

# PROJECT DESCRIPTION

## GENERAL

THIS PORTION OF THE PROJECT INVOLVES THE MODIFICATION OF THE EXISTING TRAFFIC CONTROL SIGNAL DUE TO THE GEOMETRIC IMPROVEMENTS AT THE INTERSECTION OF US 40 ALT. AND MD ROUTE 658 IN ALLEGANY COUNTY. THE SIGNAL IMPROVEMENTS INCLUDES NEW MAST ARMS, SIGNAL HEADS, SIGNS, PAVEMENT MARKINGS, DETECTORS AND THE INSTALLATION OF NEW CONDUIT AND NEW INTERCONNECT CABLE ALONG MD 658 TO I-68 OFF RAMP/MD 49.

US 40 ALT. RUNS IN A EAST-WEST DIRECTION.

NOTE: SEE INTERCONNECT PLAN SHEET

## INTERSECTION OPERATION

### 1. NORMAL OPERATION

THE INTERSECTION WILL OPERATE IN A NEMA SIX PHASE, FULL TRAFFIC ACTUATED MODE. THE US 40 ALT. APPROACHES WILL OPERATE CONCURRENTLY AND THE MD 658/CULPER DR. WILL OPERATE IN A SPLIT PHASE OPERATION.

EAST AND WESTBOUND US 40 ALT. WILL HAVE AN EXCLUSIVE LEFT TURN PHASE WITH A NORTH TO EASTBOUND RIGHT TURN OVERLAP ALONG MD ROUTE 658.

### 2. SPECIAL OPERATION

THE INTERSECTION WILL OPERATE AS INDICATED ABOVE UNLESS THE OPTICOM DETECTOR IS ACTUATED ON THE WESTBOUND US40 ALT. APPROACH WHICH WILL PRE-EMPTY THE TRAFFIC SIGNAL AND STOP ALL APPROACHES EXCEPT WESTBOUND US 40 ALT.

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

# EQUIPMENT LIST

## A. EQUIPMENT TO BE SUPPLIED BY THE SHA.

CAT CODE	ITEM	QUANTITY	DESCRIPTION
900000	1 EA	(CONT/CAB/ADD) 360 OPTICOM RACK	
900000	4 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	1 EA	TELEMETRY MODULE WITH HARNESS	
900000	1 EA	CABINET INTERSECTION MONITOR, SIZE 6	
900000	1 EA	CONTROLLER ASC II W/ TELEMETRY	
900000	16 SF	R3-5L (LEFT TURN ONLY) (30"X36") 2 EACH MAST ARM MOUNTED	
900000	8 SF	R3-5R (RIGHT TURN ONLY) (30"X36") 1 EACH MAST ARM MOUNTED	
900000	8 SF	R3-6L (LEFT THRU) (30"X36") 1 EACH MAST ARM MOUNTED	
900000	54 SF	D-3(1) (NATIONAL HWY) (VAR.X16") 4 EACH MAST ARM MOUNTED	
900000	14 SF	D-3(1) (← CAMPGROUND RD) (VAR.X16") 1 EACH MAST ARM MOUNTED	
900000	14 SF	D-3(1) (← CULPER DR) (VAR.X16") 1 EACH MAST ARM MOUNTED	
900000	14 SF	D-3(1) (CAMPGROUND RD →) (VAR.X16") 1 EACH MAST ARM MOUNTED	
900000	14 SF	D-3(1) (CULPER DR →) (VAR.X16") 1 EACH MAST ARM MOUNTED	
900000	11 SF	SHIELD ASSEMBLY (M3-2,M1-9,M6-1) (30"X51") 1 EACH MAST ARM MOUNTED	
900000	25 SF	SHIELD ASSEMBLY (M3-2,M1-9,M6-1) (48"X75") 1 EACH MAST ARM MOUNTED	

