

LAKE COUNTY PUBLIC WORKS DEPARTMENT
ENGINEERING DIVISION

PLANS OF PROPOSED

C.R. 470

LAKE COUNTY

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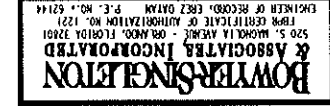
SIGNALIZATION PLANS

CR 470/CR 48 AT CR 33

CR 48 AT US 27

90% SUBMITTAL
SEPTEMBER 2007

DATE	BY	DESCRIPTION



PLANS PREPARED BY:

LAKE COUNTY PUBLIC WORKS DEPARTMENT
437 ARDICE AVE.
EUSTIS, FLORIDA 32726
(352) 483-9000

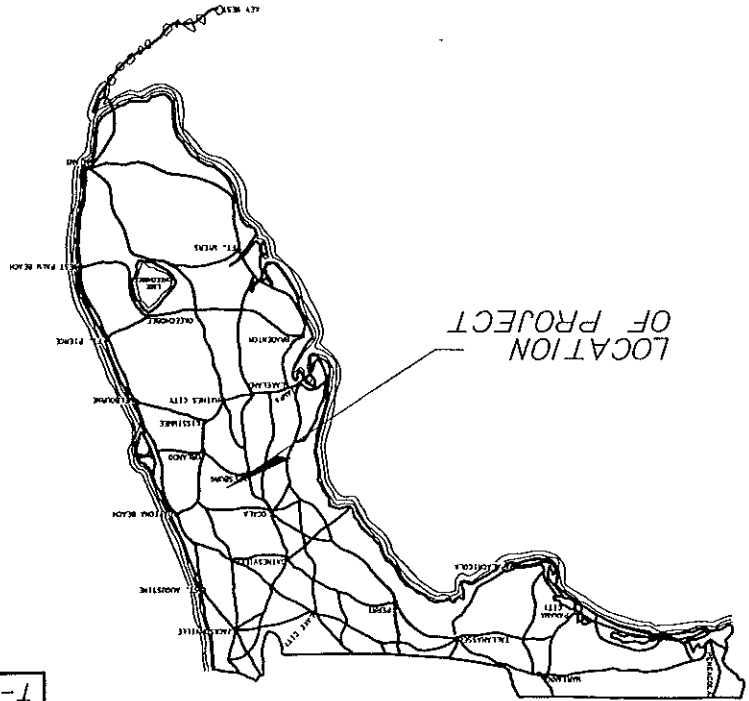
PLANS PREPARED FOR:

LAKE COUNTY, FLORIDA
COUNTY COMMISSIONERS

JENNIFER HILL, VICE-CHAIR PERSON
ELAINE RENICK
DEBBIE STWENDER, CHAIR PERSON
LINDA STEWART
WELTON G. CADWELL

CINDY HALL
COUNTY MANAGER

DISTRICT 1
DISTRICT 2
DISTRICT 3
DISTRICT 4
DISTRICT 5



T-1
SHEET NO.

ATTENTION IS DIRECTED TO THE FACT THAT THESE PLANS MAY HAVE BEEN ALTERED IN SIZE BY REPRODUCTION. THIS MUST BE CONSIDERED WHEN OBTAINING SCALED DATA.

520 SOUTH MAGNOLIA AVENUE
ORLANDO, FLORIDA 32801
407-843-5120
VENDOR NUMBER 59-137377

SIGNALIZATION PLANS
APPROVED BY: EREZ DAYAN, P.E.
DATE: _____
P.E. # 62144

GOVERNING STANDARDS AND SPECIFICATIONS: FLORIDA DEPARTMENT OF TRANSPORTATION, DESIGN STANDARDS DATED 2006, AND STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION DATED 2006, AS AMENDED BY CONTRACT DOCUMENTS.

LAKE COUNTY PROJECT MANAGER: FRED SCHNEIDER, P.E.

\$\$\$PAPER\$\$\$ \$\$\$ARCHD\$\$\$ \$\$\$PENTABLE\$\$\$

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09/10/2007

Jim Bradford

TABULATION OF QUANTITIES

PAY ITEM NO.	DESCRIPTION	UNIT	SHEET NUMBERS												TOTAL THIS SHEET	GRAND TOTAL	REF. SHEET		
			PLAN	FINAL	PLAN	FINAL	PLAN	FINAL	PLAN	FINAL	PLAN	FINAL	PLAN	FINAL					
630-1-12	Conduit (F&I) (Underground)	LF	1269																
630-1-14	Conduit (F&I) (Underground - Jacked)	LF	250																
632-7-1	Cable (Signal) (F&I)	PI	1																
635-1-11	Pull & Junction Boxes (F&I) (Pull Box)	EA	23																
635-1-15	Pull & Junction Boxes (F&I) (Fiber Optics)	EA	1																
639-1-22	Electrical Power Service (Underground)	AS	1																
639-2-1	Electrical Service Wire (F&I) (Purchase from Power Co.)	LF	157	28															
641-41-112	Prestressed Conc. Poles (F&I - Direct Burial) (Type N-11) (12')	EA	1																
649-31-301	Mast Arm Assembly (F&I) (110) (Single Arm)	EA	1																
649-31-302	Mast Arm Assembly (F&I) (110) (Single Arm)	EA	2																
649-31-303	Mast Arm Assembly (F&I) (110) (Single Arm)	EA	1																
649-31-399	Mast Arm Assembly (F&I) (110) (Custom)	EA	3																
650-51-313	Traffic Signal (F&I) (3 Section) (1 Direction) (Special) (LED)	AS	4																
650-51-513	Traffic Signal (F&I) (5 Section) (1 Direction) (Special) (LED)	AS	4																
653-191	Pedestrian Signals (F&I) (LED - Countdown) (1-Way)	AS	6																
659-108	Signal Head Auxiliaries (F&I) (Steel Pedestal)	EA	4																
660-1-109	Loop Detector, Inductive (F&I) (Type 9, 2 CH, RM, SS)	EA	6																
660-1-110	Loop Detector, Inductive (F&I) (Type 10, 2 CH, RM, SS, TD)	EA	4																
660-2-102	Loop Assembly (F&I) (Type B)	AS	8																
660-2-106	Loop Assembly (F&I) (Type F)	AS	6																
665-11	Pedestrian Detector (F&I) (Pole Mount Detector Station)	EA	6																
670-5-110	Traffic Controller Assembly (F&I) (NEMA)	AS	1																
685-138	System Auxiliaries (F&I) (CCTV Camera Assembly)	EA	1																
690-10	Remove Traffic Signal Head Assembly	EA	6																
690-53-1	Pole Removal - Deep	EA	2																
690-50	Remove Controller Assembly	EA	1																
690-80	Remove Span Wire Assembly	EA	1																
690-90	Remove Cabling & Conduit	PI	1																
690-100	Remove Miscellaneous Signal Equipment	PI	1																
699-1-11	Internally Illuminated Sign (Street Name)	EA	4																

PAY ITEM NOTES

1. PAY ITEM 630-1-14 INCLUDES THE COST OF VERIFYING VERTICAL AND HORIZONTAL UTILITY LOCATIONS.
2. WHEN JACKING CONDUIT UNDER PAVEMENT THE CONTRACTOR MAY USE A FDOT APPROVED GUIDED BORING SYSTEM AS AN ALTERNATE METHOD OF CONSTRUCTION. AN ACCEPTABLE METHOD IS THE DITCH WITCH JET-TRAC OR EQUIVALENT, PAID FOR UNDER PAY ITEM NUMBER 630-1-14.
3. ITEM NO. 635-1-11 PULL BOXES SHALL BE FDOT APPROVED NON-METALLIC WITH RECESSED COVER LOGO LABELED "TRAFFIC SIGNAL."
4. PAY ITEM 639-1-22 INCLUDES ALL FEES BY THE POWER COMPANY FOR ENERGIZING THE POWER SERVICE. ELECTRICAL UTILITY COMPANY: PROGRESS ENERGY OF FLORIDA, (407) 938-6638.
5. PAY ITEM 641-41-112 INCLUDES CONCRETE SERVICE POLE, PRESTRESSED TYPE N-11, 12' LONG.
6. PAY ITEM NO. 665-11 TO INCLUDE FTP-69A-06 SIGN.
7. PAY ITEM NO 653-191 SHALL HAVE INTERNATIONAL SYMBOL DISPLAYS WITH LED'S.
8. PAY ITEM NO 659-108 IS TO INCLUDE A BREAK AWAY BASE AND SLIP FOOTER.
9. PAY ITEM NO. 690-100 INCLUDES REMOVAL OF ABANDONED PULL BOXES.

