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

PROJECT DESCRIPTION

GENERAL

THIS PROJECT INVOLVES CONVERTING AN EXISTING INTERSECTION CONTROL BEACON TO A FULL TRAFFIC CONTROL SIGNAL AND ROADWAY LIGHTING AT THE INTERSECTION OF MD 194 AND MD 550 IN FREDERICK COUNTY. MD 194 IS ASSUMED TO RUN IN A NORTH-SOUTH DIRECTION.

INTERSECTION OPERATION

THE INTERSECTION WILL OPERATE IN A NEMA SIX-PHASE, FULL-TRAFFIC-ACTUATED MODE WITH THE MD 194 APPROACHES OPERATING CONCURRENTLY AND THE MD 550 APPROACHES OPERATING CONCURRENTLY.

EXCLUSIVE/PERMISSIVE LEFT-TURN PHASES WILL BE PROVIDED ON THE NORTHBOUND AND SOUTHBOUND MD 194 APPROACHES.

AN ALTERNATE PEDESTRIAN PHASE WILL BE PROVIDED ACROSS THE NORTH LEG OF MD 194.

THE INTERSECTION WILL OPERATE IN A FLASHING MODE FROM 8:00 PM TO 6:00 AM.

AN OPTICOM, EMERGENCY PRE-EMPTION SYSTEM WILL BE PROVIDED AND OPERATE AS INDICATED ON THE PLANS.

CONTROLLER REQUIREMENTS

INSTALL A FULL-TRAFFIC-ACTUATED, EIGHT-PHASE CONTROLLER WITH TWO (2), FOUR-CHANNEL, TIME-DELAY-OUTPUT LOOP DETECTOR AMPLIFIERS, OPTICOM CARD RACK AND DISCRIMINATOR MODULE, INTERSECTION MONITOR WITH BATTERY BACK-UP FOR PHONE DROP AND ASSOCIATED HARNESSES HOUSED IN A NEMA SIZE "6" BASE MOUNTED CABINET.

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, ZIPCODE AND PHONE NUMBER.

MAINTENANCE OF TRAFFIC

THE FOLLOWING TRAFFIC CONTROL STANDARDS SHALL BE REFERENCED 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)
STANDARD NO. MD-104.35-01 (LANE SHIFT)
STANDARD NO. MD-104.33-02 (SHOULDER WORK)
STANDARD NO. MD-104.32-02 (INTERSECTION FLAGGING OPERATION)

PROJECT CONTACTS

THE CONTACT PERSONS FOR SHA ARE AS FOLLOWS:

MR. ROBERT FISHER
DISTRICT ENGINEER
PHONE: (301) 624-8140

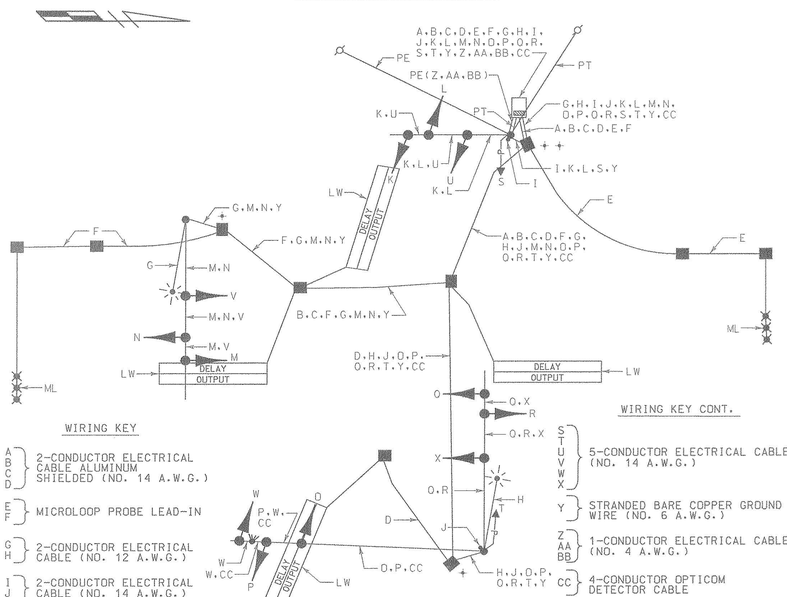
MR. JOHN CONCANNON
ACTING ASSISTANT DISTRICT ENGINEER - TRAFFIC
PHONE: (301) 624-8141

