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

PROJECT DESCRIPTION

GENERAL

STAGE 1 OF THE PROJECT INVOLVES THE RECONSTRUCTION OF AN EXISTING TRAFFIC CONTROL SIGNAL WITH INTERCONNECT FOR PHASE 1 OF THE MAINTENANCE OF TRAFFIC AT U.S. 301 AND BILLINGSLEY ROAD IN CHARLES COUNTY. U.S. 301 IS ASSUMED TO RUN IN A NORTH-SOUTH DIRECTION.

INTERSECTION OPERATION

DURING STAGE 1, THE INTERSECTION WILL OPERATE IN A NEMA SIX PHASE, FULLY-ACTUATED MODE WITH THE U.S. 301 APPROACHES RUNNING CONCURRENTLY AND THE BILLINGSLEY ROAD APPROACHES RUNNING CONCURRENTLY.

A LEAD EXCLUSIVE LEFT-TURN PHASE WILL BE PROVIDED FOR SOUTHBOUND U.S. 301 AND LAG EXCLUSIVE LEFT-TURN PHASE FOR NORTHBOUND U.S. 301.

CONTROLLER REQUIREMENTS

INSTALL A FULL-TRAFFIC-ACTUATED, EIGHT-PHASE CONTROLLER WITH SEVEN (7) FOUR-CHANNEL, TIME-DELAY-OUTPUT LOOP DETECTOR AMPLIFIERS, INTERSECTION MONITOR WITH BATTERY BACK-UP FOR PHONE DROP, AND ASSOCIATED HARNESSES HOUSED IN A NEMA SIZE "6" BASE MOUNTED CABINET.

INSTALL A MASTER CONTROLLER IN A NEMA SIZE "5" BASE MOUNTED CABINET WITH ALL NECESSARY EQUIPMENT.

SPECIAL NOTE

UPON COMPLETION OF THIS PROJECT, THE CONTRACTOR SHALL NOTIFY MR. ROBERT SNYDER OF SHA AT (410)787-7635 TO ARRANGE FOR THE PHONE LINE INSTALLATION. THE CONTRACTOR IS TO PROVIDE MR. SNYDER WITH THE NEAREST STREET ADDRESS, ZIP CODE, AND PHONE NUMBER.

MAINTENANCE OF TRAFFIC

THE FOLLOWING WORK ZONE TRAFFIC CONTROL STANDARDS SHALL BE USED FOR THE PROJECT.

STANDARD NO. MD-104.00-104.00-12

STANDARD NO. MD-104.31-01 (FLAGGING OPERATION)

STANDARD NO. MD-104.49-01 (SHOULDER WORK)

STANDARD NO. MD-104.44-01 (LEFT LANE CLOSURE)

STANDARD NO. MD-104.45-01 (RIGHT LANE CLOSURE)

STANDARD NO. MD-104.46-01 (CENTER LANE CLOSURE)

PROJECT CONTACTS

THE CONTACT PERSONS FOR DISTRICT #5 ARE AS FOLLOWS:

MR. PAUL D. ARMSTRONG
DISTRICT ENGINEER
PHONE: (410) 841-5450

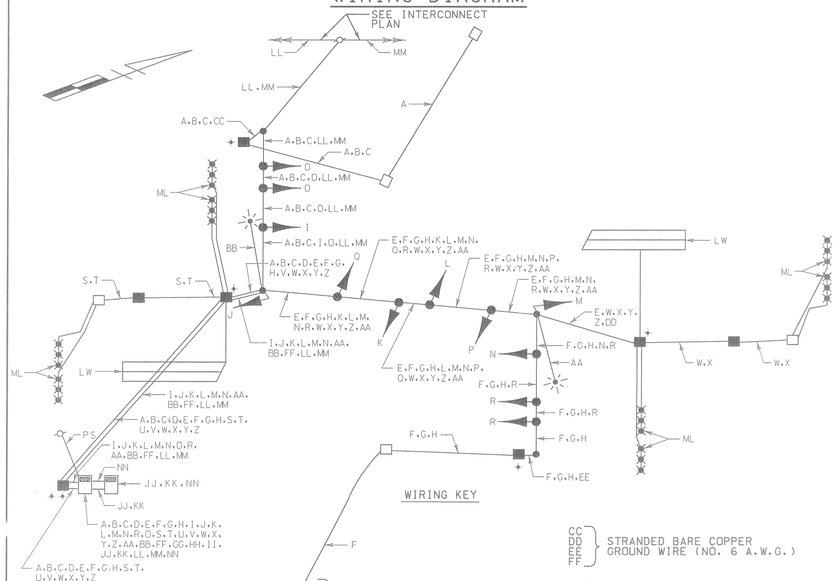
MR. LAWRENCE E. ELLIOTT
ASSISTANT DISTRICT ENGINEER - TRAFFIC
PHONE: (410) 841-5450