10. PAY ITEM 685-138 SHALL BE NTICP CCTV CAMERA ASSEMBLY FURNISHED AND INSTALLED AT A LOCATION FOR OPTIMAL PERFORMANCE.
 THE CAMERA SHALL BE COMPATIBLE WITH CURRENT LAKE COUNTY SYSTEM.
 CAMERA SHALL HAVE ELECTRONIC IMAGE STABILIZATION AND PTZ CONTROL. THE ASSEMBLY SHALL INCLUDE A SURGE PANEL, VIDEO CONVERTER, AND ANY SPECIAL MOUNTING HARDWARE NECESSARY FOR OPTIMAL CAMERA PERFORMANCE.
 ALL COSTS NECESSARY TO FURNISH AND INSTALL A COMPLETE CAMERA ASSEMBLY SHALL BE CONSIDERED INCIDENTAL TO THIS PAY ITEM.

BOWYER SINGLETON & ASSOCIATES, INCORPORATED
 520 S. MAGNOLIA AVENUE - ORLANDO, FLORIDA 32801
 P.E. NO. 162144
 ENGINEER OF RECORD, ERIC ZEVAN

Lake County


TABULATION OF QUANTITIES & PAY ITEM NOTES

GENERAL NOTES

1. THE CONTRACTOR SHALL NOTIFY THE APPROPRIATE UTILITY DEPARTMENT AT LEAST 24 HRS. IN ADVANCE OF POLE SETTING OPERATIONS WHERE CONFLICT WITH OVERHEAD ELECTRICAL CONDUCTORS IS EXPECTED AND IN ALL CASES WHERE JOINT USE POLES ARE CALLED FOR.
 2. IT SHOULD BE NOTED THAT NO TEST BORINGS WERE MADE WHERE CONDUIT RUNS ARE TO BE INSTALLED BY JACKING OR TRENCING. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO EXAMINE JOB SITE CONDITIONS BEFORE SUBMITTING BID PROPOSALS IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.
 3. MANUAL PUSHBUTTON CORD PER SPECIFICATION A 676-3.3 SHALL BE FURNISHED.
 4. ALL SAW CUTS FOR LOOP INSTALLATION SHALL BE CLEAN OF DUST AND OTHER DEBRIS PRIOR TO THE INSTALLATION OF LOOP WIRE OR LEAD-IN CABLE. BRUSH DUST BACK OVER SEALED SAW CUT TO HELP CLEANUP.
 5. SPARE CABINET CONDUIT SHALL BE STUBBED AND CAPPED IN NEAREST PULL BOX.
 6. ALL CONDUIT SHALL BE 2 INCH MINIMUM UNLESS OTHERWISE SPECIFIED IN THE PLANS, EXCEPT ELECTRICAL SERVICE POWER DUCT.
 7. EACH LOOP SHALL BE TREATED AS AN INDIVIDUAL LOOP WITH SEPARATE LEAD-INS FROM SPLICE POINT TO CABINET TERMINAL.
 8. AS DIRECTED BY THE PROJECT ENGINEER, THE CONTRACTOR SHALL ADJUST CONDUIT & PULL BOXES IN ORDER TO AVOID ANY POSSIBLE CONFLICTS.
 9. PAYMENT FOR ELECTRICAL SERVICE WIRE NOT IN THE VERTICAL ASSEMBLY WILL BE PAID FOR PER LINEAR FEET OF A SINGLE CONDUCTOR.
 10. ALL SAW CUTS SHALL BE SEALED IMMEDIATELY AFTER THE LOOP WIRES AND LEAD-IN WIRES HAVE BEEN PLACED IN THE SAWCUTS.
 11. LANE CLOSURES WILL NOT BE PERMITTED DURING THE HOURS OF 6 A.M. TO 9 A.M. AND 4 P.M. TO 7 P.M. EXCEPT ON WEEKENDS AND HOLIDAYS.
 12. ALL ITEMS PROPOSED FOR USE SHALL BE SUBMITTED ON FORM 724-10 PER SECTION 603. IN ADDITION, AT THE SAME TIME, TWO COPIES OF MANUFACTURERS DESCRIPTIVE LITERATURE SHALL BE SUBMITTED TO THE PROJECT ENGINEER.
 13. UNLESS OTHERWISE NOTED, ALL REMOVED EQUIPMENT SHALL BE TURNED OVER TO THE LOCAL MAINTAINING AGENCY AS DIRECTED BY THE ENGINEER.
 14. THE CONTRACTOR SHALL VERIFY COLOR CODES FOR SIGNAL CABLE WITH THE LOCAL MAINTAINING AGENCY BEFORE ORDERING.
 15. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO DETERMINE THE LOCATION OF THE UNDERGROUND UTILITIES PRIOR TO DIGGING. PAYMENT TO BE INCLUDED IN THE APPROPRIATE SIGNAL POLE PAY ITEM NUMBER.
 16. APPROXIMATE CONDUIT RUN LOCATIONS ARE SHOWN. ALL RUNS SHALL BE APPROVED BY ENGINEERS IN THE FIELD.
 17. SIGNAL HEADS SHALL BE LOCATED AS SHOWN ON THE PLANS. A MINIMUM OF 8' HORIZONTAL SEPARATION BETWEEN HEADS SHALL BE MAINTAINED FOR EACH MOVEMENT.
 18. THE SIGNAL CONTRACTOR SHALL COORDINATE THE PLACEMENT OF THE CONDUIT ROUTING, PULL BOXES, LOOPS AND POLES WITH THE ROADWAY CONTRACTOR. INSTALLATION OF THESE ITEMS SHALL BE SEQUENCED PROPERLY WITH THE ROADWAY CONSTRUCTION. ALL TRENCING THROUGH EXISTING PAVEMENT TO BE COMPLETED PRIOR TO INSTALLATION OF NEW PAVEMENT STRUCTURE.
 19. THE CONTRACTOR SHALL NOTIFY THE COUNTY TRAFFIC OPERATIONS SUPERVISOR AT LEAST 24 HRS IN ADVANCE OF CONSTRUCTION, LOOP CUTTING, AND CHANGEOVER. THE CONTRACTOR SHALL VERIFY COLOR CODES FOR SIGNAL CABLE BEFORE ORDERING. THE TRAFFIC ENGINEER MAY CHALK THE LOOPS AND OBSERVE THEIR INSTALLATION. THE CONTRACTOR SHALL VERIFY COUNTY PROCEDURES FOR SIGNAL CHANGEOVER.
 20. AT THE TIME OF FINAL INSPECTION OF PROJECT THE CONTRACTOR SHALL FURNISH THE INSPECTOR THREE COMPLETE SETS OF AS-BUILT PLANS: 1 FOR FDOT, 1 TO BE LEFT IN THE CABINET AND 1 FOR THE MAINTAINING AGENCY.
 21. STANDARD VEHICLE DETECTION LOOP IS 6' X 40' LOCATED 5' IN FRONT OF THE STOP BAR FOR MAJOR AND MINOR STREET LEFT TURNS AND MINOR STREET THRU MOVEMENTS. USE A 6' X 6' LOOP FOR MAJOR STREET THRU MOVEMENTS.
 22. FOR SIGN DETAILS USE MANUAL ON STANDARD HIGHWAY SIGNS PUBLISHED BY U.S. DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION (LATEST EDITION).
23. WHEN A CONTRACTOR IS WORKING ON SIGNAL WORK IN AN INTERSECTION (INSTALLING CONDUIT IN THE STREET, INSTALLING NEW SIGNAL EQUIPMENT, INSTALLING LOOPS AND RUNS, AND TURNING ON OF NEW SIGNALS) WHERE A LANE IS CLOSED AN OFF-DUTY LAW ENFORCEMENT OFFICER SHALL DIRECT TRAFFIC. THE HOURLY RATE OF PAY FOR AN OFF-DUTY LAW ENFORCEMENT OFFICER CAN BE OBTAINED FROM THE OFFICE OF THE LAW ENFORCEMENT OFFICER.
 24. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING THE COMPANY PROVIDING ELECTRICAL POWER TO DETERMINE IF ANY ADDITIONAL FEE IS REQUIRED. IF REQUIRED, FEE SHALL BE INCLUDED AS PART OF BID ITEM PAYMENT FOR ELECTRICAL POWER SERVICE ASSEMBLY.
 25. DISCONNECT HANGERS SHALL BE TRI-STUD HEAD TYPE. ADJUSTABLE HANGER SHALL BE USED, NO THREADED PIPE HEADERS WILL BE PERMITTED.
 26. SIGNAL HEADS SHALL BE WIRED DIRECTLY TO THE TERMINAL BLOCKS. THE USE OF "JONES PLUGS" SHALL BE PROHIBITED.
 27. INTERNALLY ILLUMINATED SIGNS SHALL BE POWERED BY A SEPARATE CIRCUIT BREAKER AND SHALL BE DESIGNED AND INSTALLED IN ACCORDANCE WITH LAKE COUNTY PUBLIC WORKS INTERNALLY ILLUMINATED STREET SIGN DETAILS. PLEASE GIVE CARE TO PHOTOCELL PLACEMENT WHERE STREET LIGHTS DO NOT AFFECT OPERATION.
 28. NO POLYCARBONATE HOUSING OR MOUNTING HARDWARE WILL BE PERMITTED FOR VEHICULAR OR PEDESTRIAN SIGNAL HEAD ASSEMBLIES. ALL LENSES FOR THE SAME SHALL BE GLASS.
 29. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ACQUIRING ALL NECESSARY PERMITS, INCLUDING THE ELECTRICAL PERMIT.
 30. PULL BOXES SHALL BE INSTALLED AS FOLLOWS: 10' FROM EDGE OF PAVEMENT WHERE NO CURB AND GUTTER EXIST AND 4' BEHIND CURB AND GUTTER.
 31. UNDER THE DIRECTION OF THE PROJECT ENGINEER, THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE LOCATION OF EXISTING UTILITIES, BOTH HORIZONTAL AND VERTICAL PRIOR TO ANY BORING OPERATIONS. THIS WORK IS TO BE PAID FOR UNDER PAY ITEM 630-1-14.
 32. ALL SIGNAL CONSTRUCTION SHALL MEET 90 MPH WIND LOADS.
 33. THE CONTRACTOR SHALL ADHERE TO ALL CITY AND COUNTY ORDINANCES AND STATE REGULATIONS DURING ALL CONSTRUCTION OPERATIONS.
 34. THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL UTILITIES PRIOR TO EXCAVATION.
 35. ALL TRAFFIC SIGNAL HEADS SHALL HAVE TUNNEL VISORS.
 36. ANY EXCAVATION EXCEEDING 1.5 FEET AND LOCATED WITHIN 5 FEET OF ANY FIELD DESIGNATED UNDERGROUND UTILITY SHALL BE DONE BY HAND.
 37. THE CONTRACTOR SHALL CONTACT THE LAKE COUNTY CONSTRUCTION AND TESTING OFFICE TO ARRANGE FOR AN ON SITE PRECONSTRUCTION MEETING TO REVIEW POTENTIAL CONFLICTS AT LEAST ONE WEEK PRIOR TO BEGINNING OF WORK WITH ALL AFFECTED UTILITY COMPANIES.
 38. THE CONTRACTOR SHALL FURNISH, INSTALL, AND MAINTAIN TEMPORARY VEHICLE DETECTION LOOPS IF THEY ARE DESTROYED DURING CONSTRUCTION.
 39. THE CONTRACTOR IS RESPONSIBLE FOR MAINTENANCE OF EXISTING SIGNALS UNTIL THEY ARE REMOVED.
 40. THE CONTROLLER ASSEMBLY SHALL BE A "LAKE COUNTY" MAZTEC REGIONAL TS2-1 CONTROLLER. IT SHALL BE TS2-2 ETHERNET ENABLED FOR COUNTY CLOSED LOOP SYSTEM, AND IS TO INCLUDE A GENERATOR SWITCH BOX PANEL.
 41. THE CONTROLLER ASSEMBLY GROUNDING SHALL MEASURE 25 OHMS OR LESS.
 42. THE CABINET DOOR SHALL OPEN AWAY FROM THE INTERSECTION WHEN POSSIBLE.
 43. THE FIRST BUFFER OF SINGLE MODE AND MULTI MODE FIBER SHALL BE TERMINATED IN THE CABINET USING ST CONNECTORS.
 44. THE CONTRACTOR SHALL FURNISH LAKE COUNTY TRAFFIC OPERATIONS WITH EMERGENCY CONTACTS AND PHONE NUMBERS. AN IMSA LEVEL 2 CERTIFIED SIGNAL TECHNICIAN SHALL BE ON CALL WITHIN A TWO HOUR MINIMUM RESPONSE TIME.
 45. ANY PAVEMENT MARKINGS OR LANDSCAPING DESTROYED BY THE CONTRACTOR DURING CONSTRUCTION SHALL BE RESTORED AT THE CONTRACTOR'S EXPENSE.

