

GENERAL CONSTRUCTION NOTES:

INSTALLATION AND CONSTRUCTION SHALL CONFORM TO THE DEPARTMENT OF TRANSPORTATION STANDARDS SPECIFICATIONS SECTIONS APPLICABLE, STANDARD PLANS DATED AND EFFECTIVE FOR THE CURRENT YEAR, AND ANY SPECIAL MUNICIPALITY CODE PROVISIONS.

1. THE LOCATION OF ALL EXISTING UNDERGROUND UTILITIES IS APPROXIMATE. THE SUBCONTRACTOR SHALL DETERMINE THE LOCATION AND DEPTH OF ALL UTILITIES INCLUDING THOSE NOT SHOWN ON PLANS AND VERIFY ALL JOB SITE CONDITIONS, HAND EXCAVATE FOUNDATION UNTIL CLEAR OF ALL SUBSTRUCTURES AND PROTECT ALL FACILITIES DURING CONSTRUCTION. SUBCONTRACTOR SHALL MAKE ALL NECESSARY ARRANGEMENTS FOR UNDERGROUND UTILITY REMOVAL OR RELOCATION WITH RESPECTIVE UTILITY OWNERS AS MAY BE REQUIRED SUFFICIENTLY IN ADVANCE TO PREVENT DELAY IN OPERATIONS.
2. THE SUBCONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO UNDERGROUND UTILITIES ENCOUNTERED IN AREAS WHERE EXCAVATIONS ARE INDICATED AND SHALL REPAIR ANY SUCH DAMAGE AT OWN EXPENSE. WHERE UTILITY LINES MUST BE MAINTAINED UNDER STRUCTURE, THEY SHALL BE PROPERLY SLEEVED THROUGH FOUNDATION.
3. THE SUBCONTRACTOR SHALL BE RESPONSIBLE FOR REPLACEMENT OR REPAIR OF ANY DAMAGE CAUSED BY THEM OR THEIR SUBCONTRACTORS.
4. THE SUBCONTRACTOR SHALL OBTAIN AND PAY FOR ALL REQUIRED PERMITS AND NOTIFY ALL UTILITIES AND THE CITY AT LEAST 72 HOURS IN ADVANCE OF CONSTRUCTION.
5. THE SUBCONTRACTOR SHALL CALL THE TRANSPORTATION TRAFFIC DIVISION, FIVE (5) DAYS PRIOR TO THE START OF WORK FOR A TRAFFIC CONTROL PLAN APPOINTMENT
6. THE SUBCONTRACTOR IS REQUIRED TO SUBMIT A WEEKLY SCHEDULE PRIOR TO START OF WORK EACH WEEK. (NO EXCEPTIONS)
7. POLE MOUNTED DETECTOR AND EQUIPMENT LOCATIONS SHALL BE AS DEPICTED ON SITE PLAN. THE SUBCONTRACTOR SHALL VERIFY EQUIPMENT FIELD LOCATIONS WITH THE ACS IMPLEMENTATION MANAGER (301) 357-9403 OR LOCAL AND/OR EXCAVATION AUTHORITY AND ACS PRIOR TO INSTALLATION.
8. THE SUBCONTRACTOR SHALL SUPPLY AND INSTALL ALL CONDUCTORS NECESSARY FOR THE INTENDED OPERATION AS NOTED ON THESE PLANS, NEC AND ALL APPLICABLE MUNICIPALITY CODES.
9. PROVIDE ANCHOR BOLT NUT COVERS IF REQUIRED DUE TO EXTERIOR INSTALLATION.
10. ALL PULLBOXES AND COVERS SHALL BE CONCRETE OR PVC AS REQUIRED BY THE MUNICIPALITY. ALL PULLBOXES SHALL BE NO. 5 UNLESS OTHERWISE NOTED OR REQUIRED BY THE MUNICIPALITY.
11. ALL CONCRETE FORMS ARE TO BE INSPECTED BY LOCAL AUTHORITIES BEFORE CONCRETE IS PLACED.
12. THE SUBCONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING AND COORDINATION WITH THE SERVING (ELECTRICAL) UTILITY COMPANY AND PAY REQUIRED FEES FOR SERVICE CONNECTIONS.
13. THE SUBCONTRACTOR TO OBTAIN A NO FEE ENCRDACHMENT PERMIT FROM THE CITY PRIOR TO COMMENCEMENT OF WORK. ALL WORK SHALL BE INSPECTED BY CITY FORCES. AT COMPLETION OF PROJECT CONTACT THE CITY ENGINEER 24 HOURS PRIOR TO COMPLETION OF WORK.
14. THE SUBCONTRACTOR IS TO BUILD AND MAINTAIN A CONSTRUCTION BARRICADE. TRAFFIC CONTROLS SHALL BE PER THE LATEST TMUTCD STANDARDS TO INCLUDE THE ARROW BOARD. NO LANE CLOSURES DURING PEAK TRAFFIC HOURS.
- 15 ALL SUBCONTRACTORS TO PROVIDE LIABILITY INSURANCE AND WORKERS COMPENSATION BENEFITS IN ACCORDANCE WITH STATE LAW FOR ALL WORKERS AND AGENTS WHO WILL BE ON THE SITE AT ANY TIME WHILE PERFORMING WORK ON THIS PROJECT. ALL WORK SHALL BE IN ACCORDANCE WITH NEC, ALL LOCAL, STATE AND FEDERAL CODES, ORDINANCES AND ANY APPLICABLE AMENDMENTS.


16. ALL DEBRIS, EXCESS MATERIAL, ETC. IS TO BE REMOVED BY THE SUBCONTRACTOR BY THE END OF THE JOB. JOB TO BE LEFT SUFFICIENTLY CLEAN AS TO WARRANT CITY APPROVAL.
17. THE SUBCONTRACTOR SHALL BE RESPONSIBLE FOR ALL PERMITS, FEES AND INSPECTIONS AS MAY BE REQUIRED FOR COMPLETION OF THE JOB AS PER ALL GOVERNING AGENCIES.
18. THE SUBCONTRACTOR TO PROVIDE COST ESTIMATE FOR ALL WORK SHOWN ON DRAWINGS AND WORK NORMALLY REQUIRED TO CARRY OUT THE DESIGN INTENT OF THESE DRAWINGS.
19. DRAWINGS ARE NOT TO BE SCALED. WORK SHALL BE GOVERNED BY DIMENSION ONLY. DISCREPANCIES BETWEEN THE DRAWINGS AND/OR THE EXISTING SITE CONDITIONS SHALL BE BROUGHT TO THE ATTENTION OF ACS IMMEDIATELY.
20. P.R.C. EQUIPMENT SHALL NOT BE INSTALLED ON MEDIANS LESS THAN FIVE FEET (5') IN WIDTH.
21. P.R.C. RELATED EQUIPMENT SHALL NOT BE INSTALLED WITHIN FIVE FEET (5') OF FIRE HYDRANT.
22. P.R.C. RELATED EQUIPMENT SHALL NOT BE INSTALLED WITHIN FOUR FEET (4') OF ADA RAMPS.
23. SUBCONTRACTOR SHALL SUPPLY AS-BUILT DRAWINGS TO ACS ENGINEERING DEPARTMENT WITHIN THIRTY (30) DAYS OF CONSTRUCTION COMPLETION.
24. SUBCONTRACTOR SHALL COMPLETE A "RLC POST CONSTRUCTION INSTALLATION ACCEPTANCE FORM" FOR EACH RLC INSTALLED. COMPLETED FORMS SHALL BE FORWARDED TO ACS CONSTRUCTION DEPARTMENT.
25. THE SUBCONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING THE RESPECTIVE OWNERS AND OTHER AGENCIES AT LEAST 48 HOURS PRIOR TO CONSTRUCTION. CONTACT:
 - * GAS COMPANY
 - * WATER DISTRICT
 - * PHONE COMPANY
 - * CABLE COMPANY
 - * LOCAL AND/OR STATE EXCAVATION AUTHORITY

