



- CONSTRUCTION DETAILS**
- Install 6" X 40' (2-turns) loop detector with 6' (3 turns) powered encased in 1/4" flexible tubing. (Note: 5/8" saw cut).
 - Install 1" galvanized electrical conduit sleeve for detector wire.
 - Remove existing controller and install new controller in existing base mounted cabinet. (See Note Below)
 - Use existing handbox.
 - Use existing conduit.

NOTE: Existing Traffic Signal Controller & Cabinet to be delivered to Howard County's Scagsville Shop.

GENERAL NOTES

- The highway marking and signing shall be the responsibility of others, except 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 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:
 - o Miss Utility (Collect) 1-559-0100
 - o Baltimore Gas & Electric Company - Underground Electric Distribution Engineering "Damage Control" - 234-5691
 - o Baltimore Gas & Electric Company - Underground Gas Distribution Engineering "Damage Control" - 234-5533
 - o Chesapeake and Potomac Telephone Company - 752-9976
 - o Traffic Division - 952-2072
 - o Howard County Cable T.V. - 461-1156
 - o Bureau of Utilities - Howard County - 992-2366
- Construction shall be completed in accordance with Howard County Standard Specifications and Details for Construction Division Volume 1A.
- 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 NIOSH codes.
- The contractor shall comply with the following:
 - o 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 should be separate from power feed for the luminaires.

CONTROLLER AND ACCESSORIES

- NEMA eight (8) phase modular controller with solid state circuitry and digital timing, similar to Econolite DMC 8-8000 series digital controller unit. Equivalent manufactured by Crouse-Hinds, Eagle Signal Corporation or approved equal shall be installed with the following:
 - Time base coordination unit (non-interconnect type, modular unit).
 - Vehicular actuated modules with volume density controls for two (2) approaches.
 - Vehicular actuated modules (capable of controlling six (6) 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, seconds per actuation, time to reduce, time for reduction, minimum gap, recall and memory.
 - 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 actuation, time to reduce, time for reduction, minimum gap, recall and memory.
 - Four (4) phase signal overlap capability.
- A conflict monitor for all phases and solid state switches shall be fully wired in the cabinet.
- The contractor shall be wired with four (4) two (2) channel loop detector amplifiers (delay output type and harnesses).
- All phases shall be skipplable.

UNDERGROUND WIRING

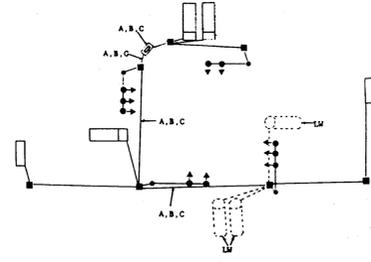
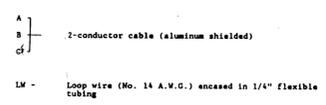
- Underground wiring under road surfaces shall be placed in new galvanized conduits pushed under the road surface. P.V.C. electrical conduit in grass median shall be trenched as specified and as shown on the contract drawings.

LOOPS AND DETECTORS

- The following new loops shall be installed:

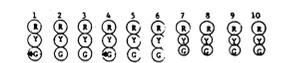
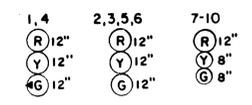
PHASE	DIMENSIONS	NO. OF LOOPS REQUIRED
1	6' x 40'	1
8	6' x 40'	2
- All wiring and saw cuts shall be in accordance with manufacturer's recommendations for correct operation.
- Phases 1, 4, 5, 7, and 8 shall operate in the presence mode. Phases 2 and 6 shall operate by extension phase detection.
- Detector amplifiers shall be Sarasota 235-T or equivalent manufactured by Econolite Control Products, Inc., Crouse-Hinds, or approved equal.

Wiring Diagram Legend



NOTE: Unless otherwise noted, all existing cable shall be utilized.

