F H W A REGION NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
3	MD			

PROJECT DESCRIPTION

I. GENERAL

This project is located at the intersection of Forest Drive @ Hilltop Lane in Anne Arundel County Maryland and involves the reconstruction of the existing signal and the geometric improvements of an additional left turn lane along Forest Drive eastbound and a right turn lane along Hilltop Lane. It is assumed that Forest Drive runs in a east-west direction.

II. INTERSECTION OPERATION

The proposed traffic signal will operate in a NEMA four (4) phase, fully traffic actuated mode. The Forest Drive approaches will operate concurrently with the Forest Drive eastbound left turns operating in an exclusive phase. The Hilltop Lane approach will operate separately.

A new eight phase fully traffic actuated 'Eagle' controller with five (5) two channel time delay output loop detector amplifiers, telemetry module, intersection monitor with battery back up and pre-emption call isolation relay package housed in a ground mounted cabinet will be installed.

III. SPECIAL NOTES

1. It is the responsiblity of the contractor to confirm geometrics prior to placing signal equipment.
2. The signal shop will be notified to perform internal wiring of the cabinet at Forest Drive @ Hilltop Lane. All cable shall be identified and brought into the controller by the contractor. The contractor shall notify Mr. Douglas Beall Signal Supervisor at (410) 222-1940 seventy-two (72) hours in advance of this work.
3. Anne Arundel County will be given at least three (3) days notice to perform striping through the intersection area. Contact Mr. at (410) 694-2595 to initiate this operation.
4. MOT ... ates for this project will be as follows: 104.107, 105.00, 01, 02, 105.101, 105.10?, 105.105, and 107.007.

CONSTRUCTION DETAILS

- (A) Not used.
- (B) Install 12'x32 foot galvanized steel pole with pedestrian signal head, pedestrain push button and push button sign, 20 foot street lighting arm with 250 watt luminaire (Note: two-three inch 90 degree PVC schedule 40 bend.)
- (C) Install 12' x 32 foot galvanized steel pole with pedestrain signal head, pedestrain push button and push button sign. (Note: 1- two inch 90 degree PVC schedule 40 bend.)
- (D) Install 12' x 32 foot galvanized steel pole with 20 foot street lighting arm and 250 watt luminaire .
- (E) Install controller and cabinet. (Note: 2-4' 90 degree PVC schedule 40 bend and 1-2' 90 degree PVC schedule 80 bend.)
- (F) Install handhole.
- (G) Install 6'x6' loop detector in 1/4 inch flexible tubing (4 turns).
- (H) Install 6'x30' loop detector in 1/4 inch flexible tubing (3-6-3 turns).
- (I) Install 1 inch liquid tight flexible non-metallic conduit and fitting (Detector Wire Sleeve).
- (J) Install 2 inch polyvinyl chloride electrical conduit schedule 40 - trenched.
- (K) Install 2 inch polyvinyl chloride electrical conduit schedule 80 - bored.
- (L) Install 3 inch polyvinyl chloride electrical conduit schedule 40 - trenched
- (M) Install 3 inch polyvinyl chloride electrical conduit schedule 80 - bored.
- (N) Install 4 inch polyvinyl chloride electrical conduit schedule 40 - trenched.
- (O) Install 24 inch preformed pavement marking tape for stop line.
- (P) Install 12 inch preformed pavement marking tape for cross walks.
- (Q) Remove and salvage existing strain pole and all attached equipment.
- (R) Install proposed pavement marking arrows.
- (S) Remove existing handhole and abandon existing conduit.
- (T) Install 3/8' steel span wire and traffic signal heads.
- (U) Remove and salvage existing controller.
- (V) Install 2 inch polyvinyl chloride electrical conduit schedule 80-trenched.
- (W) Install 2 inch polyvinyl chloride electrical conduit riser-schedule 80 for power source.

