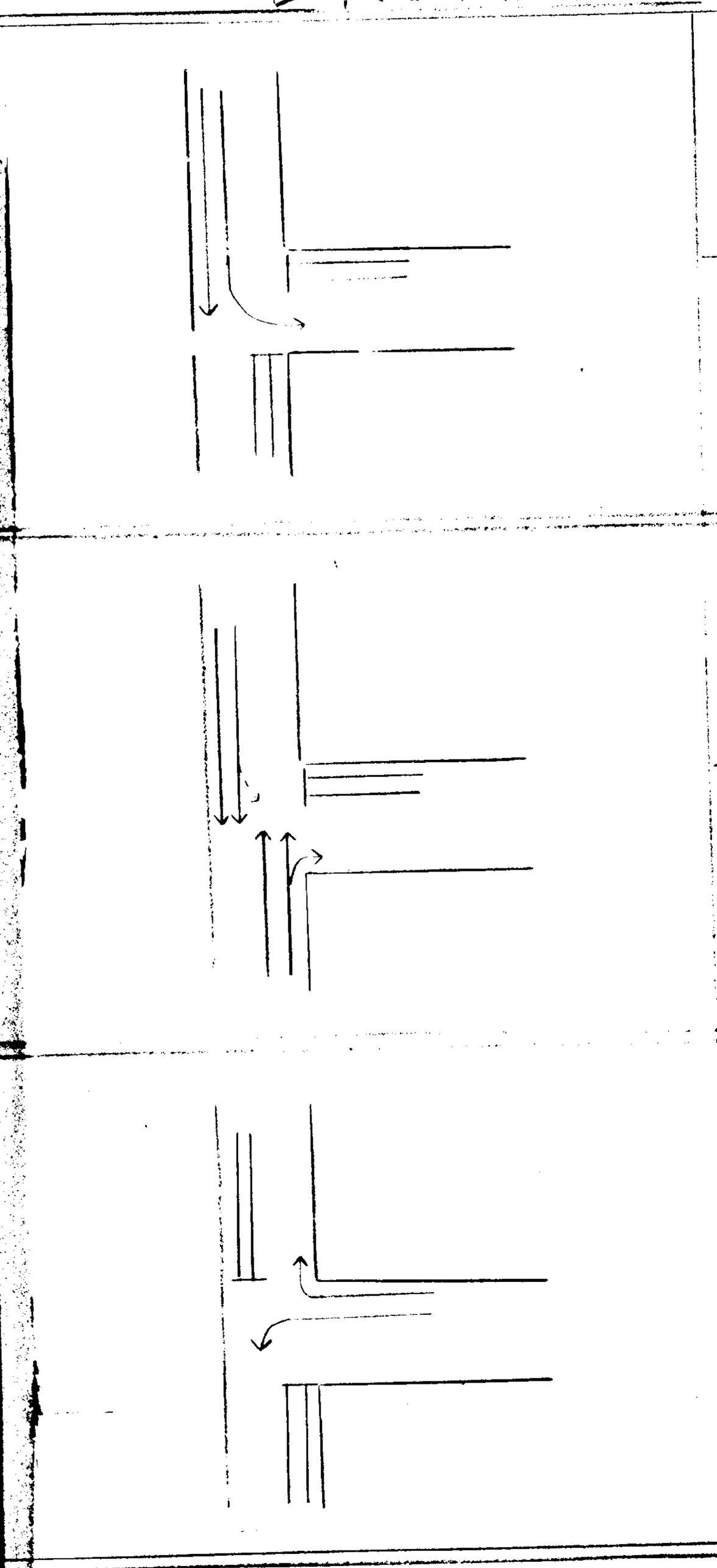
