

PROJECT DESCRIPTION

GENERAL
THIS PROJECT INVOLVES THE INSTALLATION OF A NEW TRAFFIC CONTROL SIGNAL AT THE INTERSECTION OF NORTHBOUND MD 147 (HARFORD ROAD) AND I-695 WESTBOUND OFF RAMP IN BALTIMORE COUNTY, MD 147 IS ASSUMED TO RUN IN AN NORTH-SOUTH DIRECTION.

INTERSECTION OPERATION

- NORMAL OPERATION**
THE INTERSECTION WILL OPERATE IN A FLASHING MODE WITH THE NORTHBOUND MD 147 SIGNAL INDICATIONS FLASHING YELLOW AND THE WESTBOUND I-695 OFF RAMP SIGNAL INDICATIONS FLASHING RED.
- SPECIAL OPERATION (PEAK PERIOD)**
THE INTERSECTION WILL OPERATE IN A NEMA TWO-PHASE, FULL-TRAFFIC-ACTUATED MODE WITH THE NORTHBOUND MD 147 APPROACH OPERATING ALONE AND THE WESTBOUND I-695 OFF RAMP APPROACH OPERATING ALONE.
THE INTERSECTION WILL OPERATE AS STATED ABOVE UNLESS THE DELAY OUTPUT QUEUE DETECTOR ON WESTBOUND I-695 OFF RAMP IS ACTUATED. A PRE-EMPTION CALL WILL FORCE A CHANGE TO THE WESTBOUND I-695 OFF RAMP SIGNAL PHASE.

CONTROLLER REQUIREMENTS

INSTALL A FULL-TRAFFIC-ACTUATED, EIGHT-PHASE CONTROLLER WITH TWO (2), FOUR-CHANNEL, TIME-DELAY-OUTPUT LOOP DETECTOR AMPLIFIER AND INTERSECTION MONITOR II WITH BATTERY BACK-UP FOR PHONE DROP HOUSED IN A NEMA SIZE "6" BASE MOUNTED CABINET.

SPECIAL NOTE

UPON COMPLETION OF THIS PROJECT, THE CONTRACTOR SHALL NOTIFY MR. ROBERT SNYDER OF SHA AT (410) 787-7635 TO ARRANGE FOR THE PHONE LINE INSTALLATION. THE CONTRACTOR IS TO PROVIDE MR. SNYDER WITH THE NEAREST STREET ADDRESS, ZIP CODE AND PHONE NUMBER.

MAINTENANCE OF TRAFFIC

THE FOLLOWING TRAFFIC CONTROL STANDARDS SHALL BE REFERENCED FOR THE PROJECT.

- STANDARD NO. MD-104.00 - 104.00-30
- STANDARD NO. MD-104.11-01 (SHOULDER WORK)
- STANDARD NO. MD-104.02-01 (FLAGGING OPERATION)
- STANDARD NO. MD-104.59 (PARTIAL RAMP CLOSURE)
- STANDARD NO. MD-104.05-01 (LEFT LANE CLOSURE)
- STANDARD NO. MD-104.06-01 (RIGHT LANE CLOSURE)

PROJECT CONTACTS

THE CONTACT PERSONS FOR SHA ARE AS FOLLOWS:

- MR. DAVE MALKOWSKI
DISTRICT ENGINEER
PHONE: 410 321-3461
- MR. JOE MCMAHON
DISTRICT UTILITIES ENGINEER
PHONE: 410-321-3456
- MR. RANDALL SCOTT
ASSISTANT DISTRICT ENGINEER - TRAFFIC
PHONE: 410-321-3514
- MR. RICHARD L. DAFF, SR.
CHIEF, TRAFFIC OPERATIONS DIVISION
PHONE: (410) 787-7630
- MR. RUSS YUREK
ASSISTANT DISTRICT ENGINEER - MAINTENANCE
PHONE: 410-321-3468

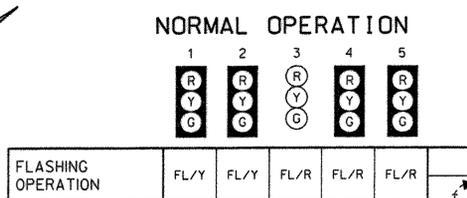
EQUIPMENT LIST "A"

