3 L 6-W

494

OHIO DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

FHWA REGION	STATE	PROJECT	
5	OHIO		

1/14

PLAN NO. 243

PART	COUNTY	ROUTE	SECTIONS	PROJECT TERMINII BEGIN	PROJECT TERMINII END	NET LENGTH MILES	TOWNSHIP	CITY	VILLAGE
1	WAY	US250	(17.44 – 18.92)	17.44	19.01	1.57			APPLE CREEK
2	WAY	US250	(19.01–22.48)(26.56)	19.01	29.67	10.11			
3	WAY	US250	(26.02 – 26.56)	26.02	26.57	0.55			MT. EATON
					12.23				

EXTRA COPY 9-14-92

The Standard 1989 Specifications of the State of Ohio, Department of Transportation, including changes and Supplemental Specifications listed in the plans and proposal shall govern these improvements.

I hereby approve these plans and declare that the making of these improvements will require the closing of the highways to traffic on Parts No. NONE and that detours will be provided by State forces. The closing to traffic of the highways will not be required on Parts No. 1, 2 & 3 and provisions for the maintenance and safety of traffic will be as indicated on the proposal.

Approved Date 1/17/90 — Gary W. Cross — District Deputy Director of Transportation

JEM Approved Date 1-22-90 — B. D. Tanfilanni — Engineer of Bridges

Approved Date _____ — Engineer of Maintenance

Approved Date 3-6-90 — James R. Longenecker — Deputy Director, Operations

Approved Date _____ — Assistant Deputy Director, Program Development

Approved Date _____ — Chief Engineer, Construction

Approved Date _____ — Chief Engineer, Design

Approved Date _____ — Assistant Director, Department of Transportation

Approved Date 3-6-90 — Bernard B. Hurst — Director, Department of Transportation

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED:

