

**I. GENERAL PROJECT DESCRIPTION**

THIS PROJECT INVOLVES THE REPLACEMENT OF THE EASTBOUND AND WESTBOUND MD 28 SAMPLING LOOPS WITH VIDEO DETECTION; AND THE REPLACEMENT OF THE EASTBOUND AND WESTBOUND MD 28 LEFT-TURN PRESENCE DETECTION LOOPS WITH VIDEO DETECTION; AND THE UPGRADE OF THE ACCESSIBLE PEDESTRIAN SIGNAL AND COUNTDOWN PEDESTRIAN SIGNAL FOR THE THREE PEDESTRIAN CROSSINGS TO CURRENT SHA STANDARDS AT THE INTERSECTION OF MD 28 (W. MONTGOMERY AVE) AND RESEARCH BLVD./CROFTON HILL LN. IN MONTGOMERY COUNTY.

MD 28 IS ASSUMED TO RUN IN AN EAST-WEST DIRECTION.

**II. INTERSECTION OPERATION**

THE INTERSECTION SHALL OPERATE IN A NEMA SIX PHASE, SEMI-TRAFFIC-ACTUATED MODE. THE MD 28 (W MONTGOMERY AVE) APPROACHES SHALL OPERATE CONCURRENTLY WITH EXCLUSIVE LEFT TURN PHASE FOR THE EASTBOUND AND WESTBOUND APPROACHES WITH THE WESTBOUND RIGHT TURN OVERLAP PHASE. AN EXISTING PEDESTRIAN MOVEMENT TO CROSS THE NORTH LEG AND A PROPOSED PEDESTRIAN MOVEMENT TO CROSS THE SOUTH LEG. THE SOUTHBOUND RESEARCH BLVD APPROACH AND THE NORTHBOUND CROFTON HILL LN APPROACH SHALL OPERATE WITH SPLIT PHASE. THE SOUTHBOUND APPROACH SHALL OPERATE CONCURRENTLY WITH MD 28 WESTBOUND RIGHT TURN OVERLAP PHASE AND A PEDESTRIAN PHASE TO CROSS WEST LEG. THE NORTHBOUND APPROACH SHALL OPERATE CONCURRENTLY WITH PEDESTRIAN PHASE TO CROSS NORTH LEG CHANNELIZED ISLAND. EXISTING PEDESTRIAN MOVEMENTS SHALL BE UPGRADED TO AUDIBLE PEDESTRIAN PUSHBUTTON OPERATIONS, WITH LED COUNTDOWN PEDESTRIAN SIGNALS. TRAFFIC DETECTION SHALL BE ACHIEVED USING VIDEO DETECTION CAMERAS FOR INTERSECTION PRESENCE AND MAINLINE PASSAGE DETECTION ALONG MD 28 AND USING DETECTION LOOPS FOR PRESENCE DETECTION ALONG RESEARCH BLVD./CROFTON HILL LN. APPROACHES.

THE AUDIBLE PUSHBUTTONS WILL FUNCTION AS FOLLOWS:

- WHEN A PEDESTRIAN LOCATES AND PRESSES THE PUSHBUTTON FOR AN EXTENDED TIME, THE PUSHBUTTON UNIT MESSAGE WILL ANNOUNCE THE FOLLOWING MESSAGE:

- NORTH LEG (BUTTON 19p): "Wait to cross Research at West Montgomery, second pushbutton in island, Wait."
- NORTH LEG (BUTTON 20p): "Wait to cross Research at West Montgomery, Wait."
- NORTH LEG (BUTTON 21p): "Wait to cross Research at West Montgomery, crosswalk angles right, Wait."
- NORTH LEG (BUTTON 22p): "Wait to cross Research at West Montgomery, crosswalk angles right, second pushbutton in island, Wait."
- SOUTH LEG (BUTTONS 17p,18p): "Wait to cross Crofton Hill at West Montgomery, Wait."
- WEST LEG (BUTTON 23p): "Wait to cross West Montgomery at Research, Wait."
- WEST LEG (BUTTON 24p): "Wait to cross West Montgomery at Crofton Hill, Wait."

