

I. GENERAL PROJECT DESCRIPTION

This project involves the installation of a new traffic signal at the intersection of MD 182 (Layhill Road) and the MD 200 On- and Off-Ramps in Montgomery County.

II. INTERSECTION OPERATION

- The intersection is to operate in a NEMA 6-phase, semi-actuated mode. The left turn phase along NB MD 182 shall operate with exclusive-permissive left turn phasing and along SB MD 182 shall operate with exclusive left turn phasing. Video detection will be installed at this location.

NOTES

- For pavement markings, refer to the pavement marking plans, as applicable; other than those detailed on the plan. All pavement markings shall be installed in accordance with Administration standards.
- The contractor shall be responsible for terminating all signal cable to the appropriate terminals and properly labeling each cable.
- 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 the appropriate 800 series Standard Plates. The contractor shall verify ultimate grades prior to the installation of all signal equipment.
- The contractor shall be responsible for delivering the video interface equipment to the Montgomery County Signal Shop. County forces will complete the retrofit of all signal equipment.
- Disconnecting and splicing of interconnect cable shall be performed by Montgomery County Forces. The contractor shall run the interconnect cable into the base of each cabinet and properly tag the cable. Contact Mr. Kamal Hamud of Montgomery County's Transportation Management Center at (240) 777-8761 seventy-two hours in advance of intended work.
- All underground and overhead 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 marked 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. Controller, cabinet, and APS equipment shall be purchased from Econolite and delivered to the Montgomery County Signal Shop for wiring and testing prior to installation.
- The Contractor shall maintain interconnect throughout all construction phases.
- APS will function as follows:
TO CROSS MD 200 RAMP:
a. When pedestrian locates and presses pushbutton for extended time, the audible message will be "Wait to cross MD 200 Ramp at Layhill Road."
b. When Walk phase begins, the message will be a rapid tick which will last for the duration of the Walk phase.
TO CROSS LAYHILL ROAD:
a. When pedestrian locates and presses pushbutton for extended time, the audible message will be "Wait to cross Layhill Road at MD 200."
b. When Walk phase begins, the message will be a rapid tick which will last for the duration of the Walk phase.
- Pushbuttons are to be located so that they can be activated by a person in a wheelchair reaching less than 18" from a 60" x 60" level landing area with a cross slope of less than or equal to 2%.
- The 10' separation between pushbuttons is to be measured from face of pushbutton to face of pushbutton, not center of pole to center of pole. Pedestrian pushbutton poles shall be installed so as to maintain a minimum 5' wide clear pedestrian pathway.
- Pushbutton arrows are to be parallel to the crossing for which they are intended.
- Location of accessible pedestrian signal pushbuttons must meet location requirements of the MD MUTCD Sec. 4E.09 and Fig. 4E.2 and the NCHRP publication "Accessible pedestrian signals: Guide to the best practice." If not met, the contractor is to stop work on pushbutton locations until a design waiver is obtained, approved by the Director, Office of Traffic & Safety.

CONTACTS

DISTRICT MR. BRIAN YOUNG ASSISTANT DISTRICT ENGINEER - TRAFFIC 301-513-7318 MR. KEVIN NOWAK ASSISTANT DISTRICT ENGINEER - CONSTRUCTION 301-513-7336 MR. VERNON STINNETT ASSISTANT DISTRICT ENGINEER - MAINTENANCE 301-513-7304 MR. AUGIE REBISH UTILITY ENGINEER 301-513-7350 MONTGOMERY COUNTY MR. KEITH LORD 301-279-1971 MR. KAMAL HAMUD TRAFFIC ENGINEER - MCTMC 240-777-8761	OFFICE OF TRAFFIC AND SAFETY MR. RICHARD DAFF SR. CHIEF, TRAFFIC OPERATIONS 410-787-7630 MR. ROBERT SNYDER ASSISTANT DIVISION CHIEF, TRAFFIC OPERATIONS 410-787-7630 MR. ED RODENHIZER TEAM LEADER SIGNAL OPERATIONS 410-787-7650 MR. EUGENE BAILEY TEAM LEADER SIGN OPERATIONS 410-787-7670 MS. DARLENE EIDE SUPPLY OFFICER IV (SIGNAL SHDP WAREHOUSE) 410-787-7668
---	--

