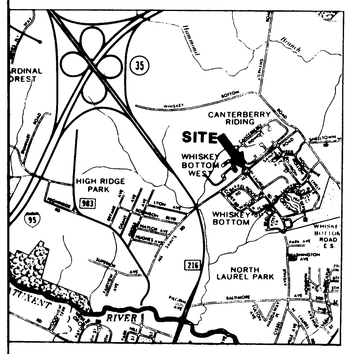
SCALE: 1" = 20'



CONSTRUCTION DETAILS

A. Install steel pole with a 42' mast arm, traffic signals, sign, pedestrian signals, pushbutton, and sign (NOTE: Install 1-2", 90° elbow).

B. Install steel pole with a 40' mast arm, traffic signals, pedestrian signals, pushbutton, and sign (NOTE: Install 1-2", 90° elbow).

C. Install steel pole with a 32' mast arm, traffic signals, sign, and pedestrian signal (NOTE: Install 1-2", 90° elbow).

D. Install steel pole with a 34' mast arm, traffic signals, and pedestrian signal (NOTE: Install 1-2", 90° elbow).

E. Install base mounted cabinet and controller with all necessary equipment (NOTE: Install 1-2" & 1-4", 90° elbow).

F. Install 6' x 16' loop detector encased in ½" flexible tubing (3-turns).

G. Install 6' x 30" loop detector encased in ½" flexible tubing (2-4-2) quadruple type.

H. Install handbox.

I. Install 1" galvanized steel electrical conduit (detector wire sleeve).

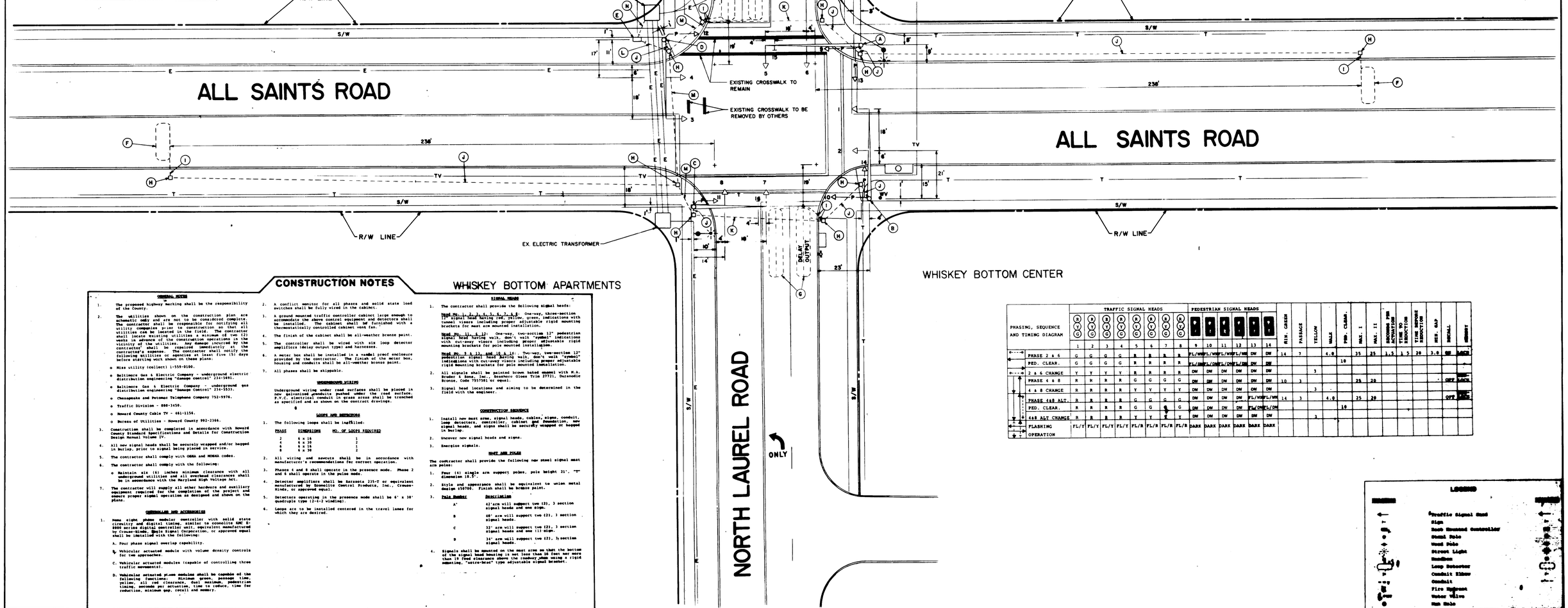
J. Install 2" polyvinyl chloride electrical conduit (trenched).

