PROJECT DESCRIPTION

I. GENERAL

This project involves the reconstruction of an existing Traffic Control Signal with street lighting and interconnect at the intersection of US 40 and Frederick Road/ Pine Orchard Lane in Howard County. The existing span wire signal shall be replaced with a mast arm traffic signal. US 40 is assumed to run an east-west direction.

II. INTERSECTION OPERATION

1. The intersection is to operate in a NEMA six-phase, fully-actuated mode, with the US 40 approaches continuing to run concurrently. Exclusive left turn phases shall continue to be provided for both approaches of US 40. Farside sampling stations shall remain in use on west leg of US 40 at this intersection. The Frederick Road and Pine Orchard Lane approaches shall now operate as a split phase.

2. A full-traffic-actuated, eight-phase controller with (4) - four channel, rack mount loop detector amplifiers housed in a NEMA size "6" base-mounted cabinet shall be installed at this intersection.

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 S.H.A. Signal Shop Contact Mr. Ed Radenhizer(Dave Swartz) at (410) 787-7650 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.

EQUIPMENT LIST

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

ITEM NO.	DESCRIPTION	QUANTITY
9027	(Updated) 50/70 Mast arm twin x 23' pole	1 EA
9032	(Updated) 70' Mast arm x 27' pole	1 EA
9067	15' Clamp on lighting arm	1 EA
9067	(Updated) Ped Pole 14" with T-base and anchor bolts	1 EA
9081	Eight-phase, full-traffic actuated, solid state digital controller with (four) 4-channel, rack mount loop detector amplifiers, housed in a NEMA size "6" base-mounted, cabinet.	1 EA
9089	Sheet aluminum signs to consist of:	113 SF
	R3-5L "LEFT TURN ONLY" sign, (30" x 36") mast arm mounted.	2 EA
	R3-6R "THRU AND RIGHT TURN" sign, (30" x 36") mast arm mounted.	1 EA
	R3-6 MOD "LEFT, THRU AND RIGHT TURN" sign, (30" x 36") mast arm mounted.	1 EA
	R7-1 (1) "NO PARKING (SYMBOL)" sign (12"x18") ground mounted.	1 EA
	R7-1 (L) "NO PARKING (SYMBOL)" sign (12"x18") ground mounted.	1 EA
	R3-8 MOD "LEFT / LEFT THRU AND RIGHT TURN" sign (42"x30") ground mounted	3 EA
	GUIDE SHIELD ASSEMBLY (36"x75") pole mounted. M3-4 "WEST"(30"X15") M1-4 "US 40"(36"X36") M6-1 "left arrow "(36"X24")	1 EA
	GUIDE SIGN ground mounted. M3-4 "WEST"(24"X12") M1-4 "US 40"(24"X24") M6-1 "right arrow "(21"X15")	1 EA
	GUIDE SIGN ground mounted. M3-2 "EAST"(30"X15") M1-4 "US 40"(36"X36") M6-1 "left arrow "(36"X24")	1 EA
	GUIDE SIGN ground mounted. M3-2 "EAST"(24"X12") M1-4 "US 40"(24"X24") M6-1 "right arrow "(21"X15")	1 EA
9090	Sheet aluminum signs to consist of: (Blue or Green)	61 SF
	D3-2 "(arrow) Frederick RD / Pine Orchard LA (arrow)", sign (variable x 32") mast arm mounted.	1 EA
	D3-2 "(arrow) Pine Orchard LA / Frederick RD (arrow)", sign (variable x 32") mast arm mounted.	1 EA
	D3-2 "Balto. Nat'l PK", sign (variable x 16") mast arm mounted.	2 EA

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

ITEM NO.	DESCRIPTION	QUANTITY
Neg.	Mobilization	1 LS
1001	Maintenance of traffic per assignment.	3 EA
2001	Class 2 Excavation.	1 C.Y.
2002	Test Pit Excavation	5 C.Y.
5001	Heat applied permanent preformed thermoplastic pavement marking arrow. (left, thru, right).	4 EA

EQUIPMENT LIST (CONT.)

