SHEET NUM.											PART.		ALT	ITEM	ITEM EXT	GRAND TOTAL	UNIT	DESCRIPTION	SEE SHEET NO.
74	146	148	149	173							01/S>2/03	02/S>2/03	(X)						
																		SANITARY SEWER	
102												102		611	01800	102	FT	8" CONDUIT, TYPE B, SDR-26 (CCWRD 3110)	
3											3			611	99575	3	EACH	MANHOLE, NO. 3, AS PER PLAN	139
2											2			611	99654	2	EACH	MANHOLE ADJUSTED TO GRADE	
2												2		611	99660	2	EACH	MANHOLE RECONSTRUCTED TO GRADE	
																		TRAFFIC CONTROL	
			135								135			621	00100	135	EACH	RPM	
			44								44			621	54000	44	EACH	RAISED PAVEMENT MARKER REMOVED	
	38.5										38.5			630	02100	38.5	FT	GROUND MOUNTED SUPPORT, NO. 2 POST	
	194										194			630	03100	194	FT	GROUND MOUNTED SUPPORT, NO. 3 POST	
	42										42			630	08520	42	FT	STREET NAME SIGN SUPPORT, NO. 3 POST	
	130.5										130.5			630	80100	130.5	SF	SIGN, FLAT SHEET	
	31.48											31.48		630	83000	31.48	SF	COVERING OF SIGN	
	10											10		630	84900	10	EACH	REMOVAL OF GROUND MOUNTED SIGN AND DISPOSAL	
	7											7		630	86002	7	EACH	REMOVAL OF GROUND MOUNTED POST SUPPORT AND DISPOSAL	
		1.26									1.26			644	00100	1.26	MILE	EDGE LINE, 4"	
		0.16										0.16		644	00200	0.16	MILE	LANE LINE, 4"	
		0.9									0.9			644	00300	0.9	MILE	CENTER LINE	
		1,289										1,289		644	00400	1,289	FT	CHANNELIZING LINE, 8"	
		104										104		644	00500	104	FT	STOP LINE	
		388									388			644	00700	388	FT	TRANSVERSE/DIAGONAL LINE	
		22										22		644	01300	22	EACH	LANE ARROW	
		2										2		644	01350	2	EACH	LANE REDUCTION ARROW	
		5										5		644	01400	5	EACH	WORD ON PAVEMENT, 72"	
		405										405		644	01500	405	FT	DOTTED LINE, 4"	

CALCULATED MSW
CHECKED GAH

GENERAL SUMMARY

CLE-CR171-OLD74 (PHASE 6)

