

**PROJECT DESCRIPTION**

THIS PROJECT INVOLVES THE INSTALLATION OF LED COUNTDOWN PEDESTRIAN SIGNAL HEADS, APS PUSHBUTTONS, AND SIGNS AT THE INTERSECTION OF US 40 AND CHATHAM ROAD IN HOWARD COUNTY. US 40 IS ASSUMED TO RUN IN AN EAST-WEST DIRECTION.

**INTERSECTION OPERATION**

THIS INTERSECTION CURRENTLY OPERATES IN A NEMA SIX-PHASE FULL-TRAFFIC-ACTUATED MODE WITH EXCLUSIVE LEFT TURN PHASES FOR WESTBOUND AND EASTBOUND US 40, SPLIT PHASING FOR CHATHAM ROAD, AND AN ALTERNATE PEDESTRIAN PHASE FOR THE WEST LEG OF THE INTERSECTION. A CONCURRENT PEDESTRIAN PHASE IS ADDED TO THE NORTH LEG OF THE INTERSECTION.

**CONTROLLER REQUIREMENTS**

THE EXISTING FULL-TRAFFIC-ACTUATED EIGHT PHASE TRAFFIC SIGNAL CONTROLLER HOUSED IN A BASE MOUNTED CABINET WILL BE USED. A 2-WIRE APS CONTROL UNIT WILL BE FURNISHED BY THE CONTRACTOR AND INSTALLED BY SHA.

**SPECIAL NOTE**

APS WILL FUNCTION AS FOLLOWS:

FOR US 40 (BALTIMORE NATIONAL PIKE):

A. WHEN PEDESTRIAN LOCATES AND PRESSES PUSHBUTTON FOR AN EXTENDED TIME, THE PUSHBUTTON UNIT MESSAGE WILL BE "WAIT TO CROSS BALTIMORE NATIONAL AT CHATHAM."

B. WHEN WALK PHASE BEGINS, THE MESSAGE WILL BE A RAPID TICK WHICH WILL LAST FOR THE DURATION OF THE WALK PHASE.

FOR CHATHAM ROAD:

A. WHEN PEDESTRIAN LOCATES AND PRESSES PUSHBUTTON FOR AN EXTENDED TIME, THE PUSHBUTTON UNIT MESSAGE WILL BE "WAIT TO CROSS CHATHAM AT BALTIMORE NATIONAL."

B. WHEN WALK PHASE BEGINS, THE MESSAGE WILL BE A RAPID TICK WHICH WILL LAST FOR THE DURATION OF THE WALK PHASE.

**CONTACT PERSONS FOR DISTRICT #7 ARE AS FOLLOWS:**

MR. JOHN CONCANNON ASSISTANT DISTRICT ENGINEER-TRAFFIC PHONE: (301)624-8140  
 MS. ANDREA ABEND UTILITY ENGINEER PHONE: (301)624-8115

MR. RAYMOND JOHNSON ASSISTANT DISTRICT ENGINEER-MAINTENANCE PHONE: (301)624-8105

**CONTACT PERSONS FOR OOTS ARE AS FOLLOWS:**

MR. RICHARD L. DAFF, SR. CHIEF, TRAFFIC OPERATIONS DIVISION PHONE: (410)787-7630  
 MR. ROBERT SNYDER ASSISTANT DIVISION CHIEF TRAFFIC OPERATIONS (410)787-7630

MR. ED RODENHIZER CHIEF, SIGNAL OPERATIONS (410)787-7650  
 MR. EUGENE BAILEY CHIEF, SIGN OPERATIONS (410)787-7676

**CONSTRUCTION DETAILS (CONTINUED)**

- N. INSTALL 1 INCH RIGID GALVANIZED STEEL CONDUIT (FOR DETECTOR SLEEVE).
- O. USE EXISTING CONDUIT.
- P. INSTALL ELECTRICAL HANDHOLE.
- Q. INSTALL 10 FT. BREAKAWAY PEDESTAL POLE WITH LED PEDESTRIAN COUNTDOWN SIGNAL HEAD, APS PUSHBUTTON, AND SIGN (ORIENTED PARALLEL TO CROSSWALK). NOTE: INSTALL 1-3 IN. CONDUIT BEND IN POLE BASE. REFER TO STANDARD MD 801.01-01 FOR MODIFIED FOUNDATION DETAILS.
- R. REMOVE EXISTING HANDHOLE AND INSTALL PROPOSED HANDHOLE IN SAME LOCATION.
- S. INSTALL PROPOSED 3 INCH WEATHER HEAD.

