F-18

CONVENTIONAL SIGNS

Easement	W A
Easement For Slopes	S L
Channel Easement	X
Point of Grade Control (on Profiles)	P.G.C.
Temporary Work Agreement	T
Existing Right of Way Line	
Lot and Tract Line	
Property Line	
Township Line	
Railroad Right of Way Line	
Center Line	
Corporation Line	
Fence Line	X X X
Guard Rail (existing)	
Guard Rail (proposed)	
Railroad Track	
Power Line (existing)	P P P
Telephone Line (existing)	T T T
Trees or Stumps (existing)	
Right of Way with Limited Access	L.A. R/W
Limited Access	L.A.
Construction Limits	Limit of Construction
Right of Way Fence	x x

MICROFILMED
MAR 29 1984

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
LAK — 2 — 16.49
PAINESVILLE TOWNSHIP
CITY OF PAINESVILLE
LAKE COUNTY

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	F-FG-U-329(23)	

1 / 313

F-FG-U-329(23)

LAKE COUNTY
LAK-2-16.49

NOTE:
'FG' PORTION OF THIS PROJECT IS LIMITED TO THE STRUCTURE CARRYING THE F.P.& E. R.R. OVER S.R.2 AND THE WORK REQUIRED ON THE RAILROAD APPROACHES.

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Approved _____
Date _____ Engineer of Traffic

File No.	LAKE COUNTY _____ LAK-2-16.49
	Date of Letting _____ 19
	Contract No. _____

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LINE DATA

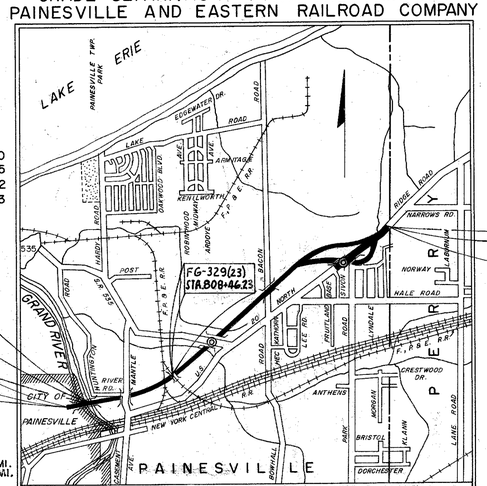
COMPUTATION OF PROJECT LENGTH

U-329(23)		
Begin Project & U-329(23)	Sta. 770+62.00	
End U-329(23)	Sta. 773+36.00	
NET LENGTH OF U-329(23)		274.00 L.F. or 0.051 MI.
NET LENGTH OF FG-329(23)	Sta. 808+46.23	0.00 L.F. or 0.000 MI.
F-329(23)		
Begin F-329(23)	Sta. 773+36.00	
Reloc. S.R. 2 E.B.	Sta. 894+72.94 Bk. =	
Reconstr. U.S. 20	Sta. 110+47.21 Ahd.	
End Project & F-329(23)	Sta. 119+45.00	13,034.73 L.F.
Add for Equation		1.41 L.F.
NET LENGTH OF F-329(23)		13,036.14 L.F. or 2.468 MI.
TOTAL PROJECT LENGTH F-FG-U-329(23)		13,310.14 L.F. or 2.520 MI.

COMPUTATION OF LENGTH OF WORK

Limit of Work	Sta. 768+24.00	
Begin Project	Sta. 770+62.00	
Length of Additional Work U-329(22)		238.00 L.F
End Project Reconstr. U.S. 20	Sta. 119+45.00	
Limit of Work	Sta. 120+65.00	120.00 L.F.
Add for Approaches (See Sheet 17)		5,398.09 L.F.
Length of Additional Work F-329(23)		5,518.09 L.F.
Net Length of Work U-329(23)		512.00 L.F. or 0.096 MI.
Net Length of Work F-329(23)		18,554.23 L.F. or 3.514 MI.
Net Length of Work FG-329(23)		1,100.00 L.F. or 0.208 MI.
TOTAL LENGTH OF WORK F-FG-U-329(23)		20,166.23 L.F. or 3.819 MI.

GRADE SEPARATION WITH THE FAIRPORT PAINESVILLE AND EASTERN RAILROAD COMPANY



Delivery Point At N.Y.C. Or Nickel Plate R.R.'s
Average Haul From Siding 4.0 Miles

10-20-64 Revised Sheets 2, 3, 21, 22, and 176 (Participation Front. Rd. A) C.E.H.
Sheet Nos. 235, 242 and 244 revised 11-20-64
Sheet No. 270 revised 10-28-65

LOCATION MAP

SCALE IN MILES
1/2 1/4 0 1/2 1

LEGEND

Portion to be improved _____
Existing Roads _____
Interchanges _____

SCALE

Plan _____ 1" = 50'
Profile Horizontal _____ 1" = 50'
Profile Vertical _____ 1" = 5'

LIMITED ACCESS

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

1963 SPECIFICATIONS

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

The right of way for this improvement will be provided by the State of Ohio.

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 the plans and estimates.

Approved Charles M. Herrick
Date JAN. 27, 1964 Division Deputy Director

Approved 8-4-64 E. W. Williams
Date Deputy Director, Planning & Programming

Approved C. H. Alfvater
Date 7-17-64 Engineer of Bridges

Approved R. M. Ricketts
Date 7-24-64 Engineer of Location & Design

Approved R. E. Shultz
Date 7-24-64 Deputy Director of Design & Construction

Approved _____
Date _____ First Assistant Director

Approved T. H. Borsch
Date 6-9-64 Deputy Director of Right of Way

Approved 8/4/64 P. E. Masheter
Date Director of Highways

Prepared and Recommended By
Capitol Engineering Associates
Consulting Engineers, Dillsburg, Pa.
_____
Partner

STATE OF OHIO ROBERT E. SMITH 10318 REGISTERED PROFESSIONAL ENGINEER

881 173

SUPPLEMENTAL PRINTS OF STANDARD CONSTRUCTION DRAWINGS						SUPPLEMENTAL SPECIFICATION	
B-T-70-71	11-15-60	I-8 C.B. NO. 8	2-1-63	L-3-A	4-1-50	I-124	Rev. 3-20-61
B-T-71R	3-2-53	I-8 I NO. 2	2-1-63	L.J. NO. 1	7-1-55	B-112	8-21-61
DR-1	1-3-55	I-8 M.H. NO. 1	2-1-63	R.I.-1	7-15 58	S-101	7-12-62
F-1	2-1-63	I-8 M.H. NO. 2	2-1-63	FACI-1	2-25-64	S-307	8-23-60
F-2	2-1-63	I-12	2-1-63	FACI-2	2-25-64	S-103	Rev. 2-16-55
F-3	2-1-63	I-14G	1-22-52	T-35	1-2-56	S-107	Rev. 2-16-55
G-7.07	4-1-64			T.J.	9-12-60	CE-101.04	5-22-56
HW-3	8-1-63					T-335	10-28-63
HW-E	2-1-63	I-15 NO. 1	11-15-60	S.B.C.-45 SHTS. 1 & 2	9-18-47		
I-1	11-15-60	I-15 NO. 2A	8-17-60	CSB-2-56 SHTS. 2 & 3	2-2-59		
I-8 C.B. 2-2-A & B	2-1-63	I-15 NO. 5B	2-1-63	FSB-1-62	1-15-63		
I-8 C.B. 2-3 & 2-4	2-1-63	I-15 NO. 6	2-1-63	AR-1-57	4-2-62		
I-8 C.B. 2-5 & 2-6	2-1-63	I-21-23	8-1-56	RB-1-55	2-2-59		
I-8 C.B. NO. 5	2-1-63	L-1	4-1-50	AS-1-54	7-5-62		
I-8 C.B. NO. 6	2-1-63	L-3	4-1-50	AS-1-54	12-1-54		
I-8 I NO. 2-A	2-1-63						
I-8 M.H. NO. 1-A	2-1-63						

DEPARTMENT OF COMMERCE
BUREAU OF PUBLIC ROADS

APPROVED

_____ DIVISION ENGINEER _____ DATE

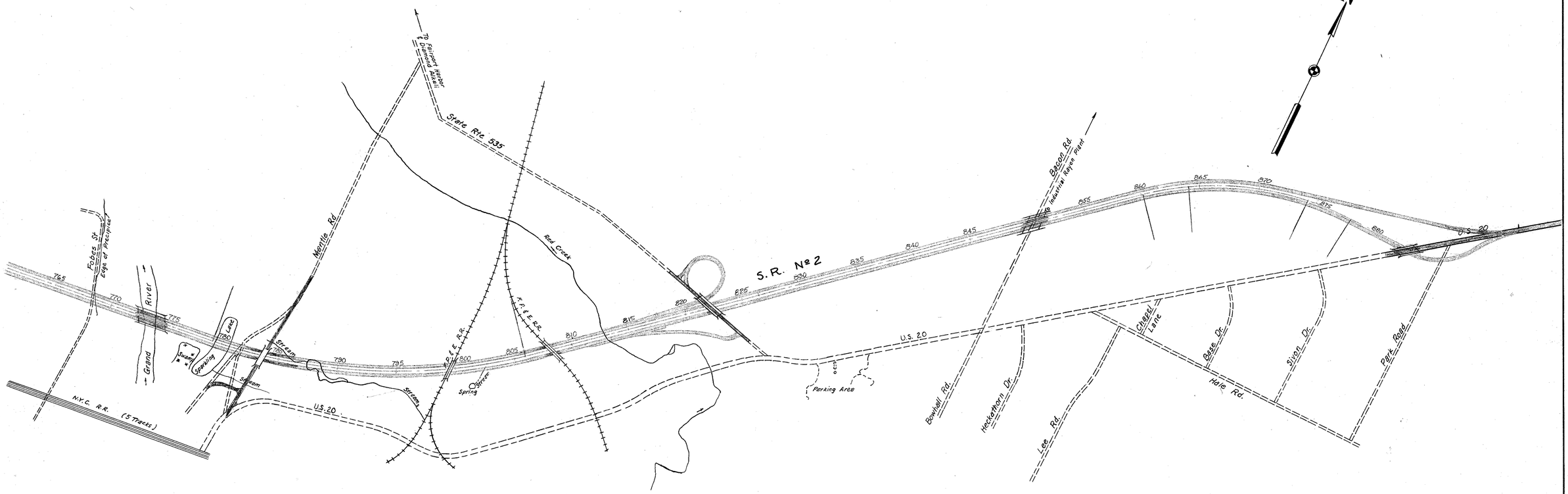
LOCATION PLAN

SCALE 1" = 400'

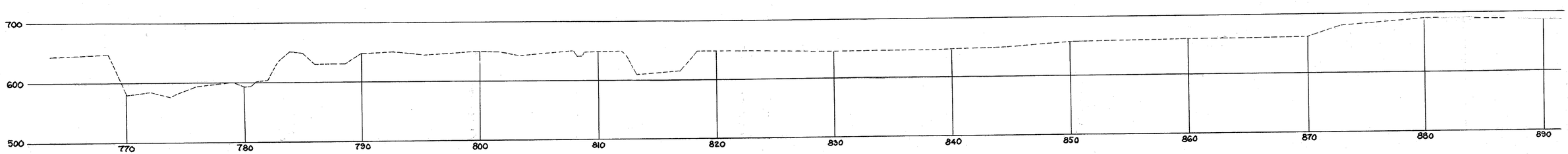
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

1A

LAKE COUNTY
LAK-2-16.49



OHIO DEPARTMENT OF HIGHWAYS
LAKELAND FREEWAY SECTION LAK-2-16.49
FOBES ROAD to PARK ROAD
PAINESVILLE
MARCH 1963



SCHEMATIC LAYOUT PLAN

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

2/313

LAKE COUNTY
LAK-2-16.49

NOTE: The Typical Section of adjoining section is the same as the Typical Section for this project except the underdrain is 2'-0" from pavement edge, I-18 & I-22 is 3" beyond paved shoulder and median rounding is 4'-0". Transition from adjoining section to Proposed Typical Section in 25 ft.

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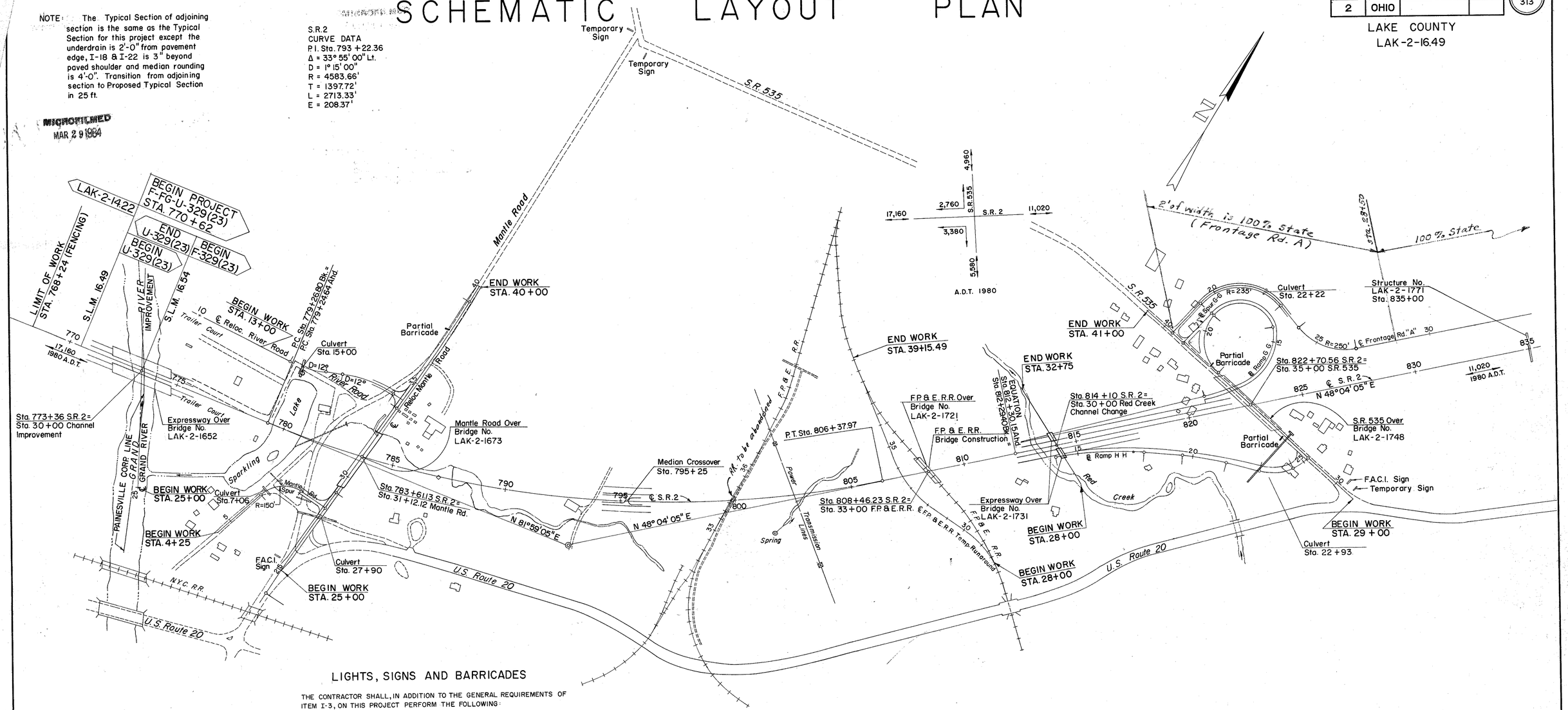
MAR 29 1984

S.R.2
CURVE DATA
P.I. Sta. 793 + 22.36
Δ = 33° 55' 00" Lt.
D = 1° 15' 00"
R = 4583.66'
T = 1397.72'
L = 2713.33'
E = 208.37'



LIGHTS, SIGNS AND BARRICADES

THE CONTRACTOR SHALL, IN ADDITION TO THE GENERAL REQUIREMENTS OF ITEM I-3, ON THIS PROJECT PERFORM THE FOLLOWING:

PROVIDE, ERECT, AND MAINTAIN STANDARD 40" x 24" SIZE "ROAD CLOSED" SIGNS, SIGN SUPPORTS, AND LIGHTS AT THE FOLLOWING LOCATIONS DURING PERIODS IN WHICH THE AFFECTED ROADS ARE CLOSED TO TRAFFIC:

1. S.R. 535 AT INTERSECTION WITH U.S. ROUTE 20
2. MANTLE RD. AT INTERSECTION WITH S.R. 535
3. S.R. 535 AT INTERSECTION WITH MANTLE RD.
4. BACON RD. AT INTERSECTION WITH LAKE RD.
5. BACON RD. AT INTERSECTION WITH U.S. ROUTE 20
6. U.S. ROUTE 20 AT INTERSECTION WITH SIVON DRIVE
7. PARK RD. AT INTERSECTION WITH HALE RD.
8. SPRING LAKE BLVD. AT INTERSECTION WITH CENTER RD.
9. SPRING LAKE BLVD. JUST SOUTH OF U.S. ROUTE 20
10. U.S. ROUTE 20 BEYOND TERMINUS AT STA. 120 + 50

SIGN SUPPORTS AND LIGHTS FOR "ROAD CLOSED" SIGNS SHALL BE AS DETAILED IN THE "OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES."

PAYMENT FOR PROVIDING, ERECTING, MAINTAINING, AND REMOVING LIGHTS, SIGNS, AND SIGN SUPPORTS SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR "MAINTAINING TRAFFIC."

SCALE IN FEET

100 50 0 100 200 300 400 500

Rev. 10-20-64 C.E.H.

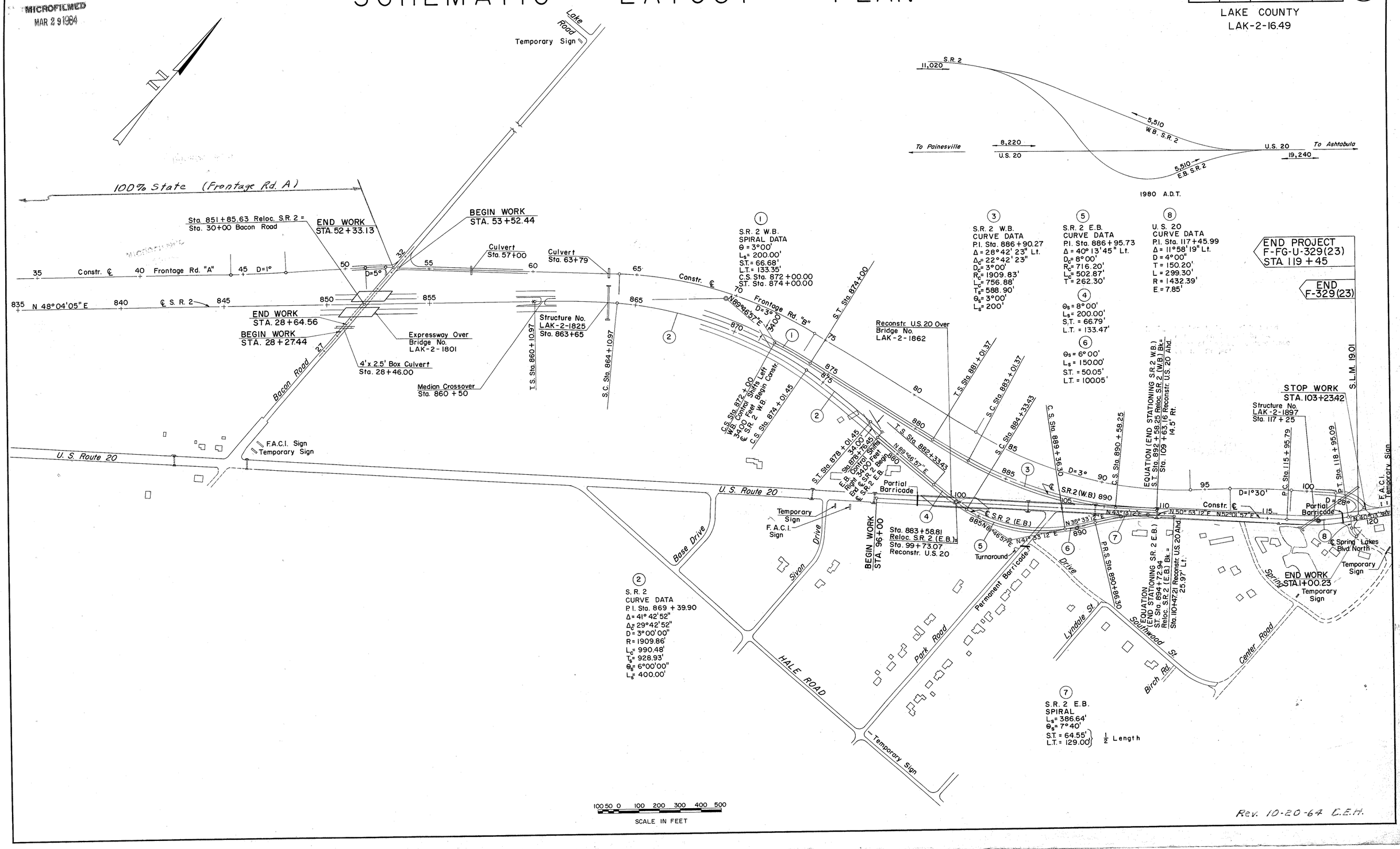
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

3/313

LAKE COUNTY
LAK-2-16.49

MICROFILMED
MAR 29 1984

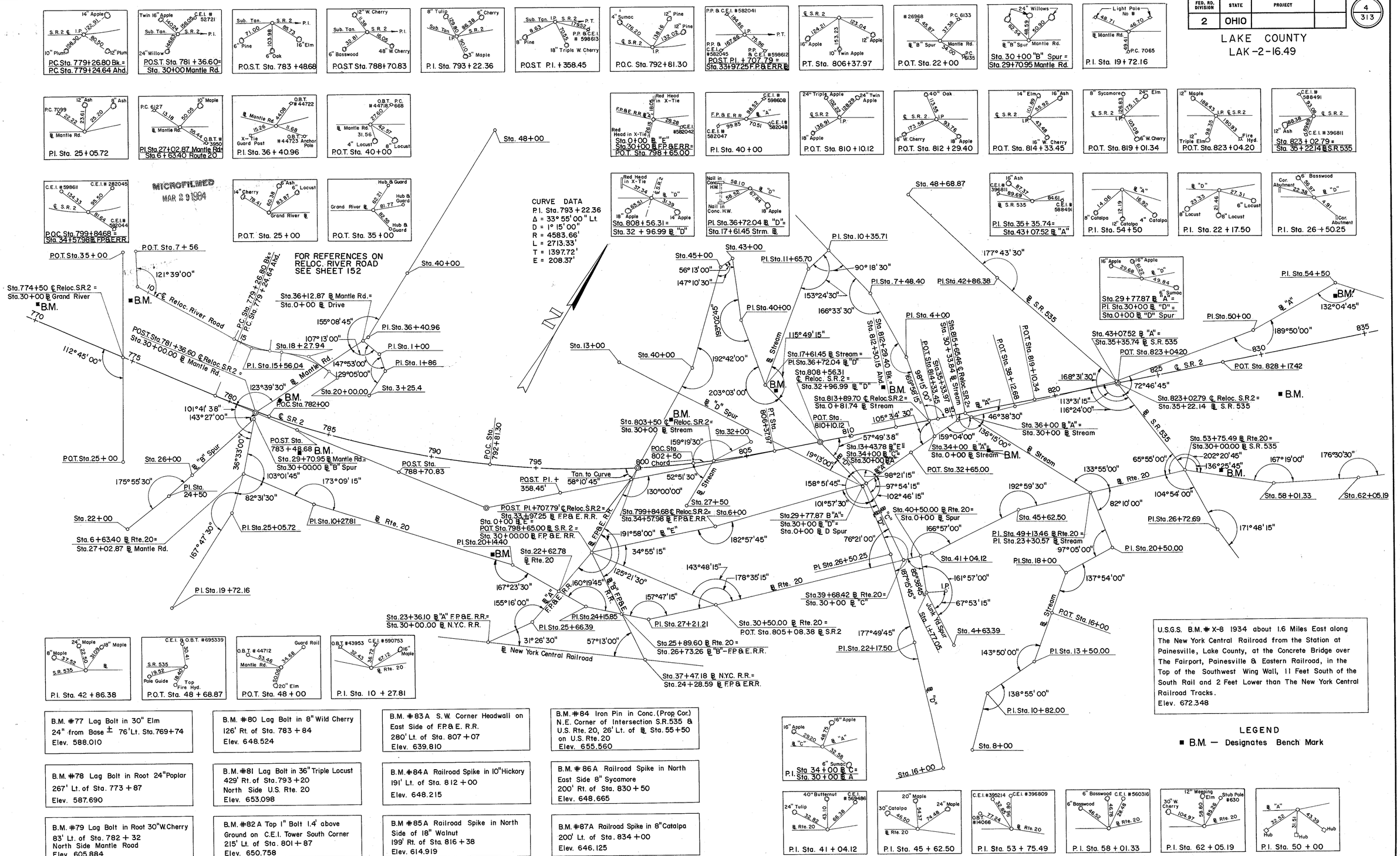
SCHEMATIC LAYOUT PLAN



Rev. 10-20-64 C.E.H.

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

LAKE COUNTY
LAK-2-16.49



U.S.G.S. B.M. # X-8 1934 about 1.6 Miles East along The New York Central Railroad from the Station at Painesville, Lake County, at the Concrete Bridge over The Fairport, Painesville & Eastern Railroad, in the Top of the Southwest Wing Wall, 11 Feet South of the South Rail and 2 Feet Lower than The New York Central Railroad Tracks.
Elev. 672.348

B.M. #77 Lag Bolt in 30" Elm
24" from Base ± 76' Lt. Sta. 769+74
Elev. 588.010

B.M. #78 Lag Bolt in Root 24" Poplar
267' Lt. of Sta. 773 + 87
Elev. 587.690

B.M. #79 Lag Bolt in Root 30" W. Cherry
83' Lt. of Sta. 782 + 32
North Side Mantle Road
Elev. 605.884

B.M. #80 Lag Bolt in 8" Wild Cherry
126' Rt. of Sta. 783 + 84
Elev. 648.524

B.M. #81 Lag Bolt in 36" Triple Locust
429' Rt. of Sta. 793 + 20
North Side U.S. Rte. 20
Elev. 653.098

B.M. #82 A Top 1" Bolt 1.4' above Ground on C.E.I. Tower South Corner
215' Lt. of Sta. 801 + 87
Elev. 650.758

B.M. #83 A S.W. Corner Headwall on East Side of F.P.& E. R.R.
280' Lt. of Sta. 807 + 07
Elev. 639.810

B.M. #84 A Railroad Spike in 10" Hickory
191' Lt. of Sta. 812 + 00
Elev. 648.215

B.M. #85 A Railroad Spike in North Side of 18" Walnut
199' Rt. of Sta. 816 + 38
Elev. 614.919

B.M. #84 Iron Pin in Conc. (Prop. Cor.) N.E. Corner of Intersection S.R. 535 & U.S. Rte. 20, 26' Lt. of ℄ Sta. 55+50 on U.S. Rte. 20
Elev. 655.560

B.M. #86 A Railroad Spike in North East Side 8" Sycamore
200' Rt. of Sta. 830 + 50
Elev. 648.665

B.M. #87 A Railroad Spike in 8" Catalpa
200' Lt. of Sta. 834 + 00
Elev. 646.125

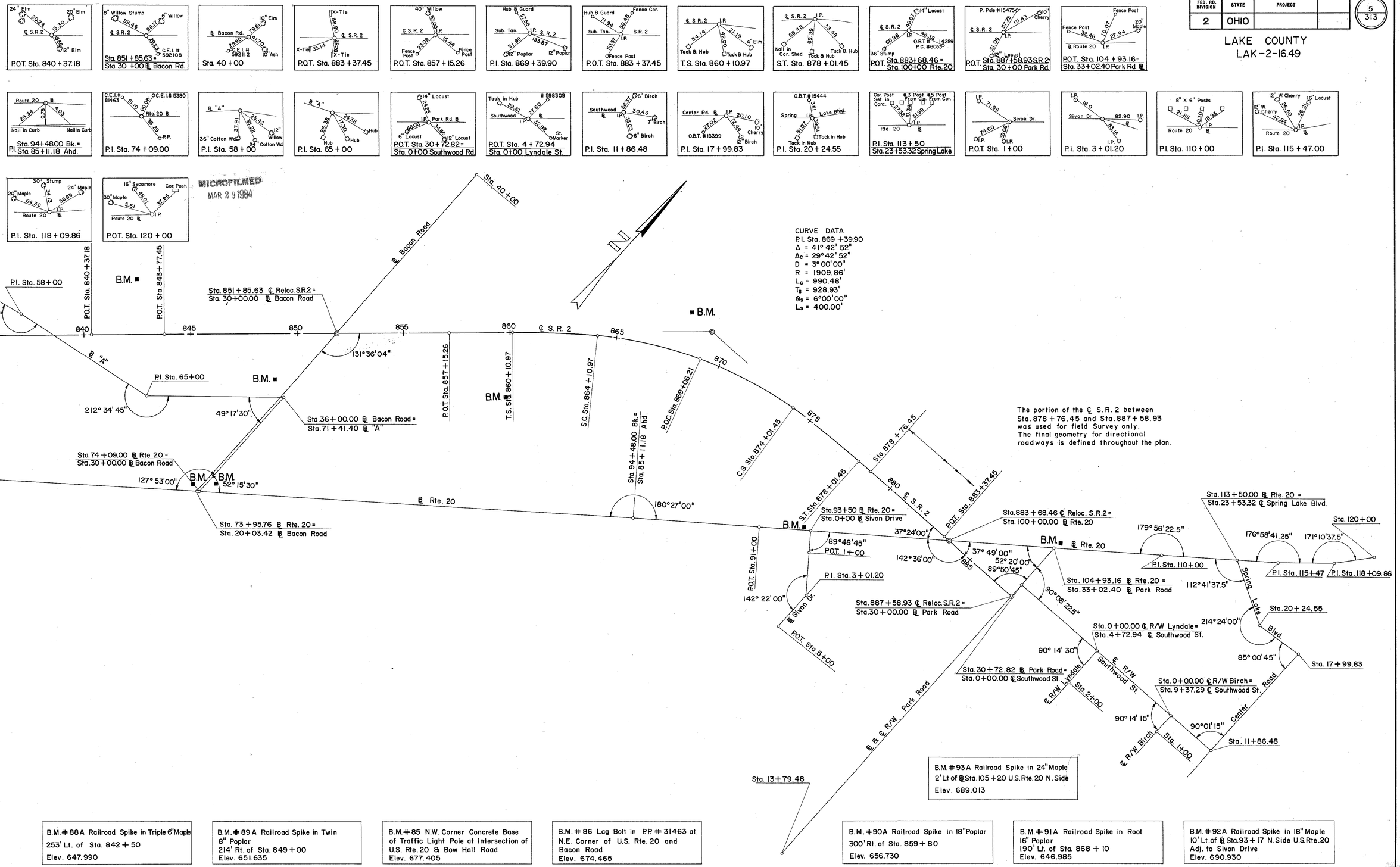
LEGEND
■ B.M. — Designates Bench Mark

PLAN OF SURVEY. BASE LINES, BENCH MARKS, & REFERENCES

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

5
313

LAKE COUNTY
LAK-2-16.49



PLAN OF SURVEY BASE LINES, BENCH MARKS, & REFERENCES

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

6 / 313

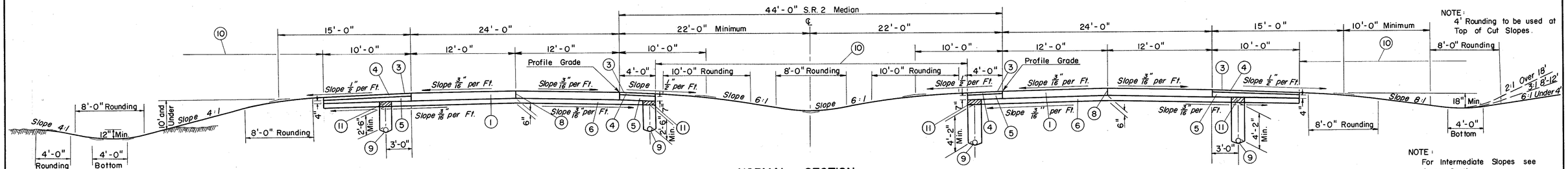
LAKE COUNTY
LAK-2-16.49

TYPICAL SECTIONS

TYPE T-71

FILL

CUT



NOTE:
4' Rounding to be used at Top of Cut Slopes.

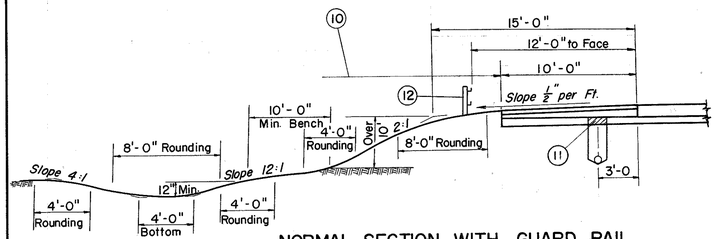
NOTE:
For Intermediate Slopes see Cross Sections.

NORMAL SECTION

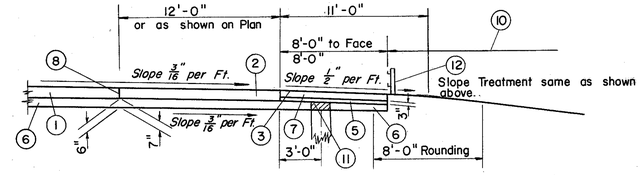
LIMITING STATIONS

	STA. 770+62.00	TO	STA. 771+78.61	STRUCTURE NO. LAK-2-1652
	STA. 774+93.39	TO	STA. 777+75.00	
(TRANSITION)	STA. 777+75.00	TO	STA. 780+00.00	CONTAINS EQUATION
(TRANSITION)	STA. 805+75.00	TO	STA. 808+00.00	CONTAINS EQUATION
	STA. 808+00.00	TO	STA. 813+73.94	STRUCTURE NO. LAK-2-1731
	*STA. 814+46.06	TO	STA. 850+80.12	STRUCTURE NO. LAK-2-1801
	STA. 852+91.14	TO	STA. 859+35.97	
(TRANSITION)	STA. 859+35.97	TO	STA. 864+10.97	

* Note: Sta. 817+40 To Sta. 834+50, Use 18" Depth Subbase as Shown on Cross Sections.

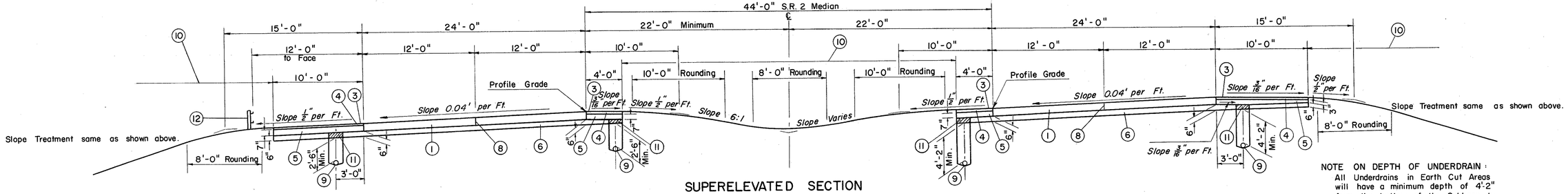


NORMAL SECTION WITH GUARD RAIL



Slope Treatment same as shown above.

NORMAL SECTION WITH SPEED CHANGE LANE

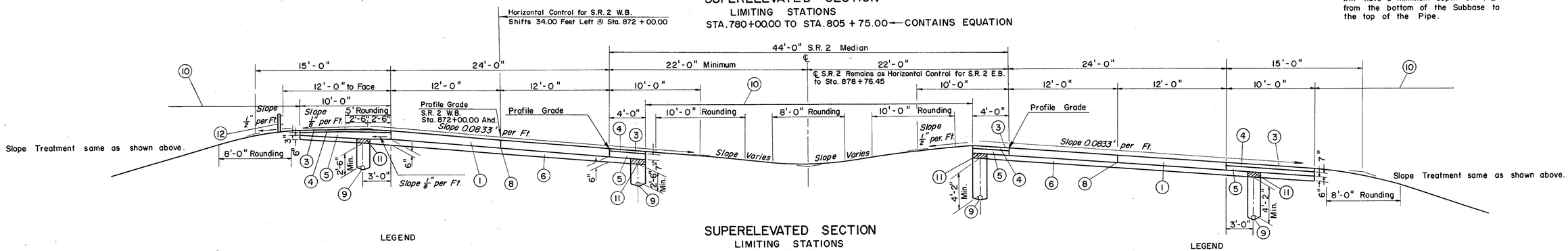


NOTE ON DEPTH OF UNDERDRAIN:
All Underdrains in Earth Cut Areas will have a minimum depth of 4'-2" from the bottom of the Subbase to the top of the Pipe.

SUPERELEVATED SECTION

LIMITING STATIONS

STA. 780+00.00 TO STA. 805+75.00 ← CONTAINS EQUATION



SUPERELEVATED SECTION

LIMITING STATIONS

STA. 864+10.97 TO STA. 872+00.00 W.B. LANE

For Typical Section of E.B. & W.B. Lanes
Sta. 872+00.00 Ahead See Sheet 7

SCALE: 3/16" = 1'-0"

** Note: Thickness shown is designed thickness as described in Section B-21.01

LEGEND

(1)	T-71	10"	Reinforced Portland Cement Concrete Pavement
(2)	T-71	9"	Reinforced Portland Cement Concrete Pavement
(3)	T-31		Bituminous Surface Treatment using 0.008 C.Y. No. 6 Aggregate and 0.25 Gal. Bit. Mat'l. per S.Y., (See note on proposal)
** (4)	B-21	3"	Waterproofed Aggregate Base Course, Type "A" T-35 Material may be used in construction of this Course.- See note on proposal
(5)	B-112		Porous Base Course

LEGEND

(11)	Remove Subbase for width of Item I-1 and replace with Type 3 Backfill immediately prior to placing the Item B-112 Porous Base Course. Cost shall be included in price bid per Lin. Ft. for Item I-1.	
(12)	I-15 Guard Rail	

LEGEND

(6)	I-22		Variable Depth Subbase, Grading A or B, modified as per General note
** (7)	B-21	6"	Waterproofed Aggregate Base Course, Type "A" T-35 Material may be used in construction of this Course.- See note on proposal
(8)			Standard Longitudinal Joint
(9)	I-1	6"	Pipe, Class I-3
(10)	L-9		Seeding and Protecting

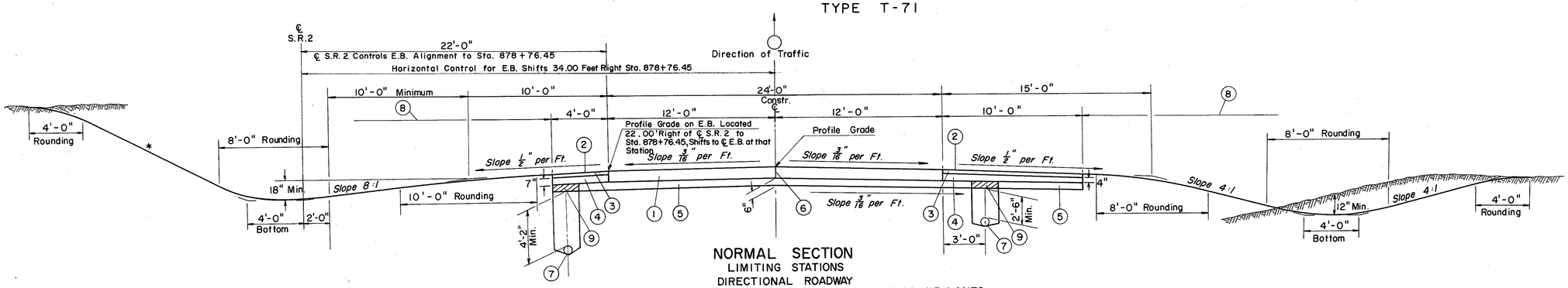
TYPICAL - MAINLINE

TYPICAL SECTIONS

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

LAKE COUNTY
LAK-2-16.49

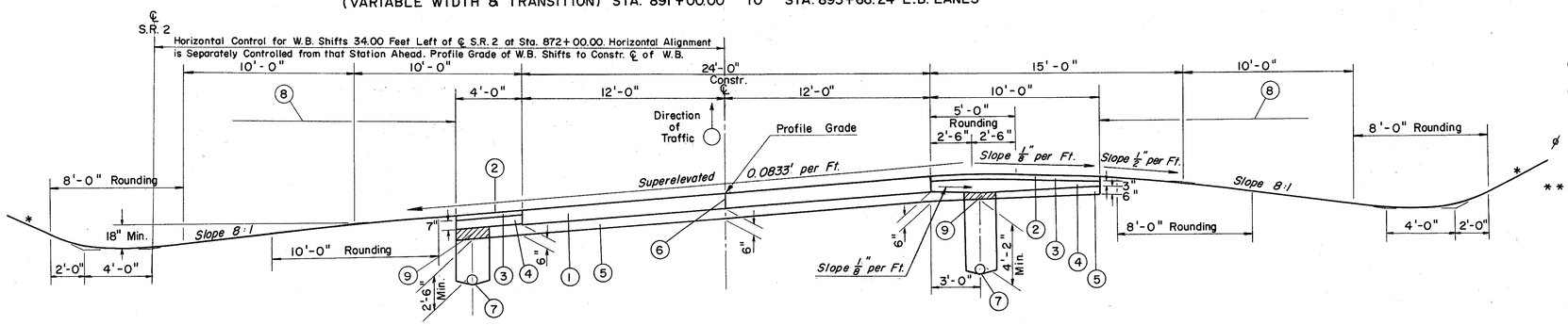
TYPE T-71



NORMAL SECTION

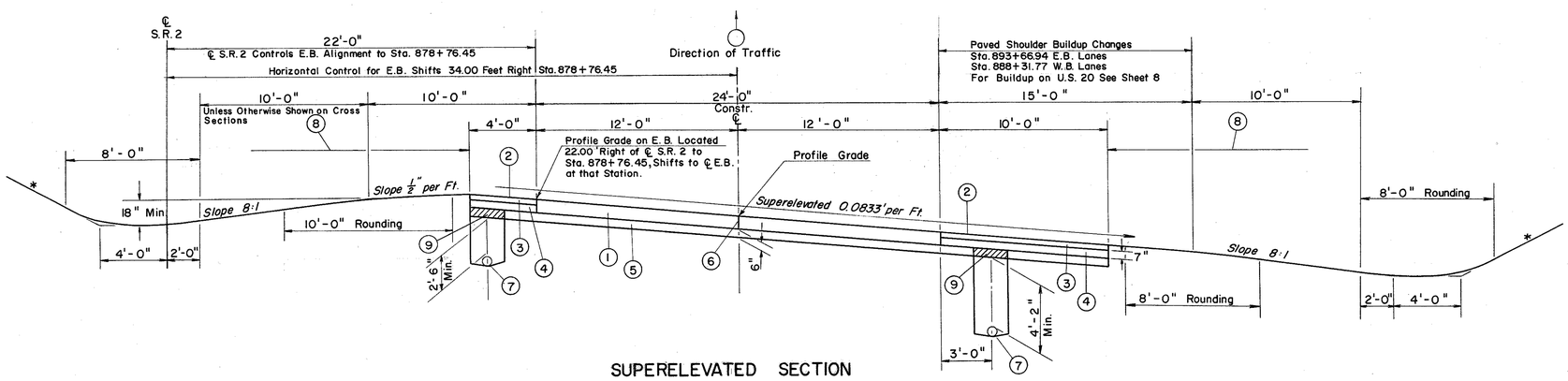
LIMITING STATIONS
DIRECTIONAL ROADWAY

(TRANSITION) STA. 872+00.00 TO S.T. STA. 874+75.00 W.B. LANES
S.T. STA. 874+75.00 TO T.S. STA. 880+26.37 W.B. LANES
(TRANSITION) STA. 880+26.37 TO S.C. STA. 883+01.37 W.B. LANES **
(TRANSITION) STA. 874+01.45 TO STA. 878+76.45 E.B. LANES
STA. 878+76.45 TO STA. 881+57.43 E.B. LANES **
(TRANSITION) STA. 881+57.43 TO STA. 884+33.43 E.B. LANES **
(TRANSITION) STA. 889+36.30 TO STA. 891+00.00 E.B. LANES
(VARIABLE WIDTH & TRANSITION) STA. 891+00.00 TO STA. 893+66.24 E.B. LANES



SUPERELEVATED SECTION

LIMITING STATIONS
DIRECTIONAL ROADWAY
STA. 884 + 33.43 TO C.S. STA. 889 + 36.30 E.B. LANES **



SUPERELEVATED SECTION

LIMITING STATIONS
DIRECTIONAL ROADWAY

S.C. STA. 883+01.37 TO STA. 887+34 ± W.B. LANES **
(VARIABLE WIDTH) STA. 887+34 ± TO STA. 888+31.77 W.B. LANES **
STA. 872+00.00 TO STA. 874+01.45 E.B. LANES

LEGEND

(1)	T-71	10" Reinforced Portland Cement Concrete Pavement
(2)	T-31	Bituminous Surface Treatment using 0.008 C.Y. No. 6 Aggregate and 0.25 Gal. Bit. Mat'l. per S.Y., (See note in proposal)
ø (3)	B-21	3" Waterproofed Aggregate Base Course, Type "A" T-35 Material may be used in construction of this Course.- See note in proposal
(4)	B-112	Porous Base Course
** (5)	I-22	Variable Depth Subbase, Grading A or B Modified as per General Notes
(6)		Standard Longitudinal Joint
(7)	I-1	6" Pipe Class I-3
(8)	L-9	Seeding and Protecting
(9)		Remove Subbase for width of Item I-1 and replace with Type 3 Backfill immediately prior to placing the Item B-112 Porous Base Course, Cost shall be included in price bid per Lin. Ft. for Item I-1.
*	Note:	See Grading Plan and Cross Sections.
**	Note:	See Non-Performance note in General Notes per I-22.
ø	Note:	Thickness shown is designed thickness as described in Section B-21.01

NOTE ON DEPTH OF UNDERDRAIN:
All Underdrains in Earth Cut Areas will have a minimum depth of 4'-2" from the bottom of the Subbase to the top of the Pipe.

SCALE: 1/4" = 1'-0"

TYPICAL - DIRECTIONAL ROADWAYS

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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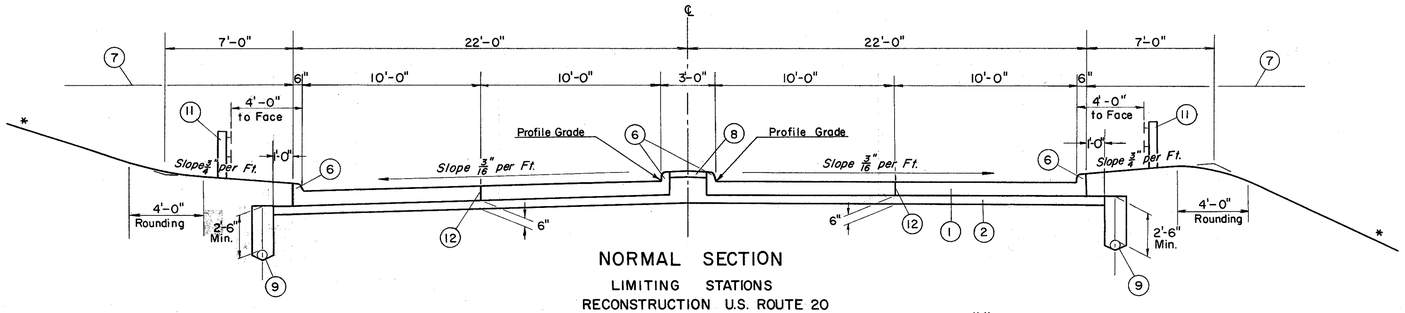
LAKE COUNTY
LAK-2-16.49

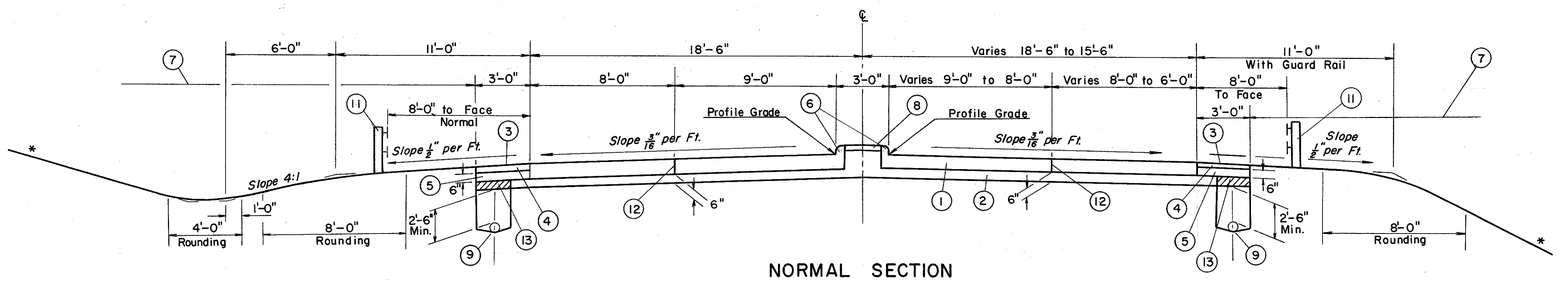
TYPICAL SECTIONS

TYPE T-71



NORMAL SECTION

LIMITING STATIONS
RECONSTRUCTION U.S. ROUTE 20
(TRANSITION FROM EXISTING PAV'T) STA. 96+00.00 TO STA. 96+50.00 **
STA. 96+50.00 TO STA. 98+17.09 **
STRUCTURE NO. LAK-2-1862



NORMAL SECTION

LIMITING STATIONS
RECONSTRUCTION U.S. ROUTE 20
STA. 101+34.75 TO STA. 105+34.87 LT. **
STA. 101+34.75 TO STA. 107+41.25 RT. **
STA. 107+41.25 TO STA. 109+41.25 RT.

FOR CONSTRUCTION DETAILS
RECONSTRUCTION U.S. 20
SEE SHEETS 212 TO 214

LEGEND

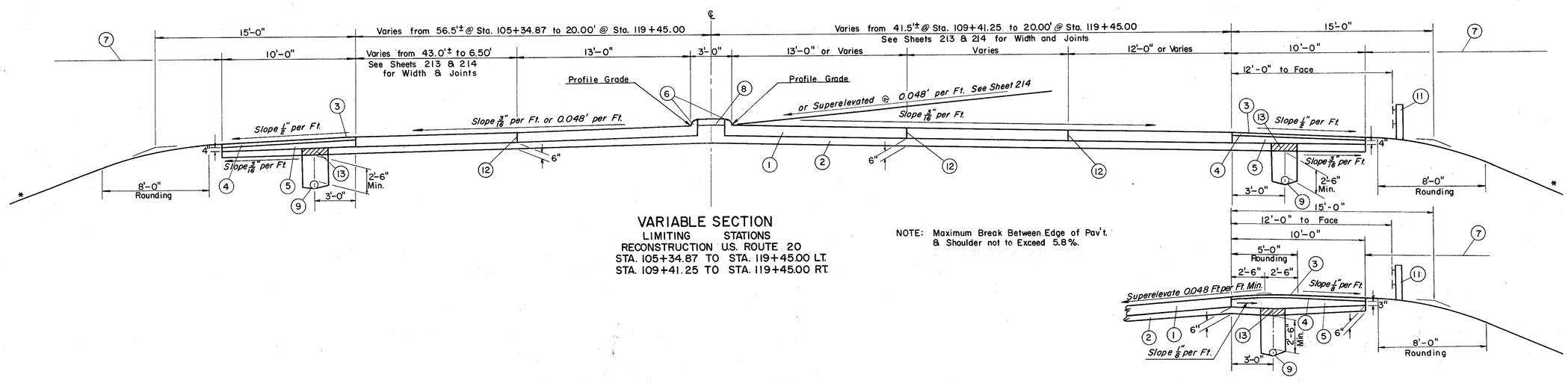
	(1) T-71	9" Reinforced Portland Cement Concrete Pavement
**	(2) I-22	Variable Depth Subbase Grading A or B, Modified as per General Note.
	(3) T-31	Bituminous Surface Treatment Using 0.008 C.Y. No.6 Aggregate and 0.25 Gal. Bit. Mat'l. per S.Y. See note in proposal.
ϕ	(4) B-21	3" Waterproofed Aggregate Base Course. (Type "A" T-35 Material may be used in Construction of this Course. See note in proposal.
	(5) I-18	Variable Depth Stabilized Crushed Aggregate Base Course
	(6) I-12	Concrete Curb, Standard Type 2-A
	(7) L-9	Seeding & Protecting
	(8) I-21	Portland Cement Concrete Median Standard Type 1
	(9) I-1	6" Pipe Class I-3
	(11) I-15	Guard Rail
	(12)	Standard Longitudinal Joint
	(13)	Remove Subbase for Width of Item I-1 and Replace with Type 3 Backfill immediately prior to placing the Item B-112 Porous Base Course, Cost shall be included in price bid per Lin. Ft. for Item I-1.

* NOTE: See Standard Construction Drawing No. R.I-1, Roadway Items, for Normal Slope, Guard Rail and Ditch Design, also Cross Sections for Ditches.

** See Non-Performance note in General Notes per I-22.

SCALE: 1/4" per Ft.

ϕ NOTE: Thickness shown is designed thickness as described in Section B-21.01



VARIABLE SECTION

LIMITING STATIONS
RECONSTRUCTION U.S. ROUTE 20
STA. 105+34.87 TO STA. 119+45.00 LT.
STA. 109+41.25 TO STA. 119+45.00 RT.

NOTE: Maximum Break Between Edge of Pav't. & Shoulder not to Exceed 5.8%.

