

CONSTRUCTION DETAILS

1. INSTALL POLE MOUNTED SIGNAL HEAD.
2. INSTALL 6' X 30' LOOP DETECTOR (QUADRUPOLE).
3. INSTALL 1" GAL. STEEL SLEEVE.
4. INSTALL 2" GAL. STEEL ELECTRICAL CONDUIT (TRENCHED). OMIT
5. INSTALL 5 CONDUCTOR CABLE FOR SIGNAL HEAD 10.
6. REMOVE EXISTING CONTROLLER, CABINET AND FOUNDATION.
7. INSTALL CONTROLLER, CABINET AND FOUNDATION AND RELOCATE EXISTING CABLES AND POWER FEED TO NEW CABINET.
8. INSTALL 2" PVC CONDUIT (TRENCHED).
9. INSTALL 6' X 30' LOOP DETECTOR.
10. INSTALL HANDBOX.
11. INSTALL TWO 4" P.V.C. CONDUITS (TRENCHED).

GENERAL NOTES

1. THE HIGHWAY MARKING AND SIGNING SHALL BE THE RESPONSIBILITY OF OTHERS, EXCEPT AS NOTED.
2. 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
 - CHESSPARE AND POTOMAC TELEPHONE COMPANY 752-9976
 - TRAFFIC DIVISION 992-2072
 - HOWARD COUNTY CABLE T.V. 461-1156
 - BUREAU OF UTILITIES - HOWARD COUNTY 992-2366
3. CONSTRUCTION SHALL BE COMPLETED IN ACCORDANCE WITH HOWARD COUNTY STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION DESIGN MANUAL VOLUME IV.
4. ALL NEW SIGNAL HEADS SHALL BE SECURELY WRAPPED AND/OR DAGGED IN DURLAP, PRIOR TO SIGNAL BEING PLACED IN SERVICE.
5. THE CONTRACTOR SHALL COMPLY WITH OSHA AND MSHA CODES.
6. 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 THESE PLANS.
 - THE ELECTRICAL FEED AND SOURCE FOR THE TRAFFIC SIGNALS SHOULD BE SEPARATE FROM POWER FEED FOR THE LUMINAIRES.

CONTROLLER AND ACCESSORIES

1. NEMA EIGHT PHASE MODULAR CONTROLLER WITH SOLID STATE CIRCUITRY AND DIGITAL TIMING, SIMILAR TO EGONOLITE KMC 8-0000 SERIES DIGITAL CONTROLLER UNIT, EQUIVALENT MANUFACTURED BY CROUSE-HINDS, EAGLE SIGNAL CORPORATION OR APPROVED EQUAL SHALL BE INSTALLED WITH THE FOLLOWING:
 - A. TIME BASE COORDINATION UNIT (NON-INTERCONNECT TYPE, MODULAR UNIT).
 - B. VEHICULAR ACTUATED MODULE WITH VOLUME DENSITY CONTROLS FOR TWO APPROACHES.
 - C. VEHICULAR ACTUATED MODULES (CAPABLE OF CONTROLLING SIX TRAFFIC MOVEMENTS).
 - D. 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.
 - E. VEHICULAR ACTUATED PHASE MODULES WITH VOLUME DENSITY CONTROLS SHALL BE CAPABLE OF THE FOLLOWING 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.
 - F. FOUR PHASE SIGNAL OVERLAP CAPABILITY.
2. A CONFLICT MONITOR FOR ALL PHASES AND SOLID STATE LOAD SWITCHES SHALL BE FULLY WIRED IN THE CABINET.
3. 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.
4. THE FINISH OF THE CABINET SHALL BE ALL-WEATHER BRONZE PAINT.
5. THE CONTROLLER SHALL BE WIRED WITH FIVE (5) CHANNEL LOOP DETECTOR AMPLIFIERS (DELAY OUTPUT TYPE) AND HARNESSSES.
6. 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.
7. ALL PHASES SHALL BE SKIPPABLE.