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

CAT CODE	ITEM	QUANTITY	DESCRIPTION
203030	2	CY	TEST PIT EXCAVATION
585624	46	LF	24 INCH HEAT APPLIED WHITE PERMANENT PREFORMED THERMOPLASTIC PAVEMENT MARKINGS
585626	8	EA	HEAT APPLIED PERMANENT PREFORMED THERMOPLASTIC PAVEMENT MARKING LETTER
585630	6	EA	HEAT APPLIED PERMANENT PREFORMED THERMOPLASTIC PAVEMENT MARKING ARROW
801004	13	CY	FURNISH AND INSTALL CONCRETE FOR SIGNAL FOUNDATION
860272	40	EA	FURNISH AND INSTALL 12 INCH VEHICULAR TRAFFIC SIGNAL HEAD SECTION
800000	1	EA	FURNISH AND INSTALL 3M OPTICOM #721 DETECTOR EYE
800000	1	EA	FURNISH AND INSTALL 3M OPTICOM #760 CARD RACK
800000	1	EA	FURNISH AND INSTALL 3M OPTICOM #762 DISCRIMINATOR MODULE
800000	3	EA	FURNISH AND INSTALL MICROLOOP PROBE SET WITH 500 FT LEAD-IN
860292	3	EA	CUT, CLEAN, GALVANIZE AND CAP TRAFFIC SIGNAL STRUCTURE
800000	1	EA	FURNISH AND INSTALL 1 INCH WEATHERHEAD
871202	1	EA	INSTALL CONTROLLER AND CABINET - BASE MOUNT
862102	760	LF	FURNISH AND INSTALL SAWCUT FOR SIGNAL (LOOP DETECTOR)
805010	35	LF	FURNISH AND INSTALL 1" RIGID METAL ELECTRICAL CONDUIT - GALVANIZED RISER
805160	48	LF	FURNISH AND INSTALL 1 INCH LIQUID TIGHT FLEXIBLE NON METALLIC CONDUIT FOR DETECTOR SLEEVE
800000	10	LF	FURNISH AND INSTALL 2 INCH SCH 80 RIGID PVC CONDUIT - TRENCHED
800000	45	LF	FURNISH AND INSTALL 3 INCH SCH 80 RIGID PVC CONDUIT - TRENCHED
805150	125	LF	FURNISH AND INSTALL 3 INCH SCH 80 RIGID PVC CONDUIT - SLOTTED
800000	40	LF	FURNISH AND INSTALL 4 INCH SCH 80 RIGID PVC CONDUIT - TRENCHED
805118	70	LF	FURNISH AND INSTALL 4 INCH SCH 80 RIGID PVC CONDUIT - BORED
805155	95	LF	FURNISH AND INSTALL 4 INCH SCH 80 RIGID PVC CONDUIT - SLOTTED
811001	3	EA	FURNISH AND INSTALL ELECTRICAL HANDHOLE
837001	4	EA	FURNISH AND INSTALL GROUND ROD 3/4 INCH DIAMETER X 10 FOOT LENGTH
860288	100	LF	FURNISH AND INSTALL 4 CONDUCTOR OPTICOM DETECTOR CABLE
862101	2352	LF	FURNISH AND INSTALL LOOP WIRE ENCASED IN FLEXIBLE TUBING (NO 14 AWG)
861104	1432	LF	FURNISH AND INSTALL ELECTRICAL CABLE - 2 CONDUCTOR (ALUMINUM SHIELDED)
861107	78	LF	FURNISH AND INSTALL ELECTRICAL CABLE - 5 CONDUCTOR (NO 14 AWG)
861108	1440	LF	FURNISH AND INSTALL ELECTRICAL CABLE - 7 CONDUCTOR (NO 14 AWG)
802501	270	LF	FURNISH AND INSTALL NO 6 AWG STRANDED BARE COPPER GROUND WIRE
810010	30	LF	FURNISH AND INSTALL ELECTRICAL CABLE - 3 WIRE NO 4 AWG THHN/THWN
813015	176	SF	INSTALL OVERHEAD SIGN
838003	1	EA	FURNISH AND INSTALL CONTROL AND DISTRIBUTION EQUIPMENT (120/240V 1PHASE 3 WIRE SYSTEM)
818030	1	EA	FURNISH AND INSTALL MAST ARM POLE AND 38 FOOT MAST ARM
818041	1	EA	FURNISH AND INSTALL MAST ARM POLE AND 60 FOOT MAST ARM
818051	1	EA	FURNISH AND INSTALL MAST ARM POLE AND TWIN (50 FT / 70 FT) OR 70 FT / 50 FT) MAST ARMS
800000	265	LF	PULL BACK EXISTING CABLE/WIRE AND RE-INSTALL INTO CONDUIT RUN
800000	5	EA	REMOVE AND DISPOSE OF EXISTING FOUNDATION 12 INCHES BELOW GRADE
873001	1	LS	REMOVE AND DISPOSE OF EXISTING MATERIAL AND EQUIPMENT
802501	270	LF	FURNISH AND INSTALL NO 6 AWG STRANDED BARE COPPER GROUND WIRE