DATE	BY	DESCRIPTION

BOWERS-INGLETON & ASSOCIATES, INCORPORATED
520 S. MAGNOLIA AVENUE - ORLANDO, FL 32801
FOR CERTIFICATE OF AUTHORIZATION NO. 1221
P.E. NO. 62144
ENGINEER OF RECORD, ERIC DAYAN



GENERAL NOTES

SIGNALIZATION PLAN SHEET

CR 470/CR 48 AT CR 33

T-4

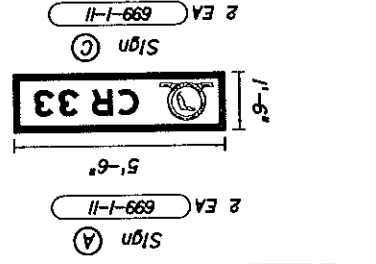
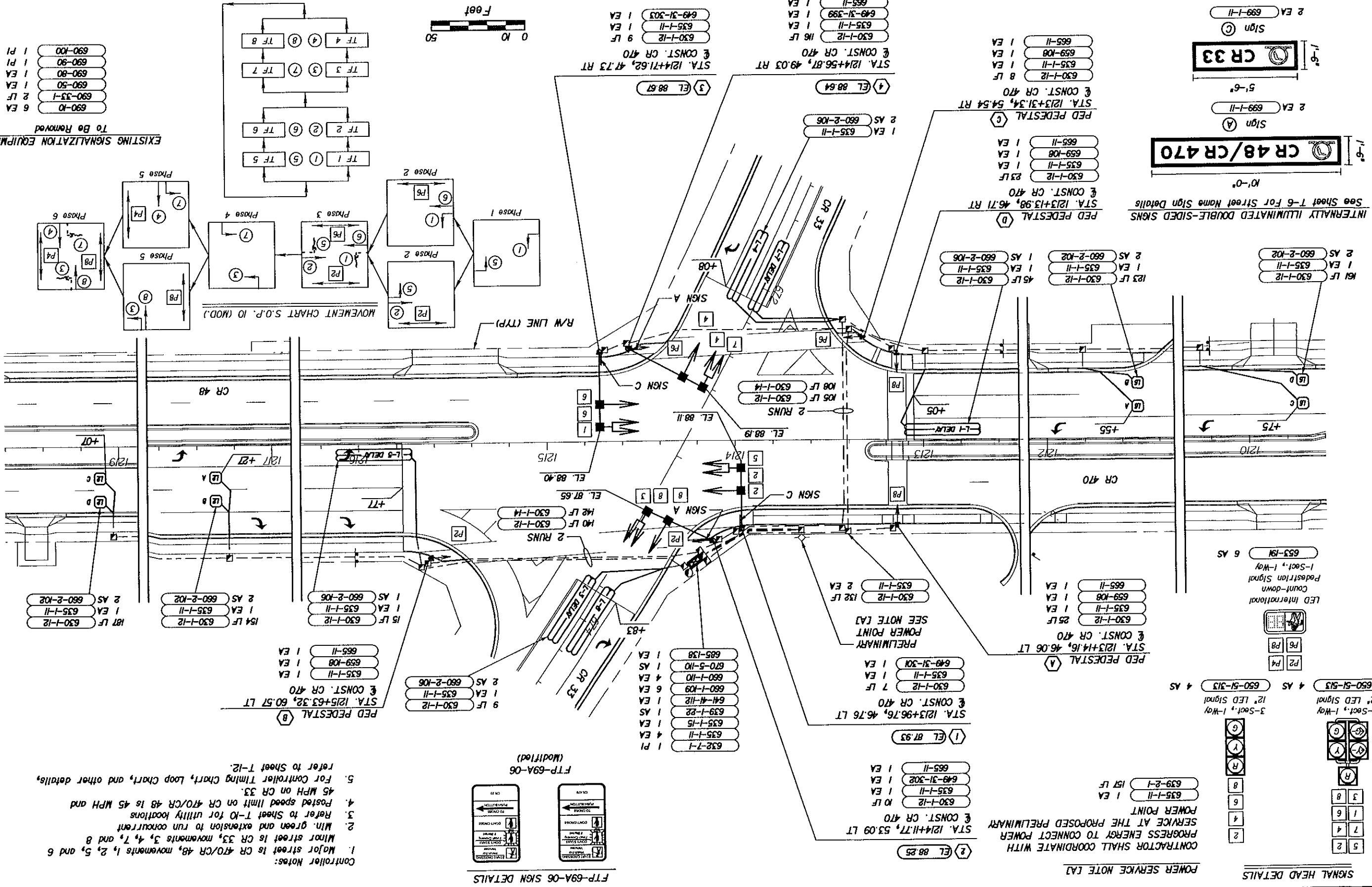
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Lake County

