DRILL HOLES

BORDER REV: DATE: June 1, 2004

PROJECT DESCRIPTION

I. GENERAL

This project involves the reconstruction of an existing Traffic Control Signal with interconnect at the intersection of MD 410 (East-West Hwy) and Grubb Road in Montgomery County. The existing strain poles shall be replaced with mast arms and existing pedestrian signal heads shall be replaced with Countdown pedestrian signals. MD 410 (East-West Hwy) is assumed to run a east-west direction.

II. INTERSECTION OPERATION

1. The intersection is to operate in a NEMA six-phase, semi-actuated mode, with the MD 410 (East-West Hwy) approaches running concurrently. The Exclusive/Permissive left turn phase for the eastbound and westbound approaches of MD 410 (East-West Hwy) will continue to operate as normal. Countdown pedestrian phases with audible pushbutton actuation shall be provided for all legs of this intersection. The Countdown pedestrian phase with audible pushbuttons across MD 410 (East-West Hwy) shall be on recall. The Grubb Road approach shall continue to operate concurrently.

2. A proposed eight-phase controller, shall be used to house the 2-wire Control Unit and all necessary equipment in a NEMA size "6" base-mounted cabinet at this intersection.

3. Montgomery County signal shop shall install APS control unit into controller cabinet. The Contractor shall deliver the Control Unit and audible pushbuttons to the Montgomery County Signal Shop for testing and programming two weeks prior to beginning work.

III. SPECIAL NOTES

1. The Contractor shall be responsible for terminating all signal cables, excluding interconnect, to the appropriate terminals and shall properly label each cable.

2. All controller cabinet wiring will be performed by the Montgomery County Signal Shop. Contact Mr. Kamal Hamud at (240) 777-8761 seventy-two hours in advance of intended work.

3. 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 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.

4. APS will function as follows:

FOR MD 410 (EAST-WEST HWY)

a. When pedestrian locates and presses pushbutton for an extended time, the pushbutton unit will announce " Wait to cross East-West at Grubb"

b. When WALK phase begins, the message will be a rapid tick which will last for the duration of the WALK phase.

FOR GRUBB ROAD

a. When pedestrian locates and presses pushbutton for an extended time, the pushbutton unit will announce " Wait to cross Grubb at East-West"

b. When WALK phase begins, the message will be a rapid tick which will last for the duration of the WALK phase.

The contacts for Montgomery County are as follows:

Mr. Jeff Wentz
Assistant District Engineer - Traffic
Phone: (301) 513-7318

Mr. Richard L. Daff, Sr.
Chief, Traffic Operations Division
Phone: (410) 787-7630

Mr. Mike Kinney
Mont. County Traffic
240-777-8760

Mr. Wayne Mowdy
Assistant District Engineer - Maintenance
Phone: (301) 513-7304

Mr. Keith Lord
Signal Shop (Mont Co.)
301-674-8965

Mr. Kamal Hamud
Mont. County TMC Center
240-777-8761

Mr. Augie Rebish
District Engineer - Utility
Phone: (301) 513-7350

Mr. Sonny Bailey
Sign Shop
410-787-7670

EQUIPMENT LIST

A. EQUIPMENT TO BE SUPPLIED BY S.H.A.

ITEM NO.	DESCRIPTION	QUANTITY
9042	Controller ASC II with telemetry	1 EA
9044	Controller cabinet, size "6"	1 EA
9086	Video detection interface equipment: 1-4 cameras (to be installed by signal shop).	1 EA
9570	Sheet aluminum signs to consist of: (ground mount)	60 S.F.
	R4-7 "KEEP RIGHT (symbolic)" sign, (24" x 30") ground mounted	1 EA
	W16-7P(L) "arrow (symbolic)" diagonal sign. (12" x 24") ground mounted.	5 EA
	S1-1 "SCHOOL" sign. (36" x 36") ground mounted.	5 EA
9571	Sheet aluminum signs to consist of: (mast arm or pole mount)	93 S.F.
	D-3(1) "Grubb Rd (8400/ Grubb Rd 8400) sign", dual-face (variable x 16"), mast arm mounted.	2 EA
	R3-5R "RIGHT TURN ONLY" sign, (30" x 36") mast arm mounted.	1 EA
	R3-5L "LEFT TURN ONLY" sign, (30" x 36") mast arm mounted.	2 EA
	R10-11b "NO TURN ON RED" sign. (24"x24"). mast arm mounted.	3 EA
	S5-1 "SCHOOL SPEED LIMIT 25 WHEN FLASHING" sign. (48" x 24") pedestal mounted.	1 EA

EQUIPMENT LIST (CON'T)