NOTE: EXISTING EQUIPMENT TO BE REMOVED BY THE CONTRACTOR AND BECOME THE PROPERTY OF THE OF THE CONTRACTOR.

# PROJECT CONTACTS

THE CONTACT PERSONS FOR DISTRICT #6 ARE AS FOLLOWS:

MR. FRED CROZIER  
DISTRICT ENGINEER  
PHONE: 301-729-8486

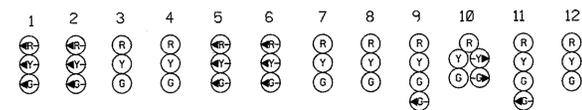
MR. LARRY HUMBERTSON  
DISTRICT UTILITY ENGINEER  
PHONE: 301-729-8439

MR. GEORGE SMALL  
ASSISTANCE DISTRICT ENGINEER-TRAFFIC  
PHONE: 301-729-8444

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

MR. GEORGE FRANKENBERRY  
ASSISTANT DISTRICT ENGINEER-MAINTENANCE  
PHONE: 301-729-8457

## PHASE CHART

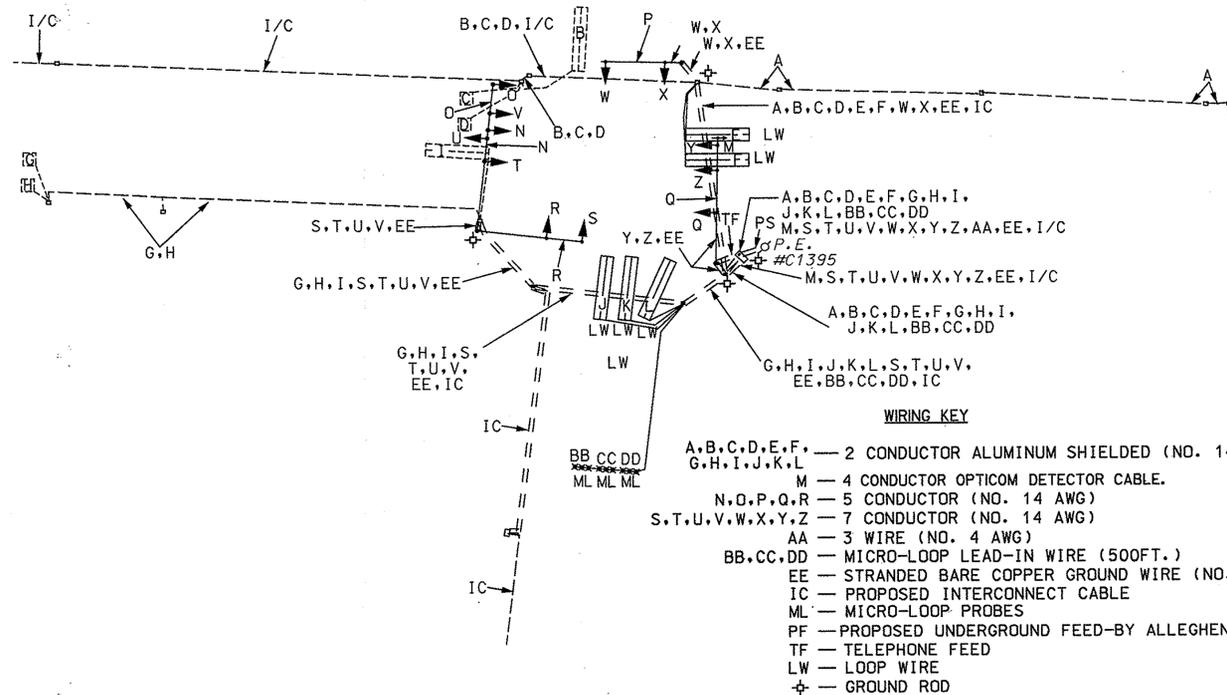


Phase	1	2	3	4	5	6	7	8	9	10	11	12
Phase 1 & 5	←G-	←G-	R	R	←G-	←G-	R	R	R	←G-	R	R
1 & 5 change	THIS PHASE MAY CHANGE TO PHASE 1+6, 2+5 OR 2+6											
Phase 1 & 6	←G-	←G-	G	G	←R-	←R-	R	R	R	R	R	R
1 & 6 change	←Y-	←Y-	G	G	←R-	←R-	R	R	R	R	R	R
Phase 2 & 5	←R-	←R-	R	R	←G-	←G-	G	G	R	←G-	R	R
2 & 5 change	←R-	←R-	R	R	←Y-	←Y-	G	G	R	←Y-	R	R
Phase 2 & 6	←R-	←R-	G	G	←R-	←R-	G	G	R	R	R	R
2 & 6 change	←R-	←R-	Y	Y	←R-	←R-	Y	Y	R	R	R	R
Phase 3	←R-	←R-	R	R	←R-	←R-	R	R	R	R	←G-	G
3 change	←R-	←R-	R	R	←R-	←R-	R	R	R	R	Y	Y
Phase 4	←R-	←R-	R	R	←R-	←R-	R	R	←G-	G	R	R
4 change	←R-	←R-	R	R	←R-	←R-	R	R	Y	Y	R	R