SPECIFIC CONSTRUCTION NOTES:

1. THE SUBCONTRACTOR SHALL INSTALL ALL SUBSTRUCTURES ACCORDING TO LOCAL GOVERNING AGENCY FROST LINE REQUIREMENTS WHERE APPLICABLE.
2. THE SUBCONTRACTOR SHALL MODIFY ALL SIDEWALKS WHERE NECESSARY, IN COMPLIANCE WITH THE ADA STANDARDS, TO ALLOW ACCESS FOR HANDICAP PEDESTRIAN PASSAGE.

Red Light Camera Installation - General Notes & Index

SHEET NUMBER	LOCATION/DESCRIPTION
SIG 1	GENERAL NOTES & INDEX
SIG 2	SITE PLAN
SIG 3	LOOP INSTALLATION DETAILS
SIG 4	SINGLE LINE DIAGRAM
SIG 5	CAMERA UNIT TERMINAL STRIP WIRING DETAILS
SIG 6	FLASH UNIT TO CAMERA POLE WIRING DETAILS
SIG 7	PELCO POLE DETAILS
SIG 8	CAMERA UNIT/DUAL FLASH CONFIGURATION



ACS
Germantown, MD

12410 MILESTONE CENTER DRIVE
4TH FLOOR
GERMANTOWN, MD 20876
PHONE: (301) 357-9403



RAMEY KEMP ASSOCIATES, INC.
TRANSPORTATION ENGINEERS

6308 Faringdon Place, Suite 100
Raleigh, North Carolina 27609
919-872-4116 Tel. 919-878-6416 Fax.
www.rameykemp.com

Prepared for:



750 Greenfield Place, Garner, NC 27529

US 70-40-NC 50 (Mcdowell Street)
at
SR 3007 (Morgan Street)

Division 5	Wake County	Raleigh
PLAN DATE: Jan 2009	REVIEWED BY: D.J. Darity	
PREPARED BY: H.W. Surti	RKA PROJ. NO.: 08232 (040)	
REVISIONS	INIT.	DATE

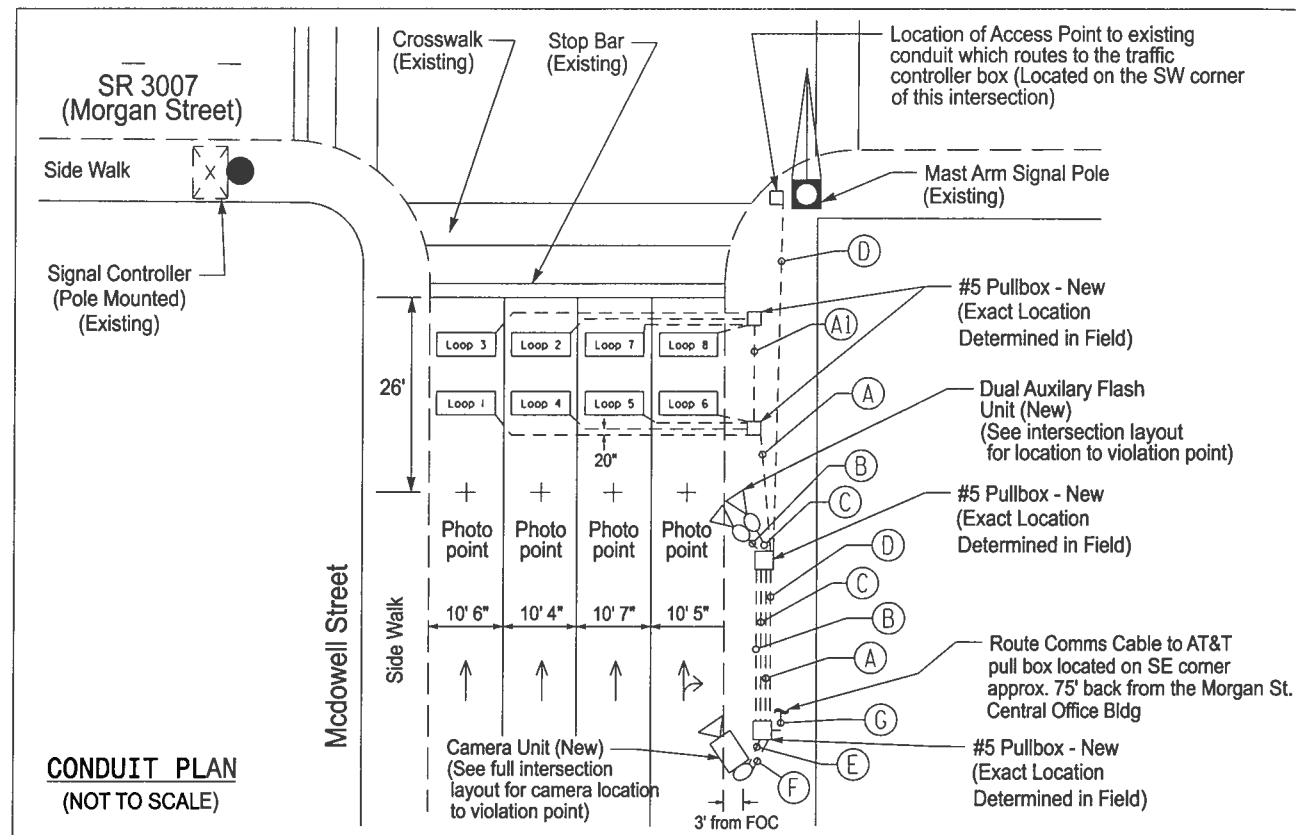
SEAL



1-22-2009

SIGNATURE DATE

SIG. INVENTORY NO. 05-0087



CONDUIT SCHEDULE						
LETTER	CONDUIT SIZE	CONDUIT CONSTRUCTION	TYPE OF SERVICE	EQUIPMENT SERVED	CABLE QUANTITY	CABLE DETAILS
(A)	2"	PVC	COMMS	LOOPS 1, 2, 3, 4, 5, 6, 7, 8	8	(5)
(A1)	2"	PVC	COMMS	LOOPS 3, 4, 7, 8	4	(5)
(B)	2"	PVC	COMMS	DUAL AUX FLASH UNIT	2	(4)
(C)	2"	PVC	POWER	DUAL AUX FLASH UNIT	6	(1)
(D)	2"	PVC	POWER	CAMERA UNIT POWER, RED/YELLOW PHASE CONTROL	3	(3) 3 (1)
(E)	2"	PVC	POWER	GS-II UNIT	3	(3) 9 (1)
(F)	2"	PVC	COMMS	GS-II UNIT	2	(4) 8 (5) 1 (4A)
(G)	2"	PVC	COMMS	TO D-MARC LOCATION	1	(4A)

