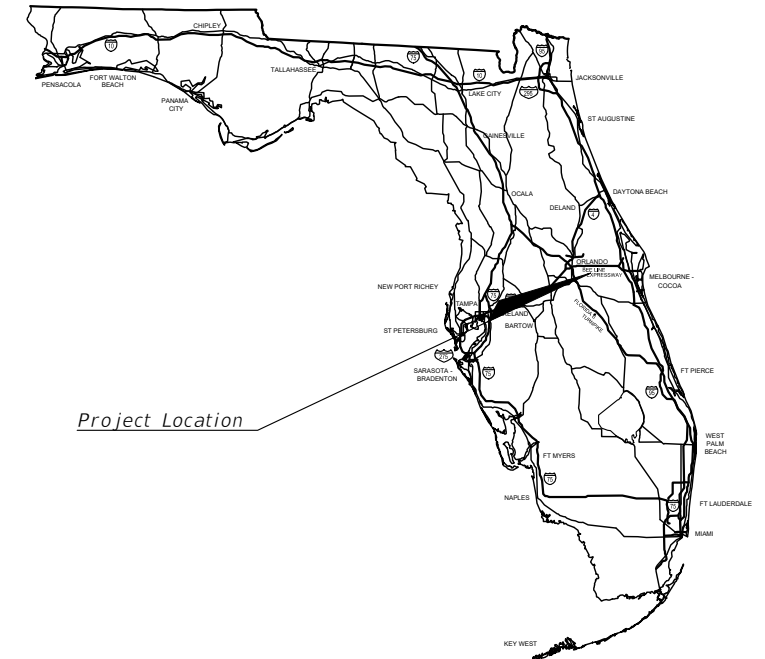


# OSCEOLA COUNTY, FLORIDA PUBLIC WORKS DEPARTMENT

## CONTRACT PLANS

### SIMPSON RD SIGNALIZATION PLANS




#### INDEX OF SIGNALIZATION PLANS

SHEET NO.	SHEET DESCRIPTION
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T-11 to T-12	MAST ARM TABULATION
T-13	STANDARD MAST ARM ASSEMBLIES DATA TABLE
T-14	SPECIAL MAST ARM ASSEMBLIES DATA TABLE
T-15 to T-17	GUIDE SIGN WORKSHEETS
T-18 to T-23	SPT BORING RESULTS

SIGNALIZATION PLANS SHOP DRAWINGS  
TO BE SUBMITTED TO:

JENNIFER M. DISTEFANO, P.E.  
VANASSE HANGEN BRUSTLIN, INC.  
225 E. ROBINSON STREET, SUITE 300  
ORLANDO, FL 32801

PLANS PREPARED BY:

 **vhb**  
Engineers | Scientists  
Planners | Designers  
225 E. Robinson Street, Suite 300  
Orlando, FL 32801 (407)839-4006  
Certificate of Authorization # 3932

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

100% PLANSET  
DATE: MARCH 6, 2023

#### OSCEOLA COUNTY TRANSPORTATION AND TRANSIT

BRANDON ARRINGTON	CHAIRMAN OF THE BOARD OF COUNTY COMMISSIONERS
VIVIANA JANER	VICE CHAIRWOMAN OF THE BOARD OF COUNTY COMMISSIONERS
PEGGY CHOUNDHRY	COUNTY COMMISSIONER
RICKY BOOTH	COUNTY COMMISSIONER
CHERYL GRIEB	COUNTY COMMISSIONER
DON FISHER	COUNTY MANAGER
DAVID MAY	COUNTY ENGINEER
FRANK RAYMOND	PUBLIC WORKS DIRECTOR
TAWNY H OLORE, P.E.	DIRECTOR OF TRANSPORTATION AND TRANSIT

GOVERNING STANDARD PLANS:  
Florida Department of Transportation, FY2022-23 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:  
<http://www.fdot.gov/design/Standardplans.shtm>

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

Standard Plans for Bridge Construction are included in the Structures  
Plans Component.

GOVERNING STANDARD SPECIFICATIONS:  
Florida Department of Transportation, July, 2022 Standard  
Specifications for Road and Bridge Construction at the following  
website:  
<http://www.fdot.gov/programmanagement/Implemented/SpecBooks>

OSCEOLA COUNTY PROJECT MANAGER: STEVEN KANE, P.E.

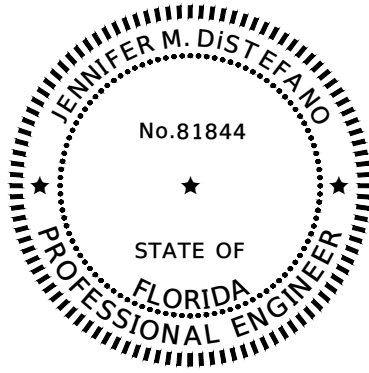
SIGNALIZATION PLANS

ENGINEER OF RECORD: JENNIFER M. DISTEFANO, P.E.

P.E. NO.: 81844

SHEET  
NO.

T-1



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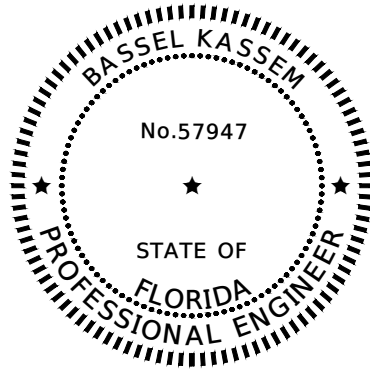
PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

VANASSE HANGEN BRUSTLIN, INC.  
TRANSPORTATION, LAND DEVELOPMENT,  
ENVIRONMENTAL SERVICES  
225 E. ROBINSON ST., SUITE 300  
LANDMARK CENTER TWO  
ORLANDO, FL 32801  
JENNIFER M. DISTEFANO, P.E. NO. 81844

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

PLAN INDEX

SHEET NO.	SHEET DESCRIPTION
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T-15 to T-17	GUIDE SIGN WORKSHEETS



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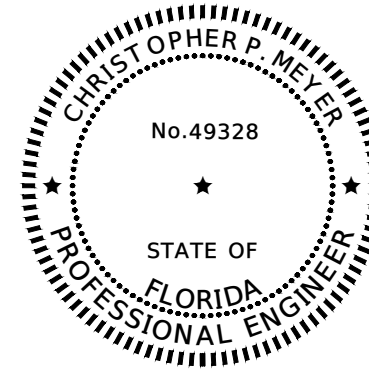
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FLORIDA BRIDGE AND TRANSPORTATION, INC.  
633 DARTMOUTH STREET  
ORLANDO, FL 32804  
BASSEL KASSEM, P.E. NO. 57947

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

PLAN INDEX

SHEET NO.	SHEET DESCRIPTION
T-2	SIGNATURE SHEET
T-13	STANDARD MAST ARM ASSEMBLIES DATA TABLE
T-14	SPECIAL MAST ARM ASSEMBLIES DATA TABLE



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ON THE DATE ADJACENT TO THE SEAL.

PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS, INC.  
2510 MICHIGAN AVENUE, SUITE D  
KISSIMMEE, FL  
CHRISTOPHER P. MEYER, P.E. NO. 49328

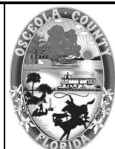
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PLAN INDEX

SHEET NO.	SHEET DESCRIPTION
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T-18 to T-23	SPT BORING RESULTS

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

Engineers | Scientists  
Planners | Designers  
225 E. Robinson Street, Suite 300  
Orlando, FL 32801 (407)839-4006  
Certificate of Authorization # 3932  
Jennifer M. DiStefano, P.E.  
PE # 81844



OSCEOLA COUNTY  
FLORIDA

SIGNATURE SHEET

SHEET NO.  
T-2

**TABULATION OF QUANTITIES**

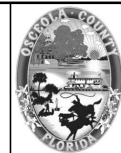
PAY ITEM NO.	DESCRIPTION	UNIT	SHEET NUMBERS												TOTAL THIS SHEET		GRAND TOTAL	
			T-5		T-6		T-7		T-8		T-9		T-10		PLAN	FINAL	PLAN	FINAL
			PLAN	FINAL	PLAN	FINAL	PLAN	FINAL	PLAN	FINAL	PLAN	FINAL	PLAN	FINAL				
630-2-11	CONDUIT, FURNISH & INSTALL, OPEN TRENCH	LF	234		271		233		67		80		127		1012		1012	
630-2-12	CONDUIT, FURNISH & INSTALL, DIRECTIONAL BORE	LF	321		354		395		434		267		405		2176		2176	
632-7-1	SIGNAL CABLE - NEW OR RECONSTRUCTED INTERSECTION, FURNISH & INSTALL	PI	1		1		1		1		1		1		6		6	
635-2-11	PULL & SPLICE BOX, F&I, 13" x 24" COVER SIZE	EA	18		17		18		14		13		17		97		97	
639-1-122	ELECTRICAL POWER SERVICE, F&I, UNDERGROUND, METER PURCHASED BY CONTRACTOR	AS	1		1		1		1						4		4	
639-1-620	ELECTRICAL POWER SERVICE, REMOVE UNDERGROUND	AS					1								1		1	
639-2-1	ELECTRICAL SERVICE WIRE	LF	145		129		106		119		16		10		525		525	
641-2-12	PRESTRESSED CONCRETE POLE, F&I, TYPE P-II SERVICE POLE	EA	1		1		1		1						4		4	
641-2-60	PRESTRESSED CONCRETE POLE, COMPLETE POLE REMOVAL PEDESTAL/SERVICE POLE	EA					5								5		5	
646-1-11	ALUMINUM SIGNALS POLE, PEDESTAL	EA	4		7		5		4		4		5		29		29	
646-1-60	ALUMINUM SIGNALS POLE, REMOVAL	EA			2						8		2		12		12	
649-21-1	STEEL MAST ARM ASSEMBLY, FURNISH AND INSTALL, SINGLE ARM 30'	EA	1				1								2		2	
649-21-3	STEEL MAST ARM ASSEMBLY, FURNISH AND INSTALL, SINGLE ARM 40'	EA	1								1				2		2	
649-21-6	STEEL MAST ARM ASSEMBLY, FURNISH AND INSTALL, SINGLE ARM 50'	EA			1						1		1		3		3	
649-21-10	STEEL MAST ARM ASSEMBLY, FURNISH AND INSTALL, SINGLE ARM, 60'	EA					1		2				3		6		6	
649-21-13	STEEL MAST ARM ASSEMBLY, FURNISH AND INSTALL, DOUBLE ARM 60'-50'	EA									1				1		1	
649-21-14	STEEL MAST ARM ASSEMBLY, FURNISH AND INSTALL, DOUBLE ARM 60'-60'	EA			1										1		1	
649-21-15	STEEL MAST ARM ASSEMBLY, FURNISH AND INSTALL, SINGLE ARM 70'	EA	2		1		1								4		4	
649-21-18	STEEL MAST ARM ASSEMBLY, FURNISH AND INSTALL, DOUBLE ARM 70'-50'	EA							1						1		1	
649-21-21	STEEL MAST ARM ASSEMBLY, FURNISH AND INSTALL, SINGLE ARM 78'	EA					1								1		1	
649-26-3	STEEL MAST ARM ASSEMBLY, REMOVE, SHALLOW FOUNDATION- BOLT ON ATTACHMENT	EA			4		4				4		2		14		14	
650-1-14	VEHICULAR TRAFFIC SIGNAL, FURNISH & INSTALL ALUMINUM, 3 SECTION, 1 WAY	AS	10		8		12		9		8		8		55		55	
650-1-16	VEHICULAR TRAFFIC SIGNAL, FURNISH & INSTALL ALUMINUM, 4 SECTION, 1 WAY	AS	2		2		2		4		2		4		16		16	
650-1-19	VEHICULAR TRAFFIC SIGNAL, FURNISH & INSTALL ALUMINUM, 5 SECTION CLUSTER, 1 WAY	AS			2										2		2	
653-1-11	PEDESTRIAN SIGNAL, FURNISH & INSTALLED LED COUNTDOWN, 1 WAY	AS			6		2						2		10		10	
653-1-12	PEDESTRIAN SIGNAL, FURNISH & INSTALL LED COUNTDOWN, 2 WAYS	AS	4		1		3		4		4		3		19		19	
660-4-11	VEHICLE DETECTION SYSTEM- VIDEO, FURNISH & INSTALL CABINET EQUIPMENT	EA	1		1		1		1		1		1		6		6	
660-4-12	VEHICLE DETECTION SYSTEM - VIDEO, FURNISH & INSTALL ABOVE GROUND EQUIPMENT	EA	4		4		4		4		4		4		24		24	
663-1-121	SIGNAL PRIORITY AND PREEMPTION SYSTEM, FURNISH AND INSTALL, GPS, REPLACE CABINET ELECTRONICS	EA	1		1		1		1		1		1		6		6	
663-1-122	SIGNAL PRIORITY AND PREEMPTION SYSTEM, FURNISH AND INSTALL, GPS, DETECTOR	EA	1		1		1		1		1		1		6		6	
665-1-11	PEDESTRIAN DETECTOR, FURNISH & INSTALL, STANDARD	EA	8		8		8		8		8		8		48		48	
670-5-111	TRAFFIC CONTROLLER ASSEMBLY, F&I, NEMA, 1 PREEMPTION	AS	1		1		1		1		1		1		6		6	
670-5-600	TRAFFIC CONTROLLER ASSEMBLY, REMOVE CONTROLLER WITH CABINET	AS			1		1				1		1		4		4	
685-1-14	UNINTERRUPTIBLE POWER SUPPLY, FURNISH AND INSTALL, ONLINE/DOUBLE CONVERSION WITH CABINET	EA	1		1		1		1		1		1		6		6	
700-3-201	SIGN PANEL, FURNISH & INSTALL OVERHEAD MOUNT, UP TO 12 SF	EA			1										1		1	
700-5-22	INTERNALLY ILLUMINATED SIGN, FURNISH & INSTALL, OVERHEAD MOUNT, 12-18 SF	EA	4		4		4		4		4		4		24		24	
715-1-12	LIGHTING CONDUCTORS, F&I, INSULATED, NO.8 - 6	LF	1311		1161		1734		1398		879		1685		8168		8168	
715-5-32	LUMINAIRE & BRACKET ARM- GALV STEEL, FURNISH & INSTALL NEW LUMINAIRE AND ARM ON NEW/EXISTING POLE	EA	2		2		4		3		2		3		16		16	

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REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION



Engineers | Scientists  
Planners | Designers  
225 E. Robinson Street, Suite 300  
Orlando, FL 32801 (407)839-4006  
Certificate of Authorization # 3932  
Jennifer M. DiStefano, P.E.  
PE # 81844



**OSCEOLA COUNTY  
FLORIDA**

**TABULATION OF  
QUANTITIES**

SHEET NO.  
T-3

**General**

- Unless otherwise noted in the technical specifications: installation, acceptance, and payment for all items required in these plans shall be in accordance with the current editions of the following, referenced in the key sheet: Manual on Uniform Traffic Control Devices (MUTCD), FDOT Standard Plans, FDOT Design Manual, FDOT Standard Specifications for Road and Bridge Construction, and Osceola County Contractor Signal Specifications.
- Temporary traffic control shall be maintained in accordance with the MUTCD, dated 2009 & all applicable revisions, and the FDOT Standard Plans, dated FY 2022-23. Attention is directed to the 102 Standard Plan Index series.
- The contractor shall notify Osceola County at least 48 hours before beginning any related traffic signal work.
- All existing signalization equipment to remain is assumed to be in good working order unless Osceola County is notified in writing prior to the start of construction. Any subsequent damage to the signal equipment shall be repaired at the contractor's expense.
- The contractor shall be advised that other projects may be under construction concurrently with this project. The contractor shall be responsible for coordinating all aspects of scheduling and work with other agencies and contractors in charge of concurrent projects.
- Final locations of any devices including cabinets shall be approved by the engineer prior to placement of the foundation if the location has changed from the plan.
- The contractor shall notify the TMC 48 hours in advance shall communications to an intersection be disrupted to perform work. Notification shall be conveyed via email to lindsey.giovinazzo@osceola.org and shall include contact name, phone number, purpose, location, and duration of outage.
- Three spare conductors shall be installed for each vehicle phase per Osceola County Standard.
- Signal cable shall be spliced to a separate 7-conductor cable for each signal and 7-conductor cable for each pedestrian signal head. These splices shall be installed in either hand-hole of the steel pole/concrete strain pole or within the transformer base of a pedestrian pedestal. The color code of each signal cable shall be verified with Osceola County prior to wiring the intersection. A permanent tag shall be placed at both wire terminations designating the phase used. All unused signal wires shall be bonded to the pole ground. Each detector push button shall be fed with an individual two-conductor Belden cable, with the shield wire bonded to the pole ground. The outside of the insulation jacket of all signal cables shall remain intact from the signal heads to the field termination points. No un-jacketed individual conductors shall rest in any field drilled structures or assemblies.
- Solid colored insulation conductors should be used for main roadway phases and tracers used for side street phases.
- The contractor shall verify structure orientation prior to placement. Structures of incorrect orientation shall be replaced at contractor's expense. The contractor shall verify all structures are set to elevations that will meet vertical clearance requirements specified in FDOT, MUTCD, and county standards prior to installing structural material. If a discrepancy is found, contact the engineer of record.
- If the contractor calls for an inspection and the contractor is not prepared for the inspection (i.e. the inspection has to be rescheduled), the contractor shall be back charged for all costs associated with the inspection.

**Procedures**

- The contractor shall coordinate a field meeting with the signal project manager (407)738-9405, prior to removing any existing equipment, to determine which equipment should be delivered to Osceola County Transportation and Transit. The agreed upon equipment shall be disassembled into their component parts, tagged as to location, packaged as needed for protection from damage, and delivered to: 3850 Old Canoe Creek Rd  
Attn: Aaron Torres  
Saint Cloud, FL 34769
- The signal project manager is to be contacted at least 48 hours prior to delivery. Written acknowledgement of equipment receipt shall be obtained from the project manager in the form of a signed receipt bearing the contractor's letterhead. This itemized receipt shall state all equipment removed from each location was returned to Osceola County in good condition. The contractor shall present the receipt to the project manager at the time of signal inspection. Absence of such receipt shall be recorded on the punch list as an item to be corrected prior to final approval of the installation.
- All signalization equipment that is removed and not requested by Osceola County shall be properly disposed of at the contractor's expense in a manner and location approved by the project manager (407) 738-9405.

