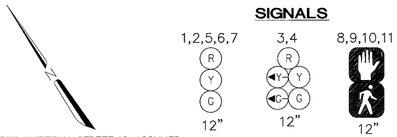
FHWA REGION NO	STATE	FED. AID PROJ. NO	SHEET NO.	TOTAL SHEETS
3	MD.	STPG-218-1(7)E	52	66

SIGNALS



EAST/WEST ANTIETAM STREET IS ASSUMED TO RUN IN AN EAST-WEST DIRECTION.

→ – OPTICAL PRE-EMPTION DETECTOR EYE

SIGNS

NOTE: SIGNALS 6&7 AND ALL SIGNS EXCEPT 16 ARE EXISTING.

CONSTRUCTION DETAILS

(A) INSTALL BASE MOUNTED CABINET, SIZE #5, AND CONTROLLER WITH ALL NECESSARY EQUIPMENT AS SHOWN (NOTE: 2-4", 90-DEGREE P.V.C. BENDS AND 2-2" 90-DEGREE P.V.C. BENDS).

(B) INSTALL 2" P.V.C. (SCHEDULE 40) ELECTRICAL CONDUIT (TRENCHED).

(C) INSTALL 3" P.V.C. (SCHEDULE 40) ELECTRICAL CONDUIT (TRENCHED).

(D) INSTALL 4" P.V.C. (SCHEDULE 40) ELECTRICAL CONDUIT (TRENCHED).

(E) INSTALL 2" P.V.C. (SCHEDULE 80) ELECTRICAL CONDUIT (SLOTTED).

(F) INSTALL 3" P.V.C. (SCHEDULE 80) ELECTRICAL CONDUIT (SLOTTED).

(G) INSTALL 2" P.V.C. BEND IN EXISTING BASE.

(H) REMOVE AND REPLACE EXISTING SIGNAL HEAD.

(J) USE EXISTING SIGNAL HEAD.

(K) INSTALL 1" LIQUID TIGHT FLEXIBLE NON-METALLIC CONDUIT IN EXISTING BASE AND POLE TO PEDESTRIAN SIGNAL.

(L) INSTALL 2" P.V.C. (SCHEDULE 80) ELECTRICAL CONDUIT – RISER AND 2" WEATHERHEAD.

(M) INSTALL HANDHOLE.

(N) INSTALL HANDHOLE (CITY STANDARD).

(P) INSTALL SIGNAL HEAD ON EXISTING MAST ARM.

(S) REMOVE AND REPLACE EXISTING SIDEWALK.

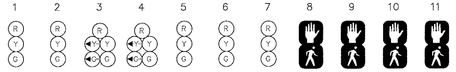
(U) REMOVE EXISTING CONTROLLER, CABINET, PEDESTAL POLE AND FOUNDATION.

(V) COIL 15' OF CABLE AT ELECTRICAL MANHOLE. (COORDINATE CONNECTION DETAILS WITH CITY LIGHT DEPARTMENT).

