

256

OHIO DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS

FHWA REGION	STATE	FEDERAL PROJECT	
5	OHIO		

1
32

PART	COUNTY	ROUTE	SECTIONS	PROJECT TERMINI		NET LENGTH MILES	TOWNSHIP	CITY	VILLAGE
				BEGIN	END				
1	Pic	SR762	(0.00) (7.65-10.41)	0.10	11.30	11.20			
2	Pic	SR752	(0.00) (2.32)	0.51	7.49	6.98			
3	Pic	SR316	(0.00) (4.31)	0.96 4.31	2.46 10.17	1.50 5.86			
4	Pic	SR316	3.65	4.14	4.31	.17			Darbyville
5	Pic	SR674	(0.00 - 2.71)	1.24	10.91	9.67			
6	Pic	SR-56	0.00 (20.64 - 33.79)	0.44 20.74	13.31 33.90	12.87 13.16			
7	Pic	SR188	(1.44 - 6.47)	3.11	7.67	4.56			
8	Pic	SR138	0.00	0.90	6.34	5.44			
9	Pic	SR159	0.00	1.03	7.35	6.32			

256-88 L+D

GUARDRAIL RECONSTRUCTION PLAN NO. 6D1939

The Standard 19 87 Specifications of the State of Ohio, Department of Transportation, including changes and Supplemental Specifications listed in the plans and proposal shall govern these improvements.

I hereby approve these plans and declare that the making of these improvements will require the closing of the highways to traffic on Parts No. NONE and that detours will be provided by State forces. The closing to traffic of the highways will not be required on Parts No. 1 Thru 9 and provisions for the maintenance and safety of traffic will be as indicated in the proposal.

Approved Date 8-6-87 *George E. Downing*
District Deputy Director of Transportation

Approved Date 9-2-87 *Walter J. Josting*
Engineer of Bridges

Approved Date _____
Engineer of Maintenance

Approved Date 11-17-87 *James R. Longenecker*
DEPUTY DIRECTOR OF OPERATIONS

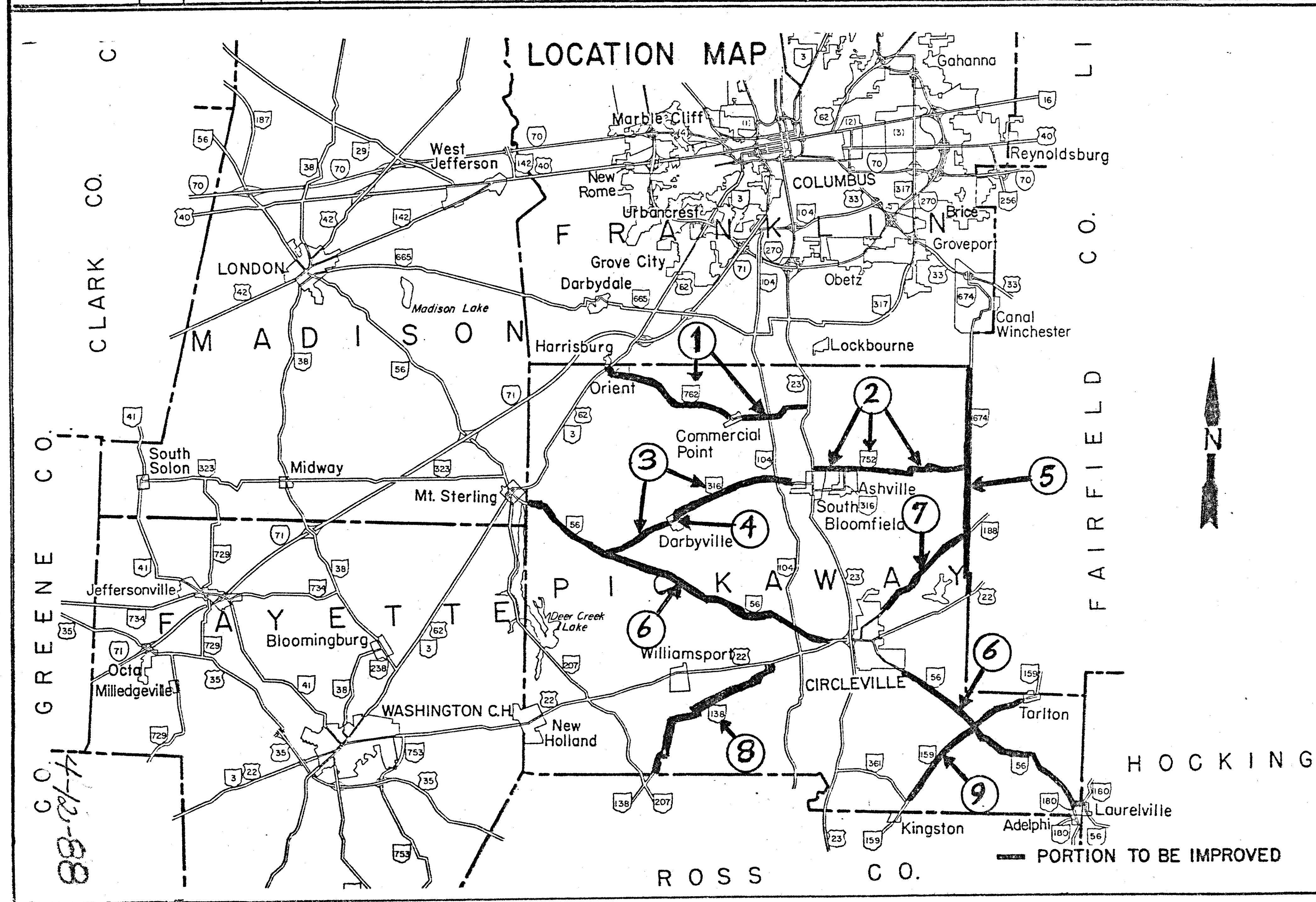
Approved Date _____
Assistant Deputy Director, Program Development

Approved Date _____
Chief Engineer, Construction

Approved Date _____
Chief Engineer, Design

Approved Date _____
Assistant Director, Department of Transportation

Approved Date 11-18-87 *Walter J. Smith*
Director, Department of Transportation



DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED:

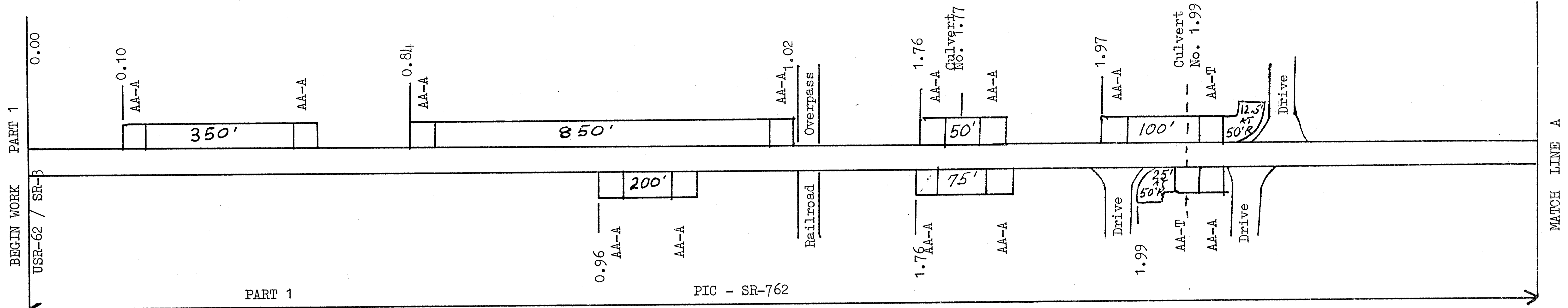
DIVISION ADMINISTRATOR DATE

STANDARD DRAWINGS		SUPPLEMENTAL SPECIFICATIONS	
DBR-2-73	4-10-73	853	6-26-78
GR-1	1-11-85	956	6-26-78
GR-2B	2-5-82	852	6-10-87
GR-3	1-21-85	952	6-10-87
GR-4	2-5-82		
GR-4A	1-30-84		

2-16-88 *WJS*

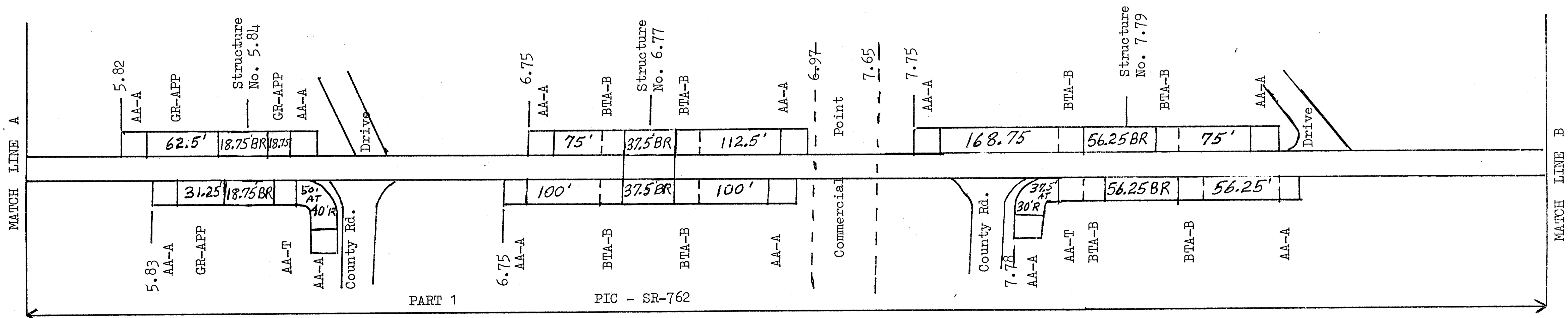
4-12-88

GUARDRAIL LOCATIONS



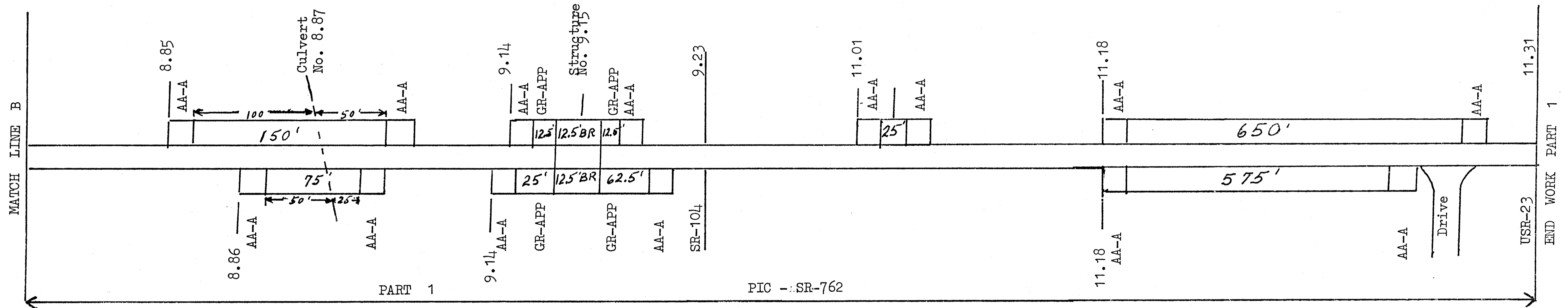
ABBREVIATIONS:

- AA-A ----- ANCHOR ASSEMBLY, TYPE A
- AA-T ----- ANCHOR ASSEMBLY, TYPE T
- BR ----- BRIDGERAIL
- BTA-B ----- BRIDGE TERMINAL ASSEMBLY, TYPE B
- GR-APP ----- GUARDRAIL AS PER PLAN