SHOULDER TREATMENT IN SUPERELEVATED SECTIONS

STA. 115+40.00 TO STA. 118+00.00

TYPICAL
RECONSTR. U.S. 20

TYPICAL SECTIONS

TYPE T-71

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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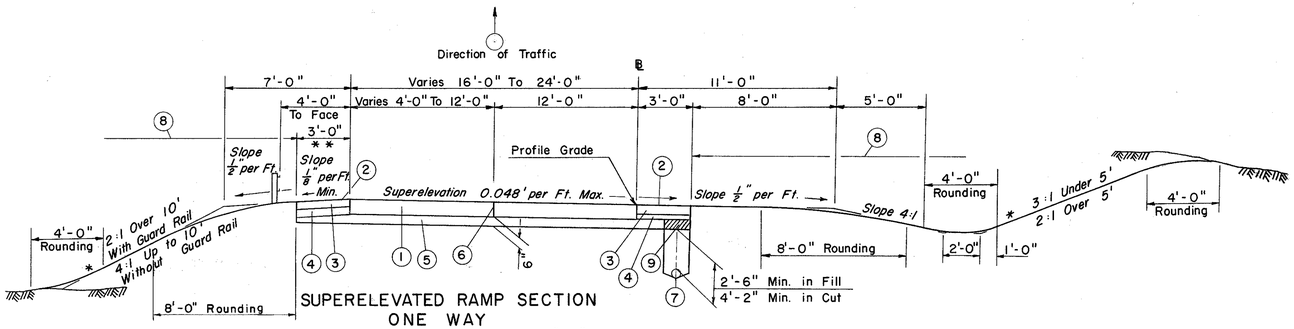
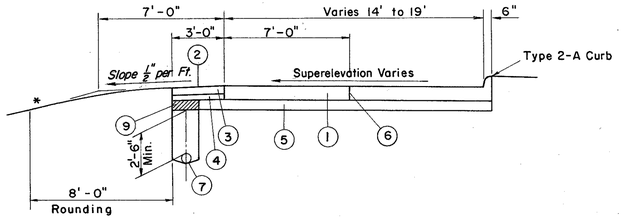
LAKE COUNTY
LAK-2-16.49



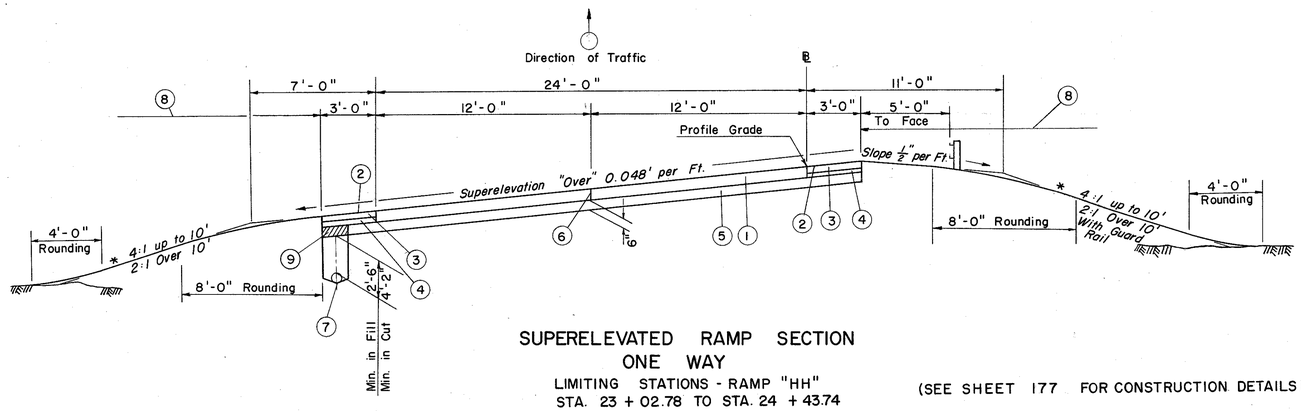
SUPERELEVATED RAMP SECTION
ONE WAY
LIMITING STATIONS-RAMP"HH"

(STRUCTURE) STA. 14+00.00 TO STA. 14 + 67.05
(TRANSITION) STA. 14+67.05 TO STA. 19 + 75.00
STA. 19+75.00 TO STA. 21 + 01.25 SUPERELEVATION = 0.0416 ft/ft
(VARIABLE WIDTH) STA 21 +01.25 TO STA. 23+02.78
(VARIABLE WIDTH) STA. 24+43.74 TO STA. 25+11.11

(SEE SHEET 177 FOR CONSTRUCTION DETAILS)

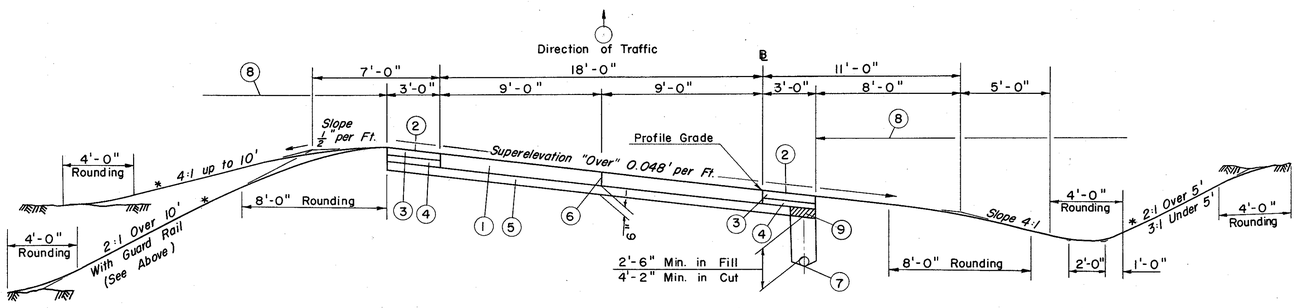


SUPERELEVATED SPUR SECTION
ONE WAY
LIMITING STATIONS SPUR GG
(VARIABLE WIDTH) STA. 19+54.72 TO STA. 20+40.99



SUPERELEVATED RAMP SECTION
ONE WAY
LIMITING STATIONS - RAMP "HH"
STA. 23 + 02.78 TO STA. 24 + 43.74

(SEE SHEET 177 FOR CONSTRUCTION DETAILS)



SUPERELEVATED RAMP SECTION
ONE WAY
LIMITING STATIONS - RAMP "GG"
(TRANSITION) STA. 10 + 25.75 TO STA. 15+60.75
STA. 15+60.75 TO STA. 18+71.58 SUPERELEVATION = 0.0833 ft/ft
(VARIABLE WIDTH) STA. 18+71.58 TO STA. 21 + 43.51

(SEE SHEET 176 FOR CONSTRUCTION DETAILS)
(SEE SHEET 176 FOR CONSTRUCTION DETAILS OF SPUR)

LEGEND

1. T-71 9" Reinforced Portland Cement Concrete Pavement
2. T-31 Bituminous Surface Treatment using 0.008 C.Y. No. 6 Aggregate and 0.25 Gal. Bit. Mat'l. per S.Y., (See note on proposal)
** 3. B-21 6" Waterproofed Aggregate Base Course, (Type "A" T-35 Material may be used in construction of this Course. - See note on proposal)
4. B-112 3" Porous Base Course
5. I-22 Variable Depth Subbase, Grading A or B Modified as per General note
6. Standard Longitudinal Joint
7. I-1 6" Pipe, Class I-3,
8. L-9 Seeding and Protecting
9. Remove Subbase for width of Item I-1 and replace with Type 3 Backfill immediately prior to placing the Item B-112 porous base course. Cost shall be included in price bid per Lin. Ft. for Item I-1.

* Note: See Grading Plan and Cross Sections
** Note: Thickness shown is designed thickness as described in Section B-21.01

SCALE : 1/4" = 1'-0"

TYPICAL - RAMPS

TYPICAL SECTIONS

TYPE T-35

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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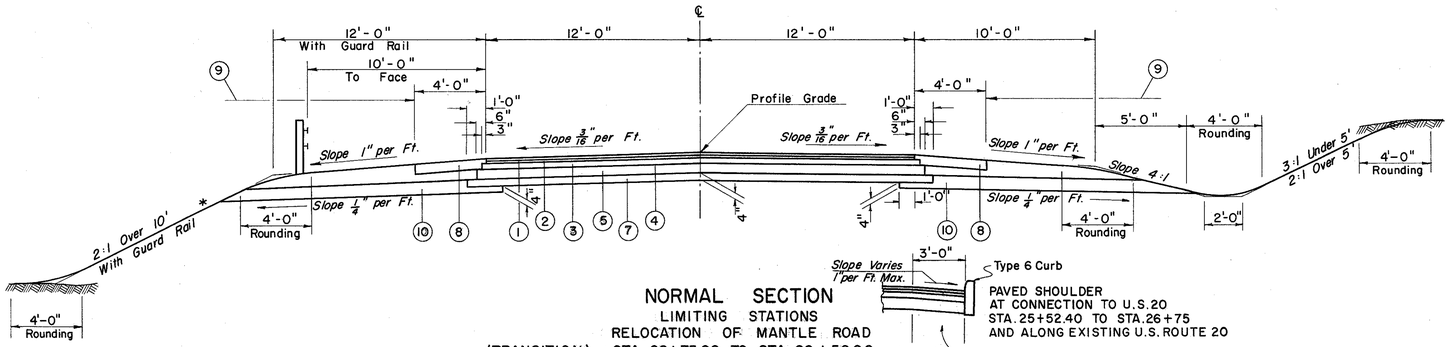
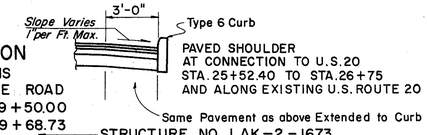
LAKE COUNTY
LAK-2-16.49





NORMAL SECTION

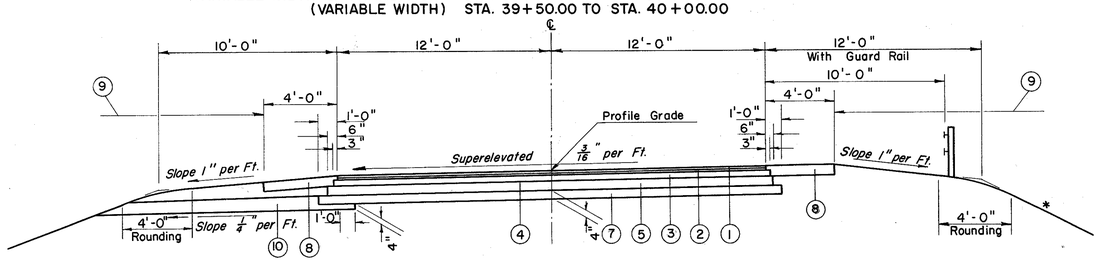
LIMITING STATIONS
RELOCATION OF MANTLE ROAD

(TRANSITION) STA. 28+75.00 TO STA. 29+50.00
STA. 29+50.00 TO STA. 29+68.73
STA. 32+55.51 TO STA. 33+25.00
(TRANSITION) STA. 33+25.00 TO STA. 34+00.00
(VARIABLE WIDTH & TRANSITION) STA. 38+75.00 TO STA. 39+50.00
(VARIABLE WIDTH) STA. 39+50.00 TO STA. 40+00.00

PAVED SHOULDER
AT CONNECTION TO U.S.20
STA. 25+52.40 TO STA. 26+75
AND ALONG EXISTING U.S. ROUTE 20

Same Pavement as above Extended to Curb

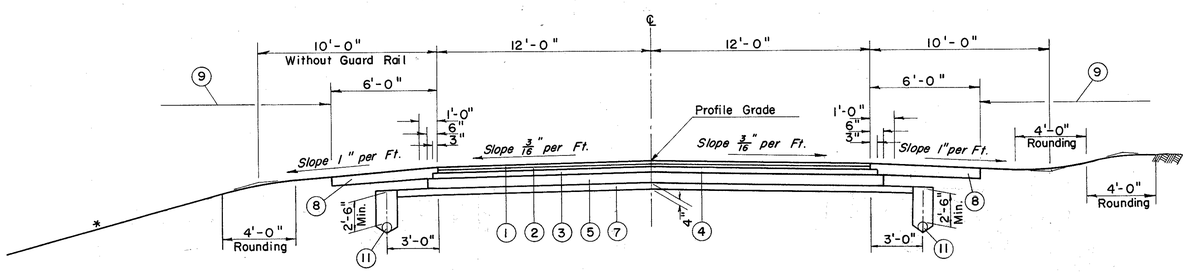
STRUCTURE NO. LAK-2-1673



SUPERELEVATED SECTION

LIMITING STATIONS
RELOCATION OF MANTLE ROAD

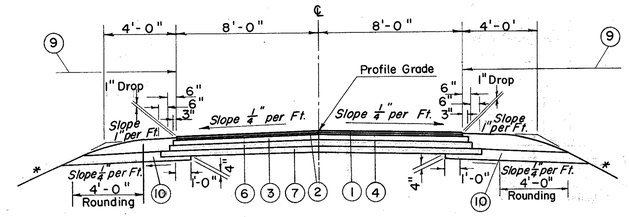
(VARIABLE WIDTH) STA. 25+00.00 TO STA. 25+52.40
STA. 25+52.40 TO STA. 28+75.00
STA. 34+00.00 TO STA. 38+75.00



NORMAL SECTION

LIMITING STATIONS
RECONSTRUCTED S.R. 535

(VARIABLE WIDTH) STA. 29+00.00 TO STA. 29+86.00
STA. 29+86.00 TO STA. 33+35.14
STA. 36+98.86 TO STA. 40+50.00
(VARIABLE WIDTH) STA. 40+50.00 TO STA. 41+00.00

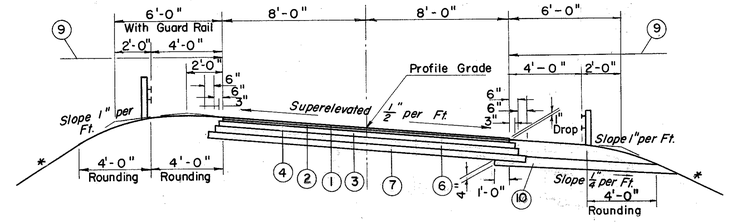


NORMAL SECTION

LIMITING STATIONS
MANTLE ROAD SPUR

STA. 4+50.00 TO STA. 6+16.04
(TRANSITION) STA. 6+16.04 TO STA. 7+06.04

Feather Surface to Meet Existing, Sta. 4+25 to Sta. 4+50.00



SUPERELEVATED SECTION

LIMITING STATIONS
MANTLE ROAD SPUR

STA. 7+06.04 TO STA. 8+67.87
(TRANSITION) STA. 8+67.87 TO STA. 9+38.00
(VARIABLE WIDTH) STA. 9+38.00 TO STA. 9+88.00

LEGEND

‡	(1) T-35	1 1/4" Asphaltic Concrete Surface Course, Type "A" (70-85)
‡	(2) B-35	1 1/4" Asphaltic Concrete Leveling Course (70-85)
‡	(3) B-35	3" Asphaltic Concrete Base Course (70-85)
	(4) T-30	Bituminous Prime Coat Sec. M-5.7, RT-2 or RT-3 Applied at the rate of 0.4 Gal. per S.Y.
	(5) B-19	8" Aggregate Base Course
	(6) B-19	5" Aggregate Base Course
	(7) I-22	4" Subbase, Grading A or B, Modified as per General Note
	(8) I-18	6" Stabilized Crushed Aggregate Shoulders and Approaches, using 1 lb. Calcium Chloride per S.Y. (See note in Proposal)
	(9) L-9	Seeding and Protecting
	(10) I-9	Stone Underdrains No. 2, (See General Notes)
	(11) I-1	6" Pipe, Class I-3

* NOTE : See Standard Construction Drawing No. RI-1, Roadway Items, for Normal Slope, Guard Rail, and Ditch Design.

‡ NOTE : Thicknesses shown are designed thicknesses as described in Sections T-35.01 and B-35.01.

TYPICAL – SIDE ROADS

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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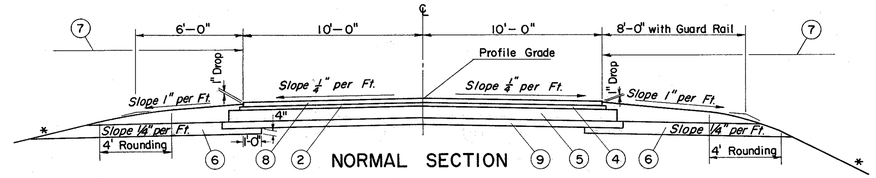
LAKE COUNTY
LAK-2-16.49

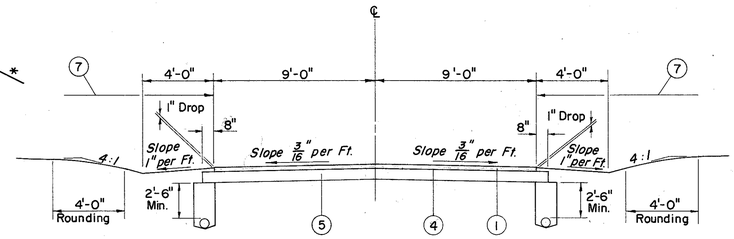
TYPICAL SECTIONS

TYPE T-35 & B-19



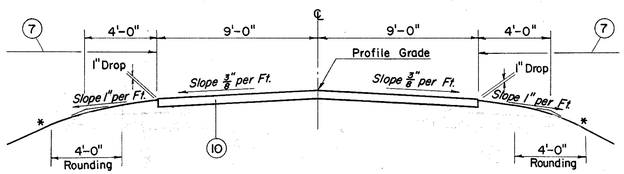
NORMAL SECTION

LIMITING STATIONS
FRONTAGE ROAD "B"
(VARIABLE WIDTH) STA. 53 + 52.44 TO STA. 54+50
STA. 54+50.00 TO STA. 62 + 65.00
(TRANSITION) STA. 62 +65 TO STA. 64 + 50.00
(TRANSITION) STA. 73 + 69 TO STA. 75 + 55
STA. 75 + 55 TO STA. 82 + 00
(TRANSITION) STA. 82 + 00 TO STA. 83 + 75
(TRANSITION) STA. 94 + 00 TO STA. 97+ 25
(VARIABLE WIDTH) STA. 102 + 57 TO STA. 103+23.42



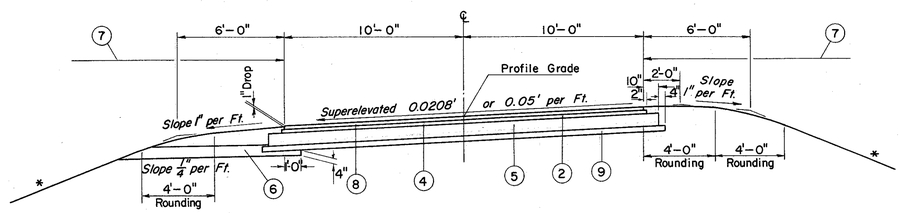
NORMAL SECTION

LIMITING STATIONS
RELOCATION SPRING LAKES BLVD.
(VARIABLE WIDTH) STA. 0 + 21.00 TO STA. 0 + 60.00
STA. 0+60.00
(VARIABLE WIDTH) STA. 0+60.00 TO STA. 1 +00.23



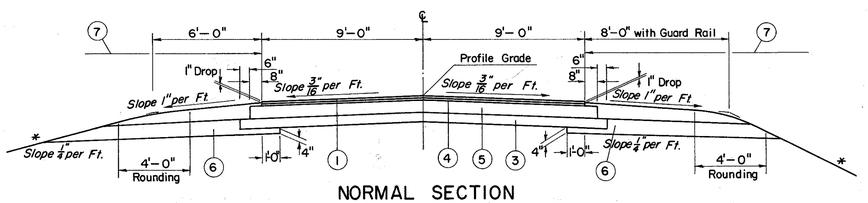
NORMAL SECTION

LIMITING STATIONS
FRONTAGE ROAD "A"
(VARIABLE WIDTH) STA. 17+02.17 TO STA. 17+43.17
STA. 17+43.17 TO STA. 17+75.00
(TRANSITION) STA. 17+75.00 TO STA. 18+75.00
(TRANSITION) STA. 22+05.00 TO STA. 24+75.00
(TRANSITION) STA. 26+75.00 TO STA. 28+50.00
STA. 28+50.00 TO STA. 43+50.00
(TRANSITION) STA. 43+50.00 TO STA. 44+50.00
(TRANSITION) STA. 47+00.00 TO STA. 48+00.00
STA. 48+00.00 TO STA. 51+50.00
(VARIABLE WIDTH) STA. 51+50.00 TO STA. 52+33.13



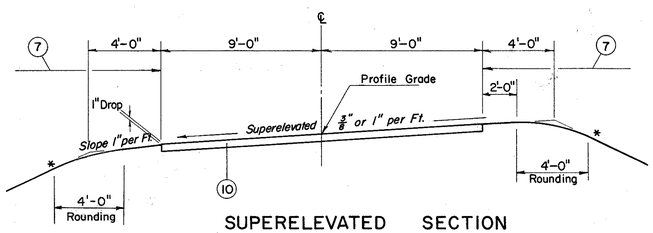
SUPERELEVATED SECTION

LIMITING STATIONS
FRONTAGE ROAD "B"
STA. 64 + 50.00 TO STA. 73 + 69.00 SUPERELEVATE 0.05' per Ft.
STA. 83 + 75.00 TO STA. 94 + 00.00 SUPERELEVATE 0.05' per Ft.
STA. 97+25.00 TO STA. 102+57.00 SUPERELEVATE 0.0208' per Ft.



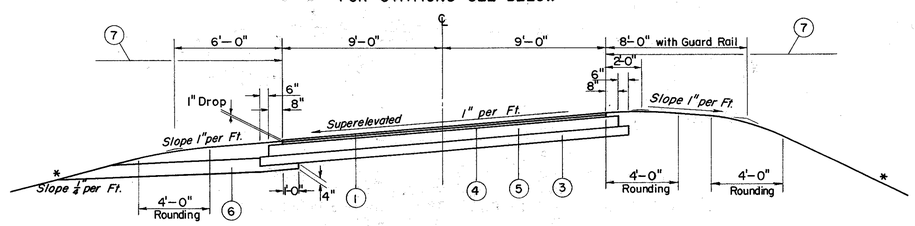
NORMAL SECTION

LIMITING STATIONS
RELOCATION OF RIVER ROAD
FOR STATIONS SEE BELOW



SUPERELEVATED SECTION

LIMITING STATIONS
FRONTAGE ROAD "A"
STA. 18 + 75.00 TO STA. 22+05.00 SUPERELEVATE 1" per Ft.
STA. 24 + 75.00 TO STA. 26+75.00 SUPERELEVATE 1" per Ft.
STA. 44 + 50.00 TO STA. 47+00.00 SUPERELEVATE 3/8" per Ft.



SUPERELEVATED SECTION

LIMITING STATIONS
RELOCATION OF RIVER ROAD
(TRANSITION) STA. 13+00.00 TO STA. 19+37.88
(VARIABLE WIDTH) STA. 19 + 37.88 TO STA. 19+87.88
FULL SUPER OCCURS ONLY AT STA. 15+00 AND STA. 18+00

LEGEND

ϕ (1)	T-35	$2\frac{1}{2}$" Asphaltic Concrete Surface Course, Type "A" (70-85) laid in 2-$1\frac{1}{4}$" Courses.
ϕ (2)	B-35	$1\frac{3}{4}$" Asphaltic Concrete Leveling Course (70-85)
(3)	I-22	6" Subbase, Grading A or B, (Modified as per General Note)
(4)	T-30	Bituminous Prime Coat Sec. M-5.7, RT.-2 or RT-3 Applied at the rate of 0.4 Gal. per S.Y.
(5)	B-19	8" Aggregate Base Course
(6)	I-9	Stone Underdrain No. 2, (See General Notes)
(7)	L-9	Seeding and Protecting
(8)	T-35	3" Asphaltic Concrete Surface Course, Type "A" (70-85) laid in two Courses, the Lower Course @ $1\frac{3}{4}$" and the Upper Course @ $1\frac{1}{4}$".
(9)	I-22	4" Subbase, Grading A or B, Modified as per General Note.
(10)	B-19	5" Aggregate Base Course, using 1 lb. Calcium Chloride per S.Y. (See Note in Proposal)

* NOTE: See Standard Construction Drawing No. RI-1, Roadway Items, for Normal Slope, Guard Rail and Ditch Design.

ϕ NOTE: Thickness Shown is Designed Thickness as Described in Section B-21.01, T-35.01 and B-35.01

SUPERELEVATION TABLES

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

12/313

LAKE COUNTY
LAK-2-16.49

P.I. STA. 793+22.36 — RELOC. S.R. 2 CURVE LEFT — FULL SUPER 0.04 FT./FT.

TRANSITION / FULL SUPER

STATION	46' LEFT	34' LEFT	22' LEFT & RIGHT	34' RIGHT	46' RIGHT
777+75	605.49	605.68	605.49	605.68	605.49
778+00	605.96	606.15	606.02	606.21	606.08
778+25	606.42	606.61	606.55	606.74	606.68
778+50	606.89	607.08	607.08	607.27	607.27
778+75	607.29	607.48	607.61	607.80	607.93
778+87.55	607.50	607.69	607.88	608.07	608.26
779+00	607.70	607.92	608.14	608.36	608.58
779+25	608.10	608.38	608.67	608.96	609.24
779+26.08	608.11	608.40	608.69	608.98	609.27
EQUATION P.C. 779+26.80 Bk.	608.13	608.42	608.71	609.00	609.29
P.C. 779+24.64 Ah.	608.13	608.42	608.71	609.00	609.29
779+25	608.14	608.43	608.72	609.01	609.30
779+50	608.54	608.89	609.25	609.61	609.96
779+75	608.94	609.36	609.78	610.20	610.62
779+97.84	609.30	609.78	610.26	610.74	611.22
780+00	609.35	609.83	610.31	610.79	611.27
780+25	609.88	610.36	610.84	611.32	611.80
780+50	610.41	610.89	611.37	611.85	612.33
780+75	610.94	611.42	611.90	612.38	612.86
781+00	611.47	611.95	612.43	612.91	613.39
781+25	612.00	612.48	612.96	613.44	613.92
781+50	612.53	613.01	613.49	613.97	614.45
781+75	613.06	613.54	614.02	614.50	614.98
782+00	613.59	614.07	614.55	615.03	615.51
782+25	614.12	614.60	615.08	615.56	616.04
782+50	614.65	615.13	615.61	616.09	616.57
782+75	615.18	615.66	616.14	616.62	617.10
783+00	615.71	616.19	616.67	617.15	617.63
783+25	616.24	616.72	617.20	617.68	618.16
783+50	616.77	617.25	617.73	618.21	618.69
783+75	617.30	617.78	618.26	618.74	619.22
784+00	617.83	618.31	618.79	619.27	619.75
784+25	618.36	618.84	619.32	619.80	620.28
784+50	618.89	619.37	619.85	620.33	620.81
784+75	619.42	619.90	620.38	620.86	621.34
785+00	619.95	620.43	620.91	621.39	621.87
785+25	620.48	620.96	621.44	621.92	622.40
785+50	621.01	621.49	621.97	622.45	622.93
785+75	621.54	622.02	622.50	622.98	623.46
786+00	622.06	622.54	623.02	623.50	623.98
786+25	622.57	623.05	623.53	624.01	624.49
786+50	623.07	623.55	624.03	624.51	624.99
786+75	623.55	624.03	624.51	624.99	625.47
787+00	624.02	624.50	624.98	625.46	625.94
787+25	624.47	624.95	625.43	625.91	626.39
787+50	624.91	625.39	625.87	626.35	626.83
787+75	625.34	625.82	626.30	626.78	627.26
788+00	625.75	626.23	626.71	627.19	627.67
788+25	626.15	626.63	627.11	627.59	628.07
788+50	626.54	627.02	627.50	627.98	628.46
788+75	626.91	627.39	627.87	628.35	628.83
789+00	627.27	627.75	628.23	628.71	629.19
789+25	627.61	628.09	628.57	629.05	629.53
789+50	627.94	628.42	628.90	629.38	629.86

FULL SUPER

STATION	46' LEFT	34' LEFT	22' LEFT & RIGHT	34' RIGHT	46' RIGHT
789+75	628.26	628.74	629.22	629.70	630.18
790+00	628.56	629.04	629.52	630.00	630.48
790+25	628.85	629.33	629.81	630.29	630.77
790+50	629.13	629.61	630.09	630.57	631.05
790+75	629.39	629.87	630.35	630.83	631.31
791+00	629.64	630.12	630.60	631.08	631.56
791+25	629.87	630.35	630.83	631.31	631.79
791+50	630.09	630.57	631.05	631.53	632.01
791+75	630.30	630.78	631.26	631.74	632.22
792+00	630.49	630.97	631.45	631.93	632.41
792+25	630.67	631.15	631.63	632.11	632.59
792+50	630.84	631.32	631.80	632.28	632.76
792+75	630.99	631.47	631.95	632.43	632.91
793+00	631.13	631.61	632.09	632.57	633.05
793+25	631.25	631.73	632.21	632.69	633.17
793+50	631.36	631.84	632.32	632.80	633.28
793+75	631.46	631.94	632.42	632.90	633.38
794+00	631.54	632.02	632.50	632.98	633.46
794+25	631.61	632.09	632.57	633.05	633.53
794+50	631.67	632.15	632.63	633.11	633.59
794+75	631.71	632.19	632.67	633.15	633.63
795+00	631.74	632.22	632.70	633.18	633.66
795+25	631.75	632.23	632.71	633.19	633.67
795+50	631.75	632.23	632.71	633.19	633.67
795+75	631.74	632.22	632.70	633.18	633.66
796+00	631.71	632.19	632.67	633.15	633.63
796+25	631.67	632.15	632.63	633.11	633.59
796+50	631.62	632.10	632.58	633.06	633.54
796+75	631.55	632.03	632.51	632.99	633.47
797+00	631.47	631.95	632.43	632.91	633.39
797+25	631.37	631.85	632.33	632.81	633.29
797+50	631.26	631.74	632.22	632.70	633.18
797+75	631.14	631.62	632.10	632.58	633.06
798+00	631.00	631.48	631.96	632.44	632.92
798+25	630.85	631.33	631.81	632.29	632.77
798+50	630.69	631.17	631.65	632.13	632.61
798+75	630.51	630.99	631.47	631.95	632.43
799+00	630.32	630.80	631.28	631.76	632.24
799+25	630.11	630.59	631.07	631.55	632.08
799+50	629.89	630.37	630.85	631.33	631.81
799+75	629.66	630.14	630.62	631.10	631.58
800+00	629.42	629.90	630.38	630.86	631.34
800+25	629.18	629.66	630.14	630.62	631.10
800+50	628.94	629.42	629.90	630.38	630.86
800+75	628.70	629.18	629.66	630.14	630.62
801+00	628.46	628.94	629.42	629.90	630.38
801+25	628.22	628.70	629.18	629.66	630.14
801+50	627.98	628.46	628.94	629.42	629.90
801+75	627.74	628.22	628.70	629.18	629.66
802+00	627.50	627.98	628.46	628.94	629.42
802+25	627.26	627.74	628.22	628.70	629.18
802+50	627.02	627.50	627.98	628.46	628.94
802+75	626.78	627.26	627.74	628.22	628.70
803+00	626.54	627.02	627.50	627.98	628.46

FULL SUPER / TRANSITION

STATION	46' LEFT	34' LEFT	22' LEFT & RIGHT	34' RIGHT	46' RIGHT
803+25	626.30	626.78	627.26	627.74	628.22
803+50	626.06	626.54	627.02	627.50	627.98
803+75	625.82	626.30	626.78	627.26	627.74
804+00	625.58	626.06	626.54	627.02	627.50
804+25	625.34	625.82	626.30	626.78	627.26
804+50	625.10	625.58	626.06	626.54	627.02
804+75	624.86	625.34	625.82	626.30	626.78
805+00	624.62	625.10	625.58	626.06	626.54
805+25	624.38	624.86	625.34	625.82	626.30
805+50	624.14	624.62	625.10	625.58	626.06
805+75	623.90	624.38	624.86	625.34	625.82
806+00	623.79	624.20	624.62	625.04	625.45
806+25	623.68	624.03	624.38	624.73	625.08
P.T. 806+37.97	623.62	623.94	624.26	624.58	624.90
806+50	623.57	623.85	624.14	624.43	624.71
806+75	623.46	623.68	623.90	624.12	624.34
806+87.99	623.40	623.59	623.78	623.97	624.16
807+00	623.34	623.53	623.66	623.85	623.98
807+25	623.24	623.43	623.43	623.62	623.62
807+50	623.07	623.26	623.20	623.39	623.33
807+75	622.93	623.11	622.99	623.18	623.05
808+00	622.78	622.97	622.78	622.97	622.78

P.I. STA. 869+39.90 — RELOC. S.R. 2 CURVE RIGHT — FULL SUPER 1"/FT.

TRANSITION / FULL SUPER

STATION	46' LEFT	34' LEFT	22' LEFT & RIGHT	34' RIGHT	46' RIGHT
859+35.97	661.17	661.36	661.17	661.36	661.17
859+50	660.99	661.14	660.95	661.10	660.91
859+75	660.68	660.77	660.58	660.67	660.48
860+00	660.38	660.41	660.22	660.25	660.06
TS 860+10.97	660.26	660.26	660.07	660.07	659.88
860+25	660.14	660.08	659.89	659.83	659.64
860+50	559.92	659.75	659.56	659.38	659.20
860+75	659.74	659.50	659.26	659.02	658.78
861+00	659.55	659.26	658.96	658.66	658.37
861+25	659.39	659.04	658.69	658.34	657.99
861+50	659.25	658.84	658.43	658.02	657.61
861+75	659.13	658.67	658.20	657.73	657.27
862+00	659.01	658.49	657.97	657.45	656.93
862+25	658.92	658.34	657.76	657.18	656.60
862+50	658.84	658.21	657.57	656.93	656.30
862+75	658.78	658.09	657.40	656.71	656.02
863+00	658.74	657.99	657.24	656.49	655.74
863+25	658.71	657.91	657.10	656.29	655.49
863+50	658.69	657.83	656.97	656.11	655.25
863+75	658.71	657.79	656.87	655.95	655.03
864+00	658.73	657.76	656.78	655.80	654.83
SC 864+10.97	658.74	657.74	656.74	655.74	654.74
864+25	658.70	657.70	656.70	655.70	654.70
864+50	658.64	657.64	656.64	655.64	654.64
864+75	658.60	657.60	656.60	655.60	654.60
865+00	658.58	657.58	656.58	655.58	654.58
865+25	658.57	657.57	656.57	655.57	654.57
865+50	658.58	657.58	656.58	655.58	654.58
865+75	658.60	657.60	656.60	655.60	654.60
866+00	658.65	657.65	656.65	655.65	654.65

SUPERELEVATION TABLES

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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LAKE COUNTY
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RELOC. S.R. 2 CURVE RIGHT

P.I. STA. 869+39.90 (CONT'D.) — FULL SUPER 1"/FT.

FULL SUPER — TRANSITION

W.B. ROADWAY CONTROLLED SEPARATELY SEE SHEETS 3,6,7 AND 33

STATION	46' LEFT	34' LEFT	22' LEFT & RIGHT	34' RIGHT	46' RIGHT
866+25	658.71	657.71	656.71	655.71	654.71
866+50	658.78	657.78	656.78	655.78	654.78
866+75	658.87	657.87	656.87	655.87	654.87
867+00	658.98	657.98	656.98	655.98	654.98
867+25	659.11	658.11	657.11	656.11	655.11
867+50	659.25	658.25	657.25	656.25	655.25
867+75	659.41	658.41	657.41	656.41	655.41
868+00	659.58	658.58	657.58	656.58	655.58
868+25	659.77	658.77	657.77	656.77	655.77
868+50	659.98	658.98	657.98	656.98	655.98
868+75	660.21	659.21	658.21	657.21	656.21
869+00	660.45	659.45	658.45	657.45	656.45
869+25	660.70	659.70	658.70	657.70	656.70
869+50	660.95	659.95	658.95	657.95	656.95
869+75	661.20	660.20	659.20	658.20	657.20
870+00	661.45	660.45	659.45	658.45	657.45
870+25	661.70	660.70	659.70	658.70	657.70
870+50	661.95	660.95	659.95	658.95	657.95
870+75	662.20	661.20	660.20	659.20	658.20
871+00	662.45	661.45	660.45	659.45	658.45
871+25	662.70	661.70	660.70	659.70	658.70
871+50	662.95	661.95	660.95	659.95	658.95
871+75	663.20	662.20	661.20	660.20	659.20
872+00	663.45	662.45	661.45	660.45	659.45
872+25			661.70	660.70	659.70
872+50			661.95	660.95	659.95
872+75			662.20	661.20	659.20
873+00			662.45	661.45	660.45
873+25			662.70	661.70	660.70
873+50			662.95	661.95	660.95
873+75			663.20	662.20	661.20
874+00			663.45	662.45	661.45
C.S. 874+01.45			663.46	662.46	661.46
874+25			663.70	662.75	661.81
874+50			663.95	663.06	662.17
874+75			664.20	663.37	662.53
875+00			664.45	663.67	662.90
875+25			664.70	663.98	663.26
875+50			664.95	664.29	663.62
875+75			665.20	664.59	663.99
876+00			665.45	664.90	664.35
876+25			665.70	665.21	664.71
876+50			665.95	665.51	665.08
876+75			666.20	665.82	665.44
877+00			666.45	666.13	665.80
877+25			666.70	666.43	666.17
877+50			666.95	666.74	666.53
877+75			667.20	667.08	666.89
878+00			667.45	667.44	667.26
S.T. 878+01.45			667.46	667.46	667.27
878+25			667.70	667.76	667.57
878+50			667.95	668.07	667.88
878+75			668.20	668.38	668.20
878+76.45			668.21	668.40	668.21

S.R. WESTBOUND CURVE RIGHT

SPIRAL TRANSITION — TRANSITIONAL

TRANSITION

STATION	12' LEFT	CONSTR. ℄ PROFILE GRADE	12' RIGHT
C.S. 872+00	663.45	662.45	661.45
872+25	663.58	662.71	661.84
872+50	663.73	662.98	662.23
872+75	663.89	663.27	662.65
873+00	664.08	663.58	663.08
873+25	664.27	663.90	663.53
873+50	664.48	664.23	663.98
873+75	664.70	664.58	664.39
S.T. 874+00	664.95	664.95	664.76
874+25	665.27	665.33	665.14
874+50	665.61	665.73	665.54
874+75	665.96	666.15	665.96

S.R. 2 WESTBOUND CURVE LEFT

P.I. STA. 886+90.27 — FULL SUPER 1"/FT.

TRANSITION — FULL SUPER — CONTINUES ON SHEET 213

880+26.37	676.79	676.98	676.79
880+50	677.26	677.45	677.32
880+75	677.76	677.95	677.88
881+00	678.26	678.45	678.45
T.S. 881+01.37	678.29	678.48	678.48
881+50	679.21	679.45	679.69
882+00	679.96	680.45	680.94
882+50	680.71	681.45	682.19
883+00	681.46	682.45	683.44
S.C. 883+01.37	681.48	682.48	683.48
883+50	682.45	683.45	684.45
884+00	683.45	684.45	685.45
884+50	684.45	685.45	685.45
884+75	684.93	685.93	686.93
885+00	685.38	686.38	687.38
885+25	685.80	686.80	687.80
885+50	686.18	687.18	688.18
885+75	686.53	687.53	688.53
886+00	686.85	687.85	688.85
886+25	687.13	688.13	689.13
886+50	687.38	688.38	689.38
886+75	687.60	688.60	689.60
887+00	687.78	688.78	689.78
887+25	687.93	688.93	689.93

S.R. 2 EASTBOUND CURVE LEFT

STATION AS SHOWN — FULL SUPER 1"/FT.

TRANSITION

881+57.43	671.02	671.21	671.02
882+00	671.45	671.64	671.56
T.S. 882+33.43	671.78	671.97	671.97
882+50	671.95	672.14	672.22
883+00	672.31	672.64	672.97
883+05	672.33	672.69	673.05
883+21	672.41	672.85	673.29
883+38	672.50	673.02	673.54
883+50	672.56	673.14	673.72
883+78	672.70	673.42	674.14

S.R. 2 EASTBOUND (CONT'D.)

TRANSITION — FULL SUPER — CONTINUES ON SHEET 213

STATION	12' LEFT	CONSTR. ℄ PROFILE GRADE	12' RIGHT
883+98	672.80	673.62	674.44
884+00	672.81	673.64	674.47
884+18	672.91	673.83	674.75
884+25	672.95	673.91	674.87
S.C. 884+33.43	673.00	674.00	675.00
884+50	673.20	674.20	675.20
884+75	673.53	674.53	675.53
885+00	673.89	674.89	675.89
885+25	674.28	675.28	676.28
885+50	674.70	675.70	676.70
885+75	675.16	676.16	677.16
886+00	675.64	676.64	677.64
886+50	676.64	677.64	678.64
887+00	677.64	678.64	679.64
887+50	678.64	679.64	680.64
888+00	679.64	680.64	681.64
888+50	680.64	681.64	682.64
889+00	681.64	682.64	683.64

RELOCATION RIVER ROAD

TRANSITIONAL THROUGHOUT LENGTH — CONTINUES ON SHEET 152

STATION	9' LEFT	℄ PROFILE GRADE	9' RIGHT
13+00	596.66	596.80	596.66
13+25	597.63	597.77	597.70
13+50	598.74	598.88	598.88
13+75	599.98	600.12	600.25
14+00	601.25	601.50	601.75
14+25	602.65	603.02	603.39
14+50	604.18	604.68	605.18
14+75	605.84	606.47	607.10
15+00	607.65	608.40	609.15
15+25	609.77	610.40	611.03
15+50	611.90	612.40	612.90
15+75	614.03	614.40	614.77
16+00	616.15	616.40	616.65
16+25	618.27	618.40	618.53
16+50	620.40	620.40	620.40
16+75	622.53	622.40	622.27
17+00	624.65	624.40	624.15
17+25	626.77	626.40	626.03
17+50	628.90	628.40	627.90
17+75	631.03	630.40	629.77
18+00	633.15	632.40	631.65
18+25	635.03	634.40	633.77
18+50	636.90	636.40	635.90
18+75	638.77	638.40	638.03
19+00	640.45	640.20	639.95
19+25	641.72	641.59	641.45
19+50	642.59	642.59	642.44

SUPERELEVATION TABLES

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

LAKE COUNTY
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FRONTAGE ROAD "B"

P.I. STA. 69+21.82 CURVE LEFT FULL SUPER 0.05 FT./FT.

TRANSITION / FULL SUPER / TRANSITION

STATION	10' LEFT	℄ PROFILE GRADE	10' RIGHT
62+65	650.74	650.95	650.74
62+75	650.80	650.98	650.77
63+00	650.93	651.05	650.84
63+25	651.04	651.10	650.89
63+50	651.14	651.14	650.93
63+75	651.29	651.16	650.95
64+00	651.42	651.17	650.92
64+25	651.54	651.16	650.79
64+50	651.64	651.14	650.64
64+75	651.60	651.10	650.60
65+00	651.55	651.05	650.55
65+25	651.49	650.99	650.49
65+50	651.43	650.93	650.43
65+75	651.37	650.87	650.37
66+00	651.31	650.81	650.31
66+25	651.25	650.75	650.25
66+50	651.19	650.69	650.19
66+75	651.13	650.63	650.13
67+00	651.07	650.57	650.07
67+25	651.01	650.51	650.01
67+50	650.95	650.45	649.95
67+75	650.89	650.39	649.89
68+00	650.83	650.33	649.83
68+25	650.81	650.31	649.81
68+50	650.87	650.37	649.87
68+75	651.00	650.50	650.00
69+00	651.21	650.71	650.21
69+25	651.50	651.00	650.50
69+50	651.87	651.37	650.87
69+75	652.31	651.81	651.31
70+00	652.83	652.33	651.83
70+25	653.38	652.88	652.38
70+50	653.89	653.39	652.89
70+75	654.38	653.88	653.38
71+00	654.83	654.33	653.83
71+25	655.26	654.76	654.26
71+50	655.65	655.15	654.65
71+75	656.02	655.52	655.02
72+00	656.35	655.85	655.35
72+25	656.66	656.16	655.66
72+50	656.93	656.43	655.93
72+75	657.18	656.68	656.18
73+00	657.39	656.89	656.39
73+25	657.59	657.09	656.59
73+50	657.79	657.29	656.79
73+75	657.96	657.49	657.02
74+00	658.04	657.69	657.35
74+25	658.11	657.89	657.67
74+50	658.19	658.09	657.88
74+75	658.28	658.29	658.08
75+00	658.41	658.49	658.28
75+25	658.57	658.71	658.50
75+50	658.76	658.96	658.75
75+55	658.80	659.01	658.80

FRONTAGE ROAD "B"

P.I. STA. 89+07.98 CURVE LEFT FULL SUPER 0.05 FT./FT.

TRANSITION / FULL SUPER / TRANSITION

STATION	10' LEFT	℄ PROFILE GRADE	10' RIGHT
82+00	669.98	670.19	669.98
82+25	670.43	670.64	670.50
82+50	670.88	671.09	671.02
82+75	671.33	671.54	671.54
83+00	671.78	671.99	672.12
83+25	672.19	672.44	672.69
83+50	672.52	672.89	673.27
83+75	672.84	673.34	673.84
84+00	673.29	673.79	674.29
84+25	673.74	674.24	674.74
84+50	674.19	674.69	675.19
84+75	674.64	675.14	675.64
85+00	675.09	675.59	676.09
85+25	675.54	676.04	676.54
85+50	675.99	676.49	676.99
85+75	676.44	676.94	677.44
86+00	676.89	677.39	677.89
86+25	677.34	677.84	678.34
86+50	677.79	678.29	678.79
86+75	678.24	678.74	679.24
87+00	678.69	679.19	679.69
87+25	679.14	679.64	680.14
87+50	679.59	680.09	680.59
87+75	680.04	680.54	681.04
88+00	680.49	680.99	681.49
88+25	680.94	681.44	681.94
88+50	681.39	681.89	682.39
88+75	681.84	682.34	682.84
89+00	682.29	682.79	683.29
89+25	682.74	683.24	683.74
89+50	683.19	683.69	684.19
89+75	683.64	684.14	684.64
90+00	684.09	684.59	685.09
90+25	684.53	685.03	685.53
90+50	684.93	685.43	685.93
90+75	685.31	685.81	686.31
91+00	685.67	686.17	686.67
91+25	685.99	686.49	686.99
91+50	686.28	686.78	687.28
91+75	686.55	687.05	687.55
92+00	686.79	687.29	687.79
92+25	687.00	687.50	688.00
92+50	687.18	687.68	688.18
92+75	687.34	687.84	688.34
93+00	687.47	687.97	688.47
93+25	687.56	688.06	688.56
93+50	687.63	688.13	688.63
93+75	687.68	688.18	688.68
94+00	687.69	688.19	688.69
94+25	687.74	688.18	688.62
94+50	687.75	688.13	688.51
94+75	687.75	688.06	688.37
95+00	687.72	687.97	688.22
95+25	687.65	687.84	688.03

P.I. STA. 89+07.98 (CONT'D.)

TRANSITION

STATION	10' LEFT	℄ PROFILE GRADE	10' RIGHT
95+50	687.55	687.68	687.81
95+75	687.44	687.50	687.56
96+00	687.29	687.29	687.29

FRONTAGE ROAD "B" CURVES RIGHT

P.I. STA. 97+76.52 & P.I. STA. 102+29.25 FULL SUPER $\frac{1}{4}$"/FT.

TRANSITION / FULL SUPER / STA. 102+57 AHEAD CONTINUES ON SHEET 214

STATION	10' LEFT	℄ PROFILE GRADE	10' RIGHT
96+00	687.29	687.29	687.29
96+25	687.09	687.05	687.01
P.C. 96+26.44	687.07	687.04	686.99
96+50	686.86	686.78	686.70
96+75	686.62	686.49	686.36
97+00	686.34	686.17	686.00
97+25	686.02	685.81	685.60
97+50	685.64	685.43	685.22
97+75	685.24	685.03	684.82
98+00	684.80	684.59	684.38
98+25	684.35	684.14	683.93
98+50	683.90	683.69	683.48
98+75	683.45	683.24	683.03
99+00	683.00	682.79	682.58
99+25	682.58	682.37	682.16
P.T. 99+26.44	682.56	682.32	682.13
99+50	682.23	682.02	681.81
99+75	681.94	681.73	681.52
100+00	681.72	681.51	681.30
100+25	681.57	681.36	681.15
100+50	681.47	681.26	681.05
100+75	681.44	681.23	681.02
101+00	681.48	681.27	681.06
101+25	681.58	681.37	681.16
P.C. 101+46.57	681.73	681.52	681.31
101+50	681.75	681.54	681.33
101+75	681.99	681.78	681.57
102+00	682.28	682.07	681.86
102+25	682.65	682.44	682.23
102+50	683.07	682.86	682.65
102+57	683.21	683.00	682.79

RELOCATION MANTLE ROAD

P.I. STA. 36+41.41 CURVE LEFT FULL SUPER $\frac{3}{16}$"/FT.

TRANSITION / FULL SUPER

STATION	12' LEFT	℄ PROFILE GRADE	12' RIGHT
33+25	642.86	643.05	642.86
33+50	643.10	643.29	643.23
P.C. 33+62.84	643.18	643.37	643.37
33+75	643.27	643.46	643.52
34+00	643.38	643.57	643.76
34+25	643.46	643.65	643.84
34+50	643.54	643.73	643.92
34+75	643.62	643.81	644.00
35+00	643.70	643.89	644.08
35+25	643.78	643.97	644.16
35+50	643.86	644.05	644.25
35+75	643.94	644.13	644.32

P.I. STA. 36+41.41 (CONT'D)

FULL SUPER / TRANSITION SEE RIGHT / WIDTH TRANS.

STATION	12' LEFT	℄ PROFILE GRADE	12' RIGHT
36+00	644.02	644.21	644.40
36+25	644.08	644.29	644.48
36+50	644.18	644.37	644.56
36+75	644.26	644.45	644.64
37+00	644.34	644.53	644.72
37+25	644.42	644.61	644.80
37+50	644.50	644.69	644.88
37+75	644.58	644.77	644.96
38+00	644.66	644.85	645.04
38+25	644.74	644.93	645.12
38+50	644.82	645.01	645.20
38+75	644.90	645.09	645.28
39+00	644.98	645.17	645.23
39+12.50	645.02	645.21	645.21
P.T. 39+19.53	645.04	645.23	645.19
39+25	645.06	645.25	645.19
39+50	645.18	645.33	645.18

MANTLE ROAD SPUR

P.I. STA. 8+05.56 CURVE RIGHT FULL SUPER $\frac{1}{2}$"/FT.

TRANSITION / FULL SUPER / TRANSITION / CONTINUES ON SHEET 148

STATION	8' LEFT	℄ PROFILE GRADE	8' RIGHT
6+16.04	607.18	607.35	607.18
6+25	607.76	607.88	607.71
6+46.04	609.23	609.23	609.06
6+50	609.52	609.50	609.33
6+75	611.47	611.31	611.14
P.C. 6+86.04	612.41	612.17	611.96
7+00	613.62	613.32	613.02
7+06.04	614.16	613.83	613.50
7+25	615.76	615.43	615.10
7+50	617.87	617.54	617.21
7+75	619.98	619.65	619.32
8+00	622.09	621.76	621.43
8+25	624.20	623.87	623.54
8+50	626.21	625.88	625.55
8+67.87	627.51	627.18	626.85
8+75	627.96	627.67	627.38
P.T. 8+87.87	628.60	628.48	628.26
9+00	629.41	629.26	629.09
9+25	630.66	630.64	630.47

GENERAL NOTES

FIELD OFFICE

THE CONTRACTOR SHALL PROVIDE A SUITABLE FIELD OFFICE FOR THE EXCLUSIVE USE OF STATE EMPLOYEES, IN ACCORDANCE WITH SEC. S-0.01(b), HAVING A MINIMUM OF 500 SQUARE FEET OF FLOOR SPACE. THE CONTRACTOR SHALL HAVE A TELEPHONE INSTALLED AND MAINTAINED IN THE FIELD OFFICE DURING THE CONSTRUCTION OF THIS PROJECT. CONTRACTOR SHALL ALSO INSTALL WIRING AND OUTLETS SUITABLE FOR CONNECTING TO OFFICE EQUIPMENT, AND PROVIDE 110 VOLT ALTERNATING CURRENT DURING THE CONSTRUCTION OF THIS PROJECT.

DESIGN SPEED

THE GEOMETRICS FOR THIS PROJECT HAVE BEEN PLANNED FOR A DESIGN SPEED OF 60 MILES PER HOUR.

UTILITIES

THE CONTRACTOR SHALL NOTIFY AT LEAST 48 HOURS BEFORE BREAKING GROUND ALL PUBLIC SERVICE CORPORATIONS HAVING WIRE, POLES, PIPE, 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.

ROUNDING OF CORNERS ON CROSS SECTIONS

THE ROUNDED CORNERS, AS SHOWN ON STANDARD DRAWING RI-1, APPLY TO ALL CROSS SECTIONS UNLESS OTHERWISE SHOWN ON THE TYPICAL SECTIONS.

R/W MONUMENTS, FEDERAL PROJECT MARKERS & SECTION MARKERS

EXISTING R/W MONUMENTS, BENCH MARKS, FEDERAL PROJECT MARKERS AND SECTION MARKERS THAT WILL BE REMOVED BY CONSTRUCTION, SHALL BE PROTECTED BY THE CONTRACTOR AS PER SECTION G-7.09 UNTIL THEY CAN BE WITNESSED, REFERENCED AND RESET AS DIRECTED BY THE ENGINEER.