**Submittals**

- All submittal data on Osceola County projects shall be submitted to Aaron Torres, PE, via email at aaron.torres@osceola.org.

**Survey**

- Survey prepared by DRMP, Inc. in April 2022.

**Utilities**

- The contractor shall notify all utilities at least 48 hours in advance of any operation that may conflict with overhead or underground utilities, including pole setting operations where a conflict with overhead electrical conductors is expected.
- Refer to Simpson Road - North Segment Roadway Improvement Plans for list of utility owners and contact information.
- These plans reflect conditions known during plan development. In the event actual physical conditions prevent the application or progression of any work specified in these plans, the contractor shall notify the engineer immediately and prior to any further work activity.

**Drilled Shafts**

- The County shall hire a certified drilled shaft CTQP level I construction engineering and inspection (CEI) firm, and a concrete testing laboratory for the purpose of inspecting all drilled shaft installations per FDOT standards. The firm shall then submit a signed and sealed report verified by the PE in responsible charge of the drilled shaft inspector to the department for approval. Contractor to also coordinate with Osceola County to perform VT inspection at the time of drilled shaft pour. Failure to obtain these services prior to the construction of the drilled shaft(s) shall result in the rejection of the drilled shaft(s).
- The signal contractor is responsible for ensuring that no conflicts exist during the soft digs with drill shaft locations and must notify the Engineer of Record when they arise. The signal contractor is responsible for all associated cost, not complying with this signal note.
- The contractor shall be responsible for supplying approved shop drawings showing the bolt pattern and arm orientation prior to the pre-drill shaft meeting.

**Mast Arms**

- The mast arms shall be painted "midnight neutral" (Sherwin Williams J4-55-34), applied according to FDOT standard specifications 560 (codes Z-C and B-8 for prime and intermediate coats). This includes any luminaires installed on the mast arm.

**As-Built Plans**

- As defined in the FDOT Standard Specifications, section 611-2.3, seven days prior to signal conditional acceptance inspection by the maintaining agency, the contractor shall provide a PDF of the as built plans to Osceola County Transportation and Transit. The contractor shall also leave one as-built plan in the drawer of the signal cabinet. In addition to the as-built plans, contractor shall submit bore logs. The contractor shall be required to become familiar with Osceola County's inspection procedure.
- Any fiber interconnect cable that is cut or damaged during construction must be replaced as an entire run and shall be re-spliced within the splice enclosure at the end of the run. Splicing of fiber interconnect cable between splice enclosures is not permitted. The contractor shall bear all expenses associated with the installation of the new interconnect cable.

**Pay Item Notes:**

- 102-1 Pay Item and all associated work is included in the Simpson Road - North Segment Roadway Improvement Plans. 102-1 includes all items required to safely maintain traffic through the work zone, as specified in the latest FDOT Standard Plans 102 Index. These items include, but are not limited to, high intensity flashing lights, temporary reflective pavement markers, impact attenuator modules, barricades and temporary street lighting, pavement markings. Payment under this item includes the professional engineer's fees for the preparation of the maintenance of traffic plans, as well as compensation for all necessary detours. This item includes providing maintenance of traffic during inspections. Also includes the cost of maintaining communication, including temporary lines and connections, and video detection.
- 102-14 Pay Item and all associated work is included in the Simpson Road - North Segment Roadway Improvement Plans. Payment for this item shall only be made if conditions 1-5 in the FDOT BOE 102-14 item details are met and it was verified by the engineer or inspector.
- 630-2-XX A green #12 AWG trace wire shall be installed within any unused conduit and spliced within the pull box to provide electrical continuity. All references in the plan to rigid conduit shall be installed as 1.5" galvanized steel metal conduit. There shall be one spare 2" underground conduit installed per run. This shall be reflected in the callout. There shall be a separate conduit for video or loop runs from signal power conduits. Under no circumstances shall loop and video runs be housed in the same conduit as signal power.

- 635-2-XX pull boxes shall be "Quazite", have non-conductive covers, and meet ANSI Tier 22 Rating. Covers shall be stamped "Osceola County Traffic Signal" for all signalization applications.
- 641-2-12 included the cost of providing concrete service pole to mount signal disconnect when not permitted to be mounted on power company pole. Service pole shall be exposed 12' above grade with disconnect mounted at 8'. Surge arrestor shall be wired on the load side of the disconnect.
- 646-1-XX all pedestrian pedestals shall be provided with aluminum breakaway transformer-type bases.
- 649-2X-XX bid price for installation of mast arms shall include foundation construction, including CSL tubes (number and configuration of CSL tubes shall comply with Standards and Specifications section 455-16.4 CSL tubes and FDOT standard plan.
- 650-1-XX all traffic signal heads shall be aluminum. An articulated astro-bracket shall be provided under this pay item if needed for proper orientation of horizontal signal head on a skewed arm or approach. This pay item includes backplates and tunnel visors. Retro reflective back plate borders are required on all back plates. Any four section signal heads with the flashing yellow arrow shall have the FTP-85-13 sign installed adjacent to the head assembly to the right.
- 653-1-XX led pedestrian signals are to be single section and provided with international style lenses and countdown features.
- 660-4-XX video detectors supplies shall meet Osceola County's functionality requirements. Sunshields shall be provided on each video camera, a menu-driven interface requiring no separate computer for set-up or maintenance shall be provided. Video cameras shall be color, and sealed pressurized housing. This pay item shall also include lightning and surge protection consisting of point discharge dissipation terminals on each camera, coax or cat 5 line protectors and camera protectors. Proper grounding must be provided including a bond wire attached to the camera assembly running to the pole ground, this item includes exterior use cabling, and mounting brackets necessary to meet the performance expectations of the system as described in the signal general notes. Payment includes all labor (man-hours) and equipment necessary to develop an acceptance testing plan and to complete a successful video detection accuracy test A.K.A. Field acceptance test of the video detection system.
- 663-1-XXX contractor to furnish and install Global Traffic Technologies GPS receiver and antenna. The contractor will perform all signal testing, mapping and system activation. Contractor to furnish and install global traffic technologies fire-rescue GPS pre-emption controller interface module. Contractor to furnish and install Global Traffic Technologies system-specific preemption GPS multi-pair cable to connect to GPS antennas to GPS pre-emption controller interface.
- 665-1-XX pedestrian push buttons shall include a MUTCD pedestrian sign, R10-3E for each button. The button and sign shall be placed on the face of the pole. Contact the engineer before proceeding if all A.D.A. Requirements cannot be met regarding the placement and accessibility of the buttons. Audible push buttons shall only be installed when called for on plan sheets.
- 670-5-XXX the controller assembly shall be Econolite R77 TS2 Type 1 operation, consist of an Econolite Cobalt 2100 controller, and 3 shelves. (Special note: if there is limited sidewalk A.D.A. clearance, a reduced depth Type VI cabinet can be used with prior approval from Osceola County Transportation and Transit). The cabinet air filter shall be of reusable washable aluminum type. The top of the controller pad shall be at least six inches above the roadway elevation. This pay item shall also include complete reintegration of the existing GPS priority control preemption equipment, and relocation to/from the existing cabinet. A flush mounted automatic power transfer switch shall be included on the cabinet. A technician service pad 30" in width shall also be provided. Whenever possible, the cabinet is to be placed so that the door opens away from the intersection and opens fully within the right of way. This pay item includes the cost of the concrete for the controller pad and the service pad. NOTE - Refer to Osceola County Traffic Signal Cabinet and Controller Specifications 5/2016 for more detailed specifications contact Aaron Torres (407)738-9405, aaron.torres@osceola.org.
- 682-1-XXX all new CCTV Cameras shall be mounted to have the ability to view 360-degree angle by placing the camera on the mast arm using a candy-cane support riser.
- 685-1-13 The UPS systems shall be Alpha XM 1100 or an equivalent Alpha model that meets Osceola County's communication system requirements. UPS cabinets shall be installed separately from the controller assembly, no piggy back mounts.

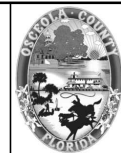
- 700-5-XX illuminated street signs shall be L.E.D. double faced type, producing a minimum of 50 lumens per watt. Signs shall be double-sided and mounted to separate cantilever arms below the mast arms. All internally illuminated street name signs shall have one common photo cell installed in cabinet. Internally illuminated street name signs shall have a 24" viewing height. This viewing height does not include the height of the sign assembly. Internally illuminated street name signs shall be burned in for 60 days before final acceptance. The signs shall use a breaker separately from the signal cabinet and shall be controlled by one master photocell.

**REVISIONS**

DATE	DESCRIPTION	DATE	DESCRIPTION



Engineers | Scientists  
Planners | Designers  
225 E. Robinson Street, Suite 300  
Orlando, FL 32801 (407)839-4006  
Certificate of Authorization # 3932  
Jennifer M. DiStefano, P.E.  
PE # 81844



**OSCEOLA COUNTY  
FLORIDA**

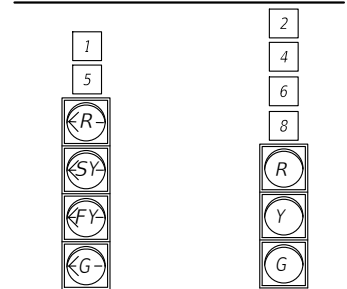
**GENERAL NOTES**

SHEET  
NO.

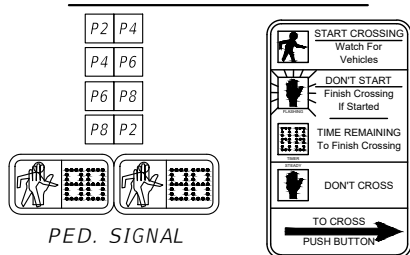
T-4

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**SIGNAL HEAD DETAILS**



**PEDESTRIAN SIGNAL HEAD DETAIL**



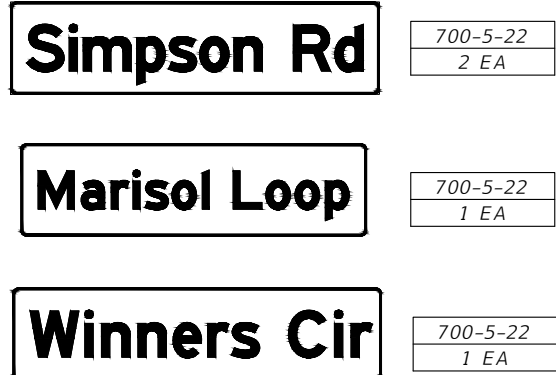
4-SECT., 1-WAY  
650-1-16  
2 AS

3-SECT., 1-WAY  
650-1-14  
10 AS

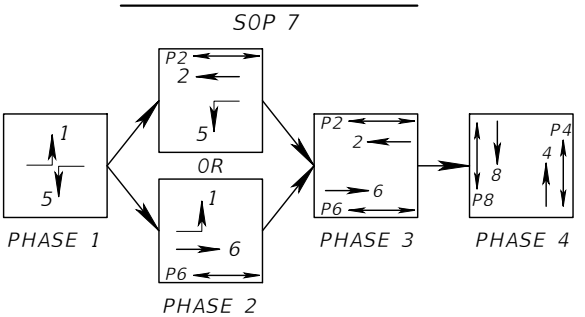
PED. SIGNAL  
COUNT-DOWN  
1-SECT., 2-WAY  
4 AS

COST OF R10-3E IS INCLUDED WITH 665-1-11

**OVERHEAD SIGNS**



**MOVEMENT DIAGRAM**



**CONTROLLER TIMINGS**

TIMING FUNCTION	1	2	4	5	6	8
MINIMUM GREEN	6	10	5	6	10	5
EXTENSION	3.0	3.0	3.0	3.0	3.0	3.0
MAXIMUM GREEN 1	20	50	30	20	50	30
MAXIMUM GREEN 2	-	-	-	-	-	-
YELLOW CLEARANCE	4.8	4.8	3.4	4.8	4.8	4.0
ALL RED	2.0	2.0	2.4	2.0	2.0	2.0
PEDESTRIAN WALK	-	7	7	-	7	7
PED. CLEARANCE	-	28	30	-	19	29
RECALL	-	MIN	-	-	MIN	-
DETECTOR FUNCTION	-	L	NL	-	L	NL

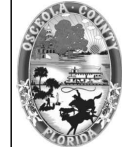
**VIDEO DETECTORS**

CAMERA DETECTOR	DETECTION ZONE	DELAY TIME (SEC.)
CD 1	VDZ 2A	-
	VDZ 2B	-
	VDZ 2C	-
	VDZ 5	-
CD 2	VDZ 4	5
	VDZ 1	-
CD 3	VDZ 6A	-
	VDZ 6B	-
	VDZ 6C	-
	VDZ 6C	-
CD 4	VDZ 8A	5
	VDZ 8B	-
	VDZ 8B	-
	VDZ 8B	-

- NOTES:**
- THE MAJOR ROADWAY IS SIMPSON RD, WHICH HAS A POSTED SPEED LIMIT OF 45 MPH. THE MINOR ROADWAYS ARE MARISOL LOOP, POSTED 25 MPH, AND WINNERS CIRCLE, POSTED 30 MPH.
  - OVERHEAD STREET NAME SIGNS SHALL BE DOUBLE SIDED AND CANTILEVER MOUNTED TO THE PROPOSED MAST ARM UPRIGHT. SEE GUIDE SIGN WORKSHEET FOR SIGN DETAILS.
  - VEHICLE DETECTION ZONE LENGTHS ON SIMPSON RD ARE BASED ON A 45 MPH POSTED SPEED LIMIT.
  - SIGNAL HEADS 1 & 5 SHALL BE PROGRAMMED FOR PROTECTED ONLY OPERATION.
  - PROPOSED POWER SOURCE IS EXISTING POLE ON SOUTH SIDE OF WINNERS CIRCLE APPROXIMATELY 30' WEST OF TRIUMFO CIRCLE.
  - CABINET BASE SHALL HAVE 12 CONDUITS WITH A MINIMUM OF 2 SPARES.

**REVISIONS**

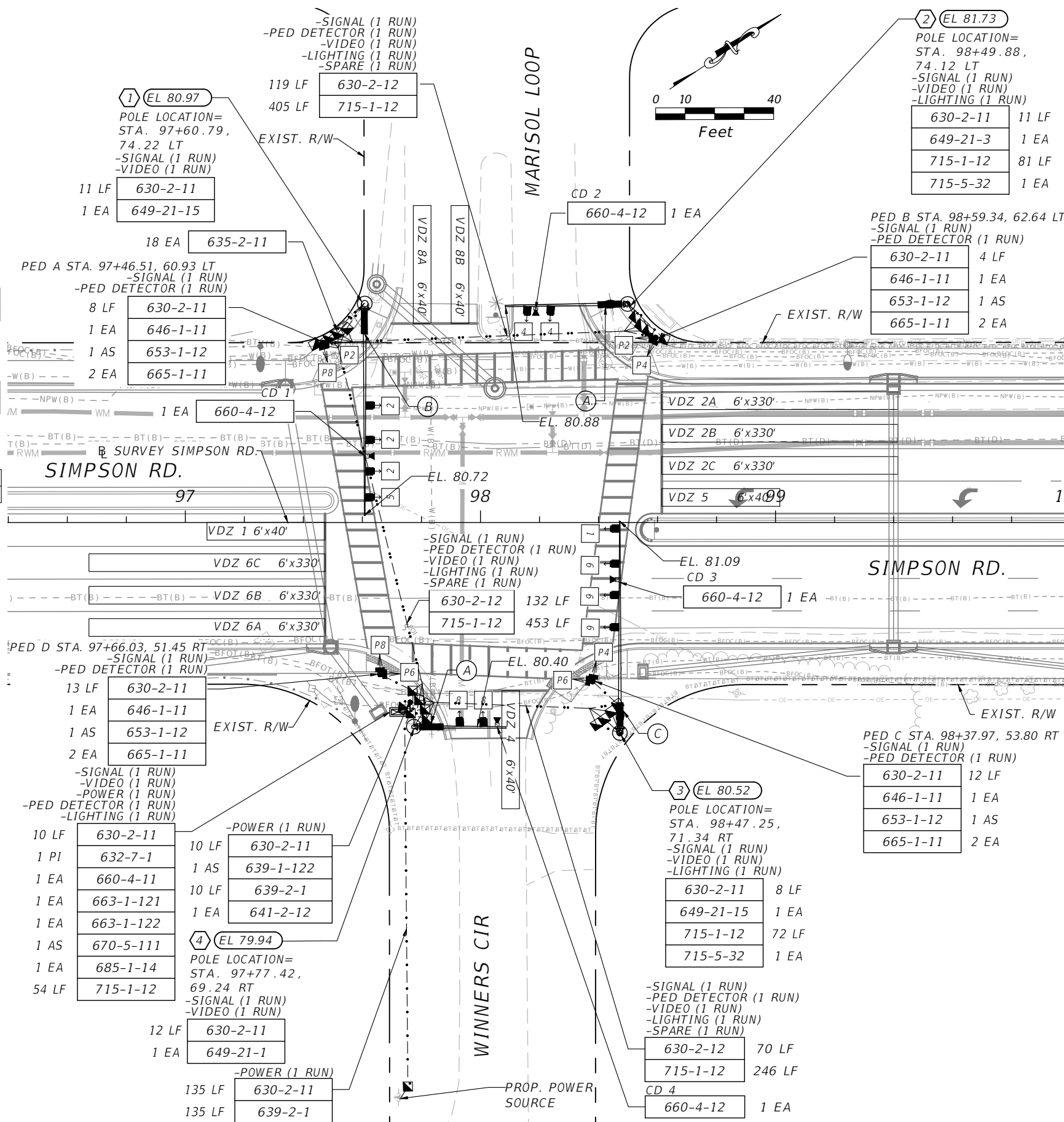
DATE	DESCRIPTION	DATE	DESCRIPTION



OSCEOLA COUNTY  
FLORIDA

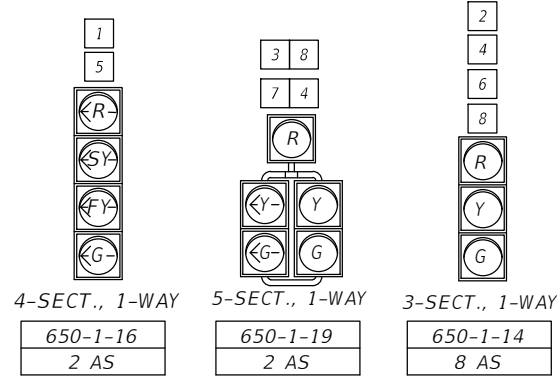
**SIGNALIZATION PLAN (1)**

SHEET NO.  
T-5

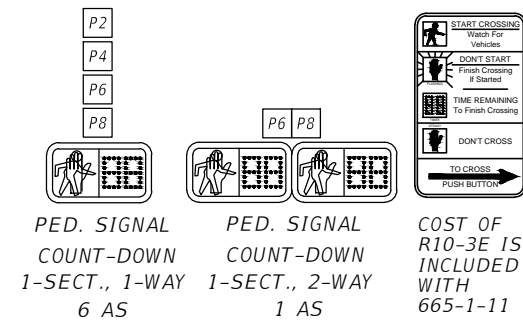


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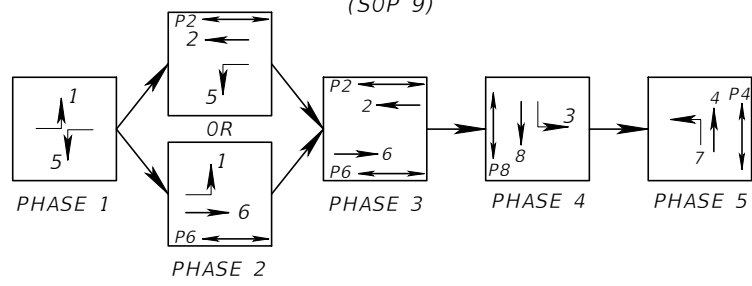
**SIGNAL HEAD DETAILS**