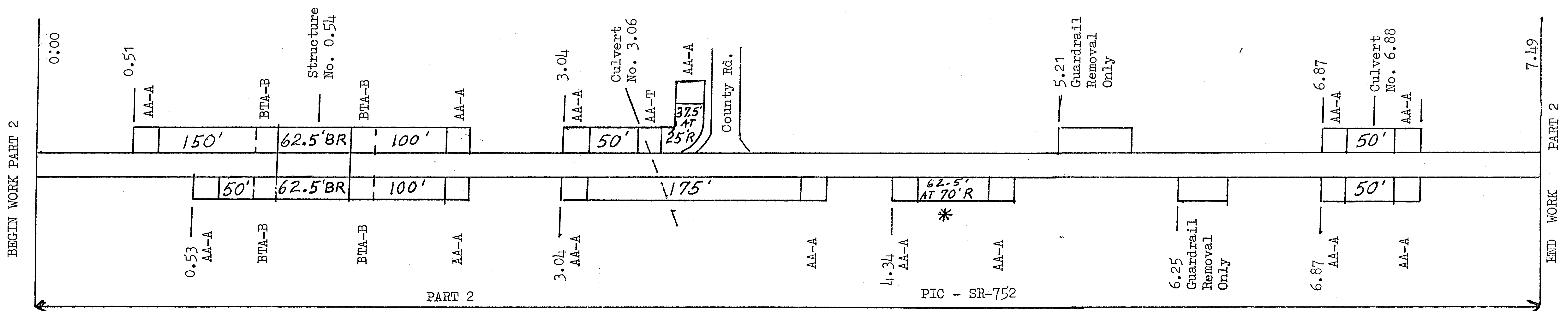
2-16-88 DCL

GUARDRAIL LOCATIONS

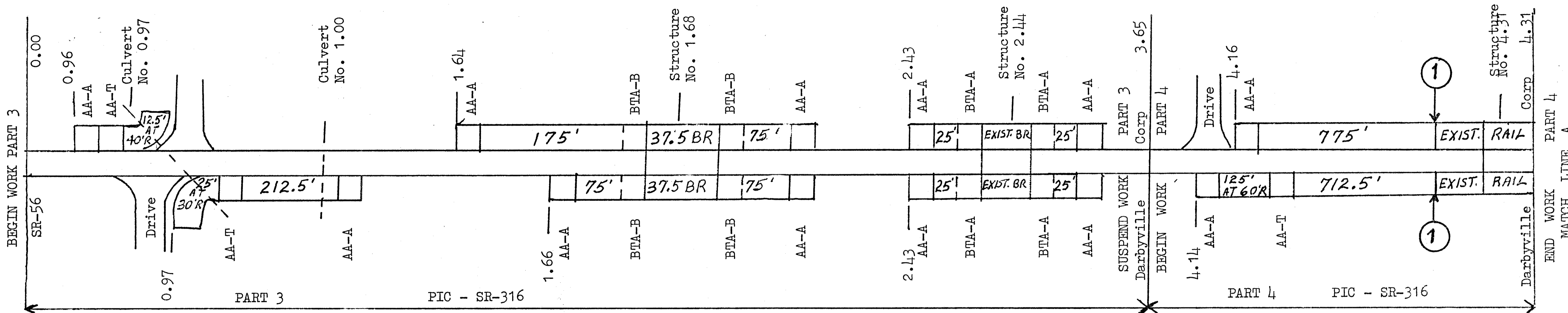


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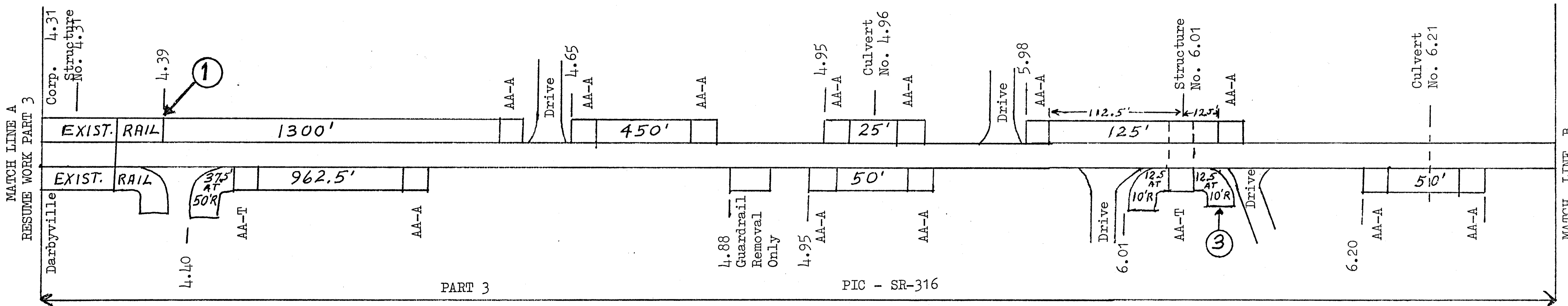
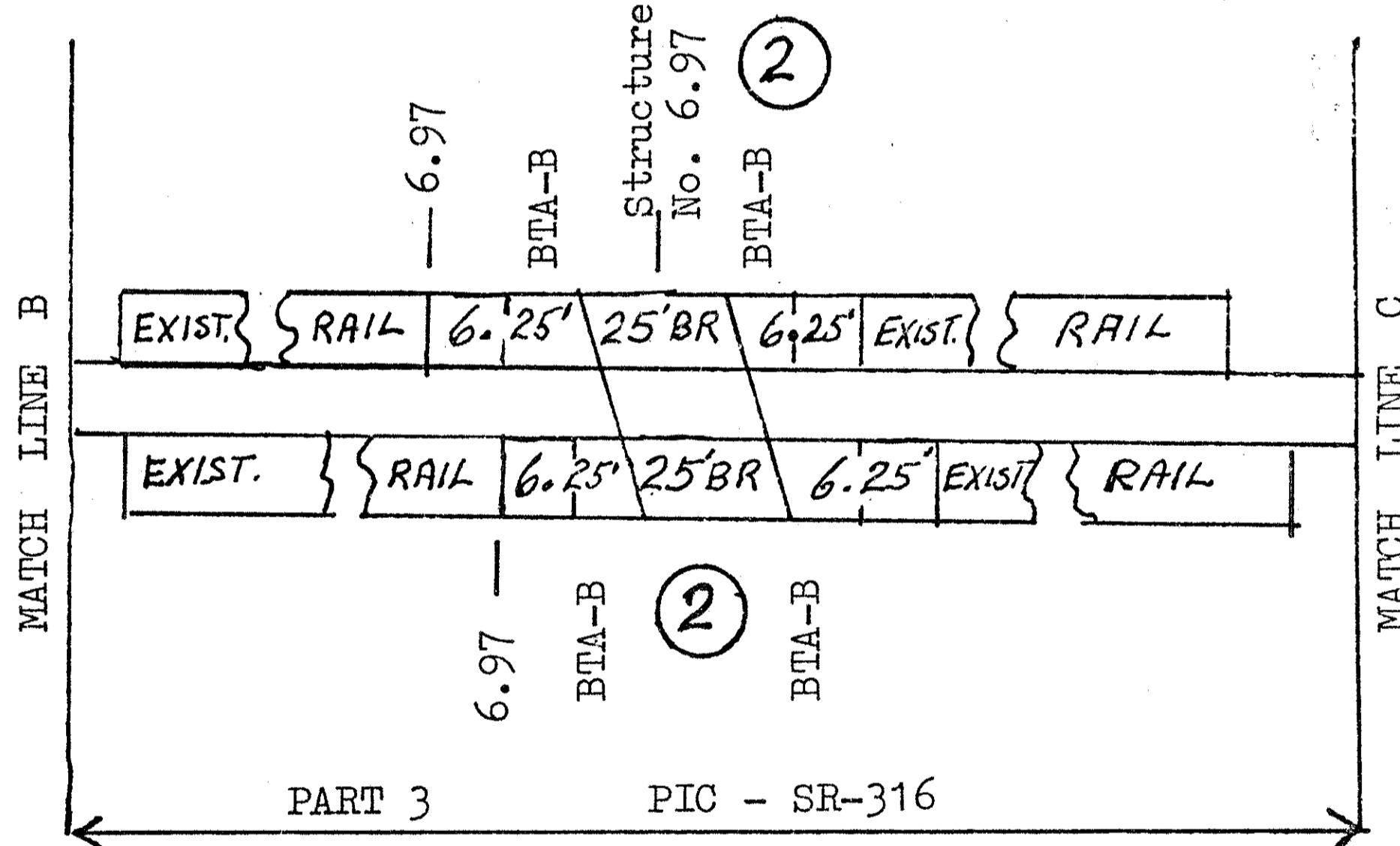
- AA-A ----- ANCHOR ASSEMBLY, TYPE A
- AA-T ----- ANCHOR ASSEMBLY, TYPE T
- BR ----- BRIDGERAIL
- BTA-B ----- BRIDGE TERMINAL ASSEMBLY, TYPE B
- GR-APP ----- GUARDRAIL AS PER PLAN
- * ----- REQUIRES CONCAVE RADIUS RAIL



2-16-88 OCL



- ABBREVIATIONS:
- AA-A ----- ANCHOR ASSEMBLY, TYPE A
 - AA-T ----- ANCHOR ASSEMBLY, TYPE T
 - BR ----- BRIDGERAIL
 - BTA-A ----- BRIDGE TERMINAL ASSEMBLY, TYPE A
 - BTA-B ----- BRIDGE TERMINAL ASSEMBLY, TYPE B
 - ① ----- ATTACH TO EXISTING GUARDRAIL
 - ② ----- REMOVE AND REUSE THE EXISTING GUARDRAIL, ADDING STEEL TUBULAR BACKUP ON THE STRUCTURE
 - ③ ----- REQUIRES FLARED END ONLY

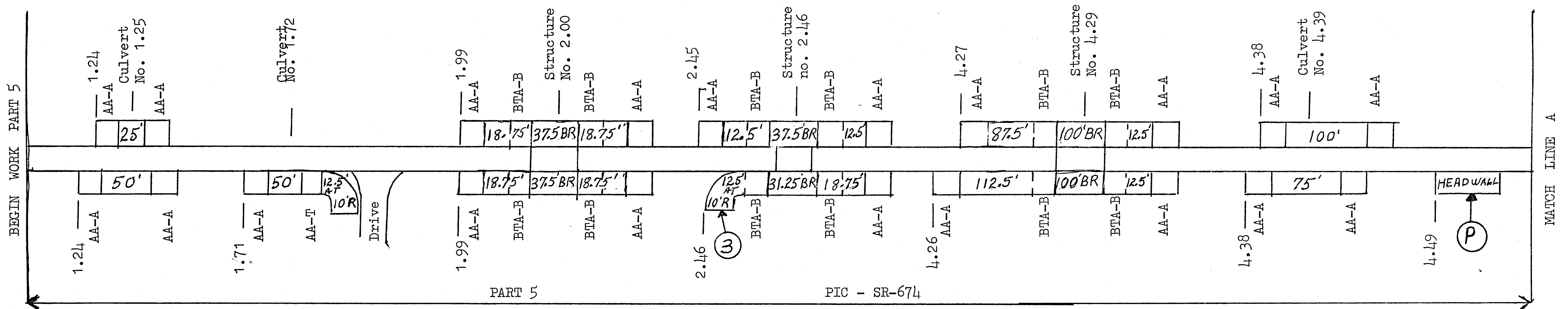


2-16-88 DCJ

GUARDRAIL LOCATIONS

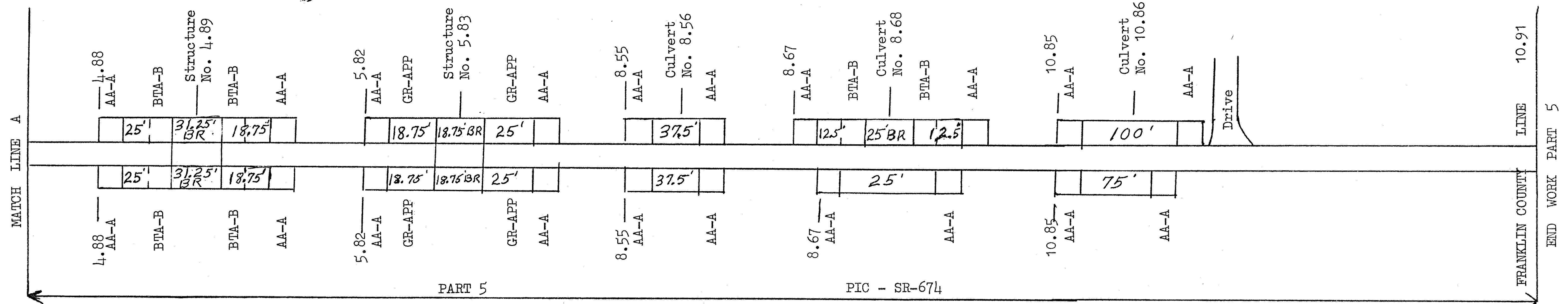
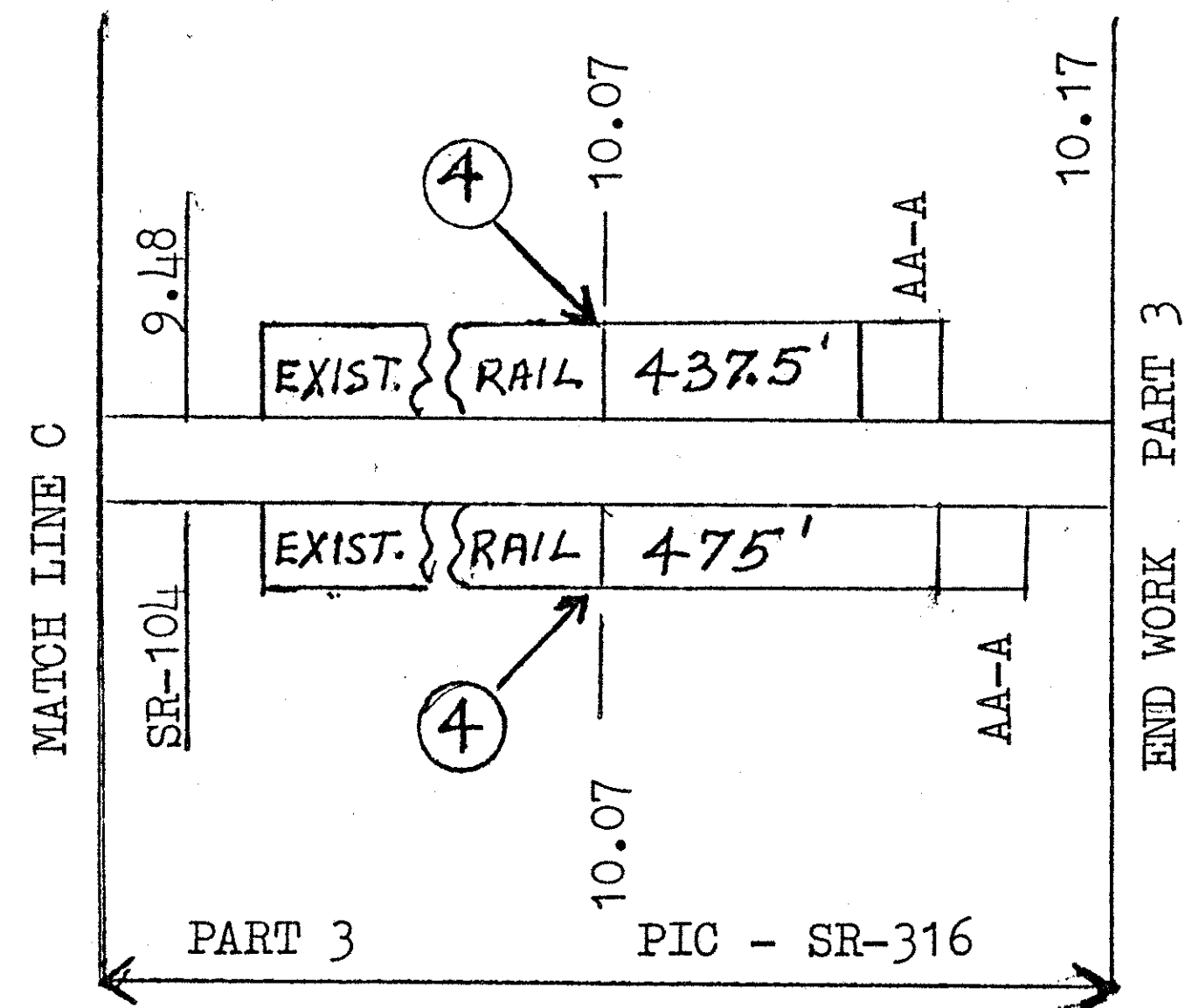
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PLAN NO.
601939



ABBREVIATIONS:

- AA-A ----- ANCHOR ASSEMBLY, TYPE A
- AA-T ----- ANCHOR ASSEMBLY, TYPE T
- BR ----- BRIDGERAIL
- BTA-B ----- BRIDGE TERMINAL ASSEMBLY, TYPE B
- GR-APP ----- GUARDRAIL AS PER PLAN
- (P) ----- PORTION OF STRUCTURE REMOVED
- (3) ----- REQUIRES FLARED END ONLY
- (4) ----- REMOVE EXISTING ANCHOR ASSEMBLY, TYPE A AND ATTACH TO EXISTING GUARDRAIL

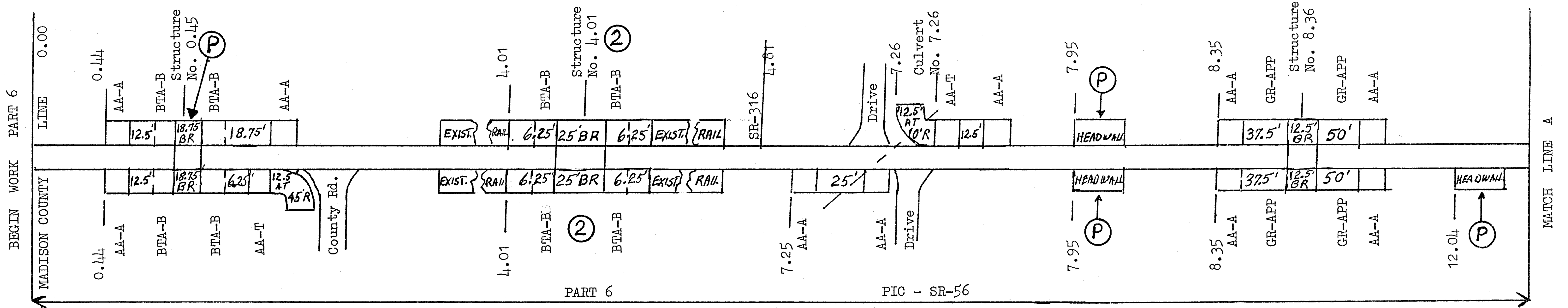


2-16-88 ocj

GUARDRAIL LOCATIONS

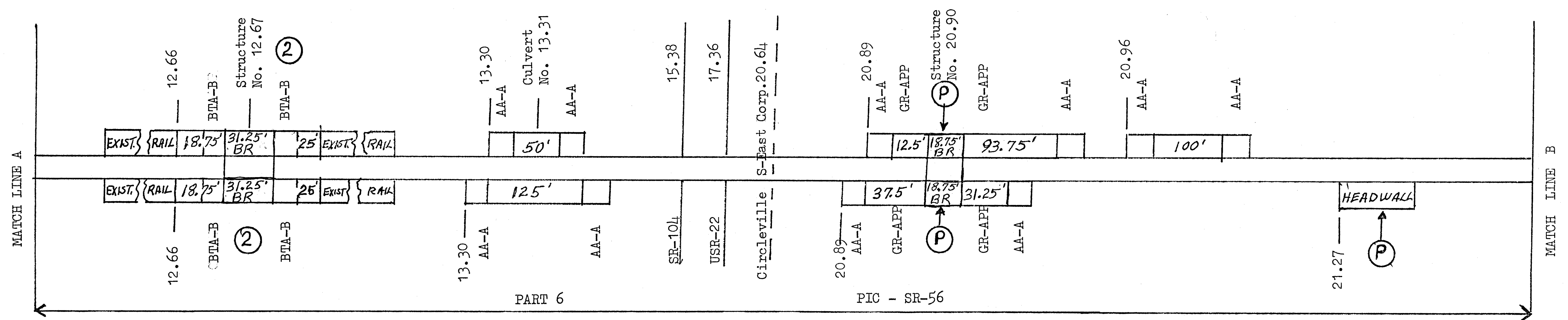
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PLAN NO.
6D1939



ABBREVIATIONS:

- AA-A ----- ANCHOR ASSEMBLY, TYPE A
- AA-T ----- ANCHOR ASSEMBLY, TYPE T
- BR ----- BRIDGERAIL
- BTA-B ----- BRIDGE TERMINAL ASSEMBLY, TYPE B
- GR-APP ----- GUARDRAIL AS PER PLAN
- (P) ----- PORTION OF STRUCTURE REMOVED
- (2) ----- REMOVE AND REUSE EXISTING GUARDRAIL, ADDING STEEL TUBULAR BACKUP ON THE STRUCTURE