A. EQUIPMENT TO BE SUPPLIED BY THE SHA

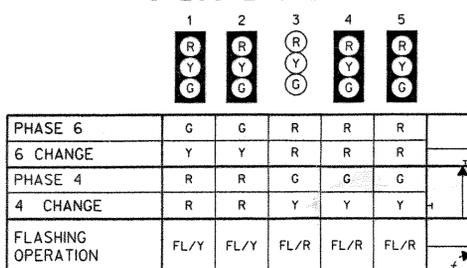
| ITEM NO. | QUANTITY | DESCRIPTION |
|----------|----------|---|
| 9002 | 2 EACH | FOUR-CHANNEL, TIME-DELAY-OUTPUT, LOOP DETECTOR AMPLIFIER |
| 9004 | 1 EACH | DETECTOR RACK POWER SUPPLY |
| 9081 | 1 EACH | EIGHT-PHASE, FULL-TRAFFIC-ACTUATED CONTROLLER WITH INTERSECTION MONITOR WITH BATTERY BACKUP FOR PHONE DROP HOUSED IN A NEMA SIZE "6" BASE MOUNTED CABINET |
| 9089 | 64 S.F. | SHEET ALUMINUM SIGNS TO CONSIST OF : - 3 EACH W3-3 SIGN (36 IN. x 36 IN.) WITH "NEW" PANEL (30 IN. x 30 IN.) AND FLAG - GROUND MOUNT - 1 EACH R3-2 SIGN (36 IN. x 36 IN.) - MAST ARM MOUNT - 1 EACH R5-1 SIGN (30 IN. x 30 IN.) - POLE MOUNT |
| 9106 | 1 EACH | 27 FT. STEEL POLE WITH 50 FT. MAST ARM |

