

**PROJECT DESCRIPTION**

**GENERAL**

THIS PROJECT INVOLVES THE MODIFICATION OF THE EXISTING FULL-TRAFFIC-ACTUATED SIGNAL AT MD 178 AND RELOCATED BESTGATE ROAD \ HOUSLEY ROAD IN ANNE ARUNDEL COUNTY. MD 178 IS ASSUMED TO RUN IN A NORTH-SOUTH DIRECTION.

THE PROJECT IS NECESSITATED BY THE WIDENING OF HOUSLEY ROAD FROM ONE TO THREE INBOUND LANES. THE WORK WILL CONSIST OF REPLACING A MAST ARM, POLE AND DETECTORS REQUIRED BY THE WIDENING AND THE INSTALLATION OF AN EXCLUSIVE-PERMISSIVE LEFT TURN PHASE FOR NORTHBOUND MD 178

**INTERSECTION OPERATION**

THE INTERSECTION CURRENTLY OPERATES IN A NEMA FIVE-PHASE, FULL-TRAFFIC ACTUATED MODE, WITH THE MD 178 APPROACHES RUNNING CONCURRENTLY AND THE REL. BESTGATE RD. \ HOUSLEY RD. APPROACHES OPERATING AS SEPARATE PHASES.

AN EXCLUSIVE/PERMISSIVE LEFT TURN PHASE IS CURRENTLY PROVIDED FOR SOUTHBOUND MD 178.

THE INTERSECTION OPERATION WILL BE REVISED TO A SIX-PHASE OPERATION WITH THE ADDITION OF AN EXCLUSIVE-PERMISSIVE LEFT TURN PHASE FOR NORTHBOUND MD 178.

**CONTROLLER REQUIREMENTS**

THE EXISTING FULL-TRAFFIC-ACTUATED, EIGHT-PHASE CONTROLLER HOUSED IN A BASE MOUNTED CABINET WILL BE USED. TWO FOUR-CHANNEL TIME-DELAY-OUTPUT LOOP DETECTOR AMPLIFIERS WILL BE INSTALLED INTO THE EXISTING CABINET.

**MAINTENANCE OF TRAFFIC**

THE TRAFFIC CONTROL STANDARD NUMBERS SHALL BE REFERENCED FOR THE PROJECT.

STANDARD NO. MD-105.00	STANDARD NO. MD-105.103 (INTERSECTION FLAGGING OPERATION)
STANDARD NO. MD-105.01	STANDARD NO. MD-105.105 (SHOULDER WORK)
STANDARD NO. MD-105.02	STANDARD NO. MD-105.107 (LANE SHIFT)
STANDARD NO. MD-105.101 (FLAGGING OPERATION)	STANDARD NO. MD-105.109 (LANE SHIFT)

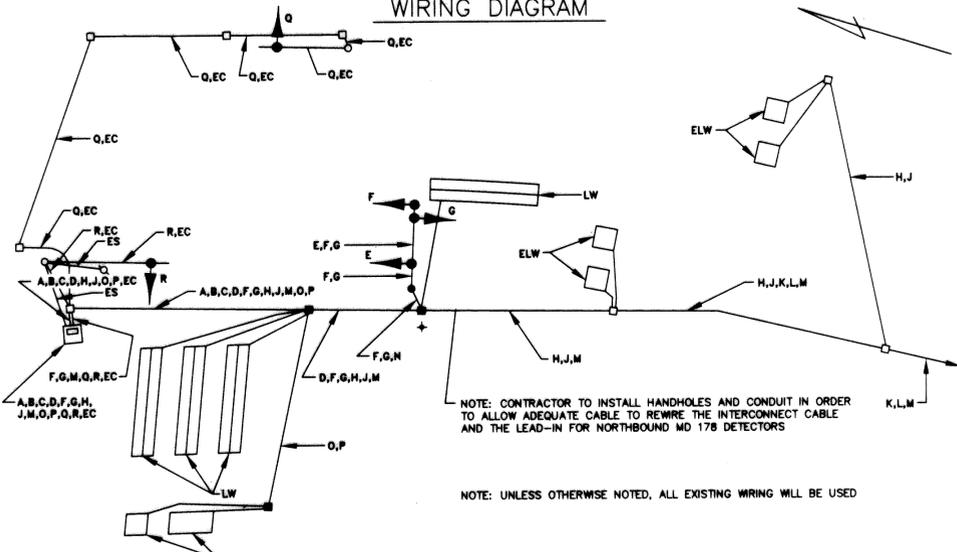
NOTE: STANDARDS TO BE MODIFIED, BY REPLACING W21-5 SIGN WITH A W20-1 SIGN (ROAD WORK AHEAD).