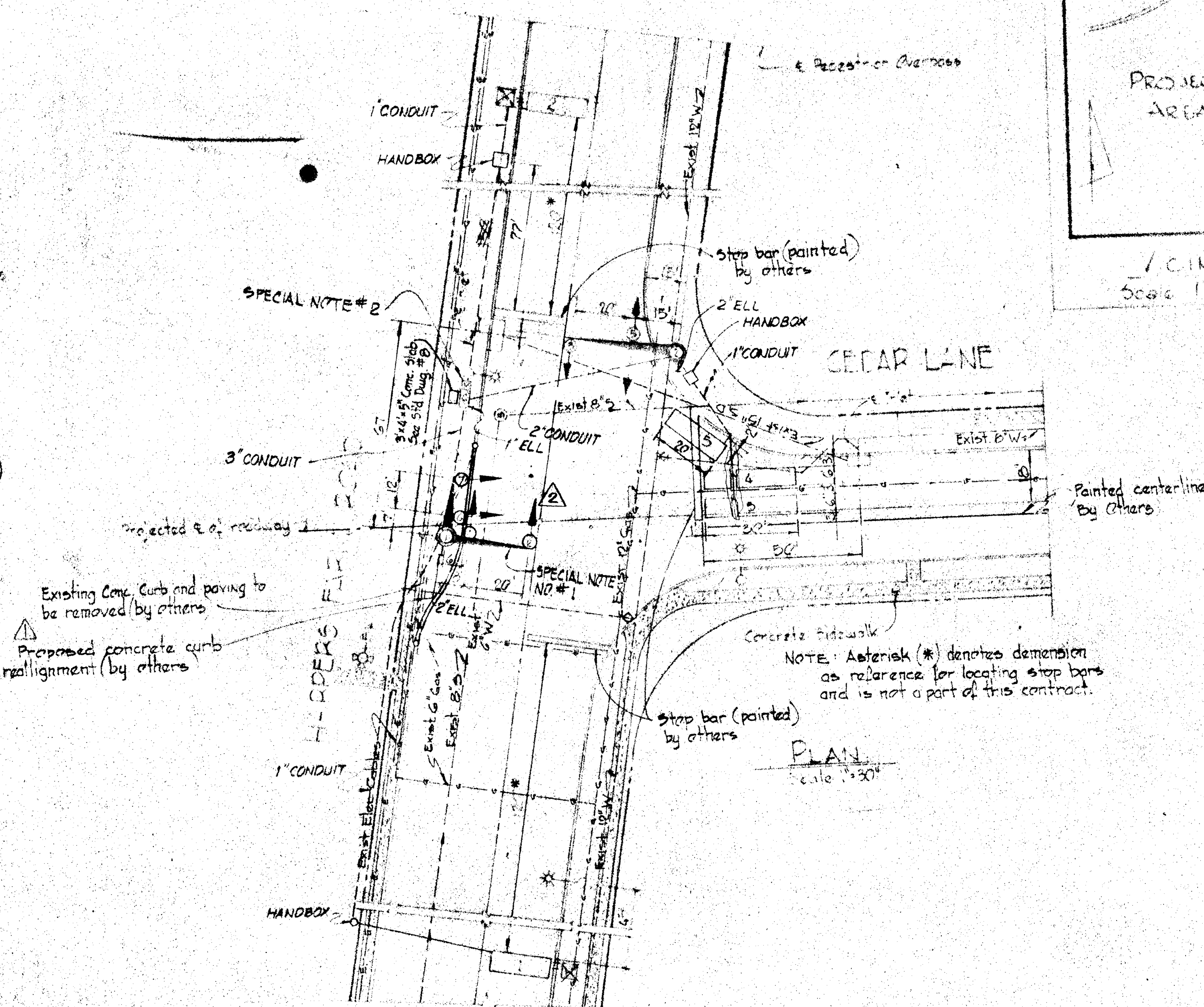
PHASE & SEQUENCE DIAGRAM