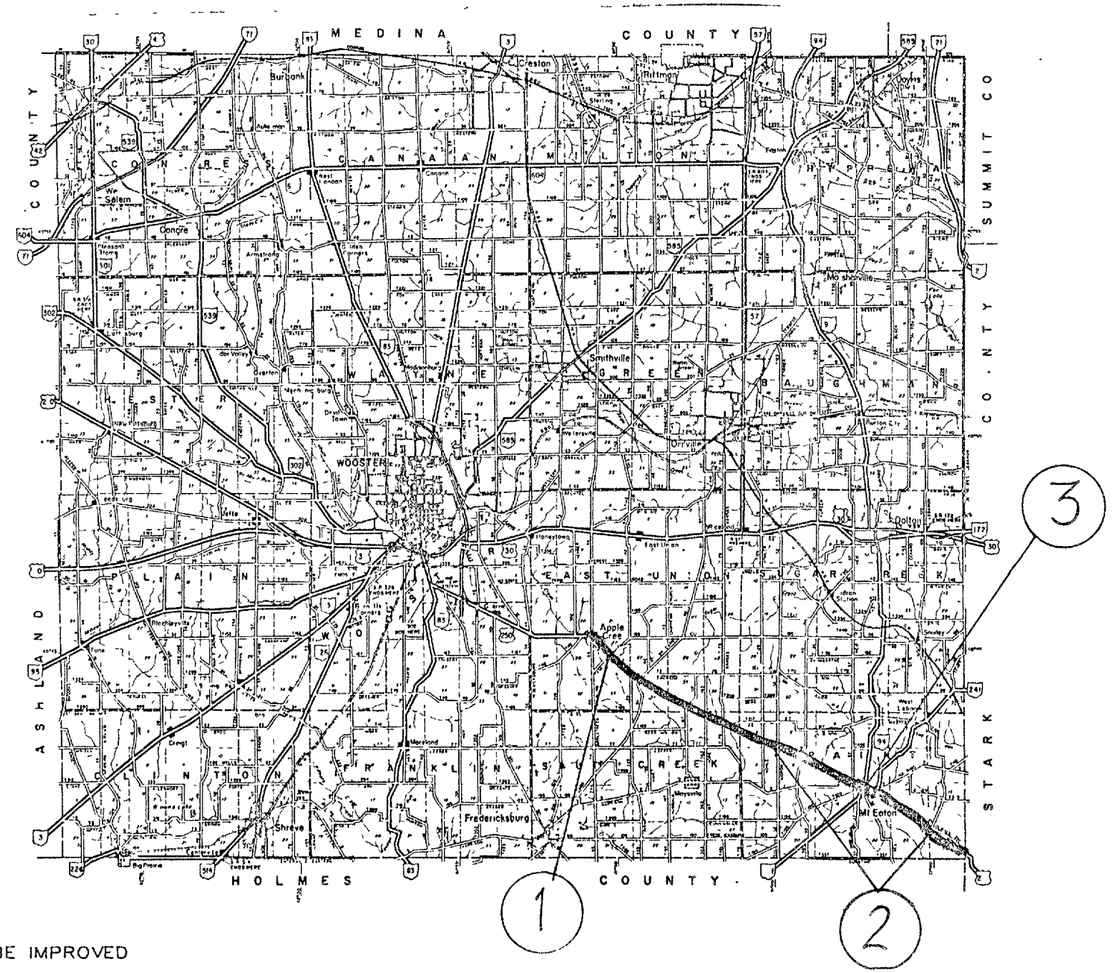
DIVISION ADMINISTRATOR _____ DATE _____

LOCATION MAP

WAYNE COUNTY

	Part 1	Part 2
1990 Current ADT	7000	5700
1995 Expanded ADT	7400	6000

N



PORTION TO BE IMPROVED

5-22-90

DOT 1920

DEPARTMENT OF TRANSPORTATION
GR-001 8-16-85

QUANTITIES			
Calc.		Chk'd.	
Date		Date	

FHWA REGION	STATE	PROJECT	
5	OHIO		

2/14

US-250-17.44

PLAN NO. 2/3

GENERAL SUMMARY

				Quantities From Sheet No.	PART 1 APPLE CREEK	PART 2	PART 3 MT.EATON	ITEM	ITEM EXT.	GRAND TOTAL PARTS 1,2&3	UNIT	DESCRIPTION
				9		142		202	20254113	142	EACH	RAISED PAVEMENT MARKERS REMOVED
				4			3,379	202	20223013	3,379	SQ.YD.	PAVEMENT REMOVED, AS PER PLAN
				7	10	50	40	253	25302000	100	CU.YD.	PAVEMENT REPAIR
				3,4	29274	1500	11770	254	25401009	42544	SQ.YD.	PAVEMENT PLANING, BITUMINOUS
				4			892	301	30110033	892	CU.YD.	BITUMINOUS AGGREGATE BASE, AC-20, AS PER PLAN
				3,4	649	3686	247	403	40338002	4582	CU.YD.	ASPHALT CONCRETE, MWS 60
				3,4	866	4914	331	404	40438007	6111	CU.YD.	ASPHALT CONCRETE, MWS 60
				3,4	2489	14154	952	407	40710009	17595	GAL.	TACK COAT, AS PER PLAN
				3,4	30		20	604	60409002	50	EACH	CATCH BASIN, ADJUSTED TO GRADE
				3	2			604	60434503	2	EACH	MANHOLE ADJUSTED TO GRADE
					12	32	6	614	61412465	50	EACH	WORK ZONE MARKING SIGNS
					4.71	20.22	1.65	614	61421502	26.58	MILE	TEMPORARY CENTER LINES, CLASS II, 621 PAINT
					LUMP	LUMP	LUMP	614	61411000	LUMP	LUMP	MAINTAINING TRAFFIC
				8	18	89		SPEC.	20360703	107	EACH	GRADING MAILBOX APPROACHES
				6	1619	35447	247	617	61720003	37313	SQ.YD.	SHOULDER PREPARATION
				6,8	92	1562	11	617	61710105	1665	CU.YD.	COMPACTED AGGREGATE, TYPE A
				6	3	71		617	61725005	74	M.GAL.	WATER
				9	1.57	10.11	0.55	621	62120107	12.23	MILE	CENTER LINES
				9	1.84	20.22	0.62	621	62100106	22.68	MILE	EDGE LINES
					LUMP	LUMP	LUMP	624	62410008	LUMP	LUMP	MOBILIZATION
				3	8			814	81410808	8	EACH	VALVE BOX ADJUSTED TO GRADE
				9	10	80		847	8478906	90	LIN.FT.	STOP LINES, 947.03, TYPE A1, INLAID
				9		2		847	84774304	2	EACH	WORD ON PAVEMENT "SCHOOL", 96", 947.03, TYPE A1, INLAID

DEPARTMENT OF TRANSPORTATION
M&R707 REV. 9-1-83

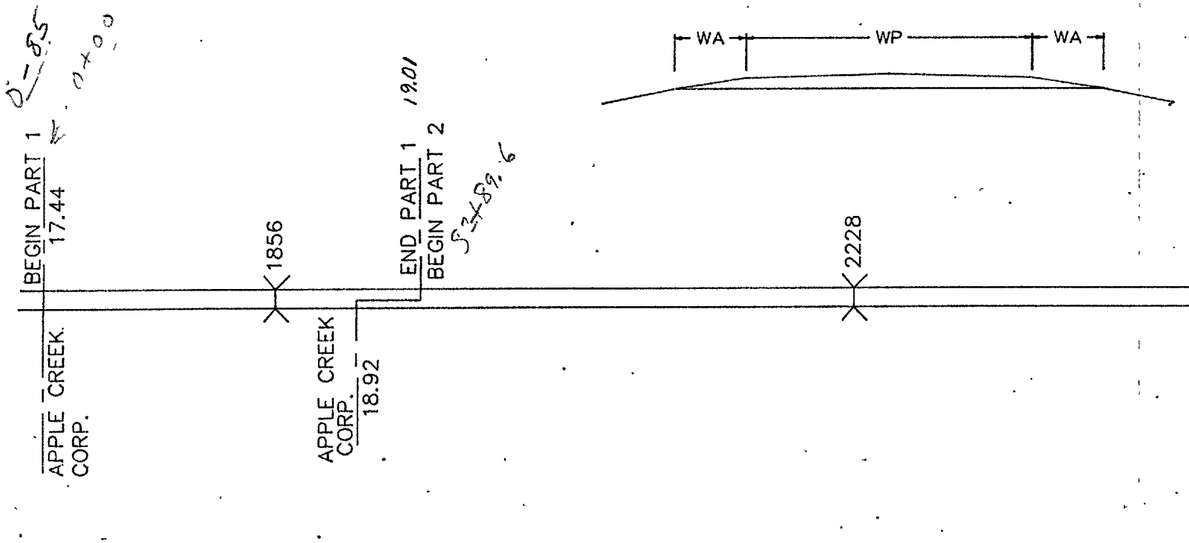
ASPHALT CONCRETE

FHWA REGION	STATE	PROJECT	
5	OHIO		

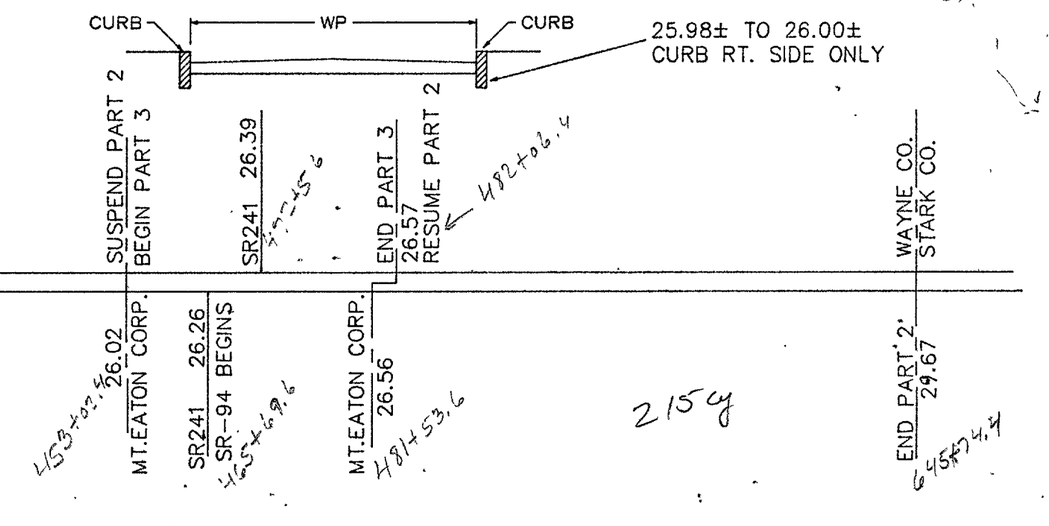
3/14

PLAN NO. 243

TYPICAL 1



TYPICAL 2



* INCLUDES PAVED BERMS

PAVEMENT DATA

PART	ROUTE	LOG POINT TO LOG POINT	LENGTH MILES	LENGTH LIN. FT.	WP FEET *	TYPICAL	EXISTING TYPE PAVEMENT	PAVEMENT AREA SQ. YDS.	PROPOSED PAVEMENT 407 TACK COAT @ 0.08 gal./s.y. GALS.	407 COVER AGGR. @ 7 lbs./s.y. TONS	ASPHALT CONCRETE (MWS-60) ITEM 403 THICK INCHES AVG.	ITEM 403 CU.YDS.	ITEM 404 THICK INCHES AVG.	ITEM 404 CU.YDS.	ITEM 301 THICK INCHES AVG.	ITEM 301 CU.YDS.	604 CATCH BASINS ADJUSTED TO GRADE EACH	604 MANHOLES ADJUSTED TO GRADE EACH	814 VALVE BOX ADJUSTED TO GRADE EACH	254 PAVEMENT PLANING BITUM. SQ.YD.		
1	US-250	17.44 – 17.62	0.18	950	30	1	404	3167	253		3/4	66	1	88						3167		
		17.62 – 18.17	0.55	2904	31av	2	404	10003	800			208		278						10003		
		18.17 – 18.29	0.12	634	40	2	404	2818	225			59		78						2818		
		18.29 – 18.55	0.26	1373	31av	2	404	4729	378			99		131						4729		
		18.55 – 18.92	0.37	1954	28	1	404	6079	486			127		169				215 cy		6079		
		18.92 – 19.01	0.09	475	14/14	1	404	739/739	59/59			15/15		21/21						739/739		
							EA FOR INTER. MB. AND DRIVES	2765/100	221/8			58/2	1	77/3			For Part I 215 cy			1000/0		
		TOTAL PART 1	1.57	8290				30300/839	2422/67		3/4	632/17		842/24	1081 cy		30	2	8	28535/739		
																2165		1081 Part I				
2	US-250	19.01 – 22.48	3.47	18322	28	1	404	57002										4452 Part II				
		22.48 – 25.98	3.50	18480	30	1	404	61600										413				
		25.98 – 26.00	0.02	106	31	2	404	365										6946				
		26.00 – 26.02	0.02	106	31	2	404	365														
		26.57 – 29.67	3.10	16368	29	1	404	52741 @ 50,000							6121		215					
							EA FOR INTER. MB. AND DRIVES	4227							4385		1736			1500		
		TOTAL PART 2	10.11	53382				176300	14104		3/4	3673	1	4897	1776		82			1500		
																	2033 cy					

