F H W A REGION NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
	MD	NH-G-117-1(38)E		

Project Description

I. General

This project involves the installation of a new traffic control signal with an advanced signal ahead warning sign and geometric improvements at the intersection of U.S. 301 (Crain Hwy.) at MD 234 (Budds Creek Road) in Charles County, Maryland. U.S. 301 is assumed to run in a north-south direction.

II. Intersection Operation

U.S. 301 at MD 234. This intersection is proposed to operate in a fully actuated mode with Southbound US 301 left turn lane operating as an exclusive phase. Southbound US 301 thru lanes will be unaffected by the signal operation. Northbound US 301 and Westbound MD 234 will also operate as exclusive phases.

A NEMA eight (8) phase, full traffic actuated solid state controller with three (3), two-channel loop detector amplifiers with time delay output housed in a base mounted cabinet are to be installed at the intersection of US 301 at MD 234.

III. Special Notes

1.) Maintenance of traffic will be handled by the contractor utilizing the following standard plates for traffic control: 105.02, 105.03, 105.301, 105.303, 105.309, 105.311, 107.007.

2.) The following contact persons for District #5 are as follows:

Mr. Edward Meehan
District Engineer
Phone # (410) 841-5450

Mr. Lawrence Elliott
Asst. District Engineer - Traffic
Phone # (410) 841-5450

Mr. Raymond Hutzler
Asst. District Engineer - Maint.
Phone # (410) 841-5450

Mr. John Mays
Asst. District Engineer - Utility
Phone # (410) 841-5450

Mr. Richard L. Daff, Sr.
Chief, Traffic Operations Division
Phone # (410) 787-7630*

Equipment List

A. Equipment to be supplied by the Administration.

Item No.	Quantity	Unit	Specification Section	Description
9001	5	EA	806	12-in. one-way, three section (R,Y,G) signal head - mast arm mount.
9002	2	EA	806	12-in. one-way, three section (RA,YA,GA) signal head - mast arm mount.
9003	1	EA	806	12-in. one-way, three section (RA,YA,GA) optically programmed signal head - mast arm mount.
9004	1	EA	806	5 ft x 5 ft "Red Signal Ahead" warning sign with LED display - mast arm mount.
1 9005	~~154~~ 204	SF	813	Sheet aluminum signs:
	2	EA		D3-2 (96 in. x 16 in.) "Budds Creek Road", Sign-mast arm mount.
	1	EA		D3-2 (96 in. x 16 in.) "Crain Hwy", Sign-mast arm mount.
	1	EA		W3-3 "New Signal Ahead" sign (36 in. x 36 in.) - post mount.
	1	EA		W3-3 "New Signal Ahead" sign (48 in. x 48 in.) - pole mount
	1	EA		W16-1, (18 in. x 18 in.) object marker-post mount
	1	EA		R4-7A, (30 in. x 24 in.) "Keep Left" sign-ground mount
	1	EA		W4-1 (48 in. x 48 in.), sign, Merging Traffic - post mount.
	1	EA		R3-5(L) (30 in. x 36 in.) "Left Turn Only" Sign - mast arm mount
	1	EA		R3-5(R) (30 in. x 36 in.) "Right Turn Only" Sign - mast arm mount
	1	EA		R4-7 (36 in. x 48 in.) Keep Right of Median sign - post mount
	1	EA		R5-1 (36 in. x 36 in.) Do Not Enter sign - post mount
	1	EA		Guide shield assembly (30"x51") - post mount
	1	EA		Guide shield assembly (48"x75") - post mount
	2	EA		R3-7(L) Left Lane Must Turn Left (48"x48") - post mount
9006	1	EA	816	Eight-phase (fully actuated) controller and cabinet - base mount.
9007	3	EA	817	Two channel loop detector amplifier (delay output).
9008	1	EA	816	Two circuit flasher and cabinet - pole mount.
1 9008	2	EA	814	12in One-way one section (Y) Signal Head - Mast Arm mount.