**PEDESTRIAN SIGNAL HEAD DETAILS**



**MOVEMENT DIAGRAM (SOP 9)**



**VIDEO DETECTORS**

CAMERA DETECTOR	DETECTION ZONE	DELAY TIME (SEC.)
CD 5	VDZ 2A	-
	VDZ 2B	-
	VDZ 2C	-
	VDZ 5	-
CD 6	VDZ 4	5
CD 7	VDZ 1	-
	VDZ 6A	-
	VDZ 6B	-
	VDZ 6C	-
CD 8	VDZ 8A	5
	VDZ 8B	-

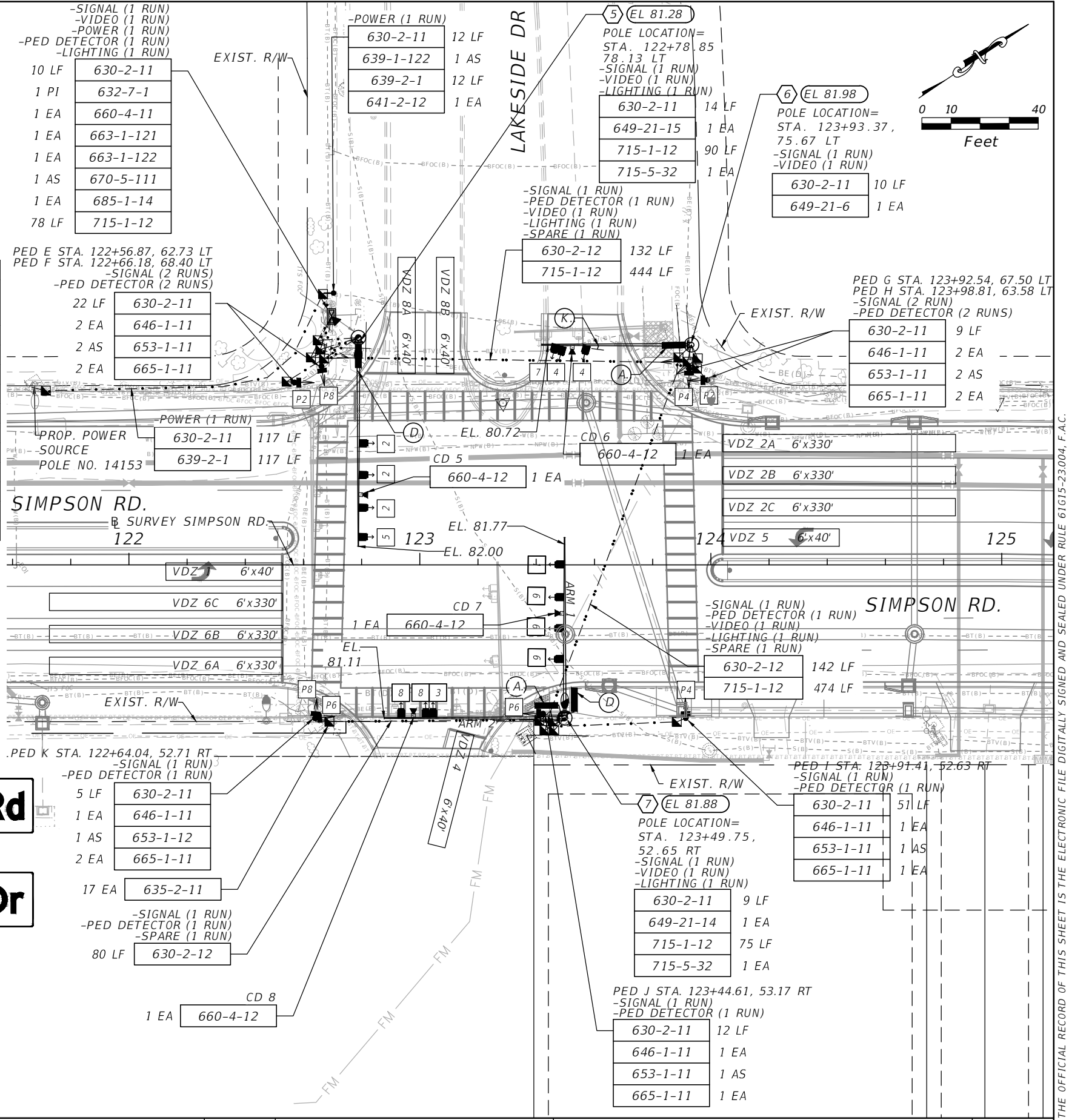
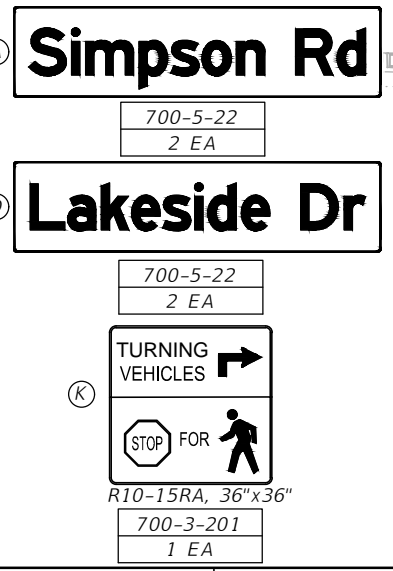
**CONTROLLER TIMINGS**

TIMING FUNCTION	1	2	3	4	5	6	7	8
MOVEMENT NUMBER	1	2	3	4	5	6	7	8
MINIMUM GREEN	6	10	5	5	6	10	5	5
EXTENSION	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
MAXIMUM GREEN 1	20	50	15	30	20	50	15	30
MAXIMUM GREEN 2	-	-	-	-	-	-	-	-
YELLOW CLEARANCE	4.8	4.8	4.4	4.4	4.8	4.8	4.4	4.4
ALL RED	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
PEDESTRIAN WALK	-	7	-	7	-	7	-	7
PED. CLEARANCE	-	34	-	28	-	19	-	30
RECALL	-	MIN	-	-	-	MIN	-	-
DETECTOR FUNCTION	-	L	-	NL	-	L	-	NL

**REMOVAL ITEMS**

646-1-60	2 EA
649-26-3	4 EA
670-5-600	1 AS

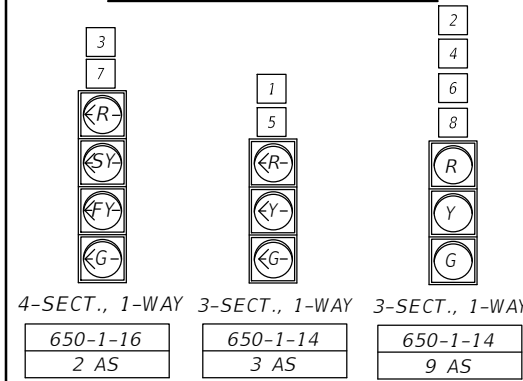
**OVERHEAD SIGNS**



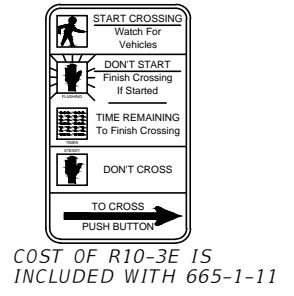
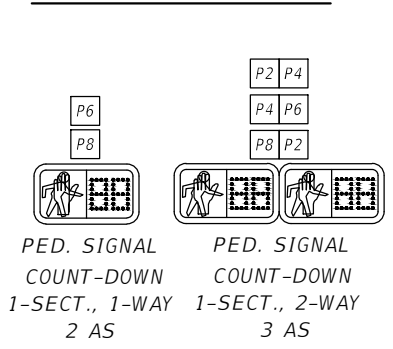
**NOTES:**

- THE MAJOR ROADWAY IS SIMPSON RD, WHICH HAS A POSTED SPEED LIMIT OF 45 MPH. THE MINOR ROADWAY IS LAKESIDE DRIVE WHICH HAS A POSTED SPEED OF 40 MPH.
- OVERHEAD STREET NAME SIGNS SHALL BE DOUBLE SIDED AND CANTILEVER MOUNTED TO THE PROPOSED MAST ARM UPRIGHT. SEE GUIDE SIGN WORKSHEET FOR SIGN DETAILS.
- VEHICLE DETECTION ZONE LENGTHS ON SIMPSON RD ARE BASED ON A 45 MPH POSTED SPEED LIMIT.
- SIGNAL HEADS 1 & 5 SHALL BE PROGRAMMED FOR PROTECTED ONLY OPERATION.
- CABINET BASE SHALL HAVE 12 CONDUITS WITH A MINIMUM OF 2 SPARES.

**SIGNAL HEAD DETAILS**



**PEDESTRIAN SIGNAL HEAD DETAILS**

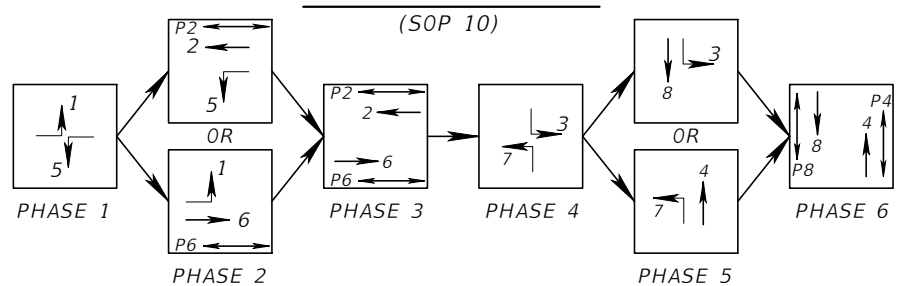


COST OF R10-3E IS INCLUDED WITH 665-1-11

**REMOVAL ITEMS**

639-1-620	1 AS
641-2-60	5 EA
649-26-3	4 EA
670-5-600	1 EA

**MOVEMENT DIAGRAM (SOP 10)**



**CONTROLLER TIMINGS**

TIMING FUNCTION	MOVEMENT NUMBER	1	2	3	4	5	6	7	8
MINIMUM GREEN		6	10	5	5	6	10	5	5
EXTENSION		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
MAXIMUM GREEN 1		20	50	15	30	20	50	15	30
MAXIMUM GREEN 2		-	-	-	-	-	-	-	-
YELLOW CLEARANCE		4.8	4.8	4.0	3.4	4.8	4.8	3.4	4.0
ALL RED		2.0	2.0	2.0	2.5	2.0	2.0	2.7	2.0
PEDESTRIAN WALK		-	7	-	7	-	7	-	7
PED. CLEARANCE		-	36	-	30	-	24	-	28
RECALL		-	MIN	-	-	-	MIN	-	-
DETECTOR FUNCTION		-	L	-	NL	-	L	-	NL

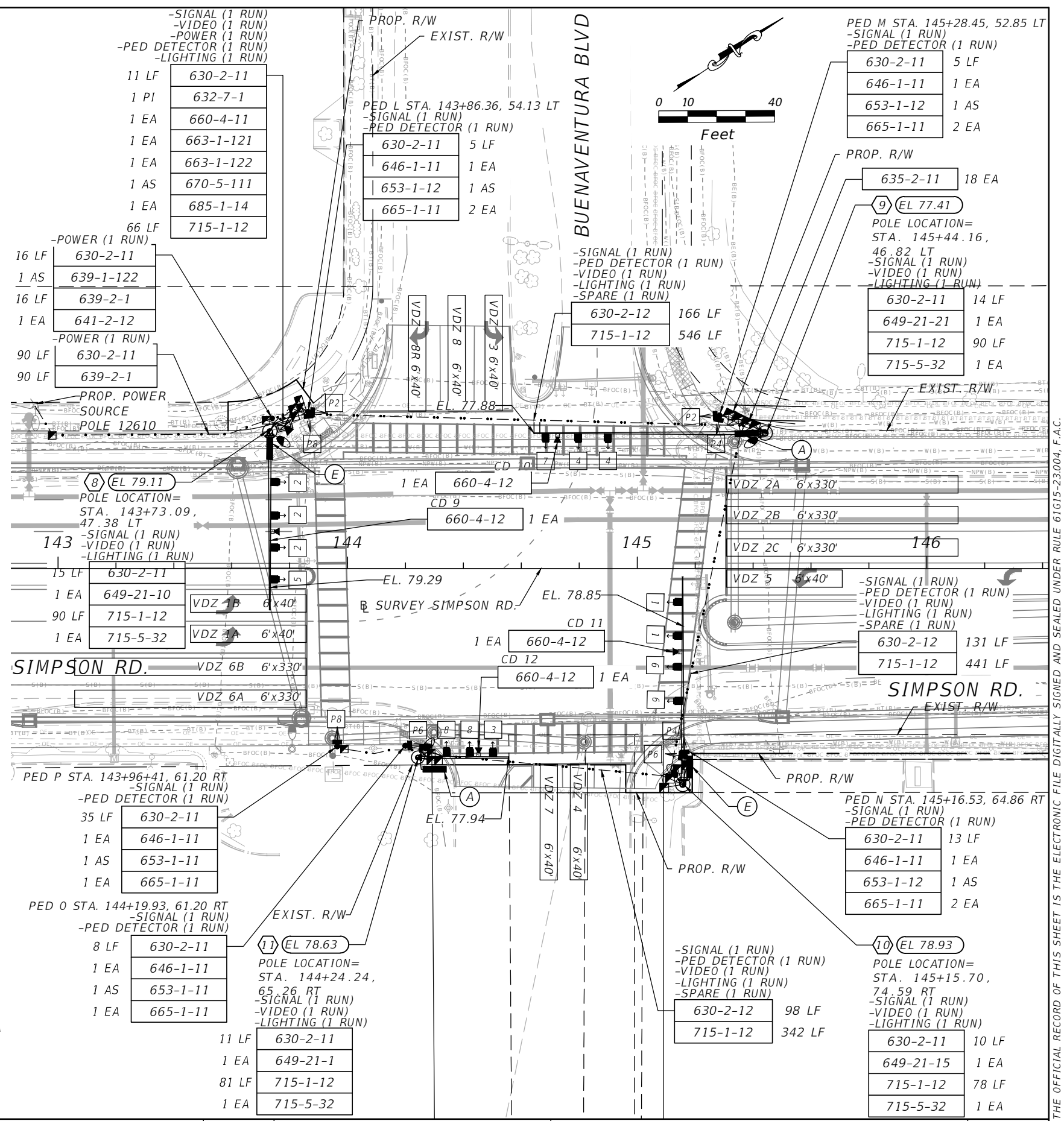
**VIDEO DETECTORS**

CAMERA DETECTOR	DETECTION ZONE	DELAY TIME (SEC.)
CD 9	VDZ 2A	-
	VDZ 2B	-
	VDZ 2C	-
	VDZ 5	-
CD 10	VDZ 7	-
	VDZ 4	5
CD 11	VDZ 1	-
	VDZ 6A	-
	VDZ 6B	-
CD 12	VDZ 6C	-
	VDZ 3	-
	VDZ 8	-
VDZ 8R	5	

**OVERHEAD SIGNS**

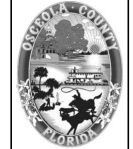


**NOTES:**  
 1. THE MAJOR ROADWAY IS SIMPSON RD, WHICH HAS A POSTED SPEED LIMIT OF 45 MPH. THE MINOR ROADWAY IS BUENAVENTURA BLVD, WHICH HAS A POSTED SPEED OF 35 MPH WEST OF SIMPSON RD. A SPEED OF 25 MPH WAS ASSUMED ON BUENAVENTURA BLVD EAST OF SIMPSON RD.  
 2. OVERHEAD STREET NAME SIGNS SHALL BE DOUBLE SIDED AND CANTILEVER MOUNTED TO THE PROPOSED MAST ARM UPRIGHT. SEE GUIDE SIGN WORKSHEET FOR SIGN DETAILS.  
 3. VEHICLE DETECTION ZONE LENGTHS ON SIMPSON RD ARE BASED ON A 45 MPH POSTED SPEED LIMIT.  
 4. CABINET BASE SHALL HAVE 12 CONDUITS WITH A MINIMUM OF 2 SPARES.