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

ITEM NO.	DESCRIPTION	QUANTITY
5001	Heat applied permanent preformed thermoplastic pavement marking arrow. (left).	4 EA
5002	Heat applied permanent preformed thermoplastic pavement marking letter. (O-N-L-Y)	8 EA
5006	5" white heat applied permanent preformed thermoplastic pavement marking.	630 L.F.
5007	5" yellow heat applied permanent preformed thermoplastic pavement marking.	70 L.F.
5008	Remove existing pavement markings - any width.	420 L.F.
6004	4" concrete sidewalk.	40 S.F.
8011	Furnish and install 12" vehicular traffic signal head section	39 EA
8013	Furnish and install 15' bracket arm for traffic signal structure.	1 EA
8014	Furnish and install 250 watt HPS Luminaire with photocell.	2 EA
8019	Furnish and install 8" vehicular traffic signal head section.	3 EA
8020	Furnish and install control and distribution equipment (120/240 V, 1 phase 3 wire system).	1 EA
8029	Furnish and install microloop probe set with 500' lead-in	4 EA
8039	Install steel pole and single mast arm	1 EA
8040	Install steel pole and twin mast arms	2 EA
8043	Furnish and install non-invasive probe set with 1000' lead-in cable.	4 EA
8047	Remove and dispose of existing foundation 12" below grade.	5 EA
8048	Remove and dispose of existing material and equipment per assignment.	1 EA
8051	Furnish and install 3" schedule 80 rigid polyvinyl chloride conduit - trenched	430 L.F.
8052	Furnish and install 4" schedule 80 rigid polyvinyl chloride conduit - bored.	265 L.F.
8053	Furnish and install 4" schedule 80 rigid polyvinyl chloride conduit - trenched.	30 L.F.
8057	Furnish and install concrete for signal foundation.	14 C.Y.
8058	Furnish and install wood sign supports 4" x 4".	125 L.F.
8059	Furnish and install wood sign supports 4" x 6".	60 L.F.
8060	Furnish and install No. 6 AWG stranded bare copper ground wire.	700 L.F.
8062	Furnish and install 1" electrical conduit galvanized sleeve.	25 L.F.
8064	Furnish and install 3" schedule 80 rigid polyvinyl chloride conduit - bored.	210 L.F.
8068	Furnish and install 1" liquid tight flexible non-metallic conduit for detector sleeve.	25 L.F.
8072	Furnish and install electrical handhole.	11 EA
8074	Install ground mounted sign.	64 S.F.
8075	Install overhead sign.	110 S.F.
8078	Furnish and install connector kit - Type 1.	1 EA
8079	Furnish and install connector kit - Type 2.	1 EA
8080	Furnish and install ground rod -3/4" x 10'.	5 EA
8081	Furnish and install electrical cable - 2 conductor (aluminum shielded).	900 L.F.
8084	Furnish and install electrical cable - 5 conductor (No. 14 AWG).	1255 L.F.
8085	Furnish and install electrical cable - 7 conductor (No. 14 AWG).	720 L.F.
8086	Furnish and install tray cable - 2 conductor (No. 12 AWG).	390 L.F.

EQUIPMENT LIST (CONT.)

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

ITEM NO.	DESCRIPTION	QUANTITY
8087	Furnish and install loop wire encased in flexible tubing (No. 14 AWG).	2735 L.F.
8088	Furnish and install saw cut for signal (loop detector).	685 L.F.
8093	Install controller and cabinet base mount.	1 EA
Neg.	Replace and install frame and cover for handhole.	1 EA
Neg.	Pull back and reroute 12-pair interconnect cable	265 L.F.
Neg.	Pull back and reroute 2 conductor (aluminum shielded) cable.	170 L.F.
Neg.	Furnish and install 40' lighting structure with 15' bracket arm	1 EA
Neg.	Furnish and install breakaway base support system for lighting structure.	1 EA
Neg.	Install ped pole on breakaway base	1 EA

C. EQUIPMENT TO BE REMOVED AND RETURNED TO SHA

All removed signal materials are to become property of the contractor.

The contact persons for District #7 are as follows:

Mr. John Concannon
Assistant District Engineer - Traffic
Phone: (310) 624-8141

Mr. Dave Coyne
Assistant District Engineer - Maintenance
Phone: (310) 624-8106

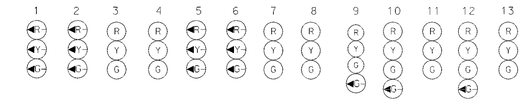
Mr. Jim Buckalew
District Engineer - Utility
Phone: (301) 624-8110

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

The power company representative is:

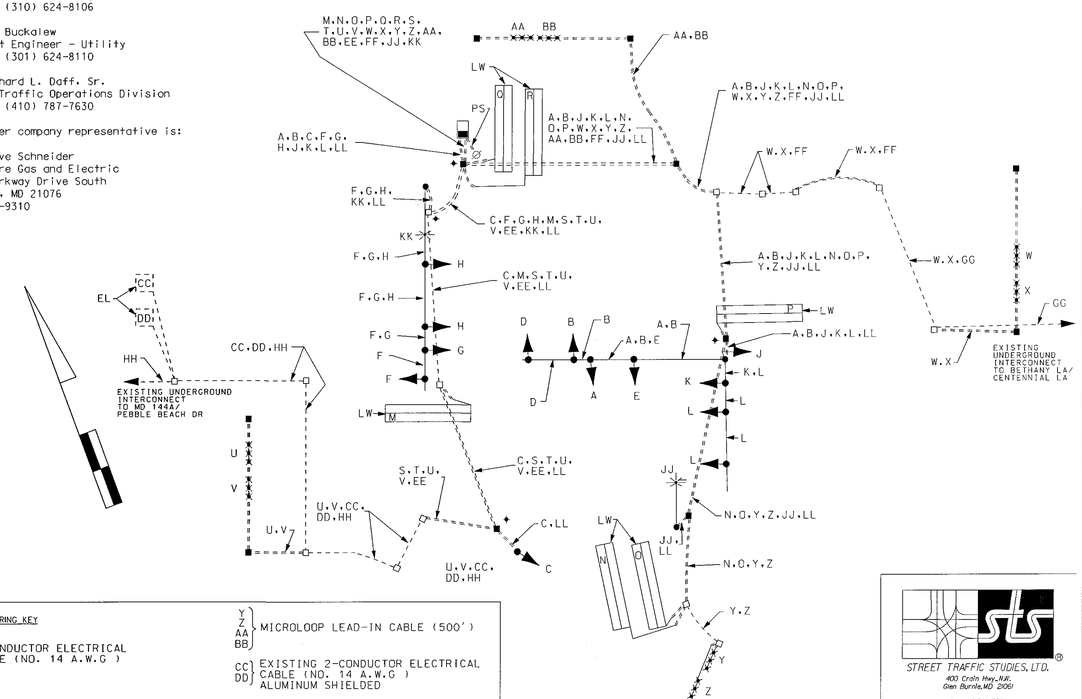
Mr. Steve Schneider
Baltimore Gas and Electric
7317 Parkway Drive South
Hanover, MD 21076
410-859-9310
WMS#

PHASE CHART



PHASE 1 & 5	G	G	R	R	G	G	R	R	R	R	R	R	R	
CHANGES TO PHASES 1 & 6, 2 & 5 OR 2 & 6														
PHASE 1 & 6	G	G	G	G	R	R	R	R	R	R	R	R	R	
1 & 6 CHANGE	Y	Y	G	G	R	R	R	R	R	R	R	R	R	
PHASE 2 & 5	R	R	R	R	G	G	G	G	R	R	R	R	R	
2 & 5 CHANGE	R	R	R	R	Y	Y	G	G	R	R	R	R	R	
PHASE 2 & 6	R	R	G	G	R	R	G	G	R	R	R	R	R	
2 & 6 CHANGE	R	R	Y	Y	R	R	Y	Y	R	R	R	R	R	
PHASE 3	R	R	R	R	R	R	R	R	G G	G G	G	R	R	
3 CHANGE	R	R	R	R	R	R	R	R	Y	Y	Y	R	R	
PHASE 4	R	R	R	R	R	R	R	R	R	R	R	G G	G	
4 CHANGE	R	R	R	R	R	R	R	R	R	R	R	Y	Y	
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	

WIRING DIAGRAM



WIRING KEY

A B C	7-CONDUCTOR ELECTRICAL CABLE (NO. 14 A.W.G)
D E F G H J K L	5-CONDUCTOR ELECTRICAL CABLE (NO. 14 A.W.G)
M N O P Q R	2-CONDUCTOR ELECTRICAL CABLE (NO. 14 A.W.G) ALUMINUM SHIELDED
S T	REROUTED 2-CONDUCTOR ELECTRICAL CABLE (NO. 14 A.W.G) ALUMINUM SHIELDED
U V W X	MICROLOOP LEAD-IN CABLE (1000')
Y Z AA BB	MICROLOOP LEAD-IN CABLE (500')
CC DD	EXISTING 2-CONDUCTOR ELECTRICAL CABLE (NO. 14 A.W.G) ALUMINUM SHIELDED
EE FF	REROUTED 12-PAIR VOICE GRADE INTERCONNECT CABLE (JELLY FILLED)
GG HH	EXISTING 12-PAIR VOICE GRADE INTERCONNECT CABLE (JELLY FILLED)
JJ KK	2-CONDUCTOR TRAY CABLE (NO. 14 A.W.G)
LL	STRANDED BARE COPPER GROUND WIRE (NO. 6 A.W.G.)
PS	PROPOSED UNDERGROUND POWER SERVICE BY BGE
EL	LOOP WIRE (NO. 14 A.W.G.) EXISTING
LW	LOOP WIRE (NO. 14 A.W.G.)
✦	GROUND ROD

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

4051GI.dgn TASK30

MARYLAND DOT - STATE HIGHWAY ADMINISTRATION
Office of Traffic & Safety
TRAFFIC ENGINEERING DESIGN DIVISION

US 40 @ FREDERICK RD/ PINE ORCHARD LN

DRAWN BY: ROB CICCHINI	F.A.P. NO.		TS NO. 2196-A	SHEET NO. 2 OF 3
CHECKED BY: R ZACHERL	S.H.A. NO.	HO [illegible]		
SCALE: N/A	COUNTY:	HOWARD	T.I.M.S. NO.	
DATE: 2-26-02	LOG MILE:	13004015.93		