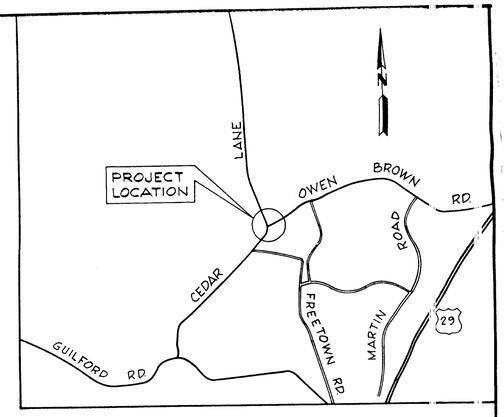
PHASE AND SEQUENCE DIAGRAM		2	3	4	5,6	Min Green	Passage	Yel Lnv	Red Clear	Max I	Seconds Per Actuation	Time To Reduce	Time Before Reduction	Min Gap	Recall	Memory
	Phase A	R	GA,C	G	R	10	1	4	1	12					Off	Off
	Phase A Clear	R	YA,C	G	R											
	Phase B	G	G	G	R	10	5	4	1	18	1.0	5.0	10.0	3.5	Off	On
	Phase B Clear	Y,R	Y,R	Y,R	R											
	Phase C	R	R	R	G	10	1	4	1	15					Off	Off
	Phase C Clear	R	R	R	Y,R											
	Flash	Y	Y	Y	R											

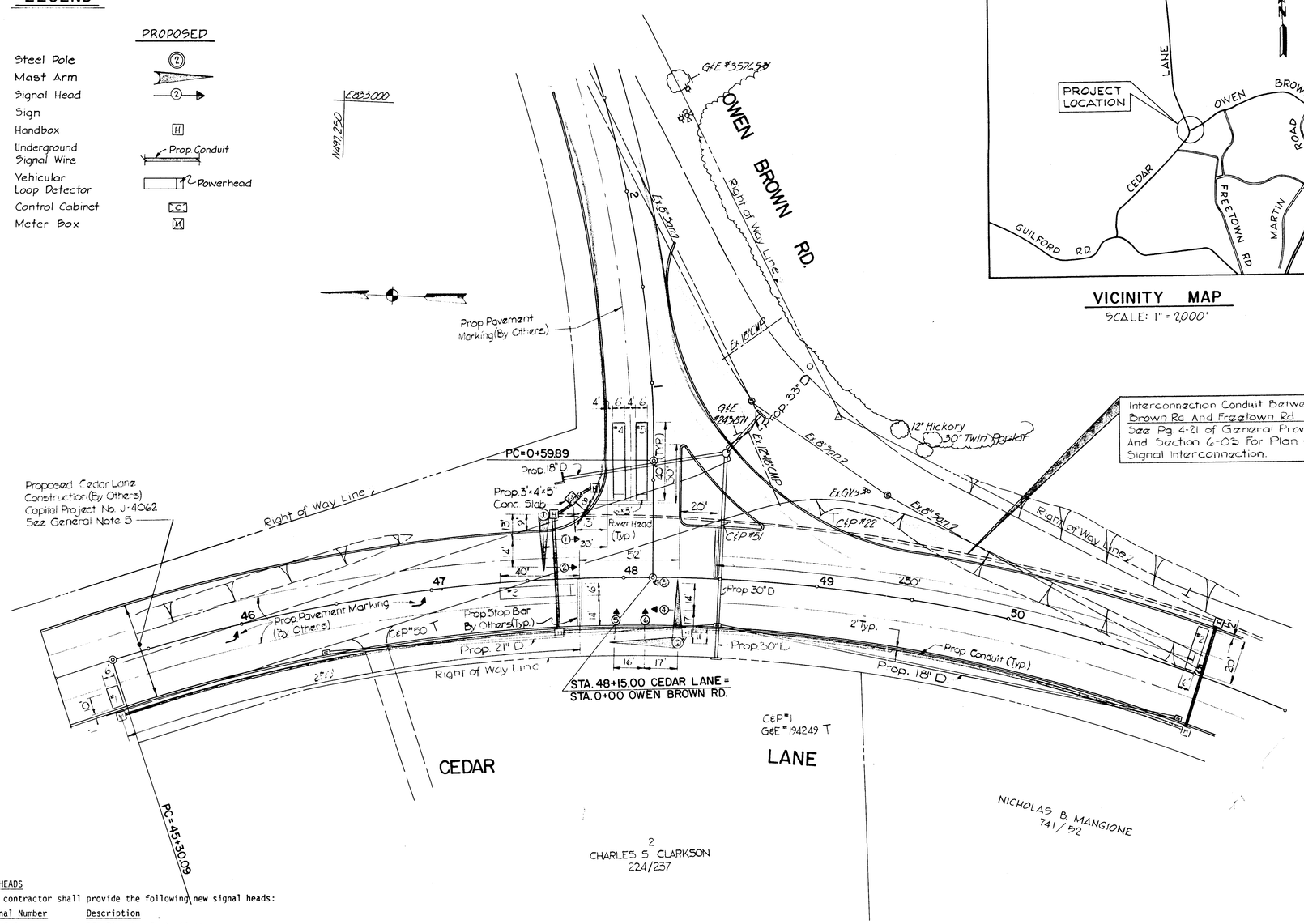
GA = Green Arrow YA = Yellow Arrow *L = Left On Green With Caution, Signs To Be Installed By Others.

