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## PAY ITEMS 2007 EDITION

		QUANTITY	
1	GROUND ELECTRODE	3	EA
630-1-12	CONDUIT UNDERGROUND	2267'	LF
630-1-14	CONDUIT (JACKED)	453'	LF
632-7-1	CABLE (SIGNAL)		PI
634-4-112	SPANWIRE ASSEMBLY (TWO WIRE DIAGONAL)	1	PI
635-1-11	PULL BOX	20	EA
639-1-12	ELECTRICAL SERVICE (OVERHEAD)	1	AS
639-2-1	ELECTRICAL SERVICE WIRE	150	LF
639-3-11	SERVICE DISCONNECT	1	EA
641-17-146	CONCRETE STRAIN POLE - 50 FOOT & 45 FOOT	2	AS
650-51-322	TRAFFIC SIGNAL 3S-2W LED'S 3 SECTION	2	AS
650-51-512	TRAFFIC SIGNAL 5S-1W LED'S 5 SECTION	4	AS
659-106	TUNNEL VISOR	32	EA
663-74-1	VEHICLE DETECTOR ASSEMBLY OPTICAL 2 WAY	2	PI
659-1-01	SIGNAL HEAD BACK PLATES 3 SECTION	2	EA
659-1-18	SIGNAL HEAD BACK PLATES 5 SECTION	2	EA
659-103	DISCONNECT HANGER	1	EA
660-1-109	INDUCTIVE LOOP DETECTOR	9	EA
660-2-102	LOOP ASSEMBLY TYPE "B"	2	EA
660-2-106	LOOP ASSEMBLY TYPE "F" 6'x40'	7	EA
670-4-01	FLASHING BEACON CONTROLLER ASSEMBLY	3	EA
685-1-28	SYSTEMS AUXILIARIES INTERFACE PANEL	1	EA
670-5-110	ACTUATED SOLID STATE CONTROLLER ASSEMBLY CONTROL CABINET, TYPE V, DUAL RING 8 PHASE	1	AS
699-1-1	ELECTRICALLY POWERED OVERHEAD SIGN (INTERNALLY ILLUMINATED) (LED)	4	EA
715-4-139	LIGHT POLE COMPLETE, F&I	1	EA

## PAVEMENT PAY ITEMS

711-17	REMOVE PAVEMENT MARKINGS	175	SF
711-11-125	SOLID TRAFFIC STRIPE-WHITE-THERMO.-24"	125	LF
711-11-121	SOLID TRAFFIC STRIPE-WHITE-THERMO.-6"	70	LF
711-13-170	DIRECTIONAL ARROWS-THERMO	6	EA

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		<b>12</b>	<b>22 S</b>	<b>25 E</b>				DATE	06025CB
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## TRAFFIC SIGNAL DESIGN NOTES

GENERAL NOTES:

1. A PRE-CONSTRUCTION MEETING SHALL BE SCHEDULED WITH LAKE COUNTY TRAFFIC OPERATION, (352) 742-1766, PRIOR TO ANY CONSTRUCTION.
2. IT SHALL BE NOTED THAT NO TEST BORINGS WERE MADE WHERE CONDUIT RUNS ARE TO BE INSTALLED. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO EXAMINE THE JOB SITE CONDITIONS PRIOR TO SUBMITTING PROPOSALS.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING LAKE COUNTY TRAFFIC OPERATIONS, AT 352-742-1766, 48 HOURS IN ADVANCE OF ALL PHASES OF CONSTRUCTION INCLUDING AND NOT LIMITED TO, INSTALLING SIGNAL POLES, GROUND RODS, UNDERGROUND CONDUIT, SIGNAL HEAD ASSEMBLIES, AND LOOP INSTALLATION.
4. DURING CONSTRUCTION TRAFFIC SHALL BE MAINTAINED IN ACCORDANCE WITH THE F.D.O.T. TRAFFIC DESIGN STANDARDS.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ACQUIRING ALL NECESSARY PERMITS INCLUDING THE ELECTRIC PERMIT. THE APPLICATION FOR POWER SHOULD BE COORDINATED WITH LAKE COUNTY TRAFFIC OPERATIONS.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING THE POWER COMPANY PROVIDING THE ELECTRICAL POWER, TO DETERMINE IF ANY ADDITIONAL FEE SHALL BE INCLUDED AS PART OF BID ITEM PAYMENT FOR ELECTRICAL SERVICE ASSEMBLY.
7. THE EXACT LOCATIONS OF ALL UTILITIES IS THE RESPONSIBILITY OF THE CONTRACTOR PRIOR TO BEGINNING OF CONSTRUCTION.
8. THE CONTRACTOR SHALL STAKE ALL POLE LOCATIONS AND HAVE IT APPROVED BY LAKE COUNTY TRAFFIC OPERATIONS.
9. THE CONTRACTOR SHALL NOTIFY THE APPROPRIATE UTILITY DEPARTMENT AT LEAST 48 HOURS IN ADVANCE OF POLE SETTING OPERATIONS WHERE A CONFLICT WITH OVERHEAD ELECTRICAL CONDUCTORS IS EXPECTED AND WHEN JOINT USE POLES ARE TO BE USED.
10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ESTABLISHING THE PROPER AMOUNT OF RAKE WITH RESPECT TO LOADING TO BE USED ON POLES AT THE TIME OF INSTALLATION.
11. ALL MATERIALS AND HARDWARE SHALL BE F.D.O.T. APPROVED, AND PRE-APPROVED BY LAKE COUNTY TRAFFIC OPERATIONS.
12. ALL REMOVED EQUIPMENT SHALL BE DELIVERED TO LAKE COUNTY TRAFFIC OPERATIONS, 28127 C.R. 561, TAVARES, 352-742-1766, EXCEPT SIGNAL POLES, WHICH SHALL BE DISPOSED OF BY THE CONTRACTOR.

GENERAL NOTES:

- NOTE: CARE SHALL BE TAKEN NOT TO DAMAGE THE EQUIPMENT IN THE REMOVAL PROCESS.
13. ANY STRIPING/PAVEMENT MARKINGS OR LANDSCAPING DESTROYED BY THE CONTRACTOR DURING CONSTRUCTION SHALL BE RESTORED AT THE CONTRACTOR'S EXPENSE.
  14. THE COST FOR THE USE OF "TRAFFIC CONTROL OFFICER" IN THE EVENT OF LANE CLOSURES SHALL BE INCIDENTAL TO THE WORK AND WILL NOT BE PAID SEPARATELY.
  15. THE CONTRACTOR SHALL FURNISH LAKE COUNTY TRAFFIC OPERATIONS WITH EMERGENCY CONTACTS AND PHONE NUMBERS AND HAVE AN IMSA LEVEL II SIGNAL TECHNICIAN ON CALL WITHIN A TWO HOUR MINIMUM RESPONSE TIME.


LOOPS/PULL BOXES:

16. PULL BOX COVERS SHALL BE F.D.O.T. APPROVED NON METALLIC WITH RECESSED COVER LOGO "TRAFFIC SIGNAL" OR "FIBER OPTICS" AS APPROPRIATE.
17. PULL BOXES SHALL BE LOCATED AWAY FROM EDGE OF PAVEMENT, OR BEHIND A CURB WHEN POSSIBLE, ATTEMPTING TO KEEP AWAY FROM THE BOTTOM OF A DITCH OR RETENTION AREA, AND WHERE LARGE VEHICLES PARK.
18. LOOP HOME RUNS SHALL NOT BE CUT INTO THE RADIUS.
19. IF LOOPS ARE TO BE DESTROYED DURING CONSTRUCTION THE CONTRACTOR SHALL FURNISH, INSTALL, AND MAINTAIN TEMPORARY VEHICLE DETECTION.