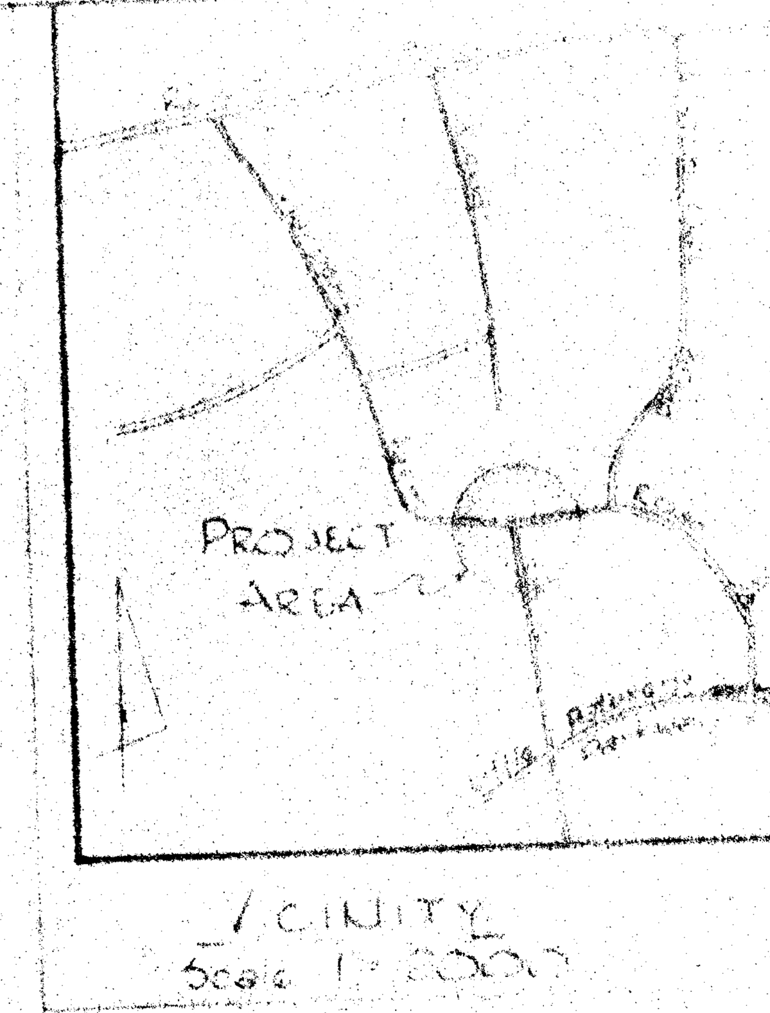


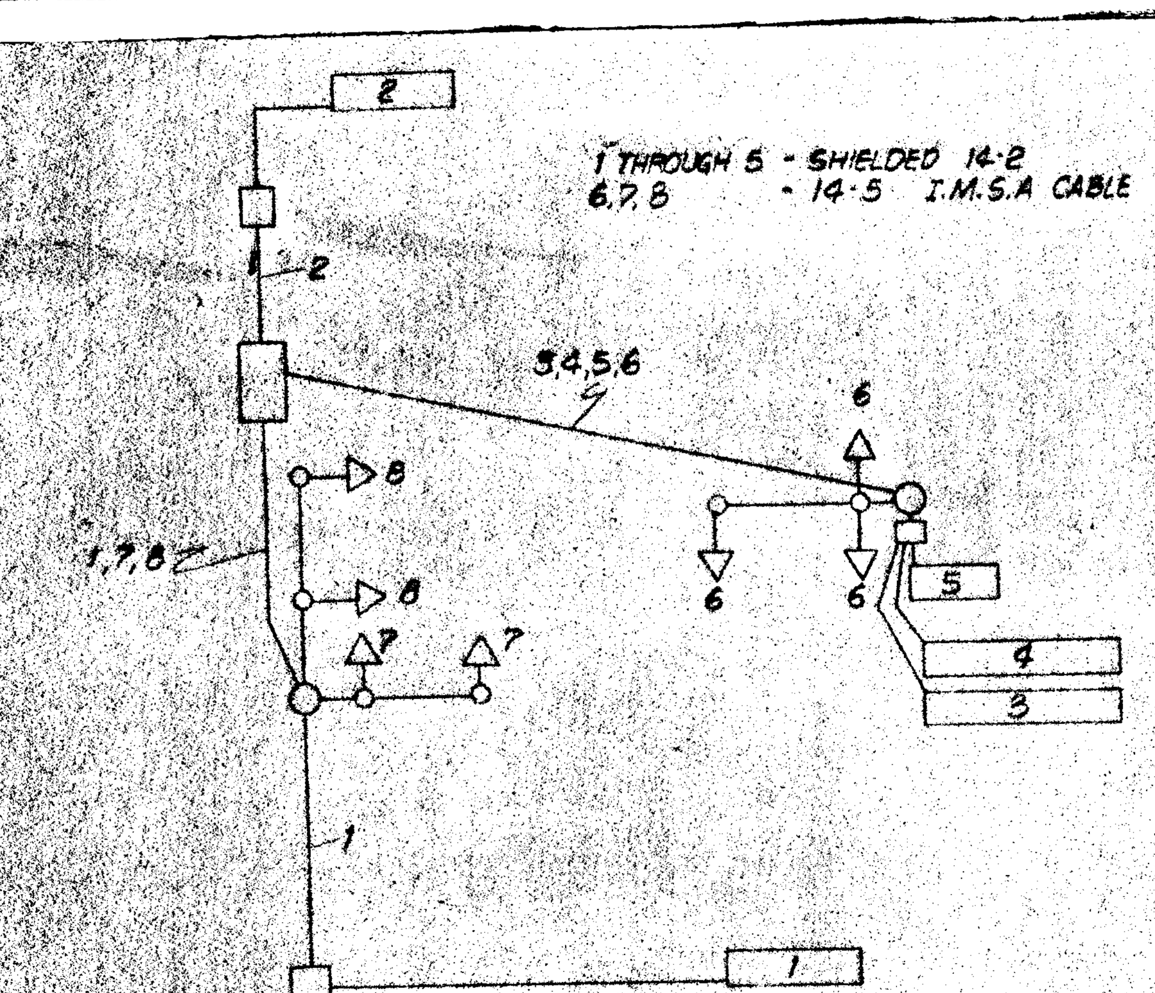
	TRAFFIC SIGNAL HEADS 2	1, 2	3, 4	6, 7
PHASE 1	←G G	G	R	R
PHASE 1 CLEAR	←A G	G	R	R
PHASE 2	G	G	G	R
PHASE 2 CLEAR	A	A	A	R
PHASE 3	R	R	R	G
PHASE 3 CLEAR	R	R	R	A
FLASH PHASE	F/A	F/A	F/A	F/R