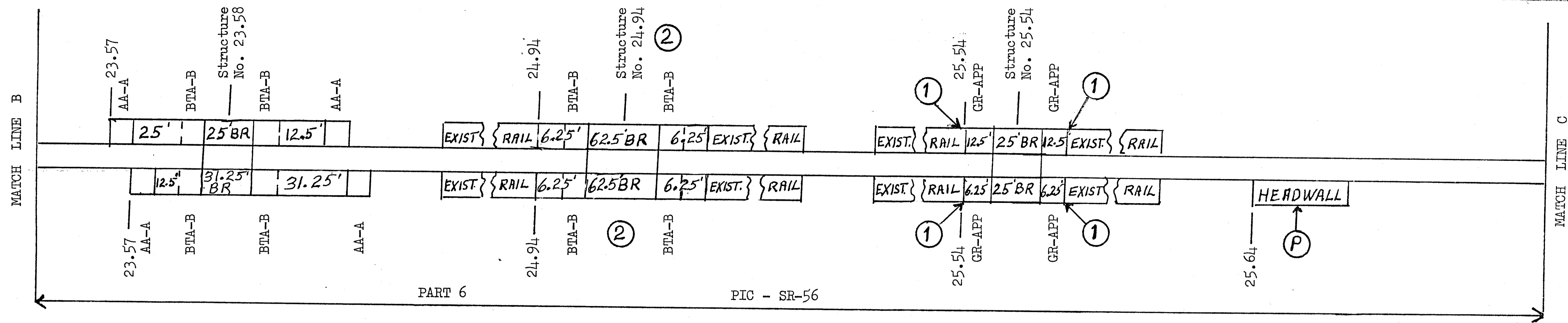


2-16-88

GUARDRAIL LOCATIONS

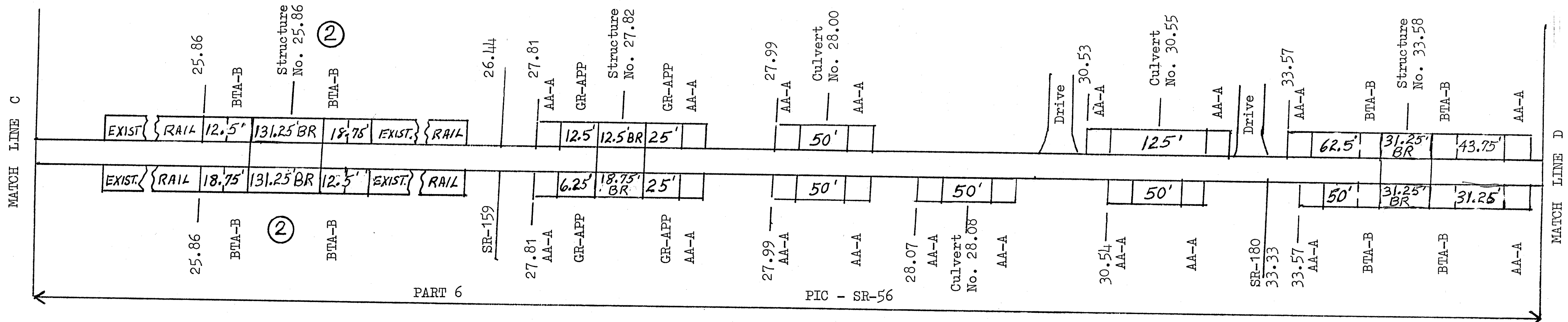
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PLAN NO.
6D1939



ABBREVIATIONS:

- AA-A ----- ANCHOR ASSEMBLY, TYPE A
- BR ----- BRIDGERAIL
- BTA-B ----- BRIDGERAIL TERMINAL ASSEMBLY, TYPE B
- GR-APP ----- GUARDRAIL AS PER PLAN
- (P) ----- PORTION OF STRUCTURE REMOVED
- (1) ----- ATTACH TO EXISTING GUARDRAIL
- (2) ----- REMOVE AND RESUE EXISTING GUARDRAIL, ADDING STEEL TUBULAR BACKUP ON THE STRUCTURE

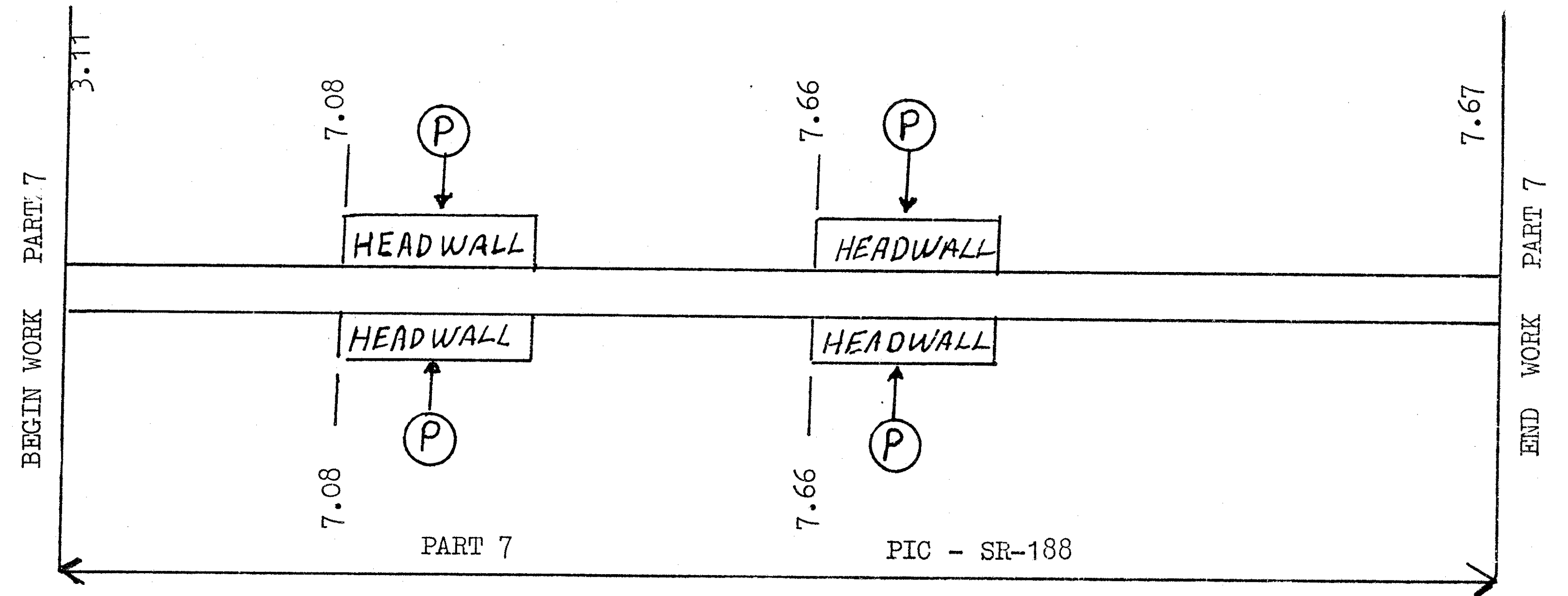
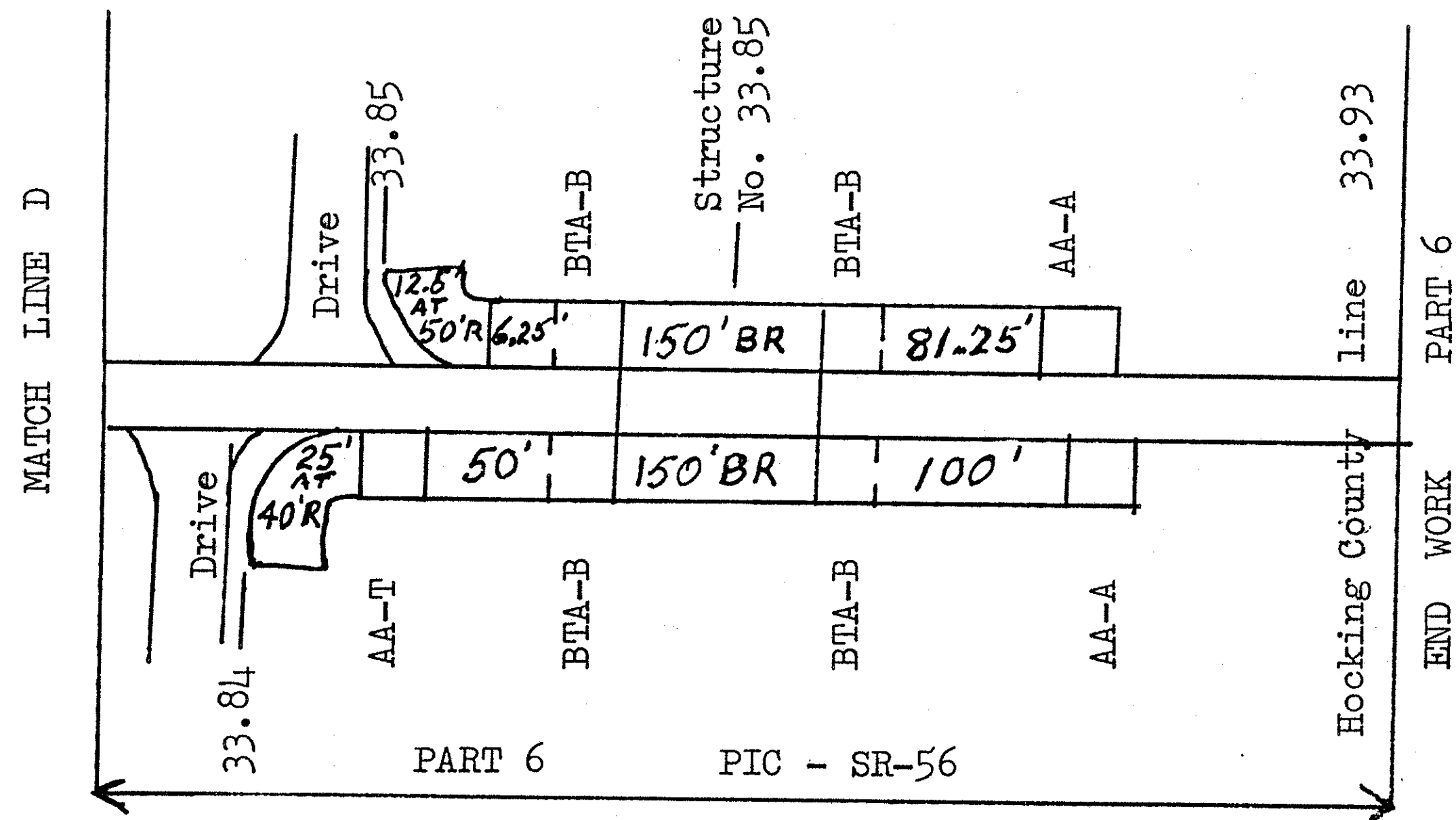


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GUARDRAIL LOCATIONS

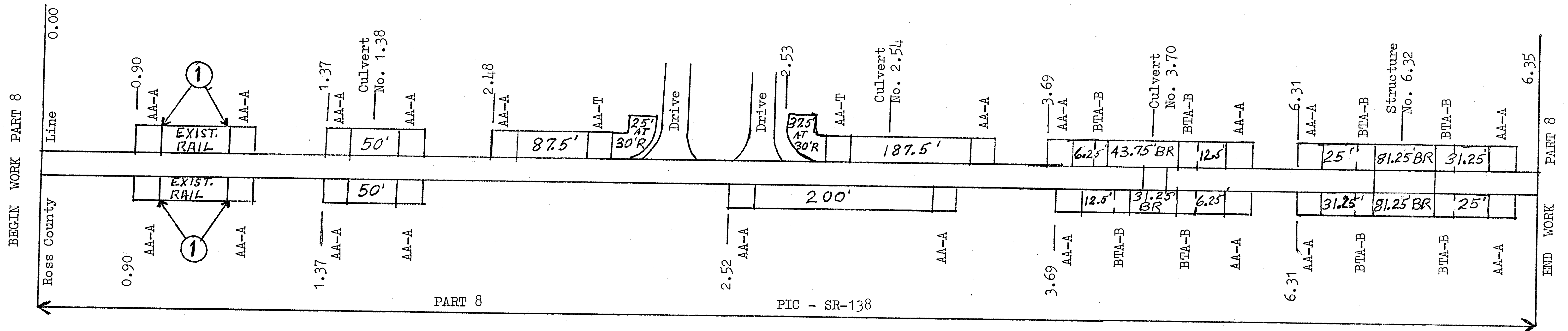
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PLAN NO.
6D1939



ABBREVIATIONS:

- AA-A ----- ANCHOR ASSEMBLY, TYPE A
- AA-T ----- ANCHOR ASSEMBLY, TYPE T
- BR ----- BRIDGERAIL
- BTA-B ----- BRIDGE TERMINAL ASSEMBLY, TYPE B
- (P) ----- PORTION OF STRUCTURE REMOVED
- (1) ----- ATTACH TO EXISTING GUARDRAIL

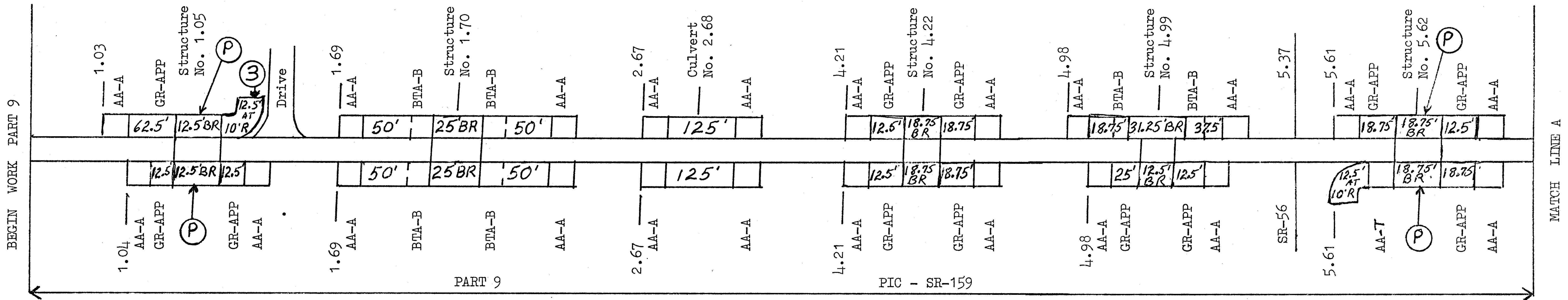


2-16-88 DJ

GUARDRAIL LOCATIONS

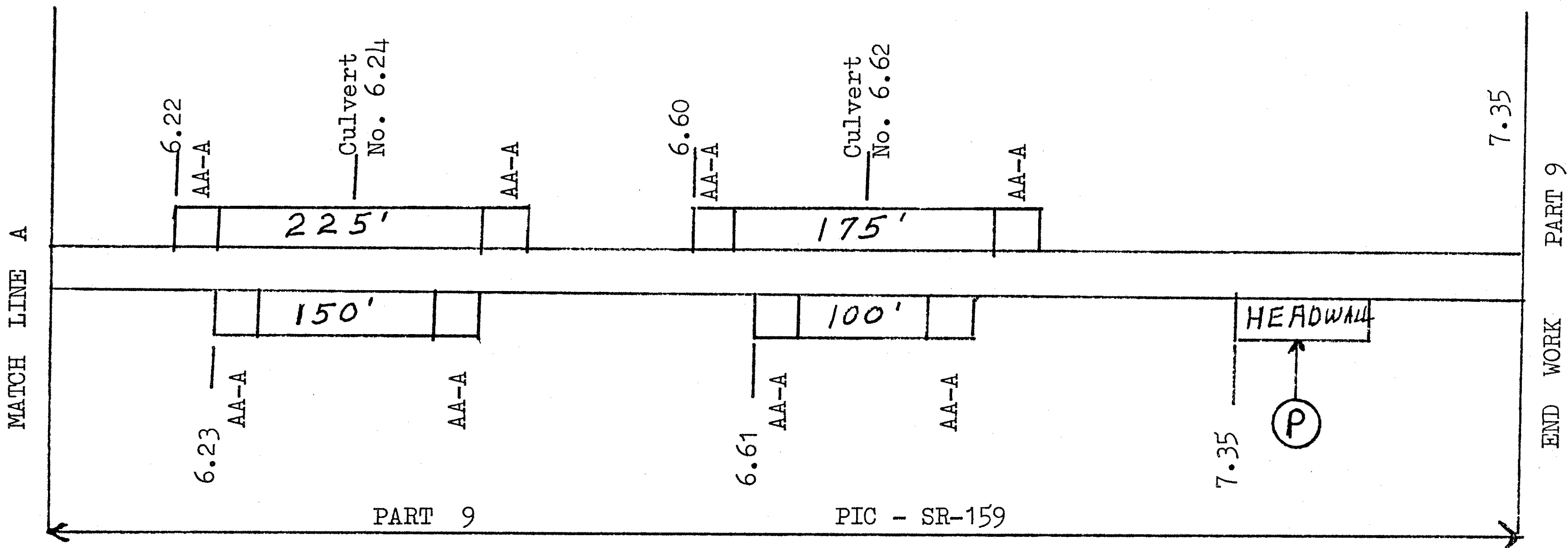
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PLAN NO.
6D1939



ABBREVIATIONS:

- AA-A ----- ANCHOR ASSEMBLY, TYPE A
- AA-T ----- ANCHOR ASSEMBLY, TYPE T
- BR ----- BRIDGERAIL
- BT-A-B ----- BRIDGE TERMINAL ASSEMBLY, TYPE B
- GR-APP ----- GUARDRAIL AS PER PLAN
- Ⓟ ----- PORTION OF STRUCTURE REMOVED
- ③ ----- REQUIRES FLARED END ONLY



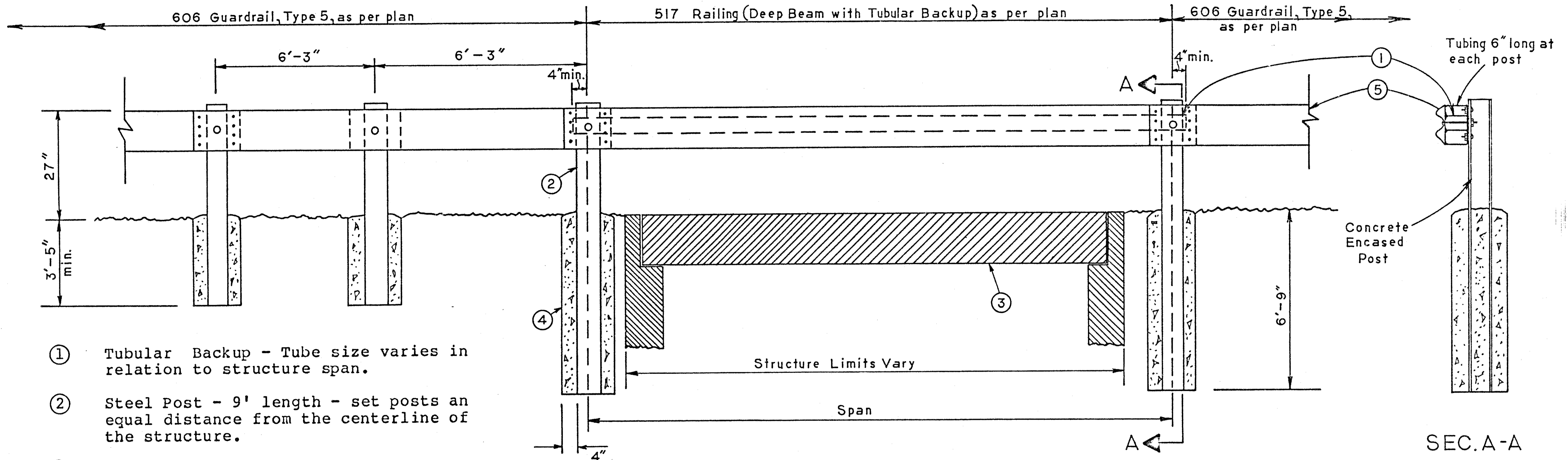
2-16-88 DCJ

STRUCTURE SPANNING DETAIL

NOT TO SCALE

10
32

PLAN NO.
601939



- ① Tubular Backup - Tube size varies in relation to structure span.
- ② Steel Post - 9' length - set posts an equal distance from the centerline of the structure.
- ③ Structure
- ④ Concrete Encasement - 4" minimum
- ⑤ Deep Beam Rail

ITEM 517 - Railing (Deep Beam with Tubular Backup) as per plan
Standard Drawing DBR - 2 - 73 shall be modified as follows: The tube size shall be as detailed in this plan. The footage for payment shall be the actual length between and including the two 9' concrete encased, steel posts.