UNDERGROUND WIRING

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

LOOPS AND DETECTORS

1. THE FOLLOWING NEW LOOPS SHALL BE INSTALLED:

PHASE	DIMENSIONS	NO. OF LOOPS REQUIRED
2	6' X 30'	1
5	6' X 30'	1
6	6' X 30'	1

2. ALL WIRING AND SAW CUTS SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS FOR CORRECT OPERATION.
3. PHASES 1, 4, 5, 7, 8 SHALL OPERATE IN THE PRESENCE MODE.
4. PHASES 2 AND 6 SHALL OPERATE BY EXTENSION PHASE DETECTION.
5. DETECTOR AMPLIFIERS SHALL BE BARABOTA 235-T OR EQUIVALENT MANUFACTURED BY EGONOLITE CONTROL PRODUCTS, INC., CROUSE-HINDS OR APPROVED EQUAL.
6. EXISTING VOLUME DENSITY LOOPS ON LITTLE PATUXENT PARKWAY FOR THIS TRAFFIC SIGNAL SHALL BE DISCONNECTED AND ABANDONED.

SIGNAL HEADS

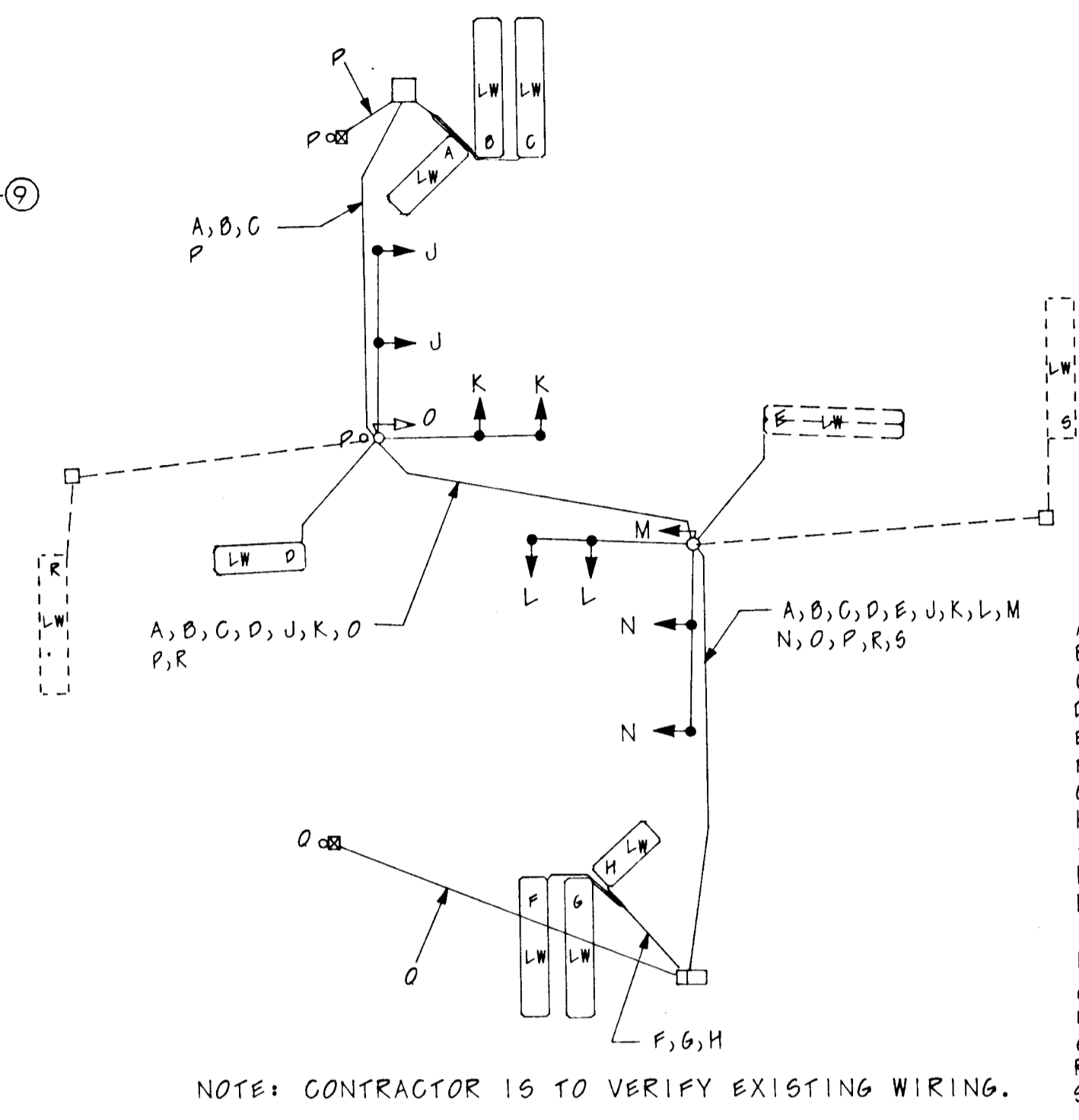
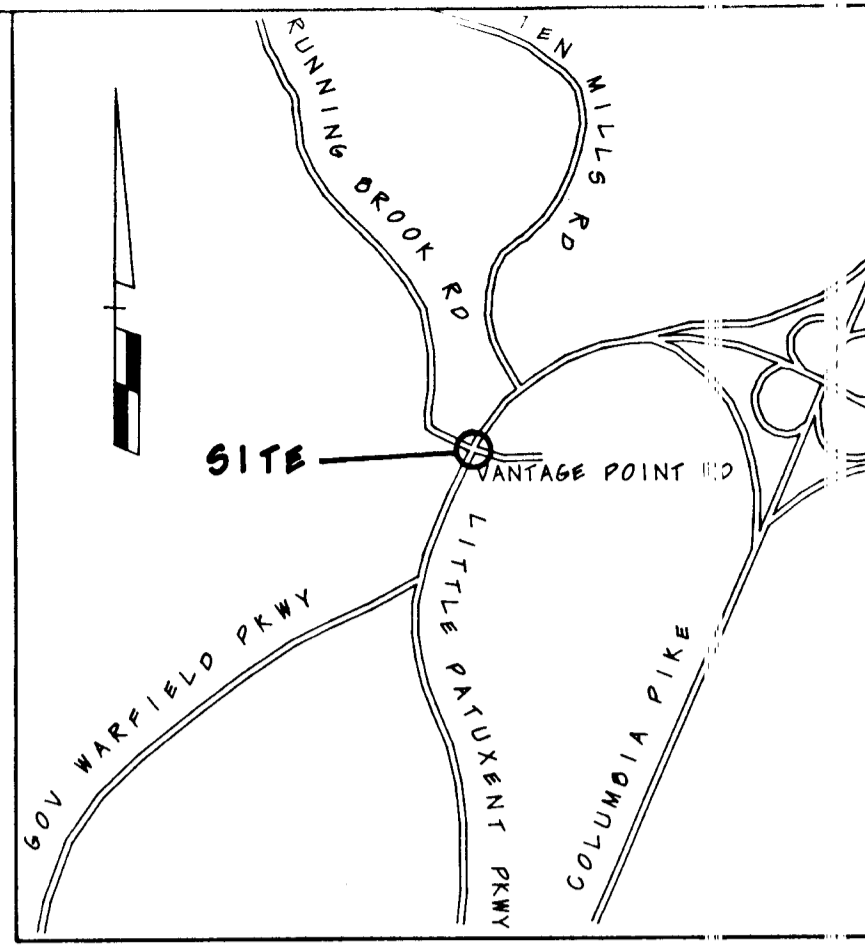
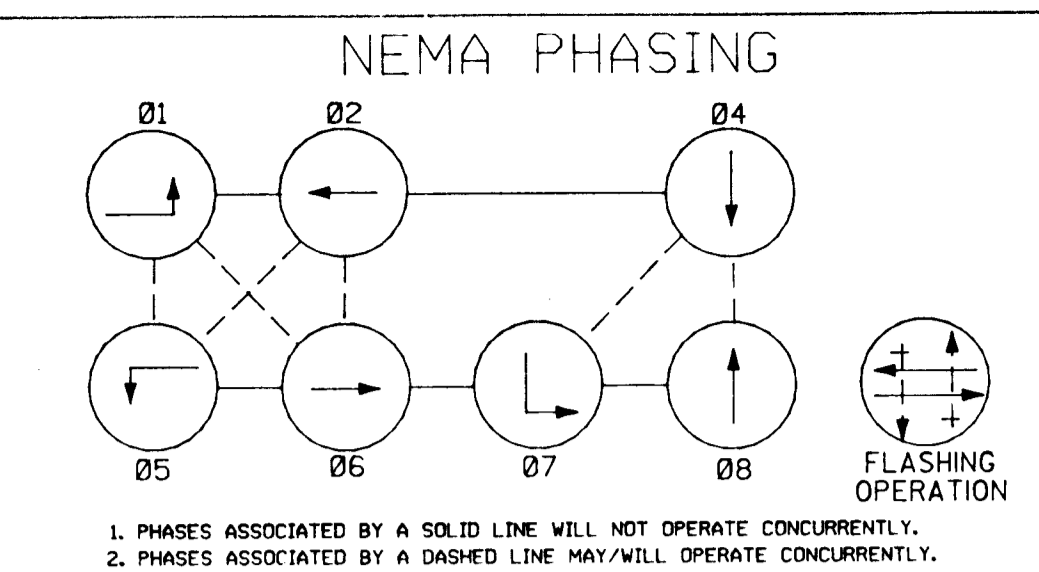
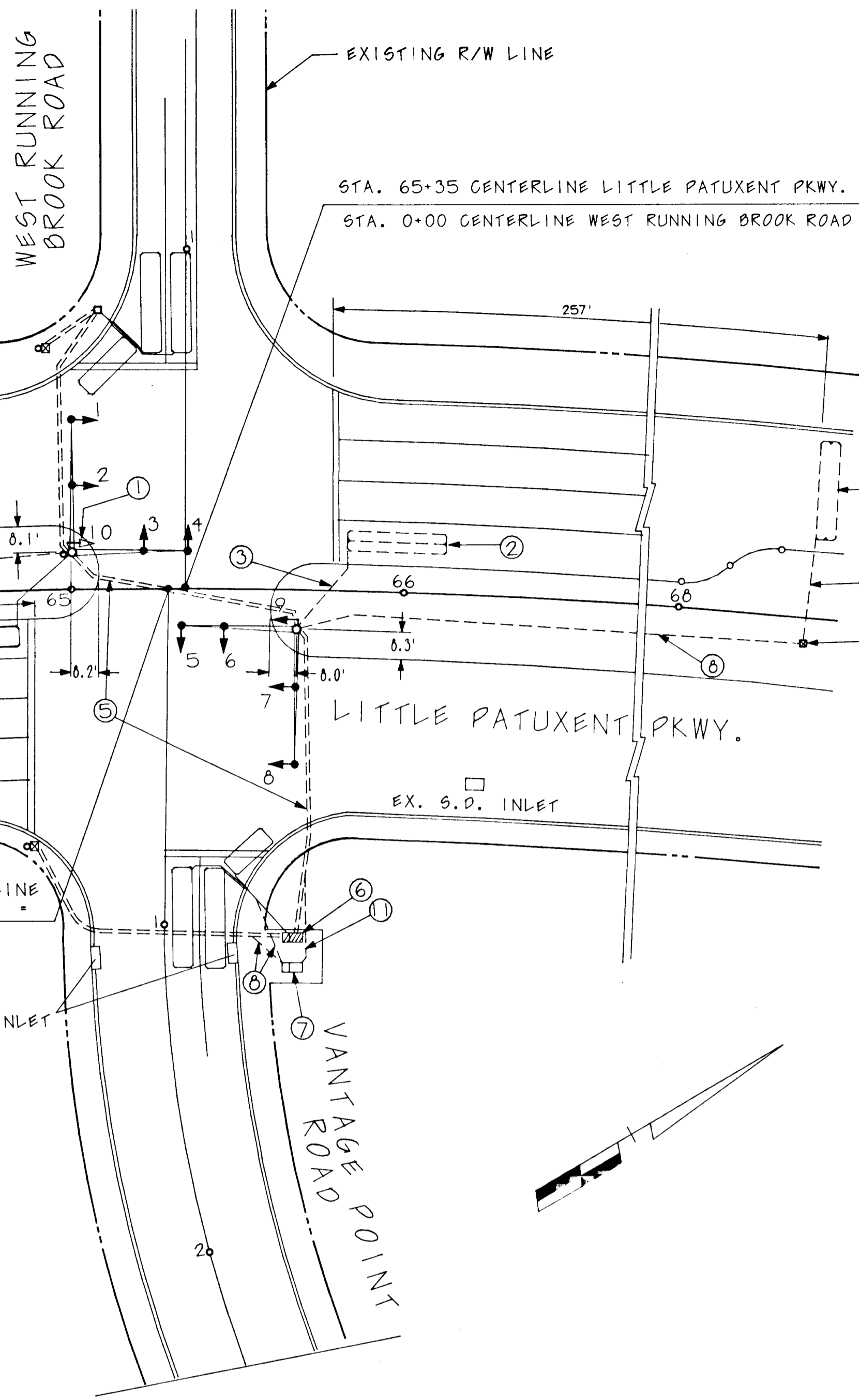
1. THE CONTRACTOR SHALL PROVIDE THE FOLLOWING SIGNAL HEAD: SIGNAL HEAD NO. 1 DESCRIPTION: ONE WAY, THREE SECTION 12" SIGNAL HEAD HAVING RED, YELLOW ARROW AND GREEN ARROW INDICATIONS WITH TUNNEL VIBROS INCLUDING PROPER ADJUSTABLE RIGID MOUNTING BRACKETS FOR POLE MOUNTED INSTALLATION.
2. ALL SIGNALS SHALL BE PAINTED BRONZE WITH W.A. BRONZE AND SONS, INC. SEASHORE GLOSS TRIM 27721, DURANODIC BRONZE, CODE 7557501 OR EQUAL.
3. SIGNAL HEAD LOCATIONS AND AIMING TO BE DETERMINED IN THE FIELD WITH THE ENGINEER.

