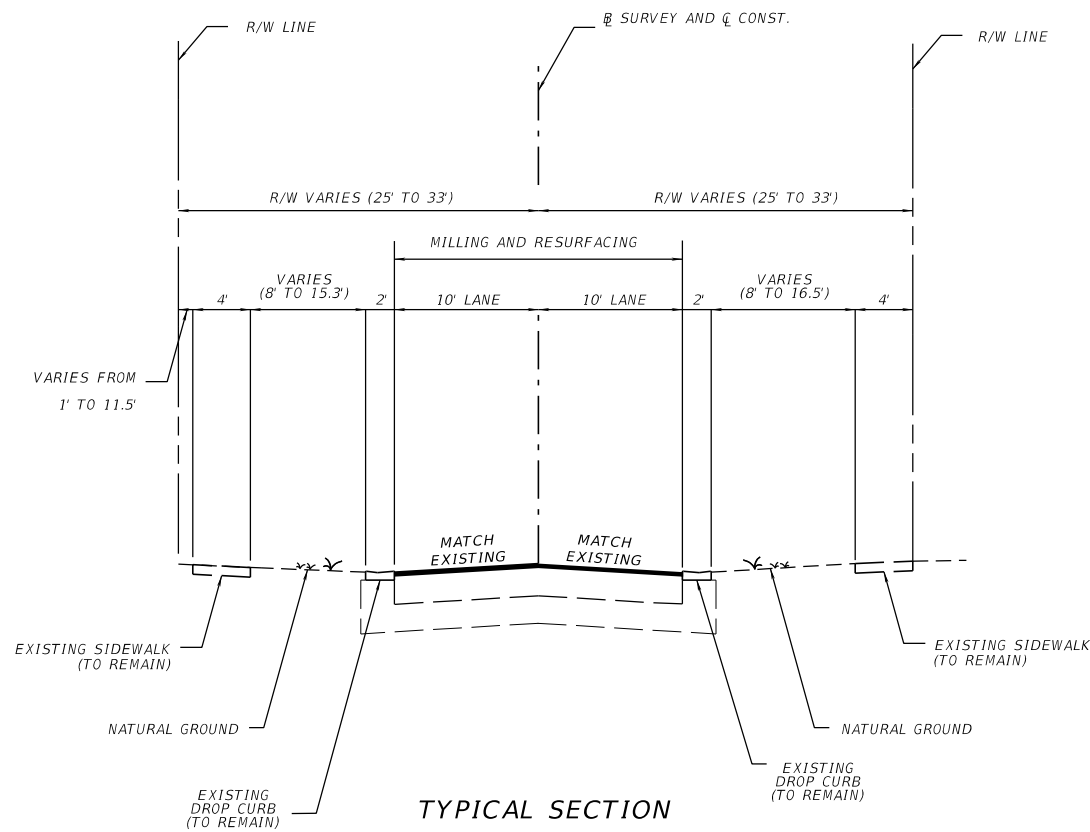
TEMPORARY TRAFFIC CONTROL NOTES

1. THE CONTRACTOR SHALL ADHERE TO THE REQUIREMENTS SET FORTH IN THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD), FDOT STANDARD PLANS FOR ROAD CONSTRUCTION AND FLORIDA DESIGN MANUAL (LATEST PUBLISHED EDITIONS) AT ALL TIMES.
2. ALL TRAFFIC CONTROL DEVICES (TEMPORARY SIGNS, PAVEMENT MARKINGS, BARRIER WALL, ETC.) REQUIRED DURING A CONSTRUCTION PHASE SHALL BE APPROVED BY THE COUNTY ENGINEERING INSPECTOR PRIOR TO COMMENCEMENT OF CONSTRUCTION AND WILL BE MAINTAINED IN ACCORDANCE WITH THE MUTCD (DEFER TO FDOT STANDARD PLANS FOR ROAD CONSTRUCTION, GENERAL CONSTRUCTION OPERATIONS - MAINTENANCE OF TRAFFIC, IF TRAFFIC CONTROL CASE IS NOT COVERED IN MUTCD). FDOT STANDARD PLANS FOR ROAD CONSTRUCTION GENERAL CONSTRUCTION OPERATIONS - MAINTENANCE OF TRAFFIC SHALL BE USED IN CONJUNCTION WITH ALL OTHER STANDARD PLAN INDICES SPECIFICALLY MENTIONED.
3. ALL EXISTING SIGNS WHICH CONFLICT WITH THE TRAFFIC CONTROL PLAN SHALL BE REMOVED OR TEMPORARILY RELOCATED AS NECESSARY.
4. ALL SIGNS 48" X 48" OR LARGER SHALL BE MAINTAINED ON TWO (2) BREAKAWAY SUPPORTS OR YIELDING POSTS AS SHOWN IN FIGURE 6F-1 OF THE MUTCD. THE CONTRACTOR SHALL USE THE MUTCD TO DETERMINE THE APPROPRIATE PLACEMENT AND ELEVATION OF CONSTRUCTION SIGNS. REFLECTIVITY SHALL ADHERE TO THE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION.
5. VEHICULAR ACCESS TO RESIDENCES WILL BE MAINTAINED AT ALL TIMES.
6. MINIMUM LANE WIDTHS WILL BE TEN (10) FEET.
7. A MINIMUM OF 1' SHY DISTANCE SHALL BE MAINTAINED BETWEEN THE TRAVEL LANES AND BARRICADES.
8. TRAFFIC CONDITIONS, ACCIDENTS, AND OTHER UNFORESEEN EMERGENCY CONDITIONS SHALL BE BROUGHT TO THE ATTENTION OF THE COUNTY ENGINEERING INSPECTOR.
9. THE EXISTING POSTED SPEED WILL BE MAINTAINED DURING CONSTRUCTION. W LAKE BRANTLEY RD IS POSTED AT 35 MPH, WILLOW AVENUE, ALHAMBRA AVENUE, ALDER AVENUE AND VIRGINIA DRIVE AT 25MPH.
10. IT IS THE COUNTY'S POLICY TO PLACE THE RESPONSIBILITY FOR MAINTENANCE OF TRAFFIC DURING CONSTRUCTION ON THE CONTRACTOR. THE CONTRACTOR IS REQUIRED TO SUBMIT A TRAFFIC CONTROL PLAN, SIGNED AND SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF FLORIDA, TO THE COUNTY PRIOR TO BEGINNING THE PROJECT. THIS TRAFFIC CONTROL DATA SHEET IS INTENDED TO DEMONSTRATE THAT THE PROJECT IS CONSTRUCTIBLE AS DESIGNED.
11. ALL ACTIVITIES REQUIRING LANE CLOSURES SHALL BE BROUGHT TO THE ATTENTION OF THE COUNTY CONSTRUCTION REPRESENTATIVE FOR APPROVAL. LANES SHALL ONLY BE CLOSED DURING ACTIVE WORK PERIODS.
12. CONSTRUCTION PHASING SHALL BE ESTABLISHED TO MAINTAIN ONE LANE OPEN AT ALL TIMES ON WEST LAKE BRANTLEY DRIVE.

SPECIAL DETOUR NOTES

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING PROPOSED DETOUR ROUTES AS REQUIRED FOR CONSTRUCTION ACTIVITIES AND IS REQUIRED TO SUBMIT A DETOUR PLAN TO THE COUNTY FOR APPROVAL BEFORE IMPLEMENTATION.

REVISIONS				C. BRIAN FULLER, P.E. P.E. LICENSE NUMBER 49524 METRIC ENGINEERING, INC. 525 TECHNOLOGY PARK, SUITE 153 LAKE MARY, FLORIDA 32746	SEMINOLE COUNTY ENGINEERING DIVISION		GENERAL / TEMP TRAFFIC CONTROL NOTES	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		PROJECT NAME	PROJECT ID		4
					WILLOW AVENUE- ALHAMBRA AVENUE	CIP 02007124		



WILLOW AVE.
STA. 30+37.38 TO STA. 30+57.58
STA. 31+17.18 TO STA. 31+37.38

ALHAMBRA AVE.
STA. 40+41.11 TO STA. 40+61.11
STA. 41+22.11 TO STA. 41+41.11

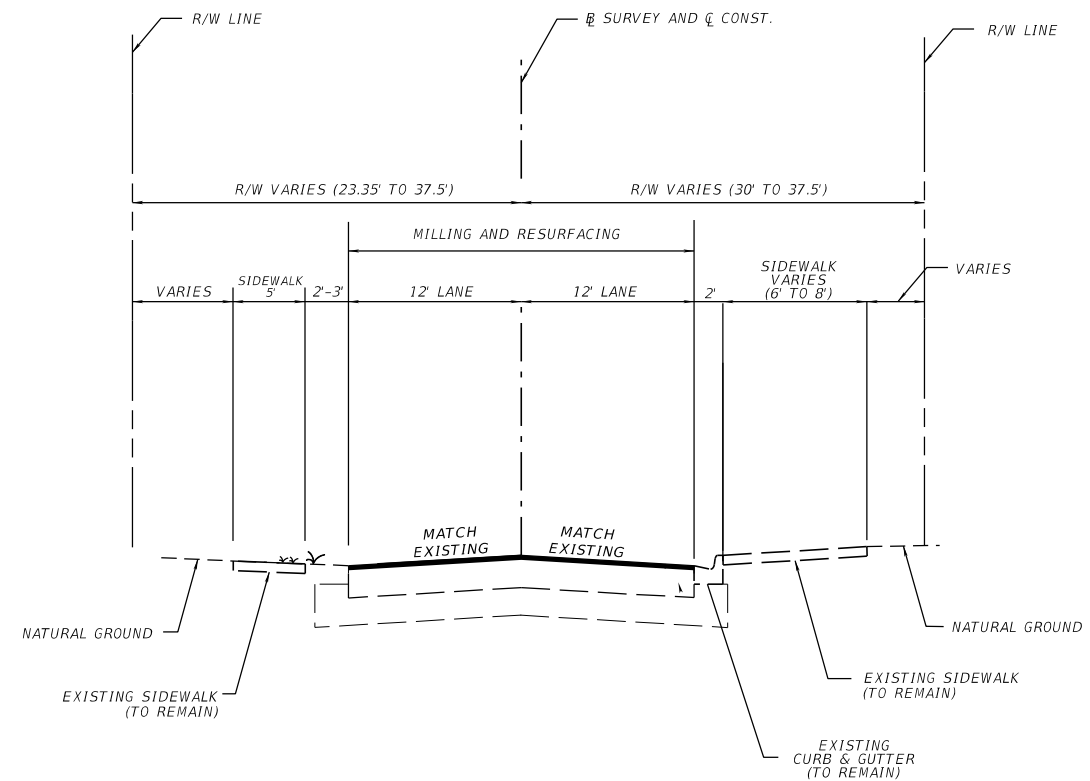
ALDER AVE.
STA. 50+59.62 TO STA. 50+97.87
STA. 51+21.37 TO STA. 51+59.62

MILLING
MILL EXISTING ASPHALT PAVEMENT (1" AVG. DEPTH)

RESURFACING
TYPE SP STRUCTURAL COURSE (TRAFFIC B) (1")

W LAKE BRANTLEY RD
DESIGN SPEED = 35 MPH

WILLOW AVE. , ALHAMBRA AVE. , OLIVER AVE.
DESIGN SPEED = 25 MPH



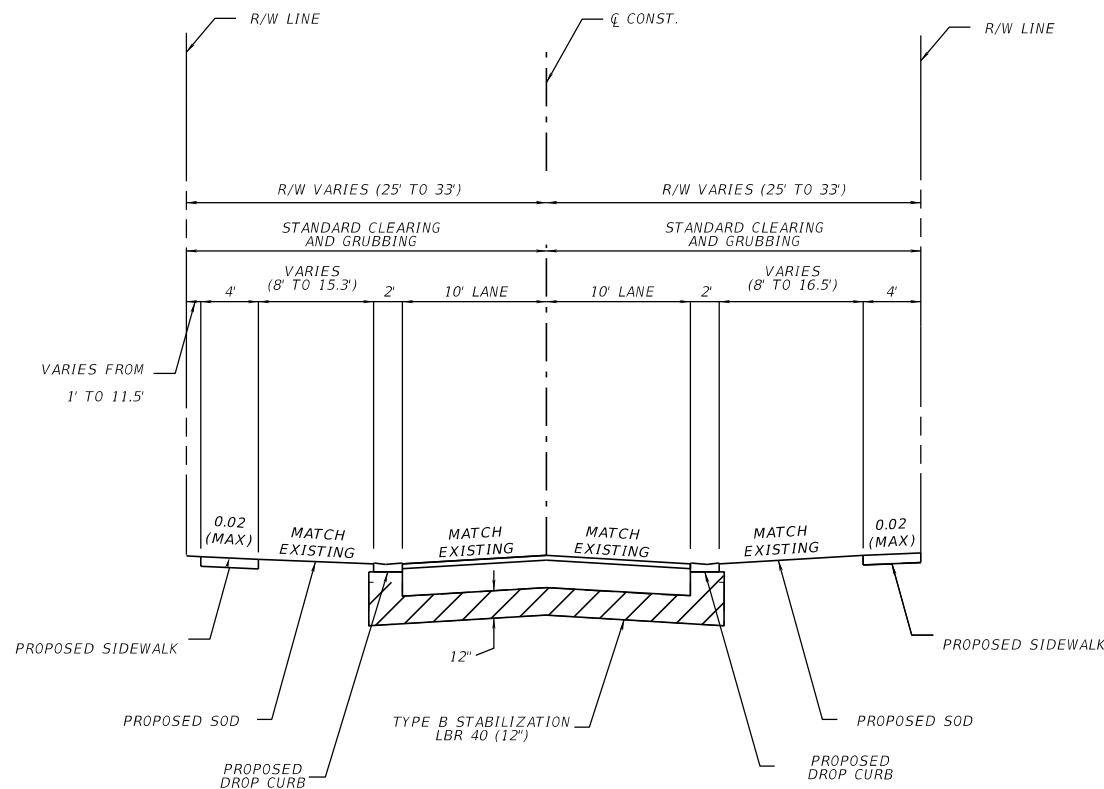
TYPICAL SECTION
WEST LAKE BRANTLEY RD

STA. 12+12.23 TO STA. 12+38.43
STA. 12+86.03 TO STA. 13+12.23

MILLING
MILL EXISTING ASPHALT PAVEMENT (1" AVG. DEPTH)

RESURFACING
FRICTION COURSE FC-9.5 (TRAFFIC B) (1") (PG 76-22)

REVISIONS				C. BRIAN FULLER, P.E. P.E. LICENSE NUMBER 49524 METRIC ENGINEERING, INC. 525 TECHNOLOGY PARK, SUITE 153 LAKE MARY, FLORIDA 32746	SEMINOLE COUNTY ENGINEERING DIVISION		TYPICAL SECTION	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		PROJECT NAME	PROJECT ID		
					WILLOW AVENUE- ALHAMBRA AVENUE	CIP 02007124		5



TYPICAL SECTION
WILLOW AVE.
STA. 30+57.58 TO STA. 31+17.18

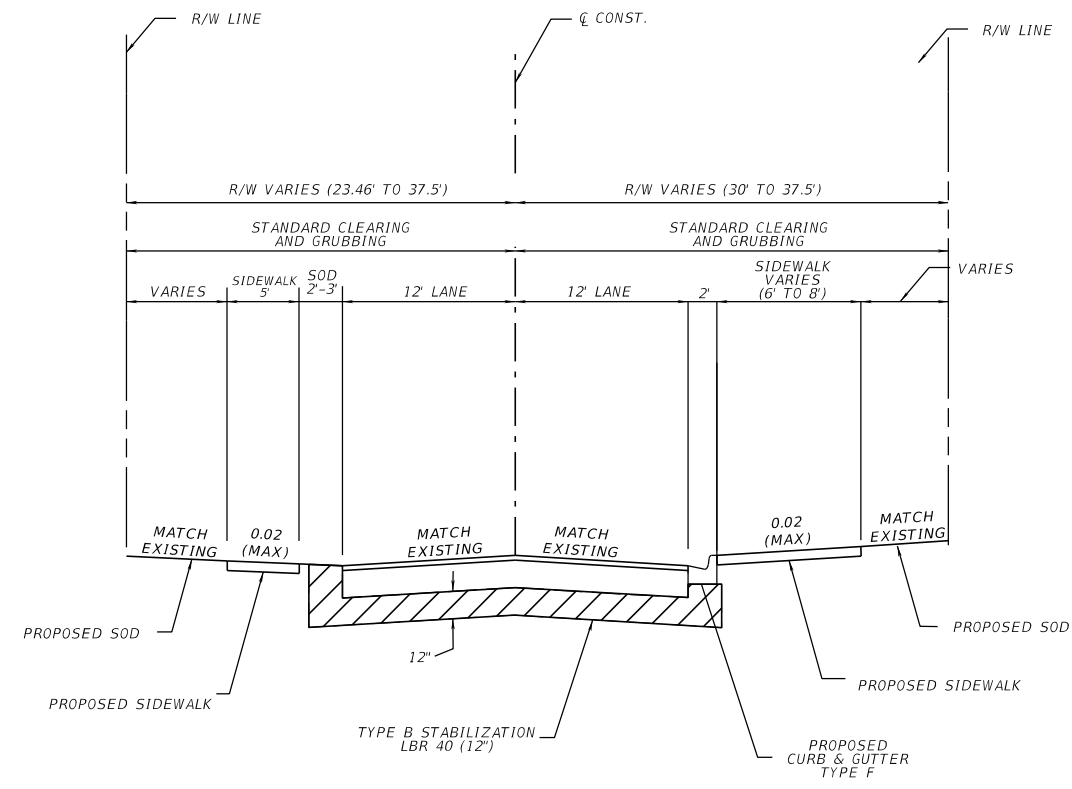
ALHAMBRA AVE.
STA. 40+61.11 TO STA. 41+22.11

ALDER AVE.
STA. 50+85.37 TO STA. 51+33.87

RECONSTRUCTION
TYPE B STABILIZATION (12") LBR 40
OPTIONAL BASE GROUP 9 WITH
TYPE SP STRUCTURAL COURSE (TRAFFIC B) (2")

W LAKE BRANTLEY RD
DESIGN SPEED = 35 MPH

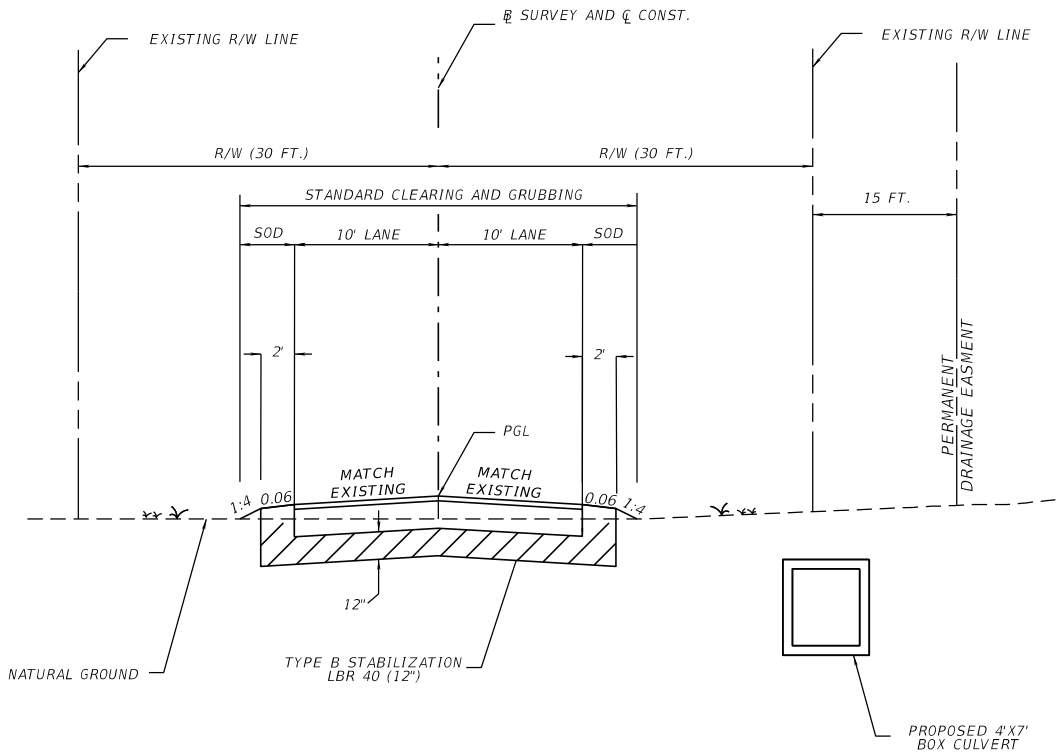
WILLOW AVE. , ALHAMBRA AVE., ALDER AVE.,
DESIGN SPEED = 25 MPH



TYPICAL SECTION
WEST LAKE BRANTLEY RD
STA. 130+17.67 TO STA. 130+65.27

RECONSTRUCTION
TYPE B STABILIZATION (12") LBR 40
OPTIONAL BASE GROUP 9 WITH
TYPE SP STRUCTURAL COURSE (TRAFFIC B) (2")
FRICTION COURSE FC-9.5 (TRAFFIC B) (1") (Pg 76-22)

