OHIO DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

For Limited Access note, see sht. 2

FHWA REGION	STATE	Federal Project		
5	Ohio	FR-11(67)		1 / 80

FRA-33-21.36 PLAN NO.

693-86

PART	COUNTY	ROUTE	SECTIONS	PROJECT TERMINII BEGIN	PROJECT TERMINII END	NET LENGTH MILES	TOWNSHIP	CITY	VILLAGE
1	FRA	US-33	(21.36 – 21.43)	21.36	26.12	4.76		Columbus	
2	FRA	US-33	(26.12) (26.61)	26.12	*29.09	2.61	Madison		
3	FRA	US-33	26.25	*26.25	26.61	0.36			Groveport
4	FRA	US-33	(29.09 – 30.21)	29.09	31.23	2.14			Canal Winchester
	See General Summary for "100% City of Columbus" participation.								

Total Project Length 52,114 Lin. Ft. or 9.870 Miles; Total Work Length 52,114 Lin. Ft. or 9.870 Miles

The Standard 19 85 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 not require the closing of the highway to traffic, and provisions for the maintenance and safety of traffic will be as set forth on the plans and estimates.

Approved Date 5-14-85 — *[signature]* District Deputy Director of Transportation

Approved Date 6-10-85 — *[signature]* Engineer, Bureau of Bridges and Structural Design

Approved Date 11-4-85 — *[signature]* Chief Engineer, Planning and Design

Approved Date 11-1-85 — *[signature]* Director, Department of Transportation

Department of Transportation
Federal Highway Administration
Approved:

Division Administrator — Date

[signature] 4-15-85
COLUMBUS CITY ENGINEER C.R.S.

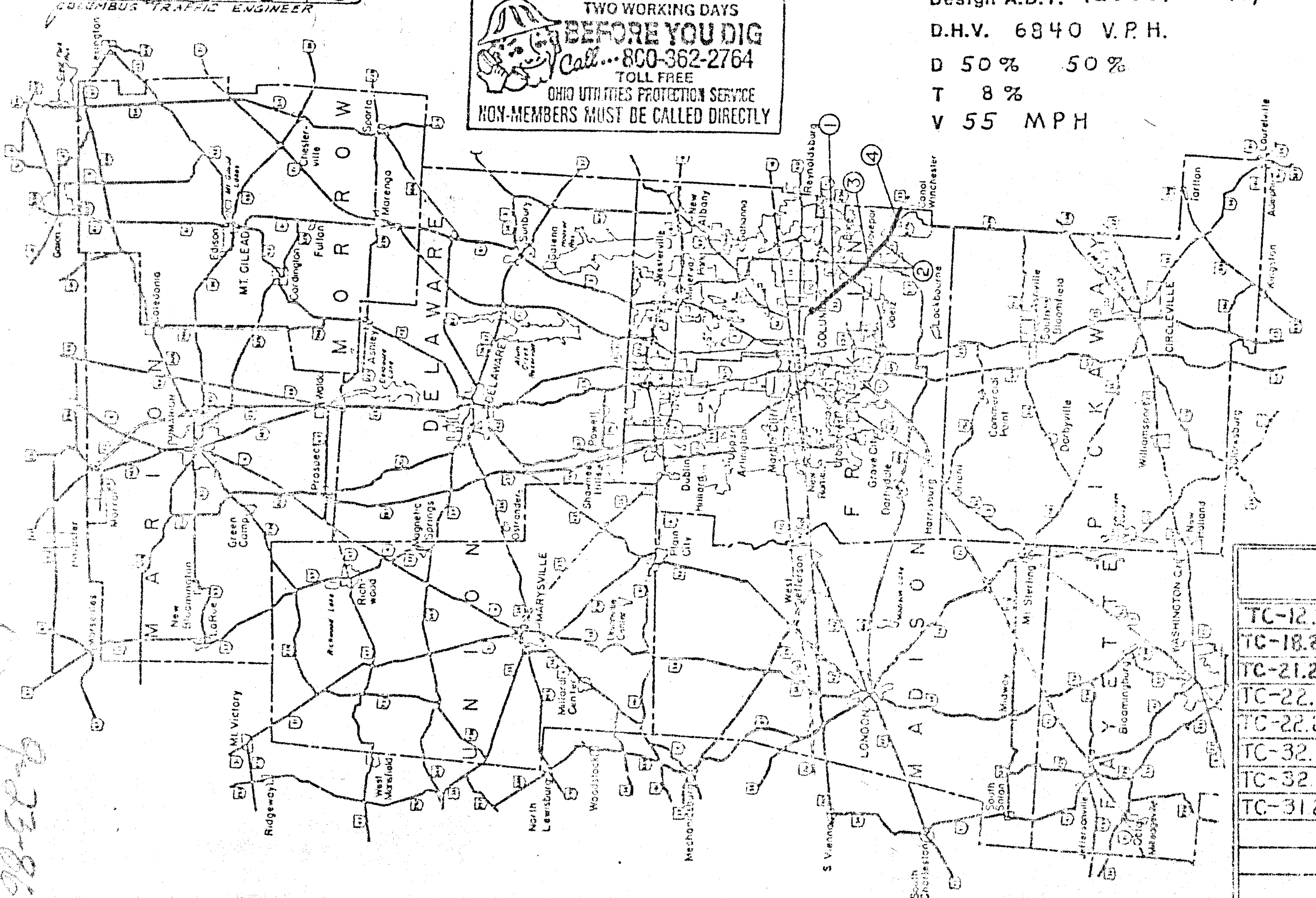
[signature] 3-4-85
COLUMBUS TRAFFIC ENGINEER

LOCATION MAP

TWO WORKING DAYS
BEFORE YOU DIG
Call... 800-362-2764
TOLL FREE
OHIO UTILITIES PROTECTION SERVICE
NON-MEMBERS MUST BE CALLED DIRECTLY

DESIGN DESIGNATION

Current A.D.T. (1985) 22,800 V.P.D.
Design A.D.T. (2005) 45,600 V.P.D.
D.H.V. 6840 V.P.H.
D 50% 50%
T 8%
V 55 MPH



— PORTION TO BE IMPROVED

Rev. 5-27-86

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		GR-3	1-21-85	HL-12	4-6-73	TC-51.11	1-20-84
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9-23-86

DEPARTMENT OF TRANSPORTATION
M& R 712 REV. 9-1-83

FRA-33-21.36

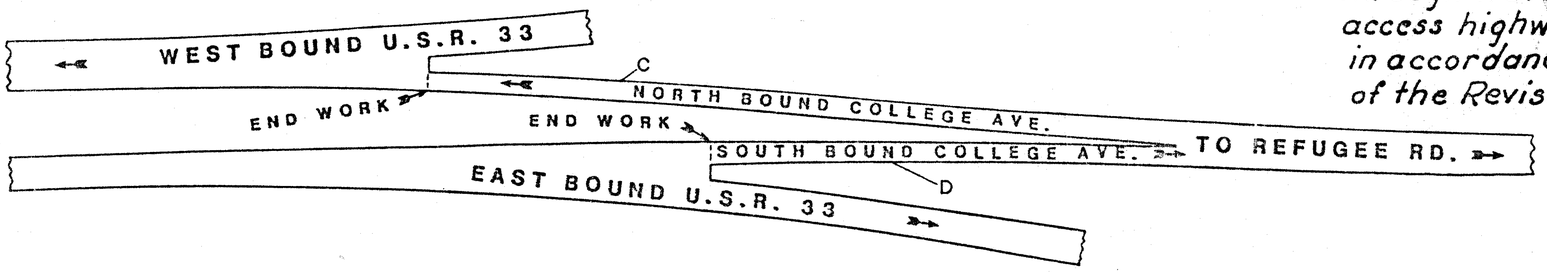
2
80

PLAN NO.

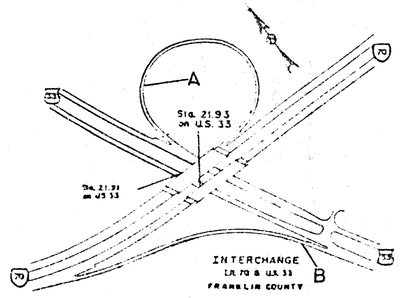
RAMP LOCATION DIAGRAM

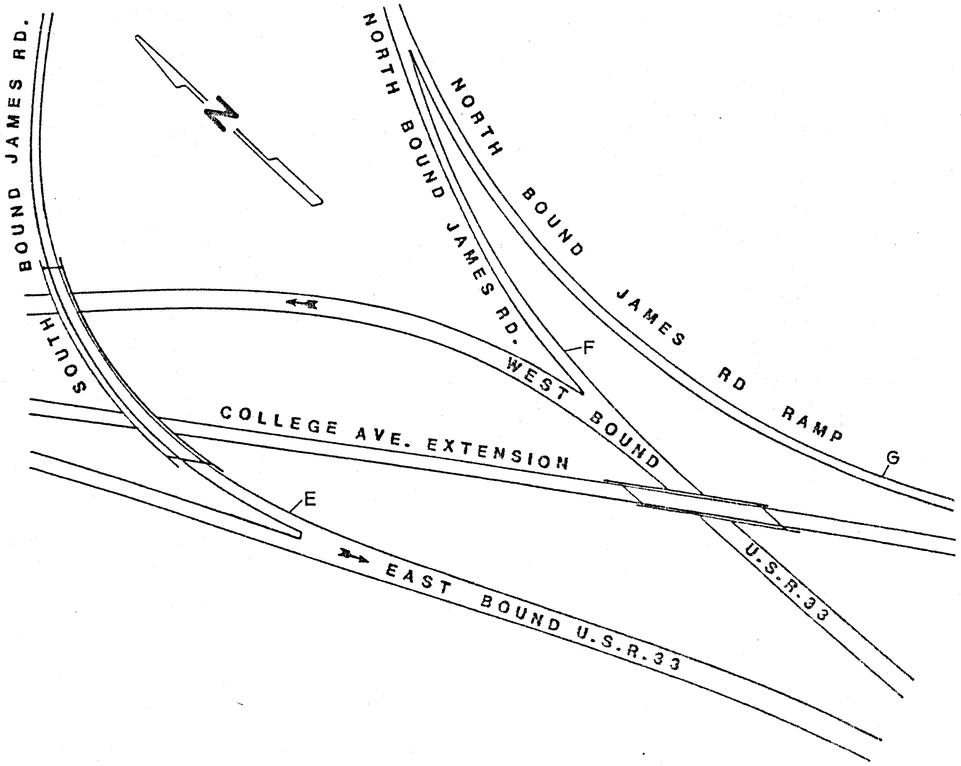
LIMITED ACCESS

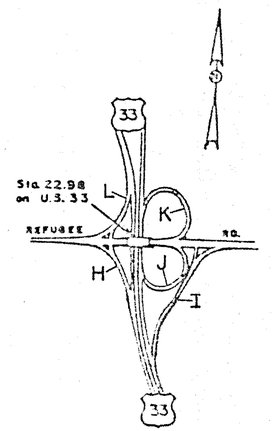
This improvement is especially designed for through traffic and has been declared a limited access highway or freeway by action of the Director in accordance with the provisions of Section 5511.02 of the Revised Code of Ohio.



U.S.R. 33 - COLLEGE AVE. EXTENSION INTERCHANGE







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DEPARTMENT OF TRANSPORTATION
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FRA-33-21.36

4
60

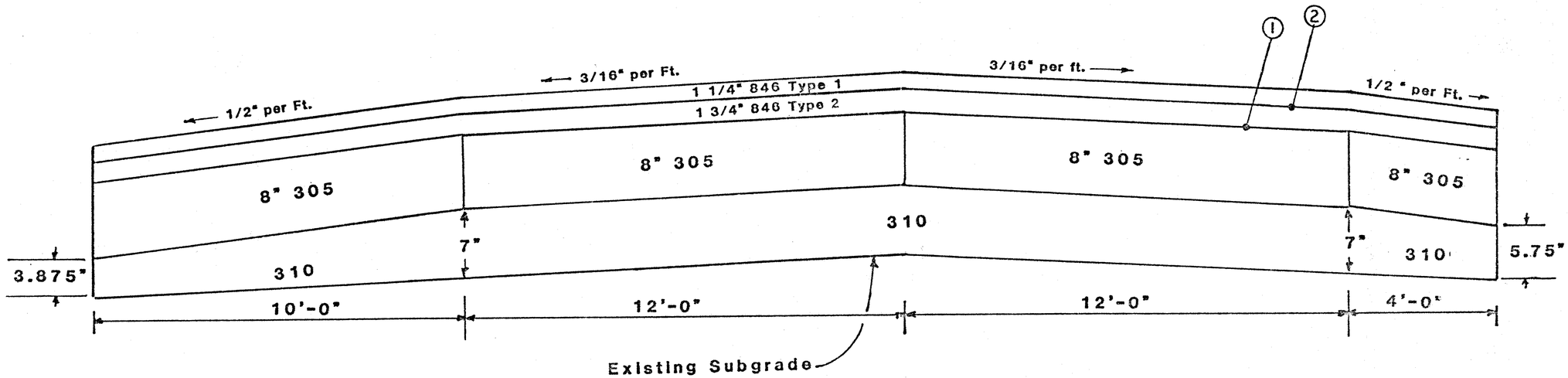
PLAN NO.

TYPICAL SECTION OF NEW PAVEMENT IN WB LANES FROM SLM 22.11 TO SLM 23.01

TYPE 846 ON 305

ITEM 407 TACK COAT

(1) Apply immediately prior to the first course of asphalt concrete.
(2) Apply between 846 Type 2 and 846 Type 1, immediately prior to the Type 1.



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DR

ODOT 1925

DEPARTMENT OF TRANSPORTATION
M& R 707 REV. 9-1-83

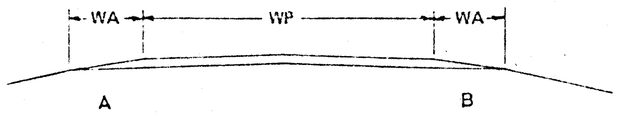
FRA-33-21.36

PLAN NO. 5/80

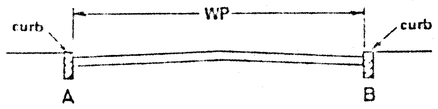
ASPHALT CONCRETE

* Omit resurfacing on Structures 2503 L&R, 2509 L&R, 2649 L&R, 2715 L&R and 2900 L&R. Intermediate course to be feathered as directed at a rate of 50'/inch. Structures 3030 L&R are to be paved.
① Apply immediately prior to the first course of asphalt concrete.
② Apply between 846 Type 2 and 846 Type 1, immediately prior to the Type 1.

TYPICAL 1
TYPE 846

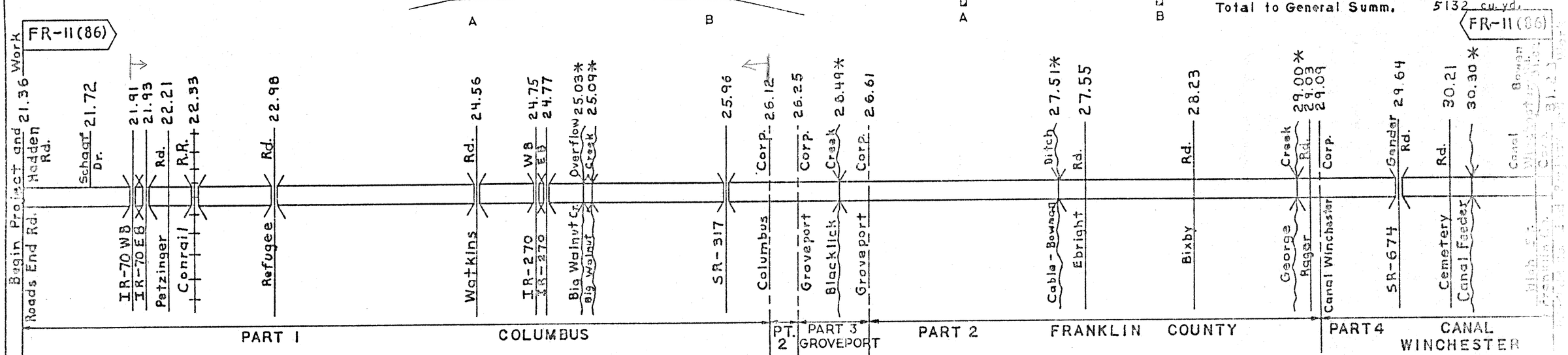


TYPICAL 2
TYPE 846



ITEM 203 - Excavation Not Including Embankment Construction.

SLM 22.11 to SLM 23.01, WB Lanes
24'x4,752'x 6"(0.5') ÷27 = 2112 cu. yd.
Total from page 43 = 206 cu. yd.
Total from page 14 = 2814 cu yd
Total to General Summ. 5132 cu. yd.



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 ① TACK COAT @ .12 gal./s.y. GAL.	407 COVER AGGR. @ 7 lbs./s.y. TON	ASPHALT CONCRETE ITEM 846 THICK INCHES	ITEM 846 TYPE 2 CU. YD.	ITEM 846 THICK INCHES	ITEM 846 TYPE 1 as per plan CU. YD.	ITEM 846 THICK INCHES	ITEM 846 TYPE 1 CU. YD.	407 ② TACK COAT at .10 gal./s.y. GAL.	407 COVER AGGR. at 7 lbs./s.y. TON	617 Compacted Aggregate CU. YD.	202 Pavement Removed (9"451 to be removed) SQ. YD.	305 Concrete Base 8" SQ. YD.	310 Subbase Type IE 7" CU. YD.
1	US-33	21.36-21.43	0.07	370	40	2	451	1644	197	6	1½	69			1¼	57	164	6				
		21.43-21.45	0.02	106	26Δ26	3	451	612	73	2	1½	26			1¼	21	61	2				
		21.45-21.54	0.09	475	26Δ24	4	451	2,639	317	9	1½	110			1¼	92	264	9				
		21.54-22.11	0.57	3,010	24Δ24	5	451	16,053	1,926	56	1½	669			1¼	557	1,605	56				
		22.11-23.01	0.90	4,752	Δ24	5	451	12,672	1,521	44	1½	528			1¼	440	1,267	44				
		22.11-23.01	(0.90)	(4,752)	24Δ	5	451	12,672	1,521	44	1¾	616			1¼	440	1,267	44		12,672	12,672	
		23.01-26.12	3.11	16,421	24Δ24	5	451	87,579	10,509	307	1½	3,649			1¼	365	8,758	307				
	Extra Areas and Deductions from Page 11								6615	191		2167				1914	5,514	191				
	Shoulder Areas from Page 14								9,912	289		3,442				2868	8,260	289	2,234		7392	
	Total From Page 43								62	2		21				17	52	2				
1	US-33	TOTAL	4.76	25,134					32653	950		11297				6771	27212	950	2,234	12,672	20064	
2	US-33	26.12-26.25	0.13	686	24Δ24	5	451	3,659	439	13	1½	152	1¼	127			366	13				
		26.61-29.09	2.48	13,094	24Δ24	5	451	69,835	8,380	244	1½	2,910	1¼	2425			6,984	244				
	Extra Areas and Deductions from Page 12								973	29		304		281			812	29				
	Shoulder Areas from Page 15								5,108	149		1,774		1478			4,257	149	1,021			
2	US-33	TOTAL	2.61	13,780					14,900	435		5,140		4311			12,419	435	1,021		Rev. 5-27-92	

DEPARTMENT OF TRANSPORTATION
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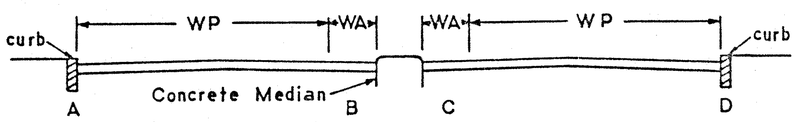
ASPHALT CONCRETE

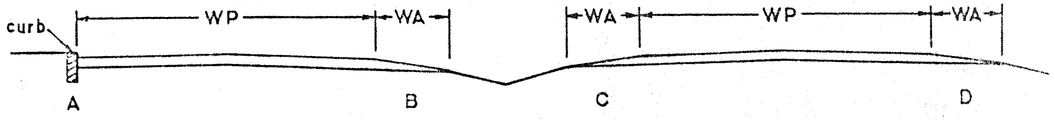
FRA-33-21.36

PLAN NO. 6/80

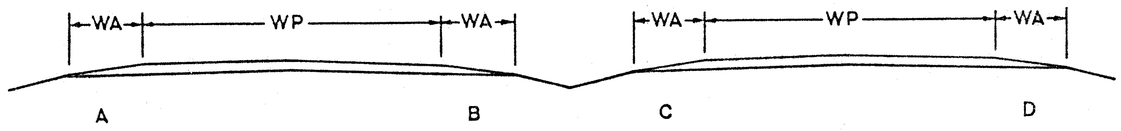
TYPICAL 3
TYPE 846



TYPICAL 4
TYPE 846



TYPICAL 5
TYPE 846



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② Apply between 846 Type 2 and 846 Type 1, immediately prior to the Type 1.

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 ①TACK COAT @ .12 gal./s.y. GAL.	407 COVER AGGR. @ .7 lbs./s.y. TON	ASPHALT CONCRETE ITEM 846 THICK INCHES	ITEM 846 TYPE 2 CU. YD.	ITEM 846 THICK INCHES	ITEM 846 TYPE 1 as per plan CU. YD.	ITEM ..... THICK INCHES	ITEM ..... CU. YD.	407 ②Tack Coat at .10 gal./s.y. GAL.	407 Cover Aggr. at 7 lbs./s.y. TON	617 Compacted Aggregate CU. YD.
3	US-33	26.25 – 26.61	0.3	1,901	24Δ24	5	451	10,139	1,217	35	1½	422	1¼	352			1,014	35	
	Extra Areas and Deductions from Page 12								-53	-2		-35		-15			-44	-2	
	Shoulder Areas from Page 15								654	19		227		189			545	19	141
3	US-33	TOTAL	0.38						1,818	52		614		526			1,515	52	141
4	US-33	29.09 – 30.21	1.12	5,914	24Δ24	5	451	31,541	3,785	110	1½	1,314	1¼	1095			3,154	110	
		30.21 – 31.23	1.02	5,386	24Δ24	5	404	28,725	3,447	101	1½	1,197	1¼	997			2,873	101	
	Extra Areas and Deductions from Page 13								2,955	88		1,027		854			2,463	88	
	Shoulder Areas from Page 15								4,362	127		1,514		1262			3,635	127	1,186
4	US-33	TOTAL	2.14						14,549	426		5,052		4208			12,125	426	1,186

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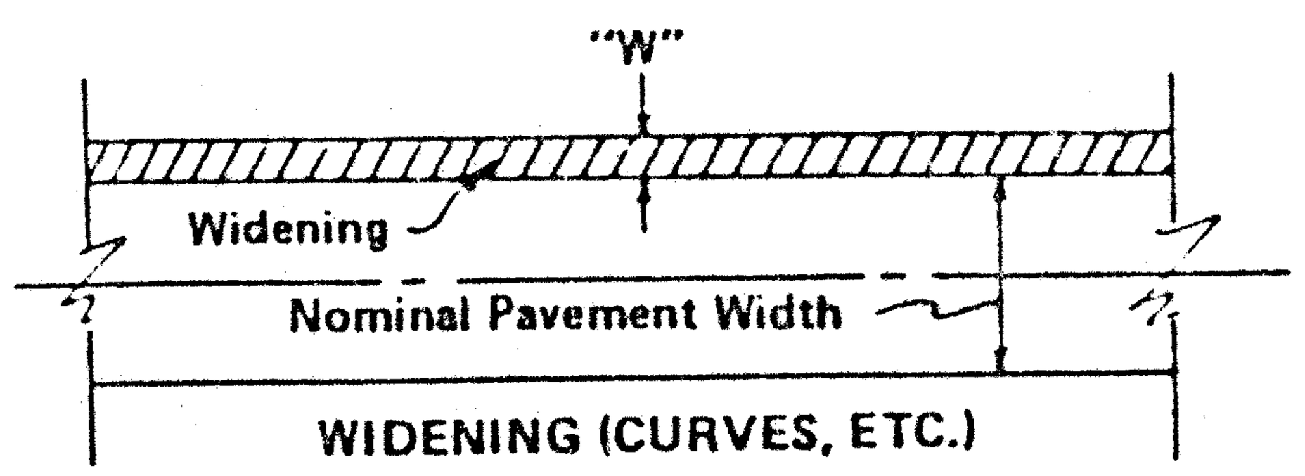
EXTRA AREA AND DEDUCTIONS



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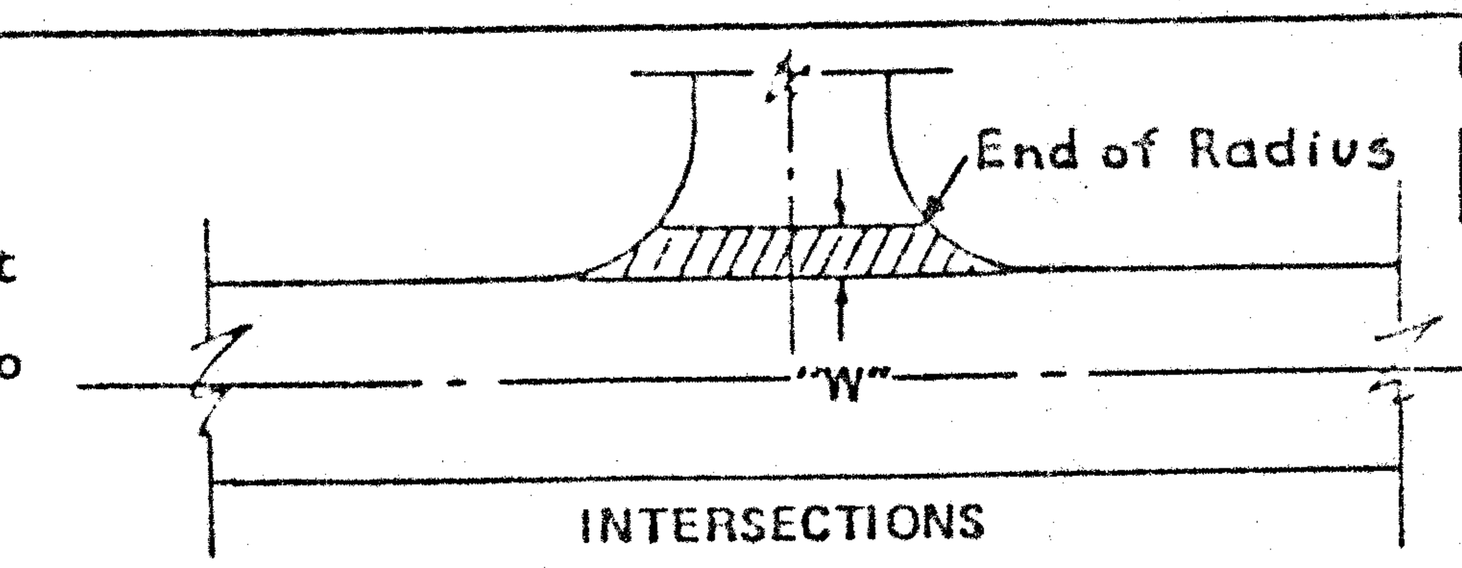

ROUTE	LOG POINT TO LOG POINT	SIDE	DESCRIPTION	LENGTH MILES	LENGTH LIN. FT.	WIDTH "W" IN FEET	AREA IN SQ. YDS.	407 ① TACK COAT @ .12 gal./s.y. Gal.	407 COVER AGGR. @ 7 lbs./s.y. Ton	ASPHALT CONCRETE THICK INCHES 1½	ASPHALT CONCRETE CU. YD. ITEM 846 Type 2	ASPHALT CONCRETE CU. YD. ITEM 846 Type 1	ASPHALT CONCRETE THICK INCHES 1¼	407 ② Tack Coat @ .10 gal./s.y. GAL.	407 Cover Aggr. @ 7 lbs/s.y. TON	* 202 Curb Removed LIN. FT.	* 301 @ 1 s.f. per lin.ft. ÷ 27 (Backfill) CU. YD.	* 604 Catch Basins Adjusted to Grade, as per plan EACH	* 604 Manholes Adjusted to Grade, as per plan EACH	* 604 Monument Boxes Adjusted to Grade as per plan EACH
US-33			Ramp F from US-33 NB to James Rd. NB (taper only)		314	35-12	820													
					386	12	515													
					100	12-0	67													
			Total Ramp F Taper				1,402	168	5		58	49		140	5					
			Ramp L from US-33 EB to Refugee Rd.		100	0-12	67													
					700	12-35	1,828													
					300	18-24	700													
					16	24	43													
			Total Ramp L				2,638	317	9		110	92		264	9					
			Ramp H from Refugee Rd. to EB US-33		403	16	716													
					200	25-15	444													
					1,000	28-0	1,556													
			Total Ramp H				2,716	326	10		13	94		272	10	300	11			
			Ramp J from Refugee Rd. to WB US-33		100	18-16	189													
					996	16	1,771													
					274	35-12	715													
					100	12	133													
			Total Ramp J				2,808	337	10		117	98		281	10	265	10			

DEPARTMENT OF TRANSPORTATION
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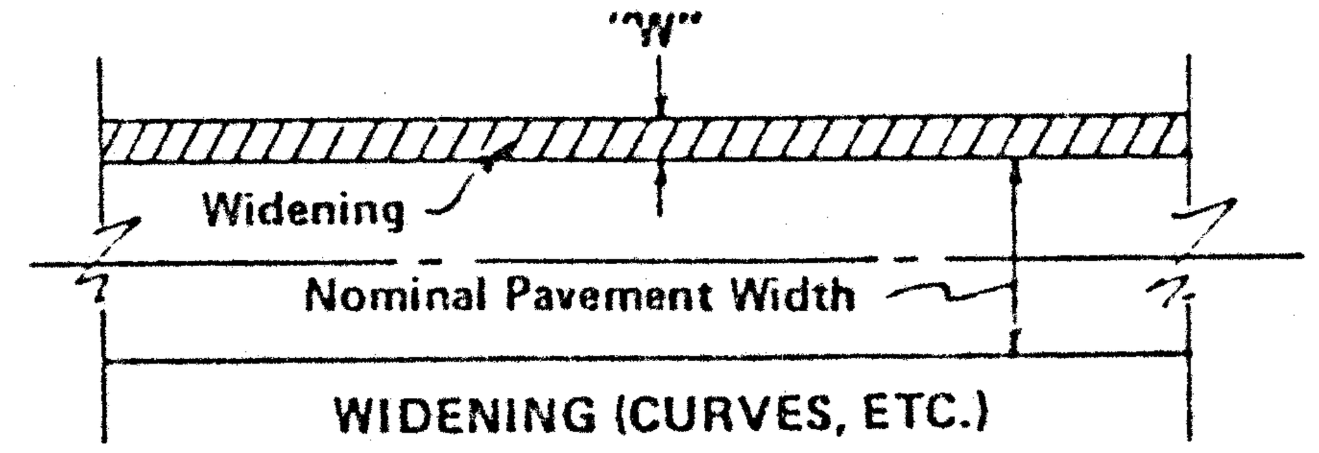
EXTRA AREA AND DEDUCTIONS

FRA -33 -21.36

PLAN NO.



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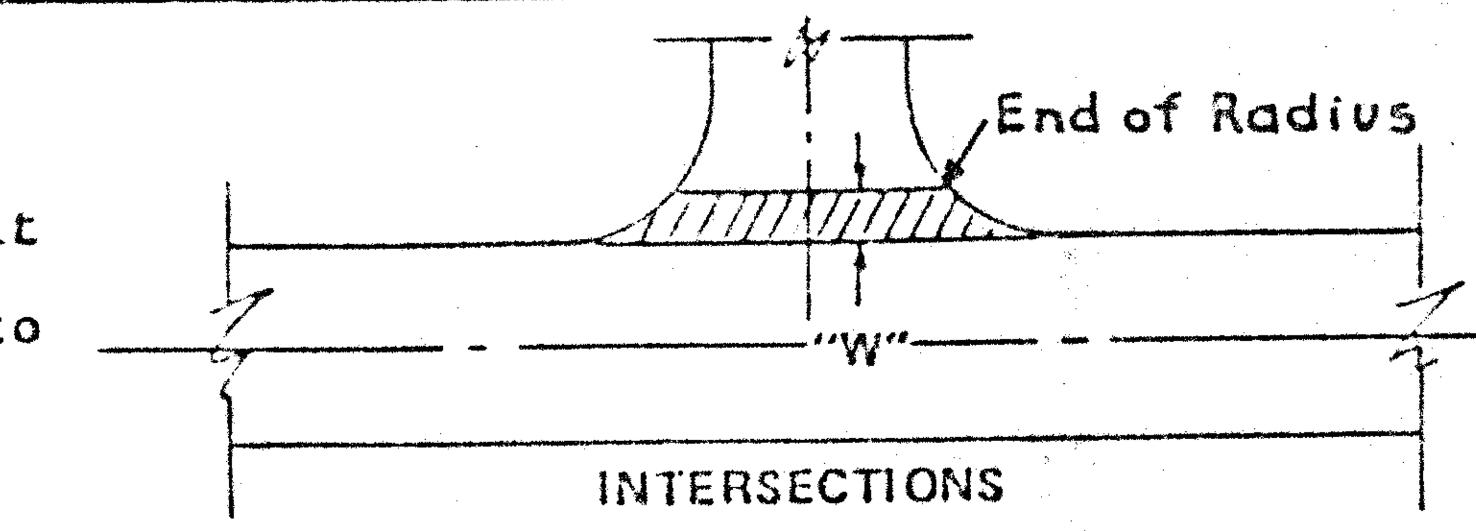
* Totals are carried directly to the General Summary.



PART	ROUTE	LOG POINT TO LOG POINT	SIDE	DESCRIPTION	LENGTH MILES	LENGTH LIN. FT.	WIDTH "W" IN FEET	AREA IN SQ. YDS.	PROPOSED ITEMS 407 ① TACK COAT @ .12 gal./s.y. Gal.	407 COVER AGGR. @ 7 lbs./s.y. Tons	ASPHALT CONCRETE THICK INCHES 1½	CU. YD. ITEM 846 Type 2	CU. YD. ITEM 846 Type 1	THICK INCHES 1¼	407 ② Tack Coat @ .10 gal./s.y. GAL.	407 Cover Aggr. @ 7 lbs/s.y. TON	*202 Curb Removed LIN. FT.	*301 @ 1 s.f. per lin.ft ÷ 27 (Backfill) CU. YD.	*604 Catch Basins Adjusted to Grade, as per plan EACH	*604 Manholes Adjusted to Grade, as per plan EACH	*6… Monument Boxes Adjusted to Grade as per plan EACH
1	US-33	Various		Intersections				1,296	156	5		54	45		130	5					
		21.36	Rt.	Transition to Divided Section	.07	370	0-24	493	59	2		21	17		49	2					
		21.66	C	Schaaf Drive Crossover				627	75	2		26	22		63	2					
		Various	C	U-Turn Crossovers				1,050	126	4		44	36		105	4					
		Ramp A from US-33 NB to IR-70 (Taper only)				367	35-12	958													
						333		444													
						100	12-0	67													
		Total Ramp A Taper						1,469	176	5		61	51		147	5					
		Ramp B from I-70 EB to US-33SB				166	40-25	599													
						395	25-12	812													
		Total Ramp B Taper						1,411	169	5		59	49		141	5					
		22.13	R	Extra Width		100	12-24	200	24	1		8	7		20	1					
		22.15	R	Extra Width		405	24	1,080	130	4		45	38		108	4					
		22.21	C	Petzinger Rd. Crossover, Manhole				800	96	3		33	28		80	3				1	
		22.32	L	Manhole																1	
		22.34	L	Manhole																1	
		Ramp C from College Ave. Extension to US-33 NB (Taper only)				279	5-12	264													
						213	12	284													
						288	12-24	576													
						30	10-14	40													
		Total Ramp C Taper						1,164	140	4		49	40		116	4					
		Ramp D from US-33 SB to the College Ave. Extension (Taper only)				440	0-28	684	82	2		29	24		68	2			1		
		Ramp E from James Rd. SB to US-33SB (Taper only)				192	30-25	587													
						1,000	25-0	1,389													
		Total Ramp E Taper						1,976	237	7		82	69		198	7	300	11			

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DEPARTMENT OF TRANSPORTATION
M & R 709 REV. 9-1-83

EXTRA AREA AND DEDUCTIONS

FRA – 33 – 21.36

PLAN NO.

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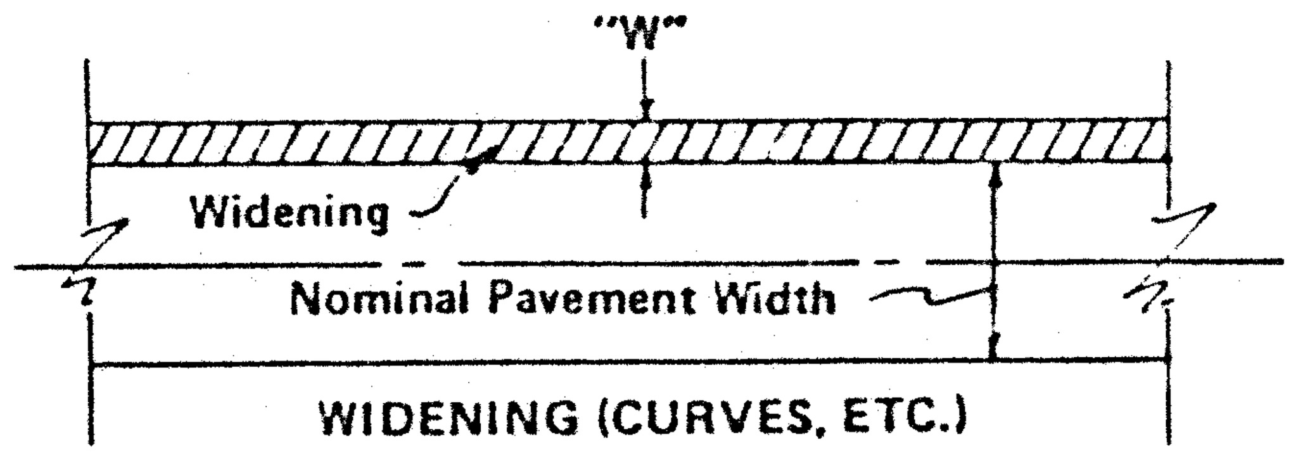

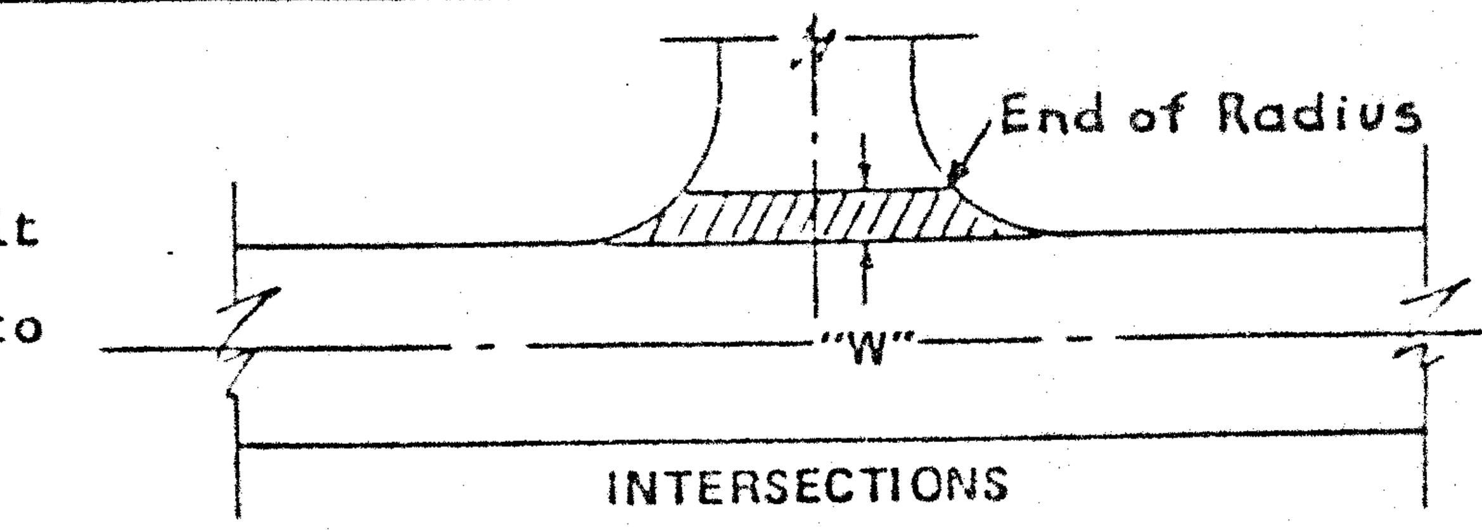

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1	US-33	Ramp K from US-33	WB	to Refugee Rd.		100	12	133													
						273	12-35	713													
						100	18-16	189													
						1,048	16	1,863													
						100	16-14	167													
		Total Ramp K						3,065	368	11		128	106		307	11			1		
		Ramp I from US-33	WB	to Refugee Rd.		100	0-12	67													
						369	12	492													
						323	12-35	843													
						100	18-16	189													
						1,061	16	1,886													
						144	16-34	400													
						69	16	123													
						138	16-18	261													
						276	16	491													
		Total Ramp I						4,752	570	17		198	165		475	17					
		Ramp M (Taper Only)		IR-270 N.B. to US-33 E.B		463	36-11	1,209													
						188	7-0	73													
		Total Ramp M						1,282	154	4		53	45		128	4					
		Ramp N (Taper Only)		US-33 W.B. to IR-270 N.B.		265	35-12	692													
						217	12	289													
						100	12-0	67													
		Total Ramp N						1,048	126	4		44	36		105	4					
		Ramp O (Taper Only)		IR-270 S.B. to U.S.-33 W.B.		1,207	40-0	2,682	322	9		112	93		268	9					
		Ramp P (Taper Only)		US-33 E.B. to IR-270 S.B.		420	35-12	1,097													
						280	12	373													
						100	12-0	67													
		Total Ramp P						1,537	184	5		64	53		154	5					

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DEPARTMENT OF TRANSPORTATION
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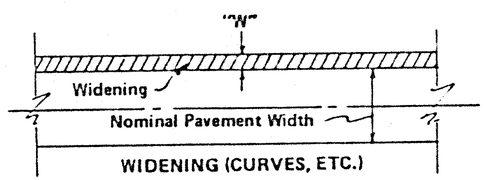
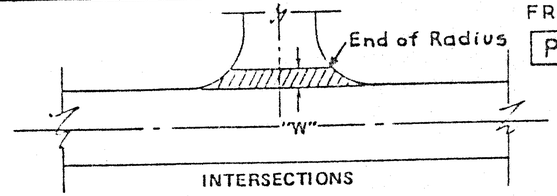


EXTRA AREA AND DEDUCTIONS

① Apply immediately prior to the first course of asphalt concrete.
② Apply between 846 Type 2 and 846 Type 1, immediately prior to the Type 1.
* Totals are carried directly to the General Summary.



FRA -33 -21.36
PLAN NO.

PART	ROUTE	LOG POINT TO LOG POINT	SIDE	DESCRIPTION	LENGTH MILES	LENGTH LIN. FT.	WIDTH "W" IN FEET	AREA IN SQ. YDS.	PROPOSED ITEMS 407 ① TACK COAT @ .12 gal./s.y. Gal.	407 COVER AGGR. @ 7 lbs./s.y. Ton	ASPHALT CONCRETE THICK INCHES	ASPHALT CONCRETE CU. YD. ITEM 846 Type 2	ASPHALT CONCRETE CU. YD. ITEM 846 Type 1	ASPHALT CONCRETE THICK INCHES 1 1/4	407 ② Tack Coat @ .10 gal./s.y. GAL.	407 Cover Aggr. @ 7 lbs/s.y. TON	* 202 Curb Removed LIN. FT.	* 301 @ 1 s.f. per lin.ft. ÷ 27 (Backfill) CU. YD.	* 604 Catch Basins Adjusted to Grade, as per plan EACH	* 604 Manholes Adjusted to Grade, as per plan EACH	* 60 Manhole Boxes Adjust to Grade as per plan
1	US-33	Ramp U		US-33EB to SR-317		100	25-0	139													
						1,355	16	2,409													
						96	16-18	181													
						255	34-12	652													
						442	12	589													
						100	12-0	67													
		Total Ramp U						4,037	484	14	1½	168	140		404	14			1		
		Ramp Y		SR-317 to US-33EB		1,122	16	1,995													
						1,141	38-0	2,409													
						210	18-14	373													
						100	14-0	78													
		Total Ramp Y						4,855	583	17	1½	202	169		486	17	200	7			
		Ramp V		SR-317 to US-33 E.B.		532	16	946	114	3	1½	39	33		95	3					
	25.03		R+L	Deduct for structures		92.5	24 24	-493	-59	-2	1½	-21	-17		-49	-2					
	25.03		R+L	Deduct for approaches		150	24 24	-800			¾	-17									
	25.09		R+L	Deduct for structures		303	24 24	-1616	-194	-6	1½	-67	-56		-162	-6					
	25.09		R+L	Deduct for approaches		150	24 24	-800			¾	-17									
	Total	From Page 43																20			
	Total Part I to Page 5								6615	191		2167	1914		5514	191	1,315	68	4	3	

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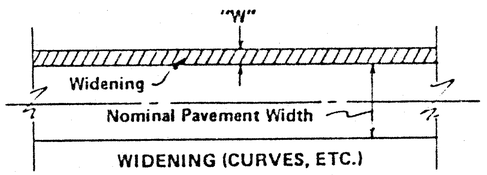
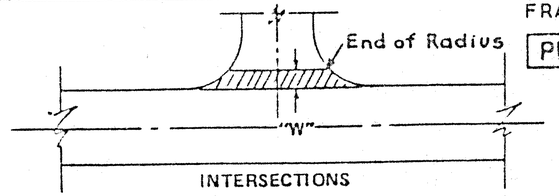
DEPARTMENT OF TRANSPORTATION
MS B 709 REV. 9-1-83



EXTRA AREA AND DEDUCTIONS

① Apply immediately prior to the first course of asphalt concrete.
② Apply between 846 Type 2 and 846 Type 1, immediately prior to the Type 1.
* Totals are carried directly to the General Summary.