LOCATION AND SIZE OF PIPES

THE LOCATION, TYPE, DEPTH AND SIZE OF ALL EXISTING PIPES ARE SHOWN AS NEAR EXACT AS THE AVAILABLE INFORMATION WILL PERMIT. THE STATE WILL NOT BE RESPONSIBLE FOR ANY VARIATIONS FOUND DURING CONSTRUCTION.

ELEVATION DATUM

ALL ELEVATIONS ARE BASED ON U.S.G.S. DATUM.

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.

RECORDS

ITEMS SET UP IN THE GENERAL NOTES FOR USE AS DIRECTED BY THE ENGINEER SHALL REQUIRE PROPER RECORDS AND VERIFICATION BEFORE PAYMENT IS APPROVED. THESE ITEMS SHALL NOT BE ORDERED UNTIL SO DIRECTED BY THE ENGINEER.

REPLACEMENTS

THE CONTRACTOR SHALL REPLACE AT HIS OWN EXPENSE ANY ITEM NOT SPECIFICALLY LISTED FOR REMOVAL THAT IS DAMAGED OR DESTROYED BY HIS OPERATIONS.

SPECIAL DITCHES

FOR SPECIAL DITCH GRADES, SEE CROSS SECTIONS AND/OR PLANS.

EXPANSION AND CONTRACTION JOINTS

ALTHOUGH SPECIFIC LOCATIONS OF CERTAIN EXPANSION & CONTRACTION JOINTS HAVE BEEN DETAILED ON THIS PLAN, NO WAIVER OF THE SPECIFICATIONS IS INTENDED. EXPANSION JOINTS SHALL BE PROVIDED AT ALL MAJOR STRUCTURES AND THE MAXIMUM SPACING BETWEEN CONTRACTION JOINTS SHALL IN ALL CASES BE IN ACCORDANCE WITH STANDARD CONSTRUCTION DRAWING TJ.

ITEM T-10, AS PER PLAN

THE WEIGHTS TO BE USED IN CALCULATING THE YARDAGE TO BE PAID FOR UNDER THIS ITEM SHALL, IF A STANDARD SIZE COARSE AGGREGATE IS SPECIFIED, BE THE SAME AS THOSE INDICATED IN THE CONSTRUCTION AND MATERIAL SPECIFICATIONS FOR CRUSHER RUN OR BANK RUN MATERIALS.

ITEM I-22 SUBBASE, GRADING "A" OR "B" AS PER PLAN

MATERIAL FOR THIS ITEM SHALL MEET THE REQUIREMENTS OF GRADING "A" OR "B" OF SEC. I-22.02 EXCEPT THAT FOR EITHER GRADING, NO MORE THAN 10% OF THE MATERIAL SHALL PASS A NO. 200 SIEVE AFTER ALL OPERATIONS OF PLACING AND COMPACTING HAVE BEEN COMPLETED.

SEQUENCE OF PAVING CONSTRUCTION OPERATIONS

UNDERDRAINS SHALL BE INSTALLED AND BACKFILLED TO SUBGRADE ELEVATION, IMMEDIATELY PRIOR TO CONSTRUCTION OF THE SUBBASE, EXCEPT THAT, WHERE SUBSURFACE CONDITIONS ARE SUCH THAT IMPROVEMENT OF AN UNSTABLE SUBGRADE CAN BE ACCOMPLISHED THROUGH THE DRYING ACTION OF DEEP UNDERDRAINS, THE PROJECT ENGINEER MAY AUTHORIZE OR REQUIRE THE CONTRACTOR TO DELAY THE CONSTRUCTION OF THE SUBBASE AS NECESSARY.

THE SUBBASE SHALL THEN BE CONSTRUCTED UNDER THE CONCRETE PAVEMENT AREA AND EXTENDED OUT TO COVER THE POROUS BACKFILL FOR THE UNDERDRAIN.

PAVEMENT SHALL THEN BE CONSTRUCTED.

AFTER THE SUBBASE IN THE SHOULDER AREA IS IN PLACE AND COMPACTED AS SPECIFIED, AND IMMEDIATELY PRIOR TO PLACING THE POROUS BASE COURSE, THE MATERIAL LOCATED ABOVE AND WITHIN THE UNDERDRAIN TRENCH SHALL BE REMOVED TO THE DEPTH NECESSARY TO EXPOSE CLEAN TYPE 3 BACKFILL. THE TRENCH SO EXCAVATED SHALL BE BACKFILLED WITH NEW TYPE 3 BACKFILL MATERIAL.

IF, AFTER TESTING THE SUBBASE MATERIAL FOR COMPOSITION IN THE SHOULDER AREA, IT IS FOUND THAT REMOVAL OF CONTAMINATED MATERIAL FROM THE SURFACE IS NECESSARY, SUCH MATERIAL SHALL BE REPLACED WITH MATERIAL MEETING THE REQUIREMENTS OF "ITEM B-112 POROUS BASE COURSE" AT THE EXPENSE OF THE CONTRACTOR.

POROUS BASE COURSE SHALL THEN BE CONSTRUCTED AND CONSTRUCTION OF THE WATERPROOFED AGGREGATE COURSE SHALL FOLLOW IMMEDIATELY.

PAYMENT FOR ALL OF THE ABOVE SHALL BE INCLUDED IN THE PERTINENT ITEMS AFFECTED.

AGGREGATE BASE COURSE

THE COMPLETED AGGREGATE BASE COURSE B-19 MAY BE USED FOR MAINTAINING LOCAL TRAFFIC ON THIS PROJECT. ANY DAMAGE DONE TO THE BASE, SUBBASE OR SUBGRADE BY LOCAL TRAFFIC SHALL BE REPAIRED BY RESHAPING, RECOMPACTING AND BY ADDITION OF EXTRA B-19 MATERIAL AT NO ADDITIONAL COST TO THE STATE.

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 MAKES NO GUARANTEES AS TO THEIR ACCURACY OR COMPLETENESS.

CONTRACTOR'S MAINTENANCE RESPONSIBILITY

ON THIS PROJECT, THE CONTRACTOR'S RESPONSIBILITY FOR MAINTENANCE OF THE EXISTING PAVEMENT PER ITEM I-3 SHALL BE LIMITED TO THOSE PORTIONS OF THE EXISTING PAVEMENT LYING WITHIN THE PROPOSED WORK LIMITS.

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 AS A MATTER OF RECORD BY INCORPORATION INTO THE FINAL CHANGE ORDER GOVERNING COMPLETION OF THIS PROJECT.

EROSION CONTROL

ITEMS I-10, I-14, L-10 AND L-120 ARE PROVIDED IN THESE PLANS FOR EROSION CONTROL. ROCK 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.

EROSION CONTROL AT BRIDGES

SODDED CHANNELS SHALL BE PROVIDED AT ENDS OF BRIDGES WHERE REQUIRED BY THE PLANS. COST OF ALL WORK NECESSARY TO COMPLETE THE ITEM SHALL BE INCLUDED IN THE UNIT PRICE BID PER SQUARE YARD FOR "ITEM L-10, SODDING FOR SPECIAL BERM AND SLOPE PROTECTION", AS PER PLAN. PLACEMENT SHALL BE MADE IN ACCORDANCE WITH THE METHOD SHOWN ON SHEET 225.

EROSION CONTROL AT HEADWALLS

AN 18" WIDE STRIP OF SOD SHALL BE PLACED ALONG THE BACK AND BOTH ENDS OF EACH STANDARD HEADWALL OR ENDWALL TO PREVENT EROSION. THE QUANTITY OF SODDING REQUIRED TO PREVENT EROSION AT THE HEADWALLS OR ENDWALLS IS INCLUDED IN THE CULVERT ESTIMATED QUANTITIES. FOR DETAIL OF SODDING SEE SHEET 223.

REMOVAL OF TREES AND STUMPS

ALL TREES AND STUMPS LYING WITHIN THE CONSTRUCTION LIMITS OF THIS PROJECT SHALL BE REMOVED UNDER THE LUMP SUM PRICE BID FOR ITEM E-9, REMOVAL OF TREES AND STUMPS, EXCEPT THAT THOSE TREES FOR WHICH PROTECTION AND PRESERVATION WORK IS INDICATED ELSEWHERE IN THESE PLANS SHALL NOT BE REMOVED:

THE FOLLOWING IS AN APPROXIMATE ESTIMATE OF THE NUMBER OF TREES AND STUMPS TO BE REMOVED:

SIZES	NO. OF TREES	NO. OF STUMPS
12" - 18"	1,035	5
18" - 24"	271	1
24" - 30"	108	2
30" - 36"	66	1
36" - 42"	46	0
48" - 54"	13	0
54" - 60"	5	1

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 AND/OR EASEMENT LINES. PAYMENT FOR THE REMOVAL OF THESE ADDITIONAL TREES OR STUMPS SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR ITEM E-9, REMOVAL OF TREES AND STUMPS.

UNSUITABLE MATERIAL

SOILS INVESTIGATION INDICATES THAT THE MOISTURE CONTENT OF THE MATERIAL IN THE CUT AREAS BETWEEN STA. 782± AND STA. 833± WILL BE GREATER THAN OPTIMUM PLUS 8%. AN ESTIMATED 277,203 C.Y. WILL BE UNSUITABLE FOR EMBANKMENT UNDER SEC. E-1.06 (a). ALL OF THE UNSUITABLE MATERIAL AS INDICATED ON THE PLANS UNDER THE EMBANKMENT IN THE VICINITY OF STA. 865± AND UNDER MANTLE ROAD AT STA. 32± SHALL BE WASTED. BOTH OF THESE CONDITIONS ARE CONSIDERED IN THE EARTHWORK ANALYSIS ON SHEET 18.

FOUNDATION TREATMENT

SHALLOW AT SURFACE PEATS AND ORGANIC MATERIALS ARE NOTED BETWEEN APPROXIMATE STATIONS 862+00 AND 867+00 ON S.R. 2 AND ALSO BETWEEN STATIONS 32+00 AND 33+00 ON MANTLE ROAD. THE EMBANKMENT FOUNDATIONS BETWEEN THESE STATIONS SHOULD BE EXCAVATED TO A DEPTH OF 3 FEET ON S.R. 2 AND TO A MAXIMUM OF 5 FEET AT STATION 32+50 ON MANTLE ROAD, OR AS DIRECTED BY THE ENGINEER, AND THE EXCAVATED UNSUITABLE MATERIAL REPLACED WITH SUITABLE EMBANKMENT MATERIAL. THE MATERIAL THUS REMOVED SHALL BE MEASURED AND PAID FOR AT THE CONTRACT UNIT PRICE BID FOR ITEM E-1 ROADWAY EXCAVATION AND DISPOSED OF IN ACCORDANCE WITH SEC. E-1.06(a).

ITEM SPECIAL - SAND BLANKET

A 1-FOOT SAND BLANKET SHALL BE PROVIDED BENEATH THE APPROACH EMBANKMENTS, AS SHOWN ON THE PLANS AT THE STRUCTURE CARRYING RELOC. S.R. 2 OVER BACON ROAD, EXTENDING FROM THE SPILL-THROUGH SLOPE TO A POINT 200 FEET BACK OF THE ABUTMENTS. SEE PROPOSAL NOTE FOR MEASUREMENTS AND PAYMENT.

GUARD RAIL ADJACENT TO BRIDGE

ONE (1) ADDITIONAL GUARD RAIL POST SHALL BE PROVIDED IN THE CENTER OF EACH PANEL OF GUARD RAIL ADJACENT TO A BRIDGE, PAYMENT FOR WHICH SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM I-15 GUARD RAIL.

GUARD RAIL FLARES

WHERE PROPOSED GUARD RAIL FLARES ARE CONSTRUCTED OF RAIL ELEMENTS WHICH HAVE NOT BEEN FABRICATED EXACTLY TO FIT THE CURVATURE SHOWN ON THE PLANS, THE TWO END POSTS OF EACH FLARED SECTION SHALL BE ENCASED IN A MINIMUM 4-INCH THICKNESS OF CLASS "E" CONCRETE FOR THE FULL DEPTH OF THE POST BELOW THE GROUND LINE. PAYMENT FOR ENCASEMENT, IF REQUIRED, SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE GUARD RAIL.

GUARD RAIL POST ANCHORS

AT LOCATIONS WHERE PIER FOOTINGS INTERFERE WITH THE INSTALLATION OF FULL LENGTH GUARD RAIL POSTS, SHORT POSTS SHALL BE PROVIDED WHICH WILL BE ANCHORED IN ACCORDANCE WITH THE DETAIL SHOWN ON STANDARD DRAWING NO. I-15, NO. 6. COST OF PROVIDING AND INSTALLING NECESSARY ANCHORS SHALL BE INCLUDED IN THE UNIT PRICE BID PER LINEAR FOOT FOR GUARD RAIL.

ITEM I-9, NO.1 STONE UNDERDRAINS

AT THOSE LOCATIONS WHERE ITEM I-9, FOR- SPRING DRAINS ARE CALLED FOR, THE PRICE BID FOR THE UNDERDRAINS SHALL CONSTITUTE FULL COMPENSATION FOR CONSTRUCTING THE DRAIN AS SHOWN ON SHEET 223 INCLUDING ALL MATERIALS, LABOR, EXCAVATION AND DISCARDING ALL SURPLUS MATERIALS. THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN INCLUDED IN THE GENERAL SUMMARY, FOR USE AS DIRECTED BY THE ENGINEER, TO DRAIN SPRINGS THAT MAY BE ENCOUNTERED:

ITEM I-9 NO.1 STONE UNDERDRAINS, AS PER PLAN	= 12 LIN. FT.
ITEM I-1 6" PIPE, CLASS I-3, SEC. M 6.4(h)	= 200 LIN. FT.
ITEM I-1 8" PIPE, CLASS F-4, SEC. M 6.4(c)	= 40 LIN. FT.

ITEM S.S. CE-101.04 COMPACTION USING HEAVY PNEUMATIC-TIRED ROLLER

AN ESTIMATED QUANTITY FOR THIS ITEM HAS BEEN PROVIDED IN THE GENERAL SUMMARY FOR USE, AS DIRECTED BY THE ENGINEER, IN PROOF ROLLING OF ALL SUBGRADE ON THE MAINLINE AND RAMPS. IN AREAS WHERE ROCK OR SHALE IS ENCOUNTERED IN SUBGRADE AND IN AREAS WHERE SUBBASE HAS BEEN THICKENED TO REPLACE FROST SUSCEPTIBLE SILTS, PROOF ROLLING WILL NOT BE REQUIRED. IN LIEW OF THE REQUIREMENTS OF CE-101.04, A MINIMUM OF ONE COVERAGE WILL BE REQUIRED TO CHECK THE SUBGRADE. MOISTURE CONTENT OF THE TOP 12" OF SUBGRADE SHALL NOT EXCEED OPTIMUM AT THE TIME OF PROOF ROLLING. TIRE PRESSURE AND TOTAL LOAD SHALL BE VARIED AS DIRECTED BY THE ENGINEER WITHIN THE LIMITS PROVIDED IN SUPPLEMENTAL SPECIFICATION CE-101.04.

GENERAL NOTES

PAVEMENT REMOVAL OUTSIDE NORMAL CONSTRUCTION LIMITS

AFTER THE EXISTING PAVEMENT AS INDICATED ON THE PLANS HAS BEEN REMOVED, THE OLD ROADWAY SHALL BE PLOWED, HARROWED, AND DRAGGED TO A SMOOTH GRADE, THE OLD DITCHES FILLED, AND THE ENTIRE AREA SLOPED TO DRAIN AND LEFT IN A NEAT CONDITION READY FOR SEEDING. PAYMENT FOR THIS WORK SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PAVEMENT REMOVAL, ITEM E-8. SEEDING SHALL BE MEASURED AND PAID FOR IN ACCORDANCE WITH ITEM L-9.

NON-RIGID PAVEMENT REMOVAL

REMOVAL AND DISPOSAL OF EXISTING NON-RIGID PAVEMENT, UNLESS OTHERWISE INDICATED ON THESE PLANS, SHALL BE MEASURED AND PAID FOR AS ITEM E-1, ROADWAY EXCAVATION.

SCARIFICATION OF EXISTING FLEXIBLE PAVEMENT

WITHIN THE LIMITS OF CONSTRUCTION WHERE THE EXISTING FLEXIBLE PAVEMENT WILL HAVE LESS THAN SIX (6) INCHES OF FILL PLACED UPON IT, THE PAVEMENT SHALL BE THOROUGHLY SCARIFIED FOR ITS FULL DEPTH, MIXED WITH SUFFICIENT SOIL AND PROPERLY RECOMPACTED TO INSURE THE ELIMINATION OF ANY PLANES OF SEPARATION BETWEEN IT AND THE EMBANKMENT PLACED THEREON. PAYMENT FOR SCARIFICATION AS DESCRIBED ABOVE SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM E-1, ROADWAY EXCAVATION.

SPECIAL SEEDING PREPARATION AREAS

THE REFERENCES IN THE FIRST PARAGRAPH OF SEC. L-9.11 TO PREPARATION OF THE SEED BED IN FRONT OF RESIDENCES, ETC., SHALL, ON THIS PROJECT, BE CONSIDERED TO BE PARTICULARLY APPLICABLE IN THE FOLLOWING AREAS:

MANTLE ROAD SPUR - LEFT OF STA. 4+25 TO 6+00±
RIGHT OF STA. 4+25 TO 5+25±

RECONSTRUCTION S. R. 535 -
RIGHT OF STA. 29+0 TO 32+60±

RELOCATION SPRING LAKES BLVD. (NORTH) -
LEFT & RIGHT SIDES, ENTIRE ROAD & CONNECTING DRIVEWAY.

RECONSTRUCTION U. S. 20 - RIGHT OF STA. 111+00 TO 120+65

POSSIBLE NON-PERFORMANCE OF ITEMS I-22 AND I-1 CLASS I-3

THE PRESENCE OF FREE-DRAINING, NATURAL SAND AND GRAVEL, IS INDICATED BY A SOILS INVESTIGATION BETWEEN STATIONS 882+50 TO 888+00 W. B. LANES AND STATIONS 879+00 TO 888+50 E. B. LANES. IF SUBGRADE IS COMPOSED OF CLEAN SAND AND GRAVEL, THE SUBBASE COURSE AND PIPE UNDERDRAINS SHOULD BE NON-PERFORMED IN THESE AREAS AS DIRECTED BY THE ENGINEER.

CONSTRUCTION LAYOUT STAKES

SEE NOTE IN PROPOSAL DESCRIBING THE WORK INCLUDED IN THIS LUMP SUM PAY ITEM.

ROAD NAME SIGNS

ALL COUNTY, TOWNSHIP, CITY OR VILLAGE ROAD OR STREET NAME SIGNS THAT WILL BE DISTURBED BY THE CONSTRUCTION SHALL BE CAREFULLY REMOVED AND STORED BY THE CONTRACTOR FOR DISPOSAL BY THEIR RESPECTIVE OWNERS. PAYMENT FOR THIS OPERATION SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ROADWAY EXCAVATION, ITEM E-1.

CURBS ON APPROACH SLABS

THE HEIGHT AND FACE OF CURBS ON APPROACH SLABS SHALL BE TRANSITIONED FROM THE STANDARD SECTION USED ON THE APPROACH PAVEMENT TO THE SECTION USED ON THE BRIDGE CURBING WITHIN THE LIMITS OF THE APPROACH SLAB.

SEEDING AND PROTECTING

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 TEN (10) FEET FROM THE WORK LIMITS, OR TO WORK LIMITS FOR AREAS OUTSIDE THE RIGHT-OF-WAY LINES COVERED BY WORK AGREEMENT.

SEED SHALL BE SOWN AT THE RATE OF 3 POUNDS PER 1,000 SQUARE FEET EXCEPT AS OTHERWISE NOTED IN THE PLANS. SEEDING FORMULA FOR ALL SEEDED AREAS SHALL BE IN ACCORDANCE WITH THE FOLLOWING:

65% KENTUCKY 31 FESCUE
25% KENTUCKY BLUEGRASS
5% REDTOP
5% ALSIKE CLOVER

THE SEEDING QUANTITIES FOR INTERSECTING SIDE ROADS AND FRONTAGE ROADS ARE CALCULATED TO THE LIMIT OF WORK AS SHOWN ON THE CROSS SECTIONS.

FEDERAL AID CONSTRUCTION IDENTIFICATION SIGNS

THE CONTRACTOR SHALL FURNISH, ERECT, MAINTAIN AND SUBSEQUENTLY REMOVE FEDERAL AID CONSTRUCTION IDENTIFICATION SIGNS AT EACH OF THE FOLLOWING LOCATIONS:

1. ON EXISTING MANTLE ROAD, LEFT OF STA. 25+50±
2. ON EXISTING S. R. 535, RIGHT OF STA. 29+70±
3. ON EXISTING BACON ROAD, AT ITS INTERSECTION WITH U. S. 20
4. ON EXISTING U. S. ROUTE 20, RIGHT OF STA. 94+70± AND LEFT OF STA. 124+0±

SIGN DETAILS SHALL BE AS SPECIFIED ON STANDARD DRAWING FACI-1, "CODE N-S4(1)-96(3)", AND THE SIGNS SHALL BE ERECTED IN ACCORDANCE WITH STANDARD DRAWING FACI-2. ADDITIONAL REQUIREMENTS SHALL BE IN ACCORDANCE WITH NOTES IN THE PROPOSAL.

L-9 COMMERCIAL. FERTILIZER

ALL AREAS TO BE SEEDED UNDER ITEM L-9 OR SODDED UNDER ITEM L-10 SHALL HAVE COMMERCIAL FERTILIZER 12-12-12, APPLIED AT THE RATE OF TWENTY (20) POUNDS PER 1,000 SQUARE FEET.

AGRICULTURAL LIMING MATERIAL

THE LOCATION AND NEED FOR AGRICULTURAL LIMING MATERIAL WILL BE DETERMINED BY THE ENGINEER ON THE BASIS OF LABORATORY TESTS AFTER ROUGH GRADING OPERATIONS HAVE BEEN PERFORMED. THE QUALITY OF AGRICULTURAL LIMING MATERIAL SHOWN ON THE PLANS IS SUFFICIENT FOR APPLICATION TO THE ENTIRE EXPOSED SOIL AREA OF THE CONTRACT BUT MAY BE PARTIALLY OR COMPLETELY OMITTED, AS DIRECTED BY THE ENGINEER, IF LABORATORY TESTS INDICATE THE ITEM IS NOT NEEDED. AGRICULTURAL LIMING MATERIAL SHALL BE APPLIED AT THE RATE OF 100 POUNDS PER 1,000 SQUARE FEET OF SURFACE AREA.

ITEM I-9 STONE UNDERDRAINS NO 2

STONE UNDERDRAINS 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 I-1 PIPE UNDERDRAINS HAVE BEEN PROVIDED.

DRAINAGE OF BASE MATERIAL

WHERE THE BASE MATERIAL IS DRAINED BY I-9 STONE UNDERDRAINS, THE CONTRACTOR SHALL FINISH, SEED, AND MULCH THE SLOPES SO AS NOT TO IMPEDE DRAINAGE OF THE BASE MATERIAL.

UNDERDRAINS

THE FOLLOWING QUANTITIES ARE INCLUDED FOR USE, AS DIRECTED BY THE ENGINEER, IN THE CUT AREAS BETWEEN STA. 783 AND 830 FOR DRAINING CUT SLOPES. FOR DETAILS SEE SHEET 223.

I-1	6" PIPE CLASS I-3 SEC. M 6.4 (h)	4,000 FT.
I-1	6" PIPE CLASS F-4 SEC.	100 FT.

MANHOLE CASTING

MANHOLE CASTINGS LOCATED IN SLOPES SHALL BE SET SO THAT THE COVER WILL CONFORM WITH THE PLANE OF THE SLOPED SURFACE, WHERE THE SLOPE RATE IS 5 : 1 OR LESS.

CONNECTIONS TO EXISTING PIPE

AT PLACES WHERE THE PLANS PROVIDE FOR PROPOSED DRAINAGE PIPE TO BE CONNECTED TO EXISTING PIPES, 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 PIPE. THE COST OF THIS OPERATION SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE PERTINENT PIPE ITEM.

PIPE

WHEN BELL AND SPIGOT PIPE IS USED, ANY NECESSARY PIPE CUT-OFFS WILL BE MADE AT THE SPIGOT END OF THE LENGTH OF PIPE ADJACENT TO THE END LENGTH. WHEN TONGUE AND GROOVE PIPE IS USED THE LENGTH OF PIPE NEXT TO THE END LENGTH SHALL BE CUT AND BUTT JOINT FORMED WITH A COLLAR 12" LARGER THAN THE OUTSIDE DIAMETER AND 12" IN LENGTH. THE COST OF THE JOINT AND COLLAR SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE BID FOR THE PERTINENT PIPE ITEM.

SEALING OF PIPE JOINTS

WHERE CONNECTIONS ARE MADE BETWEEN RIGID AND FLEXIBLE PIPE SECTIONS OR BETWEEN PIPE SECTIONS OF DIFFERENT KIND OR TYPE OF END FABRICATION, WHETHER REQUIRED BY THE PLANS, ARISING FROM PERMISSIBLE USE OF OPTIONAL MATERIALS, OR ENCOUNTERED IN CONNECTION TO EXISTING FACILITIES, THE JOINT SHALL BE SEALED, IF SEALING IS REQUIRED BY THE SPECIFICATIONS, BY MEANS OF A CLASS "E" CONCRETE COLLAR HAVING A MINIMUM THICKNESS OF 6 INCHES AND A MINIMUM LENGTH OF 12 INCHES. PAYMENT FOR SEALING AS DESCRIBED ABOVE SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE PERTINENT PIPE ITEM.

REINFORCED ENDS ON CORRUGATED METAL PIPE

REINFORCED ENDS, REINFORCED BEFORE DELIVERY, WILL BE REQUIRED ON ALL CLASS F-4, SEC. M-6.4(c) PIPE FOR DRIVEWAYS AND UNDERDRAIN OUTLETS, IF THE PIPE ENDS ARE UNPROTECTED BY HEADWALLS, CATCH BASINS OR MANHOLES.

MAINTENANCE OF SEWER FLOWS

THE CONTRACTOR SHALL CONDUCT HIS OPERATIONS SO AS TO MAINTAIN AT ALL TIMES SEWER FLOWS THROUGH EXISTING FACILITIES TO REMAIN IN PLACE AND THROUGH EXISTING FACILITIES TO BE REPLACED UNTIL NEW FACILITIES ARE COMPLETED AND PLACED INTO USE.

PAYMENT FOR ANY ADDITIONAL COSTS INVOLVED IN MAINTAINING THESE FLOWS BY PUMPING OR BY ANY OTHER MEANS APPROVED BY THE ENGINEER SHALL BE INCLUDED IN THE UNIT PRICES BID FOR THE RESPECTIVE PIPE ITEMS.

PLUGGING PIPE

THE UPSTREAM ENDS OF ALL PIPE OR TILE LINES INTERCEPTED BY EARTHWORK OPERATIONS (AND, WHERE INDICATED, THE ENDS OF PIPE LINES TO BE ABANDONED IN PLACE) SHALL BE EFFECTIVELY BLOCKED AND COVERED. BROKEN PIECES AND PORTIONS OF PIPE OR TILE SHALL BE REMOVED UNTIL A WHOLE UNDAMAGED LENGTH IS ENCOUNTERED. THIS PIPE SHALL THEN BE BLOCKED WITH CONCRETE, FLAT STONE OR BRICK LAID IN MORTAR, OR A PRECAST CLAY OR CONCRETE STOPPER. PAYMENT FOR THE ABOVE WORK SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM E-1, ROADWAY EXCAVATION.

REMOVAL OF EXISTING PIPE

THE REMOVAL OF ALL EXISTING PIPE DRAINS WITHIN THE LIMITS OF PROPOSED EXCAVATION ITEMS SHALL BE INCLUDED FOR PAYMENT IN THE UNIT PRICES BID FOR THE RESPECTIVE EXCAVATION ITEMS, UNLESS OTHERWISE ITEMIZED IN THE PLANS.

FIELD DRAINS

ALL FARM TILES WHICH ARE ENCOUNTERED DURING CONSTRUCTION SHALL BE PROVIDED WITH UNOBSTRUCTED OUTLETS UNDER THE DIRECTION OF THE ENGINEER. EXISTING COLLECTORS WHICH ARE LOCATED BELOW THE ROADWAY DITCH ELEVATIONS AND WHICH CROSS THE ROADWAY SHALL BE REPLACED WITHIN THE RIGHT-OF-WAY LIMITS BY ITEM I-1 PIPE, CLASS J-1.

EXISTING COLLECTORS AND ISOLATED FARM TILES WHICH ARE ENCOUNTERED ABOVE THE ELEVATION OF THE ROADWAY DITCHES SHALL BE OUTLETTED INTO THE ROADWAY DITCH. THE OPTIMUM OUTLET ELEVATION SHALL BE, IF POSSIBLE, ONE FOOT ABOVE THE FLOWLINE ELEVATION OF THE DITCH. LATERAL TILE FIELDS WHICH CROSS THE ROADWAY SHALL BE INTERCEPTED BY ITEM I-1 PIPE, CLASS H-2, AND CARRIED IN A LONGITUDINAL DIRECTION TO AN ADEQUATE OUTLET OR ROADWAY CROSSING.

THE LOCATION, TYPE, SIZE, AND GRADE OF REQUIRED REPLACEMENTS SHALL BE DETERMINED BY THE ENGINEER DURING CONSTRUCTION AND PAYMENT SHALL BE MADE FOR THE ACTUAL LINEAR FEET PLACED.

THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN INCLUDED IN THE GENERAL SUMMARY FOR THE WORK NOTED ABOVE:

I-1	6" PIPE CLASS J-1, SEC. M-6.6(b) OR M-6.8(b)	150 LIN. FT.
I-1	8" PIPE CLASS H-2	150 LIN. FT.
I-1	8" PIPE CLASS F-4, SEC. M-6.4(c)	50 LIN. FT.
I-5	8" PIPE SPECIALS CLASS H-2	10 EACH

SANITARY FLOW INTO HIGHWAY DRAINAGE SYSTEMS

THIS PLAN MAKES NO PROVISION FOR CONNECTING, NOR SHALL THE ENGINEER OR CONTRACTOR CONNECT, ANY EXISTING OR NEW DRAINAGE INTO THE HIGHWAY DRAINAGE SYSTEM WHEN SUCH DRAINS CARRY FLOW FROM ANY PLUMBING FIXTURES INCLUDING FLOOR DRAINS AND SINKS OR DRAINS FROM LIVESTOCK LOTS OR BARNS OR POLLUTED WATER OF ANY KIND.

ALL EXISTING SANITARY DRAINS ENCOUNTERED DURING CONSTRUCTION OPERATIONS, THAT ARE NOW OUTLETTING INTO THE HIGHWAY DRAINAGE SYSTEM, MAY BE CONNECTED TO THE HIGHWAY DRAINAGE SYSTEM AS DIRECTED BY THE ENGINEER, PROVIDED THE PROPERTY OWNER OBTAINS WRITTEN APPROVAL FROM THE LOCAL BOARD OF HEALTH. IF THE PROPERTY OWNER FAILS TO SHOW PROOF OF SATISFACTORY EFFLUENT FROM THE HEALTH BOARD, THE DRAIN SHALL BE PLUGGED AT THE RIGHT-OF-WAY LINE AND QUANTITIES SHALL BE NON-PERFORMED. COST OF PLUGGING DRAINS SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM E-1 ROADWAY EXCAVATION.

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, AN OFFICIAL PERMIT TO HAVE THE CONNECTION MADE.

IN EACH CASE WHERE A PERMIT HAS BEEN ISSUED FOR A SANITARY CONNECTION TO BE MADE, IT SHALL BE PROVIDED WITH AN INSPECTION WELL, IN ACCORDANCE WITH THE DETAIL SHOWN ON SHEET NO. 224, LOCATED APPROXIMATELY ONE FOOT INSIDE THE RIGHT-OF-WAY LINE.

IF THE OWNERS OF THE BELOW LISTED SEPTIC TANKS PROVIDE THE PROPER PERMIT, THESE SYSTEMS SHALL BE CONNECTED TO THE HIGHWAY DRAINAGE SYSTEM. ESTIMATED QUANTITIES ARE PROVIDED AND MAY BE INCREASED OR DECREASED AS DIRECTED BY THE ENGINEER.

S. R. 2 STA. 819+46± - 231'± LT.
S. R. 2 STA. 825+20± - 178'± RT.

ITEM I-1	6" PIPE, CLASS E-1	260 LIN. FT.
ITEM I-5	6" x 12" TEE CLASS E-1	2 EACH
ITEM I-8	INSPECTION WELLS	2 EACH

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 I-1	6" PIPE, CLASS E-1	300 LIN. FT.
ITEM I-5	6" PIPE SPECIALS, CLASS E-1	5 EACH
ITEM I-8	INSPECTION WELLS	5 EACH

GENERAL NOTES

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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LAKE COUNTY
LAK-2-16.49

ITEM E-4, BORROW, USING GRANULAR MATERIAL, AS PER PLAN

MATERIAL FURNISHED FOR THIS ITEM SHALL BE AS DEFINED IN SEC. E-1.02 EXCEPT THAT AT LEAST 75 PER CENT BY WEIGHT OF THE GRAINS OR PARTICLES SHALL BE RETAINED ON A NO. 200 SIEVE. IN THE AREA BETWEEN STATIONS 779+25 AND 781+00 THIS MATERIAL MAY BE PLACED BY THE METHOD OF END DUMPING IF SURFACE WATER IS PRESENT AT THE TIME OF CONSTRUCTION. END DUMPING METHODS MAY BE USED UP TO AN ELEVATION TWO FEET ABOVE THE WATER LEVEL. ABOVE THE TWO FOOT LEVEL, EMBANKMENT CONSTRUCTION SHALL BE IN ACCORDANCE WITH SEC. E-1.08. WHERE END DUMPING IS PERMITTED, NORMAL CLEARING AND GRUBBING SHALL BE PERFORMED BUT THE REQUIREMENTS OF SEC. E-1.04 FOR SCALPING AND COMPACTION OF THE FOUNDATION SHALL BE WAIVED.

ABANDONING EXISTING GAS WELL

THIS SHALL CONSIST OF PROPERLY TREATING THE WELL FOR ABANDONMENT AS SHOWN IN THE DETAIL ON THIS SHEET. THE ABANDONED GAS WELL CASING SHALL BE CUT OFF AT LEAST 4½ FEET BELOW FINISHED GRADE OR BOTTOM OF SUBBASE. COST OF THIS OPERATION SHALL BE INCLUDED IN THE UNIT PRICE BID FOR MASONRY, ITEM I-2.

LINE DATA CALCULATION FOR APPROACHES
ALL F-329 (23)

		LENGTH OF WORK
RELOCATION MANTLE ROAD		
BEGIN WORK	STA. 25+00.00	
END WORK	STA. 40+00.00	
LENGTH		1500.00 L. F.
MANTLE ROAD SPUR		
BEGIN WORK	STA. 4+25.00	
END WORK	STA. 9+88.00	
LENGTH		563.00 L. F.
RELOCATION RIVER ROAD		
BEGIN WORK	STA. 13+00.00	
END WORK	STA. 19+87.88	
LENGTH		687.88 L. F.
RECONSTRUCTION S. R. 535		
BEGIN WORK	STA. 29+00.00	
END WORK	STA. 41+00	
LENGTH		1200.00 L. F.
RECONSTRUCTION U.S. ROUTE 20 (PORTION NOT CONTAINED IN TABULATION OF S. R. 2)		
BEGIN WORK	STA. 96+00.00	
END WORK	STA. 110+47.21	
LENGTH		1447.21 L. F.
TOTAL LENGTH F-329(23)		5398.09 L. F.
BEGIN WORK	STA 28+00 F.R.E. RR	
END WORK	STA. 39+00 F.R.E. RR	
TOTAL LENGTH OF WORK F6-329(23)		1100 L. F.

PROPOSED SCHEDULE OF WORK AND TRAFFIC MAINTENANCE

MANTLE ROAD & S.R. 535

TWO-WAY TRAFFIC SHALL BE MAINTAINED ON ONE OF THESE TWO ROADS AT ALL TIMES. ONE MAY BE CLOSED IN ORDER TO COMPLETE CONSTRUCTION AS REQUIRED AT EACH END TO OPEN THAT PARTICULAR ROAD TO TRAFFIC. EXISTING MANTLE ROAD SHALL REMAIN OPEN UNTIL SUCH TIME, THAT A TEMPORARY CLOSURE WOULD BE REQUIRED IN ORDER TO COMPLETELY CONNECT THE NEW RELOCATION TO EXISTING MANTLE ROAD AT BOTH ENDS. THE CONTRACTOR SHALL SCHEDULE HIS WORK SUCH THAT INGRESS AND EGRESS FOR THOSE RESIDENTS SERVED BY MANTLE ROAD SPUR AND THE RELOCATION OF RIVER ROAD ARE AVAILABLE AT ALL TIMES.

WORK ON THE RELOCATION OF MANTLE ROAD AND RECONSTRUCTION OF S.R. 535 SHALL BE SCHEDULED SUCH THAT NEITHER WILL BE CLOSED TO THROUGH TRAFFIC DURING A WINTER SEASON.

BACON ROAD

THE CONSTRUCTION OF THE BOX CULVERT REQUIRED ON THIS ROAD SHALL BE FULLY COMPLETED BEFORE TRAFFIC IS ALLOWED TO USE FRONTAGE ROAD "B" AS A TEMPORARY RUNAROUND, AS DESCRIBED BELOW.

TWO-WAY TRAFFIC SHALL BE MAINTAINED AT ALL TIMES ON BACON ROAD DURING THE MORNING AND EVENING PEAK TRAFFIC PERIODS AS DIRECTED BY THE

PROPOSED SCHEDULE OF WORK AND TRAFFIC MAINTENANCE (CONTINUED)

BACON ROAD (CONTINUED)

ENGINEER. THIS ROAD MAY BE CLOSED TO TRAFFIC FOR A PERIOD NOT TO EXCEED TWO HOURS, EXCEPT DURING THE PEAK TRAFFIC HOURS. PEAK TRAFFIC HOURS ARE CONSIDERED AS DAILY (EXCEPT SUNDAYS) FROM 6 A.M. TILL 8 A.M., FROM 2 P.M. TILL 6 P.M. AND FROM 11 P.M. TO 12 P.M., WHICH ARE CONSIDERED AS LOCAL TIME REGARDLESS OF THE SEASON.

THE CONTRACTOR SHALL SAFEGUARD THE TRAVELING PUBLIC ON BACON ROAD BY PROVIDING PLATFORMS, NETS, OR OTHER SUITABLE PROTECTION ABOVE THE TRAVELED LANES. PAYMENT TO BE INCLUDED IN LUMP SUM PRICE BID FOR "MAINTAINING TRAFFIC".

FRONTAGE ROAD "B"

THIS ROAD SHALL BE USED AS A TEMPORARY RUNAROUND WHILE WORK ON THE RECONSTRUCTION OF U.S. ROUTE 20 IS ACCOMPLISHED. THROUGH TRAFFIC ON U.S. 20 SHALL BE MAINTAINED VIA FRONTAGE ROAD "B" TO BACON ROAD THENCE SOUTHERLY ON BACON ROAD TO EXISTING U.S. 20 AND CONVERSELY. FRONTAGE ROAD "B" SHALL NOT BE USED AS A TEMPORARY RUNAROUND UNTIL THE BOX CULVERT ON BACON ROAD IS COMPLETED AND NORMAL TWO-WAY TRAFFIC ON BACON ROAD IS RESTORED.

AFTER THIS ROAD IS NO LONGER USED AS A TEMPORARY RUNAROUND, IT SHALL BE RESTORED TO A SUITABLE CONDITION AS APPROVED BY THE ENGINEER. FRONTAGE ROAD "B" SHALL REMAIN IN PLACE AND SHALL NOT BE REMOVED AS IS NORMALLY REQUIRED FOR TEMPORARY RUNAROUNDS.

U.S. ROUTE 20

TWO-WAY TRAFFIC SHALL BE MAINTAINED ON U.S. 20 UNTIL FRONTAGE ROAD "B" IS COMPLETED FOR USE AS A TEMPORARY RUNAROUND, AFTER WHICH, U.S. 20 MAY BE CLOSED EXCEPT FOR INGRESS AND EGRESS OF LOCAL RESIDENTS. CONTRACTOR SHALL SCHEDULE WORK ON THIS ROAD TO INSURE THAT U.S. 20 IS NOT CLOSED TO TRAFFIC OVER A WINTER SEASON

RIVER ROAD AND SPRING LAKES BOULEVARD

THESE ROADS MAY BE CONSTRUCTED ANY TIME IT SHALL BE CONVENIENT TO COMPLETE THE WORK AS DIRECTED BY THE ENGINEER, SO LONG AS INGRESS AND EGRESS FOR LOCAL RESIDENTS ARE MAINTAINED.

GENERAL

THE CONTRACTOR SHALL INSURE PROPER INGRESS AND EGRESS FOR ALL LOCAL RESIDENTS WHERE REQUIRED ON MANTLE ROAD SPUR, RIVER ROAD, MANTLE ROAD, S.R. 535, BACON ROAD, SPRING LAKES BOULEVARD (NORTH), AND IN THE VICINITY OF THE CONNECTION OF THE DIRECTIONAL ROADWAYS WITH U.S. ROUTE 20.

TEMPORARY ROADWAYS WILL BE NECESSARY FOR MAINTENANCE OF TRAFFIC. SUCH TEMPORARY ROADWAYS SHALL BE SURFACED WITH ITEM T-10 AGGREGATE AND STABILIZED WITH ITEM I-4 CALCIUM CHLORIDE. THESE ITEMS SHALL BE APPLIED WHERE DIRECTED AND IN AMOUNTS REQUESTED BY THE ENGINEER. THE LIMITS AND DURATION OF USE OF ALL TEMPORARY ROADWAYS SHALL BE HELD TO AN ABSOLUTE MINIMUM AND, IN ALL CASES, SHALL BE SUBJECT TO THE APPROVAL OF THE ENGINEER.

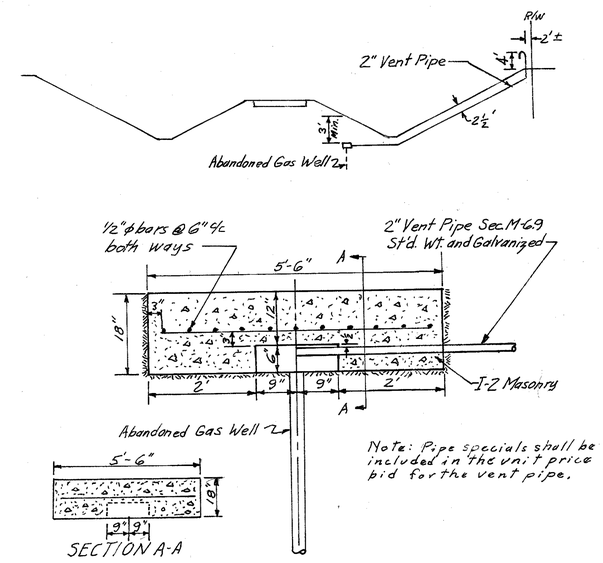
PAYMENT FOR CONSTRUCTION, MAINTENANCE, AND SUBSEQUENT REMOVAL, WHEREVER REQUIRED, OF TEMPORARY ROADWAYS, EXCEPT FOR FURNISHING AND PLACING OF ITEMS I-4 AND T-10 FOR MAINTAINING TRAFFIC SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR "MAINTAINING TRAFFIC". I-4 AND T-10 REQUIRED FOR MAINTENANCE OF TRAFFIC IS PROVIDED IN THE SUMMARY OF QUANTITIES IN THE FOLLOWING AMOUNTS:

300 CUBIC YARDS TRAFFIC COMPACTED SURFACE COURSE, ITEM T-10, FOR MAINTAINING TRAFFIC USING NO. 2, NO. 3 OR NO. 34 SIZE AGGREGATE AS DIRECTED.

200 CUBIC YARDS TRAFFIC COMPACTED SURFACE COURSE, ITEM T-10.

6 TONS CALCIUM CHLORIDE, ITEM I-4.

SEE NOTE FOR LIGHTS, SIGNS AND BARRICADES ON SHEET 2.



ABANDONED GAS WELL VENT DETAIL

COMPUTATIONS & SUB SUMMARIES

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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LAKE COUNTY
LAK-2-16.49

U-329-(23)

STA. 770 + 62 TO STA. 773 + 36

T-71, 10" REINFORCED PORTLAND CEMENT CONCRETE PAVEMENT

TOTAL NET LENGTH AS PER S.R. 2
TYPICAL SECTIONS = 116.61 FT.
WIDTH OF 4 LANES @ 12 FT. = 48.00 FT.
116.61 x 48.00 ÷ 9 = 622 S.Y.

B-21, 3" WATERPROOFED AGGREGATE BASE COURSE

TOTAL NET LENGTH AS PER S.R. 2
TYPICAL SECTIONS PLUS 1 APPROACH
SLAB @ 25 FT. = 141.61 FT.
WIDTH 2 SHOULDERS @ 4 FT. = 8 FT.
WIDTH 2 SHOULDERS @ 10 FT. = 20 FT.
TOTAL WIDTH = 28 FT.
141.61 x 28.00 ÷ 9 = 440.56 S.Y.
440.56 x $\frac{3}{36}$ = 37 C.Y.

B-112, POROUS BASE COURSE

TOTAL NET LENGTH AS PER B-21 = 141.61 FT.
AVERAGE END AREA = 13.833 SQ. FT.
141.61 x 13.833 ÷ 27 = 73 C.Y.

I-22, SUBBASE

TOTAL NET LENGTH = 141.61 FT.
AVERAGE END AREA = 37.478 SQ. FT.
141.61 x 37.478 ÷ 27 = 197 C.Y.

T-31, BITUMINOUS SURFACE TREATMENT

BITUMINOUS MATERIAL, ONE SEAL
OPERATION OF 0.25 GAL. PER S.Y. OF B-21
AREA AS ABOVE = 440.56 S.Y.
440.56 x 0.25 = 110 GAL.

NO. 6 AGGREGATE APPLIED @ 0.008
C.Y. PER S.Y. OF B-21
440.56 x 0.008 = 4 C.Y.

E-1, COMPACTED SUBGRADE

AREA AS T-71 = 622 S.Y.
AREA AS B-21 = 441 S.Y.
AREA AS I-7 = 133 S.Y.
TOTAL = 1,196 S.Y.

S.S. CE-101.04 COMPACTION, USING A HEAVY PNUEMATIC TIRED ROLLER

$\frac{S.Y.}{2,000} = \frac{1196}{2,000} =$ 0.6 HOURS

L-9 SEEDING & PROTECTING

STA. 770 + 62 TO STA. 772 + 52 1,149 S.Y.
TOTAL 1,149 S.Y.

L-9 COMMERCIAL FERTILIZER TONS = $\frac{S.F. \times 20}{1000 \times 2000}$

$\frac{1,209 \times 9 \times 20}{1,000 \times 2,000}$ = 0.108 TONS
SEEDING + SODDING = 1209

L-9 AGRICULTURAL LIMING MATERIAL TONS = $\frac{S.F. \times 100}{1000 \times 2000}$

$\frac{1,209 \times 9 \times 100}{1,000 \times 2,000}$ = 0.544 TONS

EARTHWORK

SHEET NO.	STATION FROM	STATION TO	E-1 ROADWAY EXC. CU. YDS.	EMBANKMENT PLUS 20% CU. YDS.
22	770 + 62	772 + 52	280	84
TOTAL			280	84

EXCESS E-1 ROADWAY EXCAVATION

EMBANKMENT +20% 84 C.Y.
E-1 ROADWAY EXCAVATION 280 C.Y.
E-3 CHANNEL EXCAVATION 6,764 C.Y.
TOTAL SUITABLE EXCAVATION 7,044 C.Y.
EXCESS EXCAVATION 6,960 C.Y.

E-11, WATER M-GAL. = $\frac{VOL. \times 5}{1000}$

EMBANKMENT 84
I-22 197
B-112 73
TOTAL VOLUME 354
1.8 M-GAL.

F-329-(23)

L-9 SEEDING & PROTECTING

STA. 774 + 05	TO STA. 775 + 00	1,184 S.Y.
STA. 775 + 00	TO STA. 785 + 00	20,086 S.Y.
STA. 785 + 00	TO STA. 795 + 00	21,259 S.Y.
STA. 795 + 00	TO STA. 805 + 00	22,326 S.Y.
STA. 805 + 00	TO STA. 815 + 00	21,229 S.Y.
STA. 815 + 00	TO STA. 825 + 00	24,887 S.Y.
STA. 825 + 00	TO STA. 835 + 00	15,833 S.Y.
STA. 835 + 00	TO STA. 845 + 00	18,961 S.Y.
STA. 845 + 00	TO STA. 855 + 00	18,377 S.Y.
STA. 855 + 00	TO STA. 865 + 00	16,112 S.Y.
STA. 865 + 00	TO STA. 875 + 00	13,232 S.Y.
STA. 875 + 00	TO STA. 879 + 00	7,494 S.Y.
STA. 96 + 00	TO STA. 103 + 00 (U.S. 20)	22,815 S.Y.
STA. 103 + 00	TO STA. 115 + 00,	12,411 S.Y.
STA. 115 + 00	TO STA. 119 + 38	3,046 S.Y.
RELOC. MANTLE ROAD		7,125 S.Y.
MANTLE RD. SPUR		4,222 S.Y.
RELOC. RIVER ROAD		8,517 S.Y.
RECONSTR. S.R. 535		2,871 S.Y.
RAMP GG		8,006 S.Y.
FRONTAGE ROAD "A"		14,953 S.Y.
FRONTAGE ROAD "B"		28,432 S.Y.
F.P. & E. R.R.		998 S.Y.
SPRING LAKES BLVD.		225 S.Y.
	TOTAL =	314,601 S.Y.

L-9 COMMERCIAL FERTILIZER TONS = $\frac{S.F. \times 20}{1000 \times 2000}$

$\frac{326,566 \times 9 \times 20}{1,000 \times 2,000}$ = 29.391 TONS
SEEDING + SODDING = 326,566 S.Y.

L-9 AGRICULTURAL LIMING MATERIAL TONS = $\frac{S.F. \times 100}{1000 \times 2000}$

$\frac{326,566 \times 9 \times 100}{1,000 \times 2,000}$ = 146.955 TONS

FG-329-(23) STA. 808+46.23

SH. NO.	LOCATION	E-1 EXC. CU. YDS.	EMB. +20% CU. YDS.
27	F.P. & E. R.R.	2933*	36
159	F.P. & E. R.R.	4026*	89
	TEMP. RUNAROUND	74	4831
160	F.P. & E. R.R.	2049*	42
	TEMP. RUNAROUND	35	2459
	TOTAL	9117	7457

* See Sh. 15

T-71, 10" REINFORCED PORTLAND CEMENT CONCRETE PAVEMENT

TOTAL NET LENGTH AS PER S.R. 2
TYPICAL SECTIONS = 9,424.88 FT.
WIDTH OF 4 LANES @ 12 FT. = 48.00 FT.
9,424.88 x 48.00 ÷ 9 = 50,266 S.Y.
TOTAL NET LENGTH OF DIRECTIONAL ROADWAY AS PER TYPICAL SECTIONS = 3,433.77 FT.
WIDTH OF 2 LANES @ 12 FT. = 24.00 FT.
3,433.77 x 24.00 ÷ 9 = 9,157 S.Y.
VARIABLE WIDTH DIRECTIONAL ROADWAY
198 x 25.00 ÷ 9 = 555 S.Y.
166.94 x 26.5 ÷ 9 = 492 S.Y.
TOTAL = 60,465 S.Y.

B-112, POROUS BASE COURSE

AS PER S.R. 2 TYPICAL SECTIONS
NORMAL SECTION = 5,483.69 FT.
AVERAGE END AREA = 13.833 SQ. FT.
TRANSITION SECTION = 300.00 FT.
AVERAGE END AREA = 14.50 SQ. FT.
TRANSITION SECTION = 400.00 FT.
AVERAGE END AREA = 14.893 SQ. FT.
SUPERELEVATED SECTION = 2,577.16 FT.
AVERAGE END AREA = 15.167 SQ. FT.
SUPERELEVATED SECTION = 789.03 FT.
AVERAGE END AREA = 15.951 SQ. FT.
AS PER DIRECTIONAL ROADWAY TYPICAL SECTIONS
NORMAL SECTION = 1133.35 FT.
AVERAGE END AREA = 6.917 SQ. FT.
TRANSITION SECTION = 600.00 FT.
AVERAGE END AREA = 7.353 SQ. FT.
TRANSITION SECTION = 563.70 FT.
AVERAGE END AREA = 7.542 SQ. FT.
SUPERELEVATED SECTION = 633.85 FT.
AVERAGE END AREA = 8.167 SQ. FT.
SUPERELEVATED SECTION = 502.87 FT.
AVERAGE END AREA = 7.788 SQ. FT.
TRANSITION SECTION = 354.94 FT.
AVERAGE END AREA = 5.833 SQ. FT.
SUPERELEVATED SECTION = 98.00 FT.
AVERAGE END AREA = 2.333 SQ. FT.
SUPERELEVATED SECTION = 100.00 FT.
AVERAGE END AREA = 1.75 SQ. FT.

5,483.69 x 13.833 ÷ 27 =	2,809 C.Y.
300.00 x 14.50 ÷ 27 =	161 C.Y.
400.00 x 14.893 ÷ 27 =	221 C.Y.
2,577.16 x 15.167 ÷ 27 =	1,448 C.Y.
789.03 x 15.951 ÷ 27 =	466 C.Y.
1,133.35 x 6.917 ÷ 27 =	290 C.Y.
600.00 x 7.353 ÷ 27 =	163 C.Y.
563.70 x 7.542 ÷ 27 =	157 C.Y.
633.85 x 8.167 ÷ 27 =	192 C.Y.
502.87 x 7.788 ÷ 27 =	145 C.Y.
354.94 x 5.833 ÷ 27 =	56 C.Y.
98.00 x 2.333 ÷ 27 =	8 C.Y.
100.00 x 1.75 ÷ 27 =	6 C.Y.
SUB TOTAL =	6,122 C.Y.
MINUS AREA THRU SPEED CHANGE LANES	
1471.25 x 4.583 ÷ 27 =	250 C.Y.
TOTAL =	5,872 C.Y.

