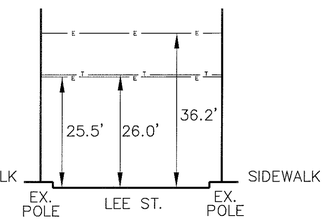
FHWA REGION NO	STATE	FED. AID PROJ. NO	SHEET NO.	TOTAL SHEETS
3	MD.	STPG-218-1(7)E	55	66

PHASING DIAGRAM

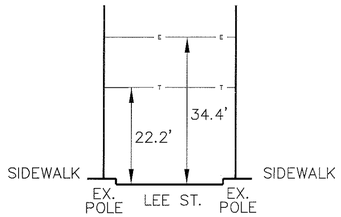
	1	2	3	4	5	6	7	8	9	10
PHASE 2+6	G	G	G	G	R	R	W	W	DW	DW
2 PED CLEAR	G	G	G	G	R	R	FL DW	FL DW	DW	DW
2+6 CHANGE	Y	Y	Y	Y	R	R	DW	DW	DW	DW
PHASE 4	R	R	R	R	G	G	DW	DW	W	W
4 PED CLEAR	R	R	R	R	G	G	DW	DW	FL DW	FL DW
4 CHANGE	R	R	R	R	Y	Y	DW	DW	DW	DW
PRE-EMPTION A	R	R	G ◄G—	G	R	R	DW	DW	DW	DW
A CHANGE	R	R	Y	Y	R	R	DW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

EET IS ASSUMED TO
AST-WEST DIRECTION.

RTICAL CLEARANCE SKETCH



② VERTICAL CLEARANCE SKETCH



CONSTRUCTION DETAILS

23' STEEL POLE (CITY STANDARD), 28' AND 32' MAST ARMS, SIGNAL HEADS, DETECTORS, PEDESTRIAN SIGNAL, AND SIGNS (NOTE: 1-2", 90-DEGREE END).

23' STEEL POLE (CITY STANDARD), 36' MAST ARM, SIGNAL HEADS, OPTICOM R, AND SIGN (NOTE: 1-2", 90-DEGREE P.V.C. BEND).

2" P.V.C. (SCHEDULE 80) ELECTRICAL CONDUIT – RISER, PEDESTRIAN SIGNAL(S) B HARDWARE (SEE DETAIL 'A'). REMOVE EXISTING RISER, PEDESTRIAN SIGNAL RDWARE.

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

HANDHOLE.

HANDHOLE (CITY STANDARD).

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

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

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

24" SOLID WHITE LINE FOR STOP BAR.

EXISTING SIGNAL HEAD, SIGN, STEEL POLE, AND FOUNDATION.

EXISTING SIGNAL HEAD AND BRACKET ARM.

EXISTING OPTICOM DETECTOR AND SPAN WIRE.

EXISTING SIGNAL HEAD.

EXISTING CABINET, CONTROLLER, AND FOUNDATION.

AND REPLACE EXISTING SIDEWALK.

12" SOLID WHITE LINE FOR CROSSWALK.