SYMBOLS

- Signal Heads
- Vehicle Lane Detectors
- Hand Box
- Meter
- Control Cabinet
- Steel Pole (Proposed)
- Street Light (existing)







(AS-BUILT) WIRING DIAGRAM
NO SCALE

EXISTING EQUIPMENT LIST

SEE PAGE 9-11 OF SPECIFICATIONS FOR MAKE/MODEL

A. CONTROLLER

1. Fully actuated two (2) phase solid state signal [illegible] controller expandable to three (3) vehicle phases fully actuated plus all red pedestrian phase actuated.
2. Memory and recall for each phase.
3. Standard Police Panel (ref 4.0[illegible] General Specifications) without manual [illegible].
4. All red clearance interval for each phase.
5. Conflict monitor with solid state signal loading switches.
6. Two (2) Loop detector amplifiers (standard)
7. Minimum acceptable adjustment range
   a) Major & Minor street initial period and unit extension [illegible] secs.
   b) Major & Minor street extension [illegible] secs.
   c) Vehicle clearance interval and all red clearance interval up to [illegible] secs.
8. Base mounted control cabinet large enough to accommodate the ultimate 3 phases and pedestrian phase.
9. Control cabinet to be finished bronze.
10. Two Loop detector amplifiers with adjustable delayed timer.

B. DETECTORS

Phase	Detector (See Plan)	Dimension
A	1 & 2	6' x 18'
B	3,4,5	6' x 12'

Loops No. 4 & 5 will be wired in parallel.
Loop No. 3 and 4 & 5 will be connected to delayed timer detectors.

C. SIGNAL HEADS

1. All signal heads shall have 12" red, 8" amber and 8" green indications with standard [illegible].

D. POLES - MAST ARM

No (SEE PLAN)	Description
1	Twin arm support with 90° Angle at separation with 28' Span supporting an Ultimate 3 signal heads and the 16' span supporting 2 signal heads.
2	[illegible] supporting 3 signal heads

Pole Finish - Manufacturers [illegible] with [illegible] Bronze finish to be [illegible] in the field.

Pole Design - Style and appearance equivalent to UNION METAL DESIGN 50300.