T-31, BITUMINOUS SURFACE TREATMENT

BITUMINOUS MATERIAL, ONE SEAL
OPERATION OF 0.25 GAL. PER S.Y. OF B-21
33,900 x 0.25 = 8,475 GAL.
NO. 6 AGGREGATE APPLIED @ 0.008
CU. YD. PER S.Y. OF B-21
33,900 x 0.008 = 271 C.Y.

E-1, COMPACTED SUBGRADE

AREA AS T-71 = 60,465 S.Y.
AREA AS B-21 = 33,900 S.Y.
AREA AS I-7 = 655 S.Y.
TOTAL = 95,020 S.Y.

F-329-(23)

STA. 773 + 36 TO STA. 872 + 00 S.R. 2 (AS PER TYPICAL SECTION)
STA. 872 + 00 TO STA. 893 + 66.94 S.R. 2 E.B. DIRECTIONAL ROADWAY
STA. 872 + 00 TO STA. 888 + 31.77 S.R. 2 W.B. DIRECTIONAL ROADWAY

I-22, SUBBASE

NET LENGTH AS PER S.R. 2 TYPICAL SECTION
NORMAL SECTION = 5,483.69 FT.
AVERAGE END AREA = 37.478 SQ. FT.
TRANSITION AREA = 300.00 FT.
AVERAGE END AREA = 37.267 SQ. FT.
TRANSITION SECTION = 400.00 FT.
AVERAGE END AREA = 37.387 SQ. FT.
SUPERELEVATED SECTION = 2,577.16 FT.
AVERAGE END AREA = 37.055 SQ. FT.
SUPERELEVATED SECTION = 789.03 FT.
AVERAGE END AREA = 37.295 SQ. FT.
AS PER DIRECTIONAL ROADWAY TYPICAL SECTION
NORMAL SECTION = 1133.35 FT.
AVERAGE END AREA = 18.739 SQ. FT.
TRANSITION SECTION = 600.00 FT.
AVERAGE END AREA = 18.869 SQ. FT.
TRANSITION SECTION = 563.70 FT.
AVERAGE END AREA = 18.517 SQ. FT.
TRANSITION SECTION = 633.85 FT.
AVERAGE END AREA = 19.00 SQ. FT.
SUPERELEVATED SECTION = 502.87 FT.
AVERAGE END AREA = 18.295 SQ. FT.
TRANSITION SECTION = 354.94 FT.
AVERAGE END AREA = 5.00 SQ. FT.
SUPERELEVATED SECTION = 98.00 FT.
AVERAGE END AREA = 2.00 SQ. FT.
SUPERELEVATED SECTION = 100.00 FT.
AVERAGE END AREA = 1.50 SQ. FT.
TOTAL NET LENGTH OF EXTRA DEPTH SUBBASE = 1710.00 FT.
AVERAGE END AREA = 76.00 SQ. FT.

5,483.69 x 37.478 ÷ 27 =	7,612 C.Y.
300.00 x 37.267 ÷ 27 =	414 C.Y.
400.00 x 37.387 ÷ 27 =	554 C.Y.
2,577.16 x 37.055 ÷ 27 =	3,537 C.Y.
789.03 x 37.295 ÷ 27 =	1,090 C.Y.
1,133.35 x 18.739 ÷ 27	787 C.Y.
600.00 x 18.869 ÷ 27 =	419 C.Y.
563.70 x 18.517 ÷ 27 =	387 C.Y.
633.85 x 19.00 ÷ 27 =	446 C.Y.
502.87 x 18.295 ÷ 27 =	341 C.Y.
354.94 x 5.00 ÷ 27 =	66 C.Y.
98.00 x 2.00 ÷ 27 =	7 C.Y.
100.00 x 1.50 ÷ 27 =	6 C.Y.
1,710.00 x 76.00 ÷ 27 =	4,813 C.Y.
SUB TOTAL =	20,479 C.Y.
MINUS AREA THRU SPEED CHANGE LANES	
1,471.29 x 4.948 ÷ 27 =	270 C.Y.
TOTAL =	20,209 C.Y.

B-21, 3" WATERPROOFED AGGREGATE BASE COURSE

TOTAL NET LENGTH AS PER S.R. 2
TYPICAL SECTIONS PLUS 5 APPROACH SLABS 25.00 FT. = 9,549.88 FT.
WIDTH OF 2 SHOULDERS 4 FT. = 8.00 FT.
WIDTH OF 2 SHOULDERS 10 FT. = 20.00 FT.
TOTAL WIDTH = 28.00 FT.
NET LENGTH OF DIRECTIONAL ROADWAYS AS PER TYPICAL SECTION = 3,531.77 FT.
WIDTH OF SHOULDERS = 10 + 4 = 14.00 FT.
VARIABLE DIRECTIONAL ROADWAYS

100.00 x 13.00 ÷ 9 =	144 S.Y.
166.94 x 10.00 ÷ 9 =	186 S.Y.
9,549.88 x 28.00 ÷ 9 =	29,711 S.Y.
3,531.77 x 14.00 ÷ 9 =	5,494 S.Y.
SUB-TOTAL	35,535 S.Y.

MINUS AREA THRU SPEED CHANGE LANES
1,471.25 x 10 ÷ 9 = 1,635 S.Y.
35,535 - 1,635 = 33,900 S.Y.
33,900 x $\frac{3}{36}$ = 2,825 C.Y.

E-11, WATER M-GAL. = $\frac{VOL. \times 5}{1000}$

EMBANKMENT	549,225 C.Y.
I-22	27,138 C.Y.
I-18	654 C.Y.
B-19	5,806 C.Y.
B-112	6,200 C.Y.
TOTAL VOLUME	589,023 C.Y.
	2,945.1 M-GAL.

EARTHWORK

SHEET NO.	STATION FROM	STATION TO	E-1 ROADWAY EXC. CU. YDS.	EMBANKMENT PLUS 20% CU. YDS.
23	774 + 05	775 + 00	236	2,911
24	775 + 00	785 + 00	47,673 *	42,383
25	785 + 00	795 + 00	108,642 *	1,169
26	795 + 00	805 + 00	140,819 *	18
27	805 + 00	815 + 00	152,759 *	11,927
	RED CREEK		0	762
28	815 + 00	825 + 00	144,074 *	15,800
29	825 + 00	835 + 00	53,202 *	361
	FRONTAGE RD. "A"		1	4,309
30	835 + 00	845 + 00	1,970	60,850
	FRONTAGE RD. "A"		0	4,760
31	845 + 00	855 + 00	534	119,831
	FRONTAGE RD. "A"		7	3,719
	FRONTAGE RD. "B"		87	389
32	855 + 00	865 + 00	6,839	90,752
	FRONTAGE RD. "B"		1,544	6,386
33	865 + 00	875 + 00	5,198	35,789
	FRONTAGE RD. "B"		5,275	11,802
34	875 + 00	879 + 00	4,279	7,878
	RECONSTR. U.S. 20		100,274	8,291
	FRONTAGE RD. "B"		5,965	4,954
36	RECONSTR. U.S. 20		21,871	3,224
	FRONTAGE RD. "B"		9,236	1,474
38	RECONSTR. U.S. 20		1,428	5,417
	FRONTAGE RD. "B"		1,348	10,148
	SPRING LAKES BLVD. NORTH		188	0
136	RELOC. MANTLE RD.		5,084 *	23,809
137	RELOC. MANTLE RD.		1,088 *	3,316
148	MANTLE RD. SPUR		76	17,872
152	RELOC. RIVER RD.		165	40,570
169	RECONSTR. S.R. 535		2,180 *	0
170	RECONSTR. S.R. 535		1,399 *	19
176	RAMP GG		23,588 *	0
	FRONTAGE RD. "A"		3,491 *	878
TOTAL			850,520	541,766

EXCESS E-1 ROADWAY EXCAVATION

EMBANKMENT +20%	549,225 C.Y.
E-1 ROADWAY EXCAVATION	859,637 C.Y.
UNSUITABLE EXCAVATION - CUT AREA	277,203 C.Y. *
UNSUITABLE EXCAVATION - FILL AREA	20,178 C.Y.
TOTAL UNSUITABLE EXCAVATION	297,381 C.Y.
SUB TOTAL EXCAVATION	562,256 C.Y.
EXCESS EXCAVATION - U-329(23)	6,960 C.Y.
E-3 CHANNEL EXCAVATION	7,030 C.Y.
TOTAL SUITABLE EXCAVATION	576,246 C.Y.
EXCESS EXCAVATION	27,021 C.Y.

* SEE GENERAL NOTES SHEET 15

E-4, BORROW

STA. 779 + 25 TO STA. 781 + 00 (See Sheet 46)
E-4, BORROW (GRANULAR MATERIAL) = 7,662 C.Y.

S.S. CE-101.04 COMPACTION, USING A HEAVY PNUEMATIC TIRED ROLLER

S.R. 2 = 95,020 S.Y.
U.S. 20 = 14,561 S.Y.
RAMP GG = 5,125 S.Y.
RAMP HH = 3,942 S.Y.
TOTAL = 118,648 S.Y. ÷ 2,000 = 59.3 HOURS

GENERAL SUMMARY

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

LAKE COUNTY
LAK-2-16.49

ITEM NO.	GENERAL NOTES AND SUB-SUMMARY				FG 329(23) 27&160	U 329(23) 23	F 329(23) 23	24	25	26	27	28	29	30	31	32	33	34	36	38			U 329(23) 301	F 329(23) 301	TOTAL FG 329(23)	TOTAL U 329(23)	F-329(23) 20	TOTAL F 329(23)	ITEM NO.	TOTAL PROJECT QUAN.	UNIT	DESCRIPTIONS (CODE TYPE 7221)
	15	16	17	18																												
																																DRAINAGE
E-2															86													0	86	86	E-2	86	C.Y.	EXCAVATION FOR STRUCTURES
E-3																6											0	556	562	E-3	562	C.Y.	CHANNEL EXCAVATION
E-12															516			432	1,376	534							0	260	3,118	E-12	3,118	L.F.	PIPE REMOVED, 15" AND UNDER
E-12								238	36											80							0	50	404	E-12	404	L.F.	PIPE REMOVED, OVER 15"
I-1																											0	64	64	I-1	64	L.F.	15" PIPE CLASS A-1
I-1																											0	86	86	I-1	86	L.F.	15" PIPE CLASS A-1 SEC. M-6.4(d), SEC. M-6.6(b), OR SEC. M-6.8(b)
I-1														178													0	0	178	I-1	178	L.F.	18" PIPE CLASS A-1 SEC. M-6.6(a) OR SEC. M-6.8(b)
I-1																54											0	0	54	I-1	54	L.F.	21" PIPE CLASS A-1
I-1																											0	188	188	I-1	188	L.F.	24" PIPE CLASS A-1 SEC. M-6.6(d) OR SEC. M-6.4(d)
I-1																158											0	0	158	I-1	158	L.F.	30" PIPE CLASS A-1 SEC. M-6.6(b) OR SEC. M-6.8(b)
I-1																											0	88	88	I-1	88	L.F.	30" PIPE CLASS A-1 SEC. M-6.6(b) OR SEC. M-6.4(d)
I-1																											0	260	260	I-1	260	L.F.	36" PIPE CLASS A-1 SEC. M-6.6(a) OR SEC. M-6.8(b)
I-1																				340							0	0	340	I-1	340	L.F.	48" PIPE CLASS A-1 SEC. M-6.6(b)
I-1		560																									0	0	560	I-1	560	L.F.	6" PIPE CLASS E-1
I-1															102												0	558	660	I-1	660	L.F.	12" PIPE CLASS E-1
I-1								10		10	18		400			10		168									0	0	616	I-1	616	L.F.	15" PIPE CLASS E-1
I-1												10						380									0	0	390	I-1	390	L.F.	21" PIPE CLASS E-1
																											0					
I-1									500			326															0	0	826	I-1	826	L.F.	24" PIPE CLASS E-1
I-1								300		524																	0	0	824	I-1	824	L.F.	27" PIPE CLASS E-1
I-1											150																0	0	150	I-1	150	L.F.	30" PIPE CLASS E-1
I-1											328																0	0	328	I-1	328	L.F.	33" PIPE CLASS E-1
I-1		100						50	46	40	30	30	20	40	40	60	90	15		10							0	28	599	I-1	599	L.F.	6" PIPE CLASS F-4
I-1	40	50					20	20	10		20	24		20		30	20	10	10	10							0	80	364	I-1	364	L.F.	8" PIPE CLASS F-4 SEC. M-6.4(c)
I-1						38	40				56	86	40													38	0	222	I-1	260	L.F.	12" PIPE CLASS F-4
I-1					94										80			66		28					94	0	80	254	I-1	348	L.F.	15" PIPE CLASS F-4
I-1										64																0	0	64	I-1	64	L.F.	21" PIPE CLASS F-4
I-1																58										0	0	58	I-1	58	L.F.	43"x27" PIPE CLASS G-1 SEC. M-6.4(j)(d)
I-1		150											534													0	0	684	I-1	684	L.F.	8" PIPE CLASS H-2
I-1						556	126	4,167	4,010	5,145	2,801	3,028	4,083	3,969	3,304	3,944	4,072	5,348	3,746	1,106						556	4,160	53,009	I-1	53,565	L.F.	6" PIPE CLASS I-3
I-1	200	4,000																								0	0	4,200	I-1	4,200	L.F.	6" PIPE CLASS I-3 SEC. M-6.4(h)
I-1		150							168	190	143	105		88		34		166	123							0	190	1,357	I-1	1,357	L.F.	6" PIPE CLASS J-1
I-1								150	86	74	154	384		84	128	82	82		348	190						0	0	1,762	I-1	1,762	L.F.	15" PIPE CLASS J-1
I-1					34																				34	0	0	0	I-1	34	L.F.	15" PIPE CLASS J-1 SEC. M-6.6(d)
I-1									102			104						76								0	0	282	I-1	282	L.F.	18" PIPE CLASS J-1
I-1																										0	126	126	I-1	126	L.F.	18" PIPE CLASS J-1 SEC. M-6.6(c)
I-1										64		74					172									0	0	310	I-1	310	L.F.	21" PIPE CLASS J-1
I-1								100										158								0	0	258	I-1	258	L.F.	24" PIPE CLASS J-1
I-1								90																		0	0	90	I-1	90	L.F.	27" PIPE CLASS J-1
I-1												230														0	0	230	I-1	230	L.F.	30" PIPE CLASS J-1 SEC. M-6.6(c)
I-1											158															0	0	158	I-1	158	L.F.	36" PIPE CLASS J-1
I-2								0.7			0.6	1.3		0.9	0.5	3.0	0.6	0.4	0.5	1.4						0	6.1	26.0	I-2	26.0	C.Y.	MASONRY
I-5															4					2						0	0	6	I-5	6	EA.	15" CLASS F-4 PIPE SPECIALS SEC. M-6.4(c)
I-5																1										0	0	1	I-5	1	EA.	30" CLASS A-1 PIPE SPECIAL SEC. M-6.6(b) OR SEC. M-6.8(b)
I-5																										0	1	1	I-5	1	EA.	36" CLASS A-1 PIPE SPECIAL SEC. M-6.6(a) OR SEC. M-6.8(b)
I-5		5																								0	0	5	I-5	5	EA.	6" CLASS E-1 PIPE SPECIALS
I-5		2																								0	0	2	I-5	2	EA.	12" CLASS E-1 PIPE SPECIALS
I-5												2														0	0	2	I-5	2	EA.	12" CLASS F-4 PIPE SPECIALS
I-5											2							2								0	0	4	I-5	4	EA.	15" CLASS F-4 PIPE SPECIALS
I-5										2																0	0	2	I-5	2	EA.	21" CLASS F-4 PIPE SPECIALS
I-5													10													0	0	10	I-5	10	EA.	4" CLASS H-2 PIPE SPECIALS
I-5													1													0	0	1	I-5	1	EA.	6" CLASS H-2 PIPE SPECIAL
I-5		10											11													0	0	21	I-5	21	EA.	8" CLASS H-2 PIPE SPECIALS
I-5							1	10	1		3	4	2	4		6	6	1		3						0	8	49	I-5	49	EA.	6" CLASS I-3 PIPE SPECIALS
I-5									10	10	8	4		4		3		7	4							0	7	57	I-5	57	EA.	6" CLASS J-1 PIPE SPECIALS
I-8					1				1	1	2	1													1	0	0	5	I-8	6	EA.	STANDARD NO. 2-2A CATCH BASINS
I-8						1	1				2		1		2											1	5	11	I-8	12	EA.	STANDARD NO. 2-2B CATCH BASINS
I-8								1	1	2	2	3					1	2								0	0	12	I-8	12	EA.	STANDARD NO. 5 CATCH BASINS
I-8												2							2							0	1	5	I-8	5	EA.	STANDARD NO. 6 CATCH BASINS
I-8								2		1	2	2	1	2		2	2	1								0	0	15	I-8	15	EA.	STANDARD NO. 8 CATCH BASINS
I-8																				1						0	0	1	I-8	1	EA.	STANDARD NO. 2-5 CATCH BASIN
I-8																				1						0	0	1	I-8	1	EA.	STANDARD NO. 2-A-6 INLET
I-8																				1						0	0	1	I-8	1	EA.	STANDARD NO. 2-6 MEDIAN INLET
I-8								2	1	1	3	2						1								0	1	11	I-8	11	EA.	STANDARD NO. 1 MANHOLES
I-8																										0	1	1	I-8	1	EA.	STANDARD NO. 2 MANHOLE WITHOUT DROP PIPE
I-8								1																		0	0	1	I-8	1	EA.	MODIFIED NO. 2-3 CATCH BASIN, AS PER PLAN
I-8																				2						0	0	2	I-8	2	EA.	CATCH BASIN ADJUSTED TO GRADE, WITH NO. 6 GRATE AND FRAME, AS PER PLAN
I-9																2,388										0	1,152	3,540	I-9	3,540	L.F.	STONE UNDERDRAINS NO. 2
I-10						13	23	8			24	1		5	4	6		36		19			14	150		27	91	367	I-10	394	C.Y.	DUMPED ROCK CHANNEL PROTECTION
I-10																30										0	17	47	I-10	47	S.Y.	RIPRAP 6" REINFORCED, AS PER PLAN
I-14								135																		0	0	135	I-14	135	L.F.	STANDARD TYPE 1 PAVED GUTTER
I-14																		121								0	0	121	I-14	121	L.F.	STANDARD TYPE 3 PAVED GUTTER
I-16					1																				1	0	0	0	I-16	1	EA.	CATCH BASIN ABANDONED
I-16															1											0	1	2	I-16	2	EA.	INLETS ABANDONED
I-16								1																		0	1	2	I-16	2	EA.	MANHOLES ABANDONED
S-1															38											0	0	38	S-1	38	C.Y.	CONCRETE FOR STRUCTURES, CLASS "C"
S-4															4,340											0	0	4,340	S-4	4,340	LBS.	REINFORCING STEEL
S-24									LUMP																	0	0	LUMP	S-24	LUMP	LUMP	REMOVAL OF EXISTING STRUCTURES
I-9	12								3																	0	0	15	I-9	15	L.F.	STONE UNDERDRAINS, NO. 1, AS PER PLAN

SUB & GENERAL SUMMARY

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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313

LAKE COUNTY
LAK-2-16.49

ITEM NO.	SHEET NUMBER 136	137	148	152	169	170	176	177	SHEET TOTAL QUAN.	UNIT	DESCRIPTIONS (CODE TYPE 7221)
											DRAINAGE
E-3	348			146				62	556	C.Y.	CHANNEL EXCAVATION
E-12		40			220				260	L.F.	PIPE REMOVED 15" AND UNDER
E-12			50						50	L.F.	PIPE REMOVED OVER 15"
I-1							64		64	L.F.	15" PIPE CLASS A-1
I-1				86					86	L.F.	15" PIPE CLASS A-1 SEC. M-6.4(d), SEC. M-6.6(b) OR SEC. M-6.8(b)
I-1	188								188	L.F.	24" PIPE CLASS A-1 SEC. M-6.6(d) OR SEC. M-6.4(d)
I-1			88						88	L.F.	30" PIPE CLASS A-1 SEC. M-6.6(b) OR SEC. M-6.4(d)
I-1								260	260	L.F.	36" PIPE CLASS A-1 SEC. M-6.6(a) OR SEC. M-6.8(b)
I-1	6				294	258			558	L.F.	12" PIPE CLASS E-1
I-1						8		20	28	L.F.	6" PIPE CLASS F-4
I-1					20		20	40	80	L.F.	8" PIPE CLASS F-4 SEC. M-6.4(c)
I-1		30	50						80	L.F.	15" PIPE CLASS F-4
I-1					869	341	1919	1031	4,160	L.F.	6" PIPE CLASS I-3
I-1							42	148	190	L.F.	6" PIPE CLASS J-1
I-1	126								126	L.F.	18" PIPE CLASS J-1 SEC. M-6.6(c)
I-2	1.12		1.02	0.52		1.7	0.52	1.18	6.1	C.Y.	MASONRY
I-5							3	4	7	EA.	6" CLASS J-1 PIPE SPECIALS
I-5					2	1	3	2	8	EA.	6" CLASS I-3 PIPE SPECIALS
I-5								1	1	EA.	36" CLASS A-1 PIPE SPECIAL SEC. M-6.6(a) OR SEC. M-6.8(b)
I-8					3	2			5	EA.	STANDARD NO. 2-2B CATCH BASINS
I-8	1								1	EA.	STANDARD NO. 6 CATCH BASIN
I-8						1			1	EA.	STANDARD NO. 1 MANHOLE
I-8	1								1	EA.	STANDARD NO. 2 MANHOLE, WITHOUT DROP PIPE
I-9	640		236	276					1,152	L.F.	STONE UNDERDRAINS NO. 2
I-10	23.1							68.0	91.1	C.Y.	DUMPED ROCK CHANNEL PROTECTION
I-10	10.7		6.7						17.4	S.Y.	RIPRAP 6" REINFORCED, AS PER PLAN
I-16	1								1	EA.	INLET ABANDONED
I-16	1								1	EA.	MANHOLE ABANDONED

GENERAL SUMMARY

ITEM NO.	QUAN.	UNIT	DESCRIPTIONS	
			REMOVAL OF BUILDINGS	TYPE CODE 7221
			PROJECT F 329(23)	
E-10	LUMP	LUMP	REMOVAL OF 7-FRAME SHEDS	PARCEL NO. 1A-WD
E-10	LUMP	LUMP	REMOVAL OF 1-1½ STORY CONC. BLOCK STOREROOM	
			1-FRAME GARAGE	
			1-CONC. BLOCK UTILITY ROOM	PARCEL NO. 2WL
E-10	LUMP	LUMP	REMOVAL OF 3 FRAME SHEDS	
			1-FRAME SHANTY	
			1-PRIVY	
			1-CONC. BLOCK BUILDING	PARCEL NO. 1WL
E-10	LUMP	LUMP	REMOVAL OF 2-FRAME SHEDS	PARCEL NO. 12WL
E-10	LUMP	LUMP	REMOVAL OF 1-1 STORY FRAME DWLG.	PARCEL NO. 19WD
E-10	LUMP	LUMP	REMOVAL OF 3-1 STORY FRAME DWLGS., Tool House,	PARCEL NO. 20WL
E-10	LUMP	LUMP	REMOVAL OF 1-1 STORY FRAME DWLG.	
			1-PRIVY	PARCEL NO. 21WL
E-10	LUMP	LUMP	REMOVAL OF 1-CONC. BLOCK PUMP HOUSE	PARCEL NO. 22WL
E-10	LUMP	LUMP	REMOVAL OF 1-1 STORY BRICK DWLG.	PARCEL NO. 23WL
E-10	LUMP	LUMP	REMOVAL OF 1-2 STORY FRAME DWLG.	PARCEL NO. 25WL
E-10	LUMP	LUMP	REMOVAL OF 1-1 STORY BRICK DWLG.	
			1-2 CAR GARAGE	PARCEL NO. 26WL
E-10	LUMP	LUMP	REMOVAL OF 1-FRAME BARN	
			1-FRAME GARAGE	
			1-CORN CRIB	
			1-FRAME SHED	PARCEL NO. 27X
E-10	LUMP	LUMP	REMOVAL OF 1-FRAME DWLG., 1 STORY BRICK DWLG.	
			1-FRAME SHED	PARCEL NO. 32WL
E-10	LUMP	LUMP	REMOVAL OF 1-1 STORY FRAME DWLG.	38WL
E-10	LUMP	LUMP	REMOVAL OF 1-1 STORY BLOCK BUILDING	39WL

GENERAL SUMMARY

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

LAKE COUNTY
LAK-2-16.49

ITEM NO.	GENERAL NOTES AND SUB-SUMMARY 16	17	U 329(23) 18	F 329(23) 18	U 329(23) 23	F 329(23) 23	FG 329(23) SUB SUMMARY 18	SHEET NUMBER 24	25	26	27	28	29	29.95	30	31	32	TOTAL FG 329(23)	U 329(23) 301	F 329(23) 301	TOTAL U 329(23) 22	TOTAL F 329(23)	ITEM NO.	TOTAL PROJECT QUAN.	UNIT	DESCRIPTIONS	CODE TYPE 7221
																										ROADWAY	100% State (F-329(23))
E-1			280	850.520			9117											9117			280	0	850.520	E-1	859.917	C.Y.	ROADWAY EXCAVATION, METHOD "B" AS PER PLAN	7
E-1			1,196	95,020						290			123			73	11,593				1,196	40,409	147,508	E-1	148,704	S.Y.	COMPACTED SUBGRADE	5,015
E-4				7,662																	0	0	7,662	E-4	7,662	C.Y.	BORROW (GRANULAR MATERIAL), AS PER PLAN	
E-8								180													0	0	180	E-8	180	S.F.	REMOVAL AND DISPOSAL OF EXISTING SIDEWALK	
E-8																91					0	13,378	13,469	E-8	13469	S.Y.	REMOVAL AND DISPOSAL OF EXISTING PAVEMENT	
E-8																					0	158	158	E-8	158	L.F.	REMOVAL AND DISPOSAL OF EXISTING CURB	
E-9																					0	0	LUMP	E-9	LUMP	L.S.	REMOVAL OF TREES AND STUMPS	
E-11			2	2,945																	2	0	2,945	E-11	2,947	M-GAL.	WATER	60
I-4		6																			0	0	6	I-4	6	TONS	CALCIUM CHLORIDE FOR DUST CONTROL	
I-8														22							0	0	22	I-8	22	EA.	CENTERLINE REFERENCE MONUMENTS, AS PER PLAN	
I-8														7							0	0	7	I-8	7	EA.	STANDARD MONUMENT ASSEMBLIES	
																					0	0					
I-8	7																				0	0	7	I-8	7	EA.	INSPECTION WELLS, AS PER PLAN
I-15					562.5			1,375			600.0		525.0		2,200.0	2,875.0					562.5	5037.5	12,612.5	I-15	13,175.0	L.F.	GUARD RAIL STEEL BEAM STANDARD TYPE (DEEP)
I-15					75.0			75.0			150.0					150.0					75.0	0	375.0	I-15	450.0	L.F.	GUARD RAIL STEEL BEAM BARRIER TYPE (DEEP)
I-15																					0	388	388	I-15	388	L.F.	GUARD RAIL REMOVED AND DISPOSED OF
I-25																			835	20,438	835	0	20,438	I-25	21,273	L.F.	WOVEN WIRE FENCE TYPE 39
I-26																				6,020	0	0	6,020	I-26	6,020	L.F.	CHAIN LINK FENCE
L-9			1,149	314,601																	1,149	0	314,601	L-9	315,750	S.Y.	SEEDING AND PROTECTING, AS PER PLAN
L-9			0.11	29.39																	0.11	0	29.39	L-9	29.50	TONS	COMMERCIAL FERTILIZER (12-12-12)
L-9			0.54	146.96																	0.54	0	146.96	L-9	147.50	TONS	AGRICULTURAL LIMING MATERIAL, AS PER PLAN
L-10								640		264		200	653	1,330	4	545	928				0	6,936	11,500	L-10	11,500	S.Y.	SODDING
L-10					60	65										194					60	207	466	L-10	526	S.Y.	SODDING FOR SPECIAL BERM AND SLOPE PROTECTION, AS PER PLAN
L-120								286		370	375	500	375	125	250		375				0	250	2,906	L-120	2,906	S.Y.	JUTE MATTING
T-10		200																			0	0	200	T-10	200	C.Y.	TRAFFIC COMPACTED SURFACE COURSE FOR MAINTAINING TRAFFIC
T-10		300																			0	0	300	T-10	300	C.Y.	TRAFFIC COMPACTED SURFACE COURSE FOR MAINTAINING TRAFFIC USING NO. 2, NO. 3, OR NO. 34 SIZE AGGREGATE, AS PER PLAN
I-1																					0	50	50	I-1	50	L.F.	2" GALVANIZED STEEL PIPE, SEC. M-6.9, USING TYPE 4 BACKFILL, AS PER PLAN
SPECIAL																3,608					0	0	3,608	SPECIAL	3,608	C.Y.	SAND BLANKET, AS PER PLAN
SPECIAL																2					0	0	2	SPECIAL	2	EA.	SETTLEMENT PLATFORMS, AS PER PLAN
SS-CE 101.04			1	59																	1	0	59	SS-CE 101.04	60	HRS.	COMPACTION, USING HEAVY PNEUMATIC-TIRED ROLLER
																										PAVEMENT	
B-19														17			2,718				0	3071	5806	B-19	5,806	C.Y.	AGGREGATE BASE COURSE	697
B-21			37	2,825						24							24				37	657	3,530	B-21	3,567	C.Y.	WATERPROOFED AGGREGATE BASE COURSE	
B-35																	558				0	236	794	B-35	794	C.Y.	ASPHALTIC CONCRETE LEVELING COURSE (70-85)	
B-35																					0	575	575	B-35	575	C.Y.	ASPHALTIC CONCRETE BASE COURSE (70-85)	
B-112			73	5,872						61							61				73	206	6,200	B-112	6,273	C.Y.	POROUS BASE COURSE	257
SPECIAL														0.06							0	4.37	4.43	SPECIAL	4.43	tons	FURNISHING & APPLYING CALCIUM CHLORIDE ON AGGREGATE SHOULDERS & APPROACHES
I-7					133	133					360					2.68					133	613	1,374	I-7	1,507	S.Y.	REINFORCED CONCRETE APPROACH SLABS (T=13"), AS PER PLAN
I-12																					0	4,533	4,533	I-12	4,533	L.F.	STANDARD TYPE 2-A CONCRETE CURB
I-12																					0	1,011	1,011	I-12	1,011	L.F.	STANDARD TYPE 6 CONCRETE CURB
I-12																					0	357	357	I-12	357	L.F.	STANDARD TYPE 8 CONCRETE CURB
I-18																					0	654	654	I-18	654	C.Y.	STABILIZED CRUSHED AGGREGATE SHOULDERS AND APPROACHES
I-7																73					0	0	73	I-7	73	S.Y.	REINFORCED CONCRETE APPROACH SLABS (T=10")
I-21																					0	532	532	I-21	532	S.Y.	4" PORTLAND CEMENT CONCRETE MEDIAN STANDARD TYPE 1, AS PER PLAN
I-22			197	20,209						57							1,446				197	5426	21,138	I-22	21,335	C.Y.	SUBBASE, GRADING A OR B, AS PER PLAN
T-30																	4,893				0	3,965	8,858	T-30	8,858	GAL.	BITUMINOUS PRIME COAT, SEC. M-5.7 RT-2 OR RT-3
T-31			110	8475						72							72				110	1,351	9,970	T-31	10,080	GAL.	BITUMINOUS SURFACE TREATMENT-BITUMINOUS MATERIAL, AS PER PLAN
T-31			4	271						2							2				4	43	318	T-31	322	C.Y.	BITUMINOUS SURFACE TREATMENT-NO. 6 AGGREGATE
T-35																	942				0	356	1,298	T-35	1,298	C.Y.	ASPHALTIC CONCRETE SURFACE COURSE TYPE A (70-85)
T-35																					0	67	67	T-35	67	C.Y.	ASPHALTIC CONCRETE SURFACE COURSE TYPE C (70-85)
T-70																					0	67	67	T-70	67	S.Y.	7" PORTLAND CEMENT CONCRETE PAVEMENT
T-71																					0	17,337	17,337	T-71	17,337	S.Y.	9" REINFORCED PORTLAND CEMENT CONCRETE PAVEMENT
T-71			622	60,465																	622	0	60,465	T-71	61,087	S.Y.	10" REINFORCED PORTLAND CEMENT CONCRETE PAVEMENT
																										TYPE CODE Y06D UTILITIES (100% CITY PARTICIPATION)	
I-1												224									0	0	224	I-1	224	L.F.	8" PIPE CLASS H-2
I-5												1									0	0	1	I-5	1	EA.	8" CLASS H-2 PIPE SPECIAL
I-124																					0	790	790	I-124	790	L.F.	8" C.I. WATER MAIN, CLASS 200, AS PER PLAN
I-124																					0	6	6	I-124	6	EA.	8" C.I. FITTINGS (1/16 BEND) CLASS 200 AS PER PLAN
I-124																					0	4	4	I-124	4	EA.	8" C.I. FITTINGS (1/8 BEND) CLASS 200 AS PER PLAN
I-124																					0	2	2	I-124	2	EA.	8"X6" C.I. REDUCER CLASS 200 AS PER PLAN
I-124																					0	30	30	I-124	30	L.F.	NEW SERVICE BRANCHES, AS PER PLAN
I-124																					0	3	3	I-124	3	EA.	WATER METERS AND BOXES REMOVED AND RESET
S-29																					0	32	32	S-29	32	C.Y.	POROUS BACKFILL
SPECIAL																					0	LUMP	LUMP	SPECIAL	LUMP	L.S.	REMOVE PIPE SECTION AND PLUG EXISTING 8" WATER MAIN AT NEW CONNECTION COMPLETED IN PLACE
																										STRUCTURES OVER 20 FT. SPAN	
																										S.R. 2 OVER GRAND RIVER — SEE SHEET 226 — STA. 773+36.00	
																										MANTLE RD OVER S.R. 2 — SEE SHEET 234 — STA. 783+61.13	
																										F.P. AND E. R.R. OVER S.R. 2 — SEE SHEET 245 — STA. 808+46.23	
																										S.R. 2 OVER RED CREEK — SEE SHEET 255 — STA. 814+10.00	
																										S.R. 535 OVER S.R. 2 — SEE SHEET 261 — STA. 822+70.56	
																										S.R. 2 OVER BACON RD. — SEE SHEET 270 — STA. 851+85.63	
																										U.S. 20 OVER S.R. 2 — SEE SHEET 278 EB STA. 883+58.81	
																									LUMP	L.S.	CONSTRUCTION LAYOUT STAKES
I-3																								I-3	LUMP	L.S.	MAINTAINING TRAFFIC

Rev. 10-20-64 C.E.H. Rev. 8-14-67

SUB SUMMARY

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

22
313

LAKE COUNTY
LAK-2-16.49

* 100% State

ITEM NO.	33	34	36	38	136	137	148	152	169	170	176	177	SHEET TOTAL QUAN.	UNIT	DESCRIPTIONS (CODE TYPE 7221)
															ROADWAY
E-1		14,090	49	431	3,695	84	1,262	1,474	2,641	328	12,413 {5,018 * / 7,395}	3,942	40,409	S.Y.	COMPACTED SUBGRADE
E-8				138						20			158	L.F.	REMOVAL AND DISPOSAL OF EXISTING CURB
E-8		10,683			1,575	1,120							13,378	S.Y.	REMOVAL AND DISPOSAL OF EXISTING PAVEMENT
I-15		887.5	25.0	437.5	850.0	450.0	550.0	1075.0	187.5	200.0	125.0	250.0	5,037.5	L.F.	GUARD RAIL STEEL BEAM STANDARD TYPE (DEEP)
I-15					388								388	L.F.	GUARD RAIL REMOVED AND DISPOSED OF
L-10	1,975	2975	828	271	46.5		28.5	35			804.5	4	6,936	S.Y.	SODDING
L-10		64			143								207	S.Y.	SODDING FOR SPECIAL BERM AND SLOPE PROTECTION
L-120	250												250	S.Y.	JUTE MATTING
I-1										50			50	L.F.	2" Galv. Steel Pipe Sec. M-6.9, Using Type 4 Backfill, As Per Plan
I-2															
															PAVEMENT
B-19		15	11	97	808	13	187	351	531	46	1,012 {697 * / 315}		3,071	C.Y.	AGGREGATE BASE COURSE
B-21		244									243	170	657	C.Y.	WATERPROOFED AGGREGATE BASE COURSE
B-35					122		37		77				236	C.Y.	ASPHALTIC CONCRETE LEVELING COURSE (70-85)
B-35					298		90		187				575	C.Y.	ASPHALTIC CONCRETE BASE COURSE (70-85)
B-112											121	85	206	C.Y.	POROUS BASE COURSE
I-7		247			184				182				613	S.Y.	REINFORCED CONCRETE APPROACH SLABS (T=13") AS PER PLAN
I-12		4,267									266		4,533	L.F.	STANDARD TYPE 2-A CONCRETE CURB
I-12		574			231							206	1,011	L.F.	STANDARD TYPE 6 CONCRETE CURB
I-12		48									309		357	L.F.	STANDARD TYPE 8 CONCRETE CURB
I-18		421			147				86				654	C.Y.	STABILIZED CRUSHED AGGREGATE SHOULDERS AND APPROACHES
I-21		503										29	532	S.Y.	PORTLAND CEMENT CONCRETE MEDIAN STANDARD TYPE 1, AS PER PLAN
I-22		2441			438		136	275	296		1,166	674	5426	C.Y.	SUBBASE, GRADING A OR B AS PER PLAN
T-30		29	20	186	1,451	28	518	632	970	131			3,965	GAL.	BITUMINOUS PRIME COAT SEC. M-5.7 RT-2 OR RT-3
T-31		732									364	255	1,351	GAL.	BITUMINOUS SURFACE TREATMENT, BITUMINOUS MATERIAL, AS PER PLAN
T-31		23									12	8	43	C.Y.	BITUMINOUS SURFACE TREATMENT, NO. 6 AGGREGATE
T-35				17	122		38	102	77				356	C.Y.	ASPHALTIC CONCRETE SURFACE COURSE TYPE A (70-85)
T-35		4	3	18		4	10		10	18			67	C.Y.	ASPHALTIC CONCRETE SURFACE COURSE TYPE C (70-85)
T-70									67				67	S.Y.	7" PORTLAND CEMENT CONCRETE PAVEMENT
T-71		10,843									3,652	2842	17,337	S.Y.	9" REINFORCED PORTLAND CEMENT CONCRETE PAVEMENT
SPECIAL					0.46				0.27		3.64 {2.51 * / 1.13}		4.37	TONS	FURNISHING & SPREADING CALCIUM CHLORIDE ON AGGREGATE SHOULDERS AND APPROACHES
															UTILITIES (100% CITY PARTICIPATION)
I-124										790			790	L.F.	8" C.I. WATER MAIN, CLASS 200 AS PER PLAN
I-124										6			6	E.A.	8" C.I. FITTINGS (1/16 BEND) CLASS 200 AS PER PLAN
I-124										4			4	EA.	8" C.I. FITTINGS (1/8 BEND) CLASS 200 AS PER PLAN
I-124										2			2	EA.	8"X6" C.I. REDUCER CLASS 200 AS PER PLAN
I-124										30			30	L.F.	NEW SERVICE BRANCHES, AS PER PLAN
I-124										3			3	EA.	WATER METERS AND BOXES REMOVED AND RESET
S-29										32			32	C.Y.	POROUS BACKFILL
SPECIAL										LUMP			LUMP	L.S.	REMOVE PIPE SECTION AND PLUG EXISTING 8" WATER MAIN AT NEW CONNECTION - COMPLETED IN PLACE

Rev. 8-14-64 Rev. 10-20-64 C.E.H.

LAKE COUNTY
LAK-2-16.49

NOTES

All drains terminating at Sta. 770+62 on this plan shall be connected to stubs provided to receive same under the previous section of roadway. Contractor shall check the system to see that proper flow is guaranteed.

The Typical Section of the adjoining section is the same as the typical section for this project except the Underdrains are 2'-0" from edge of Pavement, the I-18 & I-22 are 3" beyond the paved shoulder and Median Rounding is 4'-0". Transition adjoining Section to meet this construction in 25'.

UTILITIES

The Cleveland Electric Illuminating Co.
55 Public Square Building
Cleveland 1, Ohio

City of Painesville Electric Co.
Painesville, Ohio

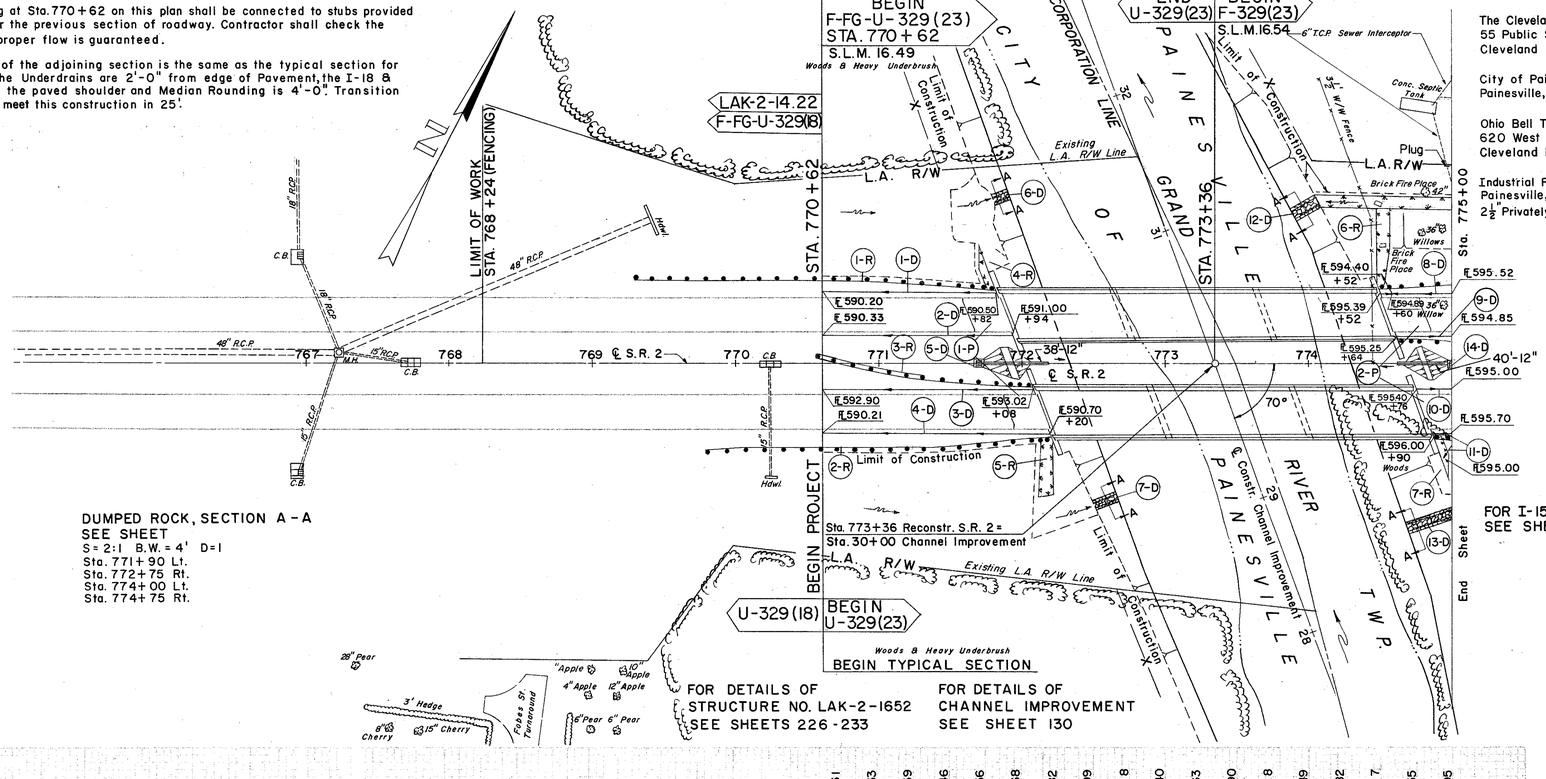
Ohio Bell Telephone Co.
620 West Superior Ave.
Cleveland 13, Ohio

Industrial Rayon Corp.
Painesville, Ohio
2½" Privately owned Gas Line

City of Painesville
Painesville, Ohio
(Water Mains)

East Ohio Gas Co.
Cleveland, Ohio

Paul Square
120 Fairport Nursery Rd.
Painesville, Ohio
1" Privately owned Gas Line



FOR DETAILS OF STRUCTURE NO. LAK-2-1652 SEE SHEETS 226-233

FOR DETAILS OF CHANNEL IMPROVEMENT SEE SHEET 130

DUMPED ROCK, SECTION A-A
SEE SHEET
S=2:1 B.W.=4' D=1
Sta. 771+90 Lt.
Sta. 772+75 Rt.
Sta. 774+00 Lt.
Sta. 774+75 Rt.

FOR I-15 QUANTITIES SEE SHEET 24

(D) DRAINAGE U-329(23)

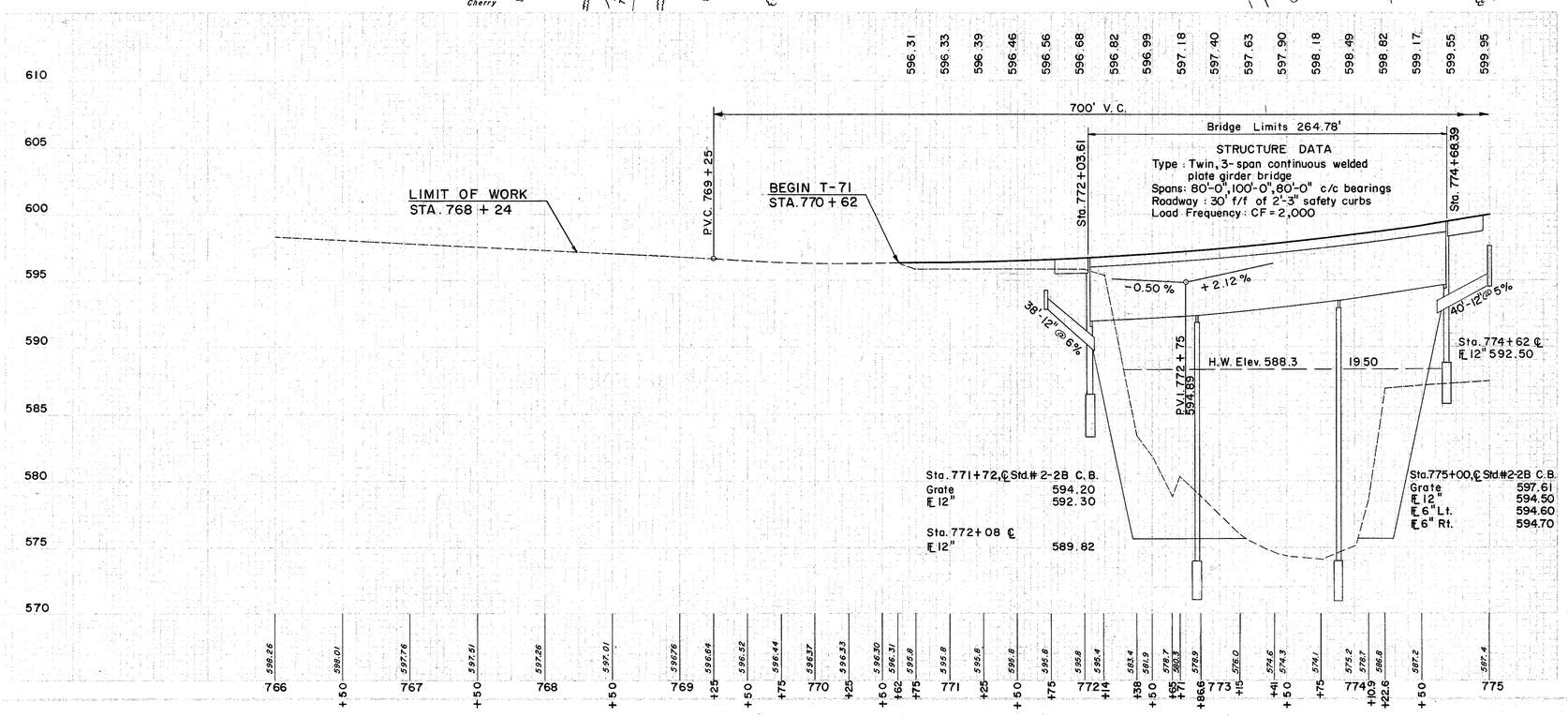
REF. NO.	STATION FROM	STATION TO	SIDE	I-1 12" PIPE CLASS F-4	I-1 6" PIPE CLASS I-3 SHALLOW	I-1 6" PIPE CLASS I-3 DEEP	I-8 STD. #2-2B C.B.	I-10 DUMPED ROCK CHANNEL PROTECT.
				L.F.			EA.	C.Y.
1-D	770+62	771+82	Lt.			120		
2-D	770+62	771+94	Lt.			132		
3-D	770+62	772+08	Rt.		146			
4-D	770+62	772+20	Rt.			158		
5-D	771+72	772+08	℄	38			1	
6-D	771+80	771+92	Lt.					5.3
7-D	772+50	772+67	Rt.					7.2
TOTAL				38	146	410	1	12.5

(R) ROADWAY U-329(23)

REF. NO.	STATION FROM	STATION TO	SIDE	I-15 GUARD RAIL STEEL BEAM STD. TYPE (DEEP)	I-15 GUARD RAIL STEEL BEAM BARRIER TYPE (DEEP)	L-10 SODDING FOR SPECIAL BERM & SLOPE PROTECT.
				L.F.		S.Y.
1-R	769+32	771+82	Lt.	250.0		
2-R	769+80	772+17	Rt.	237.5		
3-R	770+58	772+07	℄	75.0	75.0	
4-R	771+82		Lt.			16
5-R	772+20		Rt.			44
TOTAL				562.5	75.0	60

(P) PAVEMENT U-329(23)

REF. NO.	STATION FROM	STATION TO	SIDE	I-7 REINF. CONC. APPROACH SLAB T=13"
				S.Y.
1-P	771+78.61	772+03.61	Lt.-Rt.	133
TOTAL				133



(D) DRAINAGE F-329 (23)

REF. NO.	STATION FROM	STATION TO	SIDE	I-1 PIPE CLASS F-4 (SEC. M-6.4(c)) 8"	I-1 PIPE CLASS F-4 (SEC. M-6.4(c)) 12"	I-1 6" PIPE CLASS I-3 SHALLOW	I-5 CLASS I-3 6" 60° WYE	I-8 STD. #2-2B C.B.	I-10 DUMPED ROCK CHANNEL PROTECT.
				L.F.			EA.		C.Y.
8-D	774+52	775+00	Lt.	10		56	1		
9-D	774+64	775+00	Lt.			36			
10-D	774+76	775+00	Rt.			24			
11-D	774+90	775+00	Rt.	10		10			
12-D	773+88	774+05	Lt.						8.4
13-D	774+68	774+98	Rt.						14.6
14-D	774+62	775+00	℄		40			1	
TOTAL				20	40	126	1	1	23.0

(R) ROADWAY F-329 (23)

REF. NO.	STATION FROM	STATION TO	SIDE	L-10 SODDING FOR SPECIAL BERM & SLOPE PROTECT.
				S.Y.
6-R	774+52		Lt.	53
7-R	774+93		Rt.	12
TOTAL				65

(P) PAVEMENT F-329(23)

REF. NO.	STATION FROM	STATION TO	SIDE	I-7 REINF. CONC. APPROACH SLAB T=13"
				S.Y.
2-P	774+68.39	774+93.39	Lt.-Rt.	133
TOTAL				133

U-329(23)

EXCAVATION	=	280 C.Y.
EMBANKMENT	=	70 C.Y.
EMBANKMENT +20 %	=	84 C.Y.