NOTE: The deep beam rail shall be bolted to the tubular backup at 6'-3" c/c intervals using standard deep beam rail bolts 5/8" x 10" with special washers.

ITEM 606 - Guardrail, Type 5, as per plan
Place two (2) guardrail posts encased in a minimum of 4" of concrete adjacent to the 9' steel posts on both the approach and trailing ends. These posts will be spaced 6'-3" apart. Complete the guardrail runs with Type 5 Guardrail as specified in the plans. Payment for the concrete encased posts is to be included in Item 606 - Guardrail, Type 5, as per plan.

STRUCTURE NO.	SIDE	SPAN	TUBE SIZE	POST SIZE	NO. OF POST
Pic - SR-762 - 5.84	Rt. - Lt.	19.00 Ft.	8 x 4 x 1/2	W8 x 24	4
Pic - SR-762 - 9.15	Rt. - Lt.	12.50 Ft.	8 x 4 x 1/4	W6 x 25	4
Pic - SR-674 - 5.83	Rt. - Lt.	18.75 Ft.	8 x 4 x 1/2	W8 x 24	4
Pic - SR-56 - 8.36	Rt. - Lt.	8.00 Ft.	8 x 4 x 1/4	W6 x 25	4
Pic - SR-56 - 20.90	Rt. - Lt.	15.00 Ft.	8 x 4 x 3/8	W8 x 24	4
Pic - SR-56 - 25.54	Rt. - Lt.	25.00 Ft.	8 x 6 x 1/2	W10 x 26	4
Pic - SR-56 - 27.82	Rt.	16.00 Ft.	8 x 4 x 3/8	W8 x 24	2
Pic - SR-56 - 27.82	Lt.	12.50 Ft.	8 x 4 x 1/4	W6 x 25	2
Pic - SR-159 - 1.05	Rt. - Lt.	11.00 Ft.	8 x 4 x 1/4	W6 x 25	4
Pic - SR-159 - 4.22	Rt. - Lt.	15.00 Ft.	8 x 4 x 3/8	W8 x 24	4
Pic - SR-159 - 4.99	Rt.	10.00 Ft.	8 x 4 x 1/4	W6 x 25	2
Pic - SR-159 - 5.62	Rt. - Lt.	14.00 Ft.	8 x 4 x 3/8	W8 x 24	4

2-16-88 DCJ

ITEM 517 - Railing (Deep Beam Rail with Steel Tubular Backup, Type 2 Steel Post, Bolts); use Existing Rail:
 Structures No.: Pic-56-4.01; 12.67; 24.94

Self-drilling anchors shall not be used on this project. Bridge Post anchor studs shall be 1 1/4" x 20" long and shall be grouted into the existing concrete as shown on DBR - 2 - 73 and as per Supplemental Specification 853. Railing anchor studs, nuts, and washers shall conform to the physical properties of ASTM A-325 except elongation shall be 10%. The chemical properties are waived. Studs, nuts, and washers shall be galvanized in accordance with ASTM A-123. Studs shall be threaded full length.

In lieu of Supplemental Specification #853 - Grout Anchoring, the Contractor may use Hilti Adhesive Anchors to be supplied and installed according to the specifications developed by Hilti Fastening Systems; P.O. Box 45400; Tulsa, Oklahoma 74145; Telephone (918) 627-9711, or an approved equal.

The existing Deep Beam Rail shall be removed and re-mounted with Steel Tubular Backup on Type 2 Steel Post.

ITEM 517 - Railing (Deep Beam Rail with Steel Tubular Backup) use Existing Rail and Post; Structure No.; Pic-316-6.97
 The existing Deep Beam Rail shall be removed and re-mounted with Steel Tubular Backup on the existing Post.

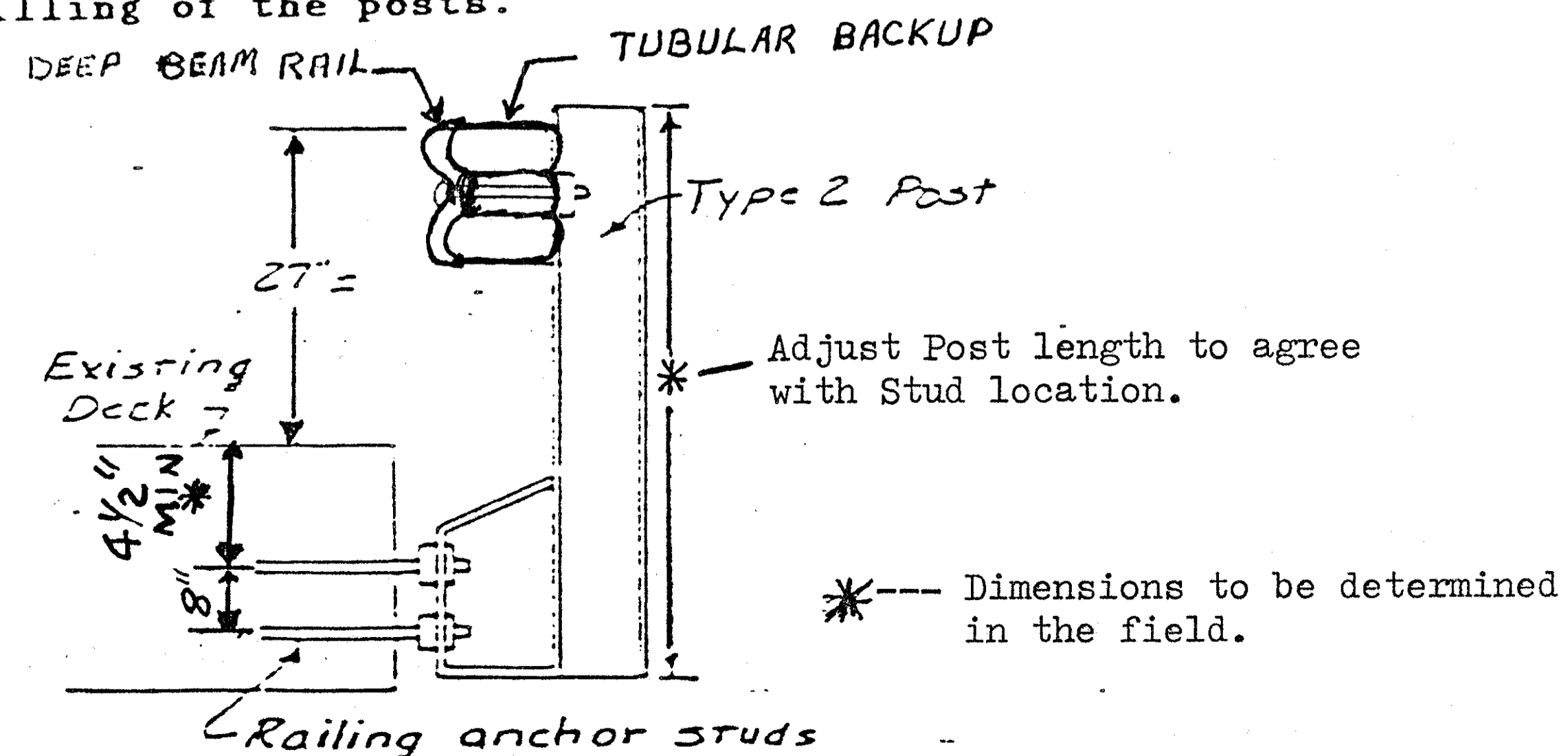
ITEM 517 - Railing (Deep Beam Rail with Steel Tubular Backup, Type 2 Steel Post, Bolts): Structures No.: Pic-762-6.77; 7.79; Pic-138-3.70; 6.32
 Pic-56-0.45; 23.58; 33.58 Pic-159-1.70; 4.99 Left

Self-drilling anchors shall not be used on this project. Bridge Post anchor studs shall be 1 1/4" x 20" long and shall be grouted into the existing concrete as shown on DBR - 2 - 73 and as per Supplemental Specification 853. Railing anchor studs, nuts, and washers shall conform to the physical properties of ASTM A-325 except elongation shall be 10%. The chemical properties are waived. Studs, nuts, and washers shall be galvanized in accordance with ASTM A-123. Studs shall be threaded full length.

In lieu of Supplemental Specification #853 - Grout Anchoring, the Contractor may use Hilti Adhesive Anchors to be supplied and installed according to the specifications developed by Hilti Fastening Systems; P.O. Box 45400; Tulsa, Oklahoma 74145; Telephone (918) 627-9711, or an approved equal.

ITEM 517 - Railing (Deep Beam Rail with Steel Tubular Backup, Type 2 Steel Post). Structures No.: Pic-752-0.54; Pic-674-4.29
 Pic-56-25.86; 33.85

It is the Contractor's responsibility to confirm the exact bolt spacing prior to the drilling of the posts.



ITEM 202 - Portions of Structure Removed:

The existing Headwall is to be removed to ground level.

The existing Parapet is to be removed to the level of the existing deck.

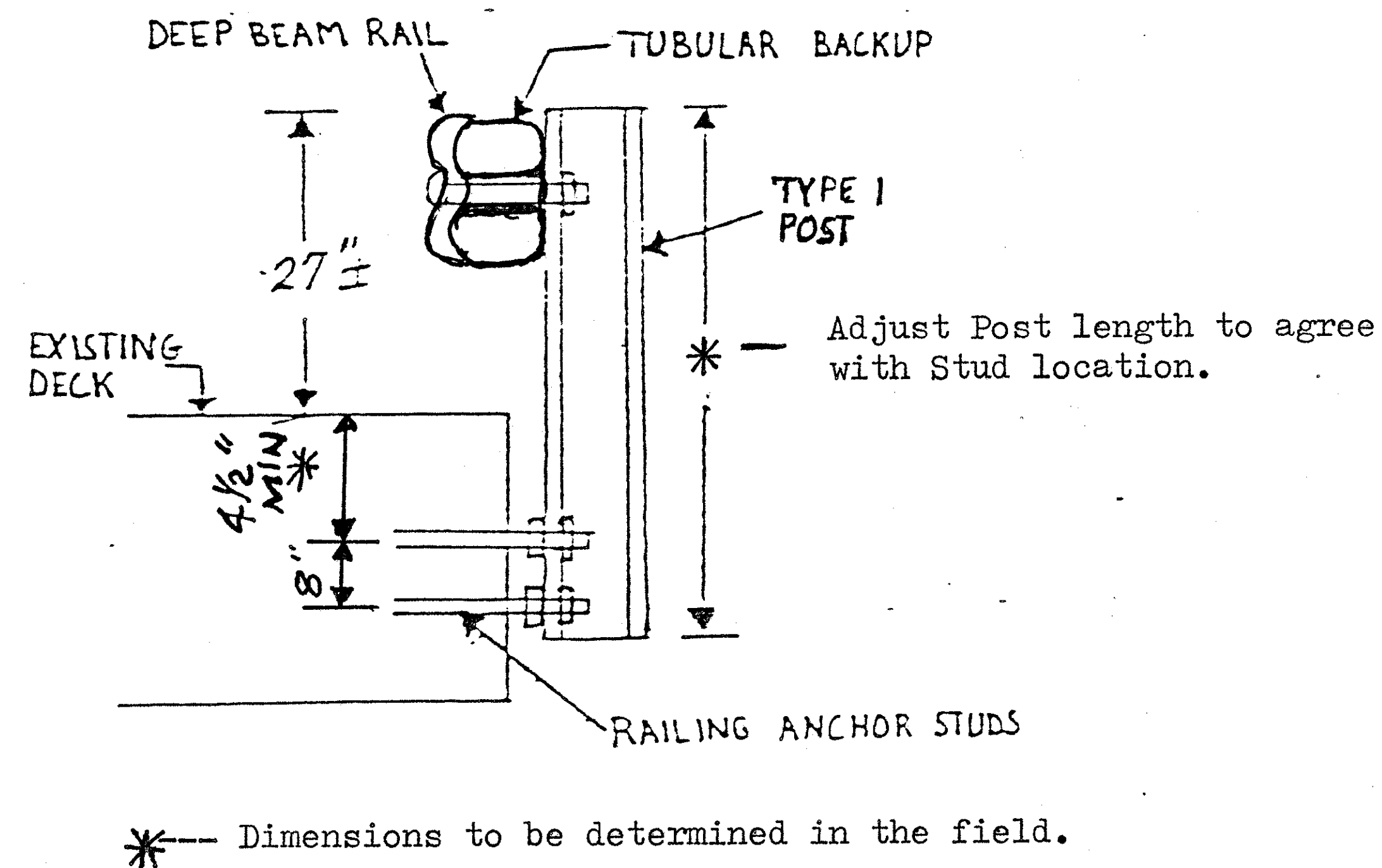
STRUCTURE NO.	DESCRIPTION	APPR. SIZE	SIDE
Pic-SR-674-4.49	Headwall	7' x 1' x 15"	Rt.
Pic-SR-56- 0.45	Headwall	16' x 15" x 1'	Lt.
Pic-SR-56- 7.95	Headwall	7' x 1' x 15"	Rt.
Pic-SR-56- 7.95	Headwall	7' x 1' x 9"	Lt.
Pic-SR-56-12.04	Headwall	3' x 1' x 1'	Rt.
Pic-SR-56-20.90	Parapet	13' x 18' x 3'	Rt. - Lt.
Pic-SR-56-21.27	Headwall	9' x 1' x 9"	Rt.
Pic-SR-56-25.64	Headwall	6' x 1' x 1'	Rt.
Pic-SR-188-7.08	Headwall	13' x 15" x 20"	Rt. - Lt.
Pic-SR-188-7.66	Headwall	12' x 15" x 26"	Rt. - Lt.
Pic-SR-159-1.05	Headwall	11' x 1' x 1'	Rt. - Lt.
Pic-SR-159-5.62	Headwall	12' x 1' x 9"	Rt. - Lt.
Pic-SR-159-7.35	Headwall	11' x 1' x 18"	Rt.

2-16-88 DJ

ITEM 517 - Railing (Deep Beam Rail with Steel Tubular Backup, Type 1 Steel Post, Bolts). Structures No.: Pic-674-2.00; 2.46; 4.89; 8.68

Self-drilling anchors shall not be used on this project. Bridge Post anchor studs shall be 1 1/4" x 20" long and shall be grouted into the existing concrete as shown on DBE-2-73 and as per Supplemental Specification 853. Railing anchor studs, nuts, and washers shall conform to the physical properties of ASTM A-325 except elongation shall be 10%. The chemical properties are waived. Studs, nuts, and washers shall be galvanized in accordance with ASTM A-123. Studs shall be threaded full length.

