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

PROJECT DESCRIPTION

I. GENERAL
This portion of the project involves the modification of the existing traffic control signal at the intersection of MD 355 and Indianola Drive/ Watkins Pond Blvd. in Montgomery County, Maryland. MD 355 is considered to run in a north/south direction.

II. INTERSECTION OPERATION
The intersection presently operates in a NEMA four (4) phase, semi-traffic-actuated mode. The intersection is to be modified to a NEMA eight (8) phase, semi-traffic-actuated mode. There will be an exclusive/permissive left turn phase for both the north and southbound movements of MD 355. The MD 355 through movements will operate concurrently with a concurrent pedestrian phase across the east and west legs of the intersection. There will be an exclusive/permissive left turn phase for both the east and westbound movements of Indianola Drive/Watkins Pond Blvd. movements will operate concurrently with an actuated pedestrian phase across the north leg of the intersection. A right turn overlap will be provided for the eastbound Watkins Pond Blvd. to southbound MD 355 movement.

The existing controller/cabinet are to be utilized. Four 2-channel time delay output loop detector amplifiers will be added to the existing base mounted cabinet.

EQUIPMENT LIST

A. Approved S.H.A. equipment to be purchased by the Developer and installed by the Contractor. All equipment in this list shall have catalog cuts submitted for approval prior to installation.

Quantity	Units	Specification Section	Description
1	EA	818	27 ft. steel twin mast arm pole with 70 ft. and 50 ft. mast arms [Note: four 2 in. x 90 in. anchor bolts].
1	EA	818	27 ft. steel mast arm pole with 50 ft. mast arm [Note: four 2 in. x 90 in. anchor bolts].
4	EA	816	2-channel loop detector amplifiers.
2	EA	814	12 in., one-way, three section (R,Y,G) adjustable traffic signal head with mast arm mounting hardware and tunnel visors.
5	EA	814	12 in., one-way, five section (R,Y,YA,G,GA) adjustable traffic signal head with mast arm mounting hardware and tunnel visors.
4	EA	814	12 in./8 in., one-way, five section (12 in. YA, GA/ 8 in. R,Y,G) adjustable traffic signal head with mast arm mounting hardware and tunnel visors.
1	EA	814	12 in., one-way, two section (symbolic DW, WK) adjustable pedestrian signal head with pole mounting hardware and cut-away visors.
1	EA	814	12 in., two-way, two section (symbolic DW, WK) adjustable pedestrian signal head with post top mounting hardware and cut-away visors.
1	EA	818	10 ft. steel pedestal pole with break away transformer base.
21	SF	813	36 in. x 42 in. R 10-12 sign with mast arm mounting hardware.
15	SF	813	30 in. x 36 in. R 3-5(R) sign with mast arm mounting hardware.
15	SF	813	30 in. x 36 in. R 3-5(L) sign with mast arm mounting hardware.
21.5	SF	813	16 in. x Var. D 3-2 (Dual Faced) sign with mast arm mounting hardware.
.75	SF	813	9 in. x 12 in. R 10-3c sign with pole mounting hardware.
1	EA	817	Pedestrian pushbutton assembly.

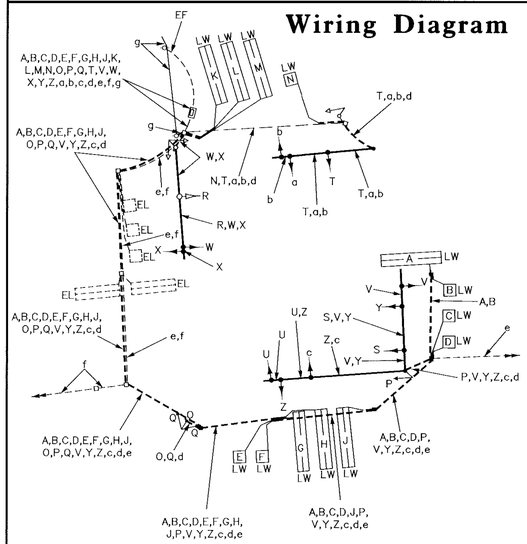
B. Equipment to be furnished and installed by the Contractor.
All equipment in this list shall have catalog cuts submitted for approval prior to installation.

