

STATE OF OHIO  
DEPARTMENT OF TRANSPORTATION

SUMMIT COUNTY	OHIO
SUM - HIGHLAND ROAD	FHWA REGION 5
HES-ID310	FEDERAL PROJECT

1  
5

DESIGN DESIGNATION	
Current Year 1989 A.D.T.	= 6325
Design Year 1999 A.D.T.	= 8225
D.H.V.	= 600
D(Directional Distribution)	= 50 %
T(Percent B & C Trucks)	= 10 %
V(Design Speed)	= 40 M.P.H.
V(Legal Speed)	= 35 M.P.H.
Functional Classification	URBAN COLLECTOR

SUM - HIGHLAND ROAD  
SIGNALIZATION PLAN  
CITY OF MACEDONIA  
SUMMIT COUNTY

HES-ID310  
1989 SPECIFICATIONS

The standard specifications of the State of Ohio, Department of Transportation, including changes and supplemental specifications listed in the proposal shall govern this improvement.

I hereby approve these plans and declare that the making of this improvement will not require the closing to traffic of the highway and that provisions for the maintenance and safety of traffic will be as set forth on the plans and estimates.

Approved *Paul Migliorini*  
Date 1-12-90 Mayor, City of Macedonia

Approved \_\_\_\_\_  
Date \_\_\_\_\_ District Deputy Director of Transportation

Approved \_\_\_\_\_  
Date \_\_\_\_\_ Deputy Director of Operations

Approved \_\_\_\_\_  
Date \_\_\_\_\_ Director, Department of Transportation

ISSUED  
JAN 19 1990

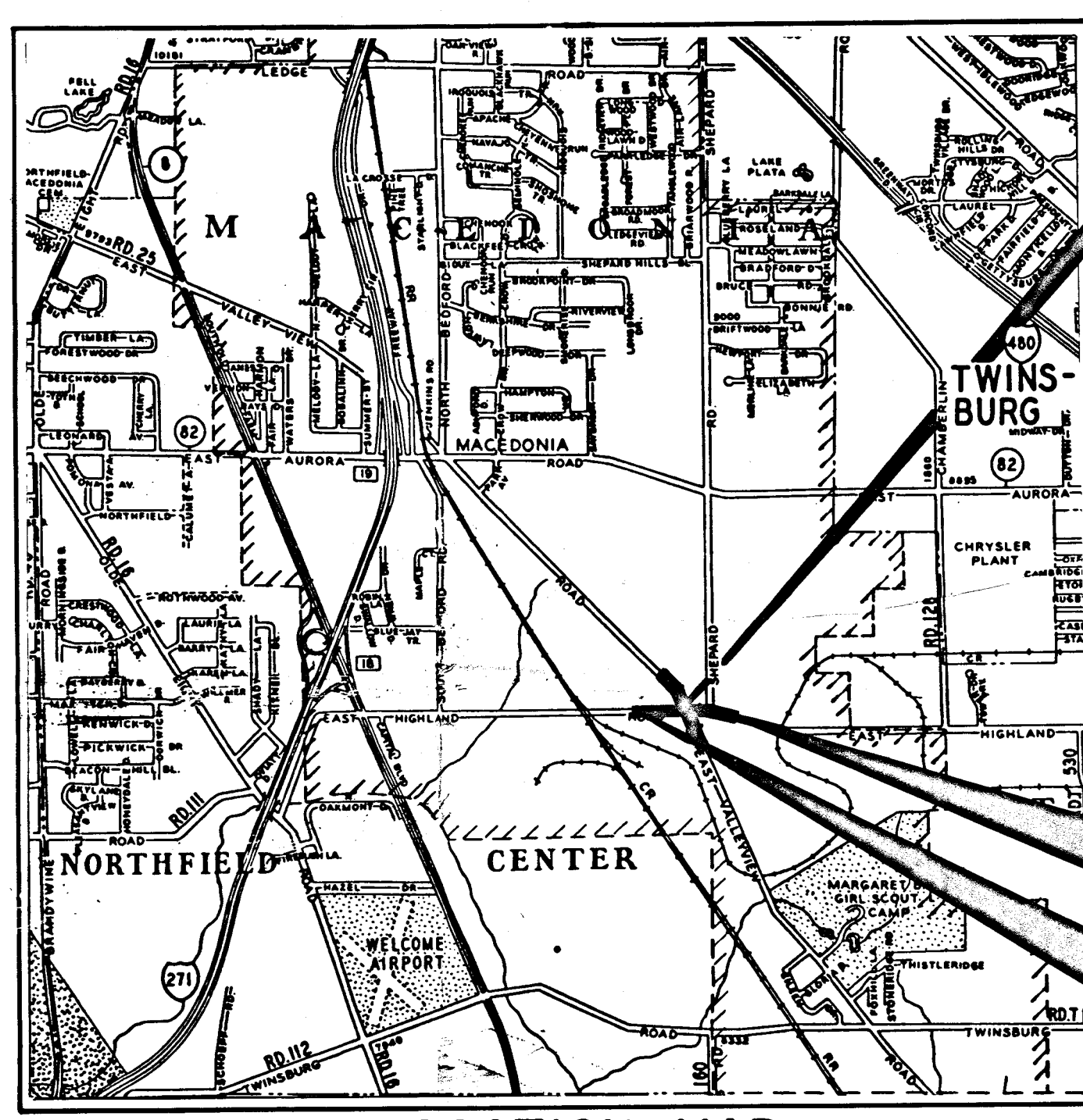
DEPARTMENT OF TRANSPORTATION	
FEDERAL HIGHWAY ADMINISTRATION	
APPROVED:	DATE
DIVISION ADMINISTRATOR	