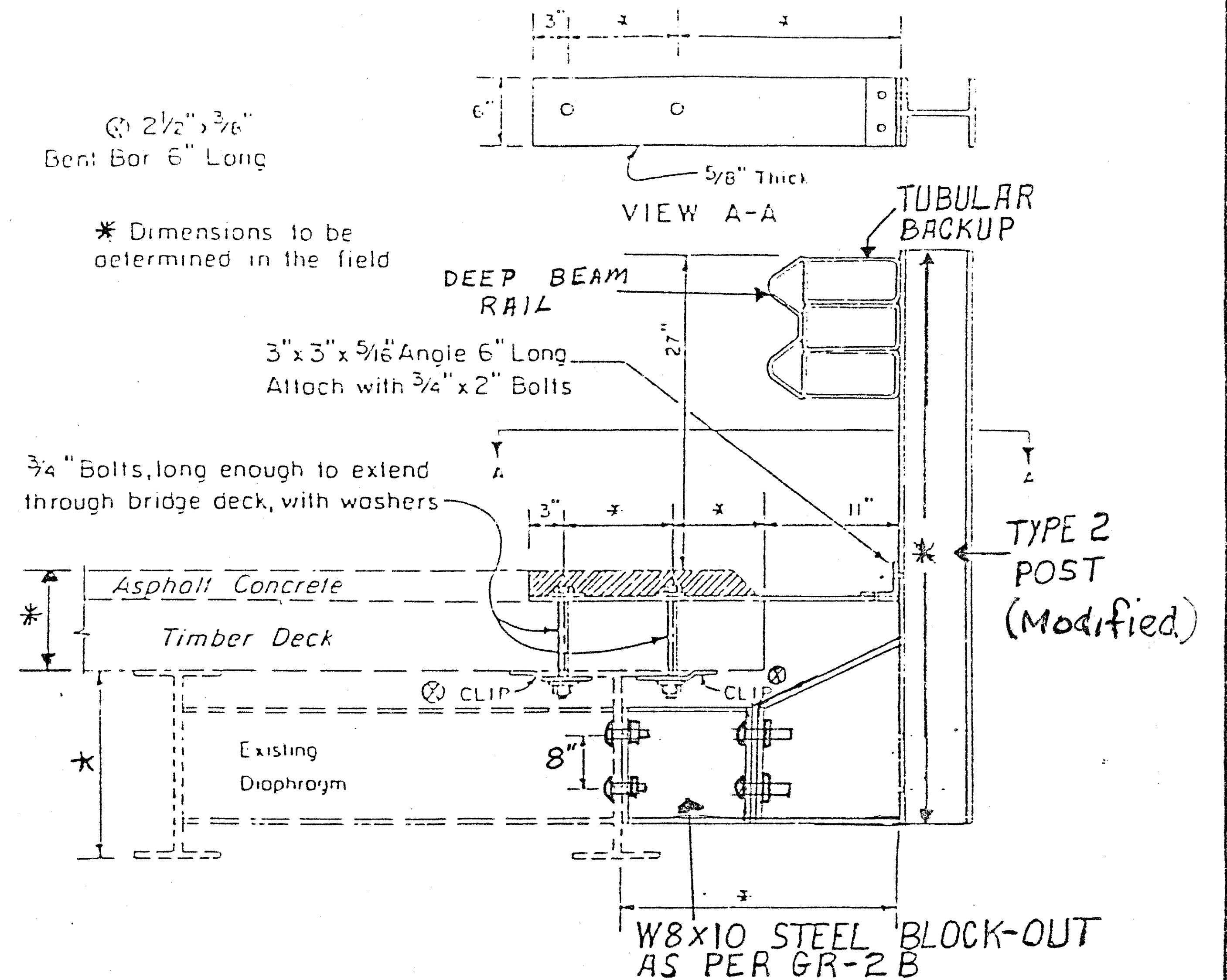
In lieu of Supplemental Specification #853 - Grout Anchoring, the Contractor may use Hilti Adhesive Anchors to be supplied and installed according to the specifications developed by Hilti Fastening Systems; P.O. Box 45400; Tulsa, Oklahoma 74145; Telephone (918) 627-9711, or an approved equal.



ITEM 517 - Railing (Deep Beam Rail with Steel Tubular Backup, Type 2 Steel Post) As Per Plan:
Structure No.: Pic.-SR-316-1.68

W8 x 10 Steel Post Block-Out shall be used for the mounting of the Type 2 Steel Post to the Steel Beams on the structure (See detail below and GR - 2B).

The cost of Overlay Removal and Replacement to allow installation of the Top Post Braces shall be included in this item, at the Unit Bid Price.



2-16-88 DJ

GUARDRAIL DATA

PART	ROUTE	STARTING LOG POINT	SIDE	ITEM 202 GUARDRAIL REMOVED			ITEM 606 GUARDRAIL					ANCHOR ASSEMBLY		606	GUARDRAIL CONNECTIONS TO BRIDGES		9' GUARD RAIL POSTS	BERM RESHAPING	RAILING (DBR WITH STEEL TUBULAR BACKUP) AS PER PLAN	RAILING (DBR WITH STEEL TUBULAR BACKUP TYPE 2 STEEL POST, BOLTS)	RAILING (DBR WITH STEEL TUBULAR BACKUP TYPE 2 STEEL POST)	NOTES					
				REMOVED LIN. FT.	FOR STORAGE OR RE-USE LIN. FT.	BRIDGE RAIL REMOVED FOR STORAGE OR RE-USE LIN. FT.	TYPE	GUARD RAIL LIN. FT.	REBUILT LIN. FT.	CURVED RAIL ELEMENTS		TYPE T (GR-4A) EACH	SINGLE RAIL (GR-4) TYPE A EACH	GUARD RAIL AS PER PLAN LIN. FT.	TYPE	EACH							EACH	EACH	LIN. FT.	LIN. FT.	LIN. FT.
										LENGTH LIN. FT.	RADIUS FT.																
1	SR-762	0.10	Lt.		212.5		5	350.0					2					400.0									
		0.84	Lt.		725.0		5	850.0					2					900.0									
		0.96	Rt.		187.5		5	200.0					2					250.0									
		1.76	Rt.		100.0		5	75.0					2					125.0									
		1.76	Lt.		50.0		5	50.0					2					100.0									
		1.97	Lt.		50.0		5	100.0		12.5	50	1	1					137.5									
		1.99	Rt.		37.5		5			25.0	50	1	1					62.5									
		5.82	Lt.	18.0			5						2	81.25				131.0	18.75			7					
		5.83	Rt.	18.0			5			50.0	40	1	2	31.25				143.5	18.75			7					
		6.75	Rt.		89.0	36.0	5	200.0					2			B	2	251.5		37.5		8					
		6.75	Lt.		76.5	36.0	5	187.5					2			B	2	239.0		37.5		8					
		7.75	Lt.		175.0	50.0	5	243.75					2			B	2	300.0		56.25		8					
		7.78	Rt.		132.5	50.0	5	56.25		37.5	30	1	2			B	2	137.5		56.25		8					
		8.85	Lt.		125.0		5	150.0					2					25	200.0								
		8.86	Rt.		50.0		5	75.0					2						125.0								
		9.14	Rt.	12.0			5						2	87.5				137.5	12.5			7					
		9.14	Lt.	12.0			5						2	25.0				75.0	12.5			7					
		11.01	Lt.				5	25.0					2					75.0									
1	SR-762	11.18	Lt.				5	650.0					2					105	700.0								

* NOTES:

- 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.
- ITEM 202 GUARDRAIL REMOVED FOR STORAGE:** Guardrail, standard terminals, posts and miscellaneous hardware designated for salvage shall be stored at the Circleville Garage 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.
- 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.
- 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.
- 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.
- 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.

The radii shown on these plans are approximate. The exact radius at each location is to be determined by the engineer.

7. See Sheet 10 for detail
8. See Sheet 11 for detail

2-16-88 DCP

GUARDRAIL DATA

PART	ROUTE	STARTING LOG POINT	SIDE	ITEM 202 GUARDRAIL REMOVED			ITEM 606 GUARDRAIL				ANCHOR ASSEMBLY		606 GUARD RAIL AS PER PLAN LIN. FT.	GUARDRAIL CONNECTIONS TO BRIDGES		9' GUARD RAIL POSTS EACH	BERM RESHAPING LIN. FT.	RAILING (DBR WITH STEEL TUBULAR BACKUP) AS PER PLAN			* NOTES		
				REMOVED LIN. FT.	FOR STORAGE OR RE-USE LIN. FT.	BRIDGE RAIL REMOVED FOR STORAGE OR RE-USE LIN. FT.	TYPE	GUARD RAIL LIN. FT.	REBUILT LIN. FT.	CURVED RAIL ELEMENTS		TYPE T (GR-4A) EACH		SINGLE RAIL (GR-4) TYPE A EACH	TYPE			EACH	EACH	EACH		LIN. FT.	LIN. FT.
										LENGTH LIN. FT.	RADIUS FT.												
1	SR-762	11.18	Rt.				5	575.0				2				93	625.0						
	TOTAL	PART 1		60.0	2010.5	172.0		3787.5			125.0	4	38	225.0	B	8		223	5115.0	62.5	187.5		7,8
2	SR-752	0.51	Lt.		75.0	56.5	5	250.0				2			B	2		306.0				9	
		0.53	Rt.		75.0	56.5	5	150.0				2			B	2		206.0				9	
		3.04	Rt.		175.0		5	175.0				2						225.0					
		3.04	Lt.		100.0		5	50.0		37.5	25	1	2					150.0					
		4.34	Rt.		87.5		5			62.5	70	2						112.5					
		5.21	Lt.		62.5													62.5					
		6.25	Rt.		25.0													25.0					
		6.87	Rt.		25.0		5	50.0				2						100.0					
2	SR-752	6.87	Lt.		25.0		5	50.0				2						100.0					
	TOTAL	PART 2			650.0	113.0		725.0			100.0	1	14		B	4		1287.0					125.0

* NOTES:

- 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.
- ITEM 202 GUARDRAIL REMOVED FOR STORAGE:** Guardrail, standard terminals, posts and miscellaneous hardware designated for salvage shall be stored at the Circleville Garage as directed by the Engineer for removal by State forces. All material not considered salvageable shall be disposed of by the Contractor as directed. Pay-

ment for the above shall be included in the unit price bid for Item 202 Guardrail Removed for Storage.

- 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.
- 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.

- 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.

- 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.

The radii shown on these plans are approximate. The exact radius at each location is to be determined by the engineer.

- See Sheet 10 for detail.
- See Sheet 11 for detail.
- See Sheet 11 for detail.

2-16-88 DCV

GUARDRAIL DATA

PART	ROUTE	STARTING LOG POINT	SIDE	ITEM 202 GUARDRAIL REMOVED			ITEM 606 GUARDRAIL				ANCHOR ASSEMBLY		606 GUARD RAIL AS PER PLAN LIN. FT.	GUARDRAIL CONNECTIONS TO BRIDGES		606 FLARED END ONLY EACH	9' GUARD RAIL POSTS EACH	BERM RESHAPING LIN. FT.	517		517		606		* NOTES			
				REMOVED LIN. FT.	FOR STORAGE OR RE-USE LIN. FT.	BRIDGE RAIL REMOVED FOR STORAGE OR RE-USE LIN. FT.	TYPE	GUARD RAIL LIN. FT.	REBUILT LIN. FT.	CURVED RAIL ELEMENTS		TYPE T (GR-4A) EACH		SINGLE RAIL (GR-4) TYPE A EACH	TYPE				EACH	TYPE	EACH	LIN. FT.	LIN. FT.	LIN. FT.		LIN. FT.	EACH	EACH
										LENGTH LIN. FT.	RADIUS FT.																	
3	SR-316	0.96	Lt.				5											50.0										
		0.97	Rt.				5	212.5										275.0										
		1.64	Lt.		38.0	37.0	5	250.0					2		B	2		300.5					37.5			11		
		1.66	Rt.		38.0	37.0	5	150.0					2		B	2		200.5					37.5			11		
		2.43	Rt.				5	50.0					2		A	2		100.0										
		2.43	Lt.				5	50.0					2		A	2		100.0										
		4.39	Lt.	1175.0	125.0		5	1300.0					1					1325.0										
		4.40	Rt.	1037.5			5	962.5		37.5	50		1					1037.5										
		4.65	Lt.				5	450.0					2					500.0				30						
		4.88	Rt.		37.5													37.5										
		4.95	Rt.				5	50.0					2					100.0										
		4.95	Lt.				5	25.0					2					75.0										
		5.98	Lt.				5	125.0					2					175.0				21						
		6.01	Rt.				5			25.0	10		1					37.5				1						
		6.20	Rt.				5	50.0					2					100.0										
		6.97	Rt.		12.5	25.0	5		12.5						B	2		18.5					25.0			10		
3	SR-316	6.97	Lt.		12.5	25.0	5		12.5						B	2		15.5					25.0			10		
3	SR-316	10.07	Rt.				5	475.0					1					500.0								1		
		10.07	Lt.				5	437.5					1					462.5								1		
	TOTAL	PART 3			2212.5	263.5	124.0		4587.5	25.0	100.0		4	24	B A	8 4	1	125	5410.0					50.0	75.0	2		
4	SR-316	4.14	Rt.		400.0		5	712.5		125.0	60		1					875.0										
4	SR-316	4.16	Lt.		400.0		5	775.0					1					800.0										

* TOTAL: PART 4 800.0 1487.5 125.0 1 2 1675.0

- 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.
- ITEM 202 GUARDRAIL REMOVED FOR STORAGE:** Guardrail, standard terminals, posts and miscellaneous hardware designated for salvage shall be stored 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.
- 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.
- 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.
- 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.
- 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.

The radii shown on these plans are approximate. The exact radius at each location is to be determined by the engineer.

10. See Sheet 11 for detail.

11. See Sheet 12 for detail.

2-16-88 DCB

GUARDRAIL DATA

PART	ROUTE	STARTING LOG POINT	SIDE	ITEM 202 GUARDRAIL REMOVED			ITEM 606 GUARDRAIL				ANCHOR ASSEMBLY		606 GUARDRAIL AS PER PLAN LIN. FT.	GUARDRAIL CONNECTIONS TO BRIDGES		606 FLARED END ONLY EACH	9' GUARDRAIL POSTS EACH	BERM RESHAPING LIN. FT.	RAILING (DBR WITH STEEL TUBULAR BACKUP) AS PER PLAN			PART OF STRUCTURE REMOVED LUMP	NOTES				
				REMOVED LIN. FT.	FOR STORAGE OR RE-USE LIN. FT.	BRIDGE RAIL REMOVED FOR STORAGE OR RE-USE LIN. FT.	TYPE	GUARD RAIL LIN. FT.	REBUILT LIN. FT.	CURVED RAIL ELEMENTS		TYPE T (GR-4A) EACH		SINGLE RAIL (GR-4) TYPE A EACH	TYPE				EACH	TYPE	EACH			LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.
										LENGTH LIN. FT.	RADIUS FT.																
5	SR-674	1.24	Rt.				5	50.0				2						100.0									
		1.24	Lt.				5	25.0				2						75.0									
		1.71	Rt.				5	50.0		12.5	10	1	1					100.0									
		1.99	Rt.		7.5	30.0	5	37.5				2		B	2			95.0		37.5			12				
		1.99	Lt.		20.0	30.0	5	37.5				2		B	2			95.0		37.5			12				
		2.45	Lt.			28.0	5	25.0				2		B	2			82.5		37.5			12				
		2.46	Rt.			28.0	5	18.75		12.5	10	1		B	2	1		47.0		31.25			12				
		4.26	Rt.		92.5	95.0	5	125.0				2		B	2			180.0			100.0		9				
		4.27	Lt.		42.5	95.0	5	100.0				2		B	2			155.0			100.0		9				
		4.38	Rt.				5	75.0				2						125.0									
		4.38	Lt.				5	100.0				2						150.0									
		4.49	Rt.																			LUMP	14				
		4.88	Rt.				5	43.75				2		B	2			101.0		31.25			12				
		4.88	Lt.				5	43.75				2		B	2			101.0		31.25			12				
		5.82	Rt.		7.0	18.0	5					2	43.75					93.75	18.75				7				
		5.82	Lt.		7.0	18.0	5					2	43.75					93.75	18.75				7				
		8.55	Rt.				5	37.5				2						87.5									
		8.55	Lt.				5	37.5				2						87.5									
5	SR-674	8.67	Lt.		18.5	19.0	5	25.0				2		B	2		5	81.0		25.0			12				

- * NOTES:
- 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.
 - ITEM 202 GUARDRAIL REMOVED FOR STORAGE:** Guardrail, standard terminals, posts and miscellaneous hardware designated for salvage shall be stored at the Circleville Garage 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.
 - 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.
 - 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.
 - 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.
 - 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.
 - The radii shown on these plans are approximate. The exact radius at each location is to be determined by the engineer.
 - See Sheet 10 for detail.
 - See Sheet 11 for detail.
 - See Sheet 12 for detail.
 - See Sheet 11 for detail.

