

GENERAL NOTES

1. THE HIGHWAY MARKING AND SIGNING SHALL BE THE RESPONSIBILITY OF OTHERS, EXCEPT AS NOTED.
2. THE UTILITIES SHOWN ON THIS 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-880-3480
- 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 BAGGED IN BURLAP, 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.
7. 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.
8. THE ELECTRICAL FEED AND SOURCE FOR THE TRAFFIC SIGNALS SHOULD BE SEPARATE FROM POWER FEED FOR THE LUMINAIRES.

CONTROLLER AND ACCESSORY NOTES

1. 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:

- A. FOUR PHASE SIGNAL OVERLAP CAPABILITY.
- B. VEHICULAR ACTUATED MODULES (CAPABLE OF CONTROLLING SIX TRAFFIC MOVEMENTS).
- C. VEHICULAR ACTUATED PHASE MODULES SHALL BE CAPABLE OF THE FOLLOWING FUNCTIONS: MINIMUM GREEN, PASSAGE TIME, YELLOW, ALL RED CLEARANCE, DUAL MAXIMUM, PEDESTRIAN RECALL AND MEMORY.
- D. VEHICULAR ACTUATED PHASE MODULE CONTROLS SHALL BE CAPABLE OF THE FOLLOWING FUNCTIONS: MINIMUM GREEN, PASSAGE TIME, YELLOW, ALL RED CLEARANCE, DUAL PEDESTRIAN TIMING, SECONDS PER ACTUATION, TIME TO REDUCE, TIME FOR REDUCTION, MINIMUM GAP, RECALL AND MEMORY.

2. A CONFLICT MONITOR FOR ALL PHASES AND SOLID STATE LOAD SWITCHES SHALL BE FULLY WIRED IN THE CABINET.
3. AN EXISTING GROUND MOUNTED TRAFFIC CONTROLLER CABINET LARGE ENOUGH TO ACCOMMODATE THE ABOVE EQUIPMENT AND DETECTORS SHALL BE UTILIZED. 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 THREE 2-CHANNEL LOOP DETECTOR AMPLIFIERS (DELAY 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.

SIGNAL HEAD NOTES

1. THE CONTRACTOR SHALL PROVIDE THE FOLLOWING SIGNAL HEADS: SIGNAL HEAD NO. 1 - ONE WAY, FIVE SECTION 12" SIGNAL HEAD HAVING RED, YELLOW, GREEN, YELLOW ARROW, GREEN ARROW INDICATIONS. SIGNAL HEAD NOS. 2,3,4,5,6 ONE WAY, THREE SECTION 12" SIGNAL HEAD HAVING RED, YELLOW, GREEN INDICATIONS. ALL SIGNALS TO HAVE TUNNEL VISORS AND INCLUDE PROPER ADJUSTABLE MOUNTING, BRACKETS FOR MAST ARM MOUNTED INSTALLATION.
2. ANY SIGNAL SHALL BE PAINTED BROWN BAKED ENAMEL WITH M.A. BRUDER AND SONS, INC., SEASHORE GLOSS TRIM 27721, DURANODIC BRONZE, CODE 7557581 OR EQUAL.
3. SIGNAL HEAD LOCATIONS AND AIMING TO BE DETERMINED IN THE FIELD WITH THE ENGINEER.

LOOPS AND DETECTOR NOTES

1. THE FOLLOWING NEW LOOPS SHALL BE INSTALLED:
- | PHASE | DIMENSIONS | NO. OF LOOPS REQUIRED |
|-------|------------|-----------------------|
| 1 | 6' X 30' | 1 Quadrupole |
| 2 | 6' X 30' | 2 Quadrupole |
| 4 | 6' X 30' | 2 Quadrupole |
| 6 | 6' X 30' | 1 Quadrupole |
2. ALL WIRING AND SAW CUTS SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS FOR CORRECT OPERATION.
 3. PHASE 1 AND 4 SHALL OPERATE IN THE PRESENCE MODE. PHASE 2 AND 6 SHALL OPERATE IN THE PRESENCE MODE WHEN SYSTEM TIMING TERMINATES RESULTING IN FREE OPERATION.
 4. DETECTOR AMPLIFIERS SHALL BE SARASOTA 235 OR EQUIVALENT MANUFACTURED BY ECONOLITE CONTROL PRODUCTS, INC., OR APPROVED EQUAL.

