FHWA REGION NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
3	MD			

PROJECT DESCRIPTION

I. GENERAL

This project involves the installation of a new traffic control signal at the intersection of Boulton Street at Entrance to Harford Mall in Harford County. Boulton Street is considered to run in an east/west direction.

II. INTERSECTION OPERATION

The intersection is to operate in NEMA six (6) phase, full-traffic-actuated mode. Controller, cabinet, and loop detector amplifiers are to be installed. The controller of the intersection is to be interconnected with the controller of the MD 24 and Boulton Street intersection.

SPECIAL NOTE

The controller and cabinet shall be delivered to MD State Highway Administration Traffic Operations Division at 7491 Connelly Drive, Hanover, MD 21076. The Contractor shall contact Mr. Ed Rodenhizer at (410) 787-7650 seventy-two (72) hours prior to the delivery. The controller and cabinet shall be bench-tested by MD State Highway Administration prior to installation.

EQUIPMENT LIST

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

Quantity	Unit	Specification Section	Description
1	EA	817	Pedestrian pushbutton assembly and pushbutton sign
2	EA	813	30" x 36" R3-5 (L) sign - span wire mount
1	EA	813	30" x 36" R3-5 (R) sign - span wire mount
2	EA	813	36" x 42" R 10-12 sign - span wire mount
6	EA	814	12", one-way, three-section (R,Y,G) adjustable traffic signal head having proper span wire hangers, balance adjusters, and tunnel visors
2	EA	814	12", one-way, five-section (R,Y,G,YA,GA) adjustable traffic signal head having proper span wire hangers, balance adjusters, and tunnel visors
2	EA	814	8" & 12", one-way, five-section (8"-R,Y,G 12"-YA,GA) adjustable traffic signal head having proper span wire hangers, balance adjusters, and tunnel visors
4	EA	814	12", two-way, two-section (W,DW) symbolic pedestrian head having proper brackets for pole mounting and cut-away visors
1	EA	816	Eight phase, full-traffic-actuated, solid state digital controller with telemetry isolation board, telemetry module with harness, intersection monitor with harness and battery backup housed in a base mounted cabinet (to be used in a NEMA six (6) phase full-traffic-actuated mode)
5	EA	814	2-channel loop detector amplifier with delay output with detector panel and harness
Lump Sum	LS	108	Mobilization
Lump Sum	LS	104	Maintenance of Traffic (traffic control)
250	SF	104	Temporary construction signs
4	CY	205	Test pit excavation
4	EA	818	30' Strain pole
16	EA	---	1-3/4" x 90" anchor bolts
10	EA	811	Handhole
1020	LF	815	Saw cut
1	EA	950	Control and Distribution equipment (Electrical service Type B-5)
2270	LF	810	Loop detector wire (No. 14 A.W.G.) encased in flexible tubing
730	LF	810	12 Pair voice grade jelly filled telemetry cable (No. 19 A.W.G.)
2100	LF	810	2-conductor electrical cable (aluminum shielded)

EQUIPMENT LIST (cont'd)

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

Quantity	Unit	Specification Section	Description
625	LF	810	2-conductor electrical cable (No. 14 A.W.G.)
1350	LF	810	5-conductor electrical cable (No. 14 A.W.G.)
850	LF	810	7-conductor electrical cable (No. 14 A.W.G.)
1400	LF	818	Bare copper stranded ground wire (No. 6 A.W.G.)
115	LF	805	1" liquid tight flexible non-metallic conduit for loop detector lead-in
1220	LF	805	2" polyvinyl chloride (Schedule 40) electrical conduit - trenched
110	LF	805	2" polyvinyl chloride (Schedule 80) electrical conduit - trenched during construction
20	LF	805	4" polyvinyl chloride (Schedule 40) electrical conduit - trenched
4	EA	805	2", 90-degree bend - PVC (Schedule 40)
2	EA	805	4", 90-degree bend - PVC (Schedule 80)
4	EA	104	Curved arrow (left) - pavement marking tape
2	EA	104	"ONLY" symbol - pavement marking tape
450	LF	555	Preformed pavement marking - white, 12" wide for crosswalk
110	LF	555	Preformed pavement marking - white, 24" wide for stop line
12	CY	801	Concrete foundation for pole base
3	UD	104	Provide flashing arrow panel
325	LF	819	Span wire
4	EA	804	Ground rod

A B C D E F G H I J — 2-Conductor Cable (Aluminum Shielded)

K L M N — 2-Conductor Cable (No. 14 A.W.G.)