REVISIONS				C. BRIAN FULLER, P.E. P.E. LICENSE NUMBER 49524 METRIC ENGINEERING, INC. 525 TECHNOLOGY PARK, SUITE 153 LAKE MARY, FLORIDA 32746	SEMINOLE COUNTY ENGINEERING DIVISION		TYPICAL SECTION		SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION						
									6



TYPICAL SECTION

VIRGINIA AVE.
STA. 22+30.00 TO STA. 26+40.00

RECONSTRUCTION
TYPE B STABILIZATION (12") LBR 40
OPTIONAL BASE GROUP 9 WITH
TYPE SP STRUCTURAL COURSE (TRAFFIC B) (2")

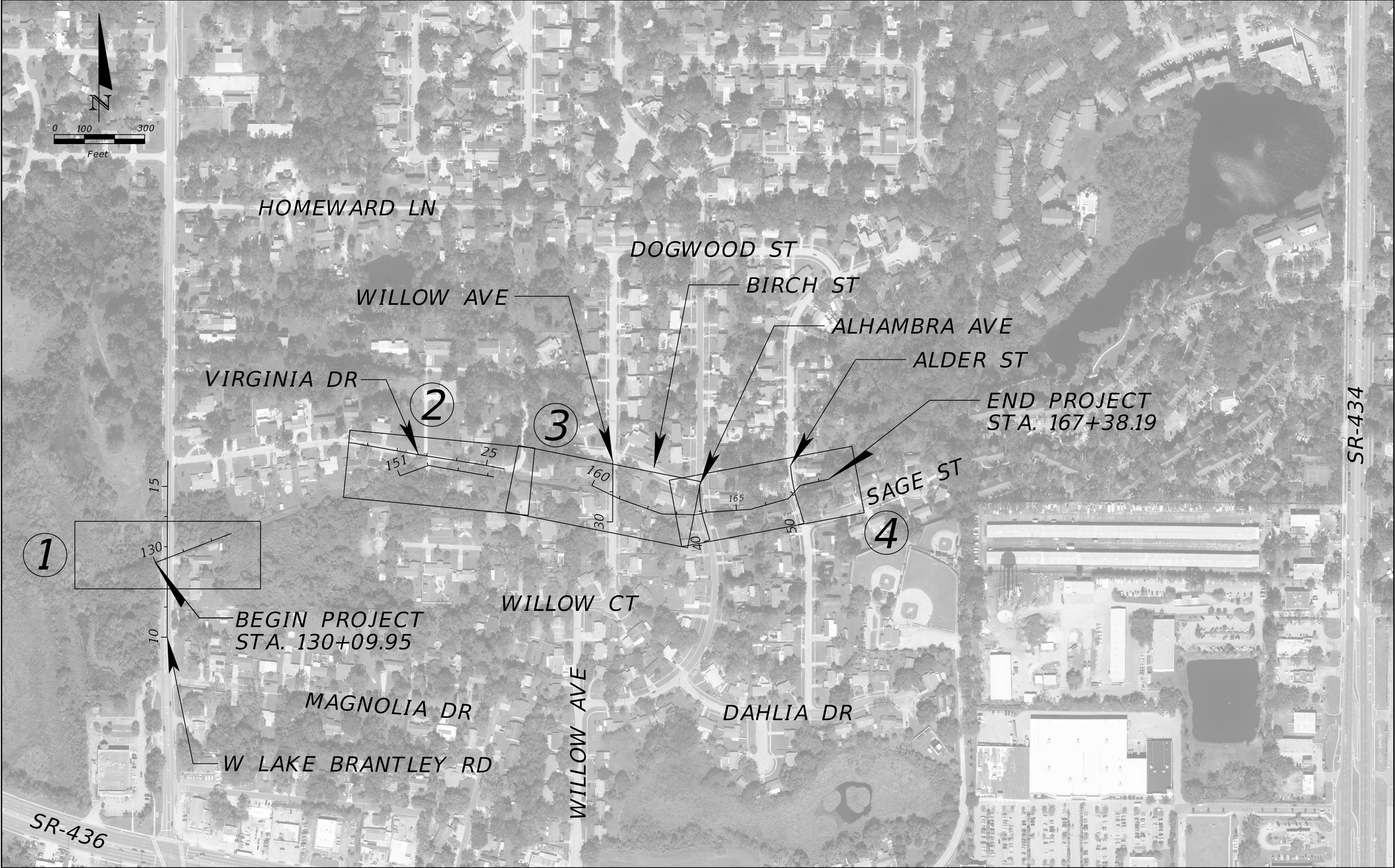
VIRGINIA AVE.
DESIGN SPEED = 25 MPH

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DATE	DESCRIPTION	DATE	DESCRIPTION		PROJECT NAME	PROJECT ID		
					WILLOW AVENUE- ALHAMBRA AVENUE	CIP 02007124		7

QUANTITY	STR. NO.	STATION	SIDE	DESCRIPTION	BARRELS	STORM DRAIN OPTIONAL MATERIAL		CURB INLETS		DITCH BOTTOM INLETS	MANHOLES	CLOSED FLUME	CONCRETE ENDWALL	4" NR DT. PAVT.	STRUCTURES		REMARKS
						ROUND		P-4	P-4						D	P-8	
						15"	18"	PARTIAL	<10'	<10'	PARTIAL						
P F	S-1	12+51.20 CL W LAKE BRANTLEY RD.	LT	ENDWALL, BOX											112.6	22,520	
P F	S-1A	12+18.00 CL W LAKE BRANTLEY RD.	RT	INLET							1		8.0				D = 8.4'
P F	S-1B	12+18.00 CL W LAKE BRANTLEY RD.	RT	INLET, PIPE			48		1								
P F	S-2	12+74.44 CL W LAKE BRANTLEY RD.	RT	ENDWALL													
P F	S-3	22+79.69 CL VIRGINIA AVE.	RT	ENDWALL, BOX									413.8	233.6	46,720		
P F	S-4	23+10.30 CL VIRGINIA AVE.	RT	MH TOP							1						ALT B RISER
P F	S-5	24+95.79 CL VIRGINIA AVE.	RT	ENDWALL									360.4				
P F	S-6	30+98.29 CL WILLOW AVE.	LT	ENDWALL, BOX											599.6	119,920	
P F	S-7	30+94.88 CL WILLOW AVE.	LT	CURB INLET TOP				1									ALT B RISER
P F	S-8	30+79.85 CL WILLOW AVE.	RT	CURB INLET TOP				1									ALT B RISER - GROUT AND ABANDON 230 LF OF EXISTING 48" PIPE (107 CY)
P F	S-9	162+52.43 CL BOX CULVERT	LT	MH TOP							1						ALT B RISER
P F	S-10	40+91.55 CL ALHAMBRA AVE.	LT	CURB INLET TOP				1									ALT B RISER
P F	S-11	40+91.67 CL ALHAMBRA AVE.	RT	CURB INLET TOP				1									ALT B RISER
P F	S-12	165+45.07 CL BOX CULVERT	LT	MH TOP							1						ALT B RISER
P F	S-13	165+47.78 CL BOX CULVERT	LT	ENDWALL, PIPE	1	11							0.59				15" U-TYPE WING ENDWALL
P F	S-14	50+94.15 CL ALDER AVE.	LT	MH TOP							1						ALT B RISER
P F	S-15	50+88.78 CL ALDER AVE.	LT	CURB INLET, PIPE	1		4		1								
P F	S-16	50+88.78 CL ALDER AVE.	RT	CURB INLET, PIPE	1		25		1								
P F	S-17	51+26.38 CL ALDER AVE.	RT	ENDWALL									585.3				
Total:						11	77	4	2	1	4	1	0.59	1367.5	945.8	189,160	

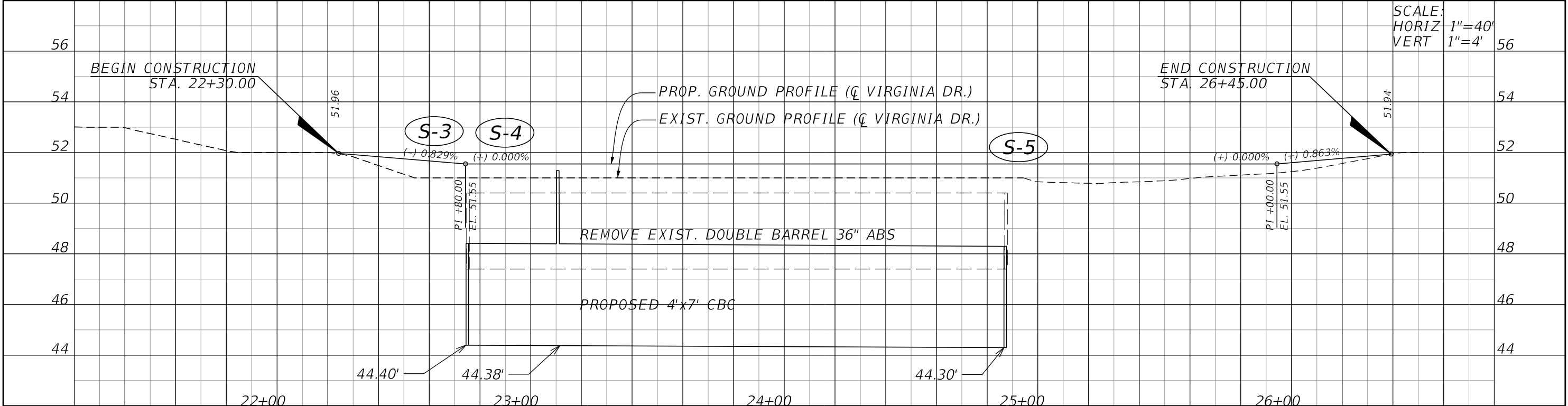
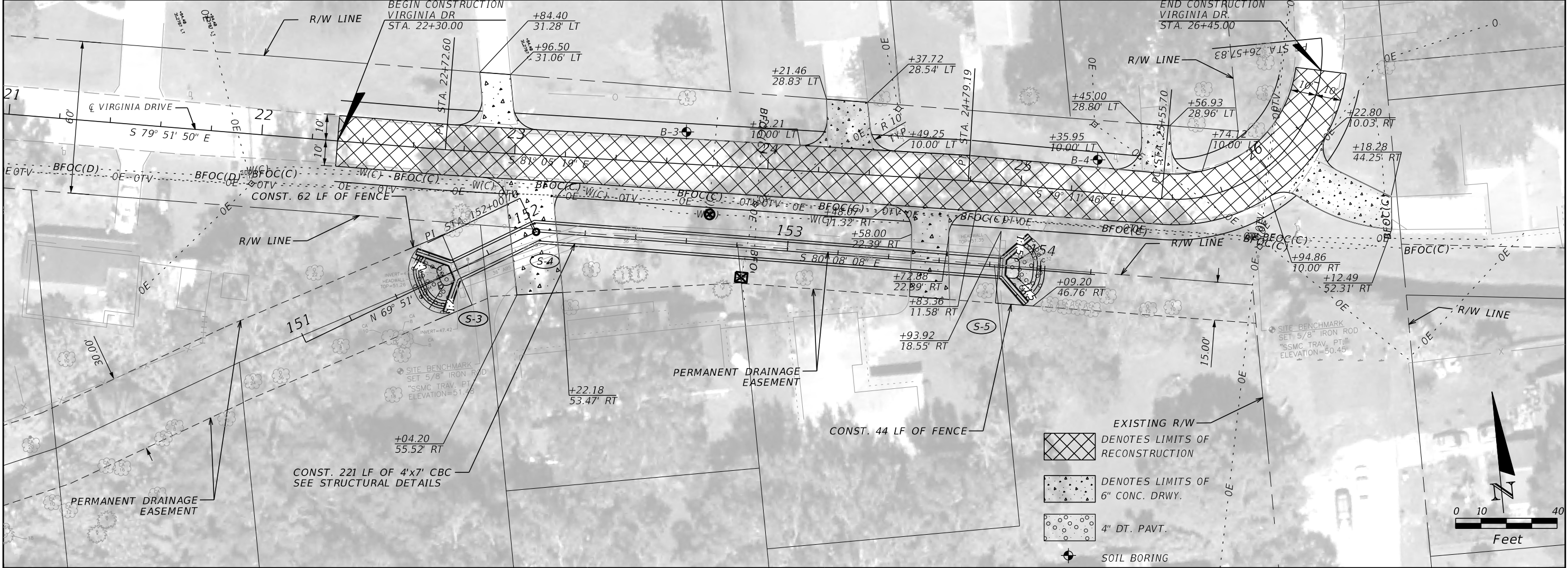
REVISIONS				MICHAEL A. HOLT, P.E. P.E. LICENSE NUMBER 76111 METRIC ENGINEERING, INC. 525 TECHNOLOGY PARK, SUITE 153 LAKE MARY, FLORIDA 32746	SEMINOLE COUNTY ENGINEERING DIVISION		SUMMARY OF DRAINAGE	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		PROJECT NAME	PROJECT ID		
					WILLOW AVENUE - ALHAMBRA AVENUE	CIP 02007124		8

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.



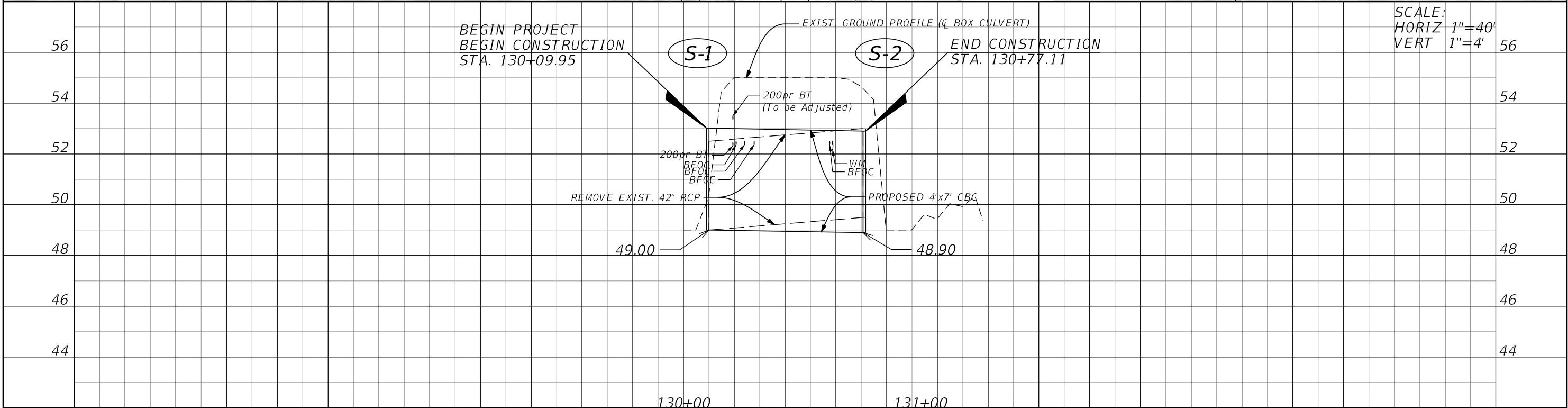
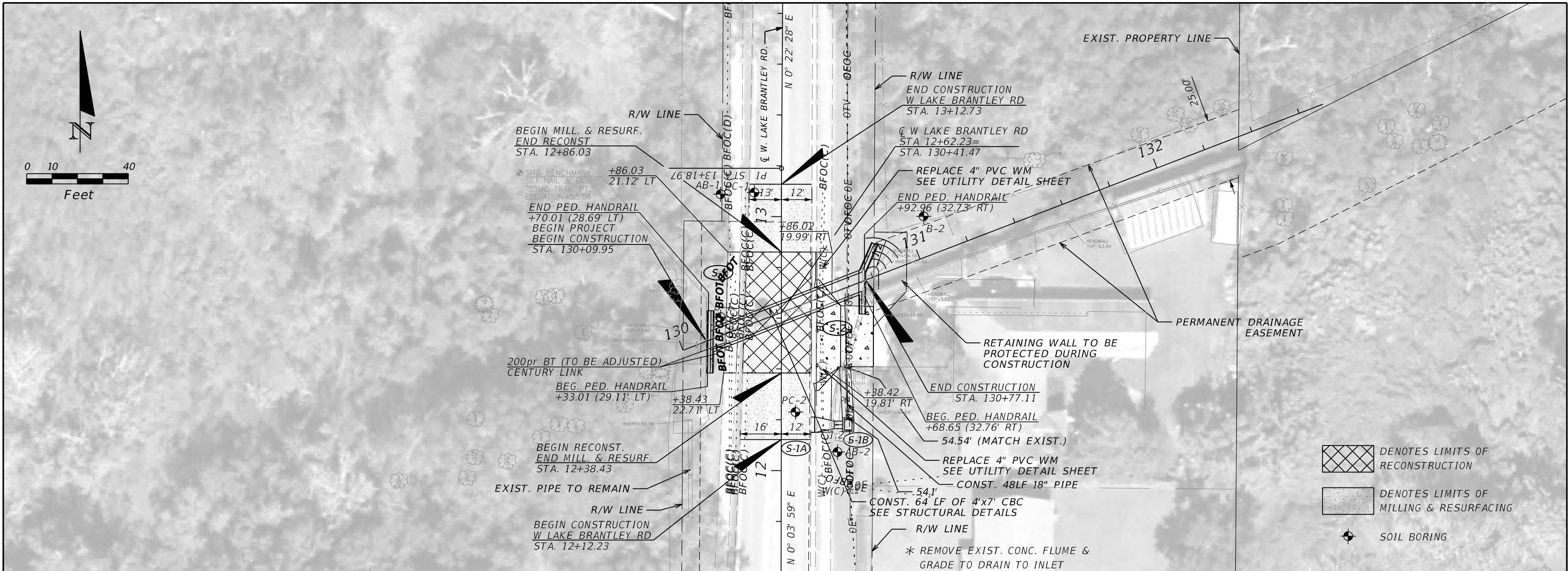
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DATE	DESCRIPTION	DATE	DESCRIPTION		PROJECT NAME	PROJECT ID		
					WILLOW AVENUE - ALHAMBRA AVENUE	CIP 02007124		9

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.