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

**III. SPECIAL NOTES**

- MONTGOMERY COUNTY SHALL PERFORM THE INTERNAL WIRING OF THE CONTROLLER/CABINET. THE CONTRACTOR SHALL PURCHASE AND DELIVER THE AUDIBLE/TACTILE PUSHBUTTONS TO THE MONTGOMERY COUNTY TECH CENTER FOR INSTALLATION AND PROGRAMMING. THE CONTRACTOR SHALL CONTACT MS. EILEEN NORMAND AT 310-279-1291, AT LEAST THREE (3) DAYS PRIOR TO THE DELIVERY.
- MAINTENANCE OF TRAFFIC WILL BE PERFORMED BY THE CONTRACTOR UTILIZING THE STANDARD PLATES FOR TRAFFIC CONTROL FROM SECTION MD 104.00 OF THE SHA BOOK OF STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES.
- THE CONTRACTOR SHALL MAINTAIN PEDESTRIAN ACCESS AT ALL TIMES.

**PROJECT CONTACTS**

- THE FOLLOWING ARE THE CONTACT PERSONS FOR THE PROJECT:

MS. ANYESHA MOOKHERJEE, ASSISTANT DISTRICT ENGINEER - TRAFFIC  
PHONE: (301) 513-7498

MR. DUANE BERNARD, ASSISTANT DISTRICT ENGINEER - CONSTRUCTION  
PHONE: (301) 513-7385

MR. TOM FOUNTAIN, ASSISTANT DISTRICT ENGINEER - MAINTENANCE  
PHONE: (301) 513-7304

MR. VICTOR GRAFTON, UTILITY ENGINEER  
PHONE: (301) 513-7350

MS. CORREN JOHNSON, DIVISION CHIEF - TRAFFIC OPERATIONS, OOTS  
PHONE: (410) 787-7630

MR. EDWARD RODENHIZER, CHIEF - SIGNAL SHOP  
PHONE: (410) 787-7652

MR. EUGENE BAILEY, CHIEF - SIGN SHOP  
PHONE: (410) 787-7676

**EQUIPMENT LIST 'A'**

A. EQUIPMENT TO BE SUPPLIED BY SHA AND INSTALLED BY THE CONTRACTOR.

CATEGORY CODE	QUANTITY	DESCRIPTION
900000	1 EA	VIDEO DETECTION CAMERA INTERFACE UNIT 1-4 CAMERAS

973023 24 SF FLAT SHEET ALUMINUM SIGNS CONSISTING OF:

GROUND-MOUNTED:

- 1 EA W11-2(L) (30" X 30")
- 1 EA W11-2(R) (30" X 30")
- 1 EA W16-7pL (24" X 12")
- 1 EA W16-7pR (24" X 12")

POLE-MOUNTED:

- 2 EA R10-3(1) COUNTDOWN PEDESTRIAN PUSHBUTTON SIGN "TO CROSS W. MONTGOMERY AVE." (9" X 15")
- 2 EA R10-3(1) COUNTDOWN PEDESTRIAN PUSHBUTTON SIGN "TO CROSS CROFTON HILL LN." (9" X 15")
- 4 EA R10-3(1) COUNTDOWN PEDESTRIAN PUSHBUTTON SIGN "TO CROSS RESEARCH BLVD." (9" X 15")

**EQUIPMENT LIST 'B'**

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

CATEGORY CODE	QUANTITY	DESCRIPTION
120500	1 LS	MAINTENANCE OF TRAFFIC
203030	3 CY	TEST PIT EXCAVATION
585412	590 LF	12" HEAT APPLIED WHITE PERMANENT PREFORMED THERMOPLASTIC PAVEMENT MARKING LINES
585424	180 LF	24" HEAT APPLIED WHITE PERMANENT PREFORMED THERMOPLASTIC PAVEMENT MARKING LINES
800000	6 EA	VIDEO DETECTION CAMERA AND CABLE, ANY LENGTH
800000	8 EA	AUDIBLE/TACTILE PEDESTRIAN PUSHBUTTON STATION AND SIGNS
800000	8 EA	16" LED COUNTDOWN PEDESTRIAN SIGNAL HEAD
800000	1 EA	REMOVE AND DISPOSE OF EQUIPMENT
800000	90 LF	DISCONNECT, PULL BACK, AND RE-ROUTE EXISTING CABLES
801004	4 CY	CONCRETE FOR SIGNAL FOUNDATION
802501	140 LF	NO. 6 AWG STRANDED BARE COPPER GROUND WIRE
805125	140 LF	2" SCHEDULE 80 RIGID PVC CONDUIT - TRENCHED
813014	24 SF	INSTALL GROUND MOUNTED SIGN
818004	8 EA	10' BREAKAWAY PEDESTAL POLE
837001	4 EA	GROUND ROD - 3/4 INCH DIAMETER X 10 FOOT LENGTH
861105	1270 LF	ELECTRICAL CABLE - 2 CONDUCTOR NO. 14 AWG
861107	50 LF	ELECTRICAL CABLE - 5 CONDUCTOR NO. 14 AWG

