FHWA REGION NO	STATE	FED. AID PROJ. NO	SHEET NO.	TOTAL SHEETS
3	MD.	STPG-218-1(7)E	9	66

WEST FRANKLIN STREET) IS
UN IN AN EAST-WEST DIRECTION.

SIGNALS

1,2,3,4 — R, Y, G — 12"

5,6,7,8 / 9,10,11,12 — 12"

→→ – OPTICAL PRE-EMPTION DETECTOR EYE

SIGNS

13,17 — ONE WAY — R6-1(R) 36" x 12"

14,19 — NO TURN ON RED — R10-11b 24"x 24"

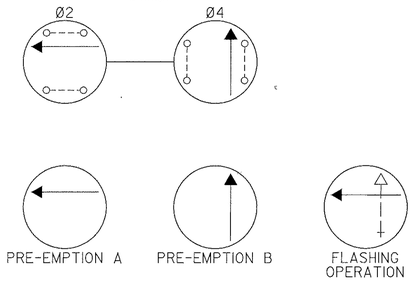
15 — Jonathan St — D3-2 Var. x 16"

16 — TO / SOUTH / 11 — M4-5 24" x 12"; M3-3 24" x 12"; M1-4a 24" x 24"; M6-3 21" x 15"

18,21 — ONE WAY — R6-1(L) 36" x 12"

20 — W. Franklin St — D3-2 Var. x 16"

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

PHASING DIAGRAM

	1	2	3	4	5	6	7	8	9	10	11	12
	G	G	R	R	W	W	W	W	DW	DW	DW	DW
LEAR	G	G	R	R	FL DW	FL DW	FL DW	FL DW	DW	DW	DW	DW
	Y	Y	R	R	DW	DW	DW	DW	DW	DW	DW	DW
	R	R	G	G	DW	DW	DW	DW	W	W	W	W
LEAR	R	R	G	G	DW	DW	DW	DW	FL DW	FL DW	FL DW	FL DW
	R	R	Y	Y	DW	DW	DW	DW	DW	DW	DW	DW
TION A	G	G	R	R	DW	DW	DW	DW	DW	DW	DW	DW
	Y	Y	R	R	DW	DW	DW	DW	DW	DW	DW	DW
TION B	R	R	G	G	DW	DW	DW	DW	DW	DW	DW	DW
	R	R	Y	Y	DW	DW	DW	DW	DW	DW	DW	DW
N	FL/Y	FL/Y	FL/R	FL/R	DARK	DARK	DARK	DARK	DARK	DARK	DARK	DARK

CONSTRUCTION DETAILS

STEEL POLE, 32' MAST ARM, SIGNAL HEADS, SIGNS, OPTICOM DETECTOR
TRIAN SIGNALS (NOTE: 1-2", 90-DEGREE P.V.C. BEND).

STEEL POLE, 32' MAST ARM, SIGNAL HEADS, SIGNS, OPTICOM DETECTOR,
SIGNALS AND SIGN, 10' STREET LIGHTING ARM, AND 250 WATT H.P.S.
UMINAIRE WITH PHOTOELECTRIC CELL (NOTE: 1-2", 90-DEGREE P.V.C. BEND).

STEEL PEDESTAL POLE AND PEDESTRIAN SIGNALS AND SIGN (NOTE: 1-2",
P.VC. BEND).

SE-MOUNTED CABINET, SIZE #5, AND CONTROLLER WITH ALL NECESSARY
AS SHOWN (NOTE: 2-4", 90-DEGREE P.V.C. ELBOWS; AND, 2-2", 90-DEGREE
S.)

NDHOLE

LIQUID TIGHT FLEXIBLE NON-METALLIC CONDUIT SLEEVE FOR DETECTOR WIRING.

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

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

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

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

X 6' SAMPLING LOOP DETECTOR ENCASED IN 1/4" FLEXIBLE TUBING (4 TURNS).

D REPLACE EXISTING SIDEWALK.

CABLE AT ELECTRICAL MANHOLE. (COORDINATE CONNECTION DETAILS WITH CITY
RTMENT.

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

STING CROSSWALK LINES.

SOLID WHITE LINE FOR CROSSWALKS.