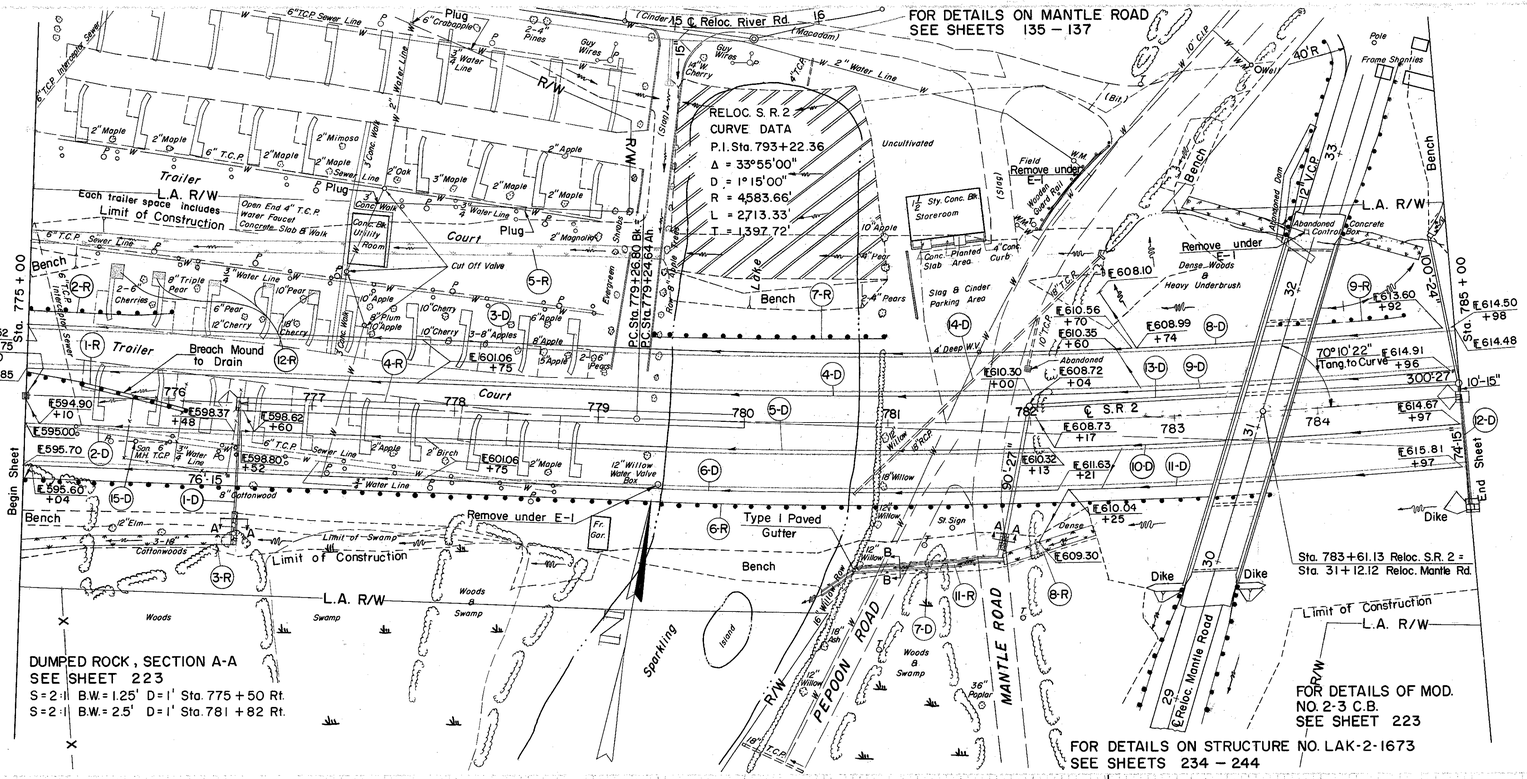
F-329(23)

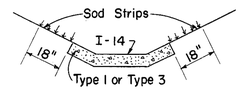
EXCAVATION		236 C.Y.
EMBANKMENT		2,426 C.Y.
EMBANKMENT +20 %		2,911 C.Y.

STA. 766+00 TO STA. 775+00

Checked by H.B.
Layout By H.H.H. 4-21-61

LAKE COUNTY
LAK-2-16.49

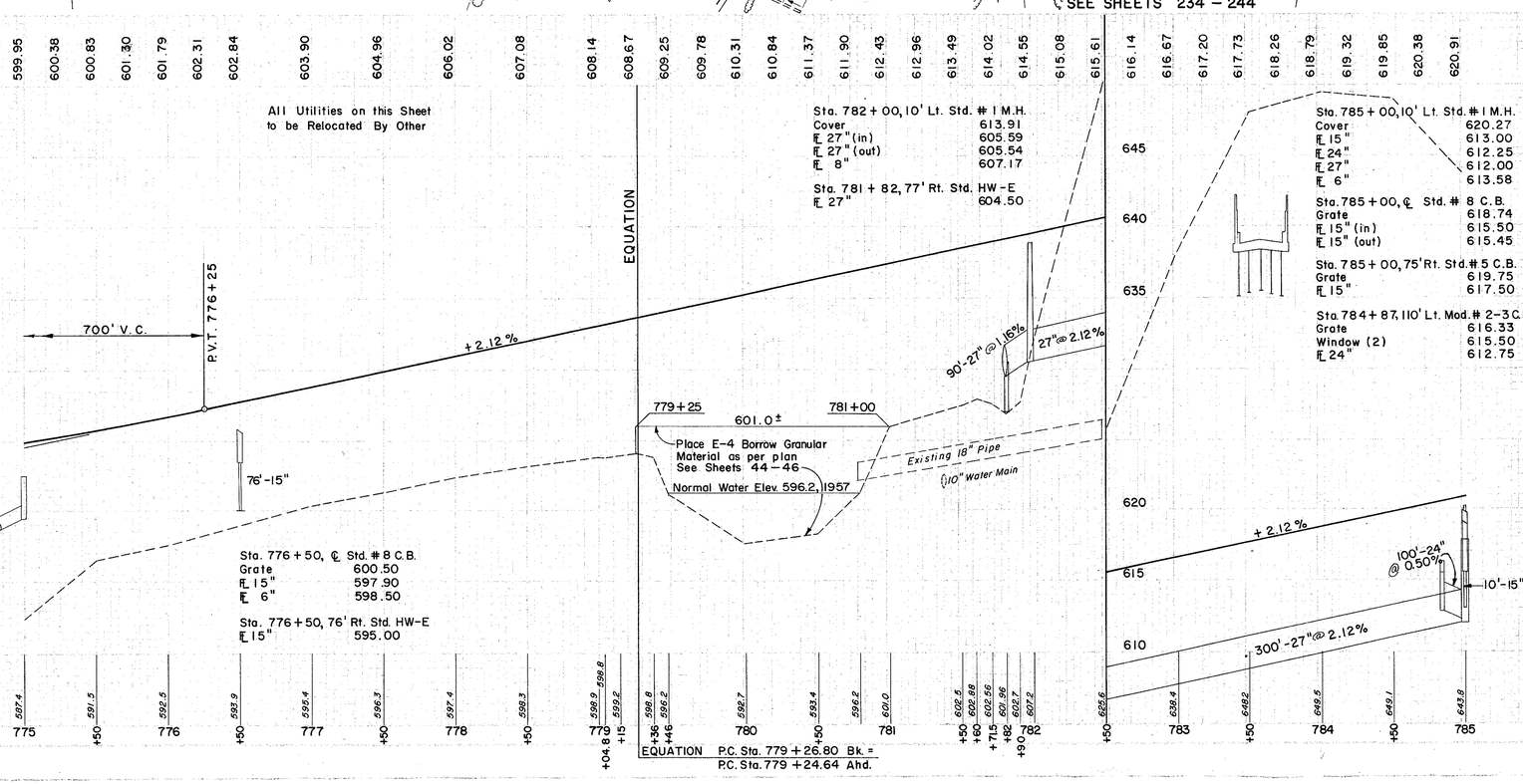




SECTION B-B
DETAIL OF SODDING AT PAVED GUTTER

SODDING RIGHT DITCH		
STATION	WIDTH OF SODDING FT.	LENGTH OF SODDING FT.	S.Y.
774 + 98	7.2	150	115
776 + 48	6.6		
SUB - TOTAL			
781 + 82	5.2	58	38
782 + 40	6.6		
SUB - TOTAL			

SODDING LEFT DITCH		
STATION	WIDTH OF SODDING FT.	LENGTH OF SODDING FT.	S.Y.
774 + 05	7.4	537	442
779 + 42	7.4		
SUB - TOTAL			



Ⓓ DRAINAGE

REF. NO.	STATION FROM	STATION TO	I-1 SIDE	PIPE CLASS J-1 15"	PIPE CLASS J-1 24"	PIPE CLASS J-1 27"	PIPE CLASS E-1 15"	PIPE CLASS E-1 27" L.F.	PIPE CLASS F-4 (SEC. M-5.01(c)) 6"	PIPE CLASS F-4 8"	6" PIPE CLASS I-3 SHALLOW DEEP	I-2 MASONRY C.Y.	I-5 CLASS I-3 6" 60° WYE	I-5 CLASS I-3 6" 60° BEND	I-8 STD. #5 C.B. EA.	I-8 STD. #8 C.B.	I-8 MOD. #2-3 C.B.	I-8 STD. #1 M.H.	I-10 DUMPED ROCK FOR CHANNEL PROTECT. C.Y.	I-14 PAVED GUTTER TYPE I L.F.	I-16 ABANDON M.H. EA.	E-12 PIPE REMOVAL OVER 15" L.F.
1-D	776+50		℄	76															5.0			
2-D	775+00	776+48	Rt.									0.26										
3-D	775+00	782+70	Lt.																			
4-D	775+00	782+00	Lt.																			
5-D	776+52	782+13	Rt.																			
6-D	775+00	782+21	Rt.																			
7-D	780+50	781+78	Rt.																			
8-D	782+74	784+92	Lt.																			
9-D	782+04	784+96	Lt.																			
10-D	782+17	784+97	Rt.																			
11-D	782+25	784+97	Rt.																			
12-D	784+87	785+00	℄ Rt.	74	100		10															
13-D	781+82	785+00	℄ Rt.			90		300														
14-D	781+75		Rt. Lt.																			
15-D	775+76		Rt.																			
TOTALS				150	100	90	10	300	50	20	2,982	1,185	0.73	6	4	1	2	2	7.5	135	—	238

Ⓡ ROADWAY

REF. NO.	STATION FROM	STATION TO	SIDE	I-15 GUARD STEEL STD. (DEEP) L.F.	I-15 GUARD STEEL RAIL BEAM	I-15 GUARD STEEL BARRIER (DEEP)	L-10 SODDING S.Y.	L-120 JUTE MATTING	E-8 REMOVAL AND DISPOSAL OF EXISTING SIDEWALK S.F.
1-R	774+63	776+14	℄						
2-R	774+50	776+00	Lt.	75.0	75.0				
3-R	774+99	776+48	Rt.	150.0					
4-R	776+51	780+00	℄				115		
5-R	774+08	779+42	Lt.					2.86	
6-R	774+97.5	783+70	Rt.	887.5			442		
7-R	779+37.5	781+00	Lt.	162.5					
8-R	781+82	782+40	Rt.	100			38		
9-R	783+60	784+60	Lt.						
11-R	780+50	781+78	Rt.				45		
12-R	775+60	777+00	Lt.					180	
TOTALS				1,375	75.0		640	286	180

EXCAVATION	47,673 C.Y.
EMBANKMENT	35,319 C.Y.
SHRINKAGE 20	42,383 C.Y.

STA. 775 + 00 TO STA. 785 + 00

LAKE COUNTY
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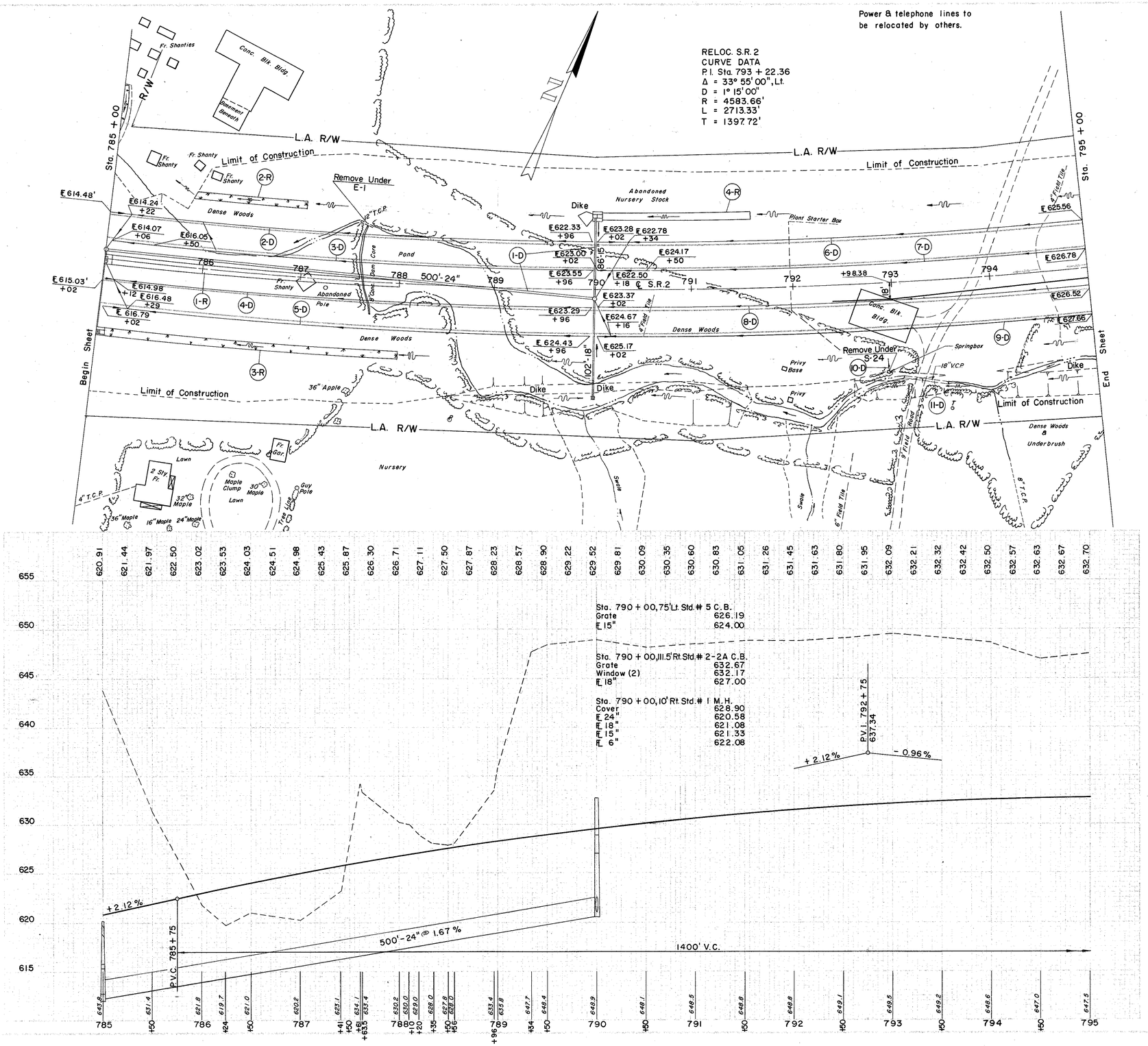


Ⓓ DRAINAGE

REF. NO.	STATION FROM	STATION TO	SIDE	PIPE CLASS J-1 SEC. M-6.61(b) OR SEC. M-6.61(c) 6"	15"	18"	PIPE CLASS E-1 24" L.F.	PIPE CLASS F-4 6"	8" SEC. M-6.41(c)	6" PIPE CLASS I-3 DEEP	I-5 CLASS J-1 I-3 6" 60° WYE EA.	I-8 STD. #5 C.B.	I-8 STD. #2-2A C.B.	I-8 STD. #1 M.H.	S-24 REMOVAL OF EXISTING STRUCTURE L.S.	I-9 NO. STONE DRAINS AS PER PLAN L.F.	E-12 PIPE REMOVED OVER 15" L.F.
I-1																	
1-D	785+00	790+00	-		86	102	500					1		1			
2-D	784+98	789+96	Lt.							528	1						
3-D	785+06	789+96	Lt.	34					10	486	1						
4-D	785+02	789+96	Rt.	44					10	498	2						
5-D	785+02	789+96	Rt.							502	1						
6-D	790+02	795+00	Lt.	58					10	494	1						
7-D	790+02	795+00	Lt.							496	2						
8-D	790+02	795+00	Rt.	32					10	502	1						
9-D	790+02	795+00	Rt.							504	1						
10-D	792+90	—	Rt.						10						L.S.	3	36
11-D	793+30	—	Rt.					6	10	4,010	10	1	1	1	LUMP	3	36
	TOTAL			168	86	102	500	46	10								

Ⓡ ROADWAY

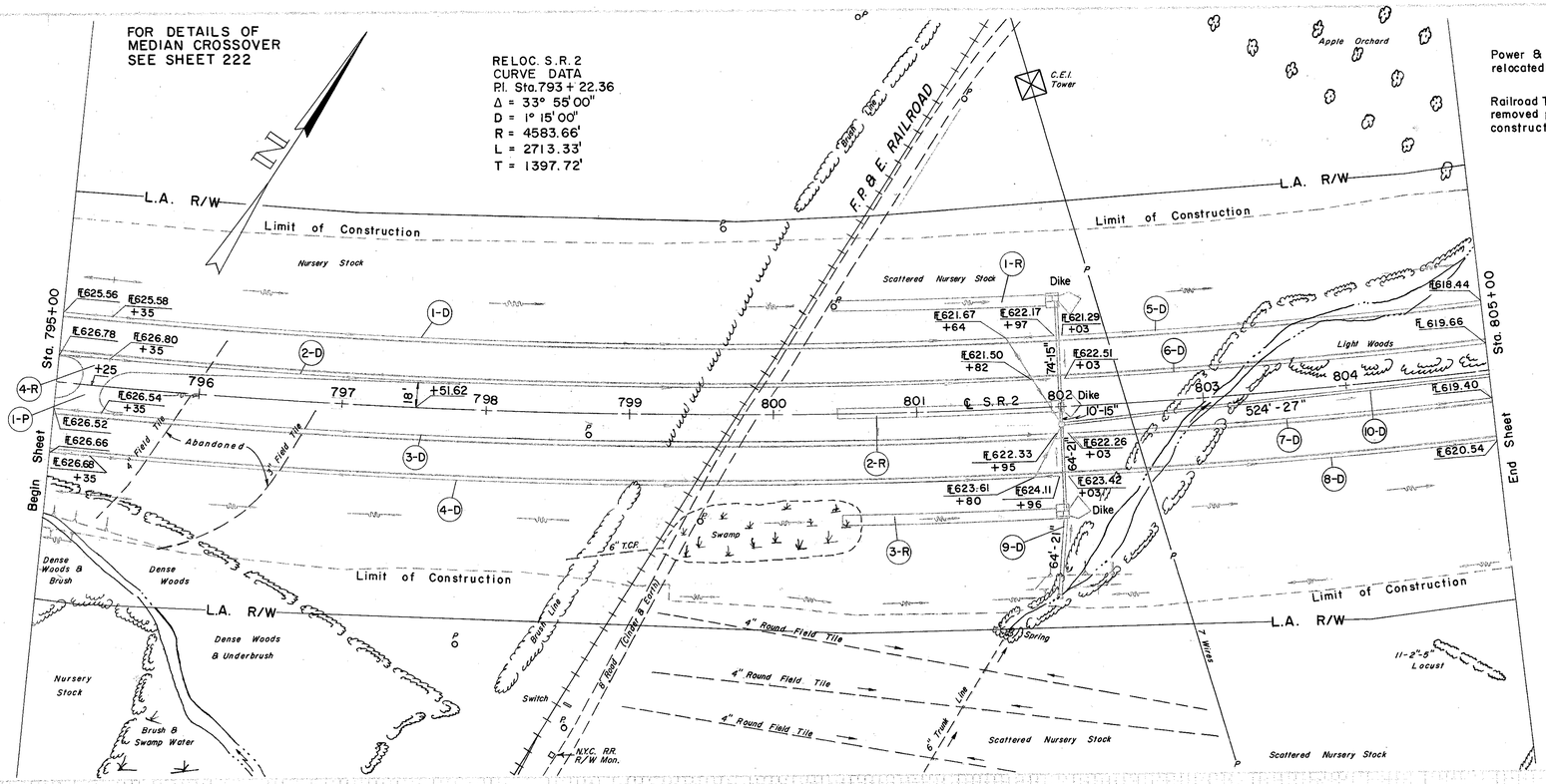
REF. NO.	STATION FROM	STATION TO	SIDE	L-10 SODDING S.Y.	L-120 JUTE MATTING S.Y.
1-R	785+07	788+00	℄		245
2-R	785+90	787+00	Lt.	92	
3-R	785+07	788+00	Rt.	172	
4-R	790+07	791+57	Lt.		125
	TOTAL			264	370

SODDING LEFT DITCH			
STATION FROM	STATION TO	WIDTH OF SODDING FT.	LENGTH OF SODDING FT.
785+90	787+00	8.0	110
	SUB TOTAL	7.0	92
SODDING RIGHT DITCH			
785+07	788+00	8.0	193
	SUB TOTAL	8.0	172

EXCAVATION	108,642 C.Y.
EMBANKMENT	974 C.Y.
SHRINKAGE AT 20	1,169 C.Y.

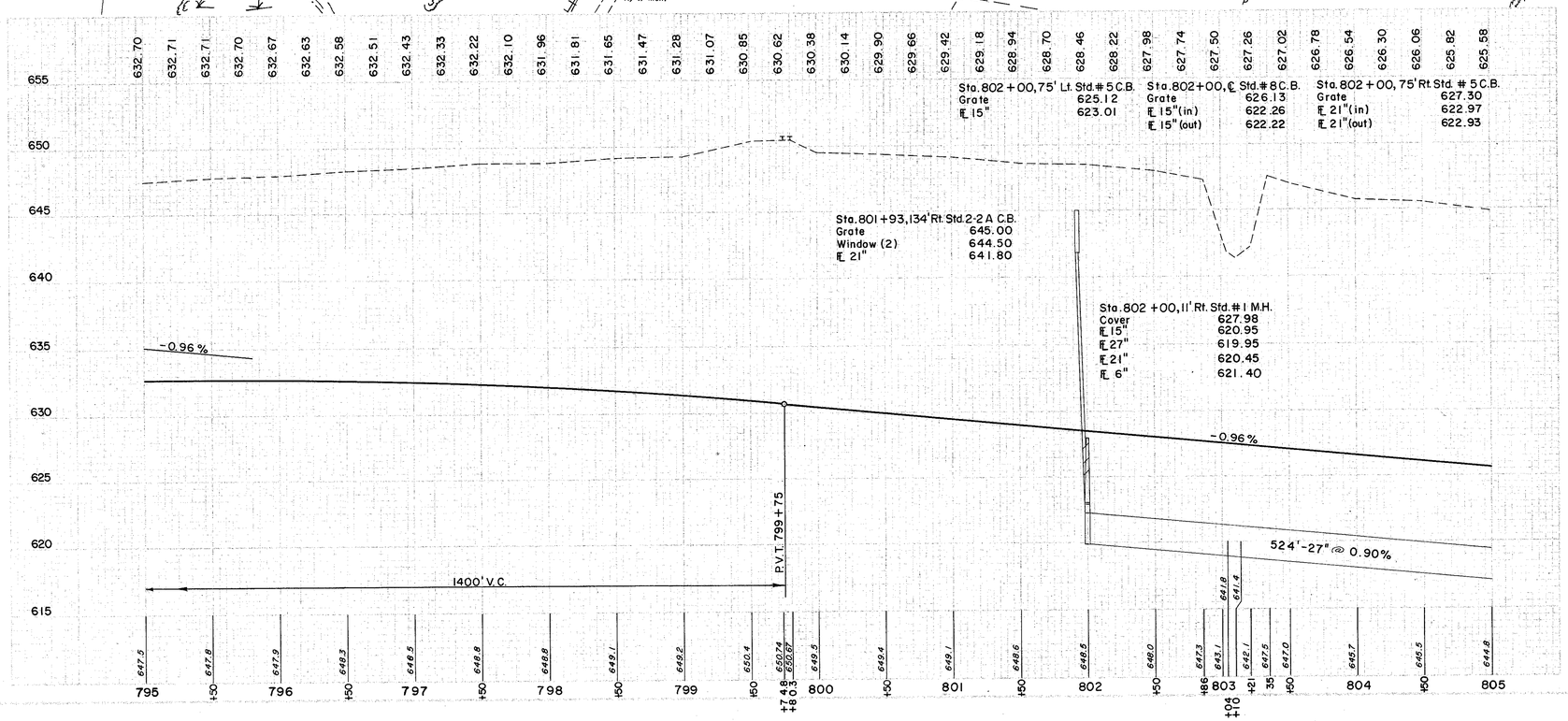
STA. 785 + 00 TO STA. 795 + 00

LAKE COUNTY
LAK-2-16.49



Power & Telephone Lines relocated by Others.

Railroad Tracks & Ties to be removed prior to or during construction by Others.



(D) DRAINAGE

REF. NO.	STATION SIDE FROM	STATION SIDE TO	PIPE CLASS J-1 SEC. M-6.61(b) OR SEC. M-6.8(b) 6"	PIPE CLASS J-1 15"	PIPE CLASS J-1 21"	I-1 PIPE CLASS E-1 15"	I-1 PIPE CLASS E-1 27"	I-1 PIPE CLASS F-4 6"	I-1 PIPE CLASS F-4 21"	I-1 6" PIPE CLASS I-3 DEEP	I-5 CLASS J-1 6" 60° BEND	I-5 CLASS J-1 6" 60° WYE	I-5 CLASS F-4 21"-25° BEND	I-8 STD. #8 C.B.	I-8 STD. #5 C.B.	I-8 STD. #1 M.H.
						L.F.							E.A.			
1-D	795+00	801+97	Lt.	62						690		1				
2-D	795+00	801+97	Lt.					10		694		2				
3-D	795+00	801+95	Rt.	32				10		698		1				
4-D	795+00	801+95	Rt.							703		1				
5-D	802+03	807+32	Lt.							524		1				
6-D	802+03	807+26	Lt.	60				10		520		2				
7-D	802+03	808+66	Rt.	36				10		665		1				
8-D	802+03	808+45	Rt.							651						
9-D	801+93	802+00	Lt.-Rt.	74	64	10			64				2	1	2	1
10-D	802+00	807+25	—				524									
		TOTAL		190	74	64	10	524	40	64	5,145	9	2	1	2	1

(P) PAVEMENT

REF. NO.	STATION SIDE FROM	STATION SIDE TO	B-21 3" WATER-PROOFED AGGR. BASE COURSE	B-112 7" POROUS BASE COURSE	I-22 SUBBASE	T-31 BIT. MATL.	T-31 #6 AGGR.
			C.Y.	C.Y.	C.Y.	GAL.	C.Y.
1-P	795+25	—	24	61	57	72	2.3
	TOTAL		24	61	57	72	2.3

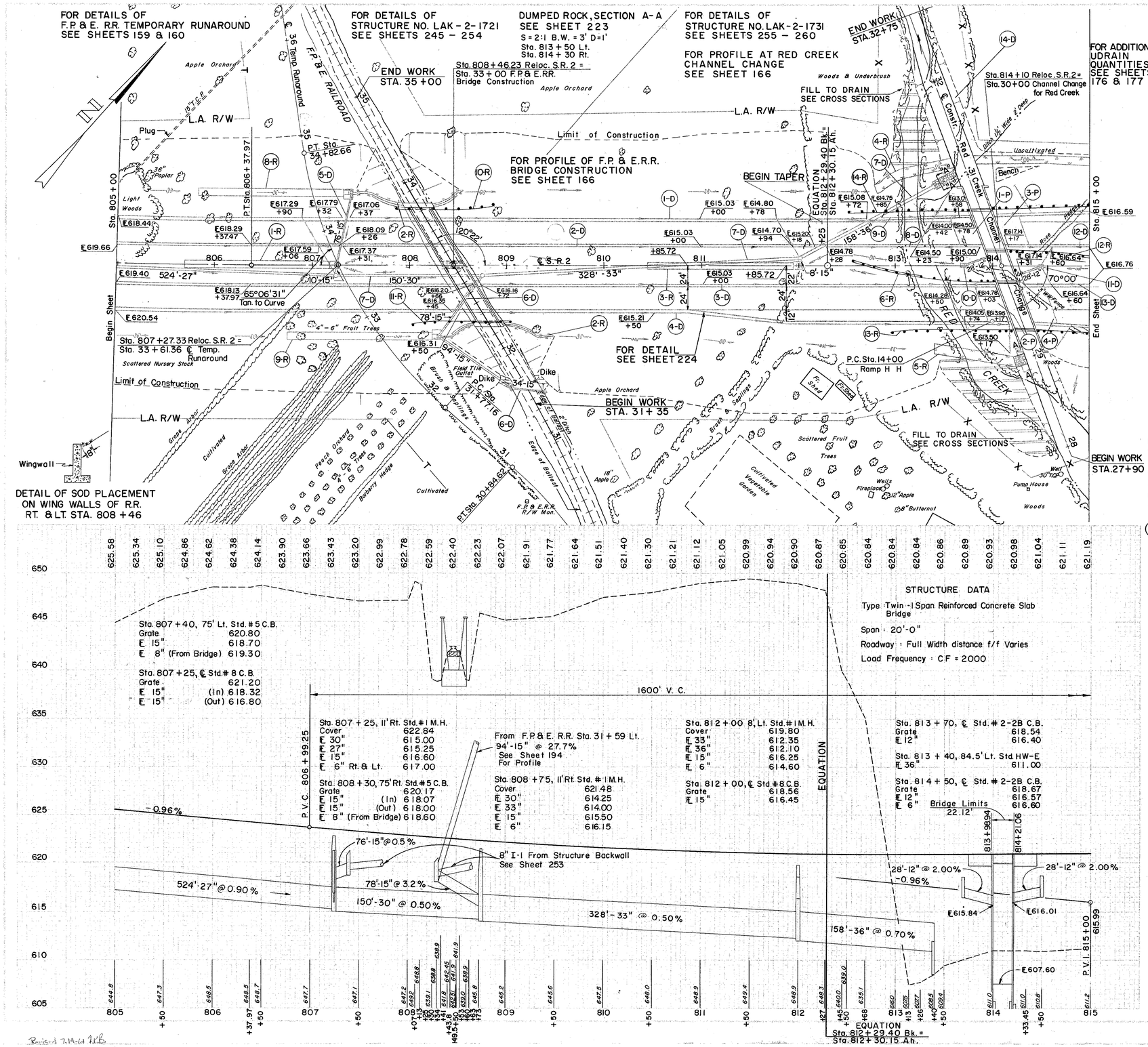
(R) ROADWAY

REF. NO.	STATION SIDE FROM	STATION SIDE TO	E-1 COMPACTED SUBGRADE	L-120 JUTE MATTING
			S.Y.	
1-R	800+43	801+93	Lt.	125
2-R	800+43	801+93	℄	125
3-R	800+43	801+93	Rt.	125
4-R	795+25		℄ 290	
		TOTAL	290	375

EXCAVATION	140,819 C.Y.
EMBANKMENT	15 C.Y.
EMBANKMENT 20 %	18 C.Y.

STA. 795 + 00 TO STA. 805 + 00

LAKE COUNTY
LAK-2-16.49



(D) DRAINAGE

REF. NO.	STATION FROM	STATION TO	PIPE CLASS J-1 SEC. M-6.6(b) OR SEC. M-6.8(b) SIZE	PIPE CLASS J-1 SEC. M-6.6(d) SIZE	PIPE CLASS E-1 SIZE	PIPE CLASS F-4 SEC. M-6.4(a) SIZE	6" PIPE CLASS I-3 DEEP	6" PIPE CLASS I-3 SHALLOW	MASONRY C.Y.	6" 60° WYE	15" 90° 15° BEND	STD. #8 C.B.	STD. #5 C.B.	STD. #2-2B C.B.	STD. #1 M.H.	STD. #2-2A C.B.	DUMPED ROCK FOR CHANNEL PROTECT.
									C.Y.	CLASS J-1	CLASS I-3	CLASS I-3	CLASS F-4	EA.			C.Y.
1-D	807+37	812+72	Lt.					534		1							
2-D	807+31	812+18	Lt.	35				487		2							
3-D	808+72	814+03	Rt.					530		1							
4-D	808+50	814+17	Rt.	48				608		1							
5-D	807+25	807+40	Lt.			10					1						
6-D	808+30	808+75	Rt.			10					1						
7-D	807+25	813+40	Rt.-Lt.	76	10												
8-D	812+28	813+90	Lt.		8												
9-D	812+85	813+78	Lt.	78	150												
10-D	813+70	℄			328												
11-D	814+50	℄															
12-D	814+17	816+07	Lt.														
13-D	814+31	816+07	Rt.														
14-D	Red Creek																
TOTAL			143	154	158	34	18	150	328	30	20	56	94	2,413	388	0.59	8	2	1	2	2	2	3	2	7.0 23.7

REF. NO.	STATION FROM	STATION TO	SIDE	GUARD RAIL STEEL BEAM STD. TYPE (DEEP) L.F.	BARRIER TYPE (DEEP)	SODDING S.Y.	JUTE MATTING S.Y.
1-R	805+68	807+18	℄				125
2-R	808+46.23		Rt.-Lt.				
3-R	810+43	811+93	℄			34	125
4-R	812+80	813+60	Lt.			84	
5-R	813+40	814+22	Rt.			82	
6-R	812+55	814+03	℄	75.0	75.0		
8-R	805+83	807+33	Lt.				125
9-R	806+73	808+23	Rt.				125
10-R	807+86	808+86	Lt.	100.0			
11-R	808+03	809+03	Rt.	100.0			
12-R	814+19	815+67	℄	75.0	75.0		
13-R	812+97	814+20	Rt.	125.0			
14-R	812+53	813+78	Lt.	125.0			
TOTAL				600.0	150.0	200	500

(P) PAVEMENT

REF. NO.	STATION FROM	STATION TO	SIDE	I-7 REINF. CONC. APPROACH T=13" S.Y.
1-P	STRUCTURE			79
2-P				99
3-P				82
4-P				100
TOTAL				360

(R) ROADWAY

SODDING RIGHT DITCH STATION	WIDTH OF SODDING FT.	LENGTH OF SODDING FT. S.Y.
813+40	9.0	82
814+22	9.0	
SUB TOTAL		

SODDING LEFT DITCH STATION	WIDTH OF SODDING FT.	LENGTH OF SODDING FT. S.Y.
812+80	9.0	84
813+60	9.0	
SUB TOTAL		

F.P. & E. RAILROAD

EXCAVATION	=	2,933 C.Y.
EMBANKMENT	=	30 C.Y.
EMBANKMENT +20%	=	36 C.Y.

RELOCATION S.R. 2

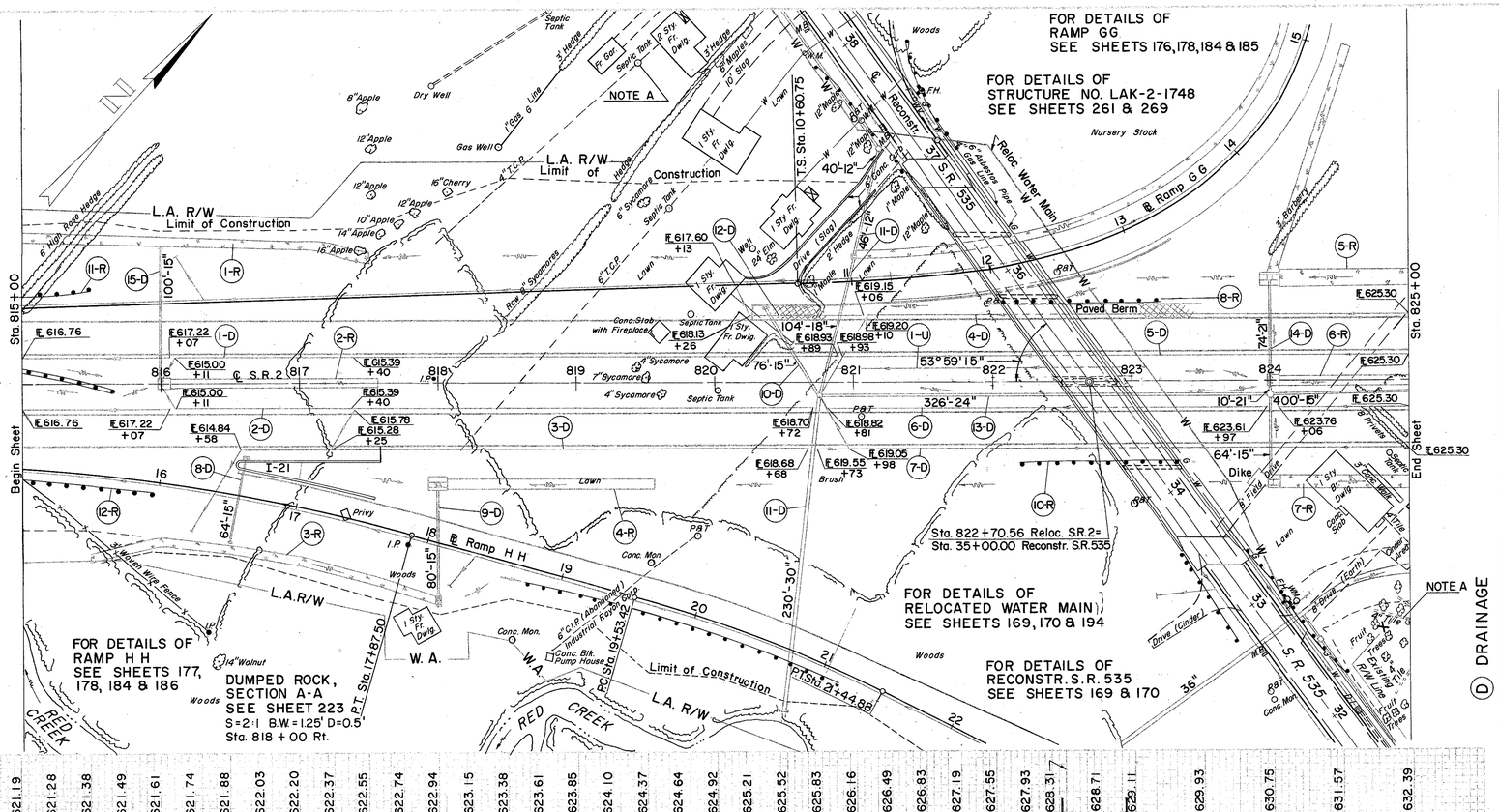
EXCAVATION	=	152,759 C.Y.
EMBANKMENT	=	10,565 C.Y. *
EMBANKMENT +20%	=	12,689 C.Y. *

* Includes embankment shown on Red Creek Channel Change cross sections

STA. 805+00 TO STA. 815+00

Revised 7-19-61 JRB

LAKE COUNTY
LAK-2-16.49



(D) DRAINAGE

REF. NO.	STATION FROM	STATION TO	S I D E	PIPE CLASS J-1 SEC. M-66(a) OR SEC. M-66(b) 6"	15"	18"	21"	30"	PIPE CLASS E-1 SEC. M-66(c) 24"	21"	PIPE CLASS E-1 PIPE SEC. M-66(c) 8"	6"	12"	6" PIPE CLASS I-3 DEEP	MASONRY CLASS I-3 J-1	I-3	6"-60° BEND J-1	6"-60° WYE I-3	CLASS F-4 12"-25° BEND	STD. #22A C.B.	STD. #8 C.B.	STD. #5 C.B.	STD. #6 C.B.	STD. #1 M.H.	DUMPED ROCK FOR CHANNEL PROTECT.
				L.F.										C.Y.			EA.								C.Y.
1-D	816+11	820+89	Lt.																						
2-D	816+11	820+72	Rt.																						
3-D	816+58	820+68	Rt.																						
4-D	821+10	825+00	Lt.											490		1									
5-D	820+93	825+00	Lt.											474											
6-D	820+81	823+97	Rt.	44										444		1		1							
7-D	820+73	825+00	Rt.	34										390											
8-D	816+62	—	Rt.			64								407		1									
9-D	818+00	—	Rt.			80								316		1									
10-D	820+35	820+75	L&Rt.			76								427		1									
11-D	820+50	R.37+26 S.R.535	Lt.												026										
12-D	820+13	821+06	Lt.	27											026										
13-D	820+73	824+00	Rt.												051				2						1.3
14-D	824+00	—	L&Rt.					64										1							
15-D	816+00	—	Lt.					100						80										2	
TOTALS				105	384	104	74	230	24	30	86	6"	12"	3,028	0.26	1.29	3	3	1	1	2	3	2	2	1.3

REF. NO.	STATION FROM	STATION TO	S I D E	PIPE CLASS J-1 SEC. M-66(a) OR SEC. M-66(b) 6"	15"	18"	21"	30"	PIPE CLASS E-1 SEC. M-66(c) 24"	21"	PIPE CLASS E-1 PIPE SEC. M-66(c) 8"	6"	12"	6" PIPE CLASS I-3 DEEP	MASONRY CLASS I-3 J-1	I-3	6"-60° BEND J-1	6"-60° WYE I-3	CLASS F-4 12"-25° BEND	STD. #22A C.B.	STD. #8 C.B.	STD. #5 C.B.	STD. #6 C.B.	STD. #1 M.H.	DUMPED ROCK FOR CHANNEL PROTECT.
				L.F.										C.Y.			EA.								C.Y.
1-R	813+80	817+50	Lt.																						
2-R	816+07	817+57	℄																						
3-R	815+50	818+00	Rt.																						
4-R	818+02	819+57	Rt.																						
5-R	824+00	825+00	Lt.																						
6-R	824+07	825+57	℄																						
7-R	824+00	825+00	Rt.																						
8-R	822+07	823+19	Lt.																						
10-R	822+24	823+36	Rt.																						
11-R	814+02	815+50	Lt.																						
12-R	814+47	815+95	Rt.																						
TOTALS																									

SODDING RIGHT DITCH STATION	WIDTH OF SODDING FT.	LENGTH OF SODDING FT.	S.Y.
815+50	6.0	250	167
818+00	6.0		
SUB TOTAL			
824+00	9.0	100	99
825+00	8.8		
SUB TOTAL			

SODDING LEFT DITCH STATION	WIDTH OF SODDING FT.	LENGTH OF SODDING FT.	S.Y.
813+80	7.0	320	224
817+00	5.6	50	35
817+50	7.0		
SUB TOTAL			259
824+00	11.7	100	128
825+00	11.3		
SUB TOTAL			

(U) UTILITIES

REF. NO.	STATION FROM	STATION TO	S I D E	I-1 8" PIPE CLASS H-2 8"-60° WYE	I-5 CLASS H-2 8"-60° WYE
				L.F.	EA.
I-U	820+75	823+09	Lt.	224	1

(R) ROADWAY

REF. NO.	STATION FROM	STATION TO	S I D E	I-15 GUARD RAIL STEEL BEAM STD. TYPE (DEEP) L.F.	SODDING S.Y.	JUTE MATTING L-120 S.Y.
1-R	813+80	817+50	Lt.			
2-R	816+07	817+57	℄		259	125
3-R	815+50	818+00	Rt.			
4-R	818+02	819+57	Rt.		167	125
5-R	824+00	825+00	Lt.			
6-R	824+07	825+57	℄		128	125
7-R	824+00	825+00	Rt.			
8-R	822+07	823+19	Lt.	112.5	99	
10-R	822+24	823+36	Rt.	112.5		
11-R	814+02	815+50	Lt.	150.0		
12-R	814+47	815+95	Rt.	150.0		
TOTALS				525.0	653	375

EXCAVATION	=	144,074 C.Y.
EMBANKMENT	=	13,167 C.Y.
ENCUMBRANCE	= 20 %	15,800 C.Y.

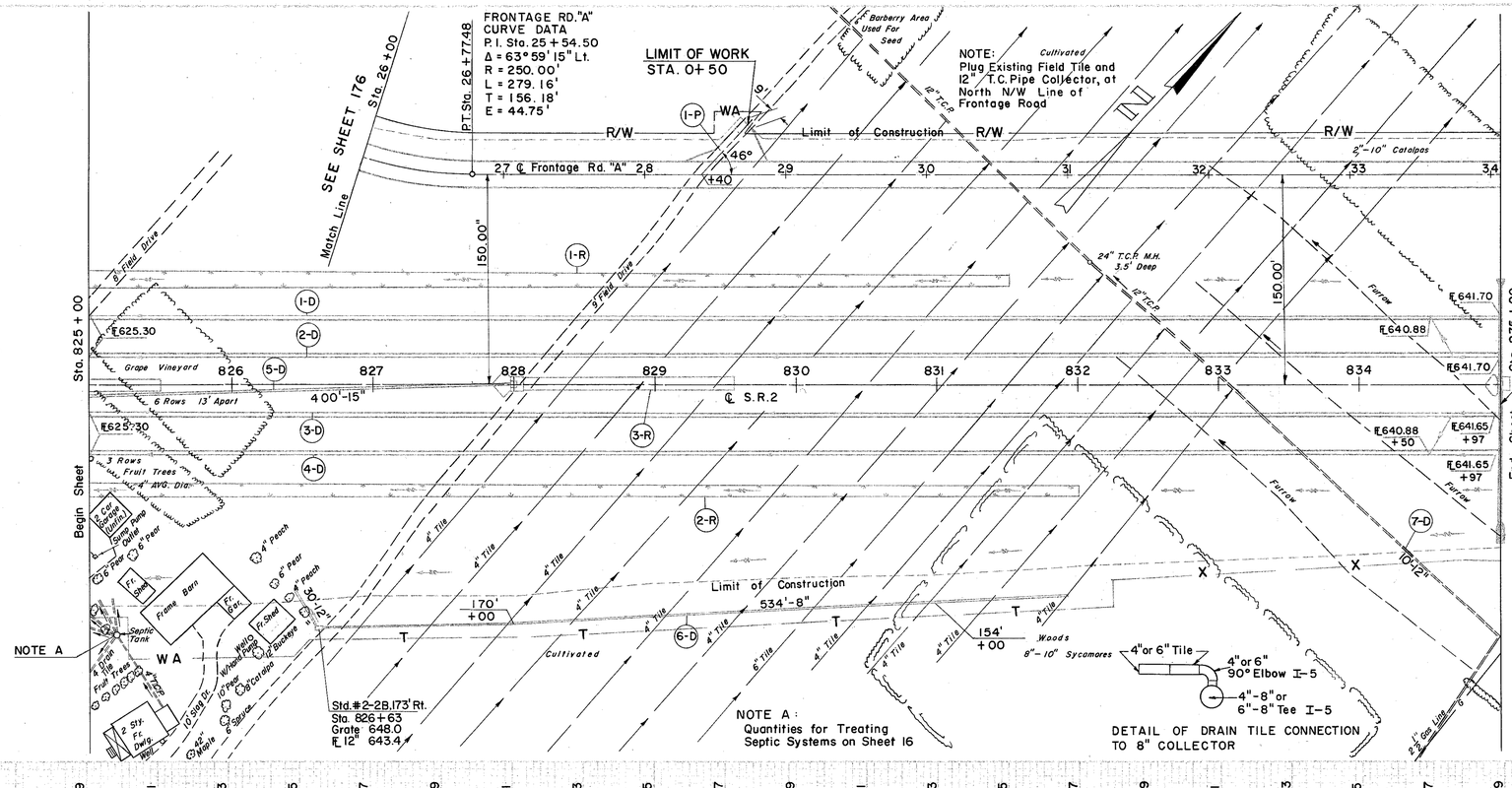
STA. 815 + 00 TO STA. 825 + 00

LAKE COUNTY
LAK-2-16.49

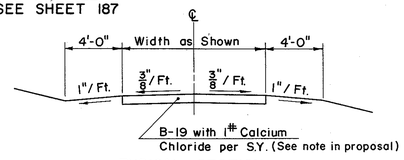
FRONTAGE RD."A"
CURVE DATA
P.I. Sta. 25+54.50
Δ = 63°59'15" Lt.
R = 250.00'
L = 279.16'
T = 156.18'
E = 44.75'

LIMIT OF WORK
STA. 0+50

NOTE:
Plug Existing Field Tile and 12" T.C. Pipe Collector, at North N/W Line of Frontage Road



FRONTAGE ROAD "A"
FOR PAVEMENT QUANTITIES
SEE SHEET 176
FOR PROFILE
SEE SHEET 187



TYPICAL SECTION
DRIVE LT. STA. 28+40

STRUCTURE NO. LAK-2-1771
SEE SHEET 30

(D) DRAINAGE

REF. NO.	STATION FROM	STATION TO	S I D E	15" PIPE CLASS E-1	8" PIPE CLASS H-2	PIPE CLASS F-4 12"	PIPE CLASS F-4 6"	6" PIPE CLASS I-3 DEEP	CLASS I-3 6"-60° WYE	CLASS H-2 90° BEND 4"	CLASS H-2 90° BEND 6"	CLASS H-2 TEE 4"-8"	CLASS H-2 TEE 6"-8"	CLASS H-2 EA.	I-5 STD. #2-2B C.B.	I-5 STD. #8 C.B.
				L.F.												
1-D	825+00	835+34	Lt.			10	1058		1							
2-D	825+00	835+07	Lt.			10	997									
3-D	825+00	834+97	Rt.				997									
4-D	825+00	834+97	Rt.				1031		1							
5-D	824+00	828+00	℄	400												
6-D	826+45	831+94	Rt.		534	30					10				I	I
7-D	834+30	—	Rt.			10									I	I
TOTAL				400	534	40	20	4,083	2		10				I	I

(R) ROADWAY

REF. NO.	STATION FROM	STATION TO	S I D E	E-1 COMP. SUBGRADE	L-10 SODDING	L-120 JUTE MATTING
				S.Y.		
1-R	825+00	831+50	Lt.		704	
2-R	825+00	832+00	Rt.		626	
3-R	828+07	829+57	℄			125
4-R	Frontage Rd. "A" 28+40		Lt.	123		
TOTAL				123	1,330	125

(P) PAVEMENT

REF. NO.	STATION FROM	STATION TO	S I D E	B-19 SPECIAL FURN. & SPREAD. CAL. CHLORIDE	CRUSHED AGGR. BASE COURSE	TOP. AGGR.
				C.Y.	Tons	
I-P	Frontage Rd. "A" 28+40		Lt.	17	0.06	
TOTAL				17	0.06	

SODDING LEFT DITCH		
STATION	WIDTH OF SODDING FT.	LENGTH OF SODDING FT.
		S.Y.
825+00	11.3	650
831+50	8.2	
SUB TOTAL		704

SODDING RIGHT DITCH		
STATION	WIDTH OF SODDING FT.	LENGTH OF SODDING FT.
		S.Y.
825+00	8.8	700
832+00	7.3	
SUB TOTAL		626

FRONTAGE ROAD "A"

EXCAVATION	=	1 C.Y.
EMBANKMENT	=	3,591 C.Y.
EMBANKMENT +20 %	=	4,309 C.Y.

EXCAVATION	=	53,202 C.Y.
EMBANKMENT	=	301 C.Y.
EMBANKMENT +20 %	=	361 C.Y.

STA. 825+00 TO STA. 835+00

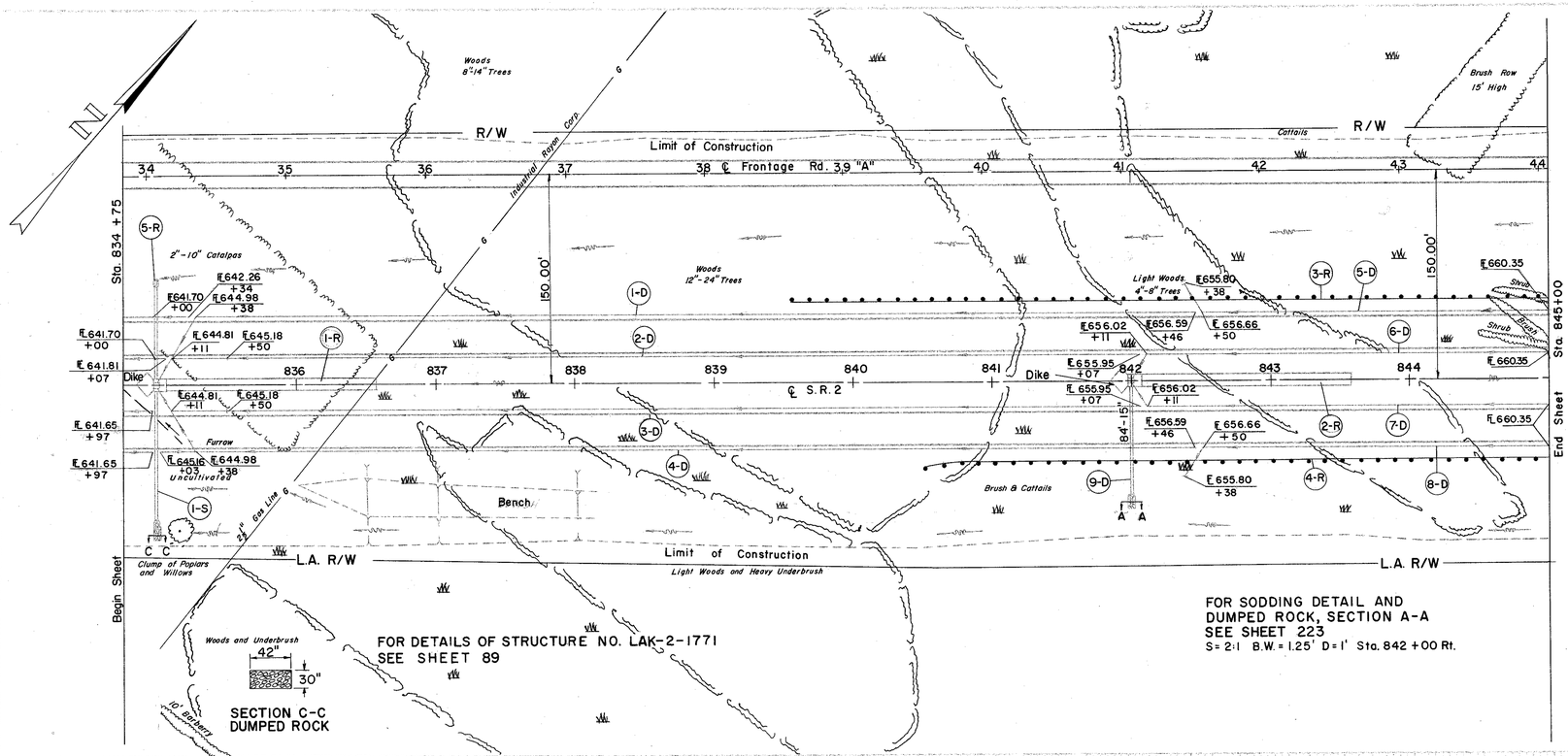
Revised 7-14-66 L.L. Brown

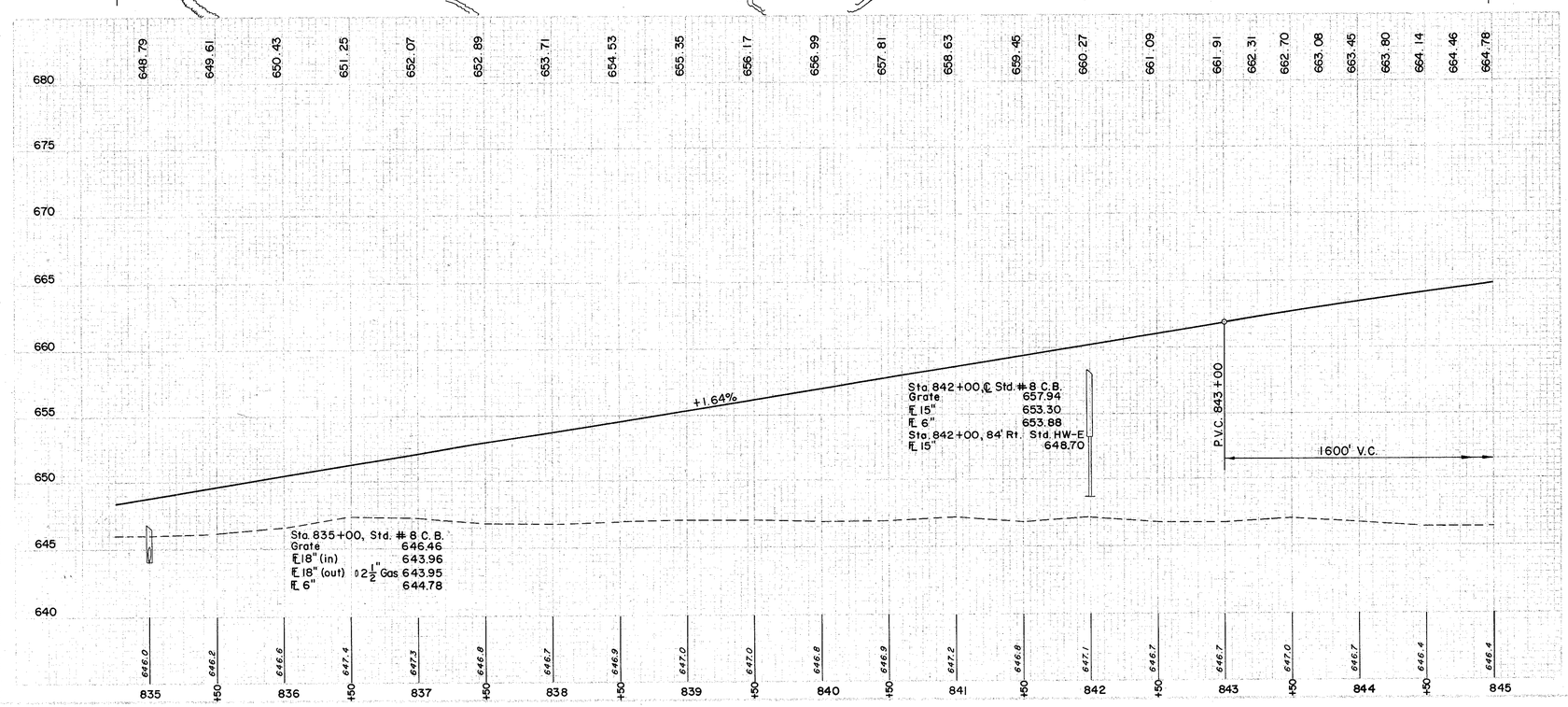
LAKE COUNTY
LAK-2-16.49

FRONTAGE ROAD "A"
FOR PAVEMENT QUANTITIES
SEE SHEET 176

FOR PROFILE
SEE SHEET 187

$2\frac{1}{2}$" Gas Line to be Relocated by Others.