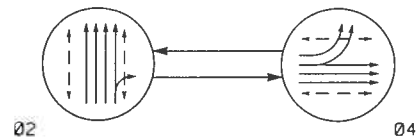
CABLE SCHEDULE

- | | |
|----|--|
| ① | #14 AWG THHN |
| ② | #12 AWG THHN |
| ③ | #10 AWG THHN |
| ④ | IMSA 40-2, 3 PAIR 19AWG w/ POLYETHYLENE JACKET (COMMS CABLE) |
| ④a | CAT-5e (BELDEN 7919A OR EQUIVALENT) |
| ⑤ | IMSA 50-2, 12 AWG |
| ⑥ | IMSA 51-7, 14 AWG |
| ⑦ | 12 STRAND FIBER OPTIC CABLE |
| ⑧ | RG-59 VIDEO CABLE |

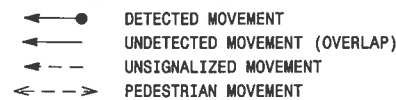
NOTES

1. ACS TO PROVIDE CAMERA POLE AND CAMERA UNIT, SUBCONTRACTOR TO PROVIDE PELCO FOUNDATION. POLES SHALL BE FIELD LOCATED AND SHALL BE 36" MINIMUM FROM FACE OF CURB TO CENTER OF BASE, SEE DETAIL. LOCATION OF EQUIPMENT SHALL BE APPROVED BY THE ENGINEER PRIOR TO INSTALLATION.
2. INSTALL TO LOCAL AND NEC SPECIFICATIONS.
3. EACH POLE SHALL BE GROUNDED WITH #10 SOLID GROUND WIRE AND 10' GROUND ROD.
4. CONTRACTOR SHALL HAND DIG POLE FOUNDATION FOR ACS CAMERA OR FLASH UNIT POLES.
5. CONDUIT SHALL BE INSTALLED BY MEANS OF TRENCHING, TRENCHING SHALL BE IN ACCORDANCE TO CURRENT DOT STANDARD SPECIFICATIONS.
6. CONTRACTOR SHALL MODIFY EXISTING 120VAC SERVICE, A DUPLEX OUTLET SHALL BE INCLUDED FOR ACCESS BY DOT PERSONNEL.
7. INSTALL NEW PULL BOX - SEE GENERAL NOTES #10, SHEET SIG-1.
8. CONTRACTOR TO CLEAN UP DEBRIS AROUND WORK AREA AND RESTORE LANDSCAPE.
9. INSTALL IN-LINE FUSE HOLDERS RATED AT 20 AMPS FOR POWER.
10. INSTALL IN-LINE FUSE HOLDERS RATED AT 5 AMPS FOR PHASE CONDUCTORS.
11. INSTALL IN-LINE FUSE HOLDERS RATED AT 15 AMPS FOR EACH AUX FLASH POWER.
12. CONTRACTOR SHALL REPAIR AND REPLACE SIDEWALK IN KIND AS REQUIRED TO INSTALL EQUIPMENT AND CONDUITS.

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND



RED LIGHT CAMERA LEGEND






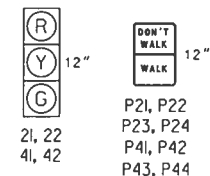
Video Detection Camera	
Camera Unit	
Auxiliary Flash Assembly	
No. 5 Pullbox	
Power Pedestal	

TABLE OF OPERATION	
1	2
3	4
5	6
7	8
9	10
11	12
13	14
15	16
17	18
19	20
21	22
23	24
25	26
27	28
29	30
31	32
33	34
35	36
37	38
39	40
41	42
43	44
45	46
47	48
49	50
51	52
53	54
55	56
57	58
59	60
61	62
63	64
65	66
67	68
69	70
71	72
73	74
75	76
77	78
79	80
81	82
83	84
85	86
87	88
89	90
91	92
93	94
95	96
97	98
99	100

SIGNAL FACE	PHASE		
	Ø 2	Ø 4	FL ASH
2I, 22	G	R	Y
4I, 42	R	G	R
P2I, P22	W	DW	DRK
P23, P24	W	DW	DRK
P4I, P42	DW	W	DRK
P43, P44	DW	W	DRK

SIGNAL FACE I.D.



NEMA TIMING CHART

FEATURE	PHASE	
	2	4
Minimum Green *	10	5
PassageGap *	-	-
Yellow Change Int	3.8	3.2
Red Clearance	1.3	1.8
Maximum 1 *	25	20
Recall Position	MAX/PED RECALL	MAX/PED RECALL
Vehicle Call Memory	-	-
Walk *	4	4
Flashing Don't Walk	8	9

* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

2 Phase
Pre-timed
(Raleigh Signal System)

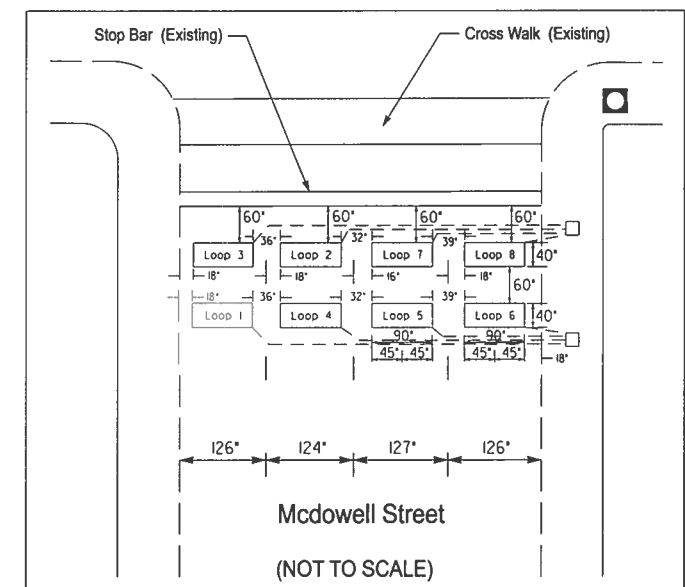
NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006, "Standard Specifications for Roads and Structures" dated July 2006 and all applicable sections of the latest version of the generic Project Special Provisions. The PSP can be accessed at the following website:
<http://www.ncdot.org/doh/preconstruct/traffic/itss/>
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Pavement markings are existing.
4. Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
5. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.