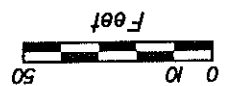


BOWERS SINGLTON & ASSOCIATES, INCORPORATED
520 S. MAGNOLIA AVENUE - ORLANDO, FLORIDA 32801
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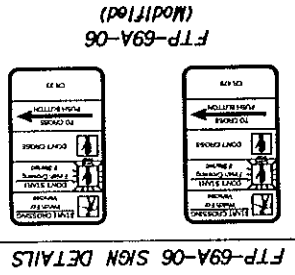
DATE	BY	DESCRIPTION



- EXISTING SIGNALIZATION EQUIPMENT
To Be Removed
- 6 EA 690-K0
 - 2 LF 690-33-1
 - 1 EA 690-50
 - 1 EA 690-80
 - 1 EA 690-90
 - 1 PI 690-100

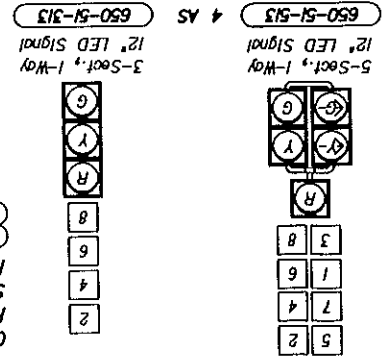


- Controller Notes:
1. Major street is CR 470/CR 48, movements 1, 2, 5, and 6. Minor street is CR 33, movements 3, 4, 7, and 8.
 2. Min. green and extension to run concurrent.
 3. Refer to Sheet T-10 for utility locations.
 4. Posted speed limit on CR 470/CR 48 is 45 MPH and 45 MPH on CR 33.
 5. For Controller Timing Chart, Loop Chart, and other details, refer to Sheet T-12.



SIGNAL HEAD DETAILS

POWER SERVICE NOTE [A]



CONTRACTOR SHALL COORDINATE WITH
SERVICE AT THE PROPOSED PRELIMINARY
POWER POINT

STA. 1214+11.77, 53.09 LT
& CONST. CR 470

- 1 PI 632-7-1
- 4 EA 635-1-11
- 1 EA 635-1-15
- 1 AS 639-1-22
- 1 EA 641-4-112
- 6 EA 660-1-109
- 4 EA 660-1-110
- 1 AS 670-5-110
- 1 EA 685-138

PRELIMINARY
POWER POINT
SEE NOTE [A]

132 LF 630-1-12 2 EA
635-1-11

STA. 1213+14.16, 46.06 LT
& CONST. CR 470

- 25 LF 630-1-12 1 EA
- 1 EA 635-1-11
- 1 EA 659-108
- 1 EA 665-11

LED International
Count-down
Pedestrian Signal
1-Sect, 1-Way
653-191 6 AS

2 EL 88.25

STA. 1213+96.76, 46.76 LT
& CONST. CR 470

- 1 PI 632-7-1
- 4 EA 635-1-11
- 1 EA 635-1-15
- 1 AS 639-1-22
- 1 EA 641-4-112
- 6 EA 660-1-109
- 4 EA 660-1-110
- 1 AS 670-5-110
- 1 EA 685-138

PRELIMINARY
POWER POINT
SEE NOTE [A]

132 LF 630-1-12 2 EA
635-1-11

STA. 1213+14.16, 46.06 LT
& CONST. CR 470

- 25 LF 630-1-12 1 EA
- 1 EA 635-1-11
- 1 EA 659-108
- 1 EA 665-11

LED International
Count-down
Pedestrian Signal
1-Sect, 1-Way
653-191 6 AS

1 EL 87.93

STA. 1213+96.76, 46.76 LT
& CONST. CR 470

- 1 PI 632-7-1
- 4 EA 635-1-11
- 1 EA 635-1-15
- 1 AS 639-1-22
- 1 EA 641-4-112
- 6 EA 660-1-109
- 4 EA 660-1-110
- 1 AS 670-5-110
- 1 EA 685-138

PRELIMINARY
POWER POINT
SEE NOTE [A]

132 LF 630-1-12 2 EA
635-1-11

STA. 1213+14.16, 46.06 LT
& CONST. CR 470

- 25 LF 630-1-12 1 EA
- 1 EA 635-1-11
- 1 EA 659-108
- 1 EA 665-11

LED International
Count-down
Pedestrian Signal
1-Sect, 1-Way
653-191 6 AS

4 EL 88.64

STA. 1214+56.87, 49.03 RT
& CONST. CR 470

- 1 EA 635-1-11
- 2 AS 660-2-106

PED PEDESTAL
& CONST. CR 470

- 25 LF 630-1-12 1 EA
- 1 EA 635-1-11
- 1 EA 659-108
- 1 EA 665-11

LED International
Count-down
Pedestrian Signal
1-Sect, 1-Way
653-191 6 AS

4 EL 88.64

STA. 1214+56.87, 49.03 RT
& CONST. CR 470

- 1 EA 635-1-11
- 2 AS 660-2-106

PED PEDESTAL
& CONST. CR 470

- 25 LF 630-1-12 1 EA
- 1 EA 635-1-11
- 1 EA 659-108
- 1 EA 665-11

LED International
Count-down
Pedestrian Signal
1-Sect, 1-Way
653-191 6 AS

3 EL 88.67

STA. 1214+71.62, 47.73 RT
& CONST. CR 470

- 9 LF 630-1-12 1 EA
- 1 EA 635-1-11
- 1 EA 649-31-303

PED PEDESTAL
& CONST. CR 470

- 25 LF 630-1-12 1 EA
- 1 EA 635-1-11
- 1 EA 659-108
- 1 EA 665-11

LED International
Count-down
Pedestrian Signal
1-Sect, 1-Way
653-191 6 AS

3 EL 88.67

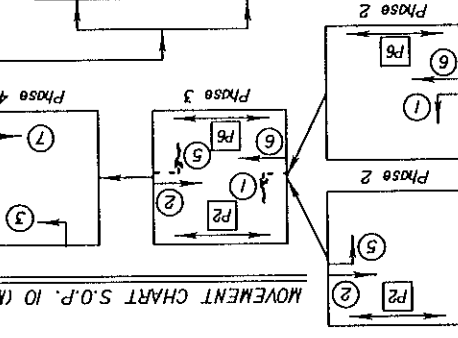
STA. 1214+71.62, 47.73 RT
& CONST. CR 470