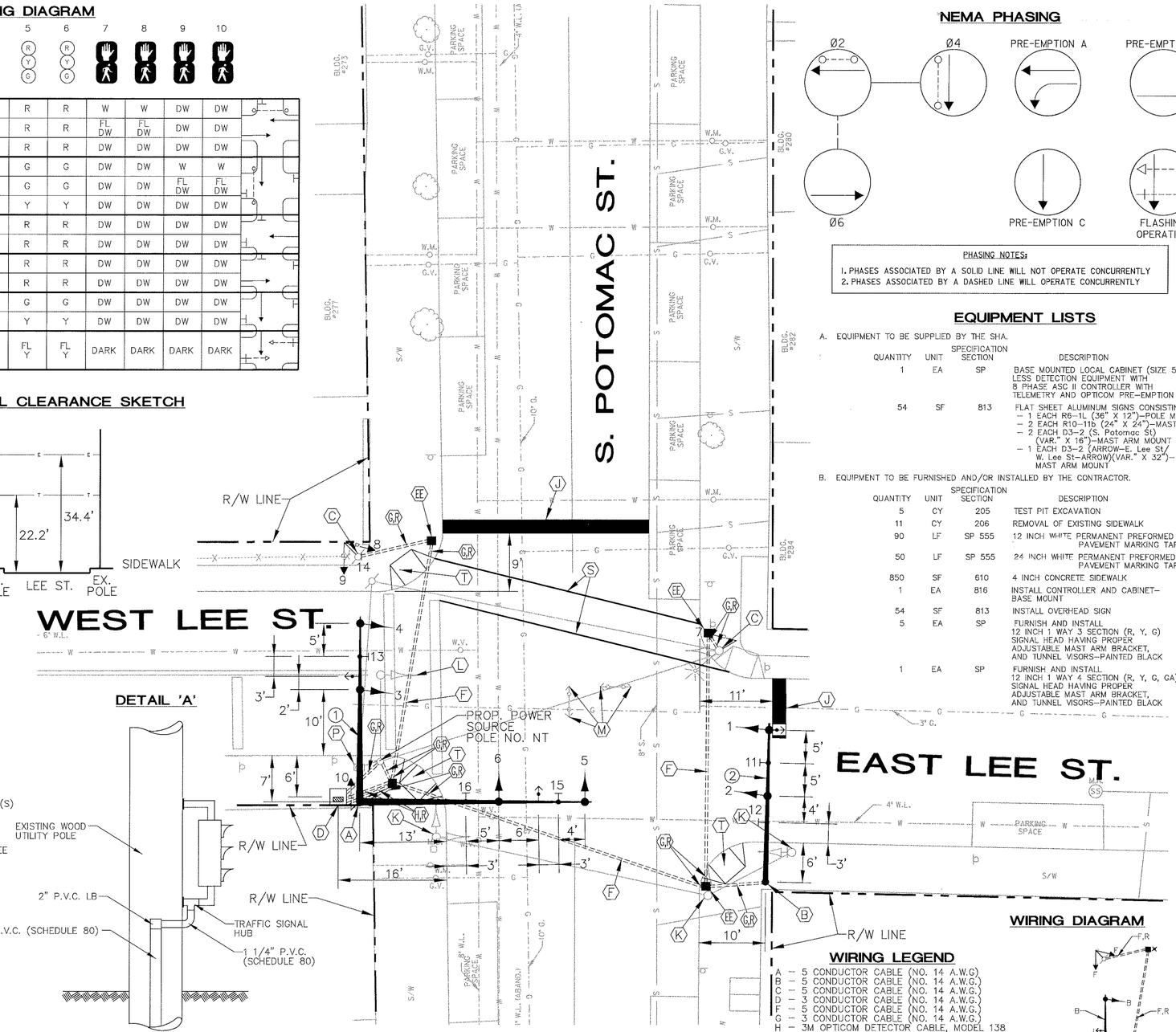
CT SIDEWALK RAMP.

10' OF 2" P.V.C. (SCHEDULE 80) ELECTRICAL CONDUIT – RISER AND COIL ADDITIONAL CABLE.

2" P.V.C. (SCHEDULE 80) ELECTRICAL CONDUIT – RISER AND 2" HEAD.

TILITY LEGEND

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



DETAIL 'A'

INTERSECTION DESCRIPTION

I. GENERAL

THIS INTERSECTION IS SOUTH POTOMAC STREET AND EAST/WEST LEE STREET. CONSTRUCTION AT THIS INTERSECTION INVOLVES THE RECONSTRUCTION OF THE EXISTING TRAFFIC SIGNAL AND INTERCONNECTION WITH THE OTHER SIGNALIZED INTERSECTIONS IN THE NEW CITY-WIDE SYSTEM. IT IS ASSUMED THAT EAST/WEST LEE STREET RUN IN AN EAST-WEST DIRECTION

II. INTERSECTION DESCRIPTION

THE INTERSECTION WILL OPERATE IN A NEMA THREE (3) PHASE PRE-TIMED MODE. EASTBOUND AND WESTBOUND EAST/WEST LEE STREET WILL OPERATE CONCURRENTLY. SOUTHBOUND SOUTH POTOMAC STREET WILL OPERATE SEPARATELY. PEDESTRIAN SIGNALS WILL OPERATE CONCURRENTLY WITH WESTBOUND LEE STREET AND SOUTHBOUND SOUTH POTOMAC STREET.