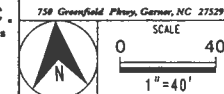
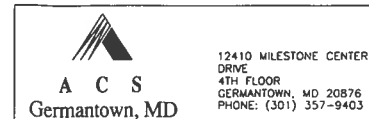
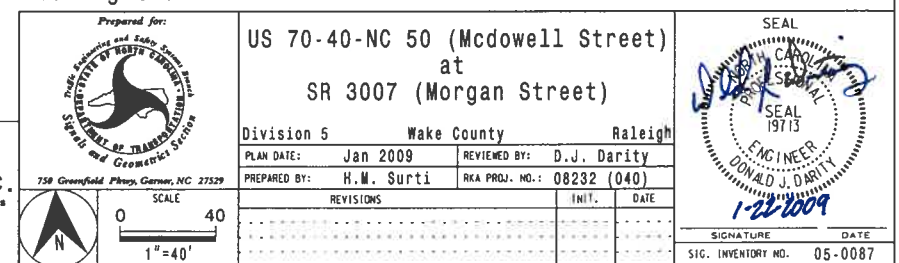
LEGEND

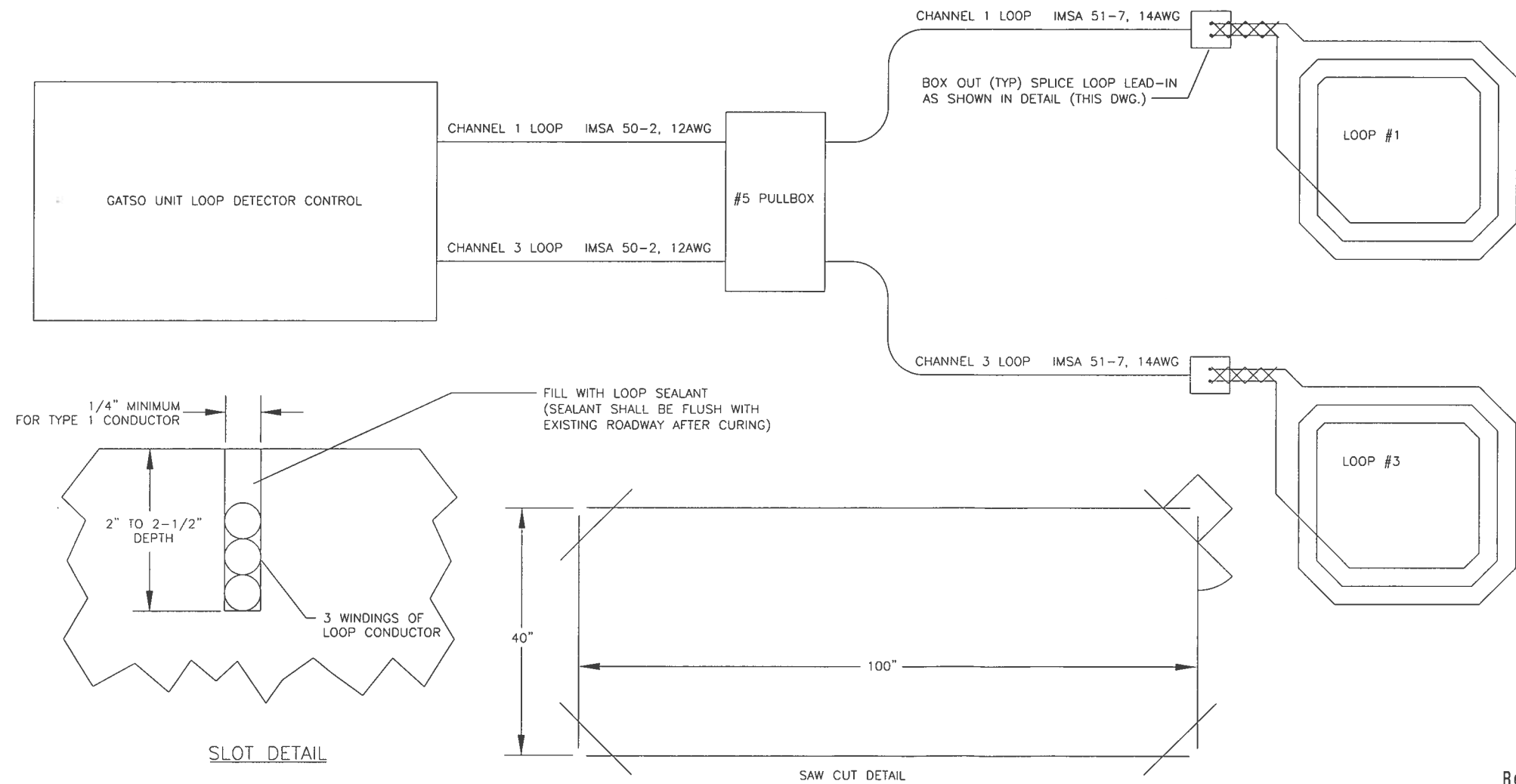
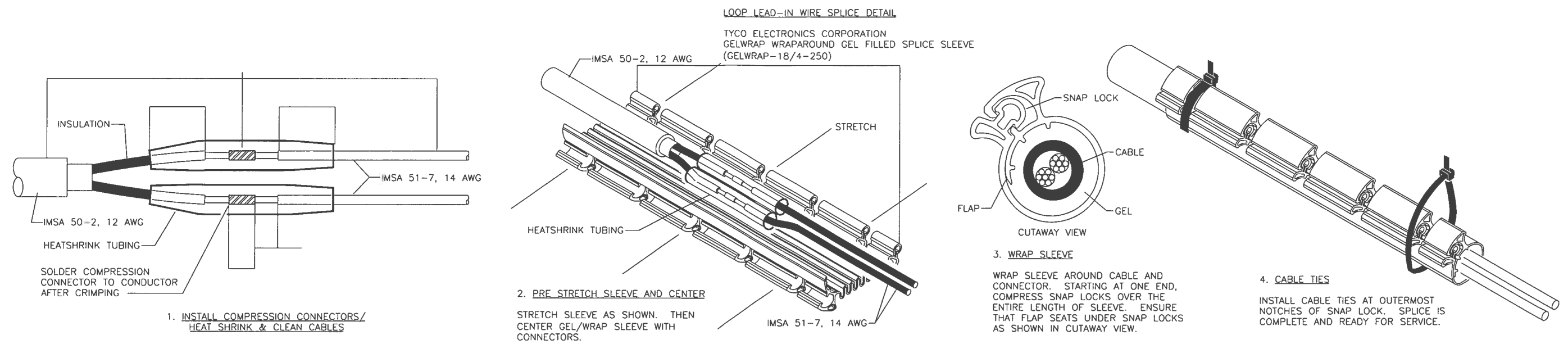
PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	Pedestrian Signal Head	
	With Push Button & Sign	
	Signal Pole with Guy	
	Signal Pole with Sidewalk Guy	
	Inductive Loop Detector	
	Controller & Cabinet	
	Junction Box	
	2-in Underground Conduit	
N/A	Right of Way	
	Directional Arrow	
	Stop Bar	
	Metal Strain Pole	
	Metal Pole with Mastarm	
	Directional Drill	N/A
(A)	Through Arrow "ONLY" Sign (R3-5A)	(A)
(B)	Left Arrow "ONLY" Sign (R3-5L)	(B)
(C)	Combined Through and Left Arrow Sign (R3-6L)	(C)