FRA - 33 - 21.36

PLAN NO.

	ROUTE	LOG POINT TO LOG POINT	SIDE	DESCRIPTION	LENGTH MILES	LENGTH LIN. FT.	WIDTH "W" IN FEET	AREA IN SQ. YDS.	PROPOSED ITEMS 407 ①TACK COAT @ .12 gal./s.y. Gal.	407 COVER AGGR. @ 7 lbs./s.y. Ton	ASPHALT CONCRETE THICK INCHES 1½	ASPHALT CONCRETE CU. YD. ITEM 846 Type 2	ASPHALT CONCRETE CU. YD. ITEM 846 Type 1	ASPHALT CONCRETE THICK INCHES 1¼	407 ②Tack Coat @ .10 gal./s.y. GAL.	407 Cover Aggr. @ 7 lbs/s.y. TON	*202 Curb Removed LIN. FT.	*301 @ 1 s.f. per lin.ft ÷ 27 (Backfill) CU. YD.	*604 Catch Basins Adjusted to Grade, as per plan EACH	*604 Manholes Adjusted to Grade, as per plan EACH	*60 Manhole Bases Adjust to Grade as per plan EACH
1	US-33	Ramp T (Taper Only)		IR-270 S.B. to US-33 E.B.		282	12	376													
						199	12-35	520													
		Total Ramp T						896	108	3		37	31		90	3					
		Ramp Q (Taper Only)		US-33 E.B. to IR-270 N.B.		213	47-12	698													
						199	12	265													
		Total Ramp Q						963	116	3		40	33		96	3					
		24.84	Rt.	Extra Area		540	12-0	360	43	1		15	13		36	1					
		Ramp R (Taper Only)		IR-270 N.B. to US-33 W.B.		176	35-12	460													
						181	12	241													
		Total Ramp R						701	84	2		29	24		70	2					
		Ramp S (Taper Only)		US-33 W.B. to IR 270 S.B.		215	12	287													
						213	12-47	698													
		Total Ramp S						985	118	3		41	34		99	3					
		24.57	Lt.	Extra Area		600	0-12	400	48	1		17	14		40	1					
		25.50	Rt.	Monument Box																	
		Ramp X		SR-317 to US-33 W.B.		1,140	0-40	2,533													
						697	16	1,239													
						70	0-70	272													
		Ramp X Total						4,044	485	14		169	140		404	14	250	9	1		
		Ramp W		US-33 W.B. to SR-317		169	14-34	451													
						100	18-16	189													
						1,032	16	1,835													
						79	0-18	79													
						160	18-16	302													
		Total Ramp W						2,856	343	10		119	99		286	10					

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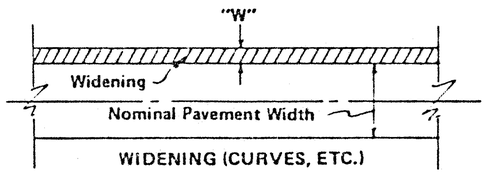
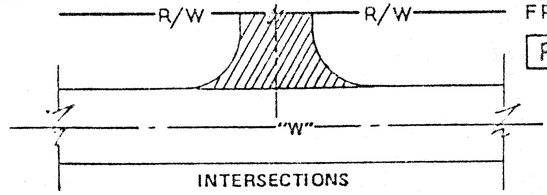
DEPARTMENT OF TRANSPORTATION
MA R 709 REV. 9-1-83



EXTRA AREA AND DEDUCTIONS



FRA -33 -21.36

PLAN NO.

① Apply immediately prior to the first course of asphalt concrete.
② Apply between 846 Type 2 and 846 Type 1, immediately prior to the Type 1.
★ Totals are carried directly to the General Summary.
③ As per plan
④ To be paved to Right of Way Line

	ROUTE	LOG POINT TO LOG POINT	SIDE	DESCRIPTION	LENGTH MILES	LENGTH LIN. FT.	WIDTH "W" IN FEET	AREA IN SQ. YDS.	PROPOSED ITEMS 407 ①TACK COAT @..12... gal./s.y. Gal.	407 COVER AGGR. @..7... lbs./s.y. Ton	ASPHALT CONCRETE THICK INCHES	ASPHALT CONCRETE CU. YD. ITEM 846 Type 2	ASPHALT CONCRETE CU. YD. ③ITEM 846 Type 1	ASPHALT CONCRETE THICK INCHES 1¼	407 ②Tack Coat @ .10 gal./s.y. GAL.	407 Cover Aggr. @ 7 lbs/s.y. TON	✳202 Curb Removed LIN. FT.	✳301 @ 1 s.f. per lin.ft ÷ 27 (Backfill) CU. YD.	✳604 Catch Basins Adjusted to Grade, as per plan EACH	✳604 Manholes Adjusted to Grade as per plan EACH
2	US-33	Various		④ Intersections				1,587	190	6	1½	66	55		159	6				
		Various		Intersection Crossovers				3,000	360	11	1½	125	104		300	11				
		Ramp W		US-33 W.B. to SR-317		100	0-12	67												
						448	12	597												
						80	12-14	116												
		Total Ramp W						780	94	3	1½	33	27		78	3			1	
		Ramp V		SR-317 to US-33 E.B.		445	16	791												
						1,170	38-0	2,470												
		Total Ramp V						3,261	391	11	1½	136	113		326	11	315	12		
	27.51		R+L	Deduct for Structures		17	24Δ24	-91	-11	-1	1½	-4	-3		-9	-1				
			R+L	Deduct for Approaches		150	24Δ24	-800			¾	-17								
			R+L	Deduct for Structures		79	24Δ24	-421	-51	-1	1½	-18	-15		-42	-1				
			R+L	Deduct for Approaches		150	24Δ24	-800			¾	-17								
	Total Part 2 to Page 5								973	29		304	281		812	29	315	12	1	
	26.37			U-Turn Crossover				350	42	1	1½	15	12		35	1				
	26.49			Deduct for Structures		148	24Δ24	-789	-95	-3	1½	-33	-27		-79	-3				
	26.49			Deduct for Approaches		150	24Δ24	-800			¾	-17								
	Total Part 3 to Page 6								-53	-2		-35	-15		-44	-2				

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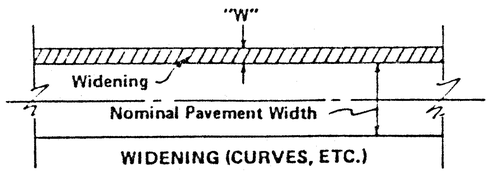
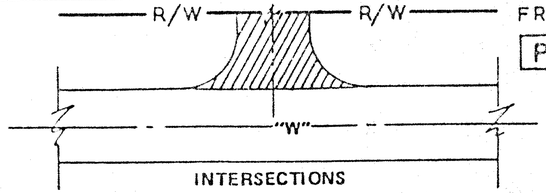
DEPARTMENT OF TRANSPORTATION
OHIO R 709 REV. 9-1-83



EXTRA AREA AND DEDUCTIONS



FRA-33-21.36

PLAN NO. 15

① Apply immediately prior to the first course of asphalt concrete.
② Apply between 846 Type 2 and 846 Type 1, immediately prior to the Type 1.
* Totals are carried directly to the General Summary.
③ As per plan
④ To be paved to Right of Way Line

ROUTE	LOG POINT TO LOG POINT	SIDE	DESCRIPTION	LENGTH MILES	LENGTH LIN. FT.	WIDTH "W" IN FEET	AREA IN SQ. YDS.	PROPOSED ITEMS 407 ①TACK COAT @..12... gal./s.y. Gal.	407 COVER AGGR. @...7... lbs./s.y. Ton	ASPHALT CONCRETE THICK INCHES 1½	ASPHALT CONCRETE CU. YD. ITEM 846 Type 2	ASPHALT CONCRETE CU. YD. ③ITEM 846 Type 1	ASPHALT CONCRETE THICK INCHES 1¼	407 ②Tack Coat @ .10 gal./s.y. GAL.	407 Cover Aggr. @ 7 lbs/s.y. TON	✱202 Curb Removed LIN. FT.	✱301 @ 1 s.f. per lin.ft. + 27 (Backfill) CU. YD.	✱604 Catch Basins Adjusted to Grade, as per plan EACH	✱604 Manholes Adjusted to Grade as per plan EACH	✱60 Manhole Bas Adjust to Gra as per plan EACH
US-33	Various		④ Intersections				813	98	3		34	28		81	3					
	30.43		U-Turn Crossover				350	42	1		15	12		35	1					
	Various		Intersection Crossovers				2,000	240	7		83	69		200	7					
	Ramp Z		US-33 S.B. to SR-674		100	0-12	67													
					438	12	584													
					262	12-39	742													
					488	16	868													
					240	16-36	693													
					310	36	1,240													
	Ramp Z Total						4,194	503	15		175	146		419	15					
	Ramp AA		SR-674 to US-33 E.B.		83	0-20	92													
					863	16	1,534													
					1,152	40-0	2,560													
	Total Ramp AA						4,186	502	15		174	145		419	15	266	10			
	Ramp CC		SR-674 S.B. to US-33 W.B.		1,007	16	1,790													
					1,267	40-0	2,816													
	Total Ramp CC						4,606	553	16		192	160		461	16	400	15			
	Ramp DD		SR-674 N.B. to US-33 W.B.		1,122	16	1,995													
					1,139	40-0	2,531													
	Total Ramp DD						4,526	543	16		189	157		453	16	200	7	1		
	Ramp BB		US-33 W.B. to SR-674		100	0-12	67													
					422	12	563													
					277	12-39	785													
					1,347	16	2,395													
					60	0-40	133													
	Total Ramp BB						3,943	473	14		164	137		394	14					
Total Part 4 to Page 6								2,955	88		1,027	854		2,463	88	866	32	1		

Rev. 5-27-8

DEPARTMENT OF TRANSPORTATION
M& R 712 REV. 9-1-83

PAVED SHOULDERS

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

PLAN NO.
FRA -33 -21.36

14
80

No deductions have been made for the approaches to the structures not being paved to allow for low shoulders. Extra material is to be used as directed.

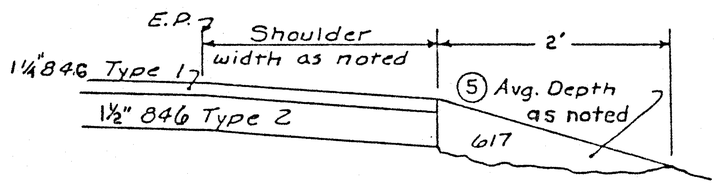
Deductions for Structures

⑧ Total s.y. = 51088 s.y.
Str.2503L&R = -288 s.y.
Str.2509L&R = -943 s.y.
Total = 49857 s.y.

⑨ Total s.y. = 40,737 s.y.
Str.2751 L&R = -53 s.y.
Str.2900 L&R = -247 s.y.
Total = 40,437 s.y.

⑬ Excavation Not Including Embanknent Construction
End Area 15.99 X 4752 ÷27= 2814 CU. YD.

⑭ Subbase Type II
End Area 6.66 X 4752÷27 = 1172 CU. YD.



SHOULDER & BERM DETAIL

Applies to all shoulders except the outside ones from SLM 30.21 to SLM 31.23

1. ITEM 203 LINEAR GRADING
This work shall consist of preparing a subgrade for the proposed paved shoulders by excavating the existing shoulder material to the depth shown in the plan, or as directed by the Engineer, removing any unstable material (unstable material shall include any material 3" in diameter or larger) 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 shall then be excavated and the subgrade shaped and compacted. Compaction shall be in accordance with ITEM 203.13 to a minimum depth of 6.0 inches. Cost of subgrade compaction shall be included in the unit bid price for ITEM 203 LINEAR GRADING. 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.

Upon completion of the paved shoulders the Contractor shall regrade the existing shoulders so as to provide positive drainage. Regrading shall be accomplished by the addition of, or removal of material between the edge of the new pavement and the shoulder break over point using a slope of 1"/Ft. The shoulder shall then be compacted to a sufficient density to prevent erosion until seeding is performed. All excess material shall be removed and disposed of by the Contractor at his own expense. Conversely, any additional material required shall be furnished at the Contractor's expense. The Contractor shall restrict his operation to one side of the road at a time and such that no open trench exists at the end of each work day. All materials, labor, equipment, tools and incidentals necessary to complete the above operation shall be included in the bid price for ITEM 203 LINEAR GRADING.

2. ITEM 301 BITUMINOUS AGGREGATE BASE
Prior to placement of the 301 the edge of the existing pavement, for the full depth of the trench, shall be coated with bituminous material in accordance with ITEM 401.12. The maximum compacted depth of any one layer shall be 3.00 inches. The cost for the above operation shall be included in the bid price for ITEM 301 BITUMINOUS AGGREGATE BASE.

3. ITEM 402 ASPHALT CONCRETE may be used in lieu of ITEM 301 BITUMINOUS AGGREGATE BASE.

4. An additional estimated quantity of ITEM 617 is provided for use on gravel driveways and other gravel areas as directed. Part 1 - 4 cu. yds.

5. Quantities of 617 for backup have been included for the entire length of the project. Any extra material is to be used as directed.

⑥ Apply immediately prior to the first course of asphalt concrete.
⑦ Apply between 846 Type 2 and 846 Type 1, immediately prior to the Type 1.
⑪ These totals are carried directly to the General Summary.
⑫ Part 2 is as per plan

										PAVED SHOULDER DATA					⑪ 659			407		407		846	846
			LENGTH		TYPICAL	PROPOSED WIDTH (FT.)					203	310	305	617		SEEDING AND MULCHING	COMMERCIAL FERTILIZER	WATER	TACK COAT	COVER AGGR.	TACK COAT	COVER AGGR.	ASPHALT CONCRETE TYPE 2	ASPHALT CONCRETE TYPE 1
PART	ROUTE	LOG POINT TO LOG POINT	MILES	LIN. FT.		A	B	C	D	SHOULDER AREA SQ. YDS.	⑬	⑭	Concrete Base 8"	COMPACTED AGGREGATE AVG. THICK INCHES	Width as Noted See Detail	3 Lbs. of seed per 1000 s.f.	20 Lbs. per 1000 s.f.		at .12	at 7	at .10	at 7	1½" Thick	1½" Thick
											CU. YD.	CU. YD.	SQ. YD.		CU. YD.	Sq. Yd.	Ton	M. Gal.	⑥ GAL.	TON	⑦ GAL.	TON	CU. YD.	CU. YD.
1	US-33	21.43 - 21.45	.02	106	3		4	4		94				3	4				11	1	9	1	4	
		21.45 - 21.54	.09	475	4		4	4	10	950				3	26				114	3	95	3	40	
		21.54 - 22.11	0.57	3010	5	10	4	4	10	9364				3	223				1124	33	936	33	390	
		22.11 - 23.01	0.90	4752	5			4	10	7392				3	176				887	26	739	26	308	
		22.11 - 23.01	(0.90)	(4752)	5	10	4			7392	2814	1172	7392	3	176				887	26	739	26	308	
	⑧	23.01 - 23.12	3.11	16421	5	10	4	4	10	49857				3	1216				5983	174	4986	174	2077	
	Refugee Rd Interchange			6017	1	3	3			4011				3	223				481	14	401	14	167	
	SR 317 Interchange			4476	1	3	3			2984				3	166				358	10	298	10	124	
	Ramp	U		528	1	curbl	3			235				3	10				28	1	24	1	10	
	Ramp	Y		735	1	3	curbl							3	14				39	1	33	1	14	
	Total	From Page 43														741	0.07	1						
	Total	Part 1	4.69							82606	2814	1172	7392		2234	741	0.07	1	9912	289	8260	289	3442	2860

DEPARTMENT OF TRANSPORTATION
M& R 712 REV. 9-1-83

PAVED SHOULDERS

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

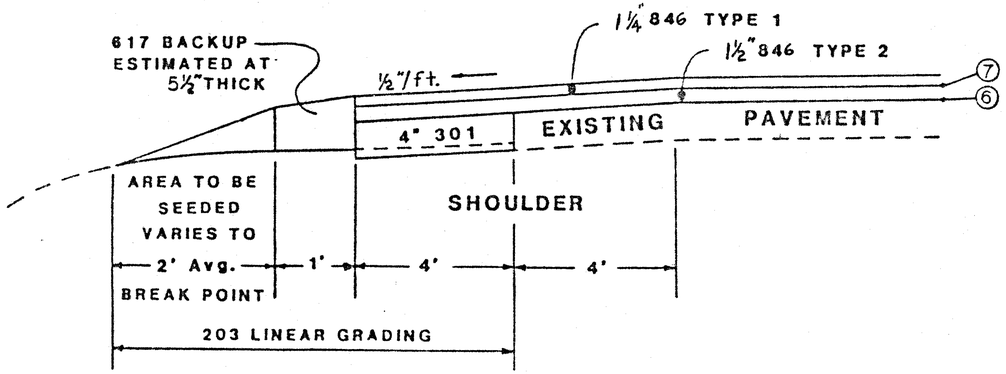
PLAN NO.

FRA-33-21.36

15
20

No deductions have been made for the approaches to the structures not being paved to allow for low shoulders. Extra material is to be used as directed.

Deductions for Structures
⑩ Total s.y. = 5,914 s.y.
Str.2649 L&R = -460 s.y.
Total = 5,454 s.y.



LINEAR GRADING DETAIL

Applies to SLM 30.21 to SLM 31.23 outside shoulders only

1. ITEM 203 LINEAR GRADING
This work shall consist of preparing a subgrade for the proposed paved shoulders by excavating the existing shoulder material to the depth shown in the plan, or as directed by the Engineer, removing any unstable material (unstable material shall include any material 3" in diameter or larger) 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 shall then be excavated and the subgrade shaped and compacted. Compaction shall be in accordance with ITEM 203.13 to a minimum depth of 6.0 inches. Cost of subgrade compaction shall be included in the unit bid price for ITEM 203 LINEAR GRADING. 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.

Upon completion of the paved shoulders the Contractor shall regrade the existing shoulders so as to provide positive drainage. Regrading shall be accomplished by the addition of, or removal of material between the edge of the new pavement and the shoulder break over point using a slope of 1"/Ft. The shoulder shall then be compacted to a sufficient density to prevent erosion until seeding is performed. All excess material shall be removed and disposed of by the Contractor at his own expense. Conversely, any additional material required shall be furnished at the Contractor's expense. The Contractor shall restrict his operation to one side of the road at a time and such that no open trench exists at the end of each work day. All materials, labor, equipment, tools and incidentals necessary to complete the above operation shall be included in the bid price for ITEM 203 LINEAR GRADING.

2. ITEM 301 BITUMINOUS AGGREGATE BASE
Prior to placement of the 301 the edge of the existing pavement, for the full depth of the trench, shall be coated with bituminous material in accordance with ITEM 401.12. The maximum compacted depth of any one layer shall be 3.00 inches. The cost for the above operation shall be included in the bid price for ITEM 301 BITUMINOUS AGGREGATE BASE.

3. ITEM 402 ASPHALT CONCRETE may be used in lieu of ITEM 301 BITUMINOUS AGGREGATE BASE.

4. An additional estimated quantity of ITEM 617 is provided for use on gravel driveways and other gravel areas as directed.

5. Quantities of 617 for backup have been included for the entire length of the project. Any extra material is to be used as directed.

⑥ Apply immediately prior to the first course of asphalt concrete.
⑦ Apply between 846 Type 2 and 846 Type 1, immediately prior to the Type 1.
⑪ These totals are carried directly to the General Summary.
⑨ See note page 14.

										PAVED SHOULDER DATA						⑪ 653			407		407		846	846
			LENGTH			PROPOSED WIDTH (FT.)					⑪ 203		⑪ 301		617		SEEDING AND MULCHING	COMMERCIAL FERTILIZER	WATER	TACK COAT	COVER AGGR.	TACK COAT	COVER AGGR.	ASPHALT CONCRETE TYPE 2	ASPHALT CONCRETE TYPE 1 as per plan
PART	ROUTE	LOG POINT TO LOG POINT	MILES	LIN. FT.	TYPICAL	A	B	C	D	SHOULDER AREA SQ. YDS.	LINEAR GRADING DEPTH INCHES 4	**STA.	BITUMINOUS AGGREGATE BASE AVG. THICK INCHES 4	CU. YD.	COMPACTED AGGREGATE AVG. THICK INCHES	Width as Noted See Detail CU. YD.	3 Lbs. of seed per 1000 s.f. Sq. Yd.	20 Lbs. per 1000 s.f. Ton	M. Gal.	at .12 gal./s.y. ⑥ GAL.	at 7 lbs./s.y. TON	at .10 gal./s.y. ⑦ GAL.	at 7 lbs./s.y. TON	1½" Thick CU. YD.	1¼" Thick CU. YD.
2	US-33	26.12 - 26.25	0.13	686	5	10	4	4	10	2134					3	51				256	7	213	7	89	74
	⑨	26.61 - 29.09	2.48	13094	5	10	4	4	10	40437					3	970				4852	142	4044	142	1685	1404
	Total	Part 2	2.61							42571						1021				5108	149	4257	149	1774	1478
3	US-33	26.25 - 26.61	0.36	1901	5	10	4	4	10	⑩ 5454					3	141				654	19	545	19	227	189
4	US-33	29.09 30.21	1.12	5914	5	10	4	4	10	18399					3	438				2208	64	1840	64	767	639
		30.21 - 31.23	1.02	5386	5	8	4	4	8	14363					5½	549				1724	50	1436	50	598	498
		30.21 - 31.23	(1.02)	(5386)	5	4			4	4788		107		532			2394	0.22	3						
	SR-674	Interchange		5377	1	3	3			3585					3	199				430	13	359	13	149	124
	Total	Part 4	2.14									107		532		1186	2394	0.22	3	4362	127	3635	127	1514	1262

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PLAN NO.

GENERAL NOTES

GENERAL

The Contractor shall submit in writing a schedule of operations to the Engineer (See 101.18) and receive approval in writing before work is started on this project.

The 407 tack coat shall be applied just ahead of the day's paving operations.

All intermediate course joints shall be governed by Sec. 401.15 and the cost of sealing these joints shall be included in the unit price bid for the asphalt course.

Any exposed center line or lane line longitudinal joints shall be covered by the adjacent asphalt concrete placement of the Contractor's next work day. A maximum of fifty (50) feet of longitudinal joint can be left exposed over the weekend.

All work shall be performed within the existing right-of-way.

The Contractor shall restrict the sawing operation to only the removal and replacement which can be completed in one week or as directed by the Engineer

All traffic control devices shall be furnished, erected, maintained and removed by the Contractor in accordance with the Ohio Manual of Uniform Traffic Control Devices.

Field Office - The Contractor shall provide a suitable field office having a minimum of 400 sq. ft. of floor space. Payment shall be at the lump price bid for Item 619 Field Office.

Profile and Alignment

The work proposed by this project is for the repair and 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 it will be raised an amount equal to the thickness of the resurfacing course.

846 Asphalt Concrete Surface Course, Type 1, As Per Plan

The top surface of the longitudinal and transverse joints shall be painted six (6) inches wide with the same bituminous material used in the 848 mixture as directed. Application rate shall be at least 0.25 gal./s.y. The cost of this operation to be included in the cost of the 846 Asphalt Concrete, Type 1, as per plan.

Contingency Quantities

The Contractor shall not order materials or perform work listed in the General Summary for items designated by plan note to be used "as directed by the Engineer" unless authorized by the Engineer. (The actual work locations and quantities used at the Engineer's discretion shall be made a matter of record by incorporation into the final change order governing completion of this project.)

Item 846 - Asphalt Concrete

On this project, Supplemental Specification 846, Table 2-2, "Properties of Mixtures for Heavy Traffic Volumes", shall apply.

407 Tack Coat

The tack coat and cover aggregate operation shall be determined as per Spec. 407.05. Plan quantities indicate average application rates of 0.10 gallons per square yard of tack coat and 7 pounds per square yard of cover aggregate for estimating purposes only.

ITEM 202 - Remove Impact Attenuators

This item shall be used for the removal of impact attenuators in the Refugee Rd. interchange. Their exact location is shown on page 78A. These attenuators shall remain in place until after the overhead sign supports behind them have been removed. This item shall also include all materials, labor and equipment needed to build up the attenuator site to the level of the surrounding overlay using asphalt concrete.

Guardrail Post and Guard Post Holes

All holes remaining after removal of guardrail posts or guard posts shall be filled with granular material, excess material resulting from guardrail reconstruction or excess material from berm reshaping. Fill material containing sod shall not be used. All fill material shall be approved by the Engineer. Material placed in holes shall be thoroughly compacted and leveled off as directed by the Engineer. Payment for the above shall be included in the unit price bid for the applicable guardrail item.

Location of Guardrail

The locations of guardrail runs, as shown in these plans, are subject to adjustment prior to final acceptance. The Engineer shall be satisfied that all installations will afford maximum protection for traffic.

Item 606 Guardrail & Item 517 Railing, 710.06 or SS 904

The rail elements used on this project will be as specified under 710.06, C&M Specs. or Supp. Spec. 904. However, intermixing of aluminum and galvanized coated beams on individual, continuous installations of rail shall not be permitted.

Cooperation between Contractors

The Contractor's attention is called to Specification 105.07 of the State of Ohio, Department of Transportation Construction and Material Specifications (Cooperation between Contractors). Project 746-84, (FRA-104-12.41) may be under construction in the Refugee Rd. interchange area and care should taken to coordinate with the contractor doing this work.

Manholes and Other Castings

The casting tops of manholes, valve boxes and other structures owned by public service corporations will be adjusted to grade by their respective owners. The work will be done following the construction of the surface course. The Contractor shall notify such public service corporations at lease 48 hours in advance of his operations so work may be properly scheduled. The placing of 404 after the private utility castings are raised shall be the responsibility of the private utility. All castings shall be covered with steel plates, or otherwise be capable of carrying traffic between 7:00 and 9:00 A.M. and between 4:00 and 6:00 P.M. All castings in the City of Columbus shall be adjusted to grade according to Specification 604.03 Method A. Adjusting rings are no longer permitted.

Petzinger Rd. Area Coordination

The Columbus Division of Traffic Engineering shall be notified at least 72 hours in advance of any work involving the traffic signals or pavement markings in the Petzinger Rd. intersection area.

Traffic Control Standard Construction Drawings

References to Supplemental Specifications 857, 858, 859, 957, 958 and 959 on the Traffic Control Standard Construction Drawings in these plans shall be considered to read as respective references to Items 630, 631, 632, 730, 731 and 732.

Rev. 8-25-86
Rev. 5-27-86

DEPARTMENT OF TRANSPORTATION
MS R 712 REV. 9-1-83

MAINTENANCE OF TRAFFIC GENERAL NOTES

FRA-33-21.36

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PLAN NO.

GENERAL

In addition to the requirements for maintaining traffic as indicated in the Ohio Manual of Uniform Traffic Control Devices and pertinent items of specifications, the following requirements shall apply:

No work shall be performed by the Contractor from 2:00 P.M. on the day preceding a National Holiday until 6:00 A.M. the day after the National Holiday. Additionally, no work shall be performed on a weekend which falls adjacent to a National Holiday. During the above periods all lanes shall be open to traffic in each direction.

The berm shall be at the same stage of completion as the main line pavement before traffic is returned to a diverted section unless otherwise directed by the Engineer.

A watchman shall be on duty twenty-four (24) hours per day during the time restricted traffic is being maintained to insure proper functioning of the various traffic control devices, except when the Contractor is performing work in these areas.

The maximum length of any one closure is one (1) mile unless otherwise directed by the Engineer.

When work is being performed or equipment is on berms or shoulders and is within 12' of a traveled lane, that lane shall be closed.

Berm reshaping and guardrail removal and construction shall be performed on only one side of the pavement at any given time.

ITEM 404 - Bituminous Concrete for Maintaining Traffic

The Contractor shall maintain and restore berm damaged by traffic opposite the work areas. Estimated quantities of 404 Bituminous Concrete are provided for this operation. Part 1 - 50 cu. yds., Part 2 - 10 cu. yds., Part 3 - 1 cu. yd. and Part 4 - 5 cu. yds.

ITEM Special - Law Enforcement Officer with Patrol Car

The Contractor shall provide the services of one special duty Law Enforcement Officer (L.E.O.) and patrol car for the purpose of closing one or more lanes of directional traffic and channelizing that traffic into one or two lanes. When the period of closure is expected to last more than one working day, the L.E.O. shall be present during the initial first day set-up period but is not considered necessary and shall not be included for payment under L.E.O. with patrol car during the remainder of the period of use of a given closure arrangement. A flashing arrow barricade with signs and drums as detailed is sufficient for warning at the beginning and end of such arrangements after the first day. A downstream extension of such arrangement shall not require the use of a L.E.O. When the beginning point of a lane closure operation is shifted substantially, or a new lane closure arrangement is initiated in another part of the project area, a L.E.O. shall again be required. In all cases the L.E.O. shall be utilized as directed by the Engineer. Information regarding arrangement and payments by the Contractor for special duty L.E.O. with patrol car may be obtained by contacting the Ohio Highway Patrol, 650 East Main Street, Columbus Ohio, telephone (614) 466-2660 and the Deputy Chief, Service Subdivision, Columbus Police Department, (614) 222-4786, for areas inside Columbus.

Payment for the L.E.O. with patrol car shall be made at the contract price for Item Special, Unit - Hours, Description - Law Enforcement Officer. with Patrol Car.

Part 1 - 100 hours
Part 2 - 50 hours
Part 3 - 2 hours
Part 4 - 25 hours

PUBLIC SAFETY

No hazard shall be left unprotected except for the actual time necessary to remove and reinstall the guardrail in a continuous operation. The removal of all existing guardrail shall at all times be as directed by the engineer. No guardrail shall be removed until the new materials are on the site, ready for installation. The exposed approach end of the final section of an incomplete guardrail run shall be dropped to the ground until the installation is completed. When a gap exists in a guardrail run, rail elements shall be bolted together to eliminate exposed ends during non-working hours. Failure to comply with these requirements shall be deemed sufficient cause to order work suspended on this project until such time that the engineer is assured of said compliance.

US 33 W.B. CLOSURE AND DETOUR

The Contractor shall complete all work in the Westbound lanes between Haddon Road and Refugee Road, as phase one of this project. When work is started in this area the Contractor shall work twenty four (24) hours per day until all work in this area is completed, unless otherwise directed.

The Contractor shall close Westbound US 33 at Refugee Rd. as detailed on page 59B. The Contractor shall also close the on ramps from Refugee Road and Winchester Pike to Westbound US 33 using the detail shown on page 59A. The left turn lane on Refugee Rd. shall also be closed. Other pertinent traffic control details are shown on pages 59 C,D,E & F.

The State will install signs for the US 33 detour on IR 270. The City of Columbus will install signs for the US 33 detour on Refugee Road, Winchester Pike and IR 70. The Contractor shall notify The State of Ohio District 6 Traffic Engineer, telephone (614) 466-1410 and The City of Columbus Traffic Engineer, telephone (614) 222-7790 fourteen days prior to closing US 33 or closing any ramps. All conflicting signs shall be covered or altered by the City of Columbus or the State of Ohio, depending on their location.

Sequence of operations for work to be performed on Westbound US 33 between Haddon Rd. and Refugee Rd.

1 - Remove existing guardrail and fence at the end of Old Petzinger Road.

2 - Install temporary pavement from old Petzinger Road to US 33 and install fill and temporary road at the intersection of Old Petzinger Road and Petzinger Road Extension.

3 - Install signing and road closures as detailed.

4 - Complete all work in the area from Haddon Rd. to Refugee Rd. in the Westbound lanes.

Alternate Methods

If the Contractor so elects, he may submit alternate methods for the maintenance of traffic, provided the intent of the above provisions is followed and no additional inconvenience to the traveling public results therefrom. No alternate plan shall be placed into effect until approval has been granted, in writing by the Director.

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PLAN NO.

MAINTENANCE OF TRAFFIC GENERAL NOTES

CONTD.

PART 1 ONLY

GENERAL

Prior to the closing of any portion of the highway within the limits of the City of Columbus, the Contractor shall submit a plan of operations in writing to the Columbus Traffic Engineer who shall have said plan reviewed by the Traffic Bureau of the Division of Police. After receiving a copy of the traffic plan approved by the Traffic Bureau and the Traffic Engineer, the Contractor shall obtain the necessary permit for any closure from the Columbus City Engineer. A copy of this permit shall be retained on the job during the times of closure. The Contractor shall submit the plan of operations to the Traffic Engineer 14 days in advance of obtaining the ermit from the Columbus City Engineer.

Special Duty Columbus Police Officer with Patrol Car

The Contractor shall provide the services of a special-duty Columbus city police officer with patrol car, as required by the permit issued by the Columbus City Engineer. The Contractor shall make arrangements for these services with the Deputy Chief, Service Subdivision, Columbus Police Department, phone 614-462-4786.

Payment for these services shall be at the Unit Price Bid for: Item Special - Special Duty Policeman, Unit - Hours. The following estimated quantity has been included in the General Summary for this purpose.

Part 1 - 100 hours

Winchester Pike Detour

Winchester Pike, between the James Road ramp and Petzinger Road, should be detoured via James Road and I-70 to Livingston Avenue during the work to be done on US-33 WB between SLM 22.11 and SLM 23.01. The Contractor will contact the Columbus Division of Traffic Engineering at (614) 222-7790 at least 14 days in advance of this work so that the City can arrange the detour. Also, the Contractor will cooperate fully with this detour within the limits of the project.

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ITEM SPECIAL - FULL DEPTH RIGID PAVEMENT REMOVAL AND RIGID REPLACEMENT

DESCRIPTION. THIS WORK SHALL CONSIST OF PAVEMENT REMOVAL, SUBBASE/SUBGRADE CORRECTION, RIGID PAVEMENT REPLACEMENT, AND SHOULDER RESTORATION IN ACCORDANCE WITH DETAILS SHOWN IN THE PLANS. UNLESS OTHERWISE PROVIDED HEREIN, THE MATERIALS AND WORK SHALL BE IN ACCORDANCE WITH THE PROVISIONS OF 202, 301, 305, 310, 402, 404, 451, 452, 453, 499, 846 AND 848 AS APPLICABLE. THE REQUIREMENTS OF ITEM 451.16 SHALL BE WAIVED FOR THIS WORK.

MATERIALS. CONCRETE SHALL BE CLASS C, ITEM 499 UNLESS OTHERWISE SPECIFIED IN THE PLANS.

JOINT SEALER SHALL MEET THE REQUIREMENTS OF ASTM D-3405, SHALL BE SAMPLED IN ACCORDANCE WITH 705.01 AND SHALL BE PRETESTED BEFORE SHIPMENT TO THE PROJECT.

BOND-BREAKER MATERIAL SHALL BE ON THE APPROVED LIST ISSUED BY THE LABORATORY.

NONSHRINK NONMETALLIC GROUT SHALL MEET THE REQUIREMENTS OF ASTM C-881, TYPE I, GRADE 3, CLASS A, B OR C. THE GROUT SHALL CONSIST OF A TWO COMPONENT EPOXY OR POLYESTER RESIN BONDING COMPOUND THAT WILL FIRMLY ANCHOR THE DOWEL/TIE BAR WITHIN 15 MINUTES.

THE GROUT SHALL BE ACCEPTED BY CERTIFICATION IN ACCORDANCE WITH ITEM 101.061.

FULL DEPTH PAVEMENT SAWING. THE LIMITS OF ALL REPAIRS WILL BE LOCATED AND MARKED BY THE ENGINEER. RIGID PAVEMENT AREAS EXHIBITING DETERIORATION AT THE SURFACE SHALL BE MARKED ONE (1) FOOT MINIMUM BEYOND THE LIMITS OF DETERIORATION BUT IN NO CASE SHALL THE MINIMUM DIMENSION OF THE RIGID REPLACEMENT BE LESS THAN SHOWN IN THE PLANS. PAVEMENT DESIGNATED TO BE REMOVED SHALL BE SAWED FULL DEPTH TRANSVERSELY AND ALONG THE LONGITUDINAL JOINT WITH A DIAMOND SAW BLADE. IF THE EXISTING PAVEMENT IS TO BE OVERLAID WITH ASPHALT CONCRETE, OTHER APPROVED METHODS OF FULL DEPTH SAWING MAY BE USED.

IN AREAS WITH AN EXISTING BITUMINOUS OVERLAY, AN OFF-SET CUT MAY BE MADE THROUGH THE OVERLAY AT THE OPTION OF THE CONTRACTOR, AND THE OVERLAY REMOVED TO PROVIDE CLEARANCE FOR THE FULL DEPTH SAW CUT THROUGH THE RIGID PAVEMENT. IF SUCH A SAW CUT IS MADE AT THE OPTION OF THE CONTRACTOR, IT SHALL BE AT NO ADDITIONAL COST TO THE STATE.

RIGID PAVEMENT REMOVAL. PROCEDURES USED FOR THE RIGID PAVEMENT REMOVAL SHALL NOT CAUSE SPALLING OR CRACKING OF THE ADJACENT PAVEMENT AND SHALL RESULT IN NO DISTURBANCE TO THE UNDERLYING SUBBASE/SUBGRADE OR SURFACED SHOULDER. THE CONTRACTOR MAY ELECT TO MAKE ADDITIONAL SAW CUTS TO FACILITATE THE REMOVAL OF THE PAVEMENT, HOWEVER, ONLY THE CUTS DESIGNATED BY THE ENGINEER WILL BE MEASURED FOR PAYMENT.

IF THE ADJACENT PAVEMENT IS DAMAGED DURING THE PAVEMENT SAWING OR RIGID PAVEMENT REMOVAL, AN ADDITIONAL FULL DEPTH DIAMOND BLADE SAW CUT SHALL BE MADE THE FULL WIDTH OF THE LANE AT A LENGTH THAT WILL ENCOMPASS THE DAMAGED PAVEMENT. THIS ADDITIONAL WORK WILL BE PERFORMED AT NO ADDITIONAL COST TO THE STATE.

SUBBASE/SUBGRADE CORRECTION. PRIOR TO PLACING THE CONCRETE FOR THE RIGID REPLACEMENT, ANY SUBBASE/SUBGRADE MATERIAL THAT IS DISTURBED BELOW THE DESIRED LEVEL OF CLEANOUT SHALL BE REMOVED AND THE PATCH AREA COMPACTED TO THE SATISFACTION OF THE ENGINEER. THE CONTRACTOR SHALL REPLACE THE SUBBASE/SUBGRADE MATERIAL REMOVED WITH CONCRETE AS PART OF THE RIGID REPLACEMENT AT NO ADDITIONAL COST TO THE STATE.

FURNISHING AND PLACING NEW STEEL. ALL REINFORCEMENT, DOWELS AND TIE BARS SHALL BE OF THE SIZE INDICATED IN THE PLAN. DOWEL BARS SHALL BE SMOOTH AND EPOXY COATED AS PER 709.13. THE TIE BARS SHALL BE ROUND, DEFORMED BARS AND EPOXY COATED AS PER 709.13. DOWEL/TIE BAR HOLES SHALL BE DRILLED WITH HYDRAULIC OR ELECTRIC DRILLS. THE DOWEL/TIE BARS SHALL BE PERMANENTLY ANCHORED INTO THE EXISTING PAVEMENT WITH GROUT. THE GROUT SHALL BE MECHANICALLY INJECTED INTO THE REAR PORTION OF THE HOLE. ENOUGH MATERIAL SHALL BE INJECTED TO PROVIDE COMPLETE COVERAGE AROUND THE DOWEL/TIE BAR TO INSURE THEY ARE PERMANENTLY ANCHORED INTO THE EXISTING PAVEMENT. A SATISFACTORY METHOD SHALL BE USED TO HOLD THE DOWEL/TIE BAR IN THE PROPER ALIGNMENT UNTIL THE GROUT HAS HARDENED.

RIGID REPLACEMENT. THE RIGID REPLACEMENT SHALL NOT BE PLACED UNTIL THE GROUT AROUND THE DOWEL/TIE BAR HAS HARDENED. FORMS SHALL BE USED TO PROVIDE A STRAIGHT AND NEAT EDGE AT THE SHOULDER. EACH PATCH SHALL BE CAST IN ONE CONTINOUS FULL-DEPTH OPERATION. THE CONCRETE SHALL BE CONSOLIDATED IN PLACE BY USE OF AN INTERNAL TYPE VIBRATOR. THE CONCRETE SHALL BE CONSOLIDATED AROUND THE EDGES OF THE PATCH AND INTERNALLY. INTERNAL VIBRATORS FOR CONSOLIDATING THE CONCRETE SHALL BE AN APPROVED MECHANICAL SPUD TYPE. THE VIBRATORS SHALL BE CAPABLE OF VISIBLY AFFECTING THE CONCRETE FOR A DISTANCE OF 12 INCHES FROM THE VIBRATOR HEAD.

FINISHING AND TEXTURING. PATCHES THAT ARE LESS THAN 12 FEET IN LENGTH SHALL BE SCREEDED EITHER TRANSVERSELY OR LONGITUDINALLY AS DIRECTED BY THE ENGINEER. FOR PATCHES OVER 12 FEET IN LENGTH, THE SCREED SHALL BE PLACED PERPENDICULAR TO THE CENTERLINE.

WHILE THE CONCRETE IS STILL PLASTIC, THE CONTRACTOR SHALL TEST THE PATCH SURFACE FOR TRUENESS AND FOR BEING FLUSH WITH THE EDGES OF THE ADJACENT SLABS BY USE OF A STRAIGHTEDGE. FOR PATCHES 10 FEET OR LESS IN LENGTH THE STRAIGHTEDGING SHALL BE DONE BY PLACING THE STRAIGHTEDGE PARALLEL TO THE PAVEMENT CENTERLINE WITH THE ENDS RESTING ON THE EXISTING PAVEMENT AND DRAWING THE STRAIGHTEDGE ACROSS THE PATCH. THE STRAIGHTEDGE SHOULD BE IN CONTACT WITH THE EXISTING PAVEMENT WHILE DRAWING IT ACROSS THE PATCH AND ANY HIGH OR LOW SPOTS EXCEEDING 1/8 INCH SHOULD BE CORRECTED. IF ANY CORRECTIONS ARE MADE, THE SURFACE SHALL BE RECHECKED.

THE SURFACE OF THE CONCRETE SHALL BE TEXTURED TO MATCH THE SURROUNDING PAVEMENT.

CURING. CONCRETE CURING COMPOUND SHALL BE APPLIED TO THE RIGID REPLACEMENT SURFACE IN ACCORDANCE WITH 451.10. IF THE RIGID REPLACEMENT IS TO BE OVERLAID WITH ASPHALT CONCRETE BEFORE OPENING TO TRAFFIC, THE CONTRACTOR MAY USE A 407 TACK COAT IN LIEU OF A CONCRETE CURING MEMBRANE AT A RATE OF 0.10 GALLONS PER SQUARE YARD.

JOINTS. TRANSVERSE JOINTS BETWEEN THE RIGID REPLACEMENT AND THE EXISTING RIGID PAVEMENT SHALL BE SAWED OR FORMED BEFORE THE REPAIR IS OPENED TO TRAFFIC. BOTH FACES OF THE JOINT SHALL BE THOROUGHLY CLEANED BY SAND-BLASTING TO THE DEPTH OF THE BOTTOM OF THE PROPOSED SEALER. THE SAND-BLAST CLEANING OPERATION SHALL BE SUCH THAT WHEN COMPLETED THE CONCRETE JOINT WHICH IS TO RECEIVE THE NEW JOINT SEALANT SHALL BE COMPLETELY FREE OF ALL DIRT, DUST, TAR AND ASPHALT, DISCOLORATION AND STAIN, AS WELL AS ANY AND ALL OTHER FORMS OF CONTAMINATION, LEAVING A CLEAN, NEWLY EXPOSED CONCRETE SURFACE. THE TOP OF THE FRESHLY PLACED SEALANT SHALL BE 1/4 INCH (± 1/16 INCH) BELOW THE PAVEMENT SURFACE. THE SHAPE FACTOR (DEPTH TO WIDTH RATIO) OF THE SEALANT SHALL BE BETWEEN ONE (1) AND TWO (2).

WEARING COURSE REPLACEMENT. EXISTING BITUMINOUS OVERLAY REMOVED SHALL BE REPLACED IN ACCORDANCE WITH DETAILS SHOWN IN THE PLANS AND THE COST SHALL BE INCLUDED IN THE UNIT PRICE BID FOR FULL DEPTH RIGID PAVEMENT REMOVAL AND RIGID REPLACEMENT.

SHOULDER RESTORATION. PRIOR TO OPENING THE RIGID REPLACEMENT TO TRAFFIC, THE SHOULDER SHALL BE RESTORED TO THE ORIGINAL LINE AND GRADE USING AN AGGREGATE OR BITUMINOUS CONCRETE IN ACCORDANCE WITH THE PLANS OR AS APPROVED BY THE ENGINEER. THE LOW AREAS SHALL BE FILLED AND COMPACTED FLUSH WITH THE SURROUNDING SHOULDER. MATERIALS REMOVED FROM THE SHOULDER SHALL BE DISPOSED OF BY THE CONTRACTOR.

OPENING TO TRAFFIC. THE RIGID REPLACEMENT MAY BE OPENED TO TRAFFIC WHEN NEW CONCRETE HAS ATTAINED A MODULUS OF RUPTURE OF 400 P.S.I. BEAMS SHALL BE CAST BY THE ENGINEER TO DETERMINE THE MODULUS OF RUPTURE.

