MICROFILMED
OCT 3 0 1984

F-FF-534 (12)

Federal No. FF-534(12) shown elsewhere in the plans shall be considered as F-FF-534(12)

FHWA REGION	STATE	PROJECT	
5	OHIO	FFF-534 (12)	

BEL-7-11.89

1/443

STATE OF OHIO
DEPARTMENT OF TRANSPORTATION
BEL-7-11.89
CITY OF SHADYSIDE
CITY OF BELLAIRE
MEAD AND PULTNEY TOWNSHIPS
BELMONT COUNTY
GRADE SEPARATIONS WITH *CONSOLIDATED RAIL CORPORATION*

MICROFILMED
NOV 19 1987

DESIGN DESIGNATION
NORTH OF INTERCHANGE

Current ADT	10650	(1976)
Design Year ADT	18000	(1996)
DHV	1800	(K=.10)
D (Directional Distribution)	1080	(D=.60)
T (Percent B & C Trucks)	5%	in Peak Hour
V (Design Speed)	60 M.P.H.	

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 of Transportation in accordance with the provisions of Section 5511.02 of the Revised Code of Ohio.

Sheets 277 & 329 revised 2-9-82 EBL
Sheet 305 revised 4-27-82 EBL
Sheet 309 revised 6-30-83 WJJ

CONVENTIONAL SIGNS

State Line
County Line
Township Line
Section Line
Center Line
Corporation Line
Fence Line
Guard Rail (existing)
Guard Rail (proposed)
Railroads
Power Poles
Telephone Poles
Trees or Stumps (existing)
Property Line — P/L
Right of Way with Limited Access — L A R W
Right of Way without Limited Access — R W
Existing Right of Way
Right of Way Limited Access Only — L A
Water Lines — W W W W W
Gas Lines — G G G G G

INDEX OF SHEETS

Title Sheet	1	Lincoln Ave. Reloc.	184 - 185
Schematic Plan	2	C.R. 46 Reloc. (incl. int. & Pvt. details)	186 - 231
Typical Sections	3 - 10	Park Drive	232
Miscellaneous Details	11*	Service Rd. No. 1 and No. 2	233 - 236
General Notes	12 - 14	*Boat Ramp Access Road*	237 - 238
Calculations	15 - 18	Structures 20' Span & Under	239 - 251
General Summary	19 - 21	Sanitary Sewer & Water Lines	252 - 256
Plan & Profile Sheets	22 - 42	Retaining Walls	257 - 266
Curve Table	43	Approach Slab Details	267 - 270
Cross Sections	44 - 156, 48A thru L	Structures Over 20' Span	271 - 361 *
S.R. 7 Temporary Conn.	157	Lighting	362 - 367
Interchange	158 - 162	Traffic Control Devices	368 - 377
Ramps	163 - 176	Right of Way	384 - 431
Interchange Pavement Details	177 - 183		

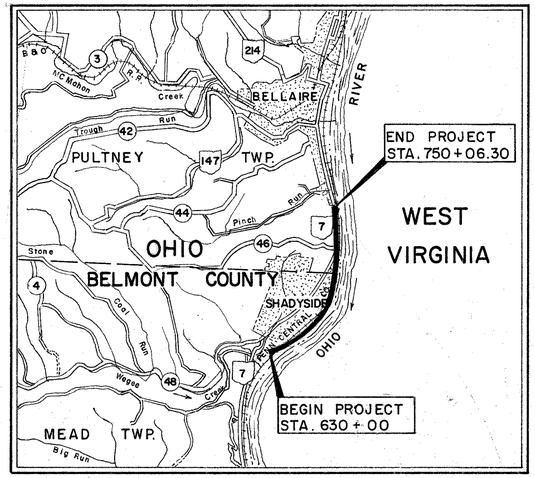
Delete Sheet No. 400, 408, 432 Thru 443, & 378 thru 383.

*Added Sheets 11-A, 11B, 11C, 309A & 309B

LINE DATA
(See Sheet No. 2)

Begin Project Sta. 630 + 00
End Project Sta. 750 + 06.30

No Additions or Deductions
Net Length of Project 12006.30 Lin. Ft. or 2.273 Miles
Net Length of Work 22008.31 Lin. Ft.
or 4.168 Miles



LOCATION MAP
SCALE OF MILES
0 1 2 3 4

Portion to be improved
State Roads
Other Roads

SCALE
Plans 0 10 20 30 40
Profile: Horizontal 0 20 40 60 80 100
Profile: Vertical, Cross Sections 0 4 8 12 16 20

1979 SPECIFICATIONS

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

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

Approved C. Clark Street
Date 8-24-78 District Deputy Director of Transportation

Approved Robert B. Pfeifer
Date 12-4-78 Engineer, Bureau of Bridges and Structural Design

Approved R. E. Catlin
Date 2-14-79 Chief Engineer, Planning and Design

Approved David L. Weir
Date 2-14-79 Director, Department of Transportation

Supplemental Specifications			
No	Date	No.	Date
845	3-2-81	948	2-19-74
847	4-3-76		
953	8-21-80		
954	6-3-78		
849	4-25-77		
804	8-31-79		
814	1-1-69		
836	3-12-75		
839	11-25-70		
844	11-8-74		
901	12-21-77		
1001	1-3-77		

PLANS PREPARED BY:
STICKLEN-BELSHEIM & ASSOC.
WORTHINGTON, OHIO

STATE OF OHIO — AARON N. LOWRY — 24229 — REGISTERED PROFESSIONAL ENGINEER

PLANS PREPARED UNDER THE DIRECTIONS OF:
Aaron N. Lowry 2/9/77
REGISTERED ENGINEER 24229 OHIO

File No.	BELMONT CO. BEL-7-11.89
	Date of Letting
	Contract No.

Supplemental Prints of Standard Construction Drawings

Drawing No.	Date	Drawing No.	Date	Drawing No.	Date	Drawing No.	Date	Drawing No.	Date	Drawing No.	Date
BP-1	6-1-65	CB-5	5-1-79	GR-4	12-6-76	HL-10	1-21-76	MC-1	6-13-69	RB-1-55	2-2-59
BP-2	12-6-76	GR-3A	12-6-76	GR-4A	7-26-76	HL-11	4-6-73	MC-3	6-1-73	SD-1-69	6-12-69
BP-3	12-6-76	CB 458A	5-1-79	GR-5	1-1-71	HL-15	1-21-76	MC-4	7-26-76		
BP-4	12-6-76	CB-3A	5-1-79	GR-6	1-1-71	HL-16	1-21-76	MC-5	6-12-75	BR-1-67	10-15-71
BP-5	4-16-79	F-1	5-1-76	HL-1	9-6-73	HL-19	3-22-77	MC-6	6-1-65	TC-42.10	8-19-77
BP-6	6-1-65	F-2	5-1-76	HL-2	7-27-73	HW-4	1-1-70	MC-7	10-15-76	TC-42.20	4-1-77
BP-7	12-6-76	F-3	5-1-76	HL-3	7-27-73	TC-4.10	8-19-77	MC-8	6-12-75	TC-51.10	6-2-75
BP-9	12-6-76	F-5	5-1-76	HL-4	1-21-76	I-2	5-1-79	MC-9	11-1-77	TC-51.11	6-2-75
BP-11	1-3-75	F-6	5-1-76	HL-5	9-6-73	I-2 A	5-1-79	MC-10	5-1-76	TC-52.10	4-1-77
MC-11	8-1-78	GR-1	12-6-76	HL-6	3-22-77	TC-41.20	4-1-77	MH-1	6-12-75	TC-52.20	4-1-77
CB-2-5 & 2-6	5-1-79	GR-2A	12-6-76	HL-7	1-21-76	L-1	6-1-73	MH-3	6-12-75	TC-61.10	8-19-77
CB-3	5-1-79	GR-2B	12-6-76	HL-8	1-21-76	HL-12	4-6-73	MH-5	6-12-75	TC-71.10	12-1-75
CB-4	5-1-79	GR-3	12-6-76	HL-9	3-22-77	TC-41.50	4-1-77	AS-1-72	6-30-72	TC-72.20	8-29-77

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED:

DIVISION ADMINISTRATOR — DATE

Rev. 5-23-79 Rev. 7-15-81 Rev. 9-26-79

MICROFILMED
OCT 3 0 1984

SCHEMATIC PLAN

STATE ROUTE 7 RELOCATION
BEL-7-11.89

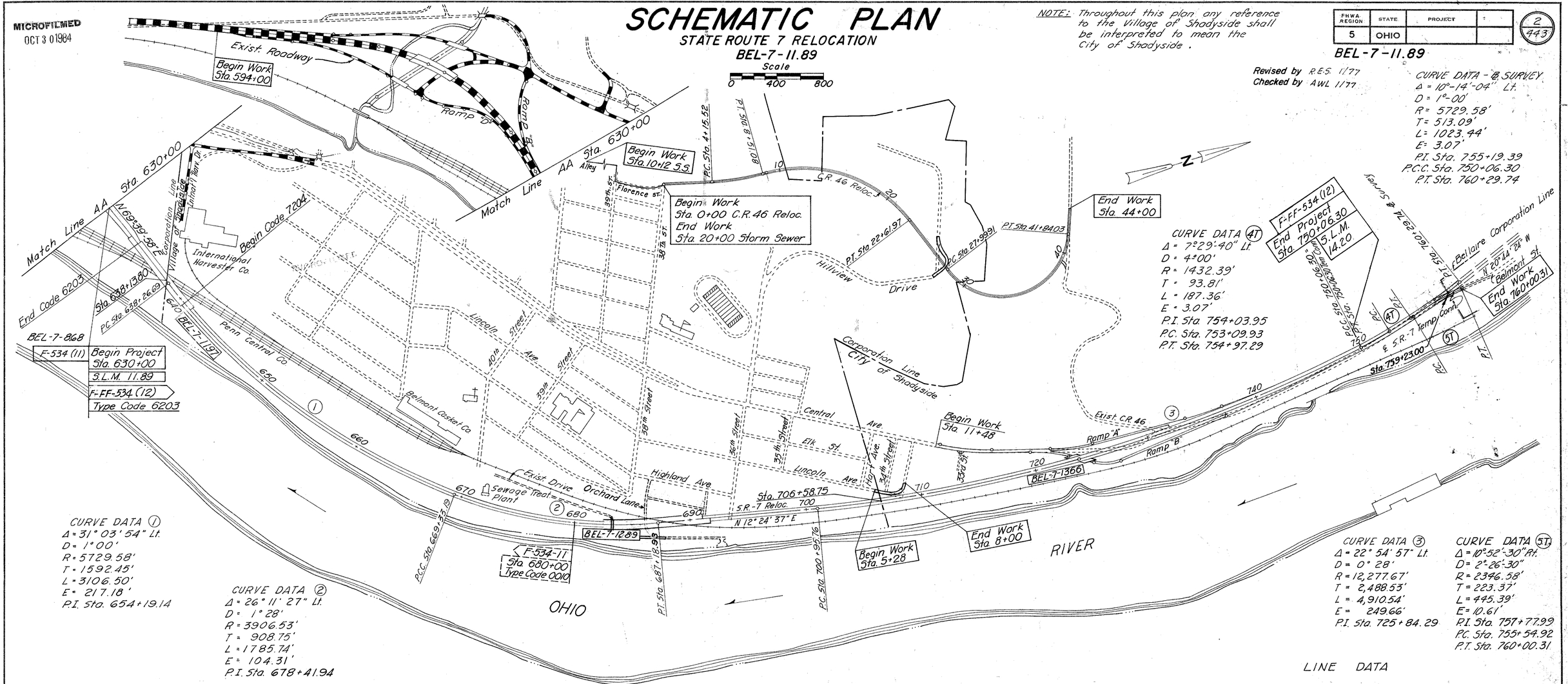
NOTE: Throughout this plan any reference to the Village of Shadyside shall be interpreted to mean the City of Shadyside.

FHWA REGION	STATE	PROJECT	
5	OHIO		

2
443

BEL-7-11.89

Revised by R.E.S. 1/77
Checked by AWL 1/77



CURVE DATA - ℄ SURVEY
Δ = 10°-14'-04" Lt.
D = 1°-00'
R = 5729.58'
T = 513.09'
L = 1023.44'
E = 3.07'
P.I. Sta. 755+19.39
P.C.C. Sta. 750+06.30
P.T. Sta. 760+29.74

CURVE DATA (4T)
Δ = 7°29'-40" Lt.
D = 4°00'
R = 1432.39'
T = 93.81'
L = 187.36'
E = 3.07'
P.I. Sta. 754+03.95
P.C. Sta. 753+09.93
P.T. Sta. 754+97.29

CURVE DATA (1)
Δ = 31° 03' 54" Lt.
D = 1°00'
R = 5729.58'
T = 1592.45'
L = 3106.50'
E = 217.18'
P.I. Sta. 654+19.14

CURVE DATA (2)
Δ = 26° 11' 27" Lt.
D = 1° 28'
R = 3906.53'
T = 908.75'
L = 1785.74'
E = 104.31'
P.I. Sta. 678+41.94

CURVE DATA (3)
Δ = 22° 54' 57" Lt.
D = 0° 28'
R = 12,277.67'
T = 2,488.53'
L = 4,910.54'
E = 249.66'
P.I. Sta. 725+84.29

CURVE DATA (5T)
Δ = 10°-52'-30" Rt.
D = 2°-26'-30"
R = 2346.58'
T = 223.37'
L = 445.39'
E = 10.61'
P.I. Sta. 757+77.99
P.C. Sta. 755+54.92
P.T. Sta. 760+00.31

LINE DATA

Begin Project	Sta. 630+00.00	
End Project	Sta. 750+06.30	
No Additions or Deductions		
Total Length of Project		12,006.30 L.F.
		2.273 Miles
Begin Work	Sta. 594+00.00	
End Work	Sta. 760+00.31	
No Additions or Deductions		
Net Length of Work		16,600.31 L.F.
Add for Approaches		
County Road 46		4,400.00 L.F.
Add for Sign	(see sheet no. 370)	20.00 L.F.
Add for Storm Sewer	(see sheet nos. 247 to 249)	988.00 L.F.
Total Length of Work		22,008.31 L.F.
		or 4.168 Miles

Rev. 5-23-79

SCHEMATIC PLAN

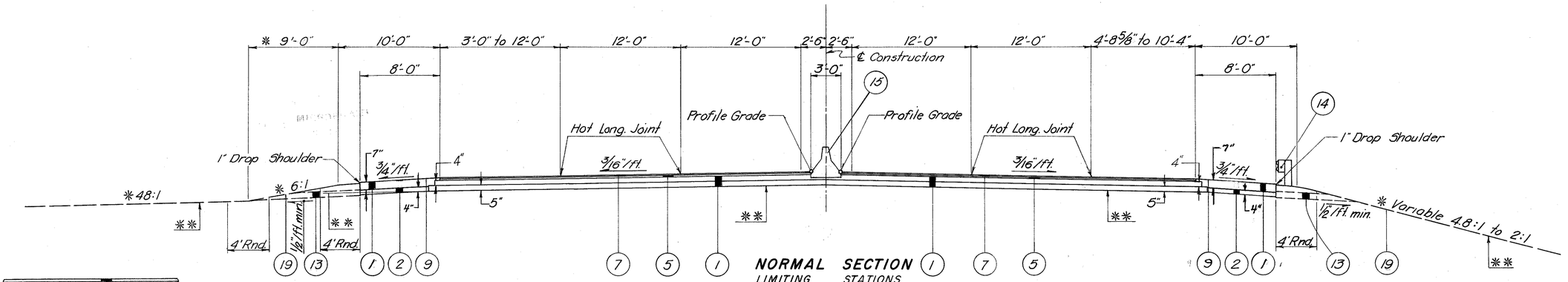
TYPICAL SECTIONS

F.H.W.A. REGION	STATE	PROJECT	
5	OHIO		

3/443

BEL-7-11.89

TYPE 404 ON 301



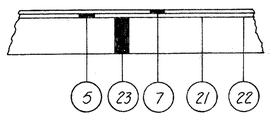
NORMAL SECTION

LIMITING STATIONS

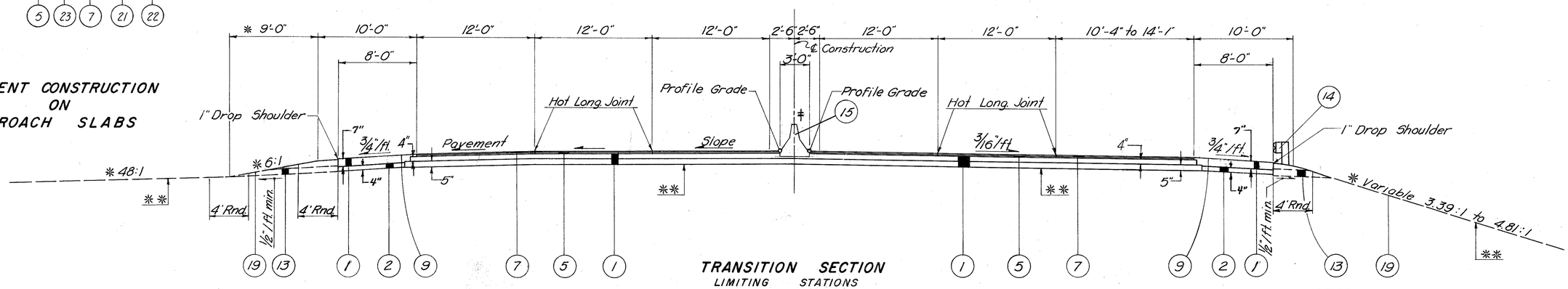
Left: Sta. 631+50.00 to Sta. 634+59.75 = 309.75 L.F.

Right: Sta. 631+50 to Sta. 633+74.75 = 224.75 L.F.

309.75 + 224.75 ÷ 2 = 267.25



PAVEMENT CONSTRUCTION ON APPROACH SLABS



TRANSITION SECTION

LIMITING STATIONS

Sta. 630+00 to 631+50 = 150 L.F.

LEGEND

(1) Item 301 Bituminous Aggregate Base, AC-20 or RT-11 or RT-12 (Thickness as shown)

(2) Item 304 4" Aggregate Base (as per plan)

(5) Item 402 1¼" Asphalt Concrete, AC-20

(7) Item 404 1¼" Asphaltic Concrete, AC-20

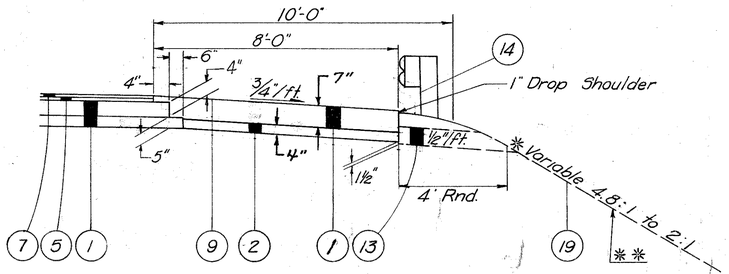
(9) Item 409 Seal Coat using 0.008 cu.yd. No. 8 cover aggregate per sq.yd. and 0.30 gal. RT-9 or RT-10 or MC-800 or MC-3000; CBAE-800; RS-1, RS-2, CRS-1 or CRS-2

(13) Item 605 Aggregate Drains (See general notes)

(14) Item 606 Guard Rail, Type 5

(15) Item 622 Concrete Barrier, Type A

(19) Item 659 Seeding and Mulching (See general notes)



SHOULDER DETAIL

(21) Item 407 Tack Coat, RC-250; or SS-1, SS-1H, MS-2 or RS-1 applied at the rate of 0.1 gal. per sq.yd.

(22) Item 407 Cover Aggregate

(23) Item 611 Reinforced concrete approach slabs (T=15")

NOTES

‡ See Detail Sheet 11A

SURFACE TOLERANCE

See notes in the proposal relating to special smoothness requirements and for the use of pavers with automatic screed control

* As shown on the cross-sections

** Limits of fill on BEL-7-8.68

Rev. 5-23-79

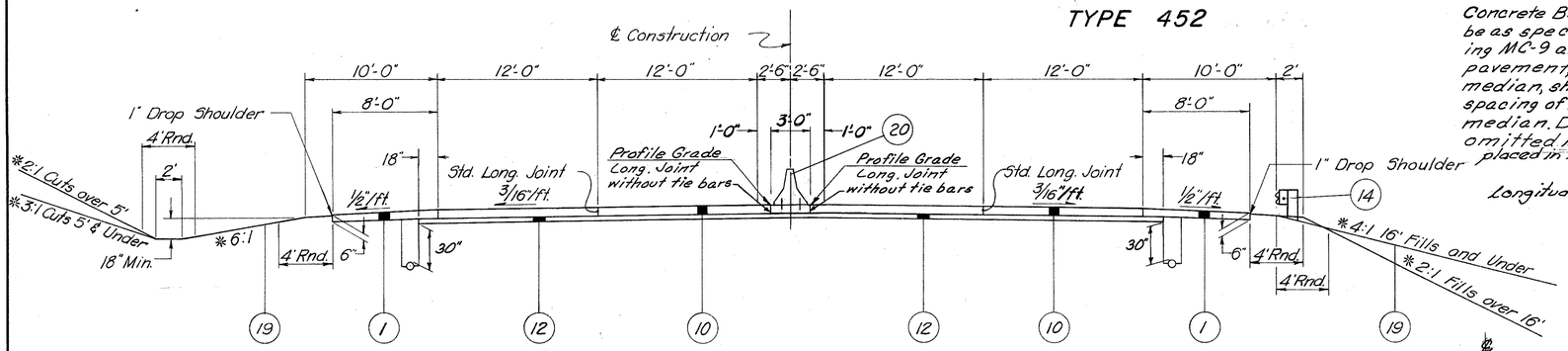
TYPICAL SECTION S.R.-7 RELOCATION

CHECK PRINT NOTES
BEL-7-11.89

F.H.W.A. REGION	STATE	PROJECT	
5	OHIO		

TYPICAL SECTIONS

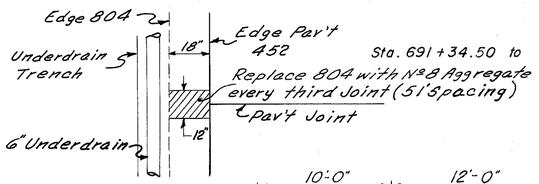
TYPE 452



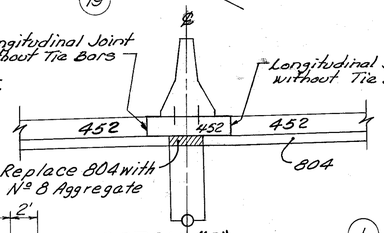
NORMAL SECTION
LIMITING STATIONS

Left: Sta. 691+34.50 to Sta. 692+97.63 = 163.13 L.F.
Right: Sta. 691+99.50 to Sta. 692+97.63 = 98.13 L.F.

163.13 + 98.13 ÷ 2 = 130.63 L.F.

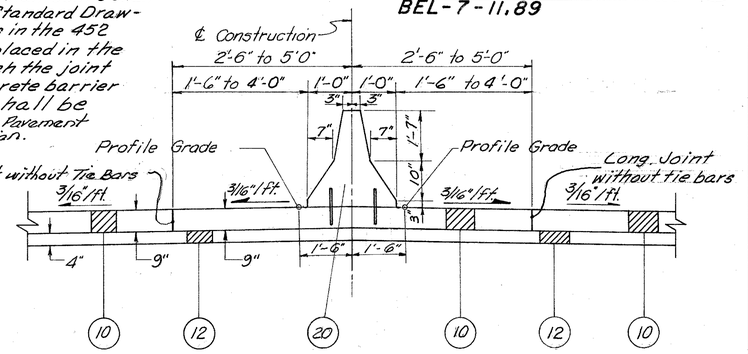


DETAIL "A" PLAN



DETAIL "B"

Concrete Barrier Median Joints shall be as specified in Standard Drawing MC-9 and joints in the 452 pavement, where placed in the median, shall match the joint spacing of the concrete barrier median. Dowels shall be omitted in the 452 Pavement placed in the median.



VARIABLE WIDTH MEDIAN
LIMITING STATIONS
Sta. 693+00 to Sta. 695+50 = 250.00 L.F.

LEGEND

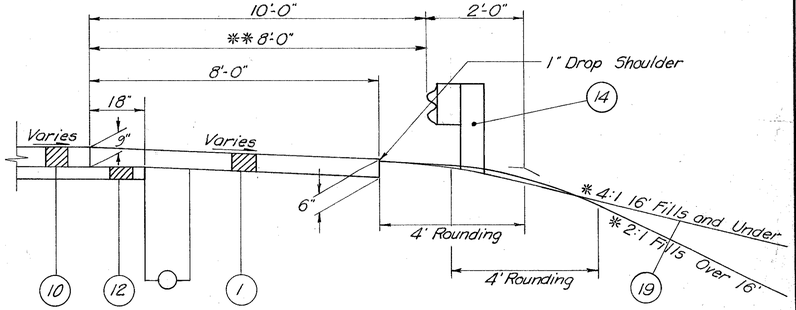
(1) Item 301 Bituminous Aggregate Base, [illegible] AC-20 or RT-11 or RT-12

(10) Item 452 9" Plain Portland Cement Concrete Pavement (as per plan)
(12) Item 804 4" Cement Stabilized Subbase
(14) Item 606 Guard Rail, Type 5

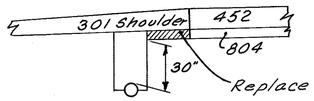
(19) Item 659 Seeding and Mulching (See general notes)
(20) Item 622 Concrete Barrier Type A, Modified As Per Plan (integral base not included.)

NOTES

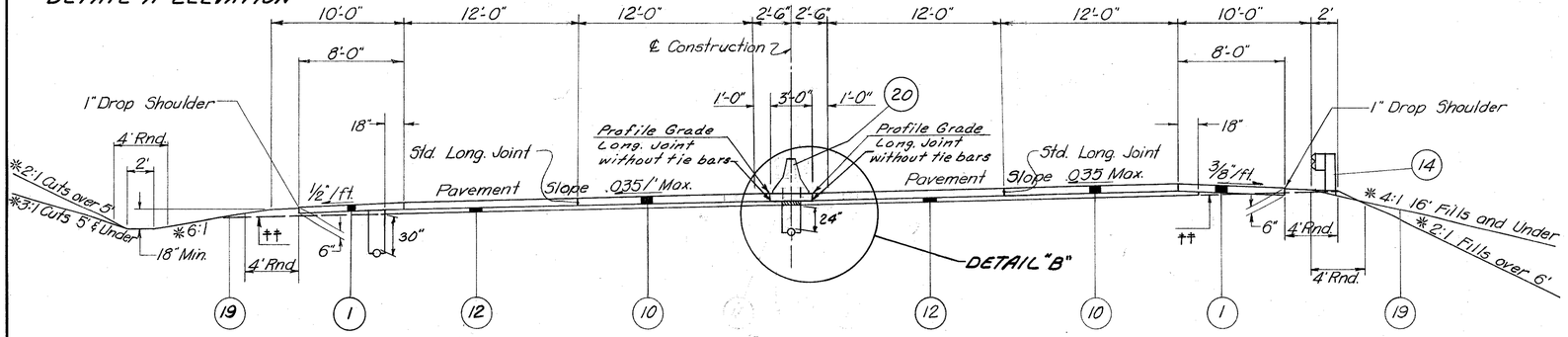
† See Median Detail for Variable Median Width
* Unless otherwise shown on cross-sections
** Acceleration and Deceleration Lanes
For pavement edge elevation, see superelevation tables Sheet No. 43
For paved median detail transitions See Sheet No. 43
†† Limits of fill on Bel-7-8.68
⊙ 12" Rock Cuts, see plan for locations



SHOULDER DETAIL



DETAIL "A" ELEVATION



DETAIL "B"

SUPERELEVATED SECTION
LIMITING STATIONS

Left: Sta. 640+75.25 to Sta. 682+15.97 = 4,140.72 L.F.
Right: Sta. 639+90.25 to Sta. 682+15.97 = 4,225.72 L.F.

4,140.72 + 4,225.72 ÷ 2 = 4,183.22 L.F.

NORMAL SECTION
LIMITING STATIONS

Left: Sta. 692+97.63 to Sta. 723+31.13 = 3,033.50 L.F.; Sta. 724+61.61 to Sta. 750+06.30 = 2,544.69 L.F.; Total = 5,578.19
Right: Sta. 692+97.63 to Sta. 723+31.13 = 3,033.50 L.F.; Sta. 724+61.61 to Sta. 750+06.30 = 2,544.69 L.F.; Total = 5,578.19

5,578.19 + 5,578.19 ÷ 2 = 5,578.19 L.F.

NOTE: For pipe underdrain sequence of operation note, see sheet No 6.

Rev. 5-23-79

TYPICAL SECTION S.R.-7 RELOCATION

TYPICAL SECTIONS

F.H.W.A. REGION	STATE	PROJECT	
5	OHIO		

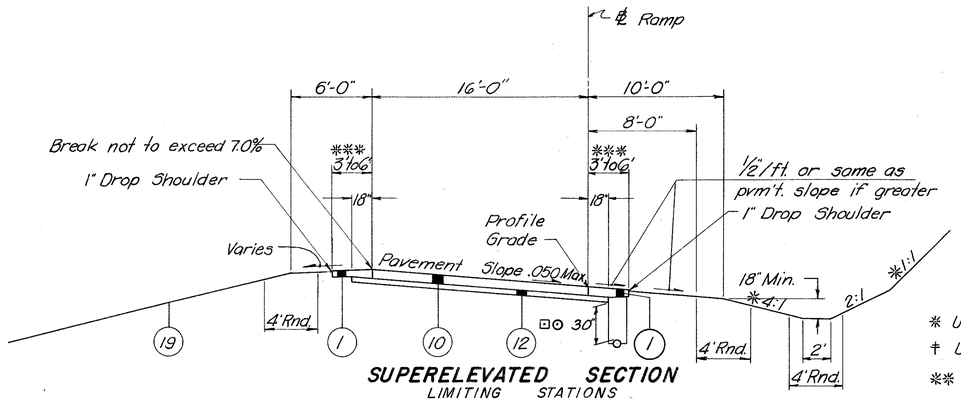
5/443

BEL-7-11.89

Revised by R.E.S. 1/77

Checked by A.W.L. 1/77

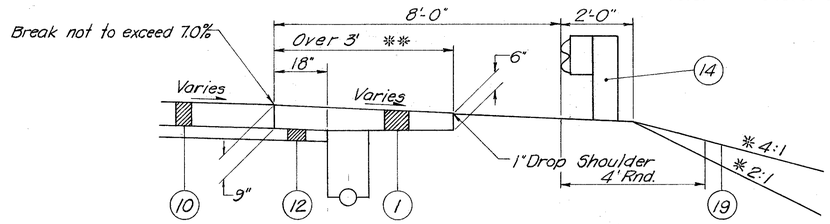
TYPE 452



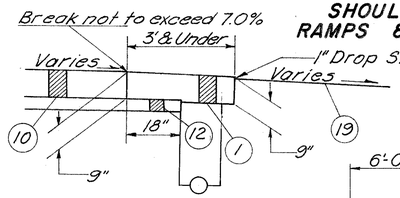
SUPERELEVATED SECTION

LIMITING STATIONS

Ramp A Sta. 21+95.49 to Sta. 26+25 = 429.51 L.F.
Ramp B Sta. 21+13.54 to Sta. 23+25 = 211.46 L.F.
Total = 640.97 L.F.



SHOULDER DETAIL RAMPS & SPEED CHANGE LANES



SHOULDER DETAIL

NOTES

* Unless otherwise shown on cross sections.

† Under Structure

** 8'-0" on acceleration & deceleration lanes

*** See pavement detail sheets for dimensions and elevations

†† Type 6 Curb

⊡ 30" in Soil cut, see Plan for Location

⊙ 12" in Rock cut, see Plan for Location

LEGEND

(1) Item 301 Bituminous Aggregate Base, AC-20 or RT-11 or RT-12

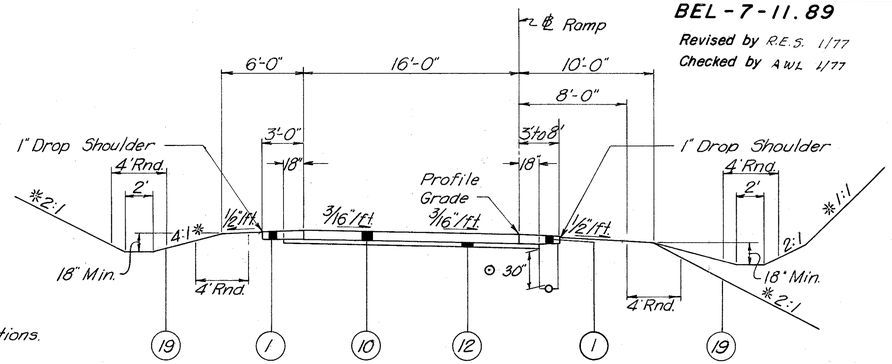
(10) Item 452 9" Plain Portland Cement Concrete Pavement (as per plan.)

(12) Item 804 4" Cement Stabilized Subbase

(14) Item 606 Guard Rail, Type 5

(16) Item 609 Curb, (See Pavement Details)

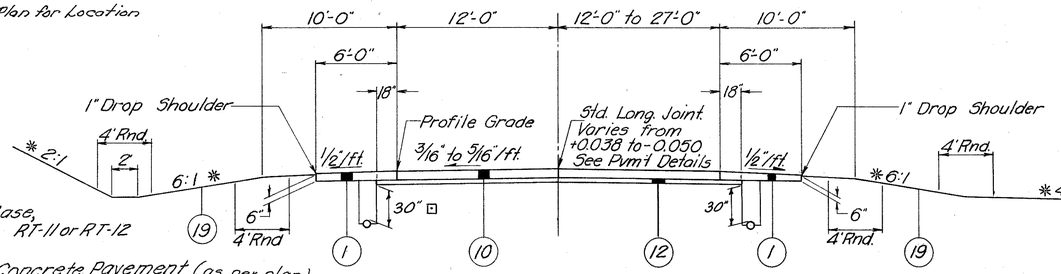
(19) Item 659 Seeding and Mulching (See general notes)



NORMAL SECTION

LIMITING STATIONS

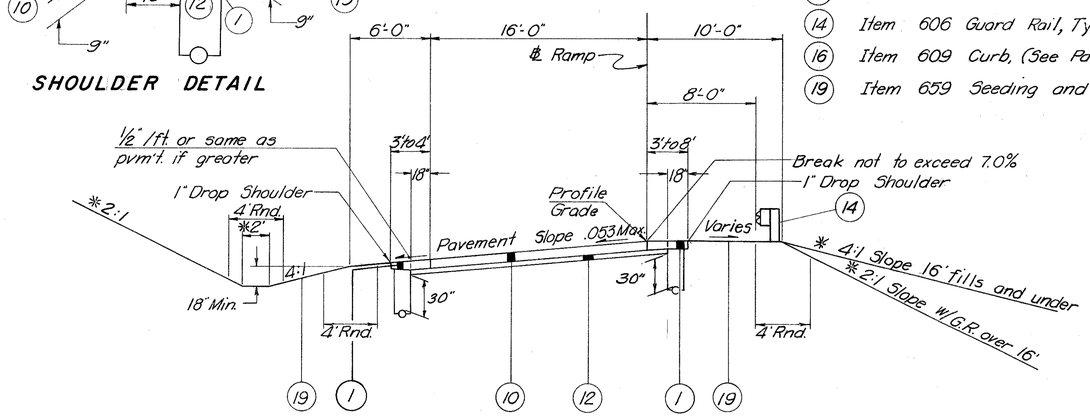
Ramp A Sta. 26+25 to Sta. 32+27.29 = 602.29 L.F.
Ramp B Sta. 30+00 to Sta. 37+00.00 = 700.00 L.F.
Total = 1,302.29 L.F.



NORMAL SECTION

LIMITING STATIONS

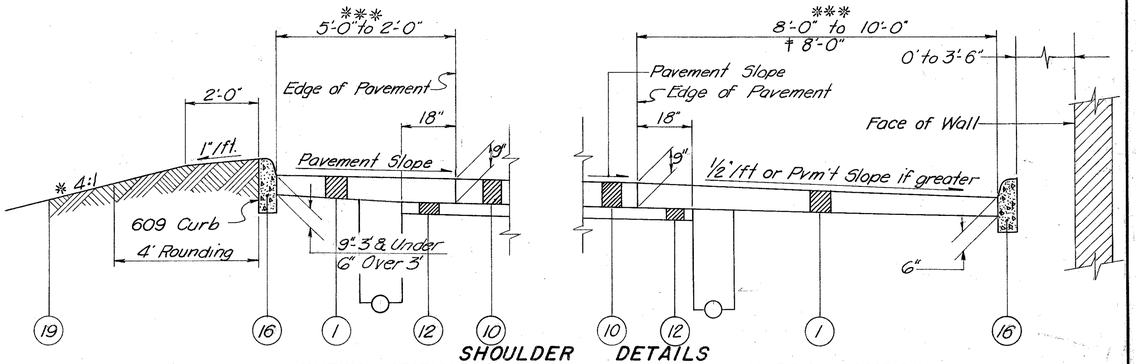
Ramp A Sta. 13+00 to Sta. 21+95.49 = 895.49 L.F.
Ramp B Sta. 19+20.10 to Sta. 21+13.54 = 193.44 L.F.
Total = 1,088.93 L.F.



SUPERELEVATED SECTION

LIMITING STATIONS

Ramp B Sta. 23+25 to Sta. 30+00 = 675.00 L.F.



SHOULDER DETAILS

Left	LIMITING STATIONS			Right
†† Ramp A	Sta. 22+31.50	to	Sta. 25+75 = 343.50 L.F.	
†† Ramp B	Sta. 21+49.50	to	Sta. 25+75 = 425.50 L.F.	†† Ramp B Sta. 21+79.35 to Sta. 24+25 = 245.65 L.F.

NOTE: For pipe underdrain sequence of operation note, see sheet N° 6.

††Type 6 Curb = 343.50' + 425.50' + 245.65' = 1014.65 L.F.

Rev. 5-23-79

TYPICAL SECTION RAMPS

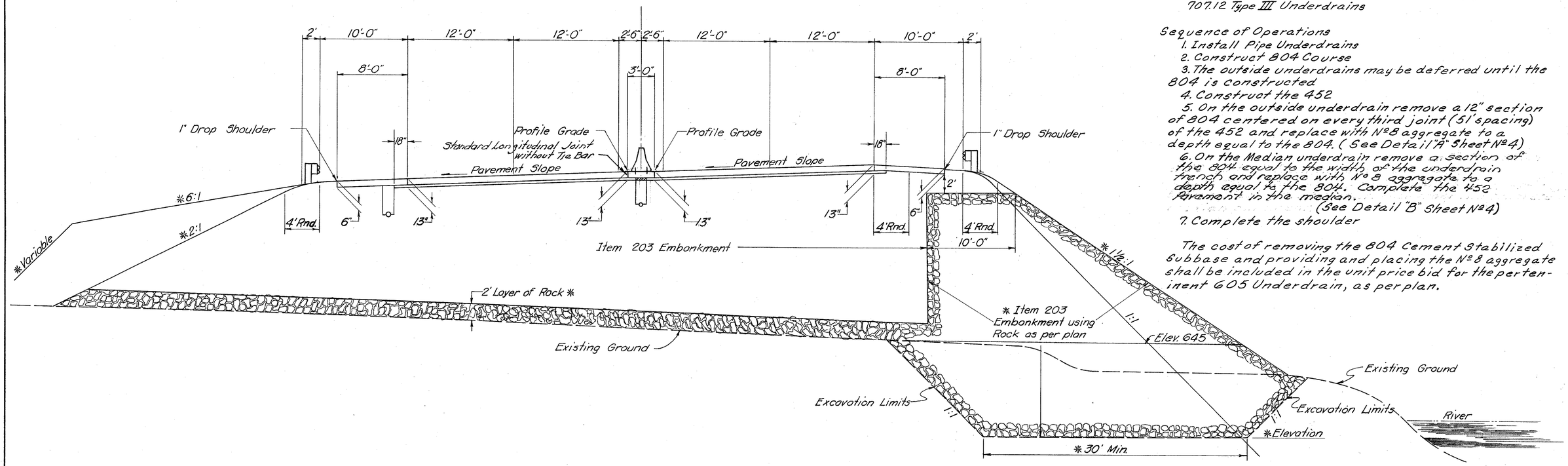
TYPICAL SECTION

TYPE 452

F.H.W.A. REGION	STATE	PROJECT	FISCAL YEAR
5	OHIO		

6/443

BEL-7-11.89

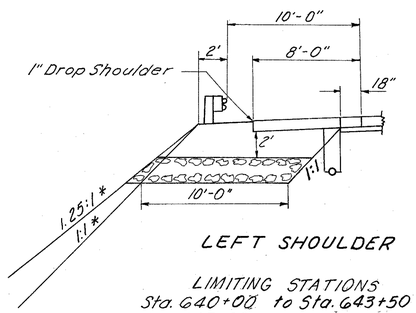


Item 605 Pipe Underdrains, as per plan
Pipe Underdrains 24" & 30" in depth shall be Shallow Underdrains
Pipe Underdrains 50" in depth shall be Deep Underdrains
Pipe Underdrains 12" in depth shall be 707.01, Type III or 707.12 Type III Underdrains

Sequence of Operations
1. Install Pipe Underdrains
2. Construct 804 Course
3. The outside underdrains may be deferred until the 804 is constructed
4. Construct the 452
5. On the outside underdrain remove a 12" section of 804 centered on every third joint (51' spacing) of the 452 and replace with N°8 aggregate to a depth equal to the 804. (See Detail "A" Sheet N°4)
6. On the Median underdrain remove a section of the 804 equal to the width of the underdrain trench and replace with N°8 aggregate to a depth equal to the 804. Complete the 452 Pavement in the median.
(See Detail "B" Sheet N°4)
7. Complete the shoulder

The cost of removing the 804 Cement Stabilized Subbase and providing and placing the N°8 aggregate shall be included in the unit price bid for the pertenient 605 Underdrain, as per plan.

Note:
Rock embankment below Elev. 645 has been placed under contract for Bel 7-8.68

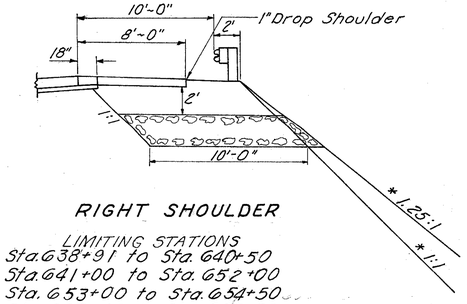


LEFT SHOULDER

LIMITING STATIONS
Sta. 640+00 to Sta. 643+50
Sta. 645+00 to Sta. 646+00
Sta. 671+00 to Sta. 680+50

ROCK FILL SECTION

LIMITING STATIONS
Sta. 680+00 to Sta. 682+15.97 S.R. 7 Reloc.



RIGHT SHOULDER

LIMITING STATIONS
Sta. 638+91 to Sta. 640+50
Sta. 641+00 to Sta. 652+00
Sta. 653+00 to Sta. 654+50
Sta. 657+50 to Sta. 658+50
Sta. 659+50 to Sta. 661+50
Sta. 675+00 to Sta. 680+50

NOTES:
* Or as shown on cross sections
See Sheet No 4 for Pavement Composition and for Underdrain Placement.

Rev. 5-23-79

TYPICAL SECTION ROCKFILL

TYPICAL SECTIONS

F.H.W.A. REGION	STATE	PROJECT	FISCAL YEAR
5	OHIO		

7
443

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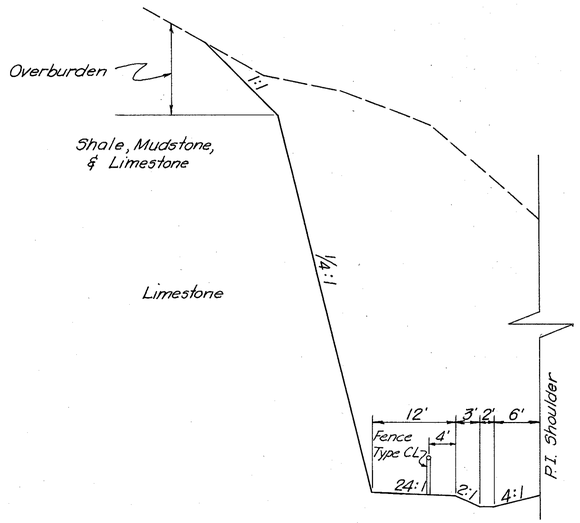
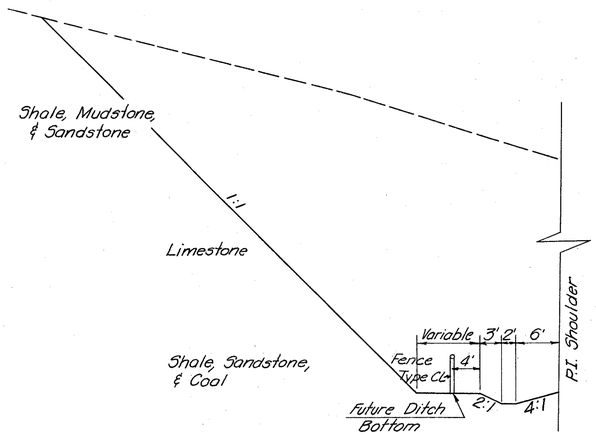
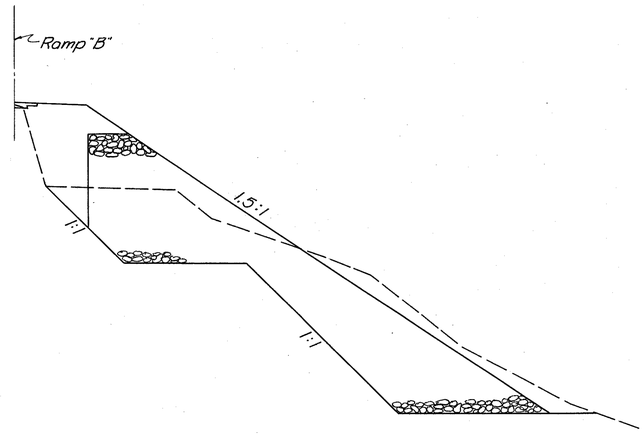


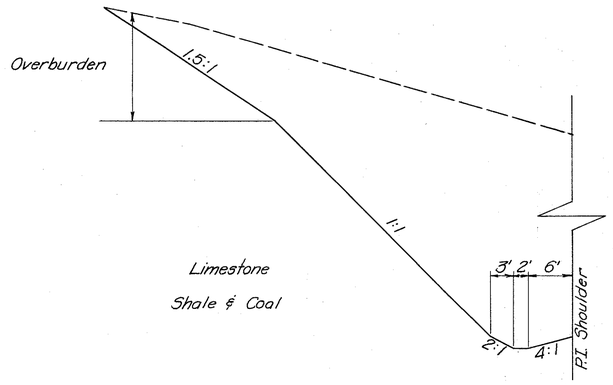
Sta. 726+50 to Sta. 750+00 S.R.7 Reloc.



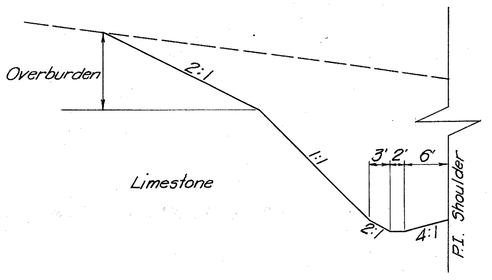
Sta. 750+06.30 to Sta. 754+00 S.R.7 Reloc.



Sta 729+00 to 735+00 S.R. 7 Reloc.



Sta. 724+00 to Sta. 726+00 S.R.7 Reloc.
Sta. 15+00 to Sta. 17+00 Lt. C.R.46 Reloc.
Sta. 21+50 to Sta. 24+00 Lt. C.R.46 Reloc.
Sta. 12+50 to Sta. 24+00 Rt. C.R.46 Reloc.



Sta. 24+00 to Sta. 25+50 Lt. C.R. 46 Reloc.
Sta. 24+00 to Sta. 26+16.85 Rt. C.R. 46 Reloc.

PART TYPICALS - BACK SLOPE TREATMENT

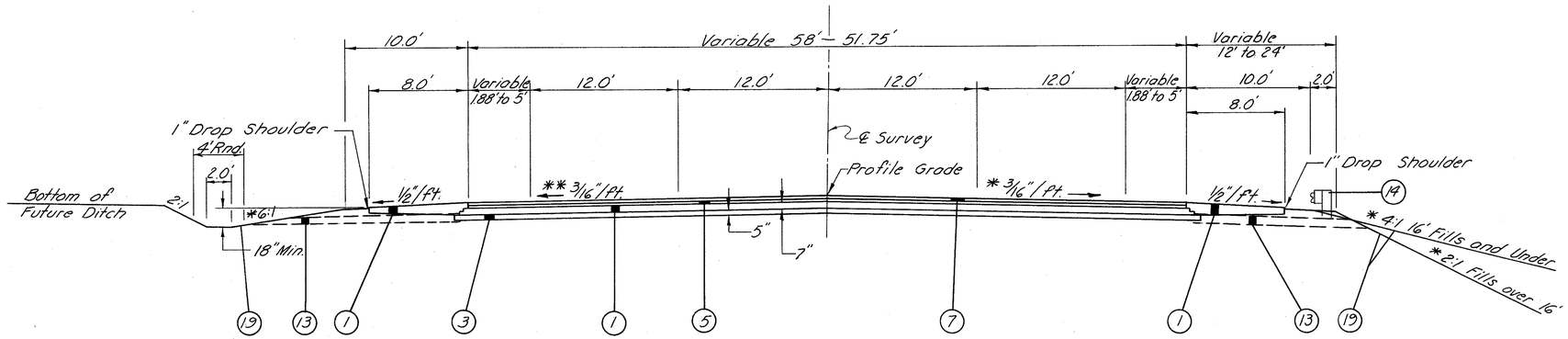
FHWA REGION	STATE	PROJECT	
5	OHIO		

8
443

BEL - 7 - 11.89

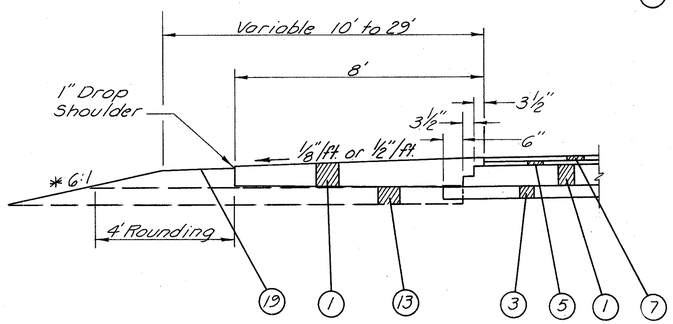
TYPICAL SECTIONS

TYPE 404 ON 301

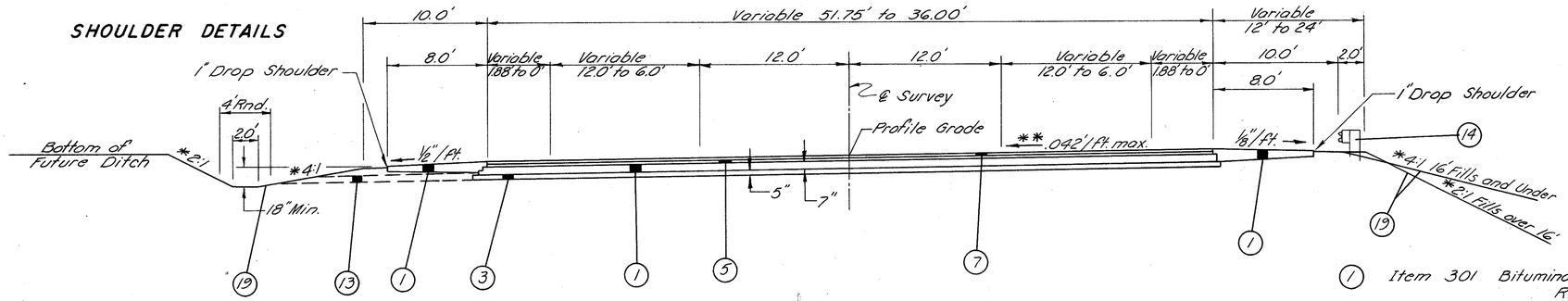


LIMITING STATIONS

Sta. 750 + 06.30 to Sta. 751+00 = 93.70 L.F.



SHOULDER DETAILS



LIMITING STATIONS

Sta. 751+00 to Sta. 754+00 Max. Super .042'/ft. = 300 L.F.

NOTES:

* Unless otherwise shown on cross sections
# Build-up over existing pavement varies. For details see sheet No. 157
** For pavement elevations see temporary connection detail

LEGEND

(1) Item 301 Bituminous Aggregate Base AC-20 or Rt. 11 or Rt. 12

(3) Item 310 Subbase, Type I Grading B

(5) Item 402 1¼" Asphalt Concrete, AC-20

(7) Item 404 1¼" Asphalt Concrete, AC-20

(13) Item 605 Aggregate Drains (See General Notes)

(14) Item 606 Guard Rail Type 5

(19) Item 659 Seeding and Mulching (See General Notes.)

Rev. 5-23-79

TYPICAL SECTION SR-7 RELOCATION TEMP. CONN.

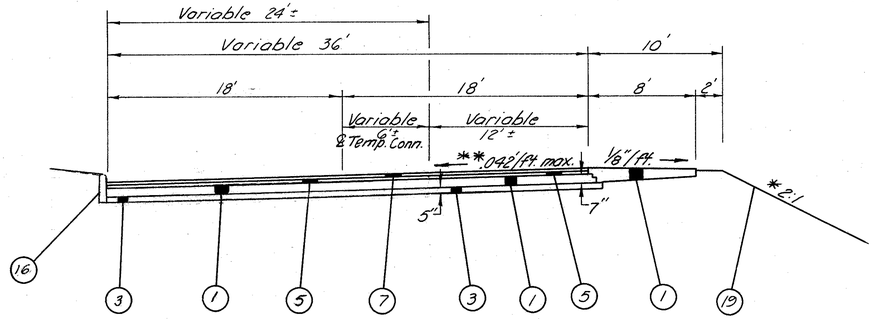
F.H.W.A. REGION	STATE	PROJECT	
5	OHIO		

9
443

BEL-7-11.89

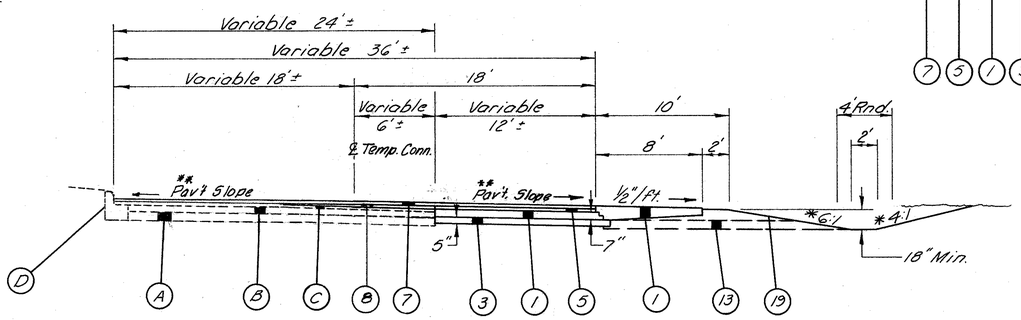
TYPICAL SECTIONS

TYPE 404 ON 301



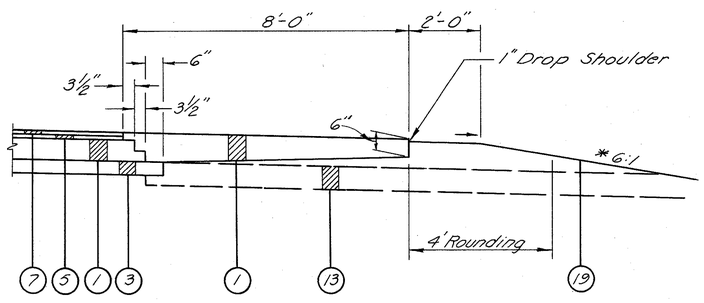
LIMITING STATIONS

Sta. 754+00 to Sta. 755+00 Max. Super .042'/ft. = 100 L.F.

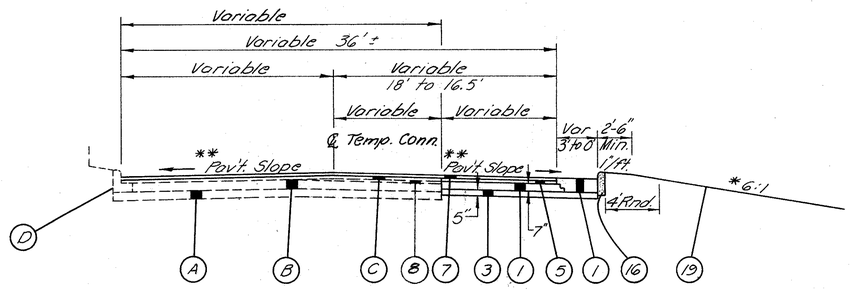


LIMITING STATIONS

Sta. 755+00 to Sta. 758+00 = 300 L.F.

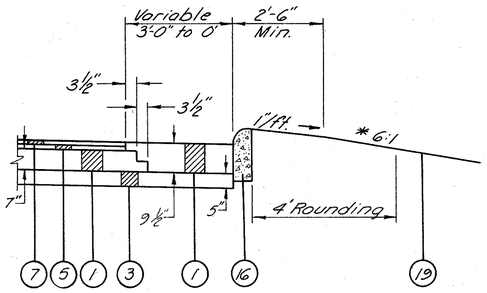


SHOULDER DETAILS



LIMITING STATIONS

Sta. 758+00 to Sta. 759+75 = 175 L.F.



SHOULDER DETAILS

LIMITING STATIONS

Sta. 758+00 to Sta. 759+75 = 175 L.F.

NOTES

* Unless otherwise shown on cross sections
** For pavement elevations see temporary connection detail

LEGEND

- (A) 6" Gravel Base
- (B) 9" Portland Cement Concrete
- (C) 3" Asphalt Concrete
- (D) Curb & Gutter
- (1) Item 301 Bituminous Aggregate Base AC-20 or Rt. 11 or Rt. 12
- (3) Item 310 Subbase, Type 1 Grading B
- (5) Item 402 1¼" Asphalt Concrete, AC-20.
- (7) Item 404 1¼" Asphalt Concrete, AC-20
- (8) Item 402 0"min Asphalt Concrete, AC-20 Preleveling (See note in proposal)
- (13) Item 605 Aggregate Drains (See General Notes)
- (16) Item 609 Concrete Curb, Std. Type 6
- (19) Item 659 Seeding and Mulching (See General Notes)

Rev. 5-23-79

TYPICAL SECTION SR-7 RELOCATION TEMP. CONN.

TYPICAL SECTIONS

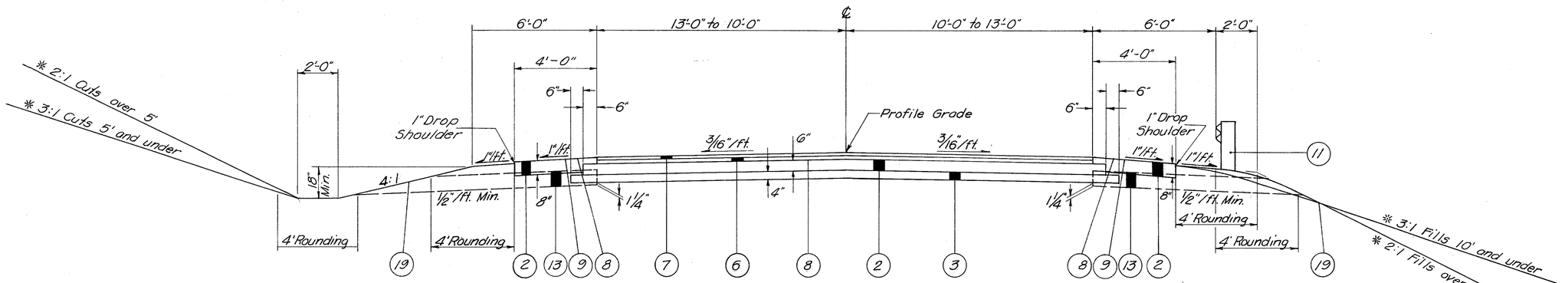
TYPE 404 ON 304

F.H.WA. REGION	STATE	PROJECT	
5	OHIO		

10
443

BEL-7-11.89

Revised by R.E.S. 1/77
Checked by A.W.L. 1/77



NORMAL SECTION

LIMITING STATIONS

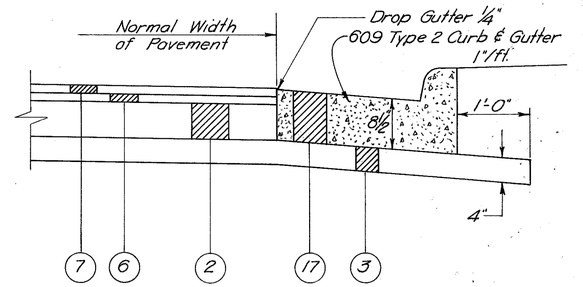
Sta. 0+50.00 to Sta. 2+00.00 = 150.00 L.F.
Sta. 24+50.00 to Sta. 25+50.00 = 100.00 L.F.
Total = 250.00 L.F.

LEGEND

(2) Item 304 Aggregate Base, as per plan
(3) Item 310 4" Subbase, Type I Grading B
(6) Item 402 1½" Asphalt Concrete, AC-20
(7) Item 404 1¼" Asphalt Concrete, AC-20
(8) Item 408 Bituminous Prime Coat MC 30 or MC-70; Primer 20 or RT-2 or RT-3; applied of the rate of 0.4 gal. per sq. yd.
(13) Item 605 Aggregate Drains (See General Notes)
(11) Item 606 Guard Rail Type 5
(17) Item 609 Combination Curb and Gutter, Std. Type 2
(19) Item 659 Seeding and Mulching (See general notes)
(9) Item 409 Seal Coat using 0.008 cu.yd. No.8 cover aggregate per Sq. yd. & 0.30 gal. RT-9 or RT-10, MC-800 or MC-3000; CBAE-800 or RS-1, RS-2, CRS-1 or CRS-2.

NOTES

* Unless otherwise shown on Cross Sections

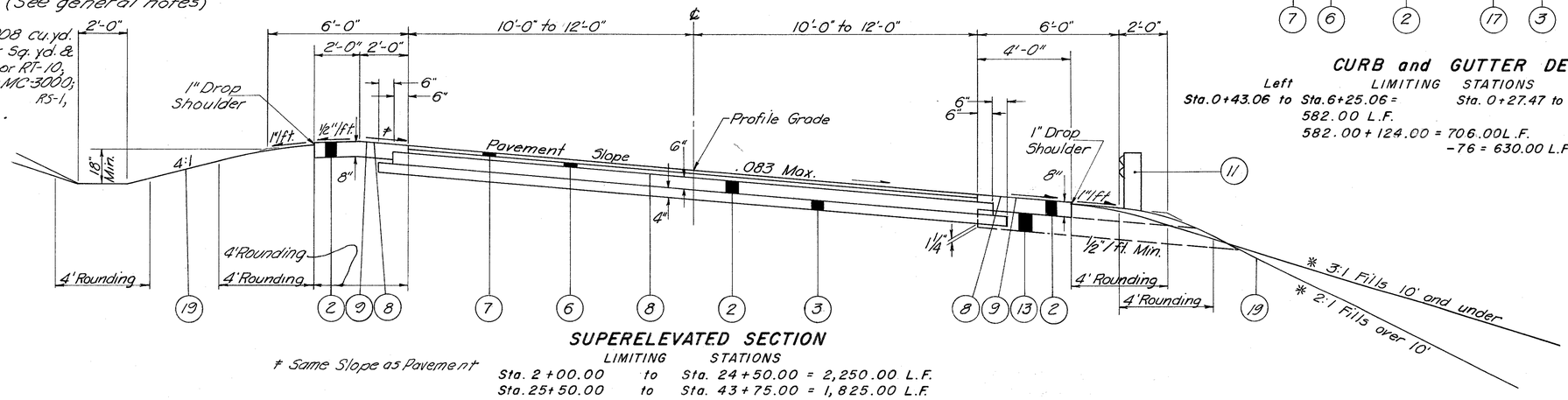


CURB and GUTTER DETAIL

LIMITING STATIONS

Left Sta. 0+43.06 to Sta. 6+25.06 = 582.00 L.F.
582.00 + 124.00 = 706.00 L.F.
-76 = 630.00 L.F.

Right Sta. 0+27.47 to Sta. 1+57.20 = 124.00 L.F.



SUPERELEVATED SECTION

* Same Slope as Pavement

LIMITING STATIONS

Sta. 2+00.00 to Sta. 24+50.00 = 2,250.00 L.F.
Sta. 25+50.00 to Sta. 43+75.00 = 1,825.00 L.F.
Total = 4,075.00 L.F.

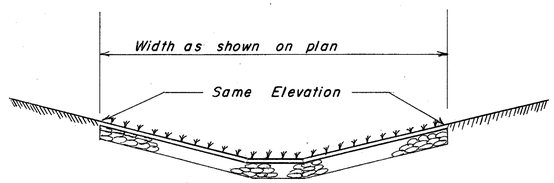
Rev. 7/15/81
Rev. 5-23-79

TYPICAL SECTION - CR. 46 RELOCATION

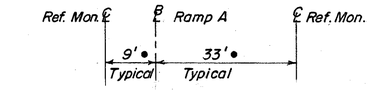
F.H.W.A. REGION	STATE	PROJECT	
5	OHIO		

11
443

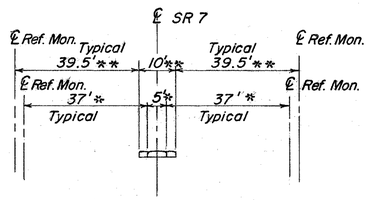
BEL-7 - 11.89



DITCH PROTECTION PLACEMENT DETAIL

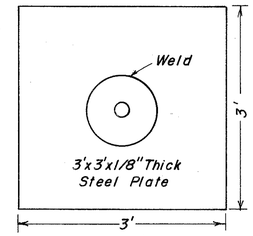


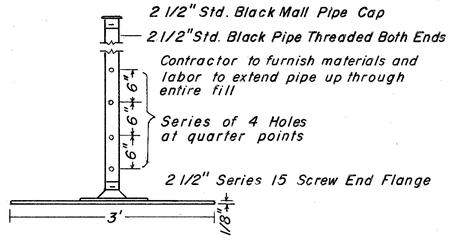
• Sta. 13+00 Lt. & Rt. & Sta. 16+72.32 Lt. & Rt.
Sta. 21+81.42 Lt. 9', Rt. 45.5'



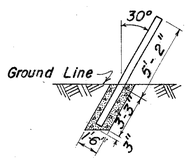
Sta. 633+00 Lt. 49' Rt. 43.59'
* Sta. 641+00 Lt. & Rt. to Sta. 693+00 Lt. & Rt.
** Sta. 697+00 Lt. & Rt. to Sta. 730+06.30 Lt. & Rt.
Sta. 735+00 Lt. 56', Rt. 70.20'
Sta. 740+00 Lt. 51', Rt. 56.50'
Sta. 746+00 Lt. 39.5', Rt. 40.50'
** Sta. 750+06.30

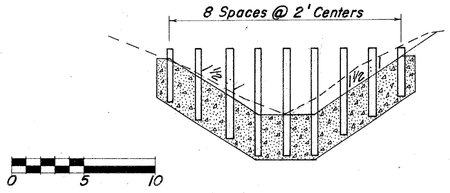
DETAILS OF REFERENCE MONUMENTS





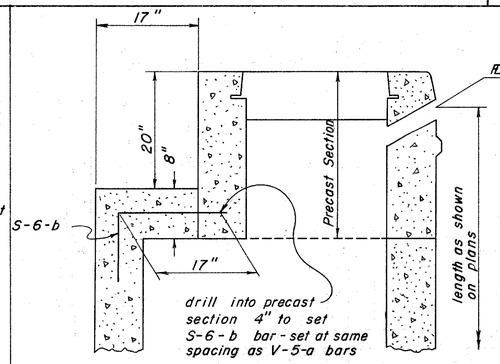
DETAILS OF SETTLEMENT PLATFORM





NOTE:
Salvaged Railroad A.S.C.E. Rail in good condition and meeting the approval of the Engineer may be used. Unless otherwise noted Rail weight to be optional with Contractor. Min. 90 #/Yd.
The work included in this item shall be paid for at the contract unit price for each "Item Special", "Rail Debris Rack" completed and accepted which price and payment shall constitute full compensation for all excavation and backfill and for furnishing, hauling, and placing all steel, concrete and other materials, etc., and for all labor, equipment, tools and other incidentals necessary to complete this Item.

DETAIL RAIL DEBRIS RACK



Alterations to Quantities
1 Add S-6-b bar (4 per basin) at 3'-0" length with 1 bend
2 Increase concrete per basin by 0.2 C.Y.

2-A-6 to 2-A-20 PAVED SHOULDER INLET MODIFIED

0 1 2
SCALE

Rev. 5-23-79

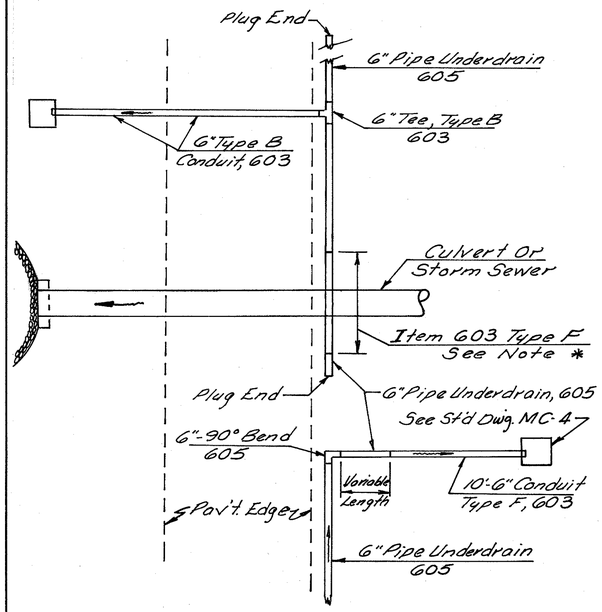
MISCELLANEOUS DETAILS

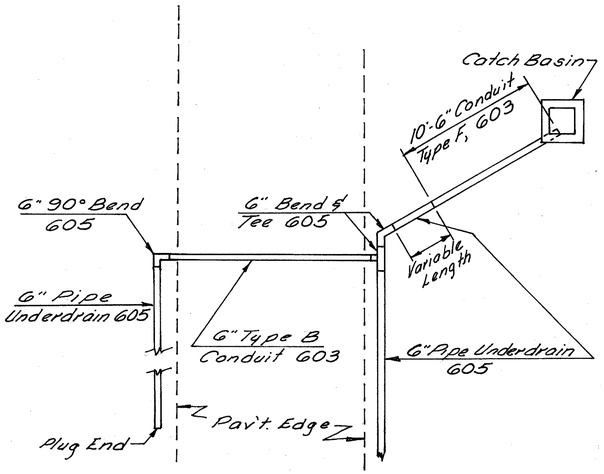
FHWA REGION	STATE	PROJECT	
5	OHIO		

11-A
443

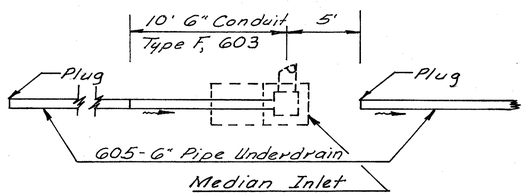
BEL-7-11.89

UNDERDRAIN DETAILS





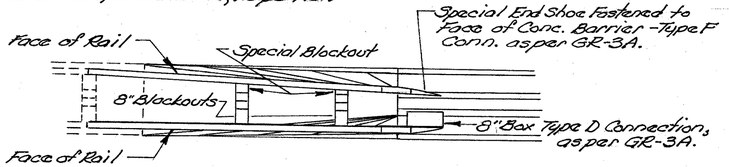
* NOTE:
When the underdrain is to be continued across a culvert or storm sewer, such as shown in detail , a ten (10') foot minimum length of six (6") inch Type F conduit shall be used to span the trench unless such crossing is above the area of granular backfill.





Note: Dash line is the shape of Concrete Median at point A.

SECTION A-A



STA. 629+97.63 TO STA. 630+10.13

NOTE: Cost of all connections included in the unit price bid per lin. ft. for Item 622, Concrete Barrier, Type A.

GUARDRAIL TO CONCRETE BARRIER CONNECTION DETAIL

Rev. 5-23-79

MISCELLANEOUS DETAILS

FHWA REGION	STATE	PROJECT	
5	OHIO		

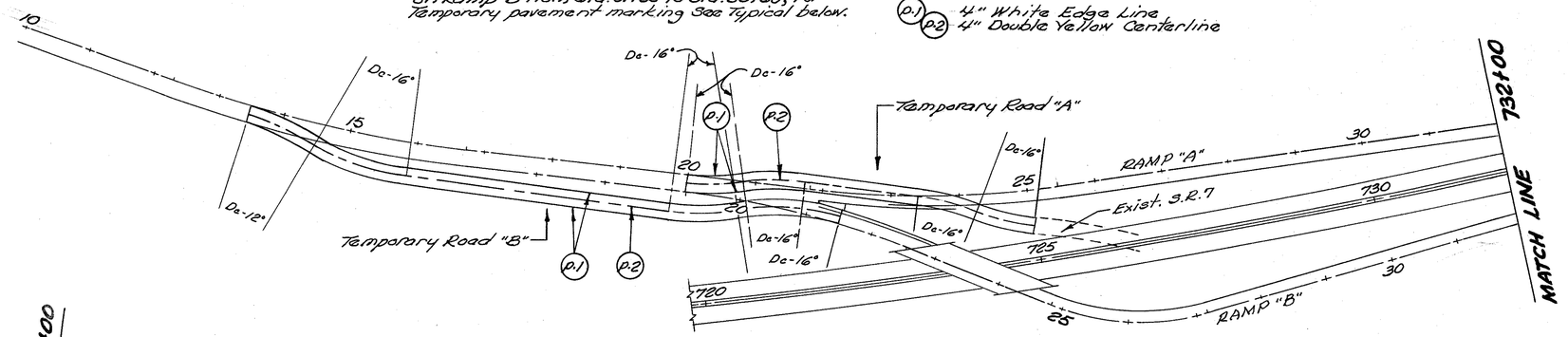
11-B
443

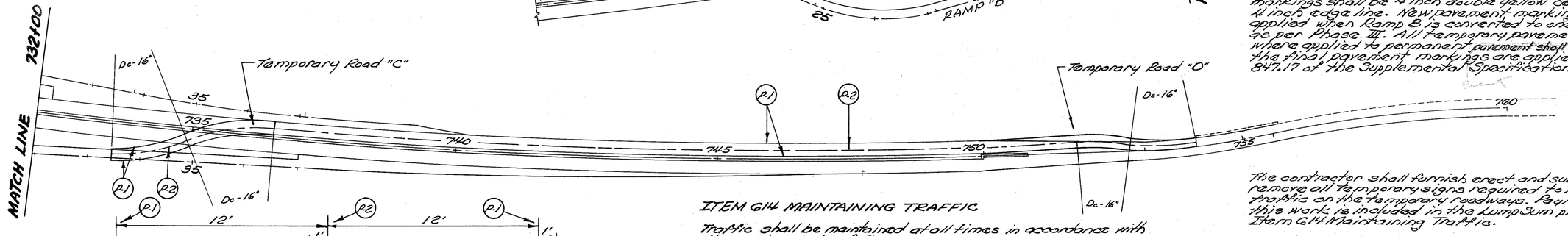
BEL-7-11.89

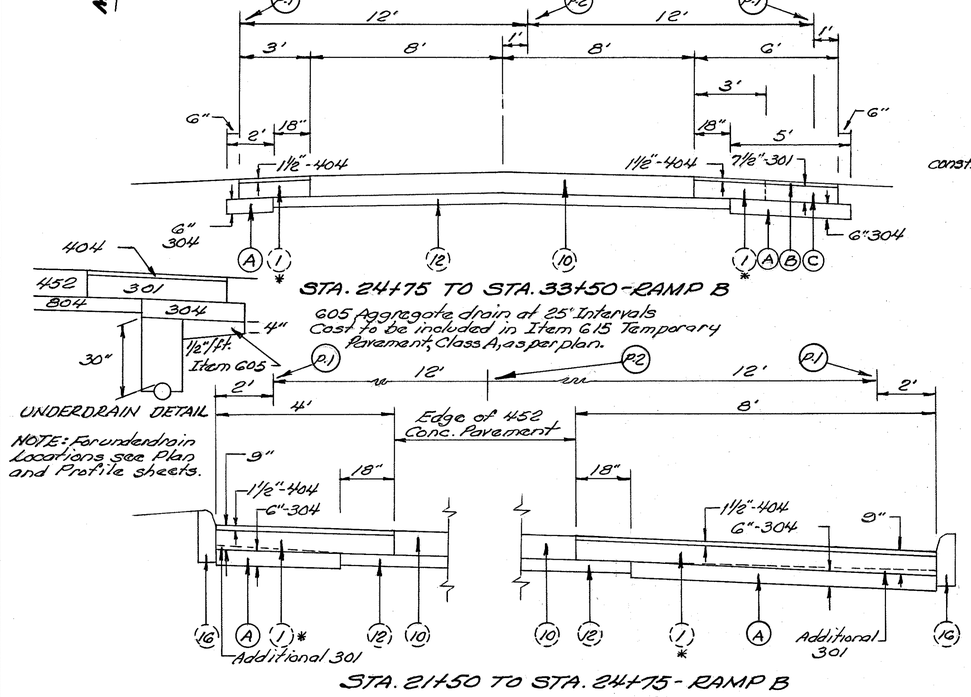
GENERAL NOTES
MAINTAINING TRAFFIC

NOTE: Two way Temporary Traffic shall be maintained on Ramp B from Sta. 21+50 to Sta. 33+50, for Temporary pavement marking see Typical below.

(P.1) (P.2) 4" White Edge Line
4" Double Yellow Centerline







(Ex) Pavement Items as shown on Typical Section Sheet 5
(A) to (C) Pavement Items required for Temporary Pavement Class A, As per plan
*Substitute 1½" of 404 for 1½" of 301
FOR DETAILS NOT SHOWN SEE SHEET 5

ITEM 614 MAINTAINING TRAFFIC

Traffic shall be maintained at all times in accordance with the requirements of Item 614.

Two way traffic shall be maintained at all times by use of the existing pavement, the proposed pavement and Temporary Roads surfaced with Temporary Pavement Class A, 24' in width. Temporary roadways surfaced with 410 aggregate and stabilized with Item 616 Calcium Chloride, a minimum of 20' wide, may be used for a minimum period of time where required while constructing Class A Temporary Pavement for the traffic phases and where it is necessary to remove the existing pavement for drainage structures.

SEQUENCE OF OPERATIONS

Phase I

Between Sta. 720+00 and the end of the project the Contractor shall conduct his work in such a manner that traffic will be maintained on the existing pavement. A 32' roadway shall be maintained at all times and temporary guardrail shall be provided when the excavation adjacent to the shoulder exceeds 5' on a 2:1 slope or 10' on a 3:1 slope.

The storm sewer at Sta. 722+55 and shown on sheet 244 shall be constructed. Temporary road "A" shall be constructed and traffic placed thereon.

Phase II

Construct bridge NO. BEL-7-13.66 Over Ramp "B". Construct Ramp "B" from Sta. 21+50 to Sta. 33+50. Construct Mainline Pavement, Southbound lanes, from Sta. 734+00 to Sta. 750+06.3. Construct temporary roads "B", "C" and "D". Complete the necessary temporary signing and pavement markings and place traffic thereon. Remove temporary road "A".

Phase III

Complete Ramp "A". Place southbound traffic on Ramp "A" and maintain northbound traffic on Ramp "B". When two way traffic is removed from Ramp "B" the temporary pavement markings shall be removed and new pavement markings for one way operation applied. When northbound lanes are completed from Sta. 736+00 to End of Project, north bound traffic shall be placed thereon, Temporary Road "C" and "D" removed. Complete Mainline work.

County Road 46-Relocated, Co. Rd. 46 and the outfall sewer shall be constructed before existing Co. Rd. 46 is closed to traffic.

Temporary pavement shall be Class A in conformity with Item 615 and with the alignment indicated in the plans, except for Ramp B where temporary traffic is maintained on Ramp B alignment. Ramp B shoulders shall be modified as per the typical section shown on this sheet and paid for by the Sq. Yd. as Item 615. Temporary Pavement Class A, as per plan. No changes have been made in the plan quantities for the Ramp B Typical Section shown on sheet 5 of the plans and these quantities shall be incorporated into the temporary pavement, as per plan, and paid for by the specific Item.

Temporary pavement markings in accordance with Supplemental Specification 847 shall be applied in all areas where permanent and Class A Temporary Pavement is used to maintain traffic. Pavement markings shall be 4 inch double yellow centerline and 4 inch edge line. New pavement markings shall be applied when Ramp B is converted to one way operation as per Phase III. All temporary pavement markings, where applied to permanent pavement shall be removed before the final pavement markings are applied as per 847.17 of the Supplemental Specifications.

The contractor shall furnish erect and subsequently remove all temporary signs required to maintain traffic on the temporary roadways. Payment for this work is included in the Lump Sum price bid for Item 614 Maintaining Traffic.

Limits and duration of use of temporary roadways Surfaced with 410 material shall be held to an absolute minimum and in all cases subject to the approval of the Engineer.

GENERAL SUMMARY TYPE CODE 7204

ITEM	QUANTITY	UNIT	DESCRIPTION ROADWAY CON'T.
404	100	Cu.Yd.	Bituminous Concrete for Maintaining Traffic
410	350	Cu.Yd.	Traffic Compacted Surface, Type A or B
410	1150	Cu.Yd.	Traffic Compacted Surface, Type C
847	2.30	Miles	4 inch Temporary Edge Lines
847	0.90	Miles	4 inch Temporary Centerlines
847	7500	Lin.Ft.	Removal of Pavement Markings, Edge Line
847	2550	Lin.Ft.	Removal of Pavement Markings, Centerline
615	4870	Sq.Yd.	Temporary Pavement, Class A
615	1308	Sq.Yd.	Temporary Pavement, Class A, as per plan
615	Lump Sum	Lump Sum	Temporary Roads

All signs, drums, barricades and flagmen shall be utilized in conformance with the Ohio Manual of Uniform Traffic Control Devices for Streets and Highways.

Payment for all the above except for the Items listed above, shall be included in the price bid for Item 614 Maintaining Traffic.

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 in effect until approval has been granted, in writing, by the director.

The following quantities have been added to sheet No. 19

Item 616	Calcium Chloride	30 Tons
Item 616	Water	50 M-Gals.

Rev. 5-23-79

MAINTAINING TRAFFIC

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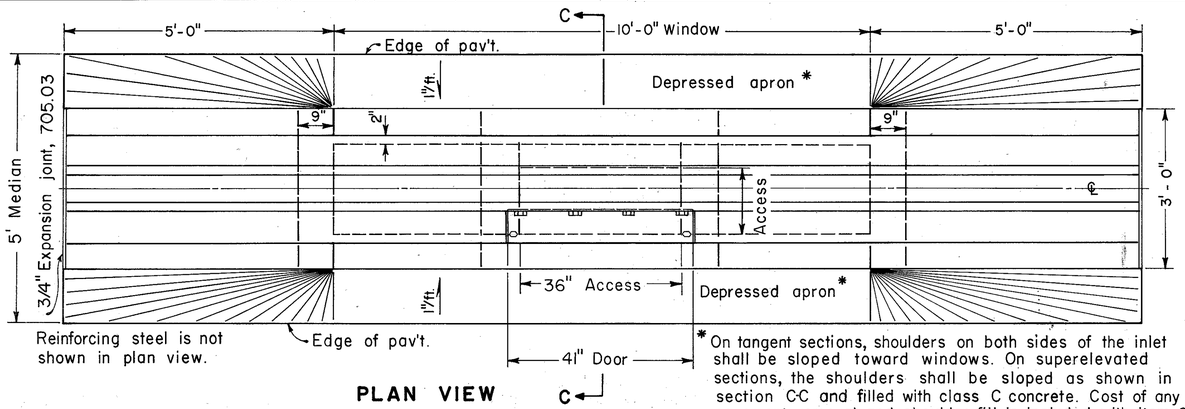
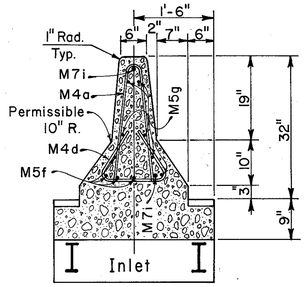
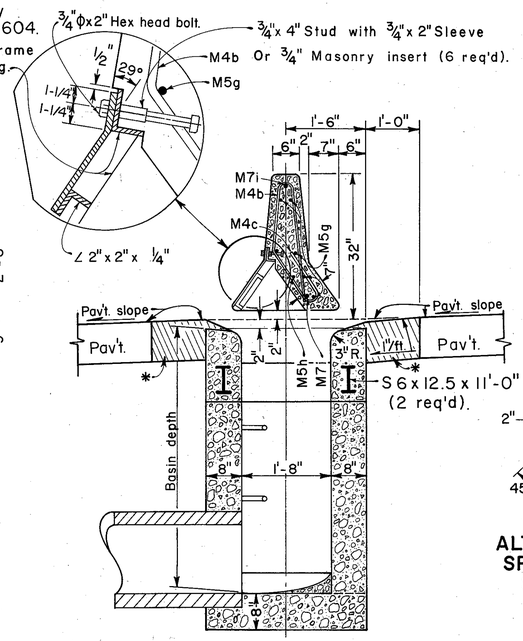


PLAN VIEW

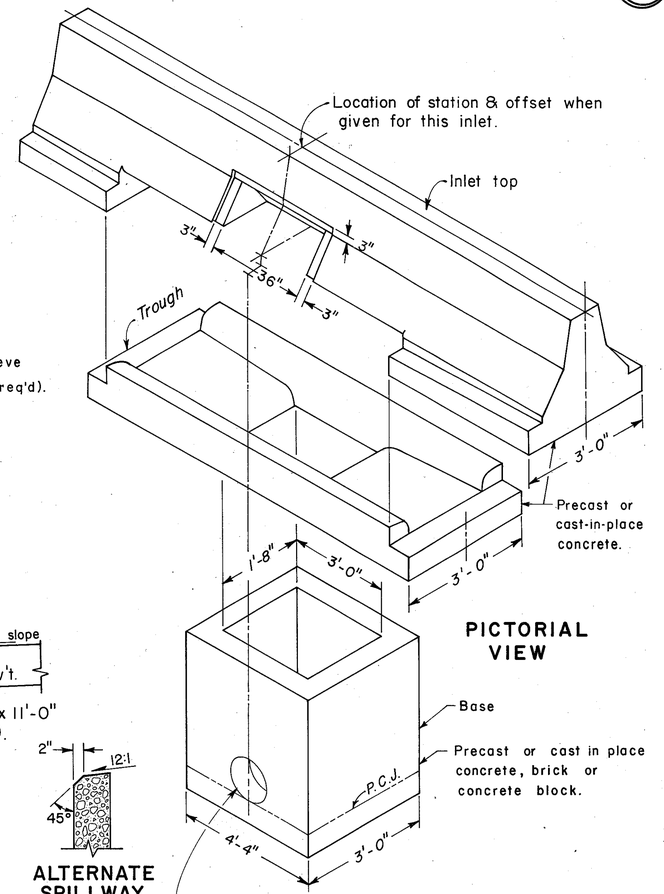
* On tangent sections, shoulders on both sides of the inlet shall be sloped toward windows. On superelevated sections, the shoulders shall be sloped as shown in section C-C and filled with class C concrete. Cost of any pavement removal and shoulder fill is included with item 604.



SECTION B-B



SECTION C-C

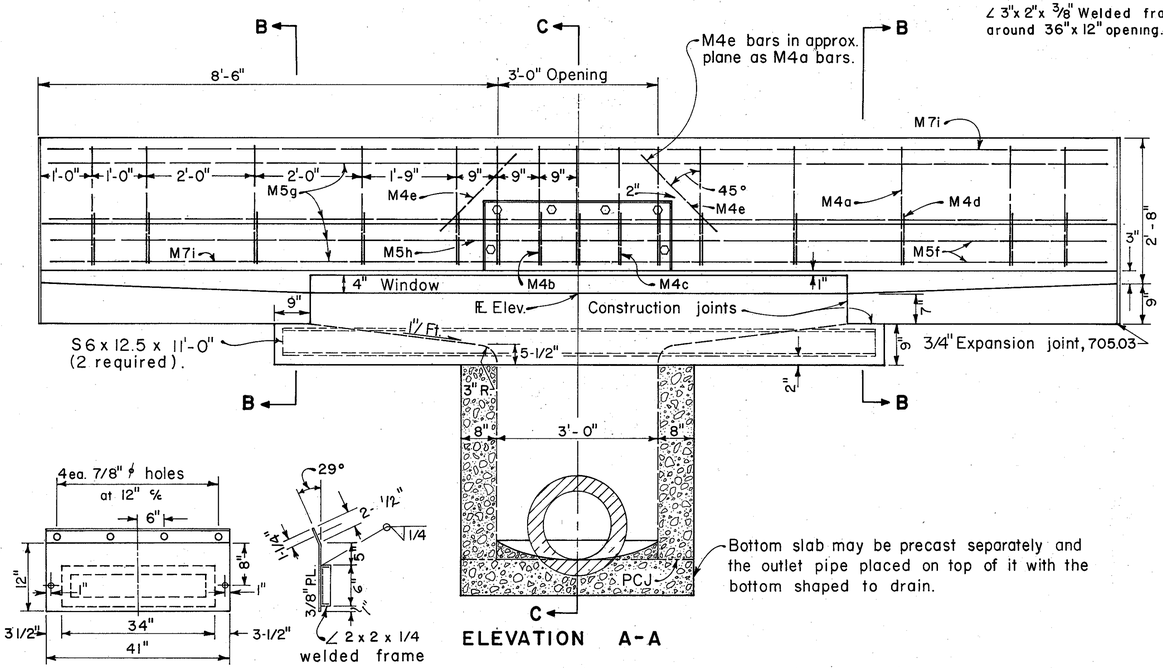


PICTORIAL VIEW

ALTERNATE SPILLWAY SHAPE

Openings for pipes shall be O.D. + 2" when prefabricated or field cut.

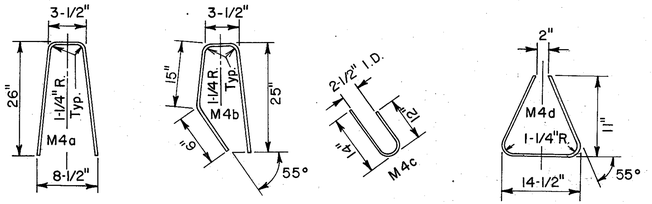
PCJ = Permissible construction joint.



ELEVATION A-A

Bottom slab may be precast separately and the outlet pipe placed on top of it with the bottom shaped to drain.

ACCESS DOOR DETAIL



BENDING DIAGRAMS - No. 4 BARS.

Size	STEEL LIST			
	Bar	Ea.	Lin. Ft.	Shape
No. 4	M4a	10	4'-9"	Bent
	M4b	5	4'-1"	
	M4c	5	2'-4"	
	M4d	10	3'-2"	
	M4e	2	2'-0"	Straight
No. 5	M5f	8	8'-2"	
	M5g	8	19'-8"	
	M5h	1	5'-0"	
No. 7	M7i	2	19'-8"	

INLETS LESS THAN 12 FEET in depth shall have walls built of brick, concrete block, cast-in-place concrete or precast concrete. Walls shall be 8" nominal thickness except precast walls may have a minimum thickness of 6" and shall be reinforced sufficiently to permit shipping and handling without damage.

INLETS OVER 12 FEET in depth shall have precast or cast-in-place concrete walls and be reinforced with No.4 bars spaced on 12" centers both vertically and horizontally with 2" clearance from the inside wall face.

CONCRETE, cast-in-place, to be class C. All precast concrete shall meet the requirements of 706.13 with 6 ±2% air void content in the hardened concrete and be marked with the inlet number.

STEPS shall be provided where the depth exceeds 72" and shall meet the requirements of MH-1.

BUREAU OF LOCATION AND DESIGN
OHIO DEPARTMENT OF TRANSPORTATION

I-3D
MEDIAN INLET

5-15-79

Rev. 5-23-79

Revised by R.E.S. 1/77
Checked by AWL 1/77

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5	OHIO		

BEL-7-11.89

12
493

GENERAL NOTES

FIELD OFFICE

The Contractor shall, provide a suitable field office having a minimum of 800 sq. ft. of floor space.

All the above is included in the lump sum price bid for item 619 Field Office.

ROUNDING OF CORNERS ON CROSS SECTIONS

The rounded corners as shown on the Typical Sections apply to all cross sections, even though otherwise shown on these plans.

UNDERGROUND UTILITIES

The locations of the underground utilities shown on the plans have been obtained by diligent field checks and searches of available records. It is believed that they are essentially correct, but the State of Ohio does not guarantee their accuracy or completeness.

ESTIMATED QUANTITIES

Specific locations and usage of estimated quantities set up on this plan to be used "as directed by the Engineer" shall be made a matter of record by incorporation into the final change order governing completion of this project. Estimated quantities of materials shall not be ordered for delivery to the project unless authorized by the Engineer.

SUPERELEVATION

Superelevated curves shall be built without crown. The crown shall be worked out of the pavement in the portion between the beginning of the transition and the point where the superelevation equals twice the crown.

CONTRACTOR'S MAINTENANCE RESPONSIBILITY

On this project, the Contractor's responsibility for maintenance of the existing pavement per Item 614 shall be limited to those portions of the existing pavement lying within the proposed work limits.

TRENCH FOR WIDENING

Trench excavation for base widening shall be performed only on one side of the pavement at a time. The open trench shall be adequately maintained and protected with drums, or barricades at all times. Placement of proposed subbase and base material shall follow as closely as possible behind the excavation operations. The length of widening trench which is open at any one time shall be held to a minimum and shall at all times be subject to approval of the Engineer.

RAILROAD

Penn Central Transportation Company appearing throughout this plan shall be considered to read Consolidated Rail Corporation.

ROCK FILL

The Contractor shall provide a 2 foot layer at the bottom of all fill on the flood plain between Station 680+00 and Station 682+96 as delineated on the plan.

Rock as defined in 203.02 will be satisfactory for both the rock blanket on the flood plain and for the entire rock fill area including the outer slope. Rock Fill is paid under item 203 Embankment as per plan.

EMBANKMENT CONSTRUCTION

To permit the foundation soils to consolidate and gain in strength, fill loading should be controlled between Station 680+00 to Station 682+96 at a rate of not over 4 feet per week for the portion of fills below a height of 10 feet and not over 3 feet per week for the portions of the fill above 10 feet in height measured at the centerline of the roadway. No rate of fill control is intended for the rock fill in the slope areas.

REMOVAL OF EXISTING PIPE

The removal of all existing pipe drains which would normally be removed in various excavation items shall be included for payment in the unit prices bid for the respective excavation items, unless otherwise itemized in the plans.

TREES OR STUMPS REMOVED

All trees or stumps specifically marked for removal within the construction limits of this project shall be removed under the lump sum price bid for Item 201 Clearing and Grubbing except that those trees for which protection and preservation work is indicated elsewhere in the plans shall not be removed.
The following is an approximate estimate of the number of trees or stumps to be removed.

SIZES	NO. TREES	NO. STUMPS
12"-24"	836	1
24"-36"	29	—
36"-60"	2	—

The above estimate is approximate and the State of Ohio reserves the right to order the removal of additional trees or stumps outside of the limits of construction but within the right-of-way or easement lines. Payment for the removal of these additional trees or stumps shall be included in the lump sum price bid for item 201 Clearing and Grubbing.

PAVEMENT REMOVAL OUTSIDE NORMAL CONSTRUCTION LIMITS

After the existing pavement as indicated on the plans has been removed, the old roadway shall be graded to the level of the surrounding ground, the old ditches filled and the disturbed areas sloped to drain and left in a neat condition ready for seeding. Seeding shall be measured and paid for in accordance with Item 659 Seeding and Mulching. Payment for all other work required shall be included in the unit price bid for Item 203.

ITEM 605 AGGREGATE DRAINS

Aggregate drains shall be placed at fifty (50) foot intervals on each side of normal crowned sections and at twenty-five (25) foot intervals on the low side only of superelevated sections, except where Item 605 Pipe Underdrains have been provided.

SEEDING

Seeding shall not be used where rock or shale are encountered in cut slopes or where fill slopes are composed of rock.

Quantities for seeding are calculated for the soil areas between lines ten (10) feet outside the work limits, as shown on the cross sections, or to the right-of-way line if such line is less than (10) feet from the work limits, of the mainline.

Quantities for seeding are calculated for the soil areas between the work limits, as shown on the cross sections, of the side roads.

ITEM SPECIAL, DRILLED (WATER) WELL ABANDONED

The existing concrete or stone slab well cover and pumping equipment shall be removed and disposed of. The casing shall be cut off at least (1) foot below the proposed finished grade outside proposed pavement areas or at least (1) foot below the proposed subgrade elevation inside proposed pavement areas. The well shall be filled from bottom to top with clean puddled clay or concrete.

The unit price bid per each for Item Special, Drilled (Water) Well Abandoned shall include payment for all labor, tools, materials, and incidentals necessary to complete this item.

ITEM 203 PROOF ROLLING

An estimated quantity for this item has been provided in the general summary for use in proof rolling of subgrade for the mainline and ramp pavements, and for paved shoulders

BENCHING OF FOUNDATION SLOPES

Although cross sections on the plan indicate specific widths and depths of proposed benching of the embankment foundation in certain areas, no waiver of the specifications is intended and all other sloped foundation areas shall be benched as set forth in 203.09. No additional payment will be made for benching required by the provisions of 203.09

ITEM 304 AGGREGATE BASE (as per plan)

Material described in Supplemental Specifications 901 (Steam Boiler Slag) may be used in lieu of materials specified in Sec. 304.02, providing the requirements for gradation in Sec. 304.02 and the requirements for soundness and durability in Sec. 703.04 are complied with.

ITEM 622 - CONCRETE BARRIER, TYPE A, MODIFIED AS PER PLAN

The Concrete Barrier shall be constructed as shown on standard drawing MC-9 except that the 9" thick foundation shall be omitted and the barrier constructed on the 9" plain portland cement concrete pavement as shown on the typical sections.

COOPERATION WITH RAILROAD

The Contractor shall cooperate with local officials of the Penn-Central Company in all work adjacent to the tracks, in order to avoid delay to, or interference with railroad traffic. When blasting operations are necessary, the Contractor shall notify the company 48 hours in advance so that watchmen can be provided to protect railroad traffic. During periods of continuous blasting the Contractor shall consult with railroad personnel as to scheduled train movements and shall control the size and timing of blasting charges in such a manner that railroad traffic delays and damage to Company property is confined to the absolute minimum.
The Contractor shall execute a bond in favor of the Company as well as in favor of the State, as required by Sec. 5525.16 of the Revised Code of Ohio, and shall carry insurance of the kinds and amounts presented in the special clauses in the proposal covering work affecting railroad property and operation.
The Contractor shall pay to the Company all costs for watchmen and flagmen deemed necessary by the Company or occasioned by the operation or negligence of the Contractor or any Sub-Contractor in carrying forward work on railroad property, or any work affecting railroad operations.
The Contractor shall first secure State and Railroad approval of any methods of operation on railroad property or affecting the safety of railroad traffic, before starting such operations, the railroad will perform its engineering review of methods of operation and supervision of construction without cost to the Contractor. Billing against the Contractor by the Company will include customary percentage for vacation pay, wage taxes, insurance and overhead expense.
Before beginning work representatives of the State, Contractor and Railroad shall make a visual inspection of all railroad drainage adjacent to the project to determine their condition as to need of repair and flow characteristics. Any corrective measures indicated at the time of inspection shall be the responsibility of the Railroad. The finding resulting from the inspection shall become a part of the project record.
The extent of responsibility for any damage to, or adverse effects on the operation of these structures, resulting from the Contractor's construction operations, shall be determined jointly by the Railroad, State and Contractor before any corrective work is undertaken by the Railroad's forces. The costs for this work shall be paid by the Contractor.

SHOULDER UNDERCUT AND CONSTRUCTION

Between Sta. 630+00 and Sta. 680+00 there are various locations where the existing embankment is inadequate for construction of the final typical section. The Contractor shall remove the existing embankment in these areas to the lines shown in the cross sections and replace it with Rock Fill as defined in 203.02. Rock Fill is paid under Item 203 Embankment, as per plan.

LIMITATIONS OF WORKING HOURS

The Contractor shall schedule his operations in such a manner that all work shall be performed between 7:00 A.M. and 10:00 P.M.

PIPE UNDER RAILROAD, AS PER PLAN

See Note in Proposal.

Rev. 5-23-79

GENERAL NOTES

Revised by R.E.S. 1/77
Checked by AWL 1/77

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13/443

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EROSION CONTROL

Item 601,660,& 667 are provided in these plans for erosion control. Rock or turf of a stable nature will not be removed in order to place any of these items. The Engineer shall check and non-perform quantities or adjust locations and quantities for these items where indicated by field conditions during construction.

CONNECTIONS TO EXISTING PIPE

Where the plans provide for proposed conduit to be connected to, or to cross either over or under an existing sewer, it shall be the responsibility of the Contractor to locate the existing pipe both as to line and grade before he starts to lay the proposed conduit.

Payment for all operations described above shall be included in the unit price bid for the pertinent 603 conduit items.

ITEM 607 UNDERDRAIN AS PER PLAN
In addition to the quantities shown on the plans for this item, FABRICATED METALLIC ITEMS, as per Supplemental Specification 814 dated November 1, 1975 shall be used in lieu of concrete.

CONSTRUCTION NOTIFICATION

The Contractor shall notify the Corp of Engineers 10 days in advance of the start of work between Stations. 680+00 to Station 682+96.

HOUSE CONNECTIONS

Existing roof drains, footer drains or yard drains disturbed by the proposed work shall be provided with unobstructed outlets by connecting to a storm sewer, manhole, catch basin, through the backslope of the roadway ditches, or through the curb.

The location, type, size and grade of required replacements will be determined by the Engineer during construction.

Item 603 4" Conduit Type E, 711.29	60 L.F.
Item 603 4" Conduit Type E, 706.01, 706.02 or 706.08	60 L.F.
Item 603 6" Conduit Type F	30 L.F.

None of the above materials shall be ordered by the Contractor until authorized by the Engineer.

SPRING DRAINS

Reference is made to the detailed drawing on Standard Drawing MC-1 showing the method of draining any spring that may be shown on the plan or encountered during construction as determined by the Engineer. The following estimated quantities have been included in the general summary for this purpose:

Item 605 - 6" Unclassified Pipe Underdrain, 707.01 Type III or 707.12 as per plan 100 L.F.
Item 605 - Aggregate Drains for springs, as per plan 100 L.F.

The Contractor shall not order materials for "Spring Drains" until authorized by the Engineer and in the event no springs are encountered, the item shall be non-performed.

MAINTENANCE OF EXISTING UTILITIES

The contractor shall conduct his operations so as to maintain sewer and water flows at all times through the existing facilities that are to remain in place and through the existing facilities that are to be replaced.
The contractor shall notify The City of Shadyside, Water and Sewage Departments, of his schedule of operations and upon completion of new facilities and together with said Departments formulate a work schedule to connect the new and existing facilities with a minimum disruption of service.

UTILITIES

The contractor shall notify, at least 7 days before breaking ground all public service corporations having wires, poles, pipes, conduits, manholes or other structures that may be affected by this operation, including all structures which are affected and not shown on these plans. Any and all work required for public or private utilities will be done by and at the expense of their respective owners unless otherwise noted on these plans.

UTILITY RELOCATION

In addition to the requirements of the plan note pertaining to the Maintenance of Existing Utilities, the contractor shall use every precaution and submit his work schedule on all operations affecting The City of Shadyside water and sewer facilities and cooperate with the Village on these items at all times.

SANITARY SEWER

The Contractor shall notify the City at least seven days prior to completion of the roadway to rough grade on the portion of the County Road 41a Relocation from Sta 4+ to Sta. 27+ in order that the City can schedule their sanitary sewer work. The City shall have thirty calendar days after the roadway is completed to rough grade in which to complete their work before the Contractor may proceed with paving.

PART-WIDTH CONSTRUCTION

Because of the necessity of building portions of this project under traffic and constructing the pavement part at a time, extreme care shall be taken to prevent the construction of a butt joint on centerline in the 304 and 310 courses.

This shall be accomplished by building the 304 and 310 courses placed with the first portion of the pavement built, at least eighteen (18) inches beyond the centerline and by surfacing no closer than eighteen (18) inches to this edge of the above courses. When the second portion of the pavement is built, at least twelve (12) inches of these projecting courses shall be broken down and thoroughly keyed in with the newly placed corresponding courses in the second portion of the pavement built. Payment for this operation shall be included in the unit prices bid for the pertinent pavement items.

ITEM SPECIAL - FILL AND PLUG EXISTING CULVERT

This item shall consist of the construction of bulkheads in the existing culvert and filling the area thus sealed off with sand or other granular material approved by the Engineer.
Bulkheads shall be located at the limits of the area to be filled as indicated on the plans. The bulkheads shall consist of brick or concrete masonry with a minimum thickness of 12 inches.
The fill material shall be pumped into place or placed by some other means approved by the Engineer, so that, after settlement, at least 90 percent of the cross-sectional area of the culvert for its entire length shall be filled.
The footage of filled and plugged culvert to be paid for shall be the actual number of liner feet (measured along the centerline of the culvert from outer face to outer face of bulkheads) filled and plugged as described above.
The footage, measured as provided above, shall be paid for at the contract unit price bid per linear foot for "Item Special, Fill and Plug Existing Culvert", which price and payment shall constitute full compensation for furnishing, hauling, and placing all labor, equipment, tools, and incidentals necessary to to complete this item.

ITEM 452, AS PER PLAN

REVIEW OF EXISTING CULVERTS, SEWERS AND DITCHES

Before any work is started on the project, and again before final acceptance, representatives of the State, Penn Central Transportation Company, and the Contractor shall make a visual inspection of the existing highway and railroad culverts, sewers and ditches, which are to remain in service and which may be affected by the work. A record of the inspection shall be kept in writing by the State. All new culverts, sewers, ditches and inlets constructed as a part of the project shall be free of all foreign matter and in a clean condition before the project will be accepted by the State. All existing culverts, sewers and ditches inspected initially by the above mentioned parties shall be maintained and left in the same condition as determined by the original inspection. Any change in the condition resulting from the Contractors operations shall be corrected by the Contractor to the satisfaction of the Engineer. The cost of making inspections and any repairing or correcting of culverts or sewers or ditches, as a result of construction shall be included in the unit price bid for the respective pipe items of the contract.

TREATED SANITARY FLOW INTO HIGHWAY DRAINAGE SYSTEMS

Treated sanitary flow may be discharged into the highway drainage system provided the owner has secured the approval of the local health authorities and has acquired from the State Highway Department the official permit to have the connection made.

In each case where a permit has been issued for a sanitary connection to be made into a highway drainage conduit, it shall be provided with an inspection well, in accordance with the detail shown on Standard Drawing MC-8.

The following estimated quantities have been included in the general summary, for use as directed by the Engineer, in making the above described connections:

*Item 603, 6" Conduit, Type C 400 Lin. Ft.

Item 604, Inspection wells 4 Each
All necessary Bends & Branches shall be included for payment in the pertinent conduit item

None of the above materials shall be ordered by the Contractor until authorized by the Engineer.

*No Inspection well is required if effluent is discharged into an open ditch, channel, catch basin or manhole.

U.S.G.S. DATUM

All elevations are based on U.S.G.S. DATUM

Rev. 5-23-79

GENERAL NOTES

Revised by R.E.S. 1/77
Checked by A.W.L. 1/77

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5	OHIO		

14/443

BEL-7-11.89

ROADWAY EXCAVATION

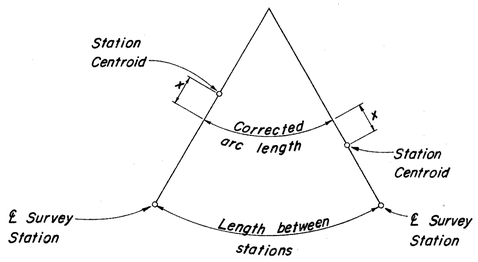
In the event slides should occur on this project due to no fault of the Contractor, the displaced material should be removed at the direction of, and in amounts determined by the Engineer in accordance with item 203 Roadway Excavation, at the unit price bid for this item. An estimated quantity of 50,000 cubic yards of excavation has been included in the general summary to allow for such a contingency. Payment, however, will be based on final measurements and, if no slides occur, this quantity will be nonperformed.

MONUMENTS

Monuments shall be constructed in accordance with details shown on Standard Drawing MC-1. For locations, see Sheet No. 18

LOCATIONS OF GUARDRAIL

The locations of guardrail runs as shown in these plans are subject to adjustment to assure that the planned installations will afford maximum protection for traffic.



METHOD OF ARC ADJUSTMENT FOR EARTHWORK

ITEM 452 - PLAIN PORTLAND CEMENT CONCRETE PAVEMENT, AS PER PLAN

In lieu of 452.01 of the specifications, contraction joints shall be constructed with dowels as shown for 451 Pavement on Standard Drawing BP-4 dated 12-6-76.

Dowels shall be plastic coated as per supplemental specification 948 dated 2-19-76.

The Longitudinal joint between simultaneously placed lanes shall be a minimum of 3½" in depth.

The texturing requirements, as per 451.09 of the specifications, shall be waived for the 452 pavement that is placed in the median where the median width is five feet or less between longitudinal joints.

EMBANKMENT CONSTRUCTION AT STRUCTURES

In order to pre-bore through the embankment and drive piles for the bridge, the embankment, as noted, shall be constructed of material meeting the requirements of 203 of the specifications except that no particles in excess of 4" size may be used in this construction.

SETTLEMENT PLATFORMS

In order to observe the amount of rate of foundation consolidation, settlement platforms as shown on Detail sheet No. 11 should be provided at the following locations:

Sta. 681+00 35' Lt.
Sta. 682+10 30' Rt.
Sta. 692+15 30' Rt.

For additional details see note in the Proposal.

UNDERGROUND MINING

The Contractor shall be forewarned of the possible impending danger from the abandoned mining and especially the area just south of the Bellaire corporation line that contains the slopes for the coal removal and ventilation.

SUBGRADE REMOVAL - between Stations 754+50 and 759+00. Subgrade under the new widening, including the shoulder area shall be undercut 18" and replaced with suitable subgrade material. A quantity of 430 cubic yards has been added to the quantities in the General Summary for "Item 203 Excavation " and Item 203 Embankment " for this work.

Between Ramp A Sta. 20+00± to Sta. 22+00± subgrade under Ramp A and B - including the shoulder areas shall be undercut 18" and replaced with suitable embankment material from Ramp A Stations 20+00 to 22+30. A quantity of 540 cubic yards has been added to the quantities in the General Summary for Item 203 Excavation " and Item 203 Embankment ", for this work.

ITEM 804 - CEMENT STABILIZED SUBBASE

In addition to the requirements of 804.08 the following shall be included.

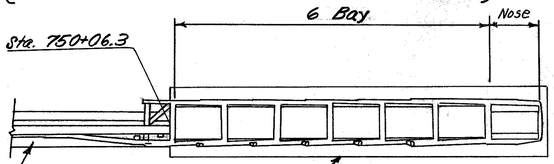
If placing equipment is used that is designed to spread and compact the cement-aggregate mixture in one pass, an acceptable air entraining admixture shall be incorporated in the mix which will produce an air content between 4% and 7% in the plastic mix. The admixture required shall be provided at the Contractors expense.

TYPE CODES
See Note on Sheet No. 19.

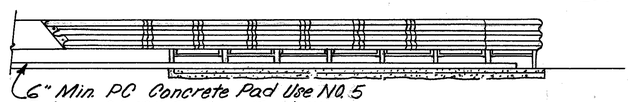
CONTRACTION AND EXPANSION JOINTS

Although specific locations of certain expansion and contraction joints have been detailed on this plan, no waiver of the specifications is intended. Provision of expansion joints at all major structures and the maximum spacing between contraction joints shall in all cases be in accordance with Standard Construction Drawings and the Specifications.

SPECIAL - IMPACT ATTENUATOR (GUARD RAIL ENERGY ABSORBING TERMINAL):



PLAN



ELEVATION

This work shall consist of an impact attenuator unit and accessories supplied by Energy Absorption Systems Inc, IBM Plaza, Chicago, Illinois 60611, and placed in accordance with the manufacturer's specifications and plan detail sheets and in reasonably close conformity with the lines, grades, thicknesses and typical sections shown on the plans or established by the Engineer.

The nose of the attenuator shall be marked with 4 evenly spaced 4" wide vertical stripes of white reflective material. The fender panels shall be marked with white reflective material in 2 vertical stripes 4" in width. Center of the first stripe shall be located 8" from the rear edge of each panel and the center of the second shall be located 2'-11" from the rear edge of each panel.

The unit shall be bi-directional and is identified as Model N° 206206-86.

The accepted quantity of impact attenuator will be paid for at the contract unit price per each installed device under this item.

TEMPORARY WATER POLLUTION, SOIL EROSION AND SILTATION CONTROL

The following estimated quantities are to be used as directed by the Engineer

207 : Temporary Seeding and Mulching

Type Code	6203	7204
	250 S.Y.	29,000 S.Y.

659 Commercial Fertilizer (12-12-12)

Type Code	6203	7204
	0.05 Tons	6.20 Tons

659 Water

Type Code	6203	7204
	1.0 M Gal	63.0 M Gal

207 Temporary Slope Drains

Type Code	7204
	700 L.F.

207 Temporary Benches, Dikes, Dams and Sediment Basins

Type Code	6203	7204
	1.0 C.Y.	275.0 C.Y.

659 Mowing

Type Code	6203	7204
	3 M. Sq. Ft.	334 M Sq. Ft.

659 Repair Seeding and Mulching

Type Code	6203	7204
	14 Sq. Yd.	7,245 Sq. Yd.

207 Straw or Hay Bales

Type Code	7204
	200 Each

WATERING AND MOWING PERMANENT SEEDED AREAS

The following estimated quantities are to be used as directed by the Engineer to promote growth and to care for permanent seeded areas, as per 659.09:

659 Water

Type Code	6203	7204
	1 M.Gal.	160 M. Gals

659 Mowing

Type Code	6203	7204
	1 M. Sq. Ft	334 M. Sq. Ft.

Rev. 5-23-79

CALCULATIONS

ITEM 203
Subgrade Compaction

Constant	Calculation	Sq.Yds/Lin.Ft.
A	[(8'+37'+3'+39.0855'+8' ÷9)+(8'+37'+3'+29.71675' +8')÷9]÷2	10.04456944
B	(8+37+3)÷9	5.33333333
C	[B+(8'+35.26'+3)÷9]÷2	5.23666666
D	[(8'+35.26'÷9)+(8'+28'÷9)]÷2	4.40333333
E	8'÷9	0.88888888
F	(25'+8)÷9	3.66666667
G	E+F	4.55555556
H	(8'+25'+3'+25'+8)÷9	7.66666667
J	(8'+25'+3'+8')÷9	4.88888889
K	(8'+24'+3.5'+3'+3.5'+24'+8)÷9	8.22222222
L	(H+K)÷2	7.94444444
M	(8'+8')÷9	1.77777778
N	K+(2÷2÷9)	8.33333333
P	K-E	7.33333334
Q	(29'x2)÷9	6.44444444
R	(6'+24'+6)÷9	4.00000000
S	[(6'+14)+(4.5'+16)]÷2÷9	2.25000000
T	[(4.5'+16)+(3'+16'+3)]÷2÷9	2.36111111
U	(3'+16'+3)÷9	2.44444444
V	[(8'+16'+3'÷9)+U]÷2	2.72222222
W	(5'+16'+6)÷9	3.00000000
X	[(5'+4'÷2)+(16'+6)]÷9	2.94444444
Y	[(5'+4'÷2)+16(+10'+8'÷2)]÷9	3.27777777
Z	(4'+16'+8)÷9	3.11111111
AA	[(4'+16)+(8'+3'÷2)]÷9	2.83333333
BB	(4'+16'+3)÷9	2.55555555
CC	(15.5'x2)÷9	3.44444444
DD	(14.5'x2)÷9	3.22222222
EE	(CC+DD)÷2	3.33333333
FF	(14.5'+12)÷9	2.94444444
GG	24'÷9	2.66666666
HH	20'÷9	2.22222222
JJ	(GG+HH)÷2	2.44444444
KK	[3'+(2x8)+2(25'+26)÷2]÷9	7.77777777
LL	[3'+2(8'+26)÷9+K]÷2	8.05555556
MM	[(8'+14)÷2+(5.5'+16)÷2]÷9	2.41666666

ITEM 301
Bituminous Aggregate Base

Constant	Calculation	Cu.Yds/Lin.Ft.
A'	[(81.24+71.38)÷2]x5"÷12÷27	1.17762
B'	40.83x5"÷12÷27	0.63009
C'	[(40.83+39.09)÷2]x5"÷12÷27	0.61667
D'	[(36.09+28.83)÷2]x5"÷12÷27	0.50093

ITEM 301
Bituminous Aggregate Base

Constant	Calculation	Cu.Yds/Lin.Ft.
A	[(80.24+70.38)÷2]x4"÷12÷27	0.92975
B	40.33x4"÷12÷27	0.49790
C	[(40.33+38.59)÷2]x4"÷12÷27	0.48716
D	[(35.59+28.33)÷2]x4"÷12÷27	0.39457
E	See Figure No.1	0.18634
F	2xE	0.37268
G	See Figure No.8	0.17754
H	See Figure No.5	0.18820
J	G+H	0.36574
K	See Figure No.6	0.19065
L	See Figure No.7	0.17657
M	K+L	0.36722
N	J+M÷2	0.36648
O	See Figure No.6~9.25'shl'd.	0.21935
P	See Figure No.7~9.25'shl'd.	0.20308
Q	See Figure No.2~9.25'shl'd.	0.21437
T	See Figure No.2	0.23119
U	(E+T)÷2+E	0.39511
V	See Figure No.3	0.41059
R	O+P	0.42243
S	Q+E	0.40071

ITEM 301 Continued

W	G+Q	0.39191
X	E+ [(E+G)÷2]	0.36828
Y	[(E+H)÷2]+ +[(E+G)÷2]	0.36921
AA	See Figure 12	0.14149
BB	See Figure 9	0.13417
CC	See Figure 15	0.14422
DD	[(AA+CC)÷2]+[(AA+BB)÷2]	0.28069
EE	BB+CC	0.27839
FF	See Figure 16	0.14583
GG	AA+[(AA+BB)÷2]	0.27932
HH	AA+[(AA+FF)÷2]	0.28515
JJ	See Figure 17	0.14306
LL	See Figure 11(2'Shl'd.)	0.05556
MM	See Figure 11(3'Shl'd.)	0.08333
NN	See Figure 13	0.08116
PP	(JJ+LL)÷2	0.09931
QQ	PP+(LL+MM)÷2	0.16876
RR	LL+MM	0.13889
SS	See Figure 14	0.07856
TT	(LL+NN÷2)+(MM+SS)÷2	0.14931
UU	NN+SS	0.15972
VV	(NN+AD)÷2+SS	0.21231
WW	See Figure 10(5'Shl'd.)	0.12269
XX	See Figure 18(6'Shl'd.)	0.14583
YY	WW+FF	0.26852
ZZ	See Figure 10(4'Shl'd.)	0.09954
AB	[(WW+ZZ)÷2]+FF	0.25695
AC	See Figure 18(10'Shl'd.)	0.23843
AD	See Figure 12(8'Shl'd.)	0.18634
AE	(WW+ZZ)÷2+(AC+AD)÷2	0.32350
AF	See Figure 10(8'Shl'd.)	0.19213
AG	ZZ+(AD+AF)÷2	0.28878
AH	ZZ+(AF+MM)÷2	0.23727
AJ	ZZ+MM	0.18287
AK	MMx2	0.16666
AL	(LL+AD)÷2+(LL+MM)÷2	0.19040
AM	(LL+AD)÷2	0.12095
AN	See Figure 4	0.37783

ITEM 304
Aggregate Base

Constant	Calculation	Cu.Yds/Lin.Ft.
A	See Figure 4	0.17695
B	A÷2	0.088475
C	(13'+13')x6"÷12÷27	0.48148148
D	12'+7'÷12÷27	0.25925925
E	(12'+12')x6"÷12÷27	0.44444444
F	C+E÷2	0.46296296
G	[(24.5'x6")+(0.5'x2¾")+ (3.5'x8")]÷12÷27	0.54437
H	{(25'x6")+[(0.5'x2¾")+ (3.5'x8")x2]}÷12÷27	0.64429
J	{(21'x6")+[(0.5'x2¾")+ (3.5'x8")x2]}÷12÷27	0.57022
K	H+J÷2	0.60725
L	17'x5"÷12÷27	0.26235
M	17'x6"÷12÷27	0.31481

ITEM 310 Subbase

Constant	Calculation	Cu.Yds/Lin.Ft.
M	(1'+15.5+15.5+1)x4"÷12÷27	0.40740740
N	(13'x2x4")+(3.5'x2x4")÷	0.6111111
	12÷27	0.40740740
P	(12'x2x4")+(3.5'x2x4")÷ 12÷27	0.38271604
Q	N+P÷2	0.39506172
R	(12'x2+1x4")+(3.5'x4")÷ 12÷27	0.35185184
S	13'x2x4"÷12÷27	0.32098765
T	11'x2x4"÷12÷27	0.27160493
U	S+T÷2	0.29629629
V	18'x4"÷12÷27	0.22222222

ITEM 402 and 404
Asphalt Concrete AC-20

Constant	Calculation	Cu.Yds./Lin.Ft.
A	37'+39.0855'x1.25"÷12÷27	0.29353973
B	37'+29.71675'x1.25"÷12÷27	0.25739486
C	(A+B)÷2	0.27546729
D	37'x1.25"÷12÷27	0.14274691
E	35.26'x1.25"÷12÷27	0.13603395
F	(D+E)÷2	0.13939043
G	28'x1.25"÷12÷27	0.10802469
H	(E+G)÷2	0.12202932
J	(13'+13')x1.5"÷12÷27	0.12037037
K	(13'+13')x1.25"÷12÷27	0.10030864
L	(12'+12')x1.5"÷12÷27	0.11111111
M	(10'+10')x1.5"÷12÷27	0.09259259
N	(L+M)÷2	0.10185185
P	(12'+12')x1.25"÷12÷27	0.09259259
Q	(10'+10')x1.25÷12÷27	0.07716049
R	(P+Q)÷2	0.08487654
S	(J+L)÷2	0.11574074
T	(K+P)÷2	0.09645061
U	16'x2"÷12÷27	0.09876543
V	16'x1.5"÷12÷27	0.07407407
W	16'x1.25"÷12÷27	0.06172839

ITEM 408
Bituminous Prime Coat (0.40 gal./sq.yd.)

Constant	Calculation	Gal./Lin.Ft.
A	(8'+8')÷9x0.40	0.71111110
B	A÷2	0.35555555
C	13'x2÷9x0.40	1.15555555
D	12'x2÷9x0.40	1.06666666
E	C+D÷2	1.11111110
F	(12x2)+4÷9x0.40	1.24444
G	16x2÷9x0.40	1.42222
H	14x2÷9x0.40	1.24444
J	G+H÷2	1.33333

ITEM 409
Seal Coat
Bituminous Material (0.30 gal./sq.yd.)

Constant	Calculation	Gal/Lin.Ft.
A	(8'+8')÷9x0.30	0.53333
B	A÷2	0.26667
C	4÷9x0.30	0.13333
D	Cx2	0.26666

ITEM 409
Seal Coat Cover Aggregate No. 8 (0.008 cu.yd./s.yd.)

Constant	Calculation	Cu.Yds./Lin.Ft.
A	(8'+8')÷9x0.008	0.01422
B	A÷2	0.00711
C	4÷9x0.008	0.00356
D	Cx2	0.00711

ITEM 452
Concrete Pavement ("T" as noted)

Constant	Calculation	Sq.Yds/Lin.Ft.
A	25÷9	2.77777778
B	2A	5.55555556
C	[(25'x2)+(29'x2)]÷2÷9	6.00000
D	(29'+29')÷9	6.44444
E	24÷9	2.66666666
F	(14'+16')÷2÷9	1.66666666
G	16÷9	1.77777777
H	(15.5'+15.5')÷9	3.44444444

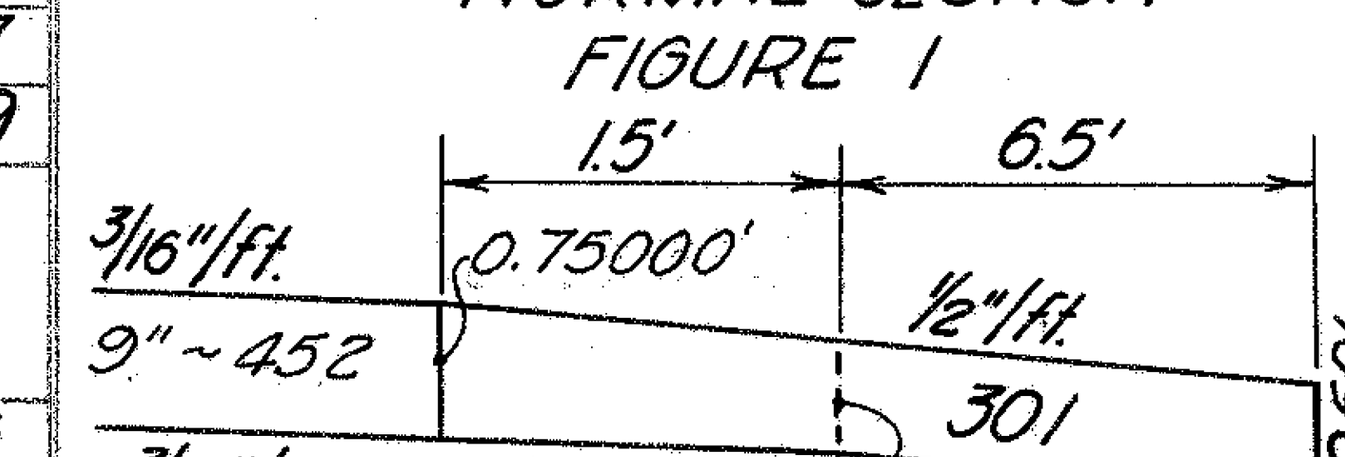
ITEM 804
4" Cement Stabilized Subbase

Constant	Calculation	Sq.Yd./Lin.Ft.
A	(25'+1.5')÷9	2.94444444
B	(3'+25'+1.5')÷9	3.27777778
C	(1.5'+25'+3'+25'+1.5')÷9	6.22222222
D	(1.5'+26'+3'+26'+1.5')÷9	6.44444444
E	(C+D)÷2	6.33333333
F	[(1.5'+24'+5')÷9]x2	6.77777776
G	(D+F)÷2	6.61111110
H	1.5'÷9	0.16666667
J	(1.5'+24'+1.5')÷9	3.00000000
K	[(1.5'+14')+(1.5'+16')]÷2÷9	1.83333333
L	[(1.5'+14'+1.5')+(1.5'+16'+1.5')]÷2÷9	2.00000000
M	(1.5'+16'+1.5')÷9	2.11111111

ITEM 804
Portland Cement (24 lbs/sq.yd. and 376 lbs./bbl.)

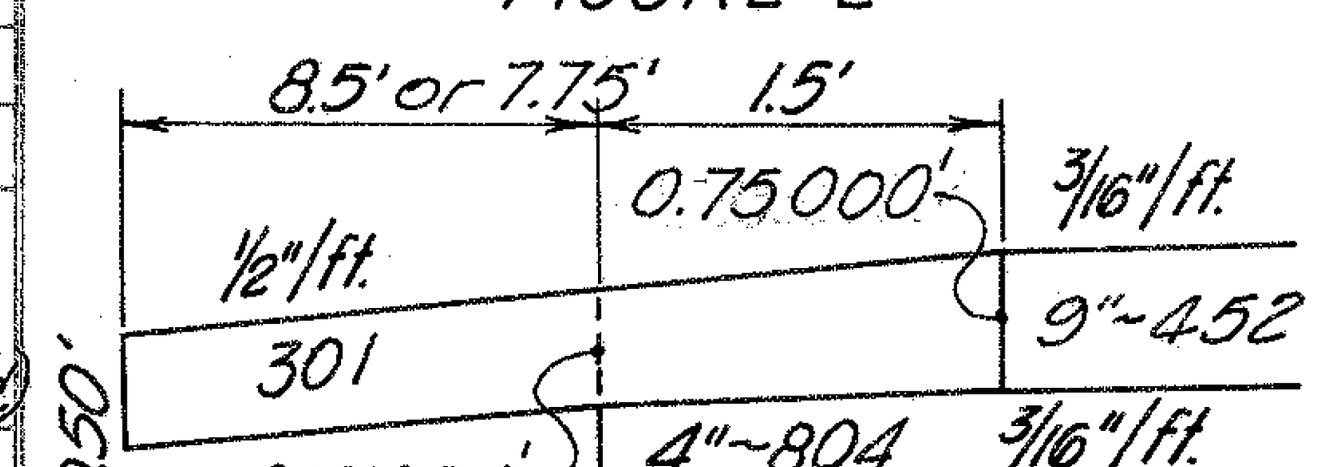
Constant	Calculation	Bbl./Sq.Yd.
A	24÷376	0.06382978

ITEM 301
NORMAL SECTION
FIGURE 1



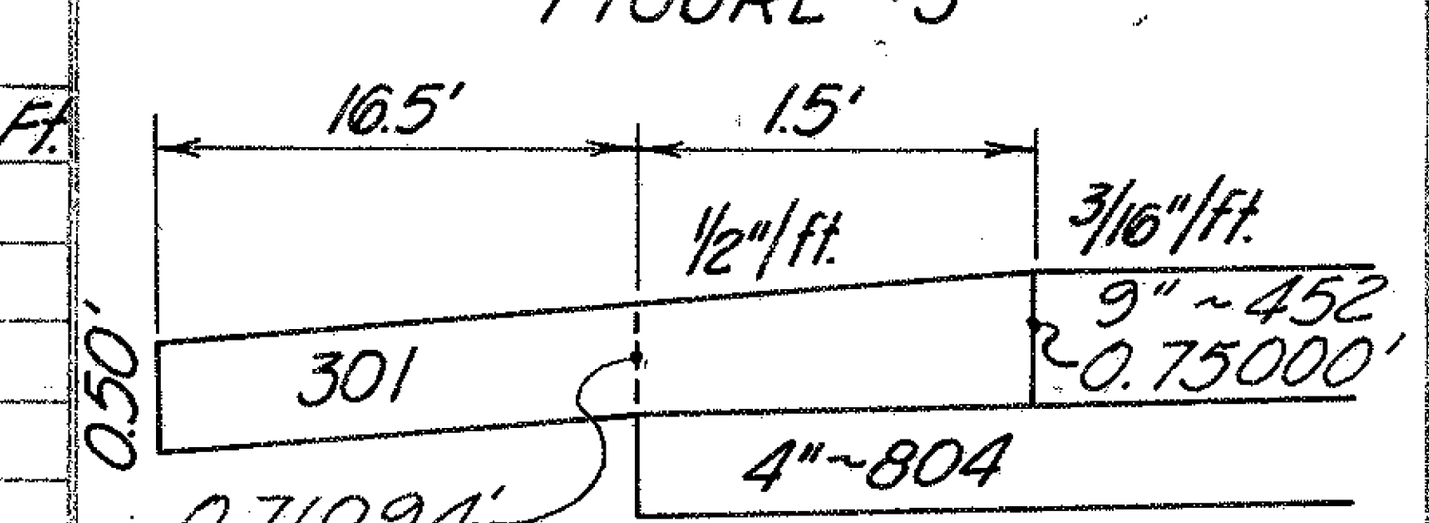
Constant "E" = NORMAL SECTION = 0.18634 cu.yd./lin.ft.
[(0.75000'+0.71094')÷2x1.5÷27]+
[(0.71094'+0.50')÷2x6.5÷27]

FIGURE 2



Constant "Q" = 0.21437 cu.yd./lin.ft.
[(0.75000'+0.71094')÷2x1.5'÷27]+
[(0.71094'+0.50')÷2x7.75'÷27]
Constant "T" = 0.23119 cu.yd./lin.ft.
[(0.50'+0.71094')÷2x8.5'÷27]+
[(0.71094'+0.75000')÷2x1.5'÷27]

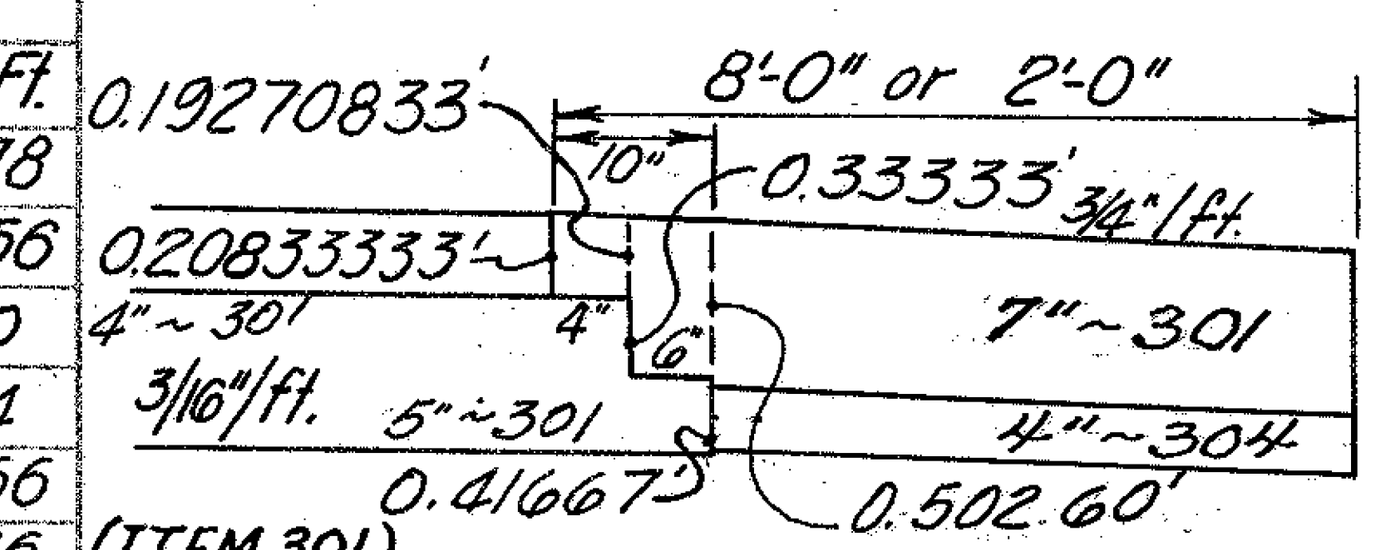
FIGURE 3



Constant "V" = 0.41059 cu.yd/lin.ft.
[(0.50'+0.71094')÷2x16.5÷27]+
[(0.75000'+0.71094')÷2x1.5÷27]

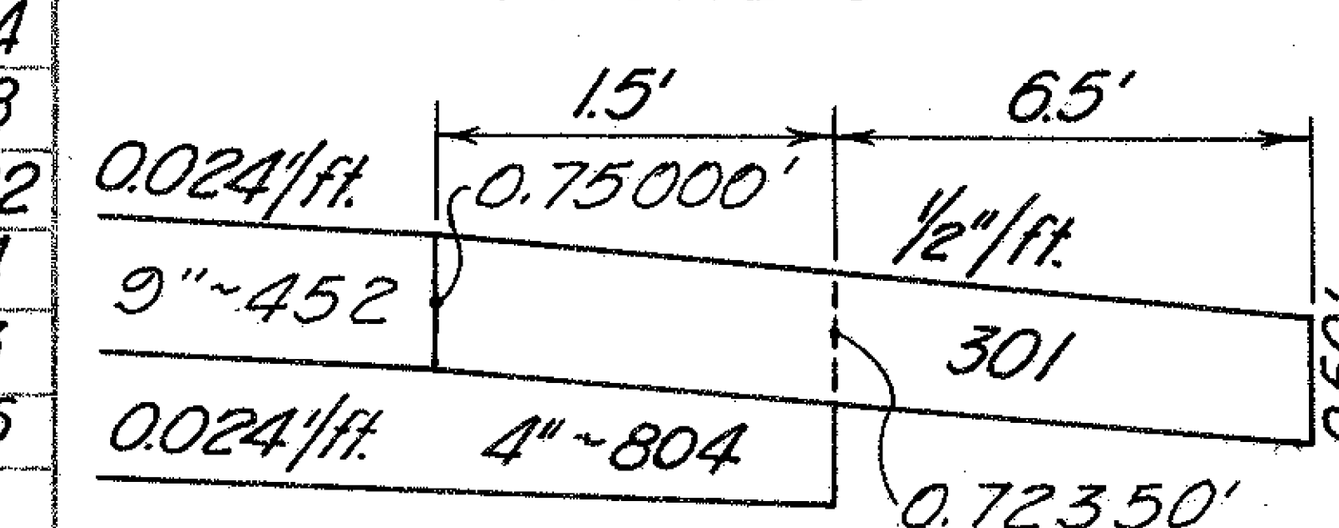
(ITEM 304) CONSTANT A = 0.17695
[(2"÷12")+7' x (4"÷12")]x2 / 27

ITEM 301 – ITEM 304
NORMAL SECTION
FIGURE 4



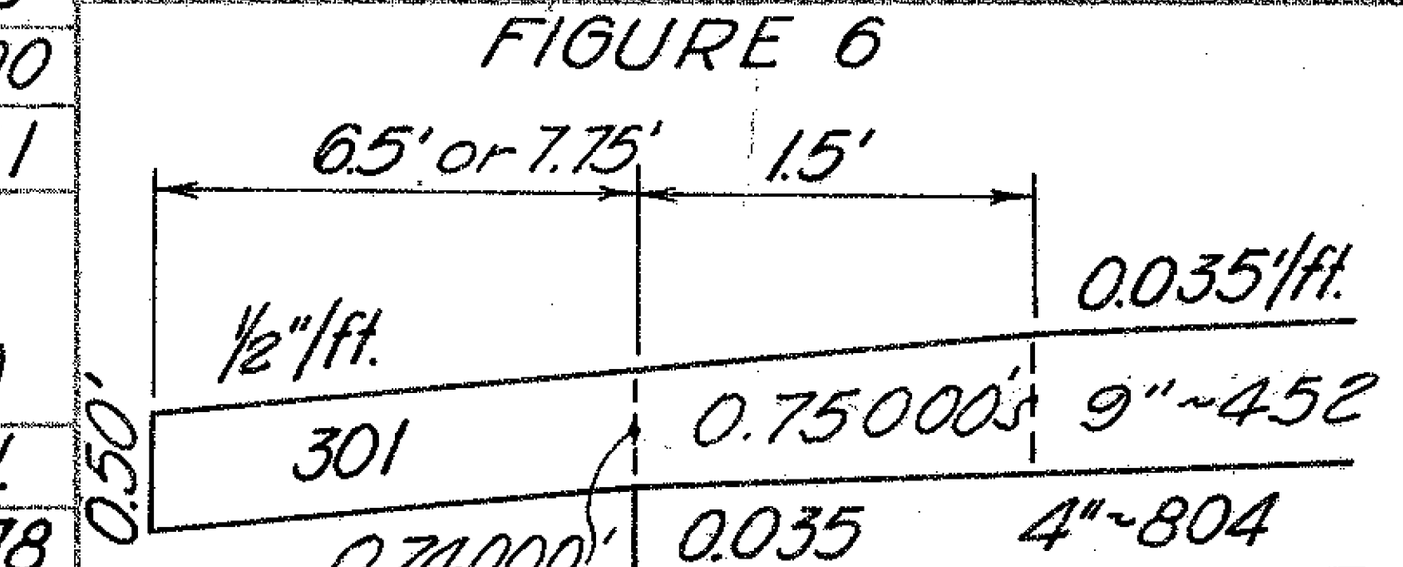
(ITEM 301)
Constant "AN" = 0.37783 cu.yd./lin.ft.
[(2"÷12)+7'x7"÷12÷27]+[(0.20833333'+
0.19270833')÷2x4"÷12÷27]+[(0.52604'+
0.50260 ')÷2x6"÷12÷27]x2

ITEM 301
LOW SIDE SUPERELEVATION
FIGURE 5



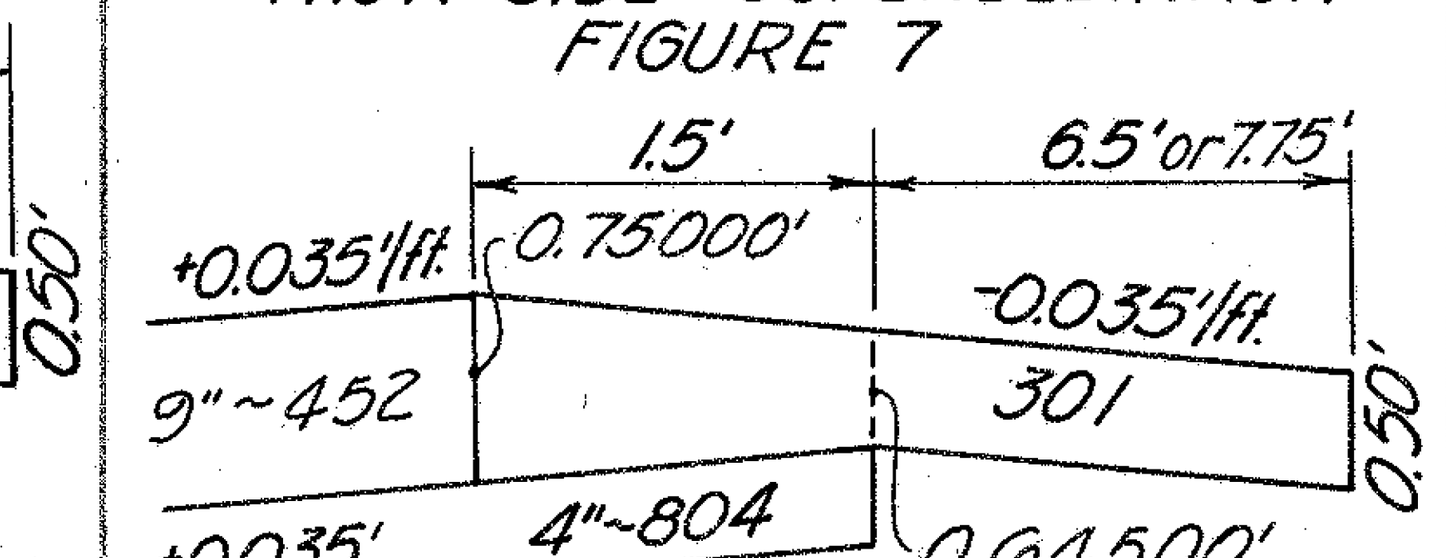
Constant "H" = 0.18820 cu.yd/lin.ft.
[(0.75000'+0.72350')÷2x1.5'÷27]+
[(0.72350' +0.50')÷2x6.5÷27]

FIGURE 6



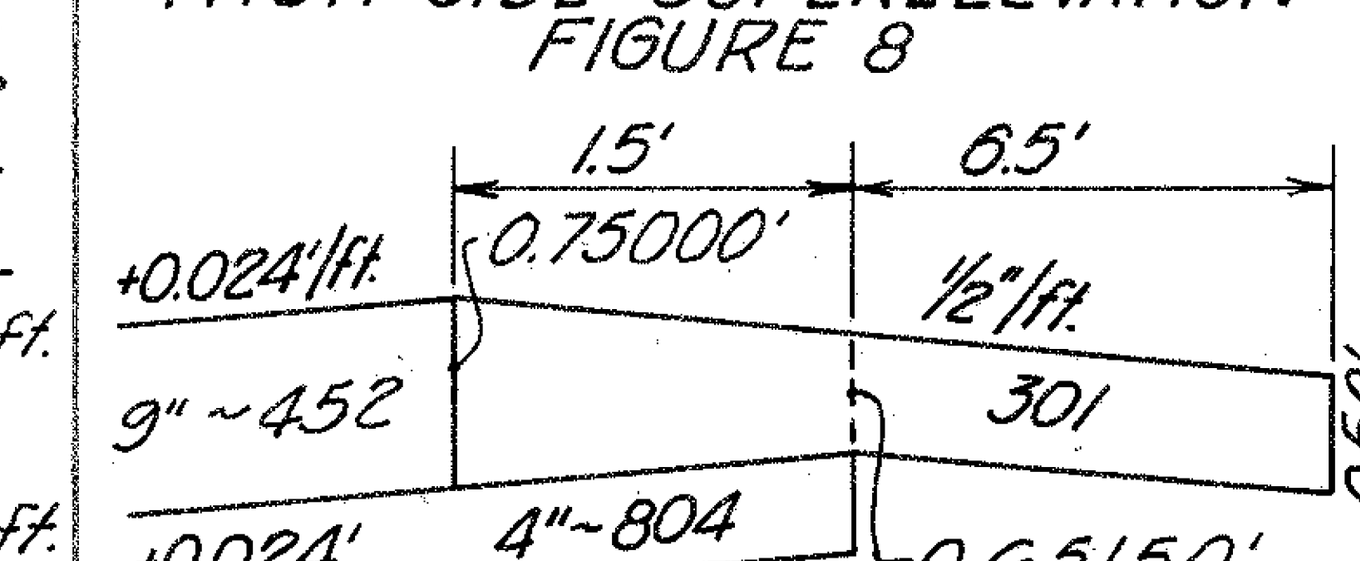
Constant "O" = 0.21935 cu.yd./lin.ft.
[(0.75000'+0.74000')÷2x1.5'÷27]+
[(0.74000'+0.50')÷2x7.75'÷27]
Constant "K" = 0.19065 cu.yd./lin.ft.
[(0.75000'+0.74000')÷2x1.5'÷27]+
[(0.74000'+0.50')÷2x6.5'÷27]

ITEM 301
HIGH SIDE SUPERELEVATION
FIGURE 7



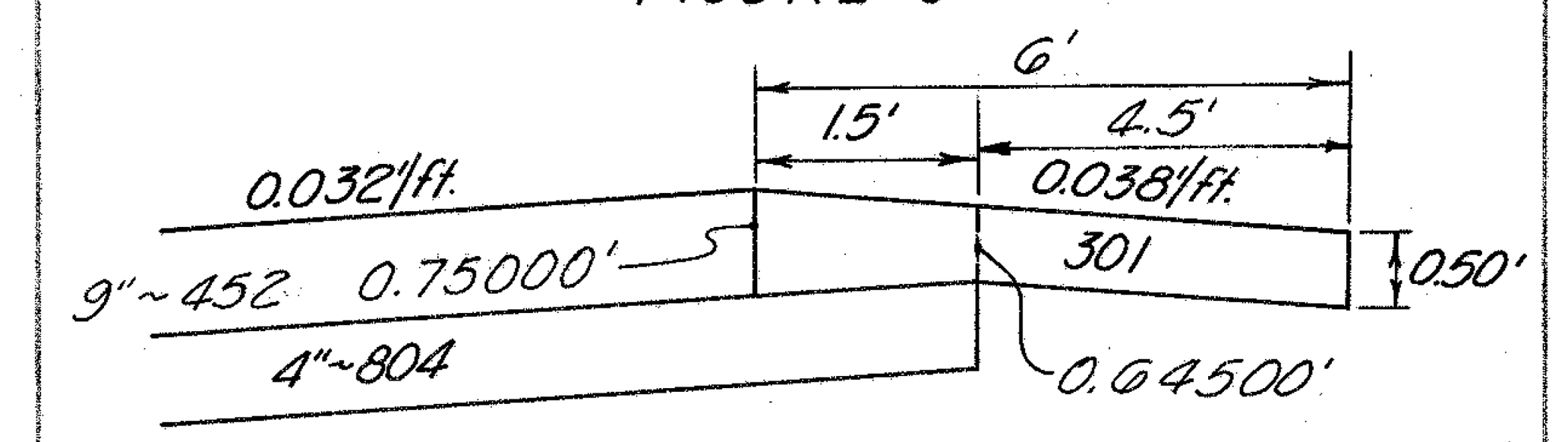
Constant "P" = 0.20308 cu.yd./lin.ft.
[(0.75000'+0.64500')÷2x1.5'÷27]+
[(0.64500'+0.50')÷2x7.75'÷27]
Constant "L" = 0.17657 cu.yd./lin.ft.
[(0.75000'+0.64500')÷2x1.5'÷27]+
[(0.64500'+0.50')÷2x6.5'÷27]

ITEM 301
HIGH SIDE SUPERELEVATION
FIGURE 8



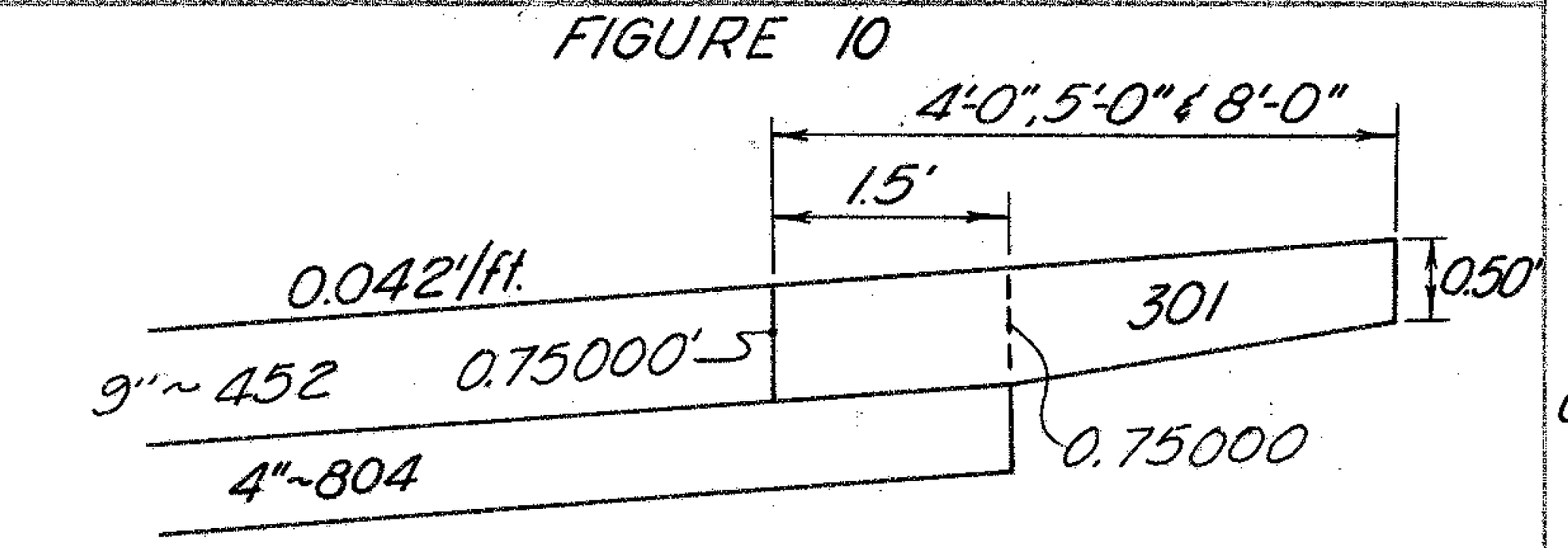
Constant "G" = 0.17754 cu.yd/lin.ft.
[(0.75000' +0.65150')÷2x1.5÷27]+
[(0.65150+0.50')÷2x6.5÷27]

ITEM 301
HIGH SIDE SUPERELEVATION
FIGURE 9



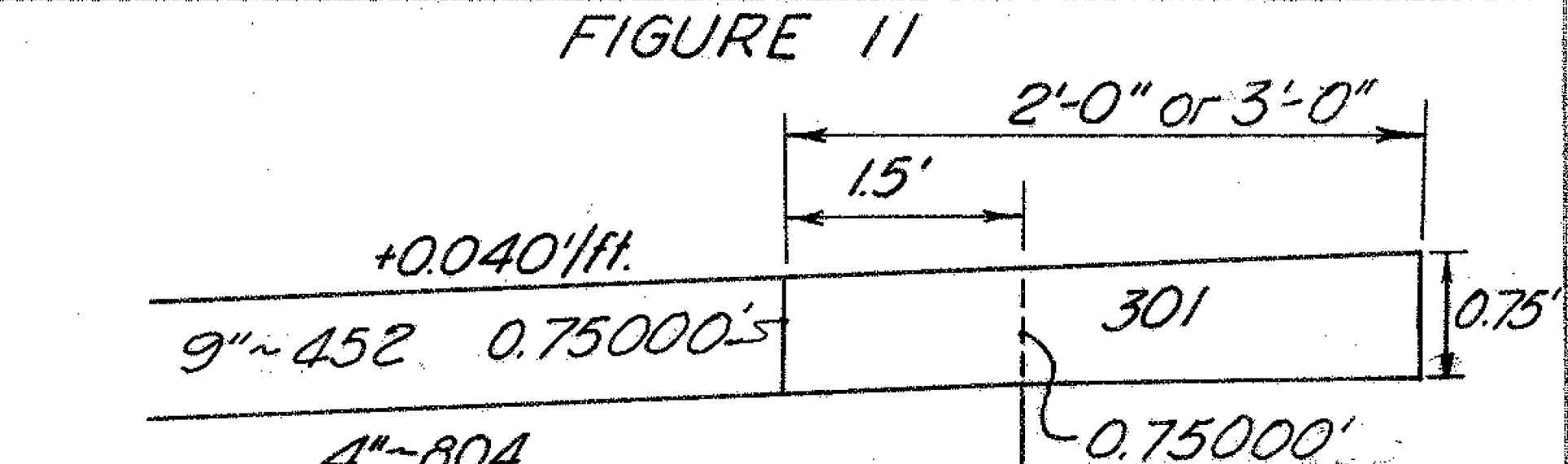
Constant "BB" = 0.13417 cu.yd./lin.ft.
[(0.75000' + 0.64500')÷2x1.5÷27]+[(0.64500'
0.50')÷2 x4.5÷27)] = 0.13417

FIGURE 10



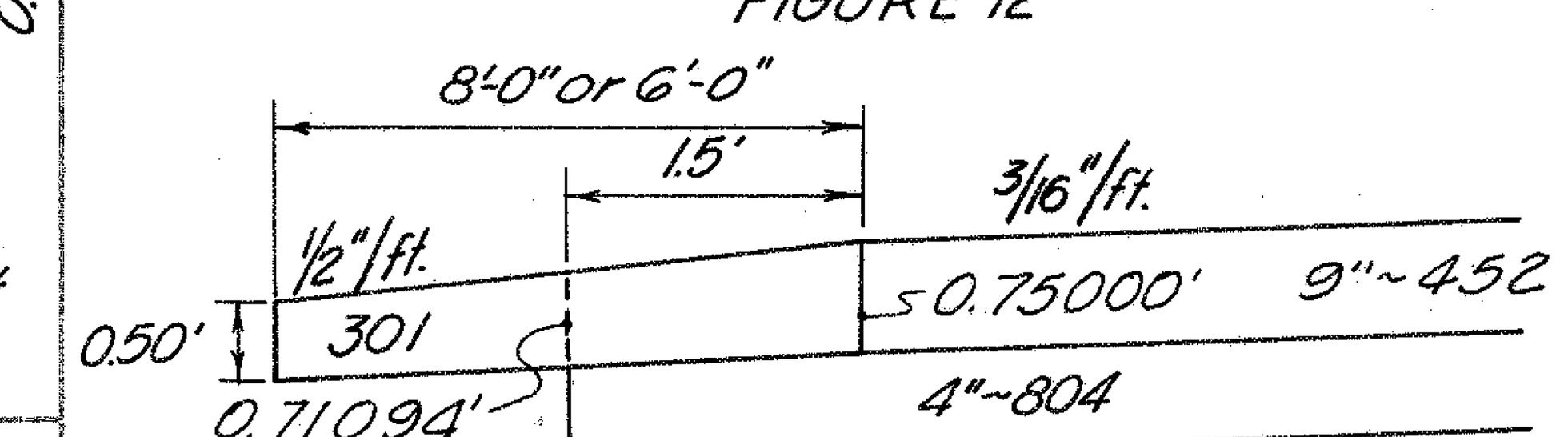
Constant "ZZ" = 0.09954 cu.yd./lin.ft. 4' Shoulder
[0.75000' x1.5÷27)]+[(0.75000'+0.50')÷2x2.5÷27]=
Constant "WW" = 0.12269 cu.ft./lin.ft. 5' Shoulder
[(0.75000' x1.5÷27)]+[(0.75000' +0.50')÷2x3.5'÷27]=
Constant "AF" = 0.19213 cu.ft./lin.ft. 8' Shoulder
[(0.75000' x1.5÷27)]+[(0.75000' +0.50')÷2x6.5÷27]

FIGURE 11



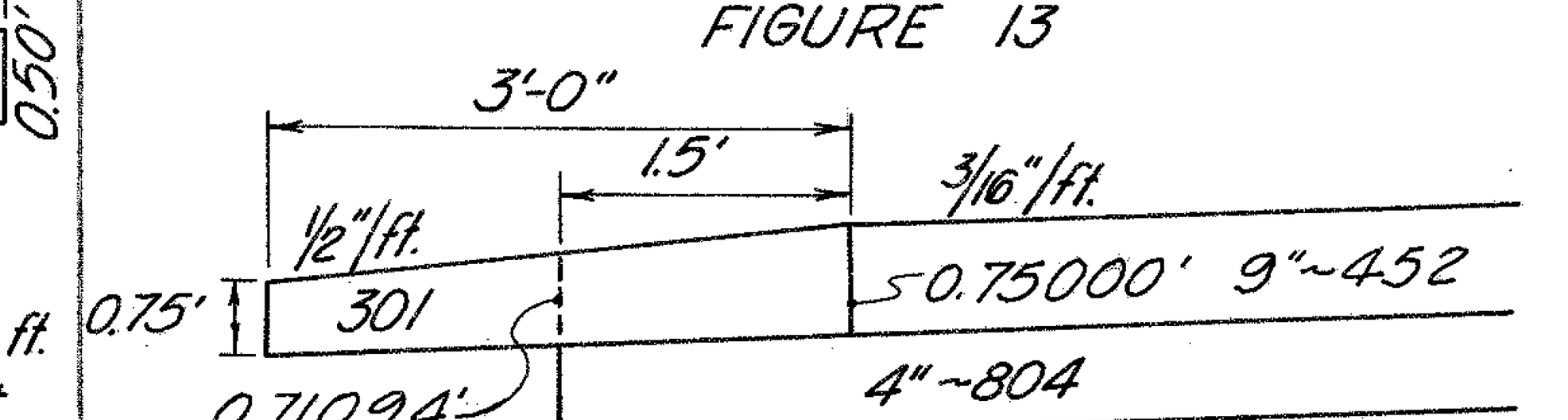
Constant "LL" = 0.05556 cu.yd./lin.ft. 2' Shoulder
0.75000'x2'÷27 = 0.05556
Constant "MM" = 0.08333 cu.yd./lin.ft. 3' Shoulder
0.75000'x3'÷27 = 0.08333

ITEM 301
NORMAL SECTION
FIGURE 12



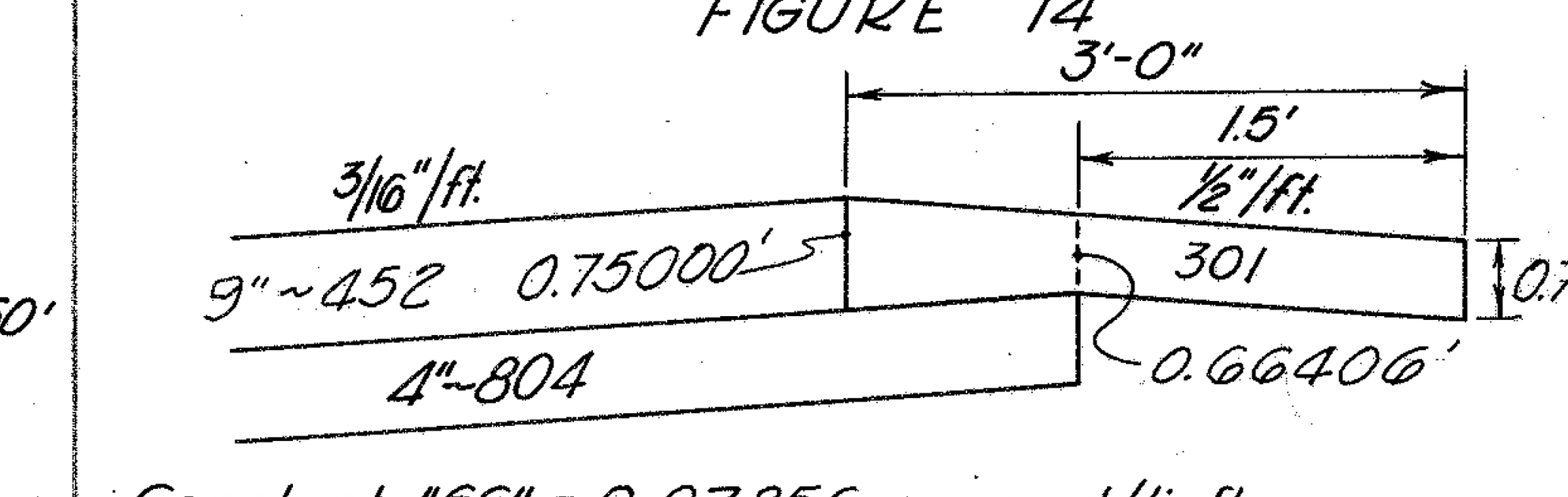
Constant "AA" = 0.14149 cu.yd./lin.ft.[(0.50'+0.71094')
÷2 x4.5÷27]+[(0.71094'+0.75000')÷2x1.5÷27]
Constant "AD"8' Normal = 0.18634 cu.yd/lin.ft. [(0.50'+
0.71094')÷2x6.5÷27]+[(0.71094'+0.75000)÷2 x1.5÷27]

FIGURE 13



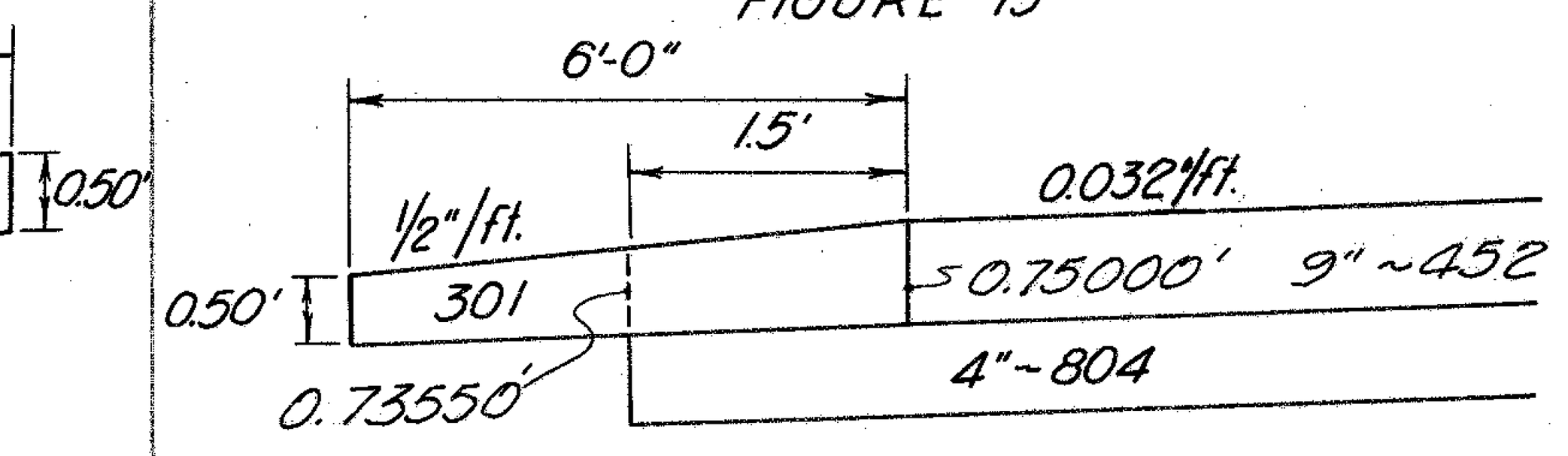
Constant "NN" = 0.08116 cu.yd/lin.ft.
[(0.75000'+0.71094')÷2x1.5'÷27]+[(0.71094'+
0.75')÷2x1.5÷27] = 0.08116

Item 301
NORMAL SECTION
FIGURE 14



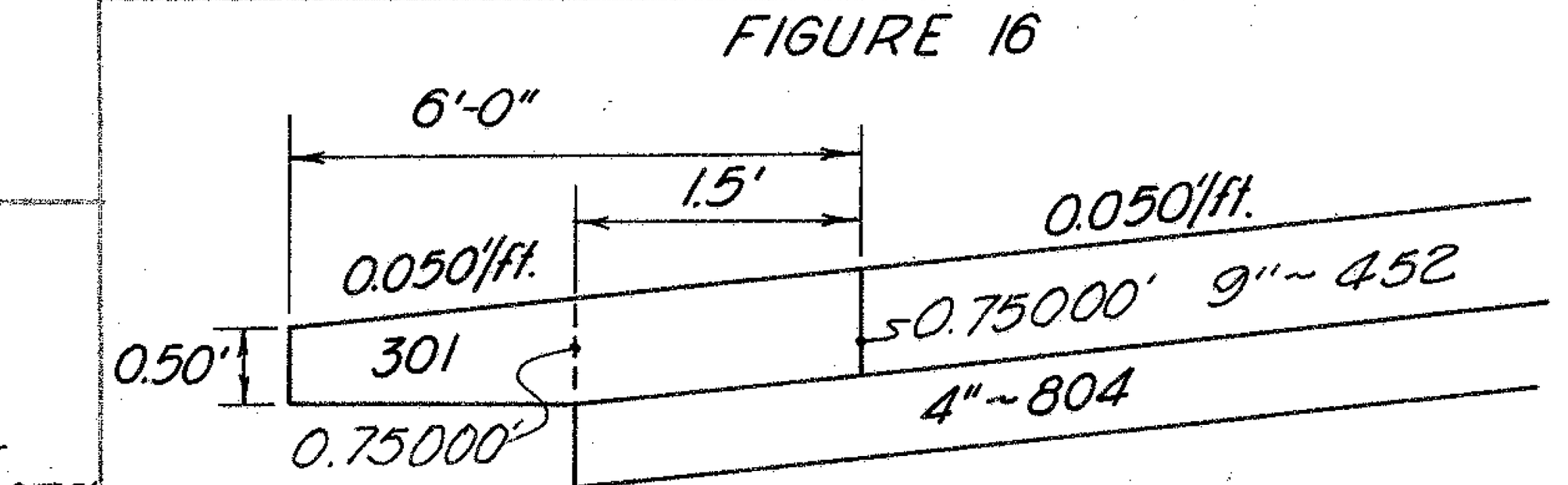
Constant "SS" = 0.07856 cu.yd./lin.ft.
[(0.75000'+0.66406')÷2x1.5÷27]+[(0.66406'+
0.75')÷2x1.5÷27] = 0.07856

LOW SIDE SUPERELEVATION
FIGURE 15



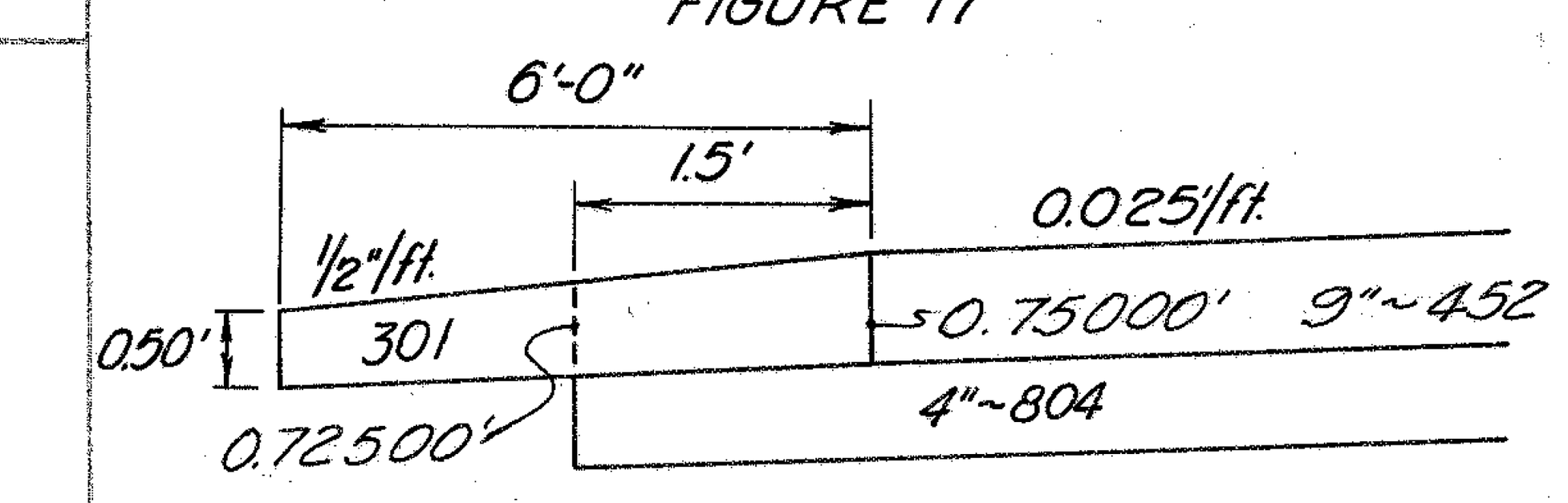
Constant "CC" = 0.14422 cu.yd./lin.ft.
[(0.50'+0.73550')÷2 x4.5'÷27]+[(0.73550'+
0.75000')÷2x1.5'÷27] = 0.14422

FIGURE 16



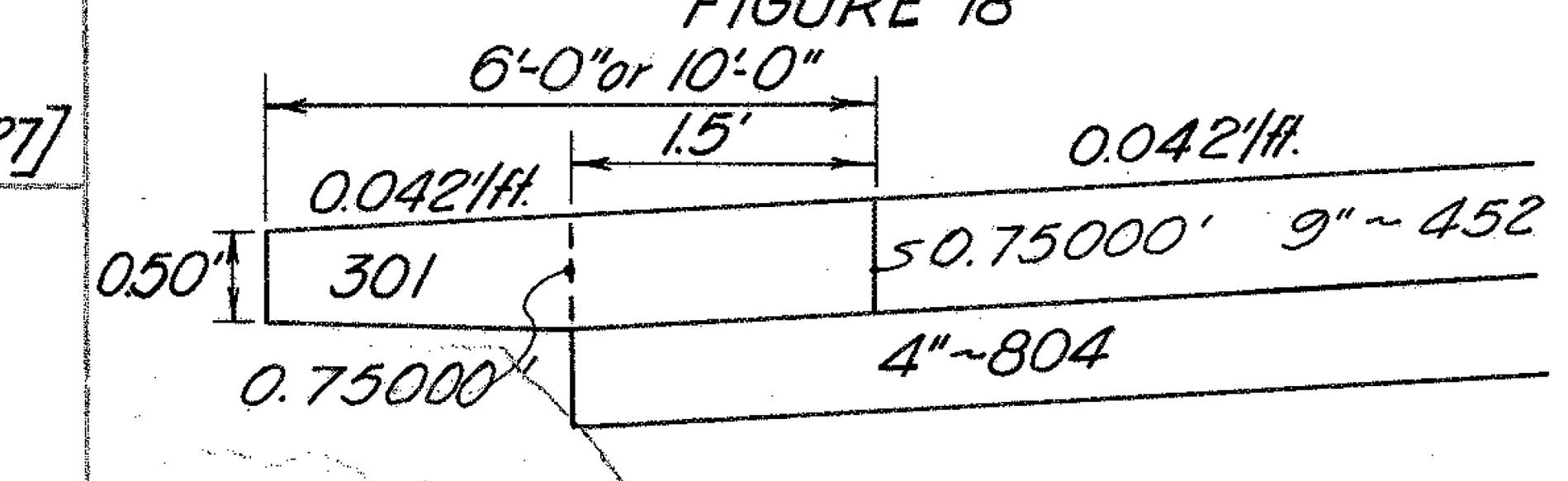
Constant "FF" = 0.14583 cu.yd./lin.ft.
[(0.50'+0.75000')÷2x4.5'÷27)]+[(0.75000'x1.5)
÷27] = 0.14583

FIGURE 17



Constant "JJ" = 0.14306 cu.yd./lin.ft.
[(0.50'+0.72500')÷2x4.5÷27]+[(0.72500'+
0.75000')÷2x1.5'÷27] = 0.14306

FIGURE 18



Constant "XX" = 0.14583 cu.yd./lin.ft. 6' Shoulder
[(0.50'+0.75000')÷2x4.5'÷27]+[0.75000'x1.5'÷27]
Constant "AC" = 0.23843 cu.yd./lin.ft. 10' Shoulder
[(0.50'+0.75000')÷2x8.5÷27]+[0.75000'x1.5÷27]

Rev. 5-23-79

CALCULATIONS

Revised by R.E.S. 1/77
Checked by A.W.L 1/77

FHWA REGION	STATE	PROJECT	FISCAL YEAR
5			

16
443

BEL-7-11.89

* 389.62 × 3 × (6½/12) ÷ 27 = 23.45

TYPE CODE 6203

LOCATION STATION TO STATION	LENGTH	REMARKS	203 Subgrade Compaction Sq. Yds.	301 Bituminous Aggregate Base Cu. Yds.	304 Aggregate Base Cu. Yds.	310 Subbase Type I Grading B Cu. Yds.	402 Asphalt Concrete, AC-20 Cu. Yds.	404 Asphalt Concrete, AC-20 Cu. Yds.	408 Bituminous Prime Coat (.040 gal/s.y.) Gal.	409 Seal Coat Bituminous Material (0.30 gal/s.y.) Gal.	409 Seal Coat Cover Aggregate No.8 (.008 c.y./s.y.) Cu. Yds.	452 9" Plain Portland Cement Conc. Pavt. Sq. Yds.	804 4" Cement Stabilized Subbase Sq. Yds.	804 Portland Cement Bbls.
FF-5.34 (12)	Lin. Ft.													
S.R. 7 Reloc.														
630+00 to 633+74.75	374.75		A 3,764.20	A+A+AN 93.133	A 616.31		C 103.23	C 103.23		A 199.87	A 5.33			
633+74.75 to 633+84.75	10.00		B 53.33	B+B+AN 15.05	B 0.88		D 1.43	D 1.43		B 2.67	B 0.07			
633+84.75 to 633+99.25	14.50		C 75.93	C+C+AN 21.48	B 1.28		F 2.02	F 2.02		B 3.87	B 0.10			
633+99.25 to 634+59.75	60.50		D 266.40	D+D+AN 77.04	B 5.35		H 7.38	H 7.38		B 16.13	B 0.43			
* 630+10.13 to 633+99.75	389.62	Deduct for Conc. Barrier		-23.45										
TOTAL TYPE CODE 6203			4,159.86	1021.45	73.82		114.06	114.06		222.54	5.93			

TYPE CODE 7204

S.R. 7 Reloc.														
639+90.25 to 640+00.25	10.00	* 10.05	F 36.67	P 2.04								A 27.78	A 29.44	A 1.88
640+00.25 to 640+75.25	75.00	* 75.40	F 275.00	G 13.39								A 208.33	A 220.83	A 14.10
640+75.25 to 640+85.25	10.00	* 9.95	H 76.67	W 3.89								B 55.56	C 62.22	A 3.97
640+85.25 to 667+50	2664.75		H 20,429.76	J 974.61								B 14,804.17	C 16,580.66	A 1,058.34
667+50 to 669+25	175.00		H 1,341.67	N 64.13								B 972.22	C 1,088.89	A 69.50
669+25 to 682+05.47	1280.47		H 9,816.94	M 470.21								B 7,113.72	C 7,967.37	A 508.56
682+05.47 to 682+15.97	10.50		H 80.50	R 4.44								B 58.33	C 65.33	A 4.17
691+34.50 to 691+42.60	8.10		F 29.70	Q 1.74								A 22.50	A 25.85	A 1.52
691+42.60 to 691+99.50	56.90		F 208.63	E 10.60								A 158.06	A 167.54	A 10.69
691+99.50 to 692+10.60	11.10		H 85.10	S 4.45								B 61.67	C 69.07	A 4.41
692+10.60 to 693+00	89.40		H 685.40	F 33.32								B 496.67	C 556.27	A 35.51
693+00 to 694+00	100.00		L 794.44	F 37.27								C 600.00	E 633.33	A 40.43
694+00 to 695+50	150.00		L 1,191.67	F 55.90								C 900.00	G 991.67	A 63.30
695+50 to 725+31.13	2781.13		K 22,867.06	F 1036.47								D 17,922.83	F 18,849.86	A 1,203.19
724+62.67 to 731+75	712.33		K 5,856.93	F 265.47								D 4,590.57	F 4,828.01	A 308.17
731+75 to 732+25	50.00		N 416.67	U 19.76								D 322.22	F 338.89	A 21.63
732+25 to 733+65.49	140.49	* 140.87 † 140.54	P 1,050.26	E 26.25								D 905.38	G 928.79	A 59.28
733+65.49 to 737+00	334.51		Q 2,155.73									D 2,155.73	G 2,211.48	A 141.16
737+00 to 740+25	325.00		Q 2,094.44									D 2,094.44	D 2,094.44	A 133.69
740+25 to 746+50	625.00	* 624.18	P 4,583.33	E 116.31								D 4,027.78	G 4,131.94	A 263.74
746+50 to 747+00	50.00	* 49.87	P 366.67	E 9.29								D 322.22	G 330.56	A 21.10
747+00 to 749+75	275.00		K 2,261.11	F 102.49								D 1,772.22	F 1,863.89	A 118.97
749+75 to 750+06.30	31.30		K 257.36	F 11.66								D 201.71	F 212.14	A 13.54
From Sheet No. 182			5,141.43	434.92								3,063.83	3,363.88	214.72
BEL-7-11.97 Appr. Slab		201.77 × 1.25 ÷ 36					7.01	7.01						
Total S.R. 7 Reloc			82,083.14	3,698.61								62,857.94	67,610.75	4,315.57
Temporary Connection														
750+06.30 to 760+00		See Comp. Bk. Pg. 5 (Temp.)	2,836.00	780.11		414.04	119.67	148.52						
‡ 640+50.25 to 682+40.97	4190.72													
‡ 691+74.50 to 692+97.63	123.13													
	4313.85	Add for Conc. Barrier										1437.95		
TOTAL TYPE CODE 7204			84,919.14	4,478.72		414.04	126.68	155.53				64,295.89	67,610.75	4,315.57

x .376 ÷ 2000 = 811.33 Tons

‡ 4313.85 × 3 ÷ 9 = 1437.95

LEGEND
✳ Corrected length of shoulder.
⌖ Corrected length of Item 804.
† Corrected length of Item 451.
† Corrected subgrade.

Rev. 5-23-79

CALCULATIONS

CALCULATIONS

Revised by R.E.S. 1/77
Checked by AWL 1/77

FHWA REGION	STATE	PROJECT	
5	OHIO		

17/443

BEL-7-11.89

TYPE CODE 7204

LOCATION	LENGTH	REMARKS	203 Subgrade Compaction		301 Bituminous Aggregate Base		304 Aggregate Base	310 Subbase Type I Grading B	402 Asphalt Concrete, AC-20	404 Asphalt Concrete, AC-20	408 Bituminous Prime Coat (0.40gal/s.y.)	409 Seal Coat Bituminous Material (0.30gal/sq.yd.)	409 Seal Coat Cover Aggregate No.8 (1.008c.y./sq.yd.)	452 9" Plain Portland Cement Conc. Pav't.		452 7" Plain Portland Cement Conc. Pav't.		804 4" Cement Stabilized Subbase		804 Portland Cement
Station to Station			Sq. Yds.		Cu. Yds.		Cu. Yds.	Cu. Yds.	Cu. Yds.	Cu. Yds.	Gal.	Gal.	Cu. Yds.	Sq. Yds.		Sq. Yds.		Sq. Yds.		Bbls.
FF-534 (12)	Lin. Ft.																			
Interchange																				
Ramp "A"																				
12+75 to 13+00	25.00	(feathering) see Calc. Bk. pg.								1.66										
13+00 to 14+25	125.00	✳⊕ 125.79'	R	503.16	QD	35.31								E	335.44			J	317.37	24.09
14+25 to 16+00	175.00	✳⊕ 176.10'	R	704.40	EE	49.02								E	469.60			J	528.30	33.72
16+00 to 17+25	125.00	✳ 125.45'	R	501.80	QD	35.22								E	334.53			J	376.35	24.02
17+25 to 19+25	200.00		R	800.00	GG	55.86								E	533.33			J	600.00	38.30
19+25 to 19+99.47	74.47		R	297.88	GG	20.80								E	198.59			J	223.41	14.26
19+99.47 to 21+95.49	195.99	see Calc. Book pg. 23.3		888.17											628.86				693.77	44.28
21+95.49 to 22+95.49	100.00	✳ 99.84'+⊕ 100.52'	S	226.17	PP	9.92								F	167.53			L	201.04	12.83
22+95.49 to 23+95.49	100.00	✳ 100.52' ⊕ 100.52'	T	237.34	QQ	16.96								F	167.53			L	201.04	12.83
23+95.49 to 24+25	29.51	✳⊕ + 29.67'	U	72.53	RR	4.12								G	52.75			M	62.64	4.00
24+25 to 26+25	200.00	✳⊕ + 200.67'	U	490.53	TT	29.96								G	356.75			M	423.64	27.04
26+25 to 31+27.29	502.29		U	1,222.82	UU	80.23								G	892.96			M	1060.39	67.68
31+27.29 to 32+27.29	100.00		V	272.22	VV	21.23								G	177.78			M	211.11	13.48
TOTAL RAMP "A"				6,217.02		358.63									4,315.65				4,959.06	316.53
Ramp "B"																				
21+13.54 to 21+49.54	36.00	+ 36.23 ‡ see Calc. Bk. pg. 9	W	108.69	YY	9.67		# 4.67						G	64.41			M	76.49	4.88
21+49.54 to 21+79.35	29.81	+ 30.00'	X	88.33	AB	7.66								G	53.33			M	63.33	4.04
21+79.35 to 22+54.93	75.58	+ 76.05'	Y	249.27	AE	24.45								G	135.20			M	160.55	10.25
22+54.93 to 24+25	170.07		Z	529.11	AG	40.11								G	302.35			M	359.04	22.92
24+25 to 24+75	50.00		AA	141.67	AH	11.86								G	88.89			M	105.56	6.74
24+75 to 25+75	100.00	+ 97.93'	BB	250.27	AJ	18.29								G	174.10			M	206.74	13.20
25+75 to 30+00	425.00	+ 421.83'	U	1,031.14	AK	70.83								G	749.92			M	890.53	56.84
30+00 to 35+00	500.00		U	1,222.22	AK	83.33								G	888.89			M	1,055.56	67.38
35+00 to 36+00	100.00		WW	241.67	AL	19.04								G	177.78				211.11	12.77
36+00 to 37+00	100.00		WW	241.67	AM	12.10								G	177.78				211.11	12.77
TOTAL RAMP "B"				4,104.04		306.34		# 4.67							2,812.65				3,340.02	211.79
SIDEROADS																				
Lincoln Ave. Reloc.																				
5+28 to 6+21.73	93.73		CC	322.85				M 38.19								H	322.85			
6+21.73 to 7+75	153.27		CC	527.93			C 73.80	M 62.44	J 18.45	K 15.37	C 177.11									
7+75 to 8+00	25.00	see Calc. Bk. pg. 22					10.19	7.41	2.55	2.12	24.44									
TOTAL LINCOLN AVE.				850.78			83.99	108.04	21.00	17.49	201.55						322.85			
Alley No. 1																				
1+08.83 to 1+38.07	29.24	Approach, see Calc. Bk. pg. 23					9.33			3.73	26.87									
1+38.07 to 2+37.00	98.93						D 25.65													
TOTAL ALLEY NO. 1							34.98			3.73	26.87									
Co. Rd. 46 Reloc.																				
0+50 to 0+75	25.00		EE	83.33			F 11.57	Q 9.88	S 2.89	T 2.41	E 27.78									
0+75 to 1+57.20	82.20		DD	264.87			E 36.53	P 31.46	L 9.13	P 7.61	D 81.68									
1+57.20 to 6+25	467.80		FF	1,371.41			G 254.66	R 164.60	L 51.98	P 43.31	D 498.99	C 62.37	C 1.07							
6+25 to 8+86.99	261.99		GG	698.64			H 168.80	S 84.10	L 29.10	P 24.26	D 279.46	D 69.86	D 1.86							
8+86.99 to 9+86.99	100.00		JJ	244.44			K 60.73	U 29.63	N 10.19	R 8.49	G 142.22	D 26.67	D 0.71							
9+86.99 to 43+75	3,388.01		HH	7,528.91			J 1,931.91	T 920.20	M 313.70	Q 261.42	F 4,216.04	D 903.47	D 24.09							
43+75 to 44+00	25.00	(Feathering) see Calc. Bk. pg. 35					3.76	1.08	0.75	1.37	13.89	8.53	0.22							
TOTAL C.R. 46 RELOC.				10,197.60			2,467.96	1,240.95	417.74	348.87	5,266.06	1,070.70	28.55							
Service Road No. 1																				
4+85 to 7+70.61	285.61		M	507.75			L 74.93			U 28.21										
7+70.61 to 8+18.76		Approach see Calc. Bk. pg. 32		133.00			19.57			7.39										
TOTAL SERVICE RD. 1				640.75			94.50			35.60										
Service Road No. 2																				
0+10.00 to 0+45.00		Approach see Calc. Bk. pg. 32		118.77			17.34			6.60										
0+45.00 to 1+82.85	137.85		M	245.07			L 36.16			U 13.62										
TOTAL SERVICE RD. 2				363.84			53.50			20.22										
Florence Street																				
0+24.36 to 0+60.00	35.64		M	63.36			M 11.22	V 7.48	V 2.64	W 2.20	A 25.34									
TOTAL FLORENCE ST.				63.36			11.22	7.48	2.64	2.20	25.34									
TOTAL THIS SHEET				22,437.39		664.97	2,746.15	1,361.14	441.38	428.11	5,519.82	1,070.70	28.55		7,128.30		322.85		8,299.08	528.32

LEGEND
✳ Corrected length of shoulder.
‡ Corrected length of Item 452
⊕ Corrected length of Item 804.

x 376 ÷ 2000 = 99.32 Tons

Revised by R.E.S. 2/77
Checked by AWL 2/77

FHWA REGION	STATE	PROJECT	FISCAL YEAR
5			

18 / 443

BEL-7-11.89

CALCULATIONS

203 EARTHWORK & PROTECTION QUANTITIES

Station	to Station	Excavation Cu. Yds.	Embankment Cu. Yds.	Protection Sq. Yds.
630+00	634+18.75	186	2762	1,128
Total Type Code 6203		186	2762	1,128
640+00	650+00	2,749	4949	1,745
650+00	660+00	1,836	1289	2,417
660+00	670+00	907	2030	2,698
670+00	680+00	2,025	2516	1,483
680+00	690+00	140	24,604	8,575
690+00	700+00	1,609	45,632	13,375
700+00	710+00	852	16,177	11,381
710+00	720+00	3,954	49,665	18,195
720+00	730+00	93,409	55,542	22,371
730+00	740+00	178,938	23,681	6,781
740+00	750+00	129,563	5,277	6,129
750+00	760+00	35,106	9,208	8,137
Total Type Code 7204		451,088	240,570	103,287
Grand Total Mainline		451,274	243,332	104,415
SIDE ROADS				
Lincoln Ave.		324	148	867
33rd. Street			420	560
County Road 46		112,666	40,869	36,495
Florence Street		47	4	90
Service Road No. 1		2,930		987
Service Road No. 2		2,557		1,071
Park Drive No. 2		10	38	85
~~Boat Ramp Access Road~~		14		
Total Sideroads		118,548	41,479	40,155
Ramp A		21,350	3,985	10,654
Total Type Code 7204		590,986	286,034	154,096
GRAND TOTAL		591,172	288,796	155,224

609 CONCRETE CURB & CURB & GUTTER

	Concrete Curb Type 2-A L.F.	Concrete Curb Type 6 L.F.			Curb & Gutter L.F.
Type Code 7204					
From Sheet 23 & 24		24			
From Sheet 184	147				307
From Sheet 157		275			
From Sheet 10					630
From Sheet 186		202			
From Sheet 5		1015			
Total Type Code 7204	147	1516			937
Type Code 6203					
From Sheet 23		24			
Total Type Code 6203		24			

203 SUBGRADE COMPACTION

	S.Y.	S.Y.
Type Code 6203		
From Sheet No. 16	4160	
Total Type Code 6203	4160	
Type Code 7204		
From Sheet No. 16		84,979
From Sheet No. 17		22,438
Deduct for rock cut area 107,417 x 20%		-21,483
From Sheet No. 186		487
Total Type Code 7204		86,421

605 AGGREGATE DRAINS

Lin. Ft. x Avg. Length ÷ 50	Lin. Ft.	Lin. Ft.
Type Code 6203		
459.75 x 11.94 ÷ 50	109.79	
417.25 x 8.56 ÷ 50	71.43	
Total Type Code 6203	181.22	

612 CONCRETE MEDIAN

	As per Plan S.Y.	S.Y.
Type Code 6203		
Sta. 630+00 to 630+10.13 = 10.13		
10.13 x 3 ÷ 9	3.4	
Total Type Code 6203	3.4	
Type Code 7204		
Ramp Nose From Sheet No. 9 Calc. Book		28.01
Total Type Code 7204		28.01

616 WATER

	M/Gal.	M/Gal.
Type Code 6203		
From Subgrade Compaction 4160		
4160 x 1/4 ÷ 1000	1.04	
Total Type Code 6203	1.04	
Type Code 7204		
From Subgrade Compaction 86,421		
86,421 x 1/4 ÷ 1000		21.61
Total Type Code 7204		21.61

616 CALCIUM CHLORIDE

	Tons	Tons
Type Code 6203		
From Water 1.04		
1.04 x 1000 x .0024	2.50	
Total Type Code 6203	2.50	
Type Code 7204		
From Water 21.61		
21.61 x 1000 x .0024		51.85
Total Type Code 7204		51.85

659 SEEDING & MULCHING

	S.Y.	S.Y.
Type Code 6203		
From Protection	1128	
Total Sodding	42	
Total Jute Matting	66	
Total Type Code 6203	1020	
Type Code 7204		
From Protection		154,096
Total Rock Channel Protection		2,001
Total Riprap		204
Total Sodding		725
Total Jute Matting		2,963
Total Type Code 7204		148,203
Total to Fertilizer & Liming Type 6203	1128	
Type 7204		151,891

659 COMMERCIAL FERTILIZER

	Tons	Tons
Type Code 6203		
From Seeding		
(1128 x 20 x 9) ÷ (1000 x 2000)		
Total Type Code 6203	0.10	
Type Code 7204		
From Seeding		
(151,891 x 20 x 9) ÷ (1000 x 2000)		
Total Type Code 7204		13.67

659 AGRICULTURAL LIMING

	Tons	Tons
Type Code 6203		
From Seeding		
(1128 x 100 x 9) ÷ (1000 x 2000)		
Total Type Code 6203	0.51	
Type Code 7204		
From Seeding		
(151,891 x 100 x 9) ÷ (1000 x 2000)		
Total Type Code 7204		68.35

203 PROOF ROLLING

	Hrs.	Hrs.
Type Code 6203		
From Subgrade Compaction 4160		
4160 ÷ 3000 =	1.39	
Total Type Code 6203	1.39	
Type Code 7204		
From Sheet No. 16 84,979		
From Sheet No. 17 (Ramps) 10,321		
95,300 x 0.80 ÷ 3000 =		25.41
Total Type Code 7204		25.41

604 CENTERLINE REFERENCE MONUMENT & ASSEMBLIES

REFERENCE MONUMENTS		MONUMENT ASSEMBLY	
Type Code 6203	Each	Type Code 7204	Each
P.O.T. Sta. 633+00	2		
Total 6203	2		
Type Code 7204	Each		
P.O.C. Sta. 641+00	2		
P.O.C. Sta. 646+00	2	County Road 46	
P.O.C. Sta. 651+00	2	P.O.T. Sta. 0+50	1
P.O.C. Sta. 655+00	2	P.C. Sta. 4+15.52	1
P.O.C. Sta. 660+00	2	P.T. Sta. 8+51.08	1
P.O.C. Sta. 665+00	2	P.C. Sta. 8+86.99	1
P.C.C. Sta. 669+33.19	2	P.O.C. Sta. 13+00	1
P.O.C. Sta. 675+00	2	P.O.C. Sta. 18+00	1
P.O.C. Sta. 680+00	2	P.T. Sta. 22+61.97	1
P.O.C. Sta. 682+00	2	P.C. Sta. 27+99.91	1
P.O.T. Sta. 693+00	2	P.O.C. Sta. 33+00	1
P.O.T. Sta. 697+00	2	P.O.C. Sta. 38+00	1
P.C. Sta. 700+95.76	2	P.T. Sta. 41+84.03	1
P.O.C. Sta. 705+00	2		
P.O.C. Sta. 710+00	2	Total 7204	11
P.O.C. Sta. 715+00	2		
P.O.C. Sta. 720+00	2		
P.O.C. Sta. 726+00	2	REFERENCE MONUMENTS	
P.O.C. Sta. 730+00	2		
P.O.C. Sta. 735+00	2	Ramp A	
P.O.C. Sta. 740+00	2	P.O.C. Sta. 13+00	2
P.O.C. Sta. 746+00	2	P.T. Sta. 16+72.32	2
P.C.C. Sta. 750+06.30	2	P.C. Sta. 21+81.42	2
Total 7204	46	Total 7204	6
		Grand Total	52

Sheet No.	607 Fence Type 47 Lin. Ft.	607 Fence Type C.L. Lin. Ft.	601 Rock Channel Protection Cu. Yds.
401	630		
402	1291		
403	1470		9
404	1497		
407		438	
413		502	
414		499	
415		502	
416		437	
419		342	
Total	4888	2720	9

611 APPROACH SLABS

Bridge Number	Concrete 15" T S.Y.	Concrete 17" T S.Y.	407 Tack Coat. Gals.	407 Cover Agg. Tons
Type Code 7204				
BEL-7-1197	203.35		20.33	1.41
BEL-7-1197	191.86			
BEL-7-1289	392.55			
BEL-7-1366		518.63		
Total Type Code 7204	787.76	518.63	20.33	1.41

GENERAL SUMMARY

NOTE:
ALL REFERENCES TO TYPE CODE 6203 THROUGHOUT THE PLANS SHALL BE CONSIDERED TO BE TYPE CODE 7204.

Revised by R.E.S. 2/77
Checked by A.W.L 2/77

FHWA REGION	STATE	PROJECT	FISCAL YEAR
5	OHIO		

BEL - 7 - 11. 89

19 / 493

ITEM NO.	TYPE CODE 6203 (except as noted) Sheet No. 12	14	18	22	23	TOTAL	UNIT	TYPE CODE 7204 (except as noted) Sheet No. 11-B	12	14	18	23	24	25	26	27	28	29	30	31	33	34	35	36	38	39	40	41	163	164	184	188	190	192	194	233	244	260	TOTAL	UNIT	ITEM NO.	GRAND TOTAL	UNIT	DESCRIPTION ROADWAY
special																							3				1		1										5	each	special	5	each	drilled water well abandoned
special										3																												3	each	special	3	each	settlement platform
201	lump					lump	lump		lump																													lump	lump	201	lump	lump	clearing and grubbing
SPECIAL																											1										1	each	SPECIAL	1	each	impact attenuator, GREAT system, Model No. 206 206 56
202																											2										2	each	202	2	each	underground storage tank removed
202																							1	1			1		1			1					5	each	202	5	each	privy vault removed
202																							3	2				2	1								8	each	202	8	each	septic tank removed
202																		1																			1	each	202	1	each	gate removed for re-use
202																		1																			1	each	607	1	each	gate rebuilt
202																					lump				lump	lump	lump		lump	lump							lump	lump	202	lump	lump	structures removed
202																												lump		lump							lump	lump	202	lump	lump	portions of structures removed
202																						80				50	142	40	48			898					1258	lin.ft.	202	1258	lin.ft.	pipe removed 24" and under.
202																			80		264	364			2506	1589		722	734	983		175					7417	sq.yds.	202	7417	sq.yds.	pavement removed
202																		1232	1104	143	1105		34						1161			81					4860	sq.ft.	202	4860	sq.ft.	walk removed
202																									68	547			339								954	lin.ft.	202	954	lin.ft.	curb and gutter removed
202																						1				3	1	3	3			2					13	each	202	13	each	catch basin or inlet removed
202																									1		3										4	each	202	4	each	catch basin or inlet abandoned
202																				1	1																2	each	202	2	each	manhole, abandoned
202																	1	1	1			1										1					5	each	202	5	each	manhole, removed
203		1				1	hours				25																										25	hours	203	26	hours	proof rolling
203		186				186	cu.yds			50000	590,986																										640,966	cu.yds.	203	641,172	cu.yds.	excavation, not including embankment construction, as per plan
203		2762				2762	cu.yds				286,034																										286,034	cu.yds.	203	288,796	cu.yds.	embankment, as per plan
203		4160				4160	sq.yds				86,421																										86,421	sq.yds.	203	90,581	sq.yds.	subgrade compaction
																		173																		173	lin.ft.	607	173	lin.ft.	fence rebuilt, type CL
CIC		3				3	Tons	30			52																										82	Tons	CIC	85	Tons	Calcium Chloride
CIC		1				1	M-Gal	50			22																										72	M-Gal	CIC	73	M-Gal	Water
604											11																										11	each	604	11	each	monument assembly
604		2				2	each				52																										52	each	604	54	each	reference monument
606					1	1	each					1	1				2		2					4													10	each	606	11	each	bridge terminal assembly, Type A
606																			12		6		4													22	each	606	22	each	guard post
606				23.13	389.37	412.50	lin.ft.					24.15	188.87	100.63	100.65	6.19	43.44	46.236	527.90	109.60					166.15	25.39	39.80	100.31	7.40	39.91		125.400				106.25		1287.85	lin.ft.	606	1328735	lin.ft.	guard rail, Type 5
606					12.50	12.50	lin.ft.																															lin.ft.	606	12.50	lin.ft.	guard rail, Type 5 ~ barrier design, as per plan
606																1				1					1	1											4	each	606	4	each	anchor assembly, Type T
606				1		1	each						1						1						1	1	1		1			4					10	each	606	11	each	anchor assembly, Type A
606																																									
607											2720														350	1000	1000	400									5470	lin.ft.	607	5470	lin.ft.	fence Type CL.
607											4888																										4888	lin.ft.	607	4888	lin.ft.	fence, Type 47
607																		186																			186	lin.ft	202	186	lin.ft	fence removed for re-use
608																		50												541	81						672	sq.ft.	608	672	sq.ft.	4" Concrete walk
																																									For continuation of General Summary-Roadway, see sheet 11-B
																																									RETAINING WALLS
610																			3088																		3088	sq.ft.	610	3088	sq.ft.	cellular retaining wall
523																																			✓	3	3	hrs.	523	3	hrs.	Dynamic pile test
503																																			✓	1568	1568	cu.yds.	503	1568	cu.yds.	unclassified excavation
505																																			✓	lump	lump	lump	505	lump	lump	test pile
507																																			✓	6120	6120	lin.ft.	507	6120	lin.ft.	12" ϕ cast-in-place reinforced concrete piles
509																																			✓	89417	89,417	lbs.	509	89,417	lbs.	reinforcing steel
511																																			✓	618	618	cu.yds.	511	618	cu.yds.	class "C" concrete, footings
511																																			✓	572	572	cu.yds.	511	572	cu.yds.	class "C" concrete, walls
512																																			✓	244	244	lin.ft.	512	244	lin.ft.	premolded sealing strip, as per plan
516																																			✓	180	180	sq.ft.	516	180	sq.ft.	1" preformed expansion joint filler
518																																			✓	386	386	cu.yds.	518	386	cu.yds.	porous backfill ⌈ EROSION CONTROL TYPE CODE Y005
207										200																											200	Each	207	200	Each	Straw or Hay Bales
601																			95																		95	Lin.Ft.	601	95	Lin.Ft.	Standard Type 1-2 Paved Gutter
601																			436			385															821	cu.yds.	601	821	cu.yds.	Dumped Rock Fill Type B
601																							17	104			23	4					5	51			204	sq.yds	601	204	sq.yds	riprap, using 6" reinforced concrete slab
601											9								46			6	14	17	84		74	54		4		217	734	48	27			1334	cu.yds.	601	1334	cu.yds.	rock channel protection Type "B" with bedding
601																																	173				173	lin.ft.	601	173	lin.ft.	paved gutter, modified as per plan
659	0.05	0.10				0.15	tons		6.20	13.67																											19.87	tons	659	20.02	tons	commercial fertilizer
659		0.51				0.51	tons			68.35																											68.35	tons	659	68.86	tons	agricultural liming
659		1020				1020	sq.yds			148,203																											148,203	sq.yds	659	149,223	sq.yds.	seeding and mulching
660					42	42	sq.yds						126				57		84						77													344	sq.yds	660	386	sq.yds.	reinforced sodding
660																			91	73			14	39						67		28			27		339	sq.yds	660	339	sq.yds.	sodding
667					66	66	sq.yds					348	51						341				58		668	92				292		527		281	88	151		2897	sq.yds	667	2963	sq.yds.	seeding and jute matting
207	250					250	sq.yds		29,000																												29,000	sq.yds.	207	29,250	sq.yds.	temporary seeding and mulching
659	4					4	m/sq.ft.		668																												668	m/sq.ft.	659	672	m sq.ft.	mowing
659	2					2	m/gal		223																												223	m/gal	659	225	m gal	water
207									700																												700	lin.ft.	207	700	lin.ft.	temporary slope drains
207	1					1	cu.yds		275																												275	cu.yds.	207	276	cu.yds.	temporary benches, dikes, dams and sediment basins
659	14					14	sq.yds		7245																												7245	sq.yds	659	7259	sq.yds.	repair seeding and mulching

Rev. 5-23-79

GENERAL SUMMARY

Revised by R.E.S. 1/77
Checked by AWL 1/77

FOR TYPE CODE NOTE SEE SH. 19

F.H.W.A. REGION	STATE	PROJECT	
5	OHIO		

BEL-7-11.89

20 / 493

| TYPE CODE 6203 | | | TYPE CODE 7204 | | |

GENERAL SUMMARY

Revised by R.E.S. 1/77
Checked by A.W.L. 1/77

FOR TYPE CODE NOTE SEE SH. 19

FHWA REGION	STATE	PROJECT	FISCAL YEAR
5	OHIO		

BEL-7-11.89

ITEM NO.	TYPE CODE 6203 SHEET NO. 23	16	18	TOTAL	UNIT	TYPE CODE 7204 (EXCEPT AS NOTED) SHEET NO. 25	26	16	17	18	24	27	28	30	31	33	34	35	36	38	39	40	41	163	164	184	186	188	194	196	237	247	248	249	252	253	254	255	256	TOTAL	UNIT	ITEM NO.	GRAND TOTAL	UNIT	DESCRIPTION
																																													PAVEMENT
301		1082		1022	cu.yds.			4479	665																														5144	cu.yds.	301	G/G.G.	cu.yds.	bituminous aggregate base , AC-20; or , RT-11 or RT-12
304		74		74	cu.yds.				2746														12			174		37	12	291	63								3335	cu.yds.	304	3409	cu.yds.	aggregate base, as per plan
310					cu.yds.			414	1361																2	58													1835	cu.yds.	310	1835	cu.yds.	subbase, type I grading B
310																																													
402		114		114	cu.yds.			127	441																	20													588	cu.yds.	402	702	cu.yds.	asphalt concrete, AC-20
404		114		114	cu.yds.			156	428														5			39		14	5									647	cu.yds.	404	761	cu.yds.	asphalt concrete, AC-20
408					gal.				5520																	193													5713	gal.	408	5713	gal.	bituminous prime coat, Primer 20, RT-2 or RT-3, MC-30 or MC-70
409		223		223	gal.				1071																														1071	gal.	409	1294	gal.	seal coat bituminous material: , MC-800 or MC-3000; , CBAE-800; , RS-1, RS-2, CRS-1 or CRS-2; or , Rt.9 or Rt.10.
409		6		6	cu.yds.				29																														29	cu.yds.	409	35	cu.yds.	seal coat cover aggregate No. 8
452								6429	6 7128																														71,424	sq.yds.	452	71,424	sq.yds.	9" plain portland cement concrete pavement, as per plan
451																																			195					195	sq.yds.	451	195	sq.yds.	6" reinforced portland cement concrete pavement
452									323																	20													343	sq.yds.	452	343	sq.yds.	7" plain portland cement concrete pavement
609										937																													937	lin.ft.	609	937	lin.ft.	combination curb and gutter, Standard Type 2
609										147																													147	lin.ft.	609	147	lin.ft.	concrete curb, Standard Type 2A
609			24	24	lin.ft.					1516			21	18																									1555	lin.ft.	609	1579	lin.ft.	concrete curb, Standard Type 6
																																						28	sq.yds.	612	28	sq.yds.	concrete median
622	389.6			389.6	lin.ft.																																		390	lin.ft.	622	390	lin.ft.	Concrete Barrier, Type A
611										788																													788	sq.yds.	611	788	sq.yds.	reinforced concrete approach slabs (T=15") modified as per plan
611										519																													519	sq.yds.	611	519	sq.yds.	reinforced concrete approach slabs (T=17") modified as per plan
612			4	4	sq.yds.					28																													4	sq.yds.	612	4	sq.yds.	concrete median, as per Plan
622						950	980				919.8	960	241	325.5	500	500	500	500	500	928.5	1000	1000	63																3812	lin.ft.	622	3812	lin.ft.	concrete barrier, Type A, Modified As Per Plan
804								811	99																													910	tons	804	910	tons	portland cement
804								6761	8299																														75,910	sq.yds.	804	75,910	sq.yds.	4" cement-stabilized subbase
Special											79		53	79						116																		327	lin.ft.	Special	327	lin.ft.	pressure relief joint Type B
407										1.4																													2	tons	407	2	tons	cover aggregate
407										20																													20	gals.	407	20	gals.	tack coat , RC-250; or , SS-1, SS-1H, MS-2 or RS-1
																																												STRUCTURES 20' SPAN AND OVER
																																												BR NO. BEL-7-11.97 see sheet No. 273
																																												BR NO. BEL-7-12.89 see sheet No. 302
																																												BR NO. BEL-7-13.66 see sheet No. 346
																																												lighting, see sheet No. 363
																																												traffic control devices, see sheet No. 368
614				Lump																																			lump	lump	614	lump	lump	maintaining traffic
619				lump																																			lump	lump	619	lump	lump	field office
623				lump																																		lump	lump	623	lump	lump	construction layout stakes
624				lump																																		lump	lump	624	lump	lump	Mobilization
																																												SANITARY LINES TYPE CODE Y060
603																							10	50					10									70	lin.ft.	603	70	lin.ft.	6" conduit, Type B, 706.08 with 706.12 joints
603									188															28														216	lin.ft.	603	216	lin.ft.	8" conduit, Type B, 706.08 with 706.12 joints
603																											469	501	495									1465	lin.ft.	603	1465	lin.ft.	10" conduit, Type B, 706.08 with 706.12 joints
603																									245													245	lin.ft.	603	245	lin.ft.	15" conduit, Type B, 706.08 with 706.12 joints
603																									64													64	lin.ft.	603	64	lin.ft.	15" conduit, Type B, 706.08 with 706.12 joints, under railroad, as per plan
603																									28													28	lin.ft.	603	28	lin.ft.	30" casing pipe, 707.08 0.25 inches thick, under railroad, as per plan
814																										333	31											364	lin.ft.	814	364	lin.ft.	12" cast iron pipe with bell and spigot joints w/compression rings
604																								2													2	each	604	2	each	manhole adjusted to grade
604																								1													1	each	604	1	each	manhole reconstructed to grade
604																									3	1	2	2	2									10	each	604	10	each	Standard No. 3 manhole
																																												WATER LINES TYPE CODE Y060
814																																						1	each	814	1	each	4" water main plug and block
814																							40															40	lin.ft.	814	40	lin.ft.	4" new water main incl. 5/8" Tie-rods (two)
814								59	178				15		410														202									864	lin.ft.	814	864	lin.ft.	1" new water main
814								124																														124	lin.ft.	814	124	lin.ft.	1¼" new water main
814								137																			140	55										332	lin.ft.	814	332	lin.ft.	6" new water main
814																																		1					1	each	814	1	each	1¼" water main cap
814																1																							1	each	814	1	each	2" water main cap
814																									1													1	each	814	1	each	10" water main plug and block
814								1																5														6	each	814	6	each	service stops and boxes removed and reset
814								1																					1									1	each	814	1	each	fire hydrant moved and reset
814																													1									1	each	814	1	each	1" valve and box
814																											1	1										2	each	814	2	each	6" valve and box

Rev. 5-23-79

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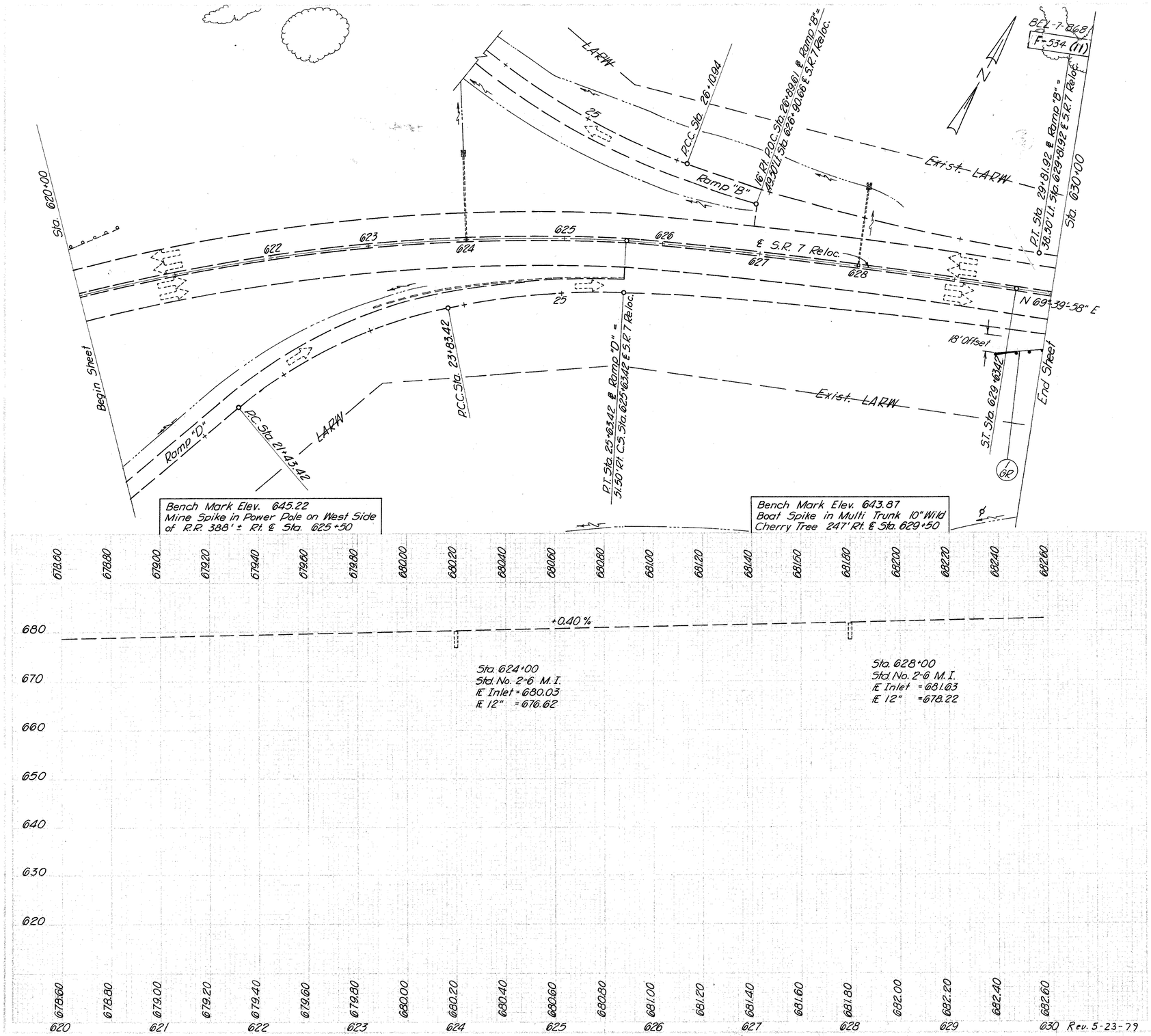
Checked by AWL 1/77

FHWA REGION 5

22
443

BEL - 7 - 11. 89



606 Guard Rail		
Anchor Assy.	Std. Type 5	
Ea.	L.F.	
1	23.13	

ESTIMATED QUANTITIES

	STATION TO STATION	SIDE
ROADWAY		
1GR	629+52.28 to 630+00	Rt.

Sta. 620 + 00 to Sta. 630 + 00

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FHWA REGION 5

23
443

BEL-7-11.89

BEGIN PROJECT
STA. 630+00
S.L.M. 11.89

FF-534 (12)

MICROFILMED
OCT 3 0 1984

Signal Light on Tower
45° 18' 09"
P.K. in Tie
11.33'
9.11'
15.64'
P.K. in Tie
I.P. Sta 632+24.90
Ref. Points P.O.T 632+24.90

CURVE DATA
P.I. Sta. 654+19.14
Δ = 31°-03'-54" Lt.
D = 1°-00'
R = 5,729.58'
T = 1,592.45'
L = 3,106.50'
E = 217.18'

Exist. Const. Limits
Village of Shadyside
Existing 30" Conc. Storm Sewer
Spur Line from the Metropolitan Stamping Company
Sign
Bin
Asphalt Drive
VILLAGE
CORPORATION
OF
P.C. Sta. 638+26.69
LA RW
Sta 630+00
Transition Barrier Shape from Roadway to Bridge Shape in 10' Sta. 633+64.75 to 633+74.75
NOTE: For Details of Guard Rail to Concrete Barrier Connection See Sheet 11-A.
2A GR
2 GR
1 SP
+84.75 Begin Taper
1 C
+84.75 End Taper
End Approach Slab Sta. 634+84.75
BEL-7-1197
Sta. 640+00
Exist. Cellular Ret. Wall
10+646.48
45°-02'-20"
N 69°-39'-58" E
632
633
634
635
636
637
638
639
℄ S.R.7 Reloc.
638+13.80
40:1 Taper
LA
RW
3 C
Begin Approach Slab Sta. 639+65.25
Begin Sheet
2 C
1 GR
Exist. Cellular Ret. Wall
SHADYSIDE LINE
RW
N 63°-17'-42" W
Constr. Limits
End Sheet
3 GR
1 SM
E 30" @ 638.50
Penn Central Transportation Company
Exist. Const. Limits
End Approach Slab Sta. 633+99.75
+63.42 End Taper
I.P. in ℄ of most Westerly Track
65.80'
115.34'
79.06'
P.K. in twin 12" W. Cherry
P.K. in 24" Elm
Ref. Point P.C. Sta. 638+26.69

PROPOSED STRUCTURE
BRIDGE NO. BEL-7-1197
TYPE: Continuous Steel beams with reinforced concrete deck piers and abutments.
Piers 2,3,4,5, and 6 have welded box girder caps.
SPANS: 68'-0", 5@85'-0", 68'-0" ℄ brg. (Rt. Bridge)
68'-0", 5@85'-0", 68'-0" ℄ brg. (Lt. Bridge)
ROADWAY: 73'-0" f/f parapets incl. 3'-0" raised median.
LOADING: HS 20-44
SKEW: None
WEARING SURFACE: 1½" Asphalt concrete.
APPROACH SLAB: AS-1-72 (25'-0" Long)
ALIGNMENT: Tangent and 1° Curve Lt.

Bench Mark Elev. 651.07
Boat Spike in 12" Wild Cherry Tree
80' Lt. ℄ Sta. 636+30

Bridge Limits 565.50' (Right Bridge)
Bridge Limits 565.50' (Left Bridge)
Sta 633+99.75
Sta 634+84.75
Sta 639+65.25
P.V.I. Sta. 640+00
Elev. 686.60
+0.40%
+0.40%
680
670
660
650
640
630
1:2 Normal
600' V.C.
2:1 Normal
Exist. 30" Conduit

Note: The vertical curve data does not to bridge or graphic grade elevations. The bridge elevations were obtained by adding 1½" to elevations obtained from vertical curve data.

Note: Elev. in Parenthesis are as built Elevations.

TYPICAL SECTION ADJOINING PAVEMENT
8' 12' 25' 3% 25' Varies 8'
12' 13' 13' 12'
5"
6:1
4:1
4:1
① 2½" Asphalt Concrete
② 9" Bituminous Aggregate Base
③ Concrete Median
④ 4" Minimum 6½" Maximum Subbase
⑤ 11" Aggregate Base
⑥ Aggregate Drains
⑦ Hot Long. Joint

| | | |

MICROFILMED
OCT 3 01984

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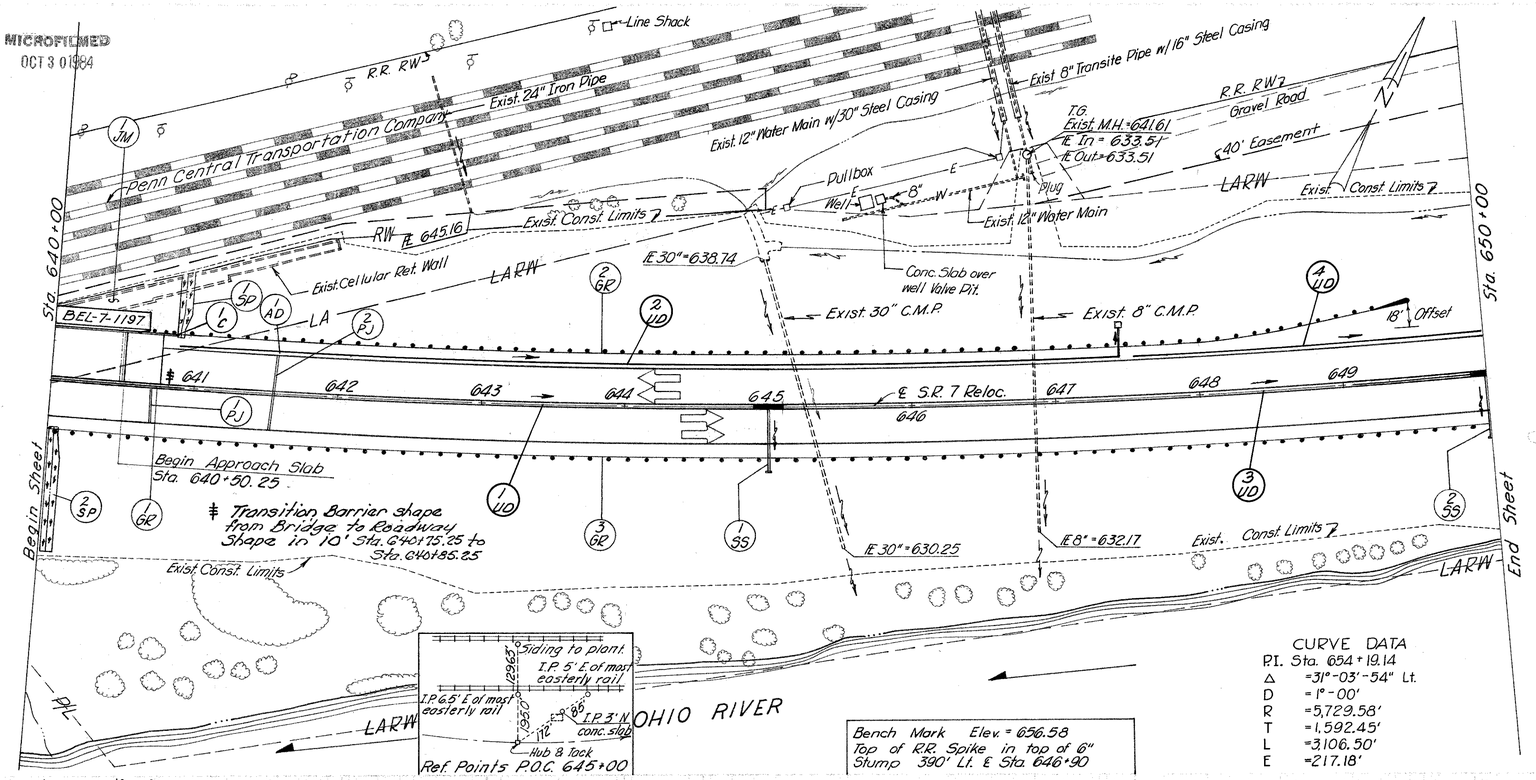
Checked by A.W.L. 11/77

FHWA REGION 5

24
443

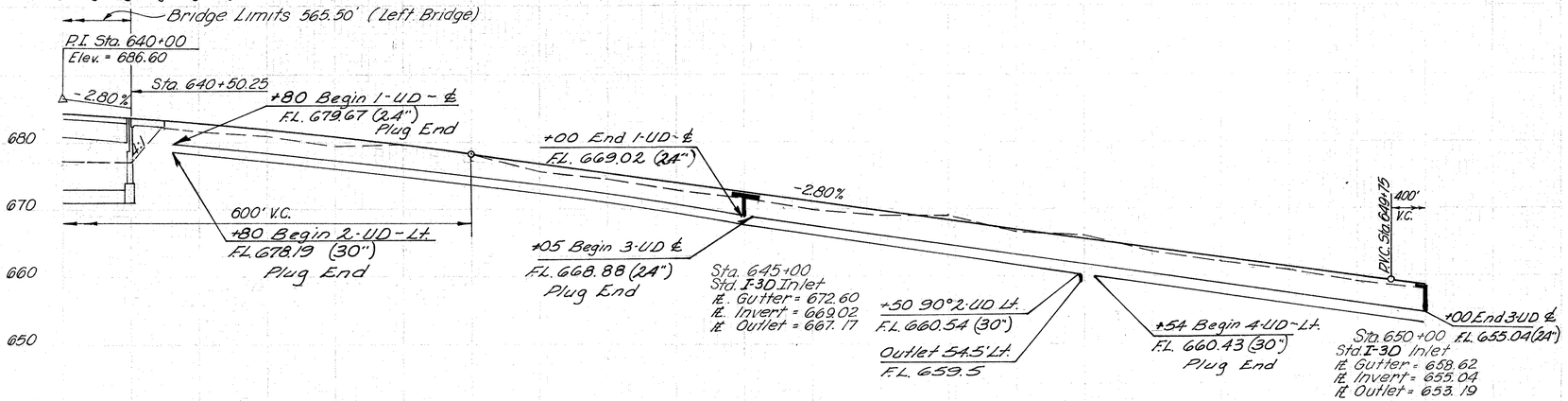
BEL-7-11.89



CURVE DATA
PI. Sta. 654+19.14
Δ = 31°-03'-54" Lt.
D = 1°-00'
R = 5,729.58'
T = 1,592.45'
L = 3,106.50'
E = 217.18'

684.35 684.01 683.66 683.28 682.81 682.32 681.80 681.28 680.73 680.15 679.53 678.88 678.20 676.80 675.40 674.00 672.60 671.20 669.80 668.40 667.00 665.60 664.20 662.80 661.40 660.00 659.30 658.62

Bridge Limits 565.50' (Left Bridge)



680 670 660 650 640 630

640 641 642 643 644 645 646 647 648 649 650 Rev. 5-23-79

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Revised by R.E.S. 1/77
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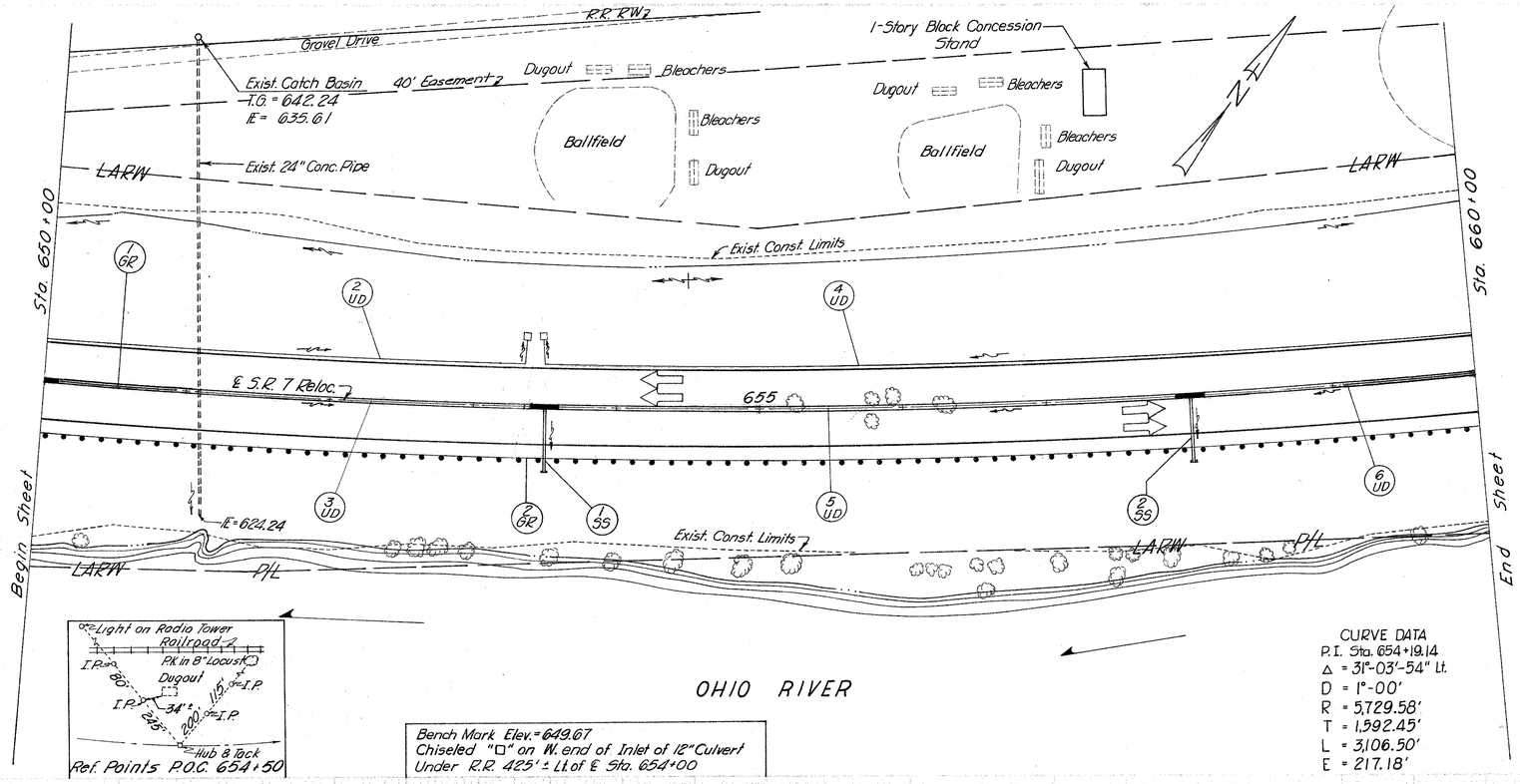
FHWA REGION 5

BEL - 7 - 11.89

25
443



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FHWA REGION 5

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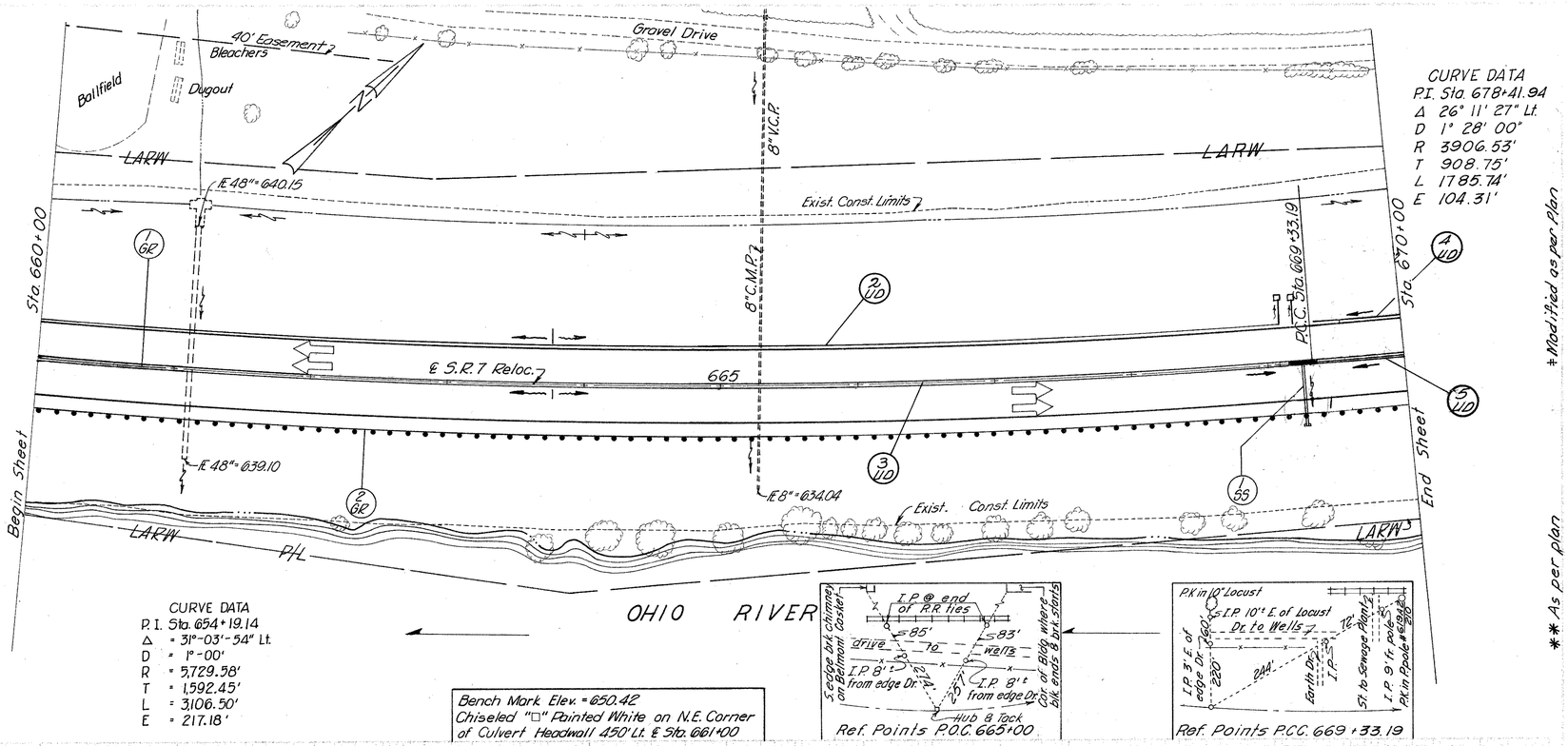
26
443



CURVE DATA
P.I. Sta. 678+41.94
Δ 26° 11' 27" Lt.
D 1° 28' 00"
R 3906.53'
T 908.75'
L 1785.74'
E 104.31'

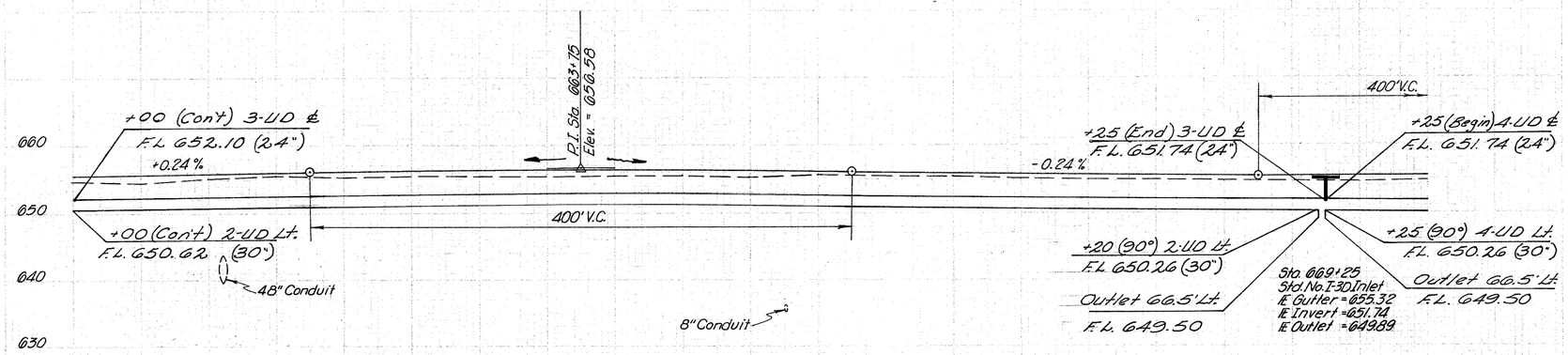
CURVE DATA
P.I. Sta. 654+19.14
Δ = 31°-03'-54" Lt.
D = 1°-00'
R = 5,729.58'
T = 1,592.45'
L = 3,106.50'
E = 217.18'

Bench Mark Elev. = 650.42
Chiseled "□" Painted White on N.E. Corner of Culvert Headwall 450' Lt. & Sta. 661+00

Ref. Points P.O.C. 665+00

Ref. Points P.C.C. 669+33.19

655.68	655.80	655.92	656.04	656.10	656.16	656.21	656.25	656.28	656.31	656.33	656.34	656.34	656.34	656.33	656.31	656.28	656.25	656.21	656.16	656.10	656.04	655.92	655.80	655.68	655.56	655.44	655.38	655.33	655.32	655.33	655.38	655.45
654.8	654.5	655.1	655.4	655.2	655.4	655.4	655.4	655.5	655.5	655.2	655.4	655.3	655.3	655.1	655.0	654.9	654.7	654.6	654.5	654.7												
660		661		662		663		664		665		666		667		668		669		670 Rev. 5-23-79												



‡ Modified as per plan

** As per plan

| | | | | | | | | | | | |

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FHWA REGION 5 OHIO

27
443

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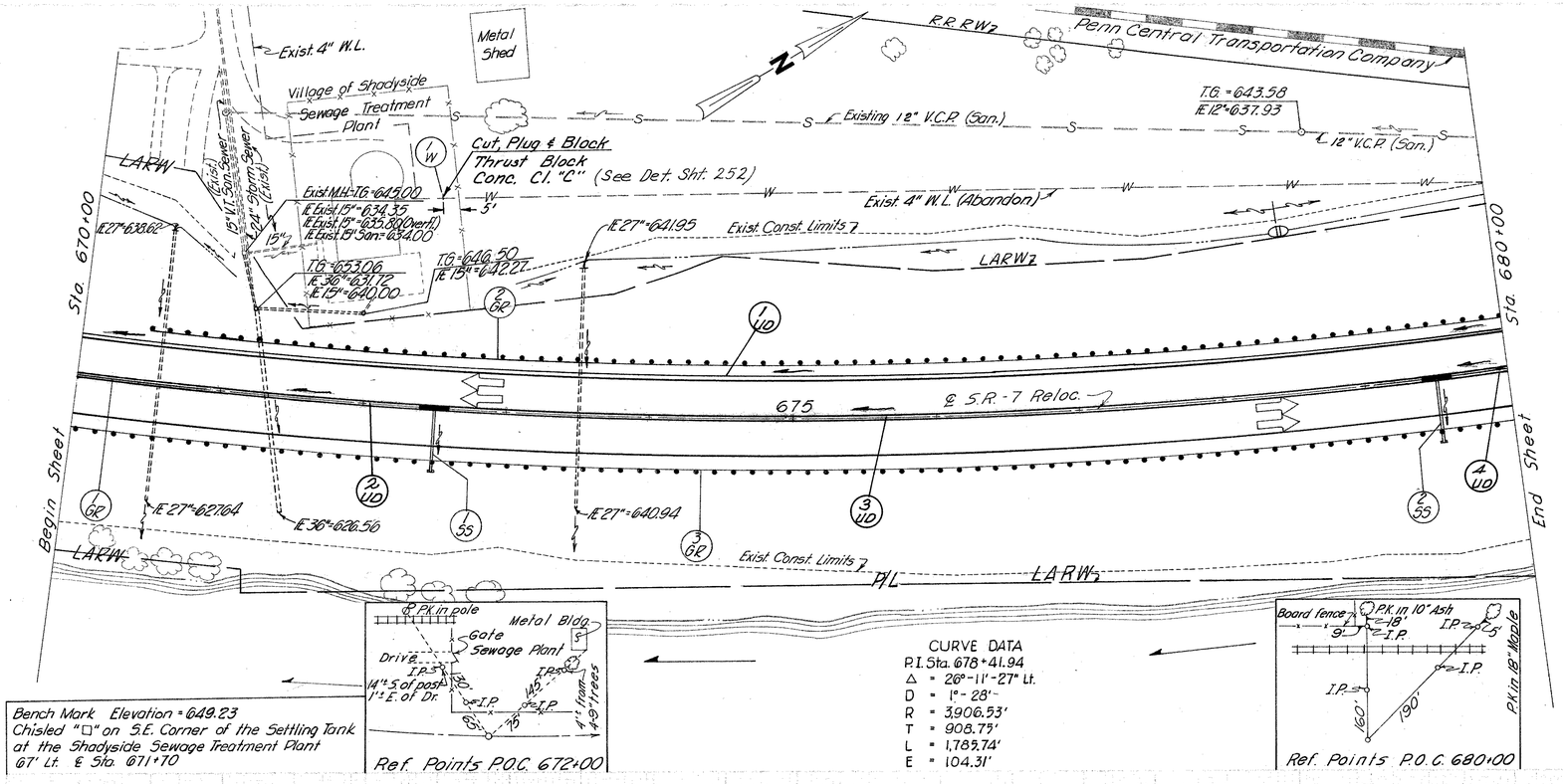

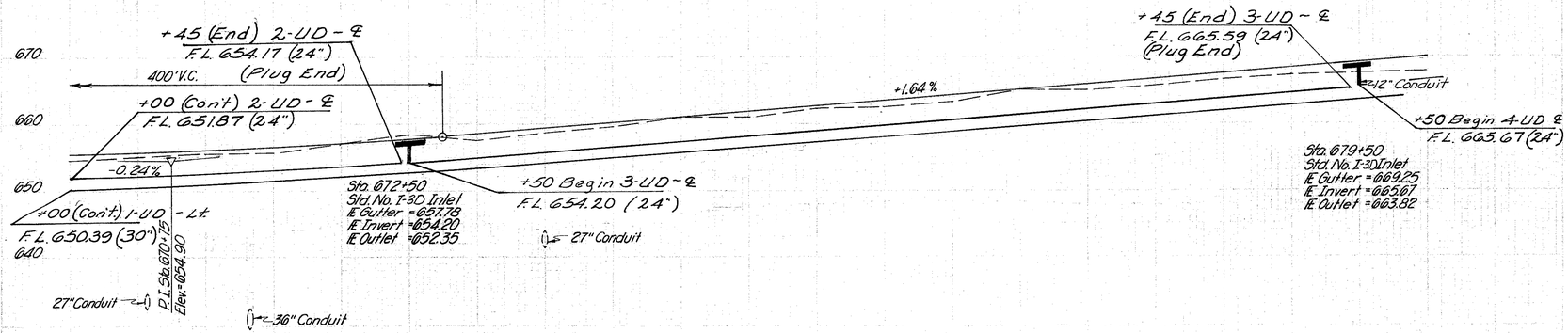

Rev. 5-23-79

* As per plan
† Modified as per plan

| | | |

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FHWA REGION	STATE	PROJECT	
5	OHIO		

28/443

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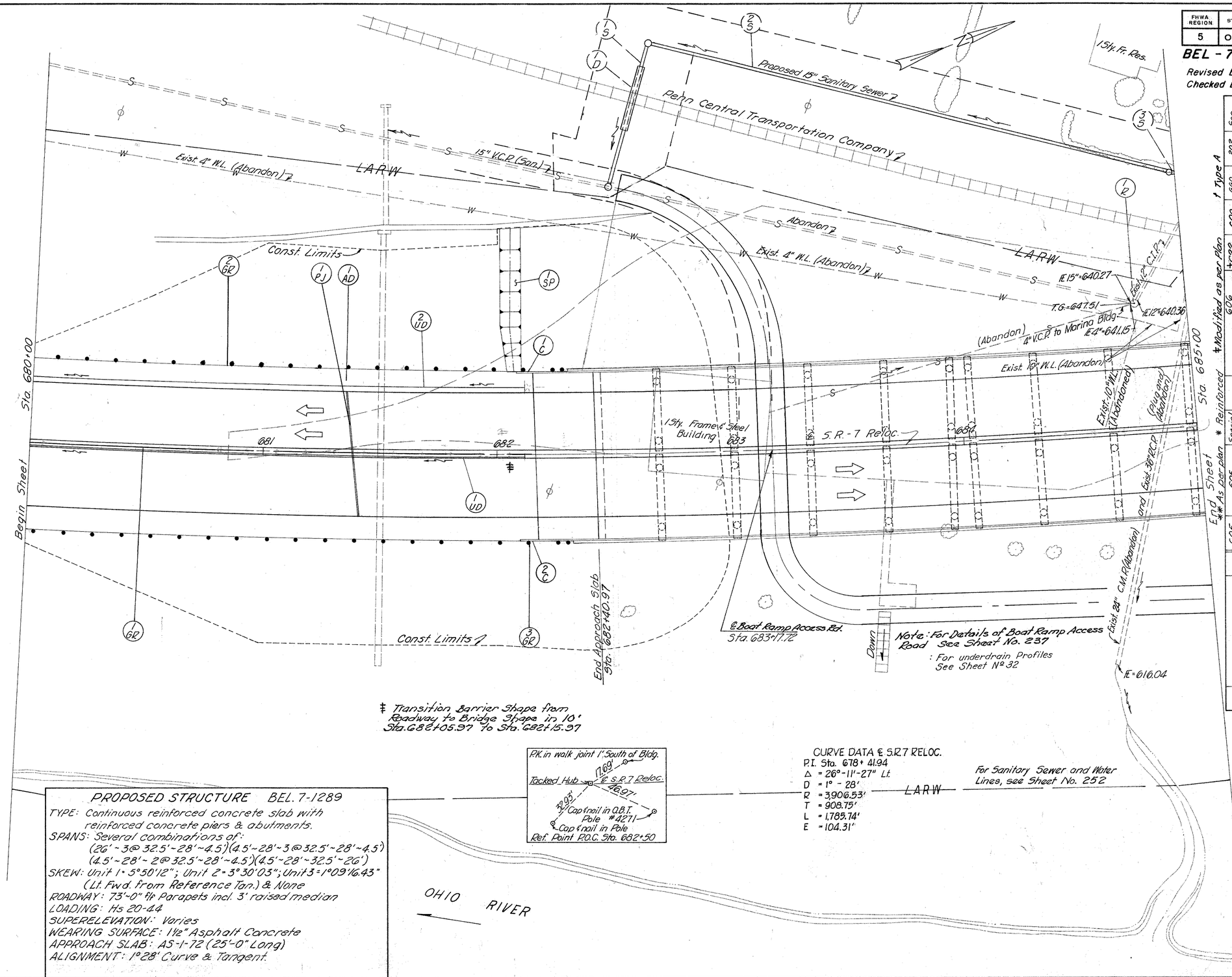

REF. NO.	STATION TO STATION	SIDE	605 Agg. Drains	605 6" Shallow Pipe Underdrain** 24"	605 6" Shallow Pipe Underdrain** 30"	Special Pressure Relief Joint Type B	Bridge† Term. Assy	606 Guard Rail Std. Type 5	‡622 Conc. Barrier Type A	609 Conc. Curb Type G	660 Sodding *	202 Manhole Removed	See Sheet No.
			L.F.	L.F.	L.F.	L.F.	Ea.	L.F.	L.F.	L.F.	S.Y.	Ea.	
1GR	680+00 to 682+40.97	℄							240.97				
2GR	680+00 to 682+30.64	Lt.					1	228.49					
3GR	680+00 to 682+32.28	Rt.					1	234.47					
1AD	681+36	Lt.	13								57		
1SP	682+04.39	Lt.											
1UD	680+00 to 682+12	℄		212									
1C	682+04.41 to 682+14.91	Lt.								10.5			
2C	682+06.51 to 682+17.01	Rt.								10.5			
2UD	680+00 to 682+12	Lt.			212							1	
1R	684+77	Lt.											
1PJ	681+36 to 681+40.41	Lt.&Rt.				53							
	TOTALS		13	424		53	2	462.96	240.97	21	57	1	

‡ Modified as per Plan
† Type A
** As per plan * Reinforced

PROPOSED STRUCTURE BEL. 7-1289

TYPE: Continuous reinforced concrete slab with reinforced concrete piers & abutments.
SPANS: Several combinations of:
(26'~3@32.5'~28'~4.5')(4.5'~28'~3@32.5'~28'~4.5')
(4.5'~28'~2@32.5'~28'~4.5')(4.5'~28'~32.5'~26')
SKEW: Unit 1 = 5°50'12"; Unit 2 = 3°30'03"; Unit 3 = 1°09'16.43"
(Lt. Fwd. from Reference Tan.) & None
ROADWAY: 73'-0" f/f Parapets incl. 3' raised median
LOADING: Hs 20-44
SUPERELEVATION: Varies
WEARING SURFACE: 1½" Asphalt Concrete
APPROACH SLAB: AS-1-72 (25'-0" Long)
ALIGNMENT: 1°28' Curve & Tangent.

Rev. 5-23-79

Sta. 680 + 00 to Sta. 685 + 00

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FHWA REGION	STATE	PROJECT	
5	OHIO		

BEL - 7 - 11.89

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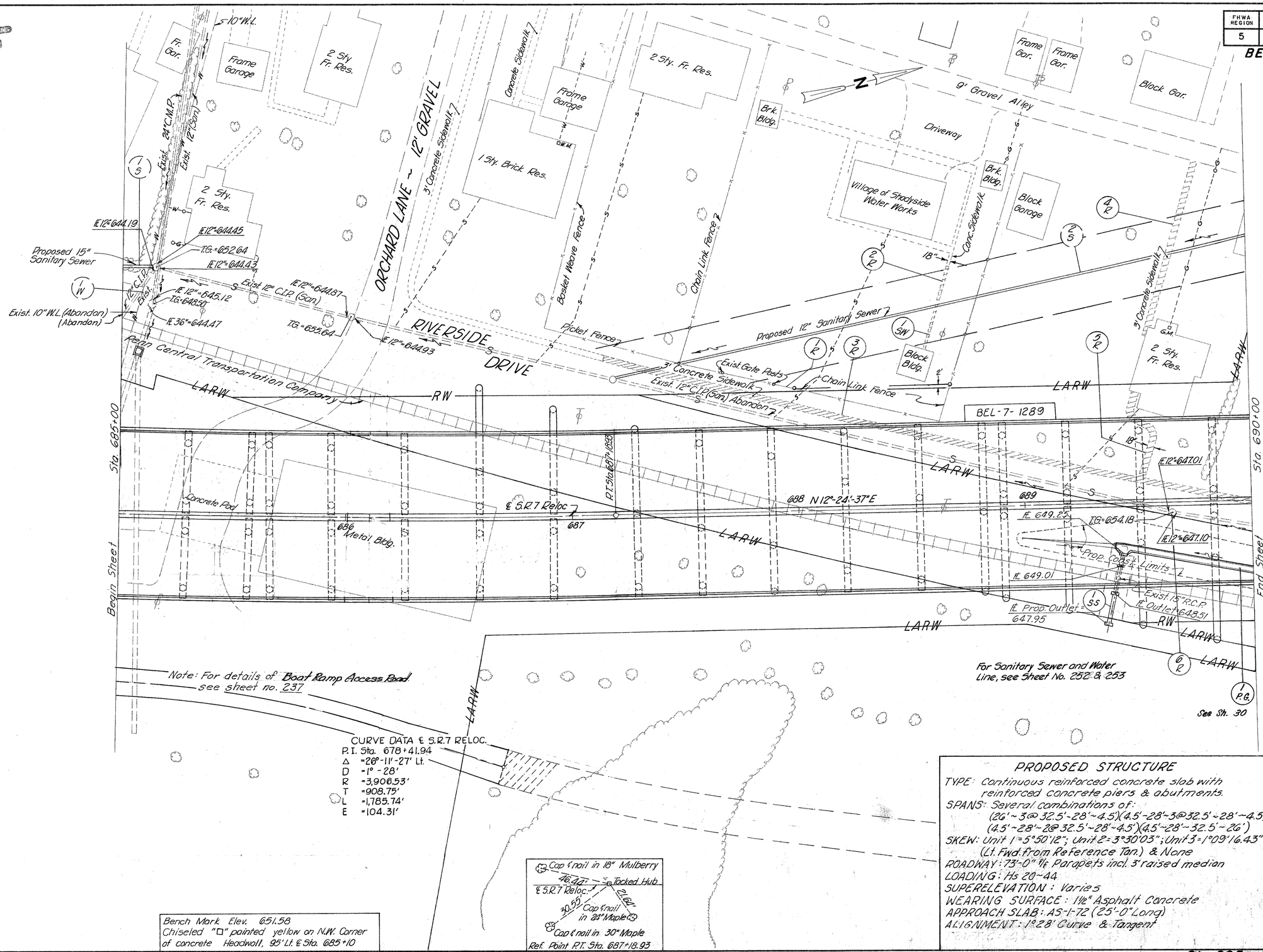

Bench Mark Elev. 651.58
Chiseled "□" painted yellow on N.W. Corner of concrete Headwall, 95' Lt. ℄ Sta. 685+10

PROPOSED STRUCTURE

TYPE: Continuous reinforced concrete slab with reinforced concrete piers & abutments.
SPANS: Several combinations of:
(26'~3@32.5'~28'~4.5')(4.5'~28'~3@32.5'~28'~4.5')
(4.5'~28'~2@32.5'~28'~4.5')(4.5'~28'~32.5'~26')
SKEW: Unit 1=5°50'12"; Unit 2=3°30'03"; Unit 3=1°09'16.43"
(Lt. Fwd. from Reference Tan.) & None
ROADWAY: 73'-0" f/f Parapets incl. 3' raised median
LOADING: Hs 20~44
SUPERELEVATION: Varies
WEARING SURFACE: 1½" Asphalt Concrete
APPROACH SLAB: AS-1-72 (25'-0" Long)
ALIGNMENT: 1°28' Curve & Tangent

REF. NO.	STATION TO STATION	SIDE	202 Manhole Removed	202 Sidewalk Removed	608 4" Concrete Walk	607 Fence Rebuilt Chain Link	202 Fence Removed CL	202 Gate Removed	607 Gate Rebuilt	602 Concrete Masonry	603 Conduit Type "C" 15"	See Sheet No.
			Ea.	S.F.	S.F.	L.F.	L.F.	L.F.	Ea.	C.Y.	Lin. Ft.	
1SW	688+58 to 688+68	Lt.			50.00							
1SS	689+50									0.6	22	57
1R	687+48 to 688+90	Lt.				186	173	1	1			
2R	688+58 to 688+68	Lt.		50.00								
3R	687+15 to 690+00	Lt.		876.00								
4R	689+55 to 689+79	Lt.		240.00								
5R	689+49 to 689+52	Lt.		66.00								
6R	689+65	Rt.	1									
	TOTALS		1	1232.00	50.00	186	173	1	1	0.6	22	

Sta. 685+00 to Sta. 690+00

Ref. No.	Station to Station	Side	Special Pressure Relief Joint Type B	605 Agg. Drains
			L.F.	L.F.
1PJ	691+68 to 691+70	Lt.	26	
2PJ	692+77 to 692+81.4	Lt.&Rt.	53	
1AD	691+70	Lt.		21
2AD	691+81.4	Lt.		21
			79	42

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FHWA REGION	STATE	PROJECT	
5	OHIO		

30/443

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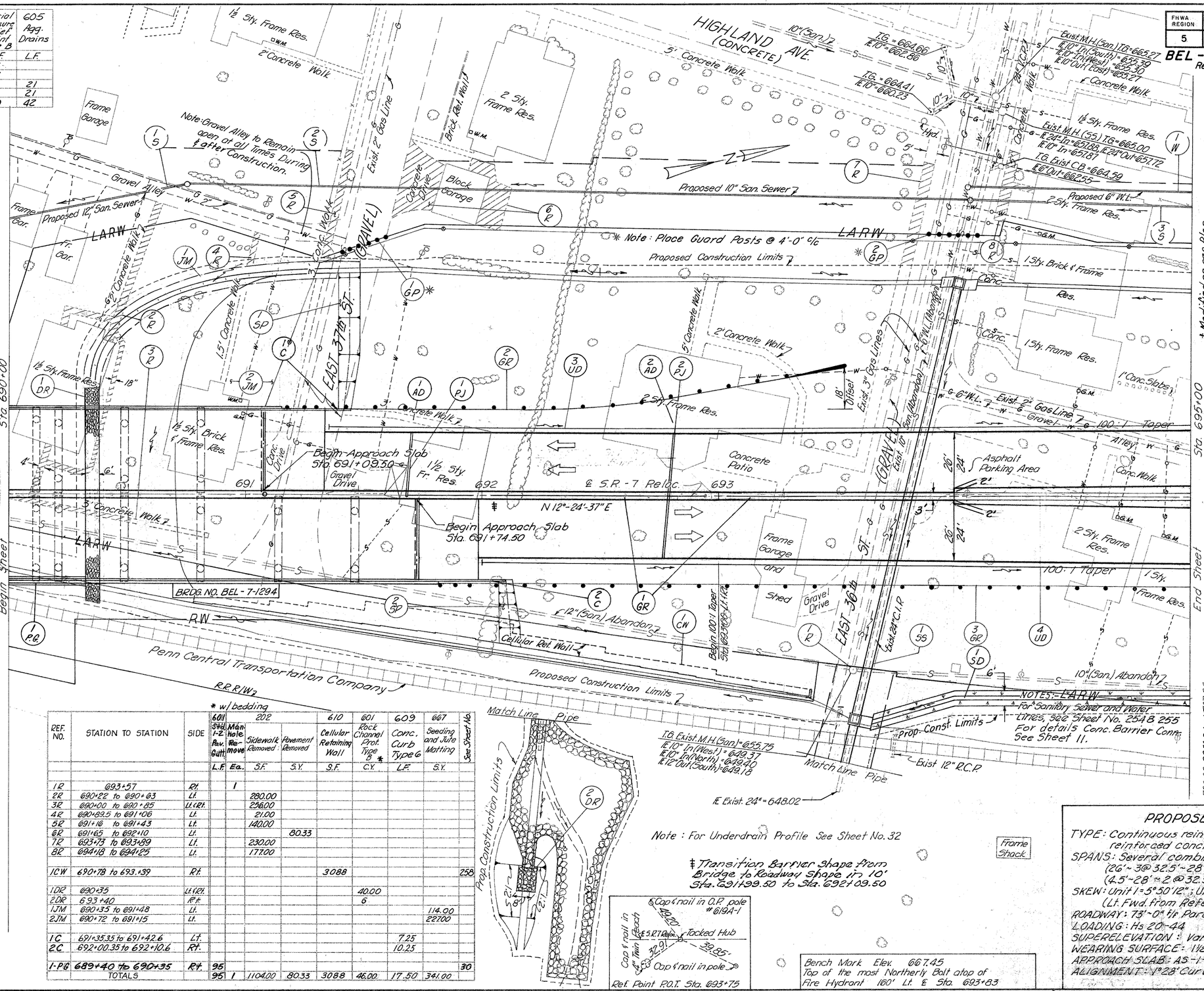

REF. NO.	STATION TO STATION	SIDE	601 Std. I-2 Rev. Gutter	202 Manhole Remove	202 Sidewalk Removed	202 Pavement Removed	610 Cellular Retaining Wall	601 Rock Channel Prot. Type B *	609 Conc. Curb Type 6	667 Seeding and Jute Matting	See Sheet No.
			L.F.	Ea.	S.F.	S.Y.	S.F.	C.Y.	L.F.	S.Y.	
1R	693+57	Rt.		1							
2R	690+22 to 690+83	Lt.			280.00						
3R	690+00 to 690+85	Lt.&Rt.			256.00						
4R	690+83.5 to 691+06	Lt.			21.00						
5R	691+16 to 691+43	Lt.			140.00						
6R	691+65 to 692+10	Lt.				80.33					
7R	693+73 to 693+89	Lt.			230.00						
8R	694+18 to 694+25	Lt.			177.00						
1CW	690+78 to 693+39	Rt.					308.8				25.8
1DR	690+35	Lt.&Rt.						40.00			
2DR	693+40	Rt.						6			
1JM	690+35 to 691+48	Lt.								114.00	
2JM	690+72 to 691+15	Lt.								227.00	
1C	691+35.35 to 691+42.6	Lt.							7.25		
2C	692+00.35 to 692+10.6	Rt.							10.25		
1-PG	689+40 to 690+35	Rt.	95								30
	TOTALS		95	1	1104.00	80.33	308.8	46.00	17.50	341.00	

* w/bedding

Ref. No.	Station to Station	Side	605 6" Shallow Pipe Underdrain 36" *	See Sheet No.
			L.F.	
3UD	691+35 to 695+00	Lt.	365	
4UD	692+00 to 695+00	Rt.	300	
	TOTALS		665	

* As per plan

REF. NO.	STATION TO STATION	SIDE	606 Guard Rail Bridge Anchor Assy. Term. Assy. Type A	606 Conc. Barrier Type A	605 Conduit Type 42"	608 Concrete Masonry	606 Guard Post	601 Rock Fill	606 Bends & Branches	606 Std. No. 4 C.B.	609 Std. Type S	See Sheet No.
			Ea.	L.F.	L.F.	C.Y.	Ea.	C.Y.	Ea.	Ea.	L.F.	
1GP	691+45 to 695+00	Lt.	1	325.50	* 42" 190	22	6	136	2	2	212.50 315.40	240
2GP	691+45 to 695+00	Rt.	1	325.50	* 42" 190	22	6	136	2	2	212.50 315.40	240
1SS	693+86 to 695+00	Lt.										
1SD	693+86 to 695+00	Rt.										
1GR	693+67 to 695+00	Lt.							57			
2GR	691+83.5 to 693+67	Rt.							27			
3UD	691+45 to 694+10	Lt.			42" 66	0.9		12	44			
4UD	691+83.5 to 694+10	Rt.			42" 66	0.9		12	44			
	TOTALS		2	651.00	132	1.8	12	272	91	4	425.00 630.80	240

* Reinforced

\# Modified as per Plan & Type A

* 706.02 2250 psi w/706.05

* 706.02 3000 psi Under railroad, as per plan.

Begin Sheet

End Sheet

PROPOSED STRUCTURE

TYPE: Continuous reinforced concrete slab with reinforced concrete piers & abutments

SPANS: Several combinations of:
(26'-3@32.5'-28'-4.5')(4.5'-28'-3@32.5'-28'-4.5')
(4.5'-28'-2@32.5'-28'-4.5')(4.5'-28'-32.5'-26')

SKEW: Unit 1 = 5°50'12"; Unit 2 = 3°30'03"; Unit 3 = 1°09'16.45" (Lt. Fwd. from Reference Tan.) & None

ROADWAY: 75'-0" f/f Parapets incl. 3' raised median

LOADING: Hs 20-44

SUPERELEVATION: Varies

WEARING SURFACE: 1½" Asphalt Concrete

APPROACH SLAB: AS-1-72 (25'-0" Long)

ALIGNMENT: 1°28' Curve & Tangent

‡ Transition Barrier Shape from Bridge to Roadway Shape in 10' Sta. 691+99.50 to Sta. 692+09.50

Note: For Underdrain Profile See Sheet No. 32

Rev. 5-23-79

Sta. 690+00 to Sta. 695+00

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FHWA REGION	STATE	PROJECT	
5	OHIO		

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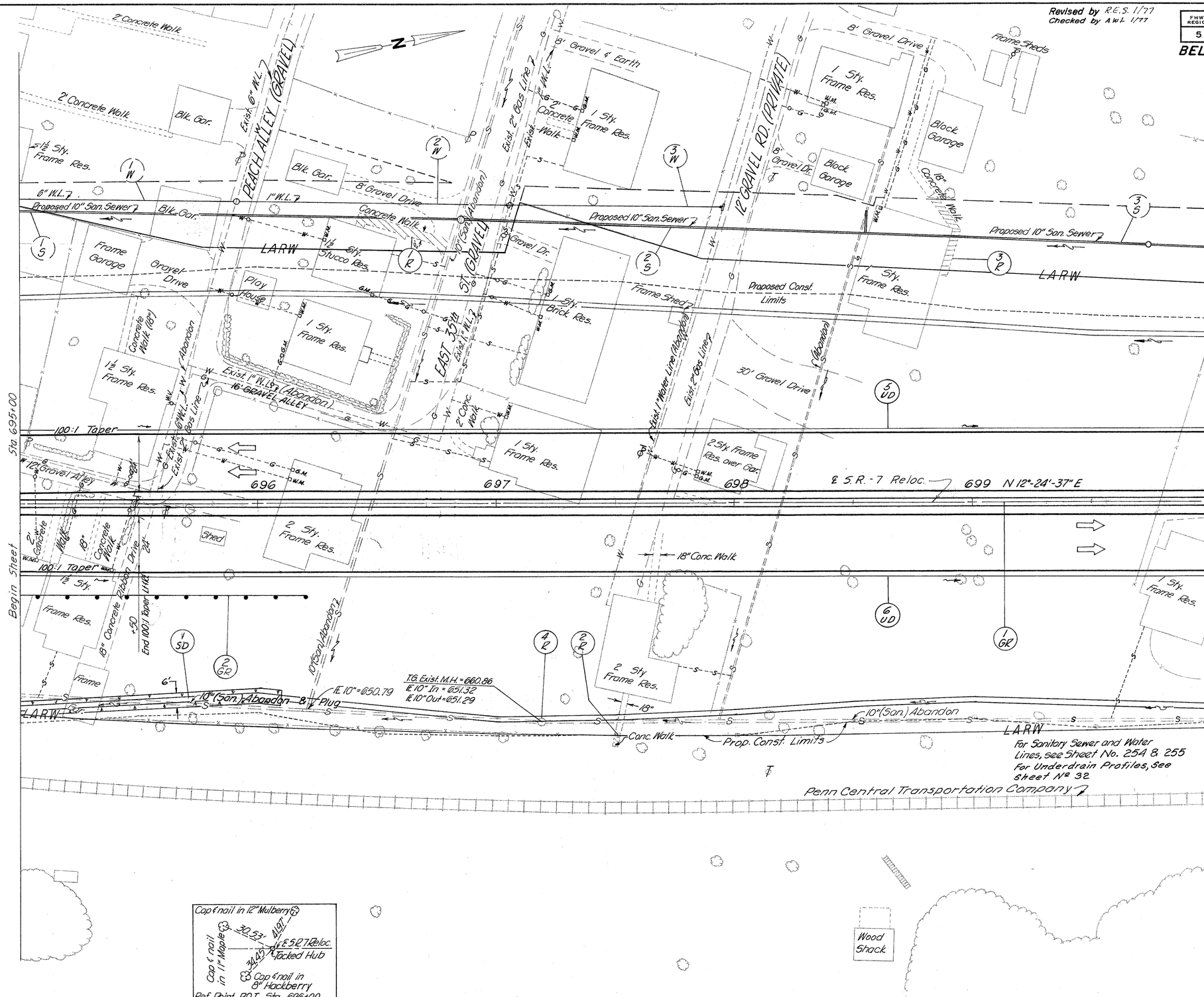

REF. NO.	STATION TO STATION	SIDE	202 Manhole Aband. Ea.	202 Sidewalk Removed S.F.	See Sheet No.
1R	696+43 to 696+74	Lt.		76.00	
2R	697+50 to 697+52	Rt.		10.00	
3R	698+85 to 698+89	Lt.		57.00	
4R	697+19	Rt.	1		
TOTALS			1	143.00	

* As per plan End Sheet *Modified as per Plan Sta. 700+00

REF. NO.	STATION TO STATION	SIDE	605* 6" Shallow Pipe Underdrain 30" L.F.	606 Guard Rail Anchor Assy. Type T Ea.	606 Guard Rail Std. Type 5 L.F.	622 Conc. Barrier Type A L.F.	660 Sodding S.Y.
1GR	695+00 to 700+00	℄				500.00	
2GR	695+00 to 696+22.10	Rt.		1	109.60		
1SD	695+00 to 696+10	Rt.					73
5UD	695+00 to 700+00	Lt.	500				
6UD	695+00 to 700+00	Rt.	500				
TOTALS			1000	1	109.60	500.00	73

Rev. 5-23-79

Sta. 695+00 to Sta. 700+00

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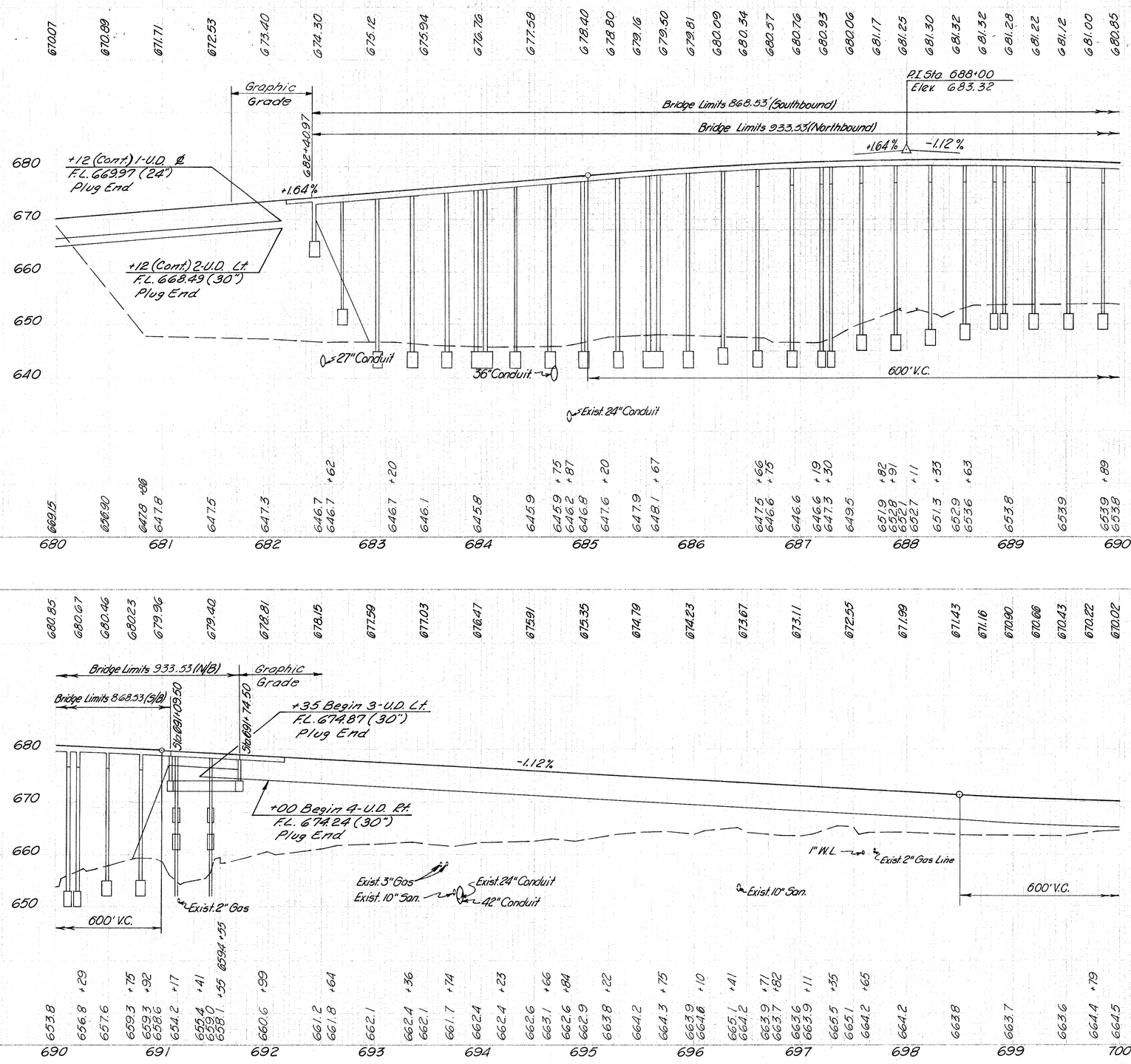
OCT 3 01984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Graphic Grade
Bridge Limits 868.53'(Southbound)
Bridge Limits 933.53'(Northbound)
P.I. Sta. 688+00
Elev. 683.32
682+40.97
+1.64%
-1.12%
+12 (Cont.) 1-U.D. ℄
F.L. 669.97 (24")
Plug End
+12 (Cont.) 2-U.D. Lt.
F.L. 668.49 (30")
Plug End
27" Conduit
36" Conduit
600' V.C.
Exist. 24" Conduit
680
670
660
650
640
669.5 656.90 647.9 +88 647.8 647.5 647.3 646.7 +62 646.7 646.7 +20 646.1 645.8 645.9 645.9 +75 646.2 +87 646.8 647.6 +20 647.9 +67 648.1 647.5 +66 646.6 +75 646.6 646.3 +19 647.3 +30 649.5 651.9 +82 652.8 +91 652.1 652.7 +11 651.3 +33 652.9 +63 653.6 653.8 653.9 653.9 653.8 653.9 653.8 653.9 653.8

FHWA REGION	STATE	PROJECT	
5	OHIO		

33/443

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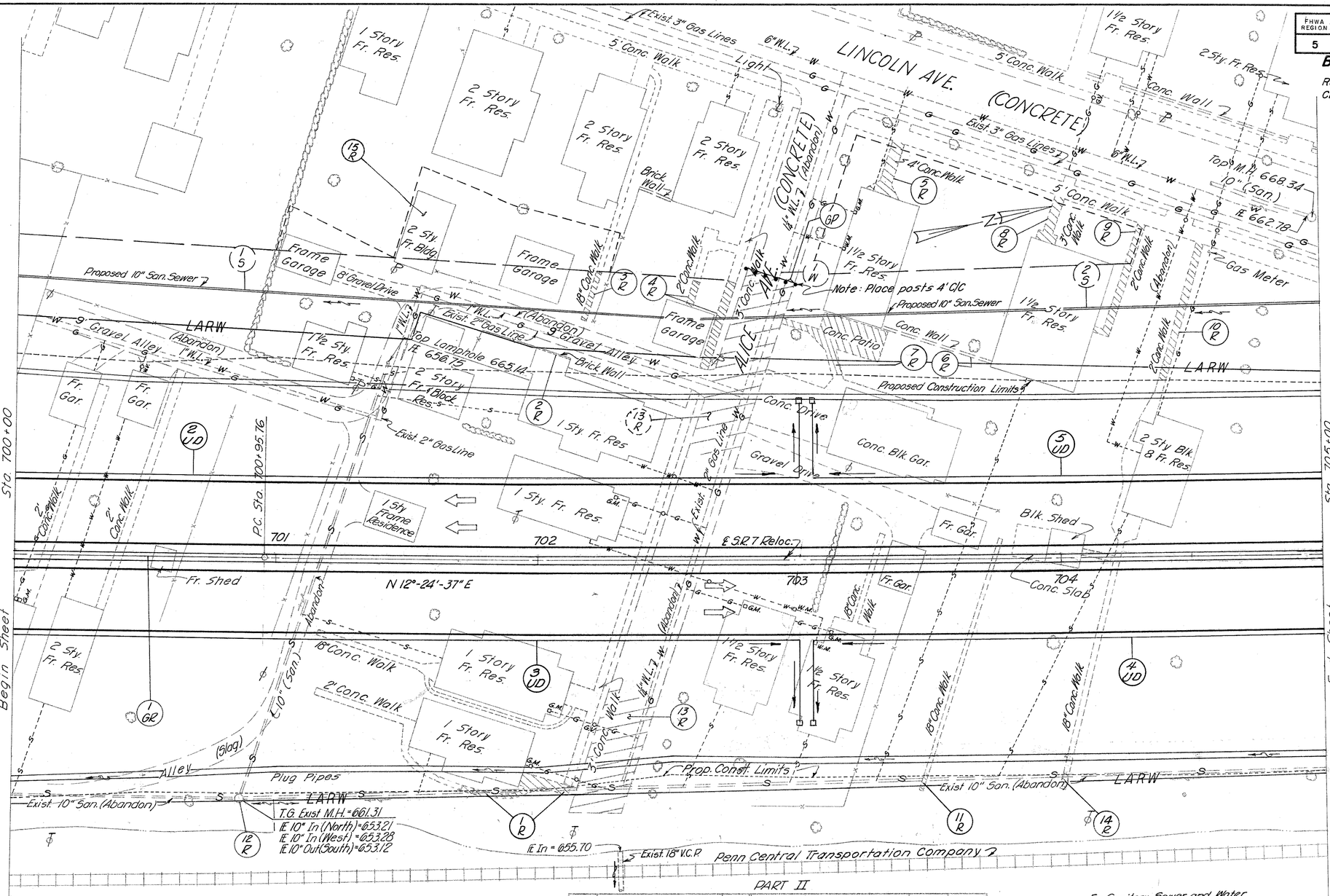


* As per plan

Ref. No.	Station to Station	Side	Shallow Pipe Underdrain in 30"	Type	See Sheet No.
			6" Lin. Ft.	603	
2UD	700+00 to 703+00	Lt.	322	Sod Bend F	11A
3UD	700+00 to 703+00	Rt.	322	10	11A
4UD	703+05 to 705+00	Lt.	217	10	11A
5UD	703+05 to 705+00	Rt.	217	10	11A
	TOTALS		1078	40	

PART I

REF. NO.	STATION TO STATION	SIDE	202 Sidewalk Removed S.F.	202 Structure Removed Lump	202 Pavement Removed S.Y.	202 Manhole Aband. Ea.	202	202
1GP	700+00 to 705+00	℄ Lt.					6022 Conc. Barrier Type A	See Sheet No.
1GP	702+80 to 703+00	Rt.					6010 Guard Posts	Ea. 6
1R	701+71 to 702+15	Lt.	126.00	Lump				L.F. 500.00
2R	701+99 to 702+10	Lt.						
3R	702+12 to 702+22	Lt.	38.00					
4R	702+57 to 702+60	Lt.	12.00					
15R	701+52 to 702+00	Lt.	28.00	Lump				6 500.00
	TOTALS		204.00	Lump				

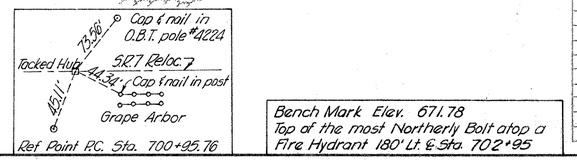
* Modified as per plan

PART II

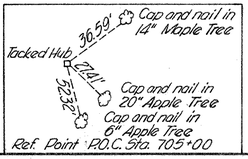
REF. NO.	STATION TO STATION	SIDE	202 Sidewalk Removed S.F.	202 Structure Removed Lump	202 Pavement Removed S.Y.	202 Manhole Aband. Ea.
5R	703+30 to 703+37	Lt.	105.00			
6R	703+32 to 703+74	Lt.		Lump		
7R	702+93 to 703+32	Lt.	38.00			
8R	703+93 to 704+00	Lt.	7.00			
9R	704+14 to 704+30	Lt.	9.00			
10R	704+00 to 704+53	Lt.	135.00			
11R	703+46 to 703+49	Rt.	9.00			
12R	700+81.50	Rt.				1
13R	702+23 to 703+04	Lt. & Rt.			264.00	
14R	703+98 to 704+02	Rt.	9.00			
	SUB-TOTAL from PART I		267.00			
	GRAND TOTALS		1105.00	Lump	264.00	1

For Sanitary Sewer and Water Lines, see Sheet No. 255-256

For Underdrain Profiles See Sheet No. 37



Bench Mark Elev. 671.78
Top of the most Northerly Bolt atop a Fire Hydrant 180' Lt. & Sta. 702+95



CURVE DATA
P.I. Sta. 725+84.29
Δ = 22°-54'-57" Lt.
Dc = 0°-28'-00"
R = 12,277.67'
T = 2,488.53'
L = 4910.54'
E = 249.66'

Rev. 5-23-79

Sta. 700+00 to Sta. 705+00

FHWA REGION	STATE	PROJECT	
5	OHIO		

34
443

BEL - 7 - 11.89

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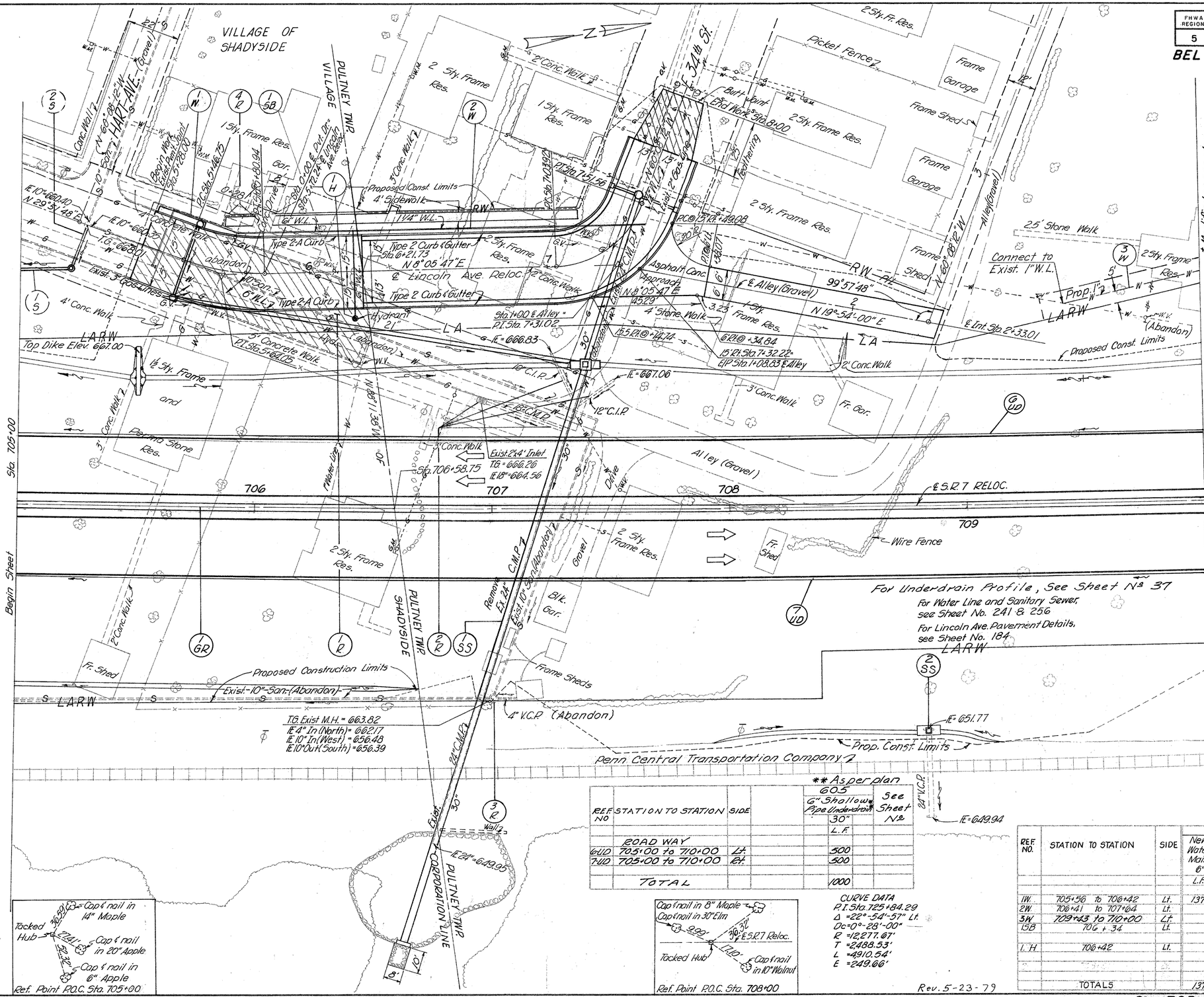

* Modified as per plan
* 706.02 3000 D-Load under railroad, as per plan
* 706.08 or 707.13

** As per plan

REF NO	STATION TO STATION	SIDE	605 6" Shallow Pipe Underdrain 30" L.F.	See Sheet No.
	ROAD WAY			
6UD	705+00 to 710+00	Lt.	500	
7UD	705+00 to 710+00	Rt.	500	
	TOTAL		1000	

CURVE DATA
P.I. Sta. 725+84.29
Δ = 22°-54'-57" Lt.
Dc = 0°-28'-00"
R = 12,271.67'
T = 2488.53'
L = 4910.54'
E = 249.66'

REF NO.	STATION TO STATION	SIDE	202 Pipe Removed 24" & Under L.F.	202 Manhole Removed Ea.	202 Inlet Removed Ea.	202 Pavement Removed S.Y.	601 Rock Channel Protection C.Y.	603 Conduit Type B 12" L.F.	603 Conduit Type B 15" L.F.	603 Conduit Type B 21" L.F.	603 Conduit Type B * 30" L.F.	603 Conduit Type F * 30" L.F.	604 Sta. No. 1 Manhole Ea.	604 Sta. No. 3 Catch Basin Ea.	604 Sta. No. 3-A Catch Basin Ea.	604 2-4-20 Paved Shoulder Inlet Ea.	606 Conc. Barrier Type A L.F.	606 Guide Rail L.F.	See Sheet No.
182	705+00 to 710+00	Lt.				355					64	64			2	2		500.00	6
212	706+91 to 707+52	Lt.											1	1					241
242	707+02 to 706+08	Rt.				9									1				241
42	705+98 to 706+08	Lt.	80	1	1			34	74	174	164	32							241
155	707+20 to 708+82	Lt.					385	30	34	174	164	32							241
255	TOTALS	Rt.				364		30	34	174	164	32	1	1	2	2	6	500.00	6

REF NO.	STATION TO STATION	SIDE	814 New Water Main 6" L.F.	814 New Water Main 1½" L.F.	814 Service Stops & Boxes Removed & Reset Ea.	814 Fire Hydrant Moved & Reset Ea.	814 New Water Main 1" L.F.	See Sheet No.
1W	705+56 to 706+42	Lt.	137					241
2W	706+41 to 707+64	Lt.		124				241
3W	709+43 to 710+00	Lt.					59	241
15B	706+34	Lt.			1			241
1H	706+42	Lt.				1		241
	TOTALS		137	124	1	1	59	

Sta. 705+00 to Sta. 710+00

FHWA REGION	STATE	PROJECT	
5	OHIO		

35/443

BEL - 7 - 11.89

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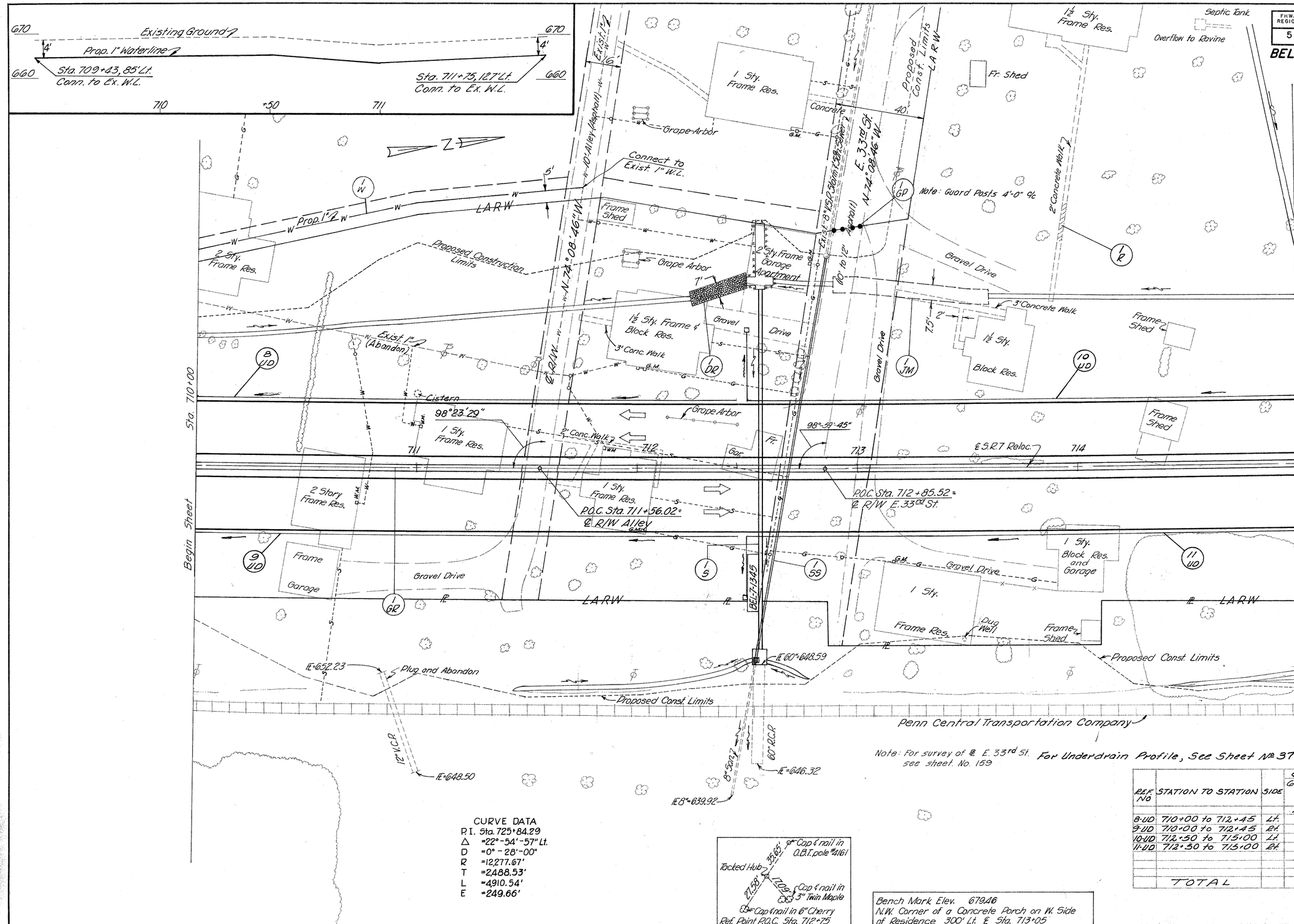

Note: For survey of ℄ E. 33rd St. see sheet. No. 159

For Underdrain Profile, See Sheet No. 37

REF. NO.	STATION TO STATION	SIDE	202 Sidewalk Removed S.F.	601 * Rock Channel Prot. C.Y.	601 Riprap Using 6" Reinforced Concrete Slab S.Y.	602 Concrete Masonry C.Y.	603 Type A 706.02 1500 D-Load 18" † L.F.	603 Conduit Type B 706.08 ** 8" L.F.	604 Std. No. 5-A Catch Basin Ea.	‡622 Conc. Barrier Type A L.F.	606 Guard Posts Ea.	660 Sodding S.Y.	667 Seeding & Jute Matting S.Y.	814 New Water Main 1" L.F.	See Sheet No.
1GR	710+00 to 715+00	℄								500.00	4				
1GP	712+90 to 713+02	Lt.													
1R	713+93 to 713+95	Lt.	34.00												
1DR	712+25 to 712+49	Lt.		14.00											
1JM	712+90 to 713+60	Lt.											58.00		
1SS	712+69	℄						188							242
1S	712+56	℄			17	0.3	164		1			14			242
1W	710+00 to 711+75	Lt.	34.00	14.00	17	0.3	164	188	1	500.00	4	14	58.00	178	
	TOTALS													178	

* Type "B" w/Bedding ** With 706.12 Joints

‡ Modified as per plan

† 706.08 or 21" 707.05 Type C

⊙ As per plan

REF. NO	STATION TO STATION	SIDE	603 6" Type F L.F.	Bends 90° Ea.	605 ⊙ 6" Shallow Pipe Underdrain 30 L.F.	See Sheet No
8-UD	710+00 to 712+45	Lt.			245	
9-UD	710+00 to 712+45	Rt.			245	
10-UD	712+50 to 715+00	Lt.	10	1	272	11A
11-UD	712+50 to 715+00	Rt.	10	1	271	11A
	TOTAL		20		1033	

CURVE DATA
P.I. Sta. 725+84.29
Δ =22°-54'-57" Lt.
D =0°-28'-00"
R =12,277.67'
T =2,488.53'
L =4,910.54'
E =249.66'

Bench Mark Elev. 679.46
N.W. Corner of a Concrete Porch on W. Side of Residence 300' Lt. ℄ Sta. 713+05

Rev. 5-23-79

Sta. 710+00 to Sta. 715+00

FHWA REGION	STATE	PROJECT	
5	OHIO		

36
443

BEL-7-11.89

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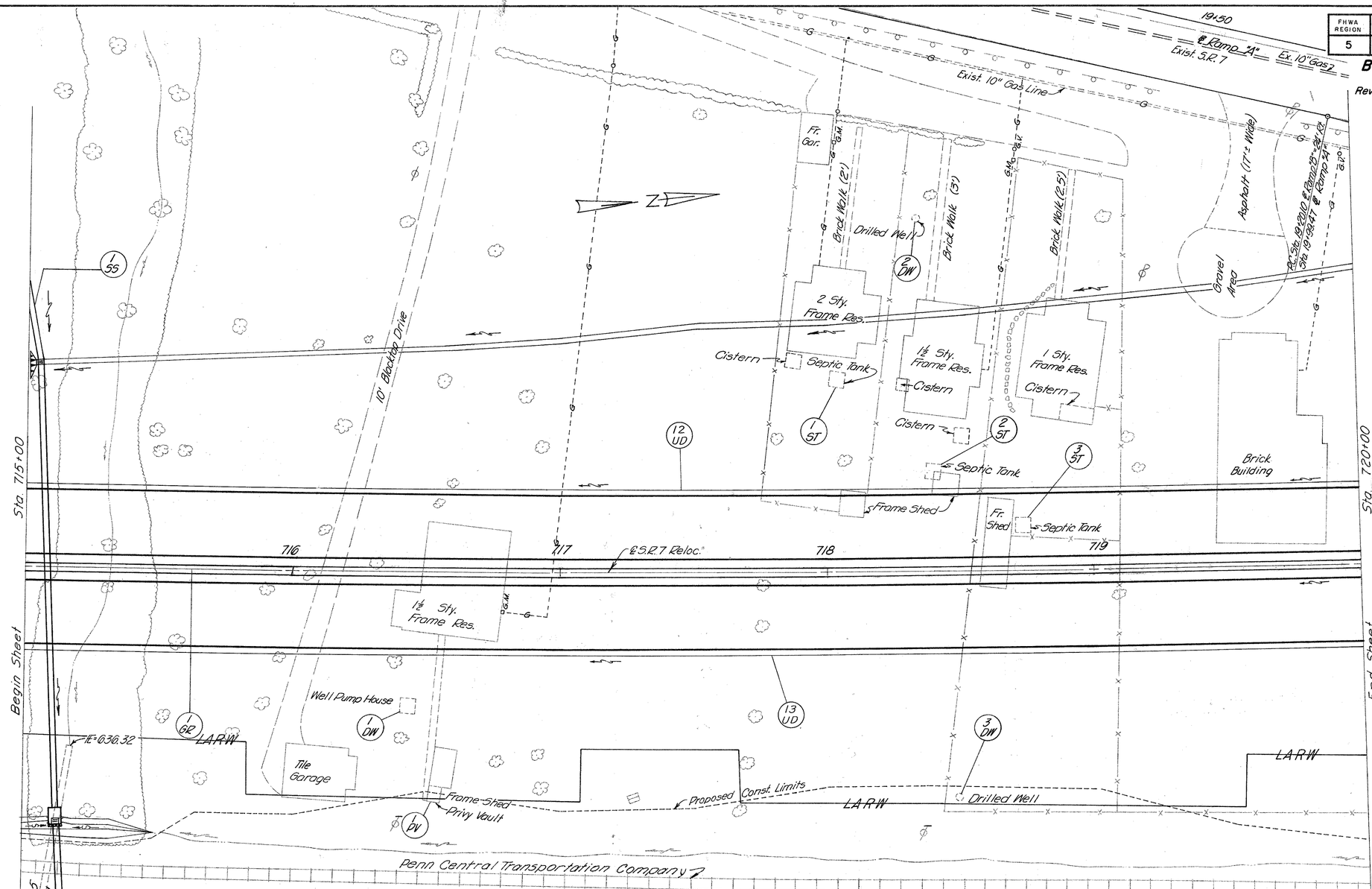


Note : For Underdrain Profile, See Sheet No. 37

REF. NO.	STATION TO STATION	SIDE	202 Septic Tank Removed Ea.	Special Drilled Well Abond. Ea.	202 Privy Vault Removed Ea.			Special Fill & Plug Existing Culvert L.F.	605 6" Shallow Pipe Underdrain 30" @ L.F.	See Sheet No.
1ST	718+04	Lt.	1							
2ST	718+40	Lt.	1							
3ST	718+73.50	Lt.	1							
1-R	715+07	Rt.						80		
1DW	716+43	Rt.		1						
2DW	718+34	Lt.		1						
3DW	718+48.50	Rt.		1						
12UD	715+00 to 720+00	Lt.							500	
1PV	716+53.50	Rt.			1					
13UD	715+00 to 720+00	Rt.							500	
	TOTALS		3	3	1				1000	

* As per plan

Cap & nail in 18" Pear
Cap & nail in 12" Apple
42.15'
22.61'
Tacked Hub
33.05'
Cap & nail in 8" Apple
Ref. Point P.O.C. Sta. 718+00

CURVE DATA
P.I. Sta. 725+84.29
△ = 22°-54'-57" Lt.
Dc = 0°-28'-00"
R = 12,277.67'
T = 2488.53'
L = 4910.54'
E = 249.66'

* Modified as per plan
* 706.02, 3000 D-Load, under railroad, as per plan
\# 1500 D-Load or 706.08 or 707.13
** Type "S" with bedding
*** Rock Channel Prof.