TIMINGS/CONTROLLER:

20. THE CONTROLLER SHALL BE A "LAKE COUNTY" NAZTEC REGIONAL TS2-1; WITH A TS2-2 CONTROLLER ETHER NET ENABLED FOR COUNTY CLOSED LOOP SYSTEM, TO INCLUDE A GENERATOR SWITCH BOX PANEL.
21. GROUNDING FOR CONTROLLER ASSEMBLY SHALL MEASURE 25 OHMS OR LESS.
22. THE CABINET DOOR SHALL OPEN AWAY FROM THE INTERSECTION WHEN POSSIBLE.
23. THE MOUNTING OF THE ELECTRICAL SERVICE TO THE TRAFFIC SIGNAL CABINET SHALL BE PROHIBITED.
24. A MANUAL PUSH BUTTON CORD SHALL BE FURNISHED IN ALL CONTROLLER CABINETS.

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## TRAFFIC SIGNAL DESIGN NOTES

SIGNAL HEADS:

- 25. SIGNAL HEADS SHALL BE WIRED DIRECTLY TO THE TERMINAL BLOCKS. THE USE OF "JONES" PLUGS IS PROHIBITED.
- 26. VEHICLE SIGNAL HEAD ASSEMBLIES SHALL BE BLACK. CAST ALUMINUM, WITH TUNNEL VISORS, AND LED'S FOR ALL INDICATIONS, UNLESS OTHERWISE NOTED.
- 27. SIGNAL CABLE SHALL BE ATTACHED TO MESSENGER WIRE USING PROPER SIZE SPIRAL WRAP.


ILLUMINATED STREET SIGNS:

- 28. INTERNALLY ILLUMINATED STREET NAME SIGNS (LED), SHALL BE INSTALLED 1' BELOW THE MESSENGER CABLE WHERE POSSIBLE, POWERED BY A SEPARATE BREAKER, AND DESIGNED AND INSTALLED IN ACCORDANCE WITH LAKE COUNTY PUBLIC WORKS INTERNALLY ILLUMINATED STREET NAME SIGN DETAIL. A PHOTOCCELL SHALL BE INSTALLED NEAR THE ELECTRIC SERVICE WITHIN REACH OF A LIFT TRUCK. CARE TO BE GIVEN TO INSTALL WHERE STREET LIGHTING DOES NOT AFFECT OPERATION.
- 29. THE CONTRACTOR SHALL FURNISH LAKE COUNTY TRAFFIC OPERATIONS, TWO COMPLETE SETS OF ASBUILT PLANS THAT INCLUDE CONDUIT AND PULL BOX LOCATIONS, AT FINAL INSPECTION.

OTHER:

- 30. SIGNAL AHEAD SIGNS SHALL BE INSTALLED ON,THE MAIN STREET, APPROACHING THE INTERSECTION.
- 31. OPTICOM PREEMPTION OR EQUIVALENT SHALL BE USED WHEN EMERGENCY PREEMPTION IS REQUESTED.

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**PROPOSED SIGNAL HEAD DETAILS**



3-SECT., 2-WAY (LED)