K. Install 2" galvanized steel electrical conduit (pushed).

L. Install 4" polyvinyl chloride electrical conduit (trenched).

M. Install 4" galvanized steel electrical conduit (pushed).

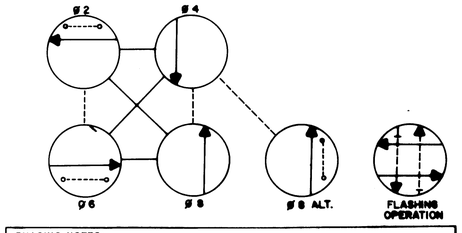
N. Proposed underground feed.



12" SIGNALS

SIGNS

NEMA PHASING



PHASING NOTES:

1. PHASES ASSOCIATED BY A SOLID LINE WILL NOT OPERATE CONCURRENTLY.
2. PHASES ASSOCIATED BY A DASHED LINE WILL OPERATE CONCURRENTLY.

PHASING, SEQUENCE AND TIMING DIAGRAM	TRAFFIC SIGNAL HEADS 1	2	3	4	5	6	7	8	PEDESTRIAN SIGNAL HEADS 9	10	11	12	13	14	MIN. GREEN	PASSAGE	YELLOW	MAX.	PED. CLEAR.	MAX. I	MAX. II	ADDITIONAL OR REDUCED TIME	TIME TO REDUCE	TIME BEFORE REDUCTION	MIN. GAP	MODAL	COMMENT
PHASE 2 & 6	G	G	G	G	R	R	R	R	FL/W	FL/W	FL/W	FL/W	DW	DW	14	7			4.0	35	25	1.5	1.5	20	3.0	SW	LOCK
PED. CLEAR.	G	G	G	G	R	R	R	R	FL/DW	FL/DW	FL/DW	FL/DW	DW	DW					10								
2 & 6 CHANGE	Y	Y	Y	Y	R	R	R	R	DW	DW	DW	DW	DW	DW			3										
PHASE 4 & 8	R	R	R	R	G	G	G	G	DW	DW	DW	DW	DW	DW	10	3				25	20					OFF	LOCK
4 & 8 CHANGE	R	R	R	R	Y	Y	Y	Y	DW	DW	DW	DW	DW	DW			3										
PHASE 4&8 ALT.	R	R	R	R	G	G	G	G	DW	DW	DW	DW	FL/W	FL/W	14	3		4.0		25	20					OFF	LOCK
PED. CLEAR.	R	R	R	R	G	G	G	G	DW	DW	DW	DW	FL/DW	FL/DW					10								
4&8 ALT CHANGE	R	R	R	R	Y	Y	Y	Y	DW	DW	DW	DW	DW	DW			3										
FLASHING OPERATION	FL/Y	FL/Y	FL/Y	FL/Y	FL/R	FL/R	FL/R	FL/R	DARK	DARK	DARK	DARK	DARK	DARK													

CONSTRUCTION NOTES

GENERAL NOTES

1. The proposed highway marking shall be the responsibility of the County.
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. Any damage incurred by the vicinity of utilities 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" 234-5491.
   - Baltimore Gas & Electric Company - underground gas distribution engineering "Damage Control" 234-5533.
   - Chesapeake and Potomac Telephone Company 752-5978.
   - Traffic Division - 888-1450.
   - Howard County Cable TV - 461-1154.
   - 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 MOSHA 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.