REF. NO.	STATION TO STATION	SIDE	601 Rock Channel Prof. C.Y.	601 Riprap Using 6" Reinforced Concrete Lined S.Y.	602 Concrete Masonry C.Y.	603 Conduit Type "S" 30" L.F.	603 Conduit Type "S" * 36" L.F.	606 Conc. Barrier Type A L.F.	607 Fence Type 4 * 30" L.F.	608 Sidewalk S.Y.	609 Conc. Curb & Gutter Type A L.F.	611 Std. No. 2-4 Catch Basin Ea.	611 Std. No. 5 Catch Basin Ea.	See Sheet No.
182	715+00 to 720+00	℄	17	104	1.7	285	40'		169			1	1	245
155	715+07	℄								39	500.00			39
	TOTALS		17	104	1.7	285	40'		169	39	500.00	1	1	

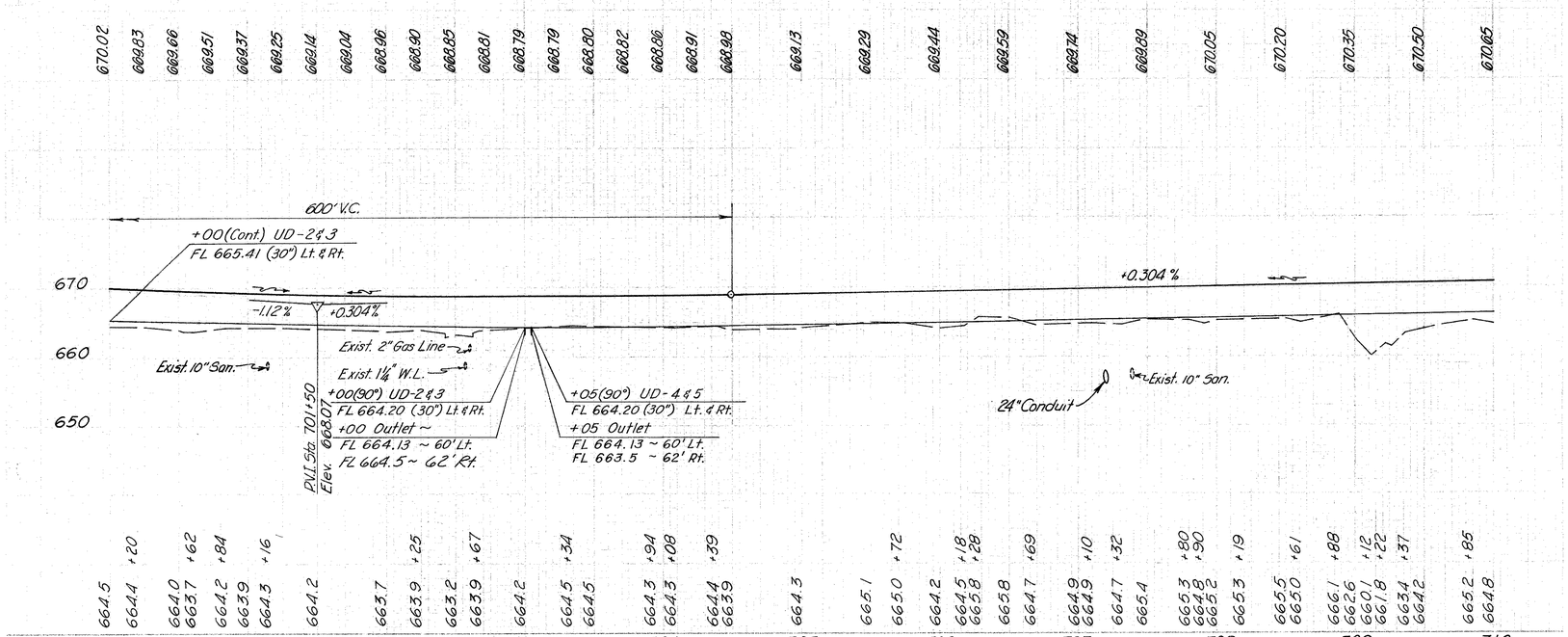
Rev. 5-23-79

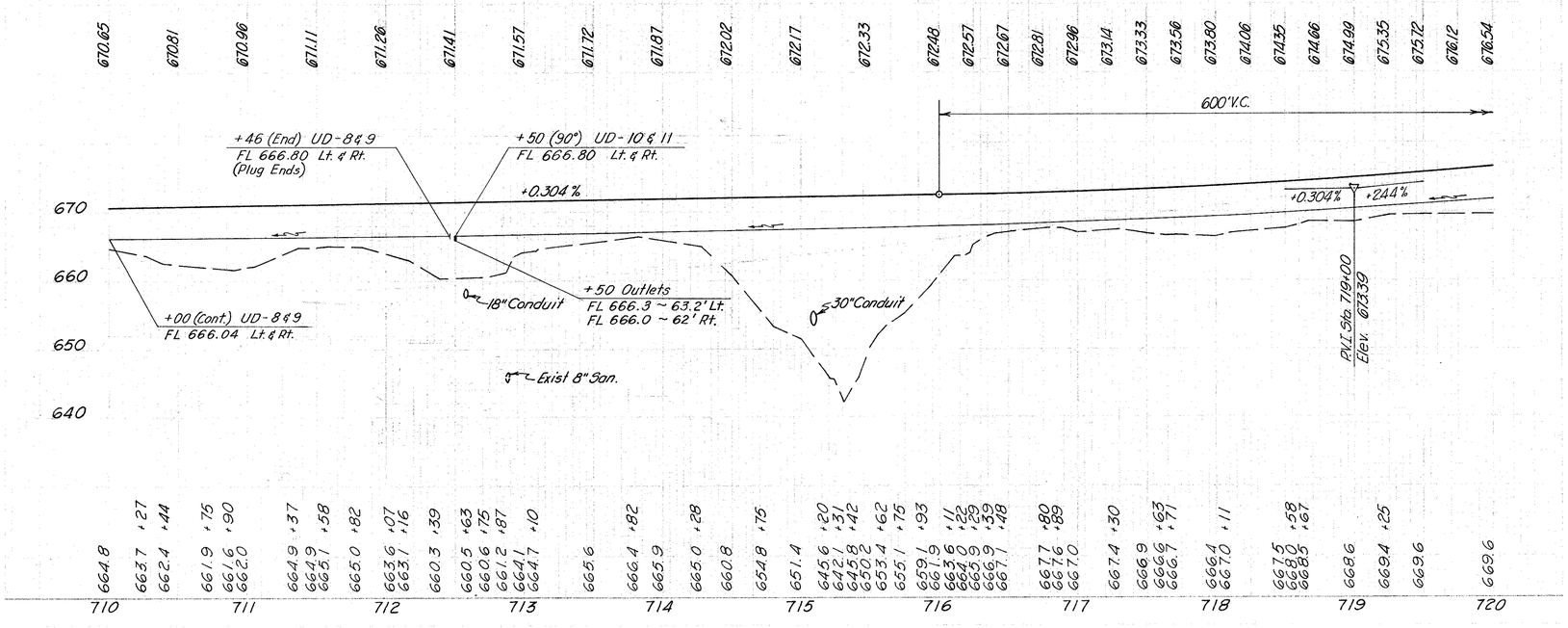
Sta. 715+00 to Sta. 720+00

FHWA REGION 5

37
443

BEL - 7 - 11.89





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Profile Sta. 700+00 to Sta. 720+00

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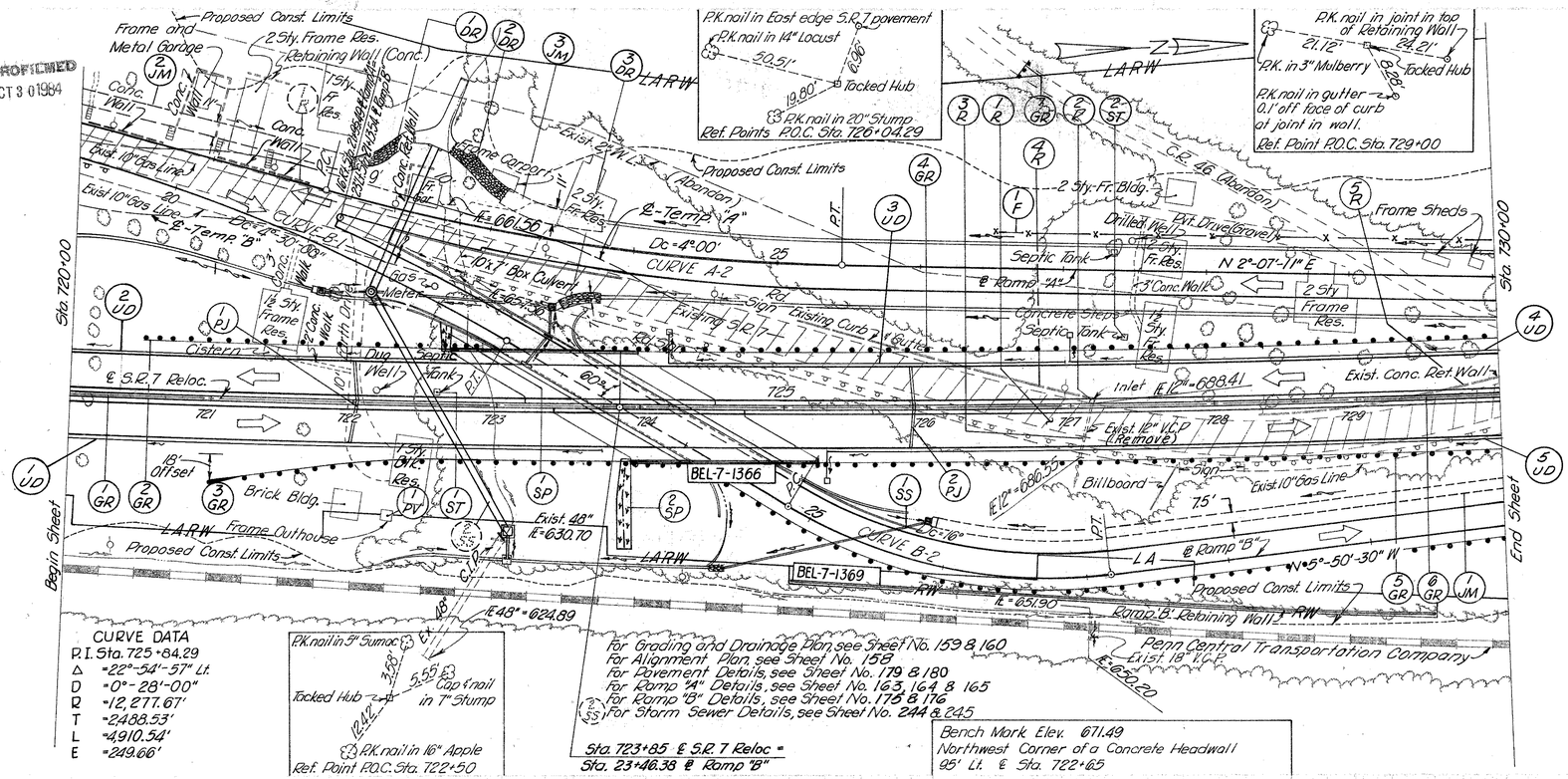
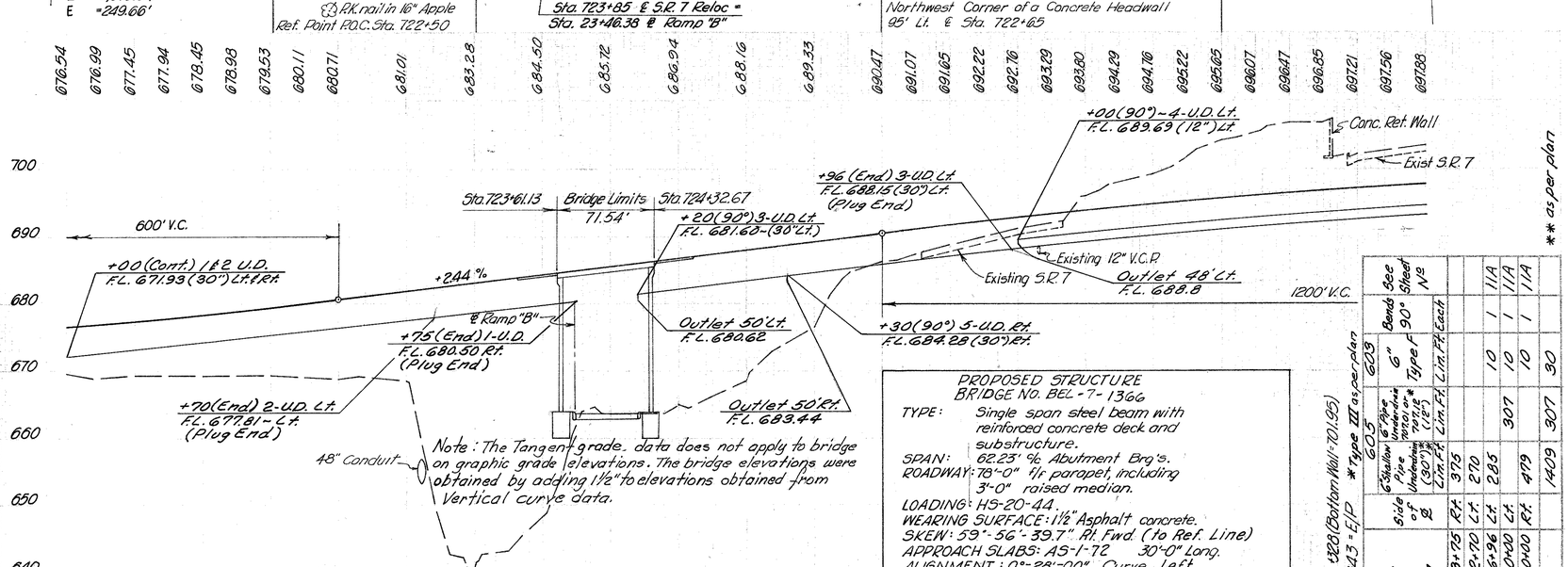
38
443

BEL-7-11.89

245





* Reinforced
† Type B with Bedding
\# Modified as per plan
** as per plan

Ref. №	Station to Station	Side of ℄	6" Shallow & Pipe Underdrain (30") C.I.m.F.t.	6" Type F C.I.m.F.t.	90° Bends See Sheet №	
1-UD	720+00 to 723+75	Rt.	375			
2-UD	720+00 to 722+70	Lt.	270	10	1	11A
3-UD	724+20 to 726+96	Lt.	285	10	1	11A
4-UD	727+00 to 730+00	Lt.	307	10	1	11A
5-UD	725+30 to 730+00	Rt.	479	307	30	
	TOTAL		1409	307	30	

ROADWAY	Station to Station		
1R	720+00 to 723+61.13	℄	
2R	720+50.13 to 724+88.39	Lt.	
3R	720+97.69 to 724+21.56	Rt.	
4R	723+72.11 to 730+00	Lt.	
5R	725+05.46 to 730+00	Rt.	
6R	724+32.67 to 730+00	℄	
7R	728+70 to 730+00	Lt. + Rt.	
1PJ	722+01 to 722+03	Lt. + Rt.	
2PJ	725+87 to 725+90	Rt.	
1SP	722+87 to 724+20	Lt.	
2SP		Rt.	
1PV	722+22 to 722+59	Rt.	
1ST	722+59 to 724+37	Lt.	
2ST		Lt.	
1JM	726+07 to 730+00	Rt.	
2JM	720+00 to 721+98	Lt.	
3JM	723+00 to 723+71	Lt.	
1SS	725+55 Ramp "B" Sta. 25+33	℄	

	202 Pavement Removal	202 Inlet & Gutter Removed	202 Curb Removed	202 Pipe Removed 24" & Under	202 Structures Removed	601 Rock Channel Prot.	602 Concrete Masonry	603 Conduit Type "B"	604 Sta. Fence Type C.L.	606 Guard Rail: Anchor Assy. Type M.A	606 Guard Rail: Bridge Terminal Assy. Type A	606 Guard Rail: Std. Type S	607 Fence Type C.L.	Special Pressure Relief Joint Type B	609 Conc. Barrier Type A	622 Septic Tank Removed	660 Privy Vault Removed	667 Seeding & Jute Matting	669 Sodding *	670 Prep. Ex.
	S.Y.	Ea.	L.F.	L.F.	Lump	C.Y.	C.Y.	L.F.	L.F.	Ea.	Ea.	L.F.	L.F.	L.F.	L.F.	Ea.	Ea.	S.Y.	S.Y.	Ea.
1R															361.3					
2R												225.00	/							
3R												300.00	/							
4R												625.90	/							
5R												498.12	/							
6R												12.5	/		56.33					
7R														58	30					
1PJ														58	30					
2PJ																				
1SP																				
2SP																				
1PV																				
1ST																				
2ST																				
1JM																				
2JM																				
3JM																				
1SS																				
1																				
2																				
3																				
4																				
5																				
6																				
7																				
1F																				
ROADWAY	5.Y.	Ea.	L.F.	L.F.	Lump	C.Y.	C.Y.	L.F.	L.F.	Ea.	Ea.	L.F.	L.F.	L.F.	L.F.	Ea.	Ea.	S.Y.	S.Y.	Ea.
															361.3					
												1161.52		116	923.46	2	1	77	008	
												4								
												350								
												350	1	1	4	1661.52

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FHWA REGION 5

39
443

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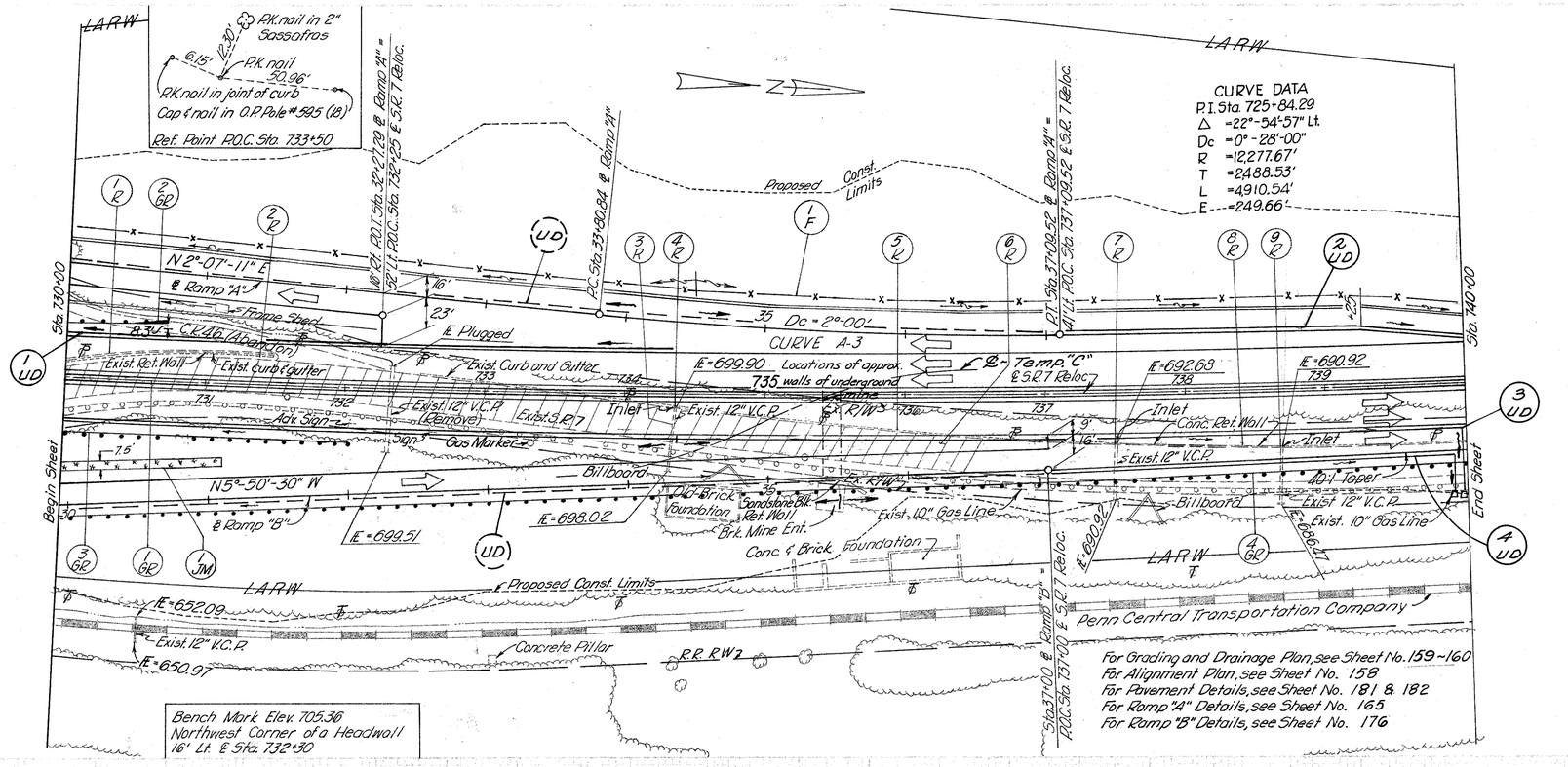

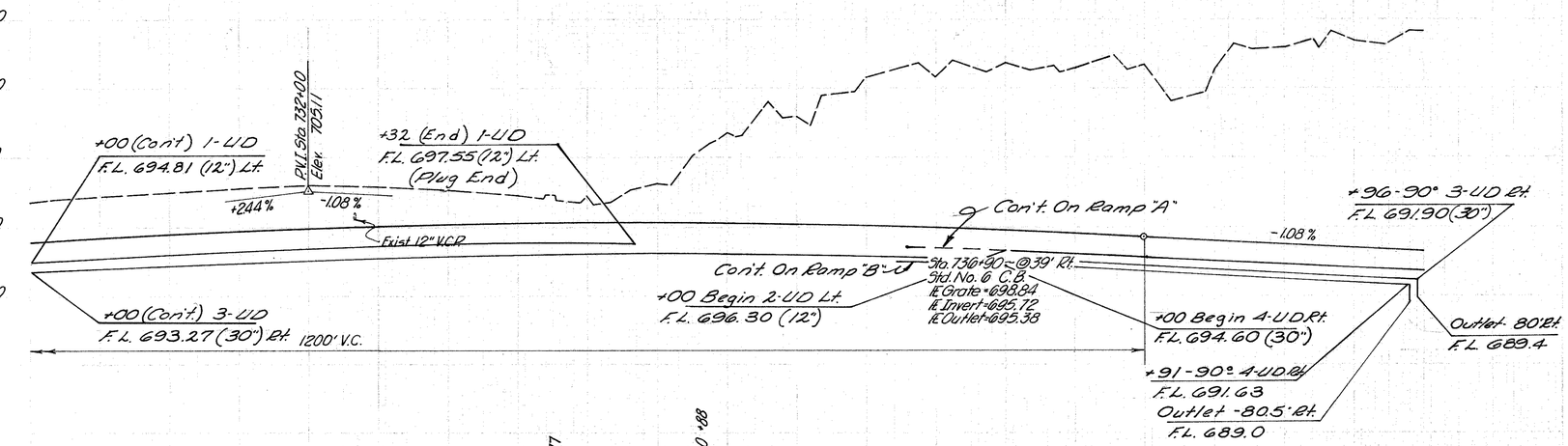

* Modified as per plan

* As per plan

Item	Unit	Total	Sta. 730+00 to Sta. 740+00
202 Pavement Removed	S.Y.		
202 Inlet Removed	Ea.		
202 Structures Removed	Lump	Lump	
202 Curb & Gutter Removed	L.F.	149	
202 Fence Removed & Salvaged	L.F.	54	
202 Curb Outlet Removed	L.F.	398	
603 6" Type B	L.F.	48	
603 6" Type F	L.F.	40	
605* 6" Shallow Pipe Underdrain	L.F.	996	
605* 6" Shallow Pipe Underdrain with 90° Bends	L.F.	312	
607 Fence Type CL	L.F.	1000	
607 Seeding & Mulching	S.Y.	1000	
608 Guard Rail Anchor Assy. Type A	Ea.	1	
608 Guard Rail Type A	L.F.	49.10	
609 Conc. Barrier Type A	L.F.	199.38	
		301.42	
1-UD	730+00 to 734+32	Lt.	
2-UD	737+00 to 740+00	Lt.	
3-UD	730+00 to 739+96	Rt.	
4-UD	737+00 (Ramp B) to 739+91	Rt.	

ROADWAY				
1GR	730+00	to 740+00	℄	
2GR	730+00	to 730+74.35	Lt.	
3GR	730+00	to 739+01.25	Rt.	
4GR	737+00	to 740+00	Rt.	
1 F	730+00	to 740+00	Lt.	
1L	730+00	to 731+49	Lt.	
2L	730+00	to 731+49	Lt.	
3L	730+00	734+35	℄	
		736+33	Rt.	
4L	732+54	to 736+50	Lt.	
5L	730+00	to 736+50	Rt.	
6L		737+50	Rt.	
7L	737+50	to 738+79	Rt.	
8L		738+68	Rt.	
9L			Rt.	
1JM	730+00	to 731+10	Rt.	

Sta. 730 + 00 to Sta. 740 + 00

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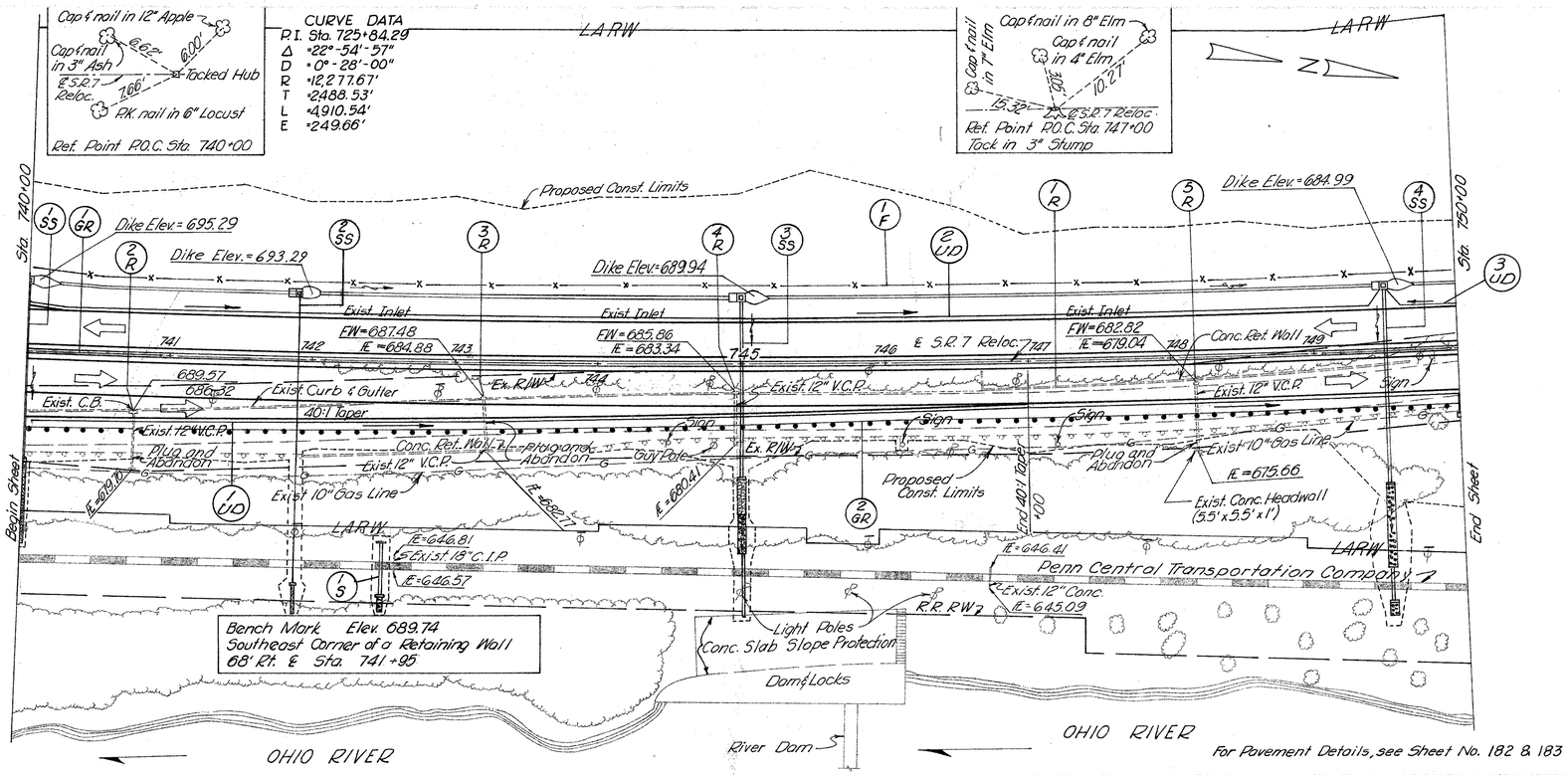
FHWA REGION 5

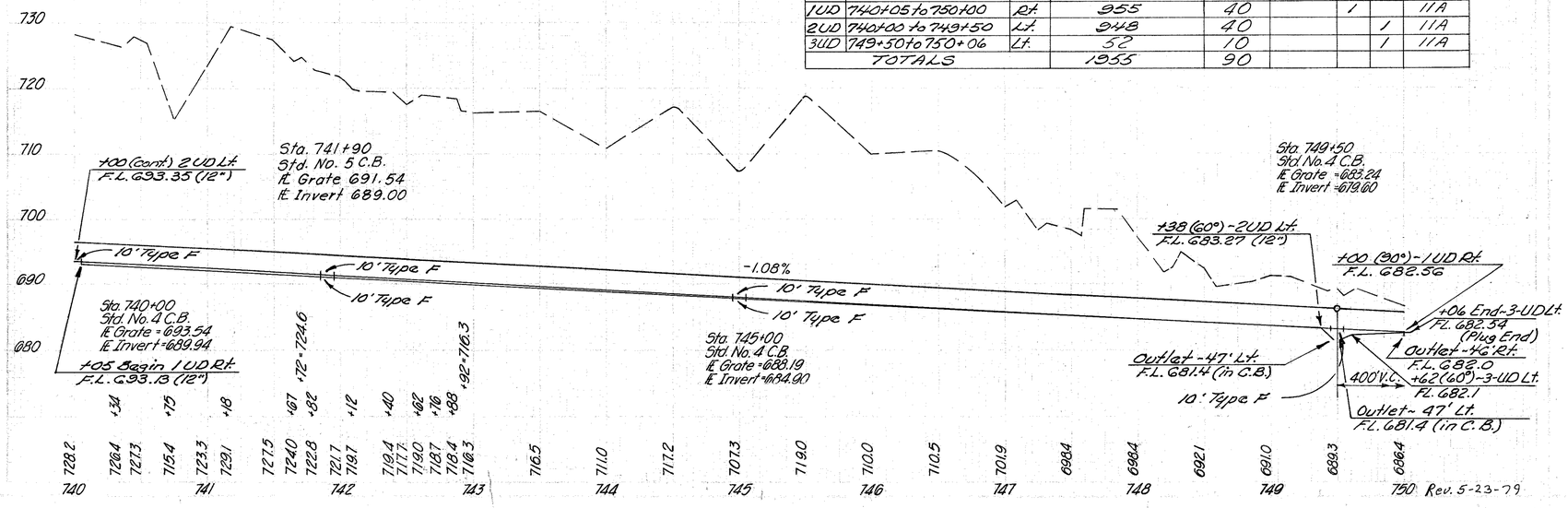
40
443

BEL - 7 - 11.89



* As Per Plan

Ref. No.	Station to Station	Side	605 * 6" Pipe Underdrain 707.01-III or 707.12T-III (12") L.F.	603 6" Type F L.F.		Bends 90°	Bends 60°	See Sheet No.
1UD	740+05 to 750+00	Rt.	955	40		1		11A
2UD	740+00 to 749+50	Lt.	948	40			1	11A
3UD	749+50 to 750+06	Lt.	52	10			1	11A
TOTALS			1955	90				



\# Modified as per plan
* Type B with Bedding ✱ 706.02, 3000 D-Load under railroad, as per plan.

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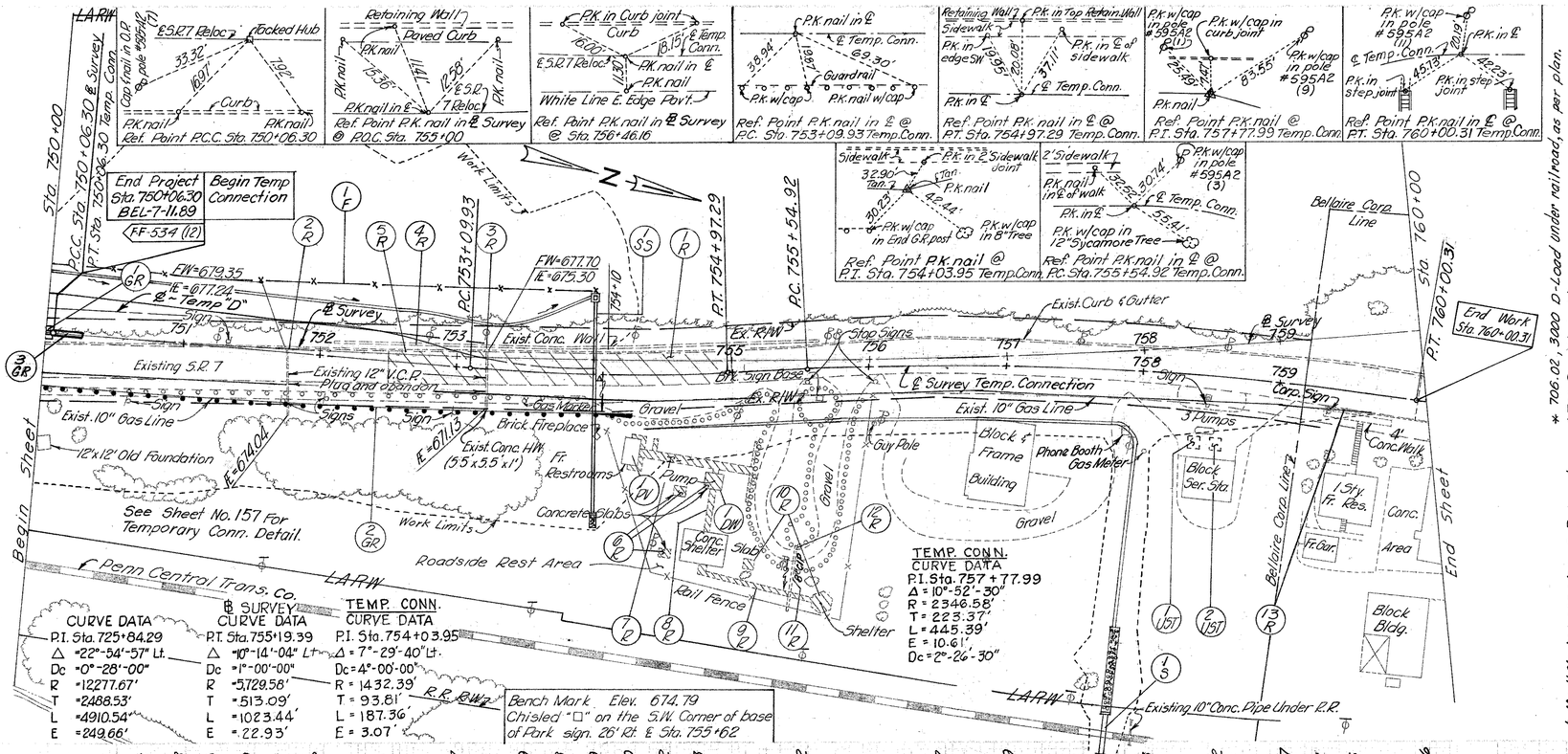
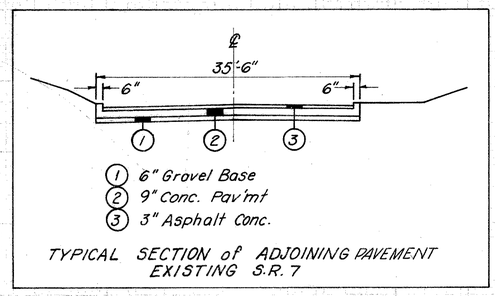
FHWA REGION 5

41
443

BEL - 7 - 11.89





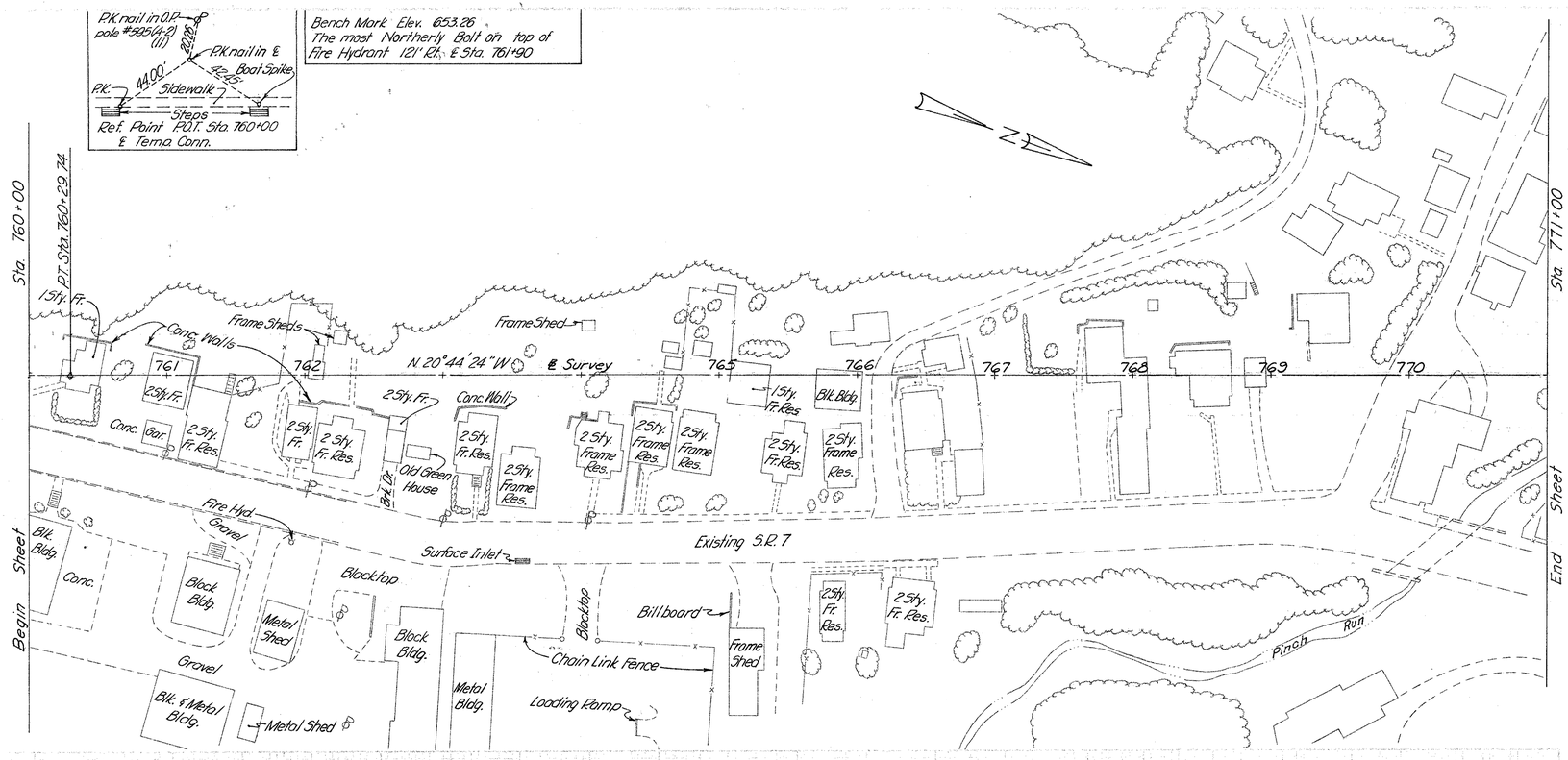
* 706.02, 3000 D-Load under railroads, as per plan.
\# Type B with bedding
\# Modified as per plan • Removed

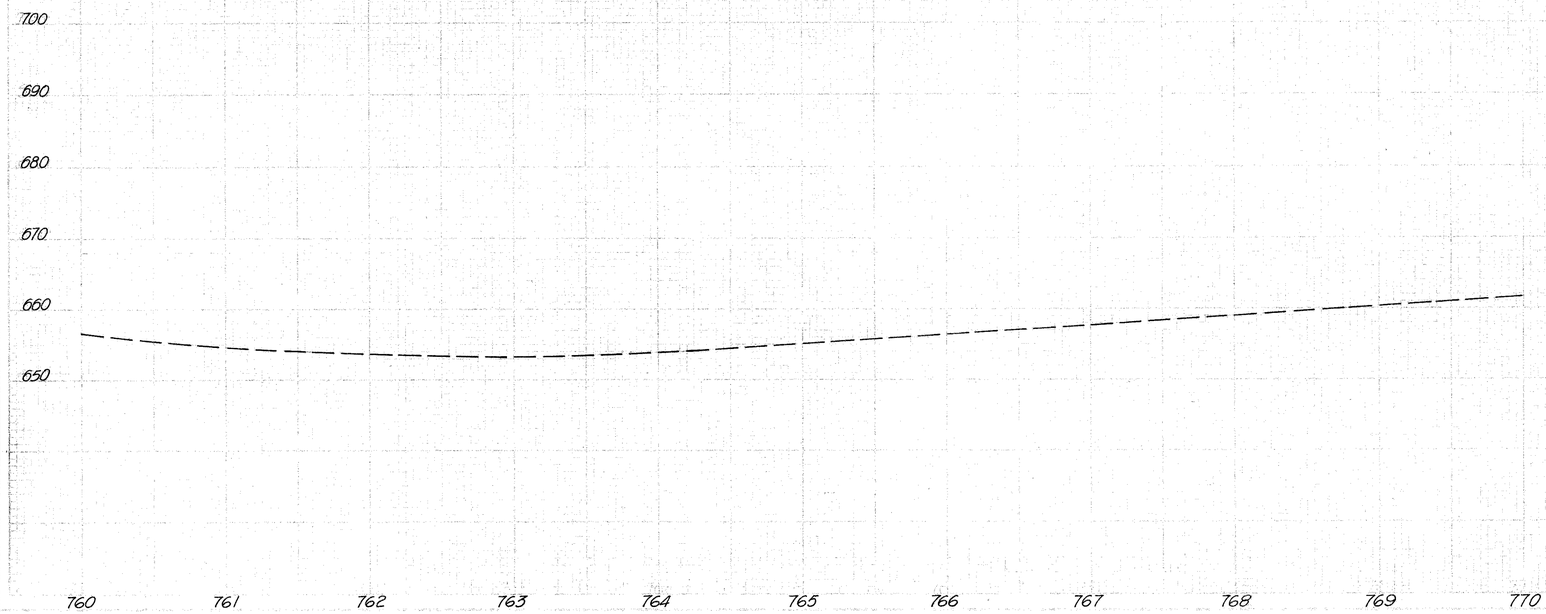
Item	Special - Impact Attenuator	604	202 Special	202	606 Guard Rail	607
		Std. No. 4 Catch Basin	Under-Ground Tanks •	Drilled Well Abond.	Anchor Assy. Removed	Fence Type CL
Each		Ea.	Ea.	Ea.	Ea.	L.F.

Item	Bends & Branches	603 Conduit	Type	B	F
			#A	24"	24"
			30"	L.F.	L.F.
			L.F.		
1R		752.50 to 755+00	℄ Lt.		
2R		751+17.30	℄		
3R		753+22.97	℄		
4R		752+18 to 754+10	℄ Lt.		
5R		752+00 to 755+00	℄ Lt.		
6R		754+43 to 754+85	Rt.		
7R		754+23 to 755+18	Rt.		
8R		754+19 to 754+89	Rt.		
9R		754+74 to 755+58	Rt.		
10R		755+10 to 755+65	Rt.		
11R		755+37 to 755+38	Rt.		
12R		759+36 to 759+75	Rt.		
1F		750+00 to 754+00	Lt.		
1DW		754+85	Rt.		
1PV		754+25	Rt.		
1SS		754+00	℄		
1S		758+00 (250' Rt)	Rt.		
1UST		758+41	Rt.		
2UST		759+38	Rt.		

Item	Roadway	602 Concrete	602 Masonry	601 Rock Channel Protection	601 Riprap 6" Reinf. Conc. Std.	202 Curb Gutter Removed	202 Pavement Removed	202 Inlet Removed	202 Pavement Removed	202 Sidewalk Removed	202 Fence Removed	202 Pipe Culverts Removed & Under
		C.Y.	C.Y.	C.Y.	S.Y.	L.F.	S.Y.	Ea.	Lump	S.F.	L.F.	L.F.
1&2	750+00 to 750+86.30 ℄											
2&3	750+00 to 754+28.01 Rt.											
3&R	750+06.30 ℄											
1R	752.50 to 755+00 ℄ Lt.							1	670			
2R	751+17.30 ℄							1				
3R	753+22.97 ℄								Lump			
4R	752+18 to 754+10 ℄ Lt.						300.00					
5R	752+00 to 755+00 ℄ Lt.											
6R	754+43 to 754+85 Rt.											
7R	754+23 to 755+18 Rt.											
8R	754+19 to 754+89 Rt.											
9R	754+74 to 755+58 Rt.											
10R	755+10 to 755+65 Rt.											
11R	755+37 to 755+38 Rt.											
12R	759+36 to 759+75 Rt.											
1F	750+00 to 754+00 Lt.											
1DW	754+85 Rt.											
1PV	754+25 Rt.											
1SS	754+00 ℄			4								
1S	758+00 (250' Rt) Rt.		0.5	50	4							
1UST	758+41 Rt.		1.2									
2UST	759+38 Rt.											

Item		602 Concrete	602 Masonry	601 Rock Channel Protection	601 Riprap 6" Reinf. Conc. Std.	202 Curb Gutter Removed	202 Pavement Removed	202 Inlet Removed	202 Pavement Removed	202 Sidewalk Removed	202 Fence Removed	202 Pipe Culverts Removed & Under
		C.Y.	C.Y.	C.Y.	S.Y.	L.F.	S.Y.	Ea.	Lump	S.F.	L.F.	L.F.
	Sta. 750+00 to Sta. 760+00	722	3	339	Lump	1,161.00	48	4	54	1.7	6.30	32.112





Sta. 760+00 to Sta. 770+00

CURVE TABLES

FHWA REGION:	STATE	PROJECT	
5	OHIO		

43 / 993

BEL-7-11.89

T.S. Sta. 607+64.44 | Dc = 3°-00' | Max. Super .07 12 | S.T. Sta. 629+63.42

Left Lanes		Station	Right Lanes	
Left Edge	Rt. Edge Profile Grade		Lt. Edge Profile Grade	Right Edge
682.49	682.60	630 + 00	682.60	682.20
682.51	682.70	+ 25	682.70	682.30
682.54	682.80	+ 50	682.80	682.40
682.58	682.90	+ 75	682.90	682.50
682.63	683.00	631 + 00	683.00	682.60
682.71	683.10	+ 25	683.10	682.70
682.80	683.20	+ 50	683.20	682.80

P.C. Sta. 638+26.69 | Dc = 1°-00' | Max. Super .024 | P.C.C. Sta. 669+33.19

Left Lanes		Station	Right Lanes	
Left Edge	Rt. Edge Profile Grade		Lt. Edge Profile Grade	Right Edge
684.03	684.43	634 + 25	684.43	684.03
684.13	684.53	+ 50	684.53	684.15
684.23	684.63	+ 75	684.63	684.29
684.33	684.73	635 + 00	684.73	684.43
684.43	684.83	+ 25	684.83	684.57
684.53	684.93	+ 50	684.93	684.71
684.63	685.03	+ 75	685.03	684.85
684.73	685.13	636 + 00	685.13	684.99
684.83	685.23	+ 25	685.23	685.13
684.93	685.33	+ 50	685.33	685.28
685.03	685.43	+ 75	685.43	685.48
685.13	685.53	637 + 00	685.53	685.58
685.21	685.61	+ 25	685.61	685.71
685.26	685.66	+ 50	685.66	685.81
685.28	685.68	+ 75	685.68	685.88
685.26	685.66	638 + 00	685.66	685.91
685.21	685.61	+ 25	685.61	685.91
685.13	685.53	+ 50	685.53	685.88
685.00	685.41	+ 75	685.41	685.81
684.81	685.26	639 + 00	685.26	685.71
684.58	685.08	+ 25	685.08	685.58
684.32	684.86	+ 50	684.86	685.40
684.04	684.61	+ 75	684.61	685.18
683.74	684.33	640 + 00	684.33	684.92
683.41	684.01	+ 25	684.01	684.61
683.06	683.66	+ 50	683.66	684.26
682.68	683.28	+ 75	683.28	683.88
682.21	682.81	641 + 00	682.81	683.41
681.72	682.32	+ 25	682.32	682.92
681.20	681.80	+ 50	681.80	682.40
680.68	681.28	+ 75	681.28	681.88
680.13	680.73	642 + 00	680.73	681.33
679.55	680.15	+ 25	680.15	680.75
678.93	679.53	+ 50	679.53	680.13
678.28	678.88	+ 75	678.88	679.48
677.60	678.20	643 + 00	678.20	678.80
676.90	677.50	+ 25	677.50	678.10
676.20	676.80	+ 50	676.80	677.40
675.50	676.10	+ 75	676.10	676.70
674.80	675.40	644 + 00	675.40	676.00

674.10	674.70	644 + 25	674.70	675.30
673.40	674.00	+ 50	674.00	674.60
672.70	673.30	+ 75	673.30	673.90
672.00	672.60	645 + 00	672.60	673.20
671.30	671.90	+ 25	671.90	672.50
670.60	671.20	+ 50	671.20	671.80
669.90	670.50	+ 75	670.50	671.10
669.20	669.80	646 + 00	669.80	670.40
668.50	669.10	+ 25	669.10	669.70
667.80	668.40	+ 50	668.40	669.00
667.10	667.70	+ 75	667.70	668.30
666.40	667.00	647 + 00	667.00	667.60
665.70	666.30	+ 25	666.30	666.90
665.00	665.60	+ 50	665.60	666.20
664.30	664.90	+ 75	664.90	665.50
663.60	664.20	648 + 00	664.20	664.80
662.90	663.50	+ 25	663.50	664.10
662.20	662.80	+ 50	662.80	663.40
661.50	662.10	+ 75	662.10	662.70
660.80	661.40	649 + 00	661.40	662.00
660.10	660.70	+ 25	660.70	661.30
659.40	660.00	+ 50	660.00	660.60
658.70	659.30	+ 75	659.30	659.90
658.02	658.62	650 + 00	658.62	659.22
657.40	658.00	+ 25	658.00	658.60
656.81	657.41	+ 50	657.41	658.01
656.28	656.88	+ 75	656.88	657.48
655.79	656.39	651 + 00	656.39	656.99
655.36	655.96	+ 25	655.96	656.56
654.96	655.56	+ 50	655.56	656.16
654.62	655.22	+ 75	655.22	655.82
654.32	654.92	652 + 00	654.92	655.52
654.08	654.68	+ 25	654.68	655.28
653.87	654.47	+ 50	654.47	655.07
653.72	654.32	+ 75	654.32	654.92
653.61	654.21	653 + 00	654.21	654.81
653.56	654.16	+ 25	654.16	654.76
653.54	654.14	+ 50	654.14	654.74
653.58	654.18	+ 75	654.18	654.78
653.64	654.24	654 + 00	654.24	654.84
653.70	654.30	+ 25	654.30	654.90
653.76	654.36	+ 50	654.36	654.96
653.82	654.42	+ 75	654.42	655.02
653.88	654.48	655 + 00	654.48	655.08
653.94	654.54	+ 25	654.54	655.14
654.00	654.60	+ 50	654.60	655.20
654.06	654.66	+ 75	654.66	655.26
654.12	654.72	656 + 00	654.72	655.32
654.18	654.78	+ 25	654.78	655.38
654.24	654.84	+ 50	654.84	655.44
654.30	654.90	+ 75	654.90	655.50
654.36	654.96	657 + 00	654.96	655.56
654.42	655.02	+ 25	655.02	655.62
654.48	655.08	+ 50	655.08	655.68
654.54	655.14	+ 75	655.14	655.74
654.60	655.20	658 + 00	655.20	655.80
654.66	655.26	+ 25	655.26	655.86
654.72	655.32	+ 50	655.32	655.92
654.78	655.38	+ 75	655.38	655.98
654.84	655.44	659 + 00	655.44	656.04
654.90	655.50	+ 25	655.50	656.10
654.96	655.56	+ 50	655.56	656.16
655.02	655.62	+ 75	655.62	656.22
655.08	655.68	660 + 00	655.68	656.28
655.14	655.74	+ 25	655.74	656.34

655.20	655.80	660 + 50	655.80	656.40
655.26	655.86	+ 75	655.86	656.46
655.32	655.92	661 + 00	655.92	656.52
655.38	655.98	+ 25	655.98	656.58
655.44	656.04	+ 50	656.04	656.64
655.50	656.10	+ 75	656.10	656.70
655.56	656.16	662 + 00	656.16	656.76
655.61	656.21	+ 25	656.21	656.81
655.65	656.25	+ 50	656.25	656.85
655.68	656.28	+ 75	656.28	656.88
655.71	656.31	663 + 00	656.31	656.91
655.72	656.32	+ 25	656.32	656.92
655.74	656.34	+ 50	656.34	656.94
655.74	656.34	+ 75	656.34	656.94
655.74	656.34	664 + 00	656.34	656.94
655.72	656.32	+ 25	656.32	656.92
655.71	656.31	+ 50	656.31	656.91
655.68	656.28	+ 75	656.28	656.88
655.65	656.25	665 + 00	656.25	656.85
655.61	656.21	+ 25	656.21	656.81
655.56	656.16	+ 50	656.16	656.76
655.50	656.10	+ 75	656.10	656.70
655.44	656.04	666 + 00	656.04	656.64
655.38	655.98	+ 25	655.98	656.58
655.32	655.92	+ 50	655.92	656.52
655.26	655.86	+ 75	655.86	656.46
655.20	655.80	667 + 00	655.80	656.40
655.14	655.74	+ 25	655.74	656.34
655.08	655.68	+ 50	655.68	656.28

P.C.C. Sta. 669+33.19 | Dc = 1°-28' | Max. Super .035 | P.T. Sta. 687+18.93

Left Lanes		Station	Right Lanes	
Left Edge	Rt. Edge Profile Grade		Lt. Edge Profile Grade	Right Edge
655.01	655.62	667 + 75	655.62	656.23
654.91	655.56	668 + 00	655.56	656.21
654.79	655.50	+ 25	655.50	656.21
654.67	655.44	+ 50	655.44	656.21
654.55	655.38	+ 75	655.38	656.21
654.47	655.33	669 + 00	655.33	656.19
654.45	655.32	+ 25	655.32	656.19
654.46	655.33	+ 50	655.33	656.20
654.51	655.38	+ 75	655.38	656.25
654.58	655.45	670 + 00	655.45	656.32
654.68	655.55	+ 25	655.55	656.42
654.81	655.68	+ 50	655.68	656.55
654.97	655.84	+ 75	655.84	656.71
655.16	656.03	671 + 00	656.03	656.90
655.38	656.25	+ 25	656.25	657.12
655.63	656.50	+ 50	656.50	657.37
655.91	656.78	+ 75	656.78	657.65
656.21	657.08	672 + 00	657.08	657.95
656.55	657.42	+ 25	657.42	658.29
656.91	657.78	+ 50	657.78	658.65
657.31	658.18	+ 75	658.18	659.05
657.72	658.59	673 + 00	658.59	659.46
658.13	659.00	+ 25	659.00	659.87
658.54	659.41	+ 50	659.41	660.28
658.95	659.82	+ 75	659.82	660.69
659.36	660.23	674 + 00	660.23	661.10

659.77	660.64	674 + 25	660.64	661.51
660.19	661.05	+ 50	661.05	661.92
660.59	661.46	+ 75	661.46	662.33
661.00	661.87	675 + 00	661.87	662.74
661.41	662.28	+ 25	662.28	663.15
661.82	662.69	+ 50	662.69	663.56
662.23	663.10	+ 75	663.10	663.97
662.64	663.51	676 + 00	663.51	664.38
663.05	663.92	+ 25	663.92	664.79
663.46	664.33	+ 50	664.33	665.20
663.87	664.74	+ 75	664.74	665.61
664.28	665.15	677 + 00	665.15	666.02
664.69	665.56	+ 25	665.56	666.43
665.10	665.97	+ 50	665.97	666.84
665.51	666.38	+ 75	666.38	667.25
665.92	666.79	678 + 00	666.79	667.66
666.33	667.20	+ 25	667.20	668.07
666.74	667.61	+ 50	667.61	668.48
667.15	668.02	+ 75	668.02	668.89
667.56	668.43	679 + 00	668.43	669.30
667.97	668.84	+ 25	668.84	669.71
668.38	669.25	+ 50	669.25	670.12
668.79	669.66	+ 75	669.66	670.53
669.20	670.07	680 + 00	670.07	670.94
669.61	670.48	+ 25	670.48	671.35
670.02	670.89	+ 50	670.89	671.76
670.43	671.30	+ 75	671.30	672.17
670.84	671.71	681 + 00	671.71	672.58
671.25	672.12	+ 25	672.12	672.99
671.66	672.53	+ 50	672.53	673.40
672.08	672.95	+ 75	672.95	673.82
672.53	673.40	682 + 00	673.40	674.27
672.98	673.85	+ 25	673.85	674.72
673.43	674.30	+ 50	674.30	675.17
673.84	674.71	+ 75	674.71	675.58
674.25	675.12	683 + 00	675.12	675.99
674.66	675.53	+ 25	675.53	676.40
675.07	675.94	+ 50	675.94	676.81
675.48	676.35	+ 75	676.35	677.22
675.89	676.76	684 + 00	676.76	677.63
676.30	677.17	+ 25	677.17	678.04
676.71	677.58	+ 50	677.58	678.45
677.12	677.99	+ 75	677.99	678.86
677.53	678.40	685 + 00	678.40	679.27
677.93	678.80	+ 25	678.80	679.67
678.29	679.16	+ 50	679.16	680.03
678.64	679.50	+ 75	679.50	680.36
678.97	679.81	686 + 00	679.81	680.65
679.28	680.09	+ 25	680.09	680.90
679.53	680.34	+ 50	680.34	681.09
679.92	680.57	+ 75	680.57	681.22
680.20	680.76	687 + 00	680.76	681.29
680.44	680.93	+ 25	680.93	681.34
680.63	681.06	+ 50	681.06	681.35
680.77	681.17	+ 75	681.06	681.34
680.86	681.25	688 + 00	681.25	681.31
680.91	681.30	+ 25	681.30	681.27
680.93	681.32	+ 50	681.32	681.22
680.93	681.32	+ 75	681.32	681.16
680.89	681.28	689 + 00	681.28	681.06
680.83	681.22	+ 25	681.22	680.94
680.73	681.12	+ 50	681.12	680.88
680.61	681.00	+ 75	680.99	680.82
680.46	680.85	690 + 00	680.85	680.46
680.28	680.67	+ 25	680.67	680.28

680.07	680.46	690 + 50	680.46	680.07
679.84	680.23	+ 75	680.23	679.84
679.57	679.96	691 + 00	679.96	679.57

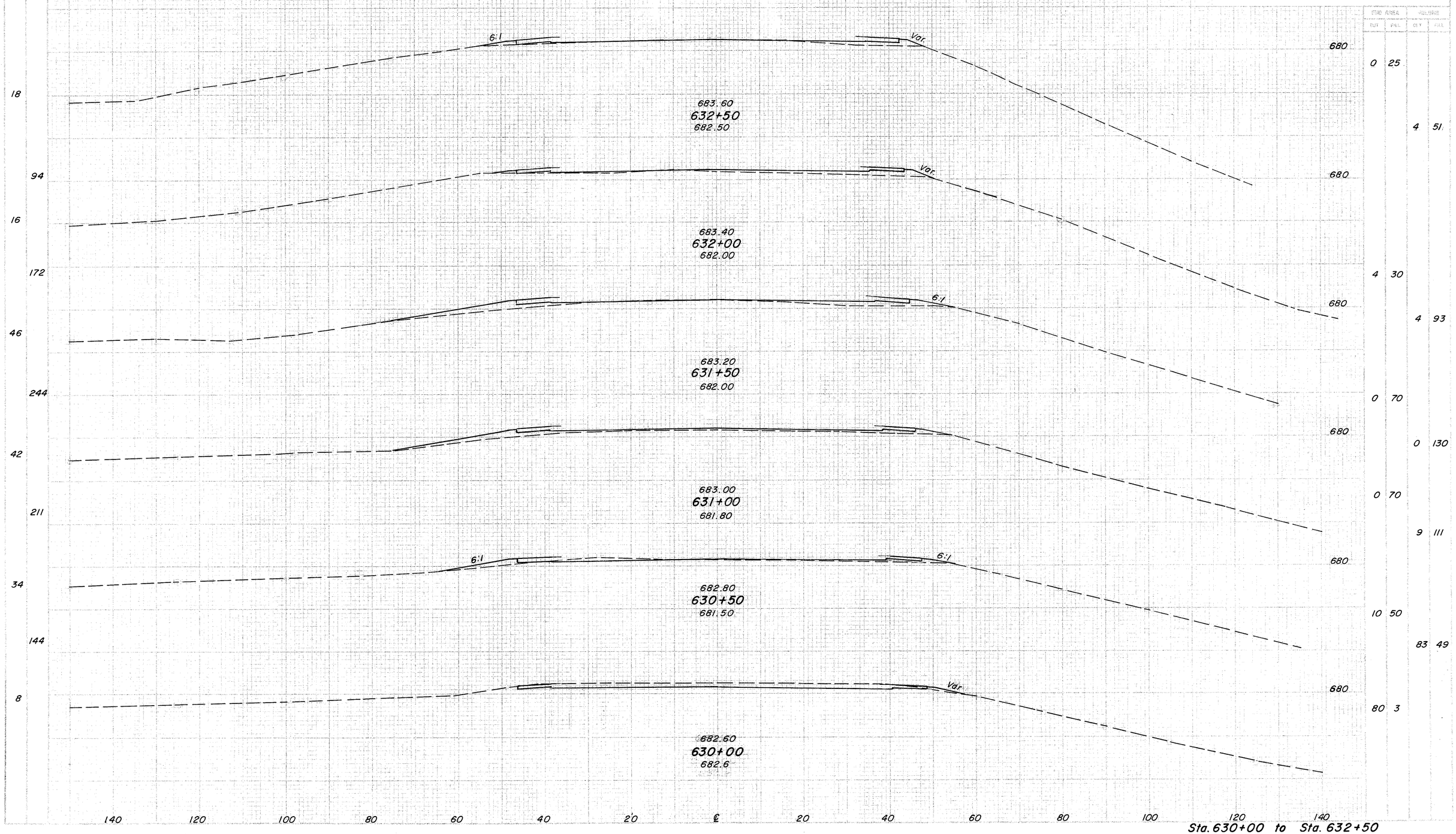
CURVE TABLE

Computed by J.S. 2/77
Checked by AWL 2/77

STATE	PROJECT
OHIO	

44
443

BEL-7-11.89



END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
0	25		
		4	51
4	30		
		4	93
0	70		
		0	130
0	70		
		9	111
10	50		
		83	49
80	3		

Sta. 630+00 to Sta. 632+50

Computed by J.S. 2/77
Checked by AWL 2/77

STATE	PROJECT
OHIO	

45
493

BEL-7-11.89

650

635+50
656.10

2:1
1:1

634+88
676.20

Var.

684.53
634+50
678.70

6:1

684.33
634+00
678.60
Bridge Rt.

Var.

684.08
633+50
682.50

6:1

Var.

683.80
633+00
682.7

32
150
22
113
19

140 120 100 80 60 40 20 ℄ 20 40 60 80 100 120 140

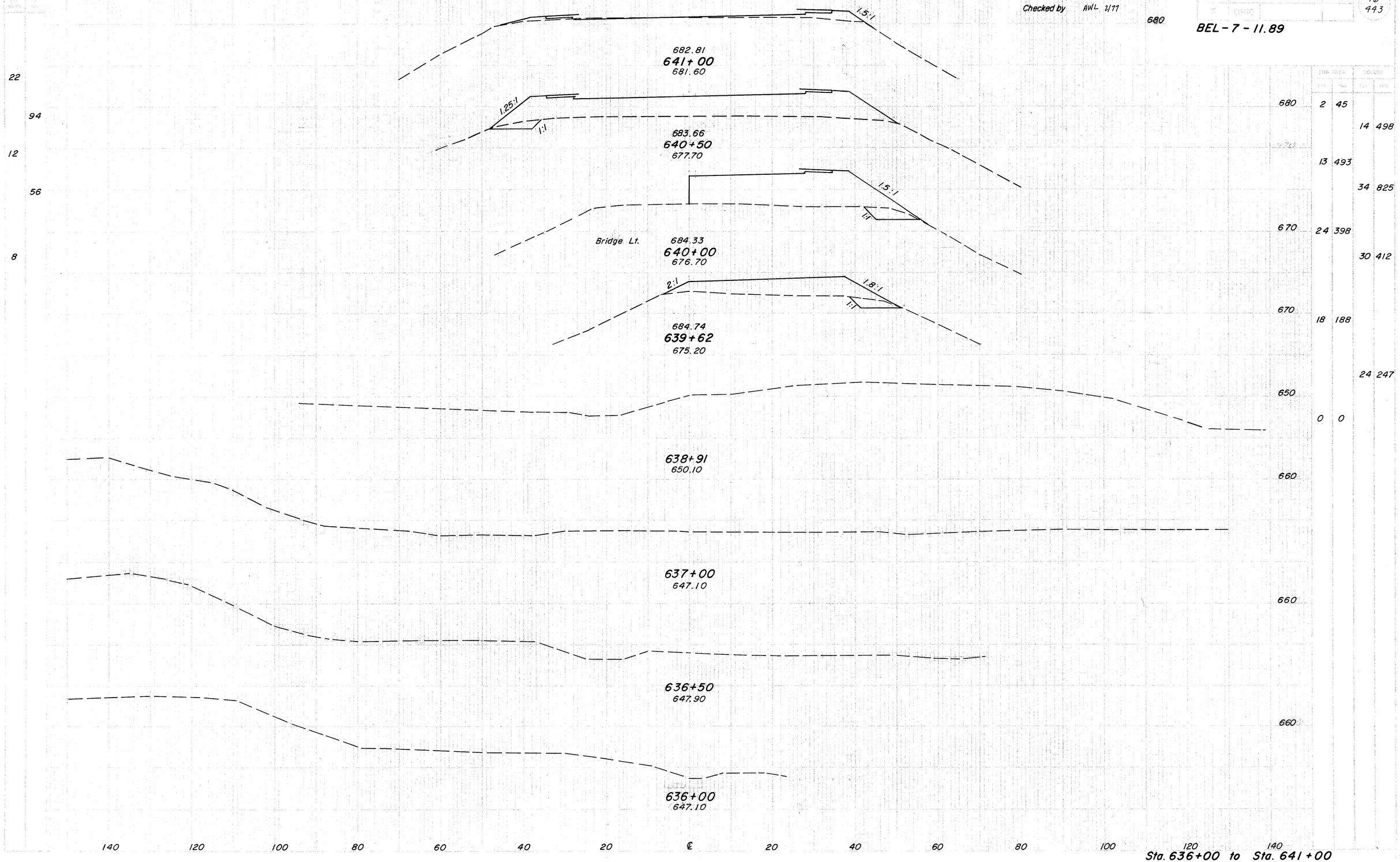
	END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
635+00	0	0		
670			7	27
	30	120		
			21	281
	0	280		
670				490
	0	250		
670			0	462
	0	250		
680			0	287
	0	60		
680			2	79
	2	25		
			2	43

Sta. 633+00 to Sta. 635+50

Computed by J.S. 2/77
Checked by AWL 2/77

46
443

BEL-7-11.89

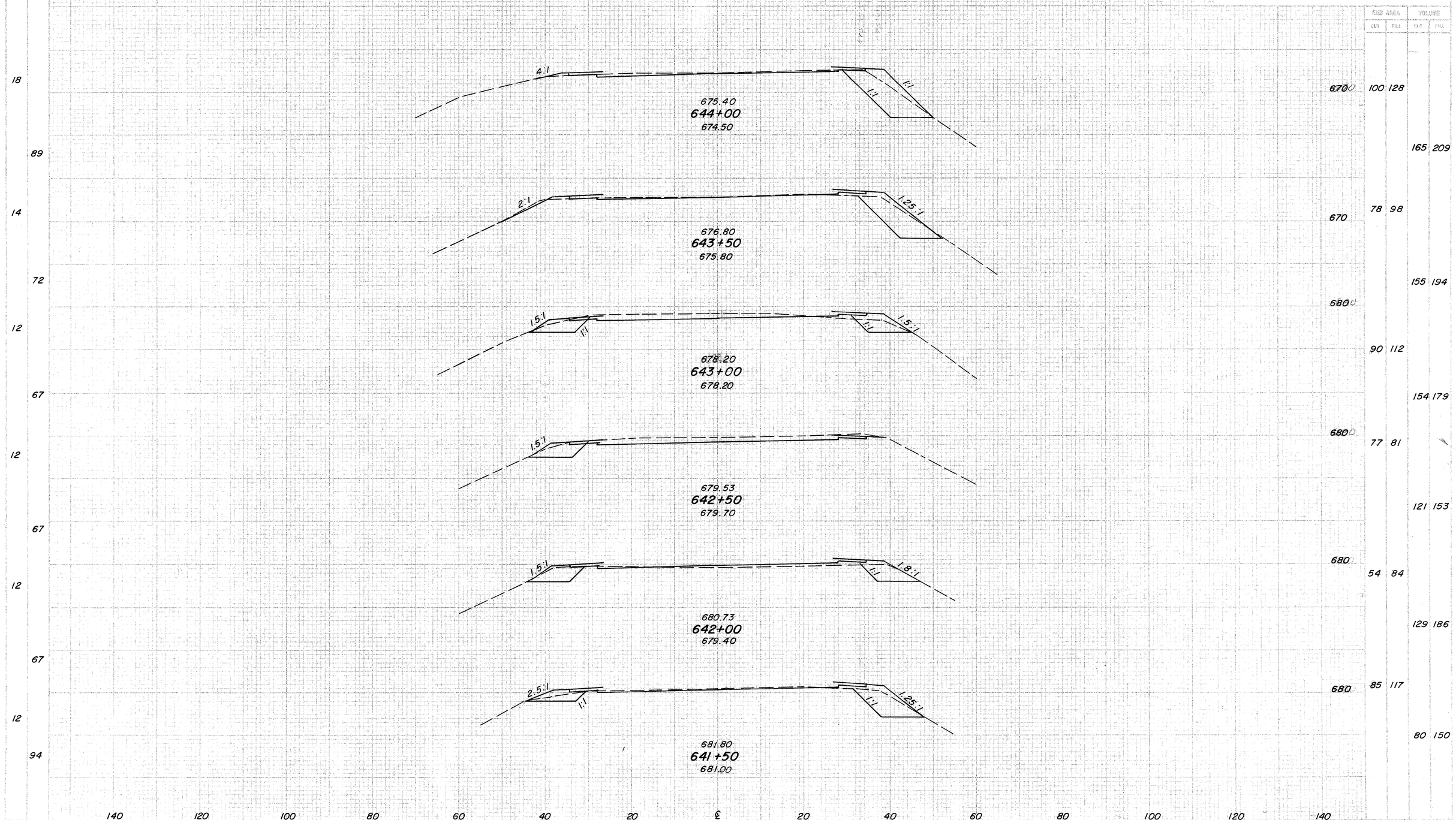


Sta. 636+00 to Sta. 641+00

Computed by J.S. 2/77
Checked by AWL 2/77

F.H.W.A. REGION	STATE	PROJECT	
	OHIO		

BEL-7-11.89



Sta. 641+50 to Sta. 644+00

Computed by J.S. 2/77
Checked by AWL 2/77

FEDERAL REGION	STATE	PROJECT	
	OHIO		

BEL-7-11.89

48
443

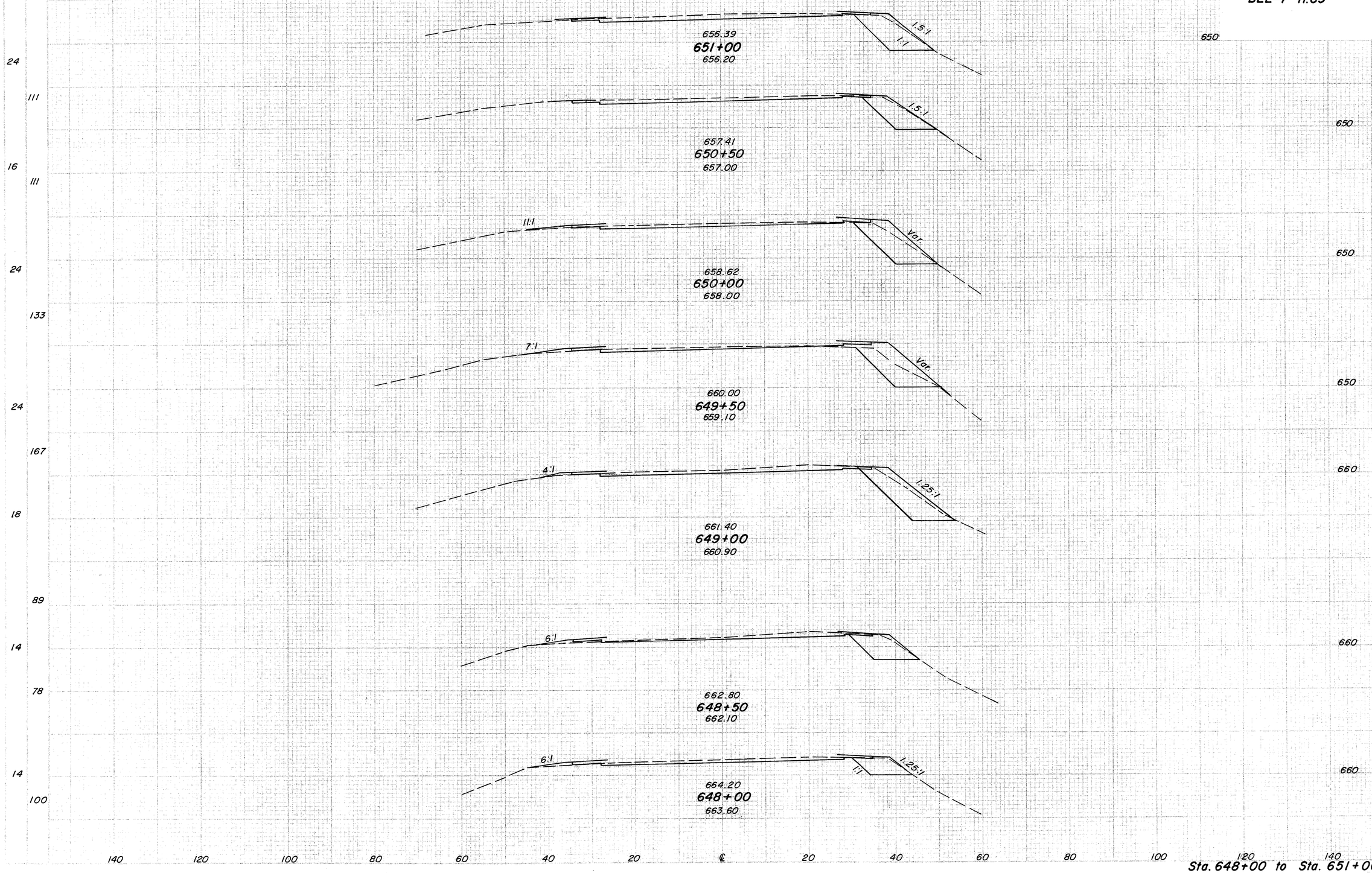
| SECTION | | |

Computed by J.S. 2/77
Checked by AWL 2/77

H.W.L. REGION	STATE	PROJECT	
	OHIO		

48A
443

BEL-7-11.89



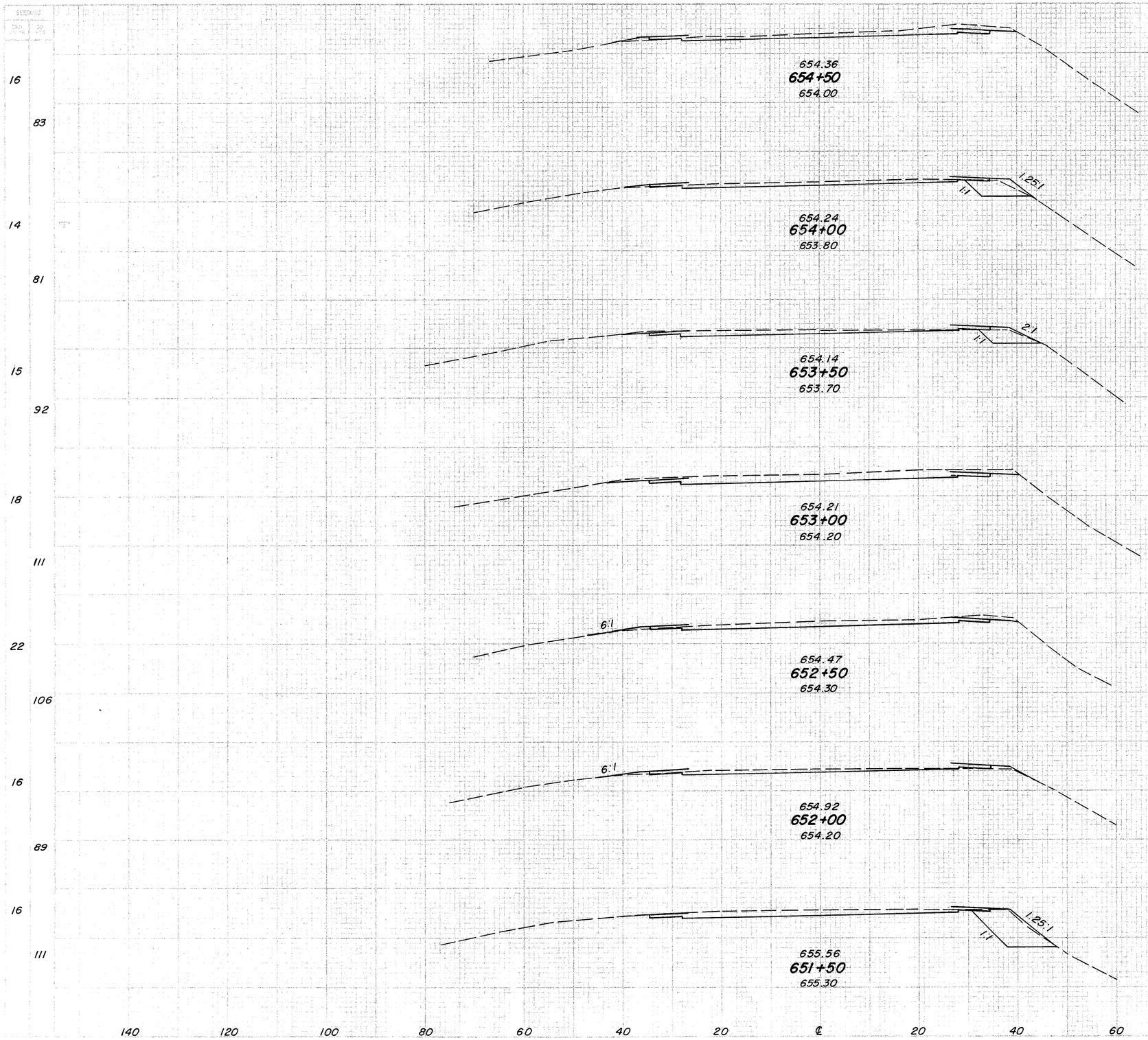
END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
76	90		
		161	178
98	102		
		176	200
92	114		
		151	212
71	115		
		185	250
129	155		
		195	230
82	94		
		134	147
63	65		
		182	212

Sta. 648+00 to Sta. 651+00

Computed by J.S. 2/77
Checked by AWL 2/77

488
443

BEL-7-11.89



SECTIONS CUT	SECTIONS FILL	END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
16	83	50	10		
		650		126	95
14			86	93	
	81				
				137	147
		650			
15			62	66	
	92				
				150	61
		650			
18		100	0		
	111			148	2
			60	2	
		650			
22					
	106			74	6
			20	5	
16		650			
	89			131	121
			122	126	
16		650			
	111			183	200

Sta. 651+50 to Sta. 654+50

Computed by J.S. 2/77
Checked by AWL 2/77

F.H.W.A. REGION	STATE	PROJECT	
	OHIO		

48C 443

BEL-7-11.89

| SEGMENT | | |

Computed by J.S. 2/77
Checked by AWL 2/77

DIVISION	STATE	PROJECT	
HIGHWAY DESIGN	OHIO		

480
443

BEL-7-11.89

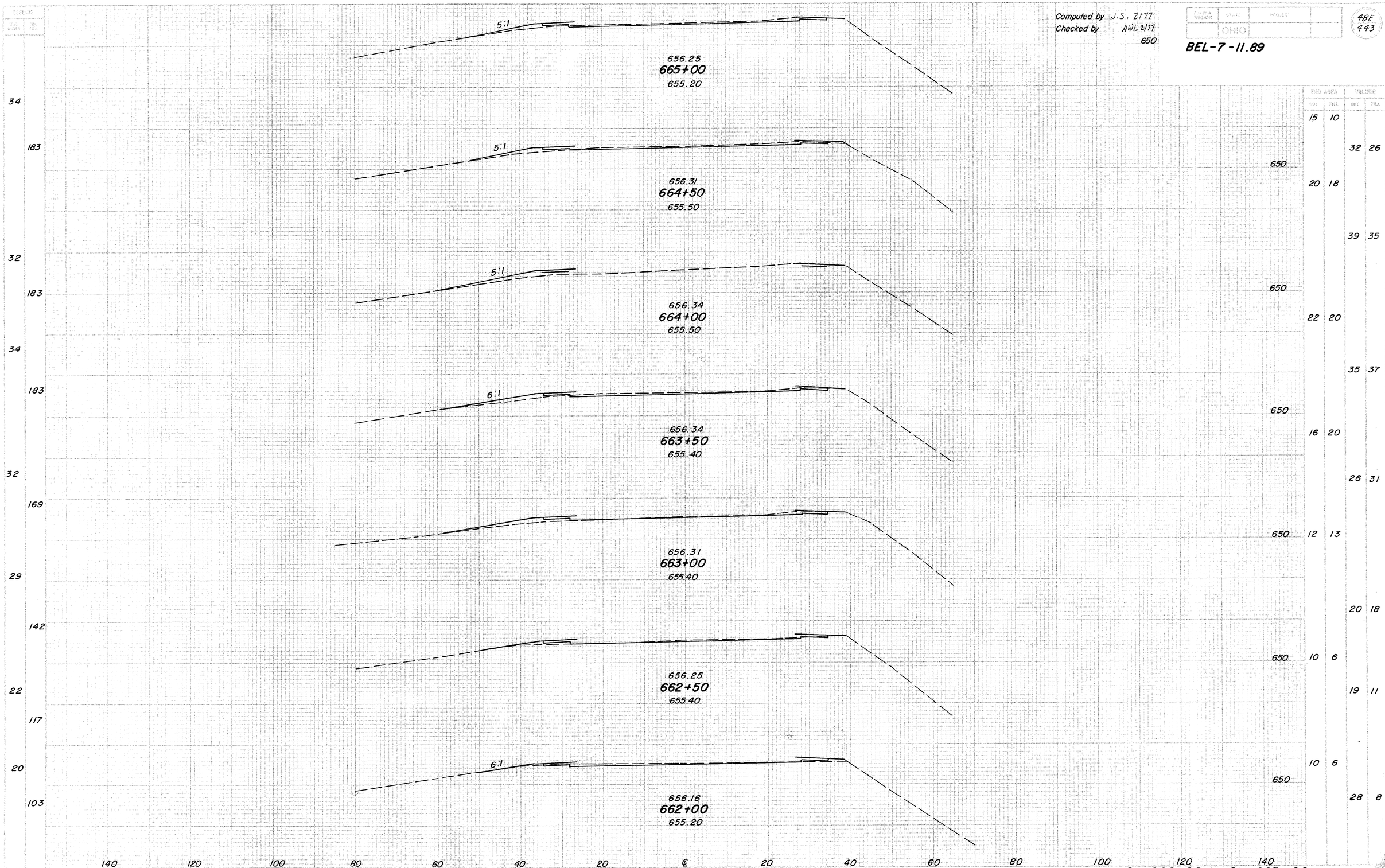
| SEGMENT SEC. THICK. | SEGMENT SQ. YDS. | | |

Computed by J.S. 2/77
Checked by AWL 2/77

F.H.W.A. REGION	STATE	PROJECT
	OHIO	

48E
443

BEL-7-11.89

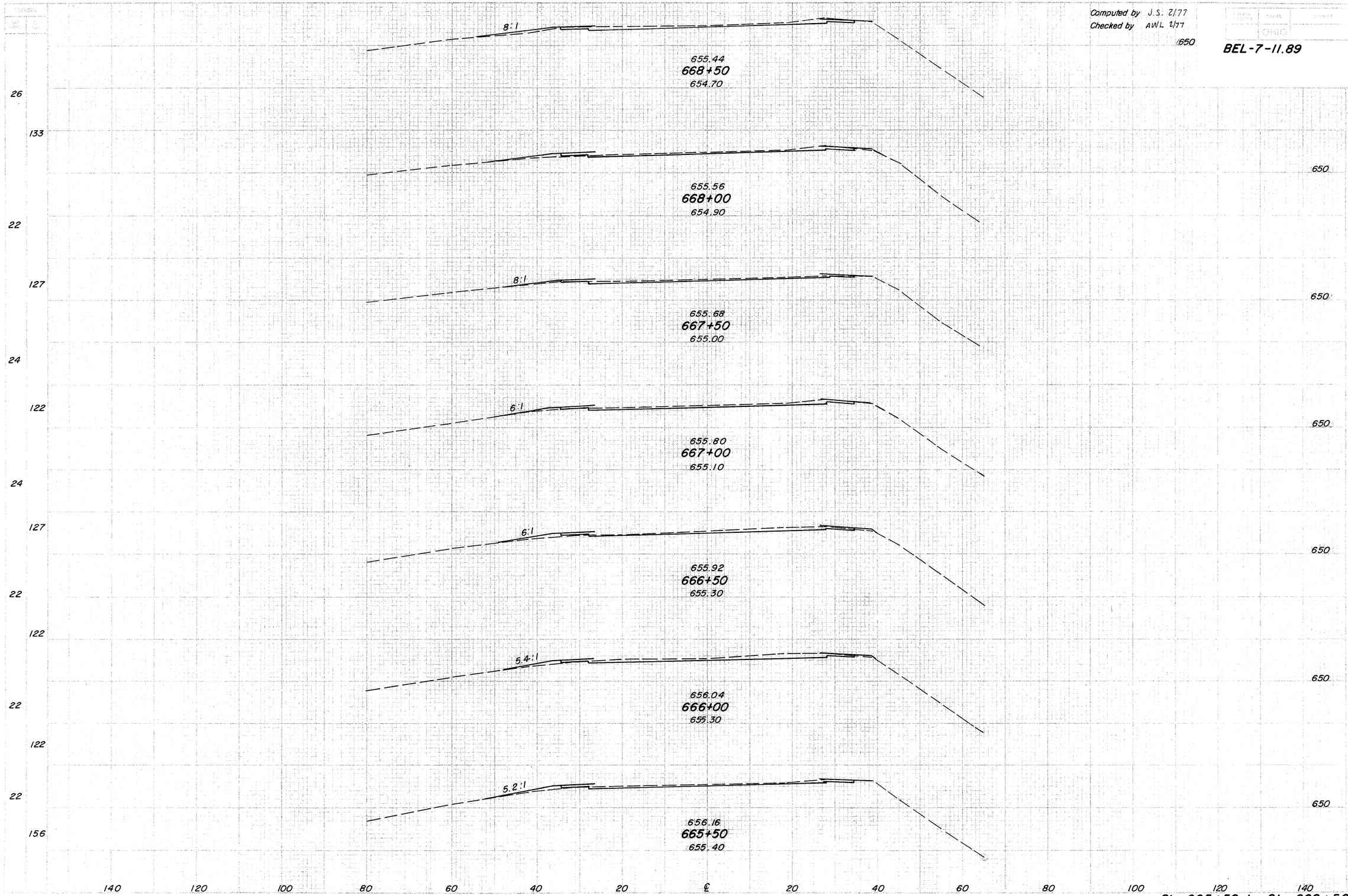


Sta. 662+00 to Sta. 665+00

Computed by J.S. 2/77
Checked by AWL 2/77

48F
443

BEL-7-11.89



Station	Elev.	Fill	Cut	Fill
650	30	5		
			42	10
650	15	6		
			23	10
650	10	5		
			44	7
650	38	3		
			58	12
650	25	10		
			56	14
650	35	5		
			51	9
650	20	5		
			32	14

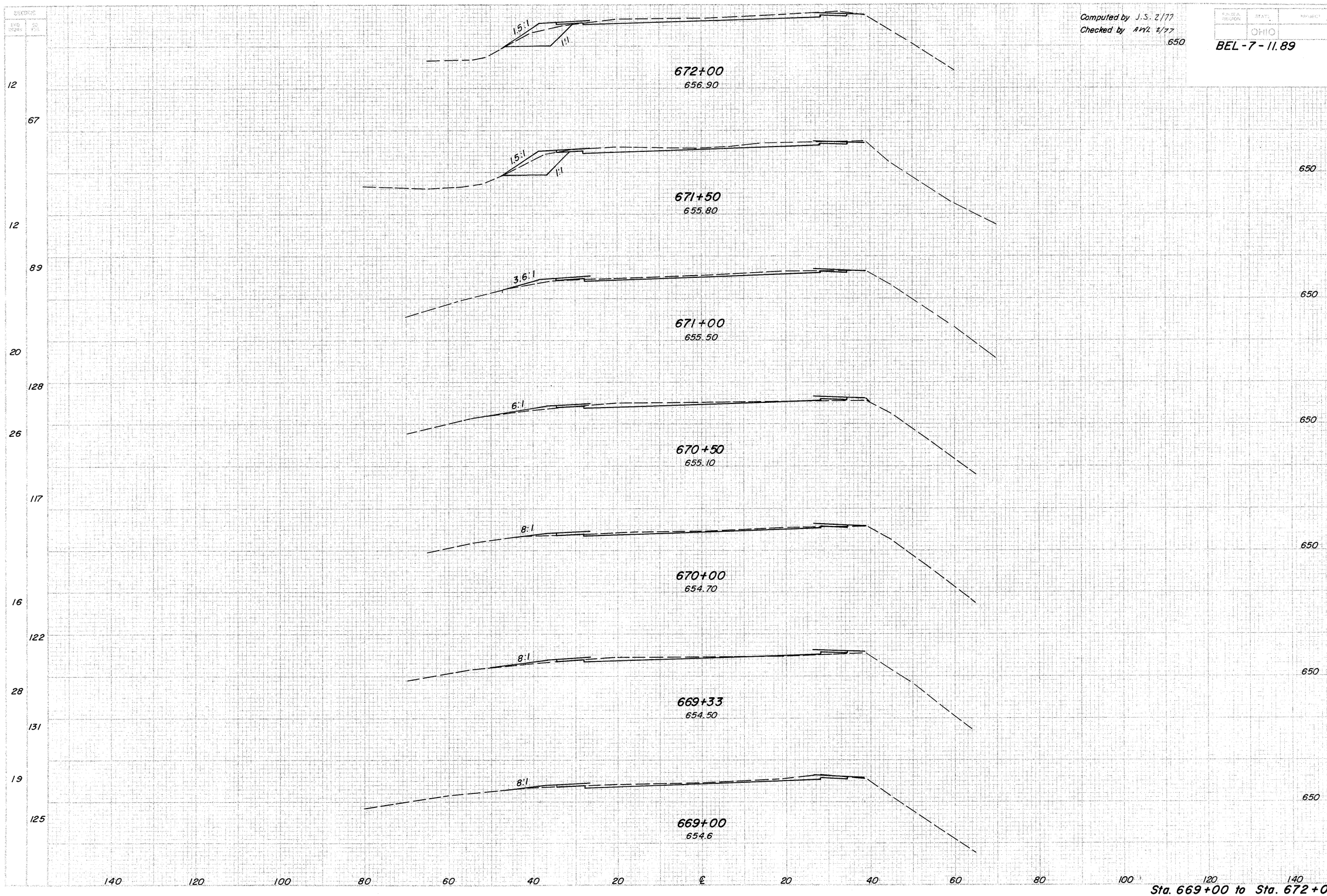
Sta. 665+50 to Sta. 668+50

Computed by J.S. 2/77
Checked by AWL 2/77

F.H.W.A. REGION	STATE	PROJECT	
	OHIO		

BEL-7-11.89

486
443



END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
77	89		
		138	156
72	80		
		88	80
23	6		
		44	15
25	10		
		37	14
15	5		
		32	12
20	8		
		44	10
28	3		
		54	7

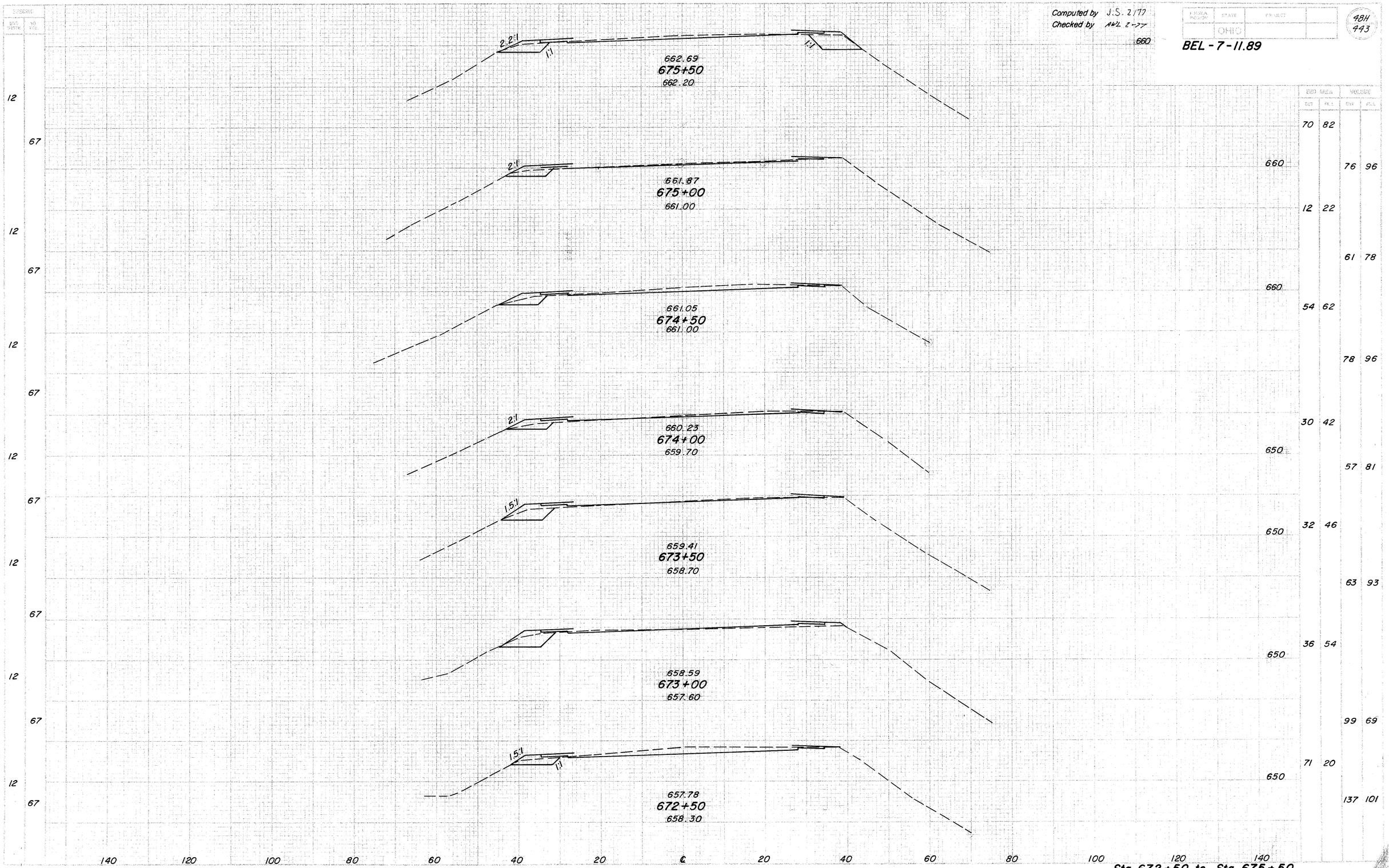
Sta. 669+00 to Sta. 672+00

Computed by J.S. 2/77
Checked by AWL 2-77

F.H.W.A. REGION	STATE	PROJECT	
	OHIO		

48H
443

BEL - 7 - 11.89



END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
70	82		
		76	96
12	22		
		61	78
54	62		
		78	96
30	42		
		57	81
32	46		
		63	93
36	54		
		99	69
71	20		
		137	101

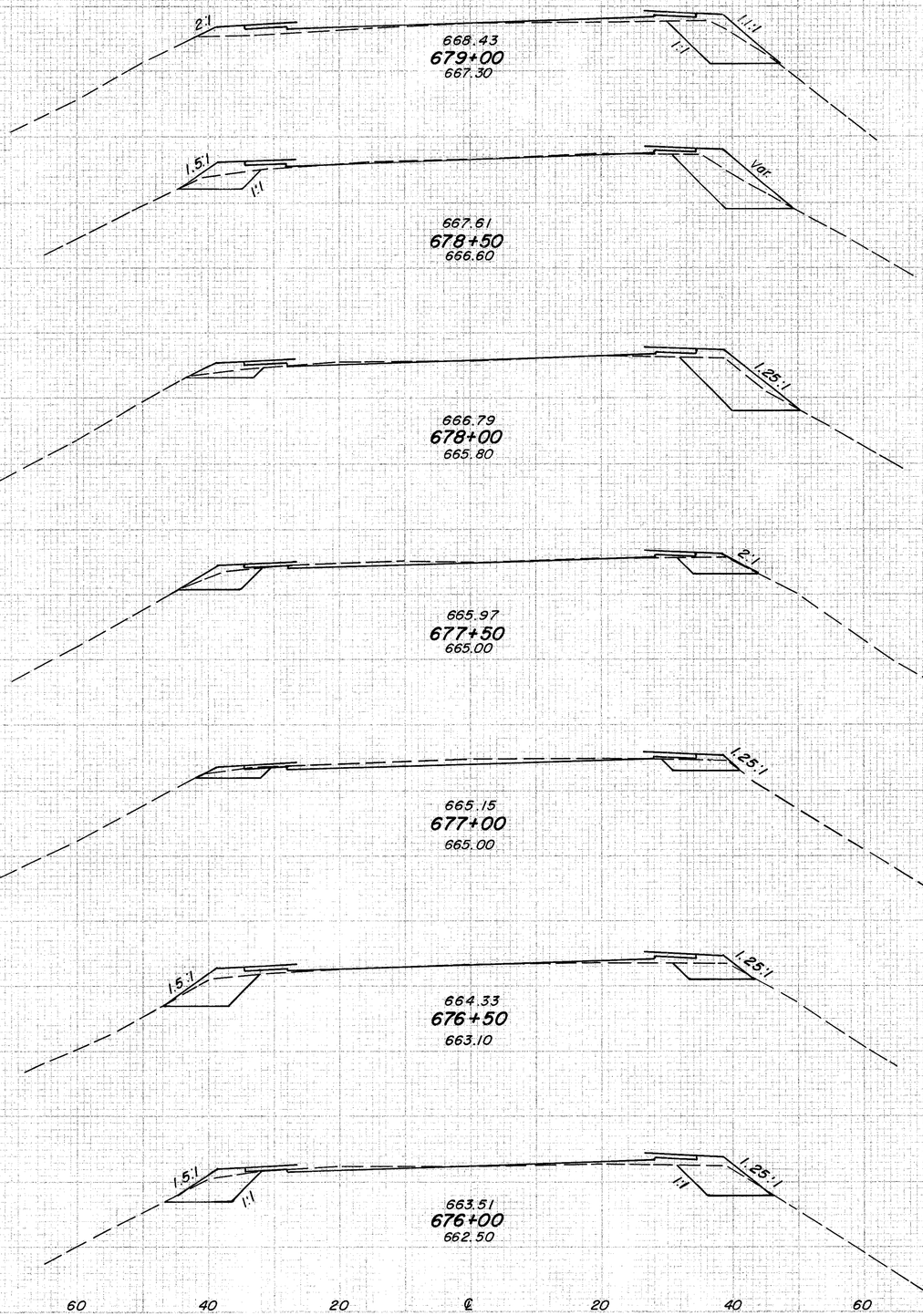
Sta. 672+50 to Sta. 675+50

Computed by J.S. 2/77
Checked by MWL 2/77

FHWA REGION	STATE	PROJECT	
	OHIO		

481
443

BEL-7-11.89



SEEDING		CUT AREA	FILL AREA
SIDE SLOPE	BK. SLOPE	CUT	FILL
14	72	58	98
		124	198
12	67	76	116
		145	210
12	67	81	111
		127	167
12	67	56	69
		104	121
12	67	56	62
		106	133
12	67	58	82
		121	168
12	67	73	99
		132	168

660

140 120 100 80 60 40 20 ℄ 20 40 60 80 100 120 140

Sta. 676+00 to Sta. 679+00

Computed by J.S. 2/77
Checked by AWL 2/77

FEDERAL PROJECT	STATE	PROJECT	
	OHIO		

BEL-7-11.89

48J
493

END AREA		VOLUME	
CUT	FILL	CUT	FILL

12
67
12
72

660
84 184
156 276
660
84 114
132 196

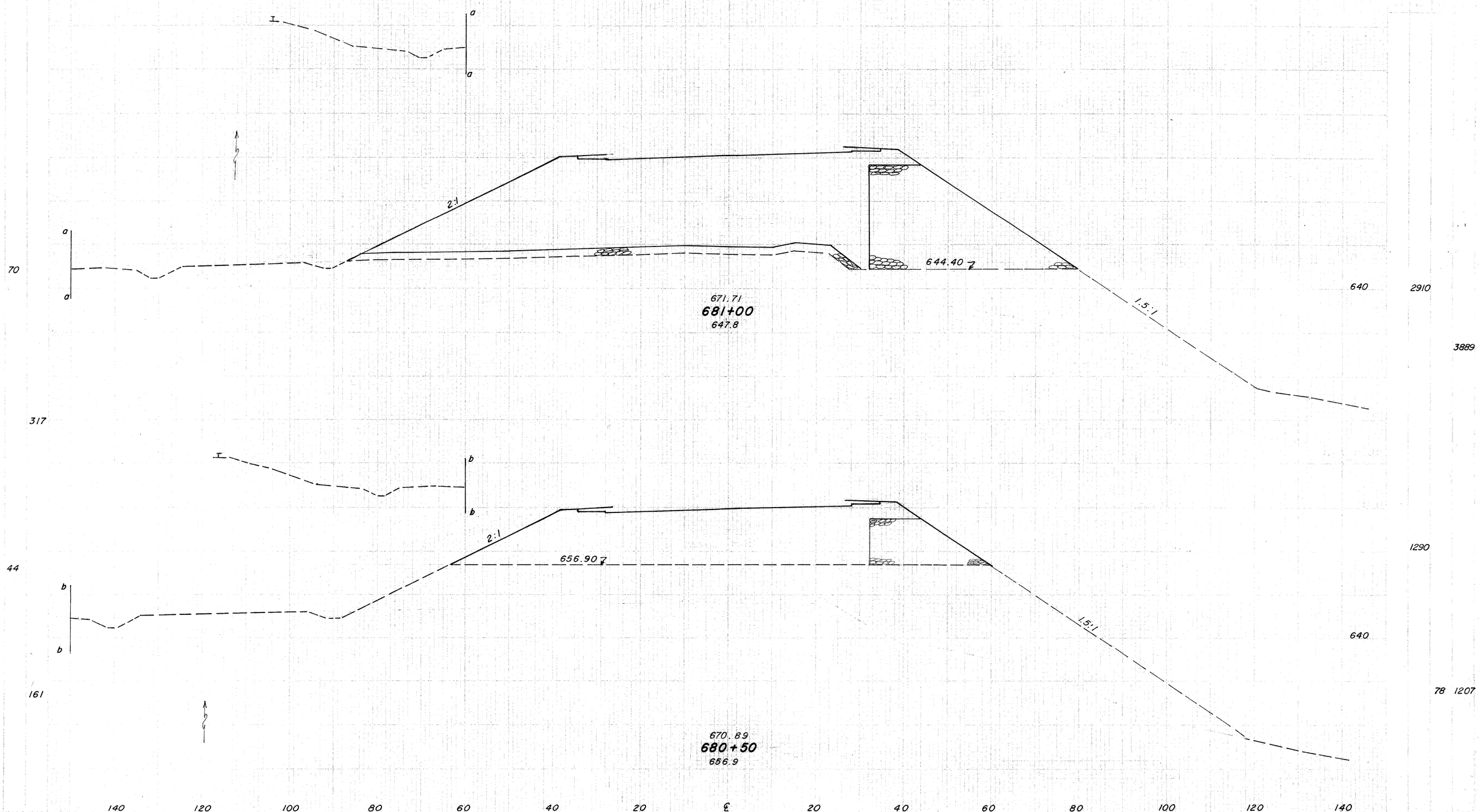
Sta. 679+50 to Sta. 680+00

FHWA REGION 5

48K 943

BEL-7 - 11.89

Revised by J.S. 3/76 *Checked by AWL 1-77*



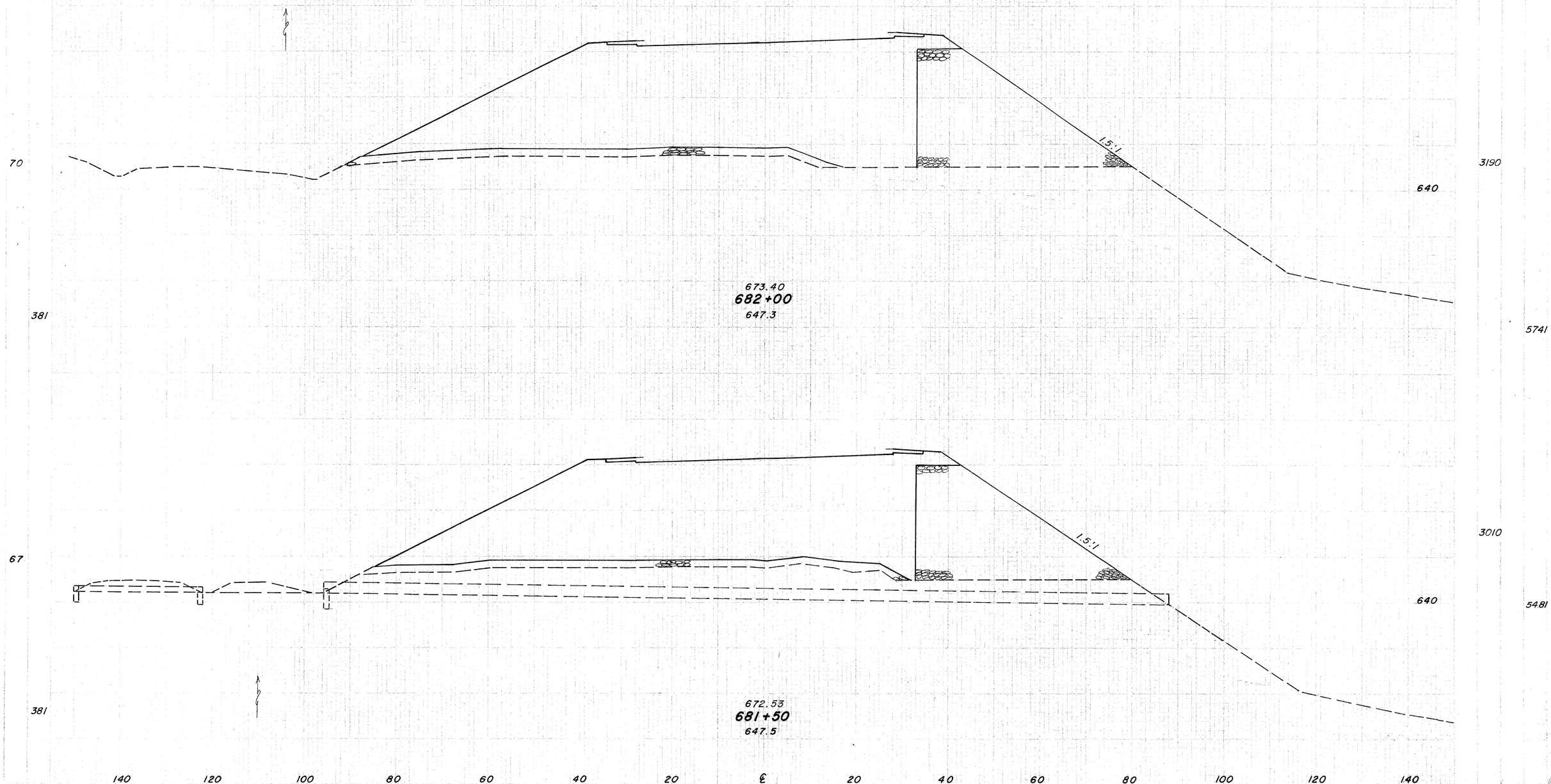
Sta. 680 + 50 to Sta. 681 + 00

FHWA REGION 5

48L 993

BEL-7-11.89

Revised by J.S. 3/76 Checked by AWL 1-77



Sta. 681 + 50 to Sta. 682 + 00

FHWA REGION 5

49
443

BEL-7-11.89

Revised by J.S. 3/76 Checked by DWL 1-77

Seeding

Seeding

80

543

640

675.12
683+00

Sta. 682+96 0 0

3747

2:1

1.5:1

75

3430

640

298

674.08
682+37
646.7

4536

140 120 100 80 60 40 20 ℄ 20 40 60 80 100 120 140

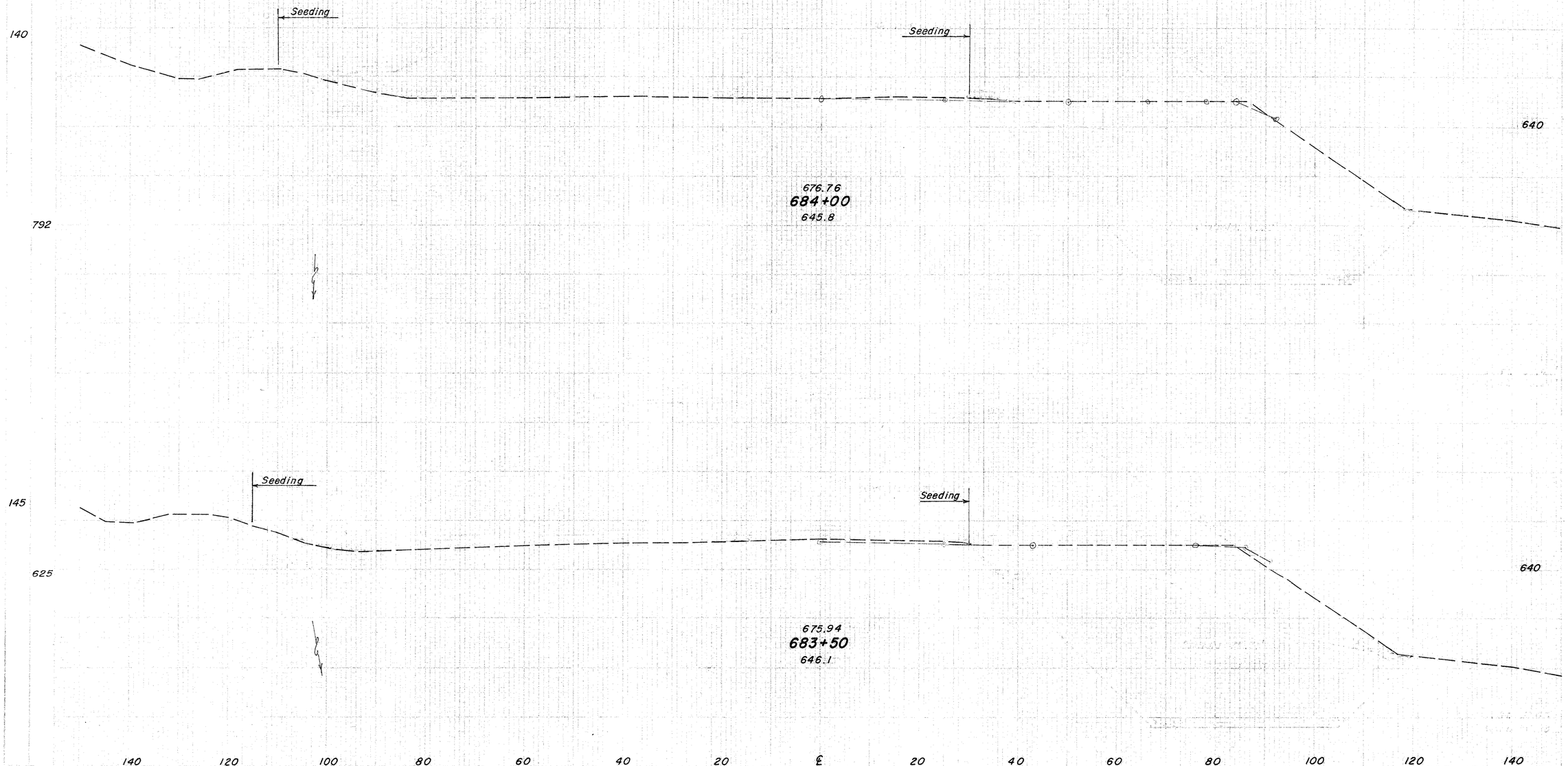
Sta. 682+50 to Sta. 683+00

FHWA REGION 5

50
443

BEL-7-11.89

Revised by J.S. 3/16 Checked by ANL 1-77



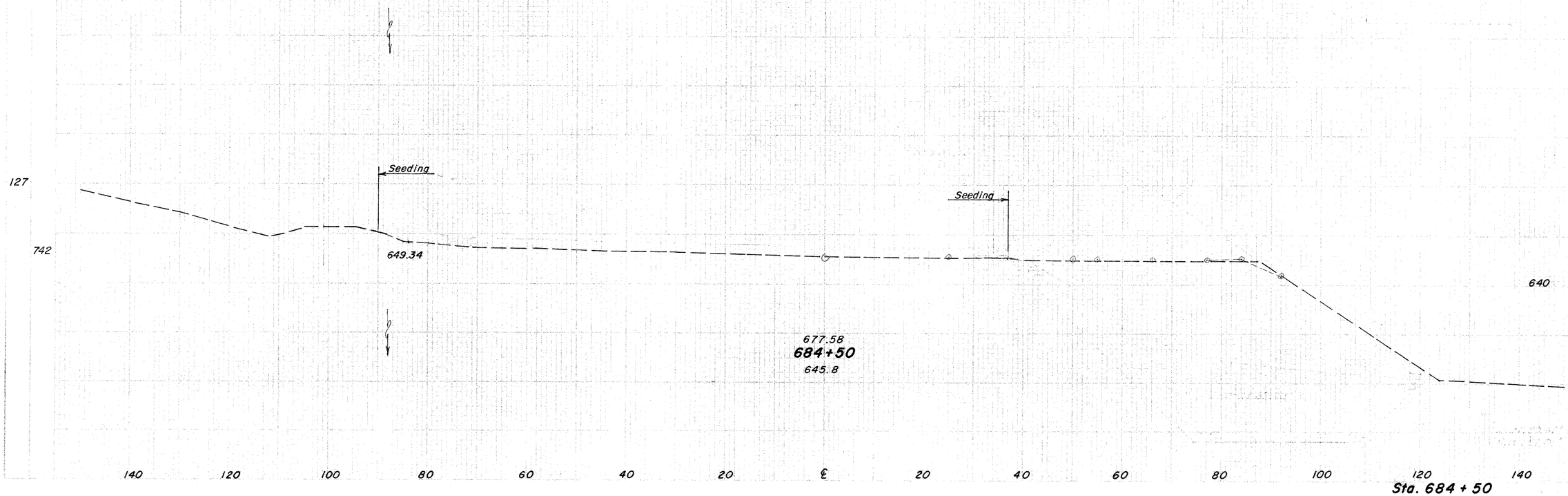
Sta. 683 + 50 to Sta. 684 + 00

FHWA
REGION
5

51
443

BEL-7-11.89

Revised by J.S. 3/76 *Checked by* AWL 1-77



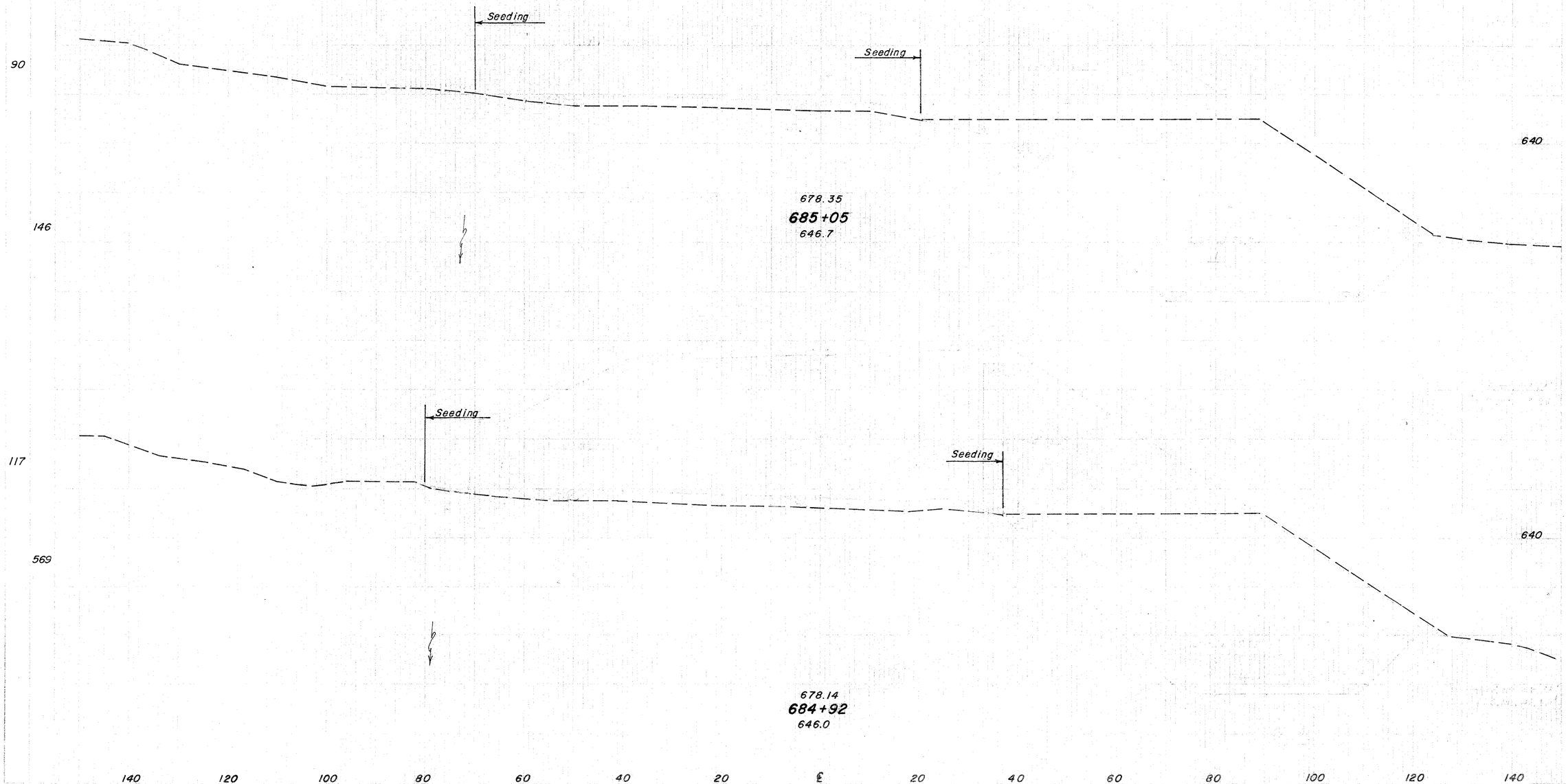
Sta. 684 + 50

FHWA REGION 5

52
443

BEL-7-11.89

Revised by J.S. 3/76 Checked by AWL 1-77



Sta. 684+92 to Sta. 685+05

FHWA REGION 5

53
443

BEL-7-11.89

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97

Seeding

Seeding

640

679.31
685+70

86

97

Seeding

Seeding

640

592

679.20
685+62
647.9

140 120 100 80 60 40 20 ℄ 20 40 60 80 100 120 140

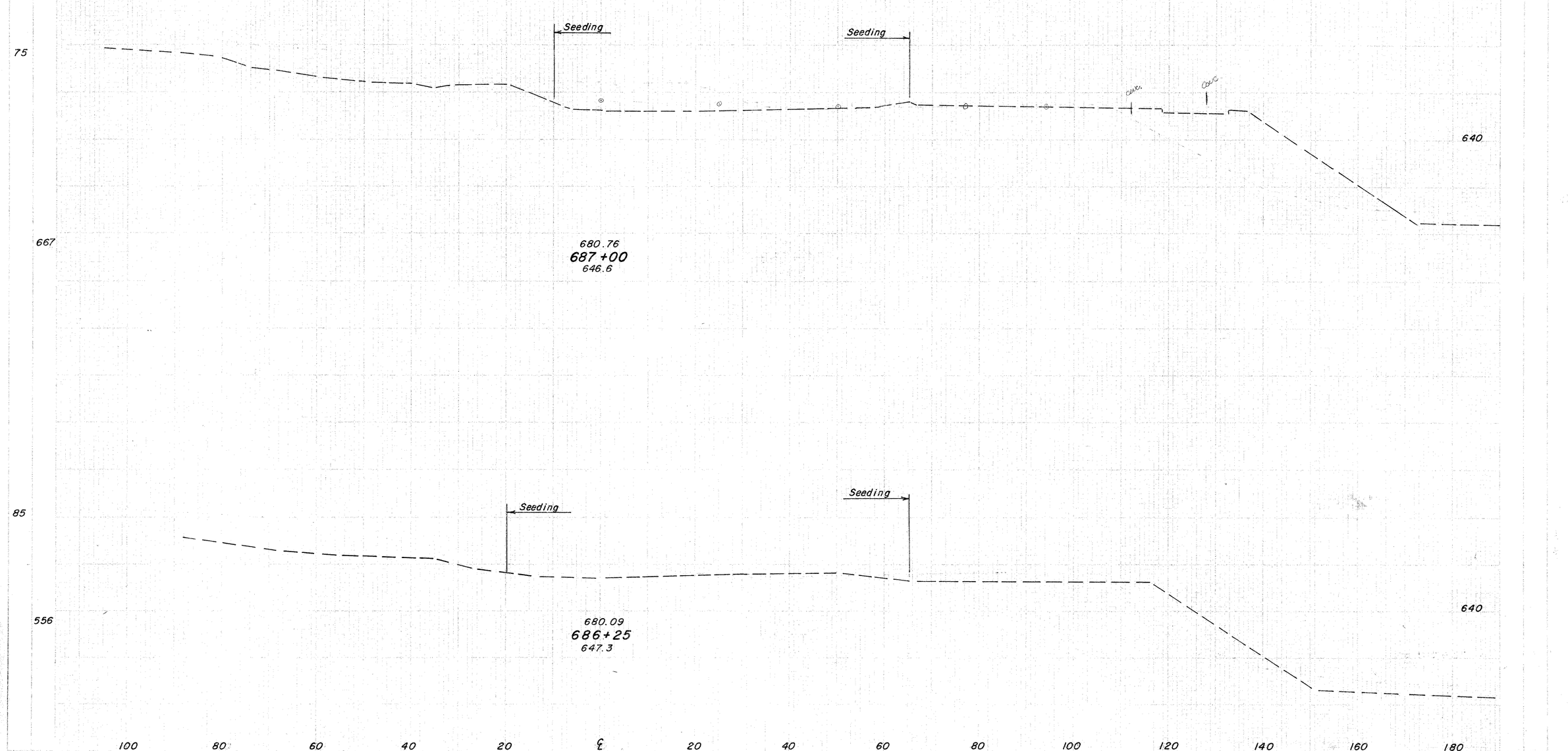
Sta. 685+62 to Sta. 685+70

FHWA REGION 5 OHIO

54
943

BEL-7-11.89

Revised by J.S. 3/76 Checked by A.N.L. 1-77



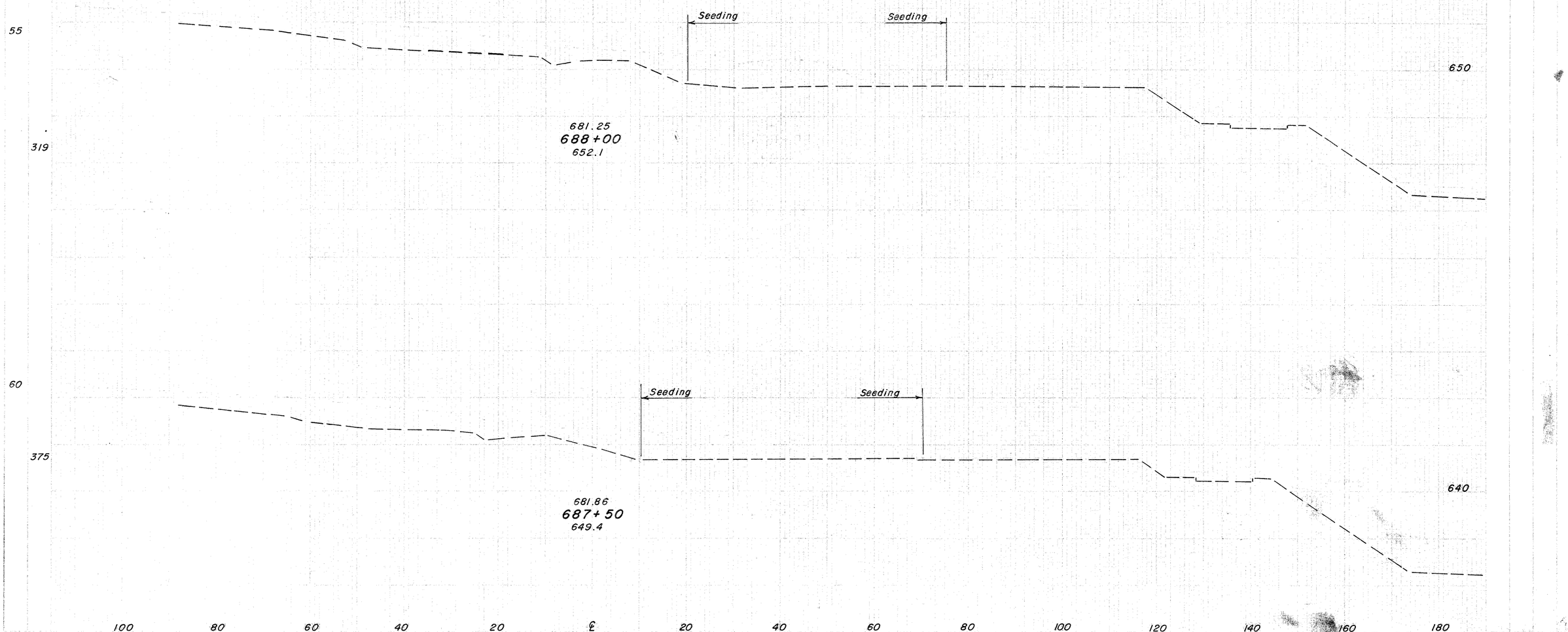
Sta. 686+25 to Sta. 687+00

FHWA REGION 5

55
443

BEL-7-11.89

Revised by J.S. 3/76 Checked by A.W.L. 1-77



Sta. 687+50 to Sta. 688+00

FHWA REGION 5

56
943

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45

Seeding

Seeding

650

681.28
689+00
653.7

297

62

325

Seeding

Seeding

650

681.32
688+50
652.8

100 80 60 40 20 ℄ 20 40 60 80 100 120 140 160 180

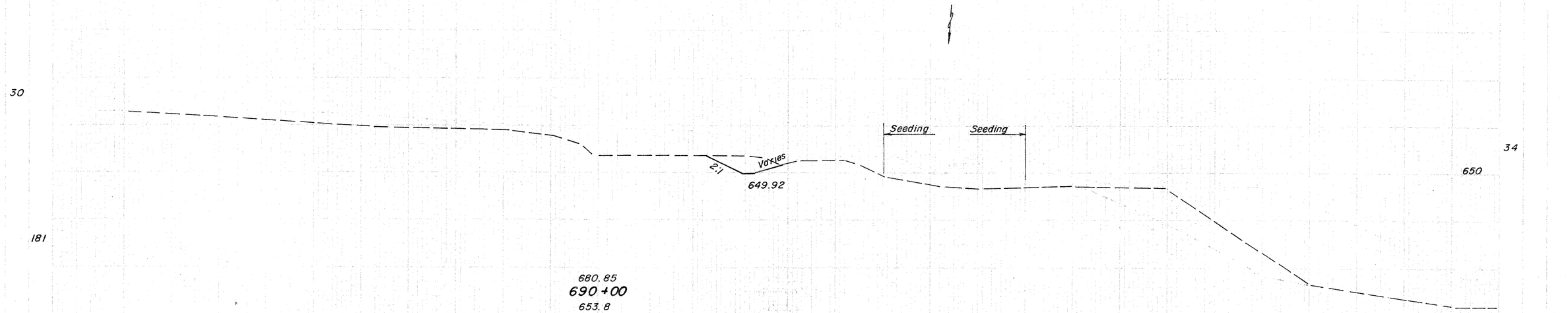
Sta. 688+50 to Sta. 689+00

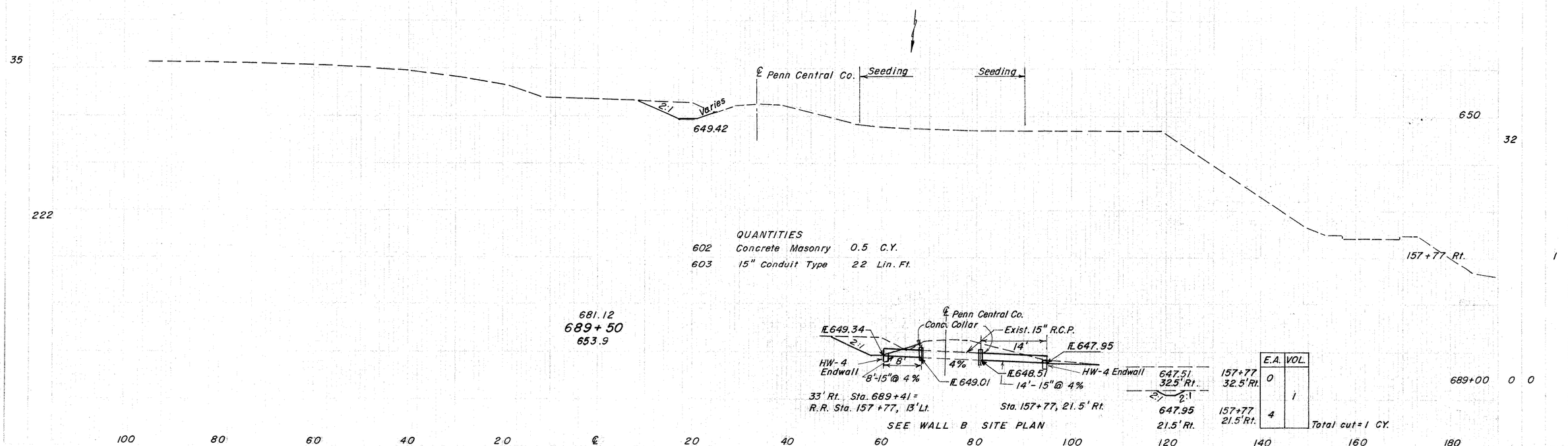
FHWA REGION 5

57
493

BEL-7-11.89

Revised by J.S. 3/76 Checked by AWL 1-77





QUANTITIES

602	Concrete Masonry	0.5 C.Y.
603	15" Conduit Type	22 Lin. Ft.

	E.A.	VOL.
157+77 32.5' Rt.	0	
		1
157+77 21.5' Rt.	4	

Total cut = 1 CY.

689+00 0 0

Sta. 689+50 to Sta. 690+00

FHWA REGION 5

58
443

BEL-7-11.89

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678.69
675.7
3:1
See Cellular Wall A Site Plan Sheet No. 257
665.4
130
2:1
660.30
Cellular Wall A
650.89
650
23 1910
679.66
691+15
658.7
141
11 650

676.9 ℄
673.14
674.44
Var.
124
2:1
660.27
35 1600
650
679.77
691+05
658.6
Cellular Wall A
650.84
310
65 1141
Ditch
45' Rt. 0 1
35 Rt. 10 24
45' Lt. 6
650
See Cellular Wall A Site Plan Sheet No. 257
Begin 7'-6" Width Jute Matting
Sta. 690+35
2'
Seeding
Var.
657.0
690+68
658.3
650.61
27
60 65
14 11
658.60
45' 45' Lt ℄
660.0
651.25
35' Rt. ℄
653.4
650.44
45' Rt. ℄
45' 652.0
215
DITCH UNDER STRUCTURE
Sta. 690+59
21 0
69 0
140 120 100 80 60 40 20 ℄ 20 40 60 80 100 120 140

Sta. 690+68 to Sta. 691+15

FHWA REGION 5

59
493

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115

674.60 6:1

3:1

2:1

2:1

Dike 663.5

Cellular Wall A

Varies

651.55

678.15
692+50
661.24

660

11 2080

31 5691

856

676.71 6:1

3:1

2:1

105

2:1

660.5

2:1

660

13 2310

116

678.93
691+80
659.9

Cellular Wall A

651.21

4 849

Cellular Wall

315

103

677.00 6:1

3:1

8 2272

660.47

711

End 7'-6" Jute Matting
Sta. 691+48
B

Cellular Wall A

Varies

651.16

650

32 4260

679.05
691+70
659.6

140 120 100 80 60 40 20 ℄ 20 40 60 80 100 120 140

Sta. 691+70 to Sta. 692+50

FHWA REGION 5

60
443

BEL - 7 - 11.89

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132

673.13

6:1

3:1

2:1

2:1

661.97

677.03
693+50
662.1

C.B. Inlet IE 652.10
@ 693+58.24, 94' Rt.

Dike Elev. 653.2

48:1

660

30 1740

708

42 3463

Begin 6' Sod
Sta. 693+61

123

673.62

6:1

3:1

2:1

2:1

662.12

Varies

Cellular Wall A

651.74

660

15 2000

661

677.59
693+00
662.14

24 3778

140 120 100 80 60 40 20 ℄ 20 40 60 80 100 120 140

Sta. 693+00 to Sta. 693+50

FHWA REGION 5

61
443

BEL-7-11.89

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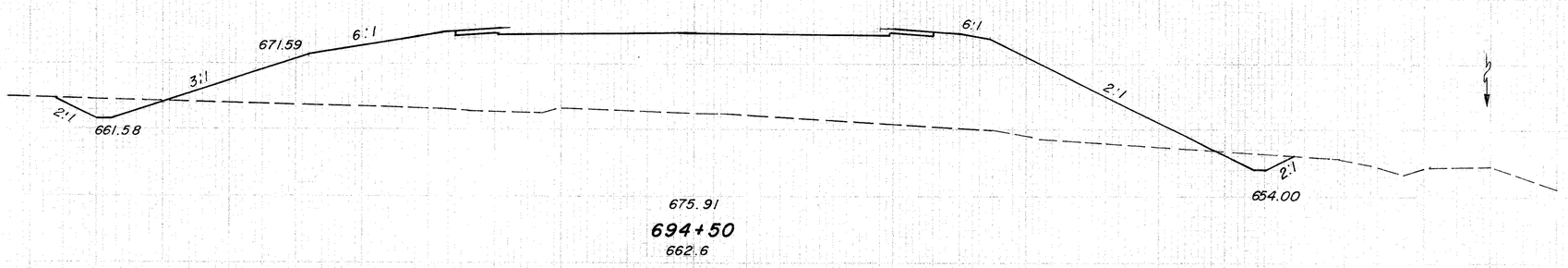
142

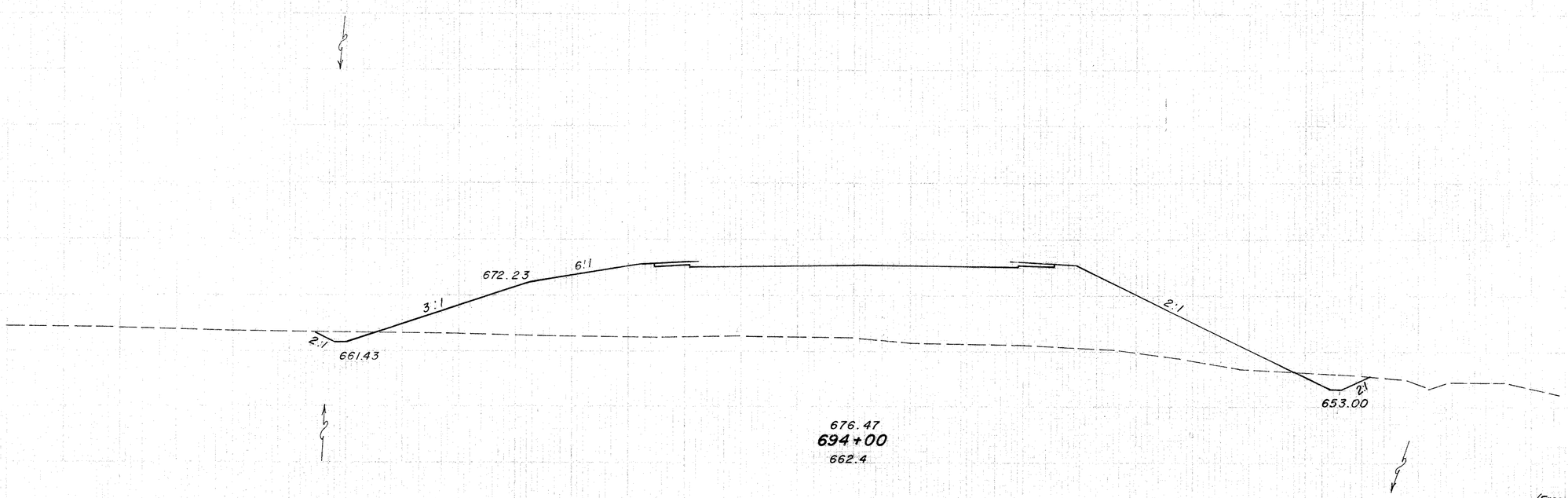


41 1540

660

794

144



66 2981

20 1680

660

766

56 3167

(From Sheet 240) Ditch 24

140 120 100 80 60 40 20 ℄ 20 40 60 80 100 120 140

Sta. 694+00 to Sta. 694+50

FHWA REGION 5

62
443

BEL - 7 - 11.89

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134

2:1 661.88 3:1 670.53 6:1 671.61 6:1 2:1 657.00

660

26 1330

674.79
695+50
664.2

756

138

778

2:1 661.73 3:1 671.10 6:1 673.06 6:1 2:1 655.00

660

56 2583

35 1460

70 2778

675.35
695+00
662.9

140 120 100 80 60 40 20 ℄ 20 40 60 80 100 120 140

Sta. 695+00 to Sta. 695+50

FHWA REGION 5

63
493

BEL-7-11.89

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141

2:1
662.18
3.9:1
669.41
6:1
6:1
669.57
3:1
2:1
658.20
48 1060
660

673.67
696+50
664.2

786

94 2024

142

End 6' Sod
Sta. 696+10

2:1
662.03
3.6:1
670.05
6:1
6:1
670.63
2:1
2:1
658.05
54 1126
660

767

674.23
696+00
663.9

74 2274

140 120 100 80 60 40 20 ℄ 20 40 60 80 100 120 140

Sta. 696+00 to Sta. 696+50

FHWA REGION 5

64
443

BEL-7-11.89

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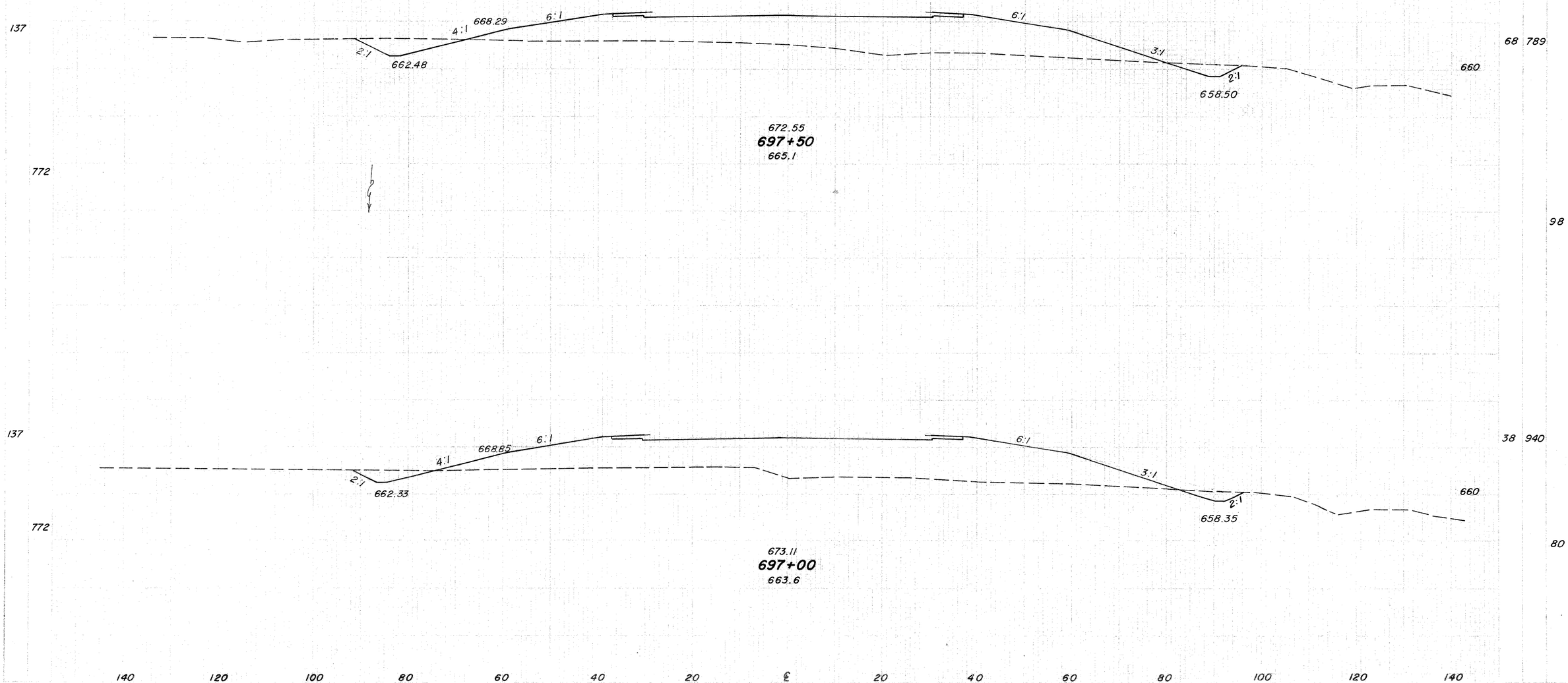

Sta. 697+00 to Sta. 697+50

FHWA REGION 5

65
443

BEL-7-11.89

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130

56 746

667.17

6:1

2:1

4:1

662.78

6:1

3:1

2:1

660

658.80

671.43

698+50

663.8

725

81 1417

131

32 784

667.73

6:1

2:1

4:1

662.63

6:1

3:1

2:1

660

658.65

744

671.99

698+00

664.2

93 1457

140 120 100 80 60 40 20 ℄ 20 40 60 80 100 120 140

Sta. 698+00 to Sta. 698+50

FHWA REGION 5

66
493

BEL-7 - 11.89

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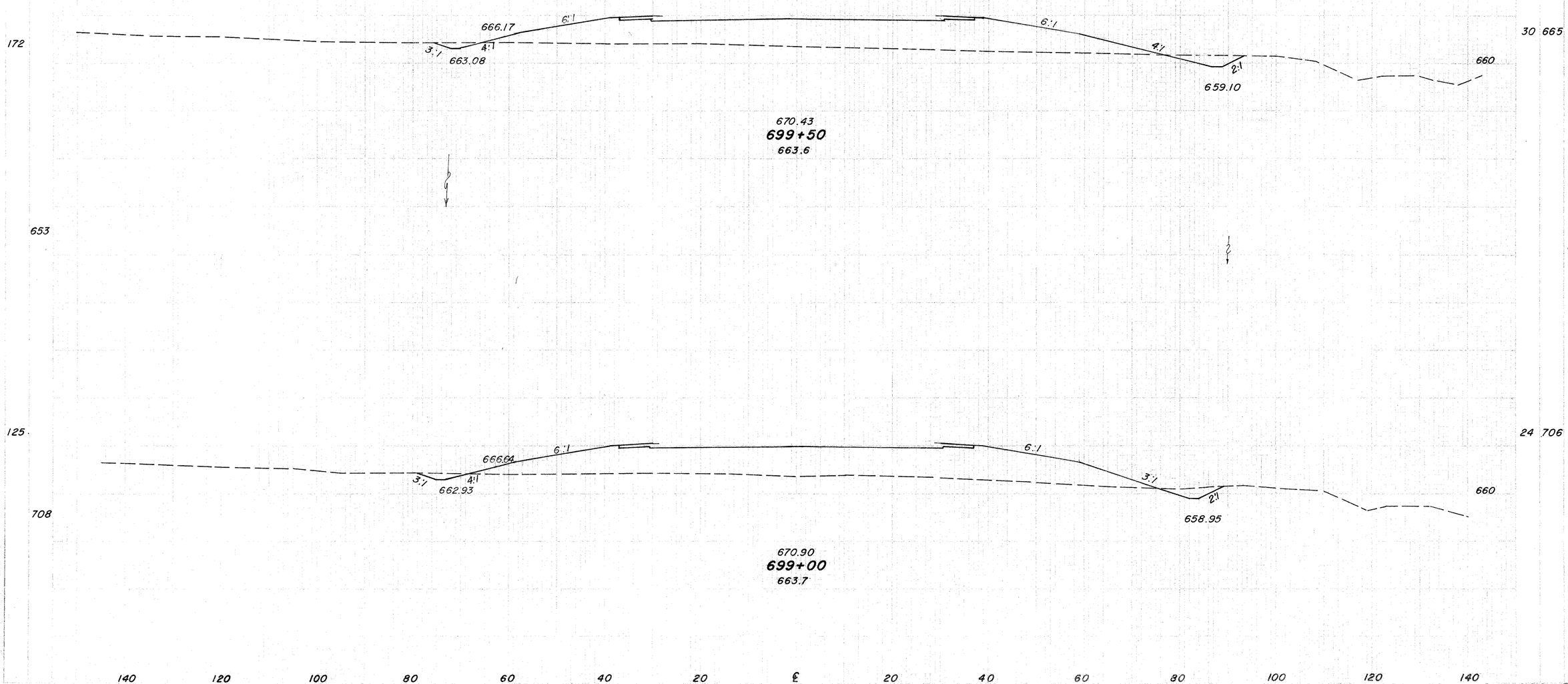

Sta. 699+00 to Sta. 699+50

FHWA REGION 5 OHIO

67
443

BEL - 7 - 11.89

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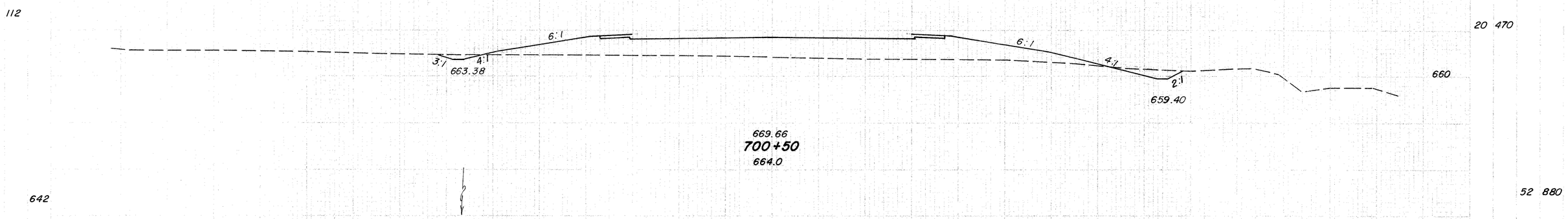

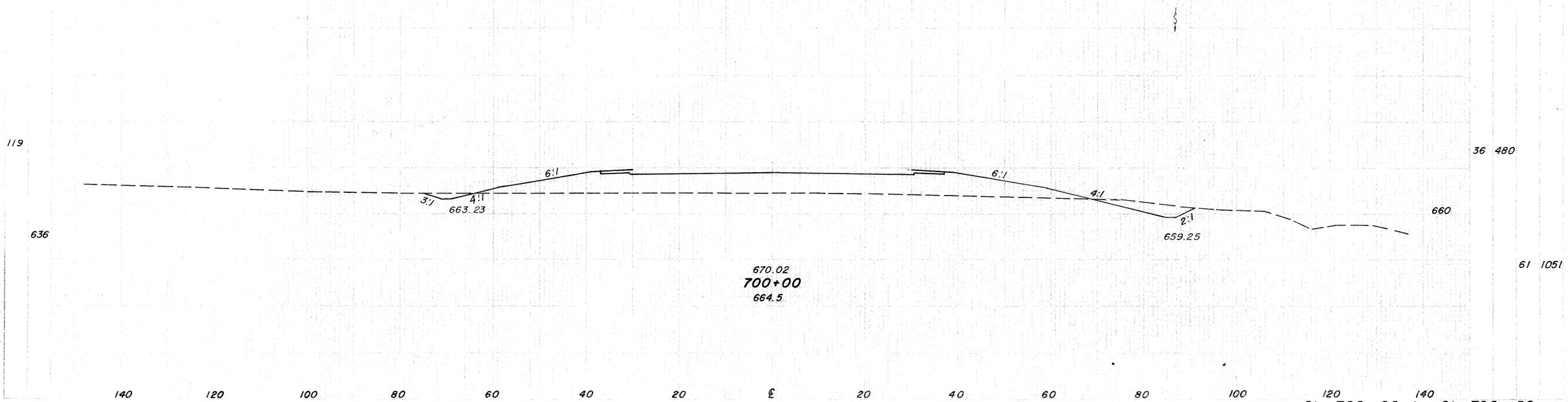

Sta. 700 + 00 to Sta. 700 + 50

FHWA REGION 5

68
993

BEL-7 - 11.89

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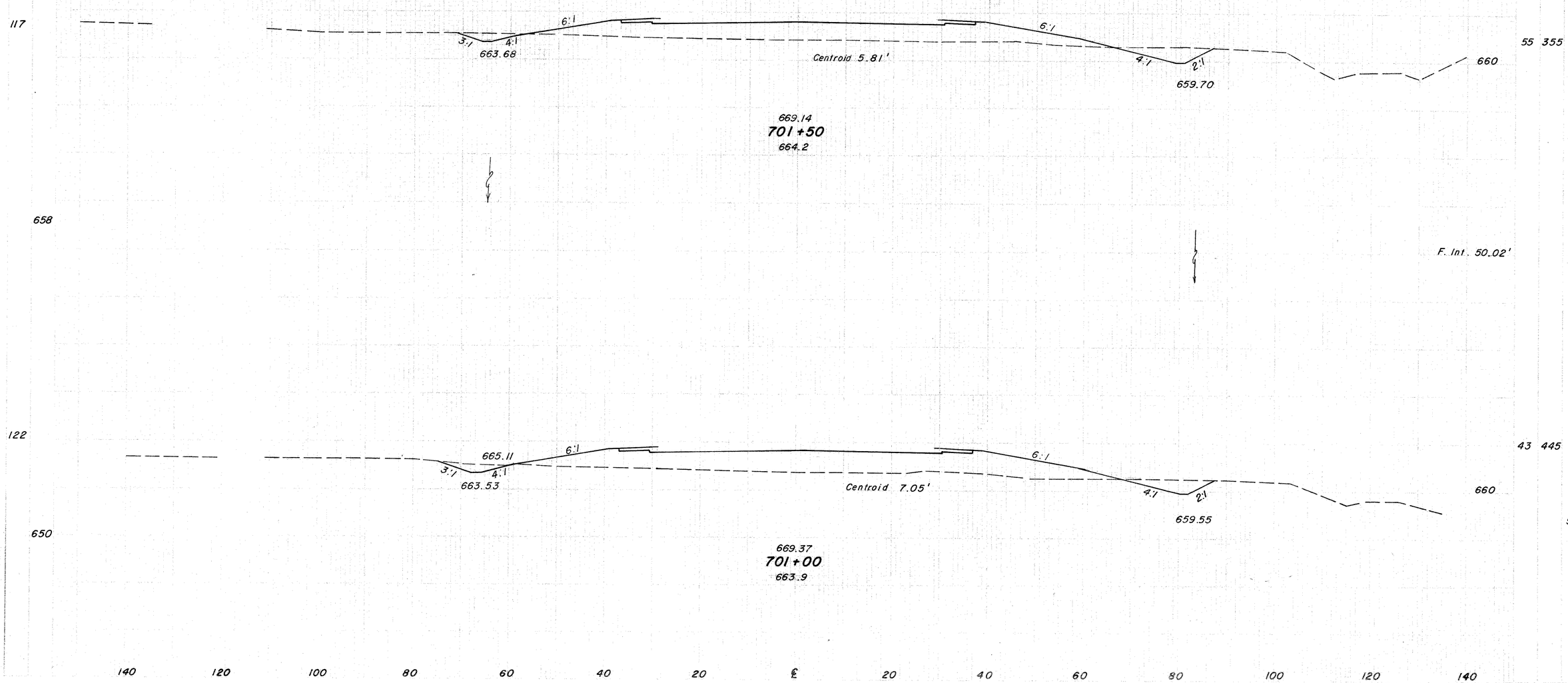


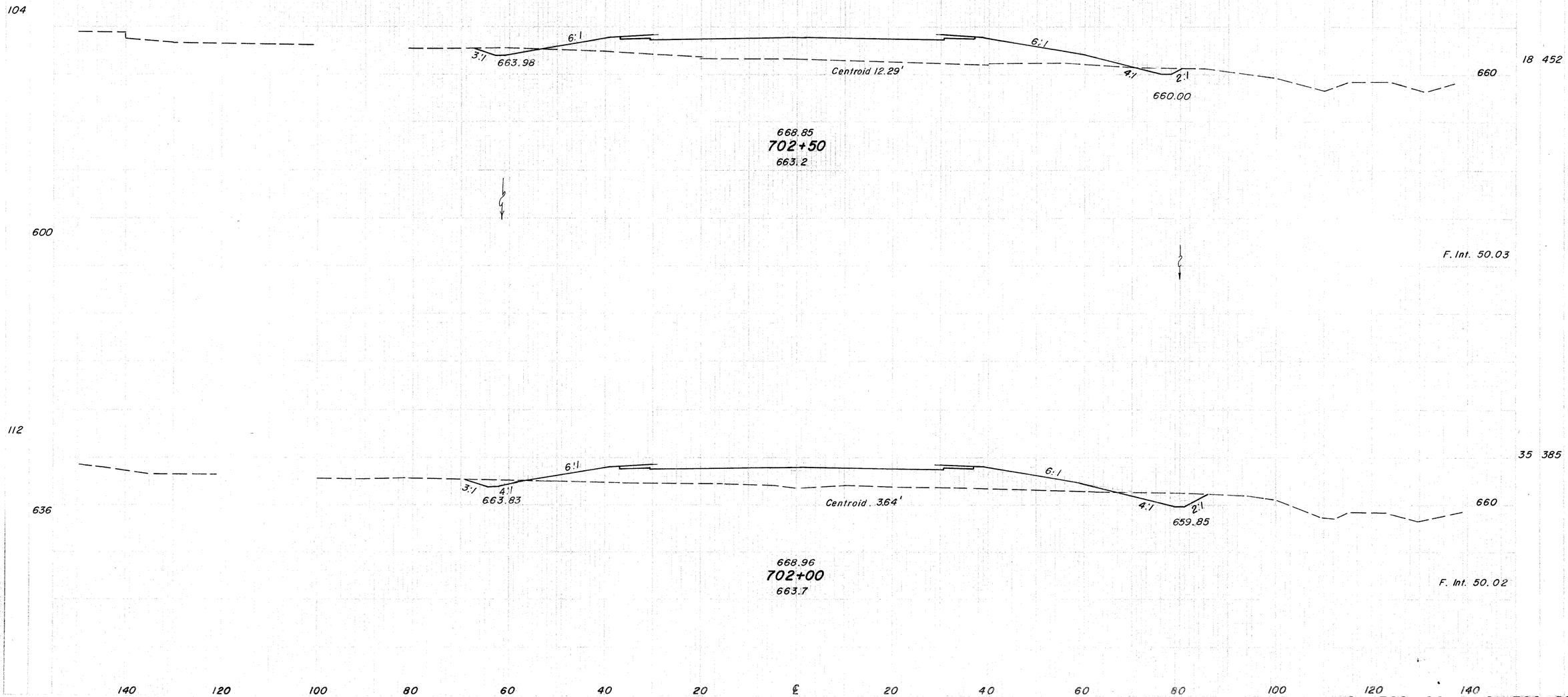
Sta. 701+00 to Sta. 701+50

FHWA REGION 5

69
993

BEL - 7 - 11.89

Revised by J.S. 3/76 Checked by AWL 1-77



Sta. 702 + 00 to Sta. 702 + 50

FHWA REGION 5 | STATE | PROJECT | SHEET NO. 70 | TOTAL SHEETS 443

BEL-7-11.89

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105

6:1 3:1 664.28 Centroid 12.63' 6:1 4:1 2:1 660.30

668.80
703+50
664.5

24 346

660

583

F. Int. 50.04

63 626

105

44 329

6:1 3:1 664.13 Centroid 6.56' 6:1 4:1 2:1 660.15

660

581

668.79
703+00
664.2

F. Int. 50.04'

57 724

140 120 100 80 60 40 20 ℄ 20 40 60 80 100 120 140

Sta. 703+00 to Sta. 703+50

FHWA REGION 5

71
443

BEL-7 - 11.89

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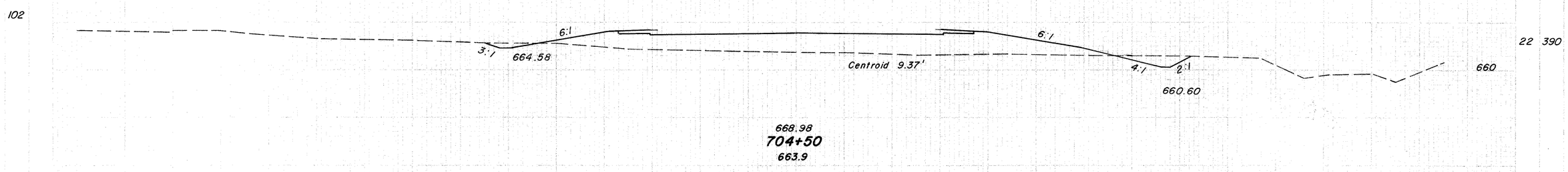
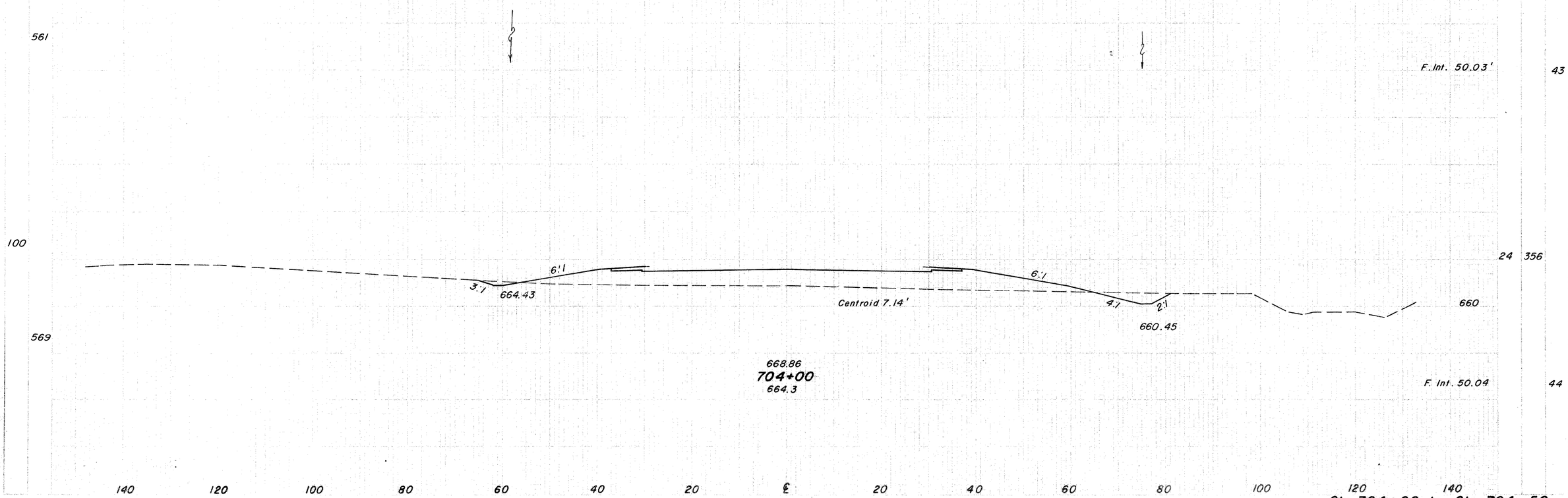




Sta. 704+00 to Sta. 704+50

FHWA REGION 5

72
443

BEL-7-11.89

Revised by J.S. 3/76 Checked by AWL 1-77

95

Dike Elev. 667.00

6:1

3:1

666.0

Centroid 15.00'

6:1

4:1

2:1

660.90

21 325

660

669.29

705+50

665.1

542

F. Int. 50.04'

39 659

100

6:1

3:1

664.73

Centroid 7.50'

6:1

4:1

2:1

660.75

21 386

660

561

669.13

705+00

664.3

F. Int. 50.03

40 725

140 120 100 80 60 40 20 ℄ 20 40 60 80 100 120 140

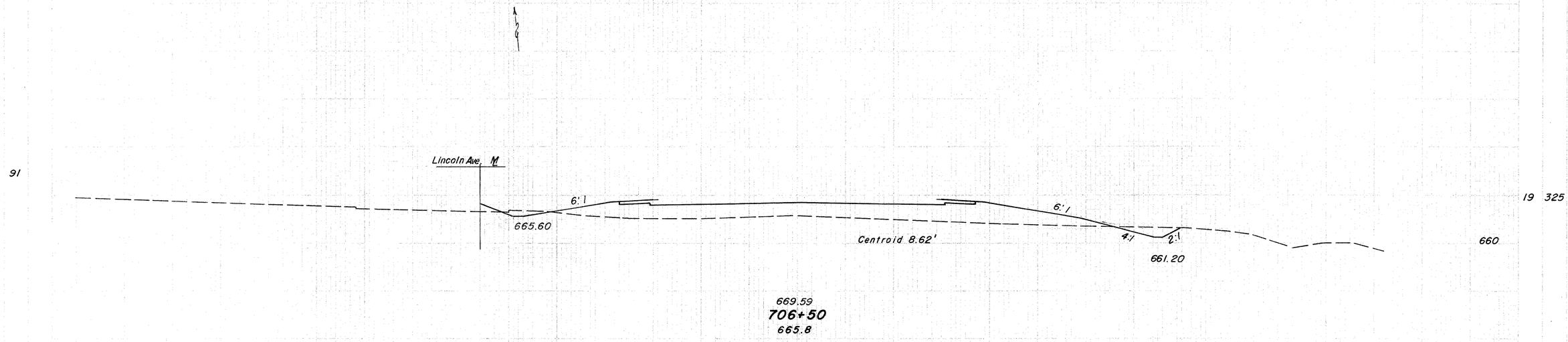
Sta. 705+00 to Sta. 705+50

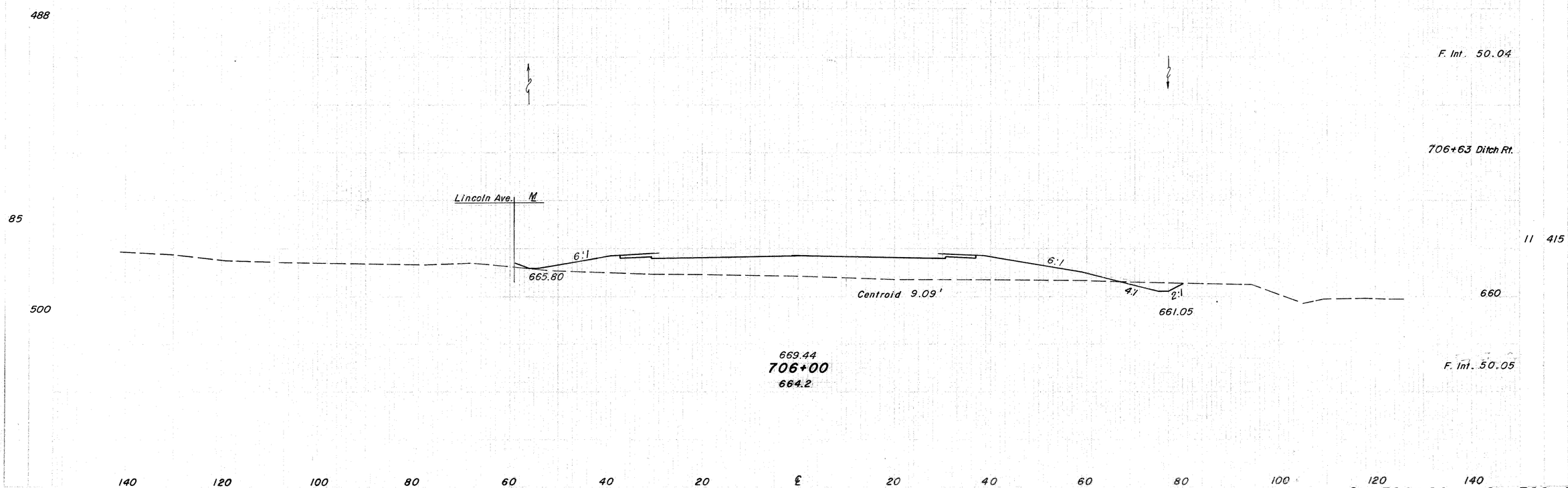
FHWA REGION 5

73
443

BEL - 7 - 11.89

Revised by J.S. 3/76 Checked by AWL 1-77



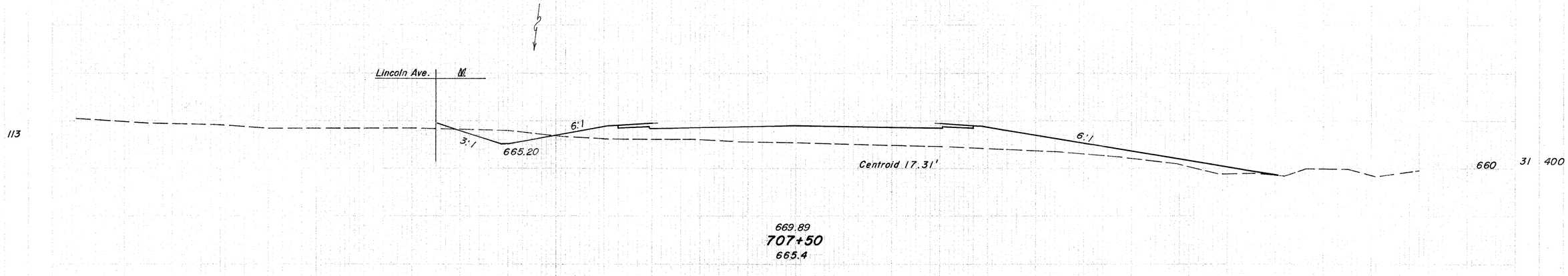


Sta. 706+00 to Sta. 706+50

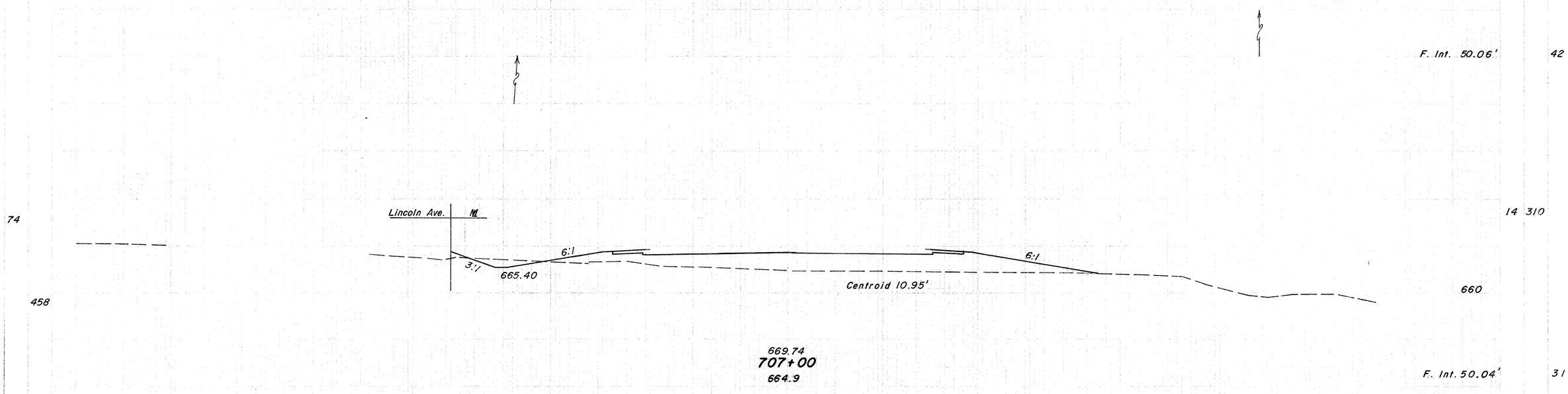
FHWA REGION 5

74
443

BEL-7-11.89



519



F. Int. 50.06'
42 658

14 310

F. Int. 50.04'
31 588

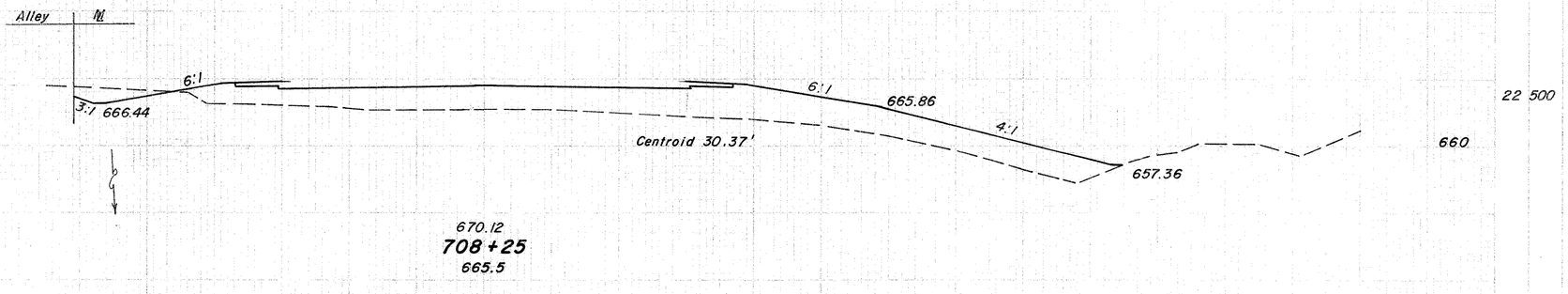
Sta. 707+00 to Sta. 707+50

FHWA REGION 5

75
443

BEL-7-11.89

94



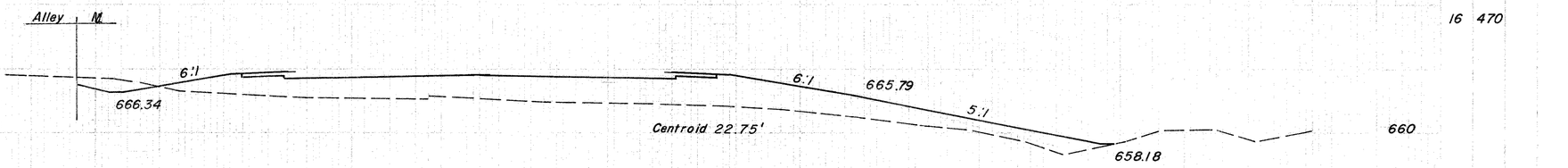
670.12
708+25
665.5

268



99

589



670.05
708+00
665.2



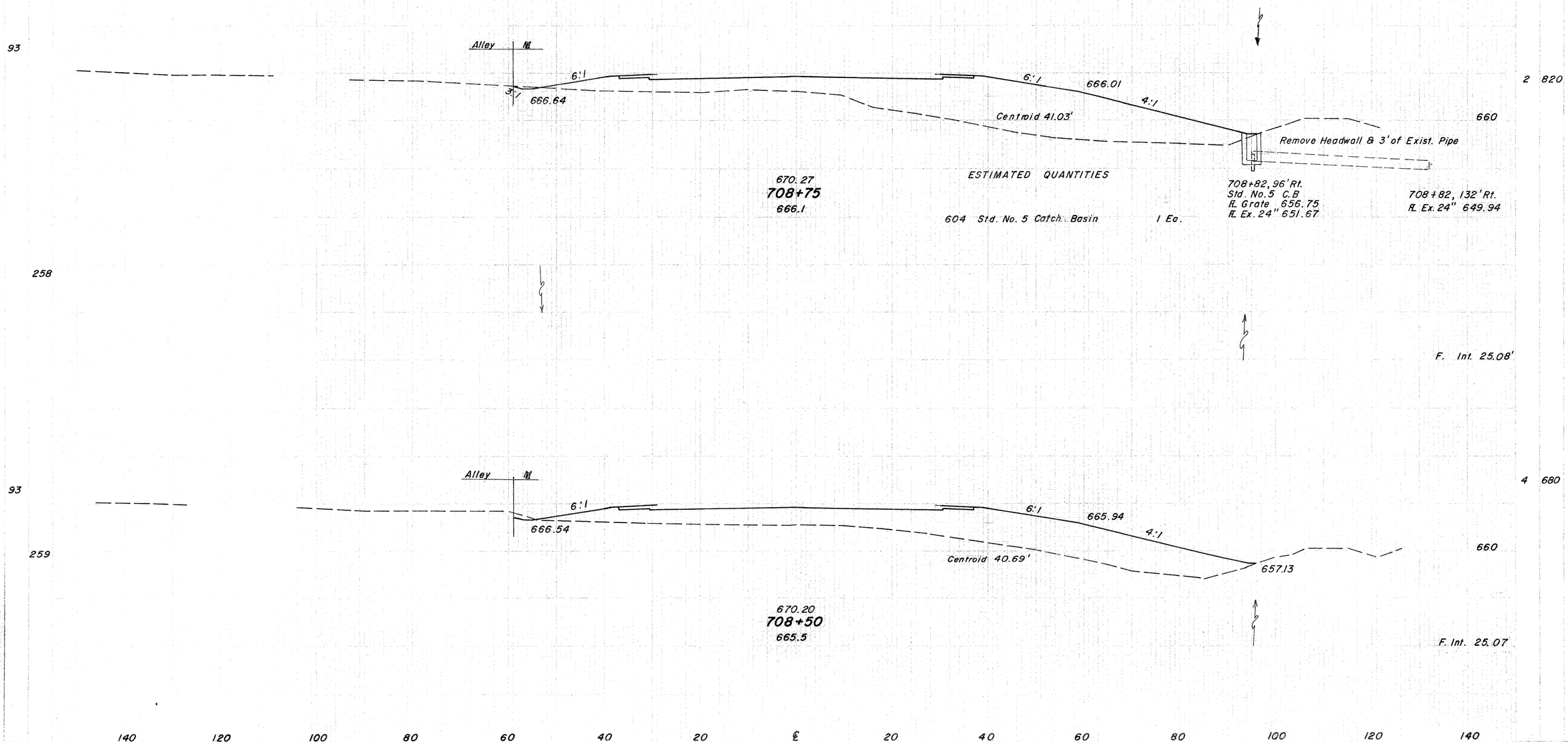
140 120 100 80 60 40 20 ℄ 20 40 60 80 100 120 140

Sta. 708+00 to Sta. 708+25

FHWA REGION 5

76
443

BEL-7-11.89

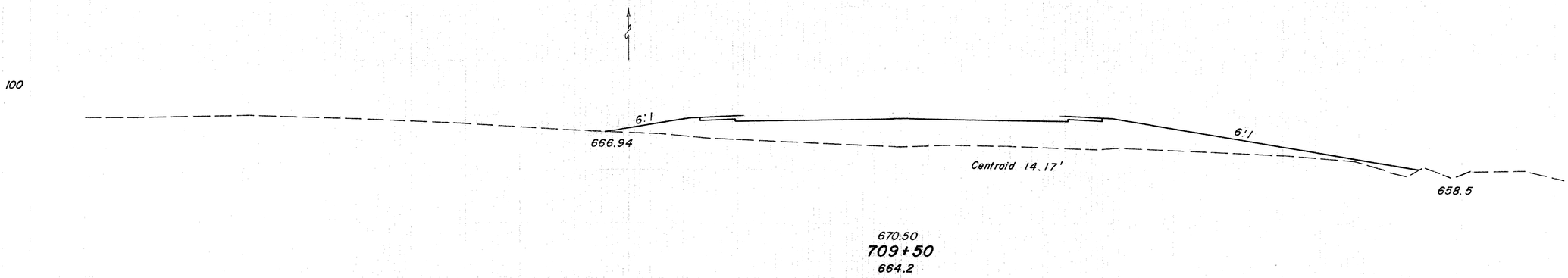


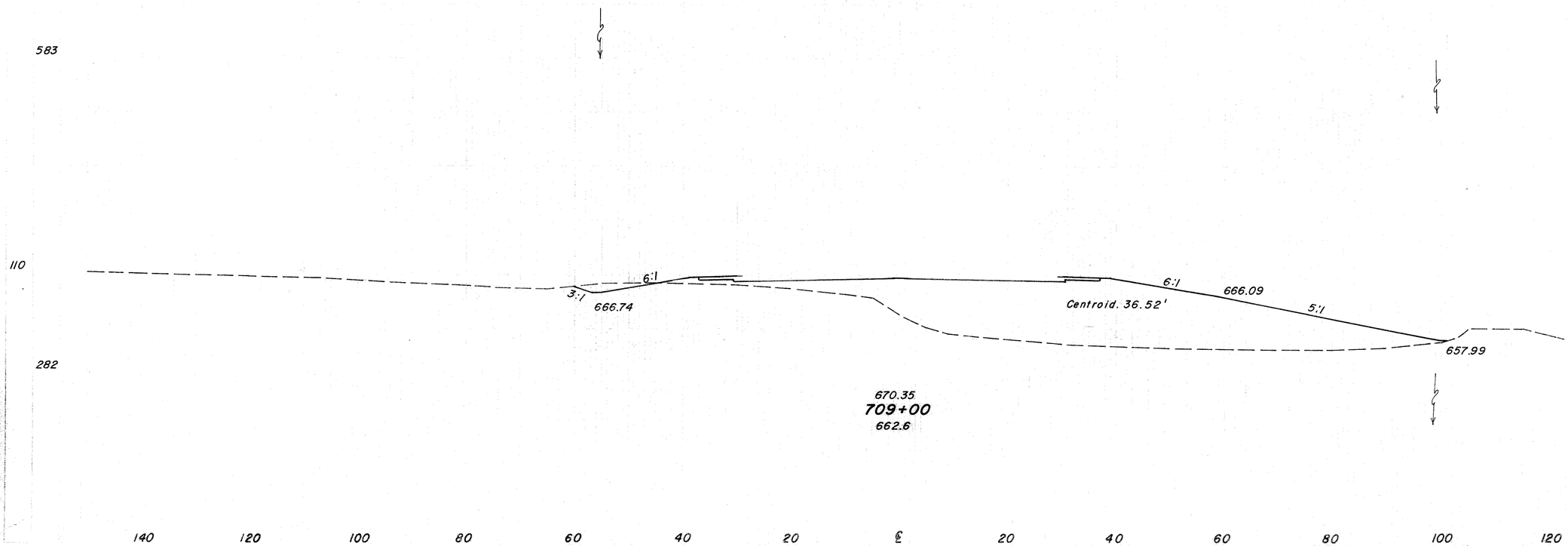
Sta. 708 +50 to Sta. 708 + 75

FHWA REGION 5

77
443

BEL-7-11.89





F. Int. 50.10'

11 1354

12 950

660

6

F. Int. 25.08'

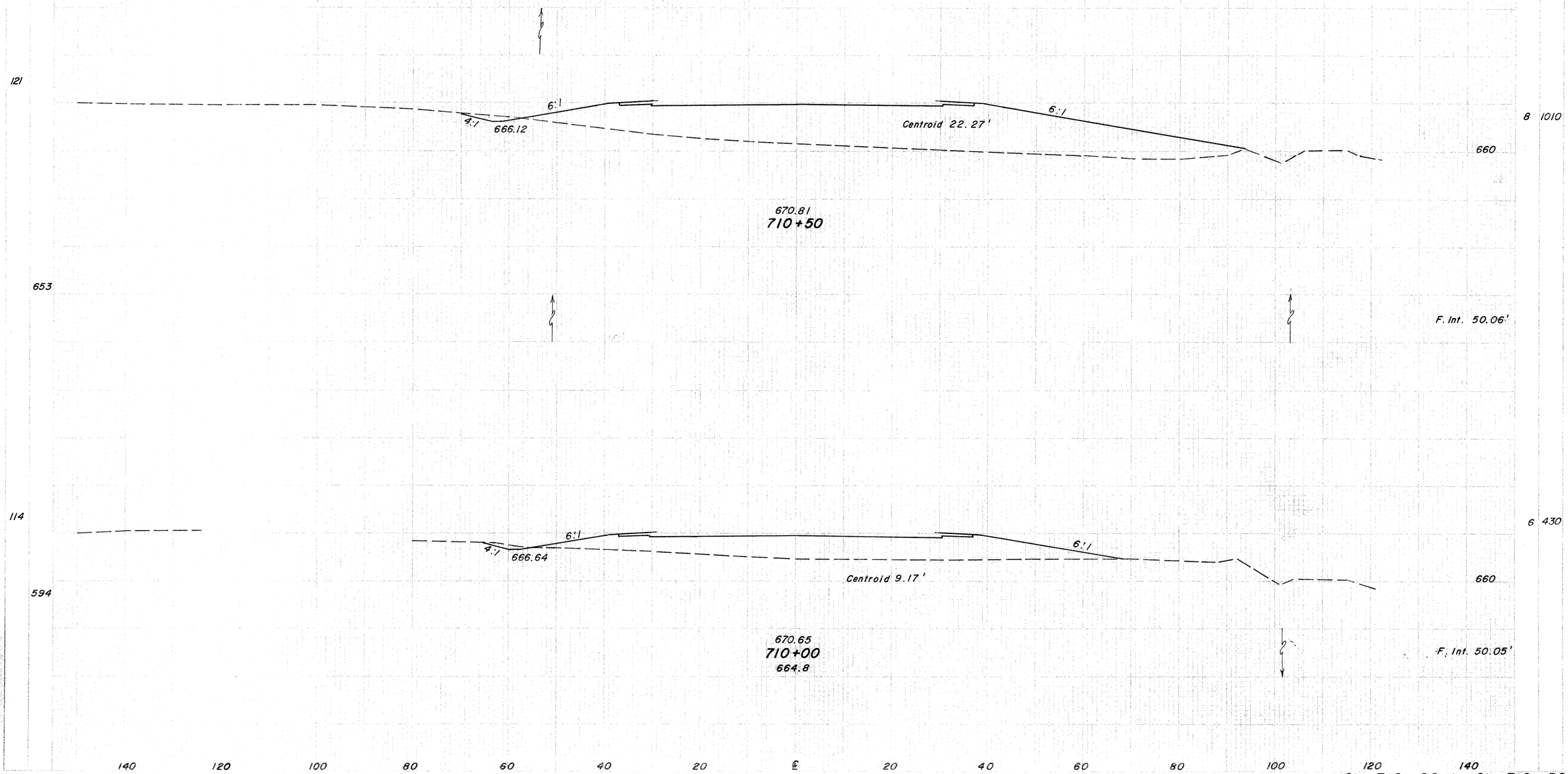
822

Sta. 709+00 to Sta. 709+50

FHWA REGION 5

78
443

BEL-7-11.89



Sta. 710+00 to Sta. 710+50

FHWA REGION 5 | STATE OHIO | PROJECT | 79 443

BEL - 7 - 11.89

CROSS AREA		VOLUME	
CUT	FILL	CUT	FILL

135

48:1 4:1 6:1 6:1 3.5:1

665.60

666.67

Centroid 12.63'

0 1020

660

670.96

711+00

662.0

290

140

450

48:1 4:1 6:1 6:1 4.5:1

665.80

666.74

Centroid 24.07'

F. Int. 19.03'

0 786

0 1210

660

48" 12" VCP

Plug & Abandon

5

F. Int. 31.06'

1277

670.90

710+81

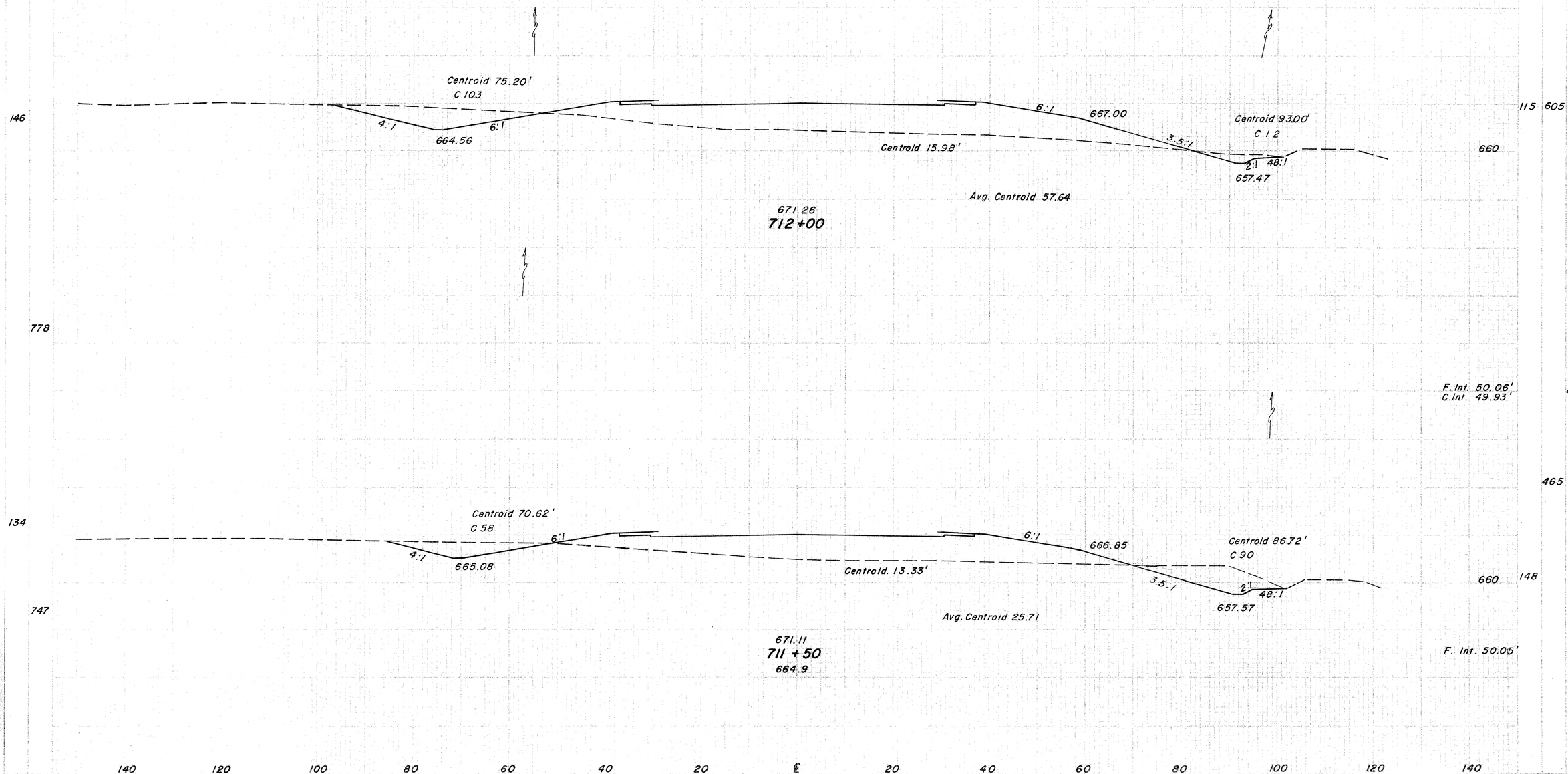
661.7

140 120 100 80 60 40 20 ℄ 20 40 60 80 100 120 140

Sta. 710+81 to Sta. 711+00

FHWA REGION 5 OHIO | PROJECT | 80 943

BEL - 7 - 11.89

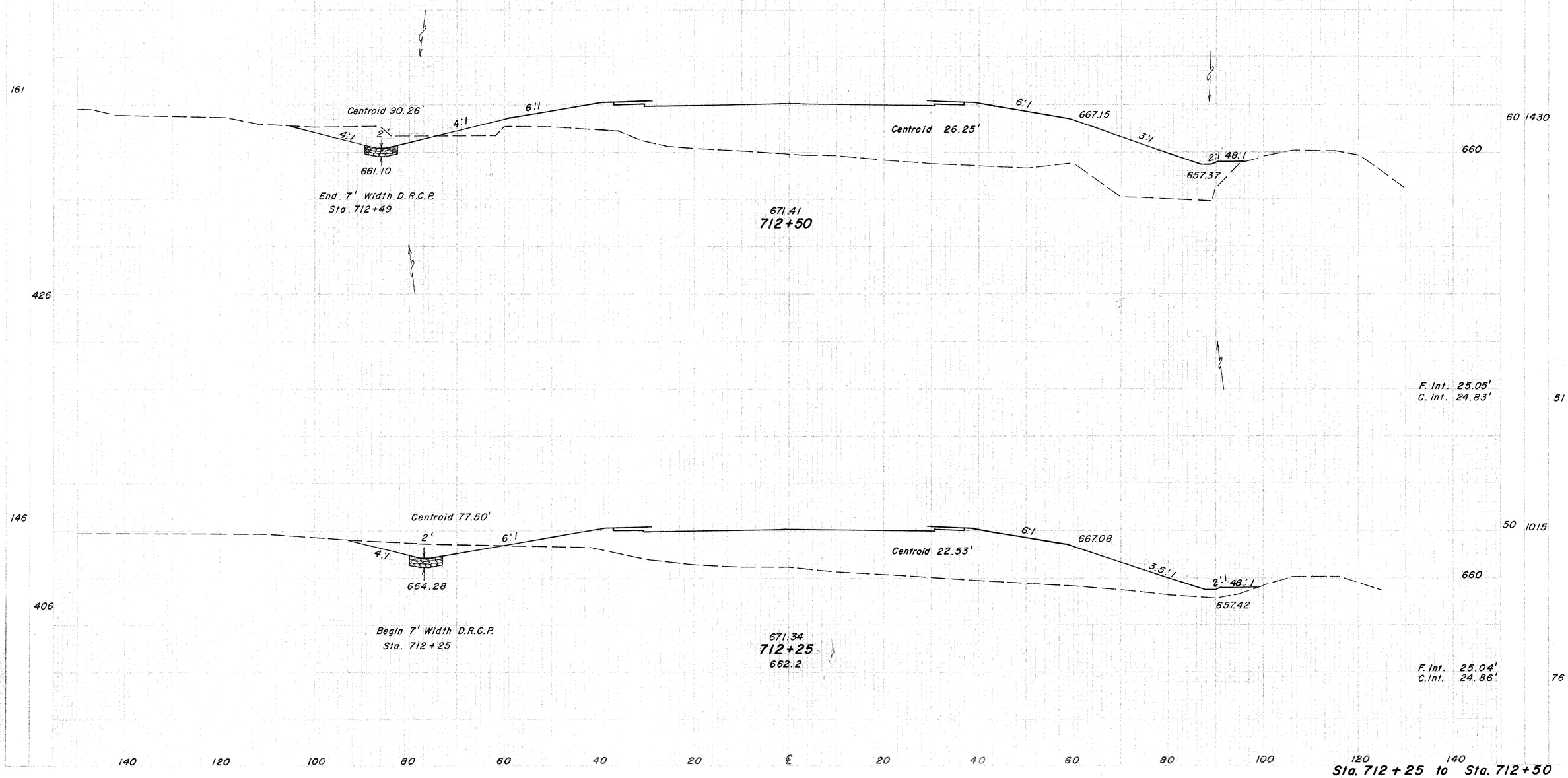


Sta. 711 + 50 to Sta. 712 + 00

FHWA REGION 5

81
443

BEL - 7 - 11.89

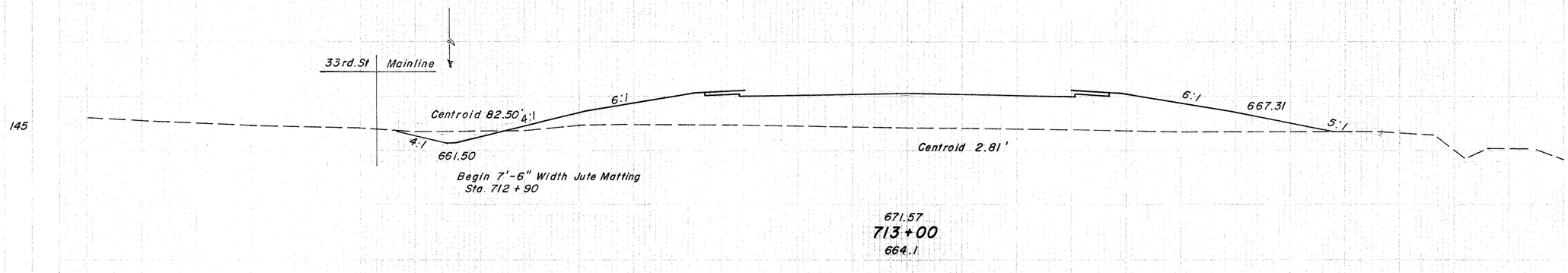


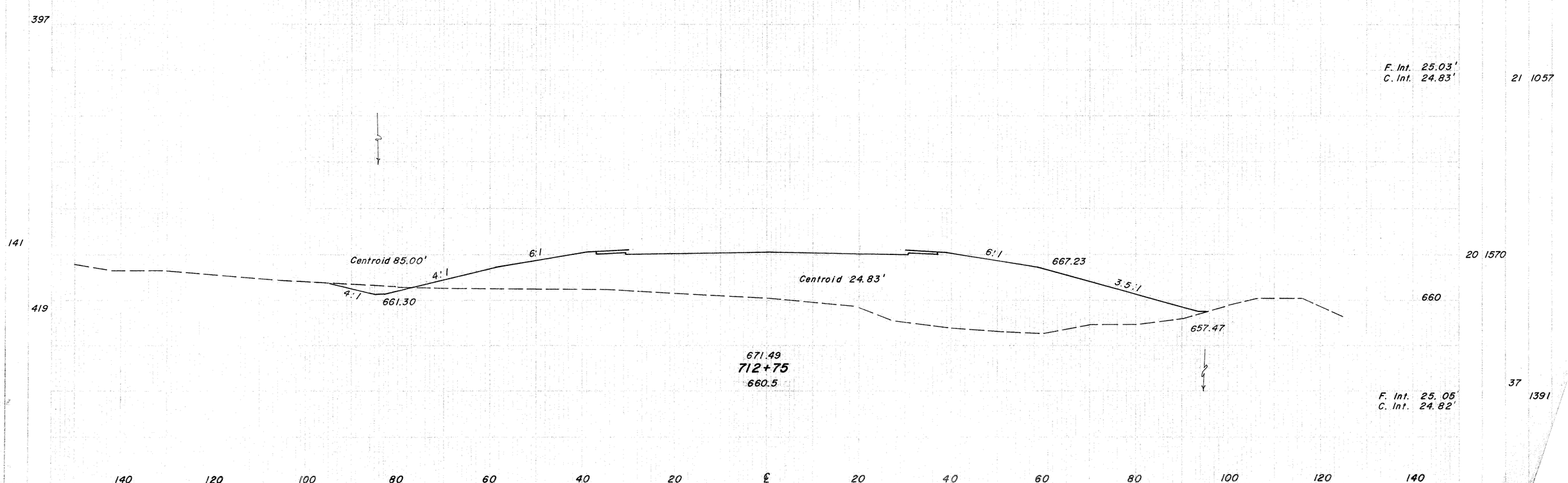
Sta. 712+25 to Sta. 712+50

FHWA REGION 5

82
443

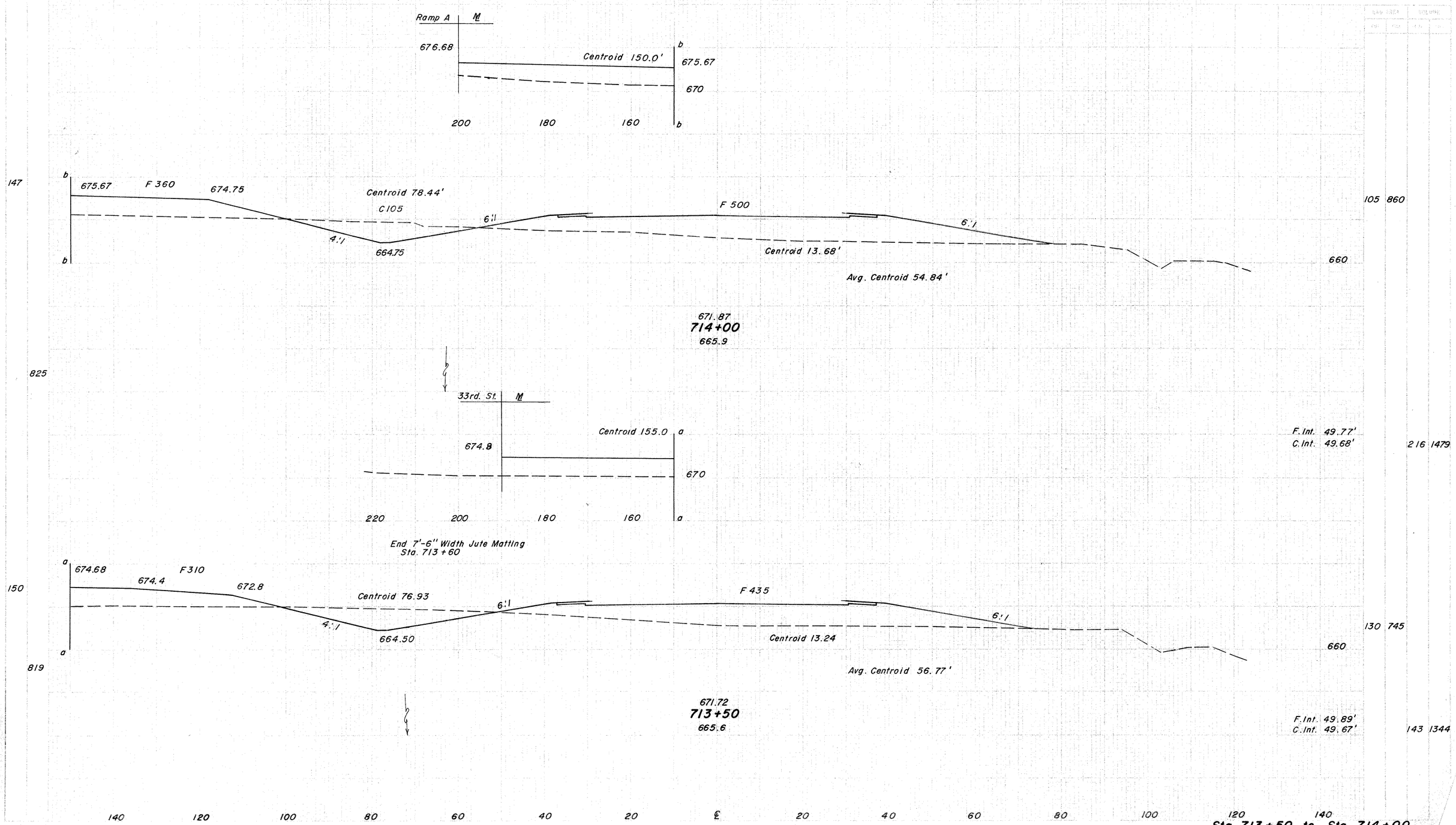
BEL - 7 - 11.89





Sta. 712+75 to Sta. 713+00

FHWA REGION 5 OHIO
83
443
BEL-7-11.89

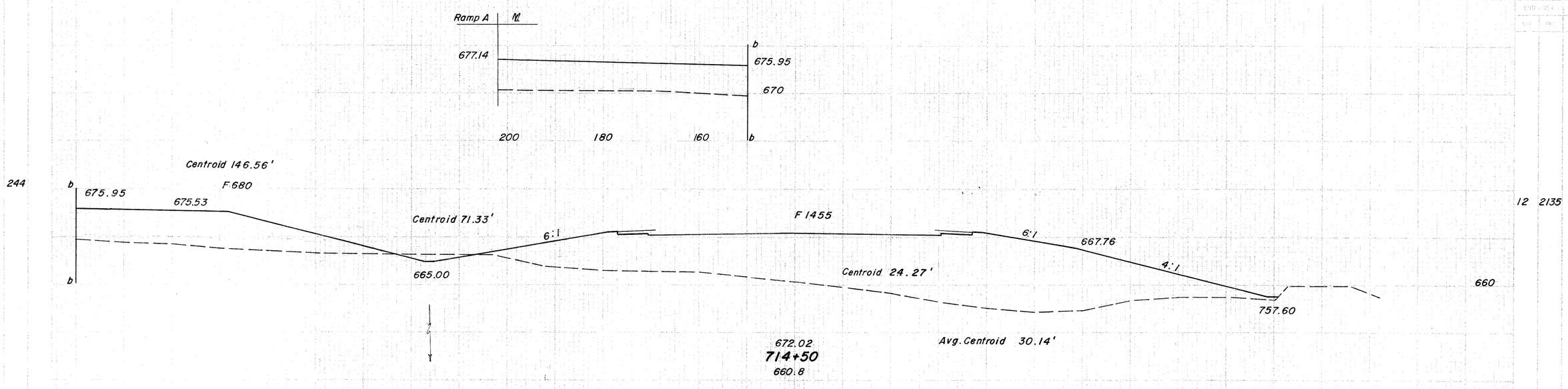


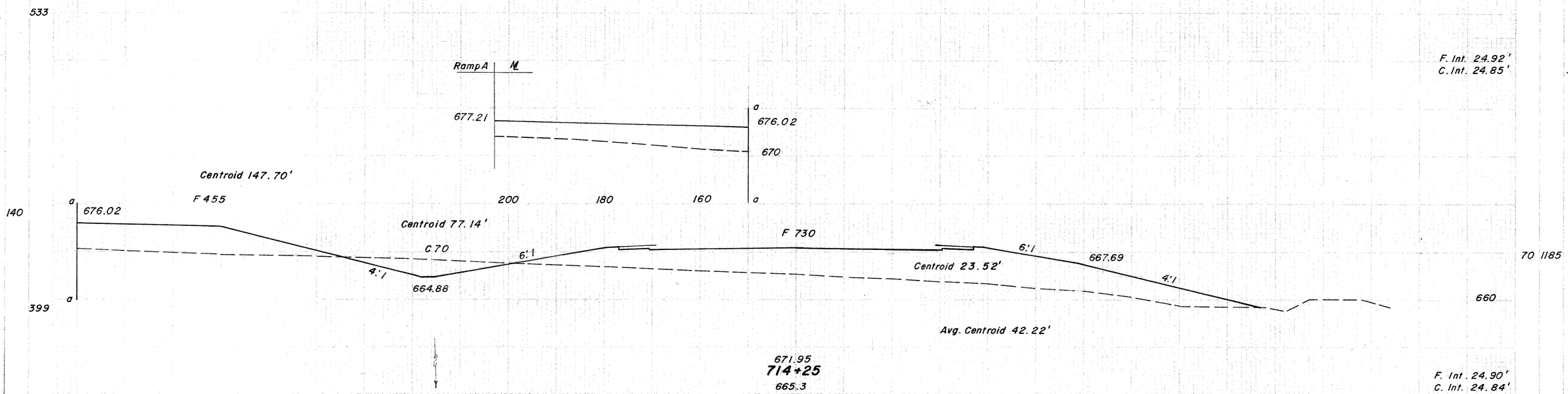
Sta. 713+50 to Sta. 714+00

FHWA REGION 5

84
443

BEL-7-11.89





Sta. 714 + 25 to Sta. 714 + 50

FHWA REGION 5 OHIO

85
443

BEL - 7 - 11.89

Ramp A M

676.84 — b — 675.76

660 — b

180 160

238

b 675.76

4:1 6:1 6:1 667.91 3:1 48:1 2:1

665.25

Centroid 28.51'

656.18

b

0 5030

650

672.17

715+00

651.4

669

Ramp A M

677.09 — a — 675.91

660 — a

180 160

F. Int. 24.96'

0 4042

244

a 675.91

4:1 6:1 6:1 667.84 3.5:1

665.13

Centroid 12.39'

757.00

678

a

0 3715

650

672.10

714+75

654.9

F. Int. 24.96'

6 2704

140 120 100 80 60 40 20 ℄ 20 40 60 80 100 120 140

Sta. 714 + 75 to Sta. 715 + 00

FHWA REGION 5

86 443

BEL-7-11.89

Ramp A M

676.58 — b — 675.72

660

b

180 160

240

b 675.72 — 675.05 — 4:1 — 665.34 — 6.25:1 — 6:1 — 668.01 — 3:1 — 2:1 — 48:1 — 656.17

b

Centroid 30.13'

672.27

715+31

642.1

0 5840

640

Ramp A M

676.67 — a — 675.65

660

a

180 160

318

237

501

a 675.65 — 674.86 — 4:1 — 665.30 — 6.15:1 — 6:1 — 667.97 — 3:1 — 2:1 — 48:1 — 656.14

a

Centroid 22.66'

672.23

715+19

645.7

F. Int. 11.97' 0 2587

Ditch Exc. 699

0 5830

650

F. Int. 18.96' 0 3813

140 120 100 80 60 40 20 ℄ 20 40 60 80 100 120 140

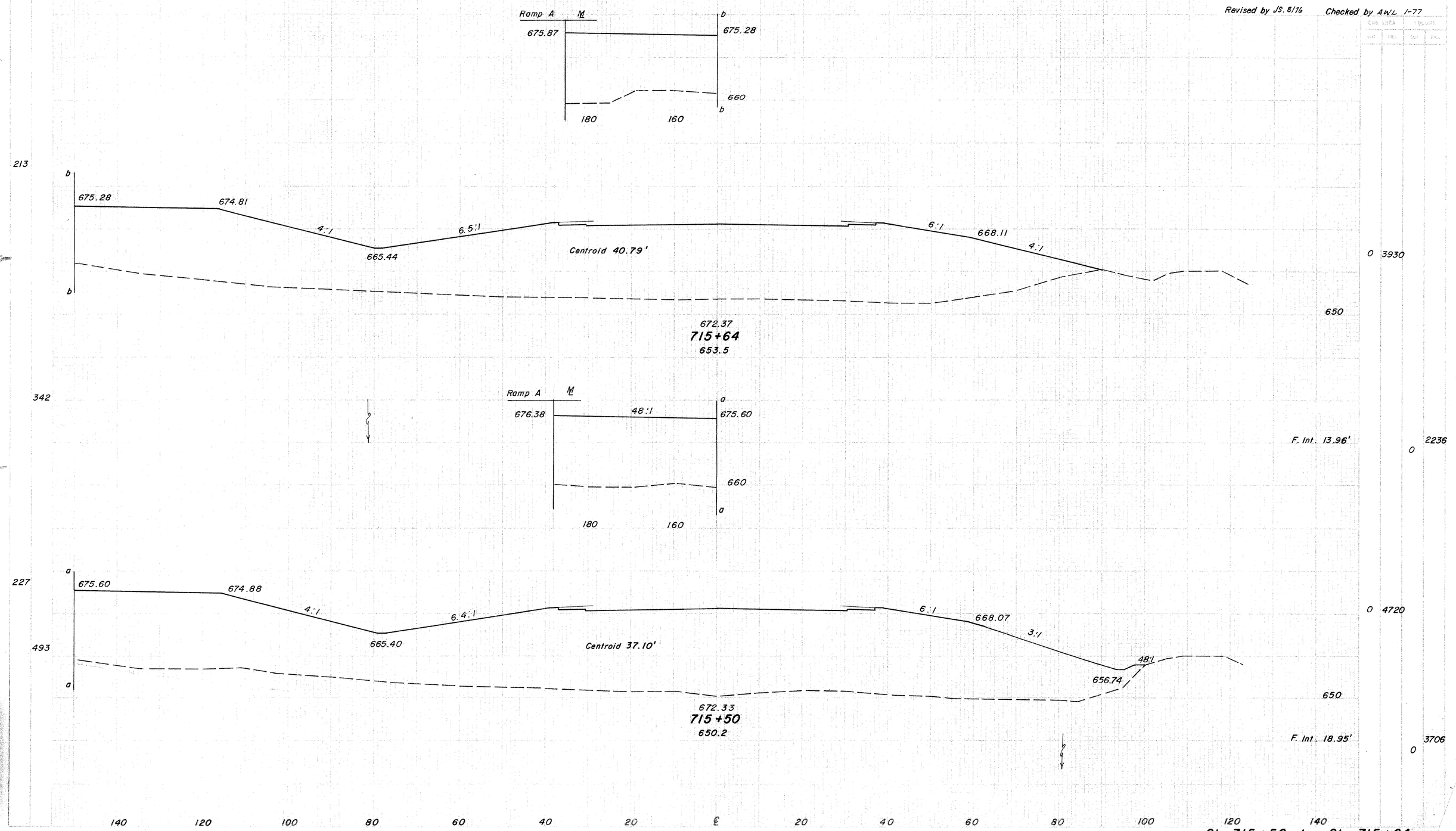
Sta. 715+19 to Sta. 715+31

FHWA REGION 5

87
443

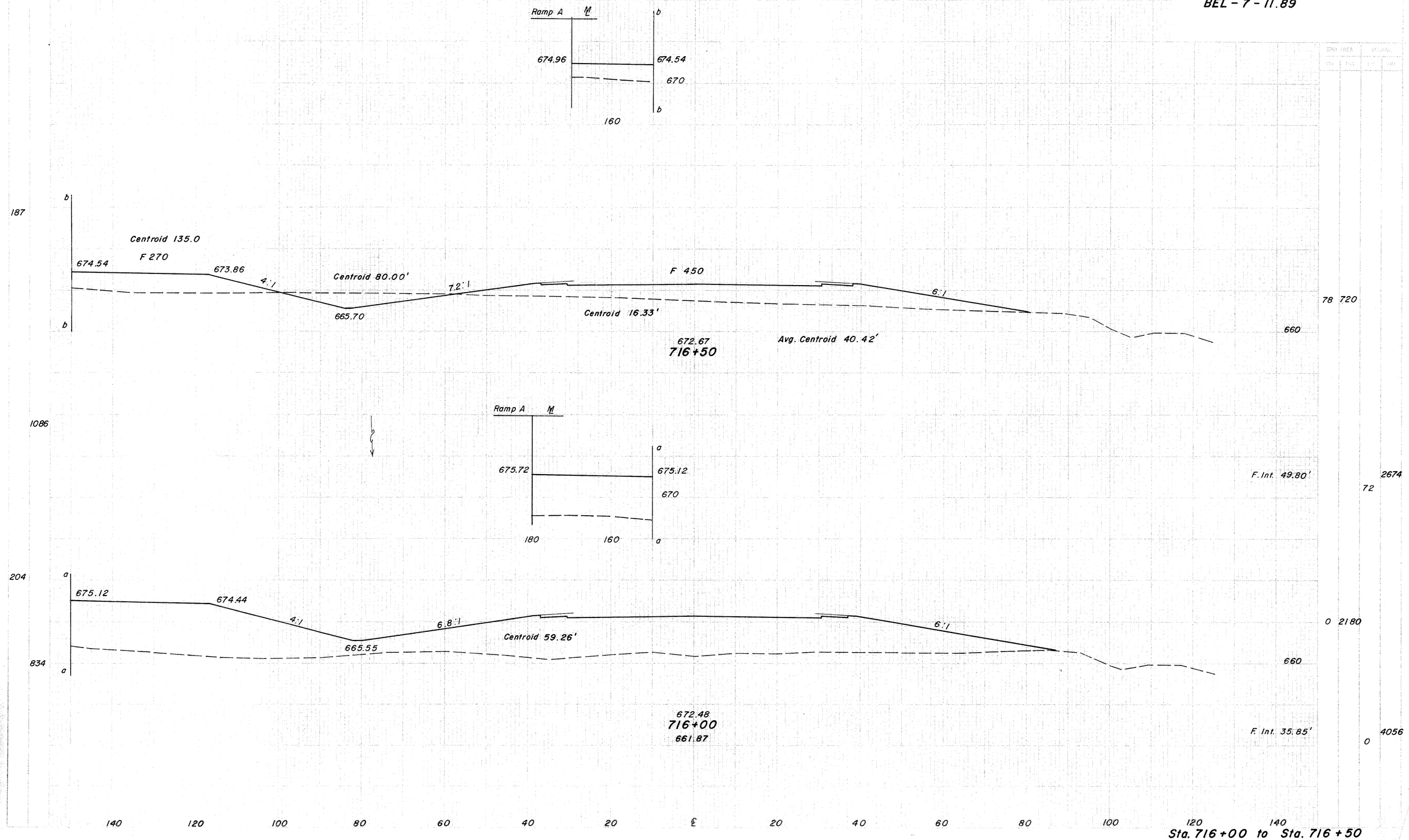
BEL - 7 - 11.89

Revised by JS. 8/76 Checked by AWL 1-77



Sta. 715+50 to Sta. 715+64

FHWA REGION 5 | STATE OHIO | 88 443
BEL - 7 - 11.89

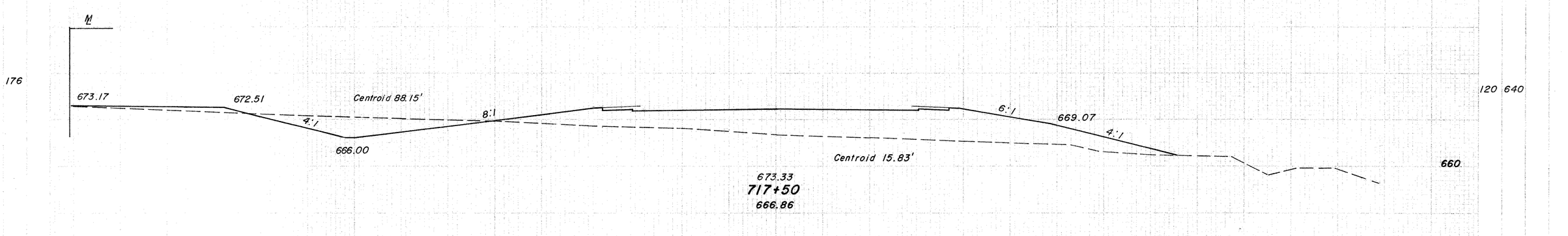


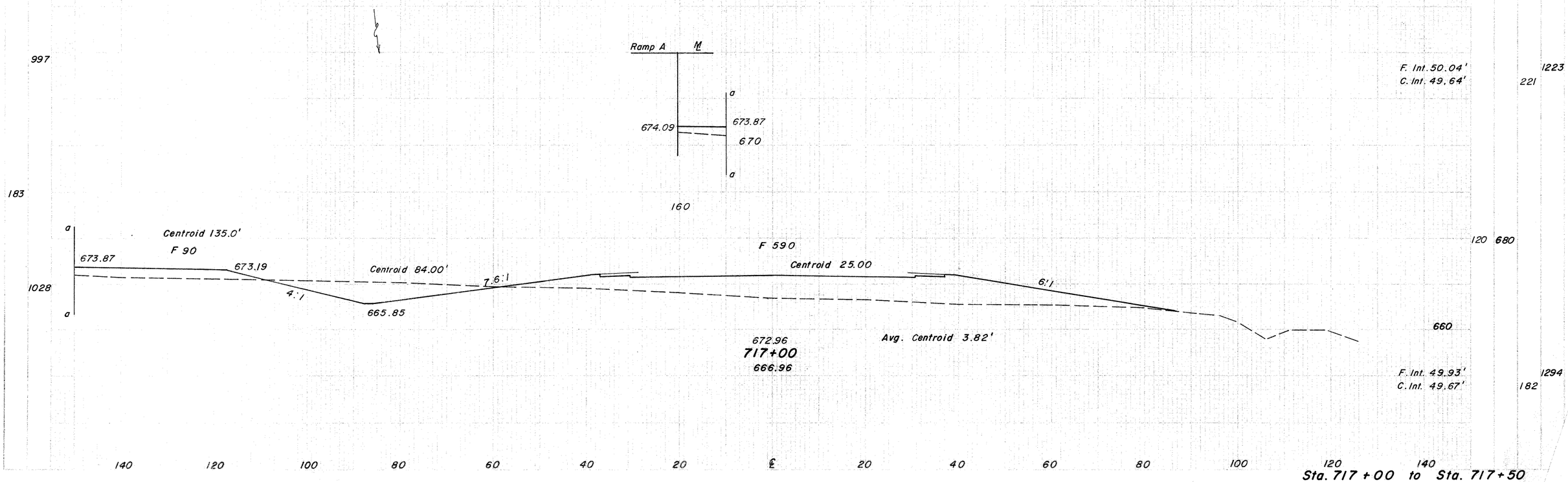
Sta. 716+00 to Sta. 716+50

FHWA REGION 5

89
443

BEL-7-11.89





FHWA REGION 5

90
443

BEL-7-11.89

147

Ramp A

671.09

670.78

4:1

666.30

8:1

Centroid 95.00'

674.35

718+50

667.46

Centroid 18.84'

6:1

670.09

4:1

230 580

660

844

157

925

Ramp A

672.15

671.71

4:1

666.15

8:1

Centroid 95.00'

673.80

718+00

666.3

Centroid 17.87'

6:1

669.54

4:1

240 620

660

F. Int. 50.07'

C. Int. 49.61'

1113

432

F. Int. 50.06'

C. Int. 49.62'

1168

331

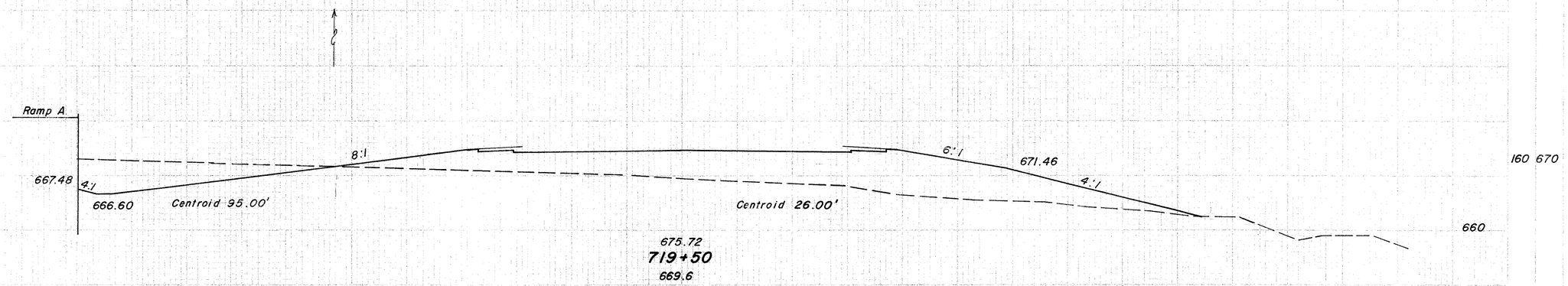
140 120 100 80 60 40 20 ℄ 20 40 60 80 100 120 140

Sta. 718+00 to Sta. 718+50

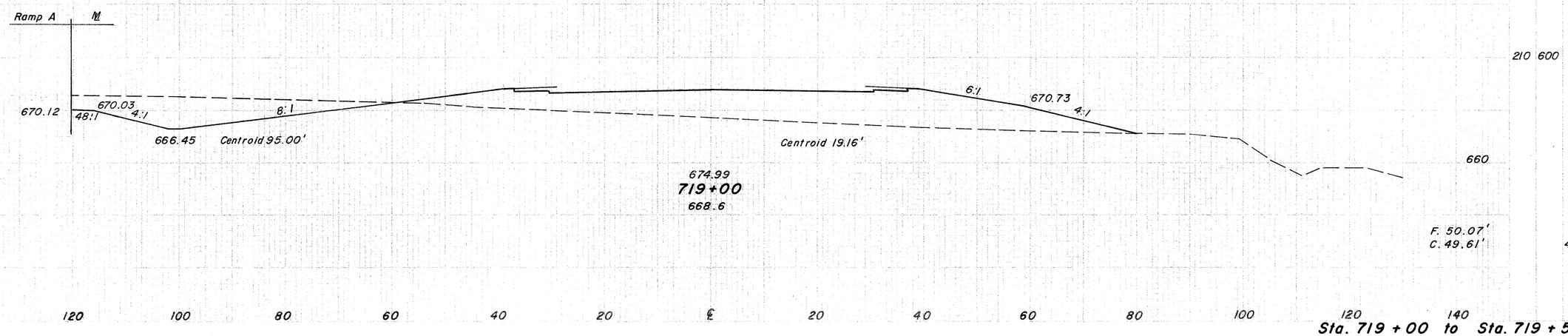
FHWA REGION 5 OHIO

91
943

BEL-7-11.89



141



775

138

791

F. Int. 50.08' 1177
C. Int. 49.61' 340

F. 50.07' 1094
C. 49.61' 404

140 120 100 80 60 40 20 ℄ 20 40 60 80 100 120 140

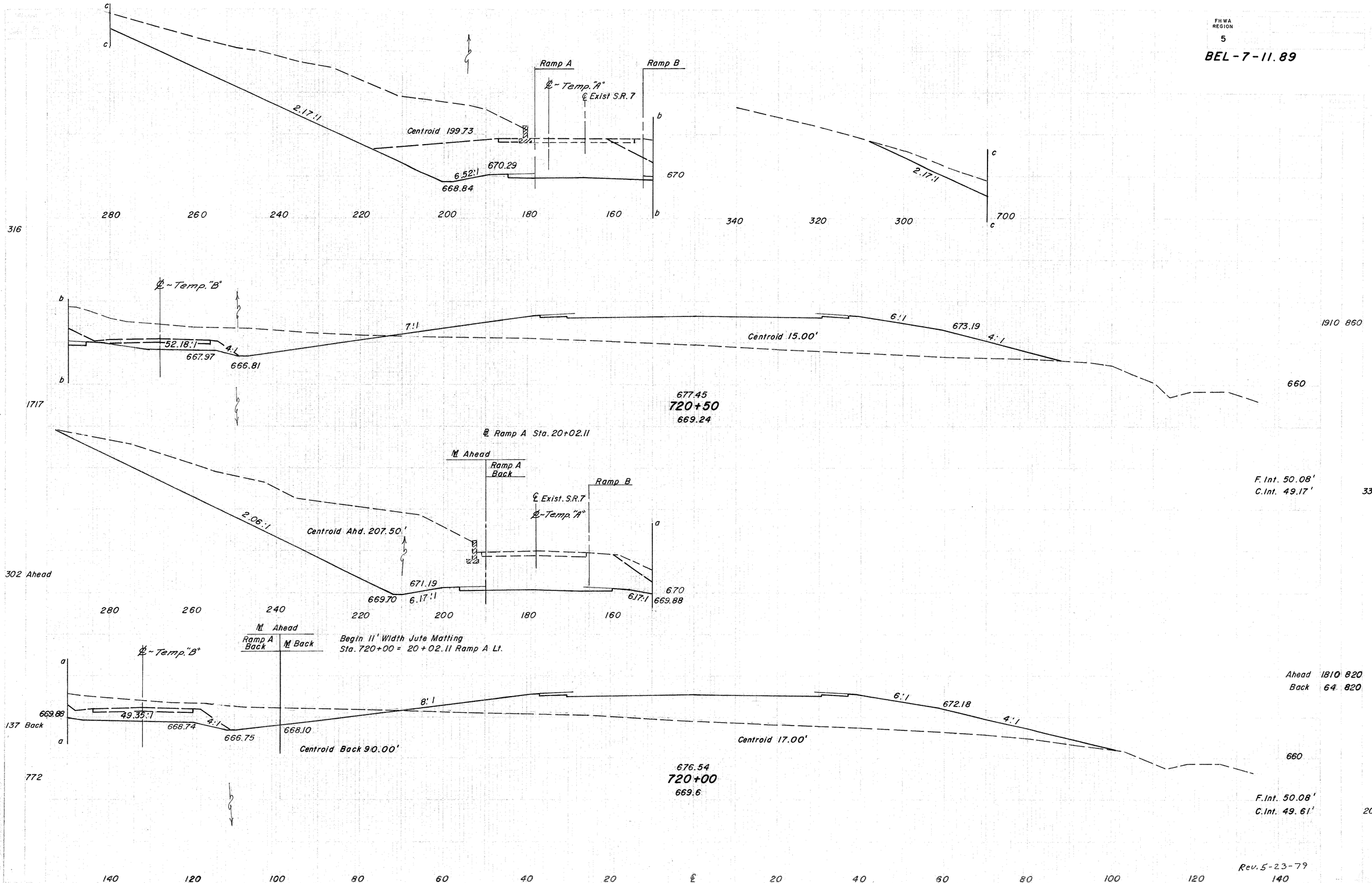
Sta. 719+00 to Sta. 719+50

EW CIV. 3/18/69

FHWA REGION 5

92
443

BEL-7-11.89



F. Int. 50.08' 1558
C. Int. 49.17' 3387

Ahead 1810 820
Back 64 820

F. Int. 50.08'
C. Int. 49.61' 206 1381

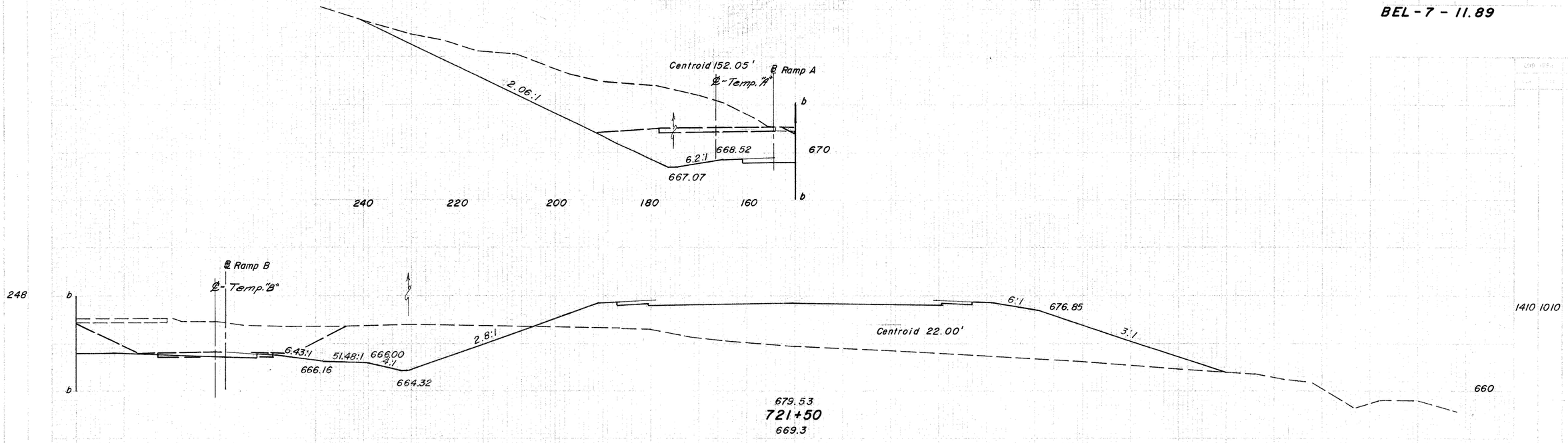
Rev. 5-23-79

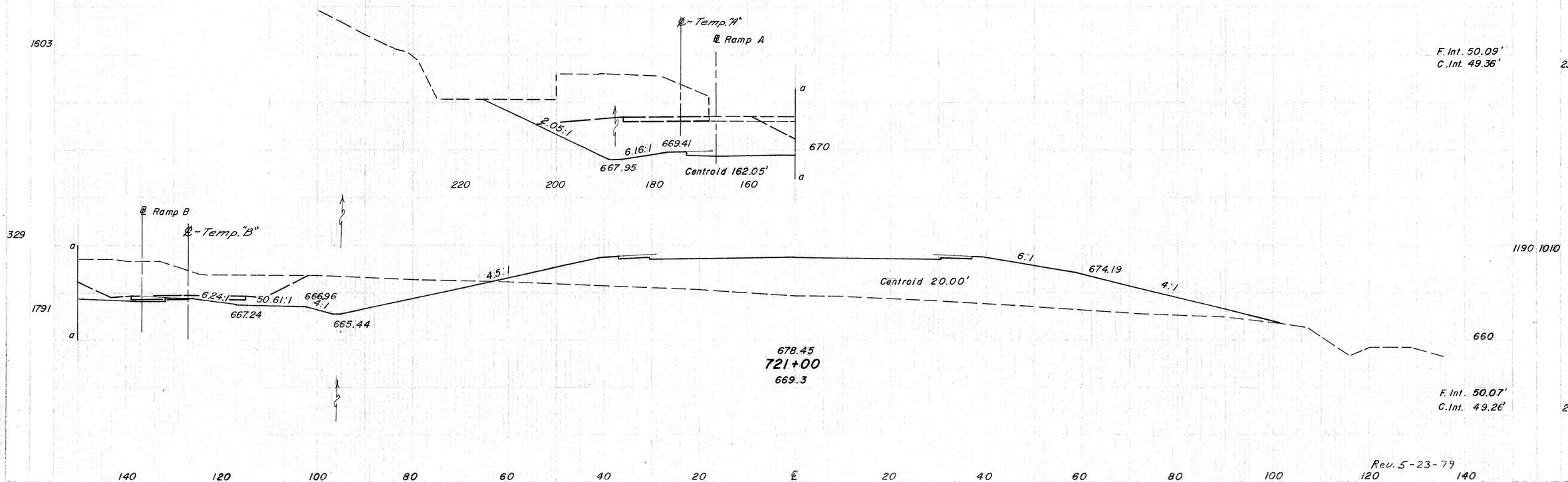
Sta. 720+00 to Sta. 720+50

FHWA REGION 5

93
443

BEL - 7 - 11.89





Rev. 5-23-79

Sta. 721+00 to Sta. 721+50

FHWA REGION 5

94
443

BEL-7-11.89

Begin 10' Width D.R.C.P.
Sta. 722+56

Centroid 162.00'

2.04:1

End 9' Width D.R.C.P.
Sta. 722+45

3.06:1

665.74

6.12:1

659.20

160

670

b

b

℄ Ramp A

℄ Ramp B

℄-Temp. "A"

℄-Temp. "B"

236

b

b

6.12:1

4.08:1

13.41:1

665.73

2:1

Centroid 1.72'

2:1

1210 1575

681.93

722+50

668.5

48:1

2:1

2:1

48:1

953.21

660

1280

Begin 9' Width D.R.C.P.
Sta. 721+98

℄-Temp. "A"

a

2.05:1

Centroid 153.00'

225

End 11' Width Jute Matting
Sta. 721+98

670

667.69

666.18

a

200

180

160

℄ Ramp A

℄ Ramp B

℄-Temp. "B"

a

1313

667.69

a

6.56:1

4:1

664.80

664.00

2:1

Centroid 12.04'

3:1

1140 1180

680.71

722+00

668.9

660

F. Int. 50.03' 2552
C. Int. 49.36' 2148

F. Int. 50.07' 2030
C. Int. 49.38' 2331

140 120 100 80 60 40 20 ℄ 20 40 60 80 100 120 140

Rev. 5-23-79

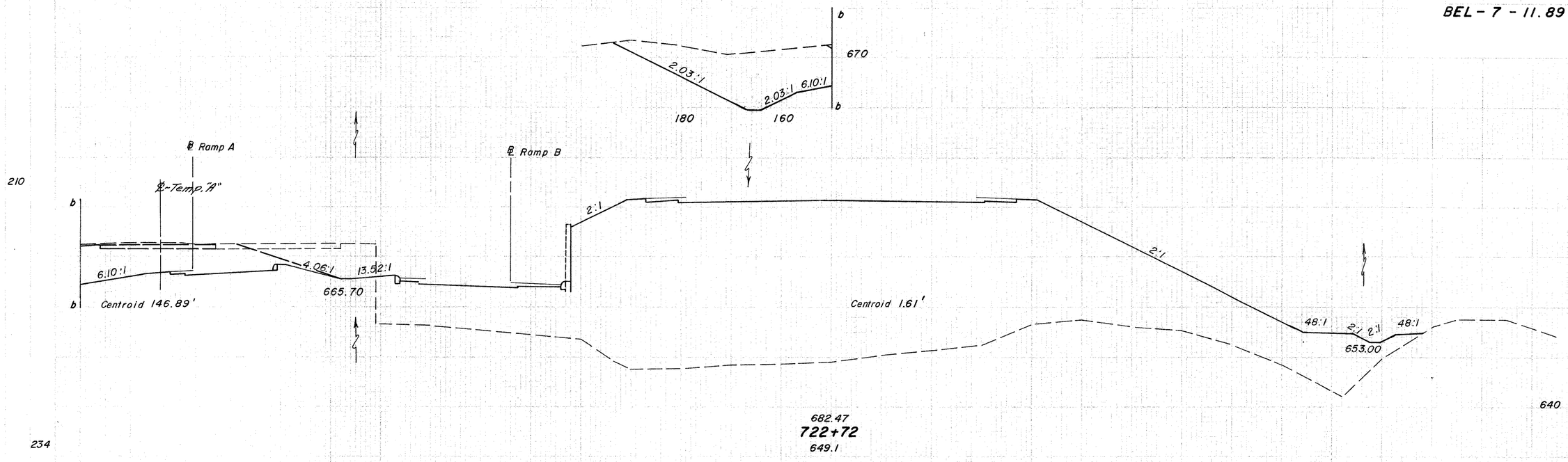
Sta. 722+00 to Sta. 722+50

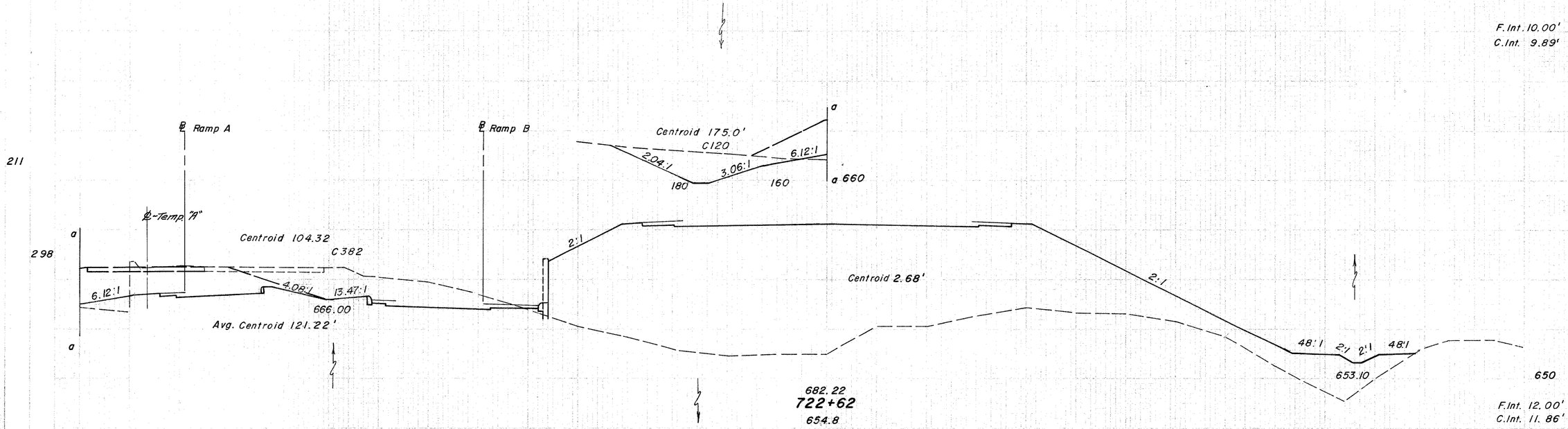
Rev Cor 3/13/69

FHWA REGION 5

95
443

BEL - 7 - 11.89





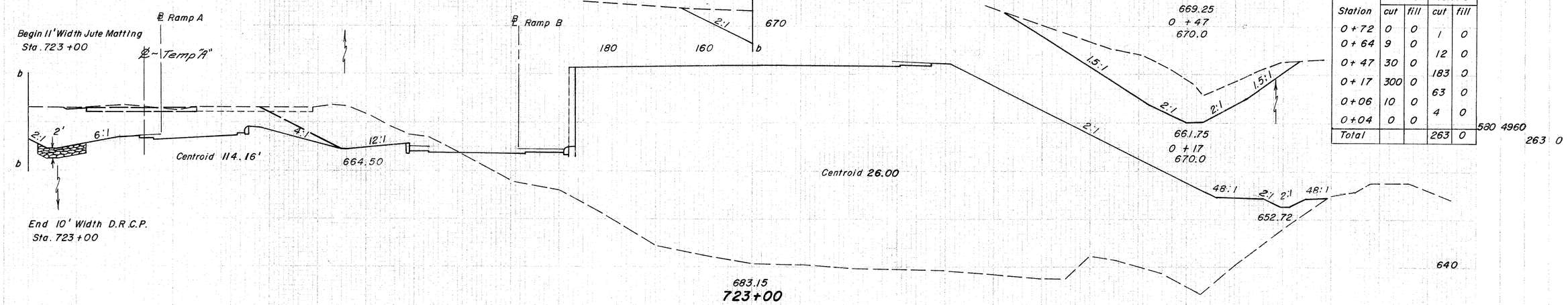
Rev. 5-23-79

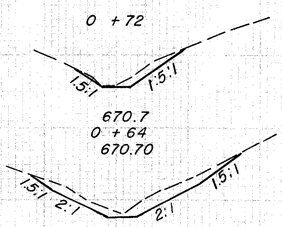
Sta. 722 + 62 to Sta. 722 + 72

FHWA REGION 5

96
443

BEL - 7 - 11.89

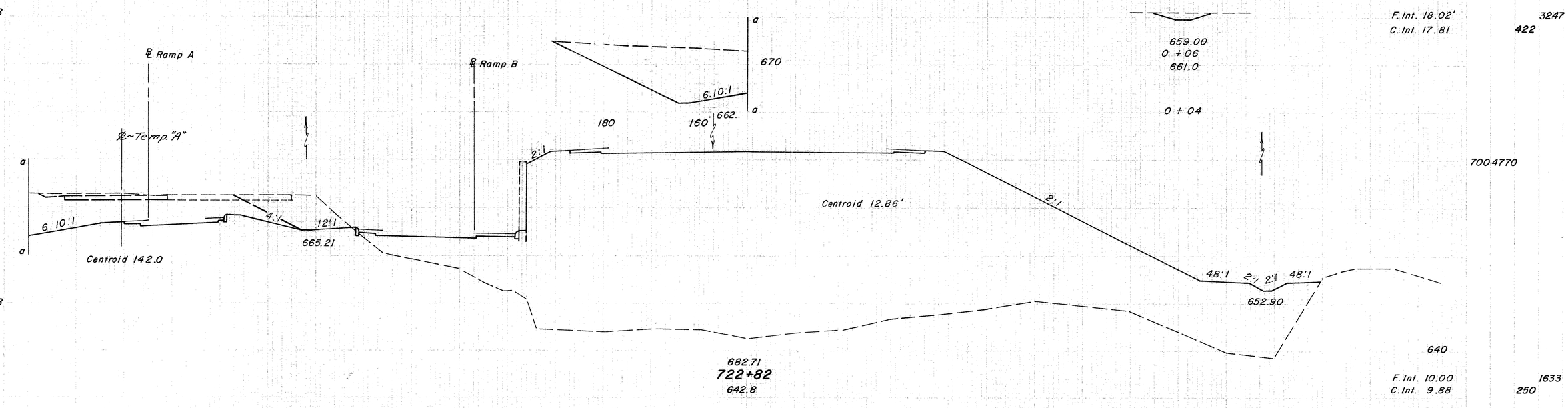




LEFT
CULVERT DITCH

Station	End Area cut	End Area fill	Volume cut	Volume fill
0 + 72	0	0	1	0
0 + 64	9	0	12	0
0 + 47	30	0	183	0
0 + 17	300	0	63	0
0 + 06	10	0	4	0
0 + 04	0	0		
Total			263	0

580 4960
263 0



F.Int. 18.02' 3247
C.Int. 17.81 422

7004770

F.Int. 10.00 1633
C.Int. 9.88 250

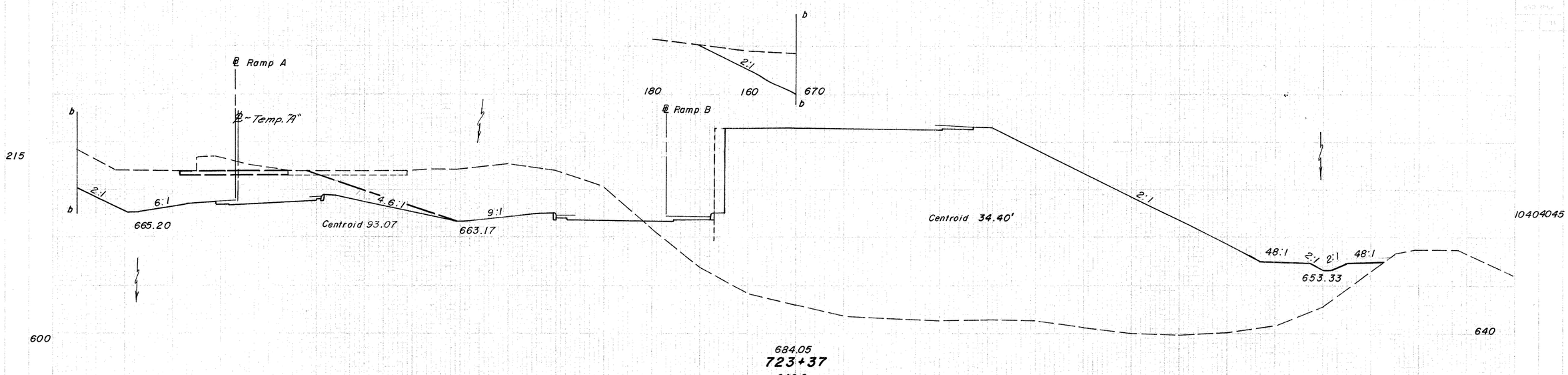
Rev. 5-23-79

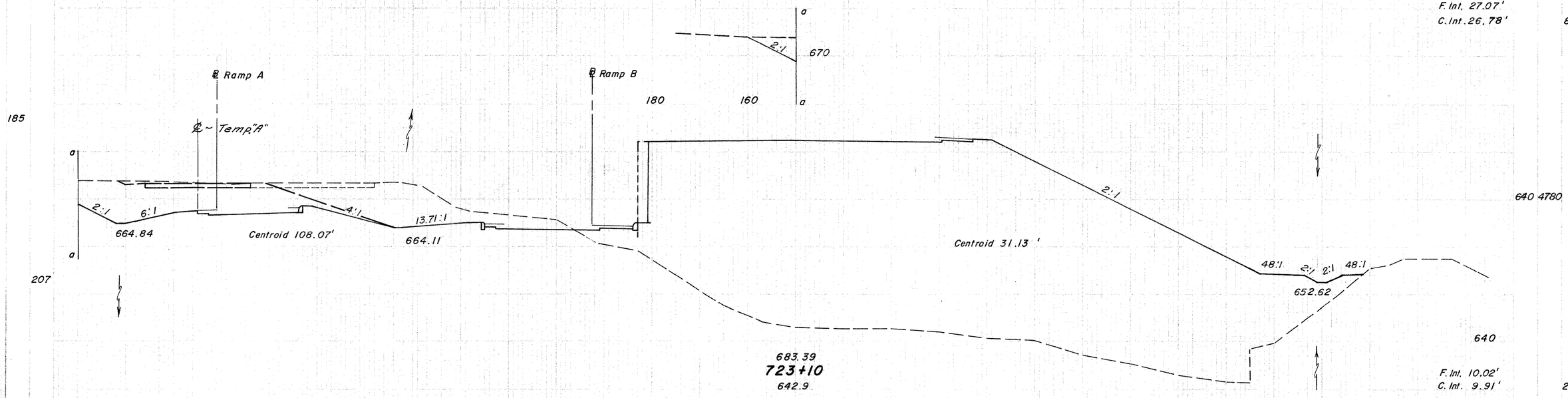
Sta. 722+82 to Sta. 723+00

FHWA REGION 5

97
443

BEL - 7 - 11.89





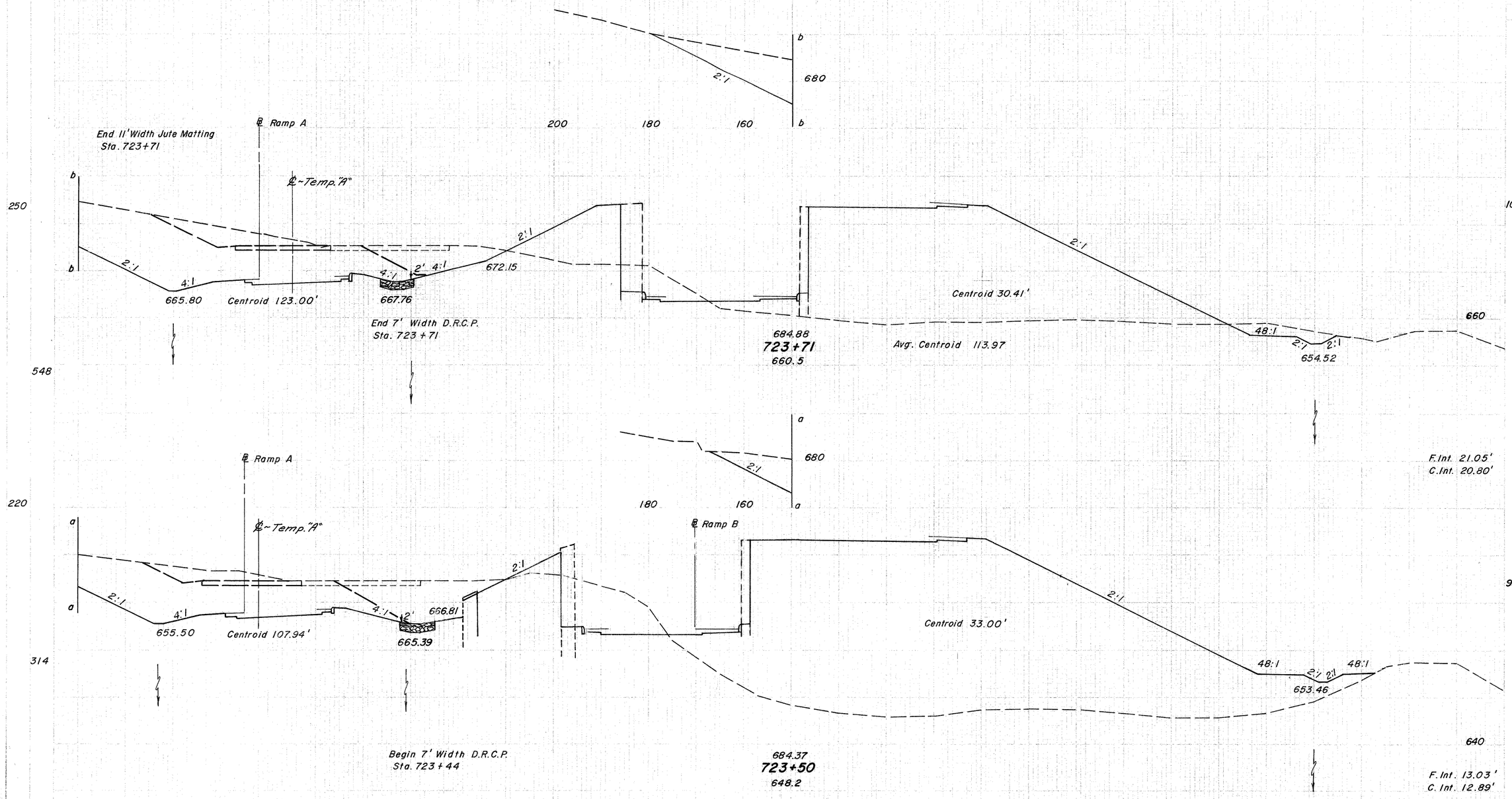
Rev. 5-23-79

Sta. 723+10 to Sta. 723+37

FHWA REGION 5

98
443

BEL - 7 - 11.89



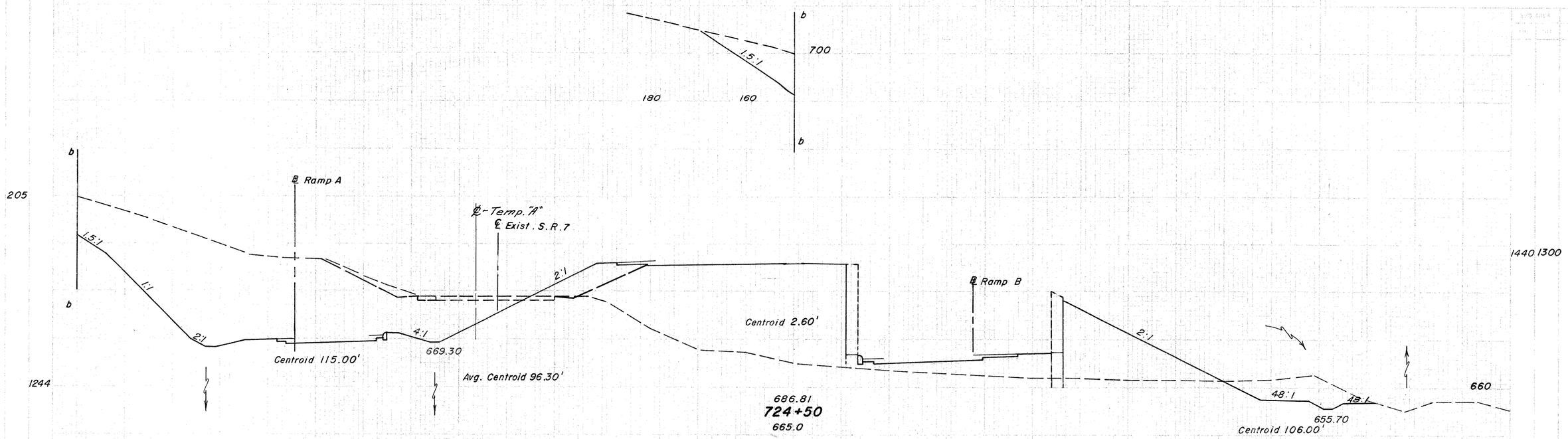
Rev. 5-23-79

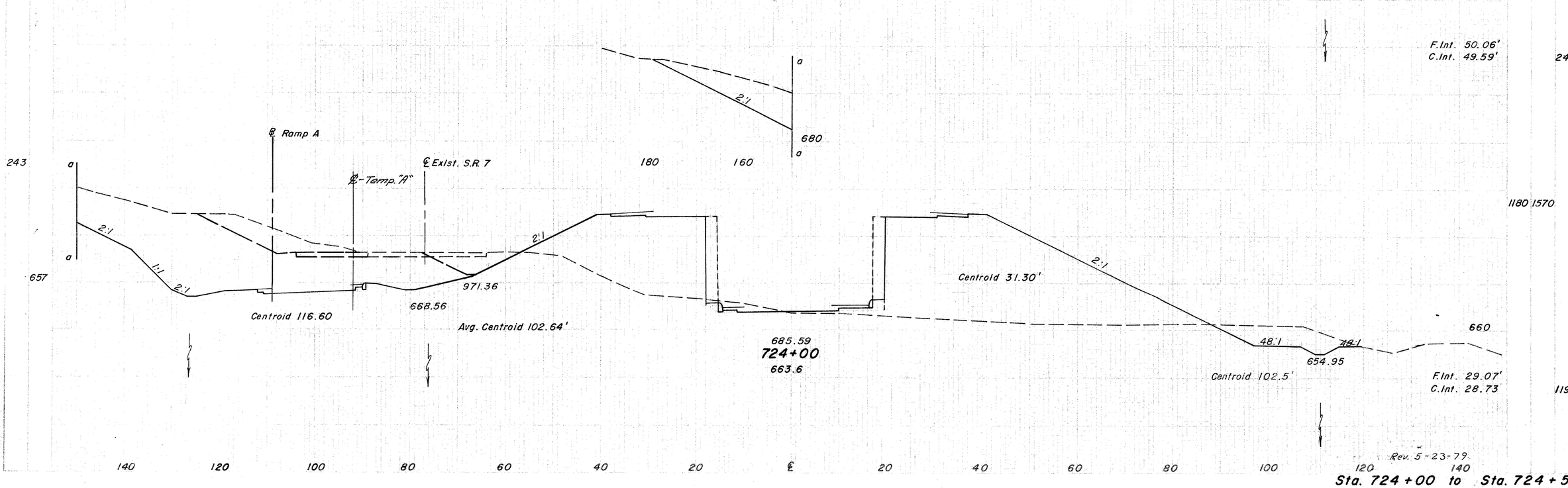
Sta. 723+50 to Sta. 723+71

FHWA REGION 5

99
443

BEL-7-11.89

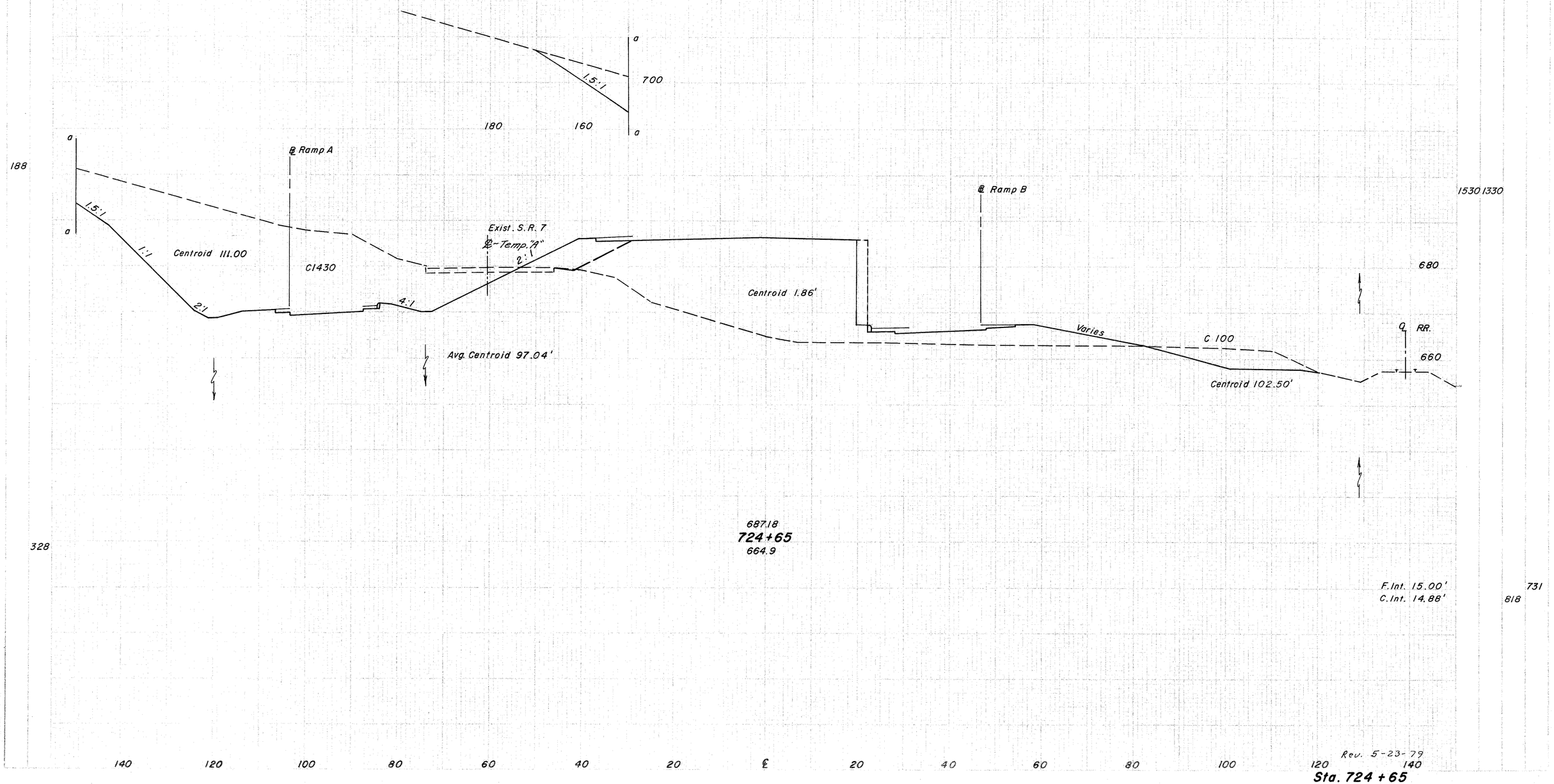




Rev. 5-23-79

Sta. 724+00 to Sta. 724+50

FHWA REGION 5 OHIO
100
443
BEL-7-11.89



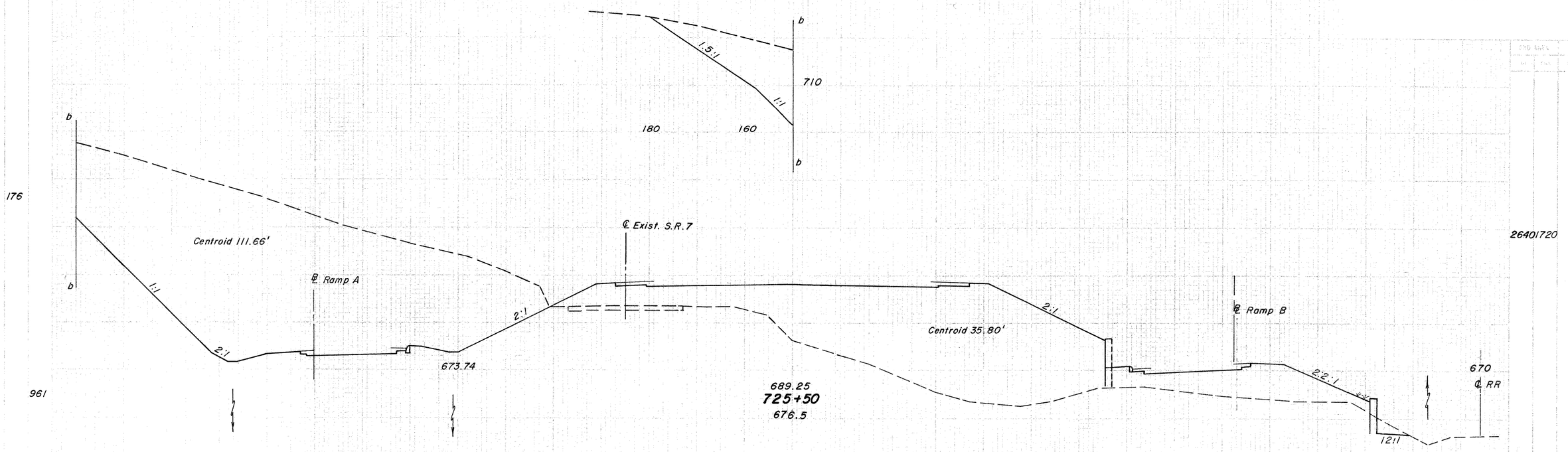
Rev. 5-23-79

Sta. 724 + 65

FHWA REGION 5

101
443

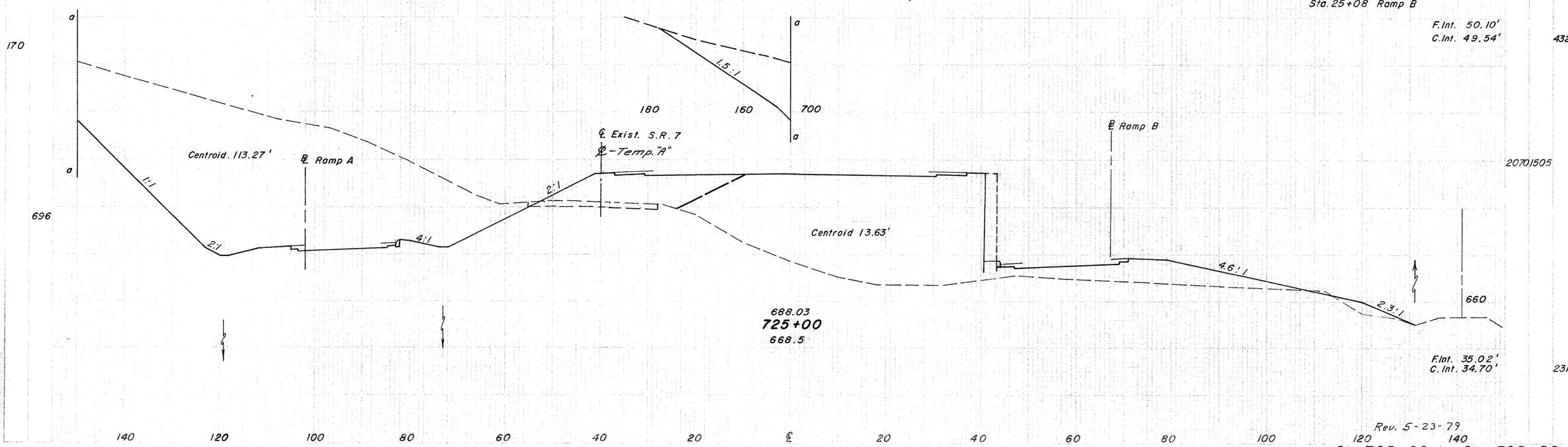
BEL - 7 - 11.89



26401720

Begin 18" Sod
Sta. 724+98 =
Sta. 25+08 Ramp B

F.Int. 50.10' 2992
C.Int. 49.54' 4321



20701505

F.Int. 35.02' 1839
C.Int. 34.70' 2313

140 120 100 80 60 40 20 ℄ 20 40 60 80 100 120 140

Rev. 5-23-79

Sta. 725+00 to Sta. 725+50

FHWA REGION 5 | STATE OHIO | PROJECT

106
443

BEL - 7 - 11.89

ERC AREA | ENG. AZ.