MR. LEON KERNS
ACTING ASSISTANT DISTRICT ENGINEER - MAINTENANCE
PHONE: (301) 624-8140

MR. JOHN WRIGHT
DISTRICT UTILITIES ENGINEER
PHONE: (301) 624-8140

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

WIRING DIAGRAM



WIRING KEY

- A B C D — 2-CONDUCTOR ELECTRICAL CABLE ALUMINUM SHIELDED (NO. 14 A.W.G.)
- E F — MICROLOOP PROBE LEAD-IN
- G H — 2-CONDUCTOR ELECTRICAL CABLE (NO. 12 A.W.G.)
- I J — 2-CONDUCTOR ELECTRICAL CABLE (NO. 14 A.W.G.)
- K L M N O P Q R — 7-CONDUCTOR ELECTRICAL CABLE (NO. 14 A.W.G.)

WIRING KEY CONT.

- S T U V W X — 5-CONDUCTOR ELECTRICAL CABLE (NO. 14 A.W.G.)
- Y — STRANDED BARE COPPER GROUND WIRE (NO. 6 A.W.G.)
- Z AA BB — 1-CONDUCTOR ELECTRICAL CABLE (NO. 4 A.W.G.)
- CC — 4-CONDUCTOR OPTICOM DETECTOR CABLE

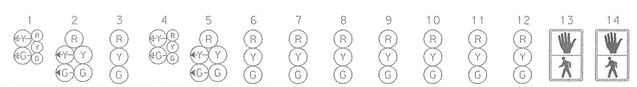
PE - PROPOSED ELECTRICAL SERVICE
PT - PROPOSED TELEPHONE SERVICE
LW - LOOP WIRE (NO. 14 A.W.G.)
ML - MICROLOOP PROBE SET
+ - 3/4 IN. X 10 FT. GROUND ROD

EQUIPMENT LIST "A"

A. EQUIPMENT TO BE SUPPLIED BY SHA

ITEM NO.	QUANTITY	DESCRIPTION
9002	2 EACH	FOUR-CHANNEL, TIME DELAY OUTPUT, LOOP DETECTOR AMPLIFIER.
9014	8 EACH	12 IN., ONE-WAY, THREE-SECTION (R,Y,G) TRAFFIC SIGNAL HEAD - MAST ARM MOUNT.
9016	2 EACH	12 IN., ONE-WAY, FIVE-SECTION (R,Y,YA,G,GA) TRAFFIC SIGNAL HEAD - MAST ARM MOUNT.
9019	2 EACH	8 IN./12 IN., ONE-WAY, FIVE-SECTION (R,Y,YA,G,GA) TRAFFIC SIGNAL HEAD - MAST ARM MOUNT.
9027	2 EACH	12 IN., ONE-WAY, TWO-SECTION PEDESTRIAN SIGNAL HEAD - POLE MOUNT.
9081	1 EACH	EIGHT-PHASE, FULL-TRAFFIC-ACTUATED CONTROLLER AND INTERSECTION MONITOR II WITH BATTERY BACK-UP FOR PHONE DROP HOUSED IN A NEMA SIZE "6" BASE MOUNTED CABINET.
9089	144 S.F.	SHEET ALUMINUM SIGNS TO CONSIST OF :
		- 2 EACH R10-12 SIGN (36 IN. X 42 IN.) - MAST ARM MOUNT.
		- 2 EACH D3-2 SIGN "WOODSBORO RD" (VARIABLE X 16 IN.) DUAL FACED - MAST ARM MOUNT.
		- 2 EACH D3-2 SIGN "WOODSBORO PIKE" (VARIABLE X 16 IN.) DUAL FACED - MAST ARM MOUNT.
		- 2 EACH W3-3 SIGN (36 IN. X 36 IN.) WITH "NEW" PANEL (30 IN. X 30 IN.) - GROUND MOUNT
		- 2 EACH W3-3 SIGN (48 IN. X 48 IN.) WITH "NEW" PANEL (30 IN. X 30 IN.) AND FLAGS - GROUND MOUNT
9096	2 EACH	PEDESTRIAN PUSHBUTTON AND R10-4 SIGN (NOTE: SIGN TO READ "PUSH BUTTON TO CROSS WOODSBORO PIKE")