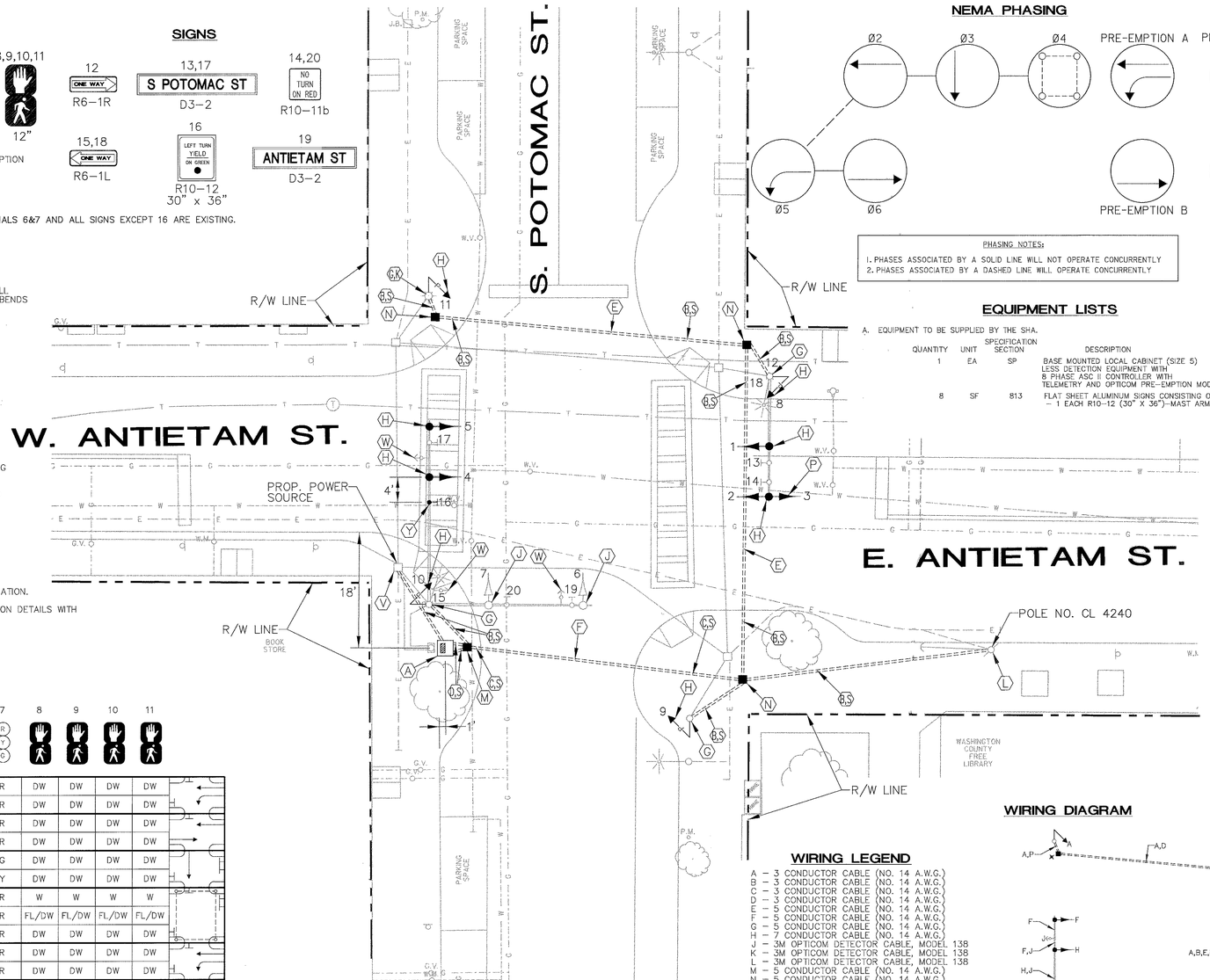
(W) USE EXISTING OPTICOM DETECTOR.

(Y) INSTALL SIGN ON EXISTING MAST ARM.

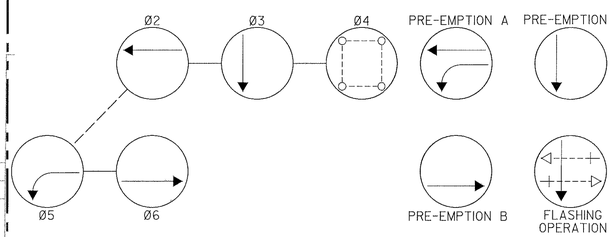
PHASING DIAGRAM



	1	2	3	4	5	6	7	8	9	10	11
PHASE 2+5	R	R	G G	G G	G	R	R	DW	DW	DW	DW
5 CHANGE	R	R	G Y	G Y	G	R	R	DW	DW	DW	DW
PHASE 2+6	G	G	G	G	G	R	R	DW	DW	DW	DW
2+6 CHANGE	Y	Y	Y	Y	Y	R	R	DW	DW	DW	DW
PHASE 3	R	R	R	R	R	G	G	DW	DW	DW	DW
3 CHANGE	R	R	R	R	R	Y	Y	DW	DW	DW	DW
PHASE 4	R	R	R	R	R	R	R	W	W	W	W
PHASE 4 PED CLEAR	R	R	R	R	R	R	R	FL/DW	FL/DW	FL/DW	FL/DW
4 PED CHANGE	R	R	R	R	R	R	R	DW	DW	DW	DW
PRE-EMPTION A	R	R	G G	G	G	R	R	DW	DW	DW	DW
A CHANGE	R	R	Y	Y	Y	R	R	DW	DW	DW	DW
PRE-EMPTION B	G	G	R	R	R	R	R	DW	DW	DW	DW
B CHANGE	Y	Y	R	R	R	R	R	DW	DW	DW	DW
PRE-EMPTION C	R	R	R	R	R	G	G	DW	DW	DW	DW
C CHANGE	R	R	R	R	R	Y	Y	DW	DW	DW	DW
FLASHING OPERATION	FL R	FL R	FL R	FL R	FL R	FL Y	FL Y	DARK	DARK	DARK	DARK