SECTIONS

102

b b 1:1 1.14:1 24:1 2:1 5.52:1 2.5:1 1.5:1

℄ Ramp A
Centroid 89.33
C 3900
Conc. Ret. Wall
℄ Exist. S. R. 7
695.66
690.68
℄ Ramp B
Centroid 96.66'
C 135
Centroid 65.50
C 280
Centroid 132.77
700
4315 1400

b 48:1 650 160 180 b

608

a a 1:1 1.14:1 24:1 2:1 3.46:1 2.5:1 1.5:1

Avg. Centroid 66.94'
698.48
730+50
703.8
b 1:1 760 160 b
693.40
Avg. Centroid 64.45'
℄ Ramp A
Centroid 82.44'
C 4140
Conc. Ret. Wall
℄ Exist. S. R. 7
688.49
℄ Ramp B
Centroid 118.15'
C400
Centroid 121.78'
F. Int. 50.43' 2120
C. Int. 49.74' 8155
F. Int. 50.48' 1645
C. Int. 49.74' 8548
4540 870
700

a 650 160 180 a

117

692

a 1:1 750 180 160 a

697.88
730+00
703.5

140 120 100 80 60 40 20 ℄ 20 40 60 80 100 120 140

Sta. 730+00 to Sta. 730+50

FHWA REGION 5 | STATE OHIO | PROJECT | 107 943

BEL - 7 - 11.89

Revised by J.S 8/76 Checked by AW L 1-77

SECTIONS AND VOLS. | END AREA C.Y. | END AREA SQ.FT. | VOLUME C.Y. | VOLUME SQ.FT.

94

544

102

567

b b 1:1

1:4:1

24:1 2:1 4:1 4.5:1

Centroid 86.09'
C 3890

℄ Ramp A

696.88

Avg. Centroid 59.73'

a a 1:1

1:4:1

24:1 2:1 4.4:1

695.73

Avg. Centroid 53.17'

a 1:1 760 160 a

699.45
731+50
705.54

699.00
731+00
704.89

℄ Exist. S.R. 7

Conc. Ret. Wall

℄ Ramp A
Centroid 87.99'
C 3490

b 1:1 770 160 b

b 6.50 48:1 160 180 b

3.4:1
695.21

℄ Ramp B

700 4510 1910

1.5:1

Centroid 87.50'
C 240

Centroid 75.0'
C 380

Centroid 125.0'

a 660 48:1 160 180 a

2.8:1
692.89

℄ Ramp B

700 4220 1640

End 7'-6" Jute Matting
Sta. 731 + 00

Centroid 92.73'
C 160

Centroid 72.11'

1.5:1

F.Int. 50.36' 3311
C.Int. 49.77' 8046

F.Int. 50.38' 2836
C.Int. 49.75' 7863

C 570

Centroid 125.0'

140 120 100 80 60 40 20 ℄ 20 40 60 80 100 120 140

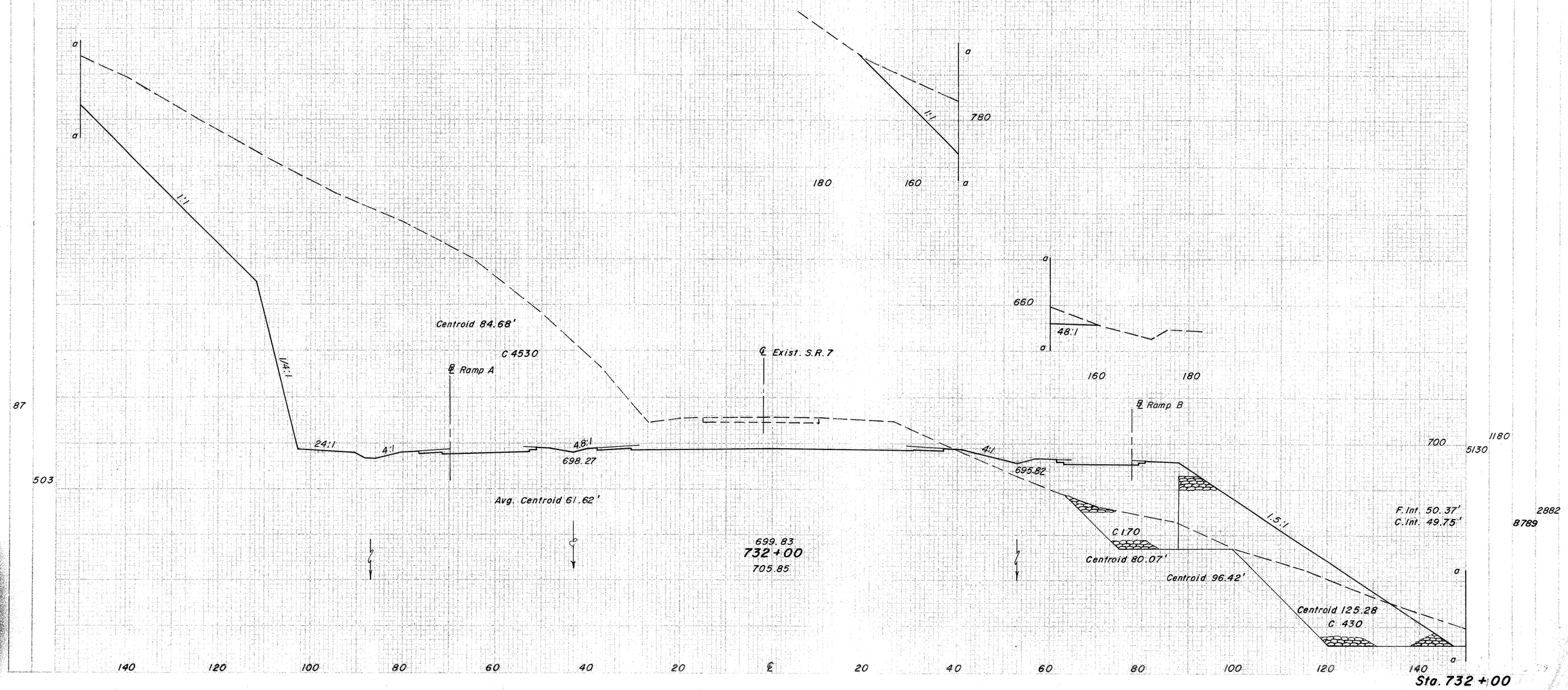
Sta. 731 + 00 to Sta. 731 + 50

FHWA REGION	STATE	PROJECT	
5	OHIO		

108
443

BEL - 7 - 11.89

Revised by J.S. 8/76 Checked by AWL 1-77



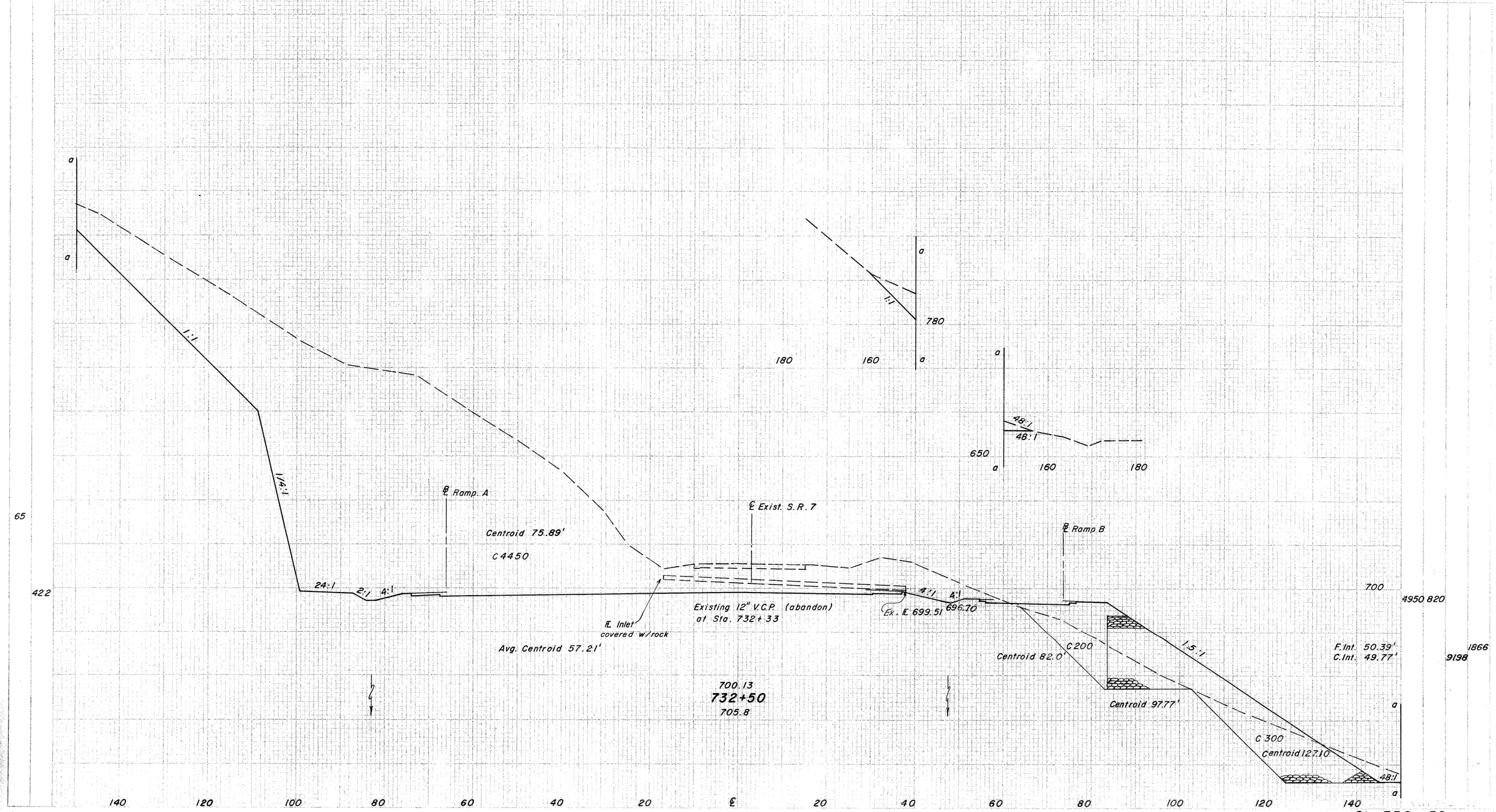
Sta. 732+00

FHWA REGION	STATE	PROJECT	
5	OHIO		

109
443

BEL-7-11.89

Revised by J.S. 8/76 Checked by AWL 1-77



Sta. 732 + 50

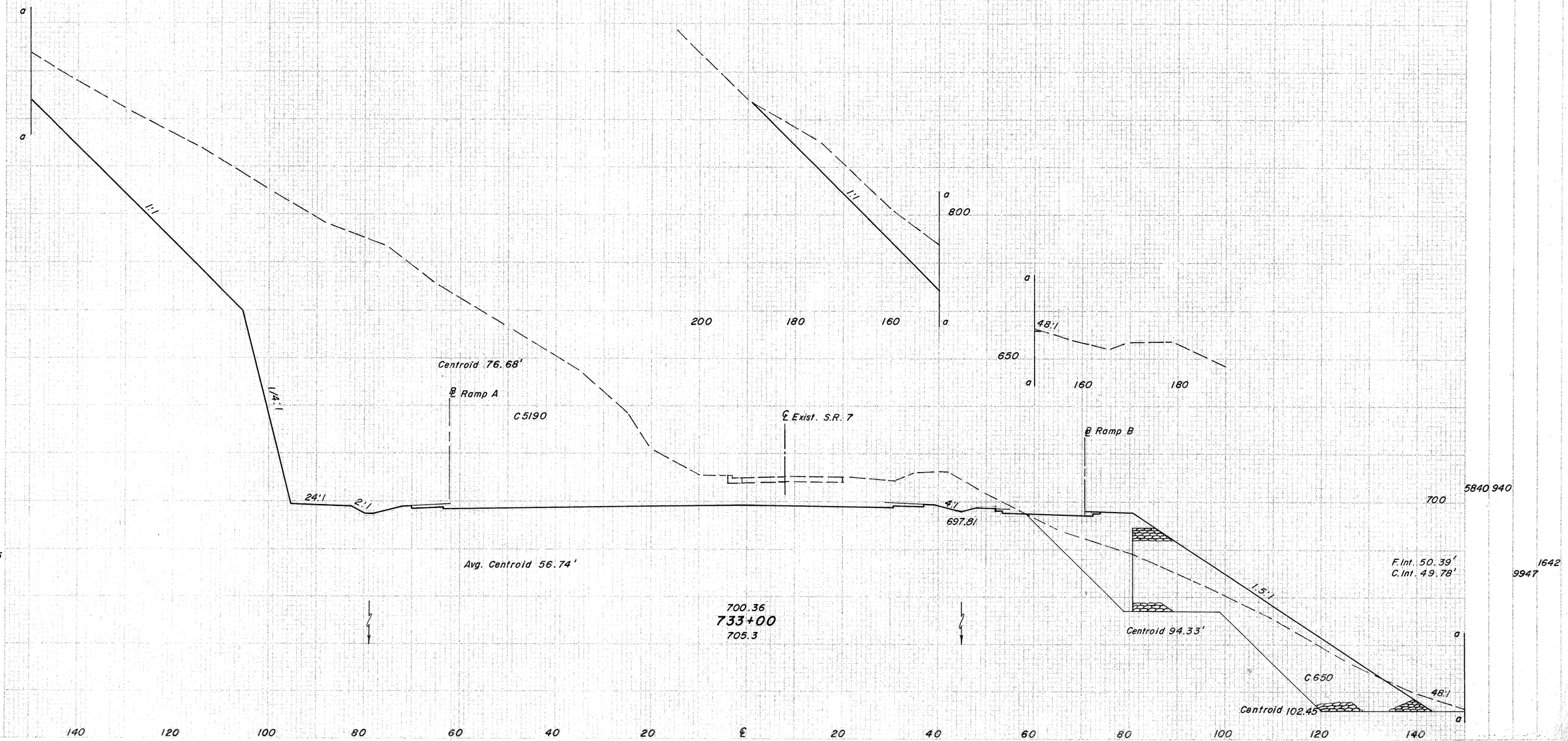
FHWA REGION	STATE	PROJECT	
5	OHIO		

110
443

BEL-7-11.89

Revised by J.S. 8/76 Checked by AWL 1-77

END AREA		VOLUME	
CUT	FILL	CUT	FILL



Sta. 733 + 00

SEEDING

FHWA REGION	STATE	PROJECT	
5	OHIO		

111
443

BEL-7-11.89

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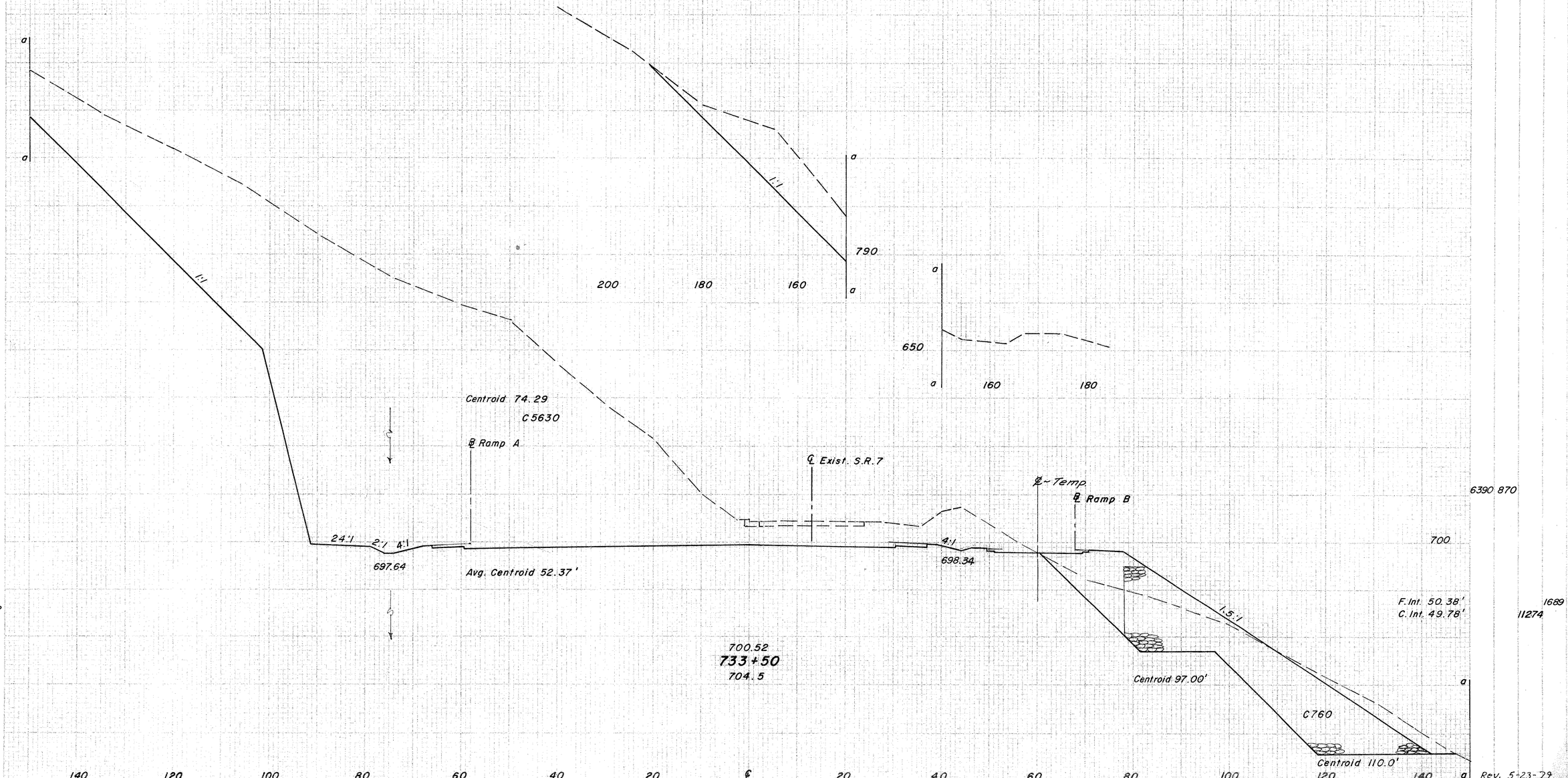
END SPEC		ITEM LINE	
CHG	YRS	CHG	YRS



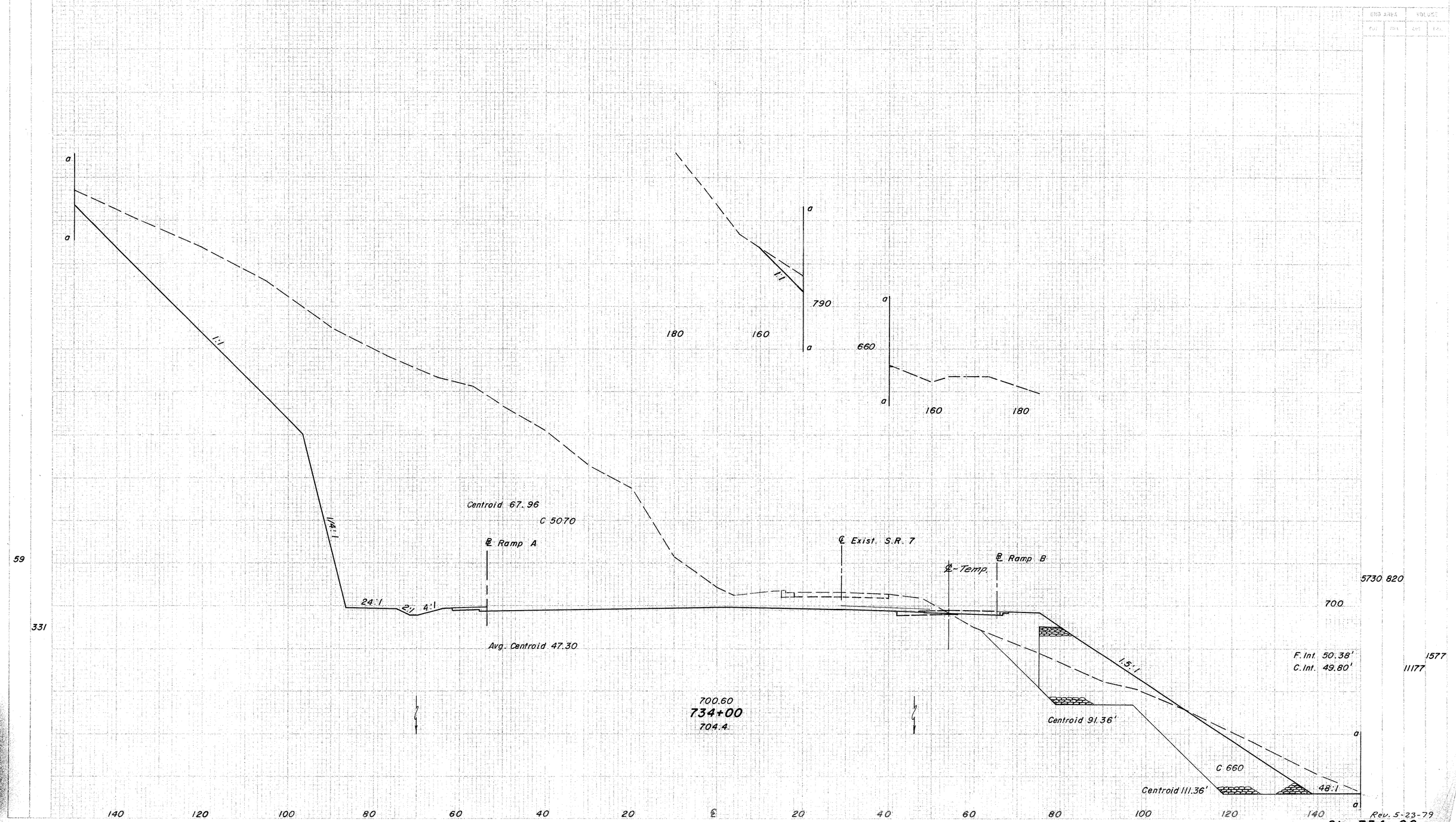
Rev. 5-23-79

Sta. 733+50

FHWA REGION	STATE	PROJECT	
5	OHIO		

112
443

BEL - 7 - 11.89



Rev. 5-23-79

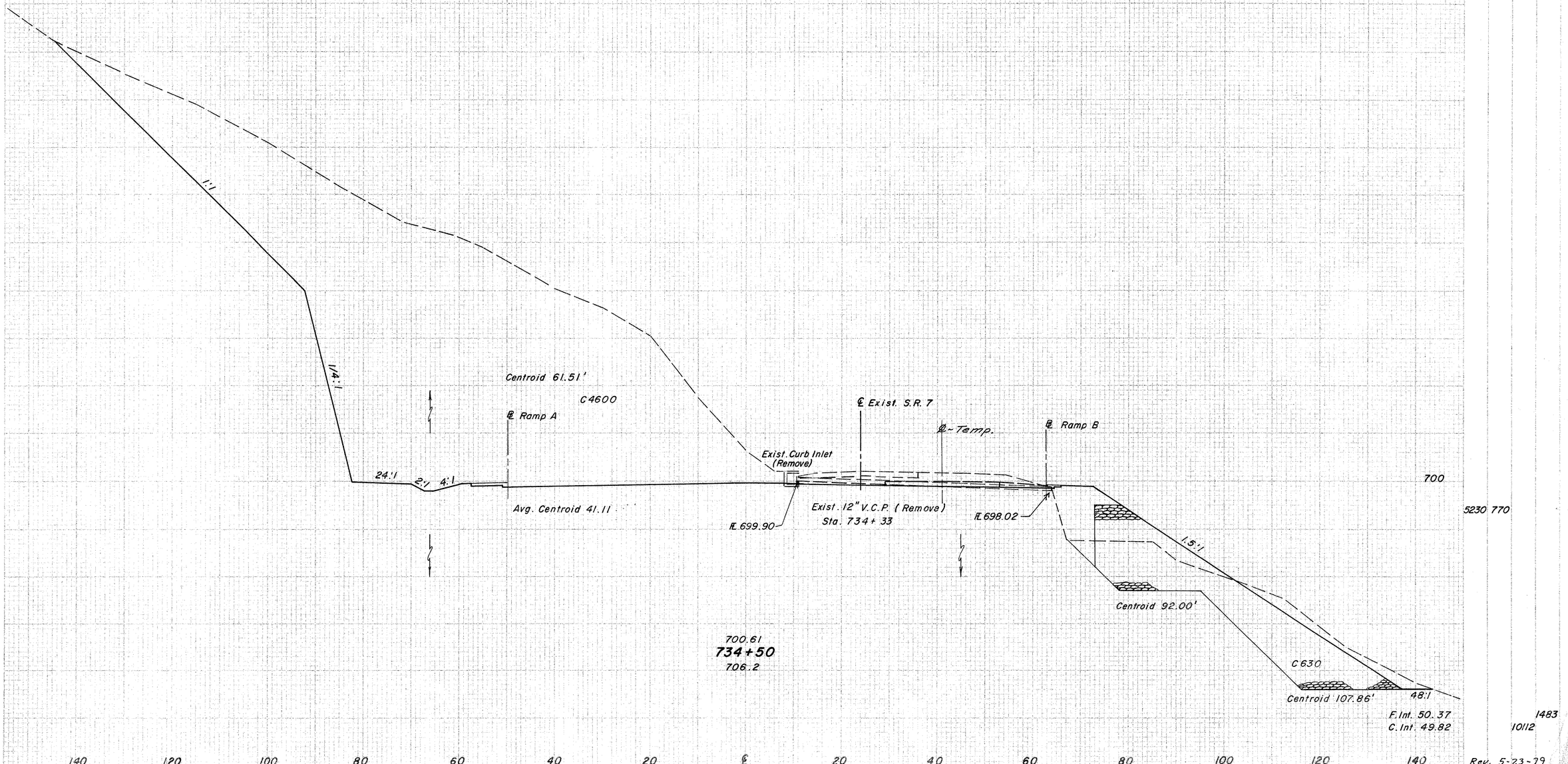
Sta. 734+00

FHWA REGION	STATE	PROJECT	
5	OHIO		

113
443

BEL-7-11.89

END AREA		VOLUME	
CUT	FILL	CUT	FILL



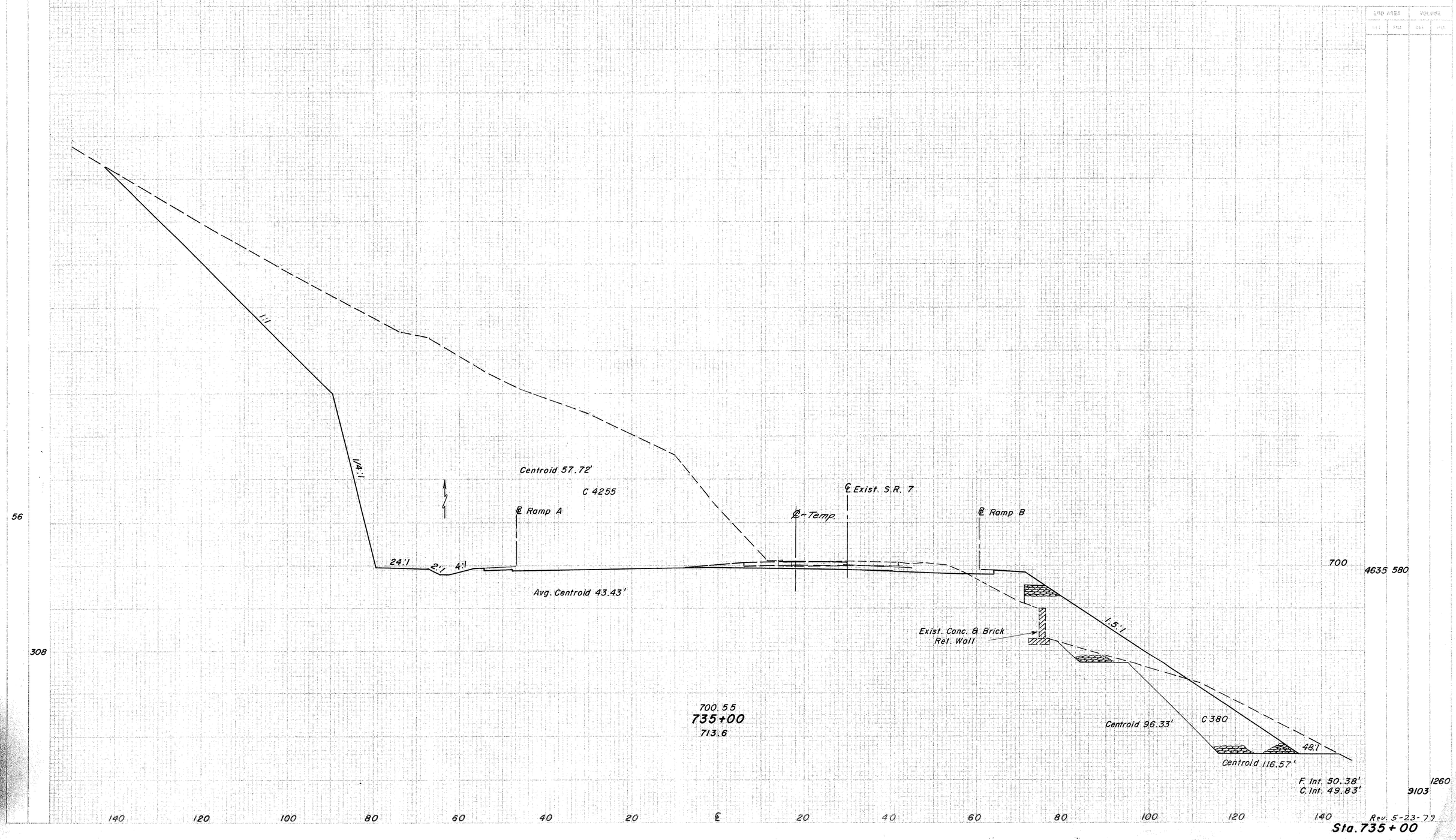
Rev. 5-23-79

Sta. 734+50

FHWA REGION	STATE	PROJECT	
5	OHIO		

114
443

BEL-7-11.89



Rev. 5-23-79

Sta. 735+00

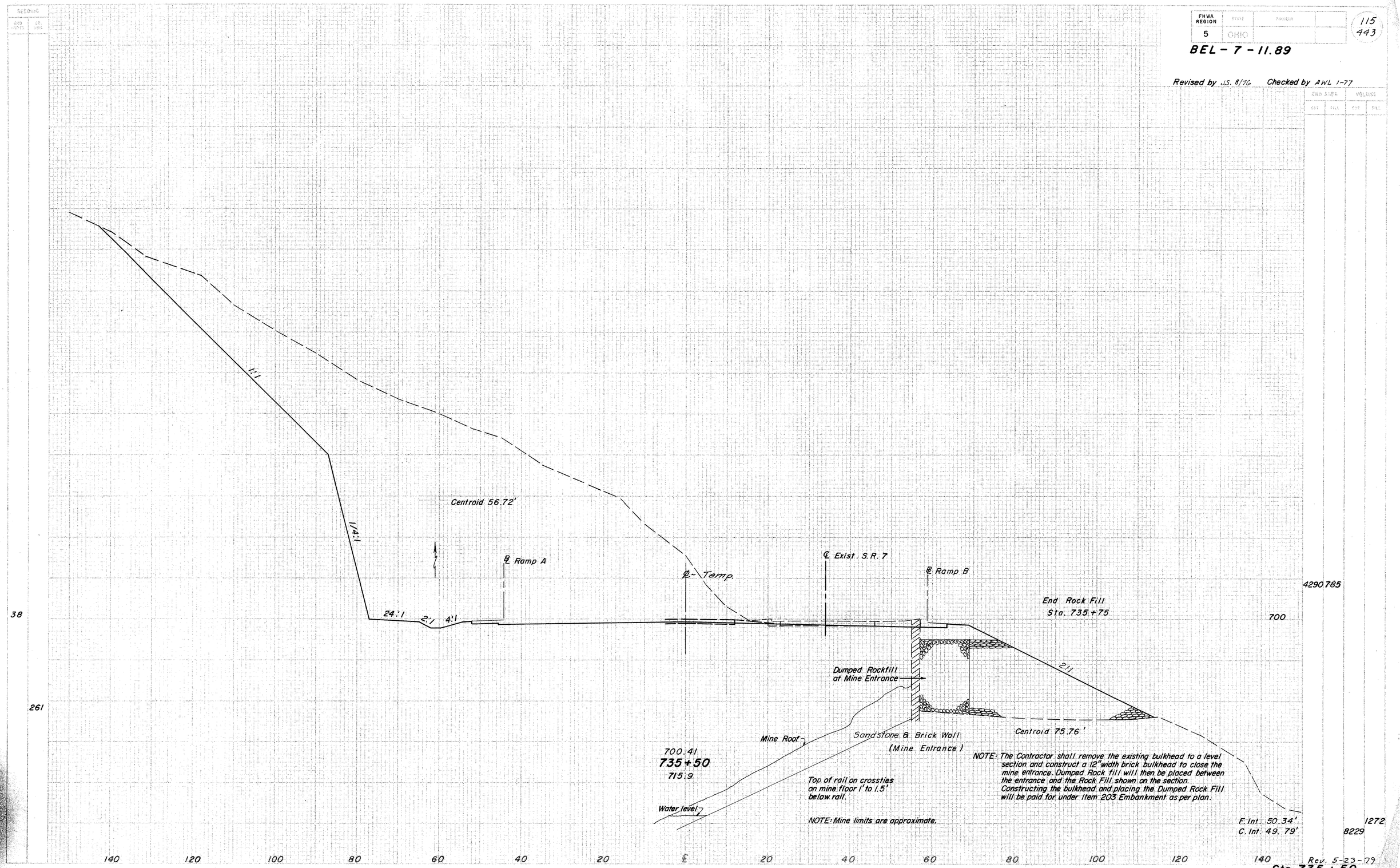
FHWA REGION	STATE	PROJECT	
5	OHIO		

115
443

BEL - 7 - 11.89

Revised by J.S. 8/76 Checked by AWL 1-77

END AREA		VOLUME	
CUT	FILL	CUT	FILL



Rev. 5-23-79

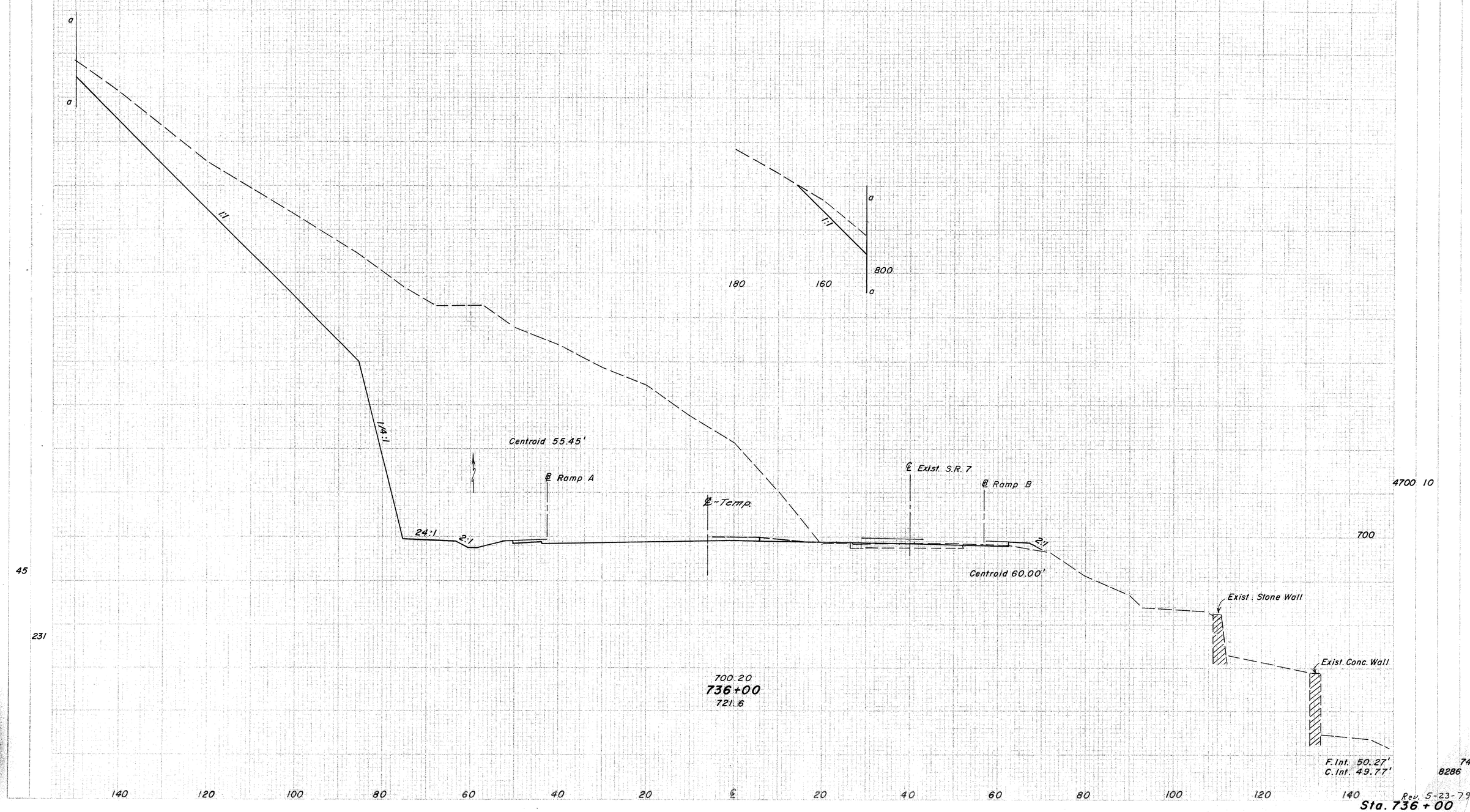
Sta. 735 + 50

FHWA REGION	STATE	PROJECT	
5	OHIO		

116
443

BEL-7-11.89

Revised by J.S. 8/76 Checked by AWL 1-77



Rev. 5-23-79

Sta. 736+00

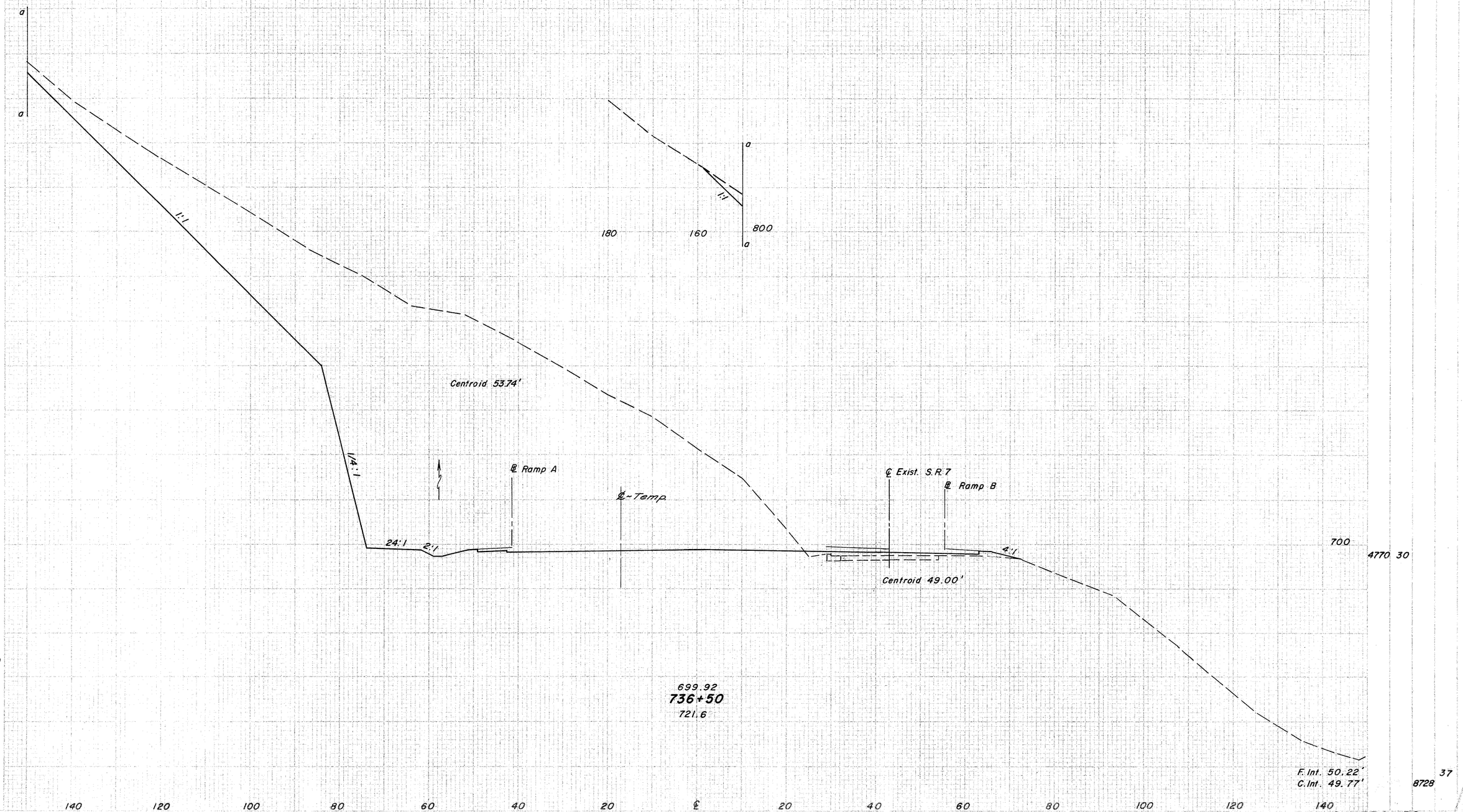
FHWA REGION	STATE	PROJECT	
5	OHIO		

117
443

BEL-7-11.89

Revised by J.S. 8/76 Checked by AWL 1-77

END AREA		VOLUME	
CUT	FILL	CUT	FILL



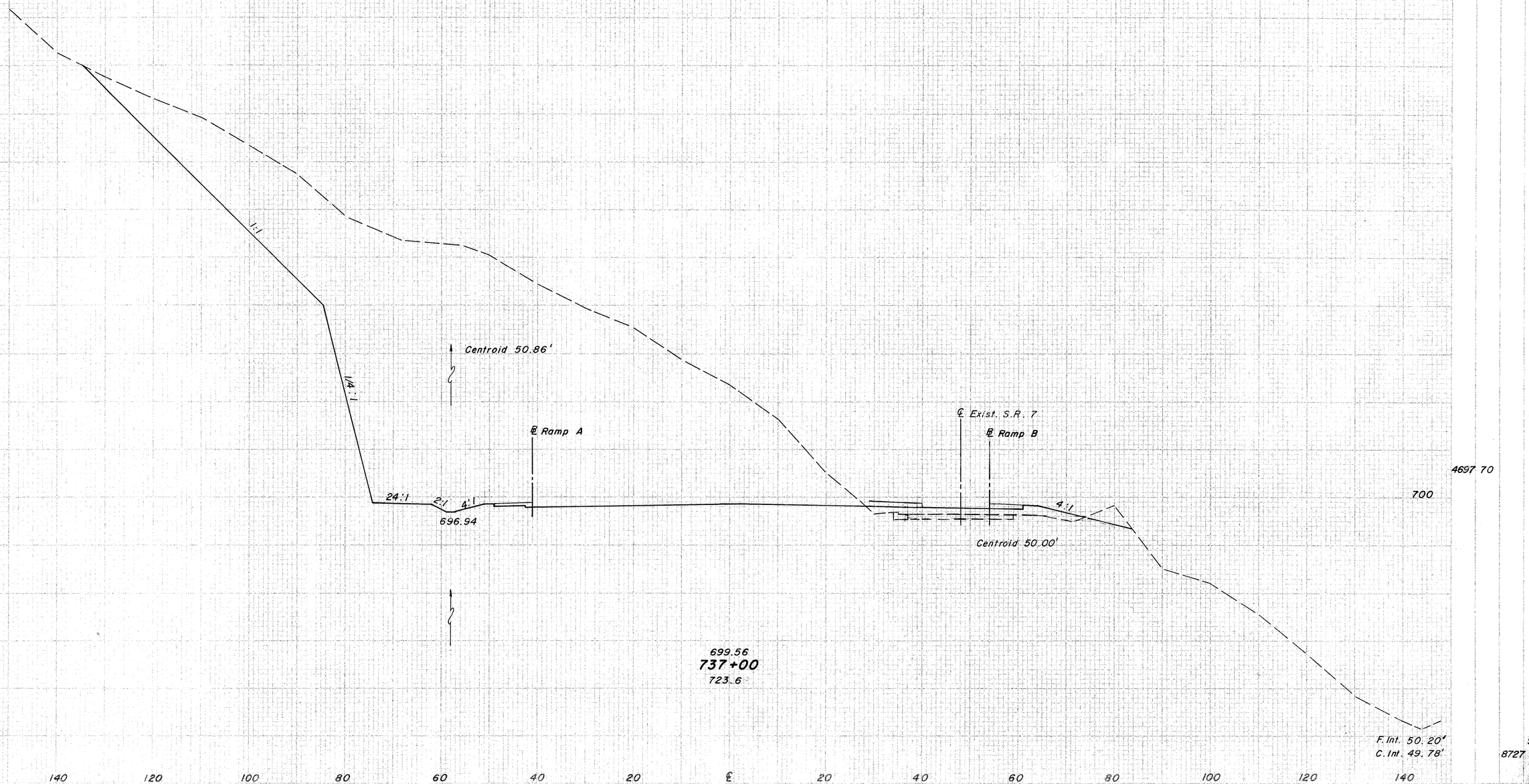
FHWA REGION	STATE	PROJECT	
5	OHIO		

118
943

BEL - 7 - 11.89

Revised by J.S. 8/76 Checked by AWL 1-77

GRID AREA		VOLUME	
CUT	FILL	CUT	FILL

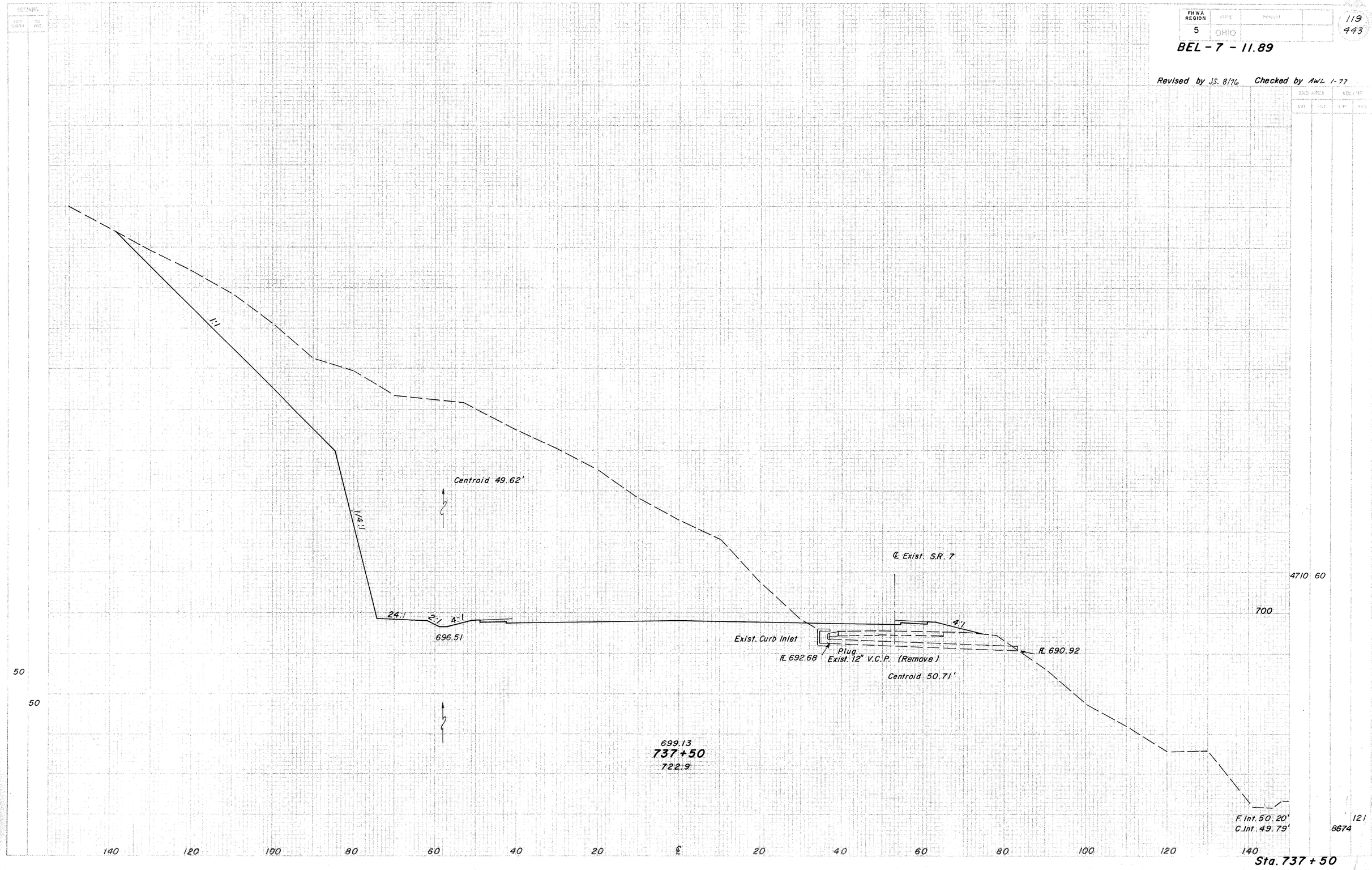


FHWA REGION	STATE	PROJECT	
5	OHIO		

119
443

BEL - 7 - 11.89

Revised by J.S. 8/76 Checked by AWL 1-77

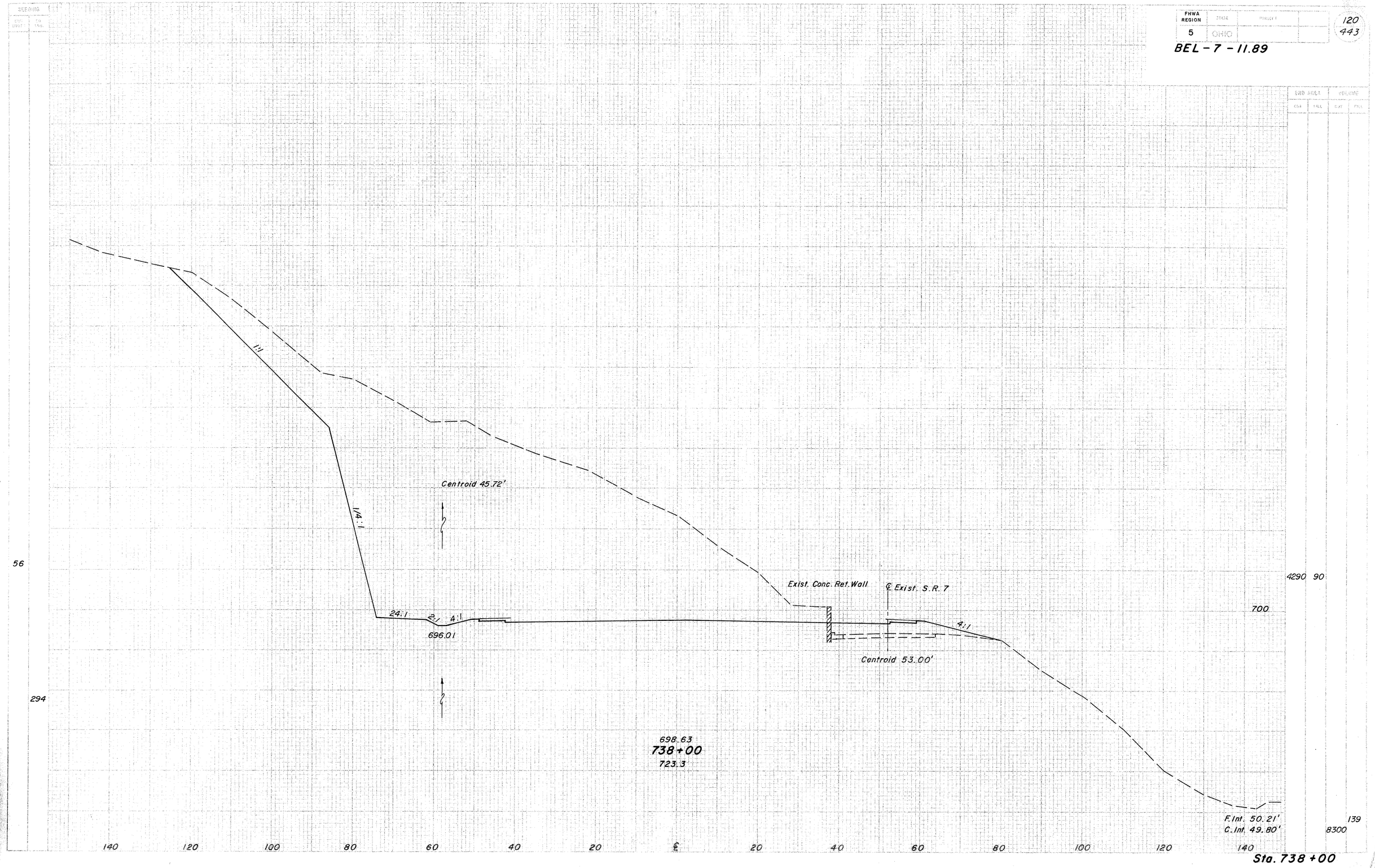


Sta. 737 + 50

FHWA REGION	STATE	PROJECT	
5	OHIO		

120
443

BEL-7-11.89



Sta. 738+00

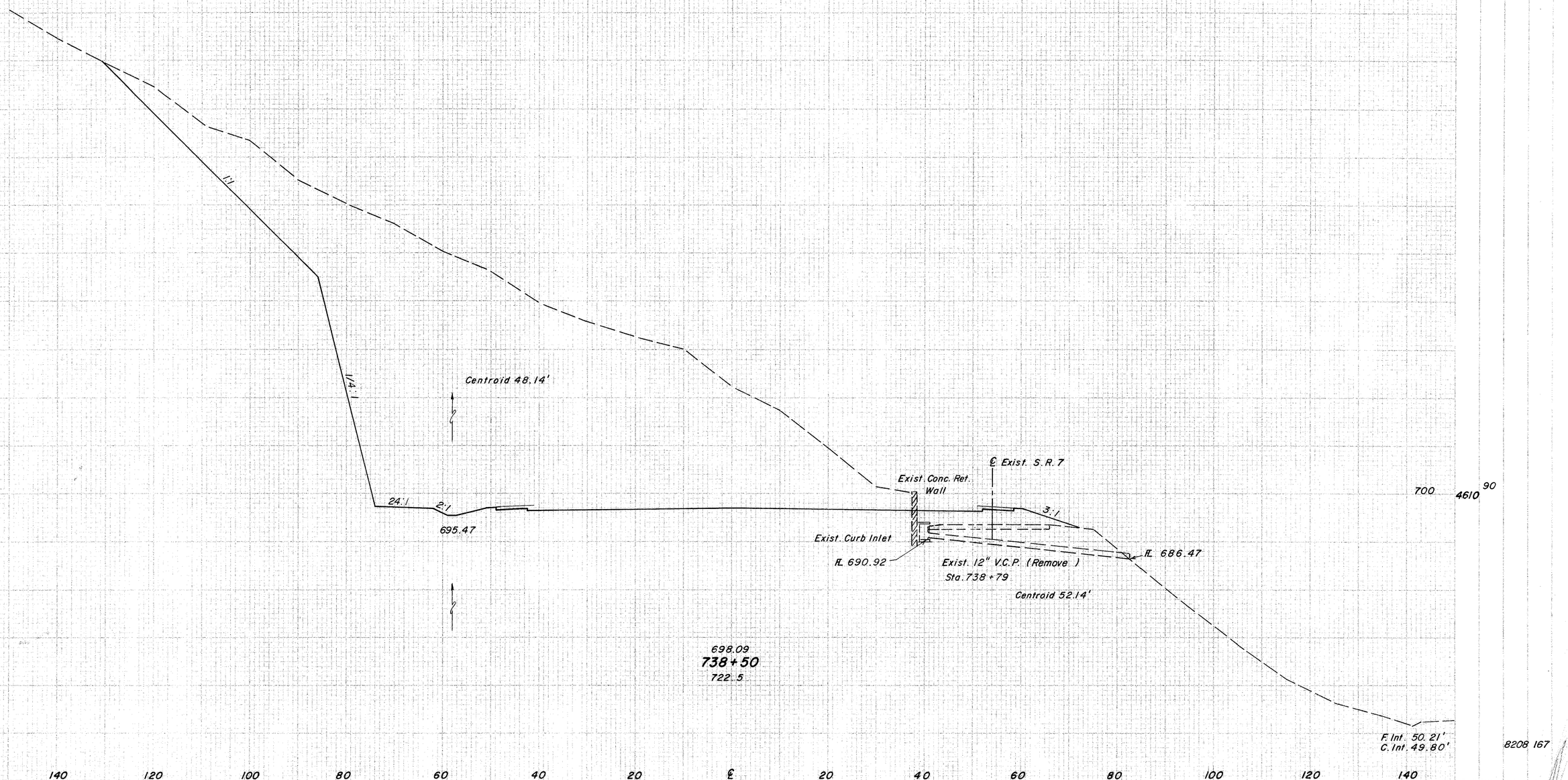
FHWA REGION	STATE	PROJECT	
5	OHIO		

121
443

BEL - 7 - 11.89

Revised by JS. 8/76 Checked by AWL 1-77

ENG AREA		VOLUME	
CUT	FILL	CUT	FILL



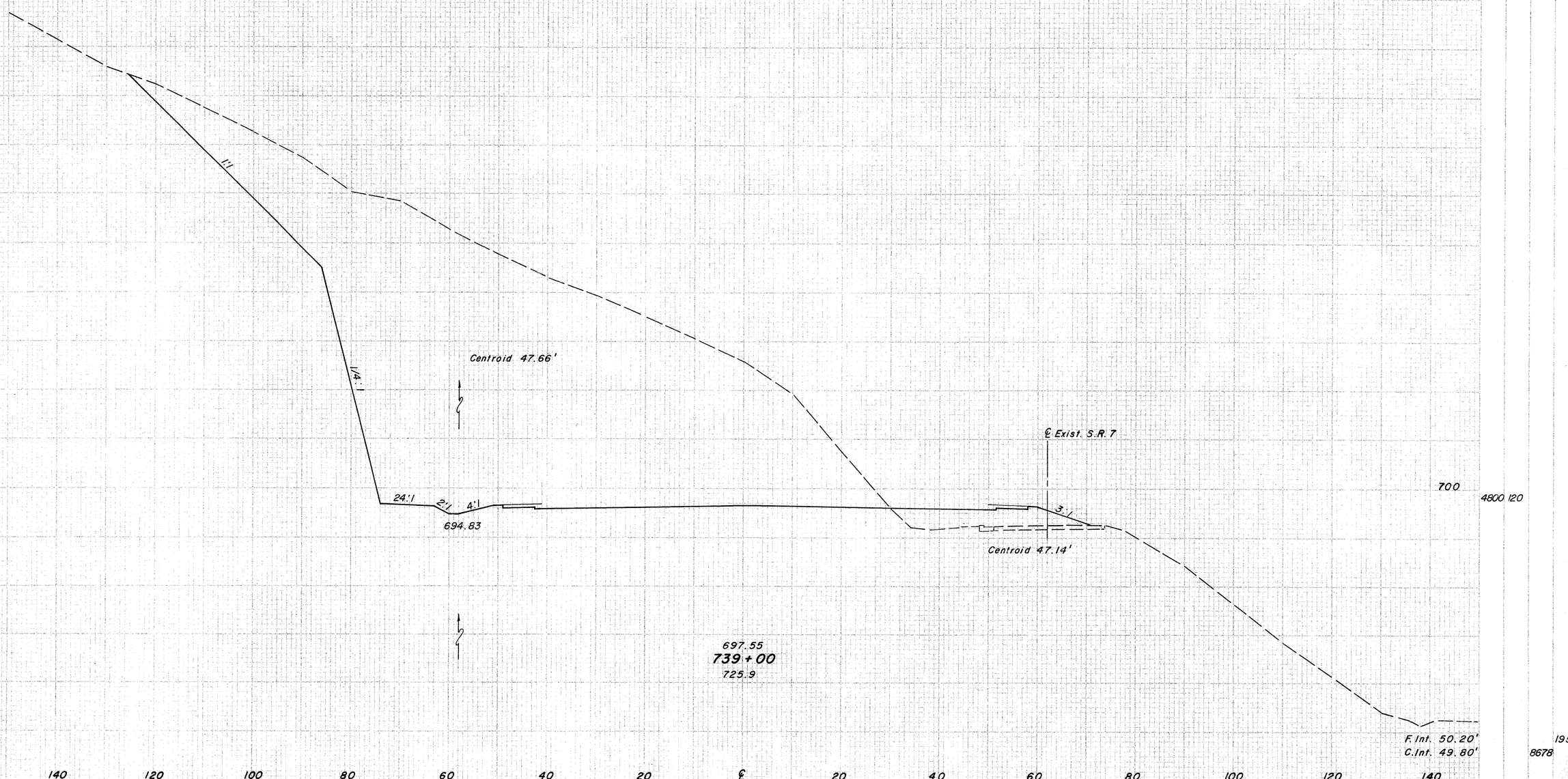
SECTIONS

END AREA		VOLUME	
CUT	FILL	CUT	FILL

FHWA REGION	STATE	PROJECT	
5	OHIO		

122
443

BEL - 7 - 11.89



FHWA REGION	STATE	PROJECT	
5	OHIO		

BEL-7-11.89

123
943

SEEDING

SEED MIXTURE	SQ. YDS.

END AREA		SQUARE	
CUT	FILL	CUT	FILL

1:1

1.4:1

Centroid 44.48'

℄ Exist. S.R. 7

4810 100

700

51

24:1 2:1 4:1

694.29

3:1

Centroid 48.07'

278

697.01

739+50

726.9

F.Int. 50.19'

C.Int. 49.81'

121

8864

140 120 100 80 60 40 20 ℄ 20 40 60 80 100 120 140

Sta. 739+50

FHWA REGION 5 | OHIO

124
443

BEL-7-11.89

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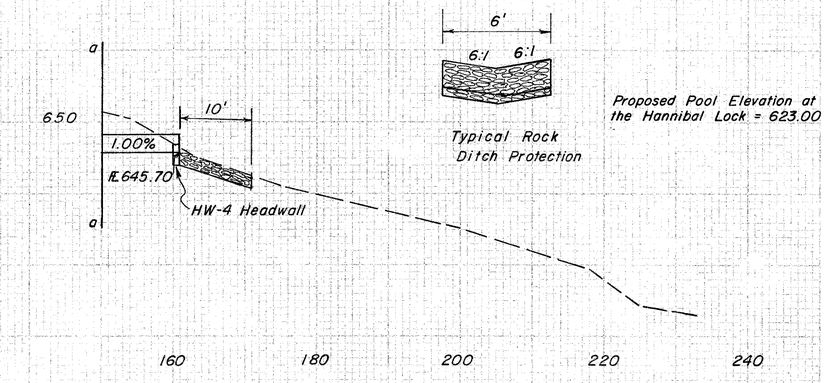


QUANTITIES

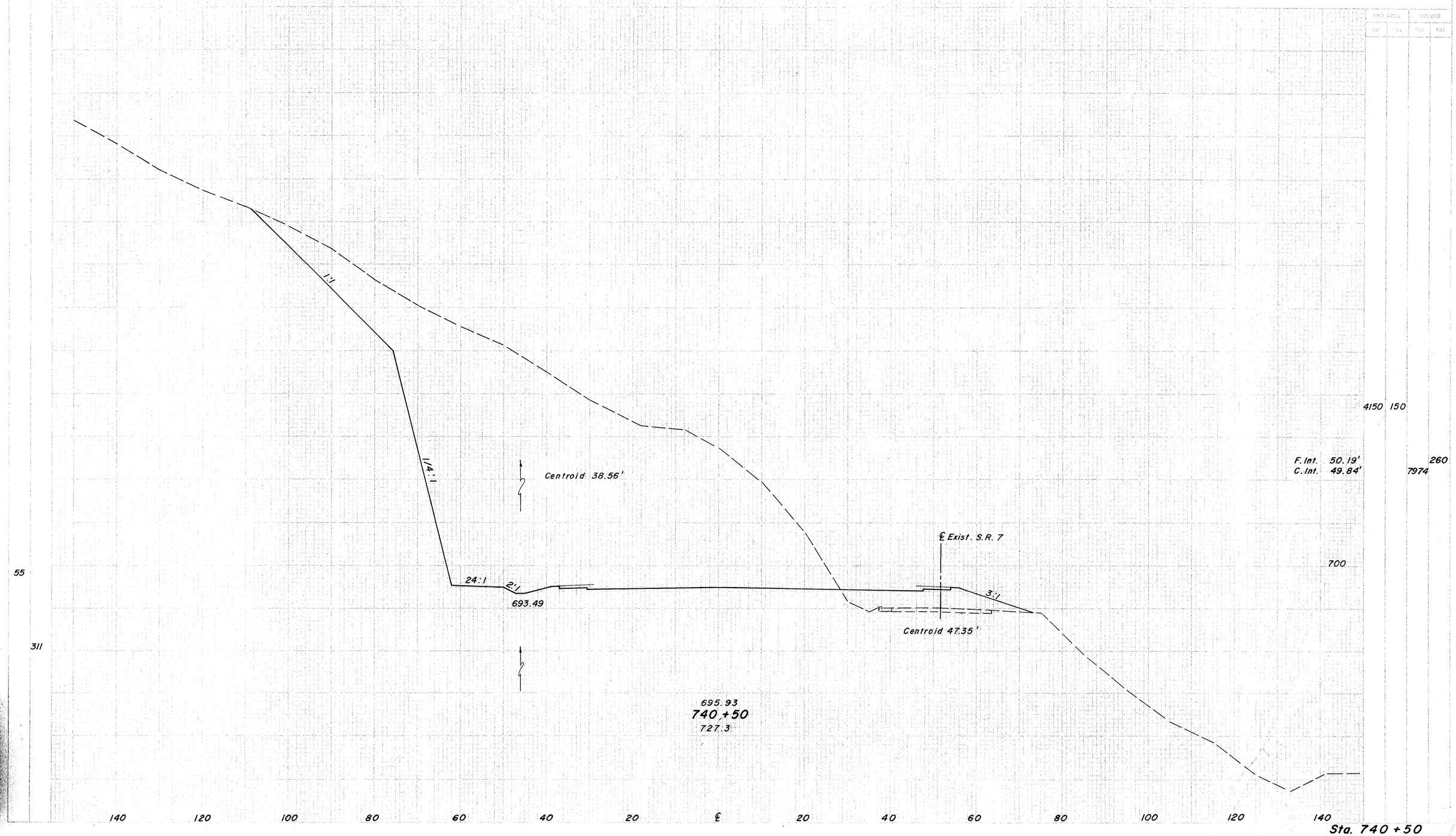
601	Rock Channel Protection Type B with Bedding	= 4.4 C.Y.		4490 130
602	Concrete Masonry	= 0.53 C.Y.		
603	27" Conduit Type B	= 111 L.F.		
603	27" Conduit Type F	= 82 L.F.		
603	27" Conduit Type A 706.02 3000 D-Load under Railroad	= 34 L.F.		
604	Std. No. 4 C.B.	= 1 Each	F. Int. 50.19'	130
	Bends & Branches	2 Each	C. Int. 49.82'	8580

Sta. 740+00

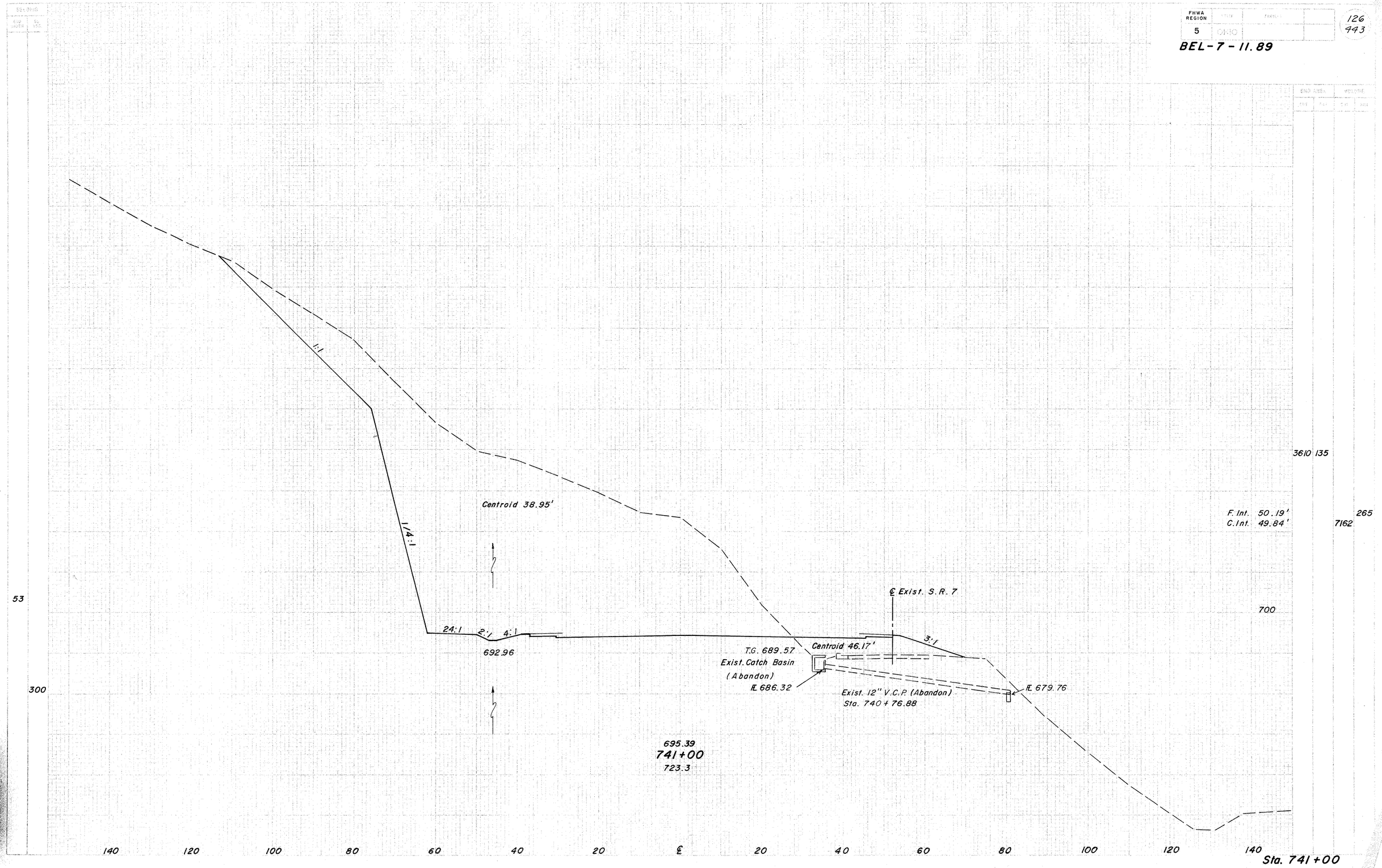
FHWA REGION	STATE	PROJECT	
5	OHIO		

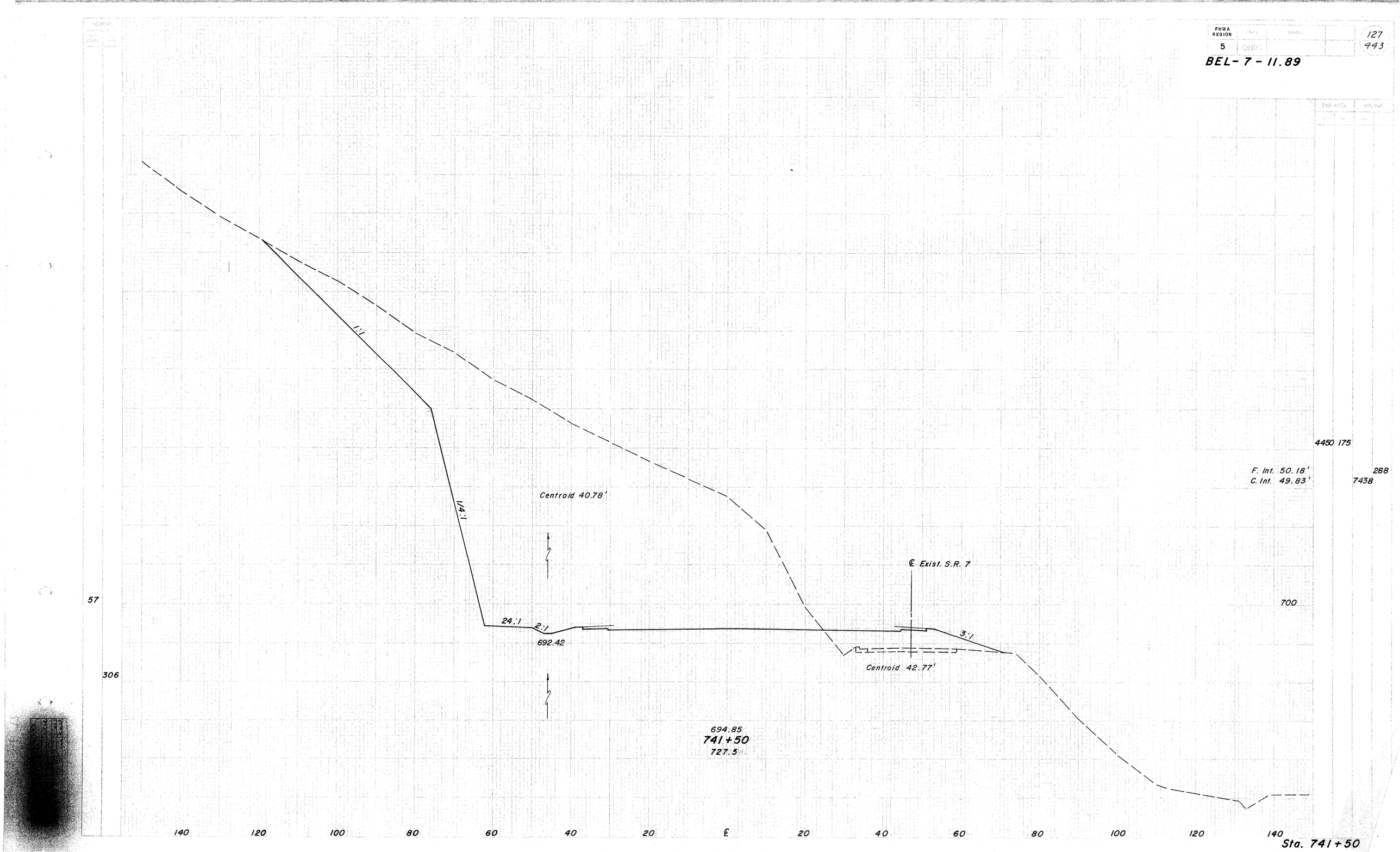
125
443

BEL - 7 - 11.89



Sta. 740 + 50


FHWA REGION
5
OHIO
BEL-7-11.89
126
443
3610 135
F. Int. 50.19'
C. Int. 49.84'
265
7162
700
53
300
1:1
1/4:1
Centroid 38.95'
24:1
2:1
4:1
692.96
℄ Exist. S.R. 7
3:1
Centroid 46.17'
T.G. 689.57
Exist. Catch Basin
(Abandon)
FL 686.32
Exist. 12" V.C.P. (Abandon)
Sta. 740 + 76.88
FL 679.76
695.39
741+00
723.3
140
120
100
80
60
40
20
℄
20
40
60
80
100
120
140
Sta. 741+00


FHWA REGION
5
127
443
BEL-7-11.89
1:1
1/4:1
Centroid 40.78'
24:1
2:1
692.42
℄ Exist. S.R. 7
3:1
Centroid 42.77'
694.85
741+50
727.5
4450 175
F. Int. 50.18'
C. Int. 49.83'
288
7438
57
700
306
140
120
100
80
60
40
20
℄
20
40
60
80
100
120
140
Sta. 741+50

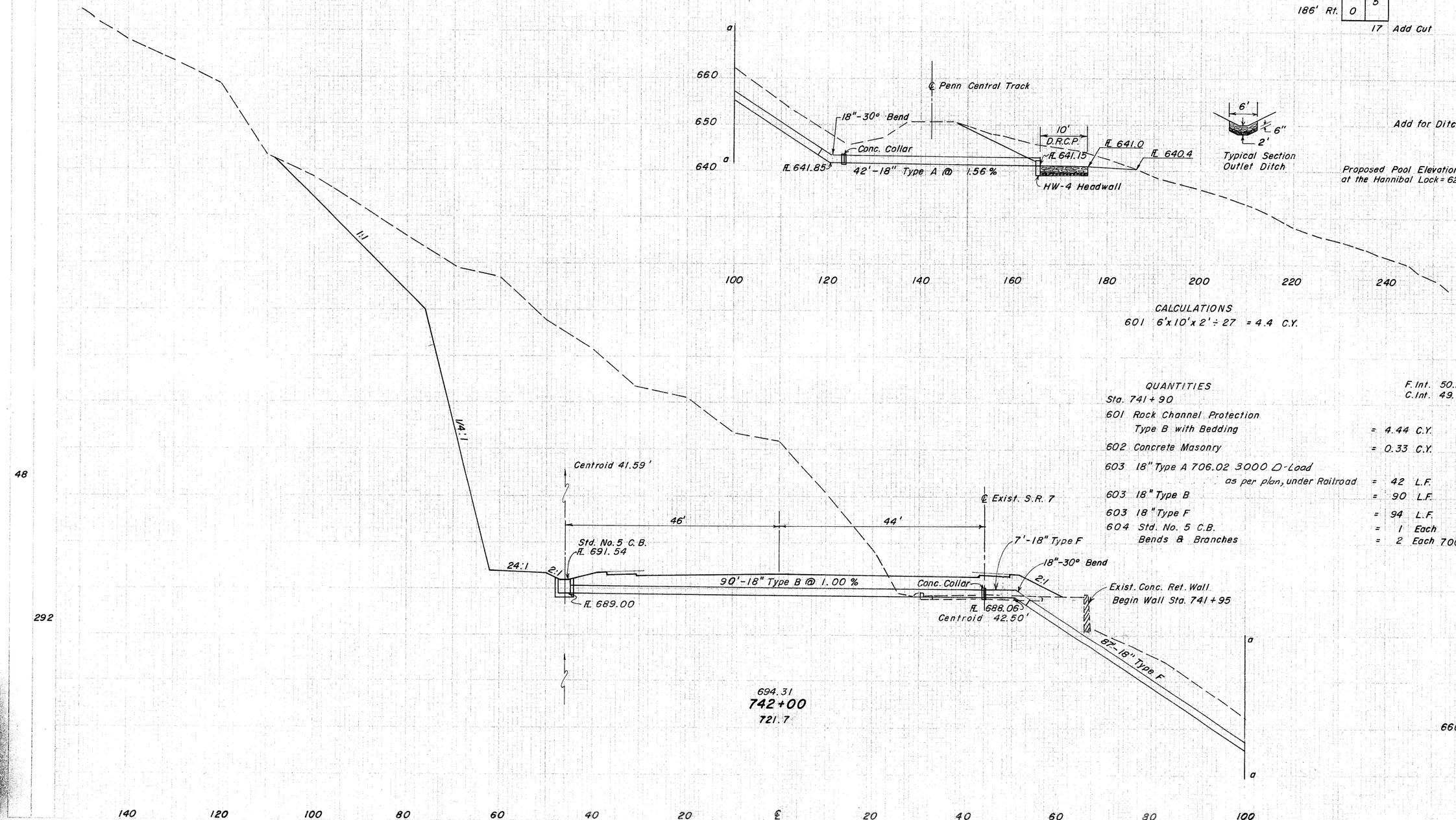
FHWA REGION			
5	OHIO		

128
443

BEL - 7 - 11.89

Revised by J.S. 8/76 Checked by AWL 1-77

Ditch	EA.	VOL.
165.5' Rt.	49	12
174' Rt.	28	5
186' Rt.	0	
		17 Add Cut



Add for Ditch 17

Proposed Pool Elevation at the Hannibal Lock = 623.00

CALCULATIONS

601 6'x10'x2' ÷ 27 = 4.4 C.Y.

3830 130

F. Int. 50.17'
C. Int. 49.83'

283
7641

QUANTITIES

Sta. 741+90

601	Rock Channel Protection Type B with Bedding	= 4.44 C.Y.
602	Concrete Masonry	= 0.33 C.Y.
603	18" Type A 706.02 3000 ⌀-Load as per plan, under Railroad	= 42 L.F.
603	18" Type B	= 90 L.F.
603	18" Type F	= 94 L.F.
604	Std. No. 5 C.B.	= 1 Each
	Bends & Branches	= 2 Each

700

660

Sta. 742+00

FHWA REGION	STATE	PROJECT	
5	OHIO		

129
943

BEL - 7 - 11.89

Revised by J.S. 8/76 Checked by AWL 1-77

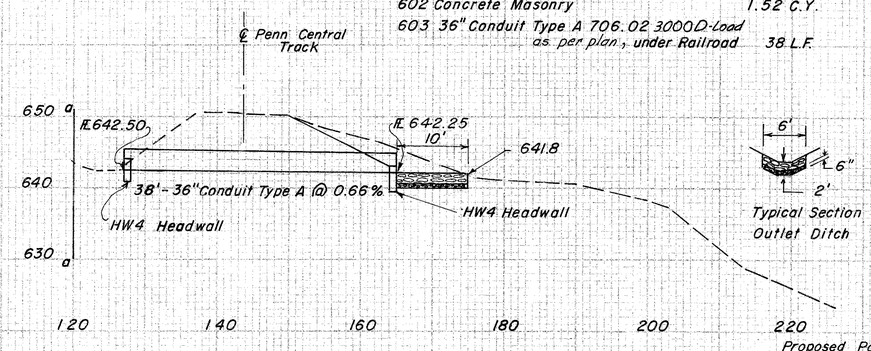
END AREA		VOLUME	
CUT	FILL	CUT	FILL

CALCULATIONS

601 6'x10'x 2' ÷ 27 = 4.4 C.Y.

QUANTITIES

601 Rock Channel Protection with bedding	4.44 C.Y.
602 Concrete Masonry	1.52 C.Y.
603 36" Conduit Type A 706.02 3000D-Load as per plan, under Railroad	38 L.F.



Add for Ditch

4

43

253

3540 130

F. Int. 50.16'
C. Int. 49.82'

242

6800

700

SLEDDING

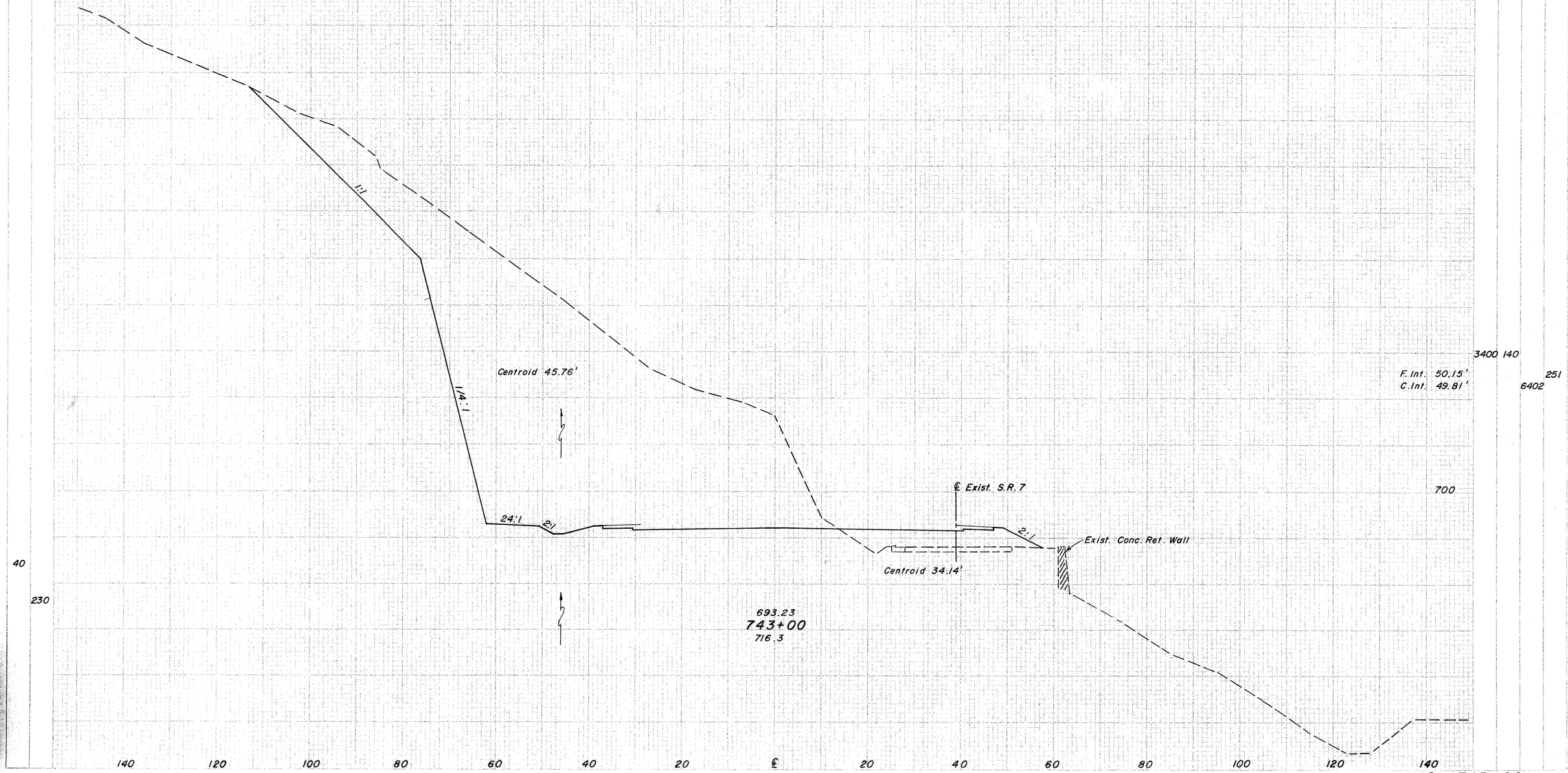
CUT	FILL

FHWA REGION	STATE	PROJECT	
5	OHIO		

130
443

BEL-7-11.89

END AREA		VOLUME	
CUT	FILL	CUT	FILL



SEEDING

LIME TONS	10-20-20 LBS.

FHWA REGION	STATE	PROJECT	
5	OHIO		

131
443

BEL-7-11.89

END AREA		VOLUME	
CUT	FILL	CUT	FILL

1:1

1.4:1

Centroid 43.91'

24:1 2:1 4:1

2:1

℄ Exist. S.R. 7

Exist. Curb Inlet

℄ 684.88

Centroid 31.76'

Exist. 12" V.C.P. (Plug & Abandon)

Sta. 743 + 22.59

Exist. Conc. Ret. Wall

℄ 682.77

692.69

743+50

716.5

F. Int. 50.13'

C. Int. 49.81'

3650 140

260

6503

700

41

225

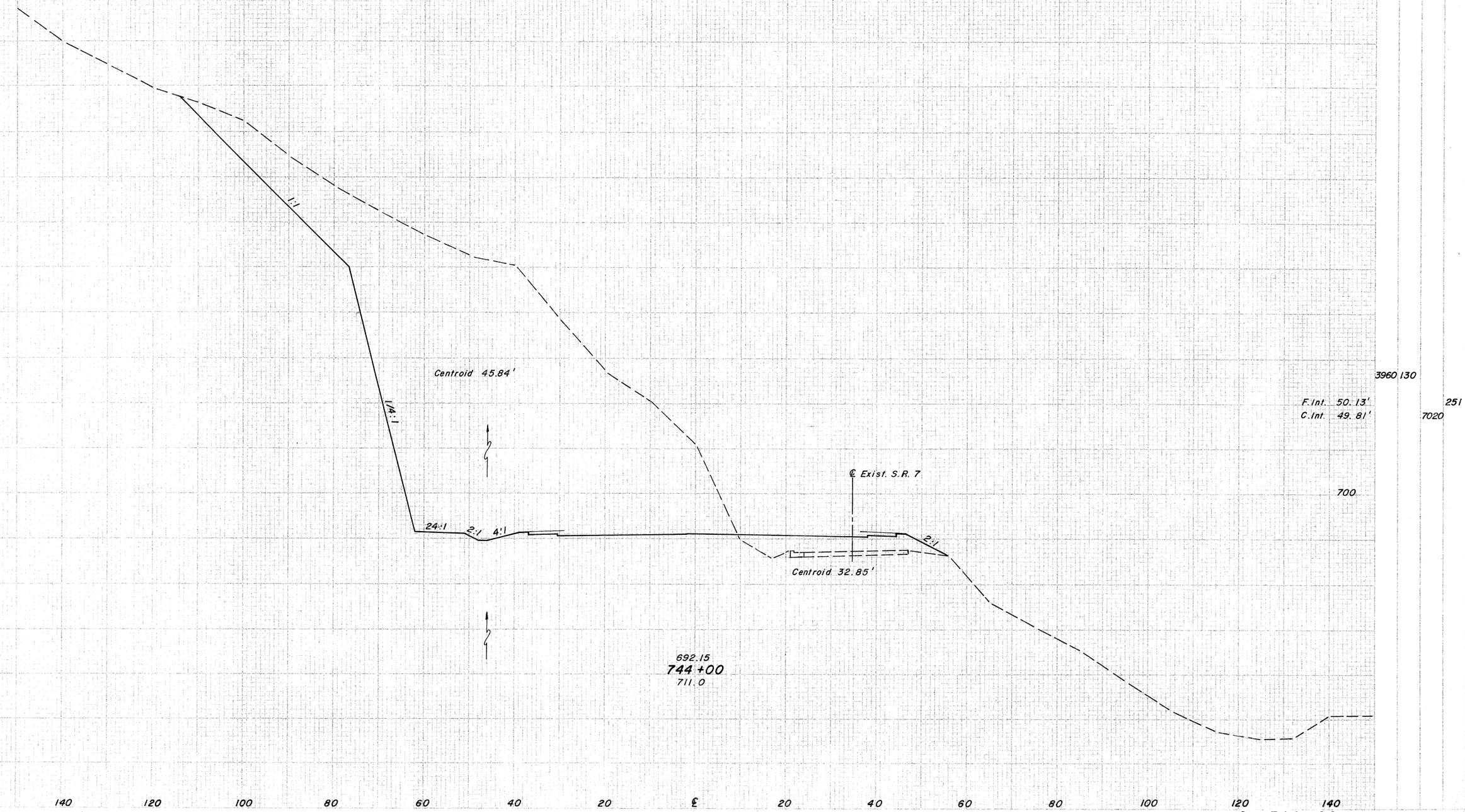
140 120 100 80 60 40 20 ℄ 20 40 60 80 100 120 140

Sta. 743 + 50

FHWA REGION	STATE	PROJECT	
5	OHIO		

132
443

BEL-7-11.89



Sta. 744+00

FHWA REGION 5

133
943

BEL - 7 - 11.89

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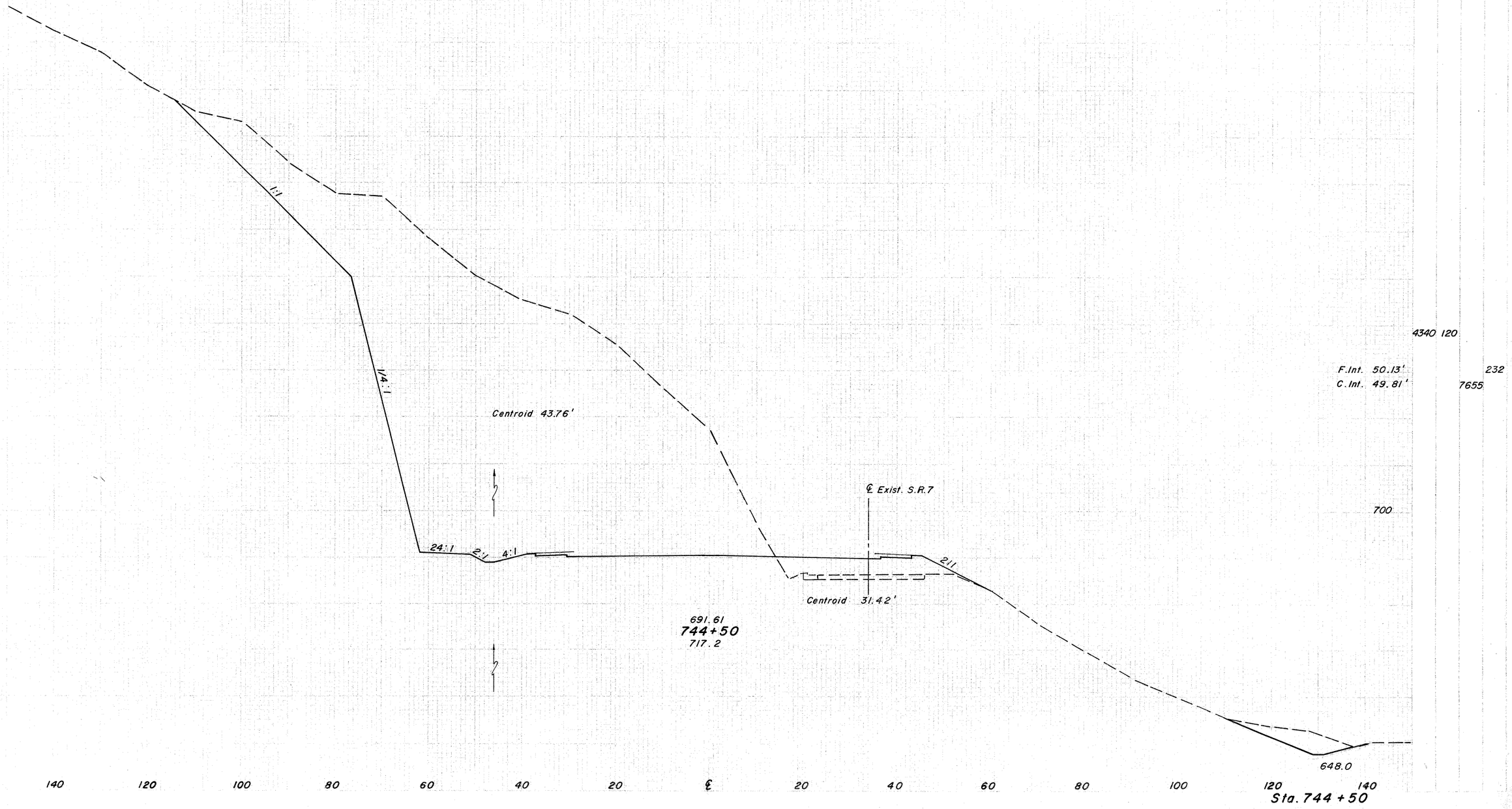

FHWA REGION	STATE	PROJECT	
5	OHIO		

134
443

BEL-7-11.89

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	E.A.	VOL.
1+65	24	7
1+77	11	1
1+79.5	0	

8 Add Cut

644.52
1+77
646.1

644.64
1+65
647.8

8

RCP = [(40'x6'x2') + (9'x8'x2)] ÷ 27 = 23 C.Y.

Riprap = [12'(16'+11')÷2+2.5'(11'+2')÷2]÷9 = 20 S.Y.

Note: The Contractor shall remove one section of existing concrete slab & replace the slab to conform to the existing slope and proposed outlet ditch. Cost will be included in the unit price bid for Item 601 Riprap.

Ditch

	EA.	VOL.
+89.5	4	3
1+04	6	12
1+14	64	40
1+26	120	13
1+29.5	83	

68 Add Cut

Ditch

68

92 Add for Ditch

650
640

a a

℄ Penn. Central Track

HW 4 Headwall

601 Riprap

22'

36'-24" Type A @ 1.00%

℄ 645.00

℄ 644.64

Proposed Pool Elevation at the Hannibal Lock = 623.00

Conc. slab

100 120 140 160 180 200

10'

645.0
1+29.5
651.00

QUANTITIES

601	Riprap (using 6" reinf. conc. slab)	= 20 S.Y.
601	Rock Channel Protection Type B with Bedding	= 23 C.Y.
602	Concrete Masonry	= 0.9 C.Y
603	24" Conduit Type A 706.02 3000 D-Load as per plan, under Railroad	= 36 L.F.
603	24" Conduit Type B	= 87 L.F.
603	24" Conduit Type F	= 54 L.F.
604	Std. No. 4 Catch Basin	= 1 Each
	Bends & Branches	= 2 Each

(*) 3000 D-Load

3970 145

246

7667

10'

F. Int 50.12'
C. Int 49.82'

645.04
1+26
652.2

6"

653.04
1+14
658.5

690

659.71
1+04
660.5

6'

2'

663.35
0+89.5
664.0

114:1

Centroid 44.58'

℄ S.R.7

47'

℄ Exist. S.R.7

Centroid 30.83'

Concrete Collar

5'-24" Type F

40° Bend

℄ 688.19

24:1

2:1

4:1

℄ 684.90

87'-24" Type B @ 1.00%

Exist. Inlet ℄ 12" 683.34

℄ 683.97

℄ 680.41

1.5:1

Exist. 12" V.C.P. (Remove)
Sta. 744+98.02

37'-24" Type F

40° Bend

℄ 663.50

℄ 663.35

HW-4 Headwall

12'-24" Type F
@ 1.50%

2'

691.07
745+00
707.3

28

219

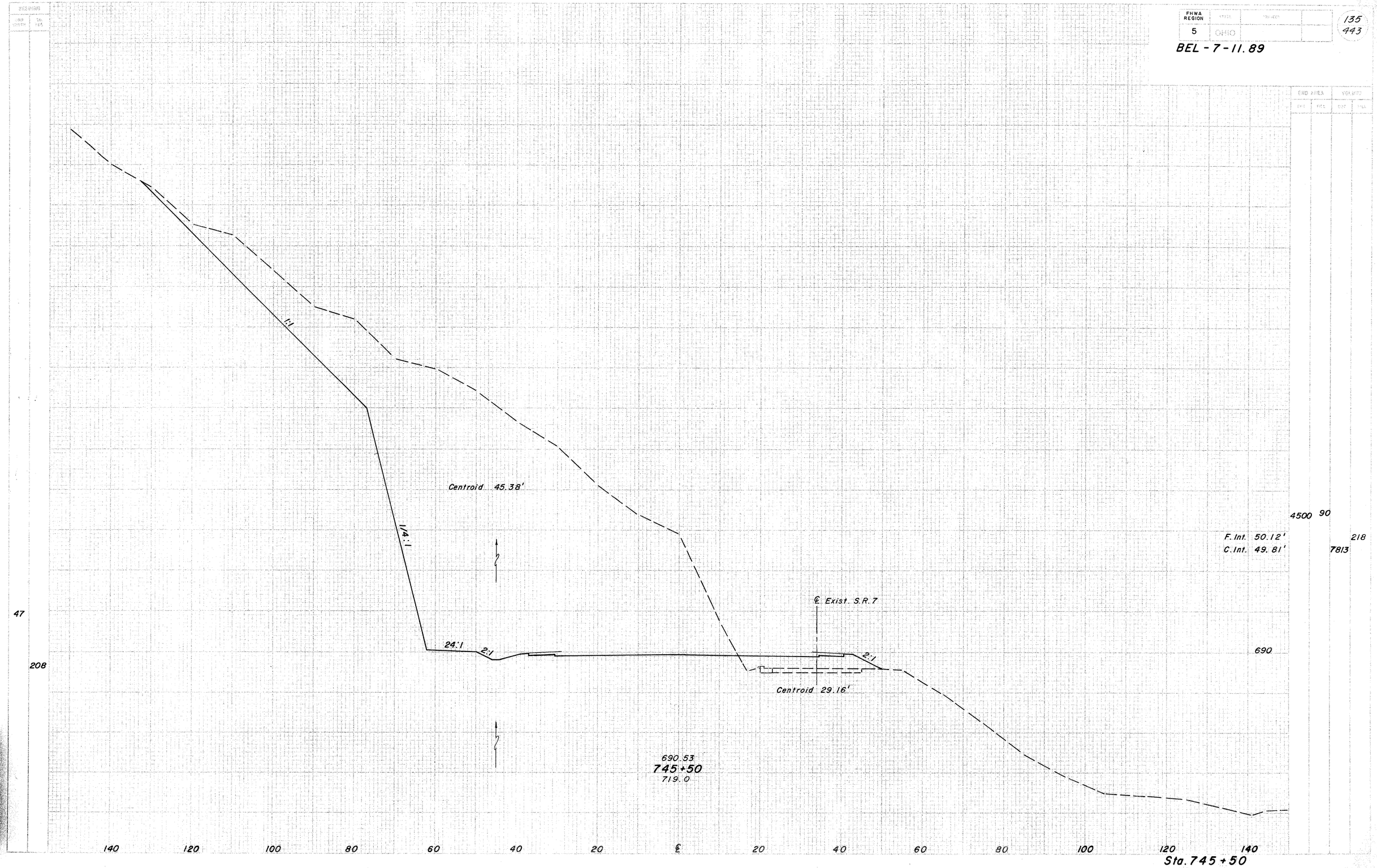
140 120 100 80 60 40 20 ℄ 20 40 60 80 100 120 140

Sta. 745+00

FHWA REGION	STATE	PROJECT	
5	OHIO		

135
443

BEL - 7 - 11.89

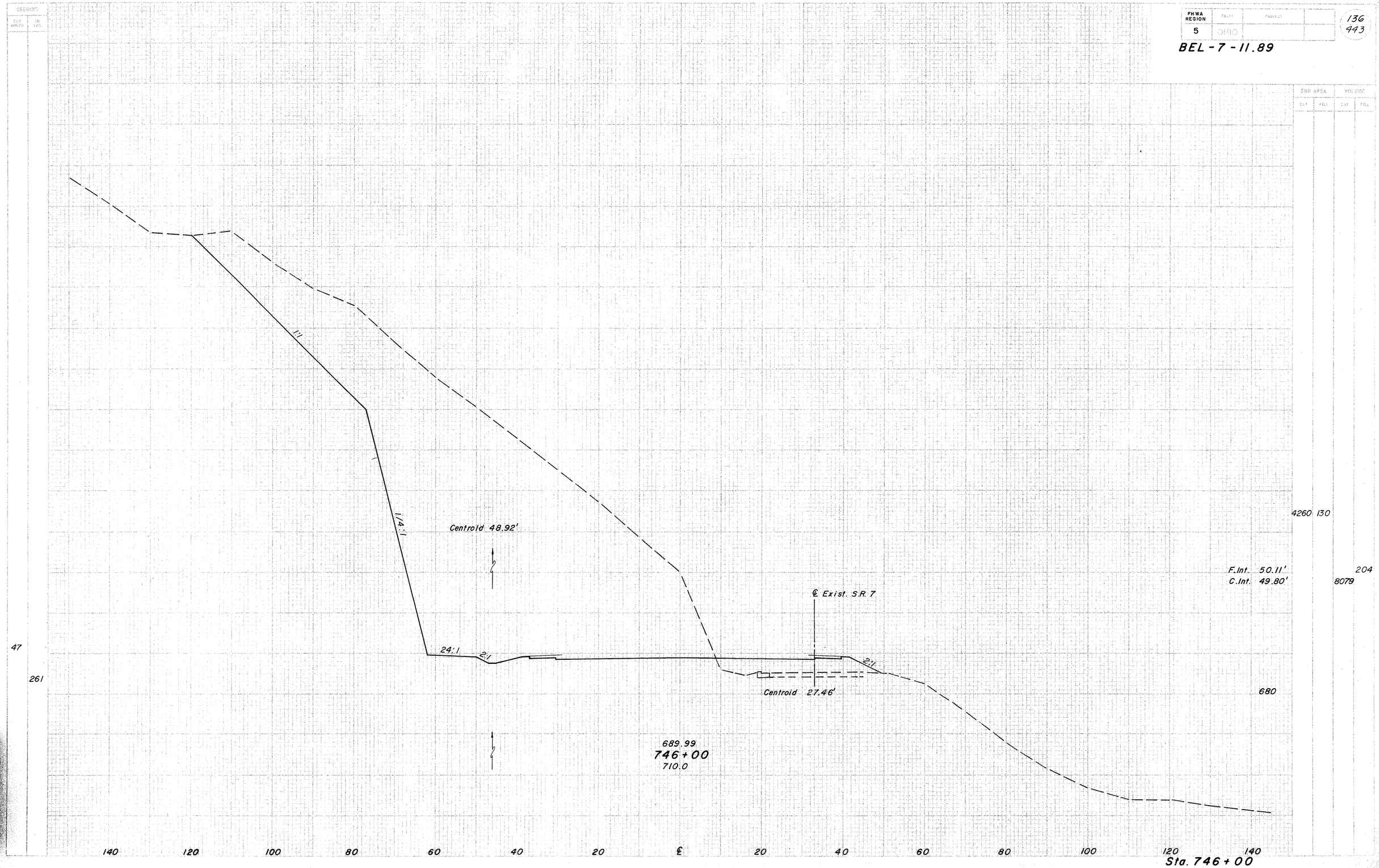


Sta. 745+50

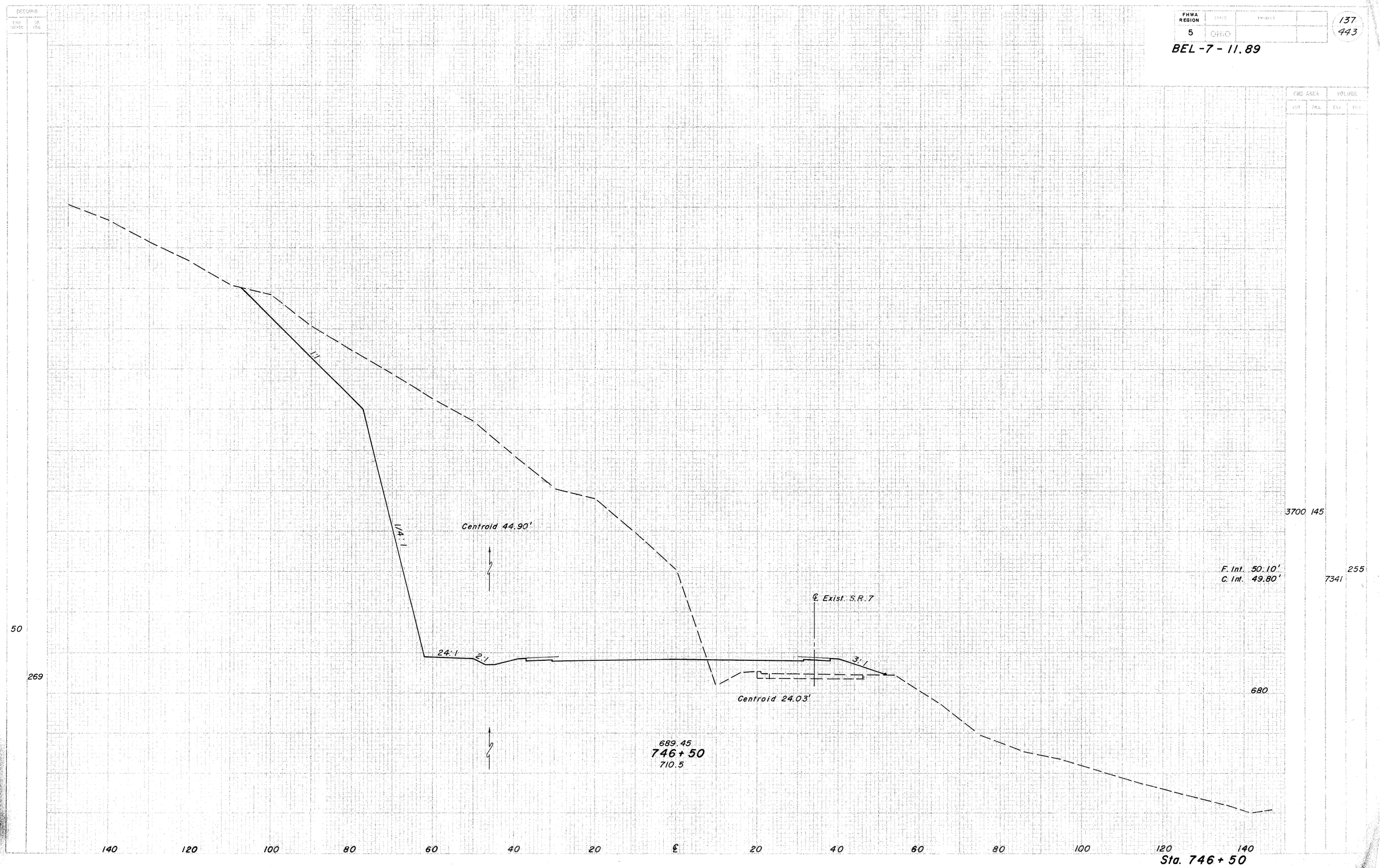
FHWA REGION	STATE	PROJECT	
5	OHIO		

136
443

BEL-7-11.89



Sta. 746+00


FHWA REGION
5
OHIO
137
443
BEL-7-11.89
END AREA
VOLUME
CUT
FILL
3700 145
255
7341
F. Int. 50.10'
C. Int. 49.80'
50
269
680
Centroid 44.90'
1/4:1
24:1
2:1
3:1
℄ Exist. S.R. 7
Centroid 24.03'
689.45
746+50
710.5
140
120
100
80
60
40
20
℄
20
40
60
80
100
120
140
Sta. 746+50

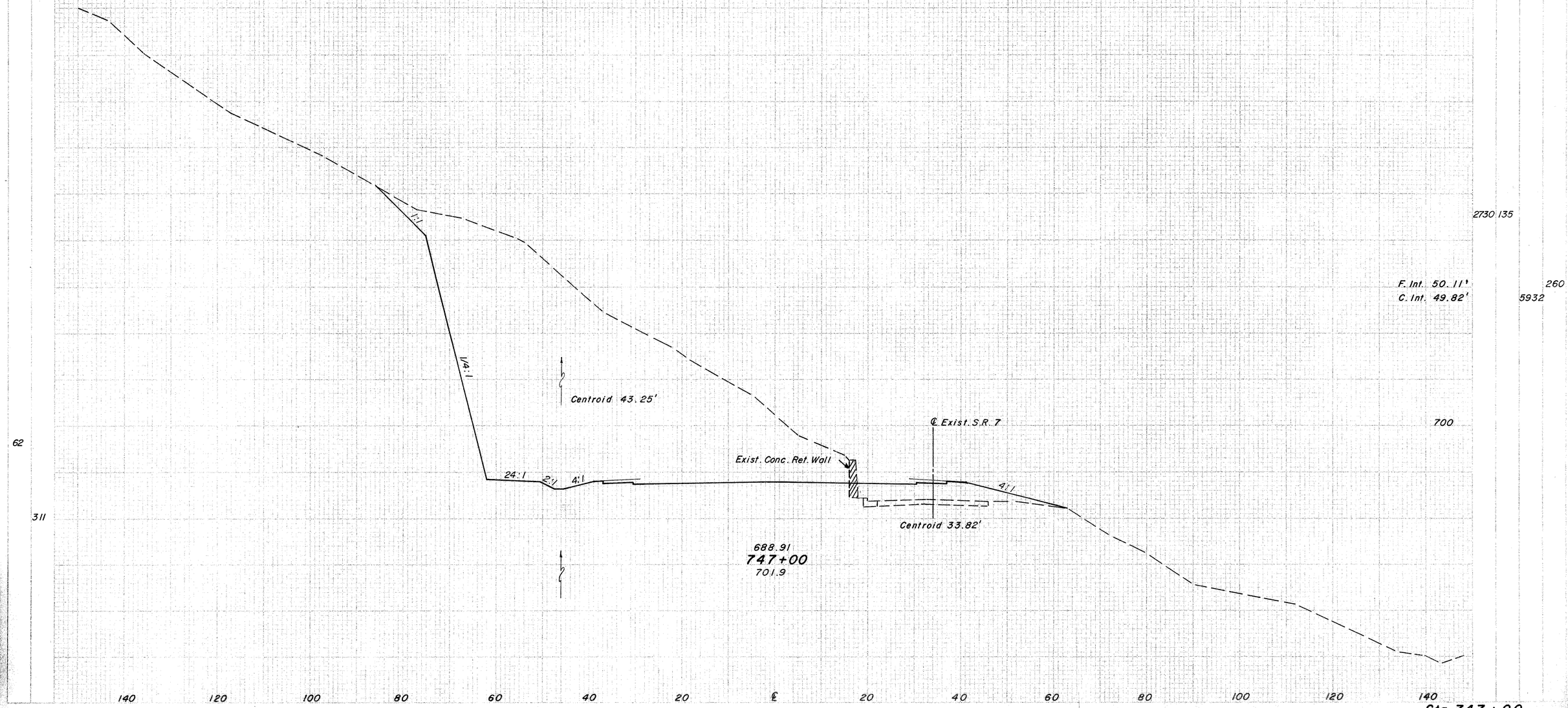
FHWA REGION	STATE	PROJECT	
5	OHIO		

138
443

BEL - 7 - 11.89

LAND AREA		VOLUME	
CUT	FILL	CUT	FILL

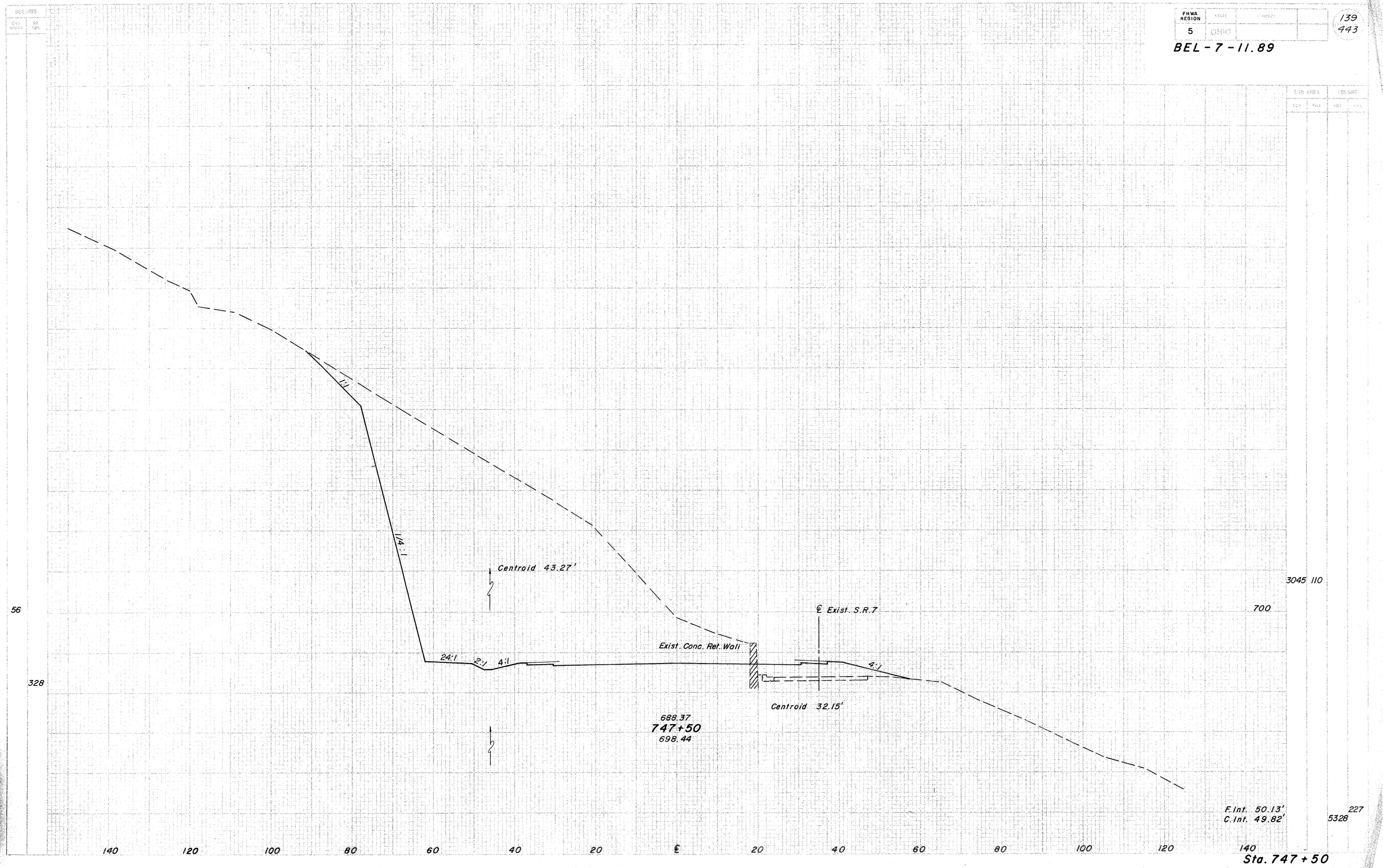
2730 135



FHWA REGION	STATE	PROJECT	
5	OHIO		

139
443

BEL-7-11.89



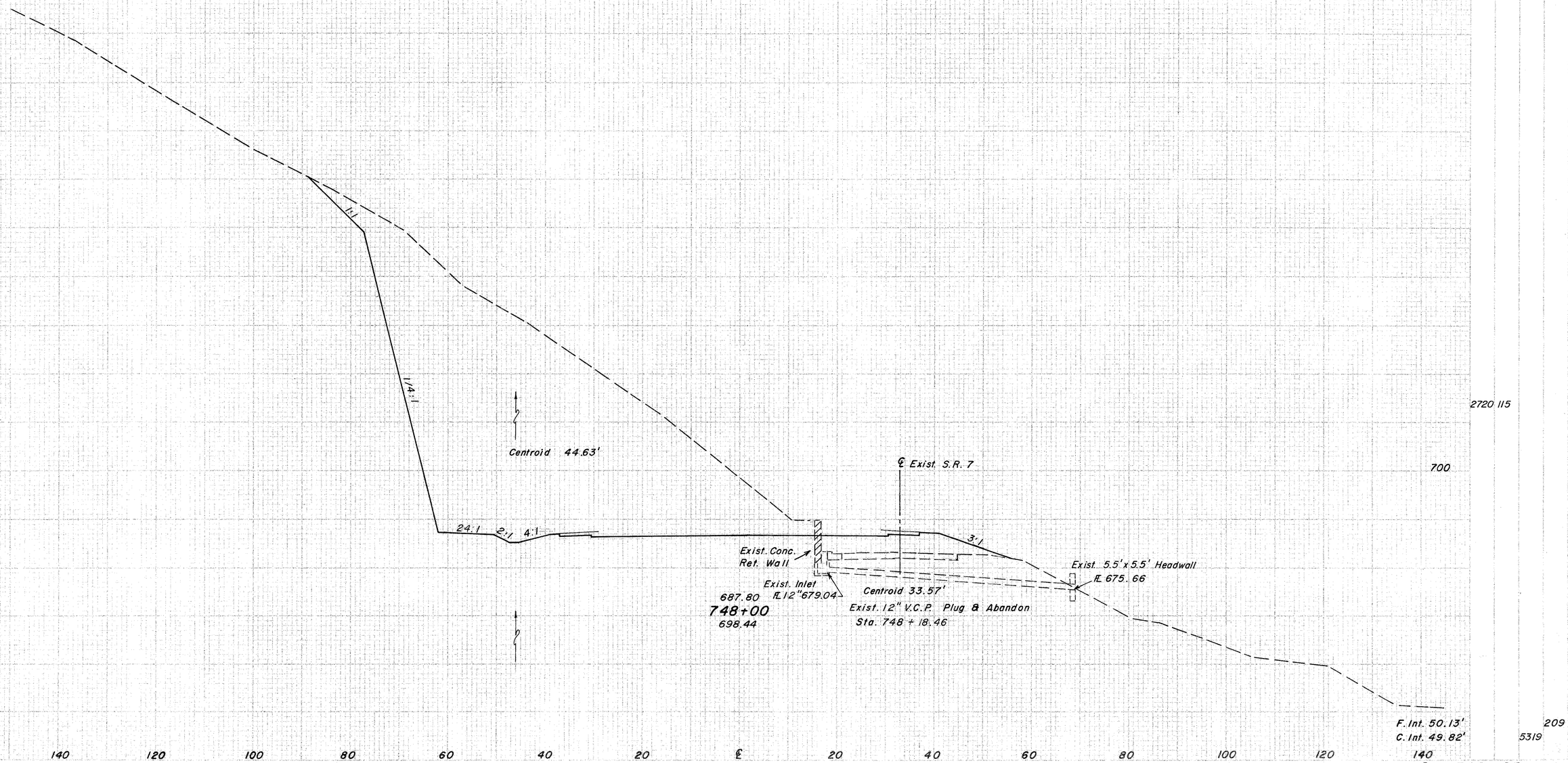
Sta. 747+50

FHWA REGION	STATE	PROJECT	
5	OHIO		

140
443

BEL-7-11.89

END AREA		VOLUME	
CUT	FILL	CUT	FILL



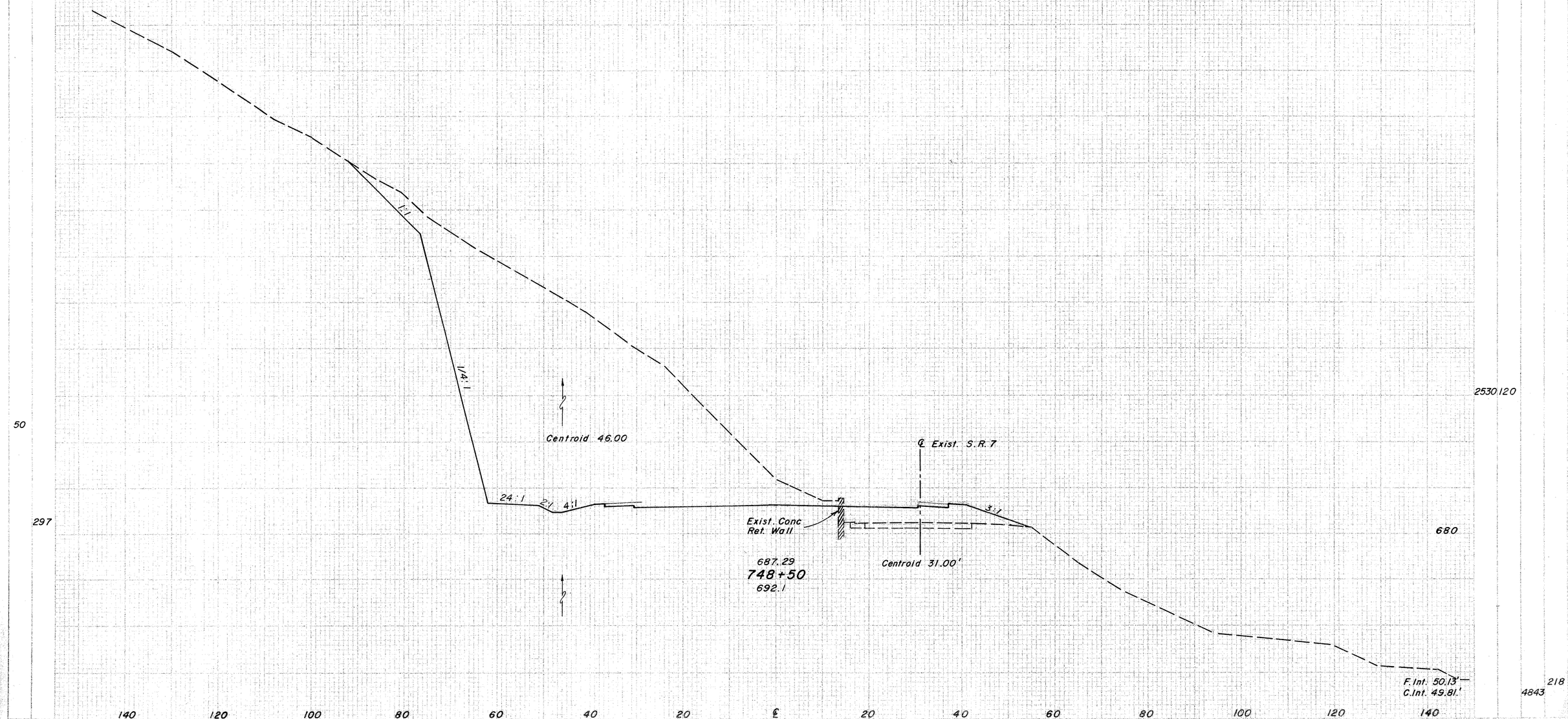
SEEDING	
SPD. WATER	NO. YDS.

FHWA REGION	STATE	PROJECT	
5	OHIO		

141
443

BEL-7-11.89

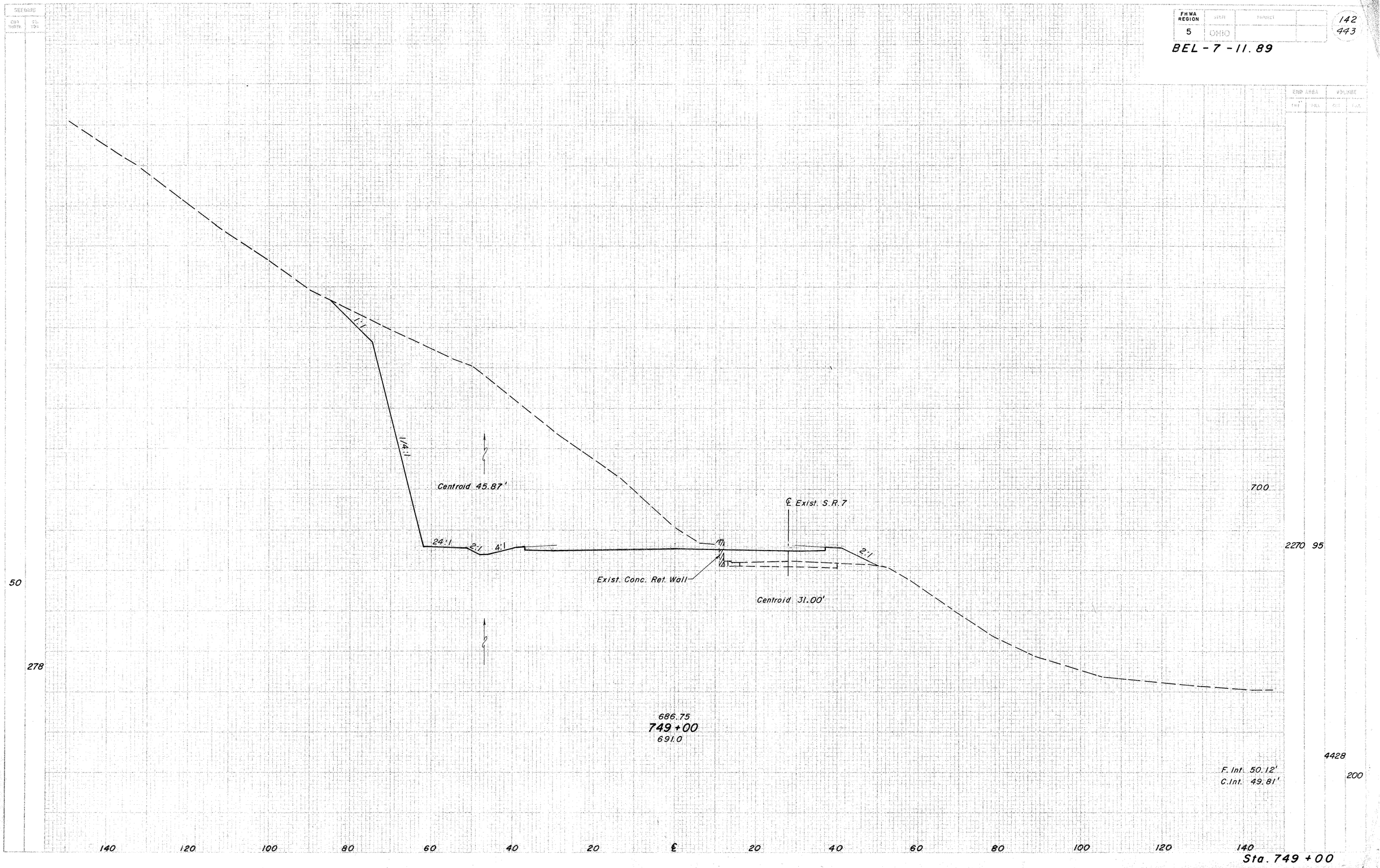
GRD AREA		SQ. UNIT	
CUT	FILL	CUT	FILL



FHWA REGION	STATE	PROJECT	
5	OHIO		

142
443

BEL-7-11.89



Sta. 749+00

FHWA REGION 5 | STATE OHIO | PROJECT

143
443

BEL - 7 - 11.89

Revised by J.S. 8/76 Checked by ANL 1-27

END AREA | VOLUME | CUT | FILL | CUT | FILL

170 Add for Ditch

645.0
1 + 53
650.0

645.5
1 + 26
650.2

658.44
1 + 00
660.0

659.49
+ 94
661.0

Ditch

	EA	VOL
+94	20	4
1+00	12	36
1+26	62	66
1+53	70	

106 Add Cut

℄ Track

℄ 644.85

℄ 644.33
644.25

S = 2.00%

26'-27" Type A

60' Riprap using 6" reinforced concrete slab. (see Std. Dwg. HW-4)

HW-4 Headwalls

Proposed Pool Elevation at the Hannibal Lock = 623.00

640
630

160 180 200 220 240

Add for Ditch 106

2:1 2' 4' 2' 2:1
18" 24"
TYPICAL DITCH SECTION

1:1

1.4:1

Centroid 46.89'

47' 4'

Exist. Conc. Ret. Wall

℄ Exist. S.R. 7

℄ Grate 683.77

24:1 2:1 4:1

℄ 679.60

27" Type B @ 1.68%

Conc. Collar (See Std. Dwg. MC 4)

Centroid 27.00'

℄ 678.06

43'-27" Type F

5'-27" Type F

2.5' Min. Cover

2:1

CALCULATIONS for 601 – 18" R.C.P.
63'x8.5'x2.0' ÷ 27 = 39.5 C.Y.
4.5'x5' ÷ 9 = 2.5 S.Y.

10'-27" Type F

℄ 658.45

658.39

S = 1.00%

℄ 658.50

HW-4 Headwall

2:1

645.39

2.00%

E. Int. 50.11'
C. Int. 49.81'

686.21
749+50
689.3

QUANTITIES

601	Rock Channel Prot. Type B W/Bedding	39.5 C.Y.
602	Concrete Masonry	1.59 C.Y.
603	27" Conduit Type B	89 L.F.
604	Std. No. 4 Catch Basin	1 Each
603	27" Conduit Type F	58 L.F.
603	27" Conduit Type A 706.02 3000 D. Load as per plan under R.R.	26 L.F.
601	Riprap (using 6" Rein. Conc. Slab)	2.5 S.Y.

90 389 690 1980 200 3920 274

140 120 100 80 60 40 20 ℄ 20 40 60 80 100 120 140

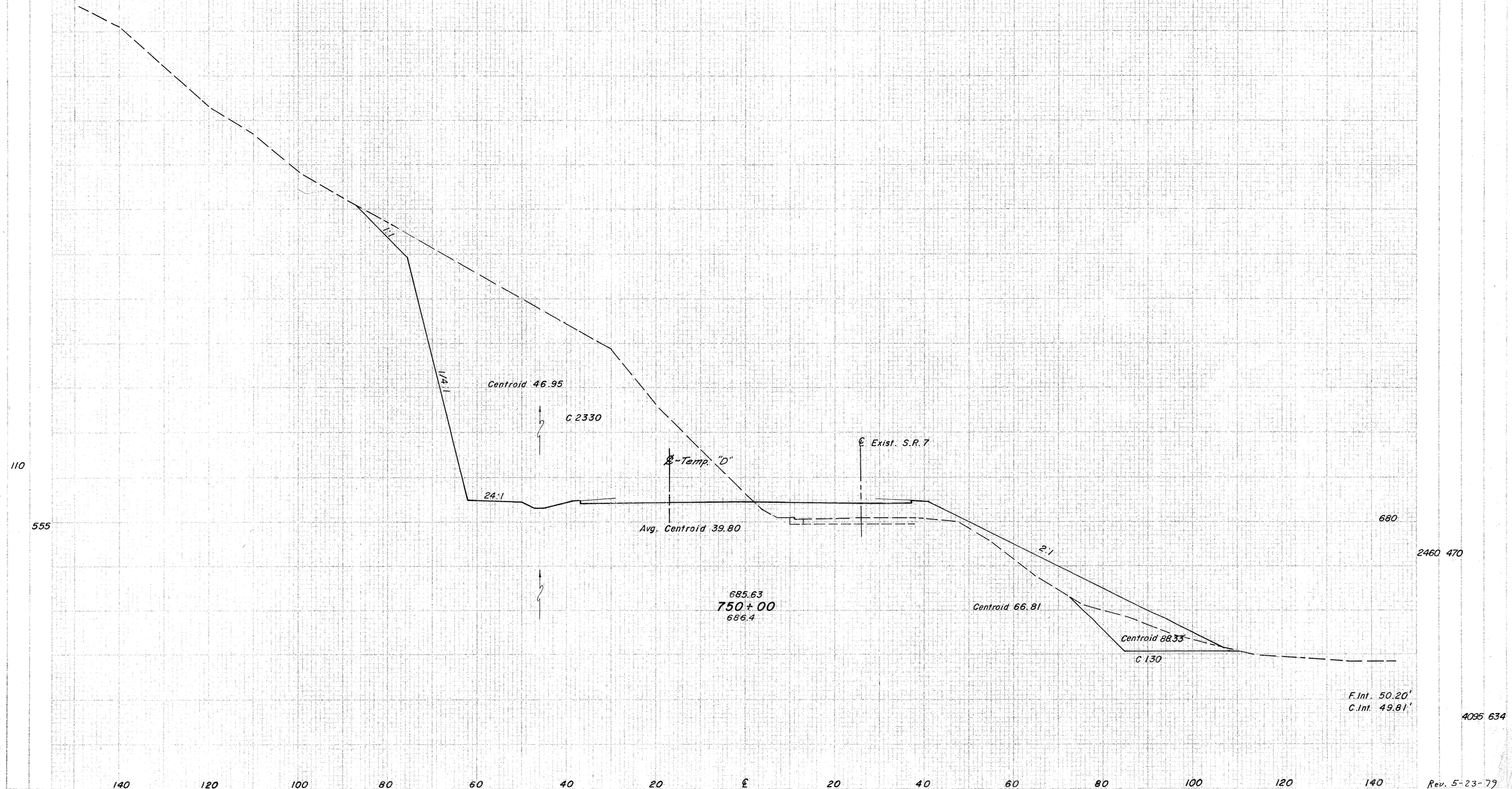
Sta. 749 +50

FHWA REGION	STATE	PROJECT	
5	OHIO		

144
443

BEL-7-11.89

END AREA		VOLUME	
CUT	FILL	CUT	FILL



Rev. 5-23-79

Sta. 750+00

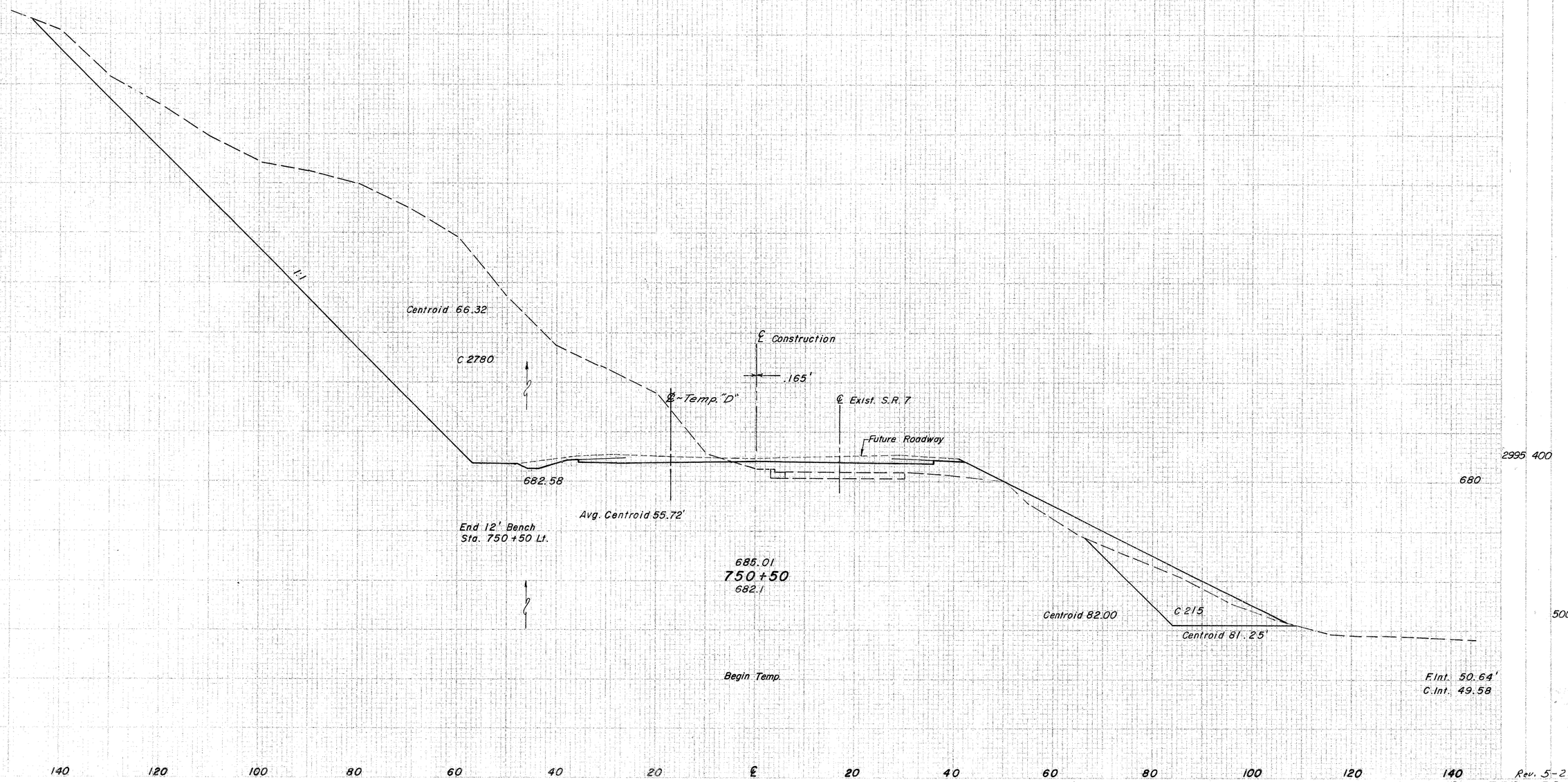
FHWA REGION	STATE	PROJECT	
5	OHIO		

145
443

BEL-7-11.89

Revised by J.S. 8/76 Checked by AWL 1-77

ENG. AREA		VOLUME	
CUT	FILL	CUT	FILL



Rev. 5-23-79

Sta. 750+50

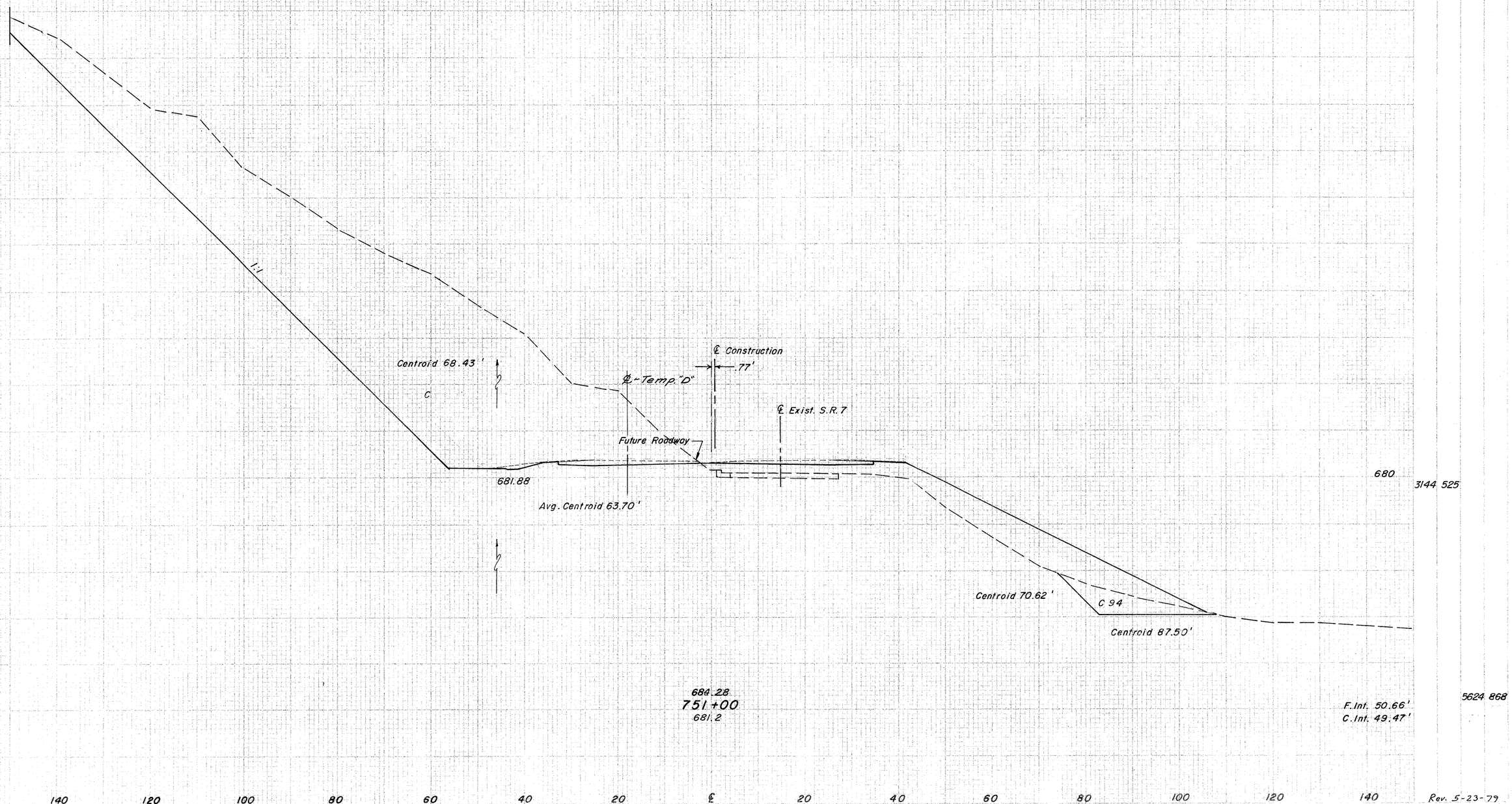
FHWA REGION	STATE	PROJECT	
5	OHIO		

146
443

BEL-7-11.89

Revised by J.S. 8/76 Checked by AWL 1-77

END AREA		VOLUME	
CUT	FILL	CUT	FILL



Rev. 5-23-79

Sta. 751+00

SEEDING

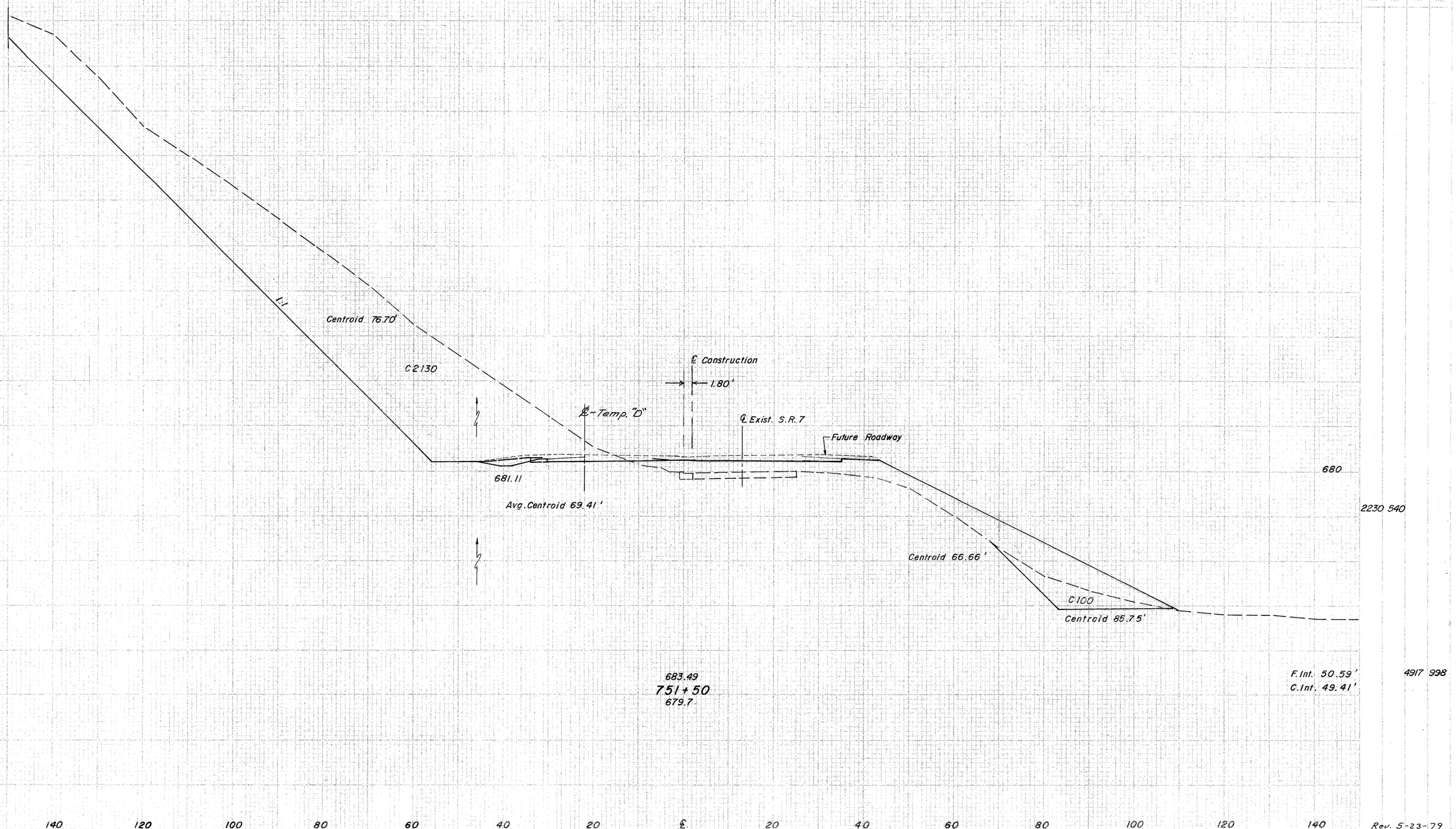
FHWA REGION	STATE	PROJECT	
5	OHIO		

147
943

BEL-7-11.89

Revised by J.S. 8/76 Checked by AWL 1-77

END AREA		VOLUME	
CUT	FILL	CUT	FILL



Rev. 5-23-79

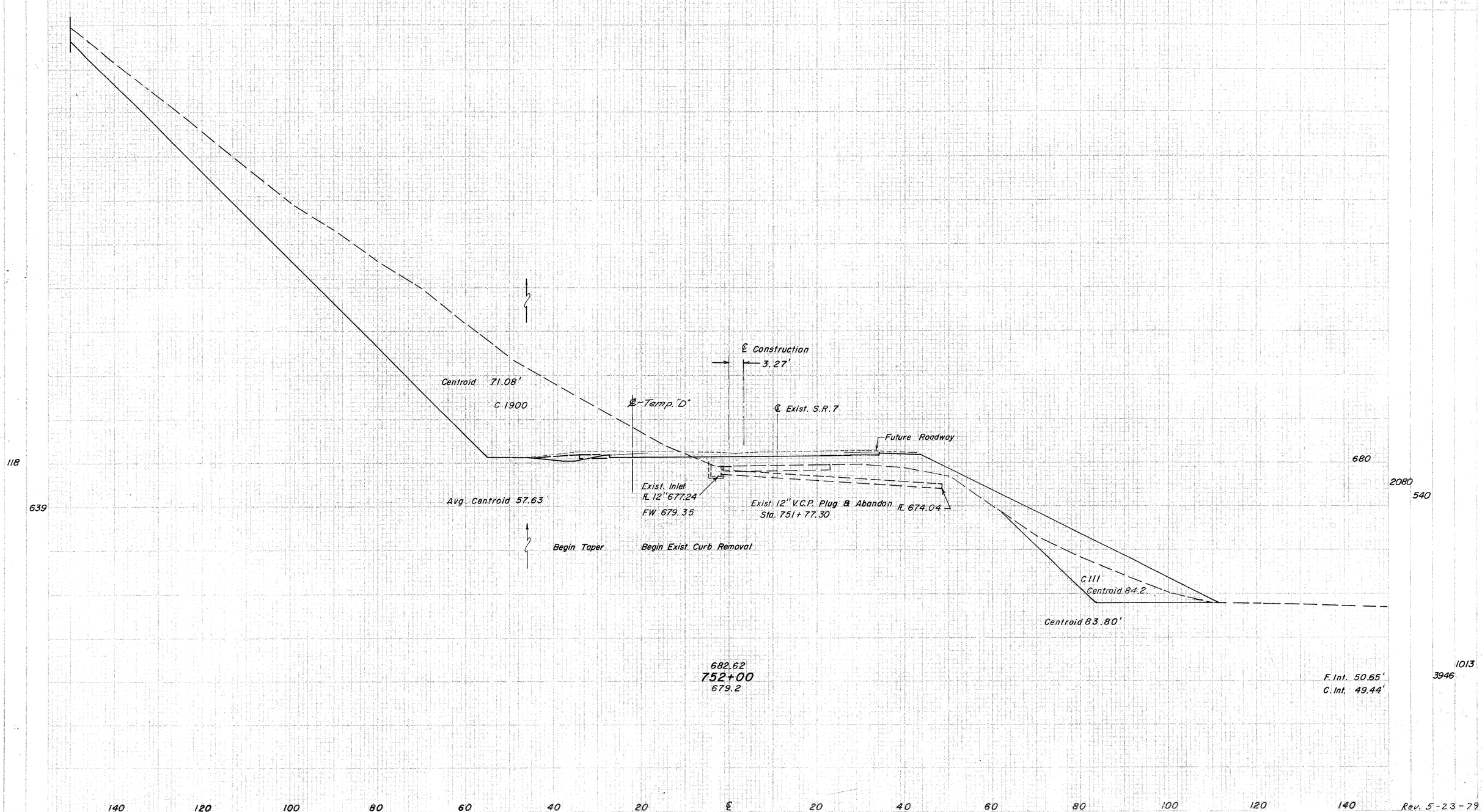
Sta. 751 + 50

FHWA REGION	STATE	PROJECT	
5	OHIO		

148
443

BEL - 7 - 11.89

Revised by J.S. 8/76 Checked by AWL 1-77



Rev. 5-23-79

Sta. 752+00

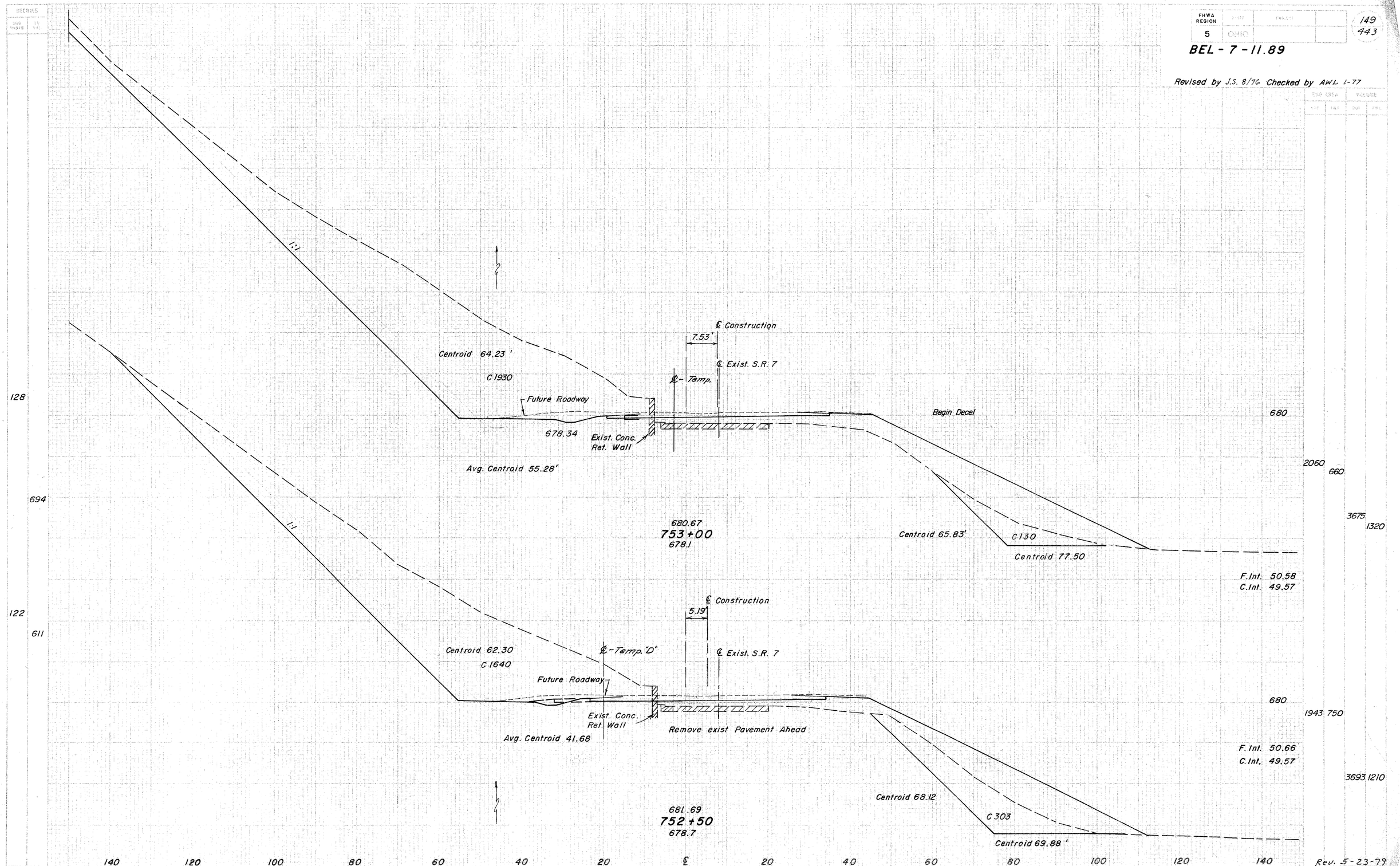
FHWA REGION	STATE	PROJECT	
5	OHIO		

149
443

BEL - 7 - 11.89

Revised by J.S. 8/76 Checked by AWL 1-77

END AREA		VOLUME	
CUT	FILL	CUT	FILL



Rev. 5-23-79

Sta. 752 + 50 to Sta. 753 + 00

FHWA REGION 5 | STATE OHIO | PROJECT

150
443

BEL - 7 - 11.89

Revised by J.S. 8/76 Checked by AWL 1-77

END PAVEMENT REMOVAL
STA. 754+00

℄ Construction
10.68'
℄ Exist. S.R. 7
℄ ~ Temp. "D"
46'
63'
1:1
Centroid 52.55'
Future Roadway
Exist. Conc. Ret. Wall
℄ Grate 674.03
2:1
℄ 670.70
112'-24" Type "B" @ 1.62%
End 8' Paved Shoulder
Lt. Begin Type 6 Curb
Centroid 55.90'
Conc. Collar
℄ 668.85
5'-24" Type F
37'-24" Type F
2:1
℄ 652.60
10'
℄ 652.55
651.8 ±
10-24" Type F @ 0.50%
HW-4 Headwall

678.29
754+00
676.6

CALCULATIONS
601 10'x6'x2' ÷ 27 = 4 C.Y.

QUANTITIES

601	Rock Channel Protection Type "B" with Bedding	= 44 C.Y.
602	Concrete Masonry	= 0.5 C.Y.
603	24" Conduit Type "B"	= 112 L.F.
603	24" Conduit Type "F"	= 52 L.F.
604	Std. No. 4 Catch Basin	= 1 Each
	Bends & Branches	2 Each

Proposed Pool Elevation at the Hannibal Lock = 623.00

F. Int. 50.55'
C. Int. 49.57'

℄ Construction
9.75'
℄ ~ Temp. "D"
℄ Exist. S.R. 7
Centroid 52.14'
C 1480
Future Roadway
Exist. Conc. Ret. Wall
676.90
Exist. Inlet
℄ 12" 673.30
Exist. 12" V.C.P. Plug & Abandon
Sta. 753+22.97
Avg. Centroid 46.19'
Exist. 5.5' x 5.5' Conc. Headwall
℄ 671.13
2:1
Centroid 70.92'
C-70
Centroid 79.56'

679.59
753+50
677.5

F. Int. 50.59'
C. Int. 49.56'

140 120 100 80 60 40 20 ℄ 20 40 60 80 100 120 140

Rev. 5-23-79

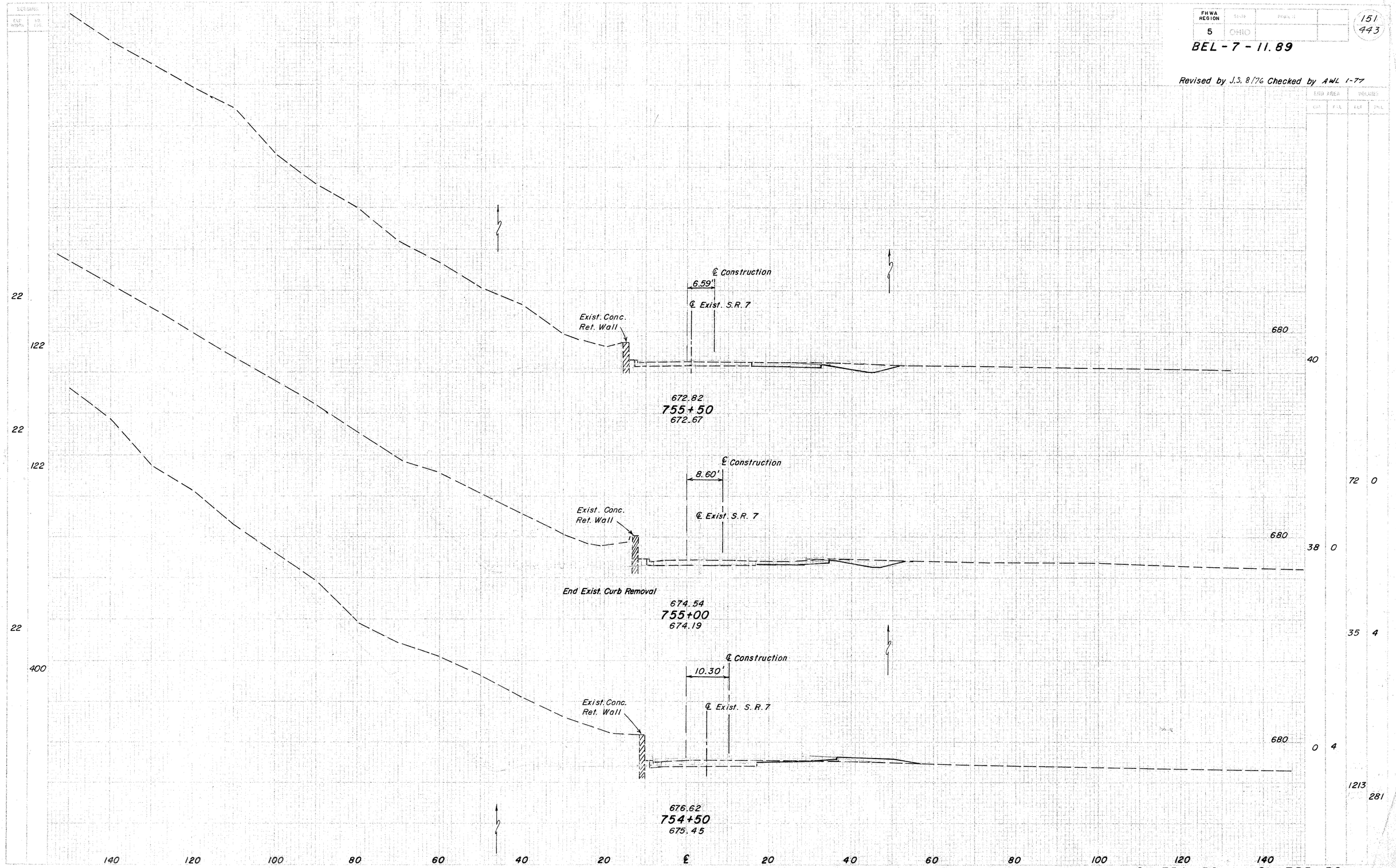
Sta. 753+50 to Sta. 754+00

FHWA REGION	STATE	PROJECT	
5	OHIO		

151
443

BEL - 7 - 11.89

Revised by J.S. 8/76 Checked by AWL 1-77



Sta. 754 + 50 to Sta. 755 + 50

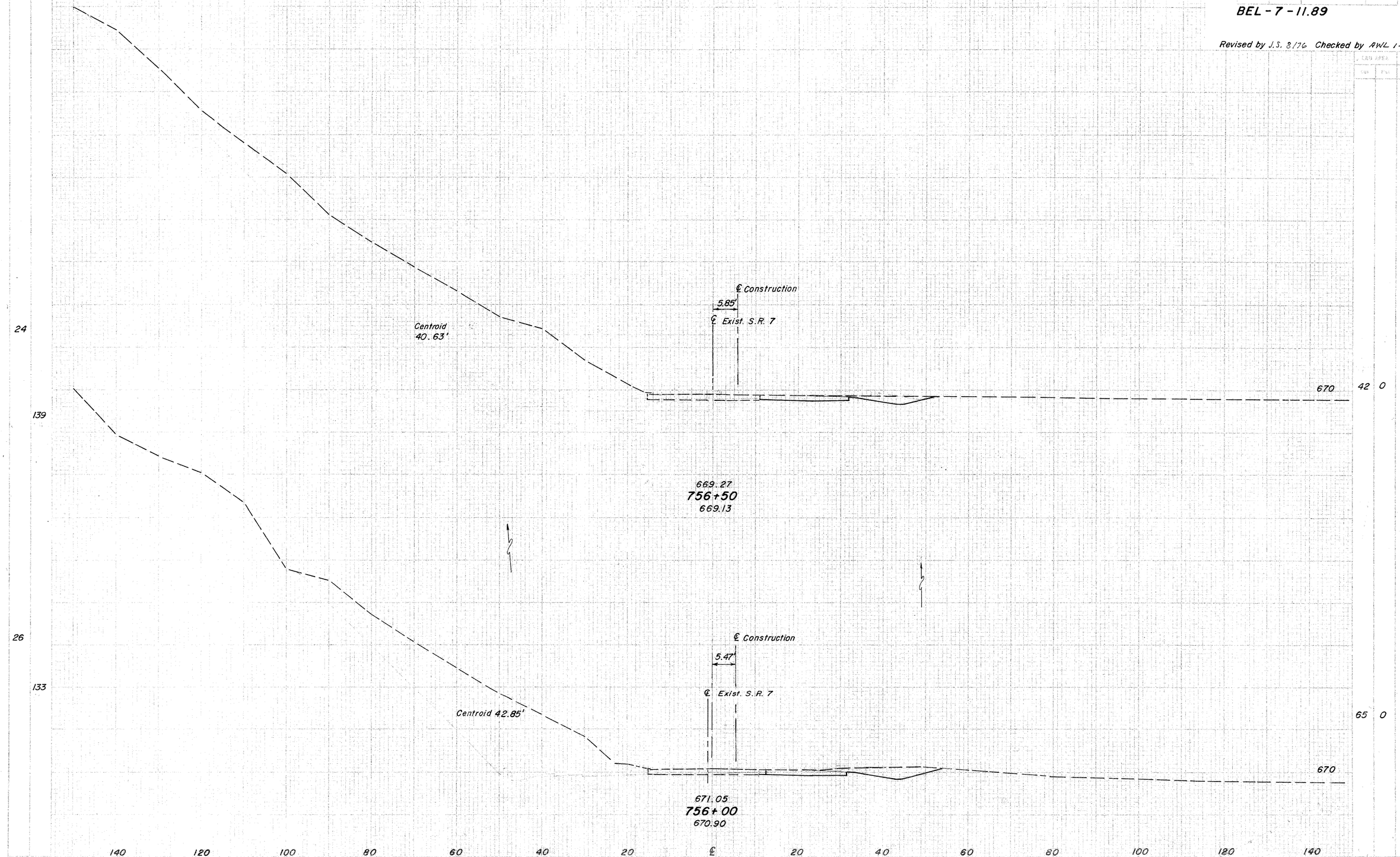
FHWA REGION	STATE	PROJECT	
5	OHIO		

152
443

BEL - 7 - 11.89

Revised by J.S. 8/76 Checked by AWL 1-77

X-SECTIONAL AREA		VOLUME	
CUT	FILL	CUT	FILL



Sta. 756+00 to Sta. 756+50

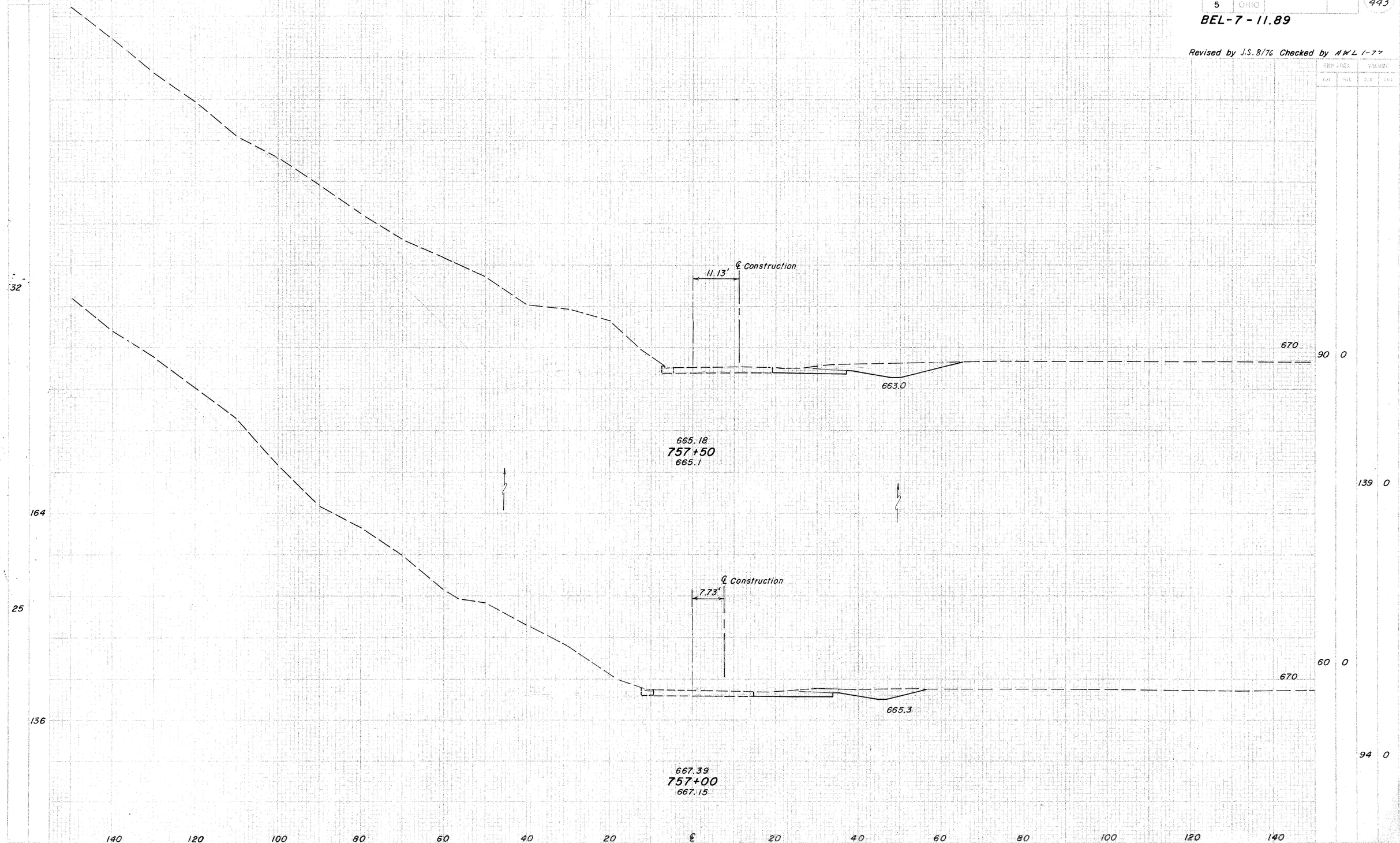
FHWA REGION	STATE	PROJECT	
5	OHIO		

153
443

BEL-7-11.89

Revised by J.S. 8/76 Checked by AWL 1-77

CROSS AREA		VOLUME	
CUT	FILL	CUT	FILL

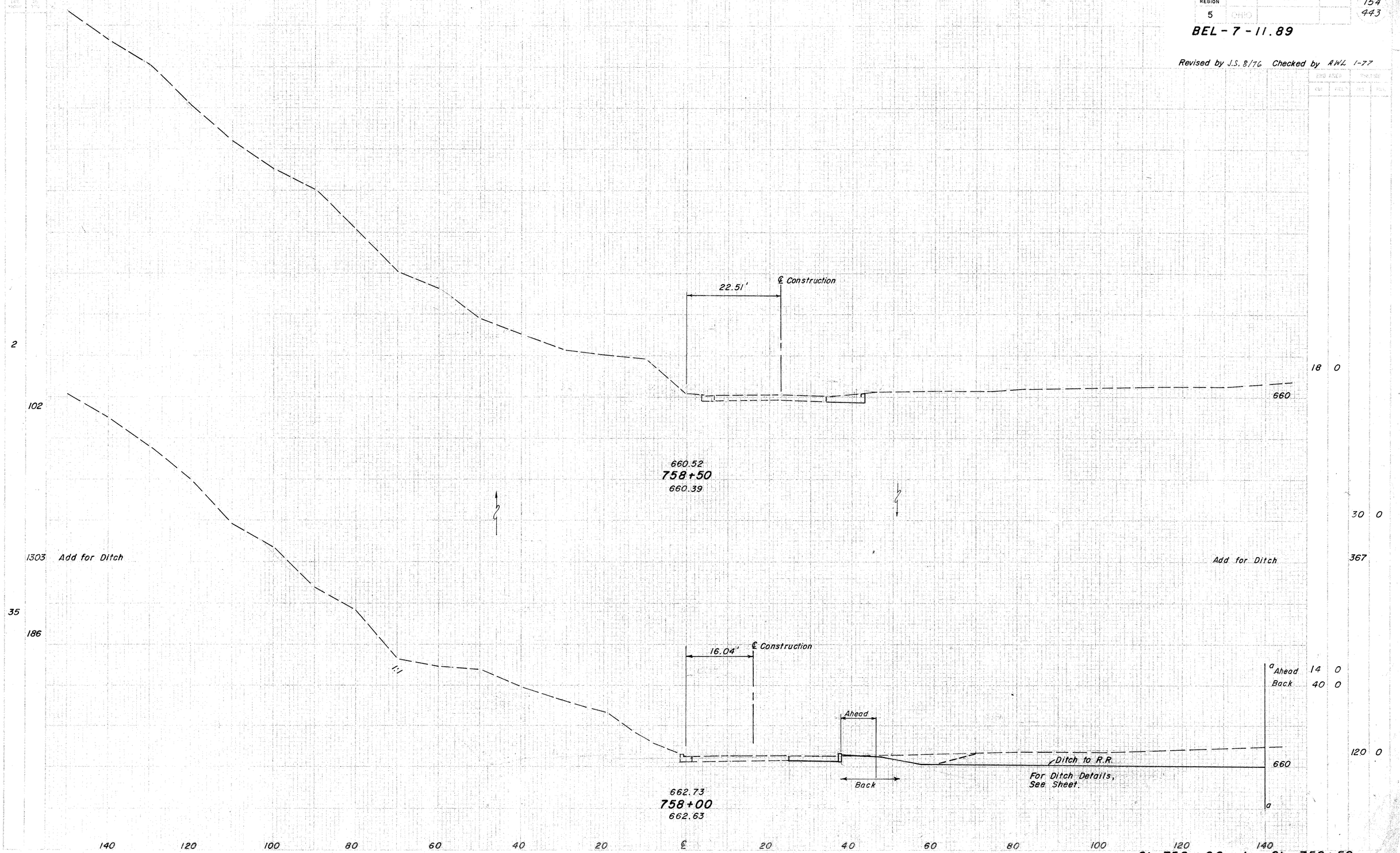


Sta. 757+00 to Sta. 757+50

FHWA REGION 5 | STATE OHIO | PROJECT | 154 443

BEL - 7 - 11.89

Revised by J.S. 8/76 Checked by AWL 1-77



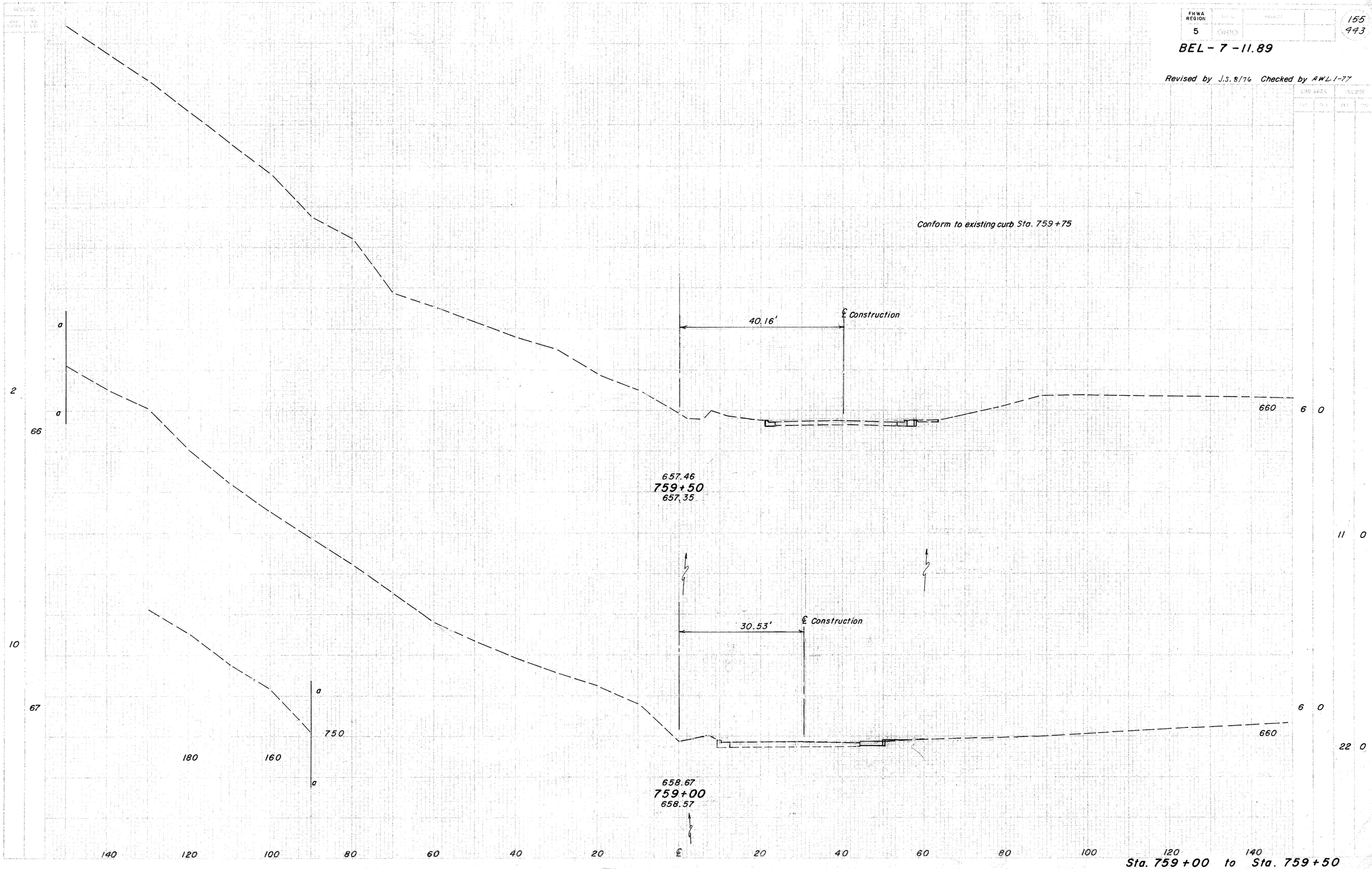
Sta. 758 + 00 to Sta. 758 + 50

FHWA REGION			
5	OHIO		

155
443

BEL - 7 - 11.89

Revised by J.S. 8/76 Checked by AWL 1-77



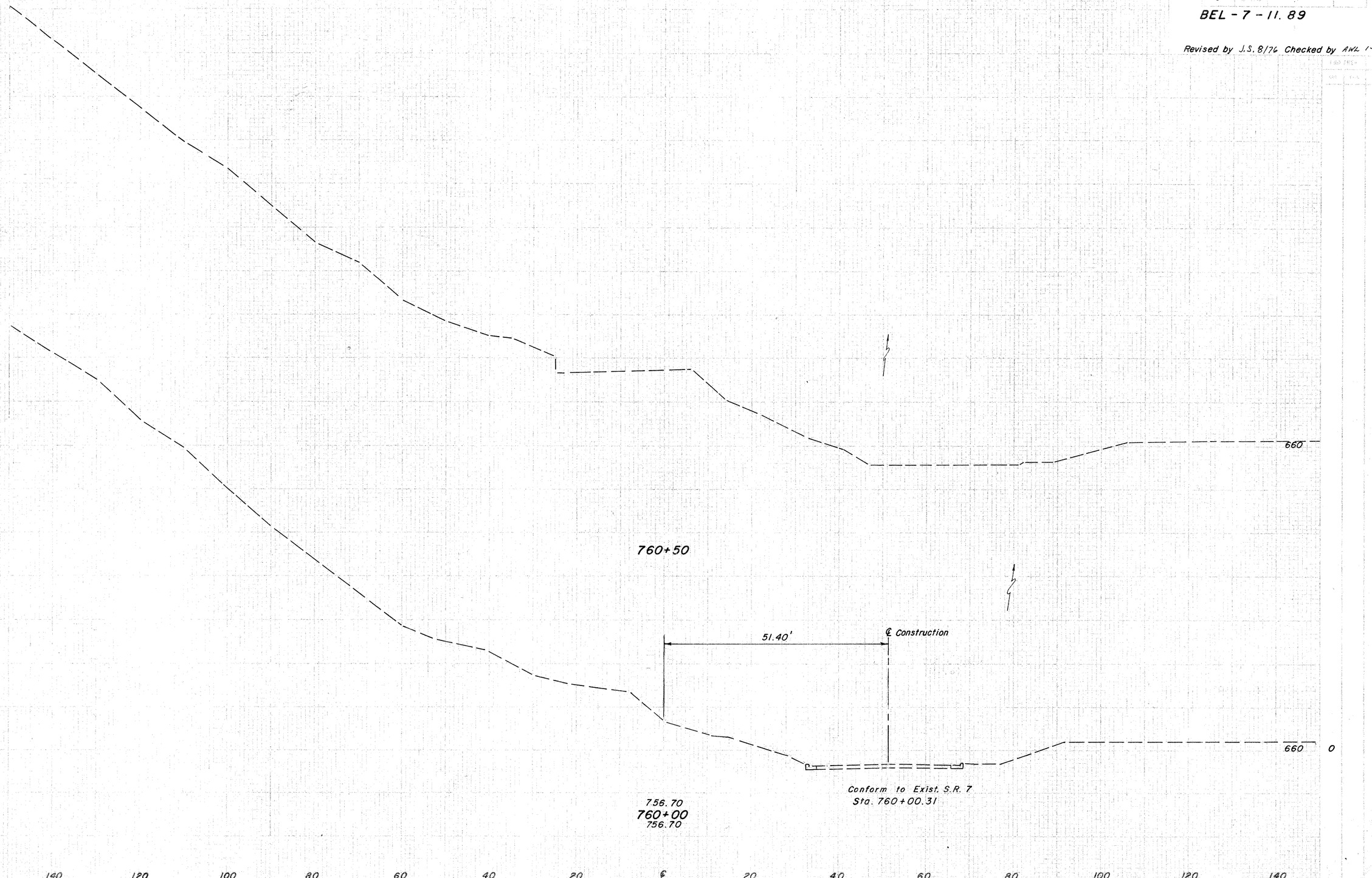
Sta. 759+00 to Sta. 759+50

FHWA REGION 5 OHIO

156
443

BEL - 7 - 11. 89

Revised by J.S. 8/76 Checked by AWL 1-77

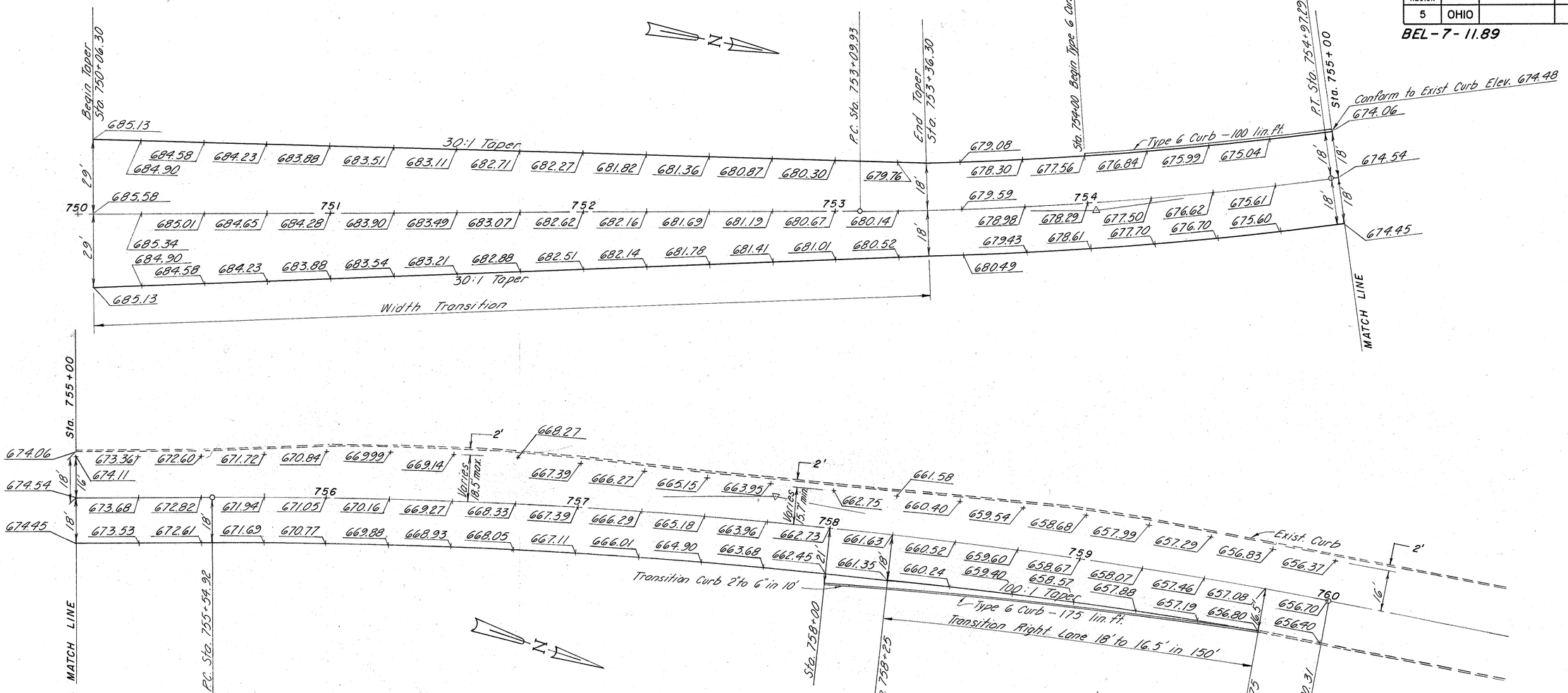


Sta. 760 + 00 to Sta. 760 + 50

F.H.W.A. REGION	STATE	PROJECT	
5	OHIO		

157
443

BEL-7-11.89



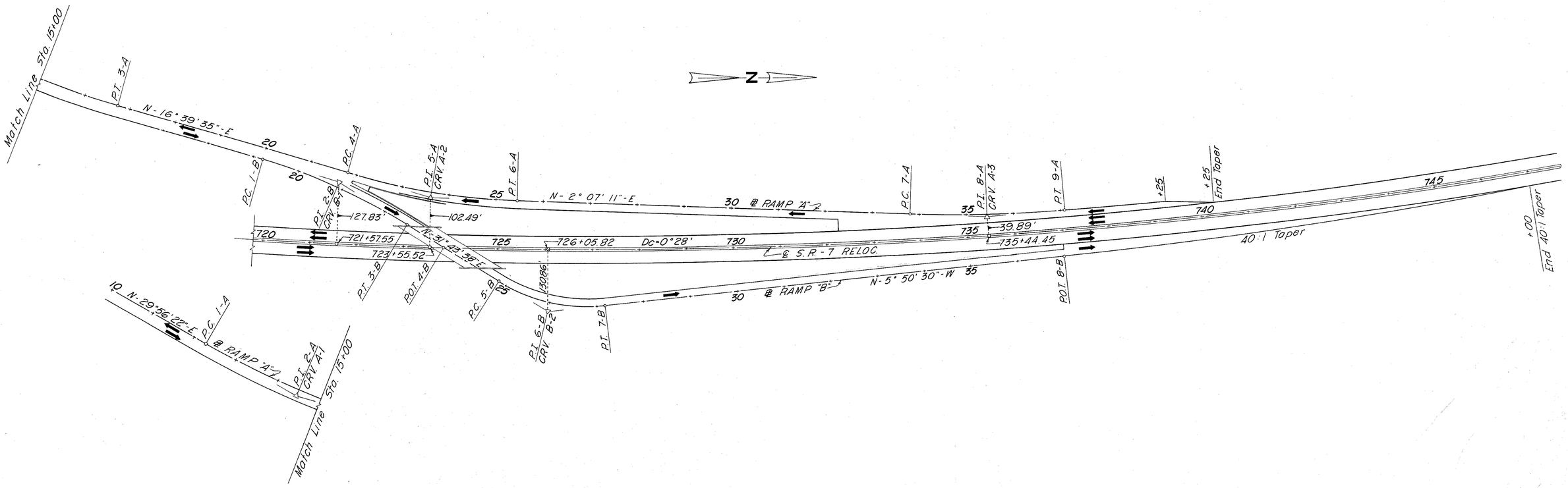
TYPICAL SECTION OF ADJOINING PAVEMENT at STA. 760 + 00

PAVEMENT DETAILS @ TEMPORARY CONNECTION

FHWA REGION	STATE	PROJECT	
5	OHIO		

158
443

BEL -7 -11.89



CURVE DATA

RAMP	CURVE	P.I. STATION	Δc	Dc	Rc	Tc	Lc	Ec
A	A - 1	14+51.98	13°16'47" Lt.	3°00'	1,909.86	222.32	442.66	12.67
A	A - 2	23+64.15	14°32'28" Lt.	4°00'	1,432.39	182.73	363.50	11.61
A	A - 3	35+45.36	6°34'25" Lt.	2°00'	2,864.79	164.52	328.68	4.72
B	B - 1	20+88.49	15°04'03" Rt.	4°30'	1,273.24	168.39	334.83	11.09
B	B - 2	26+04.07	37°34'08" Lt.	16°00'	358.10	121.80	234.81	20.15

INTERCHANGE CONTROL POINTS COORDINATES

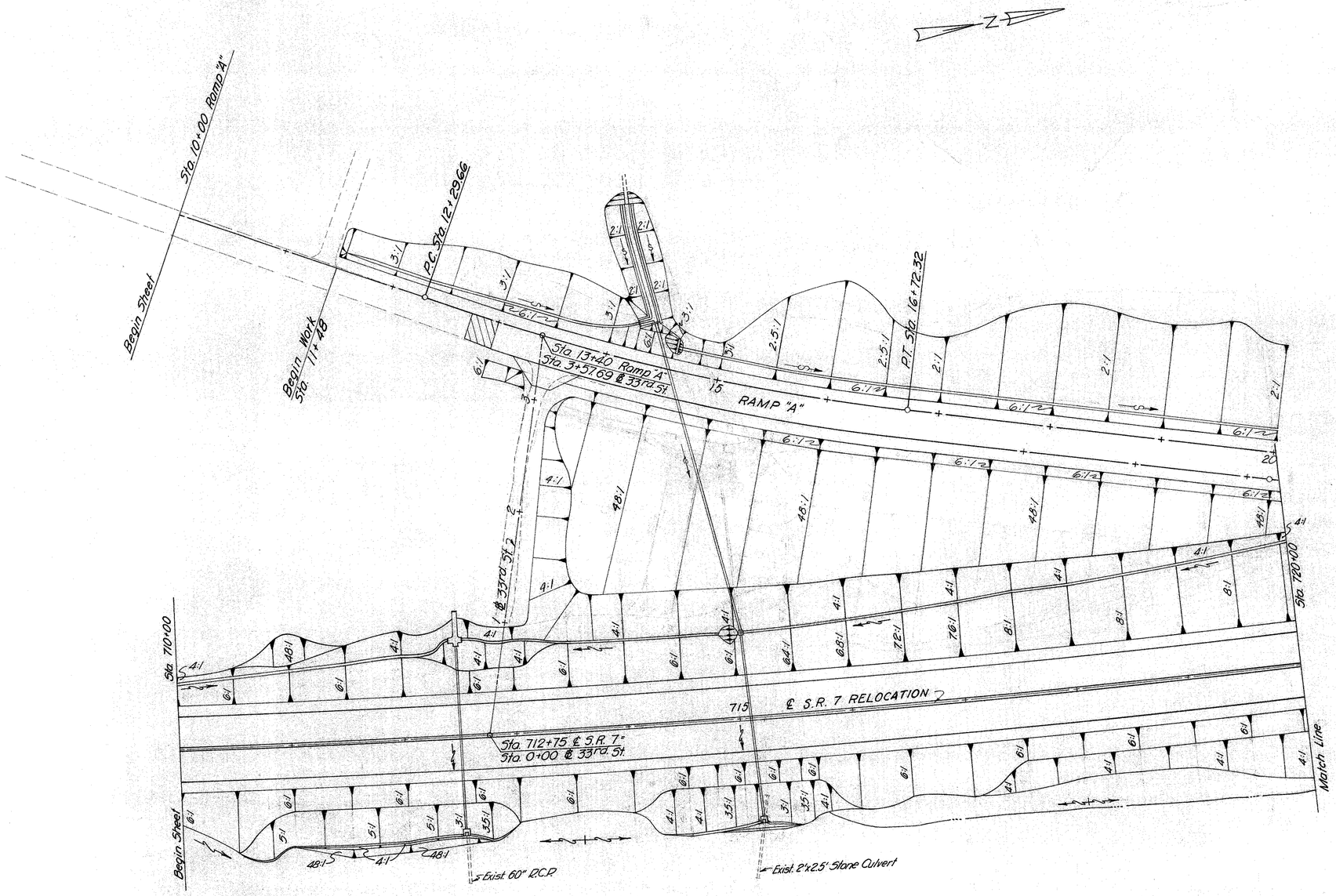
POINT	DESIGNATION & STATION	NORTH	EAST
1 - A	P.C. Sta. 12+29.66	725,603.777	2,492,652.798
2 - A	P.I. Sta. 14+51.98	725,796.429	2,492,763.754
3 - A	P.T. Sta. 16+72.32	726,009.417	2,492,827.490
4 - A	P.C. Sta. 21+81.42	726,497.147	2,492,973.442
5 - A	P.I. Sta. 23+64.15	726,672.207	2,493,025.828
6 - A	P.T. Sta. 25+44.92	726,854.812	2,493,032.587
7 - A	P.C. Sta. 33+80.84	727,690.160	2,493,063.505
8 - A	P.I. Sta. 35+45.36	727,854.567	2,493,069.590
9 - A	P.T. Sta. 37+09.52 ℄ Ramp "A" = 41' Lt. P.O.C. Sta. 737+09.52 ℄ S.R.-7 Reloc.	728,018.590	2,493,056.814
1 - B	P.C. Sta. 19+20.10 ℄ Ramp "B" = 24' Rt. P.O.T. Sta. 19+99.47 ℄ Ramp A	726,315.955	2,492,944.273
2 - B	P.I. Sta. 20+88.49	726,477.277	2,492,992.548
3 - B	P.T. Sta. 22+54.93	726,620.503	2,493,081.100
4 - B	P.O.T. Sta. 23+46.38 ℄ Ramp "B" = P.O.C. Sta. 723+85.00 ℄ S.R.-7 Reloc.	726,698.287	2,493,129.191
5 - B	P.C. Sta. 24+82.27	726,813.870	2,493,200.652
6 - B	P.I. Sta. 26+04.07	726,917.468	2,493,264.704
7 - B	P.T. Sta. 27+17.08	727,038.635	2,493,252.307
8 - B	P.O.T. Sta 37+00 ℄ Ramp "B" = 54' Rt. P.O.C. Sta. 737+00 ℄ S.R.-7 Reloc.	728,016.451	2,493,152.266

INTERCHANGE ALIGNMENT PLAN & CONTROL DATA

FHWA REGION	STATE	PROJECT	
5	OHIO		

159
493

BEL-7-11.89

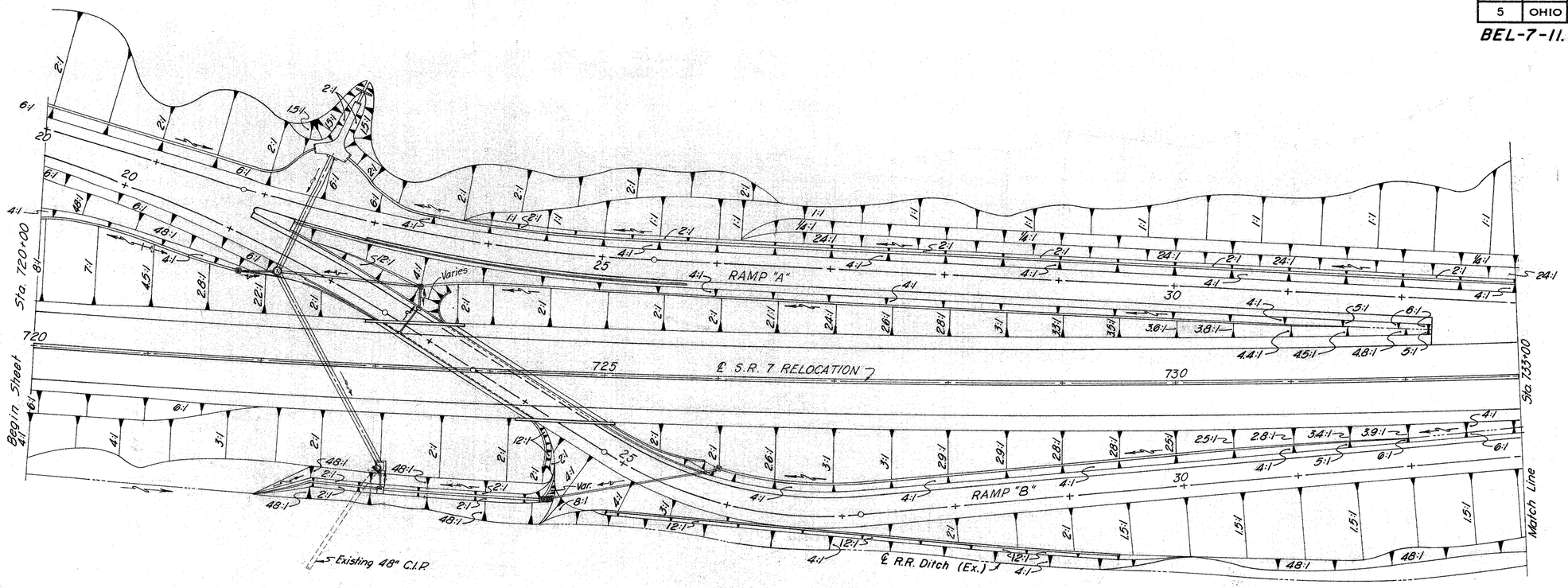


INTERCHANGE GRADING PLAN

FHWA REGION	STATE	PROJECT	
5	OHIO		

160
443

BEL-7-11.89



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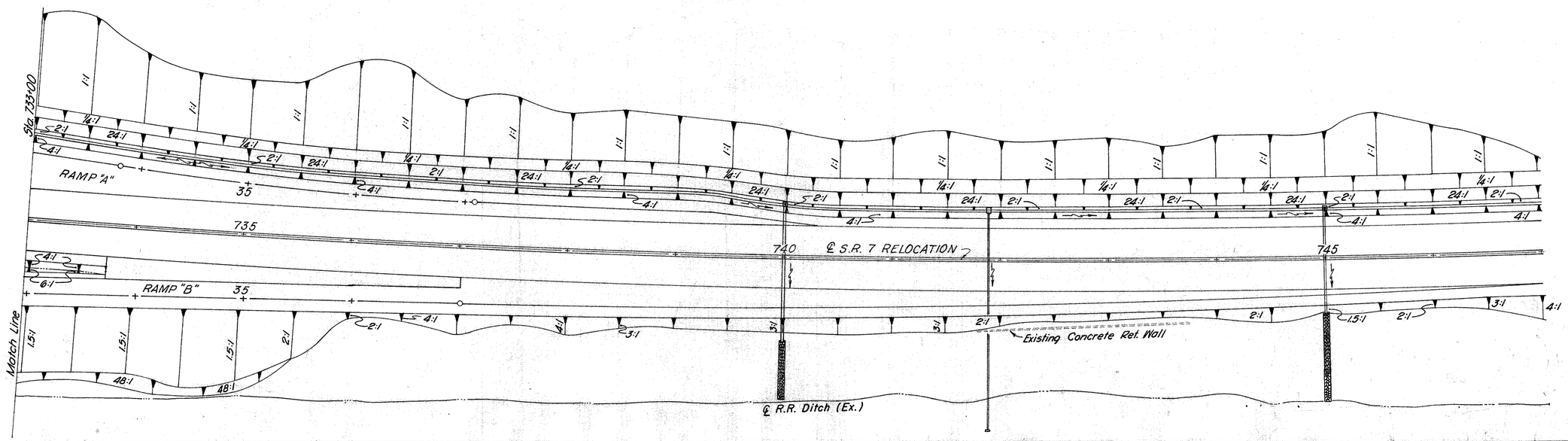


INTERCHANGE GRADING PLAN

FHWA REGION:	STATE	PROJECT	
5	OHIO		

161
443

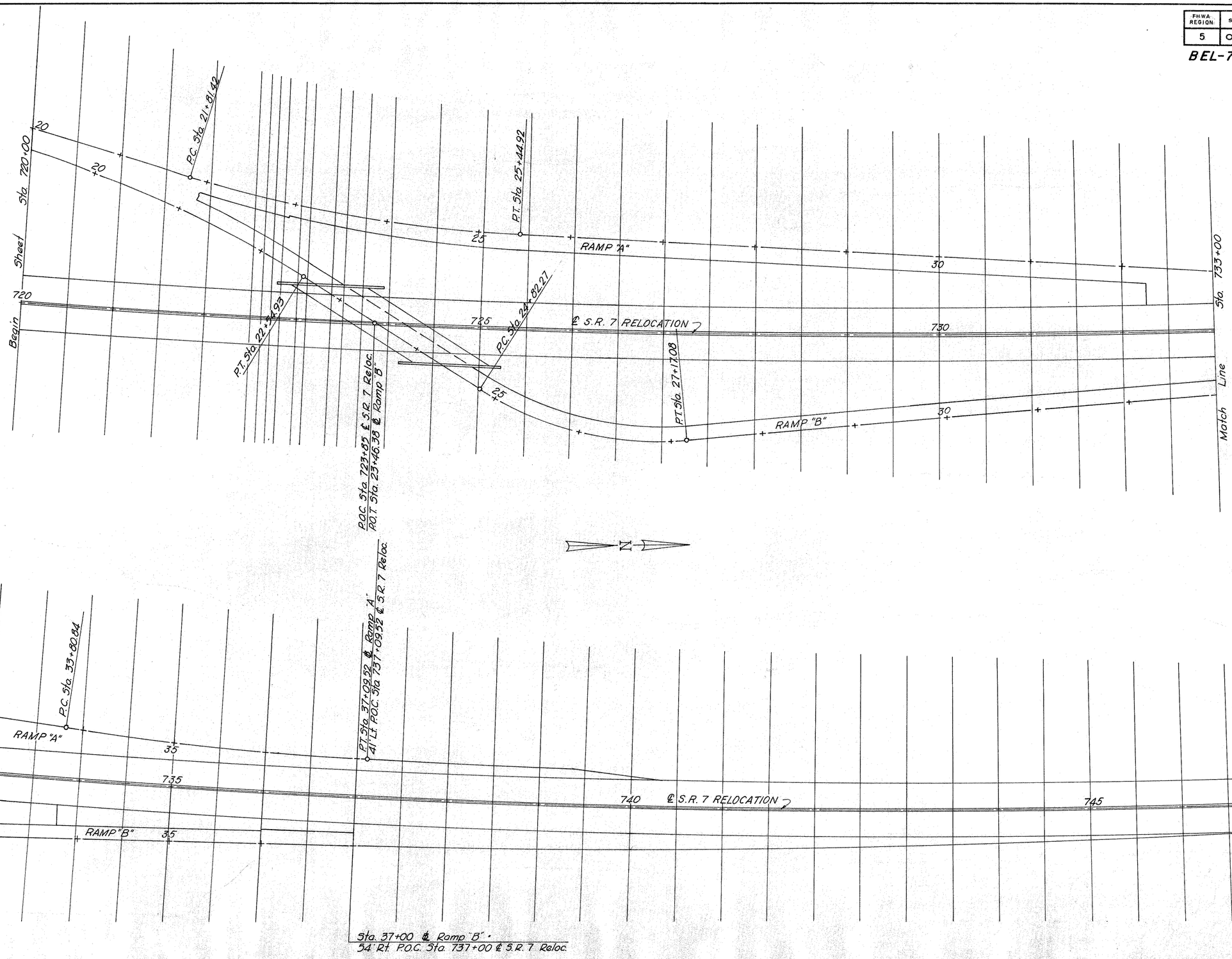
BEL - 7 - 11.89

INTERCHANGE CROSS SECTION LAYOUT

FHWA REGION	STATE	PROJECT	
5	OHIO		

162
443

BEL-7-11.89



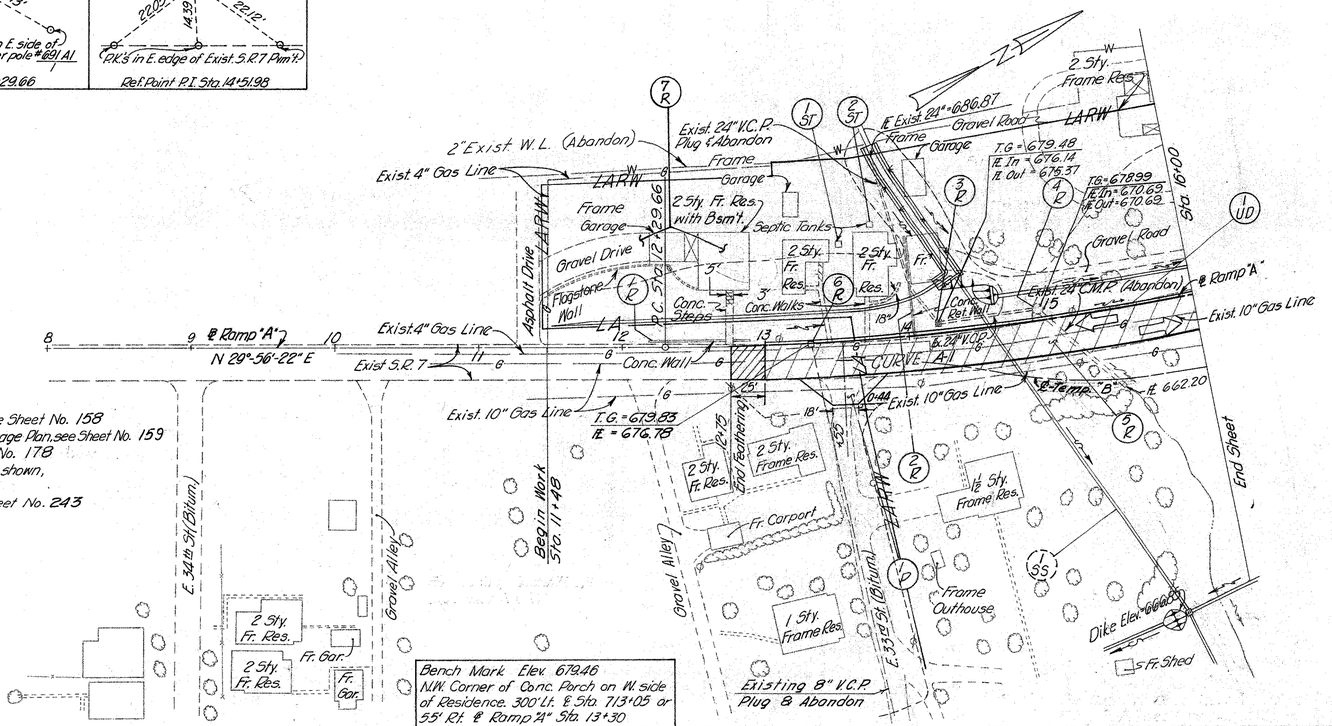
INTERCHANGE CROSS SECTION LAYOUT

P.K. in top of Conc. Ret. Wall. — 23.33' — P.K. in Pavement — 38.73' — 6.48' — P.K. in top of Conc. Ret. Wall. — P.K. in E. side of Power pole #891 A1

Ref. Point P.C. Sta. 12+29.66

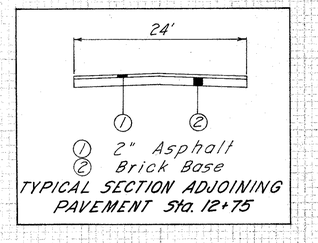
P.K. in Pavement — 22.05' — 14.39' — 22.12' — P.K.'s in E. edge of Exist. S.R.7 Pvmt.

Ref. Point P.I. Sta. 14+51.98

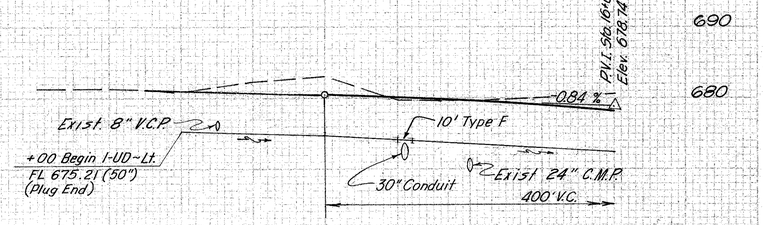


For Interchange Alignment Plan, see Sheet No. 158
For Interchange Grading and Drainage Plan, see Sheet No. 159
For Pavement Details, see Sheet No. 178
For Topo and Removal Items not shown, see Sheet No. 35 & 36
For Storm Sewer Details, see Sheet No. 243

Bench Mark Elev. 679.46
N.W. Corner of Conc. Porch on W. side of Residence. 300' Lt. & Sta. 7+13.05 or 55' Rt. & Ramp "A" Sta. 13+30



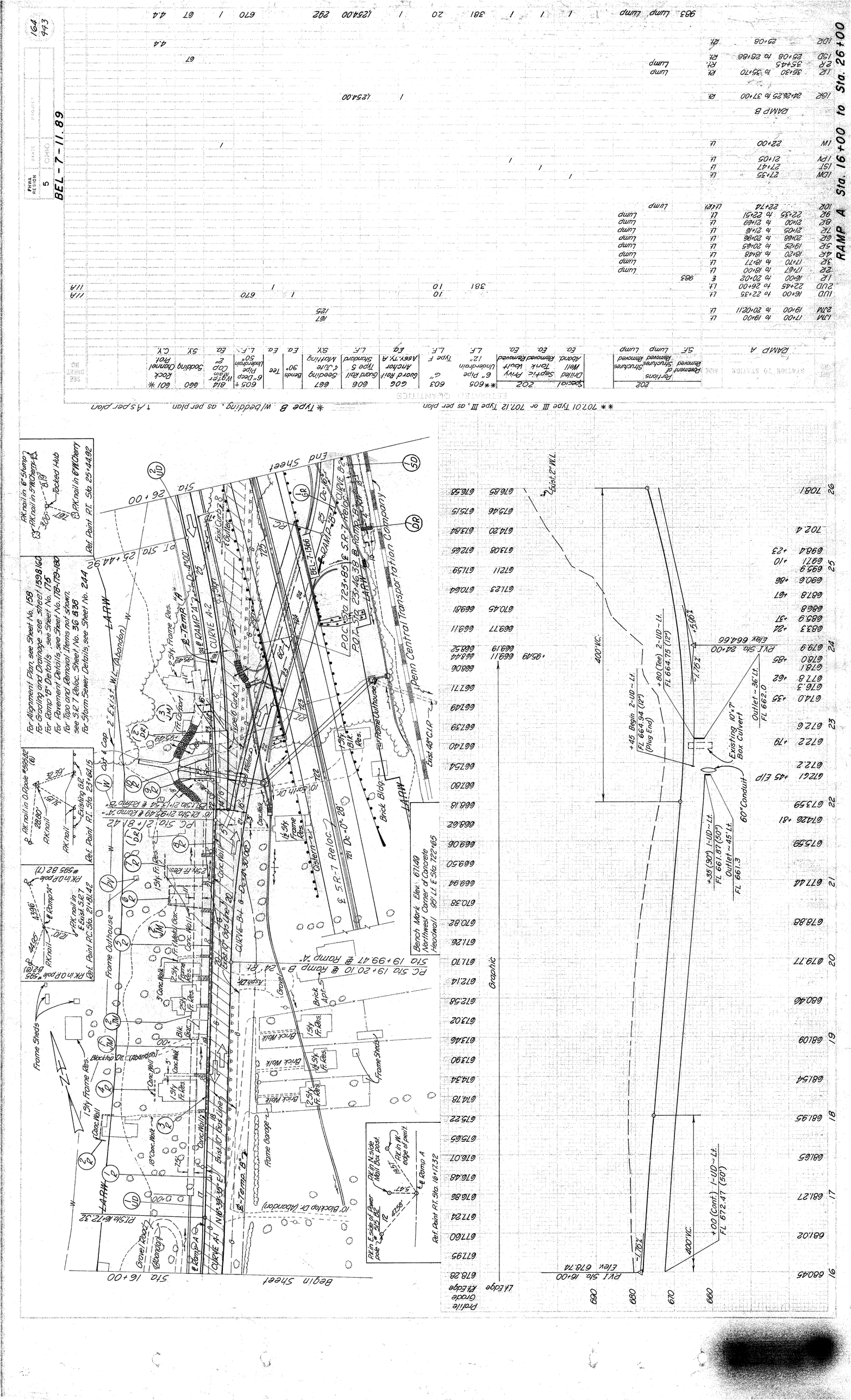
TYPICAL SECTION ADJOINING PAVEMENT Sta. 12+75



681.28	681.18	681.07	680.87	682.12	683.04	679.56	679.63	680.04	680.45
12			13		14		15		16

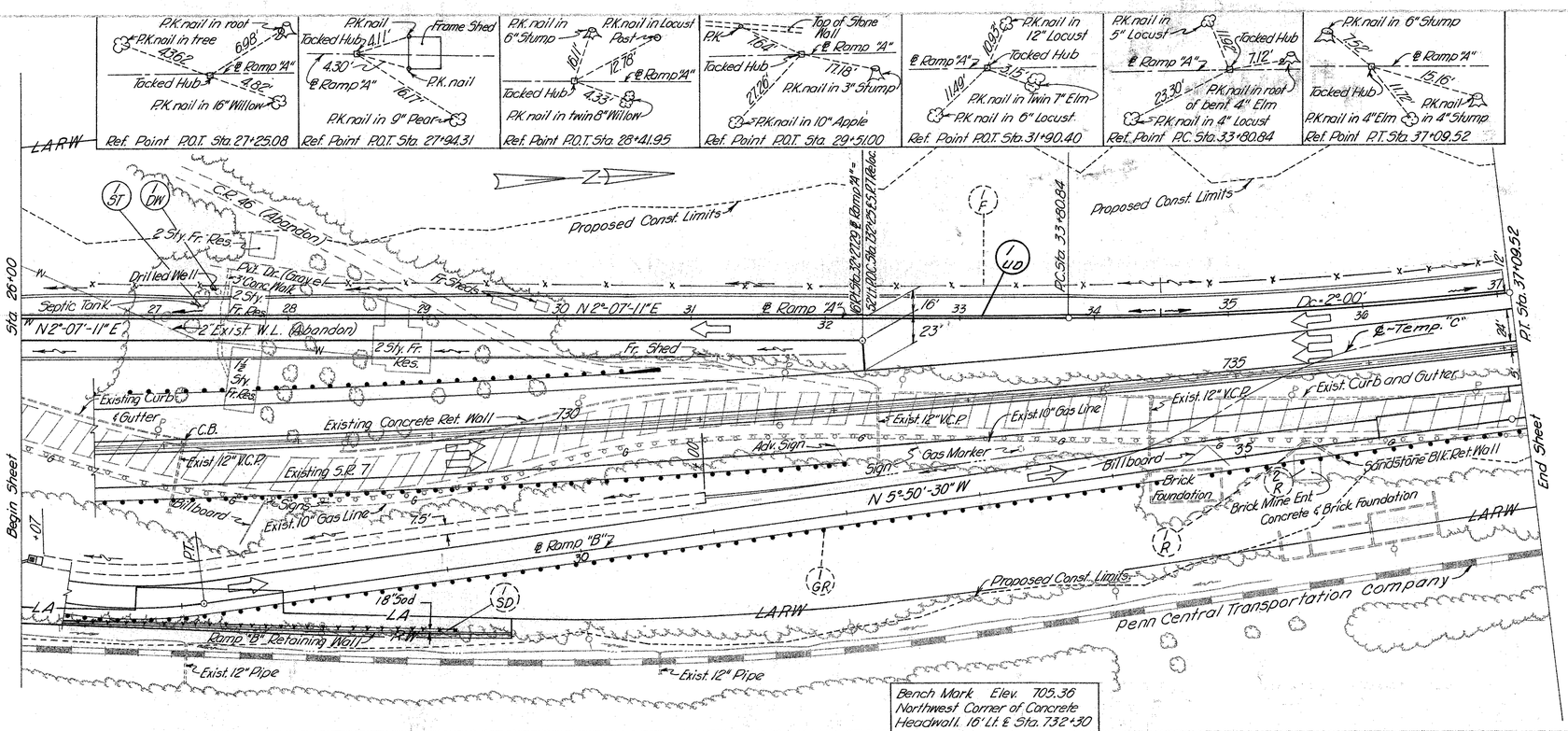
681.07	681.02	680.91	680.77	680.61	680.42	680.20	679.97	679.73	679.46	679.19	678.90	678.60	678.28

| SEE SHEET NO. | | |


BEL-7-11.89
RAMP A Sta. 16+00 to Sta. 26+00
Begin Sheet
End Sheet
Penn Central Transportation Company
Graphic
Profile Grade
Lt. Edge
Elev 678.74
Elev 664.66
Existing 10'x7' Box Culvert
60" Conduit
Outlet - 36 Lt.
FL 662.0
Outlet - 45 Lt.
FL 661.3
+80 (Tee) 2-UD-Lt.
FL 664.75 (12")
+45 Begin 2-UD-Lt.
FL 664.94 (12")
(Plug End)
+35 (90°) 1-UD-Lt.
FL 661.87 (60")
+00 (Cont.) 1-UD-Lt.
FL 672.47 (60")
400' VC.
Frame Outhouse
Brick Bldg.
Frame Garage
Frame Sheds
Brick Walk
Gravel Road (Abandon)
Asph. Dr.
Concrete Dr.
Bench Mark Elev. 671.48
Northwest Corner of Concrete Headwall 80' Lt. & Sta 722+65
Ref. Point P.T. Sta. 16+17.32
Ref. Point P.C. Sta. 21+81.42
Ref. Point P.T. Sta. 25+44.92
Ref. Point P.C. Sta. 21+95.49 & Ramp "A"
Ref. Point P.C. Sta. 21+95.34 & Ramp "A"
Pk nail in O.Pole #995 82 (T)
Pk nail in O.Pole #995 82 (7)
Pk nail in 6" Stump
Pk nail in Hickory
Tacked Hub
Pk nail in 6" Hickory
Pk nail
Pk nail in E. Edge Asph. Dr.
Pk in N. side Well Box post.
Pk in N.E. edge of pad.
Pk in E. edge of Power pole #365 82
Existing 82
Existing 83
Existing 84
Existing 85
Existing 86
Existing 87
Existing 88
Existing 89
Existing 90
Existing 91
Existing 92
Existing 93
Existing 94
Existing 95
Existing 96
Existing 97
Existing 98
Existing 99
Existing 100
Existing 101
Existing

FHWA REGION	STATE	PROJECT		165 443
5	OHIO			

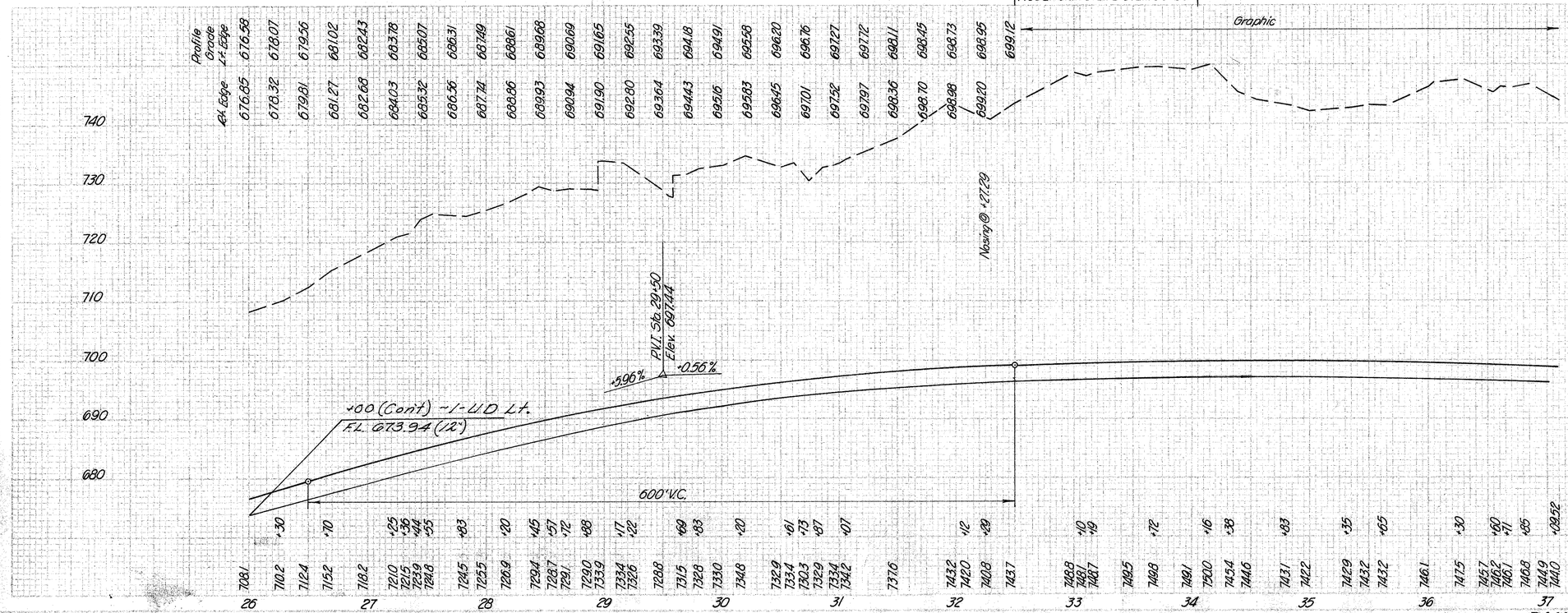
BEL - 7 - 11.89



For Quantities, see Sheet No. 164
For Alignment Plan, see Sheet No. 158
For Grading and Drainage Plan, see Sheet No. 160
For Ramp "B", see Sheet No. 176
For Topo and Removal Items not shown, see S.R.7 Reloc. Sheet No. 38 & 39

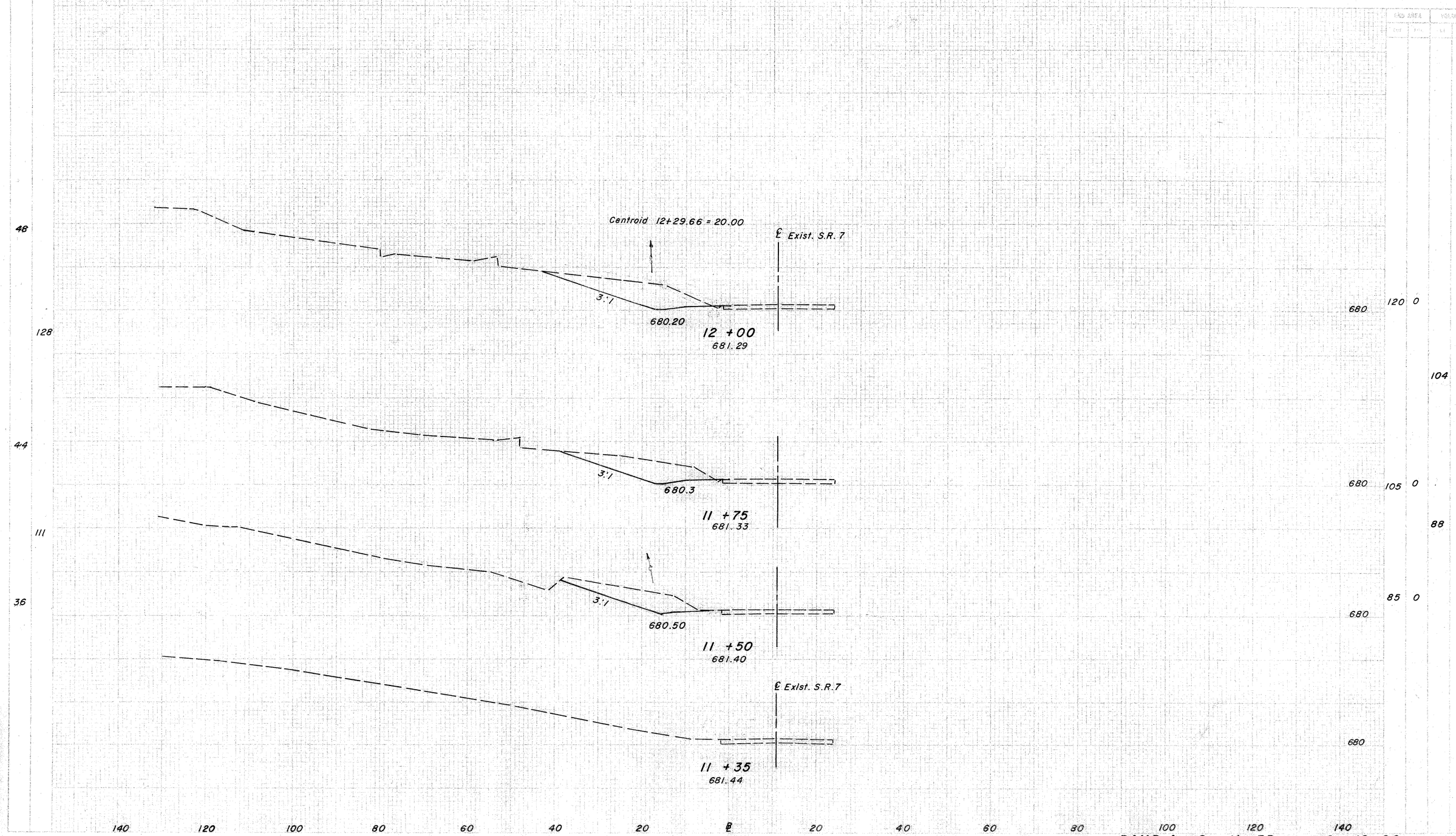
** As per plan

REF. NO	STATION TO STATION	SIDE	60.5 ** 6" Pipe Underdrain 707.01 T-III or 707.12 T-III	
			12"	
			L.F.	
HUD	26+00 to 37+00	Lt.	1100	
	TOTAL		1100	



RAMP A Sta. 26+00 to Sta. 37+09.52

FHWA REGION 5 | OHIO | 166 443
BEL-7-11.89



RAMP A Sta. 11 +35 to Sta. 12 +00

FHWA REGION 5

167
493

BEL-7-11.89

EMB AREA		VOLUME	
CUT	FILL	CUT	FILL

Ramp A 33 rd. St.

℄ Exist. S.R. 7

℄ ~ Temp. "B"

43

269

3:1

Centroid 24.18"

679.5

(Remove)
680.77

13 + 50
682.12

12.5%

680

310 0

54

C.Int. 49.38'

521 20

Exist. 8" (Abandon)

Sta. 13+32, 2' Lt.
Exist. Inlet (Remove)
T.G. - 679.83
Ø 8" 676.78

231

3:1

Centroid 22.86 (Remove)
679.8

681.02

13 + 00
680.87

6:1

680

260 22

℄ Alley

29

214

Stone Ret. Wall

3:1

Centroid 22.50

Conc. Ret. Wall
680.1

(Remove)
681.18

12 + 50
681.18

℄ Exist. SR. 7

205

680 0

Cut Interval 29.66 + 20.11 = 49.77

C.Int. 49.40'

425 20

C.Int. 49.77'

299 0

140 120 100 80 60 40 20 ℄ 20 40 60 80 100 120 140

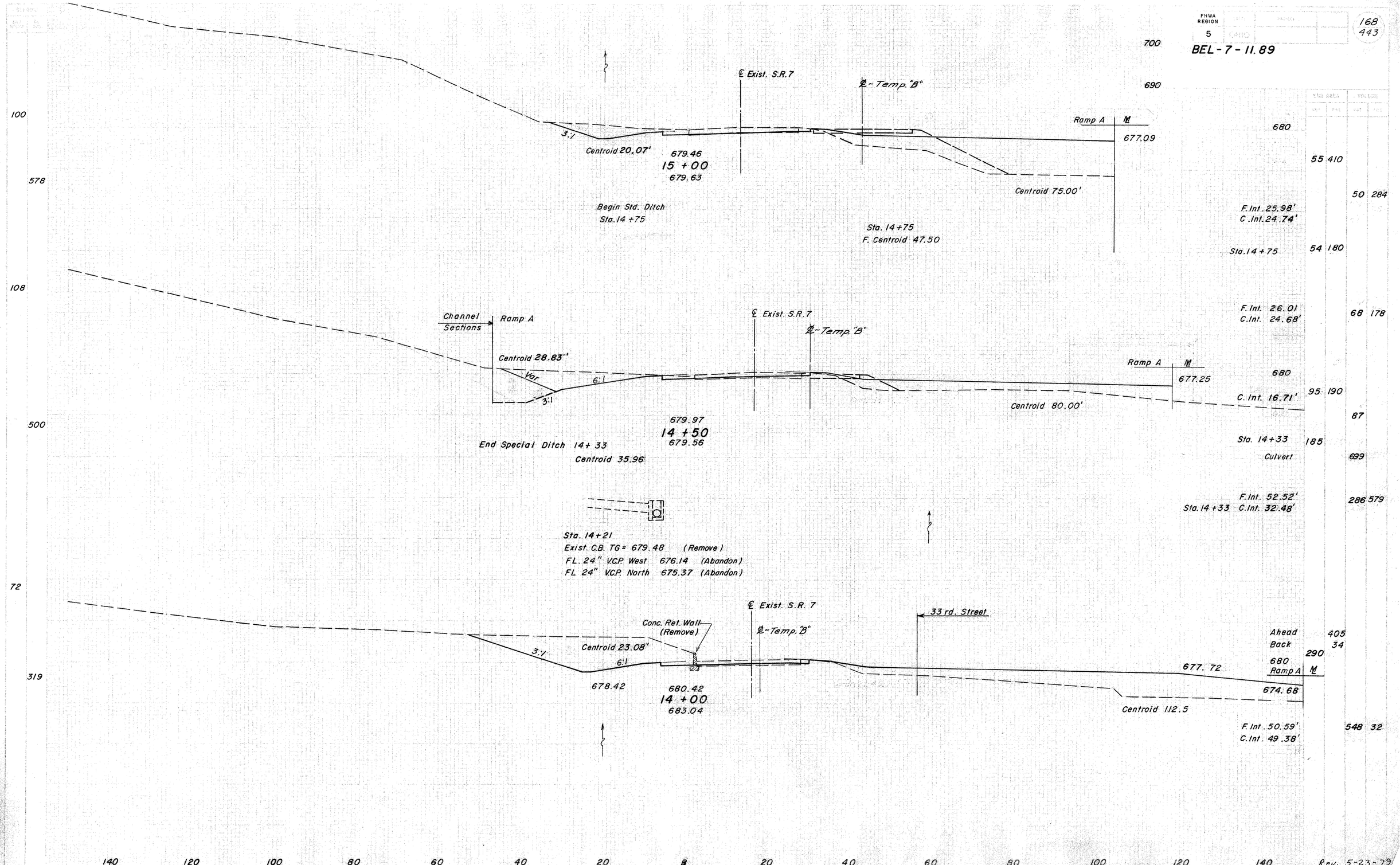
Rev. 5-23-79

RAMP A Sta. 12 + 50 to Sta. 13 + 50

FHWA REGION 5

168
443

BEL-7-11.89



Rev. 5-23-79

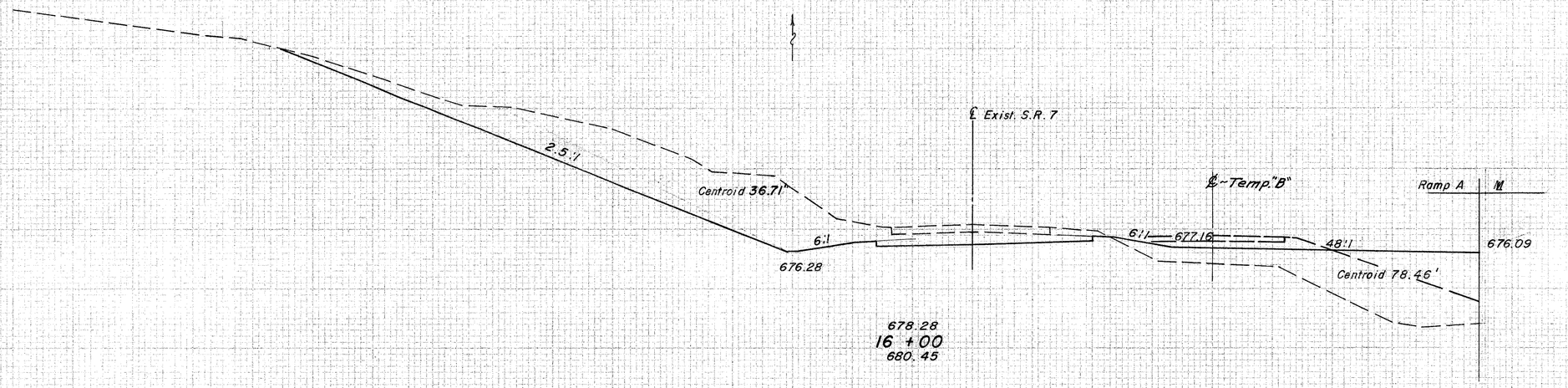
RAMP A Sta. 14 + 00 to Sta. 15 + 00

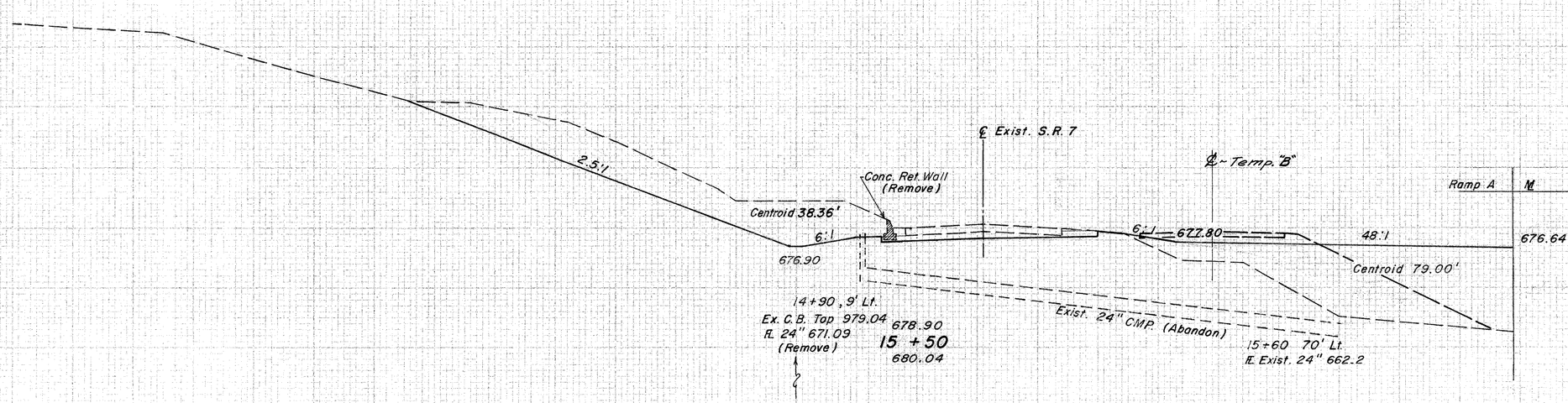
FHWA REGION	STATE	PROJECT	
5	OHIO		

169
443

BEL-7-11.89

CROSS AREA		VOLUME	
CUT	FILL	CUT	FILL





Rev. 5-23-79

RAMP A Sta. 15 + 50 to Sta. 16 + 00

FHWA REGION	STATE	PROJECT	
5	OHIO		

170
443

BEL-7-11.89

SEEDING

SEE NOTE	SQ. YDS.

END AREA		VOLUME	
CUT	FILL	CUT	FILL

130

722

2:1

6:1

674.86

Begin 7'-6" Width Jute Matting
Sta. 17+00

℄ Exist. S.R. 7

676.86

17 + 00

681.27

℄ - Temp. "B"

675.57

6:1

48:1

674.41

Ramp A

℄

710 94

680

F. Int. 27.68 + 23.19 = 50.87
C. Int. 27.68 + 22.03 = 49.72

Sta. 16+72.32
Centroid F. 74.34'
C. 22.03'

F. Int. 50.87'
C. Int. 49.72'

300
1344

130

736

2.5:1

Centroid 27.68'

6:1

675.60

℄ Exist. S.R. 7

677.60

16 + 50

681.02

℄ - Temp. "B"

6:1

676.38

48:1

675.33

Centroid 74.34'

Ramp A

℄

750 230

680

F. Int. 52.00'
C. Int. 49.16'

1261 607

140 120 100 80 60 40 20 ℄ 20 40 60 80 100 120 140

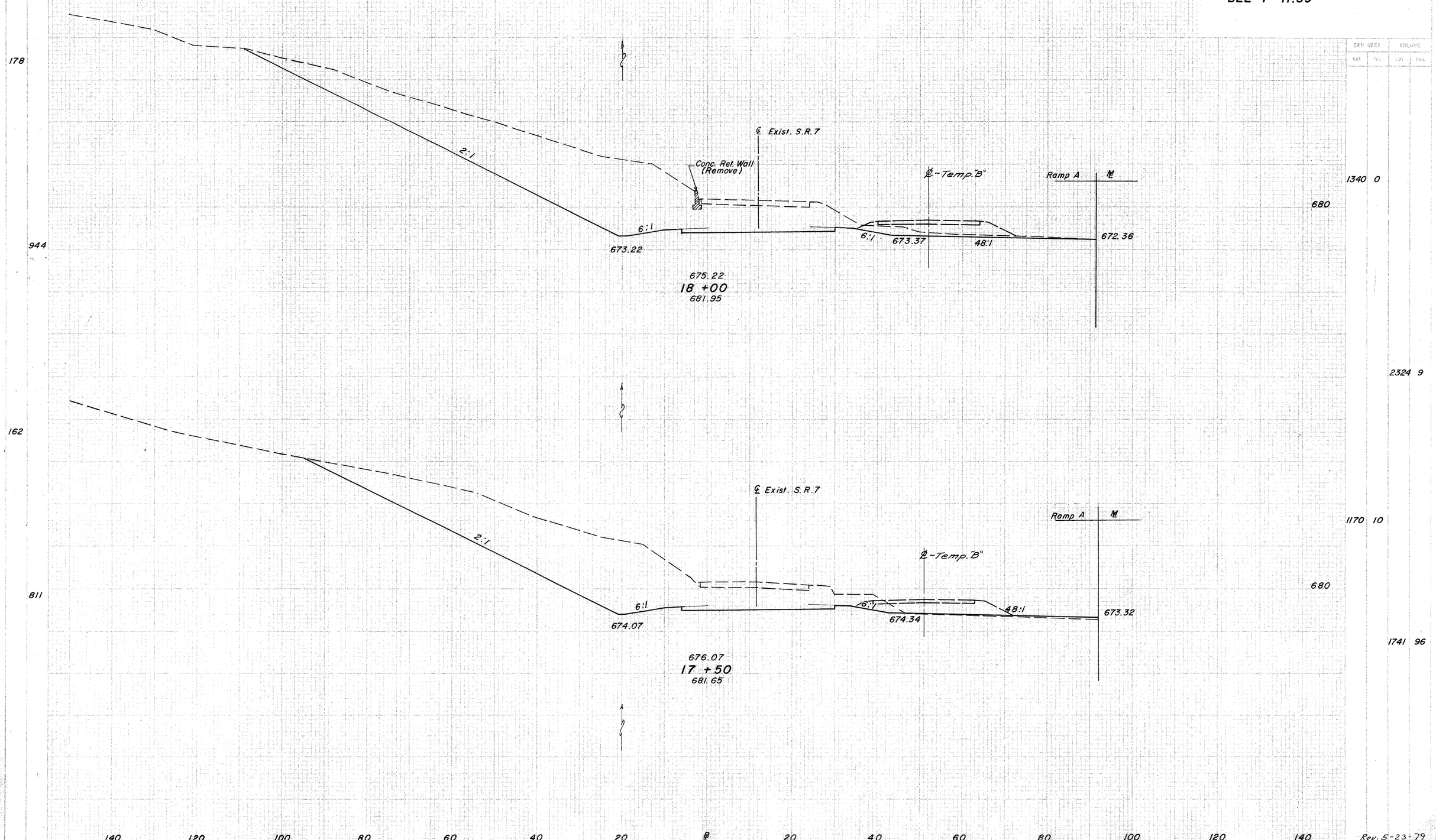
Rev. 5-23-79

RAMP A Sta. 16+50 to Sta. 17+00

FHWA REGION	STATE	PROJECT	
5	OHIO		

171
443

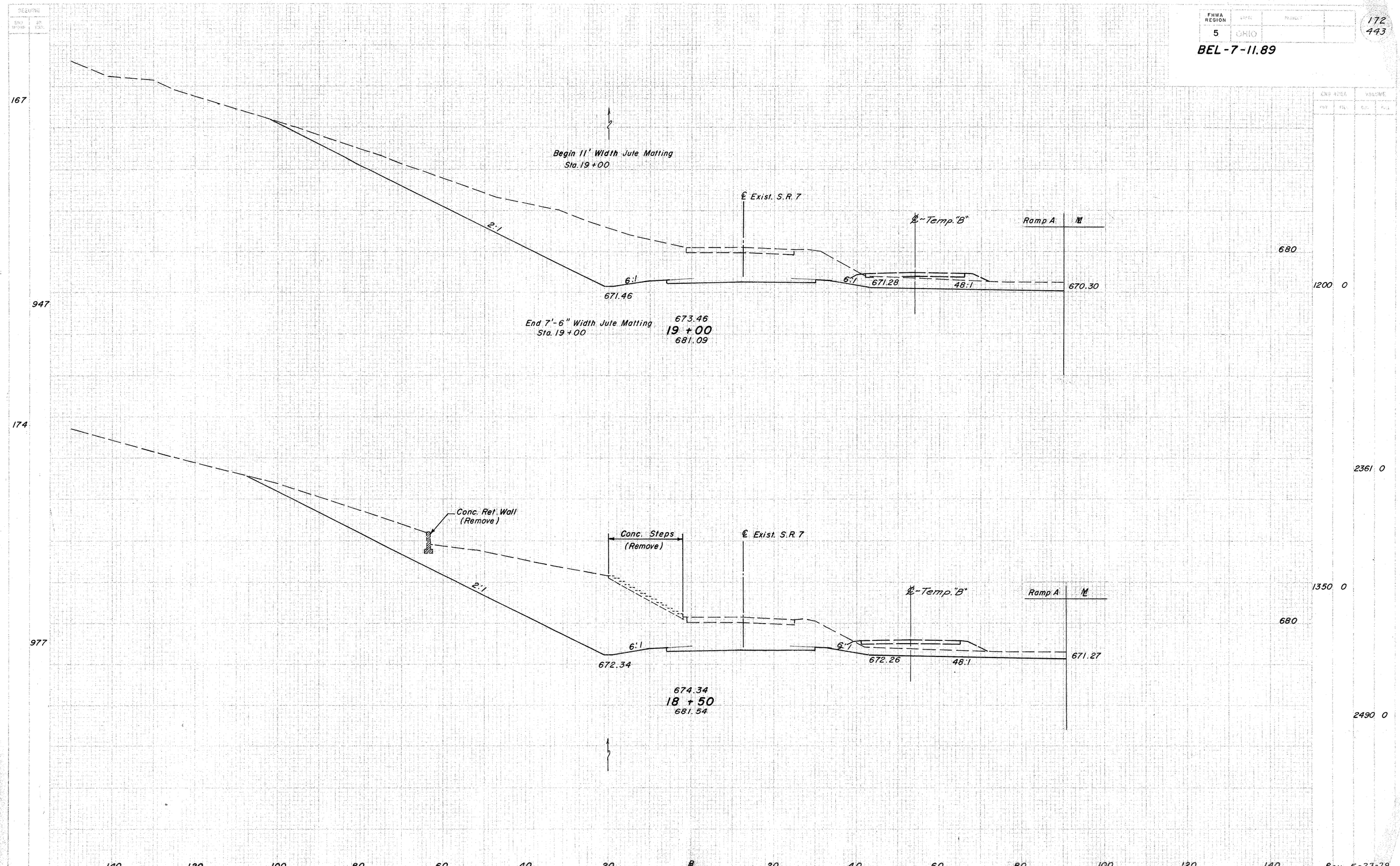
BEL-7-11.89



Rev. 5-23-79

RAMP A Sta. 17+50 to Sta. 18+00

FHWA REGION 5 | OHIO
172
443
BEL-7-11.89

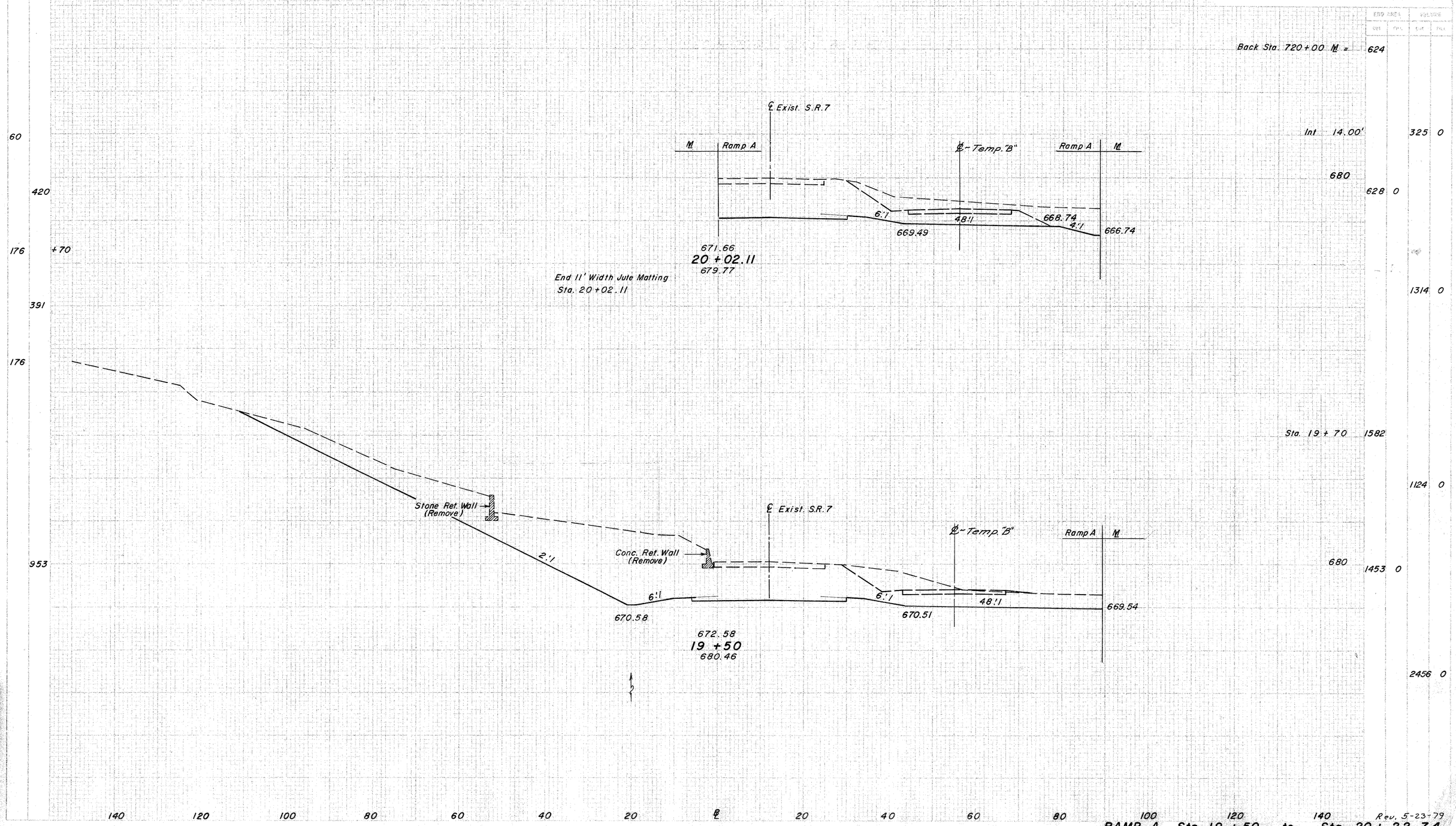


Rev. 5-23-79

RAMP A Sta. 18+50 to Sta. 19+00

FHWA REGION 5 | STATE OHIO | PROJECT
173
443

BEL-7-11.89



Rev. 5-23-79

RAMP A Sta. 19+50 to Sta. 20+22.74

FHWA REGION	STATE		
5	OHIO		

174
443

BEL-7-11.89

END AREA VOLUME				SEEDING	
Cut	Fill	Cut	Fill	End Width	Sq. Yds.

33rd. Street Mainline
674.8
4:1
660
2 + 00
669.36

33rd. Street Mainline
674.4
4:1
660
1 + 50
666.3

33rd. Street Mainline
673.0
4:1
660
1 + 18
664.91

33rd. Street Mainline
674.2
4:1
660
1 + 00
664.12

660
0 + 50
662.82

33rd. Street Ramp A
678.93
4:1
670
3 + 15
678.77

670
3 + 00
677.08

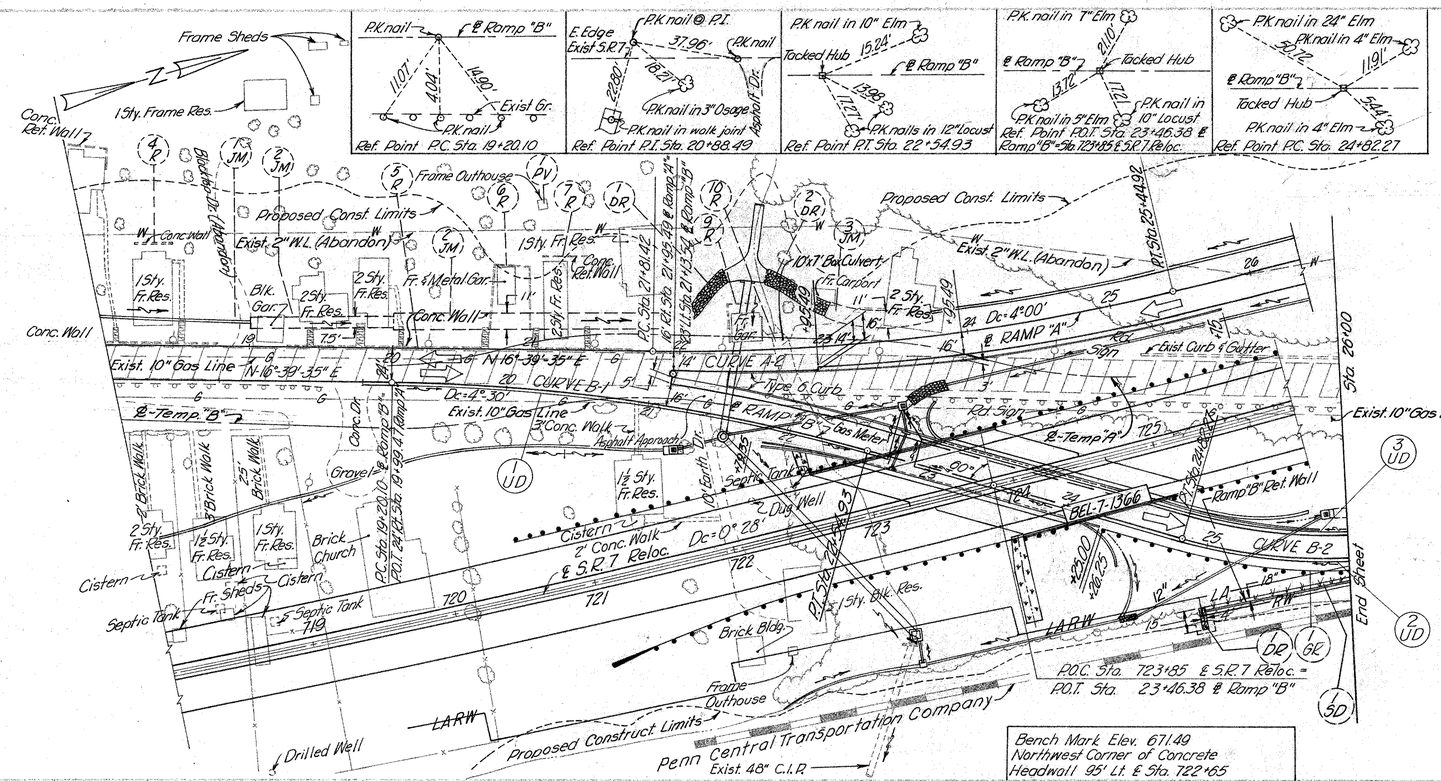
33rd. Street Ramp A
677.89
4:1
670
2 + 50
672.35

33rd. Street Ramp A
677.40
4:1
670
2 + 27.5
670.67

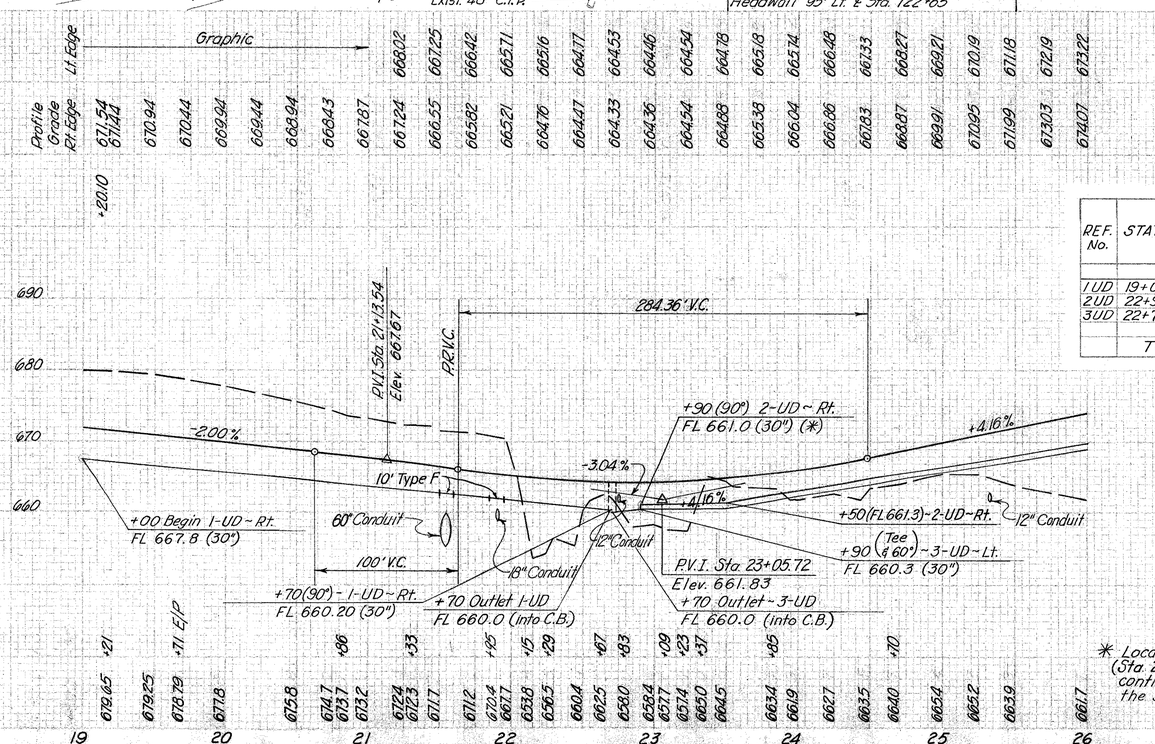
40 20 ℄ 20 40 60 40 20 ℄ 20 40 60

33 RD. STREET

BEL-7-11.89



For Ramp "B" Quantities see Sheet No. 164
For Alignment Plan, see Sheet No. 158
For Grading and Drainage Plan, see Sheet No. 159 & 160
For Ramp "A" Details, see Sheet No. 164 & 165
For Pavement Details, see Sheet No. 178, 179, 180 & 181
For Topo and Removal Items not Shown, see S.R.7 Reloc. Sheet No. 36 & 38.
For Storm Sewer Details, see Sheet No. 244
For Ramp "B" Retaining Wall, see Sheet No. 259 - 266



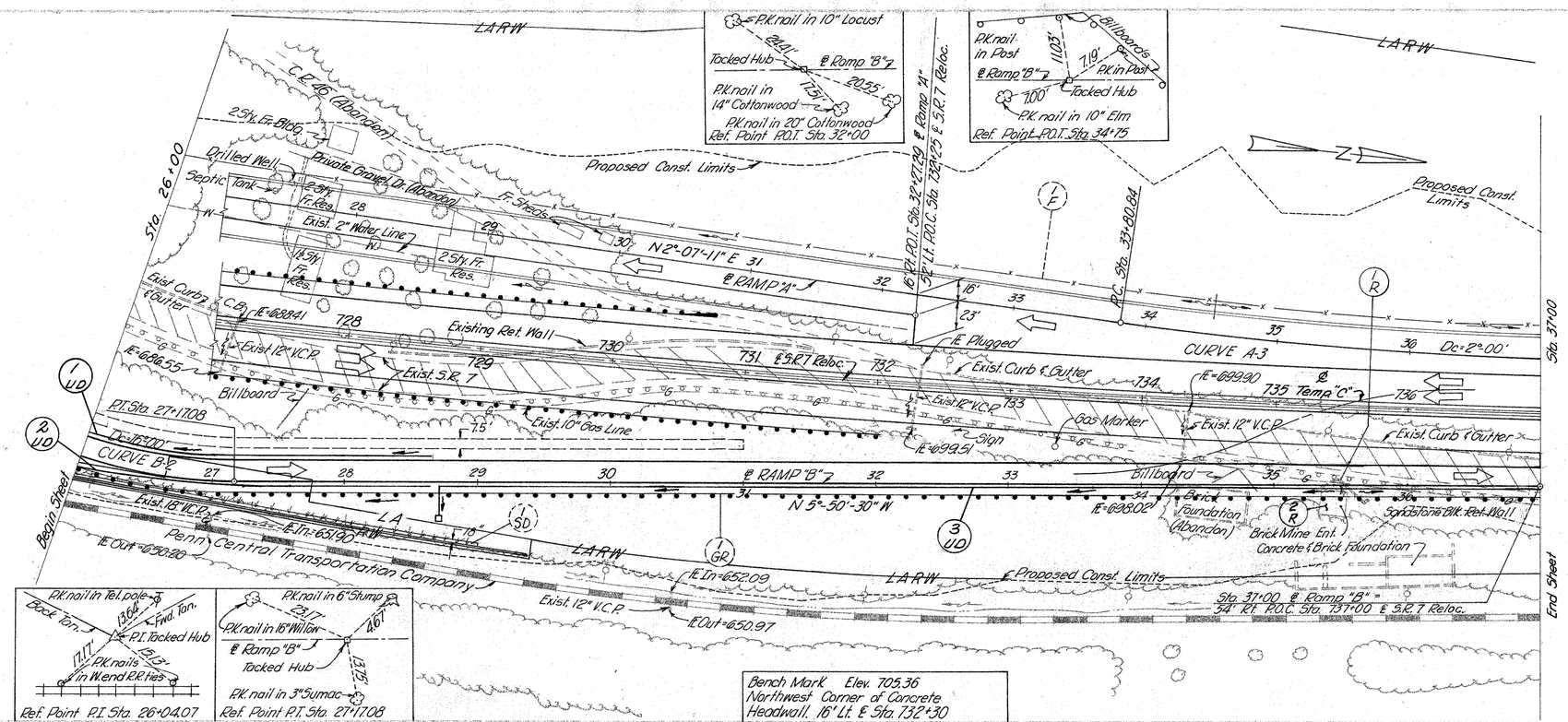
REF. No.	STATION TO STATION	SIDE	* As Per Plan 603 6" Type F	603 6" Type B	Bends 90° Tee	Bends Ea.	* 605 6" Shallow Pipe Underdrain 30"	See Sheet No.
			L.F.	L.F.	Ea.	Ea.	L.F.	
1 UD	19+00 to 22+70	Rt.	30	18	1		359	11A
2 UD	22+90 to 26+00	Rt.		20	1		310	11A
3 UD	22+70 to 26+00	Lt.	10		1	1	330	11A
	TOTALS		40	38			999	

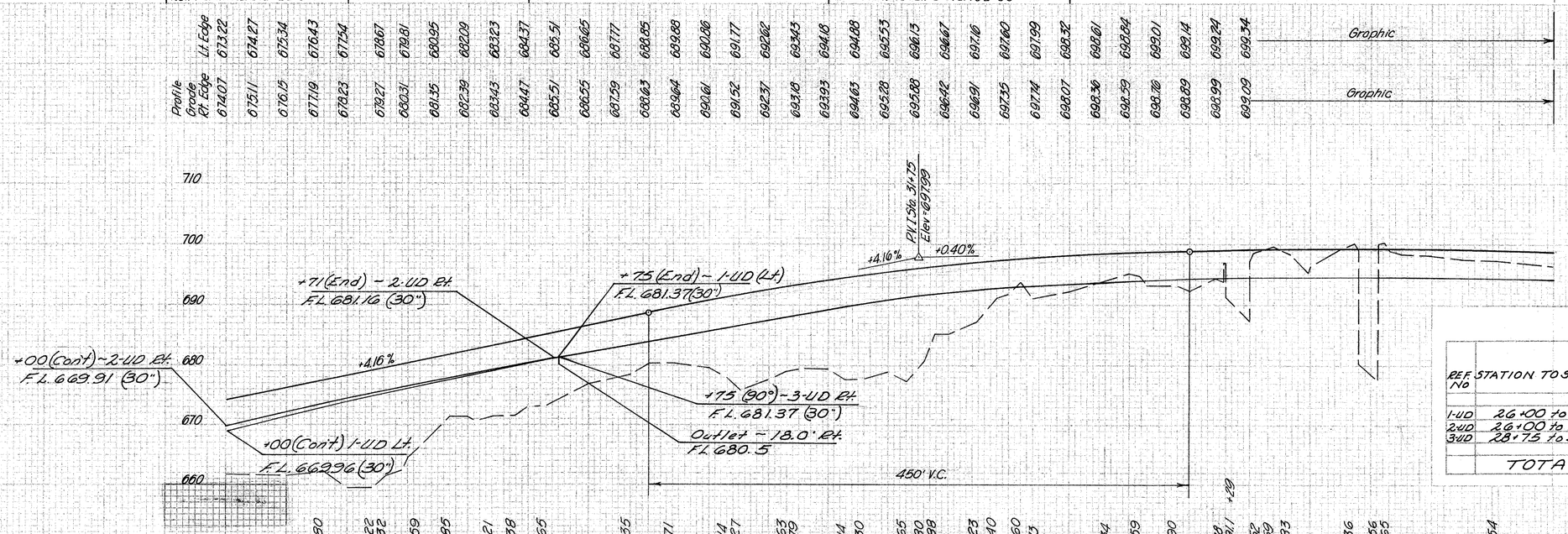
* Locate UD-2 at elevations shown (Sta. 23+50 to 22+90) to assure continuous slope (flow) throughout the system.