CONVENTIONAL SIGNS

County Line	-----	Limited Access (only)	-----LA
Township Line	-----	Right of Way (only)	-----RW
Section Line	-----	Limited Access & Right of Way	-----LA & RW
Corporation Line	----- or -----	Existing Right of Way	-----
Fence Line (existing)	---x---x--- (proposed) ---x---x---	Property Line	---x---x--- (in existing fence) ---x---x---
Center Line	----- 352 ----- 353 -----	Railroad	+++++ or +++++
Trees	☉, Stumps ☹, (to be removed) ☒, ☓	Guardrail (existing)	o o o (proposed) . . .
Utility Poles: Telephone ☐, Power ☐, Light ☐		Underground Utilities: Gas ---G---, Water ---W---, Storm Sewer ---S---, Sanitary Sewer ---SAN---, Telephone ---T---, Electric ---E---	

INDEX OF SHEETS

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LOCATION MAP  
SCALE IN MILES  
0 1/2 2

Portion to be improved.....  
State & Federal Routes.....  
Other Roads.....

SCALES  
0 10 20

Plan.....  
Profile..... Horizontal Vertical  
Cross Section..... Horizontal Vertical

SUPPLEMENTAL		SPECIFICATIONS	
NUMBER	DATE	NUMBER	DATE

LINE DATA:

HIGHLAND RD. - VALLEY VIEW RD.	200 L.F. OR 0.038 MILE
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WORK LIMITS:

HIGHLAND RD.	
STA. 85+00 TO STA. 105+50	2050 L.F.
VALLEY VIEW RD.	
STA. 1+00 TO STA. 19+00	1800 L.F.
TOTAL LENGTH OF WORK	3850 L.F.
	OR 0.729 MILE

UNDERGROUND UTILITIES  
2 WORKING DAYS  
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CALL 800-362-2764 (TOLL FREE)  
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SUPPLEMENTAL PRINTS OF STANDARD CONSTRUCTION DRAWINGS			
DRAWING NO.	DATE	DRAWING NO.	DATE
		HL - 20.11	5-1-87
		HL - 30.11	5-1-87
		HL - 30.22	5-1-87
		HL - 60.11	5-1-87
		MT - 97.10	4-29-88
		T.C. - 21.20	1-20-84
		T.C. - 32.11	3-21-79
		T.C. - 41.20	3-26-79
		T.C. - 41.40	6-18-79
		T.C. - 42.20	3-26-79
		T.C. - 52.10	4-3-79
		T.C. - 81.20	1-20-84
		T.C. - 82.10	8-29-84
		T.C. - 83.10	1-20-84
		T.C. - 83.20	1-20-84
		T.C. - 85.20	1-20-84

Prepared By:  
adache-ciuni-lynn associates  
Consulting Engineers Cleveland, Ohio

Project:	
Date of Letting	19 , Contract No.