**EQUIPMENT LIST "A"**

A. EQUIPMENT TO BE SUPPLIED BY THE SHA.

ITEM NO.	DESCRIPTION	UNIT	QUANTITY
9000	RE-AIM EXISTING VIDEO DETECTION CAMERA	EA	1

**EQUIPMENT LIST "B"**

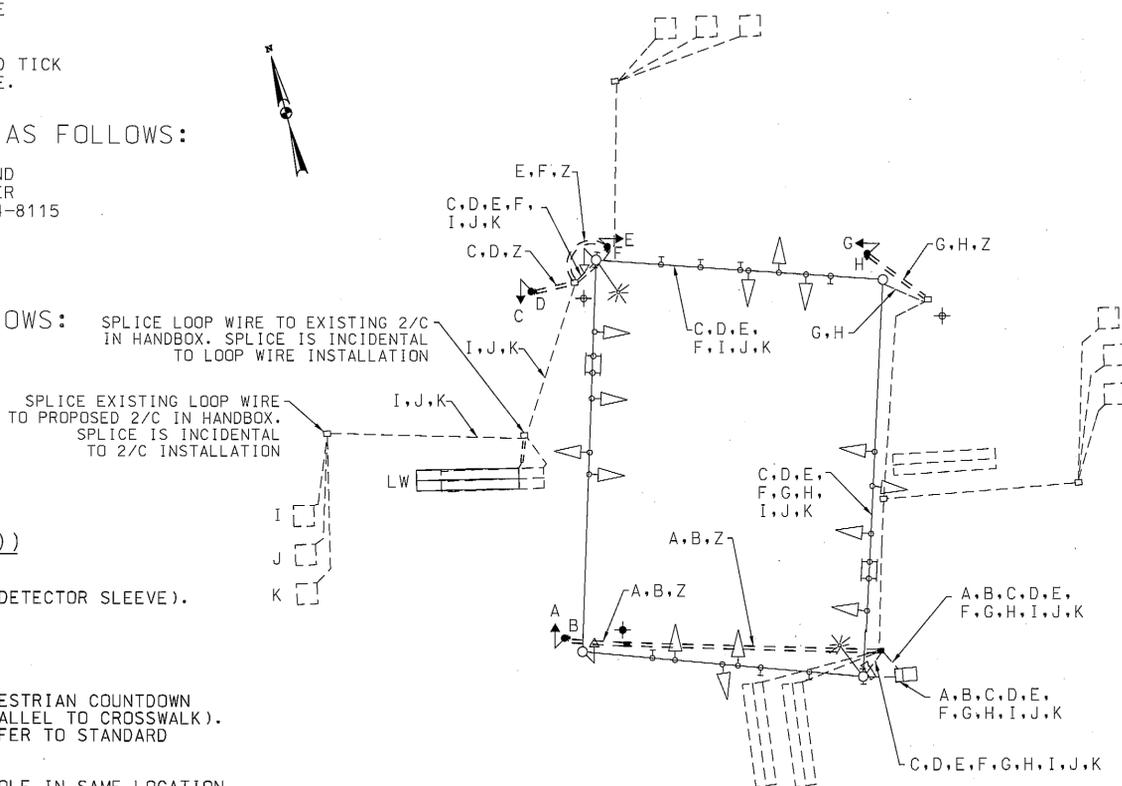
B. EQUIPMENT TO BE FURNISHED AND/OR INSTALLED BY THE CONTRACTOR.

ITEM NO.	DESCRIPTION	UNIT	QUANTITY
1001	REMOVAL OF EXISTING PAVEMENT LINE MARKINGS, ANY WIDTH	LF	1000
2002	TEST PIT EXCAVATION	CY	3
5005	12 INCH WHITE LEAD FREE REFLECTIVE THERMOPLASTIC PAVEMENT MARKINGS	LF	620
8001	AUDIBLE / TACTILE PEDESTRIAN PUSHBUTTON STATION AND SIGNS	EA	4
8002	BREAKAWAY PEDESTAL POLE - ANY SIZE	EA	4
8003	FURNISH AND INSTALL 2 WIRE CONTROL UNIT	EA	1
8004	LED 16 INCH COUNTDOWN PEDESTRIAN SIGNAL HEADS	EA	4
8005	PEDESTRIAN EDUCATION SIGN	EA	4
8007	REMOVE AND DISPOSE PER ASSIGNMENT	EA	1
8011	ADJUST EXISTING HANDHOLE	EA	1
8012	NO. 6 AWG STRANDED BARE COPPER GROUND WIRE	LF	155
8013	3 INCH SCHEDULE 80 RIGID PVC CONDUIT - TRENCHED	LF	70
8014	FURNISH AND INSTALL ELECTRICAL HANDHOLE	EA	2
8017	1 INCH DIAMETER RIGID STEEL CONDUIT, SCHEDULE 40	LF	15
8020	ELECTRICAL CABLE - 2 CONDUCTOR (NO. 14 AWG)	LF	1160
8021	ELECTRICAL CABLE - 5 CONDUCTOR (NO. 14 AWG)	LF	1160
8022	LOOP WIRE ENCASED IN FLEXIBLE TUBING (NO. 14 AWG)	LF	410
8023	SAW CUT FOR SIGNAL (LOOP DETECTOR)	LF	105
8024	4 INCH SCHEDULE 80PVC CONDUIT - SLOTTED	LF	90
NEG	WEATHER HEAD, 3 INCH	EA	3
NEG	ELECTRICAL CABLE - 2 CONDUCTOR (ALUMINUM SHIELDED)	LF	2250