SHEET NUM.										PART.		ALT	ITEM	ITEM EXT	GRAND TOTAL	UNIT	DESCRIPTION	SEE SHEET NO.
8	132	168								01/S>2/03	02/S>2/03	(X)						
																	TRAFFIC SIGNALS	
		445								445			625	23306	445	FT	NO. 10 AWG 600 VOLT DISTRIBUTION CABLE	
		30								30			625	25504	30	FT	CONDUIT, 3", 725.051	
		174								174			625	25902	174	FT	CONDUIT, JACKED OR DRILLED, 725.04, 3"	
		30								30			625	29400	30	FT	TRENCH IN PAVED AREA	
		2								2			625	30700	2	EACH	PULL BOX, 725.08, 18"	
		1								1			625	30706	1	EACH	PULL BOX, 725.08, 24"	
		4								4			625	32000	4	EACH	GROUND ROD	
		204								204			625	36010	204	FT	UNDERGROUND WARNING/MARKING TAPE	
		4								4			630	79100	4	EACH	SIGN HANGER ASSEMBLY, MAST ARM	
		3								3			630	79500	3	EACH	SIGN SUPPORT ASSEMBLY, POLE MOUNTED	
		28.75								28.75			630	80100	28.75	SF	SIGN, FLAT SHEET	
		3								3			630	80500	3	EACH	SIGN, DOUBLE FACED, STREET NAME	
		6								6			632	05007	6	EACH	VEHICULAR SIGNAL HEAD, (LED), 3-SECTION, 12" LENS, 1-WAY, POLYCARBONATE, AS PER PLAN, BLACK	158
		1								1			632	05087	1	EACH	VEHICULAR SIGNAL HEAD, (LED), 5-SECTION, 12" LENS, 1-WAY, POLYCARBONATE, AS PER PLAN, BLACK	158
		7								7			632	25000	7	EACH	COVERING OF VEHICULAR SIGNAL HEAD	
		1,022								1,022			632	40700	1,022	FT	SIGNAL CABLE, 7 CONDUCTOR, NO. 14 AWG	
		3								3			632	64010	3	EACH	SIGNAL SUPPORT FOUNDATION	
		33								33			632	68200	33	FT	POWER CABLE, 2 CONDUCTOR, NO. 6 AWG	
		76								76			632	68300	76	FT	POWER CABLE, 3 CONDUCTOR, NO. 6 AWG	
		200								200			632	69800	200	FT	SERVICE CABLE, 3 CONDUCTOR, NO. 6 AWG	
		1								1			632	70001	1	EACH	POWER SERVICE, AS PER PLAN	158
		1								1			633	45000	1	EACH	GPS (GLOBAL POSITIONING SYSTEM) CLOCK ASSEMBLY	159
		1								1			633	67101	1	EACH	CABINET FOUNDATION, AS PER PLAN	159
		1								1			633	67201	1	EACH	CONTROLLER WORK PAD, AS PER PLAN	159
		1								1			633	75001	1	EACH	UNINTERRUPTIBLE POWER SUPPLY (UPS), 1000 WATT, AS PER PLAN	159
		1								1			633	99000	1	EACH	CONTROLLER ITEM, MISC.: CONTROLLER UNIT, TYPE TS2/A2, WITH CABINET, TYPE TS1	159
		2								2			809	69100	2	EACH	STOP LINE RADAR DETECTION	
		3								3			625	18201	3	EACH	BRACKET ARM, 15', AS PER PLAN	157
		3								3			625	27551	3	EACH	LUMINAIRE, DECORATIVE, AS PER PLAN, 150W HPS, 240 VOLT	157
		1								1			632	80991	1	EACH	COMBINATION SIGNAL SUPPORT, TYPE TC-81.21, DESIGN 3, AS PER PLAN	158
		2								2			632	81071	2	EACH	COMBINATION SIGNAL SUPPORT, TYPE TC-81.21, DESIGN 11, AS PER PLAN	158
																	MISCELLANEOUS STRUCTURE	
	LS										LS		202	11201	LS		PORTIONS OF STRUCTURE REMOVED, AS PER PLAN	132
LS	LS										LS		503	11100	LS		COFFERDAMS AND EXCAVATION BRACING	
	LS										LS		503	21300	LS		UNCLASSIFIED EXCAVATION	
	12										12		510	10001	12	EACH	DOWEL HOLES WITH NONSHRINK, NONMETALLIC GROUT, AS PER PLAN	132
	23										23		512	10100	23	SY	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)	
	117										117		512	33000	117	SY	TYPE 2 WATERPROOFING	

CALCULATED MSW
CHECKED GAH

GENERAL SUMMARY

CLE-CR171-OLD74
(PHASE 6)

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GROUNDING AND BONDING

THE REQUIREMENTS OF THE CONSTRUCTION AND MATERIAL SPECIFICATIONS (CMS) AND THE HL AND TC SERIES OF STANDARD CONSTRUCTION DRAWINGS ARE MODIFIED AS FOLLOWS:

1. ALL METALLIC PARTS CONTAINING ELECTRICAL CONDUCTORS SHALL BE PERMANENTLY JOINED TO FORM AN EFFECTIVE GROUND FAULT CURRENT PATH BACK TO THE GROUNDED CONDUCTOR IN THE POWER SERVICE DISCONNECT SWITCH.

A. PROVIDE AN EQUIPMENT GROUNDING CONDUCTOR IN METALLIC CONDUITS (725.04) IN ADDITION TO THE CONDUCTORS SPECIFIED AND BOND THE CONDUIT TO THIS GROUNDING CONDUCTOR.

B. WHEN AN EQUIPMENT GROUNDING CONDUCTOR IS REQUIRED IN PLASTIC CONDUIT (725.05), THE INSTALLATION SHALL INCLUDE A SEPARATE EQUIPMENT GROUNDING CONDUCTOR IN ADDITION TO THE CONDUCTORS SPECIFIED.

C. METALLIC CONDUIT CARRYING THE LOOP WIRES FROM IN THE PAVEMENT TO THE PULL BOX SPLICE LOCATION WILL ONLY BE BONDED AT THE PULL BOX END, AND WILL NOT CONTAIN AN EQUIPMENT GROUNDING CONDUCTOR.