STING STOP BAR.

SOLID WHITE LINE.

SIDEWALK RAMP.

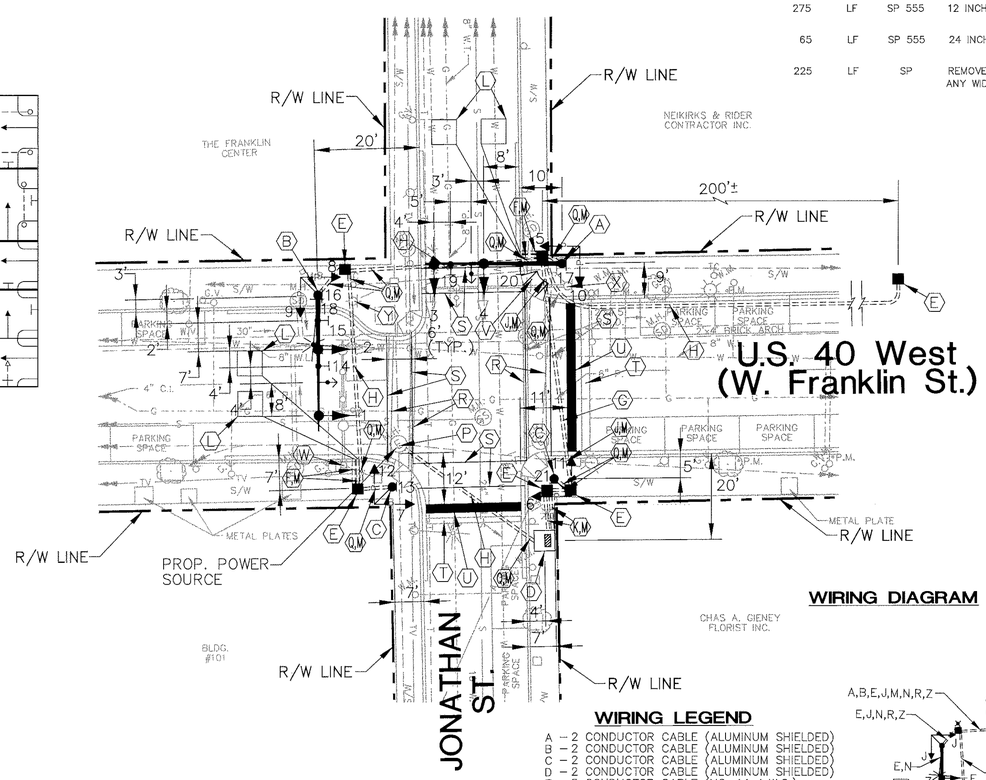
STING STEEL POLE, MAST ARM, SIGNALS, SIGNS, OPTICOM DETECTOR, CABINET,
AND FOUNDATION.

STING STEEL POLE, MAST ARM, SIGNALS, SIGNS, OPTICOM DETECTOR AND
.

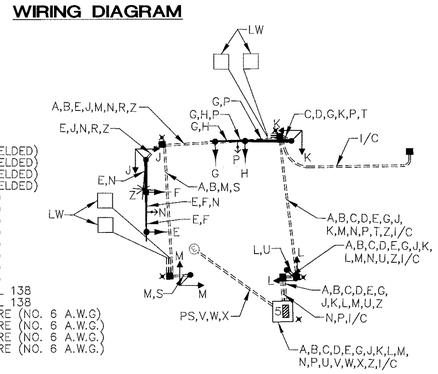
STING STREET LIGHTING ARM, POLE, SIGN AND LUMINAIRE.