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

## FIREHOUSE PRE-EMPTION

Pre-emption Phase 2 & 5	←R-	←R-	R	R	←G-	←G-	G	G	R	R	R	R
Pre-emption Clearance	←Y-	←Y-	R	R	←Y-	←Y-	Y	Y	R	R	R	R
Normal Operation Phase 2 & 6	←R-	←R-	G	G	←R-	←R-	G	G	R	R	R	R

## WIRING DIAGRAM



BAI BRUDIS & ASSOCIATES, INC.  
CONSULTING ENGINEERS

9220 RUNSEY ROAD, SUITE 210  
COLUMBIA, MARYLAND 21045  
(410)-884-3607

REVISIONS	APPROVALS	MARYLAND DOT - STATE HIGHWAY ADMINISTRATION Office of Traffic & Safety TRAFFIC ENGINEERING DESIGN DIVISION US 40 ALT. & MD 658 (CAMPGROUND ROAD) - CULPER DRIVE	
(H) GEOMETRIC IMPROVEMENTS FOR A DOUBLE LEFT ON MD 658. 07/2001 SHA No. AL841976 (RJM) ADD EMERGENCY SERVICES SIGNAL PRE-EMPTION (OPTICOM) FOR WESTBOUND US 40 ALT. 05/2000 SHA No. X1005785 (MK) INSTALL INTERCONNECT CABLE AND LOOP DETECTORS 04/1998 (MR) DAZ   BRK   TH	TEAM LEADER, TRAFFIC ENGINEERING DESIGN DIVISION ASST. CHIEF, TRAFFIC ENGINEERING DESIGN DIVISION CHIEF, TRAFFIC ENGINEERING DESIGN DIVISION DIRECTOR, TRAFFIC & SAFETY	DRAWN BY: S.A. CHECKED BY: R.D. SCALE: N.T.S. DATE: APRIL 1998	F.A.P. NO. S.H.A. NO. COUNTY: ALLEGANY LOG MILE: 01A04007.46 TS NO. TS-312 H T.I.M.S. NO. E-097 SHEET NO. 31 of 56