**EQUIPMENT LIST "C"**

C. EQUIPMENT TO BE REMOVED BY THE CONTRACTOR AND RETURNED TO SHA.

ALL MATERIALS AND EQUIPMENT REMOVED BY THE CONTRACTOR SHALL BECOME THE PROPERTY OF THE CONTRACTOR.



**WIRING KEY**

A, C, E, G	5-CONDUCTOR ELECTRICAL CABLE (NO. 14 AWG)	LW	LOOP WIRE (NO. 14 AWG)
B, D, F, H	2-CONDUCTOR ELECTRICAL CABLE (NO. 14 AWG)	Z	NO. 6 AWG STRANDED BARE COPPER GROUND WIRE
I, J, K	2-CONDUCTOR ELECTRICAL CABLE (ALUMINUM SHIELDED)	⊕	PROPOSED GROUND ROD
		⊕	EXISTING GROUND ROD

**PHASING CHART**

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15/16	17/18
PHASE 1 & 5	←R←	←R←	R	R	←G←	←G←	R	R	R	R	R	R	R	R	DW	DW
CHANGES TO PHASES 1 & 6, 2 & 5 OR 2 & 6																
PHASE 1 & 6	←R←	←R←	R	R	←G←	←G←	G	G	R	R	R	R	R	R	DW	DW
1 & 6 CHANGE	←R←	←R←	R	R	←Y←	←Y←	Y	Y	R	R	R	R	R	R	DW	DW
PHASE 2 & 5	←G←	←G←	G	G	←R←	←R←	R	R	R	R	R	R	R	R	DW	WK
PED CLEARANCE/COUNTDOWN	←G←	←G←	G	G	←R←	←R←	R	R	R	R	R	R	R	R	DW	FL/DW
2 & 5 CHANGE	←Y←	←Y←	Y	Y	←R←	←R←	R	R	R	R	R	R	R	R	DW	DW
PHASE 2 & 6	←R←	←R←	G	G	←R←	←R←	G	G	R	R	R	R	R	R	DW	WK
PED CLEARANCE/COUNTDOWN	←R←	←R←	G	G	←R←	←R←	G	G	R	R	R	R	R	R	DW	FL/DW
2 & 6 CHANGE	←R←	←R←	Y	Y	←R←	←R←	Y	Y	R	R	R	R	R	R	DW	DW
PHASE 3	←R←	←R←	R	R	←R←	←R←	R	R	R	R	R	←G←	←G←	G	DW	DW
3 CHANGE	←R←	←R←	R	R	←R←	←R←	R	R	R	R	R	Y	Y	Y	DW	DW
PHASE 4	←R←	←R←	R	R	←R←	←R←	R	R	←G←	←G←	G	R	R	R	DW	DW
4 CHANGE	←R←	←R←	R	R	←R←	←R←	R	R	Y	Y	Y	R	R	R	DW	DW
PHASE 4 ALT	←R←	←R←	R	R	←R←	←R←	R	R	←G←	←G←	G	R	R	R	WK	DW
PED CLEARANCE/COUNTDOWN	←R←	←R←	R	R	←R←	←R←	R	R	←G←	←G←	G	R	R	R	FL/DW	DW
4 ALT CHANGE	←R←	←R←	R	R	←R←	←R←	R	R	Y	Y	Y	R	R	R	DW	DW
FLASHING OPERATION	FL/←R←	FL/←R←	FL/Y	FL/Y	FL/←R←	FL/←R←	FL/Y	FL/Y	FL/R	FL/R	FL/R	FL/R	FL/R	FL/R	DARK	DARK

