

973

# OHIO DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS

973 (85)	1 30
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FHWA REGION 5	STATE OHIO	FEDERAL PROJECT	
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PLAN NO. 60

PART	COUNTY	ROUTE	SECTIONS	PROJECT TERMINI		NET LENGTH MILES	TOWNSHIP	CITY	VILLAGE
				BEGIN	END				
1	MED	252	(0.93)-(5.19)	0.93	7.80	6.86			
2	LOR	252	(0.00)-(2.66)	0.00	5.43	5.43			

The Standard 19<sup>85</sup> 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. \_\_\_\_\_ 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 and provisions for the maintenance and safety of traffic will be as indicated in the proposal.

Approved Date 6/3/85 [Signature]  
District Deputy Director of Transportation

Approved Date 8-22-85 [Signature]  
Engineer of Bridges

Approved Date \_\_\_\_\_  
Engineer of Maintenance

Approved Date 9-26-85 [Signature]  
Chief Engineer, Operations

Approved Date \_\_\_\_\_  
Assistant Deputy Director, Program Development

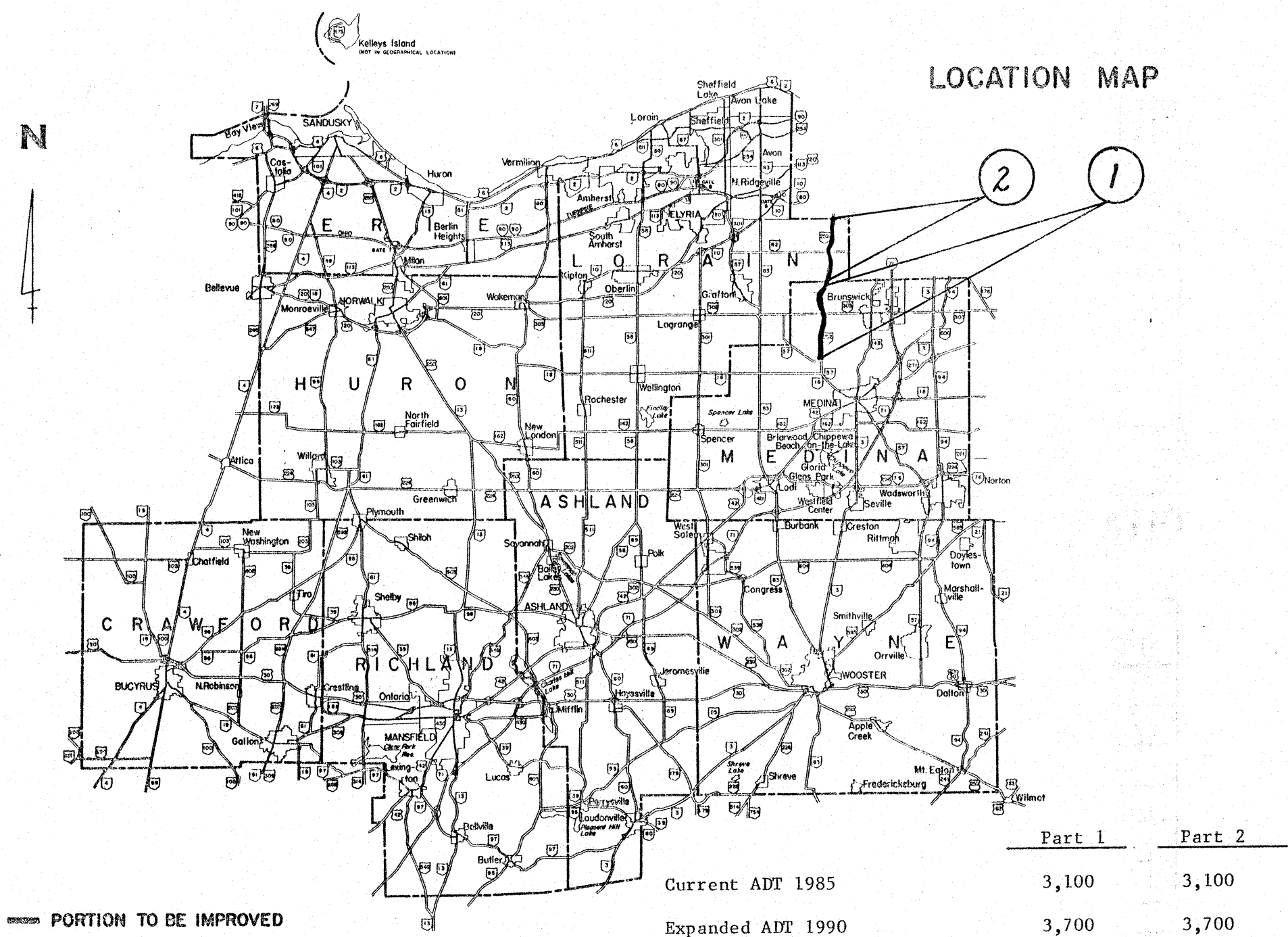
Approved Date \_\_\_\_\_  
Chief Engineer, Construction

Approved Date \_\_\_\_\_  
Chief Engineer, Design

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

Approved Date 9-26-85 [Signature]  
Director, Department of Transportation

## LOCATION MAP



Part 1	Part 2
3,100	3,100
3,700	3,700

DEPARTMENT OF TRANSPORTATION  
FEDERAL HIGHWAY ADMINISTRATION

APPROVED:

\_\_\_\_\_  
DIVISION ADMINISTRATOR      DATE

STANDARD DRAWINGS		SUPPLEMENTAL SPECIFICATIONS	
BP-5	01-11-85	SS-847	10-17-83
TC-35.10	08-29-84	SS-947	10-17-83
TC-71.10	04-09-79		
GR-3A	02-05-82		

12-3-85

EN

GENERAL SUMMARY

ITEM	Part 1	Part 2	GRAND TOTAL Parts 1 & 2	UNIT	DESCRIPTION
407	182	144	326	Ton	Cover Aggregate
402	3,842	2,996	6,838	Cu. Yd .	Asphalt Concrete AC-20
404	2,528	1,997	4,525	Cu. Yd .	Asphalt Concrete AC-20
301	2,230	1,883	4,113	Cu. Yd.	Bituminous Aggregate Base AC-20 or RT(11 or 12)
203	684	573	1,257	Station	Linear Grading
604	5		5	Each	Monument Boxes Adjusted to Grade
202	307	520	827	Each	Raised Pavement Markers Removed for Storage, as per plan
Special	70	55	125	Cu. Yd..	Pavement Repairs
847	104	66	170	Lin. Ft.	Stop lines, 947.03, Type AI, Inlaid
847	2		2	Each	Word on Pavement, <sup>SCHOOL, 96"</sup> 947.03, Type AI, Inlaid
847	2		2	Each	Railroad Symbol on Pavement, 947.03, Type AI, Inlaid
617	32	25	57	M. Gal..	Water
614	13.72	10.86	24.58	Mile	Temporary Center Lines, Class II
624	Lump	Lump	Lump	Lump	Mobilization
617	16,098	12,742	28,840	Sq. Yd .	Shoulder Preparation
617	1,342	1,062	2,404	Cu. Yd .	Compacted Aggregate
614	Lump	Lump	Lump	Lump	Maintaining Traffic

GENERAL NOTES

TRAFFIC:

Traffic shall be maintained at all times. The length of restricted traffic zones shall be kept to a minimum consistent with the specification requirements for protection of completed courses.

RAILROAD CROSSINGS:

The new surface course shall be feathered or butt jointed to meet the rail grades as specified.

ALIGNMENT AND PROFILE:

The work proposed by this project is for the resurfacing of the existing pavement. The alignment of the existing pavement will not be changed, and the profile of the proposed surface will be similar to that of the existing pavement except that it will be raised an amount equal to the thickness of the resurfacing course or courses specified in these plans.

INTERMEDIATE COURSE, SPOT LEVELING AND PATCHING:

This material shall be placed in a separate operation where and as directed by the engineer.

TACK COAT:

The tack coat operation shall be as determined at a pre-construction conference as per 407.05, and application rates shall not exceed 0.10 gal. per sq. yd.

COVER AGGREGATE:

Cover aggregate shall conform to 703.06.

973-R

FED. RD. DIVISION	STATE	PROJECT	
5	OHIO		

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# GENERAL SUMMARY

PLAN NO. 60

ITEM	Part 1	Part 2							GRAND TOTAL <i>PARTS 1 &amp; 2</i>	UNIT	DESCRIPTION
Special	5,000	200							5,200	Sq. Yd.	Pavement Planing Bituminous Without Heating
Special	3,450	2,700							6,150	Gallon	Crack Sealing, AC-20, as per plan
Special	619								619	Sq. Yd.	Superplasticized Dense Concrete Overlay, $3\frac{1}{2}$ " Thickness
Special	30								30	Cu. Yd.	Superplasticized Dense Concrete Overlay, Variable Thickness
Special	1								1	Cu. Yd.	Full Depth Repair
Special	534								534	Sq. Yd.	Rubberized Seal
516	72								72	Lin. Ft.	Vertical Extension of Structure Expansion Joints, as per plan
202	100								100	Lin. Ft.	Guardrail Removed for Reuse or Storage, as per plan
517	128.65								128.65	Lin. Ft.	Thrie-Beam Rail Attached to Concrete Bridge Railing, as per plan
606	25								25	Lin. Ft.	Guardrail Thrie-Beam Transition, as per plan
619	Lump	Lump							Lump sum	Lump sum	Field Office
621	6.86	5.43							12.29	Mile	Center line
621	13.72	10.86							24.58	Mile	Edge line
614										LUMP SUM	MAINTAINING TRAFFIC

# ASPHALT CONCRETE

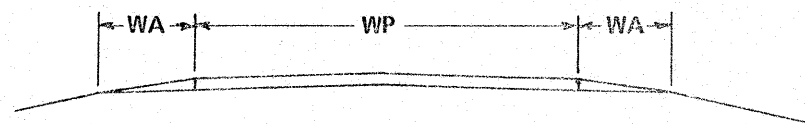
PLAN NO.  
**60**

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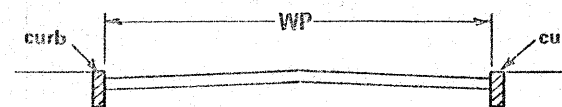
- STR MED 02.19 Resurface Full Width
- STR MED 02.71 Resurface Full Width
- STR MED 03.25 Resurface Full Width
- STR MED 03.95 Omit Resurfacing
- STR MED 05.99 Resurface Full Width
- STR MED 07.24 Resurface Full Width
- STR MED 07.64 Resurface Full Width
- STR MED 07.69 Resurface Full Width

See Sheet No. 10 for all of the above Structures

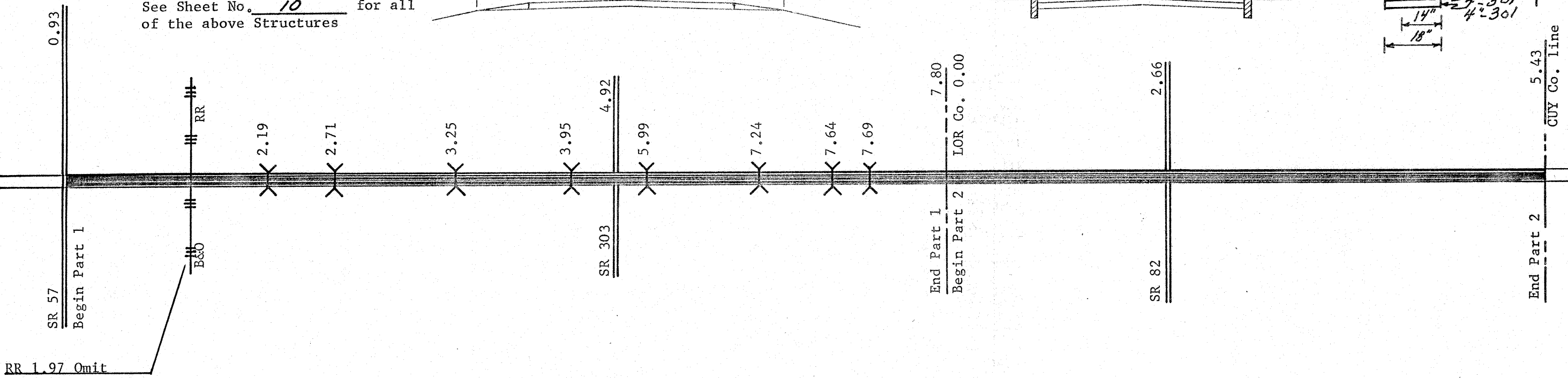
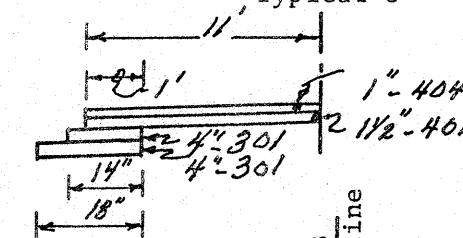
TYPICAL 1



TYPICAL 2



Typical 3



RR 1.97 Omit Resurfacing, Butt Joint

See Sheet 5 for 301 widening quantity.

PAVEMENT DATA

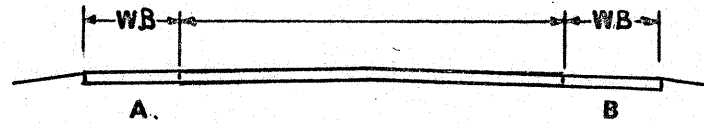
PART	ROUTE	LOG POINT TO LOG POINT	LENGTH		WP FEET	TYPICAL	EXISTING TYPE PAVEMENT	PAVEMENT AREA SQ. YDS.	PROPOSED PAVEMENT						604 Monument Boxes Adjusted to Grade Each	202 Raised Pavement Markers Removed For Store Each	Special Pavement Planing, Bitumin. Without Heat Sq. Yds.	
			MILES	LIN. FT.					407		ASPHALT CONCRETE							
									TACK COAT @ .05 gal./s.y. GALS.	COVER AGGR. @ .4 lbs./s.y. TONS	ITEM 402 THICK INCHES Min.	1 1/2" Av. CU. YDS.	ITEM 404 THICK INCHES	CU. YDS.				ITEM THICK INCHES
1	252	0.93-- 4.75	3.82	20,170	20	1	404	44,822										
		(0.93 - 4.75)	(3.82)	(20,170)	2@1'	3	617	4,482										
		4.75 - 5.18B	0.43	2,270	24	1	404	6,053										
		5.19A- 7.80	2.61	13,781	20	1	404	30,624										
		(5.19A- 7.80)	(2.61)	(13,781)	2@1'	3	617	3,062										
						EA for Inter. and Drives	1,957											
		Total Part 1	6.86	36,221				91,000	4,550	182	0"	3,792	1"	2,528		5	307	330
2	252	0.00 - 5.43	5.43	28,670	20	1	404	63,711										
		(0.00 - 5.43)	(5.43)	(28,670)	2@1'	3	617	6,371										
							EA for Inter. and Drives	1,818										
		Total Part 2	5.43	28,670				71,900	3,595	144	0"	2,996	1"	1,997			520	200



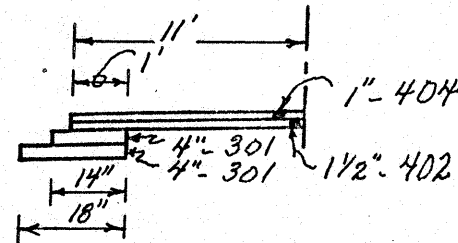
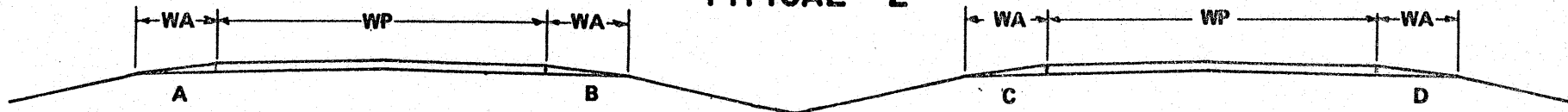
# PAVED SHOULDERS

\*NOTES

TYPICAL 1



TYPICAL 2



7. Item 301 Bituminous Aggregate Base for widening is to be completed prior to 402.  
ITEM 411 - STABILIZED CRUSHED AGGREGATE: Whenever 411 stabilized crushed aggregate is stipulated, the first paragraph of 411.03 is waived and subgrade compaction shall be to the satisfaction of the Engineer.