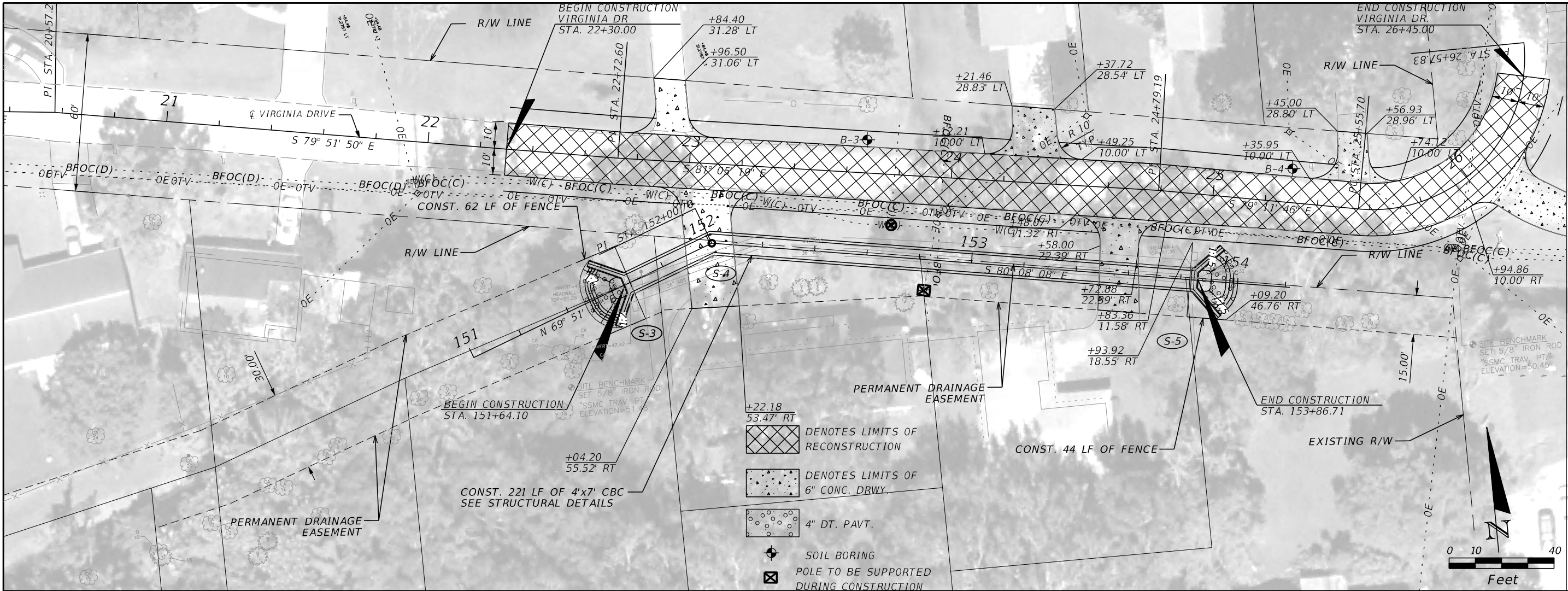
REVISIONS				C. BRIAN FULLER, P.E. P.E. LICENSE NUMBER 49524 METRIC ENGINEERING, INC. 525 TECHNOLOGY PARK, SUITE 153 LAKE MARY, FLORIDA 32746	SEMINOLE COUNTY ENGINEERING DIVISION		ROADWAY PLAN	SHEET NO. 10
DATE	DESCRIPTION	DATE	DESCRIPTION		PROJECT NAME	PROJECT ID		
					WILLOW AVENUE - ALHAMBRA AVENUE	CIP 02007124		

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

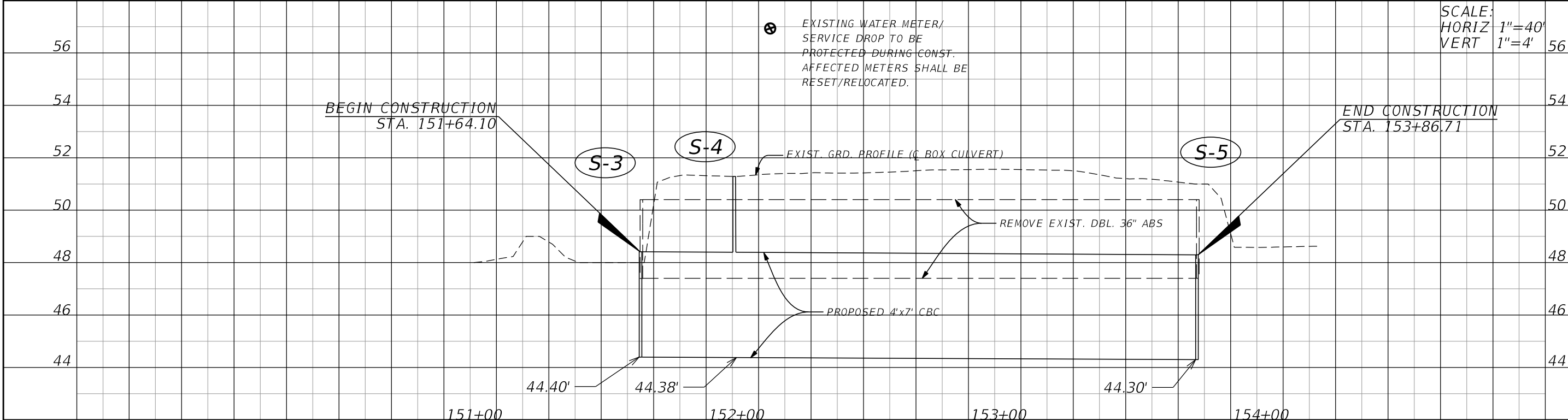


REVISIONS				MICHAEL A. HOLT, P.E. P.E. LICENSE NUMBER 76111 METRIC ENGINEERING, INC. 525 TECHNOLOGY PARK, SUITE 153 LAKE MARY, FLORIDA 32746	SEMINOLE COUNTY ENGINEERING DIVISION		DRAINAGE PLANS (1)	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		PROJECT NAME	PROJECT ID		11
					WILLOW AVENUE - ALHAMBRA AVENUE	CIP 02007124		

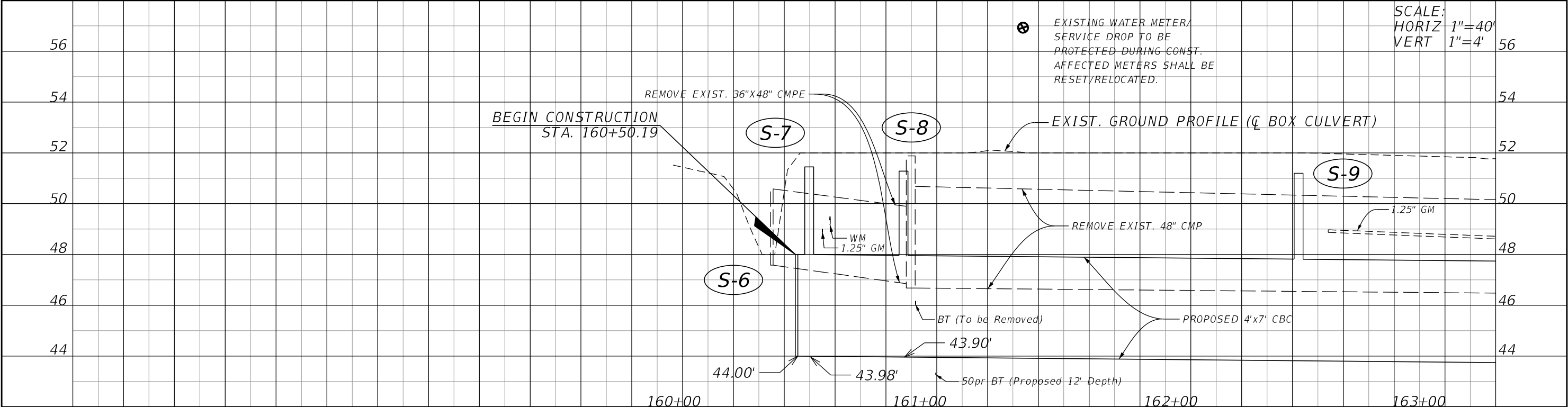
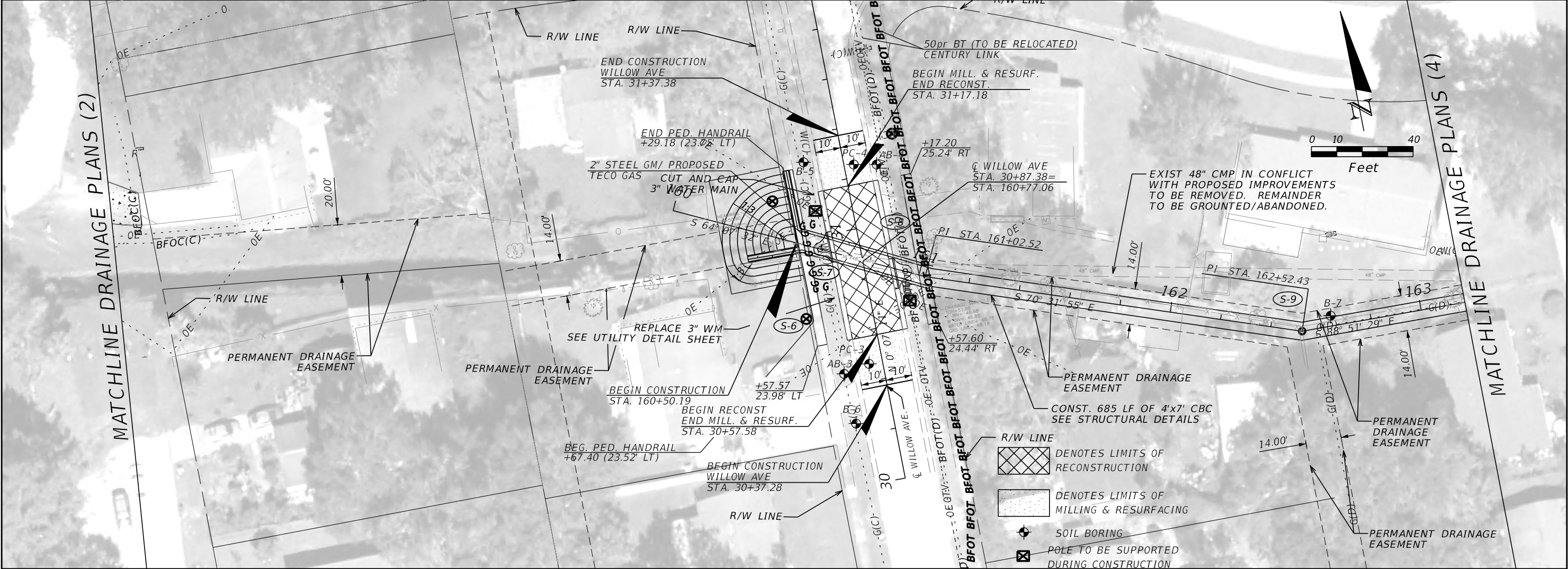
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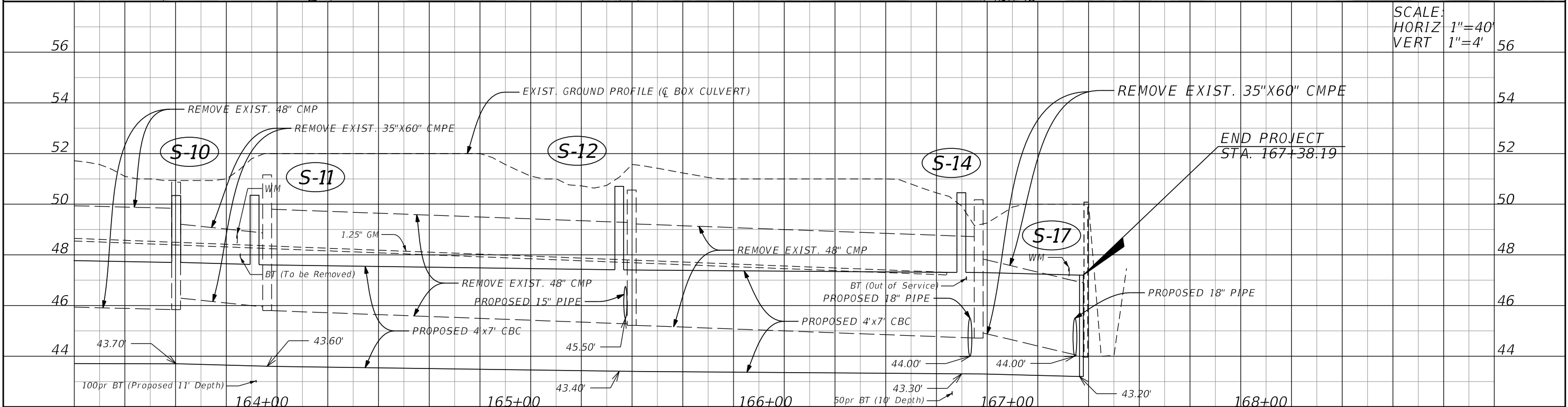
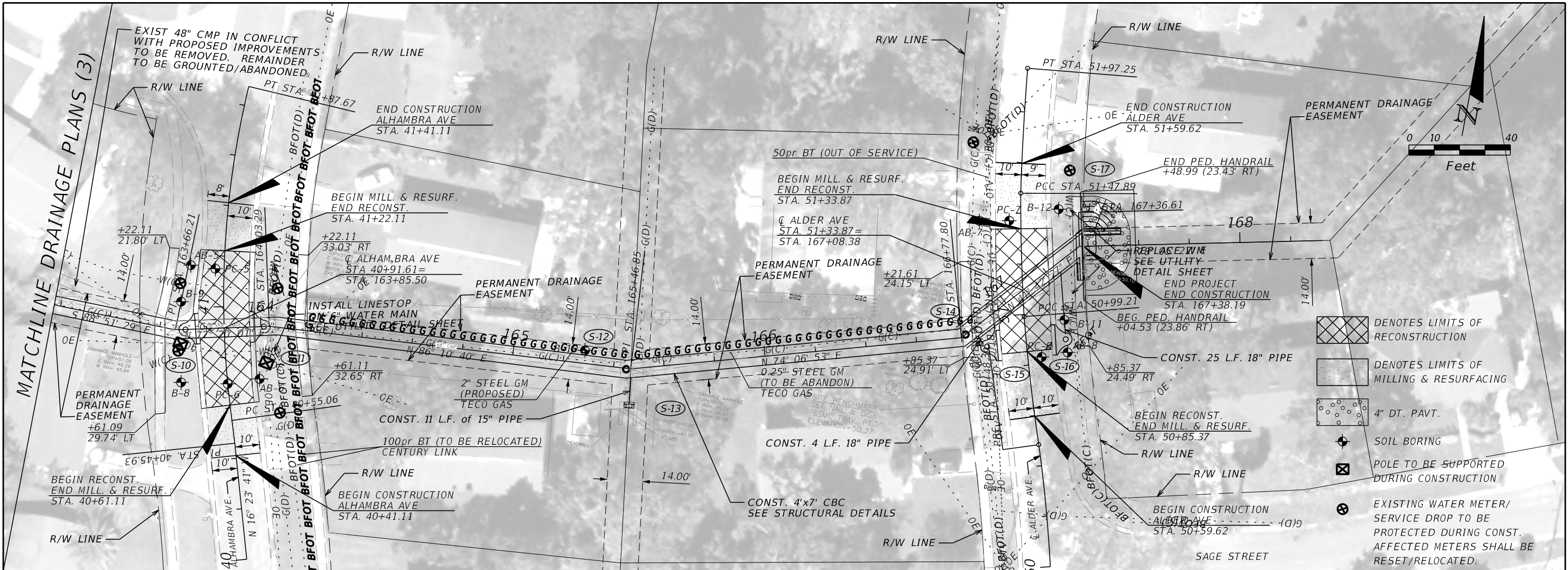
MATCHLINE DRAINAGE PLANS (3)



REVISIONS				MICHAEL A. HOLT, P.E. P.E. LICENSE NUMBER 76111 METRIC ENGINEERING, INC. 525 TECHNOLOGY PARK, SUITE 153 LAKE MARY, FLORIDA 32746	SEMINOLE COUNTY ENGINEERING DIVISION		DRAINAGE PLANS (2)	SHEET NO. 12
DATE	DESCRIPTION	DATE	DESCRIPTION		PROJECT NAME	PROJECT ID		
					WILLOW AVENUE - ALHAMBRA AVENUE	CIP 02007124		



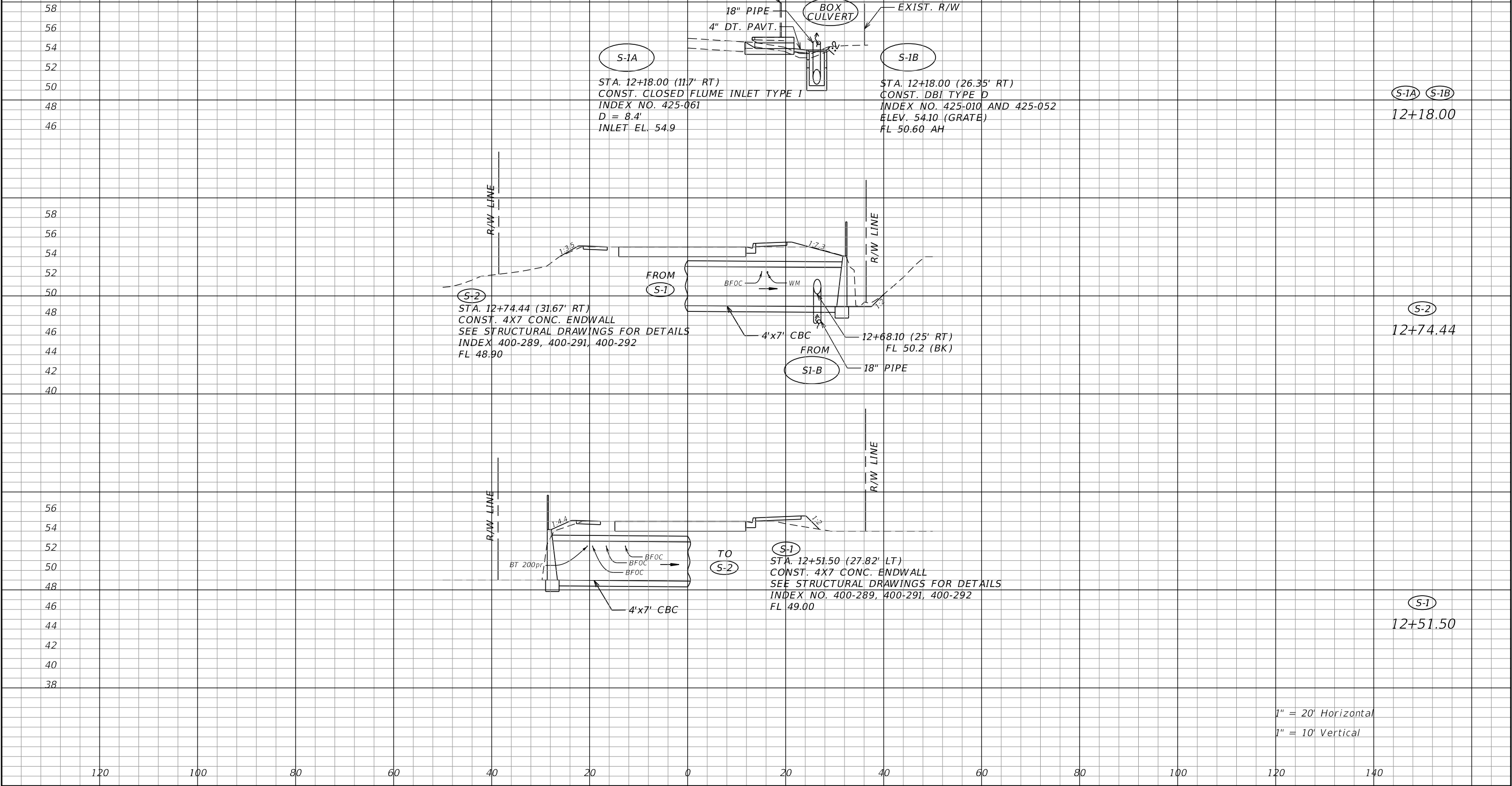
REVISIONS				MICHAEL A. HOLT, P.E. P.E. LICENSE NUMBER 76111 METRIC ENGINEERING, INC. 525 TECHNOLOGY PARK, SUITE 153 LAKE MARY, FLORIDA 32746	SEMINOLE COUNTY ENGINEERING DIVISION		DRAINAGE PLANS (3)	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		PROJECT NAME	PROJECT ID		
					WILLOW AVENUE - ALHAMBRA AVENUE	CIP 02007124		13