PHASE CHART



	1	2	3	4	5	6	7	8	9	10	11	12	13	14
PHASE 1 + 5	R G	R G	R	R G	R G	R	R	R	R	R	R	R	DW	DW
1 + 5 CHANGE	1 + 5 MAY CHANGE TO PHASE 1 + 6. PHASE 2 + 5 OR PHASE 2 + 6													
PHASE 1 + 6	G G	G G	G	R	R	R	R	R	R	R	R	R	DW	DW
1 + 6 CHANGE	G Y	G Y	G	R	R	R	R	R	R	R	R	R	DW	DW
PHASE 2 + 5	R	R	R	G G	G G	G	R	R	R	R	R	R	DW	DW
2 + 5 CHANGE	R	R	R	G Y	G Y	G	R	R	R	R	R	R	DW	DW
PHASE 2 + 6	G	G	G	G	G	G	R	R	R	R	R	R	DW	DW
2 + 6 CHANGE	Y	Y	Y	Y	Y	Y	R	R	R	R	R	R	DW	DW
PHASE 4 + 8	R	R	R	R	R	R	G	G	G	G	G	G	DW	DW
4 + 8 CHANGE	R	R	R	R	R	R	Y	Y	Y	Y	Y	Y	DW	DW
PHASE 4 + 8 ALT	R	R	R	R	R	R	G	G	G	G	G	G	WK	WK
PED CLEARANCE	R	R	R	R	R	R	G	G	G	G	G	G	FL/DW	FL/DW
4 + 8 ALT CHANGE	R	R	R	R	R	R	Y	Y	Y	Y	Y	Y	DW	DW
FIREHOUSE	R	R	R	R	R	R	G	G	G	G	G	G	DW	DW
PRE-EMPTION	R	R	R	R	R	R	Y	Y	Y	Y	Y	Y	DW	DW
FLASHING OPERATION	FL/Y	FL/Y	FL/Y	FL/Y	FL/Y	FL/Y	FL/R	FL/R	FL/R	FL/R	FL/R	FL/R	DARK	DARK

EQUIPMENT LIST "B"