DOT 1920

DEPARTMENT OF TRANSPORTATION
M&R707 REV. 9-1-83

ASPHALT CONCRETE

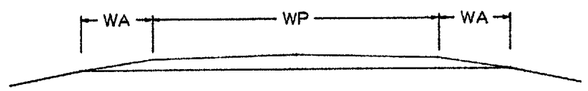
219,336 sy total

FHWA REGION	STATE	PROJECT	
5	OHIO		

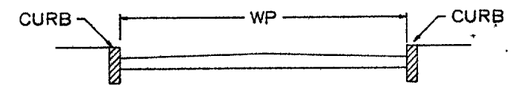
4/14

PLAN NO. 2/3

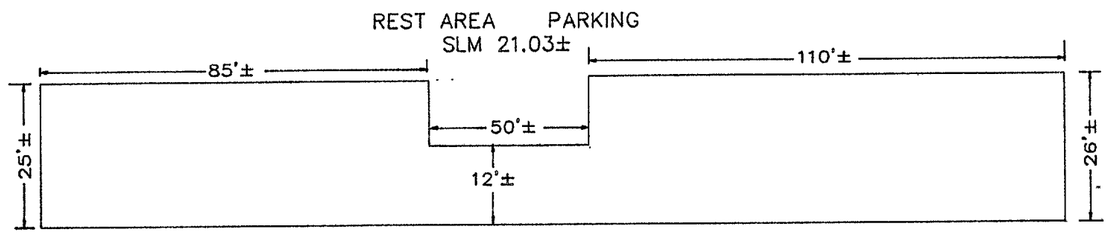
TYPICAL 1



TYPICAL 2



SEE NEXT SHEET FOR TYPICAL 3 AND DETAILS



ADDITIONAL QUANTITIES FOR REST AREA
621± SQ.YD.

403	ASPHALT CONCRETE (MWS 60)	= 13 CU.YD.
404	ASPHALT CONCRETE (MWS 60)	= 17 CU.YD.
407	TACK COAT	= 50 GAL.

ABOVE QUANTITIES CARRIED TO GENERAL SUMMARY (PART 2)

* INCLUDES PAVED BERMS

PAVEMENT DATA

PART	ROUTE	LOG POINT TO LOG POINT	LENGTH MILES	LENGTH LIN. FT.	WP FEET *	TYPICAL	EXISTING TYPE PAVEMENT	PAVEMENT AREA SQ. YDS.	PROPOSED PAVEMENT 407 TACK COAT @ 0.08 gal./s.y. GALS.	407 COVER AGGR. @ 7 lbs./s.y. TONS	ASPHALT CONCRETE (MWS-60) ITEM 403 THICK INCHES AVG.	ITEM 403 CU.YDS.	ITEM 404 THICK INCHES AVG.	ITEM 404 CU.YDS.	ITEM 301 THICK INCHES AVG.	ITEM 301 CU.YDS.	604 CATCH BASINS ADJUSTED TO GRADE EACH	604 MANHOLES ADJUSTED TO GRADE EACH	814 VALVE BOX ADJUSTED TO GRADE EACH	254 PAVEMENT PLANING BITUM. SQ.YD.	202 PAVEMENT REMOVED SQ.YD.
3	US-250	26.02 - 26.26	0.24	1267	31	2	404	4364	349		3/4	91	1	121						4364	
		26.26 - 26.50	0.24	1267	38	3	404	5350	428			111		149	6"	892				5350	3,379
		26.50 - 26.56	0.06	317	33av	1	404	1162	93			24		32						1162	
		26.56 - 26.57	0.01	53	16.5/16.5	1	404	97/97	8/8			2/2		3/3						97/97	
							EA For Inter. and Drives	827/0	66/0		3/4	17/0	1	23/0				413		700/0	
		TOTAL PART 3	0.55	2904				11800/97	944/8			245/2		328/3		892	20/0			11673/97	3,379

DOT 1920

DEPARTMENT OF TRANSPORTATION
GR-001 8-16-85

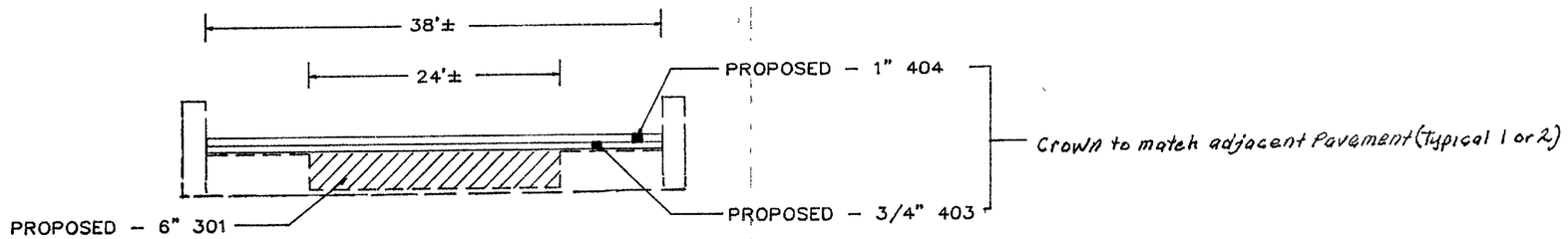
QUANTITIES			
Calc.		Chk'd.	
Date		Date	

FHWA REGION	STATE	PROJECT	
5	OHIO		

5/14

PLAN NO. 243

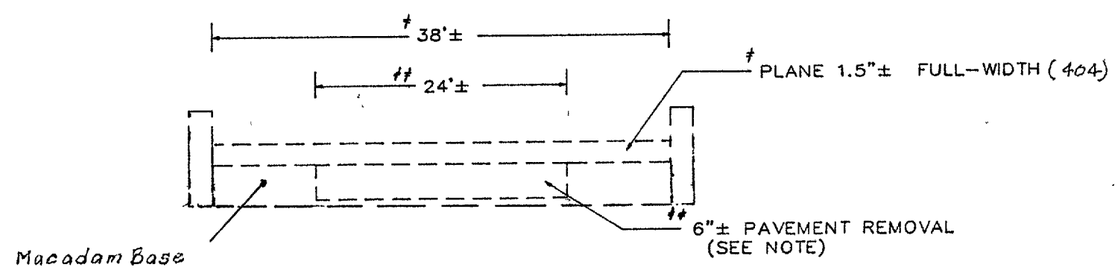
TYPICAL 3



NOTE: ‡‡6"± PAVEMENT REMOVAL TO ACCOMODATE PROPOSED 301. (26.26 – 26.50±) AREA MAY NOT BE CONTINUOUS, DEPENDING ON PREVIOUS FULL-DEPTH REPAIRS. 301 TO BE USED AS DIRECTED BY THE ENGINEER.