Equipment List

B. Equipment to be furnished and/or installed by the Contractor.

Item No.	Quantity	Unit	Specification Section	Description
1001	1	LS	104	Maintenance of Traffic
1002	1	LS	108	Mobilization
1003	20	UD	104	Arrow Panel
1004	230	SF	104	High performance wide angle retroreflective sheeting
1005	20	EA	104	Drums for Maintenance of Traffic
2001	5	CY	205	Test Pit Excavation
2002	1550	CY	201	Class 1 Excavation
2003	1945	LF	206	Saw cuts
3001	2310	LF	308	Geotextile Class F for slope silt fence
3002	60	LF	308	Geotextile Class F for channel silt fence
3003	2	TON	308	Placed riprap for sediment control
3004	60	TON	308	Stabilized construction entrance
3005	366	CY	316	Infiltration Trench
3006	140	CY	308	Erosion & sediment control original excavation
3007	70	CY	308	Erosion & sediment control cleanout excavation
3008	1	EA	305	Standard shallow manhole - minimum depth
3009	4	LF	305	Standard shallow manhole - vertical depth
3010	85	LF	303	15 in. reinforced cement concrete pipe class 4
3011	85	LF	303	Removal of old pipe culvert 12 in. or larger
3012	1	EA	315	Removal of old inlet any size & type
3013	1	EA	305	Standard end section for 15 in. reinforced cement concrete pipe
3014	30	TON	308	Rehabilitate stabilized construction entrance
5001	560	LF	555	6 in. white permanent preformed pavement marking tape
5002	1620	LF	555	8 in. yellow permanent preformed pavement marking tape.
5003	50	LF	555	Remove existing pavement marking
5004	16	EA	555	Permanent preformed pavement marking letter.
5005	4	EA	555	Permanent preformed pavement marking symbol.
5006	1720	LF	555	8 in. white permanent preformed pavement marking tape
5007	95	LF	555	24 in. white permanent preformed pavement marking tape
5008	240	TON	504	Hot mix asphalt surface SC
5009	1610	TON	504	Hot mix asphalt base BC
5010	5750	SY	501	6 in. base course using graded aggregate
6001	770	SF	610	3 in. concrete sidewalk
6002	160	LF	609	Standard type C combination curb & gutter - 12 in. gutter pan 8 in. depth
7001	2500	SY	705	Seeding median areas
7002	2500	SY	703	Placing furnished topsoil 4 in. depth
7003	2500	SY	705	Straw mulching
7004	535	SY	709	Soil stabilization matting
8001	2980	LB	829	Pounds of - furnish and install steel pole and mast arm (Note: one - 27 ft steel pole with a 58 ft mast arm, and 4-2 in. x 90 in. anchor bolts)
8002	1690	LB	829	Pounds of - furnish and install steel pole and mast arm (Note: one - 21 ft steel pole with a single 40 ft mast arm, 4-1 3/4 in. x 90 in. anchor bolts)
8003	1715	LB	829	Pounds of - furnish and install steel pole and mast arms (Note: one - 27 ft steel pole with twin 38 ft and 30 ft mast arms, 4-2 in. x 90 in. anchor bolts)
1 8004	~~8~~ 10	EA	814	Install signal head - any type
8005	1	EA		Install 5 ft x 5 ft "Red Signal Ahead" warning sign with LED display - mast arm mount
1 8006	~~77~~ 97	SF	813	Install overhead signs
8007	107	SF	813	Install ground mounted signs
8008	1	EA	816	Install two circuit flasher and cabinet - pole mount