COORDINATION

1. COORDINATION WITH SIGNAL AT LITTLE PATUXENT PARKWAY AND TEN MILLS RD SHALL BE IMPLEMENTED BY THE CONTRACTOR AS SPECIFIED.

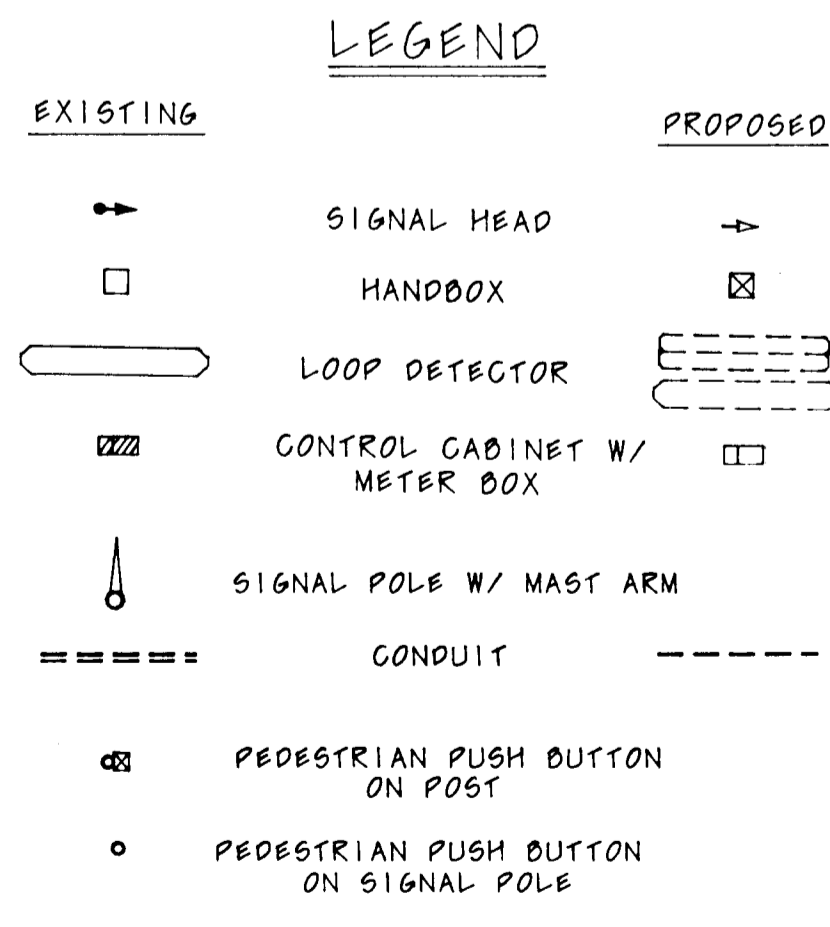
CONSTRUCTION SEQUENCE

1. INSTALL NEW SIGNAL HEAD, CABLES, CONDUIT, LOOP DETECTORS, CONTROLLER, CABINET, FOUNDATION, AND HANDBOXES. NEW SIGNAL HEAD SHALL BE SECURELY WRAPPED OR DAGGED IN DURLAP.
2. TURN OFF EXISTING SIGNAL AT THE DIRECTION OF THE ENGINEER. THE CONTRACTOR SHALL ARRANGE FOR POLICE ASSISTANCE FOR TRAFFIC CONTROL WHEN THE SIGNAL IS NOT IN OPERATION.
3. RELOCATE EXISTING CABLES AND POWER FEED TO NEW CONTROLLER.
4. UNCOVER NEW SIGNAL HEAD.
5. ENERGIZE SIGNALS.
6. REMOVE EXISTING CONTROLLER, CABINET AND FOUNDATION.



NOTE: CONTRACTOR IS TO VERIFY EXISTING WIRING.

PHASE, SEQUENCE AND TIMING DIAGRAM	TRAFFIC SIGNAL HEADS										MIN. GREEN	PASSAGE	YELLOW	PED. CLEAR	MAX. I	MAX. II	SECONDS PER ACTUATION	TIME TO REDUCTION	TIME BEFORE REDUCTION	MIN. GAP	RECALL	MEMORY	
	1	2	3	4	5	6	7	8	9	10													
PHASE A PHASE A CLEAR	R	R	R	R	R	R	R	R	R	R	4	4	3	3.5	10	10						OFF	NON LOCK
	R	R	R	R	R	R	R	R	R	R	4	4	5										
PHASE B PHASE B CLEAR	6	6	R	R	R	R	R	R	R	R	4	4	3	3	10	10							
	6	6	R	R	R	R	R	R	R	R	4	4	5										