\*\* One station equals 100 lin. ft. Stations shall be measured along each edge of pavement.

1. **ITEM 203 LINEAR GRADING:** This work shall consist of preparing a subgrade for the shoulder paving by excavating the existing shoulder material to the depth shown in the plan, or as directed by the Engineer to remove any unstable material and by shaping and compacting the subgrade. The unsound or broken edge of bituminous pavements shall first be trimmed to a line established by the Engineer. The existing shoulder then shall be excavated and the subgrade shaped and compacted. Compaction shall be carried out to the satisfaction of the Engineer by means of a trench roller, 401.11. Areas graded in excess of depths specified or directed by the Engineer shall be backfilled to desired grade using 617 Compacted Aggregate at the contractor's expense. Excavated material shall be disposed of as indicated in the plan.

- a. Used to back up shoulders where required; the balance to be disposed of as directed by the Engineer.
- b. Disposed of by the Contractor at his own responsibility outside the limits of the right-of way.
- c. Wasted adjacent to the pavement and within the right-of-way as directed by the Engineer.

2. **ITEM 402 ASPHALT CONCRETE:** Prior to placing a bituminous mixture for shoulder paving, the edge of the existing pavement, for the full depth of the trench, shall be coated with bituminous material in accordance with 401.12.

3. **ITEM 301 BITUMINOUS AGGREGATE BASE** may be used in lieu of Item 402 Asphalt Concrete.

4. **ITEM 617 COMPACTED AGGREGATE:** A quantity of Item 617 Compacted Aggregate has been provided for areas where the shoulders were low prior to grading and/or low areas caused by removal of unsuitable material.

5. **ITEM 408 BITUMINOUS PRIME COAT:** After application of the Prime Coat, no further treatment shall be performed until so directed by the Engineer.

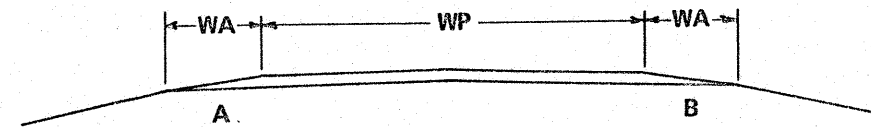
6. **SHIELD:** The contractor shall provide a shield to prevent the spraying or drifting of liquid bituminous material onto the edge of the pavement or edgelines. The attention of the contractor is directed to 107.12 of the Specifications.

PAVED SHOULDER DATA

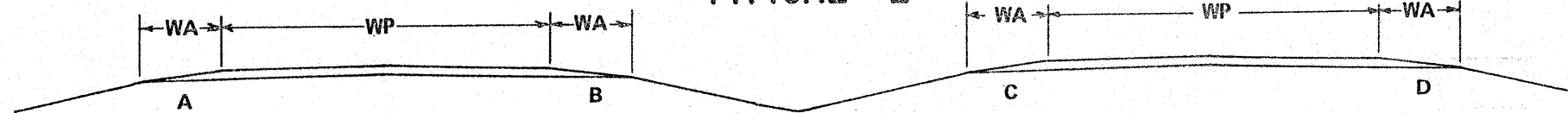
PART	ROUTE	LOG POINT TO LOG POINT	LENGTH		TYPICAL	PROPOSED WIDTH (FT.)				SHOULDER AREA SQ. YDS.	203		402		411		408	409		617	605	301	Base Widening	NOTES
			MILES	LIN. FT.		LINEAR GRADING		ASPHALT CONCRETE			STABILIZED CRUSHED AGGREGATE		PRIME	SEAL		COMPACTED AGGREGATE	AGGREGATE DRAINS	Bituminous Aggregate Base						
			Av.	**STA.		DEPTH INCHES	AVG. THICK INCHES	AVG. THICK INCHES	Bit. Matl.		Bit. Matl.	Aggr.	CU. YDS.	CU. YDS.	CU. YDS.	CU. YDS.	LIN. FT.	8"	Cu. Yds.	Sq. Yds.				
				A	B	C	D				@ gal./s.y.	@ gal./s.y.	@ c.y./s.y.											
1	252	0.93-4.75	3.82	20,170	1	1	1			7"	403											1,325	5,961	
		5.19A-7.80	2.61	13,781	1	1	1			7"	276											905	4,073	
		Total Part 1	6.43	33,951							680											2,230	10,034	17
2	252	0.00-5.43	5.43	28,670	1	1	1			7"	573											1,883	8,474	
		Total Part 2	5.43	28,670							573											1,883	8,474	17

# SHOULDER TREATMENT

## TYPICAL 1



## TYPICAL 2



**\*NOTES**

1. **SEAL COAT:** After completion of the mix the Seal Coat shall be applied when directed by 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. per sq. yd. for slag or \_\_\_\_\_ gal. per 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.



PLAN NO.  
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## SHOULDER DATA

PART	ROUTE	LOG POINT TO LOG POINT	LENGTH		TYPICAL	EXISTING TYPE - WIDTH(ft.)								AREA SQ. YDS.	407		405		408	409		617		617	NOTES						
						MILES	LIN. FT.	A				B				TACK	MIX	CHOKE	PRIME	SEAL		Shoulder Preparation	Compacted Aggregate			Water					
			TYPE	WIDTH				TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH		Bit. Matl.					Cover Aggr.	Bit. Matl.						Mix Aggr.	Aggr.	Bit. Matl.	Bit. Matl.	Aggr.
1	252	0.93 - 5.18B	4.25	22,440	1	617	2	617	2																						
		5.19A- 7.80	2.61	13,781	1	617	2	617	2																						
		Total Part 1	6.86	36,221																	16,098	1,342	32								
2	252	0.00 - 5.43	5.43	28,670	1	617	2	617	2																						
		Total Part 2	5.43	28,670																	12,742	1,062	25								

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 and paved mailbox approaches shall be resurfaced as directed by the Engineer. Care shall be taken to eliminate water pockets in curbed sections.

PAVEMENT CONTROL:

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

Special attention shall be given to superelevated curves. The superelevation shall be maintained and/or restored, if necessary, as directed by the Engineer.

BUTT JOINTS:

Butt joints shall not be cut and left open to traffic for a time period longer than one (1) day. If cut is not paved within one (1) day, it shall be filled in with a temporary asphalt concrete wedge, of sufficient length as directed by the Engineer.

Construction "Bump" signs (OW-62 and OW-143) shall be erected and maintained during the period that the cut for the butt joint is left open.

ITEM 404:

In addition to Item 404.12, the surface of feathered areas shall be uniformly coated with a 6" wide band of A.C. at the junction with the existing pavement, to be included within the cost of Item 404.

Under Item 401.15 (all cold joints on surface courses) shall be sealed by coating the vertical face. The coating of the finished surface with A.C., 6" wide will not be allowed.

GENERAL NOTES

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PLAN NO.  
60

BERM AND BASE WIDENING AT INTERSECTIONS AND DRIVES:

Pavement and berm quantities are calculated through all intersections and drives. Any portion may be non-performed if so directed by the Engineer.

TRENCH FOR WIDENING:

Trench excavation for base and berm widening shall be performed only on one side of the pavement at a time. The open trench shall be adequately maintained and protected at all times with drums or barricades, with Type "C" steady burn lights attached after working hours.

Placement of proposed base material shall follow as closely as possible behind the excavation operation. The length of widening trench which is open at any one time shall be held to a minimum and shall at all times be subject to approval by the Engineer.

TACK MATERIAL:

The amount of tack material required to coat the existing pavement edges prior to 301 or 402 operations shall be included in the Unit Price Bid for Item 402, Asphalt Concrete or Item 301, Bituminous Aggregate Base.

BASE AND BERM WIDENING:

The Cubic Yard of asphalt concrete shall be paid by ticket weight conversion, within a tolerance of plus or minus 5% of the required calculated weight per unit of area, as per 401.16. The above final quantity shall be calculated within the tolerance on a daily basis.

CRACK SEALING:

All open cracks on the existing Asphalt Concrete Pavement shall be cleaned and sealed. This work shall commence just prior to the application of the 407 Tack

Coat for Resurfacing.

The cracks shall be cleaned by forced air using a minimum of 100 P.S.I. air pressure to remove all loose material from the cracks. Immediately after cleaning, the cracks shall be sealed using AC-20. The Joint Sealer shall be protected from traffic by methods approved by the Engineer on the project.

Payment for all of the above shall be included in the Unit Price Bid per gallon for Item Special, Crack Sealing, as per plan. The following estimated quantity is provided in the Summary to be used as directed by the Engineer on the project.

ITEM SPECIAL, CRACK SEALING:

6,150 GALLONS

ITEM 202, RAISED PAVEMENT MARKERS REMOVED FOR STORAGE, AS PER PLAN:

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 tacked and 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.



ITEM SPECIAL, 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 exhibiting 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 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 Cu Yd., by ticket weight conversion, Item Special, Pavement Repair.

ITEM SPECIAL, PAVEMENT REPAIR:

125 CUBIC YARDS

ITEM 604, CASTINGS ADJUSTED TO GRADE:

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

Under Item 604.03, Adjustment 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.

ITEM SPECIAL, PAVEMENT PLANING, BITUMINOUS WITHOUT HEATING:

Planing is to be performed as directed and in areas designated by the Engineer. Removal of existing pavement surface may be required to eliminate adverse surface distortion which in the judgement of the Engineer cannot be satisfactorily corrected in the paving courses.

These areas may include material displaced by rutting or shoving, asphalt surface patches, concrete patches and transverse bumps at joints or joints with structures, adjoining pavements, railroads or castings, ect.

# BRIDGE DECK TREATMENT

PLAN NO. **60**

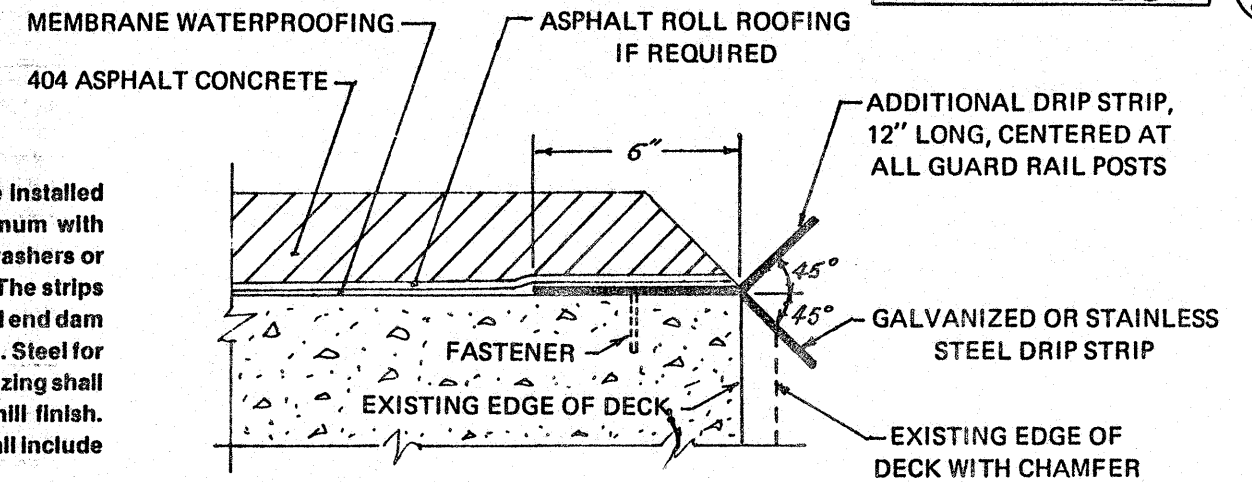
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**PROTECTIVE COURSE FOR MEMBRANE WATERPROOFING**

**MEMBRANE WATERPROOFING, Sheet Type 1:** A minimum of 1-1/2 inches of 404 Asphalt Concrete shall be placed over the membrane.

**MEMBRANE WATERPROOFING:** A minimum of 2-1/2 inches of 404 Asphalt Concrete shall be placed over the membrane.

**DRIP STRIP:** Prior to applying deck membrane waterproofing, a bent drip strip shall be installed along the edges of the deck as shown. The strips shall be fastened at 1'-6" c/c maximum with 1-1/4" x 5/32" x 1/4" (Length x Shank diameter x Head diameter) flat head drive pins and washers or No. 10 galvanized screws and expansion anchors, subject to the approval of the Engineer. The strips shall be placed the full length of the deck, ending at the face of the abutment wingwall or steel end dam angle. Where splices are required a 3" (Min.) lap shall be used with a fastener through the lap. Steel for galvanized strips shall be 8" x 0.105" and shall meet the requirements of ASTM A568. Galvanizing shall be in accordance with 711.02. Stainless steel shall be 20 gauge ASTM A167, Type 304, mill finish. Payment shall be at the contract price bid for Item Special, Sq. Ft., Steel Drip Strip, which shall include all materials, labor, tools and incidentals necessary to complete item.



**TYP. SEC. DRIP STRIP**

**BRIDGE DECK DATA**

PART	COUNTY, ROUTE, BRIDGE NO.	LENGTH (BRIDGE LIMITS)	WIDTH	BRIDGE DECK AREA	202 WEARING COURSE REMOVED DEPTH	BRIDGE DECK REPAIR			SPECIAL				516 VERT. EXT. OF STR. EXP. JOINTS as per Plan	ASPHALT CONCRETE		Existing Wearing Surface	SPECIAL Pavement Planing, Bit. Without Heat	Pavement Width	
						Superplasticized Dense Concrete (See Proposal Note)			PATCHING		STEEL DRIP STRIP	DECK WATERPROOFING		THICK INS.	404				
						3 1/2" THICK OVERLAY	VARIABLE THICKNESS OVERLAY	FULL-DEPTH REPAIR	TYPE	S.Y.		S.F.							MEMBRANE WATERPROOFING SHEET TYPE 1
/	Med-252-02.19	54.0	23.1	139											Asphalt	583 *	20		
	Med-252-02.71	17.3	26.5	51											Asphalt	495 *	20		
	Med-252-03.25	26.3	26.3	77											Asphalt	521 *	20		
	Med-252-03.95	174.0	32.0	619		619	30	1					72		Asphalt	1063**	20		
	Med-252-05.99	14.3	26.6	42											Asphalt	486 *	20		
	Med-252-07.24	17.3	26.6	51											Asphalt	495 *	20		
	Med-252-07.64	15.3	23.1	39											Asphalt	483 *	20		
	Med-252-07.69	39.0	23.1	100											Asphalt	544 *	20		
/	TOTAL					619	30	1					72			4670			

\* Plane a maximum of 2" from the bridge full width and 100' on each approach the same time the bridge is planed. Remove all dirt and loose material. Fill any large holes with Item 404, Asphalt Concrete before placing Rubberized Seal. Payment for all of the above shall be included in the cost of Pavement Planing, Bituminous Without Heating

\*\* Plane 100' on each approach the same time the bridge is planed. See Sheet No. 19 for Traffic Control Details.



VERIFICATION:

Details and dimensions shown on these plans pertaining to the existing structure have been obtained from plans of the existing structure and/or from field observation and measurements. Consequently, they are indicative of the existing structure and the proposed work but they shall be considered tentative and approximate. The original construction plans of the existing bridge are available upon request at the District 3 office of the Ohio Department of Transportation, Ashland, Ohio.

Contract bid prices shall be based upon actual details and dimensions which have been verified by the Contractor in the field.

WORK LIMITATIONS:

No concrete deck overlays shall be placed before April 15.

