REQUIRED CONSTRUCTION

1 Install new signal head # 1, #5 & #7
2 Reactivate the detector loop labelled as "FOR FUTURE USE".
~~3 Construct new bituminous curb and paving.~~
4 Provide necessary rewiring for the Left turn phases
5 Install sign R1-2C
~~6 Install new pavement markings~~
7 Remove and salvage existing signal heads

~~GEOMETRIC IMPROVEMENT~~

~~1 New bituminous curb are to be installed in accordance to standard detail R3.03 of Volume IV design manual.~~
~~2 New paving section are to be section P-5 of Vol IV design Manual~~

GENERAL NOTES

1. All highway marking and signing shall be the responsibility of the Division of Traffic Engineering of the Bureau of Engineering, Department of Public Works, Howard County, Maryland, and is not to be considered a part of this contract.
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. ~~See Section 4.09 of the General Specifications.~~ 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
3. Construction shall be completed in accordance with Howard County Standard Specifications and Details for Construction Design Manual, Volume IV.
4. ~~All disturbed areas shall be properly restored in accordance with Section 4.20 of the "GENERAL SPECIFICATIONS FOR INSTALLATION OF EQUIPMENT FOR TRAFFIC CONTROL FOR HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS" dated October 7, 1974; revised February 18, 1976.~~
4. All new signal heads shall be securely wrapped and/or bagged in burlap, prior to signal being placed in service.

CONTROLLER AND ACCESSORIES (EXISTING)

1. ~~NEMA~~ eight phase modular controller with solid state circuitry and digital timing, ~~similar to the~~ (Econolite MMC 8000 Series Digital Controller unit), and one 2017L flasher module.
   a. Equipped with time base coordination unit. - KMC 883
   b. Equipped with two (2) vehicular actuated modules.
   c. Equipped with one (1) vehicular actuated module with volume density controls.
   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 module 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 Acutation, Time to Reduce, Time Before Reduction, Minimum Gap, Recall and Memory.
   f. Four phase signal overlap capability.
2. Conflict Monitor for all phases and Solid State load switches fully wired in cabinet. Econolite NSM12L and 4 Tsc Model 300 Load Switches
3. Ground mounted traffic controller cabinet large enough to accommodate the above control equipment and detectors. The cabinet IS furnished with a thermostatically controlled cabinet vent fan.
4. Finish of the cabinet IS all weather bronze paint.
5. The controller equipped wised with eight loop detector amplifiers (delay output type) and harnesses. 236T Detector amplifiers
6. Meter box is installed in vandal proof enclosure, ~~provided by the contractor.~~
7. All phases shall be skippable.

UNDERGROUND WIRING

1. Underground wiring 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 shown on the Contract Drawings.
2. The Contractor shall furnish an "as-built" drawing as per ~~"General Specifications 4.08"~~.

LOOPS AND DETECTORS

1. The following new loops had been installed:

Phase	Dimensions	No. of Loops Required
~~A~~	~~6' x 30'~~	1
~~B~~	~~6' x 10' + 6' x 6'~~	2
~~C~~	~~6' x 30'~~	4
~~(Future)~~	~~6' x 30'~~	1

2. All wiring shall be in accordance with manufacturer's recommendations for correct operation.
3. Phase A and C loop detectors shall operate in presence mode. Phase B loops shall operate by (extension) point detection.
4. Detector for "future" phase had been installed as shown on plans; ~~however, this detector will not be in operation until a later date.~~
5. Detector amplifiers shall be Sarasota 235-T or equivalent manufactured by Econolite Control Products, Inc., Crouse-Hinds, or approved equal.