O P Q R S T U V W X Y Z — 5-Conductor Cable (No. 14 A.W.G.)

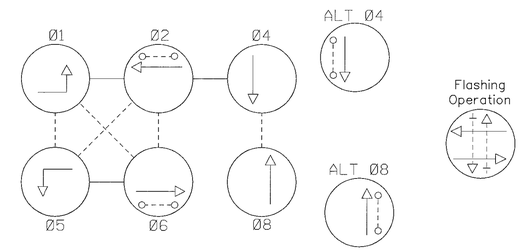
a b c d e f — 7-Conductor Cable (No. 14 A.W.G.)

IC – 12 Pair voice grade jelly filled telemetry cable (No. 19 A.W.G.)

LW – Loopwire (No. 14 A.W.G.) in Flexible Tubing

EL – Existing loopwire

NEMA PHASING

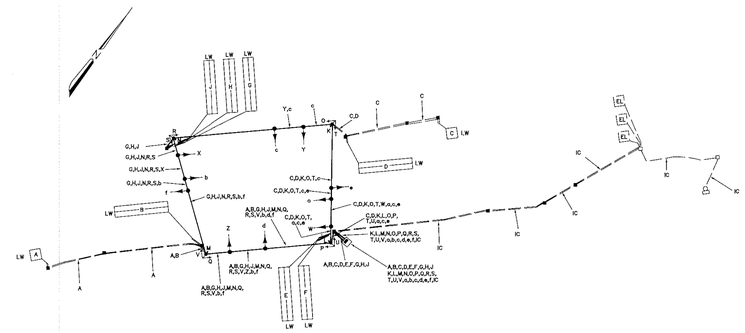


1.) Phases associated by a solid line will not operate concurrently.
2.) Phases associated by a dashed line will operate concurrently.

PHASE CHART

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Phase 1 & 5	R G	R G	R	R G	R G	R	R	R	R	R	DW	DW	DW	DW	DW	DW	DW	DW
1 & 5 Change To Phase 1 & 6 or Phase 2 & 5																		
Phase 1 & 6	R G	R G	G	R	R	R	R	R	R	R	DW	DW	DW	DW	DW	DW	DW	DW
1 Change	Y	Y	G	R	R	R	R	R	R	R	DW	DW	DW	DW	DW	DW	DW	DW
Phase 2 & 5	R	R	R	G	G	G	R	R	R	R	DW	DW	DW	DW	DW	DW	DW	DW
5 Change	R	R	R	Y	Y	G	R	R	R	R	DW	DW	DW	DW	DW	DW	DW	DW
Phase 2 & 6	G	G	G	G	G	G	R	R	R	R	WK	WK	WK	WK	DW	DW	DW	DW
Ped Clearance	G	G	G	G	G	G	R	R	R	R	FL/DW	FL/DW	FL/DW	FL/DW	DW	DW	DW	DW
2 & 6 Change	Y	Y	Y	Y	Y	Y	R	R	R	R	DW	DW	DW	DW	DW	DW	DW	DW
Phase 4 & 8	R	R	R	R	R	R	G	G	G	G	DW	DW	DW	DW	DW	DW	DW	DW
4 & 8 Change	R	R	R	R	R	R	Y	Y	Y	Y	DW	DW	DW	DW	DW	DW	DW	DW
Phase Alt 4 & Alt 8	R	R	R	R	R	R	G	G	G	G	DW	DW	DW	DW	WK	WK	WK	WK
Ped Clearance	R	R	R	R	R	R	G	G	G	G	DW	DW	DW	DW	FL/DW	FL/DW	FL/DW	FL/DW
Alt 4 & Alt 8 Change	R	R	R	R	R	R	Y	Y	Y	Y	DW	DW	DW	DW	DW	DW	DW	DW
Flashing Operation	FL/Y	FL/Y	FL/Y	FL/Y	FL/Y	FL/Y	FL/R	FL/R	FL/R	FL/R	DARK	DARK	DARK	DARK	DARK	DARK	DARK	DARK

WIRING DIAGRAM



The Traffic Group

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MDOT - STATE HIGHWAY ADMINISTRATION
Office of Traffic & Safety
TRAFFIC ENGINEERING DESIGN DIVISION

LOG MILE *

DRAWN BY: AA
DES. BY: J.A.B.
CHK. BY: J.A.B.

Boulton Street @ Entrance to Harford Mall

COUNTY: HARFORD

DATE: 03-06-95
SCALE: NONE
F.A.P. NO.
S.H.A. NO. BW 815-802-412

TS/STD. NO. 3547-GI

SHEET NO. 2 OF 2