REVISIONS	
DATE	DESCRIPTION

**vhb** Engineers | Scientists  
 Planners | Designers  
 225 E. Robinson Street, Suite 300  
 Orlando, FL 32801 (407)839-4006  
 Certificate of Authorization # 3932  
 Jennifer M. DiStefano, P.E.  
 PE # 81844



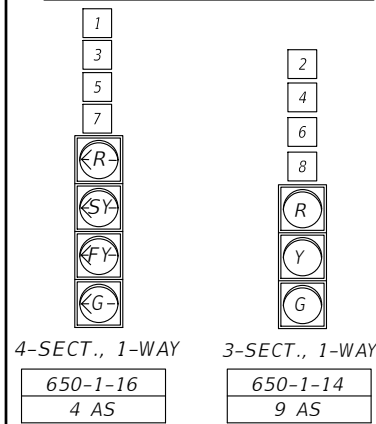
**OSCEOLA COUNTY  
 FLORIDA**

**SIGNALIZATION PLAN (3)**

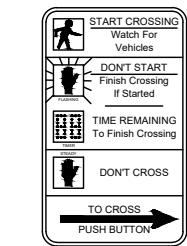
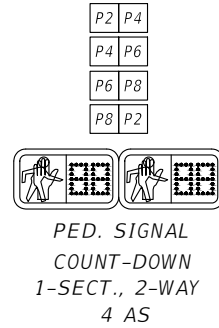
SHEET NO.  
 T-7

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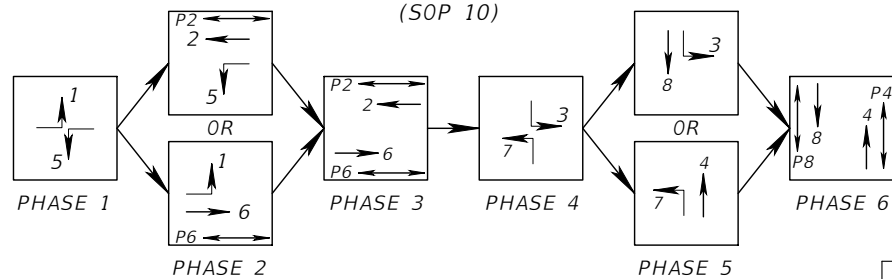
**SIGNAL HEAD DETAILS**



**PEDESTRIAN SIGNAL HEAD DETAILS**



**MOVEMENT DIAGRAM**

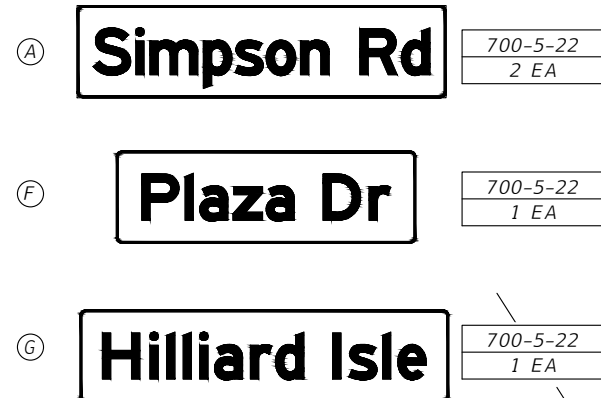


**CONTROLLER TIMINGS**

TIMING FUNCTION		1	2	3	4	5	6	7	8
MOVEMENT NUMBER		1	2	3	4	5	6	7	8
MINIMUM GREEN		6	10	5	5	6	10	5	5
EXTENSION		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
MAXIMUM GREEN 1		20	50	15	30	20	50	15	30
MAXIMUM GREEN 2		-	-	-	-	-	-	-	-
YELLOW CLEARANCE		4.8	4.8	3.4	3.7	4.8	4.8	3.7	3.4
ALL RED		2.0	2.0	2.0	2.5	2.0	2.0	2.0	2.5
PEDESTRIAN WALK		-	7	-	7	-	7	-	7
PED. CLEARANCE		-	24	-	27	-	17	-	29
RECALL		-	MIN	-	-	-	MIN	-	-
DETECTOR FUNCTION		-	L	-	NL	-	L	-	NL

VIDEO DETECTORS		
CAMERA DETECTOR	DETECTION ZONE	DELAY TIME (SEC.)
CD 13	VDZ 2A	-
	VDZ 2B	-
	VDZ 2C	-
CD 14	VDZ 7	-
	VDZ 4	5
	VDZ 1	-
CD 15	VDZ 6A	-
	VDZ 6B	-
CD 16	VDZ 3	-
	VDZ 8	5

**OVERHEAD SIGNS**



**NOTES:**  
 1. THE MAJOR ROADWAY IS SIMPSON RD, WHICH HAS A POSTED SPEED LIMIT OF 45 MPH. THE MINOR ROADWAYS ARE HILLIARD ISLE RD AND PLAZA DR. THE POSTED SPEED LIMIT ON HILLIARD ISLE RD IS 30 MPH AND THE ASSUMED SPEED LIMIT ON PLAZA DR IS 25 MPH.  
 2. OVERHEAD STREET NAME SIGNS SHALL BE DOUBLE SIDED AND CANTILEVER MOUNTED TO THE PROPOSED MAST ARM UPRIGHT. SEE GUIDE SIGN WORKSHEET FOR SIGN DETAILS.  
 3. VEHICLE DETECTION ZONE LENGTHS ON SIMPSON RD ARE BASED ON A 45 MPH POSTED SPEED LIMIT.  
 4. CABINET BASE SHALL HAVE 12 CONDUITS WITH A MINIMUM OF 2 SPARES.

PED Q STA. 159+66.41, 52.33 LT

5 LF	630-2-11
1 EA	646-1-11
1 AS	653-1-12
2 EA	665-1-11

POLE LOCATION= STA. 159+52.49, 49.91 LT

7 LF	630-2-11
1 EA	649-21-10
69 LF	715-1-12
1 EA	715-5-32

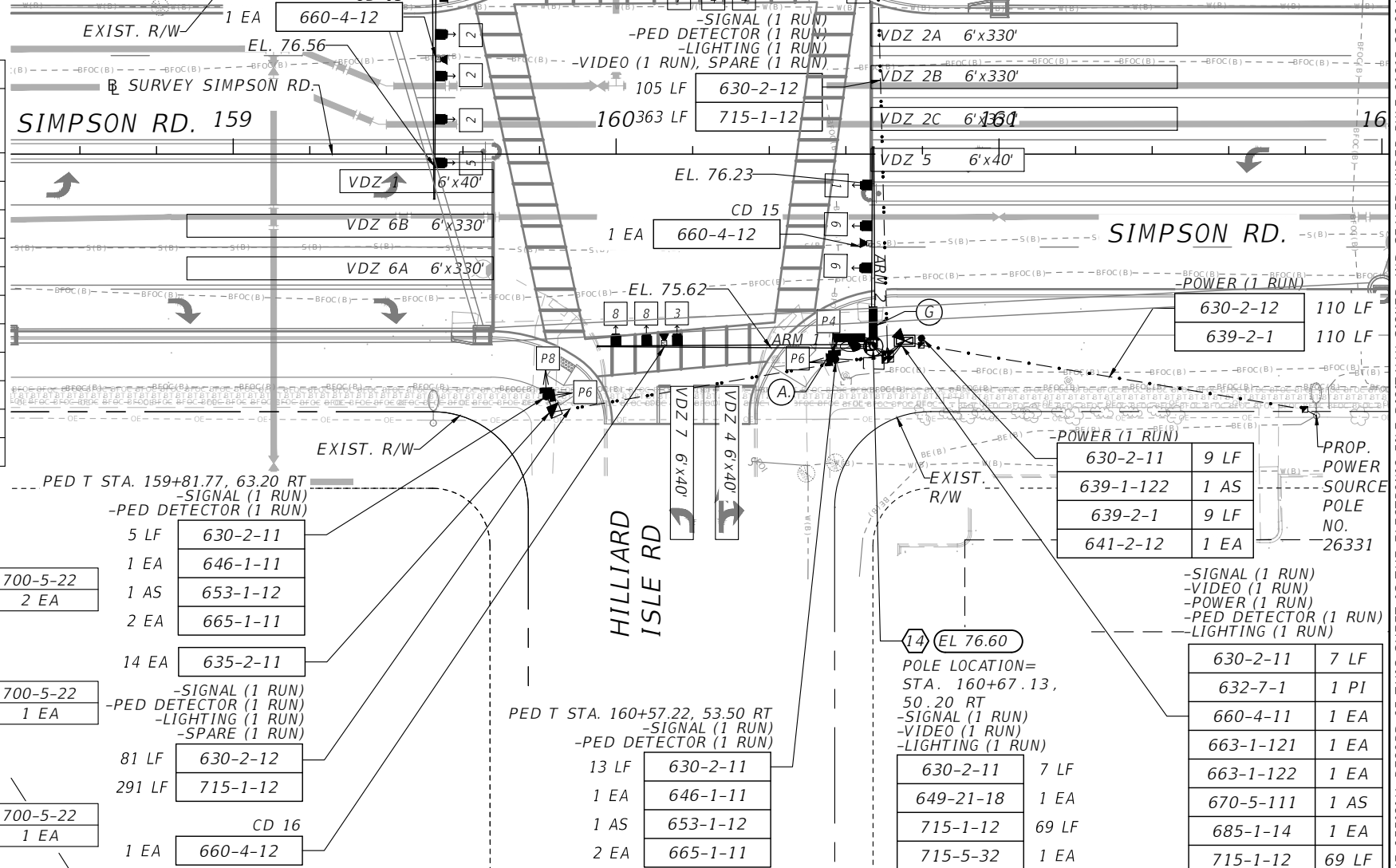
138 LF	630-2-12
462 LF	715-1-12

PED R STA. 160+64.73, 52.30 LT

5 LF	630-2-11
1 EA	646-1-11
1 AS	653-1-12
2 EA	665-1-11

POLE LOCATION= STA. 160+75.98, 50.26 LT

9 LF	630-2-11
1 EA	649-21-10
75 LF	715-1-12
1 EA	715-5-32



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

**vhb** Engineers | Scientists  
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 Certificate of Authorization # 3932  
 Jennifer M. DiStefano, P.E.  
 PE # 81844



OSCEOLA COUNTY  
 FLORIDA

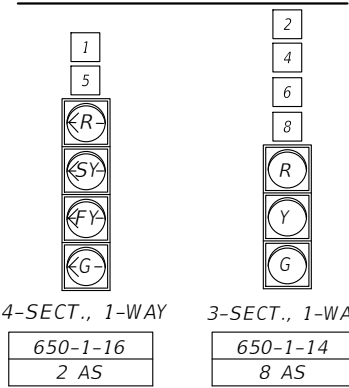
**SIGNALIZATION PLAN (4)**

SHEET NO.	T-8
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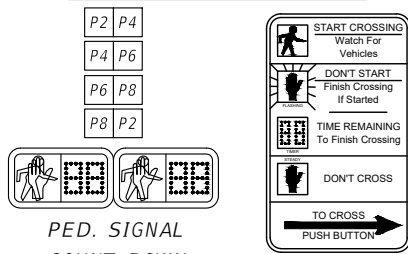
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**SIGNAL HEAD DETAILS**



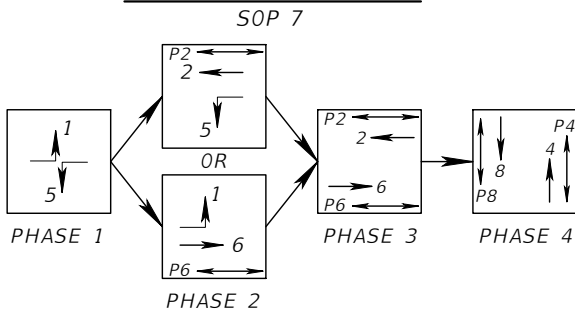
**PEDESTRIAN SIGNAL HEAD DETAIL**



PEDESTRIAN SIGNAL COUNT-DOWN 1-SECT., 2-WAY 4 AS

COST OF R10-3E IS INCLUDED WITH 665-1-11

**MOVEMENT DIAGRAM**



**CONTROLLER TIMINGS**

TIMING FUNCTION							
MOVEMENT NUMBER	1	2	4	5	6	8	
MINIMUM GREEN	6	10	5	6	10	5	
EXTENSION	3.0	3.0	3.0	3.0	3.0	3.0	
MAXIMUM GREEN 1	20	50	20	20	50	20	
MAXIMUM GREEN 2	-	-	-	-	-	-	
YELLOW CLEARANCE	4.8	4.8	3.9	4.8	4.8	3.7	
ALL RED	2.0	2.0	2.0	2.0	2.0	2.0	
PEDESTRIAN WALK	-	7	7	-	7	7	
PED. CLEARANCE	-	19	25	-	16	28	
RECALL	-	MIN	-	-	MIN	-	
DETECTOR FUNCTION	-	L	NL	-	L	NL	

**NOTES:**

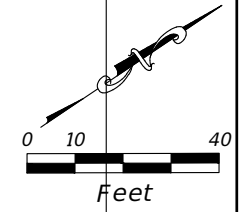
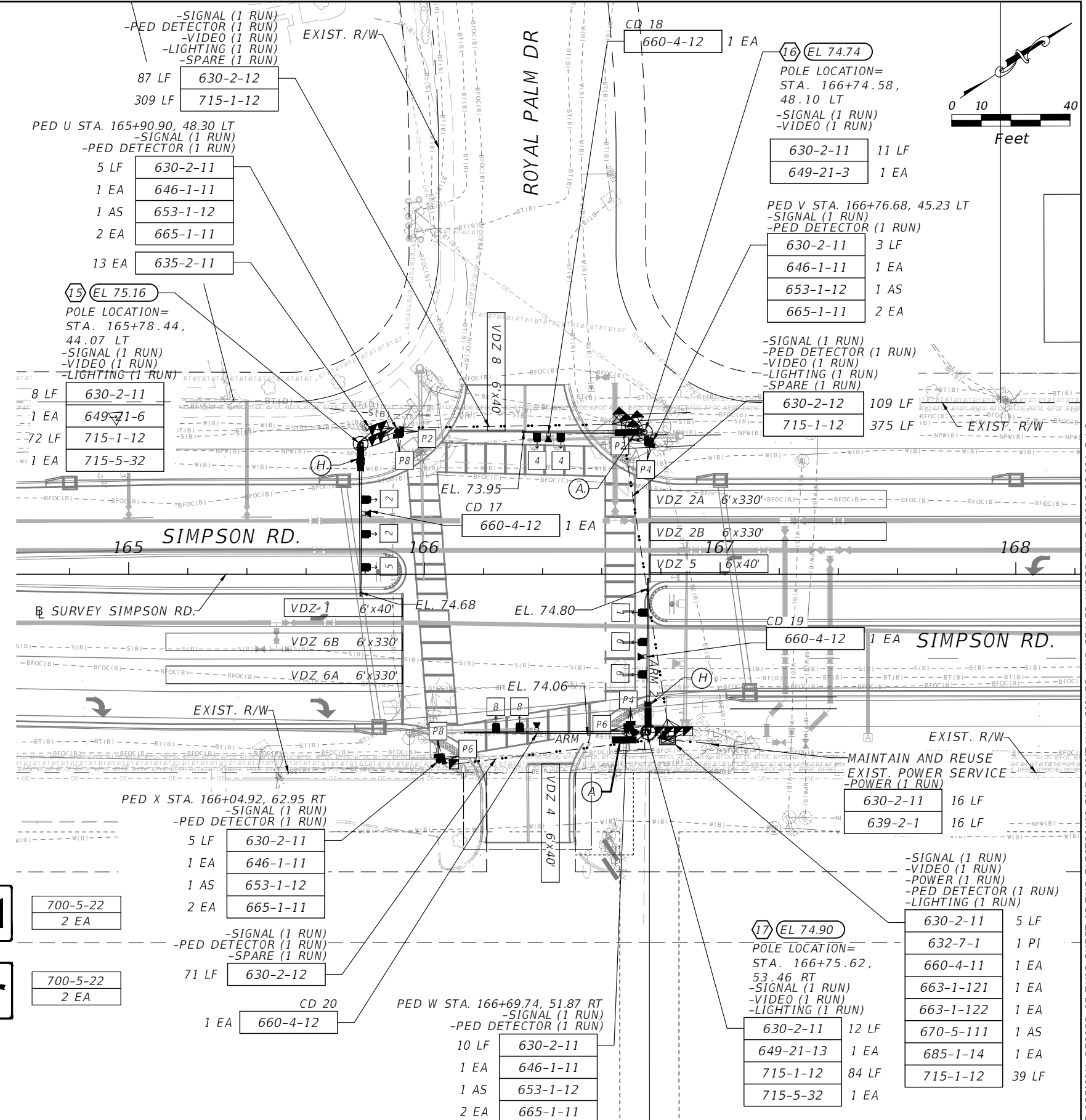
1. THE MAJOR ROADWAY IS SIMPSON RD, WHICH HAS A POSTED SPEED LIMIT OF 45 MPH. THE MINOR ROADWAY IS ROYAL PALM DR, WHICH HAS A POSTED SPEED OF 30 MPH.
2. OVERHEAD STREET NAME SIGNS SHALL BE DOUBLE SIDED AND CANTILEVER MOUNTED TO THE PROPOSED MAST ARM UPRIGHT. SEE GUIDE SIGN WORKSHEET FOR SIGN DETAILS.
3. VEHICLE DETECTION ZONE LENGTHS ON SIMPSON RD ARE BASED ON A 45 MPH POSTED SPEED LIMIT.
4. EXISTING POWER METER IS FED FROM THE TRANSFORMER AT POLE 26333 LOCATED ON THE EAST SIDE OF SIMPSON ROAD APPROXIMATELY 70' SOUTH OF THE INTERSECTION.
5. CABINET BASE SHALL HAVE 12 CONDUITS WITH A MINIMUM OF 2 SPARES.