SIGNAL HEADS

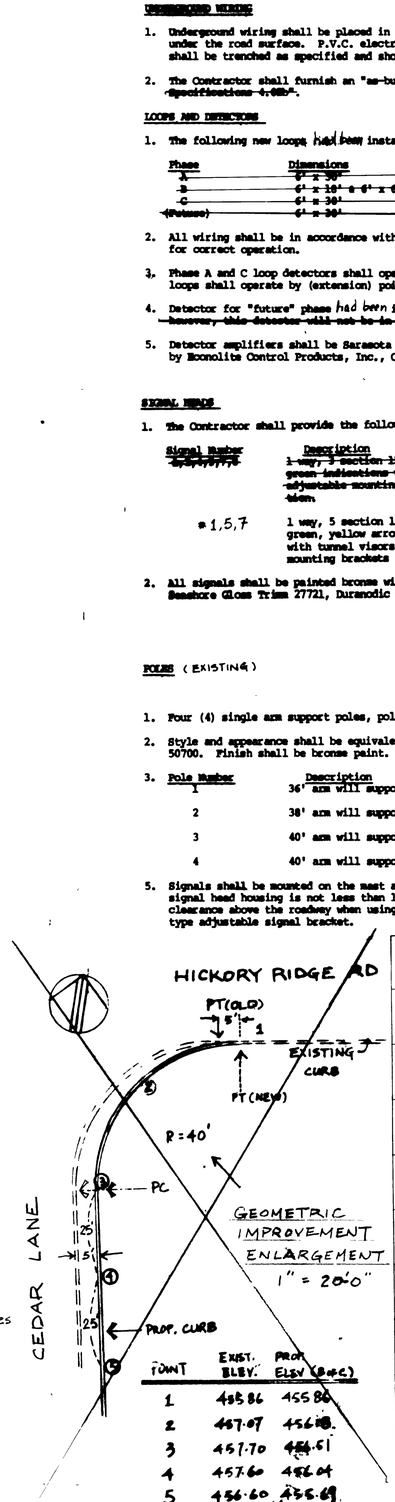
1. The Contractor shall provide the following signal heads:

Signal Number	Description
~~1,2,3,4,5,6,7,8~~	~~1 way, 3 section 12" signal, having red, yellow and green indications with tunnel visors and proper adjustable mounting brackets for mast arm installation.~~
#1,5,7	1 way, 5 section 12" signal, having red, yellow, green, yellow arrow and green arrow indications with tunnel visors and proper adjustable rigid mounting brackets for mast arm installation.

2. All signals shall be painted bronze with M.A. Bruder and Sons, Inc. Seashore Gloss Trim 27721, Duranodic Bronze Code 7557581 or equal.

POLES (EXISTING)

1. Four (4) single arm support poles, pole height 21', "T" dimension 18.5'.
2. Style and appearance shall be equivalent to Union Metal Design No. 50700. Finish shall be bronze paint.
3. Pole Number / Description
   - 1 — 36' arm will support two (2) signal heads and one (1) sign.
   - 2 — 38' arm will support two (2) signal heads.
   - 3 — 40' arm will support two (2) signal heads.
   - 4 — 40' arm will support two (2) signal heads.
5. 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.

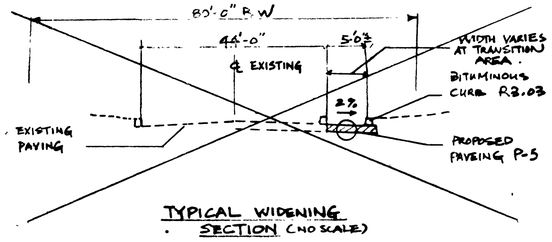


POINT	EXIST. ELEV.	PROP ELEV (B&C)
1	455.86	455.86
2	457.07	456.18
3	457.70	456.61
4	457.60	456.04
5	456.60	455.69

12" SIGNALS

X2,4,~~6,8~~ (R Y G) 1,3,5,7 (R Y G) 6 (R Y G) 9 YIELD WHEN TURNING ON GREEN ● ~~(By Others)~~

R1-2C 36"x48"



TYPICAL WIDENING SECTION (NO SCALE)

VICINITY MAP
Scale 1" = 2000'