D. IF MULTIPLE CONDUIT RUNS BEGIN AND END AT THE SAME POINTS, ONLY ONE EQUIPMENT GROUNDING CONDUCTOR IS REQUIRED.

E. IF AN EQUIPMENT GROUNDING CONDUCTOR IS NEEDED IN CONDUIT BETWEEN SIGNALIZED INTERSECTIONS FOR UNDERGROUND INTERCONNECT CABLE, THE GROUNDING SYSTEM FOR EACH SIGNALIZED INTERSECTION WILL BE SEPARATED ABOUT MIDWAY BETWEEN THE INTERSECTIONS.

F. THE MESSENGER WIRE AT SIGNALIZED INTERSECTIONS WILL BE USED AS THE CONDUCTIVE PATH FROM CORNER TO CORNER IF CONDUIT IS NOT PROVIDED UNDER THE ROADWAY. WHEN CONDUIT CONNECTS THE CORNERS OF AN INTERSECTION, AN EQUIPMENT GROUNDING CONDUCTOR SHALL BE USED IN THE CONDUIT.

2. CONDUITS.

A. THE 725.04 CONDUIT SHALL HAVE GROUNDING BUSHINGS INSTALLED AT ALL TERMINATION POINTS. THE BUSHING MATERIAL SHALL BE COMPATIBLE WITH GALVANIZED STEEL CONDUIT AND THE GROUNDING LUG MATERIAL SHALL BE COMPATIBLE FOR USE WITH COPPER WIRE. THREADED OR COMPRESSION TYPE BUSHINGS MAY BE USED.

B. THE 725.05 CONDUIT SHALL HAVE THE INSIDE AND OUTSIDE DIAMETERS OF THE CONDUIT DEBURRED AT ALL TERMINATION POINTS.

C. BOTH ENDS OF METALLIC CONDUIT SHALL BE BONDED TO THE EQUIPMENT GROUNDING CONDUCTOR.

D. METALLIC CONDUIT MAY BE BONDED TO METALLIC BOXES THROUGH THE USE OF CONDUIT FITTINGS UL APPROVED FOR THIS TYPE OF CONNECTION, WITH THE BOX BONDED TO THE EQUIPMENT GROUNDING CONDUCTOR.

GROUNDING AND BONDING (CONT.)

3. WIRE FOR GROUNDING AND BONDING.

A. USE INSULATED, COPPER WIRE FOR THE EQUIPMENT GROUNDING CONDUCTOR. BONDING JUMPERS IN BOXES AND ENCLOSURES MAY BE BARE OR INSULATED COPPER WIRE. WIRE SIZE SHALL BE AS FOLLOWS:

I. USE 4 AWG BETWEEN THE POWER SERVICE AND SUPPORTS, POLES, PEDESTALS, CONTROLLER OR FLASHER CABINETS.

II. USE A MINIMUM 8 AWG BETWEEN LOOP DETECTOR PULL BOXES AND THE FIRST CONDUIT THAT REQUIRES A LARGER SIZE AS SPECIFIED IN 3.A.I ABOVE.

III. USE A MINIMUM 8 AWG BETWEEN THE "PREPARE TO STOP WHEN FLASHING" INSTALLATION (INCLUDING SUPPORT) AND THE FIRST CONDUIT THAT REQUIRES A LARGER SIZE AS SPECIFIED IN 3.A.I ABOVE.

IV. THE INSULATION SHALL BE GREEN OR GREEN WITH YELLOW STRIPE(S). FOR 4 AWG OR LARGER, INSULATION MAY ALSO BE BLACK WITH GREEN TAPE/LABELS INSTALLED AT ALL ACCESS POINTS.

4. GROUND ROD.

A. A 3/4 INCH SCHEDULE 40 PVC CONDUIT WILL BE USED IN FOUNDATIONS AND CONCRETE WALLS FOR THE GROUNDING CONDUCTOR (GROUND WIRE) RACEWAY TO THE GROUND ROD. SHOULD METALLIC CONDUIT BE USED, BOTH ENDS OF THE CONDUIT SHALL BE BONDED TO THE GROUNDING CONDUCTOR.