The Contractor shall schedule the work so that all deck overlays are placed before October 15. If for some unforeseen circumstances the deck overlays or portions of deck overlay are not placed by October 15, regardless of the work remaining, the full depth repairs shall be completed as per 511 and the unfinished deck shall be resurfaced with Item 404, Asphalt Concrete and opened to traffic. The Contractor shall place and maintain at his expense the asphalt wearing surface until removed at his expense the following spring when the deck overlay can be placed after April 15.

PLACING ASPHALT CONCRETE FEATHERING ON APPROACHES TO BRIDGES:

Special care shall be taken, when placing the asphalt concrete feathering, to effect a smooth transition from the existing approach pavement to the bridge deck. The Contractor's attention is called to Section 404.16 of the CMS and to Standard Drawing BP-5, Dated 7-16-81 for required tolerances.

TEMPORARY WEDGE:

After the concrete overlay has been placed and before the bridge is opened to traffic a temporary wedge will be installed to maintain traffic if the permanent asphalt is not in place. The temporary wedge will be 404 Asphalt Concrete built as per Standard Drawing BP-5, except no tack coat will be required. The temporary wedge will be feathered at one inch per twenty-five feet or as directed by the Engineer. The temporary wedge will be completely removed just before any new roadway asphalt is installed and in no case shall traffic be allowed to cross an end dam without an approved temporary wedge.

Payment for all of the above shall be included in the lump sum price bid for Item 614, Maintaining Traffic, which shall include all labor, equipment, materials and incidentals necessary to complete the above work.

ITEM SPECIAL, PAVEMENT PLANING, BITUMINOUS WITHOUT HEATING:

All asphalt, seals, and waterproofing shall be planed from the bridge before any deck overlay work may begin. The concrete deck shall not be scarified at the same time as the asphalt is planed. The asphalt on the bridge shall not be planed until the Contractor is ready to begin deck work on the bridge within three (3) days.

For all pavement planing requirements see General Note on Sheet No. 10.

Payment for all the above shall be included in the unit price bid per square yard for Item Special, Pavement Planing, Bituminous Without Heating, which shall include all labor, equipment, materials and incidentals necessary to complete the above work.



## GENERAL NOTES

PLAN NO.  
60GUARDRAIL REPLACEMENT:

No hazard shall be left unprotected except for the actual time necessary to remove, grade and reinstall guardrail in a continuous operation. The removal of all guardrail shall at all times be as directed by the Engineer. No guardrail shall be removed until the replacement material is on the site, ready for installation. Failure to comply with this requirement shall be deemed sufficient cause to order work suspended on this project until such time that the Engineer is assured of said compliance.

ITEM 202, GUARDRAIL REMOVED FOR REUSE OR STORAGE AS PER PLAN:

Guardrail designated for removal shall be carefully dismantled as necessary in such a manner so as not to damage the posts or rail. Rail elements shall be stored for either reuse by the Contractor on the project or shall become the property of the State of Ohio. All post bolts, splice bolts and miscellaneous hardware removed and all rail elements not reused shall become the property of the State of Ohio. The rail elements determined by the Engineer to be in the better condition shall be those reused.

Payment for all of the above shall be at the unit price bid for Item 202, Guardrail Removed for Reuse or Storage, as per Plan, measured by the linear foot center to center of posts, including the length across the bridges and shall include all labor, equipment, materials and incidentals necessary to complete the above work.

ITEM 517, THRIE-BEAM RAIL ATTACHED TO CONCRETE BRIDGE RAILING, AS PER PLAN:

The thrie-beam rail shall be attached to the existing concrete bridge railing as per details on Sheet No. 17.

This item shall include all costs for drilling the holes in the existing concrete posts and rails, for furnishing all bolts, washers, nuts and miscellaneous hardware needed to attach the thrie-beam rail elements onto the inside face of the concrete bridge railing.

The pay length for this item shall be measured center to center of the first guardrail post off each end of the bridge.

Payment for all of the above shall be at the unit price bid per linear foot of Item 517, Thrie-Beam Rail Attached to Concrete Bridge Railing, as per Plan, which shall include all labor, equipment, materials and incidentals necessary to complete the above work.

ITEM 606, GUARDRAIL THRIE-BEAM TRANSITION SECTION, AS PER PLAN:

This item shall be for the transition from the thrie-beam bridge railing to the Standard Type 5 Guardrail as per the details on Sheet No. 17. The transition section shall be mounted as per Standard Drawing GR-2B. This item shall also include all costs of the heavier nine (9) foot long posts, the concrete encasement and the curb wheel guide.

The pay length for this item shall be measured center to center of the posts.

Payment for all of the above shall be at the unit price bid per linear foot for Item 606, Guardrail Thrie-Beam Transition Section, as per Plan which shall include all labor, equipment, materials and incidentals necessary to complete the above work.

ITEM SPECIAL, RUBBERIZED SEAL:

THE RUBBERIZED SEAL SHALL EXTEND ONE FOOT BEYOND THE BRIDGE LIMITS, APPLIED AT 0.75 GAL./SQ. YD.

THE RUBBERIZED SEAL SHALL BE BITUMINOUS MATERIAL AS PER 702.01 (AC-5 OR AC-10) WITH THE ADDITION OF GRANULATED CRUMB RUBBER. THE GRANULATED CRUMB RUBBER SHALL BE 100 PERCENT VULCANIZED AND MEET THE FOLLOWING GRANULATION REQUIREMENTS:

<u>SIEVE SIZE</u>	<u>PERCENT PASSING</u>
NO. 8	100
NO. 10	95-100
NO. 30	0-10
NO. 40	0-4

THE SIEVES SHALL COMPLY WITH THE REQUIREMENTS OF AASHTO M92 (ASTM E11).

THE GRANULATED RUBBER IRRESPECTIVE OF DIAMETER, SHALL NOT BE GREATER THAN 1/2 INCH IN LENGTH AND CONTAIN NO MORE THAN 2 PERCENT MOISTURE.

THE SPECIFIC GRAVITY OF THE RUBBER MATERIAL SHALL BE  $1.15 \pm 0.02$  AND SHALL BE FREE OF EXCESS FABRIC (0.5 PERCENT BY WEIGHT), WIRE OR OTHER CONTAMINATING MATERIALS, EXCEPT THAT UP TO 4 PERCENT CALCIUM CARBONATE MAY BE INCLUDED TO PREVENT THE RUBBER PARTICLES FROM STICKING TOGETHER.

GRANULATED CRUMB RUBBER SHALL BE ACCEPTED BY CERTIFICATION FROM THE RUBBER SUPPLIER IN ACCORDANCE WITH THE REQUIREMENTS OF 101.061.

ASPHALT-RUBBER MATERIAL MIXING: THE PERCENTAGE OF CRUMB VULCANIZED RUBBER SHALL BE  $25 \pm 4$  PERCENT BY WEIGHT OF THE ASPHALT CEMENT.

AS AN ALTERNATIVE TO THE ABOVE, THE CRUMB RUBBER MAY BE PREMIXED AS PER ASTM-D-3405.

THE TEMPERATURE OF THE ASPHALT SHALL BE BETWEEN 350F. AND 425F. BEFORE ADDITION OF THE CRUMB VULCANIZED RUBBER. THE MATERIALS SHALL BE CAREFULLY COMBINED AND MIXED AND REACTED FOR A PERIOD OF TIME. THE TEMPERATURE OF THE ASPHALT RUBBER MIXTURE SHALL BE ABOVE 325F. DURING THE REACTION PERIOD.

IF A JOB DELAY RESULTS AFTER THE FULL REACTION HAS OCCURED, THE ASPHALT-RUBBER MATERIAL MAY BE ALLOWED TO COOL AND BE SLOWLY REHEATED TO AN ACCEPTABLE SPRAYING TEMPERATURE JUST PRIOR TO APPLICATION. HOWEVER, BECAUSE OF THE POLYMER REVERSION THAT CAN OCCUR WHEN CRUMB RUBBER IS HELD AT PROLONGED HIGH TEMPERATURES, THE ASPHALT-RUBBER MATERIAL SHALL NOT BE REHEATED TO TEMPERATURES ABOVE 325F.

THE ASPHALT-RUBBER MIXING EQUIPMENT SHALL BE A HOT OIL, DOUBLE BOILER TAR KETTLE TYPE WITH MECHANICAL AGITATION CAPABLE OF COMBINING THE ASPHALT AND RUBBER INTO A HOMOGENIZED MIX.

IMMEDIATELY AFTER THE ASPHALT-RUBBER HAS BEEN SPRAYED ON THE BRIDGE, LIMESTONE (703.05 QUALITY) SHALL BE APPLIED AT THE RATE OF 40 LBS./SQ. YD. WHEN PLACED, THE TEMPERATURE OF THE LIMESTONE SHALL BE ABOVE 275F. THE LIMESTONE SHALL BE NO.8 BEFORE HEATING IN THE ASPHALT PLANT. THE LIMESTONE SHALL BE RELATIVELY DUST FREE.

ROLLERS SHALL BE AS PER 409.05 AND SURFACE PREPARATION AS PER 409.06.

PAYMENT FOR ALL OF THE ABOVE SHALL BE INCLUDED IN THE UNIT PRICE BID PER SQUARE YARD FOR ITEM SPECIAL RUBBERIZED SEAL WHICH SHALL INCLUDE ALL LABOR, EQUIPMENT, MATERIALS, AND INCIDENTALS NECESSARY TO COMPLETE THE ABOVE WORK.

ITEM 516 VERTICAL EXTENSION OF STRUCTURAL EXPANSION JOINTS,  
AS PER PLAN

PLAN NO.  
60

This item shall include all the work required to remove portions of structures in curbs, remove existing verticle extension bars, as required, trim existing angles, provide all anchors, studs, steel extrusions, steel bars, neoprene extrusion, preformed expansion joint filler and replacement concrete in accordance with details on sheet No's. 10116.

The steel extrusion shall be either type "E" with S300E neoprene extrusion or type "A" with S 300 E neoprene extrusion as manufactured by Watson Bowman Associated, Inc., 1280 Niagra Street, Buffalo, New York, 14213.

The steel extrusion shall be provided in maximum lengths possible to allow for traffic maintenance and shall be welded together to form a watertight joint. The neoprene extrusion shall be one continuous piece. The neoprene shall not be installed until all other work is complete upon the structure. An adhesive shall be used to facilitate placement of the neoprene extrusion. The contractor shall verify all dimension prior to fabrication.

PHYSICAL PROPERTIES:

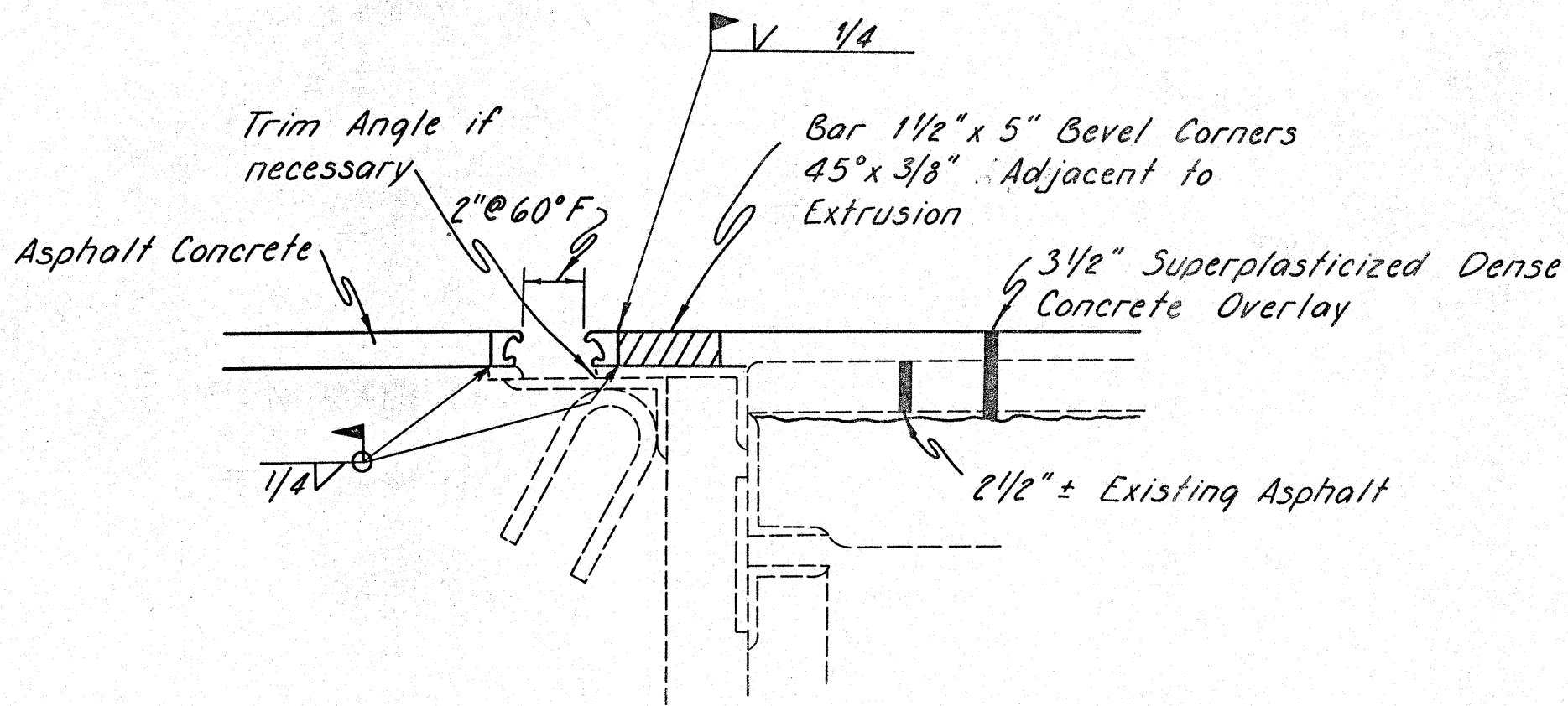
- A. The steel extrusion shall conform to ASTM A242, A36, or A588.
- B. Adhesives shall be one-part moisture curing polyurethane and hydro-carbon mixtures as distributed under the trade name Bonalastic by Watson Bowman Associates, Inc., of Buffalo, New York; or an approved equivalent.
- C. The neoprene extrusion shall conform to the physical properties specified for AASHO M220 except for the recovery test.
- D. Set secrws for fastening of split extrusion shall be stainless steel

Alternate designed - These details and provisions are based on Wabo-Maurer Str seal by Watson Bowman Associates, Inc., of Buffalo, New York.

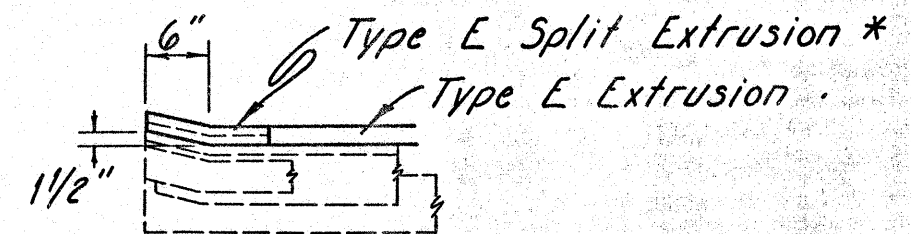
Acme Type "E" extrusion with AS-3LP seal or Acme Type "A" extrusion with AS-300 seal, by Acme Highway Products, Inc., 33 Chandler Street, Buffalo, New York, will be accepted as an alternate. The D.S. Brown Company, P.O. Fox 158, North Baltimore, Ohio 45872, will also be accepted as an alternate. The steel extrusion shall be Type "SS-E" with SS 300. The contractor shall furnish material specification, certified material test results, certification that the product meets specifications, appropriate installation procedures necessary to accommodate the alternate design.

The approval of an alternate joint seal design and the issuance of revised project plans shall be based on the understanding that such project modifications will be done without cost to the State.