EMERGENCIES. WHEN THE PAVEMENT HAS BEEN REMOVED AND THE CONTRACTOR IS UNABLE TO COMPLETE THE REQUIRED RIGID REPLACEMENT IN TIME FOR IT TO BE OPENED TO TRAFFIC ON SCHEDULE, THE EXCAVATION SHALL BE FILLED WITH A COMMERCIALLY AVAILABLE BITUMINOUS MIXTURE OR OTHER SUITABLE TEMPORARY PATCH MATERIAL WITH A DURABLE SURFACE AS DIRECTED BY THE ENGINEER. THE CONTRACTOR WILL BE REQUIRED TO MAINTAIN THESE PATCHES WHILE THEY ARE IN SERVICE. THE COST OF PLACING, MAINTAINING, REMOVING AND DISPOSING OF THE TEMPORARY PATCHES WILL BE AT THE CONTRACTOR'S EXPENSE.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT. THE QUANTITY OF FULL DEPTH RIGID PAVEMENT REMOVAL AND RIGID REPLACEMENT TO BE PAID FOR SHALL BE THE NUMBER OF SQUARE YARDS OF RIGID PAVEMENT REMOVED TO THE LIMITS ESTABLISHED BY THE ENGINEER. ACCEPTED QUANTITIES WILL BE PAID FOR AT THE CONTRACT UNIT PRICE PER SQUARE YARD WHICH PRICE AND PAYMENT SHALL BE FULL COMPENSATION FOR ALL PAVEMENT REMOVED, SUBBASE/SUBGRADE CORRECTION, RIGID REPLACEMENT, FURNISHING AND PLACING NEW STEEL, JOINTS, WEARING COURSE REPLACEMENT, SHOULDER RESTORATION AND ALL INCIDENTALS NECESSARY TO COMPLETE THIS ITEM.

THE QUANTITY OF FULL DEPTH PAVEMENT SAWING TO BE PAID FOR SHALL BE THE NUMBER OF LINEAR FEET OF FULL DEPTH SAW CUTS COMPLETED AT THE DESIGNATED LIMITS OF THE REPAIR AREAS.

PAYMENT SHALL BE MADE UNDER:

ITEM	UNIT	DESCRIPTION
SPECIAL	SQ. YDS.	FULL DEPTH RIGID PAVEMENT REMOVAL AND RIGID REPLACEMENT
SPECIAL	LIN. FT.	FULL DEPTH PAVEMENT SAWING

SUBBASE/SUBGRADE FAILURES

IF, AFTER REMOVAL OF THE RIGID PAVEMENT, THE ENGINEER DETERMINES THAT THE SUBBASE OR SUBGRADE HAS FAILED OR IS PUMPING, HE SHALL DIRECT THE CONTRACTOR TO EXCAVATE THE UNSUITABLE MATERIAL AND REPLACE IT WITH COMPACTED 304 AGGREGATE AND PLACE AGGREGATE DRAINS AS NECESSARY. QUANTITIES OF ITEM 301 BITUMINOUS AGGREGATE BASE AND ITEM 304 AGGREGATE BASE HAVE BEEN PROVIDED TO RECONSTRUCT THE PORTION OF THE EXISTING PAVED BERM DISTURBED BY THE TRENCHING OPERATIONS FOR PLACING THE ITEM 605 AGGREGATE DRAINS.

PAYMENT FOR THIS WORK SHALL BE MADE AT THE CONTRACT BID PRICE FOR:

ITEM	UNIT	DESCRIPTION
203	CU. YDS.	EXCAVATION NOT INCLUDING EMBANKMENT CONSTRUCTION
301	CU. YDS.	BITUMINOUS AGGREGATE BASE
304	CU. YDS.	AGGREGATE BASE
605	LIN. FT.	AGGREGATE DRAINS

GENERAL NOTES (continued)

The grading of the coarse aggregate within the separated size groups shall be as follows:

Sieve	Cumulative Percent Passing 3/4" to 1½"	1½" to 3"
3"		90-100
2"		20-55
1½"	90-100	0-10
1"	20-45	0-5
3/4"	0-10	
1/2"	0-1	0-1

Placing Coarse Aggregate:

The coarse aggregate shall be handled and deposited in the forms in such a manner that the grading of the aggregate in place will be as uniform as practicable. The aggregate may be lightly vibrated, tamped or rodded during placing operations to reduce the voids to an economic minimum.
Care shall be taken that reinforcing steel and embedded items are not displaced from the locations as indicated on the drawings.

Mixing and Pumping Groutite Mortar:

Only approved mixing and pumping equipment shall be used in the preparation and handling of Groutite mortar. All oil or other rust inhibitors shall be removed from the mixing drums, stirring mechanisms, and other portions of the equipment in contact with the mortar before the mixers are used.
All material shall be accurately measured by volume or weight as they are fed to the mixer.
The time of mixing shall be such as to produce a perfectly homogeneous mortar of the desired consistency. If agitated continuously, the mortar may be held in the mixer or agitator as long as two hours at temperatures below 70 degrees Fahrenheit, somewhat less at higher temperatures. If there is a lapse in the operation of injection, the mortar shall be recirculated through the pump, or through the mixer drum or agitator and pump.
The method of injecting the Groutite mortar into the aggregate shall be as approved. All pumping shall be done slowly and in such a manner as to permit the mortar to fill completely all voids in the coarse aggregate. Where the aggregate mass is totally enclosed, the pumping shall be continued until all excess air and water bave been expelled through vents or venting surfaces at the top of the forms.

Forms:

Forms shall be of wood, steel, or other approved material. Absorptive form lining will not be permitted. Forms shall be true to line and grade, mortar-tight and sufficiently rigid to prevent objectionable deformation under load. Where forms for continuous surfaces are placed in successive units, care shall be taken to fit the forms over the completed surface so as to obtain accurate alignment of the surface and to prevent leakage of mortar. Responsibility for their adequacy shall rest with the contractor. The form surfaces shall be smooth, free from irregularities, dents, sags, or holes when used for permanently exposed faces. Bolts and rods used for internal ties shall be so arranged that when the forms are removed, all metal will be not less than two (2) inches from any concrete surface. Wire ties will not be permitted where the concrete surface will be exposed to weathering or where discoloration will be objectionable. All forms shall be so constructed that they can be removed without hammering or prying against the concrete. All exposed joints shall be chamfered and suitable moulding shall be placed to bevel or round exposed edges or corners, including the use of dummy chamfers and false joints to provide a neat and uniform appearance, unless otherwise indicated on the drawings or directed.

Forms for exposed surfaces shall be coated with non-staining mineral oil which shall be applied shortly before the coarse aggregate is placed. After oiling, surplus oil on the form surfaces and any oil on the reinforcing steel or other surfaces requiring bond with the concrete shall be removed. Forms for unexposed surfaces may be thoroughly wetted in lieu of oiling immediately before the placing of coarse aggregate, except that in freezing weather, oil shall be used.
When appropriate, during the pumping of Groutite mortar, the forms shall be lightly vibrated on the outside in the vicinity of the mortar surface to remove air bubbles which sometimes adhere to the inside of the sheathing and to insure a continuous film of mortar between the aggregate particles and the forms. The vibrating shall be done on both the sheathing and the studs, using approved equipment.
Forms shall not be removed without approval, and all removal shall be accomplished in a manner which will prevent injury to the concrete.

Curing:

Preplaced aggregate concrete shall be cured by the application of approved curing compounds or by continuous wetting as required for any good concrete.

Testing:

Compressive strengths shall be determined on the basis of 6" x 12" preplaced aggregate concrete test cylinders made in accordance with proper procedures for same.
Any additional information regarding preplaced aggregate concrete shall be in accordance with the manufacturer's recommendations.

This item shall also include the cost of replacing portions of concrete at the abutment backwalls on strs. FRA-33-2649L&R in accordance with plan sheet no. 75 .

ITEM 202 - Portions of Existing Superstructure Removed

This item shall include all labor and equipment required to remove existing top rail, parapets, curbs, and deck edges on structures FRA-33-2509L&R and FRA-33-2649L&R in accordance with the plans. Also included with this item for payment shall be the removal of the bulb angles, and the removal of the existing scuppers if decided to do so, and removal of the ends of the bridges on strs. FRA-33-2649L&R in accordance with plan sheet no. 75 .
Aluminum rail, posts, and fittings removed shall become property of the State of Ohio and shall be stored on the right-of-way for removal by State Forces. All other materials removed shall be disposed of by the contractor.

ITEM 202 - Portions of Abutments Removed

This item shall include all labor and equipment required to remove existing portions of strs. FRA-33-2900L&R in accordance with plan sheet no. 74, and existing portions of strs. FRA-33-2649L&R in accordance with plan sheet no. 75 .

ITEM 516 - Structural Expansion Joints including Elastomeric Compression Seals

This item shall include the cost of furnishing and installing an Elastomeric Compression Seal at each abutment in accordance with the plans and at the direction of the Manufacturers representative. All materials, labor, equipment and incidentals required to complete this work, except that which is specifically included uder separate item, shall be included with this item for payment. The seal shall be furnished and installed without a field splice after all resurfacing and repair operations, except approach rail connections, are completed. The end dam armor steel shall be fabricated in two pieces for each end dam, but the compression seal shall be furnished in one piece. Butt joints shall be furnished in end dam, see Std. Dwg. SD-1-69. Expansion joint steel, except surfaces in direct contact with deck and backwall concrete, shall be painted in accordance with Item 514 of the C.M.S., and the cost shall be included with this item for payment.

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STATE OF OHIO
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
DISTRICT 6 BRIDGE DEPARTMENT

GENERAL NOTES

FRA-33-2503L&R FRA-33-2751L&R
FRA-33-2509L&R FRA-33-2900L&R
FRA-33-2649L&R

DESIGN	DRAWN	TRACE	CHECK	REVIEW DATE	REV.
	JAJ	JAJ		EM 12-14-83	

FHWA REGION	STATE	PROJECT	
5	OHIO		

FRA-33-21.36

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 EVALUATED BY THE ENGINEER IN ACCORDANCE WITH THE THREE PERFORMANCE PARAMETERS CONTAINED IN SUPPLEMENT 1047. THE MARKINGS SHALL BE REPAIRED OR REPLACED WHEN THE NUMERICAL RATING OF A PARAMETER IS (a) SIX OR LOWER FOR DURABILITY, (b) FOUR OR LOWER FOR VISUAL EFFECTIVENESS AND (c) FOUR OR LOWER FOR NIGHT VISIBILITY. THE CONTRACTOR SHALL REPAIR OR REPLACE UNSATISFACTORY MARKINGS IMMEDIATELY AND AT NO ADDITIONAL COST TO THE STATE.

THE CONTRACTOR SHALL, IN ADVANCE OF ANY SECTION OF ROADWAY LACKING OMUTCD FULL PATTERN STANDARD DIMENSION EDGE LINE OR CENTER LINE MARKINGS, ERECT A "NO EDGE LINES" (OW-167-36) SIGN OR "UNMARKED NO PASSING ZONES" (OW-168-36) SIGN OR BOTH AS MAY BE APPROPRIATE. THESE SIGNS SHALL BE IN PLACE PRIOR TO EXPOSING THE ROADWAY TO TRAFFIC. THESE SIGNS SHALL ALSO BE ERECTED ON EACH ENTRANCE RAMP, AT INTERSECTIONS OF THROUGH ROADS TO WARN ENTERING OR TURNING TRAFFIC OF THE CONDITION AND AT LEAST ONCE EVERY TWO MILES ALONG THE ROADWAY. THESE SIGNS SHALL BE REMOVED WHEN THEY NO LONGER APPLY.

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 (1) PARAGRAPH 621.14 SHALL NOT APPLY, (2) WHERE THE MARKINGS ARE NOT LIABLE TO BE TRACKED, EITHER CONVENTIONAL OR FAST DRY PAINT MAY BE USED FOR 621.02, AND (3) WHEN APPLIED TO NEW ASPHALT PAVEMENT SURFACES OR PLANED ASPHALT PAVEMENT SURFACES, THE SPECIFIED APPLICATION RATE SHALL BE AS FOLLOWS:

WIDTH OF LINE, IN.	GALLONS PER MILE OF LINE				
	4	6	8	12	24
SOLID LINE	24	36	48	72	144
DASHED LINE	6	9			
DOTTED LINE	8	12			

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, INCLUDING RAMPS, 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.

LINE PLACEMENT TOLERANCE FOR FINAL SURFACES SHALL BE IN ACCORDANCE WITH 621.052. ON SURFACES OTHER THAN THE FINAL, THE TOLERANCE PERMITTED SHALL BE TWICE THAT IN 621.052.

LAYOUT AND PREMARKING SHALL BE IN ACCORDANCE WITH 621.051.

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) TRANSVERSE LINES SHALL BE 8-INCHES IN WIDTH.
2) STOP LINES SHALL BE 12-INCHES IN WIDTH.
3) 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 2.4 GALLONS PER MILE FOR LANE LINE AND CENTER LINE AND 24 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 SHALL BE APPLIED. EQUIVALENT 614 CLASS I, PAINT MARKINGS MAY BE USED IN LIEU OF FINAL MARKINGS. IN THIS EVENT, 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 SUM OF $200 PER CALENDAR DAY WILL BE DEDUCTED FROM ANY MONEY DUE THE CONTRACTOR, NOT AS A PENALTY BUT AS LIQUIDATED DAMAGES.

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.

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 ____, *
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, *

*TYPE MATERIAL (621 PAINT, 947.03 TYPE B OR 947.03 TYPE C OR LEFT BLANK TO PERMIT ANY OF THE THREE)

614

621 EDGE LINES ON NEW ASPHALT PAVEMENTS

EDGE LINES SHALL BE IN ACCORDANCE WITH 621 EXCEPT THAT (1) ON EVERY ROADWAY AND RAMP, EDGE LINES SHALL BE IN PLACE PRIOR TO EXPOSING IT TO TRAFFIC, (2) WHERE THE EDGE LINES ARE NOT LIABLE TO BE TRACKED, EITHER CONVENTIONAL OR FAST DRY PAINT MAY BE USED FOR 621.02, AND (3) WHEN APPLIED TO NEW ASPHALT PAVEMENT THE SPECIFIED APPLICATION RATE SHALL BE 24 GALLONS PER MILE.

614 WORK ZONE MARKING SIGNS

THE CONTRACTOR SHALL FURNISH, INSTALL, MAINTAIN AND SUBSEQUENTLY REMOVE WORK ZONE MARKING SIGNS (OW-167 AND OW-168) WITHIN THE WORK LIMITS IN ACCORDANCE WITH THE FOLLOWING REQUIREMENTS.

THE CONTRACTOR MAY USE SIGNS AND SUPPORTS IN USED BUT GOOD CONDITION PROVIDED THE SIGNS MEET CURRENT DEPARTMENT SPECIFICATIONS. SIGN FACES SHALL BE REFLECTORIZED WITH TYPE G SHEETING COMPLYING WITH THE REQUIREMENTS OF 730.19. WORK ZONE MARKING SIGNS SHALL BE PROVIDED WITH SUITABLE YIELDING SUPPORTS OF SUFFICIENT STRENGTH AND STABILITY.

WORK ZONE MARKING SIGNS WILL BE MEASURED AS THE NUMBER OF SIGN INSTALLATIONS, INCLUDING THE SIGN AND NECESSARY SUPPORTS. ALL OTHER WORK ZONE SIGNS SHALL BE INCLUDED IN 614 MAINTAINING TRAFFIC UNLESS SEPARATELY ITEMIZED.

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

ITEM	UNIT	DESCRIPTION
614	EACH	WORK ZONE MARKING SIGNS

A QUANTITY OF 21 EACH WORK ZONE MARKING SIGNS (21 EACH "NO EDGE LINES" OW-167 AND 0 EACH "UNMARKED NO PASSING ZONES" OW-168) ARE CARRIED TO THE GENERAL SUMMARY TO BE USED AS DIRECTED BY THE ENGINEER.

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PLAN NO. 23/80

TRAFFIC CONTROL FOR LONG LINE PAVEMENT MARKING OPERATIONS

FRA-33-21.36

GENERAL

In addition to 614, 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 in all directions a minimum of ½ 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 in all directions a minimum of ½ 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 ½ 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 minimim 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 in all directions a minimum of ½ 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.

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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 (Item 621.01 thru 621.134) are considered to be stationary operations and traffic control shall be in accordance with plan details shown on Sheet(s) 37 – 41 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 in all directions a minimum of ½ 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 [1]					
	CENTER LINE		EDGE LINE		LANE LINE [2] CHANNELIZING LINE	
	>2 MIN. DRY	≤2 MIN. DRY	> 2 MIN. DRY	≤2 MIN. DRY	>2 MIN. DRY	≤2 MIN. DRY
LEAD VEHICLE	▒	▒				
POWER BROOM EQUIPMENT	▒	▒	▒	▒	▒	▒
LINE MARKING MACHINE	▒	▒	▒	▒	▒	▒
TRAIL VEHICLE		▒	▒	▒		▒
TRAIL VEHICLE (ADDITIONAL)	▒	▒	▒	▒	▒	▒
TRAIL VEHICLE (SIGN & CONE RETRIEVAL)	▒		▒		▒	

1. For equipment requirements for auxiliary operations see plan sheet(s) 62 and Part 7, OMUTCD.
2. Includes both dashed and solid lane lines.

▒ Required Equipment

▒ Equipment Required When Directed by the Engineer

☐ Not Required

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OHIO DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL FOR LONG LINE PAVEMENT MARKING OPERATIONS

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INITIAL PAVEMENT MARKINGS FOR RESURFACED SECTIONS

GENERAL NOTES

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 Contol Devices.

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M & R 695

LIGHTING GENERAL NOTES

FRA-33-21.36

Former Construction Plan

For lighting circuitry refer to plan FRA-40-17.26 Project No. 273-64

Power Supplying Agency

The power supplying agency for this project is:
Columbus and Southern Ohio Electric Co.
215 N. Front St.
Columbus, Ohio 43215

Maintaining Existing Lighting

Before any work is started in the immediate vicinity of any existing lighting circuits, representatives of the state, city and the contractor shall make a visual inspection of the existing roadway and sign lighting systems on the circuits affected. Records of this inspection as to pole, sign and circuit outages and pole knock-downs shall be kept in writing by the state. This procedure shall apply at each location where there is existing circuitry.

It shall be the Contractor's responsibility to continuously maintain the existing roadway and sign lighting systems which have been inspected and determined operational by the above parties. All outages shall be repaired within 24 hours after notification by the Engineer. Circuits from only one control center location may be out of service at any one time. Existing grounded circuits shall not be out of service during night hours.

Payment for this item shall be made at the lump sum bid price for ITEM SPECIAL - Maintaining Existing Lighting and shall include all labor, material, equipment and incidentals necessary to complete the work as specified.

Lighting Cable at Guardrail Locations

Where guardrail is to be installed in the vicinity of new or existing lighting circuits the Engineer shall find and visibly mark the location of buried lighting conduit or cable prior to any work on guardrail. The Engineer shall notify the Contractor should such conduit or cable conflict with the proposed guardrail location. Where a conflict exists, the circuit alignment shall be adjusted as directed by the Engineer. An estimated quantity of the following items have been included in the General Summary for this purpose:

PART I

Item	Description	Unit
625	Trench, 24" deep	8,269 lin. ft.
625	1 1/2" duct-cable with 2 no. 4 AWG, 600 - volt cable	8,269 lin. ft.
625	Conduit, 3", 713.04	25 lin. ft.
625	No. 4 AWG. 600 - volt distribution cable	50 lin. ft.
625	Connector Kit, Type II	166 each
625	Pull Box, Concrete, 24"	10 each

Light Pole Upgrading

Where indicated in the plans, light poles shall be upgraded. This work shall consist of the following items:

1) Repairing, where directed, an existing concrete light pole foundation by furnishing and installing a steel bearing plate including four steel nuts with washers, as shown on the plans and in accordance with applicable sections of 519.06.

2) Furnishing and installing the following:
A) A type AT-X light pole transformer base conforming to 713.01, the plans and the plan data tabulated for ordering the AT-X base. This item shall include four steel nuts with washers to connect the AT-X base to the existing anchor bolts and four steel bolts of the size shown on the plans, with steel nuts and galvanized clips or washers with nuts to connect the existing pole to the AT-X Base.
B) One each ground rod where directed by the Engineer to secure an acceptable grounded test as herein after specified.

3) Installing new extension kits "A" with all component items needed. See light pole upgrading details on sheet no. 80
In lieu of furnishing and placing cable extension kits "A" as detailed the contractor may, at his option, furnish and install all new No. 10 AWG pole and bracket cable in each light pole to be upgraded. Payment for two kit "A"s will be allowed for each pole so rewired.

Payment:

The unit bid price for each ITEM SPECIAL - Light pole foundation repaired, Transformer base, and Wiring extension kit and each ITEM 625 - Ground rod furnished and installed shall include payment for all testing equipment, labor, materials and component parts necessary to complete the necessary work.

An estimated quantity of the following items has been included in the General Summary to be used as directed by the Engineer.

PART I

Item	Description	Unit
SPECIAL	Repair of existing light pole foundation	5 each
625	Ground rod	5 each

See sheet no. 79 for other quantities.

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LIGHTING GENERAL NOTES

FED. RD. DIVISION	STATE	PROJECT	
5	OHIO		

PLAN NO.
FRA -33 - 21.36

Electrical Testing

A) A ground test as described in 625.22 except that the ground wire connecting each existing and/or newly installed ground rod to a light pole shall be included in the ground test.

B) A performance test requiring the contractor to energize and manually operate, for a minimum period of one hour, each circuit of the roadway lighting system affected by this work. The contractor shall make a visual check to determine that only those lights required to be energized by the circuit are operating. The contractor shall record each fault and the method of correction performed. After correction of a fault a restart of the test shall be required.

Payment for testing is included in the payment for the various items installed.

Utilities Notification

At least two working days prior to commencing construction operations in any area which may involve underground facilities, the contractor shall notify the project Engineer, The Registered Underground Utility Protection Services and the owners of all underground utility facilities shown in the plans.

After notice is received, the owner of any undeground utility facility that is to remain in service during and/or after construction shall within forty-eight hours, excluding Saturdays, Sundays and Legal Holidays, stake, mark or otherwise designate the location of the underground facilities in the construction area in such a manner as to indicate their course together with the approximate depth at which they were installed. The marking or locating shall be coordinated to stay approximately two days ahead of the planned construction.

Rev. 5-27-86

DEPARTMENT OF TRANSPORTATION
BUR. R 712 REV. 9-1-83

GENERAL SUMMARY

FRA -33 -21.36

ITEM	PART 1	100% City of Columbus			PART 1 TOTAL	PART 2	PART 3	PART 4	GRAND TOTAL	UNIT	DESCRIPTION
											PAVEMENT
301	243				243	196	31	625	1,095	Cu.Yd.	Bituminous Aggregate Base: AC-20, RT-11 or RT-12
304	60				60	14	5	10	89	Cu.Yd.	Aggregate Base
305	20064				20064				20064	Sq.Yd.	8" Concrete Base
305	511				511				511	Sq.Yd.	9" Concrete Base
310	3761				3761				3761	Cu.Yd.	Subbase, Type II
407	59865				59865	27,319	3,333	26,674	117191	Gal.	Tack Coat
407	1900				1900	870	104	852	3726	Ton	Cover Aggregate
617	2,234				2,234	1,021	141	1,186	4,582	Cu.Yd.	Compacted Aggregate
617	5				5	2	1	2	10	M.Gal.	Water
812	3,996				3,996	2,054	240	1,979	8,269	Each	Hole for Subsealing
812	3,230				3,230	1,314	120	1,539	6,203	Cu.Ft.	Subsealing Material
846	11297				11297	5,140	614	5,052	22,103	Cu.Yd.	Asphalt Concrete Intermediate Course Type 2, AC-20
846						4311	526	4208	9045	Cu.Yd.	Asphalt Concrete Surface Course Type 1, AC-20, as per plan
846	6771				6771				6771	Cu.Yd.	Asphalt Concrete Surface Course Type 1, AC-20
Special	9,044				9,044				9,044	Lin.Ft.	Sawing and Sealing Asphalt Concrete Pavement Joints
Special	7,496				7,496	6,266	995	2,816	17,573	Sq.Yd.	Full Depth Rigid Pavement Removal and Rigid Replacement
Special	52				52	48	12	27	139	Sq.Yd.	Partial Depth Pavement Joint Repair
Special	118				118			316	434	Cu.Yd.	Pavement Repair
											ROADWAY
202	1				1				1	Each	Catch Basin Removed
202	2				2				2	Each	Pull Box Removed
202	100				100		200		300	Lin.Ft.	Guardrail, Barrier Design, Removed for Storage
202	22,012.5				22,012.5		1,850	773	24,635.5	Lin.Ft.	Guardrail Removed for Storage
202	12,672				12,672				12,672	Sq.Yd.	Pavement Removed
202	3,186				3,186	315		866	4,367	Lin.Ft.	Curb Removed
202	277				277				277	Sq.Yd.	Concrete Median Removed
203	61				61				61	Cu.Yd.	Embankment
203	5132				5132	14	5	10	5161	Cu.Yd.	Excavation Not Including Embankment Construction
203								107	107	Sta.	Linear Grading
203	1				1				1	Each	Mounding of Existing Light Pole Foundation
304	50				50	10	1	5	66	Cu.Yd.	Bituminous Concrete for Maintaining Traffic
604	1				1				1	Each	Monument Box Adjusted to Grade, as per plan
606	150				150				150	Lin.Ft.	Guardrail, Type 5, 710.06 or SS 904, Modified as per plan
606	23,862.5				23,862.5		1900	587.5	26,350	Lin.Ft.	Guardrail, Type 5, 710.06 or SS 904 (See Gen. Notes)
606	125				125		100	25	250	Lin.Ft.	Guardrail, Barrier Design, Type 5, 710.06 or SS 904
606	35				35		3	3	41	Each	Anchor Assembly, Standard Type T

PLAN NO.

Rev. 5-27-8

DEPARTMENT OF TRANSPORTATION
MAR 712 REV. 9-1-83

GENERAL SUMMARY

FRA-33-21.36

PLAN NO.

ITEM	PART 1	100% City of Columbus			PART 1 TOTAL	PART 2	PART 3	PART 4	GRAND TOTAL	UNIT	DESCRIPTION
											ROADWAY (Cont.)
606	35				35		3	2	40	Each	Anchor Assembly, Standard Type A
606	5				5		2	2	9	Each	Anchor Assembly, Barrier Design, Standard Type A
6	2				2				2	Each	Bridge Terminal Assembly, Standard Type A, Modified as per
606	6				6		6	6	18	Each	Bridge Terminal Assembly, Standard Type B
Special	28,334				28,334	22,325	3,569	12,244	66,472	Lin. Ft.	Full Depth Pavement Sawing
Special	25,762				25,762		2,171	775	28,708	Lin. Ft.	Berm Reshaping (See Sht.
202	Lump				Lump				Lump		Remove Impact Attenuators
615	230				230				230	Sq. Yd.	Temporary Pavement, Class B, as per plan
											BRIDGE REPAIR
202								52	52	Lin. Ft.	Bridge Rail Removed for Storage
202						4	18		22	Cu. Yd.	Portions of Structures Removed (abutments)
202	310				310		118		428	Cu. Yd.	Portions of Structures Removed (Superstructure)
503						Lump	Lump		Lump		Cofferdams, Cribs and Sheeting
509	17,620				17,620	208	7,318		25,146	Lb.	Reinforcing Steel, Grade 60
510						48			48	Each	Dowel Holes
511						6	18		24	Cu. Yd.	Class 'C' Concrete, Abutments, as per plan
511	192				192		74		266	Cu. Yd.	Class 'S' Concrete, Superstructure
516	192				192				192	Lin. Ft.	Vertical Extension of Structural Expansion Joints
517	1250				1250		625		1,875	Lin. Ft.	Railing (DBR w/ Steel Tubular Backup, Type 2 Steel Posts and D
517								75	75	Lin. Ft.	Railing (DBR w/ Steel Tubular Backup and Type 2 Steel Posts
520	600				600				600	Sq. Ft.	Pneumatically Placed Mortar
845	3,458				3,458	904	1,446		5,808	Sq. Yd.	Latex Modified Concrete Overlay (1¼" thick)
845	61				61	10	16		87	Cu. Yd.	Latex Modified Concrete Overlay (variable thickness)
845	4				4	4	2		10	Cu. Yd.	Full Depth Repair
Special	726				726	120	228		1,074	Sq. Yd.	Sealing of Concrete Surfaces (See proposal note)
516							186		186	Lin. Ft.	Structural Expansion Joints including Elastomeric Compression Seals
											DRAINAGE
603	22				22				22	Lin. Ft.	12" Conduit, Type B 706.02
603	18				18				18	Lin. Ft.	6" Conduit, Type F 707.01 or 707.21
604	1				1				1	Each	Catch Basin, Standard No. 2-2-8
604	1				1				1	Each	Manhole, Standard No. 1
604	4				4	1		1	6	Each	Catch Basins Adjusted to Grade, as per plan
604	3				3				3	Each	Manholes Adjusted to Grade, as per plan
605	12,360				12,360	12,582	2,094	5,832	32,868	Lin. Ft.	Aggregate Drains, Transverse, as per plan
605	7,048				7,048	7,385	1,217	3,532	19,182	Lin. Ft.	Aggregate Drains, Longitudinal, as per plan
605	654				654				654	Lin. Ft.	6" Shallow Pipe Underdrains
											* 710.06 or SS 904 (See Gen. Note)

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DEPARTMENT OF TRANSPORTATION
MAR 712 REV. 8-1-83

GENERAL SUMMARY

FRA-33-21.36

PLAN NO.

ITEM	PART 1	100% City of Columbus			PART 1 TOTAL	PART 2	PART 3	PART 4	GRAND TOTAL	UNIT	DESCRIPTION
											EROSION CONTROL
659	741				741			2,394	3,135	Sq. Yd.	Seeding and Mulching
659	.07				.07			.22	.29	Ton	Commercial Fertilizer
659	1				1			3	4	M.Gal.	Water
											TRAFFIC CONTROL (continued on sht. 30)
630	2				2				2	Each	Removal of Overhead Sign Support and Storage, Type 10.48, as per plan
630	34				34	2		11	47	Each	Removal of Ground Mounted Sign and Reerection
630	4				4	5	1	6	16	Each	Removal of Ground Mounted Major Sign and Reerection
630	102				102			100	202	Lin. Ft.	Ground Mounted Supports S4 x 7.7 Beam
630	36				36			34	70	Lin. Ft.	Ground Mounted Supports W6 x 9 Beam
630	38				38	42	40	86	206	Lin. Ft.	Ground Mounted Supports W10 x 12 Beam
630	41				41	90			131	Lin. Ft.	Ground Mounted Supports W8 x 18 Beam
630	49				49	104		97	250	Lin. Ft.	Ground Mounted Supports W10 x 22 Beam
630	169				169	13		26	208	Lin. Ft.	Ground Mounted Supports, No. 3 Post
630	506				506			120	626	Lin. Ft.	Ground Mounted Supports, No. 4 Post
630	9.14				9.14	11.52	2.20	11.60	34.46	Cu. Yd.	Concrete for Embedded Foundations
630	14				14	10	2	16	42	Each	Breakaway Beam Connections
630	60				60			30	90	Sq. Ft.	Signs, Extrusheet, TYPE G SHEETING
630	47				47	3	2	20	72	Each	Removal of Ground Mounted Post Support
630	4				4	8		10	22	Each	Removal of Ground Mounted Beam Support
630								1	1	Each	Removal of Ground Mounted Sign and Storage
630	4				4				4	Each	Removal of Overhead Mounted Sign and Reerection
630	1				1				1	Each	Overhead Sign Support, Type 12.30, Design 6, Span 26'
											LIGHTING
Special	144				144				144	Each	Transformer Base, Type AT-X
Special	144				144				288	Each	Wiring Extension Kit A
631	1				1				1	Each	Signs Wired
631	3				3				3	Each	Sign Service
Special	5				5				5	Each	Repair of Existing Light Pole Foundation
625	8				8				8	Each	Ground Rod
625	8,829				8,829				8,829	Lin. Ft.	Trench, 24" deep
625	8,909				8,909				8,909	Lin. Ft.	1½" Duct-cable with 2 No. 4 AWG, 600-volt cables
625	25				25				25	Lin. Ft.	Conduit, 3", 713.04
625	50				50				50	Lin. Ft.	No. 4 AWG, 600-volt Distribution Cable
625	178				178				178	Each	Connector Kit, Type III
625	15				15				15	Each	Pull Box, Concrete, 24"
631	3				3				3	Each	Signs Wired, Overpass Structure Mounted
631	3				3				3	Each	Disconnect Switch with Enclosure, Type X

Lighting continued on sheet 29A Rev. 5-22-8

DEPARTMENT OF TRANSPORTATION
MM R 712 REV. 9-1-83

GENERAL SUMMARY

FRA-33-21.36

ITEM	PART 1	100% City of Columbus			PART 1 TOTAL	PART 2	PART 3	PART 4	GRAND TOTAL	UNIT	DESCRIPTION
											LIGHTING (continued)
631	4				4				4	Each	M.V. Luminaire, Type TC-31.21 with 100-watt lamp
631	4				4				4	Each	M.V. Luminaire, Type TC-31.21 , with 175-watt lamp
631	4				4				4	Each	Ballast, Type CMRI-100-480
631	4				4				4	Each	Ballast, Type CMRI-175-480
631	3				3				3	EACH	BALLAST WIRING ENCLOSURE, TYPE B
631	2				2				2	EACH	BALLAST WIRING ENCLOSURE MOUNTING BRACKET
631	2				2				2	EACH	SWITCH ENCLOSURE MOUNTING BRACKET ASSEMBLY
630	2.88				2.88				2.88	C.Y.	CONCRETE FOR ANCHOR BASE FOUNDATION
630	3				3				3	EACH	OVERPASS STRUCTURE MOUNTED SIGN SUPPORTS, TYPE TC-10

PLAN NO.

Rev. 5-27-86

DEPARTMENT OF TRANSPORTATION
M& R 712 REV. 9-1-83

GENERAL SUMMARY

FRA -33 -21.36

PLAN NO.

ITEM	PART 1	*100% City of Columbus			PART 1 TOTAL	PART 2	PART 3	PART 4		GRAND TOTAL	UNIT	DESCRIPTION
												TRAFFIC CONTROL (Cont.)
614	.98				.98	.87	.47			2.32	Mile	Temporary Edge Lines, Class I
614	.57				.57	.45	.26			1.28	Mile	Temporary Lane Lines, Class I
614	2,400				2,400			400		2,800	Lin. Ft.	Temporary Gore Markings, Class II
614	19.94				19.94	10.44	1.52	8.56		40.46	Mile	Temporary Lane Lines, Class II
614	1.96				1.96					1.96	Mile	Temporary Center Lines, Class II
614	14				14	2		5		21	EACH	WORK ZONE MARKING SIGNS
621	.11				.11	.09		.02		.22	Mile	Center Line, As Per Plan
621	10.58				10.58	5.18	.76	4.53		21.05	Mile	Lane Line, As Per Plan
621	23.92				23.92	10.54	1.52	10.81		46.79	Mile	Edge Line, As Per Plan
847	.96				.96					.96	Mile	Edge Lines, 10" , 947.02
847	3,275				3,275			448		3,723	Lin. Ft.	Transverse Lines, 947.02
847	6,536				6,536	433		1,380		8,349	Lin. Ft.	Channelizing Lines, 947.02
847								1		1	Each	Word (ONLY) on Pavement, 96", 947.02
847	8				8			1		9	Each	Lane Arrow, 947.02
847	182				182	145		333		660	Lin. Ft.	Stop Line, 947.02
847	4				4					4	Each	Word (ONLY) on Pavement, 72", 947.02
Special	100				100	50	2	25		177	Hour	Law Enforcement Officer with Patrol Car
Special		100			100					* 100	Hour	Special Duty Policeman with Patrol Car
619	Lump				Lump	Lump	Lump	Lump		Lump		Field Office
624	Lump				Lump	Lump	Lump	Lump		Lump		Mobilization
614	Lump				Lump	Lump	Lump	Lump		Lump		Maintaining Traffic
623	Lump				Lump	Lump	Lump	Lump		Lump		Construction Layout Stakes

Rev. 5-27-86

M & R 695

614 WORK ZONE PAVEMENT MARKINGS

FRA -33 -21.36

PLAN NO.

TEMPORARY MARKINGS FOR STRUCTURE REPAIR

ITEM 614 - 4" Temporary Edge Lines, Yellow and White, Class I

PART 1
Str. 2503 L&R
1,100'(tapers) + (2x93') = 1,286'
(outside tapers) = 1,100'
Str. 2509 L&R
1,100'(tapers) + (2x303') = 1,706'
(outside tapers) = 1,100'
Total Part 1 5,192'
= .98 mi.

PART 2
Str. 2751 L&R
1,100'(tapers) + (2x17') = 1,134'
(outside tapers) = 1,100'
Str. 2900 L&R
1,100'(tapers) = (2x80') = 1,260'
(outside tapers) = 1,100'
Total Part 2 4,594'
= .87 mi.

PART 3
Str. 2649 L&R
1,100'(tapers) + (2x148') = 1,396'
(outside tapers) = 1,100'
Total Part 3 2,496'
= .47 mi.

ITEM 614 - Temporary Lane Lines, Class I

PART 1
Str. 2503 L&R
1,100'(tapers) + (2x93') = 1,286'

Str. 2509 L&R
1,100'(tapers) + (2x303') = 1,706'
Total Part 1 = 2,992'
= .57 mi.

PART 2
Str. 2751 L&R
1,100'(tapers) + (2x17') = 1,134'

Str. 2900 L&R
1,100(tapers) + (2x80') = 1,260'
Total Part 2 2,394'
= .45 mi.

PART 3
Str 2649 L&R
1,100'(tapers) + (2x148') = 1,396'
= .26 mi.

TEMPORARY MARKINGS FOR RESURFACING

ITEM 614 - Temporary Gore Markings, Class II

Part 1 - 100' x 12 exits x 2 courses = 2,400 lin.ft.

Part 4 - 100' x 2 exits x 2 courses = 400 lin.ft.

ITEM 614 - Temporary Lane Lines, Class II

PART 1
SLM 21.36 to 26.12 = 4.76 miles x 2 lines x 2 courses = 19.04 miles
SLM 22.11 to 23.01 = 0.90 mile (for new concrete) = 0.90 miles
Total Part 1 19.94 miles

PART 2
SLM 26.12 to 26.25 = 0.13 miles x 2 lines x 2 courses = 0.52 miles
SLM 26.61 to 29.09 = 2.48 miles x 2 lines x 2 courses = 9.92 miles
Total Part 2 10.44 miles

PART 3
SLM 26.23 to 26.61 = 0.38 miles x 2 lines x 2 courses = 1.52 miles

PART 4
SLM 29.09 to 31.23 = 2.14 miles x 2 lines x 2 courses = 8.56 miles

ITEM 614 - Temporary Center Lines, Class II

PART 1
SLM 21.36 to 21.43 = .07 mile x 2 lines x 2 courses = 0.28 mile
SLM 21.76 to 22.14 = .38 mile x 2 lines x 2 courses = 1.52 mile
SLM 22.22 to 22.24 = .04 mile x 2 lines x 2 courses = 0.16 mile
Total Part 1 1.96 miles

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ITEM 621
CENTER LINE SUB-SUMMARY

FED RD DIVISION	STATE	PROJECT	
5	OHIO		

FRA-33-21.36

PLAN NO.

PART	ROUTE	SLM FROM	SLM TO	QUANTITIES TOTAL MILES	CENTERLINES DASHED	CENTERLINES SOLID	PARTICIPATION TYPE	REMARKS
1	US-33	21.36	21.39	.03		.06		Double Yellow Line
		21.39	21.43	.08		.08		Painted Island
Total Part 1				.11				
2	US-33	27.55	Ebright Rd.	.02		.04		Double Yellow Line at Intersection
		28.23	Bixby Rd.	.04		.08		Double Yellow Line at Intersection
		29.03	Rager Rd	.03		.06		Double Yellow Line at Intersection
Total Part 2				.09				
4	US-33	30.21	Cemetery Rd.	.01		.02		Double Yellow Line at Intersection
		31.02	Bowen Rd.	.01		.02		Double Yellow Line at Intersection
Total Part 4				.02				

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ITEM 621
LANE LINE SUB-SUMMARY

FED ROI DIVISION	STATE	PROJECT	
	OHIO		

FRA-33-21.36

PLAN NO.

	PART	ROUTE	SLM FROM	SLM TO	QUANTITIES TOTAL MILES	4" LANELINES DASHED	4" LANELINES SOLID	PARTICIPATION TYPE				REMARKS
	1	US-33	21.36	26.12	9.52	9.52						
			Ramp A		.05	.05						
			Ramp B		.04	.04						
			Ramp C		.03	.03						
			Ramp D		.01	.01						
			Ramp E		.04	.04						
			Ramp F		.05	.05						
			Ramp H		.04	.04						
			Ramp I		.05	.05						
			Ramp J		.04	.04						
			Ramp K		.05	.05						
			Ramp L		.05	.05						
			Ramp M		.01	.01						
			Ramp N		.05	.05						
			Ramp O		.06	.06						
			Ramp P		.05	.05						
			Ramp Q		.07	.07						
			Ramp R		.01	.01						
			Ramp S		.07	.07						
			Ramp T		.07	.07						
			Ramp U		.05	.05						
			Ramp W		.05	.05						
			Ramp X		.04	.04						
			Ramp V		.04	.04						
			Ramp Y		.04	.04						
	Total Part 1				10.58							
	2	US-33	26.12	26.23	.22	.22						
			26.61	29.09	4.96	4.96						
	Total Part 2				5.18							
	3	US-33	26.23	26.61	.76	.76						
	4	US-33	29.09	31.23	4.28	4.28						
			Ramp Z		.05	.05						
			Ramp AA		.04	.04						
			Ramp BB		.05	.05						
			Ramp CC		.07	.07						
			Ramp DD		.04	.04						
	Total Part 4				4.53							

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ITEM 621
EDGE LINE SUB-SUMMARY

FED. ROAD PROJECT	STATE	PROJECT	
5	OHIO		

FRA-33-21.36

PLAN NO.

34
80

	PART	ROUTE	SLM FROM	SLM TO	WHITE EDGE LINE QUANTITIES TOTAL MILES	WHITE HIGHWAY	WHITE RAMP	WHITE PART. TYPE	YELLOW EDGE LINE QUANTITIES TOTAL MILES	YELLOW HIGHWAY	YELLOW RAMP	YELLOW PART. TYPE	REMARKS
	1	US-33	21.36	26.12	9.52	9.52							
			21.43	26.12					9.38	9.38			
			Ramp B		.05		.05		.03		.03		
			Ramp C						.01		.01		
			Ramp E						.07		.07		
			Ramp H		.14		.14		.11		.11		
			Ramp I		.34		.34		.34		.34		
			Ramp J		.24		.24		.22		.22		
			Ramp K		.24		.24		.24		.24		
			Ramp L		.17		.17		.17		.17		
			Ramp M		.03		.03		.01		.01		
			Ramp O		.07		.07		.07		.07		
			Ramp R		.03		.03		.01		.01		
			Ramp T		.02		.02		.01		.01		
			Ramp U		.27		.27		.27		.27		
			Ramp W		.25		.25		.25		.25		
			Ramp X		.19		.19		.16		.16		
			Ramp V		.25		.25		.22		.22		
			Ramp Y		.28		.28		.26		.26		
	Total Part 1				12.09				11.83				
	2	US-33	26.12	26.23	.22	.22			.22	.22			
			26.61	29.09	4.96	4.96			4.96	4.96			
			27.55	Ebright Rd.	.04		.04						
			28.23	Bixby Rd.	.08		.08						
			29.03	Rager Rd.	.06		.06						
	Total Part 2				5.36				5.18				
	3	US-33	26.23	26.61	.76	.76			.76	.76			
	4	US-33	29.09	31.23	4.28	4.28			4.28	4.28			
			Ramp Z		.19		.19		.19		.19		
			Ramp AA		.19		.19		.22		.22		
			Ramp BB		.26		.26		.26		.26		
			Ramp CC		.21		.21		.19		.19		
			Ramp DD		.26		.26		.24		.24		
			30.21	Cemetery Rd.	.02		.02						
			31.02	Bowen Rd.	.02		.02						
	Total Part 4				5.43				5.38				

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DEPARTMENT OF TRANSPORTATION
TS R 712 REV. 9-1-83

347 PAVEMENT MARKING SUB-SUMMARY

FED RD DIVISION	STATE	PROJECT	
5	OHIO		

PART	ROUTE	S.L.M. FROM	S.L.M. TO	24" TRANSVERSE LINES* YELLOW LIN. FT.	24" TRANSVERSE LINES* WHITE LIN. FT.	TRANSVERSE LINES REMARKS
1	US-33	21.39	21.43	108		Painted Island at West End of Project
		21.82	22.14	730		Painted Island West of Petzinger Rd.
		22.21		88	213	Painted Islands at Petzinger Rd. Intersection
		22.15	22.20		402	Painted Island at E.B. Left Turn Lane
		22.16 Rt.			225	Painted Island at Petzinger Rd.
		22.20 Lt.			52	Painted Island at Petzinger Rd.
Transverse Lines Total			1,818	926	892	Part 1 Total to General Summary

PART	ROUTE	S.L.M. FROM	S.L.M. TO	WHITE EDGE LINE QUANTITIES TOTAL MILES	WHITE HIGHWAY MILES	WHITE RAMP MILES	YELLOW EDGE LINE QUANTITIES TOTAL MILES	YELLOW HIGHWAY MILES	YELLOW RAMP MILES	EDGE LINES, 10", 947.02 REMARKS
1	US-33 E.B.	21.82	22.20	.23	.23		.64	.64		Painted Islands West of Petzinger Rd.
	US-33 W.B.	22.21		.06	.06		.03	.03		Painted Islands East of Petzinger Rd.
Edge Lines, as per plan Total			.96	.29			.67			Part 1 Total to General Summary

* All transverse lines are to be spaced at 12' intervals except the ones in the large island from SLM 21.82 to SLM 22.14 where the spacing will be as follows:

From 0' (SLM 21.82) to 120', space lines 12' c/c.
From 120' to 360', space lines 24' c/c.
From 360' to 1,329.6', space lines 48' c/c.
From 1,329.6' to 1,569.6', space lines 24' c/c.
From 1,569.6' to 1689.6', space lines 12' c/c

ITEM 847 EDGE LINES, 10", 947.02

This item shall conform to Supplemental Specification 847 except that the line width will be 10" and the location will be surrounding the painted islands.