RAMP B Sta. 19+20.10 to Sta. 26+00

FHWA REGION	STATE	PROJECT			176 443
5	OHIO				

BEL - 7 - 11.89





For Ramp "B" Quantities, see Sheet No. 164
For Alignment Plan, see Sheet No. 158
For Grading and Drainage Plan, see Sheet No. 160
For Ramp "A" Details, see Sheet No. 165
For Topo and Removal Items not shown, see S.R. 7 Reloc. Sheet No. 38 & 39

** As per plan

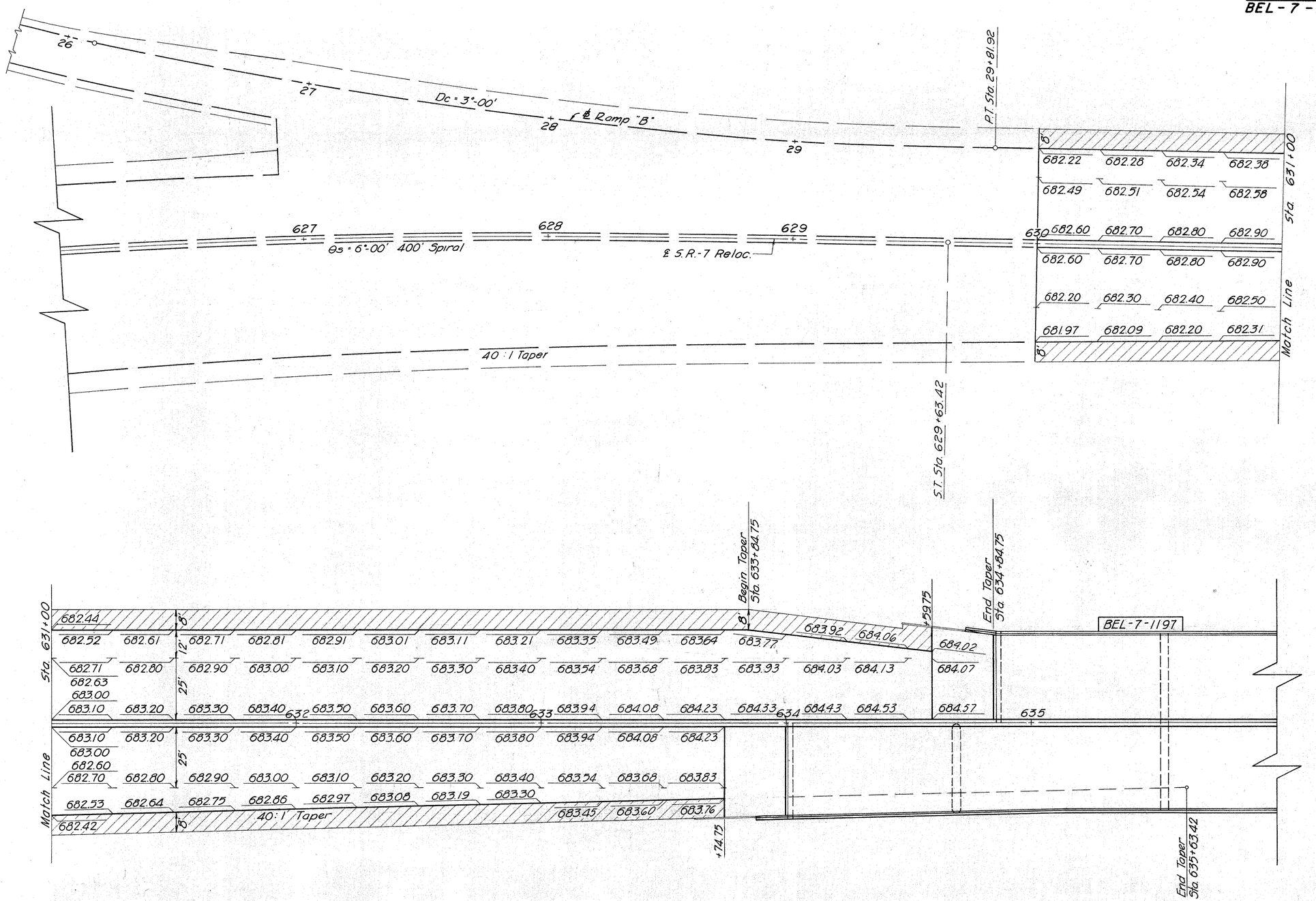
REF No	STATION TO STATION	SIDE	603 6" Type F L.F.	Bends 90° Ea.	605 6" Shallow ** Apt Underdrain 30" L.F.		See Sheet No
1-UD	26+00 to 28+75	Lt.			275		11A
2-UD	26+00 to 28+71	Rt.			271		11A
3-UD	28+75 to 37+00	Rt.	10	1	831		11A
	TOTAL		10		1377		

RAMP B Sta. 26+00 to Sta. 37+00

FHWA REGION	STATE	PROJECT	
5	OHIO		

177
443

BEL - 7 - 11.89

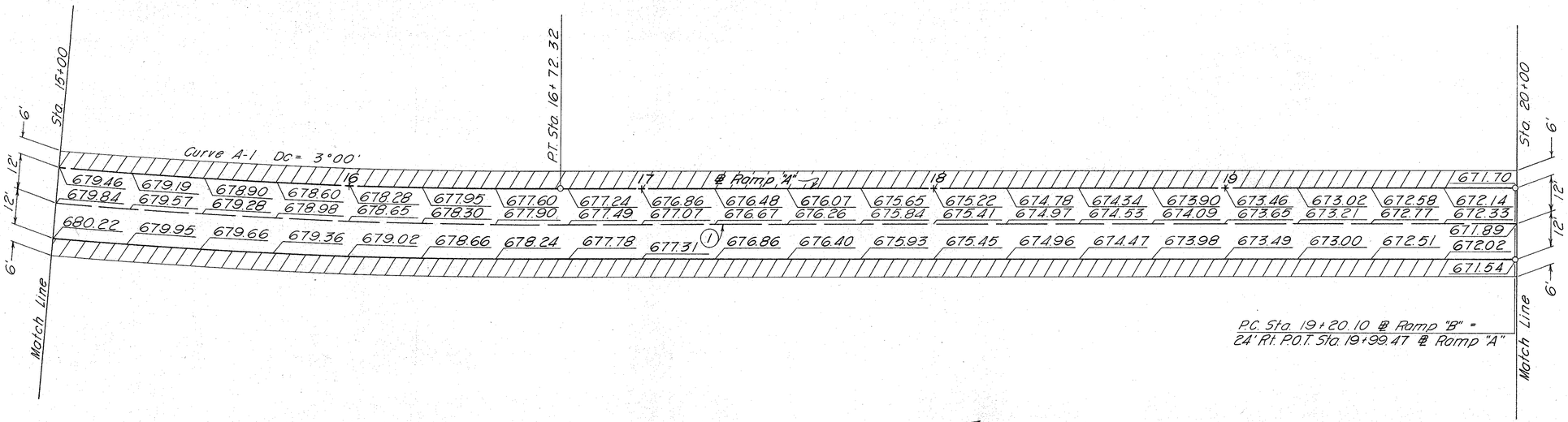


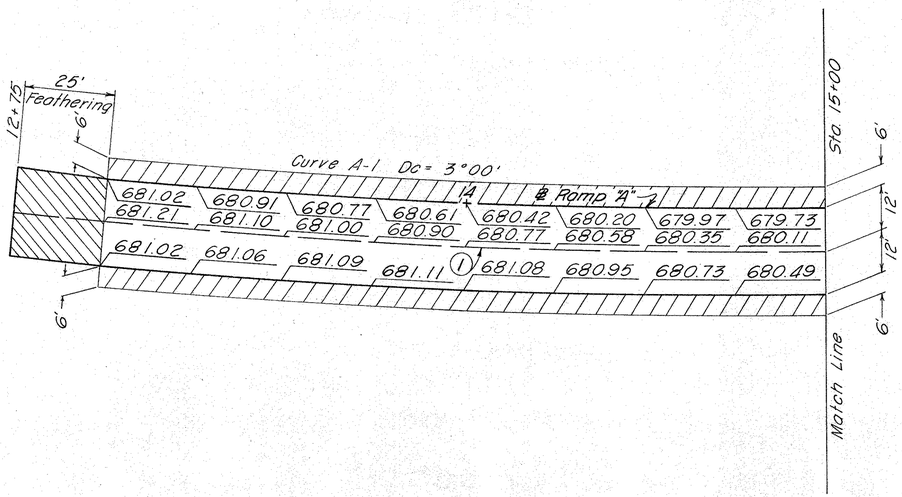
PAVEMENT DETAILS

FHWA REGION	STATE	PROJECT	
5	OHIO		

178
443

BEL - 7 - 11.89





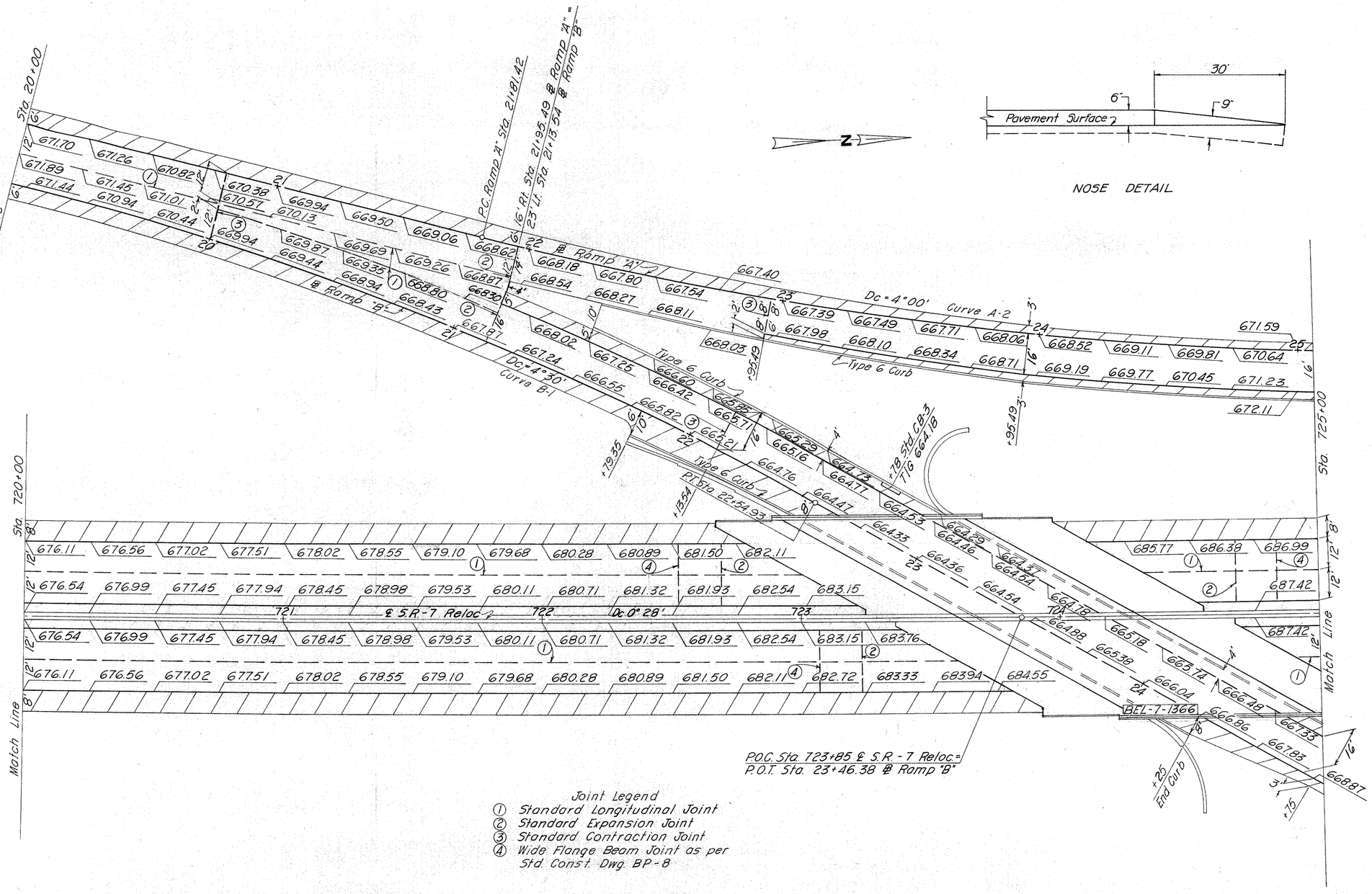
① Standard Longitudinal Joint

PAVEMENT DETAIL

FHWD REGION	STATE	PROJECT	
5	OHIO		

BEL-7-11.89

179
443



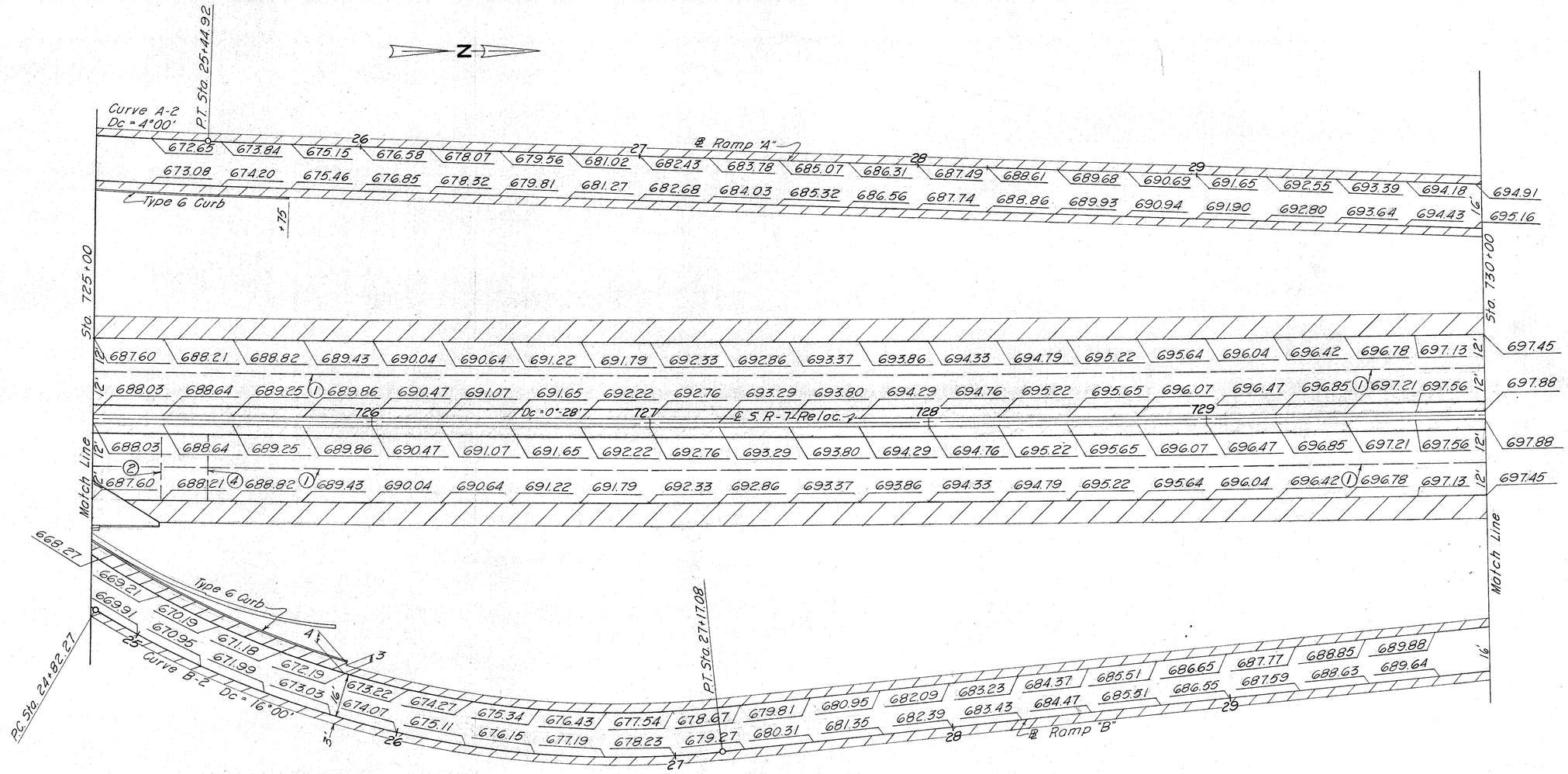
Joint Legend
① Standard Longitudinal Joint
② Standard Expansion Joint
③ Standard Contraction Joint
④ Wide Flange Beam Joint as per Std. Const. Dwg. BP-8

PAVEMENT DETAIL

FHWA REGION	STATE	PROJECT	
5	OHIO		

180/443

BEL - 7 - 11.89



Joint Legend

② Standard Expansion Joint

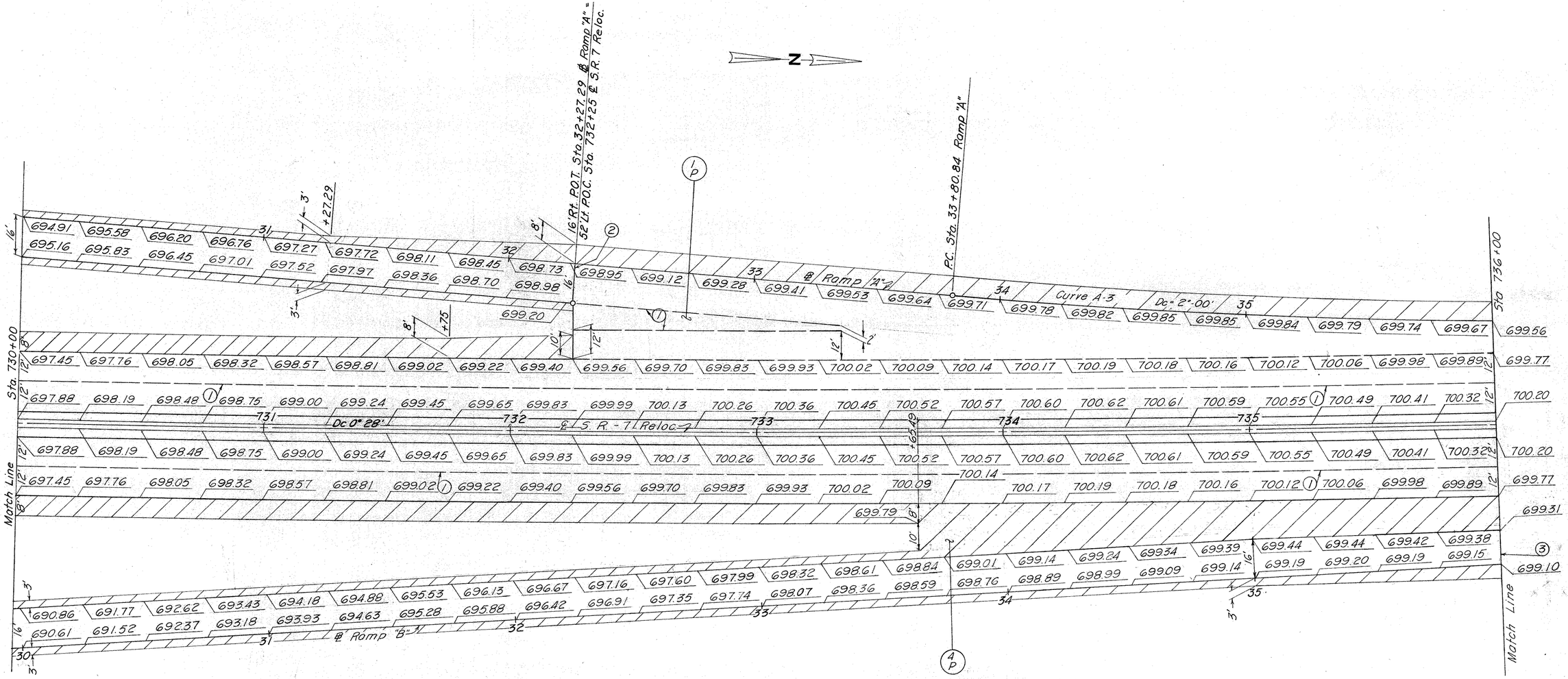
④ Wide Flange Beam Joint as per Std Const. Dwg. BP-8

PAVEMENT DETAIL

FHWA REGION	STATE	PROJECT	
5	OHIO		

181
443

BEL - 7 - 11.89



Joint Legend

① Standard Longitudinal Joint
② Standard Expansion Joint
③ Standard Contraction Joint

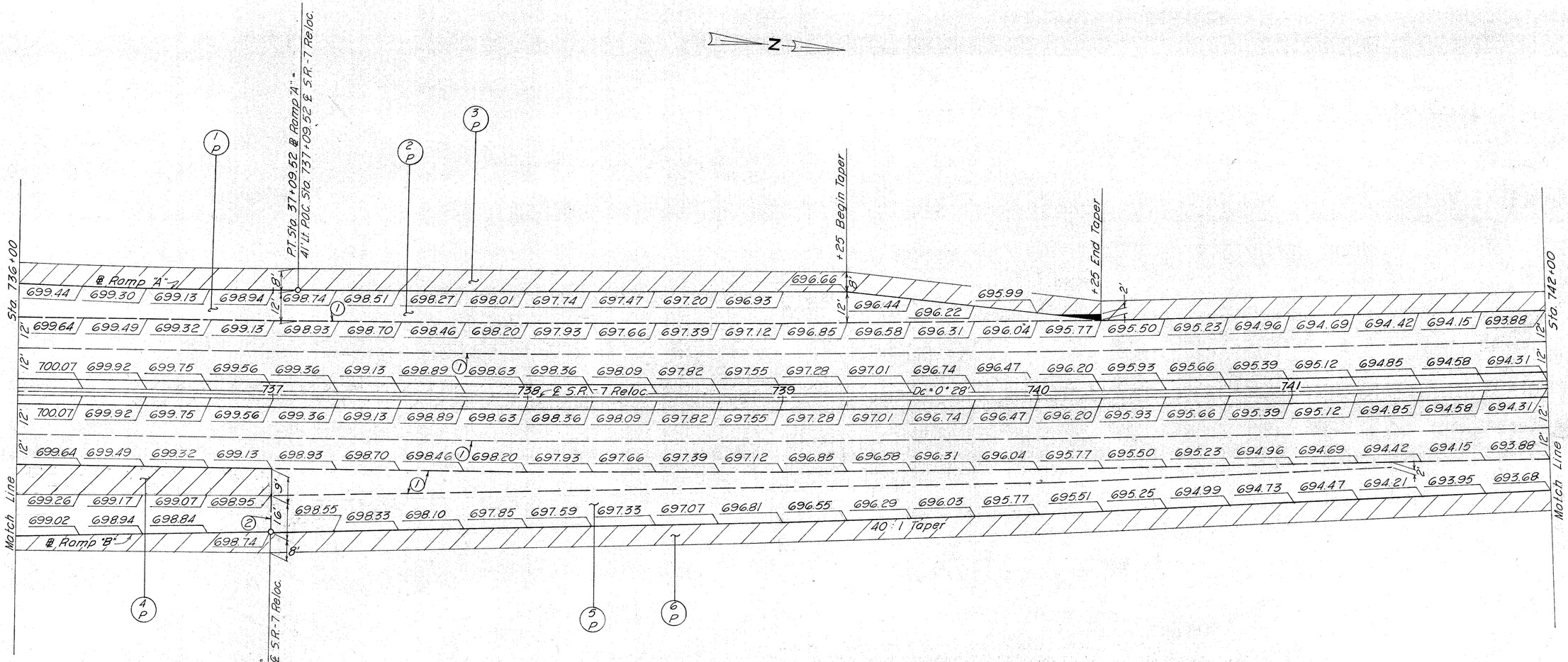
PAVEMENT DETAIL

FHWA REGION	STATE	PROJECT	
5	OHIO		

182
443

BEL - 7 - 11.89

Revised by R.E.S. 6/76
Checked by AWL 1-77



JOINT LEGEND

① Standard Longitudinal Joint
② Standard Expansion Joint

† Shoulder Length
⊕ Length along pavement edge
* Length along S.R.-7 pavement edge

Quantities to sheet No. 16

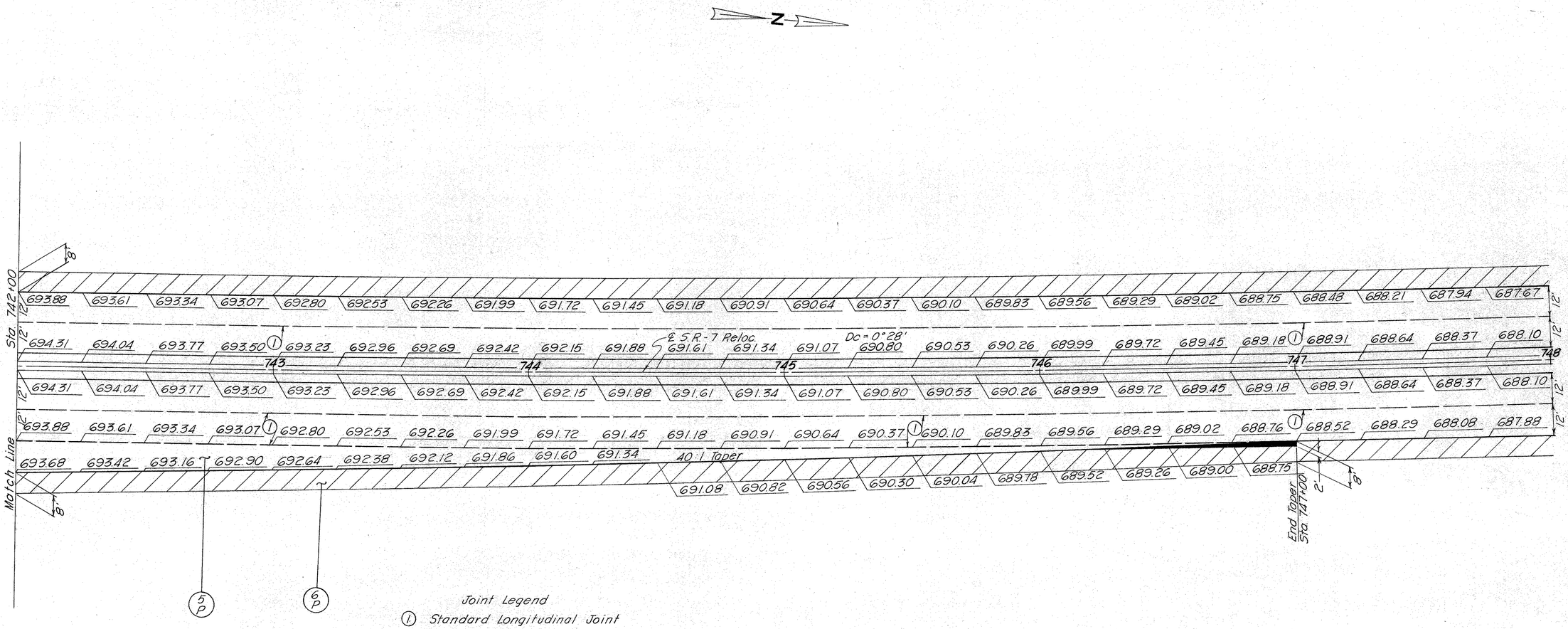
REF. NO.	LOCATION	LIN. FT.	REMARKS	203 Subgrade Compaction	301 Bituminous Aggregate Base	452 9" Plain Portland Cement Conc. Pavt	804 Cement Stabilized Subbase	804 Portland Cement 241 lbs/sq yd 376 lbs/bbl.
	Station to Station			sq. yds.	cu. yds.	sq. yds.	sq. yds.	bbl.
	Ramp "A"							
1 P	32+27.29 37+09.52		see calc. book pg. 10	1307.84	–	1307.84	1307.84	A 83.48
2 P	737+09.52 740+25.00	315.48	see calc. book pg. 9	353.52	–	353.52	353.52	A 22.57
3 P	732+25.00 740+25.00	800.00	† 796.87	E 708.33	E 148.49		H 132.81	A 8.48
	Ramp "B"							
4 P	733+65.49 737+00.00	334.51	See Calc. book pg. 13	477.08	99.40			
5 P	737+00.00 747+00.00	1000.00	†.100338+125+80=9	1402.47	–	1402.47	1402.47	A 89.52
6 P	737+00.00 747+00.00	1000.00	*100371, ⊕ 100344	E 892.19	E 187.03		H 167.24	A 10.67
	TOTALS			5141.43	434.92	3063.83	3363.88	214.72

PAVEMENT DETAIL

FHWA REGION	STATE	PROJECT	FISCAL YEAR
5			

183
443

BEL-7-11.89



Joint Legend

① Standard Longitudinal Joint

PAVEMENT DETAIL

FHWA REGION	STATE	PROJECT	FISCAL YEAR
5			

184
443

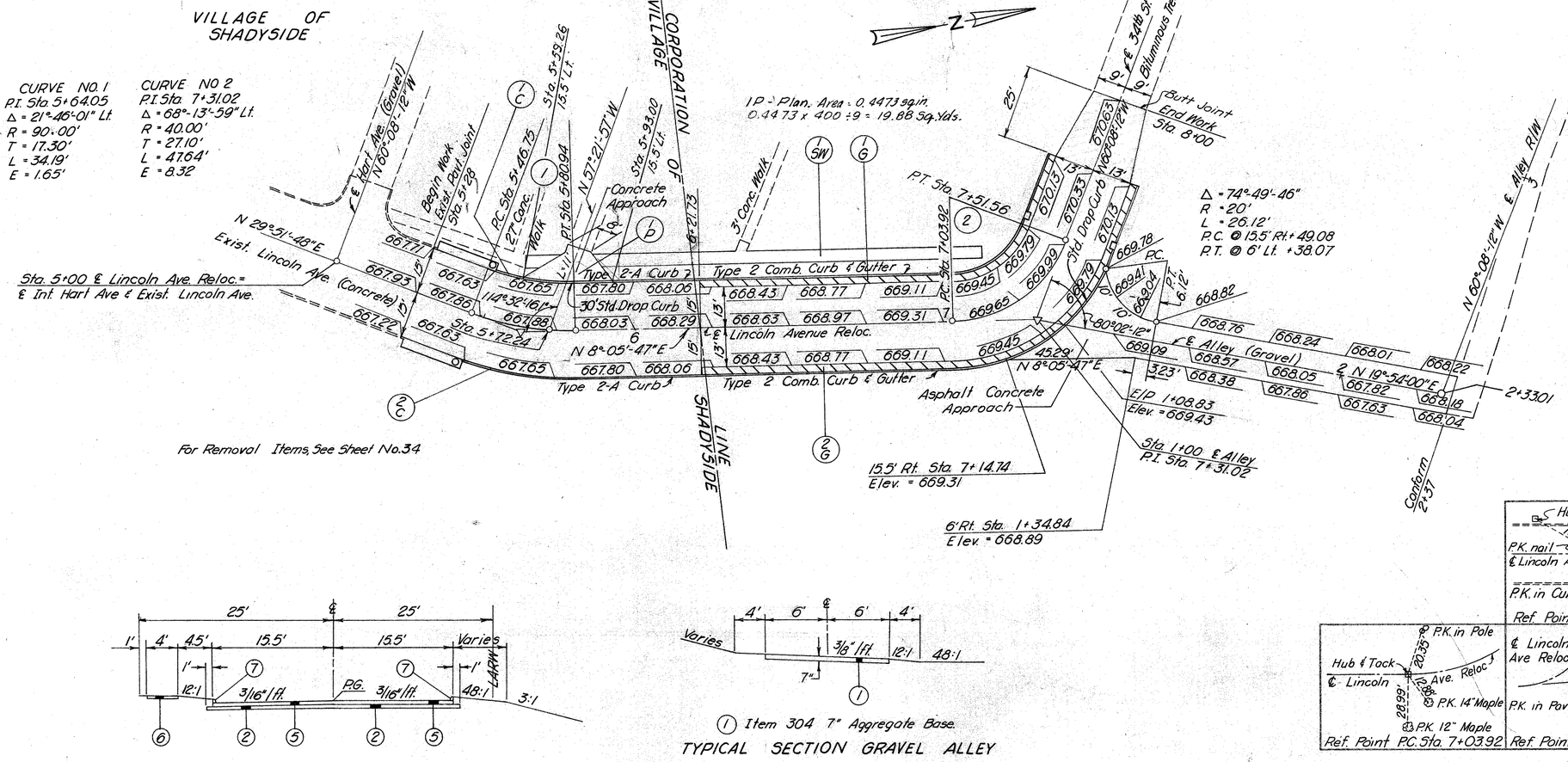
BEL -7-11.89

Revised by GDM 6/74
Checked by AWL 1-77

VILLAGE OF SHADYSIDE

CURVE NO. 1
P.I. Sta. 5+64.05
Δ = 21°-46'-01" Lt.
R = 90.00'
T = 17.30'
L = 34.19'
E = 1.65'

CURVE NO 2
P.I. Sta. 7+31.02
Δ = 68°-13'-59" Lt.
R = 40.00'
T = 27.10'
L = 47.64'
E = 8.32



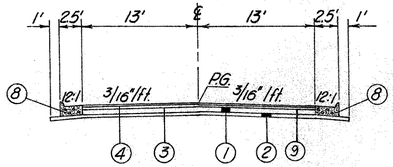
For Removal Items, See Sheet No. 34

② Item 310 4" Subbase, Type 1, Grading B
⑤ Item 452 7" Plain Portland Cement Concrete Pavement
⑥ Item 608 4" Concrete Sidewalk
⑦ Item 609 Type 2-A Curb

TYPICAL SECTION CORPORATION LINE BACK & TYPICAL SECTION ADJOINING PAVEMENT

① Item 304 7" Aggregate Base

TYPICAL SECTION GRAVEL ALLEY

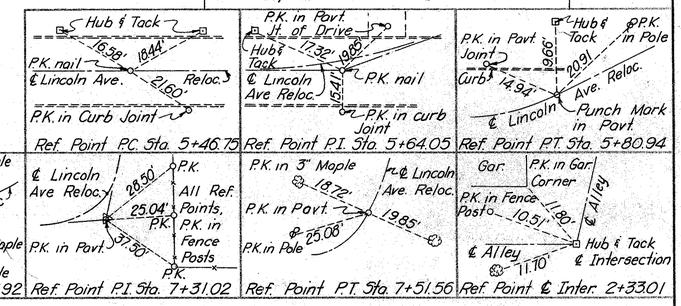


① Item 304 6" Aggregate Base
② Item 310 4" Subbase, Type 1, Grading B
③ Item 402 1½" Asphalt Concrete AC-20
④ Item 404 1¼" Asphalt Concrete AC-20
⑧ Item 609 Combination Curb & Gutter Std. Type 2

⑨ Item 408 Bituminous Prime Coat ., MC-30 or MC-70; Primer 20 or RT-2 or RT-3; applied at the rate of 0.4 gal. per sq. yd.

TYPICAL SECTION CORPORATION LINE AHEAD

Bench Mark Elev. = 671.78
Top of the most Northerly Bolt atop a Fire Hydrant 180' Lt. ℄ Sta. 702+95



REF. NO.	LOCATION		SIDE	310 Subbase Type 1 Grading B	452 7" Plain Portland Cement Conc. Pavt.	608 4" Concrete Walk	609 Curb Type 2-A	609 Combination Curb & Gutter Std. Type 2
	STATION TO STATION			Cu. Yds.	Sq. Yds.	Sq. Ft.	Lin. Ft.	Lin. Ft.
1C	Sta. 5+28	to 6+21.73	Lt.				68.03	
2C	Sta. 5+28	to 6+21.73	Rt.				79.43	
1G	Sta. 6+21.73	to 7+75	Lt.					135.40
2G	Sta. 6+21.73	to 7+75	Rt.					171.14
1SW	Sta. 5+60	to 7+26	Lt.			541		
1P	Sta. 5+72.24		Lt.	2.2	19.88			
	TOTALS			2.2	19.88	541	*147.46	*306.54

* Carried on sheet No. 18

Rev. 5-23-79

LINCOLN AVE. PAVEMENT DETAILS

FHWA REGION	STATE	PROJECT	
5	OHIO		

185
443

BEL-7-11.89

	END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL	SEEDING END WIDTH	SEEDING SQ YDS.
					15	79
					28	193
660	10	30			30	
					Alley	
			7	17		
					0	
660	11	19				27
					10	
			15	12		
						6
660	12	0				
			4			
Sta. 5+28.00	0	0			13 Ahead	
					5 Back	
						69
660						
					20	
						117
660						
					22	
						163
660						

	END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
2+37	8	10	1	1
2+33	8	10		
2+00	44	0	32	6
1+40	57	0	112	
1+10	0	0	32	
670				
			8	5
670				
7+75	9	5		
			8	5
Ahead	9	5		
Back	9	1		
			20	1
660	22	1		
7+15 Back	22	16		
			12	9
	22	16		
660				
			46	42
			28	29
660				
			35	55

668.39
2+33
668.5
Alley ℳ

667.82
2+00
668.4
Alley ℳ

668.78
1+40 (ALLEY)
669.4

8+50
671.26

670.63
8+00
670.63

669.97
7+50
669.62

669.31
7+00
669.3

668.65
6+50
668.44

668.05
6+00
667.27

667.92
5+80.94
667.56

667.86
5+46.75
667.78

668.06
5+00
668.06

668.46
4+50
668.48

4+00
668.82

Lincton Ave. ℳ
℄ Exist.
24:1
48:1

Lincoln Ave. ℳ
℄ Exist.
48:1

Lincoln Ave. ℳ
48:1

4:1
12:1
Alley ℳ

7+50 Ahead
7+50 Back

Lincoln Ave. ℳ
7+15 Ahead
7+15 Back
℄ Exist.
48:1

Lincoln Ave. ℳ
℄ Exist.
48:1

40 20 ℄ 20 40 60 40 20 ℄ 20 40

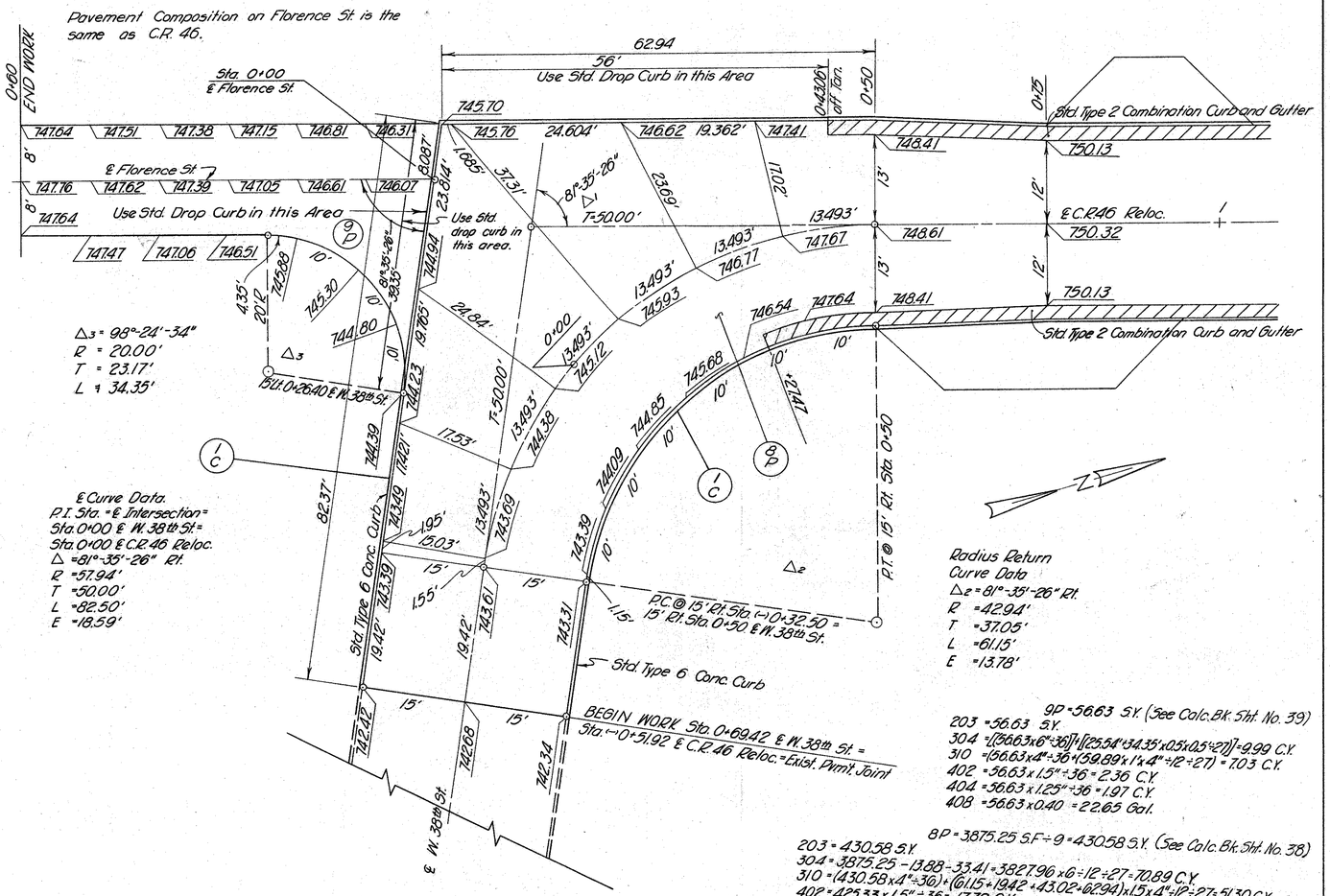
LINCOLN AVE.

FHWA REGION	STATE	PROJECT	FISCAL YEAR
5			

186
443

BEL-7-11.89

Pavement Composition on Florence St. is the same as C.R. 46.



INTERSECTION DETAIL
@ C.R. 46 and W. 38th ST.

0 10 20 30 40
Scale

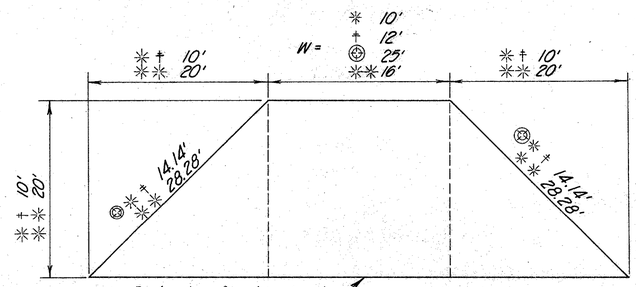
9P = 56.63 S.Y. (See Calc. Bk. Sht. No. 39)
203 = 56.63 S.Y.
304 = [(56.63 x 6" ÷ 36) + (25.54' x 34.35' x 0.5' x 0.5 ÷ 27)] = 9.99 C.Y.
310 = (56.63 x 4" ÷ 36) + (39.89' x 1¼" ÷ 12 ÷ 27) = 1.03 C.Y.
402 = 56.63 x 1.5" ÷ 36 = 2.36 C.Y.
404 = 56.63 x 1.25" ÷ 36 = 1.97 C.Y.
408 = 56.63 x 0.40 = 22.65 Gal.

8P = 3875.25 S.F. ÷ 9 = 430.58 S.Y. (See Calc. Bk. Sht. No. 38)
203 = 430.58 S.Y.
304 = 3875.25 − 13.88 − 33.41 = 3827.96 x 6 ÷ 12 ÷ 27 = 70.89 C.Y.
310 = (430.58 x 4" ÷ 36) + (6.15' + 19.42' + 43.02' + 62.94') x 1.5' x 4" ÷ 12 ÷ 27 = 5.30 C.Y.
402 = 425.33 x 1.5" ÷ 36 = 17.72 C.Y.
404 = 425.33 x 1.25" ÷ 36 = 14.76 C.Y.
408 = 425.33 x 0.40 = 170.13 Gal.
1C 609 = Curb Type 6 = 82.37' + 56.00' + 19.42' + 44.34' = 202.13 Lin. ft.
1C 609 = Combination Curb and Gutter Type 2 = 6.94' + 16.70' = 23.64 Lin. ft.

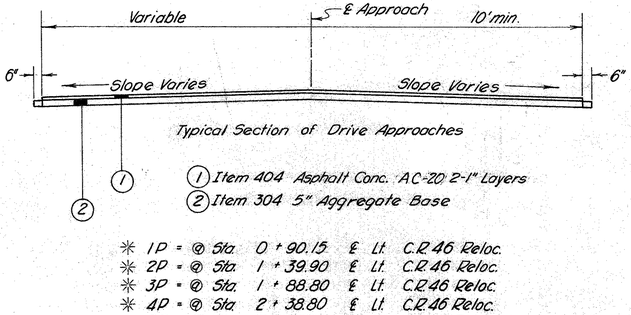
REF. NO.	STATION TO STATION	SIDE	203 Subgrade Compact. S.Y.	304 5" Aggr. Base Course C.Y.	310 Subbase Type 1 Grading B 4" C.Y.	402 Asphalt Concrete 1.5" C.Y.	404 Asphalt Concrete 2" C.Y.	408 Bitum. Prime Coat Gal.	609 Curb Type 6 L.F.	609 Comb. Curb & Gutter L.F.	304 6" Aggr. Base Course C.Y.
1P	0+90.15 ℄ C.R.46	Lt.		3.30			1.23				
2P	1+39.90 ℄ C.R.46	Lt.		3.30			1.23				
3P	1+88.80 ℄ C.R.46	Lt.		3.30			1.23				
4P	2+38.80 ℄ C.R.46	Lt.		3.30			1.23				
5P	3+73.64 ℄ C.R.46	Lt.		8.71			1.36				
6P	0+72.50 ℄ C.R.46	Rt.		5.62			2.16				
7P	1+84.20 ℄ C.R.46	Rt.		19.70			4.44				
8P	(↩)0+51.92 to 0+50 (C.R.46)	Lt. & Rt.	430.58		51.30	17.72	14.76	170.13			70.89
9P	0+00 to 0+24.36 (Florence St.)	Lt. & Rt.	56.63		7.03	2.36	1.97	22.65			9.99
10P	8+08.66 (℄ C.R. 46)	Rt.		22.53			4.44				
11P	6+75 (℄ C.R. 46)	Lt.		23.08			4.49				
1C	(↩)0+51.92 to 0+50 (C.R.46)	Lt. & Rt.							202.13	23.64	
			*						*	‡	
	TOTALS		487.21	92.84	58.33	20.08	38.54	192.78	202.13	23.64	80.88

Calculations By: AWL Date: 7-2-69
Checked JWL 7-9-69

* Carried on Sheet 118
‡ Included on Sheet 10



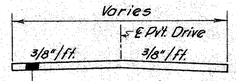
Typical of Drive Approaches
Scale: ¼" = 1'



Typical Section of Drive Approaches

(1) Item 404 Asphalt Conc. AC-20, 2-1" Layers
(2) Item 304 5" Aggregate Base

* 1P = @ Sta. 0 + 90.15 ℄ Lt. C.R.46 Reloc.
* 2P = @ Sta. 1 + 39.90 ℄ Lt. C.R.46 Reloc.
* 3P = @ Sta. 1 + 88.80 ℄ Lt. C.R.46 Reloc.
* 4P = @ Sta. 2 + 38.80 ℄ Lt. C.R.46 Reloc.
+ 5P = @ Sta. 3 + 73.64 ℄ Lt. C.R.46 Reloc.
⊛ 6P = @ Sta. 0 + 72.50 ℄ Rt. C.R.46 Reloc.
** 7P = @ Sta. 1 + 84.20 ℄ Rt. C.R.46 Reloc.
** 10P = @ Sta. 8 + 08.66 ℄ Rt. C.R.46 Reloc.
** 11P = @ Sta. 6 + 75.00 ℄ Lt. C.R.46 Reloc.



Typical Section of Private Drives

CALCULATIONS OF DRIVE and/or APPROACH AREAS

AREA 1P, 2P, 3P and 4P = 10' x 10' x 2 ÷ 9 = 22.22 S.Y.
Item 304 = (22.22 S.Y. x 5" ÷ 36) + (14.14' x 0.5' x 5" ÷ 12 ÷ 27) x 2 = 3.30 C.Y.
Item 404 = 22.22 S.Y. x 2" ÷ 36 = 1.23 C.Y.

AREA 5P = [(10' x 10') + (12' x 10')] ÷ 9 = 24.44 S.Y.
Item 304 = (24.44 S.Y. x 5" ÷ 36) + (14.14' x 0.5' x 5" ÷ 12 ÷ 27) x 2 + (27.5' x 12' ÷ 9 x 5" ÷ 36) = 8.71 C.Y.
Item 404 = 24.44 S.Y. x 2" ÷ 36 = 1.36 C.Y.

AREA 6P = [(10' x 10') + (25' x 10')] ÷ 9 = 38.89 S.Y.
Item 304 = (38.89 S.Y. x 5" ÷ 36) + (14.14' x 0.5' x 5" ÷ 12 ÷ 27 x 2) = 5.62 C.Y.
Item 404 = 38.89 S.Y. x 2" ÷ 36 = 2.16 C.Y.

AREA 7P = [(20' x 20') + (20' x 16')] ÷ 9 = 80.00 S.Y.
Item 304 = (80.00 S.Y. x 5" ÷ 36) + (28.28' x 2 x 0.5' x 5" ÷ 12 ÷ 27) + (33' x 16' ÷ 9 x 5" ÷ 36) = 19.70 C.Y.
Item 404 = 80.00 S.Y. x 2" ÷ 36 = 4.44 C.Y.

AREA 10P = [(20' x 20') + (20' x 16')] ÷ 9 = 80.00 S.Y.
Item 304 = (80.00 S.Y. x 5" ÷ 36) + (28.28' x 2 x 0.5' x 5" ÷ 12 ÷ 27) + (44.5' x 16' ÷ 9 x 5" ÷ 36) = 22.53 C.Y.
Item 404 = 80.00 S.Y. x 2" ÷ 36 = 4.44 C.Y.

AREA 11P = 10P + (3.1416 x 1909.86² − 57288.73) ÷ 9 = 80.803 S.Y.
Item 304 = (80.803 S.Y. x 5" ÷ 36) + (28.28' x 2 x 0.5' ÷ 12 ÷ 27) + (44.5' x 16' ÷ 9 x 5" ÷ 36) = 23.08 C.Y.
Item 404 = 80.803 S.Y. x 2" ÷ 36 = 4.49 C.Y.

Rev. 5-23-29

C.R. 46 RELOC. & W. 38th ST. INTERSECTION DETAILS

FHWA REGION	STATE	PROJECT	
5	OHIO		

187
443

BEL - 7-11.89

15ty. Frame Res.

15ty. Frame Res.

Exist. 2'x1.5' Inlet
℄ Grate = 745.20
IE 12" = 745.20

Exist. 2'x1.5' Inlet
℄ Grate = 746.72
IE 24" = 742.25

Begin Taper
L.T.Rt. Sta 0+50

End Taper
L.T.Rt. Sta 0+75

Sta. 0+00 ℄ C.R. 46 Reloc.
Sta. 0+00 ℄ W. 38th Street

1 Sty. Frame Residence

1 Sty. Frame Residence

1 Sty. Frame Residence

1 Sty. Frame Residence

15ty. Frame Residence

Exist. 6" V.C.P.

Exist. 4" W.L. (Abandon)

1" W.L.

2-A-16 Inlet

33" Conduit

Conc. Walk

Exist. 6" V.C.P.

1" W.L.

Exist. 24" V.C.P.

N15°38'18"E

81°35'26"

T.30'

12" Conduit

℄ 750.07

℄ C.R. 46 Reloc.

℄ 751.83

℄ 754.97

Exist. 12" Steel Pipe

Std. No. 3 C.B.

15" Conduit

30" Conduit

2-A-18 Inlet

2-A-20 Inlet

27" Conduit

Ex. 24" V.C.P.

Exist. 1" W.L. (Abandon)

92°02'45"

N15°38'18"E

Exist. 8" V.C.P.

Prop. 8" San. by City

7.5'

P.C. Sta. 4+15.52

0+52

+13.64

+39.90

+38.80

+90.15

Exist. 24" V.C.P. (Abandon)

Exist. 8" V.C.P.

Exist. Manhole

Exist. Fire Hydt.

Ex. 12" V.C.P.

Ex. 8" San.

Ex. 18" C.M.P. ℄ 748.00

℄ 745.59

Std. #3 C.B.

42.24' ℄

25'

0+24

0+18.66

T.30'

15'

15'

Exist. P/L Joint
BEGIN WORK Sta. 0+69.42

P.C. Sta. (-) 0+32.50

T.G. (Exist.) = 745.20
IE 8" = 736.22

T.G. Prop. 745.82

P.T. Sta. 0+80.30

T.G. (Exist.) 749.80
IE 8" = 740.70

T.G. (Prop.) 750.59

E = 12.72'

E = 49.87'

Ex. 6" V.C.P.

+84.20

0+65

Standard Type 2 Approach
Asphalt Concrete.

16'

5'

T.G. (Prop.) 768.55
T.G. (Exist.) = 764.22
IE 8" = 761.30

For Existing Gas and Water Lines, see Sheet No. 249 & 250
For Storm Sewer Details, see Sheet No. 249 & 250
For Drive Approach Details, see Sheet No. 186
For Intersection Details, see Sheet No. 186

2 Sty. Frame House

Exist. Conc. Curb

Exist. 4" W.L.

Exist. Conc. Curb

1 Sty. Concrete Block Bldg.

Ex. 8" V.C.P.

S65°57'08"E
℄ Ex. 38th Street

Swimming Pool

Ex. Concrete Wall

Park Drive No. 1

Earth Drive

Earth Drive

℄ W. 38th St.

15'

15'

Concrete Curb

Concrete Curb

1

2

TYPICAL SECTION ADJOINING PVM'T.
@ STATION 0+69.42 (W. 38th St.)

1 6" Reinforced Concrete
2 6" Aggregate Base

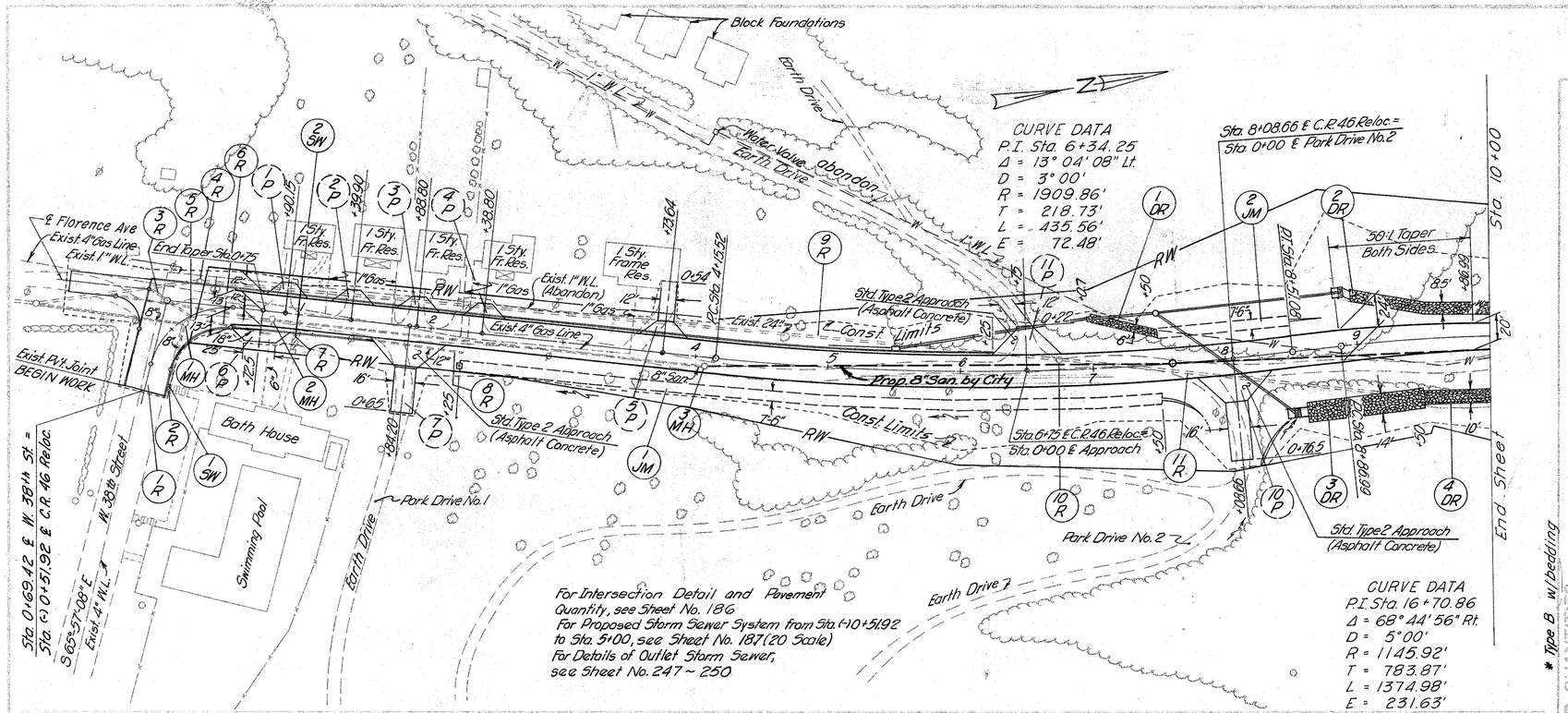
C.R. 46 Sta. 0+00 to Sta. 5+00

Revised by R.E.S. 8-76
Checked by AWL 1-77

FHWA REGION	STATE	PROJECT	
5	OHIO		

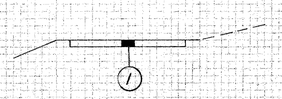
188
443

BEL - 7 - 11.89



For Intersection Detail and Pavement Quantity, see Sheet No. 186
For Proposed Storm Sewer System from Sta. (-)0+51.92 to Sta. 5+00, see Sheet No. 187 (20 Scale)
For Details of Outlet Storm Sewer, see Sheet No. 247 ~ 250

Note:
For Profile Sta. (-)0+51.92 to Sta. 10+00, see Sheet No. 189



Typical Section Adjoining Pavement (Florence Street)
(1) 6" 304 Aggregate Base

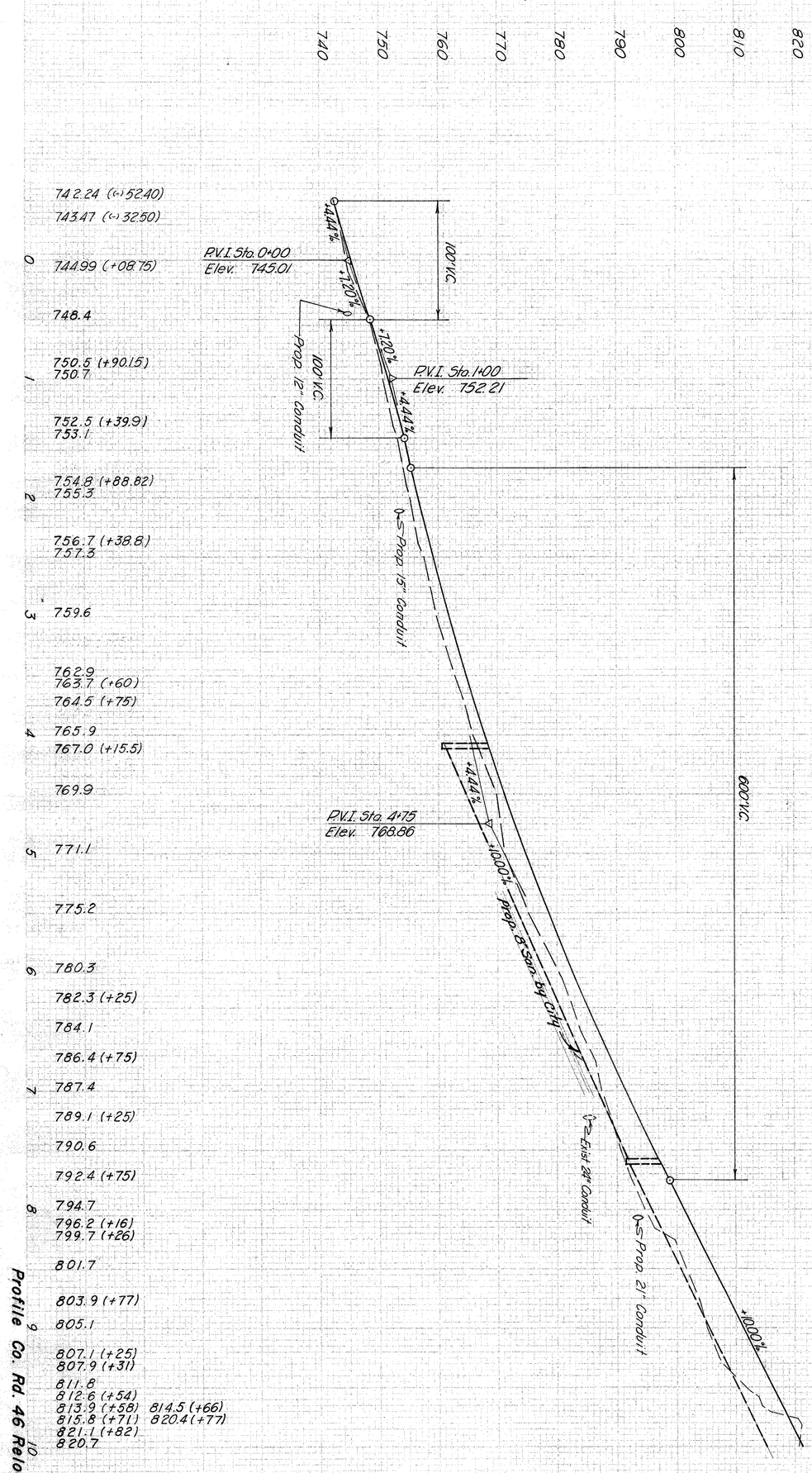
* Type B w/bedding

ESTIMATED QUANTITIES

SEE SHEET NO.	STATION TO STATION	SIDE	202 Pavt. Removed S.Y.	202 Inlet Removed Ea.	202 Pipe Removed & Plugged Under L.F.	202 Manhole Removed Ea.	202 Sidewalk Removed S.F.	601 Rock Channel Prot.* C.Y.	604 Manhole Adjusted to Grade Ea.	604 Manhole Reconst. to Grade Ea.	608 Concrete Sidewalk 4" S.F.	867 Seeding & Mulching S.Y.
	1R 0+18.67 to 0+69.42	℄ Rt.	175									
	2R 0+62.80 to 0+81.17	Rt. & Lt.		1	34		21					
	3R 0+08 to 0+23	Lt.		1								
	4R 0+20 to 0+78	Rt.			46							
	5R 0+32 to 1+00	Rt.			8							
	6R 1+48 to 2+20	Rt.			78							
	7R 2+00 to 6+74	Lt.			474	1						
	8R 6+74 to 9+30	Lt. & Rt.			258							
	9R 0+16 to 0+81	Rt.										
	10R 4+08 to 1+00	Rt.					60					
	11R 7+07 to 7+50	Lt.						23				
	1DR 8+99 to 9+00	Lt.						64				
	2DR 8+58 to 9+50	Rt.						99				
	3DR 9+50 to 10+00	Rt.						37				
	1JM 2+25 to 7+50	Rt.										
	2JM 7+50 to 8+45.08	Lt.										
	1SW 0+62.80 to 1+00	Rt.										
	2SW	Rt.										

			175	2	888	1	81	217	1	1	81	527
									1	1	21 80	443 84

CO. RD. 46 RELOCATION Sta. - 0+51.92 to Sta. 10+00



Rt. Edge	Profile Grade	Lt. Edge
(-) 0 + 51.92	742.68	
	743.99	
	745.36	
	746.90	
	748.61	
	750.32	
	751.86	
	753.23	
	754.43	
	755.54	
756.49	756.68	756.49
757.70	757.88	757.69
758.98	759.13	758.94
760.34	760.44	760.25
761.77	761.81	761.62
763.26	763.24	763.05
764.81	764.73	764.54
766.41	766.27	766.07
768.07	767.87	767.65
769.80	769.54	769.28
771.57	771.25	770.93
773.41	773.03	772.65
775.29	774.86	774.43
777.22	776.76	776.30
779.18	778.70	778.22
781.19	780.71	780.23
783.26	782.78	782.30
785.38	784.90	784.42
787.56	787.08	786.60
789.80	789.32	788.84
792.10	791.62	791.14
794.44	793.98	793.52
796.80	796.39	795.98
799.19	798.86	798.53
801.60	801.36	801.12
803.99	803.86	803.73
806.37	806.36	806.35
808.73	808.86	808.99
811.08	811.36	811.64
813.46	813.86	814.26
815.87	816.36	816.85
818.30	818.86	819.42
820.74	821.36	821.98

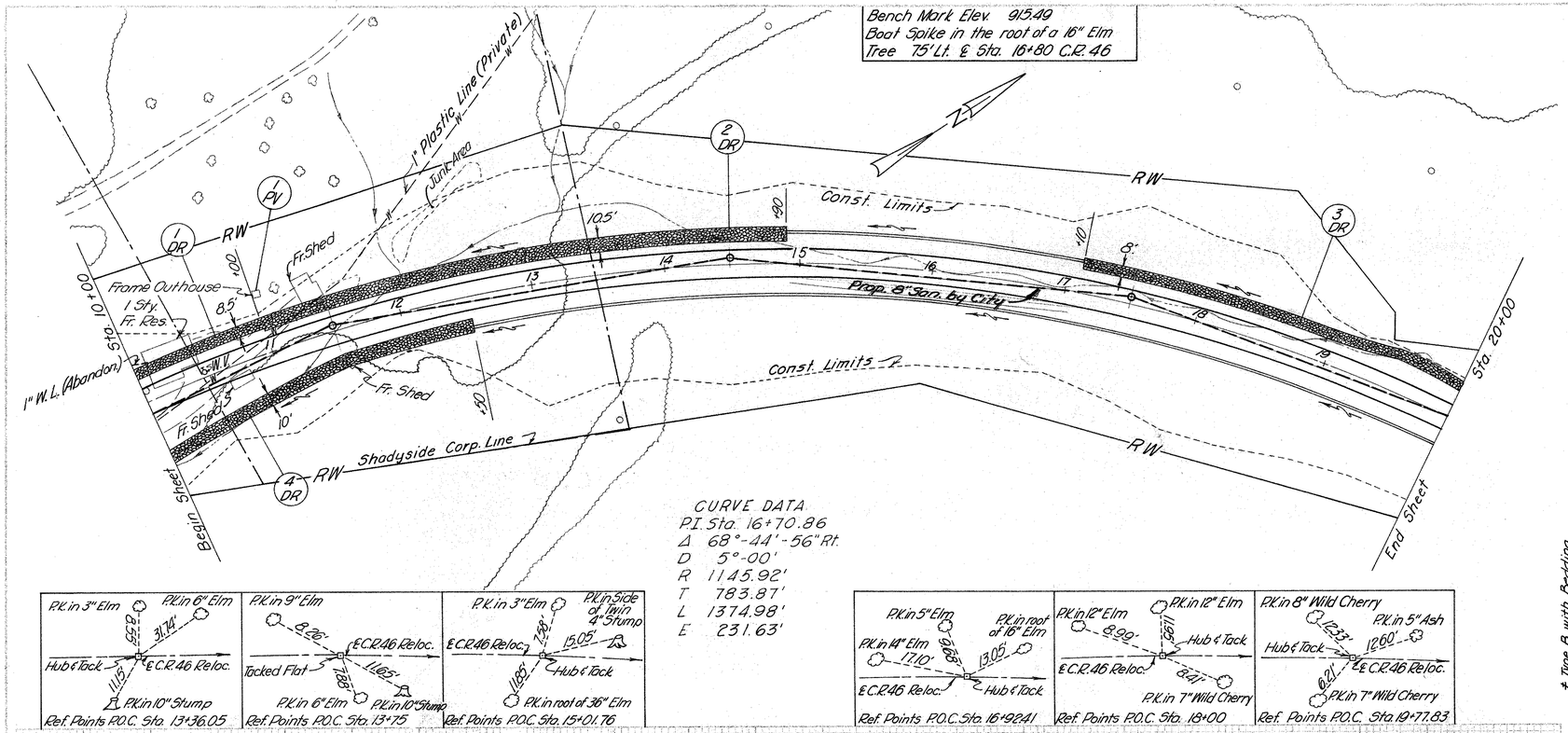
Profile Co. Rd. 46 Relocation Sta. 0+00 to Sta. 10+00

FHWA REGION 5 | STATE OHIO | PROJECT

BEL- 7 - 11.89

189
443

FHWA REGION 5 | STATE OHIO | PROJECT | 190 443
BEL-7-11.89



CURVE DATA
P.I. Sta. 16+70.86
Δ 68°-44'-56" Rt.
D 5°-00'
R 1145.92'
T 783.87'
L 1374.98'
E 231.63'

Note:
For Profile, Sta. 10+00 to Sta. 20+00, see Sheet No. 191

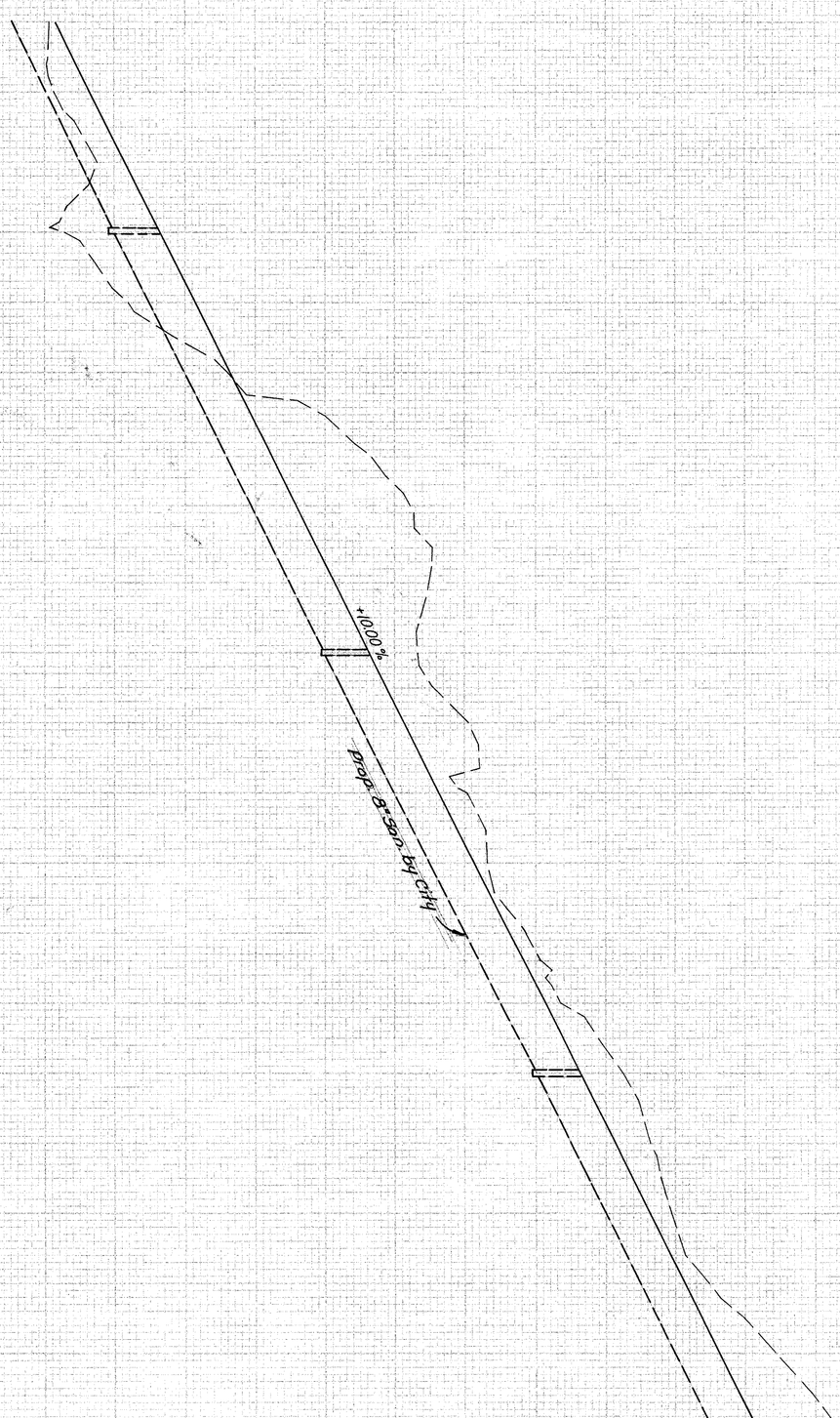
10 11 12 13 14 15 16 17 18 19 20

ESTIMATED QUANTITIES

REF. NO.	STATION TO STATION	SIDE	601 Rock Channel Prot.† C.Y.	601 Paved Gutter * L.F.	660 Sodding S.Y.	202 Privy Vault Removed Ea.
			* as per plan			
1DR	10+00 to 11+00	Lt.	64			
2DR	11+00 to 14+90	Lt.	309			
3DR	17+10 to 20+00	Lt.	178			
4DR	10+00 to 12+50	Rt.	183			
1PV	11+01	Lt.				1
	from sheet 196			173	28	
			734	173	28	1

† Type B with Bedding

Co. Rd. 46 Relocation Sta. 10+00 to Sta. 20+00



	Rt. Edge	℄ Profile Grade	Lt. Edge
10	820.7		
	820.4 (+27)		
	820.2 (+30)		
	820.3 (+38)		
	821.3		
	822.7 (+63)		
	824.3 (+71)		
	826.0 (+86)		
11	827.6		
	826.3 (+17)		
	823.2 (+31)		
	822.1 (+43)		
	820.8 (+47)		
	822.9		
	825.1 (+56)		
	829.8 (+90)		
12	832.0		
	832.8 (+06)		
	838.7 (+25)		
	844.1 (+41)		
	846.1		
	848.8 (+66)		
	856.1 (+70)		
	860.0 (+81)		
13	864.1		
	866.7 (+10)		
	868.8 (+24)		
	871.2 (+36)		
	872.8		
	872.9 (+61)		
	875.4 (+75)		
	875.3 (+88)		
14	874.5 (+11)		
	873.1 (+35)		
	873.3		
	873.5 (+59)		
	875.3 (+74)		
	880.6		
15	882.0 (+15)		
	880.2 (+32)		
	877.9 (+38)		
	879.1 (+47)		
	880.3		
	883.0 (+77)		
16	883.2		
	884.2 (+22)		
	888.2 (+46)		
	888.7		
	890.7 (+69)		
	892.2 (+76)		
	891.3 (+82)		
	892.1 (+87)		
17	893.5		
	897.0 (+10)		
	899.5 (+29)		
	902.6		
	904.8 (+69)		
	906.4		
18	907.3 (+08)		
	907.9 (+24)		
	909.5		
	911.4 (+80)		
	914.9		
19	916.4 (+11)		
	919.9 (+25)		
	924.6		
	929.6 (+78)		
20	932.8		

820.74	821.36	821.98
823.21	823.86	824.51
825.70	826.36	827.02
828.20	828.86	829.52
830.70	831.36	832.02
833.20	833.86	834.52
835.70	836.36	837.02
838.20	838.86	839.52
840.70	841.36	842.02
843.20	843.86	844.52
845.70	846.36	847.02
848.20	848.86	849.52
850.70	851.36	852.02
853.20	853.86	854.52
855.70	856.36	857.02
858.20	858.86	859.52
860.70	861.36	862.02
863.20	863.86	864.52
865.70	866.36	867.02
868.20	868.86	869.52
870.70	871.36	872.02
873.20	873.86	874.52
875.70	876.36	877.02
878.20	878.86	879.52
880.70	881.36	882.02
883.20	883.86	884.52
885.70	886.36	887.02
888.20	888.86	889.52
890.70	891.36	892.02
893.20	893.86	894.52
895.70	896.36	897.02
898.20	898.86	899.52
900.70	901.36	902.02
903.20	903.86	904.52
905.70	906.36	907.02
908.20	908.86	909.52
910.70	911.36	912.02
913.20	913.86	914.52
915.70	916.36	917.02
918.20	918.86	919.52
920.70	921.36	922.02

Profile Co. Rd. 46 Relocation Sta. 10+00 to Sta. 20+00

FHWA REGION 5 OHIO

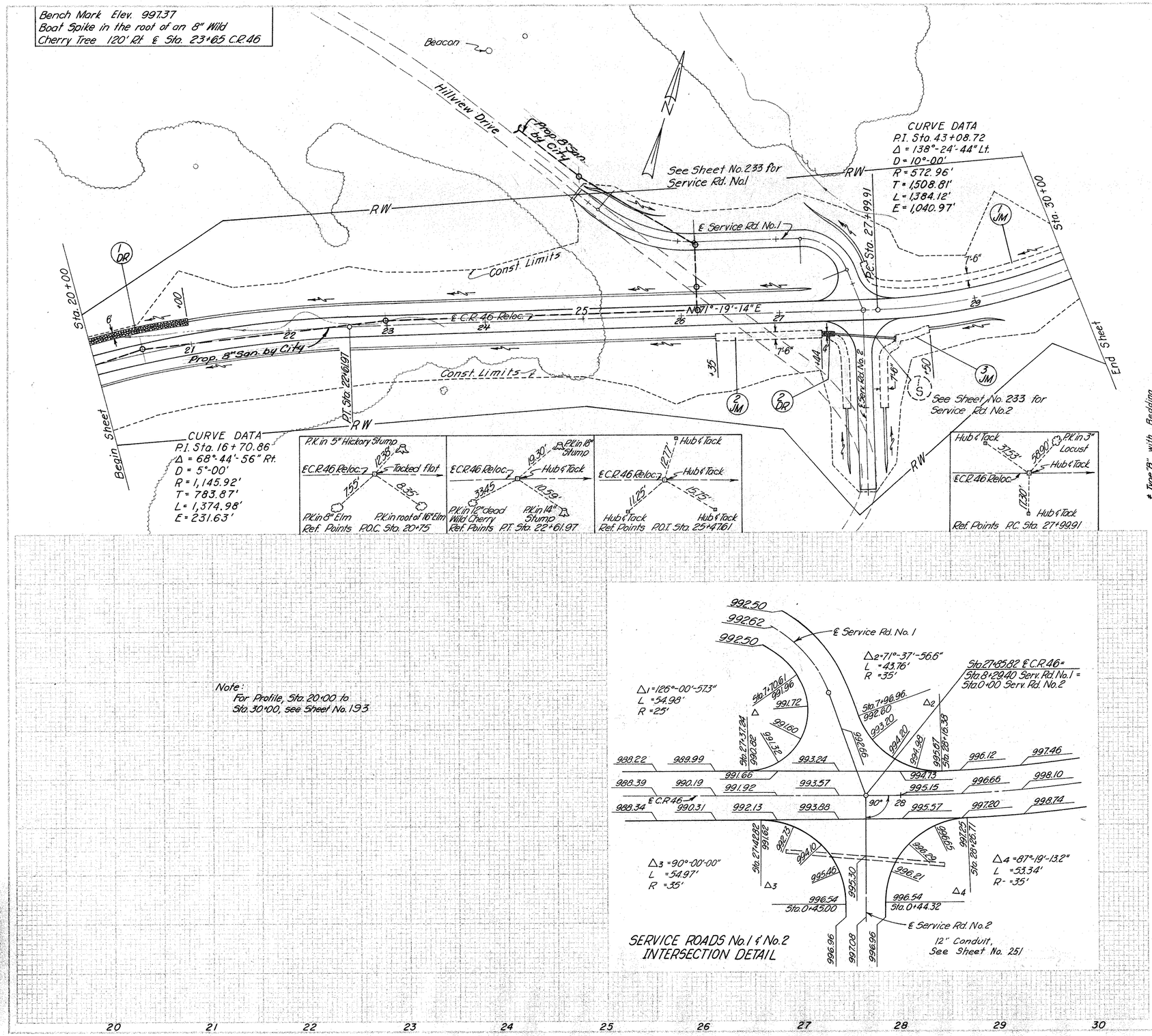
BEL-7-11.89

191
443

FHWA REGION	STATE	PROJECT	
5	OHIO		

192
443

BEL-7-11.89



ESTIMATED QUANTITIES

REF. NO.	STATION TO STATION	SIDE	601 Rock Channel Prot. ‡ C.Y.	667 Seeding & Jute Matting	SEE SHEET NO.
1DR	20+00 to 21+00	Lt.	45		
2DR	27+44 to 27+54	Rt.	3		
1JM	27+99.91 to 30+00	Lt.		160	
2JM	26+35 to 27+44	Rt.		91	
3JM	28+17 to 28+50	Rt.		30	

‡ Type "B" with Bedding

Co. Rd. 46 Relocation Sta. 20+00 to Sta. 30+00

48

FHWA REGION	STATE	PROJECT	
5	OHIO		

193
443

BEL - 7 - 11.89

Rt. Edge	℄ Profile Grade	Lt. Edge
920.70	921.36	922.02
923.20	923.86	924.52
925.70	926.36	927.02
928.20	928.86	929.52
930.70	931.36	932.02
933.21	933.86	934.51
935.73	936.36	936.99
938.26	938.86	939.46
940.81	941.36	941.91
943.38	943.86	944.34
945.98	946.36	946.74
948.56	948.86	949.13
951.12	951.36	951.53
953.66	953.86	954.04
956.19	956.36	956.53
958.70	958.86	958.98
961.20	961.36	961.53
963.70	963.86	964.03
966.20	966.36	966.52
968.70	968.86	969.03
971.32		
973.71		
975.87	976.03	976.19
978.12	978.27	978.43
980.31	980.44	980.58
982.44	982.54	982.64
984.50	984.56	984.62
986.50	986.51	986.52
988.44	988.39	988.34
990.31	990.19	990.07
992.13	991.92	991.71
993.88	993.57	993.26
995.57	995.15	994.73
997.20	996.66	996.12
998.74	998.10	997.46
1000.18	999.46	998.74
1001.53	1000.75	999.97
1002.78	1001.96	1001.14
1003.93	1003.10	1002.27
1005.00	1004.17	1003.34
1006.00	1005.17	1004.34

20	21	22	23	24	25	26	27	28	29	30
932.8	935.2 (+27)	935.6	936.7 (+50)	934.8 (+72)	936.4 (+83)	937.0	940.3 (+40)	939.6 (+45)	940.5	942.7 (+65)	942.4 (+76)	944.5 (+81)	944.8 (+96)	946.2 (+06)	949.0 (+06)	954.4 (+25)	953.2	954.8 (+62)	956.3 (+67)	956.1 (+77)	959.9	963.8 (+25)	966.1 (+45)	967.5	970.8 (+75)	972.4 (+88)	973.9 (+94)	974.6	980.3 (+35)	983.3	986.0 (+60)	988.1 (+81)	992.1	994.7 (+12)	998.7 (+27)	1005.7 (+40)	1003.7 (+43)	1007.1 (+45)	1008.1 (+87)	1006.6	1005.5 (+06)	1005.2 (+19)	1006.3 (+43)	1006.6 (+68)	1006.1 (+83)	1006.9 (+89)	1008.4 (+98)	1008.1	1008.1 (+70)	1008.3	1008.5 (+05)	1008.5 (+22)	1008.4 (+33)	1008.3	1007.8 (+70)	1006.9	1007.0 (+16)	1007.5 (+27)	1007.6 (+35)	1008.5 (+42)	1012.5	1014.2 (+51)	1013.2 (+60)	1009.2 (+75)	1005.4
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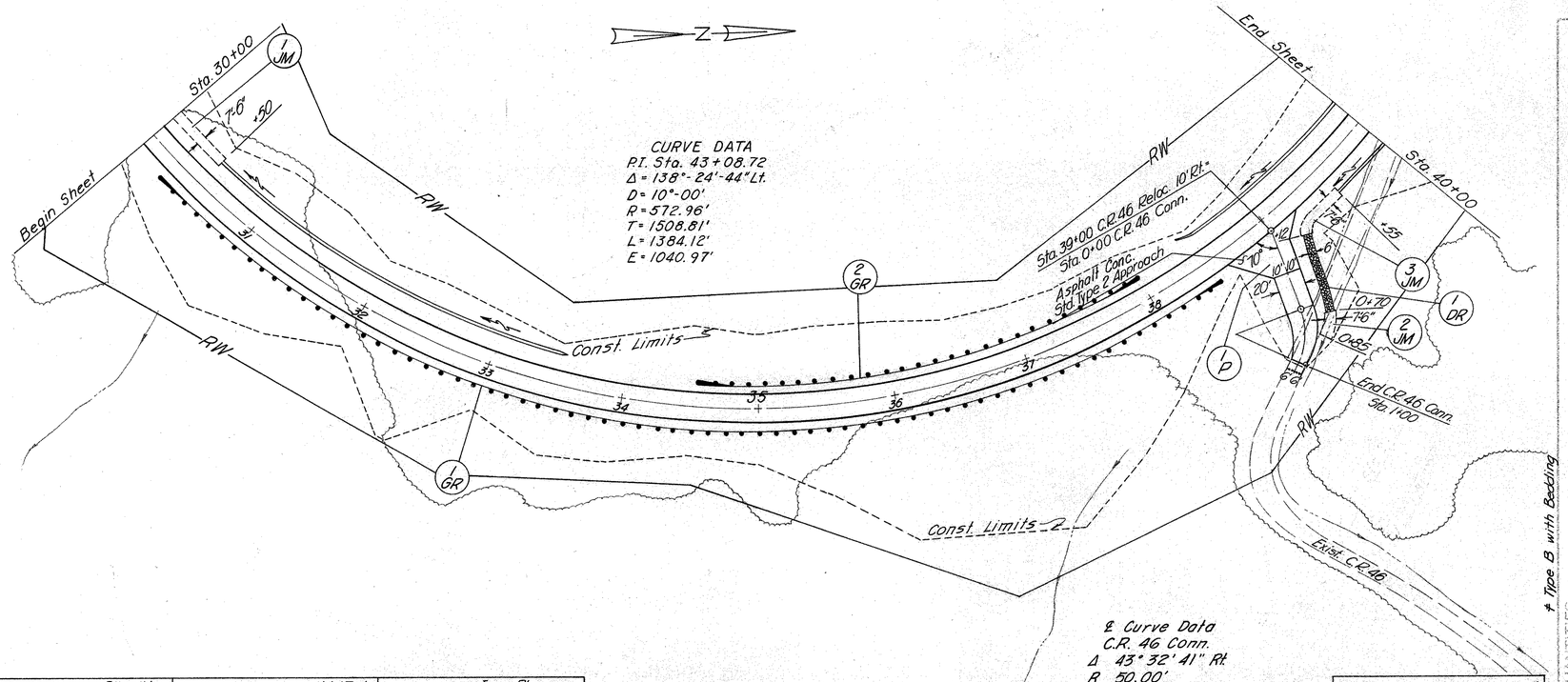
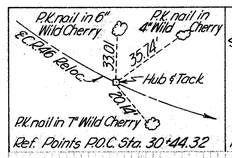
FHWA REGION	STATE	PROJECT	
5	OHIO		

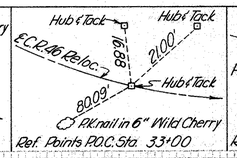
194
443

BEL-7-11.89

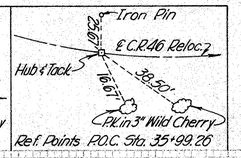




Ref. Points P.O.C. Sta. 30+44.32



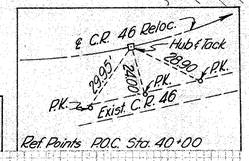
Ref. Points P.O.C. Sta. 33+00



Ref. Points P.O.C. Sta. 35+99.26

Bench Mark Elev. 1010.38
Boat Spike in a 4" Wild Cherry Tree in a Cluster of four, 70' Rt. ℄ Sta. 32+50 C.R. 46

Bench Mark Elev. 1006.63
Boat Spike in a 4" Wild Cherry Tree in a Cluster of four, 65' Rt. ℄ Sta. 38+35 C.R. 46



Ref. Points P.O.C. Sta. 40+00

Note:
For Profile, Sta. 30+00 to Sta. 40+00, see Sheet No. 195

(1P) See Calc. Bk. Page 36

30 31 32 33 34 35 36 37 38 39 40

ESTIMATED QUANTITIES

REF. NO.	STATION TO STATION	SIDE	304 Aggregate Base C.Y.	404 Asphalt Concrete C.Y.	601 Rock Channel Prot.† C.Y.	606 Anchor Assy. TY.A Ea.	606 Guardrail Type 5 Standard L.F.	667 Seeding & Jute Matting S.Y.	SEE SHEET NO.
1DR	0+12 to 0+70 (C.R. 46 Conn.)	Lt.			27				
1JM	30+00 to 30+50	Lt.						42	
2JM	0+70 to 0+85 (C.R. 46 Conn.)	Lt.						13	
3JM	0+12 (C.R. 46 Conn.) to 39+55	Rt.						33	
1GR	30+25 to 38+49	Rt.				2	762.50		
2GR	34+54.82 to 38+00	Lt.				2	300.00		
1P	0+00 to 1+00	Rt.	36.5	14.1					
			36.5	14.1	27	4	1062.50	88	

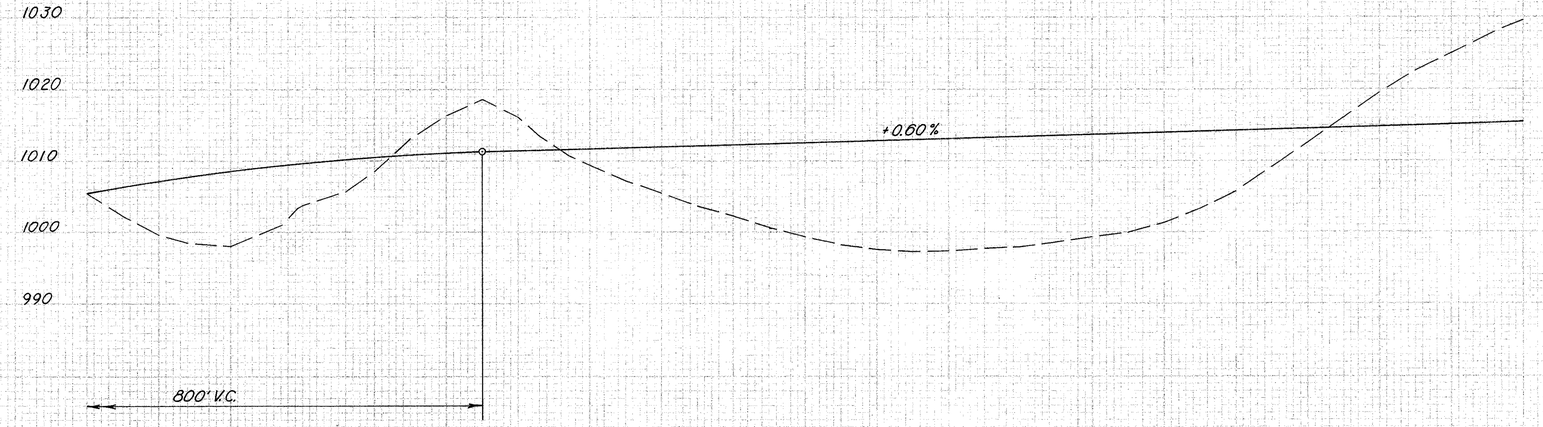
Co. Rd. 46 Relocation Sta. 30+00 to Sta. 40+00

FHWA REGION	STATE	PROJECT	
5	OHIO		

BEL-7-11.89

195
443

	℄ Profile Grade	Lt. Edge
Rt. Edge		
1006.00	1005.17	1004.34
1006.92	1006.09	1005.26
1007.77	1006.94	1006.11
1008.54	1007.71	1006.88
1009.24	1008.41	1007.58
1009.87	1009.04	1008.21
1010.42	1009.59	1008.76
1010.90	1010.07	1009.24
1011.31	1010.48	1009.65
1011.64	1010.81	1009.98
1011.90	1011.07	1010.24
1012.09	1011.26	1010.43
1012.21	1011.41	1010.58
1012.39	1011.56	1010.73
1012.54	1011.71	1010.88
1012.69	1011.86	1011.03
1012.84	1012.01	1011.18
1012.99	1012.16	1011.33
1013.14	1012.31	1011.48
1013.29	1012.46	1011.63
1013.44	1012.61	1011.78
1013.59	1012.76	1011.93
1013.74	1012.91	1012.08
1013.89	1013.06	1012.23
1014.04	1013.21	1012.38
1014.19	1013.36	1012.53
1014.34	1013.51	1012.68
1014.49	1013.66	1012.83
1014.64	1013.81	1012.93
1014.79	1013.96	1013.13
1014.94	1014.11	1013.28
1015.09	1014.26	1013.43
1015.24	1014.41	1013.58
1015.39	1014.56	1013.75
1015.54	1014.71	1013.88
1015.69	1014.86	1014.03
1015.84	1015.01	1014.18
1015.99	1015.16	1014.33
1016.14	1015.31	1014.48
1016.29	1015.46	1014.63
1016.44	1015.61	1014.78



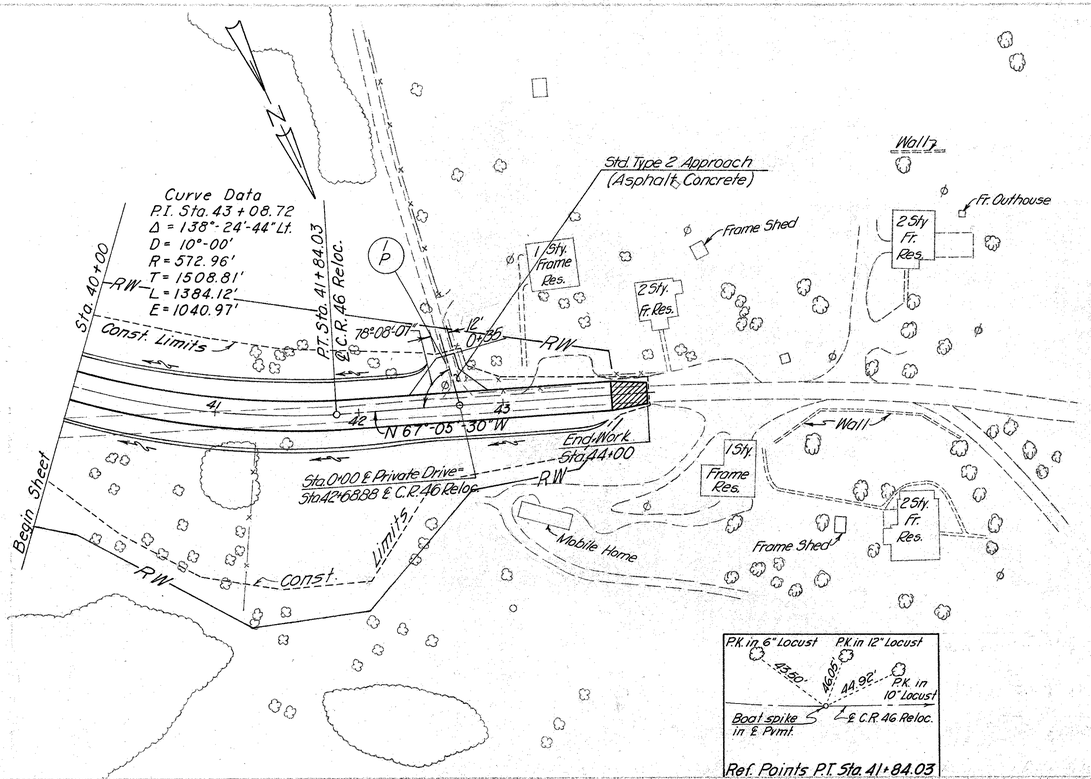
| | | |

Revised by B-74
Checked by AWL 1-77

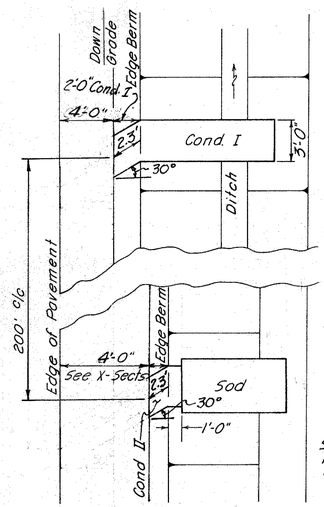
FHWA REGION	STATE	PROJECT	
5	OHIO		

BEL-7-11.89

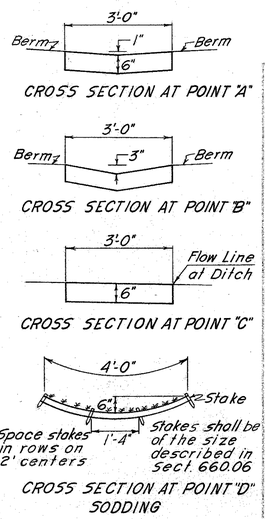
196
443

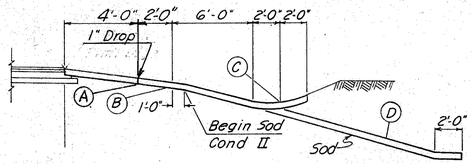


Ref. Points P.I. Sta. 41+84.03

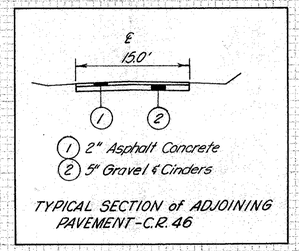


PLAN





LONGITUDINAL SECTION



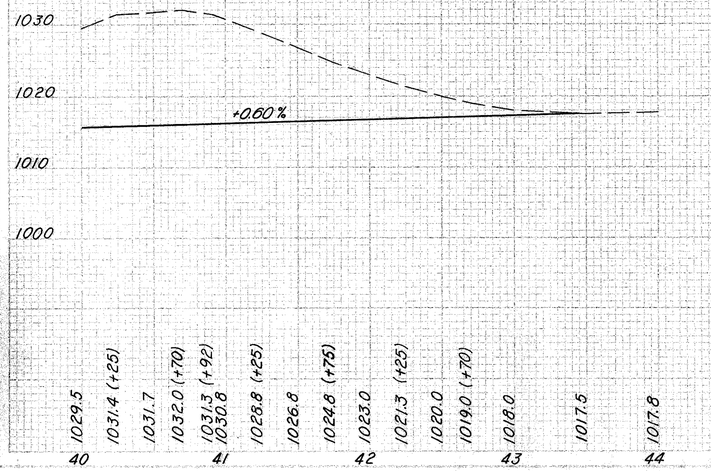
TYPICAL SECTION of ADJOINING PAVEMENT - C.R. 46

STATION	SIDE	COND.	601 PAVED GUTTER as per plan	660 SODDING
			Lin. Ft.	Sq. Yds.
7+00	Lt.	II	3.3	17 x 4 ÷ 9 = 7.55
9+00	Lt.	II	3.3	20 x 4 ÷ 9 = 8.88
9+00	Rt.	II	3.3	19 x 4 ÷ 9 = 8.44
11+00	Rt.	II	3.3	8 x 4 ÷ 9 = 3.55
13+00	Rt.	I	12.3	
15+00	Rt.	I	12.3	
17+00	Rt.	I	12.3	
19+00	Rt.	I	12.3	
21+00	Rt.	I	12.3	
23+00	Rt.	I	12.3	
25+00	Rt.	I	12.3	
25+00	Lt.	I	12.3	
27+00	Rt	I	12.3	
27+00	Lt.	I	12.3	
29+00	Lt.	I	12.3	
31+00	Lt.	I	12.3	
33+00	Lt.	I	12.3	
TOTAL			*173.10	* 28.42

* Carried on sheet No. 190

(1P) See Calc. Bk. Page 30

Lt. Edge	1014.78	1014.93	1015.09	1015.28	1015.49	1015.72	1015.97	1016.24	1016.48	1016.70	1016.91	1017.09	1017.26	1017.41	1017.56	1017.40	1017.55	1017.61	Graphic →
℄ Profile Grade	1015.61	1015.76	1015.91	1016.06	1016.21	1016.36	1016.51	1016.66	1016.81	1016.96	1017.11	1017.26	1017.41	1017.56	1017.71	1017.56	1017.71	1017.77	1017.77
Rt. Edge	1016.44	1016.59	1016.73	1016.84	1016.93	1017.00	1017.05	1017.08	1017.12	1017.17	1017.23	1017.31	1017.40	1017.50	1017.61	1017.63	1017.61	1017.61	Graphic →



ESTIMATED QUANTITIES

ITEM NO.			STATION TO STATION	SIDE		
404	Asphalt Conc.	C.Y.	1P	42+68.88	Lt.	4.7
304	Agg. Base	C.Y.				12.0

4.7
12.0

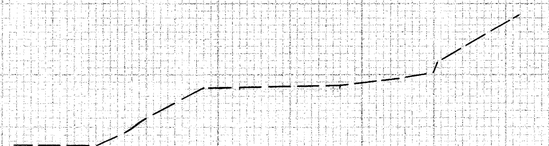
Co. Rd. 46 Reloc. Sta. 40+00 to Sta. 44+00

FHWA REGION	STATE	PROJECT	
5	OHIO		

197
443

BEL-7-11.89

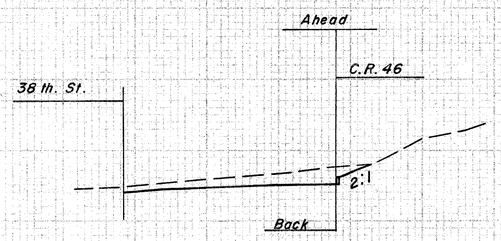
BEGINNING		END AREA		VOLUME	
FULL WIDTH	SUB BASE	CUT	FILL	CUT	FILL
0	Sta. 0+60	0	0		
12		9	3	2	1
22		45	3		
78					
6		Ahead	40	0	



END WORK 0+60



747.62
0 +50
747.63



745.44
0 +00
746.58

740
740
740

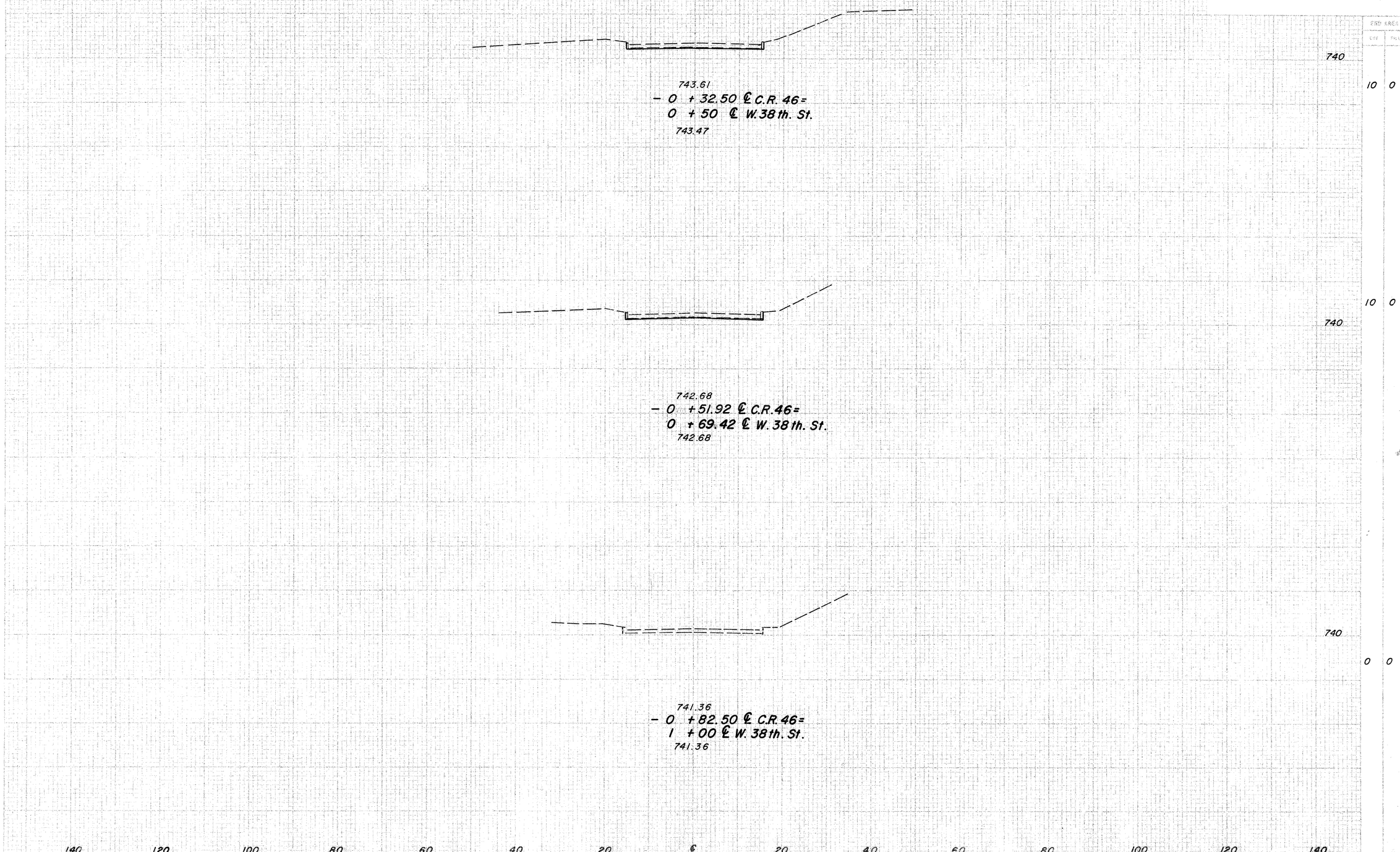
140 120 100 80 60 40 20 ℄ 20 40 60 80 100 120 140

FLORENCE STREET Sta. 0+00 to Sta. 1+0

FHWA REGION	STATE	PROJECT	
5	OHIO		

198
443

BEL- 7 - 11.89

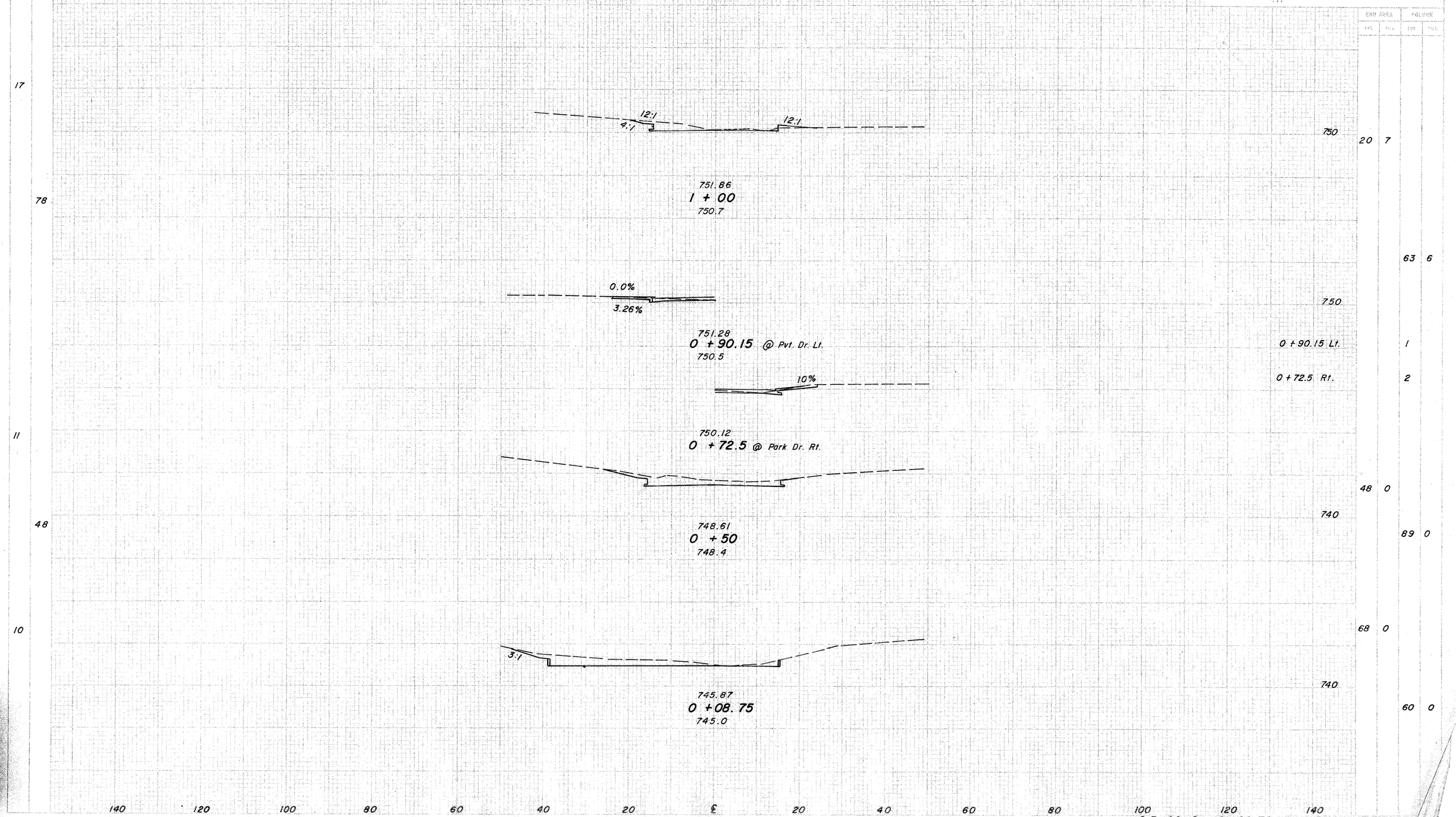


END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
10	0		
		7	0
10	0		
		6	0
0	0		

C.R. 46 Sta. -0+82.50 to Sta.-0+32.50

FHWA REGION 5 | STATE OHIO | PROJECT
199
443

BEL-7 - 11.89



C.R. 46 Sta. 0+08.75 to Sta. 1+00

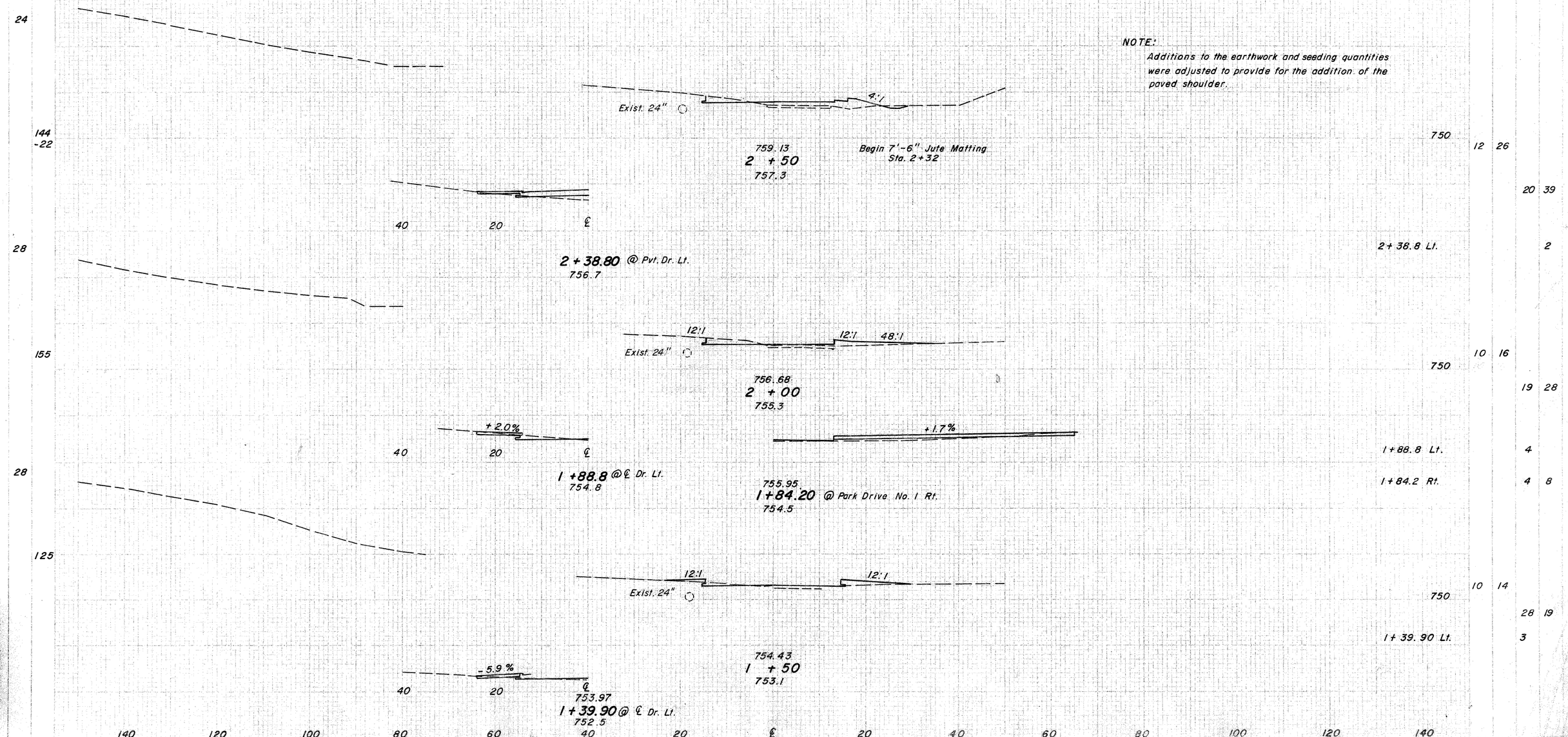
FH WA REGION 5 OHIO

200
443

BEL - 7 - 11.89

Revised by J.S. 8/74 Checked by AWL 1/77

NOTE:
Additions to the earthwork and seeding quantities were adjusted to provide for the addition of the paved shoulder.



C.R. 46 Sta. 1 + 50 to Sta. 2 + 50

FHWA REGION 5 | STATE OHIO | PROJECT | SHEET

201
443

BEL-7-11.89

Revised by J.S. 8/79 Checked by AWL 1/77

END AREA		VOLUME	
CUT	FILL	CUT	FILL

30

215
-29

Exist. 24"

3:1

4:1

4:1

767.35

Garage

P.V.I. +42.5
El. 770.65

19' V.C.
MO = 0.60

768.90
4 + 15.52
767.0

19' V.C.
MO = 0.47'

P.V.I. +23.5
El. 685.86

766.19
3 + 73.64 @ Pvt. Dr. Lt.
764.5

760

24 42

3+73 Lt.

52

29

163
-22

3:1

12:1

Exist. 24"

4:1

3:1

762.99

42 83
-4

760

11 26

764.73
3 + 50
762.9

30

150
-22

12:1

Exist. 24"

24" Conduit

4:1

3:1

759.59

760

10 24

761.81
3 + 00
759.6

19 46
-3

20 46
-3

140 120 100 80 60 40 20 ℄ 20 40 60 80 100 120 140

C.R. 46 Sta. 3+00 to Sta. 4+15.52

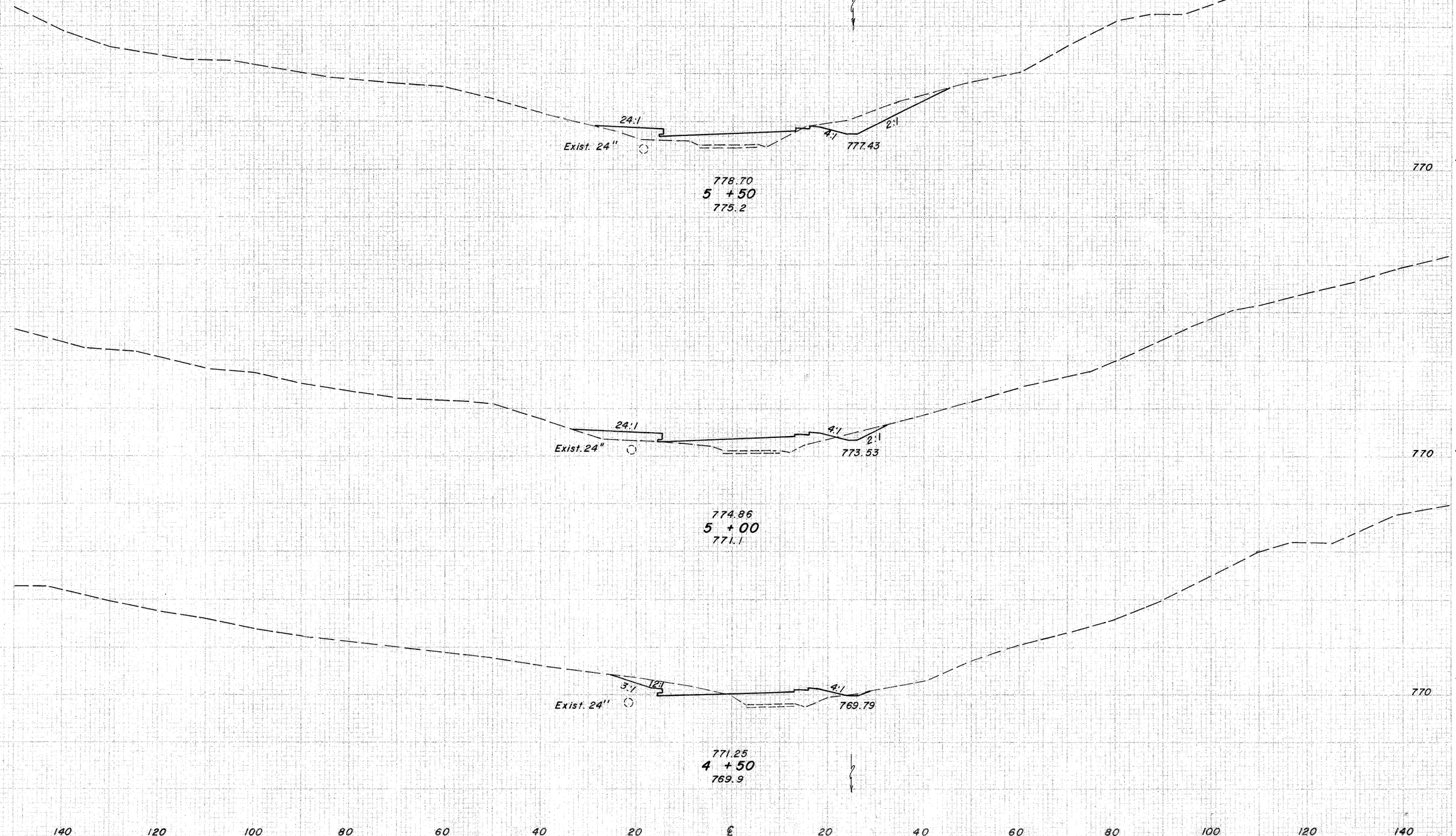
FHWA REGION	STATE	PROJECT	
5	OHIO		

202
443

BEL-7 -11.89

Revised by J.S. 8/74 Checked by AWL 1/77

END AREA		VOLUME	
CUT	FILL	CUT	FILL
52			
261			
-22			
		53	76
		770	
42			
206			
-22			
		58	160
		1	-2
		770	10 97
32			
172			
-15			
		42	138
			-3
		35	52
		770	
		38	60
			-2



C.R. 46 Sta. 4+50 to Sta. 5+50

FHWA REGION	STATE	PROJECT	
5	OHIO		

203
943

BEL - 7 - 11.89

Revised by J.S. 8/74 Checked by AWL 1/77

END AREA VOLUME

CUT FILL CUT FILL

60

350
-44

Begin 6' D.R.C.P.
Sta. 7+07

2' 6:1 2:1

787.25

Exist 24"

790.35

28 118

780

791.62
7 + 00
787.4

6+80, Dike El. 788.50

66

403
-22

+4.16%

4:1 2:1

Exist. 24"

785.81

787.08
6 + 50
784.1

80 60

780

79

363
-22

24:1

4:1 2:1

Exist. 24"

781.51

782.78
6 + 00
780.3

116 108

780

100 165
-5

181 155
1 -2

156 170
2 -2

140 120 100 80 60 40 20 ℄ 20 40 60 80 100 120 140

C.R. 46 Sta. 6+00 to Sta. 7+00

FHWA REGION	STATE	PROJECT	
5	OHIO		

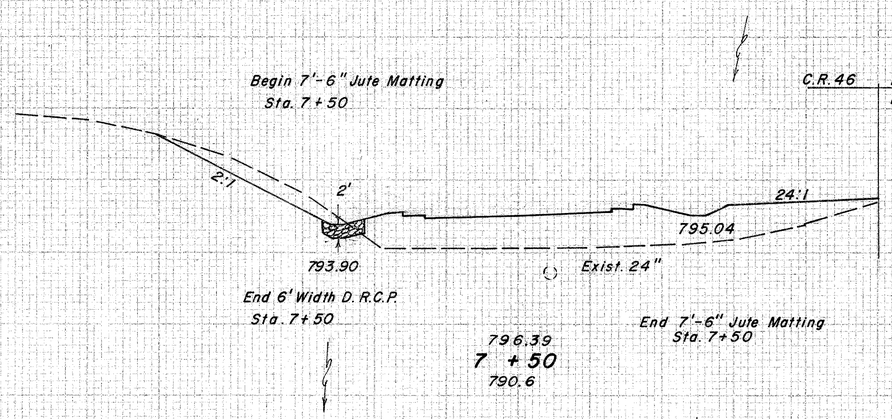
204
443

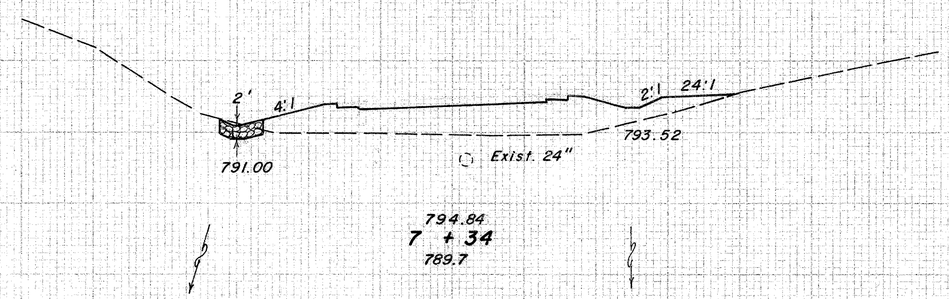
BEL - 7 - 11.89

Revised by J.S. 8/74 Checked by A.W.L. 1/77

SECTION		END AREA		VOLUME	
CUT	FILL	CUT	FILL		
50					
409		170	235		
-50		790			
				222	546
				2	-4
80					
		42	285		
361					
-15				12	153
		780			-2
				0	230
50					
				18	219
306					-4
-30		780			







140 120 100 80 60 40 20 ℄ 20 40 60 80 100 120 140

C.R. 46 Sta. 7+34 to Sta. 8+06.66

FHWA REGION	STATE	PROJECT	
5	OHIO		

205
443

BEL-7-11.89

Revised by J.S. 8/74 Checked by A.W.L. 1/77

SCRIBING

102	
777 -58	
162	
491 -32	
84	
338 -45	

END AREA / VOLUME

CUT	FILL	CUT	FILL
		160	340
		810	
		787	932 -6
		490	480
		379	492 -3
		1	
		800	
		80	260
		206	407 -1
		3	
		800	

Centroid 33.44'
2:1
2' 4:1
815.01
816.36
9 + 50
811.8
Centroid 30.00'
Begin 10' Width D.R.C.P.
Sta. 9+50
4:1
2' 4:1
48:1
808.79
End 14' Width D.R.C.P.
Sta. 9+50
F. Int. 61.36'
C. Int. 65.40'

Centroid 53.63'
1.5:1
2:1 2' 4:1
804.00
Begin 8'-6" Width D.R.C.P.
Sta. 8+85
810.06
8 + 86.99
804.7
48:1
2'
48:1
Centroid 29.87'
807.28
Exist. 24"

Dike Sta. 8+75 Elev. 808.25 Lt.

2:1
4:1
804.39
End 7'-6" Jute Matting
Sta. 8+51.08
806.47
8 + 51.08
802.6
4:1
2' 4:1
799.0
Exist. 24"
Begin 14' Width D.R.C.P.
Sta. 8+58

140 120 100 80 60 40 20 ℄ 20 40 60 80 100 120 140

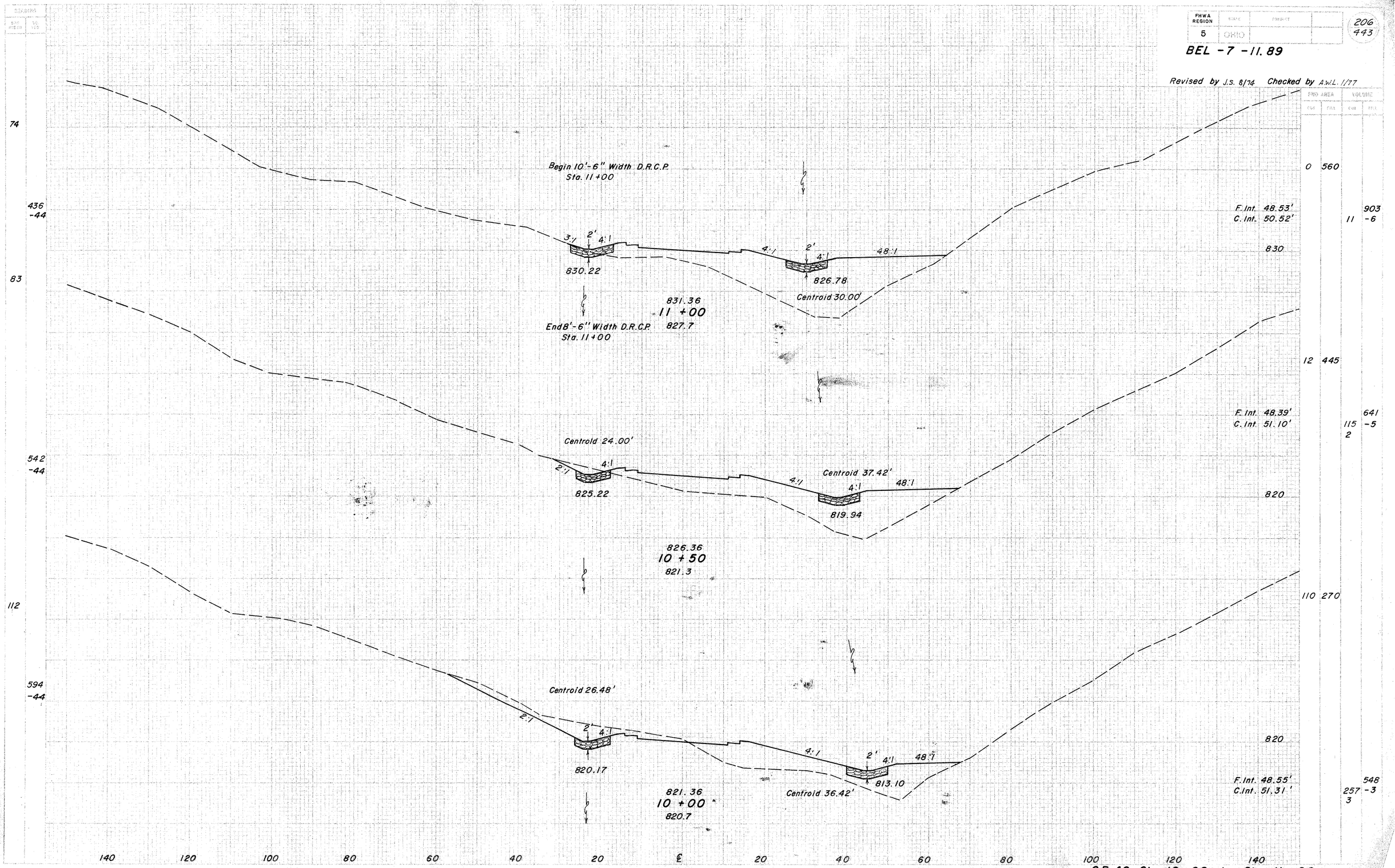
C.R. 46 Sta. 8+51.08 to Sta. 9+50

FHWA REGION	STATE	PROJECT	
5	OHIO		

206
443

BEL -7 -11.89

Revised by J.S. 8/74 Checked by A.W.L. 1/77



	END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
	0	560		
F. Int. 48.53' C. Int. 50.52'			11	903 -6
830				
	12	445		
F. Int. 48.39' C. Int. 51.10'			115 2	641 -5
820				
	110	270		
820				
F. Int. 48.55' C. Int. 51.31'			257 3	548 -3

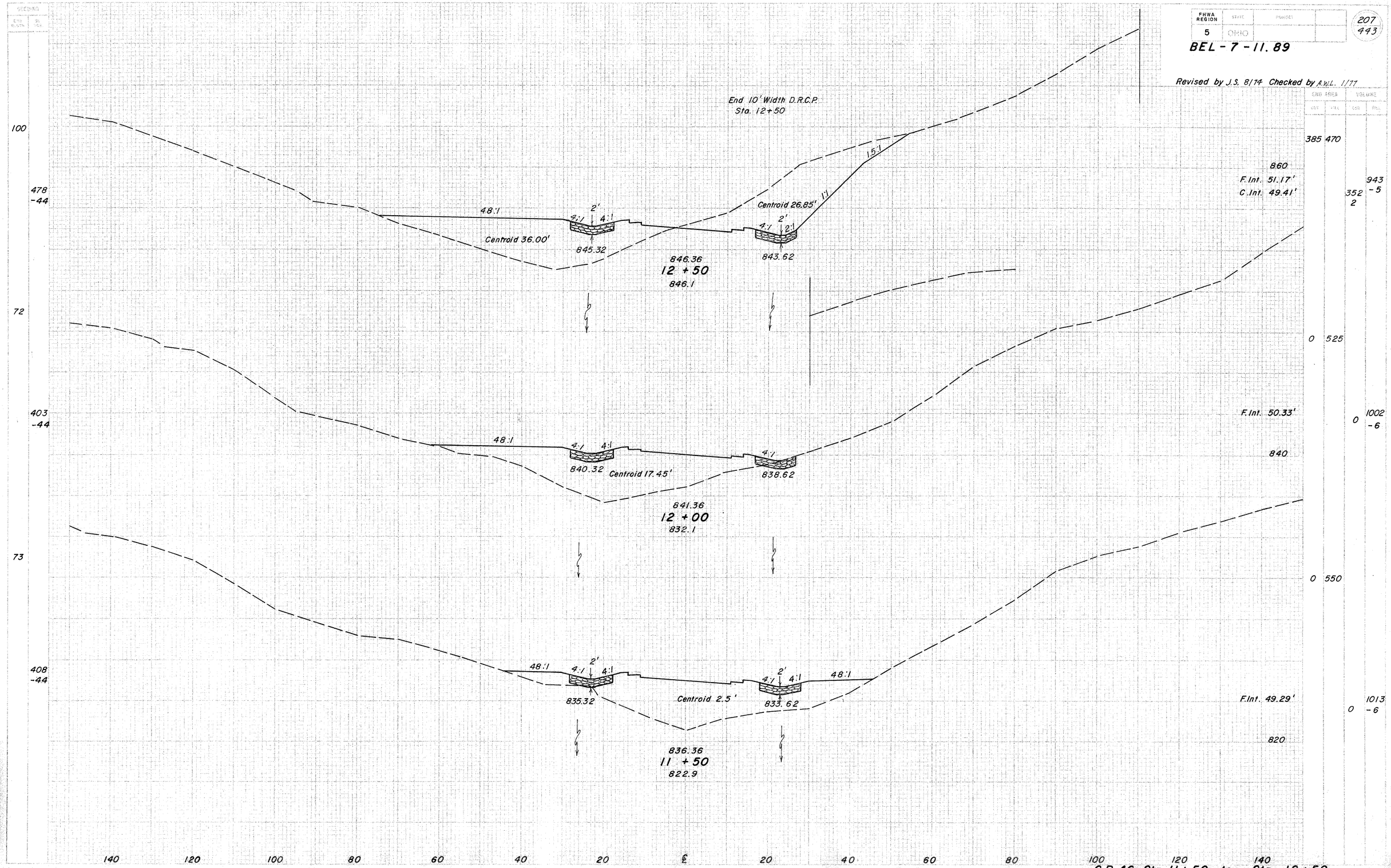
C.R. 46 Sta. 10+00 to Sta. 11+00

FHWA REGION	STATE	PROJECT	
5	OHIO		

207
443

BEL - 7 - 11.89

Revised by J.S. 8/74 Checked by A.W.L. 1/77



END AREA		VOLUME	
CUT	FILL	CUT	FILL
385	470		
		352	943
		2	-5
0	525		
		0	1002
			-6
0	550		
		0	1013
			-6

C.R. 46 Sta. 11+50 to Sta. 12+50

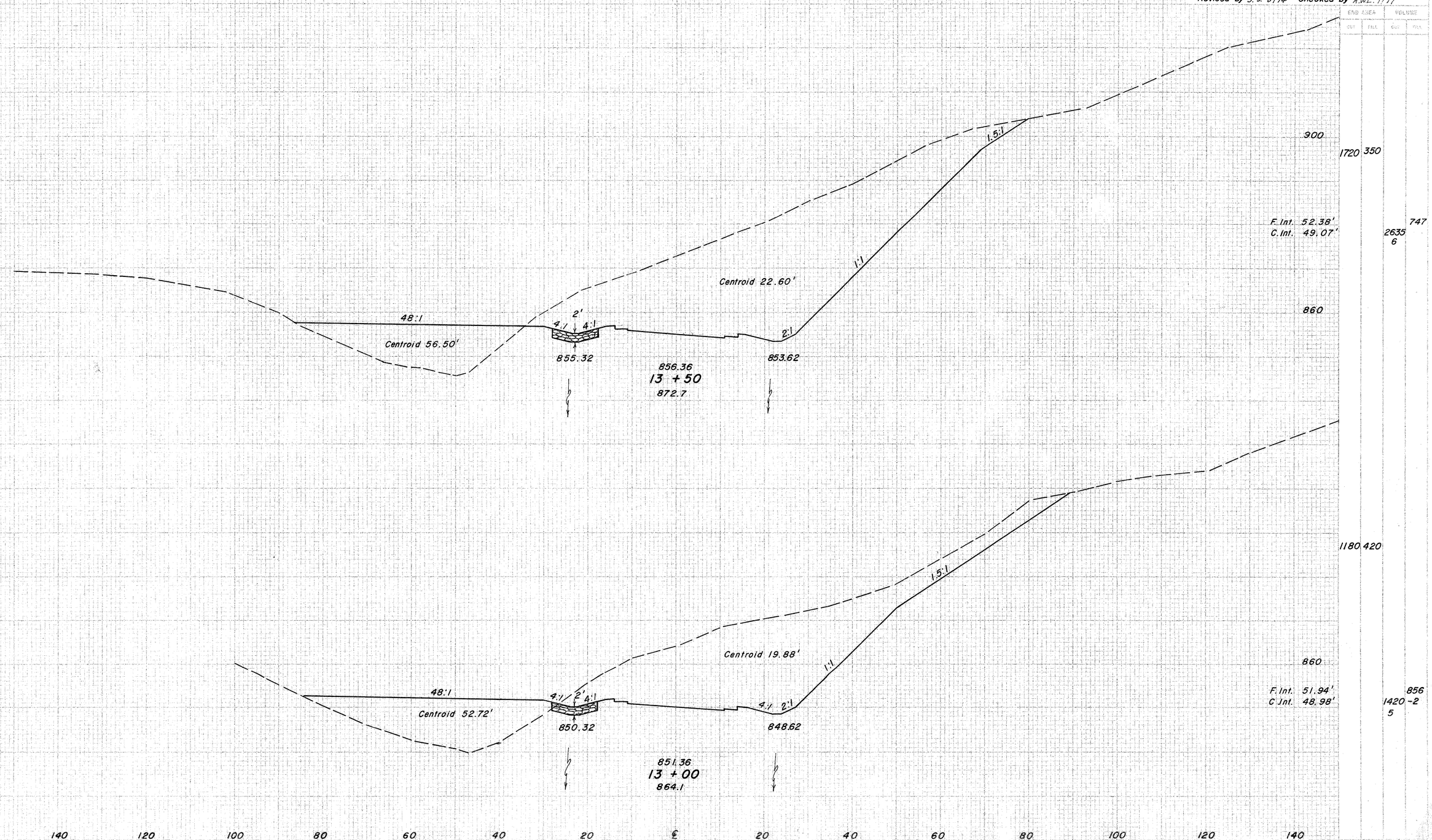
FHWA REGION	STATE	PROJECT	
5	OHIO		

208
743

BEL-7-11.89

Revised by J.S. 8/74 Checked by A.W.L. 1/77

SECTIONS		END AREA		VOLUME	
END WIDTH	50 FEET	CUT	FILL	CUT	FILL
108					
		300		1720	350
		F. Int. 52.38'			747
		C. Int. 49.07'		2635	
				6	
		860			
694 -44					
				1180	420
142					
		860			
672 -44		F. Int. 51.94'			856
		C. Int. 48.98'		1420	-2
				5	



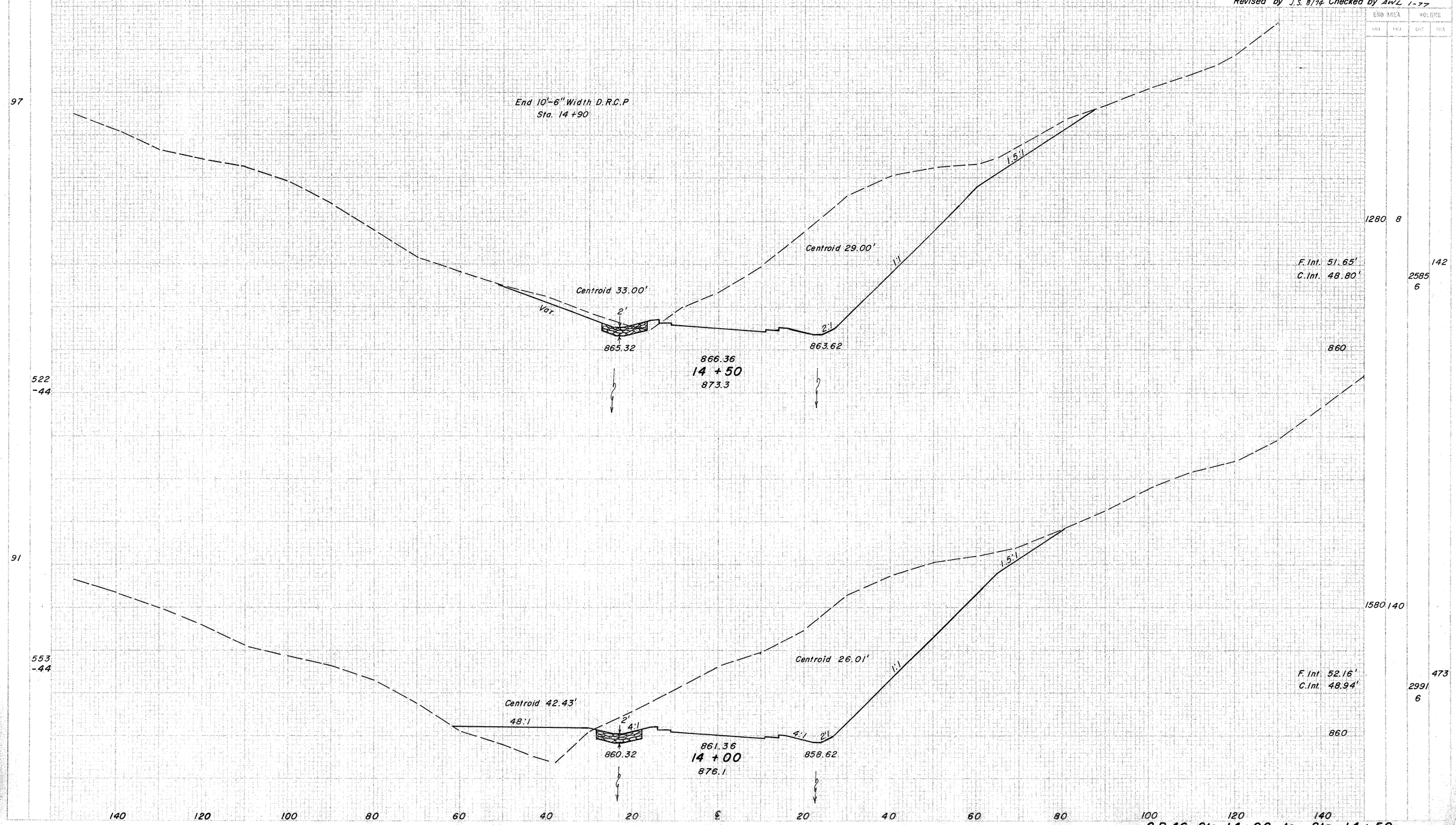
C.R. 46 Sta. 13+00 to Sta. 13+50

FHWA REGION	STATE	PROJECT	
5	OHIO		

209
443

BEL - 7 - 11.89

Revised by J.S. 8/74 Checked by AWL 1-77



	END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
	1280	8		
F. Int. 51.65'				142
C. Int. 48.80'			2585	
			6	
860				
	1580	140		
F. Int. 52.16'				473
C. Int. 48.94'			2991	
			6	
860				

C.R.46 Sta. 14+00 to Sta. 14+50

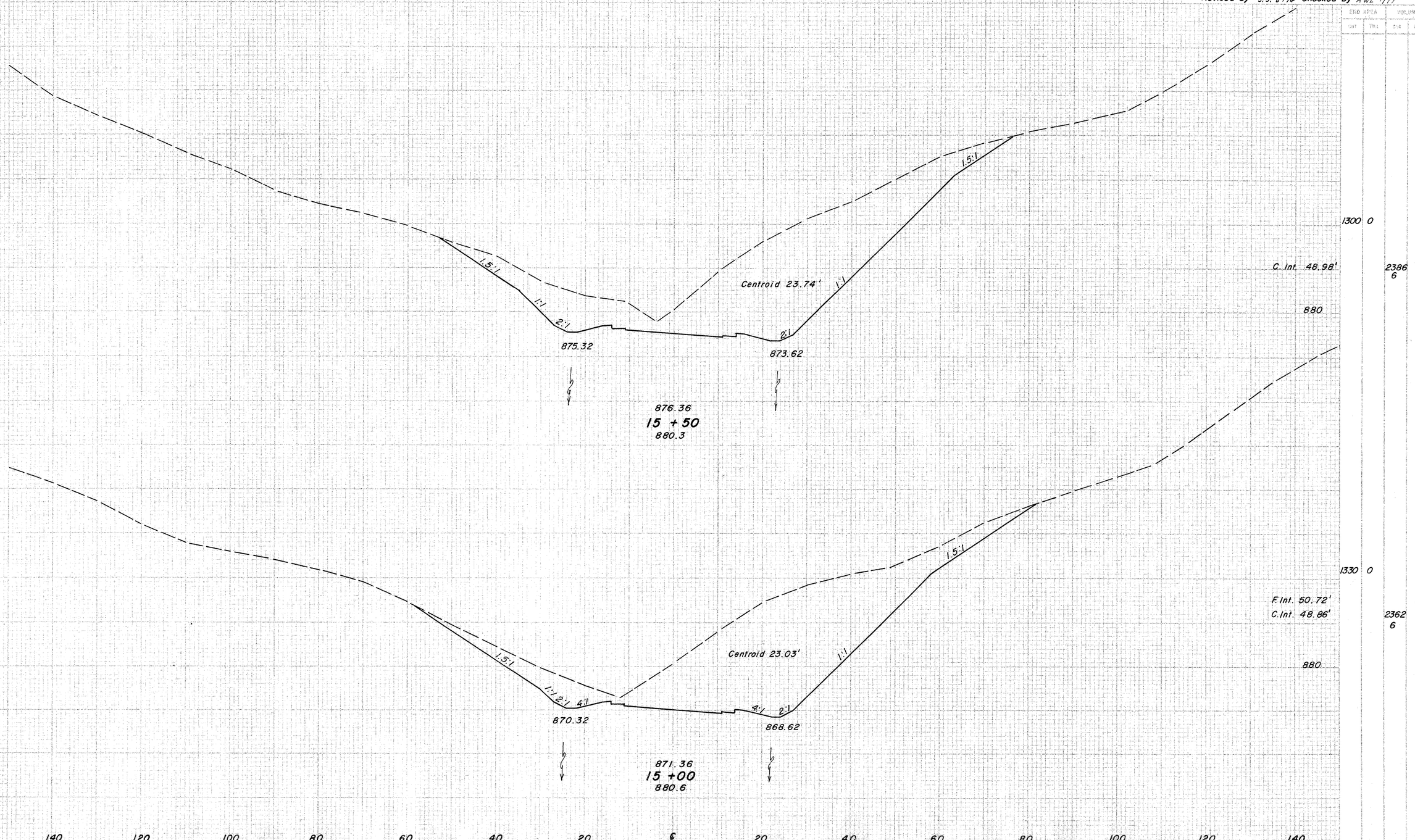
FHWA REGION	STATE	PROJECT	
5	OHIO		

210
443

BEL - 7 - 11.89

Revised by J.S. 8/78 Checked by AWL 1/77

SECTIONS		END AREA		VOLUME	
DIST. WIDTH	SQ. FEET	CUT	FILL	CUT	FILL
75					
				1300	0
		C. Int. 48.98'		2386	0
				6	
494		880			
-44					
103				1330	0
		F. Int. 50.72'			8
		C. Int. 48.86'		2362	
556				6	
-44		880			



C.R. 46 Sta. 15+00 to Sta. 15+50

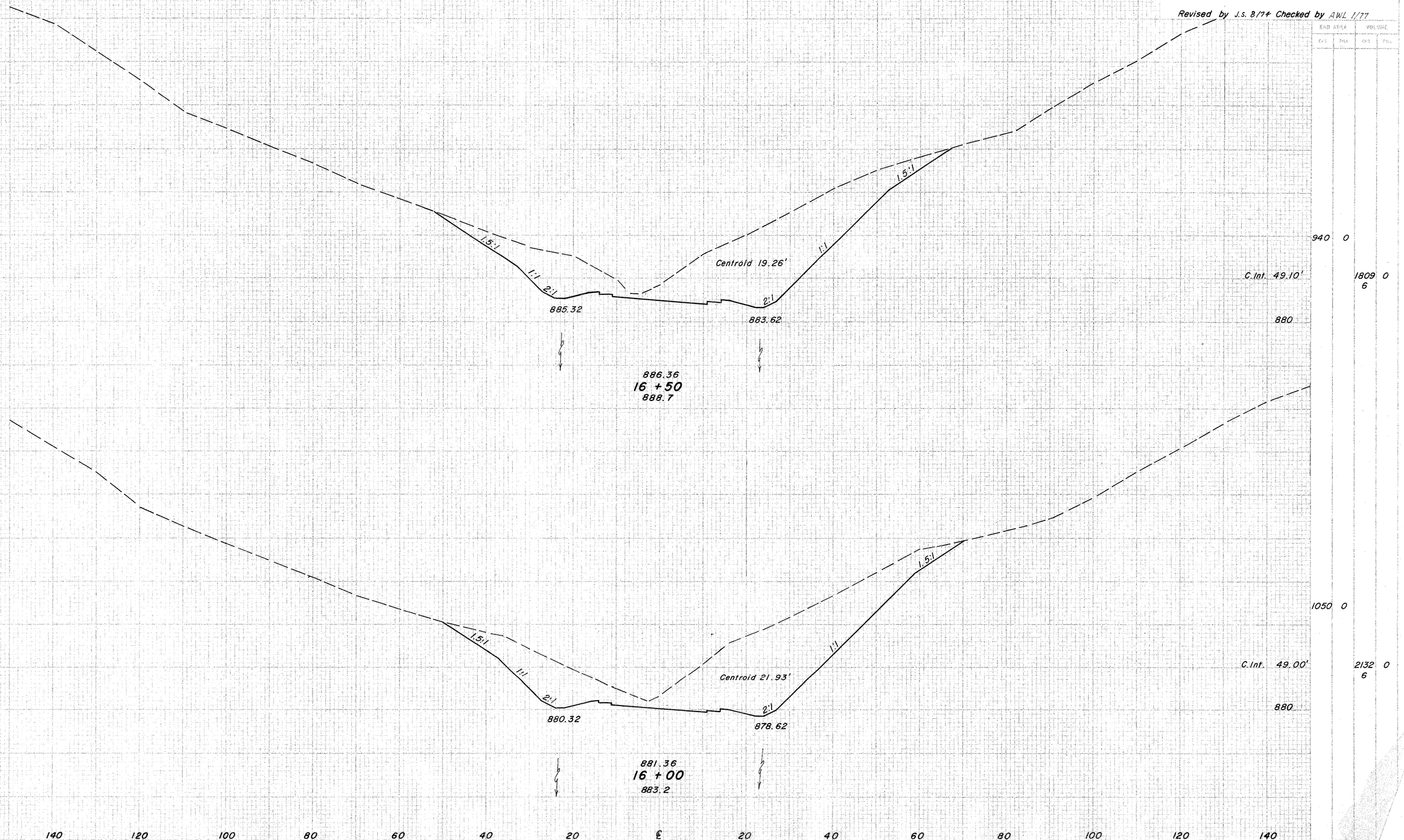
FHWA REGION	STATE	PROJECT	
5	OHIO		

211
443

BEL - 7 - 11.89

Revised by J.S. 8/74 Checked by AWL 1/77

EARTHWORK		END AREA		VOLUME	
END STATION	SQ. YDS.	CUT	FILL	CUT	FILL
76					
	394 -44	940	0		
				1809	0
		C.Int. 49.10'		6	
		880			
66					
	391 -44	1050	0		
				2132	0
		C.Int. 49.00'		6	
		880			



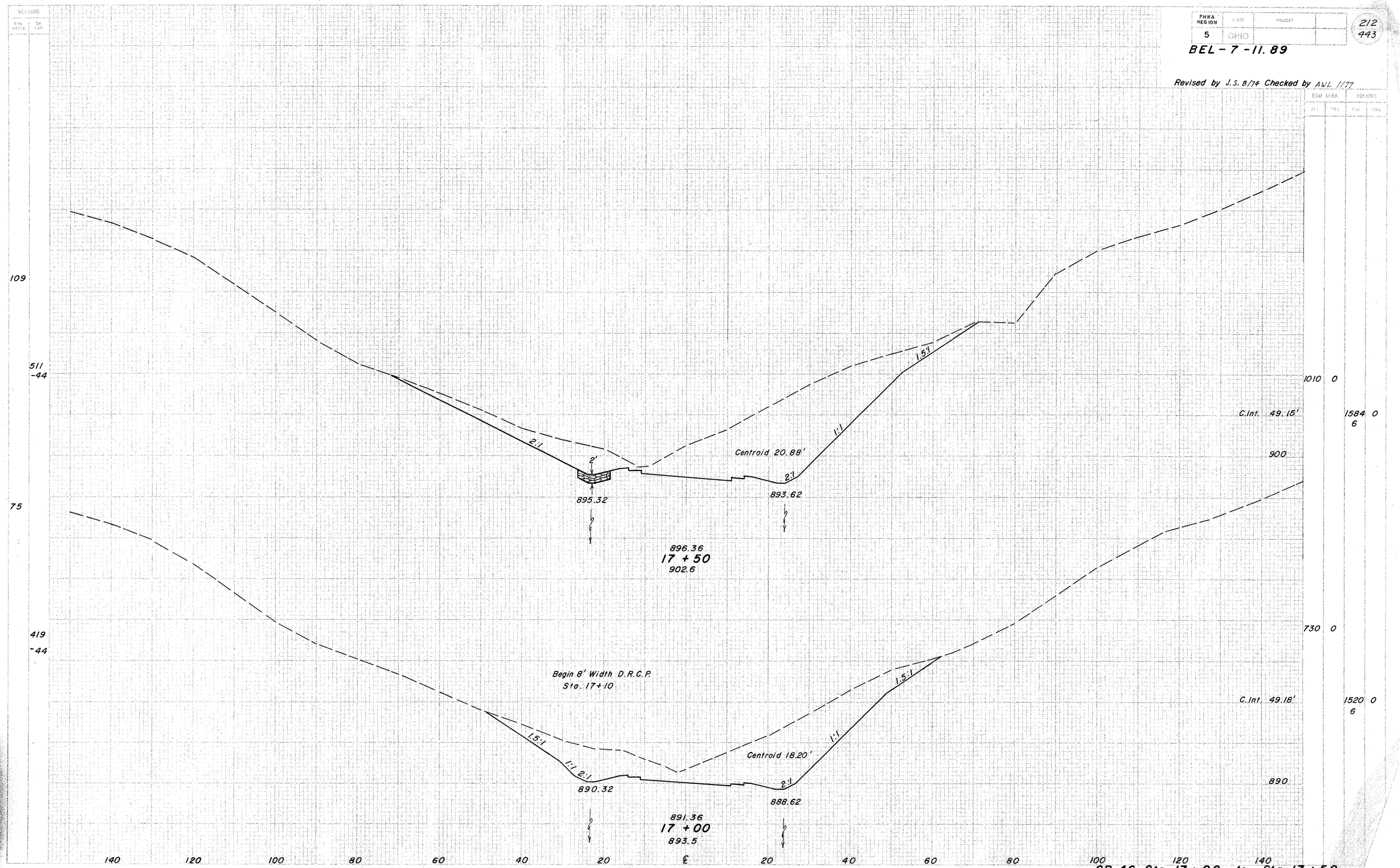
C.R. 46 Sta. 16 + 00 to Sta. 16 + 50

FHWA REGION	STATE	PROJECT	
5	OHIO		

212
443

BEL - 7 - 11.89

Revised by J.S. 8/74 Checked by AWL 1/77



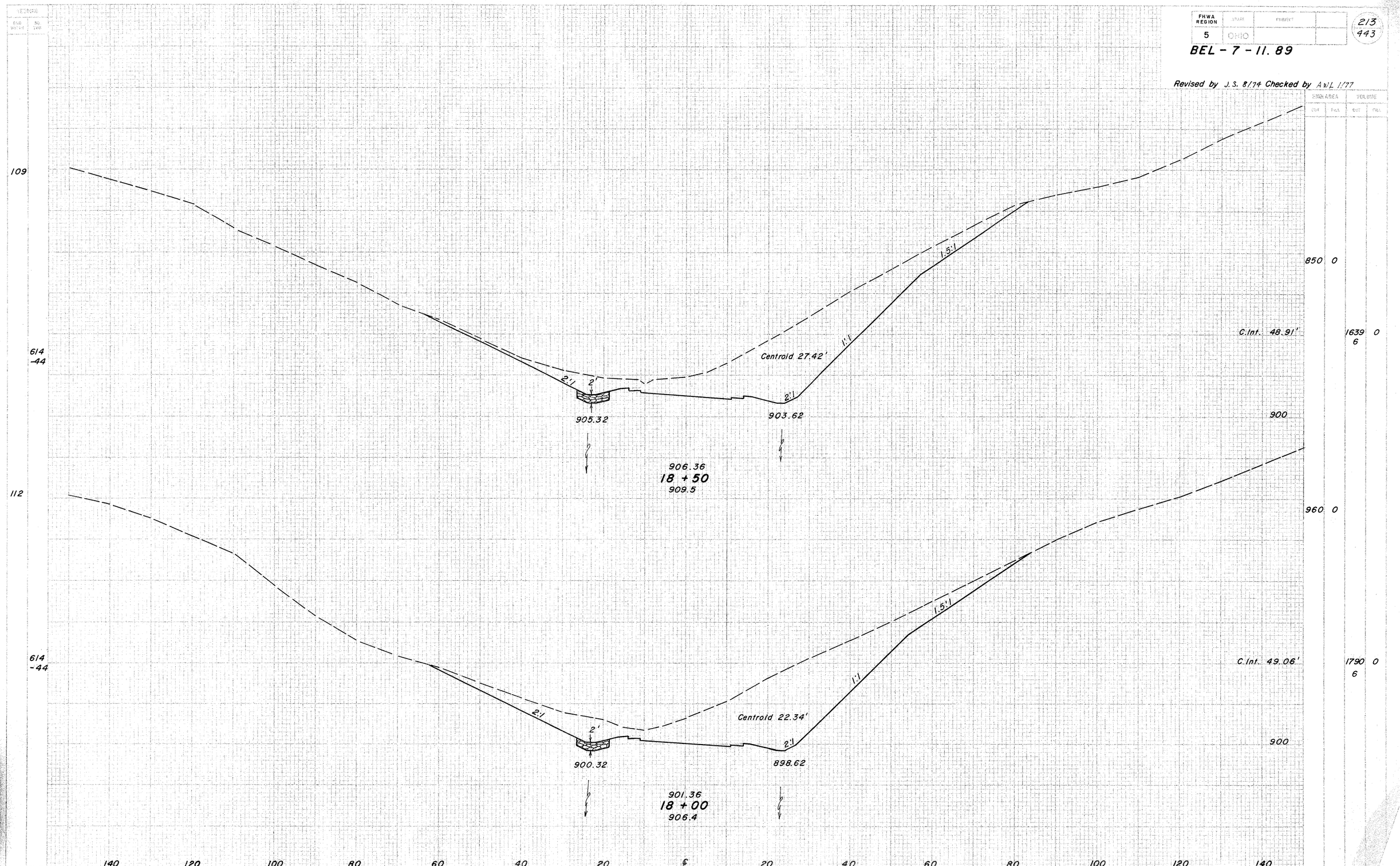
C.R. 46 Sta. 17 + 00 to Sta. 17 + 50

FHWA REGION	STATE	PROJECT	
5	OHIO		

213
443

BEL - 7 - 11. 89

Revised by J. S. 8/74 Checked by AWL 1/77



C.R. 46 Sta. 18 + 00 to Sta. 18 + 50

FHWA REGION	STATE	PROJECT	
5	OHIO		

214
743

BEL - 7 - 11.89

Revised by J.S. 8/74 Checked by AWL 1/77

SLOPING

END AREA		VOLUME	
CUT	FILL	CUT	FILL

55

319
-44

1085 0

Centroid 25.44'

1.5:1

1:1

2'

914.50

913.62

2:1

C.Int. 48.81'

1767 1
6

910

916.36
19 + 50
924.6

60

469
-44

870 1

1.5:1

Centroid 28.88'

1:1

3:1 2' 4:1

2:1

910.32

908.62

C.Int. 48.77'

1553 1
6

910

911.36
19 + 00
914.9

140 120 100 80 60 40 20 ℄ 20 40 60 80 100 120 140

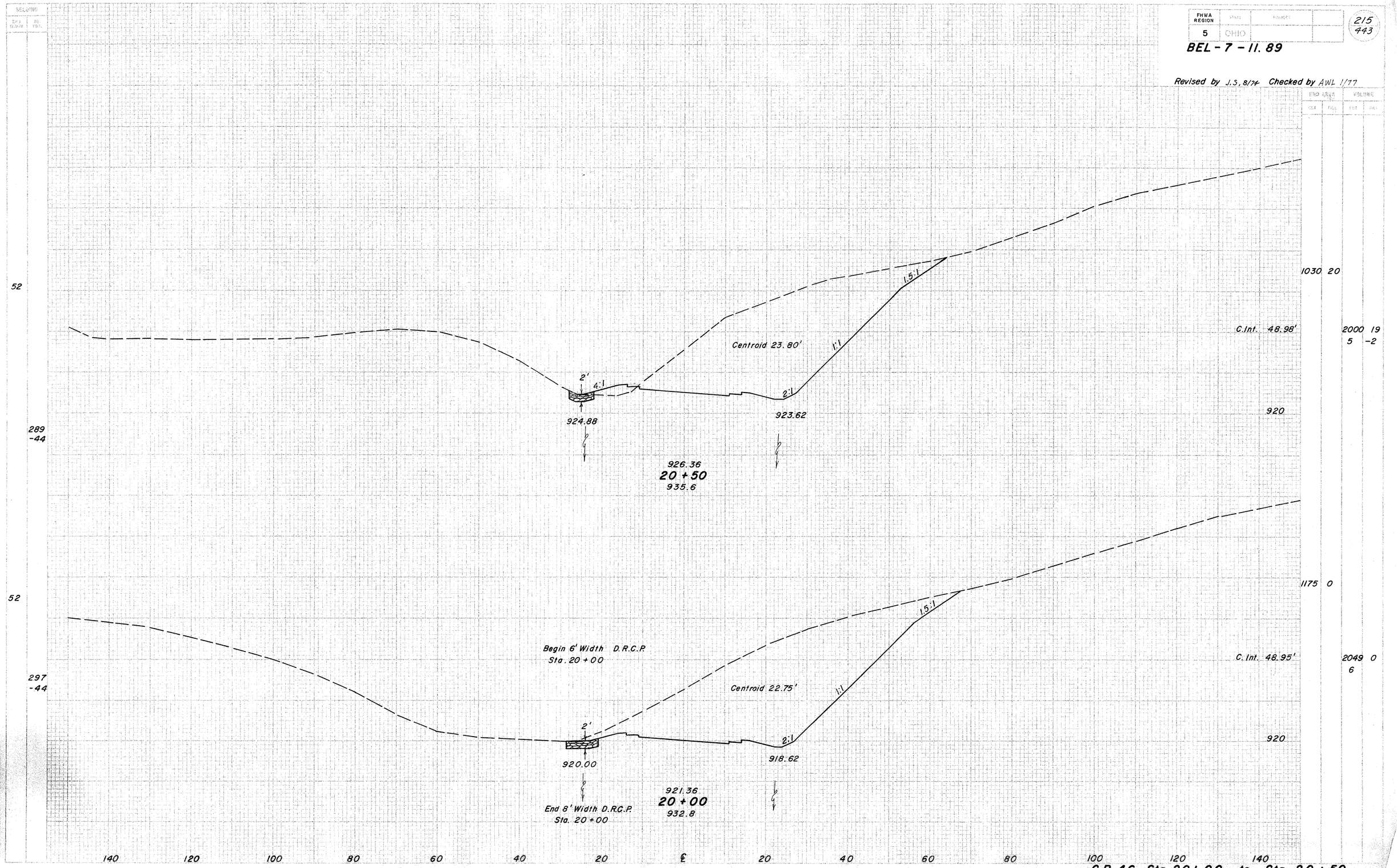
C.R. 46 Sta. 19 + 00 to Sta. 19 + 50

FHWA REGION	STATE	PROJECT	
5	OHIO		

215
443

BEL - 7 - 11. 89

Revised by J.S. 8/74 Checked by AWL 1/77



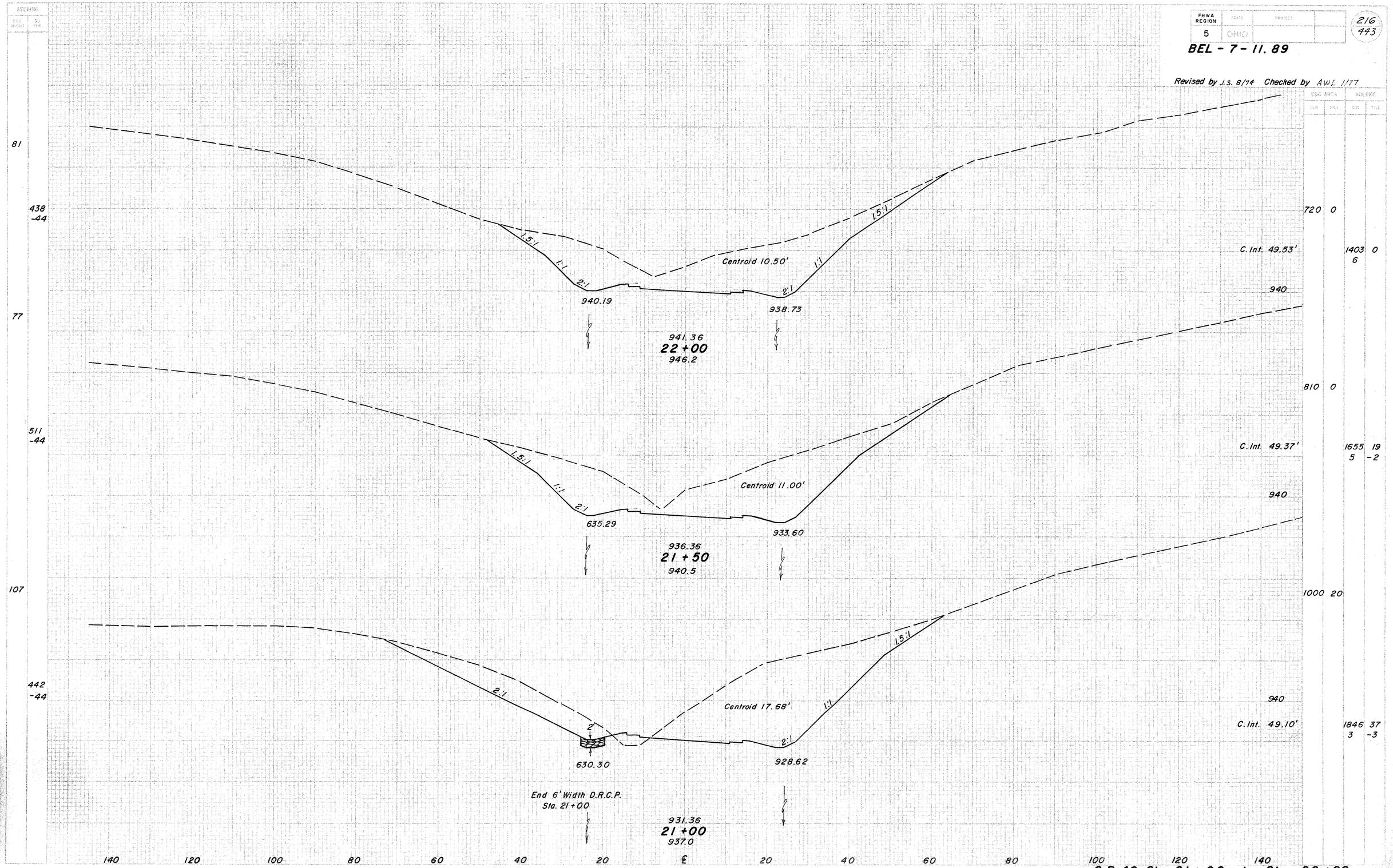
C.R. 46 Sta. 20 + 00 to Sta. 20 + 50

FHWA REGION	STATE	PROJECT	
5	OHIO		

216
443

BEL - 7 - 11.89

Revised by J.S. 8/74 Checked by AWL 1/77



C.R. 46 Sta. 21+00 to Sta. 22+00

FHWA REGION	STATE	PROJECT	
5	OHIO		

217
443

BEL - 7 - 11.89

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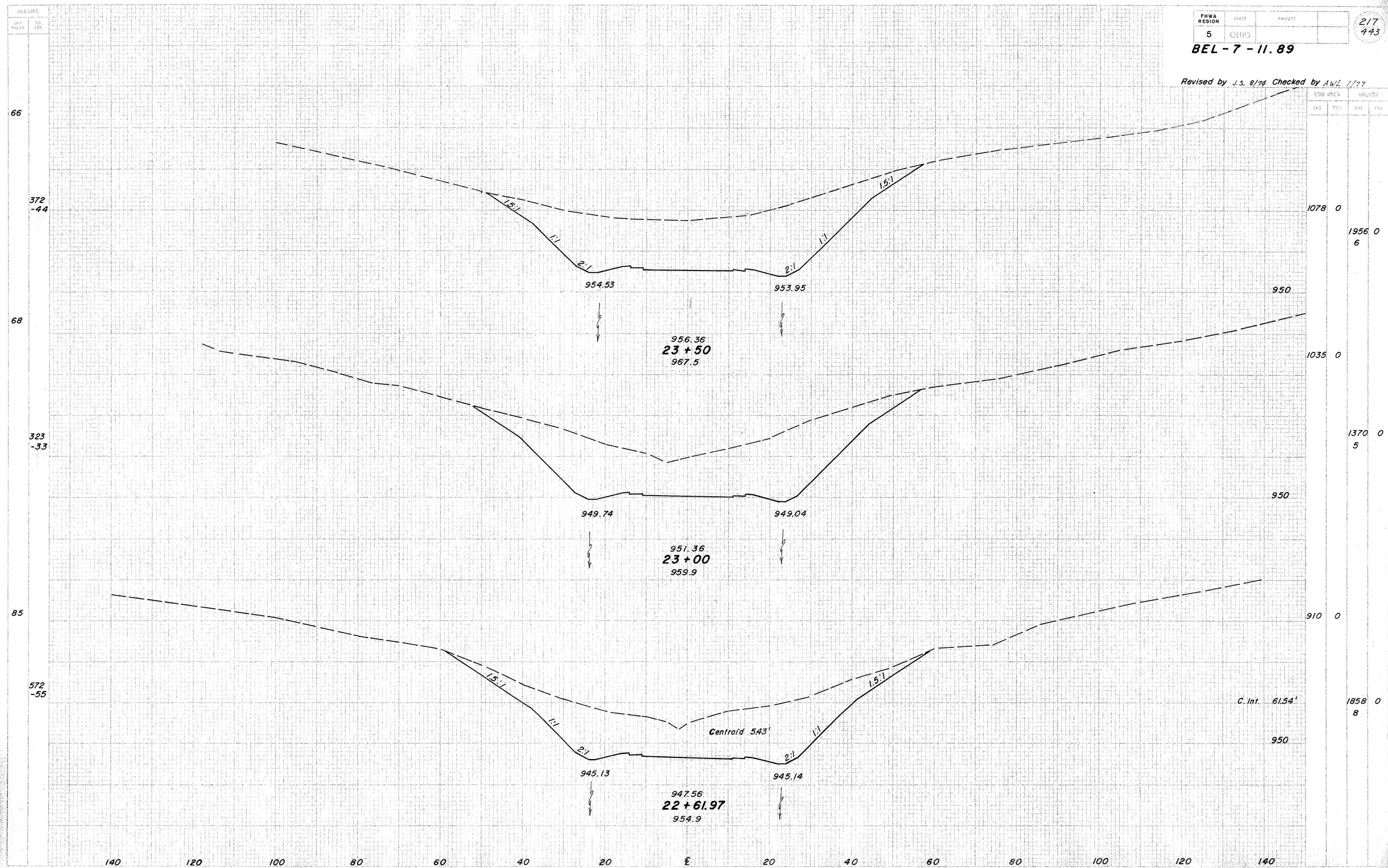


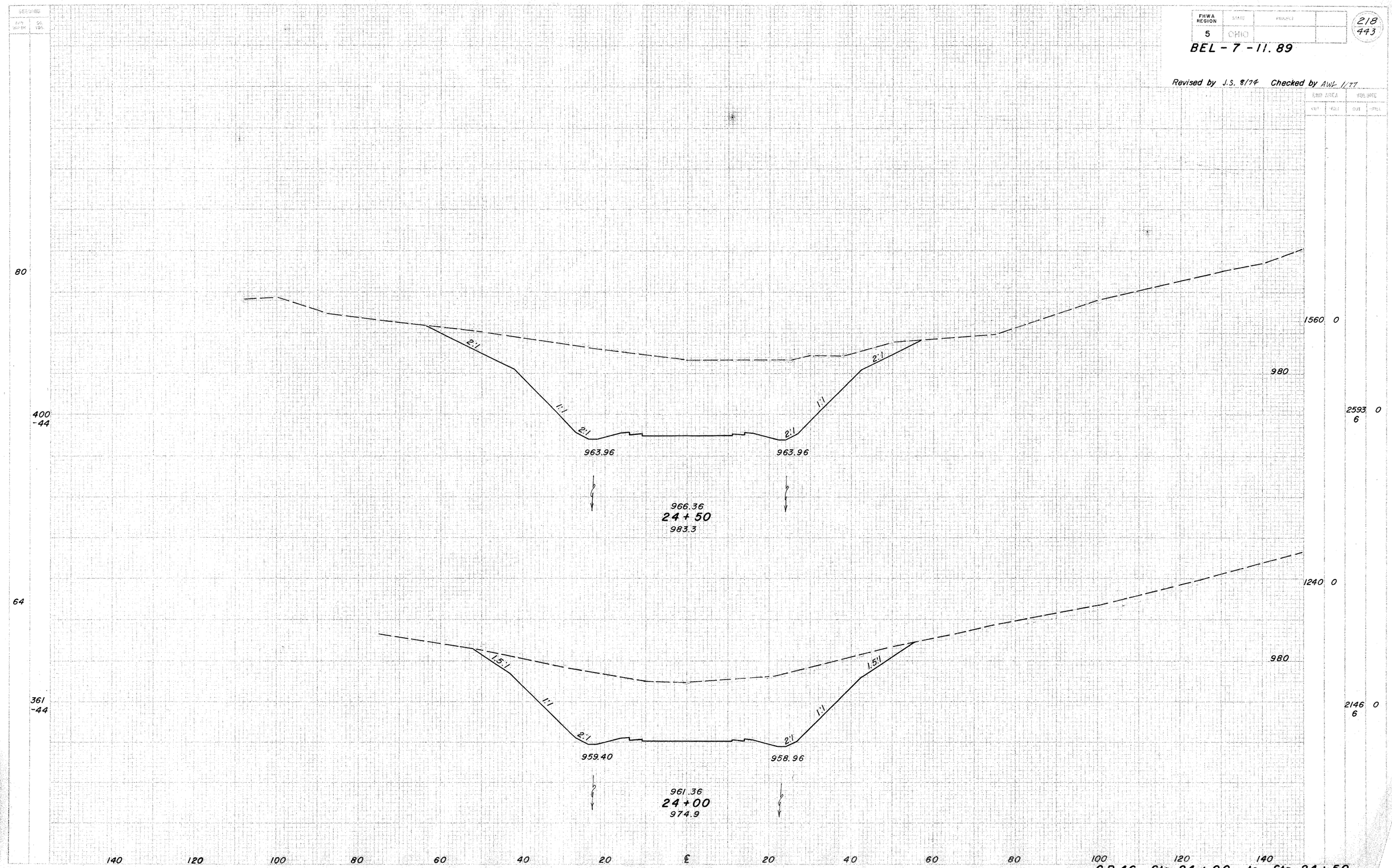
C.R. 46 Sta. 22 + 61.97 to Sta. 23 + 50

FHWA REGION	STATE	PROJECT	
5	OHIO		

218
443

BEL - 7 - 11.89

Revised by J.S. 8/74 Checked by AWL 1/77



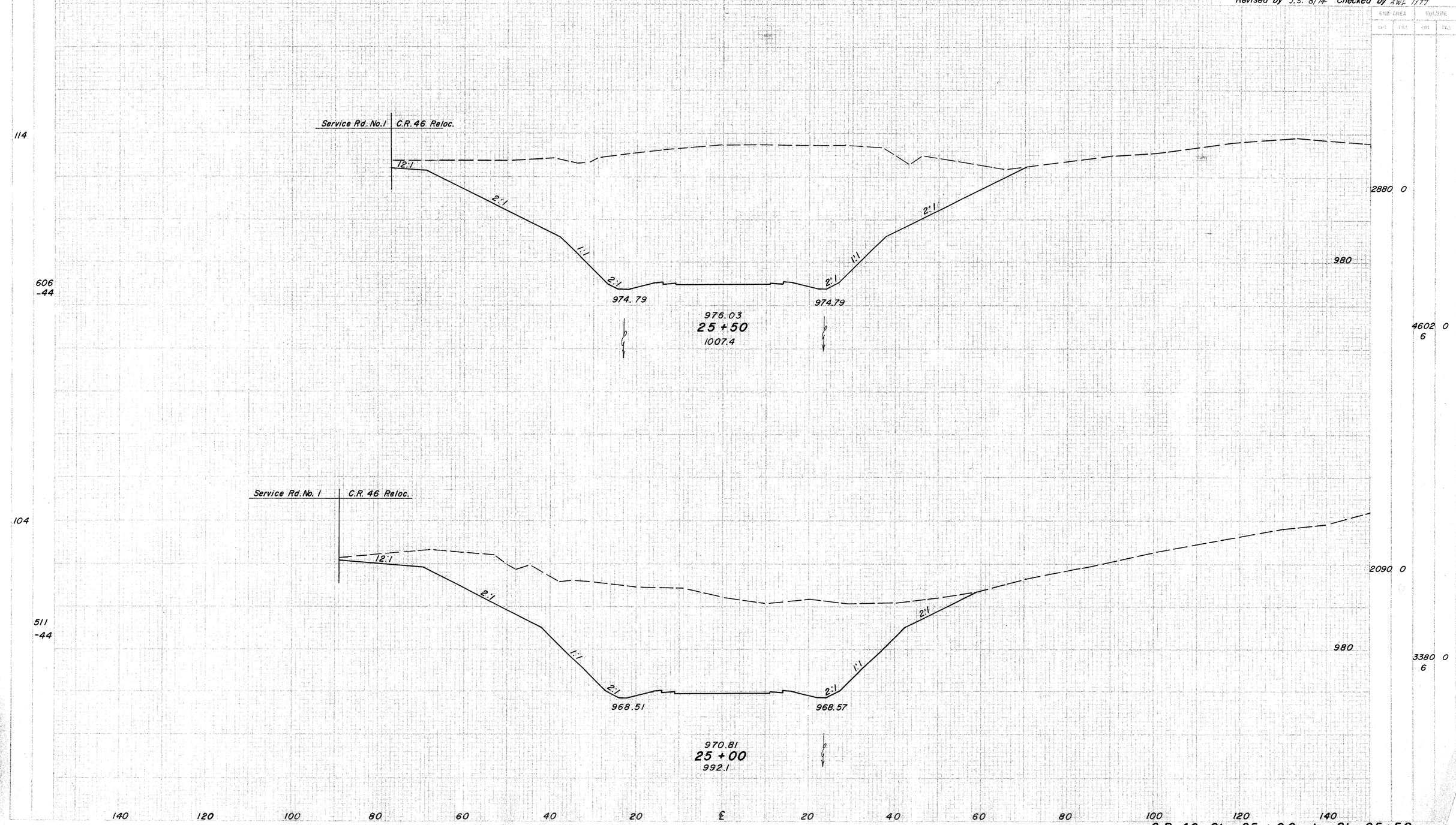
C.R.46 Sta. 24 + 00 to Sta. 24 + 50

FHWA REGION	STATE	PROJECT	
5	OHIO		

219
443

BEL - 7 - 11.89

Revised by J.S. 8/74 Checked by AWL 1/77



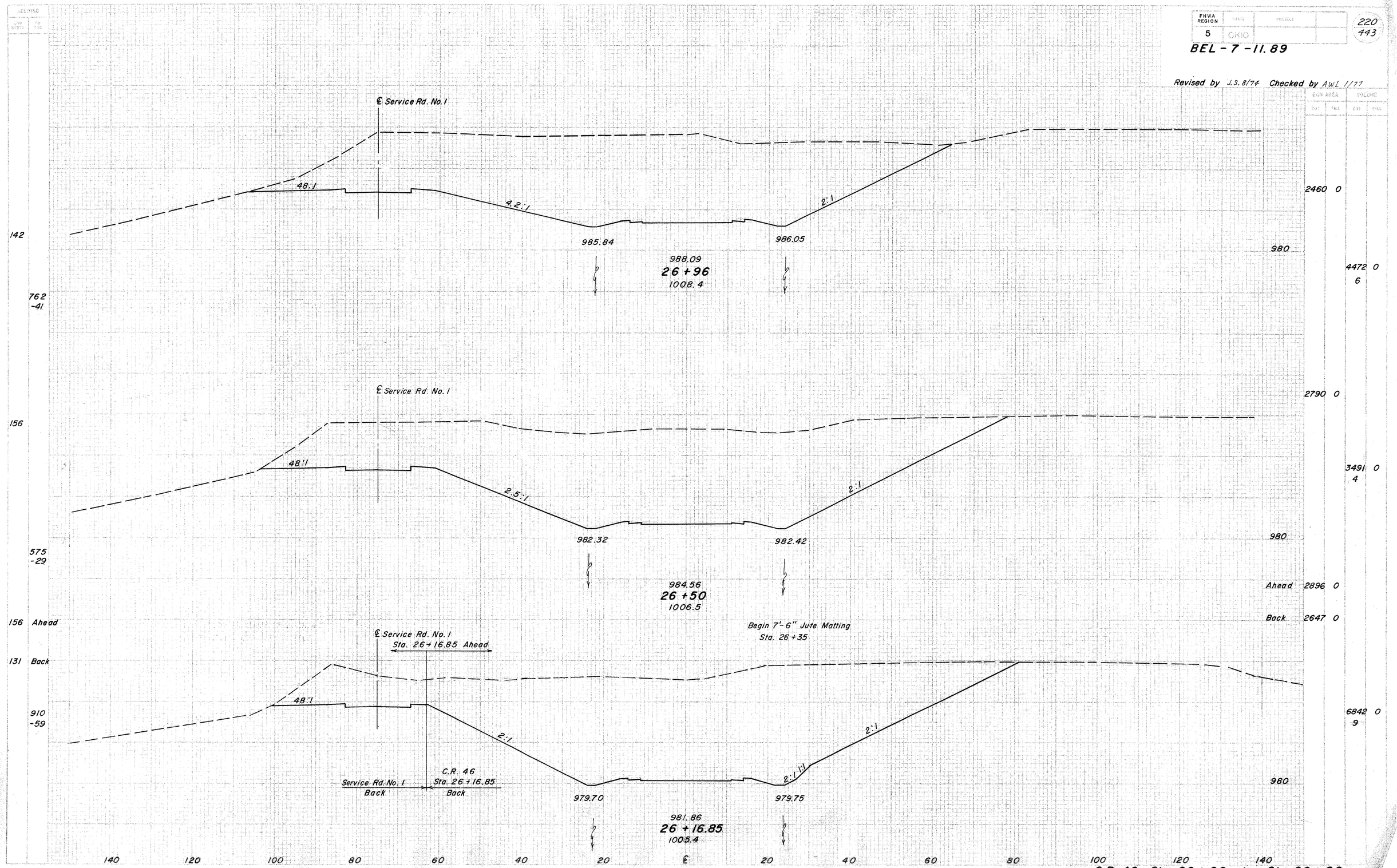
C.R. 46 Sta. 25 + 00 to Sta. 25+50

FHWA REGION	STATE	PROJECT	
5	OHIO		

220
443

BEL - 7 - 11.89

Revised by J.S. 8/74 Checked by AWL 1/77



	EQU AREA CUT	EQU AREA FILL	VOLUME CUT	VOLUME FILL
	2460	0		
			4472	0
			6	
	2790	0		
			3491	0
			4	
Ahead	2896	0		
Back	2647	0		
			6842	0
			9	

C.R. 46 Sta. 26 + 00 to Sta. 26 + 96

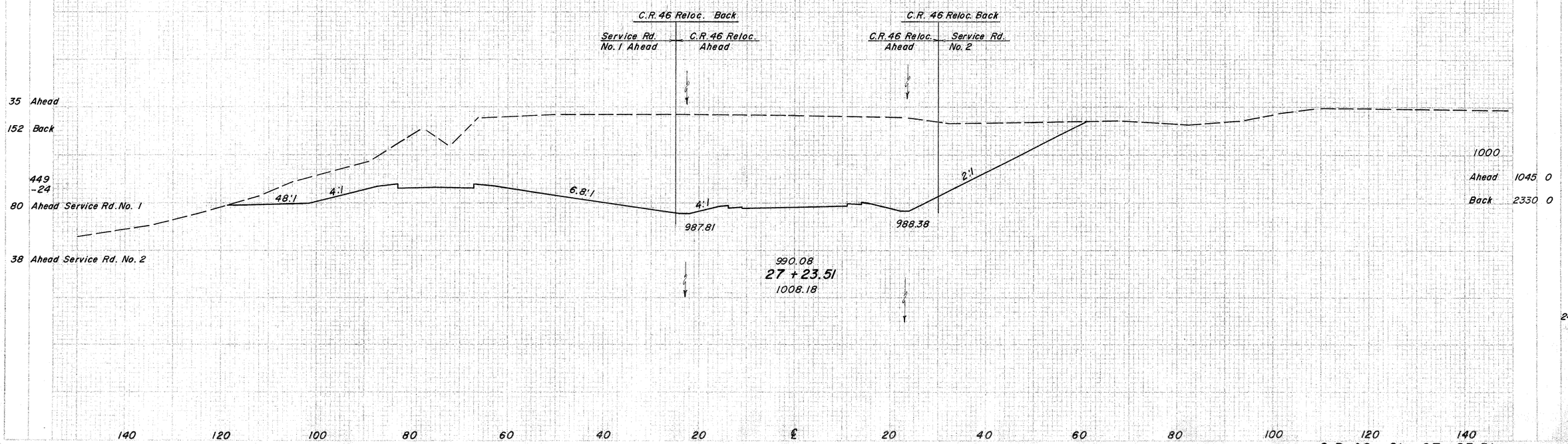
FHWA REGION	STATE	PROJECT	
5	OHIO		

221
993

BEL - 7 - 11.89

Revised by J.S. 8/74 Checked by AWL 1/77

END AREA		VOLUME	
CUT	FILL	CUT	FILL



C.R. 46 Sta. 27 + 23.51

SEEDING

FHWA REGION	STATE	PROJECT	
5	OHIO		

222
443

BEL-7-11.89

Revised by J.S. 8/74 Checked by AWL 1/77

		END AREA		VOLUME	
		CUT	FILL	CUT	FILL
	End 7'-6" Jute Matting Sta. 28+50				
84	Ahead	Ahead	837	0	
68	Back	Back	792	0	
				1000	
	Centroid Bk. 6.60' Centroid 1.95' 2:1 2:1 997.04 995.38 Back				
314 -45	998.10 28+50 1008.3			C.Int. 49.49'	1808 0 5
	Begin 7'-6" Jute Matting Sta. 28+17				
	C.R. 46 Reloc. / Service Rd. No. 2				
	Service Rd. No. 1 / C.R. 46 Reloc.				
45	Centroid 7.16' 992.3			1181	0
				1000	
	Begin 7'-6" Jute Matting Sta. 27+99.91				
250 -33	To Service Rd. No. 1 Lt. Ditch				2118 0 5
	995.14 27+99.91 1008.3				
	End 4' Width D.R.C.P. Sta. 27+54				
	C.R. 46 Reloc. / Service Rd. No. 2				
	Service Rd. No. 1 / C.R. 46 Reloc.				
45				1111	0
				1000	
	990.34				
	Begin 4' Width D.R.C.P. Sta. 27+44				1058 0 3
118 -24	End 7'-6" Jute Matting Sta. 27+44				
	991.92 27+50 1008.1				

140 120 100 80 60 40 20 ℄ 20 40 60 80 100 120 140

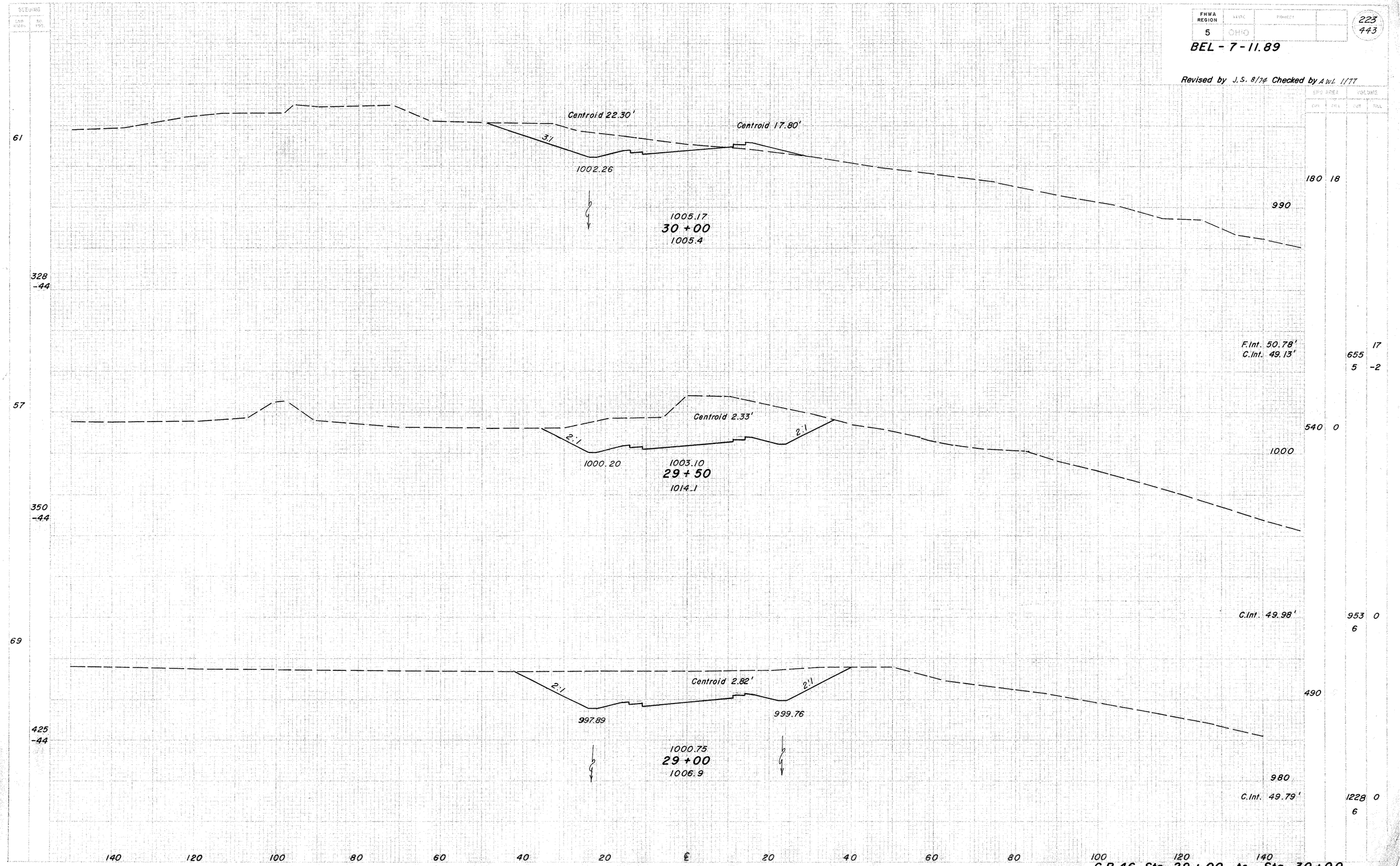
C.R. 46 Sta. 27+50 to Sta. 28+50

FHWA REGION	STATE	PROJECT	
5	OHIO		

223
443

BEL - 7 - 11.89

Revised by J.S. 8/74 Checked by AWL 1/77



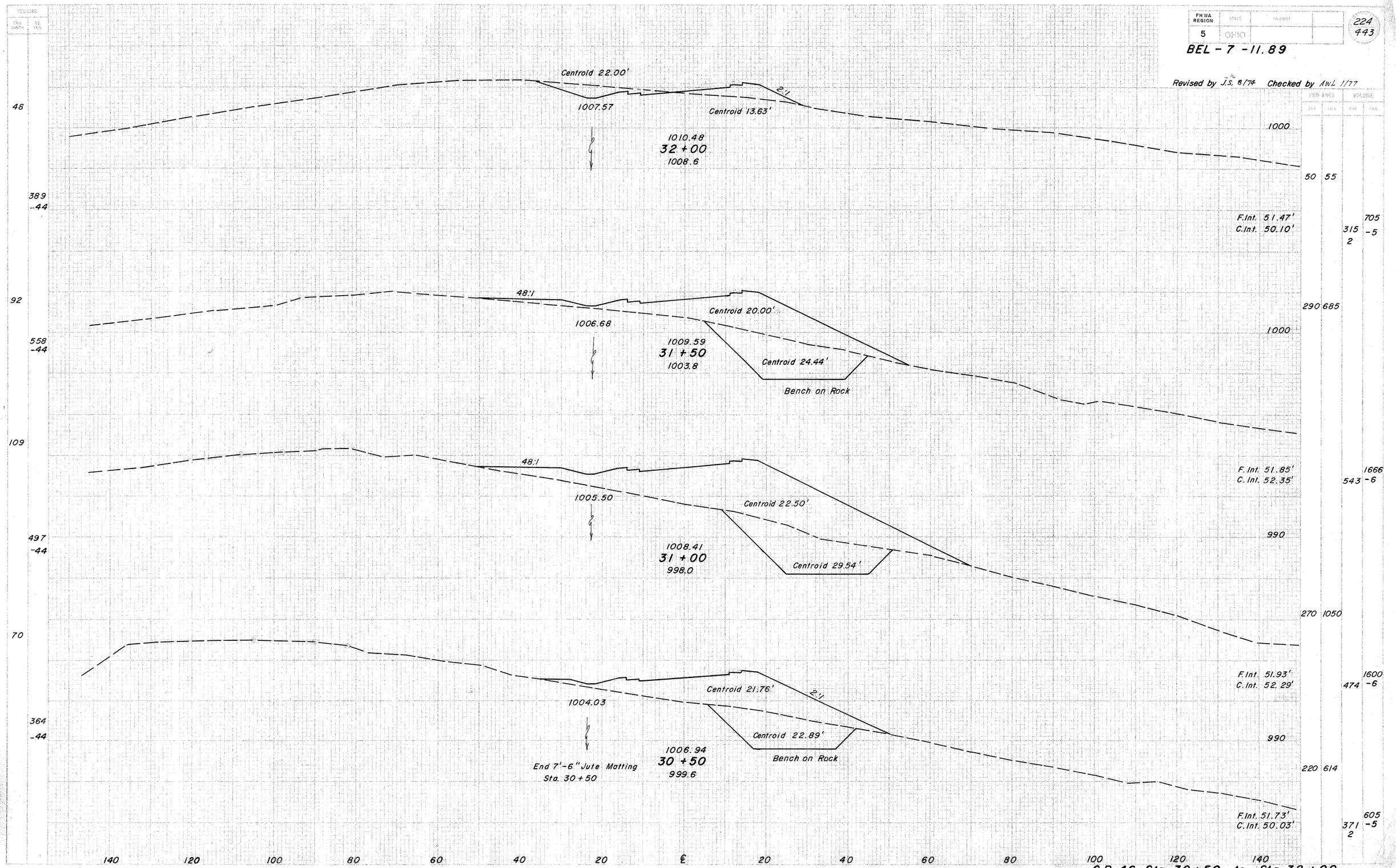
C.R.46 Sta. 29 + 00 to Sta. 30 + 00

FHWA REGION	STATE	PROJECT	
5	OHIO		

224
443

BEL - 7 - 11.89

Revised by J.S. 8/74 Checked by AWL 1/77



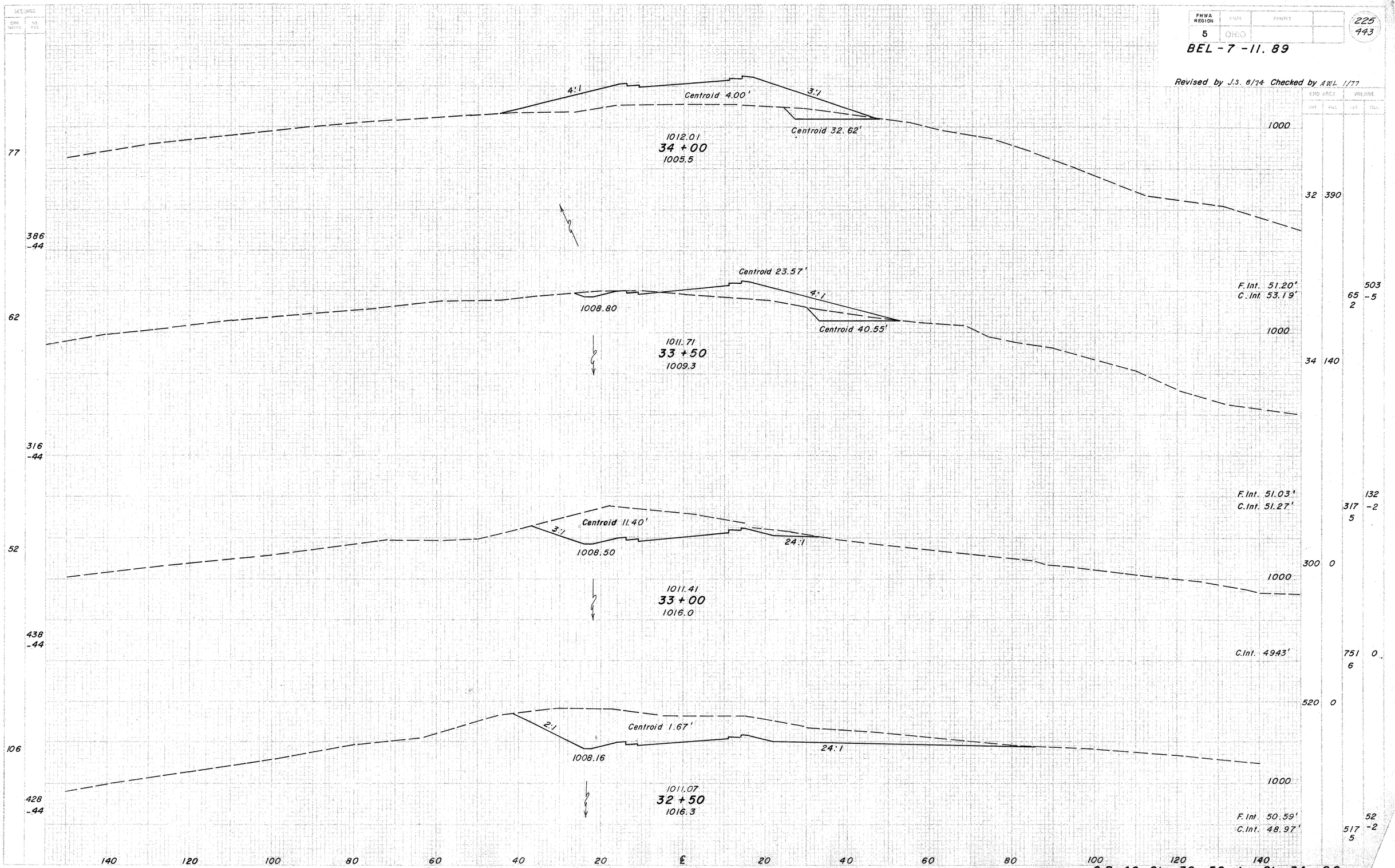
C.R. 46 Sta. 30 + 50 to Sta. 32 + 00

FHWA REGION	STATE	PROJECT	
5	OHIO		

225
443

BEL-7-11.89

Revised by J.S. 8/74 Checked by AWL 1/77



	END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
	32	390		
F.Int. 51.20' C.Int. 53.19'			65 2	503 -5
	34	140		
F.Int. 51.03' C.Int. 51.27'			317 5	132 -2
	300	0		
C.Int. 49.43'			751 6	0
	520	0		
F.Int. 50.59' C.Int. 48.97'			517 5	52 -2

C.R. 46 Sta. 32+50 to Sta. 34+00

FHWA REGION	STATE	PROJECT	
5	OHIO		

226
443

BEL - 7 - 11.89

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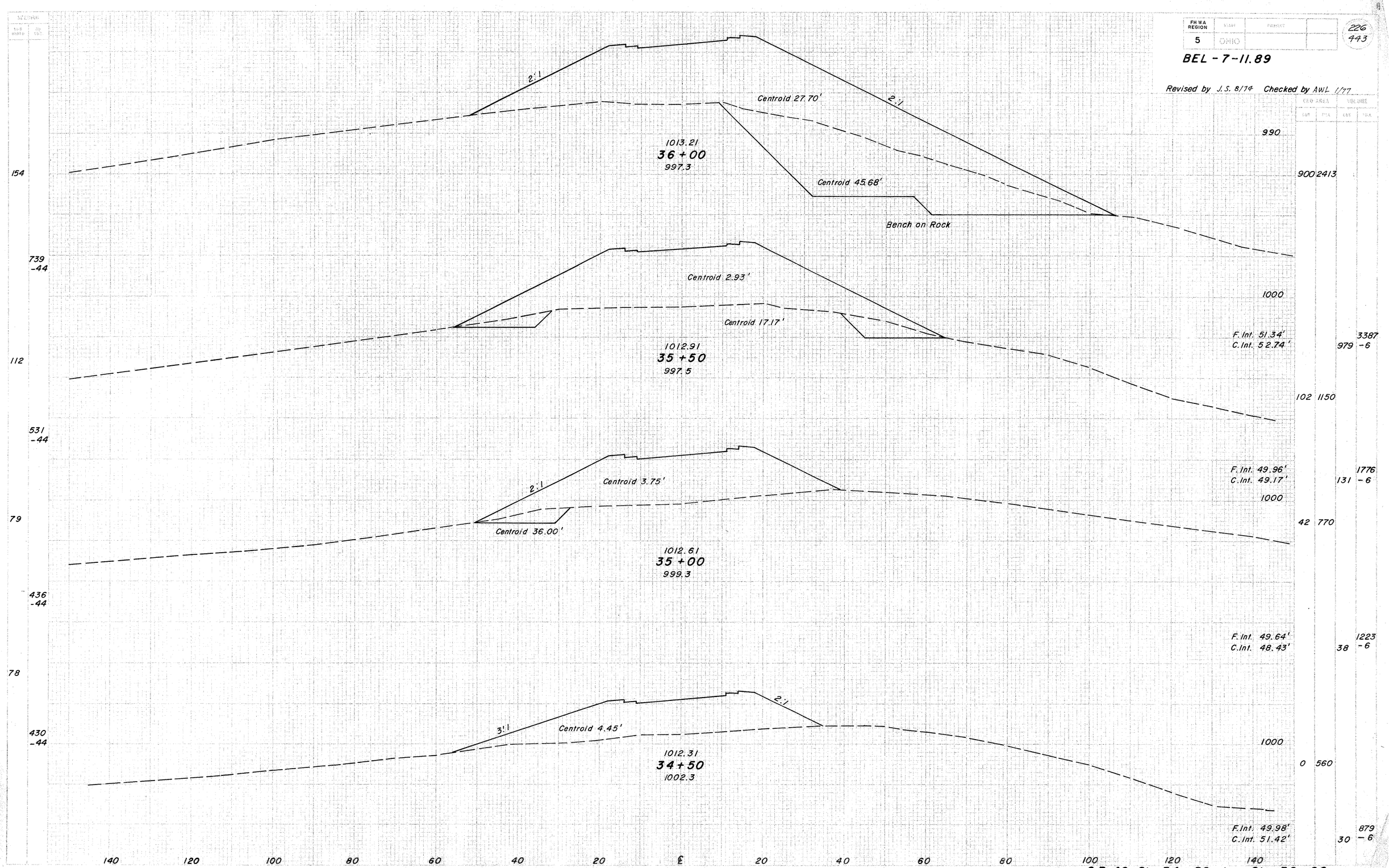

C.R. 46 Sta. 34 + 50 to Sta. 36 + 00

FHWA REGION	STATE	PROJECT	
5	OHIO		

227
443

BEL - 7 - 11.89

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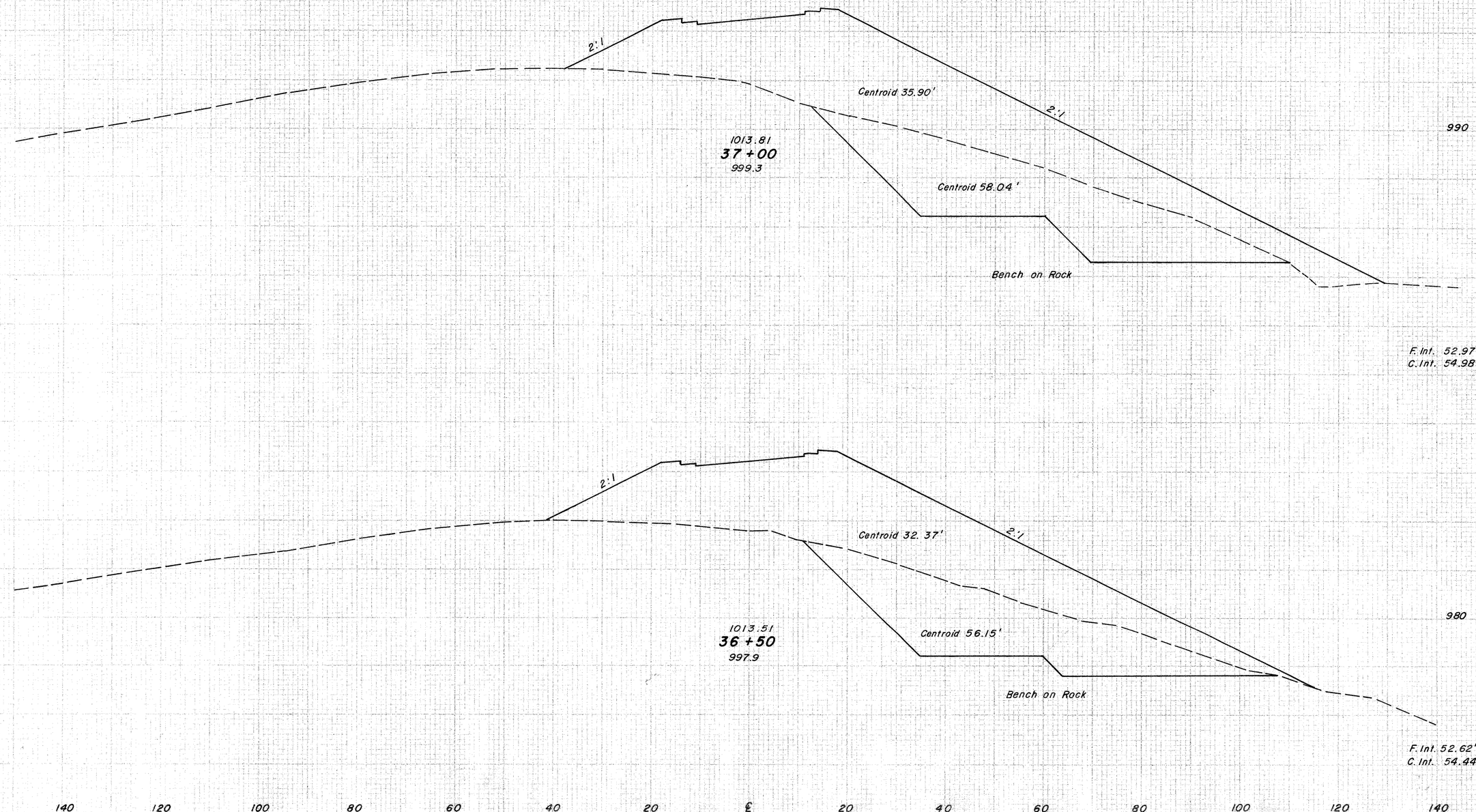
EARTH AREA		VOLUME	
CUT	FILL	CUT	FILL



165
886
-44

990
985 2735

F. Int. 52.97' 5135
C. Int. 54.98' 1899 - 6

154
856
-44

880 2500

980

F. Int. 52.62' 4787
C. Int. 54.44' 1794 - 6

C.R. 46 Sta. 36+50 to Sta. 37+00

FHWA REGION	STATE	SHEETS	
5	OHIO		

228
443

BEL-7-11.89

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	EMB AREA		VOLUME	
	CUT	FILL	CUT	FILL
1010				
	211	0		
F.Int. 50.53'				23
C.Int. 49.71'			202	-3
			2	
Ahead	8	25		
Back	8	61		
1010				
1+00	0	0	132	0
0+72	255	0	345	0
0+34	235	0	277	21
0+10	388	47		
F.Int. 56.32'				627
	8			-7
	0	540		
1000				
F.Int. 46.09'				2108
C.Int. 45.88'			569	-6
	670	1930		
1000				
F.Int. 52.94'				4573
C.Int. 54.12'			1659	-6

54 Ahead
27 Back
381 C.R. 46 Conn.
181
-23
38 Ahead
18 Back
312
-49
83
511
-40
124
803
-44

S.R. 46 Conn.
Centroid 6.66'
2:1
1012.10
30'V.C.
1015.01
39+00
1019.5
+8.33%
0.81
EL. 1016.0
1010
-13.4%
EL. 1007.4
C.R. 46 CONN. PROFILE
20 40 60 80 100 120

Ahead
3:1
1011.80
Centroid 6.00'
Centroid 12.14
Back
1014.71
38+50
1012.6

End 7'-6" Jute Matting Sta. 0+95 C.R. 46 Conn.
Begin 7'-6" Jute Matting Sta. 0+70 C.R. 46 Conn.
End 6' D.R.C.P. Sta. 0+70
To Exist. Ditch @ 0+95 Elev. 1008.0
2:1
2'
4:1
12:1
1010
1009.0
0+72

3:1
Centroid 10.26'
2:1
1014.38
37+94.47
1005.2
2:1
2'
4:1
12:1
1010
1013.16
0+34
1000
From Ditch Sta. 39+25
Begin D.R.C.P. Sta. 0+12.46
1010
0+10

2:1
Centroid 31.50'
2:1
1014.11
37+50
1001.3
Centroid 36.42'
140 120 100 80 60 40 20 ℄ 20 40 60 80 100 120 140

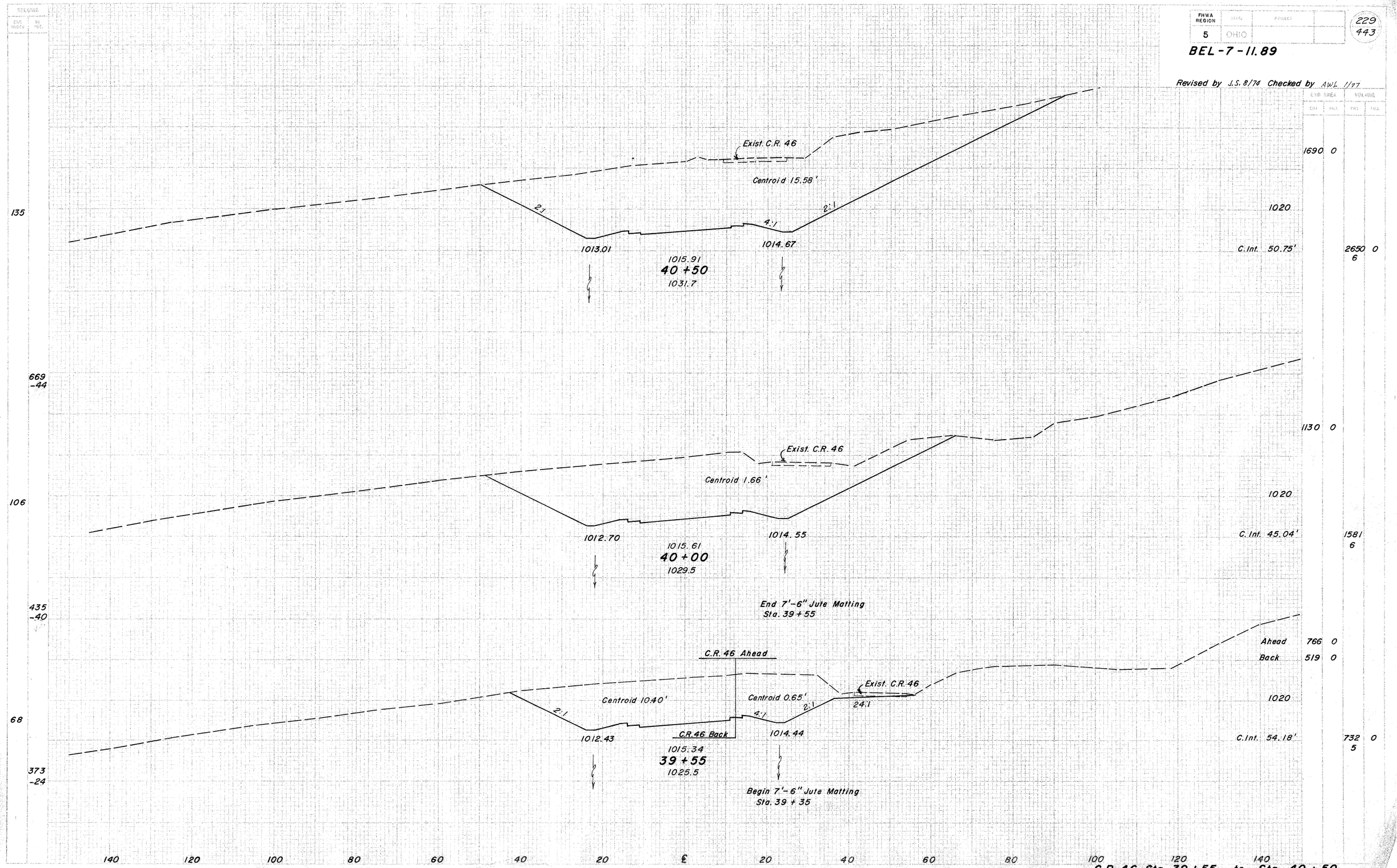
C.R. 46 Sta. 37+50 to Sta. 39+00

FHWA REGION	STATE	PROJECT	
5	OHIO		

229
443

BEL-7-11.89

Revised by J.S. 8/74 Checked by AWL 1/77



	END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
	1690	0		
			2650	0
			6	
	1130	0		
			1581	
			6	
Ahead	766	0		
Back	519	0		
			732	0
			5	

C.R. 46 Sta. 39+55 to Sta. 40+50

FHWA REGION	STATE	PROJECT	
5	OHIO		

230
443

BEL-7-11.89

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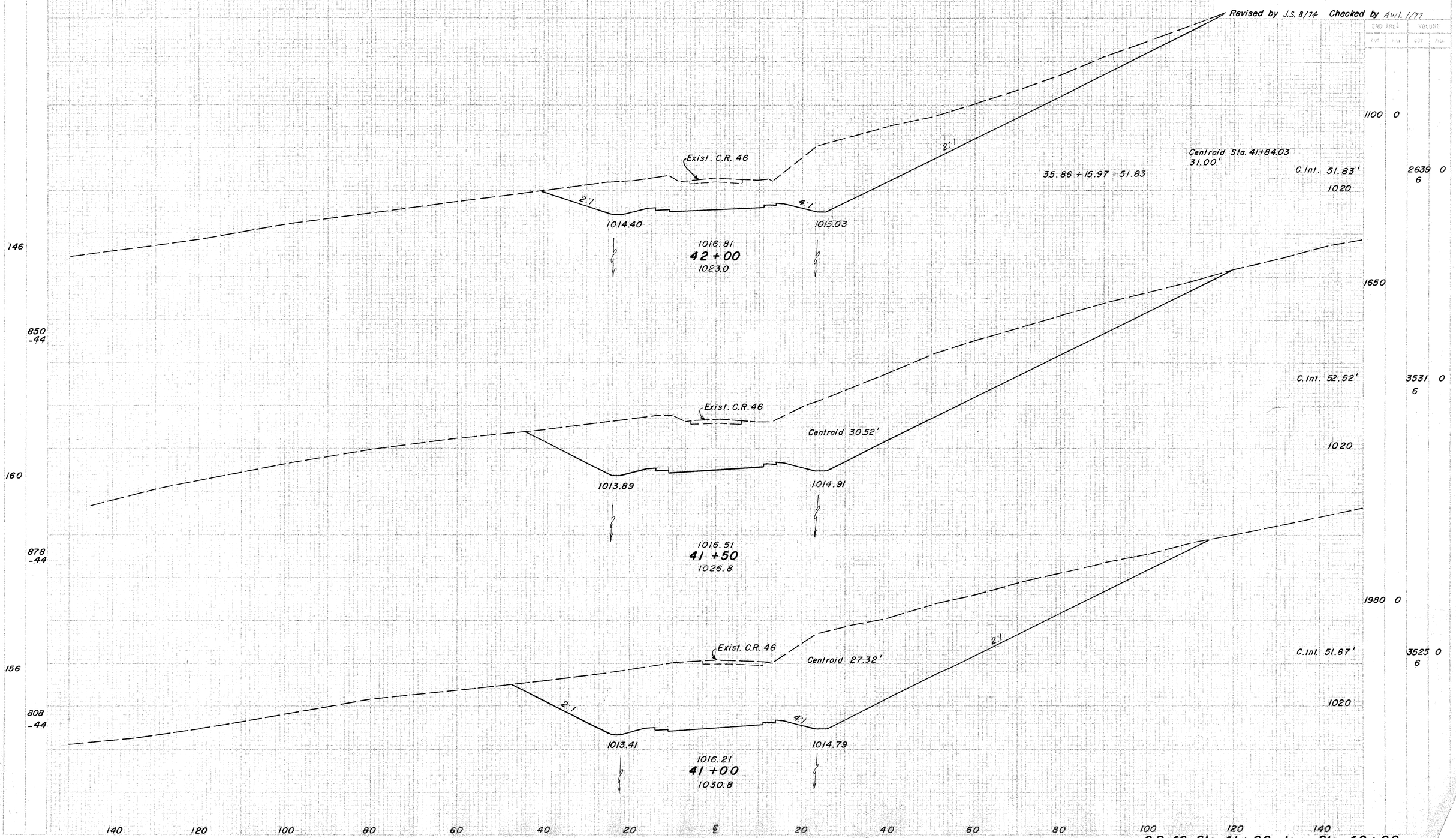

C.R. 46 Sta. 41+00 to Sta. 42+00

FHWA REGION 5

231
443

BEL-7 -11.89

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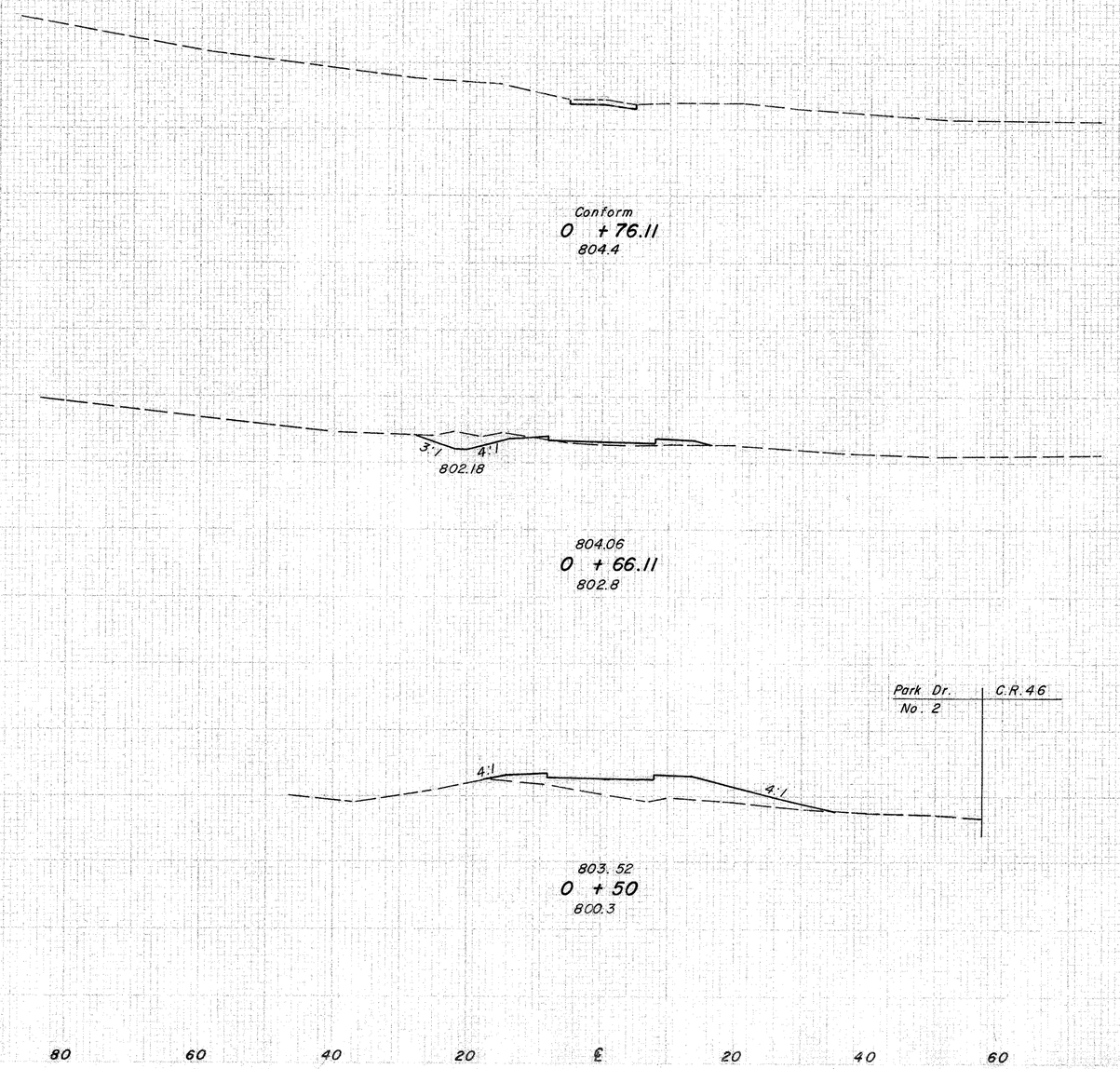
					TRD AREA		VOLUME	
					FOR	AUX	CUT	FILL
				1020				
				43+75	12	0		
								657 0
				1017.77				
				44+00				
				1017.8				
							130 0	
100								287 0
				1020				6
36				2:1				
				1015.53				
				1017.71				
				43+50				
				1017.5				
							180 0	
								491 0
								6
222 -44				1020				
				2:1				
				1015.32				
44				1017.41				
				43+00				
				1018.0				
				DRIVE Sta. 42+68.88				
				1020				
				8.58%				
322 -44				1010			350 0	
				Exist. C.R. 46				
				2:1				
				1020				
				1015.80				1343 0
				1015.15				6
72				1017.11				
				42+50				
606 -44				1019.9				

140 120 100 80 60 40 20 ℄ 20 40 60 80 100 120 140

C.R. 46 Sta. 42+50 to Sta. 44+00

FHWA REGION 5 | STATE OHIO | | 232 443

BEL-7-11.89

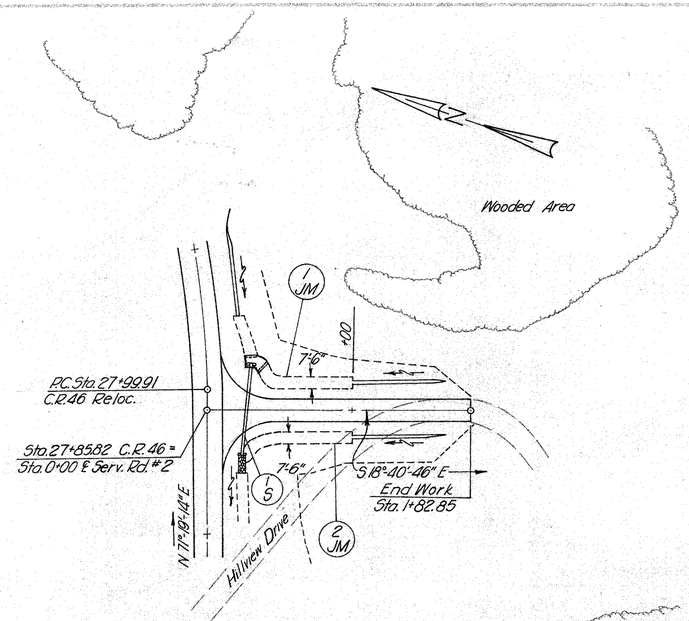


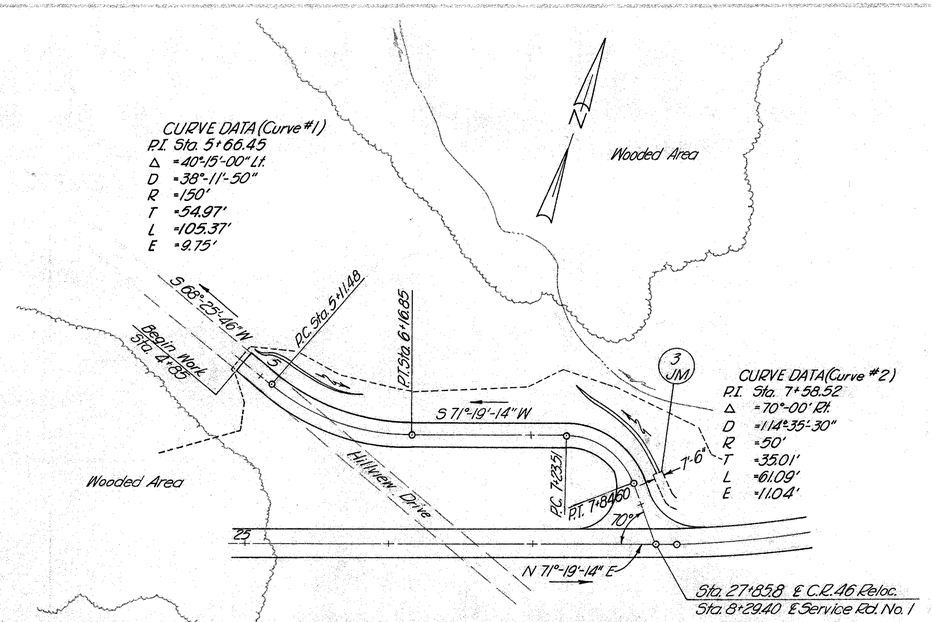
PARK DR. NO. 2 Sta. 0+50 to Sta. 0+76.11

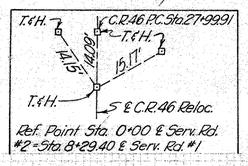
Revised by J.S. 1/77
Checked by AWL 1-77

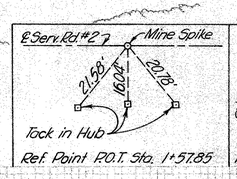
FHWA REGION 5 | STATE OHIO | | 233 / 443

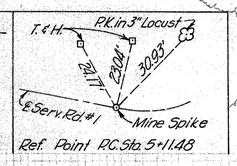
BEL - 7 - 11.89

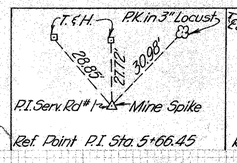


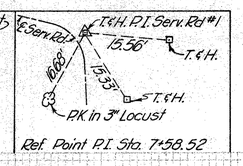


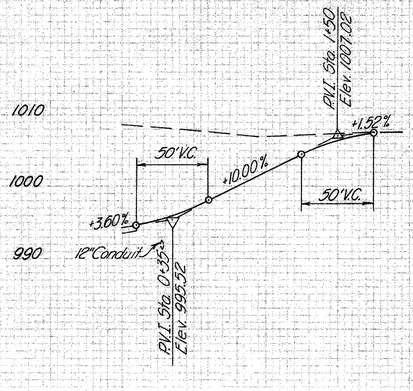


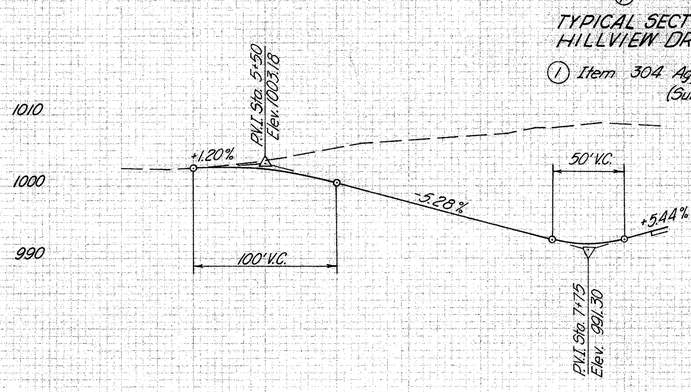


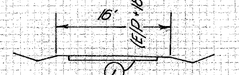












TYPICAL SECTION
HILLVIEW DRIVE

(1) Item 304 Aggregate Base (Surface Course)

	0	1	2	4	5	6	7	8
(E/P +10)	994.28	994.62	995.30	997.08	998.02	1002.02	1004.52	1006.49
(+60)	1007.40	1007.40	1007.40	1007.40	1007.40	1007.40	1007.40	1007.40
(+82.85)	1008.6	1008.1	1007.8	1006.9	1007.4	1007.4	1002.4	1002.4
	0	+30			+57.85	+82.85		
(+85)	1002.40	1002.58	1002.68	1002.37	1001.66	1000.54	997.90	995.26
	1002.4	1002.8	1003.6	1006.1	1007.4	1008.2	1008.8	1008.9
	+85	+11.48		+16.85	+19	+38	+75	+84.60
(E/P +18.78)	992.62	991.97	992.66	993.68				
	1008.2							
	+29.40							

ITEM NO.	ITEM	UNIT	STATION TO STATION		
601	Riprap & Rein. Conc. Slab	S.Y.	4.9	0.5	0.5
602	Concrete Masonry	C.Y.			
603	Type A 12"	L.F.	64		64
667	Seeding & Mulching	S.Y.	65	67	21

ESTIMATED QUANTITIES

SEE SHEET NO.

251

151

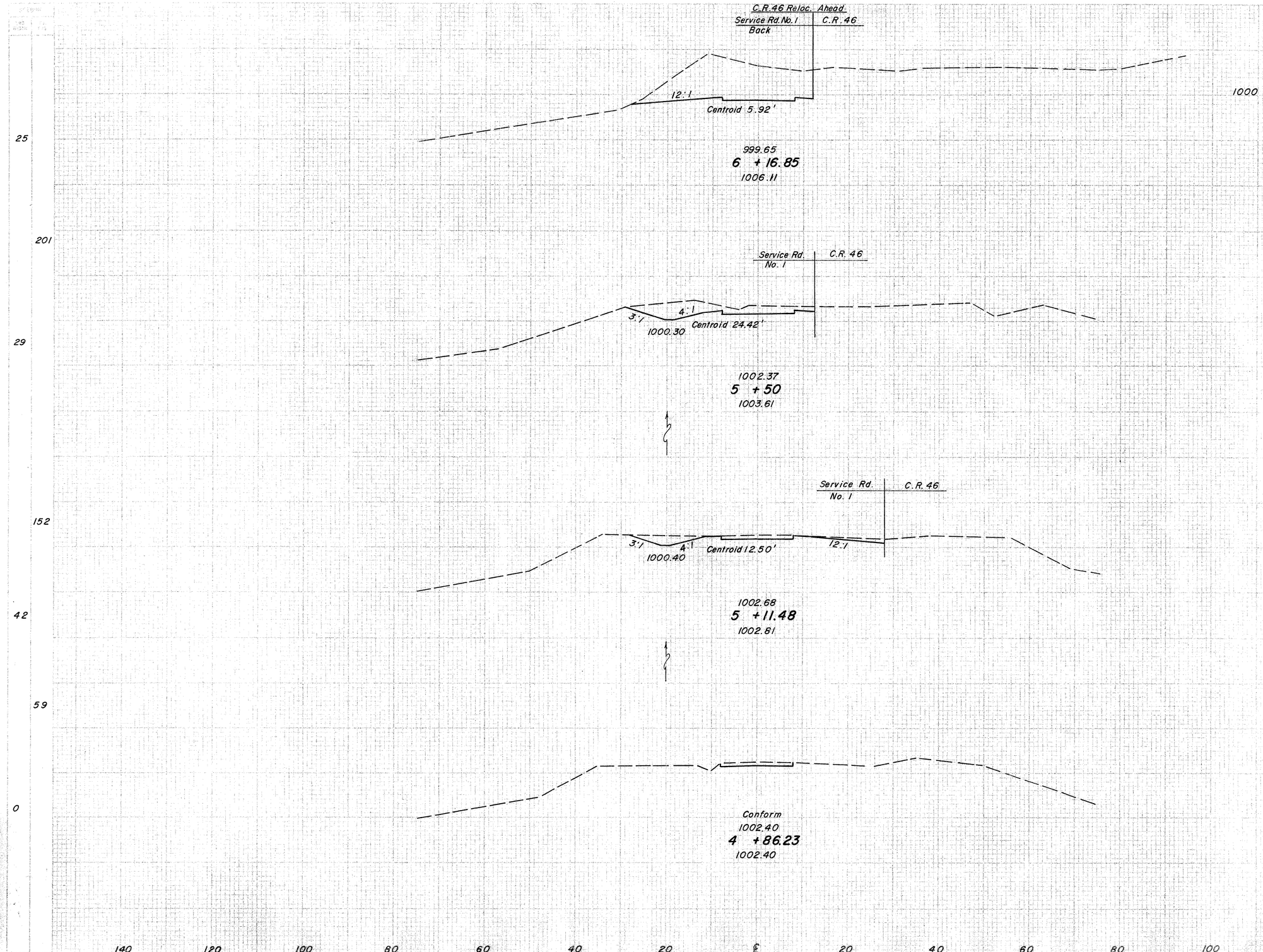
1 JM	0+33	to 1+00	LT.
2 JM	0+27	to 1+00	RT.
3 JM	7+84.60	to 8+09.60	LT.

1.5 | 0+26

SERVICE RD. NO. 1 Sta. 4+85 to Sta. 8+29.48 & SERVICE RD. NO. 2 Sta. 0+00 to Sta. 1+8

FHWA REGION 5 | STATE OHIO | 234 443

BEL-7-11.89



Service Rd. No. 1	Back	249	0	
C.Int. 60.09'			364	0
		78	0	
C.Int. 33.78'			71	0
		36	0	
			17	0
		0	0	

SERVICE RD. NO. 1 Sta. 4+85 to Sta. 6+16.85

FHWA REGION 5 | STATE OHIO | PROJECT | 235 443

BEL - 7 -11.89

C.R. 46 Reloc. | Service Rd. No. 1

End 7-6" Jute Matting
Sta. 8+09.6

Service Rd. No. 1 | C.R. 46 Reloc.

Centroid 5.57'

2:1

10.5:1

990.12

988.00

Begin 7-6" Jute Matting
Sta. 7+84.60

992.07
7 + 84.60
1008.98

C.R. 46 Reloc. | Service Rd. No. 1

Service Rd. No. 1 | C.R. 46 Reloc.

Centroid 7.35'

2:1

4:1

9.6:1

990.10

987.58

991.97
7 + 75
1008.82

Service Rd. No. 1 | C.R. 46 Reloc.

Centroid 7.50'

2:1

4:1

8.3:1

989.99

987.57

992.62
7 + 50
1008.12

Service Rd. No. 1 Ahead | C.R. 46 Reloc. Ahead

Centroid 26.13'

48:1

4:1

989.89

994.02
7 + 23.51
1008.58

987.83

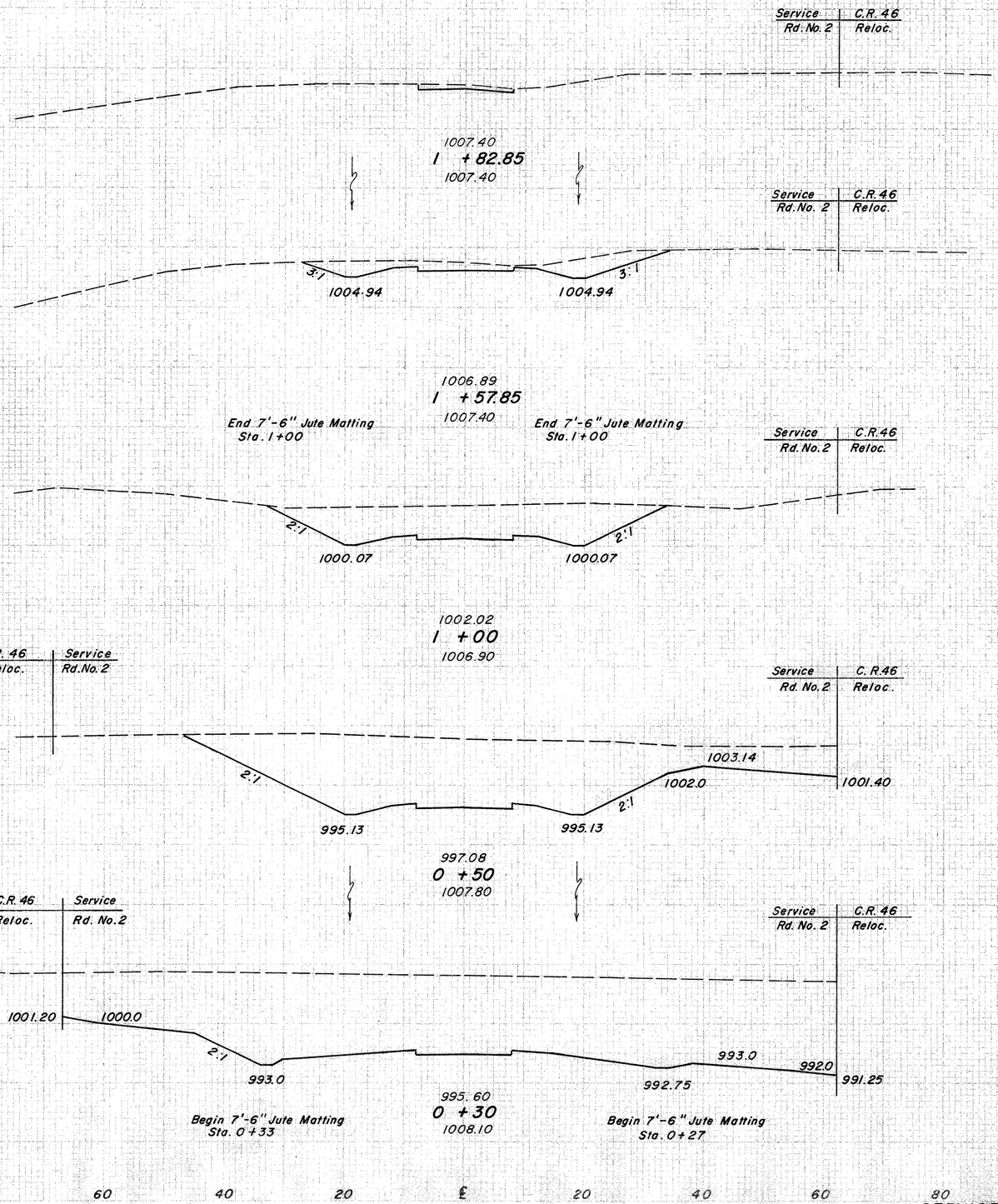
	FWD ONLY		VOLUMES	
	CUT	FILL	CUT	FILL
	1590	0		
C.Int. 8.36'			491	0
	1580	0		
1000				
C.Int. 21.29'			1183	0
	1420	0		
1000				
C. Int. 17.58'			804	0
Service Rd Ahead No 1	1050	0		
1000				

SERVICE RD. NO.1 Sta. 7+23.51 to Sta. 7+84.60

FHWA REGION 5

236
443

BEL-7-11.89



	SUB AREA		VOLUME	
	SQ. FT.	SQ. YD.	CU. FT.	CU. YD.
0				
71	1000	10	0	
51				51 0
	100	0		
350	1000			
				445 0
58	315	0		
436	1000			
				1111 0
99	885	0		
214	1000			
				950 0
115	1680	0		
	1000			

140 120 100 80 60 40 20 ℄ 20 40 60 80 100 120 140

SERVICE RD. NO. 2 Sta. 0+30 to Sta. 1+82.85

BEL-7-11.89

Hubs
9' 15'
31.28' 26.45' 85.14'
Hub Line
Tang. P.I. 10+18.64

P.I. 11+69.00
Tang. Line R.R. Spt.
28.41' 15.76' 20.43'
17' 19'
Hubs on Bank

P.I. 14+09.55
Tang. Line R.R. Spt.
29.14' 25.05' 31.24'
16' 15'
Hubs on Bank

S.R.7 Curve Data
P.I. 678+41.94
Δ = 26°11'27" Lt.
D = 1°28'
T = 908.75'
L = 1785.74'
E = 104.31'
R = 3906.53'

P.T. 687+18.93

N12°24'37"E

687

686

685

684

683

682

Exist. Aggregate Drive

N29°47'41"E

P.C. 9+54.64

P.I. 10+18.64
Δ = 77°30' Rt.
D = 71°51'12"
T = 64.00'
L = 107.86'
E = 22.51'
R = 79.74'

P.T. 10+82.50

Proposed Structure

S.R.7 & Sta. 683+17.72 = Sta. 11+00 Access Road

31.61' 12+02.15

90° 14+09.55 Curve

P.C. 11+33.00

P.T. 11+89.55

P.I. 11+69.00
Δ = 90°00' Lt.
D = 159°09.18'
T = 36.00'
L = 56.55'
E = 14.91'
R = 36.00'

Forward Tangent Line

Exist. 36" C.M.P.

P.C. 13+60.68

P.I. 14+09.55
Δ = 13°38' Rt.
D = 14°00'
T = 48.92'
L = 97.38'
E = 2.91'
R = 409.26'

P.T. 14+58.01

Top of Bank

14+69.53

50' Taper

15+19.59

15

N30°55'41"E

Exist. 16' Concrete Dr. to Boat Ramp

Top of Bank

PLAN
0' 20' 40'
Scale in feet

BEGIN APPROACH
STA. 9+54.64

END APPROACH
STA. 15+19.59

B.M. Sta. 685+10
⊡ cut N.W. cor. Headwall
95' Lt. S.R.7 ℄
Elevation 651.58

4' 6' 6' 4'
℄
2:1 1"/Ft. 3/8"/Ft. 3/8"/Ft. 1"/Ft. 2:1
9"
Item 304 Aggregate Base

TYPICAL SECTION

G45.02 G45.85 G46.05 G46.17 G46.15 G45.72 G45.59 G45.94 G45.84 G46.39 G47.34 G47.64 G46.96

650

640

Exist. Conc. Pavement

Quantity carried to Sh. 21
Item 304 Aggregate Base = 291 Cu Yd.

PROFILE
Horiz. 0' 20'
Vert. 0' 10'

G44.7 G45.0 G45.0 G45.1 G45.3 G45.4 G45.4 G45.0 G44.8 G45.2 G45.0 G45.6 G46.6 G46.9 G46.96 G46.17

9+54.64 10 11 12 13 14 15 +19.59

BOAT RAMP ACCESS ROAD

25 20 15 10 5 ℄ 5 10 15 20 25 30

Fill-11 Item 304

G45

G45.72
12+00
G45.0

G40

Fill-14 Item 304

G45

G46.27
11+61
G45.5

G40

Fill-14 Item 304

G45

G46.17
11+00
G45.4

G40

Fill-14 Item 304

G45

G46.17
10+62
G45.4

G40

Fill-14 Item 304

G45

G45.92
10+08
G45.2

G40

Cut-9 Earthwork
Fill-9 Item 304

G45

G45.00
9+54.64
G45.0

BEGIN WORK

G40

G45

9+00
G44.7

G40

25 20 15 10 5 ℄ 5 10 15 20 25 30

Item 304 Aggr. Base		End Area		Cu. Yd.	
E.A.	cu.yd.	Cut	Fill	Exc.	Emb.
	22			0	0
11		0	0		
	18			0	0
14		0	0		
	32			0	0
14		0	0		
	20			0	0
14		0	0		
	28			0	0
14		0	0		
	23			9	0
9		9	0		

30 25 20 15 10 5 ℄ 5 10 15 20

Exist. Conc. Pav't.

Fill-12 Item 304

Exist. Conc. Pav't.

Cut-12 Earthwork

G45

G46.96
15+19.59
G46.96

G40

END WORK

Fill-14 Item 304

G45

G47.64
15+00
G46.9

G40

Fill-14 Item 304

G45

G47.34
14+50
G46.6

G40

Fill-16 Item 304

G45

G46.39
14+00
G45.6

G40

Fill-17 Item 304

G45

G45.75
13+50
G45.0

G40

Fill-14 Item 304

G45

G45.94
13+00
G45.2

G40

Fill-13 Item 304

G45

G45.59
12+50
G44.8

G40

30 25 20 15 10 5 ℄ 5 10 15 20 25 30

BOAT RAMP ACCESS ROAD

BEL-7-11.89

Quantities	
Calc. L.J.C.	Ch'kd. Q.P.S.
Date 8-21-78	Date 8-22-78

25 30

Item 304 Aggr. Base		End Area		Cu. Yd.	
E.A.	C.Y.	Cut	Fill	Exc.	Emb.
	12		12	0	
	9			5	0
14		0	0		
	26			0	0
14		0	0		
	28			0	0
16		0	0		
	31			0	0
17		0	0		
	20			0	0
14		0	0		
	25			0	0
13		0	0		

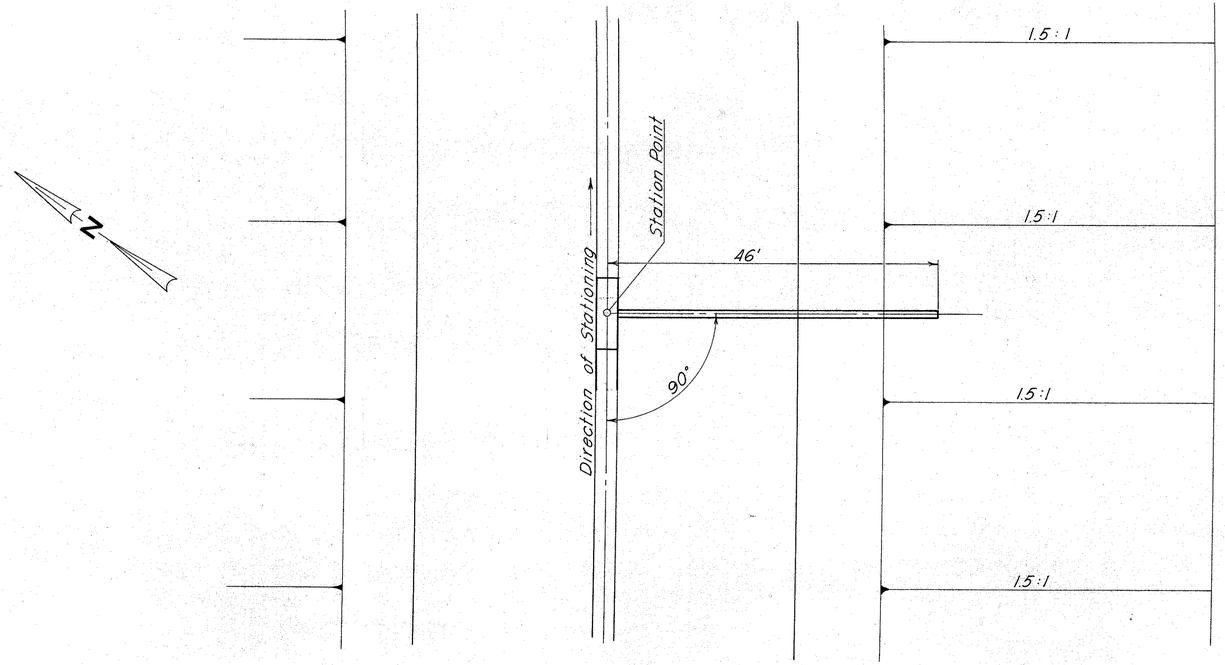
Item 304 Aggr. Base = 291 C.Y.
Quantity carried to Sh. 237

Excavation = 14 cu. Yd.
Quantity carried to Sh. 18

FHWA REGION	STATE	PROJECT	FISCAL YEAR
5			

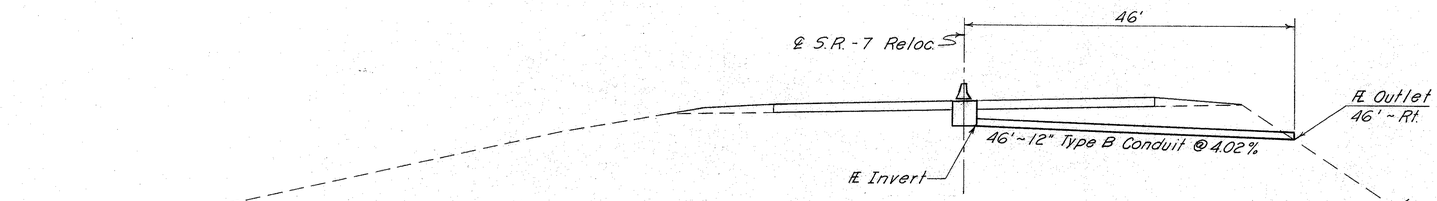
239
493

BEL-7-11.89



PLAN

0 20 40



PROFILE

QUANTITIES

Station	Direction of Invert	℄ Gutter	℄ Invert	℄ Outlet	603 12" Conduit Type "B"	604 Inlets
645+00	Up Station	672.60	669.02	667.17	46 L.F.	I-3D
650+00	Up Station	658.62	655.04	653.19	46 L.F.	I-3D
653+50	Up Station	654.14	650.56	648.61	46 L.F.	I-3D
658+00	Down Station	655.20	651.62	649.77	46 L.F.	I-3D
669+25	Up Station	655.32	651.74	649.89	46 L.F.	I-3D
672+50	Down Station	657.78	654.20	652.35	46 L.F.	I-3D
679+50	Down Station	669.25	665.67	663.82	46 L.F.	I-3D

Proposed Pool Elevation at the Hannibal Locks = 623.00

MEDIAN OUTLET DETAILS
STATIONS 645+00, 650+00, 653+00, 658+00, 669+25, 672+50, 679+50
12"x 46" STANDARD PIPE CONDUIT

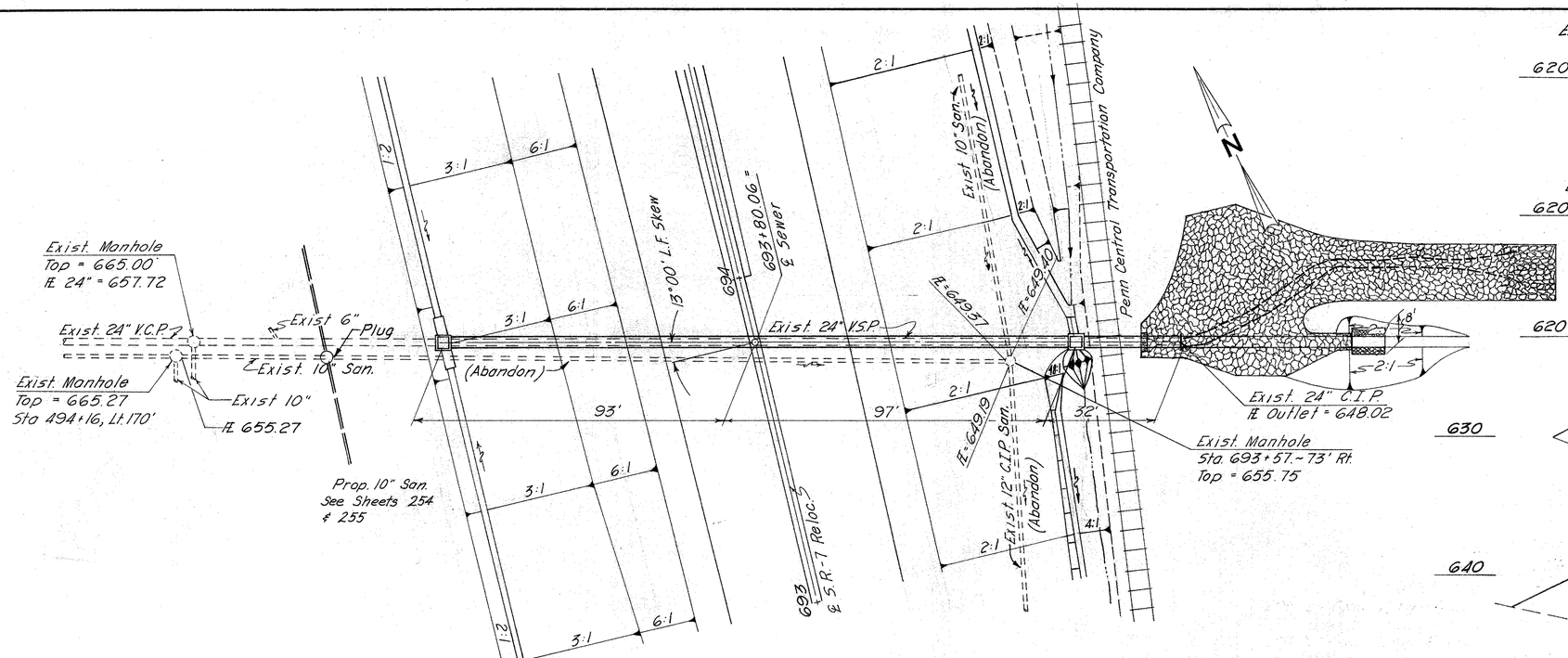
Rev. 5-23-79

FHWA REGION	STATE	PROJECT	
5	OHIO		

240
443

BEL-7-11.89

Revised by R.E.S. 6-75
Checked by AWL 1-77



PLAN

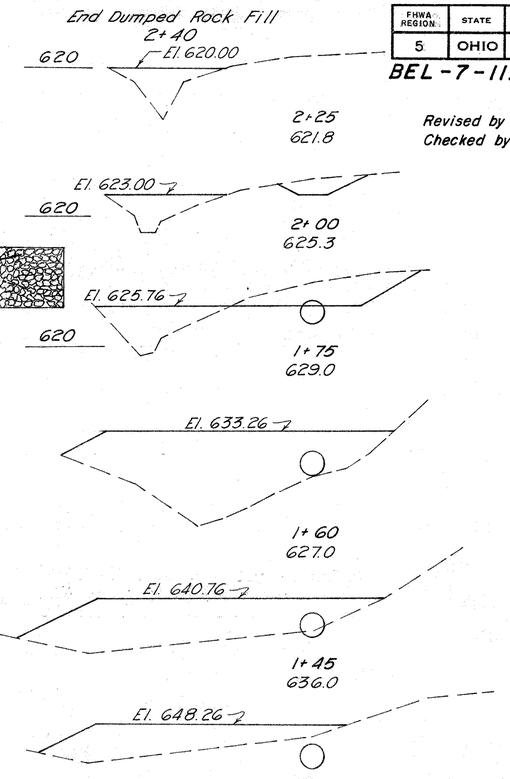
0 20 40

Note: The contractor shall remove all unsuitable material at the outlet end of the Type "A" Conduit as directed by the Engineer and replace with rock from the roadway excavation.

Note: Set both number 4 Catch Basins with grate openings in the same direction as the culvert

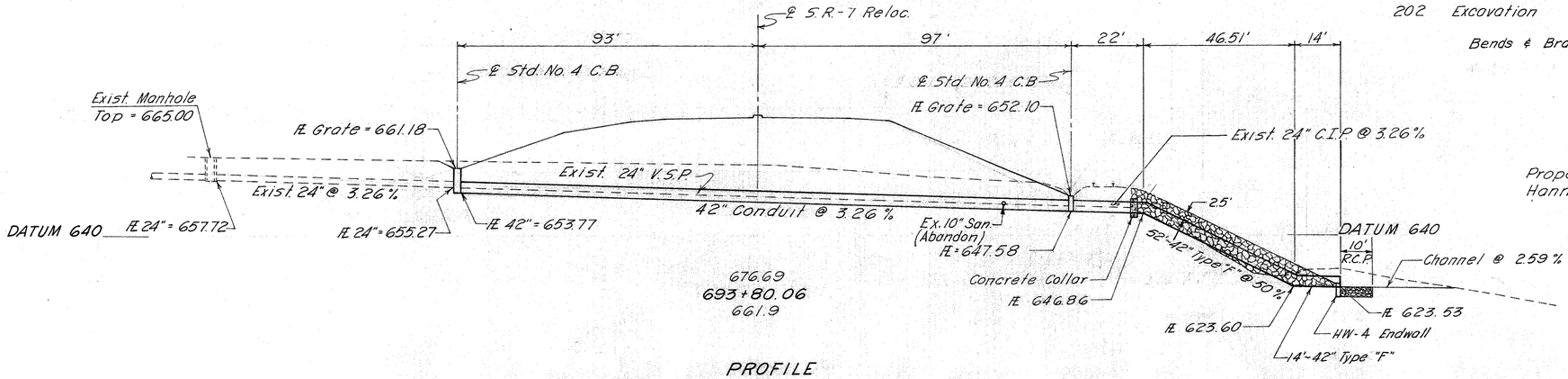
Drainage Area	88 Ac.
Q25	122 cfs

R.C.P. 10'x2'x8 ÷ 27 = 6 C.Y.



QUANTITIES

601	Rock Channel Protection TypeB With Bedding	6	C.Y.
601	Rock Fill	436	C.Y.
602	Concrete Masonry	0.9	C.Y.
603	42" Conduit, Type "A" 706.02 2250D-Load or 707.05	190	L.F.
603	42" Conduit, Type "A" 706.02 3000D-Load Under railroad, as per plan.	22	L.F.
603	42" Conduit Type "F"	66	L.F.
604	Std. No. 4 Catch Basin	2	Ea.
202	Excavation	24	C.Y.
	Bends & Branches	2	Ea.



PROFILE

Proposed pool elevation of the Hannibal Locks = 623.00

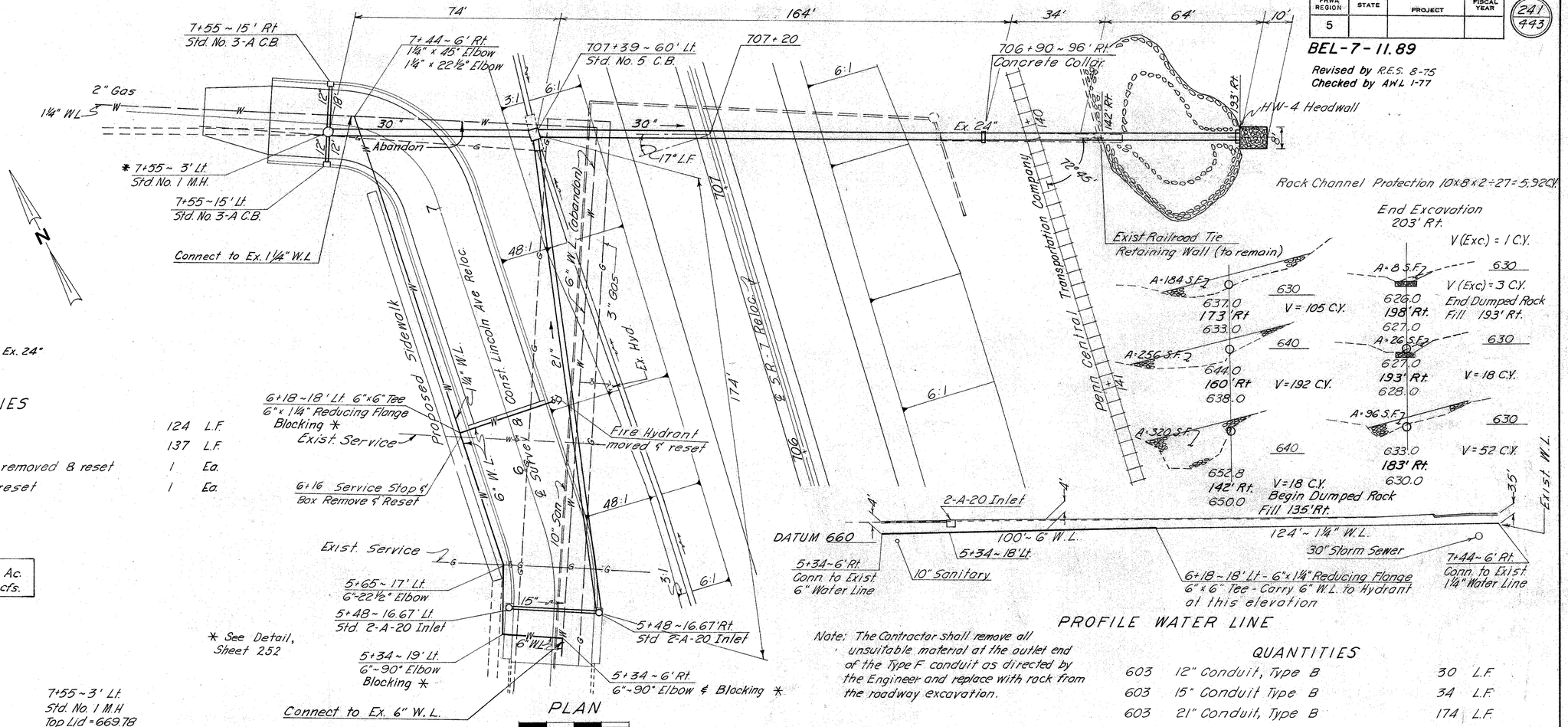
STORM SEWER
STATION 693+80.06 SR.7 RELOC
278'-42" STD. PIPE CONDUIT

FHWA REGION	STATE	PROJECT	FISCAL YEAR
5			

241
443

BEL-7-11.89

Revised by R.E.S. 8-75
Checked by AWL 1-77



* See Detail, Sheet 252

* NOTE: Contractor shall field locate Ex. 24" pipe before constructing prop. M.H.

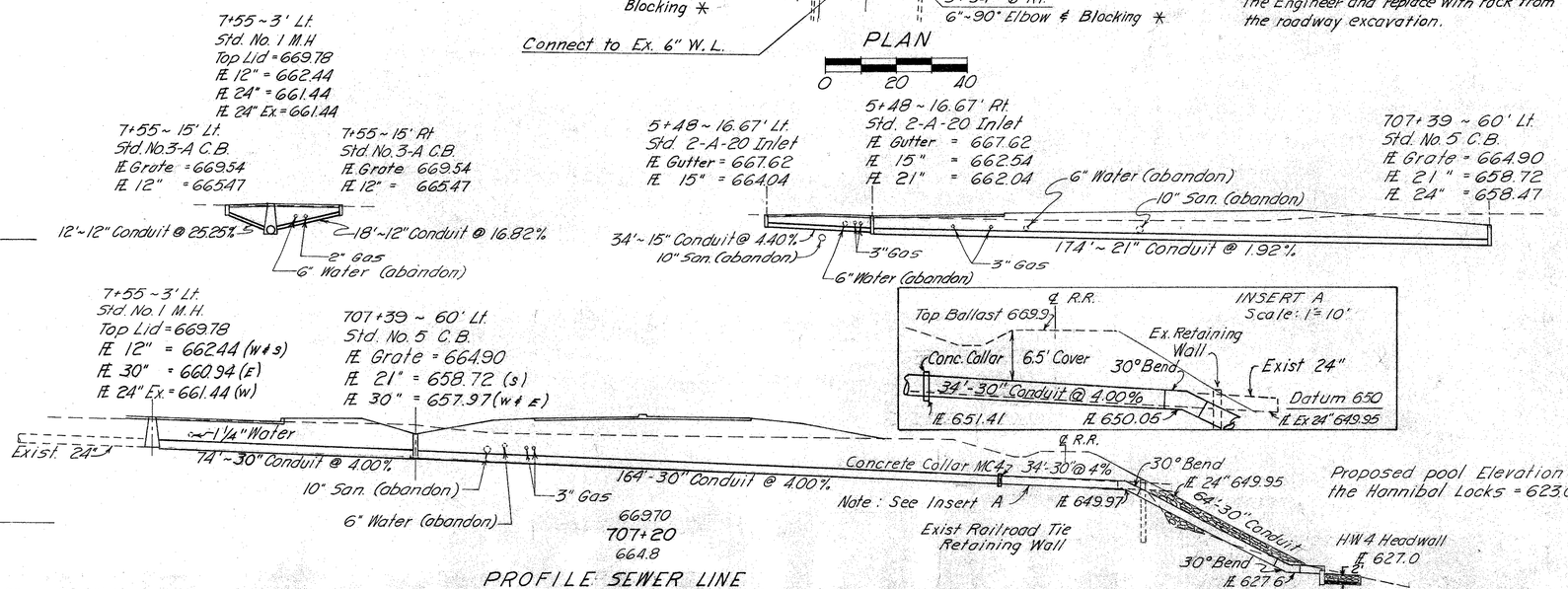
Drainage Area 22 Ac.
Q10 70 cfs.

QUANTITIES

814	New Water Main 1¼"	124	L.F.
814	New Water Main 6"	137	L.F.
814	Service Stops & Boxes removed & reset	1	Ea.
814	Fire Hydrant moved & reset	1	Ea.

Note: The Contractor shall remove all unsuitable material at the outlet end of the Type F. conduit as directed by the Engineer and replace with rock from the roadway excavation.

PROFILE WATER LINE



PROFILE SEWER LINE

QUANTITIES

603	12" Conduit, Type B	30	L.F.
603	15" Conduit Type B	34	L.F.
603	21" Conduit, Type B	174	L.F.
603	30" Conduit, Type B	74	L.F.
603	30" Conduit, Type B 706.02 1500 D-Load, 706.08 or 707.13	164	L.F.
603	30" Conduit, Type B 706.02, 3000 D-Load Under railroad, as per plan.	34	L.F.
603	30" Conduit Type F	64	L.F.
604	Std. No. 3-A Catch Basin	2	Ea.
604	Std. No. 5 Catch Basin	1	Ea.
604	Std. No. 1 Manhole	1	Ea.
604	Std No. 2-A-20 Paved Shoulder Inlet	2	Ea.
601	Dumped Rock Fill	385	C.Y.
601	Rock Channel Protection Type B With Bedding	6	C.Y.
203	Excavation	4	C.Y.
	Bends and Branches	2	Ea.

STORM SEWER & WATER LINE
STA. 707+20 S.R. 7 RELOC.

FHWA REGION	STATE	PROJECT	
5	OHIO		

242
443

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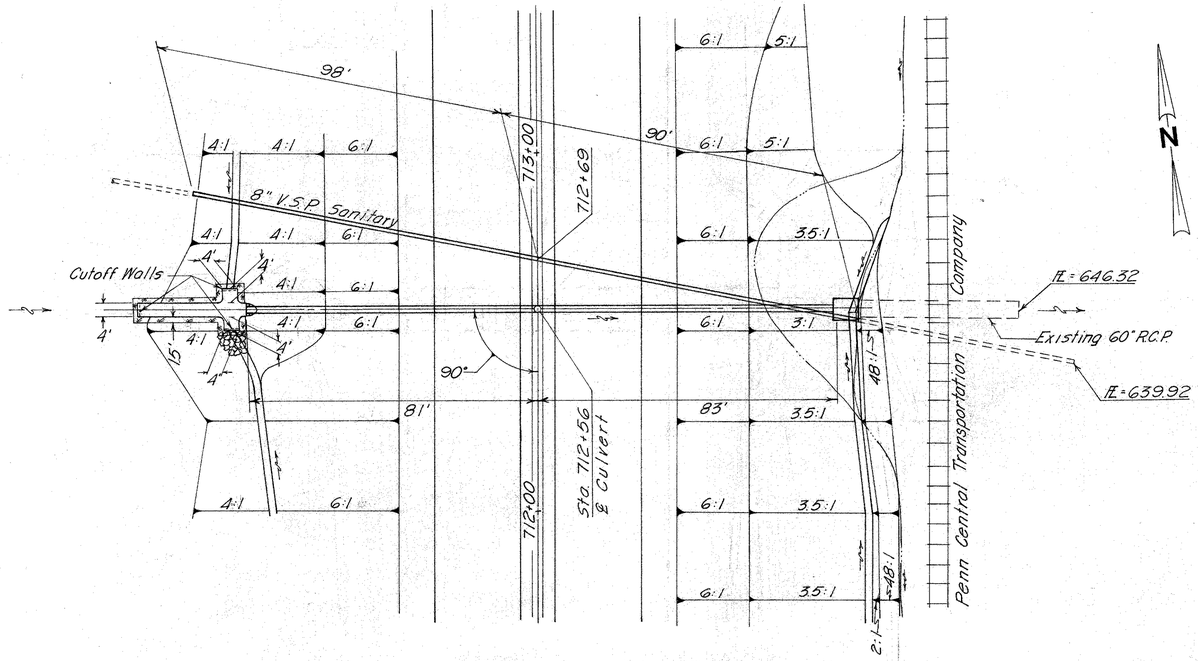
Revised by R.E.S. 8-75
Checked by AWL 1-77



PLAN

0 20 40

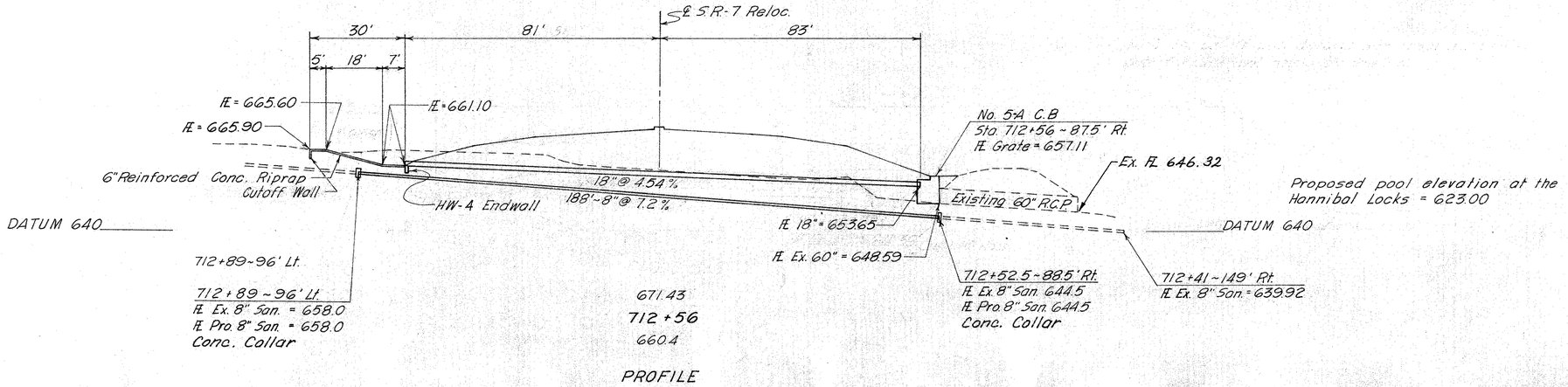
CALCULATIONS

601	Riprap (30 + 4 + 4) × 4 ÷ 9 =	17 SY
660	Sodding [(23 + 5.5 × 2 + 7) × 2] × 1.5 ÷ 9 =	14 SY

Drainage Area	4 Ac.
Q25	16 cfs

QUANTITIES

601	Riprap, using 6" Reinforced Concrete Slab	17 S.Y.
602	Concrete Masonry	0.3 C.Y.
603	18" Conduit Type "A", 706.02 1500D-Load, 706.08 or 21" 707.05 Type "C"	164 L.F.
603	8" Conduit, Type B, 706.08 with 706.12 Type III Joints	188 L.F.
604	Std. No. 5-A Catch Basin	1 Ea.
660	Sodding	14 S.Y.



PROFILE

Proposed pool elevation at the Hannibal Locks = 623.00

STA. 712+69
8" SANITARY CONDUIT

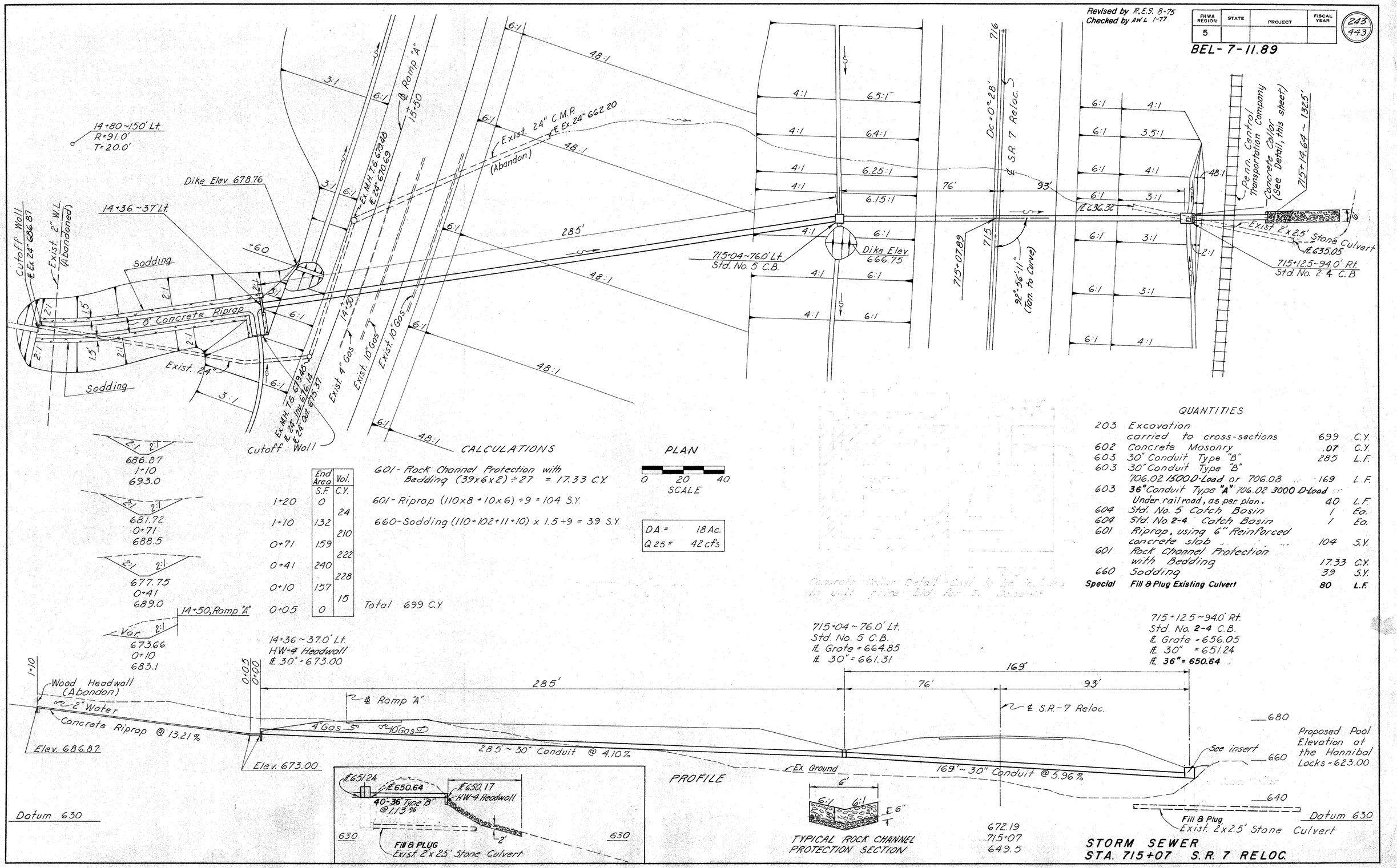
BEL - 7 - 13.45
STATION 712+56 SR. 7 RELOC
164' - 18" STD. PIPE CONDUIT

Revised by R.E.S. 8-75
Checked by AWL 1-77

FHWA REGION	STATE	PROJECT	FISCAL YEAR
5			

243
443

BEL-7-11.89



CALCULATIONS

	End Area S.F.	Vol. C.Y.
1+20	0	
		24
1+10	132	
		210
0+71	159	
		222
0+41	240	
		228
0+10	157	
		15
0+05	0	

Total 699 C.Y.

601 - Rock Channel Protection with Bedding (39x6x2) ÷ 27 = 17.33 C.Y.

601 - Riprap (110x8 + 10x6) ÷ 9 = 104 S.Y.

660 - Sodding (110+102+11+10) x 1.5 ÷ 9 = 39 S.Y.

PLAN

0 20 40
SCALE

DA =	18 Ac.
Q 25 =	42 cfs

QUANTITIES

203	Excavation carried to cross-sections	699	C.Y.
602	Concrete Masonry	.07	C.Y.
603	30" Conduit Type "B"	285	L.F.
603	30" Conduit Type "B" 706.02 1500 D-Load or 706.08	169	L.F.
603	36" Conduit Type "A" 706.02 3000 D-Load Under railroad, as per plan.	40	L.F.
604	Std. No. 5 Catch Basin	1	Ea.
604	Std. No. 2-4 Catch Basin	1	Ea.
601	Riprap, using 6" Reinforced concrete slab	104	S.Y.
601	Rock Channel Protection with Bedding	17.33	C.Y.
660	Sodding	39	S.Y.
Special	Fill & Plug Existing Culvert	80	L.F.

STORM SEWER
STA. 715+07 S.R. 7 RELOC.

FHWA REGION	STATE	PROJECT	
5	OHIO		

244
443

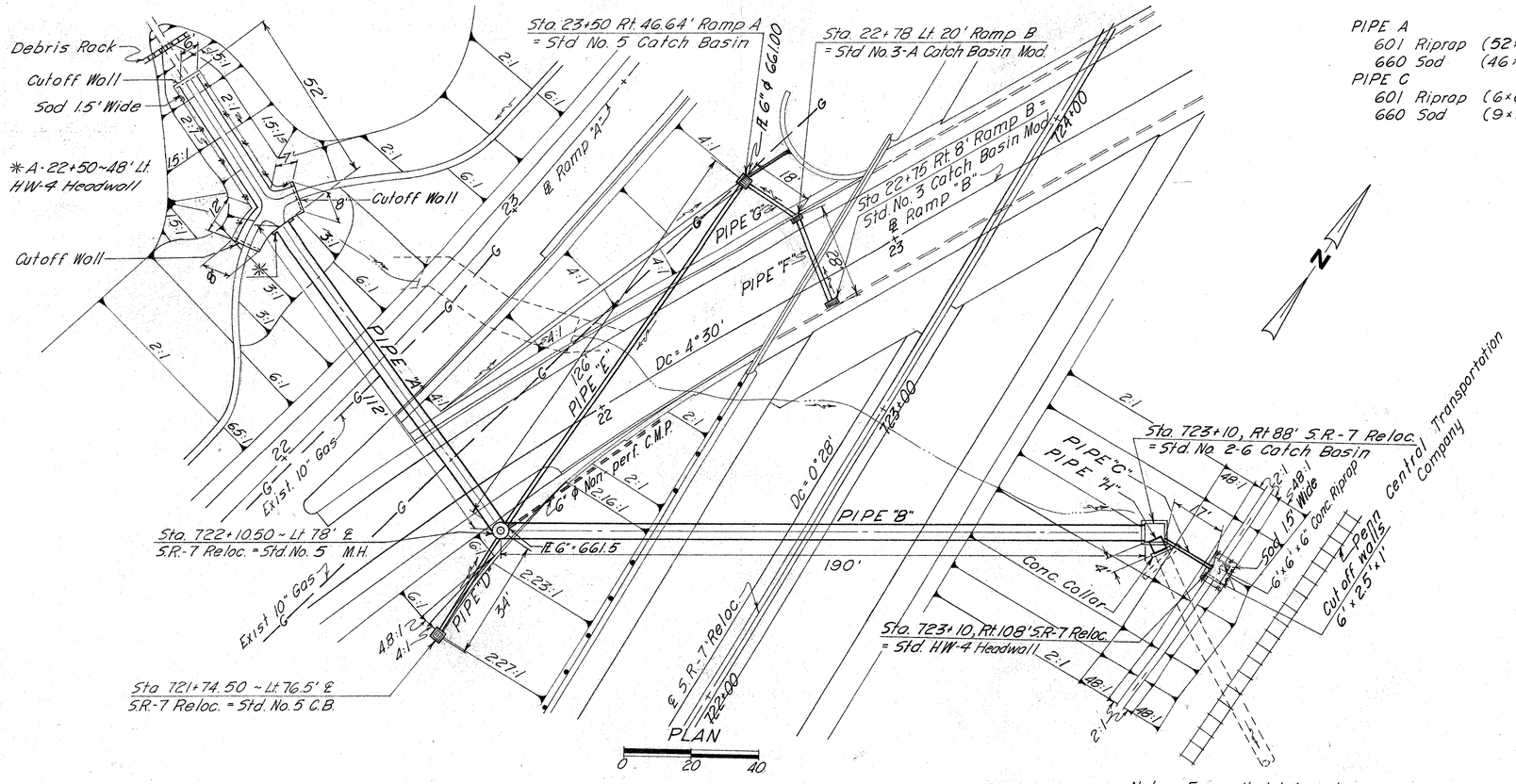
BEL - 7 - 11.89

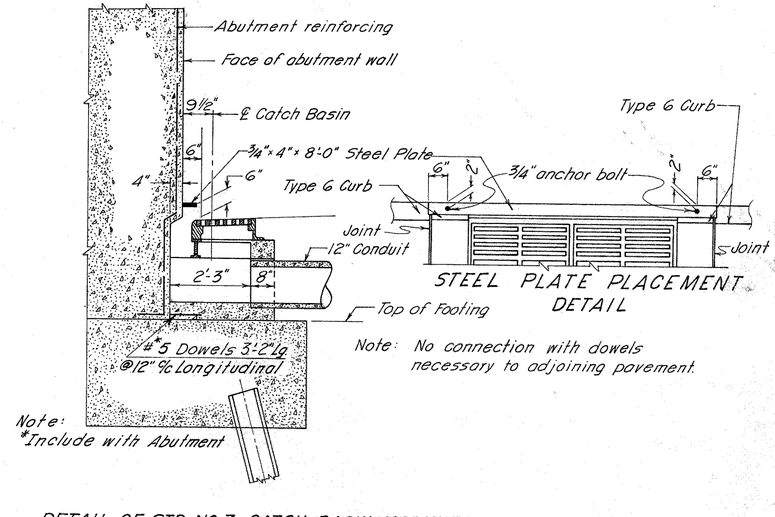
Revised by R.E.S. 8-75
Checked by A.W.L. 1-77

CALCULATIONS

PIPE A
- 601 Riprap (52×6)+8(8+6)÷9 = 47 S.Y.
- 660 Sod (46×2+5+10+5+5+8+8)×1.5÷9 = 22 S.Y.

PIPE C
- 601 Riprap (6×6)÷9 = 4 S.Y.
- 660 Sod (9×2+6×2)×1.5÷9 = 5 S.Y.

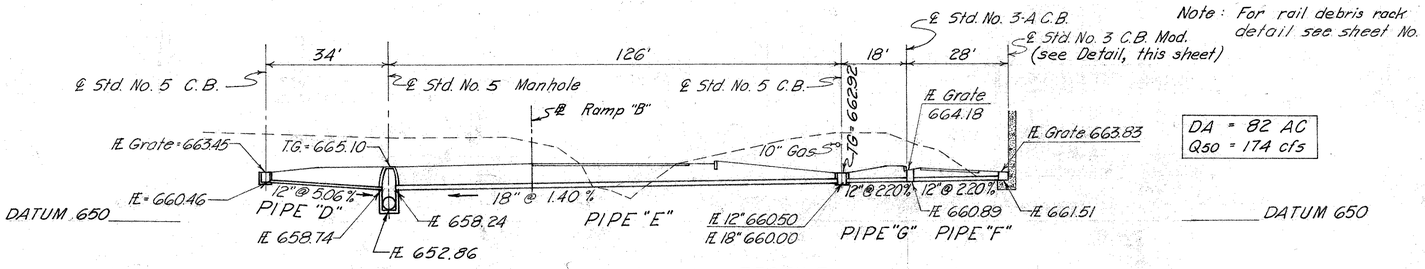




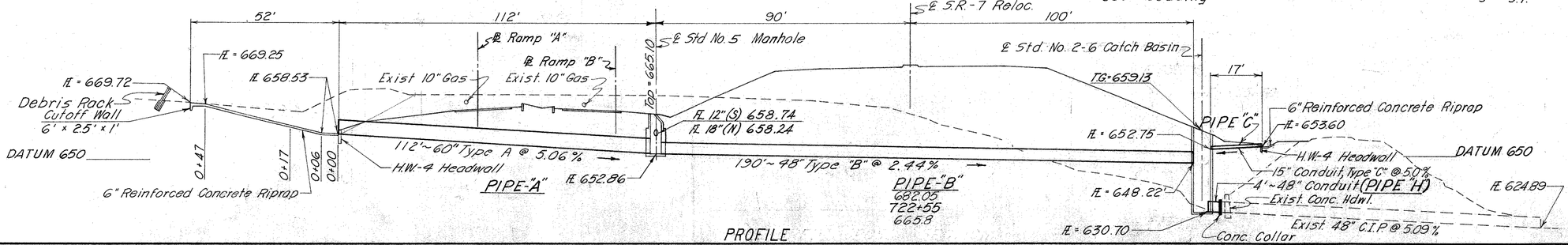
DETAIL OF STD. NO. 3 CATCH BASIN MODIFIED EMBEDDED IN ABUTMENT WALL

0 1' 2'

Note: For rail debris rock detail see sheet No. 11



DA = 82 AC
Q50 = 174 cfs



QUANTITIES PIPE "A"

601	6" Reinforced Concrete Riprap	47	S.Y.
602	Concrete Masonry	2.1	C.Y.
603	60" Conduit Type "A" 706.02 or 66" 707.05	112	L.F.
604	Std. No. 5 Manhole	1	each
660	Sodding	22	S.Y.

QUANTITIES PIPE "B"

603	48" Conduit Type "B" 706.02 2250 D-Load or 707.14	190	L.F.
604	Std. No. 2-6 Catch Basin without windows	1	each

QUANTITIES PIPE "C"

601	6" Reinforced Concrete Riprap	4	S.Y.
602	Concrete Masonry	0.3	C.Y.
603	15" Conduit Type "C"	17	L.F.
660	Sodding	5	S.Y.

QUANTITIES PIPE "D"

603	12" Conduit Type "C"	34	L.F.
604	Std. No. 5 Catch Basin	1	each

QUANTITIES PIPE "E"

603	18" Conduit, Type "B"	126	L.F.
604	Std. No. 5 Catch Basin	1	each

QUANTITIES PIPE "F"

603	12" Conduit, Type "B"	28	L.F.
604	Std. No. 3 Catch Basin mod. as per plan	1	each

QUANTITIES PIPE "G"

603	12" Conduit, Type "B"	18	L.F.
604	Std. No. 3-A Catch Basin	1	each

QUANTITIES PIPE "H"

603	48" Conduit Type "C" 706.02 2250 D-Load	4	L.F.

Special Rail Debris Rock 1 each

Proposed pool elevation at the Hannibal Locks = 623.00

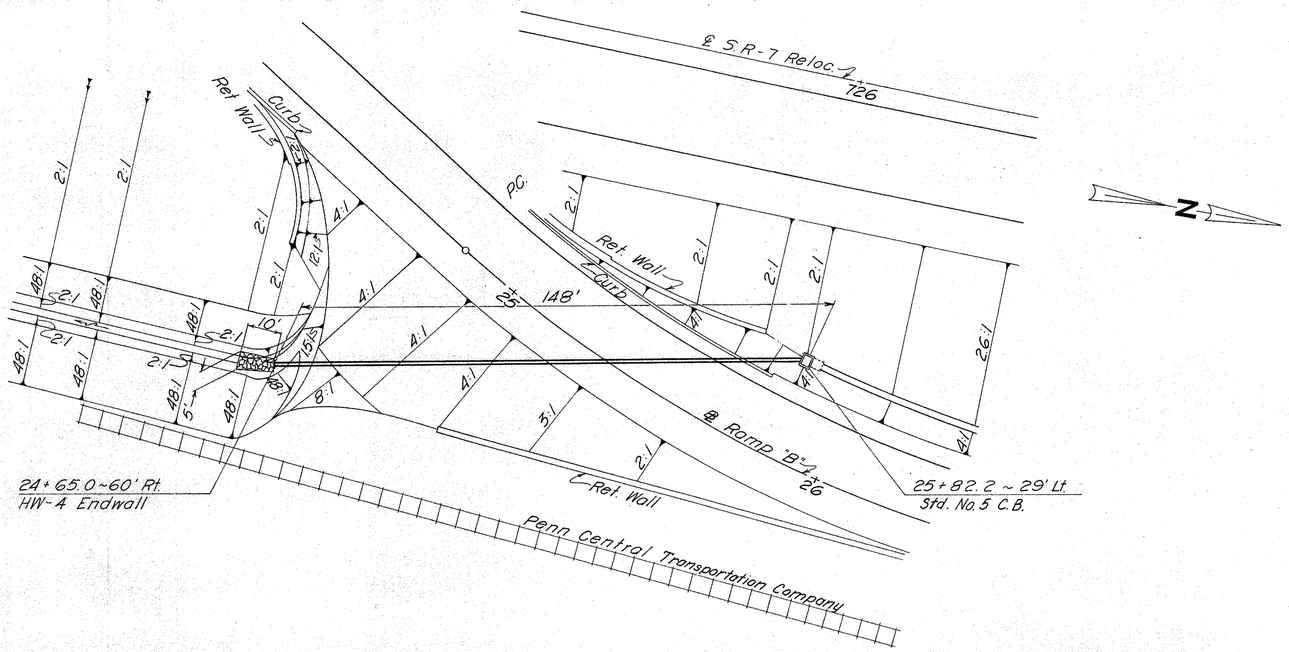
STORM SEWER - INTERCHANGE STA. 722+55 SR. 7 RELOC.

FHWA REGION	STATE	PROJECT	FISCAL YEAR
5			

245
443

BEL-7-11.89

Revised by R.E.S. 8-75
Checked by AWL 1-77

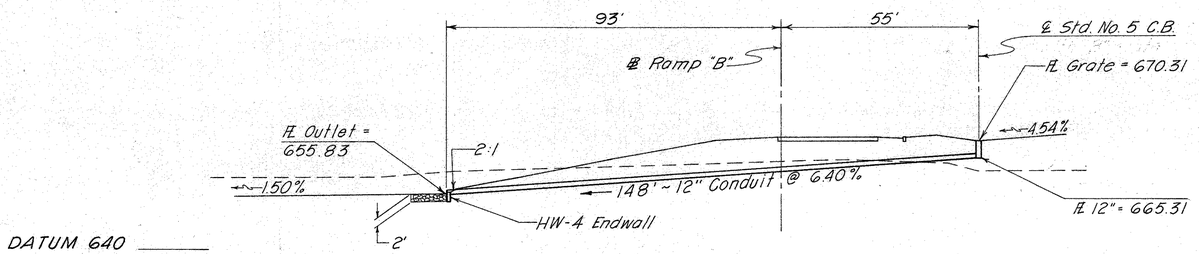


CALCULATIONS

601 RCP = 10 x 5 x 2 ÷ 27 = 4 C.Y.

PLAN

0 20 40



670.20
25+33
665.3

PROFILE

QUANTITIES

601	Rock Channel Prot. Type "B" with bedding	4	C.Y.
602	Concrete Masonry	0.2	C.Y.
603	12" Conduit Type "B"	148	L.F.
604	Std. No. 5 Catch Basin	1	Ea.

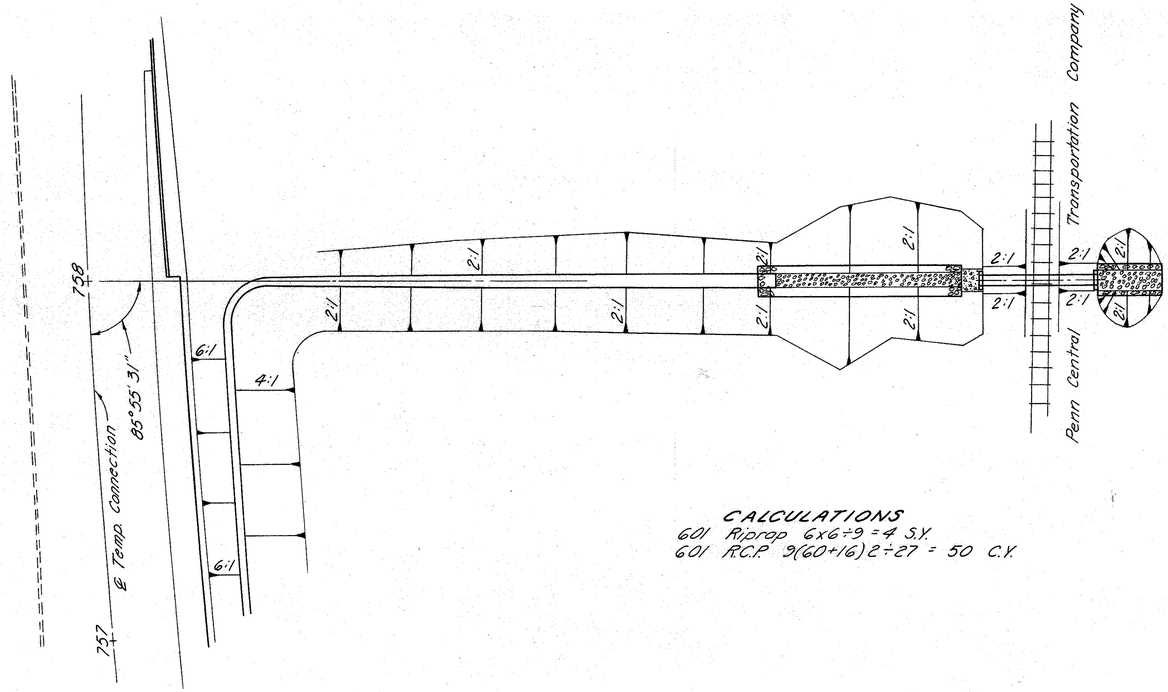
STORM SEWER
RAMP B STATION 25+33
148'- 12" STANDARD CONDUIT

Computed by R.E.S. 8-75
Checked by AWL 1-77

F.H.W.A. REGION	STATE	PROJECT	
	OHIO		

246
443

BEL-7-11.89

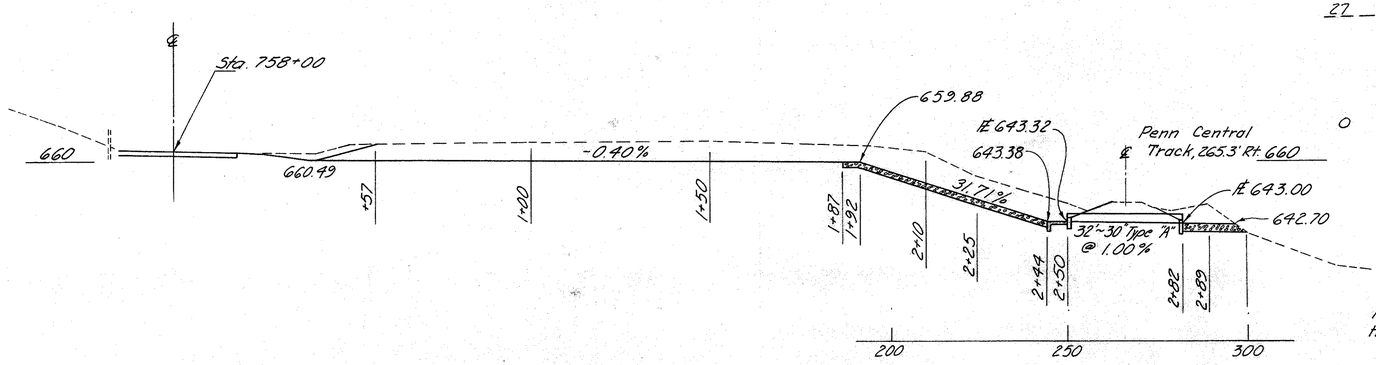


CALCULATIONS
601 Riprap 6x6÷9 = 4 S.Y.
601 R.C.P. 3(60+16)2÷27 = 50 C.Y.

END WIDTH	S.Y.		Area	Vol. Cut
54				
		660		
		654.28		
	564	2+10	100 S.F.	44 C.Y.
		662.5		
32		660		
		659.88		
	154	1+92	32 S.F.	62 C.Y.
		664.5		
34		660		
		660.05		
	178	1+50	48 S.F.	81 C.Y.
		665.9		
30		660		
		660.25		
	136	1+00	40 S.F.	51 C.Y.
		666.5		
27		660		
		660.42		
	27	0+57 Ditch	24 S.F.	8 C.Y.
		665.0		
0		0+39	0 S.F.	

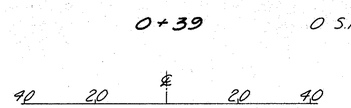
END WIDTH	S.Y.		Area	Vol. Cut
0				
	15	2+97	0 S.F.	7 C.Y.
		650		
	34	642.8		
		2+89	44 S.F.	9 C.Y.
	24	648.17		
28		Ahead		640
		643.00		
		2+82		
		647.0	24 S.F.	
32		Back		640
		643.32		
	26	2+50	48 S.F.	14 C.Y.
		649.5		
	45			640
		643.38		
	96	2+44	76 S.F.	47 C.Y.
		651.0		
	46	9' 660		
		649.61		
		2+25	60 S.F.	44 C.Y.
	83	656.0		

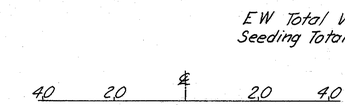
EW Total Vol. 367 C.Y.
Seeding Total 1303 S.Y.



758+00

Proposed Pool Elevation at the Hannibal Lock = 623.00





ESTIMATED QUANTITIES

203	Excavation	367 C.Y.
601	Riprap, 6" Reinforced conc. slab	4.0 S.Y.
601	Rock Channel Protection Type B with bedding	50 C.Y.
602	Concrete Masonry	1.2 C.Y.
603	30" Conduit Type A 706.02 3000 D-Load; Underrailroad; as per plan.	32 L.F.