GENERAL NOTES

CALC. _____	SUMMIT COUNTY SUM- HIGHLAND ROAD	OHIO
DATE _____		F.H.W.A. 5
CHKD. _____		REGION
DATE _____	HES- ID310	FEDERAL PROJECT



MAINTENANCE OF TRAFFIC SIGNAL/FLASHER INSTALLATIONS

THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING TRAFFIC SIGNAL/FLASHER INSTALLATIONS WITHIN THE PROJECT UNDER THE FOLLOWING CONDITIONS:

- A.) EXISTING SIGNAL/FLASHER INSTALLATIONS WHICH THE PLANS REQUIRE THE CONTRACTOR TO ADJUST, MODIFY, ADD ONTO OR REMOVE, OR WHICH THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE ENTIRE INSTALLATION (AT AN INTERSECTION) FROM THE TIME HIS OPERATIONS FIRST DISTURB THE INSTALLATION UNTIL THE INSTALLATION HAS BEEN SUBSEQUENTLY REMOVED OR MODIFIED AND THE WORK IS ACCEPTED.
- B.) NEW OR REUSED SIGNAL/FLASHER INSTALLATIONS OR DEVICES, INSTALLED BY THE CONTRACTOR. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTENANCE OF THESE FROM THE TIME OF INSTALLATION UNTIL THE WORK IS ACCEPTED.

THE CONTRACTOR SHALL CORRECT AS QUICKLY AS POSSIBLE ALL OUTAGES OR MALFUNCTIONS. HE SHALL PROVIDE THE CITY AND THE ENGINEER SUCH ADDRESSES AND PHONE NUMBERS WHERE HIS MAINTENANCE FORCES CAN BE CONTACTED. THE CONTRACTOR SHALL PROVIDE ONE OR MORE PERSONS TO RECEIVE ALL CALLS AND DISPATCH THE NECESSARY MAINTENANCE FORCES TO CORRECT OUTAGES. SUCH A PERSON OR PERSONS MAY BE USED TO PERFORM OTHER DUTIES AS LONG AS PROMPT ATTENTION IS GIVEN TO THESE CALLS AND A PERSON IS READILY AVAILABLE CONTINUOUSLY TWENTY-FOUR (24) HOURS A DAY, SEVEN (7) DAYS A WEEK. ALL LAMP OUTAGES, CABLE OUTAGES, ELECTRICAL FAILURES, EQUIPMENT MALFUNCTIONS AND MISALIGNED SIGNAL HEADS SHALL BE CORRECTED TO THE SATISFACTION OF THE ENGINEER WITH THE SIGNAL BACK IN SERVICE WITHIN FOUR (4) HOURS AFTER THE CONTRACTOR HAS BEEN NOTIFIED OF THE OUTAGE.

IN THE EVENT NEW SIGNALS ARE DAMAGED PRIOR TO ACCEPTANCE ALL DAMAGED EQUIPMENT EXCEPT POLES AND CONTROL EQUIPMENT SHALL BE REPLACED BY THE CONTRACTOR TO THE SATISFACTION OF THE ENGINEER WITH THE SIGNAL BACK IN SERVICE WITHIN EIGHT (8) HOURS AFTER THE CONTRACTOR'S NOTIFICATION OF THE OUTAGE.

IF POLES AND/OR CONTROL EQUIPMENT ARE DAMAGED AND MUST BE REPLACED, THE CONTRACTOR SHALL MAKE TEMPORARY REPAIRS AS NECESSARY TO BRING THE SIGNAL BACK INTO FULL OPERATION WITHIN THE ALLOWED EIGHT (8) HOUR PERIOD, AND SHALL MAKE PERMANENT REPAIRS OR REPLACEMENT AS SOON THEREAFTER AS POSSIBLE.