EQUIPMENT LIST

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

QUANTITY	SPEC SECTION	DESCRIPTION
4 EA	814	FURNISH 12' I WAY, 3 SECTON (R,Y,G) SIGNAL HEAD - SPAN WIRE MOUNT
6 EA	814	FURNISH 12' I WAY, 3 SECTION (RA,YA,GA) SIGNAL HEAD-SPAN WIRE MOUNT
4 EA	814	FURNISH 12'ONE-WAY, TWO-SECTION PEDESTRIAN SIGNAL HEAD-POLE MOUNT
3 EA	817	FURNISH PUSHBUTTON AND SIGN
1 EA	816	EIGHT-PHASE FULLY-ACTUATED 'EAGLE' CONTROLLER, TELEMETRY MODULE, INTERSECTION MONITOR WITH BATTERY BACK-UP AND PRE-EMPTION CALL ISOLATION RELAY PACKAGE HOUSED IN BASE MOUNTED CABINET. (TO FURNISHED BY ANNE ARUNDEL COUNTY)
8 S.F.	813	D3-2 STREET NAME SIGN (DUEL FACE) WITH SPAN WIRE MOUNTED HARDWARE (HILLTOP LANE), 16' x VARIABLE
15 S.F.	813	TWO (2) R3-6 (30"x36") SIGN WITH SPAN WIRE MOUNTED HARDWARE
4 S.F.	813	ONE (1) R3-2 (24' x 24') 'NO LEFT TURN' SIGN WITH SPAN WIRE MOUNTING HARDWARE
2.25 S.F.	813	THREE (3) R10-3C (9' x 12') SIGN WITH POLE BANDED HARDWARE
5 EA	--	FURNISH TWO CHANNEL TIME DELAY OUTPUT LOOP DETECTOR AMPLIFIERS

B. EQUIPMENT TO BE FURNISHED AND INSTALLED BY THE CONTRACTOR:

QUANTITY	SPEC SECTION	DESCRIPTION
1 L.S.	104	FURNISH AND INSTALL MAINTENANCE OF TRAFFIC
108 L.F.	—	FURNISH AND INSTALL 24' WHITE PAV'T MARKING TAPE FOR STOP LINES.
446 L.F.	—	FURNISH AND INSTALL 12' WHITE PAV'T MARKING TAPE FOR CROSS WALKS.
4 EA.	—	FURNISH AND INSTALL PAVEMENT MARKINGS
12 C.Y.	801	FURNISH AND INSTALL CONCRETE FOR SIGNAL FOUNDATION
210 L.F.	804	FURNISH AND INSTALL #6 AWG STRANDED BARE COPPER GROUND WIRE
70 L.F.	805	FURNISH AND INSTALL 1' LIQUID TIGHT NON METALLIC FLEXIBLE CONDUIT
12 EA.	~~	FURNISH AND INSTALL ELECTRIC HANDHOLE
4 EA.	806	FURNISH AND INSTALL 12' x 32' STRAIN POLE (2-PLY)
2 EA.	808	FURNISH AND INSTALL 250 WATT HIGH PRESSURE SODIUM LAMP AND LUMINAIRE
5 EA.	804	FURNISH AND INSTALL GROUND ROD -3/4' DIAMETER x 10' LENGTH
1 EA.	807	FURNISH AND INSTALL CONTROL AND DISTRIBUTION EQUIPMENT (120/240V, 1 PHASE 3 WIRE SYSTEM
4 EA.	814	INSTALL 12' ONE-WAY, TWO SECTION PEDESTRAIN SIGNAL HEAD - POLE MOUNT
10 EA.	814	INSTALL SIGNAL HEAD - SPAN MOUNT
2850 L.F.	810	FURNISH AND INSTALL ELECTRICAL CABLE 2-CONDUCTOR (ALUMINUM SHIELDED) NO. 14 A.W.G.
365 L.F.	810	FURNISH AND INSTALL ELECTRICAL, 2-CONDUCTOR (NO. 14 A.W.G.) PED. PUSHBUTTON
300 L.F.	810	FURNISH AND INSTALL ELECTRICAL 2-CONDUCTOR (NO. 12 A.W.G.) TRAY CABLE FOR LUMINAIRIES.
400 L.F.	810	FURNISH AND INSTALL CABLE, 3-CONDUCTOR (NO. 14 A.W.G.)
850 L.F.	810	FURNISH AND INSTALL CABLE, 5-CONDUCTOR (NO. 14 A.W.G.)
2380 L.F.	810	FURNISH AND INSTALL LOOP WIRE ENCASED IN FLEXIBLE TUBING (NO. 14 A.W.G.)
775 L.F.	815	FURNISH AND INSTALL SAWCUT FOR SIGNAL (LOOP DETECTOR)
3 EA.	817	INSTALL PUSHBUTTON AND SIGN
2 EA.	808	FURNISH AND INSTALL 20' LIGHTING ARM ON SIGNAL STRUCTURE
480 L.F.	819	FURNISH AND INSTALL STEEL SPAN WIRE -3/8' DIAMETER
660 L.F.	805	FURNISH AND INSTALL P.V.C. CONDUIT - 2' TRENCHED SCHEDULE 40
20 L.F.	805	FURNISH AND INSTALL P.V.C. CONDUIT - 2' BORED SCHEDULE 80
80 L.F.	805	FURNISH AND INSTALL P.V.C. CONDUIT - 3' - TRENCHED SCHEDULE 40
300 L.F.	805	FURNISH AND INSTALL P.V.C. CONDUIT - 3' - BORED SCHEDULE 80
30 L.F.	805	FURNISH AND INSTALL P.V.C. CONDUIT - 4' TRENCHED SCHEDULE 40
1 EA.	816	INSTALL CONTROLLER AND CABINET - BASE MOUNT
1 L.S.	—	REMOVE AND RETURN EXISTING EQUIPMENT