(D) DRAINAGE

REF. NO.	STATION FROM	STATION TO	SIDE	PIPE CLASS J-1 SEC. M-66(b) OR SEC. M-68(b) 6"	15"	I-1 PIPE CLASS F-4 6"	SEC. M-64(c) 8"	I-2 6" PIPE CLASS I-3 MASONRY	SHALLOW	I-5 CLASS J-1 6"-60° WYE	J-1 I-3 6"-60° BEND	I-8 STD. #8 C.B.	I-10 DUMPED ROCK FOR CHANNEL PROTECT.
				L.F.				C.Y.		EA.			C.Y.
1-D	835+38	842+46	Lt.	44					708				
2-D	835+11	842+07	Lt.				10		696				
3-D	835+11	842+07	Rt.				10		696				
4-D	835+03	842+46	Rt.	44					743				
5-D	842+50	845+00	Lt.				10		264				
6-D	842+11	845+00	Lt.						299				
7-D	842+11	845+00	Rt.				10		299				
8-D	842+50	845+00	Rt.				10		264				
9-D	842+00	—	Rt.		84							1	2.3
TOTAL				88	84	40	20	3.969	0.26	1	4	1	2.3

(R) ROADWAY

REF. NO.	STATION FROM	STATION TO	SIDE	I-15 GUARD RAIL STEEL BEAM STD. TYPE (DEEP) L.F.	L-120 JUTE MATTING S.Y.	L-10 SODDING
1-R	835+07	836+57	℄		125	
2-R	842+07	843+57	℄		125	
3-R	839+55	851+55	Lt.	1,200.0		
4-R	840+52	850+52	Rt.	1,000.0		
5-R	Structure					3.5
TOTAL				2,200.0	250	3.5

(S) STRUCTURE

REF. NO.	STATION FROM	STATION TO	SIDE	I-1 18" PIPE CLASS I-1 SEC. M-66(a) OR SEC. M-68(b) L.F.	I-2 MASONRY C.Y.	I-8 STD. #8 C.B. EA.	I-10 DUMPED ROCK FOR CHANNEL PROTECTION C.Y.
1-S	835+00	—		178	0.60	1	3.2
TOTAL				178	0.60	1	3.2

FRONTAGE ROAD "A"

EXCAVATION	=	0 C.Y.
EMBANKMENT	=	3,967 C.Y.
EMBANKMENT +20 %	=	4,760 C.Y.

EXCAVATION		1,970 C.Y.
EMBANKMENT		50,708 C.Y.
EMBANKMENT +20 %		60,850 C.Y.

STA. 835+00 TO STA. 845+00

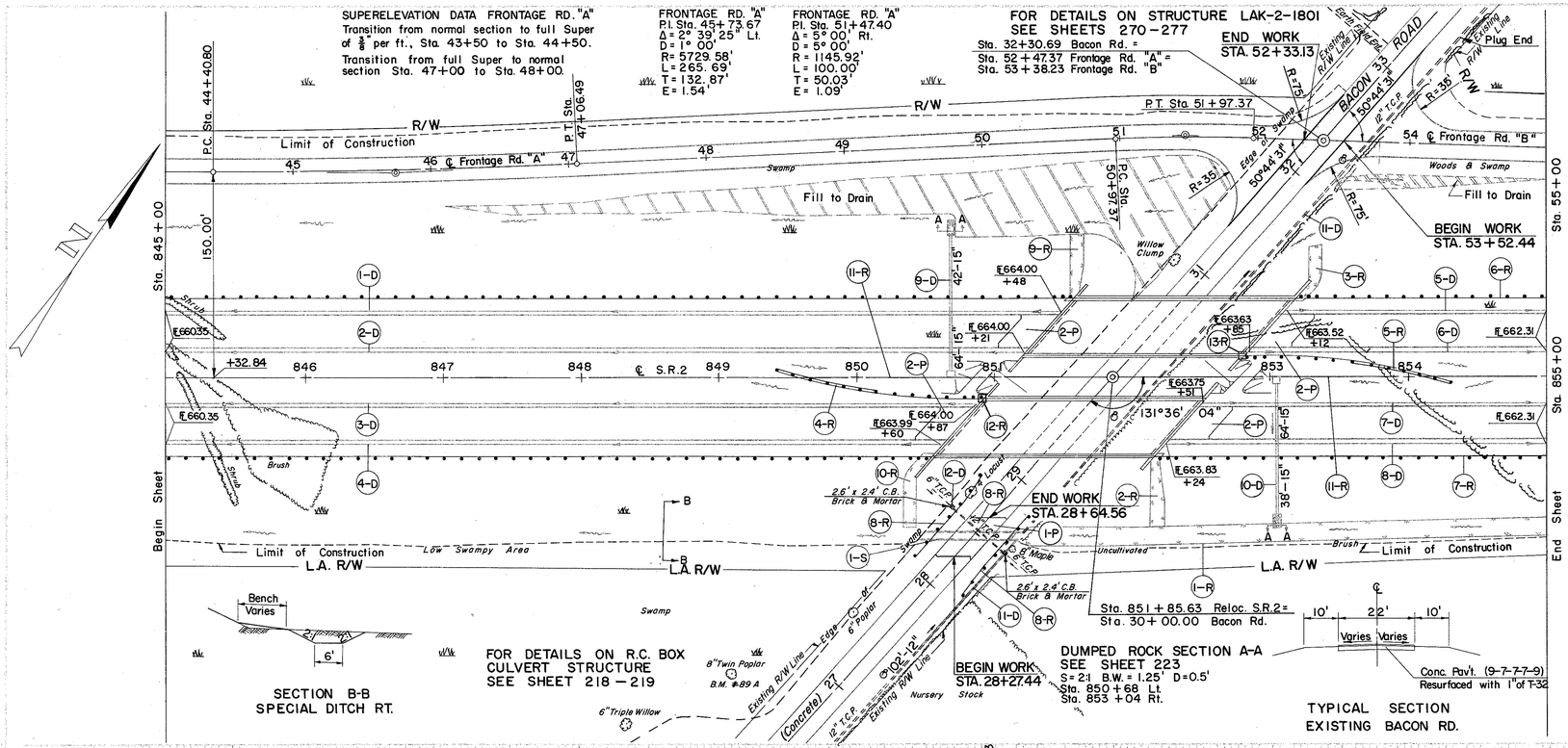
LAKE COUNTY
LAK-2-16.49

SUPERELEVATION DATA FRONTAGE RD. "A"
Transition from normal section to full Super of 3/8" per ft., Sta. 43+50 to Sta. 44+50.
Transition from full Super to normal section Sta. 47+00 to Sta. 48+00.

FRONTAGE RD. "A"
P.I. Sta. 45+73.67
Δ = 2° 39' 25" Lt.
D = 1° 00'
R = 5729.58'
L = 265.69'
T = 132.87'
E = 1.54'

FRONTAGE RD. "A"
P.I. Sta. 51+47.40
Δ = 5° 00' Rt.
D = 5° 00'
R = 1145.92'
L = 100.00'
T = 50.03'
E = 1.09'

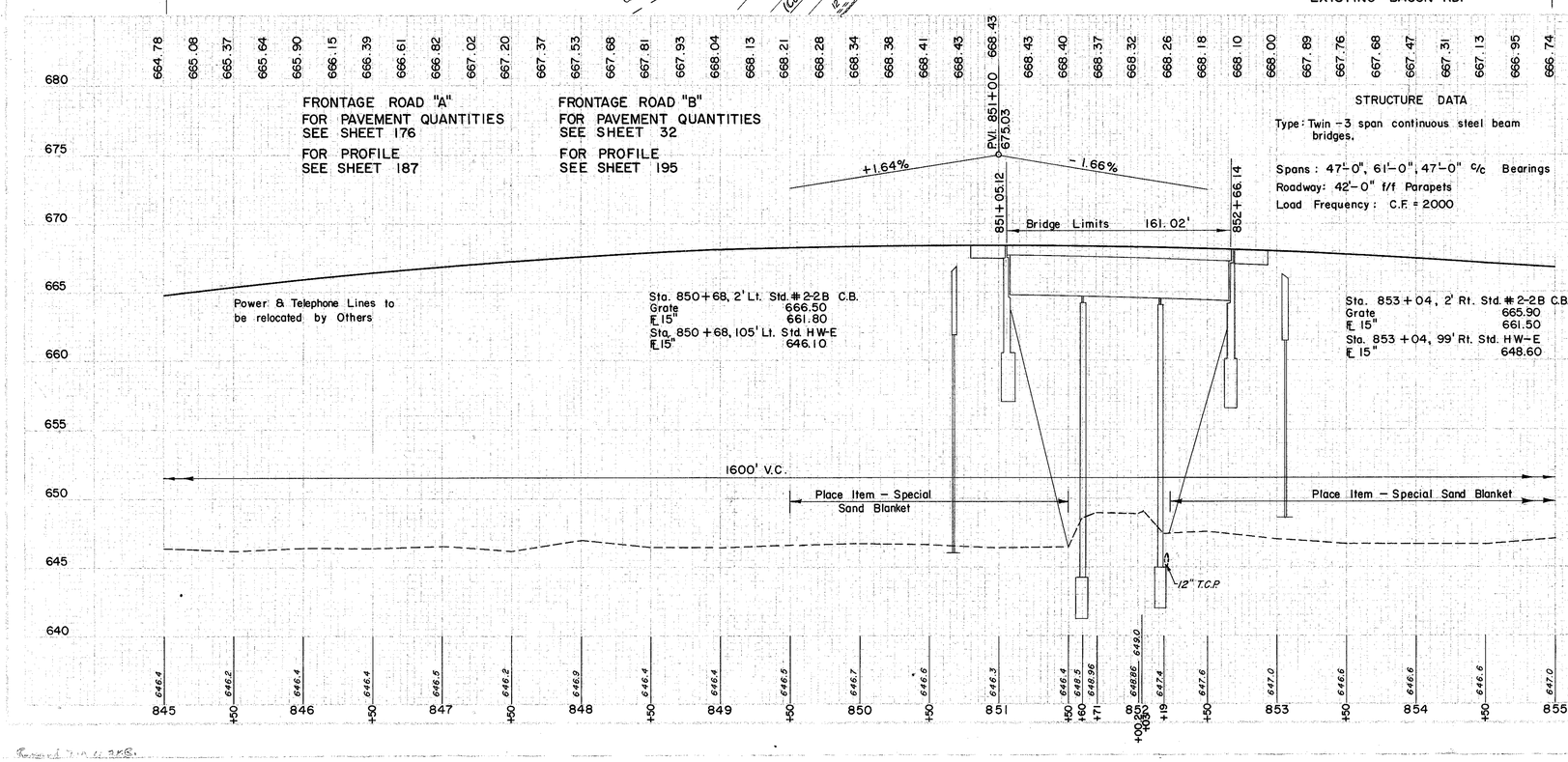
FOR DETAILS ON STRUCTURE LAK-2-1801
SEE SHEETS 270-277
Sta. 32+30.69 Bacon Rd. =
Sta. 52+47.37 Frontage Rd. "A" =
Sta. 53+38.23 Frontage Rd. "B"



FRONTAGE ROAD "A"
FOR PAVEMENT QUANTITIES
SEE SHEET 176
FOR PROFILE
SEE SHEET 187

FRONTAGE ROAD "B"
FOR PAVEMENT QUANTITIES
SEE SHEET 32
FOR PROFILE
SEE SHEET 195

STRUCTURE DATA
Type: Twin-3 span continuous steel beam bridges.
Spans: 47'-0", 61'-0", 47'-0" c/c Bearings
Roadway: 42'-0" f/f Parapets
Load Frequency: C.F. = 2000



(P) PAVEMENT

REF. NO.	STATION FROM	STATION TO	SIDE	I-7 S.Y.	I-7 REINF. CONC. APPROACH SLAB, T=13" S.Y.
1-P	STRUCTURE	BACON S.R.2		73	268
2-P	STRUCTURE	TOTAL		73	268

SODDING RIGHT DITCH

STATION	WIDTH OF SODDING FT.	LENGTH OF SODDING FT. S.Y.
851+23	13.0	377
855+00	13.0	
SUB-TOTAL		545

(S) STRUCTURES

REF. NO.	STATION	E-2 EXCAVATION FOR STRUCT. C.Y.	S-1 CONC. FOR STRUCT. C.Y.	S-4 REINF. STEEL LBS.
1-S	28+46 Bacon Rd.	86	36	4,340

I-15, BACON RD., (21 FT. TO FACE)
STA. 28+08 TO STA. 28+83 LT.
STA. 28+09 TO STA. 28+84 RT.

(R) ROADWAY

REF. NO.	STATION FROM	STATION TO	SIDE	SPECIAL SETTLE-MENT PLATFORMS EA.
12-R	850+90		Lt.	1
13-R	852+80		Rt.	2
	TOTAL			

(D) DRAINAGE

REF. NO.	STATION FROM	STATION TO	SIDE	E-12 PIPE REMOVED 15" AND UNDER	15" PIPE CLASS J-1	I-1 12" PIPE CLASS E-1	I-1 6" PIPE CLASS F-4	I-2 6" PIPE CLASS I-3 SHALLOW	I-2 MASONRY	I-5 CLASS F-4 15°-25° BEND	I-8 STD. # 2-2B C.B.	I-10 DUMPED ROCK FOR CHANNEL PROTECT.	I-16 INLETS ABND.
				L.F.					C.Y.	SEC. M-64(a) E.A.		C.Y.	E.A.
1-D	845+00	851+48	Lt.				10	638					
2-D	845+00	851+21	Rt.				10	611					
3-D	845+00	850+87	Rt.					587					
4-D	845+00	850+60	Rt.					560					
5-D	853+12	855+00	Lt.					188					
6-D	852+85	855+00	Lt.				10	215					
7-D	852+51	855+00	Rt.				10	239					
8-D	852+24	855+00	Rt.				10	266		0.26	2	1.8	
9-D	850+68		Lt.		42					0.26	2	1.8	
10-D	853+04		Rt.		38								
11-D	BACON RD. 28+70	33+50	Rt.	480		102							1
12-D	850+80		Rt. & ℄	36									
	TOTAL			516	128	102	40	3304	0.52	4	2	36	1

(R) ROADWAY

REF. NO.	STATION FROM	STATION TO	SIDE	E-1 COMP. SUB-GRADE S.Y.	I-15 GUARD RAIL STEEL BEAM STD. TYPE BARRIER (DEEP) L.F.	I-15 SODDING FOR SPECIAL BERM & SLOPE PROTECT. S.Y.	E-8 REMOVAL & DISPOSAL OF EXISTING PAVT. C.Y.	SPECIAL SAND-BLANKET C.Y.
1-R	861+23	855+00	Rt.			545		
2-R	851+17		Rt.					
3-R	852+25		Lt.					
4-R	849+42	850+90	℄		75.0			
5-R	852+82	854+30	℄		75.0			
6-R	853+22	869+05	Lt.		1600.0			
7-R	852+19	861+95	Rt.		975.0			
8-R	STRUCTURE		BACON RD.	73	150.0			
9-R	851+60		Lt.				91	
10-R	850+40		Rt.				49	
11-R	849+50	855+25	℄				57	
	TOTAL			73	2,875.0	150.0	545	194	91	3,608	3,608

FRONTAGE ROAD "A"

EXCAVATION	=	7 C.Y.
EMBANKMENT	=	3,099 C.Y.
EMBANKMENT + 20 %	=	3,719 C.Y.

FRONTAGE ROAD "B"

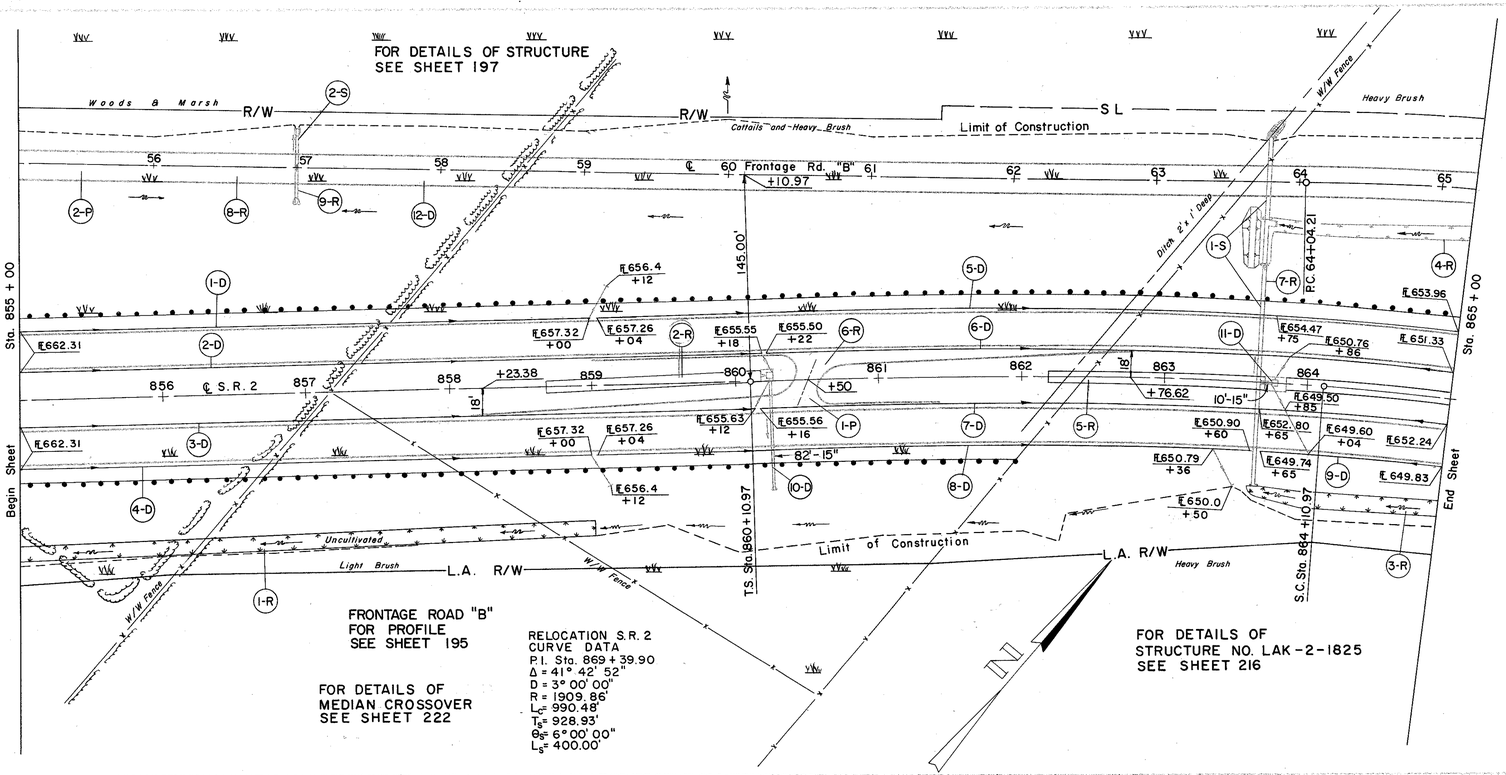
EXCAVATION	=	87 C.Y.
EMBANKMENT	=	324 C.Y.
EMBANKMENT + 20 %	=	389 C.Y.

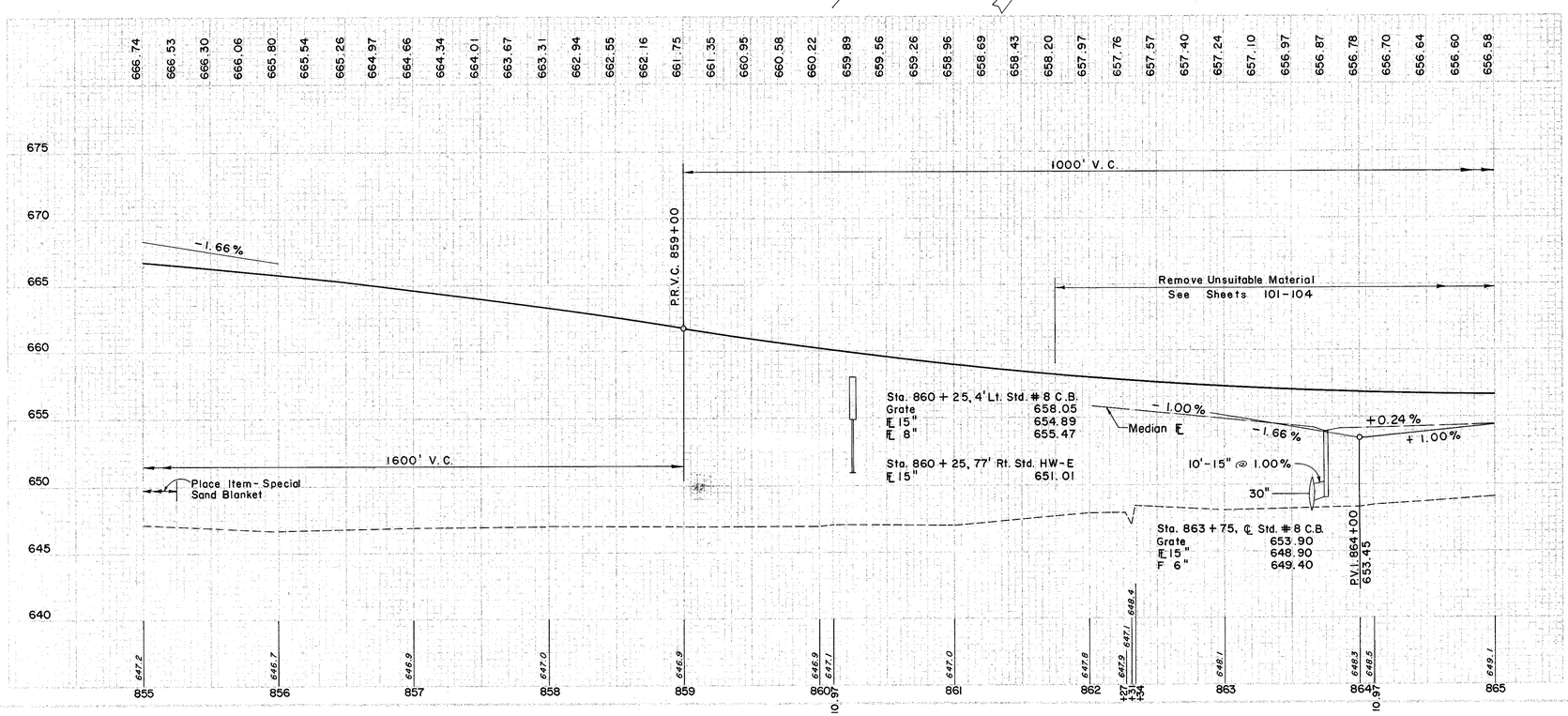
EXCAVATION		534 C.Y.
EMBANKMENT		99,859 C.Y.
EMBANKMENT + 20 %		119,831 C.Y.

STA. 845+00 TO STA. 855+00

FED. ROAD DIV.	STATE	PROJECT		32 / 313
2	OHIO			

LAKE COUNTY
LAK-2-16.49





(R) ROADWAY

REF. NO.	STATION FROM	STATION TO	S-D-E	E-1 COMP. SUBG.	L-10 SODDING	L-120 JUTE MATTING
				S.Y.	S.Y.	
1-R	855+00	859+00	Rt.		556	
2-R	858+68	860+18	℄			125
3-R	863+65	865+00	Rt.		175	
4-R	863+65	865+00	Lt.		179	
5-R	862+18	865+32	℄			250
6-R	860+50		℄	290		
7-R	863+65		—		13	
8-R	53+54.42 Frontage Road "B"	53+54.42 Frontage Road "B"		11,303		4.5
9-R	Structure					
	TOTAL			11,593	927.5	375

SODDING RIGHT DITCH			
STATION	WIDTH OF SODDING FT.	LENGTH OF SODDING FT.	S.Y.
855+00	13.0	400	556
859+00	12.0		
863+65	11.2	140	175
865+00	11.2		

SODDING LEFT DITCH			
STATION	WIDTH OF SODDING FT.	LENGTH OF SODDING FT.	S.Y.
863+65	9.6	170	179
865+00	9.3		

(D) DRAINAGE

REF. NO.	STATION FROM	STATION TO	S-I-D-E	I-1 PIPE CLASS J-1 (SEC. M-66(b) OR SEC. M-6.8(b))	I-1 PIPE CLASS E-1	I-1 PIPE CLASS F-4 (SEC. M-64(c))	I-2 6" PIPE CLASS I-3	I-2 MASONRY	I-5 CLASS I-3 6" 60° BEND	I-5 CLASS J-1 I-3 6" 60° WYE	I-8 STD. #8 C.B.	I-9 STONE UNDER DRAINS NO. 2
				15"	15"	8"	6"	C.Y.	EA.			L.F.
1-D	855+00	859+00	Lt.									
2-D	855+00	859+18	Lt.			10	414					
3-D	855+00	860+12	Rt.			10	425					
4-D	855+00	859+00	Rt.			10	528					
5-D	859+04	865+00	Lt.		10		414					
6-D	860+22	865+00	Lt.				601					
7-D	860+16	865+00	Rt.			20	485					
8-D	859+04	863+61	Rt.			20	471					
9-D	863+65	865+00	Rt.		34		474		2			
10-D	860+25		Rt.				132			1		
11-D	863+75		℄	82					1		1	2,388
12-D	53+54.42 Frontage Road "B"	53+54.42 Frontage Road "B"			10			0.26				2,388
	TOTAL			82	34	10	30	60	3,944	0.26	4	3	2	2

(S) STRUCTURE

REF. NO.	STATION	E-3 CHANNEL EXC.	I-1 30" PIPE CLASS A-1 SEC. M6.6(b) OR M6.8(b)	I-1 PIPE CLASS A-1	I-1 PIPE CLASS G-1 SEC. M-64(1)(a)	I-2 MASONRY SEC. M6.8(b)	I-2	I-5 CLASS A-1 15" x 30" TEE SEC. M6.8(b)	I-5	I-10 DUMPED ROCK CHANNEL PROTECT.	I-10 RIPRAP 6" REINF.
		C.Y.	L.F.	21"	43" x 27"	C.Y.		EA.	C.Y.	C.Y.	S.Y.
1-S	863+65	6	158		58	2.04		1	6	30	30
2-S	57+00 Frontage Rd.			54	54	0.72		1			
	TOTAL	6	158	54	58	2.76		1	6	30	30

(P) PAVEMENT

REF. NO.	STATION FROM	STATION TO	S-I-D-E	B-21 3" WATER-PROOFED AGGR. BASE COURSE	B-112 7" POROUS BASE COURSE	I-22 SUBBASE	T-31 BIT. MATL.	T-31 #6 AGGR.	T-35 ASPHALTIC CONC. SURFACE COURSE TYPE A	T-30 BIT. PRIME COAT	B-35 ASPHALTIC CONC. LEVELING COURSE	B-19 AGGR. BASE COURSE
				C.Y.	C.Y.	C.Y.	GAL.	C.Y.	C.Y.	GAL.	C.Y.	C.Y.
1-P	860+50	—	℄	24	61	46	72	2.3	942	4,893	558	2,718
2-P	53+54.42 Frontage Road "B"	53+54.42 Frontage Road "B"		24	61	1,400	72	2.3	942	4,893	558	2,718
	TOTAL											

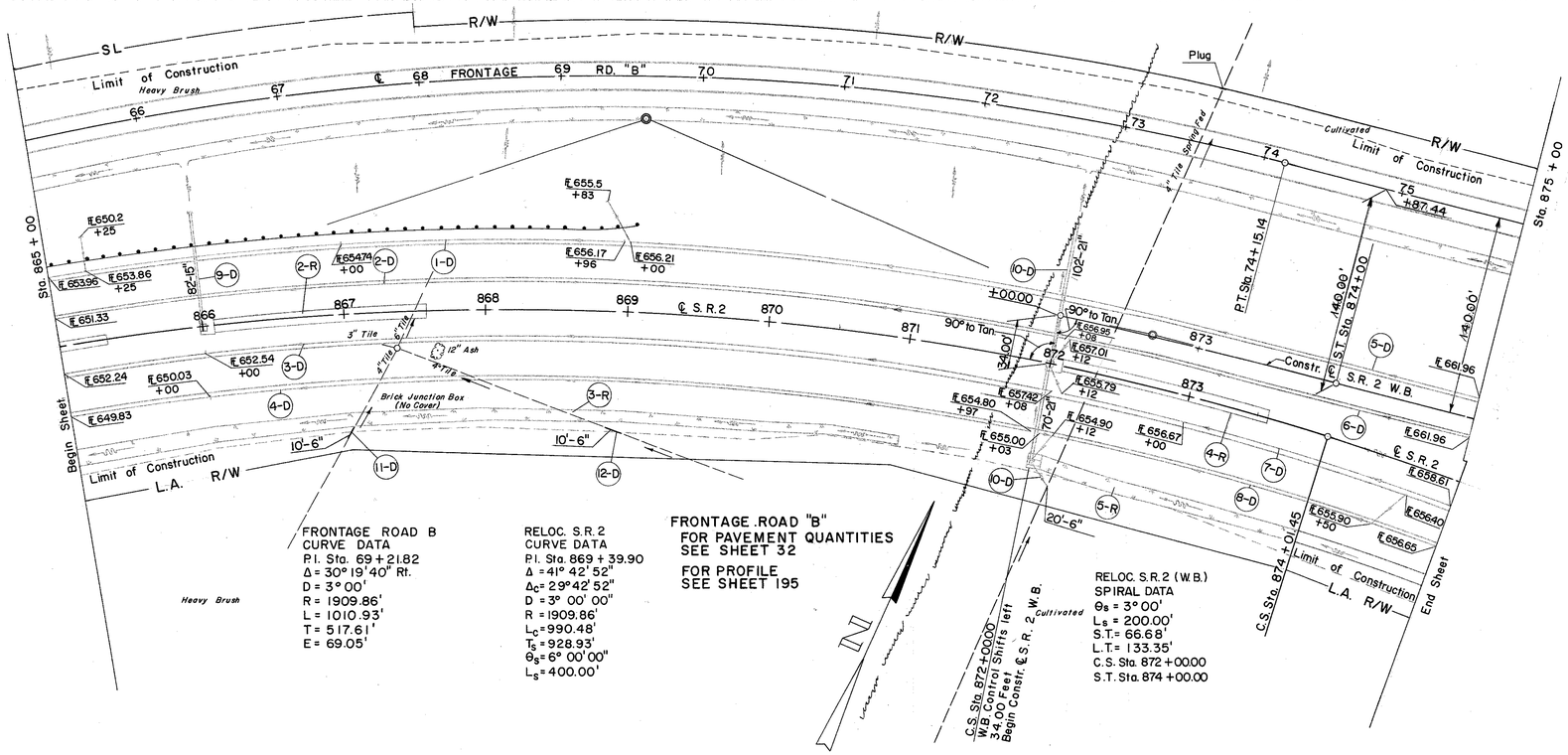
FRONTAGE ROAD "B"

EXCAVATION	=	1,544 C.Y.
EMBANKMENT	=	5,322 C.Y.
EMBANKMENT + 20 %	=	6,386 C.Y.

EXCAVATION	=	6,839 C.Y.
EMBANKMENT	=	75,627 C.Y.
EMBANKMENT + 20 %	=	90,752 C.Y.

STA. 855 + 00 TO STA. 865 + 00

LAKE COUNTY
LAK-2-16.49

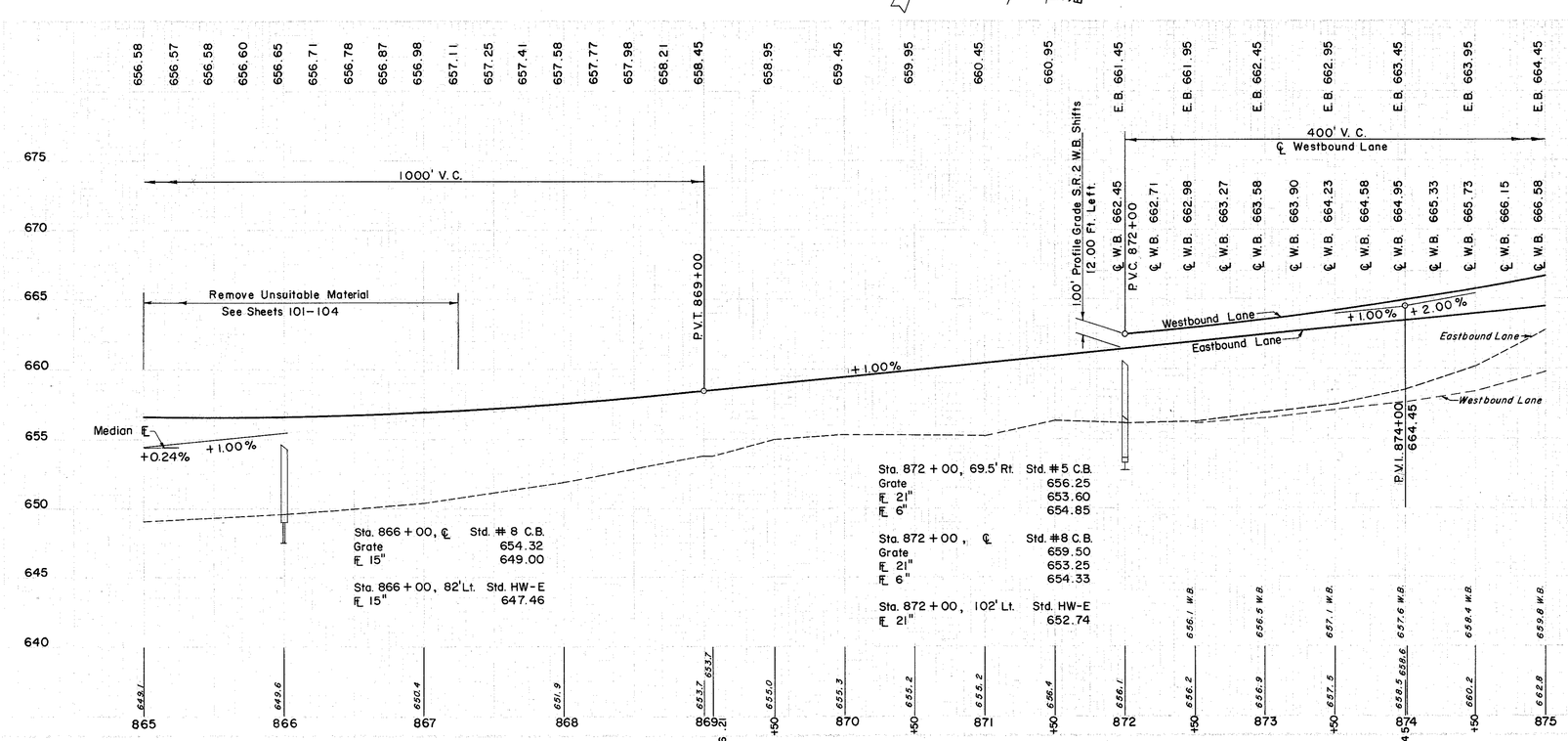


FRONTAGE ROAD B
CURVE DATA
P.I. Sta. 69 + 21.82
Δ = 30° 19' 40" Rt.
D = 3° 00'
R = 1909.86'
L = 1010.93'
T = 517.61'
E = 69.05'

RELOC. S.R. 2
CURVE DATA
P.I. Sta. 869 + 39.90
Δ = 41° 42' 52"
$Δ_c$ = 29° 42' 52"
D = 3° 00' 00"
R = 1909.86'
L_c = 990.48'
T_c = 928.93'
$θ_s$ = 6° 00' 00"
L_s = 400.00'

FRONTAGE ROAD "B"
FOR PAVEMENT QUANTITIES
SEE SHEET 32
FOR PROFILE
SEE SHEET 195

RELOC. S.R. 2 (W.B.)
SPIRAL DATA
$θ_s$ = 3° 00'
L_s = 200.00'
S.T. = 66.68'
L.T. = 133.35'
C.S. Sta. 872 + 00.00
S.T. Sta. 874 + 00.00



Grade Ch'd.

(D) DRAINAGE

REF. NO.	STATION FROM	STATION TO	SIDE	I-1 PIPE CLASS J-1 15"	I-1 PIPE CLASS J-1 21"	I-1 PIPE CLASS F-4 6"	I-1 PIPE CLASS F-4 SEC. M-64(c) 8"	I-1 6" PIPE CLASS I-3 SHALLOW	I-1 6" PIPE CLASS I-3 DEEP	I-2 MASONRY	I-5 CLASS I-3 6" 60° BEND	I-5 CLASS I-3 6" 60° WYE	I-8 STD. #8 C.B.	I-8 STD. #5 C.B.
				L.F.					C.Y.		EA.			
1-D	865+00	868+96	Lt.											
2-D	865+00	872+08	Lt.		20		10	420						
3-D	865+00	872+08	Rt.		10			695						
4-D	865+00	871+97	Rt.					691						
5-D	868+00	875+00 WB	Lt.				10	690						
6-D	872+12 W.B.	875+00 WB.	Rt.		10			640						
7-D	872+12 E.B.	875+00 E.B.	Rt.		10			303						
8-D	872+03 E.B.	875+00 E.B.	Rt.							297				
9-D	866+00	—	Lt.	82						336				
10-D	872+00	—	Lt. & Rt.		172		20							
11-D	867+00	—	Rt.				10							
12-D	869+00	—	Rt.				10							
	TOTAL			82	172		90	20	3,439	633	0.62	4	1	2	1	1

(R) ROADWAY

REF. NO.	STATION FROM	STATION TO	SIDE	L-10 SODDING S.Y.	L-120 JUTE MATTING S.Y.
1-R	65 FRONTAGE RD. "B"	82	Rt.	1,077	
2-R	866+07	867+57	℄		125
3-R	865+00	871+00	Rt.	574	
4-R	872+07	873+57	℄		125
5-R	872+00	875+00	Rt.	324	
	TOTAL			1,975	250

S.R. 2

SODDING RIGHT DITCH STATION	WIDTH OF SODDING FT.	LENGTH OF SODDING FT.	S.Y.
865+00	11.2	600	574
871+00	6.0		
872+00	10.4	300	324
875+00	9.0		

FRONTAGE RD. "B"

SODDING RIGHT DITCH STATION	WIDTH OF SODDING FT.	LENGTH OF SODDING FT.	S.Y.
65+18	9.3	762	775
72+80	9.0		
75+82	9.0	302	302
SUB TOTAL			1,077

FRONTAGE ROAD "B"

EXCAVATION	=	5,275 C.Y.
EMBANKMENT	=	9,835 C.Y.
EMBANKMENT +20%	=	11,802 C.Y.

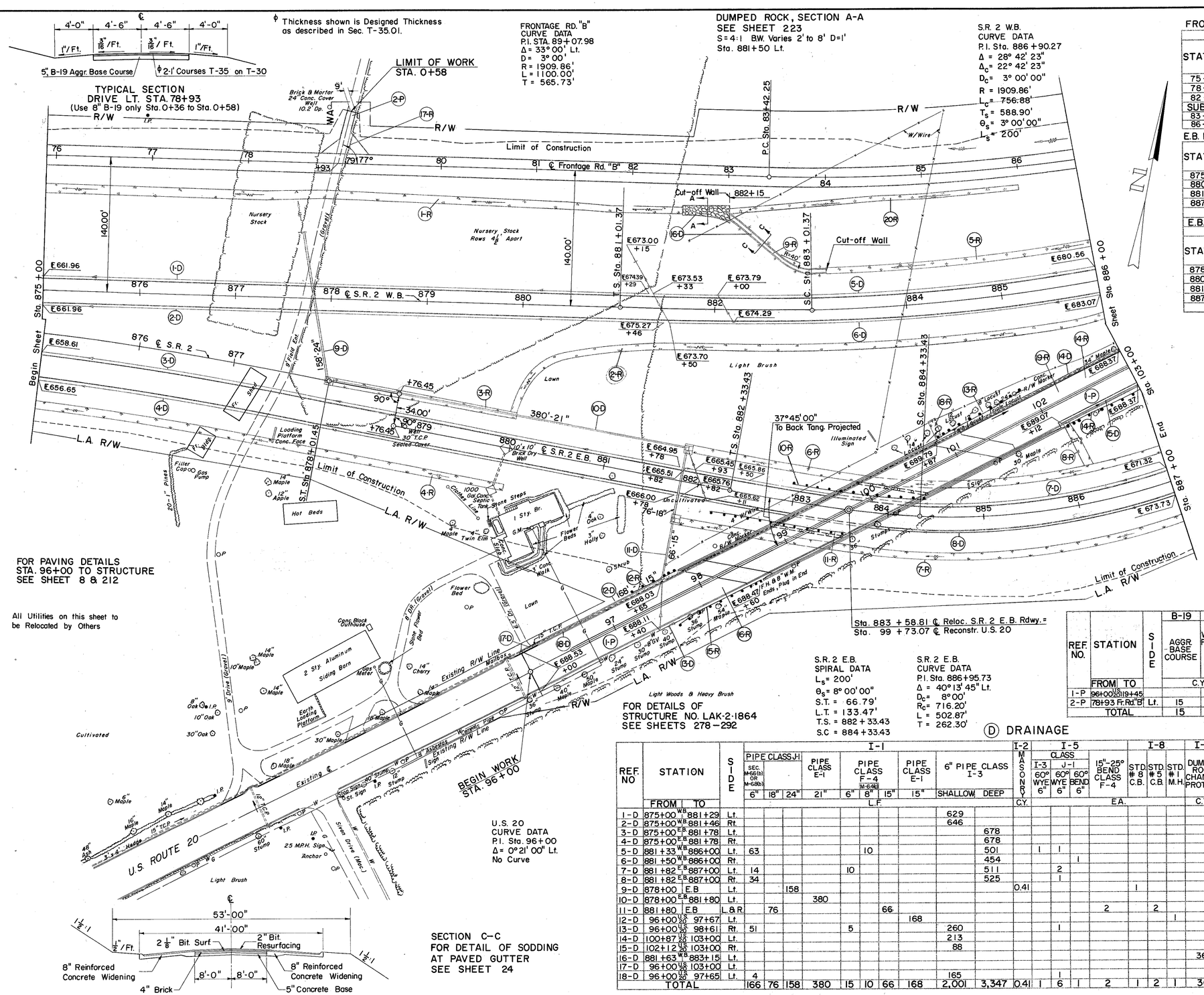
[illegible]		5,198 C.Y.
EMBANKMENT		29,824 C.Y.
[illegible]	20	35,789 C.Y.

STA. 865 + 00 TO STA. 875 + 00

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

34/313

LAKE COUNTY
LAK-2-16.49



FRONTAGE RD. "B"

SODDING RIGHT DITCH			
STATION	WIDTH OF SODDING FT.	LENGTH OF SODDING FT.	S.Y.
75+50	9.0	300	300
78+50	9.0	400	
82+50	7.2		360
SUB TOTAL			660
83+00	5.0	300	167
86+00	5.0		

E.B. RDWY. SODDING RIGHT DITCH			
STATION	WIDTH OF SODDING FT.	LENGTH OF SODDING FT.	S.Y.
875+00	9.0	500	439
880+00	6.8		
881+88	7.3	512	416
887+00	7.3		

E.B. RDWY. SODDING LEFT DITCH			
STATION	WIDTH OF SODDING FT.	LENGTH OF SODDING FT.	S.Y.
878+10	6.0	190	150
880+00	6.2		
881+88	7.3	512	416
887+00	7.3		

W.B. RDWY. SODDING RIGHT DITCH			
STATION	WIDTH OF SODDING FT.	LENGTH OF SODDING FT.	S.Y.
880+00	7.3	638	471
886+00	6.0		

W.B. RDWY. SODDING LEFT DITCH			
STATION	WIDTH OF SODDING FT.	LENGTH OF SODDING FT.	S.Y.
883+15	7.3	285	216
886+00	6.3		

(R) ROADWAY

REF. NO.	STATION FROM	TO	SIDE	E-1 COMPACT. SUBGRADE S.Y.	E-8 REMOVAL & DISPOSAL OF EXISTING PAVEMENT S.Y.	I-15 GUARD RAIL STEEL BEAM STD. TYPE (DEEP) L.F.	L-10 SODDING S.Y.	L-10 SODDING FOR SPECIAL BERM & SLOPE PROTECT. S.Y.
1-R	75+50 Fr.Rd.	82+50	Rt.				660	
2-R	880+00 WB	886+00	Rt.				471	
3-R	878+10 EB	880+00	Lt.				150	
4-R	875+00 EB	880+00	Rt.				439	
5-R	883+15 WB	886+00	Lt.				216	
6-R	881+88 EB	887+00	Lt.				416	
7-R	881+88 EB	887+00	Rt.				416	
8-R	102+15	U.S. 20	Rt.					47
9-R	882+13 WB	883+15	Lt.				40	
10-R	882+98 EB	884+37	Lt.			137.50		
11-R	882+20 EB	883+55	Rt.			137.5		
12-R	97+34 US 20	97+84	Lt.			50.0		
13-R	100+90 US 20	101+90	Lt.			100.0		
14-R	102+15 US 20	105+78	Rt.			362.5		
15-R	97+61 US 20	98+61	Rt.			100.0		
16-R	96+00	119+45		14,018				
17-R	78+93	Fr. Rd. "B"	Lt.	72				
18-R	100+91	U.S. 20	Lt.					17
19-R	96+00 US 20	119+45			10,683			
20-R	83+00 Fr. Rd.	86+00					167	
TOTAL				14,090	10,683	887.5	2,975	64

(P) PAVEMENT

REF. NO.	STATION FROM	TO	SIDE	B-19 AGGR. BASE COURSE C.Y.	B-21 WATER-PROOFED AGGR. BASE COURSE C.Y.	I-7 REINF. CONC. APPR. SLABS T=13" S.Y.	I-12 TYPE 2-A CONC. CURB L.F.	I-12 TYPE 8 CONC. CURB L.F.	I-12 TYPE 6 CONC. CURB L.F.	I-18 STAB. CRUSHED AGGR. BASE COURSE C.Y.	I-21 PORT. CEMENT CONC. MEDIAN TYPE I S.Y.	I-22 SUBBASE C.Y.	T-31 BIT. MAT'L Gal.	T-31 NO. 6 AGGR. C.Y.	T-71 REINF. PORT. CEMENT CONC. PAV'T. 9" S.Y.	T-30 BIT. MAT'L GAL.	T-35 ASPH. CONC. SURF. CRSE. TYPE C C.Y.
1-P	96+00 US 20	119+45			244	247	4,267	48	574	421	503	2,441	732	23	10,843		
2-P	78+93 Fr. Rd. "B"		Lt.	15												29	4
TOTAL				15	244	247	4,267	48	574	421	503	2,441	732	23	10,843	29	4

(D) DRAINAGE

REF. NO.	STATION FROM	TO	SIDE	I-1 PIPE CLASS JH SEC. M-66(b) OR M-68(b) 6"	18"	24"	PIPE CLASS E-1 21"	PIPE CLASS F-4 (M-64) 6"	8"	15"	PIPE CLASS E-1 15"	6" PIPE CLASS I-3 SHALLOW	DEEP	I-2 MASONRY CY.	I-5 CLASS I-3 60° WYE 6"	J-1 60° WYE 6"	60° BEND 6"	15"-25° BEND CLASS F-4 EA.	I-8 STD. #8 C.B.	STD. #5 C.B.	STD. #1 M.H.	I-10 DUMPED ROCK CHANNEL PROTECT. C.Y.	I-14 PAVED GUTTER TYPE 3	E-12 PIPE REMOVED 15" & UNDER L.F.
1-D	875+00 WB	881+29	Lt.									629												
2-D	875+00 WB	881+46	Rt.									646												
3-D	875+00 EB	881+78	Lt.										678											
4-D	875+00 EB	881+78	Rt.										678											
5-D	881+33 WB	886+00	Lt.	63					10				501		1	1								
6-D	881+50 WB	886+00	Rt.										454				1							
7-D	881+82 EB	887+00	Lt.	14				10					511			2								
8-D	881+82 EB	887+00	Rt.	34									525			1								
9-D	878+00	E.B	Lt.			158								0.41					1					
10-D	878+00 EB	881+80	Lt.				380																	
11-D	881+80	E.B	L & R.		76					66								2		2				
12-D	96+00 US 20	97+67	Lt.								168										1			
13-D	96+00 US 20	98+61	Rt.	51				5				260				1								
14-D	100+87 US 20	103+00	Lt.									213												
15-D	102+12 US 20	103+00	Rt.									88												
16-D	881+63 WB	883+15	Lt.																			36	121	
17-D	96+00 US 20	103+00	Lt.																					432
18-D	96+00 US 20	97+65	Lt.	4								165				1								
TOTAL				166	76	158	380	15	10	66	168	2,001	3,347	0.41	1	6	1	2	1	2	1	36	121	432

S.R. 2 STA. 875+00 TO S.R. 2 STA. 887+00 E.B. & STA. 886+00 W.B. (RECONSTR. U.S. 20 STA. 103+00)

RECONSTRUCTION U.S. 20

EXCAVATION	=	100,274 C.Y.
EMBANKMENT	=	6,909 C.Y.
EMBANKMENT + 20 %	=	8,291 C.Y.

FRONTAGE ROAD "B"

EXCAVATION	=	5,965 C.Y.
EMBANKMENT	=	4,128 C.Y.
EMBANKMENT + 20 %	=	4,954 C.Y.

EXCAVATION	=	4,279 C.Y.
EMBANKMENT	=	6,565 C.Y.
EMBANKMENT + 20 %	=	7,878 C.Y.