NONE OF THE ABOVE SAHLL BE CONSTRUED AS COLLECTIVE OR CONSECUTIVE OUTAGE TIME PERIODS AT ANY ONE LOCATION. THAT IS, WHERE MORE THAN ONE OUTAGE OCCURS AT ANY ONE LOCATION, THEN THE ALLOTED TIME LIMIT SHALL BE FOR THE WORST SINGLE OUTAGE.

WHERE OUTAGES ARE THE DIRECT RESULT OF A VEHICLE ACCIDENT THE RESPONSE OF THE CONTRACOTR SHALL BE AS OUTLINED ABOVE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COLLECTION OF ANY COMPENSATION FOR THIS WORK FROM THOSE PARTIES RESPONSIBLE FOR THE DAMAGE.

WHERE THE CONTRACTOR HAS FAILED TO OR CANNOT RESPOND TO AN OUTAGE OR SIGNAL EQUIPMENT MALFUNCTION, AT THESE LOCATIONS WITHIN HIS RESPONSIBILITY, WITHIN PERIODS AS SPECIFIED ABOVE, THE ENGINEER MAY INVOKE THE PROVISIONS OF SECTION 105.15 AND ANY SUBSEQUENT BILLINGS TO THE STATE OR THE CITY OF MACEDONIA FOR POLICE SERVICES AND MAINTENANCE SERVICES BY THE CITY FORCES SHALL BE DEDUCTED FROM MONIES DUE OR TO BECOME DUE TO THE CONTRACTOR IN ACCORDANCE WITH PROVISIONS OF SECTION 105.15.

THE CONTRACTOR SHALL PROVIDE THE MAINTENANCE SERVICE ENTIRELY WITH HIS FORCES OR HE MAY CHOOSE TO ENTER INTO A COOPERATIVE UNDERSTANDING WITH THE LOCAL MAINTAINING AGENCY TO PROVIDE THE MAINTENANCE. THE CONTRACTOR SHALL INFORM THE ENGINEER, IN WRITING, OF THE MAINTENANCE METHOD SELECTED.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO ANY TRAFFIC SIGNAL COMPONENTS REQUIRED TO BE HANDLED DURING THE RELOCATION OF POLES AND REVISIONS TO THE SIGNAL SYSTEM.

WHEN A TRAFFIC SIGNAL MUST BE TAKEN OUT OF SERVICE BY THE CONTRACTOR, DUE TO CONSTRUCTION PROCEDURES, THIS OUTAGE SHALL NOT EXCEED TWO (2) HOURS AND SHALL NOT INCLUDE THE HOURS OF 6:30 A.M.. TO 9:30 A.M. AND 3:30 P.M. TO 6:30 P.M. ANY SIGNALIZED INTERSECTION, WHERE A SIGNAL IS OUT OF SERVICE DUE TO CONSTRUCTION PROCEDURES, OR DUE TO AN OUTAGE OR MALFUNCTION OF EQUIPMENT AS DESCRIBED ABOVE, SHALL BE PROTECTED, BY THE CONTRACTOR, BY THE INSTALLATION OF TEMPORARY "STOP" SIGNS. EXCEPT FOR THE FOLLOWING INTERSECTION WHICH SHALL BE PROTECTED BY OFF-DUTY CITY OF MACEDONIA POLICE, HIRED BY THE CONTRACTOR:

1. HIGHLAND ROAD AND VALLEY VIEW ROAD

ANY VEHICULAR TRAFFIC SIGNAL HEAD, EITHER NEW OR EXISTING WHICH WILL BE OUT OF OPERATION SHALL BE COVERED IN THE MANNER DESCRIBED IN 632.24.

ALL COSTS RESULTING FROM THE ABOVE REQUIREMENTS SHALL BE CONSIDERED TO BE INCLUDED IN THE LUMP SUM PRICE BID FOR ITEM 614, MAINTAINING TRAFFIC.