CONSTRUCTION SEQUENCE

1. INSTALL NEW SIGNAL POLE FOUNDATIONS, POLES, SIGNS, CONDUIT, LOOP DETECTORS, CONTROLLER CABINET AND FOUNDATION. SIGNAL HEADS AND SIGNS SHALL BE SECURELY WRAPPED.
2. INSTALL DETECTOR LOOPS IN PAVEMENT AND CONNECT HAND BOXES.
3. LOCATE AND CONNECT POWER FEED TO CONTROLLER. TURN ON SIGNAL AT THE DIRECTION OF THE ENGINEER. THE CONTRACTOR SHALL CONTACT POLICE FOR ASSISTANCE FOR TRAFFIC CONTROL WHEN SIGNAL IS NOT IN OPERATION.
4. ENERGIZE SIGNALS.

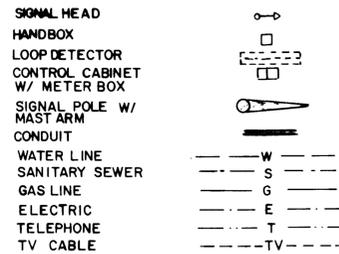
UNDERGROUND WIRING NOTES

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 AREAS SHALL BE TRENCHED IN ACCORDANCE WITH HOWARD COUNTY DESIGN SPECIFICATIONS.

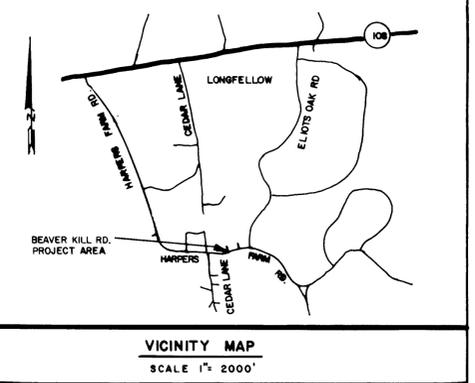
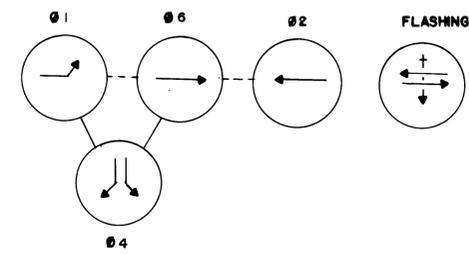
SIGNAL POLE NOTES

- NO. (SEE PLAN) DESCRIPTION
 1. COMBINATION MONOLEVER WITH ONE (1) ARM 24 FT. 24 FT. ARM SUPPORTS (2) THREE SECTION 12" SIGNAL HEADS.
 2. COMBINATION MONOLEVER WITH TWO (2) ARMS 30 FT. AND 30 FT. WITH 90 ANGLE AT SEPARATION 30 FT. ARM SUPPORTS (2) THREE SECTION 12" SIGNAL HEADS. 30 FT. ARM SUPPORTS (1) THREE SECTION 12" SIGNAL HEADS AND (1) FIVE SECTION 12" SIGNAL HEAD.
- POLE FINISH: ZINC CHROMETE PRIME COAT WITH EXTERIOR BRONZE FINISH TO BE APPLIED IN THE FIELD. UNION METAL 50980.