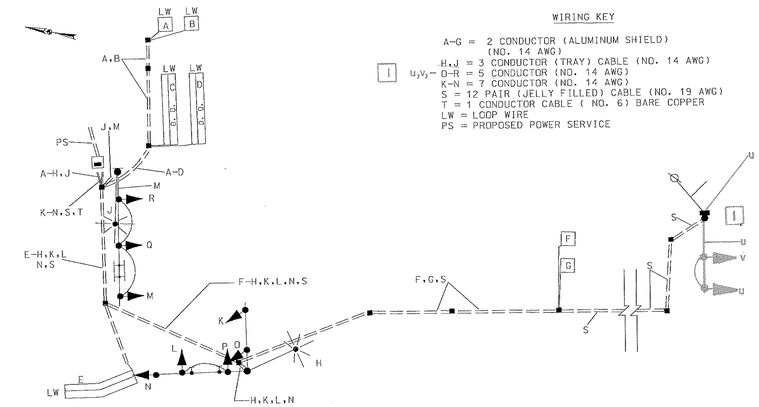
Equipment List

B. Equipment to be furnished and/or installed by the Contractor.

Item No.	Quantity	Unit	Specification Section	Description
8009	1	EA	816	Install eight-phase, (fully actuated) controller and cabinet - base mounted
8010	15	EA	811	Furnish and install electrical handhole
8011	330	LF	810	Furnish and install electrical cable - 1 conductor No. 8 AWG - THHN/THWN
8012	120	LF	810	Furnish and install electrical cable - 1 conductor No. 4 AWG - THHN/THWN
8013	600	LF	810	Furnish and install electrical cable - 2 conductor cable No. 12 AWG copper type T/C
8014	1100	LF	810	Furnish and install Loop wire encased in flexible tubing (No. 14 AWG)
8015	1750	LF	810	Furnish and install 12-pair communication cable, jelly filled (underground)
8016	1470	LF	810	Furnish and install electrical cable - 2 conductor (aluminum Shielded)
8017	450	LF	810	Furnish and install electrical cable - 5 conductor (No. 14 AWG)
8018	1350	LF	810	Furnish and install electrical cable - 7 conductor (No. 14 AWG)
8019	425	LF	810	Furnish and install No. 6 AWG bare copper ground wire
8020	50	LF	805	Furnish and install 1 in. liquid-tight flexible non-metallic - conduit for detector sleeve
8021	1400	LF	805	Furnish and install 2 in. schedule 40 rigid PVC conduit - Trenched
8022	180	LF	805	Furnish and install 3 in. schedule 80 rigid PVC conduit - Slotted
8023	20	LF	805	Furnish and install 4 in. schedule 40 rigid PVC conduit - Trenched
8024	400	LF	815	Furnish and install sawcut for signal (loop detector)
8025	2	EA	807	Furnish and install control and distribution equipment
8026	4	EA	804	Furnish and install ground Rod - 3/4 in. diameter x 10 ft length
8027	120	LF	812	Furnish and install wood sign supports 4 in. x 4 in.
8028	30	LF	812	Furnish and install wood Sign Supports 4 in. x 6 in.
8029	2	EA	818	Furnish and install 20 ft lighting arm on signal structure
8030	12	CY	801	Furnish and install concrete for signal foundation
8031	2	EA	806	Furnish and install 250 WATT high pressure sodium lamp and luminaire
8032	20	LF	805	Furnish and install 3 in. schedule 40 rigid PVC electrical conduit - trenched.
8033	1	EA	xxx	Use existing disk and as-built traffic signal

1 SEE ATTACHMENT

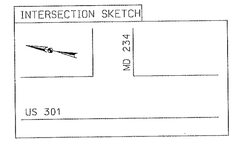
WIRING DIAGRAM



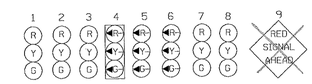
WIRING KEY

A-G = 2 CONDUCTOR (ALUMINUM SHIELD) (NO. 14 AWG)
H,J = 3 CONDUCTOR (TRAY) CABLE (NO. 14 AWG)
1 U_1V_1- O-R = 5 CONDUCTOR (NO. 14 AWG)
K-N = 7 CONDUCTOR (NO. 14 AWG)
S = 12 PAIR (JELLY FILLED) CABLE (NO. 19 AWG)
T = 1 CONDUCTOR CABLE (NO. 6) BARE COPPER
LW = LOOP WIRE
PS = PROPOSED POWER SERVICE

INTERSECTION SKETCH



PHASE SEQUENCE CHART



PHASE 1	R	R	R	→G	→G	→G	R	R	FL/R.S.A.
Ø 1 CHANGE	R	R	R	→Y	→Y	→Y	R	R	FL/R.S.A.
PHASE 2	G	G	G	R	R	R	R	R	S.A.
Ø 2 CHANGE	Y	Y	Y	R	R	R	R	R	S.A.
PHASE 4	R	R	R	R	R	R	G	G	FL/R.S.A.
Ø 4 CHANGE	R	R	R	R	R	R	Y	Y	FL/R.S.A.
FLASHING OPERATION	FL/Y	FL/Y	FL/Y	FL/→R	FL/→R	FL/→R	FL/R	FL/R	S.A.

NOTE:
FL = FLASHING INDICATION
R = RED INDICATION
Y = YELLOW INDICATION
G = GREEN INDICATION
→Y = YELLOW ARROW INDICATION
→G = GREEN ARROW INDICATION
FL/R.S.A. = YELLOW INDICATION
S.A. = YELLOW INDICATION

REVISIONS	APPROVALS
1 REDLINE REVISION NO.1 10/96	CHIEF, SIGNAL DESIGN SECTION
	ASST. DISTRICT ENGINEER, TRAFFIC
	CHIEF, TRAFFIC ENGINEERING DESIGN DIVISION
	DEPUTY CHIEF ENGINEER, OFFICE OF TRAFFIC

DGL CONSULTING ENGINEERS COLUMBIA, MARYLAND

MDOT - STATE HIGHWAY ADMINISTRATION
Office of Traffic & Safety
TRAFFIC ENGINEERING DESIGN DIVISION

ORIGINAL DRAWN BY: R. CICCHINI
DES. BY: D. PETERS
CHK. BY:

US 301 AT MD 234
(GENERAL INFORMATION SHEET)

LOG MILE # 08030105.80 COUNTY: CHARLES

DATE: JUNE , 1995 F.A.P. NO. NH-G-117-1(38)E
SCALE: NONE S.H.A. NO. CH-600-501-585

TS/FILE NO. 3522-GI

SHEET NO. 17 OF 31