MAINTENANCE OF TRAFFIC

THE CONTRACTOR SHALL MAINTAIN TWO WAY TRAFFIC AT ALL TIMES ON BOTH HIGHLAND ROAD AND VALLEY VIEW ROAD. TWO WAY TRAFFIC SHALL BE MAINTAINED ON ONE LANE WITH THE AID OF FLAGGERS WHEN WORK RESTRICTS TRAFFIC TO ONE LANE. SEE STANDARD CONSTRUCTION DRAWING MT-97.10, "FLAGGERS CLOSING ONE LANE OF A TWO LANE HIGHWAY, STATIONARY OPERATION".

\*ITEM 632 REMOVAL OF TRAFFIC SIGNAL INSTALLATION

TRAFFIC SIGNAL INSTALLATIONS, INCLUDING SIGNAL HEADS, SIGNAL CABLE, POWER CABLE, MESSENGER WIRE, STRAIN POLE, CABINET, CONTROLLER, ETC., SHALL BE REMOVED IN ACCORDANCE WITH 632.25. REMOVED ITEMS SHALL BE STORED ON THE PROJECT FOR SALVAGE BY THE CITY OF MACEDONIA IN ACCORDANCE WITH THE LISTING GIVEN HEREIN.

ITEMS TO BE STORED:

VEHICULAR SIGNAL HEADS, STRAIN POLE, CABINET AND CONTROLLER

CONTRACTOR SHALL NOTIFY CITY OF MACEDONIA SERVICE DEPARTMENT WHEN ITEMS TO BE SALVAGED ARE AVAILABLE FOR PICK-UP.

TRAFFIC CONTROL STANDARD CONSTRUCTION DRAWINGS

REFERENCES TO SUPPLEMENTAL SPECIFICATIONS 857, 858, 861, 957, 958 AND 961 ON THE TRAFFIC CONTROL STANDARD CONSTRUCTION DRAWINGS IN THESE PLANS SHALL BE CONSIDERED TO READ AS RESPECTIVE REFERENCES TO ITEMS 630, 631, 633, 730, 731 AND 733.

REFERENCES TO ITEM 608, 4" CONCRETE WALK ON THE TRAFFIC CONTROL STANDARD CONSTRUCTION DRAWINGS IN THESE PLANS SHALL BE CONSIDERED TO READ ITEM 633, CONTROLLER WORK PAD REFERENCES TO STANDARD CONSTRUCTION DRAWING HL-2 SHALL BE CONSIDERED TO READ AS REFERENCES TO STANDARD CONSTRUCTION DRAWING HL-10.12.

POWER SUPPLY FOR TRAFFIC SIGNALS

ELECTRIC POWER SHALL BE OBTAINED FROM THE OHIO EDISON CO. AT THE LOCATION INDICATED ON THE PLANS. POWER SUPPLIED SHALL BE 120 VOLTS.

UNDERDRAINS FOR PULL BOXES

REFERENCE IS MADE TO STANDARD DRAWING HL-30.11 FOR DETAILS OF DRAINING PULL BOXES. UNDERDRAINS FOR PULL BOXES SHALL BE USED AS DIRECTED BY THE ENGINEER AND SHALL BE PROVIDED WHERE THE LENGTH REQUIRED FOR A SATISFACTORY OUTLET DOES NOT EXCEED APPROXIMATELY 20 FEET. AN ESTIMATED QUANTITY OF "100 LINEAR FEET OF ITEM 603, 4" CONDUIT TYPE E" IS INCLUDED IN THE TRAFFIC CONTROL GENERAL SUMMARY FOR THIS PURPOSE.

\* EXISTING TRAFFIC SIGNAL INSTALLATION TO BE REMOVED:

- 1-VEHICULAR SIGNAL HEAD,  
1 SECTION,8" LENS,4-WAY  
2-VEHICULAR SIGNAL HEADS,  
1 SECTION,8" LENS,2 WAY  
MESSENGER WIRE, SIGNAL CABLE,  
POWER CABLE, CONTROLLER  
(FLASHER TYPE), RISERS AND  
STRAIN POLE.

