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

PROJECT DESCRIPTION

GENERAL

THIS PROJECT INVOLVES THE RECONSTRUCTION OF THE TRAFFIC SIGNAL AND THE INSTALLATION OF PEDESTRIAN INDICATIONS ON ALL FOUR LEGS OF THE INTERSECTION OF MD 147 AND JOPPA RD. IN BALTIMORE COUNTY. MD 147 RUNS IN A NORTH-SOUTH DIRECTION.

INTERSECTION OPERATION

1. NORMAL OPERATION

THE INTERSECTION WILL OPERATE IN A NEMA EIGHT PHASE, FULL-TRAFFIC ACTUATED MODE. WITH THE MD 147 APPROACHES RUNNING CONCURRENTLY AND THE JOPPA RD. APPROACHES RUNNING CONCURRENTLY.

NORTH AND SOUTHBOUND MD 147 WILL HAVE EXCLUSIVE/PERMISSIVE LEFT TURN PHASES AND EAST AND WESTBOUND JOPPA RD WILL HAVE EXCLUSIVE LEFT TURN PHASES.

AN ALTERNATE PEDESTRIAN PHASE WILL BE PROVIDED ACROSS THE EAST AND WEST LEG OF JOPPA RD.

PROJECT CONTACTS

THE CONTACT PERSONS FOR DISTRICT #4 ARE AS FOLLOWS:

MR. DAVE MALKOWSKI
DISTRICT ENGINEER
PHONE: 410-321-2810

MR. JOSEPH MCMAHON
DISTRICT UTILITY ENGINEER
PHONE: 410-321-2841

MR. RANDALL SCOTT
ASSISTANCE DISTRICT ENGINEER-TRAFFIC
PHONE: 410-321-2780

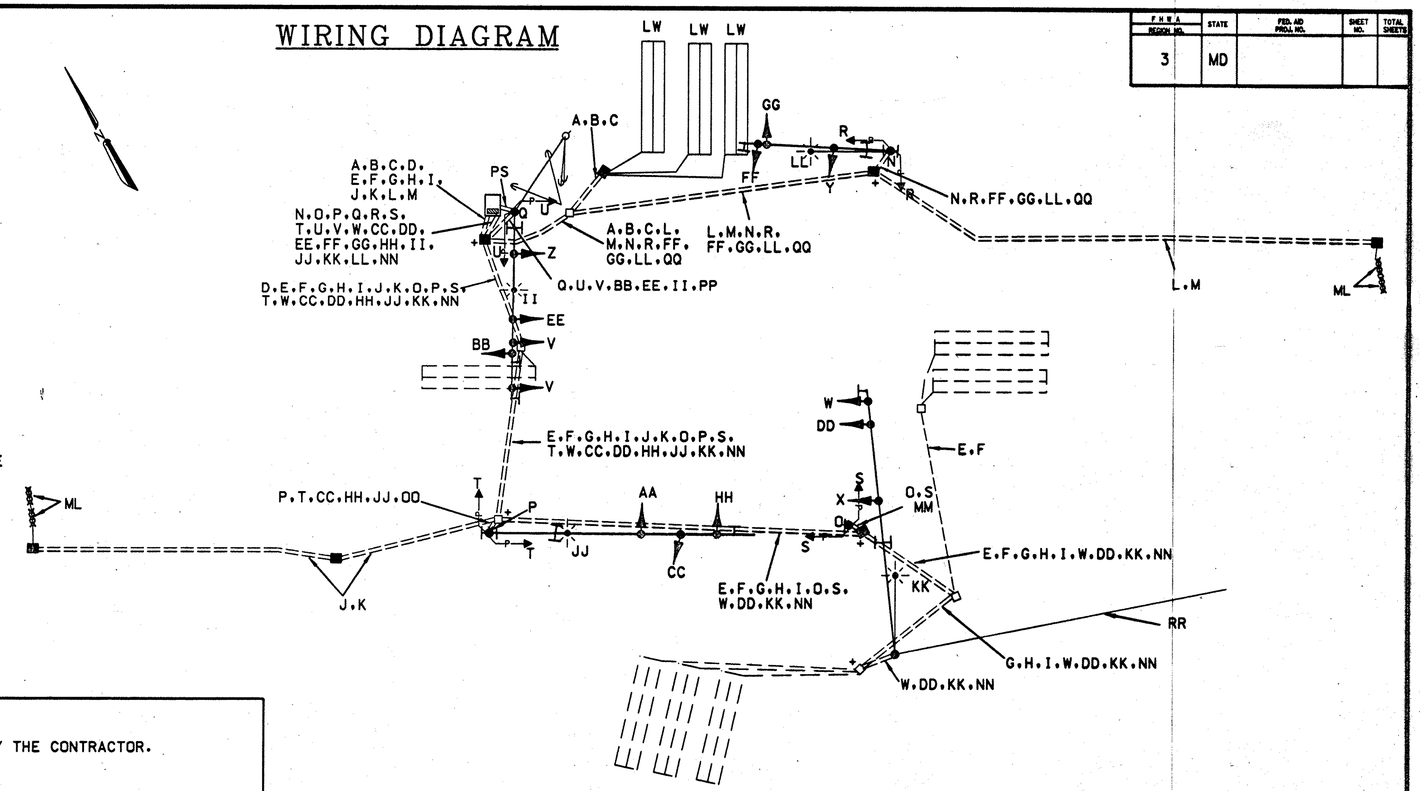
MR. RICHARD L. DAFF, SR.
CHIEF, TRAFFIC OPERATION DIVISION
PHONE: 410-787-7630

MR. DAVID RAMSEY
ASSISTANCE DISTRICT ENGINEER-MAINTENANCE
PHONE: 410-321-2761

WIRING KEY

A.B.C.D. E.F.G.H.I	- 2 CONDUCTOR ELECTRICAL CABLE (#14 AWG) ALUMINUM SHIELDED
J.K.L.M	- MICRO-LOOP PROBE LEAD-IN
N.O.P.Q	- 2 CONDUCTOR ELECTRICAL CABLE (#14 AWG)
R.S.T.U. V.W.X.Y. Z.AA.BB	- 5 CONDUCTOR ELECTRICAL CABLE (#14 AWG)
CC.DD.EE. FF.GG.HH	- 7 CONDUCTOR ELECTRICAL CABLE (#14 AWG)
II.JJ. KK.LL	- 2 CONDUCTOR ELECTRICAL CABLE (#12 AWG)
MM.NN.OO. PP.QQ	- STRANDED BARE COPPER GROUND WIRE (#6 AWG)
RR	- 12 PAIR COMMUNICATIONS CABLE OVERHEAD SELF-SUPPORTING
LW	- LOOP WIRE (#14 AWG)
ML	- MICRO-LOOP PROBE SET
PS	- PROPOSED UNDERGROUND POWER SOURCE
+	- 3/4" x 10' GROUND ROD

WIRING DIAGRAM



EQUIPMENT LIST

A. EQUIPMENT TO BE SUPPLIED BY THE SHA.

CAT CODE	ITEM	QUANTITY	DESCRIPTION
900000		3 EA	12 INCH 2 WAY 2 SECTION SIGNAL SIDE OF POLE MOUNT
900000		1 EA	12 INCH 2 WAY 2 SECTION PEDESTAL MOUNT
900000		3 EA	(CONT/CAB/ADD) DETECTOR AMPLIFIER 4-CH RACK MT
900000		1 EA	(CONT/CAB/ADD) DETECTOR PANEL
900000		1 EA	(CONT/CAB/ADD) DETECTOR RACK POWER SUPPLY
900000		10 EA	(MAST ARM MT) 12" 1-WAY, 3-SECTION SIGNAL (POLYCARBONATE)
900000		2 EA	(MAST ARM MT) 12" 1-WAY, 5-SECTION SIGNAL (POLYCARBONATE)
900000		2 EA	(MAST ARM MT) 8" & 12" COMBO SIGNAL (POLYCARBONATE)
900000		1 EA	CABINET INTERSECTION MONITOR, SIZE 6
900000		1 EA	CONTROLLER ASC II W/ TELEMETRY
900000		23 SF	R3-5L (LEFT TURN ONLY) (30"X36") 3 EACH MAST ARM MOUNTED
900000		11 SF	SHIELD ASSEMBLY (NORTH, MD 147,RIGHT ARROW) (30"X51") 1 EACH POLE MOUNTED
900000		11 SF	SHIELD ASSEMBLY (SOUTH, MD 147,RIGHT ARROW) (30"X51") 1 EACH POLE MOUNTED
900000		25 SF	SHIELD ASSEMBLY (NORTH,MD 147, LEFT ARROW) (48"X75") 1 EACH POLE MOUNTED
900000		25 SF	SHIELD ASSEMBLY (SOUTH, MD 147,LEFT ARROW) (48"X75") 1 EACH POLE MOUNTED
900000		13 SF	W11A-2 (PEDESTRIAN CROSSING) (30" X 30") 2 EACH GROUND MOUNTED
900000		12 SF	W13-4 (ON RAMP) (24" X 36") 2 EACH GROUND MOUNTED
900000		44 SF	D-3(1) (HARFORD RD) (VAR.X16") 4 EACH MAST ARM MOUNTED
900000		44 SF	D-3(1) (JOPPA RD) (VAR.X16") 4 EACH MAST ARM MOUNTED
965001		4 EA	PUSHBUTTON AND SIGN (R10-4, PUSH BUTTON TO CROSS JOPPA RD.)