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847 PAVEMENT MARKING SUB-SUMMARY

FED RD DIVISION	STATE	PROJECT	
5	OHIO		

FRA-33-21.36

AUXILIARY MARKING

PART	ROUTE	S.L.M. FROM	S.L.M. TO	24" TRANSVERSE LINES WHITE LIN. FT.	24" TRANSVERSE LINES YELLOW LIN. FT.	8" CHANNELIZING LINES WHITE LIN. FT.	12" CROSSWALK LINES LIN. FT.	WORD ON PAVEMENT ONLY 96" EACH	WORD ON PAVEMENT ONLY 72" 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	RAILROAD SYMBOL ON PAVEMENT EACH	STOP LINE 24" LIN. FT.
1	US-33	Petzinger	Rd.													52
		Schaaf	Dr.			55										
		Ramp A		155		430										
		Ramp B				100										
		Petzinger	Rd. EB			264			1		3					37
		Petzinger	Rd. WB			317			3		3	2				37
		Ramp C				70										
		Ramp D		65		300										
		Ramp E				175										
		Ramp F		130		400										
		Ramp H				150										
		Ramp I		170		500										
		Ramp J				110										
		Ramp K		100		300										
		Ramp L		200		500										
		Ramp M				120										
		Ramp N		100		320										
		Ramp O				140										
		Ramp P		180		450										
		Ramp Q		45		210										
		Ramp R				105										
		Ramp S		32		200										
		Ramp T				80										40
		Ramp U		150		420										
		Ramp V				150										16
		Ramp W		130		380										
		Ramp X				140										
		Ramp Y				150										
Total	Part 1			1,457		6,536			4		6	2				182
																38
2	US-33	Ebright	Road			156										26
		Bixby	Road			122										81
		Rager	Road			155										14
Total	Part 2					433										
																5
4	US-33	Ramp Z		238		495										
		Ramp AA				150										60
		Ramp BB		210		360										
		Ramp CC				125										
		Ramp DD				150										
		Cemetery	Rd													6
		Bowen	Rd.			100			1			1				15
Total	Part 4			448		1,380			1			1				3
AUXILIARY MARKING TOTAL			SUB-TOTAL													

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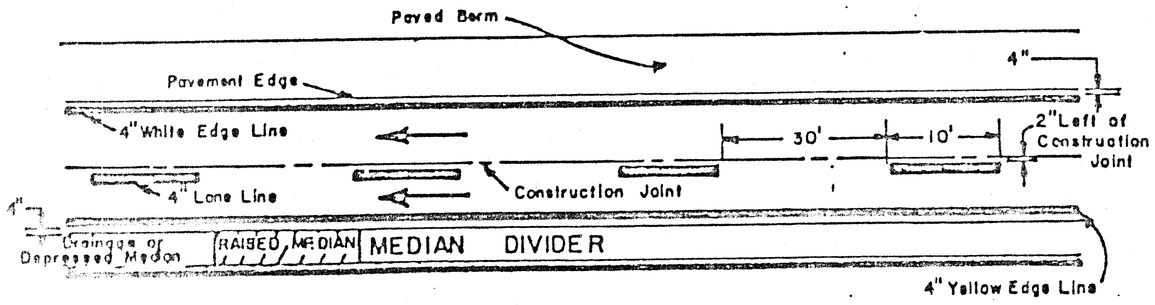
FED.RD DIV.	STATE	PROJECT	
5	OHIO		

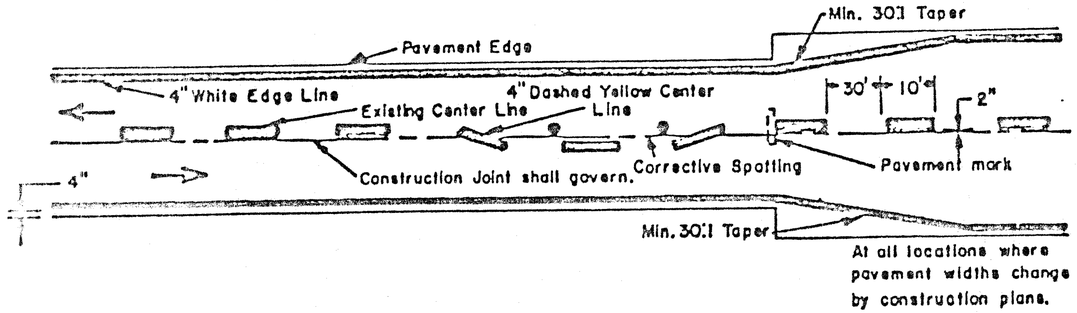
PLAN NO.

PAVEMENT MARKING TYPICAL DETAILS

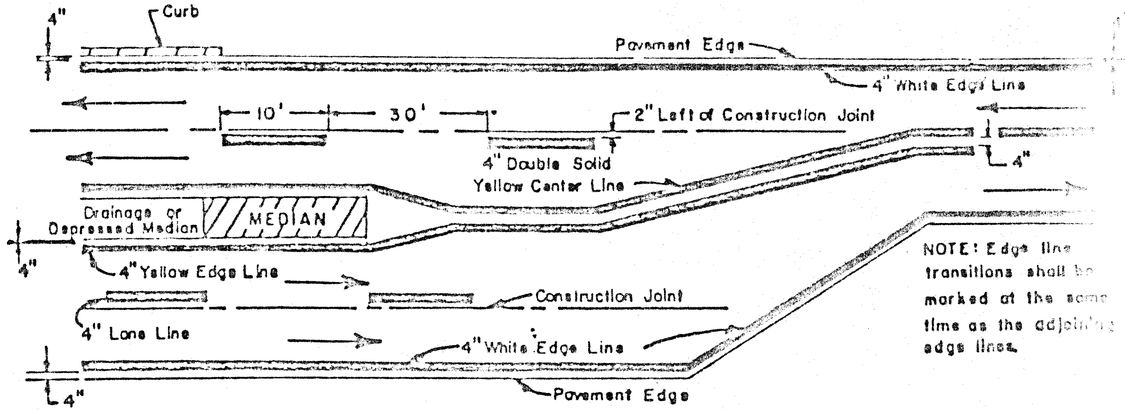
FREEWAY & EXPRESSWAY MAINLINE MARKINGS



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 PAVEMENT ENTRANCE AND EXIT RAMP TERMINALS.

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OHIO DEPARTMENT OF TRANSPORTATION

PAVEMENT MARKING TYPICAL DETAILS

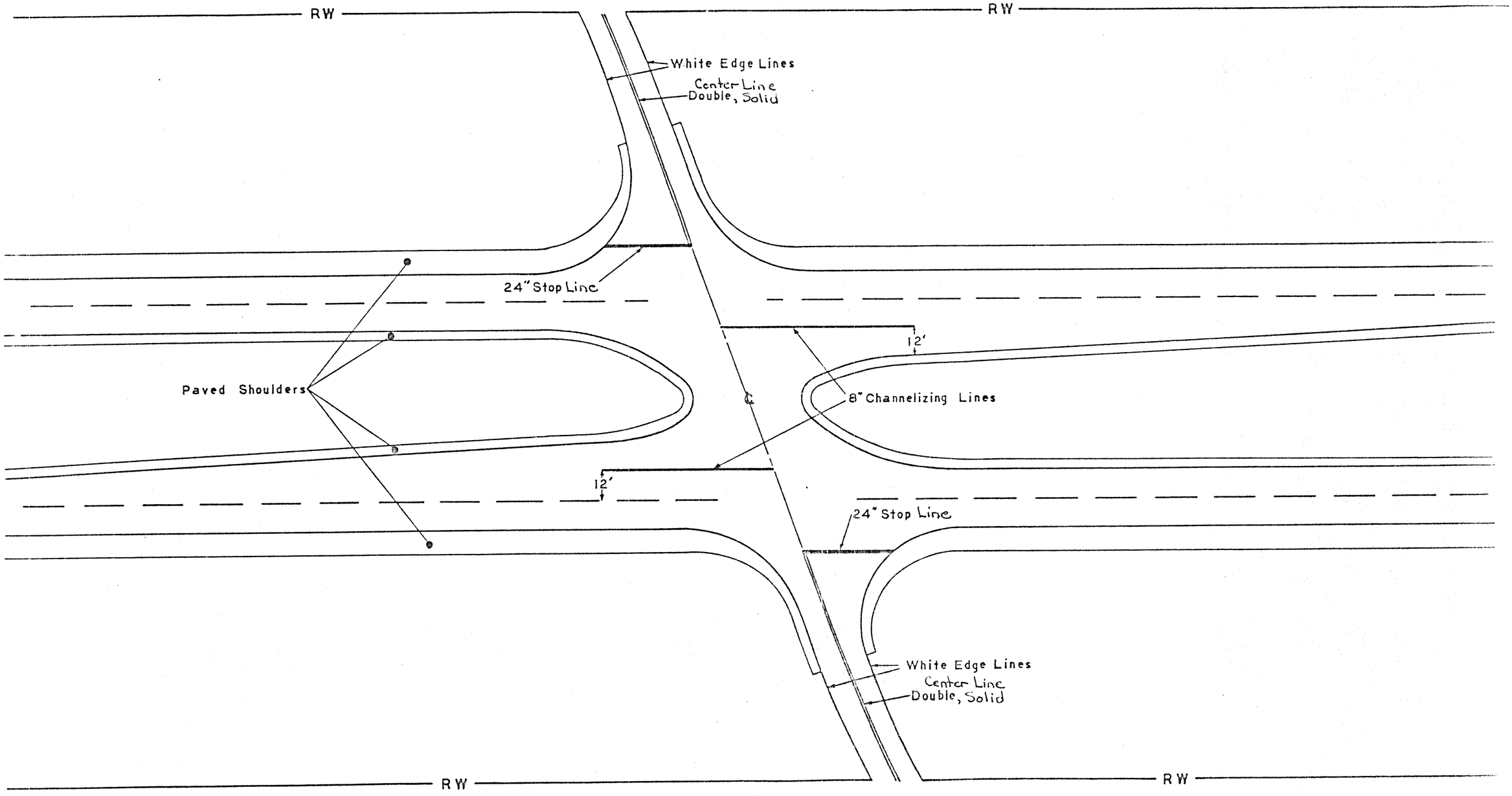
JDL · CDR

M & R 695

FRA-33-21.36

PLAN NO.

TYPICAL INTERSECTION PAVEMENT MARKING



For exact quantities and locations see pages 32, 34 and 36.

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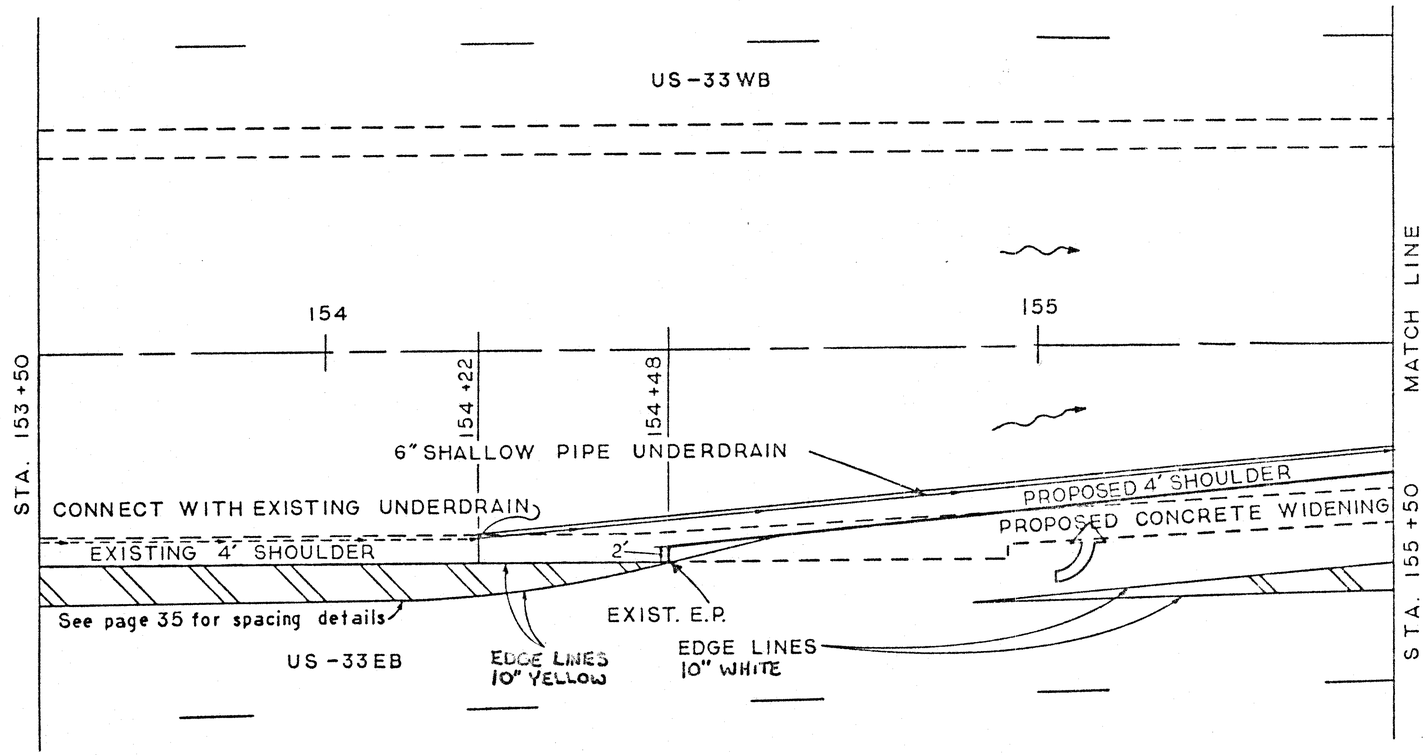
DEPARTMENT OF TRANSPORTATION
M.S.R 712 REV. 9-1-83

FRA-33-21.36

PLAN NO.

PETZINGER ROAD TURN LANE



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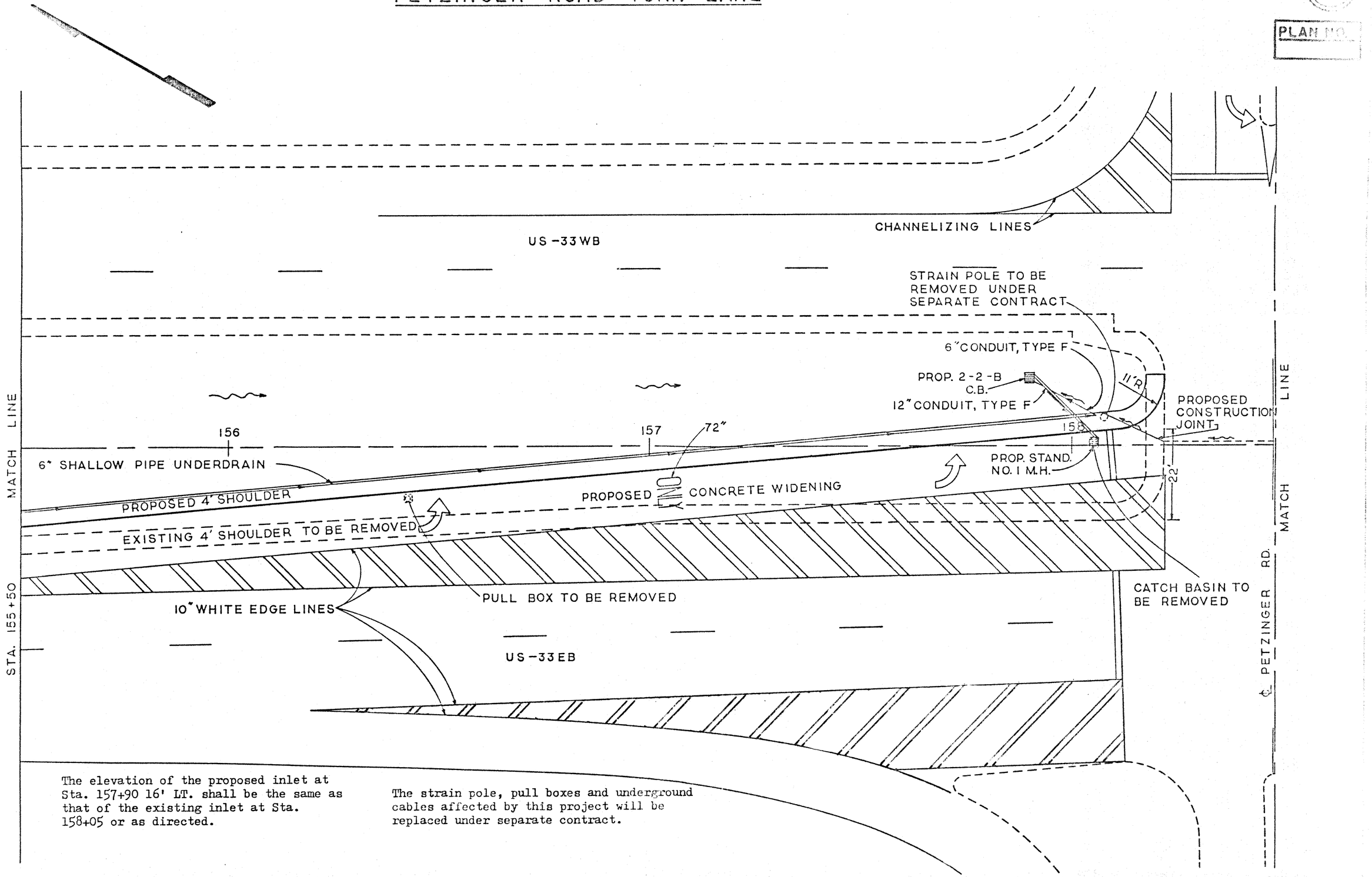
DEPARTMENT OF TRANSPORTATION
M& R 712 REV. 9-1-83

PETZINGER ROAD TURN LANE

FRA-33-21.36

PLAN NO.



The elevation of the proposed inlet at Sta. 157+90 16' LT. shall be the same as that of the existing inlet at Sta. 158+05 or as directed.

The strain pole, pull boxes and underground cables affected by this project will be replaced under separate contract.

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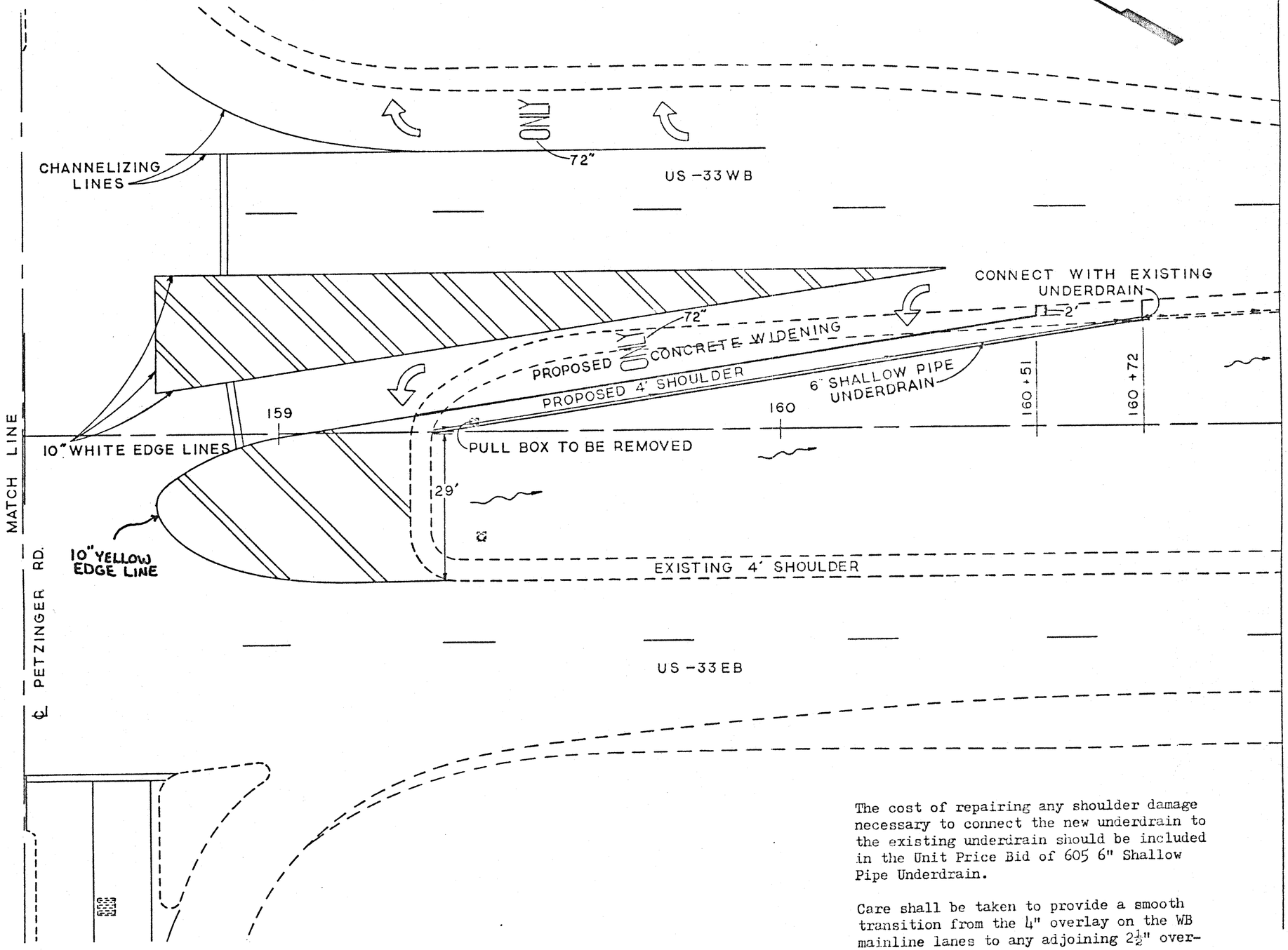
DEPARTMENT OF TRANSPORTATION
M& R 712 REV. 9-1-83

FRA-33-21.36

41
50

PLAN NO.

PETZINGER ROAD TURN LANE



The cost of repairing any shoulder damage necessary to connect the new underdrain to the existing underdrain should be included in the Unit Price Bid of 605 6" Shallow Pipe Underdrain.

Care shall be taken to provide a smooth transition from the 4" overlay on the WB mainline lanes to any adjoining 2½" overlay.

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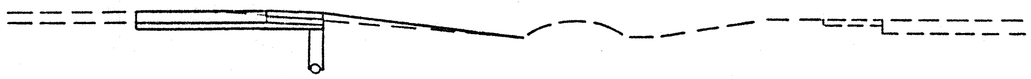
DEPARTMENT OF TRANSPORTATION
M& R 712 REV. 9-1-83

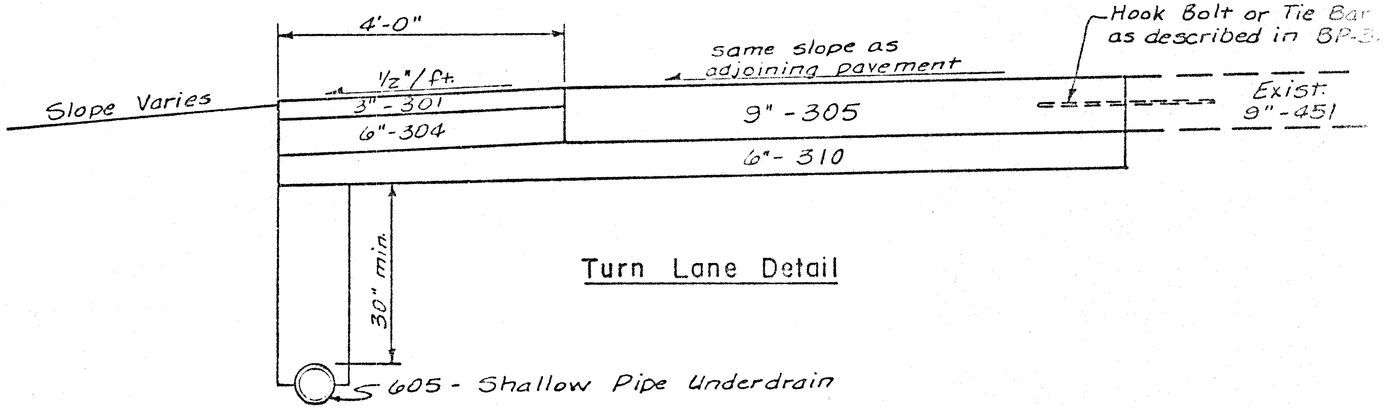
Turn Lane Cross Sections and Detail

FRA-33-21.36



Typical Cross Section - WB Turn Lane

From Sta. 159+30 ± to Sta. 161+00 ± the slope shall be graded to the existing ground line.



Turn Lane Detail

Typical Cross Section - EB Turn Lane

From Sta. 155+00 ± to Sta. 157+00 ± the center safety mound shall be removed and the ditchs shall be graded to drain to the Prop. C.B. at Sta. 157+90, 16' Lt.

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DEPARTMENT OF TRANSPORTATION
M& R 712 REV. 9-1-83

PETZINGER ROAD TURN LANE QUANTITIES

FRA-33-21.36

45
80

PLAN NO.

ITEM 203 - Excavation*
EB Turn Lane WB Turn Lane
167 Cu. Yd. + 39 Cu. Yd. = 206 Cu. Yd.

ITEM 310 - Subbase, Type II
EB Turn Lane - 415 s.y. + shoulder (401' x 4' wide ÷ 9 = 178 s.y.) = 593 s.y.
WB Turn Lane - 96 s.y. + shoulder (142' x 4' wide ÷ 9 = 63 s.y.) = 159 s.y.

593 s.y. + 159 s.y. = 752 s.y. x 6" ÷ 36 = 125 Cu. Yd.

ITEM 407 - Tack Coat
EB Turn Lane - 415 s.y. x .12 gal./s.y. = 50 gal.
WB Turn Lane - 96 s.y. x .12 gal./s.y. = 12 gal.
Total = 62 gal.

EB Turn Lane - 415 s.y. x .10 gal./s.y. = 42 gal.
WB Turn Lane - 96 s.y. x .10 gal./s.y. = 10 gal.
Total = 52 gal.

ITEM 407 - Cover Aggregate
EB Turn Lane - 415 s.y. x 7 lbs./s.y. = 2905 lb.
WB Turn Lane - 96 s.y. x 7 lbs./s.y. = 672 lb.
Total for each course = 3577 lb. ÷ 2000 = 2 Ton
(Use same quantity for both courses.)

ITEM 846 - Asphalt Concrete, Intermediate Course, Type 2
EB Turn Lane - 415 s.y. x 1 1/2" ÷ 36 = 17 Cu. Yd.
WB Turn Lane - 96 s.y. x 1 1/2" ÷ 36 = 4 Cu. Yd.
Total = 21 Cu. Yd.

ITEM 846 - Asphalt Concrete, Surface Course, Type 1
EB Turn Lane - 415 s.y. x 1¼" ÷ 36 = 14 Cu. Yd.
WB Turn Lane - 96 s.y. x 1¼" ÷ 36 = 3 Cu. Yd.
Total = 17 Cu. Yd.

* Estimated Quantity

All above totals carried to Part 1 on page 5.

ITEM 301 - Bituminous Aggregate Base
EB Turn Lane - 401' x 4' wide ÷ 9 x 3" ÷ 36 = 15 Cu. Yd.
WB Turn Lane - 142' x 4' wide ÷ 9 x 3" ÷ 36 = 5 Cu. Yd.
Total carried to page 11 = 20 Cu. Yd.

ITEM 659 - Seeding and Mulching*
563 s.y. (EB Turn Lane) + 178 s.y. (WB Turn Lane) = 741 Sq. Yd.

ITEM 659 - Commercial Fertilizer*
741 Sq. Yd. x 9 = 6669 Sq. Ft. x 20 lbs./1000 s.f. ÷ 2000 = .07 Ton

ITEM 659 - Water*
6669 Sq. Ft. x 120 gal./1000 s.f. = 1 M. Gal.

* Estimated Quantity

All above totals carried to Part 1 on page 14.

ITEM 305 - 9" Concrete Base

EB Turn Lane		WB Turn Lane	
2' to 4' wide x 48' ÷ 9	= 16 s.y.	0' to 10' wide x 25' ÷ 9	= 14 s.y.
2' to 12' wide x 195' ÷ 9	= 152 s.y.	10.5' wide x 11' ÷ 9	= 13 s.y.
12' to 22' wide x 131' ÷ 9	= 247 s.y.	10' to 2' wide x 104' ÷ 9	= 69 s.y.
	415 s.y.		96 s.y.

Total - 415 Sq. Yd + 96 Sq. Yd. = 511 Sq. Yd.

ITEM 203 - Embankment*
EB Turn Lane WB Turn Lane
54 Cu. Yd. + 7 Cu. Yd. = 61 Cu. Yd.

ITEM 202 - Catch Basin Removed
Total = 1 Each

ITEM 202 - Pull Box Removed
Total = 2 Each

ITEM 304 - Aggregate Base
EB Turn Lane WB Turn Lane
(4' wide x 401') ÷ 9 x 6" ÷ 36 = 30 c.y. (4' wide x 142') ÷ 9 x 6" = 11 c.y.

Total - 30 Cu. Yd. + 11 Cu. Yd. = 41 Cu. Yd.

ITEM 603 - 12" Conduit, Type B 706.02
Total = 22 Lin. Ft.

ITEM 603 - 6" Conduit, Type F 707.01 or 707.21
Total = 18 Lin. Ft.

ITEM 604 - Catch Basin, Standard No. 2-2-B
Total = 1 Each

ITEM 604 - Manhole, Standard No. 1
Total = 1 Each

ITEM 605 - 6" Shallow Pipe Underdrains
384 lin. ft. (EB Turn Lane) + 270 lin. ft. (WB Turn Lane) = 654 Lin. Ft.

* Estimated Quantity

All above totals carried to Part 1 in General Summary.

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DEPARTMENT OF TRANSPORTATION
TR R 712 REV. 9-1-83

① EXIT
GF (72" x 60")

GROUND MOUNTED SIGNS
SUB-SUMMARY

② Historical type Corp. limit sign to be removed and returned to the Village of Canal Winchester.

FRA-33-21.36

PLAN NO.

ITEM 630

Part	Log Point	Side	Size	Removal of Ground Mounted Sign and Rerection	Removal of Ground Mounted Major Sign and Rerection	Ground Mounted Supports, S4 x 7.7	Ground Mounted Supports, W6 x 9	Ground Mounted Supports, W10 x 12	Ground Mounted Supports, W8 x 18	Ground Mounted Supports, W10 x 22	Ground Mounted Supports, No. 3 Post	Ground Mounted Supports, No. 4 Post		Concrete for Embedded Foundations	Breakaway Beam Connections		① Signs, Extrusheet, TYPE G SHEETING						Removal of Ground Mounted Post Support	Removal of Ground Mounted Beam Support	② Removal of Ground Mounted Sign and Storage		
																		A	B	C	D	E					
			Ft. x Ft.	Each	Each	Lin. Ft.	Lin. Ft.	Lin. Ft.	Lin. Ft.	Lin. Ft.	Lin. Ft.	Lin. Ft.		Cu. Yds.	Each		Sq. Ft.	Ft.	Ft.	Ft.	Ft.	Ft.		Each	Each		
2	25.42	Lt.	10x11		1					27-28				2.46	2			30	5	16	2.42	6.16			2		
	26.24	Lt.	7.5x12		1				23-24					2.20	2			30	5	13.75	1.75	8.50			2		
	26.65	Rt.	6x15		1				21-22					2.20	2			30	5	13	3.25	8.50			2		
	26.97	Lt.	6.5x10		1			21-21						2.20	2			34	5	12.25	2.20	5.60		2			
	28.65	Rt.	8x19		1					24-25				2.46	2			30	5	14	4.18	10.64			2		
2	29.08	Lt.	2x2, 1x2	2							13							16	5	7.5				1			
Total	Part 2			2	5			42	90	104	13			11.52	10									3	8		
3	26.54	Lt.						19-21						2.20	2			16	5	11.25	2.42	6.16					
3	26.57	Lt.	6.5x11	(move to 26.54)	1																			2			
Total	Part 3				1			40						2.20	2									2			
4	29.14	Rt.																						2		1	
	29.33	Rt.	8x19		1					24-25				2.46	2			30	5	14	4.18	10.64			2		
	29.49	Rt.	5x6			17-17								.54	2		30	16	7	10.5	1.32	3.36	2				
	29.54	Ramp Z	4x13		1		17							.33	1			17	5	10	2.25	8.50			1 (Reuse 1 beam support)		
	29.69	Lt.	3x3	1								14						16	6	9			1				
	29.71	Ramp BB	4x13		1		17							.33	1			17	5	10	2.25	8.50			1 (Reuse 1 beam support)		
	29.78	Lt.	2x2	1							13							16	6	8			1				
	29.84	Lt.	5x6	1		17-17								.54	2			16	7	10.5	1.32	3.36	2				
	29.99	Lt.	8x19		1					23-25				2.46	2			30	10	14					2		
	30.14	Lt.	2.5x8	1								14-14						16	7	9.5			2				
	30.16	Rt.	2x2, 1x2	2							13							16	5	7.5			2				
	30.40	Rt.	4x5	1								16-16						16	6	9.5			2				
	30.52	Rt.	5x16		1			23-21						2.20	2			46	7	13.5	3.50	8.96			2		
	30.81	Lt.						22-20						2.20	2			36	5	13.5	2.75	8.50					
	30.91	Lt.	5x14	(move to 30.81)	1																				2		
	31.23	Med.	4x6	2		16-16								.54	2			17	6	10	1.32	3.36	2				
	29.62	Ramp CC																					1				
	29.63	Ramp CC	4x5	1								16-16						16	6	9.5			2				
4	29.67	Ramp AA	3x3	1								14						16	6	9			1				
Total	Part 4			11	6	100	34	86		97	26	120		11.60	16		30						20	10	1		

DEPARTMENT OF TRANSPORTATION
TR R 703 REV. 9-1-83

FRA-33-21.36

PLAN NO.

GUARDRAIL DATA

PART	ROUTE	STARTING LOG POINT	SIDE	ITEM 202 GUARDRAIL BARRIER DESIGN, REMOVED FOR STORAGE LIN. FT.	ITEM 202 GUARDRAIL REMOVED FOR STORAGE LIN. FT.	ITEM 202 BRIDGE-RAIL REMOVED FOR STORAGE LIN. FT.	ITEM 606 GUARDRAIL TYPE	GUARD RAIL LIN. FT.	BARRIER DESIGN LIN. FT.	CURVED RAIL ELEMENTS LENGTH LIN. FT.	CURVED RAIL ELEMENTS RADIUS FT.	ANCHOR ASSEMBLY TYPE T (GR-4A) EACH	ANCHOR ASSEMBLY SINGLE RAIL (GR-4) TYPE A EACH	ANCHOR ASSEMBLY BARRIER RAIL (GR-4) TYPE A EACH	GUARDRAIL CONNECTIONS TO BRIDGES TYPE	GUARDRAIL CONNECTIONS TO BRIDGES EACH	GUARD POSTS EACH	9' GUARD RAIL POSTS EACH	SPECIAL BERM RESHAPING LIN. FT.	606 Guardrail, Type 5, Modified as per plan ① LIN. FT.			
1	US-33	21.83	Rt.		200		5	250					1							275				
		21.88	Rt.		25 (Anchor Assem.)																			
		21.84	Lt.		225		5	225				1	1							263				
		22.00	Rt.				5	112.5				1	1							150				
		22.00	Rt.				5	112.5				1	1							150				
		22.24	Rt.		125		5	125				1	1							163				
		22.24	Rt.		50		5	50				1	1							88				
		22.24	Rt. Med.		50		5	125				1	1							163				
		22.25	Lt.		125		5	125				1	1							225	75			
		22.31	Rt.		100		5	112.5				1	1							263	75			
		22.30	Rt. Med.		100		5	125	25			1		1						363				
		22.33	Lt. Med.		100		5	337.5					1		A ② Mod.	1				350				
		22.33	Lt.		100		5	325					1		A ② Mod.	1				150				
		22.43	Rt.		50		5	112.5				1	1							400				
		22.43	Rt. Med.		50		5	350						2						200				
		22.49	Lt. Med.		100		5	162.5				1	1							200				
		22.49	Lt.		100		5	162.5				1	1							1838				
		22.50	Rt.		1762.5		5	1812.5					1							200				
		22.53	Rt. Med.		200															1400				
		22.63	Rt. Med.		1387.5		5	1387.5				1								288				
		22.74	Lt. Med.		250		5	250				1	1							638				
		22.74	Lt.		175		5	600				1	1											
		22.80	Lt.		225															263				
		22.82	Lt. Med.		225		5	225				1	1							363				
		22.90	Lt. Ramp		325		5	325				1	1							238				
		22.96	Rt.		200		5	200				1	1							238				
1	US-33	22.97	Lt.		200		5	200																

See sheet number 48 for notes.

① See sheet no. 55 for detail of Guardrail, Type 5, Modified as per plan.

② See sheet number 56 for detail of Bridge Terminal Assem - Type A Modified as per plan.

DEPARTMENT OF TRANSPORTATION
M& R 703 REV. 9-1-83

FRA-33-21.36 PLAN NO.

GUARDRAIL DATA

PART	ROUTE	STARTING LOG POINT	SIDE	ITEM 202 GUARDRAIL BARRIER DESIGN, REMOVED FOR STORAGE LIN. FT.	ITEM 202 GUARDRAIL REMOVED FOR STORAGE LIN. FT.	ITEM 202 BRIDGE-RAIL REMOVED FOR STORAGE LIN. FT.	ITEM 606 GUARDRAIL TYPE	GUARD RAIL LIN. FT.	BARRIER DESIGN LIN. FT.	CURVED RAIL ELEMENTS LENGTH LIN. FT.	CURVED RAIL ELEMENTS RADIUS FT.	ANCHOR ASSEMBLY TYPE T (GR-4A) EACH	ANCHOR ASSEMBLY SINGLE RAIL (GR-4) TYPE A EACH	ANCHOR ASSEMBLY BARRIER RAIL (GR-4) TYPE A EACH	GUARDRAIL CONNECTIONS TO BRIDGES TYPE	GUARDRAIL CONNECTIONS TO BRIDGES EACH	GUARD POSTS EACH	9' GUARD RAIL POSTS EACH	SPECIAL BERM RESHAPING LIN. FT.	606 Guardrail, Type 5, Modified as per plan LIN. FT.
1	US-33	23.03	Lt. Ramp		1025		5	1025				1	1						1063	
		23.06	Rt. Ramp		5125		5	5125				1							5138	
		23.07	Lt. Ramp		225		5	225				1	1						263	
		23.07	Lt. Ramp		562.5		5	612.5				1	1						650	
		23.13	Lt. Ramp		225		5	225				1	1						263	
		23.23	Lt. Ramp		500		5	500				1	1						538	
		23.29	Lt. Med.		50		5	112.5				1	1						150	
		23.42	Lt.		50		5	112.5				1	1						150	
		23.63	Lt.		1925		5	2075				1	1						2113	
		24.34	Rt.				5	150											150	
		24.36	Rt.		25 (Anchor Assem.)															
		24.48	Rt. Med.				5	112.5				1	1						150	
		25.06	Lt. Med.		112.5		5	37.5	50					1					113	
		25.08	Rt.		75		5	62.5											63	
		25.08	Rt. Med.		62.5		5	50											50	
		25.09	Lt.		62.5		5	50											50	
		25.14	Rt.		2000		5	2000				1							2013	
		25.15	Lt. Med.	100	112.5		5	125	50					1					200	
		25.16	Lt.		600		5	600					1						625	
		25.86	Lt. Ramp		750		5	675		75	50	1	1						788	
		25.86	Lt. Ramp		1150		5	1150				1	1						1188	
		25.91	Rt. Ramp		650		5	600		50	32		1						675	
		25.95	Lt.		162.5		5	212.5				1	1						250	
1	US-33	25.96	Rt.		162.5		5	212.5				1	1						250	
1	US-33	Total		100	22,012.5			23,737.5	125	125		33	35	5	A, Mod.	2			25,762	150

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DEPARTMENT OF TRANSPORTATION
M& R 703 REV. 9-1-83

FRA-33-21.36 PLAN NO.

GUARDRAIL DATA

PART	ROUTE	STARTING LOG POINT	SIDE	ITEM 202 GUARDRAIL BARRIER DESIGN, REMOVED FOR STORAGE LIN. FT.	ITEM 202 GUARDRAIL REMOVED FOR STORAGE LIN. FT.	ITEM 202 BRIDGE-RAIL REMOVED FOR STORAGE LIN. FT.	ITEM 606 GUARDRAIL TYPE	GUARD RAIL LIN. FT.	BARRIER DESIGN LIN. FT.	CURVED RAIL ELEMENTS LENGTH LIN. FT.	CURVED RAIL ELEMENTS RADIUS FT.	ANCHOR ASSEMBLY TYPE T (GR-4A) EACH	ANCHOR ASSEMBLY SINGLE RAIL (GR-4) TYPE A EACH	ANCHOR ASSEMBLY BARRIER RAIL (GR-4) TYPE A EACH	GUARDRAIL CONNECTIONS TO BRIDGES TYPE	GUARDRAIL CONNECTIONS TO BRIDGES EACH	GUARD POSTS EACH	9' GUARD RAIL POSTS EACH	SPECIAL BERM RESHAPING LIN. FT.	606 Guardrail, Type 5, Modified as per plan LIN. FT.
1	US-33	23.03	Lt. Ramp		1025		5	1025				1	1						1063	
		23.06	Rt. Ramp		5125		5	5125				1							5138	
		23.07	Lt. Ramp		225		5	225				1	1						263	
		23.07	Lt. Ramp		562.5		5	612.5				1	1						650	
		23.13	Lt. Ramp		225		5	225				1	1						263	
		23.23	Lt. Ramp		500		5	500				1	1						538	
		23.29	Lt. Med.		50		5	112.5				1	1						150	
		23.42	Lt.		50		5	112.5				1	1						150	
		23.63	Lt.		1925		5	2075				1	1						2113	
		24.34	Rt.				5	150											150	
		24.36	Rt.		25 (Anchor Assem.)															
		24.48	Rt. Med.				5	112.5				1	1						150	
		25.06	Lt. Med.		112.5		5	37.5	50					1					113	
		25.08	Rt.		75		5	62.5											63	
		25.08	Rt. Med.		62.5		5	50											50	
		25.09	Lt.		62.5		5	50											50	
		25.14	Rt.		2000		5	2000				1							2013	
		25.15	Lt. Med.	100	112.5		5	125	50					1					200	
		25.16	Lt.		600		5	600					1						625	
		25.86	Lt. Ramp		750		5	675		75	50	1	1						788	
		25.86	Lt. Ramp		1150		5	1150				1	1						1188	
		25.91	Rt. Ramp		650		5	600		50	32		1						675	
		25.95	Lt.		162.5		5	212.5				1	1						250	
1	US-33	25.96	Rt.		162.5		5	212.5				1	1						250	
1	US-33	Total		100	22,012.5			23,737.5	125	125		33	35	5	A, Mod.	2			25,762	150

See sheet number 48 for notes.

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DEPARTMENT OF TRANSPORTATION
M& R 703 REV. 9-1-83

FRA-33-21.36 PLAN NO.

GUARDRAIL DATA

PART	ROUTE	STARTING LOG POINT	SIDE	ITEM 202 GUARDRAIL BARRIER DESIGN REMOVED FOR STORAGE LIN. FT.	ITEM 202 GUARDRAIL REMOVED FOR STORAGE LIN. FT.	ITEM 202 BRIDGE RAIL REMOVED FOR STORAGE LIN. FT.	ITEM 606 GUARDRAIL TYPE	GUARD RAIL LIN. FT.	BARRIER DESIGN LIN. FT.	CURVED RAIL ELEMENTS LENGTH LIN. FT.	CURVED RAIL ELEMENTS RADIUS FT.	ANCHOR ASSEMBLY TYPE T (GR-4A) EACH	ANCHOR ASSEMBLY SINGLE RAIL (GR-4) TYPE A EACH	ANCHOR ASSEMBLY BARRIER RAIL (GR-4) TYPE A EACH	GUARDRAIL CONNECTIONS TO BRIDGES TYPE	GUARDRAIL CONNECTIONS TO BRIDGES EACH	GUARD POSTS EACH	9' GUARD RAIL POSTS EACH	SPECIAL BERM RESHAPING LIN. FT.	517 Deep Beam Bridge Rail w/ Tubular Backup and Type 2 Posts using exist. bolts LIN. FT.
3	US-33	26.33	Rt.										1						25	
↑	↑	26.33	Lt.		900		5	900					1						925	
		26.42	Rt.		350		5	350											350	
		26.45	Rt. Med.	100	100		5	118.75	50					1					202	
		26.52	Rt.		200		5	206.25				1							227	
↓	↓	26.52	Lt. Med.	100	100		5	118.75	50					1					202	
3	US-33	26.52	Lt.		200		5	206.25					1						240	
3	US-33	Total		200	1850		5	1900	100			1	3	2					2171	
4	US-33	30.28	Rt. Med.		199.5	13	5	81.25	12.5			1		1	B	1			137	18.75
↑	↑	30.29	Rt.		99.5	13	5	81.25				1			B	2			100	18.75
		30.30	Lt. Med.		174.5	13	5	81.25	12.5			1		1	B	1			137	18.75
		30.30	Lt.		24.5	13	5	18.75							B	2			25	18.75
		30.93	Rt.		250		5	250		37.5	50		1						313	
↓	↓	30.98	Rt.		25					37.5	32		1						63	
4	US-33	Total			773	52	5	512.5	25	75		3	2	2	B	6			775	75

NOTES:

1. ITEM 202 GUARDRAIL REMOVED: Guardrail, posts and miscellaneous hardware designated for removal become the property of the contractor and shall be disposed of. Payment for the above shall be included in the unit price bid for Item 202 Guardrail Removed.