ITY LEGEND

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



WIRING DIAGRAM



WIRING LEGEND

A – 2 CONDUCTOR CABLE (ALUMINUM SHIELDED)
B – 2 CONDUCTOR CABLE (ALUMINUM SHIELDED)
C – 2 CONDUCTOR CABLE (ALUMINUM SHIELDED)
D – 2 CONDUCTOR CABLE (ALUMINUM SHIELDED)
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 – 5 CONDUCTOR CABLE (NO. 14 A.W.G.)
J – 5 CONDUCTOR CABLE (NO. 14 A.W.G.)
K – 5 CONDUCTOR CABLE (NO. 14 A.W.G.)
L – 5 CONDUCTOR CABLE (NO. 14 A.W.G.)
M – 5 CONDUCTOR CABLE (NO. 14 A.W.G.)
N – 3M OPTICOM DETECTOR CABLE, MODEL 138
P – 3M OPTICOM DETECTOR CABLE, MODEL 138
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.)
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.)
Z – 2 CONDUCTOR TRAY CABLE (NO. 12 A.W.G.)
× – 3/4"x10' GROUND ROD
PS – PROPOSED ELECTRICAL SERVICE
I/C – INTERCONNECT CABLE
LW – LOOP WIRE

INTERSECTION DESCRIPTION

I. GENERAL

THIS INTERSECTION IS U.S. 40 WEST (WEST FRANKLIN STREET) AND JONATHAN STREET. CONSTRUCTION OF 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 U.S. 40 WEST (WEST FRANKLIN STREET) RUNS IN AN EAST-WEST DIRECTION.

II. INTERSECTION OPERATION

THE INTERSECTION WILL OPERATE IN A NEMA TWO (2) PHASE PRE-TIMED MODE. WESTBOUND U.S. 40 WEST (WEST FRANKLIN STREET) AND NORTHBOUND JONATHAN STREET WILL OPERATE IN SEPERATE PHASES. PEDESTRIAN SIGNALS WILL OPERATE CONCURRENTLY WITH THE WESTBOUND U.S. 40 WEST (WEST FRANKLIN STREET) PHASE. PEDESTRIAN SIGNALS WILL OPERATE CONCURRENTLY WITH THE NORTHBOUND JONATHAN STREET PHASE.

PRE-EMPTION ON WESTBOUND U.S. 40 WEST (WEST FRANKLIN STREET) WILL CALL PRE-EMPTION A. PRE-EMPTION ON NORTHBOUND JONATHAN STREET WILL CALL PRE-EMPTION B.

A NEW EIGHT PHASE FULLY ACTUATED CONTROLLER WITH ONE (1) FOUR-CHANNEL TIME DELAY OUTPUT LOOP DETECTOR AMPLIFIER, TELEMETRY MODULE AND PRE-EMPTION HOUSED IN A GROUND MOUNTED CABINET WILL BE INSTALLED.