EXISTING SIGNALS



Phase	1	2	3	4	5	6	7	8	9	10
Phase 165	R	R	R	R	R	R	R	R	R	R
165 Change to Phase 265 or 166	R	R	R	R	R	R	R	R	R	R
Phase 265	R	R	R	R	R	R	R	R	R	R
265 Change	R	R	R	R	R	R	R	R	R	R
Phase 166	R	R	R	R	R	R	R	R	R	R
166 Change	R	R	R	R	R	R	R	R	R	R
Phase 266	R	R	R	R	R	R	R	R	R	R
266 Change	R	R	R	R	R	R	R	R	R	R
Phase 448	R	R	R	R	R	R	R	R	R	R
448 Change	R	R	R	R	R	R	R	R	R	R
Flashing Operation	FL	FL	FL	FL	FL	FL	FL	FL	FL	FL

*Signal head will display a ball yellow only if Phase 2 & 6 is skipped

PHASE SEQUENCE NOTES

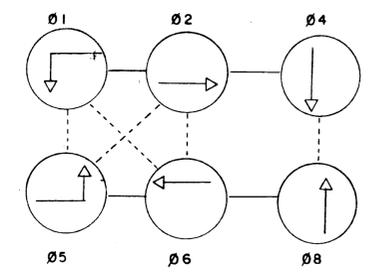
- Phase 1 will occur with Phase 5 or 6, never alone.
- Phase 2 will occur with Phase 3, never alone.
- Phase 4 will occur with Phase 8, never alone.
- Phase 5 will occur with Phase 1 or 2, never alone.
- Phase 6 will occur with Phase 1 or 2, never alone.
- Phase 8 will occur with Phase 4, never alone.
- Phase 2 & 6 will be on recall (min.)

TRAFFIC SIGNAL TIMING

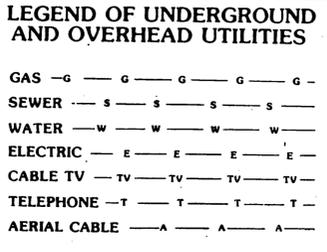
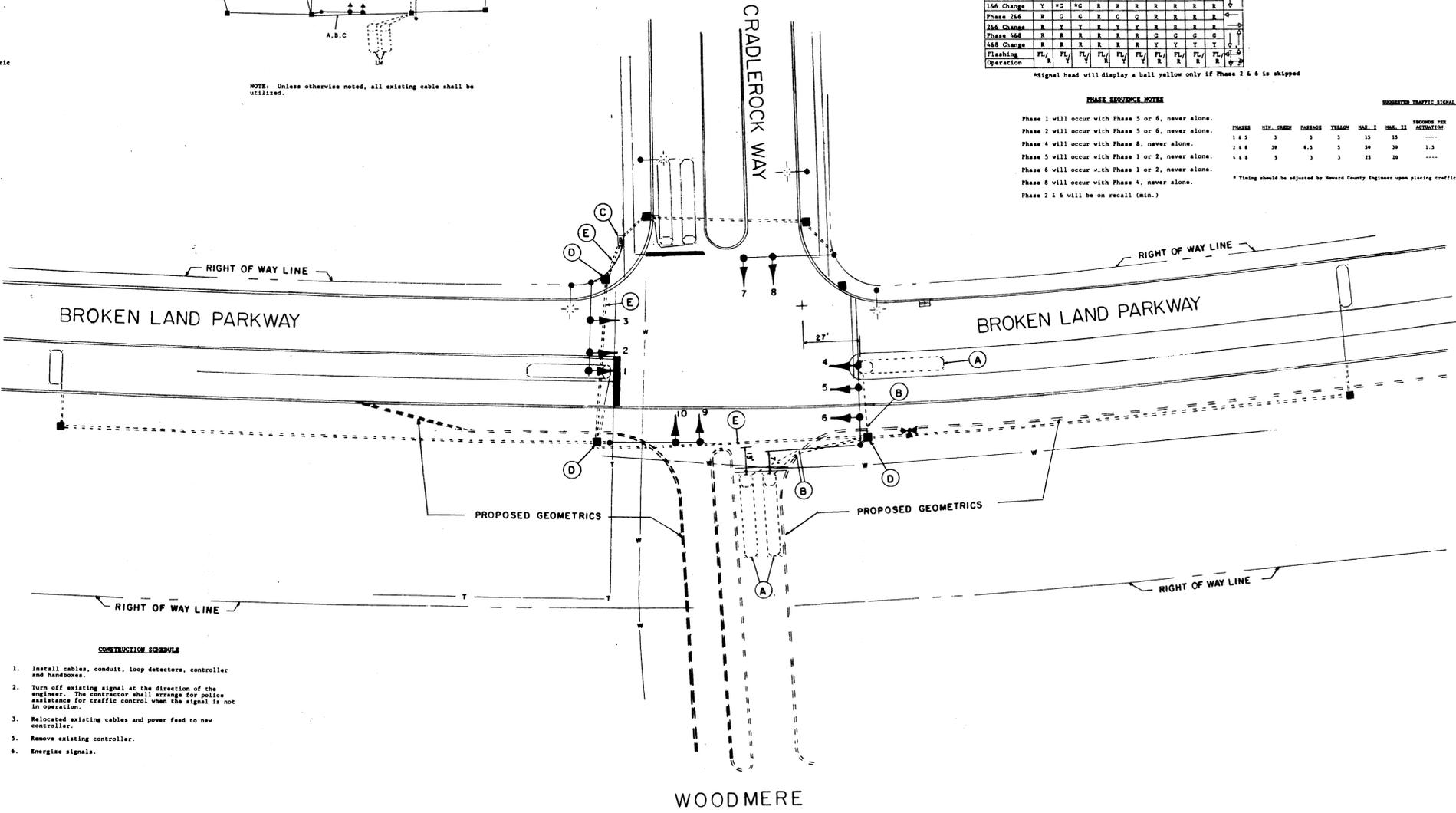
PHASE	MIN. GREEN	PASSAGE	YELLOW	MAX. I	MAX. II	SEQUENCE FOR ACTIVATION	TIME TO REDUCE	TIME TO REDUCE	MIN. GAP	RECALL	MEMORY
1 & 5	3	3	3	15	15	.....	.....	.....	.....	Off	Non-Lock
2 & 6	30	6.5	5	26	30	1,5	15	15	3.0	On	Lock
4 & 8	3	3	3	15	15	.....	.....	.....	.....	Off	Non-Lock