FURNISH & INSTALL  
4 LIGHT WEIGHT TRAFFIC SIGNAL  
3 SECTIONS ON EACH FACE  
2 DIRECTION

FURNISH & INSTALL  
12 TUNNEL VISOR  
SIGNAL HEAD AUXILIARIES



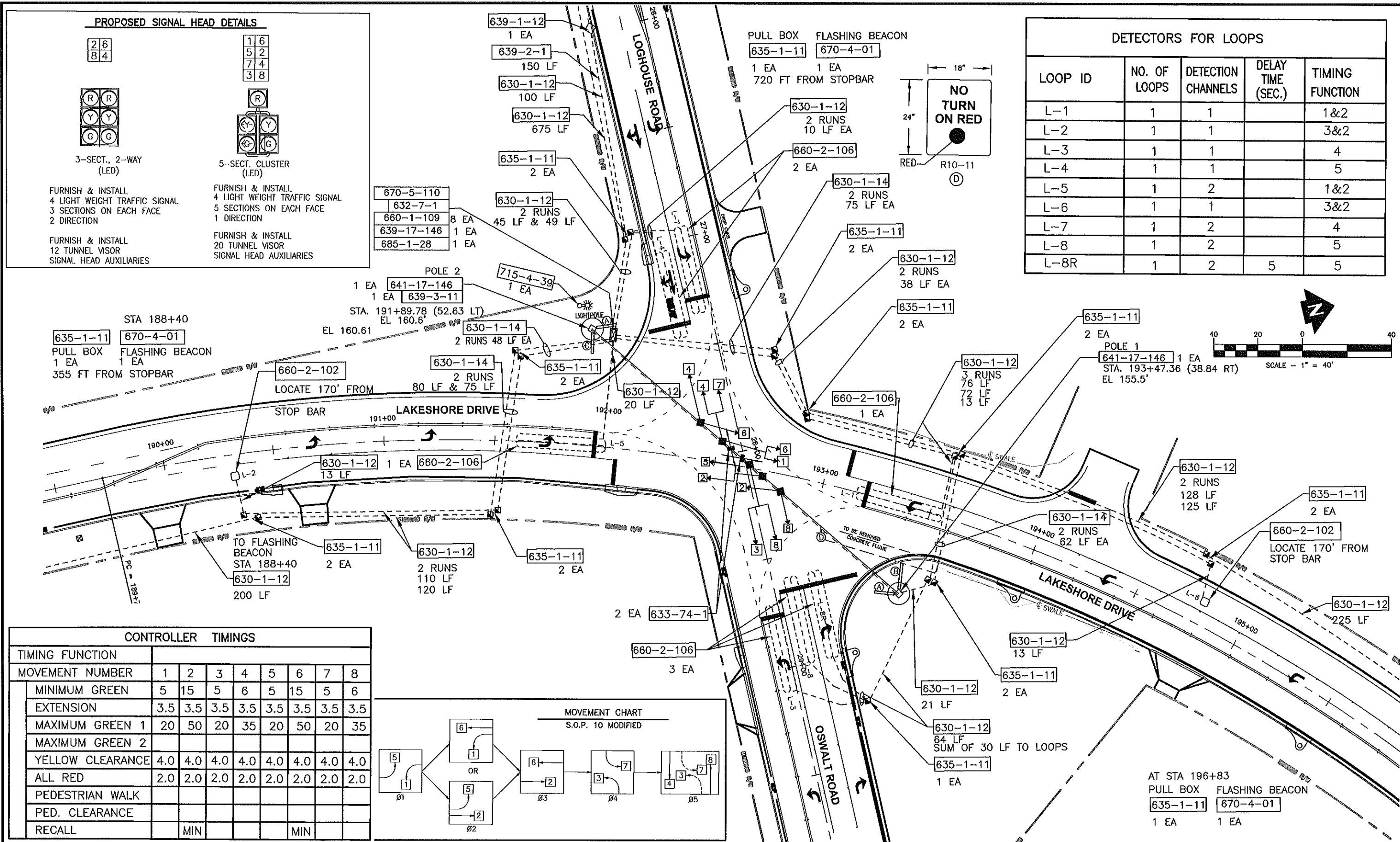
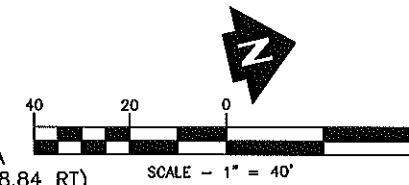
5-SECT. CLUSTER (LED)