REVISIONS				MICHAEL A. HOLT, P.E. P.E. LICENSE NUMBER 76111 METRIC ENGINEERING, INC. 525 TECHNOLOGY PARK, SUITE 153 LAKE MARY, FLORIDA 32746	SEMINOLE COUNTY ENGINEERING DIVISION		DRAINAGE PLANS (4)	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		PROJECT NAME	PROJECT ID		
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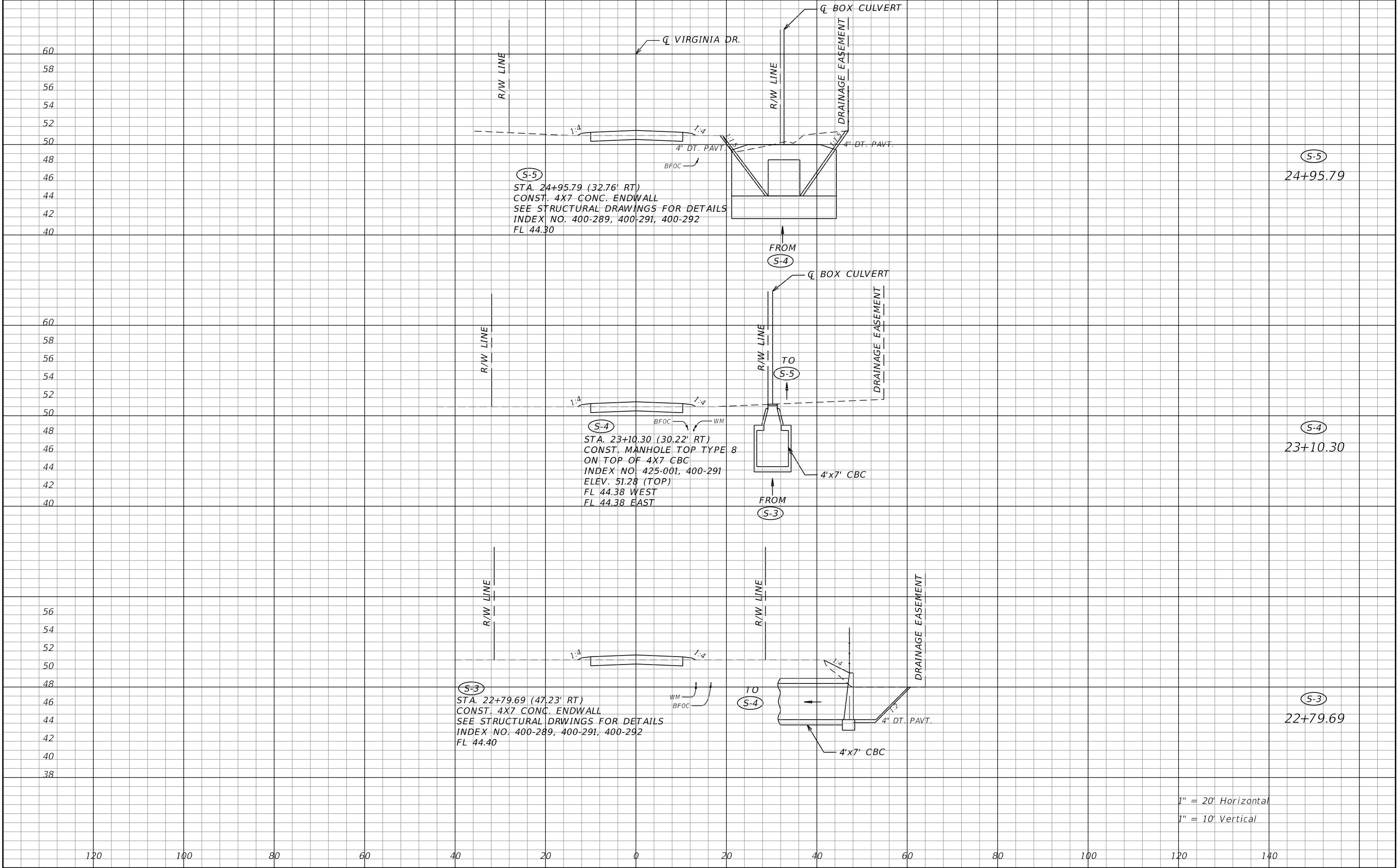
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NOTE:
SPECIAL ATTENTION IS DIRECTED TO THE FACT
THAT PORTIONS OF SOME DRAINAGE STRUCTURES
EXTEND INTO THE STABILIZED PORTION OF THE
ROADBED AND EXTREME CAUTION WILL BE NECESSARY
IN STABILIZATION OPERATIONS AT THESE LOCATIONS.

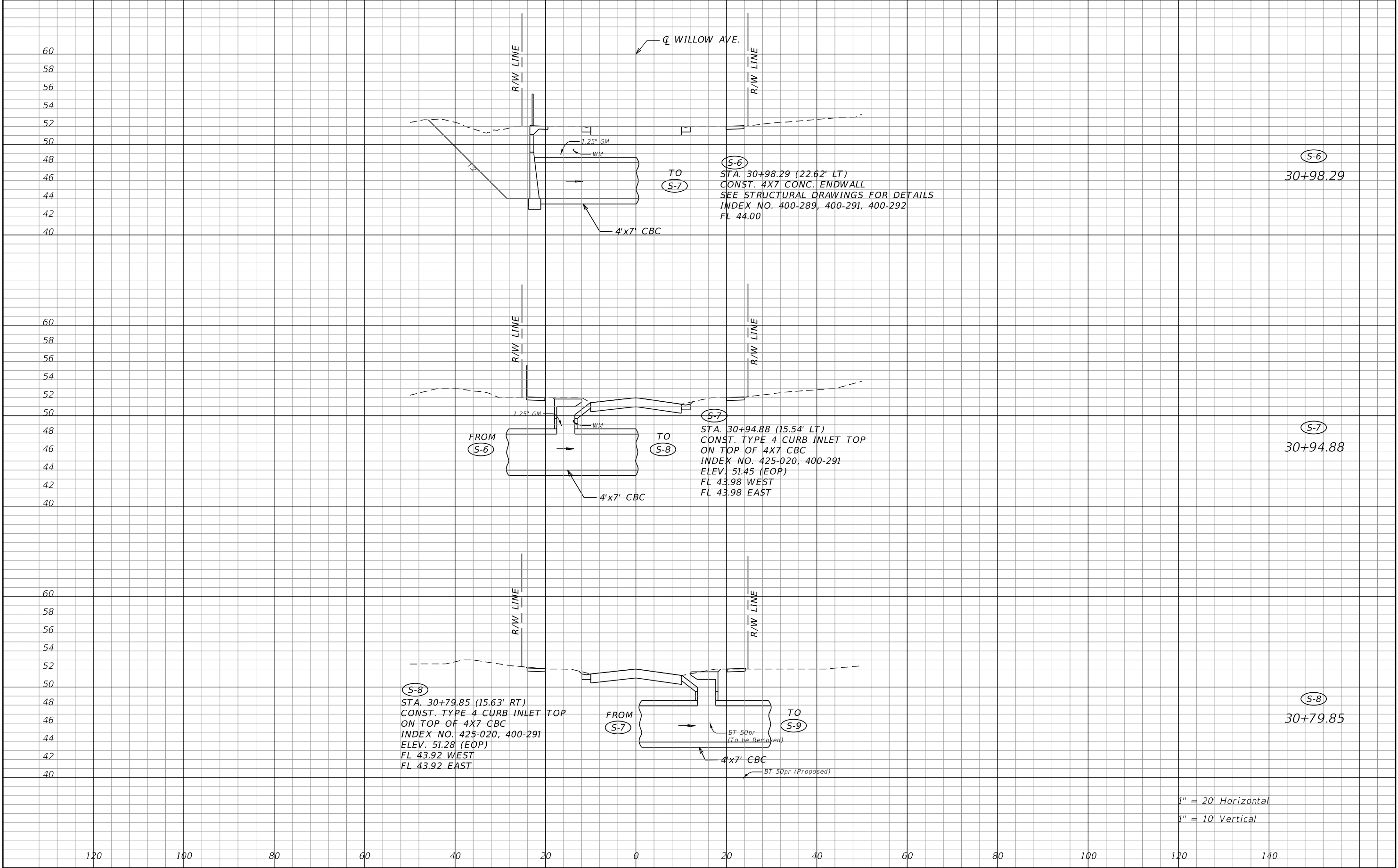


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DATE	DESCRIPTION	DATE	DESCRIPTION		PROJECT NAME	PROJECT ID		
					WILLOW AVENUE - ALHAMBRA AVENUE	CIP 02007124		15

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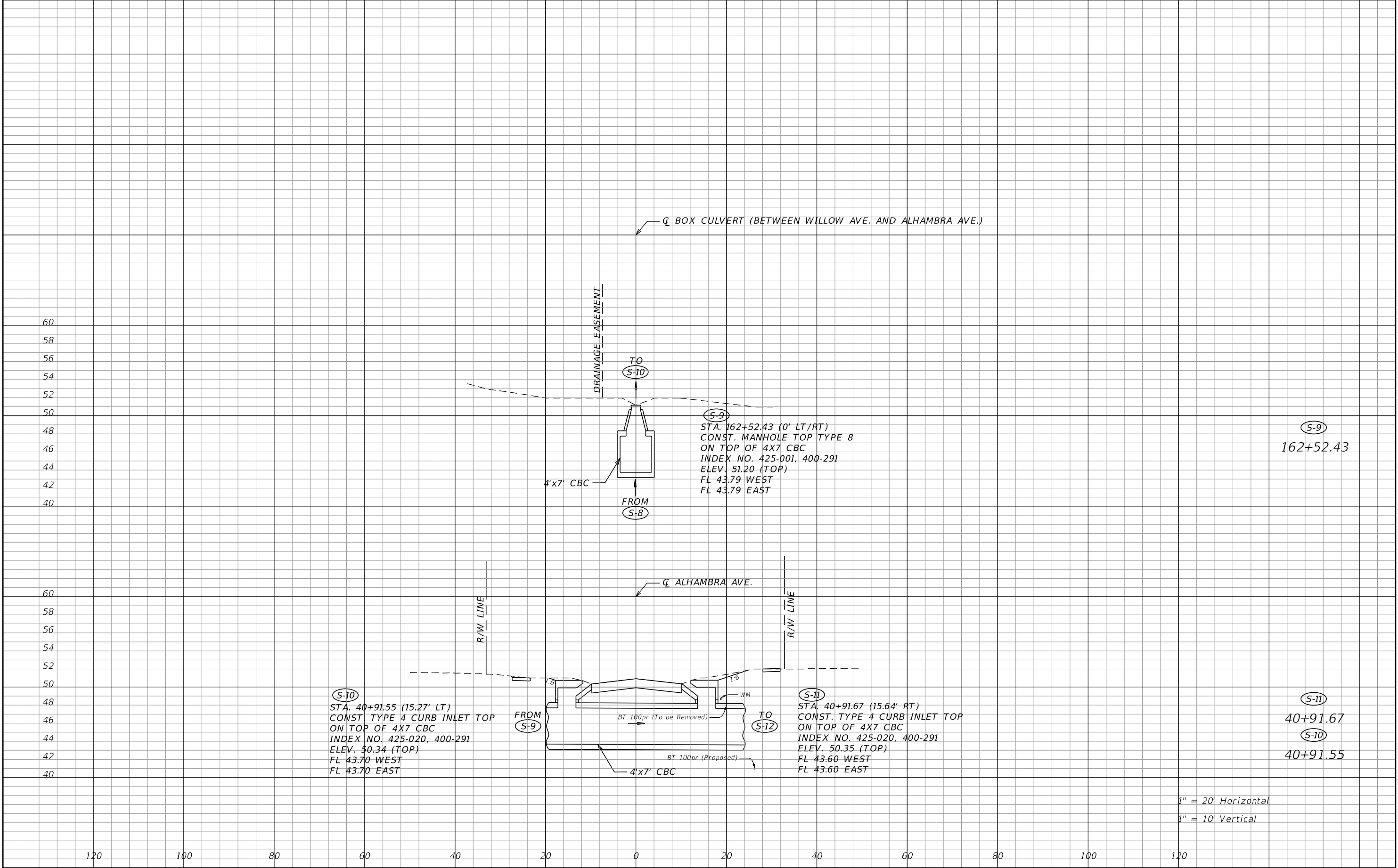


REVISIONS				MICHAEL A. HOLT, P.E. P.E. LICENSE NUMBER 76111 METRIC ENGINEERING, INC. 525 TECHNOLOGY PARK, SUITE 153 LAKE MARY, FLORIDA 32746	SEMINOLE COUNTY ENGINEERING DIVISION		DRAINAGE STRUCTURES VIRGINIA DR.	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		PROJECT NAME	PROJECT ID		
					WILLOW AVENUE - ALHAMBRA AVENUE	CIP 02007124		16



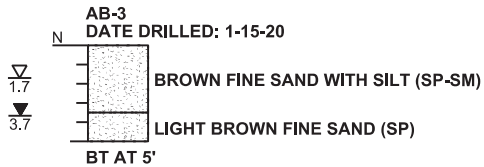
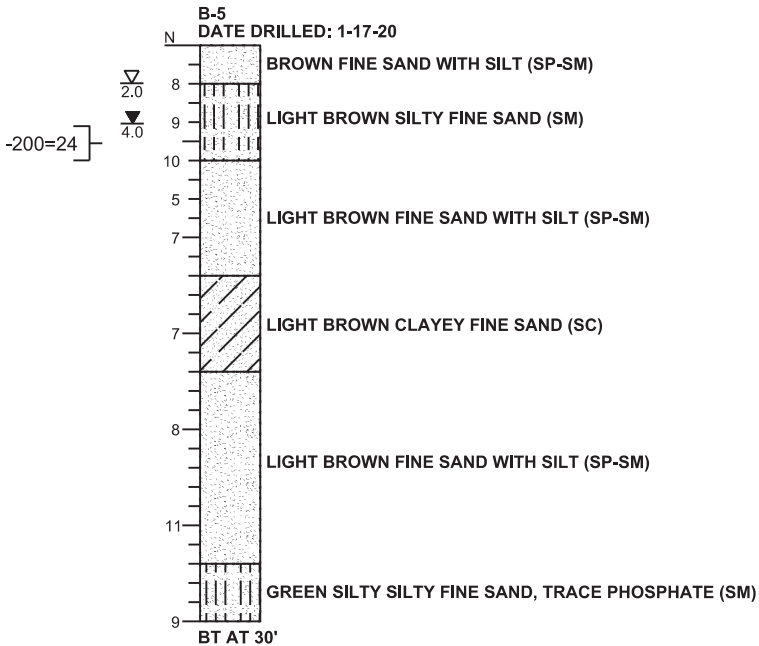
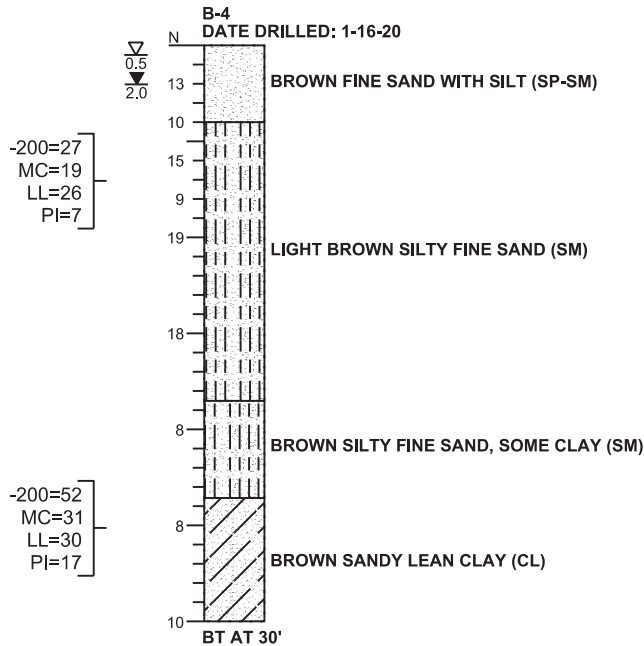
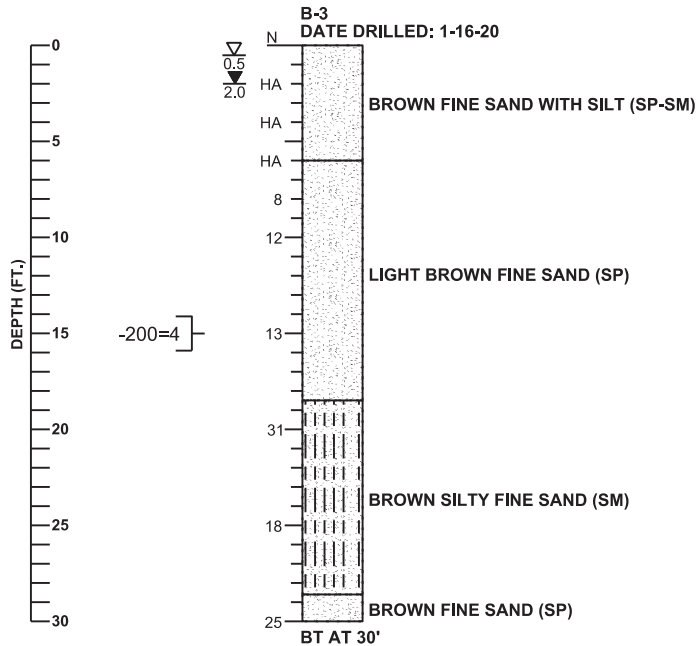
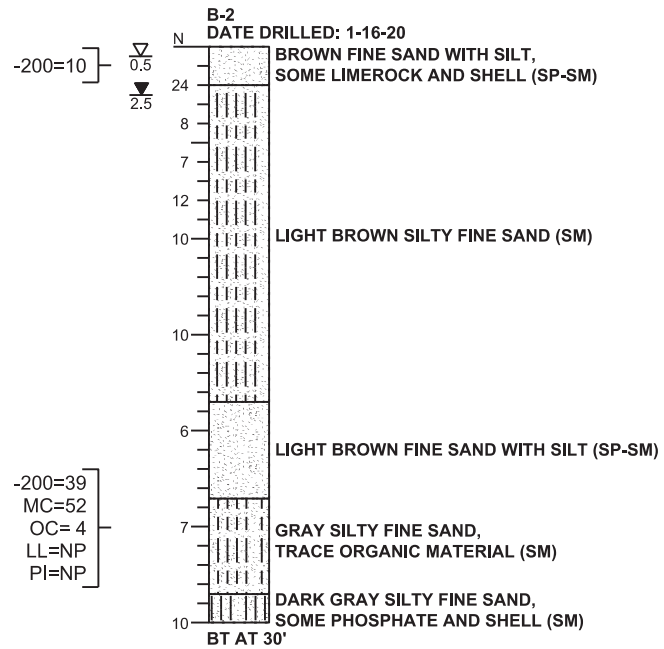
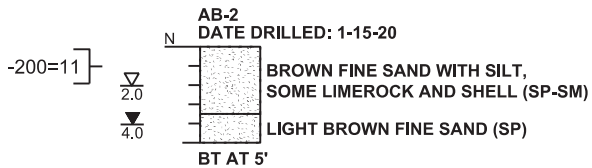
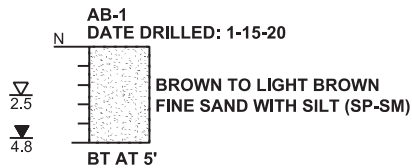
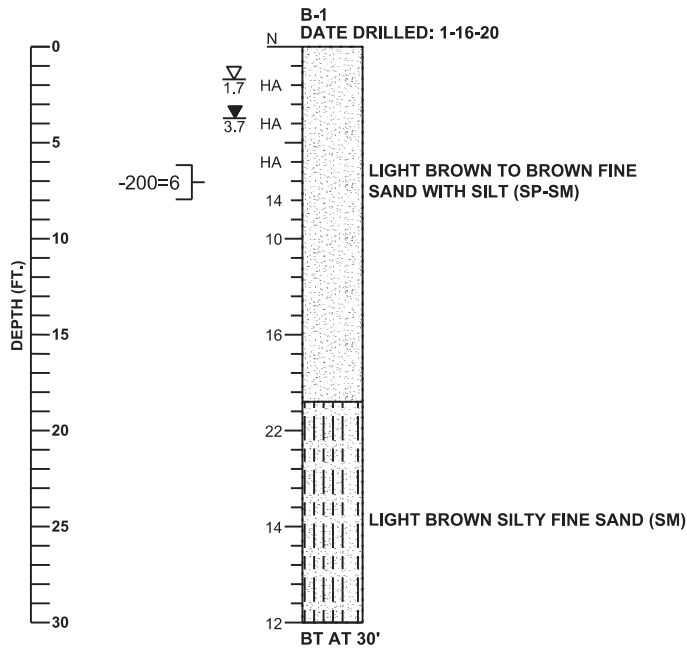
REVISIONS				MICHAEL A. HOLT, P.E. P.E. LICENSE NUMBER 76111 METRIC ENGINEERING, INC. 525 TECHNOLOGY PARK, SUITE 153 LAKE MARY, FLORIDA 32746	SEMINOLE COUNTY ENGINEERING DIVISION		DRAINAGE STRUCTURES WILLOW AVE.	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		PROJECT NAME	PROJECT ID		
					WILLOW AVENUE - ALHAMBRA AVENUE	CIP 02007124		17

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REVISIONS				MICHAEL A. HOLT, P.E. P.E. LICENSE NUMBER 76111 METRIC ENGINEERING, INC. 525 TECHNOLOGY PARK, SUITE 153 LAKE MARY, FLORIDA 32746	SEMINOLE COUNTY ENGINEERING DIVISION		DRAINAGE STRUCTURES ALHAMBRA AVE.	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		PROJECT NAME	PROJECT ID		
					WILLOW AVENUE - ALHAMBRA AVENUE	CIP 02007124		18

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.