PRE-EMPTION ON WESTBOUND EAST LEE STREET WILL CALL PRE-EMPTION A.
PRE-EMPTION ON EASTBOUND WEST LEE 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.

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
54	SF	813	FLAT SHEET ALUMINUM SIGNS CONSISTING OF: – 1 EACH R6-1L (36" X 12")-POLE MOUNT – 2 EACH R10-11b (24" X 24")-MAST ARM MOUNT – 2 EACH D3-2 (S. Potomac St) (VAR." X 16")-MAST ARM MOUNT – 1 EACH D3-2 (ARROW-E. Lee St/ W. Lee St-ARROW)(VAR." X 32")-- MAST ARM MOUNT

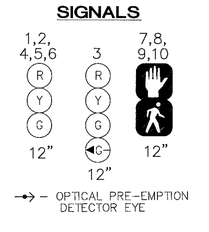
B. EQUIPMENT TO BE FURNISHED AND/OR INSTALLED BY THE CONTRACTOR.

QUANTITY	UNIT	SPECIFICATION SECTION	DESCRIPTION
5	CY	205	TEST PIT EXCAVATION
11	CY	206	REMOVAL OF EXISTING SIDEWALK
90	LF	SP 555	12 INCH WHITE PERMANENT PREFORMED PAVEMENT MARKING TAPE
50	LF	SP 555	24 INCH WHITE PERMANENT PREFORMED PAVEMENT MARKING TAPE
850	SF	610	4 INCH CONCRETE SIDEWALK
1	EA	816	INSTALL CONTROLLER AND CABINET-BASE MOUNT
54	SF	813	INSTALL OVERHEAD SIGN
5	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
1	EA	SP	FURNISH AND INSTALL 12 INCH 1 WAY 4 SECTION (R, Y, G, GA) SIGNAL HEAD HAVING PROPER ADJUSTABLE MAST ARM BRACKET, AND TUNNEL VISORS-PAINTED BLACK
2	EA	SP	FURNISH AND INSTALL 12 INCH 1 WAY 2 SECTION PEDESTRIAN SIGNAL HEAD-SIDE POLE MOUNT-- PAINTED BLACK
1	EA	SP	FURNISH AND INSTALL 12 INCH 2 WAY 2 SECTION PEDESTRIAN SIGNAL HEAD-SIDE POLE MOUNT-- PAINTED BLACK
3	EA	SP	FURNISH AND INSTALL OPTICOM DETECTOR EYE-MODEL 521
1	EA	811	FURNISH AND INSTALL ELECTRICAL HANDHOLE
3	EA	SP	FURNISH AND INSTALL ELECTRICAL HANDHOLE (CITY STANDARD)
10	CY	801	FURNISH AND INSTALL CONCRETE FOR SIGNAL FOUNDATION
10	LF	805	FURNISH AND INSTALL 1 1/4" SCHEDULE 80 RIGID PVC CONDUIT-RISER
60	LF	805	FURNISH AND INSTALL 2" SCHEDULE 80 RIGID PVC CONDUIT-RISER
60	LF	805	FURNISH AND INSTALL 2" SCHEDULE 40 RIGID PVC CONDUIT-TRENCHED
20	LF	805	FURNISH AND INSTALL 4" SCHEDULE 40 RIGID PVC CONDUIT-TRENCHED
125	LF	805	FURNISH AND INSTALL 2" SCHEDULE 80 RIGID PVC CONDUIT-SLOTTED
1	EA	807	FURNISH AND INSTALL CONTROL AND DISTRIBUTION EQUIPMENT
1	EA	SP	FURNISH AND INSTALL 23-FOOT STEEL POLE WITH TWIN 36-FOOT MAST ARMS (CITY STANDARD)-PAINTED GREEN
1	EA	SP	FURNISH AND INSTALL 23-FOOT STEEL POLE WITH A SINGLE 36-FOOT MAST ARM (CITY STANDARD)-PAINTED GREEEN
2	EA	SP	CUT, CLEAN AND CAP TRAFFIC SIGNAL STRUCTURE
1	EA	SP	AS-BUILT FOR TRAFFIC SIGNAL
5	EA	804	FURNISH AND INSTALL GROUND ROD-3/4 INCH DIAMETER X 10-FOOT LENGTH
225	LF	810	FURNISH AND INSTALL NO. 6 AWG STRANDED BARE COPPER GROUND WIRE
175	LF	810	FURNISH AND INSTALL ELECTRICAL CABLE-- 1 CONDUCTOR (NO. 4 AWG – THHN/THWN)
175	LF	810	FURNISH AND INSTALL ELECTRICAL CABLE-- 3 CONDUCTOR (NO 14 AWG)
350	LF	810	FURNISH AND INSTALL ELECTRICAL CABLE-- 5 CONDUCTOR (NO 14 AWG)
75	LF	810	FURNISH AND INSTALL ELECTRICAL CABLE-- 7 CONDUCTOR (NO 14 AWG)
300	LF	810	FURNISH AND INSTALL OPTICOM M-138 DETECTOR CABLE
4	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