Payment for all of the above shall be at the unit price bid per lineal foot for Item 516, Vertical Extention of Structural Expansion Joints, as per plan, which shall include all the labor, equipment, materials and incidentals necessary to complete the above work, for all the various modifications of the Type "A", Type "E", and Type "SS-E" extrusions as detailed.

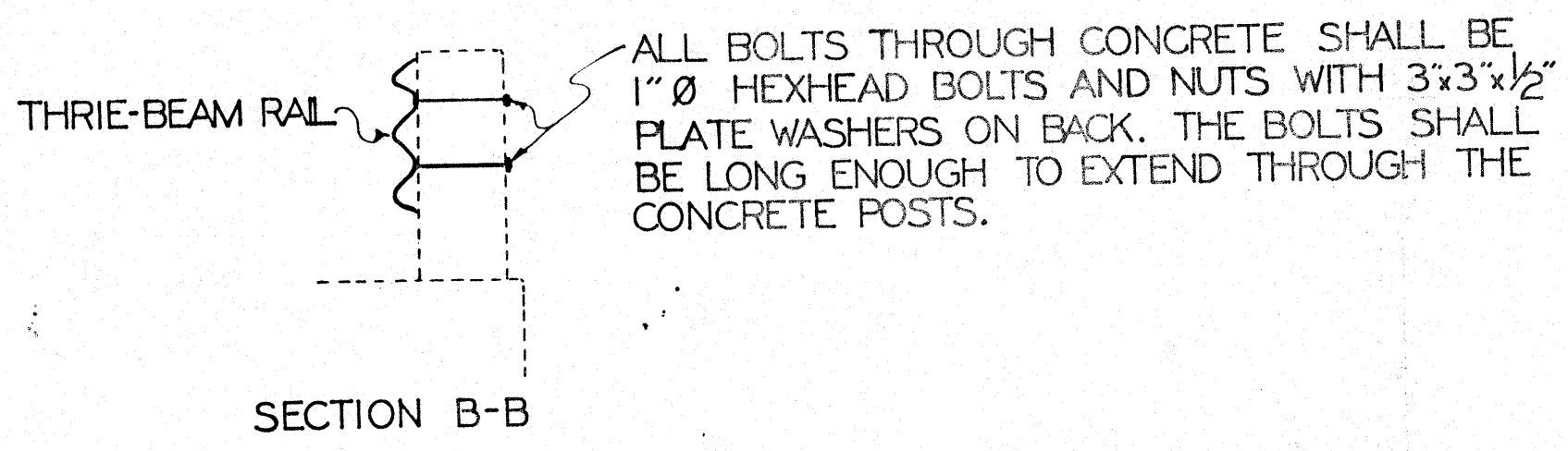
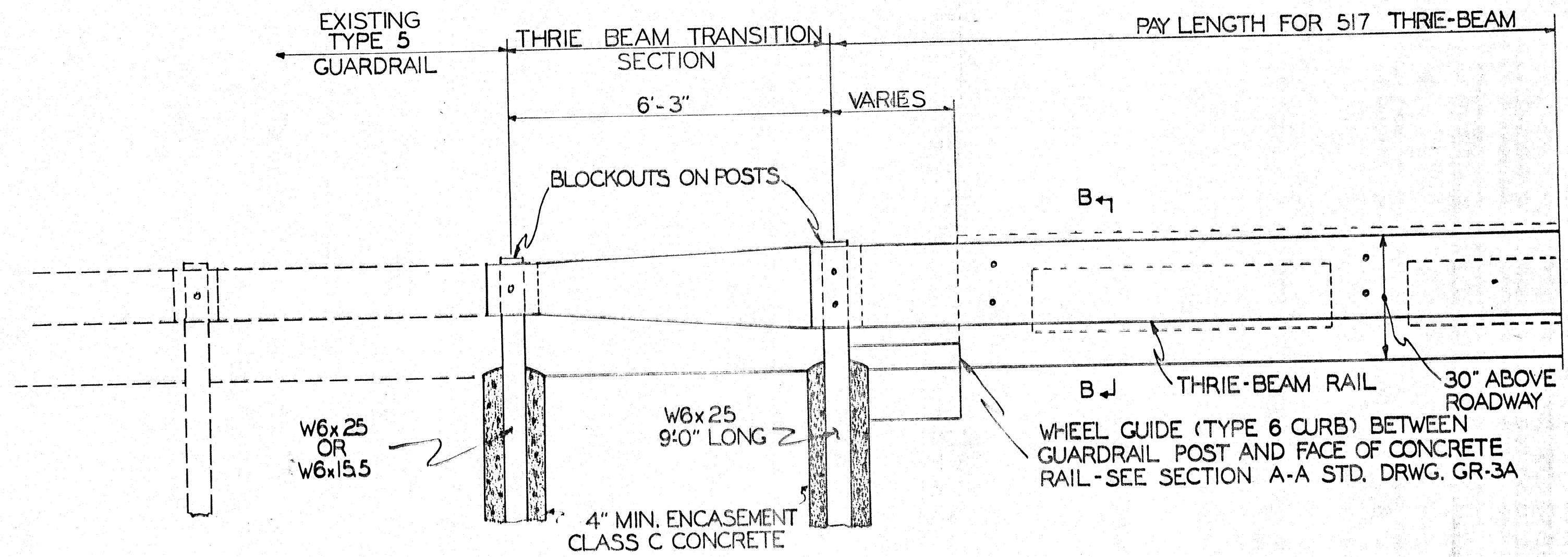


\* Contractor shall Split Extrusions as shown at his Option (at no additional cost to the State) if Required to Facilitate Placement of Strip Seal.



MED - 252 - 0395  
EXPANSION JOINT DETAILS



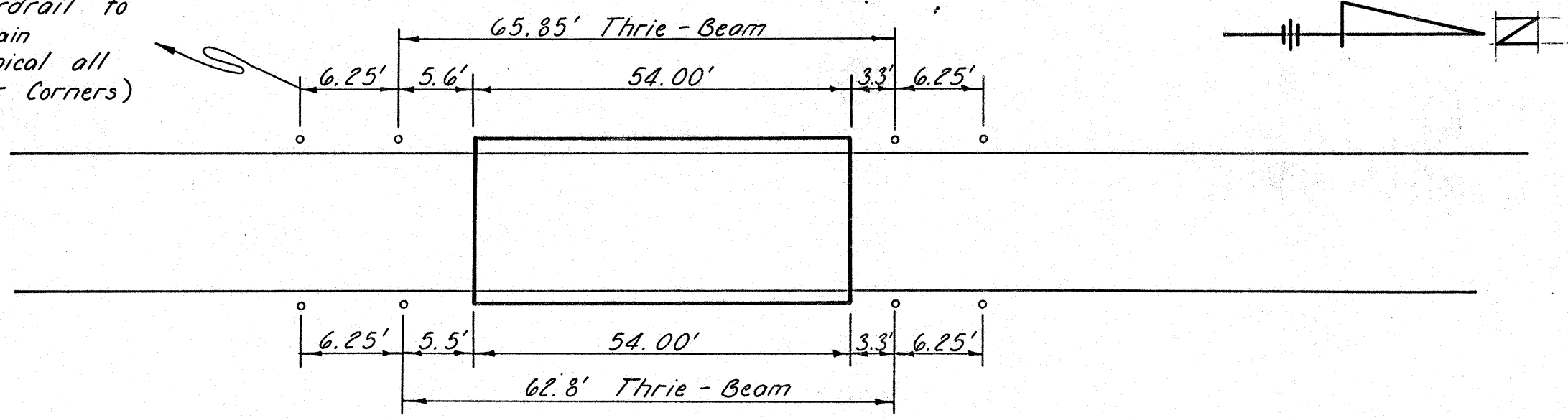


MED - 252 - 0219  
 TYPICAL DETAILS FOR ATTACHING  
 THRIE-BEAM RAIL TO INSIDE FACE OF  
 EXISTING CONCRETE BRIDGE RAILING

# ESTIMATED QUANTITIES

Bridge Number	Side	202	517	606						
		Guardrail Removed for Reuse or Storage, As Per Plan	Thrie-Beam Rail attached to Concrete Bridge Railing As Per Plan	Guardrail Thrie-Beam Transition Section, As Per Plan						
		Lin. Ft.	Lin. Ft.	Lin. Ft.						
MED - 252 - 0219	L	50	65.85	12.50						
	R	50	62.80	12.50						
<i>Total</i>		100	128.65	25.00						

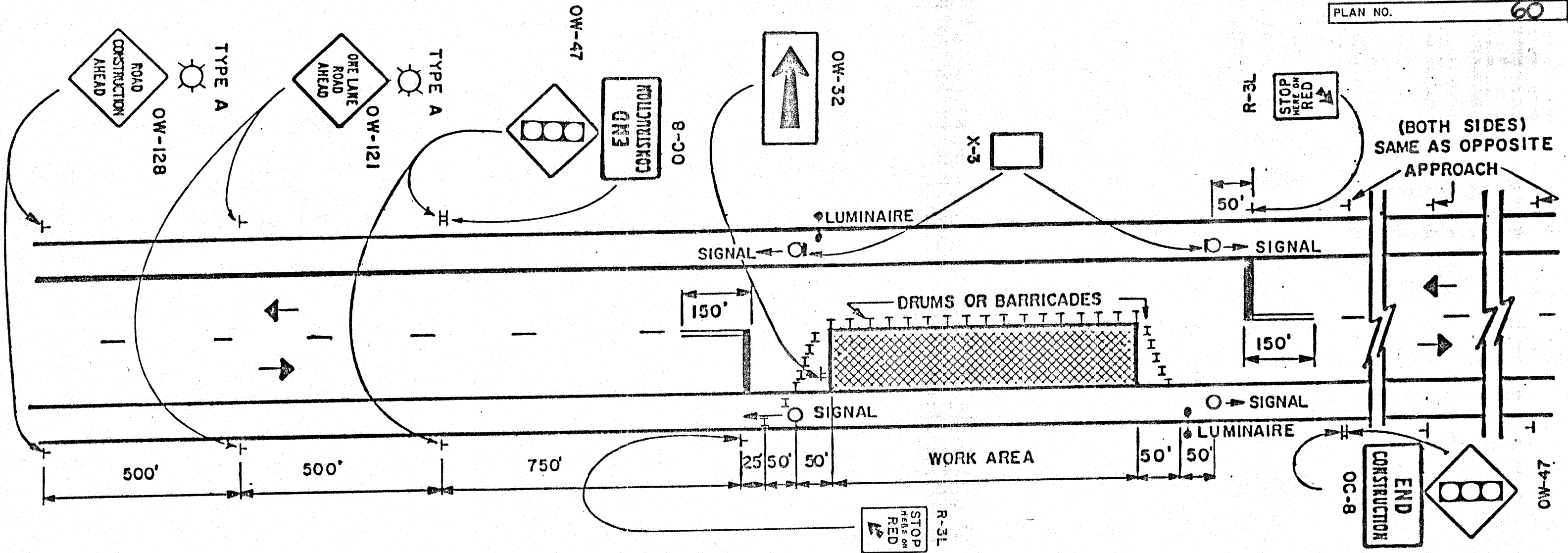
Existing Type 5  
Guardrail to  
remain  
(Typical all  
Four Corners)



FED. RD. DIVISION	STATE	PROJECT	
5	OHIO		

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PLAN NO. 60



**GENERAL NOTES:**

1. The maximum length of work area for one way traffic signal control is determined by the capacity required to handle the peak hour demand. Practical maximum length is 400 feet. Signal timing changes shall be approved by the Engineer.
2. Signals shall be installed and operated in accordance with the requirements of Part 6 of the Ohio Manual of Uniform Traffic Control Devices.
3. Drums or barricades shall be spaced at 50' to 60' center to center within the work area. Drums or barricades on the advance and return tapers shall be spaced at 10' center to center.
4. Adequate area illumination to clearly identify both ends of the work area at night for long term operations shall be provided by using 150 watt minimum high pressure sodium luminaires

or 250 watt minimum mercury luminaires. Luminaires shall be located adjacent to one signal for each direction of traffic. The mounting height for temporary luminaires shall be a minimum of 27 feet above the pavement and the overhead conductor clearance shall be a minimum of 15 feet above the pavement. Lighting material shall comply with Specification 625.

5. Twenty-four (24) inch stop lines shall be installed and where no passing lines are not already in place they shall be added. Removable pavement markings may be used. Existing conflicting pavement markings and raised pavement marker reflectors between the work area and the stop line shall be removed. After completion of the work the stop lines and added no passing lines shall be removed in accordance with 621.134 and the raised pavement marker reflectors shall be replaced in kind.

6. The Type A flashing barricade warning lights shown on the "Road Construction Ahead" and the "One Lane Road Ahead" signs are required whenever a night lane closure is necessary.
7. Type C steady burning barricade warning lights shall be erected on drums or barricades for night lane closures. The maximum spacing shall be identical to the channelizing device spacing requirements described in Note 3.
8. The horizontal or vertical alignment of the roadway may require adjustments in the location of the advance warning signs (the distances shown for advance warning sign spacings are minimums). The vertical alignment of the roadway may require adjustments in the height of the signal heads within the range specified in the Typical Pole Supported Signal Detail.

9. All traffic signals and equipment used in this traffic signal installation, such as a signal cable and signal heads, shall be in conformance with Specifications 632 and 732. However, the performance test provision noted in Specification 632.27, paragraph 6 and the working drawing requirements of 632.03 are waived. The controller, flashers, load switches, conflict monitor and other controller accessories shall comply with Supplemental Specifications 861 and 961, except that the requirements of 861.03 and 861.05 are waived, as well as the requirements of 961.01 for expandible three dial units and twelve circuits for pretimed controllers. Used equipment meeting current ODOT Specifications is acceptable.

Conflict monitors shall be furnished at all locations unless an electromechanical pretimed controller with cam shaft is provided.

10. When the signal is changed to a flash condition either manually or automatically, red shall be flashed to both approaches.