LEGEND

- N STANDARD PENETRATION RESISTANCE, BLOWS PER FOOT
- HA HAND AUGERED FOR UTILITY CLEARANCE
- 1.7 ESTIMATED SEASONAL HIGH GROUNDWATER DEPTH (FT.)
- 3.7 ENCOUNTERED GROUNDWATER DEPTH (FT.) 24 HRS. AFTER DATE DRILLED
- BT BORING TERMINATED AT DEPTH INDICATED
- 200= PERCENT PASSING NO. 200 U.S. STANDARD SIEVE
- MC= PERCENT NATURAL MOISTURE CONTENT
- LL= LIQUID LIMIT
- PI= PLASTICITY INDEX
- OC= PERCENT ORGANIC CONTENT
- NP= NON-PLASTIC



GENERAL NOTES

SUBSURFACE CONDITIONS SHOWN ON THE BORINGS REPRESENT THE CONDITIONS ENCOUNTERED AT THE BORING LOCATIONS. ACTUAL CONDITIONS BETWEEN THE BORINGS MAY VARY FROM THOSE SHOWN. UNIFIED SOIL CLASSIFICATIONS SHOWN ON THE BORINGS ARE BASED ON VISUAL EXAMINATION AND THE LABORATORY TESTING SHOWN.

STANDARD PENETRATION TEST BORINGS WERE PERFORMED IN ACCORDANCE WITH ASTM D-1586. STANDARD PENETRATION RESISTANCES ARE SHOWN ON THE BORINGS AT THE TEST DEPTHS IN IN BLOWS PER FOOT UNLESS OTHERWISE NOTED.

THE BORING LOCATIONS WERE NOT SURVEYED. THE BORING LOCATIONS WERE STAKED IN THE FIELD BY MEASURING DISTANCES FROM EXISTING SITE FEATURES.

SPLIT SPOON SAMPLER:
INSIDE DIAMETER: 1.375 IN.
OUTSIDE DIAMETER: 2.0 IN.
AVERAGE HAMMER DROP: 30 IN.
HAMMER WEIGHT: 140 LBS.
HAMMER TYPE: AUTOMATIC

CORRELATION OF STANDARD PENETRATION RESISTANCE WITH RELATIVE DENSITY AND CONSISTENCY OF SOIL

MANUAL HAMMER (SAFETY)		
GRANULAR SOILS	N VALUE (blows per foot)	RELATIVE DENSITY
SANDS	0-4	VERY LOOSE
	4-10	LOOSE
	10-30	MEDIUM DENSE
	30-50	DENSE
	OVER 50	VERY DENSE
MANUAL HAMMER (SAFETY)		
NON-GRANULAR SOILS	N VALUE (blows per foot)	CONSISTENCY
SILTS, CLAYS, MUCK, PEAT	0-2	VERY SOFT
	2-4	SOFT
	4-8	FIRM
	8-15	STIFF
	15-30	VERY STIFF
	OVER 30	HARD

GEOTECHNICAL AND ENVIRONMENTAL
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919 Lake Baldwin Lane
Orlando, FL 32814
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Certificate of Authorization No. 5882
DANIEL C. STANFILL PE NO. 42763

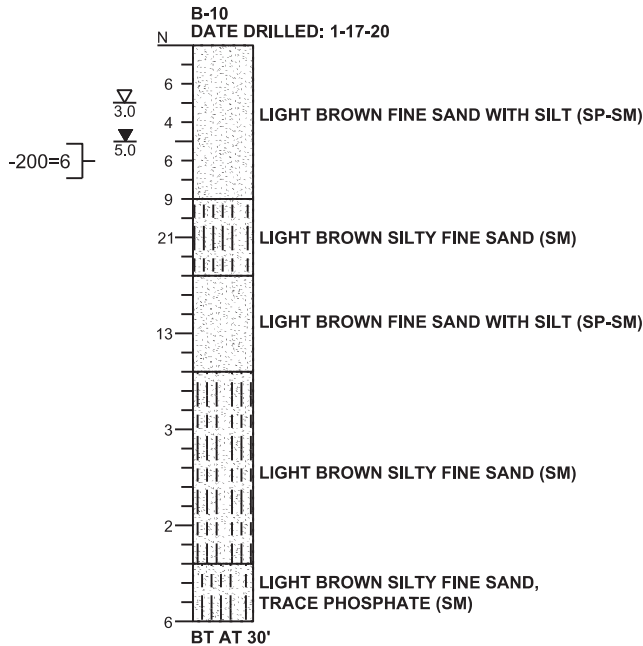
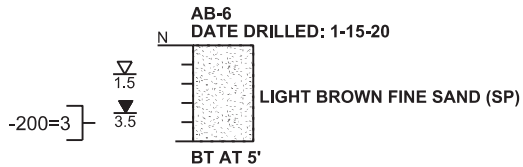
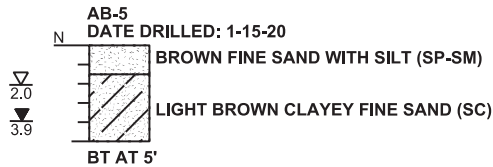
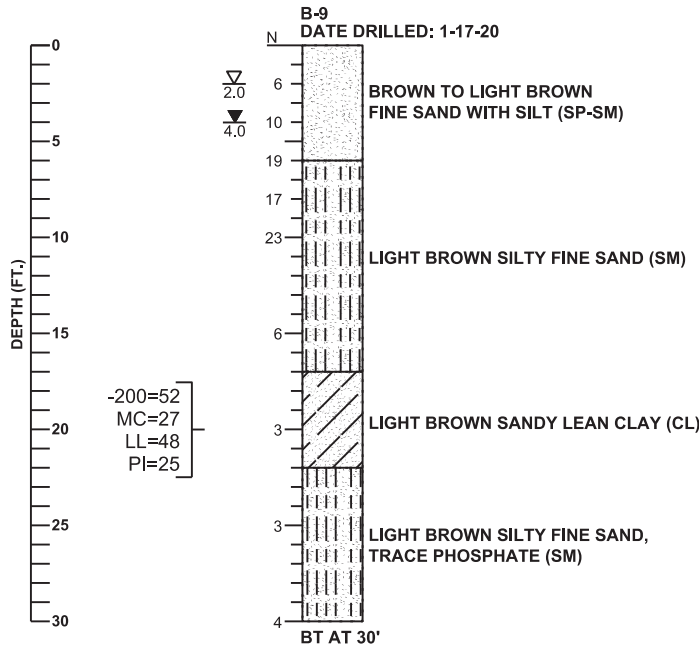
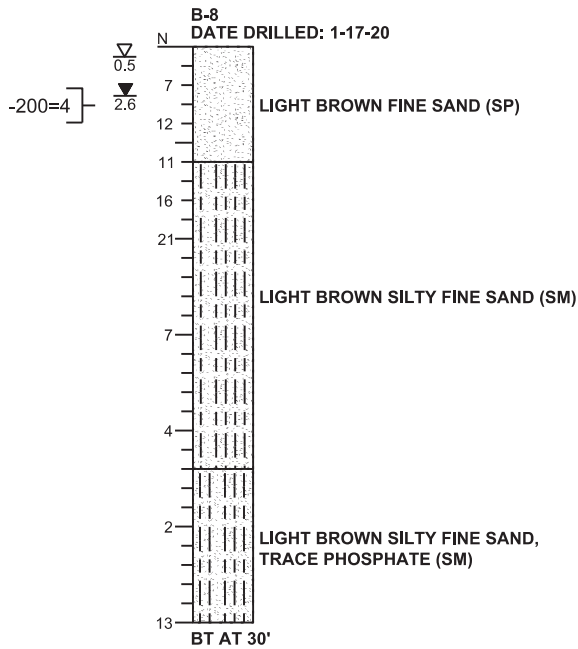
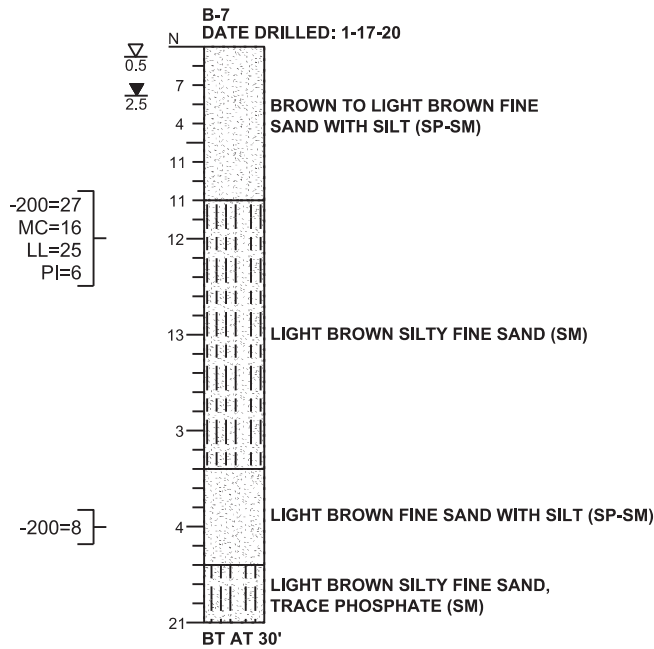
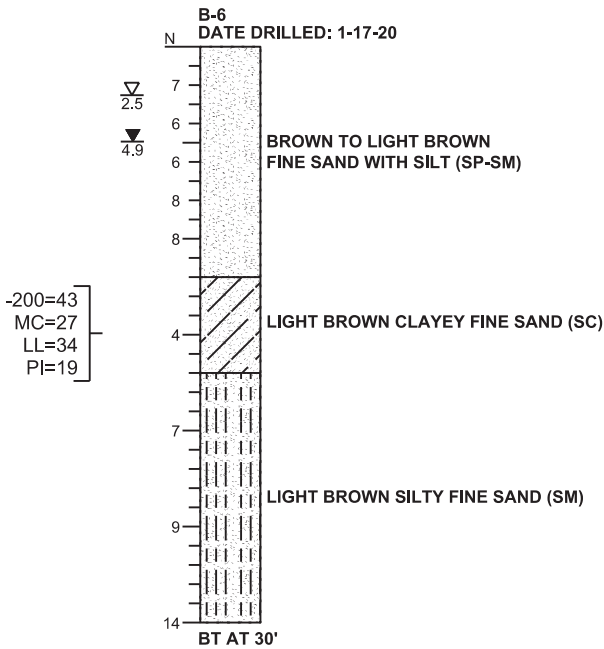
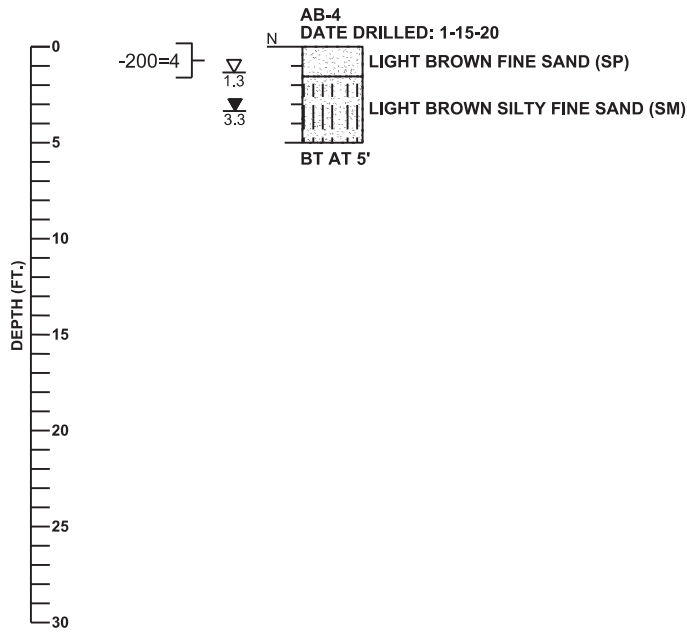
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PROJECT NO.
4518G
DATE
4/14/2020
DRAWN BY
SKR
CHECKED BY
RJP
CHECKED BY
DCS

SOIL BORING RESULTS NORTH OF THE LAKE HARRIET DRAINAGE IMPROVEMENT

SHEET
NO.

20



LEGEND

N	STANDARD PENETRATION RESISTANCE, BLOWS PER FOOT
HA	HAND AUGERED FOR UTILITY CLEARANCE
▽ 1.3	ESTIMATED SEASONAL HIGH GROUNDWATER DEPTH (FT.)
▼ 3.3	ENCOUNTERED GROUNDWATER DEPTH (FT.) 24 HRS. AFTER DATE DRILLED
BT	BORING TERMINATED AT DEPTH INDICATED
-200=	PERCENT PASSING NO. 200 U.S. STANDARD SIEVE
MC=	PERCENT NATURAL MOISTURE CONTENT
LL=	LIQUID LIMIT
PI=	PLASTICITY INDEX
OC=	PERCENT ORGANIC CONTENT
NP=	NON-PLASTIC
	 SAND
	 SAND AND CLAY
	 SAND AND SILT

GENERAL NOTES

SUBSURFACE CONDITIONS SHOWN ON THE BORINGS REPRESENT THE CONDITIONS ENCOUNTERED AT THE BORING LOCATIONS. ACTUAL CONDITIONS BETWEEN THE BORINGS MAY VARY FROM THOSE SHOWN. UNIFIED SOIL CLASSIFICATIONS SHOWN ON THE BORINGS ARE BASED ON VISUAL EXAMINATION AND THE LABORATORY TESTING SHOWN.

STANDARD PENETRATION TEST BORINGS WERE PERFORMED IN ACCORDANCE WITH ASTM D-1586. STANDARD PENETRATION RESISTANCES ARE SHOWN ON THE BORINGS AT THE TEST DEPTHS IN IN BLOWS PER FOOT UNLESS OTHERWISE NOTED.

THE BORING LOCATIONS WERE NOT SURVEYED. THE BORING LOCATIONS WERE STAKED IN THE FIELD BY MEASURING DISTANCES FROM EXISTING SITE FEATURES.

SPLIT SPOON SAMPLER:
INSIDE DIAMETER: 1.375 IN.
OUTSIDE DIAMETER: 2.0 IN.
AVERAGE HAMMER DROP: 30 IN.
HAMMER WEIGHT: 140 LBS.
HAMMER TYPE: AUTOMATIC

CORRELATION OF STANDARD PENETRATION RESISTANCE WITH RELATIVE DENSITY AND CONSISTENCY OF SOIL

MANUAL HAMMER (SAFETY) N VALUE (blows per foot)		
GRANULAR SOILS		RELATIVE DENSITY
SANDS	0-4	VERY LOOSE
	4-10	LOOSE
	10-30	MEDIUM DENSE
	30-50	DENSE
	OVER 50	VERY DENSE
MANUAL HAMMER (SAFETY) N VALUE (blows per foot)		
NON-GRANULAR SOILS		CONSISTENCY
SILTS, CLAYS, MUCK, PEAT	0-2	VERY SOFT
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	8-15	STIFF
	15-30	VERY STIFF
	OVER 30	HARD

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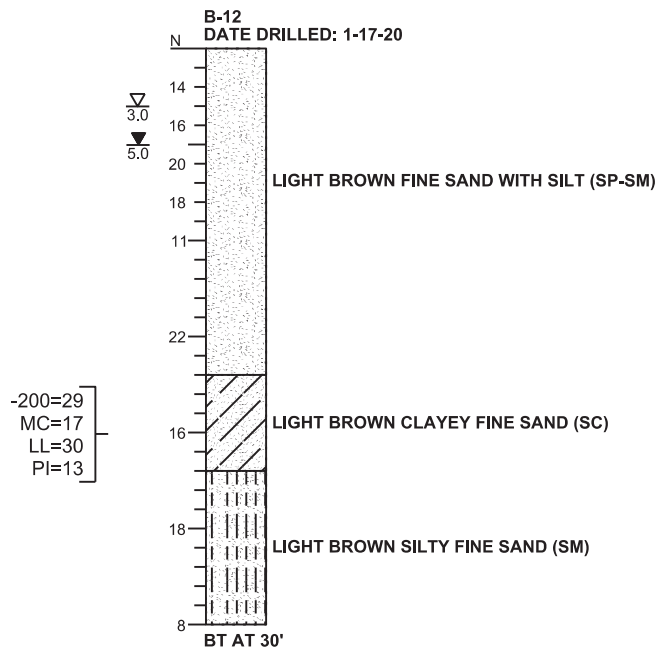
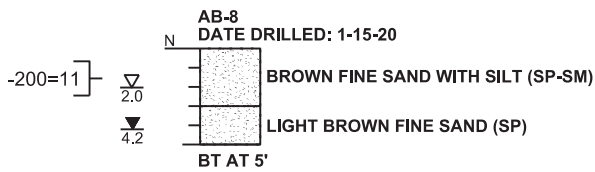
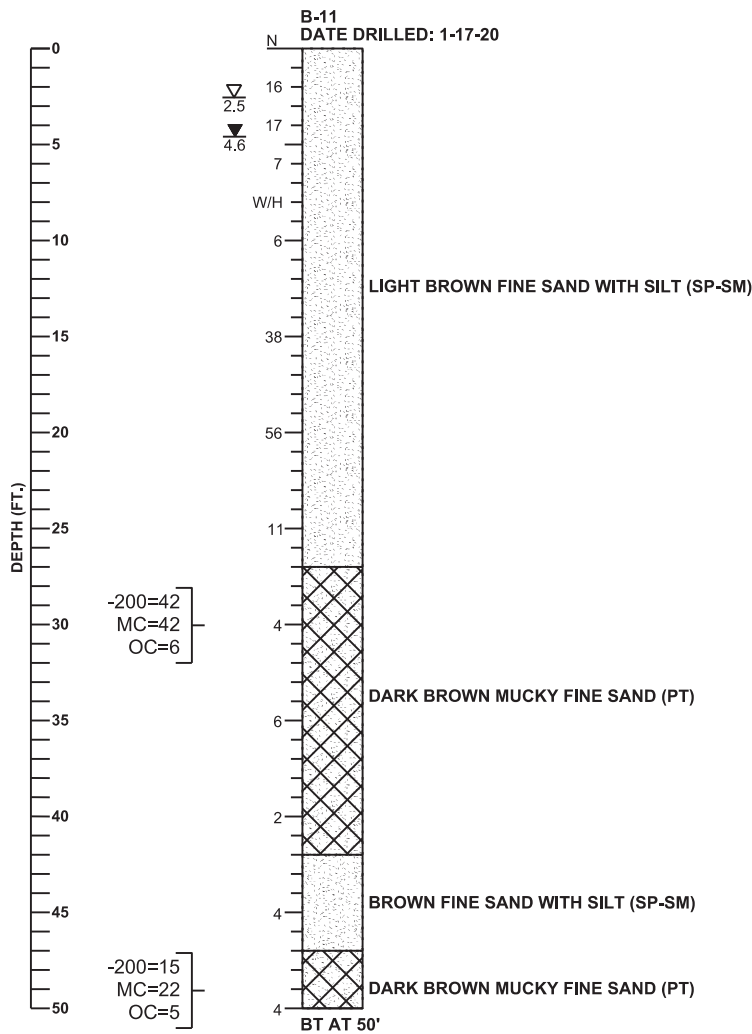
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PROJECT NO.
4518G
DATE
4/14/2020
DRAWN BY
SKR
CHECKED BY
RJP
CHECKED BY
DCS

SOIL BORING RESULTS NORTH OF THE LAKE HARRIET DRAINAGE IMPROVEMENT

SHEET
NO.