- 9 LF 630-1-12 1 EA
- 1 EA 635-1-11
- 1 EA 649-31-303

PED PEDESTAL
& CONST. CR 470

- 25 LF 630-1-12 1 EA
- 1 EA 635-1-11
- 1 EA 659-108
- 1 EA 665-11

LED International
Count-down
Pedestrian Signal
1-Sect, 1-Way
653-191 6 AS



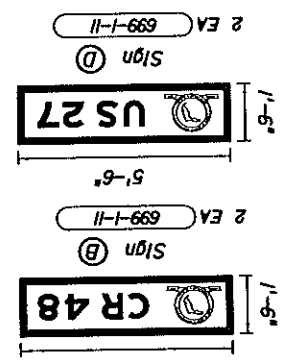
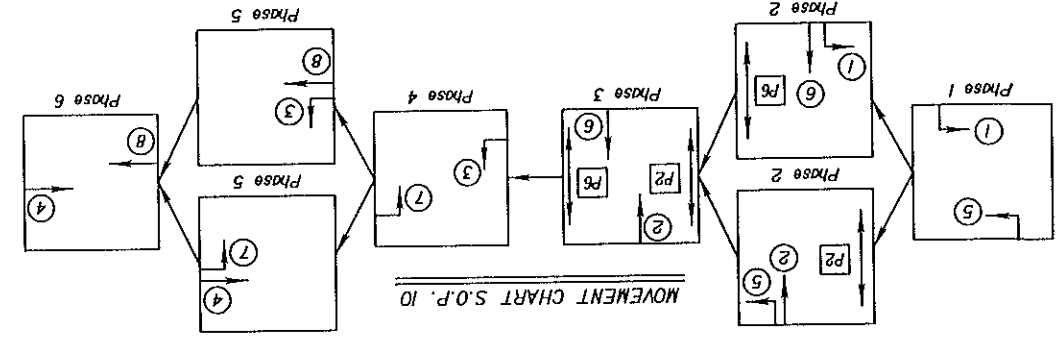
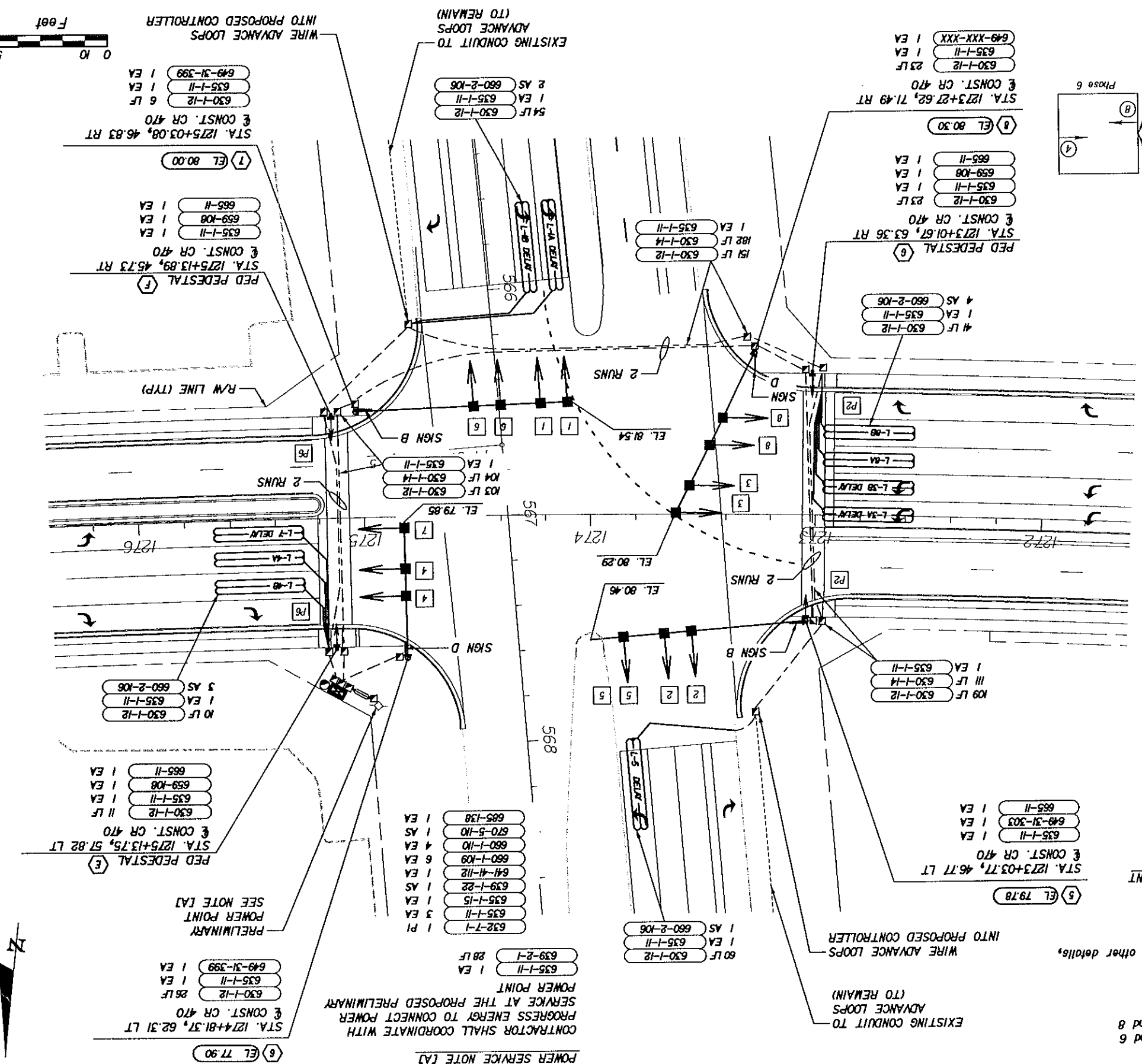
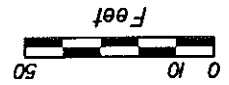
SIGNALIZATION PLAN SHEET
CR 48 AT US 27

SHEET NO. T-5



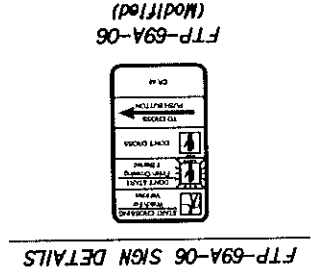
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FIRM CERTIFICATE OF AUTHORIZATION NO. 1221
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ENGINEER OF RECORD, ERIC DAYAN

REVISIONS	DATE	BY	DESCRIPTION



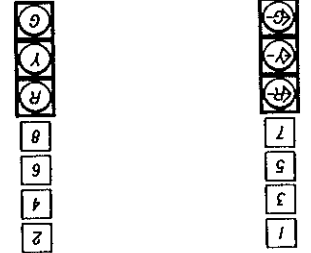
See Sheet T-6 For Street Name Sign Details
INTERNALLY ILLUMINATED DOUBLE-SIDED SIGNS

US 27 LOOP REPLACEMENT
CONTRACTOR TO REPLACE TYPE B LOOPS
ALONG US 27
INSTALL 2 LOOPS EACH AT 180 FEET AND 390 FEET
BEHIND STOP BAR ALONG NORTHBOUND AND
SOUTHBOUND US 27
CONTRACTOR SHALL UTILIZE EXISTING CONDUIT
AND PULL BOXES FOR PROPOSED TYPE B LOOPS



- EXISTING SIGNALIZATION EQUIPMENT
To Be Removed
- 690-40 10 EA
 - 690-33-1 2 LF
 - 690-50 1 EA
 - 690-80 1 EA
 - 690-90 1 P1
 - 690-100 1 P1

- 650-51-313 6 AS
12" LED Signal
3-5-sect., 1-Way
- 650-51-313 8 AS
12" LED Signal
1-5-sect., 1-Way
- 653-194 4 AS
Pedestrian Signal
Count-down
LED International
1-5-sect., 1-Way



- Controller Notes:
- Major street is US 27, movements 1, 2, 5, and 6
 - Minor street is CR 48, movements 3, 4, 7, and 8
 - Min. green and extension to run concurrent
 - Refer to Sheet T-11 for utility locations
 - Posted speed limit on US 27 is XX MPH and 45 MPH on CR 48.
 - For Controller Timing Chart, Loop Chart, and other details, refer to Sheet T-12.

STRUCTURE ID NUMBERS	ASSEMBLY NUMBERS (1)		FIRST ARM		SECOND ARM		UF (deg)	LL (deg)	POLE TYPE	POLE			GRUT PAD		
	ARM TYPE	FAA(2) (ft.)	FBA(2) (in.)	ARM TYPE	FAA(2) (ft.)	FBA(2) (in.)				UBA(3) (ft.)	UB (ft.)	UCA(3) (in.)		DA (ft.)	DB (ft.)
1	F1-W1	F1							W1	20.43	3.5	9	9	14	N
2	F3-W2	F3	31.5	6.59					W2	19.81	3.5	10	9	14	N
3	F3-W2	F3	32.5	6.45					W2	19.98	3.5	10	9	14	N
4	F5-W3	F5	23.25	7.75					W3	19.80	4.0	10	9	19	N
6	F5-W3	F5							W3	22.20	4.0	12	9	19	N

STANDARD MAST ARM ASSEMBLIES DATA TABLE

GENERAL NOTES:

- 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 Index Nos. 17743 and 17745.
 - When placing Standard Mast Arm Assemblies on existing foundations, remove existing grout pad and cut existing anchor bolts flush with top of foundation. Replace damaged or removed portions of the foundation, using epoxy bonding compound according to Section 400 of the Specifications. Replace grout pad according to Section 934 of the Specifications.
1. Assembly Number Legend
 Single Arm: Pole Type = B# - Q#
 = C# - R#
 Double Arm: Pole Type = B# - B# - B# - Q#
 = C# - C# - C# - R#
- If an entry appears in columns "FAA" and "FBA", a shorter arm is required. This is obtained by removing length from the arm tip. For these cases the mast arm length shall be shortened from "FA" to "FAA" and the tip diameter shall be increased from "FB" to "FBA".
 - If an entry appears in columns "UAA" and "UCA", a shorter pole is required. This is obtained by removing length from the pole tip. For these cases the pole height shall be shortened from "UA" to "UAA" and the pole tip diameter shall be increased from "UC" to "UCA".
 - The foundations for Standard Mast Arm Assemblies are pre-designed and are based upon the following conservative soil criteria which covers the great majority of soil types found in Florida. Only complete the "Special Drilled Shaft" data information if site conditions dictate drilled shafts with additional foundation capacity.
- Classification = Cohesionless (Fine Sand)
 Friction Angle = 30 Degrees (30°)
 Unit Weight = 50 lbs. / cu. ft. (assumed saturated)

TABLE NOTES:

1. Assembly Number Legend

Single Arm: Pole Type = B# - Q#
 = C# - R#

Double Arm: Pole Type = B# - B# - B# - Q#
 = C# - C# - C# - R#

If an entry appears in columns "FAA" and "FBA", a shorter arm is required. This is obtained by removing length from the arm tip. For these cases the mast arm length shall be shortened from "FA" to "FAA" and the tip diameter shall be increased from "FB" to "FBA".

If an entry appears in columns "UAA" and "UCA", a shorter pole is required. This is obtained by removing length from the pole tip. For these cases the pole height shall be shortened from "UA" to "UAA" and the pole tip diameter shall be increased from "UC" to "UCA".

The foundations for Standard Mast Arm Assemblies are pre-designed and are based upon the following conservative soil criteria which covers the great majority of soil types found in Florida. Only complete the "Special Drilled Shaft" data information if site conditions dictate drilled shafts with additional foundation capacity.

Classification = Cohesionless (Fine Sand)

Friction Angle = 30 Degrees (30°)

Unit Weight = 50 lbs. / cu. ft. (assumed saturated)

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
APPROVED BY	G. Craig Noon, PE				
CHECKED BY	G.C.N.	09/07			
DESIGNED BY	M.M.	09/07			
CHECKED BY	G.C.N.	09/07			
DRAWN BY	M.M.	09/07			
DATES					
ENGINEER OF RECORD:					
BOYER-SINGLETON & ASSOCIATES INCORPORATED					
520 S. WASHINGTON AVENUE - SUITE 1200, TAMPA, FLORIDA 33601 ENGINEER OF RECORD: GREGG GILES MOON P.E. NO. 12515					
ROAD NO.	470	COUNTY	LAKE		
FLORIDA DEPARTMENT OF TRANSPORTATION					
PROJECT NAME: C.R. 470					
SHEET TITLE: STANDARD MAST ARM ASSEMBLIES DESIGN TABLE					
SHEET NO. T-8					

NUMBER OF LOCATIONS	STRUCTURE NUMBER	FIRST ARM		FIRST ARM EXTENSION		SECOND ARM		SECOND ARM EXTENSION		POLE		PAD	GROUT													
		FA(ft)	FB(h)	FC(in)	FD(in)	FE(ft)	FG(h)	FG(in)	FH(in)	SA(ft)	SB(h)			SC(in)	SD(in)	SE(ft)	SF(h)	SG(in)	SH(in)	UA(ft)	UB(ft)	UC(in)	UD(in)	UE(in)	UF(deg)	UG(ft)
1	5	45.7	6.6	13	0.179	41	12.3	18	0.313	0	0	0	0	0	0	0	0	0	0	24	20.9	17.6	21	0.375	0	N
1	7	57.7	6.92	15	0.179	41	14.3	20	0.313	0	0	0	0	0	0	0	0	0	0	24	21.8	20.6	24	0.375	0	N
1	8	43.7	6.88	13	0.179	41	12.3	18	0.313	0	0	0	0	0	0	0	0	0	0	24	20.2	17.6	21	0.375	0	N

SPECIAL MAST ARM ASSEMBLIES DATA TABLE

STRUCTURE NUMBER	#Bolts	FIRST ARM CONNECTION (in) First Arm Comber Angle = 2 Degrees												SECOND ARM CONNECTION (in) Second Arm Comber Angle = 2 Degrees												
		HT	FJ	FK	FL	FM	FN	FO	FP	FQ	FR	FS	FT	#Bolts	HT	SJ	SK	SL	SM	SN	SO	SP	SQ	SR	SS	ST
5	6	30	30	2.25	0.5	0.25	0.375	14	1.25	0.313	1.75	12.5	0.375	0	30	0	0	0	0	0	0	0	0	0	0	0
7	6	30	32	2.25	0.5	0.25	0.438	15.5	1.25	0.375	1.63	12.5	0.438	0	30	0	0	0	0	0	0	0	0	0	0	0
8	6	30	30	2.25	0.5	0.25	0.375	14.1	1.25	0.313	1.75	12.5	0.375	0	30	0	0	0	0	0	0	0	0	0	0	0

SPECIAL MAST ARM ASSEMBLIES DATA TABLE (CONT.)

STRUCTURE NUMBER	#Bolts	POLE BASE CONNECTION (in)												SHAFT AND REINF.						LUMINAIRE AND LUMINAIRE CONNECTION					
		BA	BB	BC	BD	BE	BF	DA(ft)	DB(ft)	RA	RB	LA(ft)	LB(ft)	LC(in)	LD(in)	LE	LF(ft)	LG(in)	LH(in)	LJ(in)	LK(in)	LL(deg)			
5	6	35	1.38	1.75	0.375	0.313	35	17	4	9	19	0	0	0	0	0	0	0	0	0	0	0	0		
7	6	38	1.38	1.75	0.375	0.313	35	18	4.5	9	23	0	0	0	0	0	0	0	0	0	0	0	0		
8	6	35	1.38	1.75	0.375	0.313	35	18	4	9	19	0	0	0	0	0	0	0	0	0	0	0	0		

SPECIAL MAST ARM ASSEMBLIES DATA TABLE (CONT.)

- NOTES:
1. Work with Index 17745.
 2. Design Wind Speed = 110 mph
 3. Contractor shall coordinate anchor bolt requirements with fabricator.
 4. Contractor shall identify Structures Numbers and submit detailed shop drawings.

FOUNDATION NOTES:

1. Design based on assumptions.
2. Assumptions and Values used in design:

Soil Type: cohesionless sand.
 Soil Layer Thickness = varies.
 Soil Friction Angle = 30 deg.
 Soil Weight = 50 pcf (sat.)
 Design Water Table is at surface.

FLORIDA DEPARTMENT OF TRANSPORTATION
 ENGINEER OF RECORD

POWER SINGLTON & ASSOCIATES INCORPORATED
 525 S. WOODLAND AVENUE - TAMPA, FLORIDA 33609
 ENGINEER OF RECORD, GEORGE CALIC MOON P.E. NO. 51854

DRAWN BY	DATE	DESIGNED BY	DATE	CHECKED BY	DATE	APPROVED BY	DATE
M.M.	09/07	M.M.	09/07	G.C.N.	09/07	G. Craig Noon, PE	09/07

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
470	LAKE	

PROJECT NAME	SHEET NO.
C.R. 470	1-9

TABLE OF VARIABLES FOR SPECIAL MAST ARM ASSEMBLIES

MAST ARM FABULATION

SHEET NO. T-7

County Lake



BOWYER-SINGLETON & ASSOCIATES, INCORPORATED
 520 S. MAGNOLIA AVENUE - ORLANDO, FLORIDA 32801
 FBR CERTIFICATE OF AUTHORIZATION NO. 1221
 ENGINEER OF RECORD, ERZ DAVAN
 P.E. NO. 62144