E. SPECIAL NOTE #1

Signal heads [illegible] a maximum [illegible] of 16' above the roadway surface [illegible] maximum visibility [illegible]

F. SPECIAL NOTE #2

In accordance with the B.G.&E. requirements, a hinged steel (12ga.) or aluminum (10ga.) enclosure with hasp shall be provided for vandal protection.

GENERAL NOTES

1. The Contractor shall not be responsible for highway markings.
2. The timing of the Traffic Signal System shall be furnished by the Traffic Engineer (Reference 4.03 g, General Specifications)
3. The Contractor shall comply with the General Specifications for Installation of and Equipment for Traffic Signals prepared by HOWARD COUNTY Dept. of Public Works, Bureau of Engineering, Division of Traffic Engineering. Oct. 1974 and Feb. 1976 △2
4. The Contractor shall locate all underground utilities prior to construction. as required △2
5. All disturbed areas shall be seeded and mulched.

LEFT - TURN EQUIPMENT △2

G. SIGNAL HEADS - STD. CAP VISORS
Remove existing signal head #2, and replace with 5 head COMBINATION
No. (see plan) Traffic Signal } #2
Size of indication
12" Red
12" Amber, 12" Amber Arrow
12" Green, 12" Green Arrow

H. CONTROLLER MODIFICATIONS
Phase module(s), Solid State load switch(s) FOR ECONOLITE EMC 4000 S/N 472 P/N 31405G100 PROGRAM 31454

Rev. Date	Revision Description	Rev. No.
3/24/81	LEFT TURN PHASES	△2
[illegible]	RELOCATED [illegible] RELOCATED CONCRETE CURBS	△

CHIEF, DIV. RDS., BRIDGES, & STM. DRNG.

CHIEF, DIV. TRAFFIC ENGINEERING

CHIEF, BUREAU OF ENGINEERING

DIRECTOR, DEPT. OF PUBLIC WORKS

HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
BUREAU OF ENGINEERING
CAPITAL PROJECT T-1-7012
TRAFFIC SIGNAL CONSTRUCTION PLAN AND EQUIPMENT LIST

CAPITAL IMPROVEMENT PROJ. T-1-7012
HARPERS FARM ROAD AT CEDAR LANE

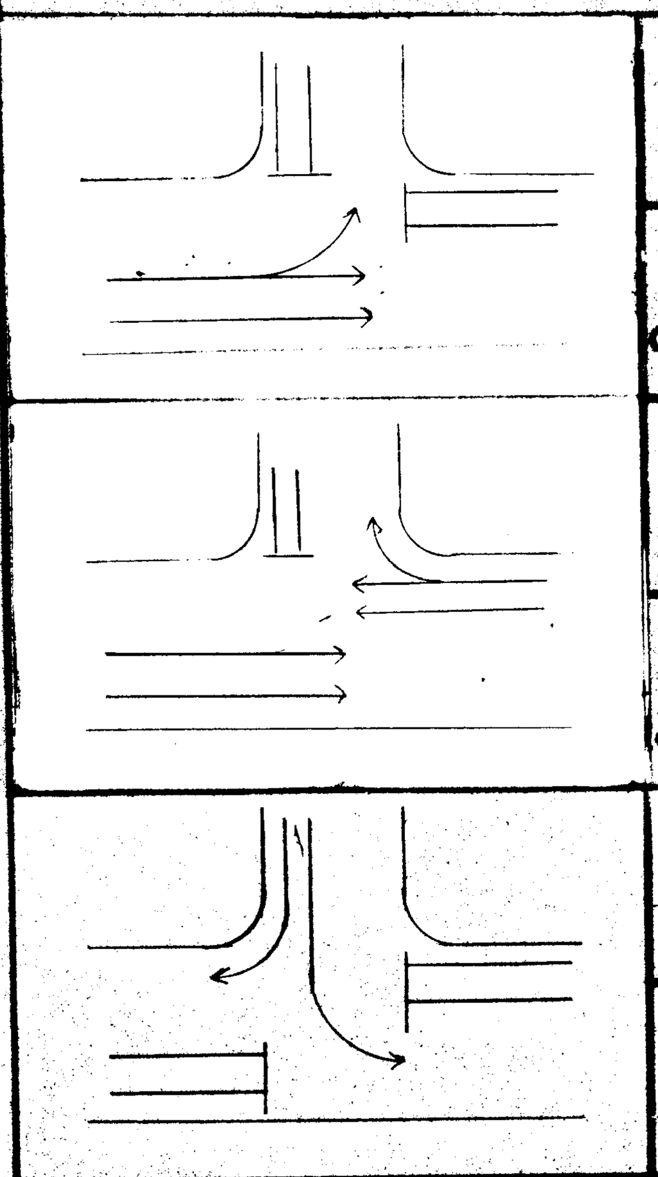
Scale: As Noted
Date: 3/[illegible]4 /ETD
Sheet No. 1 of 1
Drawing No. [illegible]