**GENERAL NOTES**

- THE CONTRACTOR SHALL VERIFY ALL PROPOSED POLE LOCATIONS PRIOR TO INSTALLATION.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR TERMINATING ALL SIGNAL CABLE TO THE APPROPRIATE TERMINALS AND PROPERLY LABELING EACH CABLE.
- ALL UNUSED CABLE SHALL BE REMOVED AND DISPOSED OF BY THE CONTRACTOR.
- UNDERGROUND UTILITIES SHOWN ON THESE PLANS ARE SCHEMATIC ONLY AND MAY NOT BE COMPLETE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING "MISS UTILITY" PRIOR TO CONSTRUCTION SO THAT ALL UTILITIES MAY BE LOCATED IN THE FIELD. IF THE CONTRACTOR PERCEIVES THAT A CONFLICT BETWEEN THE UTILITIES AND THE TRAFFIC SIGNAL WILL OCCUR, THE CONTRACTOR SHALL NOTIFY THE PROJECT ENGINEER IMMEDIATELY SO THAT THE CONFLICT MAY BE RESOLVED.
- ALL TRAFFIC SIGNAL FOUNDATIONS SHALL BE INSTALLED AT THE FINAL SIDEWALK OR CURB GRADE FOR CLOSED SECTIONS, HIGHEST ROADWAY PROFILE GRADE FOR OPEN SECTIONS, TO MEET CLEARANCES AS SPECIFIED IN MD 816.03, MD 818.01, MD 818.02, MD 818.04. THE CONTRACTOR SHALL VERIFY ULTIMATE GRADES PRIOR TO THE INSTALLATION OF ALL SIGNAL EQUIPMENT.
- ACCESSIBLE PEDESTRIAN CONTROL EQUIPMENT SHALL BE DELIVERED TO THE SHA SIGNAL SHOP FOR TESTING AND PROGRAMMING PRIOR TO INSTALLATION. CONTACT MR. EDWARD RODENHIZER AT 410-787-7652 TO COORDINATE.
- LOCATION OF ACCESSIBLE PEDESTRIAN PUSHBUTTONS MUST MEET THE LOCATION REQUIREMENTS OF THE MUTCD, SECTION 4E-09 AND FIGURE 4E-2 AND THE NCHRP PUBLICATION, "ACCESSIBLE PEDESTRIAN SIGNAL: GUIDE TO BEST PRACTICE." IF NOT MET, THE CONTRACTOR IS TO STOP WORK ON PUSHBUTTON LOCATIONS UNTIL THE CONFLICT HAS BEEN RESOLVED. IF NEEDED, A DESIGN WAIVER SHALL BE OBTAINED, APPROVED BY THE DIRECTOR, OFFICE OF TRAFFIC AND SAFETY.
- PUSHBUTTONS ARE TO BE LOCATED SO THAT THEY CAN BE ACTIVATED BY A PERSON IN A WHEELCHAIR FROM 60"X60" LEVEL LANDING AREA. A LEVEL LANDING AREA IS AN AREA WITH A CROSS-SLOPE OF LESS THAN 2%.
- PUSHBUTTON IS TO BE LOCATED SO THAT A PEDESTRIAN IN A WHEELCHAIR SITUATED ON THE LEVEL LANDING AREA, DOES NOT HAVE TO REACH MORE THAN 18".
- THE 10' SEPARATION BETWEEN PUSHBUTTONS IS TO BE MEASURED FROM FACE OF PUSHBUTTON, NOT CENTER TO CENTER OF POLE.
- VIDEO DETECTION CAMERA SHALL BE RE-AIMED UNDER THE DIRECTION OF THE PROJECT ENGINEER.

**SHA** STATE OF MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION  
 OFFICE OF TRAFFIC & SAFETY TRAFFIC ENGINEERING DESIGN DIVISION  
 US 40 @ CHATHAM ROAD  
 ELLICOTT CITY, MARYLAND

REVISIONS	GENERAL INFORMATION SHEET		
	SCALE	DATE	CONTRACT NO.
	NONE	AUGUST 2009	AX7065168
	DESIGNED BY	COUNTY	
	SK	HOWARD	
	DRAWN BY	LOGMILE	
	SK	13004017.69	
	CHECKED BY	TMS NO.	
	DAE	J826	
	FAP NO.	TOD NO.	
	TS NO. 1518-GI	DRAWING SG - 2 OF 2	SHEET NO. 2 OF 2

**RK&K**  
 RUMMEL, KLEPPER & KAHL, LLP  
 81 MOSHER STREET | BALTIMORE, MD 21217  
 PH: (410) 788-3900 FAX: (410) 788-3180  
 Engineers | Construction Managers | Planners | Scientists  
 www.rk.com