PHASE CHART

NORMAL OPERATION



SPECIAL OPERATION

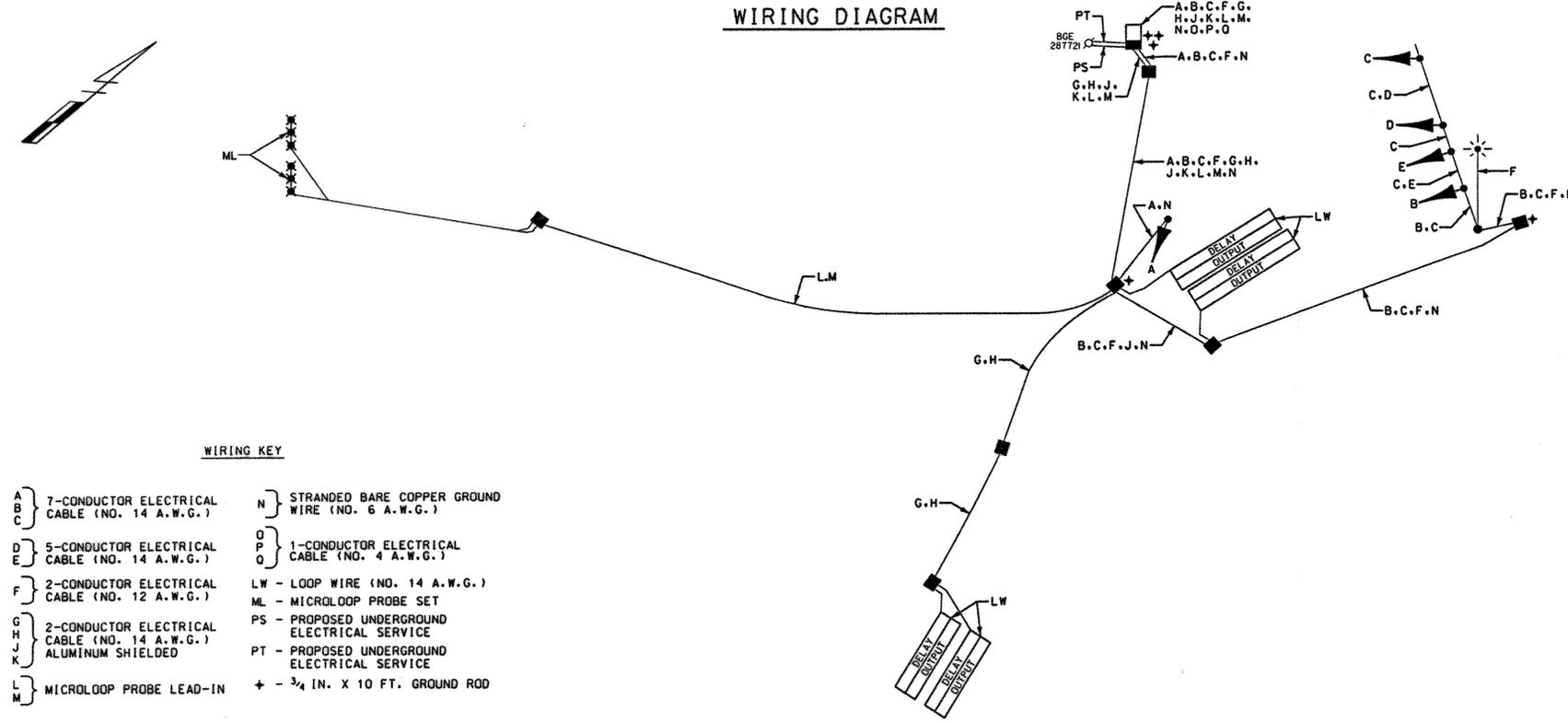


EQUIPMENT LIST "B"

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

| ITEM NO. | QUANTITY | DESCRIPTION |
|----------|-----------|---|
| 1001 | 1 EACH | MAINTENANCE OF TRAFFIC PER ASSIGNMENT |
| 2001 | 5 C.Y. | TEST PIT EXCAVATION |
| 2004 | 32 C.Y. | CLASS 2 EXCAVATION |
| 5003 | 510 L.F. | 12 IN. WHITE HEAT APPLIED PERMANENT PREFORMED THERMOPLASTIC PAVEMENT MARKINGS |
| 5004 | 50 L.F. | 24 IN. WHITE HEAT APPLIED PERMANENT PREFORMED THERMOPLASTIC PAVEMENT MARKINGS |
| 5007 | 660 L.F. | REMOVE EXISTING PAVEMENT MARKING - ANY WIDTH |
| 6001 | 800 S.F. | 4 INCH CONCRETE SIDEWALK |
| 6009 | 160 L.F. | FURNISH AND INSTALL DEPRESSED CURB AND GUTTER |
| 8001 | 6 C.Y. | FURNISH AND INSTALL CONCRETE FOR SIGNAL FOUNDATION |
| 8003 | 1 EACH | FURNISH AND INSTALL BREAKAWAY PEDESTAL POLE (ANY SIZE) |
| 8016 | 2 EACH | FURNISH AND INSTALL MICROLOOP PROBE SET WITH 500 FT. LEAD-IN |
| 8020 | 1 EACH | INSTALL CONTROLLER AND CABINET - BASE MOUNT |
| 8021 | 600 L.F. | FURNISH AND INSTALL SAW CUT FOR SIGNAL (LOOP DETECTOR) |
| 8023 | 40 L.F. | FURNISH AND INSTALL 1 IN. LIQUID-TIGHT FLEXIBLE NON-METALLIC CONDUIT FOR DETECTOR SLEEVE |
| 8024 | 540 L.F. | FURNISH AND INSTALL 2 IN. SCHEDULE 80 RIGID PVC CONDUIT - TRENCHED |
| 8030 | 170 L.F. | FURNISH AND INSTALL 4 IN. SCHEDULE 80 RIGID PVC CONDUIT - TRENCHED |
| 8032 | 110 L.F. | FURNISH AND INSTALL 4 IN. SCHEDULE 80 RIGID PVC CONDUIT - BORED |
| 8033 | 8 EACH | FURNISH AND INSTALL ELECTRICAL HANDHOLE |
| 8034 | 5 EACH | FURNISH AND INSTALL GROUND ROD - 3/4 IN. DIAMETER x 10 FT. LENGTH |
| 8036 | 2 EACH | FURNISH AND INSTALL CONNECTOR KIT - TYPE 2 |
| 8040 | 1550 L.F. | FURNISH AND INSTALL LOOP WIRE ENCASED IN FLEXIBLE TUBING (NO. 14 A.W.G.) |
| 8041 | 1290 L.F. | FURNISH AND INSTALL ELECTRICAL CABLE - 2 CONDUCTOR (ALUMINUM SHIELDED) |
| 8044 | 40 L.F. | FURNISH AND INSTALL ELECTRICAL CABLE - 5 CONDUCTOR (NO. 14 A.W.G.) |
| 8045 | 750 L.F. | FURNISH AND INSTALL ELECTRICAL CABLE - 7 CONDUCTOR (NO. 14 A.W.G.) |
| 8046 | 330 L.F. | FURNISH AND INSTALL ELECTRICAL CABLE - 2 CONDUCTOR (NO. 12 A.W.G.) |
| 8048 | 330 L.F. | FURNISH AND INSTALL NO. 6 A.W.G. STRANDED BARE COPPER GROUND WIRE |
| 8049 | 45 L.F. | FURNISH AND INSTALL ELECTRICAL CABLE 1-CONDUCTOR NO. 4 AWG-THHN/THWN |
| 8051 | 60 L.F. | FURNISH AND INSTALL WOOD SIGN SUPPORTS 4 IN. X 6 IN. |
| 8052 | 48 S.F. | INSTALL GROUND MOUNTED SIGN |
| 8053 | 16 S.F. | INSTALL OVERHEAD SIGN |
| 8055 | 1 EACH | FURNISH AND INSTALL 250 WATT HPS LUMINAIRE WITH PHOTOCCELL |
| 8056 | 1 EACH | FURNISH AND INSTALL 15 FT. LIGHTING BRACKET ARM FOR TRAFFIC SIGNAL STRUCTURE |
| 8057 | 1 EACH | REMOVE AND DISPOSE OF EXISTING FOUNDATION 12 IN. BELOW GRADE |
| 8060 | 1 EACH | REMOVE AND DISPOSE OF EXISTING MATERIAL AND EQUIPMENT PER ASSIGNMENT |
| 8066 | 1 EACH | FURNISH AND INSTALL CONTROL AND DISTRIBUTION EQUIPMENT (120/240 V, 1 PHASE 3 WIRE SYSTEM) |
| 8074 | 1 EACH | INSTALL MAST ARM POLE AND 50 FT. MAST ARM |
| 8084 | 3 EACH | FURNISH AND INSTALL 12 IN. VEHICULAR TRAFFIC SIGNAL HEAD SECTION |
| 8086 | 12 EACH | FURNISH AND INSTALL 12 IN. OPTICALLY PROGRAMMED VEHICULAR TRAFFIC SIGNAL HEAD SECTION |
| NEG. | 18 S.F. | RELOCATE EXISTING GROUND MOUNTED SIGNS AND SUPPORTS |