LEGEND

	PROPOSED
Steel Pole	②
Mast Arm	
Signal Head	②
Sign	
Handbox	H
Underground Signal Wire	Prop Conduit
Vehicular Loop Detector	Powerhead
Control Cabinet	CC
Meter Box	M



VICINITY MAP
SCALE: 1" = 2,000'



GENERAL NOTES

1. All highway marking shall be the responsibility of the Division of Traffic Engineering of the Bureau of Engineering, Department of Public Works, of 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.
3. All materials and workmanship employed under this contract shall conform with the "GENERAL SPECIFICATIONS FOR INSTALLATION OF EQUIPMENT FOR TRAFFIC SIGNALS FOR HOWARD COUNTY DEPARTMENT PUBLIC WORKS" dated October 7, 1974; revised February 18, 1976.
4. All disturbed areas shall be properly restored in accordance with Section 4.20 of the General Specifications.
5. The Contractor's attention is directed to the fact that he shall coordinate all his construction operation with the construction of the roadway. All conduit shall be installed following final grading and before paving operations begin. The remainder of the signal equipment may be installed at any time following the completion of final grading and before the seeding and sodding operation.

CONTROLLER AND ACCESSORIES

1. NEMA three phase modular controller with solid state circuitry and digital timing, similar to the Crouse-Hinds DM 400 Series Digital Controller unit, equivalent manufactured by Econolite Control Products, Inc., Eagle Signal Corporation or approved equal. The controller shall be capable of expansion to four phase operation.
   a. Equipped with two (2) vehicular actuated modules.
   b. Equipped with one (1) vehicular actuated module with volume density controls.
   c. 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.
   d. 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 Before Reduction, Minimum Gap, Recall and Memory.
   e. Four phase signal overlap capability.
2. Conflict Monitor and Solid State load switches.
3. Solid State flasher and switch accessible through police door panel.
4. Ground mounted traffic controller Cabinet large enough to accommodate the above control equipment and detectors, and the future installation of coordination equipment. Coordination equipment shall include a master traffic responsive coordination unit, secondary coordination unit and/or required interconnection equipment. The cabinet shall be furnished with a thermostatically controlled cabinet vent fan.
5. Finish of the cabinet shall be all-weather bronze paint.
6. A tamper proof meter box shall be mounted on the outside of the controller cabinet for electric connection by utility company.
7. Install 3'x 4'x 5" concrete slab in front of controller cabinet.

UNDERGROUND WIRING

1. Underground wiring shall be placed in new PVC Conduits under the road surface and in grass areas, as shown on the Contract Drawings.
2. The conduit shall be sized to accommodate future wiring for pedestrian (WALK/DON'T WALK) signal heads, and pedestrian push button detectors.
3. The contractor shall furnish "as-built" drawings as per "General Specifications - 4.02b".

LOOPS AND DETECTORS

1. The following new loops shall be installed:

Number	Dimensions	Phase
1	6' x 10'	B
2	6' x 20'	B
3	6' x 40'*	A
4,5	6' x 40'*	C

*Loops to be installed with 6' x 3' powerhead for detection of small vehicles.

2. Loops 1 and 2 shall be wired in parallel to a standard detector.
3. Loop 3 shall be wired to a standard detector.
4. Loops 4 and 5 shall be wired in parallel to a standard detector.
5. All wiring shall be in accordance with manufacturer's recommendations for correct operation.
6. Loops 1 and 2 shall operate in pulse mode.
7. Loops 3, 4 and 5 shall operate in presence mode.
8. Standard detectors shall be Sarasota 215B/MS, equivalent as manufactured by Crouse-Hinds, Econolite Control Products, Inc. or approved equal.

SIGNAL HEADS

1. The contractor shall provide the following new signal heads:

Signal Number	Description
1,2,4	12" Diameter Indications
3	12" Diameter Red, Amber and Green Indications with 12" Yellow and Green Left Turn Arrows.
5,6	12" Diameter Red Indication, 8" Diameter Amber and Green Indications

2. Signals 5 and 6 shall be furnished with back-plates.
3. All signals shall be painted bronze with M.A. Bruder & Sons, Inc. Seashore Gloss Trim 27721 Duranodic Bronze Code 7557581 or equal.
4. All signals shall be vertically mounted on the signal pole mast arms with an adjustable signal bracket equivalent to the "ASTRO-BRAC" Model O-AB-101 by VePed Traffic Controls, Inc. or approved equal.

POLES

The Contractor shall provide the following new signal poles:

1. One (1) single arm support pole and one (1) twin arm support pole with 90° angle of separation.
2. Style and appearance shall be equivalent to Union Metal Design No. 50700. Finish shall be bronze paint.
3.

Pole Number	Description
1	30' armspread supporting 2 signal heads
2	36' armspread supporting 2 signal heads
	34' armspread supporting 2 signal heads

4. Mast arms shall be mounted on the signal poles so that the bottom of the signal head housing be not less than 15 feet nor more than 19 feet clear above the roadway when using the "ASTRO-BRAC" adjustable signal bracket.

C0823201

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE
CHIEF, BUREAU OF ENGINEERING — DATE
CHIEF - DIVISION OF ROADS, BRIDGES AND STORM DRAINAGE — DATE 6-6-83

Johnson, Mirmiran & Thompson, P. A.
ENGINEERS • PLANNERS • SURVEYORS • LANDSCAPE ARCHITECTS
810 GLENEAGLES COURT • BALTIMORE MARYLAND 21204 • (301) 821-6500

Daniel F. Long 6-3-83

PLAN CONSTRUCTION OF TRAFFIC SIGNAL AND EQUIPMENT LIST

CEDAR LANE AT OWEN BROWN ROAD
CAPITAL PROJECT T-7022
ELECTION DISTRICT NO. 5
HOWARD COUNTY, MARYLAND

DRAWING	SCALE	
NO. 1	1" = 30'-0"	DES. W.K.L.
OF. 1		DR. J.T.
		CH. D.T.