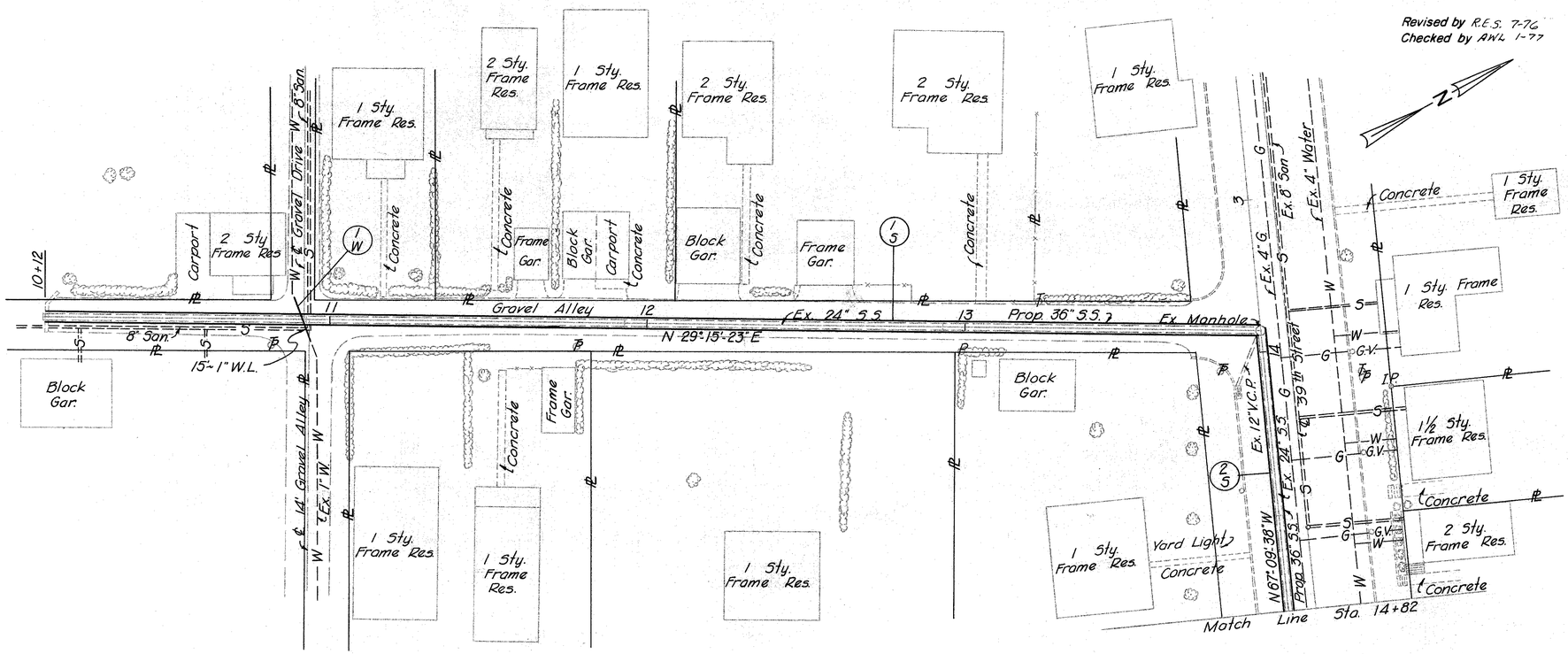
STORM SEWER
STATION 758+00 ℄ TEMP. CONN.
32' - 30" STANDARD PIPE CONDUIT

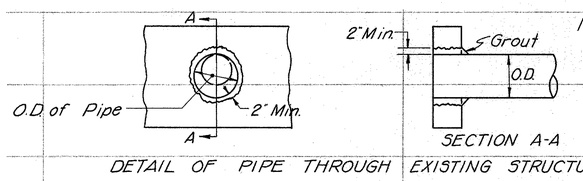
BEL-7-11.89

FHWA REGION	STATE	PROJECT	
5	OHIO		

247/443

Revised by R.E.S. 7-76
Checked by AWL 1-77

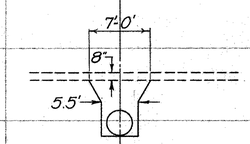




DETAIL OF PIPE THROUGH EXISTING STRUCTURE

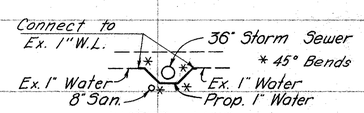
NOTE: Grout 2" Minimum around outside diameter of pipe

Cost to seal pipe with grout as shown in detail shall be included in Unit Price Bid per lineal foot of pipe

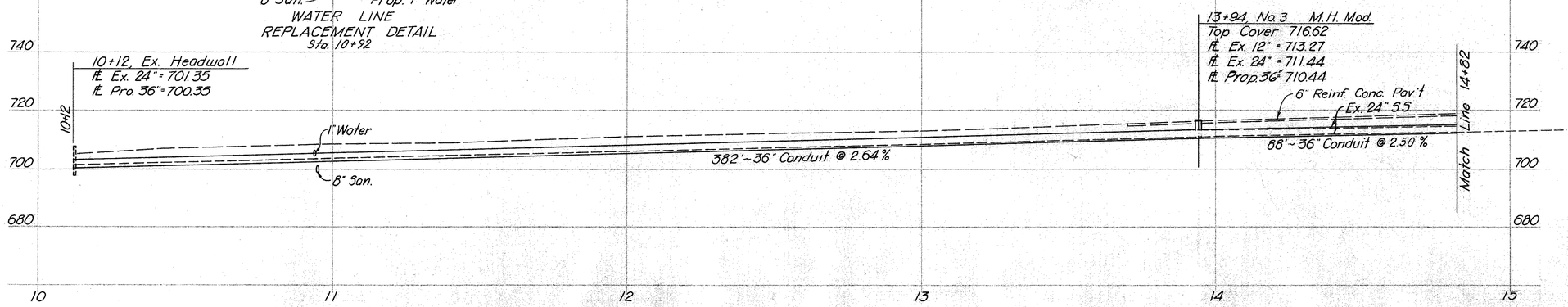


AGGREGATE REPLACEMENT DETAIL 10+13 to 13+71

358'×7'×6.7'÷27 = 63 C.Y. of ITEM 304 AGGREGATE is provided for surface replacement



WATER LINE REPLACEMENT DETAIL
Sta. 10+92



ESTIMATED QUANTITIES

REF. NO.	STATION TO STATION	SIDE	304 Aggregate C.Y.	603 CONDUIT 36" Type "B" L.F.	36" Type "B" 706.02 ℄ L.F.	604 *Std. No. 3 Manhole Each	Bends & Branches Each	814 1" New Water Main L.F.
	DRAINAGE							
1-S	Sta. 10+12 to 13+94	℄	63		382			
2-S	Sta. 13+94 to 14+82	℄		88		1		
1-W	10+91.5	℄					4	15
TOTALS			63	88	382	1	—	15

* Using Existing Frame & Cover

1250 D-Load

SEE SHEET NO.

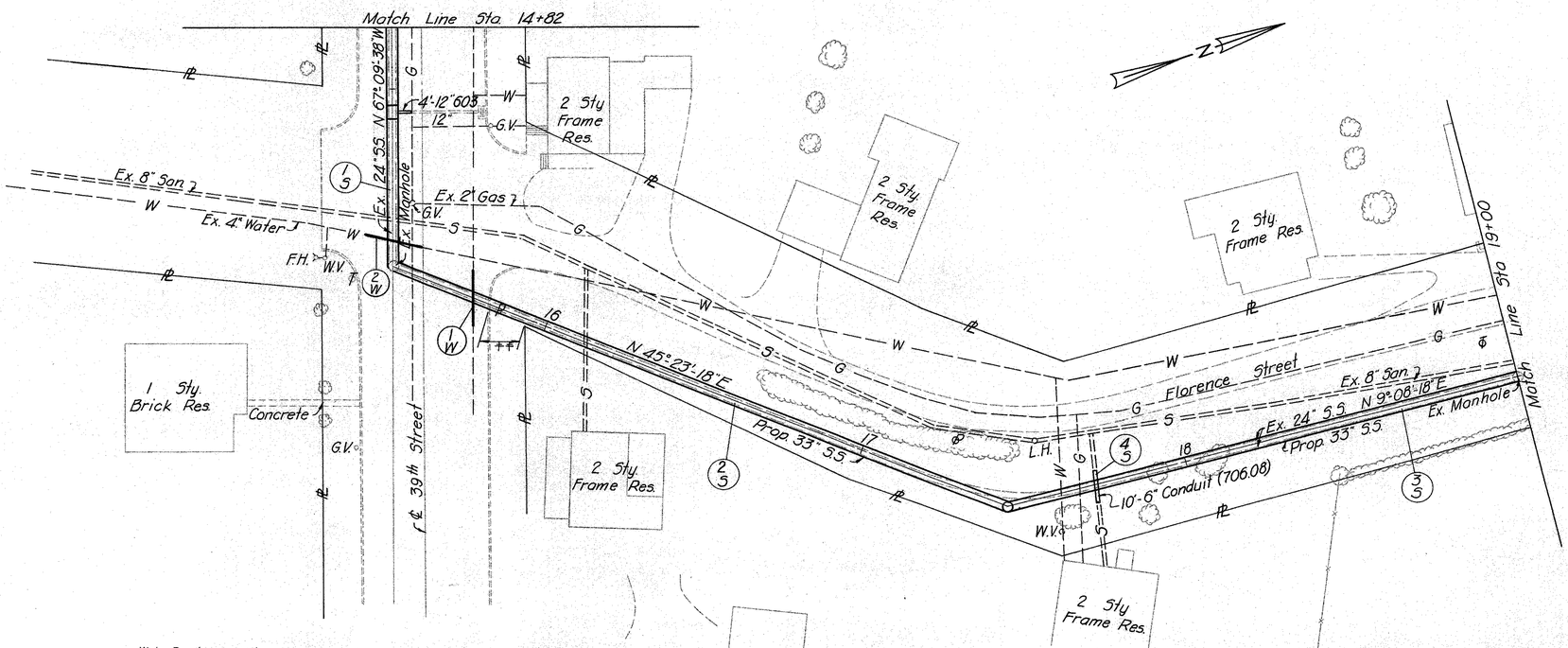
CR. 46 OUTFALL SEWER Sta. 10+12 to Sta. 14+82

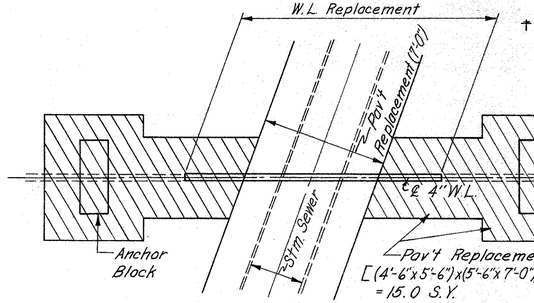
BEL-7-11.89

Revised by R.E.S. 7-76
Checked by AWL 1-77

F.H.WA. REGION	STATE	PROJECT	FISCAL YEAR
5			

248
443

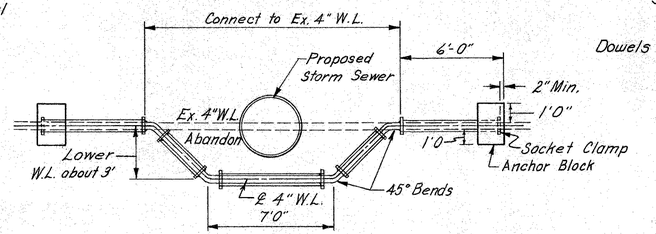




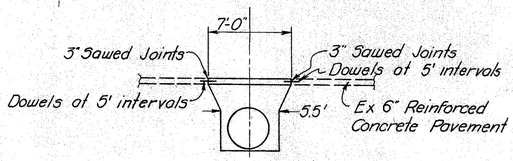
PLAN

†† Sidewalk replacement in this area to Consist of a 4" concrete slab to be included in unit price bid per lineal foot of pipe

NOTE
4" W.L. including fittings with 5/8" ϕ tie-rods and necessary conc. masonry for anchor blocks [4'-3" width x 2'-4" depth x 1'6" thick (min. bearing on undisturbed soil 1'-0") = 0.55 C.Y. / Anchor Block]



PROFILE



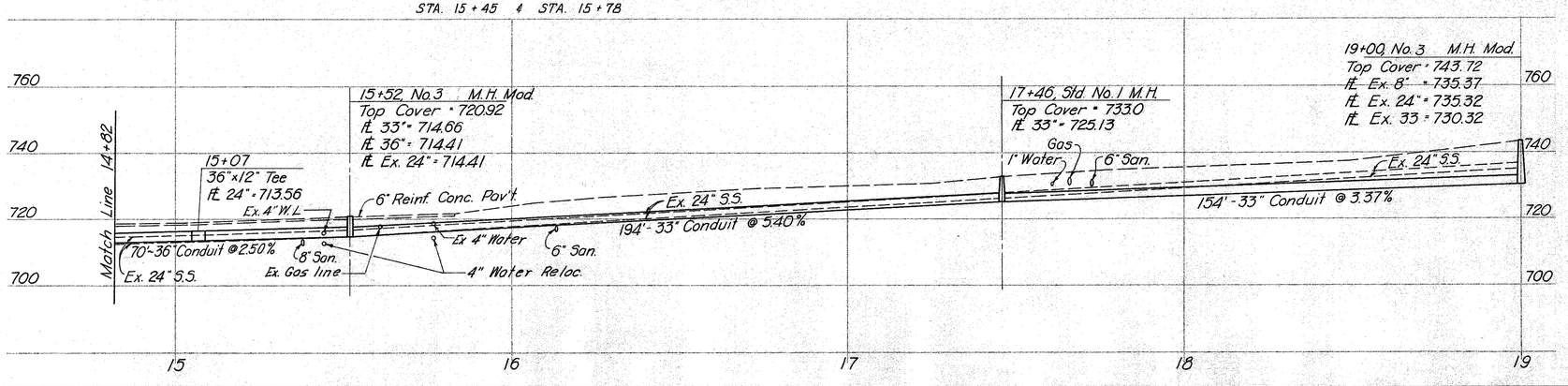
PAVEMENT REPLACEMENT DETAIL 13+71 to 15+82

Note: Reinforcing to be placed as per Std. Dwg. BP-2

211 x 7 ÷ 9 = 165 S.Y. of 6" 451 is provided for surface replacement

WATER LINE REPLACEMENT DETAIL

STA. 15+45 & STA. 15+78



CR. 46 OUTFALL SEWER Sta. 14+82 to Sta. 19+00

⊕ Incl. 5/8 ϕ tie-rods (two) per L.F.
* with 706.12 Joints
** 706.02 or 706.08 Extra Strength or 707.13
† Using Existing Frame & Cover

ESTIMATED QUANTITIES

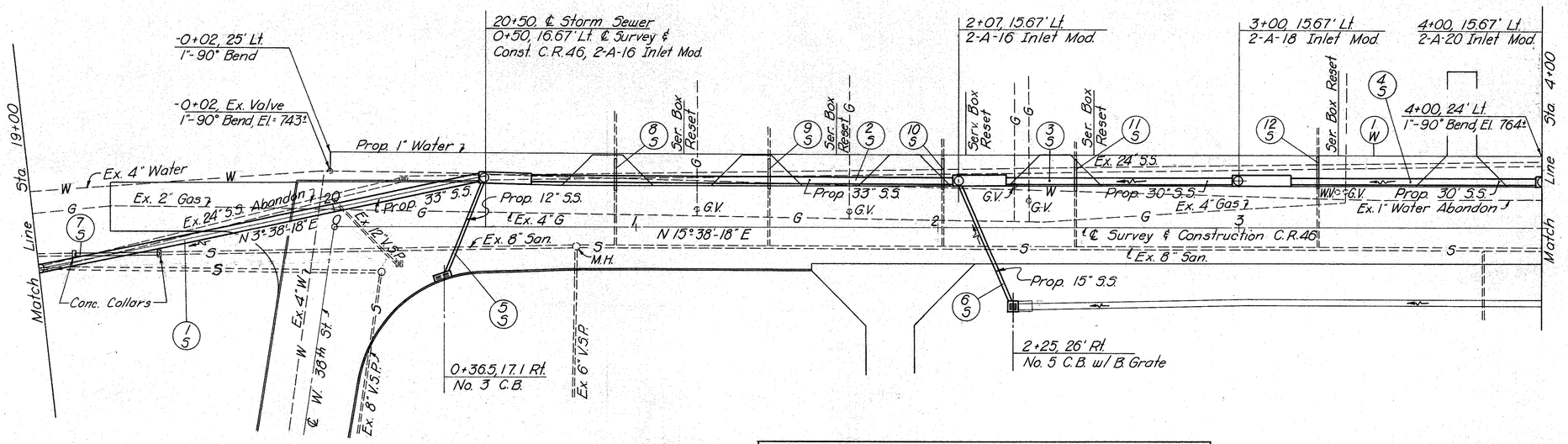
REF. NO.	STATION TO STATION	SIDE	DRAINAGE	603 CONDUIT 6" 706.08 *	12" Type 'B'	33" Type 'B'	33" Type 'C' **	36" Type 'B'	604 Std. No. 3 Manhole	604 Std. No. 1 Manhole	451 6" Reinf. Conc.	SEE SHEET NO.	814 4" New Water Main ⊕	Bends 4 Branches	602 Masonry C.Y.	TOTALS
				L.F.	L.F.	L.F.	L.F.	L.F.	Each	Each	S.Y.		L.F.	Each	C.Y.	
15	Sta. 14+82 to 15+52	℄			4	194				1	165		20	4	1.1	195
25	Sta. 15+52 to 17+46	℄					154			1			20	4	1.1	1
35	Sta. 17+46 to 19+00	℄		10				70	1							2
45	Sta. 17+72.5 to 19+00	℄									15					70
1W	15+78	℄									15					154
2W	15+45	℄														194
	TOTALS			10	4	194	154	70	2	1	195		40	8	2.2	

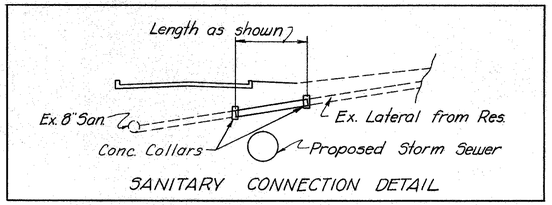
BEL - 7-11.89

Revised by R.E.S. 7-76
Checked by A.W.L. -1-77

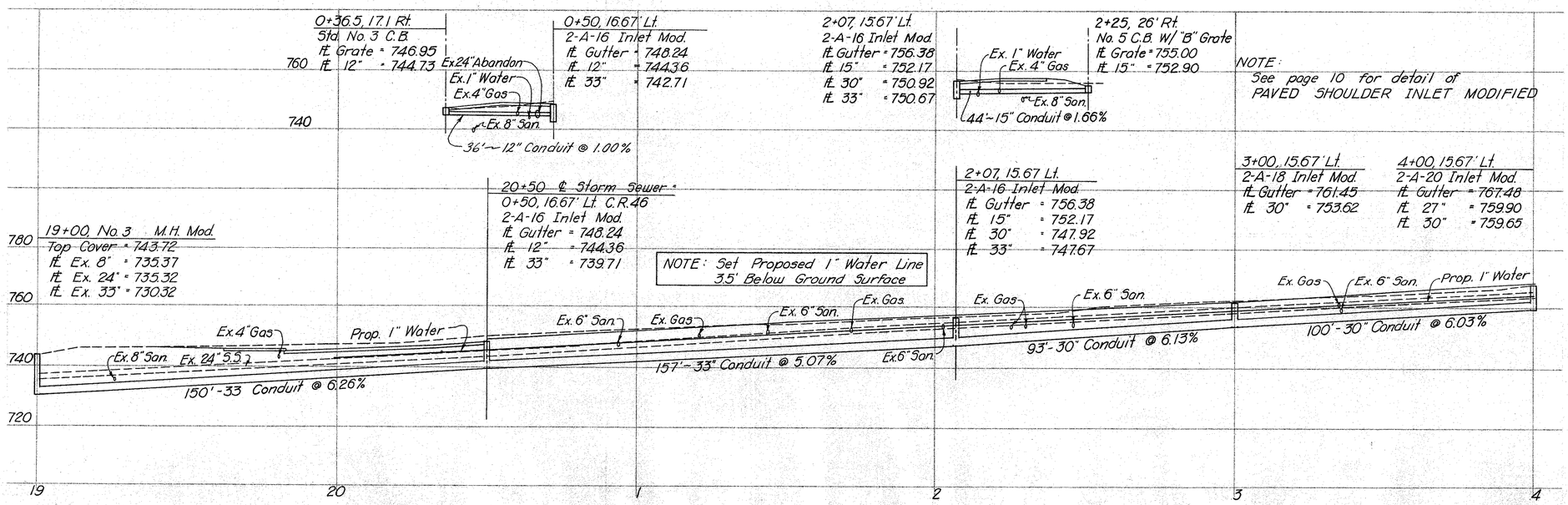
FHWA REGION	STATE	PROJECT	FISCAL YEAR
5			

249/443





SANITARY CONNECTION DETAIL



ESTIMATED QUANTITIES

* With 706.12 Joints
** With "B" Grate

REF. NO.	STATION TO STATION	SIDE	603 CONDUIT 6" Type "B" 706.08 * L.F.	8" Type "B" 706.08 ** L.F.	12" Type "B" L.F.	15" Type "B" L.F.	30" Type "B" L.F.	33" Type "B" L.F.	604 Std. No. 3 Catch Basin Each	Std. No. 5 C.B. ** Each	Std. 2-A-16 Inlet Mod. Each	Std. 2-A-18 Inlet Mod. Each	Std. 2-A-20 Inlet Mod. Each	814 1" New Service Stops & Boxes Each	Bends & Brackets Each	SEE SHEET NO.
	DRAINAGE															
15	Sta. 19+00 to 0+50	℄						130			1				4	
25	Sta. 0+50 to 2+07	Lt.						157			1				5	
35	Sta. 2+07 to 3+00	Lt.					93					1				
45	Sta. 3+00 to 4+00	Lt.					100						1			
55	Sta. 0+36.5 to 0+50	℄			36						1					
65	Sta. 2+07 to 2+25	℄				44					1					
75	Sta. 19+12 to 19+40	℄		28												
85	Sta. 0+93	Lt.	10													
95	Sta. 1+44	Lt.	10													
105	Sta. 2+02	Lt.	10													
115	Sta. 2+455	Lt.	10													
125	Sta. 3+26	Lt.	10													
1W	Sta. -0+02 to 4+00	Lt.														
	TOTALS		50	28	36	44	193	307	1	1	2	1	1	4	5	—

+ Removed & Reset

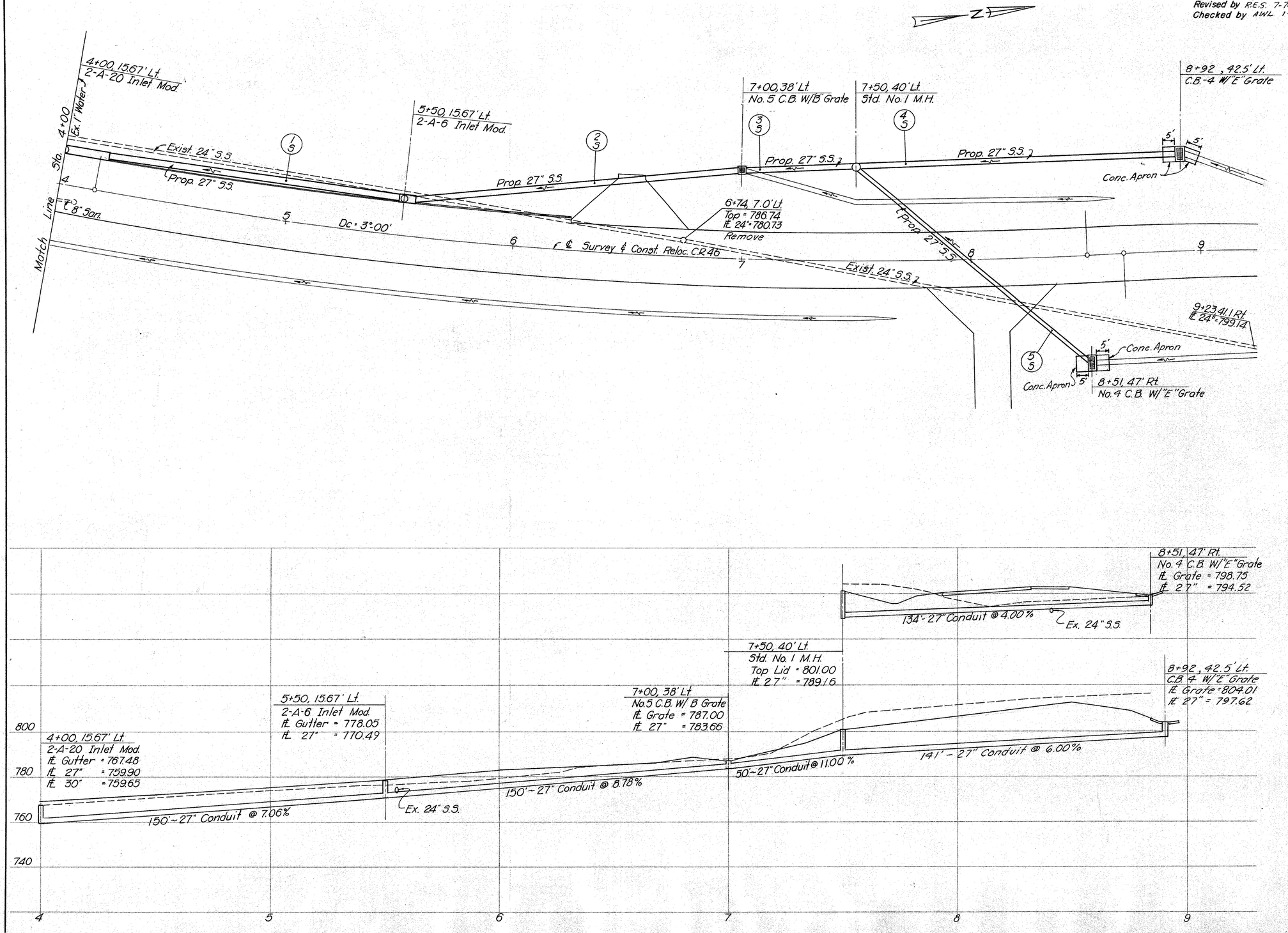
CR. 46 STORM SEWER Sta. 19+00 to Sta. 4+00

BEL-7-11.89

Revised by R.E.S. 7-76
Checked by AWL 1-77

FHWA REGION	STATE	PROJECT	FISCAL YEAR
5			

250/443



ESTIMATED QUANTITIES

* 706.02 or 706.08 Extra Strength or 707.13
** With "B" Grate
* With "E" Grate

REF. NO.	STATION TO STATION	SIDE	603 CONDUIT 27" Type "B" L.F.	27" Type "C" * L.F.	Std. No. 5 C.B. ** L.F.	604 Std. No. 1 Manhole Each	Std. 2-A-6 Inlet Mod. Each	Std. 2-A-20 Inlet Mod. Each	604 Std. No. 4 C.B. * Each	SEE SHEET NO.
	DRAINAGE									
15	Sta. 4+00 to 5+50	Lt.	150					1		
25	Sta. 5+50 to 7+00	Lt.	150				1			
35	Sta. 7+00 to 7+50	Lt.		50	1				1	
45	Sta. 7+50 to 8+92	Lt.		141		1			1	
55	Sta. 7+50 to 8+51	℄	134							
	TOTALS		434	191	1	1	1	1	2	

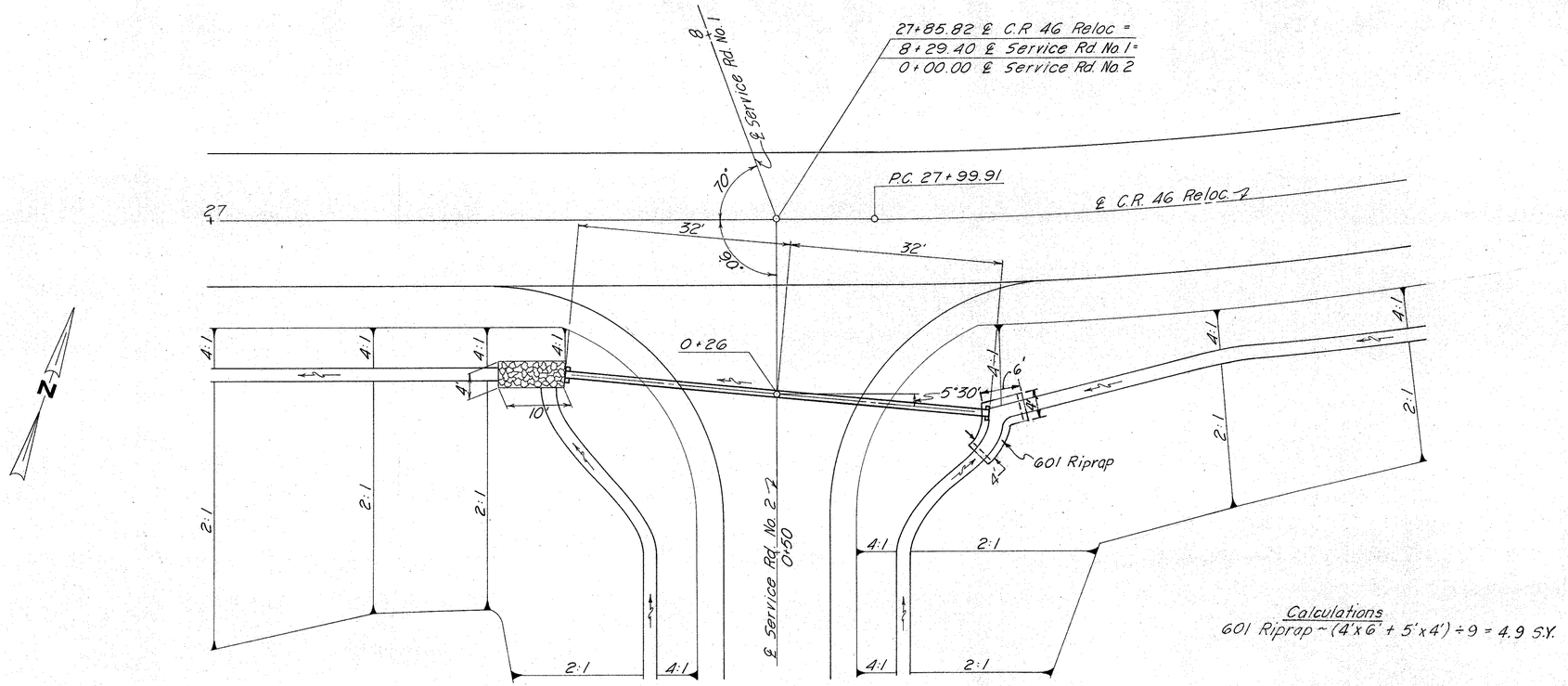
CR. 46 STORM SEWER Sta. 4+00 to Sta. 8+92

FHWA REGION	STATE	PROJECT	FISCAL YEAR
5			

251
443

BEL-7-11.89

Revised by R.E.S. 7-76
Checked by AWL 1-77



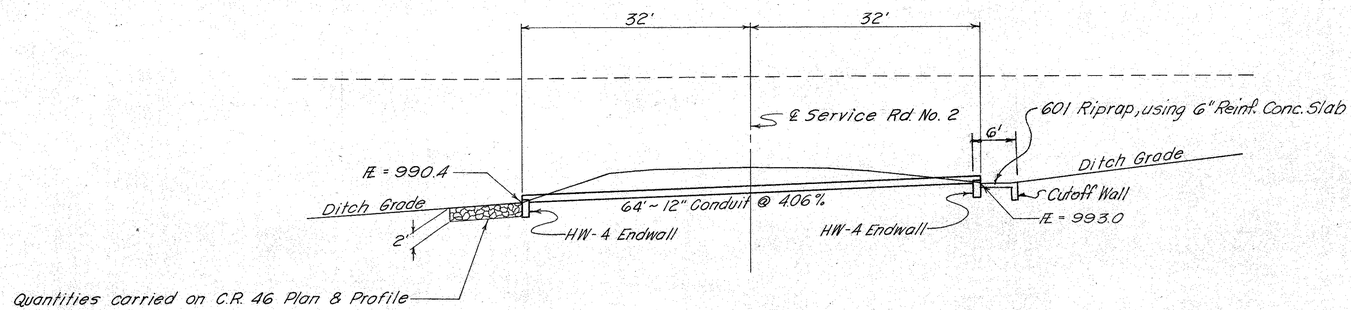
PLAN

0 10 20

Calculations
601 Riprap ~ (4'x6' + 5'x4') ÷ 9 = 4.9 S.Y.

QUANTITIES

602	Concrete Masonry	0.5 C.Y.
603	12" Conduit, Type "A"	64 L.F.
601	Riprap, using 6" reinforced concrete slab	4.9 S.Y.



Quantities carried on C.R. 46 Plan & Profile Sheet 192

99537
0+26
1008.2

PROFILE

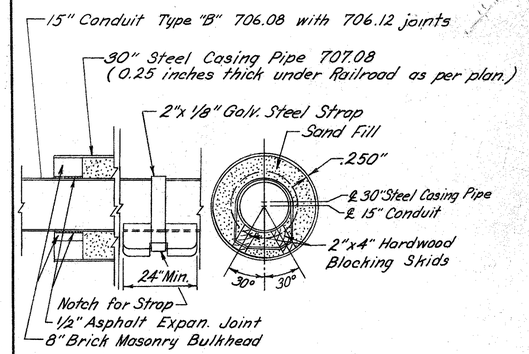
STATION 0+26 SERVICE RD. 2
64'-12" STANDARD PIPE CONDUIT

BEL-7-11.89

Revised by R.E.S. 7-76
Checked by AWL 1-77

FHWA REGION	STATE	PROJECT	FISCAL YEAR
5			

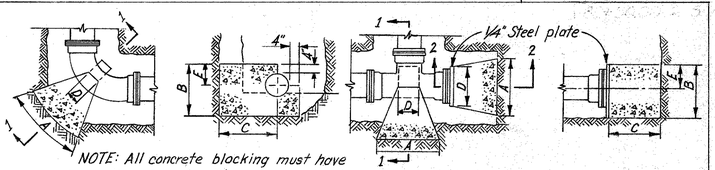
252 / 443



LONGITUDINAL ELEVATION CROSS SECTION

NOTE: Hardwood Blocking Skids to be located at points one fourth the distance from each end of each pipe length

DETAIL - ENCASED SANITARY SEWER
15" Sanitary Sewer
Sta. 82+74 to Sta. 83+02



NOTE: All concrete blocking must have its entire face (A x B) bearing against undisturbed soil

PLAN - 90°, 45°, 22½°, 11¼° SECTION 1-1 PLAN - DEAD END OR TEE SECTION 2-2

TABLE OF DIMENSIONS

DIAM.	11¼° BEND			22½° BEND			45° BEND			90° BEND			TEE - DEAD END		
	A	B	C.Y.	A	B	C.Y.	A	B	C.Y.	A	B	C.Y.	A	B	C.Y.
4"	——	——	——	——	——	——	1'-0"	1'-0"	0.08	1'-6"	1'-0"	0.10	1'-7"	1'-0"	0.08
6"	——	——	——	1'-0"	1'-0"	0.08	1'-7"	1'-2"	0.12	2'-6"	1'-4"	0.17	1'-10"	1'-4"	0.15
8"	1'-0"	1'-0"	0.07	1'-5"	1'-2"	0.11	2'-5"	1'-4"	0.17	2'-7"	1'-8"	0.23	2'-6"	1'-8"	0.23
10"	1'-2"	1'-2"	0.09	2'-0"	1'-4"	0.15	3'-0"	1'-8"	0.25	4'-3"	2'-2"	0.44	3'-4"	2'-0"	0.32

DIMENSION C
4"-10" Diam. = 2'-0"

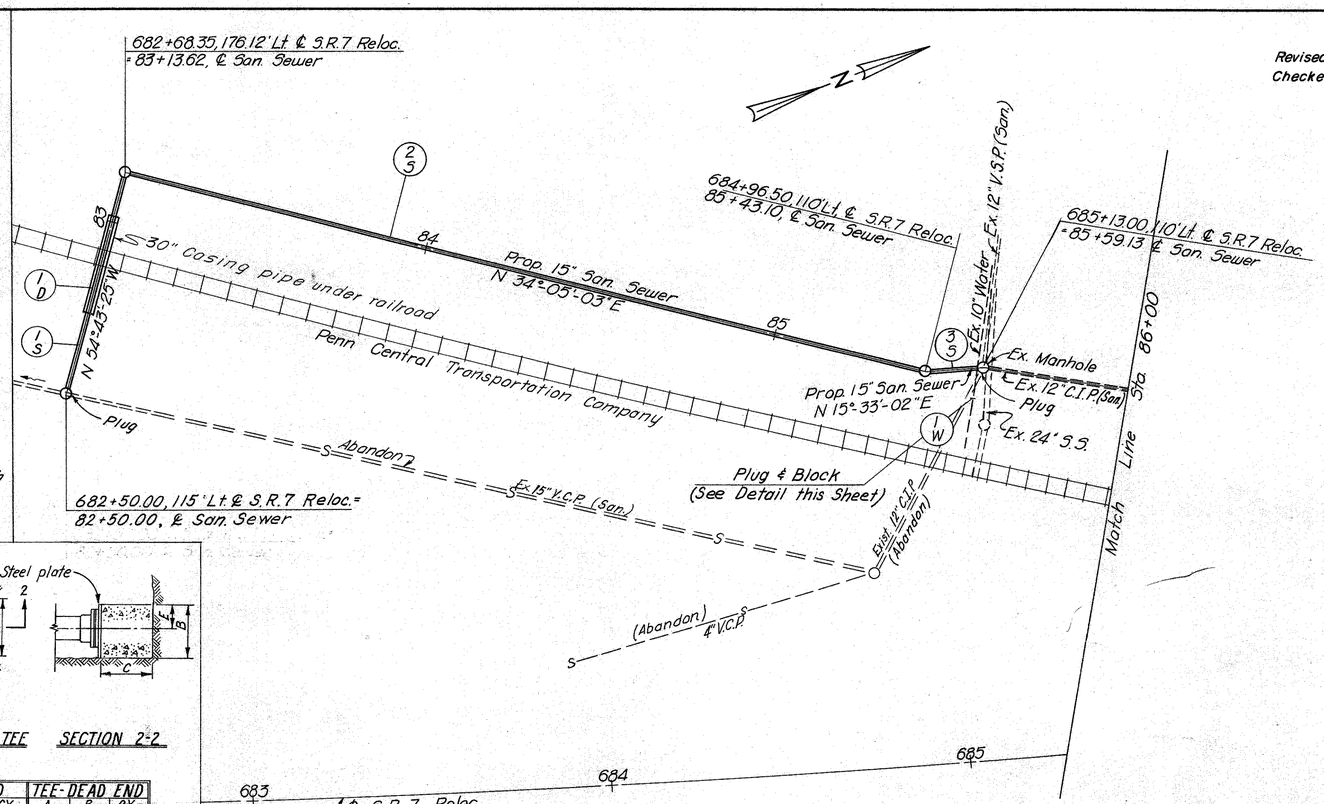
DIMENSION D
4"-10" Diam. = 1'-0"

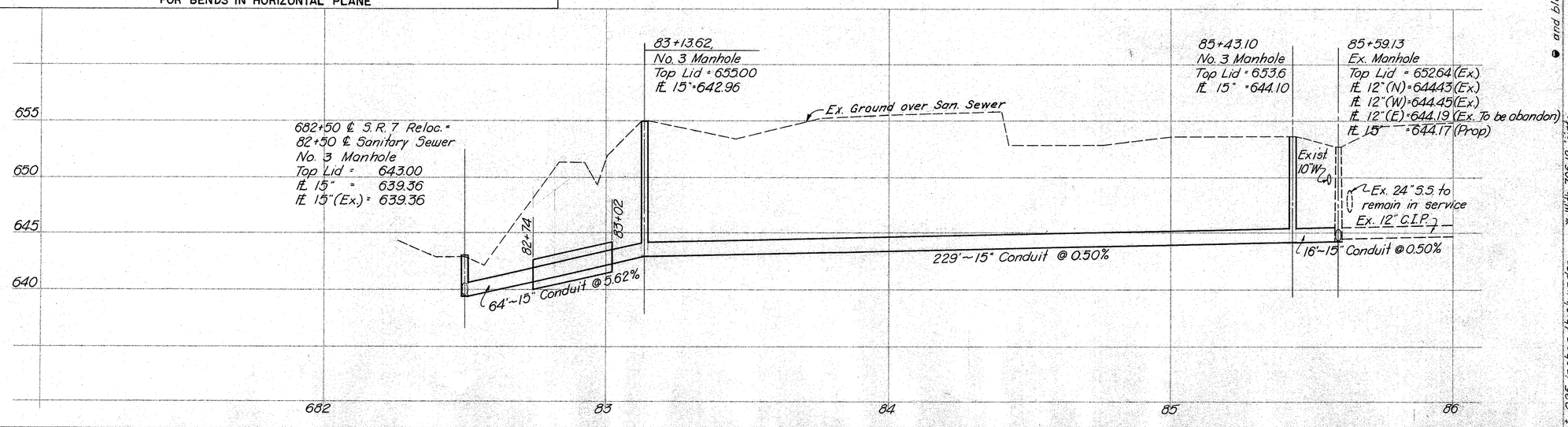
DIMENSION E
For all Diameters
E = D/2 + 4"

NOTE: All Concrete Blockings
Class "C" Concrete

NOTE: Blocking design based on working pressure 150 psi + 100 psi water hammer and soil bearing 3000 #/s.f.

THRUST BLOCKING DETAILS
FOR BENDS IN HORIZONTAL PLANE





ESTIMATED QUANTITIES

REF. NO.	STATION TO STATION	SIDE	DRAINAGE								SEE SHEET NO.
			603 15" Type "B" 706.08** With 706.12 joints L.F.	603 15" Type "B" 706.08** With 706.12 joints L.F.	604 30" Casing Pipe 707.08* 10/108 L.F.	510 No. 3 Manhole Each	614 10" Water Main Plug ● Each				
1S	82+50.00 to 83+13.62	℄	64			1					1
2S	83+13.62 to 85+43.10	℄	229			1					3
3S	85+43.10 to 85+59.13	℄	16								28
1W	685+10	Lt					1				1
1D	82+74 to 83+02	℄		64							64
TOTALS			245	64	28	2	1				28

* 0.25 inches thick under railroad as per plan

** With 706.12 joints

● and block

SANITARY SEWER DETAIL Sta. 82+50 to Sta. 86+00

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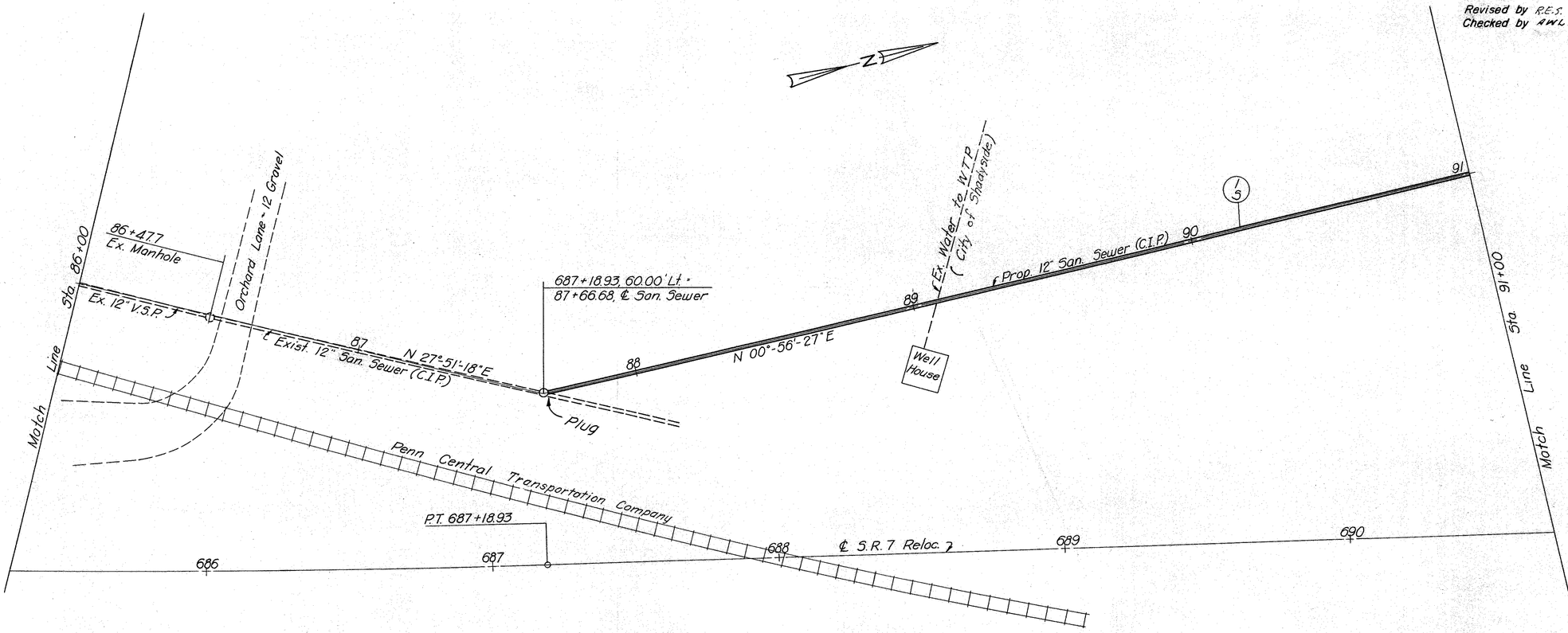
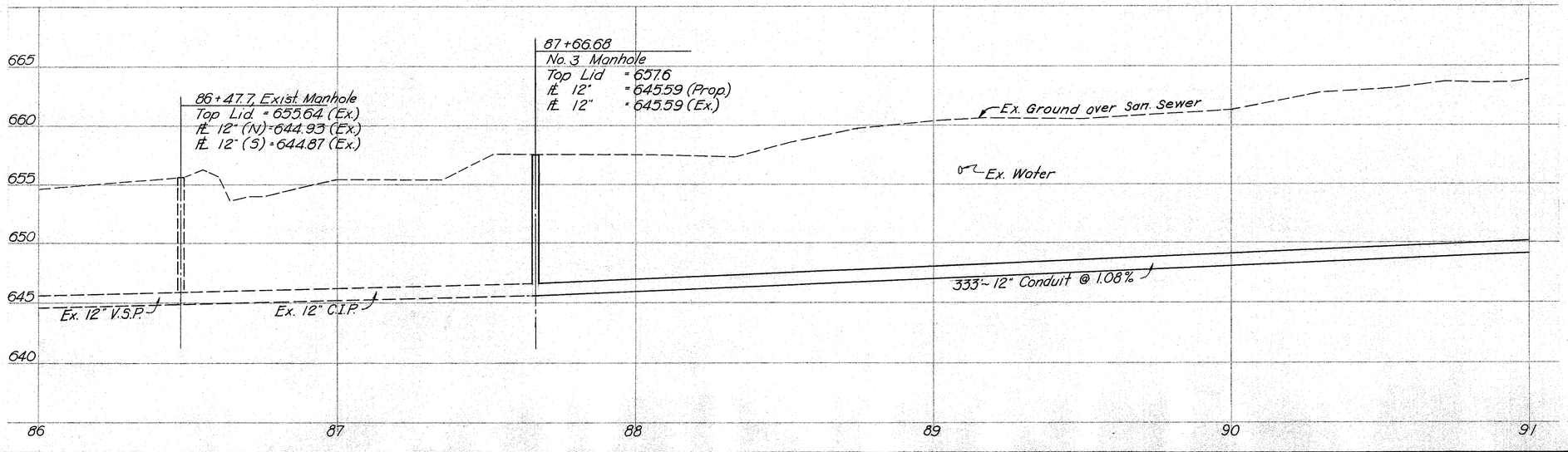
Revised by R.E.S. 7-76
Checked by AWL 1-77

FHWA REGION	STATE	PROJECT	FISCAL YEAR
5			

253
443





ESTIMATED QUANTITIES

* Bell & Spigot Joints @ Comp. Rings

REF. NO.	STATION TO STATION	SIDE	614 12" Cast Iron Pipe * L.F.	604 Std. No. 3 Manhole Each
	DRAINAGE			
1/5	Sta. 87+66.68 to 91+00	℄	333	1
	TOTALS		333	1

SEE SHEET NO.

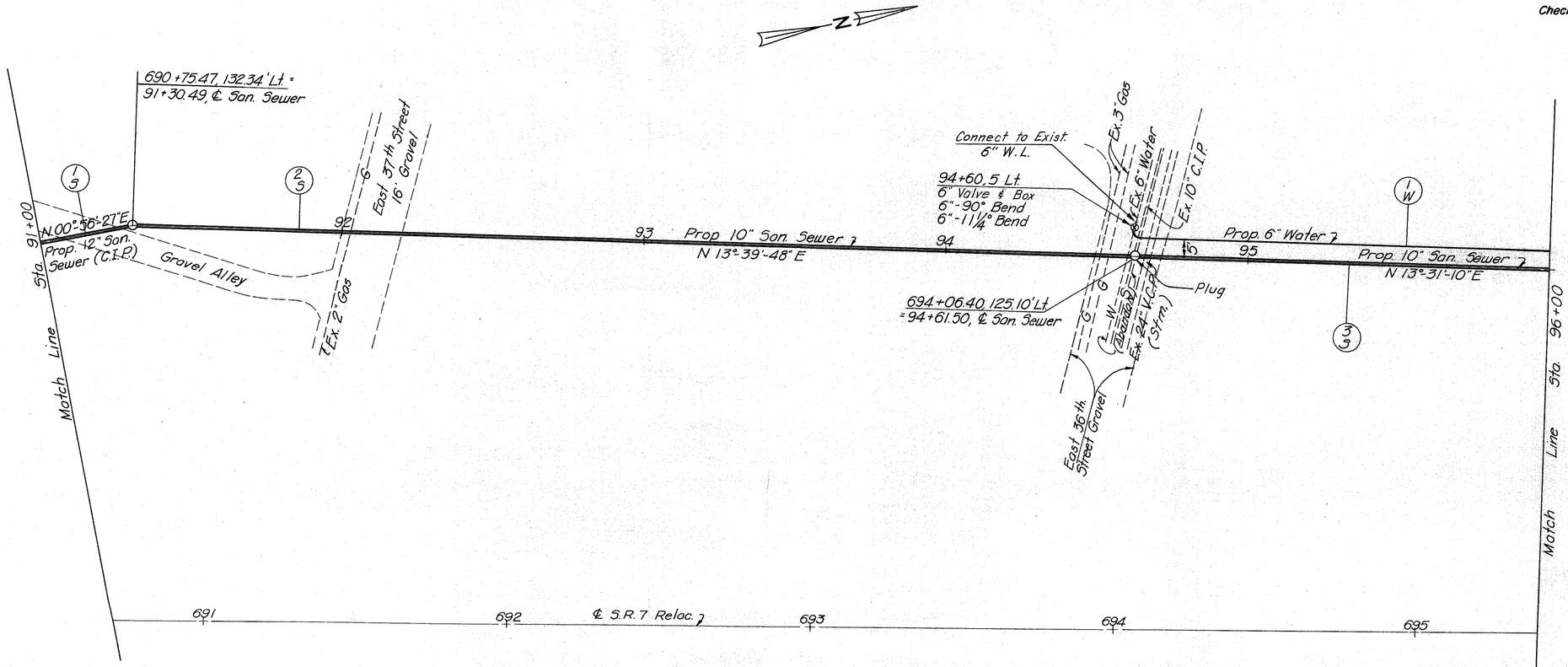
SANITARY SEWER DETAIL Sta. 86+00 to Sta. 91+00

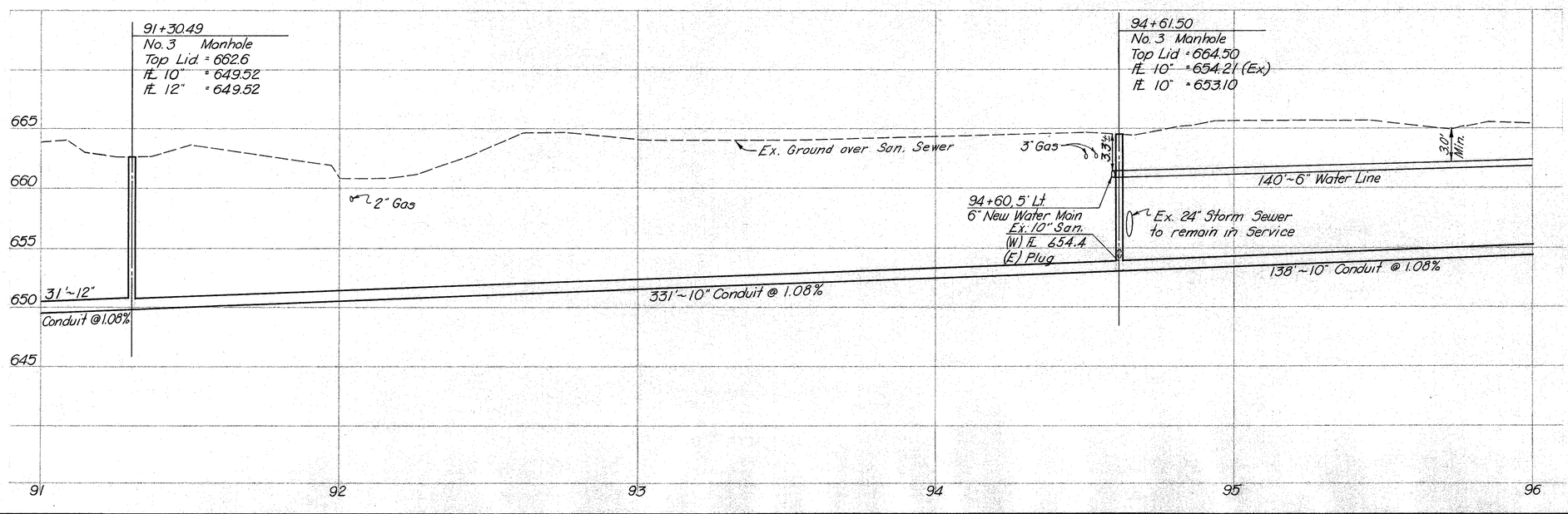
BEL-7-11.89

Revised by R.E.S. 7-76
Checked by A.W.L 1-77

FHWA REGION	STATE	PROJECT	FISCAL YEAR
5			

254 / 443





ESTIMATED QUANTITIES

* With 706.12 Joints
** Bell & Spigot Joints & Comp. Rings

REF NO.	STATION TO STATION	SIDE	10" 603 Type "B" 706.08** L.F.	604 Std. No. 3 Manhole Each	12" Cast Iron Pipe** L.F.	3/4" 6" New Water Main L.F.	6" Valve & Box Each
	DRAINAGE						
1S	Sta. 91+00 to 91+30.49	℄		1	31		
2S	Sta. 91+30.49 to 94+61.50	℄	331	1			
3S	Sta. 94+61.50 to 96+00	℄	138				
1W	Sta. 94+60 to 96+00	Lt.				140	1
	TOTALS		469	2	31	140	1

SEE SHEET NO.

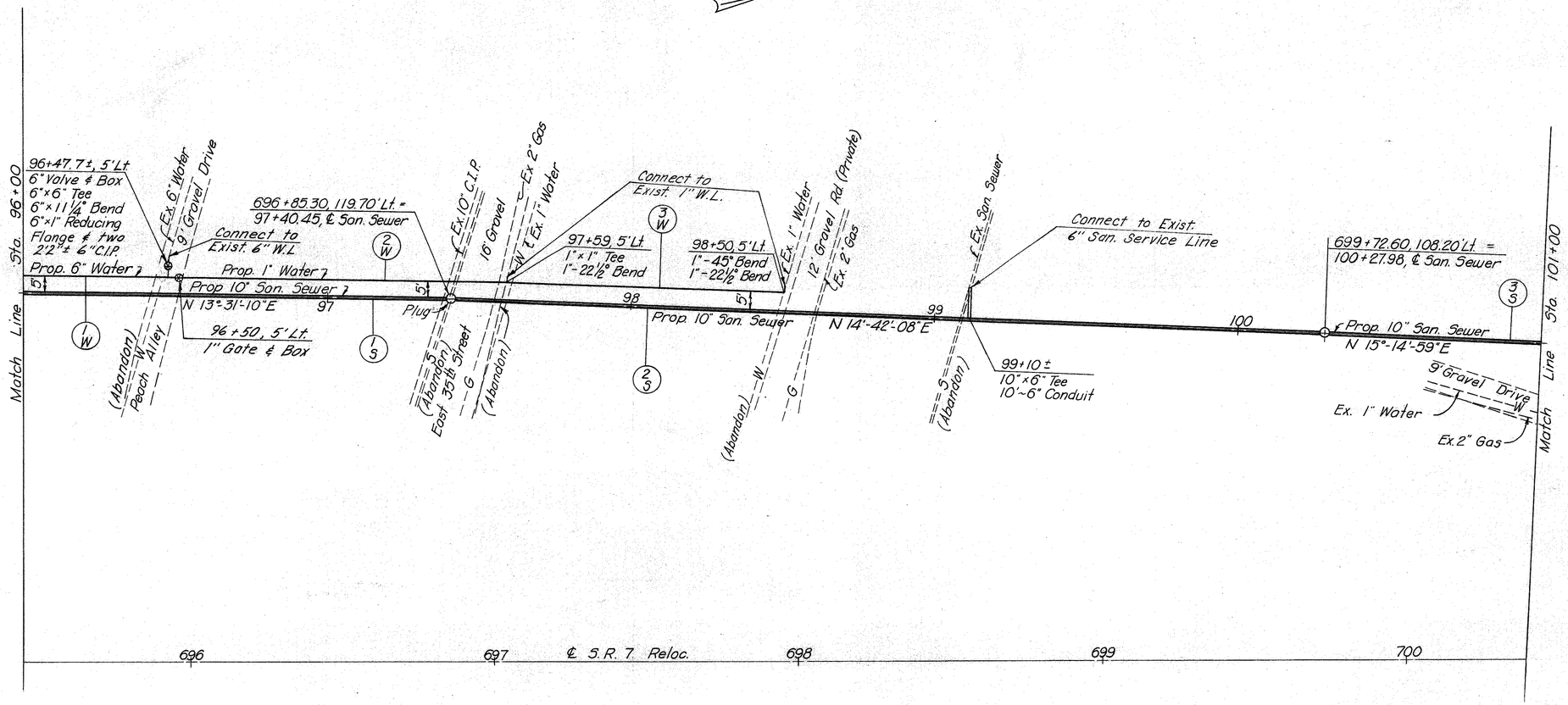
WATER LINE & SANITARY SEWER DETAIL Sta. 91+00 to Sta. 96+00

BEL-7-11.89

Revised by R.E.S. 7-76
Checked by AWL 1-77

FHWA REGION	STATE	PROJECT	FISCAL YEAR
5			

255
443



ESTIMATED QUANTITIES

* With 706.12 Joints

REF NO.	STATION TO STATION	SIDE	814 New Water Main 6" L.F.	814 Valve & Box 6" Each	604 Std No. 3 Manhole Each	603 6" 10" Type "B" Type "B" 706.08 & 706.08 * L.F.	603 6" 10" Type "B" Type "B" 706.08 & 706.08 * L.F.	DRAINAGE		
1S	Sta. 96+00 to 97+40.45	℄			1		141			
2S	Sta. 97+40.45 to 100+27.98	℄			1		288			
3S	Sta. 100+27.98 to 101+00	℄					72			
1W	Sta. 96+00 to 96+47.7	LT		1						
2W	Sta. 96+46 to 97+59	LT	55	1						
3W	Sta. 97+59 to 98+50	LT	111 91							
TOTALS			55	1	2	10	501			

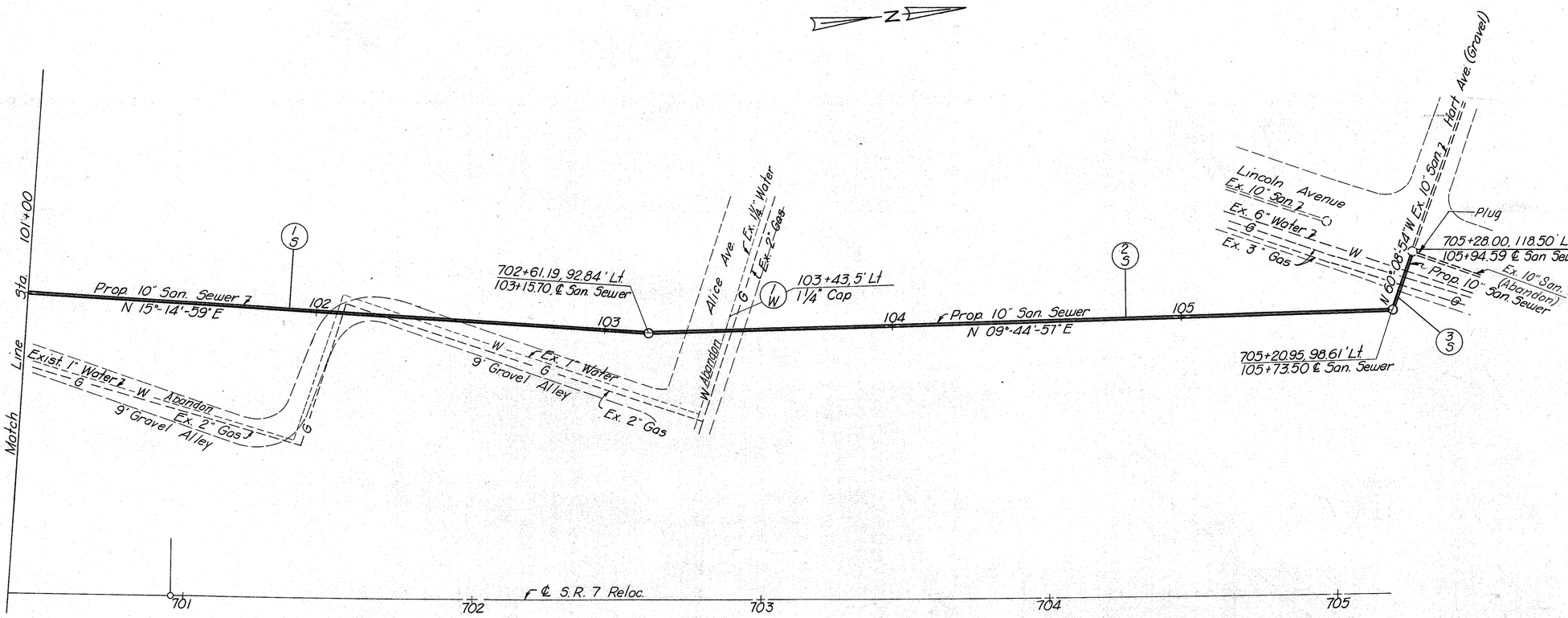
WATER LINE & SANITARY SEWER DETAIL Sta. 96+00 to Sta. 101+00

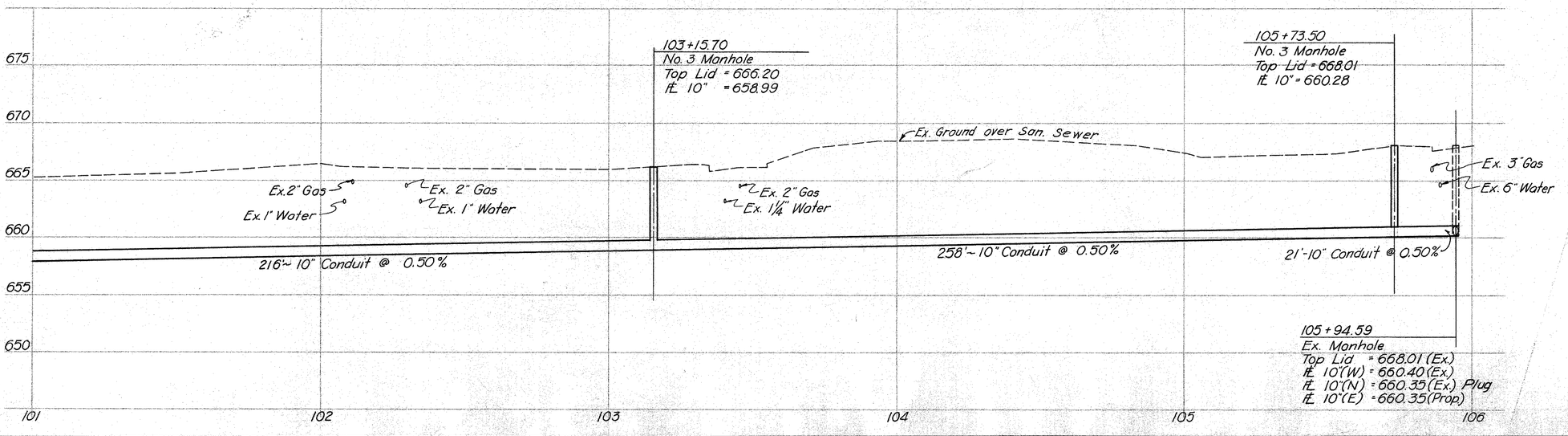
BEL-7-11.89

Revised by R.E.S. 7-76
Checked by AWL 1-77

FHWA REGION	STATE	PROJECT	FISCAL YEAR
5			

256
443





SEE SHEET NO.

ESTIMATED QUANTITIES

* With 706.12 Joints

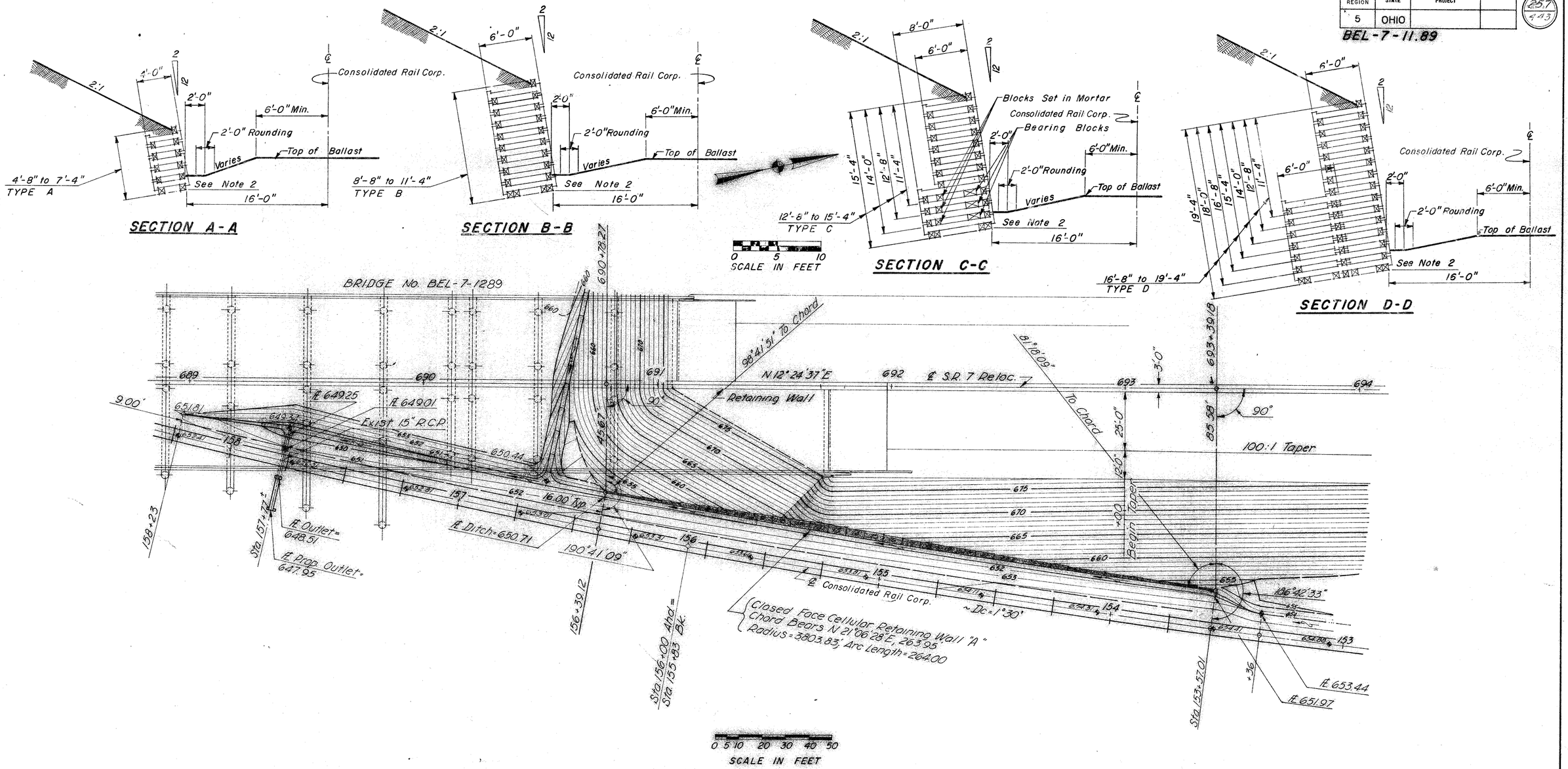
REF. NO.	STATION TO STATION	SIDE	603 10" Type "S" 10600# L.F.	604 Sta. No. 3 Manhole Each	814 Water Main Cap 1½ Each		
	DRAINAGE						
1S	Sta. 101+00 to 103+15.50	℄	216	1			2
2S	Sta. 103+15.70 to 105+73.50	℄	258	1			
3S	Sta. 105+73.50 to 105+94.59	℄	21				
1W	Sta 103+43	Lt			1		1
TOTAL			495	2	1		

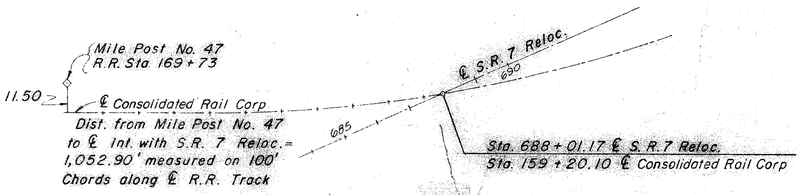
SANITARY SEWER DETAIL Sta. 101+00 to Sta. 106+00

FHWA REGION	STATE	PROJECT	
5	OHIO		

257
443

BEL-7-11.89





LOCATION OF R.R. MILE MARKER No. 47
(NOT TO SCALE)

NOTE:
1. For Plan and Elevation Views, See Sheet No. 2/2
2. Bottom of Sill elev. 649.71
3. Typical Sections as shown depict a concrete cellular wall. Galvanized Metal Wall may be used as per 610.03.
4. For Site Plan of BRIDGE No. BEL-7-1289 See Sheet No. 299
5. For 15" Pipe Culvert Details at Sta 157+77± ℄ Consolidated Rail Corp. See Sheet No. 57
6. A minimum of 6" clear to be maintained between the finished slope and top of wall.

1/2

STICKLEN - BELSHEIM & ASSOCIATES
ENGINEERS
WORTHINGTON OHIO

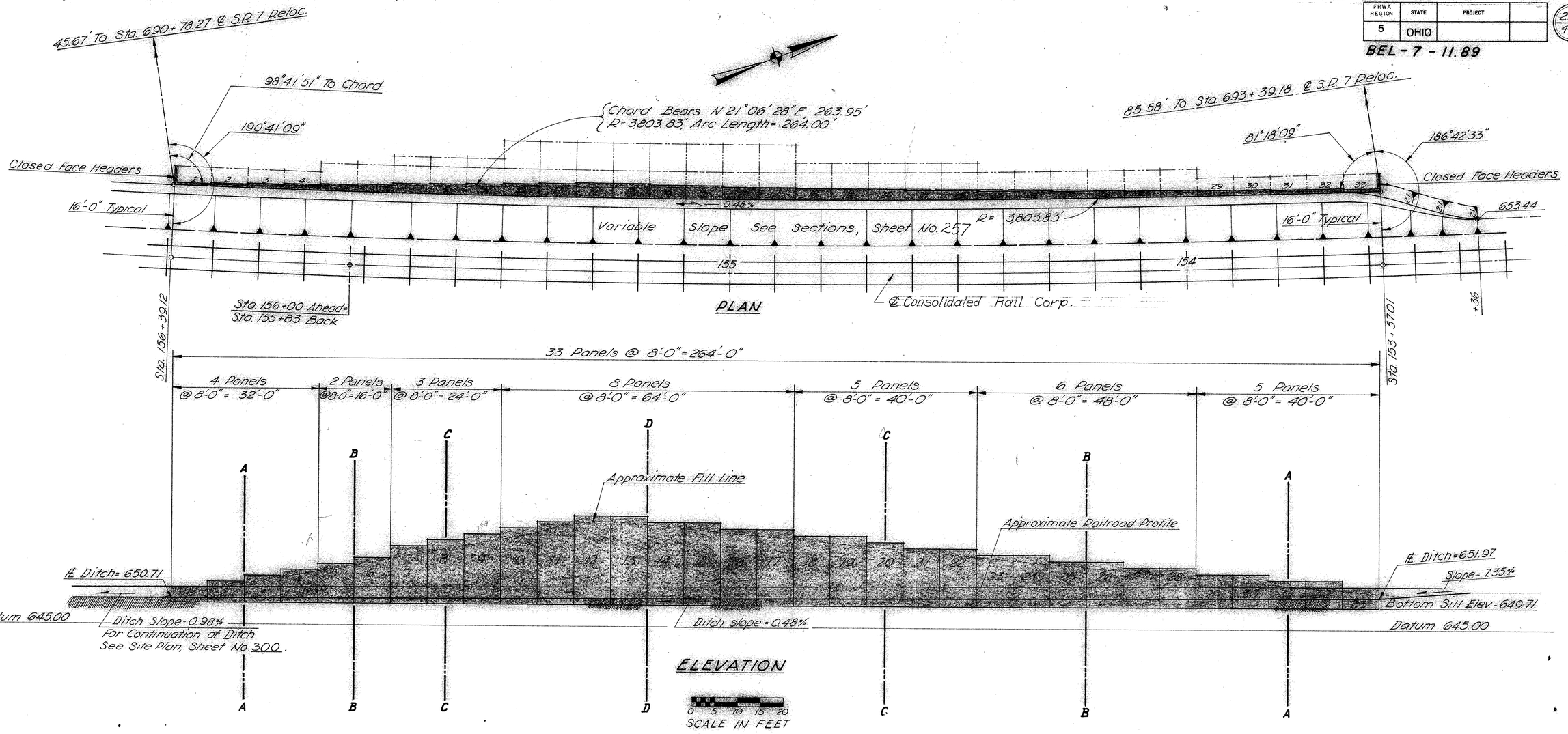
SITE PLAN
OF CLOSED-FACE
CELLULAR RETAINING WALL "A"
BELMONT CO.
Scale As Noted

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
J.W.	J.W.		A.W.L.	[illegible]	7-7-69	

FHWA REGION	STATE	PROJECT	
5	OHIO		

258/443

BEL-7-11.89



PANEL No.	TYPE	HEIGHT	TOP ELEV.	AREA	PANEL No.	TYPE	HEIGHT	TOP ELEV.	AREA
1	A	3'-4"	653.00	26.67	18	C	15'-4"	664.83	122.67
2	A	4'-8"	654.31	37.33	19	C	15'-4"	664.83	122.67
3	A	6'-0"	655.63	48.00	20	C	14'-0"	663.52	112.00
4	A	7'-4"	656.94	58.67	21	C	12'-8"	662.20	101.33
5	B	8'-8"	658.26	69.33	22	C	12'-8"	662.20	101.33
6	B	10'-0"	659.57	80.00	23	B	11'-4"	660.89	90.67
7	C	12'-8"	662.20	101.33	24	B	11'-4"	660.89	90.67
8	C	14'-0"	663.52	112.00	25	B	10'-0"	659.57	80.00
9	C	15'-4"	664.83	122.67	26	B	10'-0"	659.57	80.00
10	D	16'-8"	666.15	133.33	27	B	8'-8"	658.26	69.33
11	D	18'-0"	667.47	144.00	28	B	8'-8"	658.26	69.33
12	D	19'-4"	668.78	154.67	29	A	7'-4"	656.94	58.67
13	D	19'-4"	668.78	154.67	30	A	7'-4"	656.94	58.67
14	D	18'-0"	667.47	144.00	31	A	6'-0"	655.63	48.00
15	D	18'-0"	667.47	144.00	32	A	6'-0"	655.63	48.00
16	D	16'-8"	666.15	133.33	33	A	4'-8"	654.31	37.33
17	D	16'-8"	666.15	133.33	Total Sq. Ft. Item 610				3088.00

ITEM 203 Excavation = 315 Cu. Yds.
ITEM 610 Cellular Ret. Wall = 3088 Sq. Ft.

NOTES:
1. For Sections A-A, B-B, C-C and D-D See Sheet No. 1/2
2. For Site Plan See Sheet No 1/2
3. For Site Plan of future Bridge No. BEL-7-1289 See Sheet No. 299

2/2

STICKLEN - BELSHEIM & ASSOCIATES
ENGINEERS
WORTHINGTON OHIO

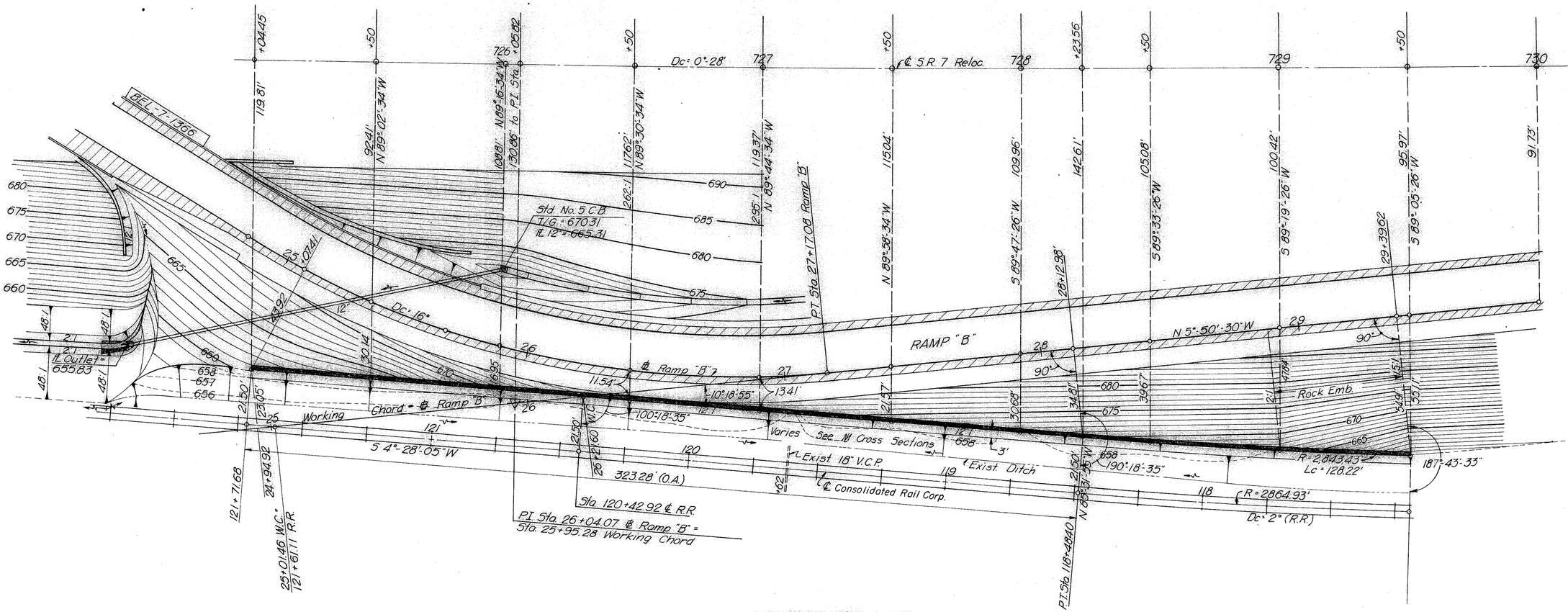
CLOSED-FACE
CELLULAR RETAINING WALL "A"
S.R. 7 Reloc. over Consolidated Rail Corp.
BELMONT CO.
Scale As Noted

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
J.W.	J.W.		A.W.L.	D.E.L.	7-7-69	

FHWA REGION	STATE	PROJECT	
5	OHIO		

259
443

BEL-7-11.89



NOTE: 1. EARTHWORK limits shown are schematic. Actual slopes shall conform to plan cross-sections.

2. For Item 606 Sodding quantities and Sta. limits See Sheet No. **164**

3. For Storm Sewer Details, See Sheet No. **245**

1/8

STICKLEN - BELSHEIM & ASSOCIATES
ENGINEERS
WORTHINGTON OHIO

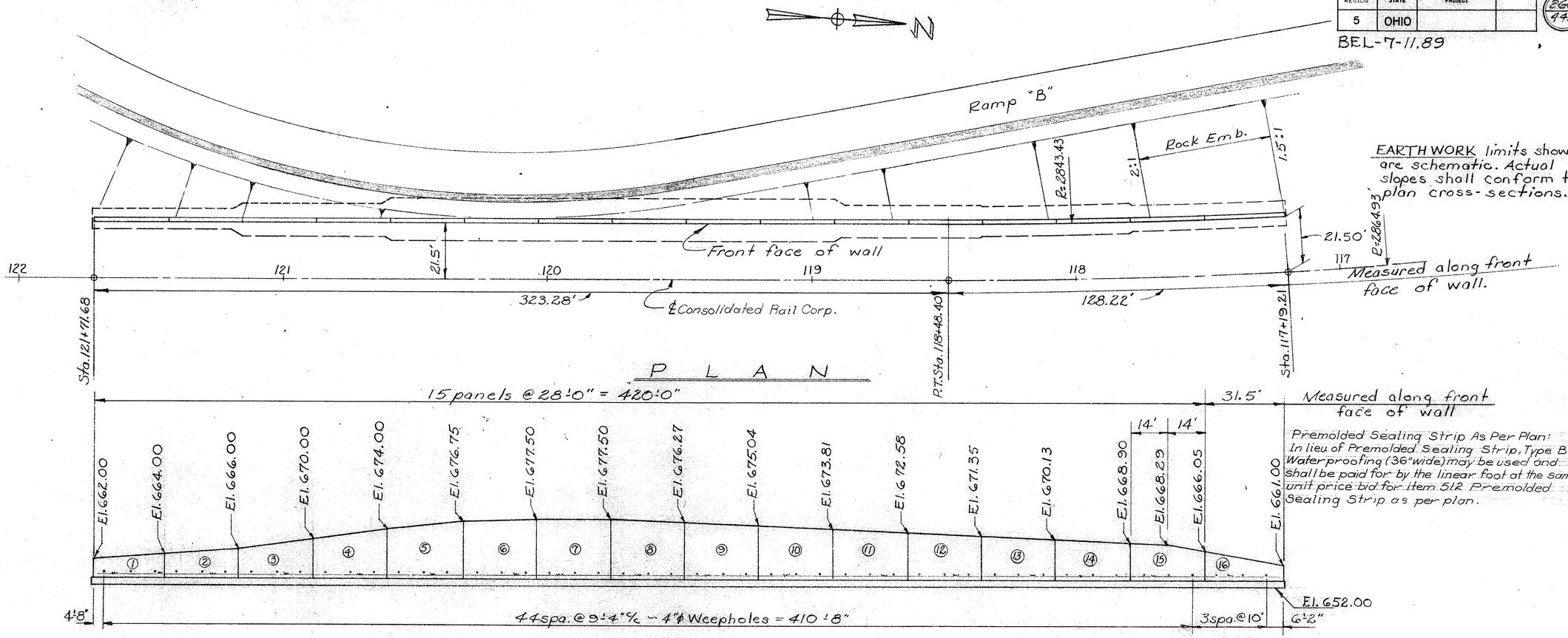
SITE PLAN
RAMP "B" RETAINING WALL
BELMONT COUNTY
Scale As Noted

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
J.W.W.	J.W.W.	R.K.N.	A.W.L.	D.G.Y.	7-3-69	

FHWA REGION	STATE	PROJECT	
5	OHIO		

260/443

BEL-7-11.89



ELEVATION

(The 12"ϕ Cast-in-place reinforced concrete piles are not shown)
(ONLY Construction Joints will be permitted in the footing)

Premolded Sealing Strip As Per Plan: In lieu of Premolded Sealing Strip, Type B Waterproofing (36" wide) may be used and shall be paid for by the linear foot at the same unit price bid for item 512 Premolded Sealing Strip as per plan.

EARTHWORK limits shown are schematic. Actual slopes shall conform to plan cross-sections.

ESTIMATED AVERAGE PAY LENGTH of 12"ϕ Cast-in-place reinforced concrete piles is 35'.

Minimum bar lap shall be 30 diameters.

GENERAL NOTES

DESIGN SPECIFICATIONS: This structure conforms to "Standard Specifications for Highway Bridges" adopted by the American Association of State Highway Officials, 1965, including the Ohio "Supplement" to these specifications.

DESIGN DATA:
Concrete Class C - unit stress 1,333 p.s.i.

Reinforcing Steel - ASTM A615, A616, or A617 unit stress 20,000 p.s.i.

PILES shall be driven to a minimum bearing capacity of 40 tons per pile.

VERTICAL RUSTICATION GROOVES shall be placed at 4 foot intervals to coincide with the expansion and contraction joints.

ESTIMATED QUANTITIES

Item	Total	Unit	Description
503	1,568	Cu.Yd.	Unclassified excavation
505	Lump	Sum	Test pile
507	6,120	Lin.Ft.	12"ϕ Cast-in-place reinforced concrete piles
509	89,417	Lbs.	Reinforcing steel
511	618	Cu.Yd.	Class C concrete, footings
511	572	Cu.Yd.	Class C concrete, walls
512	244	Lin.Ft.	Premolded sealing strip as per plan
516	180	Sq.Ft.	1" preformed expansion joint filler
518	386	Cu.Yd.	Porous backfill
523	3	Hours	Dynamic pile tests

ESTIMATED QUANTITIES
Calculated by DCH 6-27-69
Checked by GSB 7-1-69

2/8

STICKLEN - BELSHEIM & ASSOCIATES ENGINEERS
WORTHINGTON OHIO

GENERAL PLAN & ELEVATION NOTES & ESTIMATED QUANTITIES
RAMP "B" RETAINING WALL
BELMONT CO.

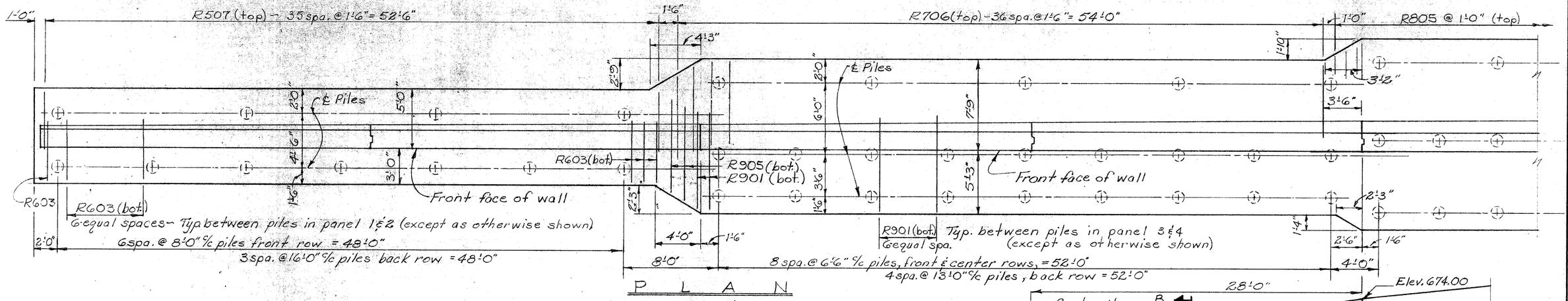
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
GSB	DGW		DCH	DCH 7-7-69	5/2/79	

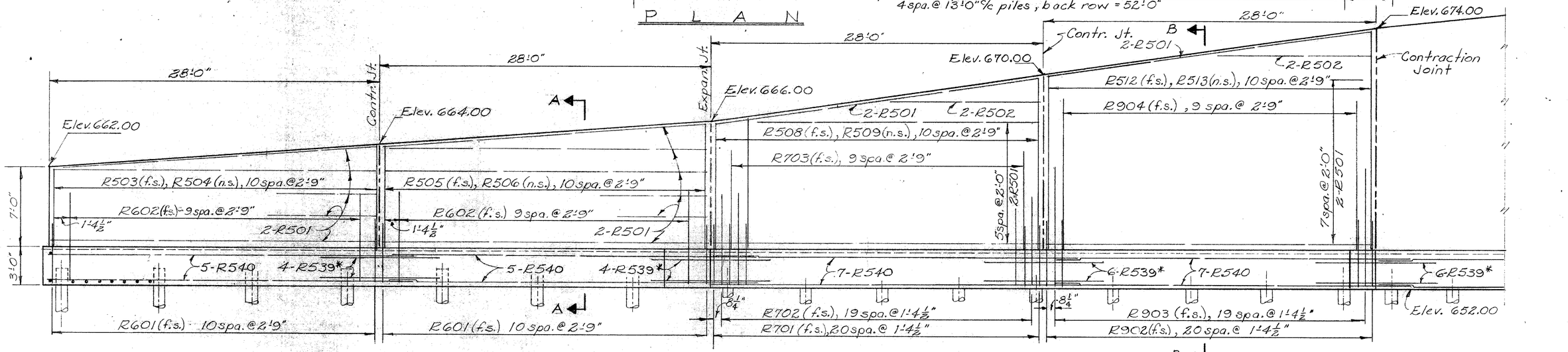
E.O.671

FHWA REGION	STATE	PROJECT	
5	OHIO		

261/443

BEL-7-11.89





PANEL - No. 1 PANEL No. 2 PANEL No. 3 PANEL No. 4

ELEVATION

LEGEND
f.s. = far side
n.s. = near side

NOTES:
Bars marked thus * are to be centered under wall joint.

See Sheet 7/8 for additional details and for Sections A-A & B-B.

3/8

STICKLEN - BELSHEIM & ASSOCIATES
ENGINEERS
WORTHINGTON OHIO

RAMP "B" RETAINING WALL DETAILS
PANELS 1, 2, 3, & 4

BELMONT CO.

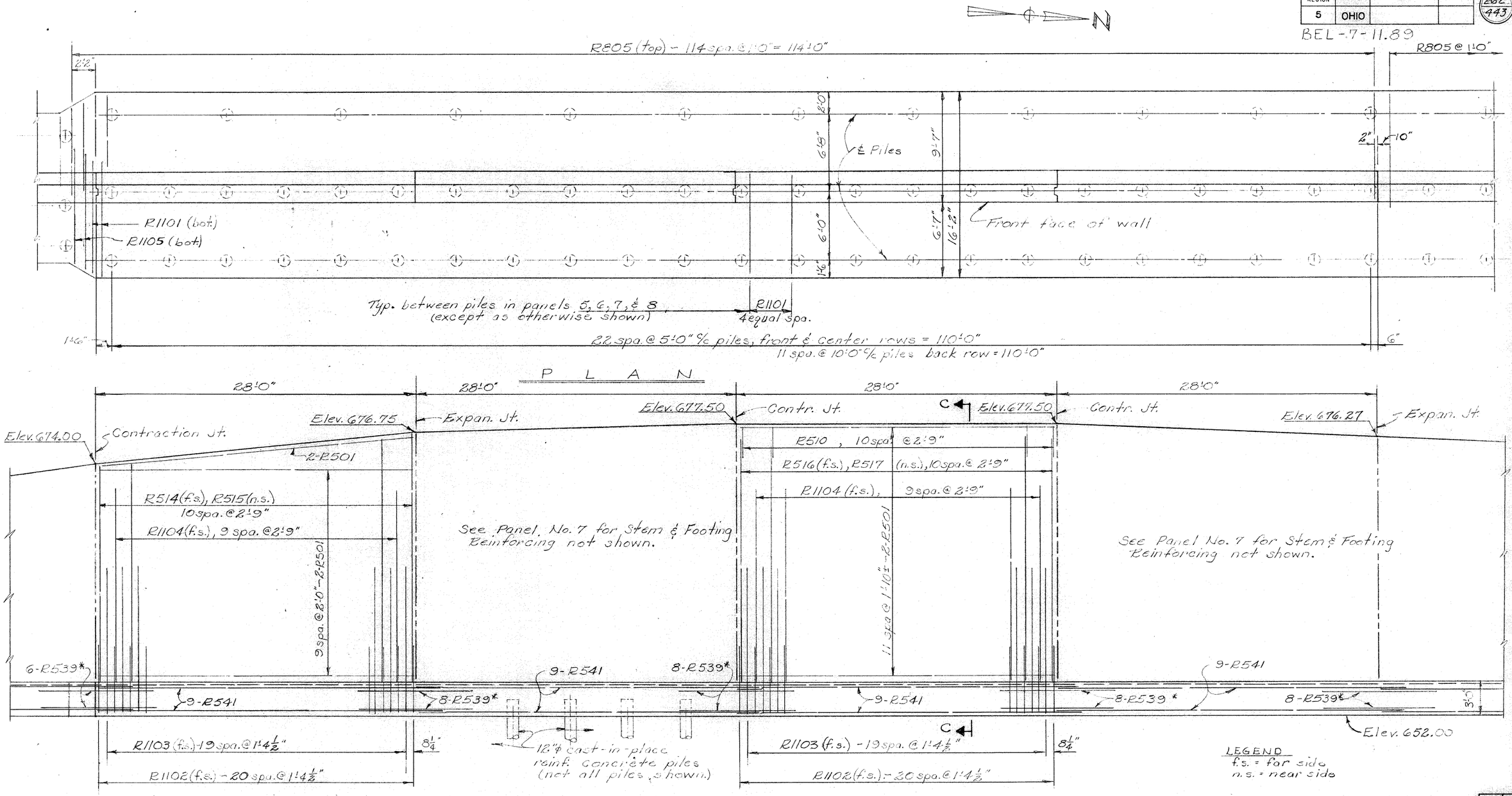
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
GSB	DGW		SP	DGW 7-7-89		

E.O. 671

FHWA REGION	STATE	PROJECT	
5	OHIO		

262/443

BEL-7-11.89



NOTE:
Bars marked thus * are to be centered under wall joint.

See Sheet 7/8 for additional details and Section C-C.

4/8

STICKLEN - BELSHEIM & ASSOCIATES
ENGINEERS
WORTHINGTON OHIO

RAMP "B" RETAINING WALL DETAILS
PANELS 5, 6, 7 & 8

BELMONT CO.

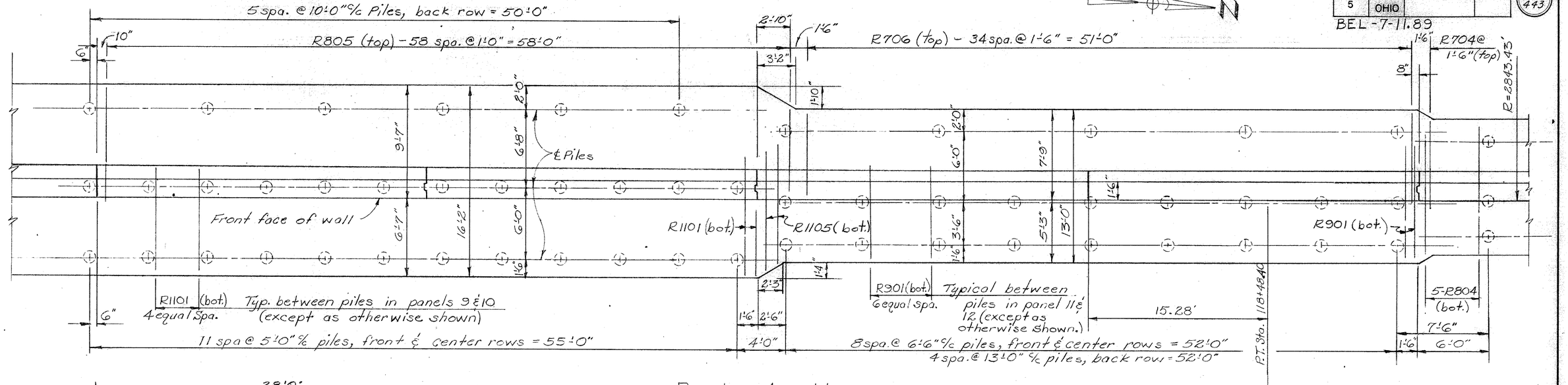
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
GSB	[illegible]		SP	[illegible]	7-7-69	

E.O. 671

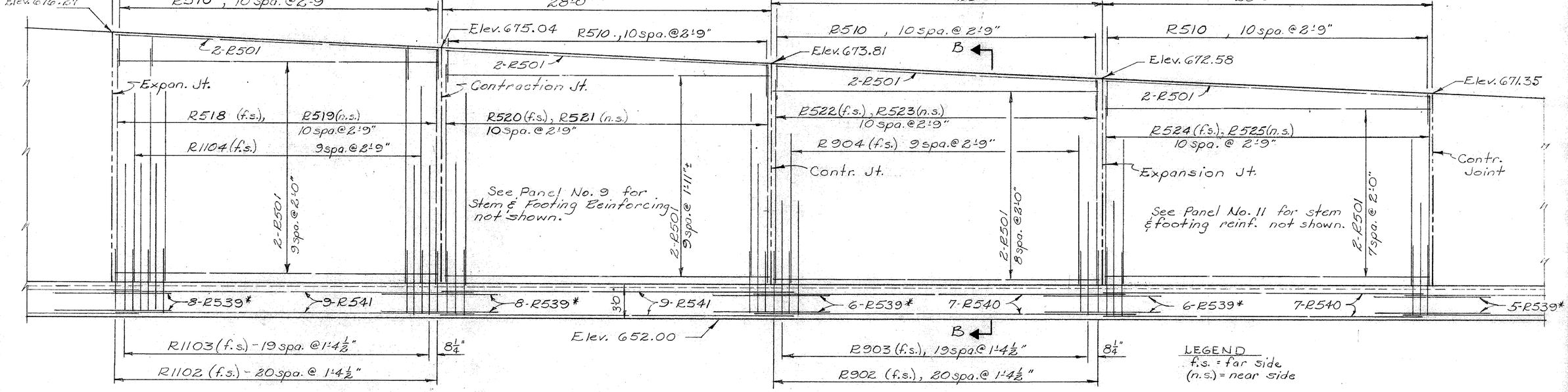
FHWA REGION	STATE	PROJECT	
5	OHIO		

BEL-7-11.89

263
443



P L A N



PANEL No. 9 PANEL No. 10 PANEL No. 11 PANEL No. 12

E L E V A T I O N
(Piles not shown)

LEGEND
f.s. = far side
(n.s.) = near side

NOTES:
Bars marked thus * are to be centered under wall joint

See sheet 7/8 for additional details and Section B-B.

5/8

STICKLEN - BELSHEIM & ASSOCIATES ENGINEERS
WORTHINGTON OHIO

RAMP "B" RETAINING WALL DETAILS

PANELS 9, 10, 11 & 12

BELMONT CO.

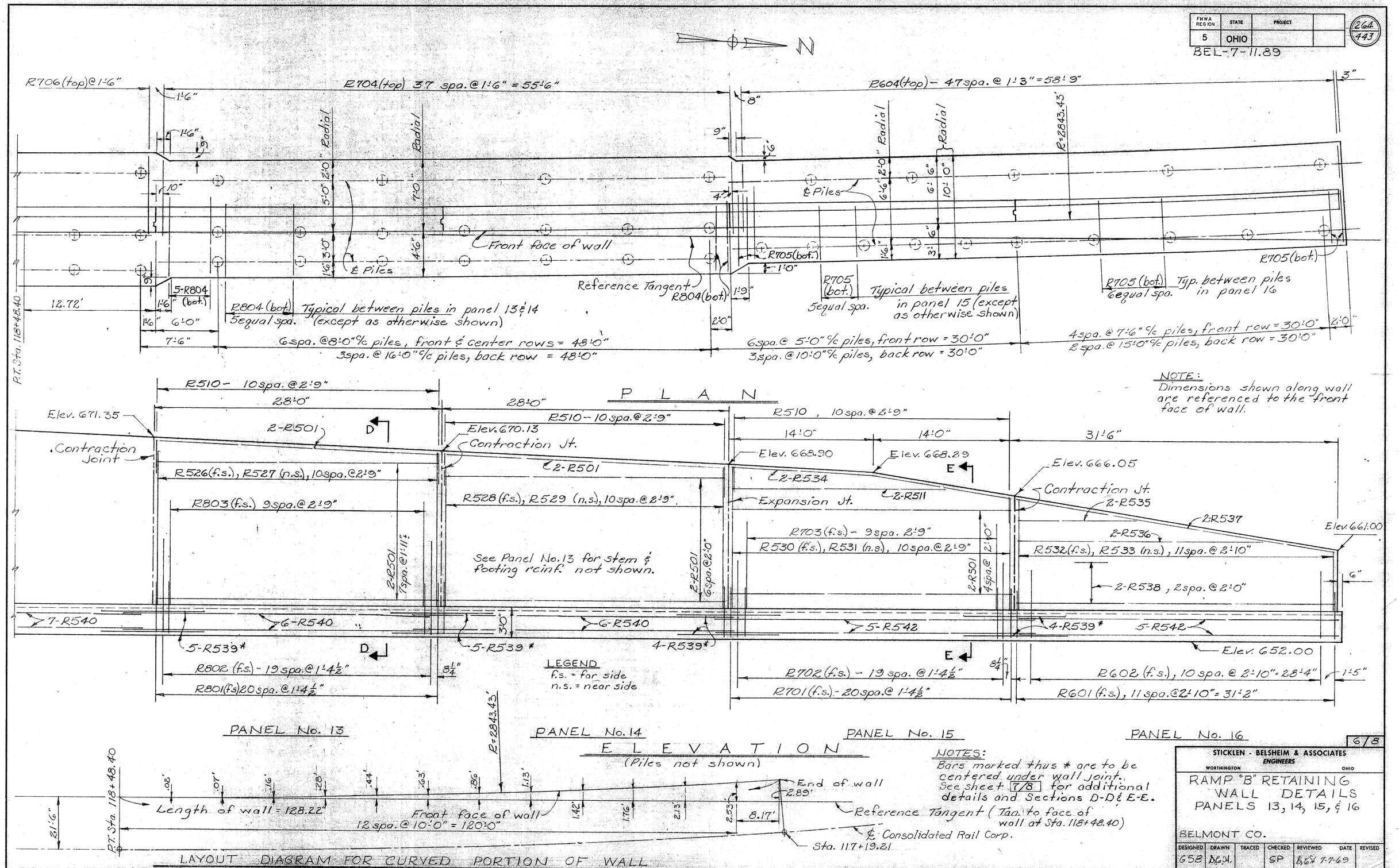
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
GSB	B.G.N.		SP	A.G.V.	7-1-65	

E.O. 671

FHWA REGION	STATE	PROJECT	
5	OHIO		

264/443

BEL-7-11.89



NOTE:
Dimensions shown along wall are referenced to the front face of wall.

NOTES:
Bars marked thus * are to be centered under wall joint.
See sheet 7/8 for additional details and Sections D-D & E-E.

6/8

STICKLEN - BELSHEIM & ASSOCIATES
ENGINEERS
WORTHINGTON OHIO

RAMP "B" RETAINING WALL DETAILS
PANELS 13, 14, 15, & 16

BELMONT CO.

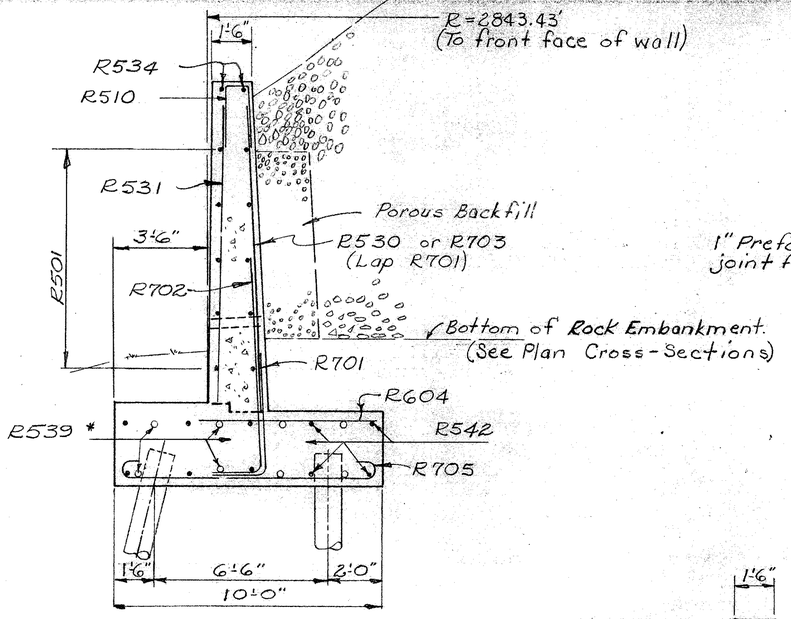
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
GSB	D.E.H.		SP	[illegible]	7-7-69	

E.O. 671

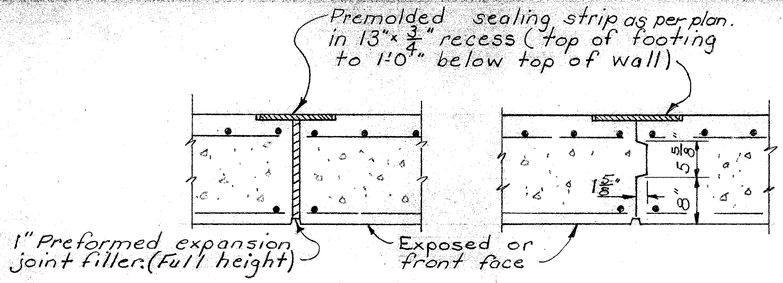
FHWA REGION	STATE	PROJECT	
5	OHIO		

265/443

BEL-7-11.89

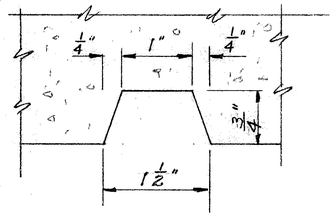


SECTION E-E

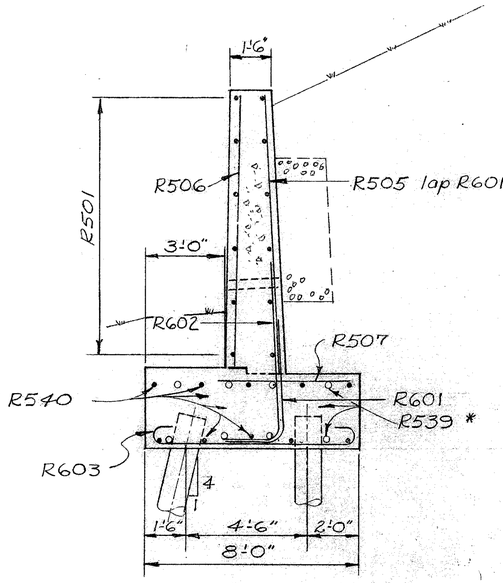


EXPANSION JOINT DETAIL

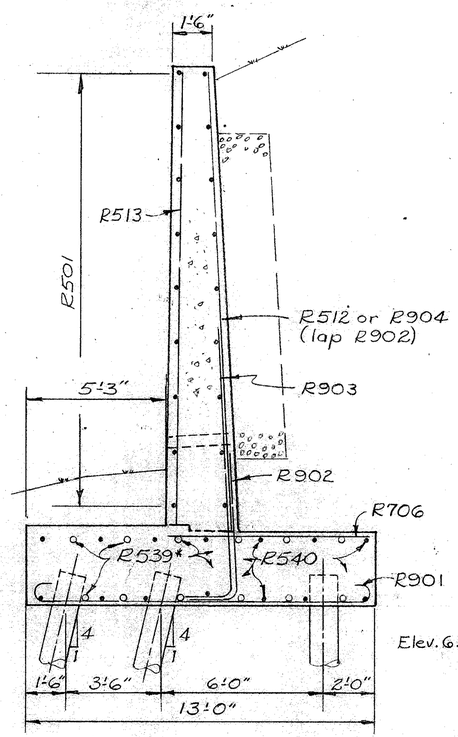
CONTRACTION JOINT DETAIL



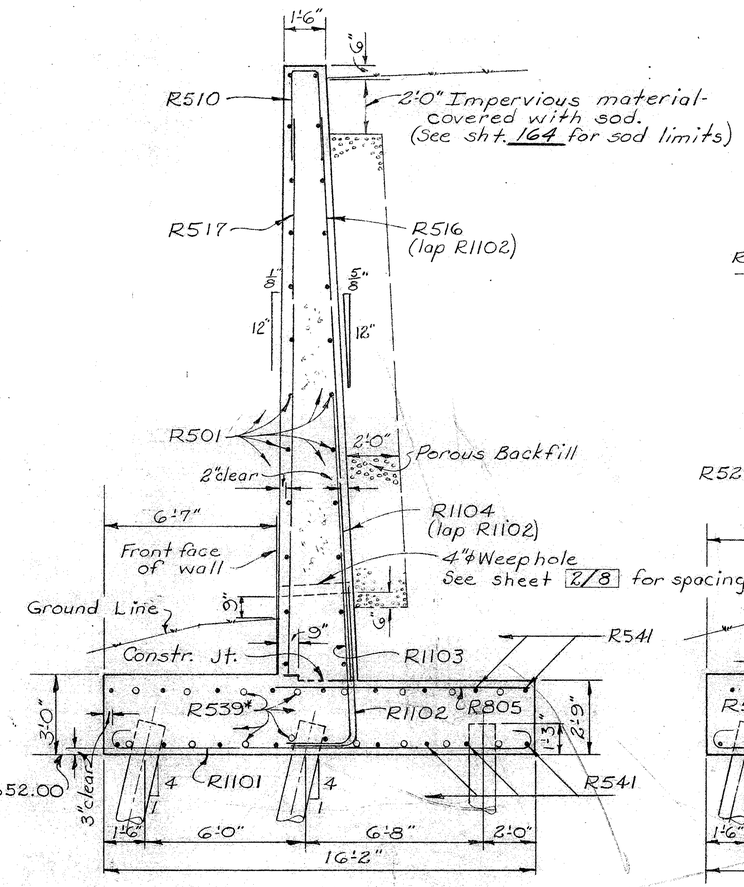
VERTICAL RUSTICATION GROOVE



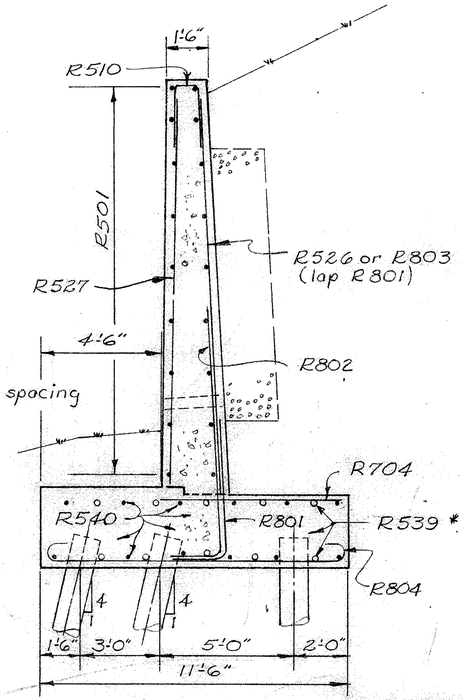
SECTION A-A



SECTION B-B



SECTION C-C



SECTION D-D

NOTE:
For additional Details not shown in Sections A-A, B-B, D-D, & E-E, see Section C-C.

Bars marked thus * are to be centered under the expansion or contraction joints.

7/8

STICKLEN - BELSHEIM & ASSOCIATES
ENGINEERS
WORTHINGTON OHIO

RAMP "B" RETAINING WALL DETAILS

BELMONT CO.

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
GSB	ACH.		SP	AGW.	7-7-69	

E.O. 671

REINFORCING STEEL LIST

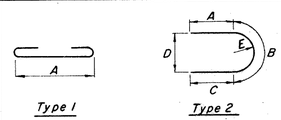
FHWA REGION	STATE	PROJECT		
5	OHIO			

266
443

BEL.-7-11.89

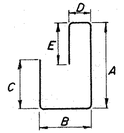
BAR SIZE is indicated in the bar mark. The first digit where three digits are used and the first two digits where four are used, indicate the bar size number. For example, A 700 is a number 7 size bar and A 1014 is a number 10 size.

BENDING DIAGRAM



Type 1

Type 2



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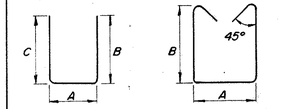
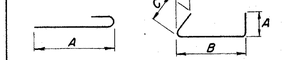


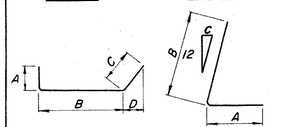
Type 5

Type 6



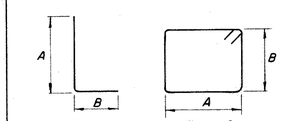
Type 7

Type 8



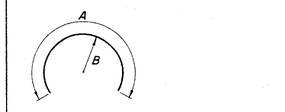
Type 9

Type 10

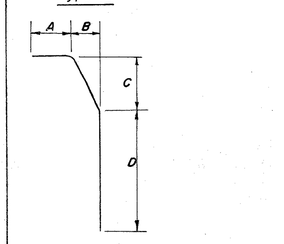


Type 11

Type 12



Type 13



Type 15

S IN THE COLUMN FOR "TYPE" INDICATES STRAIGHT BARS.

MARK	NO.	LENGTH	WEIGHT	TYPE	A	B	C	D	E
R1101	169	18'-10"	16,910	1	15'-8"				
R1102	126	9'-7"	6,415	10	3'-6"	6'-4"	5/8"		
R1103	120	16'-3"	10,360	10	3'-6"	13'-0"	5/8"		
R1104	60	16'-10"	5,366	S					
R1105	4	16'-8"	355	1	13'-6"				
R901	116	15'-0"	5916	1	12'-6"				
R902	63	7'-11"	1696	10	2'-10"	5'-4"	5/8"		
R903	60	12'-8"	2584	10	2'-10"	10'-1"	5/8"		
R904	30	12-7"	1283	S					
R905	2	11'-9"	80	1	9'-3"				
R801	42	7'-4"	822	10	2'-6"	5'-0"	5/8"		
R802	40	11'-6"	1228	10	2'-6"	9'-2"	5/8"		
R803	20	10'-7"	565	S					
R804	43	13'-2"	1512	1	11'-0"				
R805	174	9'-7"	4452	S					
R701	42	6'-9"	579	10	2'-2"	4'-9"	5/8"		
R702	40	9'-9"	797	10	2'-2"	7'-9"	5/8"		
R703	20	8'-4"	341	S					
R704	38	7'-0"	544	S					
R705	63	11'-2"	1438	1	9'-6"				
R706	72	7'-9"	1141	S					
R601	34	6'-2"	315	10	1'-11"	4'-5"	5/8"		
R602	31	9'-0"	419	10	1'-11"	7'-3"	5/8"		
R603	46	8'-10"	610	1	7'6"				
R604	48	6'-6"	469	S					
R501	274	27'-8"	7907	S					
R502	4	15'-0"	63	S					
R503	One Series of 11	7'-1" to 9'-1"	93	S	Vary by 2 3/8" ± increments				
R504	One Series of 11	6'-10" to 8'-10"	90	S	Vary by 2 3/8" ± increments				
R505	One Series of 11	9'-1" to 11'-1"	116	S	Vary by 2 3/8" ± increments				
R506	One Series of 11	8'-10" to 10'-10"	113	S	Vary by 2 3/8" ± increments				
R507	36	5'-0"	188	S					
R508	One Series of 11	11'-1" to 15'-1"	150	S	Vary by 4 3/4" ± increments				
R509	One Series of 11	10'-10" to 14'-10"	147	S	Vary by 4 3/4" ± increments				

MARK	NO.	LENGTH	WEIGHT	TYPE	A	B	C	D	E
R510	110	7'-0"	803	9	3'-0"	1'-2"	3'-0"	1 7/8"	
R511	2	22'-0"	46	S					
R512	One Series of N	15'-1" to 19'-1"	196	S	Vary by 4 3/4" ± increments				
R513	One Series of N	14'-10" to 18'-10"	193	S	Vary by 4 3/4" ± increments				
R514	One Series of N	19'-1" to 21'-10"	235	S	Vary by 2 3/8" ± increments				
R515	One Series of 11	18'-10" to 21'-7"	232	S	Vary by 2 3/8" ± increments				
R516	11	21'-4"	245	S					
R517	11	21'-1"	242	S					
R518	11	20'-1"	230	S					
R519	11	19'-10"	228	S					
R520	11	18-11"	217	S					
R521	11	18'-8"	214	S					
R522	11	17'-8"	203	S					
R523	11	17'-5"	200	S					
R524	11	16'-5"	188	S					
R525	11	16'-2"	185	S					
R526	11	15'-2"	174	S					
R527	11	14'-11"	171	S					
R528	11	14'-0"	161	S					
R529	11	13'-9"	158	S					
R530	One Series of 11	11'-1" to 14'-0"	144	S	Vary by 3 1/2" increments				
R531	One Series of 11	10'-10" to 13'-9"	141	S	Vary by 3 1/2" increments				
R532	One Series of 12	6'-0 1/2" to 11'-1"	107	S	Vary by 5 1/2" increments				
R533	One Series of 12	5'-9 1/2" to 10'-10"	104	S	Vary by 5 1/2" increments				
R534	2	27'-8"	58	15	0	7 1/2"	13'-10"	13'-10"	
R535	2	12'-0"	25	S					
R536	2	25'-0"	52	S					
R537	2	31'-0"	66	S					
R538	6	31'-2"	195	S					
R539	180	10'-0"	1877	S					
R540	100	29'-9"	3103	S					
R541	108	29'-4"	3304	S					
R542	20	31'-6"	657	S					

MARK	NO.	LENGTH	WEIGHT	TYPE	A	B	C	D	E

SPIRAL REINFORCING

MARK	NO.	LENGTH	WEIGHT		

Spirals - Core Diam. 32" %

- Pitch 4 1/2" c/c

- Other details in accordance with C.R.S.I. standard practice.

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

8 / 8

STICKLEN-BELSHEIM & ASSOCIATES ENGINEERS
WORTHINGTON OHIO

REINFORCING STEEL LIST
RAMP 'B'
RETAINING WALL

BELMONT CO.

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
GSB	G.T.W.		D.G.Y.	D.G.Y.	7-3-69	

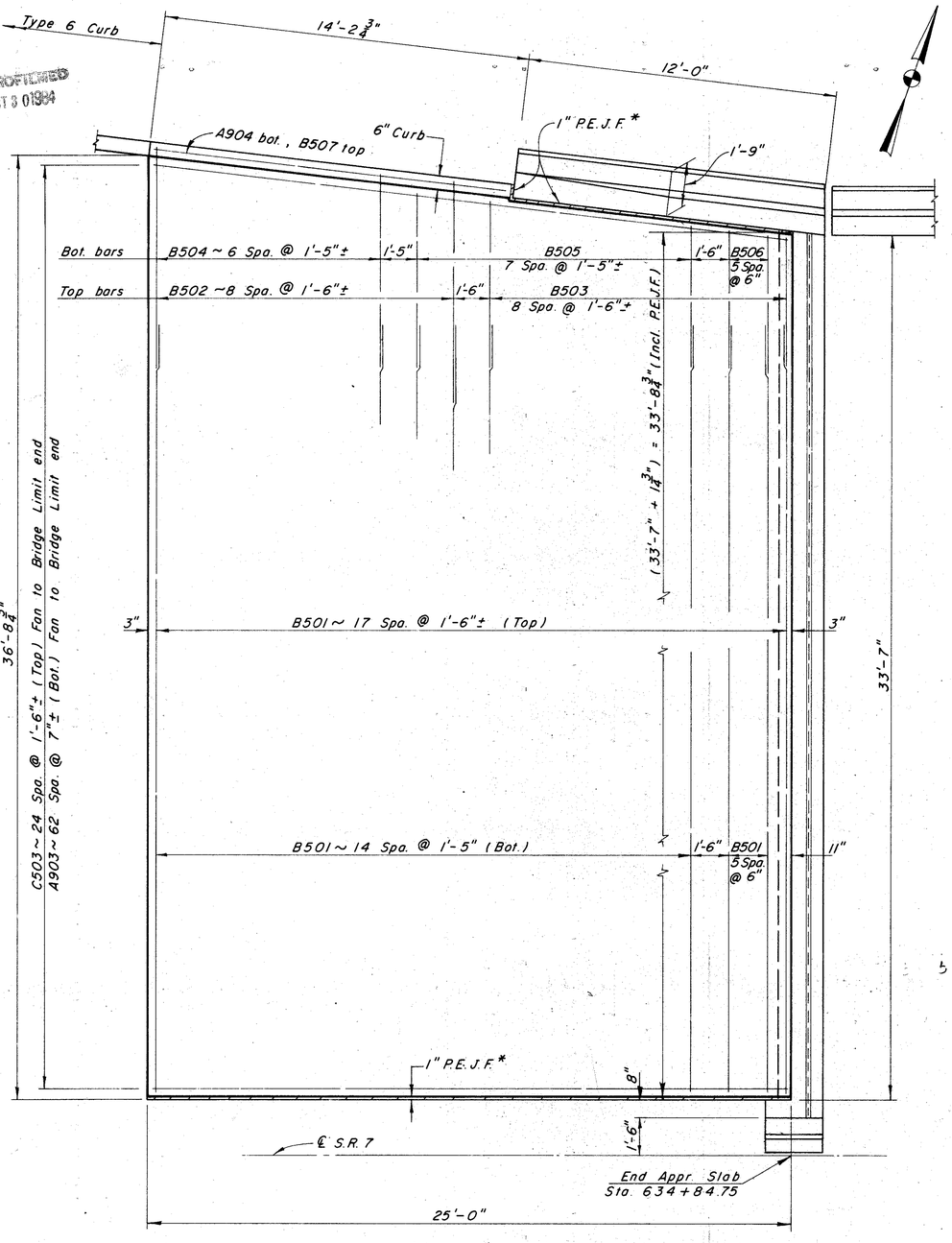
E.O.-611

MICROFILMED
OCT 3 01994

F.H.W.A. REGION	STATE	PROJECT	
5	OHIO		

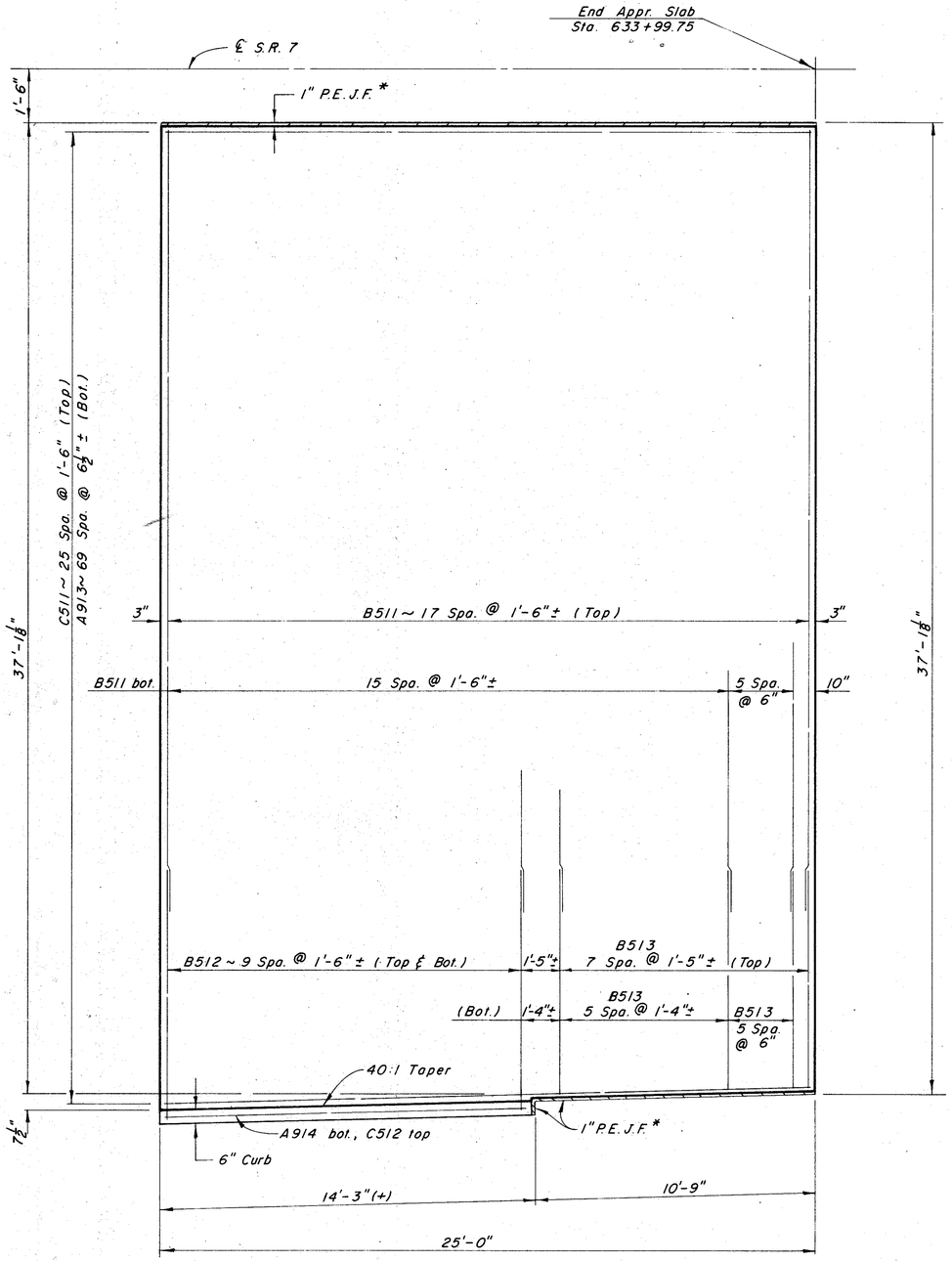
BEL -7- 11.89

267
443



REAR ABUTMENT
LEFT BRIDGE

Area = 98.65 Sq. Yds.

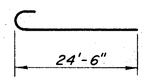


REAR ABUTMENT
RIGHT BRIDGE

Area = 104.70 Sq. Yds.

REINFORCING STEEL LIST

MARK	No.	LENGTH	TYPE
Rear Abutment Left Bridge			
A903	63	25'-9"	1
A904	1	13'-10"	Str.
C503	25	24'-6"	Str.
B501	39	30'-0"	Str.
B502	9	8'-6"	Str.
B503	9	6'-4"	Str.
B504	7	8'-6"	Str.
B505	8	7'-3"	Str.
B506	6	5'-4"	Str.
B507	1	13'-10"	Str.
Rear Abutment Right Bridge			
A913	70	25'-9"	1
A914	1	13'-10"	Str.
C511	26	24'-6"	Str.
C512	1	13'-10"	Str.
B511	39	30'-0"	Str.
B512	20	9'-5"	Str.
B513	19	8'-7"	Str.



TYPE 1

P.E.J.F. * = Preformed Expansion Joint Filler (Include with approach slab for Payment)

NOTE: For additional Details see STD. DWG. AS-1-72, sheet 1.

JACKING HOLES as shown on AS-1-72 are not required

Top reinforcing bars shall have 3" clearance from top surface of concrete.

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 samples shall be replaced in the structures by the additional steel, spliced in accordance with 509.08.

1 / 2

STICKLEN - BELSHEIM & ASSOCIATES
ENGINEERS
WORTHINGTON OHIO

APPROACH SLAB DETAILS

BRIDGE No. BEL - 7 - 1197

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
B.G.H.	R.D.Y.	R.D.Y.	TRO	B.G.H.	9/6/94	1/77 5/23/79

APPROACH SLAB DETAILS

E.O. 374

F.H.W.A. REGION	STATE	PROJECT	
5	OHIO		

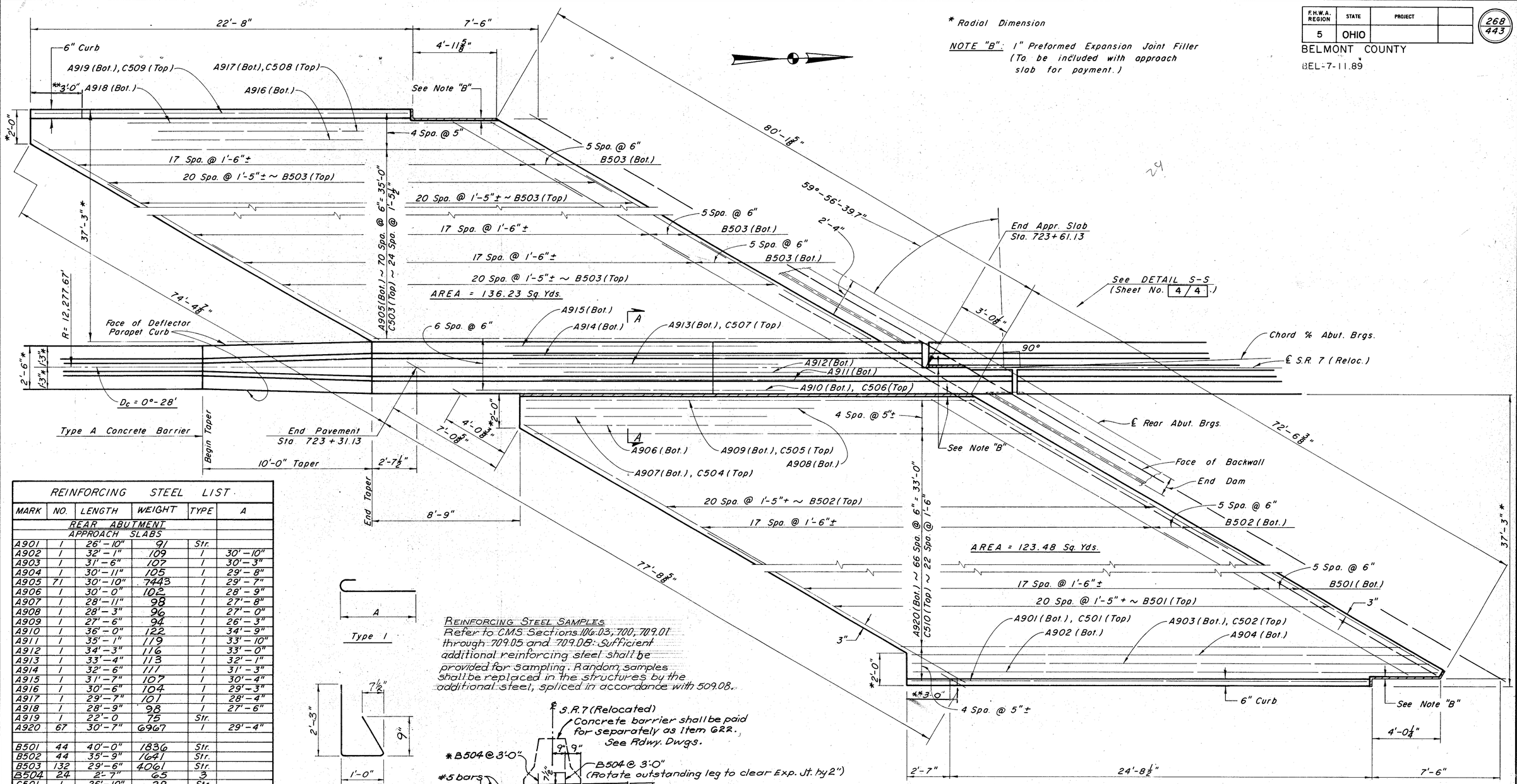
268
443

BELMONT COUNTY

BEL-7-11.89

* Radial Dimension

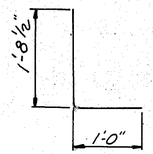
NOTE "B": 1" Preformed Expansion Joint Filler (To be included with approach slab for payment.)



REINFORCING STEEL LIST					
MARK	NO.	LENGTH	WEIGHT	TYPE	A
REAR ABUTMENT APPROACH SLABS					
A901	1	26'-10"	91	Str.	
A902	1	32'-1"	109	1	30'-10"
A903	1	31'-6"	107	1	30'-3"
A904	1	30'-11"	105	1	29'-8"
A905	71	30'-10"	7443	1	29'-7"
A906	1	30'-0"	102	1	28'-9"
A907	1	28'-11"	98	1	27'-8"
A908	1	28'-3"	96	1	27'-0"
A909	1	27'-6"	94	1	26'-3"
A910	1	36'-0"	122	1	34'-9"
A911	1	35'-1"	119	1	33'-10"
A912	1	34'-3"	116	1	33'-0"
A913	1	33'-4"	113	1	32'-1"
A914	1	32'-6"	111	1	31'-3"
A915	1	31'-7"	107	1	30'-4"
A916	1	30'-6"	104	1	29'-3"
A917	1	29'-7"	101	1	28'-4"
A918	1	28'-9"	98	1	27'-6"
A919	1	22'-0	75	Str.	
A920	67	30'-7"	6967	1	29'-4"
B501	44	40'-0"	1836	Str.	
B502	44	35'-9"	1641	Str.	
B503	132	29'-6"	4061	Str.	
B504	24	2'-7"	65	3	
C501	1	26'-10"	28	Str.	
C502	1	30'-3"	32	Str.	
C503	25	29'-7"	771	Str.	
C504	1	27'-8"	29	Str.	
C505	1	26'-0"	27	Str.	
C506	1	34'-9"	36	Str.	
C507	1	32'-1"	33	Str.	
C508	1	28'-4"	30	Str.	
C509	1	22'-0"	23	Str.	
C510	23	29'-4"	704	Str.	
E501	5	4'-0"	21	2	
E502	5	2"-3"	12	Str.	
E503	10	8'-0"	83	Str.	

Type 1

Type 2



TYPE 3

REINFORCING STEEL SAMPLES

Refer to C.M.S. 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.

SECTION A-A

* Lap outstanding leg with bottom transverse bars.

APPROACH SLAB DETAILS

Rear Abutment — Br. No. BEL-7-1366

JACKING HOLES as shown on AS-1-72 are not required. Top reinforcing bars shall have 3" clearance from top surface of concrete. For additional Details See STD DWG. AS-1-72, sheet 1

** Taper curb height from 3" to 6"

2/4

STICKLEN - BELSHEIM & ASSOCIATES
ENGINEERS
WORTHINGTON OHIO

REAR APPROACH SLAB DETAILS

BRIDGE No. BEL-7-1366
OVER
RAMP "B"

BELMONT CO.

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
DGH.	R.D.Y.	R.D.Y.	TRO	DGH	11/74	1/77 5/23/79

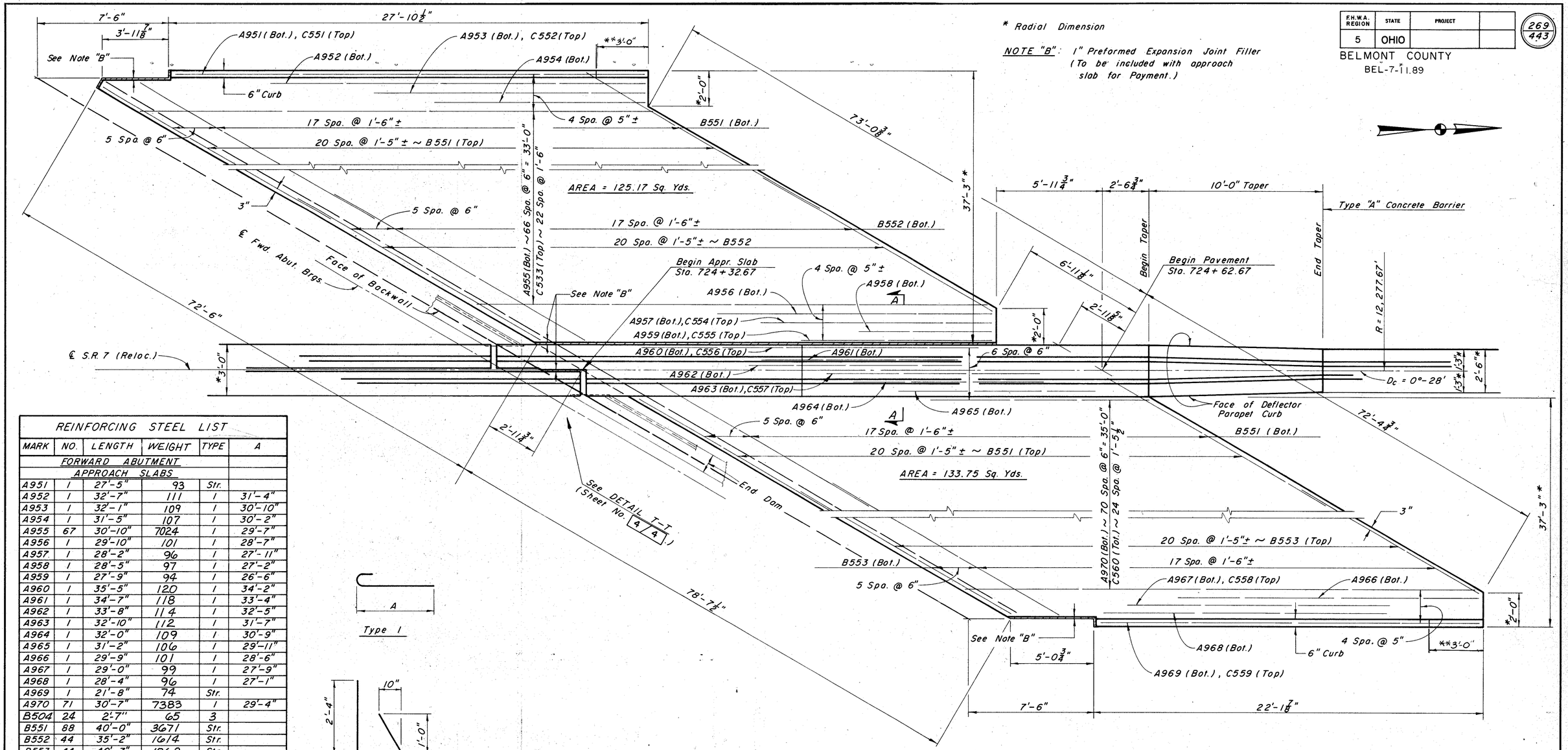
F.H.W.A. REGION	STATE	PROJECT	
5	OHIO		

269
443

BELMONT COUNTY
BEL-7-11.89

* Radial Dimension

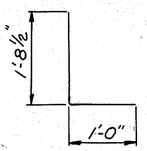
NOTE "B": 1" Preformed Expansion Joint Filler (To be included with approach slab for Payment.)



REINFORCING STEEL LIST					
MARK	NO.	LENGTH	WEIGHT	TYPE	A
FORWARD ABUTMENT APPROACH SLABS					
A951	1	27'-5"	93	Str.	
A952	1	32'-7"	111	1	31'-4"
A953	1	32'-1"	109	1	30'-10"
A954	1	31'-5"	107	1	30'-2"
A955	67	30'-10"	7024	1	29'-7"
A956	1	29'-10"	101	1	28'-7"
A957	1	28'-2"	96	1	27'-11"
A958	1	28'-5"	97	1	27'-2"
A959	1	27'-9"	94	1	26'-6"
A960	1	35'-5"	120	1	34'-2"
A961	1	34'-7"	118	1	33'-4"
A962	1	33'-8"	114	1	32'-5"
A963	1	32'-10"	112	1	31'-7"
A964	1	32'-0"	109	1	30'-9"
A965	1	31'-2"	106	1	29'-11"
A966	1	29'-9"	101	1	28'-6"
A967	1	29'-0"	99	1	27'-9"
A968	1	28'-4"	96	1	27'-1"
A969	1	21'-8"	74	Str.	
A970	71	30'-7"	7383	1	29'-4"
B504	24	2'-7"	65	3	
B551	88	40'-0"	3671	Str.	
B552	44	35'-2"	1614	Str.	
B553	44	40'-7"	1862	Str.	
C551	1	27'-5"	29	Str.	
C552	1	30'-10"	32	Str.	
C553	23	29'-7"	710	Str.	
C554	1	27'-11"	29	Str.	
C555	1	26'-6"	28	Str.	
C556	1	34'-2"	36	Str.	
C557	1	31'-7"	33	Str.	
C558	1	27'-9"	29	Str.	
C559	1	21'-8"	23	Str.	
C560	25	29'-4"	765	Str.	
E501	5	4'-1"	21	2	
E502	5	2'-4"	12	Str.	
E503	10	8'-0"	83	Str.	

Type 1

Type 2



Type 3

APPROACH SLAB DETAILS

Forward Abutment — Br. No. BEL-7-1366

** Taper curb height from 3" to 6"

JACKING HOLES as shown on AS-1-72 are not required. Top reinforcing bars shall have 3" clearance from top surface of concrete. For additional Details See STD. DWG. AS-1-72, sheet 1.

FOR SECTION A-A See Sh. No. 268

3/4

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ENGINEERS
WORTHINGTON OHIO

FORWARD APPROACH SLAB DETAILS
BRIDGE No. BEL-7-1366
OVER
RAMP "B"

BELMONT CO.

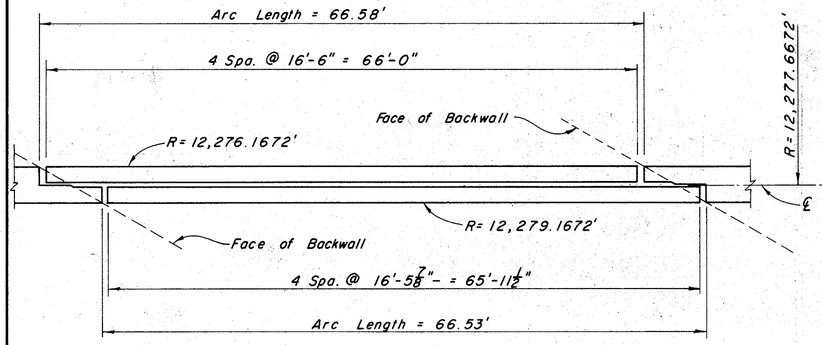
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
DGH	R.D.Y.	R.D.Y.	TRO	DGH	11/74	1/77 5/23/79

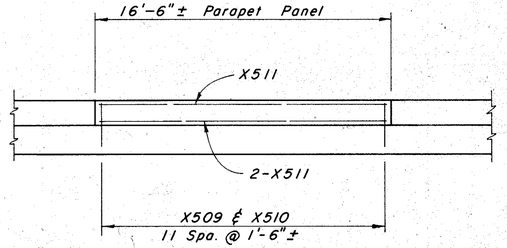
F.H.W.A. REGION	STATE	PROJECT	
5	OHIO		

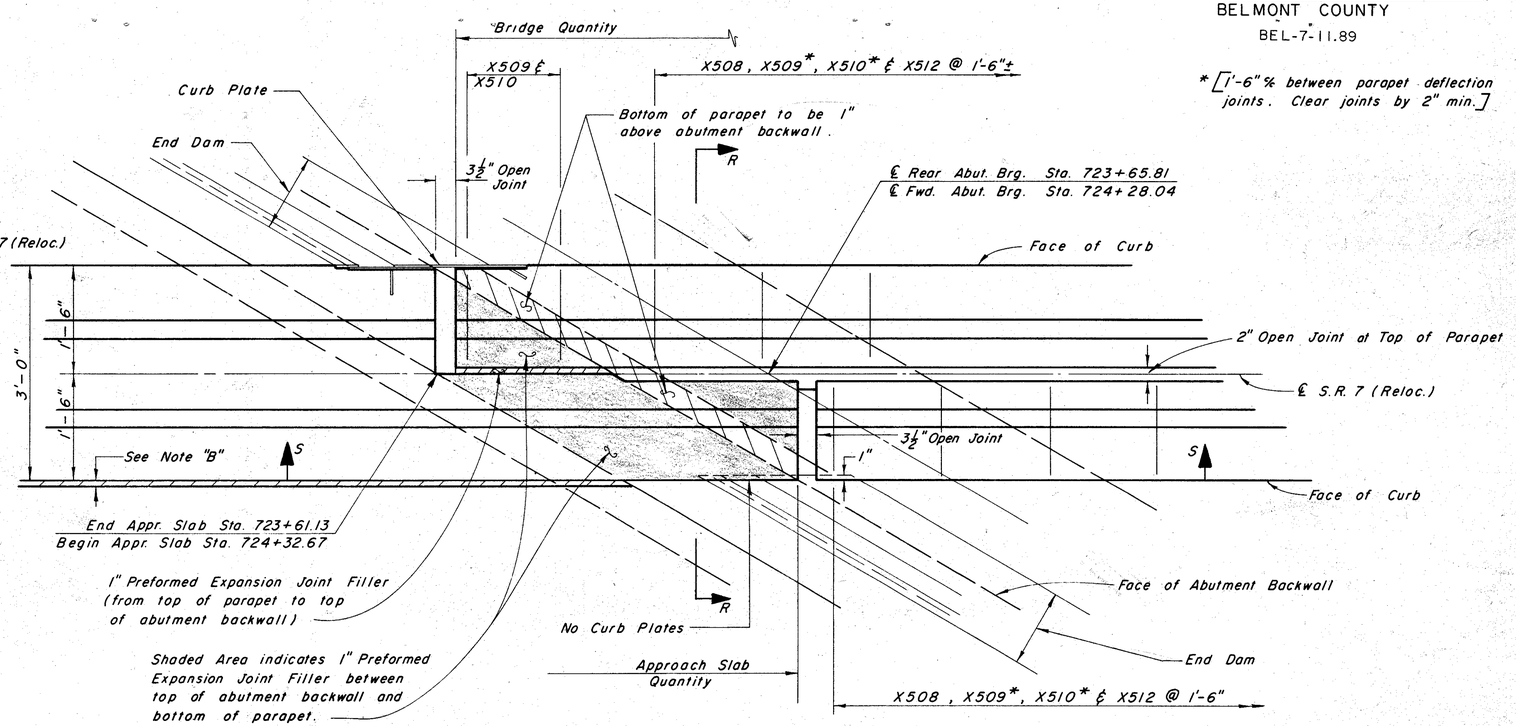
270/443

BELMONT COUNTY

BEL-7-11.89





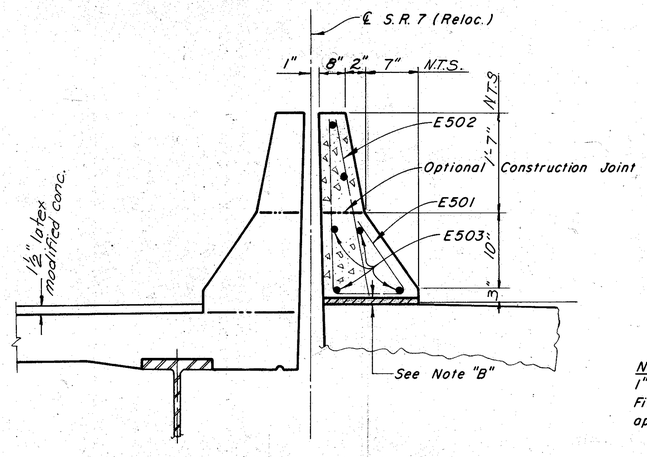


*[1'-6" % between parapet deflection joints. Clear joints by 2" min.]

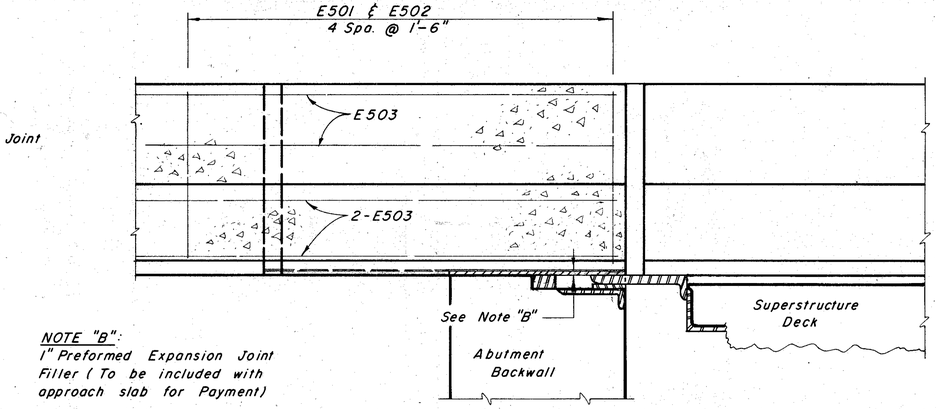
DETAIL S-S (Rear Abutment)

DETAIL T-T (Forward Abutment – Rotate 180°)

DEFLECTION JOINT SPACING DETAILS



SECTION R-R



SECTION S-S

NOTE "B":
1" Preformed Expansion Joint Filler (To be included with approach slab for Payment)

4/4

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APPROACH SLAB DETAILS

BRIDGE No. BEL-7-1366
OVER
RAMP "B"

BELMONT CO.

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
DGY	R.D.Y.	R.D.Y.	TRO	DGY	11/74	1/77

MICROFILMED
OCT 3 01984

FHWA REGION	STATE	PROJECT	FISCAL YEAR
5	OHIO		

271/443

BEL – 7 – 11.89
BELMONT COUNTY

EARTHWORK LIMITS shown are schematic. Actual slopes shall conform to Plan-Cross Section.
As built embankment not placed using 2:1 slopes as proposed. Revised slopes required to meet as built slopes are shown in plan. As built elevations shown in parenthesis in profile.

NOTE:
3" Longitudinal slotted holes shall be provided in the deep beam rail splice at post located on either side of the Rear Abutment bearings (Rt. Br.) and Forward Abutment bearings (Lt. Br.).

FOR STRUCTURE GROUNDING see Sheet No. 14/28 and Std. Constr. Dwg. HL-7.

FOR PILASTER DETAIL see Std. Constr. Dwgs HL-4 & HL-19.

NOTE "A": 8'-0" x 8'-0" x 1'-0" thick Crushed Aggregate Pad centered under scuppers where shown. For scupper locations see Sheet No. 22/28 and Sheet No. 23/28.

Corp of Engineers Design
H.W. Elevation 651.4

PROPOSED STRUCTURE

TYPE: Continuous steel beams with reinforced concrete deck, piers and abutments. Piers 2, 3, 4, 5 and 6 have welded box girder caps.
SPANS: 68.0' ; 5 @ 85.0' ; 68.0' % brg. (Rt. Br.)
68.0' ; 5 @ 85.0' ; 68.0' % brg. (Lt. Br.)
ROADWAY: 72'-8 f/f parapets incl. 3' concrete median barrier.
LOADING: HS 20-44 and the Alternate Military loading.
SKEW: None
WEARING SURFACE: 1½" Latex Mod. Conc.
APPROACH SLAB: AS-1-72 (25'-0" long, Mod.)
ALIGNMENT: Tangent and 1° curve
TRAFFIC: 10,650 ADT (1996)

1/28

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ENGINEERS
WORTHINGTON OHIO

SITE PLAN

BRIDGE No. BEL-7-1197
OVER
CONSOLIDATED RAIL CORP.
STA. 633+99.75
640+50.25
BELMONT CO.

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JCL	LCT	R.D.Y.	SD	DGH JCL	6/8/70	1/77 5/23/79

NOTE: The Vertical Curve Data does not apply to Bridge or Graphic Curve Elevations. The Bridge Elevations were obtained by adding 1½" to elevations obtained from Vertical Curve Data.

ESTIMATED AVERAGE PAY LENGTH OF 12"ϕ Cast-in-place Reinforced Concrete Piles:
Abutments = 80'-0"
Piers 1 & 7 = 75'-0"
Piers 2,3,4,5 & 6 = 60'-0"

PROFILE ON ℄ S.R. 7

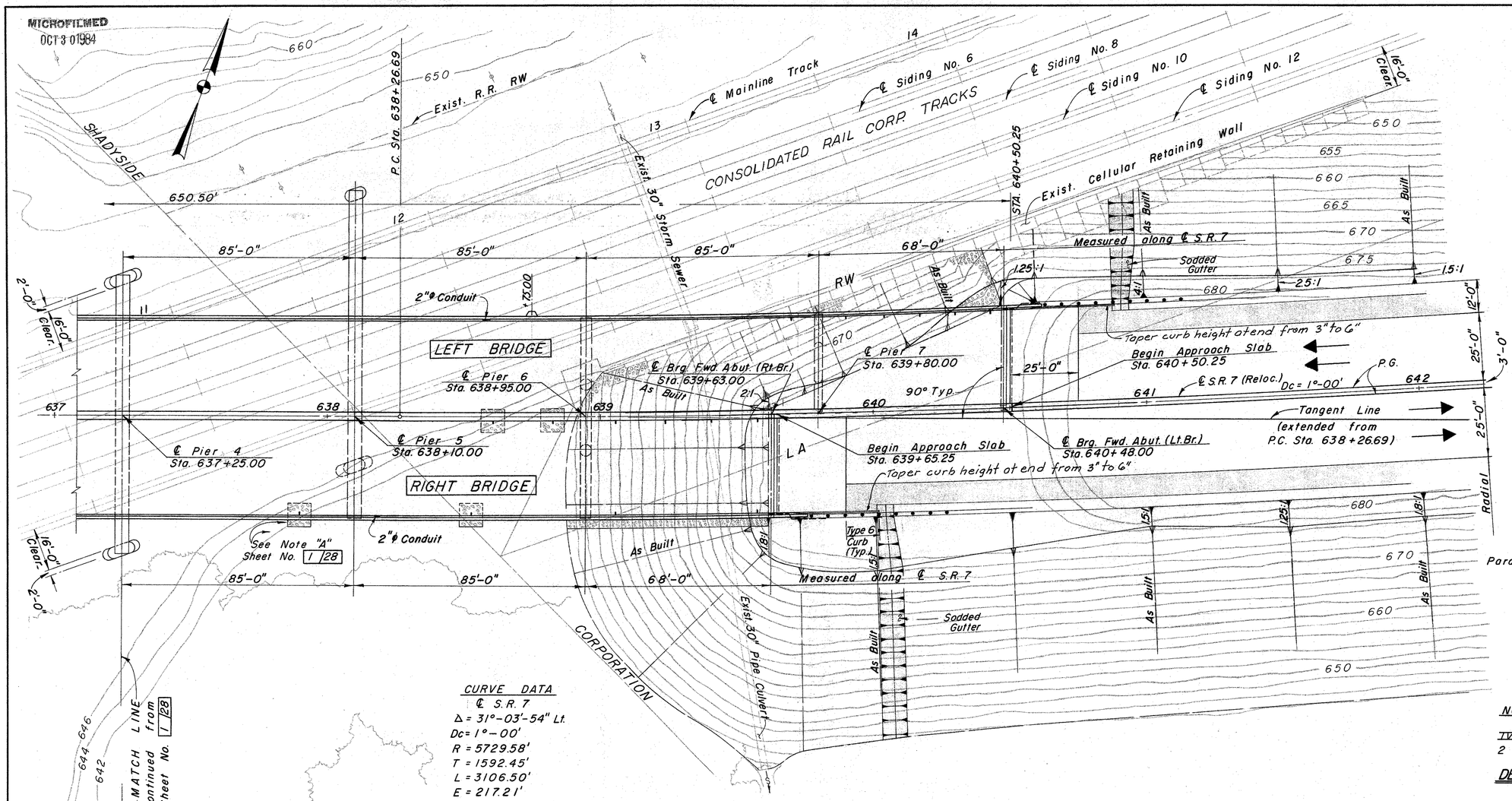
MICROFILMED
OCT 3 01984

F.H.W.A. REGION:	STATE	PROJECT	FISCAL YEAR
5	OHIO		

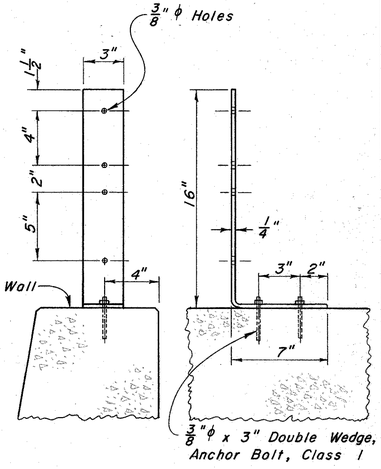
272/443

BEL-7-11.89
BELMONT COUNTY

EARTHWORK LIMITS shown are schematic. Actual slopes shall conform to Plan-Cross Sections. As built embankment not placed using 2:1 slopes as proposed. Revised slopes required to meet as built slopes are shown in plan. As built elevations shown in parenthesis in profile.



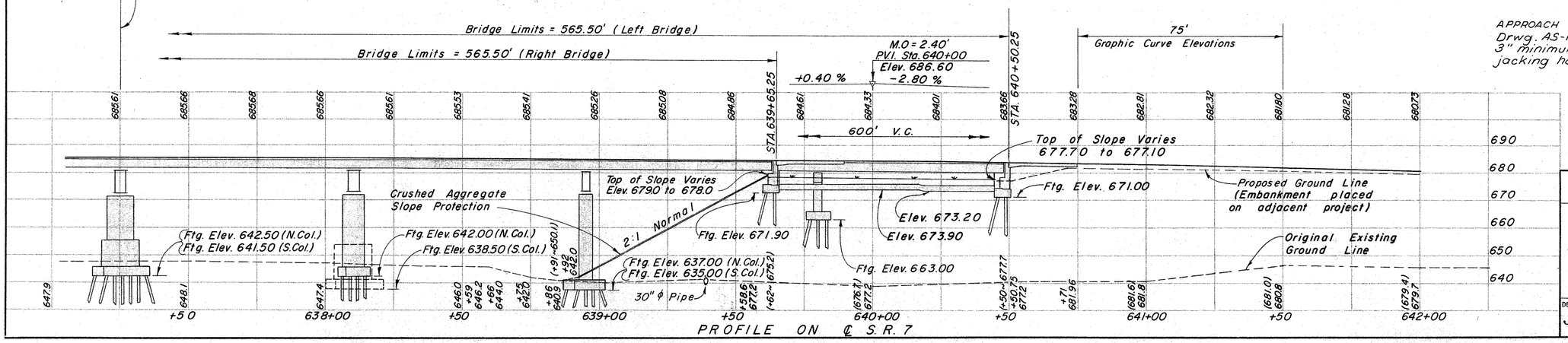
CURVE DATA
℄ S.R. 7
Δ = 31°-03'-54" Lt.
Dc = 1°-00'
R = 5729.58'
T = 1592.45'
L = 3106.50'
E = 217.21'



NOTE:
Anchor Bolts shall be selfdrilling FFS Group IV, Type 1 or Stud FFS-325 Group VIII, Type 2 as manufactured by Red Head or Wedge-it.

DELINEATOR BRIDGE PARAPET BRACKET
(Included with Roadway Quantities, see Summary Sheet 368/443 for Location.)

APPROACH SLABS shall be as shown on Std. Drwg. AS-1-72 except top steel shall have a 3" minimum cover instead of 2" and jacking holes shall be omitted.



2/28

STICKLEN - BELSHEIM & ASSOCIATES
ENGINEERS
WORTHINGTON OHIO

SITE PLAN

BRIDGE No. BEL-7-1197
OVER
CONSOLIDATED RAIL CORP.
STA. 633+99.75
640+50.25
BELMONT CO.

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JCL	LCT	RDY	S.D	D.C.H. JCL	4/8/70	1/77 5/23/79

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ESTIMATED QUANTITIES

ITEM	TOTAL	UNIT	DESCRIPTION	Rear Abuts. Lt. & Rt. Bridge	Fwd. Abuts. Lt. & Rt. Bridge	Retaining Walls	Piers 1 & 7	Piers 2 & 6	Piers 3 & 5	Pier 4	Superst. Lt. & Rt. Bridge	General
503	Lump	Sum	Cofferdams, cribs and sheeting									Lump
503	1,301	Cu. Yds.	Unclassified excavaton	165	158	184	163	341	176	114		
505	Lump	Sum	Test pile									Lump
506	Lump	Sum	Pile test load									Lump
506	2	Each	Subsequent pile test load									2
507	16,460	Lin. Ft.	12" ϕ Cast-in-place reinforced concrete piles	1,920	1,760		2,700	3,840	3,840	2,400		
507	2,070	Lin. Ft.	Prebored holes	640	700		730					
509	468,367	Lbs.	Reinforcing steel	9472	9063	12,952	15,776	23,978	17,379	11,195	365,087	3,465 ④
511	292	Cu. Yds.	Class C concrete, abutments	143	149							
511	80	Cu. Yds.	Class C concrete, retaining walls above footings			80						
511	84	Cu. Yds.	Class C concrete, retaining wall footings			84						
511	370	Cu. Yds.	Class C concrete, piers above footings				69	86	134	81		
511	243	Cu. Yds.	Class C concrete, pier footings				34	82	73	54		
511	1,345	Cu. Yds.	Class S concrete, superstructure								1345	
512	5	Sq. Yds.	Type "B" waterproofing			5						
512	45	Lin. Ft.	Premolded sealing strip as per plan			45						
513	1,906,700	Lbs.	Structural steel (See Proposal Note)					112,200	287,500	171,400	1,335,600	
514	1,906,700	Lbs.	Field painting of new structural steel; System A					112,200	287,500	171,400	1,335,600	
516	140	Sq. Ft.	1" Preformed expansion joint filler			140						
518	145	Cu. Yds.	Porous backfill	48	49	48						
518	159	Lin. Ft.	6" perforated, helical corrugated steel pipe, 707.01	81	78							
518	121	Lin. Ft.	6" non-perforated, helical corrugated steel pipe including specials, 707.01	58	63							
518	30	Each	Scuppers including supports									30
601	1,760	Sq. Yds.	Crushed aggregate slope protection									1,760
625			For 625 Lighting Quantities see sheet No. 363.									
523	3	Hours	Dynamic pile tests									3
845	4,334	Sq. Yds.	Latex modified concrete overlay (1½" thick) as per plan (See Proposal Note)								4334	

GENERAL NOTES

REFERENCE shall be made to Standard Drawings BR-1-67, Sheet 1 revised 10-15-71, SD-1-69 sheets 1, 2, 3, and 4 dated 6-12-69, RB-1-55 revised 2-2-59, AS-1-72 dated 6-30-72 and to Supplemental Specifications 845 dated 3-2-81, 836 dated 3-12-75, 953 dated 8-21-80. and to Lighting Standards HL-4 & HL-7 both dated 1-21-76, HL-5 dated 9-6-73 and HL-19 dated 3-22-77.

DESIGN SPECIFICATIONS: This structure conforms to "Standard Specifications for Highway Bridges" adopted by the American Association of State Highway Officials, 1969, including the Ohio "Supplement" to these specifications.

DESIGN DATA:

Design Loading	– HS 20-44 and the Alternate Military Loading
Concrete Class S	– unit stress 1,200 p.s.i. for superstructure
Class C	– unit stress 1,333 p.s.i. for substructure
Structural Steel	– ASTM A36 – unit stress 20,000 p.s.i.
Reinforcing Steel	– ASTM A615, A616 or A617 – unit stress 20,000 p.s.i. Spiral reinforcement may be plain bars ASTM A82 or A615.

CONSTRUCTION CLEARANCE of 20 feet vertically above the top of the railroad rails and 8 feet horizontally from the center of tracks shall be maintained at all times.

RAILROAD AERIAL LINES will be relocated by the Railroad. The Contractor shall use all precautions necessary to see that lines are not disturbed during the construction stage and shall cooperate with the Railroad in the relocation of these lines. The cost of the relocation shall be included in the railroad force account work.

PILES shall be driven to a minimum bearing capacity of 40 tons per pile for the abutments and 50 tons per pile for the piers.

PREFORMED EXPANSION JOINT FILLER in the railing parapet deflection joints may be either ½" gray sponge rubber or ½" gray cellular polyvinyl chloride (PVC) sponge. If rubber is used it shall meet the requirements of AASHTO M-153. (Included with Superstructure Concrete for payment)

MINIMUM BAR LAP shall be 30 diameters.

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5	OHIO		

273/443

BELMONT COUNTY

BEL-7-11.89

BRIDGE SEAT REINFORCING
Reinforcing steel in the vicinity of the bridge seat shall be accurately placed to avoid interference with the drilling of bearing anchor holes or the pre-setting of bearing anchors.

④ - Rear and Forward abutment wingwall reinforcing bars.

BACKWALL CONCRETE: In addition to the provisions of 511.08, backwall concrete or backwall concrete above the optional construction joint at the approach slab seat shall not be placed until after the deck concrete in the span adjacent to the backwall has been placed.

CURING, SUPERSTRUCTURE CONCRETE: All superstructure concrete, surfaces of which are to be overlaid with Latex Concrete, shall be cured using Method (a) Water Curing, 511.14. (Not Suppl. Spec. 836)

EMBANKMENT CONSTUCTION: The embankments shall be constructed to the level of the subgrade for a minimum distance of 200 feet back of the abutments. After a 90 day waiting period, excavation may be made for the Abutments, Retaining Walls, and Piers Nos. 1, 2, 6 and 7.

BEARING ANCHORS: At the option of the Contractor, bearing anchors (or formed holes), located and supported by templates, may be cast in place.

For additional notes, see sheet 15/28.

7-15-81
Revised 8-23-79

3/28

STICKLEN - BELSHEIM & ASSOCIATES ENGINEERS
WORTHINGTON OHIO

ESTIMATED QUANTITIES & GENERAL NOTES
BRIDGE No. BEL-7-1197
OVER
CONSOLIDATED RAIL CORP.
STA. 633+99.75
640+50.25
BELMONT CO.

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
DCH 3-4-10	R.D.Y.		VLA 7-9-70	DCH	4/4/10	1/77 5/23/79

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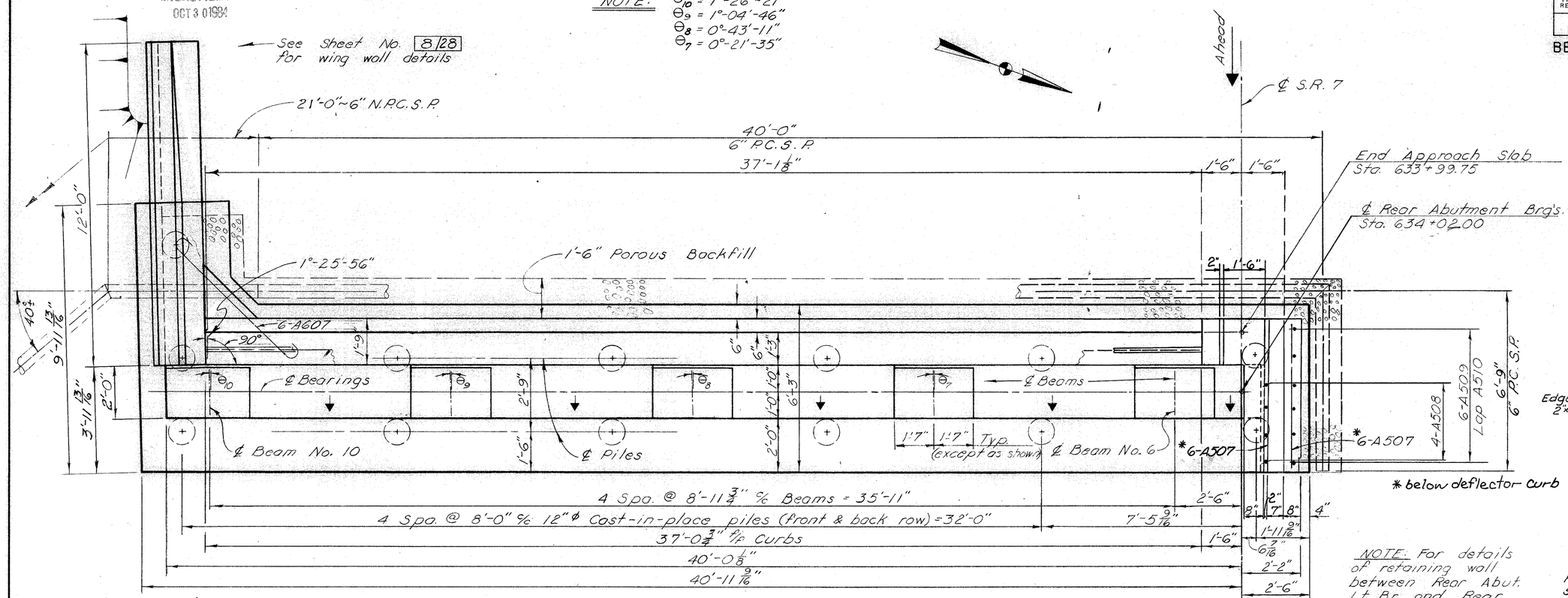
FHWA REGION	STATE	PROJECT	
5	OHIO		

274/443

BELMONT COUNTY

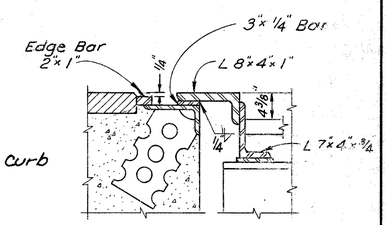
BEL-7-11.89

NOTE: θ_{10} = 1°-26'-21"
θ_9 = 1°-04'-46"
θ_8 = 0°-43'-11"
θ_7 = 0°-21'-35"



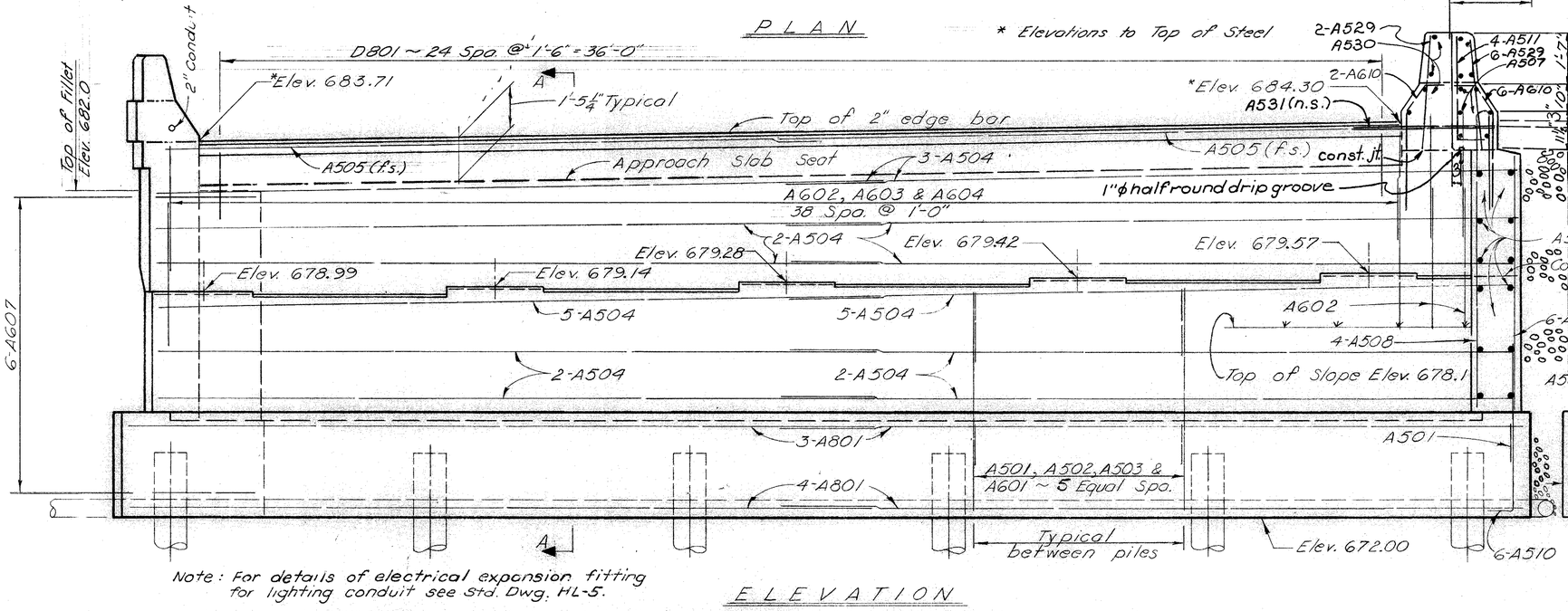
PLAN

NOTE: For details of retaining wall between Rear Abut. Lt. Br. and Rear Abut. Rt. Br. see Sheet No. 9/28



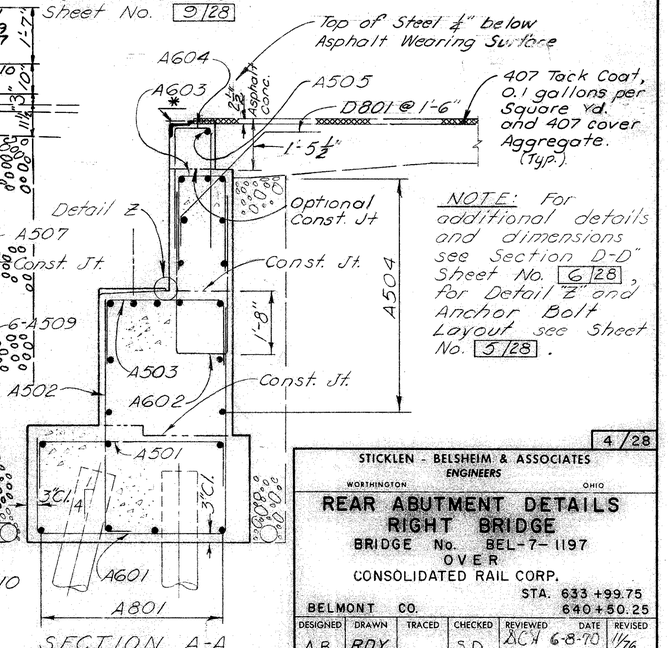
TYPICAL ROADWAY END DAM DETAIL

For additional details see Std. Dwg. SD-1-69, sh 1 of 4.



Note: For details of electrical expansion fitting for lighting conduit see Std. Dwg. HL-5.

ELEVATION



SECTION A-A

NOTE: For additional details and dimensions see Section D-D" Sheet No. 6/28, for Detail "Z" and Anchor Bolt Layout see Sheet No. 5/28.

LEGEND

f.s. = far side
N.P.C.S.P. = Non-Perforated Corrugated Steel Pipe
P.C.S.P. = Perforated Corrugated Steel Pipe

4/28

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REAR ABUTMENT DETAILS
RIGHT BRIDGE
BRIDGE No. BEL-7-1197
OVER
CONSOLIDATED RAIL CORP.
STA. 633+99.75
640+50.25
BELMONT CO.

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
AB	R.D.Y.		S.D.	DCH	6-8-70	11/76 5/23/79

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OCT 3 01984

NOTE: For details of retaining wall between Rear Abut. Lt. Br. and Rear Abut. Rt. Br. see Sheet No. 9/28.

LEGEND
As. = For side
N.P.C.S.P. = Non-Perforated Corrugated Steel Pipe
P.C.S.P. = Perforated Corrugated Steel Pipe

See Sheet No. 8/28 for wing wall details.

FHWA REGION	STATE	PROJECT	
5	OHIO		

275/443

BELMONT COUNTY
BEL-7-11.89

REAR ABUTMENTS				FORWARD ABUTMENTS			
Beam	⊖	X	Y	Beam	⊖	X	Y
1 thru 6	0°	10½"	0"	1 thru 5	1°-47'-17"	10½"	5/16"
7	0°-21'-35"		1/16"	6 thru 10	1°-05'-35"	10½"	3/16"
8	0°-43'-11"		1/8"				
9	1°-04'-46"		3/16"				
10	1°-26'-21"		1/4"				

End Appr. Slab Sta. 634+84.75

℄ Rear Abut. Brg's. Sta. 634+87.00

Ahead

℄ S.R. 7

1'-0" 1'-8" 2" 7" 8"

34'-0" 6" P.C.S.P.

33'-8¾"

5'-6" ~ 6" N.P.C.S.P.

NOTE: Special care shall be taken in placing reinforcing steel in the vicinity of the bearings so as to avoid interference with drilling of bearing anchor holes or the pre-setting of bearing anchors.

1'-6" Porous Backfill

6-A607

96°-50'-34"

℄ Piles

℄ Bearing

℄ Beam No. 1

℄ Beam No. 5

1'-7" 1'-7" Typ. except as shown

1'-6"

12'-0"

10'-0"

15'-6" 6" N.P.C.S.P.

2'-3" 6" 6" 1'-3" 1'-0" 6'-3" 2'-9" 2'-0" 1'-6" 1'-0" 2¾"

1'-0"

Back Row Piles
Front Row Piles

1'-8" 14'-2" 7'-1" 13'-10⅜" 6'-9⅜"

45pc. @ 7'-1" % 12" ϕ Cast-in-place piles = 28'-4"

1'-4" 34'-3" ℄ Curbs

2'-6" 4 Spa. @ 8'-1½" % Beams = 32'-6"

3'-0"± 1'-6" 36'-4⅛" 2'-0⅛"

4" 38'-1¼"

PLAN

3-A533@11" 3-A529@11"
5-AG10@5½"
A532
℄ 1" ϕ half round drip groove
A609
A608

D801 ~ 22 Spa @ 1'-6" = 33'-0"

* Elev. 684.64
A529 (n.s.)
A512 (f.s.)
3-A514
Elev. 679.89
Elev. 679.76

Top of 2" edge bar
Approach Slab Seat
A602, A603 & A604 34 Spa @ 1'-0"

Elev. 679.63
Elev. 679.50
2-A514
5-A514
Elev. 679.37
Top of Slope Elev. 678.4
2-A514

* Elevations to Top of Steel

* Elev. 684.09
1'-5½" Typical
2" Conduit
Top of Fillet Elev. 682.3

6-A607

3-A802
4-A802

9" 9"
A501, A502, A503 & A601 ~ 4 Equal Spa.
Typical between piles

Elev. 672.30

ELEVATION

℄ Beam
℄ Abut. Brg's.
X
Y

ANCHOR BOLT LAYOUT

407 Tack coat, 0.1 gal/yd² at 407 cover aggregate

Top of Steel 4" below Asphalt Wearing Surface
A604
A603
Optional Const Jt.
Detail "Z"

A512
2½" Asphalt Conc.
1'-3"
D801 @ 1'-6"
Const. Jt.
1'-8"
A503
A602
A501
A502
3'-0"
1'-4"
3'-2"
Const. Jt.
A514

DETAIL "Z"

Typ. for Front Row Piles
1'-6" A601 2'-0"
A802
6'-3"

SECTION C-C

NOTE: For additional details and dimensions see Section D-D Sheet No. 6/28.

Note: For details of electrical expansion fitting for Lighting Conduit see Std. Dwg. HL-5.

5/28

STICKLEN - BELSHEIM & ASSOCIATES
ENGINEERS
WORTHINGTON OHIO

REAR ABUTMENT DETAILS
LEFT BRIDGE
BRIDGE No. BEL-7-1197
OVER
CONSOLIDATED RAIL CORP.
STA. 633+99.75
640+50.25
BELMONT CO.

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
AB	R.D.Y.		S.D.	BCH	6-8-70	11/76 5/23/79

D.G.M. - 6-14-79

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FHWA REGION	STATE	PROJECT	
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276
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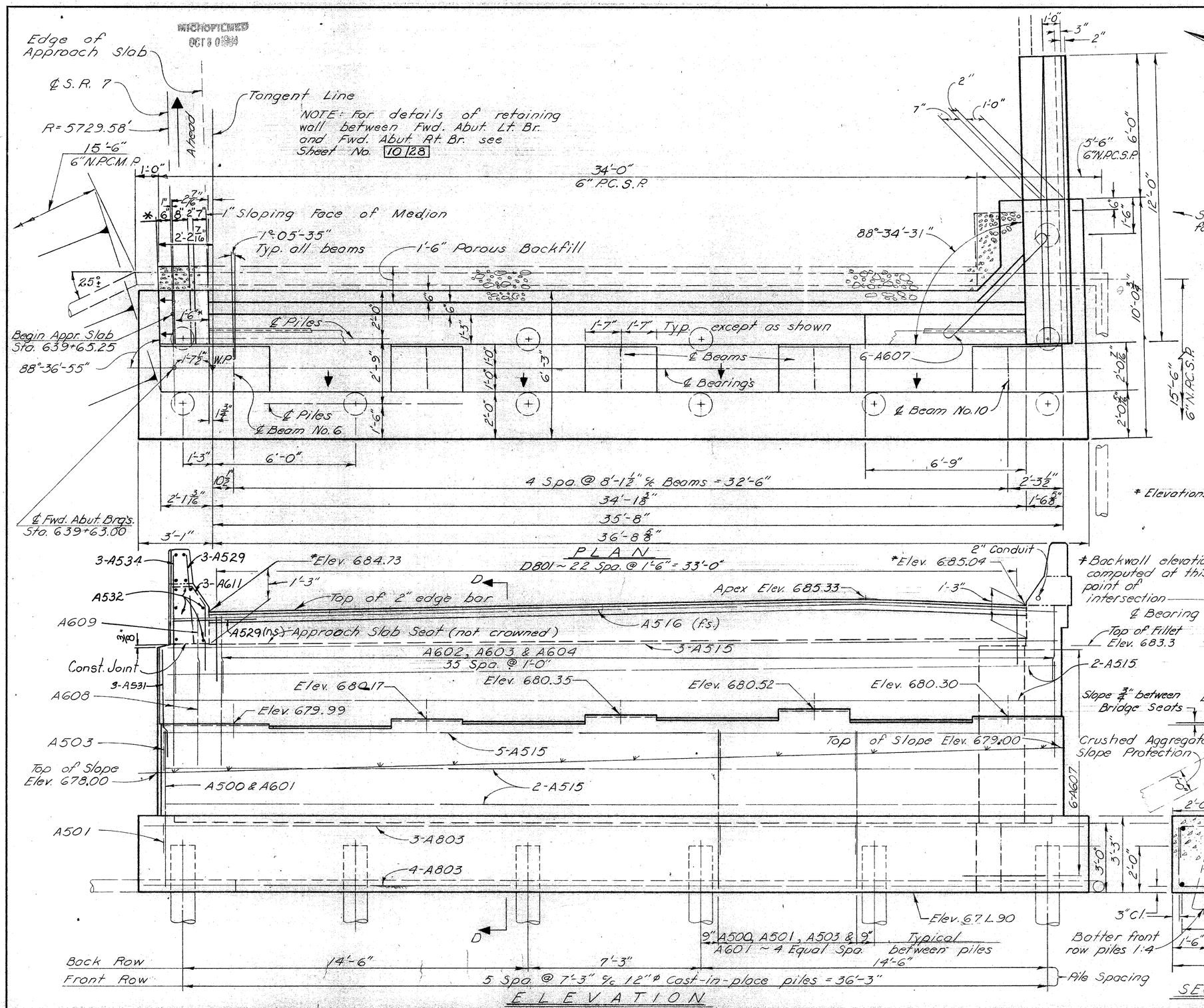
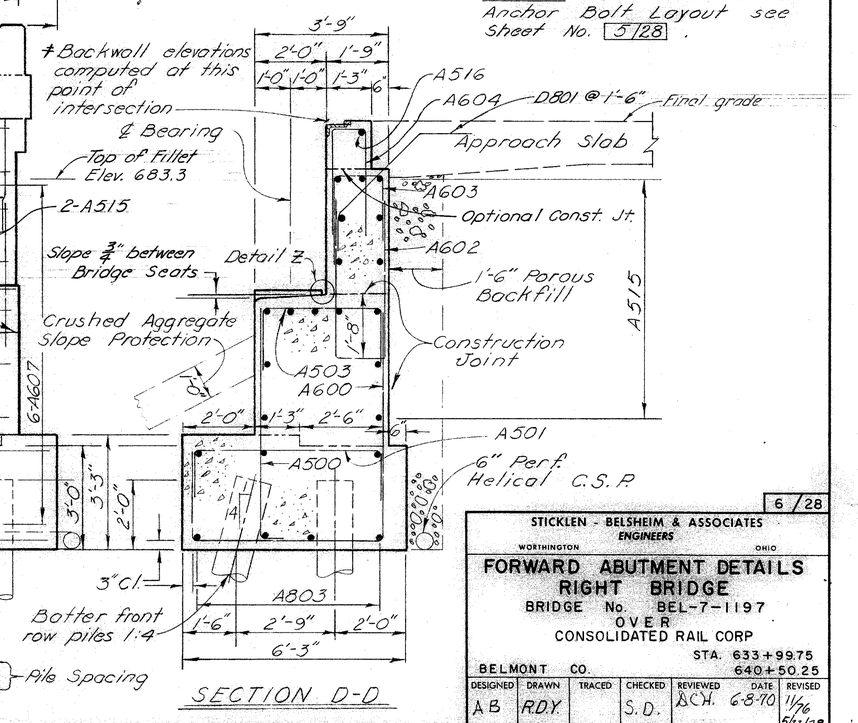
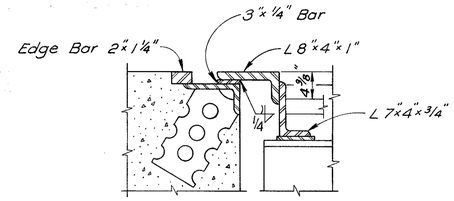
BELMONT COUNTY
BEL-7-11.89







TYPICAL ROADWAY END DAM DETAIL
For additional details see Std. Dwg. SD-1-69, sheet 1 of 4.

LEGEND
f.s. = Far side
N.P.C.S.P. = Non-Perforated Corrugated Steel Pipe
P.C.S.P. = Perforated Corrugated Steel Pipe
* Radial Dimension

NOTE: For details of electrical expansion fitting for lighting conduit see Std. Dwg. HL-5

NOTE: For Detail Z and Anchor Bolt Layout see Sheet No. 5/28.

6/28

STICKLEN - BELSHEIM & ASSOCIATES
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WORTHINGTON OHIO

FORWARD ABUTMENT DETAILS
RIGHT BRIDGE
BRIDGE No. BEL-7-1197
OVER
CONSOLIDATED RAIL CORP
STA. 633+99.75
640+50.25
BELMONT CO.

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
AB	R.D.Y.		S.D.	DCH.	6-8-70	11/76 5/23/79

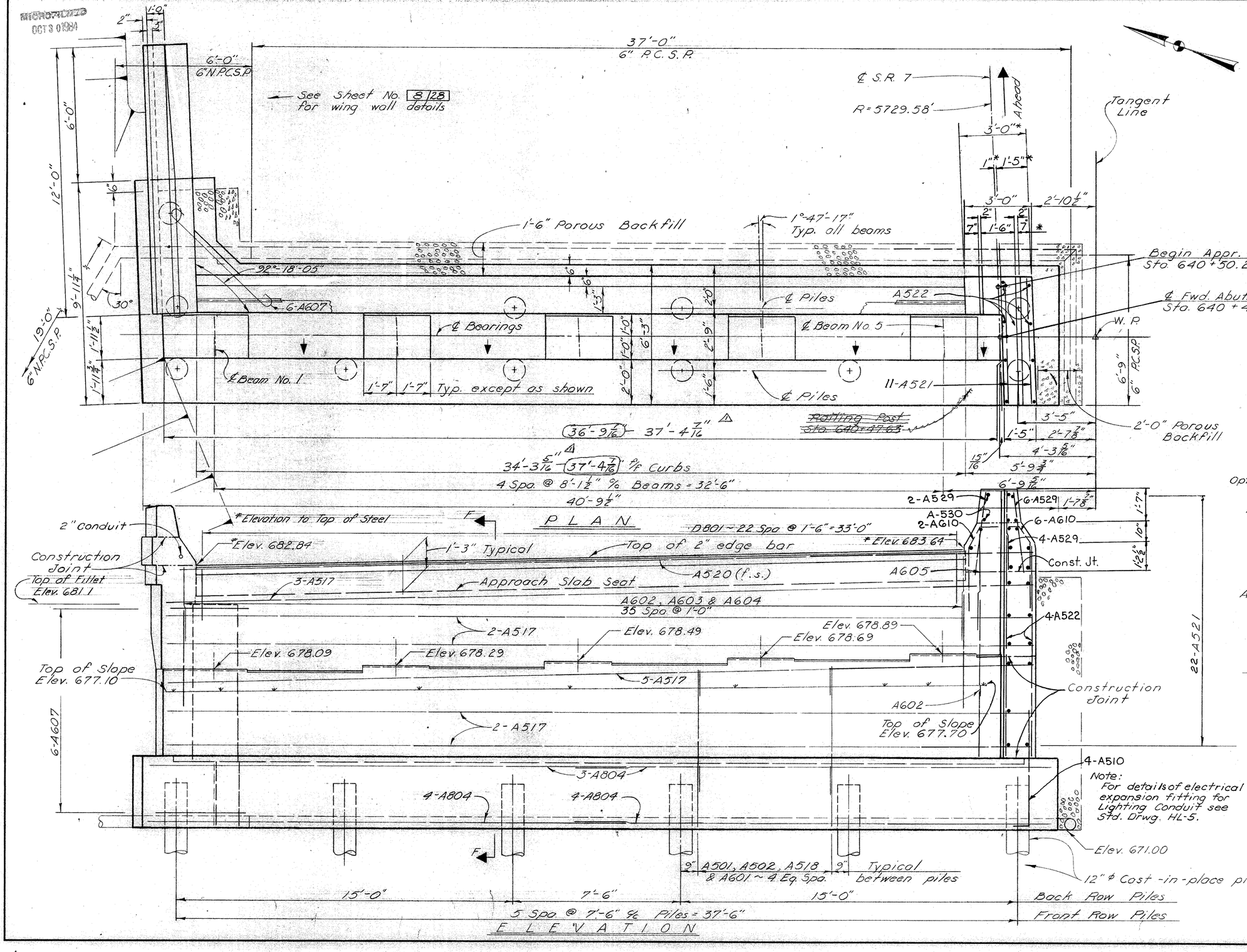
MICROFILMED
OCT 3 0 1984

FHWA REGION	STATE	PROJECT	
5	OHIO		

277/443

BELMONT COUNTY

BEL-7-11.89

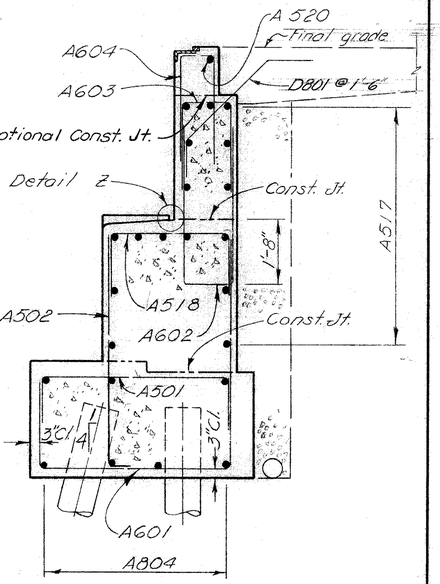


LEGEND

f.s. = far side
* = Radial Dimensions
N.P.C.S.P. = Non-Perforated Corrugated Steel Pipe
P.C.S.P. = Perforated Corrugated Steel Pipe

NOTE: For details of retaining wall between Fwd. Abut. Lt. Br. and Fwd. Abut. Rt. Br. see Sheet No. 10/28.

NOTE: For additional details and dimensions see Section D-D & E-E Sheet No. 6/28, for Detail Z and Anchor Bolt Layout see Sheet No. 5/28.



SECTION F-F

7/28

STICKLEN - BELSHEIM & ASSOCIATES
ENGINEERS
WORTHINGTON OHIO

FORWARD ABUTMENT DETAILS
LEFT BRIDGE
BRIDGE No. BEL-7-1197
OVER
CONSOLIDATED RAIL CORP.
STA. 633+99.75
640+50.25
BELMONT CO.

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
AB	R.D.Y.		S.D.	DCH	6-8-70	11/76 5/23/79

Revised △ 2-9-82

MICROFILMED
OCT 3 0 1984

FHWA REGION	STATE	PROJECT	
5	OHIO		

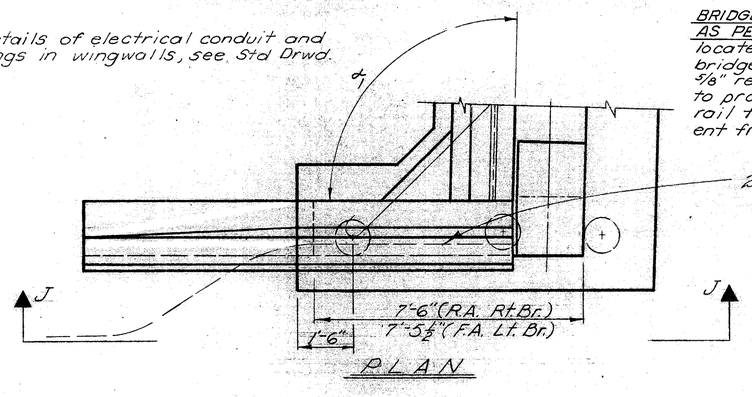
278/443

BELMONT COUNTY
BEL-7-11.89

TABLE OF ELEVATIONS AND DIMENSIONS

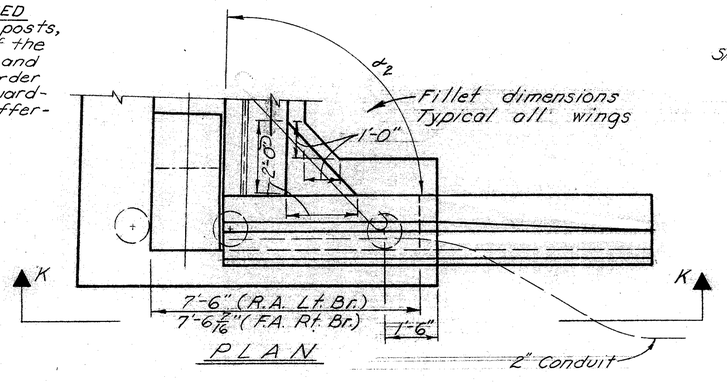
LOCATION	Elev. "A"	Elev. "B"	Elev. "C"	Elev. "D"	Elev. "E"	Elev. "F"	Elev. "G"	Elev. "H"	Dimension "J"	Dimension "K"	Dimension "L"	Dimension "M"	Bar "A"	α_1	α_2
Rear Abut. Rt. Br.	683.54	683.61	678.99	672.00	—	—	—	—	2'-9¼"	2'-6⅛"	—	—	A610	91°-25'-56"	—
Rear Abut. Lt. Br.	—	—	—	—	683.94	683.99	679.37	672.30	—	—	2'-9⅝"	2'-6⅝"	A610	—	96°-50'-34"
Fwd. Abut. Rt. Br.	—	—	—	—	684.82	684.92	680.30	671.90	—	—	4'-1¾"	2'-6⅛"	A612	—	88°-34'-31"
Fwd. Abut. Lt. Br.	682.53	682.71	678.09	671.00	—	—	—	—	2'-10¼"	2'-5⅛"	—	—	A610	92°-18'-05"	—

Note:
For details of electrical conduit and couplings in wingwalls, see Std Drwd. HL-5.

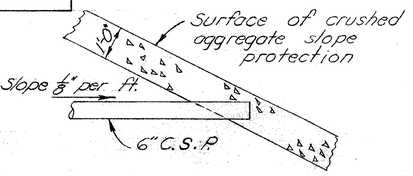


PLAN

BRIDGE TERMINAL ASSEMBLY TYPE A MODIFIED AS PER PLAN : The first, second and third posts, located 2'-3", 6'-3" and 12'-6" from the end of the bridge parapet, shall be shifted 2½", 1¾" and ⅝" respectively toward the roadway in order to provide proper attachment of the guardrail to the parapet which has a shape different from that shown on GR-3.



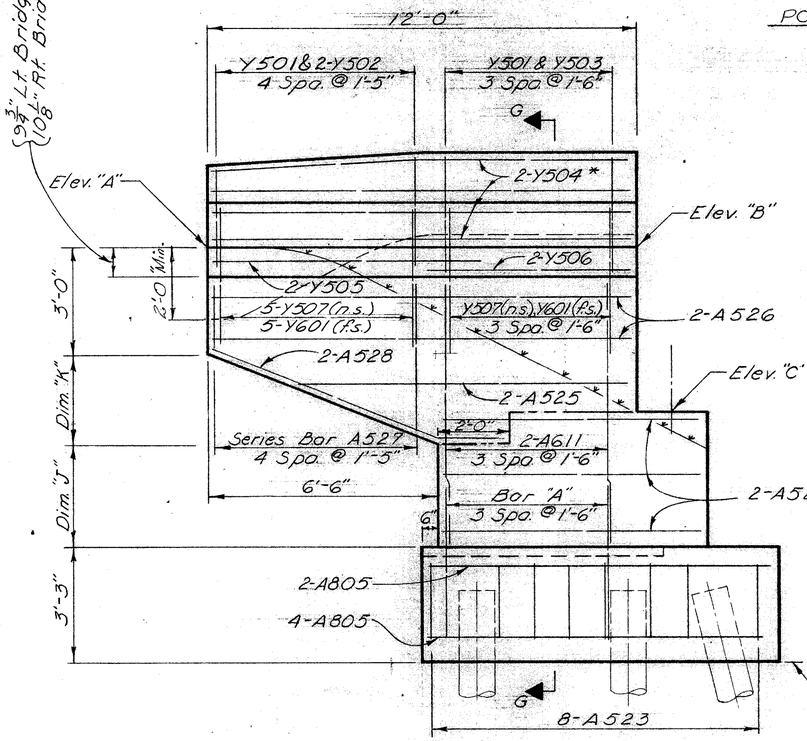
PLAN



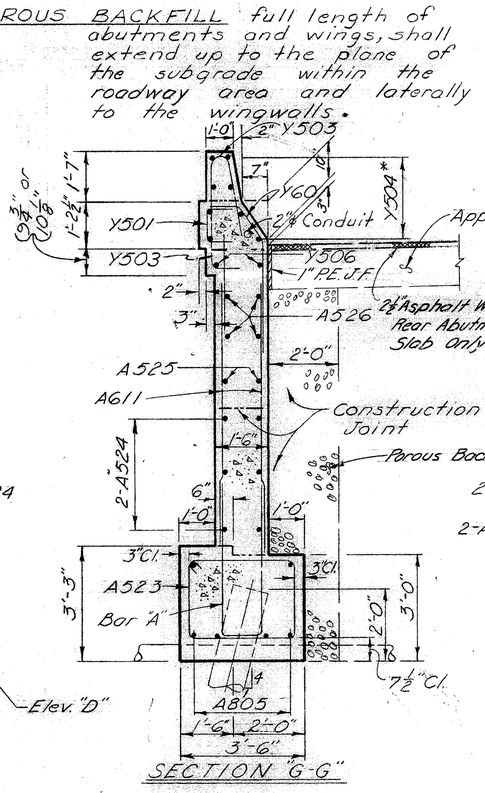
METHOD OF TERMINATING 6" C.S.P.

BRIDGE TERMINAL ASSEMBLY-TYPE "A" (Item 606 in roadway quantities) are required at Rear Abut. Rt. Bridge, Fwd. Abut. Lt. Bridge and Fwd. Abut. Rt. Bridge. (See STD. DWG. GR-3) Weelguard is not required. Concrete anchor assemblies per Std. Construction Drawings GR-3 and GR-1 shall be placed during parapet construction for attachment of guardrail to the concrete parapets.

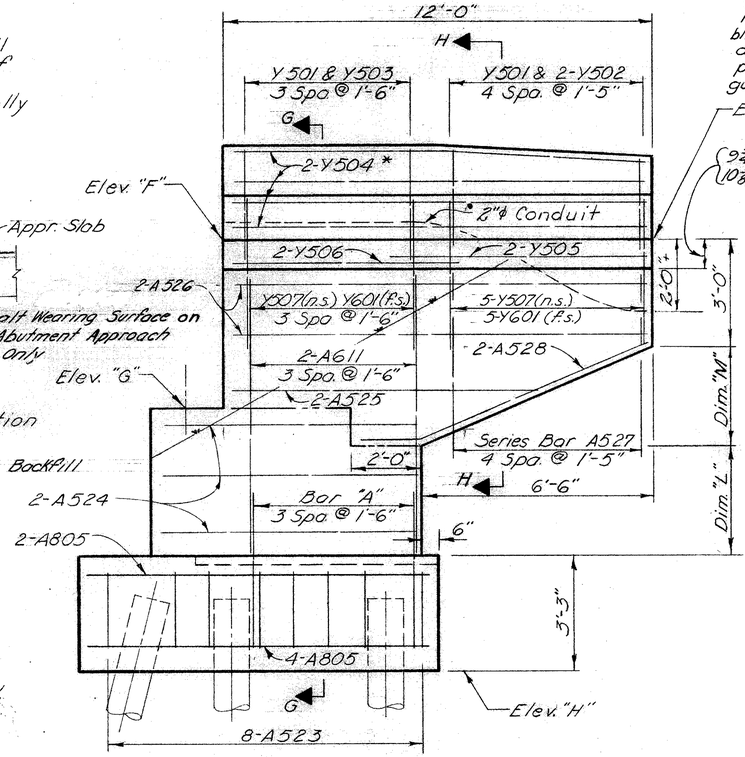
POROUS BACKFILL full length of abutments and wings, shall extend up to the plane of the subgrade within the roadway area and laterally to the wingwalls.



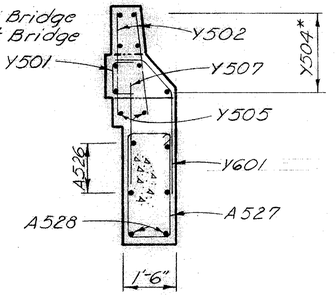
ELEVATION VIEW J-J



SECTION "G-G"



ELEVATION VIEW K-K



SECTION "H-H"

LEGEND
n.s. = near side
F.s. = far side
* = Field bend where necessary
P.E.J.F. = Preformed Expansion Joint Filler

8/28

STICKLEN - BELSHEIM & ASSOCIATES
ENGINEERS
WORTHINGTON OHIO

WINGWALL DETAILS

BRIDGE No. BEL-7-1197
OVER
CONSOLIDATED RAIL CORP.
STA. 633+99.75
640+50.25
BELMONT CO.

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
AB	R.D.Y.		S.D.	ACH	6-8-90	11/96

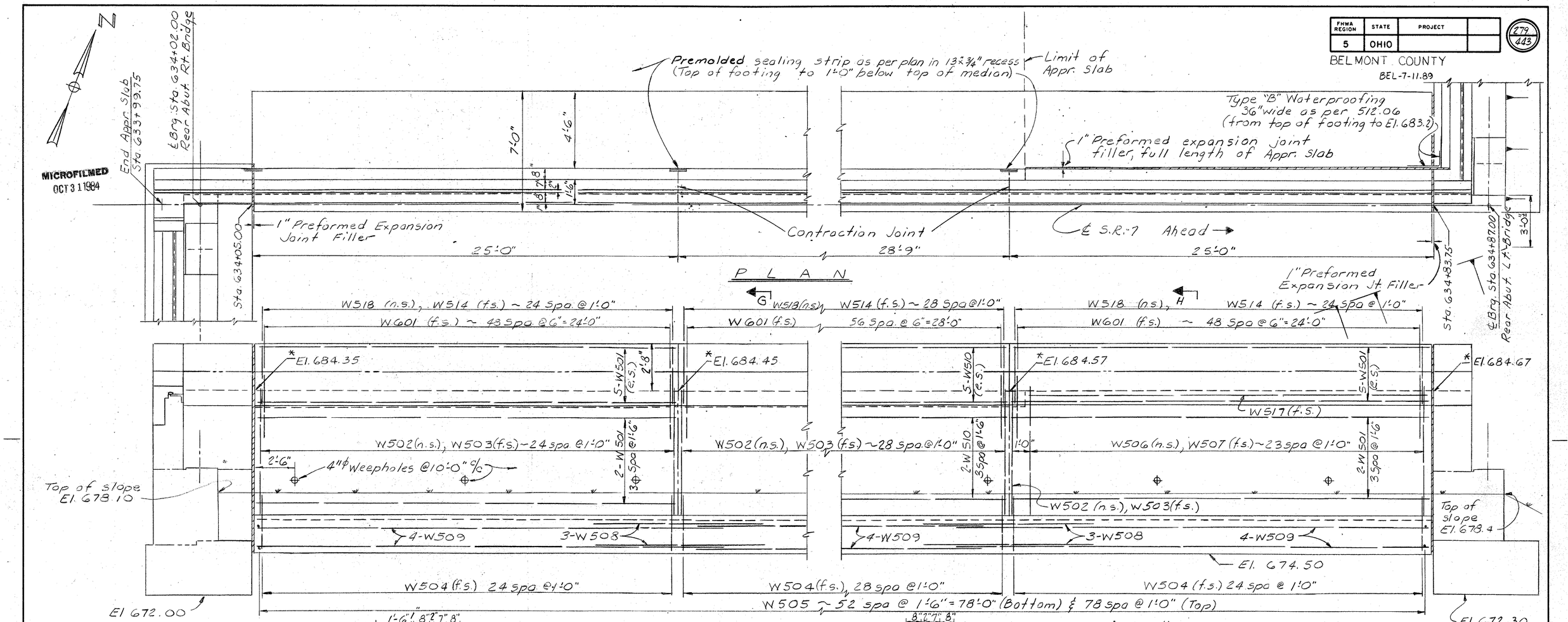
FHWA REGION	STATE	PROJECT	
5	OHIO		

279/443

BELMONT COUNTY

BEL-7-11.89

MICROFILMED
OCT 31 1984



NOTES

(a) Footings are designed for a maximum bearing pressure of 1.4 tons per square foot

(b) Coeff. of friction "f" of masonry on subfoundation is equal to 0.45

LEGEND:
(f.s.) = far side
(n.s.) = near side
(e.s.) = each side

This sheet replaces sh. 279 dated 7/8/70

STATE OF OHIO
DEPARTMENT OF TRANSPORTATION
BUREAU OF BRIDGES AND STRUCTURAL DESIGN

9/28

RETAINING WALL DETAILS
(REAR ABUTMENT)
BRIDGE NO. BEL-7-1197
OVER
CONSOLIDATED RAIL CORP
BELMONT CO.
STA 633+99.75
640+50.25

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
WTF	WTF			WJJ	5-21-79	5/23/79

MICROFILMED
OCT 3 1 1984

FHWA REGION	STATE	PROJECT	
5	OHIO		

280/443

BELMONT COUNTY
BEL-7-11.89

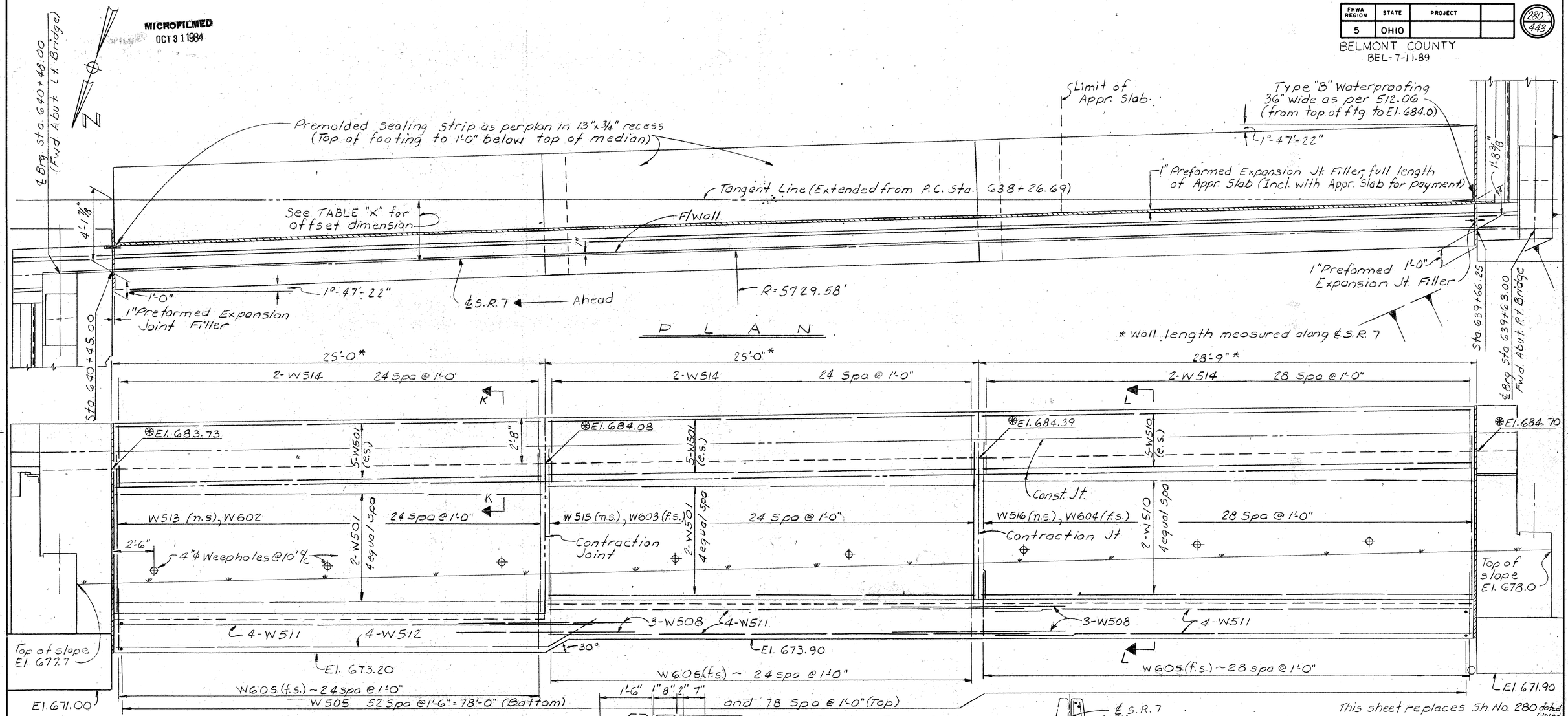
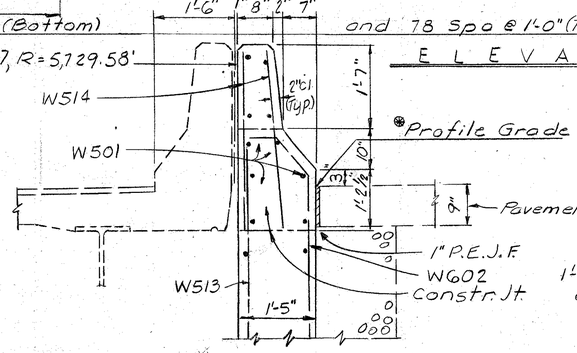
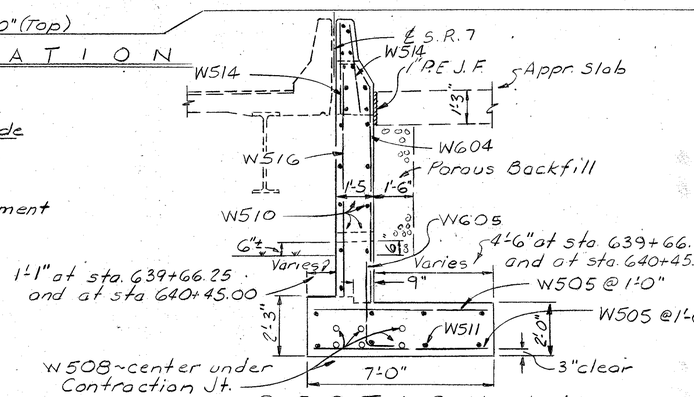


TABLE X	
STATION	OFFSET
640+45.00	4'-1 7/8"
640+40.00	3'-11 5/8"
640+30.00	3'-7 5/16"
640+20.00	3'-3 1/8"
640+10.00	2'-11 3/16"
640+00.00	2'-7 1/16"
639+90.00	2'-3 1/16"
639+80.00	2'-0 5/8"
639+70.00	1'-9 1/2"
639+66.25	1'-8 3/8"



E L E V A T I O N

S E C T I O N K-K



S E C T I O N L-L

This sheet replaces Sh. No. 280 dated 6/8/70

For additional notes and contraction joint detail see sheet 9/28.

LEGEND:
(f.s.) = far side
(n.s.) = near side
(e.s.) = each side

STATE OF OHIO
DEPARTMENT OF TRANSPORTATION
BUREAU OF BRIDGES AND STRUCTURAL DESIGN

10/28

RETAINING WALL DETAILS (FORWARD ABUTMENT)

BRIDGE No. BEL-7-1197
OVER
CONSOLIDATED RAIL CORP.
STA. 633+99.75
640+50.25
BELMONT CO.

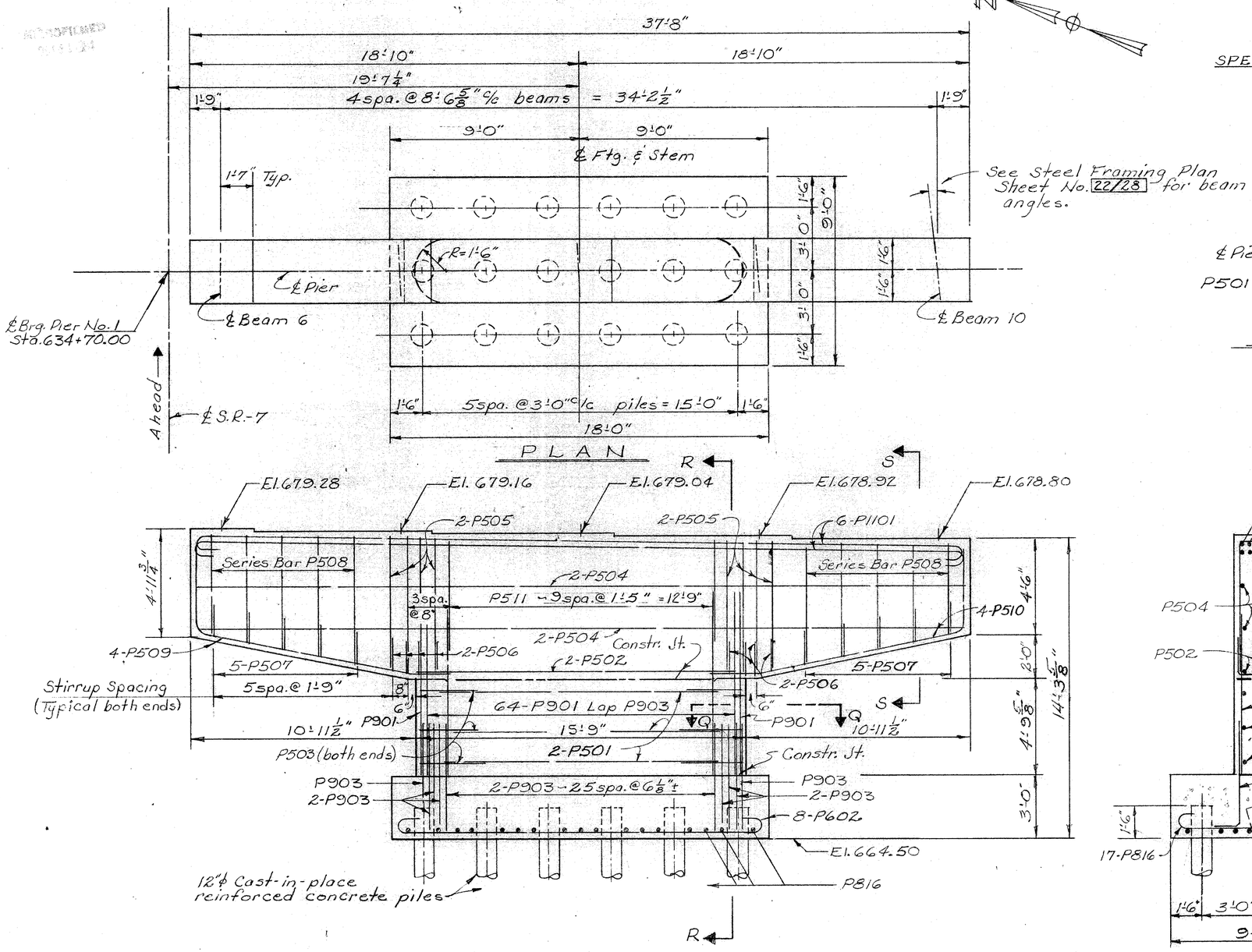
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
WTF	WTF			WJJ	5-21-79	5/23/79

N52077

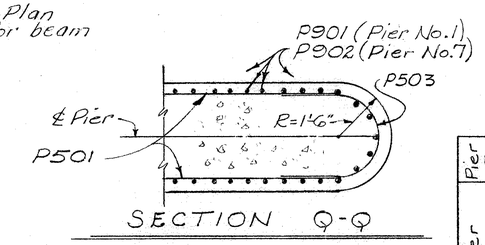
FHWA REGION	STATE	PROJECT	
5	OHIO		

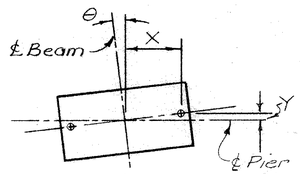
281/443

BELMONT COUNTY
BEL-7-11.89



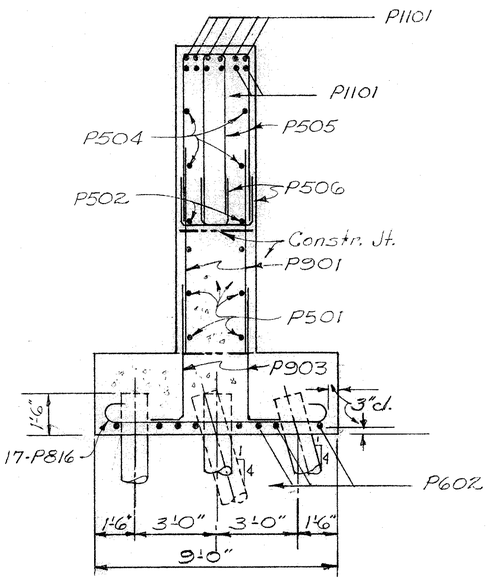
SPECIAL CARE shall be taken in placing reinforcing steel in the vicinity of the bridge seat so as to avoid interference with the drilling of bearing anchor holes or the pre-setting of bearing anchors.

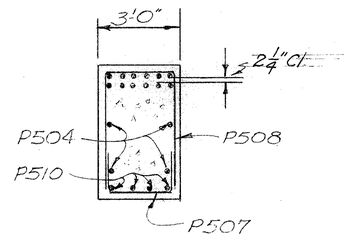




	BEAM	θ	X	Y
Pier 7	1 Thru 5	1°-47'-17"	1'-0½"	⅜"
Pier 1	6	0°	1'-0½"	0
	7	0°-21'-35"	"	1/16"
	8	0°-43'-11"	"	3/16"
	9	1°-04'-46"	"	¼"
	10	1°-26'-21"	"	5/16"

ANCHOR BOLT LAYOUT





NOTE: See Sheet No. 16/28 for PIER FOOTING LAYOUT and Location of Battered Piles.

11/28

STICKLEN - BELSHEIM & ASSOCIATES
ENGINEERS
WORTHINGTON OHIO

PIER No. 1
DETAILS
BRIDGE No. BEL-7-1197
OVER
CONSOLIDATED RAIL CORP.
STA. 633+99.75
640+50.25
BELMONT CO.

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
AB	DGH		LCT	DCH	6-8-70	6/19/74

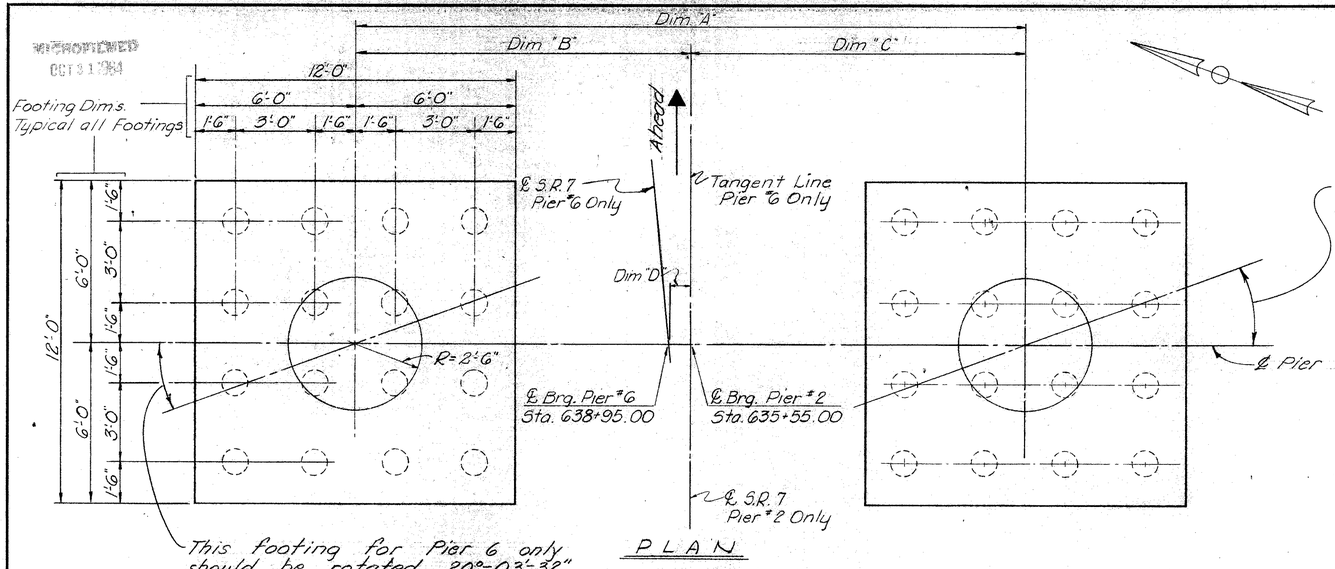
E.O. 671

FHWA REGION	STATE	PROJECT	
5	OHIO		

282/443

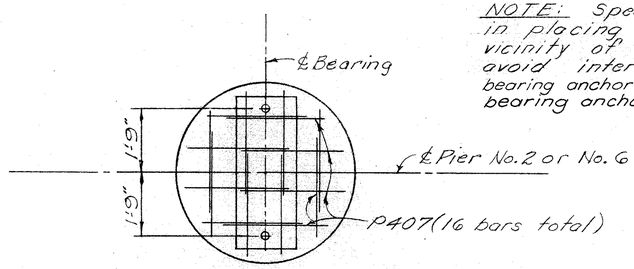
BELMONT COUNTY
BEL-7-11.89

APPROVED OCT 31 1969



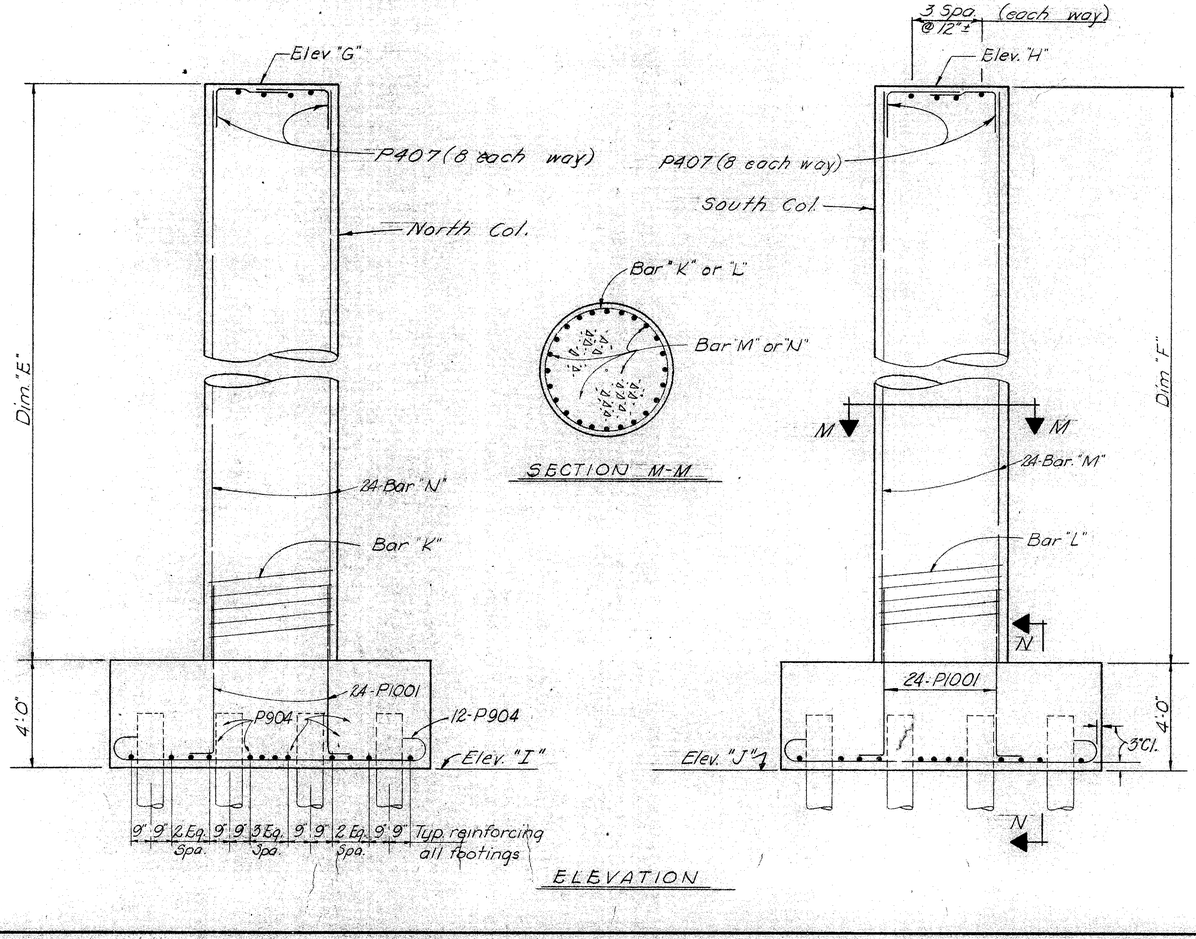
PLAN

See Sheet No. 16|28 for PIER FOOTING LAYOUT and location of Battered Piles.

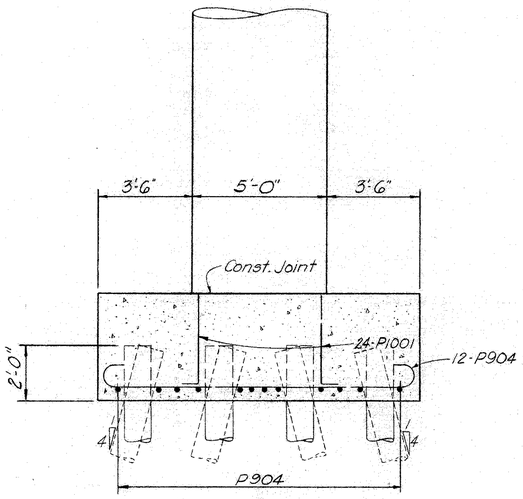


ANCHOR BOLT LAYOUT FOR BOX GIRDER BEARINGS

NOTE: Special care shall be taken in placing reinforcing steel in the vicinity of the bearings so as to avoid interference with drilling of bearing anchor holes or the pre-setting of bearing anchors.



ELEVATION



SECTION N-N

PIER DATA			
Location		Pier # 2	Pier # 6
Dimensions	Dim. "A"	22'-4 7/8"	25'-0"
	Dim. "B"	11'-2 7/16"	12'-10 7/8"
	Dim. "C"	11'-2 7/16"	12'-1 1/8"
	Dim. "D"	0	4 7/8"
	Dim. "E"	28'-1"	30'-4 3/8"
	Dim. "F"	28'-1"	32'-4 3/8"
Elevations	Elev. "G"	671.08	671.36
	Elev. "H"	671.08	671.36
	Elev. "I"	639.00	637.00
	Elev. "J"	639.00	635.00
Bars	Bar "K"	SP401	SP402
	Bar "L"	SP401	SP403
	Bar "M"	P1002	P1003
	Bar "N"	P1002	P1004

12/28

STICKLEN - BELSHEIM & ASSOCIATES ENGINEERS
WORTHINGTON OHIO

PIER No. 2 AND No. 6 DETAILS

BRIDGE No. BEL-7-1197 OVER
CONSOLIDATED RAIL CORP.
STA 633+99.75
640+50.25
BELMONT CO.

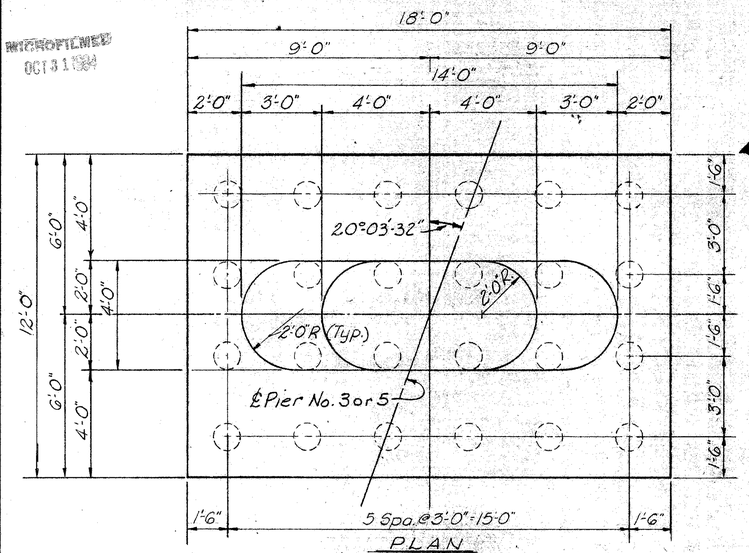
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
AB	DMK		LCT	ACH	6-8-70	

MICROFILMED
OCT 31 1989

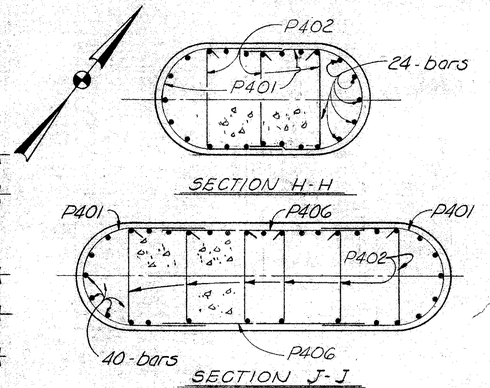
FHWA REGION	STATE	PROJECT	
5	OHIO		

283/443

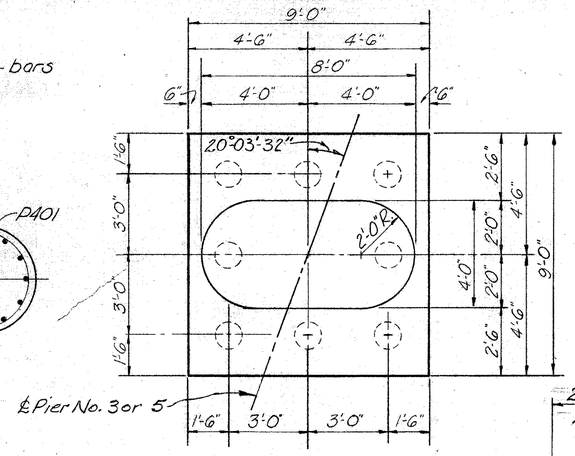
BELMONT COUNTY
BEL-7-11.89



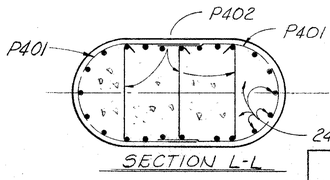
PLAN
Pier #3 - North Column
Pier #5 - South Column



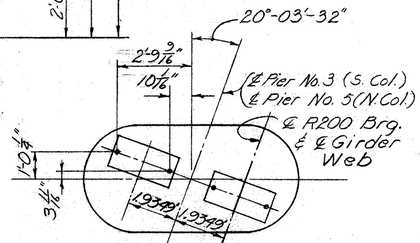
NOTE
See Sheet No. 16|28 for PIER FOOTING LAYOUT and location of Battered Piles.



PLAN
Pier #3 - South Column
Pier #5 - North Column



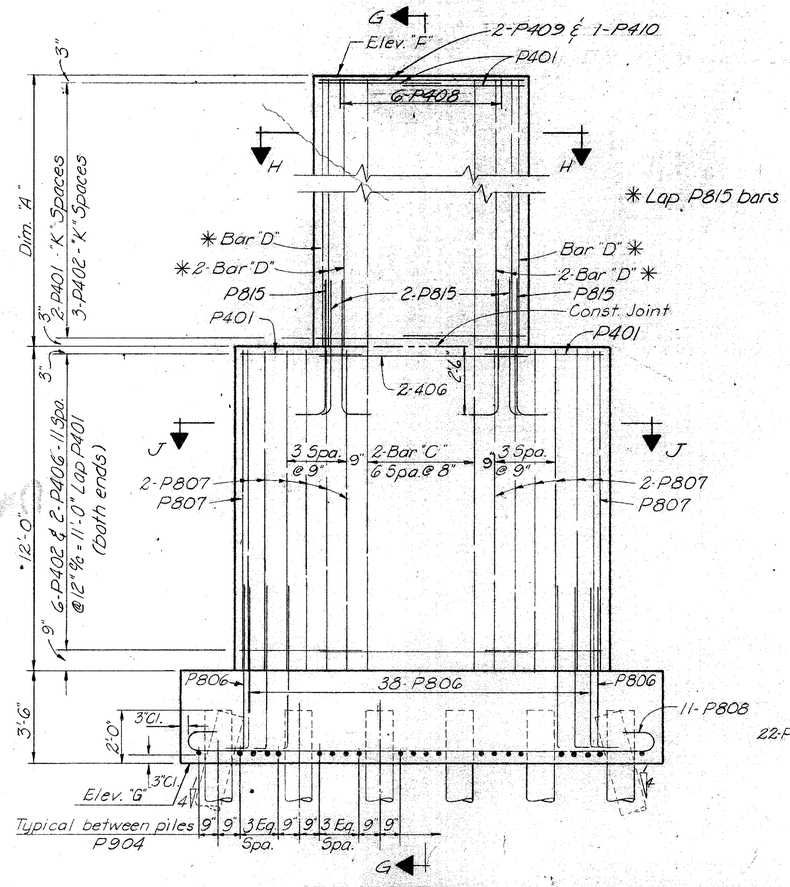
SECTION L-L



ANCHOR BOLT LAYOUT FOR BOX GIRDER BEARINGS

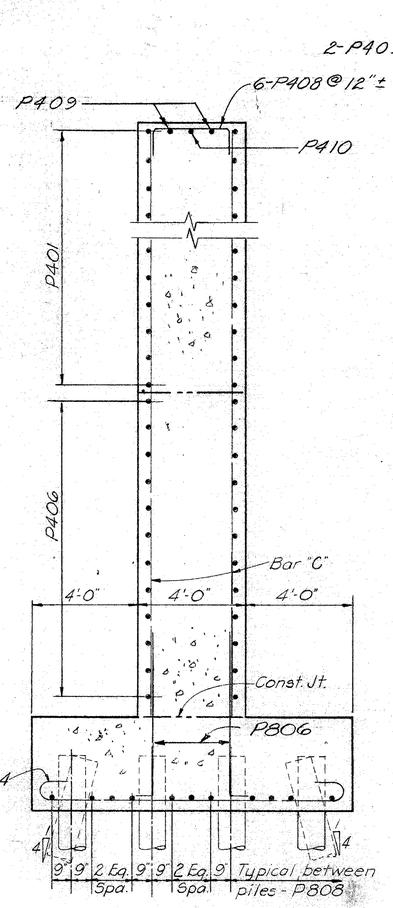
PIER DATA

Location		Pier No. 3 South Column	Pier No. 3 North Column	Pier No. 5 South Column	Pier No. 5 North Column
Dim's.	Dim "A"	—	14'-4 1/4"	17'-6 1/2"	—
	Dim "B"	24'-11 5/16"	—	—	25'-8 1/8"
Bars	Bar "C"	—	P809	P810	—
	Bar "D"	—	P811	P812	—
	Bar "E"	P813	—	—	P814
Elevations	Elev "F"	—	671.35	671.54	—
	Elev "G"	—	641.50	638.50	—
	Elev "H"	670.99	—	—	671.18
	Elev "J"	642.50	—	—	642.00
Spa's.	"K" Spaces	—	14 Spaces	17 Spaces	—

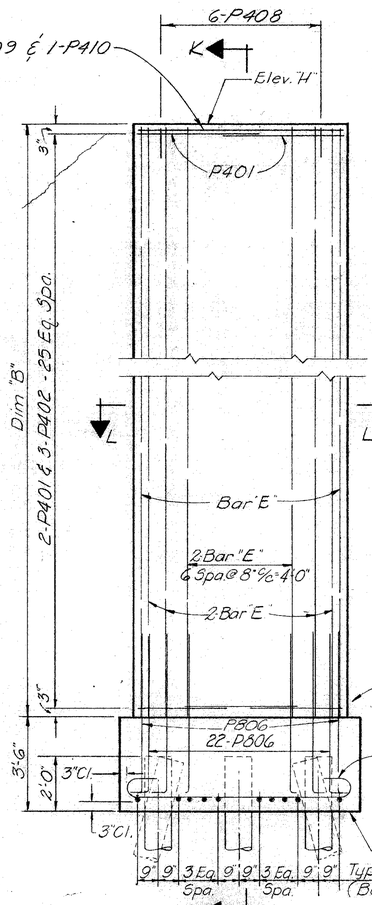


ELEVATION

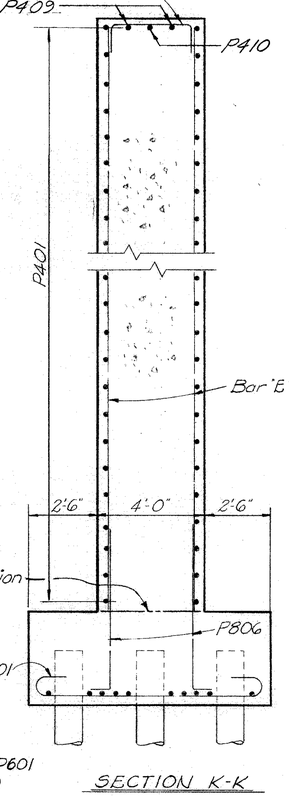
* Lap P815 bars



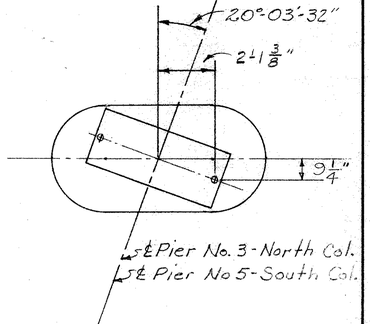
SECTION G-G



ELEVATION



SECTION K-K



ANCHOR BOLT LAYOUT FOR BOX GIRDER BEARINGS

NOTE
SPECIAL care shall be taken in placing reinforcing steel in the vicinity of the bearings so as to avoid interference with the *drilling of bearing anchor holes. 13/28

* Or the pre-setting of bearing anchors.

STICKLEN - BELSHEIM & ASSOCIATES
ENGINEERS
WORTHINGTON OHIO

PIER No. 3 AND No. 5 DETAILS

BRIDGE No. BEL-7-1197
OVER
CONSOLIDATED RAIL CORP.
STA. 633+99.75
640+50.25
BELMONT CO.

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
AB	JMK		LCT	DCV	6-8-70	

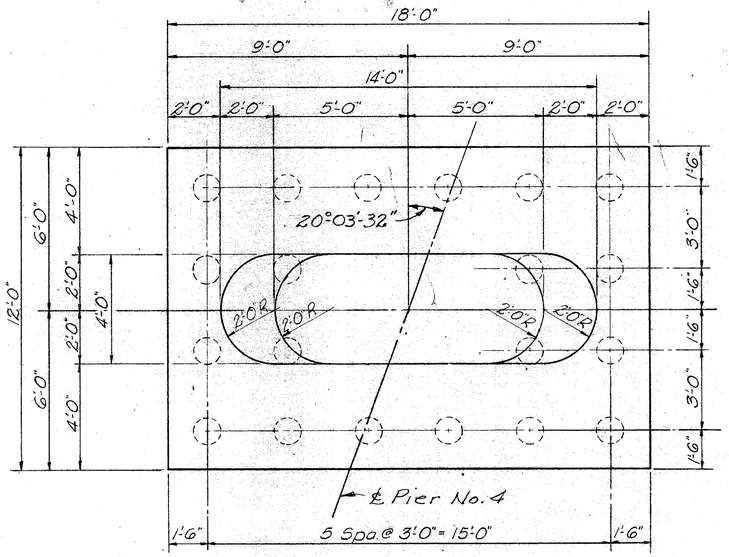
6-8-89

MICROFILMED
OCT 31 1990

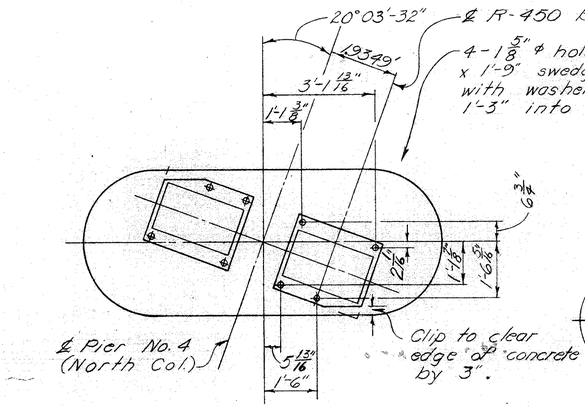
FHWA REGION	STATE	PROJECT	
5	OHIO		

284/443

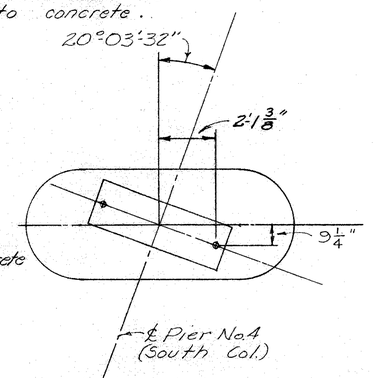
BELMONT COUNTY
BEL-7-11.89



PLAN
North Column & South Column



ANCHOR BOLT LAYOUT FOR BOX GIRDER EXPANSION BEARINGS



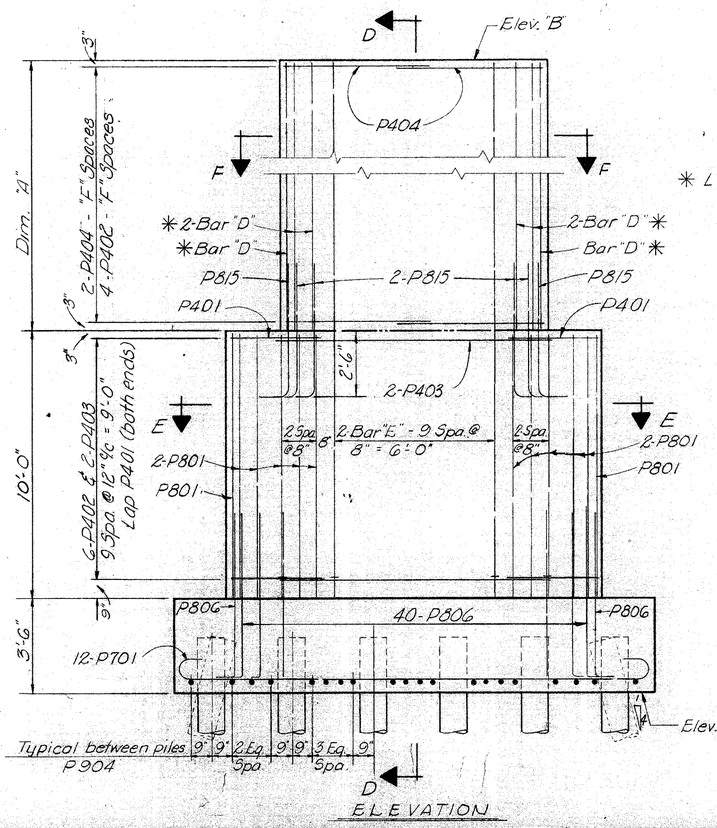
ANCHOR BOLT LAYOUT FOR BOX GIRDER FIXED BEARING

NOTE: SPECIAL care shall be taken in placing reinforcing steel in the vicinity of the bearings so as to avoid interference with drilling of bearing anchor holes or the pre-setting of bearing anchors.

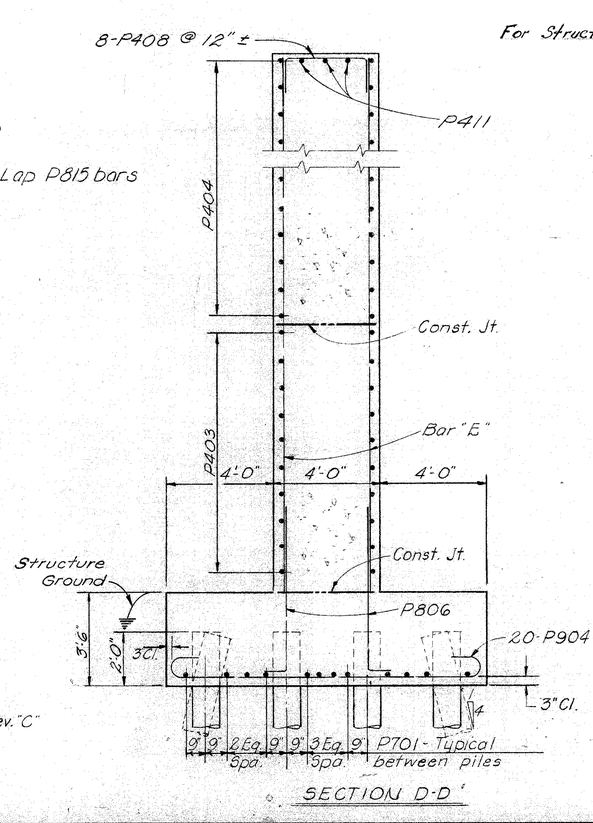
PIER DATA			
Location		North Column	South Column
Dim.	Dim. "A"	14'-2½"	16'-6⅝"
Elevs.	Elev. "B"	670.21	671.55
	Elev. "C"	642.50	641.50
Bars	Bar "D"	P802	P803
	Bar "E"	P804	P805
Spa's.	"F" Spa's.	14 Spaces	16 Spaces

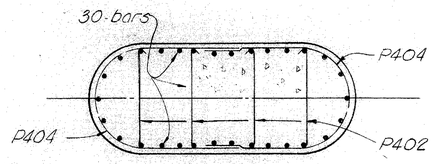
NOTE
See Sheet No. 16/28 for PIER FOOTING LAYOUT and location of Bottered Piles.

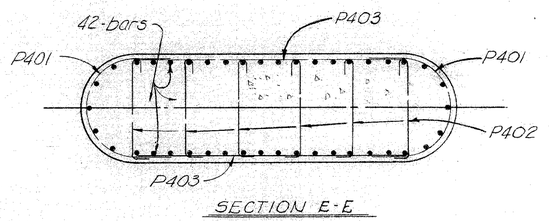
For Structure Grounding Details For PIER No. 4, See STD. DWG. HL-7.



* Lap P815 bars







14/28

STICKLEN - BELSHEIM & ASSOCIATES
ENGINEERS
WORTHINGTON OHIO

PIER No. 4 DETAILS

BRIDGE No. BEL-7-11.97
OVER
CONSOLIDATED RAIL CORP.
STA. 633+99.75
640+50.25
BELMONT CO.

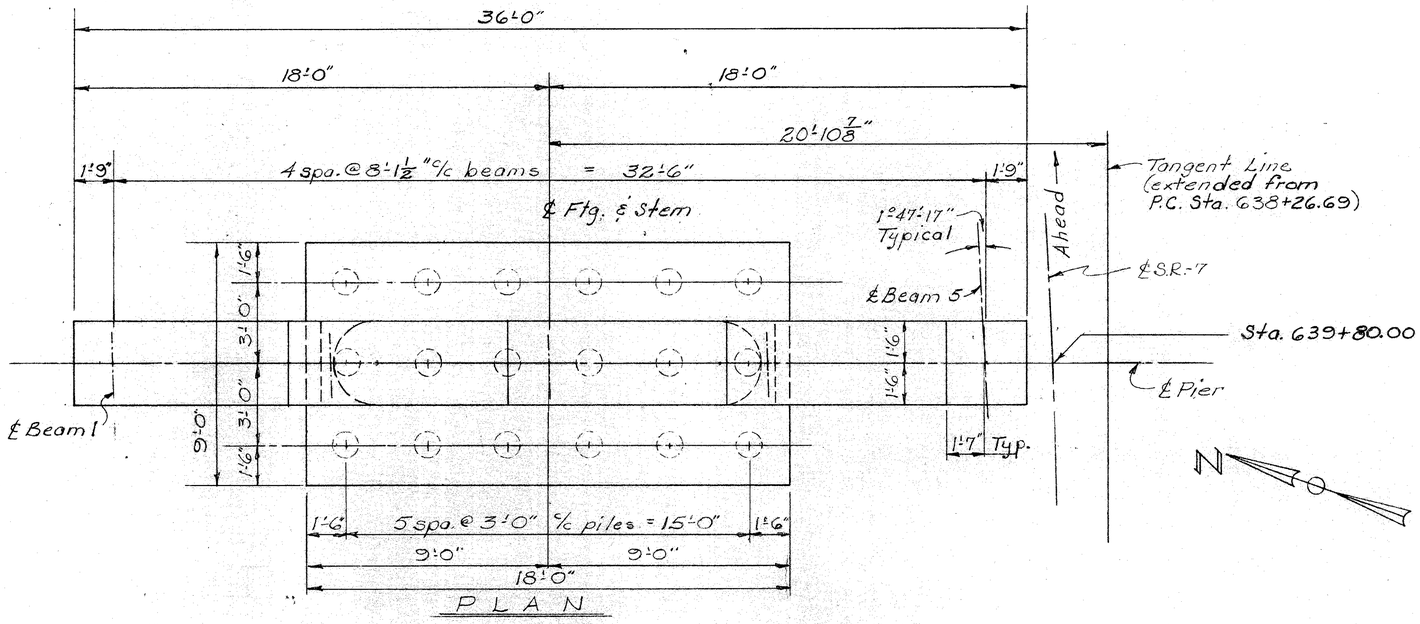
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
AB	J.M.K		LCT	BCH	6-8-10	6/24/11

MICROFILMED
OCT 31 1984

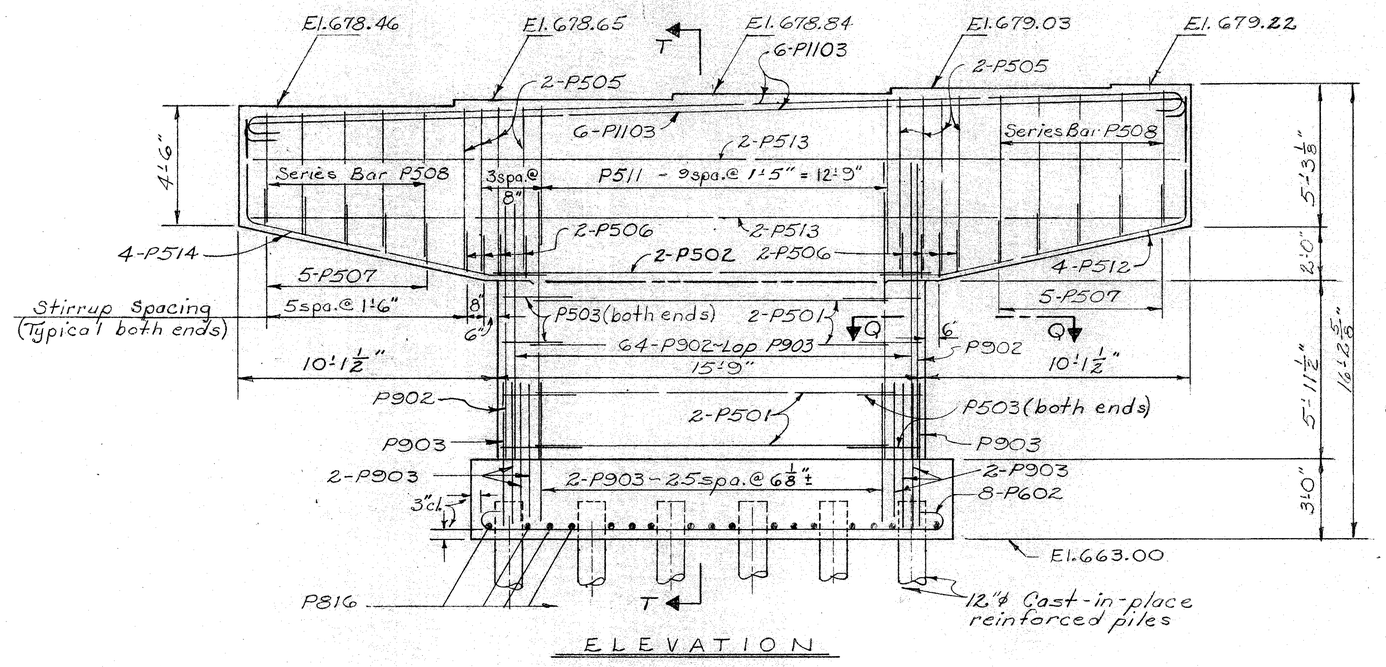
FHWA REGION	STATE	PROJECT	
5	OHIO		

285/443

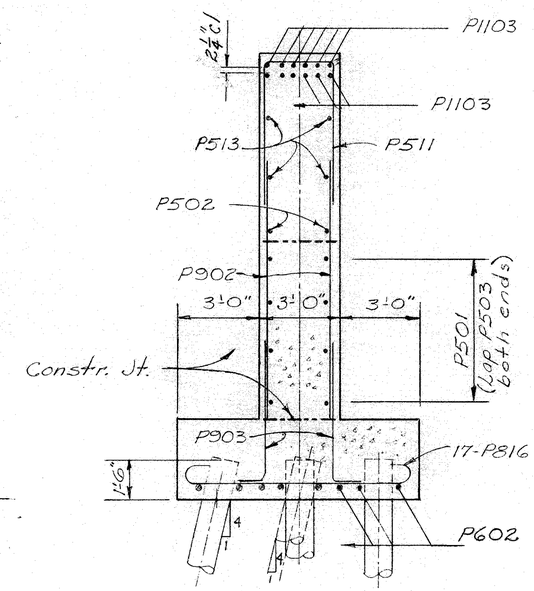
BELMONT COUNTY
BEL-7-11.89



PLAN



ELEVATION



SECTION T-T

GENERAL NOTES CON'T

PREMOLDED SEALING STRIP AS PER PLAN: In lieu of Premolded Sealing Strip, Type B Waterproofing (36" wide) may be used and shall be paid for by the linear foot at the same unit price bid for Item 512 Premolded Sealing Strip as per plan.

MONOLITHIC WEARING SURFACE thickness is assumed to be 1".

DECK PROTECTION METHOD: 1½" Latex Modified Concrete.

PREFORMED EXPANSION JOINT FILLER in the railing parapet deflection joints shall be as shown on Standard Drawing BR-1-67 except that its dimensions shall conform to the parapet dimensions as shown on the plans.

LONGITUDINAL JOINTS in the latex modified concrete overlay are permitted only to the extent necessary to accommodate the width of the finishing machine and to permit maintenance of vehicular traffic. Except as approved by the Director, joints shall not be used adjacent to raised curbs, barriers or edges of decks.

ITEM 845 - LATEX MODIFIED CONCRETE OVERLAY (1½" THICK) AS PER PLAN:
Supplemental Specification 845 shall be modified as follows: The bridge deck shall be overlaid with 1½" of latex modified concrete instead of 1¼". Scarification of the 511 deck concrete shall not be done. All references to bridge deck repair as well as to Item 845 Latex Modified Concrete Overlay (Variable thickness) and to Item 845 Full-depth repair do not apply.

NOTE: See Sheet No. 16/28 for PIER FOOTING LAYOUT and Location of Battered Piles.
See Sheet No. 11/28 for Section Q-Q and Anchor Bolt Layout.

15/28

STICKLEN - BELSHEIM & ASSOCIATES
ENGINEERS
WORTHINGTON OHIO

PIER No. 7
DETAILS
BRIDGE No. BEL-7-1197
OVER
CONSOLIDATED RAIL CORP.
BELMONT CO. STA. 633+99.75 640+50.25

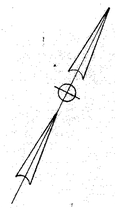
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
AB	D.H.		LCT	DCH	6-8-70	6/24/74 5/23/79

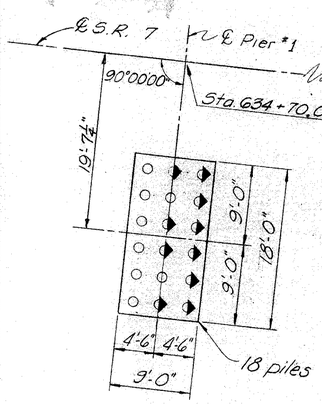
MICROFILMED
OCT 3 1984

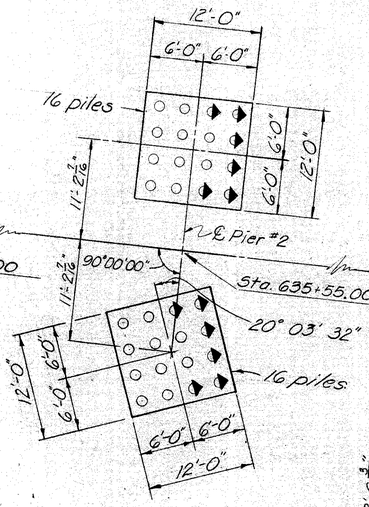
FHWA REGION	STATE	PROJECT	
5	OHIO		

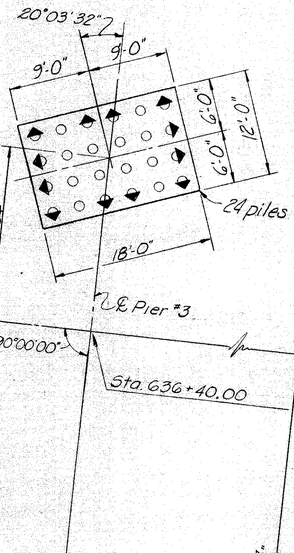
286/443

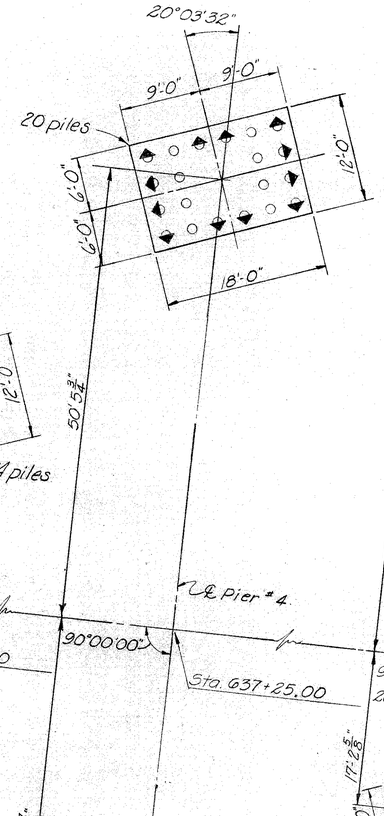
BELMONT COUNTY
BEL-7-11.89

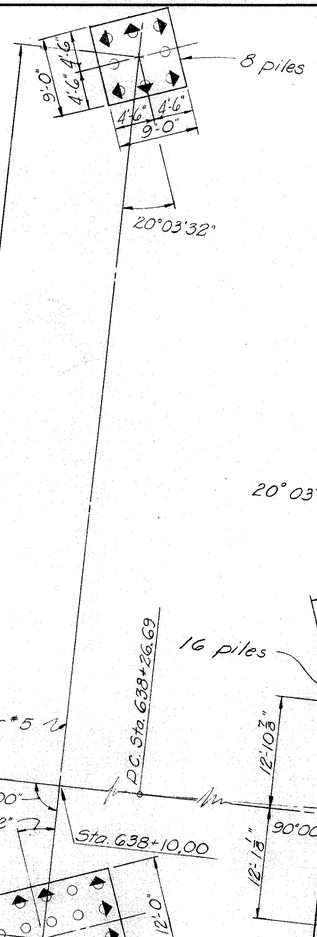


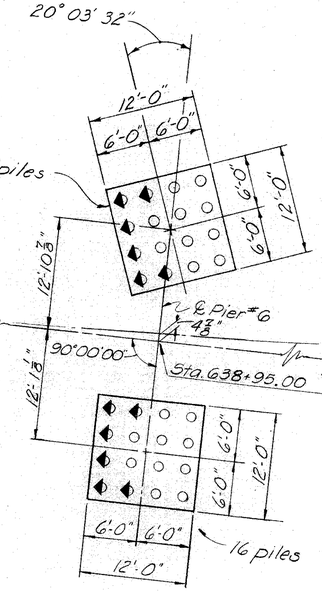


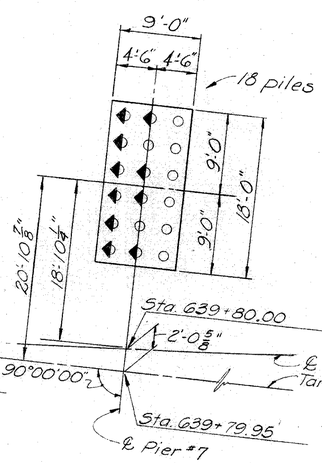


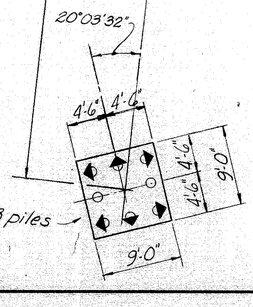


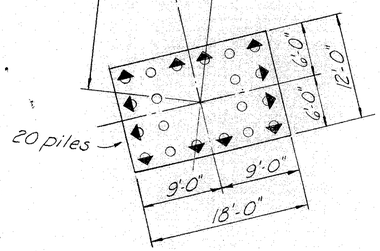












LEGEND
○ Denotes Vertical Pile
◆ Denotes Battered Pile 1:4
All piles 12" ϕ cast-in-place reinforced concrete

16/28

STICKLEN - BELSHEIM & ASSOCIATES
ENGINEERS
WORTHINGTON OHIO

PIER FOOTING LAYOUT

BRIDGE No. BEL-7-1197
OVER
CONSOLIDATED RAIL CORP.
STA. 633+99.75
640+50.25
BELMONT CO.

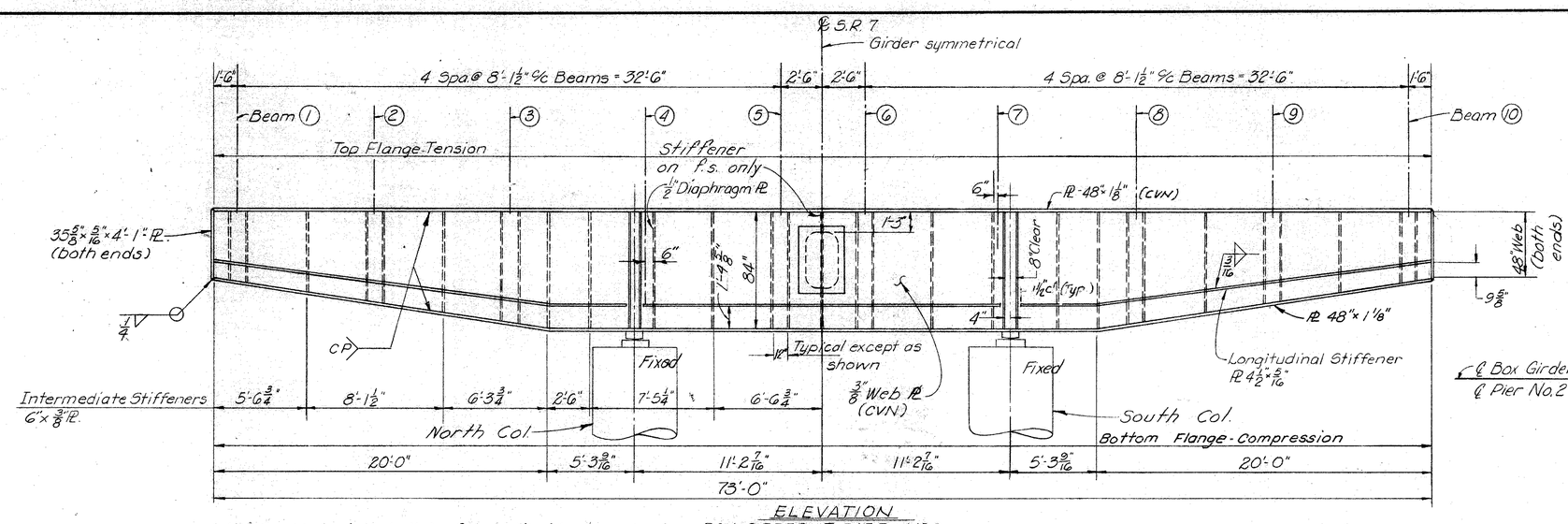
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
AB	J.M.K.		LCT	DCW	6-8-10	

MICROFILMED
OCT 3 1 1984

FHWA REGION	STATE	PROJECT	
5	OHIO		

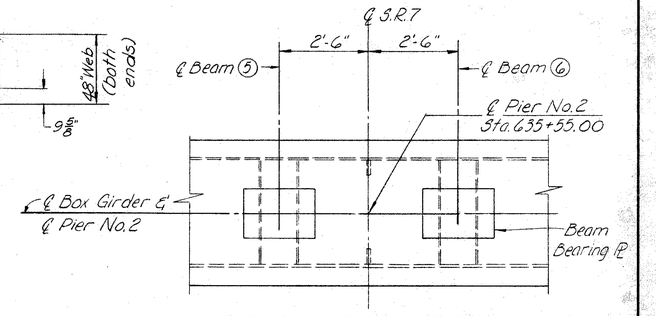
287
443

BELMONT COUNTY
BEL-7-1! 89



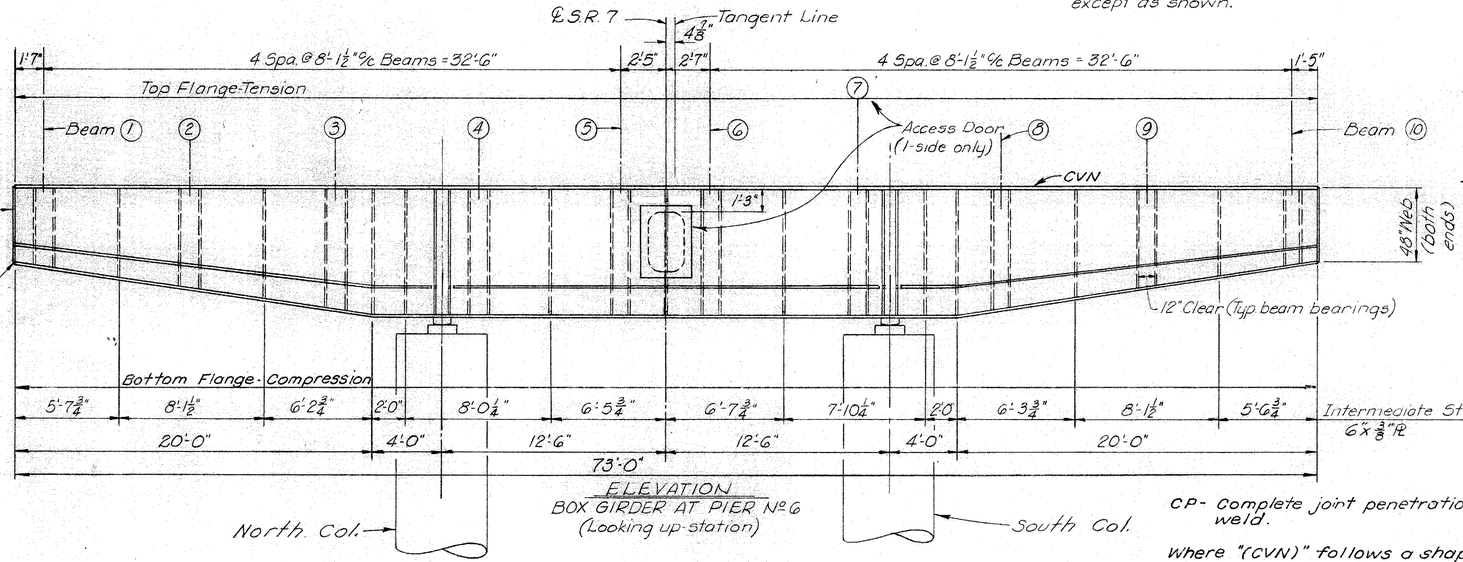
ELEVATION
BOX GIRDER AT PIER No 2
(Looking up-station)

NOTE: Material shall be fabricated in accordance with the Fracture Control Plan. See Proposal Note.



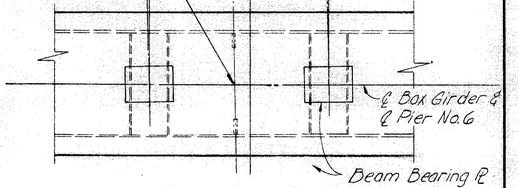
PART PLAN OF BOX GIRDER AT PIER No. 2

NOTE: Both Girders similar except as shown.



ELEVATION
BOX GIRDER AT PIER No 6
(Looking up-station)

For grinding of shop welds see note on sheet 19/28



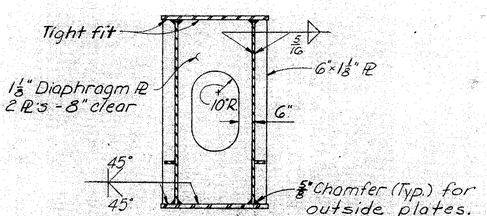
PART PLAN OF BOX GIRDER AT PIER No. 6

CP- Complete joint penetration groove weld.

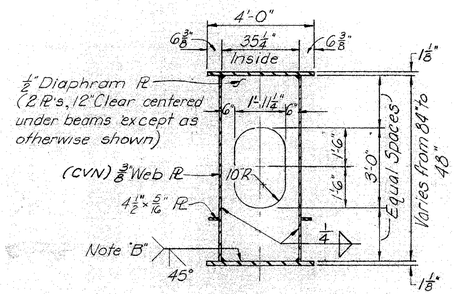
Where "(CVN)" follows a shape or plate size designation, the material shall meet minimum notch toughness requirements. All flange and web butt welds shall be complete penetration welds.

FOR DETAILS OF:	SEE SHT. NO.
Access Door	19|28
Beam Bearings	25|28
Box Girder Bearings	24|28
Welding Details	19|28

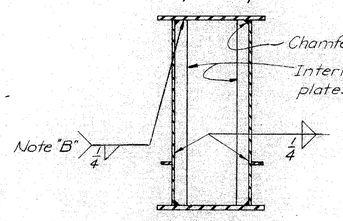
NOTE "B": Plate shall have a tight fit at the tension flange and be welded as shown at the compression flange.



GIRDER BEARING STIFFENER DIAPHRAGM



BEAM BEARING STIFFENER DIAPHRAGM



INTERMEDIATE STIFFENERS

17/28

STICKLEN - BELSHEIM & ASSOCIATES
ENGINEERS
WORTHINGTON OHIO

BOX GIRDER DETAILS PIER No. 2 AND No. 6

BRIDGE No. BEL-7-1197
OVER
CONSOLIDATED RAIL CORP.
STA. 633+99.75
640+50.25
BELMONT CO.

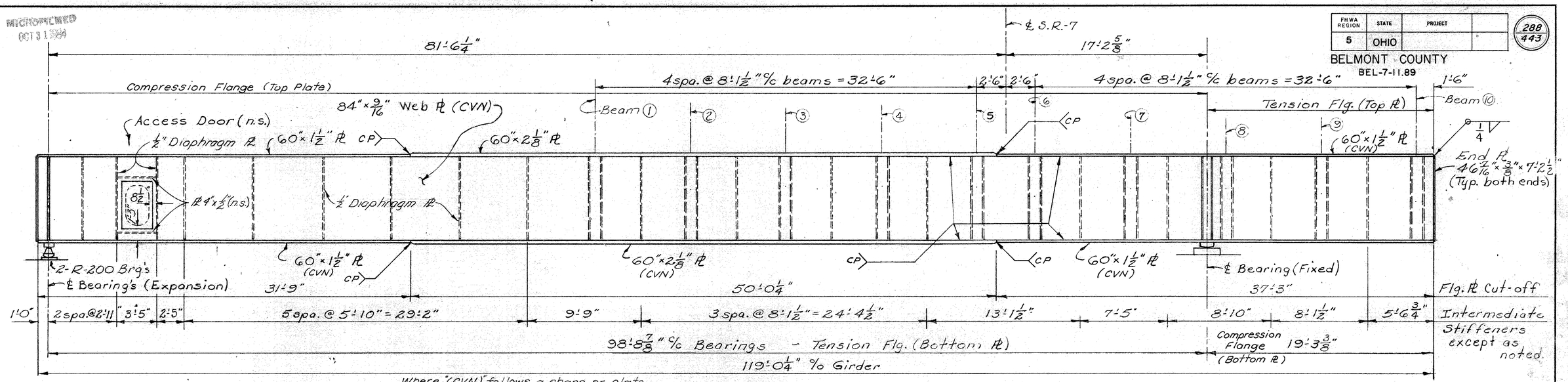
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
AB	J.M.K. JC		S.D.	DCH	6-8-70	5-23-79 7-15-81

MICROFILMED
OCT 31 1989

FHWA REGION	STATE	PROJECT	
5	OHIO		

288/443

BELMONT COUNTY
BEL-7-11.89

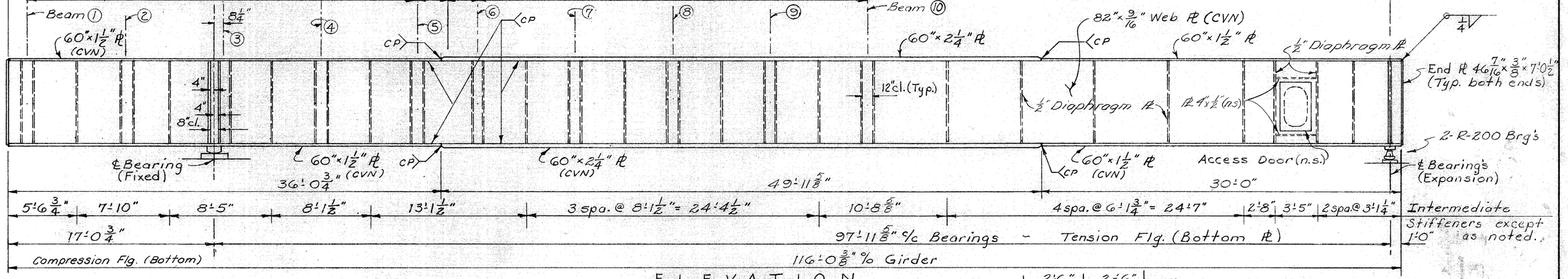


CP - Complete joint penetration groove weld.
For grinding of shop welds, see note on sh. 19/28
All web butt welds shall be complete penetration welds.

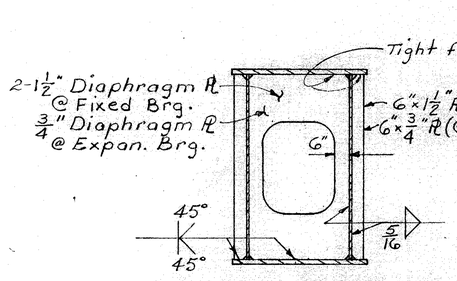
Where "(CVN)" follows a shape or plate size designation, the material shall meet minimum notch toughness requirements.

ELEVATION
PIER No. 5 BOX GIRDER
(Looking Up-Station)

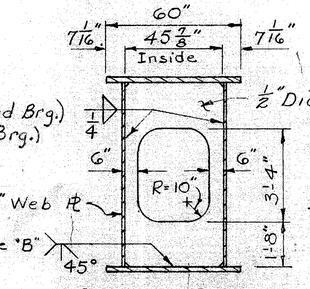
For Fixed Brg. Details of Box Girder see Sheet No. 24/28.
For Expan. Brg. Details (2-R-200 brgs centered under Girder Webs) see STD. DWG. RB-1-55 and Sheet No. 24/28 for Masonry Pl Detail.
For Access Door and Welding Details and Chamfer Details for Diaphragms and Intermediate Stiffeners see Sheet No. 19/28



ELEVATION
PIER No. 3 BOX GIRDER
(Looking Up-Station)

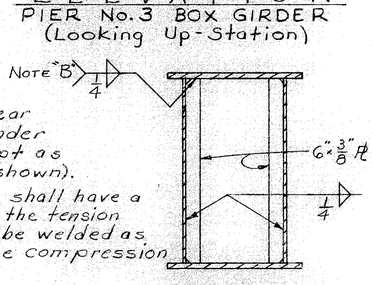


GIRDER BEARING STIFFENER DIAPHRAGM

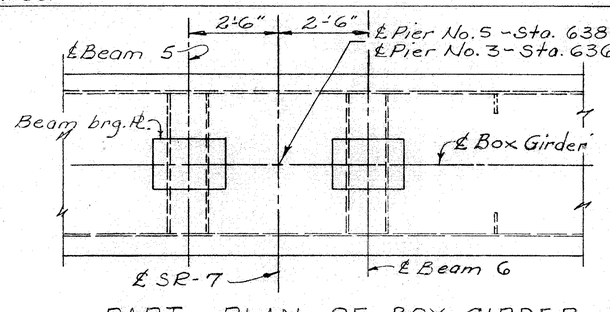


BEAM BEARING STIFFENER DIAPHRAGM

Note "B" - Plate shall have a tight fit at the tension flange and be welded as shown at the compression flange.



INTERMEDIATE STIFFENERS



PART PLAN OF BOX GIRDER AT PIER NO. 3 or 5.

NOTE: Material shall be fabricated in accordance with the Fracture Control Plan. See Proposal Note.

18/28

STICKLEN - BELSHEIM & ASSOCIATES
ENGINEERS
WORTHINGTON OHIO

BOX GIRDER DETAILS PIER No. 3 AND No. 5

BRIDGE No. BEL-7-1197
OVER
CONSOLIDATED RAIL CORP.
STA. 633+99.75
640+50.25
BELMONT CO.