UNDERGROUND UTILITIES

THE LOCATIONS OF THE UNDERGROUND UTILITIES SHOWN ON THE PLANS ARE AS OBTAINED FROM THE OWNERS OF THE UTILITY AS REQUIRED BY SECTION 153.64 ORC.

UTILITY OWNERSHIP

THE FOLLOWING UTILITIES AND OWNERS ARE LOCATED WITHIN THE WORK LIMITS OF THIS PROJECT:

TELEPHONE:	WESTERN RESERVE TELEPHONE 245 NORTH MAIN STREET HUDSON, OHIO 44236 (216) 650-8000	ELECTRIC:OHIO EDISON CO. BUILDING ONE 76 SOUTH MAIN STREET AKRON, OHIO 44308 (216) 384-4702
SANITARY SEWER:	SUMMIT COUNTY, DEPT. OF ENVIRONMENTAL SERVICES 27 N. MAIN ST AKRON, OHIO 44308 ATTN: MR. FRED MERCHANT (216) 379-2445	NATURAL GAS: EAST OHIO GAS COMPANY 1201 EAST 55TH STREET CLEVELAND, OHIO 44103 (216) 432-6803
CABLE TELEVISION:	WESTERN RESERVE CABLEVISION P.O. BOX 151 885 EAST HIGHLAND ROAD MACEDONIA, OHIO 44056 (216) 468-0307	

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632 VEHICULAR SIGNAL HEAD, 3 SECTION, 12 LENS, AS PER PLAN

SECTION 732.01 OF THE SPECIFICATIONS IS MODIFIED FOR THIS PROJECT AS FOLLOWS:

- A.) SIGNAL HEADS AND VISORS SHALL BE CONSTRUCTED OF POLYCARBONATE PLASTIC AND MEET ITE SPECIFICATIONS.
- B.) PLASTIC LENSES SHALL BE USED.
- C.) PIPE, SPACERS, AND FITTINGS CONSTRUCTED OF POLYCARBONATE PLASTIC MAY BE USED IN LIEU OF GALVANIZED STEEL OR ALUMINUM.
- D.) PROPER EXTERIOR COLORS SHALL BE OBTAINED BY USE OF COLORED PLASTIC MATERIAL RATHER THAN PAINTING.
- E.) SIGNAL HEADS TO BE RIGIDLY MOUNTED TO THE MAST ARM.



## SIGNING SUB - SUMMARY

[illegible]

## PAVEMENT MARKING SUB-SUMMARY-621

[illegible]