WIRING DIAGRAM



WIRING KEY

- A } 7-CONDUCTOR ELECTRICAL CABLE (NO. 14 A.W.G.)
- B } 5-CONDUCTOR ELECTRICAL CABLE (NO. 14 A.W.G.)
- C } 2-CONDUCTOR ELECTRICAL CABLE (NO. 12 A.W.G.)
- D } 2-CONDUCTOR ELECTRICAL CABLE (NO. 14 A.W.G.)
- E } 2-CONDUCTOR ELECTRICAL CABLE (NO. 14 A.W.G.)
- F } 2-CONDUCTOR ELECTRICAL CABLE (NO. 14 A.W.G.)
- G } 2-CONDUCTOR ELECTRICAL CABLE (NO. 14 A.W.G.)
- H } 2-CONDUCTOR ELECTRICAL CABLE (NO. 14 A.W.G.)
- J } 2-CONDUCTOR ELECTRICAL CABLE (NO. 14 A.W.G.)
- K } 2-CONDUCTOR ELECTRICAL CABLE (NO. 14 A.W.G.)
- L } MICROLOOP PROBE LEAD-IN
- N } STRANDED BARE COPPER GROUND WIRE (NO. 6 A.W.G.)
- P } 1-CONDUCTOR ELECTRICAL CABLE (NO. 4 A.W.G.)
- O } 1-CONDUCTOR ELECTRICAL CABLE (NO. 4 A.W.G.)
- LW - LOOP WIRE (NO. 14 A.W.G.)
- ML - MICROLOOP PROBE SET
- PS - PROPOSED UNDERGROUND ELECTRICAL SERVICE
- PT - PROPOSED UNDERGROUND ELECTRICAL SERVICE
- + - 3/4 IN. X 10 FT. GROUND ROD

WR&A
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MARYLAND DOT - STATE HIGHWAY ADMINISTRATION
Office of Traffic & Safety
TRAFFIC ENGINEERING DESIGN DIVISION
TRAFFIC SIGNALIZATION PLAN
MD 147 (HARFORD RD) AND I-695 WB OFF RAMP

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|---------------------|-------------------|--------------|
| DRAWN BY: S.BLOSS | F.A.P. NO. | TS NO. |
| CHECKED BY: N.LEARY | S.H.A. NO. | TS-4056 |
| SCALE: 1" = 20' | COUNTY: BALTIMORE | T.I.M.S. NO. |
| DATE: 12/15/00 | LOG MILE: | D-881 |

SHEET NO. 2 OF 2