

**DOBBIN ROAD**

**CONSTRUCTION DETAILS**

- INSTALL ONE DOUBLE MAST ARM (35') SIGNAL SUPPORT, AND FOUNDATION
- INSTALL ONE SINGLE MASTARM (30') SIGNAL SUPPORT, AND FOUNDATION
- INSTALL THREE 6' X 30' LOOP DETECTOR (QUADRUPOLE)
- INSTALL TWO 6' X 20' LOOP DETECTOR (QUADRUPOLE)
- INSTALL 2" PVC CONDUITS (TRENCHED)
- INSTALL GALVANIZED CONDUITS (PUSHED)
- INSTALL SIX HANDBOXES
- INSTALL CONDUCTOR CABLE AS PER WIRING DIAGRAM
- INSTALL CONTROLLER CABINET AND FOUNDATION
- INSTALL POWER FEED TO CONTROLLER
- INSTALL SIGN "A" NEXT TO SIGNAL HEAD #1
- INSTALL TWO SIGNS "B" AS NOTED
- INSTALL ONE FIVE-LENS SIGNAL HEAD
- INSTALL FIVE THREE-LENS SIGNAL HEADS
- PAINT PAVEMENT MARKINGS AS SHOWN
- INSTALL 1" GALVANIZED CONDUITS FOR DETECTOR WIRE LEAD-IN TO HANDBOX

**GENERAL NOTES**

- THE HIGHWAY MARKING AND SIGNING SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AS NOTED.
- THE UTILITIES SHOWN ON THE CONSTRUCTION PLAN ARE SCHEMATIC ONLY AND ARE NOT TO BE CONSIDERED COMPLETE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING ALL UTILITY COMPANIES PRIOR TO CONSTRUCTION SO THAT ALL UTILITIES CAN BE LOCATED IN THE FIELD. THE CONTRACTOR SHALL LOCATE EXISTING UTILITIES A MINIMUM OF TWO (2) WEEKS IN ADVANCE OF THE CONSTRUCTION OPERATIONS IN THE VICINITY OF THE UTILITIES. ANY DAMAGE INCURRED BY THE CONTRACTOR SHALL BE REPAIRED IMMEDIATELY AT THE CONTRACTOR'S EXPENSE. THE CONTRACTOR SHALL NOTIFY THE FOLLOWING UTILITIES OR AGENCIES AT LEAST FIVE (5) DAYS BEFORE STARTING WORK SHOWN ON THESE PLANS:
  - MISS UTILITY (COLLECT) 1-559-0100
  - BALTIMORE GAS & ELECTRIC COMPANY - UNDERGROUND ELECTRIC DISTRIBUTION ENGINEERING "DAMAGE CONTROL" 234-5691
  - BALTIMORE GAS & ELECTRIC COMPANY - UNDERGROUND GAS DISTRIBUTION ENGINEERING "DAMAGE CONTROL" 234-5533
  - CHESAPEAKE AND POTOMAC TELEPHONE COMPANY 752-9976
  - TRAFFIC DIVISION 992-2072
  - HOWARD COUNTY CABLE T.V. 461-1156
  - BUREAU OF UTILITIES - HOWARD COUNTY 992-2366

- CONSTRUCTION SHALL BE COMPLETED IN ACCORDANCE WITH HOWARD COUNTY STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION DESIGN MANUAL VOLUME IV.
- ALL NEW SIGNAL HEADS SHALL BE SECURELY WRAPPED AND/OR BAGGED IN BURLAP, PRIOR TO SIGNAL BEING PLACED IN SERVICE.
- THE CONTRACTOR SHALL COMPLY WITH OSHA AND MOSHA CODES
- THE CONTRACTOR SHALL COMPLY WITH THE FOLLOWING:
  - MAINTAIN SIX (6) INCHES MINIMUM CLEARANCE WITH ALL UNDERGROUND UTILITIES AND ALL OVERHEAD CLEARANCES SHALL BE IN ACCORDANCE WITH THE MARYLAND HIGH VOLTAGE ACT.
- THE CONTRACTOR WILL SUPPLY ALL OTHER HARDWARE AND AUXILIARY EQUIPMENT REQUIRED FOR THE COMPLETION OF THE PROJECT AND ENSURE PROPER SIGNAL OPERATION AS DESIGNED AND SHOWN ON THE PLANS.
- THE ELECTRICAL FEED AND SOURCE FOR THE TRAFFIC SIGNALS SHOULD BE SEPARATE FROM POWER FOR THE LUMINAIRES.