2-16-88 DCJ

GUARDRAIL DATA

PART	ROUTE	STARTING LOG POINT	SIDE	ITEM 202 GUARDRAIL REMOVED			ITEM 606 GUARDRAIL				ANCHOR ASSEMBLY		606 GUARDRAIL AS PER PLAN	GUARDRAIL CONNECTIONS TO BRIDGES		606 FLARED END ONLY	9' GUARDRAIL POSTS	BERM RESHAPING	517			PART OF STRUCTURE REMOVED	* NOTES
				REMOVED LIN. FT.	FOR STORAGE OR RE-USE LIN. FT.	BRIDGE RAIL REMOVED FOR STORAGE OR RE-USE LIN. FT.	TYPE	GUARD RAIL LIN. FT.	REBUILT LIN. FT.	CURVED RAIL ELEMENTS		TYPE T (GR-4A) EACH		SINGLE RAIL (GR-4) TYPE A EACH	TYPE				EACH	RAILING (DBR WITH STEEL TUBULAR BACKUP) AS PER PLAN	RAILING (DBR WITH STEEL TUBULAR BACKUP TYPE 1 STEEL POST, BOLTS)		
										LENGTH LIN. FT.	RADIUS FT.		LIN. FT.			LIN. FT.	LIN. FT.	LIN. FT.				LIN. FT.	
5	SR-674	8.67	Rt.		12.5		5	25.0				2					5	75.0					
		10.85	Rt.		100.0		5	75.0				2						125.0					
5	SR-674	10.85	Lt.		125.0		5	100.0				2						150.0					
	TOTAL	PART 5			432.5	361.0		1031.25	25.0		1	40	87.5	B	18	1	10	2200.0	37.5	231.25	200.0	LUMP	7,912

* NOTES:

- 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.
- ITEM 202 GUARDRAIL REMOVED FOR STORAGE:** Guardrail, standard terminals, posts and miscellaneous hardware designated for salvage shall be stored at the Circleville Garage 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.
- 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.
- 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.
- 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.
- 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.

The radii shown on these plans are approximate. The exact radii at each location is to be determined by the engineer.

- See Sheet 10 for detail.
- See Sheet 11 for detail.
- See Sheet 12 for detail.

2-16-88 DCJ

GUARDRAIL DATA

PART	ROUTE	STARTING LOG POINT	SIDE	ITEM 202 GUARDRAIL REMOVED			ITEM 606 GUARDRAIL				ANCHOR ASSEMBLY		606 GUARDRAIL AS PER PLAN	GUARDRAIL CONNECTIONS TO BRIDGES		202 PART OF STRUCTURE REMOVED	9' GUARDRAIL POSTS	BERM RESHAPING	RAILING (DBR WITH STEEL TUBULAR BACKUP) AS PER PLAN	RAILING (DBR WITH STEEL TUBULAR BACKUP TYPE 2 STEEL POST, BOLTS)	RAILING (DBR WITH STEEL TUBULAR BACKUP TYPE 2 STEEL POST, BOLTS) USE EXIST. RAIL	RAILING (DBR WITH STEEL TUBULAR BACKUP TYPE 2 STEEL POST)	* NOTES	
				REMOVED LIN. FT.	FOR STORAGE OR RE-USE LIN. FT.	BRIDGE RAIL REMOVED FOR STORAGE OR RE-USE LIN. FT.	TYPE	GUARD RAIL LIN. FT.	REBUILT LIN. FT.	CURVED RAIL ELEMENTS		TYPE T (GR-4A) EACH		SINGLE RAIL (GR-4) TYPE A EACH	TYPE									EACH
										LENGTH LIN. FT.	RADIUS FT.													
6	SR-56	0.44	Rt.		65.5	16.0	5	18.75			12.5	45	1	1		B	2							8
		0.44	Lt.		84.0	16.0	5	31.25					2			B	2	LUMP		84.0		18.75		8 14
		4.01	Rt.		12.5	25.0	5			12.5						B	2			19.5		25.0		13
		4.01	Lt.		12.5	25.0	5			12.5						B	2			19.5		25.0		13
		7.25	Rt.				5	25.0					2							75.0				
		7.26	Lt.				5	12.5		12.5	10		1	1						62.5				
		7.95	Rt.															LUMP						14
		7.95	Lt.															LUMP						14
		8.35	Rt.		67.0	8.0	5						2	87.5						142.0	12.5			7
		8.35	Lt.		92.0	8.0	5						2	87.5						142.0	12.5			7
		12.04	Rt.															LUMP						14
		12.66	Rt.		43.75	31.25	5			43.75						B	2			47.0		31.25		13
		12.66	Lt.		43.75	31.25	5			43.75						B	2			47.0		31.25		13
		13.30	Rt.				5	125.0					2							175.0				
		13.30	Lt.				5	50.0					2							100.0				
		20.89	Rt.		112.5		5						2	68.75				LUMP	7	122.5	18.75			7 14
		20.89	Lt.		87.5		5						2	106.25				LUMP		160.0	18.75			7 14
		20.96	Lt.				5	100.0					2							150.0				
6	SR-56	21.27	Rt.															LUMP						14

* NOTES:

- 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.
 - ITEM 202 GUARDRAIL REMOVED FOR STORAGE:** Guardrail, standard terminals, posts and miscellaneous hardware designated for salvage shall be stored at the Circleville Garage 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.
 - 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.
 - 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.
 - 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.
 - 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.
- The radii shown on these plans are approximate. The exact radius at each location is to be determined by the engineer.
- See Sheet 10 for detail.
 - See Sheet 11 for detail.
 - See Sheet 11 for detail.
 - See Sheet 11 for detail.

2-16-88 DCJ

GUARDRAIL DATA

PART	ROUTE	STARTING LOG POINT	SIDE	ITEM 202 GUARDRAIL REMOVED			ITEM 606 GUARDRAIL				ANCHOR ASSEMBLY		606 GUARDRAIL AS PER PLAN LIN. FT.	GUARDRAIL CONNECTIONS TO BRIDGES		202 PART OF STRUCTURE REMOVED LUMP	9' GUARDRAIL POSTS EACH	BERM RESHAPING LIN. FT.	517 RAILING (DBR WITH STEEL TUBULAR BACKUP) AS PER PLAN		517 RAILING (DBR WITH STEEL TUBULAR BACKUP TYPE 2 STEEL POST, BOLTS)		517 RAILING (DBR WITH STEEL TUBULAR BACKUP TYPE 2 STEEL POST)		NOTES	
				REMOVED LIN. FT.	FOR STORAGE OR RE-USE LIN. FT.	BRIDGE RAIL REMOVED FOR STORAGE OR RE-USE LIN. FT.	TYPE	GUARD RAIL LIN. FT.	REBUILT LIN. FT.	CURVED RAIL ELEMENTS		TYPE T (GR-4A) EACH		SINGLE RAIL (GR-4) TYPE A EACH	TYPE				EACH	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.		LIN. FT.
										LENGTH LIN. FT.	RADIUS FT.															
6	SR-56	23.57	Lt.		82.5	20.00	5	37.5				2		B	2			92.5			25.0			8		
		23.57	Rt.		99.0	26.0	5	43.75				2		B	2			99.0			31.25			8		
		24.94	Rt.		12.5	62.5	5		12.5					B	2			19.0				62.5		13		
		24.94	Lt.		12.5	62.5	5		12.5					B	2			19.0				62.5		13		
		24.54	Rt.		12.5	25.0	5					12.5						12.5	25.0					7		
		25.54	Lt.		25.0	25.0	5					25.0						25.0	25.0					7		
		25.64	Rt.													LUMP								14		
		25.86	Rt.		37.5	125.0	5		31.25					B	2			37.5					131.25	9		
		25.86	Lt.		37.5	125.0	5		31.25					B	2			37.5					131.25	9		
		27.81	Rt.				5					2	31.25					34.0	18.75					7		
		27.81	Lt.				5					2	37.5					37.5	12.5					7		
		27.99	Rt.				5	50.0				2						100.0								
		27.99	Lt.				5	50.0				2						100.0								
		28.07	Rt.				5	50.0				2					9	100.0								
		30.53	Lt.				5	125.0				2					21	175.0								
		30.54	Rt.				5	50.0				2						100.0								
		33.57	Lt.		160.5	27.0	5	106.25				2		B	2			160.5			31.25			8		
6	SR-56	33.57	Rt.		135.5	27.0	5	81.25				2		B	2			135.5			31.25			8		

- * NOTES:
- 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.
 - ITEM 202 GUARDRAIL REMOVED FOR STORAGE:** Guardrail, standard terminals, posts and miscellaneous hardware designated for salvage shall be stored at the Circleville Garage 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.
 - 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.
 - 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.
 - 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.
 - 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.
- The radii shown on these plans are approximate. The exact radius at each location is to be determined by the engineer.
- See Sheet 10 for detail.
 - See Sheet 11 for detail.
 - See Sheet 11 for detail.
 - See Sheet 11 for detail.
 - See Sheet 11 for detail.
 - See Sheet 11 for detail.
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GUARDRAIL DATA

PART	ROUTE	STARTING LOG POINT	SIDE	ITEM 202 GUARDRAIL REMOVED			ITEM 606 GUARDRAIL					ANCHOR ASSEMBLY		606 GUARD RAIL AS PER PLAN LIN. FT.	GUARDRAIL CONNECTIONS TO BRIDGES		202 PART OF STRUCTURE REMOVED LUMP	9' GUARD RAIL POSTS EACH	BERM RESHAPING LIN. FT.	RAILING (DBR WITH STEEL TUBULAR BACKUP) AS PER PLAN				* NOTES	
				REMOVED LIN. FT.	FOR STORAGE OR RE-USE LIN. FT.	BRIDGE RAIL REMOVED FOR STORAGE OR RE-USE LIN. FT.	TYPE	GUARD RAIL LIN. FT.	REBUILT LIN. FT.	CURVED RAIL ELEMENTS		TYPE T (GR-4A) EACH	SINGLE RAIL (GR-4) TYPE A EACH		TYPE	EACH				LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.		LIN. FT.
										LENGTH LIN. FT.	RADIUS FT.														
6	SR-56	33.84	Rt.		217.5	145.0	5	155.0			25.0	40	1	1		B	2			217.5				150.0	9
6	SR-56	33.85	Lt.		142.5	145.0	5	87.5			12.5	50		1		B	2			142.5				150.0	9
	TOTAL	PART 6			1596.0	975.5		1193.75	200.0	62.5			3	44	456.25	B	32	LUMP	37	3049.5	143.75	156.25	237.5	562.5	
7	SR-188	7.08	Rt.															LUMP							14
		7.08	Lt.															LUMP							14
		7.66	Rt.															LUMP							14
7	SR-188	7.66	Lt.															LUMP							14
	TOTAL	PART 7																LUMP							

- * NOTES:
- 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.
 - ITEM 202 GUARDRAIL REMOVED FOR STORAGE:** Guardrail, standard terminals, posts and miscellaneous hardware designated for salvage shall be stored at the Circleville Garage 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.
 - 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.
 - 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.
 - 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.
 - 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.
- The radii shown on these plans are approximate. The exact radii at each location is to be determined by the engineer.
- See Sheet 11 for detail.
 - See Sheet 11 for detail.

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GUARDRAIL DATA

517

PART	ROUTE	STARTING LOG POINT	SIDE	ITEM 202 GUARDRAIL REMOVED			ITEM 606 GUARDRAIL				ANCHOR ASSEMBLY			GUARDRAIL CONNECTIONS TO BRIDGES		9' GUARD RAIL POSTS	BERM RESHAPING	RAILING (DBR WITH STEEL TUBULAR BACKUP TYPE 2 STEEL POST, BOLTS)	* NOTES	
				REMOVED LIN. FT.	FOR STORAGE OR RE-USE LIN. FT.	BRIDGE RAIL REMOVED FOR STORAGE OR RE-USE LIN. FT.	TYPE	GUARD RAIL LIN. FT.	REBUILT LIN. FT.	CURVED RAIL ELEMENTS		TYPE T (GR-4A) EACH	SINGLE RAIL (GR-4) TYPE A EACH	BARRIER RAIL (GR-4) EACH	TYPE					EACH
										LENGTH LIN. FT.	RADIUS FT.									
8	SR-138	0.90	Rt.				5					2					50.0			
		0.90	Lt.				5					2					50.0			
		1.37	Rt.		25.0		5	50.0				2					100.0			
		1.37	Lt.		25.0		5	50.0				2					100.0			
		2.48	Lt.		112.5		5	87.5	25.0	30	1	1					150.0			
		2.52	Rt.		200.0		5	200.0				2					250.0			
		2.53	Lt.		200.0		5	187.5	37.5	30	1	1					262.5			
		3.69	Rt.		50.0		5	18.75				2		B	2		69.0	31.25	8	
		3.69	Lt.		50.0		5	18.75				2		B	2		71.5	43.75	8	
		6.31	Rt.		62.5	75.0	5	56.25				2		B	2		112.5	81.25	8	
8	SR-138	6.31	Lt.		62.5	75.0	5	56.25				2		B	2		112.5	81.25	8	
	TOTAL	PART 8			787.5	150.0		725.0	62.5			2	20	B	8		1328.0	237.5		

NOTES:

- 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.
- ITEM 202 GUARDRAIL REMOVED FOR STORAGE:** Guardrail, standard terminals, posts and miscellaneous hardware designated for salvage shall be stored at the Circleville Garage as directed by the Engineer for removal by State forces. All material not considered salvageable shall be disposed of by the Contractor as directed. Pay-

- ment for the above shall be included in the unit price bid for Item 202 Guardrail Removed for Storage.
- 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.
- 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.
- 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.
- 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.

- The radii shown on these plans are approximate. The exact radii at each location is to be determined by the engineer.
- See Sheet 11 for detail.

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GUARDRAIL DATA

PART	ROUTE	STARTING LOG POINT	SIDE	ITEM 202 GUARDRAIL REMOVED			ITEM 606 GUARDRAIL				ANCHOR ASSEMBLY		606 GUARD RAIL AS PER PLAN LIN. FT.	GUARDRAIL CONNECTIONS TO BRIDGES		606 FLARED END ONLY EACH	9' GUARD RAIL POSTS EACH	BERM RESHAPING LIN. FT.	RAILING (D&R WITH STEEL TUBULAR BACKUP) AS PER PLAN LIN. FT.	RAILING (D&R WITH STEEL TUBULAR BACKUP TYPE 2 STEEL POST, BOLTS) LIN. FT.	PART OF STRUCTURE REMOVED LUMP	NOTES	
				REMOVED LIN. FT.	FOR STORAGE OR RE-USE LIN. FT.	BRIDGE RAIL REMOVED FOR STORAGE OR RE-USE LIN. FT.	TYPE	GUARD RAIL LIN. FT.	REBUILT LIN. FT.	CURVED RAIL ELEMENTS		TYPE T (GR-4A) EACH		SINGLE RAIL (GR-4) TYPE A EACH	TYPE								EACH
										LENGTH LIN. FT.	RADIUS FT.												
9	SR-159	1.03	Lt.				5			12.5	10		1	62.5			1		101.5	12.5		Lump	7 14
		1.04	Rt.				5						2	25.0					76.5	12.5		Lump	7 14
		1.69	Rt.		39.5	23.0	5	100.0					2		B	2			152.0		25.0		8
		1.69	Lt.		39.5	23.0	5	100.0					2		B	2			152.0		25.0		8
		2.67	Rt.				5	125.0					2						175.0				
		2.67	Lt.				5	125.0					2						175.0				
		4.21	Rt.		38.0	12.0	5						2	31.25					85.0	18.75			7
		4.21	Lt.		38.0	12.0	5						2	31.25					85.0	18.75			7
		4.98	Lt.		21.5	26.0	5	56.25					2		B	2			101.5		31.25		8
		4.98	Rt.		29.5	8.0	5						2	37.5					90.0	12.5			7
		5.61	Rt.				5			12.5	10	1	1	18.75					36.0	18.75		Lump	7 14
		5.61	Lt.				5						2	31.25					73.5	18.75		Lump	7 14
		6.22	Lt.				5	225.0					2						275.0				
		6.23	Rt.				5	150.0					2						200.0				
		6.60	Lt.				5	175.0					2						225.0				
		6.61	Rt.				5	100.0					2						150.0				
9	SR-159	7.35	Rt.																			Lump	14
	TOTAL	PART 9			206.0	104.0		1156.25		25.0		1	30	237.5	B	6	1		2153.0	112.5	81.25	Lump	

NOTES:

- 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.
- ITEM 202 GUARDRAIL REMOVED FOR STORAGE:** Guardrail, standard terminals, posts and miscellaneous hardware designated for salvage shall be stored AT THE CIRCLEVILLE GARAGE 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.
- 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.
- 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.
- 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.
- 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.
- See Sheet 10 for detail.
- See Sheet 11 for detail.
- See Sheet 11 for detail.

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Basis of Payment

Basis of payment shall be at the unit price bid for each reflector and shall include all labor, equipment, hardware and incidentals required to perform work as follows:

<u>Item</u>	<u>Unit</u>	<u>Description</u>
Special	Each	Barrier Reflector, Type A
Special	Each	Barrier Reflector, Type B

614 Maintaining Traffic Provisions for Installation of Barrier Reflectors

Traffic shall be maintained on the existing pavement at all times except as approved by the Engineer. The Contractor shall set up and operate his equipment in such a manner that encroachment upon the traveled width of pavement will be kept to a minimum.

All traffic control devices and application shall conform to the Ohio Manual of Uniform Traffic Control Devices for Streets and Highways. When it is necessary to close all or part of a lane, traffic control shall be as shown on sheet _____. When work can be confined to the shoulder, traffic control shall be as shown in figure C-12 of the OMUTCD as applicable. The Engineer may suspend work in order to relieve traffic congestion at any time.

Payments for this work shall be made under Item 614, Maintaining Traffic.

BARRIER REFLECTOR NOTES

ITEM SPECIAL BARRIER REFLECTOR, BY TYPE

Description

This item shall consist of furnishing and installing barrier reflectors (type A) on galvanized steel guardrail and/or barrier reflectors (type B) on concrete barriers in accordance with the plans and specifications.