EQUIPMENT LIST

A. EQUIPMENT TO BE FURNISHED BY STATE HIGHWAY ADMINISTRATION

CAT CODE	DESCRIPTION	UNITS	QUANTITY
203030	TEST PIT EXCAVATION	CY	7
585621	12 INCH WHITE PERMANENT PREFORMED THERMO. PAVEMENT MARKING	LF	1075
585625	24 INCH WHITE PERMANENT PREFORMED THERMO. PAVEMENT MARKING	LF	225
800000	16 INCH LED COUNTDOWN PEDESTRIAN SIGNAL HEAD SECTION POLE MOUNT	EA	8
800000	AUDIBLE TACTILE PEDESTRIAN PUSH BUTTON BASE UNIT	EA	1
800000	AUDIBLE TACTILE PEDESTRIAN PUSH BUTTON STATION	EA	8
800000	CONTROL CABLE 200 FOOT VIDEO DETECTION CAMERA TO CONTROLLER	EA	2
800000	CONTROL CABLE 1000 FOOT VIDEO DETECTION CAMERA TO CONTROLLER	EA	2
800000	ECONOLITE NEMA 6 BASE-MOUNTED CABINET AND CONTROLLER WITH VIDEO INTERFACE	EA	1

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

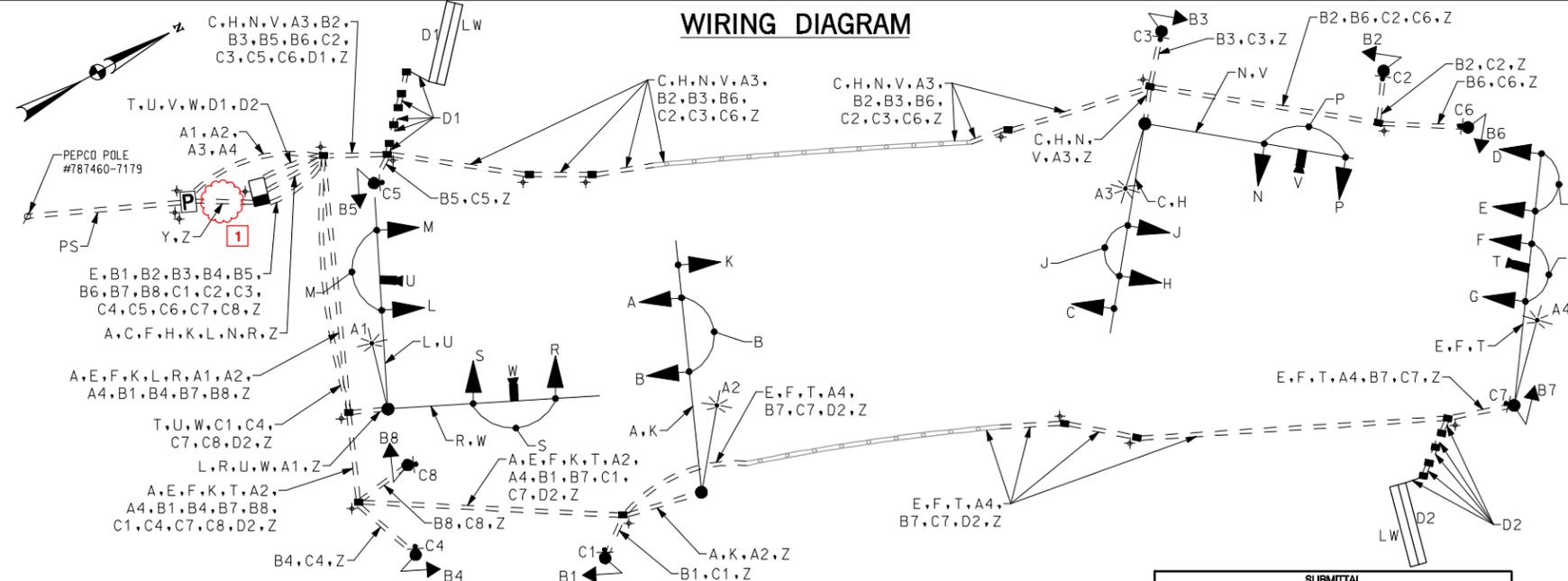
CAT CODE	DESCRIPTION	UNITS	QUANTITY
801004	CONCRETE FOR SIGNAL FOUNDATIONS	CY	22
801106	WOOD SIGN SUPPORTS 4 INCH X 6 INCH	LF	35
801605	SHEET ALUMINUM SIGNS	SF	125
802501	NO. 6 AWG STRANDED BARE COPPER GROUND WIRE	LF	1700
805125	2 INCH SCHEDULE 80 PVC CONDUIT - TRENCHED	LF	1600
805135	3 INCH SCHEDULE 80 PVC CONDUIT - TRENCHED	LF	90
805140	4 INCH SCHEDULE 80 PVC CONDUIT - TRENCHED	LF	900
805160	1 INCH LIQUID TIGHT FLEXIBLE NON-METALLIC CONDUIT FOR DETECTOR SLEEVE	LF	40
807202	METERED SERVICE PEDESTAL	EA	1
811001	FURNISH AND INSTALL ELECTRICAL HANDHOLE	EA	22
813015	INSTALL OVERHEAD SIGN	SF	92
816001	VIDEO DETECTION CAMERA	EA	4
818004	10 FOOT BREAKAWAY PEDESTAL POLE	EA	7
818021	STEEL POLE WITH TWIN 50 FOOT MAST ARMS	EA	2
818041	STEEL POLE WITH A SINGLE 60 FOOT MAST ARM	EA	2
821003	BREAKAWAY BASE SUPPORT SYSTEM FOR SIGNAL STRUCTURE	EA	3
831010	250 WATT HIGH PRESSURE SODIUM LAMP AND LUMINAIRE	EA	4
837001	GROUND ROD - 3/4 INCH DIA. X 10 FOOT LENGTH	EA	18
860284	12 INCH LED VEHICULAR TRAFFIC SIGNAL HEAD SECTION	EA	52
861104	ELECTRICAL CABLE - 2 CONDUCTOR (ALUMINUM SHIELDED)	LF	2500
861105	ELECTRICAL CABLE - 2 CONDUCTOR (NO. 14 AWG)	LF	3450
861107	ELECTRICAL CABLE - 5 CONDUCTOR (NO. 14 AWG)	LF	4325
861108	ELECTRICAL CABLE - 7 CONDUCTOR (NO. 14 AWG)	LF	3775
861116	ELECTRICAL CABLE - 2 CONDUCTOR (NO. 12 AWG)	LF	1950
861117	ELECTRICAL CABLE - 3 WIRE (NO. 4 AWG)	LF	35
862101	LOOP WIRE ENCASED IN FLEXIBLE TUBING (NO. 14 AWG)	LF	880
862102	SAW CUT FOR SIGNAL (LOOP DETECTOR)	LF	220
866103	15 FOOT LIGHTING ARM ON SIGNAL STRUCTURE	EA	2
866104	20 FOOT LIGHTING ARM ON SIGNAL STRUCTURE	EA	2