A. EQUIPMENT TO BE SUPPLIED BY S.H.A.

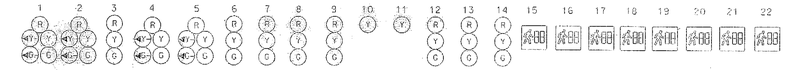
ITEM NO.	DESCRIPTION	QUANTITY
	S5-1 "SCHOOL SPEED LIMIT 25 WHEN FLASHING" sign. (48" x 24") pedestal mounted.	1 EA
	Pedestrian education R10-3(1) mod sign. (Note: Sign to read "PUSHBUTTON TO CROSS EAST-WEST HWY".)	4 EA
	Pedestrian education R10-3(1) mod sign. (Note: Sign to read "PUSHBUTTON TO CROSS GRUBB ROAD".)	4 EA
	M95-1 (mod) "East-West Hwy / WEST (arrow) / MD 410 / EAST (arrow)" sign (78"x24")	1 EA
	M95-1 (mod) "East-West Hwy / EAST (arrow) / MD 410 / WEST (arrow)" sign (78"x24")	1 EA

EQUIPMENT LIST

B. EQUIPMENT TO BE FURNISHED AND INSTALLED BY THE CONTRACTOR

ITEM NO.	DESCRIPTION	QUANTITY
1003	Maintenance of traffic per assignment.	3 EA
2001	Class 2 Excavation.	6 C.Y.
2002	Test Pit Excavation	12 C.Y.
5003	Removal of existing permanent pavement line markings	2050 L.F.
5004	12" white heat applied permanent preformed thermoplastic pavement marking.	2050 L.F.
5005	24" white heat applied permanent preformed thermoplastic pavement marking.	200 L.F.
6001	Standard type A combination curb and gutter 12" gutter pan 8" depth.	400 L.F.
6002	5" concrete sidewalk.	1470 S.F.
6003	Detectable warning surfaces for curb ramps.	300 L.F.
8001	12" LED signal head section	45 EA
8002	2 wire Central Control unit	1 EA
8007	Any size lighting arm on signal pole with 250 watt HPS lamp & luminaire.	1 EA
8008	Audible/tactile pedestrian pushbutton station & signs.	8 EA
8009	Breakaway Pedestal pole (any size)	6 EA
8012	Metered service pedestal embedded	1 EA
8016	LED 16" countdown pedestrian signal head.	8 EA
8018	Mast arm pole and 38' mast arm any "I" dimension	2 EA
8020	Mast arm pole and 60' mast arm any "I" dimension	1 EA
8021	Mast arm pole and 70' mast arm any "I" dimension	1 EA
8024	Remove and dispose of material & equipment per assignment.	1 EA
8028	Video detection camera & cable up to 500'	4 EA
8032	Disconnect, pull back and reroute cable.	300 L.F.
8034	Schedule 80 rigid PVC conduit up to 4" - bored.	550 L.F.
8036	Schedule 80 rigid PVC conduit up to 4" - trenched.	625 L.F.
8038	Install overhead or ground mounted sign (including hardware).	153 L.F.
8043	Electrical cable - 1 conductor No. 8 AWG - THHN/THWN	100 L.F.
8044	Furnish and install electrical handhole.	7 EA
8049	Cut, clean, galvanize and cap traffic signal structure	1 EA
8050	Electrical cable - 2 conductor (aluminum shielded)	430 L.F.
8051	Electrical cable - 2 conductor (No. 14 AWG).	1130 L.F.
8053	Electrical cable - 5 conductor (No. 14 AWG).	1250 L.F.
8054	Electrical cable - 7 conductor (NO. 14 AWG).	2400 L.F.
8061	Install controller and cabinet base mount.	1 EA
8062	1-Conductor Electrical Cable, No. 2 AWG/THHN	110 L.F.