B. THE TYPICAL GROUNDING CONDUCTOR (GROUND WIRE) SHALL BE 4 AWG INSULATED, COPPER.

5. THE GREEN CONDUCTOR IN SIGNAL CABLE (CONDUCTOR #4) SHALL NOT BE USED TO SUPPLY POWER TO A SIGNAL INDICATION. IT WILL BE CONNECTED TO THE SIGNAL BODY AS AN EQUIPMENT GROUND IN ALUMINUM HEADS AND IT WILL BE UNUSED IN PLASTIC HEADS. UNUSED CONDUCTORS SHALL BE GROUNDED IN THE CABINET. TYPICAL USE OF CONDUCTORS IS AS FOLLOWS:

COND. NO. / COLOR / VEHICLE SIGNAL / PEDESTRIAN SIGNAL
1 / BLACK / GREEN BALL / #1 WALK
2 / WHITE / AC NEUTRAL / AC NEUTRAL
3 / RED / RED BALL / #1 DW-FDW
4 / GREEN / EQUIPMENT GROUND / EQUIPMENT GROUND
5 / ORANGE / YELLOW BALL / #2 DW-FDW
6 / BLUE / GREEN ARROW / #2 WALK
7 / WHITE WITH BLACK STRIPE / YELLOW ARROW/NOT USED

6 POWER SERVICE AND DISCONNECT SWITCH.

A. AT THE POWER SERVICE LOCATION, THE GROUNDING CONDUCTOR (GROUND WIRE) FROM THE DISCONNECT SWITCH NEUTRAL (AC-) BAR TO THE GROUND ROD SHALL BE A CONTINUOUS, UNSPLICED CONDUCTOR. IF SPLICED, IT SHALL BE AN EXOTHERMIC WELD BUTT SPLICE.

B. THE SERVICE NEUTRAL (AC-) SHALL ONLY BE CONNECTED TO GROUND AT THE PRIMARY POWER SERVICE DISCONNECT SWITCH.

7. PAYMENT - ALL MATERIALS AND WORK REQUIRED TO COM PLETE THE EFFECTIVE GROUND FAULT CURRENT PATH SYSTEM ARE INCIDENTAL TO THE CONDUCTORS INSTALLED BY CONTRACT.

ITEM 809, STOP-BAR RADAR DETECTION

THIS ITEM OF WORK SHALL CONSIST OF FURNISHING AND INSTALLING A WAVETRONIX SMARTSENSOR MATRIX DETECTION UNIT. THE DETECTION UNIT SHALL INCLUDE THE FOLLOWING:

1. POWER SHALL BE PROVIDED FROM THE TRAFFIC CABINET.
2. ALL REQUIRED INPUTS CARDS SHALL BE INCLUDED IN THE TRAFFIC CABINET AND SHALL BE COMPATIBLE WITH CALTRANS, NEMA TS1 AND NEMA TS2 DETECTOR RACKS. THE CARDS SHALL PROVIDE TRUE PRESENCE DETECTOR CALLS OR CONTACT CLOSURE TO THE TRAFFIC CONTROLLER.
3. THE UNIT SHALL BE MOUNTED DIRECTLY TO A POLE OR MAST ARM, AS RECOMMENDED BY THE MANUFACTURER. CABLE(S) SHALL BE PROVIDED AS REQUIRED AND RECOMMENDED BY THE MANUFACTURER.
4. SURGE PROTECTION DEVICES, AS RECOMMENDED BY THE MANUFACTURER SHALL BE INCLUDED BOTH AT THE POLE WHERE THE UNIT IS LOCATED TO PROTECT THE UNIT AND IN THE TRAFFIC CABINET TO PROTECT THE CABINET ELECTRONICS.
5. THE MANUFACTURER'S REPRESENTATIVE SHALL BE ON SITE DURING INSTALLATION AND TESTING AND SHALL PROVIDE ONSITE TRAINING ON THE SETUP, OPERATION AND MAINTENANCE OF THE UNIT.
6. A SERIAL TO ETHERNET COMMUNICATIONS MODULE AND ETHERNET CABLE (MINIMUM 7 FEET).
7. THE POWER SUPPLY AND COMMUNICATION MODULES SHALL BE SECURED TO A SINGLE PANEL THAT CAN BE MOUNTED INTERIOR TO THE TRAFFIC CABINET. THE PANEL SHALL INCLUDE MODULAR-PLUG STYLE CONNECTIONS FOR UP TO FOUR (4) SENSOR CABLES. ADDITIONAL SENSORS MAY BE HARD-WIRED TO THE COMMUNICATION MODULES, AS NECESSARY.