LOOP LOCATION DETAIL

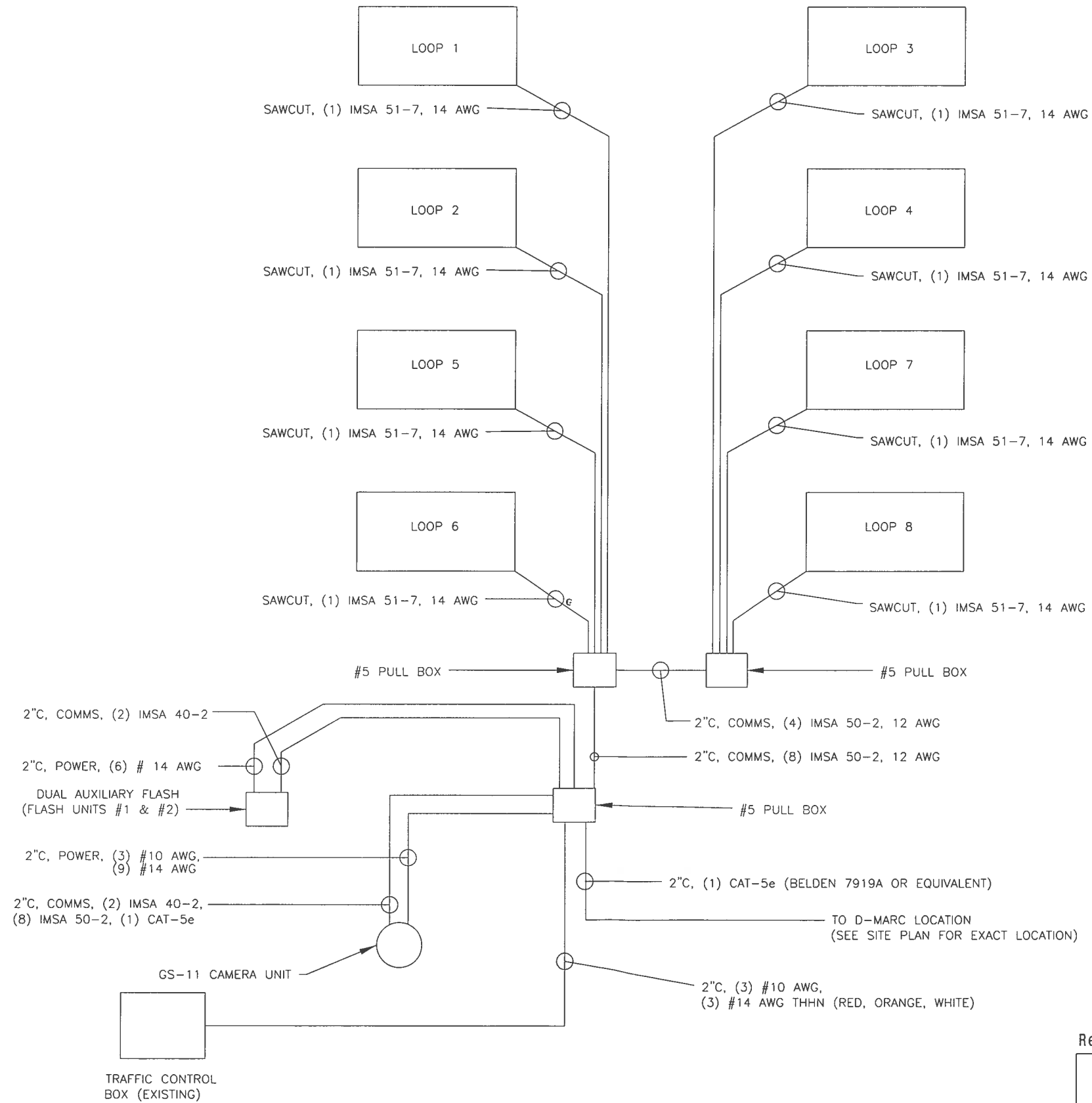


Red Light Camera Installation - Site Plan



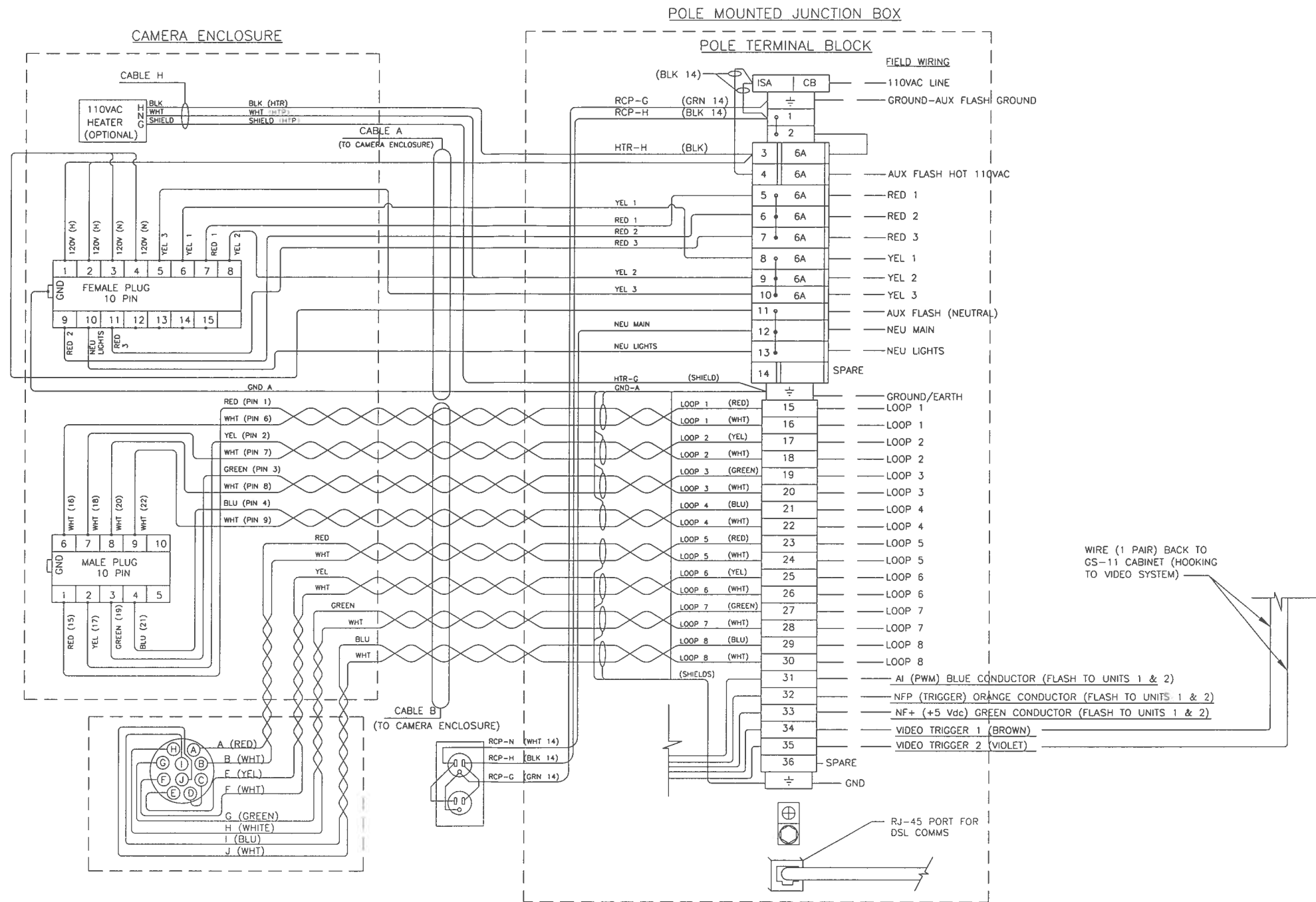


- NOTES:
1. SAWCUT LOOP LEAD-IN WIRE TRENCH WITH A UNIFORM 1/4" WIDE SLOT WITH A DEPTH BETWEEN 2" AND 2-1/2". (SEE DETAIL)
 2. CUT 6" LENGTH x 1/4" WIDE SLOTS AT THE SAME DEPTH AS STRAIGHT SAWCUTS IN EACH CORNER AS SHOWN IN DRAWING AND REMOVE ALL DEBRIS FROM SAWCUT PRIOR TO INSTALLING LOOP WIRE.
 3. SPLICE IN LOOP WIRE ARE NOT PERMITTED. THERE SHALL BE 3 TURNS AS SHOWN IN DETAIL.
 4. FROM THE LEAD-IN SLOT TO THE POINT OF TERMINATION TO THE IMSA 51-7, 14 AWG, THE 2 LOOP WIRES SHALL BE TWISTED WITH A MINIMUM OF 4 TWISTS PER FOOT.