Designed: [illegible]
Drawn: [illegible]
Check: JK & EAC

AS-BUILT JUNE 6, 1979

C744B201

PHASE AND SEQUENCE DIAGRAM



	TRAFFIC SIGNAL HEADS 1	2,6	3,4,5	7,8
PHASE A	<G G	G	R	R
PHASE A CLEARANCE	<A G	G	R	R
PHASE B	G	G	G	R
PHASE B CLEARANCE	A	A	A	R
PHASE C	R	R	R	G
PHASE C CLEARANCE	R	R	R	A
FLASH (F/)	F/A	F/A	F/A	F/R

*F/ — FLASH
—→ — FREE MOVEMENT
- - -→ — YIELD PRIOR TO MOVEMENT

GENERAL NOTES

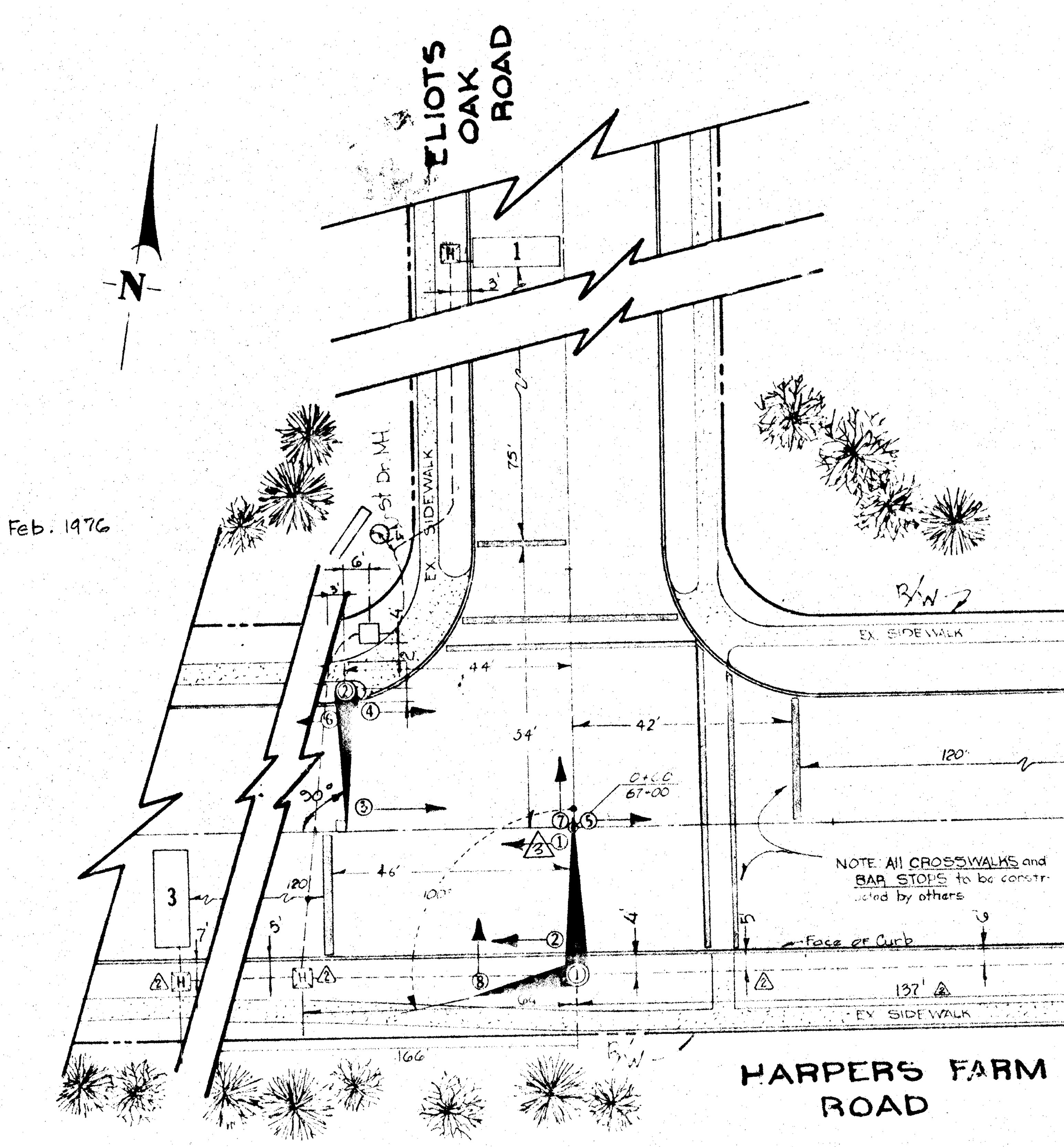
~~1. Pole # 1 & 2 are to be installed in place of the existing luminaire supports numbered 431 & 426~~