Material

The barrier reflector shall be as manufactured by Stimsonite, Reflexite or an approved functional equivalent as described below:

Stimsonite - Model 965 (white & yellow) or
Reflexite - Model 650 (white & yellow)

The adhesive shall be Franklin Panel and Metal Framing Adhesive as manufactured by Franklin Chemical Industries, PR-365 as manufactured by Products Research and Chemical Corporation or an approved equal.

All adhesives shall have a shelf life of 6 months at 75 degrees F storage minimum guaranteed.

Layout

The contractor shall layout all locations to assure proper placement. The layout shall be approved by the Engineer before installations are started. The layout shall be incidental to the installation operation.

Installation

(1) On concrete barriers the height of the top of the reflector shall be 26" above the near edge of pavement, but in no case shall the top of the reflector be less than 3" below the top of the concrete barrier. Attachment shall be by the above referenced adhesive and applied per manufacturer's recommendation.

(2) Guardrail reflectors shall be installed within the concave surface of the guardrail. Attachment may be by bracket which fits under the head of the center guardrail bolt or by the above referenced adhesive and applied per manufacturer's recommendation.

(3) The above referenced adhesive shall be flashed when applied to achieve maximum bonding strength.

(4) When mounted on a flat surface, the reflector should be tilted upward from the vertical or plumb position 2-3 degrees to facilitate "rain washing" of the reflector face.

(5) Two-lane highway - white units shall be placed on the right side of approaching traffic.

Four-lane divided highway - white units shall be placed on the right side of approaching traffic and yellow on the left.

BARRIER REFLECTOR SUB-SUMMARY

PLAN NO.
6D1939

PART	CO.	ROUTE	S.L.M.		SIDE	SPACING	TYPE A BARRIER REFLECTOR		TYPE B BARRIER REFLECTOR		REMARKS
			BEGIN	END			GUARDRAIL REFLECTOR (WHITE) EACH	GUARDRAIL REFLECTOR (YELLOW) EACH	BARRIER REFLECTOR (WHITE) EACH	BARRIER REFLECTOR (YELLOW) EACH	
1	Pic	SR-762	0.10	0.17	Lt.	100	5				
			0.84	1.00	Lt.	100	10				
			0.96	1.00	Rt.	100	3				
			1.76	1.78	Rt.	100	2				
			1.76	1.77	Lt.	100	2				
			1.97	1.99	Lt.	100	2				
			1.99	2.00	Rt.	100	1				
			5.82	5.84	Lt.	100	2				
			5.83	5.84	Rt.	100	2				
			6.75	6.79	Rt.	100	3				
			6.75	6.79	Lt.	100	3				
			7.75	7.81	Lt.	100	4				
			7.78	7.81	Rt.	100	3				
			8.85	8.88	Lt.	100	3				
			8.86	8.87	Rt.	100	2				
			9.14	9.15	Rt.	100	1				
			9.14	9.16	Lt.	100	2				
			9.75	9.81	Lt.	100	4				
			9.75	9.80	Rt.	100	3				
			10.29	10.46	Rt.	100	5		10		
			10.29	10.46	Lt.	100	5		10		
			11.01	11.02	Lt.	100	1				
			11.18	11.29	Rt.	100	7				
1	Pic	SR-762	11.18	11.30	Lt.	100	8				
	TOTAL	PART 1					83		20		
2	Pic	SR-752	0.51	0.57	Lt.	100	4				
			0.53	0.57	Rt.	100	3				
			3.04	3.05	Rt.	100	2				
			3.04	3.07	Lt.	100	3				
			4.34	4.35	Rt.	100	2				
			6.87	6.88	Rt.	100	2				
			6.87	6.88	Lt.	100	2				
			7.41	7.47	Rt.	100	5				
2	Pic	SR-752	7.41	7.49	Lt.	100	5				

2-16-88 *ocf*

BARRIER REFLECTOR SUB-SUMMARY

PLAN NO.
6D1939

PART	CO.	ROUTE	S.L.M.		SIDE	SPACING	TYPE A BARRIER REFLECTOR		TYPE B BARRIER REFLECTOR		REMARKS
			BEGIN	END			GUARDRAIL REFLECTOR (WHITE) EACH	GUARDRAIL REFLECTOR (YELLOW) EACH	BARRIER REFLECTOR (WHITE) EACH	BARRIER REFLECTOR (YELLOW) EACH	
3	Pic	SR-316	0.96	0.97	Lt.	100	1				
			0.97	1.02	Rt.	100	4				
			1.64	1.69	Lt.	100	4				
			1.66	1.70	Rt.	100	3				
			2.43	2.44	Rt.	100	2				
			2.43	2.44	Lt.	100	2				
			4.31	4.59	Rt.	100	15				
			4.31	4.64	Lt.	100	18				
			4.65	4.74	Lt.	100	5				
			4.95	4.96	Rt.	100	2				
			4.95	4.96	Lt.	100	1				
			5.98	6.00	Lt.	100	2				
			6.01	6.02	Rt.	100	2				
			6.20	6.21	Rt.	100	2				
			6.97	6.99	Rt.	100	2				
3	Pic	SR-316	6.97	7.02	Lt.	100	4				
3	Pic	SR-316	9.73	10.16	Rt.	100	23				
3	Pic	SR-316	9.73	10.16	Lt.	100	23				
	TOTAL	PART 3					115				
4	Pic	SR-316	4.14	4.31	Rt.	100	10				
4	Pic	SR-316	4.16	4.31	Lt.	100	9				
	TOTAL	PART 4					19				
5	Pic	SR-674	1.24	1.25	Rt.	100	2				
			1.24	1.25	Lt.	100	1				
			1.51	1.54	Rt.	100	2				
			1.51	1.54	Lt.	100	2				
			1.71	1.73	Rt.	100	2				
			1.99	2.01	Rt.	100	2				
			1.99	2.01	Lt.	100	2				
			2.45	2.46	Lt.	100	2				
			2.46	2.47	Rt.	100	2				
			4.26	4.30	Rt.	100	3				
			4.27	4.31	Lt.	100	3				
			4.38	4.40	Rt.	100	2				
5	Pic	SR-674	4.38	4.40	Lt.	100	2				

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BARRIER REFLECTOR SUB-SUMMARY

PLAN NO.
6D1939

PART	CO.	ROUTE	S.L.M.		SIDE	SPACING	TYPE A BARRIER REFLECTOR		TYPE B BARRIER REFLECTOR		REMARKS
			BEGIN	END			GUARDRAIL REFLECTOR (WHITE) EACH	GUARDRAIL REFLECTOR (YELLOW) EACH	BARRIER REFLECTOR (WHITE) EACH	BARRIER REFLECTOR (YELLOW) EACH	
5	Pic	SR-674	4.88	4.90	Rt.	100	2				
			4.88	4.90	Lt.	100	2				
			5.21	5.26	Rt.	100	5				
			5.21	5.26	Lt.	100	5				
			5.82	5.83	Rt.	100	2				
			5.82	5.83	Lt.	100	2				
			7.52	7.57	Rt.	100	3				
			7.52	7.57	Lt.	100	3				
			8.55	8.56	Rt.	100	2				
			8.55	8.56	Lt.	100	2				
			8.67	8.68	Rt.	100	1				
			8.67	8.68	Lt.	100	2				
			10.30	10.35	Rt.	100	3				
			10.30	10.34	Lt.	100	3				
			10.85	10.87	Rt.	100	2				
5	Pic	SR-674	10.85	10.87	Lt.	100	2				
	TOTAL	PART 5					68				
6	Pic	SR-56	0.44	0.45	Rt.	100	2				
			0.44	0.45	Lt.	100	2				
			1.58 n	1.61	Rt.	100	3				
			1.58	1.61	Lt.	100	3				
			3.99	4.03	Rt.	100	3				
			3.99	4.03	Lt.	100	3				
			4.64	4.69	Rt.	100	4				
			4.64	4.69	Lt.	100	4				
			7.25	7.26	Rt.	100	2				
			7.26	7.27	Lt.	100	2				
			7.81	7.91	Rt.	100	6				
			7.81	7.90	Lt.	100	5				
			8.35	8.37	Rt.	100	2				
			8.35	8.37	Lt.	100	2				
			12.30	12.35	Rt.	100	4				
12.30	12.35	Lt.	100	4							
6	Pic	SR-56	12.45	12.52	Rt.	100	5				

2-16-88 DCJ

BARRIER REFLECTOR SUB-SUMMARY

PLAN NO.
6D1939

PART	CO.	ROUTE	S.L.M.		SIDE	SPACING	TYPE A BARRIER REFLECTOR		TYPE B BARRIER REFLECTOR		REMARKS
			BEGIN	END			GUARDRAIL REFLECTOR (WHITE) EACH	GUARDRAIL REFLECTOR (YELLOW) EACH	BARRIER REFLECTOR (WHITE) EACH	BARRIER REFLECTOR (YELLOW) EACH	
6	Pic	SR-56	12.49	12.53	Lt.	100	3				
			12.63	12.80	Rt.	100	4				
			12.63	12.79	Lt.	100	4				
			13.30	13.32	Rt.	100	3				
			13.30	13.31	Lt.	100	2				
			20.74	20.84	Lt.	100	6				
			20.77	20.83	Rt.	100	4				
			20.89	20.91	Rt.	100	2				
			20.89	20.91	Lt.	100	3				
			20.96	20.98	Lt.	100	2				
			21.07	21.12	Lt.	100	4				
			21.48	21.51	Lt.	100	3				
			22.23	22.26	Rt.	100	2				
			22.23	22.26	Lt.	100	2				
			23.57	23.58	Lt.	100	2				
			23.57	23.58	Rt.	100	2				
			24.93	24.96	Rt.	100	3				
			24.93	24.96	Lt.	100	3				
			25.38	25.56	Lt.	100	10				
			25.53	25.56	Rt.	100	3				
			25.83	25.91	Rt.	100	5				
			25.85	25.93	Lt.	100	5				
			27.81	27.82	Rt.	100	2				
			27.81	27.82	Lt.	100	2				
			27.99	28.00	Rt.	100	2				
			27.99	28.00	Lt.	100	2				
			28.07	28.08	Rt.	100	2				
			28.27	28.33	Lt.	100	4				
			28.28	28.34	Rt.	100	4				
			29.28	29.31	Lt.	100	3				
			29.28	29.31	Rt.	100	3				
			29.86	29.89	Lt.	100	2				
			29.89	29.92	Lt.	100	2				
6	Pic	SR-56	30.53	30.55	Lt.	100	3				2-16-88 PCL

BARRIER REFLECTOR SUB-SUMMARY

PLAN NO.
6D1939

PART	CO.	ROUTE	S.L.M.		S I D E	S P A C I N G	TYPE A BARRIER REFLECTOR		TYPE B BARRIER REFLECTOR		REMARKS
			BEGIN	END			GUARDRAIL REFLECTOR (WHITE)	GUARDRAIL REFLECTOR (YELLOW)	BARRIER REFLECTOR (WHITE)	BARRIER REFLECTOR (YELLOW)	
							EACH	EACH	EACH	EACH	
6	Pic	SR-56	30.54	30.55	Rt.	100	2				
			31.50	31.66	Lt.	100	8		3		
			31.52	31.67	Rt.	100	7		3		
			31.97	32.05	Rt.	100	5				
			32.02	32.06	Lt.	100	3				
			33.27	33.29	Rt.	100	2				
			33.57	33.60	Lt.	100	3				
			33.57	33.59	Rt.	100	2				
			33.84	33.90	Rt.	100	5				
6	Pic	SR-56	33.85	33.90	Lt.	100	4				
	TOTAL	PART 6					205		6		
7	Pic	SR-188	3.11	3.13	Rt.	100	2				
			3.11	3.13	Lt.	100	2				
			4.53	4.57	Rt.	100	3				
			4.53	4.59	Lt.	100	4				
			5.60	5.65	Rt.	100	4				
			5.60	5.65	Lt.	100	4				
			5.91	5.95	Rt.	100	3				
			5.91	5.95	Lt.	100	3				
			7.31	7.33	Rt.	100	2				
7.32	7.34	Lt.	100	2							
7	Pic	SR-188	7.64	7.66	Rt.	100	2				
	TOTAL	PART 7					31				
2-16-88 DC2											

GENERAL SUMMARY

ITEM	PART 1	PART 2	PART 3	PART 4	TOTAL PARTS 3 & 4	PART 5	PART 6	PART 7	PART 8	PART 9	GRAND TOTAL	UNIT	DESCRIPTION
202	60.0		2212.5		2212.5						2272.5	Lin. Ft.	Guardrail Removed
202	2010.5	650.0	263.5	800.0	1063.5	432.5	1596.0		787.5	206.0	6746.0	Lin. Ft.	Guardrail Removed for Storage OR RE-USE
202	172.0	113.0	124.0		124.0	361.0	975.5		150.0	104.0	1999.5	Lin. Ft.	Bridgerail Removed for Storage OR RE-USE
606	3912.5	825.0	4687.5	1612.5	6300.0	1056.25	1256.25		787.5	1181.25	15,318.75	Lin. Ft.	Guardrail, Type <u>5</u>
606			25.0		25.0		200.0				225.0	Lin. Ft.	Guardrail Rebuilt, Type <u>5</u>
606	225.0					87.5	456.25			237.5	1006.25	Lin. Ft.	Guardrail As Per Plan
606	38	14	24	2	26	40	44		20	30	212	Each	Anchor Assembly, Type A
606	4	1	4	1	5	1	3		2	1	17	Each	Anchor Assembly, Type T
606			4		4						4	Each	Bridge Terminal Assembly, Type <u>A</u>
606	8	4	8		8	18	32		8	6	84	Each	Bridge Terminal Assembly, Type B
SPECIAL	5115.0	1287.0	5410.0	1675.0	7085.0	2200.0	3049.5		1328.0	2153.0	22,217.5	Lin. Ft.	Berm Reshaping
606	223		125		125	10	37				395	Each	9' Guardrail Posts, as per plan
202						Lump	Lump	Lump		Lump	Lump	Lump	Portions of Structure Removed
606			1		1	1				1	3	Each	Flared End <i>Section</i>
624	Lump	Lump	Lump	Lump	Lump	Lump	Lump	Lump	Lump	Lump	Lump	Lump	Mobilization
614	Lump	Lump	Lump	Lump	Lump	Lump	Lump	Lump	Lump	Lump	Lump	Lump	Maintaining Traffic

GENERAL NOTES

MAINTENANCE OF TRAFFIC: Traffic shall be maintained on the existing pavement without interruption during construction of the work except as otherwise approved by the Engineer. The contractor shall set up and operate his equipment in such a manner that encroachment upon the traveled width of the pavement will be kept to a minimum.

Berm reshaping and guardrail removal and construction shall be performed only on one side of the pavement at any given time. The open area due to guardrail removal shall be adequately maintained and protected with temporary guide markers or barricades at all times. Where existing guardrail is removed, new guardrail shall be erected as soon as practical. Any areas left unguarded overnight shall be protected by the use of barricades, drums, or other warning devices satisfactory to the Engineer.

All traffic control devices required inside the work limits, except regulatory, guide signs, and pavement markings shall be furnished, erected and maintained by the contractor.

GUARDRAIL: The log points of the proposed guardrail shown are approximate. Exact locations will be determined and marked by stakes or other marks by the Engineer. Mail boxes that interfere with the removal or replacement of guardrail shall be relocated by the contractor as approved by the Engineer. The cost of this item shall be included in the unit bid price for Item 606 Guardrail.

GUARDRAIL OVER CULVERTS: When sufficient post depth is not available due to a culvert, guardrail posts directly over the culvert shall be set in holes, encased in a minimum of 4" thickness of Class C concrete for the full depth of the hole, or as detailed on GR-1 for inlet mounted posts. Method shall be approved by the Engineer. Payment for the above shall be included in the unit price bid for the applicable guardrail item.

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.

2-16-88

DCL

GENERAL SUMMARY

ITEM	PART 1	PART 2	PART 3	PART 4	TOTAL PARTS 3 & 4	PART 5	PART 6	PART 7	PART 8	PART 9	GRAND TOTAL	UNIT	DESCRIPTION
517	62.5					37.5	143.75			112.5	356.25	Lin. Ft.	Railing (Deep Beam Rail with Steel Tubular Backup) As Per Plan
517	187.5						156.25		237.5	81.25	662.5	Lin. Ft.	Railing (Deep Beam Rail with Steel Tubular Backup Type 2 Steel Post and Bolts)
517			75.0		75.0						75.0	Lin. Ft.	Railing (Deep Beam Rail with Steel Tubular Backup Type 2 Steel Post) As Per Plan
517		125.0				200.0	562.5				887.5	Lin. Ft.	Railing (Deep Beam Rail with Steel Tubular Backup Type 2 Steel Post)
517			50.0		50.0						50.0	Lin. Ft.	Railing (Deep Beam Rail with Steel Tubular Backup) Use Existing Rail and Post
517						231.25					231.25	Lin. Ft.	Railing (Deep Beam Rail with Steel Tubular Backup Type 1 Steel Post and Bolts)
517							237.5				237.5	Lin. Ft.	Railing (Deep Beam Rail with Steel Tubular Backup Type 2 Steel Post and Bolts) Use Existing Rail
606			2		2						2	Each	Anchor Assembly, Type A, REMOVED
606												Each	Bridge Terminal Assembly, Type _____
606												Each	Guard Posts
SPECIAL												Lin. Ft.	Berm Reshaping
606												Each	9' Guardrail Posts, as per plan
SPECIAL	83	28	115	19	134	68	205	31	33	39	621	Each	Barrier Reflector, Type A
SPECIAL	20						6				26	Each	Barrier Reflector, Type B
624												Lump	Mobilization
614												Lump	Maintaining Traffic

GENERAL NOTES

MAINTENANCE OF TRAFFIC: Traffic shall be maintained on the existing pavement without interruption during construction of the work except as otherwise approved by the Engineer. The contractor shall set up and operate his equipment in such a manner that encroachment upon the traveled width of the pavement will be kept to a minimum.