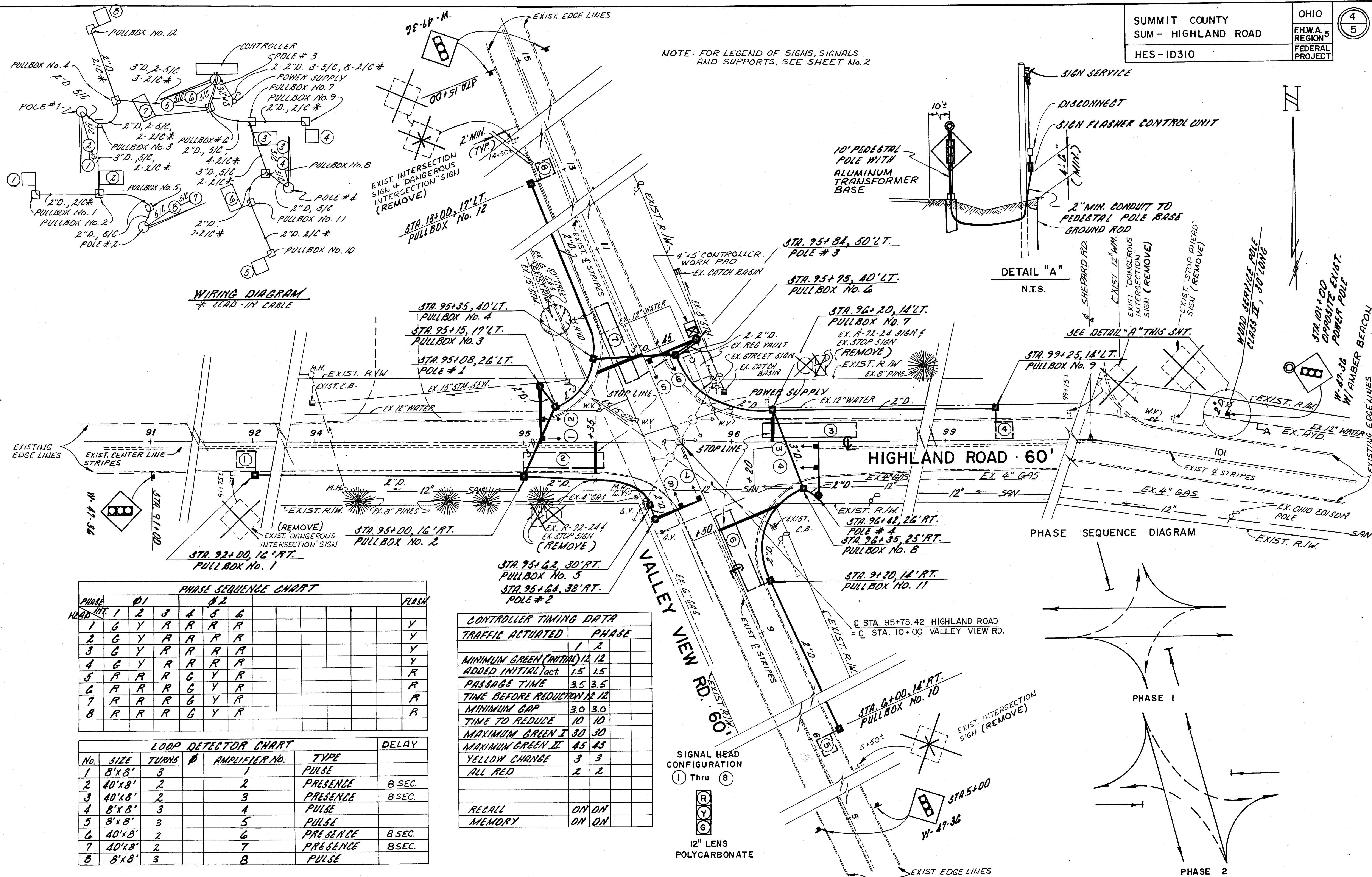
## GENERAL SUMMARY

SHEET NUMBER				ITEM	ITEM EXTENSION	GRAND TOTAL	UNIT	DESCRIPTION	X-REF. SHT.
2	3	4							
100			603		100	LIN.FT.	4" CONDUIT, TYPE 'E'		
	75		621		75	LIN.FT.	STOP LINES		
		1430	625		1430	LIN.FT.	TRENCH, 24" DEEP		
		116	625		116	LIN.FT.	TRENCH, IN PAVED AREA, TYPE A		
		12	625		12	EACH	PULL BOX, 713.09, 18 INCH		
	1	4	625		5	EACH	GROUND ROD		
		1444	625		1444	LIN.FT.	CONDUIT, 713.04, 2 INCH		
		116	625		116	LIN.FT.	CONDUIT, 713.04, 3 INCH		
	75		630		75	LIN.FT.	GROUND MOUNTED SUPPORTS, No. 3 POST		
	54		630		54	SQ. FT.	SIGNS, FLAT SHEET		
	1		630		1	EACH	SIGN SUPPORT ASSEMBLY POLE MOUNTED		
	10		630		10	EACH	REMOVAL OF GROUND MOUNTED SIGN AND STORAGE		
	7		630		7	EACH	REMOVAL OF GROUND MOUNTED POST SUPPORT AND DISPOSAL		
	1		631		1	EACH	SIGN SERVICE		
	1		631		1	EACH	SIGNS WIRED		
	1		631		1	EACH	SIGN FLASHER ASSEMBLY LESS SIGN LIGHT		
		8	632		8	EACH	VEHICULAR SIGNAL HEAD, 3-SECTION, 12 INCH LENS, ONE-WAY AS PER PLAN	2	
		8	632		8	EACH	LOOP DETECTOR UNIT		
		540	632		540	LIN.FT.	LOOP DETECTOR PAVEMENT CUTTING		
	0.45	5.92	632		6.37	CU.YD.	CONCRETE FOR ANCHOR BASE FOUNDATIONS		
		1	632		1	EACH	SIGNAL SUPPORT, TYPE TC-81.20, DESIGN 1, 19 FOOT POLE, 25 FOOT ARM, AS PER PLAN	5	
		3	632		3	EACH	SIGNAL SUPPORT, TYPE TC-81.20, DESIGN 1, 21 FOOT POLE, 25 FOOT ARM, AS PER PLAN	5	
	1		632		1	EACH	WOOD POLE, CLASS IV, 30 FEET		
	1		632		1	EACH	PEDESTAL, 12 FEET, ALUMINUM TRANSFORMER BASE		
		4	632		4	EACH	CABLE SUPPORT ASSEMBLY		
		880	632		880	LIN. FT.	SIGNAL CABLE, 5 CONDUCTOR, No. 14 AWG.		