VIDEO DETECTORS		
CAMERA DETECTOR	DETECTION ZONE	DELAY TIME (SEC.)
CD 17	VDZ 2A	-
	VDZ 2B	-
	VDZ 5	-
CD 18	VDZ 4	5
CD 19	VDZ 6A	-
	VDZ 6B	-
CD 20	VDZ 8	5

**REMOVAL ITEMS**

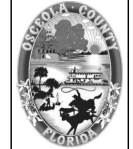
646-1-60	8 EA
649-26-3	4 EA
670-5-600	1 EA

**OVERHEAD SIGNS**



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

**vhb** Engineers | Scientists  
Planners | Designers  
225 E. Robinson Street, Suite 300  
Orlando, FL 32801 (407)839-4006  
Certificate of Authorization # 3932  
Jennifer M. DiStefano, P.E.  
PE # 81844



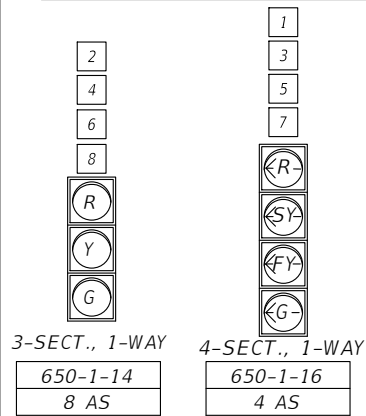
OSCEOLA COUNTY  
FLORIDA

**SIGNALIZATION PLAN (5)**

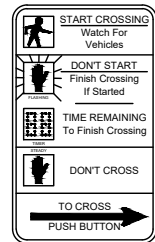
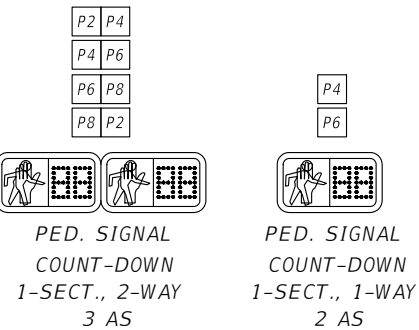
SHEET NO.	T-9
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**SIGNAL HEAD DETAILS**

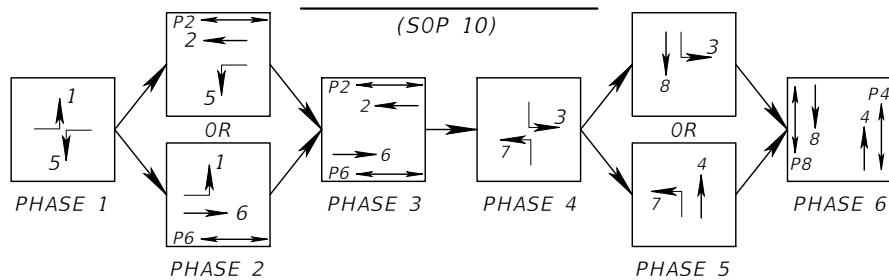


**PEDESTRIAN SIGNAL HEAD DETAILS**



COST OF R10-3E IS INCLUDED WITH 665-1-11

**MOVEMENT DIAGRAM**



**CONTROLLER TIMINGS**

TIMING FUNCTION								
MOVEMENT NUMBER	1	2	3	4	5	6	7	8
MINIMUM GREEN	6	10	5	5	6	10	5	5
EXTENSION	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
MAXIMUM GREEN 1	20	50	15	30	20	50	15	30
MAXIMUM GREEN 2	-	-	-	-	-	-	-	-
YELLOW CLEARANCE	4.8	4.8	3.7	3.4	4.8	4.8	3.4	3.7
ALL RED	2.0	2.0	2.0	2.3	2.0	2.0	2.3	2.5
PEDESTRIAN WALK	-	7	-	7	-	7	-	7
PED. CLEARANCE	-	30	-	24	-	24	-	26
RECALL	-	MIN	-	-	-	MIN	-	-
DETECTOR FUNCTION	-	L	-	NL	-	L	-	NL

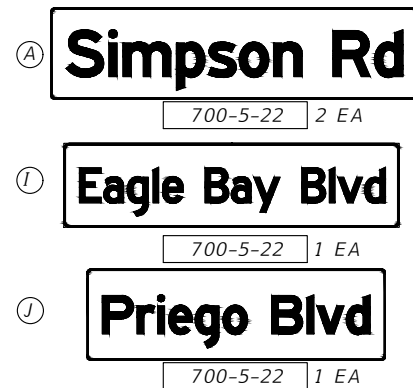
**REMOVAL ITEMS**

646-1-60	2 EA
649-26-3	2 EA
670-5-600	1 AS

**VIDEO DETECTORS**

CAMERA DETECTOR	DETECTION ZONE	DELAY TIME (SEC.)
CD 21	VDZ 2A	-
	VDZ 2B	-
CD 22	VDZ 5	-
	VDZ 7	-
CD 23	VDZ 1	-
	VDZ 6A	-
CD 24	VDZ 6B	-
	VDZ 3	-
	VDZ 8	5

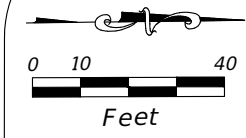
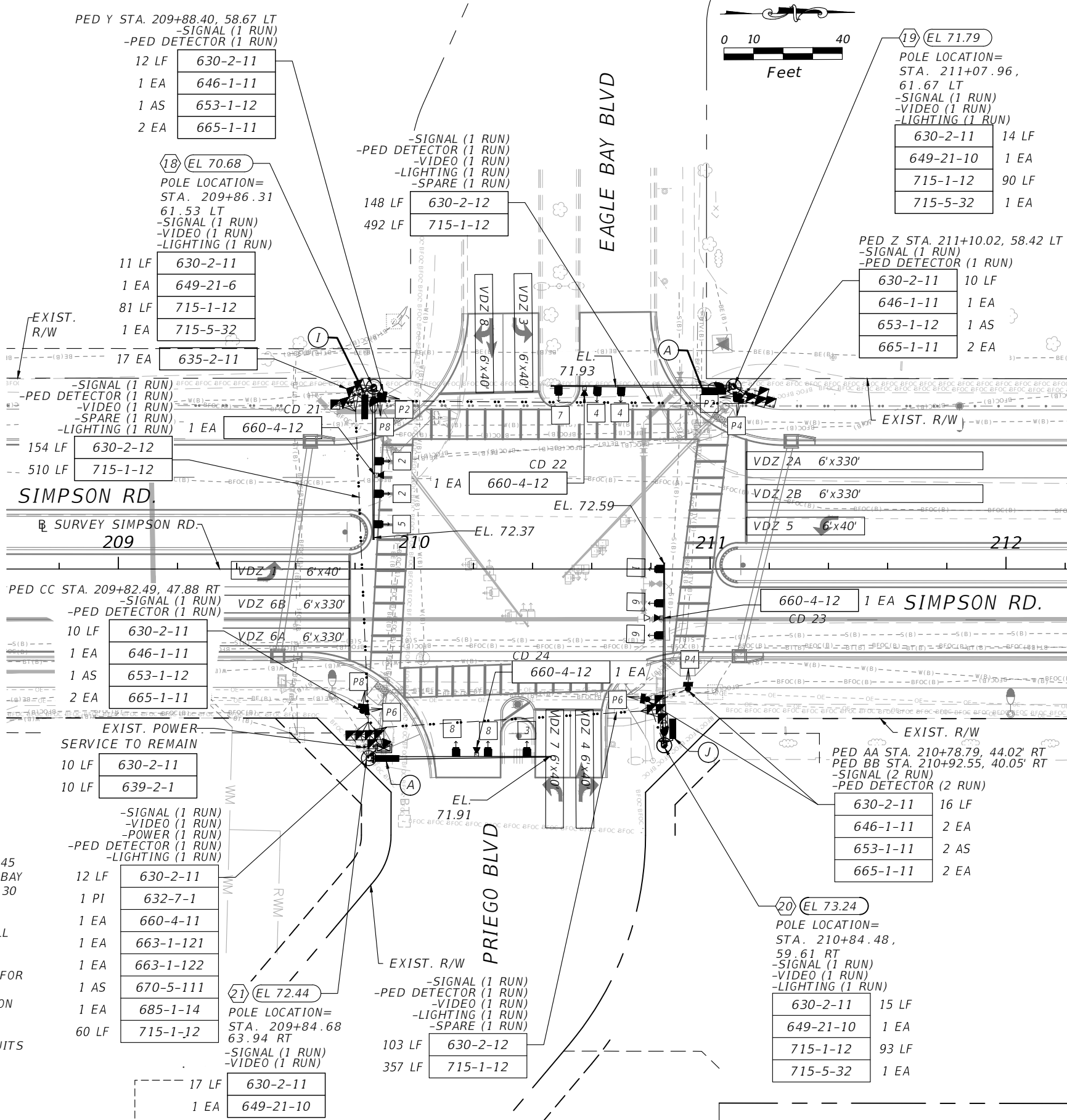
**OVERHEAD SIGNS**



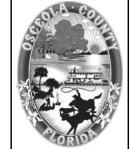
**NOTES:**  
 1. THE MAJOR ROADWAY IS SIMPSON RD, WHICH HAS A POSTED SPEED LIMIT OF 45 MPH. THE MINOR ROADWAYS ARE EAGLE BAY BLVD, WHICH HAS A POSTED SPEED OF 30 MPH, AND PRIEGO BLVD, WHICH HAS A POSTED SPEED OF 25 MPH.  
 2. OVERHEAD STREET NAME SIGNS SHALL BE DOUBLE SIDED AND CANTILEVER MOUNTED TO THE PROPOSED MAST ARM UPRIGHT. SEE GUIDE SIGN WORKSHEET FOR SIGN DETAILS.  
 3. VEHICLE DETECTION ZONE LENGTHS ON SIMPSON RD ARE BASED ON A 45 MPH POSTED SPEED LIMIT.  
 4. CABINET BASE SHALL HAVE 12 CONDUITS WITH A MINIMUM OF 2 SPARES.

**REVISIONS**

DATE	DESCRIPTION	DATE	DESCRIPTION



**vhb**  
 Engineers | Scientists  
 Planners | Designers  
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 Orlando, FL 32801 (407)839-4006  
 Certificate of Authorization # 3932  
 Jennifer M. DiStefano, P.E.  
 PE # 81844



OSCEOLA COUNTY  
FLORIDA

**SIGNALIZATION PLAN (6)**

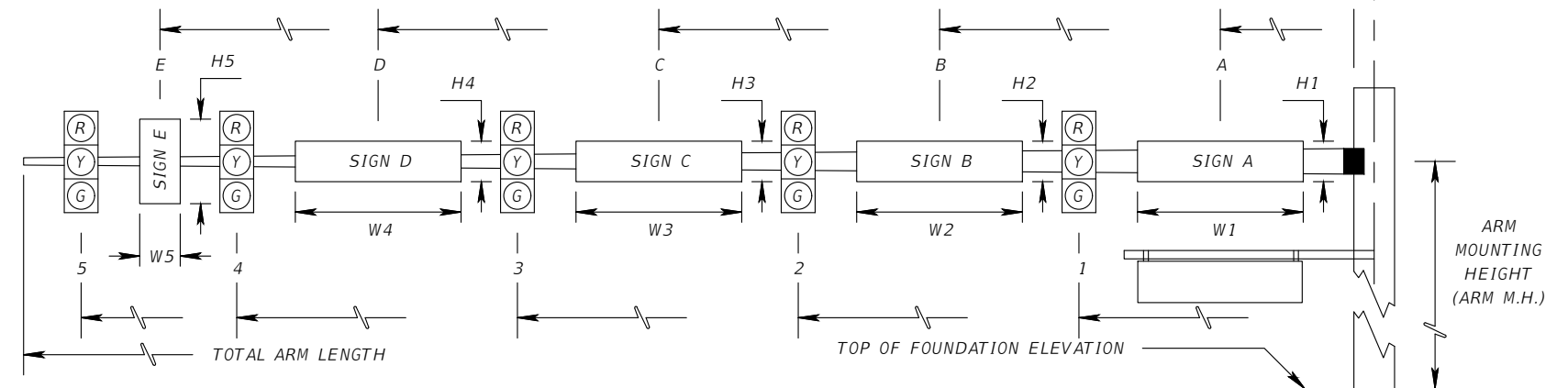
**SHEET NO.**

T-10
------

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

ARM NO. 2 - DOUBLE ARM POLE ORIENTATION  
TO BE MEASURED IN A COUNTER CLOCKWISE  
DIRECTION FROM ROADWAY ARM NO. 1.

ARM NO. 1 - SINGLE ARM POLE OR  
LONGEST ARM FOR DOUBLE ARM POLE.



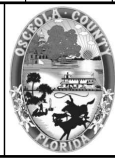
\* DENOTES NUMBER OF SECTIONS IN SIGNAL HEAD ASSEMBLY

SPECIAL INSTRUCTIONS			
ID NO.	PED. BUTTON	PED. SIGNALS	HANDHOLE LOCATION

ID NO.	SHEET NO.	LOCATION BY STA.	TOP OF FOUND. ELEVATION	RDWY ARM NO.	CROWN ELEV.	SIGNAL DATA											TOTAL ARM LENGTH	ARM M.H.	ANGLE BETWEEN DUAL ARMS 90/270	VIDEO DET. DIST FROM POLE	SIGN DATA						PAINT COLOR		
						SIGNAL V/H	BACK PLATES Y/N	PED. SIGNAL Y/N	DISTANCE FROM POLE												DISTANCE FROM POLE / HEIGHT AND WIDTH OF SIGN								
									1	*	2	*	3	*	4	*					5	*	A	H1	W1	B		H2	W2
1	T-5	STA 97+60.79, 74.22' LT	80.97	1	80.72	V	Y	N	33.0	3	44.5	3	55.5	3	64.0	4	70	20.5		50.5						MIDNIGHT NEUTRAL			
---	---	---	---	2															----										
2	T-5	STA 98+49.88, 74.12' LT	81.73	1	80.88	V	Y	N	24.5	3	32.5	3					40	19.5		30.0						MIDNIGHT NEUTRAL			
---	---	---	---	2															----										
3	T-5	STA 98+47.25, 71.34' RT	80.52	1	81.09	V	Y	N	34.5	3	45.5	3	56.0	3	68.0	4	70	21.5		50.5						MIDNIGHT NEUTRAL			
---	---	---	---	2															----										
4	T-5	STA 97+77.42, 69.24' RT	79.94	1	80.40	V	Y	N	14.5	3	22.5	3					30	20.5		27.0						MIDNIGHT NEUTRAL			
---	---	---	---	2															----										
5	T-6	STA 122+78.85, 78.13 LT	81.28	1	82.00	V	Y	N	35.0	3	46.0	3	57.0	3	67.0	4	70	21.5		52.5						MIDNIGHT NEUTRAL			
---	---	---	---	2															----										
6	T-6	STA 123+93.37, 75.67 LT	81.98	1	80.72	V	Y	N	35.0	3	44.0	5					50	19.0		40.0	30.5	3.0	3.0			MIDNIGHT NEUTRAL			
---	---	---	---	2															----										
7	T-6	STA 123+49.75, 52.65 RT	81.88	1	81.77	V	Y	N	18.5	3	29.0	3	39.5	3	51.0	4	60	20.5	90	34.0						MIDNIGHT NEUTRAL			
---	---	---	---	2	81.11	V	Y	N	44.5	5	54.5	3					60	20.5		50.0							MIDNIGHT NEUTRAL		
8	T-7	STA 143+79.09, 47.38 LT	79.11	1	79.29	V	Y	N	16.0	3	27.5	3	38.5	3	50.0	3	60	20.5		33.0						MIDNIGHT NEUTRAL			
---	---	---	---	2															----										
9	T-7	STA 145+44.16, 46.82 LT	77.41	1	77.88	V	Y	N	52.5	3	63.0	3	74.5	4			78	21.5		70.0						MIDNIGHT NEUTRAL			
---	---	---	---	2															----										
10	T-7	STA 145+15.70, 74.59 RT	78.93	1	78.85	V	Y	N	27.5	3	39.5	3	50.0	3	61.5	3	70	20.0		44.5						MIDNIGHT NEUTRAL			
---	---	---	---	2															----										
11	T-7	STA 144+24.24, 65.26 RT	78.63	1	77.94	V	Y	N	8.5	3	17.0	3	25.0	4			30	20.0		20.0						MIDNIGHT NEUTRAL			
---	---	---	---	2															----										

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

**vhb** Engineers | Scientists  
Planners | Designers  
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Jennifer M. DiStefano, P.E.  
PE # 81844



OSCEOLA COUNTY  
FLORIDA

MAST ARM TABULATION

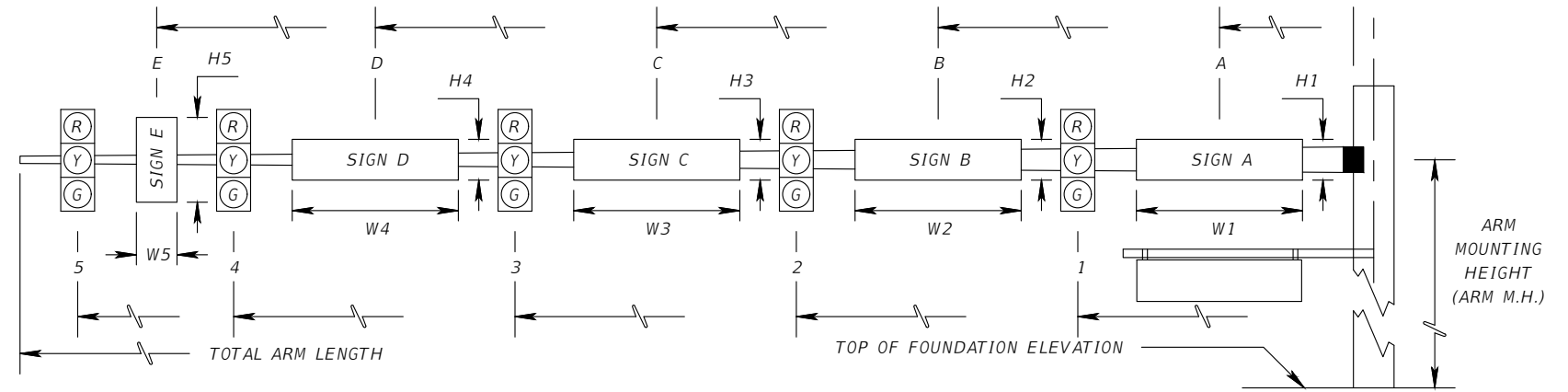
SHEET NO.  
T-11

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

ARM NO. 2 - DOUBLE ARM POLE ORIENTATION  
TO BE MEASURED IN A COUNTER CLOCKWISE  
DIRECTION FROM ROADWAY ARM NO. 1.