FURNISH & INSTALL  
4 LIGHT WEIGHT TRAFFIC SIGNAL  
5 SECTIONS ON EACH FACE  
1 DIRECTION

FURNISH & INSTALL  
20 TUNNEL VISOR  
SIGNAL HEAD AUXILIARIES

**DETECTORS FOR LOOPS**

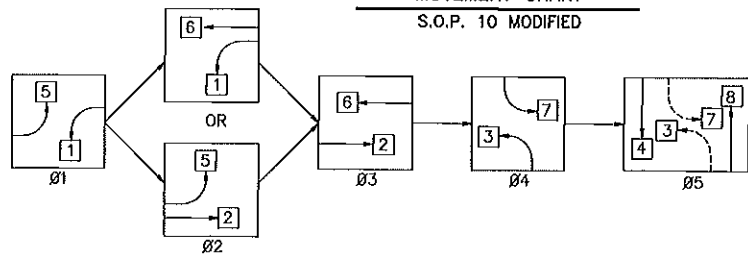
LOOP ID	NO. OF LOOPS	DETECTION CHANNELS	DELAY TIME (SEC.)	TIMING FUNCTION
L-1	1	1		1&2
L-2	1	1		3&2
L-3	1	1		4
L-4	1	1		5
L-5	1	2		1&2
L-6	1	1		3&2
L-7	1	2		4
L-8	1	2		5
L-8R	1	2	5	5



**CONTROLLER TIMINGS**

TIMING FUNCTION	1	2	3	4	5	6	7	8
MOVEMENT NUMBER	1	2	3	4	5	6	7	8
MINIMUM GREEN	5	15	5	6	5	15	5	6
EXTENSION	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
MAXIMUM GREEN 1	20	50	20	35	20	50	20	35
MAXIMUM GREEN 2								
YELLOW CLEARANCE	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
ALL RED	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
PEDESTRIAN WALK								
PED. CLEARANCE								
RECALL		MIN				MIN		

**MOVEMENT CHART**  
S.O.P. 10 MODIFIED



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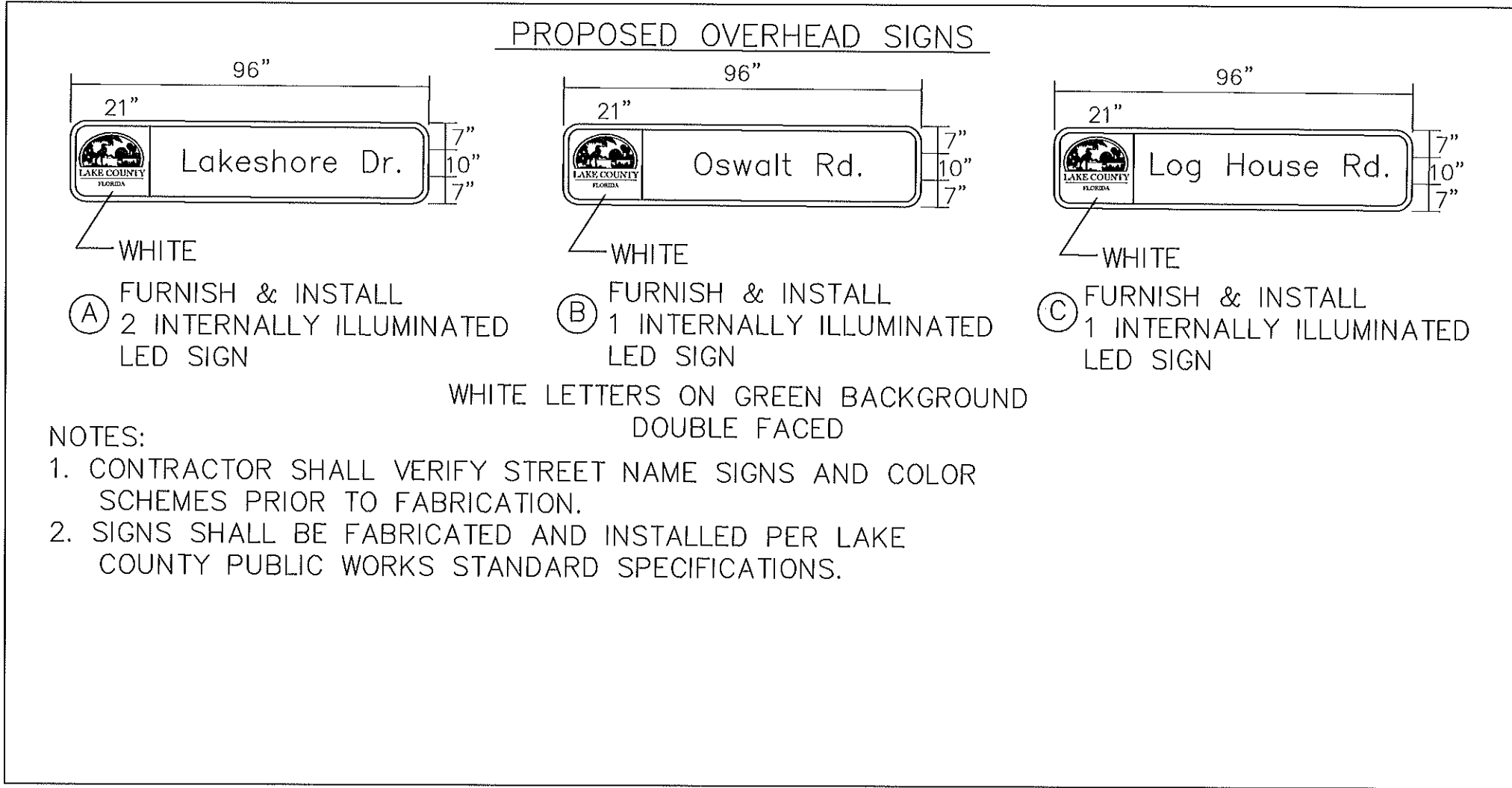
LAKESHORE DR & LOGHOUSE/OSWALT RD  
INTERSECTION IMPROVEMENTS  
SIGNAL PLAN