**CONTROLLER AND ACCESSORIES**

- NEMA EIGHT PHASE MODULAR CONTROLLER WITH SOLID STATE CIRCUITRY AND DIGITAL TIMING, SIMILAR TO ECONOLITE KMC E-8000 SERIES DIGITAL CONTROLLER UNIT, EQUIVALENT MANUFACTURED BY CROUSE-HINDS, EAGLE SIGNAL CORPORATION OR APPROVED EQUAL SHALL BE INSTALLED WITH THE FOLLOWING:
  - FOUR PHASE SIGNAL OVERLAP CAPABILITY
  - VEHICULAR ACTUATED MODULE WITH VOLUME DENSITY CONTROLS FOR TWO APPROACHES
  - VEHICULAR ACTUATED MODULES (CAPABLE OF CONTROLLING THREE TRAFFIC MOVEMENTS).
  - VEHICULAR ACTUATED PHASE MODULES SHALL BE CAPABLE OF THE FOLLOWING FUNCTIONS:
    - MINIMUM GREEN, PASSAGE TIME, YELLOW, ALL RED CLEARANCE, DUAL MAXIMUM, PEDESTRIAN TIMING, RECALL AND MEMORY.
  - VEHICULAR ACTUATED PHASE MODULE WITH VOLUME DENSITY CONTROLS SHALL BE CAPABLE OF FOLLOWING THE FUNCTIONS:
    - MINIMUM GREEN, PASSAGE TIME, YELLOW, ALL RED CLEARANCE, DUAL MAXIMUM, PEDESTRIAN TIMING, SECONDS PER ACTUATION, TIME TO REDUCE, TIME FOR REDUCTION, MINIMUM GAP, RECALL AND MEMORY.
- A CONFLICT MONITOR FOR ALL PHASES AND SOLID STATE LOAD SWITCHES SHALL BE FULLY WIRED IN THE CABINET.
- A GROUND MOUNTED TRAFFIC CONTROLLER CABINET LARGE ENOUGH TO ACCOMMODATE THE ABOVE CONTROL EQUIPMENT AND DETECTORS SHALL BE INSTALLED. THE CABINET SHALL BE FURNISHED WITH A THERMOSTATICALLY CONTROLLED CABINET VENT FAN.
- THE FINISH OF THE CABINET SHALL BE ALL-WEATHER BRONZE PAINT.
- THE CONTROLLER SHALL BE WIRED WITH FIVE 2 CHANNEL LOOP DETECTOR AMPLIFIERS (DELAY OUTPUT TYPE) AND HARNESSSES.

**DEPARTMENT OF PUBLIC WORKS**

HOWARD COUNTY, MARYLAND

*John F. Neumann* 2/2/87  
*Robert A. ...* 4/26/87  
 CHIEF ROADS, BRIDGES & STORM DRAINAGE DIVISION

- A METER BOX SHALL BE INSTALLED IN A VANDAL PROOF ENCLOSURE PROVIDED BY THE CONTRACTOR. THE FINISH OF THE METER BOX, HOUSING AND CONDUITS SHALL BE ALL-WEATHER BRONZE PAINT.
- ALL PHASES SHALL BE SKIPPABLE.

**UNDERGROUND WIRING**

- UNDERGROUND WIRING UNDER ROAD SURFACES SHALL BE PLACED IN NEW GALVANIZED CONDUITS PUSHED UNDER THE ROAD SURFACE. P.V.C. ELECTRICAL CONDUIT IN GRASS AREAS SHALL BE TRENCHED AS SPECIFIED AND AS SHOWN ON THE CONTRACT DRAWINGS.

**LOOPS AND DETECTORS**

- THE FOLLOWING LOOPS SHALL BE INSTALLED:

PHASE	DIMENSIONS	NO. OF LOOPS REQUIRED
1	6 x 30	1
2	6 x 20	1
4	6 x 30	2
6	6 x 20	1

- ALL WIRING AND SAW CUTS SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS FOR CORRECT OPERATION.
- PHASES 1 AND 4 SHALL OPERATE IN THE PRESENCE MODE. PHASE 2 AND 6 SHALL OPERATE IN THE PULSE MODE.
- DETECTOR AMPLIFIERS SHALL BE SARASOTA 235-T OR EQUIVALENT MANUFACTURED BY ECONOLITE CONTROL PRODUCTS, INC., CROUSE-HINDS, OR APPROVED EQUAL.
- DETECTORS OPERATING IN THE PRESENCE MODE SHALL BE EQUIPPED WITH 6' X 6' POWER HEAD LOOP AS SHOWN ON THE PLANS.
- LOOPS ARE TO BE INSTALLED CENTERED IN THE TRAVEL LANES FOR WHICH THEY ARE DESIGNED.