MR. RAYMOND E. HUTZLER
ASSISTANT DISTRICT ENGINEER - MAINTENANCE
PHONE: (410) 841-5462

MR. JOHN MAYS
ASSISTANT DISTRICT ENGINEER - UTILITY
PHONE: (410) 841-5450

MR. RICHARD L. DAFF, SR.
CHIEF, TRAFFIC OPERATIONS DIVISION
PHONE: (410) 787-7630

WIRING DIAGRAM



WIRING KEY

A B C D E F G H — 2-CONDUCTOR ELECTRICAL CABLE (NO. 14 A.W.G.) ALUMINUM SHIELDED

I J K L M N — 7-CONDUCTOR ELECTRICAL CABLE (NO. 14 A.W.G.)

F

O P Q R — 5-CONDUCTOR ELECTRICAL CABLE (NO. 14 A.W.G.)

S T U V W X Y Z — MICRO-LOOP PROBE LEAD-IN

AA BB — 2-CONDUCTOR ELECTRICAL CABLE (NO. 12 A.W.G.)

CC DD EE FF — STRANDED BARE COPPER GROUND WIRE (NO. 6 A.W.G.)

GG HH II — 1-CONDUCTOR ELECTRICAL CABLE (NO. 4 A.W.G.)

JJ KK — 1-CONDUCTOR ELECTRICAL CABLE (NO. 8 A.W.G.)

LL MM NN — 12-PAIR COMMUNICATION CABLE

LW - LOOP WIRE (NO. 14 A.W.G.)

ML - MICRO-LOOP PROBE SET

PS - PROPOSED ELECTRICAL SERVICE

+ - 3/4 IN. X 10 FT. GROUND ROD

EQUIPMENT LIST "A"

A. EQUIPMENT TO BE SUPPLIED BY THE SHA

QUANTITY	DESCRIPTION
8 EACH	12 IN., ONE-WAY, THREE-SECTION (R,Y,G) TRAFFIC SIGNAL HEAD AND TETHER CLAMP WITH ADJUSTABLE BRACKET FOR SPAN MOUNTING AND TUNNEL VISORS.
2 EACH	12 IN., ONE-WAY, THREE-SECTION (RA,YA,GA) TRAFFIC SIGNAL HEAD AND TETHER CLAMP WITH ADJUSTABLE BRACKET FOR SPAN MOUNTING AND TUNNEL VISORS.
2 EACH	12 IN., ONE-WAY, THREE SECTION (RA,YA,GA) SIGNAL HEAD - POLE MOUNT.
7 EACH	FOUR-CHANNEL, TIME DELAY OUTPUT, LOOP DETECTOR AMPLIFIER.
1 EACH	EIGHT-PHASE, FULL-TRAFFIC-ACTUATED, SOLID STATE DIGITAL CONTROLLER WITH TELEMETRY SYSTEM PACKAGE HOUSED IN A NEMA SIZE "6" BASE MOUNTED CABINET.
78 S.F.	SHEET ALUMINUM SIGNS TO CONSIST OF :
	- 2 EACH D3-2 SIGN DUAL FACED (VARIABLE X 16 IN.) - SPAN MOUNT.
	- 1 EACH ASSOCIATED SHIELD ASSEMBLY "SOUTH, U.S. 301, RIGHT ARROW" (24 IN. X 51 IN.) - GROUND MOUNT.
	- 1 EACH ASSOCIATED SHIELD ASSEMBLY "NORTH, U.S. 301, RIGHT ARROW" (24 IN. X 51 IN.) - POLE MOUNT.
	- 1 EACH ASSOCIATED SHIELD ASSEMBLY "NORTH, U.S. 301, LEFT ARROW" (36 IN. X 75 IN.) - POLE MOUNT.
	- 1 EACH ASSOCIATED SHIELD ASSEMBLY "SOUTH, U.S. 301, LEFT ARROW" (36 IN. X 75 IN.) - POLE MOUNT.
8 EACH	MICRO-LOOP PROBE SET WITH 1000 FT. LEAD-IN.
1 EACH	TRAFFIC RESPONSIVE MASTER CONTROLLER HOUSED IN A NEMA SIZE "5" BASE MOUNTED CABINET.