B. EQUIPMENT TO BE FURNISHED AND INSTALLED BY THE CONTRACTOR: (CONTINUED)

QUANTITY	SPEC SECTION	DESCRIPTION
27 S.F.	813	INSTALL OVERHEAD SIGNS - SPAN MOUNT
40 L.F.	810	3 CONDUCTOR (NO. 4 A.W.G.)
130 L.F.	805	FURNISH AND INSTALL P.V.C. CONDUIT - 2' TRENCHED SCHEDULE 80
50 L.F.	805	FURNISH AND INSTALL P.V.C. CONDUIT RISER SCHEDULE 80 FOR POWER SOURCE
1 EA.	—	FURNISH AND INSTALL 6' x 6' x 24' STAINLESS STEEL WEATHER TIGHT ROUGH

EQUIPMENT LIST (CONT'D)

C. EQIUPMENT TO BE REMOVED BY THE CONTRACTOR AND DELIVERED TO THE ANNE ARUNDEL COUNTY SIGNAL SHOP. CONTACT MR. DOUGLAS BEALL (410) 222-1940) 72 HOURS IN ADVANCE PRIOR TO DELIVERY.

QUANTITY	DESCRIPTION
5 EA.	1 SEC. SIGNAL HEAD
1 EA	REMOVAL AND SALVAGE OF CABINET (ANY TYPE)
4 EA	SIGNAL POLES AND ALL ASSOCIATED EQUIPMENT

NOTE: ALL EQUIPMENT AND MATERIAL NOT LISTED ABOVE WILL BECOME THE PROPERTY OF THE CONTRACTOR.

THE FOLLOWING CONTACT PERSONS FOR DISTRICT # 5 ARE AS FOLLOWS:

Mr. Paul Armstrong
District Engineer
Phone: (410) 841-5450

Mr. Lawrence E. Elliott
Assistant District Engineer-Traffic
Phone: (410) 841-5450

Mr. Charles George
Assistant District Engineer-Maintenance
Phone: (410) 841-5450

Mr. John Mayes
Assistant District Engineer-Utility
Phone: (410) 841-5450

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

THE FOLLOWING CONTACT PERSONS FOR ANNE ARUNDEL COUNTY ARE AS FOLLOWS:

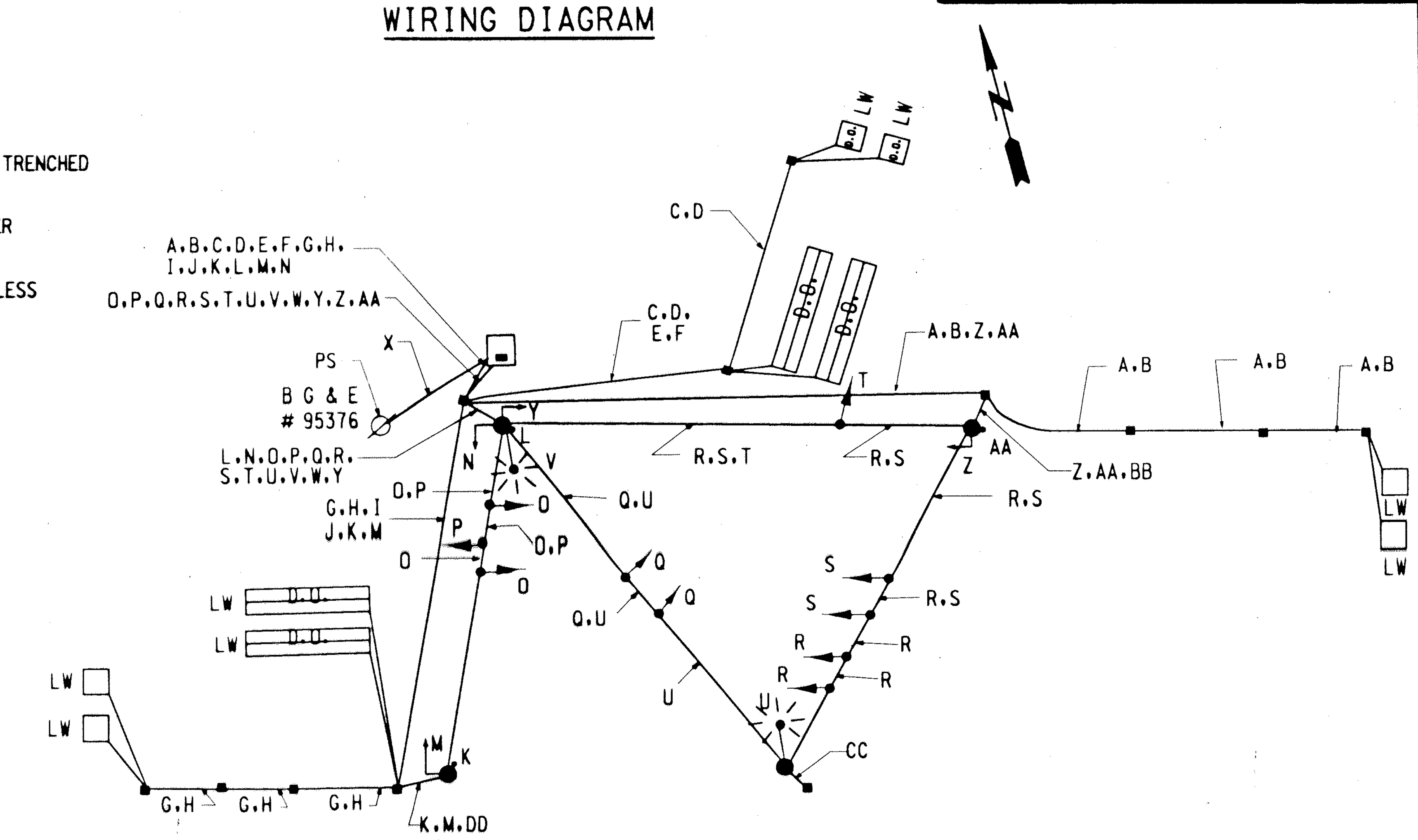
Mr. Robert Sword
Assistant Division Chief
Phone: (410) 222-7331

Mr. Douglas Beall
Signal Supervisor
Phone: (410) 222-1940

The Power Company Representative Is:

MR. WILLIAM ECKARDT
BALTIMORE GAS AND ELECTRIC COMPANY
SOUTHERN DISTRIBUTION
7317 PARKWAY DRIVE
HANOVER, MARYLAND 21076

WIRING DIAGRAM



WIRING KEY

X	3 CONDUCTOR (NO. 4 A.W.G.)
A.B.C.D E.F.G.H.I.J	2 CONDUCTOR ELECTRICAL CABLE ALUMINUM SHIELDED (NO. 14) A.W.G.
K.L.AA	2 CONDUCTOR ELECTRIC CABLE NO. 14 A.W.G. FOR PEDS PUSH BUTTON
M.N.Y.Z	3 CONDUCTOR ELECTRIC CABLE NO. 14 A.W.G. ONE WAY 2 SECTION PED SIGNAL HEAD
O.P.Q.R.S.T	5 CONDUCTOR ELECTRICAL CABLE (NO. 14) AWG
U.V	2 CONDUCTOR ELECTRIC CABLE NO.12 A.W.G. TRAY CABLE FOR LUMINAIRIES
PS	POWER SOURCE
L.W.	LOOP WIRE
W.BB.CC.DD	BARE COPPER WIRE (NO. 6 A.W.G.)

PHASE CHART

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
PHASE 1 & 6	←G	←G	←G	G	G	R	R	G→	G→	G→	DW	DW	DW	DW	
PHASE 1 & 6 CHANGE	←Y	←Y	←Y	G	G	R	R	Y	Y	Y	DW	DW	DW	DW	
PHASE 2 & 6	←R	←R	←R	G	G	G	G	R	R	R	W	W	DW	DW	
PHASE 2 & 6 CHANGE	←R	←R	←R	G	G	Y	Y	R	R	R	FL DW	FL DW	DW	DW	
PHASE 4	←G	←G	←G	G	G	R	R	G→	G→	G→	DW	DW	DW	DW	
PHASE 4 CHANGE	←Y	←Y	←Y	Y	Y	R	R	Y	Y	Y	DW	DW	DW	DW	
PED CLEAR	←R	←R	←R	R	R	R	R	R	R	R	W	W	W	W	
PED CHANGE	←R	←R	←R	R	R	R	R	R	R	R	FL DW	FL DW	FL DW	FL DW	
FLASHING OPERATION	FL/R	FL/R	FL/R	FL/Y	FL/Y	FL/Y	FL/Y	FL/R	FL/R	FL/R	DARK	DARK	DARK	DARK	

PHASING NOTES :
- PHASE 1 WILL ALWAYS BE WITH PHASE 6 AND PHASE 4 NEVER ALONE
- PHASE 2 WILL ALWAYS BE WITH PHASE 6 NEVER ALONE

JOHNSON, MIRMIRAN, & THOMPSON, P.A.
72 LOVETON CIRCLE
SPARKS, MARYLAND 21152
(410) 329-3100

REVISIONS	
(D) REBUILD EXISTING TRAFFIC SIGNAL DUE TO GEOMETRIC CHANGES	1/95
(C) REBUILD EXISTING TRAFFIC SIGNAL DUE TO GEOMETRIC CHANGES S.H.A. NO. AA-261-205-571	8/92

APPROVALS
CHIEF, DESIGN SECTION
ASST. DISTRICT ENGINEER, TRAFFIC
CHIEF, TRAFFIC ENGINEERING DESIGN DIVISION
DIRECTOR, TRAFFIC & SAFETY

REVISIONS

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

FOREST DRIVE AND HILLTOP LANE

GENERAL INFORMATION

LOG MILE: 02CFOR00.42

DRAWN BY: S.R.BARANOWSKI
CHK. BY: R.R.ZACHERL
SCALE: 1' = 20'
DATE: 3/16/88

F.A.P. NO.
S.H.A. NO. AA 317 A 23
COUNTY ANNE ARUNDEL

TS NO. 824 (D)

0283601 83

SHEET NO. ___ OF ___

FILE: m:\md_sigs\hill_gen.dgn
DATE: 12-Sep-96 17:17