**SIGNAL HEADS**

- THE CONTRACTOR SHALL PROVIDE THE FOLLOWING SIGNAL HEADS:

- HEAD NO. 1 - ONE-WAY, FIVE SECTION 12" SIGNAL HEAD HAVING RED, YELLOW, GREEN, YELLOW ARROW, GREEN ARROW INDICATIONS WITH TUNNEL VISORS INCLUDING PROPER ADJUSTABLE RIGID MOUNTING BRACKETS FOR MASTARM MOUNTED INSTALLATION
- HEAD NO. 2, 4, 5, 6 - ONE-WAY, THREE SECTION 12" SIGNAL HEAD HAVING RED, YELLOW, GREEN INDICATIONS WITH TUNNEL VISORS INCLUDING PROPER ADJUSTABLE RIGID MOUNTING BRACKETS FOR MASTARM MOUNTED INSTALLATION.
- HEAD NO. 3 - ONE-WAY, THREE SECTION 12" SIGNAL HEAD HAVING RED, YELLOW ARROW, GREEN ARROW INDICATIONS WITH TUNNEL VISORS INCLUDING PROPER ADJUSTABLE RIGID MOUNTING BRACKETS FOR MASTARM MOUNTED INSTALLATION.

- ALL SIGNALS SHALL BE PAINTED BROWN BAKED ENAMEL WITH M.A. BRUDER AND SONS, INC. SEASHORE GLOSS TRIM 27721, DURANODIC BRONZE, CODE 7557581 OR EQUAL.
- SIGNAL HEAD LOCATIONS AND AIMING TO BE DETERMINED IN THE FIELD WITH THE ENGINEER.

**CONSTRUCTION SEQUENCE**

- INSTALL NEW SIGNAL HEADS, CABLES, SIGNS, CONDUIT, LOOP DETECTORS, CONTROLLER, CABINET AND FOUNDATION. NEW SIGNAL HEADS AND SIGNS SHALL BE SECURELY WRAPPED OR BAGGED IN BURLAP.
- UNCOVER NEW SIGNAL HEADS AND SIGNS.
- ENERGIZE SIGNALS.

**POLES**

THE CONTRACTOR SHALL PROVIDE THE FOLLOWING NEW STEEL SIGNAL POLES:

- ONE (1) SINGLE ARM SUPPORT POLES, POLE HEIGHT 21', "T" DIMENSION 18.5".
  - ONE (1) TWIN ARM SUPPORT POLE, POLE HEIGHT 21', "T" DIMENSION 18.5".
  - STYLE AND APPEARANCE SHALL BE EQUIVALENT TO UNION METAL DESIGN NO. 50700. FINISH SHALL BE BRONZE PAINT.
- | POLE NUMBER | DESCRIPTION  |
|-------------|--|
| 1           | 30' ARM WILL SUPPORT TWO (2), 3 SECTION SIGNAL HEADS.                                    |
| 2           | 35' ARM WILL SUPPORT TWO (2), 3 SECTION SIGNAL HEADS.                                    |
| 2           | 35' ARM WILL SUPPORT ONE (1), 3 SECTION SIGNAL HEAD, AND ONE (1), 5 SECTION SIGNAL HEAD. |

- SIGNALS SHALL BE MOUNTED ON THE MAST ARMS SO THAT THE BOTTOM OF THE SIGNAL HEAD HOUSING IS NOT LESS THAN 15 FEET NOR MORE THAN 19 FEET CLEARANCE ABOVE THE ROADWAY WHEN USING A RIGID MOUNTING, "ASTRO-BRAC" TYPE ADJUSTABLE SIGNAL BRACKET.