2. The contractor is not responsible for providing highway markings.
3. The timing of the signal system shall be furnished by the Traffic Engineer (ref. 10.03 general specification)
4. The contractor shall conduct all backfill and cleanup operations as noted in the specifications (ref 22-07 & 22-08) or as directed by the Traffic Engineer.
5. The contractor shall comply with all provisions contained within the General Specifications for Installation and Equipment of Traffic Signals for Howard County Department of Public Works, October 1974 (3) and rev. Feb. 1976

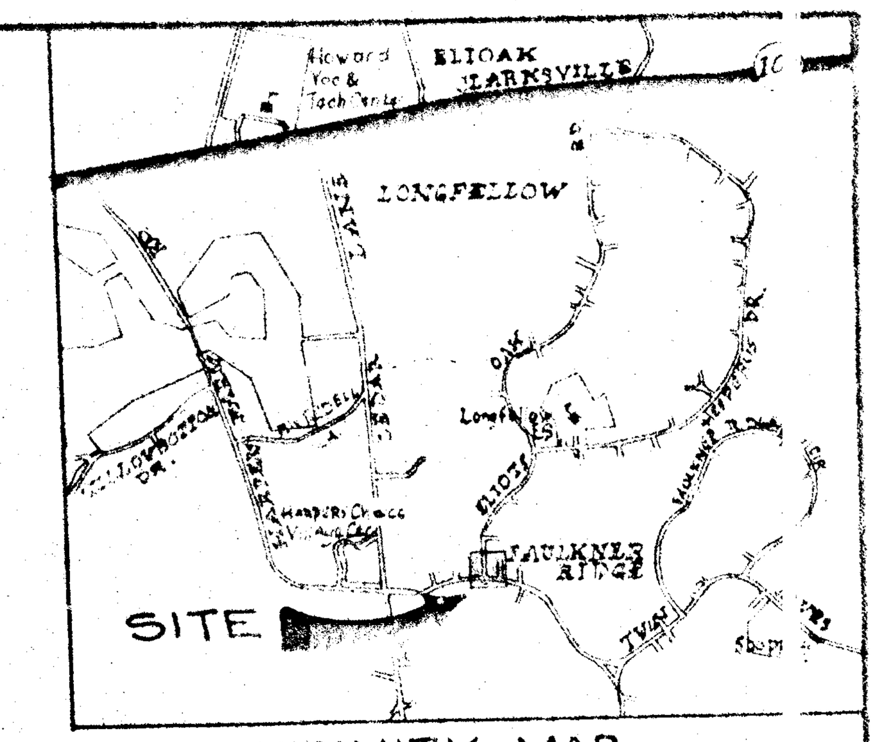
~~6. The existing lumenaires shall be removed by the Baltimore Gas & Electric Co. Arrangement for removal shall be the responsibility of Howard County. The existing poles shall be removed by the contractor and delivered to a location specified by the Traffic Engineer.~~