*Timing should be adjusted by Howard County Engineer upon placing traffic signal in operation.

PROPOSED NEMA PHASING



PHASES ASSOCIATED BY A SOLID LINE WILL NOT OPERATE CONCURRENTLY
PHASES ASSOCIATED BY A DASHED LINE MAY/WILL OPERATE CONCURRENTLY



APPROVAL
[Signature] 1-29-87
DIRECTOR OF PUBLIC WORKS DATE

[Signature] 1/29/87
CHIEF, BUREAU OF ENGINEERING DATE

[Signature] 1/29/87
CHIEF, BRIDGES & STORM DRAINAGE DIVISION DATE



<p>THE RIEMER GROUP, INC. THE RIEMER GROUP, INC., A LAND PLANNING, DESIGN & CIVIL ENGINEERING FIRM 3905 HEALTH PARK DRIVE, ELLICOTT CITY, MARYLAND 21043 (301) 461-2690</p>	<p>THE TRAFFIC GROUP, INC. Suite 220, Greenspring Station 2360 W. Joppa Road Lutherville, Maryland 21093 Telephone 301-583-8405</p>	<p>TOLERANCES (EXCEPT AS NOTED)</p> <p>DECIMAL: 1/16"</p> <p>FRACTIONAL: 1/8"</p> <p>ANGULAR: 1/4°</p>	<p>REVISIONS</p> <table border="1"> <tr> <th>NO.</th> <th>DATE</th> <th>BY</th> </tr> <tr> <td>1</td> <td></td> <td></td> </tr> <tr> <td>2</td> <td></td> <td></td> </tr> <tr> <td>3</td> <td></td> <td></td> </tr> <tr> <td>4</td> <td></td> <td></td> </tr> <tr> <td>5</td> <td></td> <td></td> </tr> </table>	NO.	DATE	BY	1			2			3			4			5			<p>BROKEN LAND PARKWAY AND CRADLEROCK WAY (EAST)</p> <p>DRAWN BY: WJR SCALE: 1"=30' DATE: 10-17-85 SIGNAL NO.: TF-239</p>
		NO.	DATE	BY																		
1																						
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