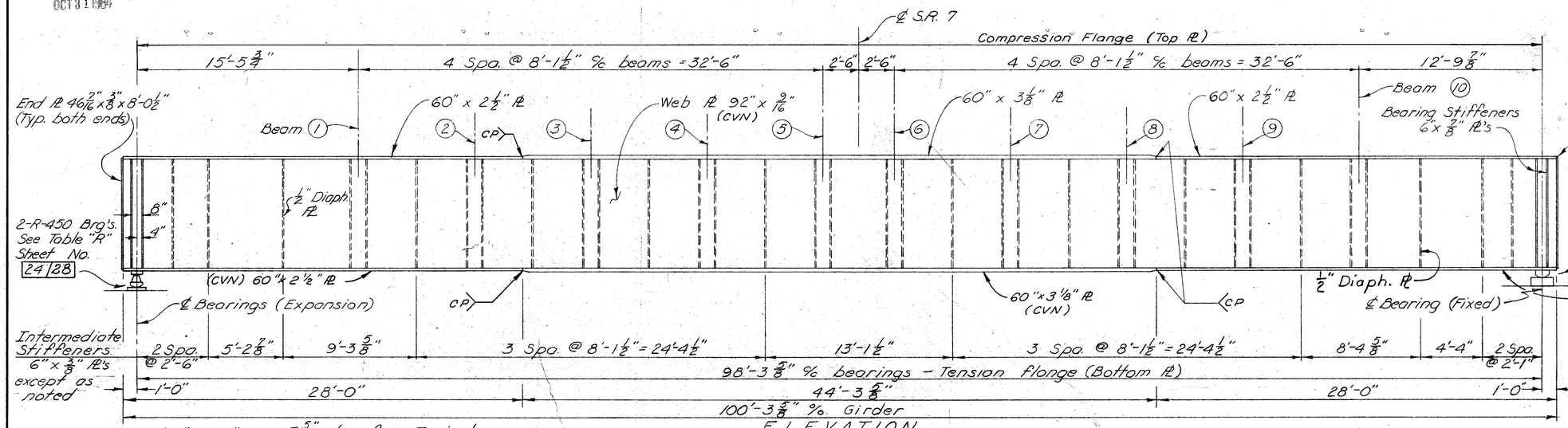
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
AB	N.H.		S.D.	DCH 6-8-90		7/15/91

MICROFILMED
OCT 31 1990

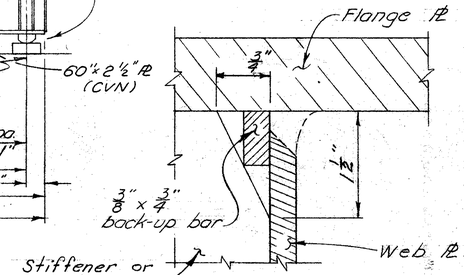
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

289/443

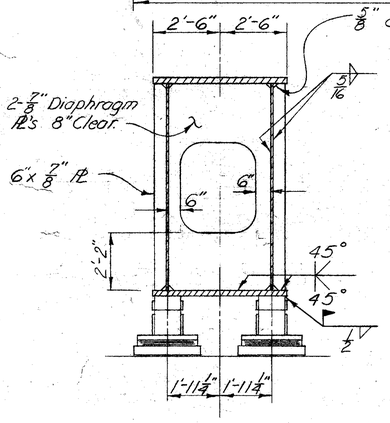
BELMONT COUNTY
BEL-7-11.89



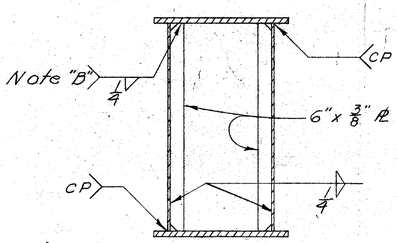
ELEVATION
PIER No. 4 BOX GIRDER
(Looking Up-Station)



TYPICAL CHAMFER DETAIL FOR DIAPHRAGMS AND INTERMEDIATE STIFFENERS

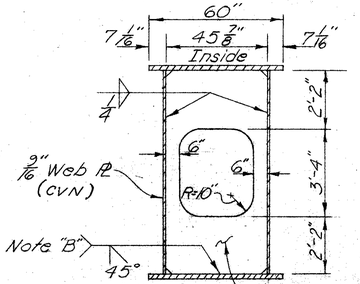


GIRDER BEARING
STIFFENER DIAPHRAGM
(Rocker Bearings Shown)



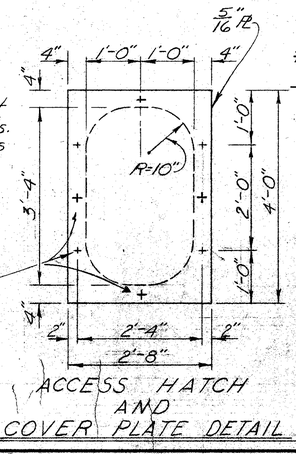
NOTE "B" ~ Plate shall have a tight fit at the tension flange and be welded as shown at the compression flange.

INTERMEDIATE STIFFENERS



BEAM BEARING
STIFFENER DIAPHRAGM

NOTE: Access hatches shall be sealed with asphalt impregnated gaskets. Payment for gaskets shall be included with Item 513.



ACCESS HATCH AND COVER PLATE DETAIL

Material shall be fabricated in accordance with the Fracture Control Plan. See Proposal Note.

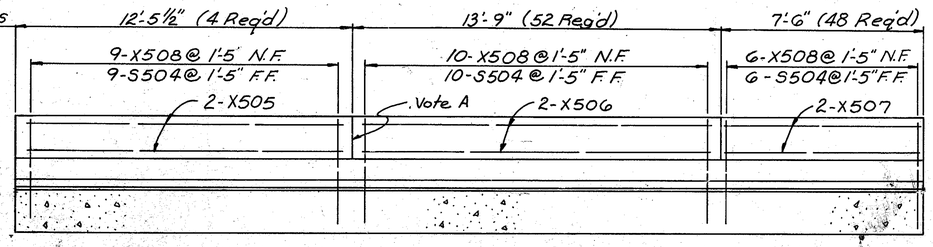
CP - Complete joint penetration groove weld

All web butt welds shall be complete penetration welds.

GRINDING OF SHOP WELDS: Flange butt welds shall be ground flush in tension areas only. Web welds shall be ground flush from the neutral axis of the web to the flange which is in tension. Grinding shall be done in the direction of stress.

Where "(CVN)" follows a shape or plate size designation, the material shall meet minimum notch toughness requirements.

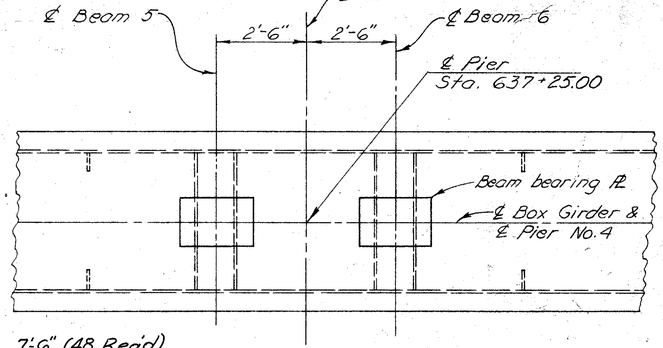
NOTE A: ¼" preformed expansion joint filler, gray sponge rubber or gray cellular polyvinyl chloride sponge. Filler shall conform to AASTO M-153, Type I, except density of PVC shall be not less than 20 lb. per cu. ft. Include with superstructure concrete for payment.



PART ELEVATION OF CONCRETE MEDIAN BARRIER

LEGEND:
N.F. ~ Near Face
F.F. ~ Far Face

* The spacing of the concrete Median Barrier Split Panels shall correspond with the spacing of the opposite Bridge Roadway Railing Panels for each bridge as shown on sh. 21/28.



PART PLAN OF BOX GIRDER AT PIER NO. 4

Revised 7-15-81

19/28

STICKLEN - BELSHEIM & ASSOCIATES
ENGINEERS
WORTHINGTON OHIO

BOX GIRDER DETAILS
PIER No. 4
BRIDGE No. BEL-7-1197
OVER
CONSOLIDATED RAIL CORP
STA. 633+99.75
640+50.25
BELMONT CO.

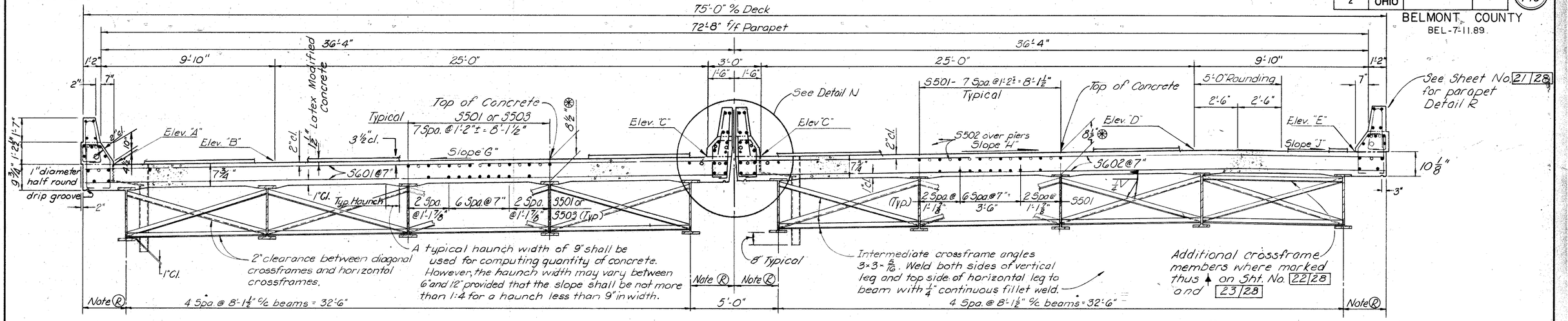
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
AB	R.D.Y.		S.D.	DCH	6-8-10	6/16 5/23/19

MICROFILMED
OCT 31 1984

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

290
443

BELMONT COUNTY
BEL-7-11.89

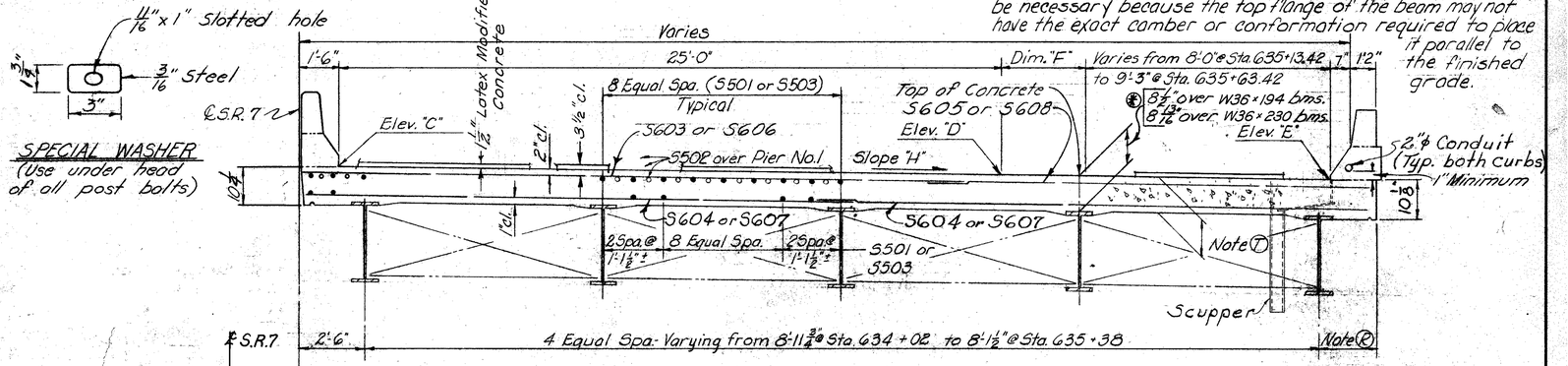


(Sta. 634+87 to Sta. 640+48)
(See Table A and B)

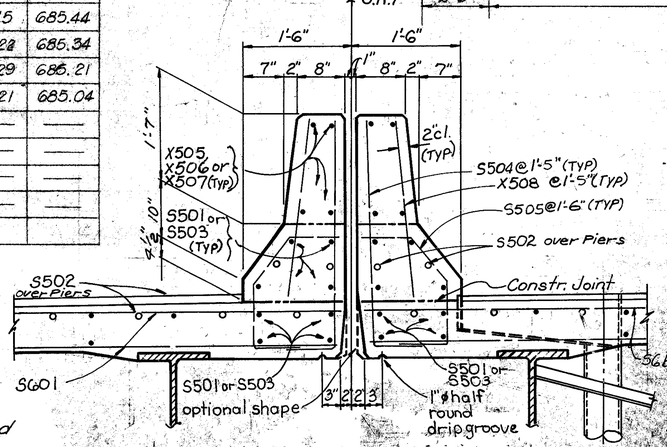
(Sta. 636+50 to Sta. 639+63)
(See Table B)

℗ DECK SLAB DEPTH: The distance shown from top of deck slab to top of steel beam is the design dimension. The quantity of deck concrete to be paid for shall be based on this dimension, even though deviation from it may be necessary because the top flange of the beam may not have the exact camber or conformation required to place it parallel to the finished grade.

TRANSVERSE SECTION
(Looking up station)



PART TRANSVERSE SECTION
(Looking up-station)
(Sta. 634+02 to Sta. 636+50)
(See Table A)



DETAIL N

Add 1/2" for finished grade elevations.

TABLE A (Elevations shown are at top of Portland Cement Concrete) ▣								
Station	Elev. "A"	Elev. "B"	Slope "G"	Elev. "C"	Slope "H"	Elev. "D"	Dim. "F"	Elev. "E"
634+00	——			684.20	-.0154	683.81	4.045'	683.61
+25	——			684.30	-.0154	683.92	3.461'	683.72
+50	——			684.40	-.0145	684.04	2.835'	683.86
+75	——			684.50	-.0132	684.17	2.210'	684.02
635+00	684.05	684.20	-.016	684.60	-.0117	684.31	1.585'	684.18
+25	684.15	684.30		684.70	-.0102	684.44	.9605	684.34
+50	684.25	684.40		684.80	-.0087	684.58	.3355	684.50
+75	684.35	684.50		684.90	-.0070	684.72	0	684.66
636+00	684.45	684.60		685.00	-.0052	684.87	0	684.82
+25	684.55	684.70		685.10	-.0035	685.01	0	684.98
+50	684.65	684.80	-.016	685.20	-.0020	685.15	0	685.13

TABLE B (Elevations shown are at top of Concrete) ▣								
Station	Elev. "A"	Elev. "B"	Slope "G"	Elev. "C"	Slope "H"	Elev. "D"	Slope "J"	Elev. "E"
636+75	684.75	684.90	-.016	685.30	0	685.30	-.0044	685.27
637+00	684.85	685.00		685.40	+.0020	685.45	-.0081	685.40
+25	684.93	685.08		685.48	+.004	685.58	-.0148	685.49
+50	684.98	685.13		685.53	+.006	685.68	-.0215	685.55
+75	685.00	685.15		685.55	+.008	685.75	-.0281	685.58
638+00	684.98	685.13		685.53	+.01	685.78	-.0333	685.58
+25	684.93	685.08		685.48	+.012	685.78	-.0370	685.56
+50	684.85	685.00	-.016	685.40	+.014	685.75	-.0407	685.51
+75	684.72	684.87	-.0164	685.28	+.016	685.68	-.0415	685.44
639+00	684.51	684.68	-.018	685.13	+.018	685.58	-.0422	685.34
+25	684.26	684.45	-.020	684.95	+.020	685.45	-.0429	685.21
+50	683.99	684.19	-.0216	684.73	+.0216	685.27	-.0421	685.04
+75	683.70	683.91	-.0228	684.48	+.0228	685.05	——	——
640+00	683.39	683.61	-.0236	684.20	+.0236	684.79	——	——
+25	683.06	683.28	-.024	683.88	+.024	684.48	——	——
+50	682.71	682.93	-.024	683.53	+.024	684.13	——	——

Note R - See Steel Framing Plan - Sheets 22 28 and 23 28 for dimensions.

Note T - Slab thickness shall be 7¾" except thickness shall be 8¼" (between beams of Rt. Br.) from Sta. 634+02.00 to Sta. 634+53, and 8" from Sta. 634+53 to Sta. 635+38. See Sheet No. 22 28 for Scupper Details and Sheet No. 22 28 & 23 28 for Location.

MATERIAL: All anchor bolts, nuts and studs shall conform to the physical properties of ASTM-A325 except that the minimum elongation shall be 10%. The chemical properties are waived.

GALVANIZING: All guard rail posts, tubes, hardware and accessories shall be galvanized in accordance with 711.02.

20/28

STICKLEN - BELSHEIM & ASSOCIATES
ENGINEERS
WORTHINGTON OHIO

TRANSVERSE SECTION

BRIDGE No. BEL-7-1197
OVER
CONSOLIDATED RAIL CORP.
STA. 633+99.75
640+50.25

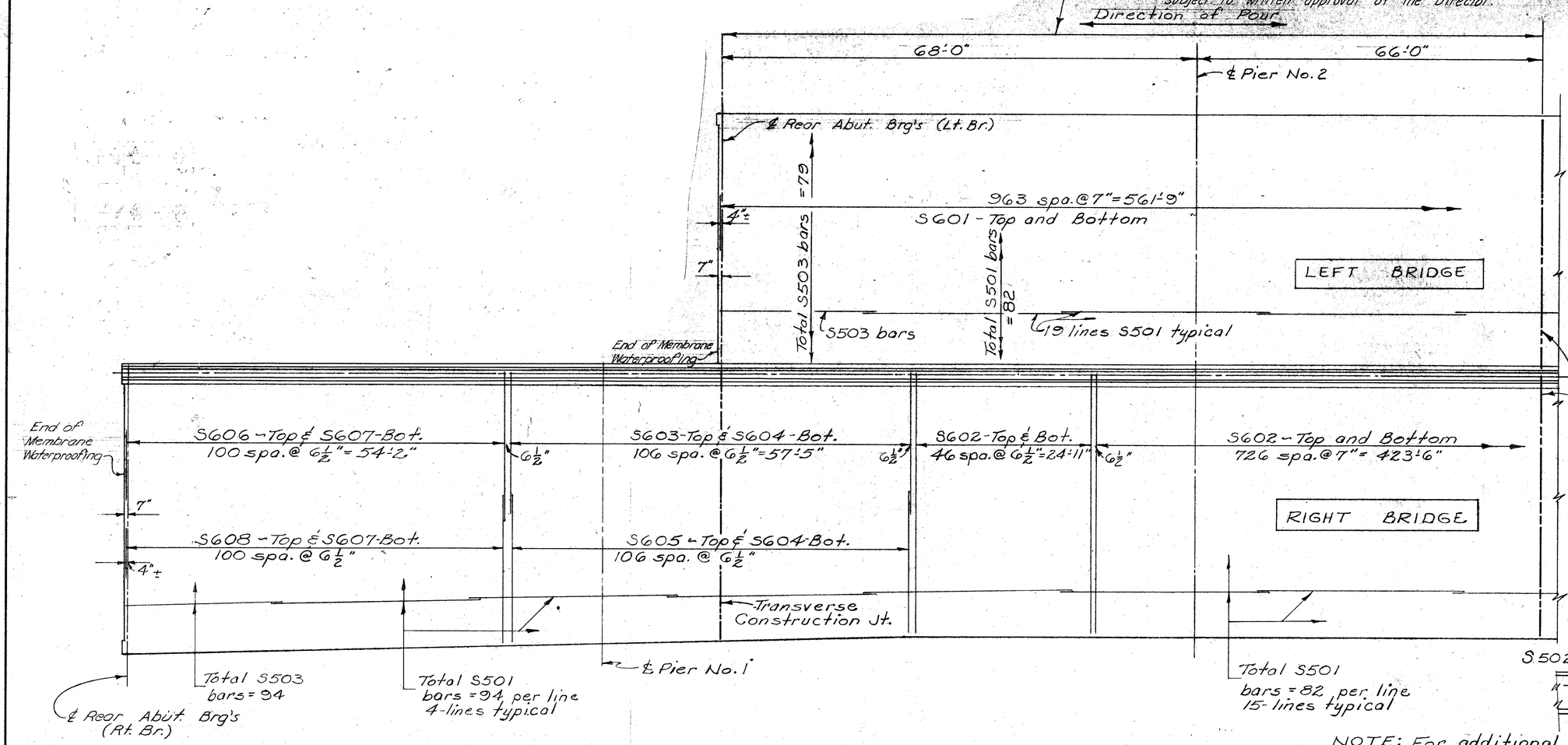
BELMONT CO.						
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
AB	MH		S.D.	DCW	6-8-70	11/16 9/23/19

MICROFILMED
OCT 31 1984

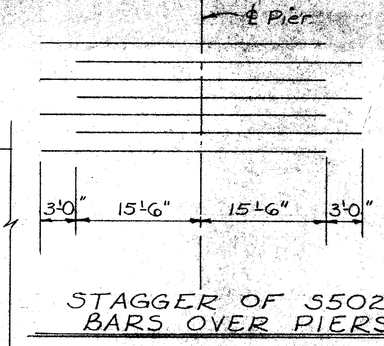
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

BELMONT COUNTY
BEL-7-11.89

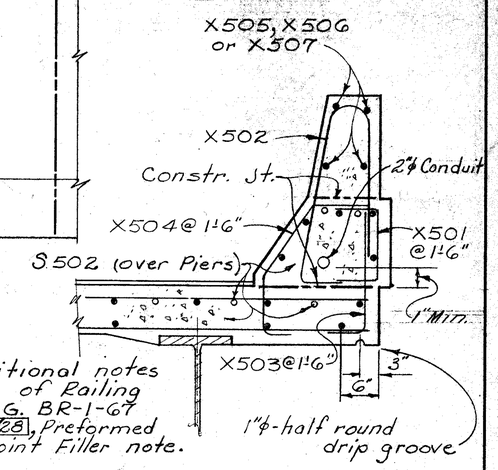
DECK SLAB concrete between these limits shall be placed simultaneously for both (the left and right) bridges to prevent unbalanced moments in Pier No. 2. See STEEL FRAMING PLAN Sheet No. 23/28 for similar placement at Pier No. 6.
The contractor may specify a different deck placement sequence subject to written approval of the Director.



PART PLAN OF DECK REINFORCING

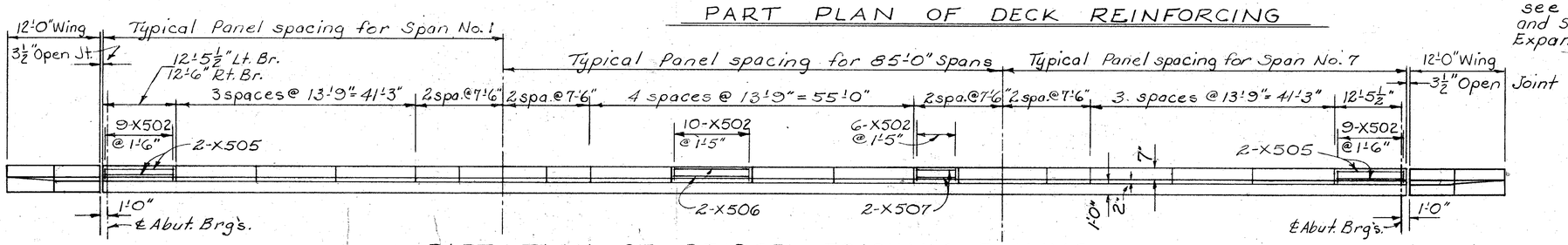


STAGGER OF S502 BARS OVER PIERS



NOTE: For additional notes and details of Railing see STD. DRG. BR-1-67 and Sheet 3/28, Preformed Expansion Joint Filler note.

DETAIL - R



PART PLAN OF BRIDGE ROADWAY RAILING

Note: The spacing of the concrete Median Barrier Split Panels shall correspond with the spacing of the opposite Bridge Roadway Railing Panels for each bridge. For reinforcement see Part Elevation of Concrete Median Barrier on sh. 19/28

21/28

STICKLEN - BELSHEIM & ASSOCIATES
ENGINEERS
WORTHINGTON OHIO

SUPERSTRUCTURE DETAILS
BRIDGE No. BEL-7-1197
OVER
CONSOLIDATED RAIL CORP.
BELMONT CO. STA. 633+99.75 640+50.25

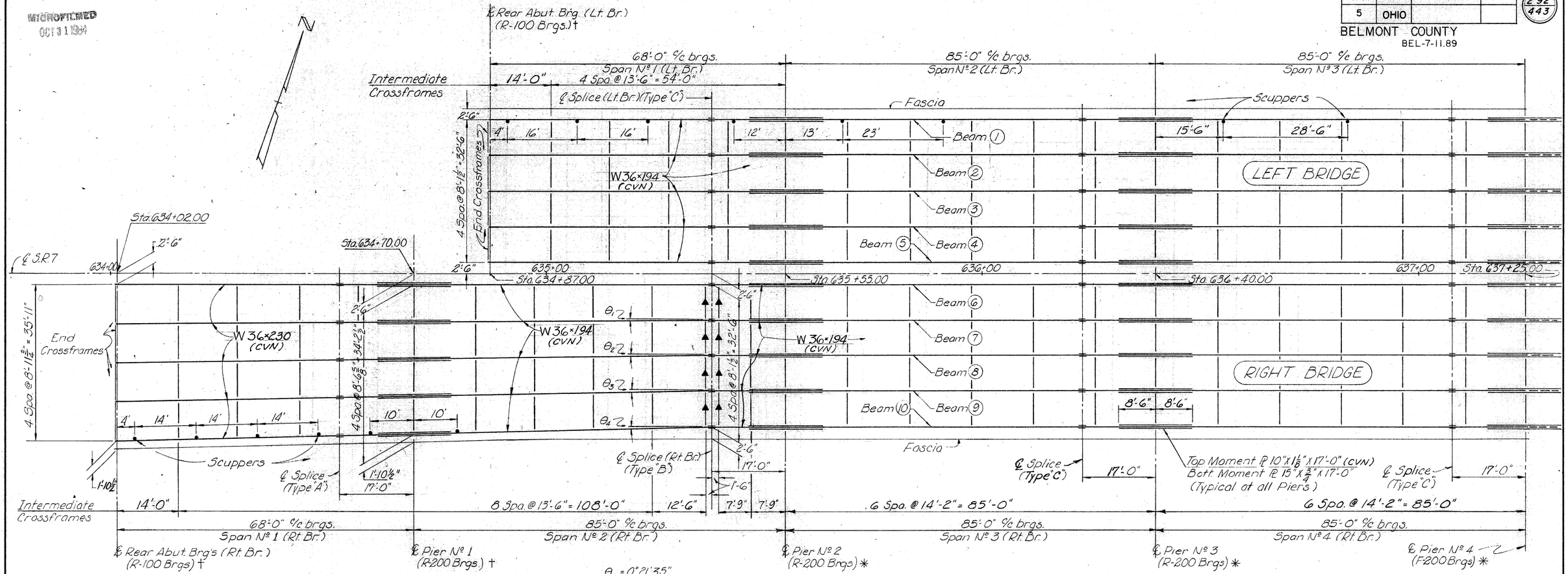
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
AB	D.H.		S.D.	DGH	6-8-70	6/25/74 5/23/79

MICROFILMED
OCT 31 1984

FHWA REGION	STATE	PROJECT	
5	OHIO		

292/443

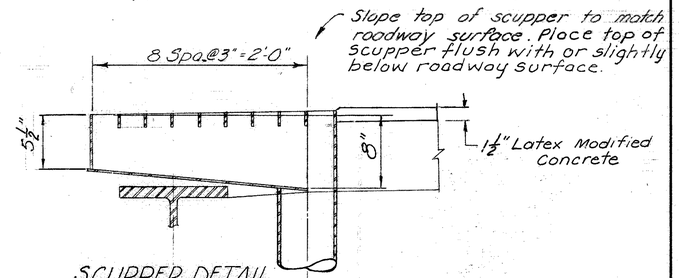
BELMONT COUNTY
BEL-7-11.89



$\theta_1 = 0°21'35"$
$\theta_2 = 0°43'11"$
$\theta_3 = 1°04'46"$
$\theta_4 = 1°26'21."$

Length of beams measured from
℄ Rear Abutment Bearings (Rt. Br.) to ℄ Splice (Rt. Br.) (Type B)
Beam 6 = 136'-0"
7 = 136'-0"
8 = 136'-0⅛"
9 = 136'-0 5/16"
10 = 136'-0½"

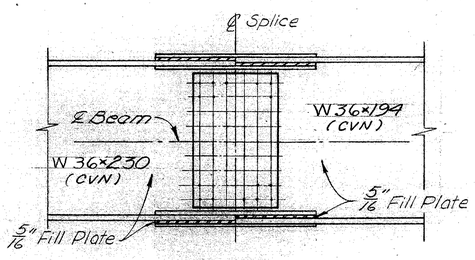
PART STEEL FRAMING PLAN



SCUPPER DETAIL

(For additional details see STD. DWG. SD-1-69, sheet 3 and Deck Drainage Details Sheet No. 35/44 - Br. No. BEL-7-1289

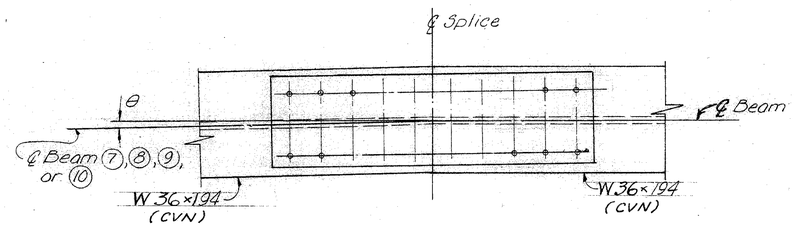
NOTE:
For additional notes and references, see Sheet No. 23/28



ELEVATION
FIELD SPLICE (TYPE "A")

Note: All splice material except fill plates shall meet minimum notch toughness requirements.

For additional splice details not shown, see STD. DWG. SD-1-69, Sheet No. 4



PLAN
FIELD SPLICE (TYPE "B")

22/28

STICKLEN - BELSHEIM & ASSOCIATES
ENGINEERS
WORTHINGTON OHIO

STEEL FRAMING PLAN

BRIDGE No. BEL-7-1197
OVER
CONSOLIDATED RAIL CORP.
STA. 633+99.75
640+50.25
BELMONT CO.

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
AB	D.M.K. JC		S.D.	DGH	6-8-70	11/76

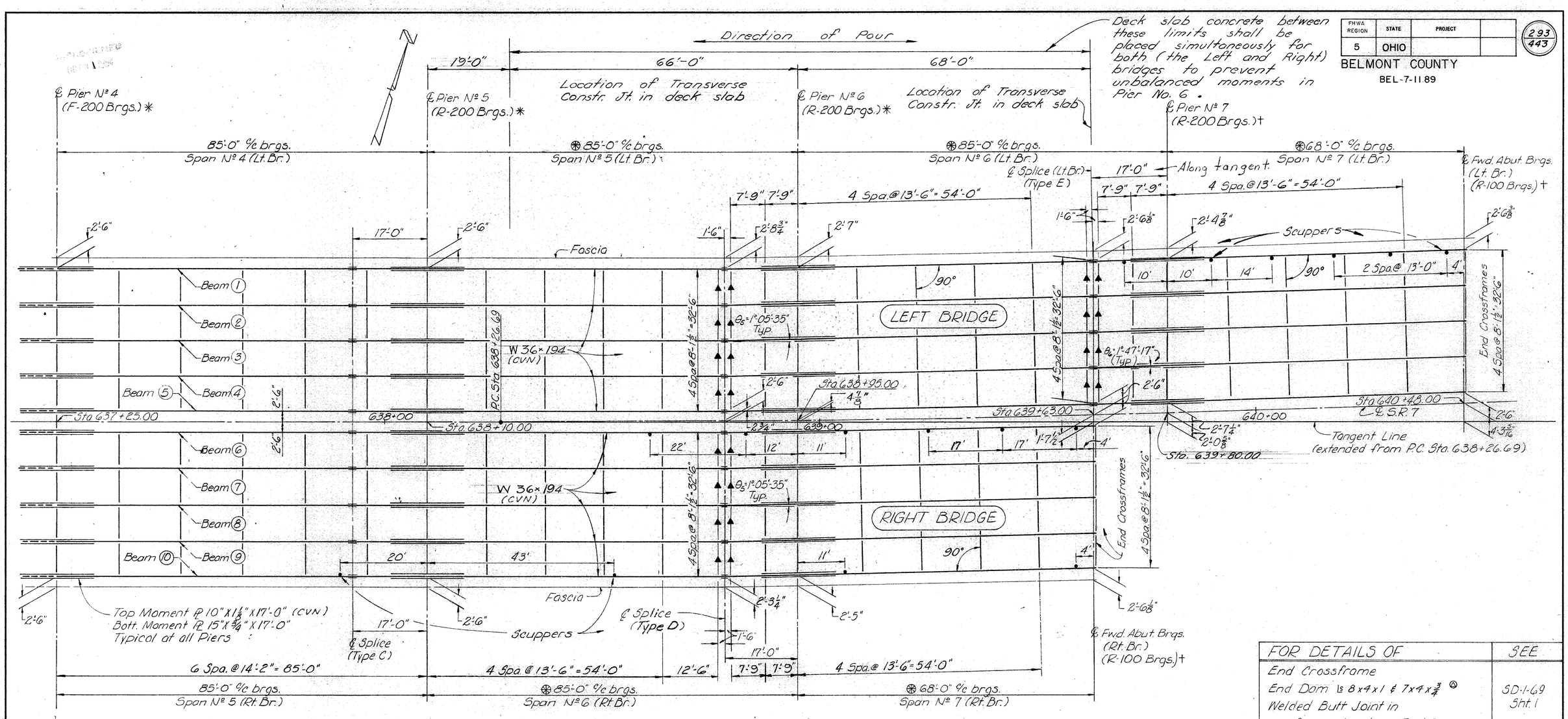
BGH 6-25-74

FHWA REGION	STATE	PROJECT	
5	OHIO		

293/443

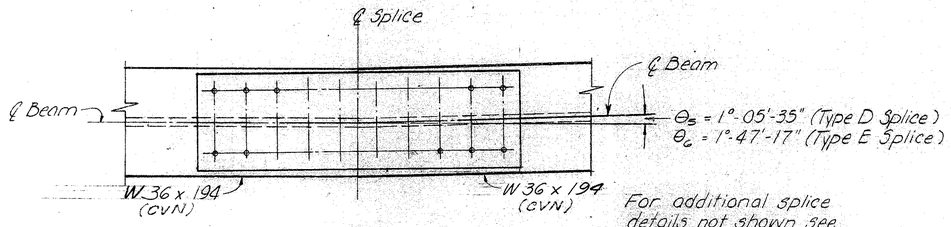
BELMONT COUNTY

BEL-7-11 89



PART STEEL FRAMING PLAN

⊛ measured along ℄ S.R. 7



For additional splice details not shown see STD. DWG. SD-1-69, Sheet No. 4

PLAN FIELD SPLICE (TYPE "D" & TYPE "E")

All splice material except fill plates shall meet minimum notch toughness requirements.

NOTES

END DAM CURB PLATES shall be as shown on Std. Dwg. SD-1-69, Sh. 2 except they shall be detailed to fit the New Jersey shape curbs.

All intermediate crossframes are 3-Ls - 3" X 3" X 5/16". except those marked thus ▲ which are 4-Ls - 3" X 3" X 5/16".

See Sheet No. 20/28 for additional details.

† See Standard Drawing RB-1-55 for bearing details except for masonry plate, size shall be as detailed on Sheet No. 25/28

* See Sheet No. 25/28 for bearing details.

Ⓐ End dam anchor bars shall be 3⅜ clear from the top of concrete slab.

FOR DETAILS OF	SEE
End Crossframe End Dam ls 8 x 4 x 1 & 7 x 4 x ¾ Ⓐ Welded Butt Joint in Superstructure End Dam	SD-1-69 Sht. 1
Curb Plate Details	SD-1-69 Sht. 2
Moment Plate	SD-1-69 Sht. 3
Bolted Beam Splice - Types "A" & "B"	SD-1-69 Sht. 4

23/28

STICKLEN - BELSHEIM & ASSOCIATES ENGINEERS
WORTHINGTON OHIO

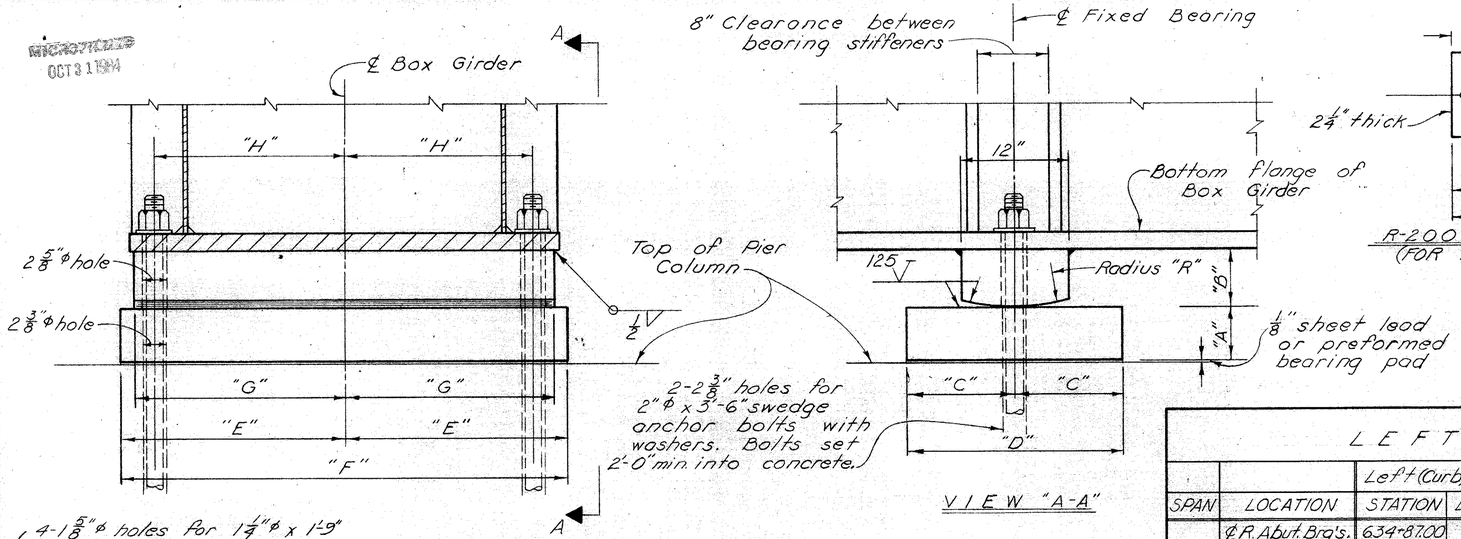
STEEL FRAMING PLAN

BRIDGE No. BEL-7-1197 OVER CONSOLIDATED RAIL CORP

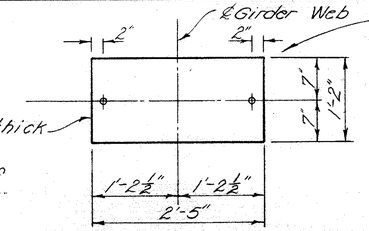
BELMONT CO. STA. 633+99.75 640+50.25

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
AB	D.M.K. JC		S.D.	NCH 6-8-70		6-25-74 9-23-77

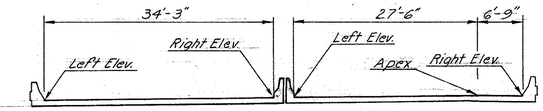
MICROFILMED
OCT 31 1994



VIEW "A-A"

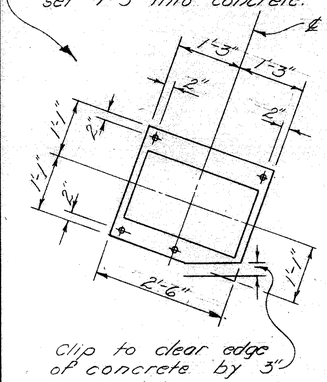


R-200 MASONRY PLATE
(FOR PIERS No. 3 and 5)



LEFT BRIDGE RIGHT BRIDGE

NOTE: The elevations shown at face of medians or curbs are those which are required before the concrete deck is placed. Proper allowance has been made for the dead load deflections caused by the weight of the concrete.



FIXED BEARING DETAILS FOR BOX GIRDERS
(See Table "F" For Dimensions Not Shown)

R-450 MASONRY PLATE

TABLE "F"
Dimensions (inches)

Location	"A"	"B"	"C"	"D"	"E"	"F"	"G"	"H"	"R"
Box Girder Pier No. 2&6	5	5	10	20	25	50	23½	21	24
Box Girder Pier No. 3&5	6	6	12½	25	30	60	29½	27	32
Box Girder Pier No. 4	5	5	10	20	31	62	29½	27	16

ROCKER ~ PIER No. 4 BOX GIRDER -2- Required

TABLE "R"
Dimensions (inches)

Rocker No.	"A"	"B"	"C"	"D"	"F"	"G"	"H"	"K"	"L"	"M"	"R"	"T"	"Y"
R-450	4½	26	6	5	¾	16	26⅛	12	30	27	16	4	2 3/16

Keeper plate shown as ½" shall be ⅜" with ⅜" fillet weld.
Note: Sole plate width shown as 9" shall be made 10".
See STD. DRWG RB-1-55 for additional details of Rocker Bearing.*

*Except for masonry plate detail.

LEFT BRIDGE

SPAN	LOCATION	Left (Curb) Gutter STATION	Left (Curb) Gutter ELEVATION	Right (Median) Gutter STATION	Right (Median) Gutter ELEVATION
	℄ R. Abut. Brg's.	634+87.00	684.00	634+87.00	684.55
	¼ Pt.	635+04.00	684.10		684.64
No.1	½ Pt.	635+21.00	684.18		684.71
	¾ Pt.	635+38.00	684.24		684.76
	℄ Brg. Pier 2	635+55.00	684.30		684.82
	¼ Pt.	635+76.25	684.41		684.93
No.2	½ Pt.	635+97.50	684.51		685.04
	¾ Pt.	635+18.75	684.58		685.12
	℄ Brg. Pier 3	636+40.00	685.65		685.20
	¼ Pt.	636+61.25	685.75		685.30
No.3	½ Pt.	636+82.50	685.85		685.41
	¾ Pt.	636+03.75	685.92		685.49
	℄ Brg. Pier 4	637+25.00	685.97		685.55
	¼ Pt.	637+46.25	685.04		685.60
No.4	½ Pt.	637+67.50	685.08		685.63
	¾ Pt.	637+88.75	685.07		685.61
	℄ Brg. Pier 5	638+10.00	685.03	638+10.00	685.55
	¼ Pt.	638+31.36	684.99	638+31.26	685.51
No.5	½ Pt.	638+52.72	684.92	638+52.52	685.44
	¾ Pt.	638+74.07	684.78	638+73.78	685.31
	℄ Brg. Pier 6	638+95.43	684.59	638+95.04	685.16
	¼ Pt.	639+16.81	684.39	639+16.29	685.03
No.6	½ Pt.	639+38.20	684.17	639+37.54	684.87
	¾ Pt.	639+59.58	683.91	639+58.79	684.66
	℄ Brg. Pier 7	639+80.96	683.63	639+80.04	684.43
	¼ Pt.	639+98.07	683.43	639+97.05	684.25
No.7	½ Pt.	640+15.18	683.22	640+14.05	684.05
	¾ Pt.	640+32.28	682.99	640+31.06	683.83
	℄ F. Abut. Brg's.	640+49.39	682.72	640+48.06	683.56

Some as Left (Curb) Gutter

RIGHT BRIDGE

SPAN	LOCATION	Left (Median) Gutter STATION	Left (Median) Gutter ELEVATION	Right (Curb) Gutter STATION	Right (Curb) Gutter ELEVATION
	℄ R. Abut. Brg's.	634+02.00	684.21	634+02.00	683.61
	¼ Pt.	634+19.00	684.30		683.71
No. 1	½ Pt.	634+36.00	684.37		683.80
	¾ Pt.	634+53.00	684.42		683.89
	℄ Brg. Pier 1	634+70.00	684.48		683.99
	¼ Pt.	634+91.25	684.58		684.15
No. 2	½ Pt.	635+12.50	684.68		684.31
	¾ Pt.	635+33.75	684.75		684.44
	℄ Brg. Pier 2	635+55.00	684.82		684.56
	¼ Pt.	635+76.25	684.93		684.72
No. 3	½ Pt.	635+97.50	685.04		684.88
	¾ Pt.	636+18.75	685.12		685.01
	℄ Brg. Pier 3	636+40.00	685.20		685.13
	¼ Pt.	636+61.25	685.31		685.26
No. 4	½ Pt.	636+82.50	685.42		685.39
	¾ Pt.	637+03.75	685.49		685.47
	℄ Brg. Pier 4	637+25.00	685.55		685.52
	¼ Pt.	637+46.25	685.60		685.59
No. 5	½ Pt.	637+67.50	685.63		685.64
	¾ Pt.	637+88.75	685.60		685.63
	℄ Brg. Pier 5	638+10.00	685.55	638+10.00	685.61
	¼ Pt.	638+31.25	685.50	638+31.15	685.60
No. 6	½ Pt.	638+52.49	685.43	638+52.29	685.57
	¾ Pt.	638+73.74	685.31	638+73.44	685.50
	℄ Brg. Pier 6	638+94.98	685.16	638+94.58	685.40
	¼ Pt.	639+11.98	685.06	639+11.47	685.32
No. 7	½ Pt.	639+28.97	684.94	639+28.37	685.24
	¾ Pt.	639+45.97	684.79	639+45.26	685.11
	℄ F. Abut. Brg's.	639+62.96	684.61	639+62.15	684.94

Some as Left (Median) Gutter

NOTE: Elevations shown in the above table are at the top of concrete.

GUTTER ELEVATIONS

FHWA REGION	STATE	PROJECT	
5	OHIO		

BELMONT COUNTY
BEL-7-11.89

294/443

24/28

STICKLEN - BELSHEIM & ASSOCIATES
ENGINEERS
WORTHINGTON OHIO

GUTTER ELEVATIONS AND BOX GIRDER BEARING DETAILS

BRIDGE No. BEL-7-1197
OVER
CONSOLIDATED RAIL CORP
STA. 633+99.75
640+50.25
BELMONT CO.

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
A.B.	R.D.Y.		S.D.	DGV	6-8-70	9-15-71 11-4-72 5-23-79

6-25-14

MICROFILMED
08/31/84

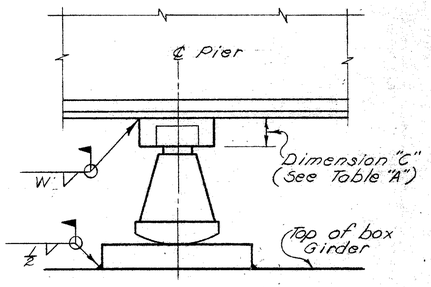
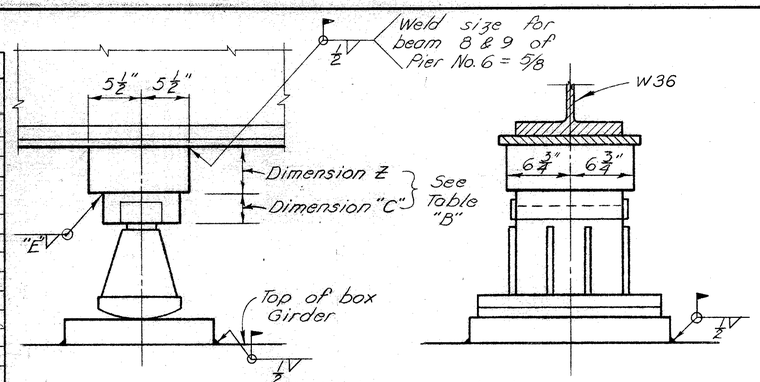


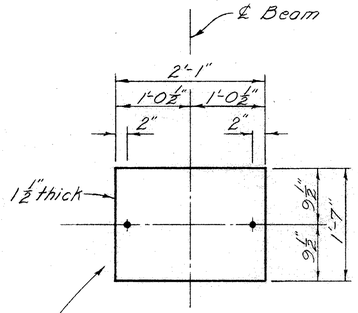
TABLE "A"		
Location	Dimension "C"	Weld Size "W"
PIER No. 2		
Beam 1	.3317'	1/2
Beam 2	.4447'	1/2
Beam 3	.5607'	5/8
Beam 9	.6357'	5/8
Beam 10	.5797'	5/8
PIER No. 3		
Beam 1	.3377'	1/2
Beam 2	.4447'	1/2
Beam 3	.5537'	5/8
PIER No. 5		
Beam 1	.3257'	1/2
Beam 2	.4557'	1/2
Beam 3	.5797'	5/8
PIER No. 6		
Beam 1	.3317'	1/2
Beam 2	.4597'	1/2
Beam 3	.5907'	5/8



For additional details see STD. DWG. RB-1-55 R-200 Rocker Bearing

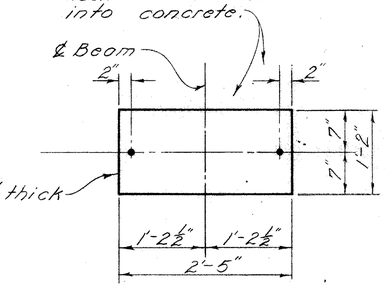
ROCKER BEARING DETAILS (R-200)

TABLE "B"			
Location	Dimension "C"	Dimension "Z"	Weld Size "E"
PIER No. 2			
Beam 4	.4167'	.2640'	1/2
Beam 5	.5000'	.3067'	1/2
Beam 6	.5000'	.3147'	1/2
Beam 7	.5000'	.2500'	1/2
Beam 8	.4167'	.2740'	1/2
PIER No. 3			
Beam 4	.4167'	.2920'	1/2
Beam 5	.5000'	.3627'	1/2
Beam 6	.5000'	.3247'	1/2
Beam 7	.5000'	.3177'	1/2
Beam 8	.5000'	.3057'	1/2
Beam 9	.5000'	.2877'	1/2
Beam 10	.5000'	.2667'	1/2
PIER No. 5			
Beam 4	.4167'	.2820'	1/2
Beam 5	.4167'	.3950'	1/2
Beam 6	.5833'	.2964'	5/8
Beam 7	.5833'	.3624'	5/8
Beam 8	.6667'	.3500'	5/8
Beam 9	.6667'	.4500'	5/8
Beam 10	.5833'	.3524'	5/8
PIER No. 6			
Beam 4	.4167'	.3080'	1/2
Beam 5	.5833'	.2824'	5/8
Beam 6	.5833'	.3174'	5/8
Beam 7	.6667'	.3820'	5/8
Beam 8	.6667'	.3350'	5/8
Beam 9	.6667'	.6780'	5/8
Beam 10	.6667'	.4600'	5/8



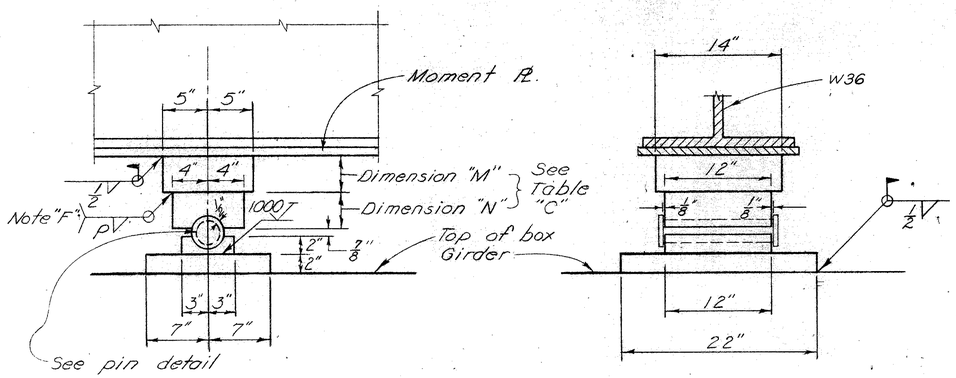
R-100 MASONRY PLATE (FOR ABUTMENTS)

1⅝" ϕ holes for 1¼" ϕ x 1'-8" swedge anchor bolts with washers. Bolts set 1'-3" into concrete.



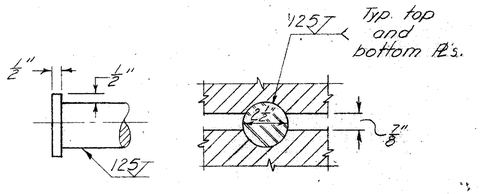
R-200 MASONRY PLATE (FOR PIERS No. 1 and 7)

For additional details see STD. DWG. RB-1-55.



FIXED BEARING DETAILS (F-200)

Note "F"
Field weld to Moment Plate for Beams 1, 2 & 3.



BEARING PIN DETAIL

STEEL Plates shall conform to ASTM Designation A36-62 T, and pins to ASTM A-108.

TABLE "C"			
Location	Dimension "N"	Dimension "M"	"P"
	PIER	No. 4	
Beam 1	.294'	0	1/2
Beam 2	.443'	0	1/2
Beam 3	.535'	0	5/8
Beam 4	.4167'	.2583'	1/2
Beam 5	.5833'	.2247'	5/8
Beam 6	.5833'	.2447'	5/8
Beam 7	.5833'	.2717'	5/8
Beam 8	.5833'	.2927'	5/8
Beam 9	.5833'	.3587'	5/8
Beam 10	.5833'	.2487'	5/8

Rocker and Fixed Bearing Setting Data (Distance in inches)

RIGHT BRIDGE

Temperature at time of setting °F	Rear Abut. ℄ Abut. brg.	Pier No. 1 ℄ Pier	Pier No. 2 ℄ Pier	Pier No. 3 ℄ Pier	Pier No. 4 ℄ Pier	Pier No. 5 ℄ Pier	Pier No. 6 ℄ Pier	℄ Pier	Fwd. Abut. ℄ Abut. brg.
+105	+1"	+13/16"	+1/2"	+1/4"	0	+1/4"	+1/2"		+3/4"
+95	+3/4"	+5/8"	+3/8"	+3/16"	0	+3/16"	+3/8"		+9/16"
+85	+1/2"	+3/8"	+1/4"	+1/8"	0	+1/8"	+1/4		+3/8"
+75	+1/4"	+3/16	+1/8"	+1/16"	0	+1/16"	+1/8"		+3/16"
+65	0	0	0	0	0	0	0		0
+55	-1/4"	-3/16"	-1/8"	-1/16"	0	-1/16"	-1/8"		-3/16"
+45	-1/2"	-3/8"	-1/4"	-1/8"	0	-1/8"	-1/4"		-3/8"
+35	-3/4"	-5/8"	-3/8"	-3/16"	0	-3/16"	-3/8"		-9/16"
+25	-1"	-13/16"	-1/2"	-1/4"	0	-1/4"	-1/2"		-3/4"

LEFT BRIDGE

	Rear Abut.		Pier No. 2	Pier No. 3	Pier No. 4	Pier No. 5	Pier No. 6	Pier No. 7	Fwd Abut.
+105	+3/4"		+1/2"	+1/4"	0	+1/4"	+1/2"	+13/16"	+1"
+95	+9/16"		+3/8"	+3/16"	0	+3/16"	+3/8"	+5/8"	+3/4"
+85	+3/8"		+1/4"	+1/8"	0	+1/8"	+1/4"	+3/8"	+1/2"
+75	+3/16"		+1/8"	+1/16"	0	+1/16"	+1/8"	+3/16"	+1/4"
+65	0		0	0	0	0	0	0	0
+55	-3/16"		-1/8"	-1/16"	0	-1/16"	-1/8"	-3/16"	-1/4"
+45	-3/8"		-1/4"	-1/8"	0	-1/8"	-1/4"	-3/8"	-1/2"
+35	-9/16"		-3/8"	-3/16"	0	-3/16"	-3/8"	-5/8"	-3/4"
+25	-3/4"		-1/2"	-1/4"	0	-1/4"	-1/2"	-13/16"	-1"

"+" Indicates position of rockers tilted away from PIER No. 4 for temperature above 65°F
"-" Indicates position of rockers tilted toward PIER No. 4 for temperatures below 65°F

FHWA REGION	STATE	PROJECT	
5	OHIO		

295/443

BELMONT COUNTY
BEL-7-11.89

25/28

STICKLEN - BELSHEIM & ASSOCIATES
ENGINEERS
WORTHINGTON OHIO

BEAM BEARING DETAILS

BRIDGE No. BEL-7-1197
OVER
CONSOLIDATED RAIL CORP.
STA. 633+99.75
640+50.25
BELMONT CO.

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
AB	RDY		S.D.	DGH	8-90	

MICROFILMED
OCT 31 1994

FHWA REGION	STATE	PROJECT	
5	OHIO		

296/443

BELMONT COUNTY
BEL-7-11.89

DEFLECTION AND CAMBER TABLE LT. Bridge)

	SPAN No. 1			SPAN No. 2			SPAN No. 3			SPAN No. 4			SPAN No. 5			SPAN No. 6			SPAN No. 7		
	1/4 Pt.	1/2 Pt.	Splice Pt.	1/4 Pt.	1/2 Pt.	Splice Pt.	1/4 Pt.	1/2 Pt.	Splice Pt.	1/4 Pt.	1/2 Pt.	Splice Pt.	1/4 Pt.	1/2 Pt.	Splice Pt.	1/4 Pt.	1/2 Pt.	Splice Pt.	1/4 Pt.	1/2 Pt.	3/4 Pt.
Deflection due to weight of steel	1/16"	1/8"	1/16"	1/16"	1/8"	1/16"	1/16"	1/8"	1/16"	1/16"	1/8"	1/16"	1/16"	1/8"	1/16"	1/16"	1/8"	1/16"	1/16"	1/8"	1/16"
Deflection due to Remaining Dead Load	5/16"	5/16"	1/8"	3/16"	3/8"	1/8"	3/16"	3/8"	1/8"	3/16"	3/8"	1/8"	3/16"	3/8"	1/8"	3/16"	3/8"	1/8"	1/8"	5/16"	5/16"
Adjustment required for Vertical Curve	—	—	—	—	—	—	1/16"	1/8"	1/8"	1/16"	9/16"	3/8"	1/16"	9/16"	3/8"	1/16"	9/16"	3/8"	1/4"	3/8"	1/4"
Adjustment required for Horizontal Curve	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1/16"	—	—	—	—
Required Shop Camber	3/8"	7/16"	3/16"	1/4"	1/2"	3/16"	5/16"	5/8"	5/16"	11/16"	1 1/16"	9/16"	11/16"	1 1/16"	9/16"	11/16"	1"	9/16"	7/16"	13/16"	5/8"
Deflection due to weight of steel	1/16"	1/8"	1/16"	1/16"	1/8"	1/16"	1/16"	1/8"	1/16"	1/16"	1/8"	1/16"	1/16"	1/8"	1/16"	1/16"	1/8"	1/16"	1/16"	1/8"	1/16"
Deflection due to Remaining Dead Load	3/8"	3/8"	3/16"	1/4"	7/16"	1/8"	1/4"	7/16"	3/16"	1/4"	7/16"	1/8"	1/4"	7/16"	1/8"	1/4"	7/16"	1/8"	3/16"	3/8"	5/16"
Adjustment required for Vertical Curve	—	—	—	—	—	—	1/16"	1/8"	1/8"	7/16"	9/16"	3/8"	7/16"	9/16"	3/8"	7/16"	9/16"	3/8"	1/4"	3/8"	1/4"
Adjustment required for Horizontal Curve	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1/16"	—	—	—	—
Required Shop Camber	7/16"	1/2"	1/4"	5/16"	9/16"	3/16"	3/8"	11/16"	3/8"	3/4"	1 1/8"	9/16"	3/4"	1 1/8"	9/16"	3/4"	1 1/16"	9/16"	1/2"	7/8"	5/8"

Beams Line 1 & 5

Beams Line 2, 3 & 4

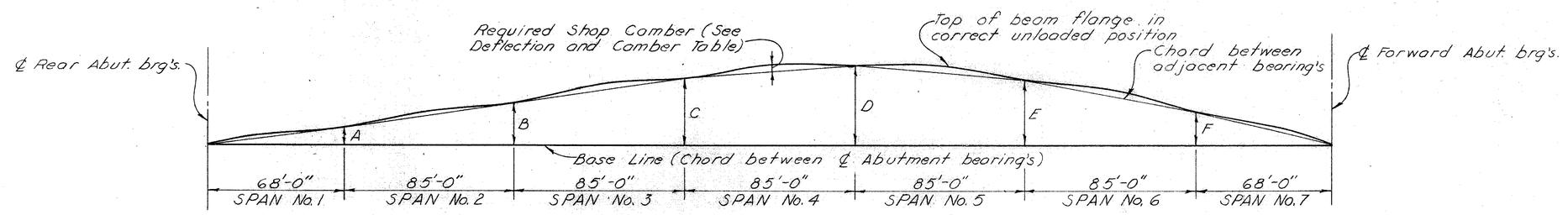
DEFLECTION AND CAMBER TABLE (RT. Bridge)

	SPAN No. 1			SPAN No. 2			SPAN No. 3			SPAN No. 4			SPAN No. 5			SPAN No. 6			SPAN No. 7		
	1/4 Pt.	1/2 Pt.	Splice Pt.	1/4 Pt.	1/2 Pt.	Splice Pt.	1/4 Pt.	1/2 Pt.	Splice Pt.	1/4 Pt.	1/2 Pt.	Splice Pt.	1/4 Pt.	1/2 Pt.	Splice Pt.	1/4 Pt.	1/2 Pt.	Splice Pt.	1/4 Pt.	1/2 Pt.	3/4 Pt.
Deflection due to weight of steel	1/16"	1/8"	1/16"	1/16"	1/8"	1/16"	1/16"	1/8"	1/16"	1/16"	1/8"	1/16"	1/16"	1/8"	1/16"	1/16"	1/8"	1/16"	1/16"	1/8"	1/16"
Deflection due to Remaining Dead Load	5/16"	5/16"	1/8"	3/16"	3/8"	1/8"	1/4"	3/8"	1/8"	3/16"	3/8"	1/8"	3/16"	3/8"	1/8"	3/16"	3/8"	1/8"	1/8"	5/16"	5/16"
Adjustment required for Vertical Curve	—	—	—	—	—	—	—	—	—	1/16"	1/8"	1/8"	7/16"	9/16"	3/8"	7/16"	9/16"	3/8"	1/4"	3/8"	1/4"
Adjustment required for Horizontal Curve	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Required Shop Camber	3/8"	7/16"	3/16"	1/4"	1/2"	3/16"	5/16"	1/2"	3/16"	5/16"	5/8"	5/16"	11/16"	1 1/16"	9/16"	11/16"	1 1/16"	9/16"	7/16"	13/16"	5/8"
Deflection due to weight of steel	1/16"	1/8"	1/16"	1/16"	1/8"	1/16"	1/16"	1/8"	1/16"	1/16"	1/8"	1/16"	1/16"	1/8"	1/16"	1/16"	1/8"	1/16"	1/16"	1/8"	1/16"
Deflection due to Remaining Dead Load	3/8"	3/8"	3/16"	1/4"	1/2"	3/16"	1/4"	7/16"	3/16"	1/4"	7/16"	3/16"	1/4"	7/16"	3/16"	1/4"	7/16"	1/8"	3/16"	3/8"	3/8"
Adjustment required for Vertical Curve	—	—	—	—	—	—	—	—	—	1/16"	1/8"	1/8"	7/16"	9/16"	3/8"	7/16"	9/16"	3/8"	1/4"	3/8"	1/4"
Adjustment required for Horizontal Curve	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Required Shop Camber	7/16"	1/2"	1/4"	5/16"	5/8"	1/4"	5/16"	9/16"	1/4"	3/8"	11/16"	3/8"	3/4"	1 1/8"	5/8"	3/4"	1 1/8"	9/16"	1/2"	7/8"	11/16"

Beams Line 6 & 10

Beams Line 7, 8 & 9

	DIMENSIONS					
	A	B	C	D	E	F
Beam Line ①	.2630'	.9592'	1.4751'	1.7019'	1.4848'	.7537'
Beam Line ②	.4178'	.9401'	1.4454'	1.6616'	1.4489'	.7512'
Beam Line ③	.4095'	.9213'	1.4161'	1.6219'	1.4137'	.7495'
Beam Line ④	.4010'	.9022'	1.3864'	1.5816'	1.3768'	.7470'
Beam Line ⑤	.3926'	.8834'	1.3571'	1.5419'	1.3416'	.7454'
Beam Line ⑥	.2209'	.5005'	.77918'	1.0428'	1.0175'	.6081'
Beam Line ⑦	.2064'	.4866'	.7619'	1.0321'	1.0124'	.6096'
Beam Line ⑧	.1909'	.4717'	.7446'	1.0194'	1.0053'	.6091'
Beam Line ⑨	.1773'	.4600'	.7307'	1.0083'	.9950'	.6027'
Beam Line ⑩	.2118'	.5543'	.8907'	1.1092'	.9967'	.5822'



CAMBER DIAGRAM

26/28

STICKLEN - BELSHEIM & ASSOCIATES
ENGINEERS
WORTHINGTON OHIO

DEFLECTION AND CAMBER DATA

BRIDGE No. BEL-7-1197
OVER
CONSOLIDATED RAIL CORP.
STA. 633+99.75
640+50.25
BELMONT CO.

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
AB	R.D.Y.		S.D.	ACH	6-8-70	

BEL-7-1197-

MICROFILMED
OCT 3 1 '84

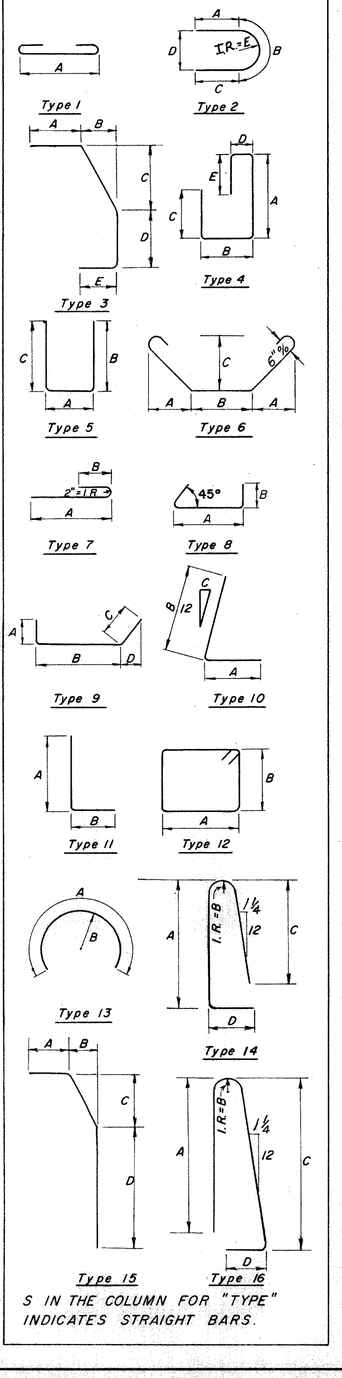
REINFORCING STEEL LIST

FHWA REGION	STATE	PROJECT	
5	OHIO		

297
443

BELMONT COUNTY
BEL-7-11.89

BENDING DIAGRAM



S IN THE COLUMN FOR "TYPE" INDICATES STRAIGHT BARS.

MARK	NO.	LENGTH	WEIGHT	TYPE	A	B	C	D	E
FORWARD ABUTMENT RIGHT BRIDGE									
A803	7	39'-3"	734	S					
A600	26	15'-3"	596	5	5'-4"	2'-9"	7'-6"		
A602	36	9'-9"	527	5	1'-5"	4'-4"	4'-4"		
A603	36	6'-1"	329	5	1'-5"	2'-6"	2'-6"		
A604	36	7'-3"	392	5	0'-11"	3'-4"	3'-4"		
A607	6	7'-4"	66	1	6'-0"				
A608	2	10'-3"	31	5	1'-11"	4'-4"	4'-4"		
A609	1	9'-11"	15	5	1'-11"	4'-2"	4'-2"		
A611	3	4'-10"	22	15	0'-7"	0'-7"	0'-8"	3'-6"	
A500	26	8'-0"	217	11	7'-6"	0'-7½"			
A501	26	8'-3"	224	5	5'-4"	1'-7"	1'-7"		
A503	26	7'-8"	208	5	3'-5"	2'-3"	2'-3"		
A529	4	3'-6"	15	S					
A531	3	4'-6"	14	S					
A532	10	1'-11"	20	S					
A515	16	37'-5"	624	S					
A516	1	36'-1"	39	S					
A534	3	6'-0"	19	S					
D801	23	5'-6"	338	15	9"	2'-4"	2'-4"	1'-6"	
REAR ABUTMENT RIGHT BRIDGE									
A801	14	22'-10"	854	S					
A601	30	14'-3"	642	5	5'-4"	2'-9"	6'-6"		
A602	41	9'-9"	600	5	1'-5"	4'-4"	4'-4"		
A603	39	6'-1"	356	5	1'-5"	2'-6"	2'-6"		
A604	39	7'-3"	425	5	0'-11"	3'-4"	3'-4"		
A606	2	10'-7"	32	5	1'-5"	4'-9"	4'-9"		
A607	6	7'-4"	66	1	6'-0"				
A610	8	4'-4"	52	15	0'-7"	0'-7"	0'-8"	3'-0"	
A501	31	8'-3"	267	5	5'-4"	1'-7"	1'-7"		
A502	30	7'-0"	219	11	6'-6"	0'-7½"			
A503	30	7'-8"	240	5	3'-5"	2'-3"	2'-3"		
A504	32	21'-9"	726	S					
A505	2	21'-6"	45	S					
A507	22	5'-5"	124	S					
A508	4	12'-8"	53	7	9'-3"	3'-1"			
A509	6	7'-8"	48	S					
A510	6	5'-0"	31	11	4'-6"	0'-7½"			
A511	4	4'-0"	17	11	3'-3"	0'-10⅝"			
A529	8	3'-6"	29	S					
A530	4	1'-5"	6	S					
D801	25	5'-6"	367	15	9"	2'-4"	2'-4"	1'-6"	
A531	1	4'-6"	5	S					

MARK	NO.	LENGTH	WEIGHT	TYPE	A	B	C	D	E
FORWARD ABUTMENT LEFT BRIDGE									
A804	14	21'-5"	801	S					
A601	25	14'-3"	535	5	5'-4"	2'-9"	6'-6"		
A602	37	9'-9"	542	5	1'-5"	4'-4"	4'-4"		
A603	36	6'-1"	329	5	1'-5"	2'-6"	2'-6"		
A604	36	7'-3"	392	5	0'-11"	3'-4"	3'-4"		
A605	1	8'-9"	13	5	1'-5"	3'-10"	3'-10"		
A607	6	7'-4"	66	1	6'-0"				
A610	8	4'-4"	52	15	0'-7"	0'-7"	0'-8"	3'-0"	
A501	25	8'-3"	215	5	5'-4"	1'-7"	1'-7"		
A502	25	7'-0"	183	11	6'-6"	0'-7½"			
A510	4	5'-0"	21	11	4'-6"	0'-7½"			
A517	16	38'-5"	641	S					
A518	25	8'-0"	209	5	3'-5"	2'-5"	2'-5"		
A530	4	1'-5"	6	S					
A520	2	20'-1"	42	S					
A521	22	5'-5"	124	S					
A522	8	9'-7"	80	S					
A529	12	3'-6"	44	S					
D801	23	5'-6"	338	15	9"	2'-4"	2'-4"	1'-6"	
REAR ABUTMENT LEFT BRIDGE									
A802	7	37'-9"	706	S					
A601	25	14'-3"	535	5	5'-4"	2'-9"	6'-6"		
A602	35	9'-9"	513	5	1'-5"	4'-4"	4'-4"		
A603	35	6'-1"	320	5	1'-5"	2'-6"	2'-6"		
A604	35	7'-3"	381	5	0'-11"	3'-4"	3'-4"		
A607	6	7'-4"	66	1	6'-0"				
A608	3	10'-3"	46	5	1'-11"	4'-4"	4'-4"		
A609	3	9'-11"	45	5	1'-11"	4'-2"	4'-2"		
A610	5	4'-4"	33	15	0'-7"	0'-7"	0'-8"	3'-0"	
A501	25	8'-3"	215	5	5'-4"	1'-7"	1'-7"		
A502	25	7'-0"	183	11	6'-6"	0'-7½"			
A503	25	7'-8"	200	5	3'-5"	2'-3"	2'-3"		
A512	1	36'-10"	38	S					
A514	16	36'-0"	601	S					
D801	23	5'-6"	338	15	9"	2'-4"	2'-4"	1'-6"	
A529	4	3'-3"	14	S					
A532	10	1'-11"	20	S					
A533	3	4'-4"	14	11	3'-3"	1'-2½"			

MARK	NO.	LENGTH	WEIGHT	TYPE	A	B	C	D	E
WINGWALLS ⊕									
A805	24	9'-6"	609	S					
A610	12	10'-2"	183	5	1'-2"	4'-8"	4'-8"		
A611	32	7'-6"	360	S					
A612	4	13'-0"	78	5	1'-2"	6'-1"	6'-1"		
A523	32	10'-10"	362	12	3'-0"	2'-2"			
A524	24	7'-1"	177	S					
A525	8	9'-0"	75	S					
A526	16	11'-8"	195	S					
A527	4 Series of 5	6'-8" to 10'-8"	181	12	1'-2"	1'-11" to 3'-11"	Vary "B" dimension by 6" increments		
A528	8	8'-4"	70	9	0	1'-8"	6'-9"	6'-4"	
Y601	36	4'-11"	266	15	0'-7½"	0'-7"	0'-8"	3'-6"	
Y501	36	1'-11½"	72	5	0'-11½"	0'-7½"	0'-7½"		
Y502	40	3'-0"	125	S					
Y503	16	6'-5"	107	14	3'-2"	0'-3¾"	2'-5"	0'-7½"	
Y504	32	11'-8"	389	S					
Y505	8	7'-3"	60	S					
Y506	8	6'-0"	50	S					
Y507	36	2'-10"	106	S					
RETAINING WALL FORWARD ABUTMENTS									
W602	25	10'-1"	379	15	0'-7"	0'-7"	0'-8"	8'-9"	
W501	40	24'-8"	1029	S					
W603	25	9'-8"	363	15	0'-7"	0'-7"	0'-8"	8'-4"	
W605	79	4'-7"	544	11	4'-1"	0'-8"			
W505	132	6'-6"	895	S					
W604	29	10'-0"	436	15	0'-7"	0'-7"	0'-8"	8'-8"	
W508	12	10'-0"	125	S					
W510	20	28'-5"	593	S					
W511	20	27'-6"	574	S					
W512	4	28'-0"	117	9	0	24'-10"	3'-2"	2'-9"	
W513	25	8'-11"	233	S					
W514	158	3'-3"	536	S					
W515	25	8'-6"	222	S					
W516	29	8'-10"	267	S					
RETAINING WALL REAR ABUTMENTS									
W601	155	4'-4"	1009	15	0'-7"	0'-7"	0'-8"	3'-0"	
W501	36	24'-8"	926	S					
W502	55	11'-0"	631	7	7'-9"	3'-1"			
W503	55	6'-6"	372	S					
W504	79	4'-1"	336	11	3'-7"	0'-7½"			
W505	132	6'-6"	895	S					
W506	24	11'-2"	280	7	7'-11"	3'-1"			
W507	24	7'-9"	194	S					
W508	12	10'-0"	125	S					
W509	24	27'-6"	688	S					
W510	18	28'-5"	533	S					
W514	79	3'-3"	268	S					
W517	1	23'-8"	25	S					
W518	79	4'-4"	357	11	3'-3"	1'-2½"			

SPIRAL REINFORCING

MARK	NO.	LENGTH	WEIGHT		

Spirals - Core Diam. 56" %

- Pitch 4½" c/c

- Other details in accordance with C.R.S.I. standard practice.

* Bend in field where necessary

⊕ Wingwall reinforcing bars include those bars for both rear and forward abutments.

27/28

STICKLEN-BELSHEIM & ASSOCIATES
ENGINEERS
WORTHINGTON OHIO

REINFORCING STEEL LIST

BRIDGE No. BEL-7-1197
OVER
CONSOLIDATED RAIL CORP.
STA. 633 + 99.75
640 + 50.25
BELMONT CO.

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
DGH	RDY		VLA	DGH	4/9/70	11/76 5/23/79

MICROFILMED
OCT 31 1994

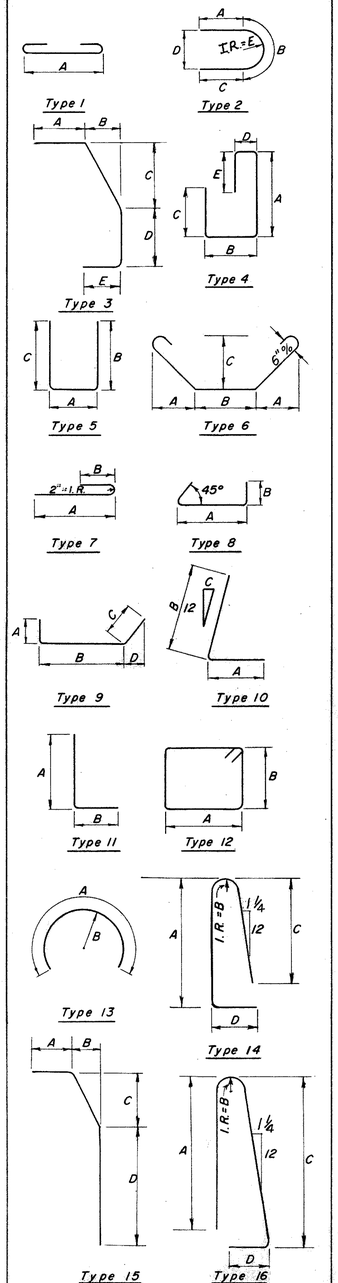
REINFORCING STEEL LIST

FHWA REGION	STATE	PROJECT		298 / 443
5	OHIO			

BELMONT COUNTY

BEL-7-11.89

BENDING DIAGRAM



S IN THE COLUMN FOR "TYPE" INDICATES STRAIGHT BARS.

PIER No. 1

MARK	NO.	LENGTH	WEIGHT	TYPE	A	B	C	D	E
P1101	12	40'-6"	2,582	1	37'-4"				
P901	66	8'-9"	1,964	S					
P903	66	6'-5"	1,440	11	5'-5"	1'-3"			
P816	17	10'-4"	469	1	8'-6"				
P602	8	18'-10"	226	1	17'-6"				
P501	6	12'-9"	80	S					
P502	2	15'-9"	33	S					
P503	6	7'-1"	44	2	1'-7"	3'-11"	1'-7"	2'-5¾"	1'-2¼"
P504	4	37'-4"	156	S					
P505	16	13'-7"	227	5	1'-8"	6'-1"	6'-1"		
P506	16	5'-5"	90	5	1'-8"	2'-0"	2'-0"		
P507	10	6'-9"	70	5	2'-8"	2'-2"	2'-2"		
	2	11'-3"				4'-5"	4'-5"		
P508	Series of 5	to 13'-11"	131	5⊗	2'-8"	to 5'-9"	to 5'-9"		
P509	4	16'-11"	71	15	4'-6"	2'-0"	10'-3"	2'-1"	
P510	4	16'-5"	68	15	4'-0"	2'-0"	10'-3"	2'-1"	
P511	10	13'-1"	136	5	2'-8"	5'-4"	5'-4"		

PIERS No. 2 & 6

MARK	NO.	LENGTH	WEIGHT	TYPE	A	B	C	D	E
P1001	96	8'-0"	3,305	11	6'-11"	1'-4½"			
P1002	48	27'-10"	5,749	S					
P1003	24	32'-2"	3,322	S					
P1004	24	30'-2"	3,115	S					
P904	96	14'-0"	4,570	1	11'-6"				
P407	64	4'-1"	175	11	2'-11"	1'-3"			

PIERS No. 3 & 5

MARK	NO.	LENGTH	WEIGHT	TYPE	A	B	C	D	E
P904	44	14'-0"	2,094	1	11'-6"				
P806	128	6'-8"	2,278	11	5'-9"	1'-1"			
P807	52	11'-10"	1,643	S					
P808	22	19'-4"	1,136	1	17'-6"				
P809	14	26'-2"	978	S					
P810	14	29'-4"	1,096	S					
P811	10	14'-2"	378	S					
P812	10	17'-4"	463	S					
P813	24	24'-9"	1,586	S					
P814	24	25'-5"	1,629	S					
P815	20	5'-11"	316	11	5'-0"	1'-1"			
P601	40	9'-10"	591	1	8'-6"				
P401	218	11'-1"	1,614	2	2'-8"	5'-9"	2'-8"	3'-8"	1'-9½"
P402	399	4'-6"	1,199	8	3'-8"	0'-7"			
P406	48	7'-2"	230	S					
P408	24	5'-10"	94	5	3'-7"	1'-3"	1'-3"		
P409	8	8'-10"	47	5	6'-7"	1'-3"	1'-3"		
P410	4	9'-10"	26	5	7'-7"	1'-3"	1'-3"		

PIER No. 4

MARK	NO.	LENGTH	WEIGHT	TYPE	A	B	C	D	E
P904	40	14'-0"	1,904	1	11'-6"				
P801	44	9'-10"	1,155	S					
P802	10	14'-0"	374	S					
P803	10	16'-4"	436	S					
P804	20	24'-0"	1,282	S					
P805	20	26'-4"	1,406	S					
P806	84	6'-8"	1,495	11	5'-9"	1'-1"			
P815	20	5'-11"	316	11	5'-0"	1'-1"			
P701	24	19'-2"	940	1	17'-6"				
P401	40	11'-1"	296	2	2'-8"	5'-9"	2'-8"	3'-8"	1'-9½"
P402	248	4'-6"	745	8	3'-8"	0'-7"			
P404	64	13'-1"	559	2	3'-8"	5'-9"	3'-8"	3'-8"	1'-9½"
P406	40	7'-2"	191	S					
P408	16	5'-10"	62	5	3'-7"	1'-3"	1'-3"		
P411	6	8'-6"	34	S					

PIER No. 7

MARK	NO.	LENGTH	WEIGHT	TYPE	A	B	C	D	E
P1103	12	38'-10"	2,476	1	35'-8"				
P902	66	10'-0"	2,244	S					
P903	66	6'-5"	1,440	11	5'-5"	1'-3"			
P816	17	10'-4"	469	1	8'-6"				
P602	8	18'-10"	226	1	17'-6"				
P501	8	12'-9"	106	S					
P502	2	15'-9"	33	S					
P503	8	7'-1"	59	2	1'-7"	3'-11"	1'-7"	2'-5¾"	1'-2¼"
P505	16	13'-7"	227	5	1'-8"	6'-1"	6'-1"		
P506	16	5'-5"	90	5	1'-8"	2'-0"	2'-0"		
P507	10	6'-9"	70	5	2'-8"	2'-2"	2'-2"		
	2	11'-3"				4'-5"	4'-5"		
P508	Series of 5	to 13'-11"	131	5⊗	2'-8"	to 5'-9"	to 5'-9"		
P511	10	13'-1"	136	5	2'-8"	5'-4"	5'-4"		
P512	4	16'-4"	68	15	4'-9"	2'-0"	9'-5"	2'-1"	
P513	4	35'-8"	149	S					
P514	4	15'-7"	65	15	4'-0"	2'-0"	9'-5"	2'-1"	

SUPERSTRUCTURE

MARK	NO.	LENGTH	WEIGHT	TYPE	A	B	C	D	E
S601	1928	36'-5"	105,457	S					
S602	1548	37'-7"	87,385	S					
S603	107	25'-0"	4,018	S					
S604	214	20'-6"	6,589	S					
S605	107	17'-4"	2,786	S					
S606	101	26'-0"	3,944	S					
S607	202	21'-2"	6,422	S					
S608	101	16'-4"	2,478	S					
S501	3164	30'-0"	99,002	S					
S502	432	34'-0"	15,320	S					
S503	176	22'-3"	4,084	S					
S504	844	3'-9"	3,301	11	3'-2"	0'-8½"			
S505	750	2'-10"	2,216	3	0'-7"	0'-7"	0'-8"	0'-11"	0'-8½"
X501	750	1'-11½"	1,532	5	0'-11½"	0'-7½"	0'-7½"		
X502	844	5'-5"	4,768	16	2'-2"	0'-3¾"	2'-5"	0'-7½"	
X503	750	2'-2"	1,695	11	1'-8"	0'-7½"			
X504	750	2'-11"	2,282	3	0'-9"	0'-7"	0'-8"	0'-11"	0'-7½"
X505	32	12'-1"	403	S					
X506	416	13'-5"	5,821	S					
X507	384	7'-2"	2,870	S					
X508	844	2'-7"	2,274	S					
L505	16	3'-1"	51	5	2'-1"	0'-7½"	0'-7½"		
L506	16	8'-4"	139	17	2'-7"	3'-0"	3'-0"	0'-4"	
L507	24	7'-11"	198	18	2'-1"	1'-4"	2'-1"	0'-6"	
L508	16	3'-0"	52	S					

SPIRAL REINFORCING

MARK	NO.	LENGTH	WEIGHT	SHAPE
SP401	2	27'-11"	1,771	Bt.
SP402	1	30'-2"	955	Bt.
SP403	1	32'-2"	1,016	Bt.

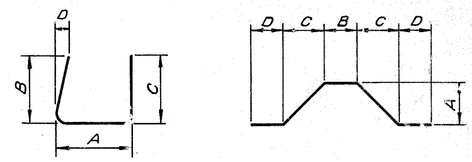
Spirals - Core Diam. 56" %
6 - Spacers for each column
- Pitch 4½" c/c

- Other details in accordance with C.R.S.I. standard practice.

* Bend in field where necessary

⊗ Vary "B" & "C" by 4" increments

NOTE:
Refer to C.M.S. 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.



TYPE 17 TYPE 18

28/28

STICKLEN-BELSHEIM & ASSOCIATES ENGINEERS
WORTHINGTON OHIO

REINFORCING STEEL LIST

BRIDGE No. BEL-7-1197
OVER
CONSOLIDATED RAIL CORP.
STA 633+99.75
BELMONT CO 640+50.25

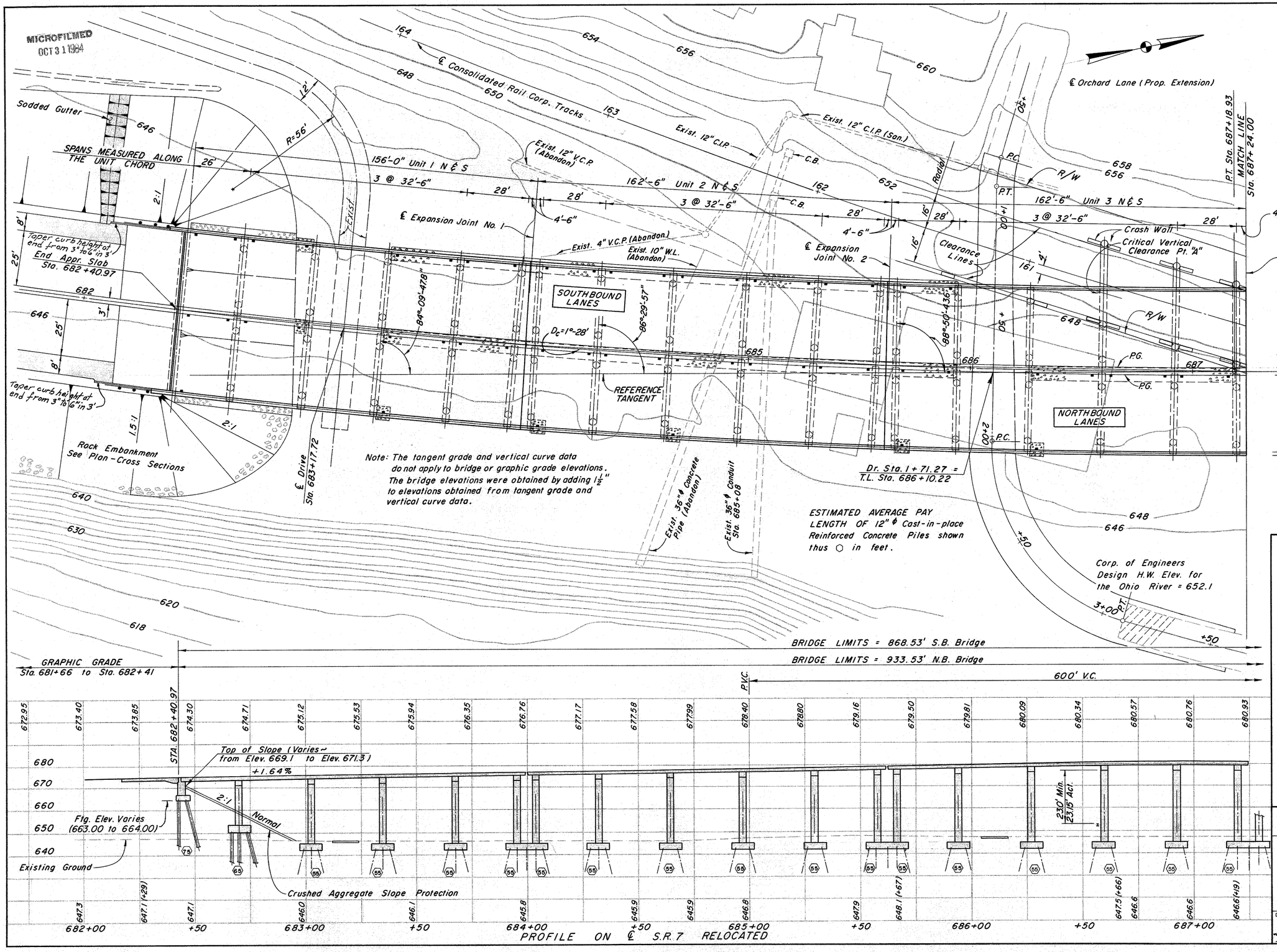
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
DGA	R.D.Y.		VLA	DGA	6/8/10	11/16 5/23/79

MICROFILMED
OCT 31 1984

F.H.W.A. REGION	STATE	PROJECT	
5	OHIO		

299/443

BEL-7-11.89



Note: The tangent grade and vertical curve data do not apply to bridge or graphic grade elevations. The bridge elevations were obtained by adding 1½" to elevations obtained from tangent grade and vertical curve data.

ESTIMATED AVERAGE PAY LENGTH OF 12" ϕ Cast-in-place Reinforced Concrete Piles shown thus ○ in feet.

CURVE DATA

℄ S.R. 7 Relocated
Δ = 26°-11'-27"
D_c = 1°-28'
R = 3906.53
T = 908.75
L = 1785.74
E = 104.31
PI Sta. 678+41.94
PT Sta. 687+18.93

EARTHWORK LIMITS shown are schematic. Actual slopes shall conform to Plan-Cross Sections.

TRAFFIC

1976 ADT = 6,390
1996 ADT = 10,650

TRAIN TRAFFIC

10 Freight trains daily
Max. speed = 35 m.p.h.

PROPOSED STRUCTURE

TYPE: Continuous reinforced concrete slab, cap and column piers and spill thru abuts.
SPANS: Several combinations of:
26'- 3 @ 32.5' - 28' - 4.5'
4.5' - 28' - 3 @ 32.5' - 28' - 4.5'
4.5' - 28' - 2 @ 32.5' - 28' - 4.5'
4.5' - 28' - 32.5' - 26'
ROADWAY: 73' f/f Deflector Parapets (incl. 3' concrete median barrier)
LOADING: HS 20-44
SKEW: Unit 1 = 5°-50'-12; Unit 2 = 3°-30'-03"; Unit 3 = 1°-09'-16.43" (Lt. Fwd. from REFERENCE TAN.) & None
WEARING SURFACE: 1½" Asphalt concrete
APPROACH SLABS: AS-1-72 (25' long, Mod.)
ALIGNMENT: 1° - 28' Curve & Tan.
SUPERELEVATION: Varies

1/44

STICKLEN-BELSHEIM & ASSOCIATES
ENGINEERS
WORTHINGTON OHIO

SITE PLAN

BRIDGE No. BEL-7-1289
OVER
CONSOLIDATED RAIL CORP.
BELMONT CO.
STA. 682+40.97
691+74.50

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JCL D.C.H.	GH AB	R.D.Y.	TRO	DLH	12/74	11/76 5/23/79

E.O. 374

MICROFILMED
OCT 3 1 1984

F.H.W.A. REGION	STATE	PROJECT	
5	OHIO		

BEL – 7 – 11.89

300/443

MATCH LINE Sta. 687+24.00

Sta. 688+86.50

Sta. 690+16.50

℄ Expansion Joint No. 3

℄ Expansion Joint No. 4

℄ Expansion Joint No. 5

Prop. 12" (San.)

Prop. 10" (San.)

Exist. 2" (Gas)

Exist. 2" (Gas)

Seeding and Jute Matting as per Std. Dwg. MC-7

Sodded Gutter

Exist. 12" C.I.P. (San.) (Abandon)

162'-6" Unit 4 NS

3 @ 32'-6"

130'-0" Unit 5 N℄S

2 @ 32'-6"

91'-0" Unit 6 S

4'-6" 28'-0" 28'-0" 4'-6" 28'-0" 28'-0" 4'-6" 28'-0" 32'-6" 26'-0"

Taper curb height at end from 3" to 6" in 3'

SOUTHBOUND LANES

NORTHBOUND LANES

Parapets

℄ Brg. Fwd. Abut. (S.B.) Sta. 691+07.50

Begin Appr. Slab Sta. 691+09.50

Retaining Wall

P.G. N12°-24'-37"E

℄ S.R. 7 Relocated

℄ Brg. Fwd. Abut. (N.B.) Sta. 691+72.50

Begin Appr. Slab Sta. 691+74.50

Type 6" Curb (Typical)

Taper curb height at end from 3" to 6" in 3'

Sodded Gutter

Crushed Aggregate

Exist. 10" (San.) (Abandon.)

Cellular Retaining Wall "A"

℄ Consolidated Rail Corp. Tracks

Radial

Sta. 688+01.17 ℄ S.R. 7 Reloc. = Sta. 159+20.10 ℄ Consolidated Rail Corp. Tracks

Prop. 15" Conduit

3'-0" Typical Unless otherwise shown

Crash Wall

Rock Channel Protection, Type "B" (Include with Roadway Quantities for payment)

156'-0" Unit 6 N

4'-6" 28'-0" 3 @ 32'-6" 26'-0"

156+00

155+83

R/W

688 689 690 691 692 693

159 158 157 156 155 154

650 640 630

654.4 653.4 653.4 653.9 653.9 652.9

647.0 647.2 646.0

663.0 663.9 663.6 663.3 663.2 664.1 663.5 663.2 653.9 652.9

660

BRIDGE LIMITS = 933.53' N.B. Bridge

BRIDGE LIMITS = 868.53' S.B. Bridge

600' V.C.

P.V.I. Sta. 688+00 Elev. 683.32

+1.64% -1.12%

PVT. STA. 691+09.50

STA. 691+74.50

GRAPHIC GRADE Sta. 691+75 to Sta. 692+50

680.93 681.06 681.17 681.25 681.30 681.32 681.32 681.28 681.22 681.12 681.00 680.85 680.67 680.46 680.23 679.96 679.40 679.12 678.81 678.51

Top of Slope Elev. 675.90
Ftg. Elev. 669.80

Top of Slope Elev. 674.20
Ftg. Elev. 668.10

Existing Ground Line

Normal

Elev. 671.80
Crushed Aggregate Slope Protection

Elev. 671.08

680 670 660 650 640

646.6 (+19) 647.3 (+30) 649.5 651.9 (+82) 652.7 (+11.2) 651.9 (+29) 651.3 (+33) 652.9 653.6 (+62.6) 653.8 653.9 653.9 (+89) 653.8 653.9 (+04) 655.3 (+05) 656.8 (+29) 657.6 659.3 (+92) 658.6 655.9 (+07) 654.2 (+17) 654.5 (+21) 655.4 (+41) 656.5 (+46) 659.0 659.4 (+55) 658.1 (+58) 660.6 (+99) 660.0 (+07)

687+00 +50 688+00 +50 689+00 +50 690+00 +50 691+00 +50 692+00

PROFILE ON ℄ S.R. 7 RELOCATED

ESTIMATED AVERAGE PAY LENGTH OF 12" ϕ Cast-in-place Reinforced Concrete Piles shown thus ○ in feet.

For pier footing elevations see PIER DETAILS.

2/44

STICKLEN-BELSHEIM & ASSOCIATES ENGINEERS
WORTHINGTON OHIO

SITE PLAN

BRIDGE No. BEL-7-1289
OVER
CONSOLIDATED RAIL CORP.
STA. 682+40.97
691+74.50

BELMONT CO.

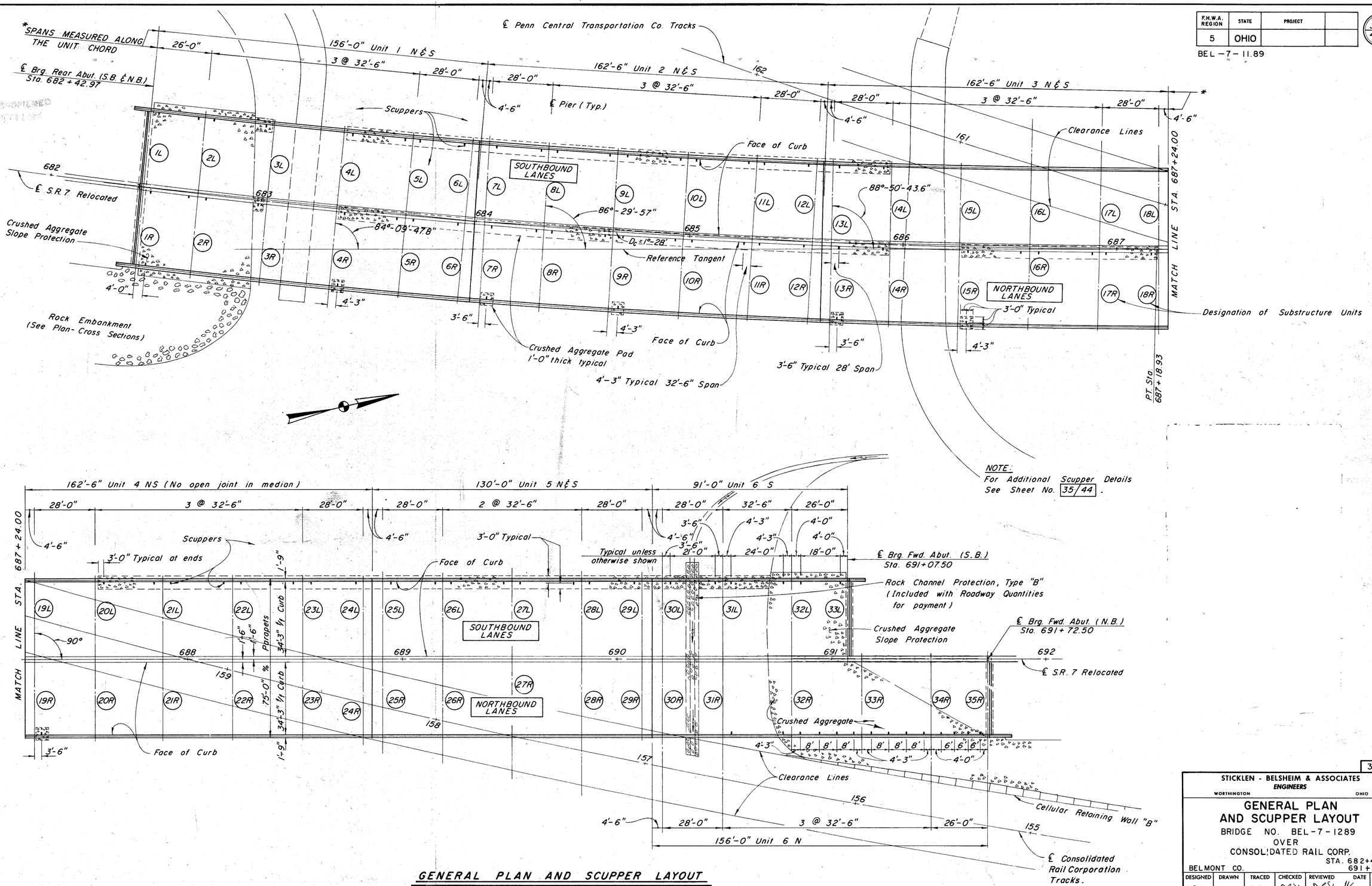
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JCL	GH AB	R.D.Y.	TRO	DGH	12/84	11/86 5/23/89

DGH 12-84

F.H.W.A. REGION	STATE	PROJECT	
5	OHIO		

BEL-7-11.89

301/443



NOTE:
For Additional Scupper Details See Sheet No. 35/44 .

GENERAL PLAN AND SCUPPER LAYOUT

3/44

STICKLEN - BELSHEIM & ASSOCIATES
ENGINEERS
WORTHINGTON OHIO

GENERAL PLAN AND SCUPPER LAYOUT

BRIDGE NO. BEL-7-1289
OVER
CONSOLIDATED RAIL CORP.
STA. 682+40.97
691+74.50
BELMONT CO.

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
TRO		R.D.Y.	DGH	DGH	11/21/74	11-76 5/23/79

MICROFILMED
OCT 3 1 1994

GENERAL NOTES

REFERENCE shall be made to Standard Drawings BR-1-67, Sht 2, revised 10-15-71, AS-1-72 dated 6-30-72 and to Supplemental Specifications:
836 dated 3-12-75, 845 dated 3-2-81, 849 dated 4-25-77 and 953 dated 8-21-80.

DESIGN SPECIFICATIONS: This structure conforms to "Standard Specifications for Highway Bridges" adopted by the American Association of State Highway Officials, 1969, including the Ohio "Supplement" to these specifications.

DESIGN DATA:
Design Loading HS 20-44
Concrete Class S - unit stress 1,200 p.s.i. for superstructure
class C - unit stress 1,333 p.s.i. for substructure
Structural Steel - ASTM A36 - unit stress 20,000 p.s.i.
Reinforcing Steel - ASTM A615, A616, or A617 - unit stress 20,000 p.s.i. Spiral reinforcement may be plain bars ASTM A82 or A615.

JACKING HOLES as shown on AS-1-72 are not req'd. Top reinforcing bars shall have 3" clearance from top surface of concrete. For additional Details See STD. DWG. AS-1-72, sheet 1.

PAINTING OF STRUCTURAL STEEL: All structural steel for the piers and superstructure shall be shop painted according to 514. The end dams at the abutments shall be field painted according to 514. The structural steel in the pier footings shall not receive any paint other than the shop applied prime coat.

PILES shall be driven to the minimum bearing capacities as shown in the table on sheet 15/44. Abutment piling shall be driven to a minimum bearing capacity of 36 tons per pile.

CAMBER shall be provided in the spans as follows (in addition to any required for conformance with the profile of the highway) to allow for dead load deflection.
4'-6" Span — 1/16" (At end of Cantilever)
26'-0" Span — 3/8"
28'-0" Span — 7/16"
32'-6" Span — 1/2"
This is the amount of camber required before falsework is released. To obtain this, proper allowance shall be made for the deflection of falsework members.

CURBS shall be placed after the shoring under the slab has been released sufficiently to permit the slab spans to attain full dead load deflection.

CONSTRUCTION CLEARANCE of 20 ft. vertically above the top of the railroad rails and 8 ft. horizontally from the center of tracks shall be maintained at all times.

RAILROAD AERIAL LINES will be relocated by the Railroad. The Contractor shall use all precautions necessary to see that the lines are not disturbed during the construction stage and shall cooperate with the Railroad in the relocation of these lines. The cost of the relocation shall be included in the railroad force account work.

DELINEATORS - see Sheet No. 2/28, Bridge No. BEL-7-1197 for Delineator Bridge Parapet Bracket Details.

PREFORMED EXPANSION JOINT FILLER in the railing parapet deflection joints may be either 1/4" gray sponge rubber, or 1/4" gray cellular polyvinyl chloride (PVC) sponge. If rubber is used it shall meet the requirements of AASHTO M-153. Included with superstructure concrete for payment.

EMBANKMENT CONSTRUCTION: The embankment at the rear abutment shall be constructed to the level of the subgrade between Sta. 680+00 and Sta. 683+00. After a 90 day waiting period, excavation may be made for the Rear Abutment, Piers 2L, 2R, 3L, 3R, and piles driven.

The embankment in the vicinity of the forward abutment shall be constructed in conjunction with the construction of the Cellular Retaining Wall "A".
The embankment shall be constructed up to the level of the subgrade between Sta. 690+75 and Sta. 694+00. After a 90 day waiting period, excavation may be made for Piers 31L, 31R, 32R, 33R, 34R, the forward Abutment, the Retaining Wall, and piles driven as per plan.
The waiting period of 90 days may be shortened only if authorized by the Director.

ITEM 517 RAILING: Holes in deep beam rail sections at all expansion joints shall be tightened as specified for expansion joints in 606.05.

BRIDGE TERMINAL ASSEMBLY TYPE A MODIFIED AS PER PLAN: The first, second and third posts located 2'-3", 6'-3" and 12'-6" from the end of the bridge parapet, shall be shifted 2 1/2", 1 3/4" and 5/8" respectively toward the roadway in order to provide proper attachment of the guardrail to the parapet which has a slope different from that shown on GR-3.

PREMOLDED SEALING STRIP AS PER PLAN: In lieu of premolded sealing strip, Type B Waterproofing (36" wide) may be used and shall be paid for by the linear foot at the same unit price bid for Item 512 Premolded sealing strip as per plan.

MINIMUM BAR LAP shall be 30 diameters.

MONOLITHIC WEARING SURFACE thickness is assumed to be 1".

Quantities calculated by T.R.O - 12-74
Quantities checked by D.G.W - 12-74

DECK PROTECTION METHOD: 1 1/2"
Latex Modified Concrete.

For additional notes, see Sh. No. 304

Revised 7-15-81

ESTIMATED QUANTITIES

Item	Total	Unit	Description	Abut's.	Piers	Superst.	Walls	General		
503	Lump	Sum	Cofferdams, cribs and sheeting					Lump		
503	4,162	Cu. Yds.	Unclassified excavation	368	3,491		303			
505	Lump	Sum	Test pile					Lump		
506	Lump	Sum	Pile test load					Lump		
506	4	Each	Subsequent pile test load		4					
507	34,170	Lin. Ft.	12" Cast-in-place reinforced concrete piles	2,780	31,390					
849	375	Lin. Ft.	Elastomeric compression seals for structural steel joints, 4 inch width, as per plan			375				
509	1,642,067	Lbs.	Reinforcing steel	16,832	696,176	910,731	18,328			
511	3,864	Cu. Yds.	Class S concrete, superstructure			3,864				
511	239	Cu. Yds.	Class C concrete, abutments	239						
511	1,726	Cu. Yds.	Class C concrete, piers above footings		1,726					
511	1,380	Cu. Yds.	Class C concrete, pier footings		1,380					
511	255	Cu. Yds.	Class C concrete, crash walls				255			
511	52	Cu. Yds.	Class C concrete, retaining walls				52			
512	2	Sq. Yds.	Type B waterproofing				2			
512	18	Lin. Ft.	Premolded sealing strip as per plan	6			12			
513	23,100	Lbs.	Structural steel (See Proposal Note)		6,600	16,500				
516	139	Sq. Ft.	1/4" preformed expansion joint filler	139						
514	16,500	Lbs.	Field painting of new structural steel, system A as per plan			16,500				
516	105	Sq. Ft.	1" preformed expansion joint filler				105			
516	978	Lbs.	1/4" phosphor bronze sliding plates, A.S.T.M. B-100 Alloy	978						
518	77	Cu. Yds.	Porous backfill	67			10			
518	136	Lin. Ft.	6" perforated, helical corrugated steel pipe 707.01	136						
518	84	Lin. Ft.	6" non-perforated, helical corrugated steel pipe, including specials 707.01	84						
518	89	Each	Scuppers, TS 6"x6"x.25", as per plan			89				
516	375	Lin. Ft.	Expansion and contraction joints as per plan			375				
601	1,885	Sq. Yds.	Crushed aggregate slope protection.					1,885		
523	6	Hours	Dynamic pile tests					6		
845	6,851	Sq. Yds.	Latex modified concrete overlay (1 1/2" thick) as per plan (See Proposal Note)			6,851				

4/44

STICKLEN - BELSHEIM & ASSOCIATES
ENGINEERS
WORTHINGTON OHIO

GENERAL NOTES AND ESTIMATED QUANTITIES
BRIDGE NO. BEL-7-1289
OVER
CONSOLIDATED RAIL CORP
STA. 682+40.97
BELMONT CO. 691+74.50

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
TRO	GEW	G.E.W.	MM	DGW	5/12/10	11/76 5/23/79

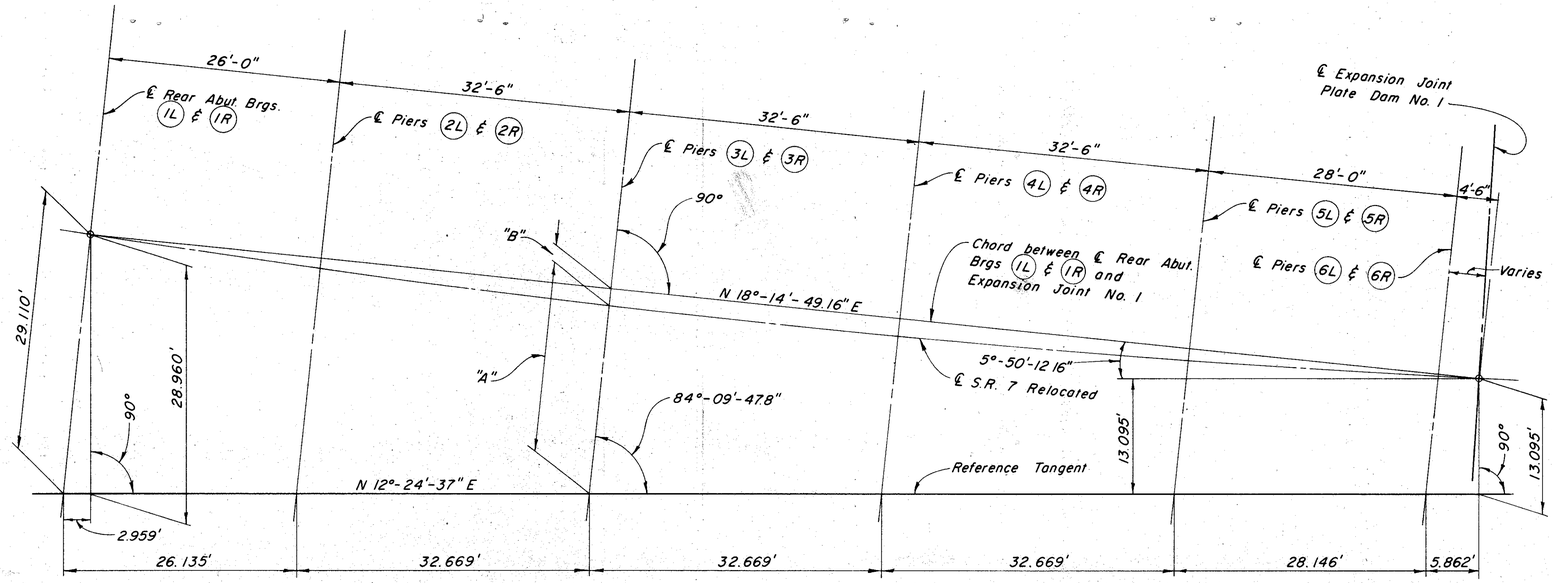
E.O.671

MICROFILMED
OCT 31 1984

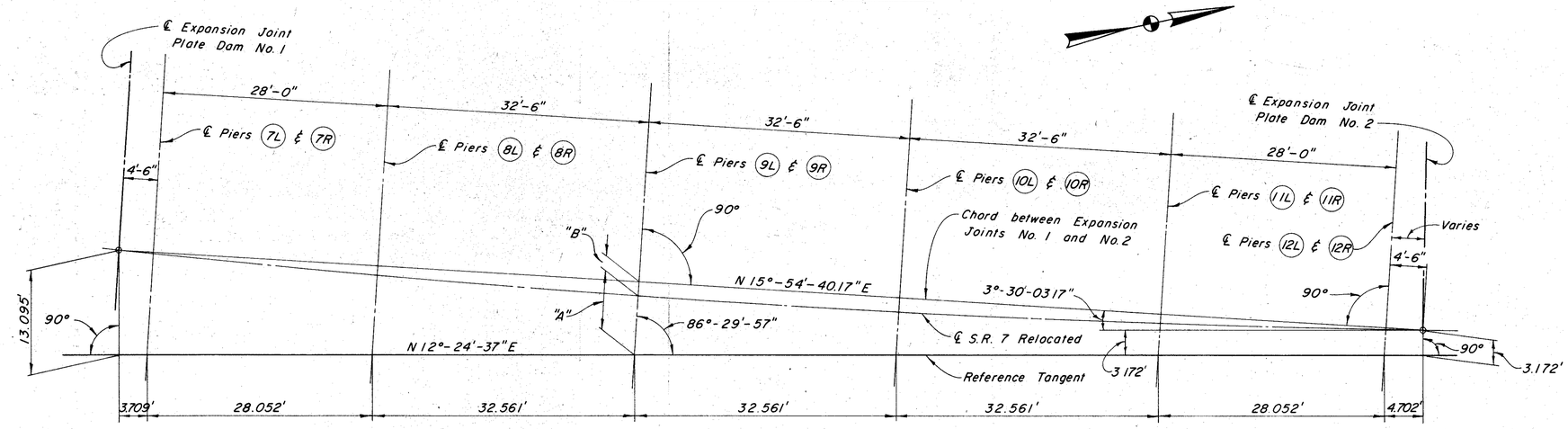
F.H.W.A. REGION	STATE	PROJECT	
5	OHIO		

BEL-7-11.89

303
443



LAYOUT OF UNIT 1 N & S



LAYOUT OF UNIT 2 N & S

NOTE:
See Table A for offset dimensions "A" and "B".

TABLE A

LOCATION	℄ STATION	DIMENSION "A"	DIMENSION "B"
℄ Rear Abut. Brg. (1L & 1R)	682+42.97	29.110'	0
℄ Piers 2L & 2R	682+68.97	26.020'	.433'
℄ Piers 3L & 3R	683+01.47	22.400'	.730'
℄ Piers 4L & 4R	683+33.97	19.050'	.757'
℄ Piers 5L & 5R	683+66.47	15.972'	.514'
℄ Piers 6L & 6R	683+94.48	13.536'	.087'
℄ Exp. Jt. PL Dam No. 1	683+98.98	13.119'	0
℄ Piers 7L & 7R	684+03.48	12.753'	.091'
℄ Piers 8L & 8R	684+31.48	10.590'	.541'
℄ Piers 9L & 9R	684+63.98	8.333'	.811'
℄ Piers 10L & 10R	684+96.48	6.343'	.811'
℄ Piers 11L & 11R	685+28.98	4.626'	.541'
℄ Piers 12L & 12R	685+56.99	3.362'	.091'
℄ Exp. Jt. PL Dam No. 2	685+61.49	3.173'	0

5/44

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ENGINEERS
WORTHINGTON OHIO

SUPERSTRUCTURE LAYOUT DETAILS

BRIDGE NO. BEL-7-1289
OVER
CONSOLIDATED RAIL CORP.
BELMONT CO.
STA. 682 + 40.97
691 + 74.50

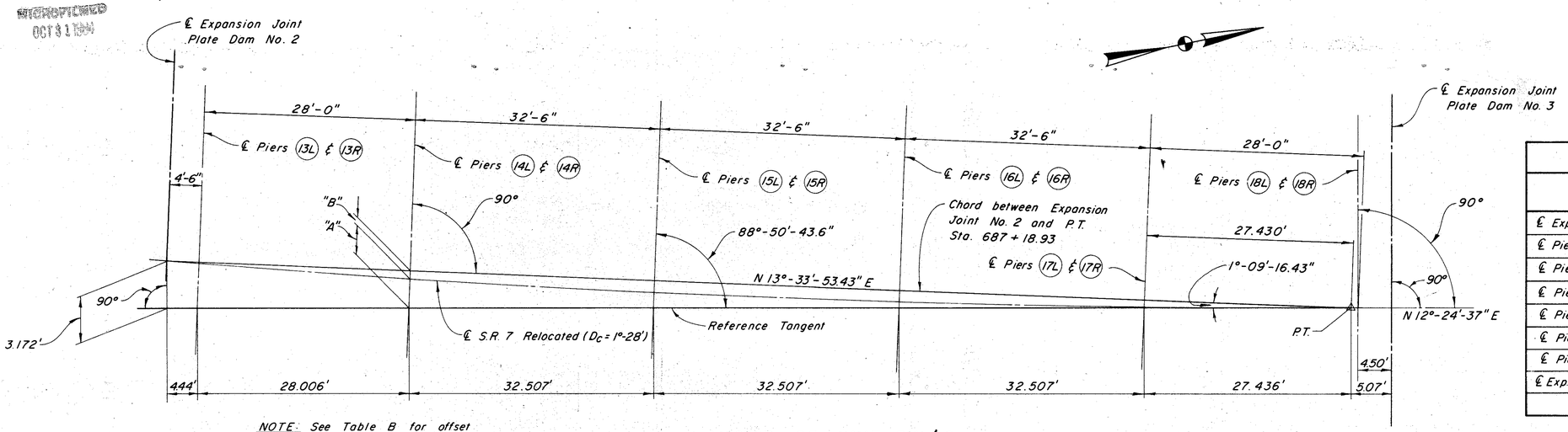
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
DGH	R.D.Y.	R.D.Y.	TRO	DGH	11-27-74	11/14

MICROFILMED
OCT 31 1990

F.H.W.A. REGION	STATE	PROJECT	
5	OHIO		

BEL-7-11.89

304
443



NOTE: See Table B for offset dimensions "A" and "B".

TABLE B

LOCATION	℄ STATION	DIMENSION "A"	DIMENSION "B"
℄ Exp. Jt. PL Dam No. 2	685+61.49	3.173'	—0—
℄ Piers 13L ℄ 13R	685+65.99	2.994'	.088'
℄ Piers 14L ℄ 14R	685+93.99	1.998'	.520'
℄ Piers 15L ℄ 15R	686+26.50	1.094'	.769'
℄ Piers 16L ℄ 16R	686+59.00	.460'	.748'
℄ Piers 17L ℄ 17R	686+91.50	.096'	.456'
℄ Piers 18L ℄ 18R	687+19.50	0	0
℄ Exp. Jt. PL Dam No. 3	687+24.00	0	0

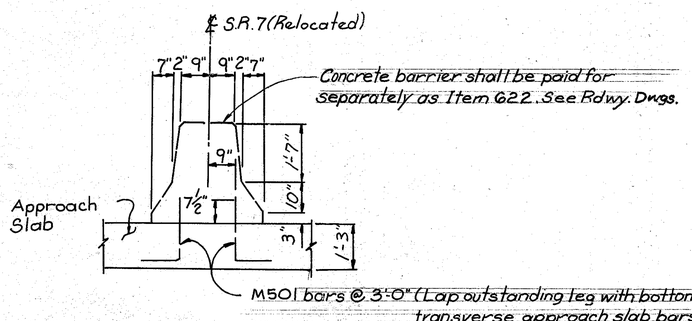
GENERAL NOTES - CONTINUED

APPROACH SLABS:
The approach slab at the Rear Abutment shall extend transversly full width across the Northbound Lanes, 3 ft. Median and Southbound Lanes. The curbed ends of the approach slab beyond the wing walls shall be treated in a manner similar to that shown on sh. 267 for Bridge No. BEL-7-1197. The concrete barrier shall be placed on the completed approach slab and anchored with M501 bars as shown on the MEDIAN DETAIL on this sheet.

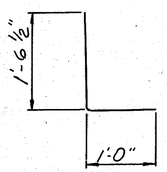
The approach slab for the Northbound Lanes at the Forward Abutment shall be treated in a manner similar to that shown on sh. 267 for the Rear Abutment - Right Bridge of Bridge No. BEL-7-1197. There shall be a curbed end on the outside and a 1" joint on the inside adjacent to the concrete median barrier.

CURING, SUPERSTRUCTURE CONCRETE: All Superstructure Concrete, surfaces of which are to be overlaid with Latex Concrete, shall be cured using Method (a) Water Curing, 511.14. (Not Suppl. Spec. 836)

LAYOUT OF UNIT 3 N℄S



APPROACH SLAB
MEDIAN DETAIL



M501 bars 2'-5" long
18 Reqd. weight 45 lbs.

Revised 8-23-79

6/44

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ENGINEERS
WORTHINGTON OHIO

SUPERSTRUCTURE LAYOUT DETAILS

BRIDGE NO. BEL-7-1289
OVER
CONSOLIDATED RAIL CORP.
STA. 682+40.97
691+74.50
BELMONT CO.

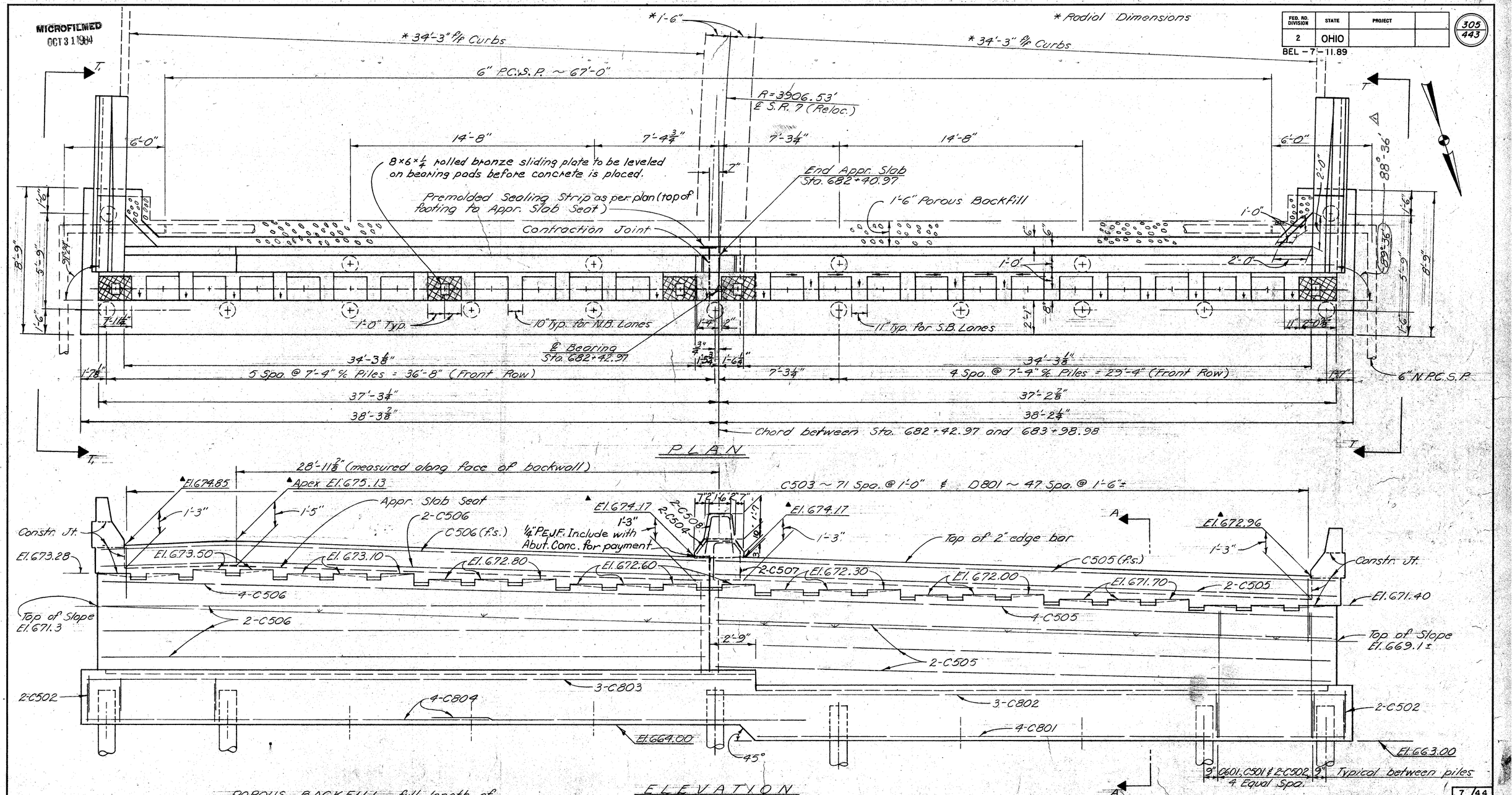
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
	R.D.Y.	R.D.Y.	T.R.O.	[illegible]	11-27-74	11/74 9/23/79

MICROFILMED
OCT 31 1984

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

BEL-7-11.89

305/443



POROUS BACKFILL, full length of abutment and wing as per plan, shall extend up to the plane of the subgrade.

FOR SECTION A-A see Sheet No. 8/44.

FOR VIEW T-T and 6" C.S.P. detail see Sheet No. 10/44.

LEGEND

P.C.S.P. = Perforated Corrugated Steel Pipe
N.P.C.S.P. = Non-Perforated Corrugated Steel Pipe
f.s. = far side
▲ = Elevation at top of 2" edge bar

△ Revised 4-27-82
Revised 7-15-81

7/44

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ENGINEERS
WORTHINGTON OHIO

REAR ABUTMENT (IL & IR) DETAILS
BRIDGE No. BEL-7-1289
OVER
CONSOLIDATED RAIL CORP.
STA. 682+40.97
691+74.50
BELMONT CO.

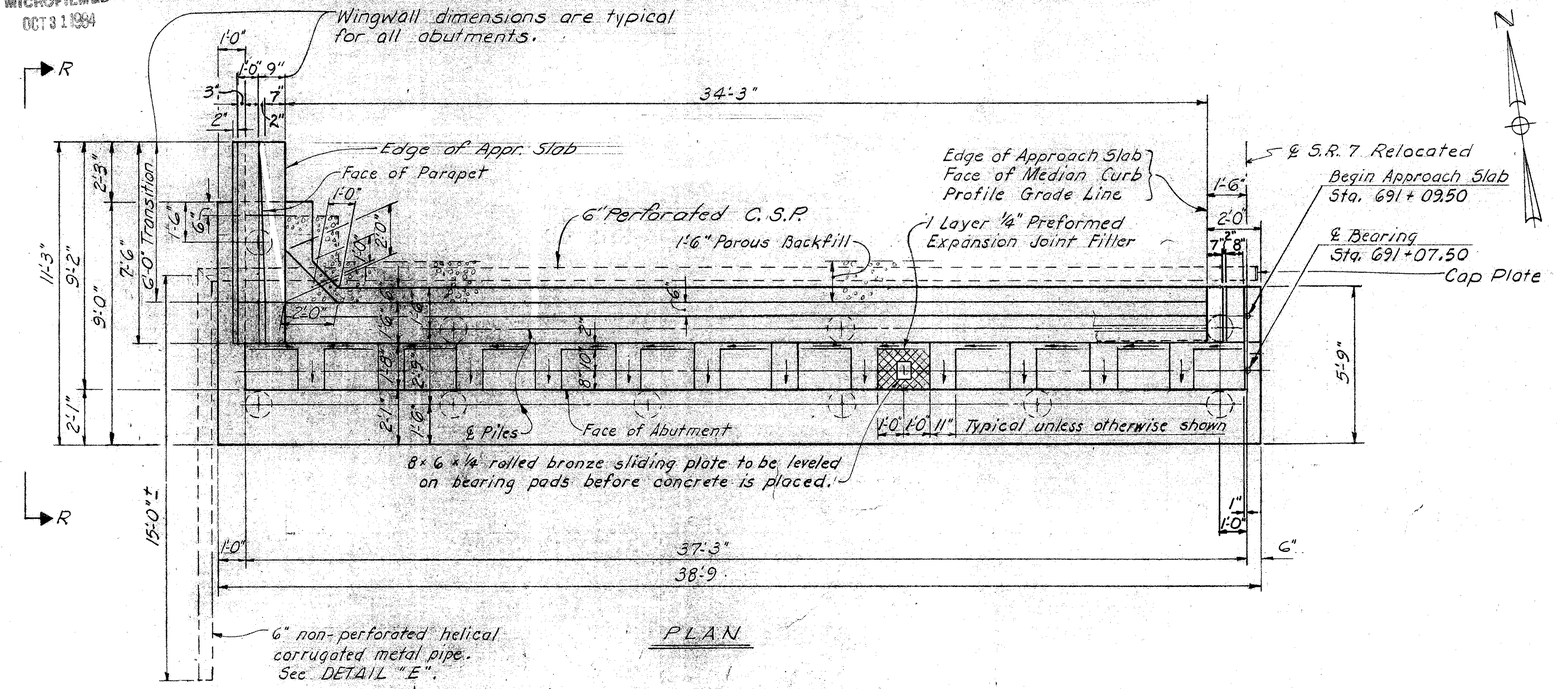
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
BGH	R.D.Y.		TRO	BGH	11-29-74	11/76 5/23/79

MICROFILMED
OCT 3 1984

FHWA REGION	STATE	PROJECT	
5	OHIO		

306
443

BEL-7-11.89

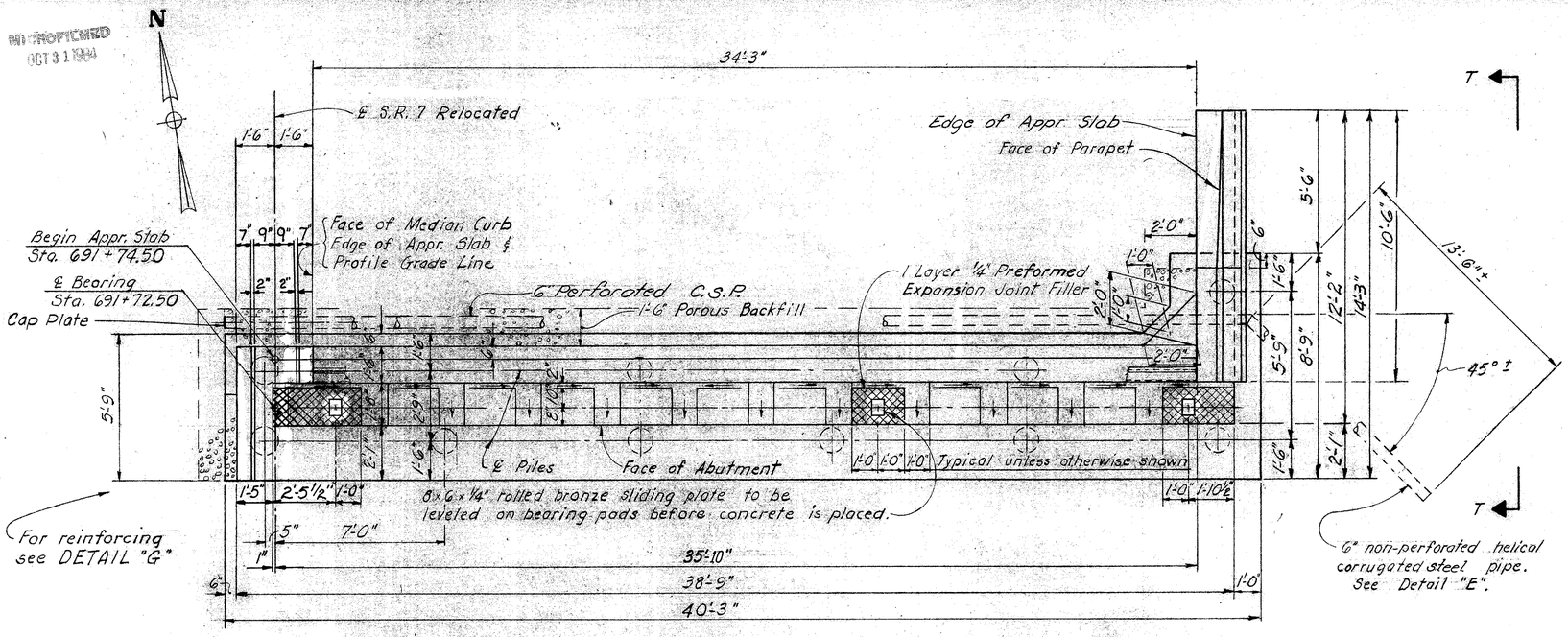

Wingwall dimensions are typical for all abutments.
1'-0"
1'-0 9"
3"
7"
2"
2"
34'-3"
Edge of Appr. Slab
Face of Parapet
1'-0"
2'-0"
6"
6"
6

APPROVED
OCT 3 1990

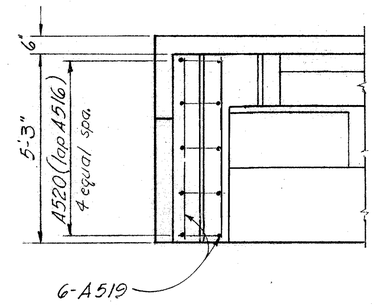
FHWA REGION	STATE	PROJECT	
5	OHIO		

307/443

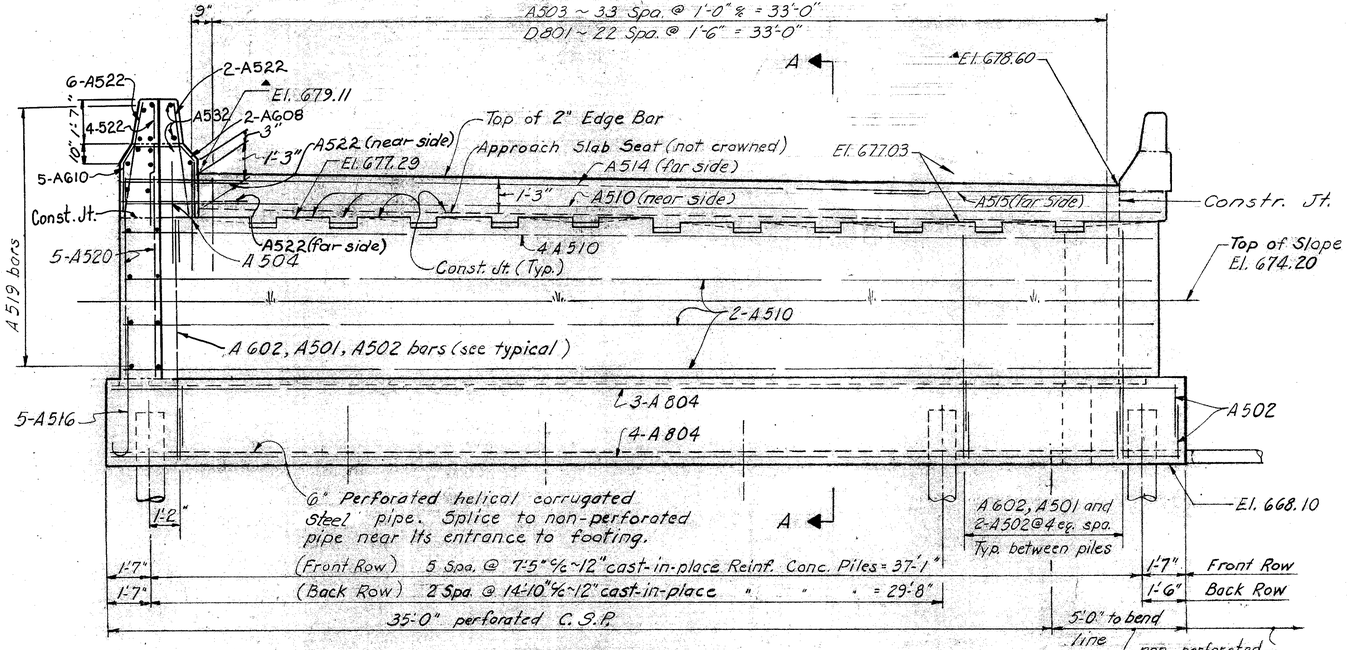
BEL-7-11.89



PLAN



DETAIL "G"



ELEVATION

▲ = Elevation at top of 2" edge bar.

For additional notes and SECTION A-A see Sheet No. 8/44

For VIEW T-T and 6" C.S.P. details see Sheet No. 10/44.

9/44

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ENGINEERS
WORTHINGTON OHIO

FORWARD ABUTMENT (35R)
NORTHBOUND LANES

BRIDGE NO. BEL-7-1289
OVER
CONSOLIDATED RAIL CORP.
STA. 682+40.97
691+74.50
BELMONT CO.

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
TRO	G.E.W.	G.E.W.	MM	DGV	9/12/90	11/76 5/23/79

E.O. 671

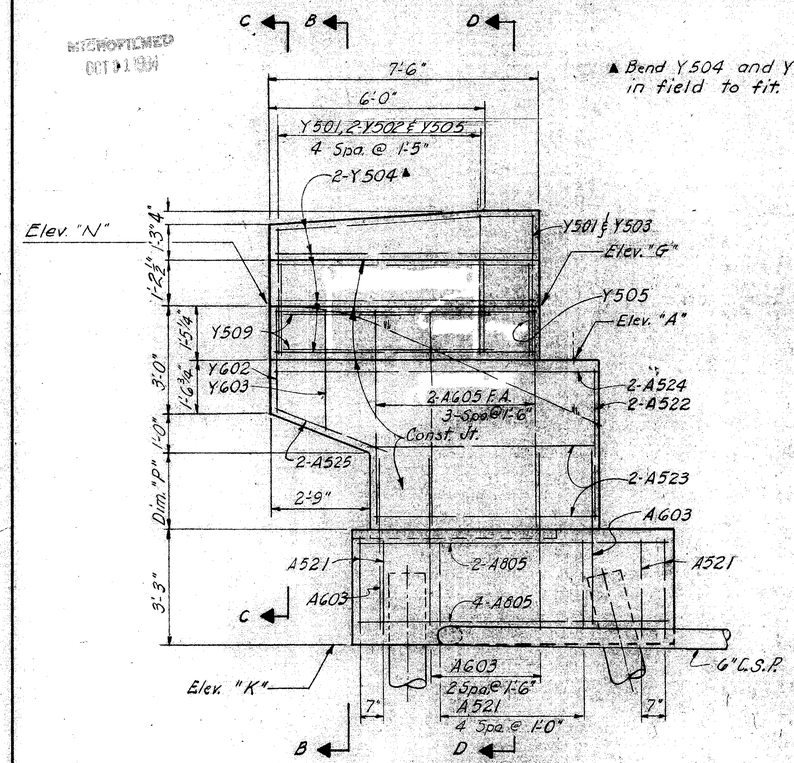
DGV 8-21-90

MICROFILMED OCT 01 1991

FHWA REGION	STATE	PROJECT		
5	OHIO			

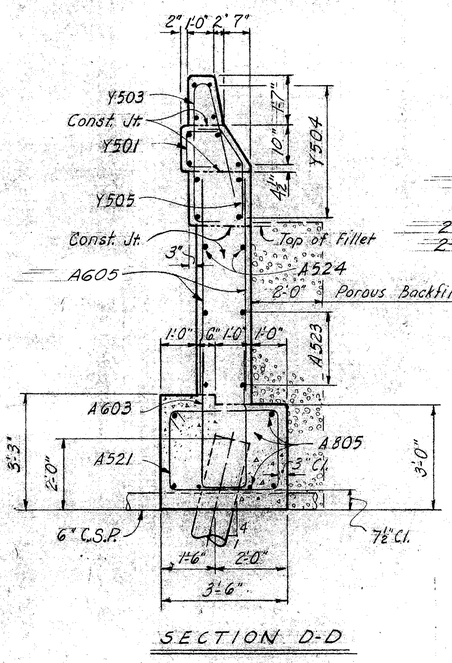
308/443

BEL - 7 - 11.89



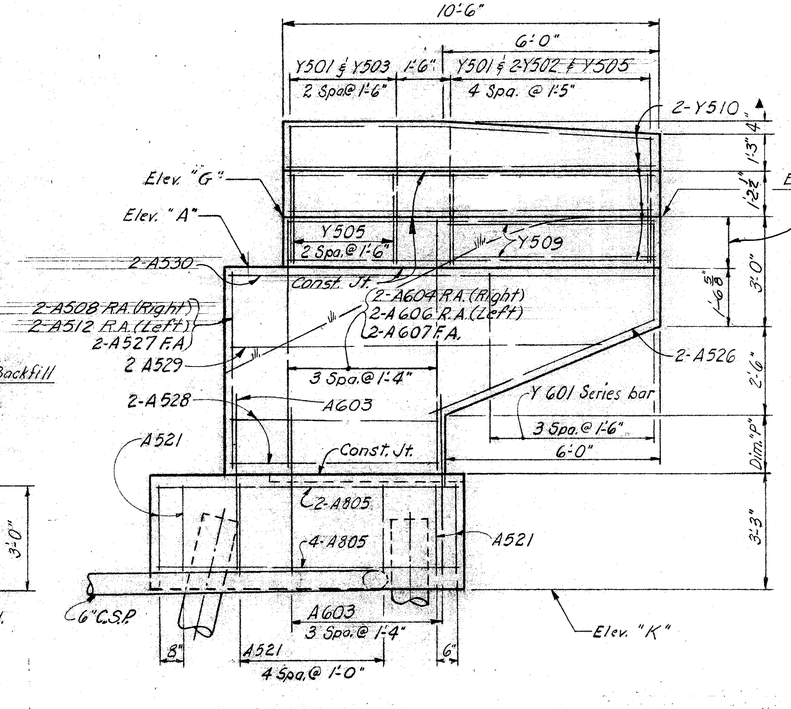
VIEW R-R

▲ Bend Y504 and Y510 bars in field to fit.



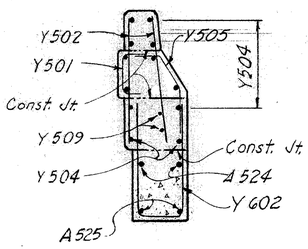
SECTION D-D

SECTION B-B



VIEW T-T

VIEW T1-T1 (Opposite Hand)



SECTION C-C

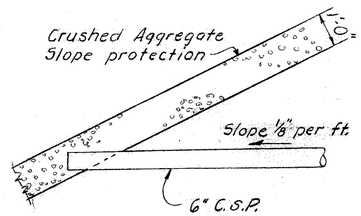
For additional railing details see Std. Dwg. BR-1-67 Sheet No. 2.

NOTE:
Provide Bridge Terminal Assembly Type "A" at ends of wingwalls.

Wheelguard is not req'd. Concrete anchor assemblies per Standard Construction Drawings GR-3 and GR-1 shall be placed during parapet construction for attachment of guardrail to the concrete parapets.

LOCATION		Elev. "A"	Elev. "G"	Elev. "K"	Elev. "N"	Dim. "P"		
VIEW R-R	Fwd. Abut. (Left) Southbound	677.76	679.20	669.80	679.12	2'-0⅞"		
VIEW T1-T1	Rear Abut. (Right) Northbound	673.28	674.72	664.00	674.55	1'-9 5/8"		
VIEW T-T	Rear Abut. (Left) Southbound	671.40	672.83	663.00	672.66	0'-10⅞"		
	Fwd. Abut. (Right) Northbound	677.03	678.48	668.10	678.36	1'-6⅛"		

LEGEND
R.A. = Rear Abutment
F.A. = Forward Abutment



DETAIL "E"

10/44

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ENGINEERS
WORTHINGTON OHIO

WINGWALL DETAILS

BRIDGE NO. BEL-7-1289
OVER
CONSOLIDATED RAIL CORP.
STA. 682+40.97
BELMONT CO. 691+74.50

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
TRO	G.E.W.	G.E.W.	MM	NGN	8/12/10	11/29/74 5/23/75

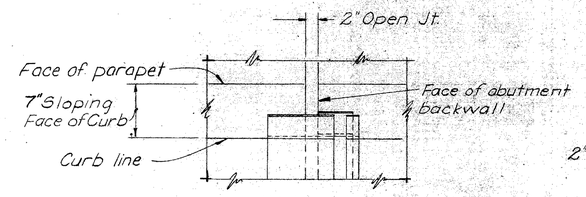
E.O. 671

MICROFILMED
OCT 31 '84

FHWA REGION	STATE	PROJECT	
5	OHIO		

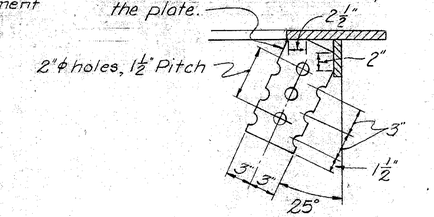
309/443

BEL-7-11.89

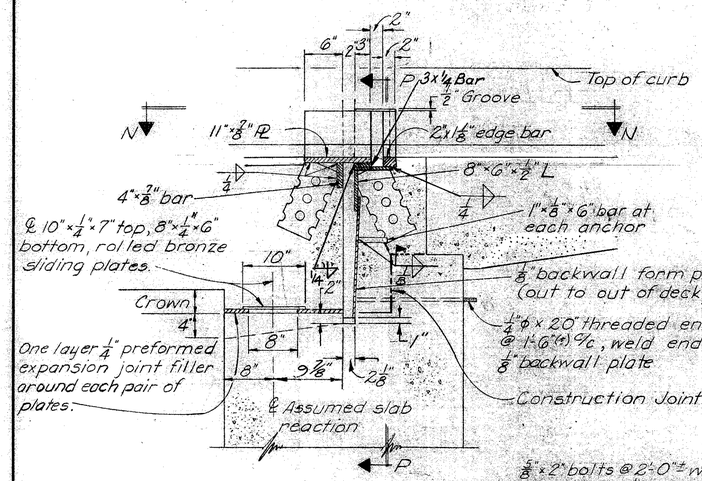


PART DECK PLAN
Fascia Curb & Median Curb

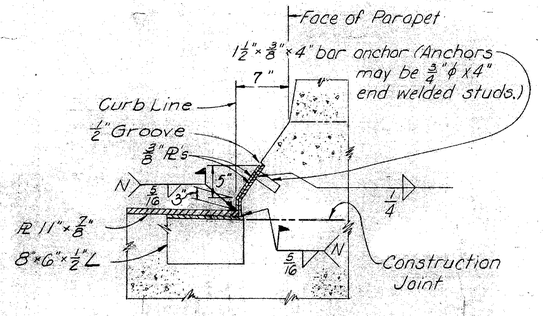
6" × ½" × 12" plates, spaced at approx. 1'-3" c/c except near joints in the plates, where plates shall be placed within 6" of each side of joint. The holes may be burned in the plate.



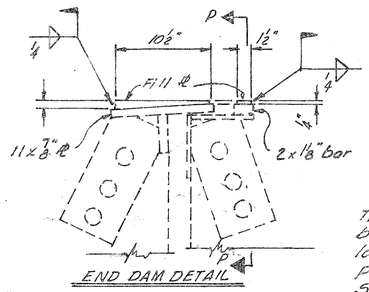
ANCHOR DETAIL
Typical



END DAM DETAIL
Fascia Curb & Median Curb

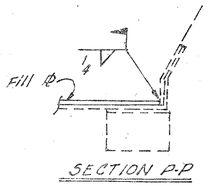


SECTION P-P
Fascia Curb & Median Curb

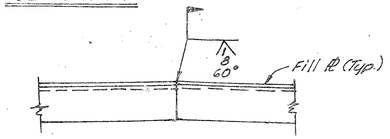


END DAM DETAIL

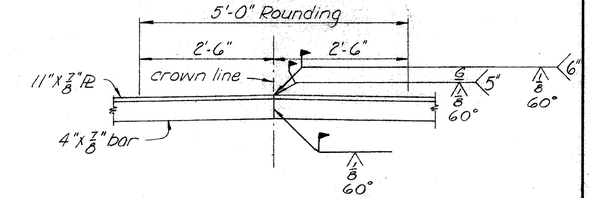
This revision required because end dam got loose during concrete placement. (Fwd. Abut. S.B. Lanes)



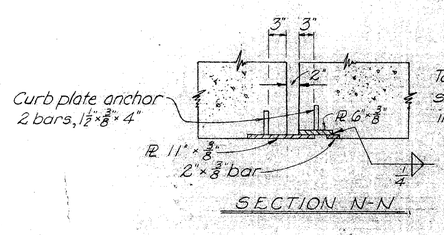
SECTION P-P



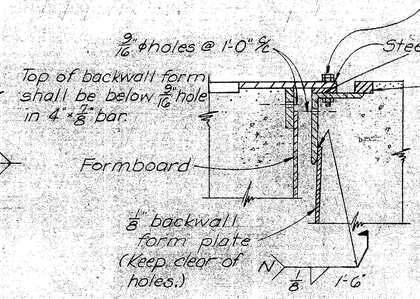
BUTT JOINT IN SUPERSTRUCTURE
END DAM & CROWN



BUTT JOINT IN SUPERSTRUCTURE
End Dam at crown



SECTION N-N

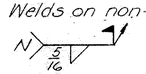


END DAM CONSTRUCTION METHODS

NOTES:

⅛" backwall form plate shall be provided in lengths not over 6'-0". Joints between lengths shall be tightly butted and no joints shall be placed opposite drainage slots in bridge seat.

Welds on non-stress-carrying members are shown thus:



Concrete above the backwall construction joint shall not be placed until after the concrete deck is in place. The steel end dam shall be used as a template for the top of the backwall.

END DAM CURB PLATES shall be as shown on Std. Dwg. SD-1-69, Sh 2 except they shall be detailed to fit the New Jersey shape curbs.

11/44

STICKLEN - BELSHEIM & ASSOCIATES
ENGINEERS
WORTHINGTON OHIO

ABUTMENT AND SUPERSTRUCTURE END DAM DETAILS

BRIDGE NO. BEL-7-1289
OVER
CONSOLIDATED RAIL CORP.
STA. 682 + 40.97
691 + 74.50
BELMONT CO.

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
TRO	DMK	D.M.K.	MM	DCH	8/12/70	11/76 5/23/79

Revised 6-30-83 WLL

E.O. 671

MICROFILMED
OCT 3 1 1984

FHWA REGION	STATE	PROJECT	
5	OHIO		

309A 443

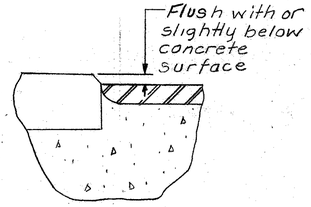
BEL-7-11.89

JOINT OPENING

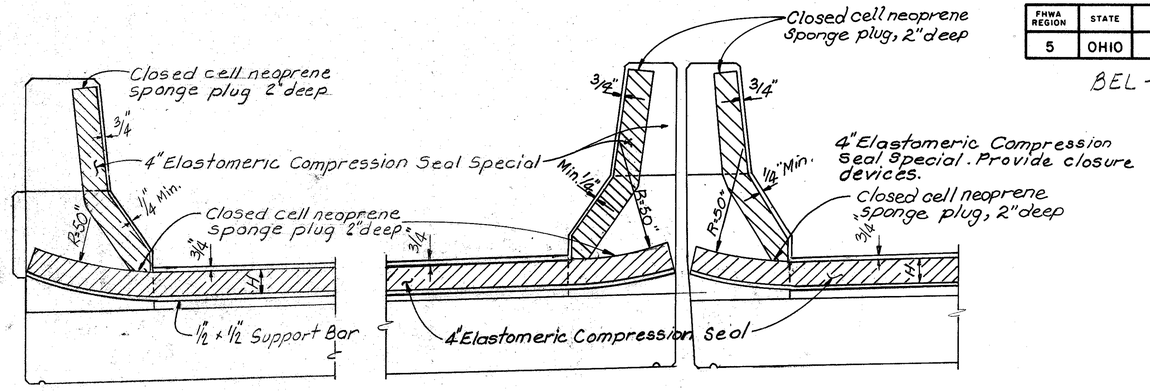
Ambient Temperature	Dimension D
30°F	3"
40	2 7/8
50	2 3/4
60	2 5/8
70	2 1/2
80	2 3/8
90	2 1/4
100	2 1/8

Note: If the joint width (Dim D) for the ambient temperature does not vary more than 1/8" from the setting width for a temperature of 60°F, then use the setting width for the normal setting temperature of 60°F.

PAINTING: Portions of armored joints which will be in contact with concrete or joint seal shall not be painted. All other portions shall be cleaned and painted according to 514.



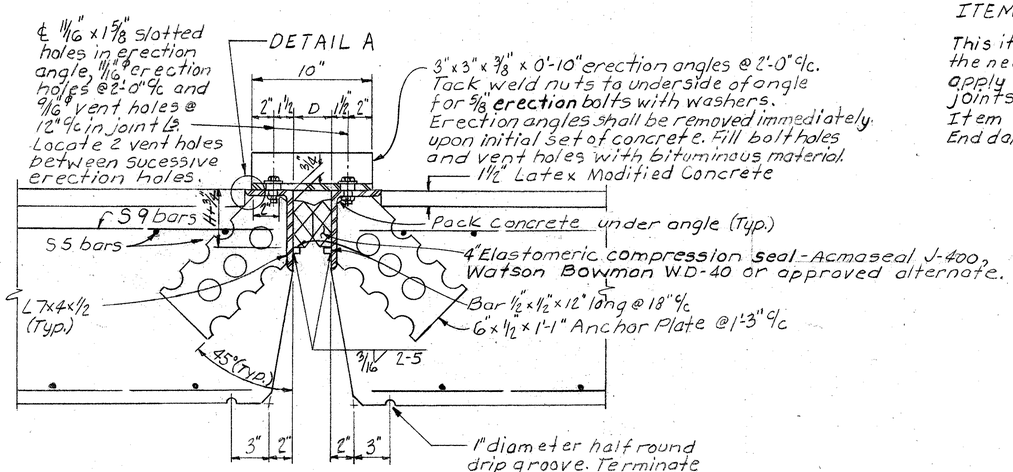
DETAIL A



Note: Locate support bars to accommodate furnished seal

SECTION THROUGH ROADWAY EXPANSION JOINT

For curb details see Sh. 309B



ROADWAY EXPANSION JOINT

Anchor plates on one side of joint (side to be cast first) shall be attached rigidly to reinforcing steel for support as directed by the Engineer. Anchor plate details are similar to those shown for End Dams. See Anchor Detail on Sh. 11/44

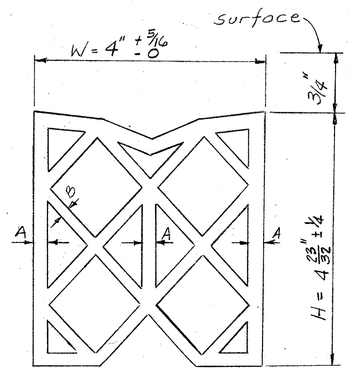
In lieu of erection angles the Contractor may furnish a device of his own design to be used for setting the joint width subject to approval by the Engineer.

Shop drawings for the armored joints shall be prepared and **submitted** to the Director for approval. Fabrication shall not begin until approval is given.

For additional joint details, see Sh. 309B.

$A = 1/4" \; {}^{+3/64}_{-1/32}$

$B = 3/16" \; {}^{+3/64}_{-1/64}$



ELASTOMERIC COMPRESSION SEAL

Note: Dimensions for ACMASEAL J-400 are shown. Dimension H depends upon the particular seal that is selected.

ITEM 516 - EXPANSION AND CONTRACTION JOINTS AS PER PLAN

This item shall include the furnishing of all materials and the necessary labor to fabricate, assemble, construct, clean and apply shop and field paint and install the expansion and contraction joints. Payment will be made at the contract price bid for Item 516, Lin. Ft., Expansion and Contraction Joints as per Plan. End dams are included with Item 513 for payment.

ITEM 849 - ELASTOMERIC COMPRESSION SEALS FOR STRUCTURAL STEEL JOINTS, 4 INCH WIDTH AS PER PLAN

In addition to the pay coverage as given in SS 849 this item shall include the furnishing and installing of special strips and pieces of elastomeric compression seal and their closure devices in the exterior and median curbs and parapets.

ELASTOMERIC COMPRESSION SEALS FOR STRUCTURAL STEEL JOINTS

DESCRIPTION: This item shall conform to Supplemental Specification 849 except as follows:

MATERIALS: Adhesives shall be Sikastix 360, Fel-Poxy FP-101 or an approved alternate. Metal surface primers are not required.

PREPARATION FOR INSTALLATION: Elastomeric surfaces shall be cleaned with MEK, T or other approved solvent using clean disposable cloths. Then, not more than seven days prior to seal installation, a thin coating of cyclizing paste* shall be applied to the elastomeric bonding surfaces only. After from 25 to 40 minutes, the paste shall be washed from the surfaces with clean water. The preparation of the steel surfaces shall be accomplished not more than 24 hours prior to **adhesive** bonding.

INSTALLATION: Immediately prior to adhesive application, bonding surfaces shall be clean, dry and warmer than 45°F, and they shall be maintained at or above this temperature until the adhesive has cured. Adhesive shall be applied liberally to both steel and elastomeric bonding surfaces using a serated spatula if necessary to achieve a complete and relatively **uniform coating**. Then the elastomeric seal shall be compressed sufficiently so that it can be inserted and allowed to expand within the joint. After installation, excess adhesive (except for the 1/4 inch beads) shall **be** removed from the exposed seal surfaces.

* Cyclizing Paste is a mixture of one pound of HiSil and six pounds of sulfuric acid (18 molar). To mix the paste, add HiSil to acid slowly while stirring mixture to achieve a smooth, viscous paste. NOTE: Since concentrated sulfuric acid is very corrosive and HiSil is an extremely fine non-toxic powder, rubber gloves and glasses should be used by those using the paste while gloves, glasses and a respirator should be used by those mixing the paste.

Note: For installation of compression seal in concrete joints, see 705.11

STATE OF OHIO
DEPARTMENT OF TRANSPORTATION
BUREAU OF BRIDGES AND STRUCTURAL DESIGN

11A/44

SUPERSTRUCTURE DETAILS
BRIDGE NO. BEL-7-1289
OVER
CONSOLIDATED RAIL CORP.

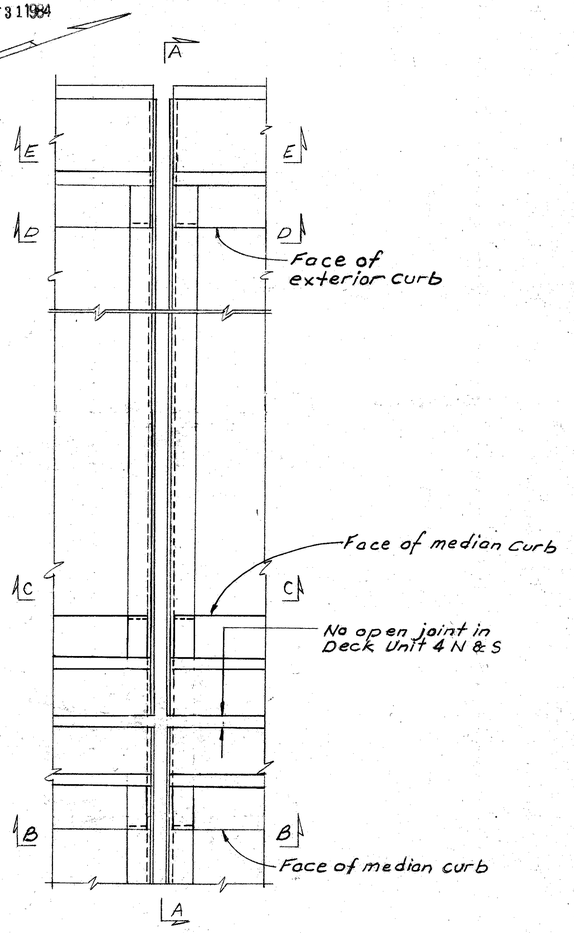
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
WTF	WTF			WJJ	1-4-79	5/23/79

MICROFILMED
OCT 3 1 1984

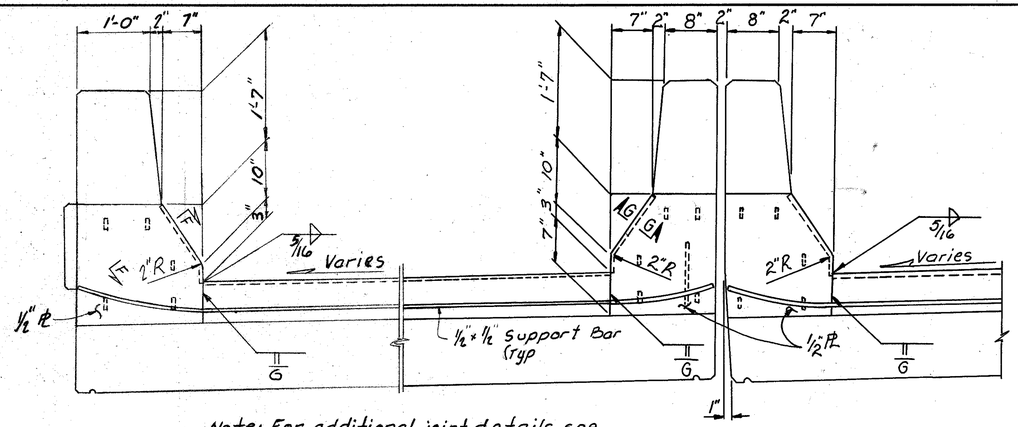
FHWA REGION	STATE	PROJECT	
5	OHIO		

309B 443

BEL-7-11.89

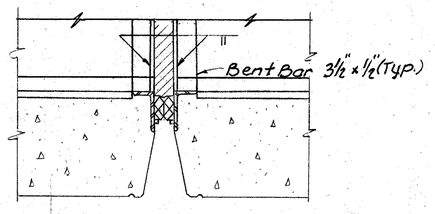


PLAN OF EXPANSION JOINT
(Seal not shown)

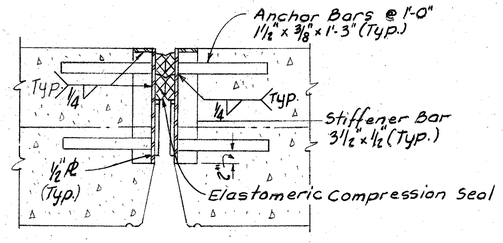


Note: For additional joint details, see Roadway Expansion Joint Detail on Sh. 309A

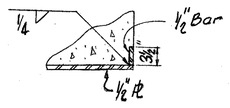
SECTION A-A



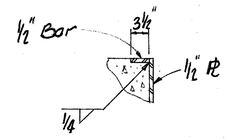
SECTION B-B
(Anchors not shown)



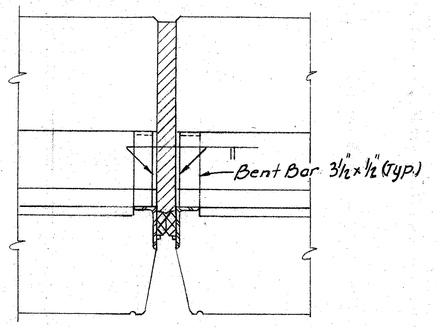
SECTION C-C



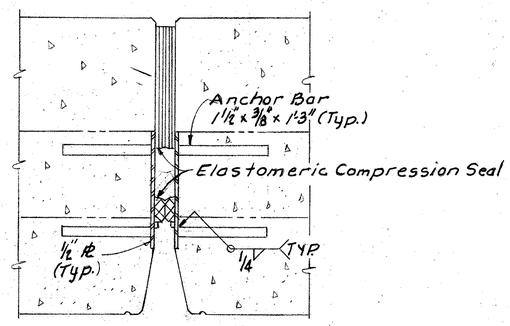
SECTION F-F



SECTION G-G



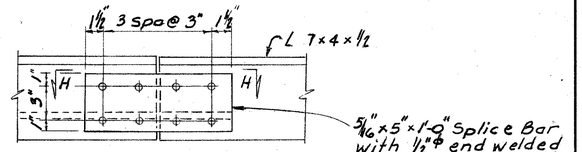
SECTION D-D
(Anchors not shown)



SECTION E-E



SECTION H-H



ARMOR SPLICE

STATE OF OHIO
DEPARTMENT OF TRANSPORTATION
BUREAU OF BRIDGES AND STRUCTURAL DESIGN

118/44

SUPERSTRUCTURE DETAILS
BRIDGE NO. BEL-7-1289
OVER
CONSOLIDATED RAIL CORP.

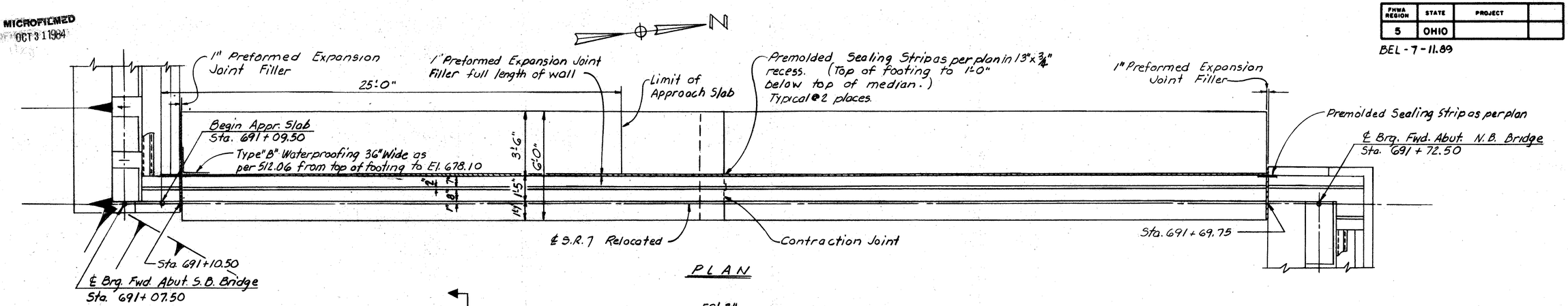
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
WTF	WTF			WJJ	1-4-79	5/23/79

MICROFILMED
OCT 3 1 1984

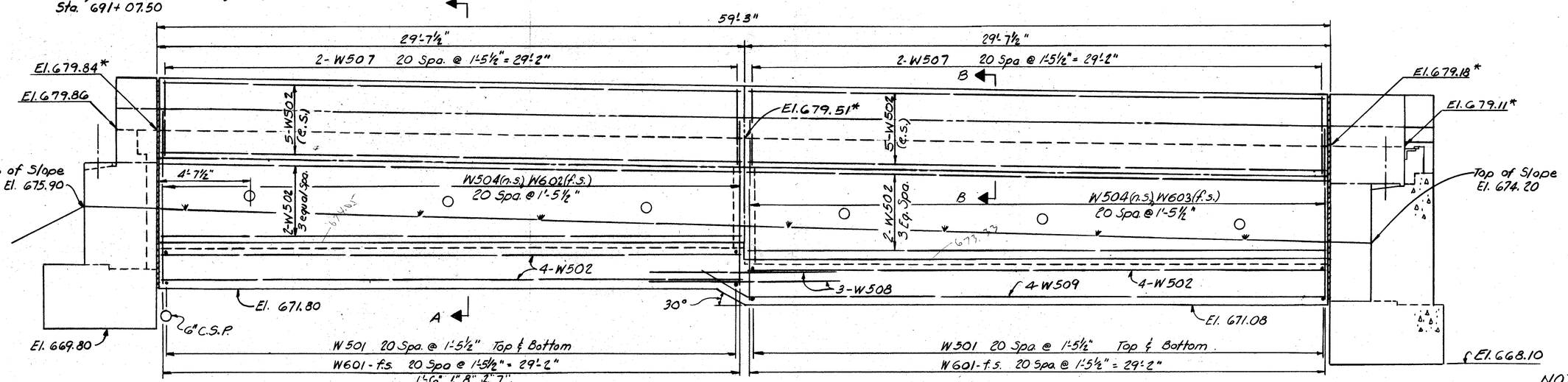
FHWA REGION	STATE	PROJECT	
5	OHIO		

310
443

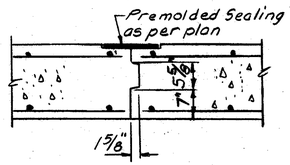
BEL - 7 - 11.89



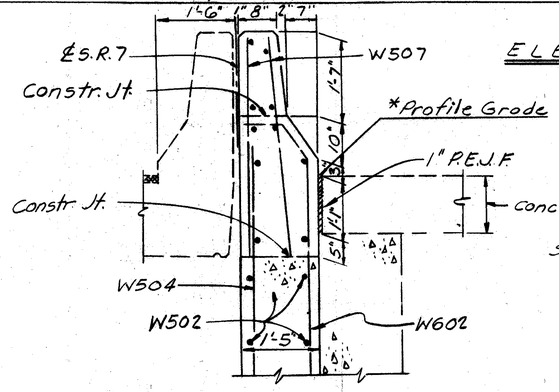
PLAN



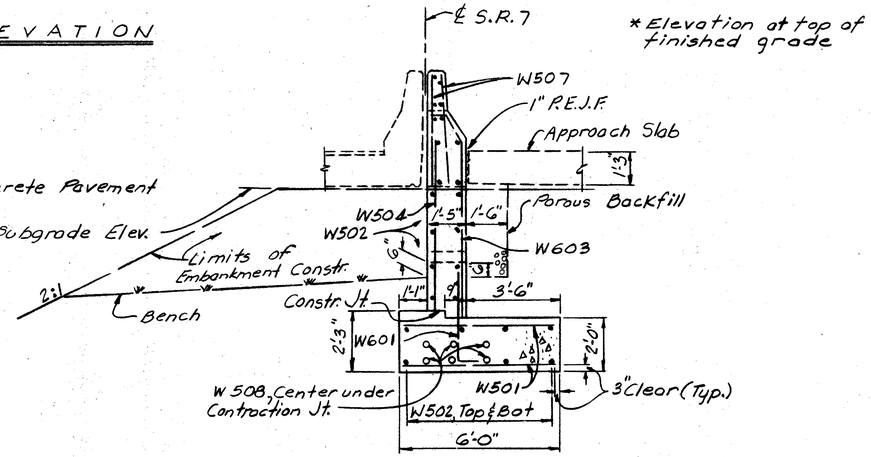
ELEVATION



CONTRACTION JOINT DETAIL



SECTION B-B



SECTION A-A

*Elevation at top of finished grade

NOTES

Porous Backfill, full length of wall, shall extend 6" below the weepholes and upward to the subgrade or the approach slab.

(a) Footings are designed for a maximum bearing pressure of 2.5 tons per square foot.

(b) Coeff. of friction "f" of masonry on subfoundation is equal to 0.45.

LEGEND

(f.s.) = far side
(n.s.) = near side
(e.s.) = each side

This sheet replaces Sh. No. 310 dated 8/12/70

STATE OF OHIO
DEPARTMENT OF TRANSPORTATION
BUREAU OF BRIDGES AND STRUCTURAL DESIGN

12 / 44

RETAINING WALL DETAILS (FORWARD ABUTMENTS)

BRIDGE NO. BEL - 7 - 1289
OVER
CONSOLIDATED RAIL CORP.
STA 682 + 40.97
691 + 74.50

BELMONT CO.

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
WTF	WTF			WLS DWI	5/18/79	5/23/79

F.H.W.A. REGION	STATE	PROJECT	
5	OHIO		

BEL-7-11.89

311/443

SOUTHBOUND LANES

Pier No. → 2L 3L 4L 5L 6L 7L 8L 9L 10L

Pier Type → IL IL IL IL IL IL IL IL IL

℄ Pier

A 650.00

B 650.00

26'-5" Typical (Except as otherwise shown)

25'-3" Typical (Except as otherwise shown)

E 642.00

C 642.00

N 642.00

Z 642.00

O 642.00

M 642.00

M 643.00

Chord

℄ SR 7 Relocated

℄ Expansion Dam No. 1

Reference Tangent

Sta. 682+68.97

Sta. 683+00

Sta. 683+01.47

Sta. 683+33.97

Sta. 683+66.47

Sta. 683+94.48

Sta. 683+98.98

Sta. 684+03.48

Sta. 684+31.48

Sta. 684+63.98

Sta. 684+96.48

Sta. 685+00

Match Line "A" See Sheet 14/44

Footing Type

Footing Elevation

Column

12" C.I.P. Pile with batter direction shown

Pier No. → 2R 3R 4R 5R 6R 7R 8R 9R 10R

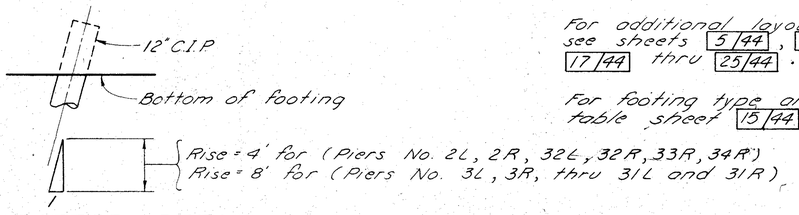
Pier Type → IR IR IR IR IR IR IR IR IR

NORTHBOUND LANES

Not Shown

Rear Abutments (1L & 1R)

For details see sheets 7/44 and 10/44.



PILE BATTER DETAIL

For pile layout dimensions and reinforcing bar details see sheets 26/44, 27/44, 28/44 and 29/44

For additional layout dimensions see sheets 5/44, 6/44 and 17/44 thru 25/44.

For footing type and size see table sheet 15/44.

13/44

STICKLEN - BELSHEIM & ASSOCIATES
ENGINEERS
WORTHINGTON OHIO

PIER DETAILS
FOOTING LAYOUT

BRIDGE NO. BEL-7-1289
OVER
CONSOLIDATED RAIL CORP.
STA. 682 + 40.97
691 + 74.50
BELMONT CO.

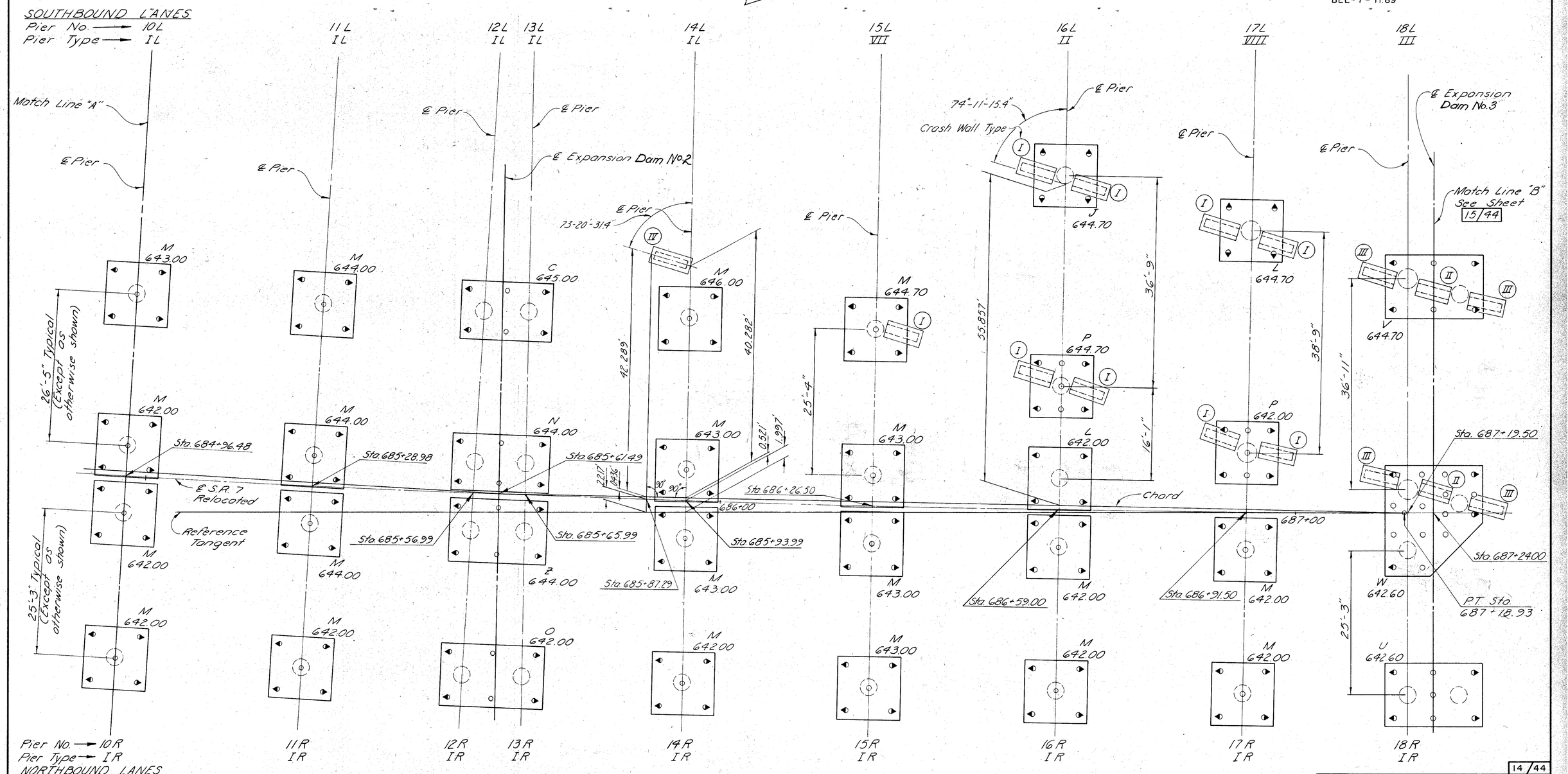
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
TRO	R.D.Y.		DGH	DGH	11/21/14	11/16

MICROFILMED
OCT 31 1994

F.H.W.A. REGION	STATE	PROJECT	
5	OHIO		

BEL-7-11.89

312/443



14/44

STICKLEN - BELSHEIM & ASSOCIATES
ENGINEERS
WORTHINGTON OHIO

PIER DETAILS
FOOTING LAYOUT

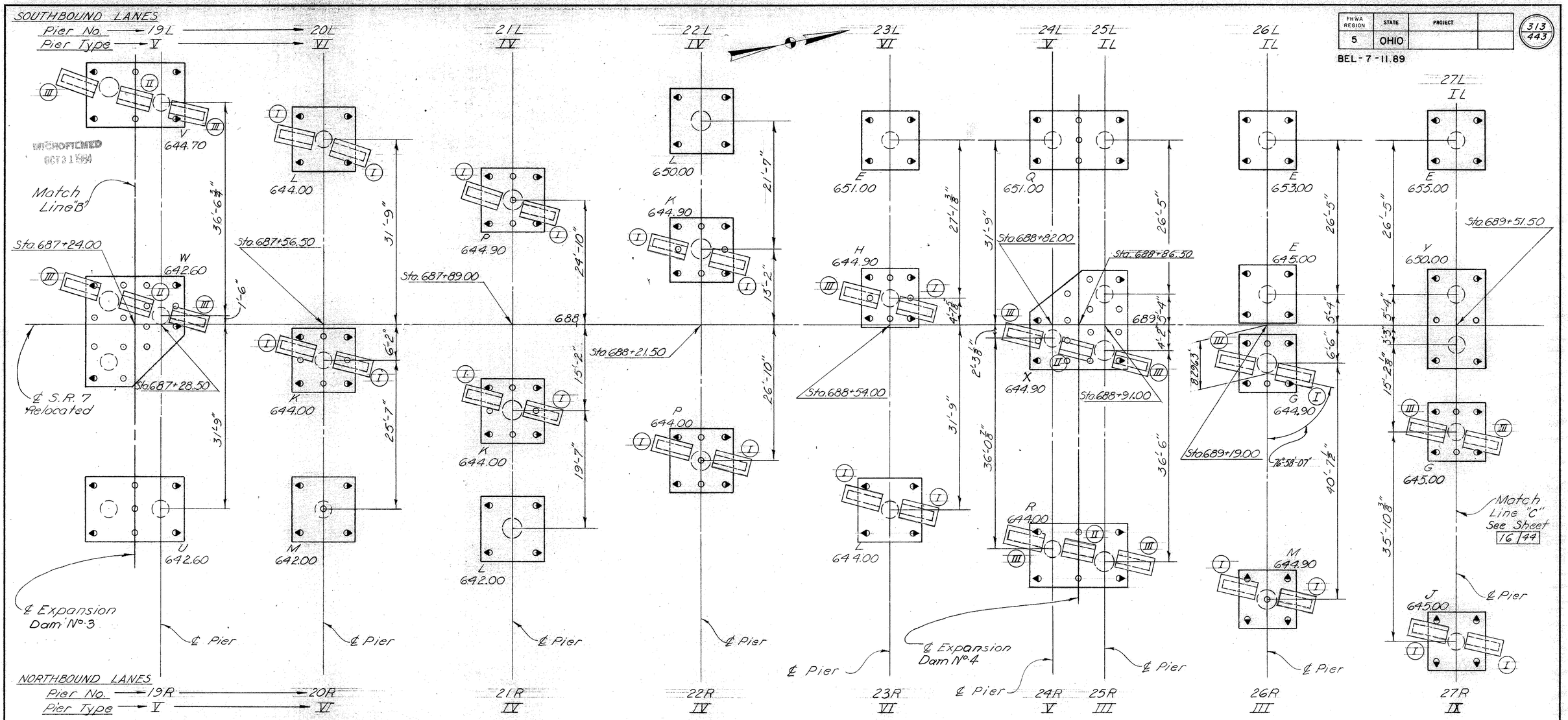
BRIDGE NO. BEL-7-1289
OVER
CONSOLIDATED RAIL CORP.
STA. 682+40.97
691+74.50
BELMONT CO.

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
TRO	R.D.Y.		D.E.H.	DEH	11/29/74	11/76

FHWA REGION	STATE	PROJECT	
5	OHIO		

313/443

BEL-7-11.89



Footing Type	Size of Footing	Load on Pile Tons/Pile
A	8'-0" x 8'-0" x 3'-0"	50
B	9'-0" x 9'-0" x 3'-0"	50
D	10'-0" x 10'-0" x 3'-0"	36
E	10'-0" x 10'-0" x 3'-0"	50
F	10'-0" x 10'-0" x 3'-0"	50
G	10'-0" x 10'-0" x 3'-0"	50
H	10'-0" x 10'-0" x 3'-0"	48
J	11'-0" x 11'-0" x 3'-0"	26
K	11'-0" x 11'-0" x 3'-0"	50

Footing Type	Size of Footing	Load on Pile Tons/Pile
L	11'-0" x 11'-0" x 3'-0"	41
M	11'-0" x 11'-0" x 3'-0"	43
P	11'-0" x 11'-0" x 3'-0"	48
C	16'-0" x 10'-0" x 3'-0"	50
N	17'-0" x 10'-0" x 3'-0"	50
Q	17'-0" x 10'-0" x 3'-0"	50
S	17'-0" x 10'-0" x 3'-0"	50
Y	17'-0" x 10'-0" x 3'-0"	45
R	17'-0" x 11'-0" x 3'-0"	46
T	17'-0" x 11'-0" x 3'-0"	50
U	17'-0" x 11'-0" x 3'-0"	48
V	17'-0" x 11'-0" x 3'-0"	46
Z	17'-0" x 11'-0" x 3'-0"	50
O	18'-0" x 11'-0" x 3'-0"	50

Footing Type	Size of Footing	Load on Pile Tons/Pile
W	19' x 17' x 8' x 10' x 3'-0"	50
X	17' x 17' x 10' x 8' x 3'-0"	50

15/44

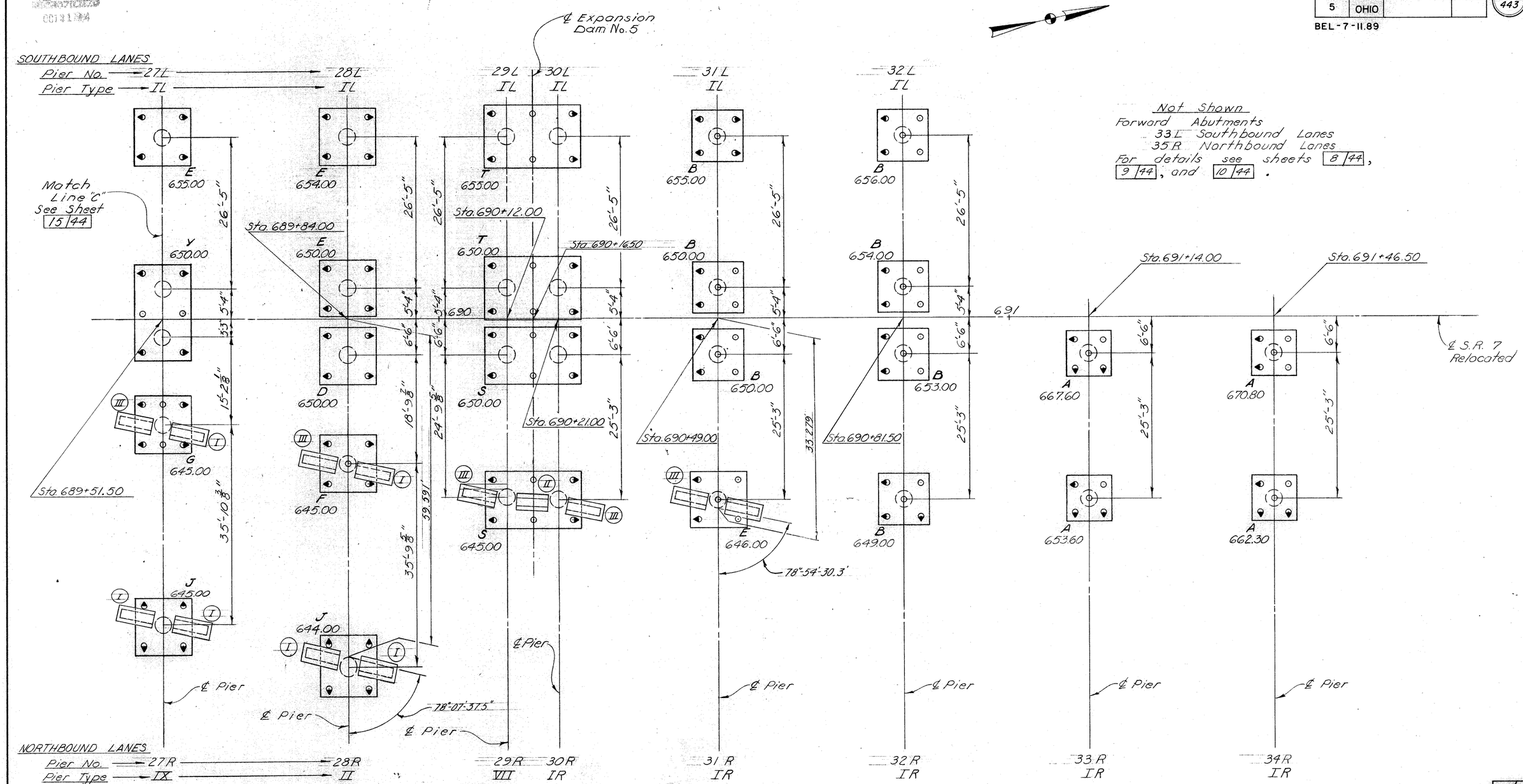
STICKLEN - BELSHEIM & ASSOCIATES
ENGINEERS
WORTHINGTON OHIO

PIER DETAILS
FOOTING LAYOUT

BRIDGE NO. BEL-7-1289
OVER
CONSOLIDATED RAIL CORP.
STA. 682+40.97
691+74.50
BELMONT CO.

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
SP TRO	R.D.Y.		TRO	BCW	8/11/10	11/96

E.O. 671



16/44

STICKLEN - BELSHEIM & ASSOCIATES
ENGINEERS
WORTHINGTON OHIO

PIER DETAILS
FOOTING LAYOUT

BRIDGE NO. BEL-7-1289
OVER
CONSOLIDATED RAIL CORP.
STA. 682 + 40.97
691 + 74.50
BELMONT CO.

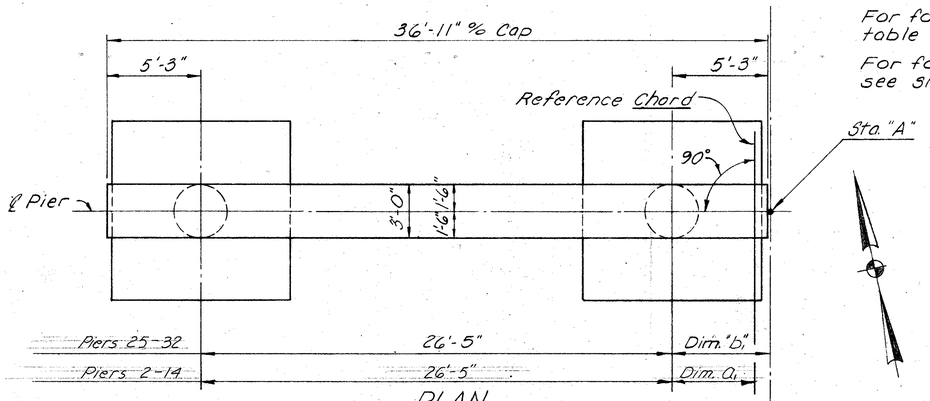
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
SP TRO	RDY		TRO	ACH	8/11/70	11/76

E.O. 671

RECEIVED
OCT 31 1989

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

BEL-7-11.89

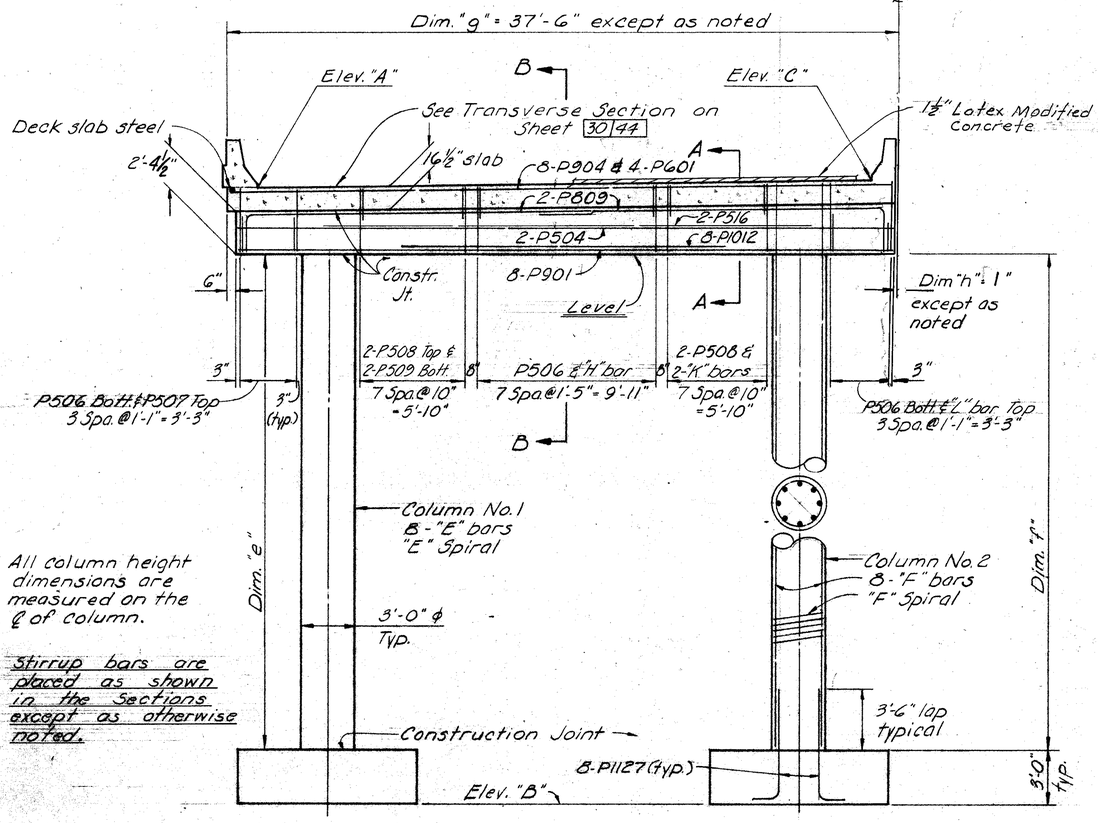


PLAN
(SHOWN WITH DECK SLAB REMOVED)

For footing size see table on sheet 15/44.

For footing details see sheets 26/44, 27/44, 28/44 & 29/44.

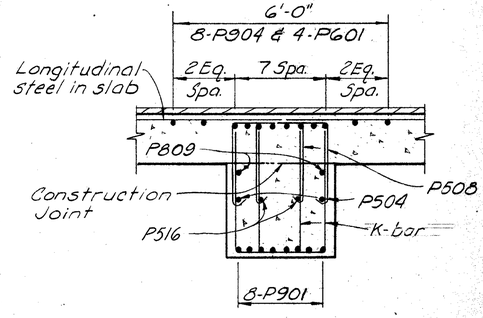
Elevations A & C are at top of concrete.



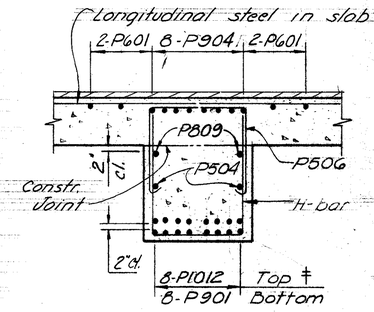
ELEVATION
(L) LEFT - SOUTHBOUND

	STA. "A"	Elev. "A"	Elev. "B" Col. 1	Elev. "B" Col. 2	Elev. "C"	Dim. "a"	Dim. "g"	Dim. "h"
Pier 2L	682+68.97	673.27	650.00	650.00	674.48	4'-10 7/8"	37'-6 1/16"	0'-1 1/16"
Pier 3L	683+01.47	673.81	642.00	642.00	675.01	4'-7 1/4"	37'-6"	0'-6"
Pier 4L	683+33.97	674.35	642.00	642.00	675.55	4'-6 15/16"	37'-6"	0'-6"
Pier 5L	683+66.47	674.89	642.00	642.00	676.08	4'-9 7/8"	37'-6"	0'-6"
Pier 6L	683+94.48	675.35	642.00	642.00	676.54	5'-3 1/16"	37'-6 1/16"	0'-1 1/16"
Pier 7L	684+03.48	675.48	642.00	642.00	676.69	5'-3"	37'-6 1/16"	0'-1 1/16"
Pier 8L	684+31.48	675.94	642.00	642.00	677.15	4'-9 3/16"	37'-6 1/16"	0'-1 1/16"
Pier 9L	684+63.98	676.48	642.00	642.00	677.68	4'-6 1/4"	37'-6"	0'-6"
Pier 10L	684+96.48	677.01	643.00	642.00	678.21	4'-6 1/4"	37'-6"	0'-6"
Pier 11L	685+28.98	677.53	644.00	644.00	678.73	4'-9 3/16"	37'-6 1/16"	0'-1 1/16"
Pier 12L	685+56.99	677.94	645.00	644.00	679.13	5'-3"	37'-6 1/16"	0'-1 1/16"
Pier 13L	685+65.99	678.04	645.00	644.00	679.25	5'-3"	37'-6 1/16"	0'-1 1/16"
Pier 14L	685+93.99	678.43	646.00	643.00	679.61	4'-9 13/16"	37'-6 1/16"	0'-1 1/16"
	STA. "A"	Elev. "A"	Elev. "B" Col. 1	Elev. "B" Col. 2	Elev. "C"	Dim. "b"	Dim. "g"	Dim. "h"
Pier 25L	688+91.00	680.63	651.00	644.90	681.17	5'-4"	37'-6"	0'-6"
Pier 26L	689+19.00	680.57	653.00	645.00	681.10	5'-4"	37'-6"	0'-6"
Pier 27L	689+51.50	680.45	655.00	650.00	680.99	5'-4"	37'-6"	0'-6"
Pier 28L	689+84.00	680.28	654.00	650.00	680.82	5'-4"	37'-6"	0'-6"
Pier 29L	690+12.00	680.10	655.00	650.00	680.64	5'-4"	37'-6"	0'-6"
Pier 30L	690+21.00	680.04	655.00	650.00	680.57	5'-4"	37'-6"	0'-6"
Pier 31L	690+49.00	679.81	655.00	650.00	680.34	5'-4"	37'-6"	0'-6"
Pier 32L	690+81.50	679.49	656.00	654.00	680.03	5'-4"	37'-6"	0'-6"

	Dim. "e"	Dim. "f"	"E" bars	"F" bars	"E" Spiral	"F" Spiral	"H" bars	"K" bars	"L" bars
Pier 2L	16'-5 3/4"	16'-5 3/4"	P1141	P1141	SP401	SP401	P517	P518	P526
Pier 3L	25'-0 1/4"	25'-0 1/4"	P1142	P1142	SP402	SP402	P517	P518	P526
Pier 4L	25'-6 3/4"	25'-6 3/4"	P1143	P1143	SP404	SP404	P517	P518	P526
Pier 5L	26'-1 1/8"	26'-1 1/8"	P1138	P1138	SP406	SP406	P517	P518	P526
Pier 6L	26'-6 3/4"	26'-6 3/4"	P1139	P1139	SP407	SP407	P517	P518	P526
Pier 7L	26'-8 1/4"	26'-8 1/4"	P1139	P1139	SP436	SP436	P517	P518	P526
Pier 8L	27'-1 3/4"	27'-1 3/4"	P1121	P1121	SP437	SP437	P517	P518	P526
Pier 9L	27'-8 1/4"	27'-8 1/4"	P1110	P1110	SP408	SP408	P517	P518	P526
Pier 10L	27'-2 5/8"	28'-2 5/8"	P1121	P1123	SP437	SP439	P517	P518	P526
Pier 11L	26'-8 7/8"	26'-8 7/8"	P1139	P1139	SP474	SP474	P517	P518	P526
Pier 12L	26'-1 7/8"	27'-1 7/8"	P1138	P1121	SP406	SP437	P517	P518	P526
Pier 13L	26'-3"	27'-3"	P1138	P1121	SP406	SP469	P517	P518	P526
Pier 14L	25'-7 5/8"	28'-7 5/8"	P1143	P1128	SP438	SP405	P517	P518	P526
	Dim. "e"	Dim. "f"	"E" bars	"F" bars	"E" Spiral	"F" Spiral	"H" bars	"K" bars	"L" bars
Pier 25L	22'-11 5/16"	29'-0 1/2"	P1115	P1116	SP414	SP415	P507	P509	P507
Pier 26L	20'-10 9/16"	28'-10 9/16"	P1117	P1116	SP416	SP419	P507	P509	P507
Pier 27L	18'-9 3/4"	23'-9 3/4"	P1118	P1119	SP433	SP431	P507	P509	P507
Pier 28L	19'-7 1/8"	23'-7 1/8"	P1111	P1119	SP420	SP421	P507	P509	P507
Pier 29L	18'-4 15/16"	23'-4 15/16"	P1120	P1124	SP422	SP423	P507	P509	P507
Pier 30L	18'-4 1/4"	23'-4 1/4"	P1120	P1124	SP422	SP423	P507	P509	P507
Pier 31L	18'-1 7/16"	23'-1 7/16"	P1120	P1124	SP425	SP426	P507	P509	P507
Pier 32L	16'-9 5/8"	18'-9 5/8"	P1122	P1118	SP429	SP418	P507	P509	P507



SECTION A-A



SECTION B-B

† Place end of bar 4'-2" from column ℄.

STICKLEN - BELSHEIM & ASSOCIATES
ENGINEERS
WORTHINGTON OHIO

PIER DETAILS
TYPE I L

BRIDGE NO. BEL-7-1289
OVER
CONSOLIDATED RAIL CORP.
STA. 582+40.97
591+74.50
BELMONT CO.

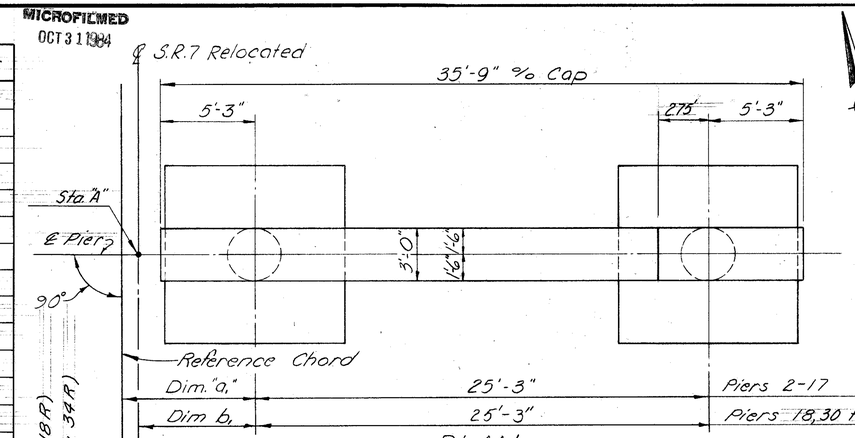
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
TRO SP	JC		MM	ACV	5/11/90	11/16 F&S 2-21

E.O. 6-11

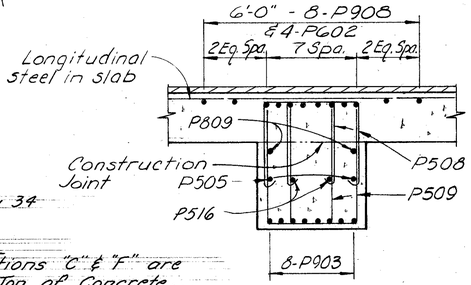
MICROFILMED
OCT 31 1994

	STA. "A"	Elev. "B" Col. 3	Col. 4	Col. 5	Elev. "C"	Elev. "E"	Elev. "F"	"H" bars	"K" bars	"T" bars
Pier 2R	682+68.97	650.00	650.00	——	674.48	675.44	675.16	P517	P518	P501
Pier 3R	683+01.47	642.00	642.00	——	675.01	675.97	675.69	P517	P518	P501
Pier 4R	683+33.97	642.00	642.00	——	675.55	676.50	676.22	P517	P518	P501
Pier 5R	683+66.47	642.00	642.00	——	676.08	677.02	676.74	P517	P518	P501
Pier 6R	683+94.48	642.00	642.00	——	676.54	677.48	677.20	P517	P518	P501
Pier 7R	684+03.48	642.00	642.00	——	676.69	677.65	677.37	P517	P518	P501
Pier 8R	684+31.48	642.00	642.00	——	677.15	678.10	677.82	P517	P518	P501
Pier 9R	684+63.98	642.00	642.00	——	677.68	678.63	678.35	P517	P518	P501
Pier 10R	684+96.48	642.00	642.00	——	678.21	679.16	678.88	P517	P518	P501
Pier 11R	685+28.98	644.00	642.00	——	678.73	679.67	679.39	P517	P518	P501
Pier 12R	685+56.99	644.00	642.00	——	679.13	680.07	679.79	P517	P518	P501
Pier 13R	685+65.99	644.00	642.00	——	679.25	680.21	679.93	P517	P518	P501
Pier 14R	685+93.99	643.00	642.00	——	679.61	680.53	680.25	P517	P518	P501
Pier 15R	686+26.50	——	643.00	643.00	679.98	680.87	680.59	P517	P518	P501
Pier 16R	686+59.00	——	642.00	642.00	680.30	681.08	680.83	P517	P518	P501
Pier 17R	686+91.50	——	642.00	642.00	680.57	681.21	680.98	P517	P518	P501
	STA. "A"	Elev. "B" Col. 3	Col. 4	Col. 5	Elev. "C"	Elev. "E"	Elev. "F"			
Pier 18R	687+19.50	642.60	642.60	——	680.76	681.24	681.07	P507	P509	P507
Pier 30R	690+21.00	650.00	645.00	——	680.57	680.14	680.07	P507	P509	P507
Pier 31R	690+49.00	650.00	646.00	——	680.34	679.91	679.83	P507	P509	P507
Pier 32R	690+81.50	653.00	649.00	——	680.03	679.61	679.50	P507	P509	P507
Pier 33R	691+14.00	667.60	653.60	——	679.67	679.25	679.14	P507	P509	P507
Pier 34R	691+46.50	670.80	662.30	——	679.31	678.88	678.78	P507	P509	P507

	Dim. "a"	Dim. "g"	Dim. "h"	"G" bars	"H" bars	"G" Spiral	"H" Spiral	Dim. "j"	Dim. "k"
Pier 2R	6'-11 1/4"	17'-8 5/8"	17'-8 5/8"	P1108	P1108	SP403	SP403	37'-6 1/16"	1'-1 1/16"
Pier 3R	7'-2 3/4"	26'-3"	26'-3"	P1138	P1138	SP467	SP467	37'-6"	0'-6"
Pier 4R	7'-3 1/16"	26'-9 1/2"	26'-9 1/2"	P1139	P1139	SP468	SP468	37'-6"	0'-6"
Pier 5R	7'-0 3/16"	27'-3 7/8"	27'-3 7/8"	P1121	P1121	SP469	SP469	37'-6"	0'-6"
Pier 6R	6'-7 1/8"	27'-9 3/8"	27'-9 3/8"	P1110	P1110	SP408	SP408	37'-6 1/16"	1'-1 1/16"
Pier 7R	6'-7 3/16"	27'-11 1/8"	27'-11 1/8"	P1110	P1110	SP440	SP440	37'-6 1/16"	1'-1 1/16"
Pier 8R	7'-0 1/2"	28'-4 5/8"	28'-4 3/8"	P1123	P1123	SP443	SP443	37'-6 1/16"	1'-1 1/16"
Pier 9R	7'-4 3/4"	28'-11"	28'-11"	P1128	P1128	SP451	SP451	37'-6".	0'-6"
Pier 10R	7'-4 3/4"	29'-5 3/8"	29'-5 3/8"	P1135	P1135	SP473	SP473	37'-6"	0'-6"
Pier 11R	7'-0 1/2"	27'-11 3/8"	29'-11 3/8"	P1110	P1113	SP470	SP472	37'-6 1/16"	1'-1 1/16"
Pier 12R	6'-7 3/16"	28'-4 3/8"	30'-4 3/8"	P1123	P1129	SP443	SP471	37'-6 1/16"	1'-1 1/16"
Pier 13R	6'-7 1/8"	28'-5 7/8"	30'-5 3/8"	P1123	P1144	SP446	SP444	37'-6 1/16"	1'-1 1/16"
Pier 14R	7'-0 1/4"	29'-10 1/4"	30'-10 1/4"	P1112	P1140	SP465	SP466	37'-6 1/16"	1'-1 1/16"
Pier 15R	7'-3 1/4"	30'-2 5/8"	30'-2 5/8"	P1113	P1113	SP410	SP410	37'-6"	0'-6"
Pier 16R	7'-3"	31'-6 1/2"	31'-6 1/2"	P1106	P1106	SP411	SP411	37'-6"	0'-6"
Pier 17R	6'-11 1/2"	31'-9 3/4"	31'-9 3/4"	P1102	P1102	SP412	SP412	37'-6 1/16"	1'-1 1/16"
	Dim. "b"	Dim. "g"	Dim. "h"	"G" bars	"H" bars	"G" Spiral	"H" Spiral	Dim. "j"	Dim. "k"
Pier 18R	6'-6"	31'-4 3/4"	31'-4 3/4"	P1107	P1107	SP413	SP413	37'-6"	0'-6"
Pier 30R	6'-6"	23'-3 13/16"	28'-3 13/16"	P1115	P1123	SP424	SP439	37'-6"	0'-6"
Pier 31R	6'-6"	23'-1"	27'-1"	P1115	P1121	SP427	SP428	37'-6"	0'-6"
Pier 32R	6'-6"	19'-9"	23'-9"	P1111	P1119	SP430	SP431	37'-6"	0'-6"
Pier 33R	6'-6"	4'-9 1/2"	18'-9 1/2"	P1109	P1118	SP432	SP433	37'-6"	0'-6"
Pier 34R	6'-6"	——	9'-9"	——	P1126	——	SP435	37'-6"	0'-6"

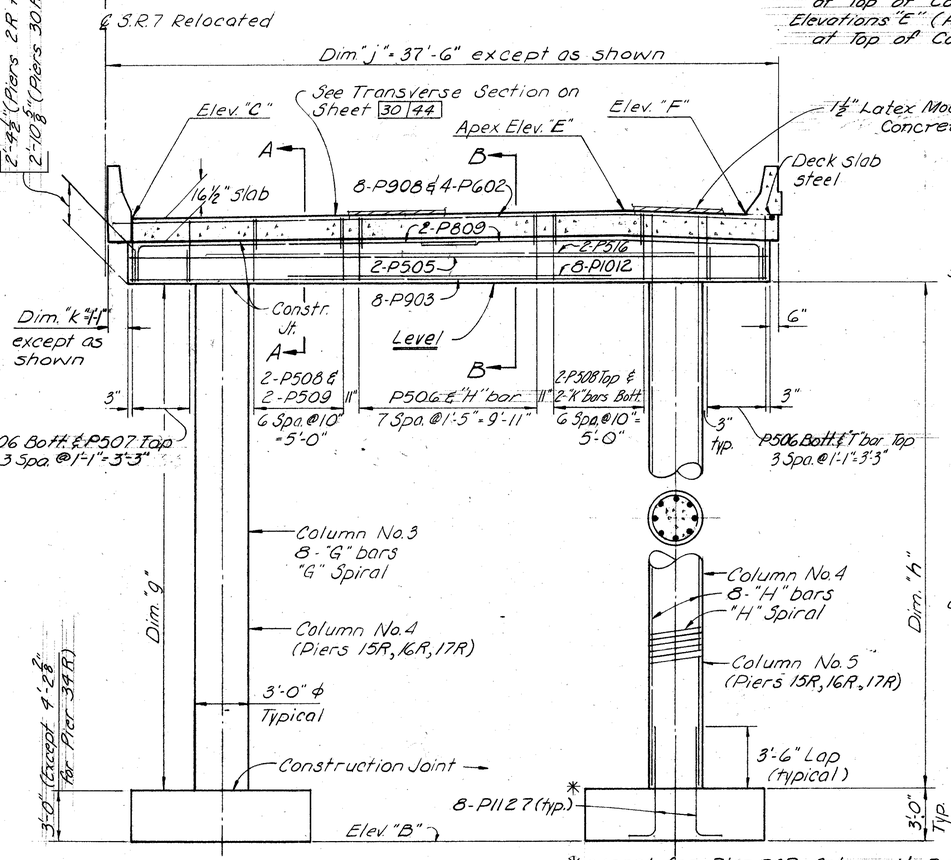


PLAN
(SHOWN WITH DECK SLAB REMOVED)



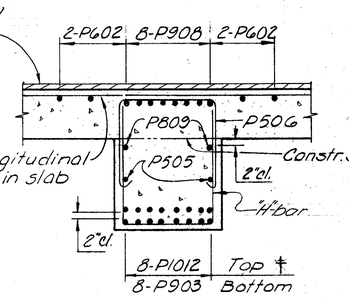
NOTE:
Elevations "C" & "F" are at Top of Concrete.
Elevations "E" (Apex Elev. at Top of Concrete.)

SECTION A-A



* except for Pier 34R, Column No. 3 - use 8-P1125 and no "G" bars.

ELEVATION
(R) RIGHT - NORTHBOUND



SECTION B-B

† Place end of bar 3'-7" from column ℄.

All column height dimensions are measured on ℄ of column.

Stirrup bars are placed as shown in the Sections except as otherwise noted.

For footing size see table on sheet 15 44

For footing details see sheet 26 44, 27 44, 28 44 & 29 44

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

BEL-7-11.89

316 / 443

18 / 44

STICKLEN - BELSHEIM & ASSOCIATES
ENGINEERS
WORTHINGTON OHIO

PIER DETAILS
TYPE I R
BRIDGE NO. BEL-7-1289
OVER
CONSOLIDATED RAIL CORP.
STA. 682 + 40.97
691 + 74.50
BELMONT CO.

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
TRO SP	JC		MM	AGW	9/11/90	11/16/90 5/23/91

E.O. 671

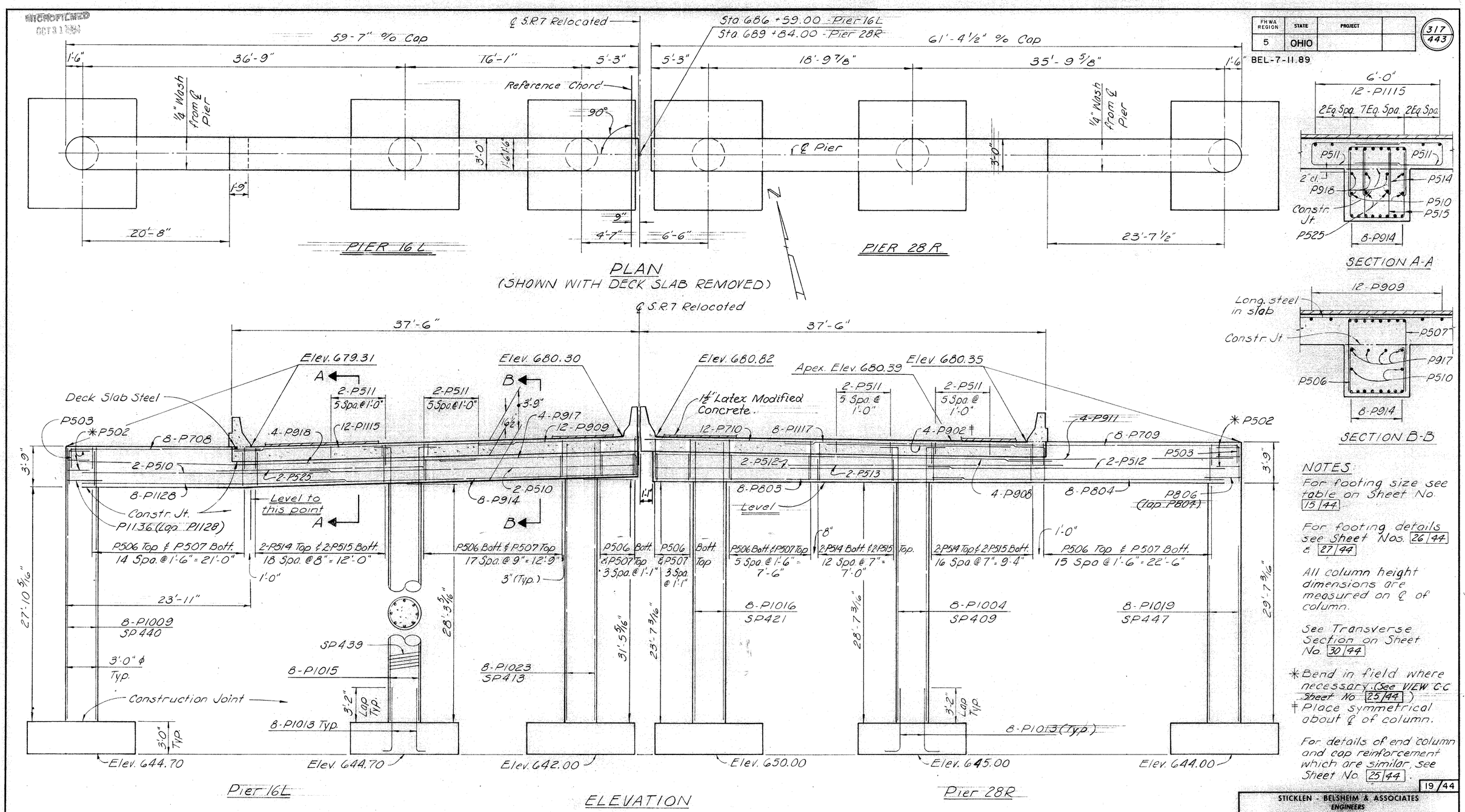
8-24-94

MICROFILMED
OCT 31 1984

FHWA REGION	STATE	PROJECT	
5	OHIO		

317/443

BEL-7-11.89



NOTES:

For footing size see table on Sheet No. 15/44

For footing details see Sheet Nos. 26/44 & 27/44

All column height dimensions are measured on ℄ of column.

See Transverse Section on Sheet No. 30/44

*Bend in field where necessary. (See VIEW C-C Sheet No. 25/44)

‡ Place symmetrical about ℄ of column.

For details of end column and cap reinforcement which are similar, see Sheet No. 25/44.

19/44

STICKLEN - BELSHEIM & ASSOCIATES
ENGINEERS
WORTHINGTON OHIO

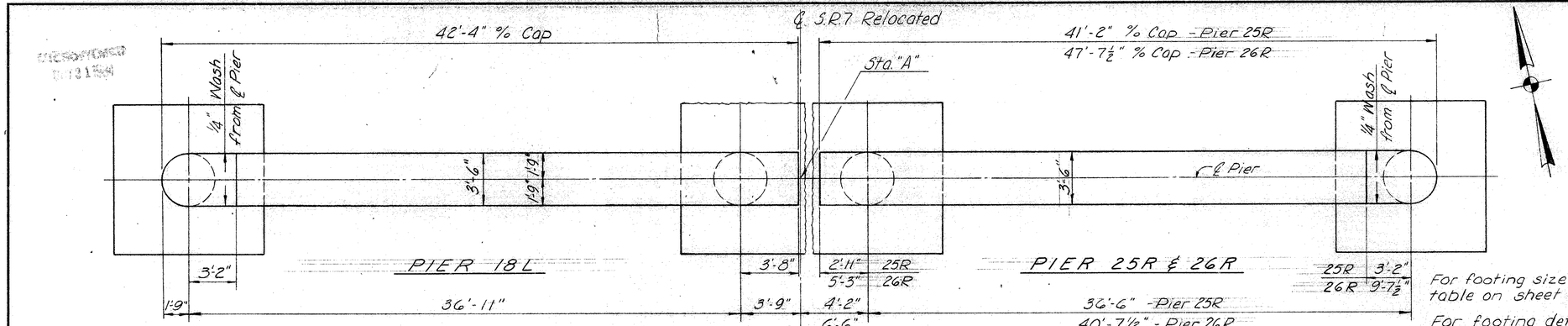
PIER DETAILS
TYPE II
BRIDGE NO. BEL-7-1289
OVER
CONSOLIDATED RAIL CORP.
STA. 682 + 40.97
691 + 74.50
BELMONT CO.

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
TKO	JC		MM	DGH	8/11/70	11/76 5/23/79

E.O. 671

FHWA REGION	STATE	PROJECT		318/443
5	OHIO			

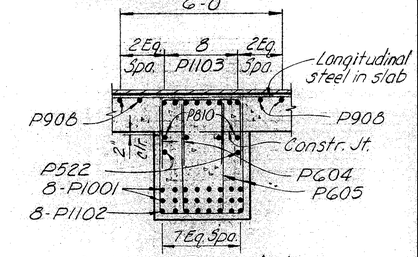
BEL-7-11.89



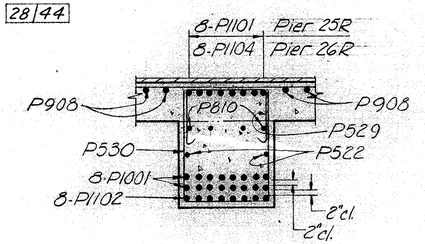
PLAN
(SHOWN WITH DECK SLAB REMOVED)

For footing size see table on sheet 15|44

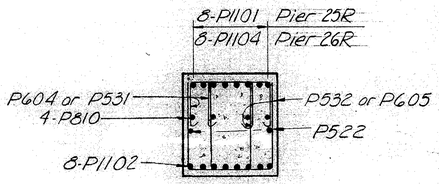
For footing details see sheets 26|44 , 27|44 & 28|44



SECTION A-A



SECTION B-B

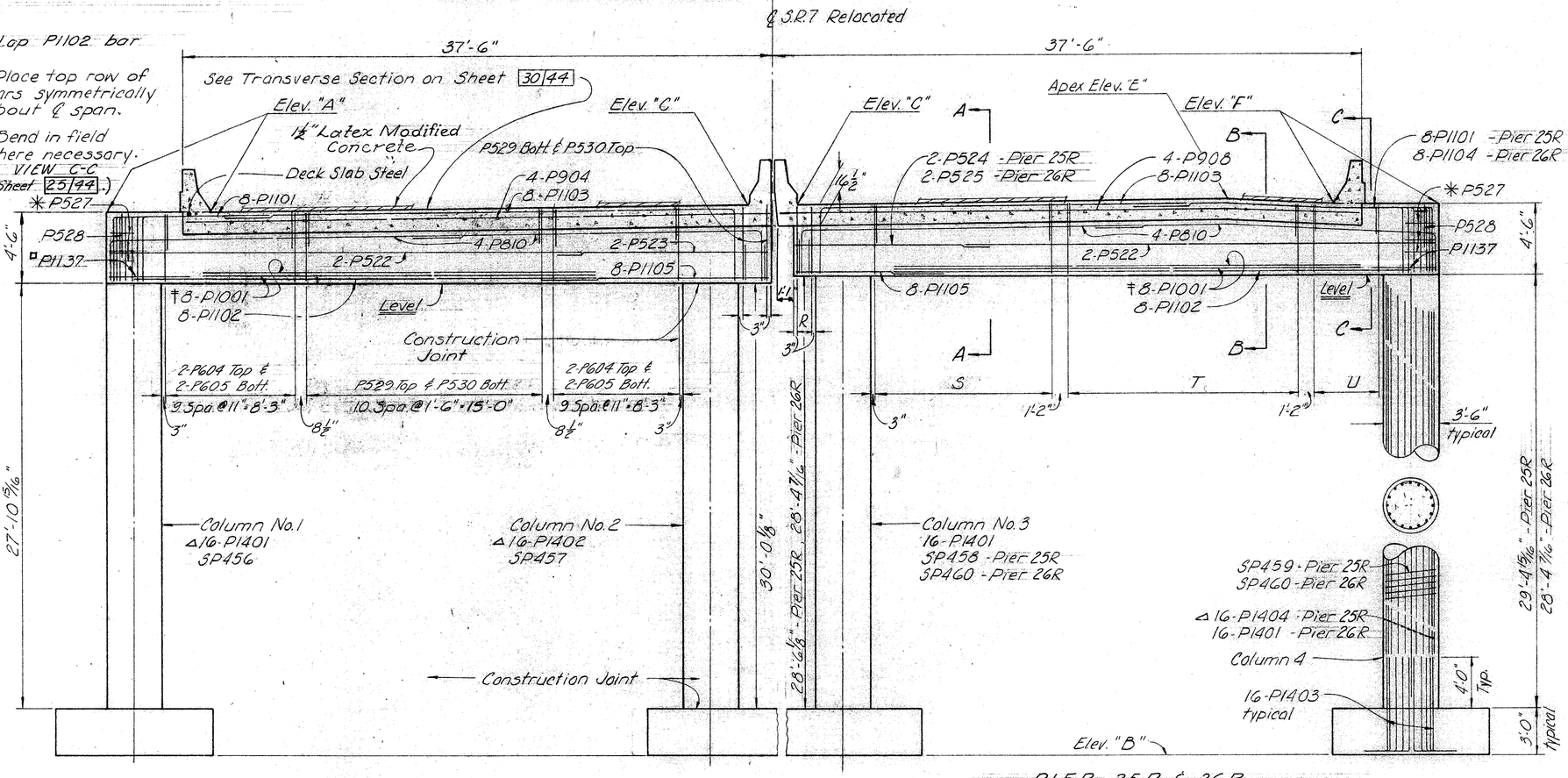


SECTION C-C

□ Lap P1102 bar

† Place top row of bars symmetrically about ℄ span.

✳ Bend in field where necessary. (See VIEW C-C on Sheet 25|44.)



(L) LEFT - SOUTHBOUND
PIER 18L

ELEVATION

PIER 25R & 26R
(R) RIGHT - NORTHBOUND

	Sta. "A"	Elev. "A"	Elev. "B" Col. 1	Col. 2	Col. 3	Col. 4	Elev. "C"	Elev. "E"	Elev. "F"
Pier 18L	687+19.50	680.11	644.70	642.60	——	——	680.76	——	——
Pier 25R	688+91.00	——	——	——	644.90	644.00	681.17	680.95	680.91
Pier 26R	689+19.00	——	——	——	644.90	644.90	681.10	680.81	680.77

STIRRUP BAR SPACING

	BAR MARK	SPACING	Pier
R	P529 Bott. & P530 Top	1 Spa. @ 8"	25R
	P529 Bott. & P530 Top	3 Spa. @ 1'-1" = 3'-3"	26R
S	2-P604 & 2-P605	15 Spa. @ 9" = 11'-3"	25R
	2-P604 & 2-P605	17 Spa. @ 9" = 12'-9"	26R
T	P529 & P530	7 Spa. @ 1'-6" = 10'-6"	25R
	P529 & P530	11 Spa. @ 1'-6" = 16'-6"	26R
U	2-P604 & 2-P605	9 Spa. @ 1'-11" = 8'-3"	25R
	2-P531 & 2-P532	4 Spa. @ 1'-3" = 5'-0"	26R

NOTE:
Stirrup bars are placed as shown in the Sections except as otherwise noted.

△ See Construction Material Specification Item 509.08

20|44

STICKLEN - BELSHEIM & ASSOCIATES
ENGINEERS
WORTHINGTON OHIO

PIER DETAILS
TYPE III

BRIDGE NO. BEL-7-1289
OVER
CONSOLIDATED RAIL CORP
STA 682+40.97
691+74.50
BELMONT CO.

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
TRO SP	JC		MM	DGV	5/1/10	11/16 5/23/77

E.O. 671

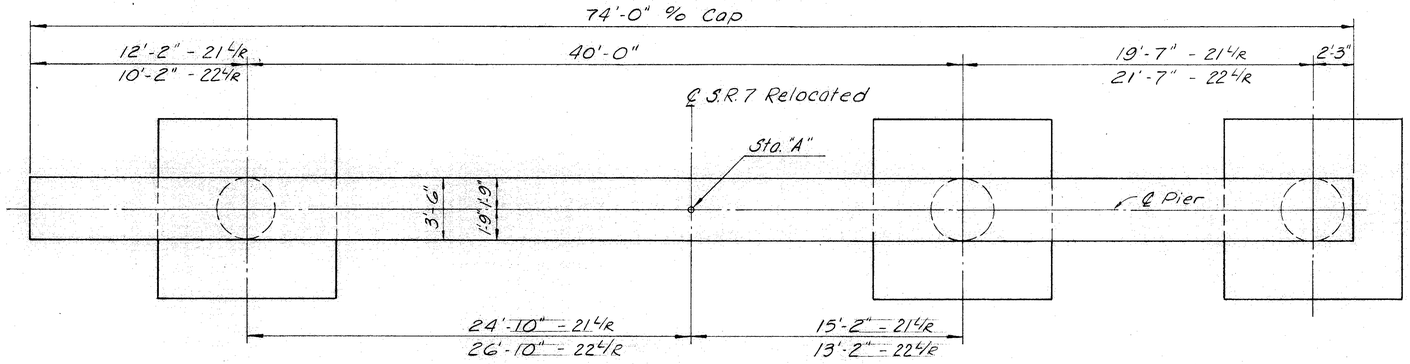
DGV 11-29-11

SYNCHRONIZED
OCT 31 1984

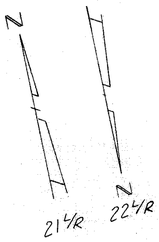
FHWA REGION	STATE	PROJECT	
5	OHIO		

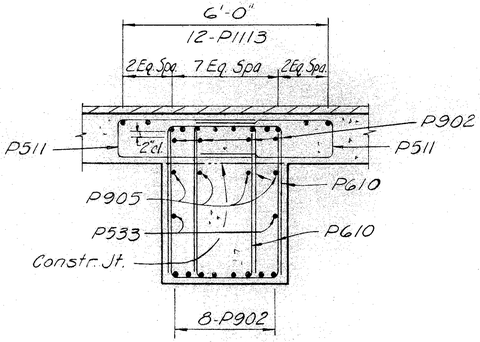
319/443

BEL-7-11.89

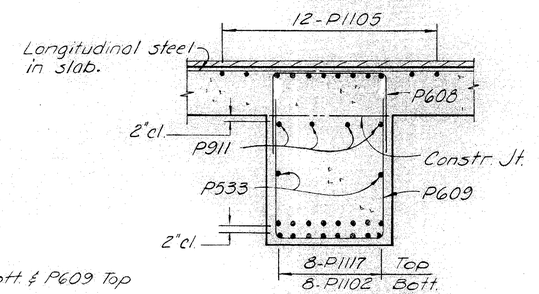


PLAN
(SHOWN WITH DECK SLAB REMOVED)

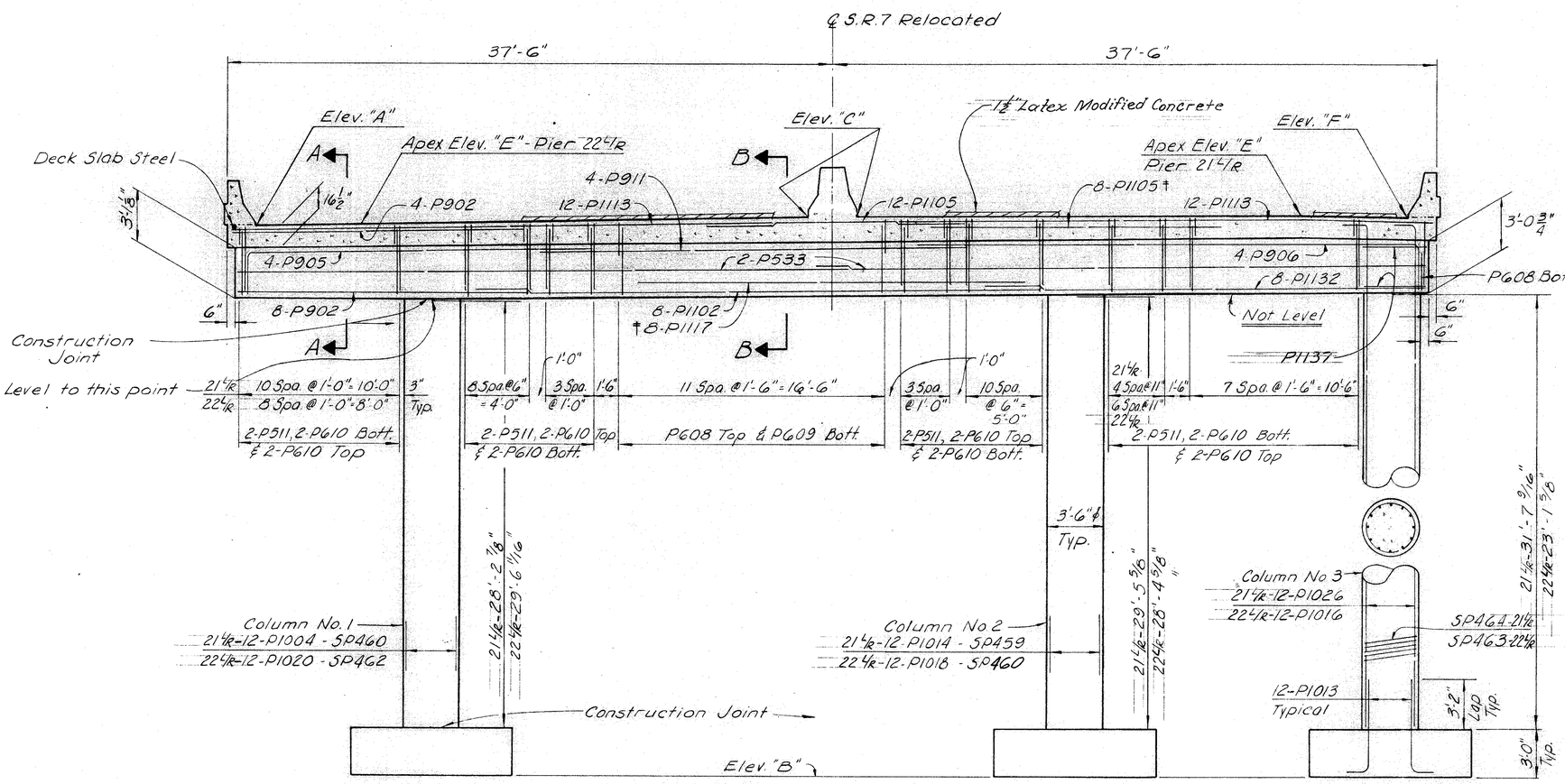




SECTION A-A



SECTION B-B



ELEVATION
PIER 21¼R
PIER 22¼R

NOTES:

For footing size see table on Sheet No. 15/44

For footing details see Sheet Nos. 26/44 & 27/44

All column height dimensions are measured on ℄ of column.

See Transverse Section on Sheet No. 32/44

† Place bars symmetrically about ℄ of span or column.

Pier 21¼R & Pier 22¼R are similar except as shown.

	Sta. "A"	Elev. "A"	Elev. "B" Col. 1	Elev. "B" Col. 2	Elev. "B" Col. 3	Elev. "C"	Elev. "E"	Elev. "F"
Pier 21¼R	687+89.00	680.55	644.90	644.00	642.00	681.09	681.20	681.14
Pier 22¼R	688+21.50	681.12	644.00	644.90	650.00	681.16	681.14	680.63

21/44

STICKLEN - BELSHEIM & ASSOCIATES
ENGINEERS
WORTHINGTON OHIO

PIER DETAILS
TYPE IV
BRIDGE NO. BEL-7-1289
OVER
CONSOLIDATED RAIL CORP.
STA. 682 + 40.97
691 + 74.50
BELMONT CO.

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
MM	JC		TRO	DGH	8/11/79	11/16 5-23-79

E.O. 671

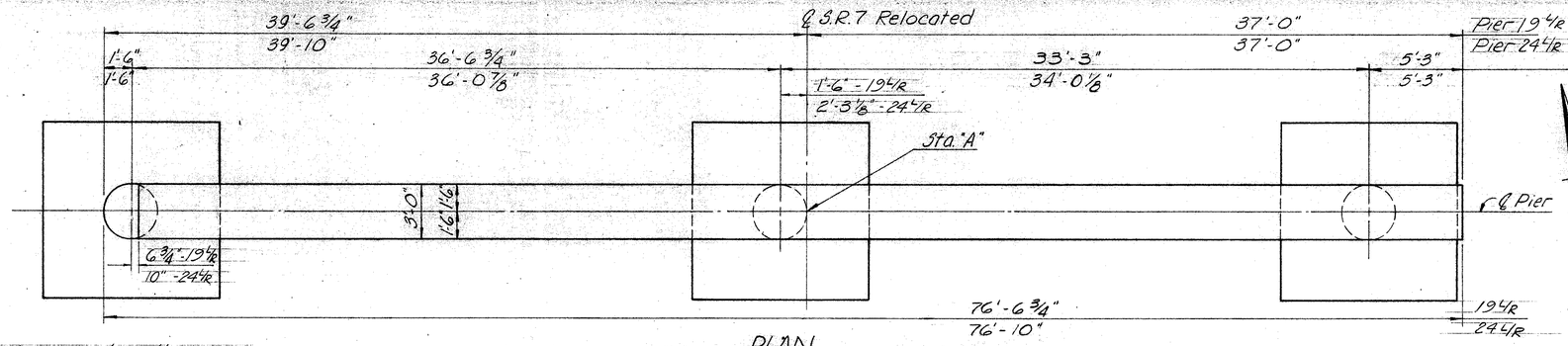
DGH 11-29-84

SUPERSEDED
OCT 1 1990

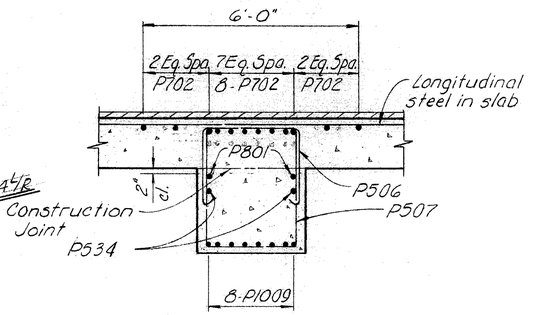
FHWA REGION	STATE	PROJECT	
5	OHIO		

320/443

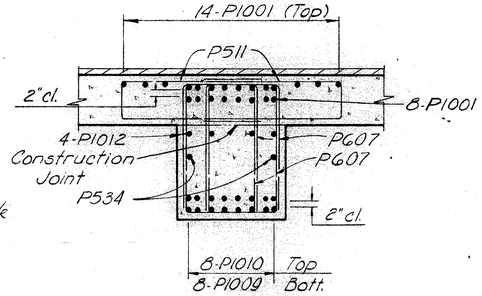
BEL-7-11.89



PLAN
(SHOWN WITH DECK SLAB REMOVED)



SECTION A-A



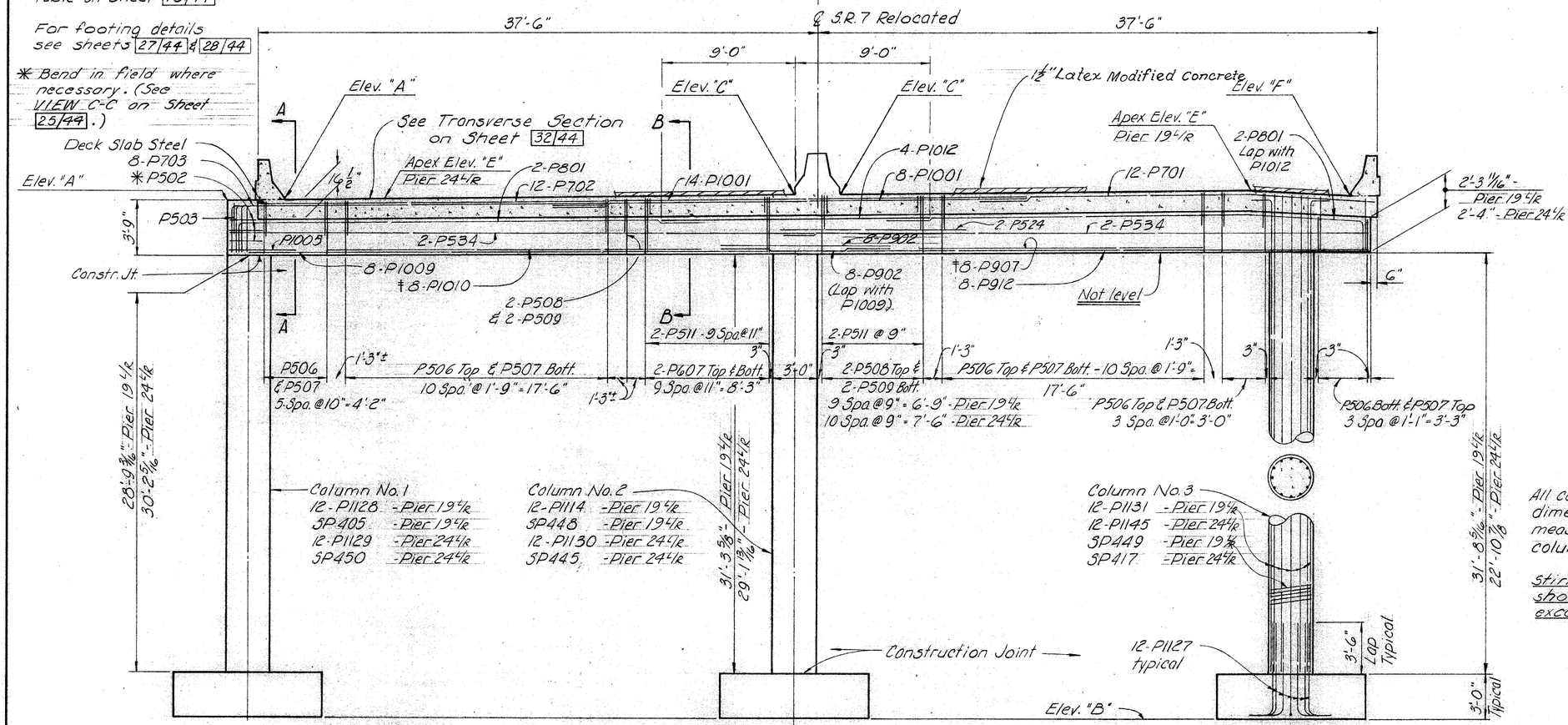
SECTION B-B

† Place bars symmetrically about ℄ of span.

For footing size see table on Sheet 15/44

For footing details see sheets 27/44 & 28/44

✱ Bend in field where necessary. (See VIEW C-C on Sheet 25/44.)



ELEVATION
PIER 19½ - LOOKING FORWARD
PIER 24½ - LOOKING REARWARD

All column height dimensions are measured on ℄ of column.

Stirrup bars are placed as shown in the Sections except as otherwise noted.

	Sta. "A"	Elev. "E"	Elev. "A"	Elev. "B" Col. 1	Elev. "B" Col. 2	Elev. "B" Col. 3	Elev. "C"	Elev. "F"
Pier 19½	687+28.50	681.25	680.20	644.70	642.60	642.60	680.82	681.09
Pier 24½	688+82.00	680.98	680.95	644.00	644.90	651.00	681.18	680.64

22/44

STICKLEN - BELSHEIM & ASSOCIATES
ENGINEERS
WORTHINGTON OHIO

PIER DETAILS
TYPE V

BRIDGE NO. BEL-7-1289
OVER
CONSLIDATED RAIL CORP.
STA 682 + 40.97
691 + 74.50
BELMONT CO.

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
TRO SP	JC		MM	BGN	8/11/90	11/26 5/23/79

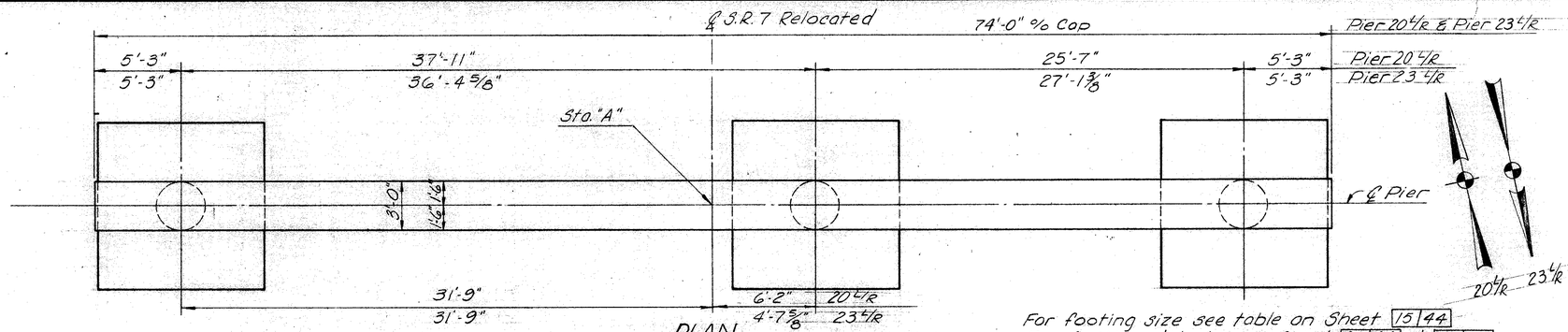
E.O. 671

MICROFILMED
DEC 31 1984

FHWA REGION	STATE	PROJECT	
5	OHIO		

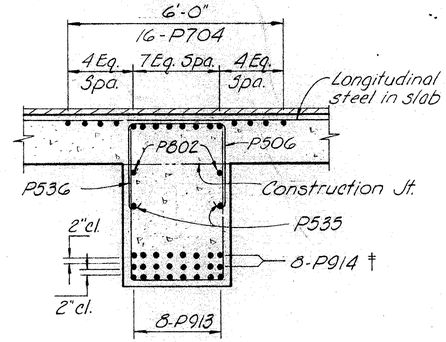
321/443

BEL-7-11.89

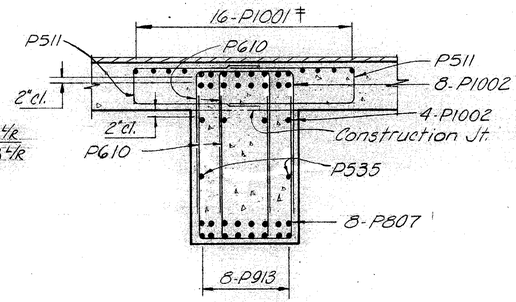


PLAN
(SHOWN WITH DECK SLAB REMOVED)

For footing size see table on Sheet 15/44
For footing details see Sheet 26/44 & 27/44



SECTION A-A

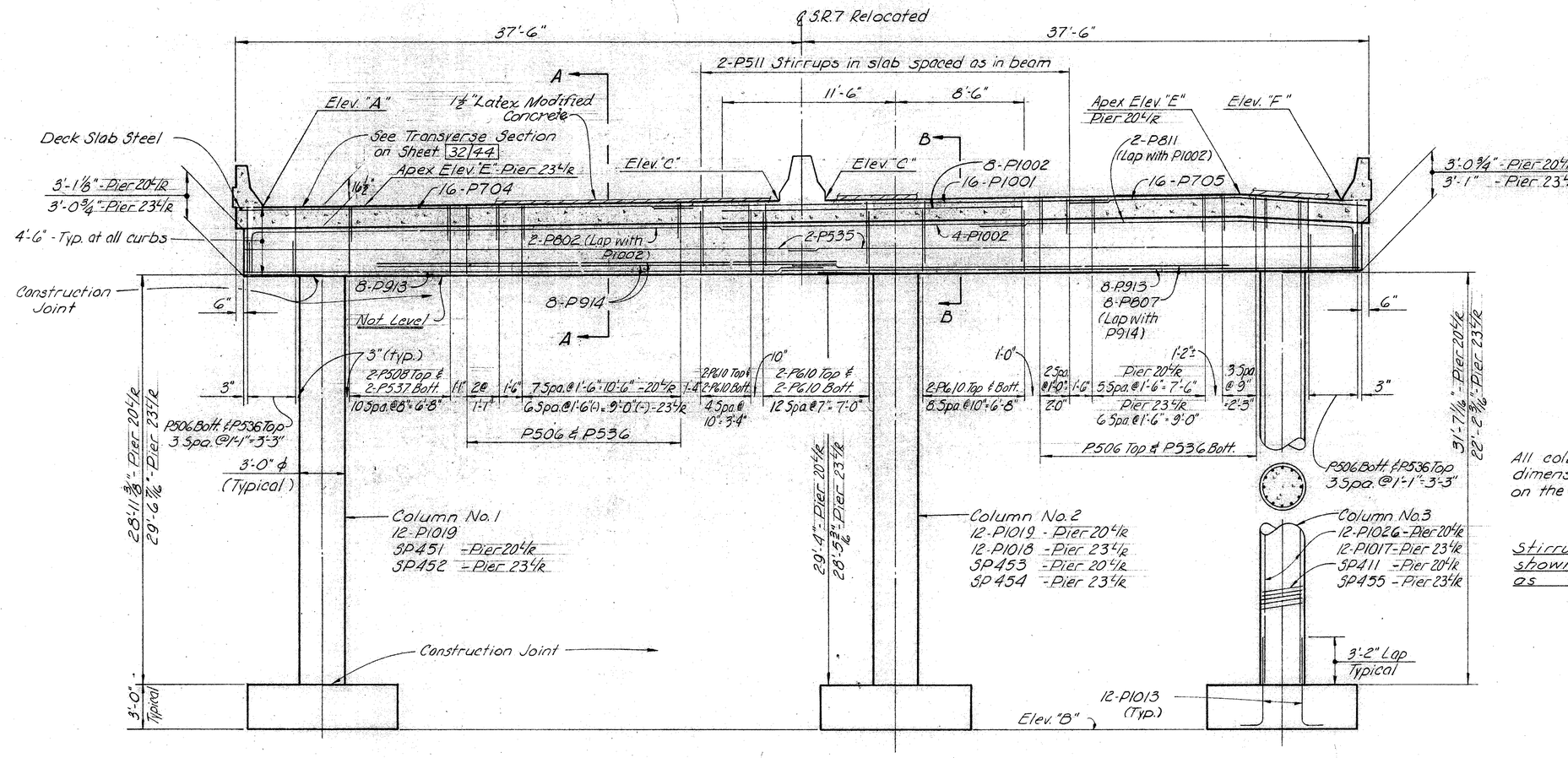


SECTION B-B

† Place bars symmetrically about ℄ of span.

All column height dimensions are measured on the ℄ of column.

Stirrup bars are placed as shown in the sections except as otherwise noted.



ELEVATION

PIER 20°-4"k - LOOKING FORWARD
PIER 23°-4"k - LOOKING REARWARD

	Sta. "A"	Elev. "E"	Elev. "A"	Elev. "B" Col. 1	Elev. "B" Col. 2	Elev. "B" Col. 3	Elev. "C"	Elev. "F"
Pier 20°-4"k	687+56.50	681.24	680.41	644.00	644.00	642.00	680.96	681.13
Pier 23°-4"k	688+54.00	681.07	681.06	644.00	644.90	651.00	681.19	680.66

23/44

STICKLEN - BELSHEIM & ASSOCIATES
ENGINEERS
WORTHINGTON OHIO

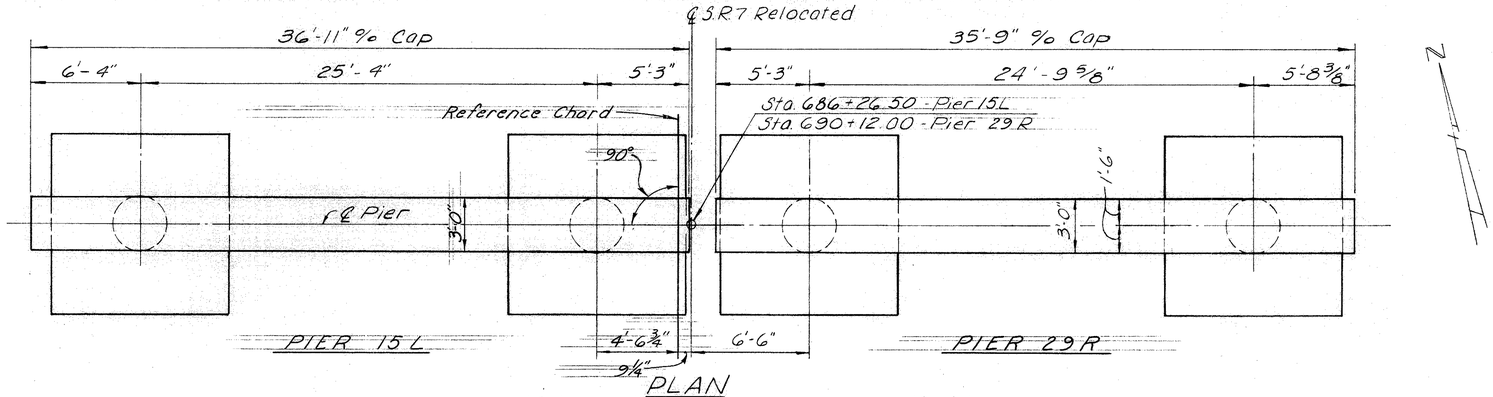
PIER DETAILS
TYPE VI

BRIDGE NO. BEL-7-1289
OVER
CONSOLIDATED RAIL CORP.
STA. 682 + 40.97
691 + 74.50
BELMONT CO.

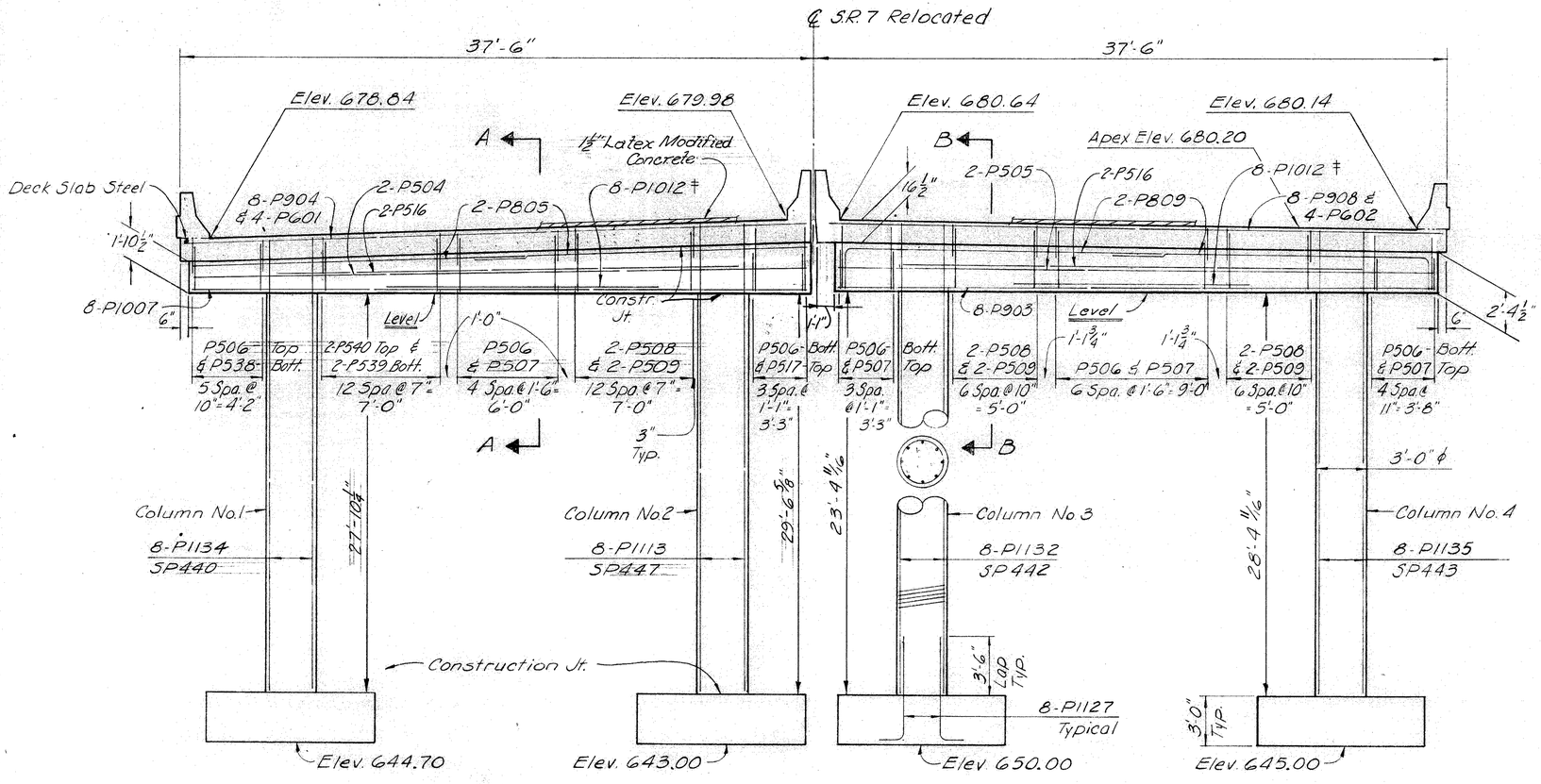
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
TRD SP	Jc		MM	NGW	9/11/90	11/96 5/23/99

E.O. 671

MICROFILMED 10 1 1990



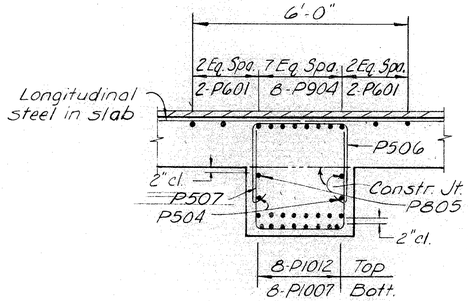
PLAN
(SHOWN WITH DECK SLAB REMOVED)



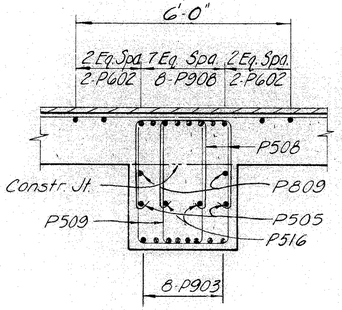
ELEVATION

FHWA REGION	STATE	PROJECT		322/443
5	OHIO			

BEL-7-11.89



SECTION A-A



SECTION B-B

NOTES:

For footing size see table on Sheet No. 15|44

For footing details see Sheet No 27|44

All column height dimensions are measured on ℄ of column.

See Transverse Section on Sheet No. 30|44

‡ Place symmetrical about ℄ of span.

Stirrup bars P506, P507, P508 & P509 are placed as shown in the Sections except as otherwise noted.

24|44

STICKLEN - BELSHEIM & ASSOCIATES
ENGINEERS
WORTHINGTON OHIO

PIER DETAILS
TYPE VII

BRIDGE NO. BEL-7-1289
OVER
CONSOLIDATED RAIL CORP.
STA 682 + 40.97
691 + 74.50
BELMONT CO.

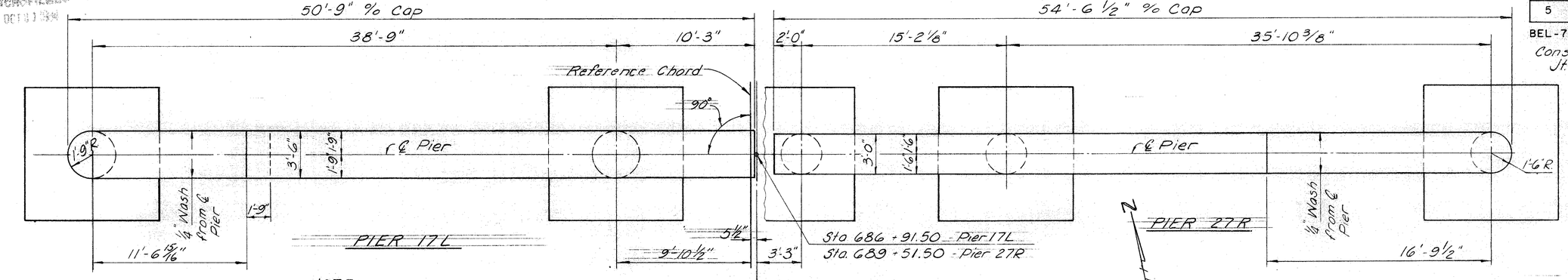
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
TRO	JC		MM	DGA	8/11/90	11/16/90 5/25/79

E0.671

FHWA REGION	STATE	PROJECT	
5	OHIO		

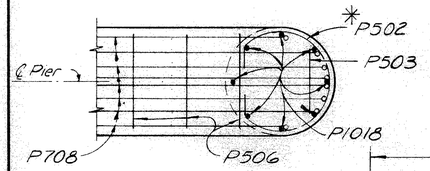
323/443

BEL-7-11.89

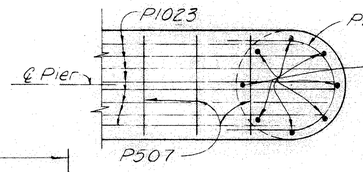


PLAN
(SHOWN WITH DECK SLAB REMOVED)

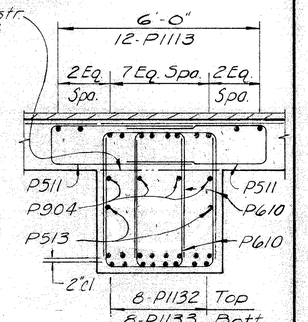
NOTE:
Extreme care shall be taken in orienting cap bars to lap the column bars (similar to that shown in View C-C) in all end column conditions.



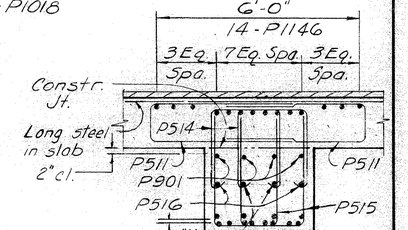
VIEW C-C



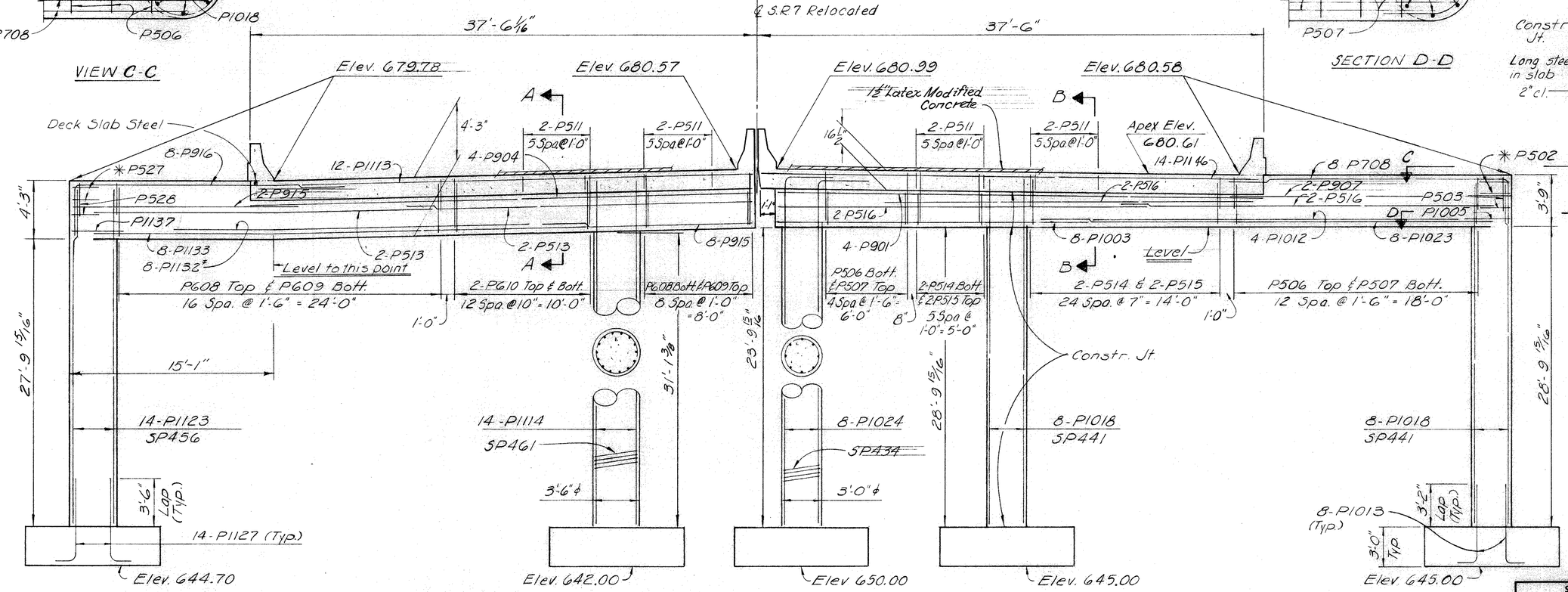
SECTION D-D



SECTION A-A



SECTION B-B



ELEVATION

Pier 17L
Type VIII

Pier 27R
Type IX

NOTE:
Stirrup bars are placed as shown in the sections except as otherwise noted.

NOTES:
For footing size see table on Sheet No. 15/44

For footing details see Sheet Nos. 26/44 & 27/44

All Column height dimensions are measured on ℄ of column.

*Bend in field where necessary.

See Transverse Section on Sheet No. 30/44

‡Place symmetrical about ℄ of span.

25/44

STICKLEN - BELSHEIM & ASSOCIATES
ENGINEERS
WORTHINGTON OHIO

PIER DETAILS
TYPE VIII & TYPE IX

BRIDGE NO. BEL-7-1289
OVER
CONSOLIDATED RAIL CORP.
STA. 682 + 40.97
BELMONT CO. 691 + 74.50

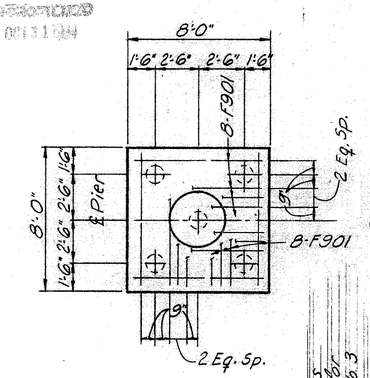
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
MM	JC		T.P.O.	DGB	9/11/79 TPO	11/96 5/23/79

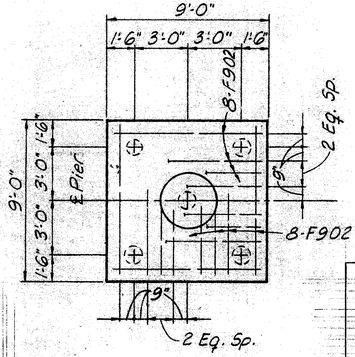
E.O. 671

FHWA REGION	STATE	PROJECT	
5	OHIO		

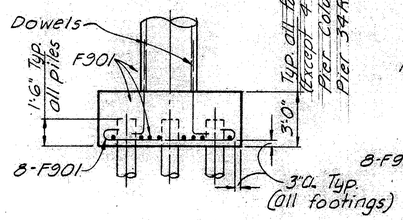
324/443

BEL-7-11.89

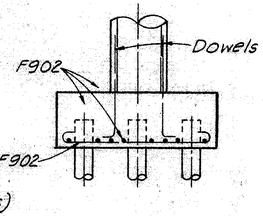




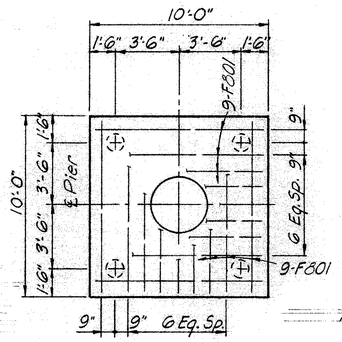
PIER FOOTING DETAILS ARE SHOWN LOOKING FORWARD ON STATIONING AND CORRESPOND WITH THE ACTUAL PIER POSITION AS SHOWN ON INDIVIDUAL PIER DETAILS.

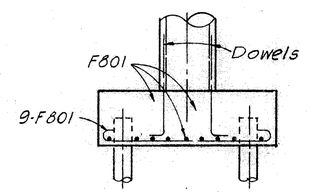


FOOTING 'A'
5-Piles

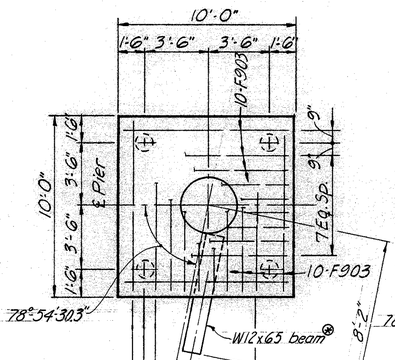


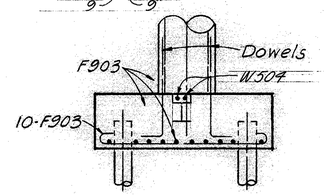
FOOTING 'B'
5-Piles



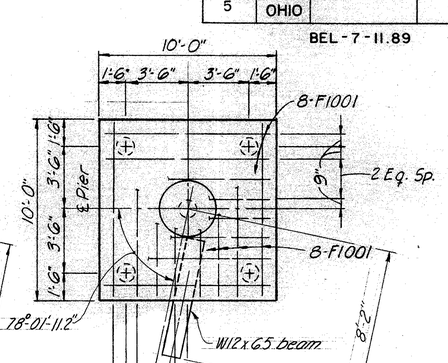


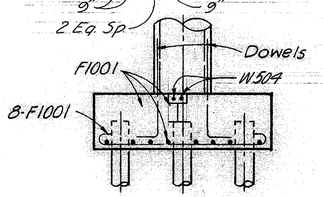
FOOTING 'D'
9-Piles



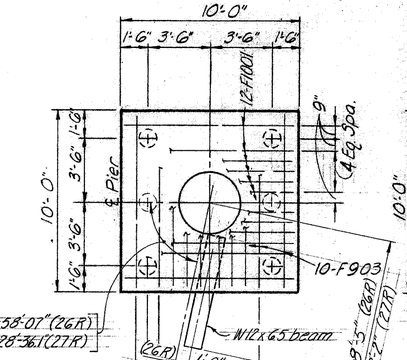


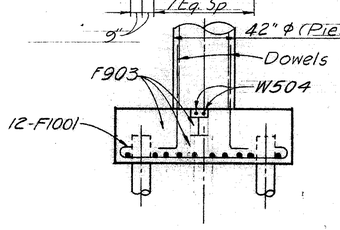
FOOTING 'E'
4-Piles
⊛ At Pier 31R



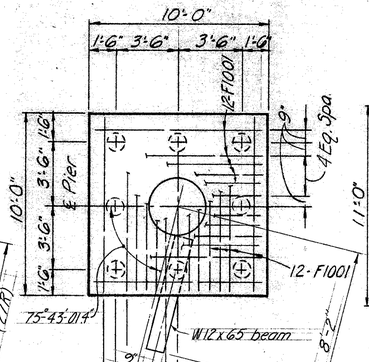


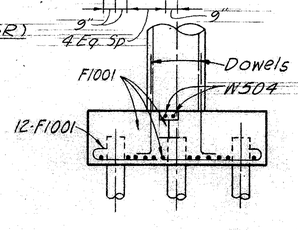
FOOTING 'F'
5-Piles



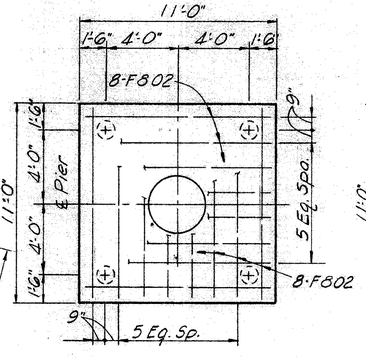


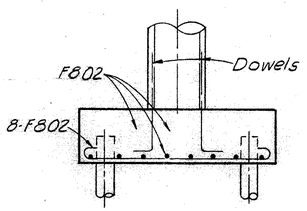
FOOTING 'G'
6-Piles



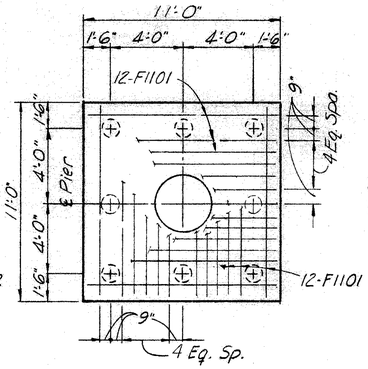


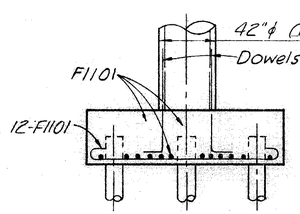
FOOTING 'H'
8-Piles



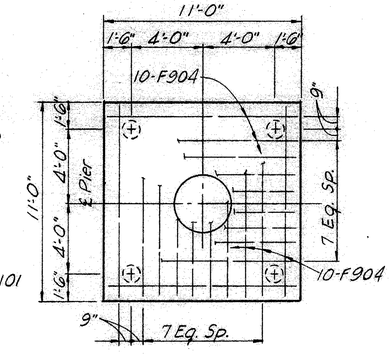


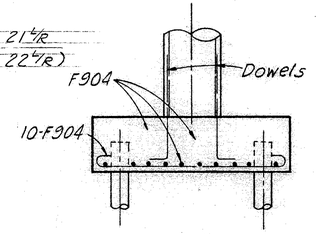
FOOTING 'J'
4-Piles





FOOTING 'K'
8-Piles





FOOTING 'L'
4-Piles

For Bottered Piles, see PIER DETAILS FOOTNG LAYOUT Shts. 13/44, 14/44, 15/44 & 16/44.

Reinforcing Bars: For size, number & marks of bars shown as 'Dowels', see individual pier details.

All columns are 36" in diameter except as othewise shown.

Footing beams shall not be field painted

26/44

STICKLEN - BELSHEIM & ASSOCIATES ENGINEERS
WORTHINGTON OHIO

PIER FOOTING DETAILS

BRIDGE NO. BEL-7-1289
OVER
CONSOLIDATED RAIL CORP.

BELMONT CO.

STA 682+40.97
691+74.50

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
SP	SP		TRO	DGH	5/11/10	11/16

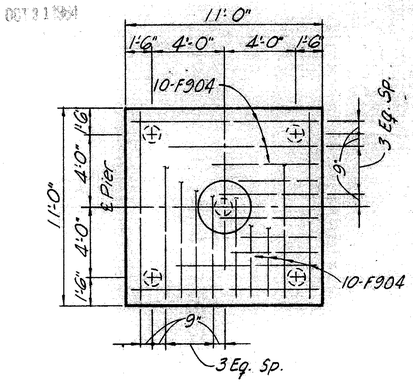
E.O.671

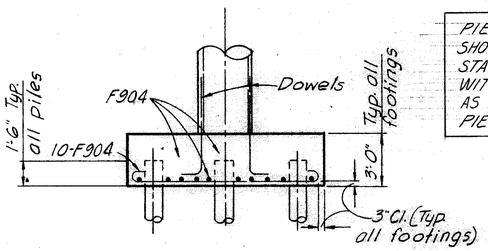
MICROFILMED
OCT 31 '84

FHWA REGION	STATE	PROJECT	
5	OHIO		

325/443

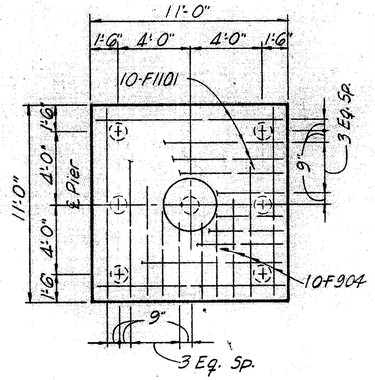
BEL-7-11.89

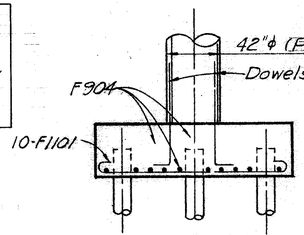




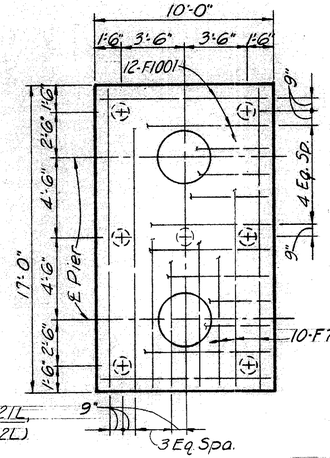
FOOTING 'M'
5-Piles

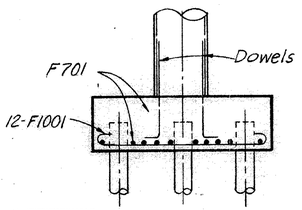
PIER FOOTING DETAILS ARE SHOWN LOOKING FORWARD ON STATIONING AND CORRESPOND WITH THE ACTUAL PIER POSITION AS SHOWN ON INDIVIDUAL PIER DETAILS.



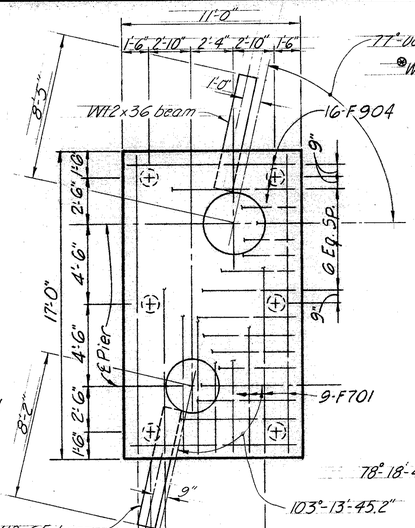


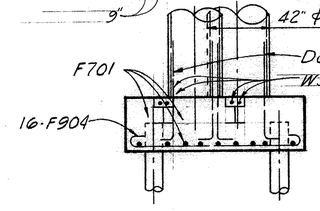
FOOTING 'P'
7-Piles



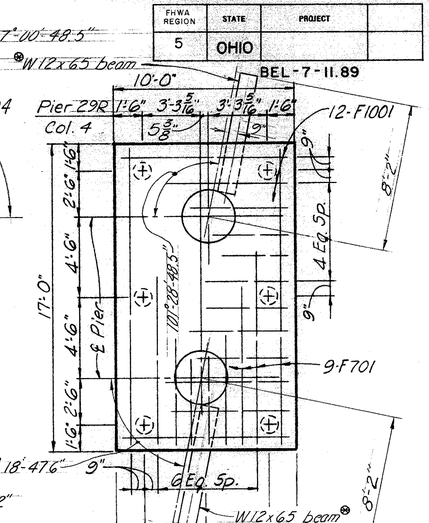


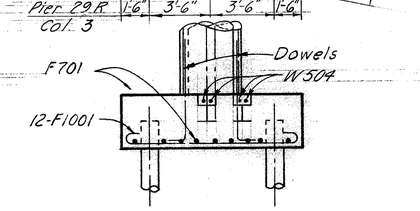
FOOTING 'Q'
7-Piles





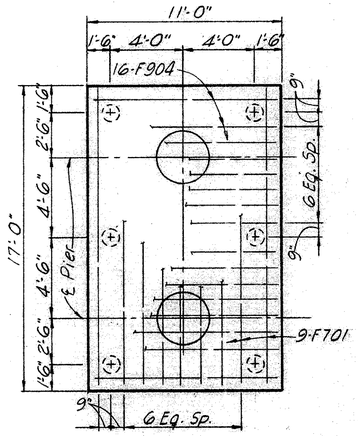
FOOTING 'R'
6-Piles

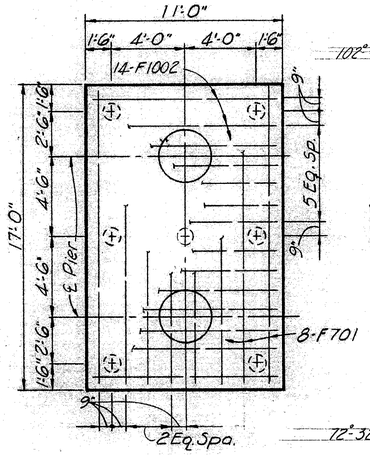


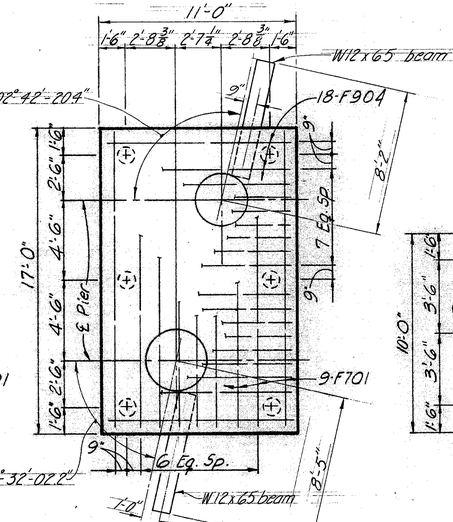


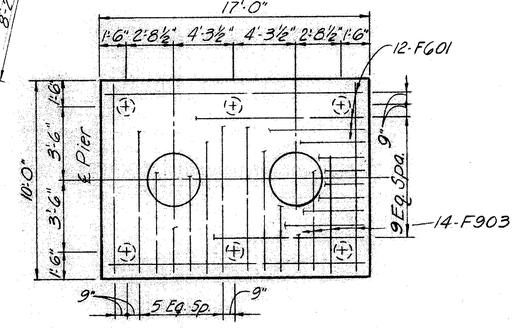
FOOTING 'S'
6-Piles

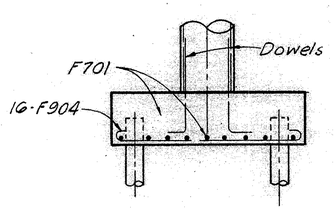
⊛ Provide beams @ Col. 4 Ftg. only



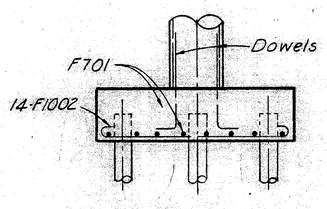




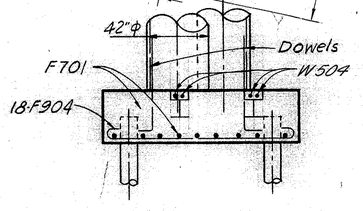




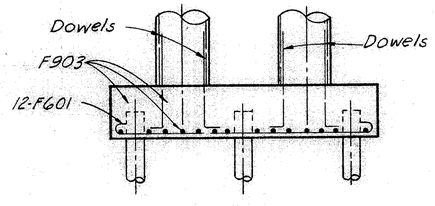
FOOTING 'T'
6-Piles



FOOTING 'U'
7-Piles



FOOTING 'V'
6-Piles



FOOTING 'X'
6-Piles

For Battered Piles see "PIER DETAILS FOOTING LAYOUT Shts. 13/44, 14/44, 15/44 & 16/44

Reinforcing Bars: For size, number & marks of bars shown as 'Dowels', see individual pier details.