PAVEMENT REMOVAL SHALL BE IN SUCH A MANNER AS TO ALWAYS KEEP ONE LANE OF TRAFFIC OPEN. NO OVERNIGHT LANE CLOSURES ARE PERMITTED. BOTH LANES OF TRAFFIC SHALL BE OPEN AT THE END OF EACH WORK DAY.

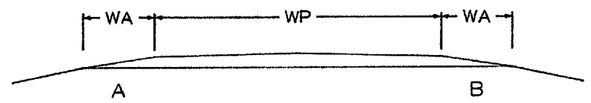
TYPICAL 3 PLANING AND REMOVAL



DEPARTMENT OF TRANSPORTATION
M& R 708 REV. 9-1-83

SHOULDER TREATMENT

TYPICAL 1



TYPICAL 2

*NOTES

1. SEAL COAT: After completion of the mix the Seal Coat shall be applied when directed be the Engineer.

2. PENETRATION CHOKE: Choke to be applied in two applications; approximately 0.004 cu. yd./sq. yd. shall be applied immediately on the mix after initial rolling. Not earlier than two days nor later than five days following the final rolling the penetration coat and final choke application shall be performed in accordance with the provisions of 409.07 and 409.08.

3. MIX BITUMINOUS MATERIAL: Include 0.20 gal./sq. yd. to be applied as a penetration.

4. PRIME COAT: A minimum of 36 hours shall elapse after completion of Prime Coat before any subsequent treatment.

5. MIX: Mix to be completed on shoulders within ____ days following completion of the adjacent pavement.

6. SHIELD: The contractor shall provide a shield to prevent the spraying or drifting of liquid bituminous material onto the edge of the pavement or edgelines. The attention of the contractor is directed to 107.12 of the Specifications.

7. APPLICATION RATE: The rate of application for mix bituminous material shall be ____ gal./sq. yd. for slag or ____ gal./sq. yd. for gravel or stone.

8. CENTRAL MIXING: When central mixing is used, the mix bituminous material shall be reduced 0.20 – 0.25 gal./sq. yd. to prevent in-transit drainage and applied as a penetration.

6/14

PLAN NO. 2&3

SHOULDER DATA

PART	ROUTE	LOG POINT TO LOG POINT	LENGTH MILES	LENGTH LIN.FT.	TYPICAL	EXISTING TYPE – WIDTH(ft.) A TYPE	A WIDTH AV.	B TYPE	B WIDTH	C TYPE	C WIDTH	D TYPE	D WIDTH	AREA SQ. YDS.	407 TACK Bit. Matl. @ ..... gal./s.y. Gals.	407 TACK Cover Aggr. @ ..... lbs./s.y. Tons	405 MIX Bit. Matl. @ ..... gal./s.y. Gals.	405 MIX Mix Aggr. @ ..... c.y./s.y. Cu. Yds.	405 CHOKE Aggr. @ ..... c.y./s.y. Cu. Yds.	408 PRIME Bit. Matl. @ ..... gal./s.y. Gals.	409 SEAL Bit. Matl. @ ..... gal./s.y. Gals.	409 SEAL Aggr. @ ..... c.y./s.y. Cu. Yds.	617 Shoulder Preparation Sq. Yds.	617 Compacted Aggregate TYPE A 1.5" avg. THICKNESS Cu. Yds.	617 WATER 2 GAL/S.Y. M. GAL.	* NOTES
1	US250	18.55 – 18.92	0.37	1954	1	617	3	617	3					1303									1303	54	2.6	
		18.92 – 19.01	0.09	475	1	617	3	617	3					158/158									158/158	7/7	0.3/0.3	
		TOTAL PART 1	0.46	2429										1461/158									1461/158	61/7	3/0	
2	US250	19.01 – 25.98	6.97	36802	1	617	3	617	3					24535									24535	1022	49	
		26.57 – 29.67	3.10	16368	1	617	3	617	3					10912									10912	455	22	
		TOTAL PART 2	10.07	53170										35447									35447	1477	71	
3	US250	26.50 – 26.56	0.06	317	1	617	3	617	3					211									211	9		
		26.56 – 26.57	0.01	53	1	617	3	617	3					18/18									18/18	1/1		
		TOTAL PART 3	0.07	370										229/18									229/18	10/1	---	

GENERAL NOTES

ROUTINE MAINTENANCE:

Between the time that bids are taken and the start of construction, the maintaining agency may enter upon the project and perform routine maintenance such as crack sealing, patching, and berm and shoulder repair. The effects, if any, of the performance of routine maintenance shall be considered as inherent in work of the character provided for in the contract and the resulting conditions shall not be considered as differing materially from those existing at the time bids were taken.

INTERSECTIONS:

Rural-Intersections shall be paved to end of radii or as directed by the Engineer to provide a smooth transition between the two highways. Urban-Intersections shall be paved to back of crosswalks or as directed by the engineer. Drives-Paved drives shall be resurfaced as directed by the Engineer. Care shall be taken to eliminate water pockets in curbed sections.

ITEM 407, TACK COAT:

As per 407.05 the application rate shall be .08 gallons per square yard, a complete pavement surface coverage shall be required. Areas of tack stripped by construction equipment or traffic shall be recoated prior to placing asphalt concrete. Cover Aggregate, as required per 407.06, shall be considered incidental and all cost shall be included in the Unit Bid Price for item 407, Tack Coat, As Per Plan.

PAVEMENT CONTROL:

An automatic screed control having a 30 foot minimum ski-arm shall be used for placing the 402 or 403 Pre-level and 404 course on existing pavement widths of 20 feet and over.

Special attention shall be given to super-elevated curves. The super-elevation shall be maintained and /or restored, if necessary, as directed by the Engineer.

*	Part 1	Part 2	Part 3
Estimated Quantity	10 C.Y.	50 C.Y.	40 C.Y.
Estimated No. Locations	6	20	10

254, PAVEMENT PLANING, BITUMINOUS:

The intent of the planing is to mill 1 1/2 " minimum depth at the centerline and/or edge of pavement and 1/4" minimum depth in bottom of wheel ruts. The pavement slope may vary between 3/16" and 3/8" per foot, continuous for pavement width. The milling depth shall be controlled from the centerline or edge of pavement, to produce the least amount of milling in conformance with above limits. Field work necessary for proper control within plan intent shall be the responsibility of the Contractor.

An automatic milling head profile control, having a minimum 30' ski-arm shall be used during planing operation. The depth of cut may be controlled from either the centerline or edge of pavement.

Above conditions do not apply to planing performed in areas as directed by the Engineer to eliminate adverse surface distortion, or to provide a satisfactory grade at castings. These areas include material displaced by rutting or shoving asphalt surface patches, concrete patching, transverse bumps, pavement at railroads, castings, etc. Planing of these areas shall be performed throughout the project prior to paving. Areas to be planed will be designated by the Engineer.