2. ITEM 202 GUARDRAIL REMOVED FOR STORAGE: Guardrail, standard terminals, posts and miscellaneous hardware designated for salvage shall be stored on the project as directed by the Engineer for removal by State forces. All material not considered salvageable shall be disposed of by the Contractor as directed. Payment for the above shall be included in the unit price bid for Item 202 Guardrail Removed for Storage.

3. ITEM 202 GUARDRAIL REMOVED FOR RE-USE: Guardrail, posts, standard terminals and miscellaneous hardware designated for re-use shall be removed and stored for re-use as directed by the Engineer. This work will be paid in the unit price bid for Item 202 Guardrail Removed for Re-Use.

4. 9' GUARDRAIL POSTS: An estimated number of nine (9) foot long guardrail posts have been listed to be used as directed by the Engineer to obtain a reasonable line and elevation of the guardrail elements. Except for length, the posts shall meet the applicable requirements noted in Item 710. The unit price bid for this item shall be the difference for supplying the nine (9) foot long posts in lieu of the standard length guardrail posts included in the 606 guardrail bid items, and shall be paid as each, Item 606 9 ft. Guardrail Posts, As Per Plan. Standard length posts required to complete the various runs shall be included in the 606 guardrail bid items.

5. BERM RESHAPING: Berms at locations where existing guardrail is removed or where new guardrail is to be erected shall be reshaped as directed by the Engineer to insure a smooth surface free of all irregularities. Excess excavation resulting from reshaping berms shall be disposed of as directed by the Engineer. Payment for reshaping berms as described shall be included in the contract price bid per lineal foot for Item Special, Berm Reshaping.

6. CURVED RAIL ELEMENTS: Length of curved rail elements, where called for in a run, shall not be included in the total length of run shown in the guardrail or guardrail rebuilt columns. However, the curved rail element total shall be included with the guardrail or guardrail rebuilt totals on the general summary sheet.

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DEPARTMENT OF TRANSPORTATION
TR R 713 REV. 9-1-03

FRA-33-21.36

PLAN NO.

Abbreviations :
AA-A – Anchor Assembly, Std. Type A
AA-B – Anchor Assembly, Barrier Design, Standard Type A
AA-T – Anchor Assembly, Standard Type T
BTA-A – Bridge Terminal Assembly, Standard Type A

Begin Work Project
Road's End
Haddon Rd. 21.36
Schaff Rd. 21.72
Ramp A
21.84 AA-T
AA-A
225'
US-33 WB
I-R-70 WB
I-R-70 WB
Structure # 2191
Structure # 2193
22.00
US-33 EB
250'
112.5'
AA-A
112.5'
AA-T
Ramp B
Match Line A
21.83 AA-A
21.88
Attach to exist. G.R. Z
Part 1 – City of Columbus

Petzinger Rd. 22.22
22.25 AA-T
AA-A
125'
US-33 WB
22.24 AA-A
AA-T
50'
22.24 AA-A
125'
AA-T
22.30 AA-B
Struc. # 2233
BTA-B
25' Bar.
100'
22.31 AA-A
87.5'
BTA-B
Conrail
E.R.
22.33
BTA-A Modified as per plan (see sh't. 56 for detail)
AA-A
325'
337.5'
AA-A
25'
AA-T
25'
AA-T
75' Guardrail, Type 5, Modified as per plan (see sh't. 55 for detail)
22.43 AA-B
Ramp C
College Ave.
175'
175'
Ramp D
AA-B
22.43 AA-A
112.5'
AA-T
Match Line B
Match Line A
Part 1 – City of Columbus

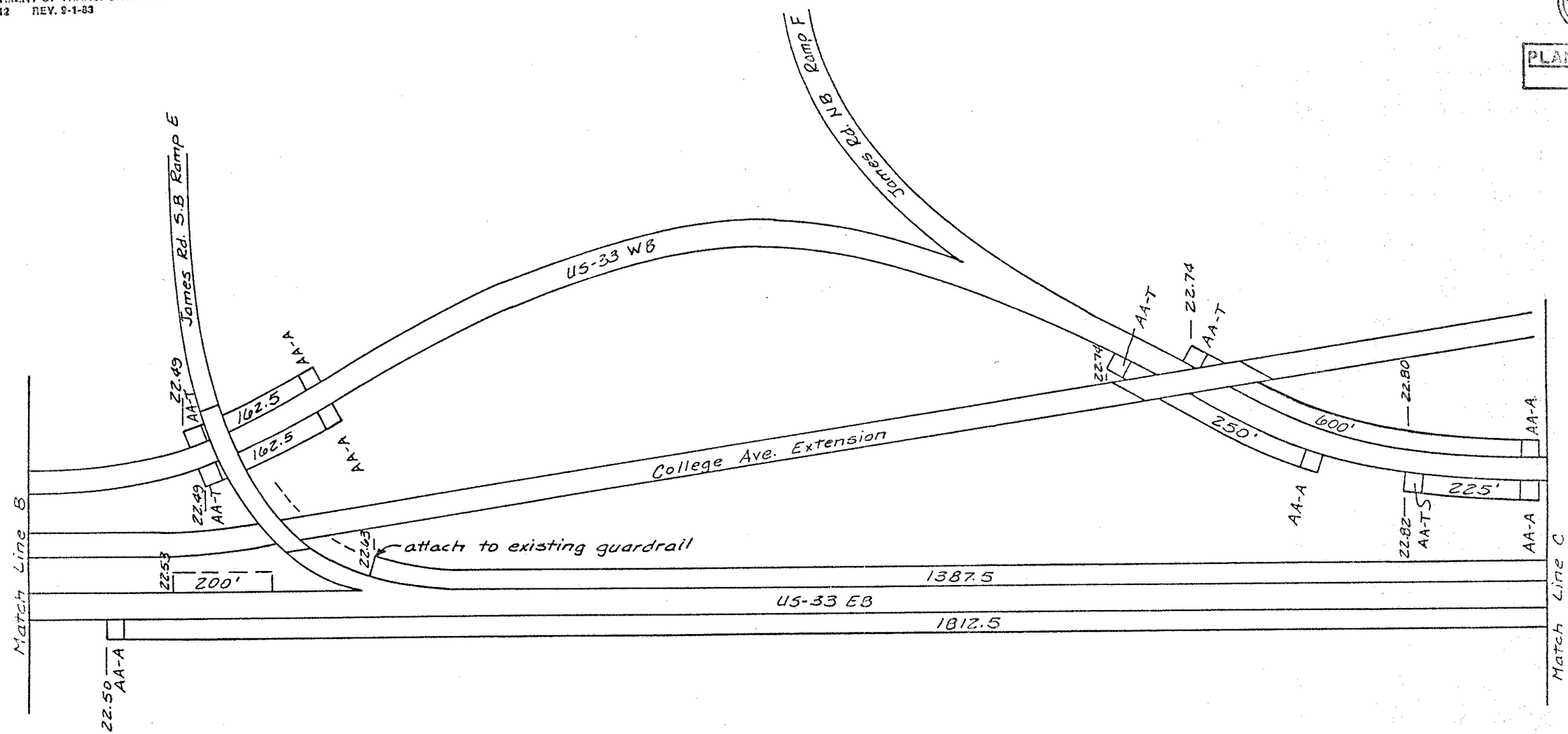
Rev. 5-27-86

DEPARTMENT OF TRANSPORTATION
213 R 712 REV. 9-1-83

FRA-33-21.36

50
90

PLAN NO.



Abbreviations:
AA-A — Anchor Assembly, Standard Type A
AA-T — Anchor Assembly, Standard Type T

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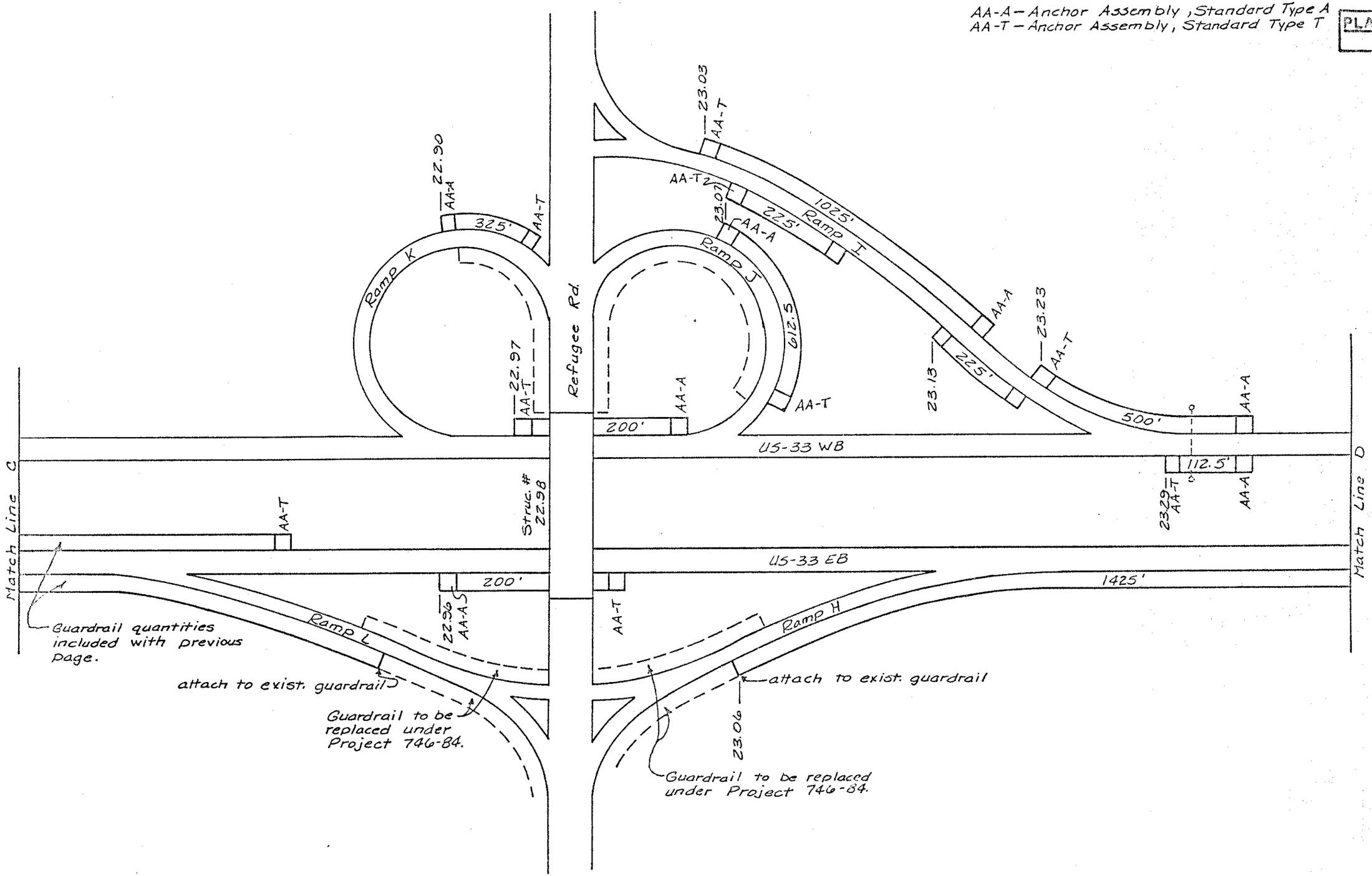
DEPARTMENT OF TRANSPORTATION
MA R 712 REV. 9-1-83

FRA-33-21.36

51
80

PLAN NO.

Abbreviations :
AA-A – Anchor Assembly, Standard Type A
AA-T – Anchor Assembly, Standard Type T



Rev. 5-27-86

DEPARTMENT OF TRANSPORTATION
M& R 712 REV. 9-1-83

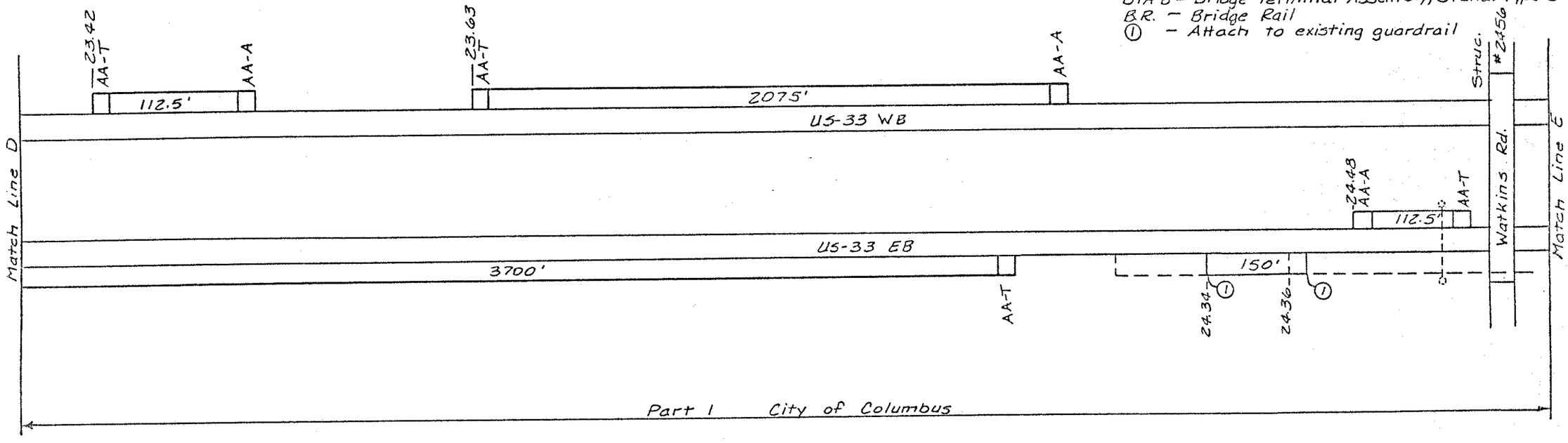
FRA-33-21.36

52
80

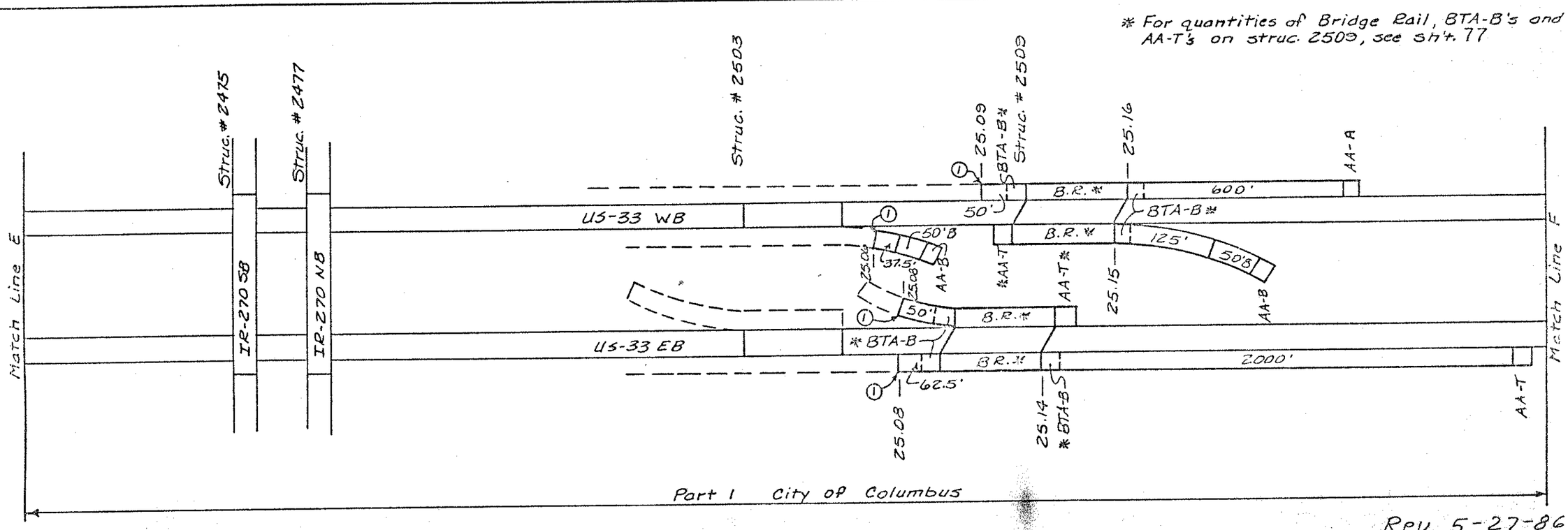
PLAN NO.

Abbreviations & Notes:

AA-A – Anchor Assembly, Stand. Type A
AA-B – Anchor Assembly, Barrier Design, Standard Type A
AA-T – Anchor Assembly, Stand. Type T
BTA-B – Bridge Terminal Assembly, Stand. Type B
B.R. – Bridge Rail
① – Attach to existing guardrail



* For quantities of Bridge Rail, BTA-B's and AA-T's on struc. 2509, see sh't. 77



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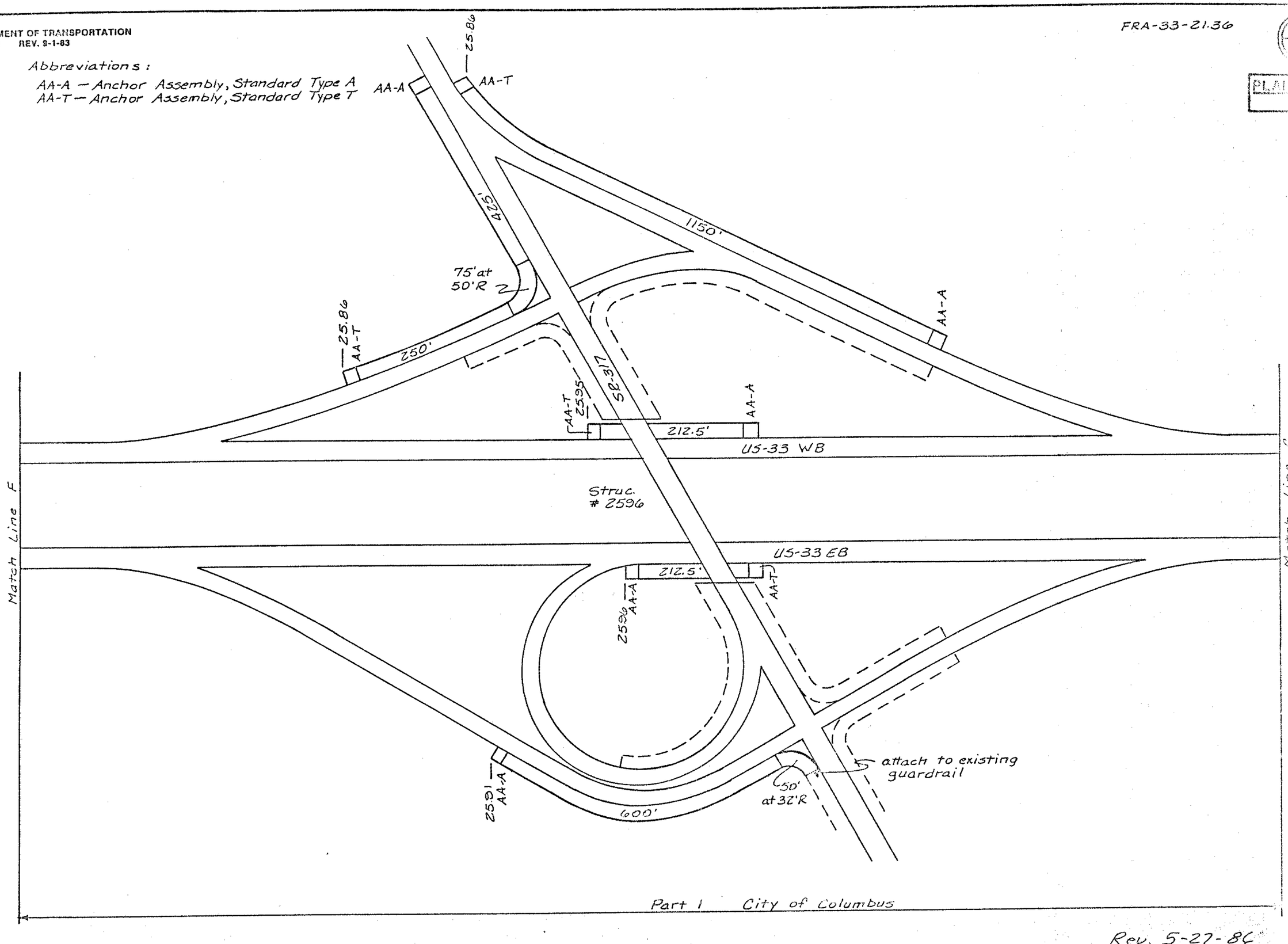
DEPARTMENT OF TRANSPORTATION
M& R 712 REV. 9-1-83

FRA-33-21.36

Abbreviations:

AA-A — Anchor Assembly, Standard Type A
AA-T — Anchor Assembly, Standard Type T

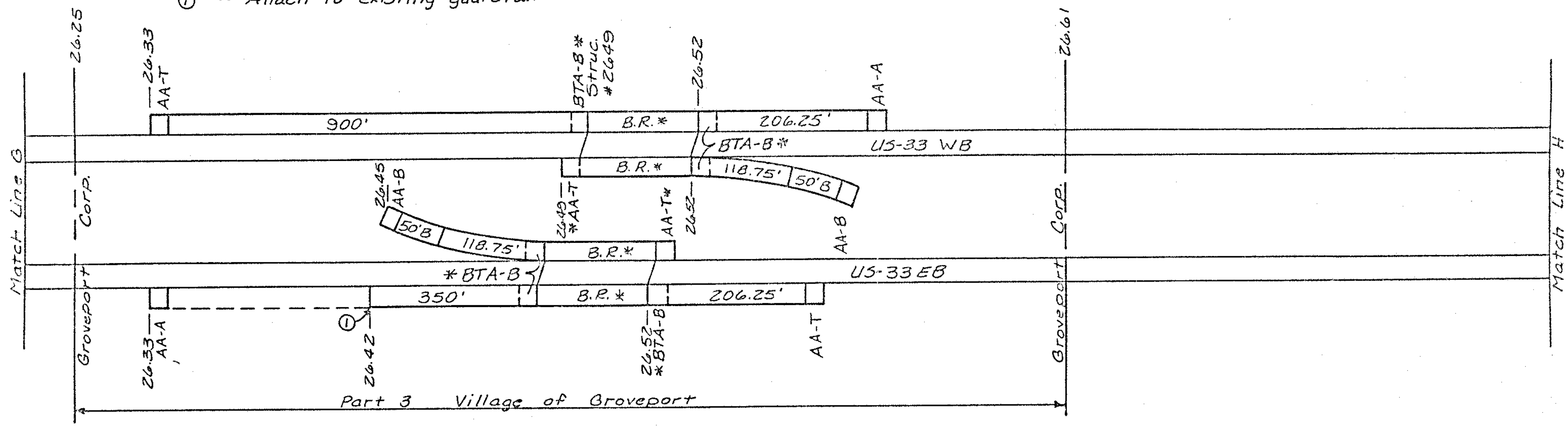


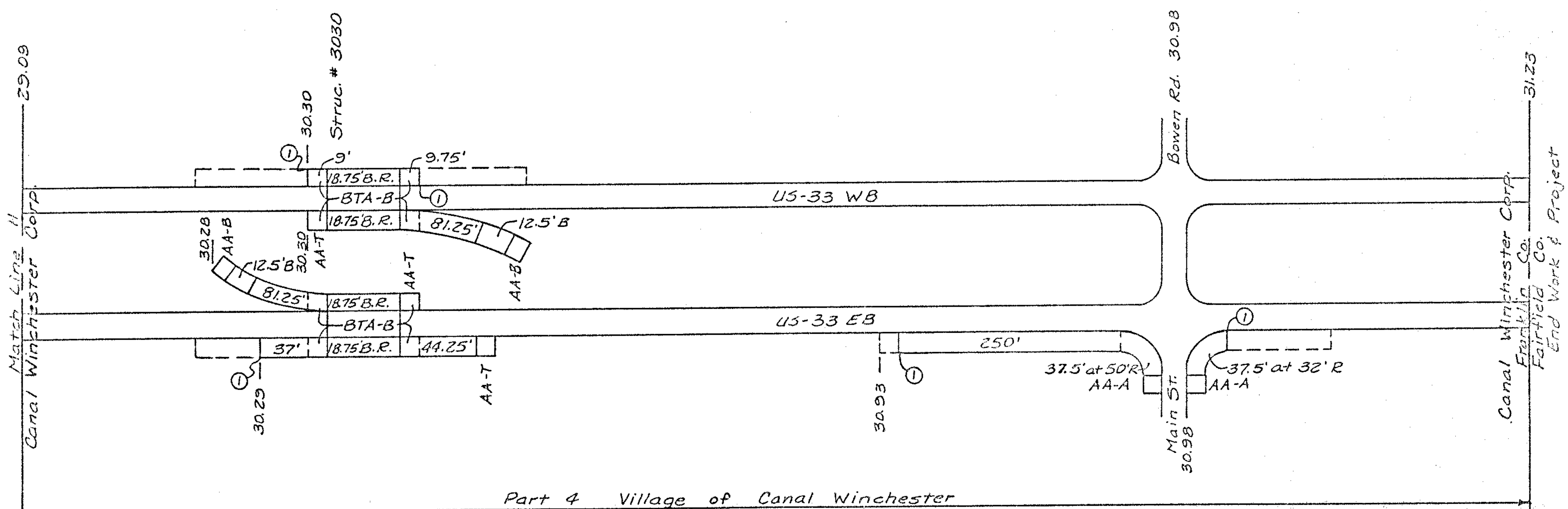
Rev. 5-27-86

Abbreviations & Notes :

AA-A – Anchor Assembly, Standard Type A
AA-B – Anchor Assembly, Barrier Design, Standard Type A
AA-T – Anchor Assembly, Standard Type T
BTA-B – Bridge Terminal Assembly, Standard Type B
B.R. – Bridge Rail
(1) – Attach to existing guardrail

* For quantities of Bridge Rail, BTA-B's and AA-T's on struc. 2649, see sh't. 77





Rev. 5-27-86

DEPARTMENT OF TRANSPORTATION
M& R 712 REV. 9-1-83

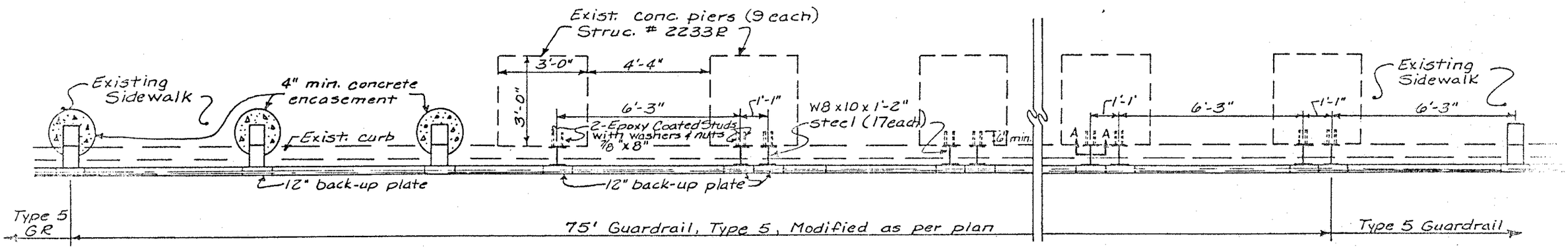
ITEM 606 - GUARDRAIL, TYPE 5, MODIFIED AS PER PLAN

FRA-33-21.36

55
80

PLAN NO.

Struc. No. 2233R



PLAN

Railing anchor studs, nuts and washers shall conform to the physical properties of ASTM A-325 except minimum elongation shall be 10%. The chemical properties are waived. Studs, nuts and washers shall be galvanized in accordance with ASTM A-123.

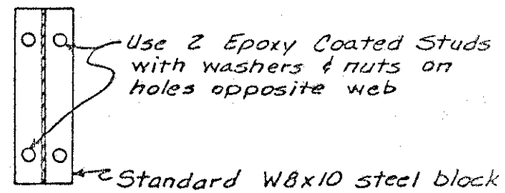
Self-drilling Anchors shall not be used on this project.

Guardrail anchor studs using 7/8" diameter studs of the length shown shall be grouted a minimum of 6" into existing concrete as per Supplemental Specifications 853 and 956.

The guardrail panels shall be field drilled as necessary to fit the W 8 x 10 blocks. A 12" back-up plate shall be placed between the guardrail and block where a rail splice does not occur.

Guardrail posts adjacent to the concrete piers shall be adjusted so as not interfere with the existing concrete curb. The cost of cutting the concrete sidewalk for guardrail post placement shall be included in the cost of ITEM 606 - Guardrail, Type 5, Modified as per plan.

For details not shown, see Standard Construction Drawing GR-2B.



Section A-A

Rev. 5-27-86

M & R 695

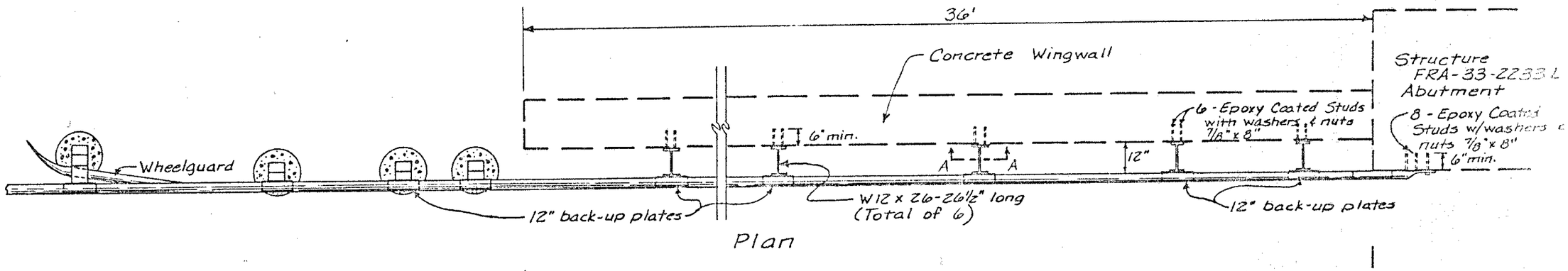
FRA-33-21.36

50
20

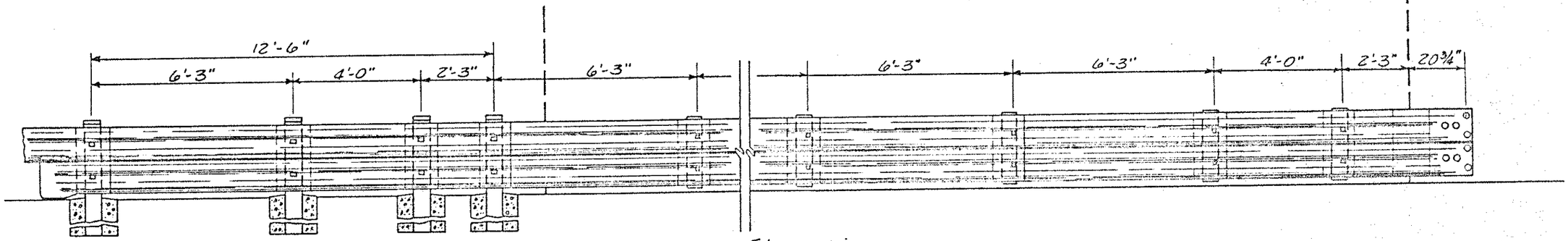
PLAN NO.

ITEM 606 – Bridge Terminal Assembly, Standard Type A, Modified as per Plan

Struc. No. 2233L



Plan



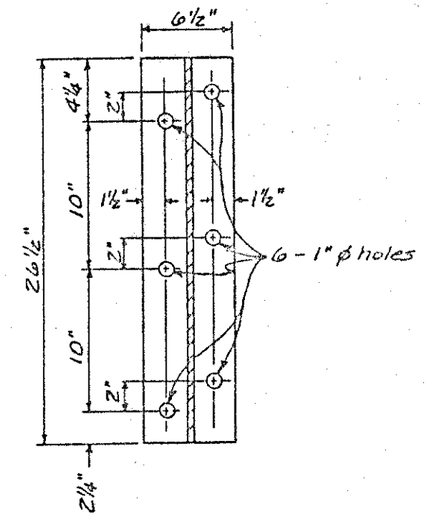
Elevation

Railing anchor studs, nuts and washers shall conform to the physical properties of ASTM A-325 except minimum elongation shall be 10%. The chemical properties are waived. Studs, nuts and washers shall be galvanized in accordance with ASTM A-123.

Self-drilling anchors shall not be used on this project.

Guardrail anchor studs using 7/8" diameter studs of the lengths shown shall be grouted a minimum of 6" into existing concrete as per Supplemental Specifications 853 and 956.

For details not shown, see Standard Construction Drawing GR-3.



Typical hole pattern for W-shape blocks.

Section A-A

Rev. 5-27-86

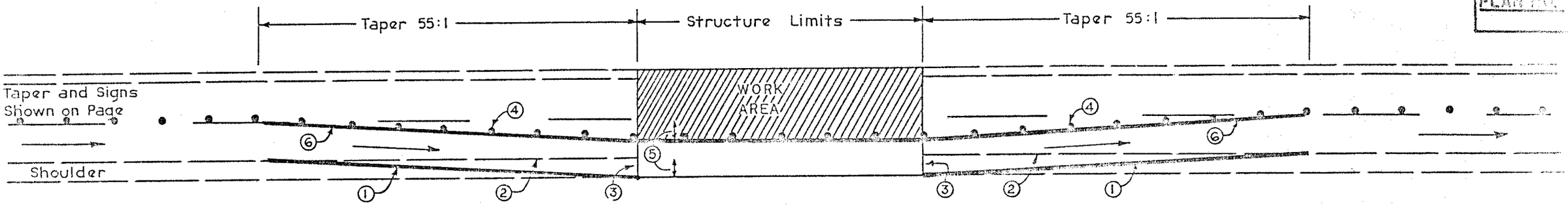
M & R 695

FRA -33 -21.36

57
80

PLAN NO.

LANE CLOSURE FOR STRUCTURE REPAIR
Four Lane



① Install 4" Temporary Edge Line, white, Class I during structure repair and latex overlay and remove when the work is completed.

② Remove existing edge line during closure and replace when the work is completed.

③ 301 or 404 to be placed as directed by the Engineer to maintain a smooth transition from the shoulder to structure.

④ Drums or barricades spaced 50′ center to center or less.

⑤ Offset - The exact offset to be as directed by the Engineer with a maximum of 5′. No offset will be allowed on the other portion of structure repair and latex overlay unless authorized by the Engineer.

For quantities see sheet 31.

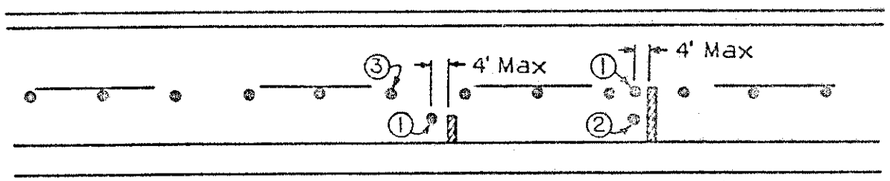
⑥ Install 4" Temporary Edge Line, yellow, Class I during structure repair and latex overlay and remove when the work is completed.

TEMPORARY CONCRETE BARRIER

Prior to the removal of the concrete parapets on Structures 2509 R&L and 2649 R&L, temporary concrete barrier shall be installed on the structure to provide protection for the removal area. In addition to the above closure detail, the approach ends of the temporary concrete barrier shall be transitioned away from the traveled roadway tapering 6:1 for an offset of 20' with an end terminal as detailed in MC-9A.

The cost of complying with these safety procedures shall be included in the lump sum bid for Item 614-Maintaining Traffic.

ADDITIONAL DRUM DETAIL
Four Lane



① The Contractor shall place an additional drum at each pavement removal. The face of this drum shall be even with the outside edge of the removal. The drum shall remain in place until traffic is returned to this lane of pavement.

② If the pavement removal is more than 6' - 0" long, additional drums shall be placed every 6' - 0" from the outside edge of the removal. These drums shall remain in place until traffic is returned to this lane of pavement.

③ Drums or barricades spaced 50' center to center or less.

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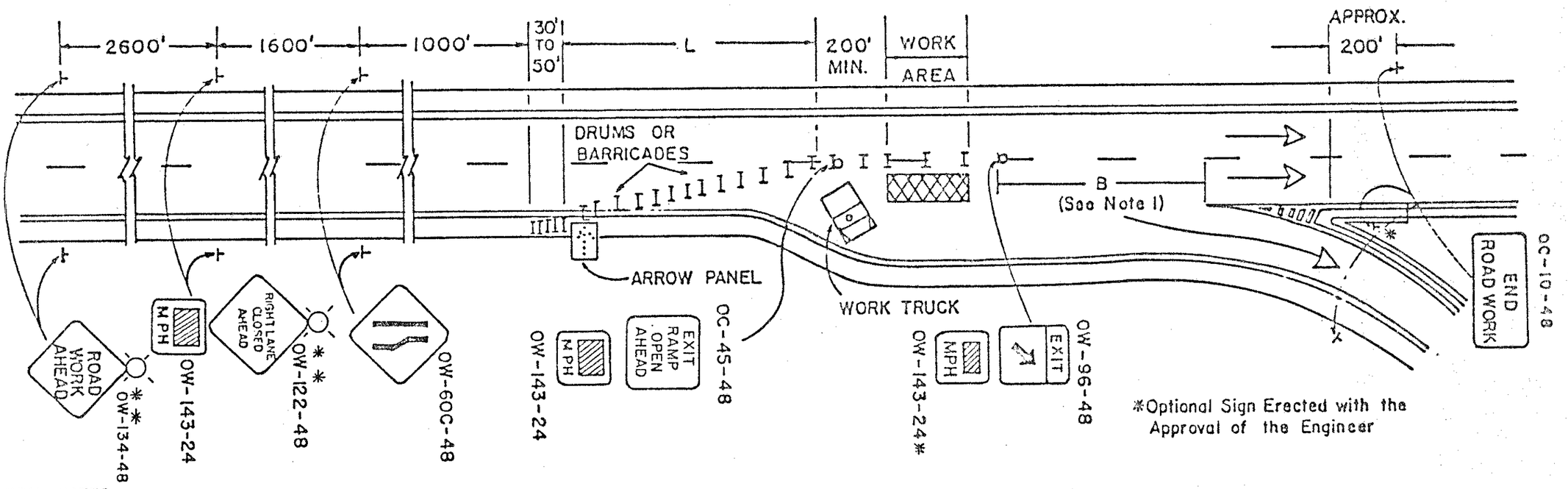


*Optional Sign Erected with the Approval of the Engineer

** TYPE A FLASHING BARRICADE WARNING LIGHTS ARE REQUIRED FOR NIGHT LANE CLOSURES.

GENERAL NOTES

1. THIS WORK AREA TRAFFIC CONTROL APPLICATION SHALL ONLY BE USED WHEN THE DISTANCE "B" IS 100 FEET OR GREATER. WHEN "B" IS LESS THAN 100 FEET, THE TRAFFIC CONTROL SHOWN ON THE "LANE CLOSURE AT EXIT GORE" DETAIL SHOULD BE USED, OR THE EXIT SHOULD BE CLOSED, OR THE TRAFFIC CONTROL ON THIS DRAWING MAY BE USED WITH APPROVAL OF THE ENGINEER. WHEN THE EXIT IS CLOSED, APPROPRIATE DETOUR SIGNS SHALL BE PROVIDED.

2. WHEN WORK IS BEING PERFORMED IN THE LANE ADJACENT TO THE MEDIAN ON A DIVIDED HIGHWAY, REFER TO THE TYPICAL WORK AREA TRAFFIC CONTROL SHOWN IN FIGURE C-21 OF THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.

3. THE WORK TRUCK SHOWN AT THE BEGINNING OF THE WORK AREA SHALL BE IN PLACE AND UNOCCUPIED WHENEVER MEN ARE WORKING WITHIN THE WORK AREA. THIS TRUCK SHALL BE MOVED FROM THE PAVEMENT WHENEVER WORKMEN ARE NOT IN THE WORK AREA. OTHER PROTECTIVE DEVICES MAY BE USED IN LIEU OF THE WORK TRUCK SHOWN WHEN APPROVED BY THE ENGINEER.

4. THE FLASHING ARROW PANEL SHALL BE IN ACCORDANCE WITH TC-35.10.

5. THIRTEEN (13) DRUMS OR BARRICADES SHALL BE USED TO FORM THE LANE TRANSITION TAPER IN ADVANCE OF THE WORK AREA. FIVE (5) CHANNELIZING DEVICES SHALL BE USED TO FORM THE TAPER ON THE SHOULDER. DRUMS OR BARRICADES SHALL BE SPACED AT 50 FOOT CENTERS. CONES MAY BE SUBSTITUTED FOR BARRICADES OR DRUMS FOR THE LANE CLOSURES DURING DAYLIGHT HOURS ONLY.

6. TYPE C STEADY BURNING BARRICADE WARNING LIGHTS SHALL BE ERECTED ON DRUMS OR BARRICADES FOR NIGHT LANE CLOSURES. MAXIMUM SPACING SHALL BE 50' CENTER TO CENTER IN ADVANCE OF THE WORK AREA AND 200' CENTER TO CENTER WITHIN THE LIMITS OF THE WORK AREA.

7. TAPER FORMULAE:

   $L = S \times W$ FOR SPEEDS OF 45 OR MORE.
   $L = WS^2/60$ FOR SPEEDS OF 40 OR LESS.

   WHERE:

   L = MINIMUM LENGTH OF TAPER.
   S = NUMERICAL VALUE OF POSTED SPEED LIMIT PRIOR TO WORK OR 85 PERCENTILE SPEED.
   W = WIDTH OF OFFSET.

8. THE SPACINGS BETWEEN CONSTRUCTION AND MAINTENANCE SIGNS SHOWN ON THIS DETAIL MAY REQUIRE ADJUSTMENTS (INCREASES OR DECREASES) TO ASSURE THAT THEY ARE POSITIONED NO CLOSER THAN 200 FEET TO EXISTING SIGNS AS DETERMINED BY THE ENGINEER.

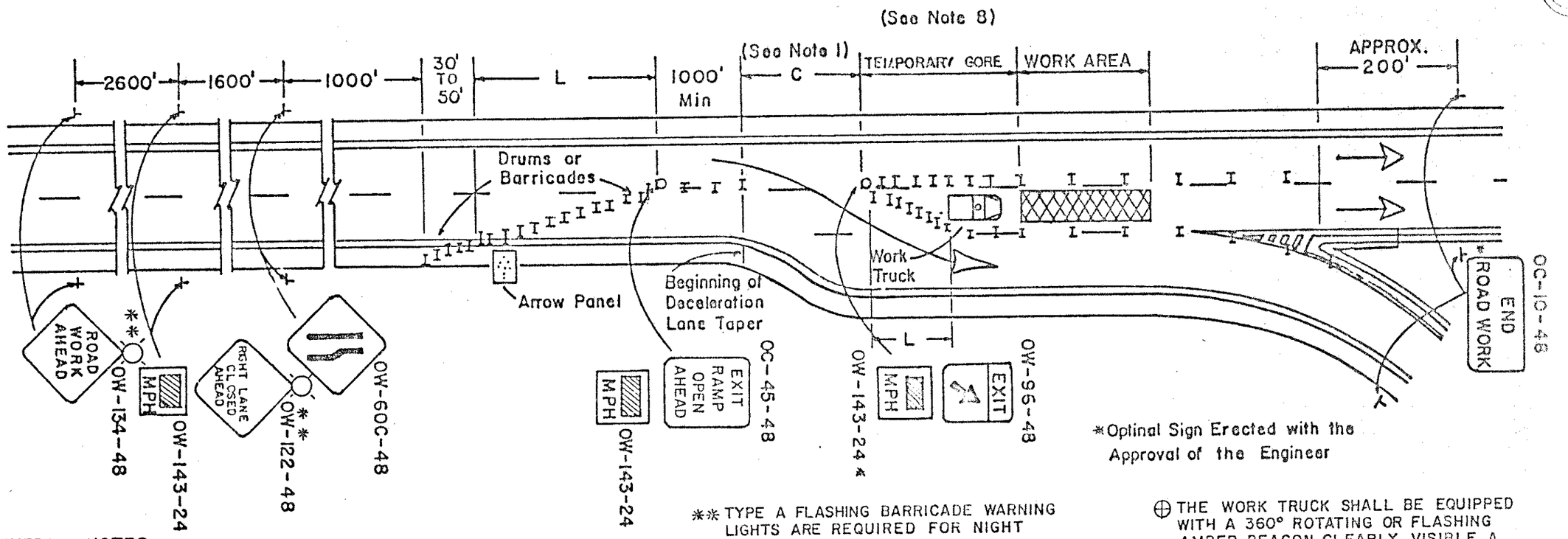
9. THE WORK TRUCK SHALL BE EQUIPPED WITH A 360° ROTATING OR FLASHING AMBER BEACON CLEARLY VISIBLE A MINIMUM OF A 1/4 MILE.

OHIO DEPARTMENT OF TRANSPORTATION

LANE CLOSURE BEFORE EXIT GORE

L TC 3-3-78

Rev. 5-27-86



*Optinal Sign Erected with the Approval of the Engineer

** TYPE A FLASHING BARRICADE WARNING LIGHTS ARE REQUIRED FOR NIGHT LANE CLOSURES.

⊕ THE WORK TRUCK SHALL BE EQUIPPED WITH A 360° ROTATING OR FLASHING AMBER BEACON CLEARLY VISIBLE A MINIMUM OF A 1/4 MILE.