CONTROLLER AND ACCESSORIES

1. Home eight phase modular controller with solid state circuitry and digital timing, similar to econolite ESC 8-2000 series digital controller unit, equivalent manufactured by Control Systems Signal Corporation, or approved equal shall be installed with the following:
   A. Four phase signal overlap capability.
   B. Vehicular actuated module with volume density controls for two approaches.
   C. Vehicular actuated modules (capable of controlling three traffic movements).
   D. Vehicular actuated plug modules shall be capable of the following functions: Minimum green, passage time, yellow, all red clearance, fuel maximum, 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. A ground mounted traffic controller cabinet large enough to accommodate the above control equipment and detectors shall be installed. 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 six loop detector amplifiers (delay output type) and harnesses.
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.

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 areas shall be trenched as specified and as shown on the contract drawings.

LOOPS AND DETECTORS

1. The following loops shall be installed:

PHASE	DIMENSIONS	NO. OF LOOPS REQUIRED
2	6 x 16	1
4	6 x 30	2
6	6 x 16	1
8	6 x 30	2

2. All wiring and splices shall be in accordance with manufacturer's recommendations for correct operation.
3. Phases 4 and 8 shall operate in the presence mode. Phase 2 and 6 shall operate in the pulse mode.
4. Detector amplifiers shall be Sarasota 235-T or equivalent manufactured by Econolite Control Products, Inc., Crouse-Hinds, or approved equal.
5. Detectors operating in the presence mode shall be 6' x 30' quadruple type (2-4-2 winding).
6. Loops are to be installed centered in the travel lanes for which they are desired.

SIGNAL HEADS

1. The contractor shall provide the following signal heads:

   Head No. 1, 2, 3, 4, 5, 6, 7 & 8: One-way, three-section 12" signal head having red, yellow, green, indications with tunnel visors including proper adjustable rigid mounting brackets for mast arm mounted installation.

   Head No. 11, & 12: One-way, two-section 12" pedestrian signal head having walk, don't walk "symbol" indications with cut-away visors including proper adjustable rigid mounting brackets for pole mounted installation.

   Head No. 9 & 10: One-way, two-section 12" pedestrian signal head having walk, don't walk "symbol" indications with cut-away visors including proper adjustable rigid mounting brackets for pole mounted installation.
2. All signals shall be painted brown baked enamel with M.A. Bruder & Sons, Inc., Seashore Gloss Trim 37731, Duranodic Bronze, Code 7557581 or equal.
3. Signal head locations and aiming to be determined in the field with the engineer.

CONSTRUCTION SEQUENCE

1. Install new mast arms, signal heads, cables, signs, conduit, loop detectors, controller, cabinet and foundation, new signal heads, and signs shall be securely wrapped or bagged in burlap.
2. Uncover new signal heads and signs.
3. Energize signals.

MAST ARM POLES

The contractor shall provide the following new steel signal mast arm poles:

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 #50760. Finish shall be bronze paint.
3. Pole Number / Description:
   - A' — 42' arm will support two (2), 3 section signal heads and one sign.
   - B — 40' arm will support two (2), 3 section signal heads.
   - C — 32' arm will support two (2), 3 section signal heads and one (1) sign.
   - D — 34' arm will support two (2), 3, section signal heads.
4. Signals shall be mounted on the mast arms so that the bottom of the signal head housing is not less than 16 feet nor more than 19 feet clearance above the roadway when using a rigid mounting, "extra-brac" type adjustable signal bracket.

LEGEND

- Traffic Signal Head
- Sign
- Base Mounted Controller
- Metal Pole
- Wood Pole
- Street Light
- Handhole
- Loop Detector
- Conduit Ribbon
- Conduit
- Fire Hydrant
- Water Valve
- Gas Valve

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 1/28/88
CHIEF, BUREAU OF ENGINEERING — DATE 1-28-88
CHIEF, DIVISION OF ROADS, BRIDGES AND STORM DRAINAGE — DATE 1/28/88

A/E GROUP, INC.
9515 REISTERSTOWN ROAD
P.O. BOX 117
GARRISON, MARYLAND 21055
(301) 363-1905

DES: TMZ
DRN: TMZ
CHK: EGS
DATE: 12-17-87

BY	NO.	REVISION	DATE

TRAFFIC SIGNAL PLAN

ALL SAINTS ROAD & NORTH LAUREL ROAD

TF NO: 256

600' SCALE MAP NO. _____ BLOCK NO. _____

SCALE AS SHOWN

SHEET 1 OF 1

ALLS N LAU

746

BRUNING 44-132 69150