253, PAVEMENT REPAIR

This item of work shall consist of the removal of the existing pavement or paved berm which may be asphalt, brick, concrete or a combination of each, in areas existing severe pavement failure.

The Engineer shall designate the locations and limits of the areas to be repaired. The repair areas shall be roughly rectangular in shape and cut or sawed to a neat line. The pavement shall be removed within the designated areas by methods which will not damage the adjacent pavement. The depth of removal, as directed by the Engineer, shall be sufficient to remove all deteriorated pavement (estimated depth may vary from 2" to a maximum 12".) The materials so removed shall be disposed of in accordance with 203.05.

Replacement material shall be 402 or 301 material and shall be placed and compacted to finish flush with the adjacent pavement surface. The repair areas shall be painted with bituminous material (sides and bottom.) All compaction shall be achieved by mechanical methods to satisfaction of the Engineer, maximum lift thickness (3".)

* Payment shall include all labor, equipment and materials necessary to complete the pavement repair. The following estimated quantity is provided in the Summary to be used as directed by the Engineer. Payment will be made at contract price per cubic yard, by ticket weight conversion, Item Special, Pavement Repair.

GENERAL NOTES

ITEM 604, CASTINGS ADJUSTED TO GRADE

Any unit of this item may be nonperformed is so directed by the Engineer and the surface shall be feathered to meet the existing casting or inlet in manner acceptable to the Engineer. All adjusting rings shall have the Engineer's prior approval before using.

Under Item 604.03, Adjusting to Grade, paragraph (a), the casting to be adjusted may or may not have an existing frame. The work shall consist of adjusting the existing casting or grate to the satisfaction of the Engineer. The Contractor is reminded to field check all adjustment to grade items prior to bidding, as no additional compensation will be granted for labor and material required to satisfactorily adjust castings without frames.

MAILBOXES:

Existing Aggregate Mailbox approaches shall be paved with 3/4" of Item 403 and 1" of Item 404. They shall conform as much as practical to Standard Drawing BP-6 or as directed by the Engineer.

Grading shall be performed in these areas to obtain a base which is flush with the existing paved berm. A quantity of 617 Aggregate has been provided for areas where the shoulders were low prior to grading and /or low areas caused by removal of unsuitable material. Quantities to perform this work have been included in the General Summary and are estimated as follows:

	Part 1	Part 2
Item Special, Grading Mailbox Approaches:	18 Locations	89
Item 617, Compacted Aggregate:	24 C.Y.	85 C.Y.

ITEM 202, RAISED PAVEMENT MARKERS REMOVED FOR STORAGE:

Raised pavement markers shall be removed in a manner that prevents damage to the castings. All depressions caused by removal of the markers shall be filled with compacted 404 to the level of existing road surface at the time they are removed. Removed markers are to be stored on the Right-of-Way within the project limits by the Contractor, as directed by the Engineer. All costs to be included in the contract price bid for Item 202-Raised Pavement Markers Removed for Storage, As Per Plan.

PAVEMENT MARKING SUB-SUMMARY

QUANTITIES			
Calc.		Chk d.	
Date		Date	

PLAN NO.	FHWA REGION	STATE	PROJECT	
213	5	OHIO		

9/14

CO.	ROUTE	FROM S.L.M.	FROM	TO S.L.M.	TO	621 QUANTITIES CENTER LINE MILES TOTAL (PAY QUANT.)	SOLID LINE EQUIV.	RAISED PAVEMENT MARKERS REMOVED FOR STORAGE EACH	621 CENTER LINE REMARKS
WAY	US 250	17.44	W. Corp. Apple Creek	19.01	E. Corp. Apple Creek	1.57	1.607	-0-	Part I Apple Creek
WAY	US 250	19.01	E. Corp. Apple Creek	26.02	W. Corp. Mt. Eaton	7.01	9.404	80	Part II
WAY	US 250	26.02	W. Corp. Mt. Eaton	26.57	E. Corp. Mt. Eaton	0.55	0.717	-0-	Part III Mt. Eaton
WAY	US 250	26.57	E. Corp. Mt. Eaton	29.67	Stark County Line	3.10	2.981	62	Part II
CENTER LINE TOTAL						12.23	14.709	142	

CO.	ROUTE	FROM S.L.M.	FROM	TO S.L.M.	TO	621 QUANTITIES 4" LANE LINE MILES TOTAL	DASHED	SOLID	PARTICIPATION	621 LANE LINE REMARKS
LANE LINE TOTAL										

CO.	ROUTE	FROM S.L.M.	FROM	TO S.L.M.	TO	WHITE EDGE LINE QUANTITIES TOTAL MILES	HWY. MILES	RAMP MILES	PART.	YELLOW EDGE LINE QUANTITIES TOTAL	HWY.	RAMP	PART.	621 EDGE LINE * Lane Widths
WAY	US 250	17.44	W. Corp. Apple Creek	19.01	E. Corp. Apple Creek	1.84	0.92							Part I Apple Creek * 12'
WAY	US 250	19.01	E. Corp. Apple Creek	26.02	W. Corp. Mt. Eaton	14.02	7.01							Part II * 12
WAY	US 250	26.02	W. Corp. Mt. Eaton	26.57	E. Corp. Mt. Eaton	0.62	0.31							Part III Mt. Eaton * 12'
WAY	US 250	26.57	E. Corp Mt. Eaton	29.67	Stark County Line	6.20	3.10							Part II * 12'
EDGE LINE TOTAL						22.68	11.34							

CO.	ROUTE	FROM S.L.M.	FROM	TO S.L.M.	TO	621 QUANTITIES 8" CHANNELIZING LINES MILES	LIN. FT.	PARTICIPATION	621 CHANNELIZING LINE REMARKS
CHANNELIZING LINE TOTAL									

847 AUXILIARY MARKING (947.03 TYPE A1) INLAID

CO.	ROUTE	S.L.M. FROM	S.L.M. TO	24" TRANSVERSE LINES WHITE LIN. FT.	24" TRANSVERSE LINES YELLOW LIN. FT.	STOP LINES 24" LIN. FT.	12" CROSS-WALK LINES WHITE LIN. FT.	WORD ON PAVEMENT ONLY EACH	WORD ON PAVEMENT SCHOOL 96" EACH	LANE ARROWS TURN LEFT EACH	LANE ARROWS TURN RIGHT EACH	LANE ARROWS THRU EACH	LANE ARROWS COMB. EACH	R.R. SYMBOL MARKING EACH	DOTTED LINES WHITE LIN. FT.	DOTTED LINES YELLOW LIN. FT.	REMARKS
WAY	US 250	17.44	19.01			10											Part I Apple Creek
WAY	US 250	19.01	26.02			70			2								Part II
WAY	US 250	26.02	26.57			0											Part III Mt. Eaton
WAY	US 250	26.57	29.67			10											Part II
AUXILIARY MARKING TOTALS						90			2								

INITIAL PAVEMENT MARKINGS FOR RESURFACED SECTIONS GENERAL NOTES

In addition to the requirements of 621 and 847 the following shall apply:

621 and 847 Materials

The materials used on this project shall either be 621 fast dry traffic paint or 847 thermoplastic material approved by prequalification.