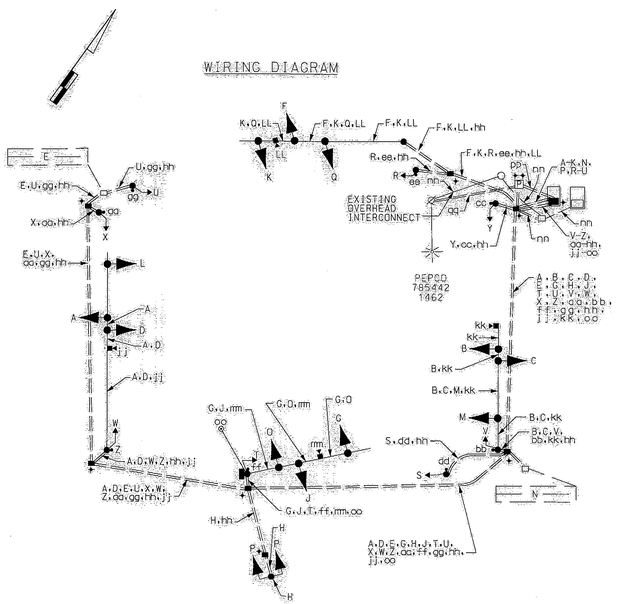
PHASE CHART



	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
PHASE 1 & 5	◄G-/R	◄G-/R	◄G-/R	◄G-/R	R	R	R	R	DARK	DARK	R	R	R	DW	DW	DW	DW	DW	DW	DW	DW	DW
CHANGES TO PHASES	1 & 6,	2 & 5	OR 2 & 6																			
PHASE 1 & 6	◄G-/G	◄G-/G	G	R	R	R	R	R	R	DARK	DARK	R	R	R	DW	DW	DW	DW	DW	DW	DW	DW
1 & 6 CHANGE	◄Y-/Y	◄Y-/Y	Y	R	R	R	R	R	R	DARK	DARK	R	R	R	DW	DW	DW	DW	DW	DW	DW	DW
PHASE 2 & 5	R	R	R	◄G-/G	◄G-/G	G	R	R	R	DARK	DARK	R	R	R	DW	DW	DW	DW	DW	DW	DW	DW
2 & 5 CHANGE	R	R	R	◄Y-/Y	◄Y-/Y	Y	R	R	R	DARK	DARK	R	R	R	DW	DW	DW	DW	DW	DW	DW	DW
PHASE 2 & 6	G	G	G	G	G	G	R	R	R	DARK	DARK	R	R	R	WK	WK	WK	WK	DW	DW	DW	DW
PED CLEAR / COUNTDOWN	G	G	G	G	G	G	R	R	R	DARK	DARK	R	R	R	FL/DW	FL/DW	FL/DW	FL/DW	DW	DW	DW	DW
2 & 6 CHANGE	Y	Y	Y	Y	Y	Y	R	R	R	DARK	DARK	R	R	R	DW	DW	DW	DW	DW	DW	DW	DW
PHASE 4 & 8	R	R	R	R	R	R	G	G	G	DARK	DARK	G	G	G	DW	DW	DW	DW	DW	DW	DW	DW
4 & 8 CHANGE	R	R	R	R	R	R	Y	Y	Y	DARK	DARK	Y	Y	Y	DW	DW	DW	DW	DW	DW	DW	DW
PHASE 8 ALT	R	R	R	R	R	R	G	G	G	DARK	DARK	G	G	G	DW	DW	DW	DW	WK	WK	WK	WK
PED CLEAR / COUNTDOWN	R	R	R	R	R	R	G	G	G	DARK	DARK	G	G	G	DW	DW	DW	DW	FL/DW	FL/DW	FL/DW	FL/DW
8 ALT CHANGE	R	R	R	R	R	R	Y	Y	Y	DARK	DARK	Y	Y	Y	DW	DW	DW	DW	DW	DW	DW	DW
FLASHING OPERATION	FL/Y	FL/Y	FL/Y	FL/Y	FL/Y	FL/Y	FL/R	FL/R	FL/R	DARK	DARK	FL/R	FL/R	FL/R	DARK	DARK	DARK	DARK	DARK	DARK	DARK	DARK

Note: Signal Heads 10 & 11 will remain dark and will only flash yellow during school hours.

WIRING DIAGRAM



WIRING KEY

- A,B,C,D,E,F,G,H,J,K — 7-CONDUCTOR ELECTRICAL CABLE (NO. 14 A.W.G.)
- E,N — 2-CONDUCTOR ALUMINUM SHIELDED SPLICED TO EXISTING LOOPWIRE
- L,M,P,R,S,U,V,W,X,Y — 5-CONDUCTOR ELECTRICAL CABLE (NO. 14 A.W.G.)
- Z,aa,bb,cc,dd,ee,ff,gg — 2-CONDUCTOR ELECTRICAL CABLE (NO. 14 A.W.G.)
- hh - STRANDED BARE COPPER GROUND WIRE (NO. 6 A.W.G.)
- jj, kk, ll, mm — CONTROL CABLE (CAMERA TO CONTROLLER) 500'
- nn - RELOCATED 3 RUNS OF INTERCONNECT CABLE (PULLED BACK FROM EXISTING CABINET)
- oo - RELOCATED SURVEILLANCE CAMERA CABLE (BY MCDOT)
- PP - 3-1 CONDUCTOR ELECTRICAL CABLE NO. 8 AWG THHN/THWN
- qq - 3-1 CONDUCTOR ELECTRICAL CABLE NO. 2 AWG/THHN
- + - GROUND ROD

C. EQUIPMENT TO BE REMOVED

Montgomery County Forces shall remove the controller and all auxilliary equipment from the controller cabinet. The cabinet and all other removed signal materials are to become property of the contractor.

STREET TRAFFIC STUDIES, LTD.
400 Crain Hwy. NW.
Glen Burnie, MD 21061
Ph (410) 590-5500
Fax (410) 590-6637

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STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION

MD 410 and GRUBB ROAD

SILVER SPRING, MARYLAND

GENERAL INFORMATION SHEET

SCALE NONE	DATE 7/20/09	CONTRACT NO. XX3545168R	
DESIGNED BY JAMES ALLEN JR.		COUNTY MONTGOMERY	
DRAWN BY JAMES ALLEN JR.		LOGMILE 15041002.54	
CHECKED BY		TIMS NO. J024	
F.A.P. NO.		TOD NO.	
TS NO. 10731A	DRAWING NO. 2 OF 2	SHEET NO. OF	

PLOTTED: WEDNESDAY, FEBRUARY 24, 2010 AT 12:13 PM
FILE: J:\DATA\J024\STS PLANS\STS PSE 7.28.09\5554GI-2.DGN