Berm reshaping and guardrail removal and construction shall be performed only on one side of the pavement at any given time. The open area due to guardrail removal shall be adequately maintained and protected with temporary guide markers or barricades at all times. Where existing guardrail is removed, new guardrail shall be erected as soon as practical. Any areas left unguarded overnight shall be protected by the use of barricades, drums, or other warning devices satisfactory to the Engineer.

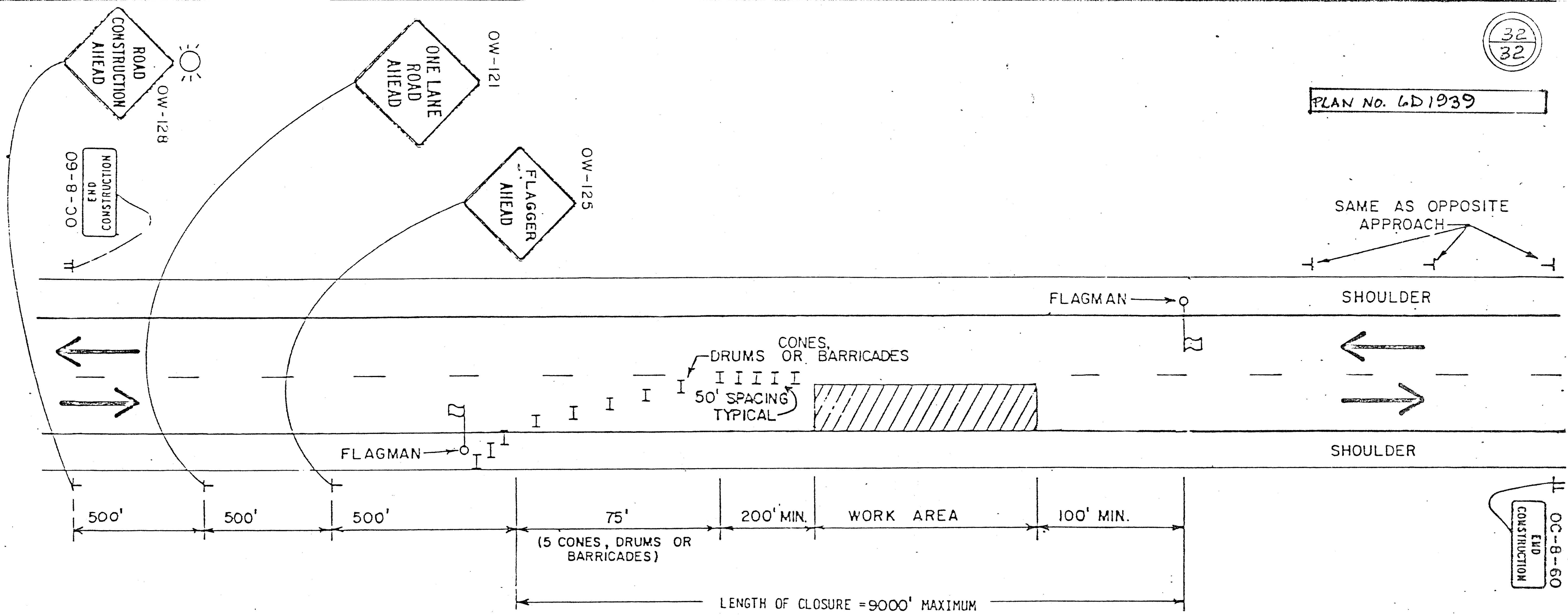
All traffic control devices required inside the work limits, except regulatory, guide signs, and pavement markings shall be furnished, erected and maintained by the contractor.

GUARDRAIL: The log points of the proposed guardrail shown are approximate. Exact locations will be determined and marked by stakes or other marks by the Engineer. Mail boxes that interfere with the removal or replacement of guardrail shall be relocated by the contractor as approved by the Engineer. The cost of this item shall be included in the unit bid price for Item 606 Guardrail.

GUARDRAIL OVER CULVERTS: When sufficient post depth is not available due to a culvert, guardrail posts directly over the culvert shall be set in holes, encased in a minimum of 4" thickness of Class C concrete for the full depth of the hole, or as detailed on GR-1 for inlet mounted posts. Method shall be approved by the Engineer. Payment for the above shall be included in the unit price bid for the applicable guardrail item.

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.

PLAN NO. 6D1939



(SEE NOTES 3 & 7)

GENERAL NOTES

1. FLAGMEN SHALL BE USED TO CONTROL TRAFFIC CONTINUOUSLY FOR AS LONG AS ONE LANE OPERATION IS IN EFFECT. FLAGMEN SHALL BE ABLE TO COMMUNICATE WITH EACH OTHER AT ALL TIMES EITHER VERBALLY OR BY MEANS OF RADIO OR FIELD TELEPHONES. FLAGMAN STATIONS SHALL BE ADEQUATELY ILLUMINATED FOR NIGHT TIME OPERATIONS BY USE OF A 175 WATT MINIMUM LUMINAIRE.
2. CONES MAY BE SUBSTITUTED FOR BARRICADES OR DRUMS FOR THE LANE CLOSURES DURING DAYLIGHT HOURS ONLY.
- 3.
4. THE TYPE B HIGH INTENSITY BARRICADE WARNING LIGHT SHOWN ON THE ROAD CONSTRUCTION AHEAD SIGN IS REQUIRED WHENEVER NIGHT LANE CLOSURE IS NECESSARY.
5. TYPE C STEADY BURNING BARRICADE WARNING LIGHTS SHALL BE ERECTED ON DRUMS OR BARRICADES FOR NIGHT LANE CLOSURES.
6. THE ADVANCE WARNING SIGNS "OW-128" "OW-121" AND "OW-125" SHALL BE MOVED BACK AS REQUIRED BY THE QUEUING OF STOPPED VEHICLES.
7. WITHIN THE LENGTH OF CLOSURE, PROVISION SHALL BE MADE TO CONTROL TRAFFIC ENTERING FROM INTERSECTING STREETS AND MAJOR DRIVES AS NECESSARY TO PREVENT WRONG WAY MOVEMENTS.

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

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

2-16-88 DCJ

OHIO DEPARTMENT OF TRANSPORTATION	
FLAGMEN CLOSING 1 LANE OF A 2 LANE- HIGHWAY	DATE 2/80

OHIO DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS

FHWA REGION	STATE	FEDERAL PROJECT	
5	OHIO		

1
32

PART	COUNTY	ROUTE	SECTIONS	PROJECT TERMINI		NET LENGTH MILES	TOWNSHIP	CITY	VILLAGE
				BEGIN	END				
1	Pic	SR762	(0.00) (7.65-10.41)	0.10	11.30	11.20			
2	Pic	SR752	(0.00) (2.32)	0.51	7.49	6.98			
3	Pic	SR316	(0.00) (4.31)	0.96 4.31	2.46 10.17	1.50 5.86			
4	Pic	SR316	3.65	4.14	4.31	.17			Darbyville
5	Pic	SR674	(0.00 - 2.71)	1.24	10.91	9.67			
6	Pic	SR-56	0.00 (20.64 - 33.79)	0.44 20.74	13.31 33.90	12.87 13.16			
7	Pic	SR188	(1.44 - 6.47)	3.11	7.67	4.56			
8	Pic	SR138	0.00	0.90	6.34	5.44			
9	Pic	SR159	0.00	1.03	7.35	6.32			

GUARDRAIL RECONSTRUCTION PLAN NO. 601939

256-88 L+D

The Standard 19 87 Specifications of the State of Ohio, Department of Transportation, including changes and Supplemental Specifications listed in the plans and proposal shall govern these improvements.

I hereby approve these plans and declare that the making of these improvements will require the closing of the highways to traffic on Parts No. NONE and that detours will be provided by State forces. The closing to traffic of the highways will not be required on Parts No. 1 Thru 9 and provisions for the maintenance and safety of traffic will be as indicated in the proposal.

Approved Date 8-6-87 *George E. Downing*
 District Deputy Director of Transportation

FFE
 9-2-87 Approved Date 9-2-87 *Walter J. Jost*
 Engineer of Bridges

Approved Date _____
 Engineer of Maintenance

Approved Date 11-17-87 *James R. Longenecker*
 DEPUTY DIRECTOR OF OPERATIONS

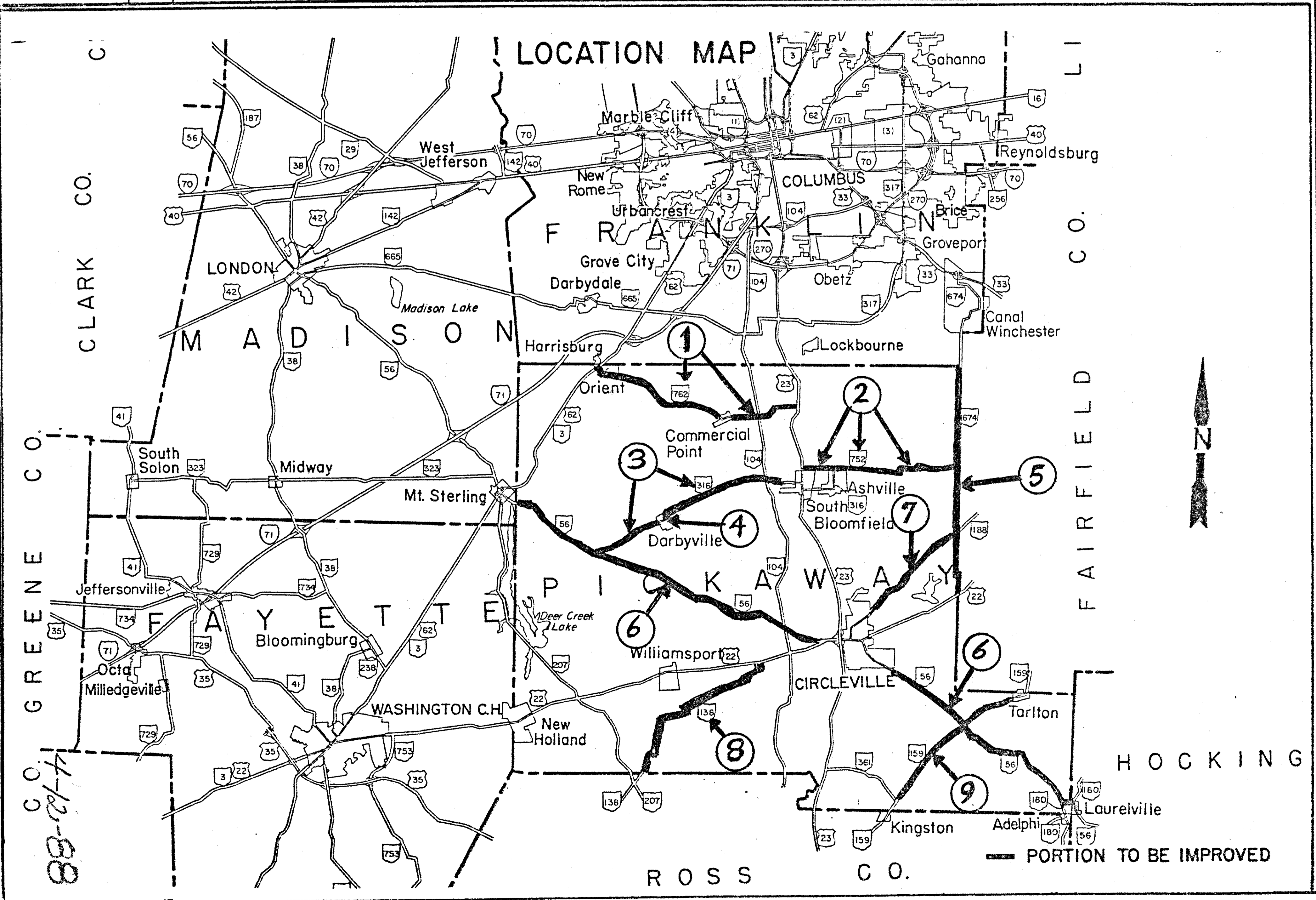
Approved Date _____
 Assistant Deputy Director, Program Development

Approved Date _____
 Chief Engineer, Construction

Approved Date _____
 Chief Engineer, Design

Approved Date _____
 Assistant Director, Department of Transportation

Approved Date 11-18-87 *William J. Smith*
 Director, Department of Transportation



DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED:

DIVISION ADMINISTRATOR DATE

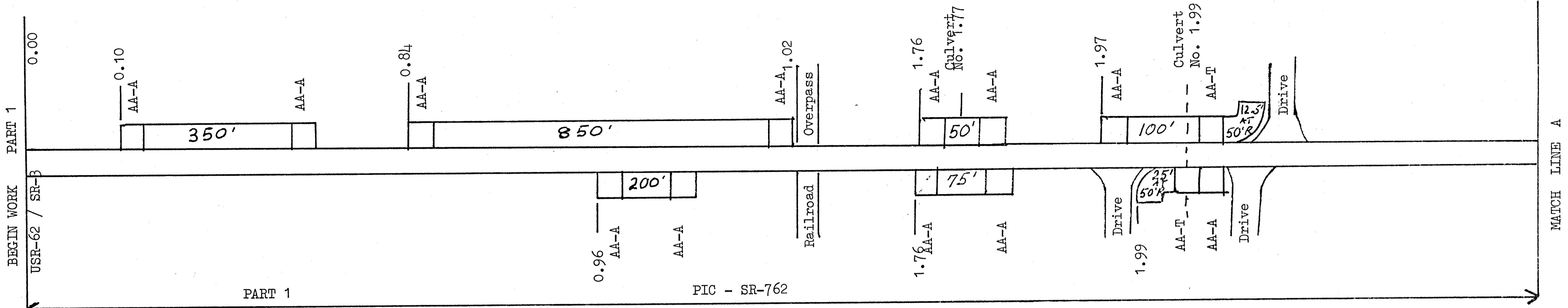
STANDARD DRAWINGS		SUPPLEMENTAL SPECIFICATIONS	
DBR-2-73	4-10-73	853	6-26-78
GR-1	1-11-85	956	6-26-78
GR-2B	2-5-82	852	6-10-87
GR-3	1-21-85	952	6-10-87
GR-4	2-5-82		
GR-4A	1-30-84		

2-16-88 *WJS*

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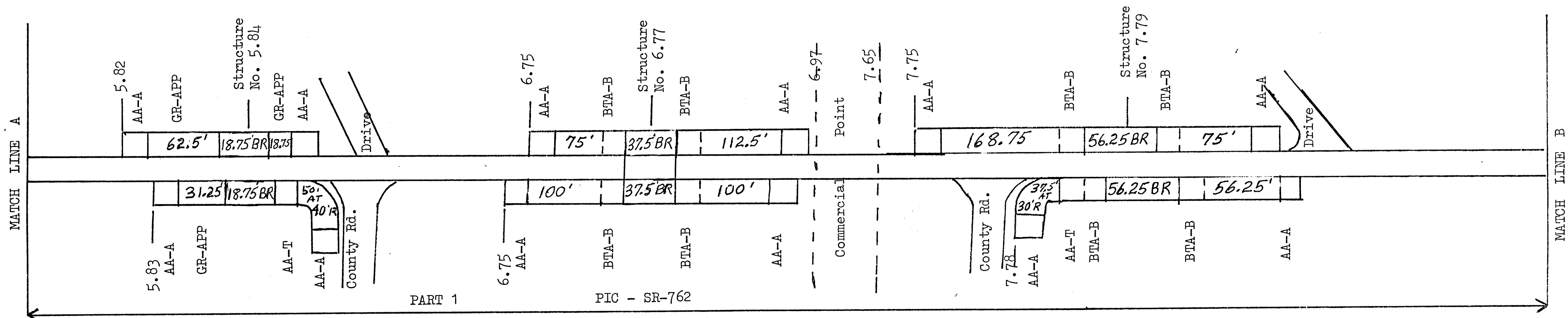
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88-27-7

GUARDRAIL LOCATIONS



ABBREVIATIONS:

- AA-A ----- ANCHOR ASSEMBLY, TYPE A
- AA-T ----- ANCHOR ASSEMBLY, TYPE T
- BR ----- BRIDGERAIL
- BTA-B ----- BRIDGE TERMINAL ASSEMBLY, TYPE B
- GR-APP ----- GUARDRAIL AS PER PLAN



2-16-88 DCJ