EQUIPMENT LIST "C"

C. EXISTING EQUIPMENT TO BE REMOVED BY THE CONTRACTOR AND DELIVERED TO THE STATE HIGHWAY ADMINISTRATION, 7941 CONNELLEY DRIVE, HANOVER, MARYLAND 21076.

QUANTITY	DESCRIPTION
1	BASE MOUNTED CABINET AND EIGHT-PHASE, FULL-TRAFFIC-ACTUATED, SOLID STATE DIGITAL COTROLLER
1	BASE MOUNTED CABINET AND MASTER CONTROLLER

NOTES:
1. ALL EQUIPMENT TO BE REMOVED AND NOT LISTED ABOVE SHALL BECOME THE PROPERTY OF THE CONTRACTOR.
2. THE CONTRACTOR SHALL NOTIFY THE SHA AT (410) 787-7652 AT LEAST THREE DAYS IN ADVANCE OF DELIVERY.

PHASE CHART

	1	2	3	4	5	6	7	8	9	10	11	12
	R Y G	R Y G	R Y G	R Y G	R Y G	R Y G	R Y G	R Y G	R Y G	R Y G	R Y G	R Y G
PHASE 2 + 5	R	R	R	R	G	G	G	G	R	R	R	R
2 + 5 CHANGE	R	R	R	R	Y	Y	G	G	R	R	R	R
PHASE 2 + 6	R	R	G	G	R	R	G	G	R	R	R	R
2 + 6 CHANGE	R	R	G	G	R	R	Y	Y	R	R	R	R
PHASE 1 + 6	G	G	G	G	R	R	R	R	R	R	R	R
1 + 6 CHANGE	Y	Y	Y	Y	R	R	R	R	R	R	R	R
PHASE 4 + 8	R	R	R	R	R	R	R	R	G	G	G	G
4 + 8 CHANGE	R	R	R	R	R	R	R	R	Y	Y	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

EQUIPMENT LIST "B"