 5. EACH LOOP CONFIGURATION WILL BE INDIVIDUALLY CABLED TO THE RLC POLE. THE DLC CABLES TO THE RLC WILL BE KEPT AS SHORT AS POSSIBLE AND THEY WILL GO IN A STRAIGHT RUN FROM THE PULL BOX TO THE RLC POLE. THE BARE WIRED DRAIN WIRE WILL BE TERMINATED IN THE RLC POLE AT THE TERMINAL BLOCK GROUND CONNECTION.



Red Light Camera Installation - Single Line Diagram

[illegible]



GS-11: WIRING DIAGRAM

Red Light Camera Installation - Camera Unit Terminal
Wiring Diagram

\$\$\$\$\$SYTIME\$\$\$\$\$
\$\$\$\$\$SERIAL\$\$\$\$\$
\$\$\$\$\$USERNAME\$\$\$\$\$

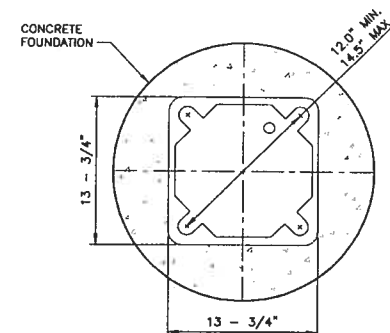
ACS
Germantown, MD
12410 MILESTONE CENTER DRIVE
4TH FLOOR
GERMANTOWN, MD 20876
PHONE (301) 357-9403

RAMEY KEMP & ASSOCIATES, INC.
Professional Engineers
6800 Faringdon Place, Suite 100
Raleigh, North Carolina 27609
919-872-9115 Tel. 919-878-6416 Fax.
www.rameykemp.com