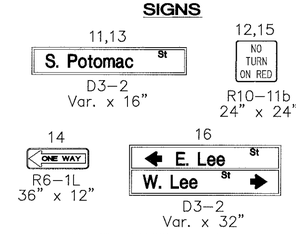
NOTE: ALL EQUIPMENT AND/OR MATERIALS TO BE REMOVED BY THE CONTRACTOR, BUT NOT LISTED BELOW, SHALL BECOME THE PROPERTY OF THE CONTRACTOR.

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

SIGNALS



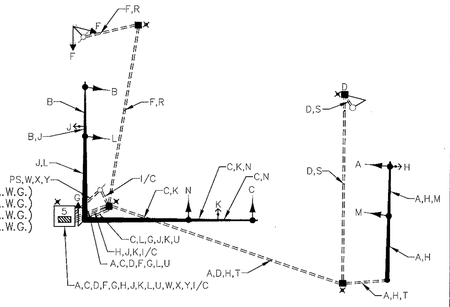
SIGNS



WIRING LEGEND

A – 5 CONDUCTOR CABLE (NO. 14 A.W.G)
B – 5 CONDUCTOR CABLE (NO. 14 A.W.G.)
C – 5 CONDUCTOR CABLE (NO. 14 A.W.G.)
D – 3 CONDUCTOR CABLE (NO. 14 A.W.G.)
F – 5 CONDUCTOR CABLE (NO. 14 A.W.G.)
G – 3 CONDUCTOR CABLE (NO. 14 A.W.G.)
H – 3M OPTICOM DETECTOR CABLE, MODEL 138
J – 3M OPTICOM DETECTOR CABLE, MODEL 138
K – 3M OPTICOM DETECTOR CABLE, MODEL 138
L – 7 CONDUCTOR CABLE (NO. 14 A.W.G.)
M – 5 CONDUCTOR CABLE (NO. 14 A.W.G.)
N – 5 CONDUCTOR CABLE (NO. 14 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.)
U – STRANDED BARE COPPER GROUND WIRE (NO. 6 A.W.G.)
W – 1 CONDUCTOR CABLE (NO. 4 A.W.G.)
X – 1 CONDUCTOR CABLE (NO. 4 A.W.G.)
Y – 1 CONDUCTOR CABLE (NO. 4 A.W.G.)
× – 3/4"x10' GROUND ROD
PS – PROPOSED ELECTRICAL SERVICE
I/C – INTERCONNECT CABLE

WIRING DIAGRAM



CITY OF HAGERSTOWN, MARYLAND
ENGINEERING DEPARTMENT

LOCATION: South Potomac St. at East/West Lee St.

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		67-054-19	
BY CITY ENGINEER			

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

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

MDOT – STATE HIGHWAY ADMINISTRATION
Office of Traffic & Safety
TRAFFIC ENGINEERING DESIGN DIVISION
LOG MI. 21MP0T02.18

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

South Potomac St. at East/West Lee 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. 07-243-332

TS NO. 3706

SHEET NO. 55 OF 66