All columns are 36" in diameter except as otherwise shown.

27/44

STICKLEN - BELSHEIM & ASSOCIATES
ENGINEERS
WORTHINGTON OHIO

PIER FOOTING DETAILS

BRIDGE NO. BEL-7-1289
OVER
CONSOLIDATED RAIL CORP.

BELMONT CO.

STA. 682 + 40.97
691 + 74.50

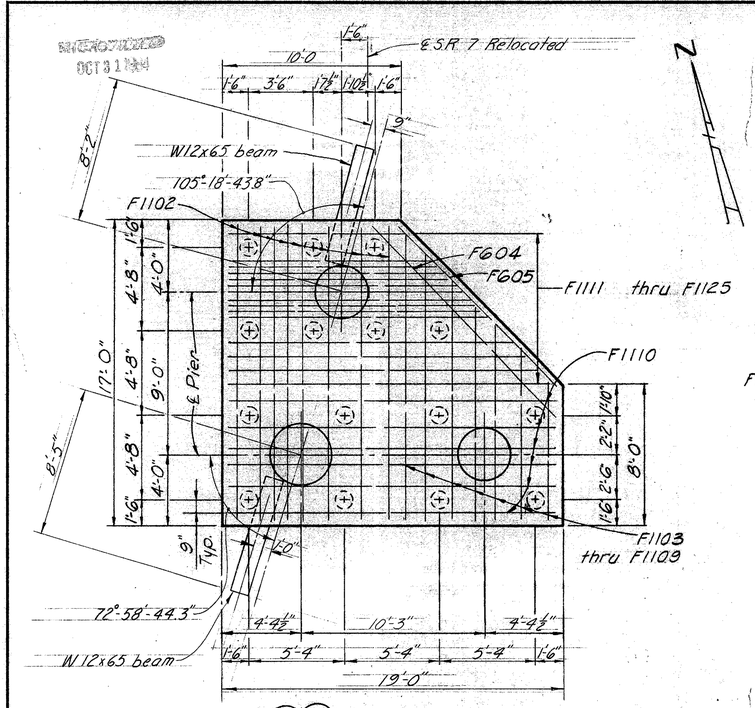
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
SP	SP		TRO	DCH	5/11/70	11/76

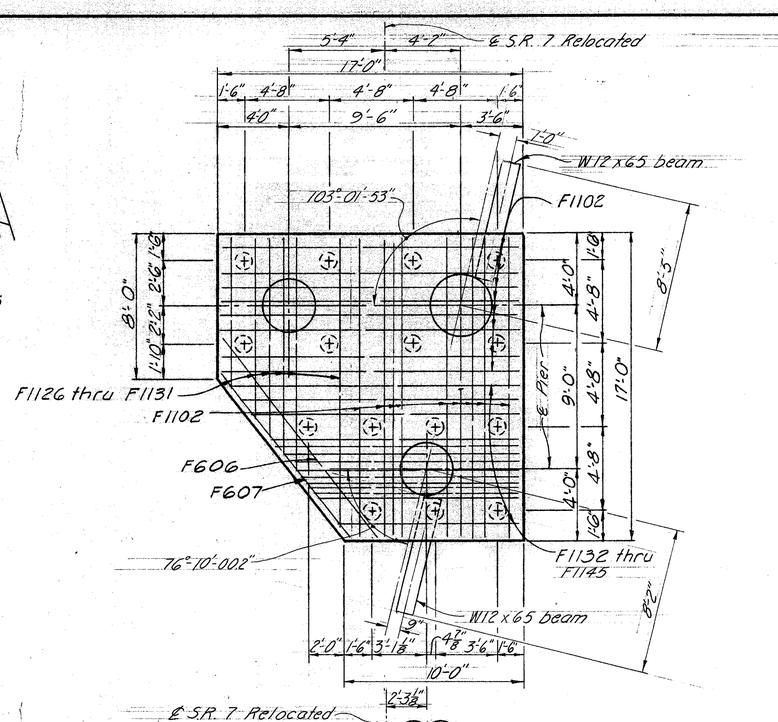
E.O. 671

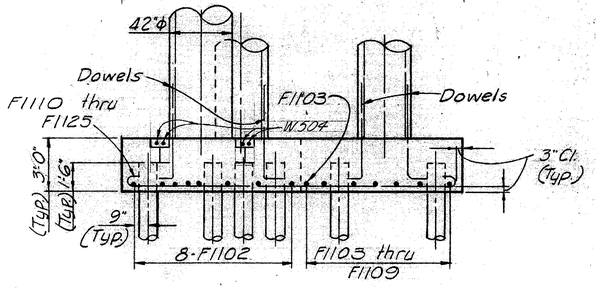
FHWA REGION	STATE	PROJECT	
5	OHIO		

326/443

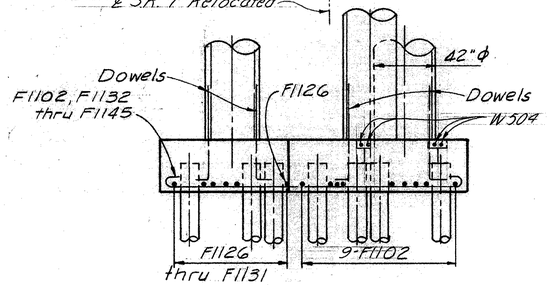
BEL-7-11.89







FOOTING 'W'
15-Piles



FOOTING 'X'
15-Piles

For Battered Piles see PIER DETAILS FOOTING LAYOUT Shts. 14/44, 15/44

Reinforcing Bars: For size, number & marks of bars shown as 'Dowels', see individual pier details.

All columns are 36" in diameter except as otherwise shown.

28/44

STICKLEN - BELSHEIM & ASSOCIATES
ENGINEERS
WORTHINGTON OHIO

PIER FOOTING DETAILS

BRIDGE NO. BEL-7-1289
OVER
CONSOLIDATED RAIL CORP.
STA 682+40.97
691+74.50
BELMONT CO.

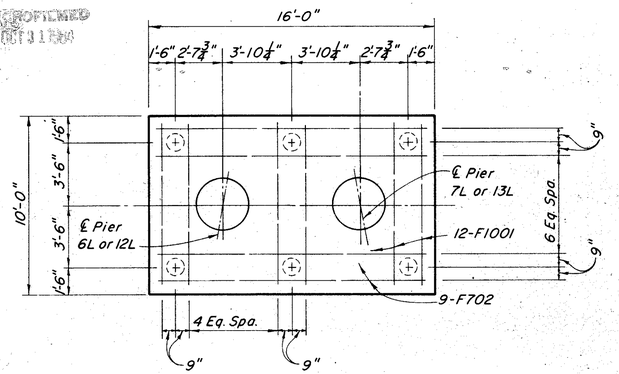
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
SP	SP		TRO	DCH	8/11/70	11/76

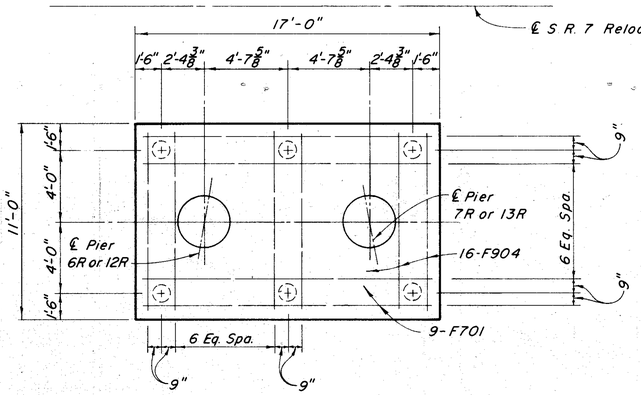
E.O. 671

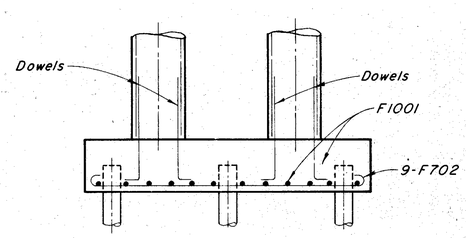
F.H.W.A. REGION	STATE	PROJECT	
5	OHIO		

BEL-7-11.89

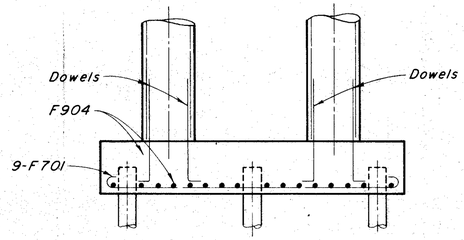
327/443



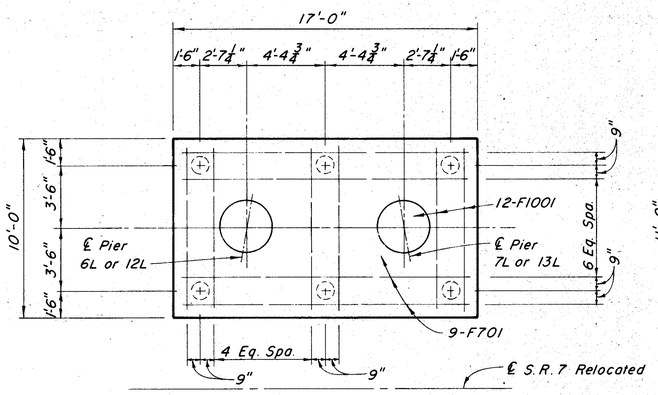


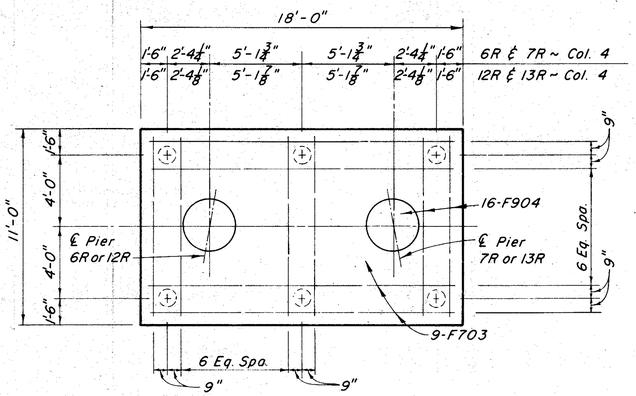


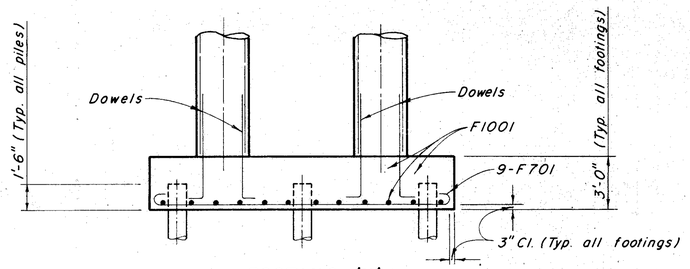
FOOTING 'C'
6 – Piles



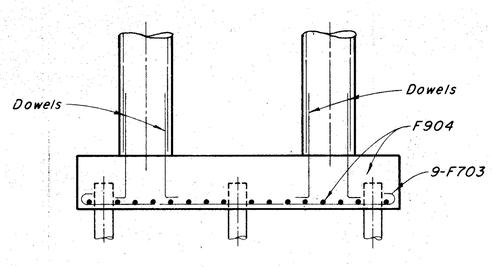
FOOTING 'Z'
6 – Piles







FOOTING 'N'
6 – Piles



FOOTING 'O'
6 – Piles

For Battered Piles see "PIER DETAILS (FOOTING LAYOUT)" Sheets 13/44 & 14/44.

Reinforcing Bars: For size, number & marks of bars shown as 'Dowels', see individual pier details.

All columns are 36" in diameter except as otherwise shown.

29/44

STICKLEN - BELSHEIM & ASSOCIATES
ENGINEERS
WORTHINGTON OHIO

PIER FOOTING DETAILS

BRIDGE No. BEL-7-1289
OVER
CONSOLIDATED RAIL CORP.
STA. 682+40.97
691+74.50
BELMONT CO.

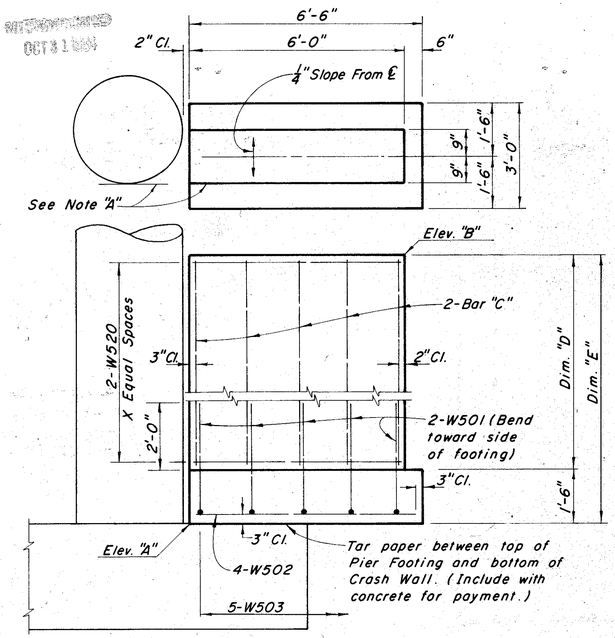
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
TRO	R.D.Y.		DGH	DGH	11/20/74	11/76

MICROFILMED
OCT 8 1990

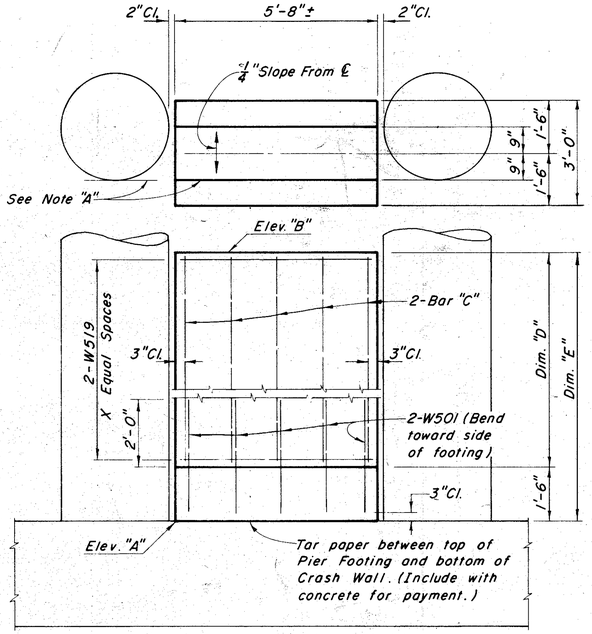
F.H.W.A. REGION	STATE	PROJECT	
5	OHIO		

328/443

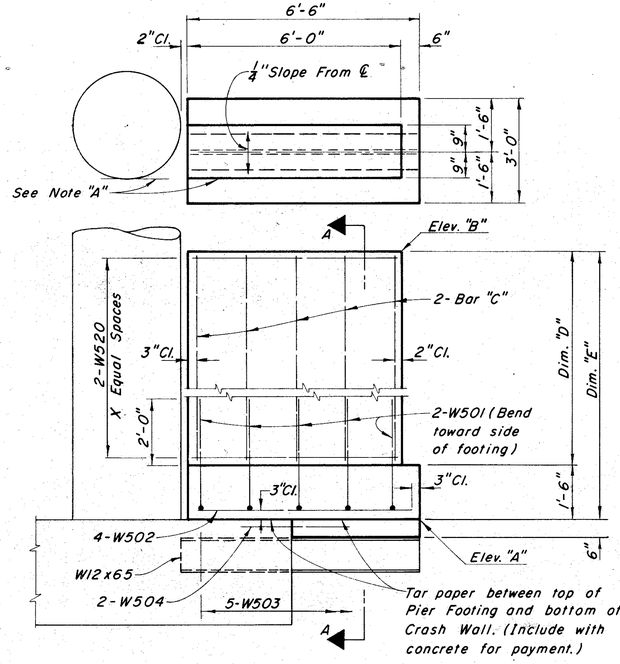
BEL -7- 11.89



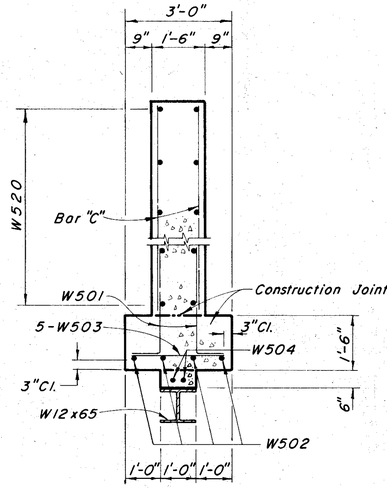
CRASH WALL ~ TYPE (I)



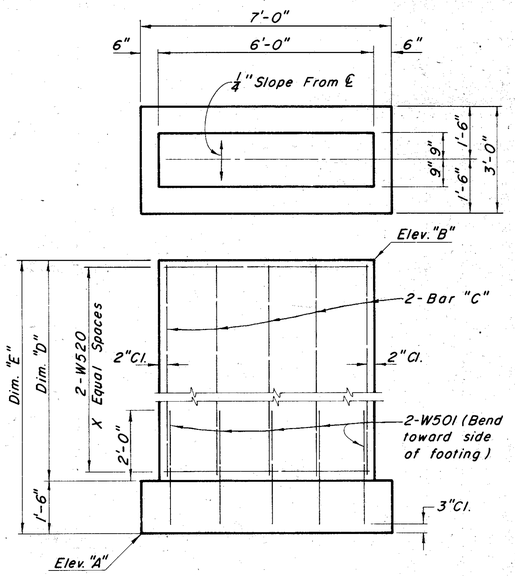
CRASH WALL ~ TYPE (II)



CRASH WALL ~ TYPE (III)



SECTION A-A



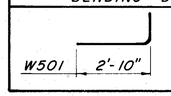
CRASH WALL ~ TYPE (IV)

STATION	LOCATION (PIER NO.)	CRASH WALL TYPE	ELEV. "A"	ELEV. "B"	DIM. "D"	DIM "E"	BAR "C"	"X" EQUAL SPACES		
685+93.99	14L	(IV)	647.50	658.75	9'-9"	11'-3"	W508	7		
686+26.50	15L (Fig. M)	(I)	647.70	658.70	9'-6"	11'-0"	W507	6		
686+59.00	16L (Fig. J & P)	(I)	647.70	658.70	9'-6"	11'-0"	W507	6		
686+91.50	17L (Fig. L)	(I)	647.70	658.95	9'-9"	11'-3"	W508	7		
686+91.50	17L (Fig. P)	(I)	645.00	659.00	12'-6"	14'-0"	W509	8		
687+24.00	18L & 19L (Fig. V)	(II) (III)	647.70	659.20	10'-0"	11'-6"	W510	7		
687+24.00	18L & 19L (Fig. W)	(II) (III)	645.60	659.10	12'-0"	13'-6"	W511	8		
687+56.50	20L (Fig. L)	(I)	647.00	669.94	10'-9"	12'-3"	W512	7		
687+56.50	20R (Fig. K)	(I)	647.00	669.94	10'-9"	12'-3"	W512	7		
687+89.00	21L (Fig. P)	(I)	647.90	659.40	10'-0"	11'-6"	W510	7		
687+89.00	21R (Fig. K)	(I)	647.00	659.50	11'-0"	12'-6"	W513	7		
688+21.50	22L (Fig. K)	(I)	647.90	659.40	10'-0"	11'-6"	W510	7		
688+21.50	22R (Fig. P)	(I)	647.00	659.50	11'-0"	12'-6"	W513	7		
688+54.00	23L (Fig. H)	(I) (III)	647.90	659.40	10'-0"	11'-6"	W510	7		
688+54.00	23R (Fig. L)	(I)	647.00	659.50	11'-0"	12'-6"	W513	7		
688+86.50	24R & 25R (Fig. X)	(II) (III)	647.90	659.65	10'-3"	11'-9"	W514	7		
688+86.50	24R & 25R (Fig. R)	(II) (III)	647.00	659.50	11'-0"	12'-6"	W513	7		
689+19.00	26R (Fig. G)	(I) (III)	647.90	659.65	10'-3"	11'-9"	W514	7		
689+19.00	26R (Fig. M)	(I)	647.90	659.65	10'-3"	11'-9"	W514	7		
689+51.50	27R (Fig. G)	(I) (III)	648.00	659.75	10'-3"	11'-9"	W514	7		
689+51.50	27R (Fig. J)	(I)	648.00	659.75	10'-3"	11'-9"	W514	7		
689+84.00	28R (Fig. F)	(I) (III)	648.00	660.00	10'-6"	12'-0"	W515	7		
689+84.00	28R (Fig. J)	(I)	647.00	660.00	11'-6"	13'-0"	W516	8		
690+16.50	29R & 30R (Fig. S)	(II) (III)	648.00	660.00	10'-6"	12'-0"	W515	7		
690+49.00	31R (Fig. E)	(I) (III)	649.00	660.25	9'-9"	11'-3"	W508	7		

REINFORCING STEEL LIST

MARK	NO.	LENGTH	WEIGHT	TYPE
W501	550	3'-4"	1,912	Bt.
W502	196	6'-0"	1,227	S
W503	245	2'-6"	639	S
W504	30	3'-0"	94	S
W507	50	9'-2"	478	S
W508	50	9'-5"	491	S
W509	20	12'-2"	254	S
W510	90	9'-8"	907	S
W511	30	11'-8"	365	S
W512	40	10'-5"	435	S
W513	90	10'-8"	1,001	S
W514	110	9'-11"	1,138	S
W515	50	10'-2"	530	S
W516	20	11'-2"	233	S
W519	82	5'-4"	456	S
W520	802	5'-7"	4,670	S

BENDING DIAGRAM



NOTES:

CRASH WALLS shall be constructed flush with the face of column adjacent to the railroad track and be parallel to the tracks.
This can be accomplished by using a string line between columns along the track except where offset dimensions and angles are furnished.

BACKFILL AND COMPACTION OF TYPE I AND III CRASH WALLS: Excavations required for the piers and crash walls and which are below crash wall footings shall be backfilled to the bottom of the footings with material meeting the requirements of 203.08 and compacted according to 203.12. This work shall be accomplished prior to constructing the three foot width crash wall footings. Provisions of 503.10 are applicable except as modified in this note. Payment for the above shall be included in the unit price bid for Item 503 Unclassified Excavation.

29A/44

STICKLEN - BELSHEIM & ASSOCIATES
ENGINEERS
WORTHINGTON OHIO

CRASH WALL DETAILS

BRIDGE No. BEL - 7 - 1289
OVER
CONSOLIDATED RAIL CORP.
STA. 682+40.97
BELMONT CO. 691+74.50

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
TRO	R.D.Y.	R.D.Y.	A.W.L.	A.W.L.	9/76	

HILLS CO — 10-1155 -250- 10-74

FHWA REGION	STATE	PROJECT	
5	OHIO		

BEL-7-11.89

329/443

75'-0" % Parapets

1'-9" | 34'-3" Face to Face of Curb | 3'-0" | 34'-3" Face to Face of Curb | 1'-9"

3¼" | S601 22 Spa. @ 1'-7½" = 35'-9" Top | 6½"

See Detail "A" | 1½" Latex Modified Concrete | Top of 511 Conc. | 1'-6" | 1'-6" | 14'-6" | ℄ S.R. 7 Relocated | See Median Detail | 14'-6" | 12'-0" | 5'-0" Rounding | 5'-0" | 2¾"

℄ Roadway | Optional Const. Jt. | P.G. | P.G. | Top of 511 Conc. | Optional Const. Jt. | ℄ Roadway (Northbound) | Varies * | Apex | Varies

16½" | 5702 | 5504 | 5703 | 5505 | ≤16½" | 5503 | 5701 | 2'-6" | 2'-6"

5701 | 5503 | Varies | 5601

1'-5⅝"

1'-5¾" | 1'-1" | 6½" | 1'-1"

5908 16 Spa. @ 2'-2" = 34'-8" | 6½" | 6½" | 5908 16 Spa. @ 2'-2" = 34'-8"

5907 16 Spa. @ 2'-2" = 34'-8" | 5907 16 Spa. @ 2'-2" = 34'-8"

3½" | 5901 34 Spa. @ 1'-1" = 36'-10" | 3" | 3" | 5901 34 Spa. @ 1'-1" = 36'-10" | 3"

37'-5" % Slab | 37'-4" % Slab

TRANSVERSE SECTION (MIDSPAN)

MICROFILMED OCT 3 1 1984

75'-0" % Parapets

1'-9" | 34'-3" Face to Face of Curb | 3'-0" | 34'-3" Face to Face of Curb | 1'-9"

℄ S.R. 7 Relocated

3¼" | 5917 22 Spa. @ 1'-7½" = 35'-9" | 5917 22 Spa. @ 1'-7½" = 35'-9" | 9¼"

6½" | 5903 22 Spa. @ 1'-7½" = 35'-9" | 6½" | 5903 22 Spa. @ 1'-7½" = 35'-9" | 6½"

6½" | 5902 22 Spa. @ 1'-7½" = 35'-9" | 5902 21 Spa. @ 1'-7½" = 34'-1½" | 6½" | 2¾"

Top of 511 Concrete | 14'-6" | 14'-6" | Top of 511 Conc.

16½" | ℄ Roadway (Southbound) | ℄ Roadway | 1½" Latex Modified Concrete

5701 | 5503 | Varies | 5702 | 5504 | 5703 | 5505 | ≤16½" | Varies * | 5701 | 5503 | Varies | 5917

1'-5⅝"

1'-5¼"

Optional Const. Jt. | Optional Const. Jt. (See detail below.)

3½" | 5901 34 Spa. @ 1'-1" = 36'-10" (Bottom) | 3½" | 3" | 5901 34 Spa. @ 1'-1" = 36'-10" (Bottom) | 3"

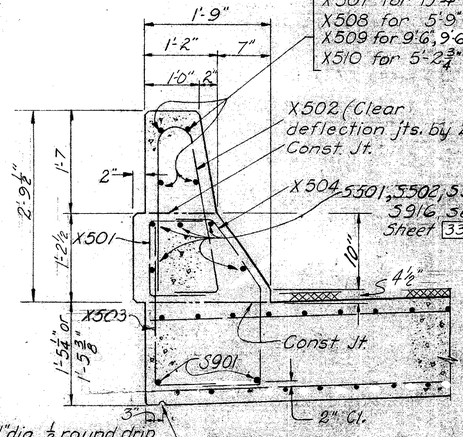
37'-5" % Slab | 37'-4" % Slab

For Deflection Joint spacing, See sh. 34/44

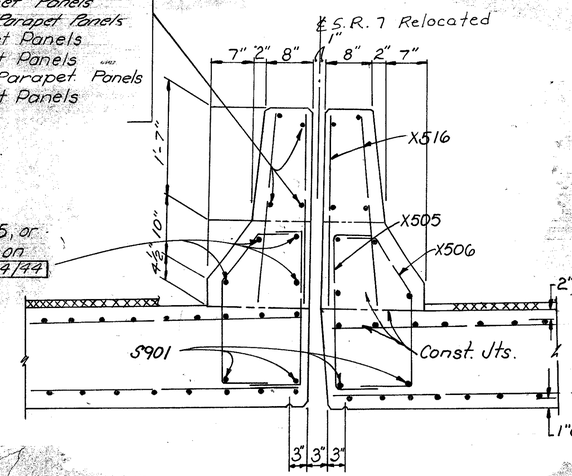
TRANSVERSE SECTION (AT INTERIOR PIERS)

Details shown above are not applicable to Unit 4NS; for 4NS see Superstructure Details sheets 32/44 and 33/44

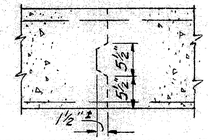
X511 for 9'-0", 9'-0⅛", & 9'-0⅜" Parapet Panels
X512 for 9'-3" Parapet Panels
X513 for 9'-9⅛" Parapet Panels
X514 for 10'-0" & 9'-11⅜" Parapet Panels
X507 for 15'-4" Parapet Panels
X508 for 5'-9" Parapet Panels
X509 for 9'-6", 9'-6⅛" & 9'-6⅜" Parapet Panels
X510 for 5'-2¾" Parapet Panels



DETAIL "A"

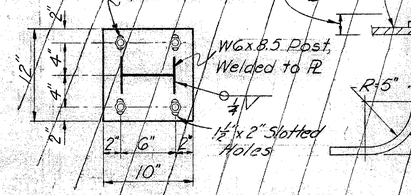


MEDIAN DETAIL
Looking Up Station

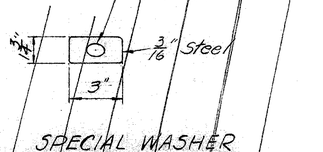


CONSTRUCTION JOINT

NOTE the anchor bolts shall be carefully placed so that the guard rail posts will be plumb and in proper alignment when installed.



ANCHOR BOLT AND BASE PLATE DETAIL



SPECIAL WASHER
(use under head of all post bolts)

NOTES:

Top bars are lapped 35 diameters, bottom bars 30 diameters.

3" Longitudinal slotted holes shall be provided in the deep beam rail splice at either post located on either side of the ℄ of abutment bearing (℄ of assumed slab reaction) and at each roadway expansion joint provided in the superstructure.

* Slope direction reverses at Sta. 688 + 25.00. See sheet 36/44.

Bar spacings in Unit 1NES, 2NES and 3NES are measured along the ℄ Piers.

⊕ Radial dimensions in Unit 1NES, 2NES and 3NES.

30/44

STICKLEN - BELSHEIM & ASSOCIATES ENGINEERS
WORTHINGTON OHIO

SUPERSTRUCTURE DETAILS

BRIDGE NO. BEL-7-1289
OVER
CONSOLIDATED RAIL CORP.

STA. 682 + 40.97
6.91 + 74.50

BELMONT CO.

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
TRO	MM	MM	MM	RCH	3/10/70	11/76 5/23/79

Revised ⚠ 2-3-82

E.O. 671

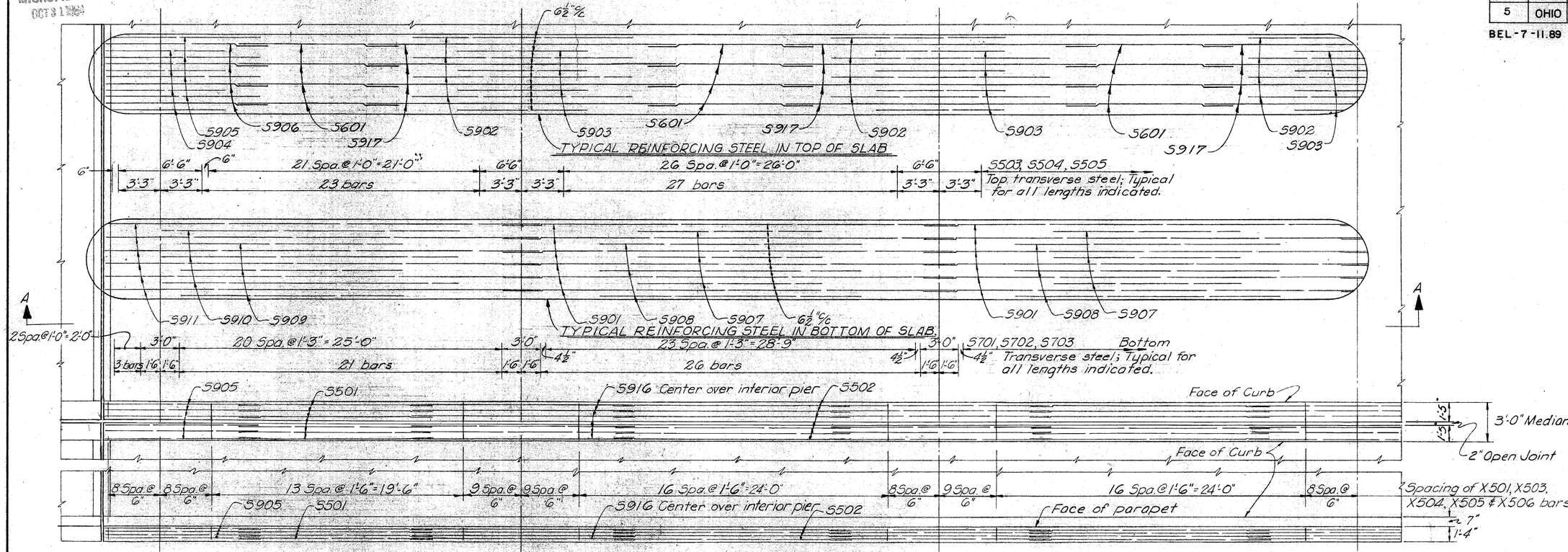
8-25-82 11-29-84

MICROFILMED
OCT 3 1 1994

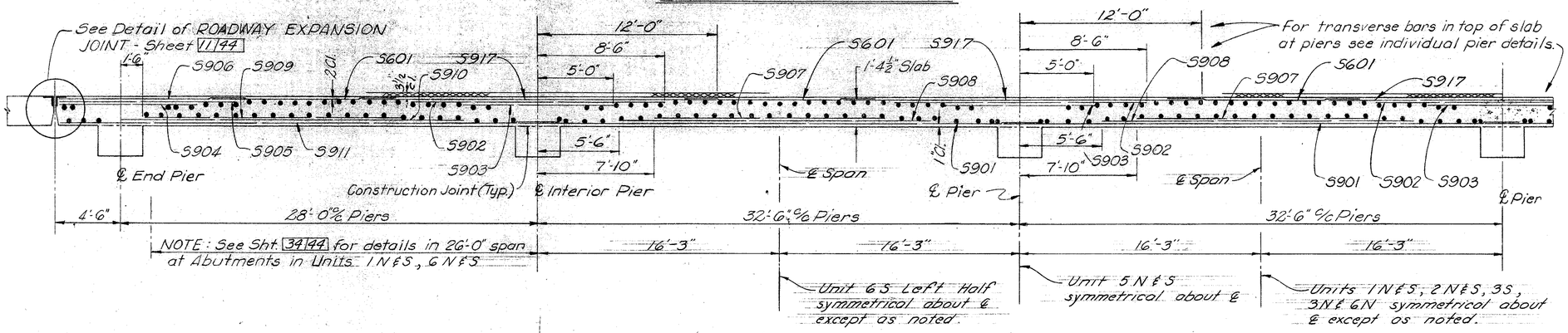
FHWA REGION	STATE	PROJECT	
5	OHIO		

330/443

BEL-7-11.89



PART PLAN OF SUPERSTRUCTURE



NOTES:

The spacing of the Transverse bars in Units 2N℄S, 3N℄S measured along the reference chord.

CONSTRUCTION JOINTS: A construction joint in the slab maybe placed on the transverse centerline of any 325 foot span.

For details of Unit 4NS See Sheets 32/44 and 33/44.

31/44

STICKLEN - BELSHEIM & ASSOCIATES
ENGINEERS
WORTHINGTON OHIO

SUPERSTRUCTURE DETAILS

BRIDGE NO. BEL-7-1289
OVER
CONSOLIDATED RAIL CORP.

BELMONT CO.

STA. 682+40.97
691+74.50

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
TRO	DMK	DMK	MM	BCN	8/10/90	11/94 5/13/99

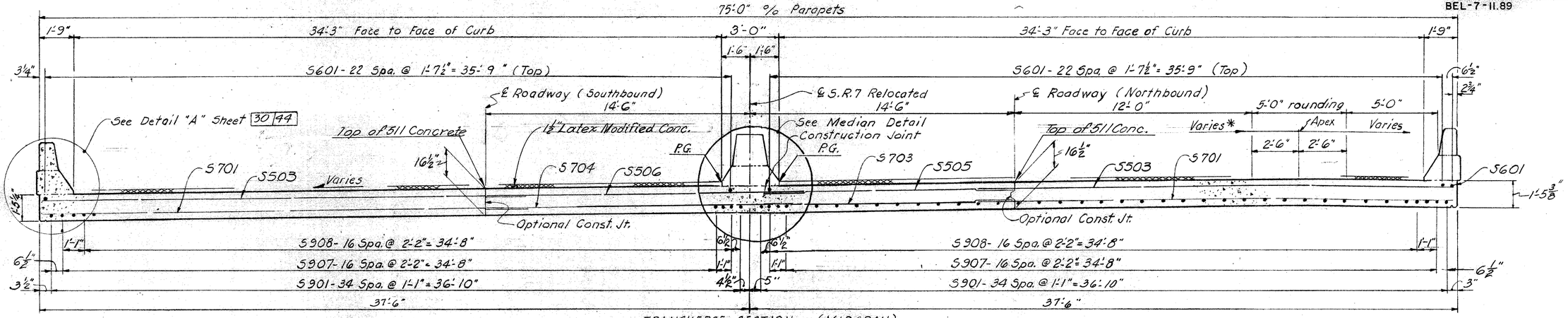
E.O.671

MICROFILMED
OCT 31 1984

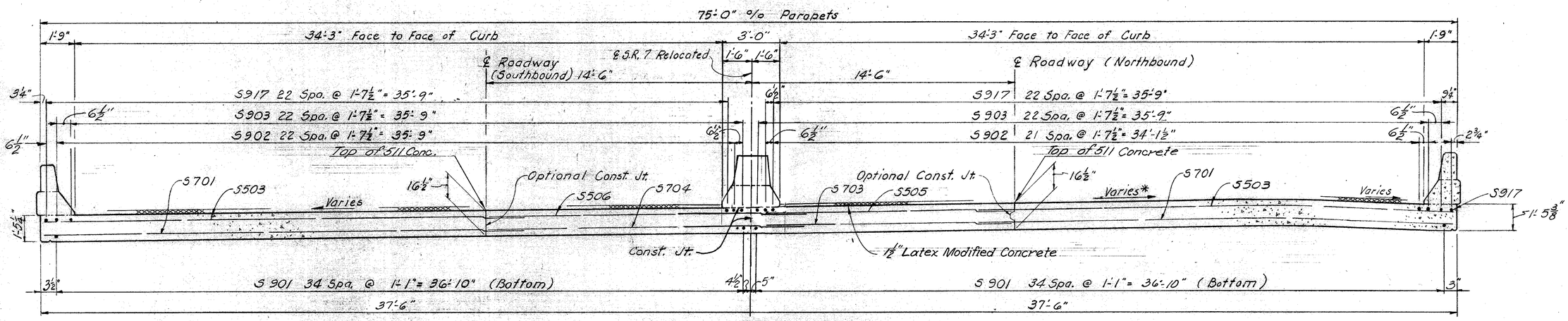
FHWA REGION	STATE	PROJECT	
5	OHIO		

331/443

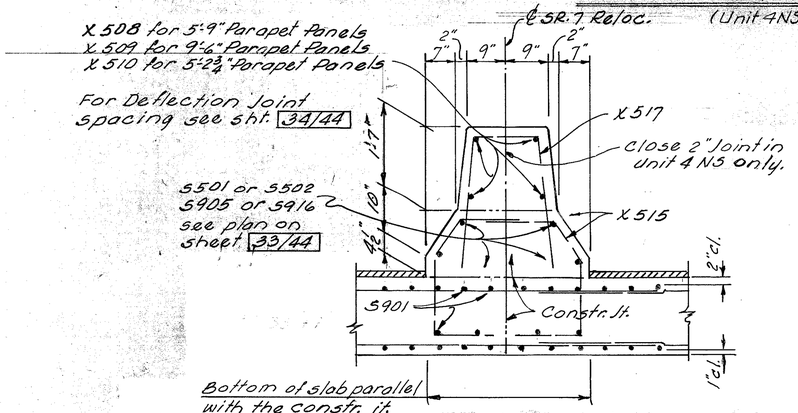
BEL-7-11.89



TRANSVERSE SECTION (MIDSPAN)



TRANSVERSE SECTION (AT INTERIOR PIERS)



MEDIAN DETAIL (Unit 4NS)
Looking Up Station

NOTES

PARAPETS and MEDIAN Conc. Included with Superstructure Concrete for payment.

For additional details and notes not shown see Sheet 30/44

* Slope direction reverses at Sta. 688+25.00 See Sheet 36/44

LONGITUDINAL JOINTS in the latex modified concrete overlay are permitted only to the extent necessary to accommodate the width of the finishing machine and to permit maintenance of vehicular traffic. Except as approved by the Director, joints shall not be used adjacent to raised curbs, barriers or edges of decks.

ITEM 845 - LATEX MODIFIED CONCRETE OVERLAY (1½" thick) AS PER PLAN

Supplemental Specification 845 shall be modified as follows: The bridge deck shall be overlaid with 1½" of latex modified concrete instead of 1¼". Scarification of the 511 deck concrete shall not be done. All references to bridge deck repair as well as to Item 845 Latex Modified Concrete Overlay (Variable thickness) and to Item 845 Full depth repair do not apply.

32/44

STICKLEN - BELSHEIM & ASSOCIATES
ENGINEERS
WORTHINGTON OHIO

SUPERSTRUCTURE DETAILS
UNIT 4 NS

BRIDGE NO. BEL - 7 - 1289
OVER
CONSOLIDATED RAIL CORP.
STA. 682 + 40.97
691 + 74.50
BELMONT CO.

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
TRO	G.E.W.	G.E.W.	MM	DGW	5/10/10	11/76 5/31/79

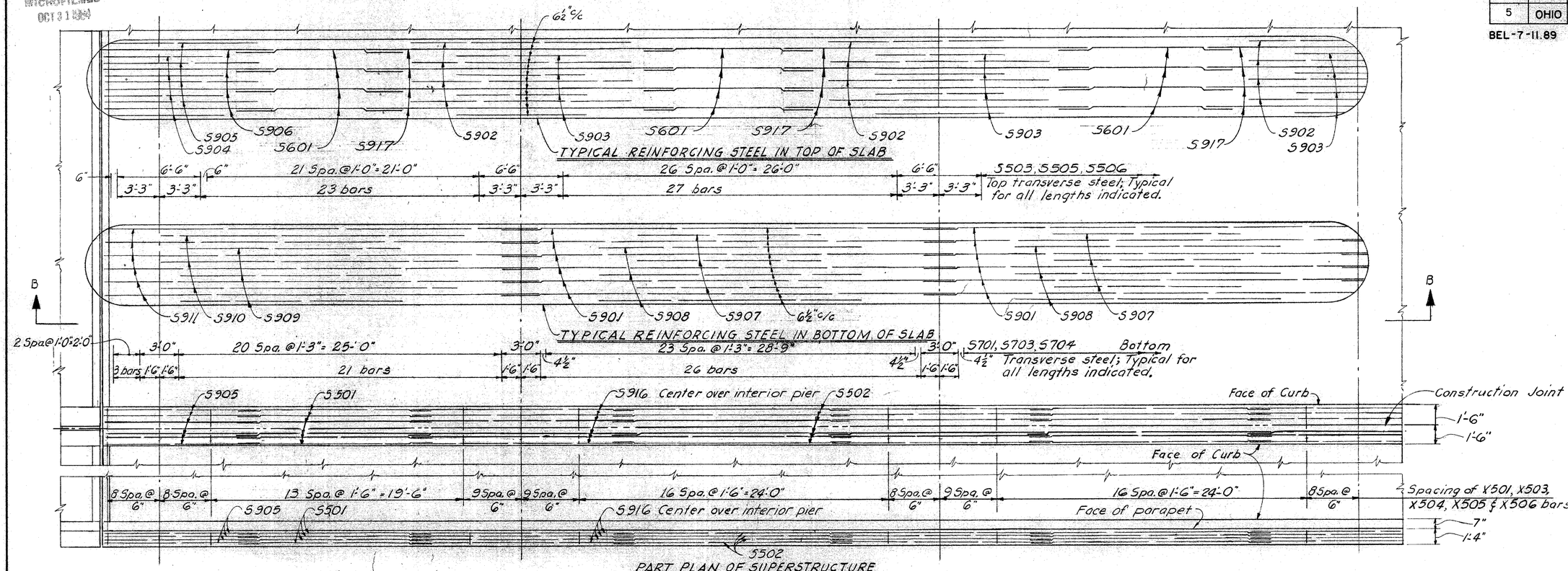
E.O. 671

MICROFILMED
OCT 31 1989

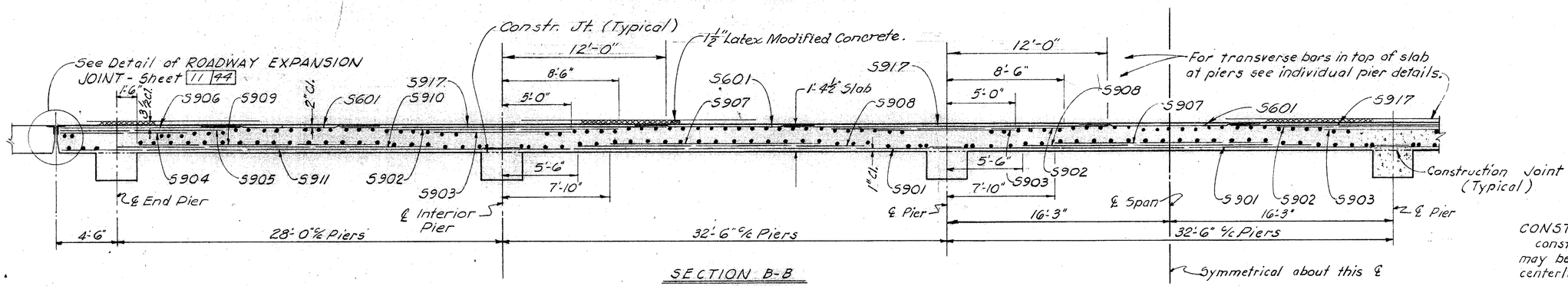
FHWA REGION	STATE	PROJECT	
5	OHIO		

332/443

BEL-7-11.89



PART PLAN OF SUPERSTRUCTURE



SECTION B-B
(Unit 4NS)

CONSTRUCTION JOINTS: A construction joint in the slab may be placed on the transverse centerline of any 32.5 foot span.

33/44

STICKLEN - BELSHEIM & ASSOCIATES
ENGINEERS
WORTHINGTON OHIO

SUPERSTRUCTURE DETAILS
UNIT 4NS

BRIDGE NO. BEL - 7 - 1289
OVER
CONSOLIDATED RAIL CORP.
STA. 682 + 40.97
591 + 74.50
BELMONT CO.

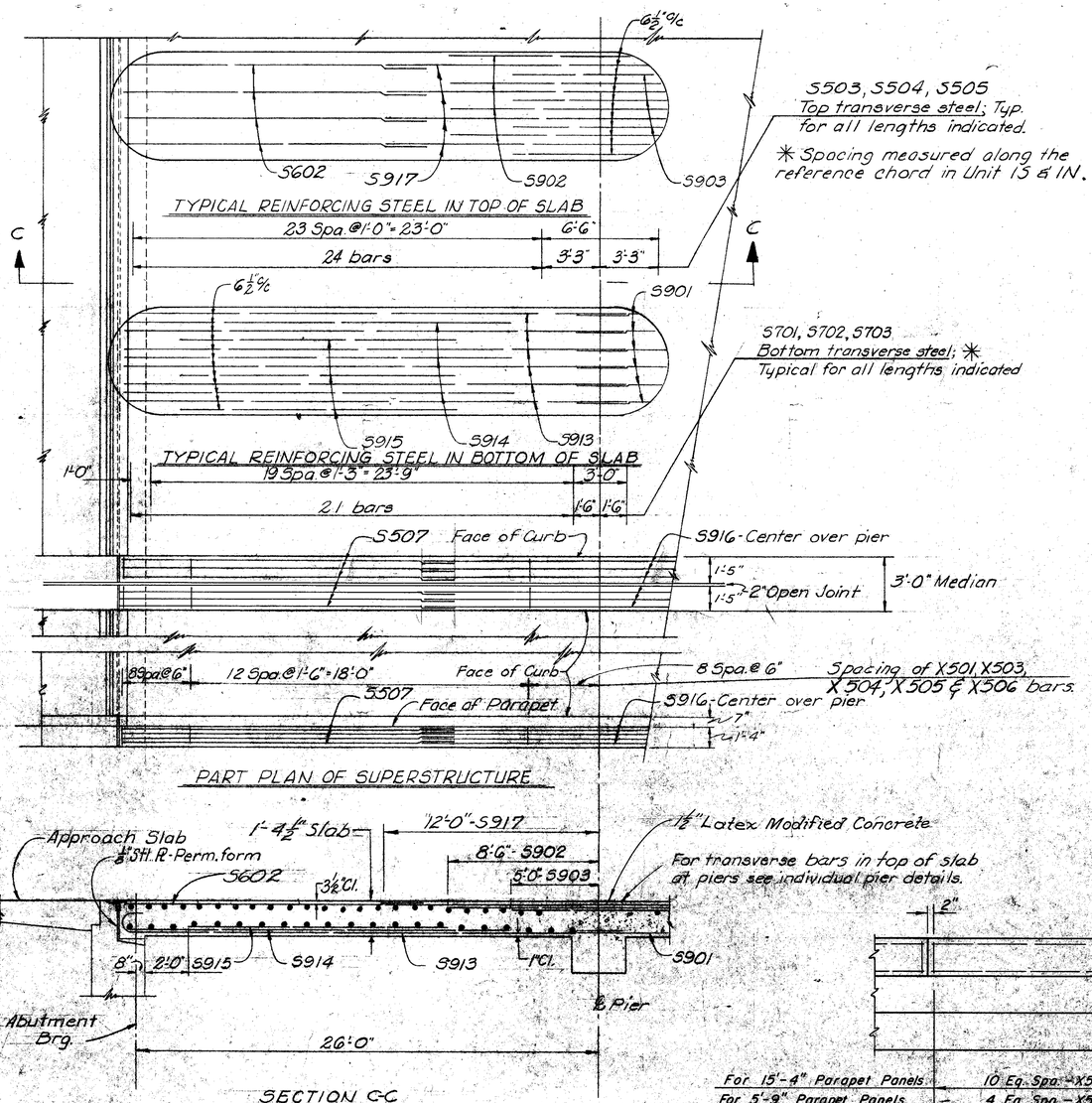
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
TRO	G.E.W.	G.E.W.	MM	BSV	8/10/90	11/94 5/23/79

E.O. 671

FHWA REGION	STATE	PROJECT	
5	OHIO		

333/443

BEL-7-11.89



PART PLAN OF SUPERSTRUCTURE

SECTION C-C
(Units 1N & S, 6N & S)

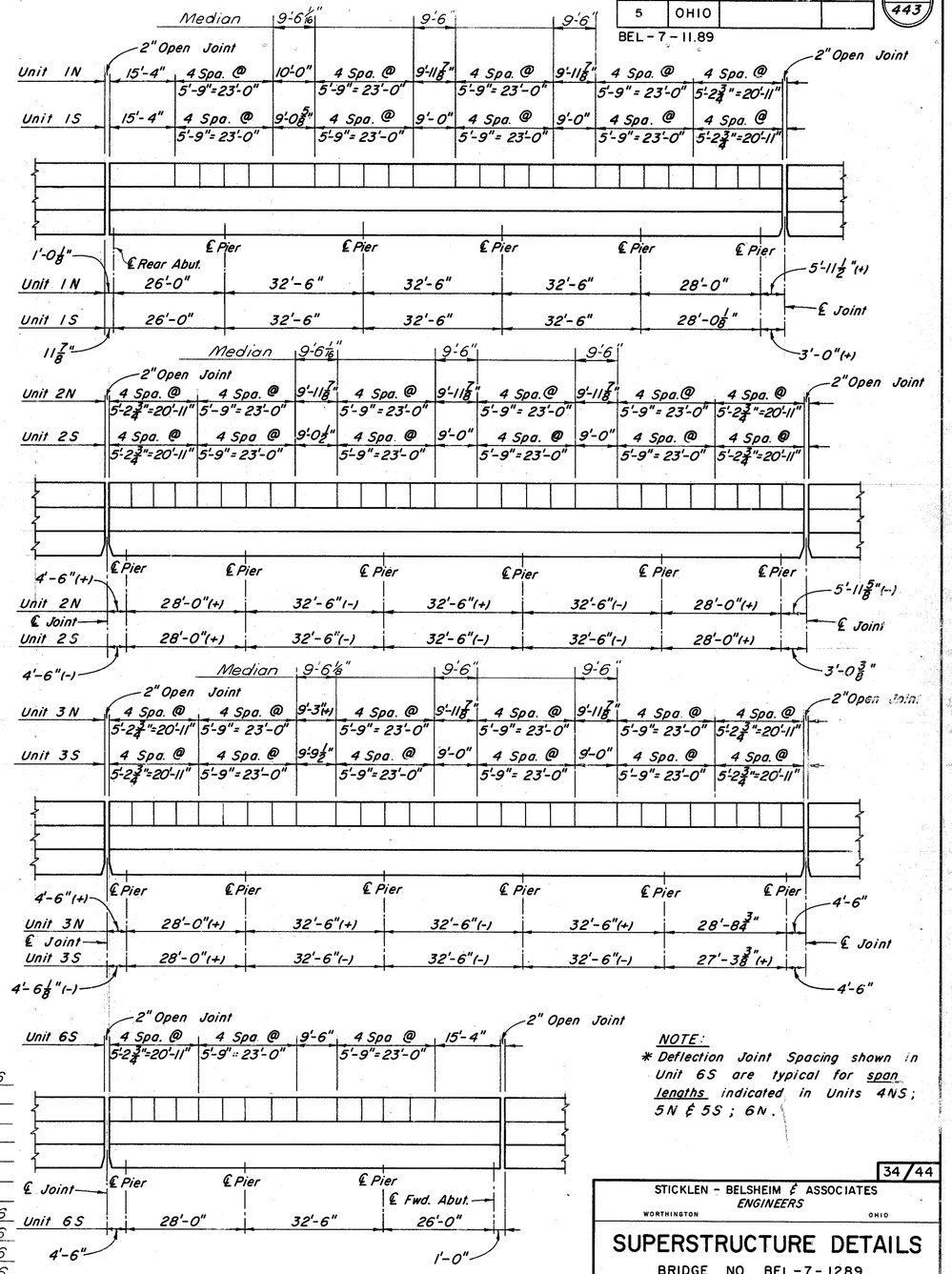
PREFORMED EXPANSION JOINT FILLER in the railing parapet deflection joints shall be as shown on Standard Drawing BA-1-67 except that its dimensions shall conform to the parapet dimensions as shown on the plans.

For 15'-4" Parapet Panels	10 Eq. Spa. - X502	or 2-X516
For 5'-9" Parapet Panels	4 Eq. Spa. - X502, 2-X516	or X517
For 9'-6" Parapet Panels	6 Eq. Spa. - X502, 2-X516	or X517
For 5'-2¾" Parapet Panels	4 Eq. Spa. - X502, 2-X516	or X517
For 9'-0" Parapet Panels	6 Eq. Spa. - X502	or 2-X516
For 9'-0½" Parapet Panels	6 Eq. Spa. - X502	or 2-X516
For 9'-08⅝" Parapet Panels	6 Eq. Spa. - X502	or 2-X516
For 9'-3" Parapet Panels	6 Eq. Spa. - X502	or 2-X516
For 9'-9½" Parapet Panels	7 Eq. Spa. - X502	or 2-X516
For 9'-11⅞" Parapet Panels	7 Eq. Spa. - X502	or 2-X516
For 10'-0" Parapet Panels	7 Eq. Spa. - X502	or 2-X516

*** DEFLECTION JOINT SPACING**

(Dimensions measured along inside face of parapet)

* Fascia and Median Parapet



NOTE:

* Deflection Joint Spacing shown in Unit 6S are typical for span lengths indicated in Units 4N & S; 5N & 5S; 6N.

34/44

STICKLEN - BELSHEIM & ASSOCIATES
ENGINEERS
WORTHINGTON OHIO

SUPERSTRUCTURE DETAILS

BRIDGE NO. BEL-7-1289
OVER
CONSOLIDATED RAIL CORP
STA. 682+40.97
691+74.50
BELMONT CO.

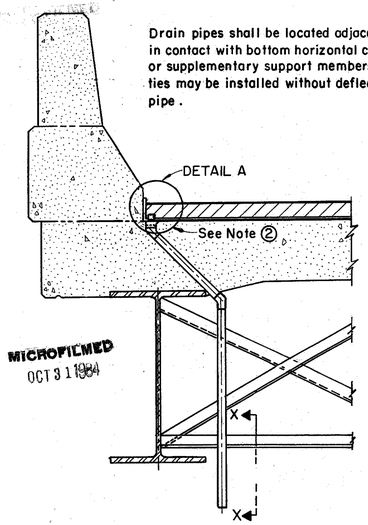
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
TRO	KCY / RDY		MM	DCL	11/24/14	11/14 5/31/19

FHWA REGION	STATE	PROJECT	
5	OHIO		

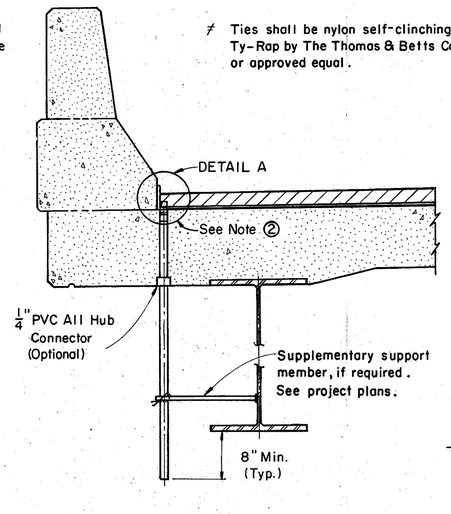
334/443

BELMONT-7-11.89

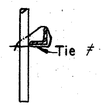
MICROFILMED
OCT 3 1 1984



FACE OF CURB LOCATED ON CENTERLINE OF STRUCTURAL STEEL

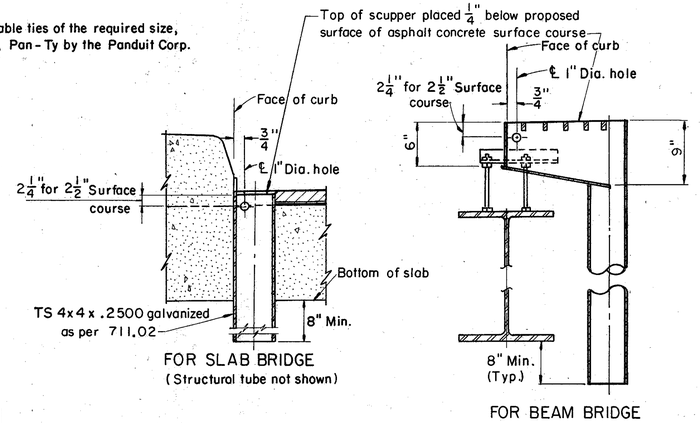


FACE OF CURB LOCATED OFF CENTER LINE OF STRUCTURAL STEEL



SECTION X-X

DRAINAGE TUBE ARRANGEMENT



SCUPPER DETAILS

(Scupper details conform to SD-1-69 except as noted)

SUBDRAINAGE FOR ASPHALT CONCRETE SURFACE COURSE:
The subdrainage system shall consist of plastic pipes and fittings, structural tubes and fasteners. The pipe location requirements of 518.07 shall apply: the pipes shall be placed within one foot of each expansion joint; the pipe shall be extended or located in such a manner as to cause the discharge to fall clear of bridge seats and structural members; no pipes shall be placed within 4 feet of a pavement or a sidewalk, or over or within 10 feet of the centerline of a railroad track. In addition, the pipes shall be spaced approximately at six foot intervals but may be shifted 2 feet maximum longitudinally to permit tying to crossframes or other support members, as required. Pipes shall not be placed along curb lines where the deck configuration does not permit water to accumulate.

The structural tube may be placed in any convenient length using butt joints. The price bid per linear foot for this drainage system shall include all PVC pipe and fittings, structural tubes and all incidentals and all labor necessary to complete the item. The quantity will be the actual length of structural tube required. Payment will be made at the contract price for Item 518, Lin. Ft. Subdrainage for wearing course, as per plan.

The 404 shall be 2½" placed in two 1¼" courses.

①-1¼"x1¼" galvanized, perforated structural tube with 11/32"± dia. holes 1" on centers on all four sides as shown. Cut 1⅜"±x1¼" opening in bottom, centered over each PVC drain pipe. The steel for the structural tube shall conform to the following:
PREGALVANIZED, ASTM A446, Grade A Steel, Galvanizing as per ASTM A525.
POSTGALVANIZED, ASTM A569 or A366, Galvanizing as per 711.02.
The minimum steel thickness shall be 0.105".
Any damaged galvanizing shall be repaired as per AASHO M36.
Install tubes with ⅛" expansion opening between pieces.

②-45° ELBOW AND/OR 1½"PVC DRAIN PIPE. Position accurately to match 1½"x1¼" openings in perforated tube. Place membrane carefully at the pipe openings, making sure to completely seal around the lip of the pipe but taking care not to plug or constrict the opening. The drain pipe and elbow shall conform to the dimensional and marking requirements of ASTM D2661 or ASTM D2665.
The elbow shall be used only as required when the face of curb is located on or near the centerline of structural steel. Where the elbow is not adequate to provide clearance between the PVC pipe and the structural steel, the elbow shall be canted as required and cut on a line ¼" below and parallel with the deck surface. The solvent cement for the pipe and fittings shall be a type suitable for the plastic used.

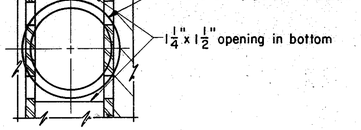
③-1¼"x5/32"x¼" flat head drive pin and washer. (Length x Shank Dia x Head Dia.)
Fastening of the structural tube by methods other than shown shall be subject to approval by the Engineer. (Driving pins into bridge deck is prohibited, except for fastening drip strips.)

④-L 1¼"x1¼"x⅛", 3" long, clipped and galvanized, or bent galvanized steel plate 2"x3"x0.105" thick. Attach to curb at approximately 5'-0" ℄ except near joints, where the angle shall be placed within 6" of the end of each tube section.

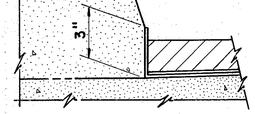
⑤-½"x⅛"x¼" flat head drive pin and washer driven thru angle and tube.

Note: Wherever "PVC" appears it shall be considered to read "PVC" or "ABS".

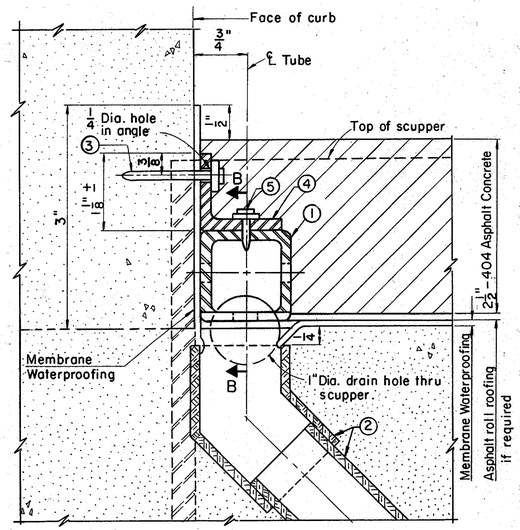
DRIP STRIP: Prior to applying deck membrane waterproofing, a bent drip strip shall be installed along the edges of the deck as shown. The strips shall be fastened at 1'-6" ℄ maximum with 1¼"x5/32"x¼" flat head drive pin and washer. (Length x Shank Dia. x Head Dia.) or #10 galvanized screws and expansion anchors, subject to the approval of the Engineer. The strips shall be placed the full length of the deck, ending at the face of the abutment wingwall or steel end dam angle. Where splices are required a 3" (Min.) lap shall be used with a fastener through the lap. Steel for galvanized strips shall be 8"x0.105" and shall meet the requirements of ASTM A568. Galvanizing shall be in accordance with 711.02. Stainless steel shall be 20 gauge ASTM A167, Type 304, mill finish. Payment shall be at the contract price bid for item Special, Sq. Ft., Steel Drip Strip, which shall include all materials, labor, tools and incidentals necessary to complete the item.



SECTION A-A

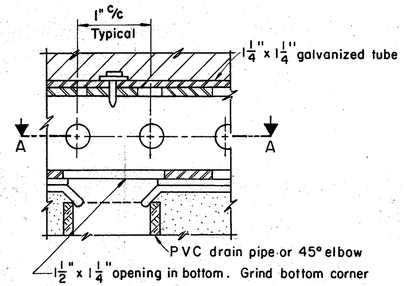


SHAPE OF SIDEWALK CURB

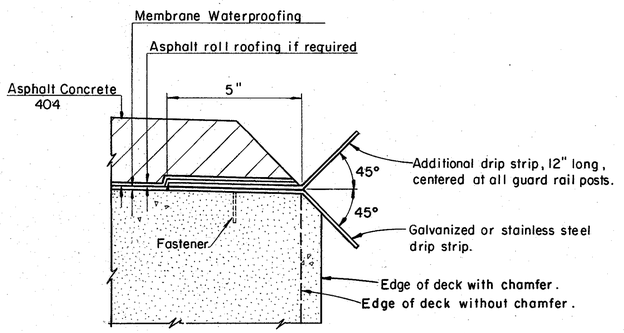


DETAIL A

SUBDRAINAGE FOR 2½" SURFACE COURSE



SECTION B-B



DRIP STRIP

BRIDGES WITHOUT CURBS

STATE OF OHIO
DEPARTMENT OF TRANSPORTATION
BUREAU OF BRIDGES AND STRUCTURAL DESIGN

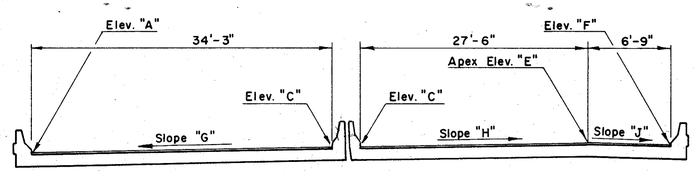
35/44

DECK DRAINAGE DETAILS FOR BRIDGES WITH ASPHALT CONCRETE SURFACE COURSE
BRIDGE NO. BEL-7-1289
CONSOLIDATED RAIL CORP.
STA. 682+40.97
691+74.50
BELMONT CO.

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
DLM	GFJ	———	DWI	WJJ	2-27-79	2-27-79

h00277

Elevations shown are finished grade elevations.
See Sheet No. 4/44 for Camber and Curb notes.



Southbound Lanes — Northbound Lanes

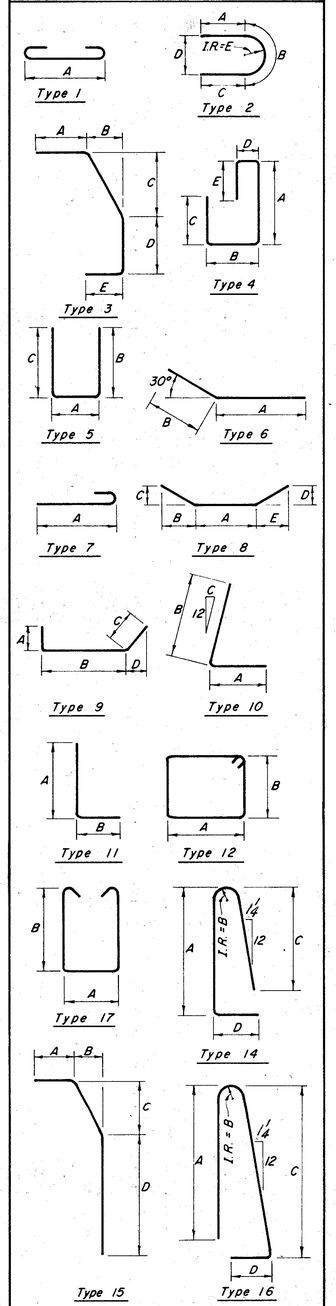
STATION	Elev. "A"		(-) Slope "G"	Elev. "C"	Slope "H"	Apex Elev. "E"	(-) Slope "J"	Elev. "F"
682 + 25	672.65		.035	673.85	.035	674.80	.0417	674.52
+ 50	673.10		.035	674.30	.035	675.25	.0417	674.97
+ 75	673.51		.035	674.71	.035	675.66	.0417	675.38
683 + 00	673.92		.035	675.12	.035	676.07	.0417	675.79
+ 25	674.33		.035	675.53	.035	676.48	.0417	676.20
+ 50	674.74		.035	675.94	.035	676.89	.0417	676.61
+ 75	675.15		.035	676.35	.035	677.30	.0417	677.02
684 + 00	675.56		.035	676.76	.035	677.71	.0417	677.43
+ 25	675.97		.035	677.17	.035	678.12	.0417	677.84
+ 50	676.38		.035	677.58	.035	678.53	.0417	678.25
+ 75	676.79		.035	677.99	.035	678.94	.0417	678.66
685 + 00	677.20		.035	678.40	.035	679.35	.0417	679.07
+ 25	677.60		.035	678.80	.035	679.75	.0417	679.47
+ 50	677.96		.035	679.16	.035	680.11	.0417	679.83
+ 75	678.30		.035	679.50	.0344	680.45	.0417	680.16
686 + 00	678.63		.0344	679.81	.0336	680.73	.0417	680.45
+ 25	678.97			680.09	+.0324	680.98	.0417	680.70
+ 50	679.31			680.34	+.0300	681.16		680.90
+ 75	679.67			680.57	+.0260	681.28		681.05
687 + 00	680.02			680.76	+.0212	681.34		681.15
+ 25	680.30			680.93	+.0164	681.38		681.21
+ 50	680.50			681.06	+.0116	681.38		681.25
+ 75	680.64		.0156	681.17	+.0068	681.36		681.27
688 + 00	680.72		.0156	681.25	+.0024	681.32		681.27
+ 25	680.77		.0156	681.30	-.0012	681.27		681.25
+ 50	680.79		.0156	681.32	-.0040	681.21		681.20
+ 75	680.78		.0156	681.32	-.0064	681.14		681.11
689 + 00	680.75		.0156	681.28	-.0088	681.04		681.00
+ 25	680.68		.0156	681.22	-.0112	680.91		680.87
+ 50	680.59		.0156	681.12	-.0136	680.75		680.72
+ 75	680.47		.0156	681.00	-.0152	680.58		680.55
690 + 00	680.31		.0156	680.85	-.0156	680.42		680.37
+ 25	680.14		.0156	680.67	-.0156	680.24		680.17
+ 50	679.93		.0156	680.46	-.0156	680.03		679.95
+ 75	679.69		.0156	680.23	-.0156	679.80	.0156	679.70
691 + 00	679.43		.0156	679.96	-.0156	679.53	.0156	679.43
+ 25	———		.0156	679.68	-.0156	679.25	.0156	679.15
+ 50	———		.0156	679.40	-.0156	678.97	.0156	678.87
+ 75	———		.0156	679.12			.0156	

36/44

NOTE: 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.

NOTE: For Crash Wall Reinforcing Steel List See Sheet No. 29A/44.

BENDING DIAGRAM



S IN THE COLUMN FOR "TYPE" INDICATES STRAIGHT BARS.

MARK	NO.	LENGTH	WEIGHT	TYPE	Rear	Fwd. Left	Fwd. Right	A	B	C	D	E
ABUTMENTS												
A801	7	38'-3"	715	S		7						
A804	7	39'-9"	743	S			7					
A805	24	8'-3"	529	S	12	6	6					
C801	4	35'-7"	380	S	4							
C802	3	38'-7"	309	S	3							
C803	3	40'-0"	320	S	3							
C804	8	22'-6"	481	S	8							
D801	94	7'-4"	1,841	8	48	23	23	5'-4"	1'-1"	1'-1"	0'-6"	0'-6"
A601	26	16'-6"	644	5		26		2'-10"	7'-0"	7'-0"		
A602	25	18'-10"	707	5			25	2'-10"	8'-2"	8'-2"		
A603	20	10'-10"	325	5	10	5	5	1'-2"	5'-0"	5'-0"		
A604	8	7'-0"	84	S	8							
A605	8	5'-10"	70	S		8						
A606	8	6'-6"	78	S	8							
A607	8	6'-10"	82	S			8					
A608	10	3'-3"	49	15		3	7	0'-7½"	0'-7"	0'-8"	1'-11"	
C601	50	17'-6"	1,314	5	50			2'-10"	7'-6"	7'-6"		
Y601	3 Series of 4	6'-2" to 9'-6"	141	5	2 Series of 4		1 Series of 4	1'-2"	2'-8" to 4'-4"	2'-8" to 4'-4"	Vary by 5" increments	
Y602	1	6'-2"	9	5		1		1'-2"	2'-8"	2'-8"		
Y603	1	7'-2"	11	5		1		1'-2"	3'-2"	3'-2"		
A501	51	4'-7"	244	5		26	25	2'-10"	1'-0"	1'-0"		
A502	106	9'-2"	1,013	5		54	52	5'-3"	2'-3"	2'-3"		
A503	68	9'-7"	680	4		34	34	3'-8"	1'-2"	1'-11"	0'-8"	2'-8"
A504	4	8'-3"	34	5		2	2	1'-2"	3'-8"	3'-8"		
A505	16	19'-3"	321	S		16						
A506	1	37'-8"	39	S		1						
A507	1	28'-4"	30	S		1						
A508	2	5'-10"	12	S	2							
A510	11	38'-5"	441	S			11					
A511	1	10'-10"	11	S		1						
A512	2	5'-0"	10	S	2							
A532	4	1'-2"										
A514	1	30'-0"	31	S			1					
A515	1	10'-6"	11	S			1					
A516	5	5'-2"	27	7			5	4'-7"				
A532	4	1'-2"	5	S			4					
A519	18	4'-11"	92	S			18					
A520	10	7'-11"	83	S			10					
A521	36	10'-11"	410	12	18	9	9	3'-0"	2'-2½"			
A522	22	4'-3"	98	S		8	14					
A523	4	6'-1"	25	S		4						
A524	2	8'-10"	18	S		2						
A525	4	3'-0"	13	S		4						
A526	6	6'-10"	43	S	4		2					
A527	2	5'-6"	11	S			2					
A528	12	5'-10"	73	S	8		4					
A529	6	11'-0"	69	S	4		2					
A530	6	11'-10"	74	S	4		2					
A531	10	1'-8"	17	S			10					
C501	50	7'-11"	413	5	50			2'-10"	2'-8"	2'-8"		
C502	104	9'-2"	994	5	104			5'-3"	2'-3"	2'-3"		
C503	72	9'-7"	720	4	72			3'-8"	1'-2"	1'-11"	0'-8"	2'-8"
C504	2	2'-3"	5	15	2			0	0'-8"	0'-7"	1'-6"	
C505	13	37'-5"	507	S	13							
C506	13	36'-3"	492	S	13							
C507	2	7'-9"	16	3	2			2'-4	0'-8"	0'-7"	1'-9"	3'-0"
C508	2	5'-5	11	8	2			1'-2"	0'-3"	2'-3"	2'-3"	0'-3"
Y501	30	1'-11½"	61	S	16	6	8	0'-11½"	0'-7½"	0'-7½"		
Y502	40	3'-8"	153	S	20	10	10					
Y503	10	7'-11"	83	14	6	1	3	3'-10"	0'-3¾"	3'-3"	0'-7½"	
Y504	12	7'-2"	90	S		12						

MARK	NO.	LENGTH	WEIGHT	TYPE	Rear	Fwd. Left	Fwd. Right	A	B	C	D	E
ABUTMENTS (Cont.)												
Y505	30	2'-10"	89	15	16	6	8	0'-7½"	0'-7"	0'-8"	1'-6"	
Y509	8	5'-10"	49	S	4	2	2					
Y510	36	10'-2"	382	S	24		12					
RETAINING WALLS												
W601	42	4'-6"	284	11				4'-0"	0'-8"			
W501	84	5'-6"	482	S								
W502	48	29'-2"	1,460	S								
W504	42	5'-9"	252	S								
W507	84	4'-0"	350	S								
W508	6	10'-0"	63	S								
W509	4	32'-0"	134	6				29'-0"	3'-0"			
W602	21	7'-4"	231	15				0'-7½"	0'-7"	0'-8"	6'-0"	
W603	21	7'-8"	242	15				0'-7½"	0'-7"	0'-8"	6'-4"	
MARK	NO.	LENGTH	WEIGHT	TYPE	Left Bridge	Right Bridge		A	B	C	D	E
SUPERSTRUCTURE												
S901	1248	35'-7"	150,987	S	585	646						
S902	989	17'-0"	57,164	S	483	506						
S903	1012	10'-0"	34,408	S	483	329						
S904	450	9'-0"	13,770	S	230	220						
S905	620	11'-6"	24,242	S	310	310						
S906	480	13'-4"	21,760	S	240	240						
S907	544	16'-10"	31,135	S	255	289						
S908	544	21'-6"	39,766	S	255	289						
S909	340	18'-6"	21,386	S	170	170						
S910	340	23'-0"	26,588	S	170	170						
S911	780	33'-6"	88,842	S	390	390						
S913	156	29'-6"	15,647	7	78	78		28'-3"				
S914	68	21'-6"	4,971	S	34	34						
S915	68	15'-0"	3,468	S	34	34						
S916	375	20'-0"	25,500	S	168	207						
S917	1035	24'-0"	84,456	S	483	552						
S701	1396	25'-6"	72,762	S	672	724						
S702	546	14'-1"	15,717	S	546							
S703	724	14'-0"	20,718	S		724						
S704	126	17'-1"	4,400	S	126							
S601	1271	12'-10"	24,499	S	599	672						
S602	94	17'-0"	2,400	S	46	48						
S501	170	14'-0"	2,482	S	80	90						
S502	271	15'-8"	4,428	S	135	136						
S503	1460	25'-6"	38,831	S	703	757						
S504	572	13'-11"	8,303	S	572							
S505	757	13'-0"	10,922	S		757						
S506	131	16'-5"	2,243	S	131							
S507	34	18'-8"	662	S	17	17						
X501	1940	1'-11½"	3963	5	937	1,003		0'-11½"	0'-7½"	0'-7½"		
X502	1557	5'-5"	8796	16	748	809		2'-2"	0'-3¾"	2'-5"	0'-7½"	
X503	1940	2'-8"	5,396	11	937	1,003		2'-2"	0'-7½"			
X504	1940	3'-6"	7,082	3	937	1,003		0'-9"	0'-7"	0'-8"	1'-5"	0'-8½"
X505	1588	3'-4"	5,520	3	761	827		0'-6"	0'-7"	0'-8"	1'-5"	0'-9½"
X506	1588	3'-1"	5,107	5	761	827		2'-1"	0'-6"	0'-9"		
X507	32	15'-0"	501	S	16	16						
X508	1344	5'-5"	7,593	S	640	704						
X509	172	9'-2"	1,644	S	78	94						
X510	608	4'-10"	3,065	S	304	304						
X511	32	8'-8"	289	S	32							
X512	4	8'-11"	37	S		4						
X513	4	9'-5"	39	S	4							
X514	32	9'-8"	323	S		32						
X515	210	4'-3"	931	3	105	105		1'-0½"	0'-7"	0'-8"	1'-5"	1'-2"
X516	2550	2'-7"	6,871	S	1214	1336						
X517	176	6'-1"	1,117	8	176			1'-2"	0'-3½"	2'-7"	2'-7"	0'-3½"

STICKLEN - BELSHEIM & ASSOCIATES ENGINEERS
WORTHINGTON OHIO

REINFORCING STEEL LIST AND DECK ELEVATIONS

BRIDGE No. BEL-7-1289
OVER
CONSOLIDATED RAIL CORP.
STA. 682+40.97
BELMONT CO. 691+74.50

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
TRO	R.D.Y.		MM	BGN	8/11/10	11/76 5/23/79

MICROFILMED
OCT 31 1994

REINFORCING STEEL LIST

F.H.W.A. REGION	STATE	PROJECT	
5	OHIO		

BEL-7-11.89

336/443

MARK	TOTAL No.	TOTAL WEIGHT	No. *	LENGTH		TYPE	A	B	C	D	E
PIER FOOTINGS											
F1101	112	8,132	112	13'-8"		1	10'-6"				
F1102	25	2,612	25	19'-8"		1	16'-6"				
F1103	1	102	1	19'-2"		1	16'-0"				
F1104	1	95	1	17'-11"		1	14'-9"				
F1105	1	87	1	16'-5"		1	13'-3"				
F1106	1	81	1	15'-2"		1	12'-0"				
F1107	1	74	1	13'-11"		1	10'-9"				
F1108	1	67	1	12'-7"		1	9'-5"				
F1109	1	58	1	11'-0"		1	7'-10"				
F1110	6	691	6	21'-8"		1	18'-6"				
F1111	1	114	1	21'-5"		1	18'-3"				
F1112	1	110	1	20'-8"		1	17'-6"				
F1113	1	106	1	19'-11"		1	16'-9"				
F1114	1	102	1	19'-2"		1	16'-0"				
F1115	1	94	1	17'-8"		1	14'-6"				
F1116	1	92	1	17'-4"		1	14'-2"				
F1117	1	90	1	17'-0"		1	13'-10"				
F1118	1	89	1	16'-8"		1	13'-6"				
F1119	1	87	1	16'-4"		1	13'-2"				
F1120	1	85	1	16'-0"		1	12'-10"				
F1121	1	83	1	15'-8"		1	12'-6"				
F1122	1	81	1	15'-4"		1	12'-2"				
F1123	1	80	1	15'-0"		1	11'-10"				
F1124	1	78	1	14'-8"		1	11'-6"				
F1125	1	70	1	13'-2"		1	10'-0"				
F1126	1	102	1	19'-2"		1	16'-0"				
F1127	1	85	1	15'-11"		1	12'-9"				
F1128	1	81	1	15'-2"		1	12'-0"				
F1129	1	75	1	14'-2"		1	11'-0"				
F1130	1	70	1	13'-2"		1	10'-0"				
F1131	1	61	1	11'-5"		1	8'-3"				
F1132	1	102	1	19'-2"		1	16'-0"				
F1133	1	99	1	18'-8"		1	15'-6"				
F1134	1	97	1	18'-2"		1	15'-0"				
F1135	1	90	1	16'-11"		1	13'-9"				
F1136	1	88	1	16'-6"		1	13'-4"				
F1137	1	86	1	16'-3"		1	13'-1"				
F1138	1	85	1	16'-0"		1	12'-10"				
F1139	1	84	1	15'-9"		1	12'-7"				
F1140	1	82	1	15'-6"		1	12'-4"				
F1141	1	81	1	15'-3"		1	12'-1"				
F1142	1	80	1	15'-0"		1	11'-10"				
F1143	1	78	1	14'-9"		1	11'-7"				
F1144	1	77	1	14'-5"		1	11'-3"				
F1145	1	70	1	13'-3"		1	10'-1"				
F1001	148	7,854	84	12'-4"		1	9'-6"				
F1002	14	803	14	13'-4"		1	10'-6"				
F901	96	3,264	32	10'-0"		1	7'-6"				
F902	144	5,386	64	11'-0"		1	8'-6"				
F903	454	18,523	294	12'-0"		1	9'-6"				
F904	850	37,570	446	13'-0"		1	10'-6"				
F801	18	~~545~~	—	~~11'-4"~~		1	9'-6"				
F802	48	1,623	16	12'-8"		1	10'-6"				
F701	108	4,010	72	18'-2"		1	16'-6"				
F702	18	632	18	17'-2"		1	15'-6"				
F703	18	705	—	19'-2"		1	17'-6"				

LEFT BRIDGE																													
2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	25	26	27	28	29	30	31	32					
														10	10														

MICROFILMED
OCT 31 1984

REINFORCING STEEL LIST

F.H.W.A. REGION	STATE	PROJECT	
5	OHIO		

BEL-7-11.89

337/443

MARK			No. *	LENGTH		TYPE	A	B	C	D	E
PIER FOOTINGS											
F1001			64	12'-4"		1	9'-6"				
F901			64	10'-0"		1	7'-6"				
F902			80	11'-0"		1	8'-6"				
F903			160	12'-0"		1	9'-6"				
F904			404	13'-0"		1	10'-6"				
F801			18	11'-4"		1	9'-6"				
F802			32	12'-8"		1	10'-6"				
F701			36	18'-2"		1	16'-6"				
F703			18	19'-2"		1	17'-6"				

RIGHT BRIDGE

2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	25	26	27	28	29	30	31	32	33	34
				See Reinforcing for Pier No. 7	32	40	40	40	40	40	See Reinforcing for Pier No. 13	32	40	40	40	40	See 37/44 Sheet No. Reinforcing for Pier No. 19	See 37/44 Sheet No. Reinforcing for Pier No. 24	12	12	16	See Reinforcing for Pier No. 30	24					
																								16	32	
32																		10	10				20			
	40	40	40															20						32	32	
					32	40	40	40	40	40		32	40	40	40	40				16	16					
					9							9											18			
					9							9														

SPIRAL REINFORCING

MARK	NO.	LENGTH	WEIGHT	PIER NO.

Spirals — Core Diam. 32" %

— Pitch 4 1/2" %

— Other details in accordance with C.R.S.I. standard practice.

For Bending Diagrams and Notes See Sheet No. 36/44 .

* Number of bars this sheet only. For total number and total weight see Sheet No. 37/44 .

38/44

STICKLEN - BELSHEIM & ASSOCIATES
ENGINEERS
WORTHINGTON OHIO

REINFORCING STEEL LIST

BRIDGE No. BEL-7-1289
OVER
CONSOLIDATED RAIL CORP.
STA. 682+40.97
691+74.50
BELMONT CO.

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
TRO	R.D.Y.				12/1/84	11/84

MICROFILMED
OCT 31 1984

REINFORCING STEEL LIST

F.H.W.A. REGION	STATE	PROJECT	
5	OHIO		

BEL-7-11.89

338/443

MARK	TOTAL No.	TOTAL WEIGHT	No. *	LENGTH		TYPE	A	B	C	D	E	LEFT BRIDGE 2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	25	26	27	28	29	30	31	32			LEFT & RIGHT BRIDGE 19	20	21	22	23	24
PIER FOOTINGS (Cont.)																																										
F601	12	321	12	17'-10"		1	16'-6"																						12														
F604	1	23	1	15'-0"		S																																1					
F605	1	19	1	12'-8"		S																																1					
F606	1	21	1	14'-0"		S																																					1
F607	1	17	1	11'-3"		S																																					1
PIERS ABOVE FOOTINGS																																										
P1401	64	13,831	16	28'-3"		S																						16														
P1402	16	3,703	16	30'-3"		S																						16														
P1403	96	6,487	32	8'-10"		11	6'-9"	2'-6½"																				32														
P1404	16	3,580	—	29'-3"		S																																				
P1146	14	2,665	—	35'-10"		S																																				
P1101	16	1,466	8	17'-3"		11	13'-7"	4'-0"																				8														
P1102	56	10,413	24	35'-0"		S																						8												8	8	
P1103	24	4,293	8	33'-8"		11	30'-0"	4'-0"																				8														
P1104	8	960	—	22'-7"		11	18'-11"	4'-0"																																		
P1105	64	5,356	48	15'-9"		S																						8												20	20	
P1106	16	2,968	—	34'-11"		S																																				
P1107	16	2,954	—	34'-9"		S																																				
P1108	16	1,785	—	21'-0"		S																																				
P1109	8	354	—	8'-4"		S																																				
P1110	56	9,248	16	31'-1"		S														16																						
P1111	16	1,955	8	23'-0"		S																									8											
P1112	8	1,406	—	33'-1"		S																																				
P1113	92	16,375	68	33'-6"		S																				8		12												24	24	
P1114	26	4,961	26	35'-11"		11	34'-9"	1'-5½"																				14											12				
P1115	36	5,021	20	26'-3"		S																				12			8													
P1116	16	2,749	16	32'-4"		S																							8	8													
P1117	32	4,109	24	24'-2"		S																								8											8	8	
P1118	24	2,816	16	22'-1"		S																									8					8						
P1119	24	3,475	16	27'-3"		S																									8	8										
P1120	24	2,742	24	21'-6"		S																											8	8	8								
P1121	64	10,399	40	30'-7"		S												16		8		8	8																				
P1122	8	857	8	20'-2"		S																														8							
P1123	62	10,431	22	31'-8"		S														8								14														
P1124	24	3,379	24	26'-6"		S																											8	8	8								
P1125	8	361	—	8'-6"		11	7'-4"	1'-5½"																																			
P1126	8	560	—	13'-2"		S																																				
P1127	812	31,997	452	7'-5"		11	6'-3"	1'-5½"				16	16	16	16	16	16	16	16	16	16	16	16	16	16		28		16	16	16	16	16	16	16	16			36					36
P1128	44	7,539	28	32'-3"		S																			8		8												12				
P1129	20	3,577	12	33'-8"		S																																					12
P1130	12	2,157	12	33'-10"		11	32'-8"	1'-5½"																																			12
P1131	12	2,321	12	36'-5"		11	35'-3"	1'-5½"																																12				
P1132	32	4,590	24	27'-0"		S																						8												8	8	
P1133	8	1,626	8	38'-3"		S																						8														
P1134	8	1,364	8	32'-1"		11	30'-11"	1'-5½"																		8																
P1135	24	4,176	—	32'-9"		11	31'-7"	1'-5½"																																			
P1136	1	57	1	10'-9"		2	3'-6"	3'-9½"	3'-6"	2'-4½"	1'-0¾"															1																	
P1137	8	485	6	11'-5"		2	3'-6"	4'-4¾"	3'-6"	2'-9½"	1'-3⅜"																	1	1											2	2		
P1138	48	7,502	32	29'-5"		S									16							8	8																			
P1139	64	10,201	48	30'-0"		S										16	16				16																						
P1140	8	1,466	-	34'-6"		S																																				
P1141	16	1,679	16	19'-9"		S						16																															
P1142	16	2,409	16	28'-4"		S							16																														
P1143	24	3,804	24	29'-10"		11	28'-8"	1'-5½"						16										8																			
P1144	8	1,438	—	33'-10"		S																																				
P1145	12	1,743	12	27'-4"		11	26'-2"	1'-5½"																																			12

SPIRAL REINFORCING

MARK	NO.	LENGTH	WEIGHT	PIER NO.
SP401	2	16'-6"	624	2L
SP402	2	25'-0"	928	3L
SP403	2	17'-9"	669	2R
SP404	2	25'-7"	949	4L
SP405	2	28'-9"	1,062	19L/R, 14L
SP406	4	26'-3"	1,946	12L, 13L, 5L
SP407	2	26'-7"	985	6L
SP408	4	27'-9"	2,053	6R, 9L
SP409	1	28'-7"	528	28R
SP410	2	30'-3"	1,116	15R
SP411	3	31'-7"	1,746	20L/R, 16R
SP412	2	31'-10"	1,173	17R
SP413	3	31'-5"	1,737	18R, 16L
SP414	1	22'-11"	427	25L
SP415	1	29'-0"	536	25L
SP416	1	20'-10"	390	26L
SP417	1	22'-11"	427	24L/R
SP418	1	18'-10"	354	32L
SP419	1	28'-10"	533	26L
SP420	1	19'-7"	367	28L
SP421	2	23'-7"	878	28L/R
SP422	2	18'-4"	690	29L, 30L
SP423	2	23'-5"	871	29L, 30L
SP424	1	23'-4"	434	30R
SP425	1	18'-1"	340	31L
SP426	1	23'-1"	430	31L
SP427	1	23'-1"	430	31R
SP428	1	27'-1"	501	31R
SP429	1	16'-10"	318	32L
SP430	1	19'-9"	370	32R
SP431	2	23'-9"	884	27L, 32R
SP432	1	4'-9"	102	33R
SP433	2	18'-9"	704	27L, 33R

Spirals — Core Diam. 32" %
— Pitch 4½" %
— Other details in accordance with C.R.S.I. standard practice.

For Bending Diagrams and Notes See Sheet No. 36/44 .

* Number of bars this sheet only.

39/44

STICKLEN - BELSHEIM & ASSOCIATES ENGINEERS
WORTHINGTON OHIO

REINFORCING STEEL LIST

BRIDGE No. BEL-7-1289
OVER
CONSOLIDATED RAIL CORP.
BELMONT CO.
STA. 682+40.97
691+74.50

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
TRO	R.D.Y.		DLS	DLS	12/1/84	11/14 5/23/79

MICROFILMED
OCT 3 1 1994

REINFORCING STEEL LIST

F.H.W.A. REGION	STATE	PROJECT	
5	OHIO		

339/443

BEL-7-11.89

MARK			No. *	LENGTH		TYPE	A	B	C	D	E	RIGHT BRIDGE 2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	25	26	27	28	29	30	31	32	33	34
				PIERS ABOVE FOOTINGS																																	
P1401			48	28'-3"		S																						16	32							
P1403			64	8'-10"		11	6'-9"	2'-6½"																				32	32							
P1404			16	29'-3"		S																						16								
P1101			8	17'-3"		11	13'-7"	4'-0"																				8								
P1102			32	35'-0"		S																				16		8	8							
P1103			16	33'-8"		11	30'-0"	4'-0"																				8	8							
P1104			8	22'-7"		11	18'-11"	4'-0"																					8							
P1105			16	15'-9"		S																						8	8							
P1106			16	34'-11"		S																			16												
P1107			16	34'-9"		S																				16										
P1108			16	21'-0"		S						16																									
P1109			8	8'-4"		S																													8		
P1110			40	31'-1"		S										16	16				8																
P1111			8	23'-0"		S																													8		
P1112			8	33'-1"		S																		8													
P1113			24	33'-6"		S															8				16												
P1115			16	26'-3"		S																												8	8		
P1117			8	24'-2"		S																										8					
P1118			8	22'-1"		S																													8		
P1119			8	27'-3"		S																												8			
P1121			24	30'-7"		S									16																			8			
P1123			40	31'-8"		S												16				8	8											8			
P1125			8	8'-6"		11	7'-4"	1'-5½"																												8	
P1126			8	13'-2"		S																														8	
P1127			360	7'-5"		11	6'-3"	1'-5½"				16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16					16	16	16	16	16	8
P1128			16	32'-3"		S														16																	
P1129			8	33'-8"		S																8															
P1132			8	27'-0"		S																							8								
P1135			24	32'-9"		11	31'-7"	1'-5½"												16									8								
P1137			2	11'-5"		2	3'-6"	4'-4⅜"	3'-6"	2'-9½"	1'-3⅜"																	1	1								
P1138			16	29'-5"		S							16																								
P1139			16	30'-0"		S								16																							
P1140			8	34'-6"		S																		8													
P1144			8	33'-10"		S																	8														
P1146			14	35'-10"		S																					14										

SPIRAL REINFORCING

MARK	NO.	LENGTH	WEIGHT	PIER NO.

Spirals – Core Diam. 32" %

– Pitch 4½" %

– Other details in accordance with C.R.S.I. standard practice.

For Bending Diagrams and Notes See Sheet No. 36/44 .

* Number of bars this sheet only. For total number and total weight see Sheet No. 39/44 .

40/44

STICKLEN - BELSHEIM & ASSOCIATES
ENGINEERS
WORTHINGTON OHIO

REINFORCING STEEL LIST

BRIDGE No. BEL-7-1289
OVER
CONSOLIDATED RAIL CORP.
STA. 682+40.97
691+74.50
BELMONT CO.

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
TRO	R.D.Y.		DGH	DGH	12/5/11	11/14 5/24/99

12-2-94

MICROFILMED
OCT 31 1984

REINFORCING STEEL LIST

F.H.W.A. REGION	STATE	PROJECT	
5	OHIO		

BEL-7-11.89

340/443

MARK	TOTAL No.	TOTAL WEIGHT	No. *	LENGTH		TYPE	A	B	C	D	E
PIERS ABOVE FOOTINGS (Cont.)											
P1001	124	16,007	92	30'-0"		S					
P1002	24	2,065	24	20'-0"		S					
P1003	8	783	—	22'-9"		S					
P1004	20	2,847	12	33'-1"		11	32'-0"	1'-4½"			
P1005	3	130	2	10'-1"		2	3'-2"	3'-8¾"	3'-2"	2'-4½"	1'-0¾"
P1007	8	1,259	8	36'-7"		S					
P1009	24	3,227	24	31'-3"		S					
P1010	16	1,824	16	26'-6"		S					
P1012	372	28,813	184	18'-0"		S					
P1013	144	4,337	96	7'-0"		11	5'-11"	1'-4½"			
P1014	12	1,786	12	34'-7"		11	33'-6"	1'-4½"			
P1015	8	1,125	8	32'-8"		11	31'-7"	1'-4½"			
P1016	20	2,417	12	28'-1"		11	27'-0"	1'-4½"			
P1017	12	1,355	12	26'-3"		S					
P1018	40	5,737	24	33'-4"		11	32'-3"	1'-4½"			
P1019	44	6,453	36	34'-1"		11	33'-0"	1'-4½"			
P1020	12	1,786	12	34'-7"		11	33'-6"	1'-4½"			
P1023	16	2,387	8	34'-8"		S					
P1024	8	1,024	—	29'-9"		11	27'-5"	2'-8"			
P1026	24	3,778	24	36'-7"		11	35'-6"	1'-4½"			
P901	172	21,394	168	36'-7"		S					
P902	60	3,672	56	18'-0"		S					
P903	184	22,157	—	35'-5"		S					
P904	184	23,199	184	37'-1"		S					
P905	8	639	8	23'-6"		11	21'-0"	2'-9"			
P906	8	972	8	35'-9"		11	33'-3"	2'-9"			
P907	18	1,255	16	20'-6"		S					
P908	196	24,657	—	37'-0"		S					
P909	12	575	12	14'-1"		S					
P911	12	1,061	8	26'-0"		S					
P912	16	1,795	16	33'-0"		S					
P913	32	4,162	32	38'-3"		S					
P914	40	4,080	40	30'-0"		S					
P915	10	536	10	15'-9"		S					
P916	8	651	8	23'-11"		11	20'-3"	3'-11"			
P917	4	279	4	20'-6"		11	18'-9"	2'-0"			
P918	4	544	4	40'-0"		S					
P801	8	739	8	34'-7"		11	32'-9"	2'-0"			
P802	4	384	4	36'-0"		11	33'-5"	2'-9"			
P803	8	598	—	28'-0"		S					
P804	8	760	—	35'-7"		S					
P805	4	223	4	20'-11"		7	19'-9"				
P806	1	23	—	8'-9"		2	2'-6"	3'-8¾"	2'-6"	2'-4½"	1'-1¼"
P807	16	1,303	16	30'-6"		S					
P809	176	10,182	84	21'-8"		11	19'-9"	2'-0"			
P810	24	1,768	8	27'-7"		11	25'-0"	2'-9"			
P811	4	303	4	28'-5"		11	25'-10"	2'-9"			
P701	24	1,312	24	26'-9"		S					
P702	24	1,153	24	23'-6"		S					
P703	16	262	16	8'-0"		11	4'-9"	3'-5"			

MARK	LEFT BRIDGE 2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	25	26	27	28	29	30	31	32	LEFT & RIGHT BRIDGE 19	20	21	22	23	24
P1001																	16									22	16			16	22
P1002																											12			12	
P1003																															
P1004																												12			
P1005																										1					1
P1007														8																	
P1009															8											8					8
P1010																										8					8
P1012	8	8	8	8	8	8	8	8	8	8	8	8	8	8				8	8	8	8	8	8	8	8	4					4
P1013															24												36	36	36	36	
P1014																												12			
P1015															8																
P1016																													12		
P1017																														12	
P1018																												12	12		
P1019																											24			12	
P1020																													12		
P1023															8																
P1024																															
P1026																											12	12			
P901	8	8	8	8	8	8	8	8	8	8	8	8	8					8	8	8	8	8	8	8	8						
P902																										16		12	12		16
P903																															
P904	8	8	8	8	8	8	8	8	8	8	8	8	8	8		4	4	8	8	8	8	8	8	8	8						
P905																												4	4		
P906																												4	4		
P907																										8					8
P908																															
P909															12																
P911																												4	4		
P912																										8					8
P913																											16			16	
P914															8												16			16	
P915																10															
P916																8															
P917															4																
P918															4																
P801																										4					4
P802																											2			2	
P803																															
P804																															
P805														4																	
P806																															
P807																											8			8	
P809	4	4	4	4	4	4	4	4	4	4	4	4	4					4	4	4	4	4	4	4	4						
P810																	8														
P811																											2			2	
P701																										12					12
P702																										12					12
P703																										8					8

SPIRAL REINFORCING

MARK	NO.	LENGTH	WEIGHT	PIER NO.
Spirals — Core Diam. 32" %				
— Pitch 4½" %				
— Other details in accordance with C.R.S.I. standard practice.				
SP434	1	23'-10"	443	27R
SP435	1	9'-9"	191	34R
SP436	2	26'-8"	988	7L
SP437	4	27'-2"	2,012	12L, 8L, 10L
SP438	1	25'-8"	476	14L
SP439	3	28'-4"	1,571	10L, 30R, 16L
SP440	4	27'-11"	2,065	15L, 7R, 16L
SP441	2	28'-10"	1,066	27R
SP442	1	23'-5"	436	29R
SP443	4	28'-5"	2,101	29R, 8R, 12R
SP444	1	30'-6"	562	13R
SP445	1	29'-2"	539	24L/R
SP446	1	28'-6"	527	13R
SP447	2	29'-7"	1,092	28R, 15L
SP448	1	31'-4"	578	19L/R
SP449	1	31'-8"	584	19L/R
SP450	1	30'-2"	557	24L/R
SP451	3	28'-11"	1,602	20L/R, 9R
SP452	1	29'-6"	545	23L/R
SP453	1	29'-4"	542	20L/R
SP454	1	28'-5"	525	23L/R
SP455	1	22'-2"	413	23L/R
	For	SP456	thru	SP464
	see	Sheet	43/44	.
SP465	1	29'-10"	551	14R
SP466	1	30'-10"	568	14R
SP467	2	26'-3"	973	3R
SP468	2	26'-10"	994	4R
SP469	3	27'-4"	1,517	13L, 5R
SP470	1	28'-0"	518	11R
SP471	1	30'-4"	559	12R
SP472	1	30'-0"	554	11R
SP473	2	29'-5"	1,086	10R
SP474	2	26'-9"	991	11L

For Bending Diagrams and Notes See Sheet No. 36/44 .

* Number of bars this sheet only .

41/44

STICKLEN - BELSHEIM & ASSOCIATES
ENGINEERS
WORTHINGTON OHIO

REINFORCING STEEL LIST

BRIDGE No. BEL-7-1289
OVER
CONSOLIDATED RAIL CORP.
STA. 682+40.97
691+74.50
BELMONT CO.

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
T.R.O.	R.D.Y.		D.E.F.	D.E.F.	12/1/88	11/88 5/23/89

D.E.F. 12-2-88

MICROFILMED
OCT 31 1924

REINFORCING STEEL LIST

F.H.W.A. REGION	STATE	PROJECT	
5	OHIO		

BEL-7-11.89

341/443

RIGHT BRIDGE

MARK			No. *	LENGTH		TYPE	A	B	C	D	E	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	25	26	27	28	29	30	31	32	33	34
PIERS ABOVE FOOTINGS (Cont.)																																					
P1001			32	30'-0"		S																						16	16								
P1003			8	22'-9"		S																								8								
P1004			8	33'-1"		11	32'-0"	1'-4½"																							8							
P1005			1	10'-1"		2	3'-2"	3'-8¾"	3'-2"	2'-4½"	1'-0¾"																				1							
P1012			188	18'-0"		S						8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8			4		8	8	8	8	8	8
P1013			48	7'-0"		11	5'-11"	1'-4½"																						24	24							
P1016			8	28'-1"		11	27'-0"	1'-4½"																							8							
P1018			16	33'-4"		11	32'-3"	1'-4½"																						16								
P1019			8	34'-1"		11	33'-0"	1'-4½"																							8							
P1023			8	34'-8"		S																								8							
P1024			8	29'-9"		11	27'-5"	2'-8"																						8							
P901			4	36'-7"		S																								4							
P902			4	18'-0"		S																									4							
P903			184	35'-5"		S						8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8					8	8	8	8	8	8
P907			2	20'-6"		S																								2							
P908			196	37'-0"		S						8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	4	4		4	8	8	8	8	8	8
P911			4	26'-0"		S																									4							
P803			8	28'-0"		S																									8							
P804			8	35'-7"		S																									8							
P806			1	8'-9"		2	2'-6"	3'-8¾"	2'-6"	2'-4½"	1'-1¼"																				1							
P809			92	21'-7"		11	19'-9"	2'-0"				4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4					4	4	4	4	4	4
P810			16	27'-7"		11	25'-0"	2'-9"																					8	8								

SPIRAL REINFORCING

MARK	NO.	LENGTH	WEIGHT	PIER NO.

Spirals – Core Diam. 32" %

– Pitch 4½" %

– Other details in accordance with C.R.S.I. standard practice.

For Bending Diagrams and Notes See Sheet No. 36/44 .

* Number of bars this sheet only. For total number and total weight see Sheet No. 41/44 .

STICKLEN - BELSHEIM & ASSOCIATES
ENGINEERS
WORTHINGTON OHIO

REINFORCING STEEL LIST

BRIDGE No. BEL-7-1289
OVER
CONSOLIDATED RAIL CORP.
BELMONT CO. STA. 682+40.97
691+74.50

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
TRO	R.D.Y.		DGH	DGH	10/1/74	11/74 5/23/79

MICROFILMED
OCT 31 1994

REINFORCING STEEL LIST

F.H.W.A. REGION	STATE	PROJECT	
5	OHIO		

342/443

BEL-7-11.89

MARK	TOTAL No.	TOTAL WEIGHT	No. *	LENGTH		TYPE	A	B	C	D	E
PIERS ABOVE FOOTINGS (Cont.)											
P704	32	1,979	32	30'-3"		S					
P705	32	1,265	32	19'-4"		S					
P708	16	927	8	28'-4"		11	25'-0"	3'-6"			
P709	8	506	–	30'-11"		11	27'-7"	3'-6"			
P710	12	382	–	15'-7"		S					
P601	88	4,902	88	37'-1"		S					
P602	92	5,113	–	37'-0"		S					
P604	128	1,314	40	6'-10"		5	2'-2"	2'-6"	2'-6"		
P605	128	1,955	40	10'-2"		5	2'-2"	4'-2"	4'-2"		
P607	80	1,041	80	8'-8"		5	2'-2"	3'-5"	3'-5"		
P608	52	560	52	7'-2"		5	3'-2"	2'-2"	2'-2"		
P609	52	833	52	10'-8"		5	3'-2"	3'-11"	3'-11"		
P610	664	9,641	664	9'-8"		5	2'-2"	3'-11"	3'-11"		
P501	64	684	–	10'-3"		5	2'-8"	3'-11"	3'-11"		
P502	15	107	9	6'-10"		2	1'-7"	3'-8 3/8"	1'-7"	2'-5 1/2"	1'-2 1/8"
P503	5	31	3	6'-0"		5	2'-3"	2'-0"	2'-0"		
P504	44	1,679	44	36'-7"		S					
P505	46	1,699	–	35'-5"		S					
P506	936	7,403	524	7'-7"		17	2'-8"	2'-2"	2'-2"		
P507	514	4,959	294	9'-3"		5	2'-8"	3'-5"	3'-5"		
P508	1,432	10,206	788	6'-10"		17	1'-11"	2'-2"	2'-2"		
P509	956	8,475	536	8'-6"		5	1'-11"	3'-5"	3'-5"		
P510	4	127	4	30'-6"		S					
P511	506	4,486	458	8'-6"		5	0'-11"	3'-11"	3'-11"		
P512	4	128	–	30'-9"		S					
P513	6	159	4	25'-4"		S					
P514	160	1,126	38	6'-9"		17	1'-10"	2'-2"	2'-2"		
P515	160	1,405	38	8'-5"		5	1'-10"	3'-5"	3'-5"		
P516	96	2,728	44	27'-3"		S					
P517	236	2,400	108	9'-9"		5	2'-8"	3'-8"	3'-8"		
P518	432	4,280	208	9'-6"		5	1'-11"	3'-11"	3'-11"		
P522	6	188	2	30'-0"		S					
P523	2	28	2	13'-7"		S					
P524	6	78	4	12'-5"		S					
P525	4	79	2	19'-0"		S					
P526	52	583	52	10'-9"		5	2'-8"	4'-2"	4'-2"		
P527	12	99	6	7'-11"		2	1'-7"	4'-8 1/2"	1'-7"	3'-2"	1'-6"
P528	4	26	2	6'-3"		5	2'-6"	2'-0"	2'-0"		
P529	39	315	13	7'-9"		17	3'-2"	2'-0"	2'-0"		
P530	39	458	13	11'-3"		5	3'-2"	4'-2"	4'-2"		
P531	10	67	–	6'-5"		17	2'-2"	1'-10"	1'-10"		
P532	10	107	–	10'-3"		5	2'-2"	4'-2"	4'-2"		
P533	8	315	8	37'-9"		S					
P534	8	320	8	38'-4"		S					
P535	8	315	8	37'-9"		S					
P536	64	695	64	10'-5"		5	2'-8"	4'-0"	4'-0"		
P537	44	459	44	10'-0"		5	1'-11"	4'-2"	4'-2"		
P538	6	46	6	7'-5"		5	2'-8"	2'-6"	2'-6"		
P539	26	197	26	7'-3"		5	1'-10"	2'-10"	2'-10"		
P540	26	188	26	6'-11"		17	1'-10"	2'-3"	2'-3"		

LEFT BRIDGE																														LEFT & RIGHT BRIDGE					
2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	25	26	27	28	29	30	31	32			19	20	21	22	23	24
																												16			16	
																												16			16	
														8																		
4	4	4	4	4	4	4	4	4	4	4	4	4	4				4	4	4	4	4	4	4	4								
																40																
																40																
																											40				40	
															26														13	13		
															26														13	13		
															52													98	208	208	98	
														3													3				3	
														1													1				1	
2	2	2	2	2	2	2	2	2	2	2	2	2	2				2	2	2	2	2	2	2	2								
16	16	16	16	16	16	16	16	16	16	16	16	16	15	37			16	16	16	16	16	16	16	16			36	32			32	36
4	4	4	4	4	4	4	4	4	4	4	4	4	5	37			16	16	16	16	16	16	16	16			36					36
32	32	32	32	32	32	32	32	32	32	32	32	32	26				32	32	32	32	32	32	32	32			22	22			22	24
16	16	16	16	16	16	16	16	16	16	16	16	16	26				32	32	32	32	32	32	32	32			22					24
														4																		
														24	24												40	60	104	104	60	42
															4																	
														38																		
														38																		
2	2	2	2	2	2	2	2	2	2	2	2	2	2				2	2	2	2	2	2	2	2								
8	8	8	8	8	8	8	8	8	8	8	8	8	4																			
16	16	16	16	16	16	16	16	16	16	16	16	16																				
																2																
																2																
														2													2				2	
4	4	4	4	4	4	4	4	4	4	4	4	4																				
															3	3																
															1	1																
																13																
																13																
																													4	4		
																											4				4	
																												4			4	
																												32			32	
																												22			22	
													6																			
													26																			
													26																			

SPIRAL REINFORCING

MARK	NO.	LENGTH	WEIGHT	PIER NO.
SP456	2	27'-11"	1,194	17L, 18L
SP457	1	30'-0"	640	18L
SP458	1	28'-6"	609	25R
SP459	2	29'-5"	1,256	21 1/2 R, 25R
SP460	4	28'-4"	2,423	26R, 21 1/2 R, 22 1/2 R
SP461	1	31'-1"	663	17L
SP462	1	29'-7"	632	22 1/2 R
SP463	1	23'-2"	499	22 1/2 R
SP464	1	31'-8"	675	21 1/2 R

Spirals – Core Diam. 38" %
– Pitch 4 1/2" %
– Other details in accordance with C.R.S.I. standard practice.

For Bending Diagrams and Notes See Sheet No. 36/44.

*Number of bars this sheet only.

STICKLEN - BELSHEIM & ASSOCIATES
ENGINEERS
WORTHINGTON OHIO

REINFORCING STEEL LIST

BRIDGE No. BEL-7-1289
OVER
CONSOLIDATED RAIL CORP.
STA. 682+40.97
691+74.50
BELMONT CO.

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
TRO	R.D.Y.		DGH	DGH	12/5/94	11/96 5/23/97

DGH 12-5-94

MICROFILMED
OCT 31 1984

REINFORCING STEEL LIST

F.H.W.A. REGION	STATE	PROJECT	
5	OHIO		

BEL-7-11.89

343/443

RIGHT BRIDGE

MARK			No. *	LENGTH		TYPE	A	B	C	D	E	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	25	26	27	28	29	30	31	32	33	34
PIERS ABOVE FOOTINGS (Cont.)																																					
P708			8	28'-4"		11	25'-0"	3'-6"																						8								
P709			8	30'-11"		11	27'-7"	3'-6"																							8							
P710			12	15'-7"		S																								12							
P602			92	37'-0"		S						4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4					4	4	4	4	4	4
P604			88	6'-10"		5	2'-2"	2'-6"	2'-6"																			52	36								
P605			88	10'-2"		5	2'-2"	4'-2"	4'-2"																			52	36								
P501			64	10'-3"		5	2'-8"	3'-11"	3'-11"			4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4										
P502			6	6'-10"		2	1'-7"	3'-8 3/8"	1'-7"	2'-5 1/2"	1'-2 1/8"																			3	3							
P503			2	6'-0"		5	2'-3"	2'-0"	2'-0"																					1	1							
P505			46	35'-5"		S						2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2					2	2	2	2	2	2
P506			412	7'-7"		17	2'-8"	2'-2"	2'-2"			16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16			18	26	16	16	16	16	16	16
P507			220	9'-3"		5	2'-8"	3'-5"	3'-5"			4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	16			18	26	16	16	16	16	16	16
P508			644	6'-10"		17	1'-11"	2'-2"	2'-2"			28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28					28	28	28	28	28	28
P509			420	8'-6"		5	1'-11"	3'-5"	3'-5"			14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	28					28	28	28	28	28	28
P511			48	8'-6"		5	0'-11"	3'-11"	3'-11"																					24	24							
P512			4	30'-9"		S																								4							
P513			2	25'-4"		S																								2							
P514			122	6'-9"		17	1'-10"	2'-2"	2'-2"																					62	60							
P515			122	8'-5"		5	1'-10"	3'-5"	3'-5"																					62	60							
P516			52	27'-3"		S						2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2			6		2	2	2	2	2	2
P517			128	9'-9"		5	2'-8"	3'-8"	3'-8"			8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8										
P518			224	9'-6"		5	1'-11"	3'-11"	3'-11"			14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14										
P522			4	30'-0"		S																						2	2								
P524			2	12'-5"		S																						2									
P525			2	19'-0"		S																							2								
P527			6	7'-11"		2	1'-7"	4'-8 1/2"	1'-7"	3'-2"	1'-6"																		3	3							
P528			2	6'-3"		5	2'-6"	2'-0"	2'-0"																				1	1							
P529			26	7'-9"		17	3'-2"	2'-0"	2'-0"																				10	16							
P530			26	11'-3"		5	3'-2"	4'-2"	4'-2"																				10	16							
P531			10	6'-5"		17	2'-2"	1'-10"	1'-10"																					10							
P532			10	10'-3"		5	2'-2"	4'-2"	4'-2"																					10							

SPIRAL REINFORCING

MARK	NO.	LENGTH	WEIGHT	PIER NO.

Spirals — Core Diam. 32" %

— Pitch 4 1/2" %

— Other details in accordance with C.R.S.I. standard practice.

For Bending Diagrams and Notes See Sheet No. 36/44 .

* Number of bars this sheet only. For total number and total weight see Sheet No. 43/44 .

44/44

STICKLEN - BELSHEIM & ASSOCIATES
ENGINEERS
WORTHINGTON OHIO

REINFORCING STEEL LIST

BRIDGE No. BEL-7-1289
OVER
CONSOLIDATED RAIL CORP.
STA. 682+40.97
691+74.50
BELMONT CO.

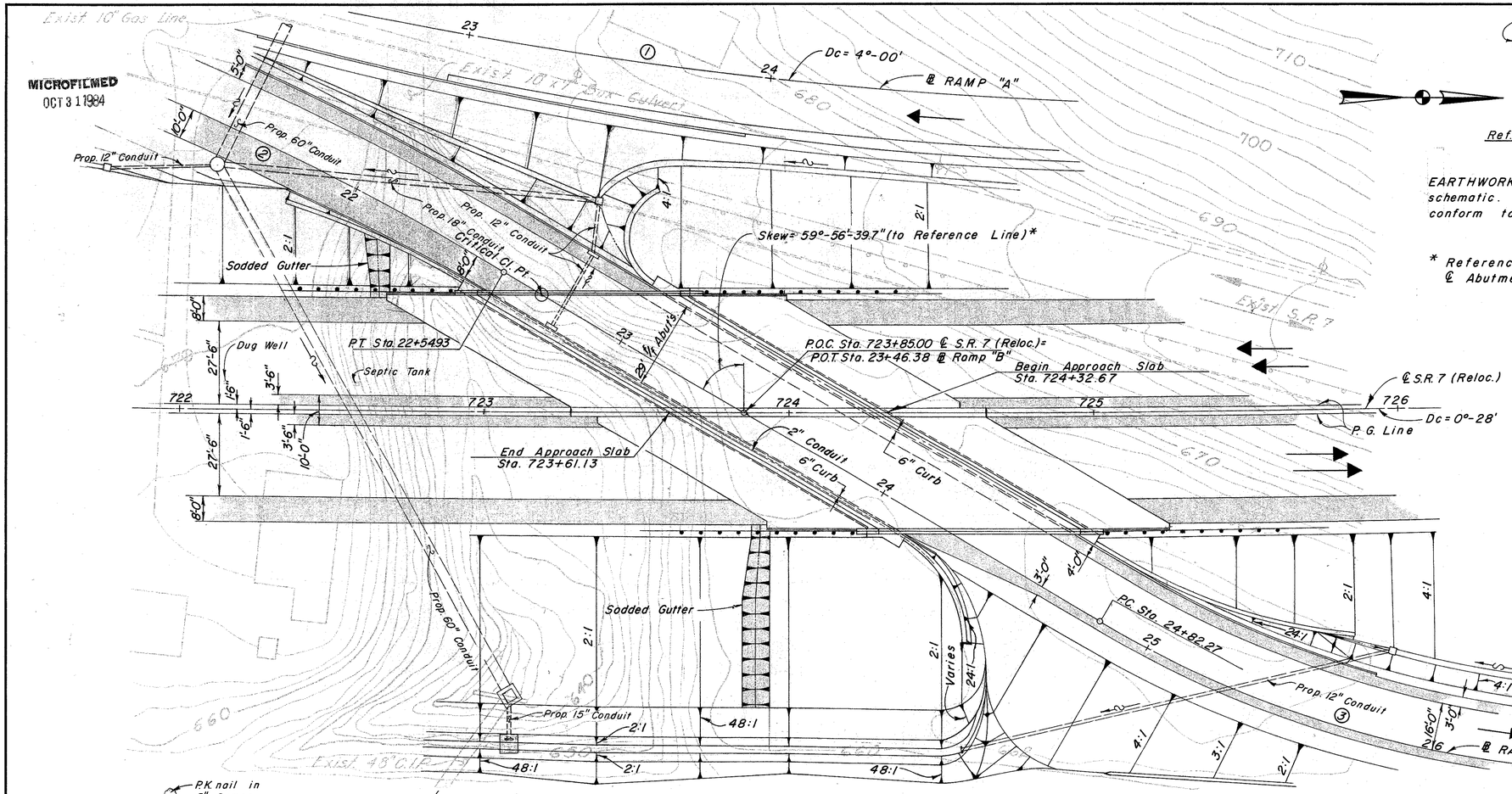
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
TRO	R.D.Y.		D.G.Z.	D.G.Z.	12/1/94	11/16/99 5/23/99

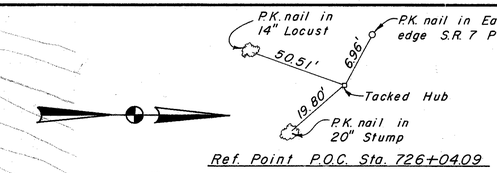
MICROFILMED
OCT 3 1 1984

FHWA REGION	STATE	PROJECT	FISCAL YEAR
5	OHIO		

344/443

BEL-7-11.89





Ref. Point P.O.C. Sta. 726+04.09

EARTHWORK LIMITS shown are schematic. Actual slopes shall conform to Plan-Cross Sections.

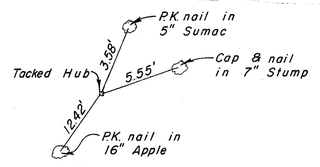
* Reference Line = Chord between ℄ Abutment Bearings

CURVE DATA
℄ S.R. 7 (Reloc.)
P.I. Sta. 725+84.29
Δ = 22°-54'-57" Lt.
Dc = 0°-28'
R = 12,277.67'
T = 2,488.53'
L = 4,910.54'
E = 249.66'

① CURVE DATA
℄ Ramp "A"
P.I. Sta. 23+64.15
Δ = 14°-32'-28" Lt.
Dc = 4°-00'
R = 1,432.39'
T = 182.73'
L = 363.50'
E = 11.61'

② CURVE DATA
℄ Ramp "B"
P.I. Sta. 20+88.49
Δ = 15°-04'-03" Rt.
Dc = 4°-30'
R = 1,273.24'
T = 168.39'
L = 334.83'
E = 11.09'

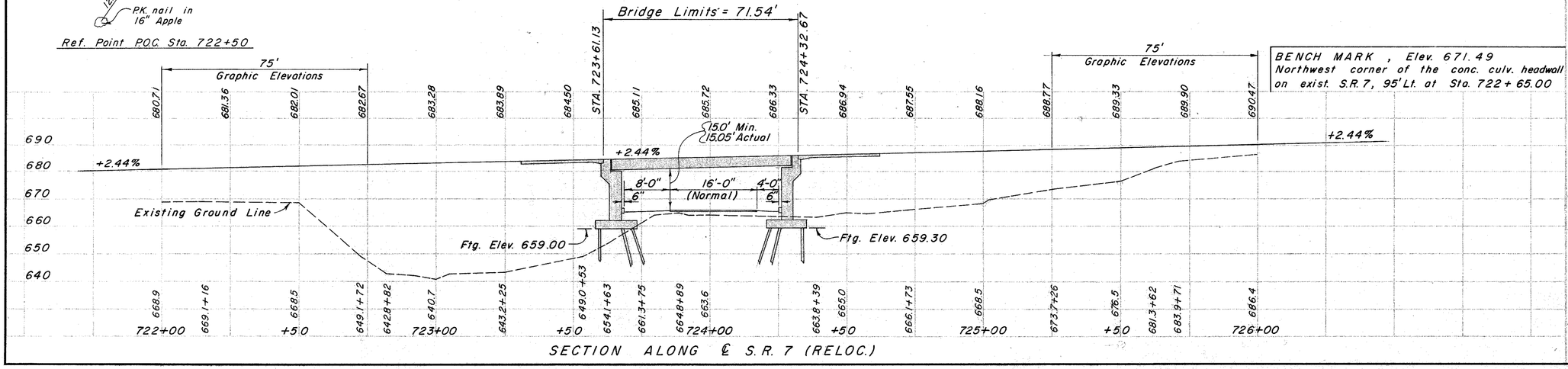
③ CURVE DATA
℄ Ramp "B"
P.I. Sta. 26+04.07
Δ = 37°-34'-08" Lt.
Dc = 16°-00'
R = 358.10'
T = 121.80'
L = 234.81'
E = 20.15'



Ref. Point P.O.C. Sta. 722+50

NOTE: The tangent grade data does not apply to bridge or graphic grade elevations. The bridge elevations were obtained by adding 1½" to elevations obtained from tangent grade data.

ESTIMATED AVERAGE PAY LENGTH OF HP10x42 Steel Piles is 30'.



SECTION ALONG ℄ S.R. 7 (RELOC.)

PROPOSED STRUCTURE

TYPE: Single span steel beam with reinforced concrete deck and substructure.
SPAN: 62.23'% Abutment brg's.
ROADWAY: 77'-8" ᶠ/ₜ Parapets; including 3'-0" Concrete median barrier
LOADING: HS 20-44 & Alternate Military
WEARING SURFACE: 1½" Latex Modified Conc.
SKEW: 59°-56'-39.7" Rt. Fwd. (to Ref. Line)
APPROACH SLABS: AS-1-72 (30'-0" long, Mod.)
SUPERELEVATION: None
ALIGNMENT: 0°-28' Curve Left

TRAFFIC: 10,650 ADT (1996)

1/18

STICKLEN - BELSHEIM & ASSOCIATES
ENGINEERS
WORTHINGTON OHIO

SITE PLAN

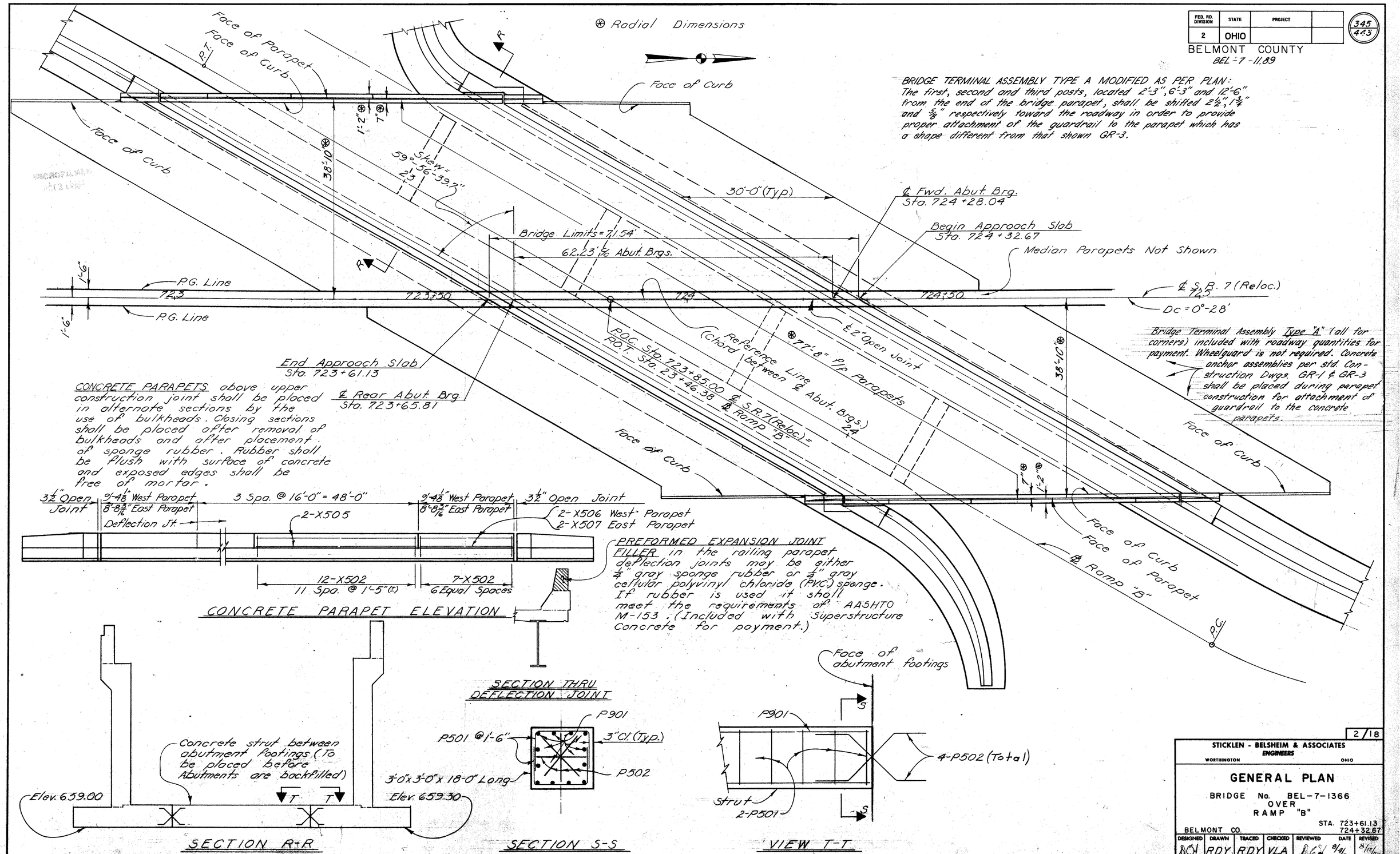
BRIDGE No. BEL-7-1366
OVER
RAMP "B"
STA. 723+61.13
724+32.67
BELMONT CO.

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
WBD		R.D.Y.	DGH	DGH	9/1/10	11/96 5/13/19

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

345
443

BELMONT COUNTY
BEL-7-11.89



BRIDGE TERMINAL ASSEMBLY TYPE A MODIFIED AS PER PLAN: The first, second and third posts, located 2'-3", 6'-3" and 12'-6" from the end of the bridge parapet, shall be shifted 2½", 1¾" and ⅝" respectively toward the roadway in order to provide proper attachment of the guardrail to the parapet which has a shape different from that shown GR-3.

Bridge Terminal Assembly Type "A" (all for corners) included with roadway quantities for payment. Wheelguard is not required. Concrete anchor assemblies per std. Construction Dwgs. GR-1 & GR-3 shall be placed during parapet construction for attachment of guardrail to the concrete parapets.

CONCRETE PARAPETS above upper construction joint shall be placed in alternate sections by the use of bulkheads. Closing sections shall be placed after removal of bulkheads and after placement of sponge rubber. Rubber shall be flush with surface of concrete and exposed edges shall be free of mortar.

CONCRETE PARAPET ELEVATION

PREFORMED EXPANSION JOINT FILLER in the railing parapet deflection joints may be either ¼" gray sponge rubber or ¼" gray cellular polyvinyl chloride (P.V.C.) sponge. If rubber is used it shall meet the requirements of AASHTO M-153. (Included with Superstructure Concrete for payment.)

SECTION R-R

SECTION THRU DEFLECTION JOINT

SECTION S-S

VIEW T-T

2/18

STICKLEN - BELSHEIM & ASSOCIATES
ENGINEERS
WORTHINGTON OHIO

GENERAL PLAN

BRIDGE No. BEL-7-1366
OVER
RAMP "B"

BELMONT CO. STA. 723+61.13 724+32.67

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
DCH	R.D.Y.	R.D.Y.	VLA	BGL	8/4/70	8/12/74

MICROFILMED
OCT 31 1984

ESTIMATED QUANTITIES

ITEM	TOTAL	UNIT	DESCRIPTION	Superst.	Abutments	Wingwalls	General
503	Lump	Sum	Cofferdams, cribs and sheeting				Lump
503	1,218	Cu. Yds.	Unclassified excavation		747	409	62 ⊛
505	Lump	Sum	Test pile				Lump
507	7,470	Lin. Ft.	Steel piles, HP 10 x 42		5,070	2,400	
509	208,642	Lbs.	Reinforcing steel	42,812	130,670	31,352	3,799 ⊛
511	172	Cu. Yds.	Class S concrete, superstructure	172			
511	746	Cu. Yds.	Class C concrete, abutments above footings		746		
511	242	Cu. Yds.	Class C concrete, wingwalls above footings			242	
511	731	Cu. Yds.	Class C concrete, footings		479	252	
511	24	Cu. Yds.	Class C concrete, struts				24 ⊛
512	259	Lin. Ft.	Premolded sealing strip as per plan		226	33	
512	30	Sq. Yds.	Type B waterproofing			30	
513	235,900	Lbs.	Structural steel (see proposal note)	235,900			
514	235,900	Lbs.	Field painting of new structural steel, system A	235,900			
516	321	Sq. Ft.	1" preformed expansion joint filler		321		
518	661	Cu. Yds.	Porous backfill		484	177	
518	565	Lin. Ft.	6" perforated, helical corrugated steel pipe, 707.01				565
518	53	Lin. Ft.	6" non-perforated, helical corrugated steel pipe including specials, 707.01				53
625			For 625 Lighting Quantities, See Sheet No. 363.				
845	535	Sq. Yds.	Latex Modified Concrete Overlay (1½" thick) as per plan (see proposal note)	535			

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

346
443

BELMONT COUNTY
BEL-7-11.89

PREMOLDED SEALING STRIP AS PER PLAN
In lieu of premolded sealing strip, Type B Waterproofing (36" wide) may be used and shall be paid for by the linear ft. at the same unit price bid for Item 512 premolded sealing strip as per plan.

Quantities indicated thus ⊛ are for struts between abutment footings.

MONOLITHIC WEARING SURFACE thickness is assumed to be 1".

ITEM 845 - Latex Modified Concrete overlay (1½" thick) as per plan
Supplemental specification 845 shall be modified as follows: the bridge deck shall be overlaid with 1½" of latex modified concrete instead of 1¼". Scarification of the 511 deck concrete shall not be done. All references to bridge deck repair as well as to Item 845 Latex Modified Concrete overlay (Variable thickness) and to Item 845 full-depth repair do not apply.

LONGITUDINAL JOINTS in the latex modified concrete overlay are permitted only to the extent necessary to accommodate the width of the finishing machine and to permit maintenance of vehicular traffic. Except as approved by the Director, joints shall not be used adjacent to raised curbs, barriers or edges of decks.

GENERAL NOTES

REFERENCE shall be made to Standard Drawings
SD-1-69 sheets 1 and 2 dated 6-12-69,
RB-1-55 revised 2-2-59, HL-7 dated 1-21-76, HL-5 dated 9-6-73, HL-6 dated 3-22-77
AS-1-72 dated 6-30-72
and to Supplemental Specifications
953 dated 8-21-80 845 dated 3-2-81
and 836 dated 3-12-75.

DESIGN SPECIFICATIONS: This structure conforms to "Standard Specifications for Highway Bridges" adopted by the American Association of State Highway Officials, 1969, including the Ohio "Supplement" to these specifications.

DESIGN DATA:

Design Loading - HS 20-44 and the Alternate Military Loading

Concrete Class S - unit stress 1,200 p.s.i. for superstructure
Class C - unit stress 1,333 p.s.i. for substructure

Structural Steel - ASTM A36 - unit stress 20,000 p.s.i.
Reinforcing Steel - ASTM A615, A616 or A617 - unit stress 20,000 p.s.i.

UTILITY LINES: All expense involved in relocating the affected utility lines shall be borne by the Owners. The Contractor and Owners are requested to cooperate by arranging their work in such a manner that inconvenience to either would be held to a minimum.

EMBANKMENT CONSTRUCTION: The embankment behind the rear abutment shall be constructed to Elevation 659.00 and to a minimum Elevation of 665.3 in the vicinity of N.E. Wingwall prior to driving any wingwall or abutment piles. Before the abutment backwall is constructed the embankment shall be constructed up to the level of the subgrade with a 1:1 slope from the bridge seat to the plane of the subgrade, within the roadway area and extend laterally to the intersection of porous backfill back of the wingwalls.

POROUS BACKFILL 2'-0" thick full length of abutment and wings, and shall extend from the bottom of the 6" ⌀ perforated, helical corrugated metal pipe up to the subgrade, paved shoulder, bottom of approach slab, or two feet below ground line along wingwalls.

PILES shall be driven to bedrock. The bearing capacity shall be considered obtained by refusal on hard bedrock or by penetrating soft bedrock for several inches with a minimum resistance of 20 blows per inch. The design load is 42 tons per pile.

MINIMUM BAR LAP shall be 30 diameters.

APPROACH SLABS shall be as shown on Std. Dwg. AS-1-72 except jacking holes shall be omitted and top steel shall have 3" minimum cover instead of 2".

DECK PROTECTION METHOD: 1½" Latex Modified Concrete.

CURING, SUPERSTRUCTURE CONCRETE: All Superstructure Concrete, the surface of which is to be overlaid with Latex Concrete, shall be cured using Method (a) Water Curing 511.14. (Not Suppl. Spec. 836)

7-15-81
Revised 8-23-79
3/18

STICKLEN - BELSHEIM & ASSOCIATES
ENGINEERS
WORTHINGTON OHIO

ESTIMATED QUANTITIES & GENERAL NOTES
BRIDGE No. BEL-7-1366
OVER
RAMP "B"
STA. 723+61.13
724+32.67
BELMONT CO.

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
DCH 6-25-70	R.D.Y.		VLA 6-29-70	DCH	9/11/70	11/14 5/23/79

DCH 11-74

MICROFILMED
OCT 3 1 1984

FHWD REGION	STATE	PROJECT	FISCAL YEAR
5	OHIO		

347/443

BELMONT COUNTY
BEL-7-11.89
See Detail S-S Sheet No. 270/443 for median parapet details.

PLAN

A701 ~ 169 Spa. @ 1'-0"
71'-5 3/4"
Skew = 59° 56' 39.7" (Beams placed parallel to Reference Line)
℄ Rear Abut Brg. Sta. 723+65.81
MATCH LINE A,-A, End Appr. Slab Sta. 723+61.13
Typical toe reinforcement between pile groups
℄ Piles, Row No. 3
℄ S.R. 7
Backwall Elevations shown are at this point
1'-8 1/2"
13'-0"
1'-6"
6'-6"
3'-6"
1'-6"
A1101
A1102
A1101
6"
1'-1"
5'-6"
℄ Beam (Typical)
1'-6" 1'-6" (Typ. except as shown)
℄ Piles, Row No. 2
℄ Piles, Row No. 1
Reference Line
1'-0"
3'-4 1/2"
16 Spa. @ 5'-1" % Piles ~ Row No. 1 & No. 2, 8 Spa. @ 10'-2" % Piles ~ Row No. 3 = 81'-4"
73'-4 3/8" f/f Curbs
1'-1 1/2"
8'-0"
4 Spa. @ 17'-11 3/8"† % Beams = 71'-10 9/16"
3'-9 1/16"
83'-8 1/2"

For additional notes and details pertaining to Lighting see Sheets 366/443 & 367/443.

See Detail "A" Sht. No. 8/18 for additional details and reinforcing for abutment and parapet

2" Conduit (embeded conduit shall clear face off wall by 3" minimum.)

MATCH LINE A1-A1

NOTE: See Sheet No. 5/18 for Section G-G. See Sheet No. 7/18 for Detail H and Sheet No. 6/18 for Contraction Joint.

LEGEND
n.s. = near side
f.s. = far side
⊛ = Elevations at top of steel

D801 ~ 47 Spa. @ 1'-6" = 70'-6"
A605 thru A608
76 Spa. @ 1'-0"(±)

Elev. 685.86⊛
Elev. 684.90⊛
1'-5" (Typ.)
Elev. 684.76⊛
E
Top of 2" edge bar
A505 (f.s.)
A502 (f.s.)
Appr. Slab Seat
Elev. 681.03
2-A505
3-A505
Elev. 680.80
3-A502
Elev. 680.55
2-A502
A503
Elev. 680.32
Constr. Jt. 3" Typ.
Elev. 680.08
structure ground
Expan. fitting
5-A504
A503
5-A502
A503 ~ 14 Spa. @ 2'-0"
A503 ~ 13 Spa. @ 2'-0"
Luminaire
A1004 (f.s.) ~ 14 Spa. @ 2'-0"
A501 (n.s.) & A1004 (f.s.)
A1003 (f.s.) ~ 13 Spa. @ 2'-0"
A1004 (f.s.) ~ 13 Spa. @ 2'-0"
A501 (n.s.) & A1004 (f.s.)
A1003 (f.s.) ~ 13 Spa. @ 2'-0"
2-A504
8 Spa. @ 2'-0 1/2"
29'-5"
28'-0" % Contraction Jts.
2-A502 ~ 8 Spa. @ 2'-0 1/2"
A1002 (f.s.) ~ 28 Spa. @ 1'-0"
A1002 (f.s.) ~ 26 Spa. @ 1'-0"
A501 (n.s.) ~ 14 Spa. @ 2'-0"
A501 (n.s.) ~ 13 Spa. @ 2'-0"
28'-0"
Panel Reinf. some as adjacent panel except as shown
1" Expansion Jt.
6" ϕ Perf. Helical C.S.P.
F.L. 662.61
6-A601
Constr. Jt.
6-A601
F.L. 664.37
A701
*5-A602
A1101 (f.s.)
9-A601
*5-A602
*9-A901
9-A601
A1101
6-A601
A1101
*5-A602
9-A601
A1102
Elev. 659.00
A1001 (f.s.) ~ 29 Spa. @ 1'-0"
A1001 (f.s.) ~ 27 Spa. @ 1'-0"
E

ELEVATION

SECTION E-E

Backwall Elevations shown are at this point
2'-2" 1'-3" 6"
1'-1" 1'-1"
Final grade
A608
℄ Bearing
optional const. jt.
D801
A607
A502
Detail H
A503
A606
2"conduit
2'-0" Min.
A605
See Note "A"
135°
Include with abutment concrete for payment.
A1004
A1003
See Note "B"
A502
A501
2'-0" Porous Backfill
5'-6"
2'-6"
5'-0"
6 ϕ Perf. Helical C.S.P.
A1002
1'-0"
A701 @ 12"
A1001
A601
*A602
3"Cl.
3'-0"
3"Cl.
1'-3"
2'-9"
A1101
A1102
A601
1'-6"
3'-6"
6'-6"
1'-6"
13'-0"
* Center under Joints

For structure grounding details see std. dwg. HL-7
For details of electrical expansion fittings for conduit see std. dwg. HL-5

NOTE "A" ~ 4" ϕ Cast Iron or galvanized steel pipe, 6'-6" long, located where marked thus on abutment plan.

NOTE "B" ~ 8" ϕ Perforated Corrugated Steel Pipe, 6'-0" long, with galvanized metal cap fitting the 4" pipe and covering the upper end of the 8" pipe.

4/18

STICKLEN - BELSHEIM & ASSOCIATES ENGINEERS
WORTHINGTON OHIO

REAR ABUTMENT DETAILS

BRIDGE No. BEL-7-1366 OVER RAMP "B"
STA. 723+61.13
724+32.67
BELMONT CO.

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
D.G.H.	D.G.H.	R.D.Y.	V.L.A.	D.G.H.	9/1/10	11/96

MICROFILMED
OCT 3 1 1984

FHWA REGION	STATE	PROJECT	FISCAL YEAR
5	OHIO		

348/443

BELMONT COUNTY

BEL-7-11.89

MATCH LINE A,-A,

A701 ~ 169 Spa. @ 1'-0" (Adjust to clear bottom of catch basin recess)

81'-2¼"

End Appr. Slab Sta. 723+61.13

See Detail S-S Sheet No. 270/443 for median parapet details.

BEARING ANCHORS: At the option of the Contractor, bearing anchors (or formed holes), located and supported by templates, may be cast in place.

10 5/8"

℄ Rear Abut. Brg. Sta. 723+65.81

1'-8½"

℄ S.R. 7

Skew = 59°-56'-39.7" Beams placed parallel to Reference Line.

℄ Piles, Row No. 3

1'-3"

1'-1"

℄ Piles, Row No. 2

℄ Bearing

℄ Beam (typ.)

5'-6"

4"

1'-7"

5-A528

A1101

1'-6"

6'-6"

3'-6"

13'-0"

℄ Piles, Row No. 1

℄ Catch Basin

30'-11½"

Reference Line

4'-1"

1'-0"

3'-4½"

16 Spa. @ 5'-1" ℄ Piles ~ Row No.1 & No.2, 8 Spa. @ 10'-2" ℄ Piles ~ Row No. 3 = 81'-4"

4'-10 3/4"

74'-1⅞" f/f Curbs

3'-9 15/16"

4 Spa. @ 17'-11 5/8"(±) ℄ Beams = 71'-10 9/16"

10'-0"

85'-8½"

PLAN

MATCH LINE A,-A,

D801 ~ 52 Spa. @ 1'-6" = 78'-0"

A605 thru A608 ~ 78 Spa. @ 1'-0"(±)

A503 ~ 13 Spa. @ 2'-0"

A503 ~ 15 Spa. @ 2'-0"

A503 ~ 11 Spa. @ 2'-0"

Elev. 684.76*

Top of 2" edge bar

A502 (f.s.)

Appr. Slab Seat

1'-5" (Typ.)

A511 (f.s.)

3-A513

Elev. 682.62*

A513 (f.s.)

Elev. 679.92

3-A502

2-A502

Elev. 679.40

Elev. 678.88

3-A511

2-A511

Elev. 678.36

2-A513

Elev. 677.84

A503

5-A502

5-A511

3" Typ.

5-A513

Constr. Jt.

Junction Box

2" conduit (embeded conduit shall clear face of wall by 3" minimum.) premolded sealing strip as per plan in 13"x3" recess. (top of footing to appr. slab seat)

1¼" ℄ Flexible Conduit (1'-6" long)

28'-0"

32'-0" ℄ Contraction Joints

24'-0"

A506 (n.s.) & A1005 (f.s.)

A1005 (f.s.) ~ 13 Spa. @ 2'-0"

A1006 (f.s.) ~ 15 Spa. @ 2'-0"

A1006 (f.s.) ~ 11 Spa. @ 2'-0"

A1003 (f.s.) ~ 13 Spa. @ 2'-0"

A1003 (f.s.) ~ 15 Spa. @ 2'-0"

A1003 (f.s.) ~ 11 Spa. @ 2'-0"

A1002 (f.s.) ~ 26 Spa. @ 1'-0"

A1002 (f.s.) ~ 30 Spa. @ 1'-0"

A507 (n.s.)

A1002 (f.s.) ~ 22 Spa. @ 1'-0"

A506 (n.s.) ~ 13 Spa. @ 2'-0"

A507 (n.s.) ~ 10 Spa. @ 2'-0"

5 Spa. @ 2'-0"

A507 (n.s.) ~ 11 Spa. @ 2'-0"

A508 (n.s.)

A512 (n.s.)

A507 (n.s.) & A1006 (f.s.)

2-A502 7 Spa. @ 2'-0"

2-A513 7 Spa. @ 2'-0"

Expansion Joint

Constr. Joint

A510 (n.s.), A511 (f.s.)

3'-0"

4'-9"

5-A528

5-A601 & 1-A603

Expansion fitting

F.L. 664.37

6-A601

1'-2"

F.L. 662.94

6" ℄ Perf. Helical C.S.P.

*5-A602

*5-A602

A1001 (f.s.)

45°

*5-A602

*9-A901

A1001 (f.s.)

9-A601

9-A604

4'-6"

3'-9"

1'-2"

9-A601

A1101

Elev. 659.00

A1001 (f.s.) ~ 27 Spa. @ 1'-0"

A1001 (f.s.) ~ 31 Spa. @ 1'-0"

A1001 (f.s.) ~ 23 Spa. @ 1'-0"

ELEVATION

NOTE: Reference shall be made to Backwall Concrete Note Sheet No. 6/18.

LEGEND
n.s. = near side
f.s. = far side
* = Center under joints
* Elevations at top of steel

59°-56'-39.7"

℄ Beam

℄ Rear Abut. Brg.

3" 5/16

8 11/16"

1"

7"

ANCHOR BOLT LAYOUT
B-125 BEARINGS

SPECIAL CARE shall be taken in placing reinforcing steel in the vicinity of the Rear Abutment bearing area so as to avoid interference with the drilling of bearing anchor holes or the pre-setting of bearing anchors.

NOTES:
See Sheet No. 4/18 for typical section thru abutment (except for reinforcing bar marks).
See Sheet No. 6/18 for Abutment Contraction Joint detail and Sheet 244/427 for additional Catch Basin Details.
See Sheet No. 4/18 for typical toe reinforcing between pile groups.
See Detail "B", Sheet No. 8/18 for additional details and reinforcing for abutment and parapet.

2'-6" or 3'-11"

1" Preformed expansion joint filler

face of abutment

SECTION G-G

5/18

STICKLEN-BELSHEIM & ASSOCIATES
ENGINEERS
WORTHINGTON OHIO

REAR ABUTMENT DETAILS

BRIDGE No. BEL-7-1366 OVER RAMP "B"

STA. 723+61.13
724+32.67

BELMONT CO.

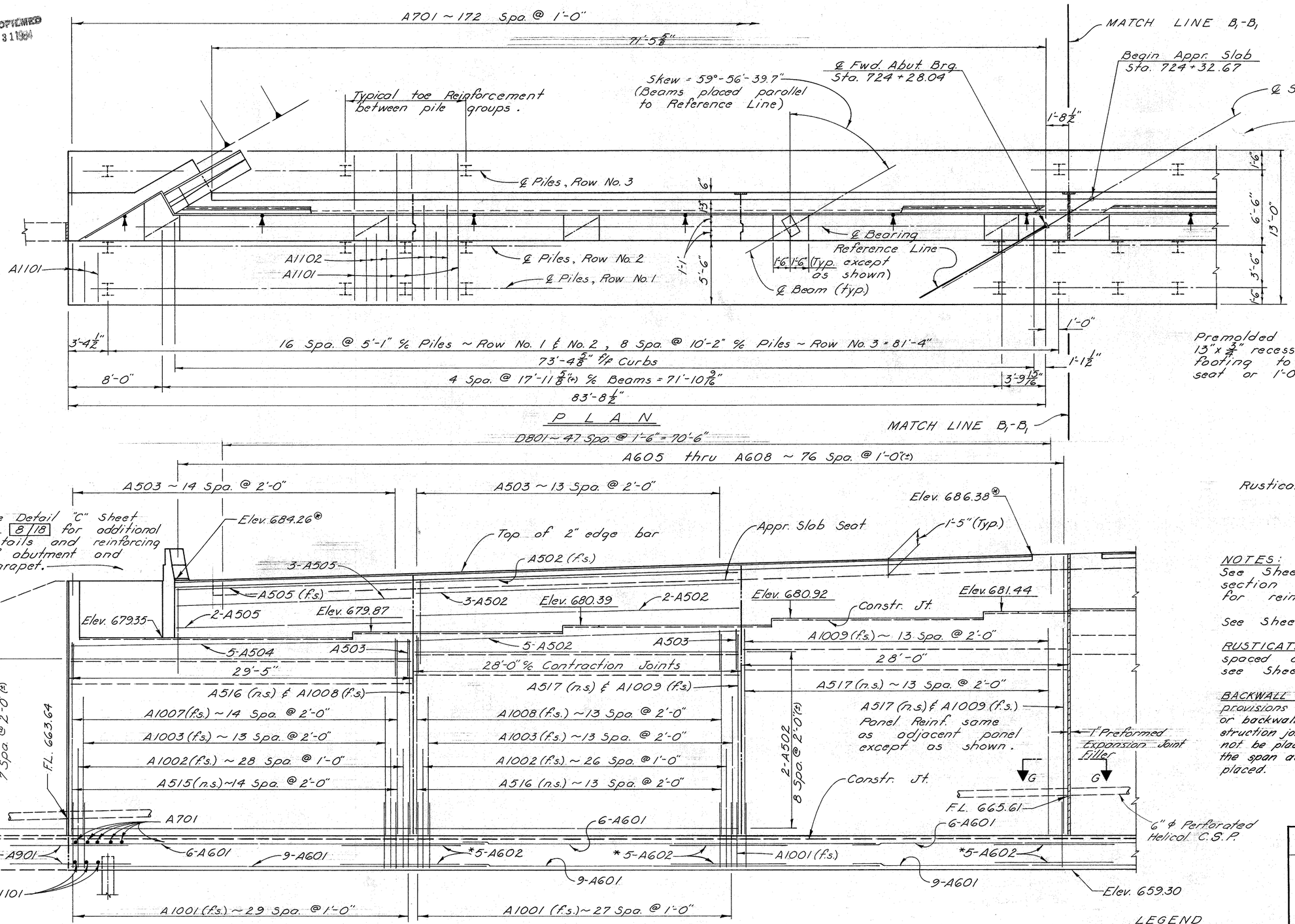
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
D.G.H.	D.G.H.	R.D.Y.	V.L.A.	D.G.H.	9/1/10	11/96

MICROFILMED
OCT 3 1 1994

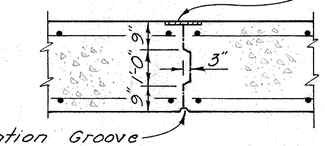
FHWA REGION	STATE	PROJECT	FISCAL YEAR
5	OH10		

349/443

BELMONT COUNTY
BEL-7-11.89



Premolded sealing strip as per plan in 13"x 3/4" recess, from top of footing to bottom of appr. slab seat or 1'-0" below top of wall.



ABUTMENT CONTRACTION JOINT

NOTES:
See Sheet No. 4/18 for typical section thru abutment (except for reinforcing bar marks.)

See Sheet No. 5/18 for Section G-G.

RUSTICATION GROOVES shall be spaced at 4'-0" %. For detail see Sheet No. 13/18.

BACKWALL CONCRETE: In addition to the provisions of 511.08, backwall concrete or backwall concrete above the optional construction joint at the approach slab seat shall not be placed until after deck concrete in the span adjacent to the backwall has been placed.

* Elevations at top of steel

LEGEND
n.s. = near side
f.s. = far side
* = Center under joints

6/18

STICKLEN-BELSHEIM & ASSOCIATES
ENGINEERS
WORTHINGTON OHIO

FORWARD ABUTMENT DETAILS

BRIDGE No. BEL-7-1366
OVER
RAMP "B"
STA. 723+61.13
724+32.67
BELMONT CO.

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
DGA	DGA	R.D.Y.	VLA	DGA	3/4/10	11/96

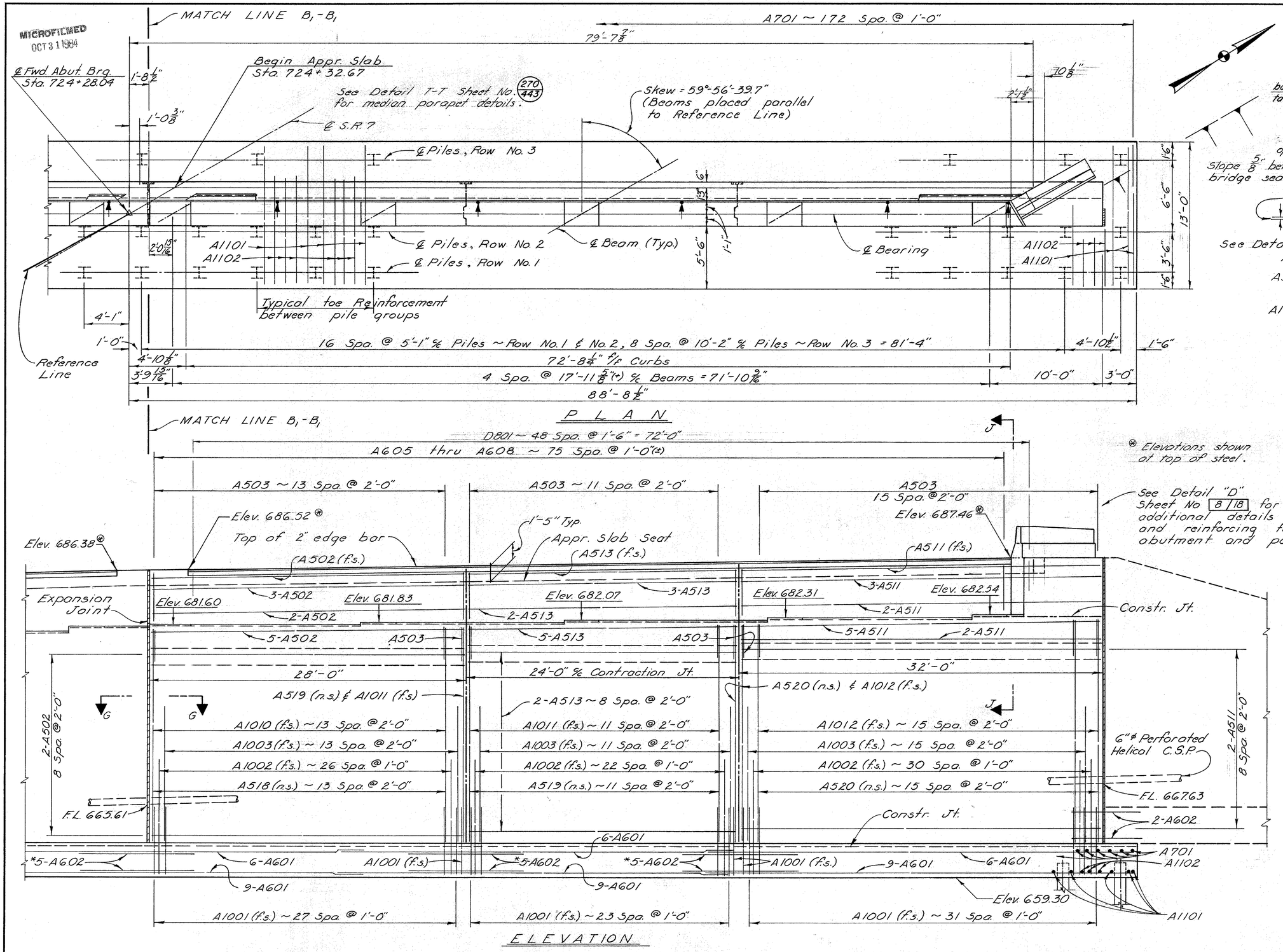
44-11 K28

MICROFILMED
OCT 31 1984

FHWA REGION	STATE	PROJECT	FISCAL YEAR
5	OHIO		

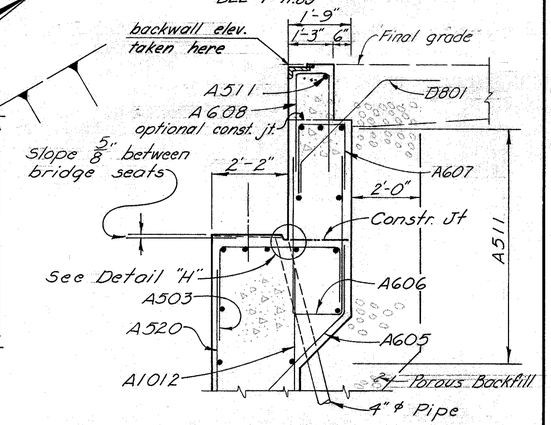
350/443

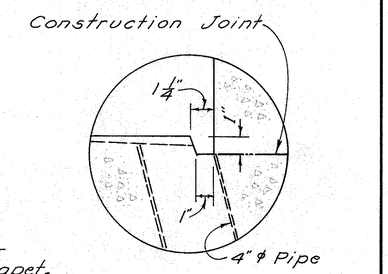
BELMONT COUNTY
BEL-7-11.89



⊛ Elevations shown at top of steel.

See Detail "D" Sheet No. 8/18 for additional details and reinforcing for abutment and parapet.





NOTE:
See Sheet No. 4/18 for typical section thru abutment (except for reinforcing bar marks.)

See Sheet No. 5/18 for Section G-G.

See Sheet No. 6/18 for Abutment Contraction Joint Detail.

LEGEND
n.s. = near side
f.s. = far side
* = Centered under joints

7/18

STICKLEN-BELSHEIM & ASSOCIATES
ENGINEERS
WORTHINGTON OHIO

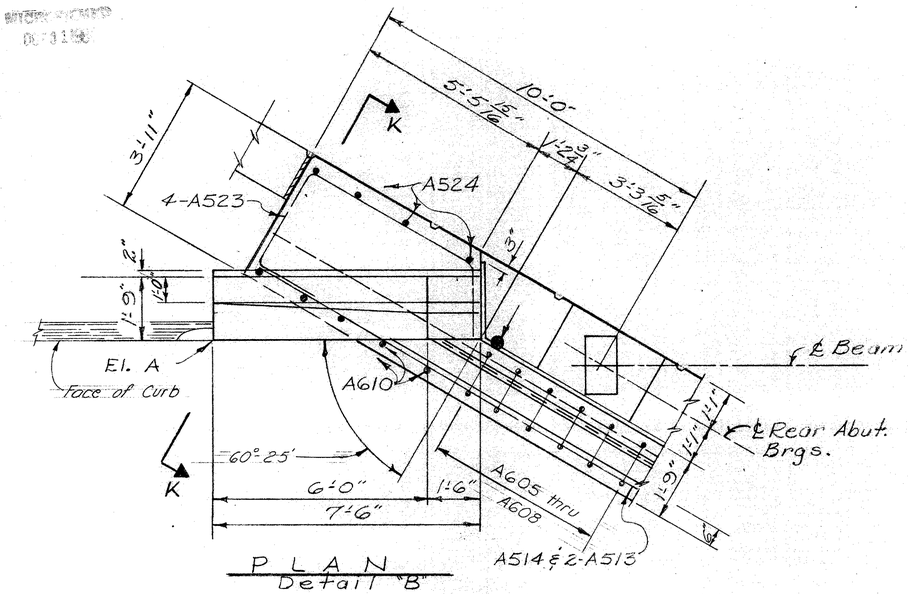
FORWARD ABUTMENT DETAILS
BRIDGE No. BEL-7-1366
OVER
RAMP "B"
STA. 723+61.13
724+32.67
BELMONT CO.

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
DCH	DCH	R.D.Y.	VLA	DCH	8/4/80	11/76

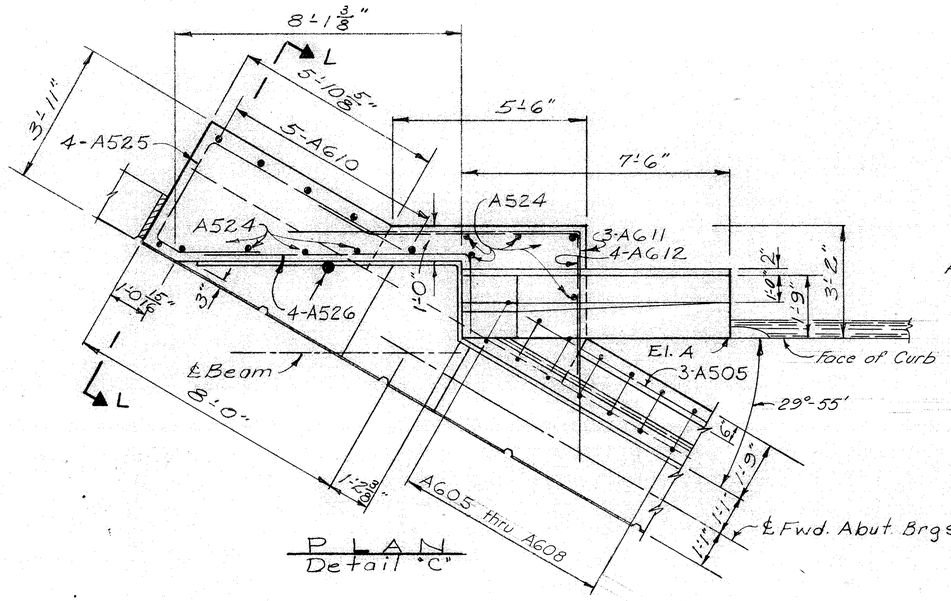
FHWA REGION	STATE	PROJECT	
5	OHIO		

351/443

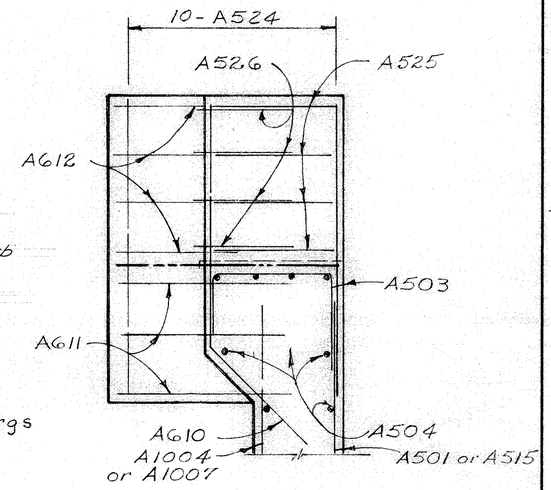
BELMONT COUNTY
BEL-7-11.89



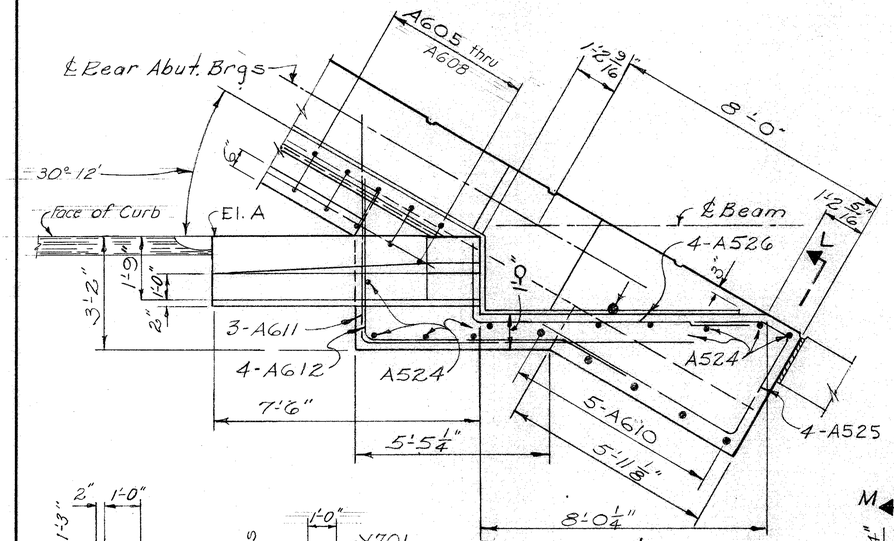
PLAN
Detail "B"



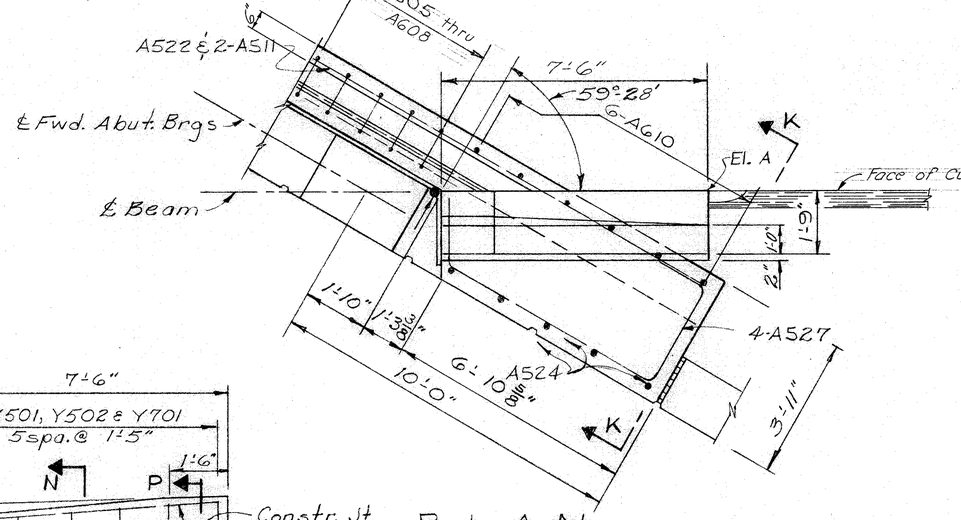
PLAN
Detail "C"



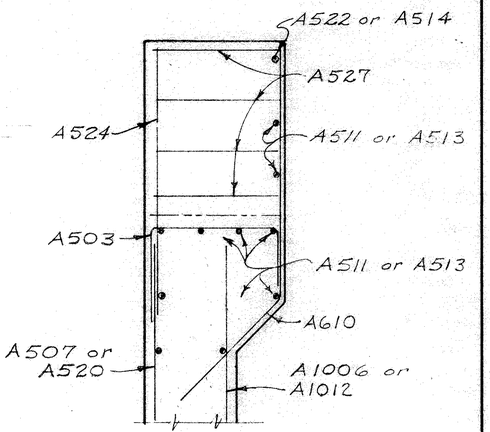
SECTION L-L



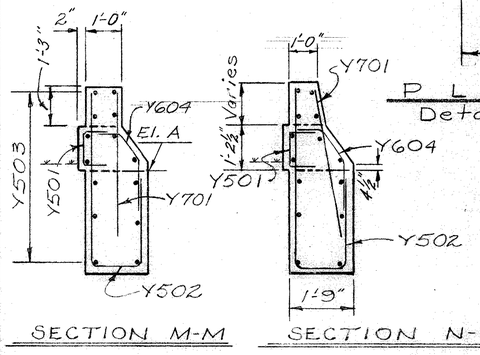
PLAN
Detail "A"



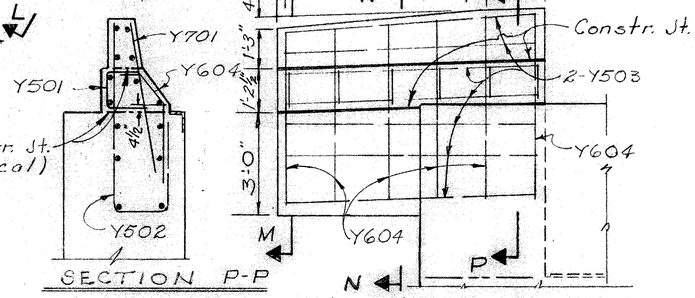
PLAN
Detail "D"



SECTION K-K



SECTION M-M SECTION N-N



SECTION P-P

RAILING ELEVATION

	El. A
Detail A	685.56
Detail B	682.31
Detail C	684.32
Detail D	687.52

8/18

STICKLEN - BELSHEIM & ASSOCIATES
ENGINEERS
WORTHINGTON OHIO

ABUTMENT DETAILS

BRIDGE No. BEL-7-1366
OVER
RAMP "B"
STA. 723+61.13
724+32.67
BELMONT CO.

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
DCH	DGA		VLA	DGA	4/5/90	8/94

DGA-11/94

FHWA REGION	STATE	PROJECT	
5	OHIO		

352/443

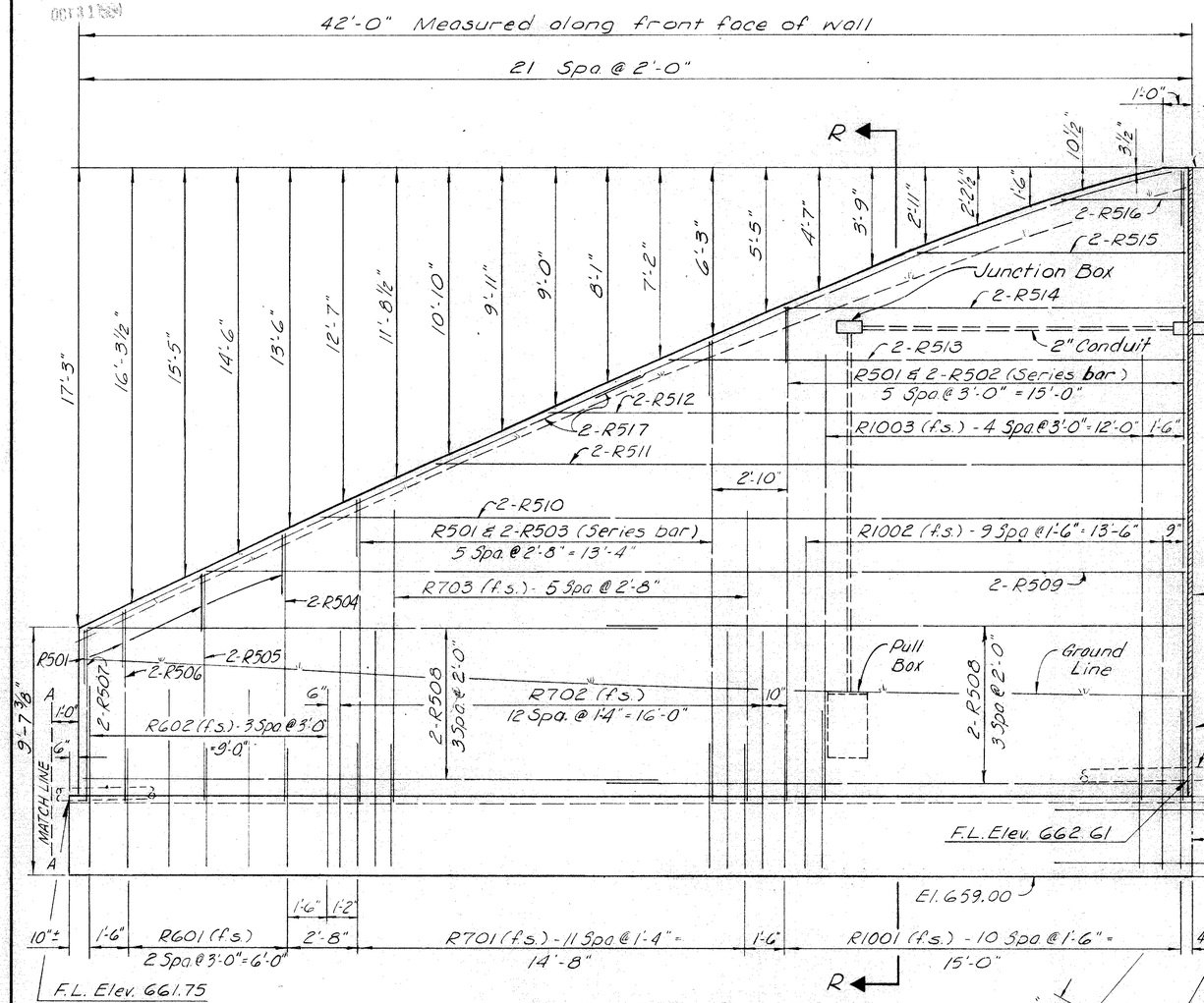
BELMONT COUNTY

BEL-7-11.89

RECOMMENDED OCT 31 1989

42'-0" Measured along front face of wall

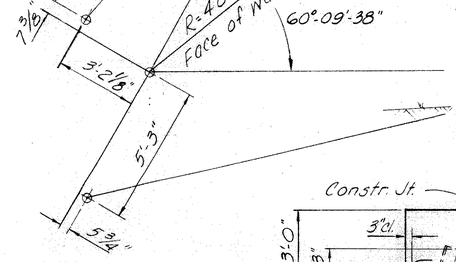
21 Spa @ 2'-0"

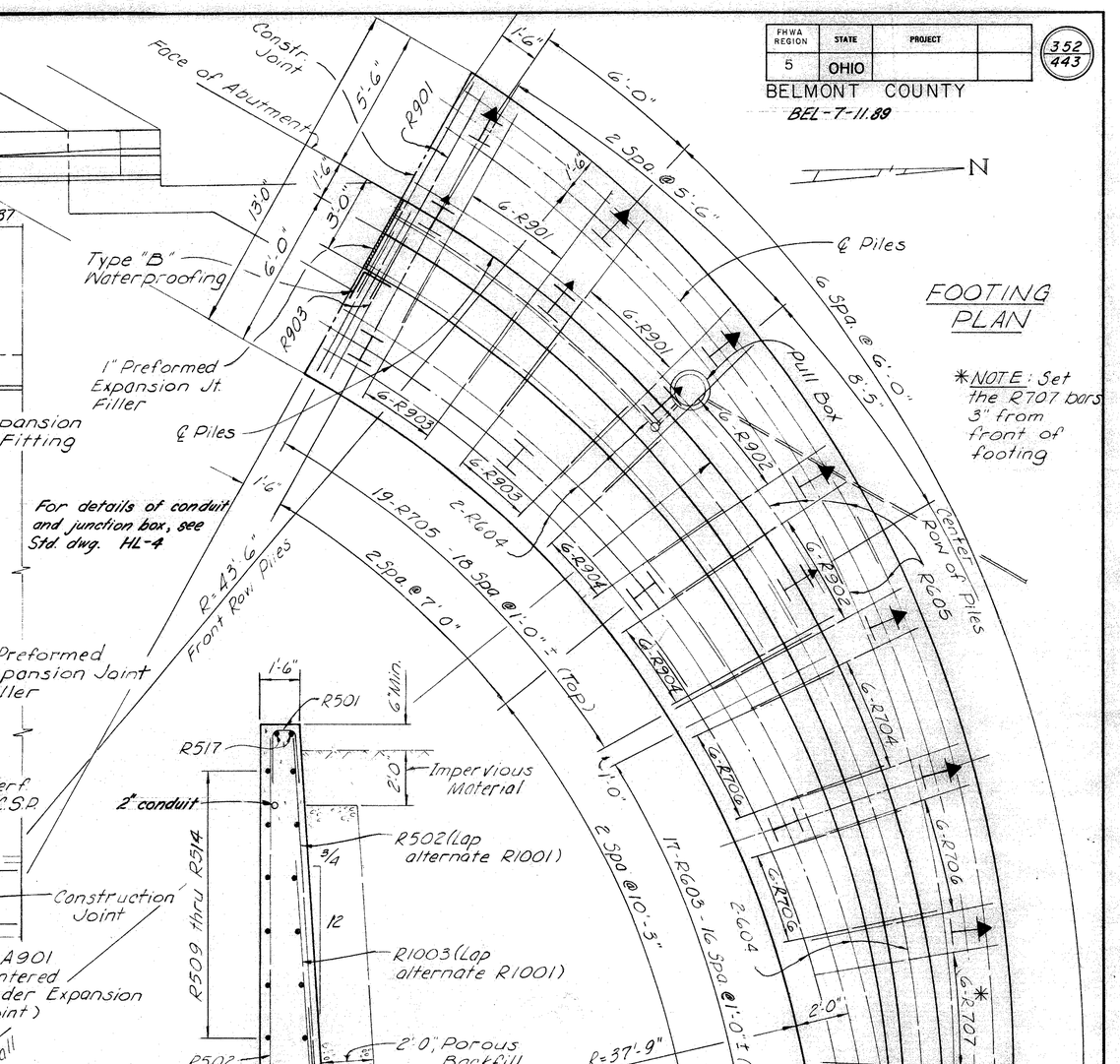


DEVELOPED ELEVATION

(Piles and Footing Reinforcing Not Shown)

For details of conduit and junction box, see Std. dwg. HL-4





FOOTING PLAN

*NOTE: Set the R707 bars 3" from front of footing

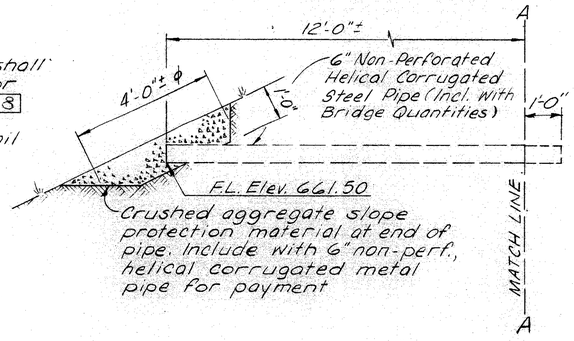
SECTION R-R

NOTE: Bend the Horizontal Reinforcing Bars in field to fit (Include with reinforcing for payment)

NOTES:

RUSTICATION GROOVES shall be spaced at 4'-0" %, For detail see Sheet No. 13|18

For Expansion Joint detail see Sheet No. 13|18



LEGEND

f.s. = far side
n.s = near side
= Piles battered 1:4
= Piles battered 1:3
= Vertical Piles

9/18

STICKLEN - BELSHEIM & ASSOCIATES ENGINEERS
WORTHINGTON OHIO

SOUTH EAST WINGWALL DETAILS

BRIDGE No. BEL-7-1366
OVER
RAMP "B"

STA 723+61.13
724+32.67

BELMONT CO

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
DLH	JC		VLA	DLH	6/22/90	11/96

E0671

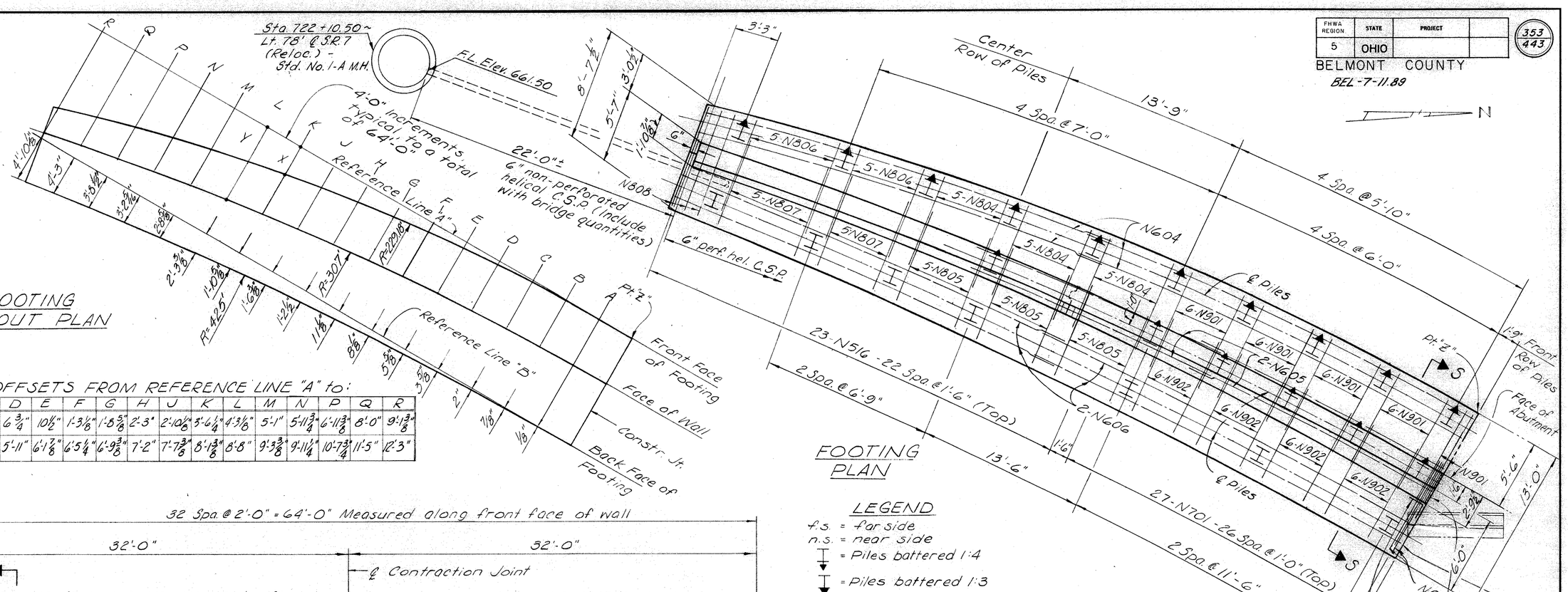
FHWA REGION	STATE	PROJECT	
5	OHIO		

353 / 443

BELMONT COUNTY

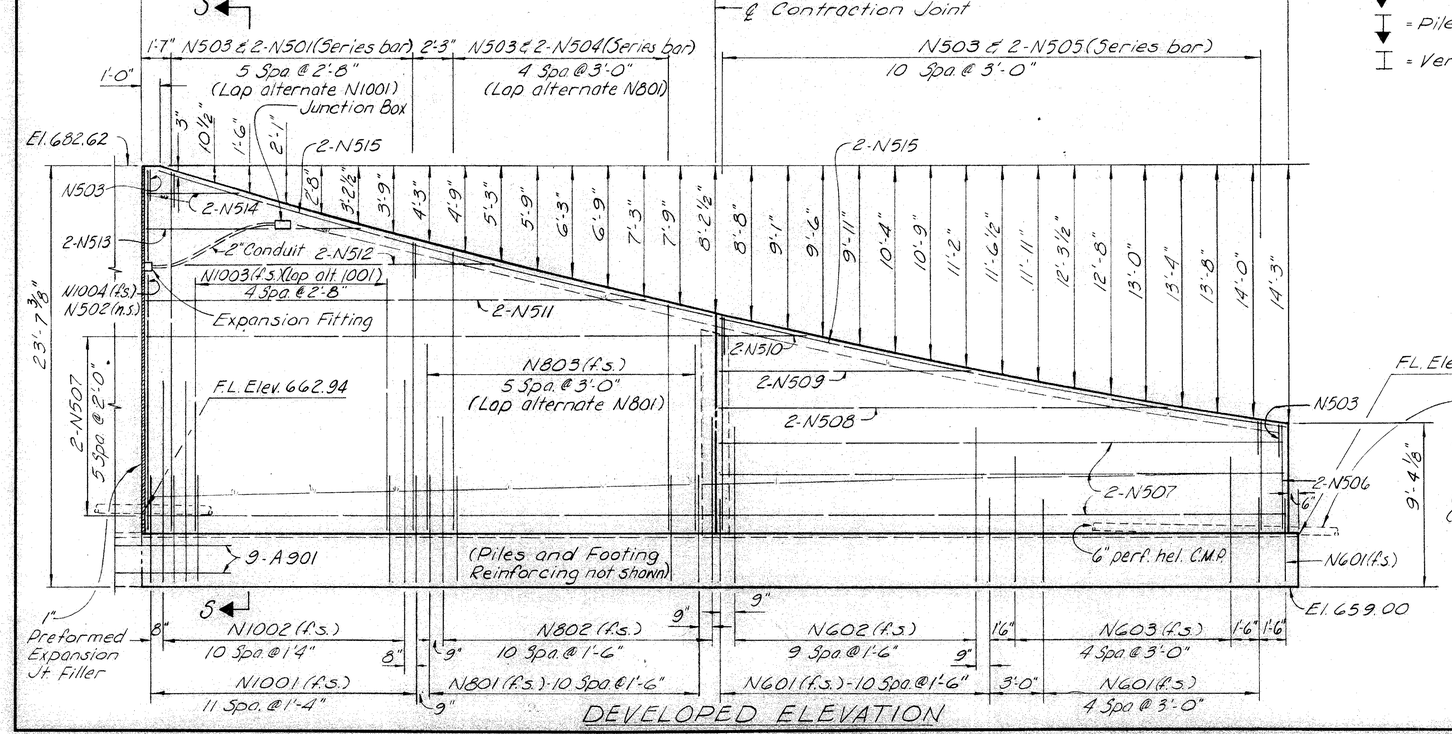
BEL-7-11.89

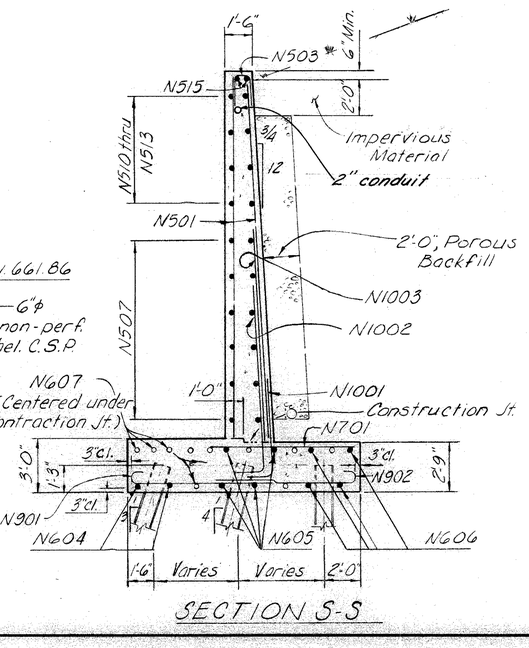
N



OFFSETS FROM REFERENCE LINE "A" to:

	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R
X	3/8"	1 5/8"	3 3/4"	6 3/4"	10 1/2"	1'-3 1/8"	1'-8 5/8"	2'-3"	2'-10 1/8"	3'-6 1/4"	4'-3 1/8"	5'-1"	5'-11 3/4"	6'-11 3/8"	8'-0"	9'-1 3/8"
Y	5'-6 1/4"	5'-7 1/4"	5'-8 7/8"	5'-11"	6'-1 3/8"	6'-5 1/4"	6'-9 3/8"	7'-2"	7'-7 3/8"	8'-1 3/8"	8'-8"	9'-3 3/8"	9'-11 1/4"	10'-7 3/4"	11'-5"	12'-3"





NOTES:

RUSTICATION GROOVES shall be spaced at 4'-0" ℄c. For detail see Sheet No. 13/18

For Expansion Joint detail see Sheet No. 13/18

For Contraction Joint details see Sheet No. 13/18

10/18

STICKLEN - BELSHEIM & ASSOCIATES ENGINEERS

WORTHINGTON OHIO

SOUTH WEST WINGWALL DETAILS

BRIDGE No. BEL-7-1366 OVER RAMP "B"

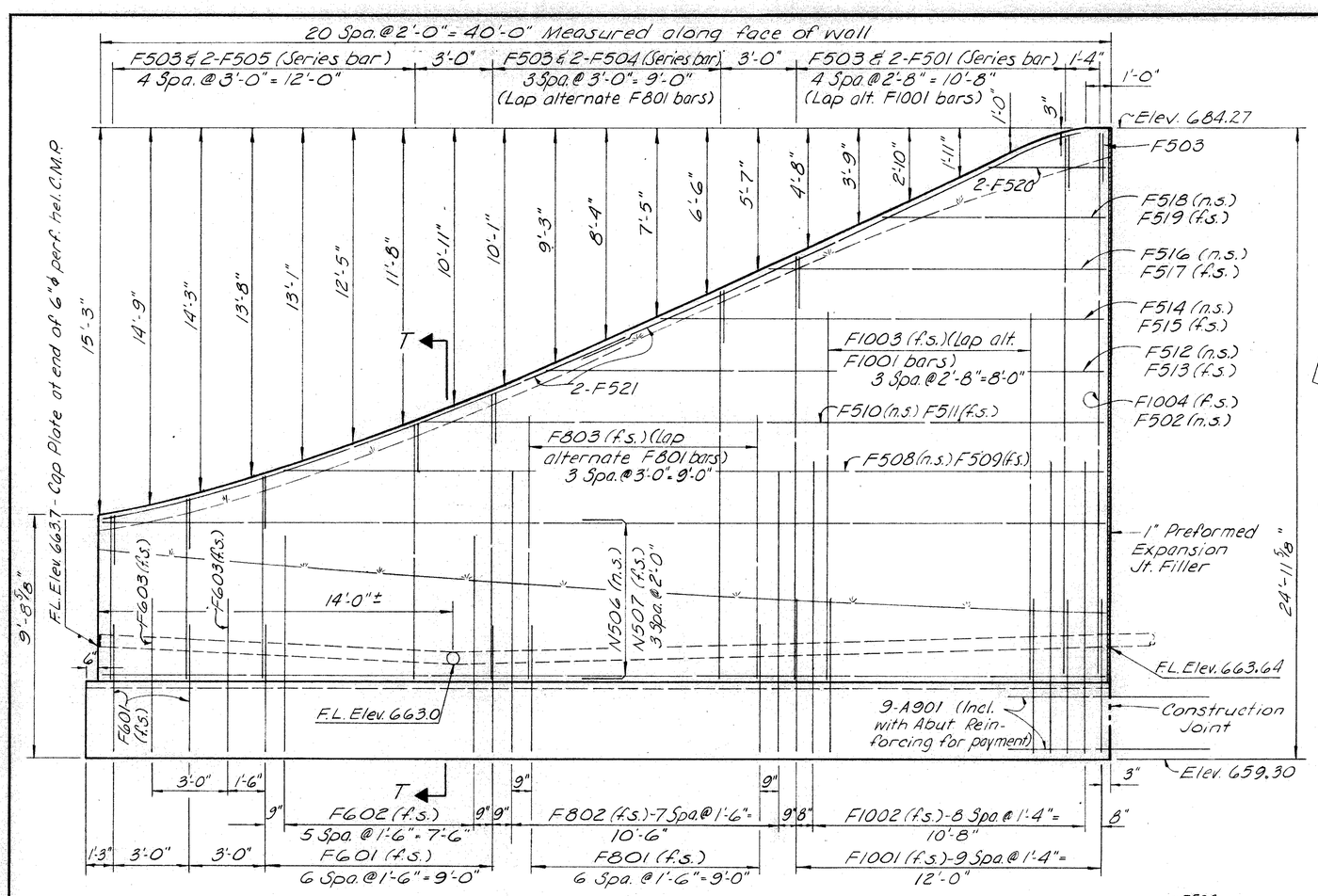
STA. 723+61.13 / 724+32.67

BELMONT CO.

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
DGH	JC		VLA	DGH	6/22/10	8/9/11

E.O.671

BEL-7-11.89



DEVELOPED ELEVATION

(Piles and Footing Reinforcing not shown)

MICROFILMED
OCT 3 1994

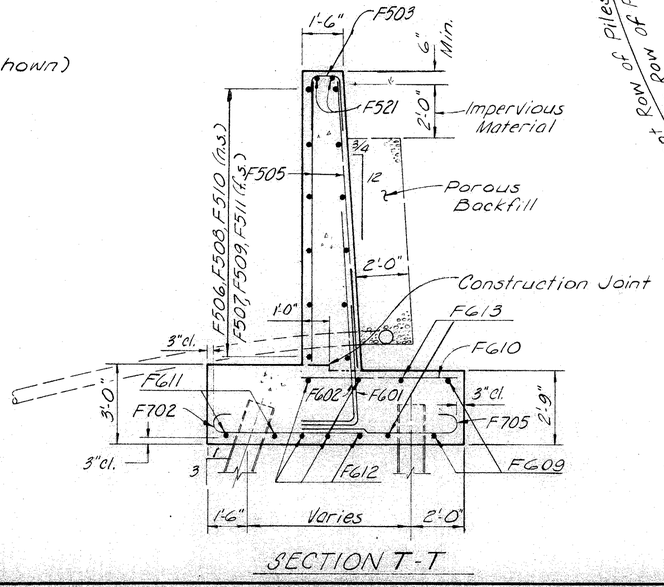
NOTES:

RUSTICATION GROOVES shall be spaced at 4'-0" c/c. For detail see Sheet No. 13|18

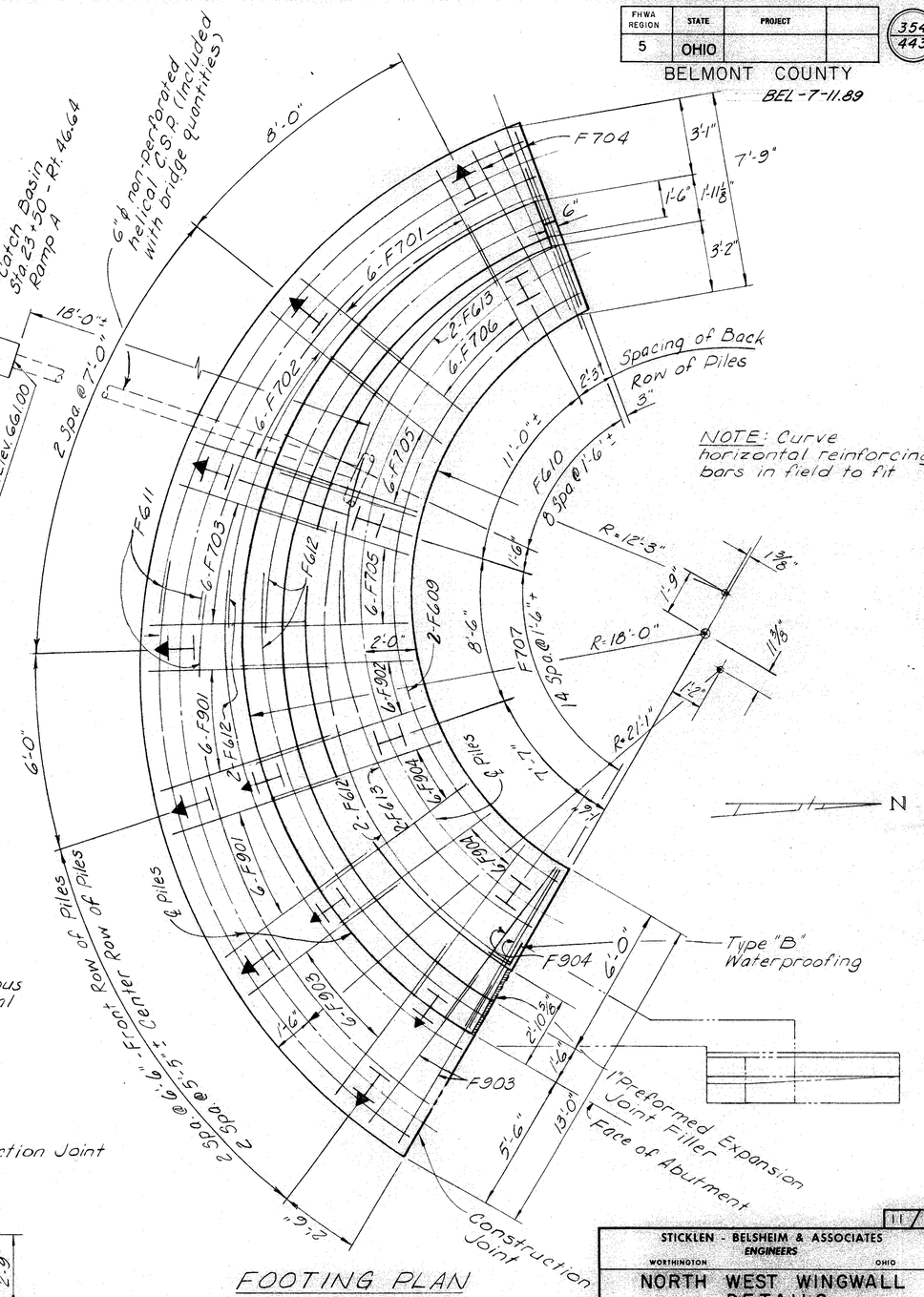
For Expansion Joint Detail see Sheet No. 13|18

LEGEND

f.s. = far side
n.s. = near side
= Piles battered 1:4
= Piles battered 1:3
= Vertical Piles



SECTION T-T



FOOTING PLAN

FHWA REGION	STATE	PROJECT	
5	OHIO		

354
443

BELMONT COUNTY

BEL-7-11.89

11/18

STICKLEN - BELSHEIM & ASSOCIATES
ENGINEERS
WORTHINGTON OHIO

NORTH WEST WINGWALL DETAILS

BRIDGE No. BEL-7-1366
OVER
RAMP "B"

STA. 723+61.13
724+32.67

BELMONT CO.

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
DGN	JC		VLA	DGN	6/22/90	8/14/94

E.O. 671

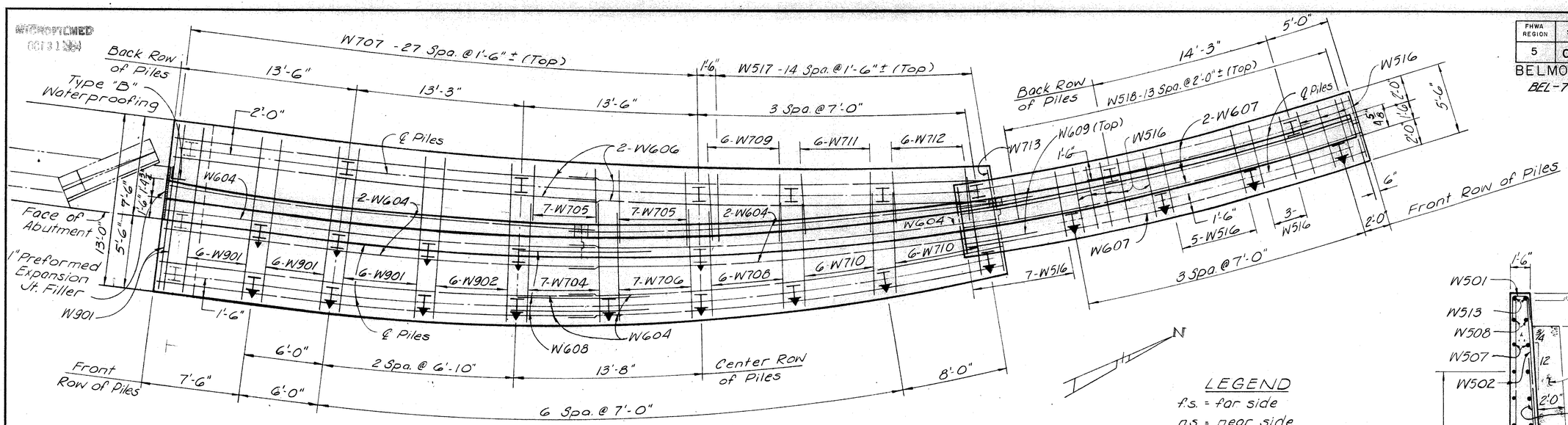
DGN 8-14-94

MICROFILMED
OCT 31 1990

FHWA REGION	STATE	PROJECT	
5	OHIO		

355
443

BELMONT COUNTY
BEL-7-11.89

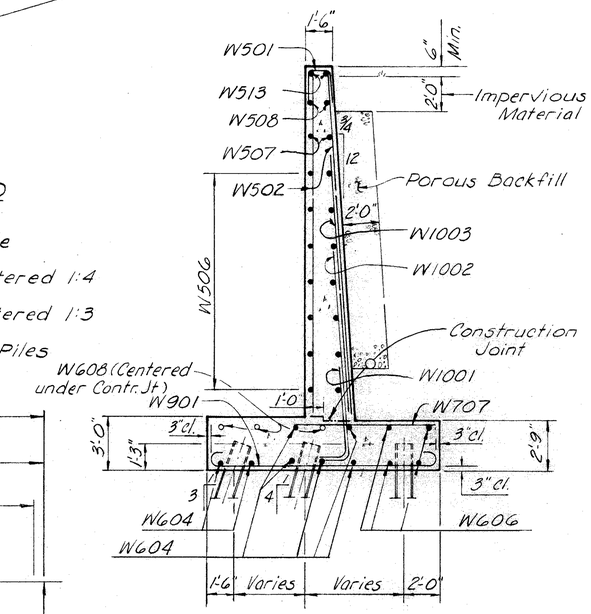


FOOTING PLAN

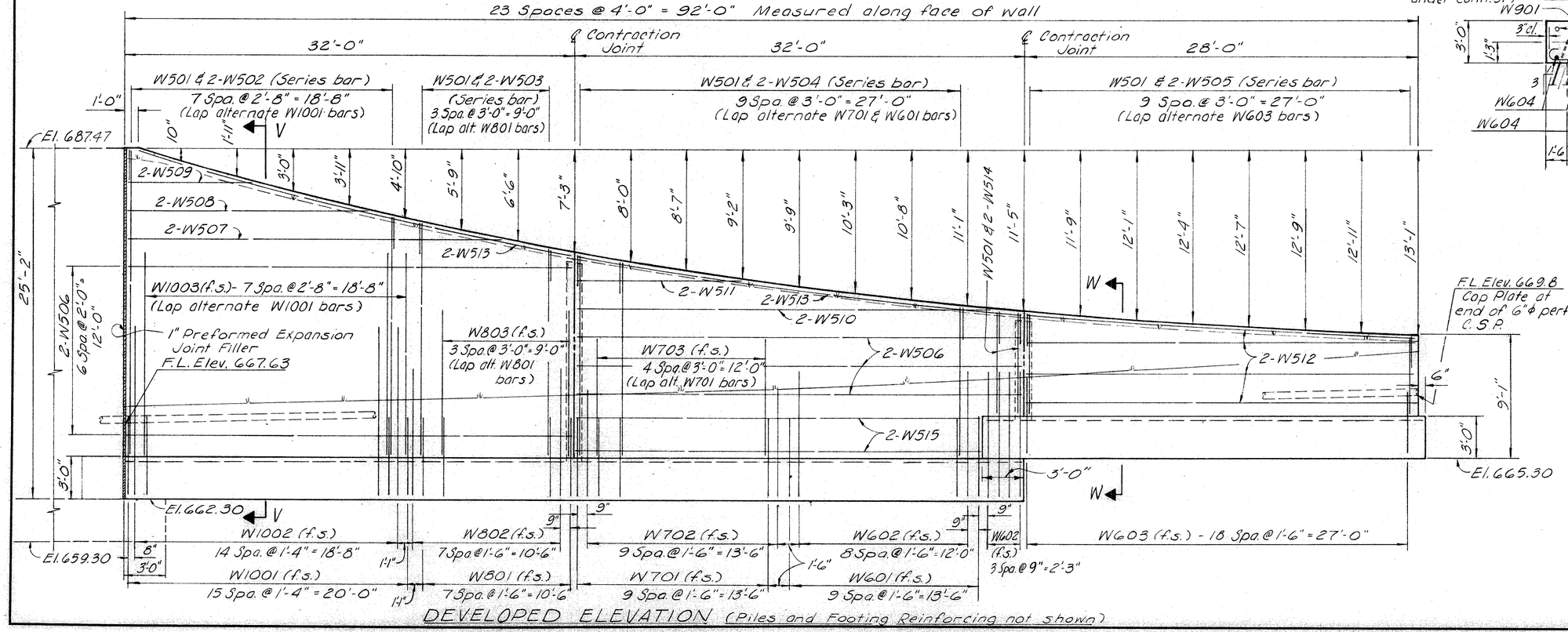
See Sheet No. 13/18 for Footing Layout Plan

N

LEGEND
f.s. = far side
n.s. = near side
= Piles battered 1:4
= Piles battered 1:3
= Vertical Piles



SECTION V-V



DEVELOPED ELEVATION (Piles and Footing Reinforcing not shown)

NOTES:

RUSTICATION GROOVES shall be spaced at 4'-0" c/c. For detail see Sheet No. 13/18

For Section W-W see Sheet No. 13/18

For Expansion Joint Detail "A" see Sheet No. 13/18

For Contraction Joint Detail see Sheet No. 13/18

12/18

STICKLEN - BELSHEIM & ASSOCIATES
ENGINEERS
WORTHINGTON OHIO

NORTH EAST WINGWALL DETAILS

BRIDGE No. BEL-7-1366 OVER RAMP "B"
STA. 723+61.13
BELMONT CO 724+32.67

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
B.G.H.	J.C.		V.L.A.	B.G.H.	6/22/90	8/15/91

B.G.H. 8-12-91 C.M.

E.0.671

FHWA REGION	STATE	PROJECT	
5	OHIO		

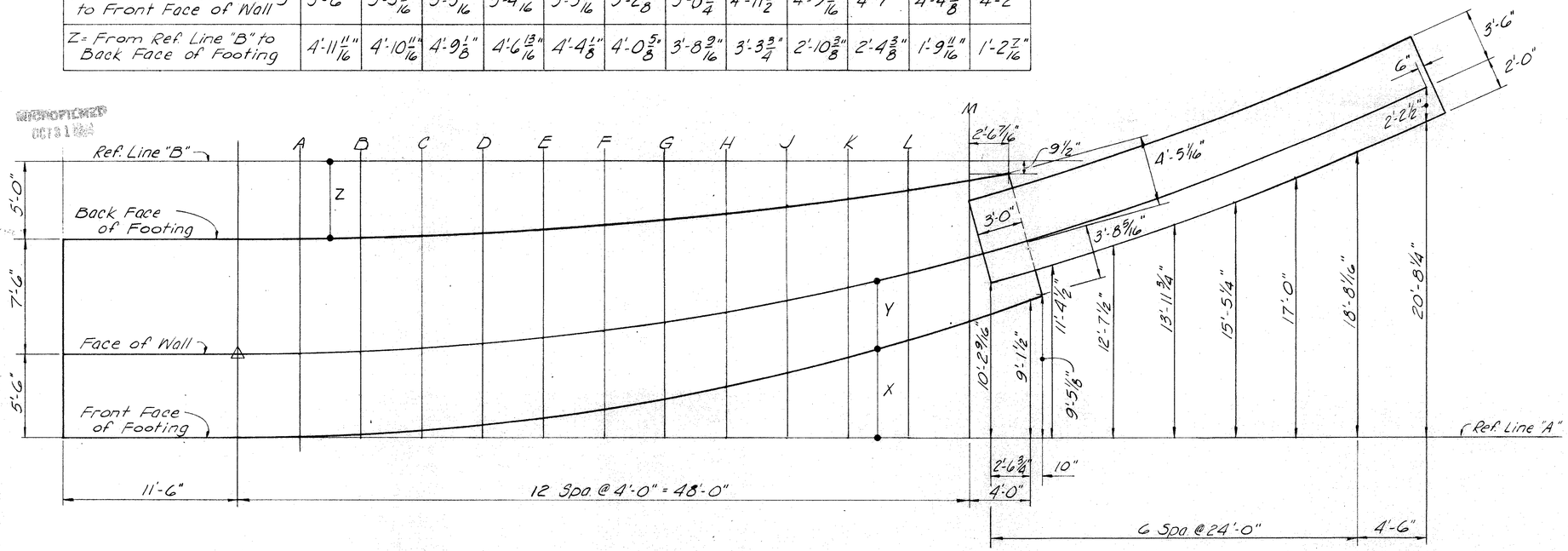
356
443

BELMONT COUNTY
BEL-7-11.89

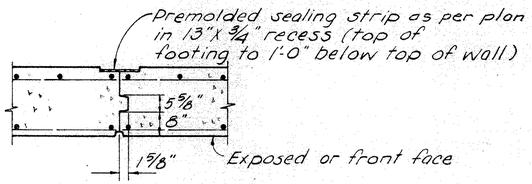
TABLE OF OFFSETS

	A	B	C	D	E	F	G	H	J	K	L	M
X = From Ref. Line "A" to Front Face of Footing	5/8"	2 9/16"	5 11/16"	10 1/8"	1'-3 13/16"	1'-10 13/16"	2'-7 1/8"	3'-3 3/4"	4'-3 11/16"	5'-4"	6'-5 11/16"	7'-9"
Y = From Face of Footing to Front Face of Wall	5'-6"	5'-5 9/16"	5'-5 1/16"	5'-4 5/16"	5'-3 5/16"	5'-2 1/8"	5'-0 3/4"	4'-11 1/2"	4'-9 3/16"	4'-7"	4'-4 5/8"	4'-2"
Z = From Ref. Line "B" to Back Face of Footing	4'-11 11/16"	4'-10 11/16"	4'-9 1/8"	4'-6 13/16"	4'-4 1/8"	4'-0 5/8"	3'-8 9/16"	3'-3 3/4"	2'-10 3/8"	2'-4 3/8"	1'-9 11/16"	1'-2 7/16"

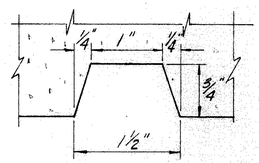
MICROFILMED
OCT 31 1990



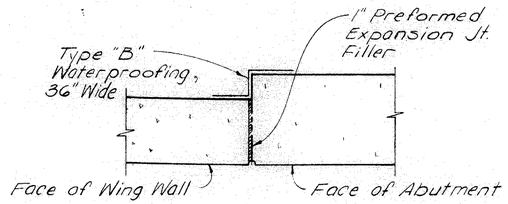
FOOTING LAYOUT PLAN



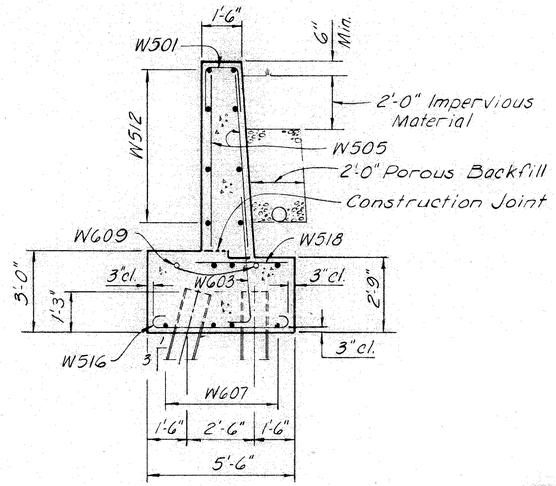
CONTRACTION JOINT DETAIL



VERTICAL RUSTICATION GROOVE



EXPANSION JOINT DETAIL "A"



SECTION W-W

13/18

STICKLEN - BELSHEIM & ASSOCIATES
ENGINEERS
WORTHINGTON OHIO

NORTH EAST WINGWALL DETAILS

BRIDGE No. BEL-7-1366
OVER
RAMP "B"
STA. 723+61.13
724+32.67
BELMONT CO.

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
DGH	J.C.		VLA	DGH	6/22/10	8/4/11

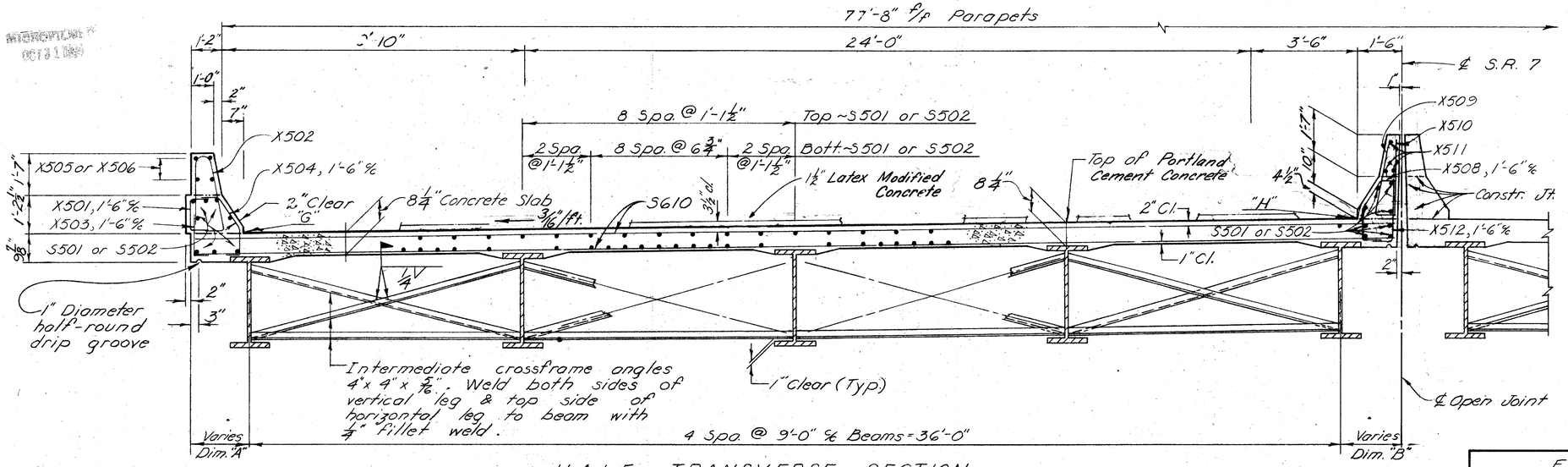
E.O. 671

MICROFILMED OCT 31 1989

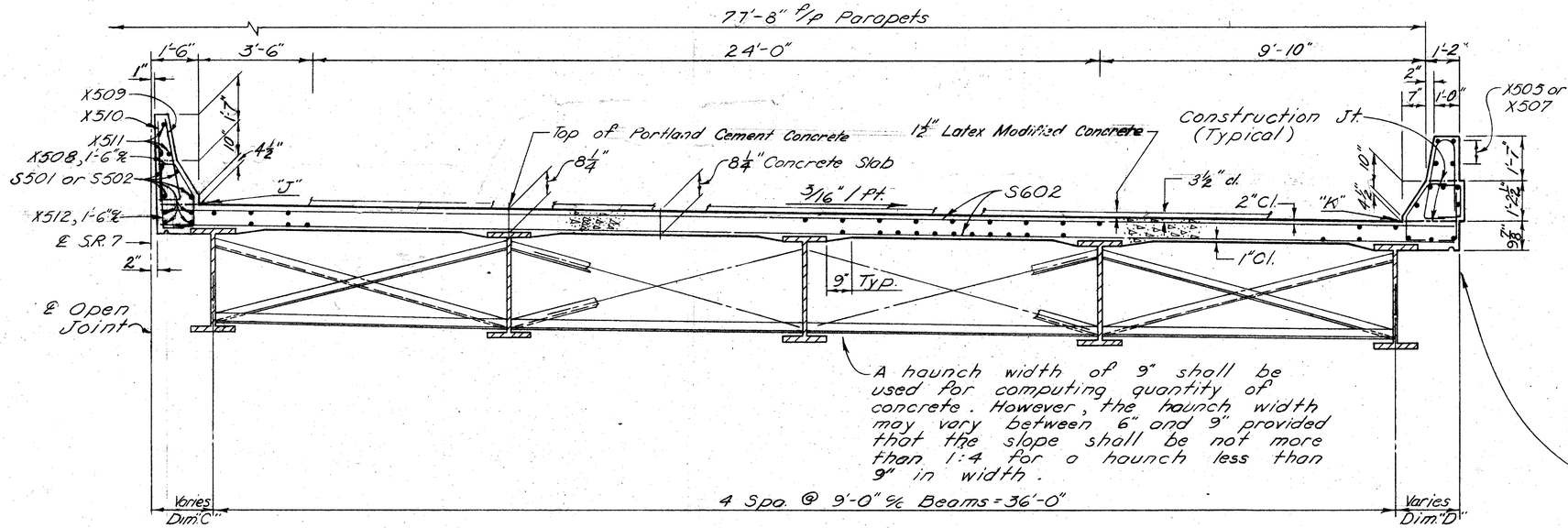
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

357
443

BELMONT COUNTY
BEL-7-11.89



HALF TRANSVERSE SECTION



HALF TRANSVERSE SECTION
LOOKING FORWARD

LOCATION	DIMENSION "A"		DIMENSION "B"		DIMENSION "C"		DIMENSION "D"	
	Measured parallel to ℄ Bearings	Measured Radially	Measured parallel to ℄ Bearings	Measured Radially	Measured parallel to ℄ Bearings	Measured Radially	Measured parallel to ℄ Bearings	Measured Radially
℄ Rear Abutment Bearings	4'-11"	2'-5 1/8"	3'-9 7/8"	1'-10 7/8"	3'-10"	1'-10 7/8"	4'-1 1/2"	2'-0 7/8"
℄ Span (¼ Point)	4'-5 3/4"	2'-2 5/8"	3'-10 7/8"	1'-11"	3'-9"	1'-11"	3'-10 1/4"	1'-11 3/8"
℄ Fwd. Abutment Bearings	4'-2 3/8"	2'-1 1/8"	3'-9 7/8"	1'-11 1/8"	3'-10"	1'-11 1/8"	3'-5 1/8"	1'-8 7/8"

DECK SLAB DEPTH:
The distance shown from top of deck slab to top of steel beam is the design dimension. The quantity of deck concrete to be paid for shall be based on this dimension, even though deviation from it may be necessary because the top flange of the beam may not have the exact camber or conformation required to place it parallel to the finished grade.

For Transverse Reinforcing Steel Layout see Sheet No. 15/18.

FACE OF CURB ELEVATIONS Ⓐ				
LOCATION	"G"		"H"	
	Station	Elevation	Station	Elevation
℄ Rear Abut. Brgs.	722+98.79	682.55	723+63.20	684.69
¼ Point	723+14.60	682.97	723+78.82	685.11
½ Point	723+30.37	683.36	723+94.40	685.50
¾ Point	723+46.10	683.74	724+09.95	685.87
℄ Fwd. Abut. Brgs.	723+61.81	684.08	724+25.46	686.21
LOCATION	"J"		"K"	
	Station	Elevation	Station	Elevation
℄ Rear Abut. Brgs.	723+68.41	684.82	724+31.78	685.79
¼ Point	723+84.02	685.24	724+47.20	686.21
½ Point	723+99.58	685.63	724+62.59	686.59
¾ Point	724+15.11	686.00	724+77.94	686.96
℄ Fwd. Abut. Brgs.	724+30.61	686.34	724+93.25	687.29

Ⓐ The elevations shown at the face of curbs are those which are required before the concrete deck is placed. Proper allowance has been made for the dead load deflections caused by the weight of the concrete.

NOTE:
Reinforcing steel same as other parapet, except as shown.

14/18

STICKLEN - BELSHEIM & ASSOCIATES
ENGINEERS
WORTHINGTON OHIO

SUPERSTRUCTURE DETAILS
BRIDGE No. BEL-7-1366
OVER
RAMP "B"
STA. 723+61.13
724+32.67
BELMONT CO.

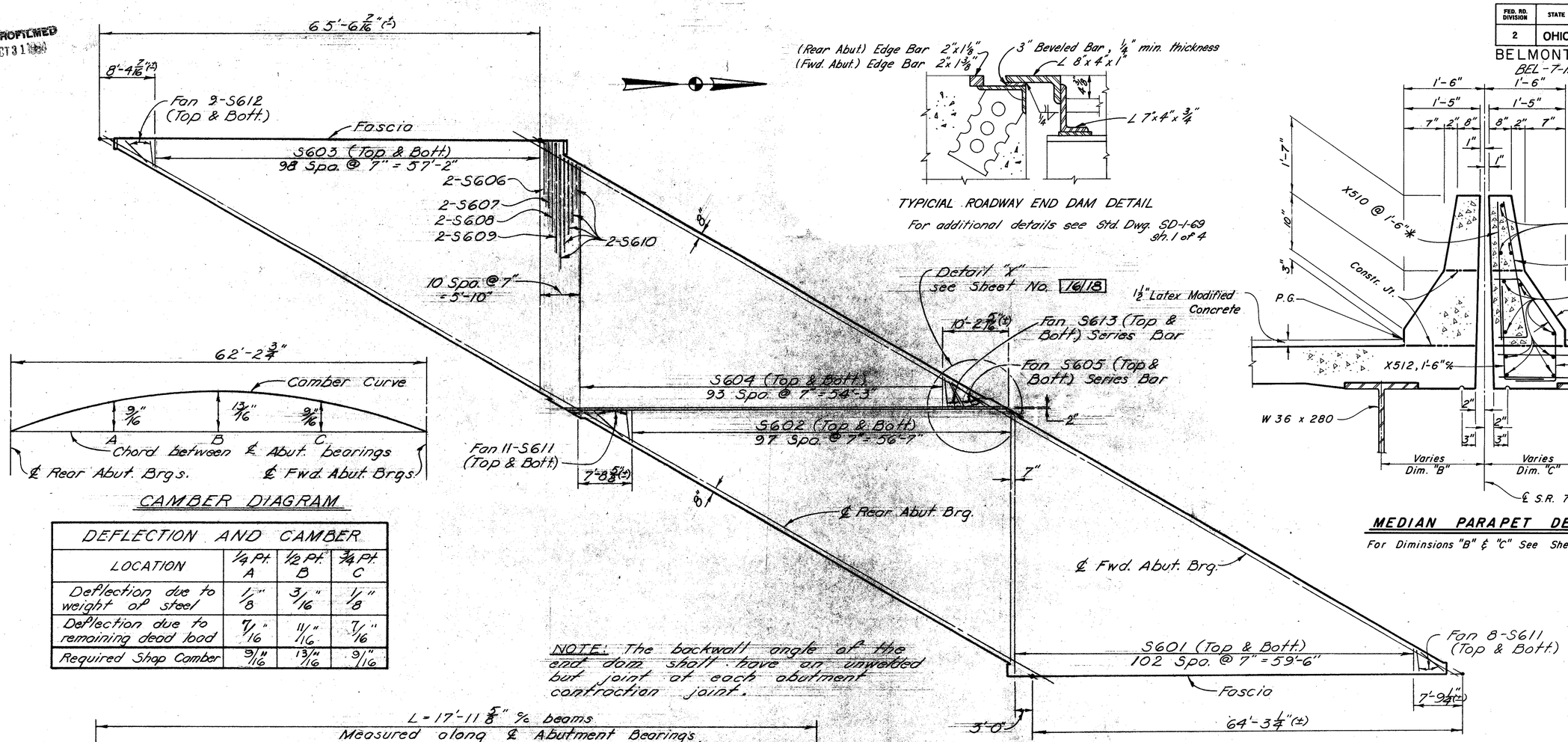
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
DGH	RDY		VLA	DGH	8/4/90	11/96

MICROFILMED
OCT 31 1990

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

358/443

BELMONT COUNTY
BEL-7-11.89



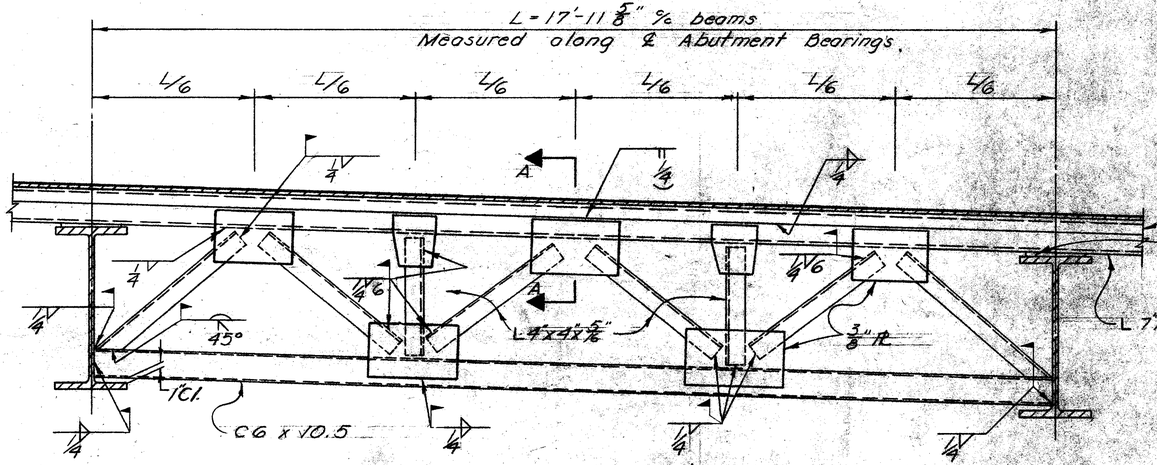
TYPICIAL ROADWAY END DAM DETAIL
For additional details see Std. Dwg. SD-1-69 sh. 1 of 4

MEDIAN PARAPET DETAILS
For Diminsions "B" & "C" See Sheet No. 14/18 .

CAMBER DIAGRAM

DEFLECTION AND CAMBER			
LOCATION	1/4 Pt. A	1/2 Pt. B	3/4 Pt. C
Deflection due to weight of steel	1/8"	3/16"	1/8"
Deflection due to remaining dead load	7/16"	11/16"	7/16"
Required Shop Camber	9/16"	13/16"	9/16"

NOTE: The backwall angle of the end dam shall have an unwebbed but joint at each abutment contraction joint.



END CROSSFRAME

TRANSVERSE REINFORCING STEEL LAYOUT

FOR DETAILS OF	SEE SD-1-69
Section A-A (End Dam) End Dam Details At Fascia Beam Longitudinal Section Bridge On Grade Welded Butt Joint In Superstructure End Dam	Sheet No. 1
Curb Plate Details	Sheet No. 2*

* And See Detail S-S & T-T Sheet No. 270/443

15/18

STICKLEN - BELSHEIM & ASSOCIATES
ENGINEERS
WORTHINGTON OHIO

SUPERSTRUCTURE DETAILS
BRIDGE No. BEL-7-1366
OVER
RAMP "B"
STA. 723+61.13
724+32.67
BELMONT CO.

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
D.C.W.	R.D.Y.		V.L.A.	D.C.W.	9/4/90	8/12/94

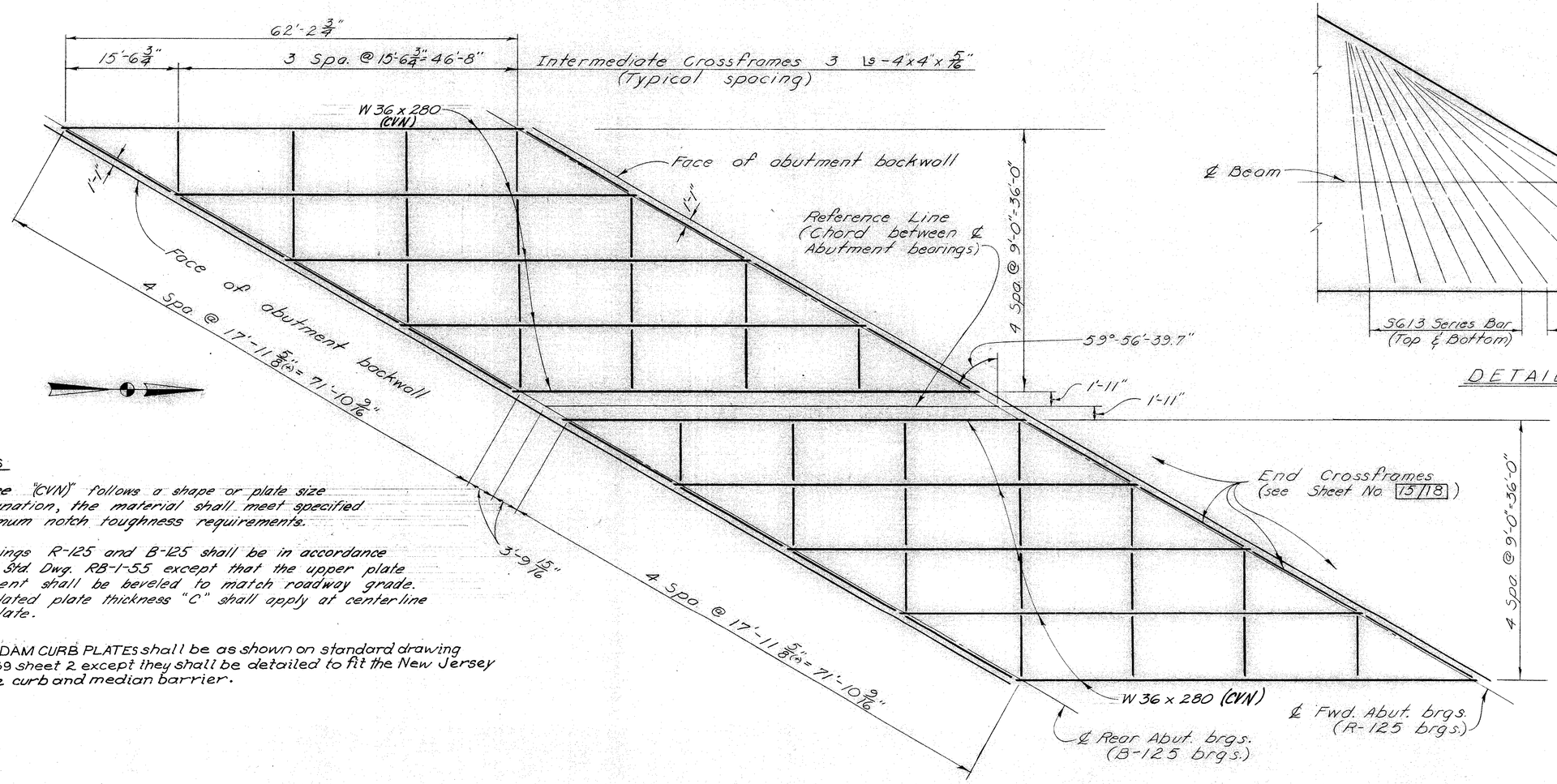
MICROFILMED
OCT 31 1990

FHWA REGION	STATE	PROJECT	
5	OHIO		

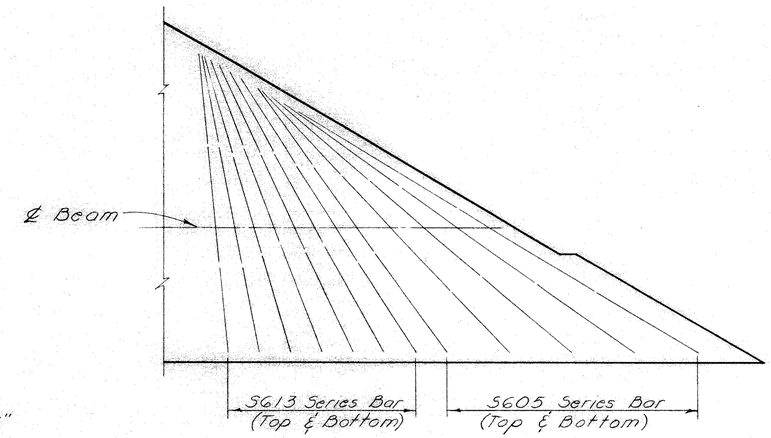
359/443

BELMONT COUNTY

BEL-7-11.89



STEEL FRAMING PLAN



DETAIL "X"

NOTES

Where "(CVN)" follows a shape or plate size designation, the material shall meet specified minimum notch toughness requirements.

Bearings R-125 and B-125 shall be in accordance with Std. Dwg. RB-1-55 except that the upper plate element shall be beveled to match roadway grade. Tabulated plate thickness "C" shall apply at centerline of plate.

END DAM CURB PLATES shall be as shown on standard drawing SD-1-69 sheet 2 except they shall be detailed to fit the New Jersey shape curb and median barrier.

16/18

STICKLEN - BELSHEIM & ASSOCIATES
ENGINEERS
WORTHINGTON OHIO

SUPERSTRUCTURE DETAILS
BRIDGE No. BEL-7-1366
OVER
RAMP "B"

BELMONT CO. STA. 723+61.13 724+32.67

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
DGH	RDY		VLA	DGH	8/4/70	8/14/70 5/23/79

NOV

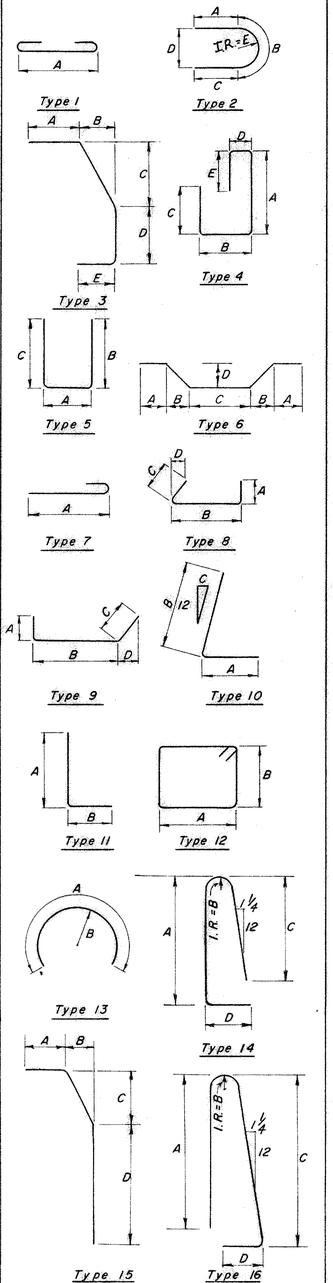
REINFORCING STEEL LIST

FHWA REGION	STATE	PROJECT	
5	OHIO		

360/443

BELMONT COUNTY
BEL-7-11.89

BENDING DIAGRAMS



S IN THE COLUMN FOR "TYPE" INDICATES STRAIGHT BARS.

REAR ABUTMENT

MARK	NO.	LENGTH	WEIGHT	TYPE	A	B	C	D	E
A1101	70	15'-8"	5,827	1	12'-6"				
A1102	96	12'-7"	6,418	7	11'-0"				
A1001	175	8'-8"	6,526	11	5'-9"	3'-2"			
A1002	164	12'-11"	9,115	11	10'-0"	3'-2"			
A1003	84	12'-0"	4,337	S					
A1004	46	17'-11"	3,546	S					
A1005	16	16'-10"	1,159	S					
A1006	29	15'-10"	1,976	S					
A901	36	10'-0"	1,224	S					
A701	170	8'-6"	2,954	S					
A601	74	36'-0"	4,001	S					
A602	50	10'-0"	751	S					
A603	1	28'-2"	42	S					
A604	9	14'-9"	199	6	1'-11"	1'-2"	7'-11"	1'-2"	
A605	156	5'-9"	1,347	17	1'-11"	3'-11"	2'-9"	2'-9"	
A606	156	11'-1"	2,597	5	1'-5"	5'-0"	5'-0"		
A607	117	6'-7"	1,157	5	1'-5"	2'-9"	2'-9"		
A608	117	7'-3"	1,274	5	0'-11"	3'-4"	3'-4"		
A609	39	9'-1"	532	5	1'-5"	4'-0"	4'-0"		
A610	10	10'-0"	150	17	6'-3"	3'-11"	2'-9"	2'-9"	
A611	3	14'-10"	67	11	6'-0"	9'-0"			
A612	4	10'-4"	62	19	3'-4"	5'-8"	1'-10"	1'-0¾"	
A501	46	17'-8"	848	S					
A502	85	27'-8"	2,453	S					
A503	91	8'-1"	767	5	3'-7"	1'-8"	3'-1"		
A504	23	29'-1"	698	S					
A505	5	19'-6"	102	S					
A506	16	16'-7"	277	S					
A507	27	15'-7"	439	S					
A508	2	15'-7"	33	20	1'-10"	0'-4"	13'-5"	0'-4"	
A510	1	22'-4"	23	S					
A511	26	31'-8"	859	S					
A512	1	4'-3"	4	S					
A513	25	23'-8"	617	S					
A514	1	22'-3"	23	S					
A523	4	12'-0"	50	18	1'-7"	3'-5"	5'-3"	1'-0"	1'-9"
A524	14	7'-9"	113	S					
A525	4	12'-2"	51	18	6'-3"	3'-5"	0'-10"	1'-8"	1'-0"
A526	4	9'-9"	41	11	7'-9"	2'-1"			
A528	5	3'-2"	17	S					
Y701	12	4'-3"	104	S					
Y604	12	3'-11"	71	15	0'-9"	0'-7"	0'-8	2'-5½	
Y501	12	1'-11½"	24	5	0'-11½"	0'-7½"	0'-7½"		
Y502	12	8'-10"	111	5	1'-5"	2'-8"	5'-0"		
Y503	28	7'-2"	209	S					
D801	92	7'-9"	1,904	15	0'-9"	4'-0"	4'-0"	1'-6"	

STRUTS

P901	48	17'-8"	2,883	S					
P501	104	6'-5"	696	5	2'-6"	2'-1"	2'-1"		
P502	32	6'-7"	220	20	1'-7"	2'-6"	1'-7"	2'-6"	

FORWARD ABUTMENT

MARK	NO.	LENGTH	WEIGHT	TYPE	A	B	C	D	E
A1101	71	15'-8"	5,910	1	12'-6"				
A1102	99	12'-7"	6,619	7	11'-0"				
A1001	175	8'-8"	6,526	11	5'-9"	3'-2"			
A1002	164	12'-11"	9,115	11	10'-0"	3'-2"			
A1003	84	12'-0"	4,337	S					
A1007	15	17'-0"	1,097	S					
A1008	15	17'-6"	1,130	S					
A1009	16	18'-0"	1,239	S					
A1010	14	19'-3"	1,160	S					
A1011	13	19'-5"	1,086	S					
A1012	18	19'-8"	1,523	S					
A901	18	10'-0"	612	S					
A701	173	8'-6"	3,006	S					
A601	75	36'-0"	4,055	S					
A602	54	10'-0"	811	S					
A605	153	5'-9"	1,321	17	1'-11"	3'-11"	2'-9"	2'-9"	
A606	153	11'-1"	2,547	5	1'-5"	5'-0"	5'-0"		
A607	116	6'-7"	1,147	5	1'-5"	2'-9"	2'-9"		
A608	116	7'-3"	1,263	5	0'-11"	3'-4"	3'-4"		
A609	37	9'-1"	505	5	1'-5"	4'-0"	4'-0"		
A610	11	10'-0"	165	17	6'-3"	3'-10½"	2'-9"	2'-9"	
A611	3	14'-10"	67	11	6'-0"	9'-0"			
A612	4	10'-4"	62	19	3'-4"	5'-8"	1'-10"	1'-0¾"	
A502	87	27'-8"	2,511	S					
A503	91	8'-1"	767	5	3'-7"	1'-8"	3'-1"		
A504	21	29'-1"	637	S					
A505	5	18'-6"	96	S					
A511	30	31'-8"	991	S					
A513	29	23'-8"	716	S					
A515	15	16'-9"	262	S					
A516	15	17'-3"	270	S					
A517	16	17'-9"	296	S					
A518	14	19'-0"	277	S					
A519	13	19'-2"	260	S					
A520	18	19'-5"	365	S					
A521	1	9'-6"	10	S					
A522	1	23'-0"	24	S					
A524	15	7'-9"	121	S					
A525	4	12'-2"	51	18	6'-3"	3'-5"	0'-10"	1'-8"	1'-0"
A526	4	9'-9"	41	11	7'-9"	2'-1"			
A527	4	13'-4"	56	18	1'-7"	3'-5"	6'-7"	1'-0"	1'-9"
Y701	12	4'-3"	104	S					
Y604	12	3'-11"	71	15	0'-9"	0'-7"	0'-8	2'-5½	
Y501	12	1'-11½"	24	5	0'-11½"	0'-7½"	0'-7½"		
Y502	12	8'-10"	111	5	1'-5"	2'-8"	5'-0"		
Y503	28	7'-2"	209	S					
D801	97	7'-9"	2007	15	0'-9"	4'-0"	4'-0"	1'-6"	

SUPERSTRUCTURE

MARK	NO.	LENGTH	WEIGHT	TYPE	A	B	C	D	E
S601	2 Series of 103	4'-2" to 38'-8"	6,627	S	Vary by 4 1/16" increments				
S602	2 Series of 98	4'-9" to 37'-7"	6,231	S	Vary by 4 1/16" increments				
S603	2 Series of 99	4'-7" to 37'-3"	6,221	S	Vary by 4" increments				
S604	2 Series of 94	4'-9" to 36'-3"	5,789	S	Vary by 4 1/16" increments				
S605	2 Series of 5	6'-0" to 8'-8"	110	S	Vary by 8" increments				
S606	2	37'-7"	113	S					
S607	2	37'-11"	114	S					
S608	2	38'-3"	115	S					
S609	2	38'-7"	116	S					
S610	10	37'-3"	559	S					
S611	38	5'-0"	285	S					
S612	18	4'-6"	122	S					
S613	2 Series of 7	5'-6" to 6'-0"	121	S	Vary by 1" increments				
S501	186	30'-0"	5,820	S					
S502	186	37'-9"	7,323	S					
X501	86	1'-11½"	176	5	0'-11½"	0'-7½"	0'-7½"		
X502	100	5'-6½"	578	16	2'-6"	0'-3¾"	2'-6½"	0'-7½"	
X503	86	2'-2"	194	11	1'-8"	0'-7½"			
X504	86	2'-11	262	3	0'-9"	0'-7"	0'-8"	0'-11"	0'-7½"
X505	24	15'-8"	392	S					
X506	8	9'-0"	75	S					
X507	8	8'-4"	70	S					
X508	84	3'-0"	263	3	0'-4"	0'-7"	0'-8"	1'-0"	1'-0"
X509	96	2'-11"	292	10	0'-6"	2'-6"	0'-1¾"		
X510	96	2'-5"	242	S					
X511	24	16'-2"	405	S					
X512	84	2'-3"	197	11	1'-8"	0'-9"			

SPIRAL REINFORCING

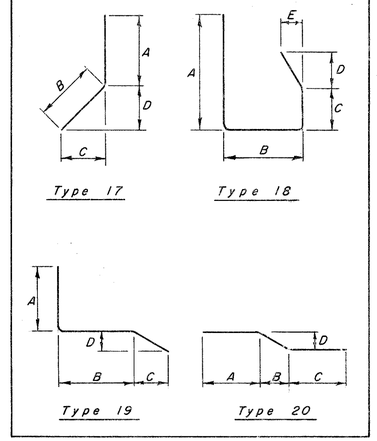
MARK	NO.	LENGTH	WEIGHT		

Spirals - Core Diam. 32" %
- Pitch 4½" c/c
- Other details in accordance with C.R.S.I. standard practice.

* Bend in field where necessary

NOTE 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.

BENDING DIAGRAMS



17/18

STICKLEN-BELSHEIM & ASSOCIATES ENGINEERS
WORTHINGTON OHIO

REINFORCING STEEL LIST

BRIDGE No BEL-7-1366 OVER RAMP "B"
STA. 723+6113
724+3267
BELMONT CO.

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
DCH	RDY		VLA	DCH	8/4/10	8/18

MICROFILMED
NOV 1 1984

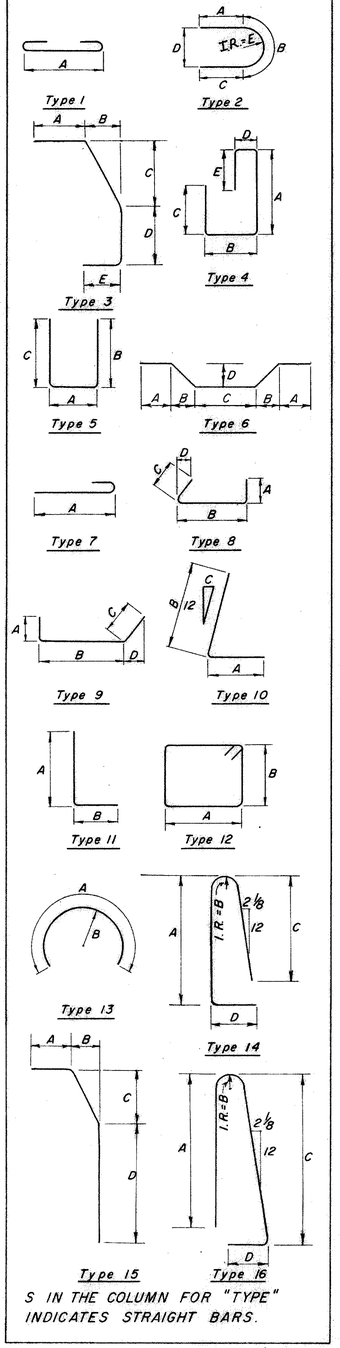
REINFORCING STEEL LIST

FHWA REGION	STATE	PROJECT		
5	OHIO			

361/443

BEL-7-11.89 BELMONT COUNTY

BENDING DIAGRAM



S IN THE COLUMN FOR "TYPE" INDICATES STRAIGHT BARS.

N.W. WINGWALL

MARK	NO.	LENGTH	WEIGHT	TYPE	A	B	C	D	E
F1001	10	8'-9"	377	10	3'-2"	5'-10"	0'-0¾"		
F1002	9	14'-5"	558	10	3'-2"	11'-6"	0'-0¾"		
F1003	4	15'-0"	258	S					
F1004	1	21'-11"	94	S					
F901	12	9'-3"	377	7	8'-0"				
F902	6	6'-11"	141	7	5'-8"				
F903	8	10'-0"	272	7	8'-9"				
F904	14	7'-10"	373	7	6'-7"				
F801	7	7'-4"	137	10	2'-6"	5'-0"	0'-0¾"		
F802	8	11'-5"	244	10	2'-6"	9'-1"	0'-0¾"		
F803	4	10'-6"	112	S					
F701	6	6'-8"	82	7	5'-10"				
F702	6	7'-1"	87	7	6'-3"				
F703	6	8'-1"	99	7	7'-3"				
F704	3	8'-11"	55	1	7'-3"				
F705	12	5'-10"	143	7	5'-0"				
F706	6	5'-4"	65	7	4'-6"				
F707	15	7'-0"	215	S					
F601	9	6'-6"	88	10	1'-11"	4'-9"	0'-0¾"		
F602	6	10'-6"	95	10	1'-11"	8'-9"	0'-0¾"		
F603	2	7'-9"	23	10	1'-11"	6'-0"	0'-0¾"		
F609	2	27'-9"	83	S					
F610	9	6'-0"	81	S					
F611	4	24'-10"	149	S					
F612	8	21'-8"	260	S					
F613	4	17'-0"	102	S					
F501	2 Series of 5	16'-7" to 21'-5"	198	S	Vary by 1'-2½" increments				
F502	1	21'-7"	23	S					
F503	15	5'-6"	86	9	2'-2"	1'-2"	2'-5"	0'-1¾"	
F504	2 Series of 4	11'-3" to 15'-3"	111	S	Vary by 1'-4" increments				
F505	2 Series of 5	6'-2" to 9'-10"	83	S	Vary by 11" increments				
F506	8	20'-8"	172	S					
F507	8	19'-0"	159	S					
F508	1	32'-0"	33	S					
F509	1	29'-9"	31	S					
F510	1	27'-0"	28	S					
F511	1	25'-0"	26	S					
F512	1	22'-0"	23	S					
F513	1	20'-6"	21	S					
F514	1	17'-3"	18	S					
F515	1	16'-3"	17	S					
F516	1	13'-0"	14	S					
F517	1	12'-3"	13	S					
F518	1	8'-9"	9	S					
F519	1	8'-4"	9	S					
F520	2	4'-3"	9	S					
F521	4	21'-8"	90	S					

N.E. WINGWALL

MARK	NO.	LENGTH	WEIGHT	TYPE	A	B	C	D	E
W1001	16	8'-9"	602	10	3'-2"	5'-10"	0'-0¾"		
W1002	15	14'-5"	931	10	3'-2"	11'-6"	0'-0¾"		
W1003	8	15'-0"	516	S					
W901	20	15'-0"	1,020	1	12'-6"				
W902	6	14'-8"	299	1	12'-2"				
W801	8	7'-4"	157	10	2'-6"	5'-0"	0'-0¾"		
W802	8	11'-5"	244	10	2'-6"	9'-1"	0'-0¾"		
W803	4	10'-6"	112	S					
W701	10	6'-8"	136	10	2'-2"	4'-8"	0'-0¾"		
W702	10	9'-6"	194	10	2'-2"	7'-6"	0'-0¾"		
W703	5	8'-6"	87	S					
W704	7	9'-10"	141	7	9'-0"				
W705	14	6'-4"	181	7	5'-6"				
W706	7	9'-1"	130	7	8'-3"				
W707	28	6'-9"	386	S					
W708	6	8'-10"	108	7	8'-0"				
W709	6	5'-10"	72	7	5'-0"				
W710	12	8'-4"	204	7	7'-6"				
W711	6	5'-4"	65	7	4'-6"				
W712	6	4'-7"	56	7	3'-9"				
W713	1	9'-3"	19	1	7'-7"				
W601	10	6'-6"	98	10	1'-11"	4'-9"	0'-0¾"		
W602	13	10'-6"	205	10	1'-11"	8'-9"	0'-0¾"		
W603	19	6'-3"	178	10	1'-11"	4'-6"	0'-0¾"		
W604	14	33'-6"	704	S					
W606	8	32'-0"	385	S					
W607	7	30'-6"	321	S					
W608	3	10'-0"	45	S					
W609	2	5'-6"	17	S					
W501	34	5'-6"	195	9	2'-2"	1'-2"	2'-5"	0'-1¾"	
W502	2 Series of 8	17'-1" to 21'-9"	324	S	Vary by 8" increments				
W503	2 Series of 4	14'-10" to 16'-7"	131	S	Vary by 7" increments				
W504	2 Series of 10	10'-3" to 14'-0"	253	S	Vary by 5" increments				
W505	2 Series of 10	5'-6" to 7'-0"	130	S	Vary by 2" increments				
W506	24	31'-6"	789	S					
W507	2	26'-6"	55	S					
W508	2	17'-0"	35	S					
W509	2	8'-6"	18	S					
W510	2	29'-0"	60	S					
W511	2	11'-6"	24	S					
W512	8	27'-6"	229	S					
W513	4	32'-0"	134	S					
W514	4	7'-3"	30	S					
W515	4	28'-6"	119	S					
W516	24	6'-2"	154	1	5'-0"				
W517	15	6'-7"	103	7	6'-0"				
W518	14	3'-0"	44	S					

S.W. WINGWALL

MARK	NO.	LENGTH	WEIGHT	TYPE	A	B	C	D	E
N1001	12	8'-9"	452	10	3'-2"	5'-10"	0'-0¾"		
N1002	11	14'-5"	682	10	3'-2"	11'-6"	0'-0¾"		
N1003	5	15'-0"	323	S					
N1004	1	20'-6"	88	S					
N901	26	11'-3"	995	7	10'-0"				
N902	26	6'-7"	582	7	5'-4"				
N801	11	7'-4"	215	10	2'-6"	5'-0"	0'-0¾"		
N802	11	9'-5"	277	10	2'-6"	9'-1"	0'-0¾"		
N803	6	10'-6"	168	S					
N804	15	10'-1"	404	7	9'-0"				
N805	15	6'-1"	244	7	5'-0"				
N806	10	9'-1"	243	7	8'-0"				
N807	10	5'-9"	154	7	4'-8"				
N808	3	9'-3"	74	1	7'-5"				
N701	27	8'-0"	442	S					
N601	16	6'-6"	156	10	1'-11"	4'-9"	0'-0¾"		
N602	10	10'-6"	158	10	1'-11"	8'-9"	0'-0¾"		
N603	5	7'-9"	58	10	1'-11"	6'-0"	0'-0¾"		
N604	4	33'-6"	201	S					
N605	8	21'-6"	258	S					
N606	8	33'-0"	397	S					
N607	10	10'-0"	150	S					
N501	2 Series of 6	16'-3" to 20'-0"	227	S	Vary by 9" increments				
N502	1	20'-3"	21	S					
N503	24	5'-6"	138	9	2'-2"	1'-2"	2'-5"	0'-1¾"	
N504	2 Series of 5	12'-8" to 15'-8"	148	S	Vary by 9" increments				
N505	2 Series of 11	6'-0" to 11'-10"	205	S	Vary by 7" increments				
N506	2	6'-0"	13	S					
N507	18	31'-6"	591	S					
N508	2	25'-0"	52	S					
N509	2	14'-0"	29	S					
N510	2	4'-6"	9	S					
N511	2	28'-0"	58	S					
N512	2	19'-6"	41	S					
N513	2	12'-0"	25	S					
N514	2	5'-0"	10	S					
N515	4	32'-0"	134	S					
N516	23	7'-0"	168	S					

S.E. WINGWALL

MARK	NO.	LENGTH	WEIGHT	TYPE	A	B	C	D	E
R1001	11	8'-10"	418	10	3'-2"	5'-11"	0'-0¾"		
R1002	10	15'-5"	663	10	3'-2"	12'-6"	0'-0¾"		
R1003	5	16'-8"	359	S					
R901	14	10'-3"	488	7	9'-0"				
R902	12	9'-3"	377	7	8'-0"				
R903	14	7'-7"	361	7	6'-4"				
R904	12	7'-4"	299	7	6'-1"				
R701	12	6'-8"	164	10	2'-2"	4'-8"	0'-0¾"		
R702	13	11'-0"	292	10	2'-2"	9'-0"	0'-0¾"		
R703	6	10'-8"	131	S					
R704	6	7'-7"	93	7	6'-9"				
R705	19	7'-6	291	S					
R706	18	5'-10"	215	7	5'-0"				
R707	8	8'-5"	138	1	6'-9"				
R601	3	6'-3"	28	10	1'-11"	4'-6"	0'-0¾"		
R602	4	8'-6"	51	10	1'-11"	6'-9"	0'-0¾"		
R603	17	6'-3"	160	S					
R604	14	22'-0"	463	S					
R605	5	23'-9"	178	S					
R501	16	5'-6"	92	9	2'-2"	1'-2"	2'-5"	0'-1¾"	
R502	2 Series of 6	18'-6" to 23'-6"	263	S	Vary by 1'-0" increments				
R503	2 Series of 6	11'-0" to 17'-3"	177	S	Vary by 1'-3" increments				
R504	2	9'-10"	21	S					
R505	2	8'-4"	17	S					
R506	2	7'-0"	15	S					
R507	2	6'-3"	13	S					
R508	16	21'-6"	359	S					
R509	2	37'-0"	77	S					
R510	2	32'-8"	68	S					
R511	2	28'-2"	59	S					
R512	2	24'-0"	50	S					
R513	2	19'-6"	41	S					
R514	2	15'-0"	31	S					
R515	2	10'-0"	21	S					
R516	2	4'-6"	9	S					
R517	4	23'-4"	97	S					

NOTE: For additional bending diagrams see Sheet No. 17/18.

18/18

STICKLEN-BELSHEIM & ASSOCIATES ENGINEERS
WORTHINGTON OHIO

REINFORCING STEEL LIST

BRIDGE No. BEL-7-1366
OVER
RAMP "B"
STA. 723+61.13
724+32.67
BELMONT CO

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
DBH	R.D.Y.		VLA	DBH	8/14/90	8/14

DBH 11-21-90

FHWA REGION	STATE	PROJECT	
5	OHIO		

362
443

BEL-7-11.89

Calc. R.E.S. 10/76
Checked AWL. 1/77

LIGHTING GENERAL NOTES

625.03 GENERAL

The utility which will furnish electric power to this installation, is
The Ohio Power Co. 340, 34th Street Bellaire, Ohio. 43906
The other utility is The Ohio Bell Telephone Co. 223 N. 5th Street
Steubenville, Ohio. 43952

The project has been designed on the basis of partial lighting with illumination of 1.2 foot candle initial, with a maximum uniformity ratio of 4.0 to 1.0 and will be serviced by 480volt two-wire secondary service one side grounded.

625.07 - 713.13 UNDERPASS LUMINAIRES

Underpass luminaires shall be Holophane "Underpass Wallpack" or equal Westinghouse, McGraw-Edison, or General Electric WL-250 underpass unit approved by the Engineer, and shall be furnished with an integral fuse holder and 10-ampere fuse. The integral ballast shall be of a regulator type rated for 480 volts.
THE INTEGRAL BALLAST SHALL BE OF A H.P.S. TYPE, SINGLE RATED 480 VOLTS, AND DESIGNED FOR USE WITH A 100 WATT HPS LAMP.

LIGHT POLE ANCHOR BOLTS FOR BRIDGES AND RETAINING WALLS

Anchor bolts for mounting light poles on bridges and retaining walls shall conform to the requirements of 713.01 and details shown on the plans and standard drawings, or the approved shop drawings, for the respective poles to be placed thereon.
Payment shall be made at the unit price bid for each set of the size required and necessary to install one pole, and this payment shall constitute full compensation for furnishing and placing the bolts.

CONDUIT ON STRUCTURES

Expansion fittings for conduit on structures shall be OZ Type AX, Crouse-Hinds Type XJ-4, Appleton Type XJ-4 or equal approved by the Engineer, for Bridges Nos. BEL-7-1366 and BEL-7-1197
Each expansion fitting shall have a copper external bonding jumper.

HIGH VOLTAGE DIRECT CURRENT TEST

A high voltage direct current test, as described in Supplemental Specification 839, shall be performed on all distribution cable and duct cable systems to be installed on this project. The test shall not be performed until after all new construction, such as guard rail, fence, delineator post, sign supports etc., in the immediate vicinity of the location of the cable run being tested, has been completed.

625 - SERVICE TO UNDERPASS LIGHTING, AS PER PLAN

This item shall consist of providing complete electrical service, except for luminaires, lamps, and structure grounding, for an underpass lighting system on Bridge No. BEL-7-1366 over Ramp B. The installation work shall include conduits, conduit grounding, mountings, fittings, junction boxes, cables, and all incidentals necessary to complete, ready for use, the service as detailed on Sheet 367. The lump sum price bid for "Item 625 Service to Underpass Lighting, as per plan" shall include payment for all equipment, labor, and materials necessary to complete the work as specified. Component parts not specifically mentioned but required for satisfactory operation of this item shall be furnished and considered paid for as part of the item.

625.07 - 713.11 LUMINAIRES

23,000 LUMEN HORIZONTAL STYLE B LUMINAIRE DESIGNED FOR USE WITH 200 WATT HIGH PRESSURE SODIUM LAMPS SHALL HAVE SINGLE RATED 480 VOLT, 200 WATT INTEGRAL REGULATOR BALLASTS. STYLE B LUMINAIRES SHALL BE GENERAL ELECTRIC M-400, WESTINGHOUSE OV-25 TU-DOR, I.T.T. American-400," OR EQUAL APPROVED BY THE ENGINEER.

HIGH PRESSURE SODIUM LAMPS. - 713.14

HIGH PRESSURE SODIUM LAMPS SHALL BE GENERAL ELECTRIC "LUCALOX," SYLVANIA "LUMALUX," WESTINGHOUSE "CERAMALUX," OR EQUAL APPROVED BY THE ENGINEER.

UNDERDRAINS FOR PULL BOXES

Reference is made to Standard Drawing HL-10 for details of draining pull boxes. Underdrains for pull boxes shall be used as directed by the Engineer and shall be provided where the length required for a satisfactory outlet does not exceed approximately 20 feet. An estimated quantity of "140 linear feet of Item 605, 4" shallow pipe underdrains" is included in the Lighting General Summary for this purpose.

ITEM SPECIAL - CABLE SPLICING KIT

This item shall consist of providing and installing an approved cable splicing kit as described in paragraph 5 of section 713.15 of the ODOT Construction and Material Specifications. The cost of all materials, labor, and equipment necessary for this item shall be included in the unit price bid for each "Item Special - Cable Splicing Kit."

LIGHT POLE DATA

Ref. Letter	Pole Design No.		Foundation Anchor Bolts Size	Foundation Anchor Bolts Bolt Circle Dia.	Transformer Base Style
A	AT10B34.2		1"x40"	15"	AT-A
B	AT15B41.7		1"x40"	15"	AT-A
C	ST15B41.7		1"x40"	15"	Steel

Rev. 7-15-81
Rev. 5-23-79

FHWA REGION	STATE	PROJECT	
5	OHIO		

363
443

BEL-7-11.89

Calc. R.E.S. 10/24/69
Checked A.W.L. 10/25/69
Calc. Revised R.E.S. 10/76
Checked AWL 1/77

LIGHTING GENERAL SUMMARY

ITEM NO.	STRUCTURES BEL-7-1197 Lt.	STRUCTURES BEL-7-1197 Rt.	STRUCTURES BEL-7-1366 Lt.	STRUCTURES BEL-7-1366 Rt.	ROADWAY		GRAND TOTAL	UNIT	DESCRIPTION	TOTAL CODE 8203	TOTAL CODE 7204		Reference Letter
Sheet No.	365	365	366	366	365	366	364						
	FF-534 (12)		FF-534 (12)		FF-534(12)	FF-534(12)			TYPE CODE 7204				
625						5	5	Each	Light Pole, Design AT10B34.2		5		A
625					2	7	9	Each	Light Pole, Design AT15B41.7		9		B
625		1					1	Each	Light Pole, Design ST15B41.7 Bridge Mounted		1		C
625					2	12	14	Each	Light Pole Foundation 24" x 6'-0" Deep		14		
625						8	8	Each	Luminaire, Type II, 200 Watt, Style B, High Pressure Sodium 480V		8		
625		1			2	4	7	Each	Luminaire, Type III, 200 Watt, Style B, High Pressure Sodium 480V		7		
625			2	2			4	Each	Luminaire, Underpass, 100 Watt, High Pressure Sodium 480V		4		
605					40	100	140	Lin.Ft.	4" Shallow Pipe Underdrain		140		
625						1	1	Each	Glare Shield, 713.11, 200 Watt Luminaire		1		
625					2	12	14	Each	Ground Rod, 713.16		14		
625					4	10	14	Each	Pull Box, 18" Circular, 713.09		14		
625					1002	4690	5692	Lin.Ft.	Trench, 24" Deep	4690	4690		
625	589	602				40	1231	Lin.Ft.	Conduit, 2", 713.04		1231		
625						245	245	Lin.Ft.	Conduit, 3", 713.04		245		
625		684				697	1381	Lin.Ft.	No. 4 AWG, 600 Volt Distribution Cable		1381		
625		105			228	1235	1568	Lin.Ft.	No. 10 AWG, Pole and Bracket Cable		1568		
625		333			1032	4463	5495	Lin.Ft.	1 1/2" Duct-cable with 2 No. 4 AWG, 600 Volt Cables	5495	5495		
625						411	411	Lin.Ft.	1 V2 Duct-cable with 2 No. 2 AWG, 600 Volt Cables		411		
625		1			2	12	15	Each	Cable Connector Kits, Type II		15		
625		1			2	12	15	Each	Cable Connector Kits, Type III		15		
Special					2	24	26	Each	Cable Splicing Kits		26		
625						Lump	Lump	Lump	Service Pole and Control Center No. 1		Lump		
625	1	4					5**	Each	Structure Grounding System for Bridge No. BEL-7-1197 **		5		
625	2	1					3	Each	Steel Transformer Base 713.01	1	2		
625	2	2					4	Set	Light Pole Anchor Bolts for Structures, 713.01	1	3		
625			Lump	Lump			Lump	Lump	Service to Underpass Lighting for Bridge No. BEL-7-1366		Lump		
839							Lump	Lump	High Voltage Test	Lump	Lump		

** See sheet 365 for actual grounding on the bridge

Rev. 5-23-79

LIGHTING SUB-SUMMARY

Ref. No.	Side	Station		light pole design AT10B3#2 Ea.	light pole design AT15B4#7 Ea.	light pole design ST15B4#7 bridge mtd. Ea.	light pole foundation, 24"x6' Ea.	luminaire, type II 200 watt HPS. Ea.	luminaire, type III 200 watt HPS. Ea.	luminaire, underpass 100 watt HPS. Ea.	Item 605-4"Shallow Pipe Underdrain L.F.	glare shield, 200watt Ea.	ground rod, 713.16 Ea.	pull box 18"circular Ea.	trench 24"deep L.F.	structure grounding system (**) Ea.	conduit 2", 713.04 L.F.	conduit 3", 713.04 L.F.	distribution cable No.4 L.F.	pole and bracket cable no. 10 L.F.	duct-cable, 600 volt 1 1/2" two no. 4 L.F.	duct-cable, 600 volt 1 1/2" two no. 2 L.F.	Item Special Cable Splicing Kit Ea.	connector kit, type II Ea.	connector kit, type III Ea.	Steel Transformer Base 713.01 Ea.	light pole anchor bolts for structures 713.01 Set	service pole and control center no. 1 Lump
1	Lt.	627+35	633+15												580												
2	"	633+15	634+70														96			114	590						
3	"	634+70	635+66.25																								
4	"	634+70	635+66.25																								
5	"	635+66.25	638+75												225	1	309			235							
6	"	635+66.25	638+75																								
7	"	638+75	640+59												197		184			114							
8	"	638+75	640+59																								
9	"	640+59	636+40																	207							
94	"	636+40																									
10	Rt.	629+60	631+85																								
11	"	631+85	633+82																								
12	"	631+85	633+82																								
13	"	633+82	634+35																								
14	"	633+82	634+35																								
15	"	634+35	637+13.25																								
16	"	634+35	637+13.25																								
17	"	637+13.25	639+84																								
18	"	637+13.25	639+84																								
19	"	639+84	637+25																								
20	Rt.	637+25																									
FF-534 (12) TOTALS Sheet 365															1002	5	1191		684	1032							
21	Rt.	16+71 ("B")																									
22	"	16+71 ("B")	17+58 ("B")												87					97							
23	"	17+58 ("B")																									
24	"	17+58 ("B")	17+58(85'rt.												60			60	280							
25	"	17+58 ("B")	85'rt.																								
26	"	17+58 ("B")	95'rt.																								
27	"	17+58 ("B")	20+73 ("B")												315					325	315						
28	"	20+73 ("B")																									
29	"	20+73 ("B")	21+59 ("B")												86					96	96						
30	"	21+59 ("B")																									
31	Lt-Rt.	21+59 ("B")	722+15												35		35		80								
32	Lt.	722+15																80									
33	Lt-Rt.	722+15													80												
34	Rt.	722+15																									
35	Lt.	722+15	722+82												67				77								
36	"	722+82																									
37	"	722+82	22+36('B')												5		5		20								
38	Rt.	22+36('B')																									
39	"	22+36('B')	22+78('B")												5												
40	"	22+78('B")													173												
41	"	22+78('B')	23+13('B")												180												
42	"	23+13('B")													870												
43	"	23+13('B")	23+48('B")												360												
44	"	23+48('B")													490												
45	"	23+48('B")	23+83('B")												35			35	80								
46	"	23+83('B")													84												
47	"	23+83('B")	24+27('B")												25			25	60								
48	"	24+27('B")													808												
49	"	24+27('B")	26+00('B")												75												
50	"	26+00('B")													45			45	100								
51	"	26+00('B")	27+80('B")												140												
52	"	27+80('B")													665												
53	"	27+80('B")	736+50																								
54	"	736+50													4690	5	40	246	697	1235	4463	411	24	12	12	Lump	Lump
55	"	736+50	740+10																								
56	"	740+10													5692	5	1231	245	1381	1568	5495	411	26	15	15	4	Lump
57	"	740+10	745+00																								
58	"	745+00																									
59	Rt-Lt.	21+59("B")																									
60	Lt.	21+59("B")																									
61	"	21+59("B")	22+43("B")																								
62	"	22+43("B")																									
63	Rt-Lt.	21+59("B")	22+42("A")																								
64	Lt.	22+42("A")																									
65	"	22+42("A")	30+50("A")																								
66	"	30+50("A")																									
67	"	30+50("A")	31+25("A")																								
68	Lt-Rt.	31+25("A")	731+23																								
70	Lt.	731+23																									
71	"	31+25("A")	732+65																								
72	"	732+65																									
73	"	732+65	739+30																								
74	"	739+30																									
FF-534 (12) TOTALS Sheet 366				5	7	12	8	4	4	4	100	1	1	14													
FF-534 (12) GRAND TOTALS				5	9	1	14	8	7	4	140	1	1	14													

** See sheet 365 for actual grounding on the bridge

FHWA REGION	STATE	PROJECT	
5	OHIO		

364
443

BEL-7-11.89

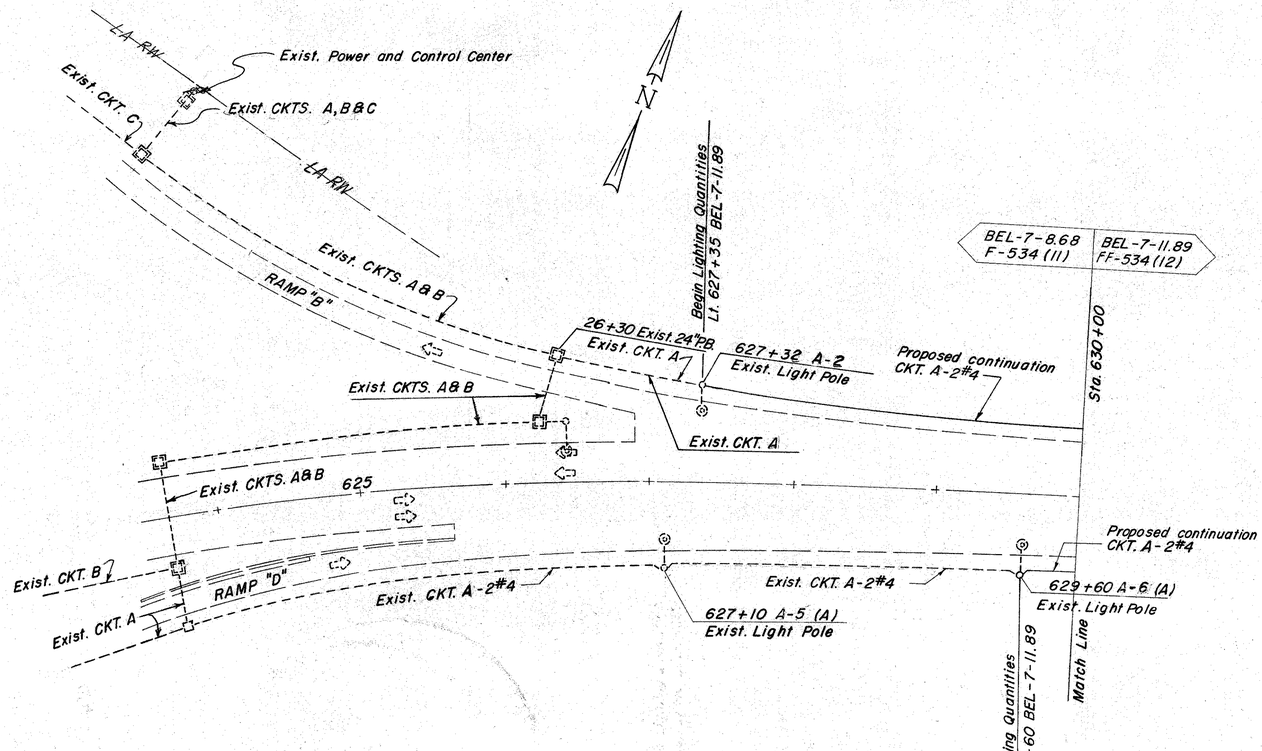
Calc. R.E.S. 10/24/69
Checked A.W.L. 10/25/69
Calc. Revised R.E.S. 10/76
Checked AWL. 1/77

Rev. 5-23-79

FHWA REGION	STATE	PROJECT	
5	OHIO		

365
443

BEL-7-11.89



* NOTE: Light units A-3, A-7 and A-8 will be energized from the distribution circuits on the adjacent project BEL-7-8.68

For lighting and bridge details see sheet No. 367 and HL-3 Std. Const. Dwg.

LEGEND

- = Control Center
- = Duct - Cable, as per plan
- = Glare Shield
- = Existing Light Unit
- = Future Light Unit
- = 200 Watt ANSI - IES Type II, Medium and Semi. Cutoff H.P.S.
- = 200 Watt ANSI - IES Type III, Medium and Semi. Cutoff H.P.S.
- = 18" Pullbox
- = 1 1/4" Conduit
- = 2" Conduit
- = 3" Conduit
- = Structure grounding points
- = 100 Watt Underpass Luminaire - HPS.

HPS = High Pressure Sodium

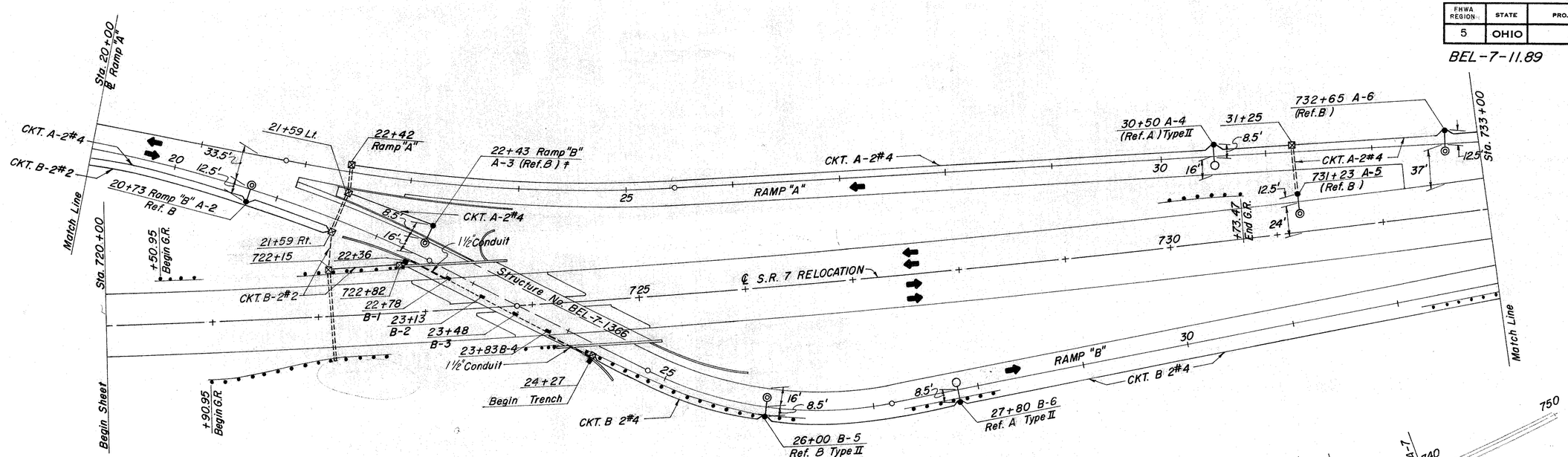
Rev. 7-15-81
Rev. 5-23-79

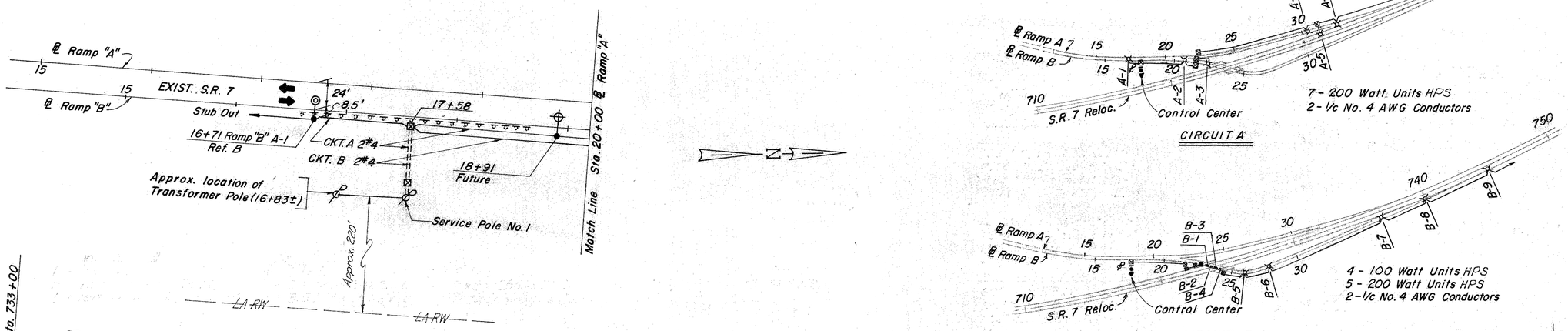
SCHEMATIC a LIGHTING PLAN SOUTH INTERCHANGE

FHWA REGION	STATE	PROJECT	
5	OHIO		

366
443

BEL-7-11.89





NOTE: For details of underpass lighting, light poles and bridge plan details (Br. No. BEL-7-1366) see Sheets No. 367 and HL-3 Std. Const. Dwg.

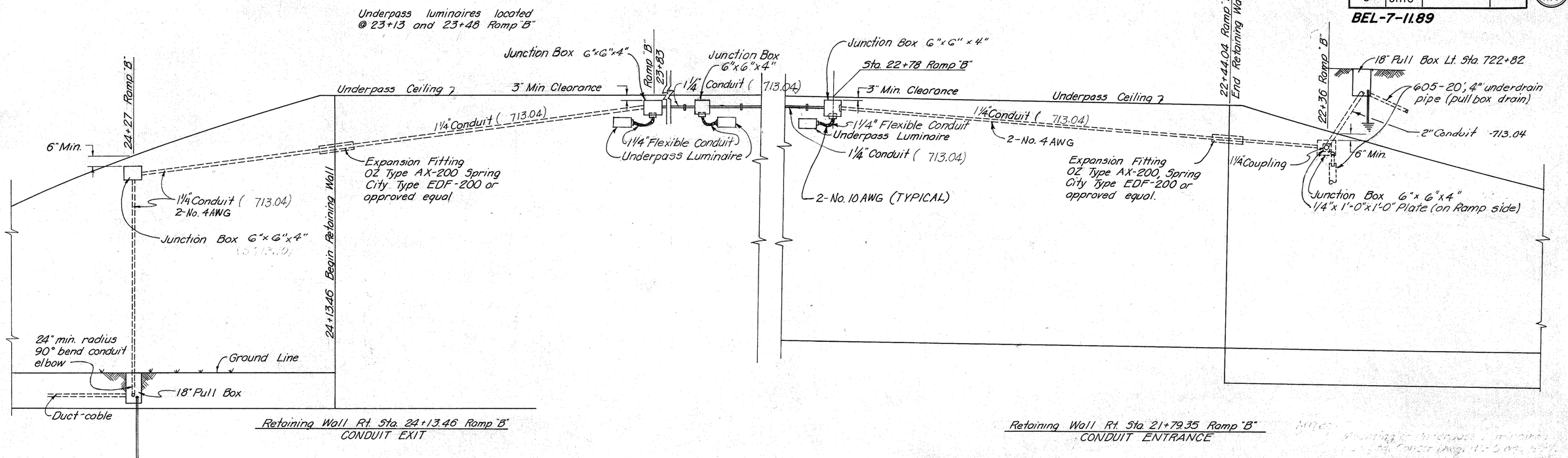
Rev. 5-23-79

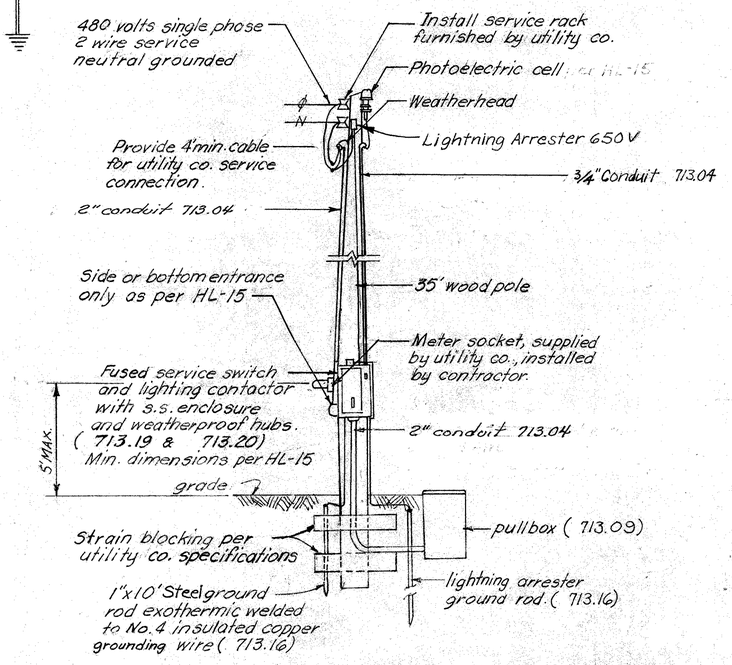
SCHEMATIC & LIGHTING PLAN NORTH INTERCHANGE

FHWA REGION	STATE	PROJECT	FISCAL YEAR
5	OHIO		

367
443

BEL-7-11.89





SERVICE POLE #1

For Details see Std. Constr. Dwg. HL-15

DETAIL FOR SERVICE TO UNDERPASS LIGHTING

See General Notes for each item included in Service for Underpass Lighting

NOTE: See sheets 347, 348, 352 and 353 for details of conduit in the abutments.