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

CAT CODE	ITEM	QUANTITY	DESCRIPTION
100000		1 EA	MAINTENANCE OF TRAFFIC
203030		3 CY	TEST PIT EXCAVATION
585443		655 LF	12 INCH WHITE PERMANENT PREFORMED PAVEMENT MARKING TAPE
585445		155 LF	24 INCH WHITE PERMANENT PREFORMED PAVEMENT MARKING TAPE
585448		6 EA	PERMANENT PREFORMED PAVEMENT MARKING ARROW
585450		245 LF	REMOVE EXISTING PAVEMENT MARKINGS - ANY WIDTH
500000		2 EA	REMOVE EXISTING PAVEMENT MARKINGS LETTER OR ARROW
655104		48 SF	4 INCH CONCRETE SIDEWALK
801004		19 CY	FURNISH AND INSTALL CONCRETE FOR SIGNAL FOUNDATION
800000		1 EA	FURNISH AND INSTALL BREAKAWAY PEDESTAL POLE (ANY SIZE)
800000		22 EA	INSTALL SIGNAL HEAD (ANY TYPE)
800000		4 EA	FURNISH AND INSTALL MICROLOOP PROBE SET WITH 500 FT LEAD-IN
865201		4 EA	INSTALL PUSHBUTTON AND SIGN
871202		1 EA	INSTALL CONTROLLER AND CABINET - BASE MOUNT
862102		380 LF	FURNISH AND INSTALL SAWCUT FOR SIGNAL (LOOP DETECTOR)
805160		35 LF	FURNISH AND INSTALL 1 INCH LIQUID TIGHT FLEXIBLE NON METALLIC CONDUIT FOR DETECTOR SLEEVE
800000		450 LF	FURNISH AND INSTALL 2 INCH SCH 80 RIGID PVC CONDUIT - TRENCHED
805145		120 LF	FURNISH AND INSTALL 2 INCH SCH 80 RIGID PVC CONDUIT - SLOTTED
805150		75 LF	FURNISH AND INSTALL 3 INCH SCH 80 RIGID PVC CONDUIT - SLOTTED
805155		315 LF	FURNISH AND INSTALL 4 INCH SCH 80 RIGID PVC CONDUIT - SLOTTED
811001		7 EA	FURNISH AND INSTALL ELECTRICAL HANDHOLE
837001		6 EA	FURNISH AND INSTALL GROUND ROD -3/4INCH DIAMETER X 10 FOOT LENGTH
822001		500 LF	FURNISH AND INSTALL 12-PAIR COMMUNICATION CABLE SELF-SUPPORTING (OVERHEAD)
862101		1,405 LF	FURNISH AND INSTALL LOOP WIRE ENCASED IN FLEXIBLE TUBING (NO 14 AWG)
861104		1,350 LF	FURNISH AND INSTALL ELECTRICAL CABLE - 2 CONDUCTOR (ALUMINUM SHIELDED)
861105		555 LF	FURNISH AND INSTALL ELECTRICAL CABLE - 2 CONDUCTOR (NO 14 AWG)
861107		1,235 LF	FURNISH AND INSTALL ELECTRICAL CABLE - 5 CONDUCTOR (NO 14 AWG)
861108		1,140 LF	FURNISH AND INSTALL ELECTRICAL CABLE - 7 CONDUCTOR (NO 14 AWG)
861116		390 LF	FURNISH AND INSTALL ELECTRICAL CABLE - 2 CONDUCTOR (NO 12 AWG) TYPE "TC"
802501		410 LF	FURNISH AND INSTALL NO 6 AWG STRANDED BARE COPPER GROUND WIRE
801106		36 LF	FURNISH & INSTALL WOOD SIGN SUPPORTS 4 INCH X 6 INCH
813015		183 SF	INSTALL OVERHEAD SIGN
800000		4 EA	FURNISH AND INSTALL 250 WATT HPS LUMINAIRE WITH PHOTOCELL
800000		4 EA	FURNISH AND INSTALL LIGHTING BRACKET ARM FOR TRAFFIC SIGNAL STRUCTURE
800000		5 EA	REMOVE AND DISPOSE OF EXISTING FOUNDATION 12 INCHES BELOW GRADE
816001		1 EA	REMOVE & SALVAGE OF CABINET (ANY TYPE)
800000		1 EA	REMOVE AND DISPOSE OF EXISTING MATERIAL AND EQUIPMENT
838003		1 EA	FURNISH AND INSTALL CONTROL AND DISTRIBUTION EQUIPMENT (120/240V 1PHASE 3 WIRE SYSTEM)
800000		1 EA	FURNISH AND INSTALL 27' STEEL POLE WITH A SINGLE 38 FOOT MAST ARM
800000		1 EA	FURNISH AND INSTALL 27' STEEL POLE WITH A SINGLE 50 FOOT MAST ARM
800000		2 EA	FURNISH AND INSTALL MAST ARM POLE AND 70 FOOT MAST ARM
800000		10 SF	RELOCATE EXISTING SIGN