LAKE COUNTY
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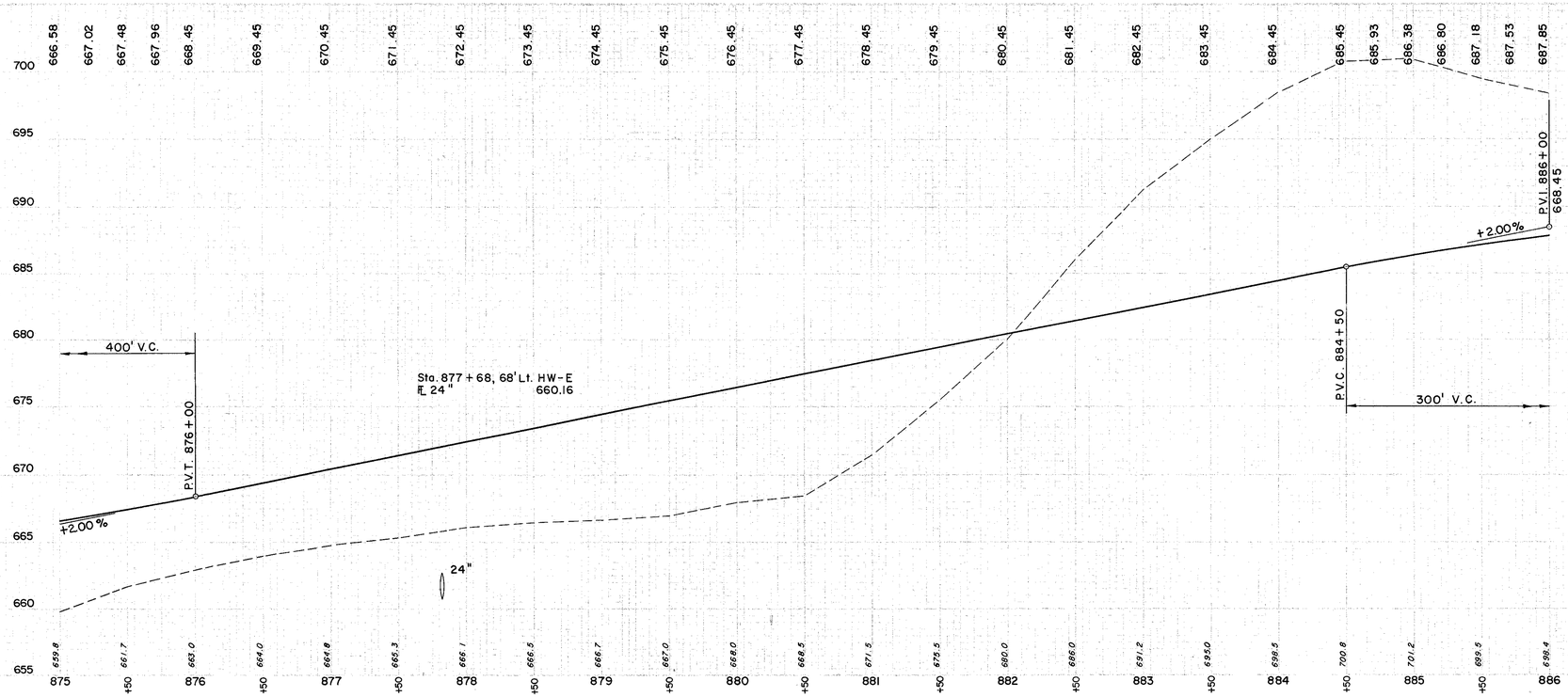
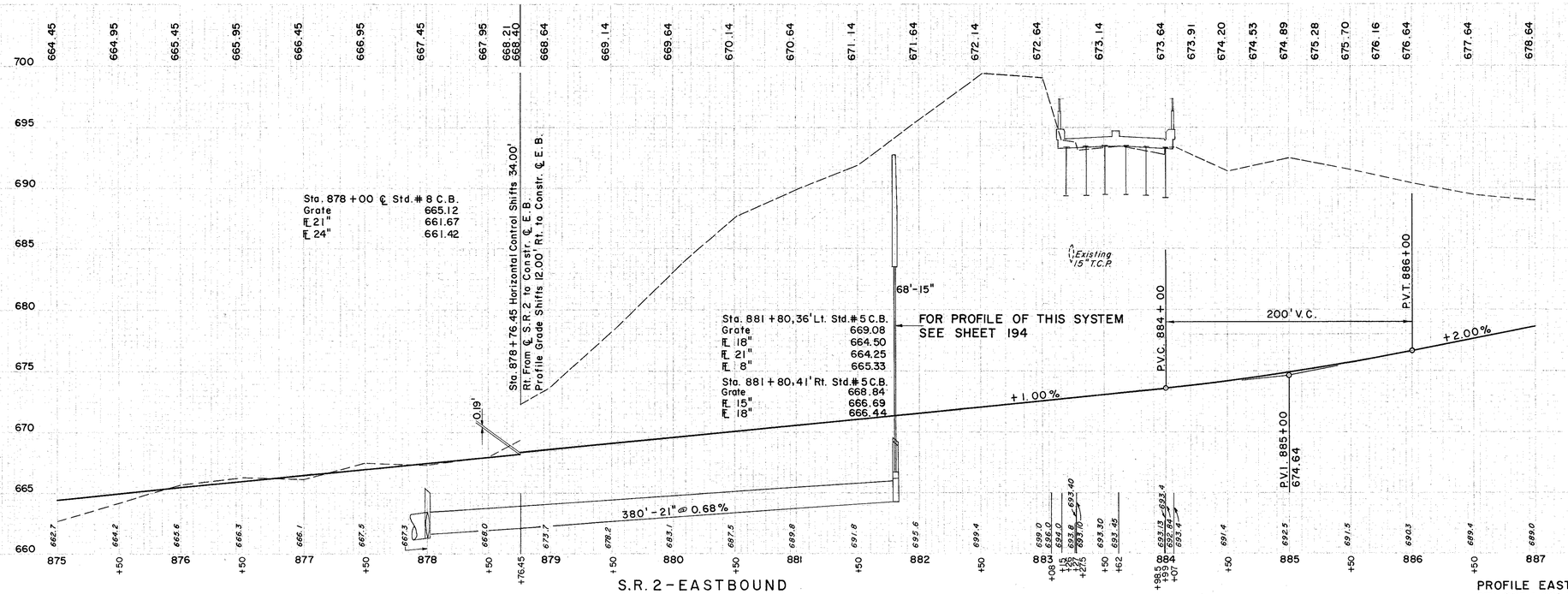


S.R. 2 - WESTBOUND



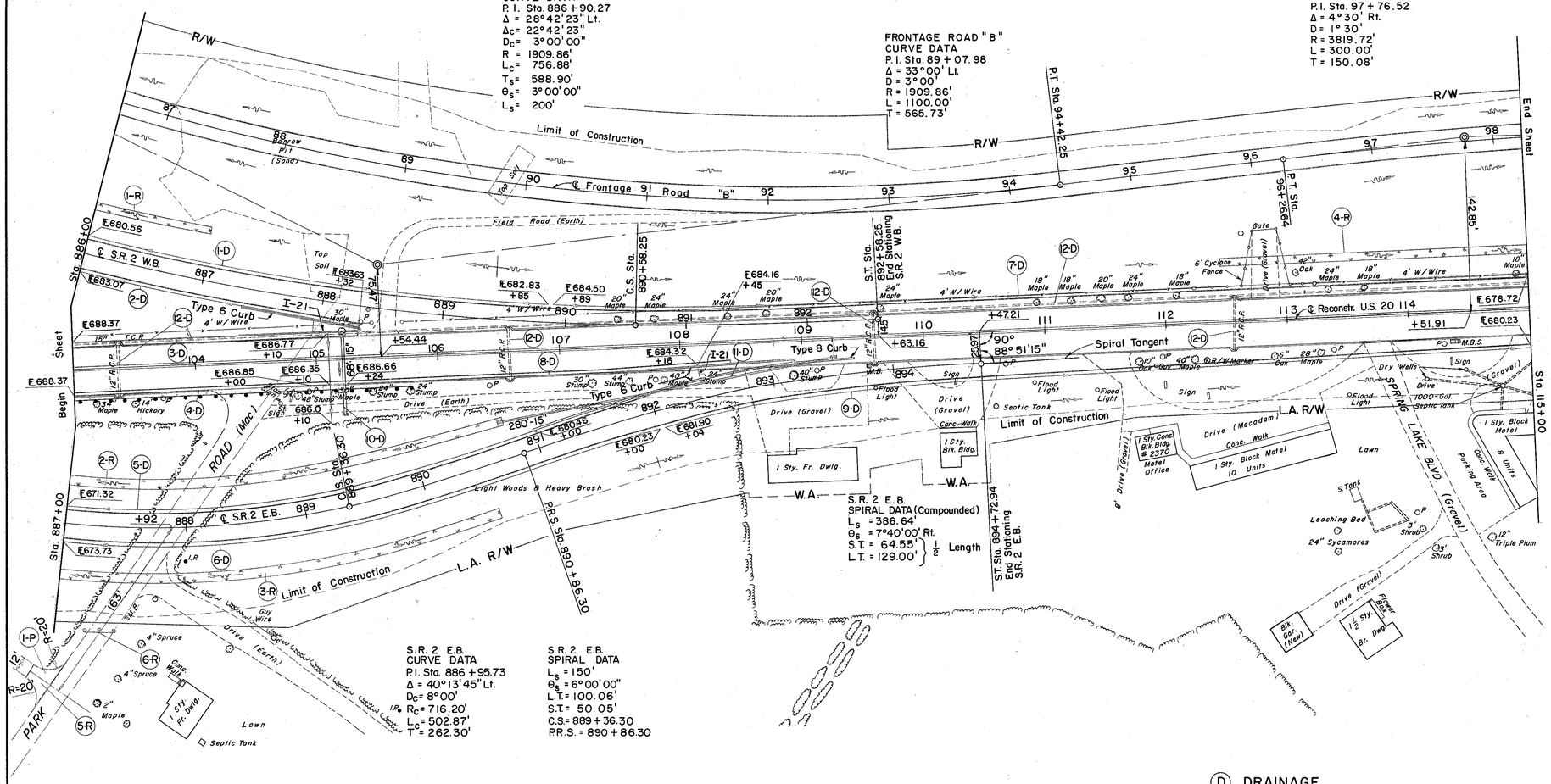
S.R. 2 - EASTBOUND

PROFILE EASTBOUND & WESTBOUND S.R. 2
STA. 875+00 TO STA. 887+00

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

36
313

LAKE COUNTY
LAK-2-16.49



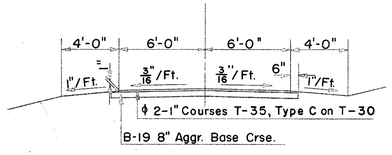
S.R. 2 E.B.
SPIRAL DATA (Compounded)
L_s = 386.64'
θ_s = 7°40'00" Rt.
S.T. = 64.55'
L.T. = 129.00'
} Length

S.R. 2 E.B.
CURVE DATA
P.I. Sta. 886+95.73
Δ = 40°13'45" Lt.
Dc = 8°00'
Rc = 716.20'
Lc = 502.87'
T = 262.30'

S.R. 2 E.B.
SPIRAL DATA
L_s = 150'
θ_s = 6°00'00"
L.T. = 100.06'
S.T. = 50.05'
C.S. = 889+36.30
P.R.S. = 890+86.30

FOR INTERSECTION DETAILS AND OTHER GEOMETRIC DETAILS NOT SHOWN ON THIS SHEET, SEE SHEETS 211, 213 & 214

All Utilities on this sheet to be Relocated by Others



TYPICAL SECTION - TURNAROUND
PARK ROAD

ϕ Thickness shown is design thickness as shown in Sec. T-35.01

W. B. RDWY.

SODDING LEFT DITCH			
STATION	WIDTH OF SODDING FT.	LENGTH OF SODDING FT.	S.Y.
886+00	6.3	100	69
887+00	6.0		

E.B. RDWY.

SODDING LEFT DITCH			
STATION	WIDTH OF SODDING FT.	LENGTH OF SODDING FT.	S.Y.
887+00	7.3	358	290
890+65	7.3		
SODDING RIGHT DITCH			
887+00	7.3	366	297
890+50	7.3		

RECONSTR. U.S. 20

SODDING LEFT DITCH			
STATION	WIDTH OF SODDING FT.	LENGTH OF SODDING FT.	S.Y.
112+50	6.2	250	172
115+00	6.2		

(P) PAVEMENT

REF. NO.	STATION FROM	STATION TO	SIDE	B-19 AGGR. BASE COURSE	T-35 ASPHALTIC CONC. SURF. COURSE TYPE C	T-30 BIT PRIME COAT
				C.Y.	C.Y.	GAL
1-P	887+00	E.B.	Rt.	11	3	20

(R) ROADWAY

REF. NO.	STATION FROM	STATION TO	SIDE	E-1 COMP. SUB-GRADE	I-15 GUARD RAIL STEEL BEAM STD. TYPE (DEEP)	L-10 SODDING
				S.Y.	L.F.	S.Y.
1-R	886+00	887+00	Lt.			69
2-R	887+00	890+65	Lt.			290
3-R	887+00	890+50	Rt.			297
4-R	112+50	115+00	Lt.			172
5-R	887+00	E.B.	Rt.	49		
6-R	887+50	E.B.	Rt.		25	
TOTAL				49	25	828

(D) DRAINAGE

REF. NO.	STATION FROM	STATION TO	SIDE	E-12 PIPE REMOVED 15" AND UNDER	I-1 PIPE CLASS J-1 SEC. M-6.6(b) OR SEC. M-6.8(b) 6"	I-1 PIPE CLASS J-1 15"	I-1 PIPE CLASS F-4 SEC. M-6.4(c) 8"	I-1 6" PIPE CLASS I-3 SHALLOW	I-1 6" PIPE CLASS I-3 DEEP	I-2 MASONRY	I-5 CLASS J-1 6" 60° BEND	I-5 CLASS J-1 6" 60° WYE	I-5 CLASS J-1 6" 90° BEND	I-5 CLASS J-1 6" 90° TEE	I-8 STD. #6 C.B.
				L.F.						C.Y.	EA.				
1-D	886+00 W.B.	889+85	Lt.						383						
2-D	886+00 W.B.	888+32	Rt.						233						
3-D	103+00 U.S. 20	105+10	Lt.					210				1			
4-D	103+00 U.S. 20	105+10	Rt.		65		10	210					1		
5-D	887+00 E.B.	891+00	Lt.						392						
6-D	887+00 E.B.	892+00	Rt.						508						
7-D	889+89 W.B.	115+00 U.S. 20	Lt.					803				1			
8-D	105+24 U.S. 20	108+16	Rt.		58			292			1				
9-D	892+04 E.B.	115+00 U.S. 20	Rt.					715							
10-D	105+22 U.S. 20	——	L&R			68				0.26					1
11-D	106+50 U.S. 20	109+25	Rt.			280				0.26					1
12-D	103+00	115+00	Lt.	1,376											
TOTALS				1,376	123	348	10	2230	1,516	0.52	1	1	1	1	2

FRONTAGE RD. "B"

EXCAVATION	= 9,236 C.Y.
EMBANKMENT	= 1,228 C.Y.
EMBANKMENT + 20 %	= 1,474 C.Y.

EXCAVATION	= 21,871 C.Y.
EMBANKMENT	= 2,687 C.Y.
EMBANKMENT + 20 %	= 3,224 C.Y.

S.R. 2 STA. 887+00 E.B. & STA. 886+00 W.B. TO RECONSTR. U.S. 20 STA. 115+00

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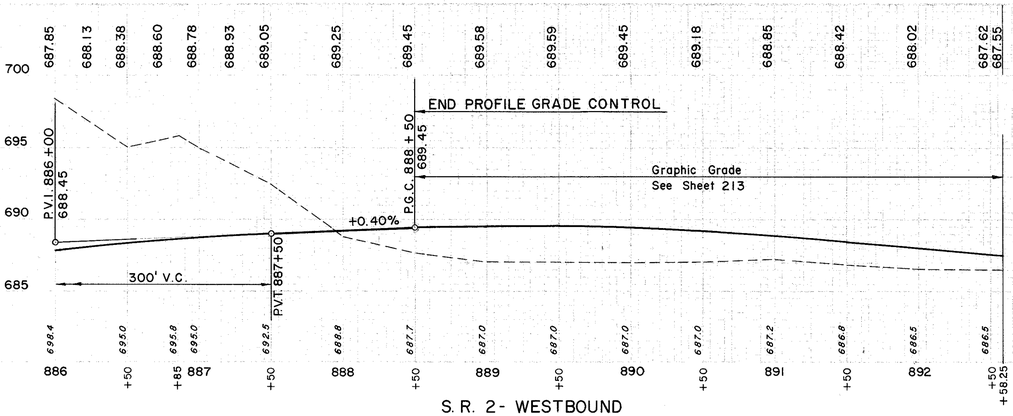
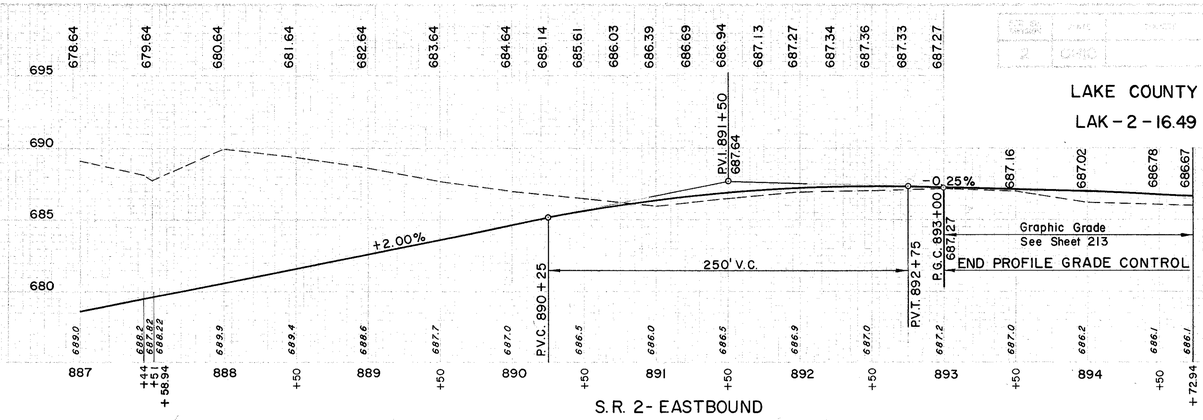
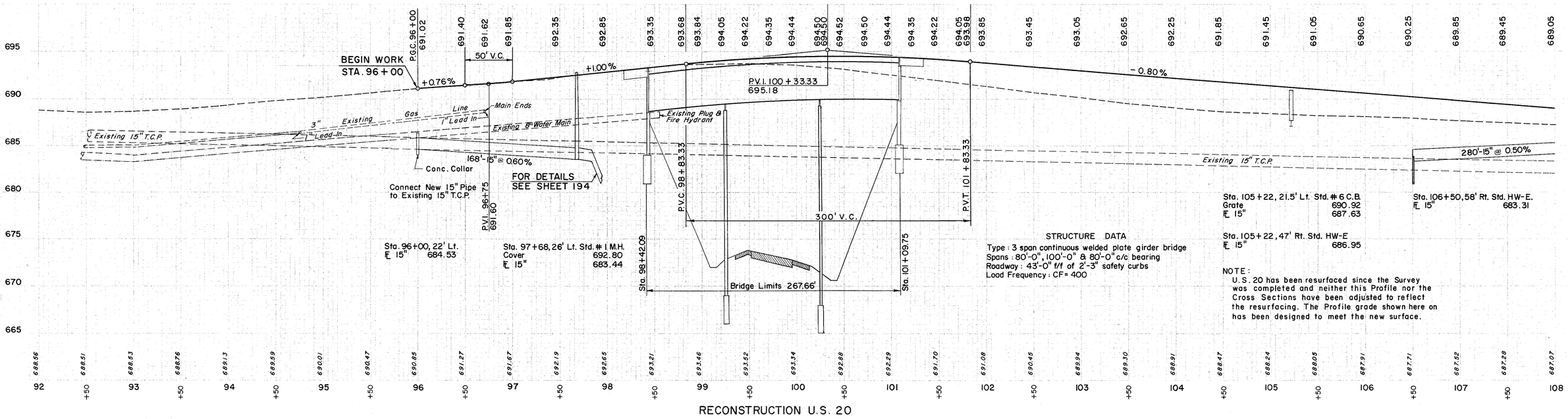


S. R. 2- WESTBOUND



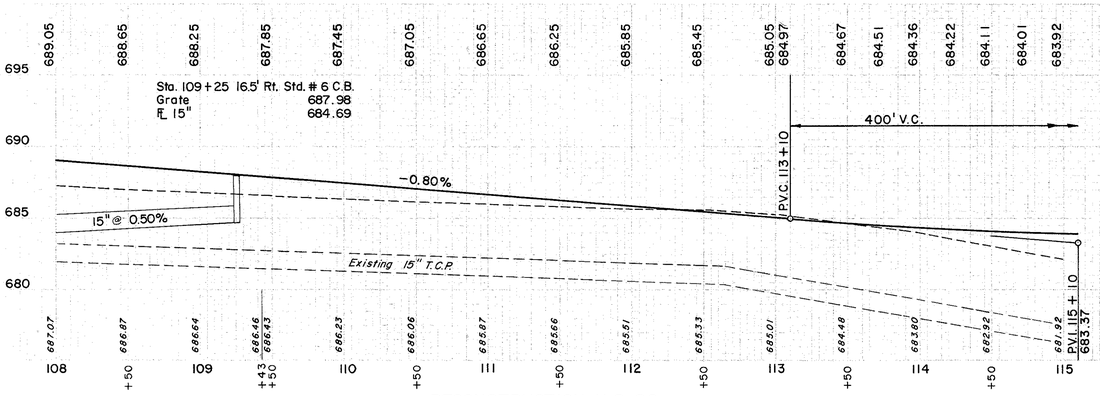
S. R. 2- EASTBOUND



STRUCTURE DATA
Type : 3 span continuous welded plate girder bridge
Spans : 80'-0", 100'-0" & 80'-0" c/c bearing
Roadway : 43'-0" f/f of 2'-3" safety curbs
Load Frequency : CF= 400

NOTE :
U. S. 20 has been resurfaced since the Survey was completed and neither this Profile nor the Cross Sections have been adjusted to reflect the resurfacing. The Profile grade shown here on has been designed to meet the new surface.

RECONSTRUCTION U.S. 20



RECONSTRUCTION U.S. 20

FOR CONTINUATION OF RECONSTRUCTION
U.S. 20 PROFILE AND GRADE LINE
SEE SHEET 38

PROFILE S.R. 2- EASTBOUND & WESTBOUND STA. 886+00 TO STA. 894+00
PROFILE RECONSTRUCTION U.S. 20 STA. 96+00 TO STA. 115+00

LAKE COUNTY
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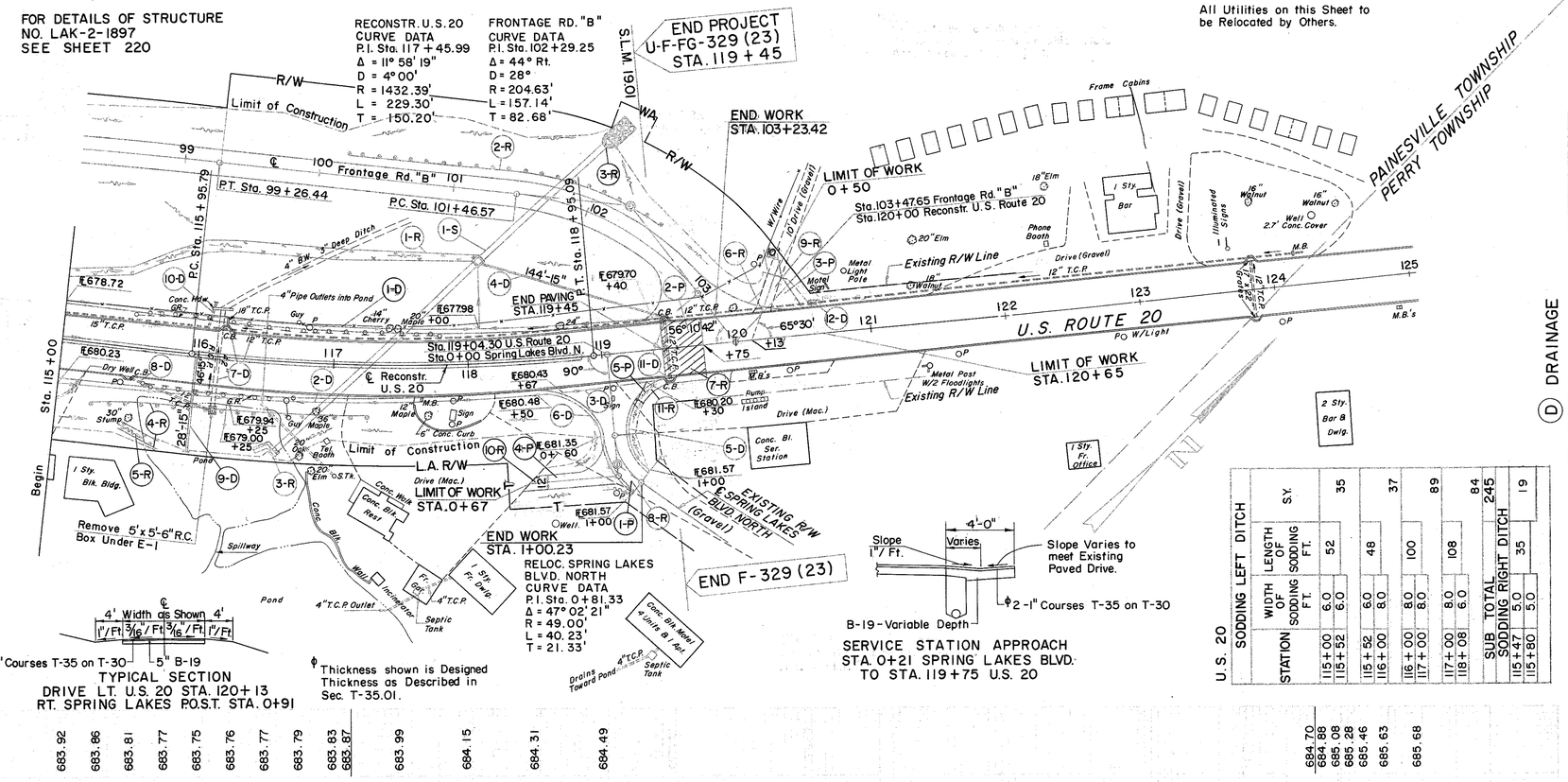
FOR DETAILS OF STRUCTURE
NO. LAK-2-1897
SEE SHEET 220

All Utilities on this Sheet to
be Relocated by Others.

FOR DETAILS OF SPRING LAKES BLVD.
NORTH, DRIVE CONNECTION, AND
CONSTRUCTION AND GEOMETRIC DETAILS
NOT SHOWN ON THIS SHEET
SEE SHEET 214.

RECONSTR. U.S. 20
CURVE DATA
P.I. Sta. 117 + 45.99
Δ = 11° 58' 19"
D = 4° 00'
R = 1432.39'
L = 229.30'
T = 150.20'

FRONTAGE RD. "B"
CURVE DATA
P.I. Sta. 102 + 29.25
Δ = 44° Rt.
D = 28°
R = 204.63'
L = 157.14'
T = 82.68'



TYPICAL SECTION
DRIVE LT. U.S. 20 STA. 120+13
RT. SPRING LAKES P.O.S.T. STA. 0+91

Thickness shown is Designed Thickness as Described in Sec. T-35.01.

683.92 683.86 683.81 683.77 683.75 683.76 683.77 683.79 683.83 683.87 683.99 684.15 684.31 684.49 684.70 684.88 685.08 685.28 685.46 685.63 685.68

Sta. 116 + 00 ℄ Std. # 2-6 Inlet
Cover 684.25
Gutter 683.58
FL 15" 680.17

Sta. 118 + 11, 75' Lt. Std. # 2-5 C.B.
Grate 673.58
Window (2) 672.00
FL 48" 665.40
FL 15" 668.15
FL 6" 668.90

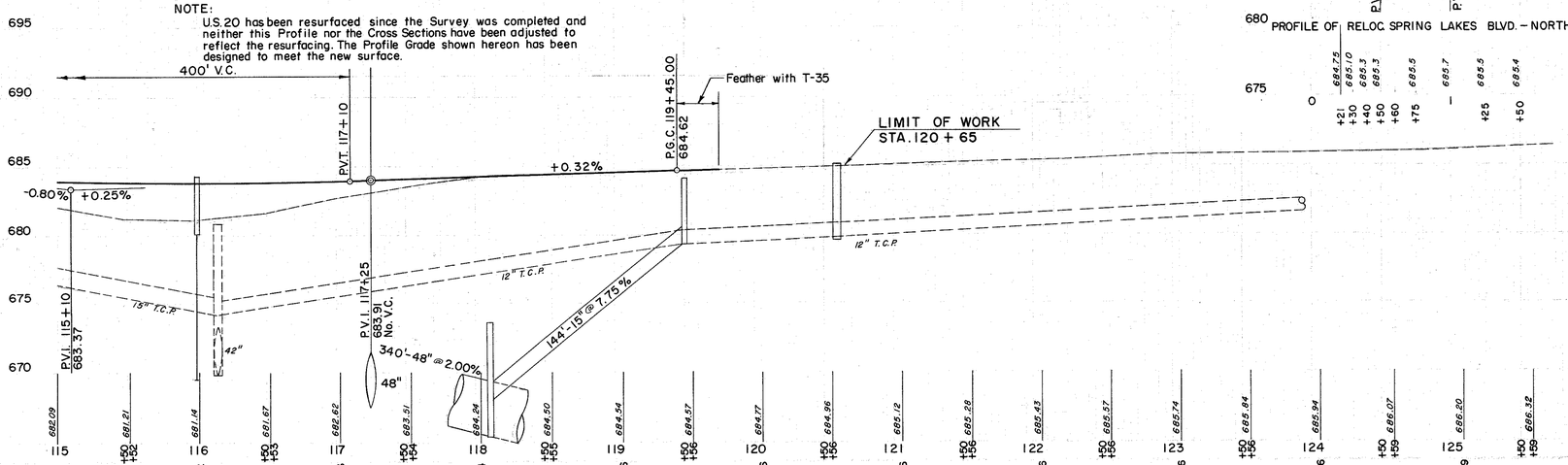
Sta. 119 + 50, 22.5' Lt. Adjust Existing C.B.
New Grate 684.00
FL 15" As Required

Sta. 120 + 59, 21.5 Lt. Std. # 2-A-6 Inlet
Cover 685.18
FL 12" As Exists

Sta. 116+00, 72' Rt. Std. HW-E
FL 15" 669.50

Sta. 119 + 50, 22.5' Rt. Adjust Existing C.B.
New Grate 684.36
FL 6" (New) 680.13

NOTE:
U.S. 20 has been resurfaced since the Survey was completed and neither this Profile nor the Cross Sections have been adjusted to reflect the resurfacing. The Profile Grade shown hereon has been designed to meet the new surface.



U.S. 20

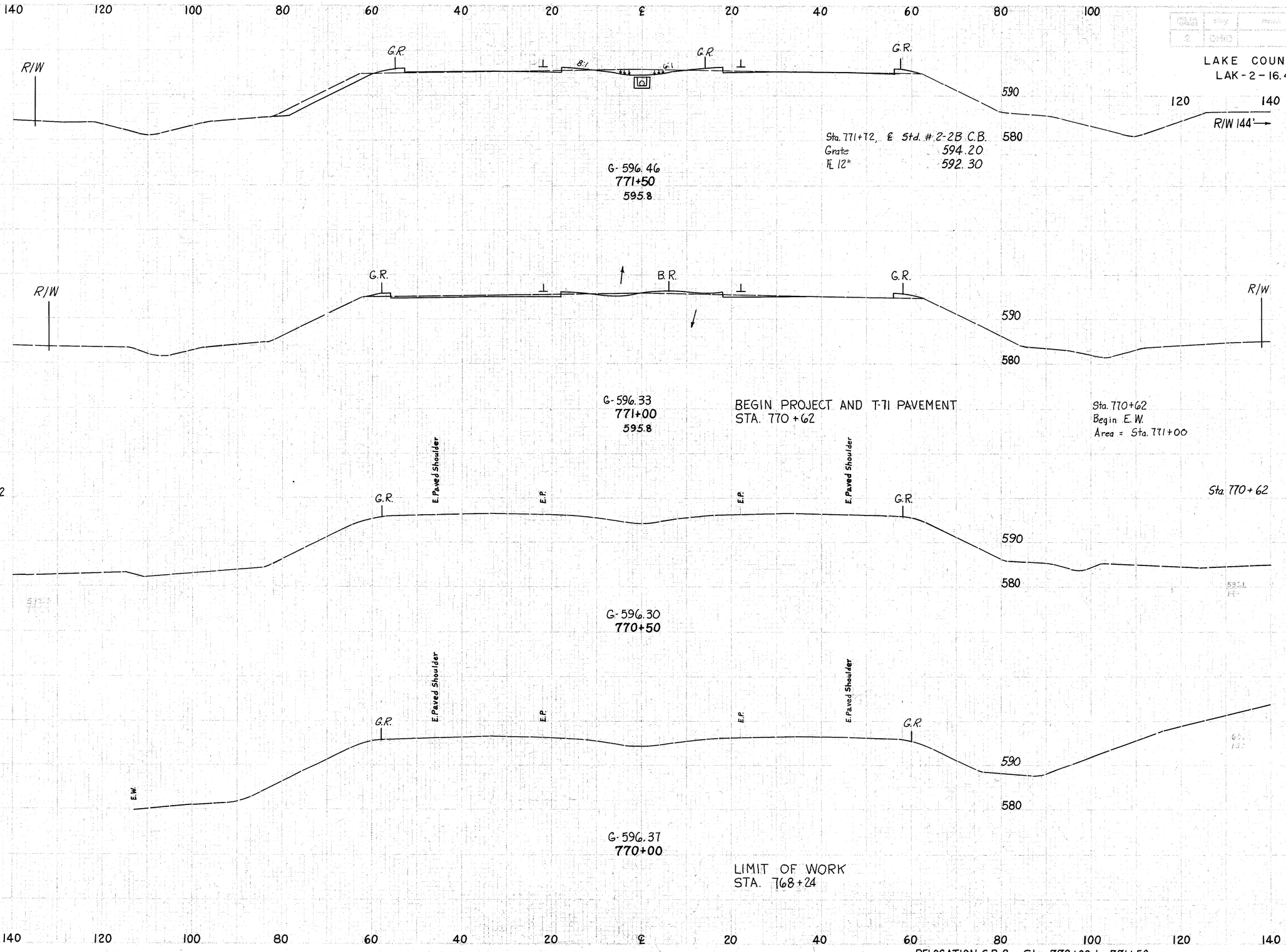
STATION	SODDING LEFT DITCH: WIDTH OF SODDING FT.	SODDING LEFT DITCH: LENGTH OF SODDING FT.	SODDING LEFT DITCH: S.Y.	SODDING RIGHT DITCH: WIDTH OF SODDING FT.	SODDING RIGHT DITCH: LENGTH OF SODDING FT.	SODDING RIGHT DITCH: S.Y.
115+00	6.0	52	35			
115+52	6.0					
115+52	6.0	48	37			
116+00	8.0					
116+00	8.0	100	89			
117+00	8.0					
117+00	8.0	108	84			
118+08	6.0					
SUB TOTAL			245			
115+47	5.0	35	19			
115+80	5.0					

(D) DRAINAGE

STATION FROM	STATION TO	I-1 PIPE CLASS F-4 SEC. M-6.4(a) 8" L.F.	I-1 PIPE CLASS F-4 6" L.F.	I-2 6" PIPE CLASS I-3 SHALLOW	I-2 MASONRY C.Y.	I-5 CLASS F-4 15"-25° BEND SEC M-6.4(c)	I-5 CLASS I-3 6" 90° TEE EA.	I-5 CLASS I-3 6" 60° WYE	I-5 STD. 2-6	I-5 INLET 2-A-6	I-8 CATCH BASIN ADJUSTED TO GRADE INCLUDING FURNISHING & PLACING STD. NO. 6 FRAME & GRATE
115+00	118+08										
100+23 Frontage 102+53	Lt.										
117+25 Structure	Rt-Lt										
115+25	117+25										
115+47	115+80										
119+45	120+53										
119+45	119+75										
0+21-1+00.23 Spring Lakes Blvd.	Rt.										
120+13	Drive										
0+91	Spring Lakes Blvd. North										
0+50	Rt.										
0+50	Lt.										
0+91	Lt-Rt.										
0+91	Rt.										
0+91	Lt.										
1+00 Spring Lakes Blvd.	Rt.										
1+00 Spring Lakes Blvd.	Lt.										
1+00 Spring Lakes Blvd.	Lt-R

21.0 F-18

SEEDING	
END WIDTH	SQ. YDS.
74	
	339
48	
	203
48	



END AREA		VOLUME	
CUT	FILL	CUT	FILL
49	17		
		72	23
29	8		
		41	11
29	8		

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313

LAKE COUNTY
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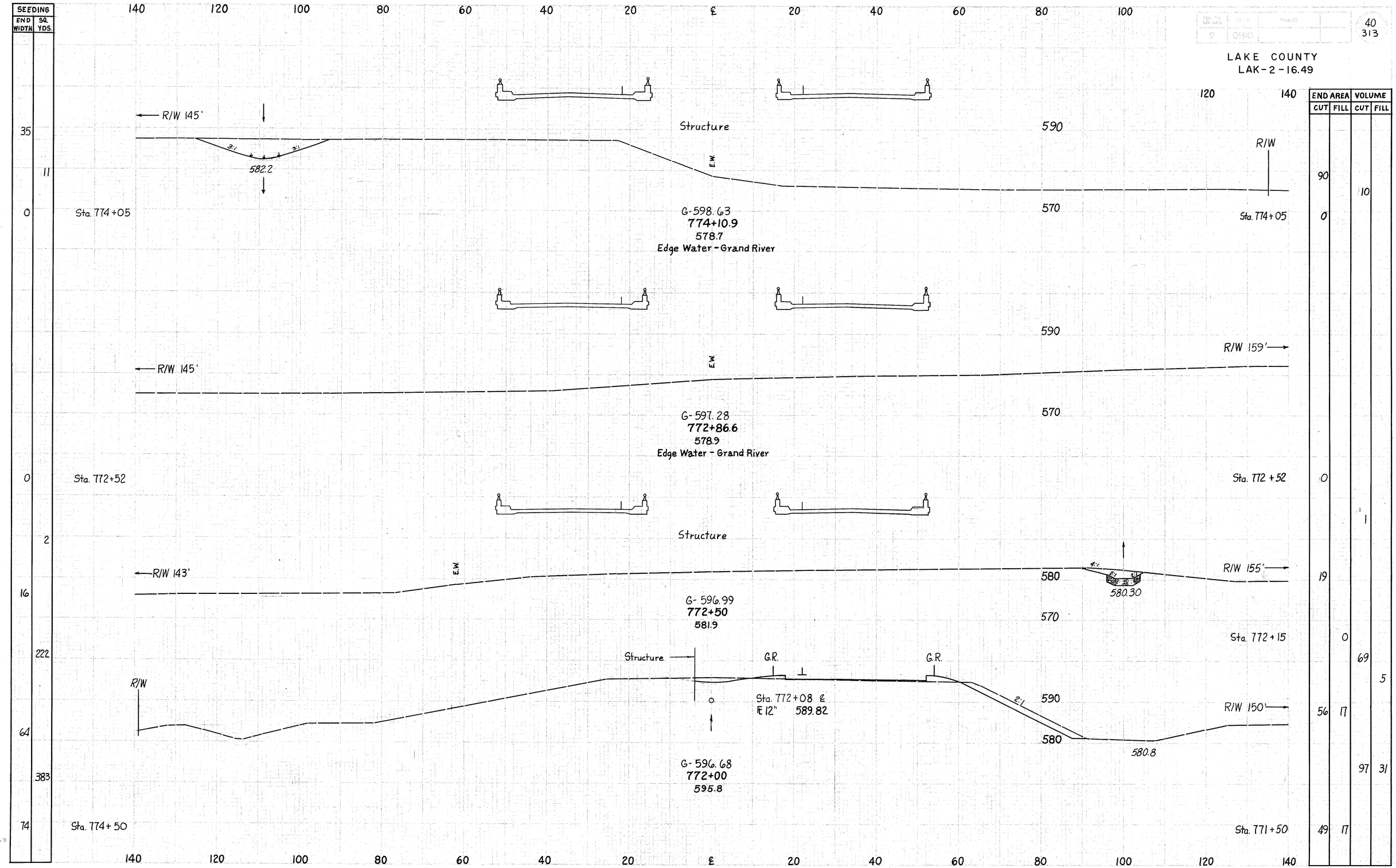
RELOCATION S.R. 2 Sta. 770+00 to 771+50

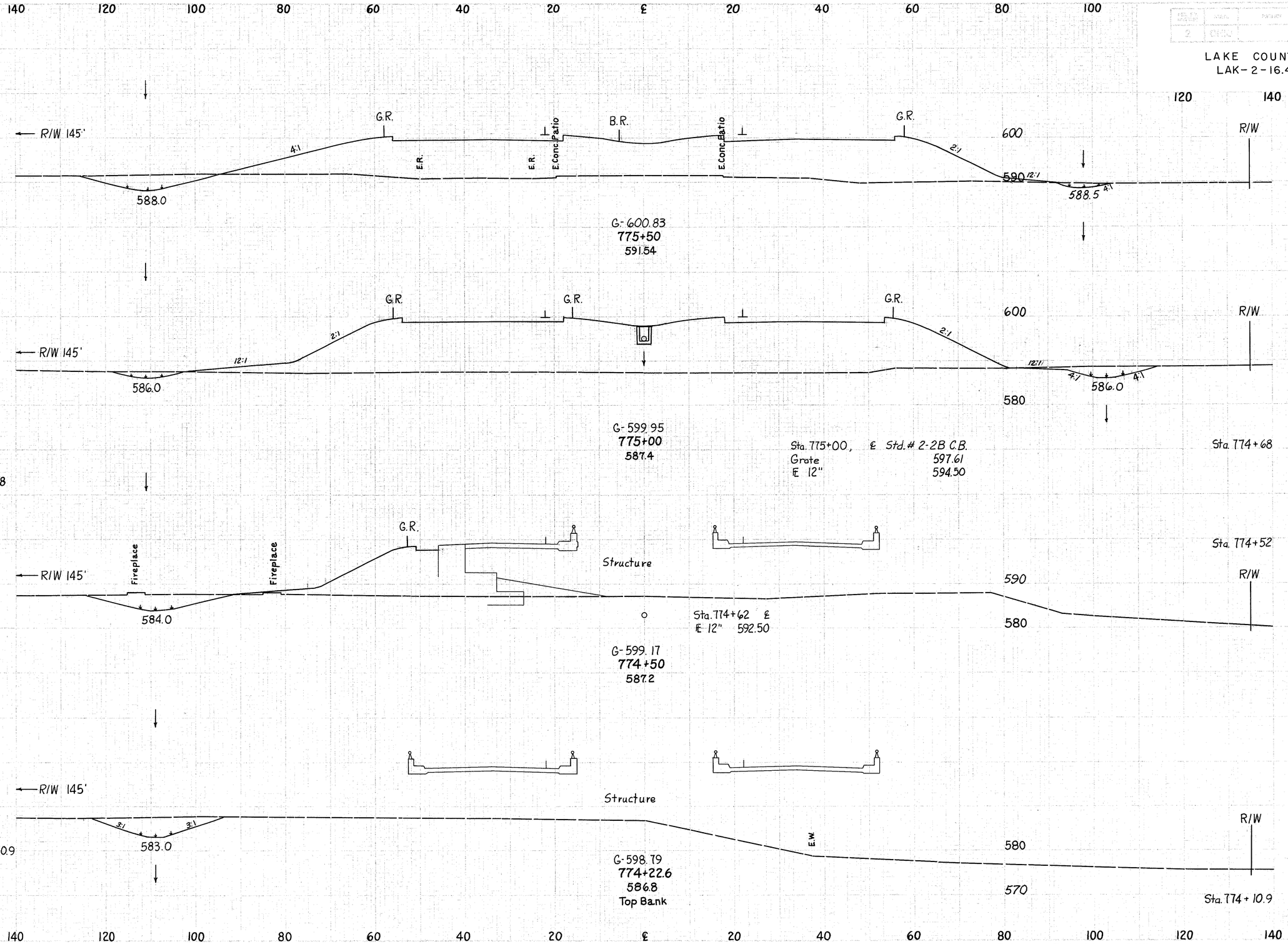
LAKE COUNTY
LAK-2-16.49



RELOCATION S.R.2 Sta. 772+00 to 774+10.9

LAKE COUNTY
LAK-2-16.49

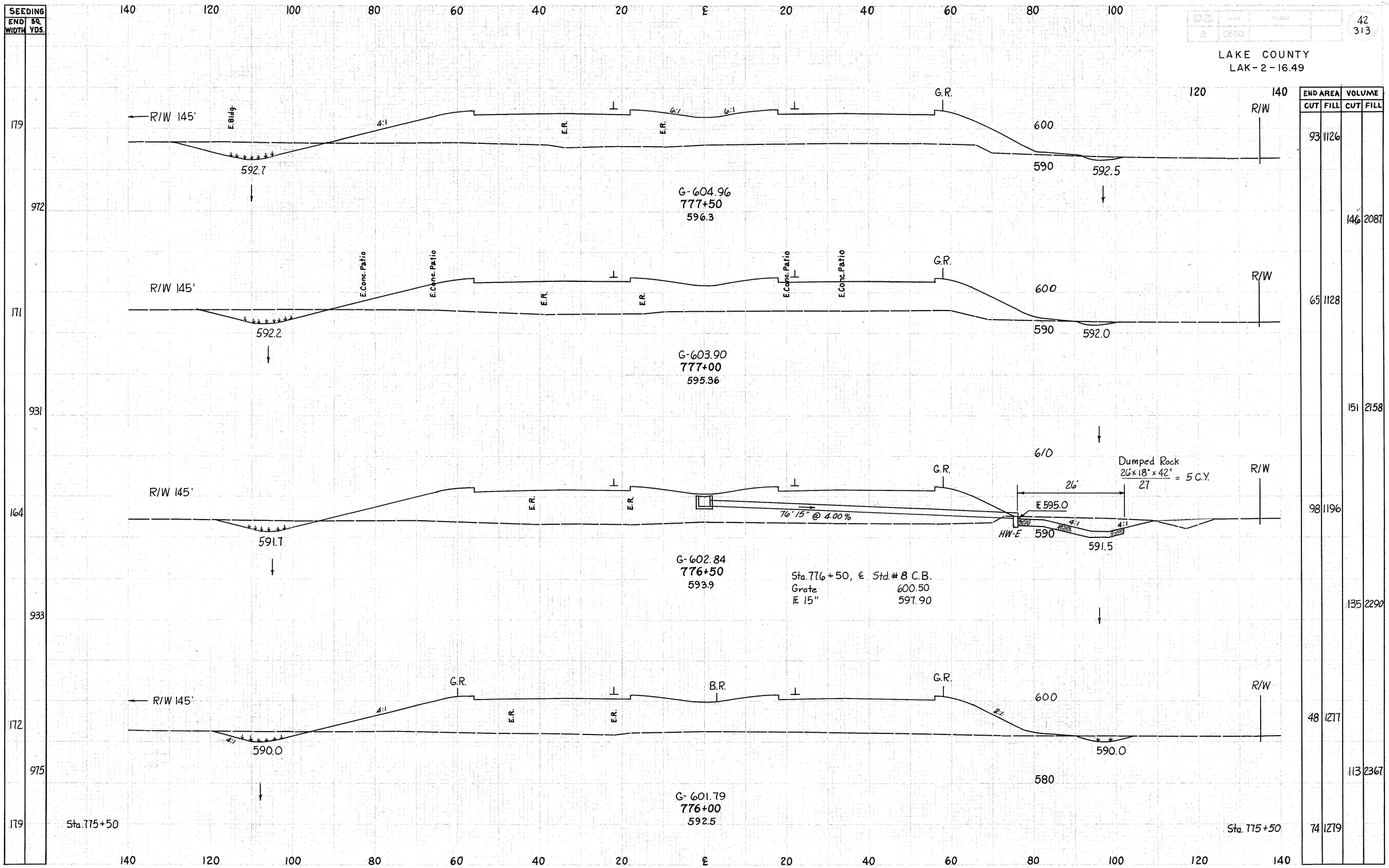
SEEDING END WIDTH	SEEDING SQ. YDS.
179	
	1022
189	
	612
189	
	277
88	
	181
31	
	43
35	



END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
74	1279		
		118	2701
53	1638		
			1941
	1638		
		115	
			485
	0		
71			
		75	
77			
			36
90			

RELOCATION S.R. 2 Sta. 774+22.6 to 775+50

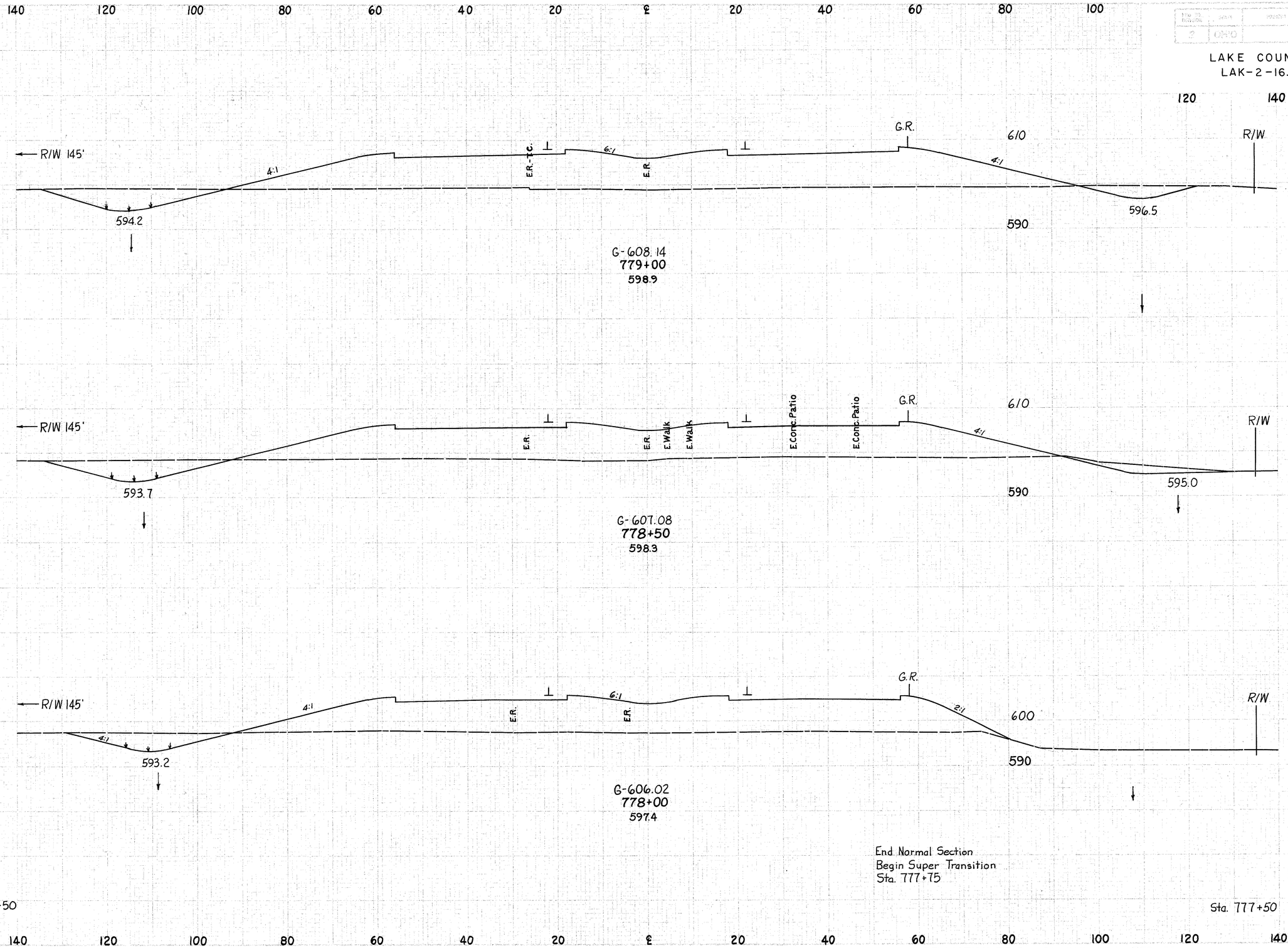
LAKE COUNTY
LAK-2-16.49



RELOCATION S.R. 2 Sta. 776+00 to 777+50

LAKE COUNTY
LAK-2-16.49

SEEDING END WIDTH	SEEDING SQ. YDS.
205	
	1147
208	
	1022
160	
	942
179	

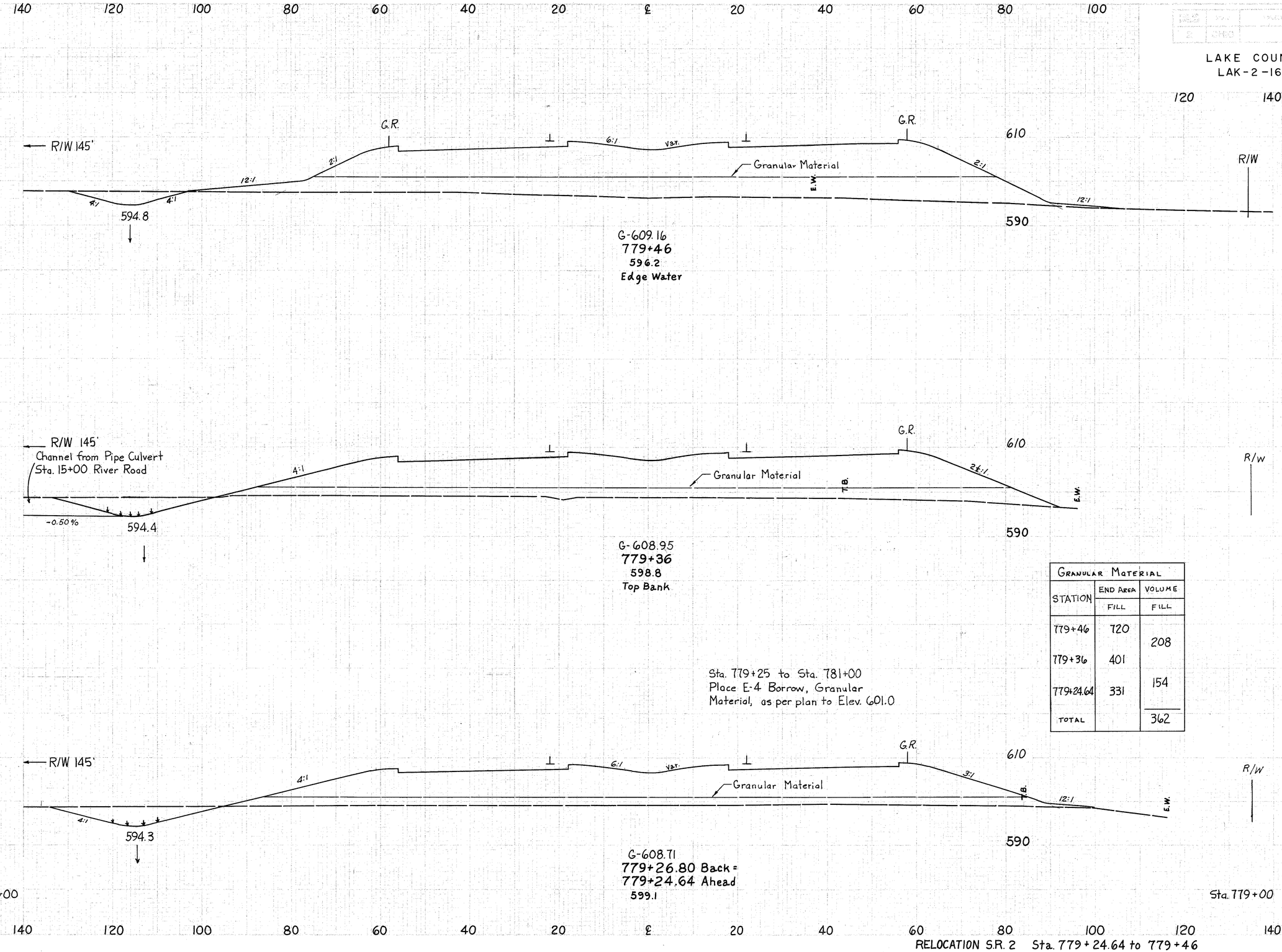


END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
156	1219		
		286	2178
153	1133		
		221	2050
86	1081		
		166	2044
93	1126		