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 02 AND 05	R	R	←R	←R	←R	R	R	G	G	←G/G	←G/G	G	R	R	R	R	DW	WALK	WALK	DW	DW	DW	DW	DW
02 AND 05 CHANGE	R	R	←R	←R	←R	R	R	G	G	←YG	←YG	G	R	R	R	R	DW	WALK	WALK	DW	DW	DW	DW	DW
PHASE 02 AND 06	G	G	←R	←R	←R	G	G	G	G	G	G	R	R	R	R	R	WALK	WALK	WALK	WALK	DW	DW	DW	DW
PED CLEARANCE	G	G	←R	←R	←R	G	G	G	G	G	G	R	R	R	R	R	WALK	FLDW	FLDW	WALK	DW	DW	DW	DW
02 AND 06 CHANGE	G	G	←R	←R	←R	G	G	Y	Y	Y	Y	R	R	R	R	R	WALK	DW	DW	WALK	DW	DW	DW	DW
PHASE 01 AND 06	G	G	←G	←G	←G	G	G	R	R	R	R	R	R	R	R	R	WALK	DW	DW	WALK	DW	DW	DW	DW
PED CLEARANCE	G	G	←G	←G	←G	G	G	R	R	R	R	R	R	R	R	R	FLDW	DW	DW	FLDW	DW	DW	DW	DW
01 AND 06 CHANGE	Y	Y	←G	←G	←G	G	G	R	R	R	R	R	R	R	R	R	DW							
PHASE 03	R	R	←G	←G	←G	G	G	R	R	R	R	R	R	R	R	G	DW							
03 CHANGE	R	R	←Y	←Y	←Y	Y	Y	R	R	R	R	R	R	R	R	Y	DW							
PHASE 03 ALT	R	R	←G	←G	←G	G	G	R	R	R	R	R	R	R	R	G	DW	DW	DW	DW	WALK	DW	DW	WALK
PED CLEARANCE	R	R	←G	←G	←G	G	G	R	R	R	R	R	R	R	R	G	DW	DW	DW	DW	FLDW	DW	DW	FLDW
03 ALT CHANGE	R	R	←Y	←Y	←Y	Y	Y	R	R	R	R	R	R	R	R	Y	DW							
PHASE 04	R	R	←R	←R	←R	R	R	R	R	←G/G	←G/G	G	G	G	R	R	DW							
04 CHANGE	R	R	←R	←R	←R	R	R	R	R	←G/G	←G/G	G	Y	Y	R	R	DW							
PHASE 04 ALT	R	R	←R	←R	←R	R	R	R	R	←G/G	←G/G	G	G	G	R	R	DW	DW	DW	DW	DW	WALK	WALK	DW
PED CLEARANCE	R	R	←R	←R	←R	R	R	R	R	←G/G	←G/G	G	G	G	R	R	DW	DW	DW	DW	DW	FLDW	FLDW	DW
04 ALT CHANGE	R	R	←R	←R	←R	R	R	R	R	←GG	←GG	Y	Y	Y	R	R	DW							
FLASHING OPERATION	FLY	FLY	FLR	FLR	FLR	FLY	FLY	FLY	FLY	FLY	FLY	FLY	FLR	FLR	FLR	FLR	DARK							