~~7. The Contractor shall, after furnishing and installing the two (2) 250 watt Hg luminaires, notify the Baltimore Gas & Electric Co., Mr Walter W. Kimmel 265-7500, to have the luminaires energized.~~ (1)

~~8. The two (2) luminaires shall not be supplied by the metered power source for the traffic signal system.~~



PLAN
SCALE: 1" = 20'



EXISTING EQUIPMENT LIST

SEE PAGE 9-10 OF SPECIFICATIONS FOR MAKE/MODEL

A CONTROLLER

1. Fully actuated two (2) phase solid state controller expandable to three (3) phase fully actuated with all red pedestrian phase - push button actuated
2. All red clearance interval for phase A & phase B
3. Memory and recall for each phase
4. Conflict monitor with solid state signal loading switches
5. Standard police panel (ref. 29.35 general specifications) without manual override feature
6. Two (2) loop detector amplifiers
7. Minimum acceptable adjustment range
   a) Major & minor street initial period and unit extension 2-30
   b) Major & minor street extension 10-60
   c) Vehical clearance internal & all red clearance internal up to 10
8. Base mounted control cabinet large enough to accommodate the ultimate three (3) phases. The cabinet shall be finished bronze.

B. DETECTORS - VEHICLE LOOP

Location in accordance

Phase	Detector Nº (see plan)	Dimensions
A	2 & 3	6' x 18'
B	1	6' x 12'

C. SIGNAL HEADS STANDARD CAP VISORS

Nº (see plan)	Size of indication
Traffic signals 1,2,3,4,5,6	12" red, 8" amber, 8" green
Traffic signals 7,8	12" red, 8" amber, 8" green

D. POLES

Nº (see plan)	Description
1	Combination monolever with two (2) arms 28 ft. & 18 ft. with 100° angle at separation & lumenaire support. 28 ft. arm supports 4-12" signal heads. 18 ft. arm supports 1-12" signal head
2	Combination monolever with one (1) arm 24 ft & luminaire support. 24 ft. arm supports 3-12" signal heads

Pole Finish - Zinc chromate prime coat with exterior bronze finish to be applied in the field.

Note - The luminaire for poles 1 & 2 shall be 250 watt mercury vapor. The contractor shall furnish and install the two (2) lumenaires & all related hardware.
The luminaires & hardware provided shall be consistent with standard B G & E specifications and the following:
a.) It shall be for use with 250 watt Hg. Vapor lamp.
b.) It shall have long semi cut-off with Type 3 distribution with clear lamp.
c.) It shall be equipped with 120-240 V regulated out-put ballast connected for 120 v. operation with locking type receptacle for photo electric controls.
d.) It shall have a 2" slip fitter mounting and bronze exterior finish.

SYMBOLS

- Signal Head
- Vehicle Loop Detector
- [H] Hand Box (Junction Box)
- [M] Meter Box
- [C] Control Cabinet
- ◎ Proposed Steel Pole

(3) LEFT TURN PHASE EQUIPMENT

E. SIGNAL HEADS STANDARD CAP VISORS

Remove existing signal head #1 and replace with 5 head combination

No. (see plan)	Size of indication
Traffic Signal 1	12" Red, 12" amber, 12" amber arrow, 12" Green Arrow, 12" Green

F. CONTROLLER - MODIFICATIONS

Phase module(s) FOR ECONOLITE DI3200 S/N 0613
Solid state load switch(s) COMPATIBLE WITH ECONOLITE DI3200 S/N 0613

DIRECTOR, DEPT. PUBLIC WORKS

CHIEF DIV. OF TRAFFIC ENG.

REV. NO	DESCRIPTION	DATE
3	Left Turn Phases	3/24/81
2	As Built	3-?-76
1	Added General Note # 7 & 8	[illegible]

TRAFFIC SIGNAL CONSTRUCTION PLAN AND EQUIPMENT LIST
HOWARD COUNTY MARYLAND
CAPITAL PROJECT T-1-7012

PROJECT AREA

HARPER'S FARM ROAD AT ELIOTS OAK ROAD

SCALE: AS SHOWN
DATE: [illegible]
SHEET: 1 of 1
DSGN: [illegible]
DRWN: [illegible]
CHKD: [illegible]
APPR: [illegible]

C744B702