PHASING SEQUENCE 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	G	R	R	G	G	R	R	R	R	R	R	R	R	DW	DW	DW	DW	DW	DW	DW	DW
1 & 5 Change	to 1 & 6 or 2 & 5 or 2 & 6																					
Phase 1 & 6	G	G	G	G	R	R	R	R	R	R	R	R	R	R	DW	DW	DW	DW	DW	DW	DW	DW
1 Change	Y	Y	G	G	R	R	R	R	R	R	R	R	R	R	DW	DW	DW	DW	DW	DW	DW	DW
Phase 2 & 5	R	R	R	R	G	G	G	G	R	R	R	R	R	R	DW	DW	DW	DW	DW	DW	DW	DW
5 Change	R	R	R	R	Y	Y	G	G	R	R	R	R	R	R	DW	DW	DW	DW	DW	DW	DW	DW
Phase 2 & 6	R	R	G	G	R	R	G	G	R	R	R	R	R	R	WK	WK	WK	WK	DW	DW	DW	DW
PED Clear	R	R	G	G	R	R	G	G	R	R	R	R	R	R	FL/DW	FL/DW	FL/DW	FL/DW	DW	DW	DW	DW
2 & 6 Change	R	R	Y	Y	R	R	Y	Y	R	R	R	R	R	R	DW	DW	DW	DW	DW	DW	DW	DW
Phase 3 & 7	R	R	R	R	R	R	R	R	G	G	R	G	G	R	DW	DW	DW	DW	DW	DW	DW	DW
3 & 7 Change	to 3 & 4 or 7 & 8 or 4 & 8																					
Phase 3 & 4	R	R	R	R	R	R	R	R	R	R	R	G/G	G/G	G	DW	DW	DW	DW	DW	DW	DW	DW
3 Change	R	R	R	R	R	R	R	R	R	R	R	Y/G	Y/G	G	DW	DW	DW	DW	DW	DW	DW	DW
Phase 7 & 8	R	R	R	R	R	R	R	R	G/G	G/G	G	R	R	R	DW	DW	DW	DW	DW	DW	DW	DW
7 Change	R	R	R	R	R	R	R	R	Y/G	Y/G	G	R	R	R	DW	DW	DW	DW	DW	DW	DW	DW
Phase 4 & 8	R	R	R	R	R	R	R	R	G	G	G	G	G	G	DW	DW	DW	DW	DW	DW	DW	DW
4 & 8 Change	R	R	R	R	R	R	R	R	Y	Y	Y	Y	Y	Y	DW	DW	DW	DW	DW	DW	DW	DW
Alt Phase 4 & 8	R	R	R	R	R	R	R	R	G	G	G	G	G	G	DW	DW	DW	DW	WK	WK	WK	WK
PED Clear	R	R	R	R	R	R	R	R	G	G	G	G	G	G	DW	DW	DW	DW	FL/DW	FL/DW	FL/DW	FL/DW
Alt 4 & 8 Change	R	R	R	R	R	R	R	R	Y	Y	Y	Y	Y	Y	DW	DW	DW	DW	DW	DW	DW	DW
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	FL/R	DARK	DARK	DARK	DARK	DARK	DARK	DARK	DARK

TS-2 OF 2

REVISIONS
REDLINE REVISION NO.1
JULY 20,1999

APPROVALS

ASST. DIVISION CHIEF, TEDD

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 147 (HARFORD RD.) & JOPPA RD.

DATE 5/25/99

DRAWN BY: R. MILSTEAD	F.A.P. NO.		PLAN SHEET NO.: TS-3016B	SHEET NO. ___ OF ___
CHECK BY: T. BRUDIS	S.H.A. NO.	BA 1815176		
SCALE: NONE	COUNTY	BALTIMORE		

BAI BRUDIS & ASSOCIATES, INC.
CONSULTING ENGINEERS

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