NEMA PHASING



PHASING NOTES:
1. PHASES ASSOCIATED BY A SOLID LINE WILL NOT OPERATE CONCURRENTLY
2. PHASES ASSOCIATED BY A DASHED LINE WILL OPERATE CONCURRENTLY

EQUIPMENT LISTS

A. EQUIPMENT TO BE SUPPLIED BY THE SHA.

QUANTITY	UNIT	SPECIFICATION SECTION	DESCRIPTION
1	EA	SP	BASE MOUNTED LOCAL CABINET (SIZE 5) LESS DETECTION EQUIPMENT WITH 8 PHASE ASC II CONTROLLER WITH TELEMETRY AND OPTICOM PRE-EMPTION MODULE
8	SF	813	FLAT SHEET ALUMINUM SIGNS CONSISTING OF: – 1 EACH R10-12 (30" X 36")–MAST ARM MOUNT

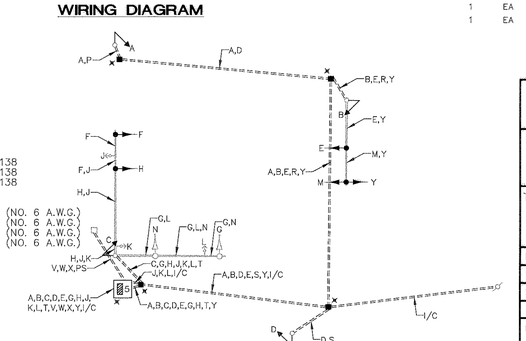
B. EQUIPMENT TO BE FURNISHED AND/OR INSTALLED BY THE CONTRACTOR.