LEGEND

EXISTING
- LUMINARE
- WATER MAIN
- WATER VALVE
- HANDBOX
- CONDUIT
- STEEL POLE
- MAST ARM EXISTING SIGNAL HEAD
- LOOP DETECTOR
- NEW PAVING
- NEW CURB
- NEW SIGNAL HEAD

WIRING DIAGRAM

A-2-CONDUCTOR CABLE (No.14 AWG)
B-2-CONDUCTOR CABLE (No.14 AWG)
C-2-CONDUCTOR CABLE (No.14 AWG)
D-2-CONDUCTOR CABLE (No.14 AWG)
E-2-CONDUCTOR CABLE (No.14 AWG)
F-2-CONDUCTOR CABLE (No.14 AWG)
G-2-CONDUCTOR CABLE (No.14 AWG)
H-2-CONDUCTOR CABLE (No.14 AWG)
J-5-CONDUCTOR CABLE (No.14 AWG)
K-7-CONDUCTOR CABLE (No.14 AWG)
L-7-CONDUCTOR CABLE (No.14 AWG)
M-7-CONDUCTOR CABLE (No.14 AWG)
PS-PROPOSED SERVICE
LW-LOOP WIRE

PHASE, SEQUENCE AND TIMING DIAGRAM		TRAFFIC SIGNAL HEADS								MIN GREEN	PASSAGE	YELLOW	PED CLEAR	MAX I	MAX II	SECONDS PER ACTUATION	TIME TO REDUCE	TIME BEFORE REDUCTION	MIN GAP	RECALL	MEMORY
		1	2	3	4	5	6	7	8												
	PHASE A	←G R	R	←G R	R	R	RG→	R	R	4	1			15	10					OFF	NON LOCK
	PHASE A CLEAR	←G R	R	←Y R	R	R	RG→	R	R			4									
	PHASE B	←G G	G	R	R	R	RG→	R	R	4	1			15	10						
	PHASE B CLEAR	←Y Y	Y	R	R	R	RY→	R	R			4									
	PHASE B ALT	R	R	←G G	L	R	R	R	R	4	1			15	10						
	PHASE B ALT CLEAR	R	R	←Y G	L	R	R	R	R			4									
	PHASE C	G	G	G	G	R	R	R	R	10	5			35	25	3	5	10	3 5	ON	LOCK
	PHASE C CLEAR	Y	Y	Y	Y	R	R	R	R			4									
	PHASE D	R	R	R	R	←R	R	←R	R	4	1			15	10					OFF	NON LOCK
	PHASE D CLEAR	R	R	R	R	←R	R	←Y	R			4									
	PHASE E	R	R	R	R	←G	R	R	R	4	1			15	10						
	PHASE E CLEAR	R	R	R	R	←Y	R	R	R			4									
	PHASE F ALT	R	R	R	R	R	G	←G	G	4	1			15	10						
	PHASE F ALT CLEAR	R	R	R	R	R	G	←Y	G			4									
	PHASE F	R	R	R	R	G	G	G	G	6	5			20	15					OFF	NON LOCK
	PHASE F CLEAR	R	R	R	R	Y	G	Y	Y			4									
	FLASH OPER.	FL/Y	FL/Y	FL/Y	FL/Y	FL/Y	FL/R	FL/R	FL/R												

Rev. No.	Date	Revision Description	By

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
DIRECTOR OF PUBLIC WORKS — DATE 9-29-86 — CHIEF BUREAU OF ENGINEERING — DATE
CHIEF, ROADS, BRIDGES, STORM DRAINAGE DIVISION — DATE 8/26/86

DIV. OF ROADS, BRIDGES AND STORM DRAINAGE
BUREAU OF ENGINEERING
DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

TRAFFIC SIGNAL PLAN

HICKORY RIDGE ROAD & CEDAR LANE
CAPITAL PROJECT J-4086
HOWARD COUNTY, MARYLAND

TF. 246

SCALE 1" = 30'

DATE.

DESIGNED BY J. CHEUNG
DRAFTED BY J. CHEUNG
CHECKED BY E. CALIA

#746

CEDAHIC2