Rev. 5-23-79

STICKLEN - BELSHEIM & ASSOCIATES
ENGINEERS
WORTHINGTON OHIO

LIGHTING DETAILS FOR BRIDGES and UNDERPASSES
BRIDGE NO. BEL-7-1366 OVER RAMP "B"
BRIDGE NO. BEL-7-1197 OVER B. & O. R.R.

F.H.W.A. REGION	STATE	PROJECT	
5	OHIO		

368
443

BEL - 7 - 11.89

Calc. by R.E.S. 10/76
Checked by A.W.L. 11/77

SUMMARY TABLES

635

620 DELINEATORS

Ref.	Side	Station From	Station To	Spacing (Ft.)	Post D	Brkt. D	Post A	Brkt. A
BEL-7	Lt.	631+00	634+00	100	4			
	"		634+84			1		
	"	636+00	640+00	200				3
	"	642+00	684+00	200			22	
	"	686+00	690+00	200				3
	"	692+00	732+00	200			21	
	"	732+00	736+20	See Ramp "A"				
	"	737+20	740+20	100	4			
	"	742+00	756+00	200			8	
	"	756+40	760+00	60	7*			
Sub Total	Lt.				15	1	51	6
BEL-7	Rt.	631+65	633+65	100	3			
	"	634+65	635+65	100		2		
	"	637+65	639+65	200				2
	"	641+65	683+65	200			22	
	"	685+65	689+65	200				3
	"	691+65	733+65	200			22	
	"	733+65	736+00	See Ramp B				
	"	737+00	745+00	100	9			
	"	746+00	748+00	200			2	
	"		749+00	100	1*			
	"	750+00	760+00	40	26*			
Sub Total	Rt.				40	2	46	5
Ramp A	Rt.Lt.	13+00	20+00	100	16			
	Lt.	21+00	22+60	80	3			
	Rt.	22+60	28+20	100	8			
	Lt.	28+20	36+20	100	9			
Sub Total					36			
Ramp B	Rt.	19+90	21+70	60	4			
	Lt.	21+70	22+90	60	3			
	Rt.		24+30		1			
	"	24+80	27+20	30	9			
	"	28+20	36+20	100	9			
Sub Total					26			
Total					117	3	97	11

*Delineators to be removed at the completion of adjacent project = 34

621 TRAFFIC ZONE PAINT MARKING

Ref.	Side	Station From	Station To	4" White Edge Line Lin.Ft.	4" Yellow Edge Line Lin.Ft.	6" Lane Line Lin.Ft.	Center-line Solid Double Lin.Ft.	4" Broken Center-line Lin.Ft.	Center-line Broken & Solid Lin.Ft.	8" Chan. Line Lin.Ft.	24" White Broad Trans. Lines Lin.Ft.	24" Yellow Broad Trans. Lines Lin.Ft.	White Curb Marking Lin.Ft.	Yellow Island Marking Sq.Ft.	Lane Arrows Each
BEL-7	Lt.	630+00	632+68	268	268	268									
	"	632+68	732+25	9,957	9,957	9,957									
	"	732+25	735+64		339	339				339	404				
	"	735+64	737+24	160	160	320									
	"	737+24	749+50	1226	1226	1226									
	"	749+50.0	753+36.3	386		50	386					338			
	"	753+36.3	755+00	164											
	℄	753+36.3	756+36.3				300								
	℄	756+36.3	760+00.02						364						
Sub Total	Lt.			12,161	11,950	12,160	686		364	339	404	338			
BEL-7	Rt.	630+00	630+04	4	4	8									
	"	630+04	737+00	10,696	10,696	10,696									
	"	737+00	739+00	400	200	200				200					
	"	739+00	741+40	240	240	480									
	"	741+40	747+45	605	605	605									
	"	747+45	753+36.3	491			491					388			
		753+36.3	760+00.02	664											
Sub Total	Rt.			13,100	11,745	11,989	491			200		388			
Ramp A	Lt.	12+75	35+64	2,289											
	℄	12+75	20+50				775								
	℄	21+00													1
	Rt.	12+75	20+50	775											
	"	20+50	21+93.49				144					103			
	"	21+93.49	22+31.49		38									258	
	"	22+31.49	25+75		344										
	"	25+75	32+27.29		652										
		32+27.29	35+64							337					
Sub Total				3,064	1034		919			337		103		258	1
Ramp B	Lt.	19+70	21+11.54				142								
	"	21+11.54	21+50		39										
	"	21+50	25+75		425										
	"	25+75	30+87.50		513										
	"	30+87.50	35+00		413								413		
	"	35+00	37+00										200		
	Rt.	19+70	37+00	1730											
	℄	20+20													1
Sub Total				1,730	1,390		142						613		1
C.R. 46	Lt.	6+25	27+40	2,115											
	"	28+05	44+00	1,595											
	Rt.	1+57.2	27+50	2,593											
	"	28+10	44+00	1,590											
	℄	0+15	8+50					835							
	"	8+50	27+40				1890								
	"	28+10	37+50				940								
	"	38+25	44+00				575								
Sub Total				7,893			3405	835							
Total in Lin. Ft. =				37,948	26,119	24,149	5,643	835	364	876	404	829	613	258	2
Total in Miles =				12.13	4.57		1.30				1233				

GENERAL SUMMARY OF ESTIMATED TRAFFIC CONTROL QUANTITIES

TYPE CODE 7204

Sheet Number 368	370	371	372	373	374	Item No.	Total	Unit	Item Description
						202	1	Each	Removal of Ground Mounted Sign Installation for Storage
						202	2	Each	Removal of Ground Mounted Major Sign Installation for Storage
	1					202	Lump	Lump	Removal and Storage or Temporary Guardrail
	2					620	97	Each	Delineators, Type A, Bracket Mounted
	Lump					620	11	Each	Delineators, Type A, Post Mounted
97						620	117	Each	Delineators, Type D, Post Mounted
11						620	3	Each	Delineators, Type D, Bracket Mounted
117						620			
3						621	12.13	Miles	Edge lines
12.13						621	4.57	Miles	6" Lane lines
4.57						621	1.30	Miles	Centerlines
1.30						621	876	Lin.Ft.	8" Channelizing lines
876						621	1233	Lin.Ft.	24" Broad transverse lines
1233						621	613	Lin.Ft.	Curb marking
613						621	258	Sq.Ft.	Island marking
258						621	2	Each	Lane arrows
2									
		180	64.56	52.25	43.56	844	178.4	Sq.Ft.	Sign erected, flat sheet
		60	23.70	165.0	90.0	120.0	844	672.0	Sign erected, extrusheet
		125.6	—	—	—	—	844	125.6	Interim overlays and coverings removed and disposed of
			77.0	168.5	67.0	86.5	844	399.0	Ground Mounted support No. 4 post
			35.0	—	37.0	—	844	72.0	Ground Mounted support 5"x7"
		41.5	124.5	102.0	38.0	72.0	844	378.0	Ground Mounted support 10WF11.5
		2	4	—	4	4	844	14.0	Breakaway sign support connection
		2.2	7.14	6.66	2.74	4.4	844	23.1	Concrete for anchor base foundation

Rev. 5-23-79

GENERAL NOTES

202
REMOVAL AND STORAGE OF TEMPORARY GUARDRAIL

This work shall consist of "Removal and Storage of Temporary Guardrail" 606.04. It shall also include the cleaning of the site in preparation for opening to traffic.

To assure maintenance of adequate traffic control at all times, no items shall be removed without the approval of the Engineer.

The basis of payment will be as follows and will be full compensation for the removal of the Guardrail and Barrels, including Signs, Delineators, Posts or other Items attached thereto and their storage for removal by state forces, disposal, or reuse elsewhere on the project. Payment will also include the cleaning of the site in preparation for opening to traffic.

202 REMOVAL AND STORAGE OF TEMPORARY GUARDRAIL, AT THE CONTRACT LUMP SUM.

202
REMOVAL OF GROUND MOUNTED SIGN INSTALLATIONS FOR STORAGE

This work shall consist of the removal of sign installations as shown on the plans.

Work shall consist of the removal of sign supports, signs and foundations and the disposal of surplus material.

All signs, supports and accessories removed shall be stored within the limits of the project at locations approved by the Engineer for removal by State Forces.

To assure maintenance of adequate traffic control at all times, no signs shall be removed without the approval of the Engineer.

Payment for removal of ground mounted sign installations will include all necessary labor and equipment required to perform the required work as indicated above.

Basis of payment will be as follows:

(1) 202 Removal of Ground Mounted Major Sign Installations for Storage, at the contract bid price per each, for signs Forty (40) Square Feet or greater.

(2) 202 Removal of Ground Mounted Sign Installations for Storage, at the contract bid price per each, for signs less than Forty (40) Square Feet.

614
EXISTING SIGNS

Existing signs located within the roadwork areas which are necessary for interim or permanent traffic control shall be removed and re-erected in locations indicated by the plans or as approved by the Engineer. Stop signs shall be maintained at all times while traffic is maintained. The cost of removal, re-erection and subsequent removal if required will be considered a subsidiary work item, the cost of which will be included in the price bid for the roadway items. The signs which are to be re-erected outside the paver berms shall be located with the center line of support on the point of intersection (P.I.) of the shoulder.

844
SIGNS FURNISHED BY THE STATE

The Contractor shall submit, in triplicate, a schedule for sign erection to the Engineer at least 120 calendar days prior to the start of any scheduled erection work. The schedule shall include proposed dates, sign numbers and delivery point. The Engineer will furnish copies of the schedule to the district Traffic Engineer and to the Engineer of Design Services, 25 South Front Street, Columbus, Ohio 43215

844
INTERIM OVERLAY REMOVED AND DISPOSED OF

This work shall consist of the removal of rivets in the interim overlay and the disposal of the overlay to the satisfaction of the Engineer.

Rivets to be removed shall be drilled out and the overlay removed in such a way as not to harm the surface of the sign. Remaining rivets in the sign shall be checked and any loose or damaged rivets shall be replaced.

The quantity of interim overlay removed and disposed of will be paid for at the price bid per square foot, 844 Interim Overlay Removed and Disposed of, which price will be full compensation for the removal and disposal of the interim overlay sign and rivets, the replacement of loose or damaged rivets, and all labor and equipment necessary to perform the required work.

844
ALTERNATE DESIGNS FOR SIGN SUPPORTS

If the Contractor desires to furnish alternate design(s) or materials for sign supports, the alternate design(s) shall be submitted to the State at least 21 days prior to opening of bids. The Bidder will be notified as to acceptance or rejection of alternate design at least 7 day before bids are to be opened. Submissions shall be made to the Ohio Department of Transportation, Bureau of Design Services, 25 South Front Street, Columbus, Ohio 43215

844
BEAMS

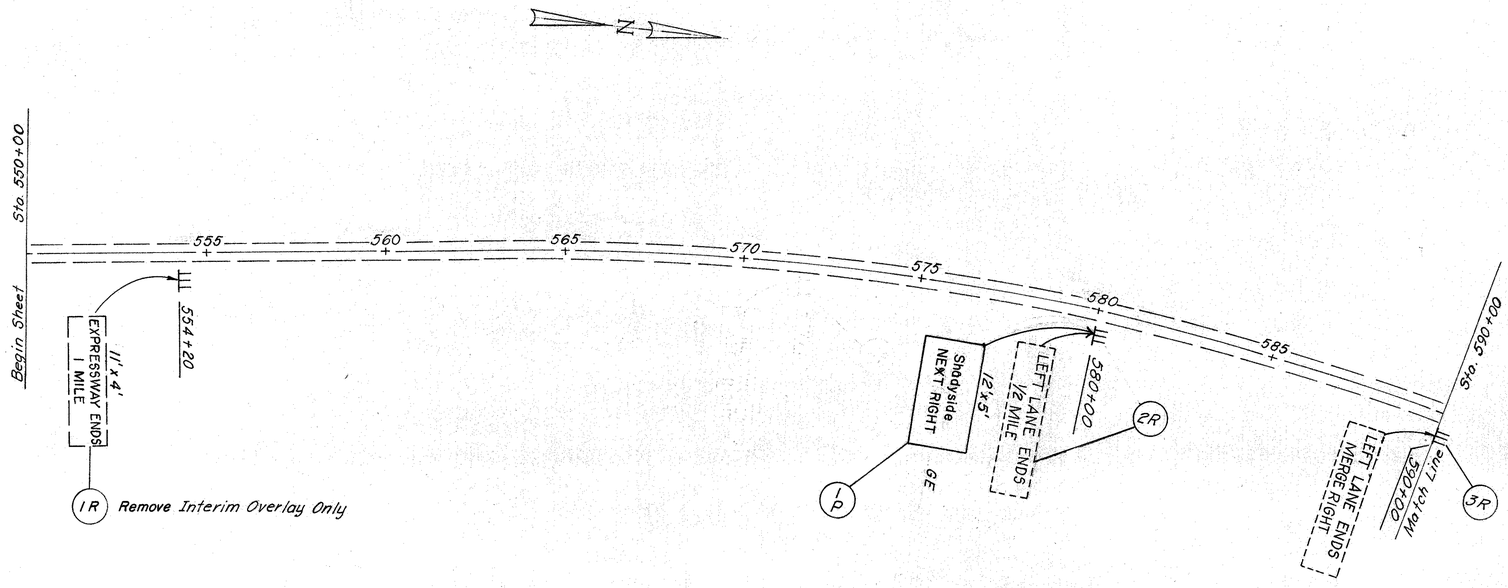
All non-yielding beams shall be placed a minimum of twelve feet and preferable thirty feet from edge of pavement.

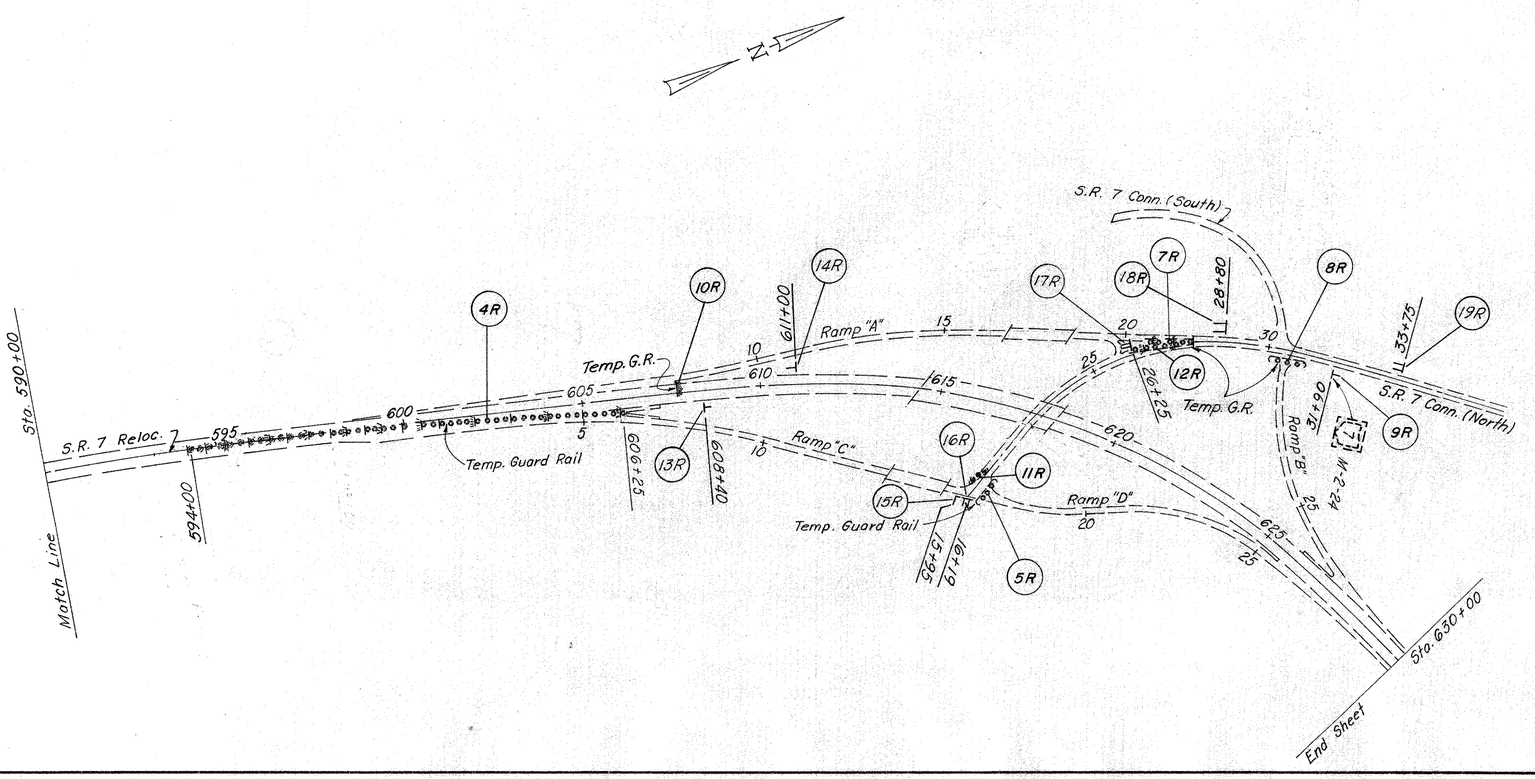
FHWD REGION	STATE	PROJECT	
5	OHIO		

370/443

BEL-7-11.89

Calc. R.E.S. 7/24/69
Checked A.W.L. 7/25/69
Calc. Revised R.E.S. 10/76
Checked A.W.L. 1/77





SIGN SUMMARY					
Ref. No.	Location	844 Sign Erected Extrusheet Sq. Ft.	844 10WF115 L.F.	844 Breakaway Connection EA.	844 Conc. CY.
1P	580+00 Rt.	60	41.5	2	2.2
Total		60	41.5	2	2.2

Sign ( ) to be added at the completion of BEL-7-11.89

202 REMOVAL and STORAGE of TEMPORARY GUARDRAIL		
Ref. No.	Location	Lump
4R	594+00 to 606+32 Rt.	Lump
5R	17+35 ℄ Ramp "D"	Lump
7R	26+25 to 27+75 S.R.7 Conn.	Lump
8R	21+75 ℄ Ramp "B"	Lump
10R	607+65 (Cross S.B. Lane)	Lump
11R	20+90 It. - ℄ 21+40 S.R.7 C.N.	Lump
12R	20+80 to 21+80 Rt. Ramp "A"	Lump
	Total	Lump

NOTE: Temp. Guard Rail to be removed and stored at the completion of BEL-7-11.89

202 REMOVAL OF GROUND MOUNTED MAJOR SIGN INSTALLATATION		
Ref No.	Location	Each
⊛ 2R	580+00 Rt.	1
3R	590+00 Rt.	1
	Total	2
202. REMOVAL OF GROUND MOUNTED SIGN INSTALLATIONS FOR STORAGE		
9R	31+90 Rt. S.R. 7 Conn. N.	1

NOTE: Temporary Signs to be removed and stored at the completion of BEL-7-11.89

⊛ Remove Sign Only

Interim Overlay and Covering Removed & Disposed of		
Ref. No.	Location	Sq. Ft.
13R	608+40 Rt.	4.0
14R	611+00 Lt.	14.0
15R	15+95 Rt. ℄ Ramp "C"	9.0
16R	16+19 Rt. ℄ Ramp "C"	8.1
17R	26+25 Lt. ℄ S.R. 7 Conn. (North)	15.0
18R	28+80 Lt. ℄ S.R. 7 Conn. (North)	24.0
19R	33+75 Lt. ℄ S.R. 7 Conn. (North)	7.5
*1R	554+20 Rt.	44.0
Total		125.6

NOTE: Interim Overlays and Covering to be removed and Disposed of at the completion of BEL-7-11.89

* Remove Overlay Only

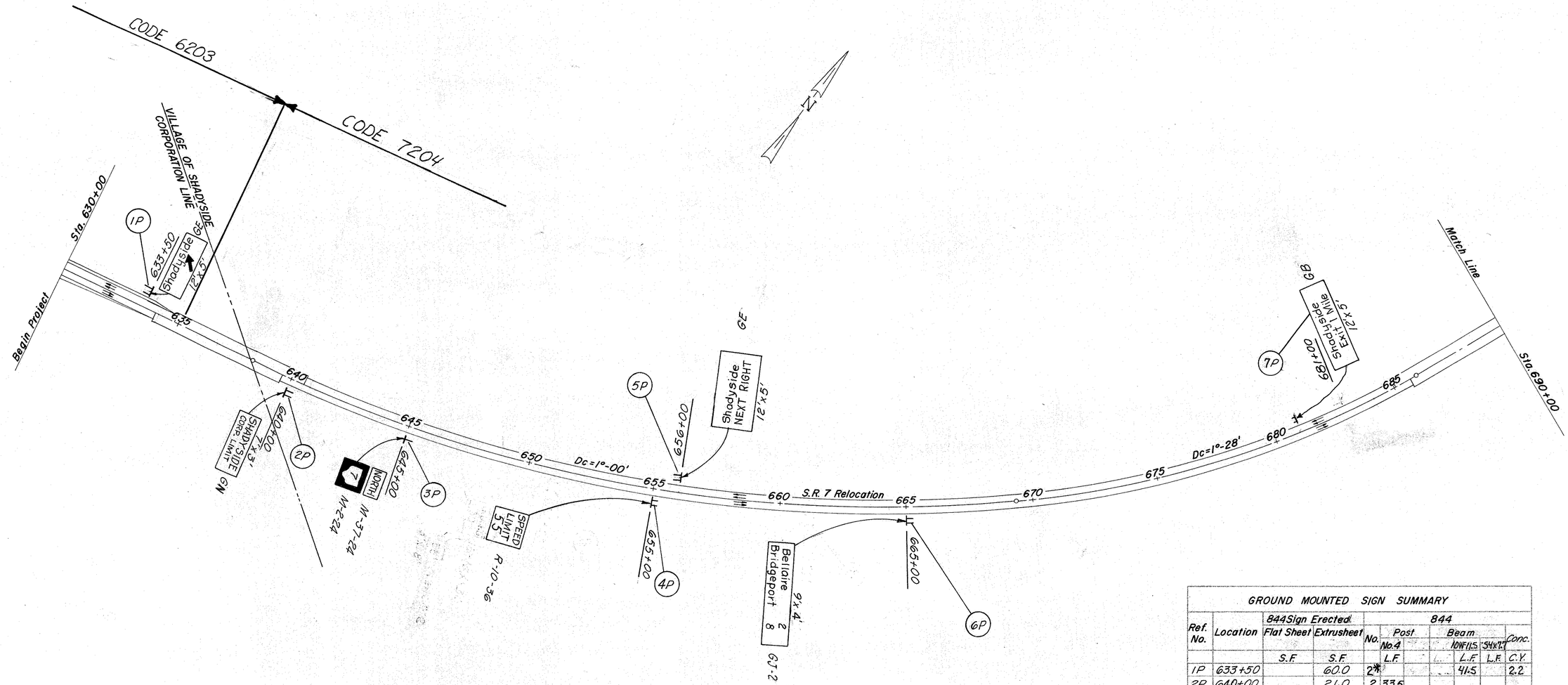
SIGN LAYOUT PLAN

FHWA REGION	STATE	PROJECT	
5	OHIO		

371
443

BEL-7-11.89

Calc. R.E.S. 7/24/69
Checked A.W.L. 7/25/69
Calc. Revised R.E.S. 10/76
Checked A.W.L. 1/77



GROUND MOUNTED SIGN SUMMARY

Ref. No.	Location	844 Sign Erected Flat Sheet	844 Sign Erected Extrusheet	844 No.	844 Post No.4	844 Beam 10WF11.5	844 Beam 5Hx1.7	Conc.
		S.F.	S.F.		L.F.	L.F.	L.F.	C.Y.
1P	633+50		60.0	2*		41.5		2.2
2P	640+00		21.0	2	33.5			
3P	645+00	6.0		1	14.5			
4P	655+00	12.0		2	29.0			
5P	656+00		60.0	2*		41.5		2.2
6P	665+00		36.0	2			35	0.54
7P	681+00		60.0	2		41.5		2.2
Totals		18.0	237.0	4*	77.0	124.5	35.0	7.14

Overlay

* Breakaway Sign Support Connections

(P) = Permanent Signs

Base Plan "A"

SIGN LAYOUT PLAN

FHWA REGION	STATE	PROJECT	
5	OHIO		

3.72
443

BEL-7-11.89

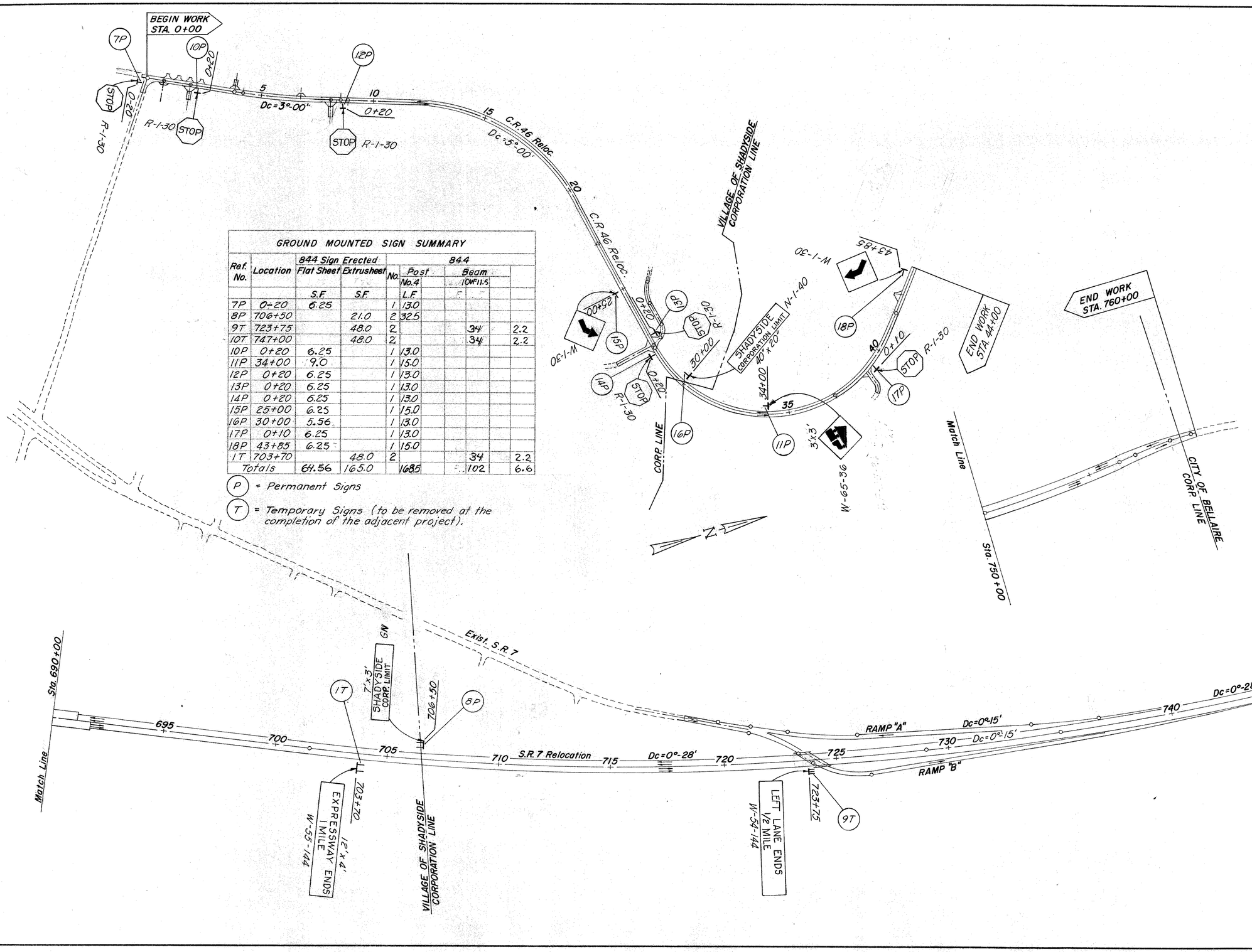
Calc. R.E.S. 7/24/69
Checked A.W.L. 7/25/69
Calc. Revised R.E.S. 10/76
Checked A.W.L. 1/77

GROUND MOUNTED SIGN SUMMARY

Ref. No.	Location	844 Sign Erected Flat Sheet	Extrusheet	No.	844 Post No.4	Beam 10WF11.5		
		S.F.	S.F.		L.F.			
7P	0+20	6.25		1	13.0			
8P	706+50		21.0	2	32.5			
9T	723+75		48.0	2			34	2.2
10T	747+00		48.0	2			34	2.2
10P	0+20	6.25		1	13.0			
11P	34+00	9.0		1	15.0			
12P	0+20	6.25		1	13.0			
13P	0+20	6.25		1	13.0			
14P	0+20	6.25		1	13.0			
15P	25+00	6.25		1	15.0			
16P	30+00	5.56		1	13.0			
17P	0+10	6.25		1	13.0			
18P	43+85	6.25		1	15.0			
1T	703+70		48.0	2			34	2.2
Totals		64.56	165.0		1685		102	6.6

(P) = Permanent Signs

(T) = Temporary Signs (to be removed at the completion of the adjacent project).



Base Plan "A"

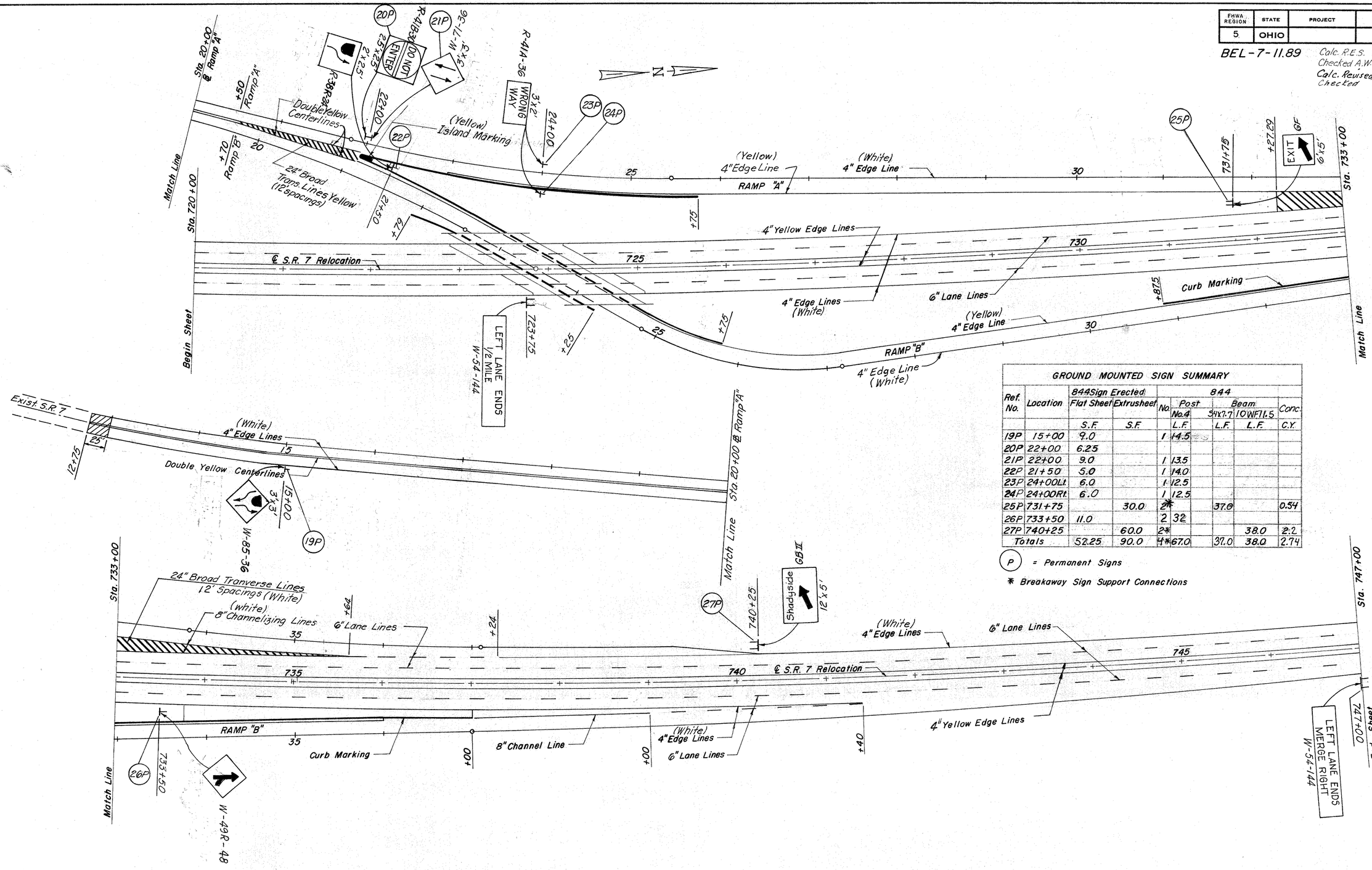
SIGN LAYOUT PLAN

FHWA REGION	STATE	PROJECT	
5	OHIO		

373
443

BEL-7-11.89

Calc. R.E.S. 7/24/69
Checked A.W.L. 7/25/69
Calc. Revised R.E.S. 10/76
Checked A.W.L. 1/77



GROUND MOUNTED SIGN SUMMARY

Ref. No.	Location	844 Sign Erected Flat Sheet	844 Sign Erected Extrusheet	844 No.	844 Post No.4	844 Beam 3"x7.7	844 Beam 10WF11.5	844 Conc.
		S.F.	S.F.		L.F.	L.F.	L.F.	C.Y.
19P	15+00	9.0		1	14.5			
20P	22+00	6.25						
21P	22+00	9.0		1	13.5			
22P	21+50	5.0		1	14.0			
23P	24+00Lt.	6.0		1	12.5			
24P	24+00Rt.	6.0		1	12.5			
25P	731+75		30.0	2*		37.0		0.54
26P	733+50	11.0		2	32			
27P	740+25		60.0	2*			38.0	2.2
Totals		52.25	90.0	4*	67.0	37.0	38.0	2.74

(P) = Permanent Signs

* Breakaway Sign Support Connections

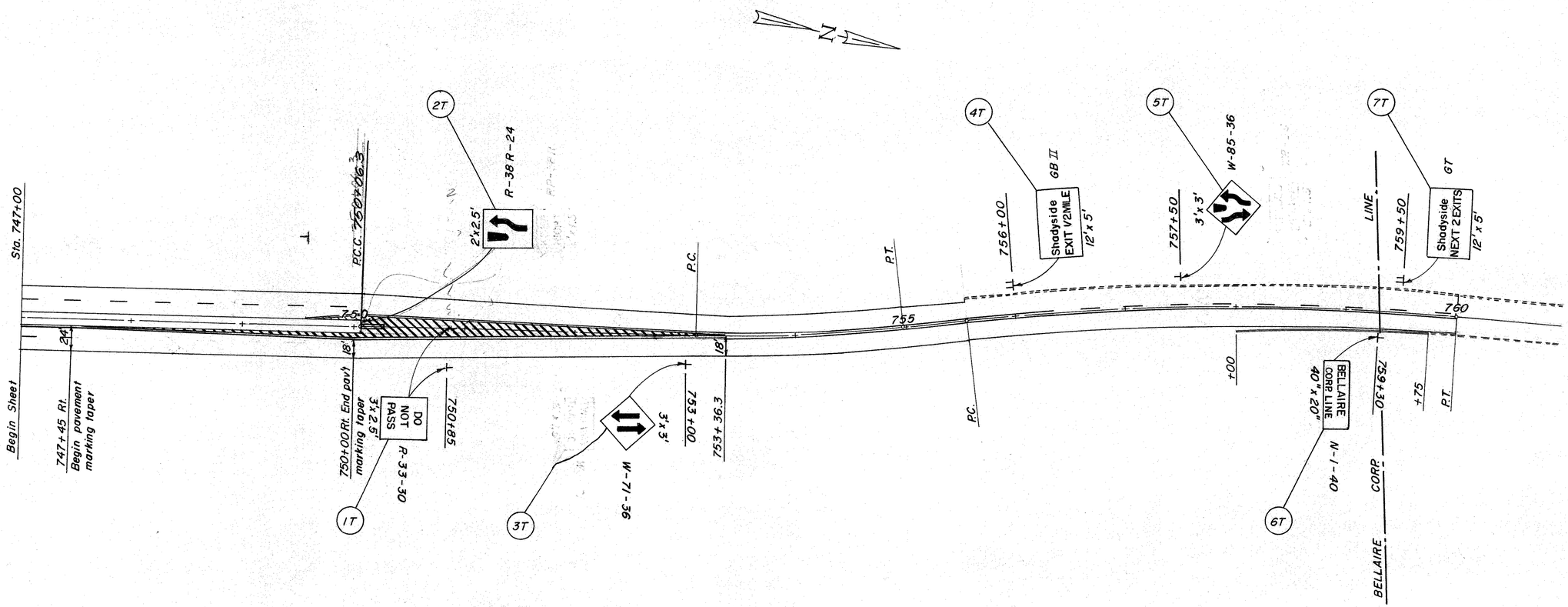
Base Plan "B"

SIGN LAYOUT AND PAVEMENT MARKING PLANS

F.H.W.A. REGION	STATE	PROJECT	
5	OHIO		

374
443

BEL.-7-11.89 Calc.by R.E.S. 10/76
Checked by AWL 1/77



GROUND MOUNTED SIGN SUMMARY

Ref. No.	Location	844 Sign Erect		844 Supports				
		Flat Sheet	Extrusheet	No.	Post No.4		Beam 10WF11.5	Conc.
		S.F.	S.F.		L.F.	....	L.F.	C.Y.
1T	750+85	7.5		1	14.5			
2T	750+88	12.5		1	15.0			
3T	753+00	9.0		1	15.0			
4T	756+00		60.0	2*			39.0	2.2
5T	757+50	9.0		1	15.0			
6T	759+30	5.56		2	27.0			
7T	759+50		60.0	2*			33.0	2.2
TOTALS		43.56	120.0	4*	86.5		72.0	4.4

(T) = Temporary Signs (to be removed at the completion of the adjacent project.)

* Breakaway Sign Support Connections

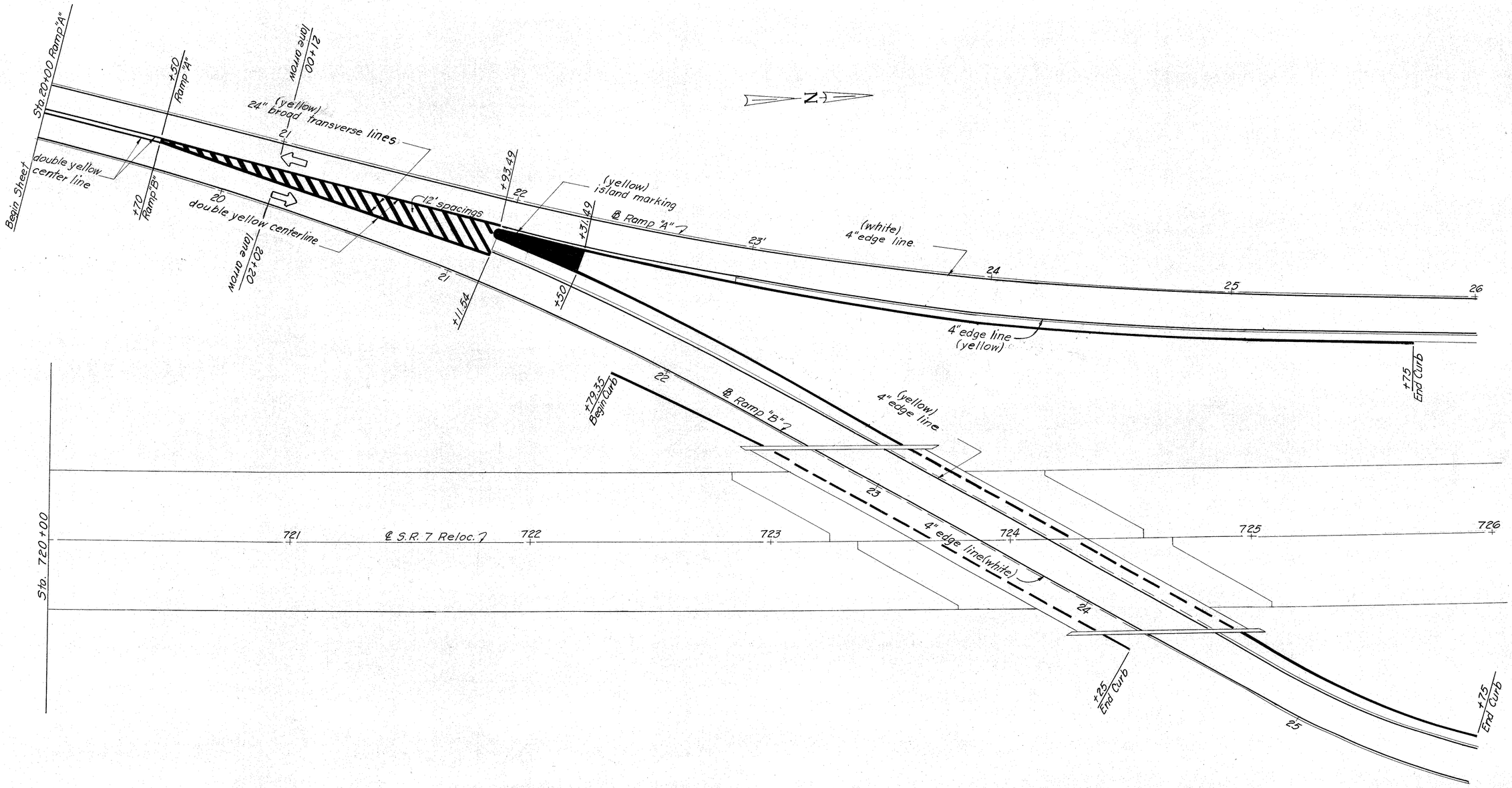
Rev. 5-23-79 **Base Plan "B"**

SIGN LAYOUT PLAN

FHWA REGION	STATE	PROJECT	FISCAL YEAR
5			

375
443

BEL-7-11.89

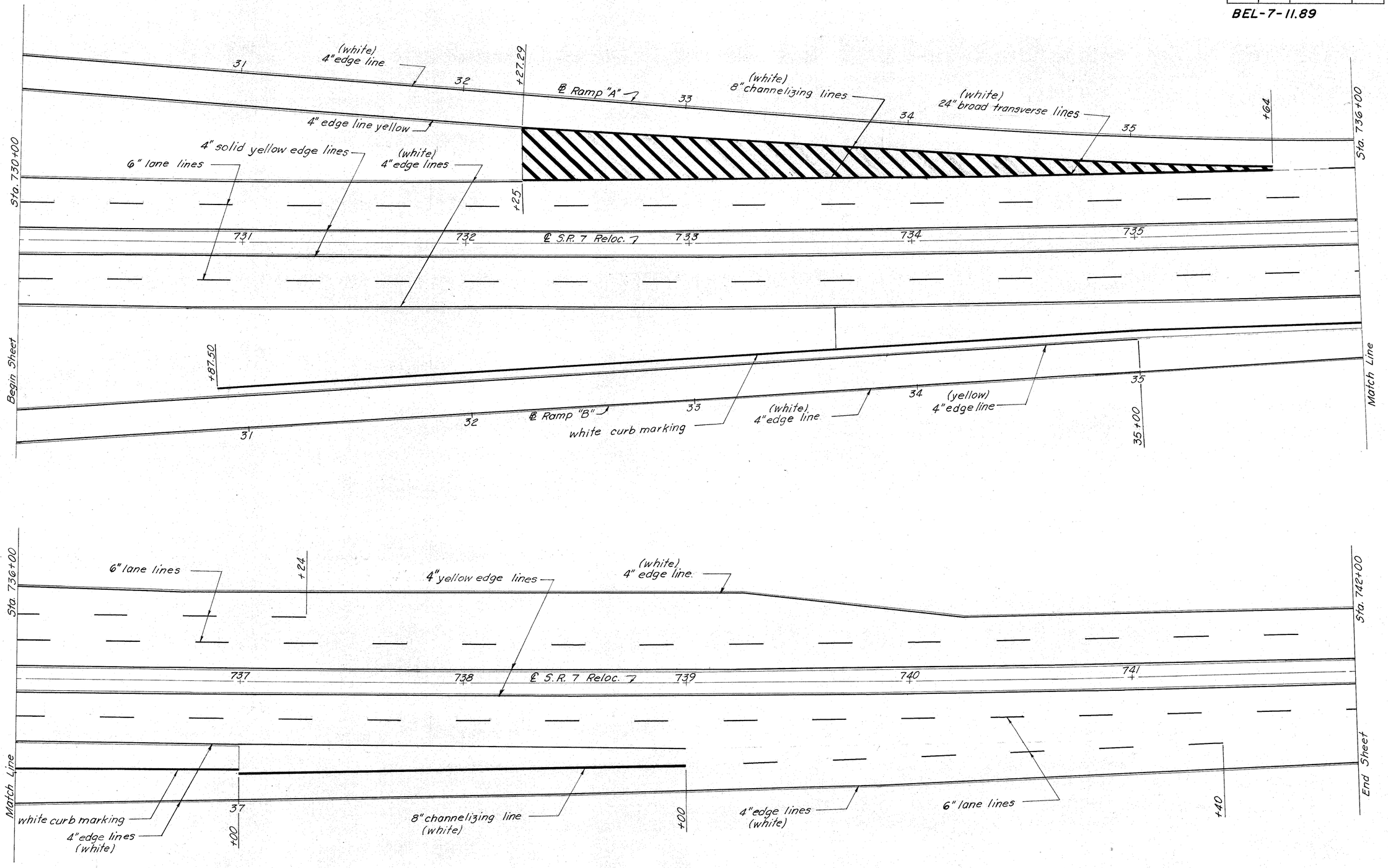


INTERCHANGE PAVEMENT MARKING DETAILS

FHWA REGION	STATE	PROJECT	FISCAL YEAR
5			

376
443

BEL-7-11.89



INTERCHANGE PAVEMENT MARKING DETAILS

F.H.W.A. REGION	STATE	PROJECT	
5	OHIO		

BEL-7-11.89

377
493

Sta. 747+00

4" yellow edge line

4" edge line (white)

6" lane line

750+00 End 4" lane line Lt.

750+06.3 Begin taper and Temp. Conn.

Great Traffic Attenuator

NOTE: For Details See Sheet No. 14.

750+86.3 End 4" yellow edge line Lt.

double yellow centerline

(white) 4" edge line

End taper 753+36.30

Sta. 753+50

748 749 ℄ S.R. 7 Reloc. 750 751 752 ℄ S.R. 7 Temp. Conn. 753

24' 18' 18'

6' Typ.

Begin Sheet

6" lane line

double yellow centerline

(yellow) 24" broad transverse line

double yellow centerline

Match Line

747+45 End 4" edge line and 4" yellow edge line Rt. ℄ Begin solid double centerline and 24" broad transverse line

750+00

753+36.30 End solid double centerline and 24" broad transverse line Lt. & Rt. Begin solid double centerline

N

Sta. 753+50

(white) 4" edge line

755+00 End 4" edge line Lt.

(white) 4" edge line

Exist. curb

754 755 756 ℄ S.R. 7 Temp. Conn. 757 758 759 760

18' 18' 21' 18' 16.5' 16.3'

double yellow centerline

broken and solid centerline

Prop. Curb (Type 6)

Ex. Curb & Gutter

Match Line

756+36.3 End solid double centerline Begin broken & solid centerline

758+00 758+25 759+75

760+00.02 End 4" edge line Rt. and broken & solid centerline

Rev. 5-23-79

747+00 to 760+00.02 PAVEMENT MARKING DETAILS

TE-95
400-8-64

MICROFILMED
NOV 1 1968

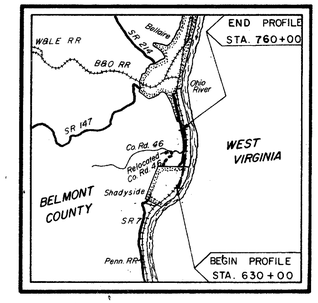
SOIL PROFILE

BELMONT COUNTY

BEL-7-11.89

OHIO STATE HIGHWAY TESTING LABORATORY
1620 W. BROAD ST. COLUMBUS 23, OHIO

NOTE: INFORMATION SHOWN BY THIS SUBGRADE PROFILE WAS OBTAINED SOLELY FOR USE IN ESTABLISHING DESIGN CONTROLS FOR THE PROJECT. THE STATE OF OHIO DOES NOT GUARANTEE THE ACCURACY OF THIS DATA AND IT IS NOT TO BE CONSTRUED AS A PART OF THE PLANS GOVERNING CONSTRUCTION OF THE PROJECT.



LOCATION MAP

Recon - L.E.S., J.S.M. - 4/8/68 to 4/16/68
Auger - J.W.P., T.R.S. - 4/11/68 to 4/18/68
Drilling - Core - A.V., H.D.P., J.H.S. - 6/18/68 to 7/12/68
Drafting - R.L.W. - 7/26/68

GENERAL INFORMATION

INTRODUCTION

THE PROJECT CONSIST OF THE CONSTRUCTION OF RELOCATED SR 7, BEGINNING 0.5 MILE SOUTH OF THE SHADYSIDE NORTH CORPORATION LINE, 160 FEET EAST OF THE RIVER, EXTENDING IN A NORTHWARD DIRECTION, AND TERMINATING IN BELLAIRE, ADJACENT TO EXISTING SR 7, 3000 FEET NORTH OF THE COUNTY ROAD 46 AND EXISTING SR 7 INTERSECTION. ALSO INCLUDED IN THIS REPORT ARE SOIL PROFILES FOR RELOCATED COUNTY ROAD 46 AND THE PROPOSED RAMPS FOR THE EXISTING SR 7 INTERCHANGE.

PROPOSED GRADES INDICATE THE FOLLOWING MAXIMUM CUTS AND FILL EMBANKMENTS:

SR 7 - MAXIMUM CUTS 45-FOOT DEEP AND 50-FOOT HIGH FILL EMBANKMENTS.

RAMP A - 55-FOOT DEEP CUTS.

RAMP B - MAXIMUM CUTS 6-FOOT DEEP AND MAXIMUM 20-FOOT HIGH FILL EMBANKMENTS.

COUNTY ROAD 46 - MAXIMUM CUTS 30-FOOT DEEP AND MAXIMUM 10-FOOT HIGH FILL EMBANKMENTS.

GEOLOGY AND OBSERVATIONS OF THE PROJECT

SR 7 - THE ALIGNMENT INCEPTS ON THE TERRACED FLOODPLAIN OF THE OHIO RIVER AND ASCENDS THE STEEP-WALLED WEST VALLEY WALL; DESCENDS AND TERMINATES ON THE TERRACED FLOODPLAIN OF THE OHIO RIVER.

RAMP A - LOCATED ON THE DISSECTED PORTION OF THE STEEP-WALLED WEST VALLEY WALL OF THE OHIO RIVER.

RAMP B - LOCATED ON THE TERRACED FLOODPLAIN OF THE OHIO RIVER.

COUNTY ROAD 46 - LOCATED ON THE UPLAND PORTION OF THE WEST VALLEY WALL OF THE OHIO RIVER.

SHALE, SANDSTONE, LIMESTONE, INDURATED CLAY, AND ASSOCIATED COALS AND UNDERCLAY, OF PERMIAN AGE, ARE OVERLAIN BY DEEP ALLUVIUM IN THE FLOODPLAIN AREAS AND SHALLOW RESIDUAL SOIL COVER ON THE VALLEY WALL AND UPLAND AREAS. SEVERAL ROCK EXPOSURES WERE OBSERVED AND MEASURED ALONG THE EXISTING SR 7 CUT BETWEEN APPROXIMATE STATIONS 734+00 AND 746+50 AND ALONG EXISTING COUNTY ROAD 46. A SLUMP AREA WAS OBSERVED AT APPROXIMATELY RAMP A STATIONS 24+00 AND 28+00.

EXPLORATION

EXPLORATORY BORINGS WERE MADE BY MEANS OF TRUCK-MOUNTED MECHANICAL SOIL AUGER, HAND AUGER (IN AREAS OF DIFFICULT ACCESS), AND ROTARY-TYPE DRILL RIGS, BETWEEN APRIL 11 AND JULY 12, 1968. ALSO INCLUDED IN THIS REPORT ARE THE LOGS OF BORINGS MADE FOR THE STRUCTURE FOUNDATION INVESTIGATIONS ON THIS PROJECT, AND BORINGS MADE FOR A PRELIMINARY INVESTIGATION AND FOR THE SOIL PROFILE INVESTIGATION DESIGNATED BEL-7-9.65.

INVESTIGATIONAL FINDINGS

MATERIALS OCCURRING IMMEDIATELY BELOW PROPOSED GRADE ARE COMPRISED OF SILT CLAYS, CLAYS, AND ELASTIC CLAYS, IN THE A-4a, A-7-6, AND A-7-5 CLASSIFICATIONS, AS WELL AS BEDROCK.

BEDROCK IS ANTICIPATED TO BE ENCOUNTERED IN THE FOLLOWING APPROXIMATE EXCAVATION AREAS:

SR 7

STATIONS 727+00 TO 727+50 - LIMESTONE AT THE LEFT PORTION OF THE GRADE AND IN THE LEFT DITCHLINE.

STATIONS 727+50 TO 732+00 - LIMESTONE AT GRADE AND IN THE LEFT DITCHLINE.

STATIONS 732+00 TO 737+00 - LIMESTONE AT GRADE, IN THE LEFT DITCHLINE, AND IN THE LEFT BACKSLOPE.

STATIONS 737+00 TO 751+00 - LIMESTONE ACROSS THE MAJORITY OF THE GRADE, IN THE LEFT DITCHLINE AND LEFT BACKSLOPE, WITH INTERVALS OF CLAY SHALE SCATTERED THROUGHOUT.

STATIONS 751+00 TO 760+00 - LIMESTONE AT THE LEFT PORTION OF THE GRADE, IN THE LEFT DITCHLINE AND LEFT BACKSLOPE, WITH INTERVALS OF CLAY SHALE SCATTERED THROUGHOUT.

RAMP A

STATIONS 723+50 TO 724+50 - SANDSTONE AT GRADE AND IN THE DITCHLINES AND BACKSLOPES.

STATIONS 724+50 TO 728+50 - LIMESTONE AND POSSIBLE COAL AT GRADE AND IN THE DITCHLINES; LIMESTONE IN THE LOWER PORTION OF THE RIGHT BACKSLOPE AND LIMESTONE WITH SHALE SEAMS IN THE LEFT BACKSLOPE.

STATIONS 728+50 TO 737+00 - LIMESTONE AT GRADE, IN THE DITCHLINES, AND IN THE LEFT BACKSLOPE.

COUNTY ROAD 46

STATIONS 7+50 TO 8+00 - SANDSTONE AND SHALE IN THE LEFT BACKSLOPE.

STATIONS 8+00 TO 10+50 - SANDSTONE AND SHALE IN THE LEFT DITCH AND LEFT BACKSLOPE.

STATIONS 12+50 TO 12+75 - SHALE AND SANDSTONE IN THE RIGHT DITCH AND RIGHT BACKSLOPE.

STATIONS 12+75 TO 14+50 - SHALE AND SANDSTONE AT GRADE AND IN THE RIGHT DITCH AND RIGHT BACKSLOPE.

STATIONS 14+50 TO 18+50 - POSSIBLE SHALE AND SANDSTONE AT GRADE; SHALE AND SANDSTONE IN BOTH DITCHES AND IN BOTH BACKSLOPES.

STATIONS 18+50 TO 19+00 - SHALE AND SANDSTONE AT GRADE AND IN BOTH DITCHLINES AND RIGHT BACKSLOPE.

STATIONS 19+00 TO 20+50 - SHALE AND SANDSTONE AT GRADE AND IN THE RIGHT DITCHLINE AND RIGHT BACKSLOPE.

STATIONS 20+50 TO 28+50 - LIMESTONE AND POSSIBLE COAL AT GRADE AND IN THE DITCHLINES AND LOWER PORTION OF THE BACKSLOPES.

ELASTIC CLAYS WERE ENCOUNTERED AT OR NEAR GRADE BETWEEN SR 7 STATIONS 749+00 AND 759+00.

FROST SUSCEPTIBLE SILT WAS ENCOUNTERED AT GRADE AT RAMP B STATION 20+00.

MATERIALS OCCURRING IN THE EMBANKMENT FOUNDATION AREAS ARE GENERALLY COMPRISED OF SANDS AND GRAVELS WITH SANDY SILTS AND SILT CLAYS, IN THE A-1-a, A-1-b, A-4, AND A-6 CLASSIFICATIONS; GENERALLY HAVING MOISTURE CONTENTS OR MOISTURE CONTENTS IN THE UPPER PORTION OF THE PLASTIC RANGE.

THROUGHOUT MOST OF THE EXCAVATION AREAS, SHALLOW SOIL COVER OVERLIES SLOPING BEDROCK SURFACE.

LEGEND FOR PROJECT AVERAGE RESULTS OF TESTS — 157 SAMPLES TESTED

DESCRIPTION	H.R.B. CLASS	OHIO CLASS	% AGG.	% C. SAND	% F. SAND	% SILT	% CLAY	LIQUID LIMIT	PLASTICITY INDEX	WATER CONTENT	SAMPLES TESTED
GRAVEL	A-1-a(0)	A-1-a	64	20	10	3	3	NP	NP	14	4
GRAVEL WITH SAND	A-1-b(0)	A-1-b	25	47	20	4	4	NP	NP	14	5
FINE SAND	A-3(0)	A-3	22	29	44	-	5	NP	NP	22	-
COARSE AND FINE SAND	------	A-3a	0	1	74	7	18	NP	NP	17	3
STONE FRAGMENTS WITH SAND AND SILT	A-2-4(0)	A-2-4	40	10	22	11	17	27	4	18	2
STONE FRAGMENTS WITH SAND, SILT, AND CLAY	A-2-6(0)	A-2-6	56	11	12	8	13	36	15	18	3
SANDY SILT	A-4(5)	A-4a	6	2	32	35	25	NP	NP	19	39
SILT	A-4(8)	A-4b	0	0	16	56	28	28	5	21	16
SILT AND CLAY	A-6(9)	A-6a	13	2	11	33	41	35	12	20	33
SILTY CLAY	A-6(11)	A-6b	12	3	8	31	46	38	17	21	3
ELASTIC CLAY	A-7-5(14)	A-7-5	9	6	6	24	55	52	19	26	9
CLAY	A-7-6(13)	A-7-6	11	2	5	30	52	46	19	24	26
WEATHERED SHALE			VISUAL CLASSIFICATION								9
INDURATED CLAY	UNDERCLAY		VISUAL CLASSIFICATION								-
SHALE			VISUAL CLASSIFICATION								5
SANDSTONE			VISUAL CLASSIFICATION								-
LIMESTONE			VISUAL CLASSIFICATION								-
COAL			VISUAL CLASSIFICATION								-
RANDOM FILL			VISUAL CLASSIFICATION								-
VARIOUS OTHER MATERIALS			VISUAL CLASSIFICATION								-

TOPSOIL=X'=APPROXIMATE DEPTH.

AUGER BORING-PLAN VIEW.

DRIVE SAMPLE AND/OR CORE BORING-PLAN VIEW.

AUGER BORING PLOTTED TO VERTICAL SCALE ONLY.

DRIVE SAMPLE AND/OR CORE BORING PLOTTED TO VERTICAL SCALE ONLY.

WATER CONTENT NEARLY EQUAL TO OR GREATER THAN LIQUID LIMIT.

INDICATES A NON-PLASTIC MATERIAL WITH A HIGH WATER CONTENT.

FREE WATER.

NUMBER OF BLOWS FOR "STANDARD PENETRATION" TEST.
X=NUMBER OF BLOWS FOR FIRST 6 INCHES.
Y=NUMBER OF BLOWS FOR SECOND 6 INCHES.

NOTE: FIGURES BESIDE BORINGS INDICATE WATER CONTENT IN PERCENT. E.G. 15

SUMMARY OF SOIL TEST DATA

NOTE: NP SHOWN IN LIQUID LIMIT AND PLASTICITY INDEX COLUMNS INDICATES THAT THE MATERIAL IS NON-PLASTIC.
*DENOTES SAMPLE TAKEN AT OR NEAR GRADE.

DRIVE SAMPLE SOIL TEST DATA CONT'D.

STATION & OFFSET	DEPTH FROM	TO	% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	% W.C.	SHTL CLASS.
691+72 37'Rt	5.0	6.0	33	7	11	28	21	28	9	18	A-4a
	10.0	11.0	81	10	5	-	4	NP	NP	10	A-1-a
	15.0	16.0	81	10	5	-	4	NP	NP	10	A-1-a
	20.0	21.0	30	40	20	-	10	NP	NP	11	A-1-b
	25.0	26.0	53	16	22	-	9	NP	NP	5	A-1-b
	30.0	31.0	26	40	26	-	8	NP	NP	17	A-1-b
	35.0	36.0	28	28	26	-	18	NP	NP	11	A-1-b
	40.0	41.0	36	26	25	-	13	NP	NP	12	A-1-b
	45.0	46.0	0	87	12	-	1	NP	NP	20	A-1-b
	50.0	51.0	0	33	61	-	6	NP	NP	32	A-3
	55.0	56.0	0	67	30	-	3	NP	NP	30	A-1-b
	60.0	61.0	0	74	24	-	2	NP	NP	26	A-1-b
	65.0	66.0	0	23	75	-	2	NP	NP	35	A-3
	70.0	71.0	0	39	57	-	4	NP	NP	29	A-3
	75.0	76.0	0	56	40	-	4	NP	NP	25	A-1-b
722+37 60'Lt	2.5	3.5	6	6	15	30	43	33	11	29	A-6a
	5.0	6.0	3	9	17	35	36	37	14	16	A-6a
	7.5	8.5	15	10	14	30	31	34	14	23	A-6a
	10.0	11.0	1	6	24	37	32	28	9	24	A-4a
	12.5	13.5	5	23	12	33	27	NP	NP	25	A-4a
	15.0	16.0	4	4	35	31	26	NP	NP	14	A-4a
	17.5	18.5	27	10	28	19	16	26	9	15	A-2-4
	20.0	21.0	21	8	38	18	15	NP	NP	14	A-2-4
	25.0	26.0	0	0	35	52	13	NP	NP	26	A-4b
	30.0	31.0	3	16	32	32	17	NP	NP	13	A-4a
730+00 187'Lt	5.0	6.0	17	8	6	26	43	36	14	24	A-6a
	10.0	10.5	(8	7	12	36	37	26	8	9)	VISUAL
	GRAY WEATHERED SHALE										
RAMP A											
27+00 15'Lt	5.0	6.0	8	9	10	36	37	32	10	19	A-4a *
	10.0	11.0	0	4	5	25	66	31	11	24	A-6a
	15.0	15.4	0	12	17	33	38	25	7	17	A-4a
RAMP B											
25+70 23'Lt	2.5	3.5	1	3	36	42	18	NP	NP	23	A-4a
	5.0	6.0	0	0	27	54	19	NP	NP	22	A-4b
	7.5	8.5	0	0	36	48	16	NP	NP	26	A-4a
	10.0	11.0	0	0	27	57	16	NP	NP	26	A-4a
	12.5	13.5	0	0	25	60	15	NP	NP	26	A-4b
	15.0	16.0	20	24	31	16	9	NP	NP	17	A-1-b
	17.5	18.5	35	15	41	-	9 -	NP	NP	27	A-1-a
	20.0	21.0	43	12	36	-	9 -	NP	NP	12	A-1-a
	25.0	26.0	6	7	19	27	41	32	10	19	A-4a
	30.0	31.0	15	6	23	25	31	27	7	21	A-4a
COUNTY ROAD 46											
25+65 CL	5.0	6.0	0	1	10	52	37	31	10	23	A-4b
	10.0	11.0	0	1	50	30	19	24	8	18	A-4a
	15.0	16.0	0	1	1	23	75	48	20	31	A-7-6
	20.0	21.0	0	6	6	50	38	26	7	13	A-4a

SOIL INFORMATION - All available soil and bedrock information which can be conveniently shown on the soil profile and/or structure foundation investigation sheets has been so reported. Additional subsurface investigations may have been made to study some special aspect of the project. Copies of the data, if any, may be inspected in the District Deputy Director's Office, the Bureau of Tests at 1600 West Broad Street, the Pavement and Soils Section of the Bureau of Roadway Design or in the Bureau of Bridges at 25 South Front Street.

MICROFILMED
NOV 1 1961

SOIL PROFILE

(2/39)

BELMONT COUNTY
BEL-7-11.89

OHIO STATE HIGHWAY TESTING LABORATORY
1620 W. BROAD ST. COLUMBUS 23, OHIO

(2/15)

SUMMARY OF SOIL TEST DATA

NOTE: NP SHOWN IN LIQUID LIMIT AND PLASTICITY INDEX COLUMNS INDICATES THAT THE MATERIAL IS NON-PLASTIC.
*DENOTES SAMPLE TAKEN AT OR NEAR GRADE.

STATION & OFFSET		DEPTH FROM	TO	% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	% W.C.	SHTL CLASS.
						SR 7						
630+00	CL	0.5	5.0	5	2	5	44	44	36	13	24	A-6a
		5.0	10.0	0	1	1	36	62	47	20	22	A-7-6
		10.0	15.0	24	9	11	29	46	62	33	21	A-7-6
		15.0	20.0	65	10	14	11	10	36	18	14	A-2-6
		20.0	23.0	69	8	8	5	10	34	16	22	A-2-6
		23.0	28.0	71	17	10	1	1	NP	NP	14	A-1-a
		28.0	28.5	27	54	15	2	2	NP	NP	19	A-1-b
633+00	CL	0.5	2.0	0	1	13	67	19	NP	NP	25	A-4b
		2.0	7.0	35	55	4	3	3	NP	NP	11	A-1-b
		7.0	11.0	53	37	5	3	2	NP	NP	11	A-1-a
636+00	25'Lt	0.0	5.0	(66	18	9	5	2	NP	NP	15)	
				CINDERS, SAND AND SOIL								VISUAL
		5.0	7.0	(31	30	19	14	6	NP	NP	46)	
				CINDERS, SAND AND SOIL								VISUAL
		7.0	11.0	30	36	20	7	7	NP	NP	15	A-1-b
		11.0	15.0	52	24	18	3	3	NP	NP	12	A-1-a
639+50	CL	0.5	6.0	0	2	9	49	40	42	16	33	A-7-6
		6.0	10.0	0	1	5	48	46	42	14	29	A-7-6
		10.0	15.0	0	0	24	49	27	29	9	19	A-4a
647+00	CL	0.5	5.0	0	0	7	55	38	35	12	19	A-6a
		5.0	10.0	0	0	6	50	44	41	17	21	A-7-6
		10.0	12.0	0	0	7	51	42	36	13	22	A-6a
		12.0	17.0	0	0	29	42	29	28	11	22	A-6a
		17.0	20.0	0	0	22	47	31	27	6	23	A-4a
657+00	32'Lt	0.5	5.0	0	0	16	52	32	32	9	22	A-4b
		5.0	10.0	0	0	5	54	41	34	10	22	A-4b
		10.0	15.0	0	0	13	52	35	31	7	22	A-4b
		15.0	18.0	0	0	11	57	32	47	26	29	A-7-6
665+00	CL	0.0	5.0	0	0	19	59	22	29	10	21	A-4b
		5.0	10.0	0	1	28	52	19	29	10	19	A-4b
		10.0	15.0	0	0	29	50	21	30	11	20	A-6a
673+00	CL	0.0	5.0	0	0	22	58	20	29	6	19	A-4b
		5.0	10.0	0	0	38	47	15	NP	NP	20	A-4a
		10.0	15.0	0	1	41	44	14	NP	NP	18	A-4a
680+20	15'Lt	0.0	5.0	0	0	15	50	35	27	6	19	A-4b
		5.0	11.0	0	0	16	50	34	24	5	20	A-4b
		11.0	15.0	0	0	26	42	32	24	6	22	A-4a
684+25	CL	0.0	6.0	0	0	13	48	39	28	11	22	A-6a
		6.0	12.0	0	0	6	53	41	27	8	21	A-4b
		12.0	18.0	0	0	25	43	32	22	4	22	A-4a
689+00	CL	0.0	6.0	0	1	15	46	38	30	11	19	A-6a
		6.0	12.0	0	0	28	44	28	NP	NP	19	A-4a
		12.0	18.0	0	0	16	50	34	28	6	22	A-4b
		18.0	24.0	24	36	31	5	4	NP	NP	11	A-1-b
		24.0	30.0	8	53	32	4	3	NP	NP	12	A-1-b
693+80	10'Rt	0.0	5.0	6	1	36	33	24	NP	NP	20	A-4a
		5.0	10.0	0	1	42	34	23	NP	NP	22	A-4a
		10.0	15.0	0	1	42	35	22	NP	NP	19	A-4a
699+00	CL	0.0	6.0	0	0	30	44	26	NP	NP	19	A-4a
		6.0	12.0	0	0	33	44	23	NP	NP	19	A-4a
704+35	CL	1.0	7.0	0	1	22	47	30	24	5	18	A-4a *
708+75	CL	0.0	5.0	0	0	32	43	25	NP	NP	20	A-4a
		5.0	11.0	0	0	49	31	20	NP	NP	18	A-4a *
		11.0	15.0	0	0	40	38	22	NP	NP	21	A-4a
712+75	CL	0.0	5.0	(15	16	40	12	17	NP	NP	22)	
				BROWN SANDY SILT, CINDERS AND STONE FRAGMENTS								VISUAL *
		5.0	11.0	22	0	27	30	21	NP	NP	20	A-4a
		11.0	15.0	79	3	8	5	5	NP	NP	16	A-1-a
716+25	20'Lt	0.0	6.0	0	0	51	26	23	NP	NP	20	A-4a *
		6.0	11.0	0	1	32	30	37	NP	NP	20	A-4a
722+00	CL	0.0	5.0	0	0	41	36	23	NP	NP	21	A-4a
		5.0	10.0	0	0	22	60	18	NP	NP	19	A-4b
		10.0	15.0	0	19	23	20	38	NP	NP	21	A-4a
724+00	CL	0.0	6.0	15	0	22	48	15	30	10	16	A-4a
		6.0	11.0	19	13	20	16	32	40	7	20	A-4a
		11.0	17.0	17	6	15	40	22	29	6	21	A-4a
		17.0	22.0	0	31	29	45	25	NP	NP	14	A-4a
		22.0	26.0	28	3	19	25	25	26	8	19	A-4a
		26.0	30.0	50	1	10	28	11	NP	NP	14	A-4a

STATION & OFFSET		DEPTH FROM	TO	% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	% W.C.	SHTL CLASS.
727+35	CL	0.0	7.0	(40	17	17	13	13	NP	NP	15)	
				CINDERS, SLAG AND SOIL								VISUAL *
		7.0	10.0	53	10	11	10	16	27	7	20	A-2-4
729+00	35'Rt	0.0	5.0	18	5	7	21	49	43	16	23	A-7-6 *
		5.0	10.0	7	5	7	22	59	36	12	16	A-6a *
		10.0	15.0	19	4	6	23	48	46	17	20	A-7-6
		15.0	20.0	13	4	7	28	48	38	16	18	A-6b
734+00	30'Rt	0.0	6.0	2	2	5	30	61	42	17	20	A-7-6 *
739+00	67'Rt	0.0	5.0	(17	38	25	10	10	NP	NP	14)	
				GRAY SLAG AND SOIL								VISUAL
		5.0	10.0	8	4	5	24	59	41	15	25	A-7-6
749+00	42'Rt	0.0	3.0	37	15	16	14	19	37	11	17	A-2-6 *
		3.0	7.0	16	6	7	26	45	52	16	26	A-7-5
754+00	25'Rt	0.0	5.0	17	8	7	26	43	49	19	21	A-7-5 *
		5.0	10.0	4	4	6	31	55	53	20	23	A-7-5
758+00	25'Rt	0.0	3.0	11	13	14	21	41	45	15	24	A-7-5 *
		3.0	7.0	34	5	6	18	37	50	21	24	A-7-6 *
		7.0	10.0	1	1	3	31	64	53	24	30	A-7-6
						RAMP A						
24+75	BL	0.0	2.0	(52	23	16	19	21	36	13	7)	
				BROWN WEATHERED SHALE								VISUAL
20+00	BL	0.0	3.0	28	9	7	32	31	39	13	15	A-6a *
		3.0	6.0	0	0	24	55	20	NP	NP	15	A-4b *
		6.0	11.0	48	5	16	27	13	NP	NP	13	A-4b
		11.0	12.0	26	5	20	30	19	NP	NP	18	A-4a
						RAMP B						
						RELOCATED COUNTY ROAD 46						
0+40	30'Lt	0.0	5.0	4	2	4	36	54	43	17	20	A-7-6
		5.0	9.0	38	5	9	18	30	38	14	22	A-6a
		9.0	10.0	0	1	2	30	67	30	11	20	A-6a
4+00	15'Lt	0.0	5.0	16	2	9	31	42	32	11	18	A-6a *
		5.0	9.0	35	1	4	19	41	45	19	23	A-7-6
		9.0	10.0	4	0	2	19	75	61	32	31	A-7-6
8+00	CL	0.0	2.0	19	3	8	32	38	37	14	20	A-6a
		2.0	4.0	39	2	6	22	31	42	18	27	A-7-6
11+50	CL	0.0	4.5	5	1	2	17	75	52	28	26	A-7-6
13+50	CL	0.0	5.0	33	2	4	25	36	40	15	13	A-6a
14+50	50'Rt	0.0	2.0	36	2	3	24	35	39	13	18	A-6a
		2.0	5.0	30	1	3	20	46	49	21	20	A-7-6
14+50	150'Rt	0.0	2.0	(80	2	3	8	7	NP	NP	8)	
				BROWN SILTY CLAY AND SHALE								VISUAL
16+00	40'Lt	0.0	2.0	5	4	17	29	45	41	14	26	A-7-6
		2.0	5.0	4	1	2	25	68	45	17	25	A-7-6
16+00	70'Rt	0.0	3.5	46	2	6	20	26	36	13	15	A-6a
21+00	100'Lt	0.0	4.0	8	6	3	23	60	47	15	27	A-7-5
		4.0	5.0	(61	5	4	13	17	39	14	12)	
				GRAY SHALE								VISUAL
21+00	24'Rt	0.0	4.0	0	1	4	31	64	43	15	26	A-7-6
22+00	50'Lt	0.0	4.0	11	5	4	23	57	48	16	28	A-7-5
		4.0	6.0	20	5	10	23	42	41	17	22	A-7-6
		6.0	8.0	(21	2	3	36	38	33	15	16)	
				GRAY WEATHERED SHALE								VISUAL
24+00	60'Lt	0.0	5.0	0	3	40	24	33	NP	NP	17	A-4a
		5.0	7.0	0	2	18	34	46	38	15	19	A-6a
		7.0	8.0	(17	1	8	17	57	51	15	34)	
				WEATHERED SHALE WITH COAL BLOSSOM								VISUAL
		8.0	10.0	(32	1	10	27	30	40	7	20)	
				BROWN SHALE WITH COAL BLOSSOM								VISUAL
24+00	CL	0.0	5.0	4	2	23	27	44	30	11	21	A-6a
		5.0	7.0	34	6	16	11	13	46	15	36	A-7-6
		7.0	8.0	(65	3	4	10	18	36	14	12)	
				GRAY SHALE								VISUAL
24+00	60'Rt	0.0	4.0	2	4	9	41	44	45	16	21	A-7-6
		4.0	8.0	(15	2	2	24	57	43	16	15)	
				GRAY WEATHERED SHALE								VISUAL

STATION & OFFSET		DEPTH FROM	TO	% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	% W.C.	SHTL CLASS.
25+50	CL	0.0	1.0	0	1	8	46	45	30	11	20	A-6a
		1.0	4.0	0	2	63	11	24	NP	NP	16	A-3a
		4.0	7.0	0	1	14	50	35	25	3	24	A-4b
		7.0	12.0	0	3	38	27	32	25	7	18	A-4a
		12.0	16.0	0	3	35	28	34	27	8	19	A-4a
		16.0	19.0	0	0	2	19	79	50	21	27	A-7-6
		19.0	20.0	(11	4	9	46	30	28	7	6)	
				GRAY WEATHERED SHALE								VISUAL
30+00	30'Lt	0.0	1.0	0	0	24	36	40	32	11	21	A-6a *
		1.0	6.0	0	4	54	21	21	NP	NP	15	A-4a *
		6.0	8.0	12	3	23	28	34	32	11	42	A-6a
		8.0	10.0	(6	1	2	30	61	39	15	19)	
				GRAY WEATHERED SHALE								VISUAL
		10.0	11.0	(21	2	10	33	34	30	7	20)	
				GRAY WEATHERED SHALE								VISUAL
31+00	50'Rt	0.0	5.0	23	2	4	31	40	40	14	16	A-6a
		5.0	7.0	31	1	2	27	39	38	14	15	A-6a
		7.0	8.0	GRAY SHALE					34	10	7	VISUAL
32+75	20'Lt	0.0	2.0	0	1	42	26	31	26	8	19	A-4a *
		2.0	7.0	0	1	74	3	22	NP	NP	19	A-3a *
		7.0	12.0	0	1	82	8	9	NP	NP	15	A-3a
		12.0	15.0	0	0	51	26	24	NP	NP	15	A-4a
36+50	CL	0.0	2.0	7	5	8	23	57	55	18	35	A-7-5
		2.0	4.0	0	1	1	23	75	40	14	18	A-6a
		4.0	8.0	32	2	4	27	35	36	12	12	A-6a
36+50	70'Rt	0.0	4.0	5	5	4	27	59	54	22	25	A-7-5
		4.0	6.0	2	2	9	38	49	36	11	20	A-6a
		6.0	10.0	(62	13	10	6	9	NP	NP	4)	
				GRAY SHALE WITH COAL BLOSSOM								VISUAL
		10.0	12.0	GRAY SHALE					NP	NP	11	VISUAL
38+65	CL	0.0	5.0	6	5	18	30	41	33	12	19	A-6a *
		5.0	10.0	17	3	18	25	37	38	14	19	A-6a
		10.0	11.0	5	3	3	16	73	63	26	29	A-7-5
		11.0	12.0	28	9	34	12	17	NP	NP	16	A-2-4
		12.0	17.0	9	3	10	32	46	39	14	22	A-6a
		17.0	18.0	(12	2	5	35	46	35	11	15)	
				GRAY WEATHERED SHALE								VISUAL
40+00	CL	0.0	5.0	28	3	16	23	30	26	11	15	A-6a
		5.0	10.0	17	2	12	28	41	36	15	19	A-6a
		10.0	15.0	18	4	23	26	29	27	8	14	A-4a *
43+00	23'Rt	0.0	5.0	1	1	10	41	47	39	18	23	A-6b *
		5.0	10.0	4	1	3	43	49	44	16	26	A-6b *
		10.0	13.0	23	3	7	25	42	38	17	22	A-6b
		13.0	14.0	(10	2	3	41	44	31	8	8)	
				GRAY WEATHERED SHALE								VISUAL

DRIVE SAMPLE SOIL TEST DATA

STATION & OFFSET		DEPTH FROM	TO	% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	% W.C.	SHTL CLASS.
						SR 7						
635+55	37'Lt	5.0	6.0	0	71	17	-	12 -	NP	NP	41	A-1-b
		7.5	8.5	0	59	22	-	19 -	NP	NP	63	A-1-b
		10.0	11.0	65	18	9	-	8 -	NP	NP	10	A-1-a
		12.5	13.5	46	22	24	-	8 -	NP	NP	8	A-1-b
		15.0	16.0	40	28	24	-	8 -	NP	NP	11	A-1-b
		17.5	18.5	42	15	27	-	16 -	NP	NP	8	A-1-b
		20.0	21.0	25	28	35	-	12 -	NP	NP	12	A-1-b
		22.5	23.5	45	20	21	-	14 -	NP	NP	7	A-1-b
		25.0	26.0	14	14	64	-	8 -	NP	NP	28	A-3
		30.0	31.0	38	27	23	-	12 -	NP	NP	11	A-1-b
		35.0	36.0	44	24	20	-	12 -	NP	NP	12	A-1-b
		40.0	41.0	35	19	24	-	22 -	NP	NP	14	A-1-b
		45.0	46.0	43	21	22	-	14 -	NP	NP	9	A-1-b
		50.0	51.0	44	18	19	-	19 -	NP	NP	10	A-1-b
		55.0	56.0	49	29	15	-	7 -	NP	NP	14	A-1-b
		60.0	61.0	24	35	23	-	18 -	NP	NP	11	A-1-b
		65.0	66.0	46	23	14	-	17 -	NP	NP	11	A-1-b
643+87	26'Lt	5.0	6.0	57	12	8	11	12	NP	NP	17	A-1-b
		11.5	12.5	0	0	3	46	51	37	15	24	A-6a
		16.5	17.5	0	0	14	48	38	30	11	23	A-6a
		21.5	22.5	0	0	33	36	31	23	4	21	A-4a
		26.0	27.0	0	0	36	35	29	22	5	21	A-4a
		31.5	32.5	0	0	21	45	34	27	10	25	A-6a
		35.0	36.0	45	1	19	16	19	25	10	18	A-2-4
		40.0	40.5	58	9	24	-	9 -	NP	NP	6	A-1-b
		45.0	45.3	19	50	22	-	9 -	NP	NP	8	A-1-b
		50.0	50.3	26	31	31	-	12 -	NP	NP	8	A-1-b
		55.0	60.0	0	35	64	-	1 -	NP	NP	30	A-3
		60.0	60.4	50	31	11	-	8 -	NP	NP	17	A-1-a
		65.0	65.2	50	20	15	-	15 -	NP	NP	5	A-1-a
		70.0	70.2	75	12	7	-	6 -	NP	NP	6	A-1-a

STATION & OFFSET		DEPTH FROM	TO	% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	% W.C.	SHTL CLASS.
651+75	17'Lt	6.5	7.5	0	0	12	46	42	30	11	22	A-6a
		11.5	12.5	0	0	20	44	36	30	11	22	A-6a
		16.5	17.5	0	1	32	34	33	26	8	23	A-4a
		21.5	22.5	0	0	29	40	31	25	6	26	A-4a
		26.5	27.5	0	0	33	40	27	NP	NP	26	A-4a
		31.5	32.5	0	0	66	14	20	27	4	NP	A-2-4
		36.5	37.4	53	9	22	14	12	NP	NP	7	A-1-b
		40.0	40.6	80	7	8	-	5 -	NP	NP	12	A-1-a
		45.0	46.0	60	19	13	-	8 -	NP	NP	5	A-1-a
		50.0	50.7	0	83	14	-	3 -	NP	NP	26	A-3a
		55.0	56.0	0	65	31	-	4 -	NP	NP	25	A-3a
		60.0	60.4	0	70	17	-	13 -	NP	NP	13	A-3a
		65.0	66.0	51	24	14	-	11 -	NP	NP	12	A-1-a
661+13	38'Lt	6.5	7.5	0	0	12	49	39	31	11	21	A-6a
		11.5	12.5	0	0	9	50	41	32	11	23	A-6a
		16.5	17.5	0	0	19	44	37	28	11	24	A-6a
		21.5	22.5	0	0	35	39	26	23	4	22	A-4a
		26.5	27.5	0	0	27	41	32	25	6	23	A-4a
		31.5	32.5	0	0	21	49	30	37	16	29	A-6b
		36.5	37.5	0	1	19	46	34	34	11	40	A-6a
		50.0	50.5	0	80	11	-	0 -	NP	NP	25	A-1-b
		55.0	55.5	23	43	27	-	7 -	NP	NP	14	A-1-b
		60.0	60.5	41	28	21	-	10 -	NP	NP	29	A-1-b
		65.0	66.0	0	0	5	92	-	3 -	NP	NP	26	A-3
		70.0	70.8	67	15	9	-	9 -	NP	NP	13	A-1-a
668+71	61'Lt	6.5	7.5	0	0	10	45	45	34	11	25	A-6a
		11.5	12.5	0	0	14	48	36	30	8	25	A-4a
		16.5	17.5	0	0	26	40	34	27	7	28	A-4a
		21.5	22.5	0	0	28	42	30	27	7	28	A-4a
		25.0	25.3	0	0	45	29	26	NP	NP	24	A-4a
		25.3	25.5	0	0	7	50	43	32	9	29	A-4b
		25.5	26.0	0	1	69	13	17	NP	NP	25	A-3a
		26.0	26.2	0	1	24	43	32	25	5	24	A-4a
		26.5	27.5	0	0	11	35	54	22	2	25	A-4a
		30.0	30.4	0	0	60	21	19	NP	NP	15	A-4a
		30.4	30.7	0	0	7	49	44	34	12	37	A-6a
		30.7	31.2	0	0	40	33	27	NP	NP	26	A-4a
		31.2	31.4	0	0	28	41	31	NP	NP	27	A-4a
		31.4	31.5	0	0	11	47	42	32	11	20	A-6a
		31.5	32.5	0	0	25	40	35	28	8	26	A-4a
		36.5	37.5	18	5	48	11	18	NP	NP	29	A-3a
		40.0	41.0	28	7	9	2	4	NP	NP	10	A-1-a
		45.0	45.3	55	12	18	6	9	NP	NP	12	A-1-b
		50.0	51.0	57	32	7	-	4 -	NP	NP	9	A-1-a
		55.0	56.0	22	59	18	-	1 -	NP	NP	17	A-1-b
		60.0	60.6	0	38	58	-	4 -	NP	NP	24	A-3
		70.0	70.7	51	4	5	15	25	33	12	8	A-6a
676+26	26'Lt	5.0	6.0	0	0	24	41	35	29	8	21	A-4a
		10.0	11.0	0	0	24	44	32	28	7	21	A-4a
		12.0	13.2	0	0	32	40	28	25	4	22	A-4a
		15.0	16.0	0	0	53	25	22	NP	NP	23	A-4a
		16.0	16.6	0	0	48	29	23	NP	NP	22	A-4a
		20.0	21.0	0	0	44	32	24	NP	NP	23	A-4a
		25.0	26.0	0	0	47	30	23	NP	NP	23	A-4a
		30.0	31.0	0	4	63	14	19	NP	NP	17	A-3a
		35.0	36.0	10	24	48	-	18 -	NP	NP	20	A-3a
		40.0	41.0	BROWN STONE FRAGMENTS AND SOIL							8	VISUAL
		45.0	46.0	BROWN STONE FRAGMENTS AND SOIL							11	VISUAL
		50.0	51.0	BROWN STONE FRAGMENTS AND SOIL							9	VISUAL
		55.0	56.0	22	70	6	-	2 -	NP	NP	17	A-1-b
		65.0	66.0	58	26	10	-	6 -	NP	NP	8	A-1-a
685+68	37'Rt	5.0	6.0	0	0	19	47	34	27	10	22	A-4a
		10.0	11.0	0	0	9	52	39	33	13	25	A-6a
		15.0	16.0	0	0	33	40	27	23	6	23	A-4a
		20.0	21.0	0	0	41	37	22	22	5	24	A-4a
		25.0	26.0	0	0	38	39	23	NP	NP	9	A-4a
		30.0	31.0	0	0	35	39	26	22	7	25	A-4a
		35.0	36.0	0	0	29	43	28	23	8	25	A-4a
		40.0	41.0	16	15	54	-	15 -	NP	NP	16	A-1-b
		45.0	46.0	24	21	47	-	8 -	NP	NP	15	A-1-b
		50.0	51.0	7	15	75	-	3 -	NP	NP	20	A-1-b
		55.0	56.0	24	20	40	-	16 -	NP	NP	10	A-1-b
		60.0	61.0	10	13	62	-	15 -	NP	NP	13	A-1-b
		65.0	66.0	14	10	62	-	14 -	NP	NP	14	A-1-b
		70.0	71.0	0	0	99	-	1 -	NP	NP	24	A-3a
		75.0	76.0	(15	15	8	32	30	28	8	8)	
				MUDSTONE								VISUAL

NOTE: FOR DRIVE

MICROFILMED
NOV. 1 1984

SOIL PROFILE

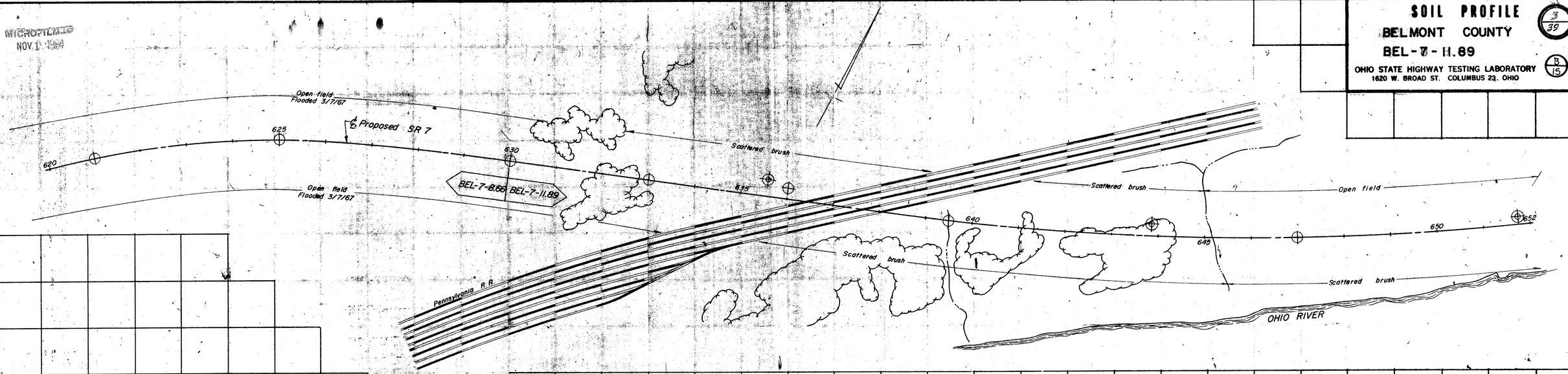
BELMONT COUNTY

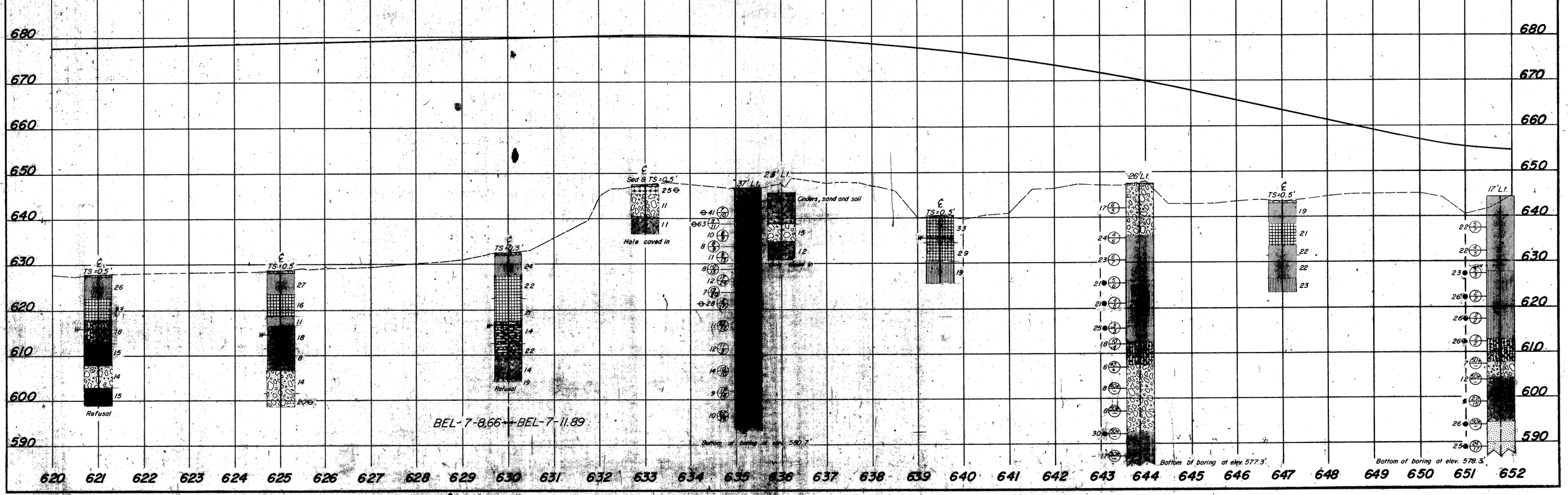
BEL-7-11.89

OHIO STATE HIGHWAY TESTING LABORATORY
1620 W. BROAD ST. COLUMBUS 23, OHIO

3/39

B/15





SOIL PROFILE

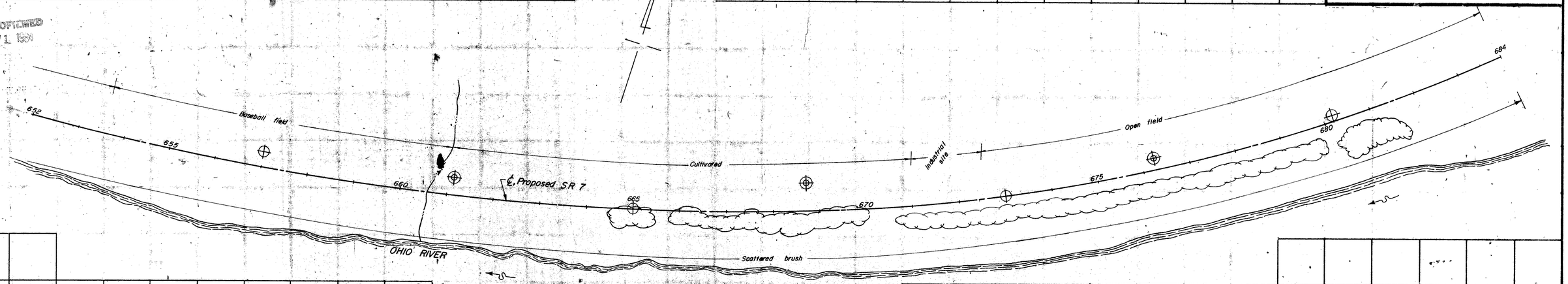
BELMONT COUNTY

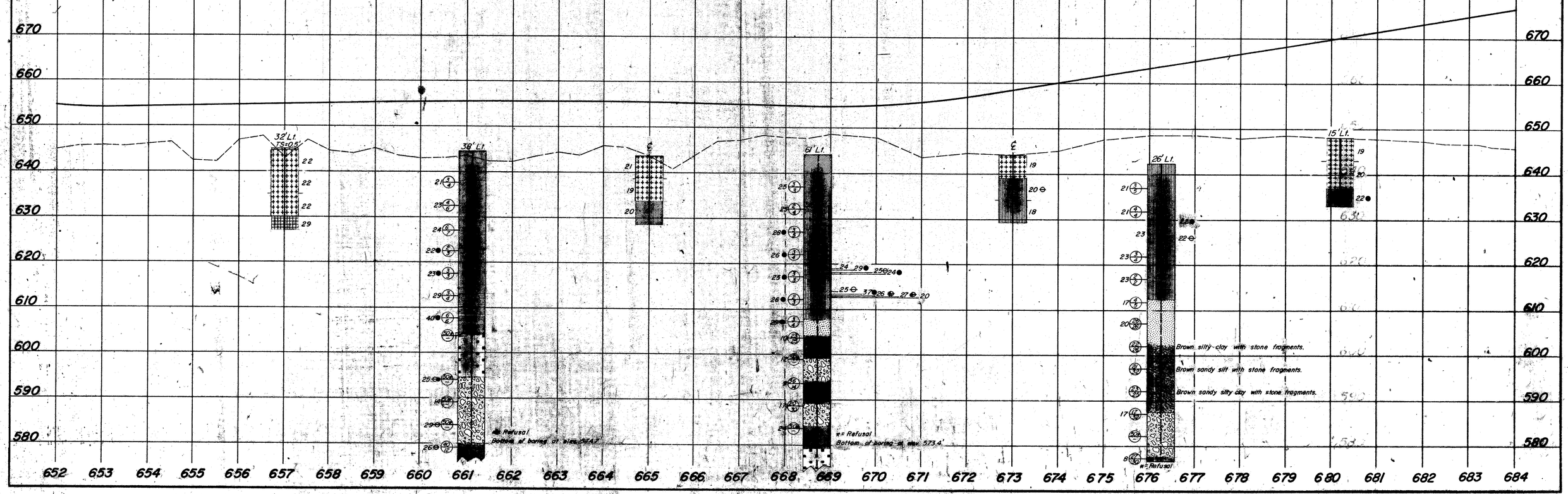
BEL-7-11.89

OHIO STATE HIGHWAY TESTING LABORATORY
1620 W. BROAD ST. COLUMBUS 23, OHIO

1
39

MICROFILMED
NOV 1 19





TE - 127
1900-12-66

MICROFILMED
NOV 1 1984

SOIL PROFILE

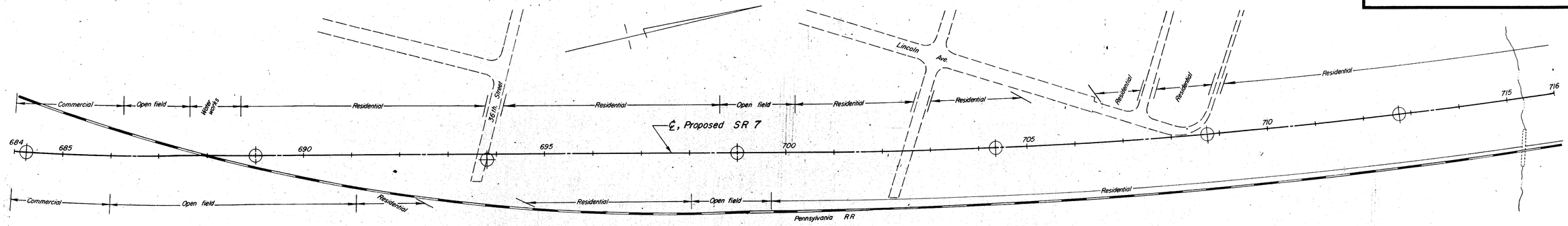
5/39

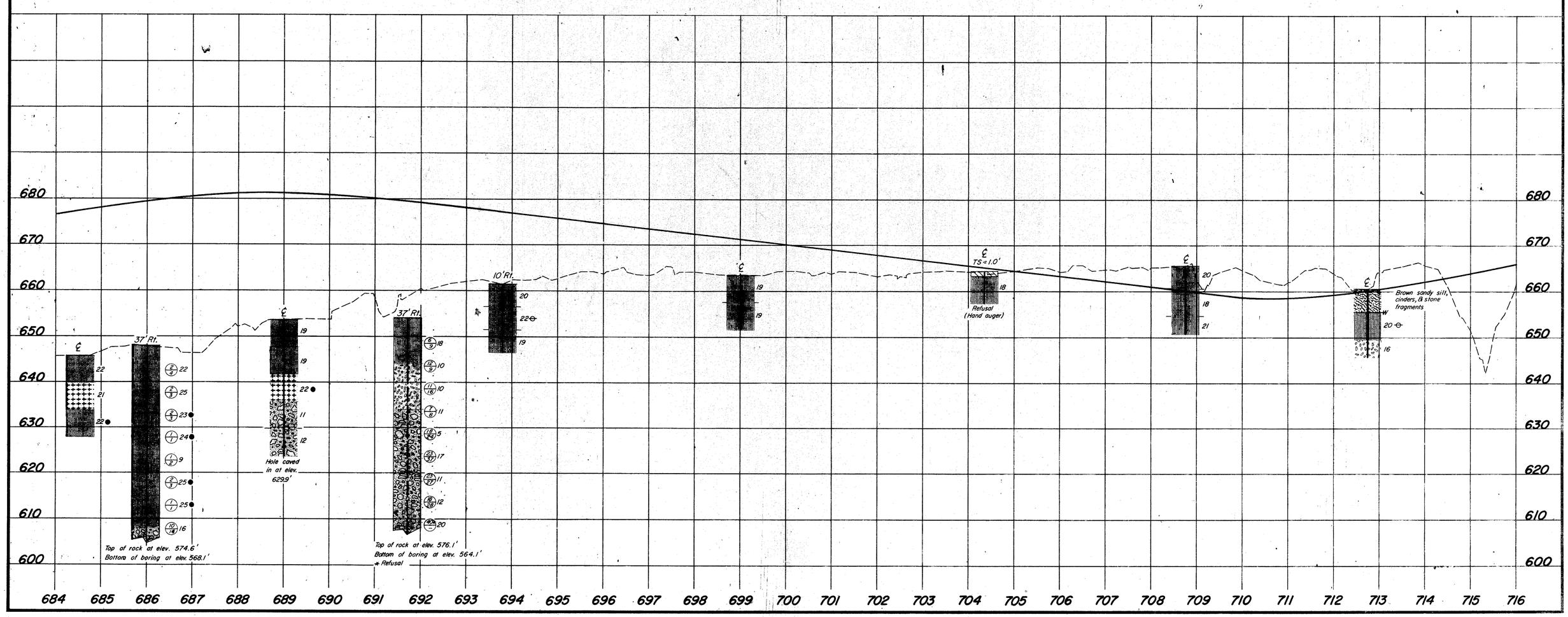
BELMONT COUNTY

BEL-7-11.89

OHIO STATE HIGHWAY TESTING LABORATORY
1620 W. BROAD ST. COLUMBUS, OHIO 43223

5/15





MICROFILMED
NOV 1 1964

SOIL PROFILE

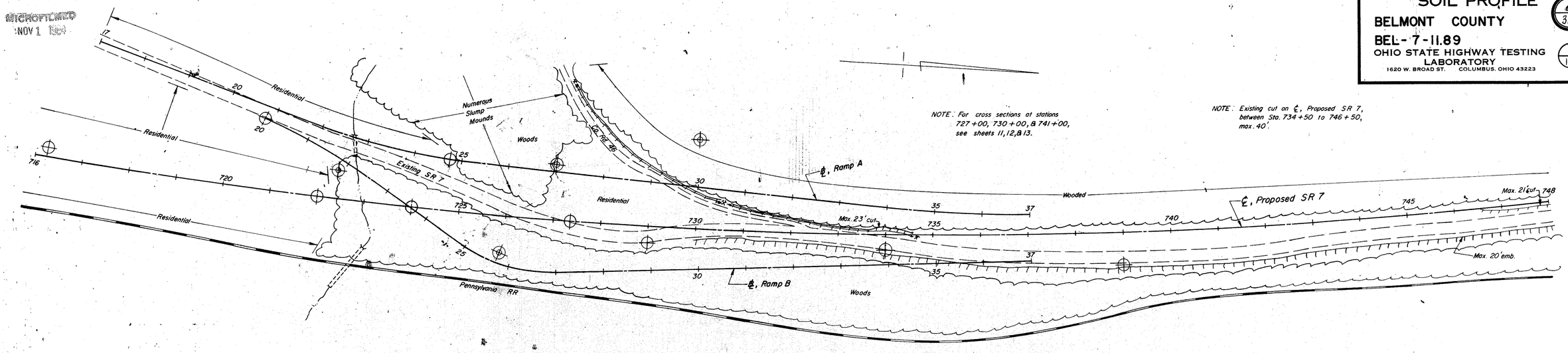
BELMONT COUNTY

BEL-7-11.89

OHIO STATE HIGHWAY TESTING LABORATORY
1620 W. BROAD ST. COLUMBUS, OHIO 43223

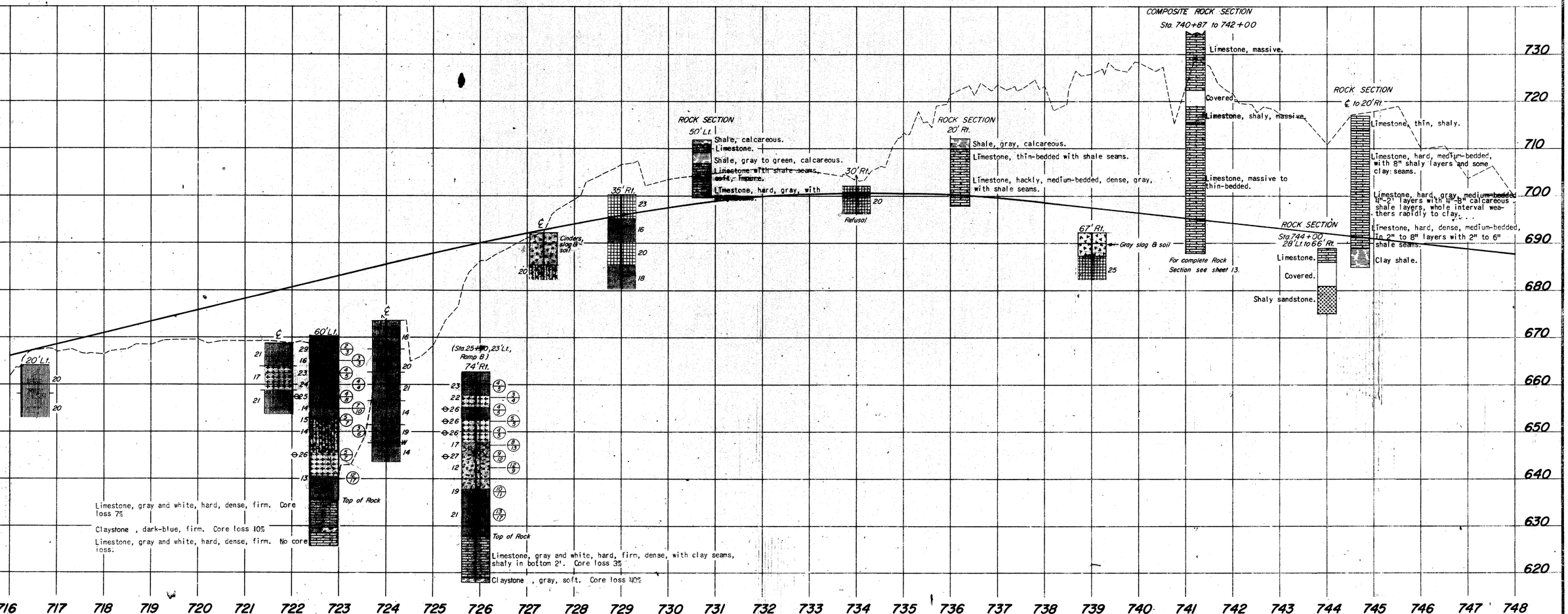
6/39

6/15



NOTE: For cross sections at stations 727+00, 730+00, & 741+00, see sheets 11, 12, & 13.

NOTE: Existing cut on ℄, Proposed SR 7, between Sta. 734+50 to 746+50, max. 40'.



TE - 127
800-12-68

SOIL PROFILE

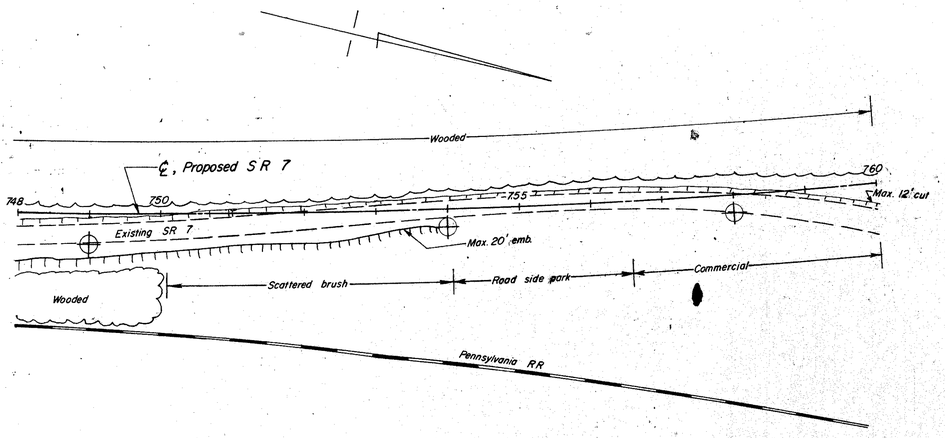
BELMONT COUNTY

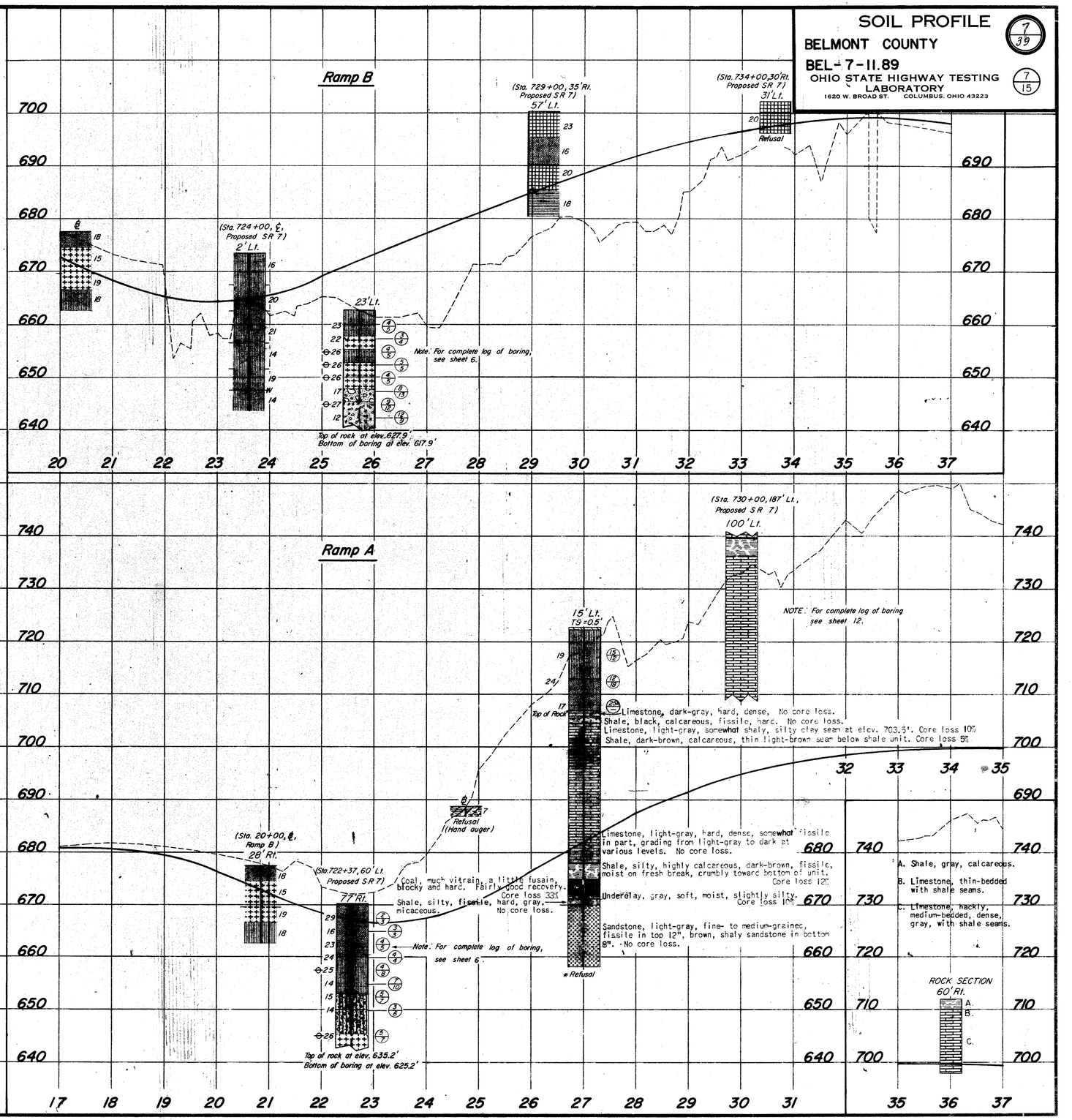
BEL-7-11.89

OHIO STATE HIGHWAY TESTING LABORATORY
1620 W. BROAD ST. COLUMBUS, OHIO 43223

7 / 39

7 / 15





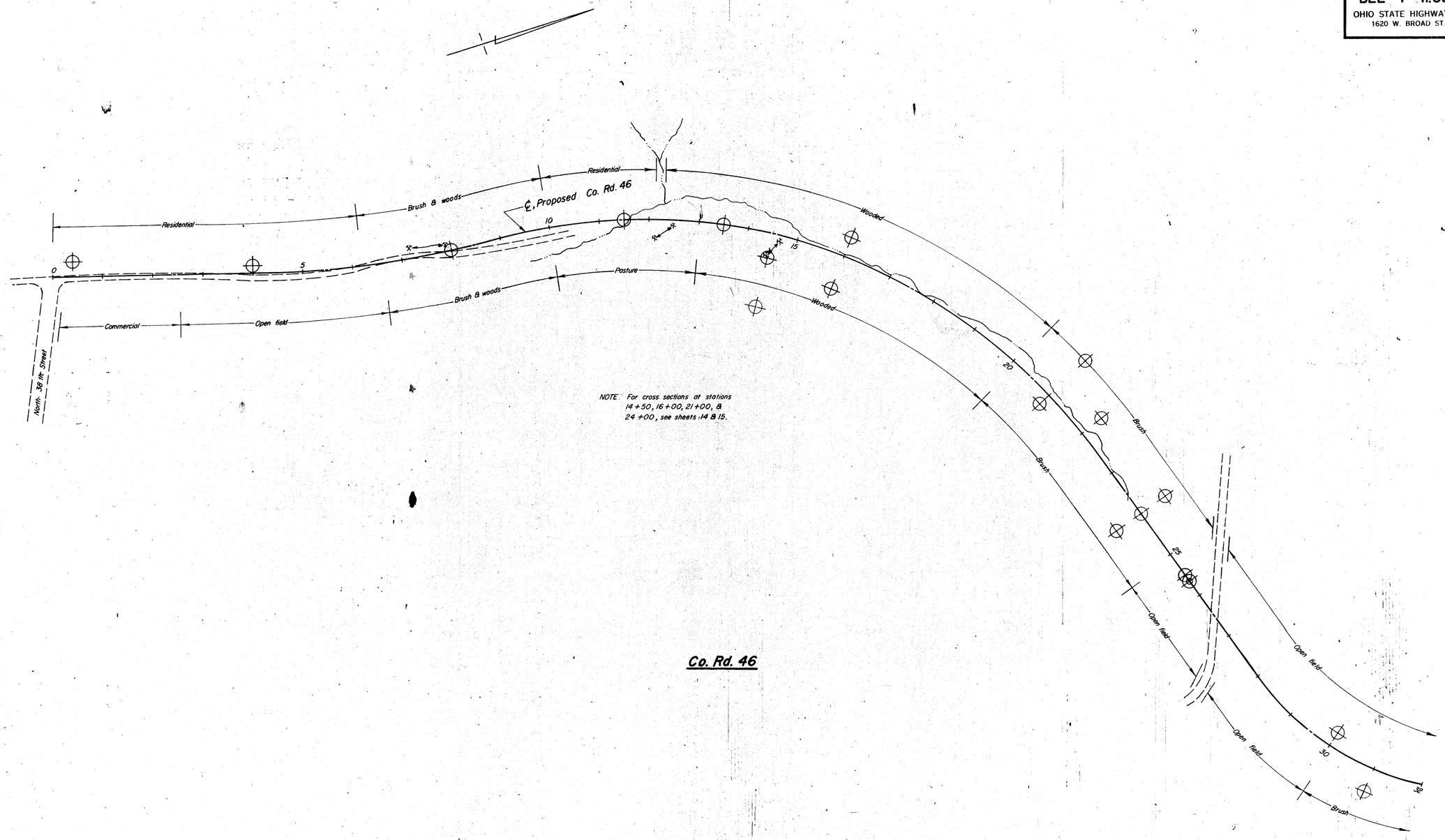
SOIL PROFILE

B 39

BELMONT COUNTY
BEL-7-11.89

OHIO STATE HIGHWAY TESTING LABORATORY
1620 W. BROAD ST. COLUMBUS 23, OHIO

8 15



NOTE. For cross sections at stations 14+50, 16+00, 21+00, & 24+00, see sheets 14 & 15.

Co. Rd. 46

TE - 96
1500-12-66

SOIL PROFILE

BELMONT COUNTY

BEL-7-11.89

OHIO STATE HIGHWAY TESTING LABORATORY

1620 W. BROAD ST. COLUMBUS, OHIO 43223

9 / 39

9 / 15

Co. Rd. 46

910 900 890 880 870 860 850 840 830 820 810 800 790 780 770 760 750 740 730

1020 1010 1000 990 980 970 960 950 940 930 920 910

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32

40' Lt. 26 25 Refusal (Hand auger)

ROCK SECTION 20' Rt. Shale, sandy, brown, firm.

℄ 13 Refusal (Hand auger)

ROCK SECTION 30' Rt. Sandstone, shaly gray.

℄ 26 Refusal (Hand auger)

℄ Sandstone 20 27 Refusal

15' Lt. 18 23 31

30' Lt. 20 22 20

℄ 20 16 24 18 19 27 6 Refusal

℄ 23 18 31 13

Top of Rock

Limestone, gray, hard, dense, nodular, and somewhat fissile in part. No core loss.

Claystone, gray, slightly silty in top part, moist on fracture at elev. 973.5' to 977.5', smooth on fracture. Core loss 16%

Claystone, black, fissile in part, slickensides. Core loss 5%

Shale, black, coaly streaks, fissile, hard, firm, claystone bottom 6". Core loss 5%

Coal, good recovery, intact, hard, very little fusain. No core loss.

Clay shale, black, fissile, hard, smooth on fracture, thinly bedded. Core loss 10%

30' Lt. 21 15 42 19 20 Refusal

50' Rt. 16 15 7 Refusal

℄ 21 16 12 Refusal

50' Lt. 28 22 16 Refusal

24' Rt. 26 Refusal (Hand auger)

TE - 127
1500-12-66

SOIL PROFILE

BELMONT COUNTY

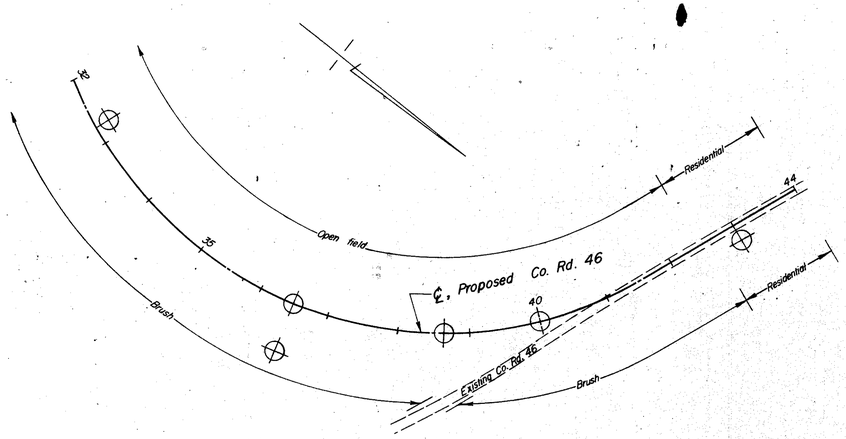
BEL-7-11.89

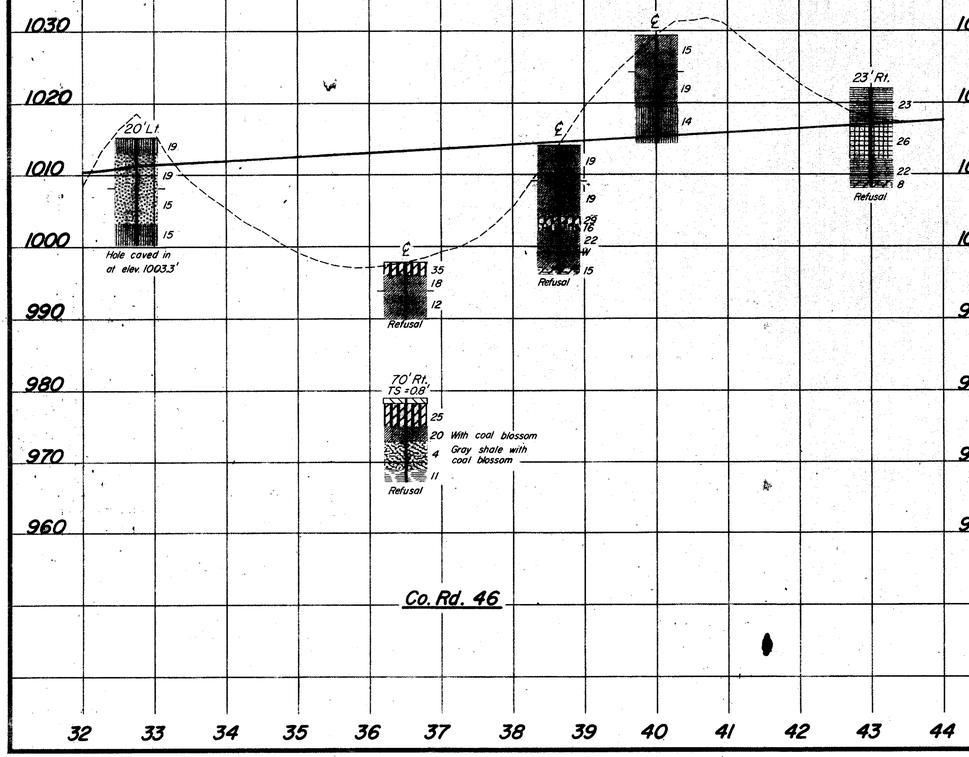
OHIO STATE HIGHWAY TESTING LABORATORY

1620 W. BROAD ST. COLUMBUS, OHIO 43223

10/39

10/15





TE - 96
1900-12-66

SOIL PROFILE

BELMONT COUNTY

BEL - 7 - 11.89

OHIO STATE HIGHWAY TESTING LABORATORY
1620 W. BROAD ST. COLUMBUS, OHIO 43223

11/39

11/15

Sta. 727 +00

730
720
710
700
690
680
670
660
650

(Sta. 27 + 00, 15 Lt, Ramp A)
TS = 0.5'

℄, Ramp A

19 (12/12)
24 (12/18)
17 (10/10)
Top of Rock

Limestone, dark-gray, hard, dense. No core loss.
Shale, black, calcareous, fissile, hard. No core loss.
Limestone, light-gray, somewhat shaly, silty clay seam at elev. 703.5'. Core loss 10%
Shale, dark-brown, calcareous, thin, light-brown seam below shale unit. Core loss 5%

Limestone, light-gray, hard, dense, somewhat fissile in part, grading from light-gray to dark at various levels. No core loss.

Shale, silty, highly calcareous, dark-brown, fissile, moist on fresh break, crumbly toward bottom of unit. Core loss 12%

Coal, much vitrain, a little fusain, blocky and hard, fairly good recovery. Core loss 33%
Underclay, gray, soft, moist, slightly silty. Core loss 10%
Shale, silty, fissile, hard, gray, micaceous. No core loss.

Sandstone, light-gray, fine- to medium-grained, fissile in top 12", brown, shaly, sandstone in the bottom 8". No core loss.

(Sta. 727 + 35, Proposed SR 7)

Cinders, slag, & soil
20

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 ℄ 10 20 30 40 50 60

TE - 96
1500-12-66

SOIL PROFILE

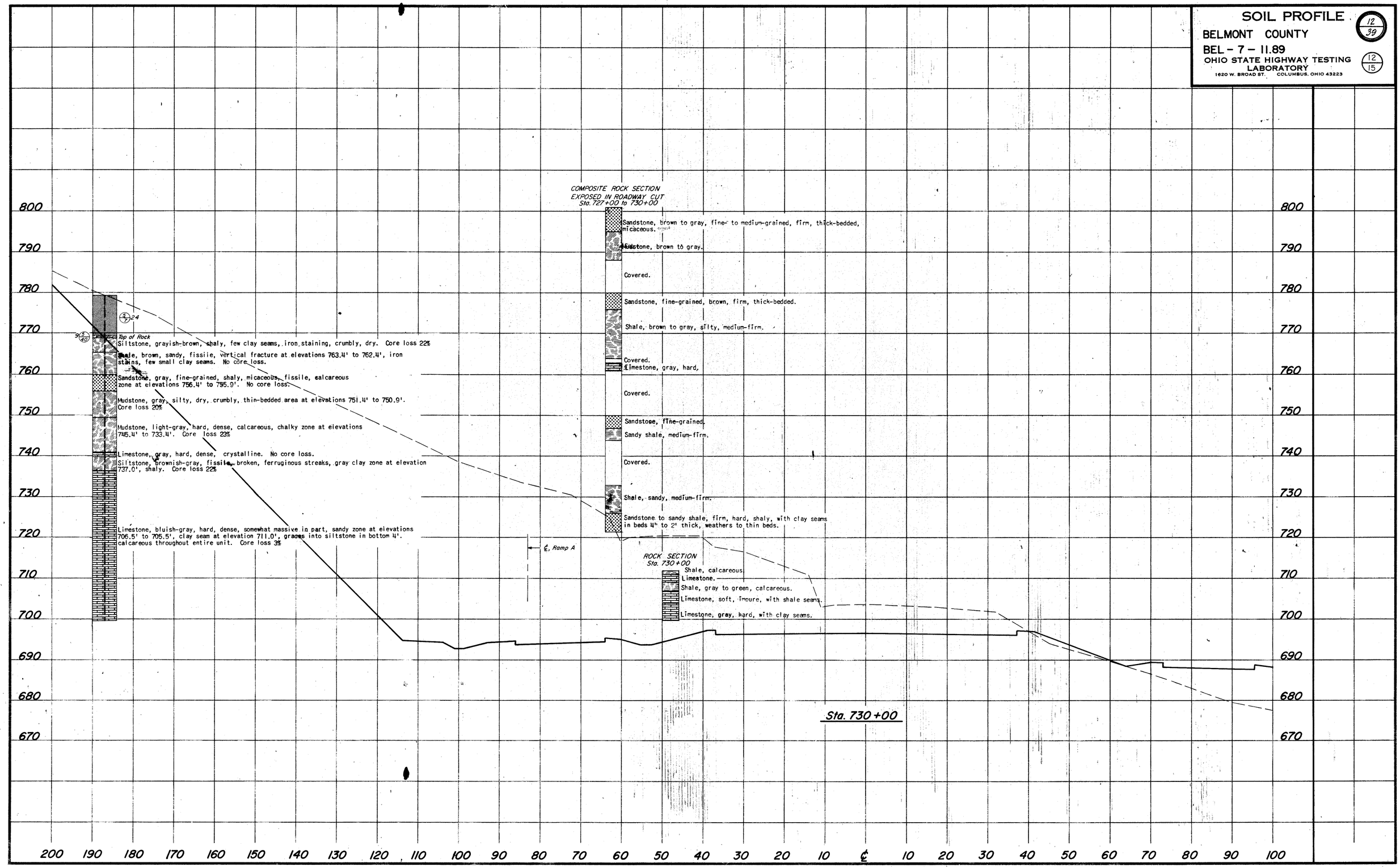
BELMONT COUNTY

BEL - 7 - 11.89

OHIO STATE HIGHWAY TESTING LABORATORY
1620 W. BROAD ST. COLUMBUS, OHIO 43223

12/39

12/15



TE - 96
1500-12-66

SOIL PROFILE

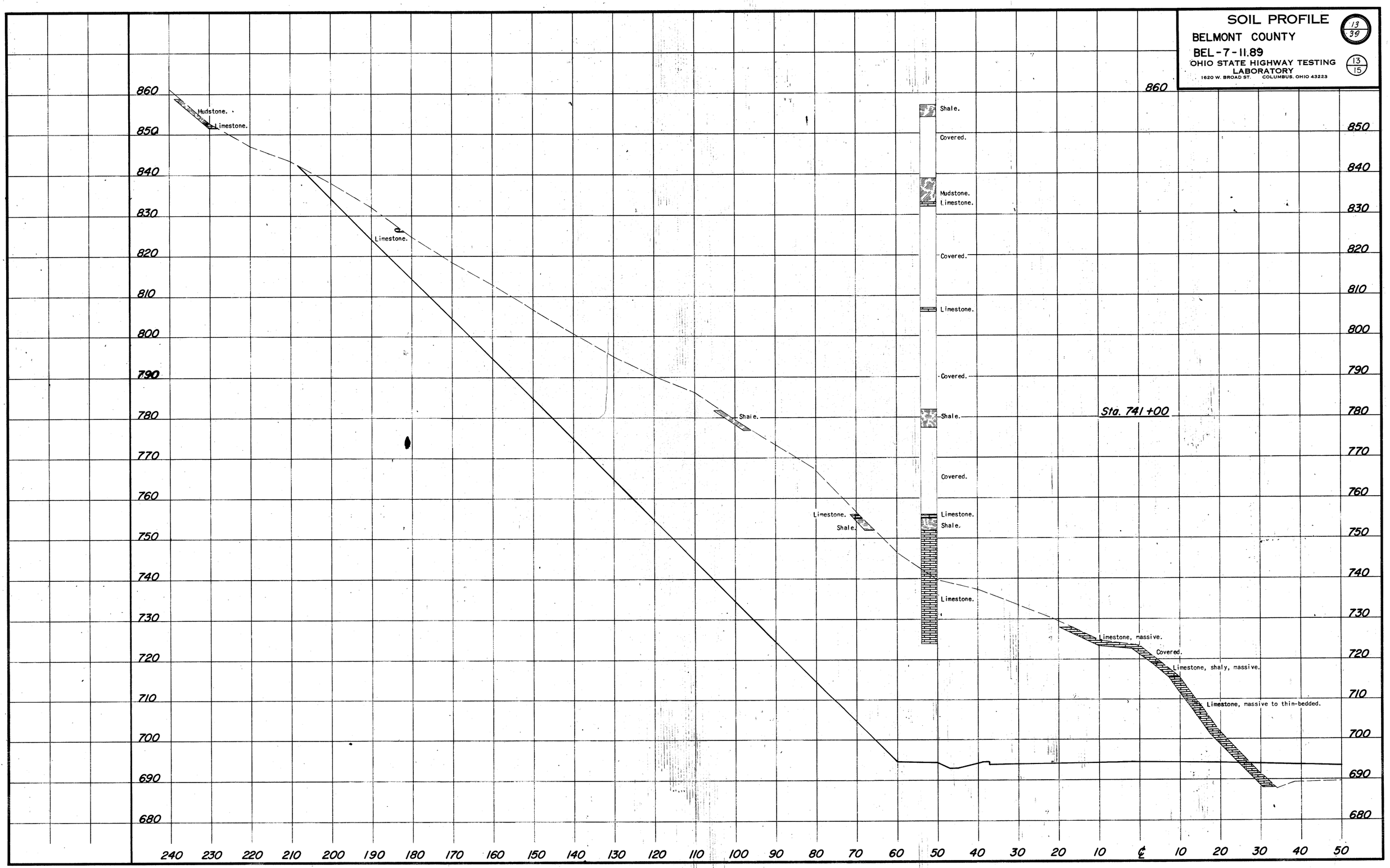
BELMONT COUNTY

BEL-7-11.89

13/39

OHIO STATE HIGHWAY TESTING LABORATORY
1620 W. BROAD ST. COLUMBUS, OHIO 43223

13/15



SOIL PROFILE

BELMONT COUNTY

BEL-7-11.89

OHIO STATE HIGHWAY TESTING LABORATORY

1620 W. BROAD ST. COLUMBUS, OHIO 43223

14/39

14/15

940 930 920 910 900 890 880 870

150 100 50 ℄ 50 100 140

Co. Rd. 46
Sta. 16+00

26
25
Refusal
(Hand auger)

15
Refusal
(Hand auger)

940 930 920 910 900 890 880 870

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 ℄ 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160

Co. Rd. 46
Sta. 14+50

18
20
Refusal
(Hand auger)

Shale, sandy, brown, firm.

18
Refusal
(Hand auger)

Brown silty clay & shale

940 930 920 910 900 890 880 870 860

SOIL PROFILE

BELMONT COUNTY

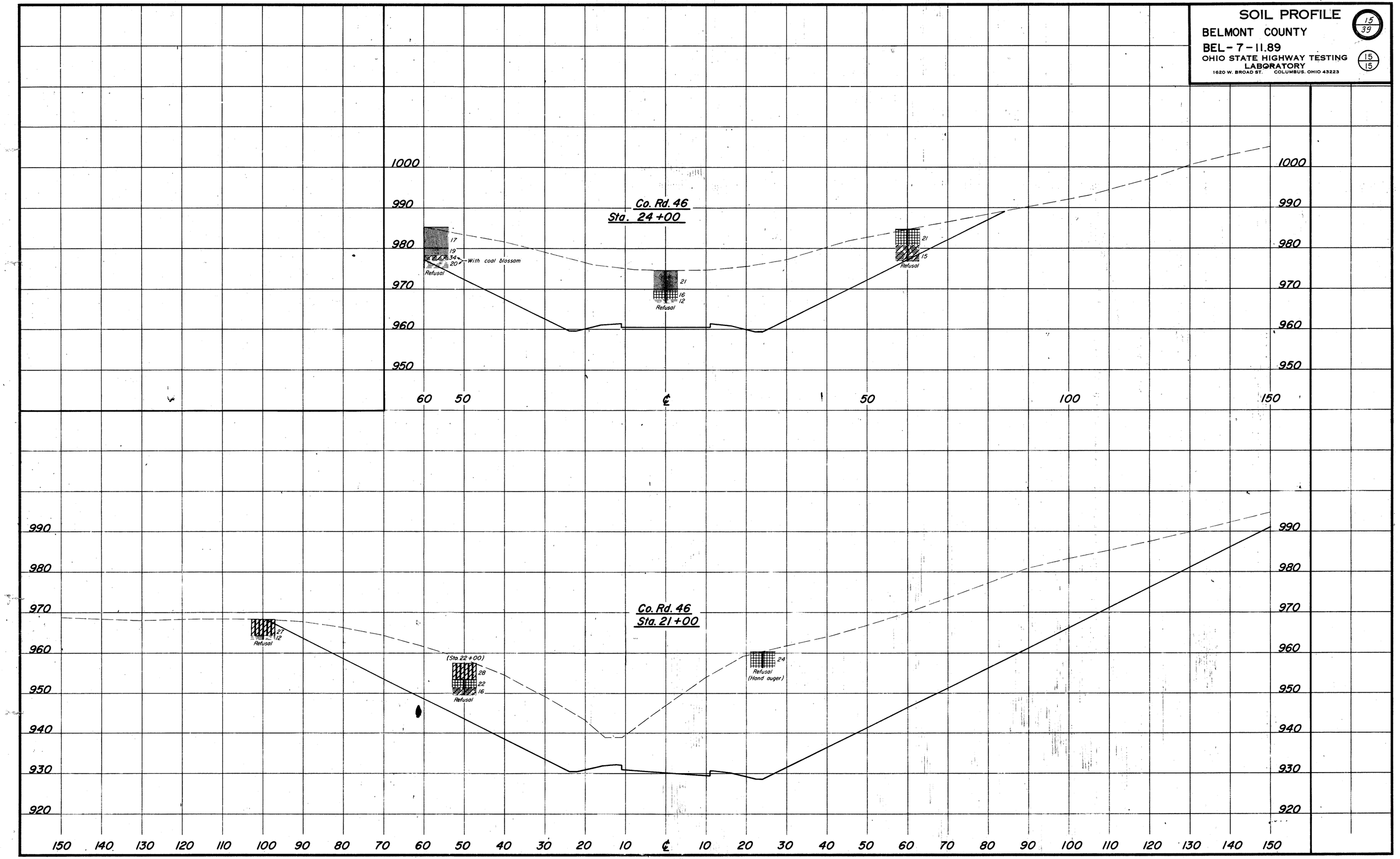
BEL-7-11.89

OHIO STATE HIGHWAY TESTING LABORATORY

1620 W. BROAD ST. COLUMBUS, OHIO 43223

15/39

15/15



GEOLOGY OF THE SITE

THE STRUCTURE SITE IS LOCATED ON THE TERRACED FLOODPLAIN OF THE OHIO RIVER, IN AN AREA WHERE THREE ALLUVIUM AND OUTWARD OVERLYING SHALE, LIMESTONE, SANDSTONE, AND COAL BEDROCK, OF PENNSYLVANIAN AGE.

EXPLANATION

THE EXPLANATION CONSISTED OF FIVE DRIVE SAMPLE-CORE BORINGS, ONE DRIVE SAMPLE BORING, AND FIFTEEN DRIVE-ROD PENETRATION TESTS, MADE BETWEEN MAY 10 AND JUNE 17, 1968.

INVESTIGATIONAL FINDINGS

BORINGS DISCLOSED SOILS TO VERY DENSE SILTY SANDS AND GRAVELS AND OCCASIONAL BOULDERS TO BEDROCK SURFACE, ENCOUNTERED AT 66 TO 76-FOOT DEPTHS, ELEVATIONS 575 TO 570 FEET. BORING B-12 WAS TERMINATED AT 66-FOOT DEPTH, ELEVATION 581 FEET, AFTER PENETRATING 20 FEET OF MATERIAL REQUIRING 19 BLOWS OF 30 BLOWS PER FOOT IN THE STANDARD PENETRATION TEST. THE REMAINING BORINGS WERE TERMINATED AT 75 TO 85-FOOT DEPTHS, ELEVATIONS 565 TO 560 FEET, AFTER PENETRATING 9 TO 12 FEET OF BEDROCK. BEDROCK BAND WAS ENCOUNTERED IN BORINGS B-15, B-18, B-22 AND B-26, NEAR ELEVATION 598 FEET.

THE RED SOUNDINGS ENCOUNTERED GENERALLY MEDIUM-HIGH RESISTANCE TO PENETRATION WITH INCREASING DEPTH AND WERE TERMINATED DUE TO REFUSAL OR NEAR-REFUSAL TO PENETRATION AT 51 TO 75-FOOT DEPTHS, ELEVATIONS 596 TO 572 FEET, CONSIDERED TO BE RELATIVELY OF BEDROCK SURFACE, AS DETAILED BY THE BORINGS.

FREE WATER WAS ENCOUNTERED IN THE MAJORITY OF THE RED SOUNDING HOLES BETWEEN ELEVATIONS 598 AND 606 FEET.

LEGEND

- Auger Boring Location – Plan View.
- Press and / or Drive Sample and / or Core Boring Location – Plan View.
- Drive Rod Penetration Resistance Sounding Location – Plan View.
- Capped Pile
- Footing
- Footing on Pile
- TR Top of Rock
- Horizontal Bar on Boring Log Indicates the Depth the Sample Was Taken.
- X/Y Figures Beside the Boring Log in Profile Indicate the Number of Blows for Standard Penetration Test.
  X = Number of Blows for First 6 inches.
  Y = Number of Blows for Second 6 inches.
- Drive Rod Penetration Resistance Sounding Log – Profile
- Casing
- Resistance "R" < 10,000 lbs.
- Resistance "R" > 10,000 lbs.
- Z Indicates Final Measurement of Penetration, in Inches.
- W Indicates Free Water Elevation.
- Indicates Static Water Elevation.

SYMBOLS OF ROCK TYPES

- Coal
- Weathered Indurated Clay
- Indurated Clay
- Weathered Shale
- Shale
- Boulders
- Weathered Sandstone
- Sandstone
- Leached Dolomite
- Dolomite
- Leached Limestone
- Limestone

GENERAL INFORMATION

Drive Rod Penetration Sounding Tests

Drive rod penetration resistance tests constitute driving a 1.315-inch diameter steel rod, with a 45° cone point, into the ground, using a 122-pound drop-hammer with a free fall of five feet. At one or two-foot depth intervals, a measurement is taken to determine the amount of penetration achieved in three hammer drops. This reading is converted to an empirical value for capacity, "R", in thousands of pounds, (which is a measure of both the point-resistance and frictional resistance on the rod), by using charts prepared by the Ohio Department of Highways, Bureau of Bridges, on the basis of correlation study of rod penetration with past performance of pile driving. For interpretation, a graph is prepared by plotting the value "R" against the depth at which the reading was taken, and connecting the plotted points. The curve so obtained reflects the density of subsurface materials in a manner that can be readily compared with data from similar tests at other locations on the structure site. From this comparison, the overall uniformity of subsurface condition may be evaluated.

Drive Sample Borings – Drive-Press Sample Borings

Drive sample borings are made by means of a rotary-type drill rig, employing a 2" O.D., 1-3/8" I.D. sampler, at 2-1/2 and / or 5-foot depth intervals, driven by means of a 140 – pound drop-hammer with a free fall of 30 inches. The number of blows required to drive the sampler 12 inches is considered the standard penetration test.

Drive-press sample borings are made by means of a rotary-type drill rig, employing a 2" O.D., 1-3/8" I.D. drive sampler, and 3" O.D. thin-wall press sampler. The press sampler is advanced by continuous uniform pressure, applied by the drill rig.

The boring log sheets show a graphic plot of the information obtained, including depth and elevation of the sample, number of blows for the standard penetration tests in two 6-inch increments, depth of press samples, field sample number, sample description – based on laboratory tests and the Casagrande AC classification system-and gradation, plasticity, and moisture content determinations. Results of strength and consolidation testing, if performed, appear on separate enclosures.

At depths where materials are bouldery or gravelly to the extent that the sampler can not be driven, a wash sample is procured for visual classification, in order to determine the general character of the material. These samples are not considered sufficiently representative to warrant laboratory testing.

Particle Size Definitions

Boulders	Cobbles	Gravel	Coarse Sand	Fine Sand	Silt	Clay
8"	3"	2.0mm (No. 10 sieve)	0.42mm (No. 40 sieve)	0.074mm (No. 200 sieve)	0.005mm	

NOTE: Information shown by this subsurface investigation was obtained solely for the use in establishing design controls for the project. The State of Ohio does not guarantee the accuracy of this data and it is not to be construed as a part of the plans governing construction of the project.

OHIO DEPARTMENT OF HIGHWAYS
TESTING LABORATORY
1620 WEST BROAD STREET, COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. BEL-7-11.97
OVER PENNA RR
SEC. BEL-7-11.89

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L.N.L.	R.D.R.	6/27/68

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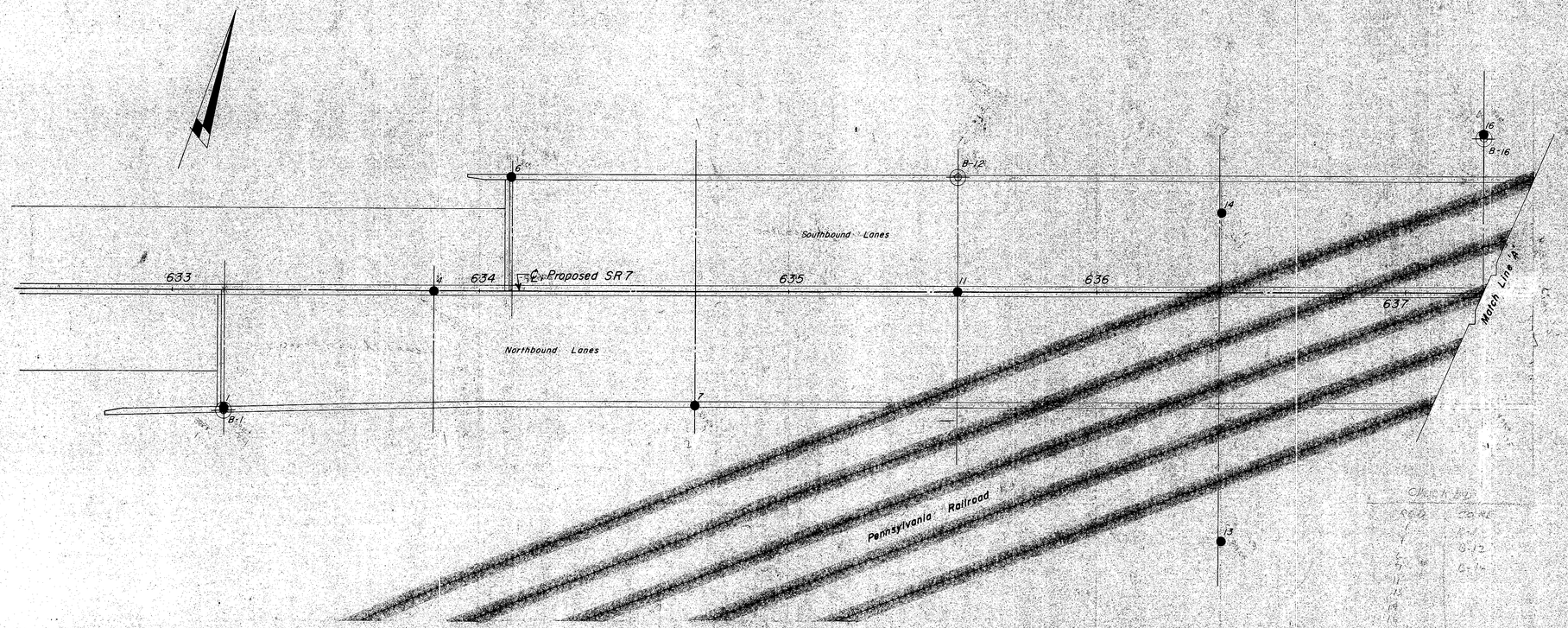
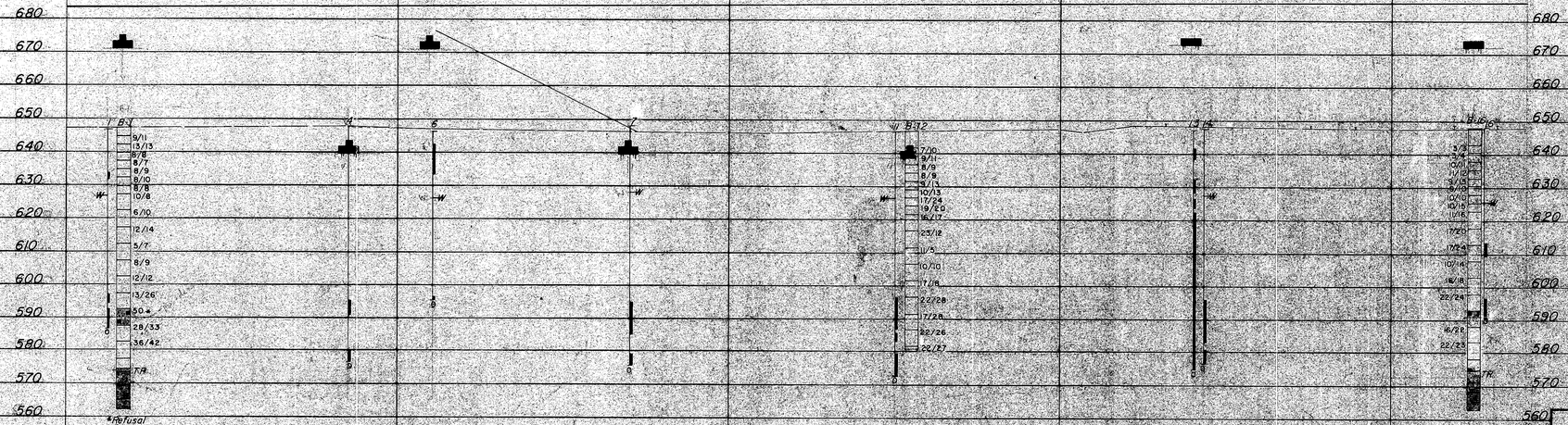
BEL-7-11.89





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1620 WEST BROAD STREET, COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION
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PLAN AND PROFILE

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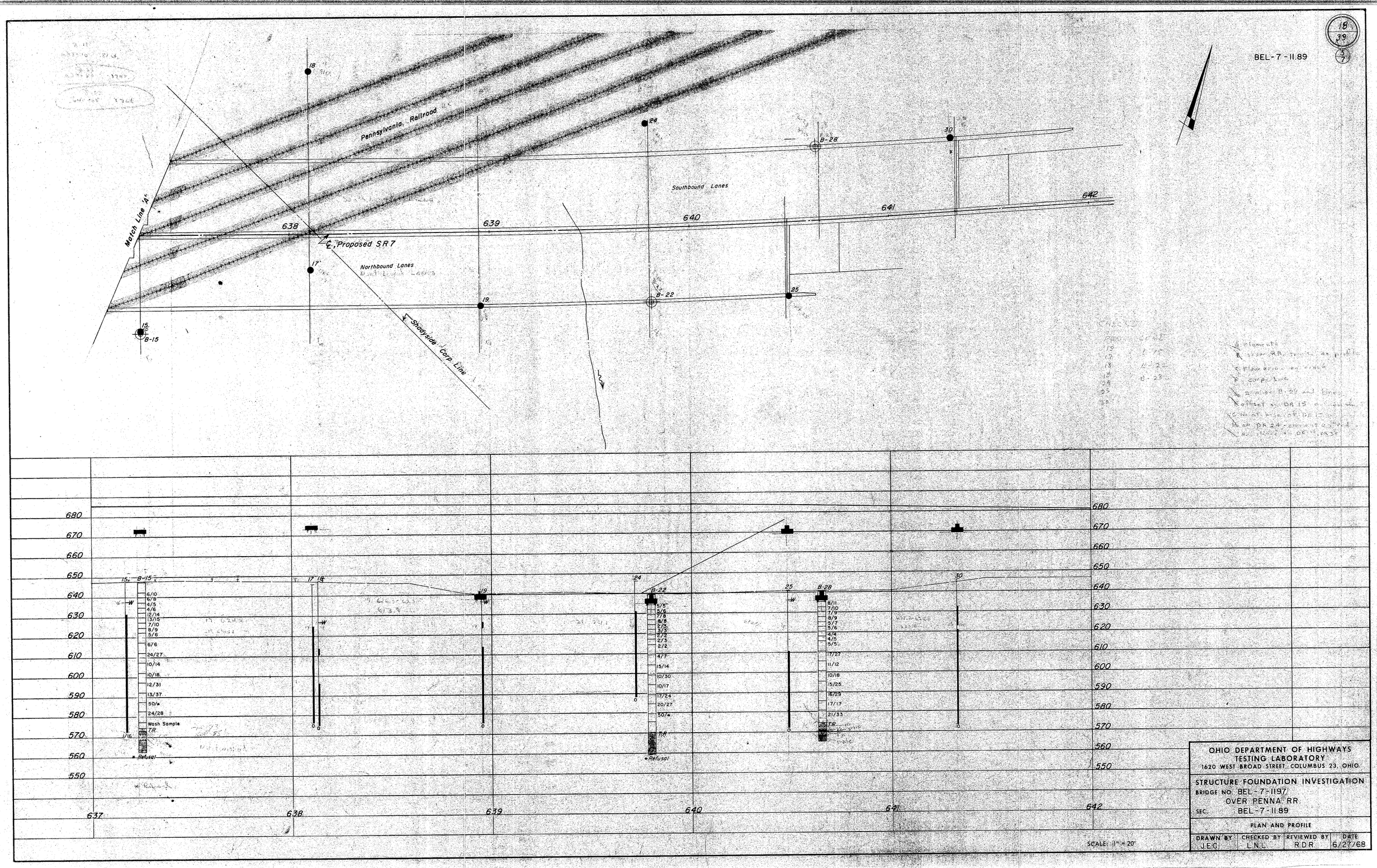
WEG	LNL	RDR	5/27/68

SCALE 1" = 20'



OHIO DEPARTMENT OF HIGHWAYS
TESTING LABORATORY
1620 WEST BROAD STREET, COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. BEL-7-1197
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SEC. BEL-7-11.89

PLAN AND PROFILE

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BEL-7-11.89 4/7

Date Started 5-15-68 Sampler Type SS Dia 2"
Date Completed 5-15-68 Casing Length 70' Dia 3 1/2" Water Elev —
Boring No. B-1 Station & Offset 633+17, 39' Rt. (Rear Abutment) Surface Elev 647.4'

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTO Class.
647.4	0														
644.9	2														
	4	9/11			Brown Sandy Gravel	1	55	19	18	-8-		NP	NP	14	A-1-b
642.4	6	13/13			Brown Silty Sandy Gravel with Coal Blossom	2	55	12	19	-14-		NP	NP	12	A-1-b
639.9	8	8/8			Brown Silty Sandy Gravel	3	48	28	14	-10-		NP	NP	15	A-1-b
637.4	10	8/7			Brown Silty Gravelly Sand	4	39	34	13	-14-		NP	NP	16	A-1-b
634.9	12														
	14	8/9			Brown Sandy Gravel	5	49	19	23	-9-		NP	NP	11	A-1-b
632.4	16	8/10			Brown Sandy Gravel	6	65	10	16	-9-		NP	NP	11	A-1-a
629.9	18	8/8			Brown Sandy Gravel	7	57	17	16	-10-		NP	NP	11	A-1-a
627.4	20	10/8			Brown Silty Gravelly Sand	8	33	25	29	-13-		NP	NP	10	A-1-b
	22														
622.4	24														
	26	6/10			Brown Silty Gravelly Sand	9	33	20	33	-14-		NP	NP	15	A-1-b
617.4	28														
	30	12/14			Brown Silty Gravelly Sand	10	40	19	24	-17-		NP	NP	11	A-1-b
612.4	32														
	34														
	36	5/7			Brown Gravelly Sand	11	40	29	21	-10-		NP	NP	14	A-1-b
	38														
602.4	44														
	46	12/12			Brown Silty Sandy Gravel	13	48	17	19	-16-		NP	NP	14	A-1-b
	48														
597.4	50														
	52	13/26			Brown Silty Sandy Gravel	14	53	12	16	-19-		NP	NP	8	A-1-b
	54														
592.4	56	50" (0.3')			No Sample Recovered-Large Gravel & Boulders (Driller's Description)		V		I	S	U	A	L		
	58														
587.4	60	28/33			Brown Silty Gravelly Sand	15	31	26	19	-24-		NP	NP	9	A-1-b
	62														
	64														
	66	36/42			Brown Gravelly Sand	16	20	42	29	-9-		NP	NP	14	A-1-b
	68														
577.4	70														
	72				No Sample Recovered		V		I	S	U	A	L		
574.4					TOP OF ROCK										
573.2	74		1.5	3.5	Limestone, Light-gray, crystalline, dense. No Core Loss.										
	76				Mudshale, Light-gray, siliceous and silty toward bottom of unit. Core Loss 10%.										
569.6	78		4.8	0.2											
	80				Shale, Siliceous and micaceous, slightly calcareous, medium gray. Core Loss 5%.										
565.4	82		4.7	0.3	Shale, Clayey, dark-gray, slightly silty toward bottom of unit.										

Date Started 5-16-68 Sampler Type SS Dia 1 3/8"
Date Completed 5-17-68 Casing Length 65' Dia 3 1/2" Water Elev —
Boring No. B-12 Station & Offset 635+55, 37' Lt. (3rd Pier) Surface Elev 646.7'

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTO Class.
646.7	0														
	2														
	4														
641.7	6	7/10			Gray Silty Sand	1	0	71	17	-12-		NP	NP	41	A-1-b
639.2	8	9/11			Gray Silty Sand	2	0	59	22	-19-		NP	NP	63	A-1-b
636.7	10	8/9			Brown Sandy Gravel	3	65	18	9	-8-		NP	NP	10	A-1-a
	12														
634.2	14	8/9			Brown Sandy Gravel	4	46	22	24	-8-		NP	NP	8	A-1-b
631.7	16	9/13			Brown Gravelly Sand	5	40	28	24	-8-		NP	NP	11	A-1-b
629.2	18	10/13			Brown Silty Gravelly Sand	6	42	15	27	-16-		NP	NP	8	A-1-b
626.7	20	17/24			Brown Silty Gravelly Sand	7	25	28	35	-12-		NP	NP	12	A-1-b
624.2	22														
	24	19/20			Brown Silty Sandy Gravel	8	45	20	21	-14-		NP	NP	7	A-1-b
621.7	26	16/17			Brown Sand	9	14	14	64	-8-		NP	NP	28	A-3
	28														
616.7	30														
	32	23/12			Brown Silty Gravelly Sand	10	38	27	23	-12-		NP	NP	11	A-1-b
	34														
611.7	36	11/5			Brown Silty Sandy Gravel	11	44	24	20	-12-		NP	NP	12	A-1-b
606.7	38														
	44														
601.7	46	17/18			Brown Silty Gravelly Sand	13	43	21	22	-14-		NP	NP	9	A-1-b
	48														
596.7	50	22/28			Brown Silty Sandy Gravel	14	44	18	19	-19-		NP	NP	10	A-1-b
	52														
591.7	54														
	56	17/28			Brown Sandy Gravel	15	49	29	15	-7-		NP	NP	14	A-1-b
586.7	58														
	60	22/26			Brown Silty Gravelly Sand	16	24	35	23	-18-		NP	NP	11	A-1-b
	62														
	64				BOTTOM OF HOLE										

Date Started 5-16-68 Sampler Type SS Dia 1 3/8"
Date Completed 5-16-68 Casing Length 72' Dia 3 1/2" Water Elev —
Boring No. B-13 Station & Offset 637+25, 49' Rt. (Fifth Pier) Surface Elev 647.5'

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTO Class.
647.5	0														
	2														
	4														
642.5	6	6/10			Brown and Gray Silty Sand -Fill Material	1	0	58	22	-20-		NP	NP	37	A-1-b
640.0	8	6/8			Gray Silty Sand -Fill Material	2	0	52	25	-23-		NP	NP	18	A-1-b
637.5	10	4/5			Brown and Gray Silt & Clay	3	0	5	7	44	44	36	12	26	A-6-b
635.0	12	4/6			Brown and Gray Silt & Clay	4	0	7	8	59	26	39	13	25	A-6-b
632.5	14	12/14			Brown and Gray Silt & Clay	5	0	0	7	52	41	35	13	21	A-6-b
630.0	16	13/15			Brown and Gray Silt & Clay	6	0	1	9	49	41	33	12	20	A-6-b
627.5	20	7/10			Brown and Gray Clayey Silt	7	0	0	17	44	39	29	9	21	A-6-b
625.0	22	8/9			Brown Clayey Silt	8	0	0	15	45	40	28	9	23	A-6-b
622.5	24	5/6			Brown Sandy Silt	9	0	0	23	42	35	26	9	23	A-6-b
	28														
617.5	30	6/6			Brown Sandy Silt	10	0	0	24	41	35	28	9	21	A-6-b
	32														
	34														
612.5	36	24/27			Brown Silty Gravelly Sand	11	39	21	19	11	10	NP	NP	11	A-2-4
607.5	38														
603.5	44														
	46	19/18			Brown Silty Gravelly Sand	13	33	26	26	6	9	NP	NP	10	A-1-b
	48														
598.5	50	32/31			Brown and Gray Gravelly Sand	14	33	49	11	-7-		NP	NP	14	A-1-b
	52														
	54														
593.5	56	13/37			Brown and Gray Sandy Gravel	15	58	24	10	-8-		NP	NP	10	A-1-b
	58														
588.5	60	50" (0.4')			Brown Silty Gravelly Sand	16	40	20	21	10	9	NP	NP	10	A-1-b
	62														
	64														
583.5	66	24/28			Brown Silty Sandy Gravel	17	43	28	14	-15-		NP	NP	9	A-1-b
	68														
578.5	70				No Sample Recovered - Sand (Sample Heaved 5' in Casing)		V	I	S	U	A	L			
576.5					TOP OF ROCK										
573.5	74		1.6	1.4	Limestone, gray, fossiliferous, crumbly, moist on fresh fracture. Core Loss 15%.										
	76				Clay shale, gray, hard, friable, fossiliferous, smooth. Core Loss 10%.										
568.5	78		5.23	0.0	Sandstone, light gray, fine grained micaceous, dark thin bedding streaks. No Core Loss.										
	80				Shale, Silty, dark gray, hard/friable, grading to clay shale toward bottom. No Core Loss.										
563.5	82		4.4	0.6											

OHIO DEPARTMENT OF HIGHWAYS
TESTING LABORATORY
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BRIDGE NO. BEL-7-1197
OVER PENNA. RR.
SEC. BEL-7-11.89

BORING DATA

TYPED BY	CHECKED BY	REVIEWED BY	DATE
A.L.A.	R.C.	R.D.R.	6/27/68

TE - 122
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LOG OF BORING

Date Started 6-4-68 | Date Completed 6-6-68 | Boring No. B-16
Sampler Type SS | Dia. 1 3/8" | Casing: Length 72' | Dia. 3 1/2"
Station & Offset 637+25, 50' Lt. (4th Pier)
Water Elev. ____ | Surface Elev. 648.0'

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	% Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class
648.0	0														
643.0	6	3/3			Brown Sandy Silt	1	13	2	11	36	38	NP	NP	24	A-4a
640.5	8	3/4			Brown Clayey Silt	2	3	1	11	40	45	31	10	29	A-4a
638.0	10	10/11			Brown Sandy Clay	3	8	4	16	31	41	27	11	23	A-6a
635.5	14	11/12			Brown Sandy Silt	4	12	4	30	26	28	26	8	22	A-4a
633.0	16	9/15			Brown Silty Sandy Gravel	5	39	13	19	14	15	23	8	14	A-2-
630.5	18	9/10			Brown Silty Sandy Gravel	6	45	19	21	-15	-	NP	NP	13	A-1-
628.0	20	10/10			Brown Silty Sandy Gravel	7	53	14	22	-11	-	NP	NP	13	A-1-
625.5	24	10/15			Brown Silty Sand	8	7	51	35	- 7	-	NP	NP	22	A-3a
623.0	26	11/16			Brown Silty Gravelly Sand	9	37	20	29	-14	-	NP	NP	11	A-1-
618.0	30	17/20			Brown Silty Sandy Gravel	10	43	21	17	-19	-	NP	NP	8	A-1-
613.0	36	17/24			Brown Silty Gravelly Sand	11	25	31	32	-12	-	NP	NP	16	A-1-
608.0	40	[illegible]			[illegible]	[illegible]									A-1-
603.0	46	16/18			Brown Silty Gravelly Sand	13	41	24	18	-17	-	NP	NP	10	A-1-
598.0	50	22/24			Gray Silty Sandy Gravel	14	53	20	14	-13	-	NP	NP	8	A-1-
593.0	56				No Sample Recovered - Boulders(Driller's Des.)		V	I		S		U	A	L	
588.0	60	16/22			Brown Silty Sandy Gravel(Sand Heaved in Casing 1.0')	15	42	16	21	-21	-	NP	NP	9	A-1-
583.0	66	22/23			Brown Silty Sandy Gravel(Sand Heaved in Casing 1.0')	16	50	23	14	-13	-	NP	NP	10	A-1-
578.0	70				No Sample Recovered - Gray Sand(Sand Heaved in Casing - Driller's Description)		V	I		S		U	A	L	
					TOP OF ROCK										
574.6	74		2.1	0.9	No Sample Recovered - Boulders(Driller's Des.)		V	I		S		U	A	L	
					Shale, gray clay with sandy shale seams. Core Loss 4%.										
571.5	78		4.8	0.2	Shale, firm, gray, micaceous, sandy. No Core Loss.										
568.3	82		5.0	0.0	Shale, soft, blue-gray clay. No Core Loss.										
[illegible]					[illegible]										

LOG OF BORING

Date Started 6/8/68 | Date Completed 6/11/68 | Boring No. B-22
Sampler Type SS | Dia. 1 3/8" | Casing: Length 64' | Dia. 3 1/2"
Station & Offset 639+80, 37' Rt. (Eighth Pier)
Water Elev. ____ | Surface Elev. 639.6'

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	% Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class
639.6	0														
634.6	6	5/5			Brown Silt and Clay	1	0	0	5	46	49	37	12	28	A-6a
632.1	8	5/6			Brown Silt and Clay	2	0	0	3	46	51	39	12	29	A-6a
629.6	10	7/8			Brown Silt and Clay	3	0	0	8	45	47	38	15	36	A-6a
627.1	12	8/8			Brown Silt and Clay	4	0	1	7	48	44	38	14	35	A-6a
624.6	16	2/3			Brown Sandy Silt	5	0	0	36	38	26	23	5	23	A-4a
622.1	18	3/3			Brown Sandy Silt	6	0	0	39	32	29	23	4	23	A-4a
619.6	20	2/2			Brown Sandy Silt	7	0	0	39	36	25	22	5	13	A-4a
617.1	24	2/3			Brown Sandy Silt	8	0	0	33	40	27	24	7	22	A-4a
614.6	26	2/2			Brown and Gray Sandy Silt	9	0	0	26	44	30	24	6	24	A-4a
609.6	30	4/7			Brown Gravelly Sandy Silt	10	22	1	23	29	25	23	6	22	A-4a
604.6	36	15/14			Brown Silty Gravelly Sand	11	20	39	23	10	8	NP	NP	13	A-1-b
599.6	40	[illegible]			[illegible]	[illegible]									
594.6	46	10/17			Brown Silty Gravelly Sand	13	23	35	24	-18-		NP	NP	12	A-1-b
589.6	50	17/24			[illegible] Silty Sandy Gravel	14	45	20	19	-16-		NP	NP	9	A-1-
[illegible]	56	20/27			Brown Sand	15	[illegible]	[illegible]	[illegible]	[illegible]		NP	NP	24	A-3
579.6	60	50/*			[illegible] Silty Gravelly Sand	16	32	33	20	-15-		NP	NP	5	A-1-
575.6	64		0.9	4.1	Gray clay with stone fragments.										
					TOP OF ROCK										
570.1	70		2.7	2.3	Shale, gray, firm, somewhat sandy, micaceous with clay seams. Core Loss 42%.										
564.6	76		4.2	0.8	Silt shale, dark gray, firm. Core Loss 16%.										

LOG OF BORING

Date Started [illegible] | Date Completed 6/12/68 | Boring No. B-28
Sampler Type [illegible] | Dia. [illegible] | Casing: Length 64' | Dia. 3 1/2"
Station & Offset 640+65, 37' Lt. (Ninth Pier)
Water Elev. ____ | Surface Elev. 640.4'

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	% Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class
640.4	0														
635.4	6	8/11			Brown and Gray Silt and Clay	1	0	2	5	40	53	42	15	26	[illegible]
632.9	8	7/10			Brown and Gray Silt and Clay	2	0	2	6	37	55	41	14	26	[illegible]
630.4	10	7/9			Brown Sandy Silt	3	0	1	20	38	41	29	9	20	[illegible]
627.9	14	8/9			Brown and Gray Sandy Silt	4	0	1	26	37	36	26	6	21	[illegible]
625.4	16	5/7			Brown Sandy Silt	5	0	0	31	36	33	25	7	21	[illegible]
622.9	18	5/6			Brown Sandy Silt	6	0	0	25	43	32	28	10	24	[illegible]
620.4	20	4/4			Brown Sandy Clay	7	0	1	22	40	37	30	11	24	[illegible]
617.9	24	4/5			Brown Sandy Silt	8	0	1	31	37	31	26	7	23	[illegible]
615.4	26	5/5			Brown Sandy Silt	9	0	1	34	37	28	NP	NP	20	[illegible]
610.4	30	17/27			Brown Silty Sandy Gravel	10	47	9	21	11	12	NP	NP	18	[illegible]
605.4	36	11/12			Brown Silty Gravelly Sand	11	19	42	25	-14-		NP	NP	15	[illegible]
600.4	40	[illegible]			[illegible]	[illegible]									
595.4	46	15/25			Brown Silty Gravelly Sand	13	40	28	18	-14-		NP	NP	8	[illegible]
590.4	50	16/29			Brown Silty Gravelly Sand	14	41	23	19	-17-		NP	NP	5	[illegible]
585.4	56	17/17			Brown Silty Gravelly Sand	15	20	11	37	20	12	NP	NP	9	[illegible]
580.4	60	21/33			Brown Sand	16	0	28	66	-6-		NP	NP	20	[illegible]
575.4	64														
					TOP OF ROCK										
574.4	66				Clay stone, gray, soft, pyrite nodules. Core Loss 5%.										
573.0	68		4.[illegible]	0.4	Sandstone, shaly, hard, light gray with dark gray bedding streaks. No Core Loss.										
570.8					Clay shale, light gray, thin layered smooth on fracture. Core Loss 2%.										
570.3	70				Sandstone, shaly, hard, light gray with dark gray bedding streaks. No Core Loss.										
568.3	72		4.9	0.1	Clay shale, thin bedded, smooth on fracture, [illegible]										

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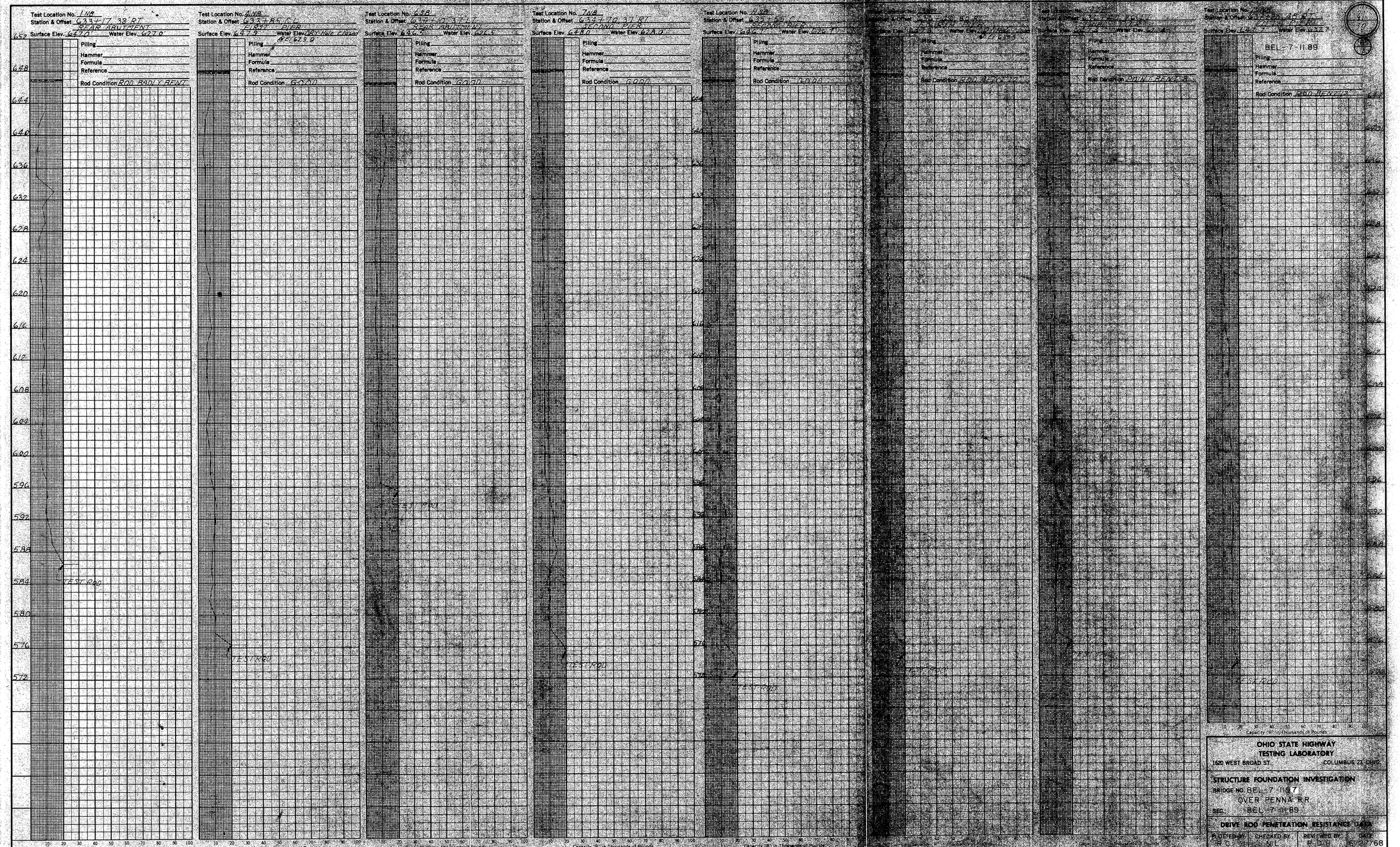
BORING DATA

TYPED BY	CHECKED BY	REVIEWED BY	DATE
A.L.A.	R.C.	R.D.R.	6/27/68

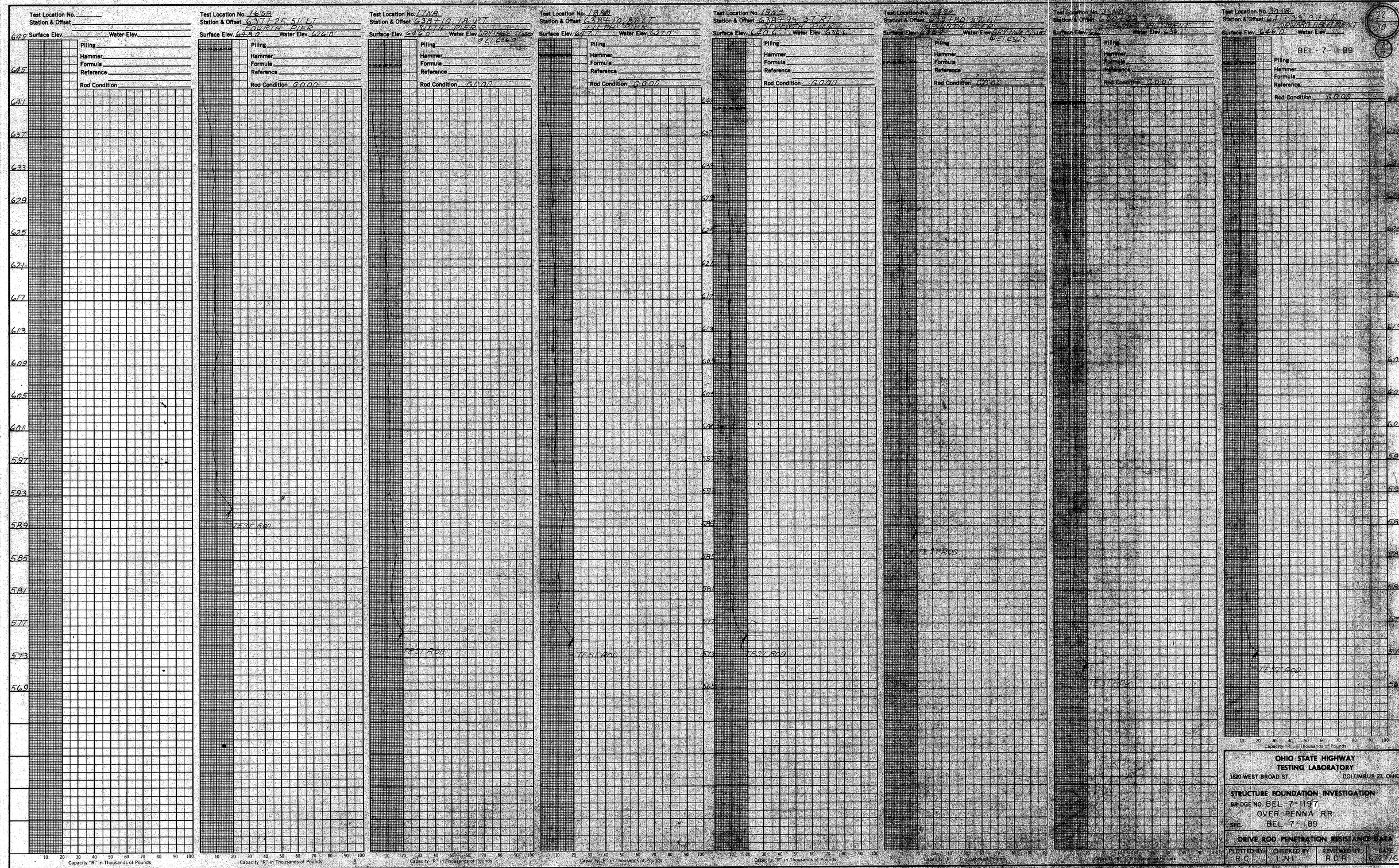


OHIO STATE HIGHWAY
TESTING LABORATORY
1620 WEST BROAD ST. COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. BEL-7-1197
OVER PENNA RR
SEC. BEL-7-11.89

DRIVE ROD PENETRATION RESISTANCE DATA

PLOTTED BY	CHECKED BY	REVIEWED BY	DATE
R.C.	L.N.L.	R.D.R.	6/27/68



OHIO STATE HIGHWAY
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STRUCTURE FOUNDATION INVESTIGATION
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DRIVE ROD PENETRATION RESISTANCE DATA

PLOTTED BY	CHECKED BY	REVIEWED BY	DATE
R.C.	L.N.L.	R.D.R.	6/27/68

TE - 118
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NOV 1 1984

GEOLOGY OF THE SITE

THE STRUCTURE SITE IS LOCATED ON THE TERRACED FLOODPLAIN OF THE OHIO RIVER, IN AN AREA WHERE ALLUVIUM AND OUTWASH OVERLIE SHALE, SANDSTONE, LIMESTONE,AND COAL BEDROCK, OF PENNSYLVANIAN AGE.

EXPLORATION

THE EXPLORATION CONSISTED OF TEN DRIVE SAMPLE-CORE BORINGS AND TWENTY-SEVEN DRIVE ROD PENETRATION TESTS, MADE BETWEEN JUNE 3 AND 19, 1968 AND ON APRIL 2 AND 3, 1974.

INVESTIGATIONAL FINDINGS

BORINGS DISCLOSED VERY LOOSE TO VERY DENSE SANDS, SILTS AND GRAVELS AND OCCASIONAL CLAYS TO BEDROCK SURFACE, ENCOUNTERED AT 70 TO 82-FOOT DEPTHS, ELEVATIONS 576 TO 571 FEET. BORINGS WERE TERMINATED AT 71 TO 90-FOOT DEPTHS ELEVATIONS 577 TO 562 FEET, AFTER PENETRATING 5 TO 14 FEET OF BEDROCK WITH THE EXCEPTION OF BORINGS B-1 AND B-2A WHICH WERE TERMINATED AT 71-FOOT DEPTH, ELEVATION 576 FEET AFTER PENETRATING IN EXCESS OF 15 FEET OF MATERIAL REQUIRING IN EXCESS OF 30 BLOWS PER FOOT IN THE STANDARD PENETRATION TEST. CONSIDERABLE RUNNING SAND WAS ENCOUNTERED IN THE BORINGS.

THE ROD SOUNDINGS ENCOUNTERED GRADUALLY INCREASING RESISTANCE TO PENETRATION WITH INCREASING DEPTH AND WERE TERMINATED DUE TO REFUSAL OR NEAR-REFUSAL OR IN MATERIAL OFFERING MEDIUM-HIGH RESISTANCE AT 59 TO 88-FOOT DEPTHS, ELEVATIONS 596 TO 568 FEET. ROD SOUNDINGS NUMBERS 50, 56, 57 AND 87 ARE CONSIDERED TO HAVE TERMINATED IN SAND AND GRAVEL. THE REMAINING SOUNDINGS ARE CONSIDERED TO HAVE TERMINATED ON OR SLIGHTLY ABOVE OR BELOW BEDROCK SURFACE, AS REVEALED BY THE BORINGS, WITH EXCEPTION OF ROD SOUNDING NUMBER 4, WHICH IS CONSIDERED TO HAVE TERMINATED ON WHAT HAS BEEN REPORTED TO BE A 30-FOOT DIAMETER TANK OR BUILDING FOUNDATION FOR AN ABANDONED WATER TREATMENT PLANT.

NO FREE WATER WAS OBSERVED IN ANY OF THE ROD SOUNDING HOLES.

LEGEND

- Auger Boring Location - Plan View.
- Press and / or Drive Sample and / or Core Boring Location - Plan View.
- Drive Rod Penetration Resistance Sounding Location - Plan View.
- Capped Pile
- Footing
- Footing on Pile
- TR — Top of Rock
- Horizontal Bar on Boring Log Indicates the Depth the Sample Was Taken.
- X/Y/Z — Figures Beside the Boring Log in Profile Indicate the Number of Blows for Standard Penetration Test.
  - X = Number of Blows for First 6 inches.
  - Y = Number of Blows for Second 6 inches.
  - Z = Number of Blows for Third 6 inches
- Drive Rod Penetration Resistance Sounding Log - Profile
- Casing
- Resistance "R" < 10,000 lbs.
- Resistance "R" > 10,000 lbs.
- Z — Indicates Final Measurement of Penetration, in Inches.
- W — Indicates Free Water Elevation.
- Indicates Static Water Elevation.

SYMBOLS OF ROCK TYPES

- Coal
- Weathered Mudstone or Claystone
- Mudstone or Claystone
- Weathered Shale
- Shale
- Weathered Siltstone
- Siltstone
- Weathered Sandstone
- Sandstone
- Leached Dolomite
- Dolomite
- Leached Limestone
- Limestone
- Boulders or Cobbles

GENERAL INFORMATION

Drive Rod Penetration Sounding Tests

Drive rod penetration resistance tests constitute driving a 1.315-inch diameter steel rod, with a 45° cone point, into the ground, using a 122-pound drop-hammer with a free fall of five feet. At one or two-foot depth intervals, a measurement is taken to determine the amount of penetration achieved in three hammer drops. This reading is converted to an empirical value for capacity "R", in thousands of pounds (which is a measure of both the point resistance and frictional resistance on the rod), by using charts prepared by the Ohio Department of Highways, Bureau of Bridges, on the basis of correlation study of rod penetration with past performance of pile driving. For interpretation, a graph is prepared by plotting the value "R" against the depth at which the reading was taken, and connecting the plotted points. The curve so obtained reflects the density of subsurface materials in a manner that can be readily compared with data from similar tests at other locations on the structure site. From this comparison, the overall uniformity of subsurface condition may be evaluated.

Drive Sample Borings - Drive-Press Sample Borings

Drive sample borings are made by means of a rotary-type drill rig, employing a 2" O.D., 1-3/8" I.D. sampler, at 2-1/2 and / or 5-foot depth intervals, driven by means of a 140 - pound drop-hammer with a free fall of 30 inches. The number of blows required to drive the sampler 12 inches is considered the standard penetration test.

Drive-press sample borings are made by means of a rotary-type drill rig, employing a 2" O.D., 1-3/8" I.D. drive sampler, and 3" O.D. thin-wall press sampler. The press sampler is advanced by continuous uniform pressure, applied by the drill rig.

The boring log sheets show a graphic plot of the information obtained, including depth and elevation of the sample, number of blows for the standard penetration tests in two 6-inch increments, depth of press samples, field sample number, sample description - based on laboratory tests and the Casagrande AC classification system - and gradation, plasticity, and moisture content determinations. Results of strength and consolidation testing, if performed, appear on segrate enclosures.

At depths where materials are bouldery or gravelly to the extent that the sampler can not be driven, a wash sample is procured for visual classification, in order to determine the general character of the material. These samples are not considered sufficiently representative to warrant laboratory testing.

Particle Size Definitions

Boulders	Cobbles	Gravel	Coarse Sand	Fine Sand	Silt	Clay
	12"	3"	2.0mm (No. 10 sieve)	0.42mm (No. 40 sieve)	0.074mm (No. 200 sieve)	0.005mm

Revised 4/24/74

NOTE: Information shown by this subsurface investigation was obtained solely for the use in establishing design controls for the project. The State of Ohio does not guarantee the accuracy of this data and it is not to be construed as a part of the plans governing construction of the project.

OHIO DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS — TESTING LABORATORY
1600 WEST BROAD STREET, COLUMBUS, OHIO 43223

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. BEL-7-1289
OVER PENN-CENTRAL RR.
SEC. BEL-7-11.89

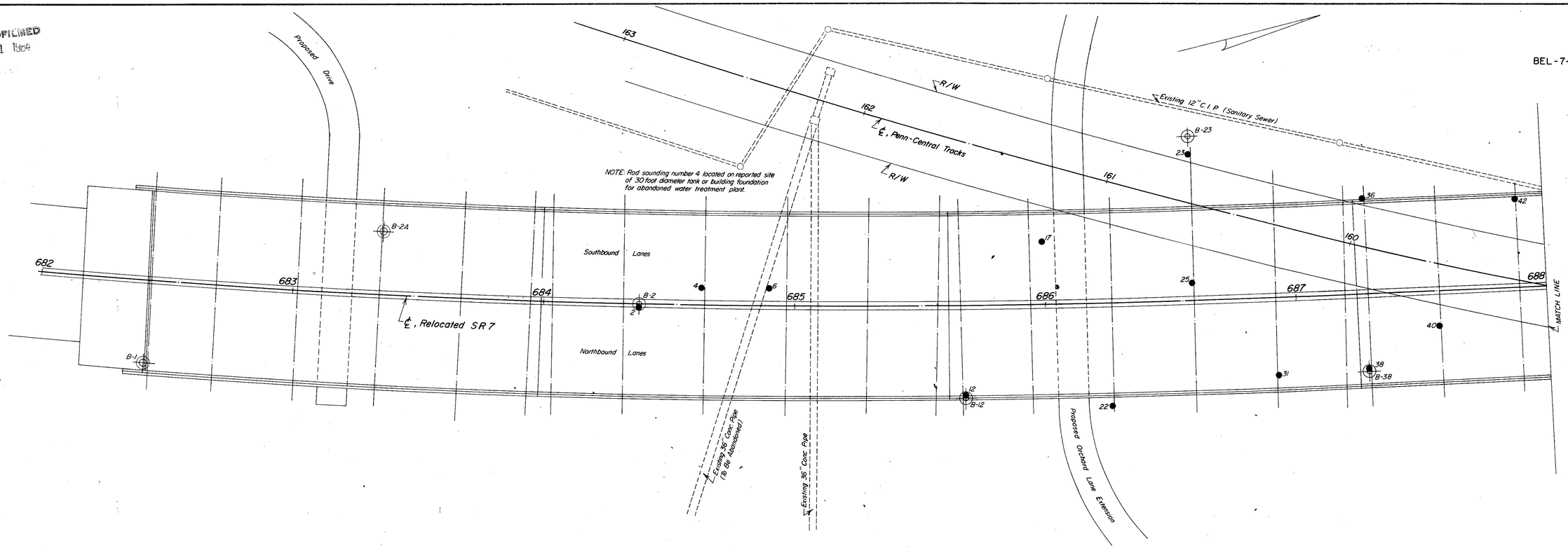
CHECKED BY	REVIEWED BY	DATE
L. N. L.	R. D. R.	6/27/68

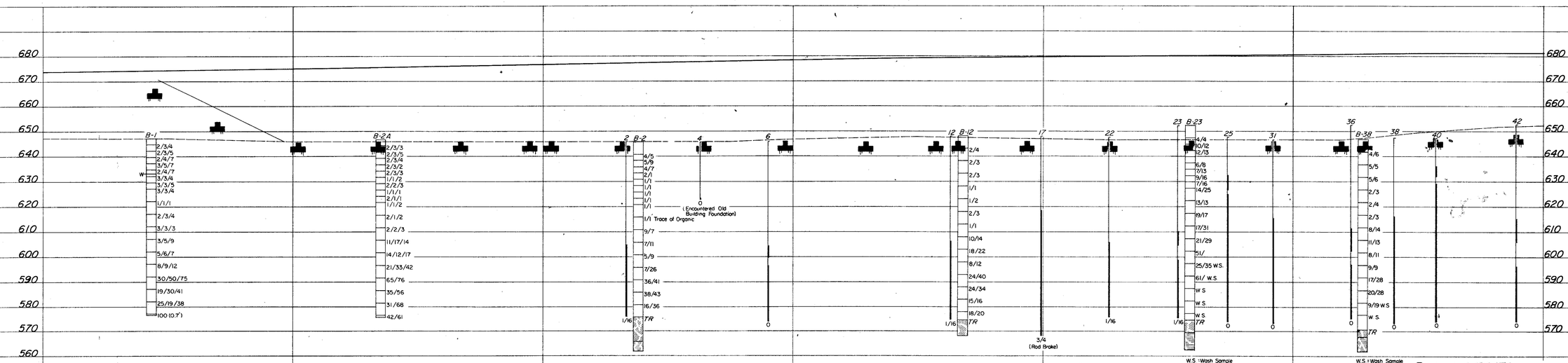
TE - 119
1000 - 12- 69

MICROFILMED
NOV 1 1968

24
39
2
11

BEL-7-11.89





Revised 4/24/74

SCALE: 1" = 20'

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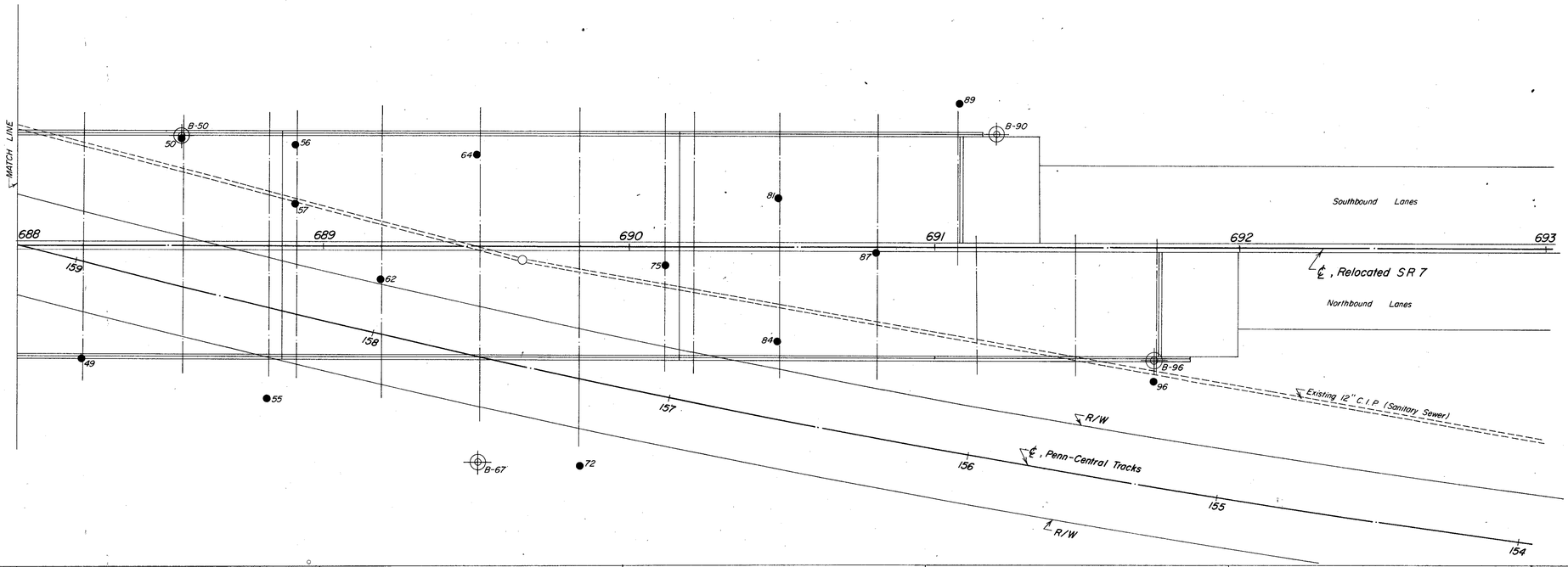
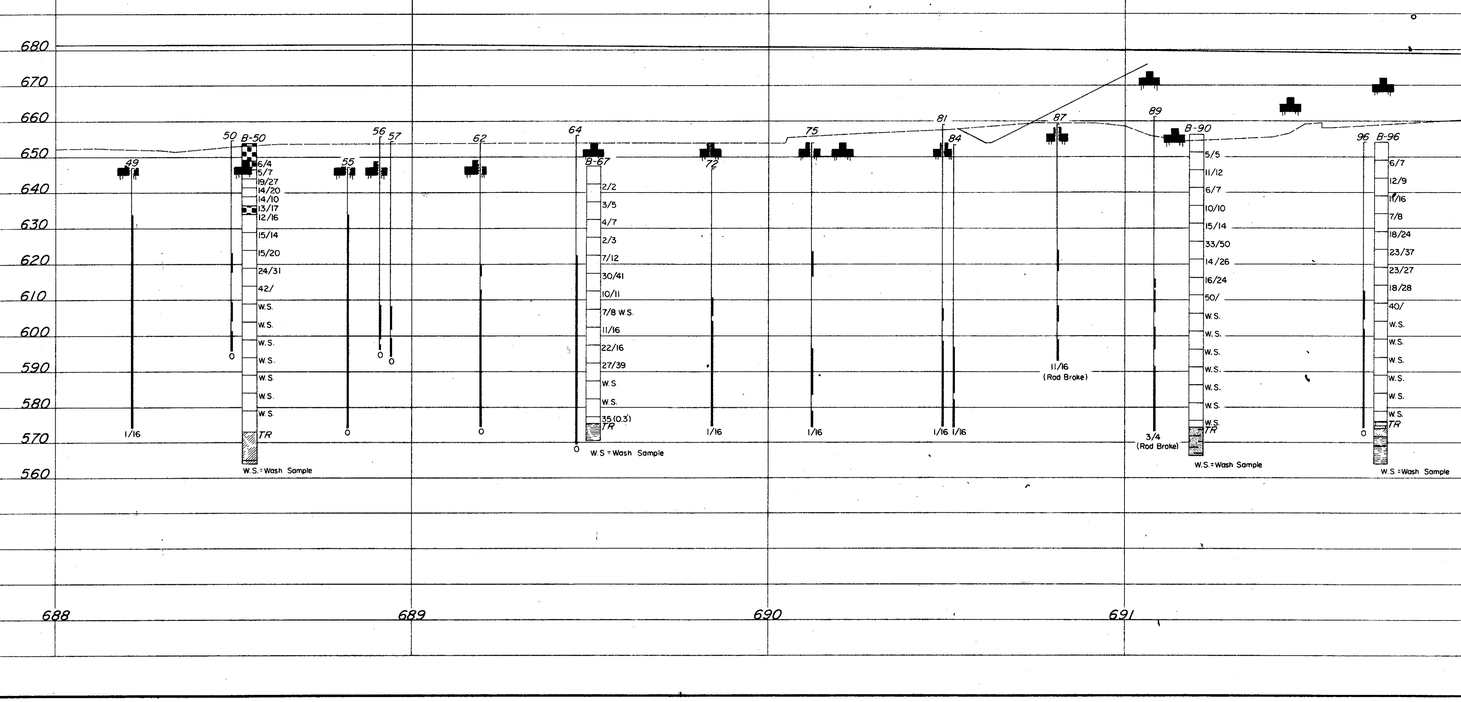
PLAN AND PROFILE

DRAWN BY	CHECKED BY	REVIEWED BY	DATE
J. E. C.	L. N. L.	R. D. R.	6/27/68

TE - 119
1000 - 12- 69

MICROFILMED
NOV 1 1984





SCALE: 1" = 20'

Revised 4/24/74

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SEC. BEL-7-11.89

PLAN AND PROFILE

DRAWN BY	CHECKED BY	REVIEWED BY	DATE
J.E.C.	L.N.L.	R.D.R.	6/27/68

TE-122
400-12-72

MICROFILMED
NOV 1 1984

LOG OF BORING

Date Started 4-2-74 | Sampler Type SS | Dia 1 3/8" | Water Elev 633.3'
Date Completed 4-2-74 | Casing: Length | Dia
Boring No. B-1 | Station & Offset 682+43, 33' RT (REAR ABUTMENT) | Surface Elev 647.3'

Elev.	Depth	Std. Pen. (N)	Rec. / Loss (ft)	Description	Sample no.	Physical Characteristics: % Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class.
647.3	0													
644.8	2													
	4	2/3/4		BROWN SILT	1	0	3	10	76	11	23	5	20	A-4b
642.3	6	2/3/5		BROWN CLAYEY SILT	2	0	0	19	51	30	28	8	22	A-4b
639.8	8	2/4/7		BROWN CLAYEY SILT	3	0	0	7	57	36	31	9	22	A-4b
637.3	10	3/5/7		BROWN CLAYEY SILT	4	0	0	17	51	32	28	8	24	A-4b
634.8	12	2/4/7		BROWN CLAYEY SILT	5	0	0	12	58	30	28	9	24	A-4b
632.3	14	3/3/4		BROWN SANDY SILT	6	0	0	34	40	26	23	7	22	A-4a
629.8	16	3/3/5		BROWN SANDY SILT	7	0	0	29	47	24	28	8	24	A-4b
627.3	18	3/3/4		BROWN SANDY SILT	8	0	0	32	44	24	23	6	23	A-4a
	20													
622.3	22													
	24	1/1/1		BROWN SANDY SILT	9	0	0	31	46	23	23	6	25	A-4a
617.3	26													
	28	2/3/4		BROWN SANDY SILT	10	0	0	31	43	26	21	4	26	A-4a
612.3	30													
	32	3/3/3		BROWN SANDY SILT	11	0	1	40	36	23	23	6	28	A-4a
607.3	34													
	36	3/5/9		BROWN SANDY SILT	12	5	1	30	38	26	24	6	21	A-4a
602.3	38													
	40	5/6/7		BROWN SILTY GRAVELLY SAND	13	15	23	24	22	16	22	6	22	A-4a
597.3	42	8/9/12		BROWN GRAVELLY SAND	14	21	46	31	--2--		NP	NP	20	A-1-b
	44													
592.3	46	30/50/75		BROWN SILTY SANDY GRAVEL	15	52	23	14	--11--		NP	NP	12	A-1-a
587.3	48													
	50	19/30/41		BROWN GRAVELLY SAND	16	40	34	17	--9--		NP	NP	15	A-1-b
582.3	52													
	54	25/19/38		BROWN SILTY GRAVELLY SAND	17	18	40	27	--15--		NP	NP	14	A-1-b
577.3	56													
576.6	58	100 (0.7')		BROWN SILTY SANDY GRAVEL	18	54	14	18	7	7	NP	NP	8	A-1-b

BOTTOM OF BORING

LOG OF BORING

Date Started 4-2-74 | Sampler Type SS | Dia 1 3/8" | Water Elev
Date Completed 4-3-74 | Casing: Length | Dia
Boring No. B-2A | Station & Offset 683+35, 25' LT (THIRD PIER) | Surface Elev 646.7'

Elev.	Depth	Std. Pen. (N)	Rec. / Loss (ft)	Description	Sample no.	Physical Characteristics: % Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class.
646.7	0													
644.2	2													
	4	2/3/3		BROWN SANDY SILT	1	14	5	22	36	23	26	9	20	A-4a
641.7	6	2/3/5		BROWN CLAYEY SILT	2	0	0	13	52	35	29	10	24	A-4b
639.2	8	2/3/4		BROWN SILT AND CLAY	3	0	0	12	54	34	30	12	22	A-6a
636.7	10	2/3/2		BROWN SANDY SILT	4	0	0	25	49	26	25	8	23	A-4a
634.2	12	2/3/3		BROWN SANDY SILT	5	0	0	35	41	24	22	6	22	A-4a
631.7	14	1/1/2		BROWN SANDY SILT	6	0	0	41	38	21	21	5	27	A-4a
629.2	16	2/2/3		BROWN SANDY SILT	7	0	0	33	43	24	24	8	26	A-4a
626.7	18	1/1/1		BROWN SANDY SILT	8	0	0	50	33	17	NP	NP	25	A-4a
624.2	20	2/1/1		BROWN SANDY SILT	9	0	0	37	40	23	NP	NP	28	A-4a
621.7	22	1/1/2		BROWN SANDY SILT	10	0	0	29	48	23	23	5	27	A-4a
	24													
616.7	26													
	28	2/1/2		BROWN SANDY SILT	11	0	0	38	39	23	21	5	33	A-4a
611.7	30													
	32	2/2/3		BROWN SANDY SILT	12	0	0	37	39	24	23	7	24	A-4a
606.7	34													
	36	18/17/14		BROWN SILTY GRAVELLY SAND	13	34	33	19	9		5 NP	NP	14	A-1-b
601.7	38													
	40	14/12/17		BROWN SILTY SANDY GRAVEL	14	37	4	21	23		15 22	6	18	A-4a
596.7	42	21/33/42		BROWN SILTY SANDY GRAVEL	15	47	20	19	8		6 NP	NP	11	A-1-b
591.7	44	65/76		BROWN SILTY SANDY GRAVEL	16	43	21	23	8		5 NP	NP	7	A-1-b
586.7	46	35/56		BROWN SILTY SAND	17	7	39	42	--12--		NP	NP	15	A-3a
581.7	48	31/68		BROWN SAND	18	8	64	21	--7--		NP	NP	15	A-1-b
576.7	50	42/61'		BROWN SAND	19	9	59	32	--9--		NP	NP	19	A-3a
575.7				BOTTOM OF BORING-POSSIBLE TOP OF ROCK										

Supplement 4/24/74

OHIO DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS - TESTING LABORATORY
1600 WEST BROAD STREET COLUMBUS, OHIO 43223

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. BEL-7-1289
OVER PENN-CENTRAL RR.
SEC. BEL-7-11.89

BORING DATA

TYPED BY	CHECKED BY	REVIEWED BY	DATE
D. R. D.	R. D. R.	R. D. R.	

TE - 122
500 - 11 - 64

MICROFILMED
NOV 1 1984

LOG OF BORING

Date Started 6-5-68 Sampler Type SS Dia 1 3/8"
Date Completed 6-7-68 Casing: Length 70' Dia 3 1/2"
Boring No B-2 Station & Offset 684+38, CL. (Seventh Pier)
Water Elev ____ Surface Elev 645.9'

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	% Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class.
645.9	0														
	2														
	4														
640.9	5	4/5			Brown Gravelly Clay	1	18	2	9	38	33	33	13	27	A-6a
638.4	8	5/9			Brown Silt and Clay	2	0	0	6	45	49	34	11	23	A-6a
635.9	10	4/7			Brown Clayey Silt	3	8	0	10	43	39	32	10	23	A-4a
633.4	12	2/1			Brown Sandy Silt	4	0	1	28	36	35	NP	NP	25	A-4a
630.9	15	1/1			Brown Sandy Silt	5	0	0	25	39	36	NP	NP	26	A-4a
628.4	18	1/1			Brown Sandy Silt	6	0	0	32	37	31	NP	NP	21	A-4a
625.9	20	1/1			Brown Sandy Silt	7	0	0	29	40	31	NP	NP	23	A-4a
623.4	22	1/1			Brown Sandy Silt	8	0	0	45	25	30	NP	NP	24	A-4a
620.9	25	1/1			Brown Sandy Silt	9	0	2	33	33	32	23	5	24	A-4a
615.9	30	1/1			Brown Sandy Silt, Trace of Organic	10	0	0	25	44	31	22	6	25	A-4a
610.9	35	9/7			Brown Gravelly Sandy Silt	11	16	1	35	15	33	21	6	22	A-4a
605.9	40	7/11			Brown Gravelly Sand	12	37	35	18	-10-	-	NP	NP	14	A-1-b
600.9	45	5/9			Brown Sandy Gravel	13	55	40	3	- 2	-	NP	NP	14	A-1-a
595.9	50	7/26			Brown Gravelly Sand	14	24	33	33	-10	-	NP	NP	19	A-1-b
590.5	55	36/41			Brown Silty Sandy Gravel	15	45	21	22	-12	-	NP	NP	12	A-1-b
585.9	60	38/43			Brown Gravelly Sand	16	33	41	21	- 5	-	NP	NP	10	A-1-b
580.9	65	16/36			Brown Silty Gravelly Sand	17	27	31	24	-18	-	NP	NP	10	A-1-b
575.9	70				TOP OF ROCK										
	75		3.9	1.1	Claystone gray to blue-gray, soft with a 2 inch limestone layer in basal 1 foot. Core Loss 40%.										
	80		2.0	3.0											
565.9	82		3.6	0.4	Shale - clay, blue-gray with a thin 3 inch limestone layer in basal 1 foot. Core Loss 10%.										
561.9	84				BOTTOM OF BORING										

LOG OF BORING

Date Started 6-5-68 Sampler Type SS Dia 1 3/8"
Date Completed 6-5-68 Casing: Length 71' Dia 3 1/2"
Boring No B-12 Station & Offset 685+68, 37' Rt. (Twelfth Pier)
Water Elev ____ Surface Elev 648.1'

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	% Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class.
648.1	0														
	2														
	4														
643.1	5	2/4			Brown Sandy Silt	1	0	0	19	47	34	27	10	22	A-4a
638.1	10	2/3			Brown Silt and Clay	2	0	0	9	52	39	33	13	25	A-6a
633.1	15	2/3			Brown Sandy Silt	3	0	0	33	40	27	23	6	23	A-4a
628.1	20	1/1			Brown Sandy Silt	4	0	0	41	37	22	22	5	24	A-4a
623.1	25	1/2			Brown Sandy Silt	5	0	0	38	39	23	NP	NP	9	A-4a
618.1	30	2/3			Brown Sandy Silt	6	0	0	35	39	26	22	7	25	A-4a
613.1	35	1/1			Brown Sandy Silt	7	0	0	29	43	28	23	8	25	A-4a
608.1	40	10/14			Brown Silty Gravelly Sand	8	16	15	54	-8-	-	NP	NP	16	A-1-b
603.1	45	18/22			Brown Silty Gravelly Sand	9	24	21	47	-8-	-	NP	NP	15	A-1-b
598.1	50	8/12			Brown Sand	10	7	15	75	-3-	-	NP	NP	20	A-1-b
593.1	55	24/40			Brown Silty Gravelly Sand	11	24	20	40	-16-	-	NP	NP	10	A-1-b
588.1	60	24/34			Brown Sandy Silt	12	10	13	62	-15-	-	NP	NP	13	A-1-b
583.1	65	15/16			Brown Sandy Silt	13	14	10	62	-14-	-	NP	NP	14	A-1-b
578.1	70	18/20			Brown Sand	14	0	0	99	-1-	-	NP	NP	24	A-3a
574.6	73				TOP OF ROCK										
	75				Mudstone (Driller's Description)	15	15	15	8	32	30	28	8	8	Visual
568.1	80				BOTTOM OF BORING										

LOG OF BORING

Date Started 6/10/68 Sampler Type SS Dia 1 3/8"
Date Completed 6/13/68 Casing: Length 78' Dia 3 1/2"
Boring No B-23 Station & Offset 686+59, 65' Lt. (Fifteenth Pier)
Water Elev ____ Surface Elev 652.4'

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	% Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class.
652.4	0														
	2														
	4														
647.4	6	4/4			Brown Silty Sandy Gravel	1	60	13	13	5	9	NP	NP	15	A-1-a
644.9	8	10/12			Brown Sandy Gravel	2	55	14	24	3	4	NP	NP	9	A-1-b
642.4	10	12/13			Gray Gravelly Sand	3	38	46	11	-5-		NP	NP	14	A-1-b
639.9	13				No Sample Recovered (Hole caved in)										
637.4	15	6/8			Brown Gravelly Sand	4	44	35	14	-7-		NP	NP	11	A-1-b
634.9	18	7/13			Brown and Gray Gravelly Sand	5	36	46	11	-7-		NP	NP	13	A-1-b
632.4	20	9/16			Brown Silty Sand	6	13	30	44	-13-		NP	NP	16	A-3a
629.9	23	7/16			Brown Silty Gravelly Sand	7	38	23	28	-11-		NP	NP	13	A-1-b
627.4	25	14/25			Brown and Gray Sand	8	15	57	24	-4-		NP	NP	15	A-1-b
622.4	30	13/13			Brown Silty Sandy Gravel	9	46	23	18	-13-		NP	NP	5	A-1-b
617.4	35	19/17			Brown Silty Sandy Gravel	10	47	23	17	-13-		NP	NP	10	A-1-b
612.4	40	17/31			Brown and Gray Gravelly Sand (Sand Heaved in Casing 2.0')	11	33	54	9	-4-		NP	NP	4	A-1-b
607.4	45	21/29			Brown and Gray Silty Sand (Sand Heaved in Casing 3.0')	12	0	9	75	-16-		NP	NP	25	A-3a
602.4	50	51/			Brown Silty Sand (Sand Heaved in Casing 3.0')	13	0	8	77	-15-		NP	NP	25	A-3a
597.4	55	25/35			Gray Sand (Wash Sample)-(Sand Heaved in Casing 1.0')	14	0	57	41	-2-		NP	NP	10	A-1-b
592.4	60	61/			Gray Sand (Wash Sample)-(Sand Heaved in Casing 2.0')	15	0	61	38	-1-		NP	NP	20	A-1-b
587.4	65				Gray Sand (Wash Sample)-(Sand Heaved in Casing 3.0')	16	0	63	37	-0-		NP	NP	24	A-1-b
582.4	70				Gray Sand (Wash Sample)-(Sand Heaved in Casing 3.0')	17	0	31	64	-5-		NP	NP	27	A-3
577.4	75				Brown and Gray Silty Sand (Wash Sample)-(Sand Heaved in Casing 3.0')	18	0	0	77	-23-		NP	NP	31	A-3a
574.4	78				TOP OF ROCK										
	80		1.2	0.8	Claystone, soft, gray to gray-blue with a thin 2 inch limestone stringer at 83 feet. Core Loss 42%.										
569.4	82		3.7	1.3											
	86		5.0	0.0	Clay shale, gray to dark gray, medium firm. No Core Loss.										
562.4	90				BOTTOM OF BORING										

Revised 4/24/74

OHIO DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS - TESTING LABORATORY
1600 WEST BROAD STREET COLUMBUS, OHIO 43223

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. BEL - 7 - 1289
OVER PENN-CENTRAL RR
SEC. BEL - 7 - 11.89

BORING DATA

TYPED BY	CHECKED BY	REVIEWED BY	DATE
A.L.A.	R.C.	R.D.R.	6/27/68

TE - 122
.00 - 11 - 64

MICROFILMED
NOV 1 1968

LOG OF BORING

Date Started 6/10/68 | Sampler Type SS | Dia 1 3/8" | Water Elev
Date Completed 6/12/68 | Casing: Length | Dia
Boring No. B-38 | Station & Offset 687+28, 31' Rt. (Eighteenth Pier) | Surface Elev. 646.9'

Elev.	Depth	Std. Pen. (N)	Rec ft.	Loss ft.	Description	Sample No.	Physical Characteristics: % Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class.
646.9	0														
	2														
	4														
641.9	6	4/6			Brown Sandy Silt	1	0	2	19	44	35	30	10	20	A-4a
	8														
636.9	10	5/5			Brown Clayey Silt	2	0	0	7	51	42	32	9	21	A-4b
	12														
	14														
631.9	16	5/6			Brown Sandy Silt	3	0	1	26	40	33	24	6	22	A-4a
	18														
626.9	20	2/3			Brown Sandy Silt	4	0	0	21	46	33	27	7	25	A-4a
	22														
	24														
621.9	26	2/4			Brown Sandy Silt	5	0	0	27	41	32	25	6	23	A-4a
	28														
616.9	30	2/3			Brown Sandy Silt	6	0	2	26	39	33	24	6	22	A-4a
	32														
	34														
611.9	36	8/14			Brown Silty Gravelly Sand	7	32	24	19	16	9	NP	NP	15	A-1-b
	38														
606.9	40	11/13			Brown Gravelly Sand	8	36	35	19	-10-		NP	NP	18	A-1-b
	42														
	44														
601.9	46	8/11			Brown and Gray Sandy Gravel	9	56	24	12	-8-		NP	NP	12	A-1-a
	48														
596.9	50	9/9			Brown Sandy Gravel	10	57	21	14	-8-		NP	NP	13	A-1-a
	52														
	54														
591.9	56	17/28			Brown Silty Gravel	11	28	28	28	-16-		NP	NP	14	A-1-b
	58														
	60														
586.9	62	20/28			Brown Silty Gravelly Sand	12	30	39	32	5	4	NP	NP	11	A-1-b
	64														
582.9	66	9/19			Gray Sand (Wash Sample)	13	0	79	20	-1-		NP	NP	19	A-1-b
	68														
576.9	70				Gray Sand (Wash Sample)	14	0	78	22	-0-		NP	NP	24	A-1-b
	72														
	74														
570.8	76				TOP OF ROCK										
			3.9	1.1	Mudstone, gray, soft, with a thin (2") limestone stringer at 77 feet. Core Loss 20%.										
567.9	78														
	80														
			5.0	0.0	Clay shale, dark gray, hard sandy in bottom foot. No Core Loss.										
	82														
561.9	84				BOTTOM OF BORING										

LOG OF BORING

Date Started 6-13-68 | Sampler Type SS | Dia 1 3/8" | Water Elev
Date Completed 6-18-68 | Casing: Length 80' | Dia 3 1/2"
Boring No. B-50 | Station & Offset 688+54, 36' Lt. (Twenty-Second Pier) | Surface Elev. 654.0'

Elev.	Depth	Std. Pen. (N)	Rec ft.	Loss ft.	Description	Sample No.	Physical Characteristics: % Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class.
654.0	0														
	2														
	4														
649.0	6	6/4			Gravelly Sandy Clay With Boulders	1	V	I	S	U	A	L		12	-
646.5	8	5/7			Brown Clayey Sandy Gravel	2	51	18	13	9	9	-	-	5	-
644.0	10	19/27			Brown Clayey Sand	3	0	43	24	15	18	27	12	10	A-2-6
641.5	12	14/20			Brown Silty Gravelly Sand	4	30	29	24	-17-		NP	NP	15	A-1-b
639.0	14	14/10			Brown Silty Sandy Gravel	5	43	21	19	-17-		NP	NP	6	A-1-b
636.5	16	13/17			Brown and Gray Silty Gravelly Sand With Boulders	6	36	34	14	-16-		NP	NP	12	A-1-b
634.0	18	12/16			Brown Silty Gravelly Sand	7	18	17	42	-23-		NP	NP	10	A-3a
	20														
	22														
629.0	24	15/14			Brown and Gray Sandy Gravel	8	61	15	18	-6-		NP	NP	12	A-1-a
	26														
624.0	28	15/20			Brown Silty Sandy Gravel	9	50	15	20	-15-		NP	NP	9	A-1-b
	30														
	32														
619.0	34	24/31			Brown and Gray Gravelly Sand	10	30	55	7	-8-		NP	NP	14	A-1-b
	36														
614.0	38	42/			Brown and Gray Silty Sandy Gravel	11	51	21	13	-15-		NP	NP	12	A-1-a
	40														
	42														
609.0	44				Brown and Gray Sand (Wash Sample) - (Sand Heaved in Casing 4.0')	12	0	51	43	-6-		NP	NP	26	A-1-b
	46														
	48														
604.0	50				Brown and Gray Sand (Wash Sample) - (Sand Heaved in Casing 4.0')	13	0	42	52	-6-		NP	NP	25	A-3
	52														
	54														
599.0	56				Brown Sand (Wash Sample) - (Sand Heaved in Casing 3.0')	14	0	61	35	-4-		NP	NP	25	A-1-b
	58														
594.0	60				Brown Sand (Wash Sample) - (Sand Heaved in Casing 3.0')	15	0	52	42	-6-		NP	NP	27	A-1-b
	62														
	64														
589.0	66				Brown and Gray Sand (Wash Sample) - (Sand Heaved in Casing 3.0')	16	0	41	52	-7-		NP	NP	27	A-3
	68														
584.0	70				Brown and Gray Sand (Wash Sample)- (Sand Heaved in Casing 4.0')	17	0	35	55	-10-		NP	NP	29	A-3
	72														
	74														
579.0	76				Brown and Gray Sand (Wash Sample) - (Sand Heaved in Casing 4.0')	18	0	29	68	-3-		NP	NP	30	A-3
	78														
574.0	80														
573.0					TOP OF ROCK										
	82		3.7	1.3	Claystone, gray, dense, crumbly at 83 feet, fairly hard grades into clay shale toward bottom. Core Loss 15%.										
	84														
	86														
	88		3.7	1.3											
565.0															
564.0	90				Clay, gray, moist, soft, plastic. Core Loss 5%.										
					BOTTOM OF BORING										

LOG OF BORING

Date Started 6/13/68 | Sampler Type SS | Dia 1 3/8" | Water Elev
Date Completed 6/14/68 | Casing: Length 71' | Dia 3 1/2"
Boring No. B-67 | Station & Offset 689+51, 71' Rt. (Twenty Sixth Pier) | Surface Elev. 647.5'

Elev.	Depth	Std. Pen. (N)	Rec ft.	Loss ft.	Description	Sample No.	Physical Characteristics: % Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class.
647.5	0														
	2														
	4														
642.5	6	2/2			Brown Gravelly Clay	1	12	1	10	35	42	34	13	24	A-6a
	8														
637.5	10	3/5			Brown Silt	2	0	0	9	54	37	25	5	20	A-4b
	12														
	14														
632.5	16	4/7			Brown Silt and Clay	3	0	0	16	46	38	31	11	20	A-6a
	18														
627.5	20	2/3			Brown Clayey Silt	4	0	0	17	46	37	29	8	24	A-4a
	22														
	24														
622.5	26	7/12			Brown Silty Sandy Gravel	5	51	20	18	4	7	NP	NP	14	A-1-a
	28														
617.5	30	30/41			Brown Silty Gravelly Sand	6	40	25	21	5	9	NP	NP	15	A-1-b
	32														
	34														
612.5	36	10/11			Brown Sandy Gravel	7	52	25	18	-5-		NP	NP	11	A-1-a
	38														
607.5	40	7/8			Brown and Gray Sand (Wash Sample)	8	11	74	13	-2-		NP	NP	20	A-1-b
	42														
	44														
602.5	46	11/16			Brown Silty Gravelly Sand	9	39	32	18	-11-		NP	NP	12	A-1-b
	48														
597.5	50	22/16			Brown Sandy Gravel	10	48	26	16	-10-		NP	NP	12	A-1-b
	52														
	54														
592.5	56	27/39			Brown Silty Gravelly Sand	11	17	35	30	-18-		NP	NP	12	A-1-b
	58														
	60														
587.5	62				Brown and Gray Gravelly Sand (Wash Sample)	12	32	50	17	-1-		NP	NP	18	A-1-b
	64														
582.5	66				Brown and Gray Sand (Wash Sample)	13	0	86	13	-1-		NP	NP	24	A-1-b
	68														
577.5	70	35 (0.3')			Brown and Gray Gravelly Sand	14	45	29	21	-5-		NP	NP	16	A-1-b
575.5	72				TOP OF ROCK										
			4.6	0.0	Clay shale, firm, medium hard, dark gray. Core Loss 8%.										
	74														
570.5	76				BOTTOM OF BORING										

Revised 4/24/74

OHIO DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS - TESTING LABORATORY
1600 WEST BROAD STREET COLUMBUS, OHIO 43223

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. BEL-7-1289
OVER PENN - CENTRAL RR
SEC. BEL-7-11.89

BORING DATA

TYPED BY	CHECKED BY	REVIEWED BY	DATE
A.L.A.	R.C.	R.D.R.	6/27/68

TE - 122
600 - 11 - 64

MICROFILMED
NOV 1 1968

LOG OF BORING

Date Started 6-13-68 | Sampler Type SS | Dia 1 3/8" | Water Elev ———
Date Completed 6-19-68 | Casing Length 82' | Dia 3 1/2"
Boring No. B-90 | Station & Offset 691+20, 37' Lt. (Forward Abutment) | Surface Elev 656.2'

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	% Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class.
656.2	0														
	2														
	4														
651.2	6	5/5			Brown Silty Sandy Gravel	1	40	11	23	13	13	NP	NP	14	A-2-4
	8														
646.2	10	11/12			Brown Silty Sandy Gravel	2	49	17	18	-16-		NP	NP	13	A-1-b
	12														
641.2	14	6/7			Brown Sand	3	V	I	S	U	A	L		18	
	16														
636.2	18														
	20	10/10			Brown Silty Sandy Gravel	4	51	25	11	-13-		NP	NP	15	A-1-a
	22														
631.2	24	15/14			Brown and Gray Silty Sandy Gravel	5	45	30	11	-14-		NP	NP	15	A-1-b
	26														
626.2	28	33/50			Brown Silty Gravelly Sand	6	42	24	20	-14-		NP	NP	6	A-1-b
	30														
621.2	32	14/26			Brown Silty Sandy Gravel	7	45	21	18	-16-		NP	NP	12	A-1-b
	34														
616.2	36	16/24			Brown Silty Sandy Gravel	8	45	28	16	-11-		NP	NP	13	A-1-b
	38														
	40														
	42														
611.2	44	50/			Brown and Gray Gravelly Sand	9	22	63	10	-5-		NP	NP	16	A-1-b
	46														
	48														
606.2	50				Brown and Gray Sand (Wash Sample)- (Sand Heaved in Casing 2.0')	10	0	20	76	-4-		NP	NP	33	A-3
	52														
601.2	54				Brown and Gray Sand (Wash Sample) - (Sand Heaved in Casing 2.0')	11	0	22	72	-6-		NP	NP	30	A-3
	56														
	58														
596.2	60				Brown and Gray Sand (Wash Sample) - (Sand Heaved in Casing 3.0')	12	0	68	29	-3-		NP	NP	24	A-3-b
	62														
	64														
591.2	66				Brown and Gray Sand (Wash Sample) - (Sand Heaved in Casing 1.5')	13	0	23	69	-8-		NP	NP	28	A-3
	68														
586.2	70				Brown Sand (Wash Sample) -(Sand Heaved in Casing 2.0')	14	0	31	61	-8-		NP	NP	30	A-3
	72														
	74														
581.2	76				Brown Sand (Wash Sample) - (Sand Heaved in Casing 1.5')	15	0	63	33	-4-		NP	NP	26	A-3
	78														
576.2	80				Brown and Gray Sand (Wash Sample) - (Sand Heaved in Casing 1.0')	16	0	55	43	-2-		NP	NP	31	A-3
574.2	82				TOP OF ROCK										
	84		2.9	0.1	Siltstone, gray, hard, dense, slightly sandy in part, tracably Calcareous, micaceous in part. No Core Loss.										
	86														
	88		5.0	0.0											
566.2	90				BOTTOM OF BORING										

LOG OF BORING

Date Started 6/7/68 | Sampler Type SS | Dia 1 3/8" | Water Elev ———
Date Completed 6/13/68 | Casing Length 78' | Dia 3 1/2"
Boring No. B-96 | Station & Offset 691+72, 37' Rt. (Forward Abutment) | Surface Elev 654.1'

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	% Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class.
654.1	0														
	2														
	4														
649.1	6	6/7			Brown Sandy Gravelly Silt	1	33	7	11	28	21	28	9	18	A-4a
	8														
644.1	10	12/9			Brown Sandy Gravel	2	81	10	5	-4-		NP	NP	10	A-1-a
	12														
639.1	14	11/16			Brown Sandy Gravel	3	81	10	5	-4-		NP	NP	10	A-1-a
	16														
	18														
634.1	20	7/8			Brown Gravelly Sand	4	30	40	20	-10-		NP	NP	11	A-1-b
	22														
	24														
629.1	26	18/24			Brown Sandy Gravel	5	53	16	22	-9-		NP	NP	5	A-1-b
	28														
624.1	30	23/37			Brown Gravelly Sand	6	26	40	26	-8-		NP	NP	17	A-1-b
	32														
	34														
619.1	36	23/27			Brown Silty Gravelly Sand	7	28	28	26	-18-		NP	NP	11	A-1-b
	38														
614.1	40	18/28			Brown Silty Gravelly Sand	8	36	26	25	-13-		NP	NP	12	A-1-b
	42														
	44														
609.1	46	40			Brown and Gray Sand	9	0	87	12	-1-		NP	NP	20	A-1-b
	48														
604.1	50				Brown and Gray Sand (Wash Sample)-(Sand Heaved in Casing 2')	10	0	33	61	-6-		NP	NP	32	A-3
	52														
	54														
599.1	56				Brown and Gray Sand (Wash Sample)-(Sand Heaved in Casing 2')	11	0	67	30	-3-		NP	NP	30	A-1-b
	58														
	60														
594.1	62				Brown and Gray Sand (Wash Sample)-(Sand Heaved in Casing 1'5")	12	0	74	24	-2-		NP	NP	26	A-1-b
	64														
589.1	66				Brown and Gray Sand (Wash Sample)-(Sand Heaved in Casing 2')	13	0	23	75	-2-		NP	NP	35	A-3
	68														
584.1	70				Brown and Gray Sand (Wash Sample)-(Sand Heaved in Casing 1'5")	14	0	39	57	-4-		NP	NP	29	A-3
	72														
	74														
579.1	76				Brown and Gray Sand (Wash Sample)-(Sand Heaved in Casing 1'5")	15	0	56	40	-4-		NP	NP	25	A-1-b
576.1	78				TOP OF ROCK										
574.1	80		1.5	0.2	Limestone, gray, hard, dense, fine-grained, with clay seams, Core Loss 25%.										
571.6	82		4.2	0.8	Clay stone, dark gray, soft. Core Loss 23%.										
569.1	84				Shale, gray, firm, (silty to sandy). No Core Loss.										
	86														
	88		5.0	0.0	Shale, gray, firm, micaceous, sandy in part, grading into clay in bottom 0.6'. Core Loss 8%.										
564.1	90				BOTTOM OF BORING										

Revised 4/24/74

OHIO DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS - TESTING LABORATORY
1600 WEST BROAD STREET COLUMBUS, OHIO 43223

STRUCTURE FOUNDATION INVESTIGATION

BRIDGE NO. BEL-7-1289
OVER PENN-CENTRAL RR
SEC. BEL-7-11.89

BORING DATA

TYPED BY	CHECKED BY	REVIEWED BY	DATE
A.L.A.	R.C.	R.D.R.	6/27/68

MICROFILMED
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39
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BEL-7-11.89

Test Location No. 2SB
Station & Offset 684+38.1'RT.
SEVENTH PIER
Surface Elev. 645.9' **Water Elev.**
Piling
Hammer
Formula
Reference
Rod Condition GOOD

Test Location No. 4SB
Station & Offset 684+63.7'LT.
EIGHTH PIER
Surface Elev. 645.8' **Water Elev.**
Piling
Hammer
Formula
Reference
Rod Condition GOOD

Test Location No. 6SB
Station & Offset 684+90.7'LT.
NINTH PIER
Surface Elev. 645.8' **Water Elev.**
Piling
Hammer
Formula
Reference
Rod Condition GOOD

Test Location No. 12NB
Station & Offset 685+68.36'RT.
TWELFTH PIER
Surface Elev. 648.1' **Water Elev.**
Piling
Hammer
Formula
Reference
Rod Condition GOOD

Test Location No. 17SB
Station & Offset 685+99.25'LT.
THIRTEENTH PIER
Surface Elev. 648.0' **Water Elev.**
Piling
Hammer
Formula
Reference
Rod Condition ROD BROKE

Test Location No. 22NB
Station & Offset 686+26.41'RT.
FOURTEENTH PIER
Surface Elev. 647.7' **Water Elev.**
Piling
Hammer
Formula
Reference
Rod Condition

Test Location No. 23SB
Station & Offset 686+59.58'LT.
FIFTEENTH PIER
Surface Elev. 632.2' **Water Elev.**
Piling
Hammer
Formula
Reference
Rod Condition

Test Location No. 25SB
Station & Offset 686+59.7'LT.
FIFTEENTH PIER
Surface Elev. 647.8' **Water Elev.**
Piling
Hammer
Formula
Reference
Rod Condition

653 649 645 641 637 633 629 625 621 617 613 609 605 601 597 593 589 585 581 577 573 569 565

TEST ROD

10 20 30 40 50 60 70 80 90 100
Capacity "R" in Thousands of Pounds

Revised 4/24/74

OHIO DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS - TESTING LABORATORY
1600 WEST BROAD STREET COLUMBUS, OHIO 43223

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. BEL-7-1289
OVER PENN-CENTRAL RR.
SEC. BEL-7-11.89

DRIVE ROD PENETRATION RESISTANCE DATA

PLOTTED BY	CHECKED BY	REVIEWED BY	DATE
R.C.	L.N.L.	R.D.R.	6/27/68

MICROFILMED
NOV 1 1974

Test Location No. 31NB
Station & Offset 686+92.30'RT
SIXTEENTH PIER
Surface Elev. 646.6 Water Elev.
Piling
Hammer
Formula
Reference
Rod Condition GOOD

Test Location No. 36SB
Station & Offset 687+28.38'LT
EIGHTEENTH PIER
Surface Elev. 652.6 Water Elev. DRY-Hole Closed @El. 624.6
Piling
Hammer
Formula
Reference
Rod Condition GOOD

Test Location No. 38NB
Station & Offset 687+28.31'RT
EIGHTEENTH PIER
Surface Elev. 647.3 Water Elev.
Piling
Hammer
Formula
Reference
Rod Condition ROD BENT

Test Location No. 40NB
Station & Offset 687+57.14'RT
NINETEENTH PIER
Surface Elev. 647.2 Water Elev.
Piling
Hammer
Formula
Reference
Rod Condition

Test Location No. 42SB
Station & Offset 687+89.35'LT
TWENTIETH PIER
Surface Elev. 652.9 Water Elev. DRY-Hole closed @El. 625.9'
Piling
Hammer
Formula
Reference
Rod Condition GOOD

Test Location No. 49NB
Station & Offset 688+21.37'RT
TWENTY FIRST PIER
Surface Elev. 647.0 Water Elev.
Piling
Hammer
Formula
Reference
Rod Condition

Test Location No. 50SB
Station & Offset 688+54.35'LT
TWENTY SECOND PIER
Surface Elev. 654.8 Water Elev. DRY-Hole Closed @El. 626.8'
Piling
Hammer
Formula
Reference
Rod Condition GOOD

Test Location No. 55NB
Station & Offset 688+82.50'RT
TWENTY THIRD PIER
Surface Elev. 647.1 Water Elev.
BEL-7-11.89
Piling
Hammer
Formula
Reference
Rod Condition

655 651 647 643 639 635 631 627 623 619 615 611 607 603 599 595 591 587 583 579 575 571

TEST ROD

10 20 30 40 50 60 70 80 90 100
Capacity "R" in Thousands of Pounds

Revised 4-24-74

OHIO DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS - TESTING LABORATORY
1600 WEST BROAD STREET COLUMBUS, OHIO 43223

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. BEL-7-1289
OVER PENN-CENTRAL RR.
SEC. BEL-7-11.89

DRIVE ROD PENETRATION RESISTANCE DATA

PLOTTED BY	CHECKED BY	REVIEWED BY	DATE
R.C.	L.N.L.	R.D.R.	6/27/68

COLE CO.-HDM-10-67-1-IX

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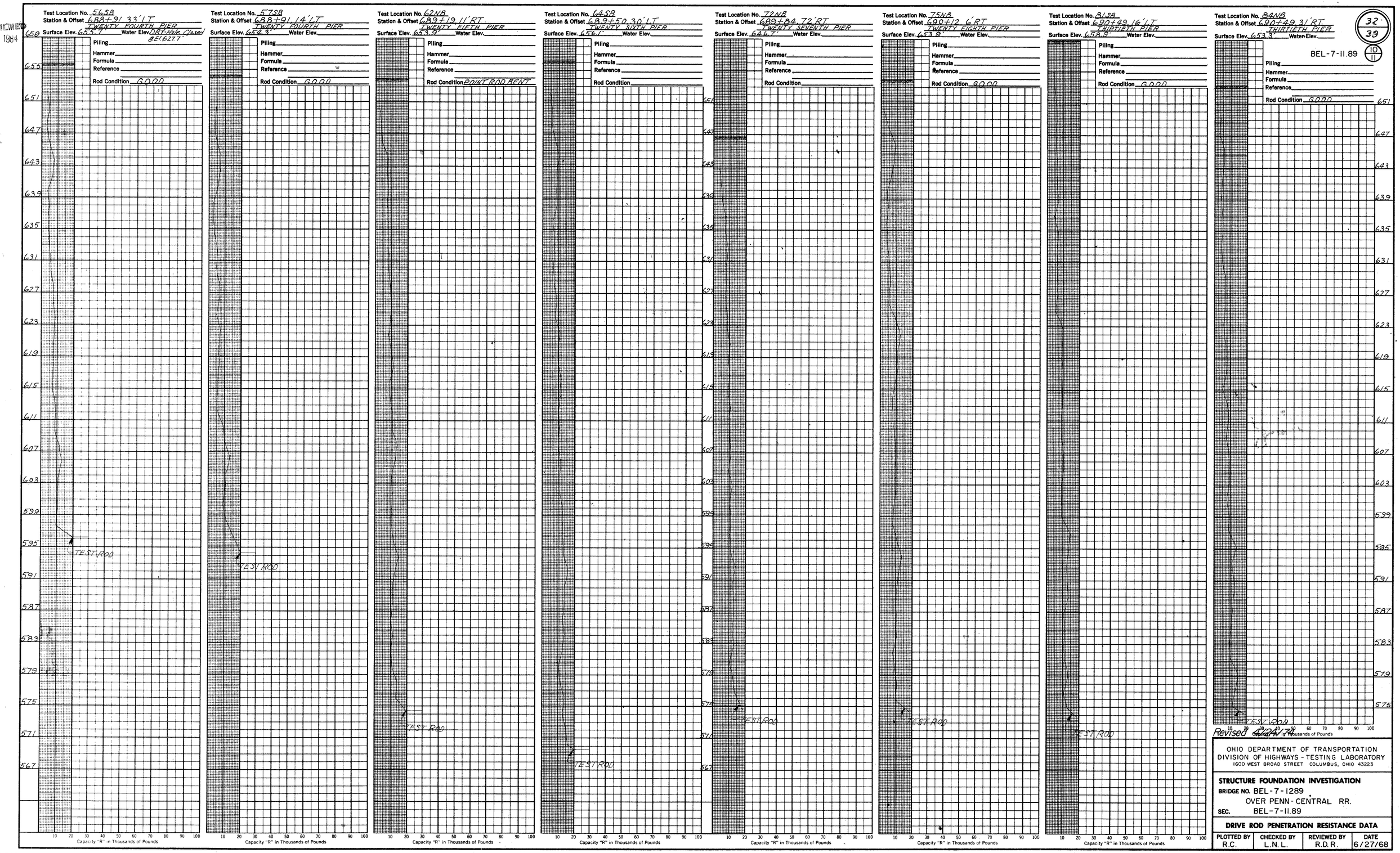

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Revised 4/24/74

OHIO DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS - TESTING LABORATORY
1600 WEST BROAD STREET COLUMBUS, OHIO 43223

STRUCTURE FOUNDATION INVESTIGATION

BRIDGE NO. BEL-7-1289
OVER PENN-CENTRAL RR.
SEC. BEL-7-11.89

DRIVE ROD PENETRATION RESISTANCE DATA

PLOTTED BY	CHECKED BY	REVIEWED BY	DATE
R.C.	L.N.L.	R.D.R.	6/27/68

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Test Location No. _____
Station & Offset _____
Surface Elev. _____ Water Elev. _____
Piling _____
Hammer _____
Formula _____
Reference _____
Rod Condition _____

Test Location No. _____
Station & Offset _____
Surface Elev. _____ Water Elev. _____
Piling _____
Hammer _____
Formula _____
Reference _____
Rod Condition _____

Test Location No. _____
Station & Offset _____
Surface Elev. _____ Water Elev. _____
Piling _____
Hammer _____
Formula _____
Reference _____
Rod Condition _____

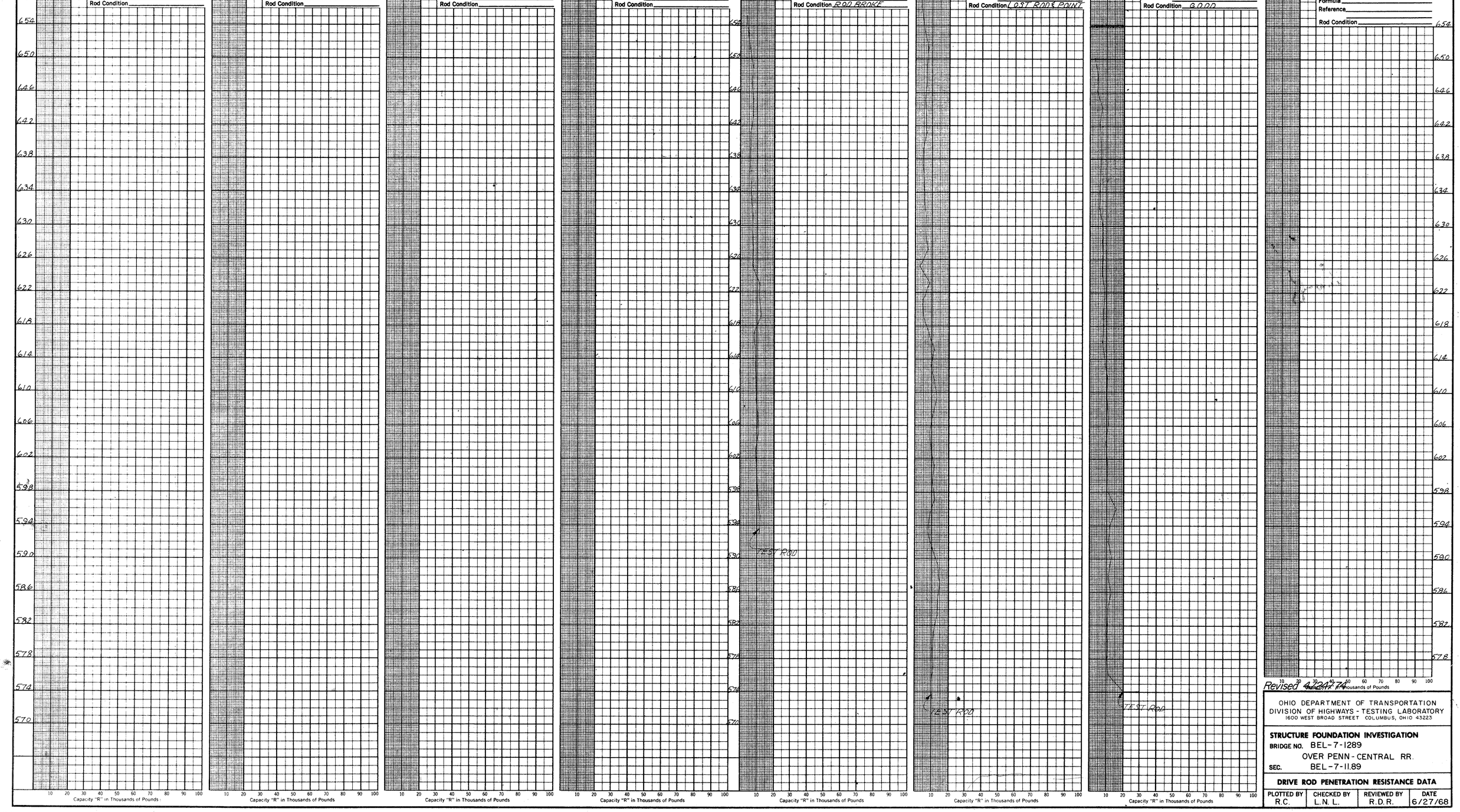
Test Location No. _____
Station & Offset _____
Surface Elev. _____ Water Elev. _____
Piling _____
Hammer _____
Formula _____
Reference _____
Rod Condition _____

Test Location No. 87NB
Station & Offset 690+81.2' RT
THIRTY FIRST PIER
Surface Elev. 659.1' Water Elev. _____
Piling _____
Hammer _____
Formula _____
Reference _____
Rod Condition ROD BROKE

Test Location No. 89SB
Station & Offset 691+08.47' LT
FORWARD ABUTMENT
Surface Elev. 661.2' Water Elev. _____
Piling _____
Hammer _____
Formula _____
Reference _____
Rod Condition LOST ROD & POINT

Test Location No. 96NB
Station & Offset 691+72.44' RT
FORWARD ABUTMENT
Surface Elev. 654.1' Water Elev. _____
Piling _____
Hammer _____
Formula _____
Reference _____
Rod Condition GOOD

Test Location No. _____
Station & Offset _____
Surface Elev. _____ Water Elev. _____
Piling _____
Hammer _____
Formula _____
Reference _____
Rod Condition _____



Revised 4/24/74

OHIO DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS - TESTING LABORATORY
1600 WEST BROAD STREET COLUMBUS, OHIO 43223

STRUCTURE FOUNDATION INVESTIGATION

BRIDGE NO. BEL-7-1289
OVER PENN-CENTRAL RR.
SEC. BEL-7-11.89

DRIVE ROD PENETRATION RESISTANCE DATA

PLOTTED BY	CHECKED BY	REVIEWED BY	DATE
R.C.	L.N.L.	R.D.R.	6/27/68

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NOV 1 1968

BELMONT COUNTY
BEL-7-11.89

GEOLOGY OF THE SITE

THE STRUCTURE SITE IS LOCATED AT THE BASE OF AND THE LOWER PORTION OF THE STEEP WEST VALLEY WALL OF THE OHIO RIVER, IN AN AREA WHERE MODERATELY DEEP ALLUVIUM AND RESIDUAL SOILS OVERLIE LIMESTONE AND CLAYSTONE BEDROCK, OF PERMIAN AGE.

EXPLORATION

THE EXPLORATION CONSISTED OF THREE DRIVE SAMPLE-CORE BORINGS AND EIGHT DRIVE ROD PENETRATION TESTS, MADE BETWEEN JUNE 7 AND 13, 1968.

INVESTIGATIONAL FINDINGS

THE BORINGS DISCLOSED THAT LOOSE TO VERY DENSE SANDS, SILTS, AND GRAVELS AND SOME MEDIUM-STIFF CLAYS, OVERLIE SLOPING BEDROCK SURFACE, ENCOUNTERED AT 35-FOOT DEPTH, ELEVATION 635 FEET, IN THE REAR-MOST PORTION OF THE STRUCTURE SITE, AND AT 35-FOOT DEPTH, ELEVATION 628 FEET, IN THE FORWARD-MOST PORTION OF THE STRUCTURE SITE. THE BORINGS WERE DISCONTINUED AT 40 AND 45-FOOT DEPTHS, ELEVATIONS 625 TO 618 FEET, AFTER PENETRATING 9 AND 10 FEET BELOW BEDROCK SURFACE.

THE ROD SOUNDINGS ENCOUNTERED GENERALLY ERRATIC, INDICATIVE OF GRAVELLY INTERVALS, AND GRADUAL INCREASE IN PENETRATION RESISTANCE WITH INCREASE IN DEPTH. THE ROD SOUNDINGS ENCOUNTERED RATHER ABRUPT REFUSAL TO PENETRATION ACROSS THE SITE AND WERE TERMINATED AT 26 TO 38-FOOT DEPTHS, ELEVATIONS 652 TO 627 FEET, CONSIDERED TO BE ON BEDROCK SURFACE, AS REVEALED BY THE BORINGS AND GEOLOGY OF THE SITE.

ON THE BASIS OF THE TESTS, BEDROCK SURFACE IS CONSIDERED TO SLOPE DOWNWARD ACROSS THE SITE FROM THE LEFT SIDE TO THE RIGHT SIDE AND FROM THE REAR TO THE FORWARD PORTION.

NO FREE WATER WAS ENCOUNTERED IN ANY OF THE ROD SOUNDINGS HOLES.

LEGEND

- Auger Boring Location - Plan View.
- Press and / or Drive Sample and / or Core Boring Location - Plan View.
- Drive Rod Penetration Resistance Sounding Location - Plan View.
- Capped Pile
- Footing
- Footing on Pile
- TR — Top of Rock
- Horizontal Bar on Boring Log Indicates the Depth the Sample Was Taken.
- X/Y — Figures Beside the Boring Log in Profile Indicate the Number of Blows for Standard Penetration Test.
  X = Number of Blows for First 6 inches.
  Y = Number of Blows for Second 6 inches.
- Drive Rod Penetration Resistance Sounding Log - Profile
- Casing
- Resistance "R" < 10,000 lbs.
- Resistance "R" > 10,000 lbs.
- Z — Indicates Final Measurement of Penetration, in Inches.
- W — Indicates Free Water Elevation.
- Indicates Static Water Elevation.

SYMBOLS OF ROCK TYPES

- Coal
- Weathered Indurated Clay
- Indurated Clay
- Weathered Shale
- Shale
- Weathered Sandstone
- Sandstone
- Leached Dolomite
- Dolomite
- Leached Limestone
- Limestone

GENERAL INFORMATION

Drive Rod Penetration Sounding Tests

Drive rod penetration resistance tests constitute driving a 1.315-inch diameter steel rod, with a 45° cone point, into the ground, using a 122-pound drop-hammer with a free fall of five feet. At one or two-foot depth intervals, a measurement is taken to determine the amount of penetration achieved in three hammer drops. This reading is converted to an empirical value for capacity "R", in thousands of pounds (which is a measure of both the point resistance and frictional resistance on the rod), by using charts prepared by the Ohio Department of Highways, Bureau of Bridges, on the basis of correlation study of rod penetration with past performance of pile driving. For interpretation, a graph is prepared by plotting the value "R" against the depth at which the reading was taken, and connecting the plotted points. The curve so obtained reflects the density of subsurface materials in a manner that can be readily compared with data from similar tests at other locations on the structure site. From this comparison, the overall uniformity of subsurface condition may be evaluated.

Drive Sample Borings - Drive-Press Sample Borings

Drive sample borings are made by means of a rotary-type drill rig, employing a 2" O.D., 1-3/8" I.D. sampler, at 2-1/2 and / or 5-foot depth intervals, driven by means of a 140 - pound drop-hammer with a free fall of 30 inches. The number of blows required to drive the sampler 12 inches is considered the standard penetration test.

Drive-press sample borings are made by means of a rotary-type drill rig, employing a 2" O.D., 1-3/8" I.D. drive sampler, and 3" O.D. thin-wall press sampler. The press sampler is advanced by continuous uniform pressure, applied by the drill rig.

The boring log sheets show a graphic plot of the information obtained, including depth and elevation of the sample, number of blows for the standard penetration tests in two 6-inch increments, depth of press samples, field sample number, sample description - based on laboratory tests and the Casagrande AC classification system-and gradation, plasticity, and moisture content determinations. Results of strength and consolidation testing, if performed, appear on separate enclosures.

At depths where materials are bouldery or gravelly to the extent that the sampler can not be driven, a wash sample is procured for visual classification, in order to determine the general character of the material. These samples are not considered sufficiently representative to warrant laboratory testing.

Particle Size Definitions

Boulders	Cobbles	Gravel	Coarse Sand	Fine Sand	Silt	Clay
8"	3"	2.0mm (No. 10 sieve)	0.42mm (No. 40 sieve)	0.074mm (No. 200 sieve)	0.005mm	

NOTE: Information shown by this subsurface investigation was obtained solely for the use in establishing design controls for the project. The State of Ohio does not guarantee the accuracy of this data and it is not to be construed as a part of the plans governing construction of the project.

OHIO DEPARTMENT OF HIGHWAYS
TESTING LABORATORY
1620 WEST BROAD STREET, COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. BEL-7-1366
OVER RAMP 'B'
SEC. BEL-7-11.89

CHECKED BY	REVIEWED BY	DATE
L.N.L.	R.D.R.	6/20/68

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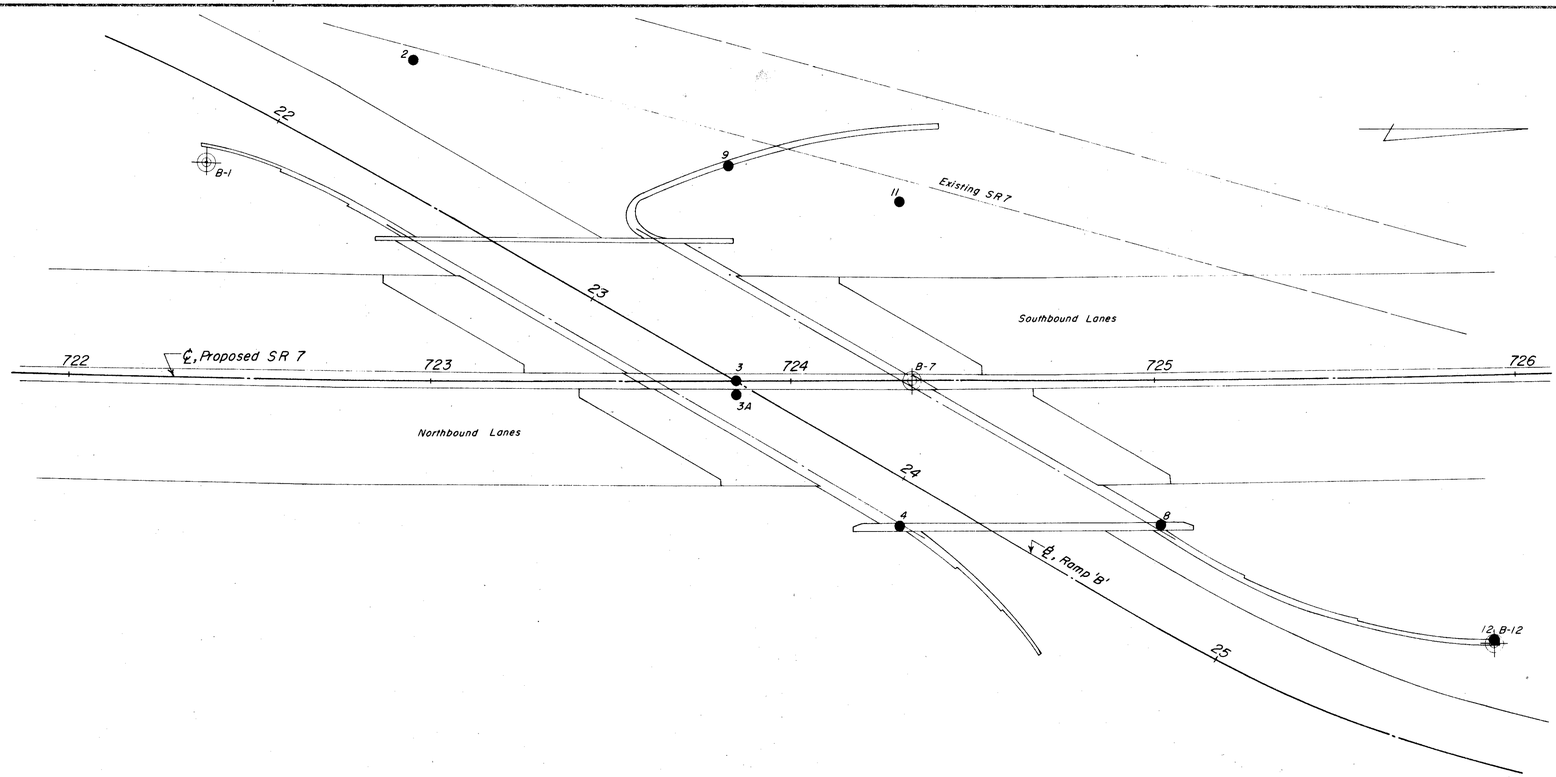

SCALE: 1" = 20'

OHIO DEPARTMENT OF HIGHWAYS TESTING LABORATORY 1620 WEST BROAD STREET, COLUMBUS 23, OHIO			
STRUCTURE FOUNDATION INVESTIGATION BRIDGE NO. BEL-7-1366 OVER RAMP 'B' SEC. BEL-7-11.89			
PLAN AND PROFILE			
DRAWN BY J.E.C.	CHECKED BY L.N.L.	REVIEWED BY R.D.B.	DATE 6/20/68

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LOG OF BORING

Date Started 6-12-68 | Sampler Type SS | Dia 1 3/8" | Water Elev. ———
Date Completed 6-13-68 | Casing: Length 35' | Dia 3 1/2"
Boring No. B-1 | Station & Offset 722+37, 60' Lt. (Left Rear Wingwall) | Surface Elev. 670.2'

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	Physical Characteristics: % Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class.
670.2	0														
667.7	2	2/3			Brown and Gray Sandy Clay	1	6	6	15	30	43	33	11	29	A-6a
665.2	4	3/3			Brown Sandy Clay	2	3	9	17	35	36	37	14	16	A-6a
662.7	6	4/5			Brown Sandy Clay	3	15	10	14	30	31	34	14	23	A-6a
660.2	8	4/4			Brown Sandy Silt	4	1	6	24	37	32	28	9	24	A-4a
657.7	10	4/8			Brown Sandy Silt	5	5	23	12	33	27	NP	NP	25	A-4a
655.2	12	7/10			Brown Sandy Silt	6	4	4	35	31	26	NP	NP	14	A-4a
652.7	14	5/7			Brown and Gray Silty Gravelly Sand	7	27	10	28	19	16	26	9	15	A-2-4
650.2	16	3/6			Brown Silty Gravelly Sand	8	21	8	38	18	15	NP	NP	14	A-2-4
	18														
	20														
645.2	22	5/7			Brown Sandy Silt	9	0	0	35	52	13	NP	NP	26	A-4b
	24														
	26														
640.2	28	12/17			Brown Sandy Silt	10	3	16	32	32	17	NP	NP	13	A-4a
	30														
	32														
635.2	34				TOP OF ROCK										
	36		4.6	0.4	Limestone, gray and white, hard, dense, firm. Core Loss 7%.										
629.2	38														
628.2	40				Clay Stone, dark-blue, firm. Core Loss 10%.										
	42		4.9	0.1	Limestone, gray and white, hard, dense, firm. No Core Loss.										
625.2	44				BOTTOM OF BORING										

LOG OF BORING

Date Started 6-12-68 | Sampler Type SS | Dia 1 3/8" | Water Elev. ———
Date Completed 6-12-68 | Casing: Length 30' | Dia 3 1/2"
Boring No. B-7 | Station & Offset 724+33, CL. (Forward Abutment) | Surface Elev. 664.3'

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	Physical Characteristics: % Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class.
664.3	0														
661.8	2														
659.3	4	5/5			Brown Sandy Silt	1	11	10	19	28	32	30	10	22	A-4a
656.8	6	4/5			Brown Sandy Silt	2	11	2	29	37	21	22	3	22	A-4a
654.3	8	50* (0.3')			Brown Sandy Silt	3	17	4	28	32	19	NP	NP	19	A-4a
651.8	10	5/7			Brown Sandy Silt	4	5	8	26	36	25	25	9	20	A-4a
649.3	12	7/9			Brown Silty Sandy Gravel	5	43	10	22	15	10	NP	NP	11	A-1-b
646.8	14	9/14			Brown Silty Sandy Gravel	6	42	16	24	11	7	NP	NP	11	A-1-b
644.3	16	8/13			Brown Silty Gravelly Sand	7	37	18	27	9	9	NP	NP	14	A-1-b
	18														
	20	16/10			Brown Gravelly Sandy Silt	8	33	7	35	12	13	NP	NP	16	A-1-b
	22														
	24														
639.3	26	10/9			Brown and Gray Sandy Silt	9	6	16	28	25	25	29	8	20	A-4a
	28														
634.3	30														
633.4		50* (0.9')			Brown and Gray Silt and Clay	10	0	0	7	18	75	33	13	21	A-6a
	32				TOP OF ROCK										
			3.7	0.4											
	34				Limestone, gray and white, hard, firm, with a clay-stone interval at 36 to 37 feet. Core Loss 11%.										
	36														
			4.4	0.6											
624.3	38														
	40				BOTTOM OF BORING										

*Refusal

LOG OF BORING

Date Started 6-10-68 | Sampler Type SS | Dia 1 3/8" | Water Elev. ———
Date Completed 6-11-68 | Casing: Length 30' | Dia 3 1/2"
Boring No. B-12 | Station & Offset 725+93, 74' Rt. (Right Forward Wingwall) | Surface Elev. 662.9'

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	Physical Characteristics: % Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class.
662.9	0														
660.4	2														
657.9	4	4/5			Brown and Gray Sandy Silt	1	1	3	36	42	18	NP	NP	23	A-4a
655.4	6	3/4			Brown Sandy Silt	2	0	0	27	54	19	NP	NP	22	A-4b
652.9	8	4/5			Brown Sandy Silt	3	0	0	36	48	16	NP	NP	26	A-4a
650.4	10	5/5			Brown Sandy Silt	4	0	0	27	57	16	NP	NP	26	A-4b
647.9	12	4/5			Brown Sandy Silt	5	0	0	25	60	15	NP	NP	26	A-4b
645.4	14	8/13			Brown Silty Gravelly Sand	6	20	24	31	16	9	NP	NP	17	A-1-b
642.9	16	9/12			Brown Silty Gravelly Sand	7	35	15	41	-9-		NP	NP	27	A-1-a
	18														
	20	12/9			Brown Gravelly Sand	8	43	12	36	-9-		NP	NP	12	A-1-a
	22														
	24														
637.9	26	10/11			Gray Sandy Silt	9	6	7	19	27	41	32	10	19	A-4a
	28														
632.9	30	13/17			Brown and Gray Sandy Silt	10	15	6	23	25	31	27	7	21	A-4a
	32														
	34														
627.9	36				TOP OF ROCK										
	38		4.7	0.3	Limestone, gray and white, hard, firm, dense, with clay seams, shaly in bottom 2'. Core Loss 3%.										
	40														
	42														
			4.6	0.4											
618.9	44				Clay Stone, gray, soft. Core Loss 40%.										
617.9					BOTTOM OF BORING										

OHIO DEPARTMENT OF HIGHWAYS
TESTING LABORATORY
1620 WEST BROAD STREET, COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. BEL-7-1366
OVER RAMP 'B'
SEC. BEL-7-11.89

BORING DATA

TYPED BY	CHECKED BY	REVIEWED BY	DATE
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Test Location No. 2
Station & Offset 722+94 89'Lt
Left Ahead Wingwall
Surface Elev. 677.5 Water Elev. DRY-Hole Closed @ El. 663.5'
Piling
Hammer
Formula
Reference
Rod Condition Good
TEST ROD
Capacity "R" in Thousands of Pounds

Test Location No. 3
Station & Offset 723+85 ℄
Rear Abutment
Surface Elev. 665.3 Water Elev. DRY-Hole Closed @ El. 653.3'
Piling
Hammer
Formula
Reference
Rod Condition Cast 28" Pile
TEST ROD
Capacity "R" in Thousands of Pounds

Test Location No. 3A
Station & Offset 723+85 4'Rt
Rear Abutment
Surface Elev. 664.9 Water Elev. DRY-Hole Closed @ El. 652.9
Piling
Hammer
Formula
Reference
Rod Condition 8" Bailey Bent
TEST ROD
Capacity "R" in Thousands of Pounds

Test Location No. 4
Station & Offset 724+30 40'Rt
Rear Abutment
Surface Elev. 663.4 Water Elev. DRY-Hole Closed @ El. 651.4
Piling
Hammer
Formula
Reference
Rod Condition Good
TEST ROD
Capacity "R" in Thousands of Pounds

Test Location No. 8
Station & Offset 725+01 40'Rt
Forward Abutment
Surface Elev. 664.6 Water Elev. DRY-Hole Closed @ El. 652.6
Piling
Hammer
Formula
Reference
Rod Condition Good
TEST ROD
Capacity "R" in Thousands of Pounds

Test Location No. 9
Station & Offset 723+83 60'Lt
Left Forward Wingwall
Surface Elev. 676.3 Water Elev. DRY-Hole Closed @ El. 663.3
Piling
Hammer
Formula
Reference
Rod Condition Good
TEST ROD
Capacity "R" in Thousands of Pounds

Test Location No. 11
Station & Offset 724+30 50'Lt
Left Forward Wingwall
Surface Elev. 677.4 Water Elev. DRY-Hole Closed @ El. 667.4
Piling
Hammer
Formula
Reference
Rod Condition Good
TEST ROD
Capacity "R" in Thousands of Pounds

Test Location No. 12
Station & Offset 725+93 73'Rt
Right Forward Wingwall
Surface Elev. 661.4 Water Elev. DRY-Hole Closed @ El. 649.4
Piling
Hammer
Formula
Reference
Rod Condition
TEST ROD
Capacity "R" in Thousands of Pounds

OHIO STATE HIGHWAY
TESTING LABORATORY
1620 WEST BROAD ST. COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. BEL-7-1366
OVER RAMP 'B'
SEC. BEL-7-11.89

DRIVE ROD PENETRATION RESISTANCE DATA

PLOTTED BY	CHECKED BY	REVIEWED BY	DATE
J.E.C.	L.N.L.	R.D.R.	6/20/68

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BELMONT COUNTY
BEL-7-11.89

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GEOLOGY OF THE SITE

THE STRUCTURE SITE IS LOCATED AT THE BASE OF THE STEEP WEST VALLEY WALL OF THE OHIO RIVER, IN AN AREA WHERE MODERATELY DEEP ALLUVIUM OVERLIES LIMESTONE AND SHALE BEDROCK AND ASSOCIATED COALS, OF PENNSYLVANIAN AGE.

EXPLORATION

THE EXPLORATION CONSISTED OF THREE DRIVE SAMPLE-CORE BORINGS, MADE BETWEEN APRIL 10 AND 24, 1969.

INVESTIGATIONAL FINDINGS

BORINGS DISCLOSED LOOSE SANDY SILTS FROM GROUND SURFACE TO 15 TO 18-FOOT DEPTHS, ELEVATION 645 FEET; BELOW THIS, MEDIUM-DENSE TO VERY DENSE SILTS, SANDS, GRAVELS, AND COBBLES TO BEDROCK SURFACE, ENCOUNTERED AT 41 TO 55-FOOT DEPTHS, ELEVATIONS 618 TO 608 FEET. THE BORINGS WERE TERMINATED AT 50 TO 65-FOOT DEPTHS, ELEVATIONS 608 TO 598 FEET, AFTER PENETRATING 9 AND 10 FEET OF BEDROCK.

LEGEND

- Auger Boring Location - Plan View.
- Press and / or Drive Sample and / or Core Boring Location - Plan View.
- Drive Rod Penetration Resistance Sounding Location - Plan View.
- Capped Pile
- Footing
- Footing on Pile
- TR — Top of Rock
- Horizontal Bar on Boring Log Indicates the Depth the Sample Was Taken.
- X/Y — Figures Beside the Boring Log in Profile Indicate the Number of Blows for Standard Penetration Test.
  X = Number of Blows for First 6 inches.
  Y = Number of Blows for Second 6 inches.
- Drive Rod Penetration Resistance Sounding Log - Profile
- Casing
- Resistance "R" < 10,000 lbs.
- Resistance "R" > 10,000 lbs.
- Z — Indicates Final Measurement of Penetration, in Inches.
- W — Indicates Free Water Elevation.
- Indicates Static Water Elevation.

SYMBOLS OF ROCK TYPES

- Coal
- Weathered Siltstone, Mudstone, or Claystone
- Siltstone, Mudstone, or Claystone
- Weathered Shale
- Shale
- Boulders or Cobbles
- Weathered Sandstone
- Sandstone
- Leached Dolomite
- Dolomite
- Leached Limestone
- Limestone

GENERAL INFORMATION

Drive Rod Penetration Sounding Tests

Drive rod penetration resistance tests constitute driving a 1.315-inch diameter steel rod, with a 45° cone point, into the ground, using a 122-pound drop-hammer with a free fall of five feet. At one or two-foot depth intervals, a measurement is taken to determine the amount of penetration achieved in three hammer drops. This reading is converted to an empirical value for capacity "R", in thousands of pounds (which is a measure of both the point resistance and frictional resistance on the rod), by using charts prepared by the Ohio Department of Highways, Bureau of Bridges, on the basis of correlation study of rod penetration with past performance of pile driving. For interpretation, a graph is prepared by plotting the value "R" against the depth at which the reading was taken, and connecting the plotted points. The curve so obtained reflects the density of subsurface materials in a manner that can be readily compared with data from similar tests at other locations on the structure site. From this comparison, the overall uniformity of subsurface condition may be evaluated.

Drive Sample Borings - Drive-Press Sample Borings

Drive sample borings are made by means of a rotary-type drill rig, employing a 2" O.D., 1-3/8" I.D. sampler, at 2-1/2 and / or 5-foot depth intervals, driven by means of a 140 - pound drop-hammer with a free fall of 30 inches. The number of blows required to drive the sampler 12 inches is considered the standard penetration test.

Drive-press sample borings are made by means of a rotary-type drill rig, employing a 2" O.D., 1-3/8" I.D. drive sampler, and 3" O.D. thin-wall press sampler. The press sampler is advanced by continuous uniform pressure, applied by the drill rig.

The boring log sheets show a graphic plot of the information obtained, including depth and elevation of the sample, number of blows for the standard penetration tests in two 6-inch increments, depth of press samples, field sample number, sample description - based on laboratory tests and the Casagrande AC classification system - and gradation, plasticity, and moisture content determinations. Results of strength and consolidation testing, if performed, appear on separate enclosures.

At depths where materials are bouldery or gravelly to the extent that the sampler can not be driven, a wash sample is procured for visual classification, in order to determine the general character of the material. These samples are not considered sufficiently representative to warrant laboratory testing.

Particle Size Definitions

Boulders	Cobbles	Gravel	Coarse Sand	Fine Sand	Silt	Clay
12"	3"	2.0mm (No. 10 sieve)	0.42mm (No. 40 sieve)	0.074mm (No. 200 sieve)	0.005mm	

NOTE: Information shown by this subsurface investigation was obtained solely for the use in establishing design controls for the project. The State of Ohio does not guarantee the accuracy of this data and it is not to be construed as a part of the plans governing construction of the project.

OHIO DEPARTMENT OF HIGHWAYS
TESTING LABORATORY
1620 WEST BROAD STREET, COLUMBUS, OHIO 43223

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. BEL-7-
RAMP 'B' RET. WALL
SEC. BEL-7-11.89

CHECKED BY	REVIEWED BY	DATE
R.D.R.	G.P.H.	5/13/69

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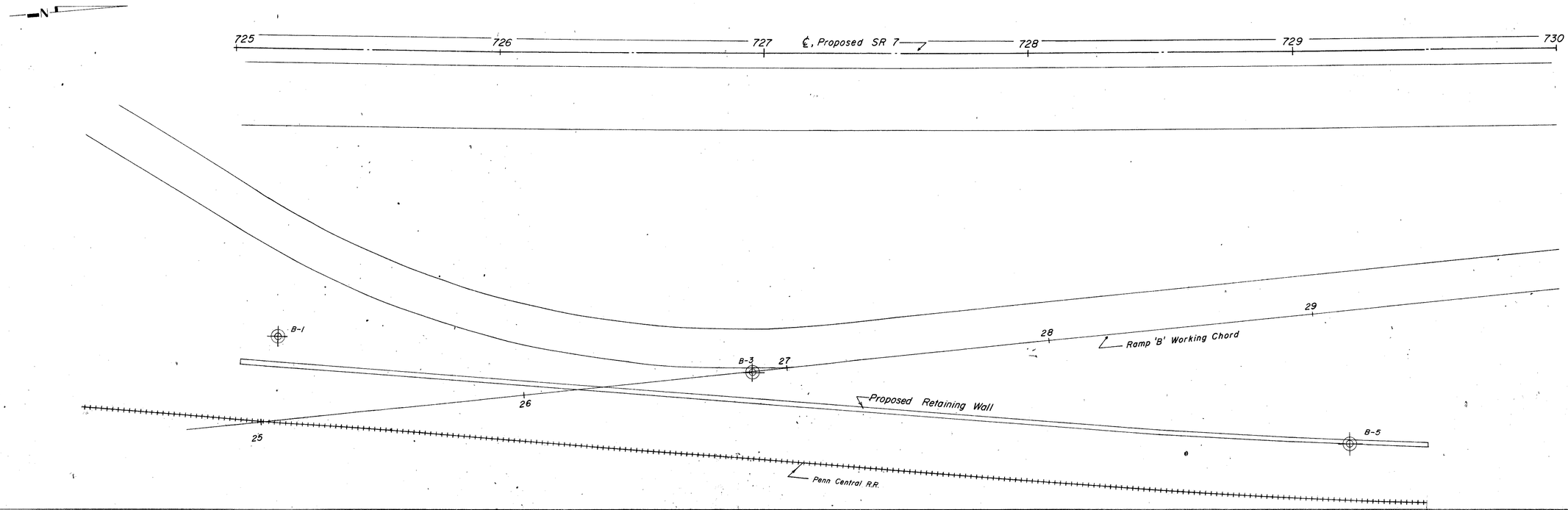
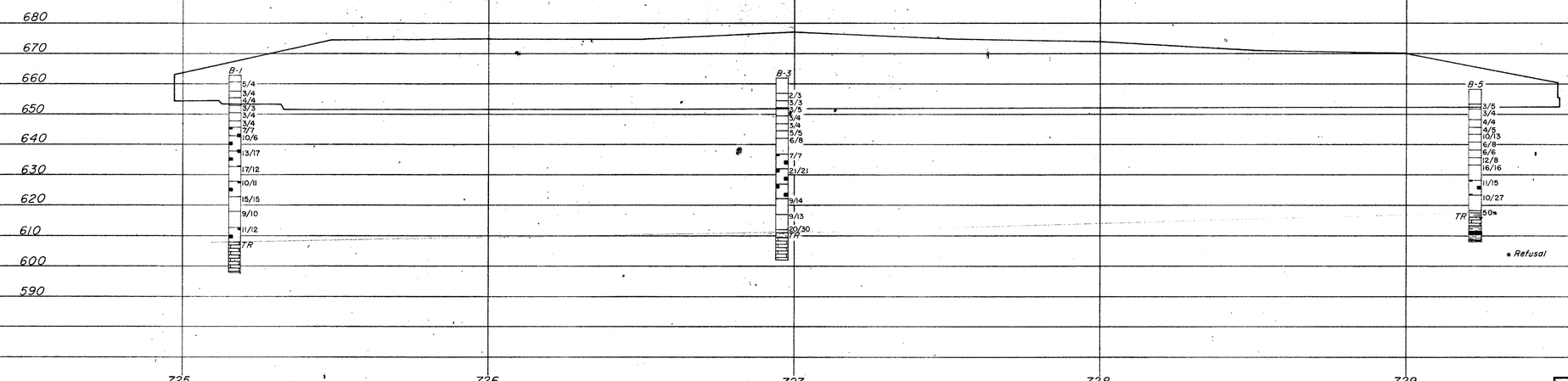
BEL-7-11.89





SCALE: 1" = 20'

OHIO DEPARTMENT OF HIGHWAYS
TESTING LABORATORY
1620 WEST BROAD STREET, COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. BEL-7-
RAMP 'B' RET. WALL
SEC. BEL-7-11.89

PLAN AND PROFILE

DRAWN BY	CHECKED BY	REVIEWED BY	DATE
L.L.L.	R.D.R.	G.P.H.	5/13/69

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39

BEL-7-11.89 3/3

LOG OF BORING

Date Started 4-10-69
Date Completed 4-16-69
Boring No. B-1
Sampler Type SS Dia 1 3/8"
Casing: Length 55' Dia 3 1/2"
Station & Offset 725+17, 110'Rt. (Retaining Wall)
Water Elev ———
Surface Elev 662.8'

Elev	Depth	Std. Pen. (N)	Rec ft.	Loss ft.	Description	Sample No	Physical Characteristics: % Agg	% C.S	% F.S	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class.
662.8	0														
660.3	2														
657.8	4	5/4			Brown Sandy Silt	1	0	0	40	34	26	NP	NP	20	A-4a
655.3	6	3/4			Brown Sandy Silt	2	0	0	44	37	19	NP	NP	20	A-4a
652.8	8	4/4			Brown Sandy Silt	3	0	0	46	37	17	NP	NP	21	A-4a
650.3	10	3/3			Brown Sandy Silt	4	0	0	34	50	16	NP	NP	24	A-4b
647.8	12	3/4			Brown Sandy Silt	5	0	0	32	50	18	NP	NP	22	A-4b
645.3	14	3/4			Brown Sandy Silt	6	0	0	35	43	17	NP	NP	23	A-4a
642.8	16	7/7			Brown Silty Sandy Gravel with Cobbles	7	43	4	23	20	10	NP	NP	13	A-2-4
	18	10/6			Brown Sandy Gravel with Cobbles	8	78	5	11	- 6	-	NP	NP	14	A-1-a
637.8	20														
	22														
	24	13/17			Brown Silty Sandy Gravel with Cobbles	9	63	11	14	6	6	NP	NP	12	A-1-a
632.8	26														
	28														
	30	17/12			Brown Silty Sandy Gravel	10	62	13	11	5	9	-	-	6	-
627.8	32														
	34														
	36	10/11			Gray Gravelly Sand with Cobbles	11	-	-	-	-	-	-	-	18	Visual
622.8	38														
	40	15/15			Brown Sandy Gravelly Silt	12	29	9	15	26	21	NP	NP	13	A-4a
617.8	42														
	44														
	46	9/10			Brown Gravelly Sandy Silt	13	19	12	17	29	23	NP	NP	14	A-4a
612.8	48														
	50	11/12			Gray Sandy Gravelly Silt with Cobbles	14	38	8	9	16	29	24	7	18	A-4a
607.8	52														
	54														
	56				TOP OF ROCK										
	58		4.3	0.7	Limestone, gray, hard, slightly argillaceous, carbonaceous in part, thin-bedded, interbedded with thin shale seam. Core Loss 7%.										
	60														
	62		5.0	0.0											
597.8	64				BOTTOM OF BORING										

LOG OF BORING

Date Started 4-16-69
Date Completed 4-17-69
Boring No. B-3
Sampler Type SS Dia 1 3/8"
Casing: Length 40' Dia 3 1/2"
Station & Offset 726+84, 122' Rt. (Retaining Wall)
Water Elev ———
Surface Elev 662.0'

Elev	Depth	Std. Pen. (N)	Rec ft.	Loss ft.	Description	Sample No	Physical Characteristics: % Agg	% C.S	% F.S	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class.
662.0	0														
	2														
657.0	4														
	6	2/3			Brown Sandy Silt	1	0	6	40	41	13	NP	NP	25	A-4a
654.5	8	3/3			Brown Sandy Silt	2	0	0	25	51	24	NP	NP	23	A-4b
652.0	10	3/5			Brown Sandy Silt	3	0	1	34	45	20	NP	NP	22	A-4a
649.5	12														
	14	3/4			Brown Sandy Silt	4	0	0	43	40	17	NP	NP	20	A-4a
647.0	16	3/4			Brown Sandy Silt	5	0	1	44	37	18	NP	NP	19	A-4a
644.5	18	5/5			Brown Sandy Silt	6	0	0	36	43	21	NP	NP	23	A-4a
642.0	20	6/8			Brown Silty Sandy Gravel	7	63	6	17	6	8	NP	NP	12	A-1-b
	22														
	24														
637.0	26	7/7			Brown Silty Sandy Gravel with Cobbles	8	60	7	17	8	8	-	-	11	-
	28														
632.0	30	21/21			Brown Silty Sandy Gravel with Cobbles	9	52	17	14	6	11	-	-	13	-
	32														
	34														
627.0	36				Cobbles										
	38														
622.0	40														
	42	9/14			Gray Gravelly Silt	10	37	7	6	20	30	29	6	19	A-4a
	44														
617.0	46	9/13			Gray Sandy Silt with Coal Blossom	11	8	9	9	26	48	33	10	22	A-4a
	48														
612.0	50				TOP OF ROCK										
611.0		20/30			Gray Sandy Clay with Coal Fragments	12	12	8	9	27	44	40	17	12	A-6b
609.5	52				Shale, black, medium-firm, argillaceous, carbonaceous, calcareous, broken. Core Loss 60%.										
	54		2.8	1.0											
	56				Limestone, gray, hard, slightly argillaceous, carbonaceous in part, pyritiferous in part, thin-bedded. Core Loss 1%.										
	58		5.0	0.0											
602.0	60				BOTTOM OF BORING										

LOG OF BORING

Date Started 4-21-69
Date Completed 4-24-69
Boring No. B-5
Sampler Type SS Dia 1 3/8"
Casing: Length 34' Dia 3 1/2"
Station & Offset 729+23, 149' Rt. (Retaining Wall)
Water Elev ———
Surface Elev 658.2'

Elev	Depth	Std. Pen. (N)	Rec ft.	Loss ft.	Description	Sample No	Physical Characteristics: % Agg	% C.S	% F.S	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class.
658.2	0														
	2														
653.2	4														
	6	3/5			Brown Sandy Silt	1	0	1	29	38	32	NP	NP	21	A-4a
650.7	8	3/4			Brown Sandy Silt	2	0	1	36	32	31	NP	NP	23	A-4a
648.2	10	4/4			Brown Sandy Silt	3	0	0	28	46	26	NP	NP	20	A-4a
645.7	12	4/5			Brown Sandy Silt	4	0	0	29	45	26	NP	NP	20	A-4a
643.2	14	10/13			Brown Silty Sandy Gravel	5	38	8	22	14	18	NP	NP	14	A-2-4
640.7	16	6/8			Brown Gravelly Sandy Silt	6	25	9	23	24	19	NP	NP	16	A-4a
638.2	18	6/6			Brown Silty Gravelly Sand	7	30	23	18	10	19	22	4	16	A-2-4
	20														
635.7	22	12/8			Brown Silty Gravelly Sand	8	29	13	23	21	14	NP	NP	16	A-2-4
633.2	24	16/16			Brown Silty Sandy Gravel	9	57	17	8	7	11	NP	NP	9	A-1-a
	26														
628.2	28														
	30	11/15			Gray Sandy Gravelly Silt with Cobbles	10	42	9	8	15	26	22	7	17	A-4a
623.2	32														
	34														
	36	10/27			Gray Sandy Gravelly Silt	11	34	12	9	15	30	26	8	22	A-4a
618.2	38														
617.5	40	50* (0.7')			Gray Clayey Silt TOP OF ROCK	12	1	2	3	5	29	54	32	10	17	A-4a
616.0	42				Clay Shale, dark-gray, medium-firm, carbonaceous, conglomeratic, broken. Core Loss 60%.										
			3.1	1.2	Limestone, gray, hard, fossiliferous, carbonaceous, interbedded with thin clay seam. Core Loss 11%.										
613.2	44														
611.7	46				Clay Shale, dark-gray, soft to medium-firm, carbonaceous, conglomeratic, broken. Core Loss 40%.										
610.2	48		3.8	1.2	Coal, black, medium-firm, incomplete carbonization, pyritiferous. Core Loss 20%.										
608.6					Clay Shale, dark-gray, medium-firm, carbonaceous, conglomeratic in part, slightly calcareous. Core Loss 10%.										
608.2	50				Limestone, dark-gray, firm to hard, impure, carbonaceous, argillaceous. No Core Loss.										

*Refusal

BOTTOM OF BORING

OHIO DEPARTMENT OF HIGHWAYS
TESTING LABORATORY
1620 WEST BROAD STREET, COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. BEL-7-
RAMP 'B' RET. WALL
SEC. BEL-7-11.89

BORING DATA

TYPED BY	CHECKED BY	REVIEWED BY	DATE
S.A.J.	R.D.R.	G.P.H.	5/13/69