GENERAL NOTES

1. THIS WORK AREA TRAFFIC CONTROL APPLICATION SHALL ONLY BE USED WHEN THE DISTANCE "C" IS 100 FEET OR GREATER. WHEN "C" IS LESS THAN 100 FEET, THE TRAFFIC CONTROL SHOWN ON THE "LANE CLOSURE BEFORE EXIT GORE" DETAIL SHOULD BE USED, OR THE EXIT SHOULD BE CLOSED, OR THE TRAFFIC CONTROL ON THIS DRAWING MAY BE USED WITH APPROVAL OF THE ENGINEER. WHEN THE EXIT IS CLOSED, APPROPRIATE DETOUR SIGNS SHALL BE PROVIDED.

2. WHEN WORK IS BEING PERFORMED IN ONLY THE LANE ADJACENT TO THE MEDIAN ON A DIVIDED HIGHWAY, REFER TO THE TYPICAL WORK AREA TRAFFIC CONTROL SHOWN IN FIGURE C-21 OF THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.

3. THE WORK TRUCK SHOWN AT THE BEGINNING OF THE WORK AREA SHALL BE IN PLACE AND UNOCCUPIED WHENEVER MEN ARE WORKING WITHIN THE WORK AREA. THIS TRUCK SHALL BE MOVED FROM THE PAVEMENT WHENEVER WORKMEN ARE NOT IN THE WORK AREA. OTHER PROTECTIVE DEVICES MAY BE USED IN LIEU OF THE WORK TRUCK SHOWN WHEN APPROVED BY THE ENGINEER. A TRUCK MOUNTED IMPACT ATTENUATOR MAY BE EMPLOYED. ⊕

4. THE FLASHING ARROW PANEL SHALL BE IN ACCORDANCE WITH TC-35.10.

5. THIRTEEN (13) DRUMS OR BARRICADES SHALL BE USED TO FORM THE LANE TRANSITION TAPER IN ADVANCE OF THE WORK AREA. FIVE (5) CHANNELIZING DEVICES SHALL BE USED TO FORM THE TAPER ON THE SHOULDER. DRUMS OR BARRICADES SHALL BE SPACED AT 50 FOOT CENTERS. CONES MAY BE SUBSTITUTED FOR BARRICADES OR DRUMS FOR THE LANE CLOSURES DURING DAYLIGHT HOURS ONLY.

6. TYPE C STEADY BURNING BARRICADE WARNING LIGHTS SHALL BE ERECTED ON DRUMS OR BARRICADES FOR NIGHT LANE CLOSURES. MAXIMUM SPACING SHALL BE 50' CENTER TO CENTER IN ADVANCE OF THE WORK AREA AND 200' CENTER TO CENTER WITHIN THE LIMITS OF THE WORK AREA.

7. TAPER FORMULAE:

   $L = S \times W$ FOR SPEEDS OF 45 OR MORE.
   $L = WS^2/60$ FOR SPEEDS OF 40 OR LESS.

   WHERE:

   L = MINIMUM LENGTH OF TAPER.
   S = NUMERICAL VALUE OF POSTED SPEED LIMIT PRIOR TO WORK OR 85 PERCENTILE SPEED.
   W = WIDTH OF OFFSET.

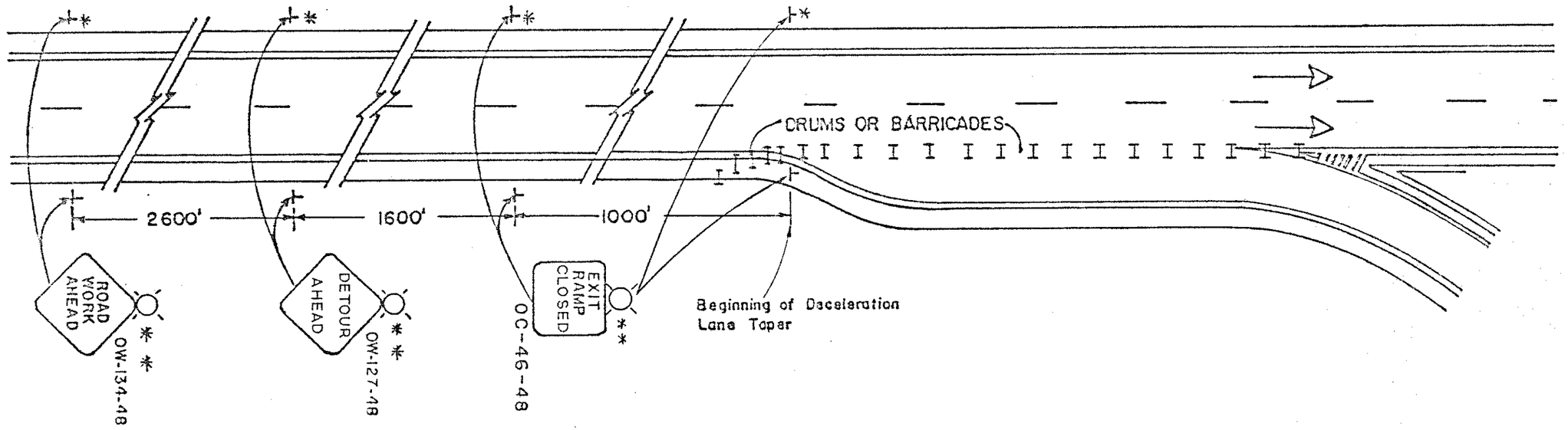
8. WHEN CREATING A TEMPORARY GORE, CHANNELIZING DEVICES SHOULD BE SPACED 25' CENTER TO CENTER SO AS TO CREATE A "SOLID GORE" EFFECT.

9. THE SPACINGS BETWEEN CONSTRUCTION AND MAINTENANCE SIGNS SHOWN ON THIS DETAIL MAY REQUIRE ADJUSTMENTS (INCREASES OR DECREASES) TO ASSURE THAT THEY ARE POSITIONED NO CLOSER THAN 200 FEET TO EXISTING SIGNS AS DETERMINED BY THE ENGINEER.

OHIO DEPARTMENT OF TRANSPORTATION

LANE CLOSURE AT EXIT GORE

Rev. 5-2-



* * TYPE A FLASHING BARRICADE WARNING LIGHTS ARE REQUIRED FOR NIGHT LANE CLOSURES.

* OPTIONAL SIGN ERECTED WITH THE APPROVAL OF THE ENGINEER.

GENERAL NOTES

1. Drums or barricades shall be spaced at 25 foot centers. Additional drums or barricades may be required as directed.

2. Type C steady burning barricade warning lights shall be erected on drums or barricades.

3. The spacings between construction and maintenance signs shown on this detail may require adjustments (increases or decreases) to assure that they are positioned no closer than 200 feet to existing signs or to avoid other obstacles. In any event, the adjustments shall be as determined by the engineer.

4. This detail is to be used to close the US-33 WB ramp on Refugee Rd. and Winchester Pike.

OHIO DEPARTMENT OF TRANSPORTATION

RAMP CLOSURE

DATE

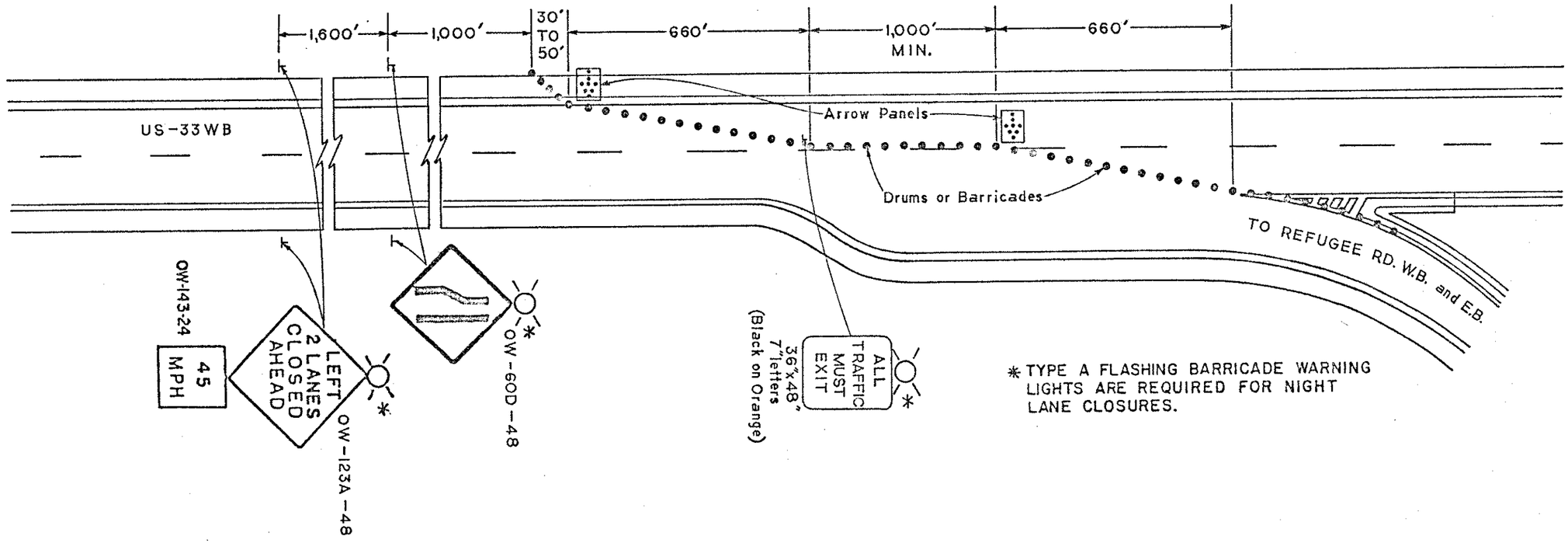
Rev. 5-27-86

DEPARTMENT OF TRANSPORTATION
MO R 712 REV. 9-1-83

FRA-33-21.36

598
80

PLAN NO.



GENERAL NOTES

1. The flashing arrow panels shall be in accordance with TC-35.10.

2. Five (5) channelizing devices shall be used to form the taper on the shoulder. Drums or barricades shall be spaced at 25 foot centers on tapers and at 50 foot centers on other sections. Additional drums or barricades may be required as directed.

3. Type C steady burning barricade warning lights shall be erected on drums or barricades for night closures. Maximum spacing shall be 50 feet center to center.

4. The spacings between construction and maintenance signs shown on this detail may require adjustments (increases or decreases) to assure that they are positioned no closer than 200 feet to existing signs as determined by the engineer.

Rev. 5-27-86

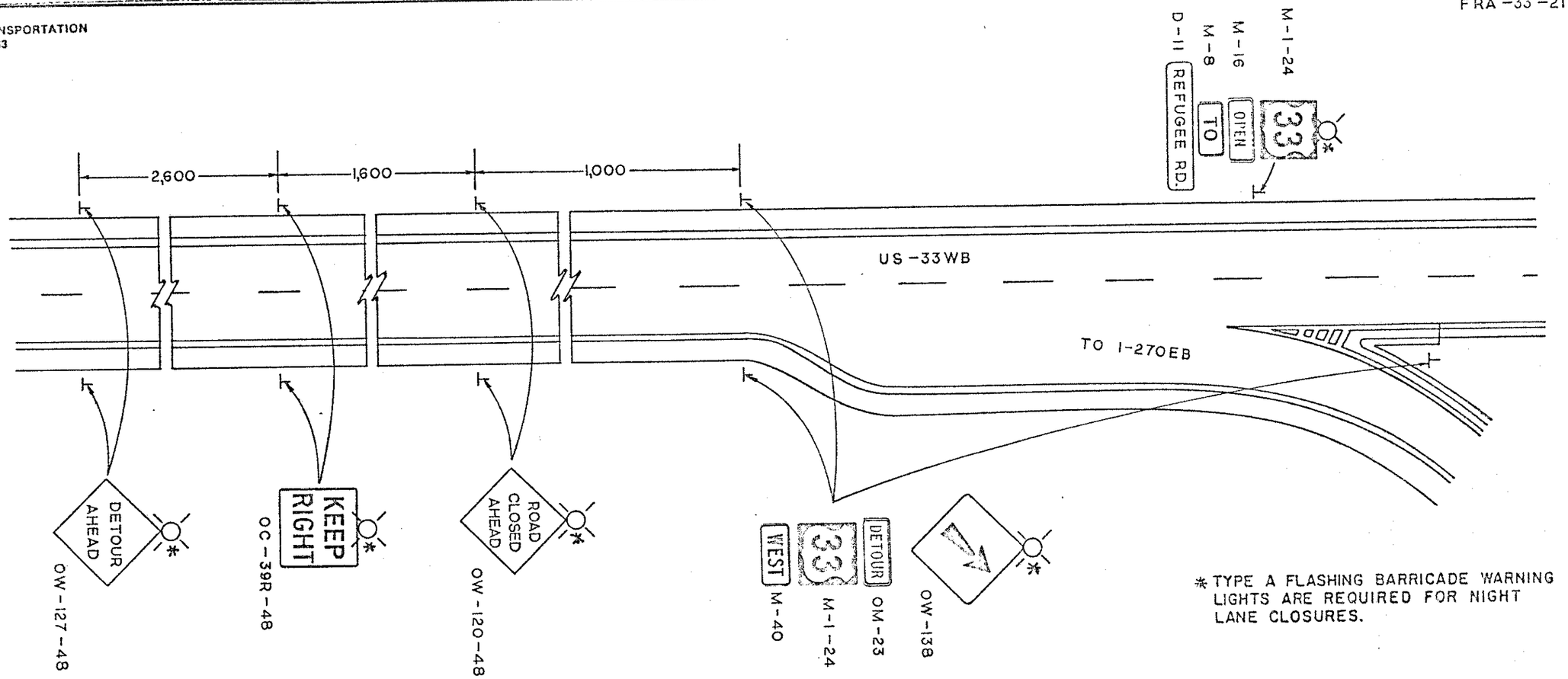
CLOSURE
US-33 W.B.
AT REFUGEE ROAD

DATE 4-13-84

FRA-33-21.36

59C
80

PLAN NO.



* TYPE A FLASHING BARRICADE WARNING LIGHTS ARE REQUIRED FOR NIGHT LANE CLOSURES.

GENERAL NOTES

1. The spacings between construction and maintenance signs shown on this detail may require adjustments (increases or decreases) to assure that they are positioned no closer than 200 feet to existing signs as determined by the engineer.

DETOUR
US-33 WB
AT I-270

Rev. 5-27-86

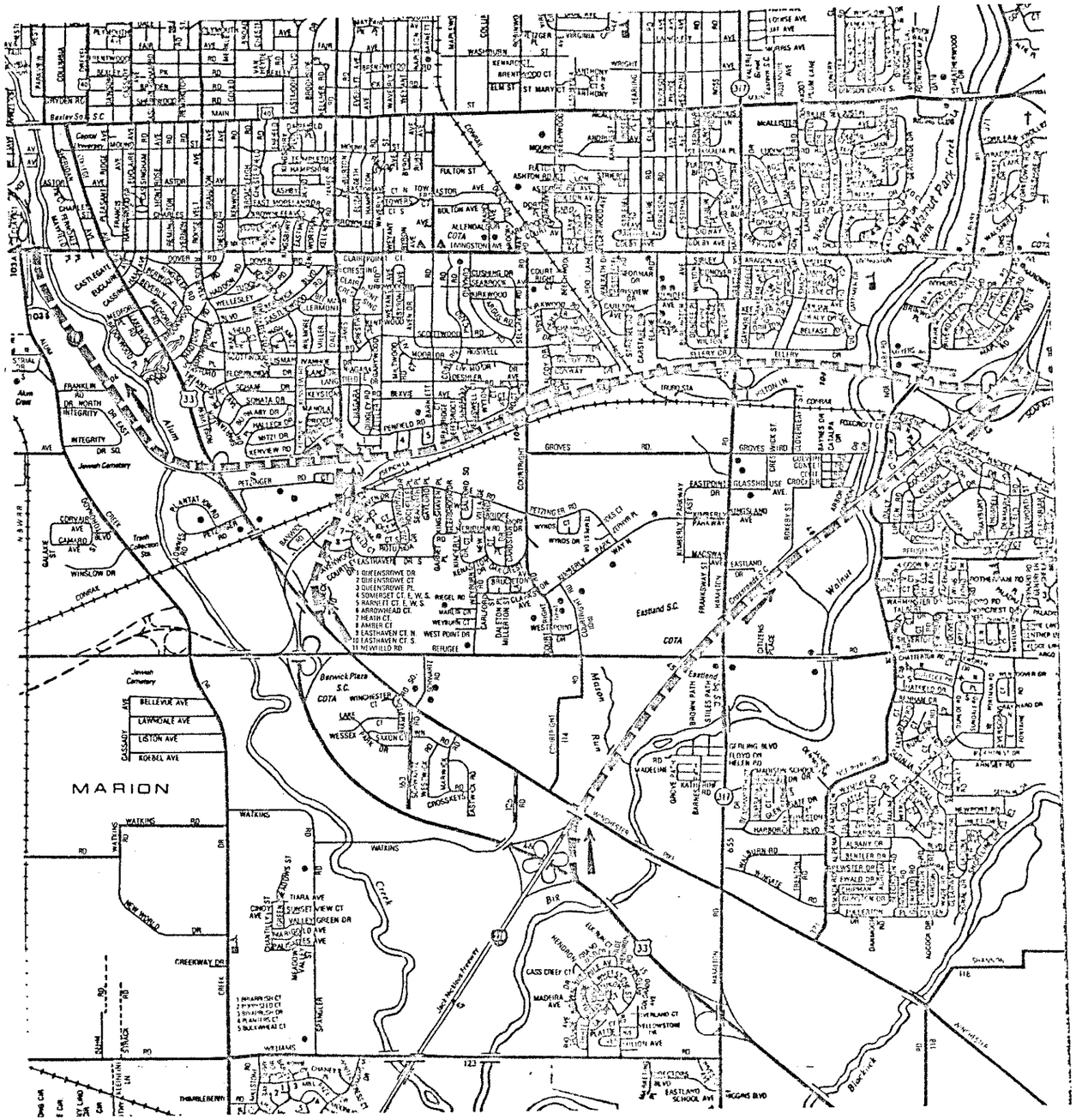
DEPARTMENT OF TRANSPORTATION
TR R 712 REV. 9-1-83

FRA -33 -21.36

59D
80

PLAN NO.

US-33W.B. DETOURS



Rev. 5-27-86

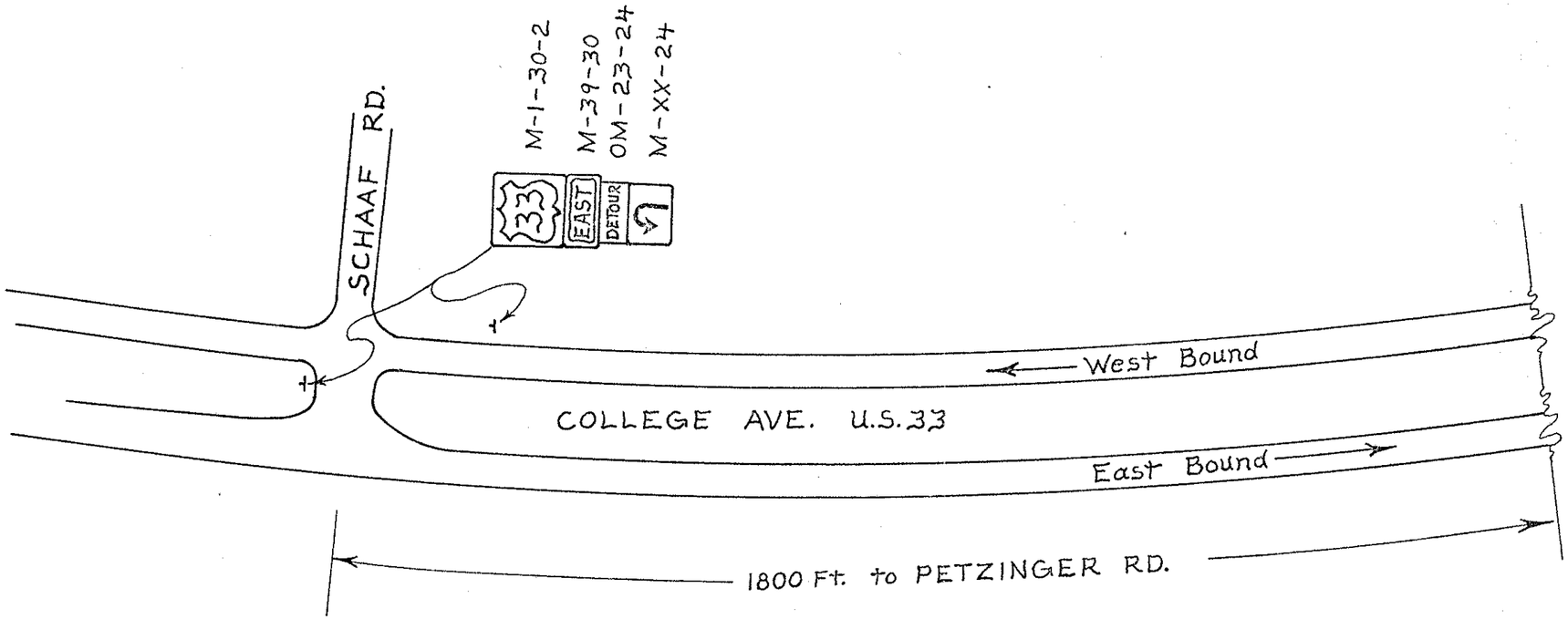
DEPARTMENT OF TRANSPORTATION
TR & R 712 REV. 9-1-83

FRA-33-21.36

59E
80

PLAN NO.

DETOUR at PETZINGER RD.



Rev. 5-27-86

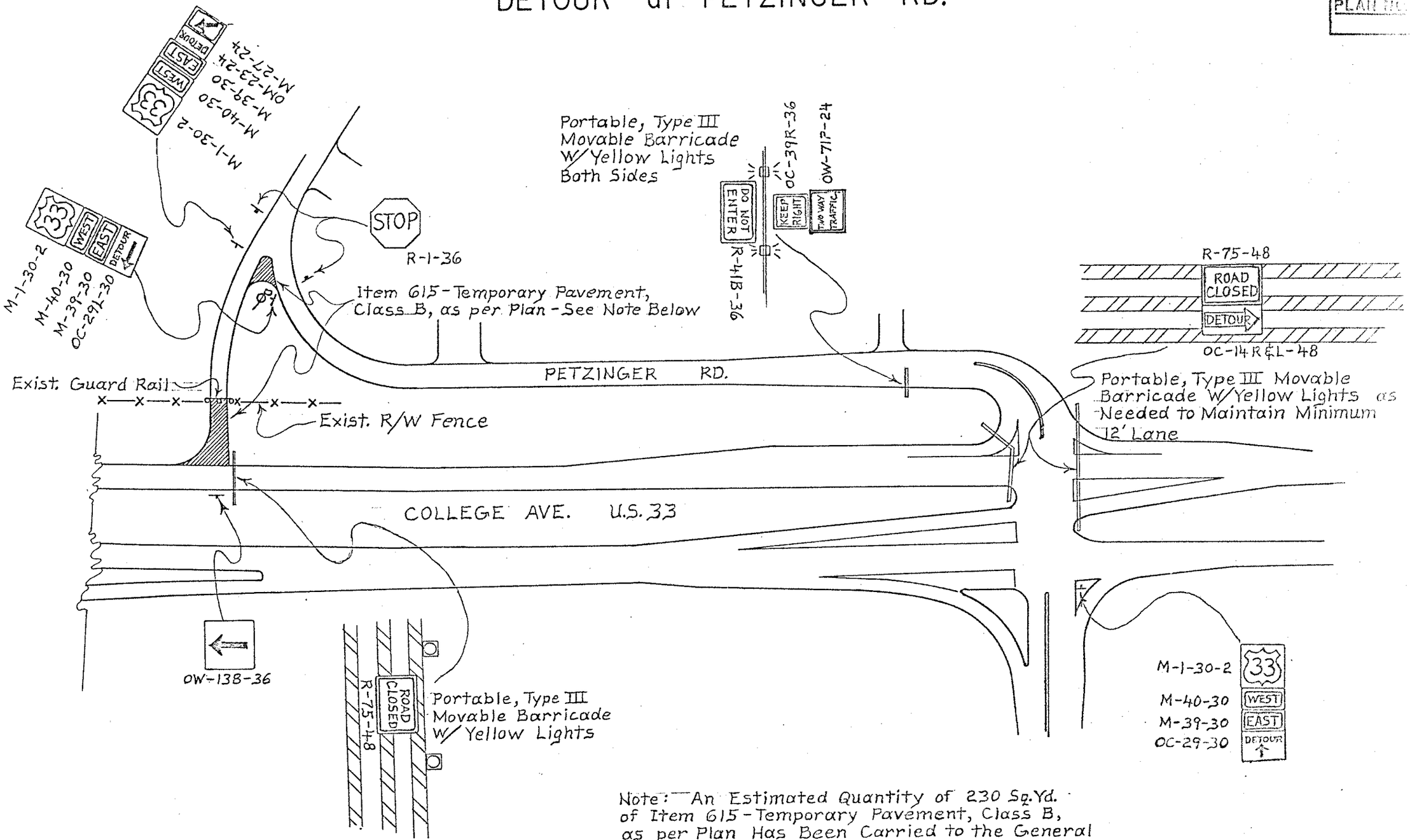
DEPARTMENT OF TRANSPORTATION
M&R 712 REV. 9-1-83

FRA-33-21.36

50 P 80

PLAN NO.

DETOUR at PETZINGER RD.

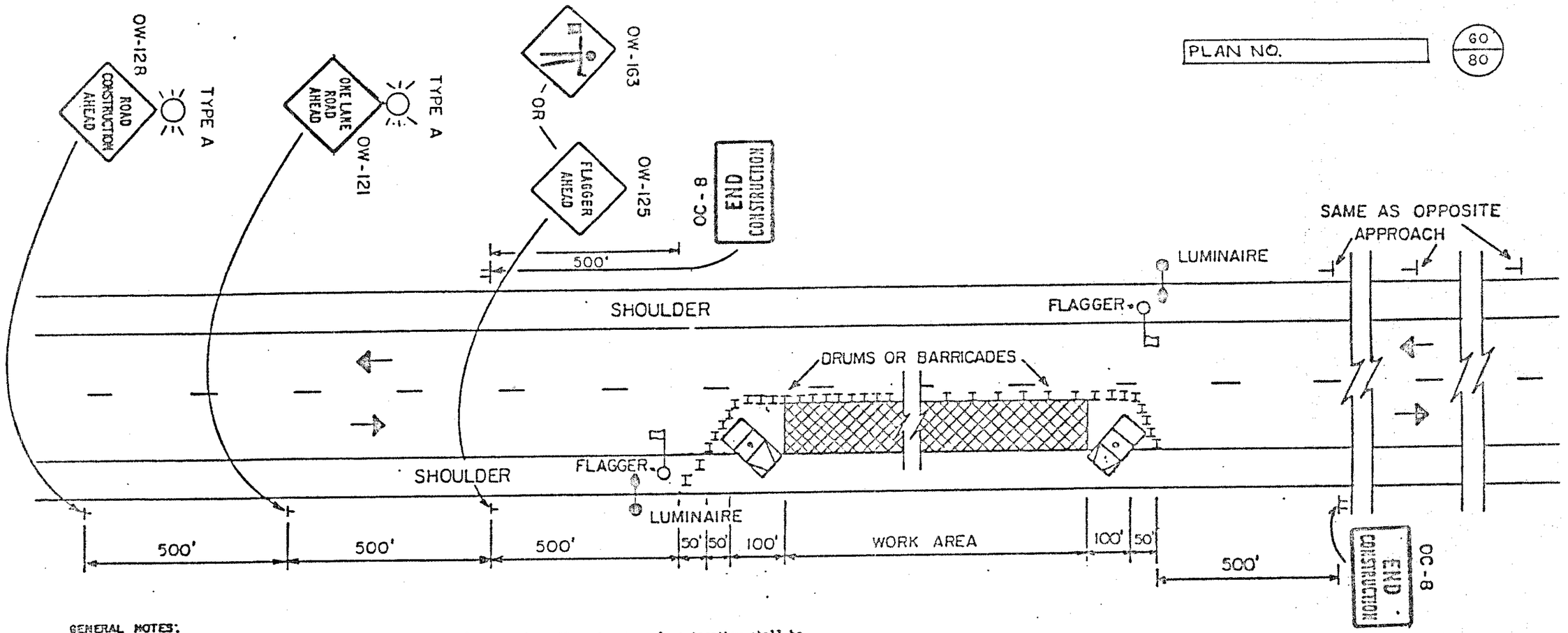


Note: An Estimated Quantity of 230 Sq.Yd. of Item 615 - Temporary Pavement, Class B, as per Plan Has Been Carried to the General Summary. Included in this Item Shall be the Removal of 25 Ft. of Guard Rail and Approximatly 30 Ft. of Right of Way Fence. The Guard Rail and Fence Shall be Replaced With New Materials at Termination of Detour.

Rev. 5-27-86

DOT 1925

PLAN NO. 60/80



GENERAL NOTES:

1. 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.

2. 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.

3. 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. 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 the lane closures during daylight hours only.

4. 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.

5. 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 ¼ mile.

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. 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.

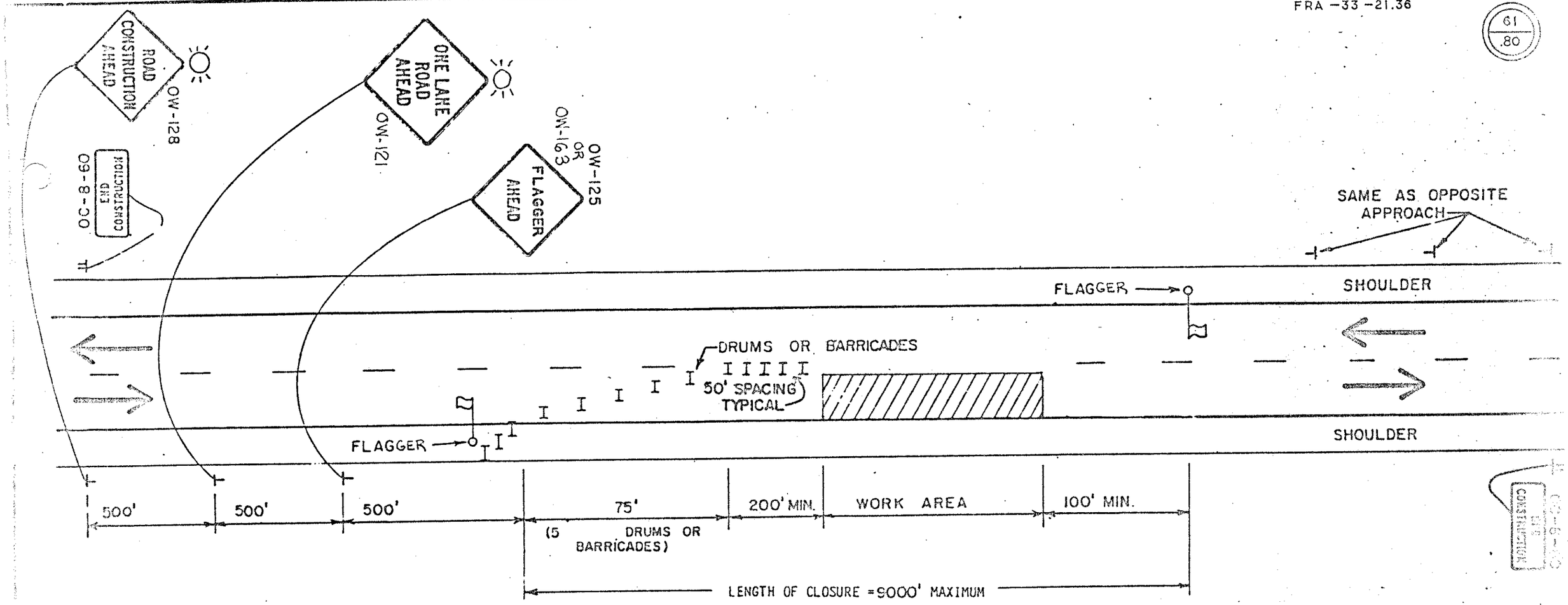
OHIO DEPARTMENT OF TRANSPORTATION

FLAGGERS CLOSING 1 LANE OF A 2 LANE HIGHWAY

DATE

DR. CR. Rev. 5-27-83

61
.80



GENERAL NOTES

1. FLAGGERS SHALL BE USED TO CONTROL TRAFFIC CONTINUOUSLY FOR AS LONG AS ONE LANE OPERATION IS IN EFFECT. FLAGGERS SHALL BE ABLE TO COMMUNICATE WITH EACH OTHER AT ALL TIMES EITHER VERBALLY OR BY MEANS OF RADIO OR FIELD TELEPHONES. FLAGGER 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.

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

   ALL TRAFFIC CONTROL SIGNS, CHANNELIZING DEVICES AND FLAGGERS 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.

4. THE TYPE A FLASHING BARRICADE WARNING LIGHT SHOWN ON THE ROAD CONSTRUCTION AHEAD AND ONE LANE ROAD AHEAD SIGN IS REQUIRED WHENEVER A 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.

OHIO DEPARTMENT OF TRANSPORTATION

FLAGGERS CLOSING I LANE OF A 2 LANE HIGHWAY

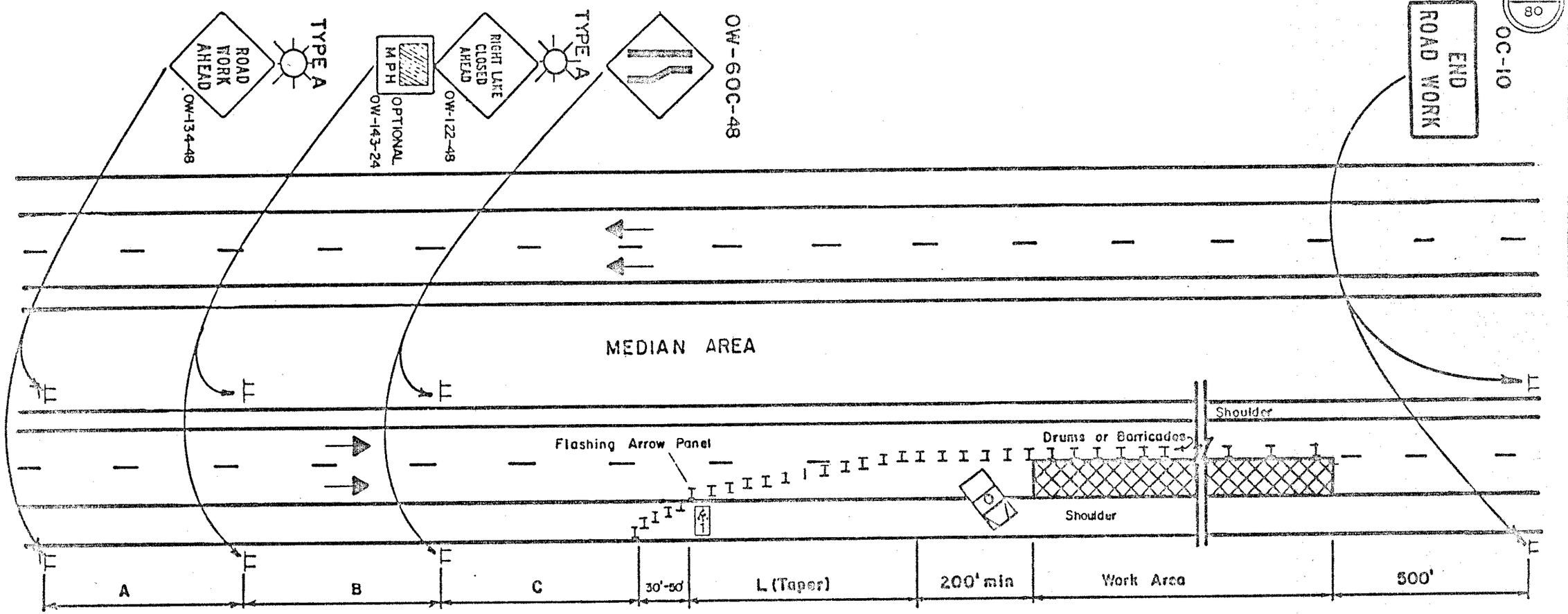
PAVING OPERATIONS

DR. | CK. | Rev. 5-27-86

FRA -33 -21.36

62/80

OC-10



GENERAL NOTES:

1. The taper length (L) shall be in accordance with Section 7F-17 of the OMUTCD. The location of the transition taper and location of the advance warning signs should be adjusted to provide for adequate sight distance for the existing vertical and horizontal roadway alignment. In order to determine the minimum number of channelizing devices for the transition taper see Table 7-5 OMUTCD. For a 55 MPH prevailing speed and a 12 ft. lane, not less than thirteen (13) drums or barricades shall be used to form the lane transition taper in advance of the work area. Not less than five (5) drums or barricades shall be used to form the taper on the shoulder. Drums or barricades shall be spaced approximately 50' to 60' center to center for the first 1000 feet of the work area and at a maximum of 100 to 120 feet for the balance of the work area. Cones may be substituted for barricades or drums during daylight closures only.

2. The major standard lane warning sign sizes may be used on divided streets or highways that are not classified as freeways or expressways.

3. When work is being performed in the lane adjacent to the median on a divided highway an OW-123-48 sign(s) shall be substituted for the OW-122-48 sign(s) and an OW-60D-48 sign(s) shall be substituted for the OW-60C sign(s).

4. The work vehicle shown at the beginning of the work area shall be in place and unoccupied whenever workers are in the work area. This work vehicle 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 vehicle shown when approved by the Engineer. The vehicle shall be equipped with a 360° rotating or flashing amber beacon clearly visible a minimum of a ½ mile.

5. The flashing arrow panel shall meet requirements of TC-35.10.

6. 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 1.

MINIMUM DISTANCE	A	B	C
MAJOR STANDARD	300'	500'	500'
URBAN FREEWAY & EXPRESSWAY	500' TO 1000'	500' TO 1000'	500' TO 1000'
RURAL FREEWAY & EXPRESSWAY	2600'	1600'	1000'

7. Type A flashing barricade warning lights shown on the "Road Work Ahead" and the "Right Lane Closed Ahead" signs are required whenever a night lane closure is necessary.

8. Some work area locations may require more than just static or conventional signs to enhance communication with the driver. At these locations Portable Changeable Message Signs (PCMS) units are recommended. These devices should be located 2000 to 4000 feet in advance of a lane closure or other point of required action. See Section 7G-8.1, OMUTCD for further guidance on use of PCMS units.

OHIO DEPARTMENT OF TRANSPORTATION

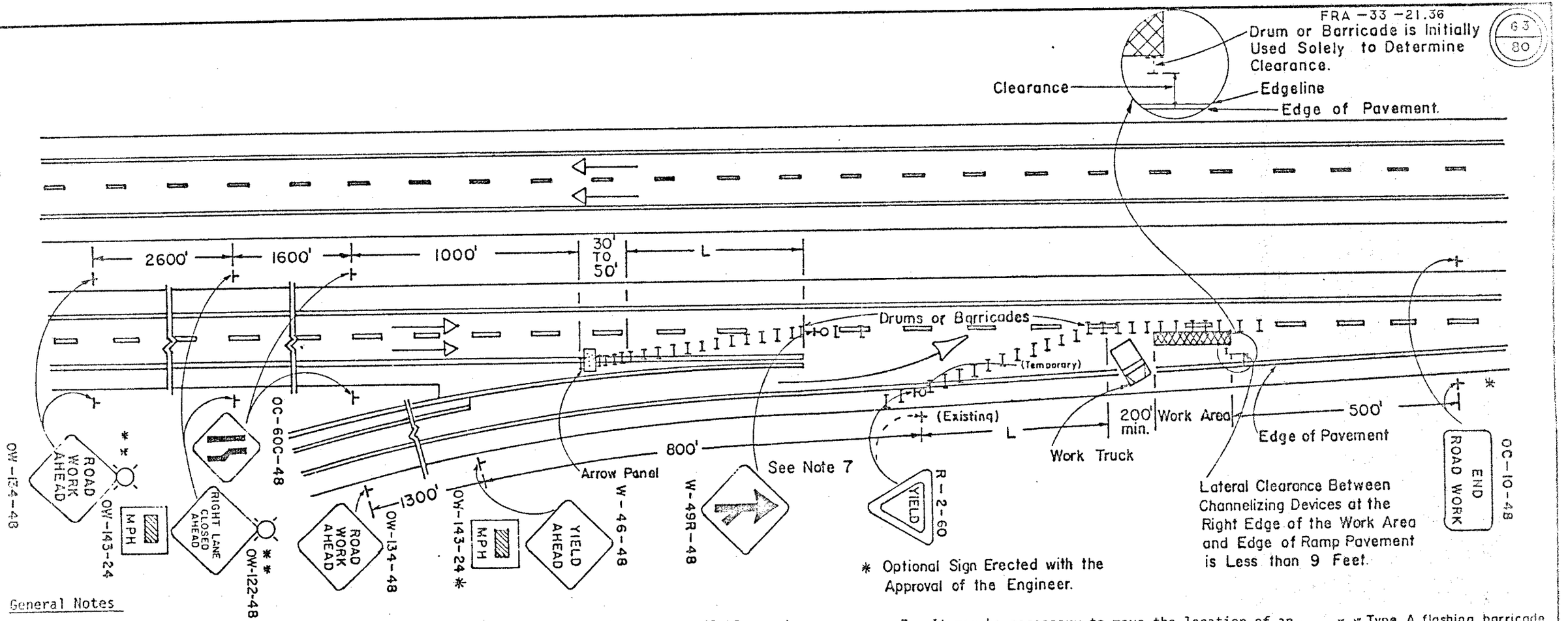
CLOSING ONE LANE OF A FOUR LANE DIVIDED HIGHWAY

DATE 2/01

Rev. 5-27-86

FRA -33 -21.36

63/80



* Optional Sign Erected with the Approval of the Engineer.

** Type A flashing barricade lights are required for night lane closures.

⊕ The work truck shall be equipped with a 360° rotating or flashing amber beacon clearly visible a minimum of a 1/4 mile.

General Notes

1. This work area traffic control application shall be employed when the lateral clearance between channelizing devices at the right edge of the work area and the edge of the ramp pavement is less than 9 feet. When the clearance is more than 9 feet, the traffic control on "Lane Closure at Entrance Ramp: Plan A" should be used, or the ramp should be closed. When the ramp is closed, appropriate detour signs shall be provided.

2. Thirteen (13) drums or barricades shall be used to form the lane transition taper in advance of the work area. Five (5) channelizing devices shall be used to form the taper on the shoulder. Drums or barricades shall be spaced at 50 foot centers. Cones may be substituted for barricades or drums for the lane closures during daylight hours only.

3. Ramp signs shall be dual mounted on multi-lane ramps. When the ramp is not long enough to allow placement as specified above, the signs may be spaced proportionately within the space available as determined by the Engineer (a 200' minimum spacing must be maintained).

4. The flashing arrow panel shall be in accordance with TC-35.10.

5. The work truck shown at the beginning of the work area shall be in place and unoccupied whenever men are working within the work area. This truck shall be moved from the pavement whenever workmen are not in the work area. Other protective devices may be used in lieu of work truck shown when approved by the Engineer.⊕

6. Type C steady burning barricade warning lights shall be erected on drums or barricades for night lane closures. Maximum spacing shall be 50' center to center in advance of the work area and 200' center to center within the limits of the work area.

7. It may be necessary to move the location of an existing Yield condition In these cases, the permanent R-2 sign installation shall be covered and the temporary installation shall be mounted upon a drive post which shall be banded to a drum with stainless steel strapping material or other techniques subject to the approval of the Engineer.

8. Taper Formulae:

   $L = S \times W$ for Speeds of 45 or more.
   $L = WS^2/60$ for Speeds 40 or less.

   Where:

   L = Minimum length of taper.
   S = Numerical value of posted speed limit prior to work or 85 percentile speed.
   W = Width of offset.

9. THE SPACINGS BETWEEN CONSTRUCTION AND MAINTENANCE SIGNS SHOWN ON THIS DETAIL MAY REQUIRE ADJUSTMENTS (INCREASES OR DECREASES) TO ASSURE THAT THEY ARE POSITIONED NO CLOSER THAN 200 FEET TO EXISTING SIGNS AS DETERMINED BY THE ENGINEER.