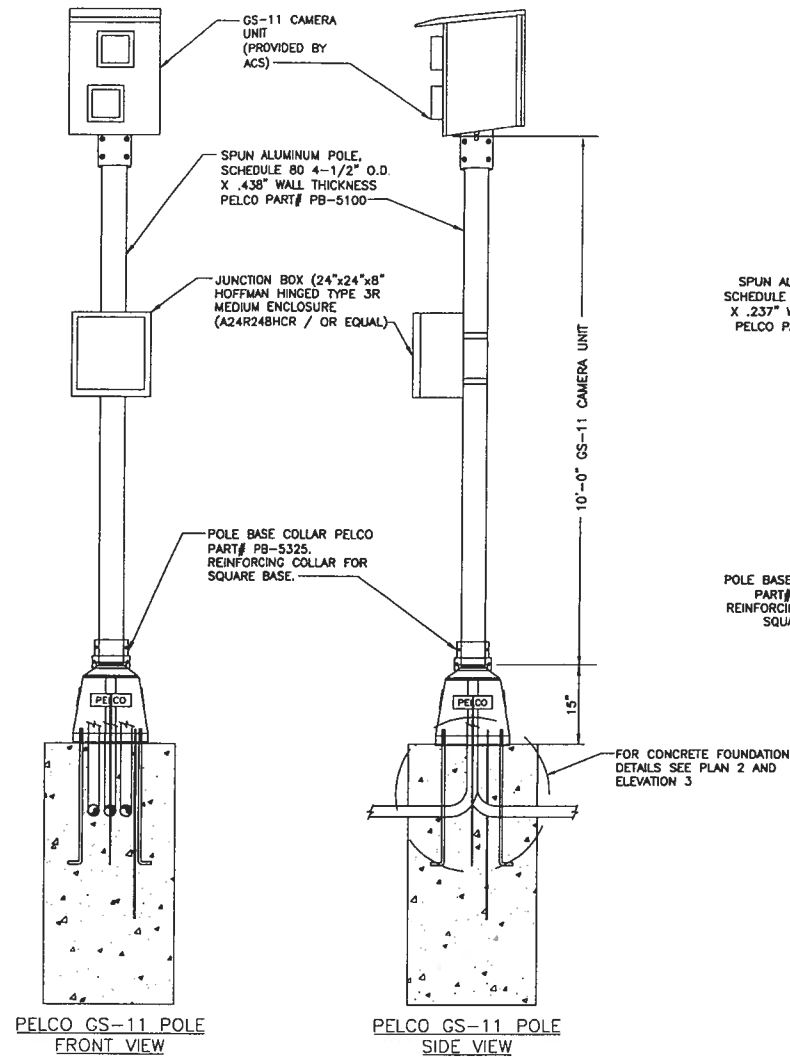
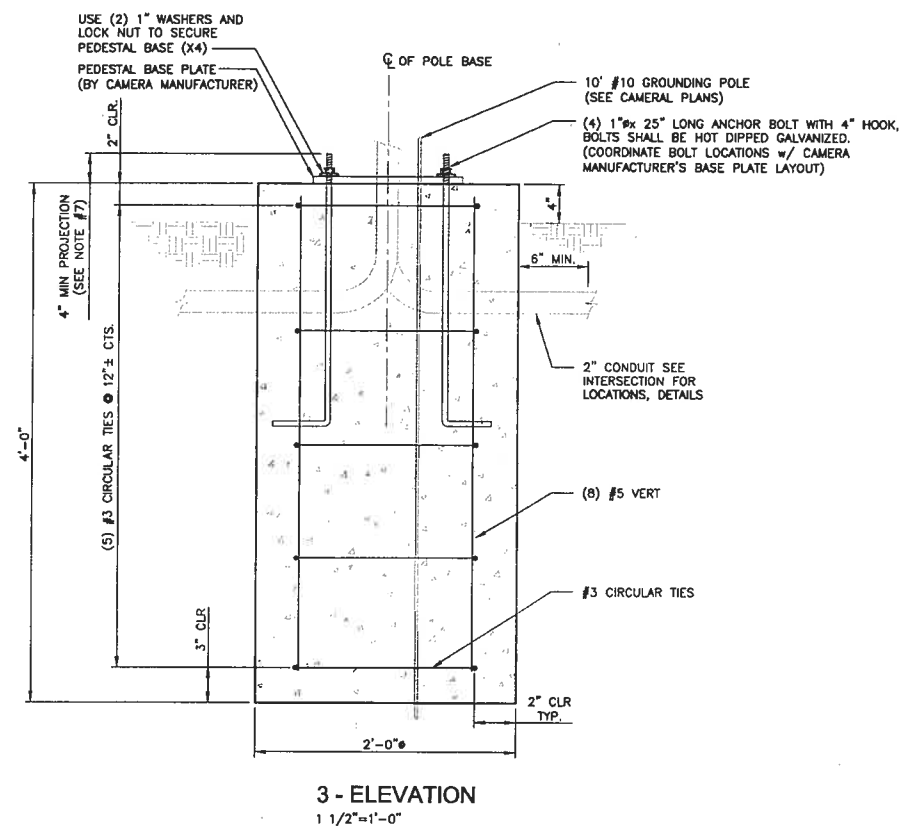
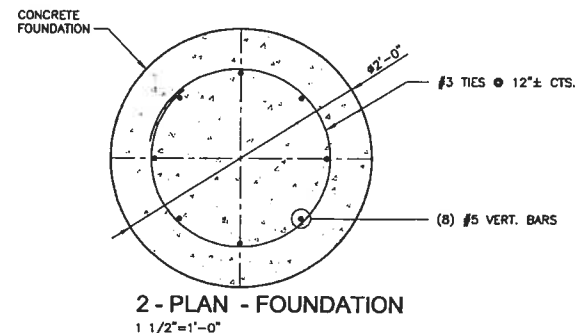
Prepared for:
US 70-40-NC 50 (Mcdowell Street) at SR 3007 (Morgan Street)
Division 5 Wake County Raleigh
PLAN DATE: Jan 2009 REVIEWED BY: D.J. Darity
PREPARED BY: H.W. Surti RKA PROJ. NO.: 08232 (040)
REVISIONS INIT. DATE
SIGNATURE DATE
SIG. INVENTORY NO. 05-0087



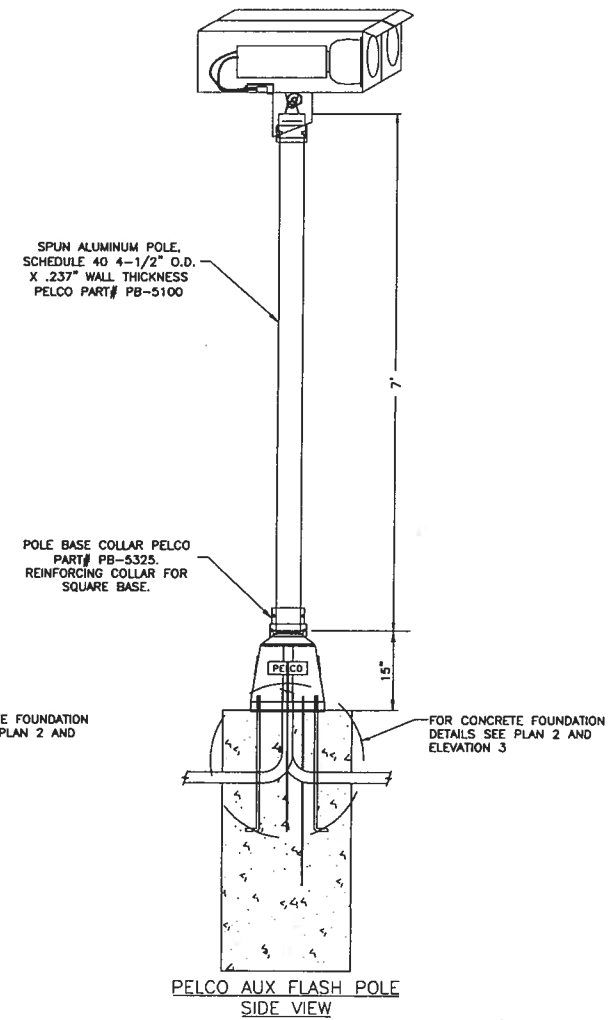
Red Light Camera Installation - Flash Unit to Camera Pole Wiring Details



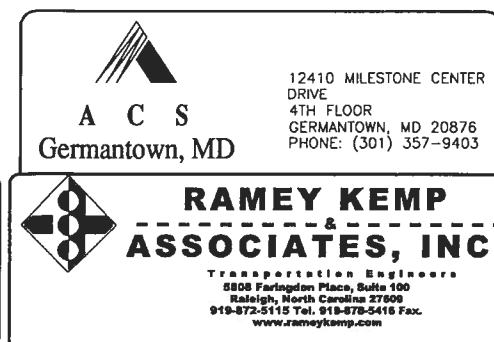
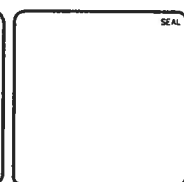
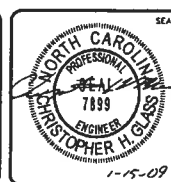
1 - PLAN - BASE PLATE
1 1/2" = 1'-0"