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

QUANTITY	DESCRIPTION
LUMP SUM	MAINTENANCE OF TRAFFIC
7 U.D.	ARROW PANEL
300 S.F.	TEMPORARY TRAFFIC SIGNS
300 L.F.	REMOVAL OF EXISTING PAVEMENT MARKINGS - ANY WIDTH
LUMP SUM	MOBILIZATION
6 C.Y.	TEST PIT EXCAVATION
110 L.F.	24 IN. WHITE PERMANENT PREFORMED PAVEMENT MARKING TAPE
15 C.Y.	FURNISH AND INSTALL CONCRETE FOR SIGNAL FOUNDATION
225 L.F.	FURNISH AND INSTALL STRANDED BARE COPPER WIRE (NO. 6 A.W.G.)
90 L.F.	FURNISH AND INSTALL 1 IN. GALVANIZED ELECTRICAL CONDUIT (DETECTOR WIRE SLEEVE)
270 L.F.	FURNISH AND INSTALL 3 IN. SCHEDULE 80 RIGID PVC CONDUIT - BORED
900 L.F.	FURNISH AND INSTALL 2 IN. SCHEDULE 40 RIGID PVC CONDUIT - TRENCHED
70 L.F.	FURNISH AND INSTALL 3 IN. SCHEDULE 40 RIGID PVC CONDUIT - TRENCHED
20 L.F.	FURNISH AND INSTALL 4 IN. SCHEDULE 40 RIGID PVC CONDUIT-TRENCHED
40 L.F.	FURNISH AND INSTALL 1 IN. LIQUID-TIGHT FLEXIBLE NON-METALLIC CONDUIT FOR DETECTOR SLEEVE
1 EACH	FURNISH AND INSTALL CONTROL AND DISTRIBUTION EQUIPMENT
45 L.F.	FURNISH AND INSTALL ELECTRICAL CABLE-1-CONDUCTOR (NO. 4 A.W.G. - THHN/THWN)
20 L.F.	FURNISH AND INSTALL ELECTRICAL CABLE 1 CONDUCTOR (NO. 8 A.W.G.)
7 EACH	FURNISH AND INSTALL ELECTRICAL HANDHOLE
22 S.F.	INSTALL OVERHEAD SIGN
56 S.F.	INSTALL GROUND MOUNTED SIGN
8400 L.F.	FURNISH AND INSTALL 12-PAIR COMMUNICATION CABLE, SELF-SUPPORTING (OVERHEAD)
6 EACH	FURNISH AND INSTALL GROUND ROD - 3/4 IN. DIAMETER X 10 FT. LENGTH
8 EACH	INSTALL 12 IN., ONE-WAY, THREE SECTION (R,Y,G) SIGNAL HEAD - SPAN MOUNT
2 EACH	INSTALL 12 IN., ONE-WAY, THREE SECTION (RA,YA,GA) SIGNAL HEAD - SPAN MOUNT
3610 L.F.	FURNISH AND INSTALL ELECTRICAL CABLE - 2 CONDUCTOR ALUMINUM SHIELDED (NO. 14 A.W.G.)
680 L.F.	FURNISH AND INSTALL ELECTRICAL CABLE - 5 CONDUCTOR (NO. 14 A.W.G.)
1690 L.F.	FURNISH AND INSTALL ELECTRICAL CABLE - 7 CONDUCTOR (NO. 14 A.W.G.)
590 L.F.	FURNISH AND INSTALL ELECTRICAL CABLE - 2 CONDUCTOR (NO. 12 A.W.G.)
940 L.F.	FURNISH AND INSTALL LOOP WIRE ENCASED IN FLEXIBLE TUBING (NO 14. A.W.G.)
480 L.F.	FURNISH AND INSTALL SAWCUT FOR SIGNAL (LOOP DETECTOR)
2 EACH	FURNISH AND INSTALL 20 FT. LIGHTING BRACKET FOR TRAFFIC SIGNAL STRUCTURE
320 L.F.	FURNISH AND INSTALL STEEL SPAN WIRE 1/4 IN. DIAMETER
320 L.F.	FURNISH AND INSTALL STEEL SPAN WIRE 3/8 IN. DIAMETER
1 EACH	INSTALL EIGHT PHASE (FULLY ACTUATED) CONTROLLER AND CABINET - BASE MOUNT
LUMP SUM	REMOVE EXISTING CONTROLLER AND CABINET
LUMP SUM	DELIVERY OF REMOVED EQUIPMENT
1 EACH	INSTALL TRAFFIC RESPONSIVE MASTER CONTROLLER AND CABINET - BASE MOUNT
4 EACH	FURNISH AND INSTALL 12 IN. X 30 FT. STRAIN POLE
8 EACH	INSTALL MICROLOOP PROBE SET
2 EACH	INSTALL 12 IN., ONE-WAY, THREE SECTION (RA,YA,GA) SIGNAL HEAD - POLE MOUNT
2 EACH	FURNISH AND INSTALL 250 WATT HPS LUMINAIRE WITH PHOTOCELL
LUMP SUM	REMOVE AND DISPOSE OF EXISTING MATERIAL AND EQUIPMENT
17 L.F.	FURNISH AND INSTALL WOOD SIGN SUPPORT (4 IN. X 4 IN.)

PGM #94-123

TEMPORARY TRAFFIC SIGNAL STAGE 1

REVISIONS	APPROVALS	REVISIONS
	ASSISTANT DIVISION CHIEF	
	ASST. DISTRICT ENGINEER, TRAFFIC	
	CHIEF, TRAFFIC ENGINEERING DESIGN DIVISION	
	DIRECTOR, OFFICE OF TRAFFIC & SAFETY	

WR&A
Whitman, Requardt and Associates
Engineers and Planners
2315 Saint Paul Street
Baltimore, Maryland 21218
(410) 235-3450

MARYLAND DOT - STATE HIGHWAY ADMINISTRATION
Office of Traffic & Safety
TRAFFIC ENGINEERING DESIGN DIVISION
GENERAL INFORMATION SHEET
U.S. 301 AND BILLINGSLEY ROAD

DATE: 3-21-97	DRAWN BY: S. BLOSS	F.A.P. NO.		PLAN SHEET NO.:	SHEET NO.
SCALE: NONE	DESIGNED BY: N. LEARY	S.H.A. NO.		TS-2484GIX-1	2 OF 6
APPROVED BY:	CHECKED BY: T. HANNAN	COUNTY	CHARLES		

M:\94002\40735GII.DGN

#97