OHIO DEPARTMENT OF TRANSPORTATION

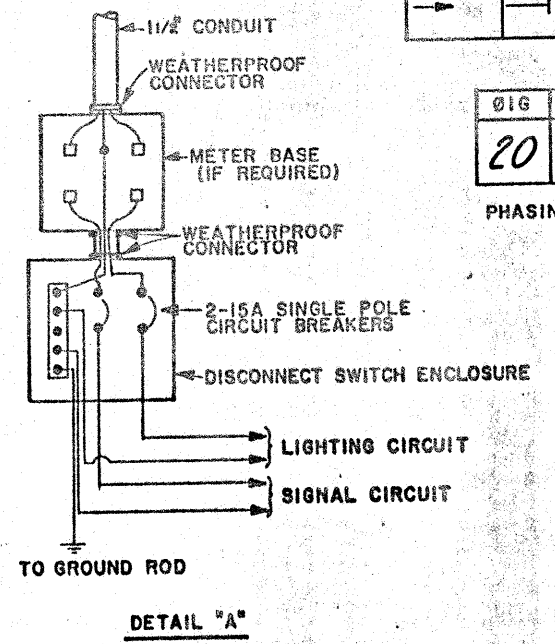
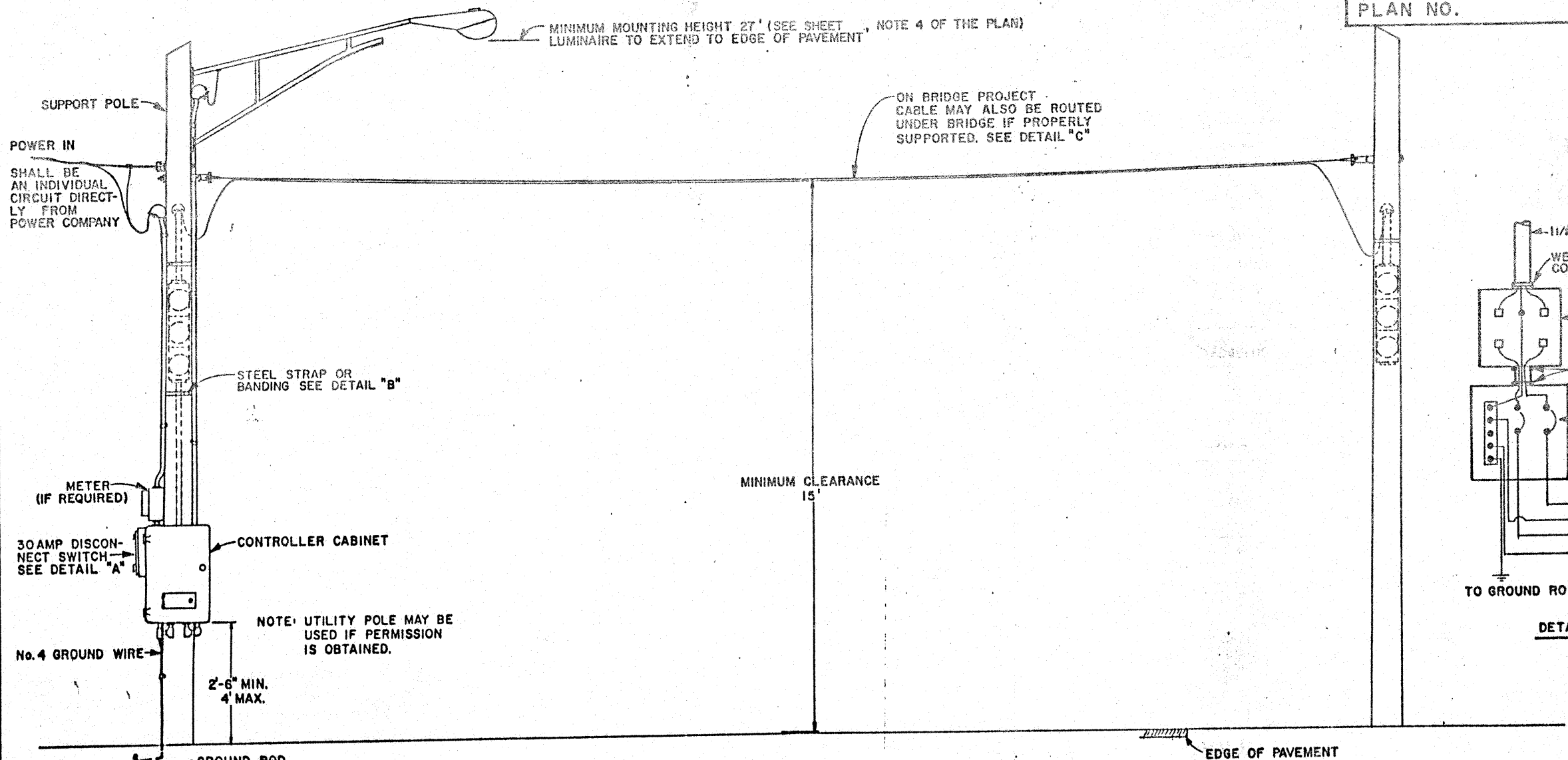
**SIGNALIZED CLOSING  
1 LANE OF A 2 LANE  
HIGHWAY**

DATE  
12/02  
3/81  
4/85

(A)

DR.

CK.

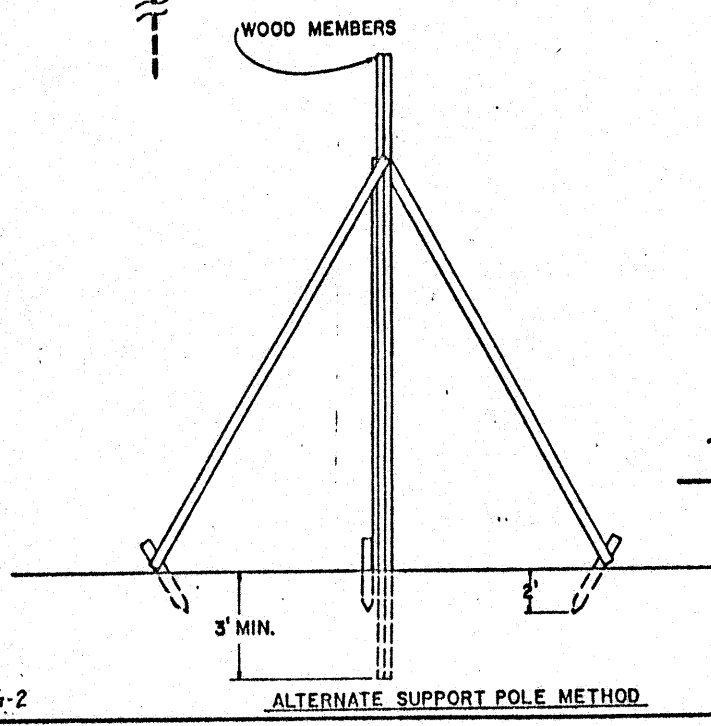
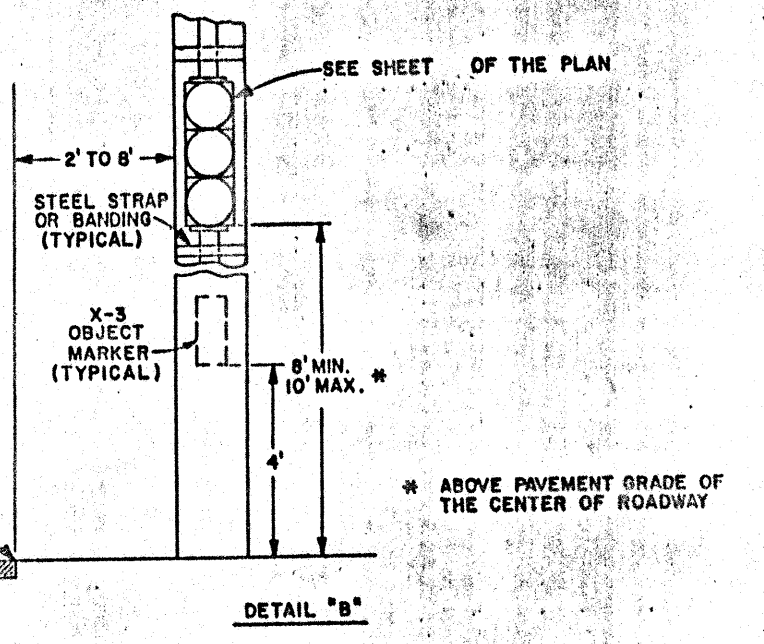
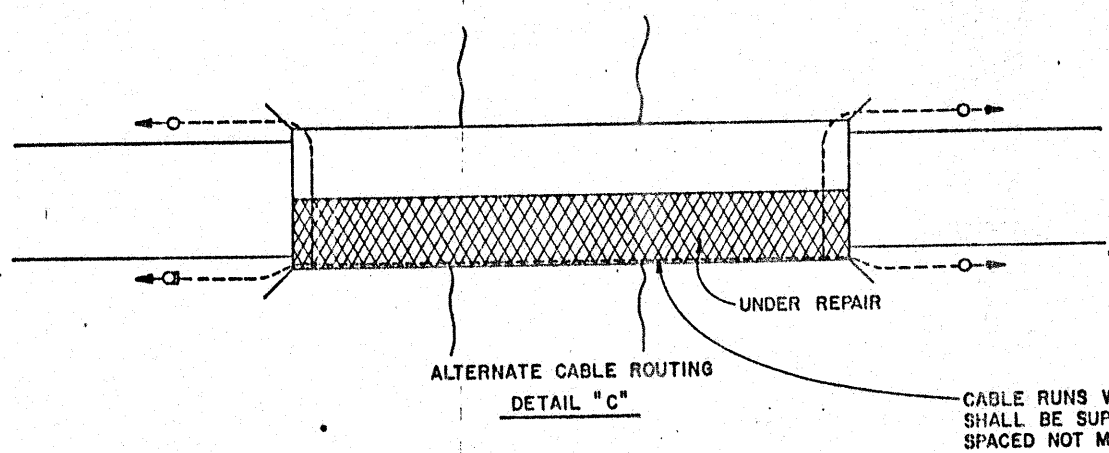


WORK AREA

MAXIMUM LENGTH 400 FEET (SEE SHEET , NOTE 1 OF THE PLAN)

Ø1G	Ø1Y	ALL RED	Ø2G	Ø2Y	ALL RED
20	5	10	20	5	10

PHASING AND INITIAL TIMING SETTINGS



TYPICAL SERVICE, LUMINAIRE, SIGNAL HEAD AND CONTROLLER CABINET INSTALLATION

OHIO DEPARTMENT OF TRANSPORTATION	
SIGNALIZED CLOSING 1 LANE OF A 2 LANE HIGHWAY	DATE 4/85
DR.	CK.

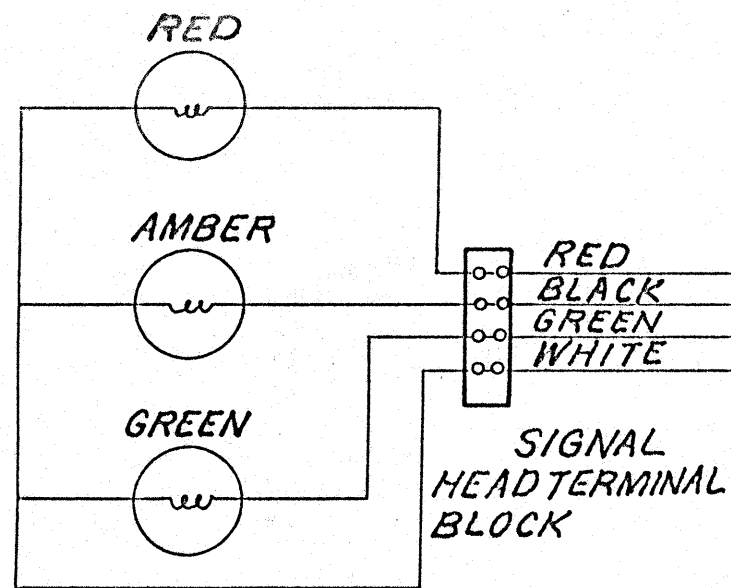


FED. RD. DIVISION	STATE	PROJECT	
5	OHIO		

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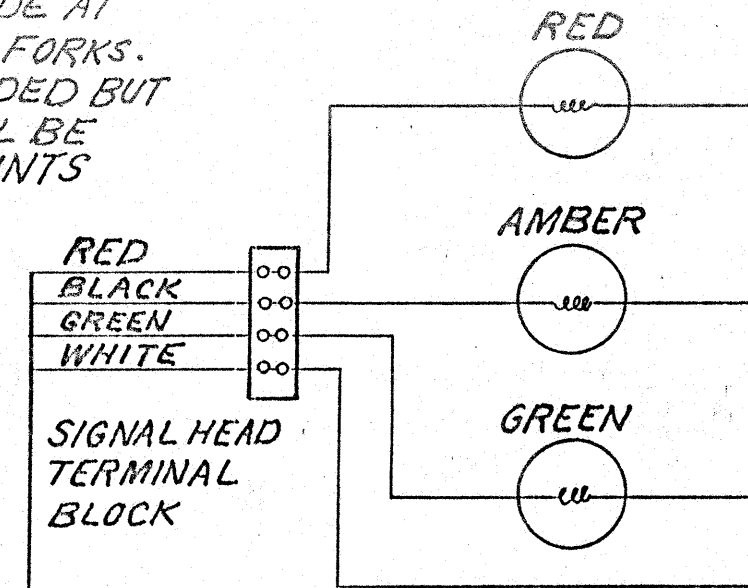
PLAN NO.

CABLE SHALL BE 4-CONDUCTOR No. 14 COPPER SIGNAL CABLE, COLOR CODED AND STRANDED. ALL ELECTRICAL CONNECTIONS TO BE MADE AT TERMINAL BLOCKS USING TERMINAL LOCK FORKS. SPLICES IN SIGNAL CABLE SHOULD BE AVOIDED BUT IF NECESSARY SPLICE KITS SHALL BE USED. ALL CONNECTIONS AT SPLICE POINTS SHALL BE SOLDERED.

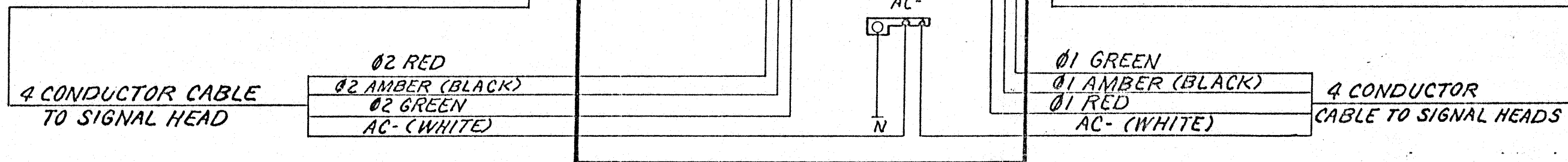


TYPICAL SIGNAL HEAD FOR 02

CABLE SHALL BE RUN INTO SIGNAL HEAD AND CONNECTIONS ARE TO BE MADE AT TERMINAL BLOCK. WHEN TWO 4-CONDUCTOR CABLES ARE USED AT FIRST HEAD FROM CONTROLLER BOTH CABLES SHALL BE CONNECTED AT TERMINAL BLOCK IN HEAD.



TYPICAL SIGNAL HEAD FOR 01



TYPICAL SIGNAL HEAD HOOK-UP

OHIO DEPARTMENT OF TRANSPORTATION	
SIGNALIZED CLOSING 1 LANE OF A 2 LANE HIGHWAY	DATE 4/85
(C)	
DR.	CK.

DATE		OHIO	22
BY		FHWA	30
DATE		REGION	5

# 614 WORK ZONE PAVEMENT MARKINGS

### GENERAL

THE CONTRACTOR SHALL FURNISH, INSTALL, MAINTAIN AND WHEN NECESSARY, REMOVE WORK ZONE RETROREFLECTIVE PAVEMENT MARKINGS ON EXISTING, RECONSTRUCTED, RESURFACED OR TEMPORARY ROADS WITHIN THE WORK LIMITS, IN ACCORDANCE WITH THE FOLLOWING REQUIREMENTS.

THE MARKINGS SHALL BE MAINTAINED IN GOOD CONDITION TO PROVIDE DAY AND NIGHT VISIBILITY. THE MARKINGS SHALL BE REPAIRED OR REPLACED AS DIRECTED BY THE ENGINEER TO MAINTAIN REQUIRED VISUAL EFFECTIVENESS AND NIGHT VISIBILITY AT NO ADDITIONAL COST TO THE STATE.

THE CONTRACTOR SHALL, IN ADVANCE OF ANY SECTION OF ROADWAY LACKING OMTCD FULL PATTERN STANDARD DIMENSION EDGE LINE OR CENTER LINE MARKINGS, ERECT A "NO EDGE LINES" (OW-167) SIGN OR "UNMARKED NO PASSING ZONES" (OW-168) SIGN OR BOTH AS MAY BE APPROPRIATE. THESE SIGNS SHALL BE IN PLACE PRIOR TO EXPOSING THE ROADWAY TO TRAFFIC. THESE SIGNS SHALL BE REPEATED EVERY 1 TO 2 MILES AND AT OTHER LOCATIONS AS NECESSARY. THESE SIGNS SHALL BE REMOVED WHEN THEY NO LONGER APPLY. THE COST FOR FURNISHING AND ERECTING AND SUBSEQUENTLY REMOVING THESE SIGNS SHALL BE INCLUDED IN 614 MAINTAINING TRAFFIC, UNLESS SPECIFICALLY ITEMIZED.

### TEMPORARY PAVEMENT MARKING MATERIALS

UNLESS OTHERWISE INDICATED ON THE PLANS, TEMPORARY PAVEMENT MARKINGS MAY BE EITHER 621.02 PAINT OR 947.03 TYPE B OR C PREFORMED MATERIAL.

#### PAINT

PAINTED MARKINGS SHALL BE IN ACCORDANCE WITH 621 EXCEPT THAT THE INCREASE OF 25 PERCENT IN THE APPLICATION RATE FOR NEW BITUMINOUS PAVEMENT AND PARAGRAPH 621.14 SHALL NOT APPLY.