ARM NO. 1 - SINGLE ARM POLE OR  
LONGEST ARM FOR DOUBLE ARM POLE.

SPECIAL INSTRUCTIONS			
ID NO.	PED. BUTTON	PED. SIGNALS	HANDHOLE LOCAT ION

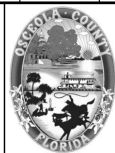


\* DENOTES NUMBER OF SECTIONS IN SIGNAL HEAD ASSEMBLY

ID NO.	SHEET NO.	LOCATION BY STA.	TOP OF FOUND. ELEVATION	RDWY ARM NO.	CROWN ELEV.	SIGNAL V/H	BACK PLATES Y/N	PED. SIGNAL Y/N	SIGNAL DATA										TOTAL ARM LENGTH	ARM M.H.	ANGLE BETWEEN DUAL ARMS 90/270	VIDEO DET. DIST FROM POLE	SIGN DATA						PAINT COLOR
									DISTANCE FROM POLE														DISTANCE FROM POLE / HEIGHT AND WIDTH OF SIGN						
									1	*	2	*	3	*	4	*	5	*					A	H1	W1	B	H2	W2	
12	T-8	STA 159+52.49, 49.91 LT	76.64	1	76.56	V	Y	N	17.5	3	28.0	3	39.5	3	51.0	4	60	21.0	24.0							MIDNIGHT NEUTRAL			
---	---	-----	-----	2																									
13	T-8	STA 160+75.98, 50.26 LT	76.26	1	75.43	V	Y	N	41.5	3	49.5	3	58.5	4	60	20.0	54.5							MIDNIGHT NEUTRAL					
---	---	-----	-----	2																									
14	T-8	STA 160+67.13, 50.20 RT	76.60	1	75.62	V	Y	N	49.5	4	57.5	3	65.5	3	70	20.5	90	53.0							MIDNIGHT NEUTRAL				
				2	76.23	V	Y	N	18.5	3	30.0	3	40.0	4	50	20.5		25.0											
15	T-9	STA 165+78.44, 45.07 LT	75.16	1	74.68	V	Y	N	17.5	3	29.0	3	40.5	4	50	20.5	22.5							MIDNIGHT NEUTRAL					
---	---	-----	-----	2																									
16	T-9	STA 166+74.58, 48.10 LT	74.74	1	73.95	V	Y	N	27.5	3	35.5	3	40	19.5	31.5							MIDNIGHT NEUTRAL							
---	---	-----	-----	2																									
17	T-9	STA 166+75.62, 53.46 RT	74.90	1	74.06	V	Y	N	41.5	3	49.5	3	60	20.5	270	35.5							MIDNIGHT NEUTRAL						
				2	74.80	V	Y	N	17.5	3	28.5	3	38.5	4		50	20.5	23.5											
18	T-10	STA 209+86.31, 61.53 LT	70.68	1	72.37	V	Y	N	24.0	3	35.0	3	45.0	4	50	22.5	28.5							MIDNIGHT NEUTRAL					
---	---	-----	-----	2																									
19	T-10	STA 211+07.96, 61.67 LT	71.79	1	71.93	V	Y	N	36.5	3	44.5	3	58.0	4	60	21.0	49.0							MIDNIGHT NEUTRAL					
---	---	-----	-----	2																									
20	T-10	STA 210+84.48, 59.61 RT	73.24	1	72.59	V	Y	N	35.5	3	46.5	3	58.0	4	60	20.0	41.5							MIDNIGHT NEUTRAL					
---	---	-----	-----	2																									
21	T-10	STA 209+84.68, 63.94 RT	72.44	1	71.91	V	Y	N	28.0	3	39.0	3	52.0	4	60	20.5	35.0							MIDNIGHT NEUTRAL					
---	---	-----	-----	2																									

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION


 Engineers | Scientists  
 Planners | Designers  
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 Orlando, FL 32801 (407)839-4006  
 Certificate of Authorization # 3932  
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 PE # 81844



OSCEOLA COUNTY  
FLORIDA

MAST ARM TABULATION

SHEET NO.  
T-12

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

STANDARD MAST ARM ASSEMBLIES DATA TABLE

TABLE DATE 11-01-16

STRUCTURE ID NUMBERS	DESIGNATION	FIRST ARM		SECOND ARM		UF (DEG)	LL (DEG)	POLE			DRILLED SHAFT ID
		ARM ID	FAA (FT.)	ARM ID	SAA (FT.)			POLE ID	UAA (FT.)	UB (FT.)	
1	A70/S - P5/S	A70/S						P5/S	23.5	20.5	DS/18/5.0
2	A40/S - P2/S/L	A40/S					0	P2/S/L	39.0	19.5	DS/14/4.5
3	A70/S - P5/S/L	A70/S					0	P5/S/L	39.0	21.5	DS/16/5.0
4	A30/S - P1/S	A30/S						P1/S	23.5	20.5	DS/12/4.0
5	A70/S - P5/S/L	A70/S					0	P5/S/L	39.0	21.5	DS/25/5.0
6	A50/S - P3/S	A50/S						P3/S	22.0	19.0	DS/14/5.0
7	A60/D - A60/D - P5/D/L	A60/D		A60/D		90	0	P5/D/L	39.0	20.5	DS/25/5.0
8	A60/S - P4/S/L	A60/S					45	P4/S/L	39.0	20.5	DS/20/5.0
9	A78/S - P6/S/L	A78/S					35	P6/S/L	39.0	21.5	DS/25/5.0
10	A70/S - P5/S/L	A70/S					40	P5/S/L	39.0	20.0	DS/18/5.0
11	A30/S - P1/S/L	A30/S					50	P1/S/L	39.0	20.0	DS/12/4.5
12	A60/S - P4/S/L	A60/S					0	P4/S/L	39.0	21.0	DS/25/5.0
13	A60/S - P4/S/L	A60/S					90	P4/S/L	39.0	20.0	DS/25/5.0
14	A70/D - A50/D - P5/D/L	A70/D		A50/D		270	0	P5/D/L	39.0	20.5	DS/20/5.0
15	A50/S - P3/S/L	A50/S					0	P3/S/L	39.0	20.5	DS/14/4.5
16	A40/S - P2/S	A40/S						P2/S	22.5	19.5	DS/14/4.5
17	A60/D - A50/D - P4/D/L	A60/D		A50/D		270	0	P4/D/L	39.0	20.5	DS/18/5.0
19	A60/S - P4/S/L	A60/S					0	P4/S/L	39.0	21.0	DS/14/5.0
20	A60/S - P4/S/L	A60/S					0	P4/S/L	39.0	20.0	DS/20/5.0
21	A60/S - P4/S	A60/S						P4/S	23.5	20.5	DS/25/5.0

GEOTECHNICAL PROPERTIES

ID NO.	EFFECTIVE UNIT WEIGHT (PCF)	FRICTION ANGLE (DEG)	SPT N-VALUE (BLOWS/FT)
1	47	30	10
2	42	29	7
3	47	30	13
4	47	30	11
5	42	29	8
6	42	29	10
7	42	29	7
8	42	29	7
9	42	29	9
10	47	30	10
11	52	31	18
12	42	29	5
13	42	29	5
14	47	30	11
15	47	30	11
16	42	29	9
17	42	29	9
19	47	30	12
20	42	29	6
21	42	29	5

NOTES [NOTES DATE 11-01-16]:

- IF AN ENTRY APPEARS IN COLUMN FAA, A SHORTER ARM IS REQUIRED. THIS IS OBTAINED BY REMOVING LENGTH FROM THE ARM TIP AND THE ARM LENGTH SHORTENED FROM FA TO FAA. SAA SIMILAR.
- IF AN ENTRY APPEARS IN COLUMN UAA, A SHORTER POLE IS REQUIRED. THIS IS OBTAINED BY REMOVING LENGTH FROM THE POLE TIP AND THE POLE HEIGHT SHORTENED FROM UA TO UAA.
- WORK THIS SHEET WITH THE SIGNAL DESIGNER'S "MAST ARM TABULATION". SEE "MAST ARM TABULATION" FOR SPECIAL INSTRUCTIONS THAT INCLUDE NON-STANDARD HANDHOLE LOCATION, PAINT COLOR, TERMINAL COMPARTMENT REQUIREMENT, AND PEDESTRIAN FEATURES.
- WORK WITH INDEXES 649-030 AND 649-031.
- DESIGN WIND SPEED = 150 MPH IN ACCORDANCE WITH THE JANUARY 2022 STRUCTURES MANUAL.

FOUNDATION NOTES [NOTES DATE 01-01-12]:

- DESIGN BASED ON BORINGS TAKEN ON 12/02/2021 THROUGH 01/13/2022 SEALED BY GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS, INC.
- ASSUMPTIONS AND VALUES USED IN DESIGN:  
 SOIL TYPE = COHESIONLESS (FINE SAND)  
 SOIL LAYER THICKNESS = 30 FT.  
 DESIGN WATER TABLE = 0 FT. BELOW SURFACE

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

BASSEL KASSEM, P.E.  
 P.E. LICENSE NUMBER 57947  
 FBT-FLORIDA BRIDGE AND TRANSPORTATION, INC.  
 633 DARTMOUTH STREET  
 ORLANDO, FL 32804  
 (407) 513-9709



OSCEOLA COUNTY  
 FLORIDA

STANDARD MAST ARM  
 ASSEMBLIES DATA TABLE

SHEET NO.  
 T-13

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.  
 Drawn By : ADB 06-22  
 Designed By : ADB 06-22  
 Checked By : SD 06-22

SPECIAL MAST ARM ASSEMBLIES DATA TABLE																						TABLE DATE 01-01-12		
NUMBER OF LOCATIONS	STRUCTURE NUMBER	FIRST ARM				FIRST ARM EXTENSION				SECOND ARM				SECOND ARM EXTENSION				POLE						
		FA(ft)	FB(in)	FC(in)	FD(in)	FE(ft)	FF(in)	FG(in)	FH(in)	SA(ft)	SB(in)	SC(in)	SD(in)	SE(ft)	SF(in)	SG(in)	SH(in)	UA(ft)	UB(ft)	UC(in)	UD(in)	UE(in)	UF(deg)	UG(ft)
1	POLE 18	32.5	7.45	12	0.25	20.5	11.2	14	0.313									39	22.5	14.6	20	0.375	0	37.5

SPECIAL MAST ARM ASSEMBLIES DATA TABLE (CONT.)																						TABLE DATE 01-01-12		
STRUCTURE NUMBER	FIRST ARM CONNECTION (in) First Arm Camber Angle = 2 Degrees											SECOND ARM CONNECTION (in) Second Arm Camber Angle = 2 Degrees												
	#Bolts	HT	FJ	FK	FL	FN	FO	FP	FR	FS	FT	#Bolts	HT	SJ	SK	SL	SN	SO	SP	SR	SS	ST		
POLE 18	6	22	29	3	0.75	0.438	16	1.25	2	8.5	0.438													

SPECIAL MAST ARM ASSEMBLIES DATA TABLE (CONT.)																						TABLE DATE 07-01-15		
STRUCTURE NUMBER	POLE BASE CONNECTION (in)					SHAFT AND REINF.								LUMINAIRE AND LUMINAIRE CONNECTION										
	#Bolts	BA	BB	BC	BF	DA(ft)	DB(ft)	RA	RB	RC	RD(in)	RE	RF(in)	LA(ft)	LB(ft)	LC(in)	LD(in)	LE	LF(ft)	LG(in)	LH(in)	LJ(in)	LK(in)	LL(deg)
POLE 18	6	36	2.5	2	40	16	4.5	11	16	10	8	-	-	40	10	3	0.125	0.5	8	0.5	0.75	0.25	0.25	0

NOTES [NOTES DATE 07-01-13]:

1. WORK WITH INDEX 649-031.
2. DESIGN WIND SPEED = 150 MPH IN ACCORDANCE WITH THE JANUARY 2022 STRUCTURES MANUAL.

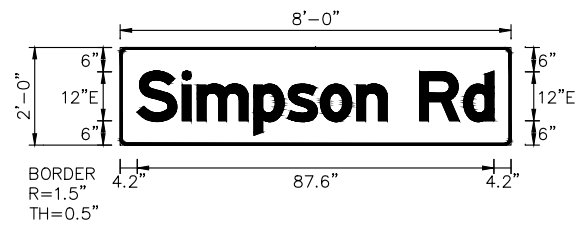
FOUNDATION NOTES [NOTES DATE 01-01-12]:

1. DESIGN BASED ON BORINGS TAKEN ON 12/02/2021 THROUGH 01/13/2022 SEALED BY GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS, INC.
2. ASSUMPTIONS AND VALUES USED IN DESIGN:  
 SOIL TYPE = COHESIONLESS (FINE SAND)  
 SOIL LAYER THICKNESS = 30 FT.  
 SOIL FRICTION ANGLE = 29 DEG.  
 SOIL UNIT WEIGHT = 42 PCF  
 SPT N-VALUE = 10 BLOWS/FT.  
 DESIGN WATER TABLE = 0 FT. BELOW SURFACE

REVISIONS		DATE		DESCRIPTION		BASSEL KASSEM, P.E. P.E. LICENSE NUMBER 57947 FBT-FLORIDA BRIDGE AND TRANSPORTATION, INC. 633 DARTMOUTH STREET ORLANDO, FL 32804 (407) 513-9709		<b>OSCEOLA COUNTY</b> <b>FLORIDA</b>	<b>SPECIAL MAST ARM</b> <b>ASSEMBLIES DATA TABLE</b>	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION	T-14						

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.  
 Drawn By : ADB 06-22  
 Checked By : SD 06-22  
 Designed By : ADB 06-22  
 Checked By : SD 06-22

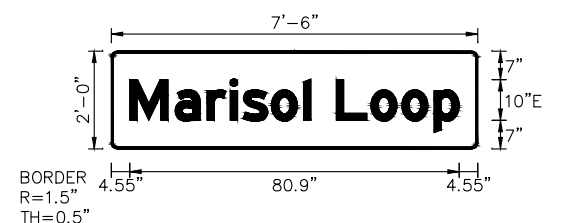
SIGN NAME	A		QTY	2	SIGN NUMBER		STATION(S)	
PANEL	BORDER				none			
WIDTH	8'-0"	WIDTH	0.5"					
HEIGHT	2'-0"	RADII	1.5"					
LEGEND	White	COLOR	White					
COLOR	Green							
SYMBOL(S)	ANGLE	X	Y	WID	HT			
SIGN NUMBER	NUMBER OF POSTS	CLEARANCE Edge Of Lane	COLUMN SIZE		AVERAGE LENGTH			



NO. OF LIGHT FIXTURES	FIXTURE SPACING	PHOTOMETRIC CURVE	WATT	VOLTAGE

COPY	S	i	m	p	s	o	n	R	d	L								
SPACE	4.2	15.2	18.9	32.8	41.1	49.2	58.1	73.6	84.4	87.6								
COPY																		
SPACE																		
COPY																		
SPACE																		
COPY																		
SPACE																		
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SPACE																		

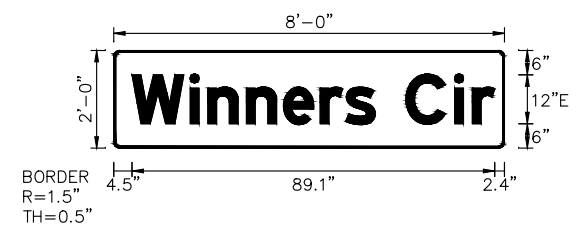
SIGN NAME	B		QTY	1	SIGN NUMBER		STATION(S)	
PANEL	BORDER				none			
WIDTH	7'-6"	WIDTH	0.5"					
HEIGHT	2'-0"	RADII	1.5"					
LEGEND	White	COLOR	White					
COLOR	Green							
SYMBOL(S)	ANGLE	X	Y	WID	HT			
SIGN NUMBER	NUMBER OF POSTS	CLEARANCE Edge Of Lane	COLUMN SIZE		AVERAGE LENGTH			



NO. OF LIGHT FIXTURES	FIXTURE SPACING	PHOTOMETRIC CURVE	WATT	VOLTAGE

COPY	M	a	r	i	s	o	L	o	o	p	L							
SPACE	4.5	15.7	23.5	29.2	32.3	39.3	47.2	49	55.3	63.8	71.4	79.3	80.9					
COPY																		
SPACE																		
COPY																		
SPACE																		
COPY																		
SPACE																		
COPY																		
SPACE																		
COPY																		
SPACE																		

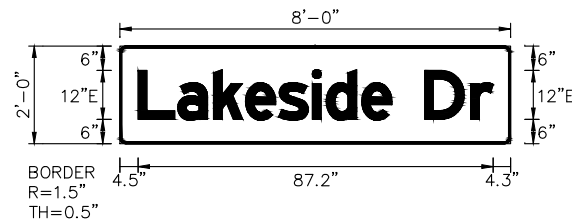
SIGN NAME	C		QTY	1	SIGN NUMBER		STATION(S)	
PANEL	BORDER				none			
WIDTH	8'-0"	WIDTH	0.5"					
HEIGHT	2'-0"	RADII	1.5"					
LEGEND	White	COLOR	White					
COLOR	Green							
SYMBOL(S)	ANGLE	X	Y	WID	HT			
SIGN NUMBER	NUMBER OF POSTS	CLEARANCE Edge Of Lane	COLUMN SIZE		AVERAGE LENGTH			



NO. OF LIGHT FIXTURES	FIXTURE SPACING	PHOTOMETRIC CURVE	WATT	VOLTAGE

COPY	w	i	n	n	e	r	s	C	i	r	L							
SPACE	4.5	18.8	23.1	32.6	41.7	50.7	56.9	64.3	71.8	83.8	88.1	89.1						
COPY																		
SPACE																		
COPY																		
SPACE																		
COPY																		
SPACE																		
COPY																		
SPACE																		