21



LEGEND

N	STANDARD PENETRATION RESISTANCE, BLOWS PER FOOT
HA	HAND AUGERED FOR UTILITY CLEARANCE
W/H	WEIGHT OF HAMMER
2.5	ESTIMATED SEASONAL HIGH GROUNDWATER DEPTH (FT.)
4.6	ENCOUNTERED GROUNDWATER DEPTH (FT.) 24 HRS. AFTER DATE DRILLED
BT	BORING TERMINATED AT DEPTH INDICATED
-200=	PERCENT PASSING NO. 200 U.S. STANDARD SIEVE
MC=	PERCENT NATURAL MOISTURE CONTENT
LL=	LIQUID LIMIT
PI=	PLASTICITY INDEX
OC=	PERCENT ORGANIC CONTENT
NP=	NON-PLASTIC
	 SAND
	 SAND AND CLAY
	 SAND AND SILT
	 SAND AND MUCK

GENERAL NOTES

SUBSURFACE CONDITIONS SHOWN ON THE BORINGS REPRESENT THE CONDITIONS ENCOUNTERED AT THE BORING LOCATIONS. ACTUAL CONDITIONS BETWEEN THE BORINGS MAY VARY FROM THOSE SHOWN. UNIFIED SOIL CLASSIFICATIONS SHOWN ON THE BORINGS ARE BASED ON VISUAL EXAMINATION AND THE LABORATORY TESTING SHOWN.

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INSIDE DIAMETER: 1.375 IN.
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AVERAGE HAMMER DROP: 30 IN.
HAMMER WEIGHT: 140 LBS.
HAMMER TYPE: AUTOMATIC

CORRELATION OF STANDARD PENETRATION RESISTANCE WITH RELATIVE DENSITY AND CONSISTENCY OF SOIL

MANUAL HAMMER (SAFETY)		
GRANULAR SOILS	N VALUE (blows per foot)	RELATIVE DENSITY
SANDS	0-4	VERY LOOSE
	4-10	LOOSE
	10-30	MEDIUM DENSE
	30-50	DENSE
	OVER 50	VERY DENSE
MANUAL HAMMER (SAFETY)		
NON-GRANULAR SOILS	N VALUE (blows per foot)	CONSISTENCY
SILTS, CLAYS, MUCK, PEAT	0-2	VERY SOFT
	2-4	SOFT
	4-8	FIRM
	8-15	STIFF
	15-30	VERY STIFF
	OVER 30	HARD

GEOTECHNICAL AND ENVIRONMENTAL
CONSULTANTS, INC.
919 Lake Baldwin Lane
Orlando, FL 32814
T 407-898-1818 F 407-898-1837
Certificate of Authorization No. 5882

GEC

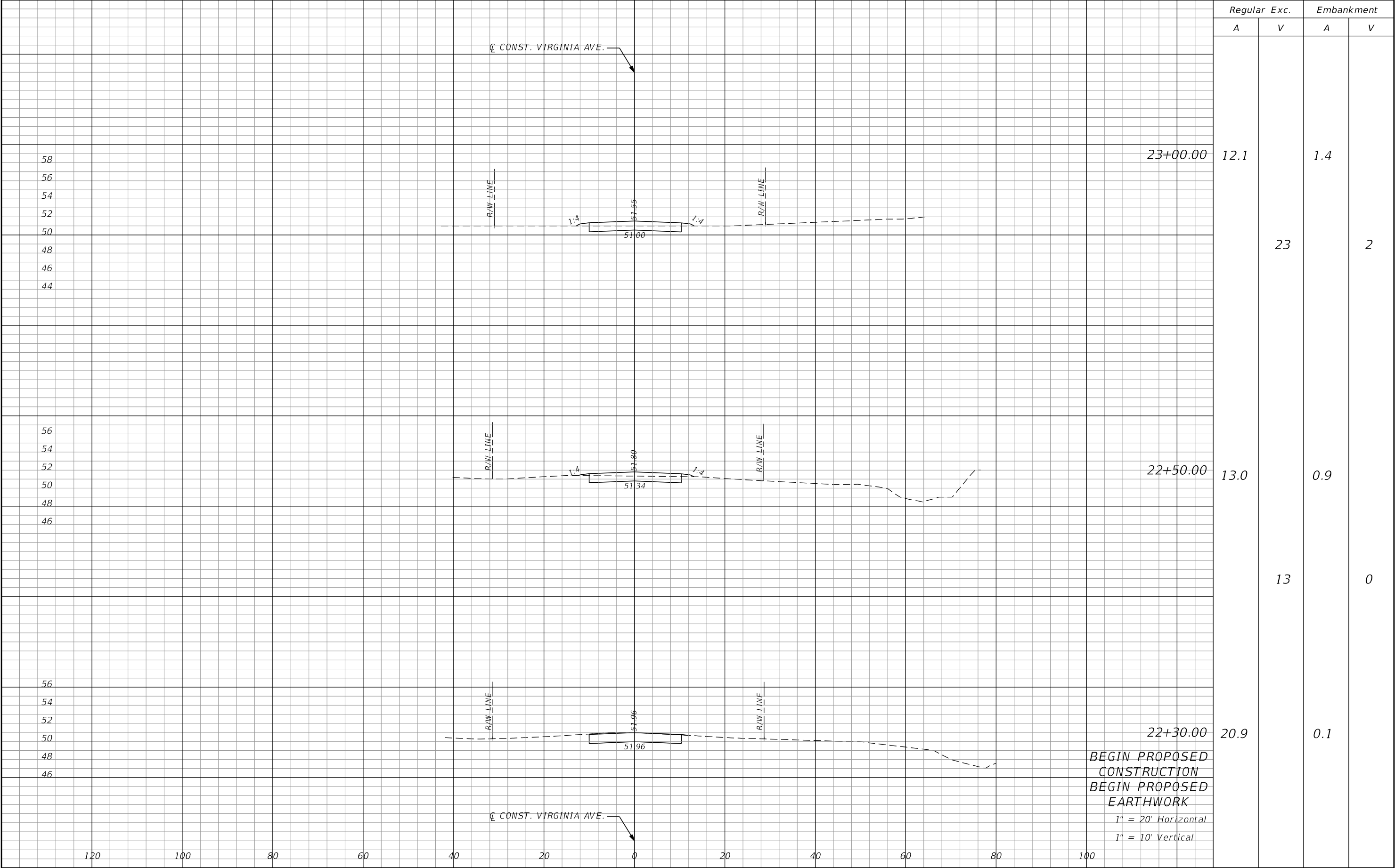
DANIEL C. STANFILL PE NO. 42763

PROJECT NO.
4518G
DATE
4/14/2020
DRAWN BY
SKR
CHECKED BY
RJP
CHECKED BY
DCS

SOIL BORING RESULTS NORTH OF THE LAKE HARRIET DRAINAGE IMPROVEMENT

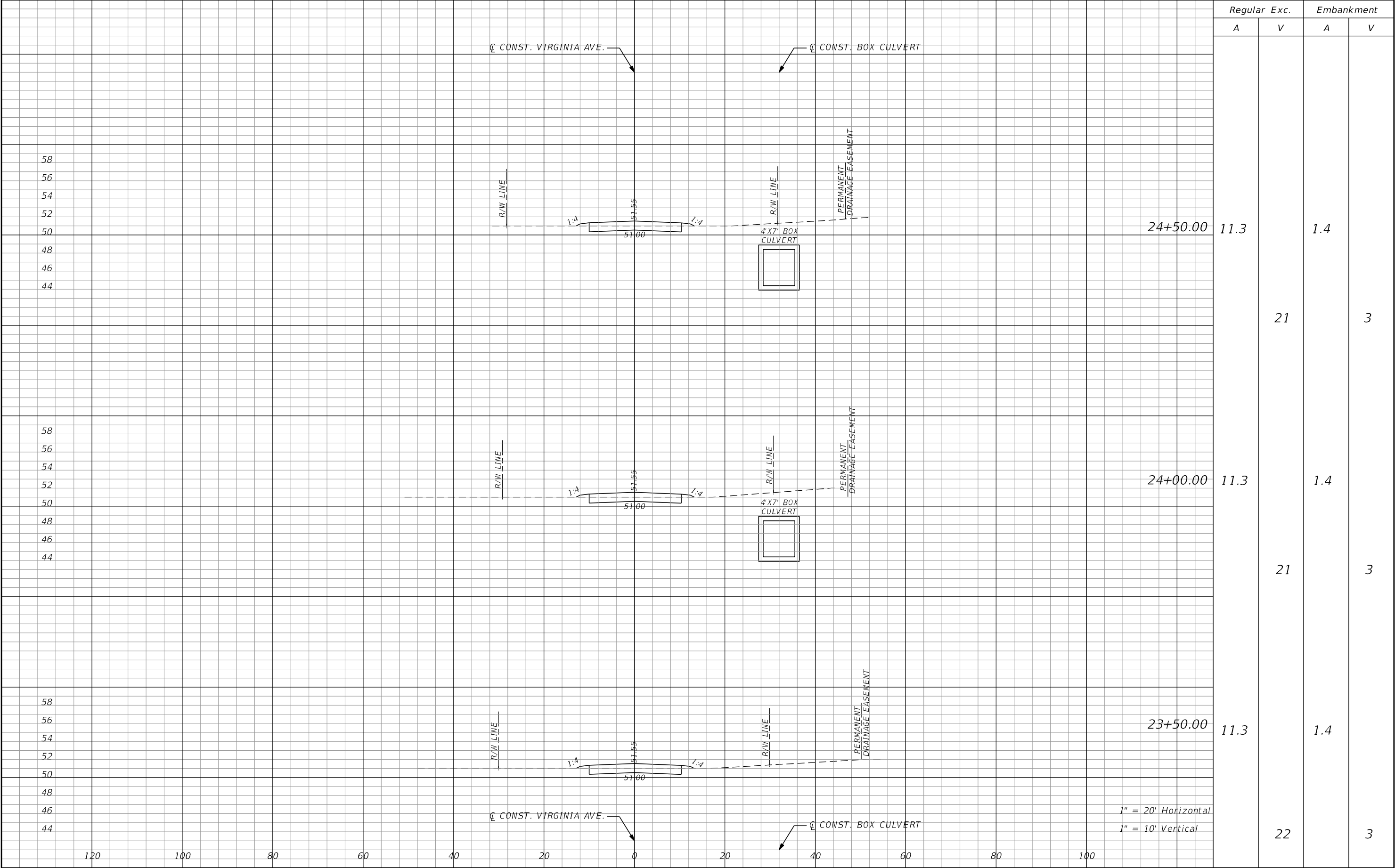
SHEET
NO.

22



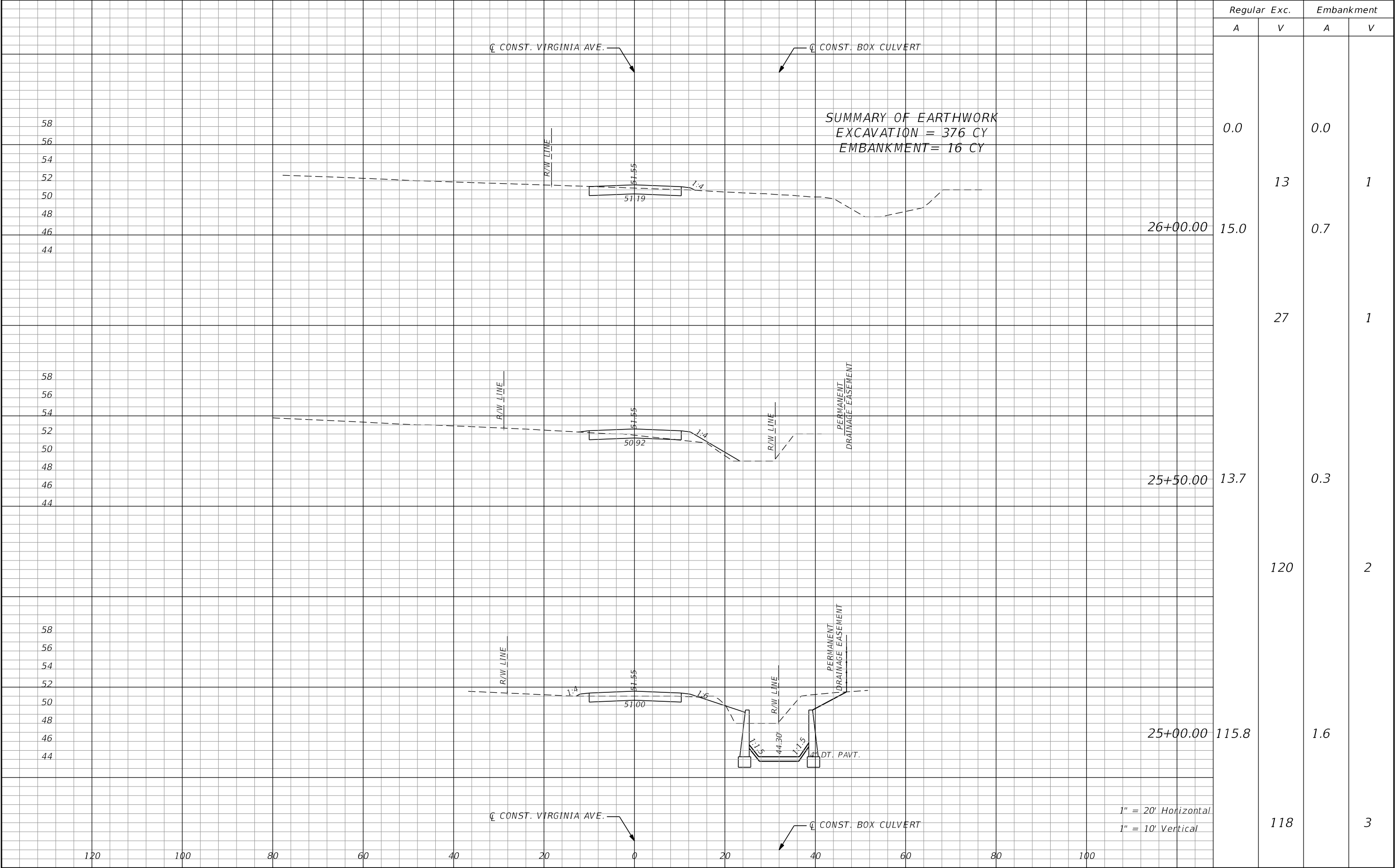
REVISIONS				C. BRIAN FULLER, P.E. P.E. LICENSE NUMBER 49524 METRIC ENGINEERING, INC. 525 TECHNOLOGY PARK, SUITE 153 LAKE MARY, FLORIDA 32746	SEMINOLE COUNTY ENGINEERING DIVISION		CROSS SECTIONS VIRGINIA AVENUE		SHEET NO.	
DATE	DESCRIPTION	DATE	DESCRIPTION		PROJECT NAME	PROJECT ID			23	
					WILLOW AVENUE- ALHAMBRA AVENUE	CIP 02007124				

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DATE	DESCRIPTION	DATE	DESCRIPTION		PROJECT NAME	PROJECT ID			24	
					WILLOW AVENUE- ALHAMBRA AVENUE	CIP 02007124				

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DATE	DESCRIPTION	DATE	DESCRIPTION		PROJECT NAME	PROJECT ID			
					WILLOW AVENUE- ALHAMBRA AVENUE	CIP 02007124			25

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BOX, HEADWALL AND CUTOFF WALL DATA TABLE (inches unless shown otherwise)

Table Date 10-27-20

LOCATION	STRUCTURE /BRIDGE NUMBER	BOX									HEADWALL AND CUTOFF WALL									
		Wc(ft)	Hc(ft)	Tt	Tw	Tb	Ti	#cells	Lc(ft)	Cover	Blhw	Hlhw	Brhw	Hrhw	Blcw	Hlcw	Brcw	Hrcw	SL(deg)	SR(deg)
STA 160+50.19 TO 167+38.19	CBC-1	7	4	10	10	10	10	1	67.2	2	12	24	12	24	12	24	12	24	-22.03	-21.31
STA 151+64.10 TO 153+86.31	CBC-2	7	4	10	10	10	10	1	222	2	12	24	12	24	12	24	12	24	-2.59	-0.083
STA 130+09.95 TO 130+77.11	CBC-3	7	4	10	10	10	10	1	688	2	12	24	12	24	12	24	12	24	27.17	-35.94

LEFT SIDE WINGWALLS DATA TABLE (inches unless shown otherwise)																	Table Date 10-27-20	
STRUCTURE /BRIDGE NUMBER	LEFT END WINGWALL									LEFT BEGIN WINGWALL								
	Rt	Rw	Rh	Rd	SW(deg)	β (deg)	He(ft)	Hs(ft)	Lw(ft)	Rt	Rw	Rh	Rd	SW(deg)	β (deg)	He(ft)	Hs(ft)	Lw(ft)
CBC-1	34	10	60	11	90	26.60	8	8	17	34	10	60	11	90	26.60	8	8	17
CBC-2	34	10	60	11	90	17.88	8	8	17	34	10	60	11	90	19.61	8	8	17
CBC-3	34	10	60	11	90	26.57	8	8	17	34	10	60	11	90	-0.40	8	8	17

RIGHT SIDE WINGWALLS DATA TABLE (inches unless shown otherwise)																	Table Date 10-27-20	
STRUCTURE /BRIDGE NUMBER	RIGHT END WINGWALL									RIGHT BEGIN WINGWALL								
	Rt	Rw	Rh	Rd	SW(deg)	β (deg)	He(ft)	Hs(ft)	Lw(ft)	Rt	Rw	Rh	Rd	SW(deg)	β (deg)	He(ft)	Hs(ft)	Lw(ft)
CBC-1	34	10	60	11	90	24.20	8	8	17	34	10	60	11	90	26.60	8	8	17
CBC-2	34	10	60	11	90	18.83	8	8	17	34	10	60	11	90	18.75	8	8	17
CBC-3	34	10	60	11	90	25.31	8	8	17	34	10	60	11	90	26.57	8	8	17

ESTIMATED CONCRETE QUANTITIES (CY)																			Table Date 10-27-20		
STRUCTURE /BRIDGE NUMBER	BOX								LEFT END WINGWALL			LEFT BEGIN WINGWALL			RIGHT END WINGWALL			RIGHT BEGIN WINGWALL			
	Left Cutoff Wall	Right Cutoff Wall	Bottom Slab	Walls	Top Slab	Left Head Wall	Right Head Wall	Sub Total	Footing	Wall	Sub Total	Footing	Wall	Sub Total	Footing	Wall	Sub Total	Footing	Wall	Sub Total	
CBC-1	0.400	0.400	18.77	16.58	17.96	0.400	0.400	55.06	5.00	4.20	9.88	5.00	4.20	9.88	5.00	4.20	9.88	5.00	4.20	9.88	
CBC-2	0.374	0.374	60.2	54.9	59.4	0.374	0.374	176.00	5.00	4.20	9.88	5.00	4.20	9.88	5.00	4.20	9.88	5.00	4.20	9.88	
CBC-3	0.420	0.460	185	170	184	0.42	0.46	542.00	5.00	4.20	9.88	5.00	4.20	9.88	5.00	4.20	9.88	4.69	4.20	9.57	

[illegible]

WINGWALL STEEL REINFORCEMENT SPACING (inches)																										Table Date 10-27-20		
STRUCTURE /BRIDGE NUMBER	LEFT END WINGWALL							LEFT BEGIN WINGWALL							RIGHT END WINGWALL							RIGHT BEGIN WINGWALL						
	401 407(8)	402 (403)	404 (405)	406	409	410	411	501 507(8)	502 (503)	504 (505)	506	509	510	511	601 607(8)	602 (603)	604 (605)	606	609	610	611	701 707(8)	702 (703)	704 (705)	706	709	710	711
CBC-1	8	12	12	12	8	8	12	8	12	12	12	8	8	12	8	12	12	12	8	8	12	8	12	12	12	8	8	12
CBC-2	8	12	12	12	8	8	12	8	12	12	12	8	8	12	8	12	12	12	8	8	12	8	12	12	12	8	8	12
CBC-3	8	12	12	12	8	8	12	8	12	12	12	8	8	12	8	12	12	12	8	8	12	8	12	12	12	8	8	12

WINGWALL NOTE: Bar designations in "()" are only required for variable height wingwalls.