#### TYPE B AND TYPE C PREFORMED MATERIAL

PREFORMED MATERIAL SHALL COMPLY WITH 947.03 EXCEPT THAT NO PREFORMED MATERIAL CONTAINING METAL SHALL BE PLACED ON ANY SURFACE UNLESS IT WILL BE REMOVED LATER BY THE CONTRACTOR. TEMPORARY PAVEMENT MARKINGS OF 947.03 PREFORMED MATERIAL SHALL BE REMOVED PRIOR TO PLACEMENT OF 621 OR 847 SURFACE COURSE MARKINGS AT THAT LOCATION. PREFORMED MATERIAL SHALL BE APPLIED IN ACCORDANCE WITH 847 EXCEPT AS MODIFIED HEREIN.

### PLACEMENT

TEMPORARY MARKINGS SHALL BE COMPLETE AND IN PLACE ON ALL PAVEMENT PRIOR TO EXPOSING IT TO TRAFFIC. WHEN TEMPORARY MARKINGS CONFLICT WITH THE TRAFFIC PATTERN, THEY SHALL BE REMOVED BY THE CONTRACTOR IN ACCORDANCE WITH 621.134.

### TEMPORARY MARKING CLASSES

#### CLASS I MARKINGS

CLASS I MARKINGS SHALL BE APPLIED TO THE FULL DIMENSIONS AS DEFINED IN 621 WITH THE FOLLOWING ADDITIONS OR EXCEPTIONS:

- 1) LANE LINES SHALL BE 4-INCHES IN WIDTH.
- 2) TRANSVERSE LINES SHALL BE 8-INCHES IN WIDTH.
- 3) STOP LINES SHALL BE 12-INCHES IN WIDTH.
- 4) CROSS WALK LINES SHALL BE 8-INCHES IN WIDTH.

### CLASS II MARKINGS

CLASS II MARKINGS (ABBREVIATED) SHALL BE DEFINED AS FOLLOWS:

CENTER LINES SHALL CONSIST OF SINGLE, YELLOW 4-INCH WIDE BY A MINIMUM OF 48-INCH LONG DASHES SPACED AT A MAXIMUM OF 40-FOOT INTERVALS.

LANE LINES SHALL CONSIST OF WHITE 4-INCH WIDE BY A MINIMUM OF 48-INCH LONG DASHES SPACED AT A MAXIMUM OF 40-FOOT INTERVALS.

GORE MARKINGS SHALL BE TWO CONTINUOUS, WHITE 4-INCH LINES PLACED AT THE THEORETICAL GORE OF AN EXIT RAMP OR DIVERGING ROADWAYS.

THE PAINT APPLICATION RATE SHALL BE NOT LESS THAN 1.6 GALLONS PER MILE FOR LANE LINE AND CENTER LINE AND 16 GALLONS PER MILE FOR GORE MARKINGS.

### CONFLICTING EXISTING MARKINGS

THE CONTRACTOR SHALL, PRIOR TO PLACING TEMPORARY MARKINGS, REMOVE ALL CONFLICTING EXISTING MARKINGS VISIBLE TO THE TRAVELING PUBLIC DURING DAYLIGHT OR NIGHTTIME HOURS IN ACCORDANCE WITH 621.134. THE COST FOR REMOVAL OF CONFLICTING MARKINGS SHALL BE INCLUDED IN 614 MAINTAINING TRAFFIC UNLESS SPECIFICALLY ITEMIZED.

THE CONTRACTOR SHALL ALSO REMOVE THE PRISMATIC RETRO-REFLECTOR WITHIN ANY RAISED PAVEMENT MARKER (RPM) WHICH IS IN CONFLICT WITH THE TEMPORARY PAVEMENT MARKINGS. WHEN THE TEMPORARY PAVEMENT MARKINGS ARE REMOVED AND THE RPM IS NO LONGER IN CONFLICT, THE CONTRACTOR SHALL THOROUGHLY CLEAN THE RECESSED REFLECTOR ATTACHMENT AREA OF THE CASTING AND INSTALL A NEW PRISMATIC RETRO-REFLECTOR OF THE SAME KIND AND COLOR. THE COST FOR THIS WORK SHALL BE INCIDENTAL TO THE VARIOUS PAY ITEMS.

### INTERIM MARKINGS

WITHIN 21 CALENDAR DAYS AFTER OPENING ANY LENGTH OF PAVEMENT TO TRAFFIC, THE 621 OR 847 PAVEMENT MARKINGS CALLED FOR IN THE PLANS OR EQUIVALENT 614 CLASS I, PAINT MARKINGS SHALL BE APPLIED. THE CONTRACTOR SHALL FURNISH ALL LABOR, EQUIPMENT, AND MATERIAL NECESSARY TO PLACE AND MAINTAIN 614 CLASS I PAINT MARKINGS AS PART OF THE LUMP SUM BID FOR 614 MAINTAINING TRAFFIC.

FOR EACH CALENDAR DAY BEYOND 21 DAYS THAT THIS WORK SHALL REMAIN UNCOMPLETED, THE PROVISIONS OF 108.07 WILL BE INVOKED, EXCEPT THAT BETWEEN NOVEMBER 15 AND APRIL 15 WEATHER CONDITIONS SHALL NOT BE AN ACCEPTABLE REASON FOR EXTENSION.

### METHOD OF MEASUREMENT

TEMPORARY PAVEMENT MARKINGS WILL BE MEASURED COMPLETE IN PLACE, BY CLASS AND MATERIAL, IN THE UNITS DESIGNATED. LINE QUANTITIES WILL BE THE LENGTH OF THE COMPLETED STRIPE, INCLUDING GAPS, INTERSECTIONS, AND OTHER SECTIONS OF PAVEMENT NOT NORMALLY MARKED, IN ACCORDANCE WITH 621.15.

TEMPORARY PAVEMENT MARKINGS WILL INCLUDE THE LAYOUT, APPLICATION AND REMOVAL OF THE MARKINGS, WHEN REQUIRED.

### BASIS OF PAYMENT

PAYMENT FOR ACCEPTED QUANTITIES COMPLETE IN PLACE WILL BE MADE AT THE CONTRACT UNIT PRICE. PAYMENT SHALL BE FULL COMPENSATION FOR ALL MATERIALS, LABOR, INCIDENTALS AND EQUIPMENT FOR PLACEMENT, MAINTENANCE AND NECESSARY REMOVAL OF THE MARKINGS.

ITEM	UNIT	DESCRIPTION
614	MILES	TEMPORARY LANE LINES, CLASS _____, *
614	MILES	TEMPORARY CENTER LINES, CLASS II, *
614	LIN. FT.	TEMPORARY CHANNELIZING LINES, CLASS I, *
614	MILES	TEMPORARY EDGE LINES, CLASS I, *
614	LIN. FT.	TEMPORARY GORE MARKINGS, CLASS II, *
614	LIN. FT.	TEMPORARY STOP LINES, CLASS I, *
614	LIN. FT.	TEMPORARY CROSSWALK LINES, CLASS I, *
614	EACH	TEMPORARY LANE ARROWS, CLASS I, *
614	EACH	TEMPORARY RAILROAD SYMBOL MARKINGS, CLASS I, *
614	EACH	TEMPORARY WORD "ONLY" ON PAVEMENT, 72-INCH, CLASS I, *
614	LIN. FT.	TEMPORARY TRANSVERSE LINES, CLASS I, *
614	LIN. FT.	TEMPORARY DOTTED LINES, CLASS I, *
		*621 PAINT, 947.03 TYPE B OR 947.03 TYPE C
fh4		

### Sub-Summary

Part 1 13.72 Miles  
Part 2 10.86 Miles

# PAVEMENT MARKING SUB-SUMMARY

FED. RD. DIVISION	STATE	PROJECT	
5	OHIO		

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PLAN NO. **60**

CO.	ROUTE	FROM		TO		621 QUANTITIES			PARTICIPATION	621 CENTER LINE
		S.L.M.		S.L.M.		CENTER LINES MILES				REMARKS
						TOTAL	DASHED	SOLID		
MED	SR 252	0.93	SR 57 (Sta. E. ded. .01)	7.80	Lorain Co. Line	6.86	4.09	8.75		Part 1
LOR	SR 252	0.00	Medina Co. Line	5.43	Cuyahoga Co. Line	5.43	1.64	8.34		Part 2
CENTER LINE TOTAL						12.29	5.73	17.09		

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

CO.	ROUTE	FROM		TO		WHITE EDGE LINE QUANTITIES				YELLOW EDGE LINE QUANTITIES				621 EDGE LINE
		S.L.M.		S.L.M.		TOTAL	HIGHWAY	RAMP	PART.	TOTAL	HIGHWAY	RAMP	PART.	REMARKS
						MILES	MILES	MILES		MILES	MILES	MILES		
MED	SR 252	0.93	SR 57	7.80	Lorain Co. Line	13.72	13.72		1					
LOR	SR 252	0.00	Medina Co. Line	5.43	Cuyahoga Co. Line	10.86	10.86		2					
EDGE LINE TOTAL						24.58	24.58							

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

847 AUXILIARY MARKING (947.03 TYPE A) INLAID																	
CO.	ROUTE	S.L.M.		24" TRANSVERSE LINES		STOP LINE	12" CROSSWALK LINES	WORD ON PAVEMENT		LANE ARROWS				RAILROAD SYMBOL ON PAVEMENT	DOTTED LINES		REMARKS
		FROM	TO	WHITE	YELLOW	24"	WHITE	ONLY	SCHOOL	TURN		THRU.	COMB.	EACH	WHITE	YELLOW	
				LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	96"	96"	LEFT	RIGHT	EACH	EACH	EACH	EACH	LIN. FT.	
MED	SR 252	0.93	7.80			104			2					2		Part 1	
LOR	SR 252	0.00	5.43			66										Part 2	
AUXILIARY MARKING TOTALS						170			2				2				

FED. RD. DIVISION	STATE	PROJECT	
5	OHIO		

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INITIAL PAVEMENT MARKINGS FOR RESURFACED SECTIONS

GENERAL NOTES

PLAN NO. 60

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

621 Materials

Glass beads shall be kept dry during storage and prior to use.

621 SPECIAL EQUIPMENT

The Contractor's striper shall be equipped with an odometer graduated to 1/100 of a mile. The Engineer will 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 will periodically check the odometer's operation to assure maintenance of 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 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 striper. The counters shall individually tabulate the amount of footage applied by each striping gun on the center line carriage and lane line carriage, whether solid or dashed. The counters shall be 6 digit type with a reset feature.

The pavement marking equipment shall be equipped with a pressure regulated air jet which shall remove all debris from the pavement in advance of the applicator gun. The air jet shall operate when marking material is being applied and shall be synchronized with marking material application or remain "on" at all times.

The Contractor shall use an accurate dashing mechanism, capable of being easily adjusted

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

847 LAYOUT AND PREMARKING

In addition to the requirements of 847 premarking for auxiliary markings shall be located from schematic forms provided at the pre-construction conference.

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 quantity used.

847 AUXILIARY PAVEMENT MARKING

For this project auxiliary markings shall be defined as: stop lines, crosswalk lines, transverse lines, railroad symbol markings, lane arrows, word on pavement and dotted lines except when used to extend edge lines.

STANDARD CONSTRUCTION DRAWING TC 71.10

The dimensions shown on Standard Construction Drawing TC 71.10 are nominal. Letters, numerals and symbols conforming to the requirements of section 3B-17 of the 1978 National Manual On Uniform Traffic Control Devices may also be used. Any of the following standards for letters, numeral or symbol dimensioning may be used: A.) Standard dimensions shown on this detail or B.) Standard dimensions (either metric or their hard converted English unit equivalents) in accord with the 1977 Metric Edition Standard Alphabets For Highway Signs and Pavement Marking with Errata or C.) Standard dimensions 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.



# TRAFFIC CONTROL FOR LONG LINE PAVEMENT MARKING OPERATIONS

## GENERAL

In addition to 6114, traffic shall be maintained in accordance with the following requirements.

The purpose of the following requirements for Traffic Control for Pavement Marking operations is to provide safety for highway users, workers and equipment and to protect the markings from damage during application. These requirements are the required minimums. If at any time during the application of markings it is found by the Engineer that these minimum traffic control device requirements are not achieving the necessary safety and marking protection, additional traffic control devices shall be implemented in accordance with 104.02.

The Engineer may suspend work in order to relieve traffic congestion at any time. No work shall be done during peak hours, as determined by the Engineer.

## LEAD VEHICLE

A lead vehicle is to be used to warn opposing traffic of the approach of centerline and other marking equipment when this equipment extends into the adjacent opposing traffic lane. The lead vehicle shall precede the "left of center" marking equipment a distance that will provide advance safe warning to approaching traffic. The operator of this unit should drive ahead of the crest of a vertical curve or around a horizontal curve and wait until the "left of center" marking equipment nears and then proceed, maintaining an advance location of 400 feet to 600 feet.

A lead vehicle shall be equipped and operated with the following traffic control devices:

1. A 360° rotating or flashing amber beacon clearly visible a minimum of 1/4 mile.
2. Lighted head lights and tail lights, and
3. A KEEP RIGHT sign (OC-31R-48) and WET PAINT sign (OC-52-48) mounted a minimum of 5' above the road surface measured to the bottom of the sign and visible to opposing traffic.

## POWER BROOM EQUIPMENT

Power broom equipment shall be equipped and operated during pavement preparations (Item 621.04) with the following traffic control devices:

1. A 360° rotating or flashing amber beacon clearly visible a minimum of 1/4 mile.
2. Lighted head lights and tail lights, and
3. A flashing arrow panel 54" x 30" (Type B) visible to the rear mounted a minimum of 7' above the road surface measured to the bottom of the panel and used only on multi-lane highways.

## LINE MARKING MACHINE

All traffic line marking machines shall be equipped and operated with the following traffic control equipment:

1. Three 360° rotating or flashing amber beacons clearly visible a minimum of 1/4 mile mounted a minimum of 7' above the road surface; one forward, one on the right rear and one on the left rear of the vehicle.
2. (a) A flashing arrow panel 54" x 30" (Type B) displayed to the rear mounted a minimum of 7' above the road surface measured to the bottom of the panel and used only on multilane highways, or  
(b) A DO NOT PASS sign (R-33A-48) visible to the rear during centerline marking on two lane, two way roadways and mounted a minimum of 7' above the road surface measured to the bottom of the sign. This sign may be

used to cover the arrow panel, which shall Not be used on two lane, two way roadways.

3. A WET PAINT with arrow sign (OC-50-24 or OC-51-48) shall face the rear. The sign shall be positioned with the arrow pointing to the wet line. When used, OC-50-24 shall be mounted on the in use carriage side of the vehicle. OC-50-24 and OC-51-48 signs shall be mounted a minimum of 1' above the road surface.
4. A KEEP RIGHT sign (OC-31R-48) and WET PAINT sign (OC-52-48) mounted a minimum of 5' above the road surface measured to the bottom of the sign and facing opposing traffic when this unit extends into the adjacent opposing traffic lane.
5. The guide and side mounted marking carriages shall each be equipped with a clean red flag not less than 16" square and fastened to staffs of sufficient length so as to permit the flags to move freely of any obstruction.

## TRAIL VEHICLE

When required a trail vehicle shall be positioned at the track free end of the wet line. An additional trail vehicle shall be used when applying lane lines of fast dry material (i.e. <= 2 min. dry) to protect the wet line between the line marking machine and the track free end of the wet line. All pavement marking application, protection and support equipment following the line marking machine shall be equipped with the traffic control of a trail vehicle.