PHASE D ALT. PHASE D ALT. CLEAR	R	R	R	R	R	R	6	6	6	R	3	3	5		10	10							
	R	R	R	R	R	R	6	6	6	R	4	4	5										
PHASE C PHASE C CLEAR	6	6	R	R	R	R	6	6	R	R	25	6.5	60	30	1.5	15	20	3.0	01			LOCK	
	Y	Y	R	R	R	R	Y	Y	R	R	5												
PHASE D PHASE D CLEAR	R	R	6	6	6	R	R	R	R	R	3	3	10	10								OFF	NON LOCK
	R	R	6	6	6	R	R	R	R	R	4												
PHASE E PHASE E CLEAR	R	R	6	6	6	R	R	R	R	R	5	3	15	10								OFF	NON LOCK
	R	R	Y	Y	Y	Y	R	R	R	R	5												
FLASH OPER.	FL/Y	FL/Y	FL/R	FL/R	FL/R	FL/R	FL/Y	FL/Y	FL/R	FL/R													



SCALE: 1" = 30'

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DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND DIRECTOR OF PUBLIC WORKS: [Signature] DATE: 3/10/06 CHIEF DIVISION OF ROADS, BRIDGES AND STRUCTURES	ENGINEERS ARCHITECTS PLANNERS SCIENTISTS SURVEYORS PHOTOGRAMMETRISTS GREENHORNE & O'MARA, INC. 9001 EDMONSTON ROAD, GREENBELT, MARYLAND 20770 (301) 982-2800 ANNAPOLIS, MD. ATLANTA, GA. BECKETT, VT. COLLEGE PARK, MD. DENVER, CO. FAIRFAX, VA. GREENSBORO, NC. HOUSTON, TX. KENTWOOD, PA. ROCKVILLE, MD. WILMINGTON, DE.	DES: J. A. O.				TRAFFIC SIGNAL PLAN TF 218	LITTLE PATUXENT PARKWAY AND WEST RUNNING BROOK/VANTAGE POINT ROADS CAPITAL PROJECT T-7037 HOWARD COUNTY, MARYLAND	SCALE AS SHOWN SHEET 1 OF 1
		DRN: J. A. O.						