The Contractor shall provide storage for all materials and shall transport materials to the site where used. Glass beads shall be kept dry during storage and prior to use.

The Laboratory will furnish the names of manufacturers and code numbers from its approved list of prequalified white and yellow paint upon request.

621 and 847 Special Equipment

The Contractor's striper shall be equipped with an odometer graduated to 1/100 of a mile. The Engineer shall determine the degree of accuracy of the Contractor's odometer and establish an adjustment factor as may be required to accurately determine the pay item quantities. The Engineer shall periodically check the odometer's operation to assure maintenance to accurate measurements.

Failure of the odometer to function properly shall be cause to stop the work until the odometer is made to function properly. On short projects the Engineer may approve alternate methods to accurately measure the length of the various types of markings applied. If measurement of the work has to be done by the Department, the cost of the Department labor and equipment plus 10 percent shall be deducted from payment due the Contractor for the work. When measuring lane, edge and/or center line marking, the odometer shall be started at the first marked line and remain in operation, until the end of the section being marked, where it shall be shut off and the reading of the odometer recorded.

Electrical foot counters shall be provided and installed in the application equipment used to apply long line markings. The counters shall individually tabulate the amount of footage applied for each line, whether solid or dashed. The counters shall be a six digit type with a reset feature.

The Contractor shall use an accurate dashing mechanism, capable of being easily adjusted, to place lane or center line markings as specified in the plans or as directed by the Engineer.

Provision for the described special equipment by the Contractor shall be incidental to the application.

621 Material Quantity Measurement

The quantity of marking material or glass beads per unit of measurement will be computed by the Engineer at the end of each day's work. A day's applied mileage of less than 2 miles may be included in the next day's applied markings for the purpose of computing marking material and bead application rates.

The Contractor shall provide a calibrated measuring device acceptable to the Engineer for measuring material in the striper tanks.

The quantity of marking material used shall be determined by measuring the marking material in the tanks before and after marking material is applied. The Contractor shall cooperate with the Engineer in providing measurements whenever requested. The marking material application rate shall be determined by dividing the total gallons used by the appropriate marking length as determined from the foot counter as described within the Special Equipment Section of these notes. Any determination of pay deduction resulting from shortages in marking quantities shall be based on the measurements obtained by this method. The amount of glass beads applied will be ascertained by the Engineer by observation and from information supplied by the Contractor as to the quantity used.

847 Material Quantity Measurement

The quantity of marking material or glass beads per unit of measurement will be computed by the Engineer at the end of each day's work. A day's applied quantity of less than 100 pounds of marking material may be included in the next day's applied markings for the purpose of computing marking material and bead application rates.

The Contractor shall provide a calibrated measuring device acceptable to the Engineer for measuring material in the striper tanks.

The quantity of marking material used shall be determined by measuring the marking material before and after marking material is applied. The Contractor shall provide measurements whenever requested by the Engineer. The marking material application rate shall be determined by dividing the total pounds of thermoplastic material used by the appropriate marking length as determined from the foot counter as described within the Special Equipment Section of these notes. Any determination of pay deduction resulting from shortages in marking quantities shall be based on the measurements obtained by this method. The amount of glass beads applied shall by ascertained by the Engineer by observation and from information supplied by the Contractor as to quantity used.

FHWA REGION	STATE	PROJECT	
5	OHIO		

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PLAN NO. 243

INITIAL PAVEMENT MARKINGS FOR RESURFACED SECTIONS GENERAL NOTES

621 Layout and Premarking

In accordance with 621.05 the Contractor shall "T" no-passing zones in accordance with a no-passing zone log provided by the Engineer.

847 Layout and Premarking

In addition to the requirements of 847.04, premarking for auxiliary markings shall be located from schematic forms provided by the Engineer.

Markings shall not be applied over existing markings except when applying initial permanent markings over temporary markings of fast-dry paint. Temporary markings other than fast-dry paint shall be removed and the surface prepared to the satisfaction of the Engineer before permanent markings are applied.

621 and 847 Auxiliary Pavement Marking

For this project, auxiliary markings shall be defined as: Stop lines, crosswalk lines, transverse lines, railroad and school symbol markings, lane arrows, word on pavement, curb and island markings, parking lot stall markings and dotted lines except when used to extend edge lines.

847 Material Application Temperature

The Contractor shall provide a calibrated temperature sensing device which will accurately measure the temperature of the extruded thermoplastic material when it makes contact with the pavement. A temperature of 400°F to 440°F at point of application to road surface must be maintained at all times.

847 Material Application Rates

In addition to the requirements of 847 the minimum application rates shall be as follows:

Pounds Per Mile of Line	Width of Line (Inches) 4	8	12	24
Solid Line	2340	4680	7020	14040
Dashed Line	585	1170	1755	3510

133 Pounds Per 100 Square Feet

947.02 Thermoplastic Pavement Markings

Glass beads intermixed or dropped on 947.02 thermoplastic pavement marking material shall meet the following specification:

Sieve No.	% Retained
16	3 Max
20	5 to 20
40	65 to 95
50	0 to 5
Refractive Index:	1.50 to 1.60
Roundness:	80% Min
Coating:	Adhesion Promoting

The application rate of drop-on beads shall be a uniform 25 pounds of beads for each 100 square feet of thermoplastic material surface area.

862 Raised Pavement Markers

This Contract may include sections of roadway where plowable prismatic raised pavement markers are to be installed in the pavement. Raised pavement marker placement for a resurfaced section shall begin after the permanent pavement marking for that resurfaced section is completed and dry.

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5	OHIO		

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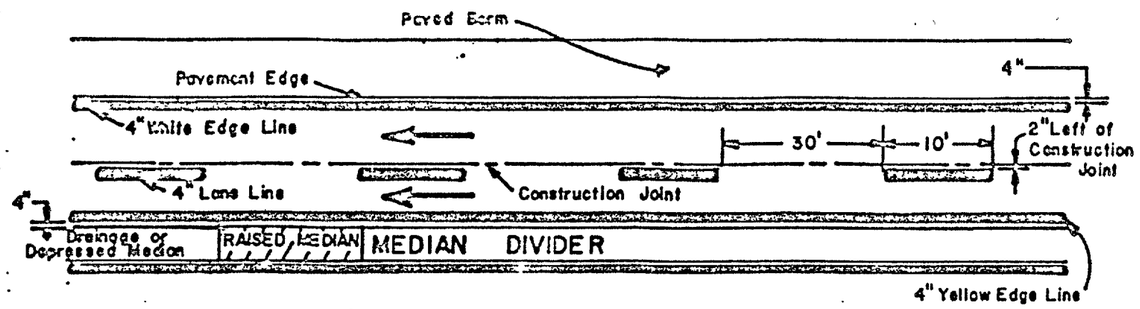
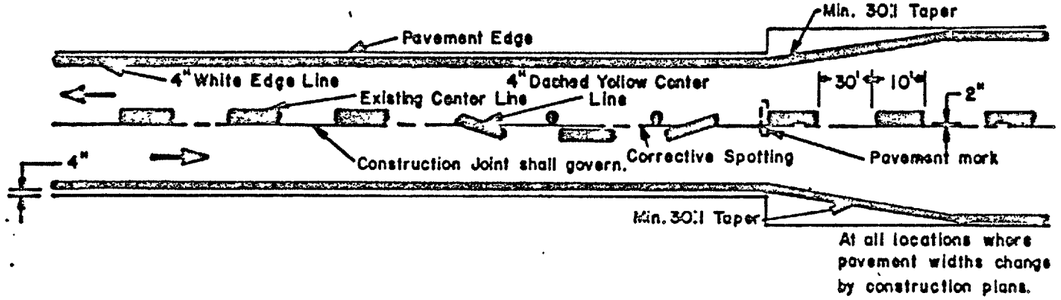
PLAN NO. 243