**PROJECT CONTACTS**

THE CONTACT PERSONS FOR DISTRICT #5 ARE AS FOLLOWS:

MR. PAUL ARMSTRONG DISTRICT ENGINEER PHONE: (410) 841-5450	MR. JOHN MAYS ASSISTANT DISTRICT ENGINEER - UTILITY PHONE: (410) 841-5450
MR. LAWRENCE ELLIOTT ASSISTANT DISTRICT ENGINEER - TRAFFIC PHONE: (410) 841-5450	MR. RICHARD L. DAFF, SR. CHIEF, TRAFFIC OPERATIONS DIVISION PHONE: (410) 787-7630
MR. RAYMOND HUTZLER ASSISTANT DISTRICT ENGINEER - MAINTENANCE PHONE: (410) 841-5461	

**WIRING DIAGRAM**



**WIRING KEY**

A, B, C, D } 2-CONDUCTOR ELECTRICAL CABLE (ALUMINUM SHIELDED)	M } EXISTING INTERCONNECT CABLE	ELW } EXISTING LOOP WIRE
E } 5-CONDUCTOR ELECTRICAL CABLE (NO. 14 A.W.G.)	N } STRANDED BARE COPPER GROUND WIRE (NO. 6 A.W.G.)	LW } LOOP WIRE (NO. 14 A.W.G.)
F, G } 2-CONDUCTOR ELECTRICAL CABLE (NO. 14 A.W.G.)	P } 2-CONDUCTOR ELECTRICAL CABLE (ALUMINUM SHIELDED)	+ } 3/4 IN. X 10 FT. GROUND ROD
H, J, K } EXISTING 2-CONDUCTOR ELECTRICAL CABLE (ALUMINUM SHIELDED)	Q, R } 5-CONDUCTOR ELECTRICAL CABLE (NO. 14 A.W.G.)	ES } ELECTRIC SERVICE BG&E 306100
	EC } EXISTING CABLE	

**EQUIPMENT LIST "A"**

A. EQUIPMENT TO BE SUPPLIED BY THE SHA

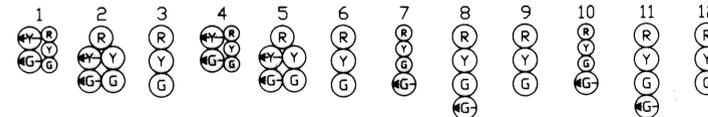
QUANTITY	DESCRIPTION
1 EACH	12 IN., ONE-WAY, THREE-SECTION (R,Y,G) TRAFFIC SIGNAL HEAD WITH ADJUSTABLE BRACKET FOR MAST ARM MOUNTING AND TUNNEL VISORS.
2 EACH	12 IN., ONE-WAY, FIVE-SECTION (R,Y,YA,G,GA) TRAFFIC SIGNAL HEAD WITH ADJUSTABLE BRACKET FOR MAST ARM MOUNTING AND TUNNEL VISORS.
1 EACH	8 IN./12 IN., ONE-WAY, FIVE-SECTION (R,Y,YA,G,GA) TRAFFIC SIGNAL HEAD WITH ADJUSTABLE BRACKET FOR MAST ARM MOUNTING AND TUNNEL VISORS.
80 S.F.	SHEET ALUMINUM SIGNS TO CONSIST OF : - 1 EACH D3-2 SIGN (VARIABLE X 32 IN.) - MAST ARM MOUNT. - 3 EACH R10-12 SIGN (36 IN. X 42 IN.) - MAST ARM MOUNT - 1 EACH R3-5L SIGN (30 IN. X 36 IN.) - MAST ARM MOUNT - 1 EACH R3-5R SIGN (30 IN. X 36 IN.) - MAST ARM MOUNT - 1 EACH R3-6 SIGN (30 IN. X 36 IN.) - MAST ARM MOUNT
2 EACH	FOUR-CHANNEL, TIME DELAY OUTPUT, LOOP DETECTOR AMPLIFIER.
2 EACH	8 IN./12 IN., ONE-WAY, FOUR-SECTION (R,Y,G 8 IN.) (GA 12 IN.) TRAFFIC SIGNAL HEAD WITH ADJUSTABLE BRACKET FOR MAST ARM MOUNTING AND TUNNEL VISORS.