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

ITEM NO.	QUANTITY	DESCRIPTION
1001	1 EACH	MAINTENANCE OF TRAFFIC PER ASSIGNMENT
2001	4 C.Y.	TEST PIT EXCAVATION
5010	50 L.F.	24 IN. WHITE THERMOPLASTIC PAVEMENT MARKING TAPE
5012	2 EACH	THERMOPLASTIC PAVEMENT MARKING ARROW
5013	200 L.F.	REMOVE EXISTING PAVEMENT MARKINGS - ANY WIDTH
5014	11 EACH	REMOVE EXISTING PAVEMENT MARKING LETTER OR ARROW
6001	100 S.F.	FURNISH AND INSTALL 4 IN. CONCRETE SIDEWALK
6006	10 EACH	TRAFFIC BARRIER W-BEAM POST NORMAL 6 FT. LENGTH
8001	13 C.Y.	FURNISH AND INSTALL CONCRETE FOR SIGNAL FOUNDATION
8006	2 EACH	CUT, CLEAN, GALVANIZE AND CAP TRAFFIC SIGNAL STRUCTURE
8011	14 EACH	INSTALL SIGNAL HEAD (ANY TYPE)
8012	1 EACH	FURNISH AND INSTALL OPTICOM DETECTOR EYE
8013	1 EACH	FURNISH AND INSTALL OPTICOM CARD RACK
8014	1 EACH	FURNISH AND INSTALL OPTICOM DISCRIMINATOR CABLE
8017	2 EACH	FURNISH AND INSTALL MICROLOOP PROBE SET WITH 1000 FT. LEAD-IN
8018	2 EACH	INSTALL PUSHBUTTON AND SIGN
8020	1 EACH	INSTALL CONTROLLER AND CABINET - BASE MOUNT
8021	570 L.F.	SAW CUT FOR SIGNAL LOOP DETECTOR
8023	40 L.F.	FURNISH AND INSTALL 1 IN. LIQUID-TIGHT FLEXIBLE NON-METALLIC CONDUIT FOR DETECTOR SLEEVE
8024	840 L.F.	FURNISH AND INSTALL 2 IN. SCHEDULE 80 RIGID PVC CONDUIT - TRENCHED
8030	60 L.F.	FURNISH AND INSTALL 4 IN. SCHEDULE 80 RIGID PVC CONDUIT - TRENCHED
8031	50 L.F.	FURNISH AND INSTALL 4 IN. SCHEDULE 80 RIGID PVC CONDUIT - SLOTTED
8032	210 L.F.	FURNISH AND INSTALL 4 IN. SCHEDULE 80 RIGID PVC CONDUIT - BORED
8033	10 EACH	FURNISH AND INSTALL HANDHOLE
8034	4 EACH	FURNISH AND INSTALL GROUND ROD - 3/4 IN. DIAMETER X 10 FT. LENGTH
8037	280 L.F.	FURNISH AND INSTALL 4 CONDUCTOR OPTICOM DETECTOR CABLE
8040	1930 L.F.	FURNISH AND INSTALL LOOP WIRE ENCASED IN FLEXIBLE TUBING (NO 14. A.W.G.)
8041	500 L.F.	FURNISH AND INSTALL ELECTRICAL CABLE - 2 CONDUCTOR (NO. 14 A.W.G.) ALUMINUM SHIELDED
8042	250 L.F.	FURNISH AND INSTALL ELECTRICAL CABLE - 2 CONDUCTOR (NO. 14 A.W.G.)
8044	320 L.F.	FURNISH AND INSTALL ELECTRICAL CABLE - 5 CONDUCTOR (NO. 14 A.W.G.)
8045	1900 L.F.	FURNISH AND INSTALL ELECTRICAL CABLE - 7 CONDUCTOR (NO. 14 A.W.G.)
8046	340 L.F.	FURNISH AND INSTALL ELECTRICAL CABLE - 2 CONDUCTOR (NO. 12 A.W.G.)
8049	350 L.F.	FURNISH AND INSTALL NO. 6 A.W.G. STRANDED BARE COPPER GROUND WIRE
8050	75 L.F.	FURNISH AND INSTALL ELECTRICAL CABLE 1-CONDUCTOR NO. 4 A.W.G. - THHN/THWN
8051	36 L.F.	FURNISH AND INSTALL WOOD SIGN SUPPORTS 4 IN. X 4 IN.
8052	76 L.F.	FURNISH AND INSTALL WOOD SIGN SUPPORTS 4 IN. X 6 IN.
8053	78 S.F.	INSTALL GROUND MOUNTED SIGN
8054	66 S.F.	INSTALL OVERHEAD SIGN
8056	2 EACH	FURNISH AND INSTALL 250 WATT HPS LUMINAIRE WITH PHOTOCELL
8057	2 EACH	FURNISH AND INSTALL 20 FT. LIGHTING BRACKET ARM FOR TRAFFIC SIGNAL STRUCTURE
8058	4 EACH	REMOVE AND DISPOSE OF EXISTING FOUNDATION 12 IN. BELOW GRADE
8059	1 EACH	REMOVAL OF EXISTING FLASHER, CABINET AND GALVANIZED SIGNAL STRUCTURE
8060	1 EACH	DELIVERY OF REMOVED FLASHER, CABINET AND GALVANIZED SIGNAL STRUCTURE
8061	1 EACH	REMOVE AND DISPOSE OF EXISTING MATERIAL AND EQUIPMENT PER ASSIGNMENT
8069	30 L.F.	FURNISH AND INSTALL 1 IN. ELECTRICAL CONDUIT - GALVANIZED RISER
8070	1 EACH	FURNISH AND INSTALL CONTROL AND DISTRIBUTION EQUIPMENT (120/240V, 1 PHASE 3 WIRE SYST)
8081	1 EACH	FURNISH AND INSTALL MAST ARM POLE AND 38 FT. MAST ARM
8082	1 EACH	FURNISH AND INSTALL MAST ARM POLE AND 50 FT. MAST ARM
8086	1 EACH	FURNISH AND INSTALL 27 FT. STEEL POLE WITH TWIN 70 FT./50 FT. MAST ARMS
NEG.	LUMP SUM	RELOCATE SIGNS

WR&A
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Engineers and Planners
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Baltimore, Maryland 21218
(410) 235-3450

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

MARYLAND DOT - STATE HIGHWAY ADMINISTRATION
Office of Traffic & Safety
TRAFFIC ENGINEERING DESIGN DIVISION
GENERAL INFORMATION SHEET
MD 194 AND MD 550

DATE: 1-30-98	DRAWN BY: S.BLOSS	F.A.P. NO.		PLAN SHEET NO.:	SHEET NO.
SCALE: NONE	DESIGNED BY: N.LEARY	S.H.A. NO.	AW279A58/058	3131 A	2 OF 3
APPROVED BY:	CHECKED BY: T.HANNAN	COUNTY	FREDERICK		