PAVEMENT MARKING TYPICAL DETAILS

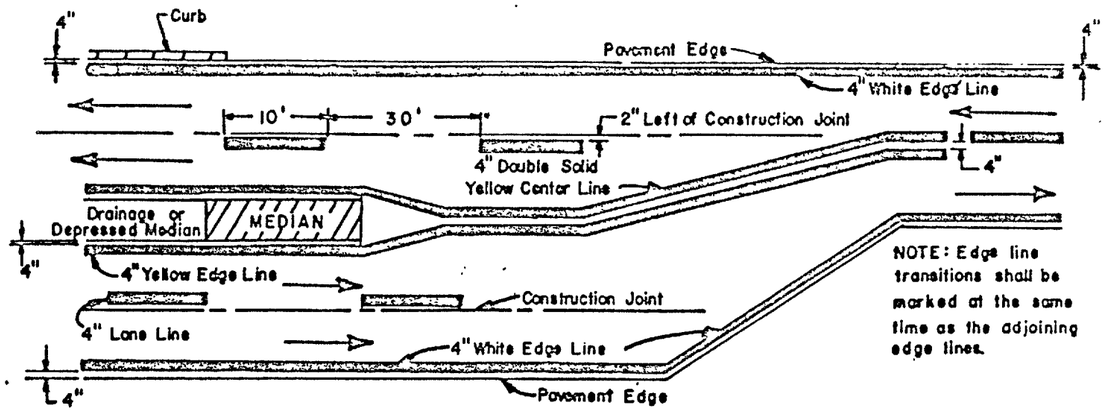
FREEWAY & EXPRESSWAY MAINLINE MARKINGS



TWO LANE MARKINGS



MULTILANE DIVIDED & UNDIVIDED HIGHWAY MARKINGS



NOTES:

1. THE DISTANCE FROM THE PAVEMENT EDGE TO THE NEARSIDE EDGE OF THE EDGELINE MAY BE INCREASED WITH THE APPROVAL OF THE ENGINEER IN ORDER TO MAINTAIN UNIFORM LANE WIDTH.
2. SEE TC 72.20 FOR ENTRANCE AND EXIT RAMP MARKINGS.
3. The cycle length for dashed lines shall be 40 feet plus or minus 6 inches. The minimum length of dash shall be sufficiently long to maintain a 3:1 ratio between length of gap and length of dash.

DEPARTMENT OF TRANSPORTATION	
PAVEMENT MARKING TYPICAL DETAILS	DATE 11/80
JDJ CDR.	

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SC-2

WORD AND SYMBOL MARKING DETAILS

FED RD DIVISION	STATE	PROJECT	
5	OHIO		

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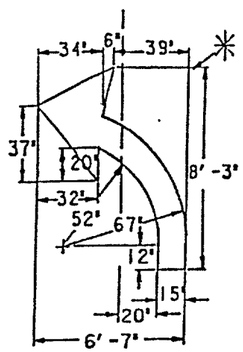
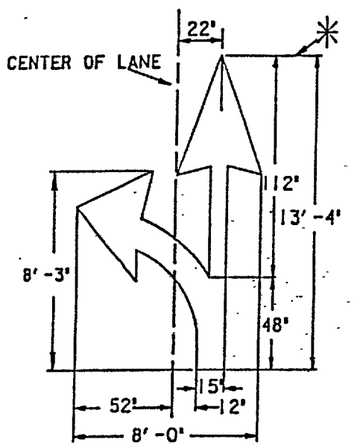
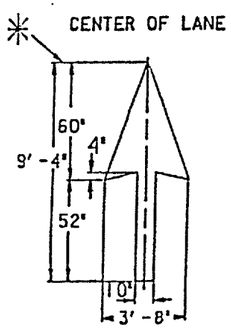
PLAN NO. 243



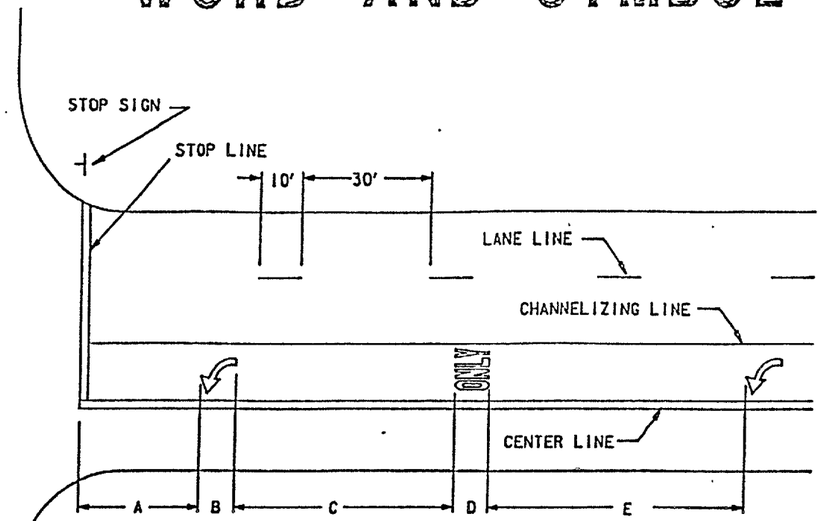
TURN ARROW
(LEFT ARROW SHOWN
RIGHT ARROW OPPOSITE)



COMBINED ARROW
THREE HEAD DIRECTIONAL ARROWS CAN BE ACHIEVED BY THE COMBINATION OF TURN ARROWS.