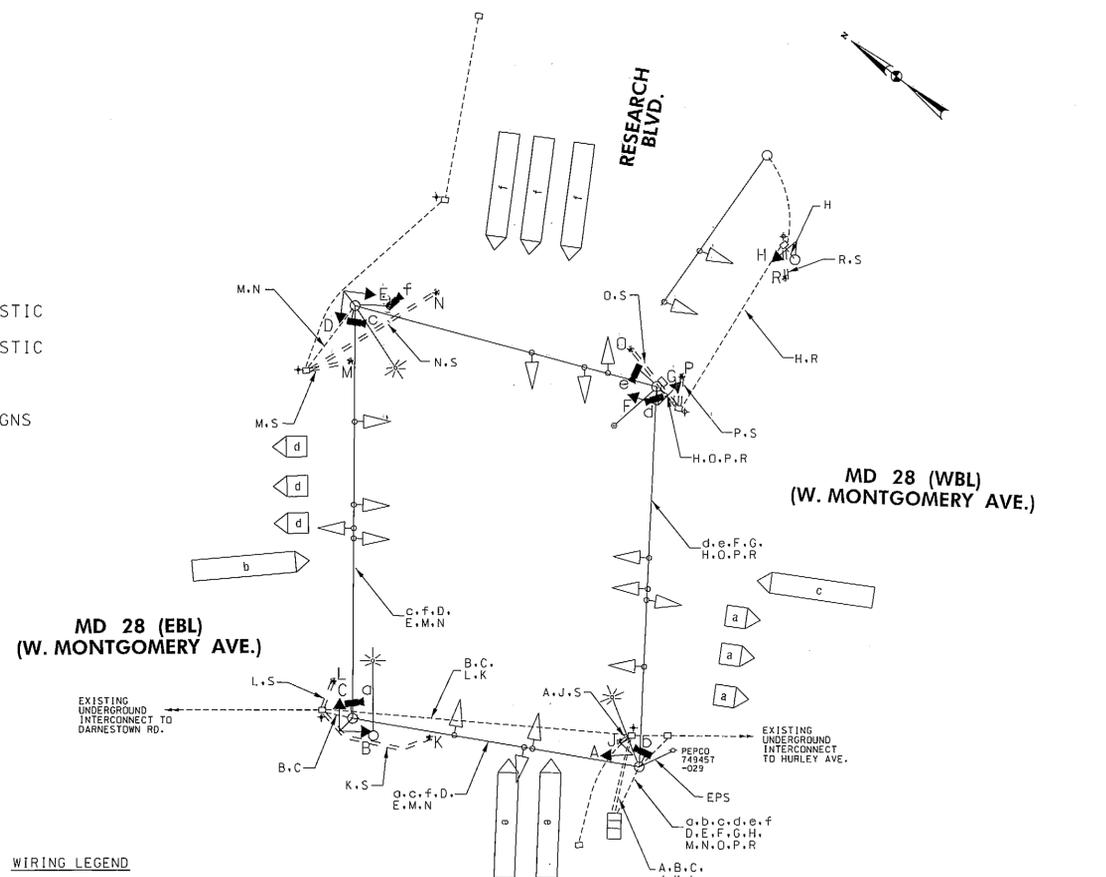
**EQUIPMENT LIST 'C'**

C. SHA FORCES SHALL REMOVE THE CONTROLLER AND ALL AUXILIARY EQUIPMENT FROM THE CONTROLLER CABINET. THE CABINET AND ALL OTHER MATERIALS TO BE REMOVED BY THE CONTRACTOR SHALL BECOME THE PROPERTY OF THE CONTRACTOR.