Trail vehicles shall be equipped and operated with the following traffic control equipment:

1. A 360° rotating or flashing amber beacon clearly visible a minimum of 1/4 mile.
2. (a) A flashing arrow panel 54" x 30" (Type B) visible to the rear mounted at a minimum height of 7' above the road surface measured to the bottom of the panel and used only on multi-lane highways, or  
(b) A DO NOT PASS sign ((R-33A-48) visible to the rear during centerline marking on two lane, two way roadways, and mounted a minimum of 7' above the road surface measured to the bottom of the sign. This sign may be used to cover the arrow panel, which shall Not be used on two lane, two way roadways.
3. A WET PAINT with arrow sign (OC-50-24 or OC-51-48) shall face the rear. The sign shall be positioned with the arrow pointing to the wet line. When used, OC-50-24 shall be mounted on the side of the vehicle nearest the wet marking material. When used, OC-50-24 shall be mounted a minimum of 4'6" above the road surface and OC-51-48 shall be mounted a minimum of 5'0" above the road surface, both measured to the bottom of the sign.

## CONES AND WET PAINT-KEEP OFF SIGNS

Cones and WET PAINT-KEEP OFF signs (R-87-24) shall be placed to protect the line whenever the track free time exceeds two minutes. These devices shall not be removed until the line has dried to a track free condition. Retrieval equipment shall have traffic control of a trail vehicle. Cones shall have a minimum height of 18". They shall be spaced to protect the wet line, normally between 120' and 200'. In areas of traffic congestion, on curves and at other locations where tracking of the wet line is expected, spacings as close as 20' may be required. The WET PAINT-KEEP OFF signs (R-87-24) shall be placed facing traffic at:

- A. The beginning and end of line application,
- B. All side and cross roads, and
- C. Maximum intervals of one mile.

DATE
9-82
12-82
1

**IMMOBILE OPERATIONS**

When loading material, cleaning or performing other operations in the field every effort shall be made to have all equipment completely off of the traveled roadway. When it becomes necessary to enter upon private property, permission shall be obtained in advance. When the Contractor cannot remove his equipment from the traveled roadway all traffic control devices on the vehicles shall be in operation and flaggers and vehicles shall be stationed to protect the work site and the travelling public.

Two way traffic shall be maintained. Flaggers shall be equipped in accordance with Item 614.03.

**AUXILIARY MARKINGS**

Pavement preparation and placing of auxiliary markings are considered to be stationary operations and traffic control shall be in accordance with plan details shown on Sheet(s) 28, 29 & 30 and Part 7, Ohio Manual of Uniform Traffic Control Devices (OMUTCD).

**LAYOUT AND PREMARKING**

The vehicle used in layout and premarking (Item 621.051) shall be equipped and operated with the following equipment:

1. A 360° rotating or flashing amber beacon clearly visible a minimum of 1 mile.
2. Lighted head lights and tail lights, and
3. A KEEP RIGHT sign (OC-31R-48) mounted a minimum of 5' above the road surface measured to the bottom of the sign and visible to opposing traffic.

**NIGHTTIME OPERATION**

Nighttime operation is defined to include the time from one-half hour after sunset to one-half hour before sunrise, and at any other time when there are unfavorable atmospheric conditions or when there is not sufficient natural light to render discernible persons, vehicles, and substantial objects on the highway at a distance of one thousand feet.

During nighttime conditions the following additional traffic control shall be provided:

1. Cones shall be reflectorized or equipped with lighting devices for maximum visibility (See 7F-5, OMUTCD), and
2. The guide and side mounted carriages shall be illuminated.




The presence of highway lighting does not waive these requirements.

**MINIMUM PAVEMENT MARKING TRAFFIC CONTROL EQUIPMENT REQUIREMENTS**

This table indicates the traffic control equipment which shall be furnished for each type of long line pavement marking operation. In addition, those types of traffic control equipment which shall be furnished when directed by the Engineer are indicated.

EQUIPMENT	PAVEMENT MARKING LINE TYPE					
	CENTER LINE		EDGE LINE		LANE LINE 2	
	> 2 MIN. DRY	≤ 2 MIN. DRY	> 2 MIN. DRY	≤ 2 MIN. DRY	> 2 MIN. DRY	≤ 2 MIN. DRY
LEAD VEHICLE	Required	Required	Not Required	Not Required	Not Required	Not Required
POWER BROOM EQUIPMENT	Required	Required	Required	Required	Required	Required
LINE MARKING MACHINE	Required	Required	Required	Required	Required	Required
TRAIL VEHICLE	Not Required	Required	Required	Required	Not Required	Required
TRAIL VEHICLE (ADDITIONAL)	Required	Required	Required	Required	Required	Required
TRAIL VEHICLE (SIGN & CONE RETRIEVAL)	Required	Not Required	Required	Not Required	Required	Not Required

1. For equipment requirements for auxiliary operations see plan sheet(s) \_\_\_\_\_ and Part 7, OMUTCD.
2. Includes both dashed and solid lane lines.

-  Required Equipment
-  Equipment Required When Directed by the Engineer
-  Not Required

TRAFFIC CONTROL FOR LONG LINE PAVEMENT MARKING OPERATIONS

DATE  
9-02  
12-02

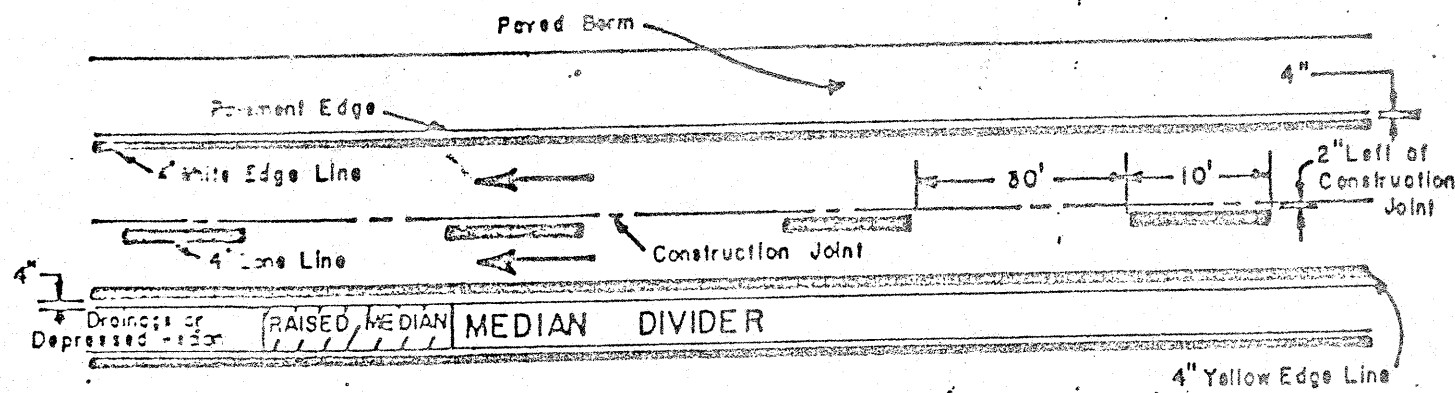
# PAVEMENT MARKING TYPICAL DETAILS

FED. RD DIST.	STATE	PROJECT	
5	OHIO		

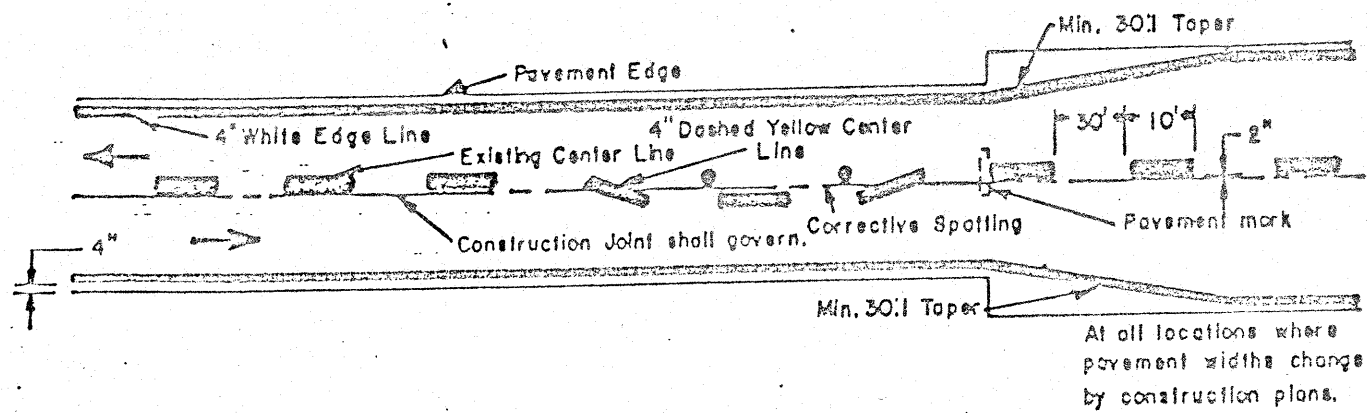
27  
30

PLAN NO. 60

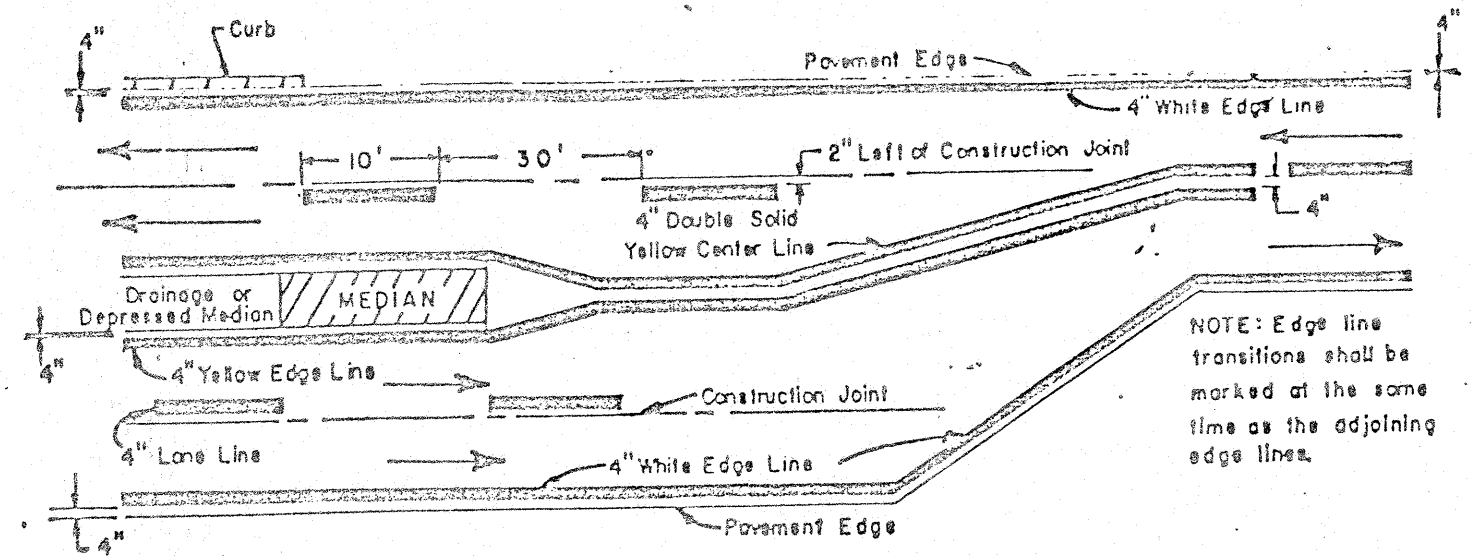
## FREEWAY & EXPRESSWAY MAINLINE MARKINGS



## TWO LANE MARKINGS



## MULTILANE DIVIDED & UNDIVIDED HIGHWAY MARKINGS



### NOTES:

1. THE DISTANCE FROM THE PAVEMENT EDGE TO THE NEAR SIDE 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 PAVEMENT ENTRANCE AND EXIT RAMP TERMINALS.

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

12/81

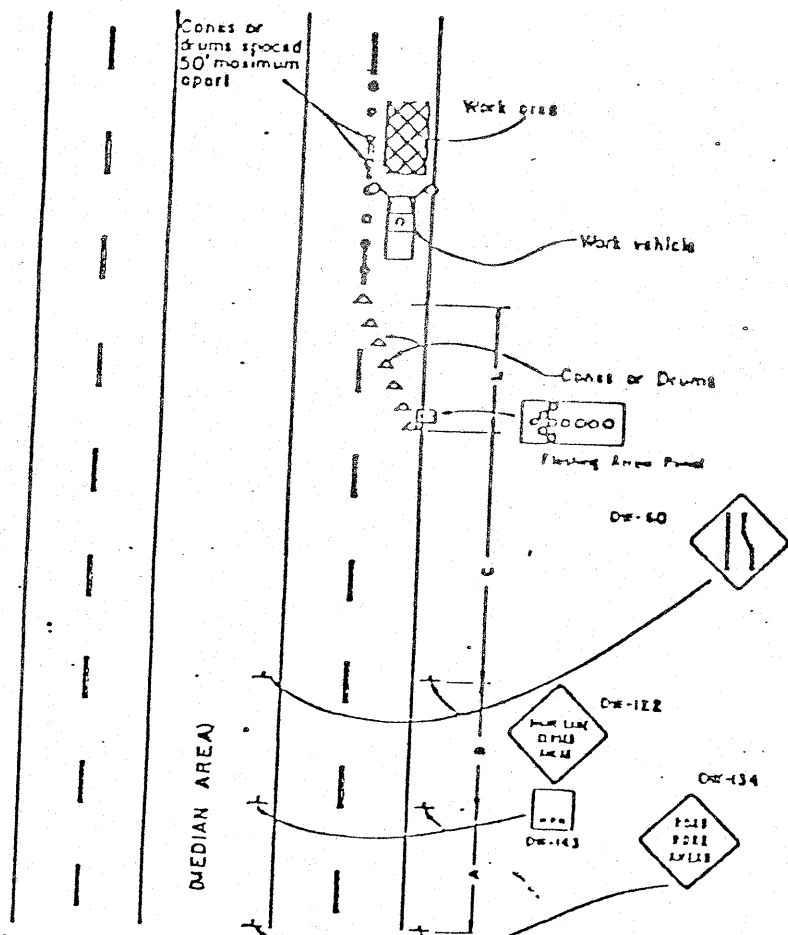
# MAINTENANCE OF TRAFFIC

FEDERAL DISTRICT	STATE	PROJECT	
8	OHIO		

28  
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PLAN NO. 60

## TYPICAL APPLICATIONS OF TRAFFIC CONTROL DEVICES FOR CLOSING ONE LANE ON A 4-LANE DIVIDED HIGHWAY



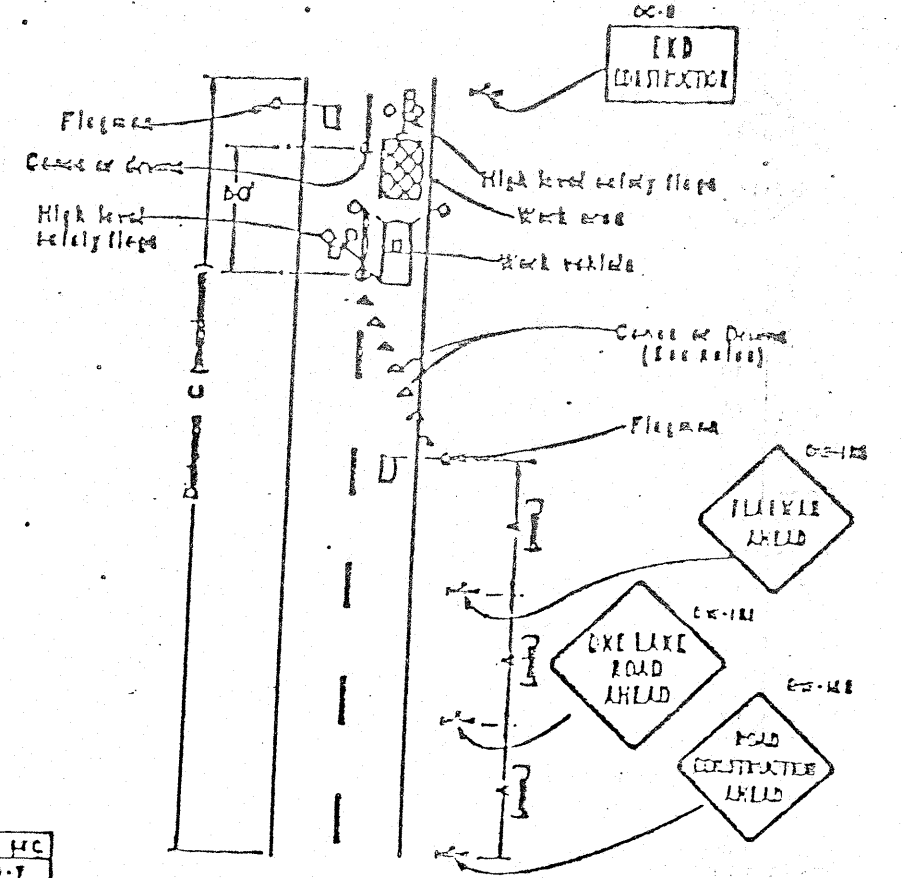
DISTANCE	A	B	C
100'	100'	100'	100'
200'	200'	200'	200'
300'	300'	300'	300'
400'	400'	400'	400'
500'	500'	500'	500'

NOTE: See Section 77-17 for proper spacing.