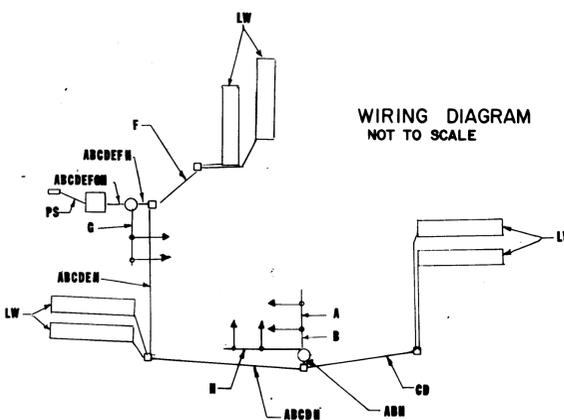
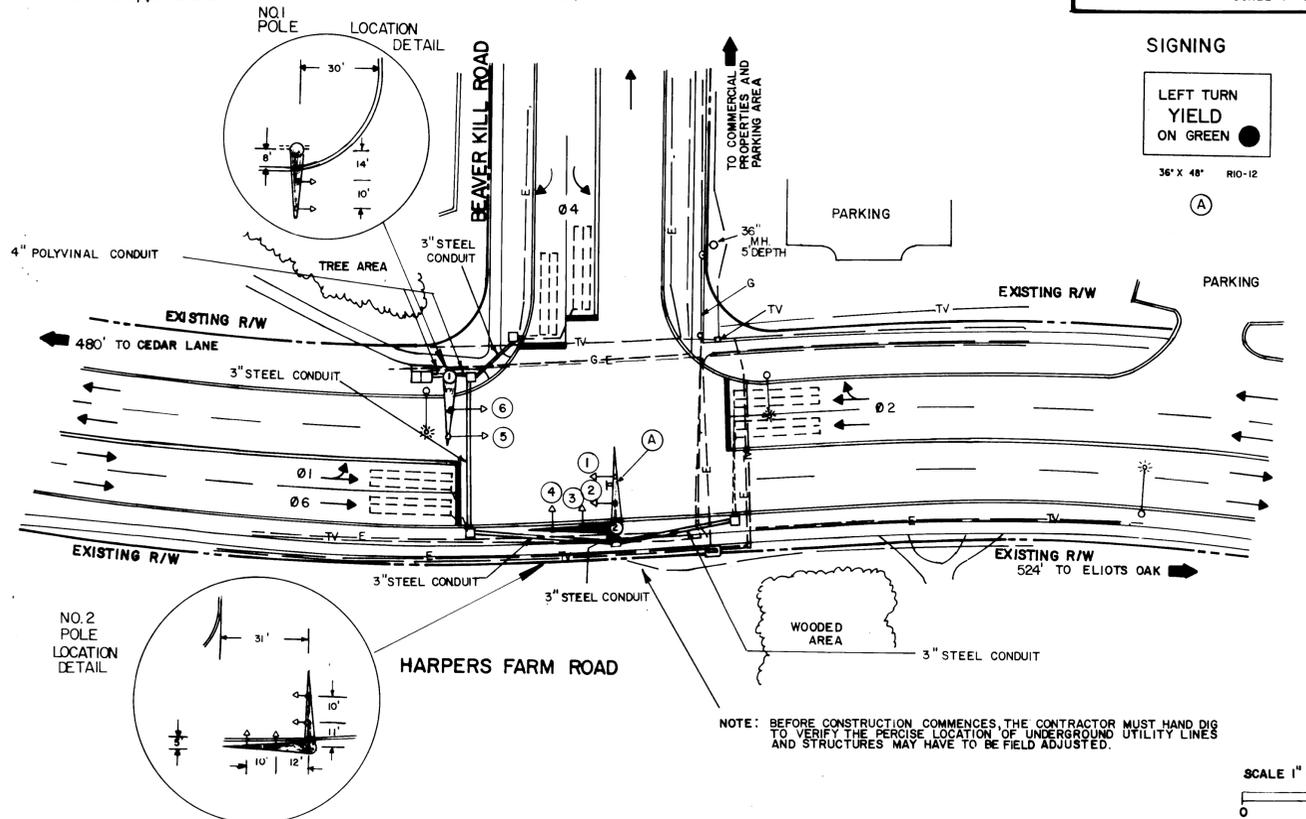
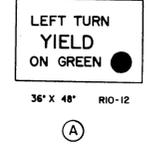
LEGEND



NEMA PHASING



SIGNING



WIRING DIAGRAM NOT TO SCALE

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												
PHASE 1-6 CLEAR	← G	G	R	R	R	R	4	3.0	-	13							OFF	NON LOCK
	← Y	G	R	R	R	R		3.5										
PHASE 2-6 CLEAR	G	G	R	R	G	G	10	3.0	-	20							ON	LOCK
	Y	Y	R	R	Y	Y		3.5										
PHASE 4 CLEAR	R	R	G	G	R	R	10	3.0	-	15							OFF	NON LOCK
	R	R	Y	Y	R	R		4.0										
FLASH OPERATION	FL/Y	FL/Y	FL/R	FL/R	FL/Y	FL/Y												

12-18-87	CONCEPTUAL SIGNAL PLAN, 30% STAGE SUBMISSION
01-11-88	PRELIMINARY SIGNAL PLAN, 75% STAGE SUBMISSION
04-11-88	PRELIMINARY SIGNAL PLAN, 75% RESUBMISSION
05-02-88	PRELIMINARY SIGNAL PLAN, SECOND RESUBMISSION



DES: C.F.D.	SIGNAL PLAN, 90% STAGE SUBMISSION	5/21/88
DRN: C.F.D.	SIGNAL PLAN, 100% STAGE SUBMISSION	7/1/88
CHK: MRM		
DATE: 7-1-88	BY NO.	REVISION

TRAFFIC SIGNAL PLAN
TF 255
600' SCALE MAP NO. _____ BLOCK NO. _____

HARPERS FARM ROAD AND BEAVER KILL ROAD
CAPITAL PROJECT T-7046
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 1 OF 1

HARPBEAV