OHIO DEPARTMENT OF TRANSPORTATION

LANE CLOSURE AT ENTRANCE RAMP PLAN B

DATE 03-75

Rev. 5-27-86

FRA-33-21.36

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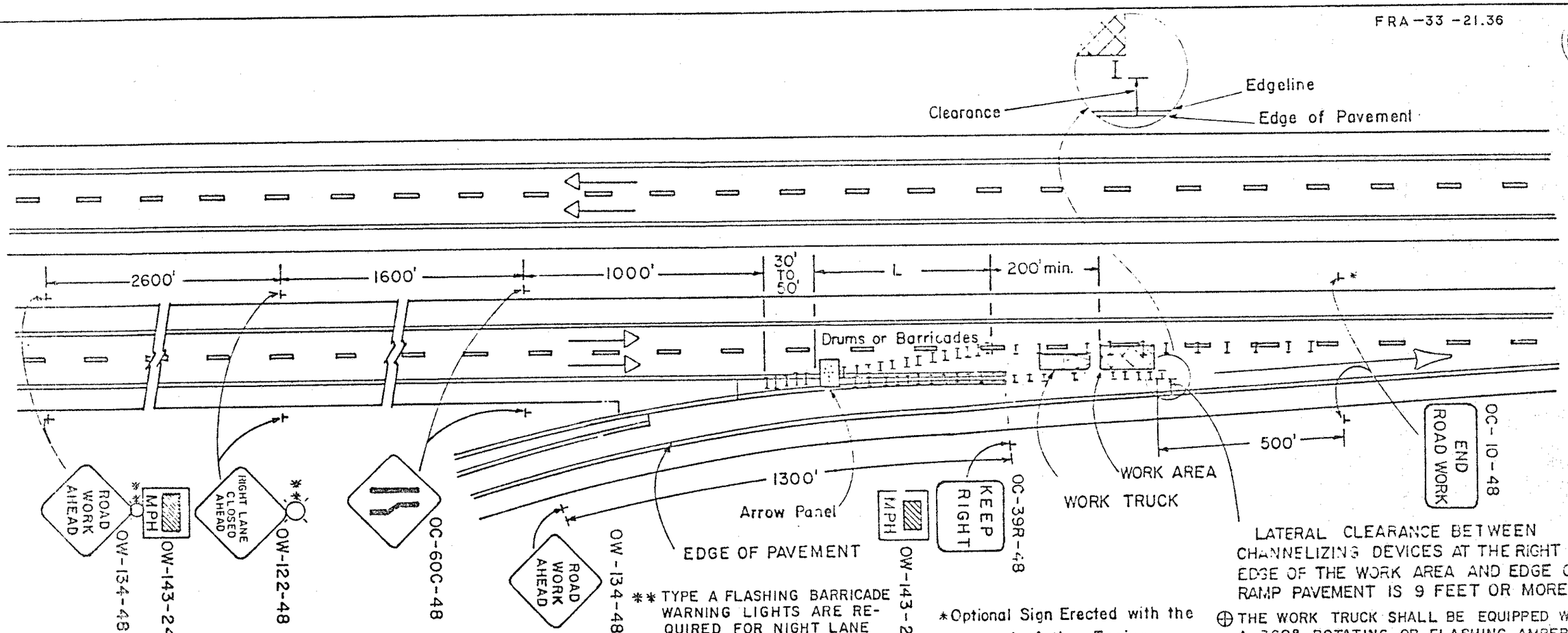


** TYPE A FLASHING BARRICADE WARNING LIGHTS ARE REQUIRED FOR NIGHT LANE CLOSURES.

*Optional Sign Erected with the Approval of the Engineer

LATERAL CLEARANCE BETWEEN CHANNELIZING DEVICES AT THE RIGHT EDGE OF THE WORK AREA AND EDGE OF RAMP PAVEMENT IS 9 FEET OR MORE.

⊕ THE WORK TRUCK SHALL BE EQUIPPED WITH A 360° ROTATING OR FLASHING AMBER BEACON CLEARLY VISIBLE A MINIMUM OF A 1/4 MILE.

GENERAL NOTES

1. THIS WORK AREA TRAFFIC CONTROL APPLICATION SHALL BE EMPLOYED WHEN THE LATERAL CLEARANCE BETWEEN THE CHANNELIZING DEVICES AT THE RIGHT EDGE OF THE WORK AREA AND THE EDGE OF THE RAMP PAVEMENT IS 9 FEET OR MORE. WHEN THE CLEARANCE IS LESS THAN 9 FEET, THE TRAFFIC CONTROL ON "LANE CLOSURE AT ENTRANCE RAMP: PLAN B" SHOULD BE USED, OR THE RAMP SHOULD BE CLOSED, OR ALLOWING RAMP TRAFFIC TO USE THE BERM SHOULD BE CONSIDERED PROVIDED THE OPERATION IS "SHORT" IN DURATION. WHEN THE RAMP IS CLOSED, APPROPRIATE DETOUR SIGNS SHALL BE PROVIDED.

2. THIRTEEN (13) DRUMS OR BARRICADES SHALL BE USED TO FORM THE LANE TRANSITION TAPER IN ADVANCE OF THE WORK AREA. FIVE (5) CHANNELIZING DEVICES SHALL BE USED TO FORM THE TAPER ON THE SHOULDER. DRUMS OR BARRICADES SHALL BE SPACED AT 50 FOOT CENTERS. CONES MAY BE SUBSTITUTED FOR BARRICADES OR DRUMS FOR THE LANE CLOSURES DURING DAYLIGHT HOURS ONLY.

3. RAMP SIGNS SHALL BE DUAL MOUNTED ON MULTILANE RAMPS.

4. THE FLASHING ARROW PANEL SHALL BE IN ACCORDANCE WITH TC-35.10.

5. THE WORK TRUCK SHOWN AT THE BEGINNING OF THE WORK AREA SHALL BE IN PLACE AND UNOCCUPIED WHENEVER MEN ARE WORKING WITHIN THE WORK AREA. THIS TRUCK SHALL BE MOVED FROM THE PAVEMENT WHENEVER WORKMAN ARE NOT IN THE WORK AREA. OTHER PROTECTIVE DEVICES MAY BE USED IN LIEU OF WORK TRUCK SHOWN WHEN APPROVED BY THE ENGINEER. A TRUCK MOUNTED IMPACT ATTENUATOR MAY BE EMPLOYED. ⊕

6. TYPE C STEADY BURNING BARRICADE WARNING LIGHTS SHALL BE ERECTED ON DRUMS OR BARRICADES FOR NIGHT LANE CLOSURES. MAXIMUM SPACING SHALL BE 50' CENTER TO CENTER IN ADVANCE OF THE WORK AREA AND 200' CENTER TO CENTER WITHIN THE LIMITS OF THE WORK AREA.

7. TAPER FORMULAE:

$L = S \times W$ FOR SPEEDS OF 45 OR MORE.
$L = WS^2/60$ FOR SPEEDS OF 40 OR LESS.

WHERE:

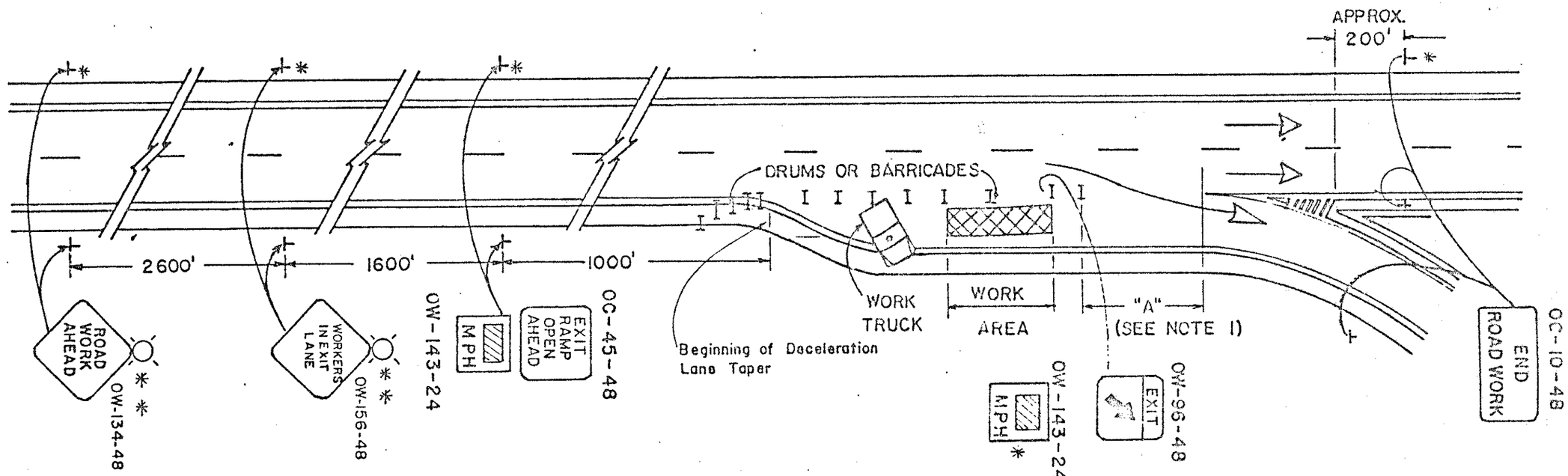
L = MINIMUM LENGTH OF TAPER.
S = NUMERICAL VALUE OF POSTED SPEED LIMIT PRIOR TO WORK OR 85 PERCENTILE SPEED.
W = WIDTH OF OFFSET.

8. THE SPACINGS BETWEEN CONSTRUCTION AND MAINTENANCE SIGNS SHOWN ON THIS DETAIL MAY REQUIRE ADJUSTMENTS (INCREASES OR DECREASES) TO ASSURE THAT THEY ARE POSITIONED NO CLOSER THAN 200 FEET TO EXISTING SIGNS AS DETERMINED BY THE ENGINEER.

OHIO DEPARTMENT OF TRANSPORTATION

LANE CLOSURE AT ENTRANCE RAMP: PLAN A

Rev. 5-27-86



** TYPE A FLASHING BARRICADE WARNING LIGHTS ARE REQUIRED FOR NIGHT LANE CLOSURES.

* OPTIONAL SIGN ERECTED WITH THE APPROVAL OF THE ENGINEER.

GENERAL NOTES.

1. THIS WORK AREA TRAFFIC CONTROL APPLICATION SHALL ONLY APPLY WHEN THE DISTANCE "A" IS GREATER THAN 100'. WHEN DISTANCE "A" IS LESS THAN 100', THE RAMP SHALL BE CLOSED. WHEN THE RAMP IS CLOSED, THE TRAFFIC CONTROL SHALL INCLUDE DETOUR SIGNING FOR EXIT RAMP CLOSURES IN ACCORDANCE WITH OMUTCD.

2. DRUMS OR BARRICADES SHALL BE SPACED AT 50 FOOT CENTERS. CONES MAY BE SUBSTITUTED FOR BARRICADES OR DRUMS FOR THE LANE CLOSURES DURING DAYLIGHT HOURS ONLY.

3. TYPE C STEADY BURNING BARRICADE WARNING LIGHTS SHALL BE ERECTED ON DRUMS OR BARRICADES FOR NIGHT LANE CLOSURES. MAXIMUM SPACING SHALL BE 50' CENTER TO CENTER IN ADVANCE OF THE WORK AREA AND 200' CENTER TO CENTER WITHIN THE LIMITS OF THE WORK AREA.

4. THE WORK TRUCK SHOWN AT THE BEGINNING OF THE WORK AREA SHALL BE IN PLACE AND UNOCCUPIED WHENEVER MEN ARE WORKING WITHIN THE WORK AREA. THIS TRUCK SHALL BE MOVED FROM THE PAVEMENT WHENEVER WORKMEN ARE NOT IN THE WORK AREA. OTHER PROTECTIVE DEVICES MAY BE USED IN LIEU OF THE WORK TRUCK SHOWN WHEN APPROVED BY THE ENGINEER.

5. THE SPACINGS BETWEEN CONSTRUCTION AND MAINTENANCE SIGNS SHOWN ON THIS DETAIL MAY REQUIRE ADJUSTMENTS (INCREASES OR DECREASES) TO ASSURE THAT THEY ARE POSITIONED NO CLOSER THAN 200 FEET TO EXISTING SIGNS AS DETERMINED BY THE ENGINEER.

6. THE WORK TRUCK SHALL BE EQUIPPED WITH A 360° ROTATING OR FLASHING AMBER BEACON CLEARLY VISIBLE A MINIMUM OF A 1/4 MILE

OHIO DEPARTMENT OF TRANSPORTATION

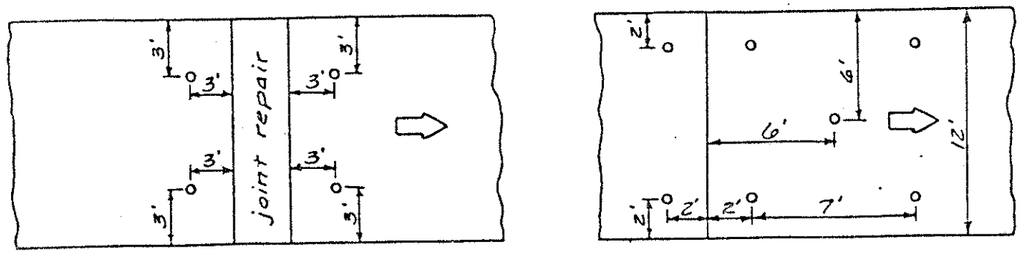
LANE CLOSURE IN DECELERATION LANE

Rev. 5-27-86

PLANS NO.

GROUT SUBSEALING of EXISTING CONCRETE PAVEMENT

The joint repairs shall be done prior to the subsealing.



TYPICAL HOLE PATTERN FOR CEMENT-GROUT UNDERSEAL

Both outside lanes shall be undersealed except in the pavement replacement area from SLM 22.11 to 23.01 WB which will not be undersealed.

The pattern and number of holes illustrated are suggested only. They were used as the basis for estimating purposes. The actual configuration and number of holes may vary from these examples somewhat, depending on the conditions encountered in the field. All work will be as directed.

Part 1: 383 locations with joint repairs x 4 holes per joint = 1,532 holes
352 locations without joint repairs x 7 holes per joint = 2,464 holes
Total Part 1 = 3,996 holes

1,532 holes x .5 cu. ft. per hole = 766 cu. ft.
2,464 holes x 1 cu. ft. per hole = 2,464 cu. ft.
Total Part 1 = 3,230 cu. ft.

ITEM 812 - Hole for Subsealing = 3,996 holes
ITEM 812 - Subsealing Material = 3,230 cu. ft.

Part 2: 370 locations with joint repairs x 4 holes per joint = 1,480 holes
82 locations without joint repairs x 7 holes per joint = 574 holes
Total Part 2 = 2,054 holes

1,480 holes x .5 cu. ft. per hole = 740 cu. ft.
574 holes x 1 cu. ft. per hole = 574 cu. ft.
Total Part 2 = 1,314 cu. ft.

ITEM 812 - Hole for Subsealing = 2,054 holes
ITEM 812 - Subsealing Material = 1,314 cu. ft.

Part 3: 60 locations with joint repairs x 4 holes per joint = 240 holes

240 holes x .5 cu. ft. per hole = 120 cu. ft.

ITEM 812 - Hole for Subsealing = 240 holes
ITEM 812 - Subsealing Material = 120 cu. ft.

Part 4: 220 locations with joint repairs x 4 holes per joint = 880 holes
157 locations without joint repairs x 7 holes per joint = 1,099 holes
Total Part 4 = 1,979 holes

880 holes x .5 cu. ft. per hole = 440 cu. ft.
1,099 holes x 1 cu. ft. per hole = 1,099 cu. ft.
Total Part 4 = 1,539 cu. ft.

ITEM 812 - Hole for subsealing = 1,979 holes
ITEM 812 - Subsealing Material = 1,539 cu. ft.

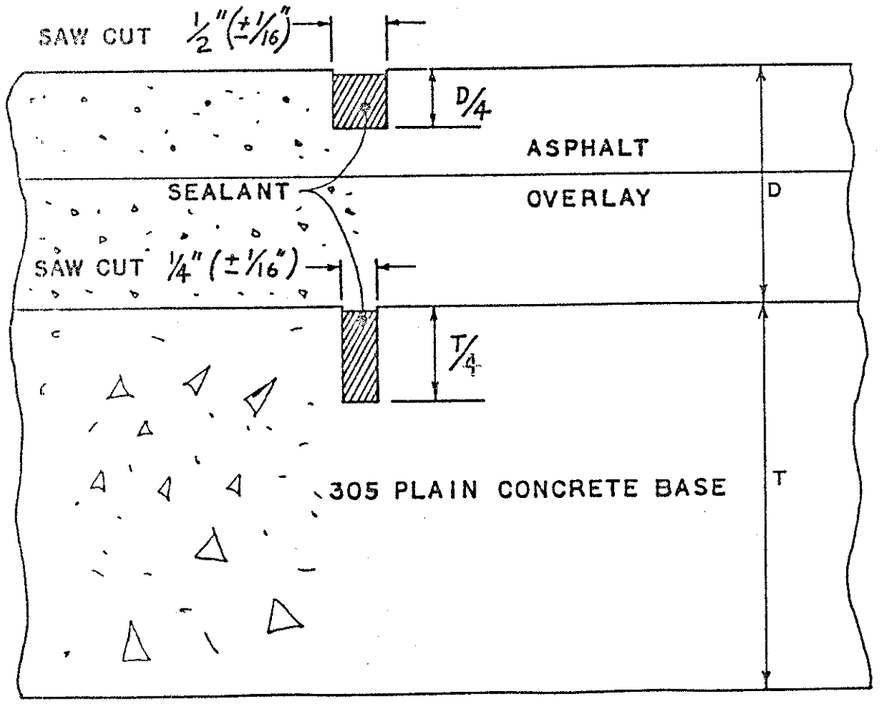
Quantities are carried to the General Summary

Rev. 5-27-86

DEPARTMENT OF TRANSPORTATION
33 B 712 REV. 9-1-63

FRA -33 -21.36

ITEM SPECIAL - SAWING AND SEALING ASPHALT CONCRETE PAVEMENT JOINTS



JOINT DETAIL

These joints will be placed only in the pavement replacement area between SLM 22.11 and SLM 23.01. For further information see the notes in the proposal.

0.90 mi. x 5,280′ - 20′ = 238 joints
238 x 38′ each = 9,044 lin. ft. of joints

ITEM 202 - CONCRETE MEDIAN REMOVED

ITEM 202 - CURB REMOVED

PLAN

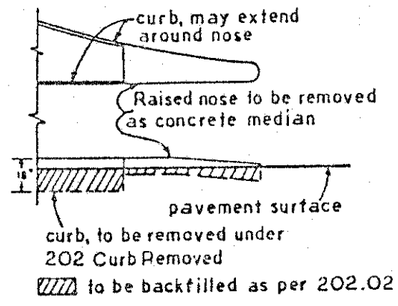
See pages 2 and 3 for ramp location diagrams.

EXIT NOSE REMOVAL				
PART	RAMP NO.	202 Concrete Median Removed SQ. YDS.	202 Curb Removed LIN. FT.	
1	A	29	207	
	D	51	272	
	F	22	206	
	I	30	201	
	P	21	113	
	Q	25	164	
	N	22	150	
	S	26	157	
	U	27	205	
	W	24	196	
Total	Part 1	277	1,871	

Items 202 Concrete Median Removed and 202 Curb Removed (Exit Nose Removal)

This operation shall consist of the removal and disposal of the indicated concrete exit ramp noses and any curb associated with them. The bid items for this shall be Item 202 Concrete Median Removed and Item 202 Curb Removed. Also to be included in these items at the bid price will be any backfill, earth shaping, grading or compaction necessary to form a smooth transition between the shoulder and the pavement as per 202.02. Also, any damage to the surrounding pavement caused by this operation shall be repaired at the expense of the Contractor.

EXIT NOSE REMOVAL DETAIL



All quantities are carried to the General Summary.

Rev. 5-27-86

ITEM 301 Bituminous Aggregate Base - The following quantities are to be used to replace the existing shoulder pavement over the aggregate drains. Totals are carried directly to the General Summary.

PART 1

	cu. yds.
Joint Repair Areas:	
longitudinal - 498 repairs x .185 cu.yd./repair	= 92
transverse passing lane - 241 repairs x .056 cu.yd./repair	= 13
transverse driving lane - 257 repairs x .167 cu.yd./repair	= 43
Slab Repair Areas	
longitudinal - 1288' x 1' x 6"	= 24
transverse passing lane - 7 x .056	= 1
transverse driving lane - 13 x .167	= 2
TOTAL PART 1	175 CU.YDS.

PART 2

	cu. yds.
Joint Repair Areas	
longitudinal - 579 repairs x .185	= 107
transverse passing lane - 268 x .056	= 15
transverse driving lane - 311 x .167	= 52
Slab Repair Areas	
longitudinal - 408' x 1' x 6"	= 8
transverse passing lane - 7 x .056	= 1
transverse driving lane - 7 x .167	= 1
TOTAL PART 2	184 CU.YDS.

PART 3

	cu. yds.
Joint Repair Areas	
longitudinal - 97 repairs x .185	= 18
transverse passing lane - 47 x .056	= 3
transverse driving lane - 50 x .167	= 8
Slab Repair Areas	
longitudinal - 44" x 1" x 6"	= 1
transverse driving lane - 2 x .167	= 1
TOTAL PART 3	31 CU.YDS.

PART 4

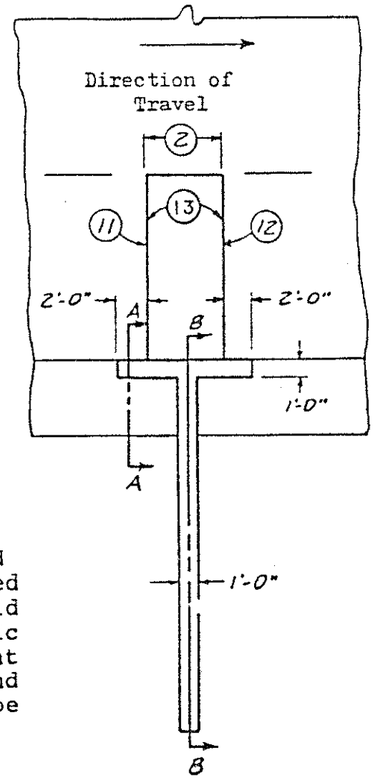
	cu. yds.
Joint Repair Areas	
longitudinal - 188 repairs x .185	= 35
transverse passing lane - 84 x .056	= 5
transverse driving lane - 104 x .167	= 17
Slab Repair Areas	
longitudinal - 88' x 1' x 6"	= 2
transverse passing lane - 2 x .056	= 1
transverse driving lane - 2 x .167	= 1
TOTAL PART 4	61 CU.YDS.

DEPARTMENT OF TRANSPORTATION
BUR R 712 REV. 9-1-83

ITEM SPECIAL— Rigid Pavement Removal and Rigid Replacement

FRA-33-21.36

PLAN NO.



① Pay length required - used 20' outside and 15' median side (for estimating purposes only)
② Variable width - minimum width 6'-0"
③ Width as noted on Shoulder Sheet
④ Proposed Rigid Concrete Repair - Type MS
⑤ Existing 9" of 451
⑥ Existing subbase
⑦ 12" No. 8 stone (Aggregate Drain)
⑧ 301 or 843 Type 2, See page 68 for quantities

⑨ Backfill
⑩ Existing berm
⑪ Type Y joint
⑫ Type T joint

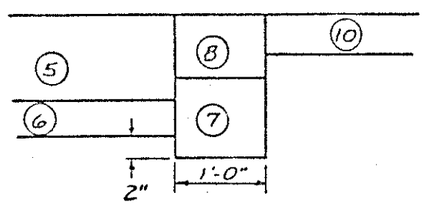
The cost of the Type Y and T joints to be included in the Unit Price Bid for ITEM SPECIAL - Rigid Pavement Removal and Rigid Replacement

⑬ Type X Joints - In place of Type Y and T Joints placed at intervals of approximately 500' from beginning of project to end.

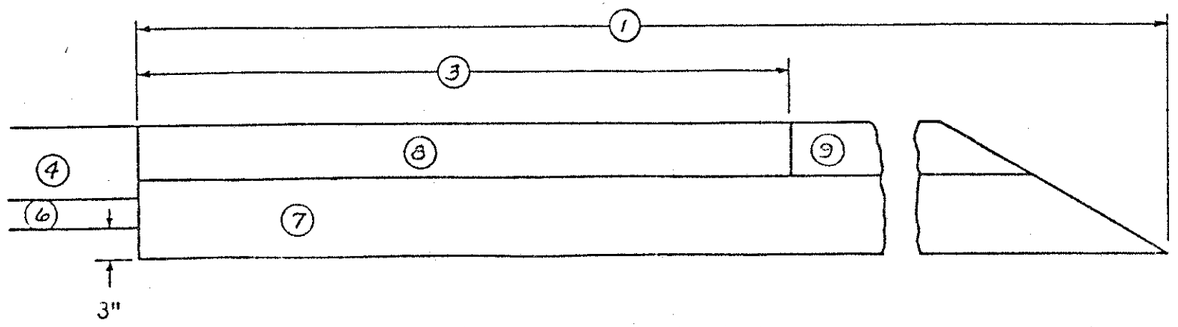
For details of joints see Sheet Nos. 19 and BP — 13

TYPE MS - A moderate-setting portland cement concrete mixture for accelerated strength development. The rigid replacement may be opened to traffic within 24 hours. Minimum cement content shall be 800 pounds per cubic yard and the maximum water-cement ratio shall be 0.43.

Removal areas as detailed are used for estimating purposes. The actual dimensions of the removals in the field may vary as directed. Payment shall be based on areas completed, accepted and measured in place.



Section A-A



Section B-B

Rev. 5-27-86

*	S.L.M.	Rigid Repair Locations Approximately 6' x 12' each — Westbound					Eastbound				NOT DRAINED	DRAINED
	PART 1	OTHER	DRIVING	PASSING	OTHER		OTHER	PASSING	DRIVING	OTHER		
ND	21.36 - 21.43		3	3				3	3		12	
D	21.43 - 22.00		11	21				4	4			40
ND			14	2							16	
D	22.00 - 22.11	12	5	8								25
ND			3								3	
D	22.00 - 23.01						9	8	8			25
ND								10	10		20	
D	23.01 - 24.00	11	7	12				13	14			57
ND			3						4		7	
D	24.00 - 25.00	2	16	24				29	27	3		101
ND			22						25		47	
D	25.00 - 26.00	8	45	32				72	53	11		221
ND			13					7	14		34	
D	26.00 - 26.12	3	7	6				3		10		29
ND			3						5		8	
	TOTALS	36	152	108			9	149	167	24	147	498
	PART 2											
D	26.12 - 26.25	9	2	5				6	6			28
ND			6								6	
D	26.61 - 27.00		30	25				29	24			108
D	27.00 - 28.00		70	49			5	59	68			251
ND				7				4			11	
D	28.00 - 29.09		53	37	2		4	47	49			192
ND		1						1			2	
	TOTALS	10	161	123	2		9	146	147		19	579
	PART 3											
D	26.25 - 26.61		25	24				23	25			97
	PART 4											
D	29.09 - 30.21		38	31				53	66			188
ND			24						12		36	
	TOTALS		62	31				53	78		36	188

MEDIAN

* D = drained
ND = not drained
** For the joint repair from SLM 30.21 to SLM 31.23 see the flexible repair quantities on page 72

ITEM SPECIAL - Full Depth Pavement Sawing

Part 1 - 645 repairs at 30' each	=	19,350'
slabs	=	2,374'
59 repairs at 32' each	=	1,888'
20% add. to be used as directed	=	4,722'
TOTAL PART 1		28,334 lin. ft.
Part 2 - 598 repairs at 30' each	=	17,940'
slabs	=	664'
20% add. to be used as directed	=	3,721'
TOTAL PART 2		22,325 lin. ft.
Part 3 - 97 repairs at 30' each	=	2,910'
slabs	=	64'
20% add. to be used as directed	=	595'
TOTAL PART 3		3,569 lin. ft.
Part 4 - 224 repairs at 30' each	=	6,720'
slabs	=	486'
111 repairs at 27' each	=	2,997'
20% add. to be used as directed	=	2,041'
TOTAL PART 4	=	12,244 lin. ft.

See sheet 69 for Pavement Removal Details.

All totals are carried to the General Summary

ITEM SPECIAL - Rigid Removal and Rigid Replacement

Part 1 - 645 repairs at 8 sq. yds. each	=	5,160 sq. yds.
slabs	=	1,087 sq. yds.
20% additional to be used as directed	=	1.249 sq. yds.
TOTAL PART 1	=	7,496 sq. yds.
Part 2 - 598 repairs at 8 sq. yds. each	=	4,784 sq. yds.
slabs	=	438 sq. yds.
20% additional to be used as directed	=	1,044 sq. yds.
TOTAL PART 2	=	6,266 sq. yds.
Part 3 - 97 repairs at 8 sq. yds. each	=	776 sq. yds.
slabs	=	53 sq. yds.
20% additional to be used as directed	=	166 sq. yds.
TOTAL PART 3	=	995 sq. yds.
Part 4 - 224 repairs at 10 sq. yds. each	=	2,240 sq. yds.
slabs	=	107 sq. yds.
20% additional to be used as directed	=	469 sq. yds.
TOTAL PART 4	=	2,816 sq. yds.

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ITEM SPECIAL - Rigid Removal and Rigid Replacement

Slab Locations and Sizes (in feet)					
S.L.M.	Westbound		Eastbound		Approximate
Part 1	Driving Lane	Passing Lane	Passing Lane	Driving Lane	Sq. Yds.
21.81	12 X 25	12 X 25			67
25.56			12 X 60	12 X 60	160
25.58		6 X 90			60
25.66				6 X 680	453
25.92			12 X 30	12 X 30	80
25.93			12 X 30	12 X 30	80
25.93 (317 Ramp)				16 X 60	107
26.10	6 X 120				80
			Total Part 1		1,087
Part 2					
26.23	6 X 40				27
27.25	12 X 30	12 X 30			80
27.95 (Lt.turn Lane)		6 X 40			27
27.95	12 X 24	12 X 24			64
27.99			12 X 60	12 X 60	160
29.65			12 X 30	12 X 30	80
			Total Part 2		438
Part 3					
26.60				12 X 40	53
			Total Part 3		53
Part 4					
29.65	12 X 40	12 X 40			107
			Total Part 4		107

ITEM 605 - Aggregate Drains, Transverse, as Per Plan

The costs of the No. 8 stone, the removal and replacement of guardrail, and all other work or material, except Item 301, necessary to complete these drains are to be included in the price bid per lin. ft. of aggregate drains, transverse as per plan. See page 68 for quantities of Item 301.

Part 1

Joint Repair	257 repairs at 20′ each	=	5,140′	
	241 repairs at 15′ each	=	3,615′	
*Slabs	13 drains at 20′ each	=	260′	
	7 drains at 15′ each	=	105′	
Ramps	59 repairs at 10′ ea. x 2 sides	=	1,180′	
20% additional to be used as directed		=	2,060′	
	TOTAL PART 1	=	12,360 lin. ft.	

Part 2

Joint Repair	311 repairs at 20′ each	=	6,220′	
	268 repairs at 15′ each	=	4,020′	
*Slabs	7 drains at 20′ each	=	140′	
	7 drains at 15′ each	=	105′	
20% additional to be used as directed		=	2,097′	
	TOTAL PART 2	=	12,582 lin. ft.	

Part 3

Joint Repair	50 repairs at 20′ each	=	1,000′	
	47 repairs at 15′ each	=	705′	
*Slabs	2 drains at 20′ each	=	40′	
20% additional to be used as directed		=	349′	
	TOTAL PART 3	=	2,094′ lin. ft.	

Part 4

Rigid Joint Repair	104 at 20′ each	=	2,080′	
	84 at 15′ each	=	1,260′	
Flex. Joint Repair	43 at 15′ each	=	645′	
	68 at 10′ each	=	680′	
*Slabs (Rigid)	2 drains at 20′ each	=	40′	
	2 drains at 15′ each	=	30′	
*Slabs (Flex.)	7 drains at 15′ each	=	105′	
	2 drains at 10′ each	=	20′	
20% additional to be used as directed		=	972′	
	TOTAL PART 4	=	5,832 lin. ft.	

*Slabs 40′ and over should have two transverse drains.

All totals are carried to the General Summary.

Rev. 5-27-86

ITEM 605 - Aggregate Drains, Longitudinal, as Per Plan

The costs of the No. 8 stone and any other work or material, except 301, necessary to complete these drains are to be included in the price bid per lin. ft. of aggregate drains, longitudinal, as per plan. See page 68 for quantities of Item 301.

Part 1

498 repairs at 10′ each	=	4,980′
59 repairs at 7′ each	=	413′
slabs	=	480′
plus 20%	=	1,175′
TOTAL PART 1	=	7,048 lin. ft.

Part 2

579 repairs at 10′ each	=	5,790′
slabs	=	364′
plus 20%	=	1,231′
TOTAL PART 2	=	7,385 lin. ft.

Part 3

97 repairs at 10′ each	=	970′
slabs	=	44′
plus 20%	=	203′
TOTAL PART 3	=	1,217 lin. ft.

Part 4

184 repairs at 10′ each	=	1,840′
111 repairs at 7′ each	=	777′
slabs (rigid)	=	88′
slabs (flexible)	=	238′
plus 20%	=	589′
TOTAL PART 4	=	3,532 lin. ft.

ITEM SPECIAL - Partial Depth Pavement Joint Repair
(See note in proposal)

This work shall be performed only when deemed necessary and only in areas as determined by the Engineer. The average depth of removal will be 3".

Part 1 - 52 sq. yds.
Part 2 - 48 sq. yds.
Part 3 - 12 sq. yds.
Part 4 - 27 sq. yds.

Subbase/Subgrade Failures
(also see page 19)

ITEM 203 - Excavation not Including Embankment Construction

Part 1 - 19 cu. yds.
Part 2 - 14 cu. yds.
Part 3 - 5 cu. yds.
Part 4 - 10 cu. yds.

ITEM 304 - Aggregate Base

Part 1 - 19 cu. yds.
Part 2 - 14 cu. yds.
Part 3 - 5 cu. yds.
Part 4 - 10 cu. yds.

ITEM SPECIAL - Pavement Repair (see note in proposal)

Part 1

3′ x 16′ Repairs on Ramps

	Ramp	# of Repairs
Refugee Rd.	H	- 3
	I	- 16
	J	- 8
	K	- 3
SR-317	U	- 4
	W	- 17
	X	- 4
	Y	- 4

59 repairs at 1.33 cu. yds.
= 78 cu. yds. subtotal

Large Repairs on Ramps

	Ramp	Size	Sq. Yds.	Cu. Yds.
Refugee Rd.	U	8′x 18′	16	4
	X	16′x 30′	53	13
	Y	3′x 40′	13	3

20 cu. yds. subtotal

98 cu. yds. + 20% add. to be used as directed = 118 cu. yds.
TOTAL PART 1 TO GEN. SUMMARY 118 CU. YDS.

Part 4

3′x 12′ Repairs on Mainline US-33
From SLM 30.21 to SLM 31.23

EB Driving Lane	- 25 repairs
EB Passing Lane	- 33 repairs
WB Driving Lane	- 18 repairs
WB Passing Lane	- 35 repairs

111 repairs at 1.44 cu. yds. each =
160 cu. yds. subtotal

Large Repairs on Mainline

SLM	LOCATION	SIZE	SQ. YDS.	CU. YDS.
30.21	WB PS LN	12 X 54	72	26
30.21	WB DR LN	12 X 50	67	24
30.22	WB DR LN	12 X 40	53	19
30.27	WB DR LN	12 X 20	27	10
30.85	WB DR LN	12 X 20	27	10
31.02	WB DR LN	12 X 30	40	14

103 cu. yds. subtotal

263 cu. yds. + 20% add. to be used as directed = 316 cu. yds.
TOTAL PART 4 TO GEN. SUMMARY 316 CU. YDS.

All totals are carried to the General Summary

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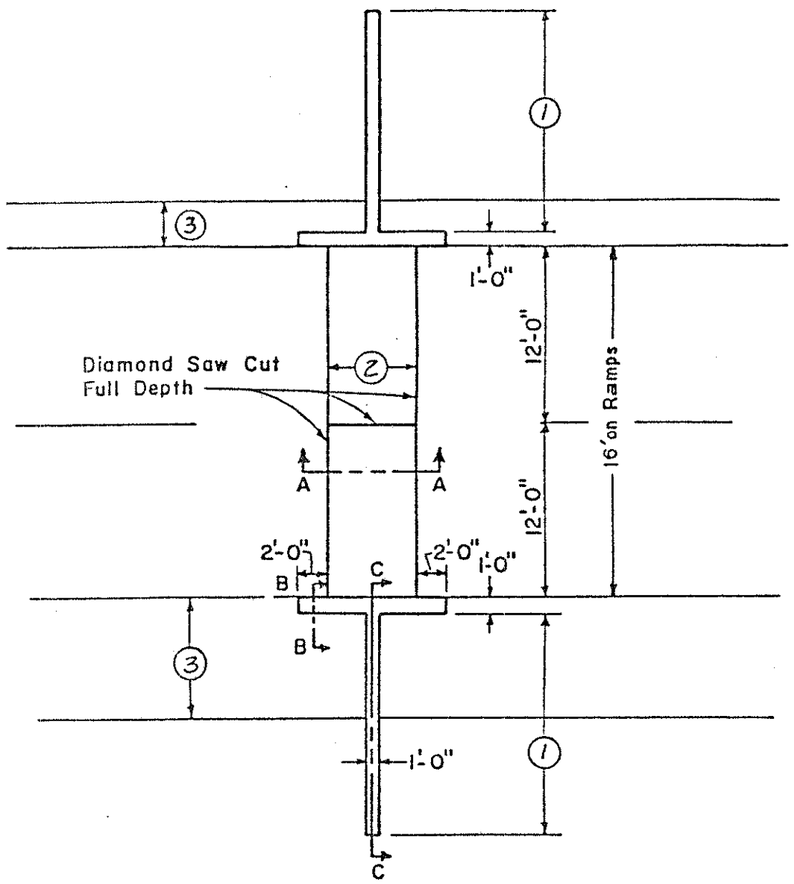
ITEM SPECIAL - Pavement Repair (see note in proposal)



Ⓐ Existing 9" Reinforced Concrete

Ⓑ Existing Asphalt Overlay (approx. 4" from SLM 30.21 to SLM 31.23)

Ⓒ Existing Subbase

Ⓓ Existing Berm (see shoulder sheets for composition)

① Pay length for aggregate drains - used 15' outside & 10' median side for the main line and 10' for the ramps for estimating purposes.

② Variable width - minimum width 3'-0"

③ Width of berm - as noted on shoulder sheets

④ Flexible Replacement using Item 301.

⑤ Berm Repair - The repairs will consist of 617 and a minimum of 3" 301 where there is existing paved berm and full depth 617 where there is existing aggregate berm. See shoulder sheets for details of berms. The cost of placing 617 over drains to be included under ITEM 605 - Aggregate Drains. See page 68 for quantities of Item 301.

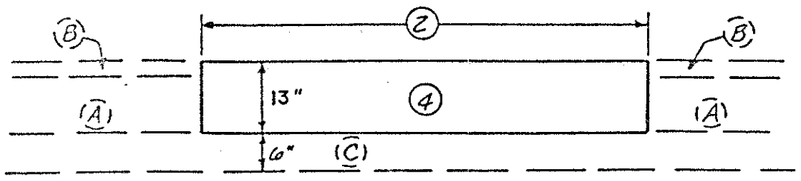
⑥ 12" No. 8 stone (aggregate drains)

⑦ Backfill

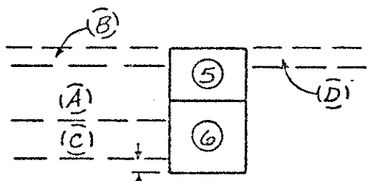
Removal areas as detailed are used for estimating purposes. The actual dimensions in the field may vary as directed. Payment shall be based on areas completed, accepted, and measured in place.

ITEM SPECIAL - Pavement Repair shall be measured and paid for in Cu. Yds.

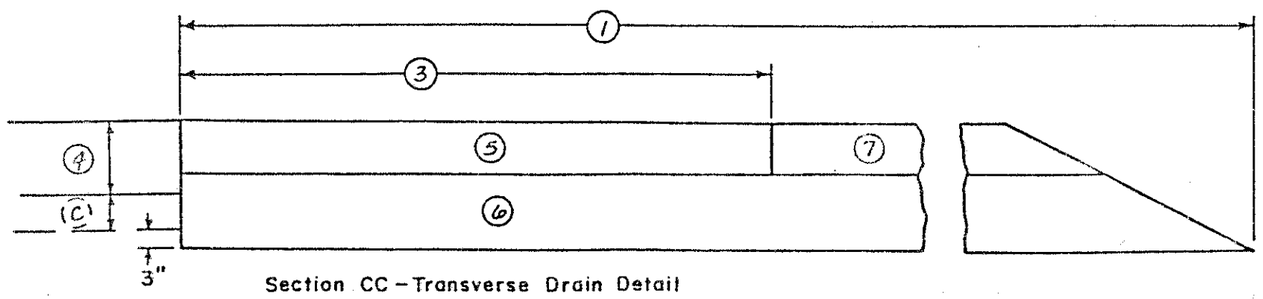
See page 72 for quantities.



Section AA - Pavement Repair Detail



Section BB - Longitudinal Drain Detail



Section CC - Transverse Drain Detail

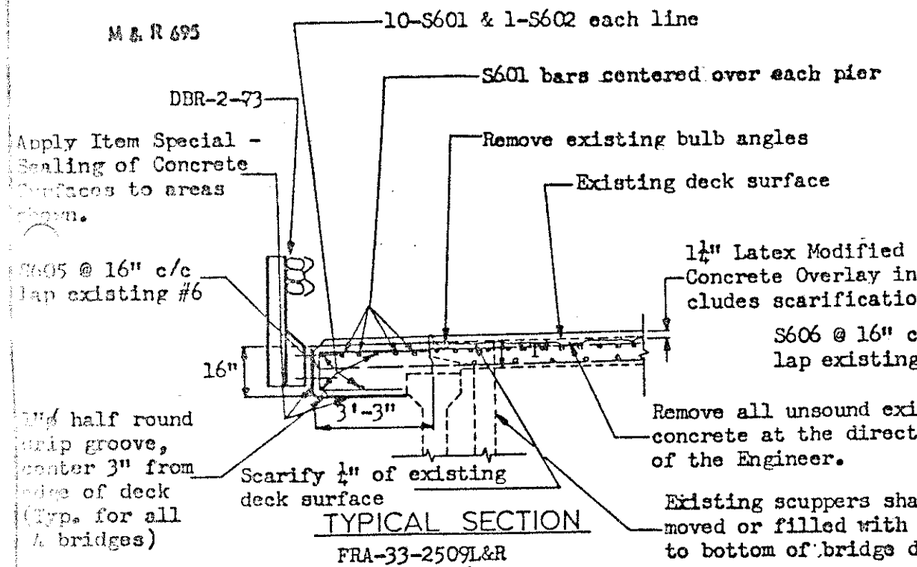
Rev. 5-27-86

FRA-33-21.36

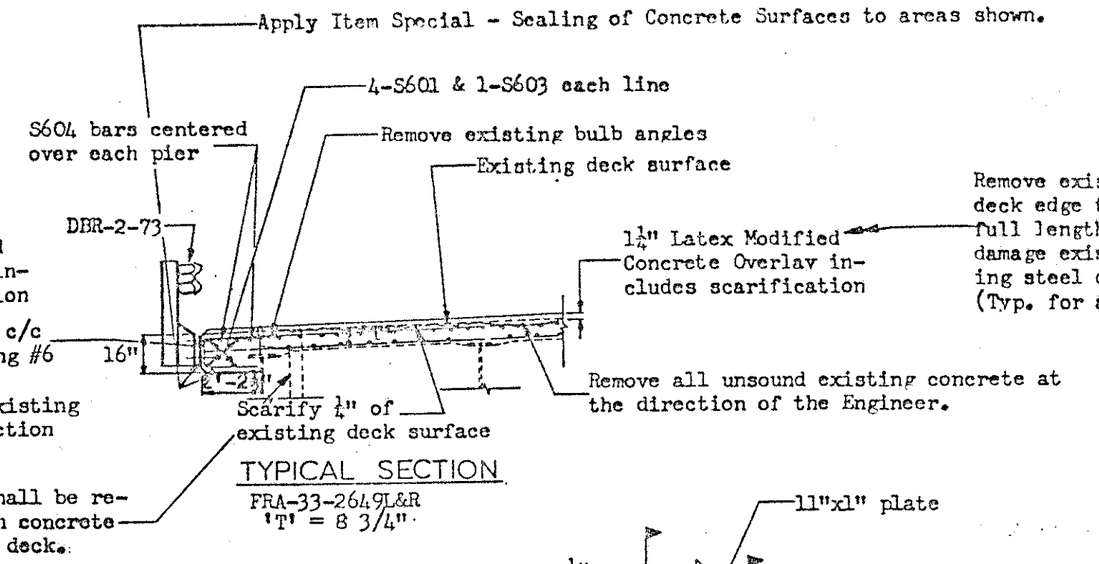
74
80

PLAN NO.

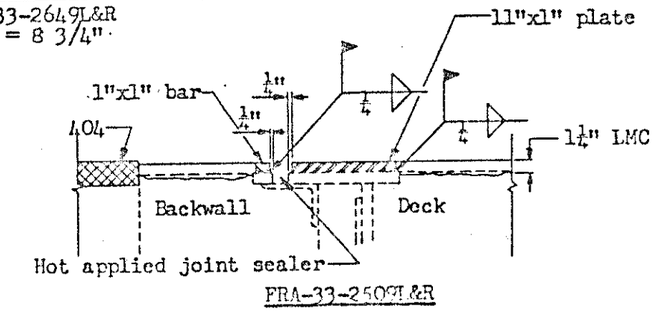
M & R 695



TYPICAL SECTION
FRA-33-2509L&R
'T' = 8 3/4"



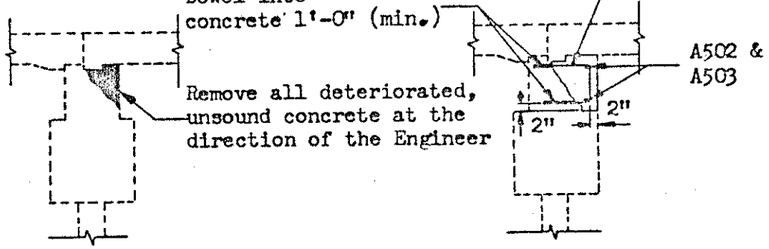
TYPICAL SECTION
FRA-33-2649L&R
'T' = 8 3/4"



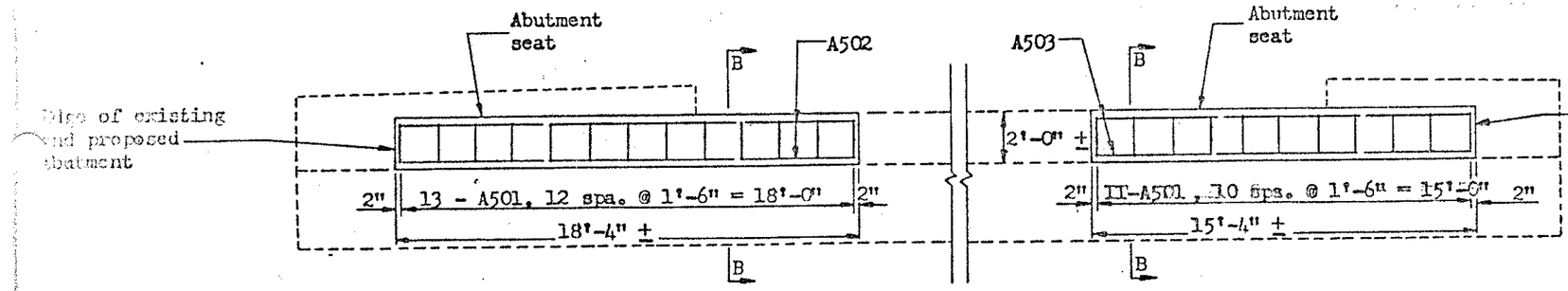
FRA-33-2509L&R

VERTICAL EXTENSION OF STRUCTURAL EXPANSION JOINTS

Surfaces of existing steel end dams to be welded shall be cleaned and free of scale, rust, moisture, grease, paint or other foreign material that will prevent proper welding.
See Standard Drawing BP-5 for details not shown.