REF. SEC. 77-6

C-21

## TYPICAL APPLICATIONS OF TRAFFIC CONTROL DEVICES FOR STATIONARY OPERATIONS IN ONE LANE



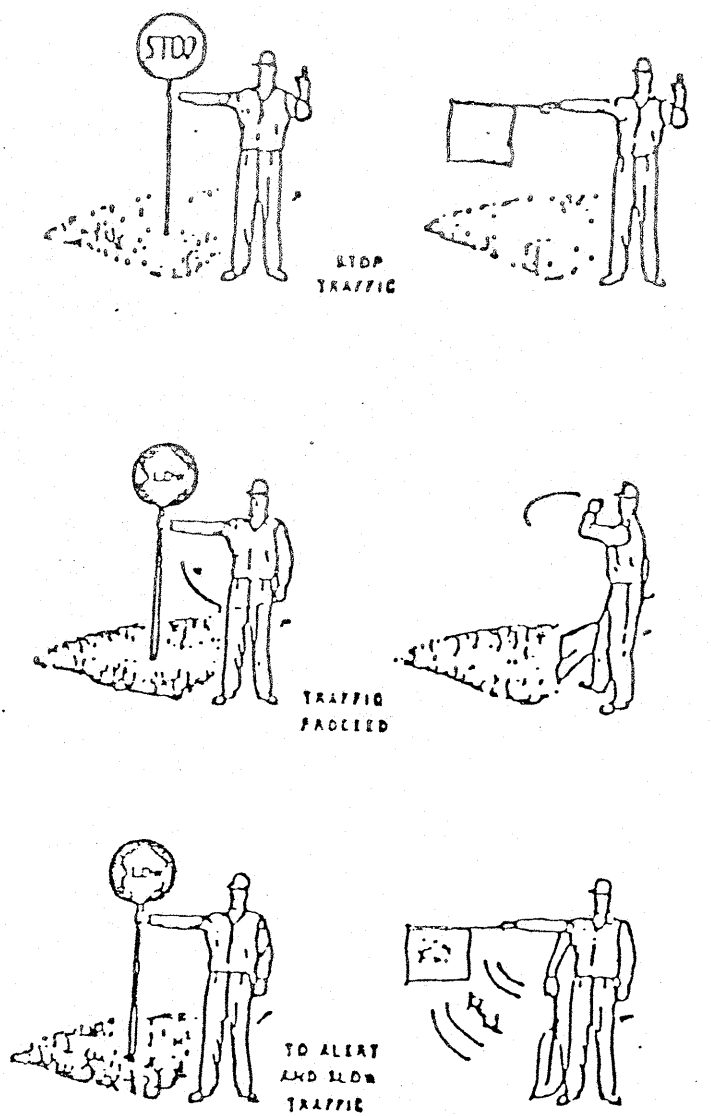
REF. SEC.
77-1
77-2
77-3

NOTES:  
 1. See Table T-8 for taper lengths.  
 2. Use the same working length on the opposite approach.  
 3. Space the ends of 50' max. or longer.

TYPE OF ROADWAY	DISTANCES	
	A-B	C-D
Urban	100	05
Standard	300	10

C-18

## PROCEDURES FOR FLAGMAN

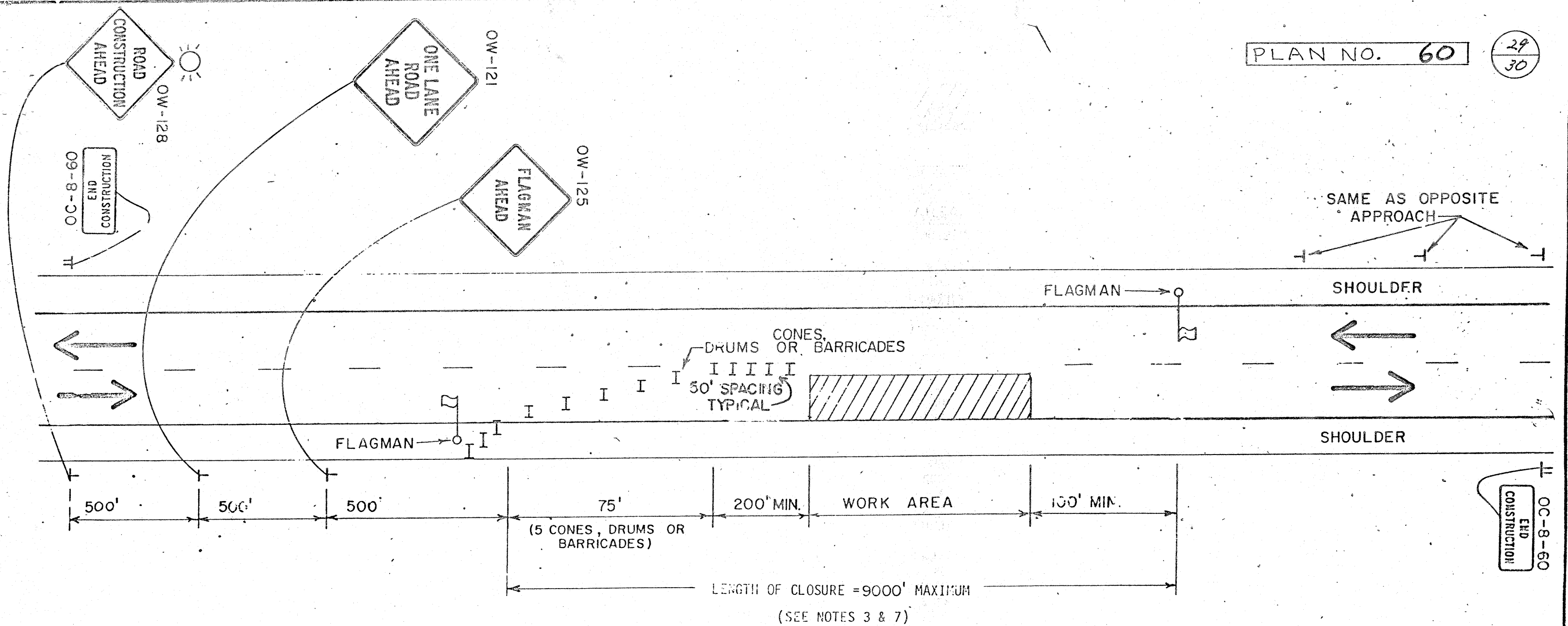


REF. SEC.
77-1
77-4

C-10

Cones or drums shall be placed so that the Contractor's workmen and equipment are totally within the channelized area when working.





**GENERAL NOTES**

1. FLAGMEN SHALL BE USED TO CONTROL TRAFFIC CONTINUOUSLY FOR AS LONG AS ONE LANE OPERATION IS IN EFFECT. FLAGMEN SHALL BE ABLE TO COMMUNICATE WITH EACH OTHER AT ALL TIMES EITHER VERBALLY OR BY MEANS OF RADIO OR FIELD TELEPHONES. FLAGMAN STATIONS SHALL BE ADEQUATELY ILLUMINATED FOR NIGHT TIME OPERATIONS BY USE OF A 175 WATT MINIMUM LUMINAIRE.
2. CONES MAY BE SUBSTITUTED FOR BARRICADES OR DRUMS FOR THE LANE CLOSURES DURING DAYLIGHT HOURS ONLY.
3. WHEN THE AMBIENT TEMPERATURE EXCEEDS 80 DEGREES F, THE ENGINEER MAY INCREASE THE LENGTH OF CLOSURE TO ALLOW FOR SUFFICIENT COOLING OF THE NEW PAVEMENT.
4. THE TYPE B HIGH INTENSITY BARRICADE WARNING LIGHT SHOWN ON THE ROAD CONSTRUCTION AHEAD SIGN IS REQUIRED WHENEVER NIGHT LANE CLOSURE IS NECESSARY.
5. TYPE C STEADY BURNING BARRICADE WARNING LIGHTS SHALL BE ERECTED ON DRUMS OR BARRICADES FOR NIGHT LANE CLOSURES.
6. THE ADVANCE WARNING SIGNS "OW-128" "OW-121" AND "OW-125" SHALL BE MOVED BACK AS REQUIRED BY THE QUEUING OF STOPPED VEHICLES.
7. WITHIN THE LENGTH OF CLOSURE, PROVISION SHALL BE MADE TO CONTROL TRAFFIC ENTERING FROM INTERSECTING STREETS AND MAJOR DRIVES AS NECESSARY TO PREVENT WRONG WAY MOVEMENTS AND TO KEEP VEHICLES OFF OF NEW PAVEMENT NOT READY FOR TRAFFIC.

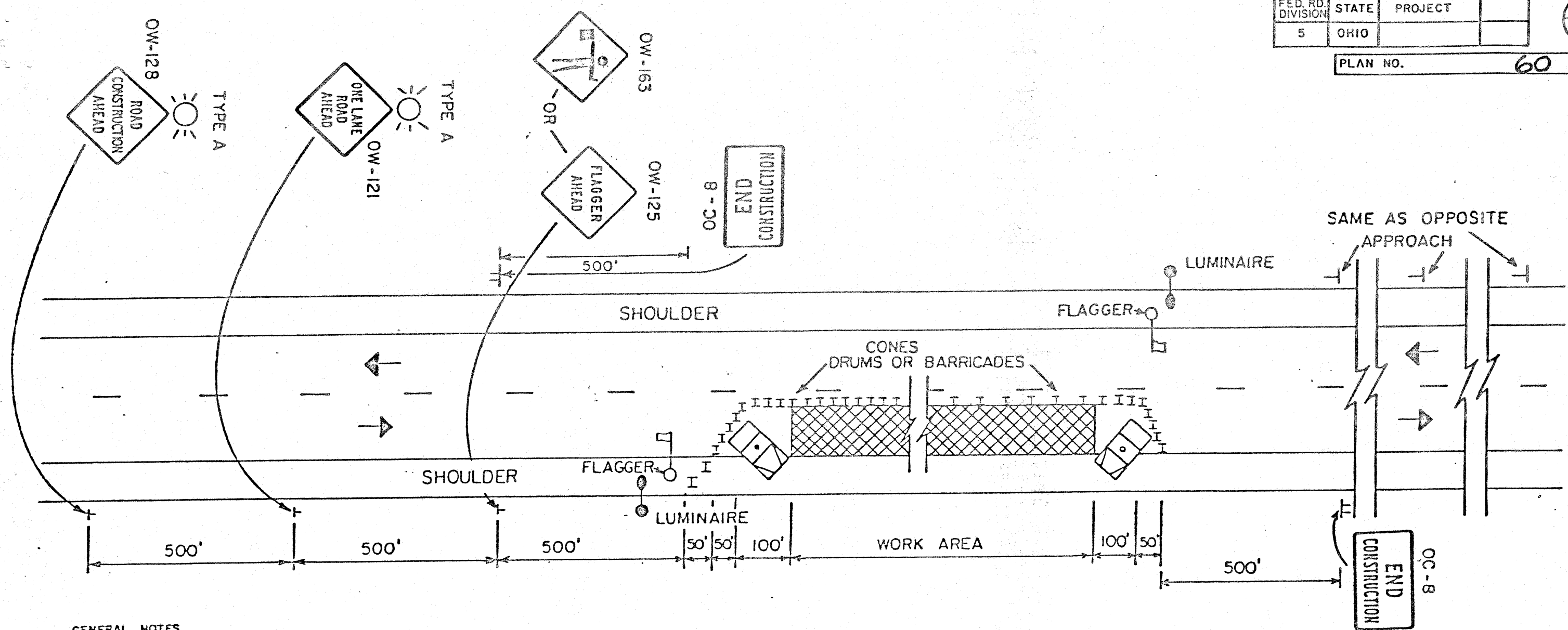
THE ENGINEER MAY SHORTEN THE MAXIMUM ALLOWABLE LENGTH OF CLOSURE TO RELIEVE EXCESSIVE TRAFFIC BACKUPS.

ALL TRAFFIC CONTROL SIGNS, CHANNELIZING DEVICES, AND FLAGMEN SHALL BE MOVED FORWARD BEFORE THE CLOSURE REACHES THE MAXIMUM ALLOWABLE LENGTH. ONLY ONE SIDE OF THE ROAD SHALL BE CLOSED AT ANY TIME IN A WORK AREA.

OHIO DEPARTMENT OF TRANSPORTATION		
FLAGMEN CLOSING 1 LANE OF A 2 LANE HIGHWAY		DATE 12/80
PAVING OPERATIONS		
DR	CK	

FED. RD. DIVISION	STATE	PROJECT	
5	OHIO		
PLAN NO.			60

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**GENERAL NOTES.**

- The location of the advance warning signs should be adjusted to provide for adequate sight distance for the existing vertical and horizontal roadway alignment. The distances shown are minimums.
- Flaggers shall be used to control traffic continuously for as long as a one lane operation is in effect. The flaggers shall communicate with each other at all times as described in the Ohio Manual of Uniform Traffic Control Devices (OMUTCD) in Section 7H: Control of Traffic Through Work Areas.
- Cones drums or barricades shall be spaced at approximately 50' to 60' center to center for the first 1000 feet of the work area and at a maximum of 100' to 120' center to center for the balance of the work area. Cones, drums or barricades on the advance and return tapers shall be spaced at 10' center to center. Cones may be substituted for barricades or drums for lane closures during daylight hours only.
- Several small work sites close together shall be combined into one work area to make a closure not more than 2000 feet long including tapers. Closures of more than 2000 feet may be approved by the Engineer. The minimum length between closures shall be 2000 feet. Only one side of the road shall be closed in any one work area.
- The work vehicles shown at the beginning and end of the work area shall be in place and unoccupied whenever workers are in the work area. These work vehicles shall be removed from the pavement whenever workers are not in the work area. Other protective devices may be used in lieu of the work vehicles shown when approved by the Engineer. The vehicles shall be equipped with a 360° rotating or flashing amber beacon clearly visible a minimum of a 1 mile.
- The Type A flashing barricade warning lights shown on the "Road Construction Ahead" and the "One Lane Road Ahead" signs are required whenever a night lane closure is necessary.
- Type C steady burning barricade warning lights shall be erected on drums or barricades for night lane closures. The maximum spacing shall be identical to the channelizing device spacing requirements described in Note 3.
- Adequate area illumination to clearly identify the flagger station at night for long term operations shall be provided by using 150 watt minimum high pressure sodium luminaires or 250 watt minimum mercury luminaires. Luminaires shall be located adjacent to one flagger station for each direction of traffic as shown above. The mounting height for temporary luminaires shall be a minimum of 27 feet above the pavement and the overhead conductor clearance shall be 20 feet above the pavement.

OHIO DEPARTMENT OF TRANSPORTATION	
FLAGGERS CLOSING 1 LANE OF A 2 LANE HIGHWAY	
DATE	12/82