4 - ELEVATIONS
N.T.S.
FOR REFERENCE



- NOTES:**
1. ALL CONCRETE SHALL BE 28 DAY COMPRESSIVE STRENGTH $f_c = 4000$ PSI.
 2. ALL REINFORCING STEEL SHALL BE ASTM #15, GRADE 60.
 3. THE PLACEMENT OF CONCRETE AND RE-BAR SHALL CONFORM TO THE REQUIREMENTS OF ACI 318 (LATEST EDITION).
 4. ALL ANCHOR BOLTS SHALL BE A-307 OR A-36 GRADE STEEL.
 5. CONTRACTOR SHALL PROTECT EXCAVATIONS FROM INCLEMENT WEATHER UNTIL CONCRETE HAS BEEN POURED.
 6. FOUNDATION MAY BE USED FOR PELCO GS-11 CAMERA OR AUXILIARY FLASH UNIT.
 7. CONTRACTOR TO VERIFY BOLT PROJECTION IN FIELD BEFORE INSTALLATION OF SHAFT.
 8. CONTRACTOR MAY SHIFT LOCATION OF TIES AS NECESSARY TO AVOID CONFLICT WITH CONDUIT.
 9. CAMERA FOUNDATION SHALL BEAR IN SOIL SUITABLE FOR 2,000 PSF BEARING CAPACITY. SHOULD UNSTABLE MATERIAL BE ENCOUNTERED AT THE BOTTOM OF THE EXCAVATION, THE FOUNDATION DEPTH MAY BE EXTENDED TO FIRM MATERIAL.

[illegible]

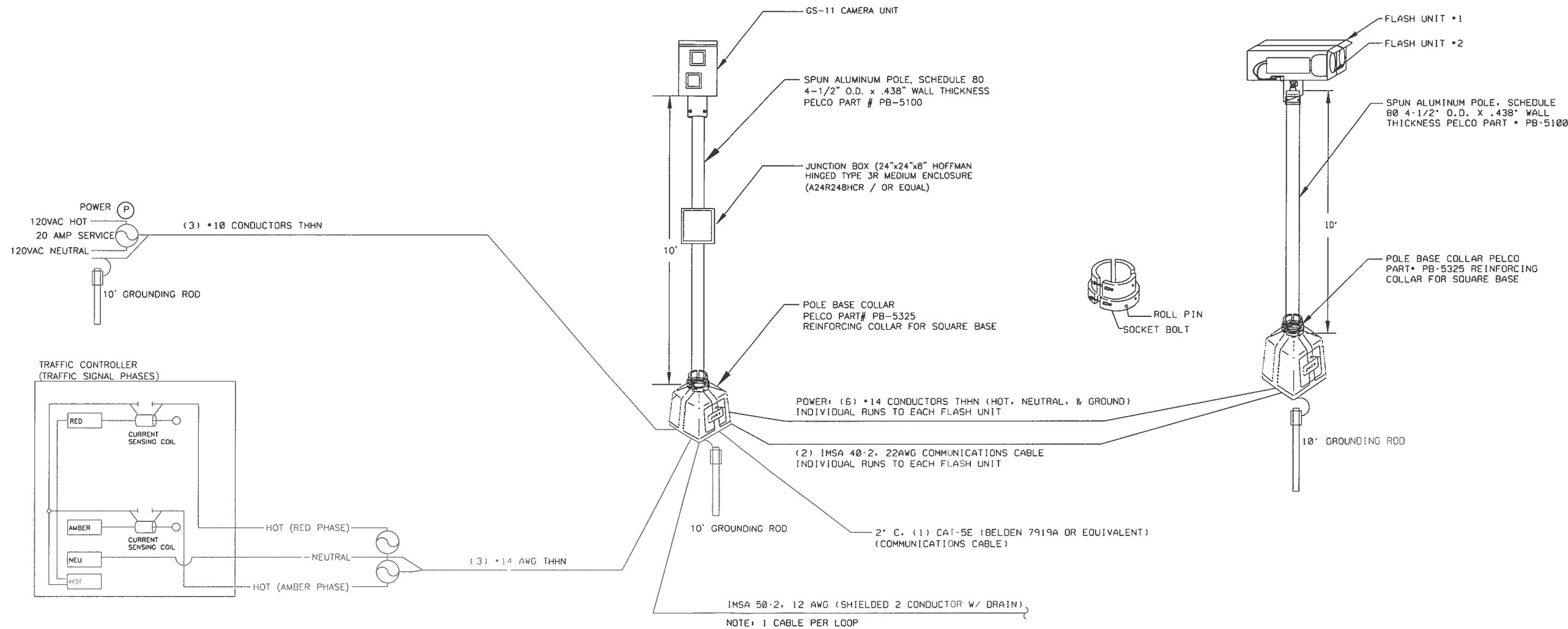
PELCO GS-11 REDLIGHT CAMERA
FLASH POLE INSTALLATION
REINFORCED CONCRETE BASE

US 70-40-NC 50 (McDOWELL STREET)
@ SR 3007 (MORGAN STREET)

DATE: DECEMBER 2008	SCALE	MAC FILE NUMBER
MOE PROJ. # 1093-0027	HORIZONTAL: AS NOTED VERTICAL: NA	DESIGNING NUMBER
DRAWN EJB		Sig-7
DESIGNED CHG		
CHECKED CHG		
PROJ. MGR. CHG		
STATUS:	REVISION	


ISSUED FOR REVIEW

SUBCONTRACTOR MUST NOTIFY THE BELOW LISTED AGENCY AT
LEAST THREE (3) WORKING DAYS PRIOR TO COMMENCEMENT OF
NORTH CAROLINA ONE CALL CENTER
1-800-632-4949



Red Light Camera Installation - Camera Unit/Dual Flash Configuration

\$\$\$\$SYTIME\$\$\$\$
\$\$\$\$\$USERNAME\$\$\$\$



ACS
Germantown, MD


12410 MILESTONE CENTER
DRIVE
4TH FLOOR
GERMANTOWN, MD 20876
PHONE: (301) 357-9403



**RAMEY KEMP
ASSOCIATES, INC.**
Transportation Engineers

6500 FARRINGTON PLAZA, SUITE 100
RALEIGH, NORTH CAROLINA 27608
919-872-8116 Tel. 919-878-6416 Fax.
www.rameykemp.com

Prepared for:




750 Greenfield Place, Garner, NC 27529

US 70-40-NC 50 (Mcdowell Street)
at
SR 3007 (Morgan Street)

Division 5 Wake County Raleigh

PLAN DATE:	Jan 2009	REVIEWED BY:	D.J. Darity
PREPARED BY:	H.W. Surti	RKA PROJ. NO.:	08232 (040)
REVISIONS		INIT.	DATE

SEAL



1-02-2009

SIGNATURE DATE

SIG. INVENTORY NO. 05-0087