DATE	BY	DESCRIPTION
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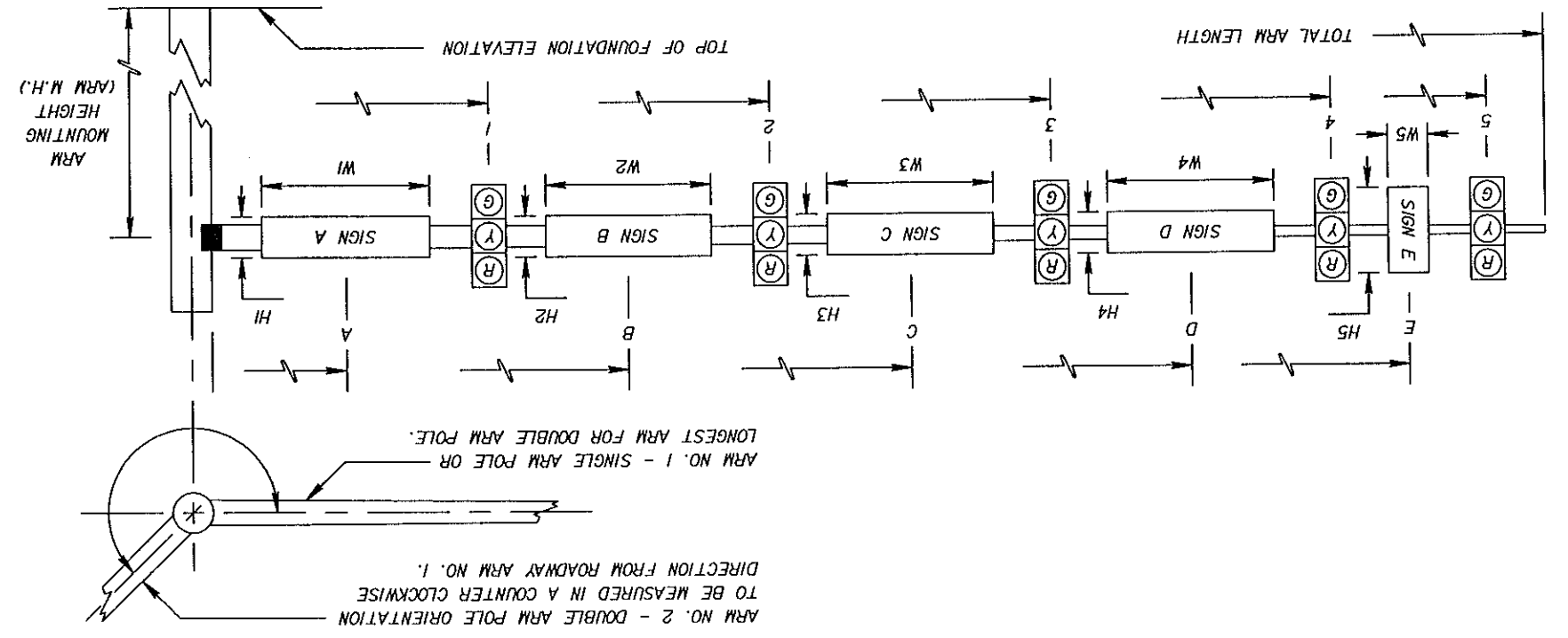
REVISIONS

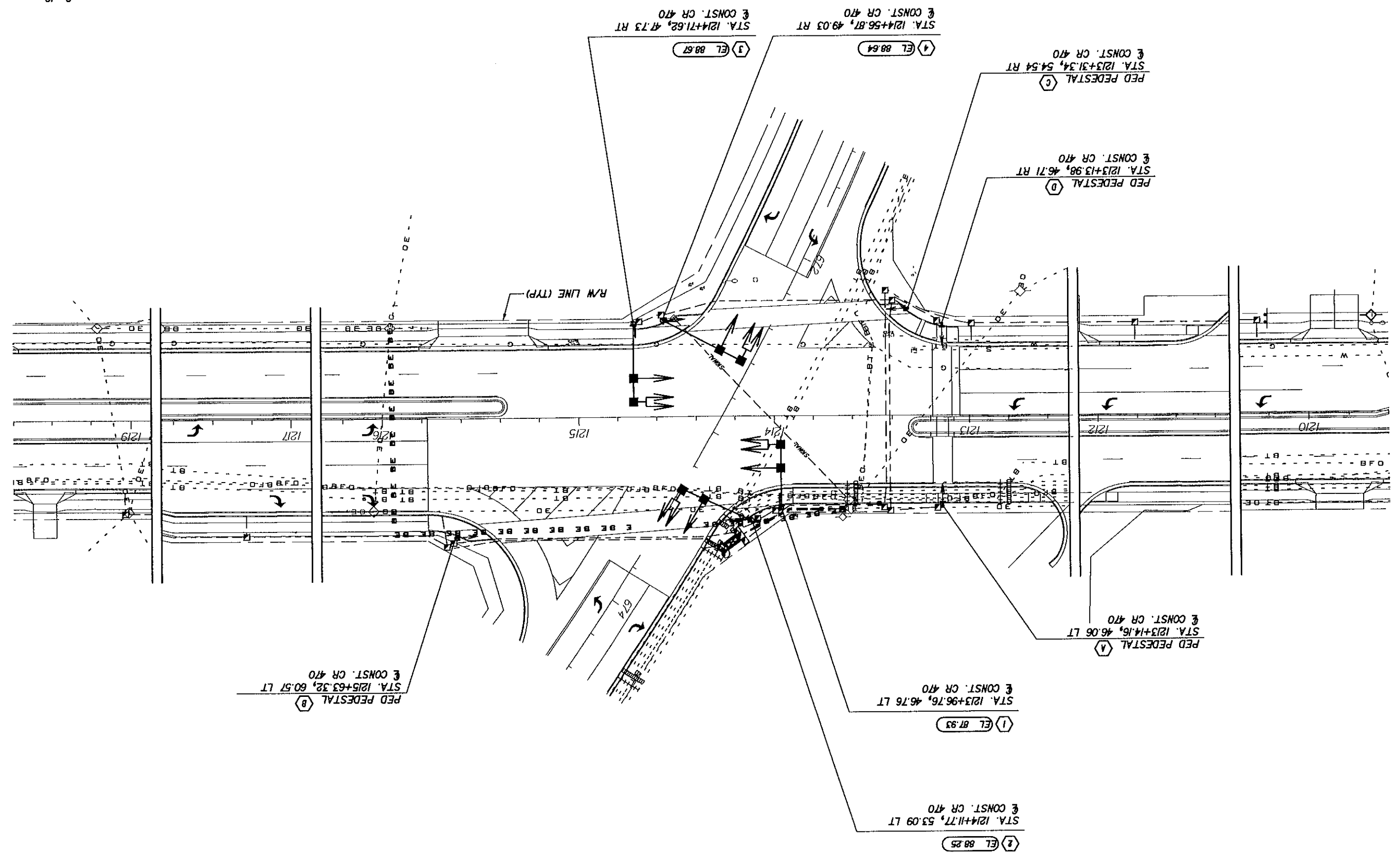
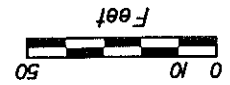
ID NO.	SHEET NO.	LOCATION BY STA.	FOUNDATION ELEVATION	TOP OF ARM NO.	CROWN ELEV.	SKIAL V/H	PLATES Y/N	BKAL PED. Y/N	DISTANCE FROM POLE					TOTAL ARM LENGTH	ARM NO. 90/270	SIGN DATA											PAINT COLOR			
									1	2	3	4	5			A	H1	W1	B	H2	W2	C	H3	W3	D	H4		W4	E	H5
1	T-4	STA. 1213+96.76	87.93	1	88.11	V	N	N	20.1	3	32.1	5	36	20.43	A	H1	W1	B	H2	W2	C	H3	W3	D	H4	W4	E	H5	W5	
2	T-4	STA. 1214+11.77	88.25	1	87.65	V	N	Y	27.1	3	39.0	5	41	19.81																
3	T-4	STA. 1214+71.62	88.67	1	88.40	V	N	N	28.0	3	40.1	5	42	19.98																
4	T-4	STA. 1214+56.87	88.64	1	88.19	V	N	Y	33.5	3	45.5	5	47	19.80																
5	T-5	STA. 1213+03.77	79.78	1	80.46	V	N	Y	51.2	3	63.2	3	96	20.93																
6	T-5	STA. 1274+81.37	77.90	1	79.85	V	N	N	27.3	3	39.3	3	60	22.20																
7	T-5	STA. 1275+03.08	80.00	1	81.54	V	N	N	52.0	3	64.0	3	84	21.79																
8	T-5	STA. 1273+27.62	80.30	1	80.29	V	N	N	32.0	3	45.5	3	82	20.24																