Quantity	Units	Specification Section	Description
Lump Sum	LS	108	Mobilization.
Lump Sum	LS	104	Maintenance of traffic.
3	CY	205	Test pit excavation.
4	EA	811	Handhole.
1200	LF	815	Sawcut for signal loop detector.
4150	LF	810	Loop detector wire (No. 14 A.W.G.) encased in flexible tubing.
3220	LF	810	2-conductor (aluminum shielded) electrical cable (No. 14 A.W.G.).
250	LF	810	2-conductor electrical cable (No. 14 A.W.G.).
365	LF	810	3-conductor electrical cable (No. 14 A.W.G.).
365	LF	810	5-conductor electrical cable (No. 14 A.W.G.).
2395	LF	810	7-conductor electrical cable (No. 14 A.W.G.).
575	LF	804	Bare copper stranded ground wire (No. 6 A.W.G.).
80	LF	805	1 in. liquid tight flexible non-metalic conduit for loop detector sleeve.
15	LF	805	1 in. galvanized steel conduit for loop detector sleeve.
50	LF	805	2 in. polyvinyl chloride [Schedule 40] electrical conduit - trenched.
50	LF	805	2 in. polyvinyl chloride [Schedule 80] electrical conduit - pushed.
60	LF	805	3 in. polyvinyl chloride [Schedule 40] electrical conduit - trenched.
110	LF	805	3 in. polyvinyl chloride [Schedule 80] electrical conduit - pushed.
100	LF	805	4 in. polyvinyl chloride [Schedule 40] electrical conduit - trenched.
95	LF	805	4 in. polyvinyl chloride [Schedule 80] electrical conduit - trenched.
20	LF	805	2 in. PVC conduit riser.
1	EA	---	2 in. weatherhead.
8	CY	801	Concrete foundation for traffic signal equipment.
3	EA	804	Ground rod - 3/4 in. diameter x 10 ft. length.
560	LF	553	12 in. wide HAPPTPM - white for crosswalk.
200	LF	553	24 in. wide HAPPTPM - white for stop line
2	EA	---	Paint new galvanized mast arm pole and arm(s) - Federal Standard Green Color #14036.
1	EA	---	Paint existing galvanized mast arm pole and arm - Federal Standard Green Color #14036.
1	EA	---	Paint new galvanized pedestal pole - Federal Standard Green Color #14036.
1	EA	---	Paint galvanized existing pedestal pole - Federal Standard Green Color #14036.
2	EA	---	Cut, clean, and cap steel mast arm pole.
300	LF	---	Remove existing pavement markings by grinding.
Lump Sum	LS	---	Remove existing traffic signal equipment.
Lump Sum	LS	---	As-built for S.H.A.(on CADD)

Phase Chart

	1	2	3	4	5	6	7	8	9	10	11	12	13-16	17,18
Phase 1 & 5	R, G	R, G	R	R, G	R, G	R	R	R	R, G	R	R	R	DW	DW
1 & 5 Change to Phase 1 & 6 or Phase 2 & 5														
Phase 2 & 5	G, G	G, G	G	R	R	R	R	R	R, G	R	R	R	DW	DW
5 Change	G, Y	G, Y	G	R	R	R	R	R	R, Y	R	R	R	DW	DW
Phase 1 & 6	R	R	R	G, G	G, G	G	R	R	R	R	R	R	DW	DW
1 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	WK	DW
Ped Clearance	G	G	G	G	G	G	R	R	R	R	R	R	FL/DW	DW
2 & 6 Change	Y	Y	Y	Y	Y	Y	R	R	R	R	R	R	DW	DW
Phase 3 & 7	R	R	R	R	R	R	R, G	R, G	R	R, G	R, G	R	DW	DW
3 & 7 Change to Phase 3 & 8 or Phase 4 & 7														
Phase 3 & 8	R	R	R	R	R	R	G, G	G, G	G	R	R	R	DW	DW
3 Change	R	R	R	R	R	R	G, Y	G, Y	G	R	R	R	DW	DW
Phase 4 & 7	R	R	R	R	R	R	R	R	R	G, G	G, G	G	DW	DW
7 Change	R	R	R	R	R	R	R	R	R	G, Y	G, Y	G	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 Alt 4 & 8	R	R	R	R	R	R	G	G	G	G	G	G	DW	WK
Ped Clearance	R	R	R	R	R	R	G	G	G	G	G	G	DW	FL/DW
Alt 4 & 8 Change	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

Wiring Diagram



A B C D E F G H J K L M N — 2-Conductor Cable (Aluminum Shielded)
O — 2-Conductor Electrical Cable (No. 14 A.W.G.)
P — 3-Conductor Electrical Cable (No. 14 A.W.G.)
Q R S U — 5-Conductor Electrical Cable (No. 14 A.W.G.)
T V W X Y Z a b c — 7-Conductor Electrical Cable (No. 14 A.W.G.)

d — Bare Copper Ground Wire (No. 6 A.W.G.)
e — 50-Pair Voice Grade Telemetry Cable (No. 19 A.W.G.) (Indianola Dr. / Watkins Pond Blvd. - Vitro Entr. run)
f — 50-Pair Voice Grade Telemetry Cable (No. 19 A.W.G.) (Indianola Dr. / Watkins Pond Blvd. - Redland Rd. run)
g — Existing Telemetry Cable (MD 355 - Crabbs Branch Way run)
LW — Loop Detector Wire (No. 14 A.W.G.) in Flexible Tubing
EL — Existing Loop Detector Wire
EF — Existing Under Ground Electrical Service By PEPCO.

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

DRAWN BY: J. Dirndorfer
DES. BY: J. Dirndorfer
CHK. BY:

(General Information)
MD 355 at Indianola Drive/ Watkins Pond Blvd.
COUNTY: MONTGOMERY LOG MILE • 15035511.60

DATE: May 29, 1997 F.A.P. NO. N/A
SCALE: N/A S.H.A. NO. BW978M82
TS/STD. NO. 3592B-GI
SHEET NO. 2 of 2