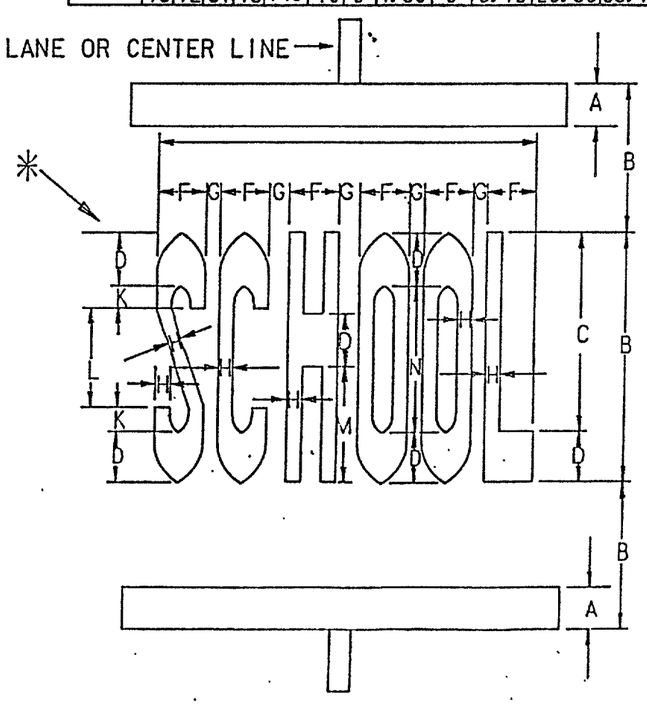
THROUGH ARROW

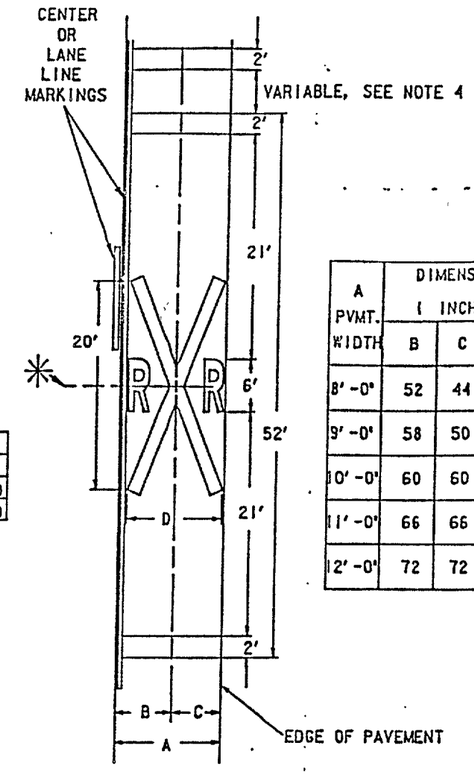


NOTE:
STOP BAR LOCATED MIN. 40' FROM AT LEAST ONE SIGNAL HEAD WHICH APPLIES TO THAT APPROACH

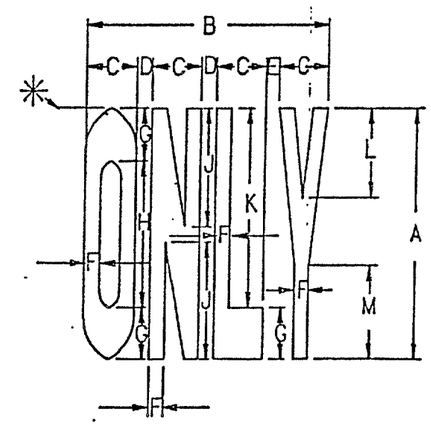
TYPE	DIMENSIONS (FEET)				
	A	B	C	D	E
RURAL	30 MIN.	8.25	32-80	8	32-60
URBAN	10 MIN.	8.25	32-80	6	24-60

TYPE	DIMENSIONS (INCHES)												
	A	B	C	D	E	F	G	H	J	K	L	M	N
RURAL	16	96	76	20	150	20	6	6	8	9	38	45	56
URBAN	16	72	57	15	148	18	8	4.50	9	6.75	28.50	33.75	42





A PVMT. WIDTH	DIMENSIONS (INCHES)		
	B	C	D
8'-0"	52	44	84
9'-0"	58	50	96
10'-0"	60	60	96
11'-0"	66	66	96
12'-0"	72	72	120



TYPE	DIMENSIONS (INCHES)											
	A	B	C	D	E	F	G	H	J	K	L	M
RURAL	96	94	20	6	2	6	20	56	45	76	32	36
URBAN	72	90	18	8	2	4.50	15	42	33.75	57	24	27

NOTES

1. PAVEMENT MARKING FOR WORDS, SYMBOLS, ARROWS AND TRANSVERSE LINES FOR WORD 'SCHOOL' OR THE RAILROAD SYSMBOL SHALL BE WHITE REFLECTIVE MATERIAL.

2. TWO TRANSVERSE LINES SHALL BE INCLUDED IN THE PAYMENT FOR EACH WORD 'SCHOOL'. THREE TRANSVERSE LINES SHALL BE INCLUDED IN THE PAYMENT FOR EACH RAILROAD SYMBOL.

3. ON MULTI-LANE APPROACHES, THE TRANSVERSE LINES USED WITH THE RAILROAD SYMBOLS SHALL EXTEND ACROSS ALL APPROACH LANES AND SYMBOLS SHALL BE PLACED IN EACH APPROACH LANE.

4. FOR THE RAILROAD SYMBOL, NO PORTION OF ONE TRANSVERSE LINE SHALL BE CLOSER THAN 30 FEET FROM THE NEAREST RAILROAD TRACK RAIL AND THE LINE MAY BE EITHER PARALLEL TO THE TRACK OR PERPENDICULAR TO THE CENTERLINE OF THE ROADWAY. THE OTHER TWO TRANSVERSE LINES AND THE RAILROAD SYMBOL SHALL BE LOCATED FROM THE STATION REFERENCE POINT SHOWN IN THE PLANS.

5. ON MULTI-LANE APPROACHES, THE TRANSVERSE LINES USED WITH THE WORD 'SCHOOL' SHALL EXTEND ACROSS ALL APPROACH LANES WITH A SINGLE WORD 'SCHOOL' CENTERED ACROSS THE APPROACH LANES. ON TWO LANE ROADWAYS, THE TRANSVERSE LINES SHALL EXTEND ACROSS THE ROADWAY WITH THE WORD 'SCHOOL' CENTERED ACROSS THE ROADWAY. CENTER OR LANE LINES SHALL NOT PASS THROUGH THE 'SCHOOL' MARKING.

6. THE STOP LINE SHOULD BE PLACED WHERE CROSS-CORNER VISION IS MAXIMUM, IN NO CASE MORE THAN 30 FEET OR LESS THAN 4 FEET FROM NEAREST EDGE OF THE INTERSECTING ROADWAY. FOR NORMAL INTERSECTIONS A MAXIMUM DISTANCE OF 10 FEET IS RECOMMENDED.

   IF A MARKED CROSSWALK IS PRESENT THE STOP LINE SHOULD BE PLACED 4 FEET IN ADVANCE OF AND PARALLEL TO THE NEAREST CROSSWALK.

7. ** ANY OF THE FOLLOWING STANDARDS FOR LETTER (EXCEPT 'R'), NUMERAL OR SYMBOL DIMENSIONING MAY BE USED:

   A.) STANDARD DIMENSIONS SHOWN ON THIS DETAIL (NOMINAL)

   B.) STANDARD DIMENSIONS IN ACCORDANCE WITH THE 1977 METRIC EDITION STANDARD ALPHABETS FOR HIGHWAY SIGNS AND PAVEMENT MARKING WITH ERRATA.

   C.) STANDARD DIMENSIONS CONFORMING TO REQUIREMENTS OF SECTION 3B-17 OR AS SHOWN IN FIGURES 3-17, 3-18, 7-2, 7-3, 8-2 OR 9-6 OF THE 1978 NATIONAL MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.

** THE LETTER 'R' DIMENSIONS SHALL BE AS SHOWN ON THIS SHEET AND IN THE NMUTCD SECTION 8-2.

✳ INDICATES STATION REFERENCE POINT