**HOMESPUN LANE**

**CONSTRUCTION DETAILS**

- INSTALL ONE SINGLE MASTARM (30') SIGNAL SUPPORT, AND FOUNDATIONS
- INSTALL THREE SINGLE MASTARMS (35') SIGNAL SUPPORT, AND FOUNDATIONS
- INSTALL TWO 6' X 30' LOOP DETECTOR (QUADRUPOLE)
- INSTALL FOUR 6' X 20' LOOP DETECTOR (QUADRUPOLE)
- INSTALL 2" PVC CONDUITS (TRENCHED)
- INSTALL GALVANIZED CONDUITS (PUSHED)
- INSTALL SEVEN HANDBOXES
- INSTALL CONDUCTOR CABLE AS PER WIRING DIAGRAM
- INSTALL CONTROLLER CABINET AND FOUNDATION
- INSTALL POWER FEED TO CONTROLLER
- INSTALL SIGN "A" NEXT TO SIGNAL HEAD #5 & #1
- INSTALL SIGN "B" ON EXISTING W2-1 SIGN POST. REMOVE & SALVAGE EXISTING SIGN.
- INSTALL TWO FIVE-LENS SIGNAL HEAD
- INSTALL SIX THREE-LENS SIGNAL HEADS
- PAINT PAVEMENT MARKINGS AS SHOWN
- INSTALL 1" GALVANIZED CONDUITS FOR DETECTOR LEAD-IN TO HANDBOX

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4	6 x 20	1
6	6 x 20	1
7	6 x 30	1
8	6 x 20	1

- ALL WIRING AND SAW CUTS SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS FOR CORRECT OPERATION.
- PHASES 2, 4, 6, & 8 SHALL OPERATE IN THE PULSE MODE. PHASE 3 & 7 SHALL OPERATE IN THE PRESENCE MODE.
- DETECTOR AMPLIFIERS SHALL BE SARASOTA 235-T OR EQUIVALENT MANUFACTURED BY ECONOLITE CONTROL PRODUCTS, INC., CROUSE-HINDS, OR APPROVED EQUAL.
- DETECTION LOOPS OPERATING IN THE PRESENCE MODE SHALL BE CONSTRUCTED WITH A 6' X 6' POWER HEAD LOOP.
- LOOPS ARE TO BE INSTALLED CENTERED IN THE TRAVEL LANES FOR WHICH THEY ARE DESIGNED.

**SIGNAL HEADS**

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HEAD NO. 1, 5 - ONE-WAY, FIVE SECTION 12" SIGNAL HEAD HAVING RED, YELLOW, GREEN, YELLOW ARROW, GREEN ARROW INDICATIONS WITH TUNNEL VISORS INCLUDING PROPER ADJUSTABLE RIGID MOUNTING BRACKETS FOR MASTARM MOUNTED INSTALLATION

HEAD NO. 2, 3, 4, 6, 7, 8 - ONE-WAY, THREE SECTION 12" SIGNAL HEAD HAVING RED, YELLOW, GREEN INDICATIONS WITH TUNNEL VISORS INCLUDING PROPER ADJUSTABLE RIGID MOUNTING BRACKETS FOR MASTARM MOUNTED INSTALLATION.

- ALL SIGNALS SHALL BE PAINTED FEDERAL YELLOW WITH M.A. BRUDER AND SONS, INC. SEASHORE GLOSS TRIM 27721, DURANODIC BRONZE, CODE 7557581 OR EQUAL.
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- FOUR (4) SINGLE ARM SUPPORT POLES, POLE HEIGHT 21', "T" DIMENSION 18.5".
- STYLE AND APPEARANCE SHALL BE EQUIVALENT TO UNION METAL DESIGN NO. 50700. FINISH SHALL BE BRONZE PAINT.

POLE NUMBER	DESCRIPTION
1	30' ARM WILL SUPPORT TWO (2), 3 SECTION SIGNAL HEADS
2 & 4	EACH 35' ARM WILL SUPPORT ONE (1), 3 SECTION SIGNAL HEAD, AND ONE (1), 5 SECTION SIGNAL HEAD.
3	35' ARM WILL SUPPORT TWO (2), 3 SECTION SIGNAL HEADS.

- SIGNALS SHALL BE MOUNTED ON THE MAST ARMS SO THAT THE BOTTOM OF THE SIGNAL HEAD HOUSING IS NOT LESS THAN 15 FEET NOR MORE THAN 19 FEET CLEARANCE ABOVE THE ROADWAY WHEN USING A RIGID MOUNTING, "ASTRO-BRAC" TYPE ADJUSTABLE SIGNAL BRACKET.

**OAKLAND MILLS ROAD INTERSECTION IMPROVEMENT CAPITAL PROJECT NO. T-7036**  
 ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN  
 SHEET 4 OF 4



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