QUANTITY	UNIT	SPECIFICATION SECTION	DESCRIPTION
3	CY	205	TEST PIT EXCAVATION
10	CY	206	REMOVAL OF EXISTING SIDEWALK
750	SF	610	4 INCH CONCRETE SIDEWALK
1	EA	816	INSTALL CONTROLLER AND CABINET–BASE MOUNT
8	SF	813	INSTALL OVERHEAD SIGN
3	EA	SP	FURNISH AND INSTALL 12 INCH 1 WAY 3 SECTION (R, Y, G) SIGNAL HEAD HAVING PROPER ADJUSTABLE MAST ARM BRACKET, AND TUNNEL VISORS–PAINTED BLACK
2	EA	SP	FURNISH AND INSTALL 12 INCH 1 WAY 5 SECTION (R, Y, YA, G, GA) SIGNAL HEAD HAVING PROPER ADJUSTABLE MAST ARM BRACKET, AND TUNNEL VISORS–PAINTED BLACK
1	EA	SP	FURNISH AND INSTALL 12 INCH 1 WAY 2 SECTION PEDESTRIAN SIGNAL HEAD–PEDESTAL TOP MOUNT–PAINTED BLACK
3	EA	SP	FURNISH AND INSTALL 12 INCH 1 WAY 2 SECTION PEDESTRIAN SIGNAL HEAD–SIDE POLE MOUNT–PAINTED BLACK
1	EA	811	FURNISH AND INSTALL ELECTRICAL HANDHOLE
3	EA	SP	FURNISH AND INSTALL ELECTRICAL HANDHOLE (CITY STANDARD)
1	CY	801	FURNISH AND INSTALL CONCRETE FOR SIGNAL FOUNDATION
4	EA	SP	FURNISH AND INSTALL CONDUIT BEND IN EXISTING BASE
30	LF	805	FURNISH AND INSTALL 2" SCHEDULE 80 RIGID PVC CONDUIT–RISER
15	LF	805	FURNISH AND INSTALL 1" LIQUID TIGHT FLEXIBLE NON-METALLIC CONDUIT (INTO EXISTING FOUNDATION)
125	LF	805	FURNISH AND INSTALL 2" SCHEDULE 40 RIGID PVC CONDUIT–TRENCHED
25	LF	805	FURNISH AND INSTALL 3" SCHEDULE 40 RIGID PVC CONDUIT–TRENCHED
10	LF	805	FURNISH AND INSTALL 4" SCHEDULE 40 RIGID PVC CONDUIT–TRENCHED
75	LF	805	FURNISH AND INSTALL 2" SCHEDULE 80 RIGID PVC CONDUIT–SLOTTED
30	LF	805	FURNISH AND INSTALL 3" SCHEDULE 80 RIGID PVC CONDUIT–SLOTTED
1	EA	807	FURNISH AND INSTALL CONTROL AND DISTRIBUTION EQUIPMENT
1	EA	SP	AS–BUILT FOR TRAFFIC SIGNAL
5	EA	804	FURNISH AND INSTALL GROUND ROD–3/4 INCH DIAMETER X 10–FOOT LENGTH
250	LF	810	FURNISH AND INSTALL NO. 6 AWG STRANDED BARE COPPER GROUND WIRE
125	LF	810	FURNISH AND INSTALL ELECTRICAL CABLE–1 CONDUCTOR (NO. 4 AWG – THHN/THWN)
450	LF	810	FURNISH AND INSTALL ELECTRICAL CABLE–3 CONDUCTOR (NO 14 AWG)
300	LF	810	FURNISH AND INSTALL ELECTRICAL CABLE–5 CONDUCTOR (NO 14 AWG)
275	LF	810	FURNISH AND INSTALL ELECTRICAL CABLE–7 CONDUCTOR (NO 14 AWG)
200	LF	810	FURNISH AND INSTALL OPTICOM M–138 DETECTOR CABLE
1	EA	SP	REMOVE AND DISPOSE OF EXISTING FOUNDATION 12" BELOW GRADE
1	LS	SP	DELIVERY OF SALVAGED EQUIPMENT
1	LS	SP	REMOVE AND DISPOSE OF EXISTING EQUIPMENT
1	LS	SP	REMOVAL OF EXISTING SIGNAL EQUIPMENT TO BE SALVAGED

NOTE: ALL EQUIPMENT AND/OR MATERIALS TO BE REMOVED BY THE CONTRACTOR, BUT NOT LISTED BELOW, SHALL BECOME THE PROPERTY OF THE CONTRACTOR.

QUANTITY	UNIT	DESCRIPTION
1	EA	CONTROLLER AND CABINET
1	EA	PEDESTAL POLE AND BASE

WIRING DIAGRAM



WIRING LEGEND

A – 3 CONDUCTOR CABLE (NO. 14 A.W.G.)
B – 3 CONDUCTOR CABLE (NO. 14 A.W.G.)
C – 3 CONDUCTOR CABLE (NO. 14 A.W.G.)
D – 3 CONDUCTOR CABLE (NO. 14 A.W.G.)
E – 5 CONDUCTOR CABLE (NO. 14 A.W.G.)
F – 5 CONDUCTOR CABLE (NO. 14 A.W.G.)
G – 5 CONDUCTOR CABLE (NO. 14 A.W.G.)
H – 7 CONDUCTOR CABLE (NO. 14 A.W.G.)
J – 3M OPTICOM DETECTOR CABLE, MODEL 138
K – 3M OPTICOM DETECTOR CABLE, MODEL 138
L – 3M OPTICOM DETECTOR CABLE, MODEL 138
M – 5 CONDUCTOR CABLE (NO. 14 A.W.G.)
N – 5 CONDUCTOR CABLE (NO. 14 A.W.G.)
P – STRANDED BARE COPPER GROUND WIRE (NO. 6 A.W.G.)
R – STRANDED BARE COPPER GROUND WIRE (NO. 6 A.W.G.)
S – STRANDED BARE COPPER GROUND WIRE (NO. 6 A.W.G.)
T – STRANDED BARE COPPER GROUND WIRE (NO. 6 A.W.G.)
V – 1 CONDUCTOR CABLE (NO. 4 A.W.G.)
W – 1 CONDUCTOR CABLE (NO. 4 A.W.G.)
X – 1 CONDUCTOR CABLE (NO. 4 A.W.G.)
Y – 7 CONDUCTOR CABLE (NO. 14 A.W.G)
× – 3/4"x10' GROUND ROD
PS – PROPOSED ELECTRICAL SERVICE
I/C– INTERCONNECT CABLE