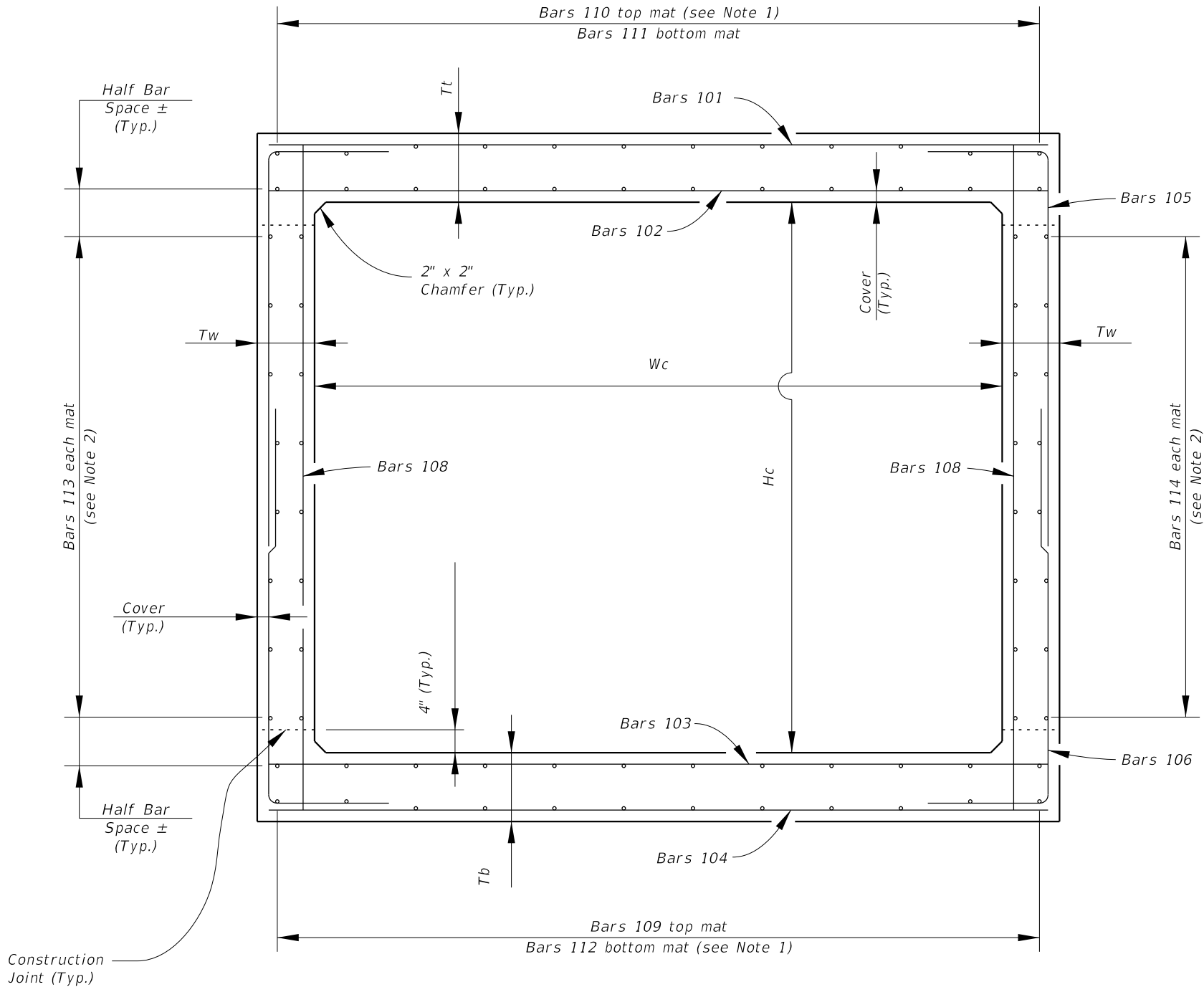
	BOX CULVERT 1	BOX CULVERT 2	BOX CULVERT 3	
Soil Properties:				
Soil Density	110	110	100	pcf
Modulus of Subgrade Reaction	100	100	100	pci
Friction Angle	30	30	28	degrees
Nominal Bearing Resistance	3000	3000	2000	psf
Settlement criteria for Precast Box Culvert:				
Long Term Differential Settlement (ΔY)	1.0	1.0	1.0	in
Effective Length for Settlement (L)	67	221	691	ft

REVISIONS				PETER J. MEDICO, P.E. P.E. LICENSE NUMBER 42654 METRIC ENGINEERING, INC. 525 TECHNOLOGY PARK, SUITE 153 LAKE MARY, FLORIDA 32746	SEMINOLE COUNTY ENGINEERING DIVISION		CONCRETE BOX CULVERT DATA TABLE	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		PROJECT NAME	PROJECT ID		26
					WILLOW AVENUE- ALHAMBRA AVENUE	CIP 02007124		

NOTES:

1. *Environmental Class 2*
2. *Reinforcing Steel, Grade 60*
3. *Concrete Class III $f'c = 5 \text{ ksi}$*
4. *Work this Drawing with Standard Plans Index 400-289 & 425-010.*
5. *At the contractors' option, Index 400-292 Standard Precast Concrete Box Culverts may be substituted for Index 400-289 Cast-In-Place Box Culverts. Submit shop drawings and calculations, signed by a professional engineer registered in Florida, to the engineer of record of approval.*
6. *The contractor is required to provide a dewatering system which maintains groundwater levels at least 2 feet below compaction surfaces, including the bottom of all excavations. A system of ditches and sumps may be sufficient in some instances to achieve adequate dewatering, but the contractor must be prepared to install well-point or other dewatering systems as necessary.*
7. *Use of gravel in excavation bottom when soils are too wet to achieve required compaction is not allowed.*
8. *The contractor must provide positive drainage during site preparation and fill placement. Surface water shall not be allowed to accumulate on compacted surfaces.*

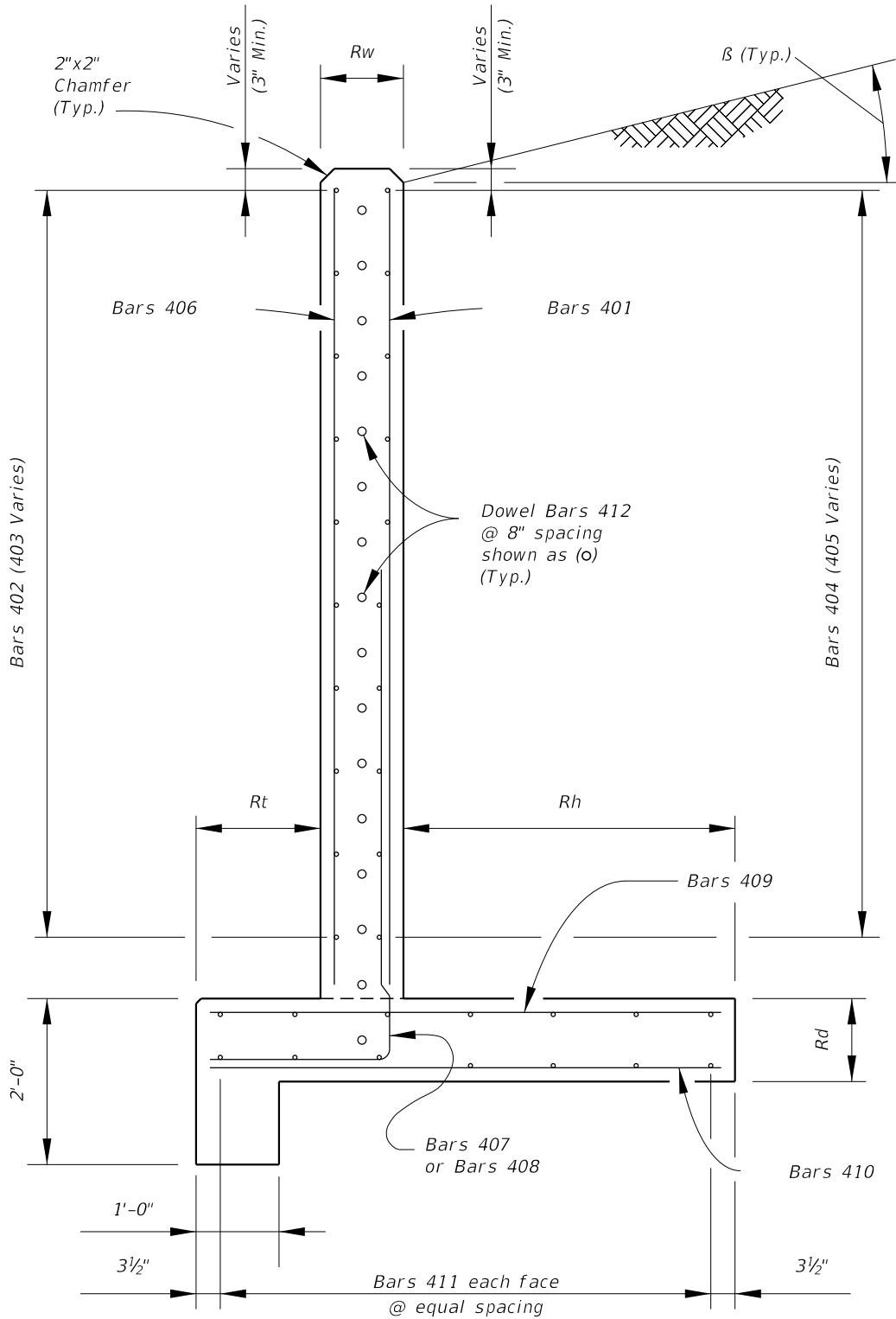
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TYPICAL SECTION THRU SINGLE BARREL CULVERT

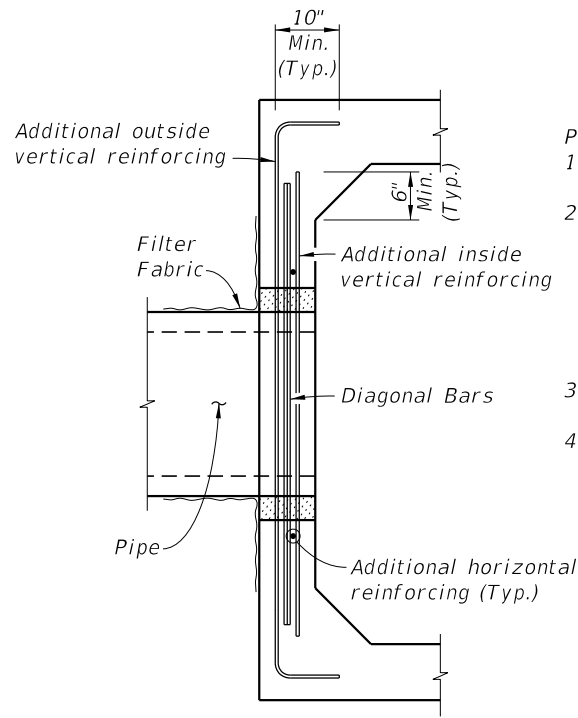
- CULVERT BARREL NOTES:
1. Space Bars 110 and 112 with a bar in each corner, and at the C of interior walls (for multiple barrel culverts only), and the remaining bars placed at equal spacing shown in the Contract Plans. Adjust last bar spacing when required.
 2. Place Bars 113 and 114 at spacing shown in the Contract Plans evenly between Bars 109 and 111.
 3. Locate the first transverse bar from the ends of the culvert at one half the bar spacing, but provide the minimum reinforcement cover and not greater than 4" clear.

- WINGWALL NOTES:
1. Align construction joint perpendicular to wingwall.
 2. In the vicinity of the construction joint, field bend reinforcement as necessary to maintain minimum reinforcement cover.
 3. For constant height wingwalls, variable length Bars 403, 405 & 408 are not required, and as such the limits of Bars 401 & 407 extend the full length of the wingwall, and the limits of Bars 402 & 404 extend to the full height of the wingwall.



WINGWALL TYPICAL SECTION

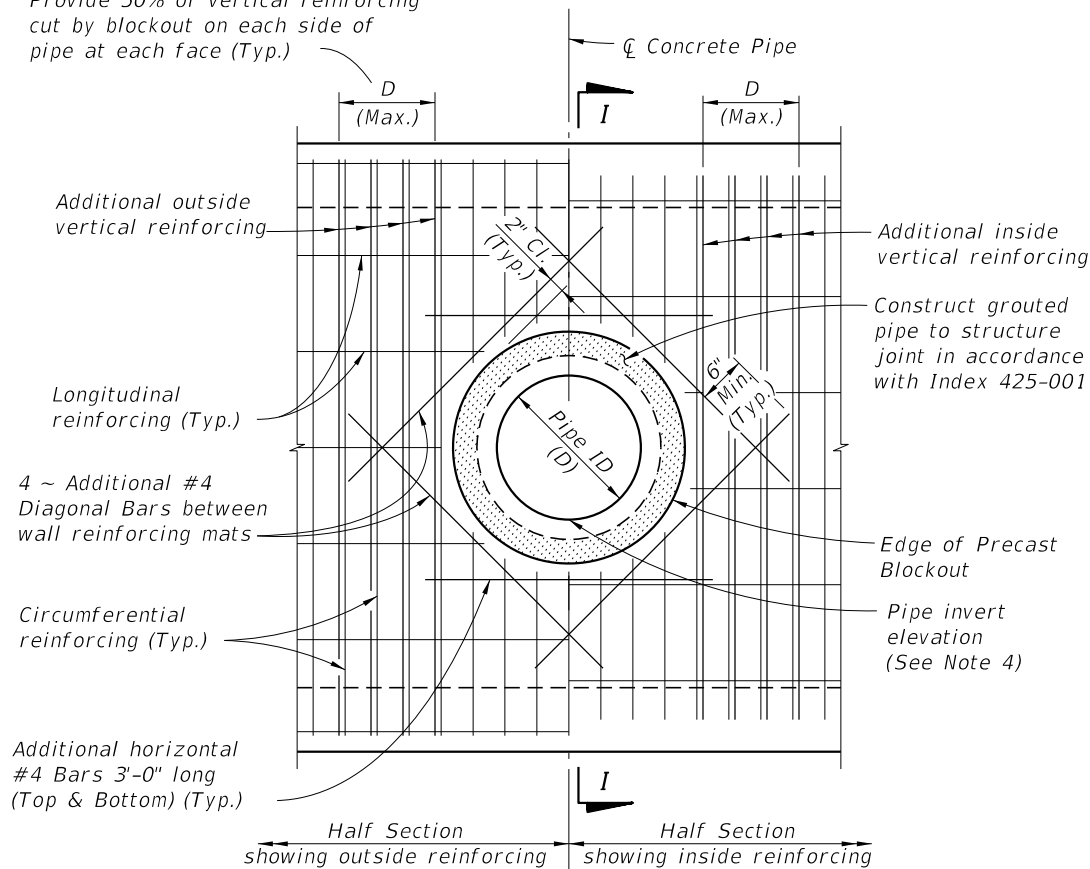
REVISIONS				PETER J. MEDICO, P.E. P.E. LICENSE NUMBER 42654 METRIC ENGINEERING, INC. 525 TECHNOLOGY PARK, SUITE 153 LAKE MARY, FLORIDA 32746	SEMINOLE COUNTY ENGINEERING DIVISION		CONCRETE BOX CULVERT STANDARD DETAILS (1 OF 2)	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		PROJECT NAME	PROJECT ID		
					WILLOW AVENUE- ALHAMBRA AVENUE	CIP 02007124		27



SECTION I-I

(Showing additional blackout reinforcing only)

Provide 50% of vertical reinforcing cut by blackout on each side of pipe at each face (Typ.)



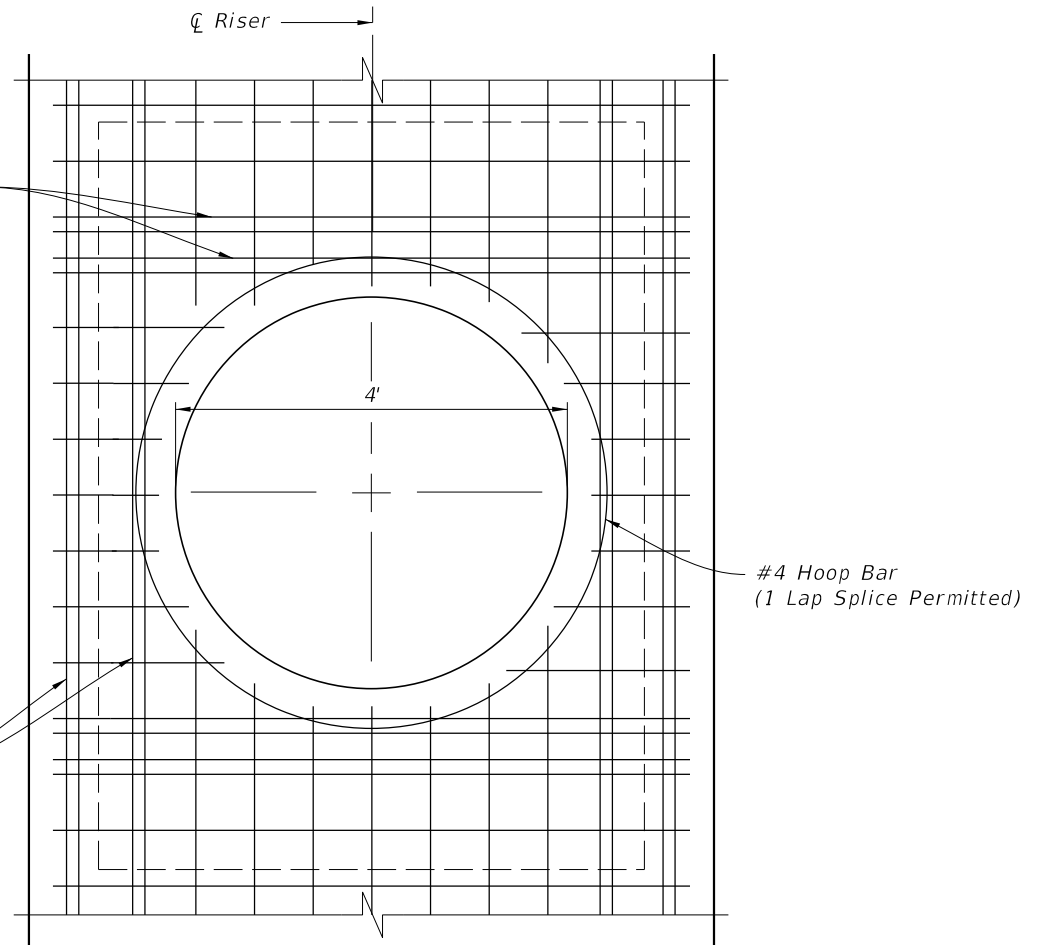
PIPE BLOCKOUT DETAILS (SIDE PENETRATION)
ELEVATION VIEW

PIPE BLOCKOUT NOTES:

1. Cut box culvert reinforcement as required to maintain 2" cover.
2. For Precast Sections construct opening a minimum of 1'-6" away from any box to box joint, except opening may be a minimum of 1'-0" away from joint when at least 2'-0" of clearance to the box to box joint is provided on the opposite side of the pipe opening.
3. Pipe blockout diameter to be 6" greater than pipe outside diameter.
4. See Drainage Plans for size, placement, and invert elevation.