SIGN NAME	D		QTY	2	SIGN NUMBER		STATION(S)	
PANEL	BORDER				none			
WIDTH	8'-0"	WIDTH	0.5"					
HEIGHT	2'-0"	RADII	1.5"					
LEGEND	White	COLOR	White					
COLOR	Green							
SYMBOL(S)	ANGLE	X	Y	WID	HT			
SIGN NUMBER	NUMBER OF POSTS	CLEARANCE Edge Of Lane	COLUMN SIZE		AVERAGE LENGTH			



NO. OF LIGHT FIXTURES	FIXTURE SPACING	PHOTOMETRIC CURVE	WATT	VOLTAGE

COPY	L	a	k	e	s	i	d	e	D	r	L							
SPACE	4.5	14.3	23	30.9	39	47.3	50.7	59.4	74.9	86.2	87.2							
COPY																		
SPACE																		
COPY																		
SPACE																		
COPY																		
SPACE																		
COPY																		
SPACE																		

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

Engineers | Scientists  
Planners | Designers  
225 E. Robinson Street, Suite 300  
Orlando, FL 32801 (407)839-4006  
Certificate of Authorization # 3932  
Jennifer M. DiStefano, P.E.  
PE # 81844

OSCEOLA COUNTY  
FLORIDA

GUIDE SIGN  
WORKSHEET (1)

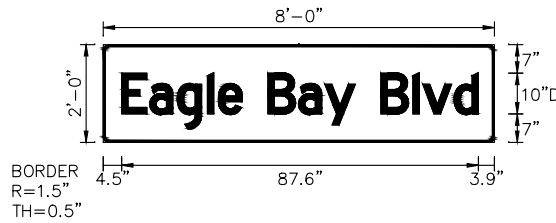
SHEET NO.  
T-15

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





SIGN NAME	I	QTY	I	SIGN NUMBER	STATION(S)
PANEL	BORDER		none		
WIDTH	8'-0"	WIDTH	0.5"		
HEIGHT	2'-0"	RADII	1.5"		
LEGEND	White	COLOR	White		
COLOR	Green				
SYMBOL(S)	ANGLE	X	Y	WID	HT
SIGN NUMBER	NUMBER OF POSTS	CLEARANCE Edge Of Lane	COLUMN SIZE	AVERAGE LENGTH	



NO. OF LIGHT FIXTURES	FIXTURE SPACING	PHOTOMETRIC CURVE	WATT	VOLTAGE

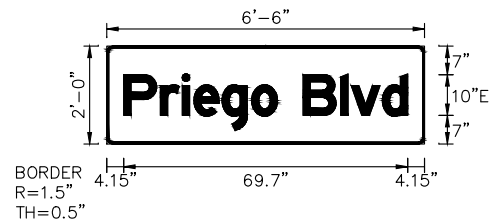
COPY	E	a	g	i	e	B	a	y	B	i	v	d	L		
SPACE	4.5	11.4	18.1	25.5	28.3	34.2	40.4	47.9	54.4	61.9	68.1	76	78.4	86.1	87.6
COPY															
SPACE															
COPY															
SPACE															
COPY															
SPACE															
COPY															
SPACE															

SIGN NAME		QTY		SIGN NUMBER	STATION(S)
PANEL	BORDER				
WIDTH		WIDTH			
HEIGHT		RADII			
LEGEND		COLOR			
COLOR					
SYMBOL(S)	ANGLE	X	Y	WID	HT
SIGN NUMBER	NUMBER OF POSTS	CLEARANCE Edge Of Lane	COLUMN SIZE	AVERAGE LENGTH	

NO. OF LIGHT FIXTURES	FIXTURE SPACING	PHOTOMETRIC CURVE	WATT	VOLTAGE

COPY													
SPACE													
COPY													
SPACE													
COPY													
SPACE													
COPY													
SPACE													
COPY													
SPACE													

SIGN NAME	J	QTY	I	SIGN NUMBER	STATION(S)
PANEL	BORDER		none		
WIDTH	6'-6"	WIDTH	0.5"		
HEIGHT	2'-0"	RADII	1.5"		
LEGEND	White	COLOR	White		
COLOR	Green				
SYMBOL(S)	ANGLE	X	Y	WID	HT
SIGN NUMBER	NUMBER OF POSTS	CLEARANCE Edge Of Lane	COLUMN SIZE	AVERAGE LENGTH	



NO. OF LIGHT FIXTURES	FIXTURE SPACING	PHOTOMETRIC CURVE	WATT	VOLTAGE

COPY	P	r	i	e	g	o	B	i	v	d	L	
SPACE	4.2	13.2	18.5	21.4	28.3	35.5	41.9	48.2	57.4	60	67.6	69.7
COPY												
SPACE												
COPY												
SPACE												
COPY												
SPACE												
COPY												
SPACE												

SIGN NAME		QTY		SIGN NUMBER	STATION(S)
PANEL	BORDER				
WIDTH		WIDTH			
HEIGHT		RADII			
LEGEND		COLOR			
COLOR					
SYMBOL(S)	ANGLE	X	Y	WID	HT
SIGN NUMBER	NUMBER OF POSTS	CLEARANCE Edge Of Lane	COLUMN SIZE	AVERAGE LENGTH	

NO. OF LIGHT FIXTURES	FIXTURE SPACING	PHOTOMETRIC CURVE	WATT	VOLTAGE

COPY												
SPACE												
COPY												
SPACE												
COPY												
SPACE												
COPY												
SPACE												
COPY												
SPACE												

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

Engineers | Scientists  
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225 E. Robinson Street, Suite 300  
Orlando, FL 32801 (407)839-4006  
Certificate of Authorization # 3932  
Jennifer M. DiStefano, P.E.  
PE # 81844



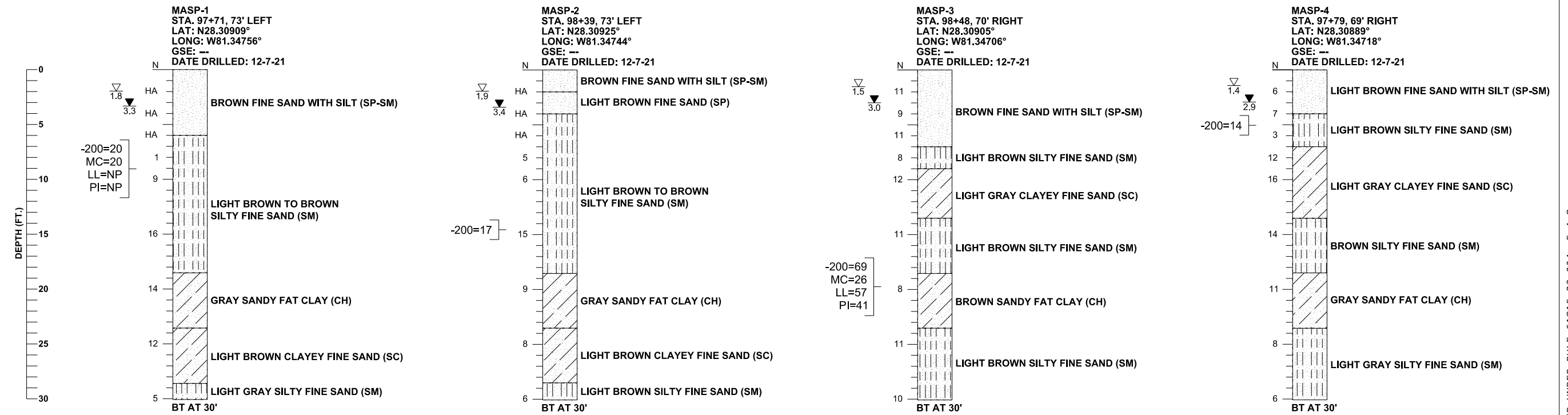
OSCEOLA COUNTY  
FLORIDA

GUIDE SIGN  
WORKSHEET (3)

SHEET  
NO.  
T-17

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

**SIMPSON ROAD AND MARISOL LOOP/WINNERS CIRCLE INTERSECTION**



**LEGEND**

- GSE GROUND SURFACE ELEVATION (FT. NAVD88)
- N STANDARD PENETRATION RESISTANCE, BLOWS PER FOOT
- HA HAND AUGERED FOR UTILITY CLEARANCE
- ▽ 1.8 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
- 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 BLOWS PER FOOT UNLESS OTHERWISE NOTED.

THE BORING LOCATIONS WERE NOT SURVEYED BUT WERE ESTABLISHED IN THE FIELD USING A SUB-METER ACCURACY TRIMBLE GPS UNIT. THE BORING LOCATIONS REFERENCE THE SIMPSON ROAD (CR 530) CENTERLINE.

ACCORDING TO THE FDEP SEPTEMBER 2017 POTENTIOMETRIC CONTOURS MAP, THE POTENTIOMETRIC SURFACE OF THE FLORIDA AQUIFER IN THE VICINITY OF THE SUBJECT INTERSECTION IS APPROXIMATELY +50 FEET NGVD. THE CONTRACTOR SHALL BE PREPARED TO HANDLE ARTESIAN HEAD LEVELS UP TO +50 FEET NGVD.

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

SECTION: 18  
 TOWNSHIP: 25 SOUTH  
 RANGE: 30 EAST

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

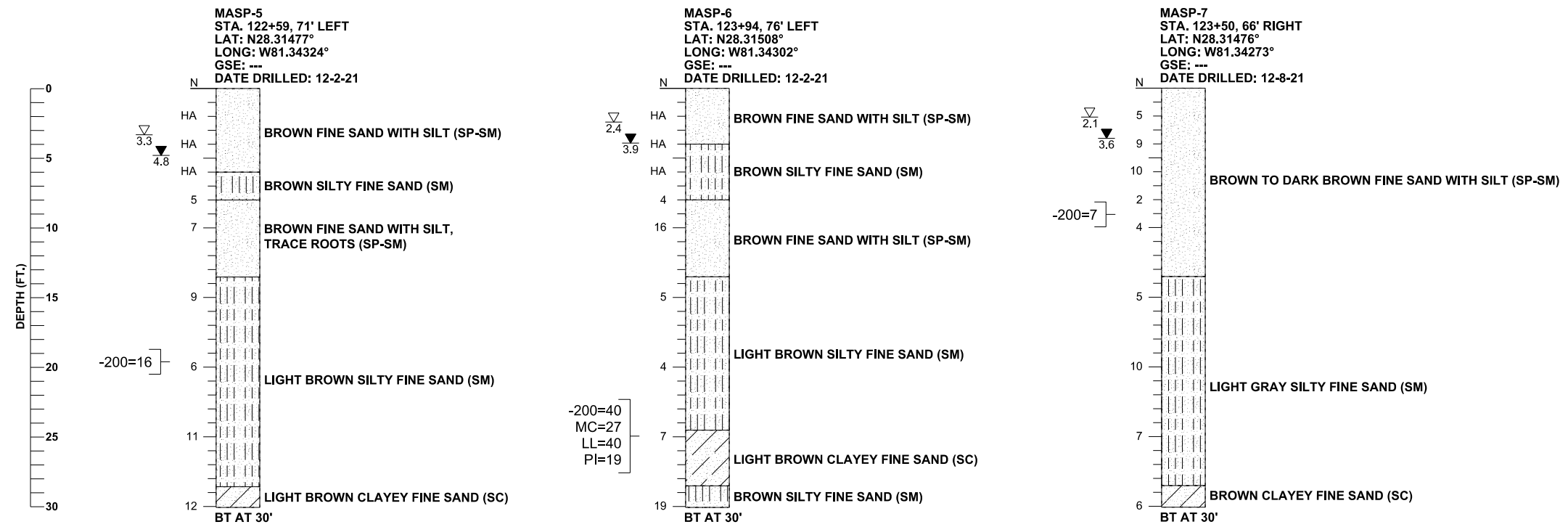
GRANULAR SOILS	AUTOMATIC HAMMER	RELATIVE DENSITY	
	N VALUE (blows per foot)		
SANDS	0-3	VERY LOOSE	
	3-8	LOOSE	
	8-24	MEDIUM DENSE	
	24-40	DENSE	
	OVER 40	VERY DENSE	
NON-GRANULAR SOILS	AUTOMATIC HAMMER	CONSISTENCY	
	N VALUE (blows per foot)		
	0-1		VERY SOFT
	1-3		SOFT
	3-6		FIRM
	6-12		STIFF
12-24	VERY STIFF		
OVER 24	HARD		

**FIGURE 3A**

REVISIONS				CHRISTOPHER P. MEYER, P.E. P.E. LICENSE NUMBER 49328 GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS, INC. 2510 MICHIGAN AVENUE, SUITE D KISSIMMEE, FL 34744-1933		OSCEOLA COUNTY FLORIDA	SOIL BORING RESULTS FOR MAST ARM SIGNAL POLES	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION					T-18

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

**SIMPSON ROAD AND LAKESIDE DRIVE INTERSECTION**



**LEGEND**

- GSE GROUND SURFACE ELEVATION (FT. NAVD88)
- N STANDARD PENETRATION RESISTANCE, BLOWS PER FOOT
- HA HAND AUGERED FOR UTILITY CLEARANCE
- ▽ 3.3 ESTIMATED SEASONAL HIGH GROUNDWATER DEPTH (FT.)
- ▼ 4.8 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



**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 BLOWS PER FOOT UNLESS OTHERWISE NOTED.

THE BORING LOCATIONS WERE NOT SURVEYED BUT WERE ESTABLISHED IN THE FIELD USING A SUB-METER ACCURACY TRIMBLE GPS UNIT. THE BORING LOCATIONS REFERENCE THE SIMPSON ROAD (CR 530) CENTERLINE.

ACCORDING TO THE FDEP SEPTEMBER 2017 POTENTIOMETRIC CONTOURS MAP, THE POTENTIOMETRIC SURFACE OF THE FLORIDA AQUIFER IN THE VICINITY OF THE SUBJECT INTERSECTION IS APPROXIMATELY +50 FEET NGVD. THE CONTRACTOR SHALL BE PREPARED TO HANDLE ARTESIAN HEAD LEVELS UP TO +50 FEET NGVD.

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

SECTIONS: 17, 18  
 TOWNSHIP: 25 SOUTH  
 RANGE: 30 EAST

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

GRANULAR SOILS	AUTOMATIC HAMMER	RELATIVE DENSITY	
	N VALUE (blows per foot)		
SANDS	0-3	VERY LOOSE	
	3-8	LOOSE	
	8-24	MEDIUM DENSE	
	24-40	DENSE	
	OVER 40	VERY DENSE	
NON-GRANULAR SOILS	AUTOMATIC HAMMER	CONSISTENCY	
	N VALUE (blows per foot)		
	0-1		VERY SOFT
	1-3		SOFT
	3-6		FIRM
	6-12		STIFF
12-24	VERY STIFF		
OVER 24	HARD		

**FIGURE 3B**

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

CHRISTOPHER P. MEYER, P.E.  
 P.E. LICENSE NUMBER 49328  
 GEOTECHNICAL AND ENVIRONMENTAL  
 CONSULTANTS, INC.  
 2510 MICHIGAN AVENUE, SUITE D  
 KISSIMMEE, FL 34744-1933



OSCEOLA COUNTY  
 FLORIDA

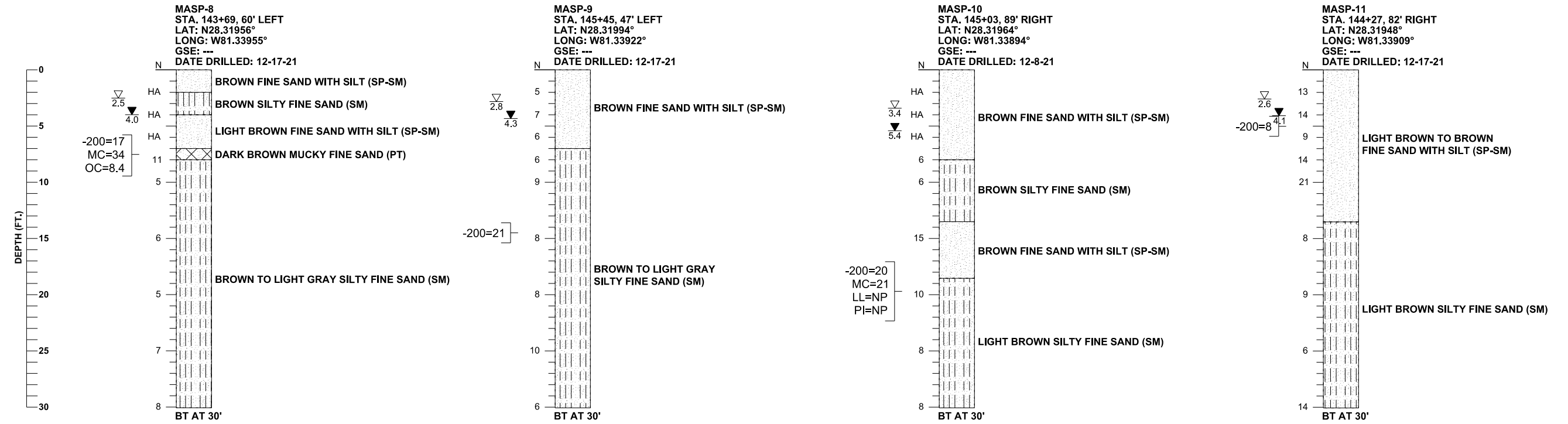
*SOIL BORING RESULTS FOR  
 MAST ARM SIGNAL POLES*

SHEET  
 NO.

T-19

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

**SIMPSON ROAD AND BUENAVENTURA BOULEVARD INTERSECTION**



**LEGEND**

- GSE GROUND SURFACE ELEVATION (FT. NAVD88)
  - N STANDARD PENETRATION RESISTANCE, BLOWS PER FOOT
  - HA HAND AUGERED FOR UTILITY CLEARANCE
  - ▽ 2.5 ESTIMATED SEASONAL HIGH GROUNDWATER DEPTH (FT.)
  - ▼ 4.0 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 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.

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 BLOWS PER FOOT UNLESS OTHERWISE NOTED.