PAYMENT FOR ITEM 809 STOP-BAR RADAR DETECTION SHALL BE MADE AT THE CONTRACT UNIT PRICE FOR EACH UNIT, COMPLETE AND IN PLACE INCLUDING ALL REQUIRED CABINET HARDWARE, MOUNTING BRACKETS, CABLES, CONDUIT AND CONNECTIONS TESTED AND ACCEPTED.

CALCULATED SSS CHECKED HJF

TRAFFIC SIGNAL GENERAL NOTES

CLE-CR171-OLD74 (PHASE 6)

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TRAFFIC SIGNAL SUBSUMMARY - OLD SR 74 & BACH BUXTON ROAD

ITEM	ITEM EXT.	TOTAL	UNIT	DESCRIPTION	SEE SHT.
625	18201	3	EACH	BRACKET ARM, 15', AS PER PLAN	157
625	23306	445	FT	NO. 10 AWG 600 VOLT DISTRIBUTION CABLE	
625	25504	30	FT	CONDUIT, 3", 725.051	
625	25902	174	FT	CONDUIT, JACKED OR DRILLED, 725.04, 3"	
625	27551	3	EACH	LUMINAIRE, DECORATIVE, AS PER PLAN	157
625	29600	30	FT	TRENCH IN PAVED AREA, TYPE B	
625	30700	2	EACH	PULL BOX, 725.08, 18"	
625	30706	1	EACH	PULL BOX, 725.08, 24"	
625	32000	4	EACH	GROUND ROD	
625	36010	204	FT	UNDERGROUND WARNING/MARKING TAPE	
630	79100	4	EACH	SIGN HANGER ASSEMBLY, MAST ARM	
630	79500	3	EACH	SIGN SUPPORT ASSEMBLY, POLE MOUNTED	
630	80100	28.75	SF	SIGN, FLAT SHEET	
630	80500	3	EACH	SIGN, DOUBLE FACED, STREET NAME	
632	05007	6	EACH	VEHICULAR SIGNAL HEAD, (LED), 3-SECTION, 12" LENS, 1-WAY, POLYCARBONATE, AS PER PLAN, BLACK	158
632	05087	1	EACH	VEHICULAR SIGNAL HEAD, (LED), 5-SECTION, 12" LENS, 1-WAY, POLYCARBONATE, AS PER PLAN, BLACK	158
632	25000	7	EACH	COVERING OF VEHICULAR SIGNAL HEAD	
632	40700	1022	FT	SIGNAL CABLE, 7 CONDUCTOR, NO. 14 AWG	
632	64010	3	EACH	SIGNAL SUPPORT FOUNDATION	
632	68200	33	FT	POWER CABLE, 2 CONDUCTOR, NO. 6 AWG	
632	68300	76	FT	POWER CABLE, 3 CONDUCTOR, NO. 6 AWG	
632	69800	200	FT	SERVICE CABLE, 3 CONDUCTOR, NO. 6 AWG	
632	70001	1	EACH	POWER SERVICE, AS PER PLAN	158
632	80991	1	EACH	COMBINATION SIGNAL SUPPORT, TYPE TC-81.21, DESIGN 3, AS PER PLAN	158
632	81071	2	EACH	COMBINATION SIGNAL SUPPORT, TYPE TC-81.21, DESIGN 11, AS PER PLAN	158
633	45000	1	EACH	GPS (GLOBAL POSITIONING SYSTEM) CLOCK ASSEMBLY	159
633	67101	1	EACH	CABINET FOUNDATION, AS PER PLAN	159
633	67201	1	EACH	CONTROLLER WORK PAD, AS PER PLAN	159
633	75001	1	EACH	UNINTERRUPTIBLE POWER SUPPLY (UPS), 1000 WATT, AS PER PLAN	159
633	99000	1	EACH	CONTROLLER ITEM, MISC.: CONTROLLER UNIT, TYPE TS2/A2, WITH CABINET, TYPE TS1	159
809	69100	2	EACH	STOP LINE RADAR DETECTION	

CALCULATED SSS CHECKED HJF

TRAFFIC SIGNAL DETAILS
OLD SR 74 AND BACH BUXTON RD

CLE-CR171-OLD74
(PHASE 6)