**EQUIPMENT LIST "B"**

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

SPEC. SECTION	QUANTITY	DESCRIPTION
104	LUMP SUM	MAINTENANCE OF TRAFFIC
108	LUMP SUM	MOBILIZATION
104.08	300 S.F.	TEMPORARY TRAFFIC SIGNS
104.07	15 U.D.	FLASHING ARROW PANEL
205	1 C.Y.	TEST PIT EXCAVATION
---	40 L.F.	24 IN. WHITE PERMANENT PREFORMED PAVEMENT MARKING TAPE
---	2 EACH	PERMANENT PREFORMED PAVEMENT MARKING ARROW
801	5 C.Y.	FURNISH AND INSTALL CONCRETE FOR SIGNAL FOUNDATION
---	2 EACH	CUT, CLEAN, GALVANIZE AND CAP TRAFFIC SIGNAL STRUCTURE
814	6 EACH	INSTALL SIGNAL HEAD
815	590 L.F.	FURNISH AND INSTALL SAW CUT FOR SIGNAL (LOOP DETECTOR)
805	50 L.F.	FURNISH AND INSTALL 1 IN. LIQUID TIGHT FLEXIBLE NON-METALLIC CONDUIT FOR DETECTOR SLEEVE
805	115 L.F.	FURNISH AND INSTALL 2 IN. SCHEDULE 40 RIGID PVC CONDUIT-TRENCHED
805	130 L.F.	FURNISH AND INSTALL 4 IN. SCHEDULE 40 RIGID PVC CONDUIT-TRENCHED
805	90 L.F.	FURNISH AND INSTALL 4 IN. SCHEDULE 80 RIGID PVC CONDUIT-BORED
811	3 EACH	FURNISH AND INSTALL ELECTRICAL HANDHOLE
804	1 EACH	FURNISH AND INSTALL GROUND ROD - 3/4 IN. DIAMETER X 10 FT. LENGTH
810	2220 L.F.	FURNISH AND INSTALL LOOP WIRE ENCASED IN FLEXIBLE TUBING (NO. 14 A.W.G.)
810	910 L.F.	FURNISH AND INSTALL ELECTRICAL CABLE- 2 CONDUCTOR ALUMINUM SHIELDED (NO. 14 A.W.G.)
810	480 L.F.	FURNISH AND INSTALL ELECTRICAL CABLE- 5 CONDUCTOR (NO. 14 A.W.G.)
810	410 L.F.	FURNISH AND INSTALL ELECTRICAL CABLE- 7 CONDUCTOR (NO. 14 A.W.G.)
804	10 L.F.	FURNISH AND INSTALL STRANDED BARE COPPER GROUND WIRE (NO. 6 A.W.G.)
813	80 S.F.	INSTALL OVERHEAD SIGN
---	LUMP SUM	REMOVAL AND SALVAGE OF EXISTING EQUIPMENT
---	1 EACH	USE EXISTING PLAN AND AS-BUILT TRAFFIC CONTROL DEVICES ON CADD (MICROSTATION)
---	1 EACH	FURNISH AND INSTALL MAST ARM POLE AND 50 FT. ARM
---	2 EACH	RELOCATE EXISTING SIGNAL HEADS
---	660 L.F.	REMOVE AND RE-INSTALL EXISTING CABLE

**PHASE CHART**



PHASE	1	2	3	4	5	6	7	8	9	10	11	12
PHASE 1 + 5	R	R	R	R	R	R	R	R	R	R	R	R
1 + 5 CHANGE	THE CONTROLLER MAY SKIP TO PHASES 1+6, 2+5 OR 2+6											
PHASE 1 + 6	G	G	G	R	R	R	R	R	R	R	R	R
1 CHANGE	Y	Y	Y	G	G	G	G	G	G	G	G	G
PHASE 2 + 5	R	R	R	R	R	R	R	R	R	R	R	R
5 CHANGE	R	R	R	Y	Y	Y	Y	Y	Y	Y	Y	Y
PHASE 2 + 6	G	G	G	G	G	G	R	R	R	R	R	R
2 + 6 CHANGE	Y	Y	Y	Y	Y	Y	R	R	R	R	R	R
PHASE 3	R	R	R	R	R	R	G	G	G	R	R	R
3 CHANGE	R	R	R	R	R	R	Y	Y	Y	R	R	R
PHASE 4	R	R	R	R	R	R	R	R	R	G	G	G
4 CHANGE	R	R	R	R	R	R	R	R	R	Y	Y	Y
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

**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. THE CONTRACTOR SHALL NOTIFY THE SHA AT (410) 787-7652 AT LEAST THREE DAYS IN ADVANCE OF DELIVERY.

QUANTITY	DESCRIPTION
1 EACH	STEEL POLE AND MAST ARM

ALL EQUIPMENT TO BE REMOVED AND NOT LISTED ABOVE SHALL BECOME THE PROPERTY OF THE CONTRACTOR

**TRAFFIC CONCEPTS, INC.**

Brightview Business Center  
8258 Veterans Highway  
Suite 19B  
Millersville, MD 21108  
(410) 987-0427

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

MARYLAND DOT - STATE HIGHWAY ADMINISTRATION  
Office of Traffic & Safety  
TRAFFIC ENGINEERING DESIGN DIVISION  
GENERAL INFORMATION SHEET  
MD 178 AND REL. BESTGATE RD. / HOUSLEY RD.

DATE: 12-30-96	DRAWN BY: J. ZAYDEL	F.A.P. NO.:	PLAN SHEET NO.:	SHEET NO.:
SCALE: NONE	DESIGNED BY: J. ZAYDEL	S.H.A. NO.:	TS-3319A.GI	OF
APPROVED BY: [Signature]	CHECKED BY: K. SCHMID	COUNTY: ANNE ARUNDEL		