THE BORING LOCATIONS WERE NOT SURVEYED BUT WERE ESTABLISHED IN THE FIELD USING A SUB-METER ACCURACY TRIMBLE GPS UNIT. THE BORING LOCATIONS REFERENCE THE SIMPSON ROAD (CR 530) CENTERLINE.

ACCORDING TO THE FDEP SEPTEMBER 2017 POTENTIOMETRIC CONTOURS MAP, THE POTENTIOMETRIC SURFACE OF THE FLORIDA AQUIFER IN THE VICINITY OF THE SUBJECT INTERSECTION IS APPROXIMATELY +50 FEET NGVD. THE CONTRACTOR SHALL BE PREPARED TO HANDLE ARTESIAN HEAD LEVELS UP TO +50 FEET NGVD.

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

SECTION: 8  
 TOWNSHIP: 25 SOUTH  
 RANGE: 30 EAST

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

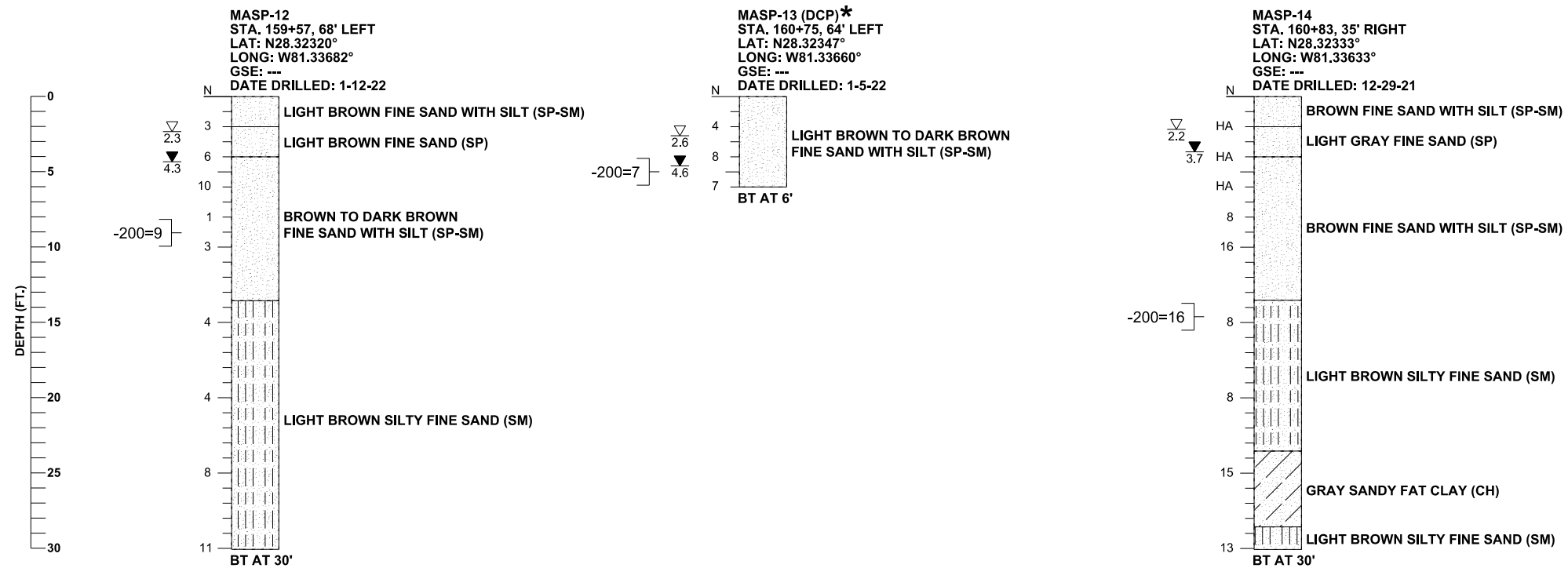
GRANULAR SOILS	AUTOMATIC HAMMER N VALUE	
	(blows per foot)	RELATIVE DENSITY
SANDS	0-3	VERY LOOSE
	3-8	LOOSE
	8-24	MEDIUM DENSE
	24-40	DENSE
	OVER 40	VERY DENSE
NON-GRANULAR SOILS	AUTOMATIC HAMMER N VALUE	
	(blows per foot)	CONSISTENCY
SILTS, CLAYS, MUCK, PEAT	0-1	VERY SOFT
	1-3	SOFT
	3-6	FIRM
	6-12	STIFF
	12-24	VERY STIFF
	OVER 24	HARD

**FIGURE 3C**

REVISIONS				CHRISTOPHER P. MEYER, P.E. P.E. LICENSE NUMBER 49328 GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS, INC. 2510 MICHIGAN AVENUE, SUITE D KISSIMMEE, FL 34744-1933		OSCEOLA COUNTY FLORIDA	SOIL BORING RESULTS FOR MAST ARM SIGNAL POLES	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION					T-20

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

**SIMPSON ROAD AND PLAZA DRIVE/HILLIARD ISLE ROAD INTERSECTION**



**LEGEND**

- GSE GROUND SURFACE ELEVATION (FT. NAVD88)
- N STANDARD PENETRATION RESISTANCE, BLOWS PER FOOT
- HA HAND AUGERED FOR UTILITY CLEARANCE
- ▽ 2.3 ESTIMATED SEASONAL HIGH GROUNDWATER DEPTH (FT.)
- ▼ 4.3 ENCOUNTERED GROUNDWATER DEPTH (FT.) 24 HRS. AFTER DATE DRILLED
- BT BORING TERMINATED AT DEPTH INDICATED
- 200= PERCENT PASSING NO. 200 U.S. STANDARD SIEVE

- SAND
- SAND AND SILT
- SAND AND CLAY

**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 BLOWS PER FOOT UNLESS OTHERWISE NOTED.

DUE TO UNDERGROUND UTILITIES, BORING MASP-13 COULD NOT BE PERFORMED AS AN SPT. \* THE DYNAMIC CONE PENETROMETER (DCP) TEST BORING MASP-13 WAS PERFORMED IN GENERAL ACCORDANCE WITH "DYNAMIC CONE FOR SHALLOW IN-SITU PENETRATION TESTING, VANE SHEAR AND CONE PENETRATION TESTING OF IN-SITU SOILS", ASTM STP 399, 1966.

THE "N" VALUES SHOWN FOR THE DCP TEST BORING REPRESENT APPROXIMATE STANDARD PENETRATION RESISTANCE, BLOWS PER FOOT CORRELATED FROM MEASURED DCP RESISTANCE, BLOWS PER 1.75 INCHES OF 1.75 INCHES OF PENETRATION. THE CORRELATION OF DCP TO SPT "N" VALUES IS BASED ON THE CALIBRATION CURVE FOR COASTAL PLAINS SOILS, ASTM SPT 399, 1966.

THE BORING LOCATIONS WERE NOT SURVEYED BUT WERE ESTABLISHED IN THE FIELD USING A SUB-METER ACCURACY TRIMBLE GPS UNIT. THE BORING LOCATIONS REFERENCE THE SIMPSON ROAD (CR 530) CENTERLINE.

ACCORDING TO THE FDEP SEPTEMBER 2017 POTENTIOMETRIC CONTOURS MAP, THE POTENTIOMETRIC SURFACE OF THE FLORIDA AQUIFER IN THE VICINITY OF THE SUBJECT INTERSECTION IS APPROXIMATELY +50 FEET NGVD. THE CONTRACTOR SHALL BE PREPARED TO HANDLE ARTESIAN HEAD LEVELS UP TO +50 FEET NGVD.

**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 (MASP-12 AND MASP-14) MANUAL (MASP-13)

SECTION: 8  
 TOWNSHIP: 25 SOUTH  
 RANGE: 30 EAST

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

GRANULAR SOILS	AUTOMATIC HAMMER N VALUE (blows per foot)	RELATIVE DENSITY
SANDS	0-3	VERY LOOSE
	3-8	LOOSE
	8-24	MEDIUM DENSE
	24-40	DENSE
	OVER 40	VERY DENSE
NON-GRANULAR SOILS	AUTOMATIC HAMMER N VALUE (blows per foot)	CONSISTENCY
SILTS, CLAYS, MUCK, PEAT	0-1	VERY SOFT
	1-3	SOFT
	3-6	FIRM
	6-12	STIFF
	12-24	VERY STIFF
	OVER 24	HARD
GRANULAR SOILS	MANUAL HAMMER (SAFETY) 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
NON-GRANULAR SOILS	MANUAL HAMMER (SAFETY) 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

FIGURE 3D

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

CHRISTOPHER P. MEYER, P.E.  
 P.E. LICENSE NUMBER 49328  
 GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS, INC.  
 2510 MICHIGAN AVENUE, SUITE D  
 KISSIMMEE, FL 34744-1933



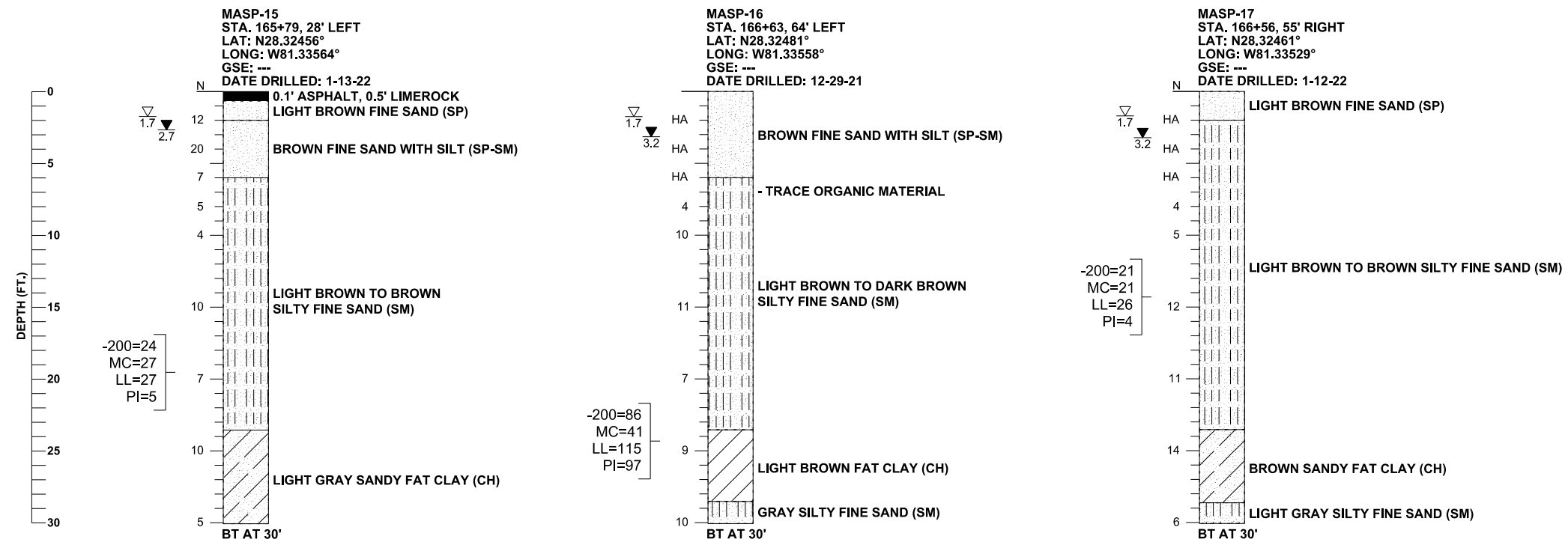
OSCEOLA COUNTY  
 FLORIDA

*SOIL BORING RESULTS FOR  
 MAST ARM SIGNAL POLES*

SHEET NO.  
 T-21

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

**SIMPSON ROAD AND ROYAL PALM DRIVE INTERSECTION**



**LEGEND**

- GSE GROUND SURFACE ELEVATION (FT. NAVD88)
- N STANDARD PENETRATION RESISTANCE, BLOWS PER FOOT
- HA HAND AUGERED FOR UTILITY CLEARANCE
- ▽ 1.7 ESTIMATED SEASONAL HIGH GROUNDWATER DEPTH (FT.)
- ▼ 2.7 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
- SAND      SAND AND SILT
- SAND AND CLAY      CLAY

**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 BLOWS PER FOOT UNLESS OTHERWISE NOTED.

THE BORING LOCATIONS WERE NOT SURVEYED BUT WERE ESTABLISHED IN THE FIELD USING A SUB-METER ACCURACY TRIMBLE GPS UNIT. THE BORING LOCATIONS REFERENCE THE SIMPSON ROAD (CR 530) CENTERLINE.

ACCORDING TO THE FDEP SEPTEMBER 2017 POTENTIOMETRIC CONTOURS MAP, THE POTENTIOMETRIC SURFACE OF THE FLORIDA AQUIFER IN THE VICINITY OF THE SUBJECT INTERSECTION IS APPROXIMATELY +50 FEET NGVD. THE CONTRACTOR SHALL BE PREPARED TO HANDLE ARTESIAN HEAD LEVELS UP TO +50 FEET NGVD.

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

SECTION: 8  
 TOWNSHIP: 25 SOUTH  
 RANGE: 30 EAST

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

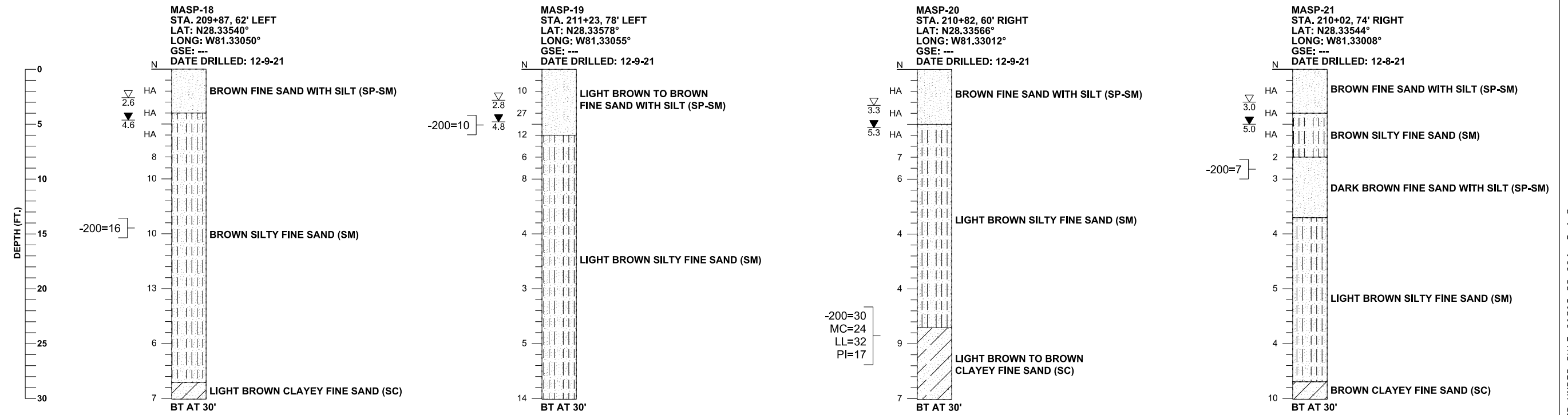
GRANULAR SOILS	AUTOMATIC HAMMER	
	N VALUE (blows per foot)	RELATIVE DENSITY
SANDS	0-3	VERY LOOSE
	3-8	LOOSE
	8-24	MEDIUM DENSE
	24-40	DENSE
	OVER 40	VERY DENSE
NON-GRANULAR SOILS	AUTOMATIC HAMMER	
	N VALUE (blows per foot)	CONSISTENCY
	0-1	VERY SOFT
	1-3	SOFT
	3-6	FIRM
	6-12	STIFF
12-24	VERY STIFF	
OVER 24	HARD	

**FIGURE 3E**

REVISIONS				CHRISTOPHER P. MEYER, P.E. P.E. LICENSE NUMBER 49328 GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS, INC. 2510 MICHIGAN AVENUE, SUITE D KISSIMMEE, FL 34744-1933		OSCEOLA COUNTY FLORIDA	SOIL BORING RESULTS FOR MAST ARM SIGNAL POLES	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION					T-22

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

**SIMPSON ROAD AND EAGLE BAY BOULEVARD/PRIEGO BOULEVARD INTERSECTION**



**LEGEND**

- GSE GROUND SURFACE ELEVATION (FT. NAVD88)
  - N STANDARD PENETRATION RESISTANCE, BLOWS PER FOOT
  - HA HAND AUGERED FOR UTILITY CLEARANCE
  - ▽ 2.6 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
- SAND
  SAND AND SILT
  SAND AND CLAY

**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 BLOWS PER FOOT UNLESS OTHERWISE NOTED.

THE BORING LOCATIONS WERE NOT SURVEYED BUT WERE ESTABLISHED IN THE FIELD USING A SUB-METER ACCURACY TRIMBLE GPS UNIT. THE BORING LOCATIONS REFERENCE THE SIMPSON ROAD (CR 530) CENTERLINE.

ACCORDING TO THE FDEP SEPTEMBER 2017 POTENTIOMETRIC CONTOURS MAP, THE POTENTIOMETRIC SURFACE OF THE FLORIDA AQUIFER IN THE VICINITY OF THE SUBJECT INTERSECTION IS APPROXIMATELY +50 FEET NGVD. THE CONTRACTOR SHALL BE PREPARED TO HANDLE ARTESIAN HEAD LEVELS UP TO +50 FEET NGVD.

**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

**SECTION: 5**  
**TOWNSHIP: 25 SOUTH**  
**RANGE: 30 EAST**

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

GRANULAR SOILS	AUTOMATIC HAMMER	RELATIVE DENSITY	
	N VALUE (blows per foot)		
SANDS	0-3	VERY LOOSE	
	3-8	LOOSE	
	8-24	MEDIUM DENSE	
	24-40	DENSE	
	OVER 40	VERY DENSE	
NON-GRANULAR SOILS	AUTOMATIC HAMMER	CONSISTENCY	
	N VALUE (blows per foot)		
	0-1		VERY SOFT
	1-3		SOFT
	3-6		FIRM
	6-12		STIFF
12-24	VERY STIFF		
OVER 24	HARD		

**FIGURE 3F**

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