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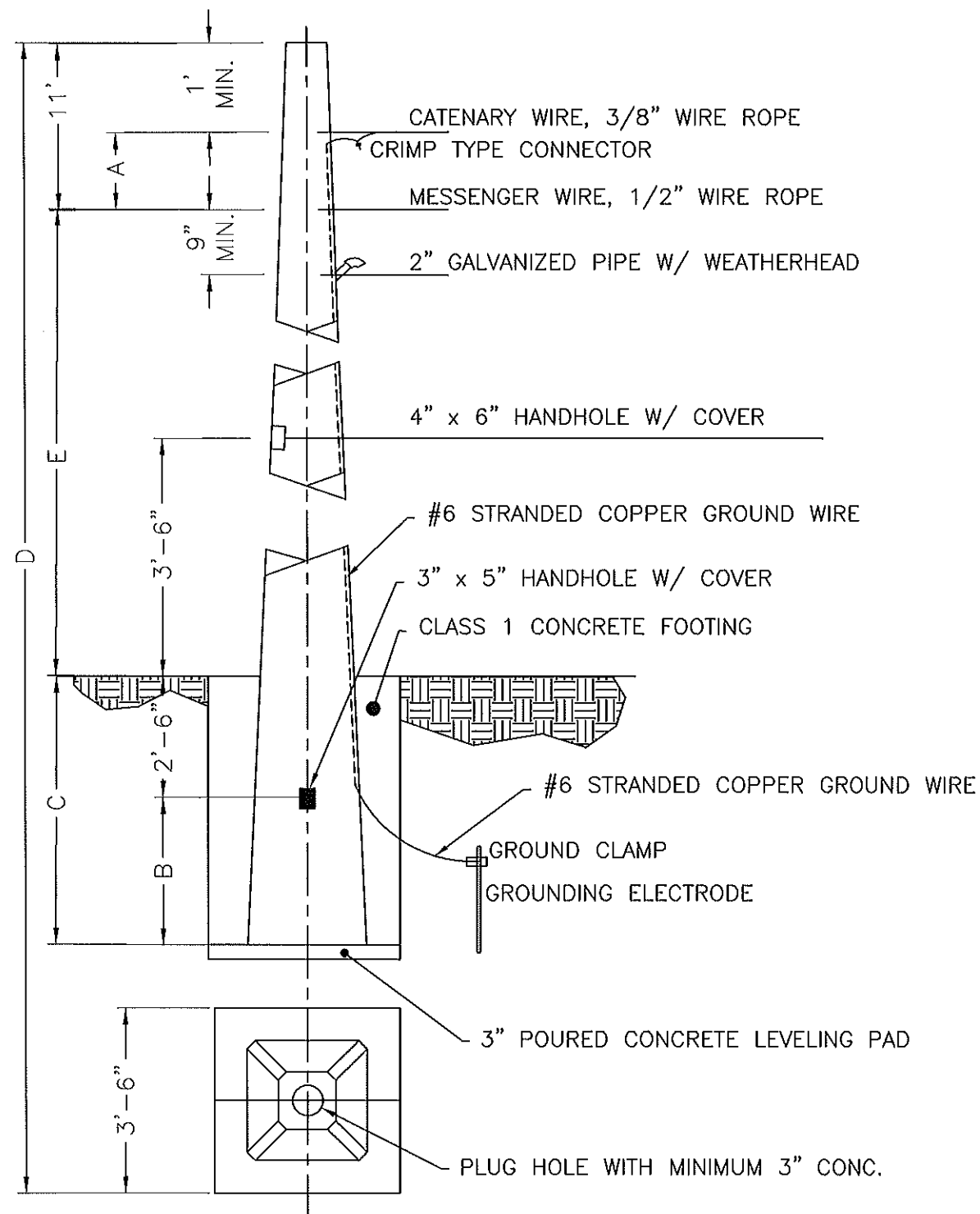
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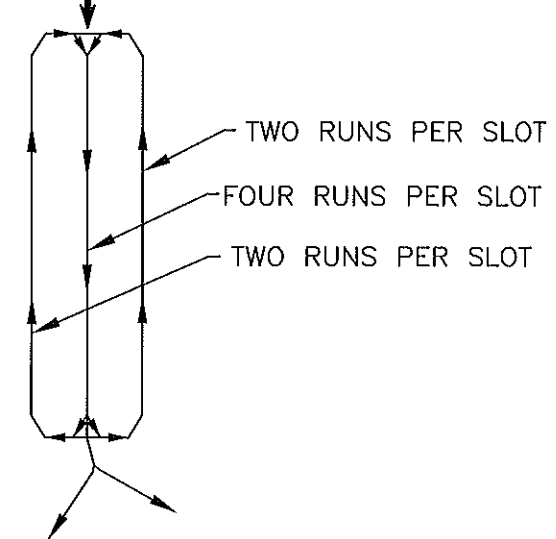


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TYPE N-VIII  
F.D.O.T. INDEX 17725 & 17727

DIRECTION OF TRAFFIC



DETAIL OF LOOP WINDING  
(QUADRA POLE PRESENCE LOOP)

LOOP WIRE SHALL BE PLACED IN THE ABOVE MANNER TO AVOID CENTER SLOT CANCELLATION

MESSENGER CABLE SHALL BE 7/16", CATENARY WIRE SHALL BE 3/8"  
POLE SCHEDULE

POLE	TYPE	LOCATION	A	B	C	D	E
1	N-VIII	STA 193+47.36 38.84' RT	10	10.5	13	50	26
2	N-VIII	STA 191+89.78 52.63' LT	10	10.5	13	45	21

NOTES:

- DESIGN PARAMETERS:
  - COHESIONLESS SOIL
  - SOIL FRICTION ANGLE = 29 DEGREES
  - SOIL WEIGHT (SUBMERGED) = 45 PCF
  - 81 MPH:
    - EQUIVALENT 1994 AASHTO WIND SPEED
    - FOR 2001 AASHTO 110 MPH WIND

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LAKESHORE DR & LOGHOUSE/OSWALT RD  
INTERSECTION IMPROVEMENTS  
STRAIN POLE DETAILS

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