**PHASE CHART**

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
PHASE 1 AND 5	<G-	<G-	R	R	<G-	<G-	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
1 AND 5 CHANGE TO 1 AND 6, 2 AND 5, OR 2 AND 6	<G-	<G-	G	G	<R-	<R-	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	
PHASE 1 AND 6	<Y-	<Y-	Y	Y	<R-	<R-	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	
1 AND 6 CHANGE	<R-	<R-	R	R	<G-	<G-	G	G	G	G	R	R	R	R	R	R	R	R	R	R	R	R	R	
PHASE 2 AND 5	<R-	<R-	R	R	<G-	<G-	G	G	G	G	R	R	R	R	R	R	R	R	R	R	R	R	R	
PED CLEARANCE	<R-	<R-	R	R	<G-	<G-	G	G	G	G	R	R	R	R	R	R	R	R	R	R	R	R	R	
2 AND 5 CHANGE	<R-	<R-	R	R	<Y-	<Y-	Y	Y	Y	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	
PHASE 2 AND 6	<R-	<R-	G	G	<R-	<R-	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	
PED CLEARANCE	<R-	<R-	G	G	<R-	<R-	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	
2 AND 6 CHANGE	<R-	<R-	Y	Y	<R-	<R-	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	
PHASE 3	<R-	<R-	R	R	<R-	<R-	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	
PED CLEARANCE	<R-	<R-	R	R	<R-	<R-	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	
3 CHANGE	<R-	<R-	R	R	<R-	<R-	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	
PHASE 4	<R-	<R-	R	R	<R-	<R-	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	
PED CLEARANCE	<R-	<R-	R	R	<R-	<R-	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	
4 CHANGE	<R-	<R-	R	R	<R-	<R-	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	
FLASHING OPERATION	FL/RA	FL/RA	FL/Y	FL/Y	FL/RA	FL/RA	FL/Y	FL/Y	FL/R															

**WIRING DIAGRAM**



**WIRING LEGEND**

g, b, c, d, e	3 CONDUCTOR NO. 16 AWG VIDEO CABLE
A	PROPOSED 5 CONDUCTOR NO. 14 AWG ELEC. CABLE
B, C, D, E	EXISTING 5 CONDUCTOR NO. 14 AWG ELEC. CABLE
f, m, n	EXISTING 2 CONDUCTOR NO. 14 AWG ELEC. CABLE
j, k, l	PROPOSED 2 CONDUCTOR NO. 14 AWG ELEC. CABLE
S	NO. 6 AWG STRANDED BARE COPPER GROUND WIRE
EPS	EXISTING POWER SERVICE
+	EXISTING GROUND ROD
+	PROPOSED GROUND ROD

CROFTON HILL LANE

**SHA** STATE OF MARYLAND  
DEPARTMENT OF TRANSPORTATION  
STATE HIGHWAY ADMINISTRATION  
OFFICE OF TRAFFIC & SAFETY  
TRAFFIC ENGINEERING DESIGN DIVISION  
MD 28 (W. MONTGOMERY AVE.) AND  
RESEARCH BLVD./CROFTON HILL LN.  
ROCKVILLE, MARYLAND

**GENERAL INFORMATION SHEET**

SCALE	NONE	ADVERTISED DATE	APR 19, 2013	CONTRACT NO.	MO1315177
DESIGNED BY	LL	COUNTY	MONTGOMERY		
DRAWN BY	LL/BDL	LOGMILE	15002820.34		
CHECKED BY	NMR	TIMS NO.	L510		
F.A.P. NO.	AC-NHPP-G-5010(15)E	TOD NO.			
TS NO.	545J	DRAWING	SG-02	OF	02
		SHEET NO.	2	OF	2

**ADDENDUM NO. 2**  
DATE: 04 - - 13

**MM CENTURY**  
ENGINEERING  
CONSULTING ENGINEERS - PLANNERS  
10710 GILROY ROAD  
HUNT VALLEY, MD 21031  
PHONE: (410) 589-2400  
FAX: (410) 589-2401  
REVISION 'J' CEI PROJECT NO. 27257.49