WIRING DIAGRAM



KEY

A, C, F, H, K, L, N, R	7 CONDUCTOR ELECTRICAL CABLE (NO. 14 AWG)
B, D, E, G, J, M, P, S, B1, B2, B3, B4, B5, B6, B7, B8	5 CONDUCTOR ELECTRICAL CABLE (NO. 14 AWG)
C1, C2, C3, C4, C5, C6, C7, C8	2 CONDUCTOR ELECTRICAL CABLE (NO. 14 AWG)
T, U, V, W	VIDEO DETECTION CABLE
A1, A2, A3, A4	2 CONDUCTOR ELECTRICAL CABLE (NO. 12 AWG) TRAY CABLE
Y	3 WIRE 1 CONDUCTOR (NO. 4 AWG THHN/THWN)
Z	1 CONDUCTOR (NO. 6 AWG) STRANDED COPPER GROUND WIRE
D1, D2	2 CONDUCTOR ELECTRICAL CABLE ALUMINUM SHIELDED
LW	LOOP WIRE
PS	3 WIRE 250 KCMIL TYPE USE
+	GROUND ROD

SUBMITTAL
SDSTS-LAY-FIN1

SHA STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
OFFICE OF TRAFFIC & SAFETY
TRAFFIC ENGINEERING DESIGN DIVISION
MD 182 (LAYHILL ROAD)
AT THE MD 200 (ICC) RAMPS
LAYHILL, MARYLAND

REVISIONS		GENERAL INFORMATION SHEET	
0	SDSTS-LAY-FIN1	SCALE NOT TO SCALE	DATE JANUARY 2009 CONTRACT NO. AT3765980
1	NDC-054	DESIGNED BY A. GRIFFIN	COUNTY MONTGOMERY
		DRAWN BY A. GRIFFIN	LOGMILE 16018202.86
		CHECKED BY K. RINKER	TIMS NO. K129
		F.A.P. NO. AC-NH-ICC-101N	TOD NO.
TS NO. 4880	DRAWING pSG OF N003	SHEET NO.	OF

MD 200 Constructors
ISSUED FOR CONSTRUCTION
Date: 4/26/10 Initials: JM

MD 200 Constructors
a Joint Venture
17710 BELTSVILLE DRIVE • BELTSVILLE, MARYLAND 20705
301-755-2000