EQUIPMENT LISTS

A. EQUIPMENT TO BE SUPPLIED BY THE SHA.

QUANTITY	UNIT	SPECIFICATION SECTION	DESCRIPTION
1	EA	SP	BASE MOUNTED LOCAL CABINET (SIZE 5) WITH DETECTION EQUIPMENT WITH 8 PHASE ASC II CONTROLLER WITH TELEMETRY AND OPTICOM PRE-EMPTION MODULE
53	SF	813	FLAT SHEET ALUMINUM SIGNS CONSISTING OF: – 2 EACH R6-1L (36" X 12")-POLE MOUNT – 2 EACH R6-1R (36" X 12")-POLE MOUNT – 2 EACH R10-11b (24" X 24")-MAST ARM MOUNT – 1 EACH M1-4a(11) (24" X 24")-POLE MOUNT – 1 EACH M3-3 (24" X 12")-POLE MOUNT – 1 EACH M4-5 (24" X 12")-POLE MOUNT – 1 EACH M6-3 (21" X 15")-POLE MOUNT – 1 EACH D3-2 (W. Franklin St) (VAR." X 16")-MAST ARM MOUNT – 1 EACH D3-2 (Jonathan St) (VAR." X 16")-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
10	CY	206	REMOVAL OF EXISTING SIDEWALK
275	LF	SP 555	12 INCH WHITE PERMANENT PREFORMED PAVEMENT MARKING TAPE
65	LF	SP 555	24 INCH WHITE PERMANENT PREFORMED PAVEMENT MARKING TAPE
225	LF	SP	REMOVE EXISTING PAVEMENT MARKINGS-ANY WIDTH
800	SF	610	4 INCH CONCRETE SIDEWALK
1	EA	816	INSTALL CONTROLLER AND CABINET-BASE MOUNT
53	SF	813	INSTALL OVERHEAD SIGN
4	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 2 WAY 2 SECTION PEDESTRIAN SIGNAL HEAD-PEDESTAL TOP MOUNT-PAINTED BLACK
2	EA	SP	FURNISH AND INSTALL 12 INCH 2 WAY 2 SECTION PEDESTRIAN SIGNAL HEAD-SIDE POLE MOUNT-PAINTED BLACK
2	EA	SP	FURNISH AND INSTALL OPTICOM DETECTOR EYE-MODEL 521
5	EA	811	FURNISH AND INSTALL ELECTRICAL HANDHOLE
8	CY	801	FURNISH AND INSTALL CONCRETE FOR SIGNAL FOUNDATION
25	LF	805	FURNISH AND INSTALL 1" LIQUID TIGHT FLEXIBLE NON-METALLIC CONDUIT FOR DETECTOR SLEEVE
100	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
30	LF	805	FURNISH AND INSTALL 4" SCHEDULE 40 RIGID PVC CONDUIT-TRENCHED
300	LF	805	FURNISH AND INSTALL 2" SCHEDULE 80 RIGID PVC CONDUIT-SLOTTED
50	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	FURNISH AND INSTALL 21-FOOT STEEL POLE WITH A SINGLE 38-FOOT MAST ARM-PAINTED GREEN
1	EA	SP	FURNISH AND INSTALL 27-FOOT STEEL POLE WITH A SINGLE 38-FOOT MAST ARM-PAINTED GREEN
2	EA	SP	CUT, CLEAN AND CAP TRAFFIC SIGNAL STRUCTURE
1	EA	SP	AS-BUILT FOR TRAFFIC SIGNAL
1	EA	806	FURNISH AND INSTALL 250 WATT HIGH PRESSURE SODIUM LAMP AND LUMINAIRE WITH PHOTOCELL
1	EA	SP	FURNISH AND INSTALL 10 FOOT LIGHTING ARM ON SIGNAL STRUCTURE-PAINTED GREEN
5	EA	804	FURNISH AND INSTALL GROUND ROD-3/4 INCH DIAMETER X 10-FOOT LENGTH
275	LF	810	FURNISH AND INSTALL NO. 6 AWG STRANDED BARE COPPER GROUND WIRE
200	LF	810	FURNISH AND INSTALL ELECTRICAL CABLE-1 CONDUCTOR (NO. 4 AWG - THHN/THWN)
600	LF	810	FURNISH AND INSTALL ELECTRICAL CABLE-2 CONDUCTOR (ALUMINUM SHIELDED)
1000	LF	810	FURNISH AND INSTALL ELECTRICAL CABLE-5 CONDUCTOR (NO 14 AWG)
700	LF	810	FURNISH AND INSTALL LOOP WIRE ENCASED IN FLEXIBLE TUBING (NO 14 AWG)
225	LF	815	FURNISH AND INSTALL SAWCUT FOR SIGNAL (LOOP DETECTOR)
225	LF	810	FURNISH AND INSTALL 2-CONDUCTOR TRAY CABLE (NO 12 AWG)
2	EA	SP	FURNISH AND INSTALL 10-FOOT BREAKAWAY PEDESTAL POLE-PAINTED GREEN
350	LF	810	FURNISH AND INSTALL OPTICOM M-138 DETECTOR CABLE
2	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
2	EA	OPTICOM DETECTOR EYE

NOTE: EXISTING RIGHT-OF-WAY BASED ON INFORMATION PROVIDED THE CITY OF HAGERSTOWN.

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. 95-289

MDOT - STATE HIGHWAY ADMINISTRATION
Office of Traffic & Safety
TRAFFIC ENGINEERING DESIGN DIVISION LOG MI. 21W04035.93

DRAWN BY: T. COURVILLE
DES. BY: J. LAWRENCE
CHK. BY:

US 40 West (West Franklin St.) at Jonathan St.

COUNTY: WASHINGTON

DATE: 05/30/97 F.A.P. NO. STPG-218-1(7)E
SCALE: 1" = 20' S.H.A. NO. WA9535/85

TS . NO. 3677

SHEET NO. 9 OF 66