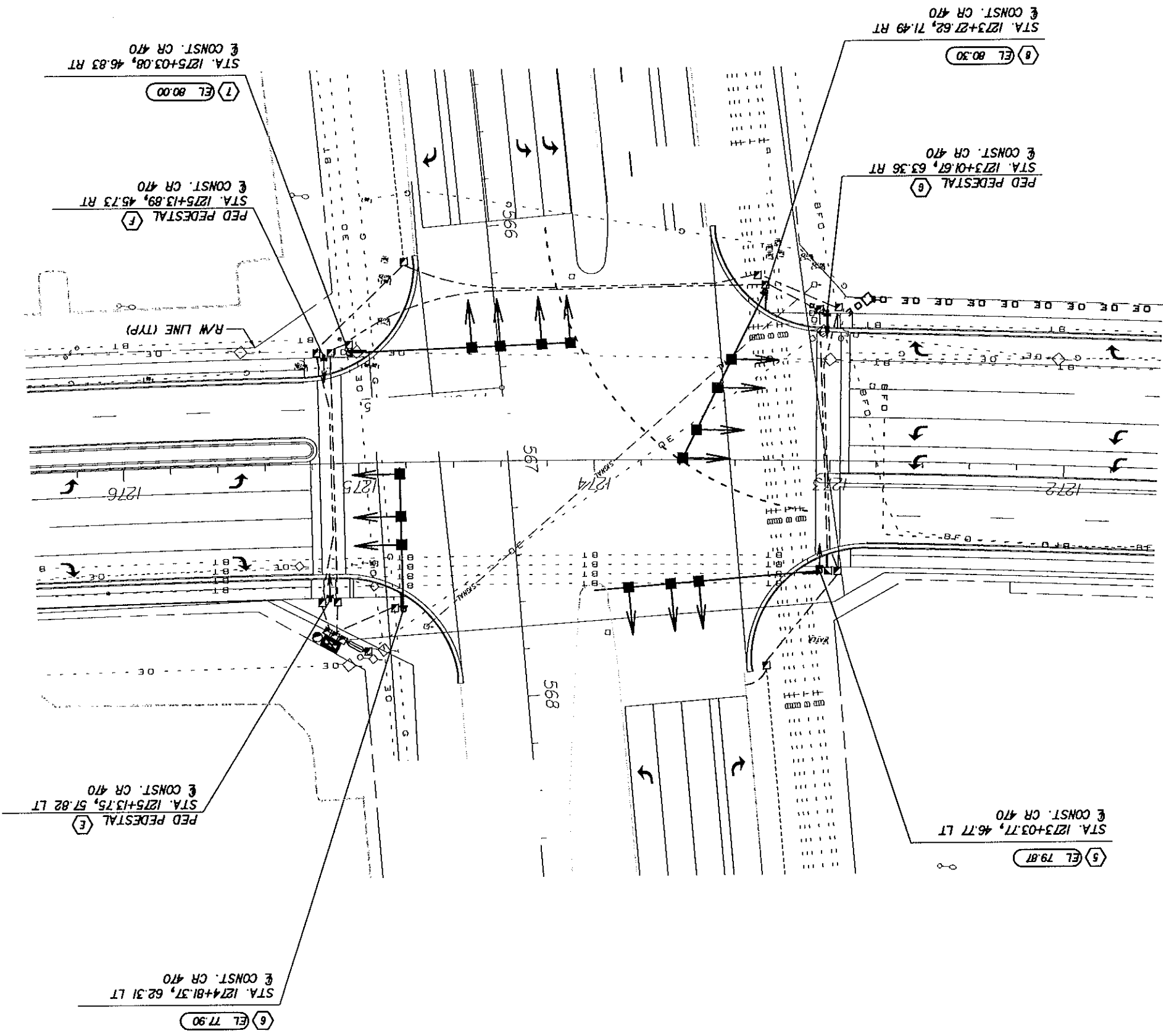
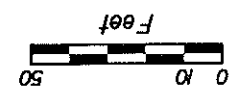
SPECIAL INSTRUCTIONS

ID NO.	PED.	BUTTON	SIGNALS	LOCATION	HANDHOLE
2	1				
4	1				
5	1				

* DENOTES NUMBER OF SECTIONS IN SIGNAL HEAD ASSEMBLY







DATE	BY	DESCRIPTION

BOWYER-SINGLETON & ASSOCIATES, INCORPORATED
 520 S. MAGNOLIA AVENUE - ORLANDO, FLORIDA 32801
 FBR CERTIFICATE OF AUTHORIZATION NO. 1221
 ENGINEER OF RECORD, ERIC DAYAN
 P.E. NO. 62144



SIGNALIZATION DETAIL SHEET

SHEET NO. T-12

09/10/2007 04:10 PM I:\K3\2\signs\1115301.dgn

REVISIONS

Delay time is initial and may require field adjusting as directed by project engineer.

LOOP	NO. OF CHANNEL TIME DELAY (SEC)	NO. OF NEW DETS.	NO. OF DETS.	MOVEMENT NUMBER	MINIMUM GREEN	EXTENSION	L-2A/B	L-2C/D	L-3	L-4	L-5	L-6A/B	L-6C/D	L-7	L-8
L-1	1	1	1	1	5	0	1 & 2	0	1	1	1	1	1	1	1
L-2A/B	2	1	1 & 2	0	0	0	1 & 2	0	1	1	1	1	1	1	1
L-2C/D	2	1	1 & 2	0	0	0	1 & 2	0	1	1	1	1	1	1	1
L-3	1	1	1	5	5	0	1	1	1	1	1	1	1	1	1
L-4	1	1	1	0	0	0	1	1	1	1	1	1	1	1	1
L-5	1	1	1	5	5	0	1	1	1	1	1	1	1	1	1
L-6A/B	2	1	1 & 2	0	0	0	1 & 2	0	1	1	1	1	1	1	1
L-6C/D	2	1	1 & 2	0	0	0	1 & 2	0	1	1	1	1	1	1	1
L-7	1	1	1	5	5	0	1	1	1	1	1	1	1	1	1
L-8	1	1	1	0	0	0	1	1	1	1	1	1	1	1	1

CONTROLLER TIMINGS

TIMING FUNCTION	MOVEMENT NUMBER	MINIMUM GREEN	EXTENSION	MAXIMUM GREEN 1	MAXIMUM GREEN 2	YELLOW CLEARANCE	ALL RED	PEDESTRIAN WALK	PED. CLEARANCE	RECALL	MIN	MIN
L-1A/B	1	2	3	3	3	3	3	3	3	3	3	3
L-2A/B	2	3	3	3	3	3	3	3	3	3	3	3
L-2C/D	2	3	3	3	3	3	3	3	3	3	3	3
L-3A/B	2	3	3	3	3	3	3	3	3	3	3	3
L-4A/B	2	3	3	3	3	3	3	3	3	3	3	3
L-5	1	3	3	3	3	3	3	3	3	3	3	3
L-6A/B	2	3	3	3	3	3	3	3	3	3	3	3
L-6C/D	2	3	3	3	3	3	3	3	3	3	3	3
L-7	1	3	3	3	3	3	3	3	3	3	3	3
L-8A/B	2	3	3	3	3	3	3	3	3	3	3	3

Delay time is initial and may require field adjusting as directed by project engineer.

DETECTORS FOR LOOPS

LOOP	NO. OF CHANNEL TIME DELAY (SEC)	NO. OF NEW DETS.	NO. OF DETS.	LOOPS	NO. OF CHANNEL TIME DELAY (SEC)
L-1A/B	2	1	1 & 2	5	5
L-2A/B	2	1	1 & 2	0	0
L-2C/D	2	1	1 & 2	0	0
L-3A/B	2	1	1 & 2	5	5
L-4A/B	2	1	1 & 2	0	0
L-5	1	1	1	5	5
L-6A/B	2	1	1 & 2	0	0
L-6C/D	2	1	1 & 2	0	0
L-7	1	1	1	5	5
L-8A/B	2	1	1 & 2	0	0

CONTROLLER TIMINGS

TIMING FUNCTION	MOVEMENT NUMBER	MINIMUM GREEN	EXTENSION	MAXIMUM GREEN 1	MAXIMUM GREEN 2	YELLOW CLEARANCE	ALL RED	PEDESTRIAN WALK	PED. CLEARANCE	RECALL	MIN	MIN
L-1A/B	1	2	3	3	3	3	3	3	3	3	3	3
L-2A/B	2	3	3	3	3	3	3	3	3	3	3	3
L-2C/D	2	3	3	3	3	3	3	3	3	3	3	3
L-3A/B	2	3	3	3	3	3	3	3	3	3	3	3
L-4A/B	2	3	3	3	3	3	3	3	3	3	3	3
L-5	1	3	3	3	3	3	3	3	3	3	3	3
L-6A/B	2	3	3	3	3	3	3	3	3	3	3	3
L-6C/D	2	3	3	3	3	3	3	3	3	3	3	3
L-7	1	3	3	3	3	3	3	3	3	3	3	3
L-8A/B	2	3	3	3	3	3	3	3	3	3	3	3