INTERSECTION DESCRIPTION

I. GENERAL

THIS INTERSECTION IS SOUTH POTOMAC STREET AND EAST/WEST ANTIETAM STREET. CONSTRUCTION AT THIS INTERSECTION INVOLVES THE REPLACEMENT OF THE EXISTING TRAFFIC SIGNAL CONTROLLER AND INTERCONNECTION WITH THE OTHER SIGNALIZED INTERSECTIONS IN THE NEW CITY-WIDE SYSTEM. IT IS ASSUMED THAT EAST/WEST ANTIETAM STREET RUNS IN AN EAST-WEST DIREXTION.

II. INTERSECTION OPERATION

THE INTERSECTION WILL OPERATE IN A NEMA FIVE (5) PHASE PRE-TIMED MODE. EASTBOUND AND WESTBOUND ANTIETAM STREET WILL OPERATE CONCURRENTLY WITH WESTBOUND EAST ANTIETAM STREET OPERATING IN A LEADING PHASE. AN EXCLUSIVE PEDESTRIAN PHASE WILL FOLLOW THE VEHICULAR PHASES.

PRE-EMPTION ON WESTBOUND EAST ANTIETAM STREET WILL CALL PRE-EMPTION A.
PRE-EMPTION ON EASTBOUND WEST ANTIETAM STREET WILL CALL PRE-EMPTION B.
PRE-EMPTION ON SOUTHBOUND SOUTH POTOMAC STREET WILL CALL PRE-EMPTION C.

A NEW EIGHT PHASE FULLY ACTUATED CONTROLLER WITH TELEMETRY MODULE, AND PRE-EMPTION HOUSED IN A GROUND MOUNTED CABINET WILL BE INSTALLED.

UTILITY LEGEND

—— G —— G ——	GAS MAIN
—— W —— W ——	WATER MAIN
—— S —— S ——	SEWER MAIN
==========	STORM DRAIN
—— TV —— TV ——	CABLE TELEVISION
—— E —— E ——	ELECTRIC CABLES
—— T —— T ——	TELEPHONE CABLES
—— A —— A ——	AERIAL CABLES

A/E GROUP, INC.
ENGINEERS • PLANNERS
181 E. Main Street
Westminster, Maryland 21158
A/E Job No. 96-317

CITY OF HAGERSTOWN, MARYLAND
ENGINEERING DEPARTMENT

LOCATION: South Potomac Street at East/West Antietam Street

TITLE: TRAFFIC SIGNAL UPGRADE

DRAWN BY	A.W. (BASE PLAN)	DATE	8-96
SURVEY BY	A.J.B.	DATE	7-96
SCALES	HORIZONTAL: 1" = 10'	VERTICAL: –	
APPROVED		FILE NUMBER	
DATE		67-054-17	
BY CITY ENGINEER			

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

MDOT – STATE HIGHWAY ADMINISTRATION
Office of Traffic & Safety
TRAFFIC ENGINEERING DESIGN DIVISION LOG MI. 2IMSP000.00

DRAWN BY: M. GESELL
DES. BY: J. LAWRENCE
CHK. BY:

South Potomac St. at East/West Antietam St.

COUNTY: WASHINGTON

DATE: 05/30/97
SCALE: 1" = 10'

F.A.P. NO. STPG-218-1(7)E
S.H.A. NO. WA9535185
CITY NO. 07-843-332

TS NO. 3715

SHEET NO. 52 OF 66