SECTION B-B
FRA-33-2900L&R



WEST ABUTMENT DETAILS
FRA-33-2900R

WEST ABUTMENT DETAILS
FRA-33-2900L

STATE OF OHIO
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DISTRICT 6 BRIDGE DEPARTMENT

ABUTMENT, RESURFACING & REPAIR DETAILS

FRA-33-2509L&R
FRA-33-2649L&R
FRA-33-2900L&R

DESIGN	DRAWN	TRACE	CHECK	REVIEW DATE
	Ja	Ja		EM 12-14-83

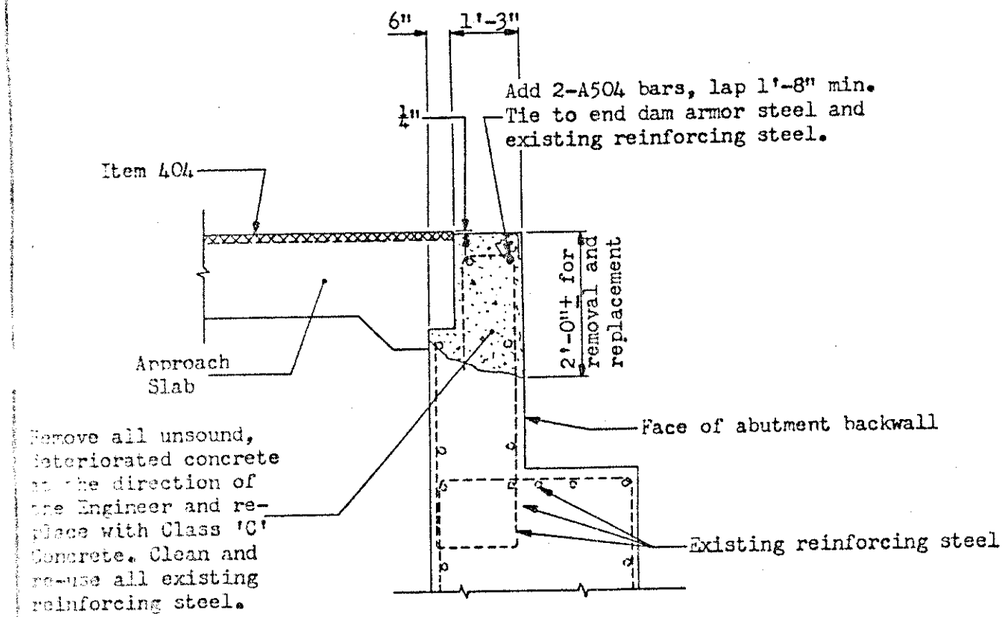
Rev. 5-27-86

M & R 695

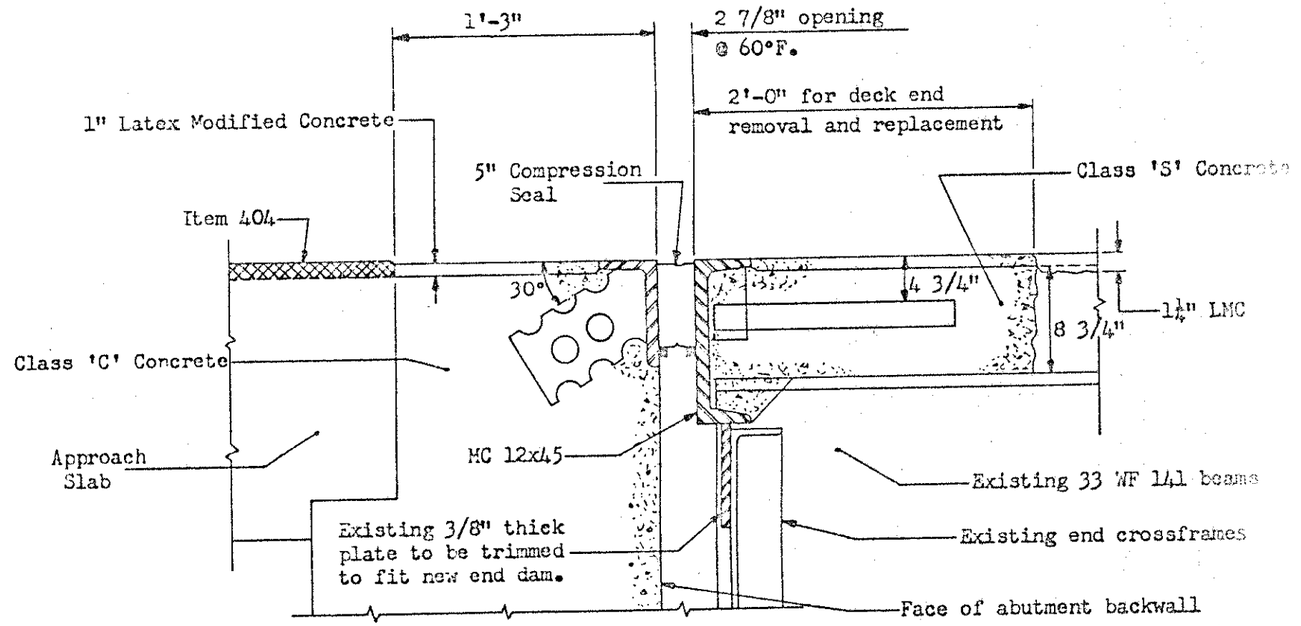
FRA-33-21.36

75
80

PLAN NO.



TYPICAL ABUTMENT SECTION
FRA-33-2649L&R



EXPANSION JOINT DETAIL

All end dam armor steel shall be included with Item 516 - Structural Expansion Joints including Elastomeric Compression Seals, for payment. See Std. Dwg. EXJ-2-81 for additional details and notes not shown.
The sikastix adhesive of ss 849 has been replaced by sikastix 323.

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STATE OF OHIO
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DISTRICT 6 BRIDGE DEPARTMENT

ABUTMENT AND EXPANSION JOINT DETAILS

FRA-33-2649L&R

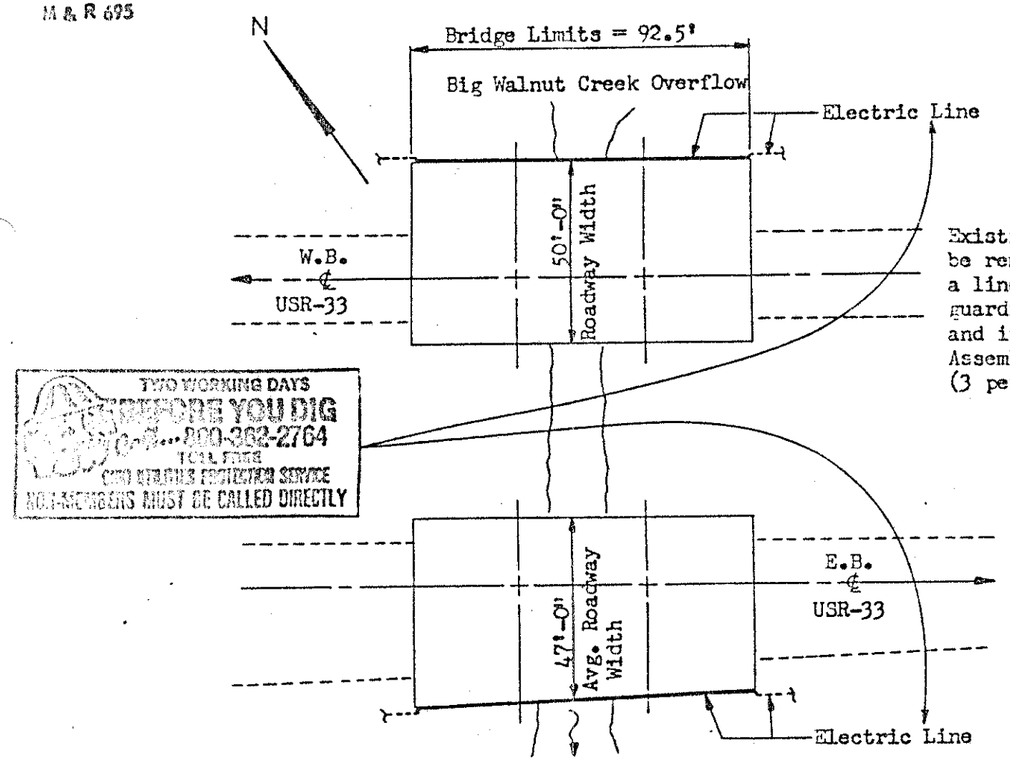
DESIGN	DRAWN	TRACED	CHECKED	REVIEW DATE
	JJ	JJ		EM 4-16-2

M & R 695

FRA -33 -21.36

77
80

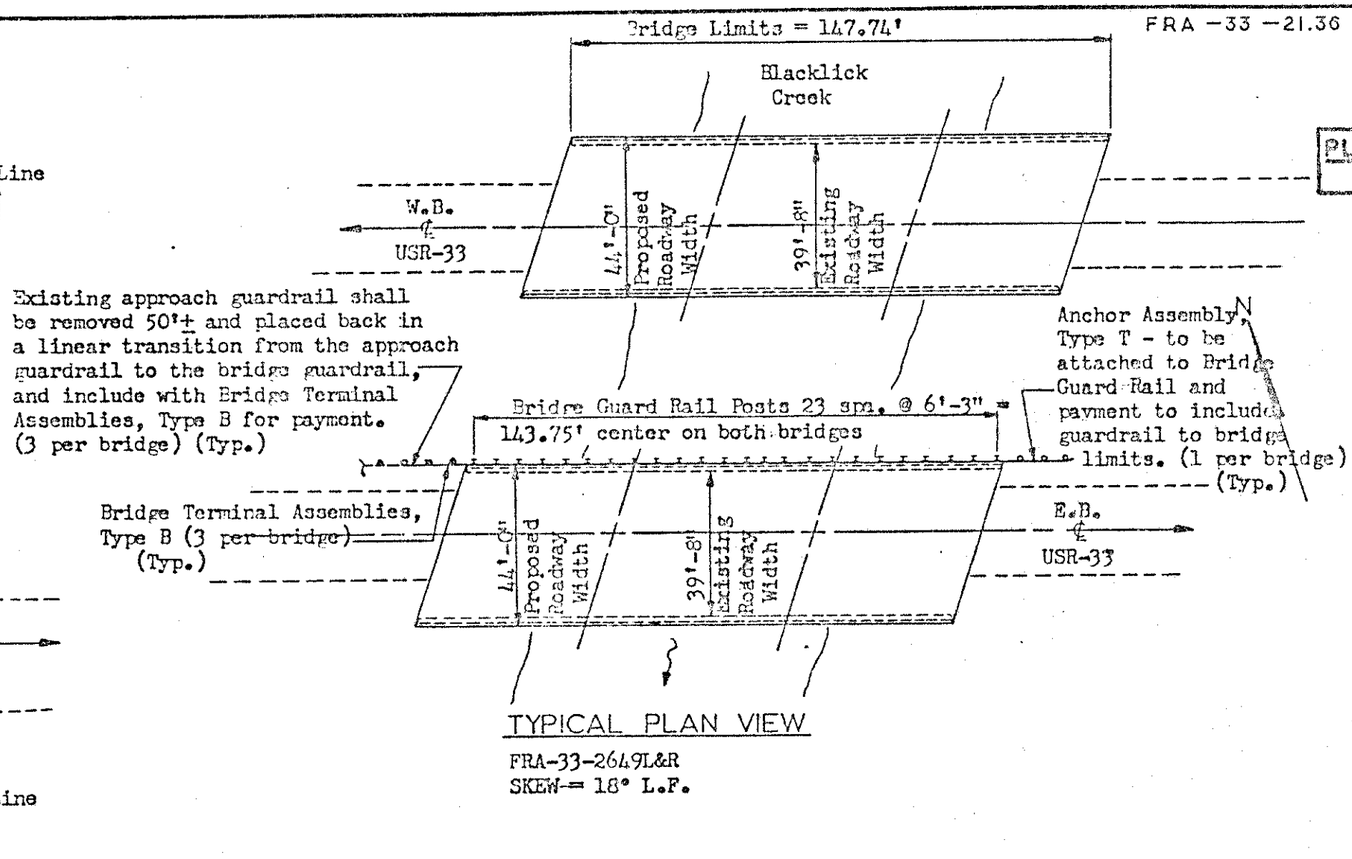
PLAN NO.



TYPICAL PLAN VIEW

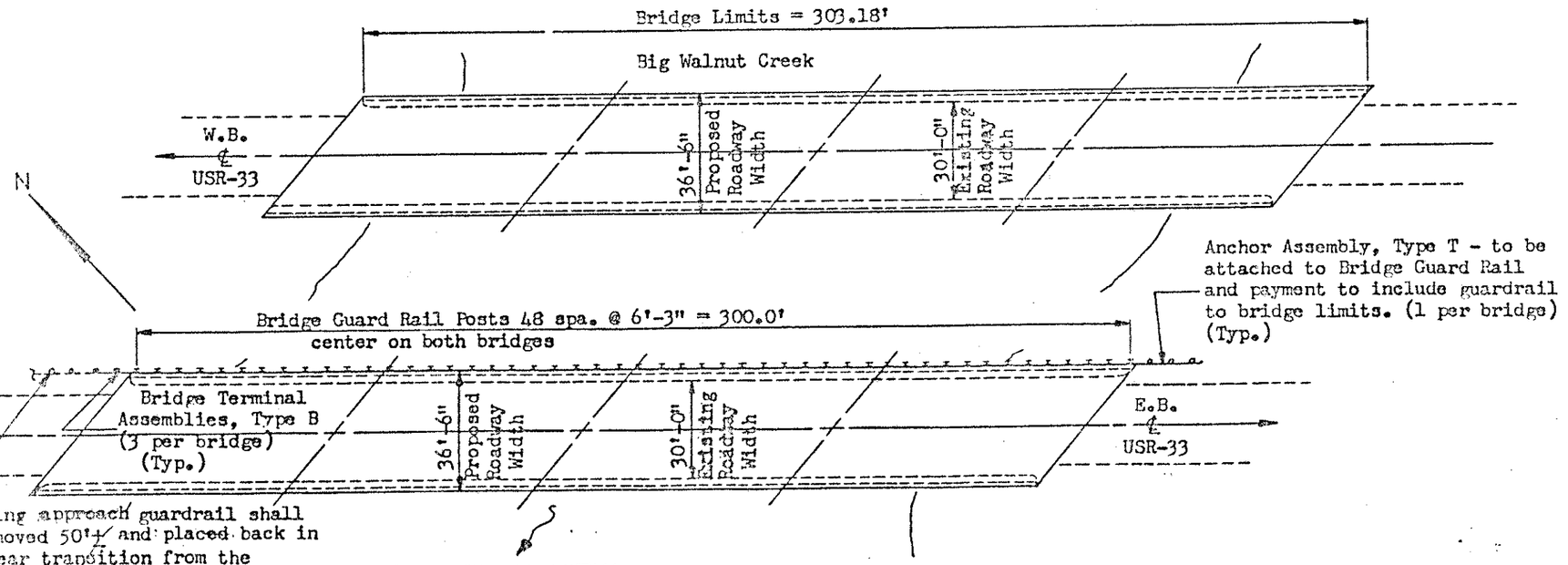
FRA-33-2503L&R
SKEW = 0°

Existing approach guardrail shall be removed 50'± and placed back in a linear transition from the approach guardrail to the bridge guardrail, and include with Bridge Terminal Assemblies, Type B for payment. (3 per bridge) (Typ.)



TYPICAL PLAN VIEW

FRA-33-2649L&R
SKEW = 18° L.F.



TYPICAL PLAN VIEW

FRA-33-2509L&R
SKEW = 40° L.F.

Existing approach guardrail shall be removed 50'± and placed back in a linear transition from the approach guardrail to the bridge guardrail, and include with Bridge Terminal Assemblies, Type B for payment. (3 per bridge) (Typ.)

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STATE OF OHIO
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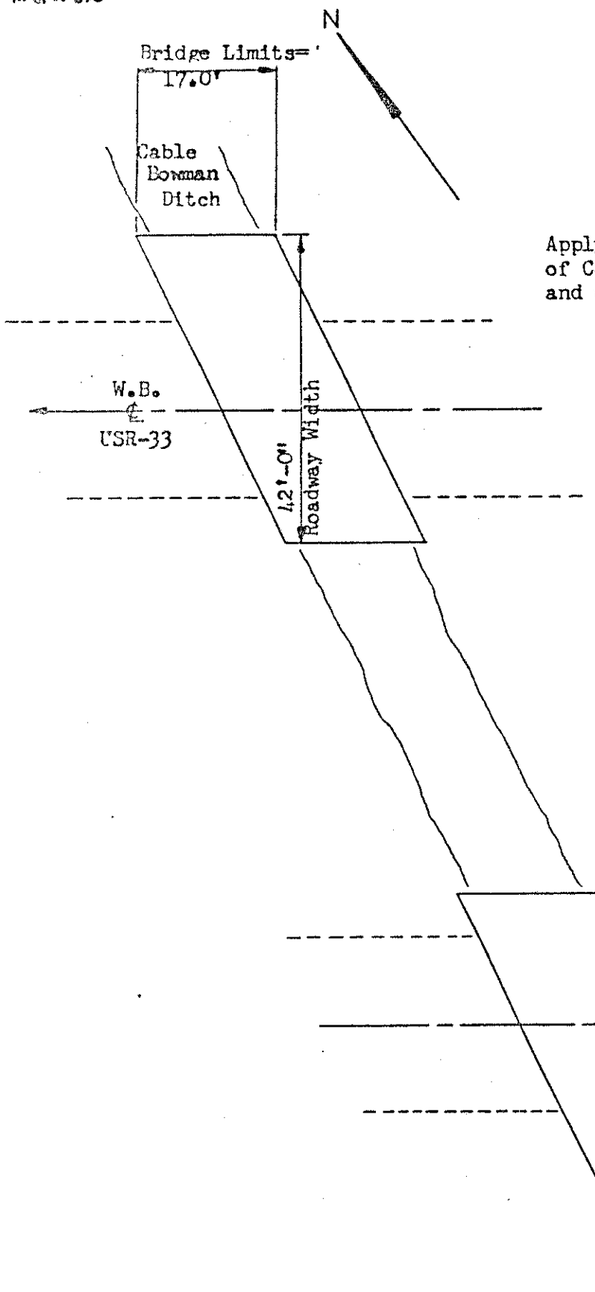
DISTRICT 6 BRIDGE DEPARTMENT

PLAN VIEWS

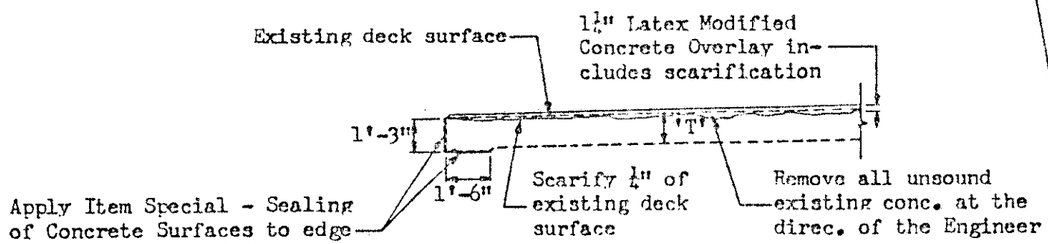
FRA-33-2503L&R
FRA-33-2509L&R
FRA-33-2649L&R

DESIGN	DRAWN	TRACE	CHECK	REVIEW DATE
	JAZ	JAZ		EM 12-14-85

M & R 695

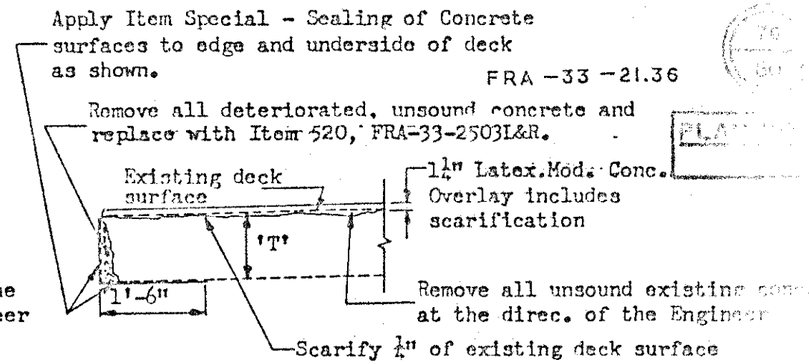


TYPICAL PLAN VIEW
FRA-33-2751L&R
SKEW = 26° R.F.

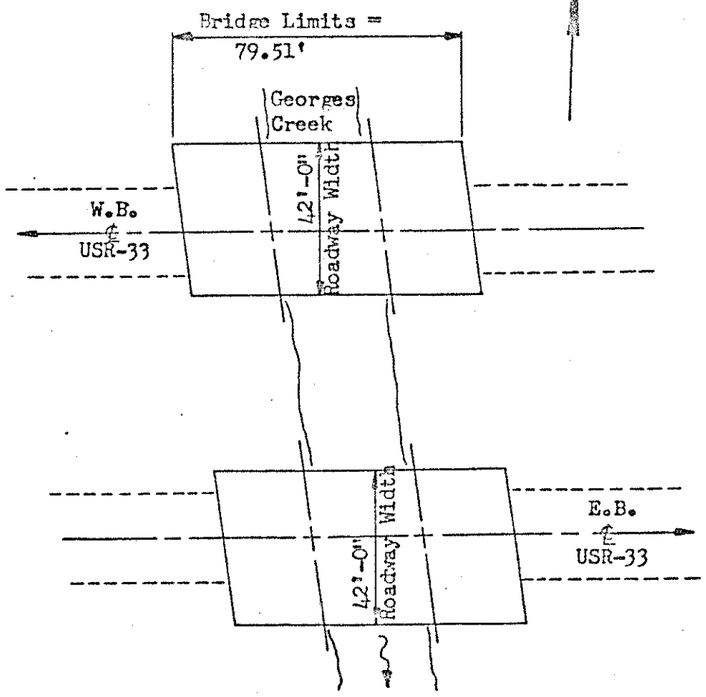


TYPICAL SECTION
FRA-33-2751L&R 'T'= 13½"

Note: Scarification of concrete wearing surfaces shall be by Roto-Mill or by an approved equivalent. Removal of variable thickness shall be by nominal chipping hammer not to exceed the 35 lb. class and shall be operated at an angle of less than 45° with respect to the surface of the deck. (Typ.)



TYPICAL SECTION
FRA-33-2503L&R 'T'= 16"
FRA-33-2900L&R 'T'= 14 3/4"



TYPICAL PLAN VIEW
FRA-33-2900L&R
SKEW = 7° R.F.

STATE OF OHIO
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
DISTRICT 6 BRIDGE DEPARTMENT

PLAN VIEWS, RESURFACING & REPAIR DETAILS

FRA-33-2503L&R FRA-33-2751L&R
FRA-33-2900L&R

DESIGN	DRAWN	TRACE	CHECK	REVIEW	DATE
	JA JH	JA JH		EM	12-14-83

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ESTIMATED QUANTITIES

Type Codes-X020 X020 X081 X081 X031 X031 X020 X020 X020 X020

PLAN NO. 78 80

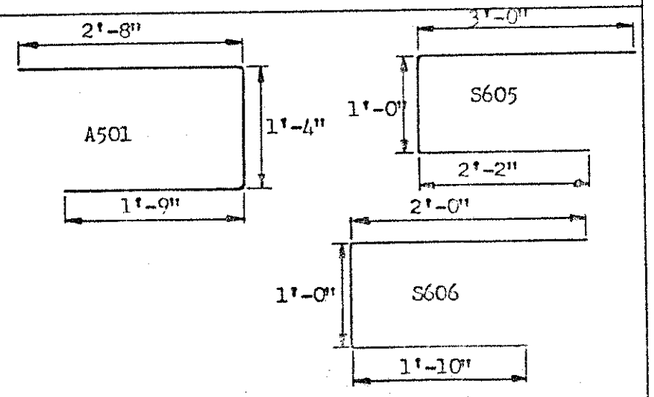
FRA -33 -21.36

ITEM	DESCRIPTION	UNIT	PART 1 FRA-33 2503L	PART 1 FRA-33 2503R	PART 1 FRA-33 2509L	PART 1 FRA-33 2509R	PART 3 FRA-33 2649L	PART 3 FRA-33 2649R	PART 2 FRA-33 2751L	PART 2 FRA-33 2751R	PART 2 FRA-33 2900L	PART 2 FRA-33 2900R	TOTAL PART 1	TOTAL PART 2	TOTAL PART 3
202	Portions of Abutments Removed	Cu. Yds.	-	-	-	-	9	9	-	-	2	2	-	4	18
503	Cofferdams, Cribs and Sheeting	Lump	-	-	-	-	Lump	Lump	-	-	Lump	Lump	-	Lump	Lump
509	Reinforcing Steel, grade 60	Lbs.	-	-	8810	8810	3659	3659	-	-	95	113	17620	208	7318
510	Dowel Holes	Each	-	-	-	-	-	-	-	-	22	26	-	48	-
511	Class 'C' Concrete for Abutments, as per plan	Cu. Yds.	-	-	-	-	9	9	-	-	3	3	-	6	18
516	Vertical Extension of Structural Expansion Joints	Lin. Ft.	-	-	96	96	-	-	-	-	-	-	192	-	-
202	Portions of Existing Superstructure Removed	Cu. Yds.	-	-	155	155	59	59	-	-	-	-	310	-	118
* 520	Pneumatically Placed Motar	Sq. Ft.	300	300	-	-	-	-	-	-	-	-	600	-	-
845	Latex Modified Concrete Overlay (1¼" thick)	Sq. Yds.	514	484	1230	1230	723	723	80	80	372	372	3458	904	1446
845	Latex Modified Concrete Overlay (variable thickness)	Cu. Yds.	9	9	17	26	8	8	2	2	3	3	61	10	16
845	Full Depth Repair	Cu. Yds.	1	1	1	1	1	1	1	1	1	1	4	4	2
SPECIAL	Sealing of Concrete Surfaces (See proposal note)	Sq. Yds.	59	59	304	304	114	114	11	11	49	49	726	120	228
605	Bridge Terminal Assemblies, Type B	Each	-	-	3	3	3	3	-	-	-	-	6	-	6
606	Anchor Assembly, Type T	Each	-	-	1	1	1	1	-	-	-	-	2	-	2
517	Railing (Deep Beam Bridge Guard Rail with Tubular Backup, Steel Posts (Type 2) and Bolts)	Lin. Ft.	-	-	625	625	312.5	312.5	-	-	-	-	1250	-	625
511	Class 'S' Concrete for Superstructure	Cu. Yds.	-	-	96	96	37	37	-	-	-	-	192	-	74
516	Structural Expansion Joints including Elastomeric Compression Seals	Lin. Ft.	-	-	-	-	93	93	-	-	-	-	-	-	186

REINFORCING STEEL LIST

MARK	NO.	LENGTH	WEIGHT	SHAPE
A501	24	5'-6"	138	Bent
A502	2	18'-1"	38	Str.
A503	2	15'-1"	32	Str.
S601	272	30'-0"	12256	Str.
S602	16	13'-4"	320	Str.
S603	16	30'-4"	729	Str.
S604	16	22'-0"	529	Str.
S605	892	5'-11"	7928	Bent
S606	432	4'-7"	2974	Bent
A504	8	24'-0"	202	Str.

BENDING DIAGRAM



REINFORCING STEEL SAMPLES:
Refer to CMS Sections 106.03, 700, 709.01 through 709.05 and 709.08. Sufficient additional reinforcing steel shall be provided for sampling. Random samples shall be replaced in the structures by the additional steel, spliced in accordance with 509.08.

* 50% Federal Participation

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STATE OF OHIO
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
DISTRICT 6 BRIDGE DEPARTMENT

ESTIMATED QUANTITIES
REINFORCING STEEL LIS

FRA-33-2503L&R FRA-33-2751L&R
FRA-33-2509L&R FRA-33-2900L&R
FRA-33-2649L&R

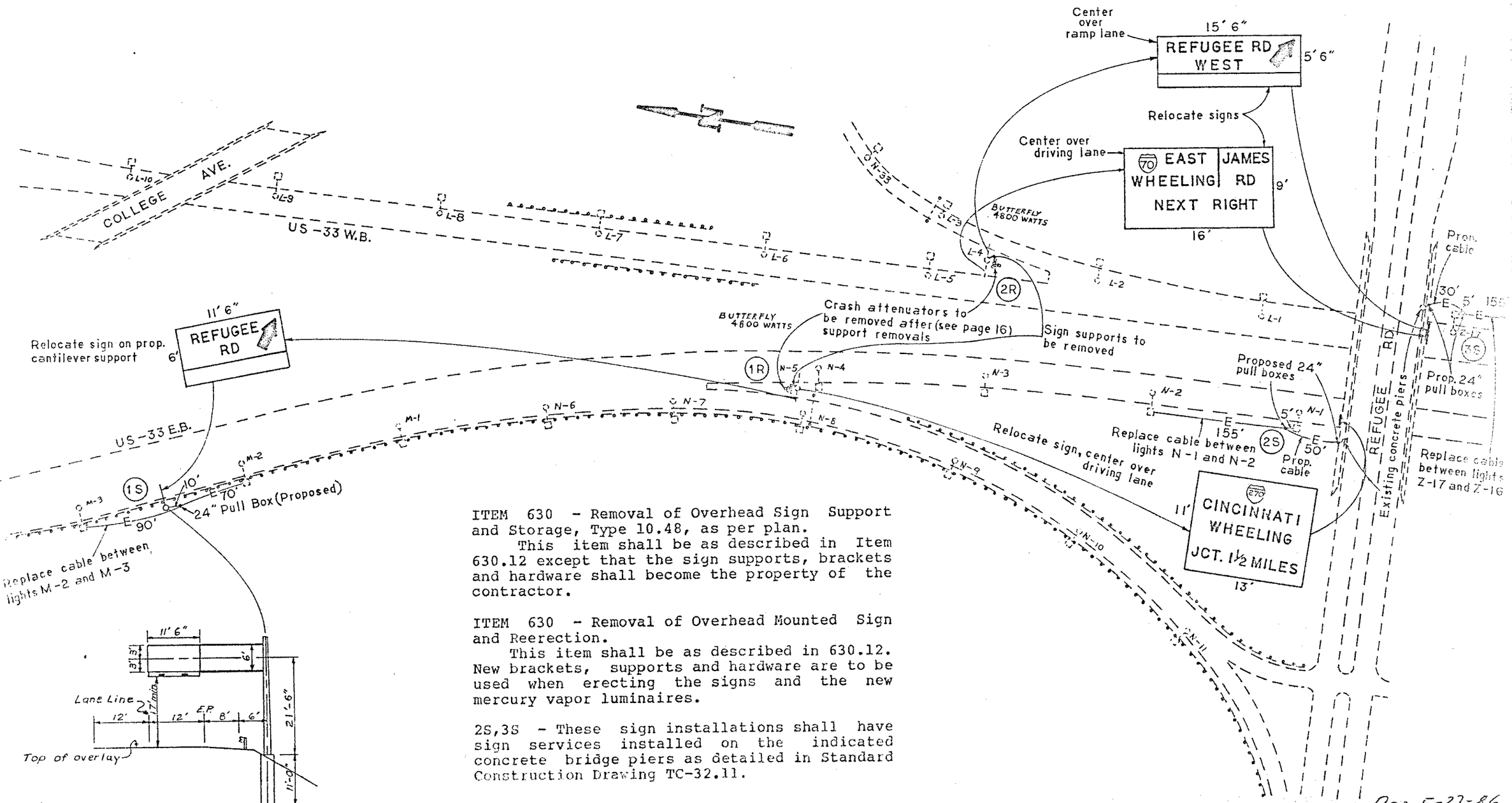
DESIGN	DRAWN	TRACE	CHECK	REVIEW DATE
	JAJ	JAJ		EM 12-14-85

FRA-33-21.36

78A
80

PLAN NO.

BUTTERFLY SIGN RELOCATION



ITEM 630 - Removal of Overhead Sign Support and Storage, Type 10.48, as per plan.

This item shall be as described in Item 630.12 except that the sign supports, brackets and hardware shall become the property of the contractor.

ITEM 630 - Removal of Overhead Mounted Sign and Reerection.

This item shall be as described in 630.12. New brackets, supports and hardware are to be used when erecting the signs and the new mercury vapor luminaires.

2S,3S - These sign installations shall have sign services installed on the indicated concrete bridge piers as detailed in Standard Construction Drawing TC-32.11.

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DEPARTMENT OF TRANSPORTATION
FHWA R 712 REV. 9-1-83

FRA-33-21.36

18B
80

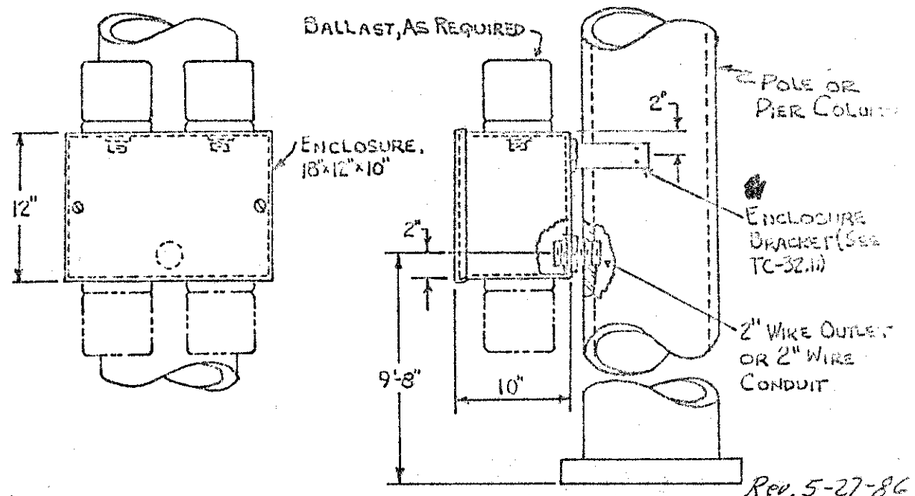
PLAN NO.

Butterfly Sign Relocation Quantities

Ref. No.	630 Removal of Overhd. Sign Support and Storage, Type 10.48, as per plan Each	630 Removal of Overhd. Mounted Sign and Reerection Each	625 Ground Rod Each	625 Cable Splicing Kit Each	625 Connector kit, type II Each	625 Pull box, concrete, 24" Each	625 1½" duct-cable with 2 no. 4 AWG, 600-volt cable Lin. Ft.	625 Trench Lin. Ft.	630 Concrete for anchor base foundations Cu. Yd.	630 Overhead sign support, Type 12.30, design 6, span 26' Each	631 Signs wired Each	631 Sign service Each	631 Signs wired, overpass structure mounted Each	631 Disconnect switch with enclosure, type X Each	631 Switch Enclosure Mounting Bracket Assembly Each	631 M.V. luminaire, type TC-31.21, with 100-watt lamp Each	631 M.V. luminaire, type TC-31.21, with 175 watt lamp Each	631 Ballast, type CMRI-100-480 Each	631 Ballast, type CMRI-175-480 Each	631 Ballast, Wiring Enclosure, Type B EACH	631 Ballast, Wiring Enclosure Mounting Bracket EACH	630 Overpass Struct. Mtd. Sign Supp. T.C.-18.24 EACH
1R	1	2														2		2		1		
2R	1	2																				
1S			1	2	4	1	180	160	2.88	1	1	1		1			2		2		1		
2S			1	4	4	2	240	210				1	1	1	1		2		2	1	1	1
3S			1	4	4	2	220	190				1	2	1	1	2	2	2	2	1	1	2
TOTALS	2	4	3	10	12	5	640	560	2.88	1	1	3	3	3	2	4	4	4	4	3	2	3

(Totals carried to General Summary)

BALLAST ENCLOSURE, TYPE B



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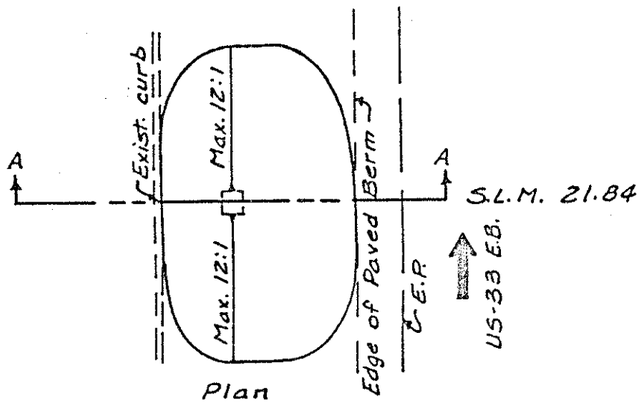
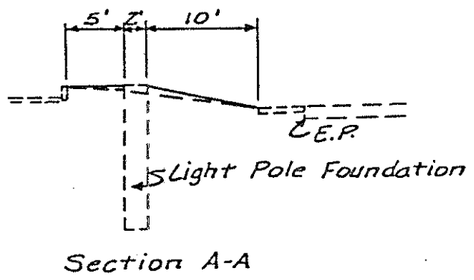
DETAIL FOR MOUNDING EXISTING LIGHT POLE FOUNDATION



Plan



Section A-A

ITEM 203 - Mounding of Existing Light Pole Foundation.

Approximately 4 cu. yds. of embankment and 45 sq. yds. of Seeding and Mulching shall be necessary for mounding of existing light pole foundation as directed by the Engineer.

The subgrade shall be prepared by scalping to remove vegetation before placing and compacting the soil embankment. The top of the light pole foundation shall not project more than 2 inches above the finished grade.

The contractor's responsibility for protection of slopes and paved berm shall be the same as for 203.04(e) of the material specifications.

Payment for each ITEM 203 - Mounding of Existing Light Pole Foundation, shall include all scalping, embankment, seeding and mulching, labor and equipment required to perform this item of work.

Seeding and Mulching shall be as per 659.

Items	Description	Total
203	Mounding of Existing Light Pole Foundation	1 each

Total carried to the General Summary.

LIGHT POLE UPGRADING LOCATIONS & QUANTITIES

S.L.M.	W.B.	E.B.
21.36 to 21.80	10	9
22.18 to 23.60	36	37
Ramps		
33 EB to Refugee Rd.	7	
Refugee Rd. to 33 EB	7	
33 WB to Refugee Rd. WB	13	
Refugee Rd to 33 WB	16	
33 WB to Refugee Rd.	8	
33 WB to IR-70 EB	1	
Total Part 1	144	

Totals carried to General Summary.

Item	Description	Unit
Special	Transformer Base, Type AT-X	144
Special	Wiring Extension Kit, Type A	288

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LIGHT POLE UPGRADING DETAILS

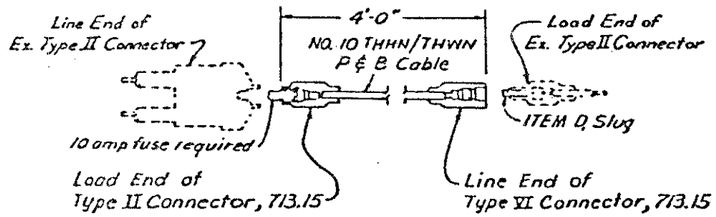
PLAN NO.

FRA-33-21.36

WHERE AT-X BASE IS BEING ADDED THE EXISTING WIRING SHALL BE MODIFIED WITH THE CABLE EXTENSION KITS AND ITEMS DETAILED BELOW:

EXTENSION KIT "A" FOR ENERGIZED & NEUTRAL CABLE

fits between line end and load end of 713.15 Type II Kit



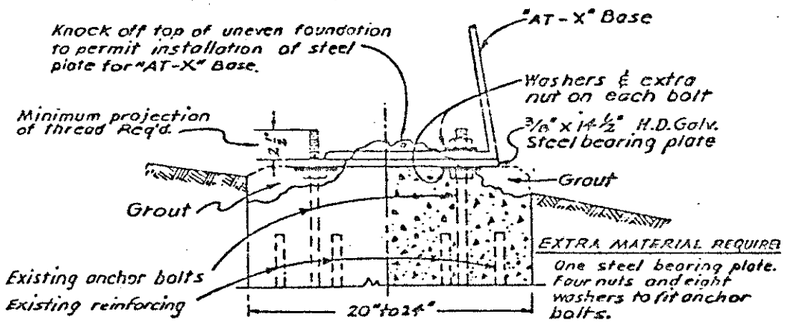
Two of these Kits will be required where system is 3-wire, 120/240 volts or 2-wire, 480 volts ungrounded.

PROCEDURE FOR INSTALLING BREAKAWAY "AT-X" TRANSFORMER BASES ON EXISTING PROJECTS

REPAIR OF DAMAGED FOUNDATION

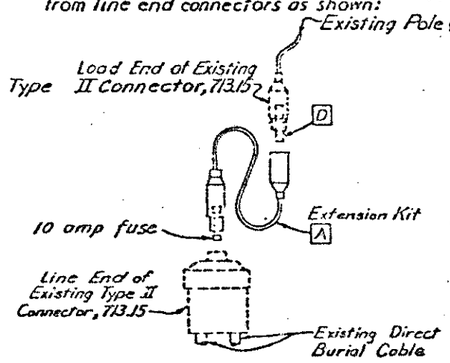
FOUNDATION

Where field inspection reveals that top of the existing light pole foundation has disintegrated proceed as follows:

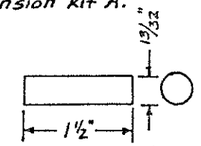


METHOD OF INSTALLING EXTENSION KITS

1. Prior to detaching pole from anchor bolts, pull load end connectors from line end connectors as shown:

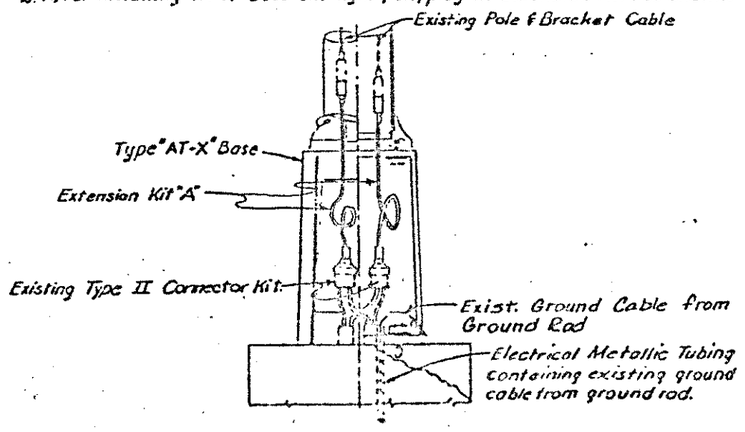


Item D – Tin plated silicon bronze slug for use in Extension kit A.



Included in kit A for payment.

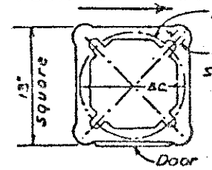
2. After installing "AT-X" Base and light pole, plug in Extension Kits as shown:



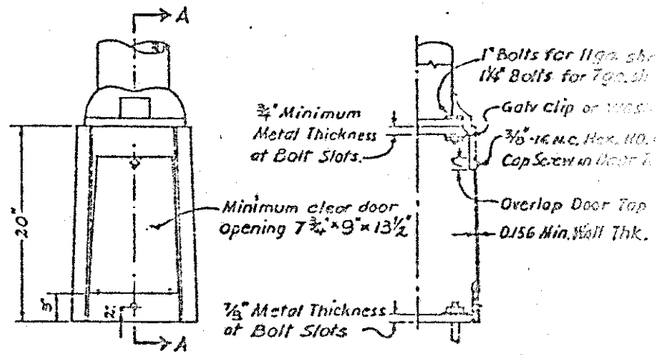
FRANGIBLE ALUMINUM TRANSFORMER BASE TYPE "AT-X"

DATA NECESSARY FOR ORDERING FRANGIBLE BASES

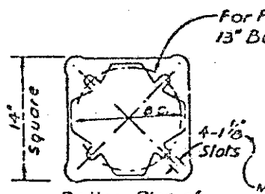
REF. LETTER	EXISTING FOUNDATION ANCHOR BOLT CIRCLE	EXISTING ANCHOR BOLT DIAMETER FOR 5 SHAFT	EXISTING ANCHOR BOLT DIAMETER FOR 4 SHAFT	EXISTING SHAFT DIAMETER TOP	EXISTING SHAFT DIAMETER BOTTOM	EXISTING SHAFT LENGTH	EXISTING ARM LENGTH	MANUFACTURER'S POLE CATALOG NUMBER
A	11.0"		1¼"x48"	3.87"	8.0"	29'-6"	10'	
B	12.5"		1½"x48"	4.87"	9.0"	29'-6"	15'	



Top Plan for Transformer Base



SECTION A-A



Bottom Plan of Transformer Base

NOTES: 1. Poles having bolt circles larger than 13" will require Type "AT-C" Transformer Base with adapter plates.

2. Poles having bolt circle smaller than 10.5" will require top and bottom adapter plates obtainable from the manufacturer of the AT-X Transformer Base. Payment for such adapter plates shall be included in payment for AT-X base

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Upgrading & Wiring Conver... from the original contra... Project – FRA-40-17.24... Project. No. 273-64.