		30	632		30	LIN. FT.	POWER CABLE, 3 CONDUCTOR, No. 8 AWG.		
		1	632		1	EACH	POWER SERVICE		
	1		632		1	EACH	DISCONNECT SWITCH WITH ENCLOSURE		
		1350	632		1350	LIN.FT.	LOOP DETECTOR WIRE		
		2320	632		2320	LIN.FT.	LOOP DETECTOR LEAD-IN CABLE		
		8	632		8	EACH	COVERING OF VEHICULAR SIGNAL HEAD		
		1	632		1	EACH	REMOVAL OF TRAFFIC SIGNAL INSTALLATION		
		1	633		1	EACH	CONTROLLER, ACTUATED 2 PHASE		
		2	633		2	EACH	SOLID STATE DIGITAL MICROPROCESSOR		
		20	633		20	SQ. FT.	RELAY CALLING		
							CONTROLLER WORK PAD		
			614		LUMP		MAINTAINING TRAFFIC		
			623		LUMP		CONSTRUCTION LAYOUT STAKES		
			624		LUMP		MOBILIZATION		

## GENERAL SUMMARY



NOTE: FOR LEGEND OF SIGNS, SIGNALS AND SUPPORTS, SEE SHEET No.2



WIRING DIAGRAM  
\* LEAD-IN CABLE

PHASE SEQUENCE CHART										
PHASE	1	2	3	4	5	6	7	8	9	FLASH
1	G	Y	R	R	R	R				Y
2	G	Y	R	R	R	R				Y
3	G	Y	R	R	R	R				Y
4	G	Y	R	R	R	R				Y
5	R	R	R	G	Y	R				R
6	R	R	R	G	Y	R				R
7	R	R	R	G	Y	R				R
8	R	R	R	G	Y	R				R

LOOP DETECTOR CHART						DELAY
No.	SIZE	URNS	Φ	AMPLIFIER NO.	TYPE	
1	8'x8'	3		1	PULSE	
2	40'x8'	2		2	PRESENCE	8 SEC.
3	40'x8'	2		3	PRESENCE	8 SEC.
4	8'x8'	3		4	PULSE	
5	8'x8'	3		5	PULSE	
6	40'x8'	2		6	PRESENCE	8 SEC.
7	40'x8'	2		7	PRESENCE	8 SEC.
8	8'x8'	3		8	PULSE	

CONTROLLER TIMING DATA		
TRAFFIC ACTUATED	PHASE	
	1	2
MINIMUM GREEN (INITIAL)	12	12
ADDED INITIAL (act.)	1.5	1.5
PASSAGE TIME	3.5	3.5
TIME BEFORE REDUCTION	12	12
MINIMUM GAP	3.0	3.0
TIME TO REDUCE	10	10
MAXIMUM GREEN I	30	30
MAXIMUM GREEN II	45	45
YELLOW CHANGE	3	3
ALL RED	2	2
RECALL	ON	ON
MEMORY	ON	ON

SIGNAL HEAD CONFIGURATION  
① Thru ⑧  
12" LENS POLYCARBONATE

SIGNALIZATION PLAN