2 Additional Bars B @ 5" Max. O. C. Each Side Of Opening (Minimum #4 Bars)

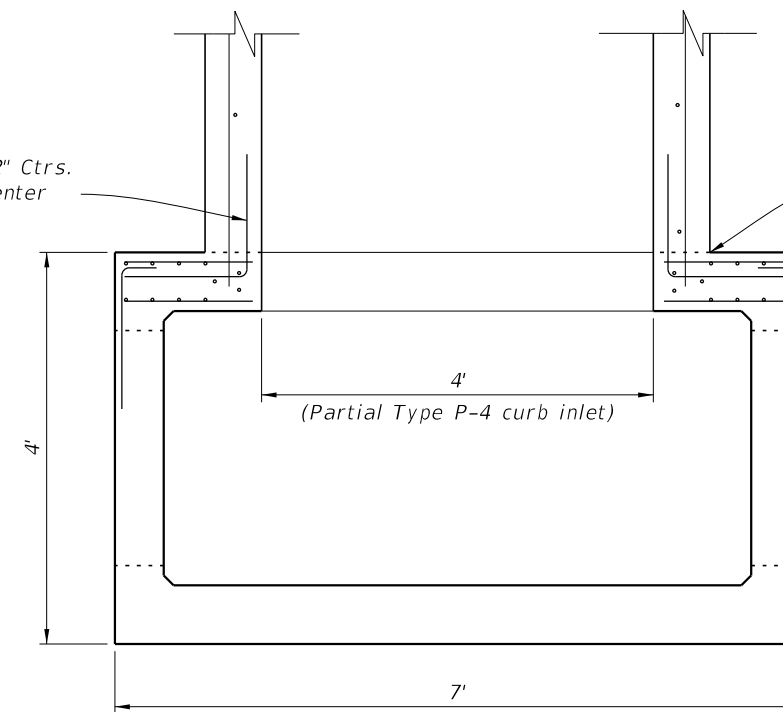
2 Additional Bars A @ 5" O.C. (Minimum #4 Bars)



ROUND RISER OPENING
TOP SLAB REINFORCING STEEL DIAGRAM
PLAN VIEW

#4 Type 10 Bars @ 12" Ctrs. 30" long, bent 90° in center

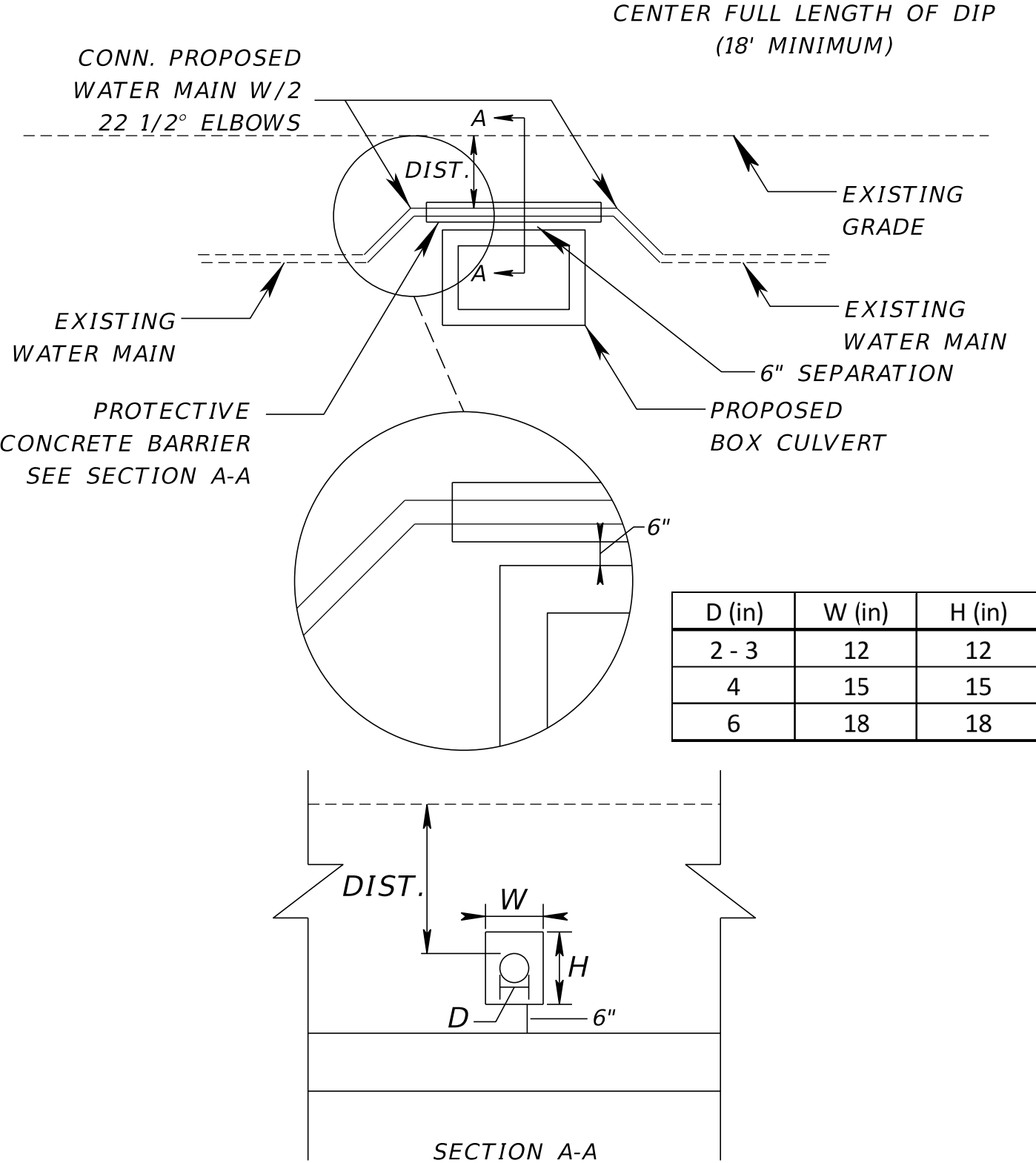
Construction Joint (Typ.)



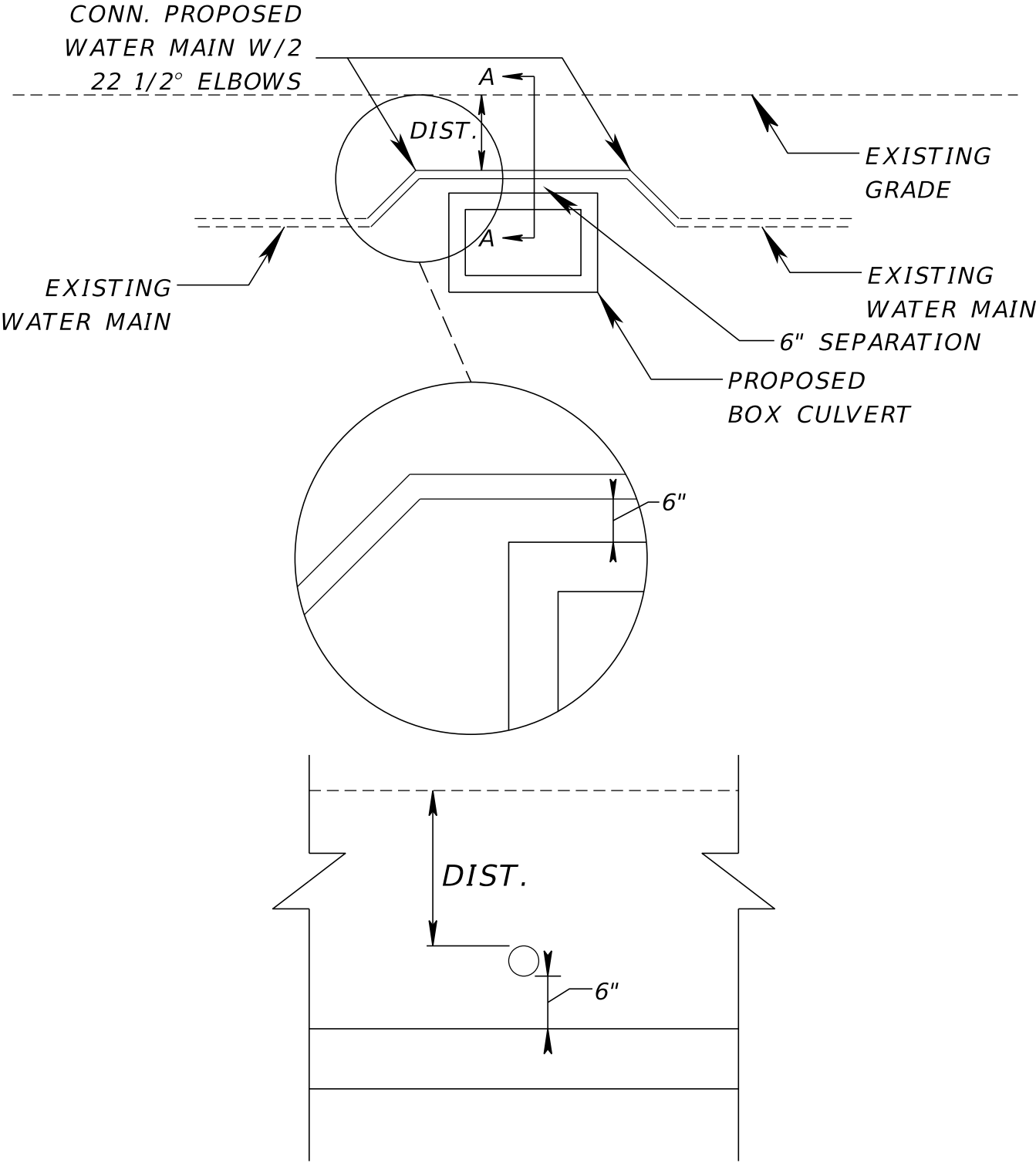
TOP PENETRATION DETAIL
(Not showing all reinforcing for clarity)

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DATE	DESCRIPTION	DATE	DESCRIPTION		PROJECT NAME	PROJECT ID		
					WILLOW AVENUE- ALHAMBRA AVENUE	CIP 02007124		28

"DIST." LESS THAN 30 INCHES IN
PROPOSED CONDITION



"DIST." GREATER THAN/EQUALS 30 INCHES IN
PROPOSED CONDITION



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

MICHAEL A. HOLT, P.E.
P.E. LICENSE NUMBER 76111
METRIC ENGINEERING, INC.
525 TECHNOLOGY PARK, SUITE 153
LAKE MARY, FLORIDA 32746

SEMINOLE COUNTY ENGINEERING DIVISION	
PROJECT NAME	PROJECT ID
WILLOW AVENUE - ALHAMBRA AVENUE	CIP 02007124

UTILITY DETAILS	
28	

SHEET NO.
28

SUMMARY OF LUMP SUM ITEMS					
PAY ITEM NO.	PAY ITEM DESCRIPTION	QUANTITY		DESIGN NOTES	CONSTRUCTION REMARKS
		P	F		
101-1	MOBILIZATION	1			
102-1	MAINTENANCE OF TRAFFIC	1			

SUMMARY OF EARTHWORK					
PAY ITEM NO.	PAY ITEM DESCRIPTION	CY		DESIGN NOTES	CONSTRUCTION REMARKS
		P	F		
120-1	REGULAR EXCAVATION	376.00			
120-6	EMBANKMENT	16.00			

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DATE	DESCRIPTION	DATE	DESCRIPTION		PROJECT NAME	PROJECT ID		
					WILLOW AVENUE- ALHAMBRA AVENUE	CIP 02007124		SQ-1

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SUMMARY OF PAVEMENT														
PAY ITEM NO.	PAY ITEM DESCRIPTION	LOCATION		SIDE	AREA ID	LENGTH	WIDTH	UNIT	QUANTITY		TOTAL		DESIGN NOTES	CONSTRUCTION REMARKS
		STA. TO STA.	DESCRIPTION						P	F	P	F		
0160 4	Type B Stabilization	12+38.43 to 12+86.03		LT/RT	5011			SY	149.2		1735			
		22+30.00 to 26+45.00		LT/RT	8994				1124.9					
		30+57.58 to 31+17.18		LT/RT	7806				163.8					
		40+61.10 to 41+22.11		LT/RT	7830				161.3					
		50+85.37 to 51+33.92		LT/RT	9310				135.3					
285709	Optional Base, Base Group 09	12+38.43 to 12+86.03		LT/RT	7950			SY	139.5		1444			
		22+30.00 to 26+45.00		LT/RT	9158				932.0					
		30+57.58 to 31+17.18		LT/RT	7972				132.9					
		40+61.11 to 41+22.11		LT/RT	7961				129.8					
		50+85.37 to 51+33.87		LT/RT	9254				110.2					
0334 1 12	Superpave Asphaltic Conc, Traffic B	12+38.43 to 12+86.03		LT/RT	18335			TN	15.35		177.6			
		22+30.00 to 26+45.00		LT/RT	24928				102.52					
		30+37.38 to 30+57.58		LT/RT	18097				2.49					
		30+57.58 to 31+17.18		LT/RT	18351				14.62					
		31+17.18 to 31+37.38		LT/RT	18091				2.46					
		40+41.11 to 40+61.11		LT/RT	18085				2.36					
		40+61.11 to 41+22.11		LT/RT	18340				14.28					
		41+22.11 to 41+41.11		LT/RT	18073				2.04					
		50+59.62 to 50+85.37		LT/RT	18048				4.66					
		50+85.37 to 51+33.87		LT/RT	18373				12.12					
		51+33.87 to 51+59.62		LT/RT	18040				4.70					
0337 7 80	Asphalt Concrete Friction Course, Traffic B, FC-9.5, PG 76-22	12+12.23 to 13+12.73		LT/RT	13127			TN	16.20		16.2			

SUMMARY OF RAILING					
LOCATION	SIDE	PIPE HANDRAIL - GUIDERAIL (ALUMINUM)		DESIGN NOTES	CONSTRUCTION REMARKS
		0515 1 2			
		LF			
		P	F		
12+33.01 to 12+70.01	LT	37.0			
12+68.65 to 12+92.96	RT	24.3			
30+67.40 to 31+29.18	LT	61.8			
51+04.53 to 51+48.99	RT	42.4			
SUB-TOTAL :		165.5			
TOTAL :		166			

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DATE	DESCRIPTION	DATE	DESCRIPTION		PROJECT NAME	PROJECT ID		
					WILLOW AVENUE-ALHAMBRA AVENUE	CIP 02007124		SQ-2

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SUMMARY OF FENCING										
PAY ITEM NO.	DESCRIPTION	LOCATION	SIDE	UNIT	QUANTITY		TOTAL		DESIGN NOTES	CONSTRUCTION REMARKS
		STA. TO STA.			P	F	P	F		
0550 10220	FENCING, TYPE B, 5.1- 6.0', STANDARD	151+49.52 to 151+66.82	LT/RT	LF	61.9		105			
		153+83.45 to 153+98.30	LT/RT		43.3					

SUMMARY OF PERFORMANCE TURF								
LOCATION	SIDE	AREA ID	LENGTH	WIDTH	PERFORMANCE TURF (SOD)		DESIGN NOTES	CONSTRUCTION REMARKS
STA. TO STA.					0570	1 2		
					SY			
					P	F		
22+30.00 to 22+86.43	LT	23243			37.4			
22+30.00 to 22+97.54	RT	23233			45.2			
22+98.81 to 24+21.37	LT	23251			80.0			
23+16.23 to 24+57.17	RT	23260			92.3			
24+40.08 to 25+45.11	LT	23301			66.9			
24+73.74 to 26+01.86	RT	23272			88.8			
25+60.78 to 26+40.00	LT	23316			38.8			
26+16.03 to 26+40.00	RT	23321			18.1			
30+57.55 to 31+17.20	RT	23332			57.6			
30+57.58 to 31+27.71	LT	23326			63.4			
40+61.09 to 41+22.11	LT	23352			79.5			
40+61.11 to 41+22.11	RT	23337			106.1			
50+94.65 to 51+46.58	RT	23383			45.8			
50+94.69 to 51+33.90	LT	23366			36.9			
SUB-TOTAL:					856.8			
TOTAL:					857			

SUMMARY OF UTILITY ADJUSTMENTS										
PAY ITEM NO.	PAY ITEM DESCRIPTION	LOCATION	SIDE	UNIT	QUANTITY		TOTAL		DESIGN NOTES	CONSTRUCTION REMARKS
					P	F	P	F		
1050-16-002	UTILITY PIPE,REMOVE & DISPOSE, 2-4.9"	West Lake Brantley	RT	LF	35.0					
1050-16-002	UTILITY PIPE,REMOVE & DISPOSE, 2-4.9"	Alder Avenue	RT	LF	35.0					
1050-16-002	UTILITY PIPE,REMOVE & DISPOSE, 2-4.9"	Willow Avenue	LT	LF	35.0					
1050-16-003	UTILITY PIPE, REMOVE & DISPOSE, 5.0 - 7.9"	Alhambra Avenue	RT	LF	35.0					
1050-11-422	UTILITY PIPE, F&I, DI/CI, WATER / SEWER, 2 - 4.9"	West Lake Brantley	RT	LF	35.0					
1050-11-422	UTILITY PIPE, F&I, DI/CI, WATER / SEWER, 2 - 4.9"	Alder Avenue	RT	LF	35.0					
1050-11-422	UTILITY PIPE, F&I, DI/CI, WATER / SEWER, 2 - 4.9"	Willow Avenue	LT	LF	35.0					
1050-11-423	UTILITY PIPE, F&I, DI/CI, WATER / SEWER, 5 - 7.9"	Alhambra Avenue	RT	LF	35.0					
1080-27-110	UTILITY FIXTURE, F&I, LINE STOP ASSEMBLY, 8"	Alhambra Avenue	RT	EA	1.0					

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DATE	DESCRIPTION	DATE	DESCRIPTION				

PROJECT NAME	PROJECT ID
WILLOW AVENUE- ALHAMBRA AVENUE	CIP 02007124

SQ-4

REVISIONS				C. BRIAN FULLER, P.E. P.E. LICENSE NUMBER 49524 METRIC ENGINEERING, INC. 525 TECHNOLOGY PARK, SUITE 153 LAKE MARY, FLORIDA 32746	SEMINOLE COUNTY ENGINEERING DIVISION		SUMMARY OF QUANTITIES	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION					
					PROJECT NAME	PROJECT ID		
					WILLOW AVENUE- ALHAMBRA AVENUE	CIP 02007124		SQ-4

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