RELOCATION S.R. 2 Sta. 778+00 to 779+00

LAKE COUNTY
LAK-2-16.49

SEEDING END WIDTH	SEEDING SQ. YDS.
183	
	198
174	
	225
182	
	576
205	



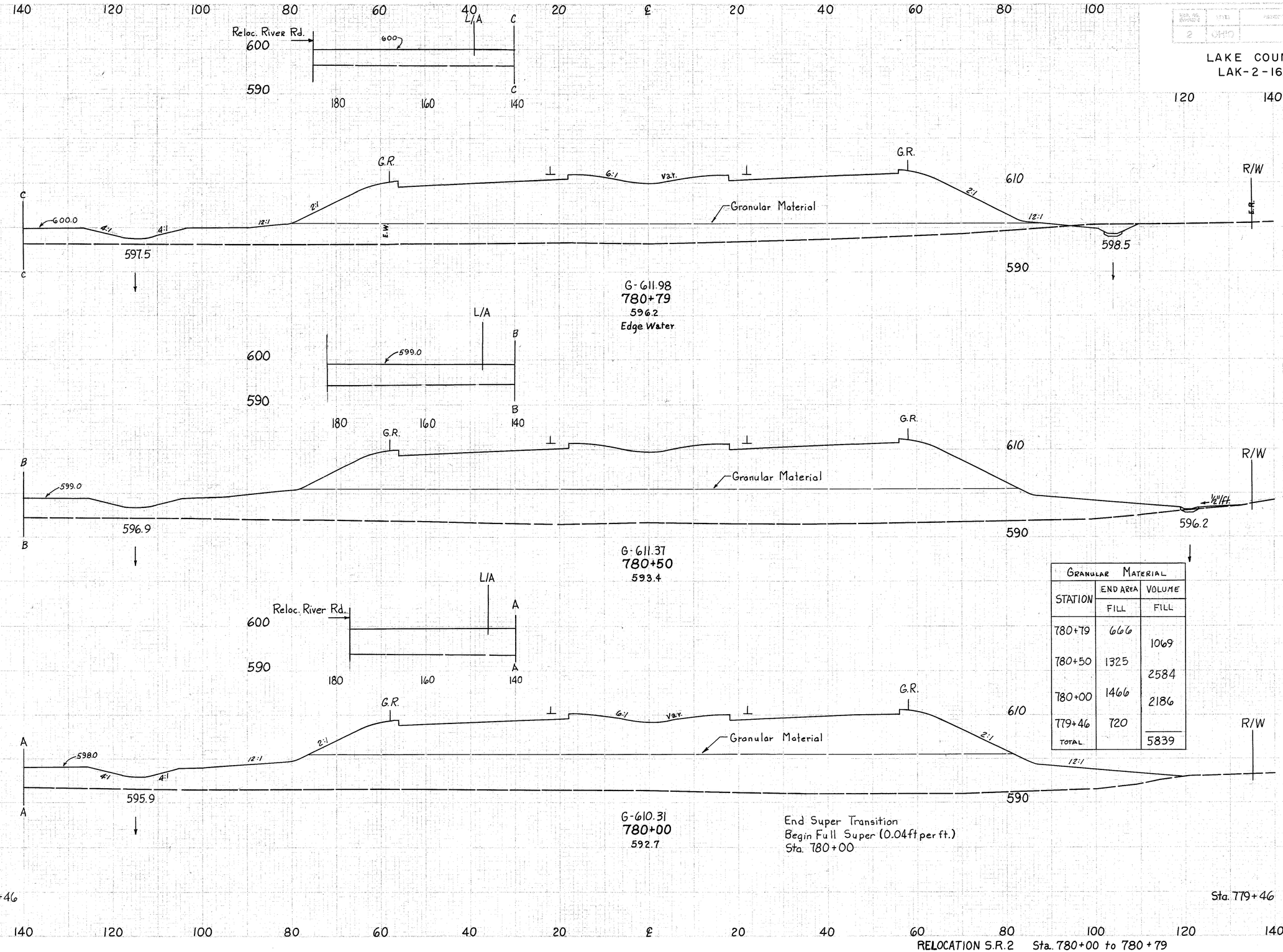
Sta. 779+25 to Sta. 781+00
Place E-4 Borrow, Granular
Material, as per plan to Elev. 601.0

GRANULAR MATERIAL		
STATION	END AREA FILL	VOLUME FILL
779+46	720	208
779+36	401	154
779+24.64	331	
TOTAL		362

END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
47	1015		
		25	374
88	1005		
		39	417
99	977		
		127	1090
156	1219		

RELOCATION S.R. 2 Sta. 779+24.64 to 779+46

SEEDING END WIDTH	SEEDING SQ. YDS.
231	
	759
240	
	1322
236	
	1257
183	



End Super Transition
Begin Full Super (0.04ft. per ft.)
Sta. 780+00

Granular Material		
STATION	END AREA FILL	VOLUME FILL
780+79	666	
		1069
780+50	1325	
		2584
780+00	1466	
		2186
779+46	720	
TOTAL		5839

END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
	30	1772	
		16	1950
	0	1860	
			3317
	—	1722	
			2737
	47	1015	

LAKE COUNTY
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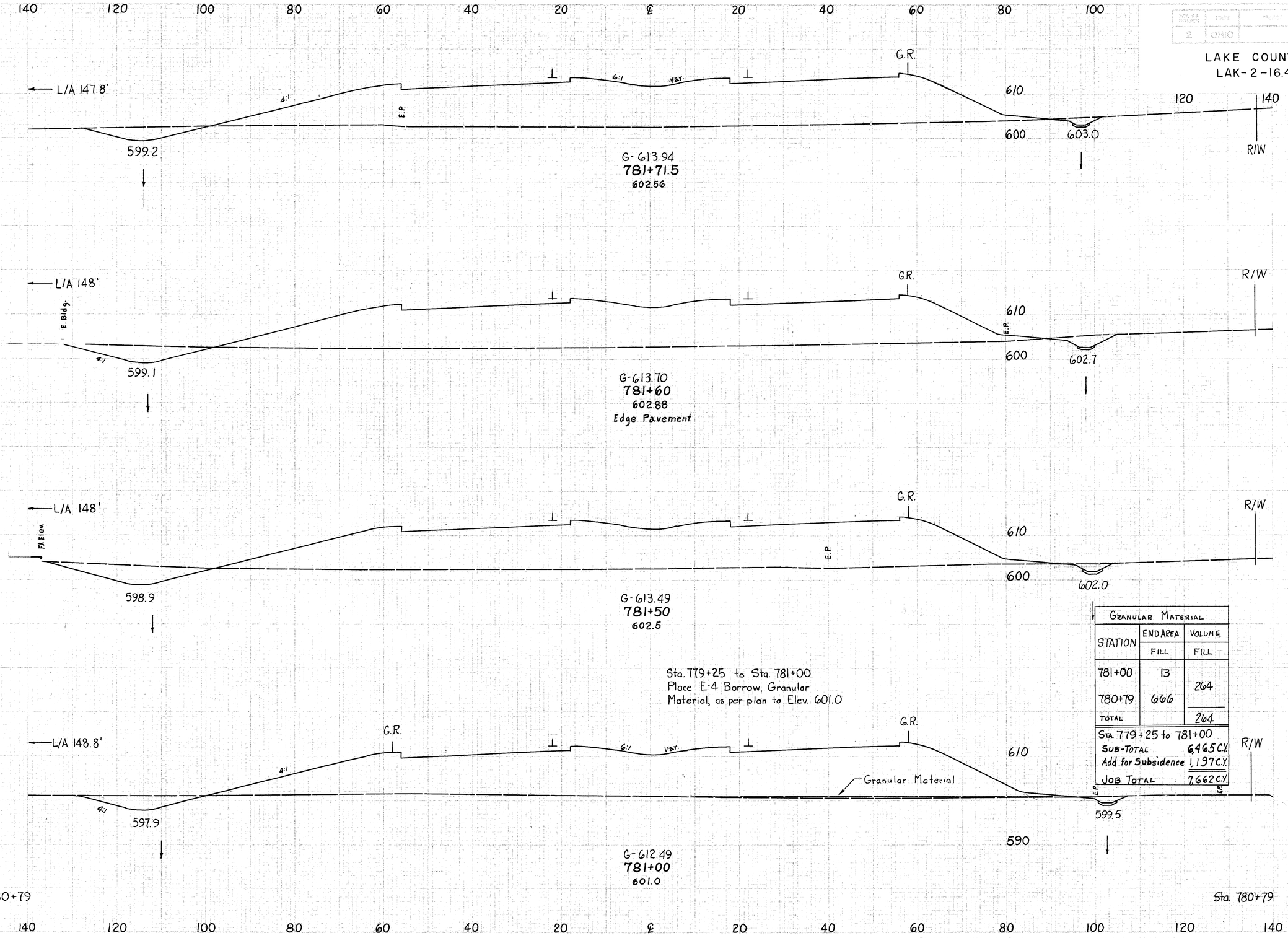
RELOCATION S.R.2 Sta. 780+00 to 780+79

SEEDING	
END WIDTH	SQ. YDS.
174	
	227
182	
	204
185	
	975
166	
	463
231	



Granular Material		
STATION	END AREA FILL	VOLUME FILL
781+00	13	264
780+79	666	
TOTAL		264

Sta. 779+25 to 781+00	
Sub-Total	6,465 C.Y.
Add for Subsidence	1,197 C.Y.
Job Total	7,662 C.Y.

END AREA		VOLUME	
CUT	FILL	CUT	FILL
61	1482		
		33	626
94	1458		
		36	544
102	1477		
		151	2649
61	1384		
		35	1227
30	1772		

STATE	FEDERAL PROJECT NO.	SHEET NO.
OHIO		46 / 313

LAKE COUNTY
LAK-2-16.49

RELOCATION S.R. 2 Sta. 781+00 to 781+71.5

SEEDING	
END WIDTH	SQ. YDS.

END AREA		VOLUME	
CUT	FILL	CUT	FILL

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

Sta. 782+00, 10' Lt. Std. #1 M.H.
Cover 613.91
FE 27" (in) 605.59
FE 27" (out) 605.54

178 — 196

L/A 147'
E.P.
4:1
E.P.
600.0
6:1 Var.
90'-27" @ 1.16 %
G-614.55
782+00
607.2
G.R.
4:1
620
608.5
600
R/W

102 | 1053 | 30 | 481

176 — 148

L/A 147'
E.P.
E.P.
599.9
G-614.33
781+90
602.7
Toe Slope
G.R.
610
600
603.5
R/W

62 | 1544 | 19 | 462

158 — 194

L/A 147'
E.P.
4:1
599.8
6:1 Var.
E.P.
G-614.16
781+82
601.96
Edge Pavement
G.R.
2:1
620
90'-27" @ 1.16 %
14'
FE 604.50
HW-E 600
603.2
E.P.
Dumped Rock
$\frac{14 \times 3.25 \times 1.5}{27}$ = 2.5 C.Y.
R/W

64 | 1572 | 24 | 594

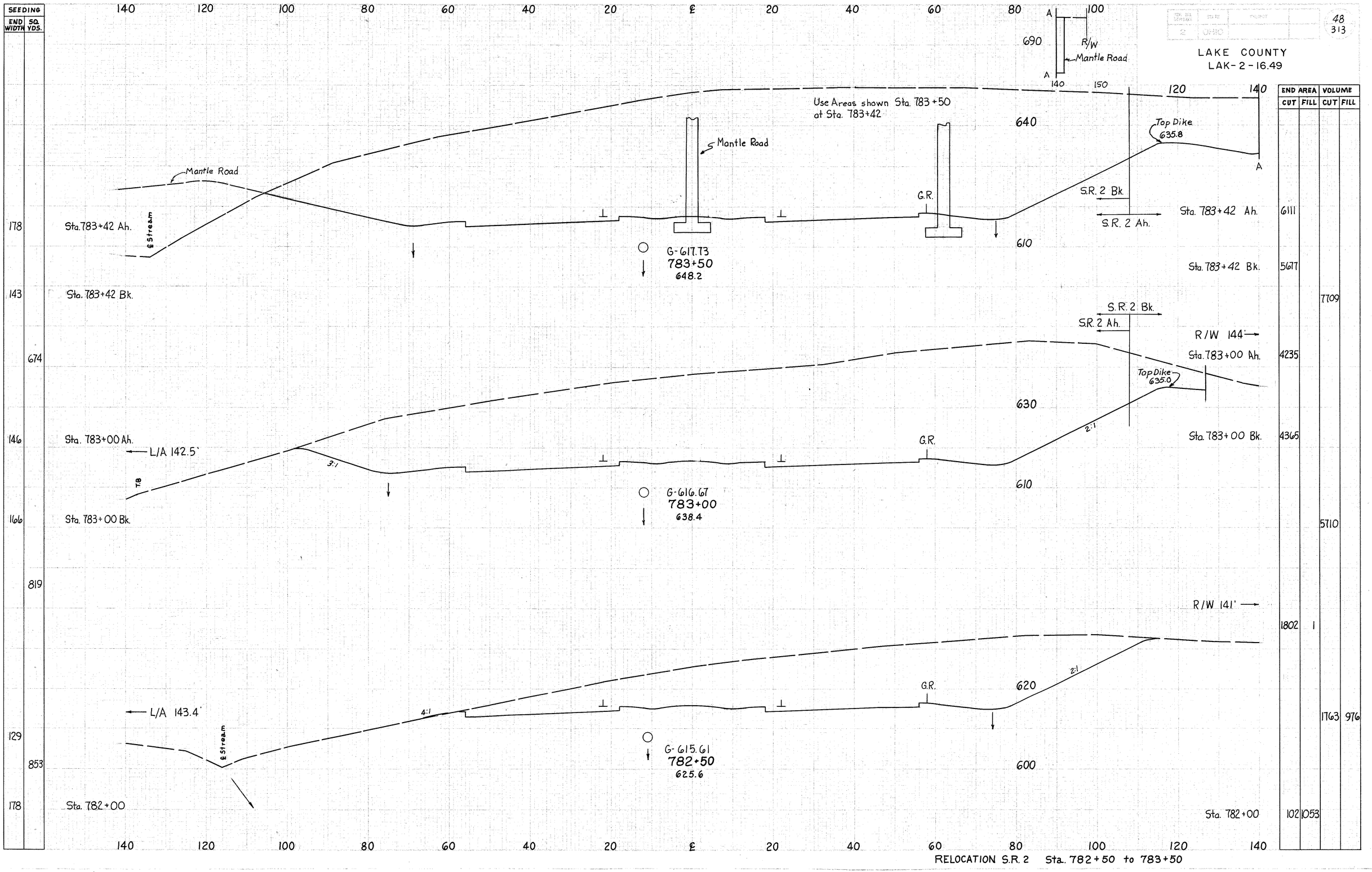
174 — Sta. 781+71.5 — Sta. 781+71.5

61 | 1482

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

RELOCATION S.R. 2 Sta. 781+82 to 782+00

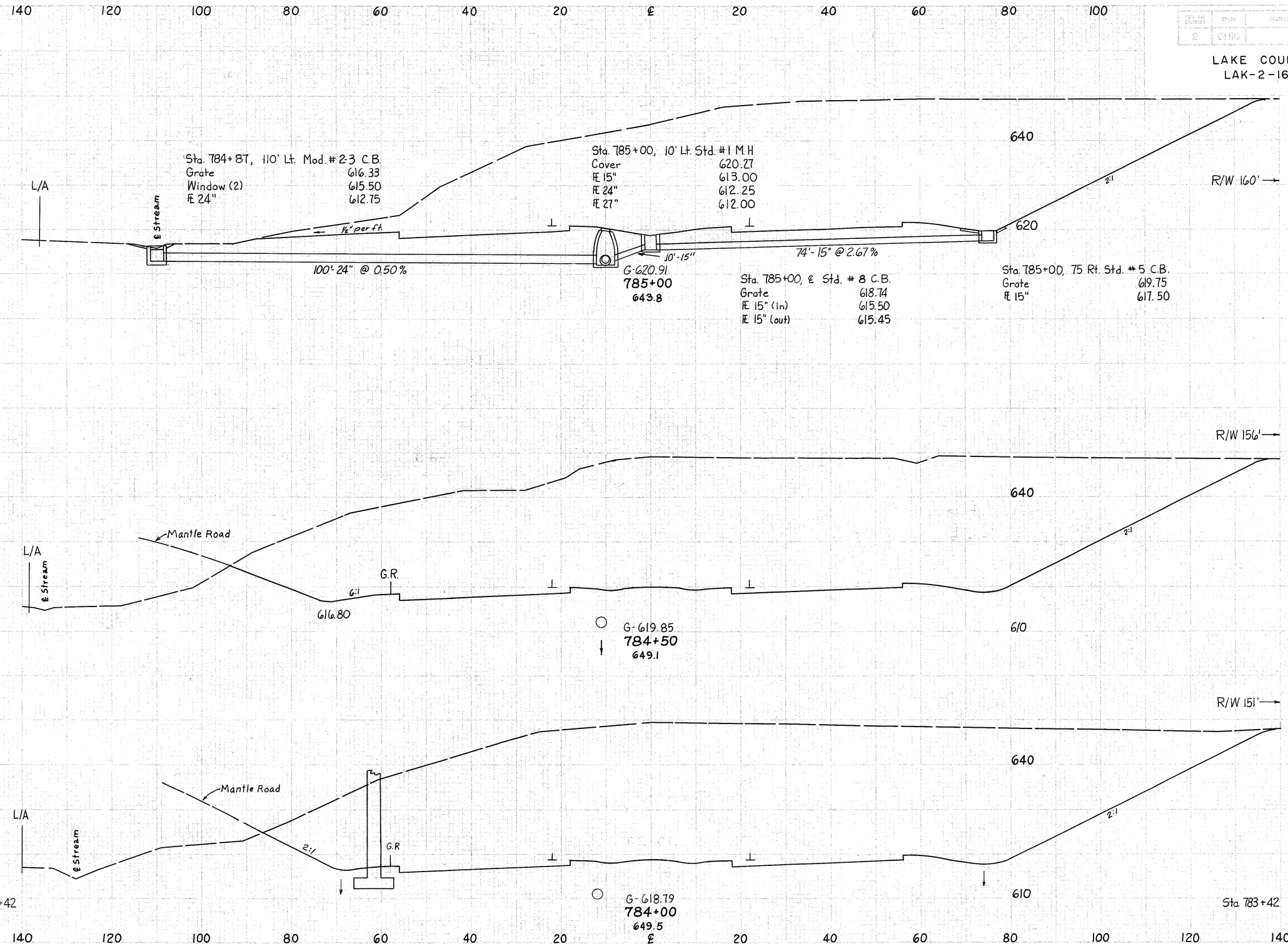
LAKE COUNTY
LAK-2-16.49



RELOCATION S.R. 2 Sta. 782+50 to 783+50

LAKE COUNTY
LAK-2-16.49

SEEDING END WIDTH	SEEDING SQ. YDS.
177	
	978
175	
956	
169	
1118	
178	



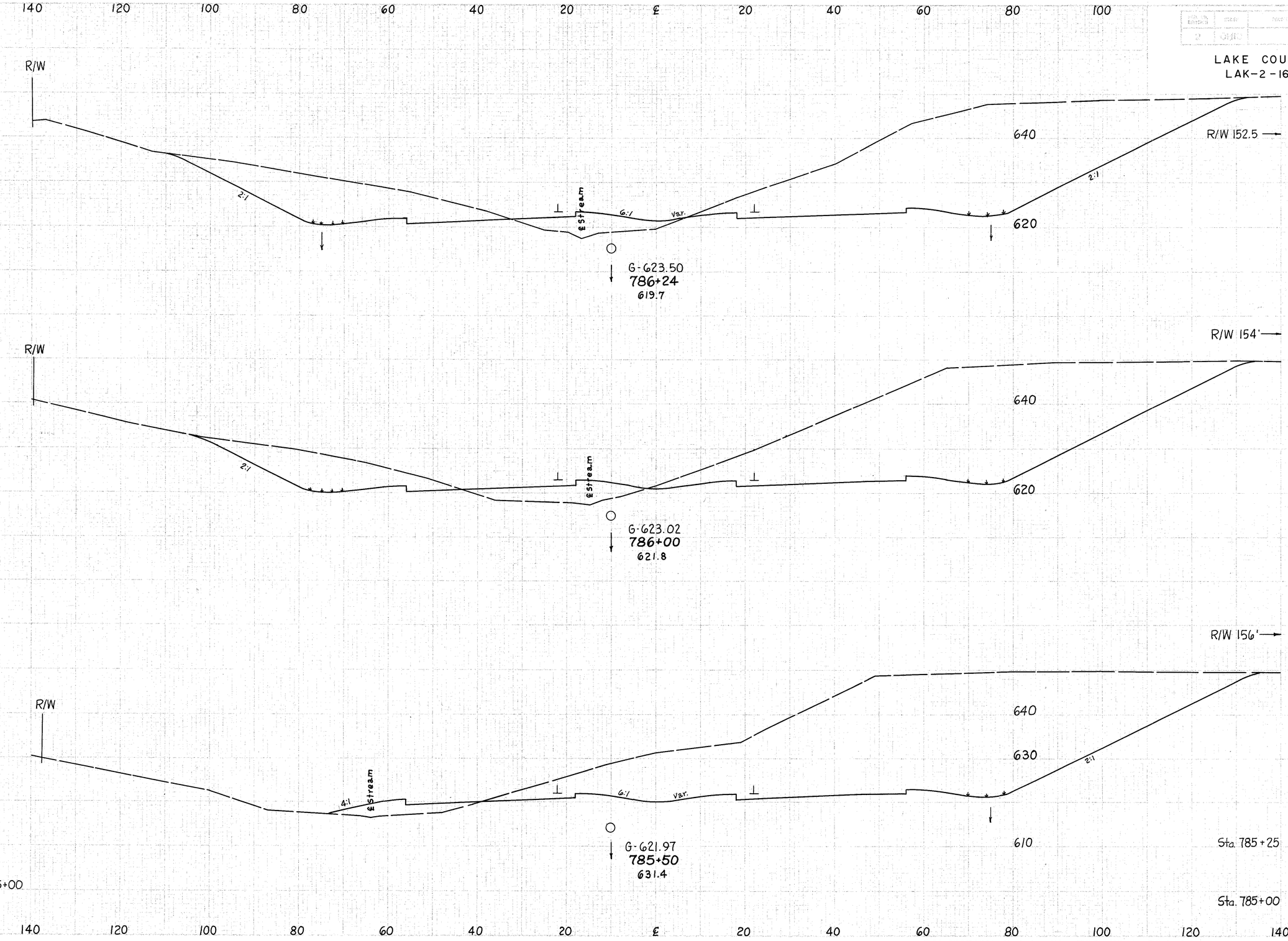
END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
4052			
		8557	
5190			
		9756	
5347			
		12307	
6111			

*RELOCATION S.R.2 Sta. 784+00 to 785+00

50
313

LAKE COUNTY
LAK-2-16.49

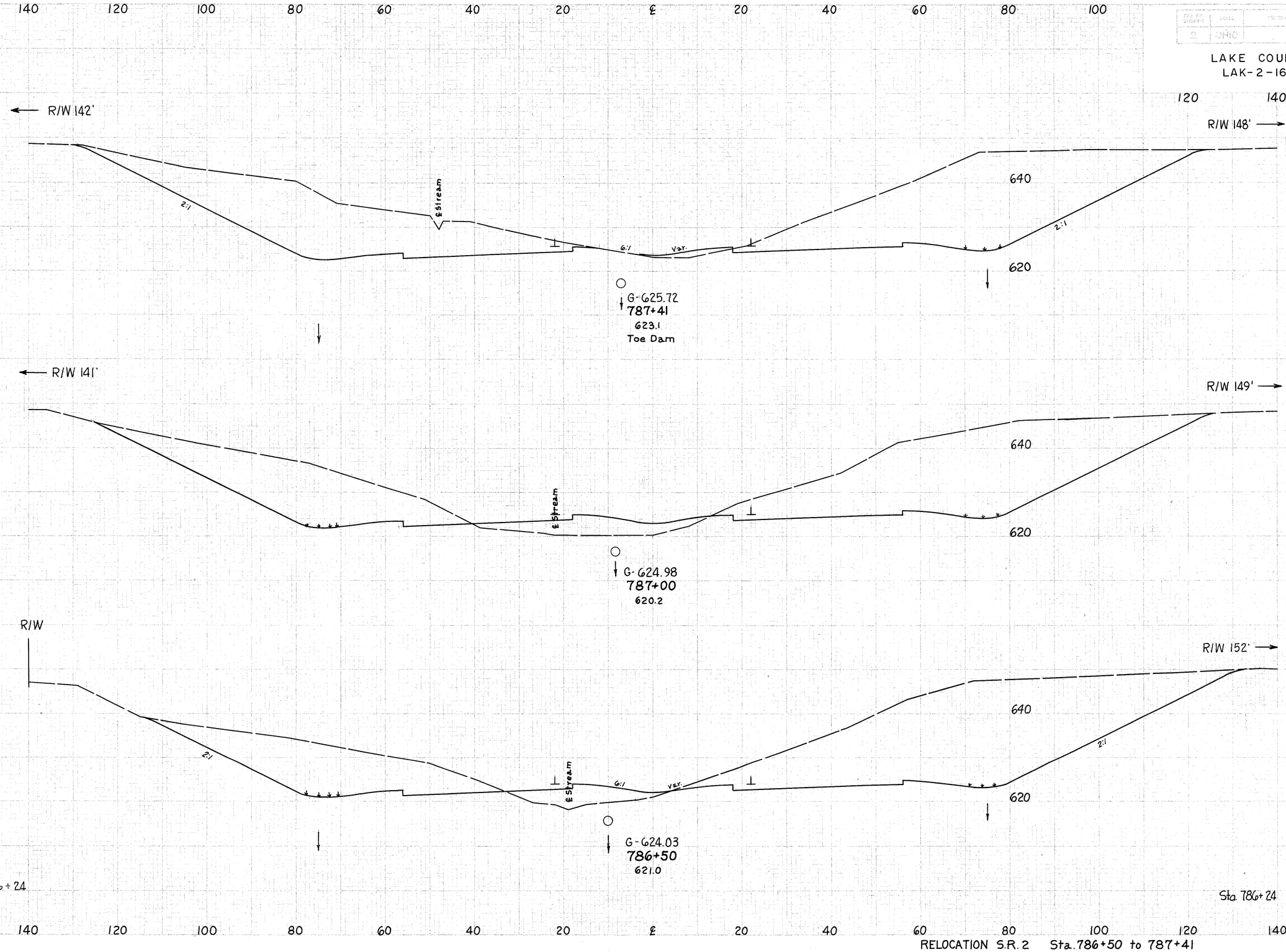
SEEDING END WIDTH	SEEDING SQ. YDS.
197	
	524
196	
	991
161	
	939
177	



END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
2059	102		
		1857	100
2120	123		
		4383	175
2614	66		
		6172	31
	0		
4052			

RELOCATION S.R.2 Sta. 785+50 to 786+24

SEEDING	
END WIDTH	SQ. YDS.
211	
	959
210	
	1147
203	
	578
197	



END AREA		VOLUME	
CUT	FILL	CUT	FILL
2091	18		
		3035	117
1906	136		
		3140	219
2133	100		
		2018	107
2059	123		

LAKE COUNTY
LAK-2-16.49

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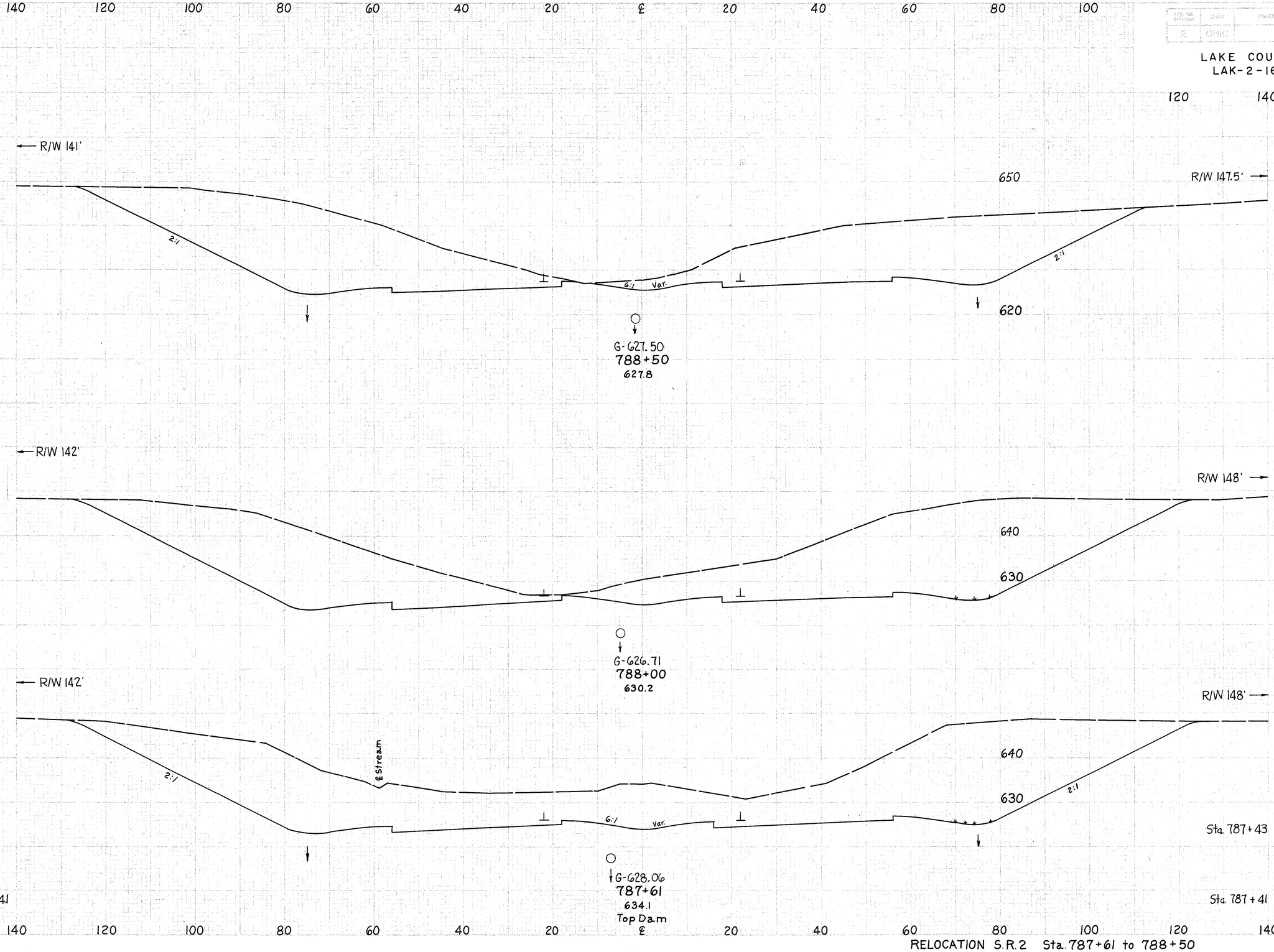
313

RELOCATION S.R. 2 Sta. 786+50 to 787+41

LAKE COUNTY
LAK-2-16.49

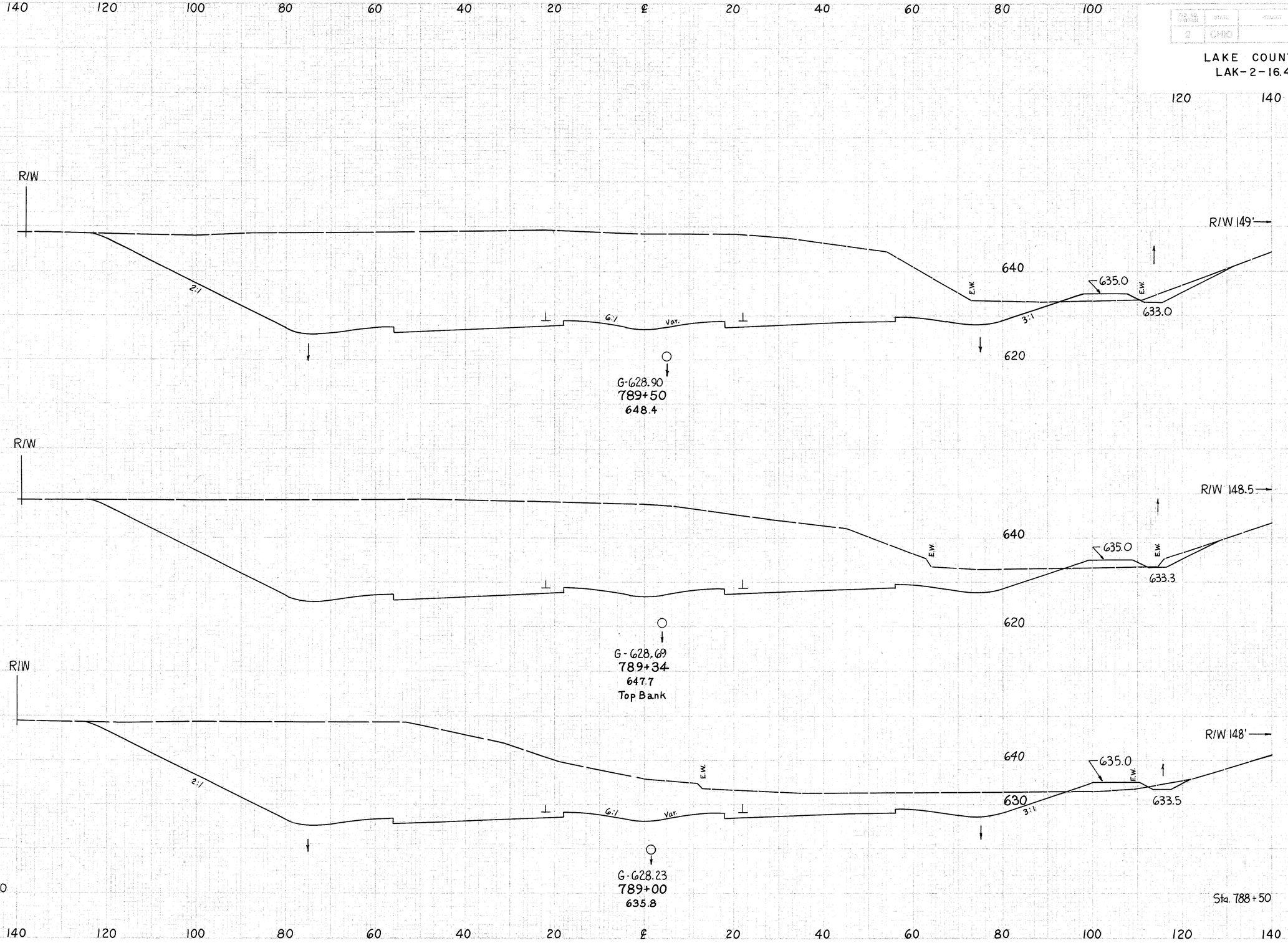
SEEDING END WIDTH	SEEDING SQ. YDS.
189	
	1108
210	
	914
212	
	470
211	



END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
2297	0		
		4518	
2582			
		3792	
2669			
		1763	
	0		
2091	18		1

RELOCATION S.R.2 Sta. 787+61 to 788+50

SEEDING	
END WIDTH	SQ. YDS.
215	
	376
208	
	772
201	
	1083
189	



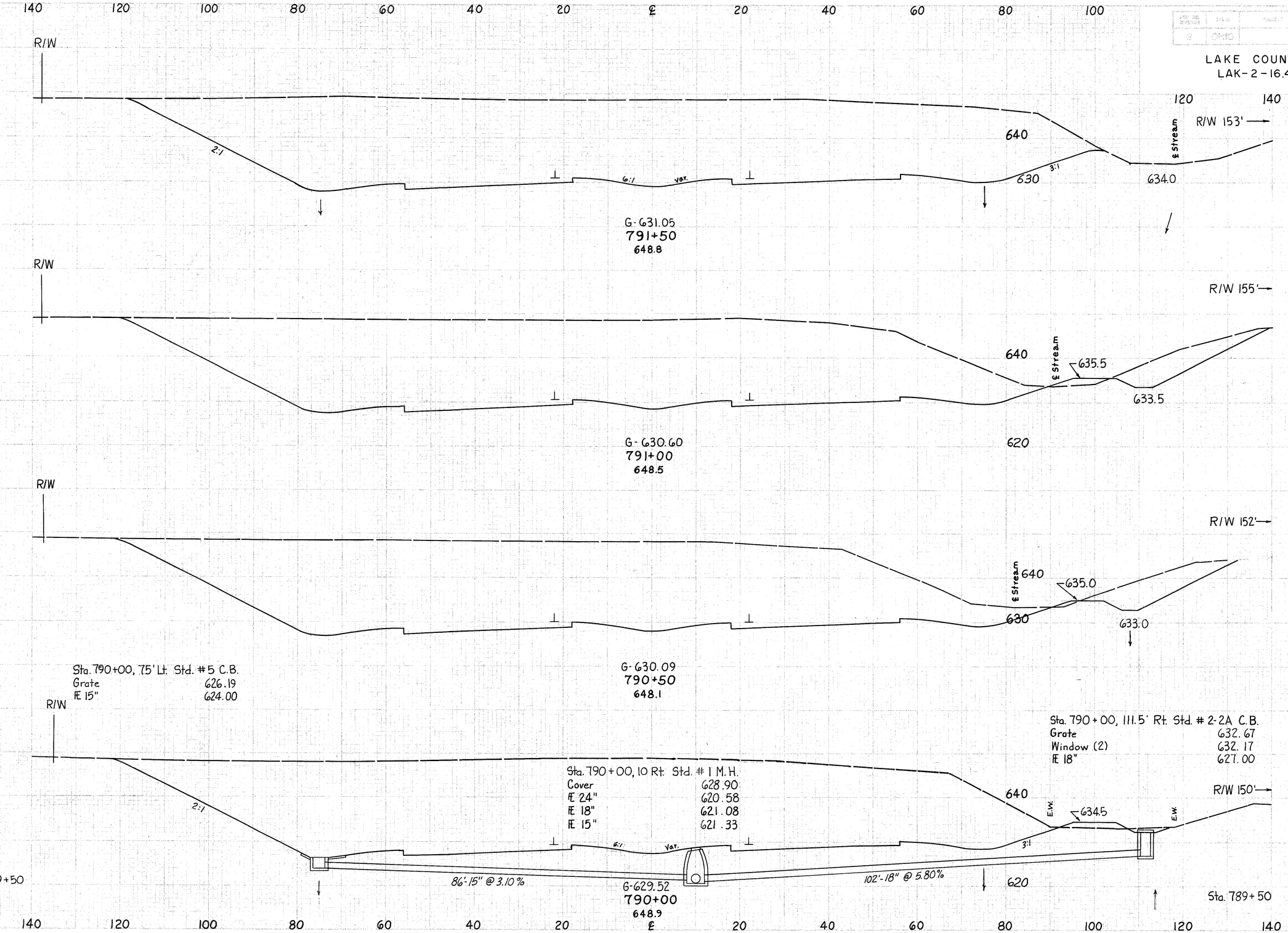
END AREA		VOLUME	
CUT	FILL	CUT	FILL
3512	20		
		2012	13
3279	23		
		3586	30
2416	25		
		4364	23
2297	0		

2	OHIO		53 / 313

LAKE COUNTY
LAK-2-16.49

RELOCATION S.R.2 Sta. 789+00 to 789+50

SEEDING	
END WIDTH	SQ. YDS.
174	
	1083
216	
	1180
209	
	1119
194	
	1136
215	



END AREA		VOLUME	
CUT	FILL	CUT	FILL
3541	0		
		6428	14
3401	15		
		6209	17
3305	3		
		6168	17
3356	15		
		6359	32
3512	20		

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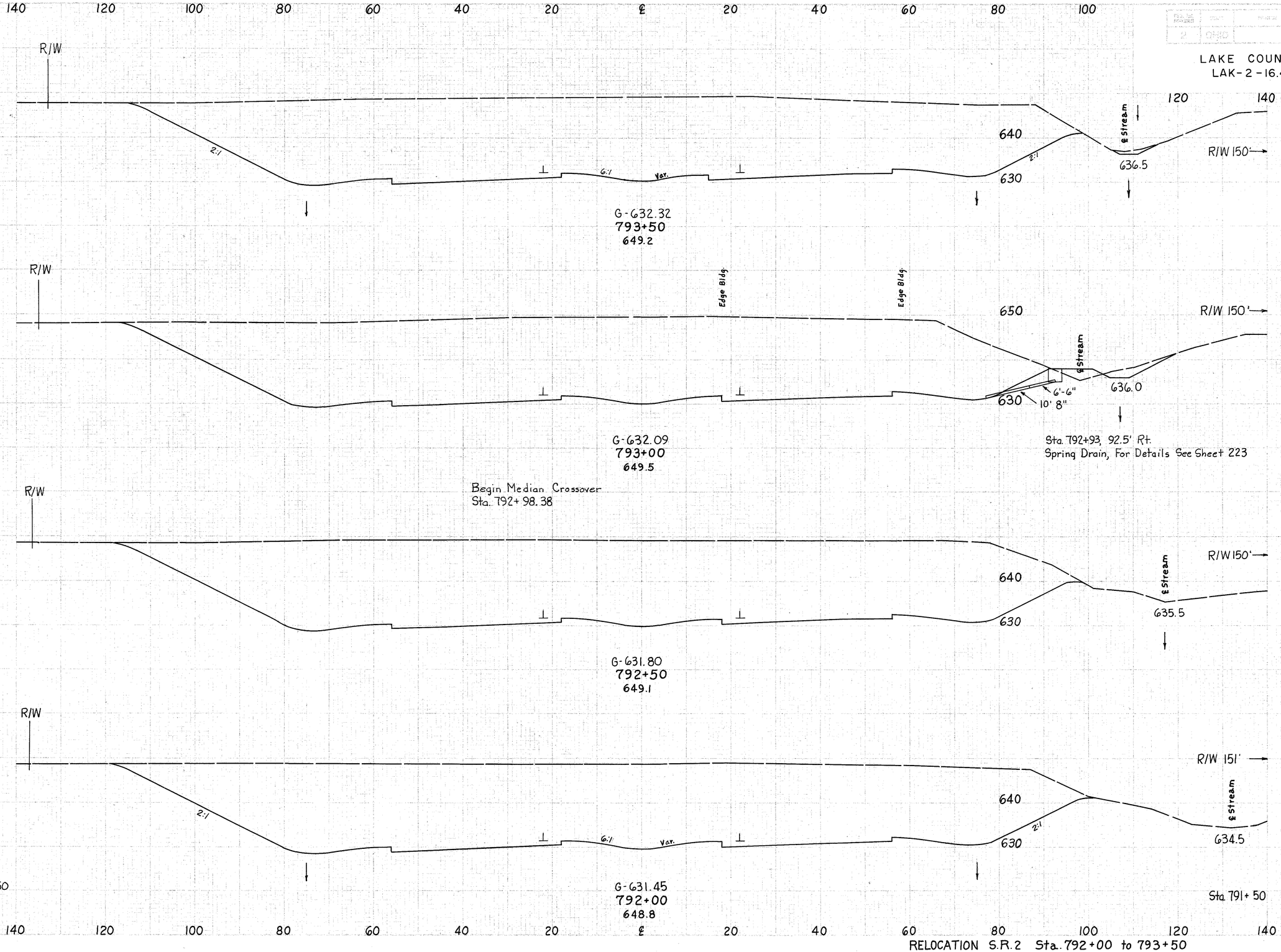
313

LAKE COUNTY
LAK-2-16.49

RELOCATION S.R.2 Sta. 790+00 to 791+50

LAKE COUNTY
LAK-2-16.49

SEEDING END WIDTH	SEEDING SQ. YDS.
164	
	986
191	
	1002
170	
	955
174	
	966
174	



END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
3284	0		
		6056	15
3257	16		
		6243	15
3485	0		
		6455	
3486			
		6506	
3541	0		

RELOCATION S.R.2 Sta. 792+00 to 793+50

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LAKE COUNTY
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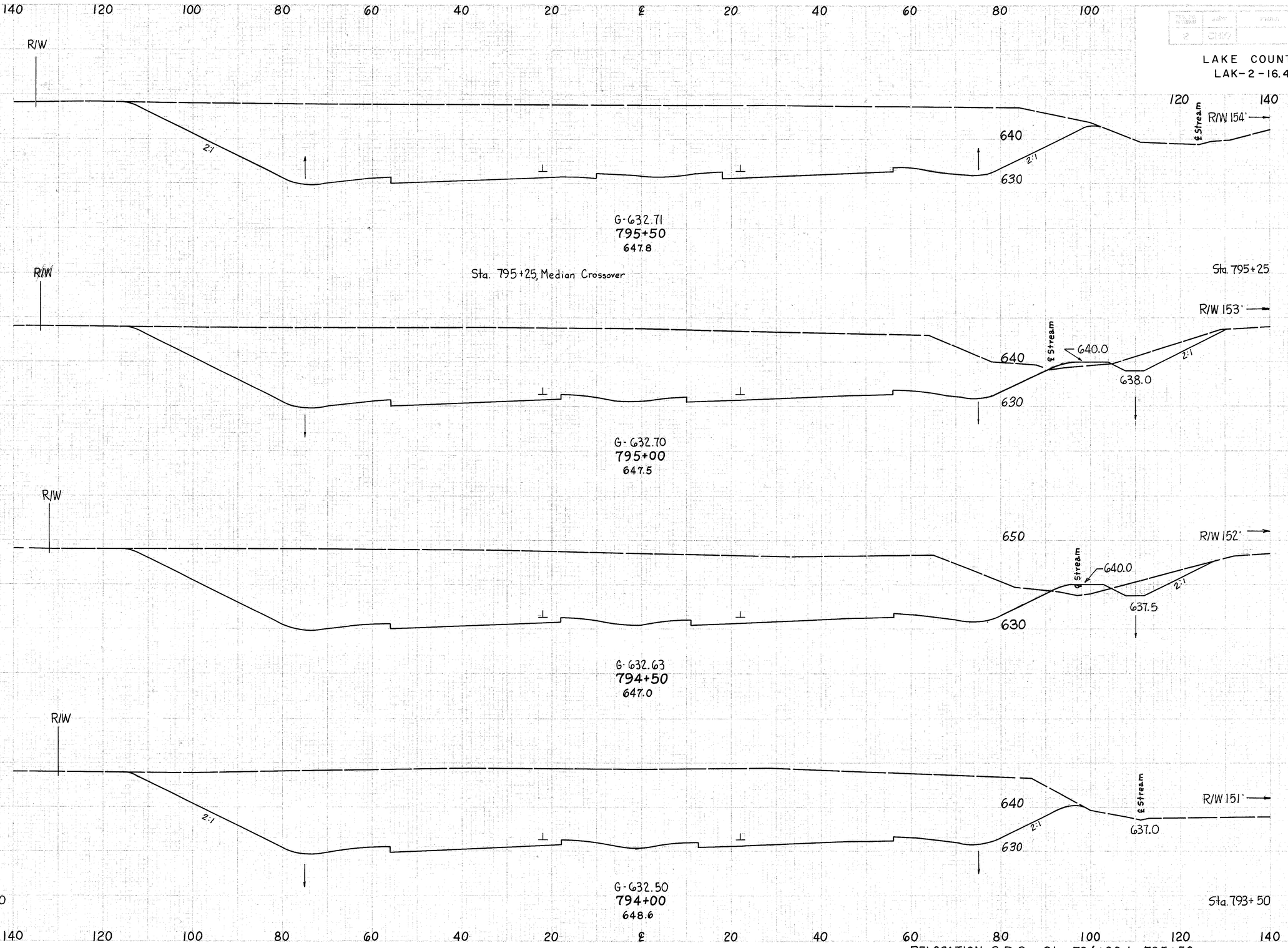
SEEDING END WIDTH	SEEDING SQ. YDS.	END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
162		3050			
	983			5481	
192			0		5
	1069	2870	10		
				5360	29
193					
	991	2919	21		
				5640	19
164					
	911	3172	0		
				5978	—
164		3284	0		

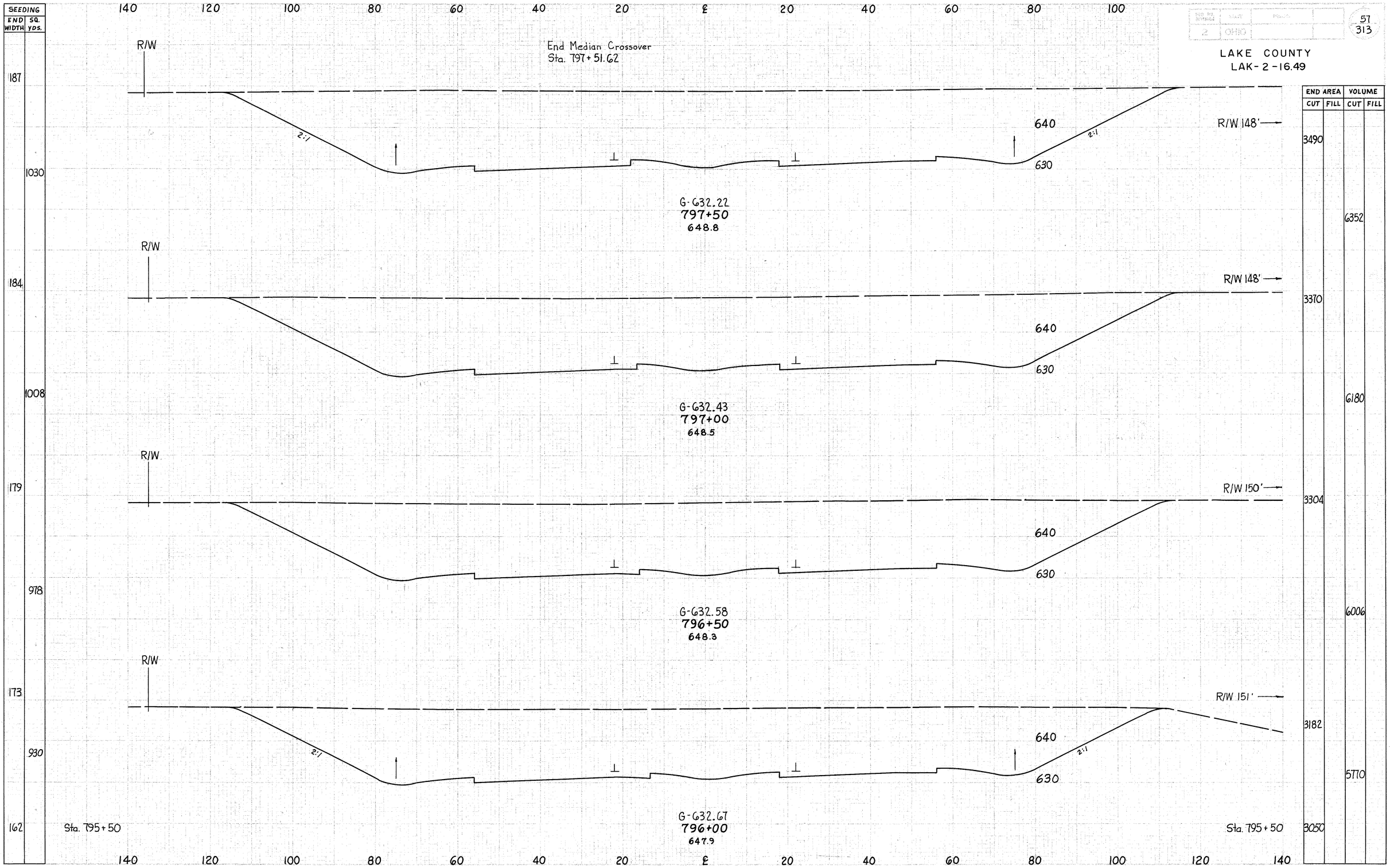


RELOCATION S.R.2 Sta. 794+00 to 795+50

SEED NO. DIVISION	STATE	PROJECT	
2	OHIO		

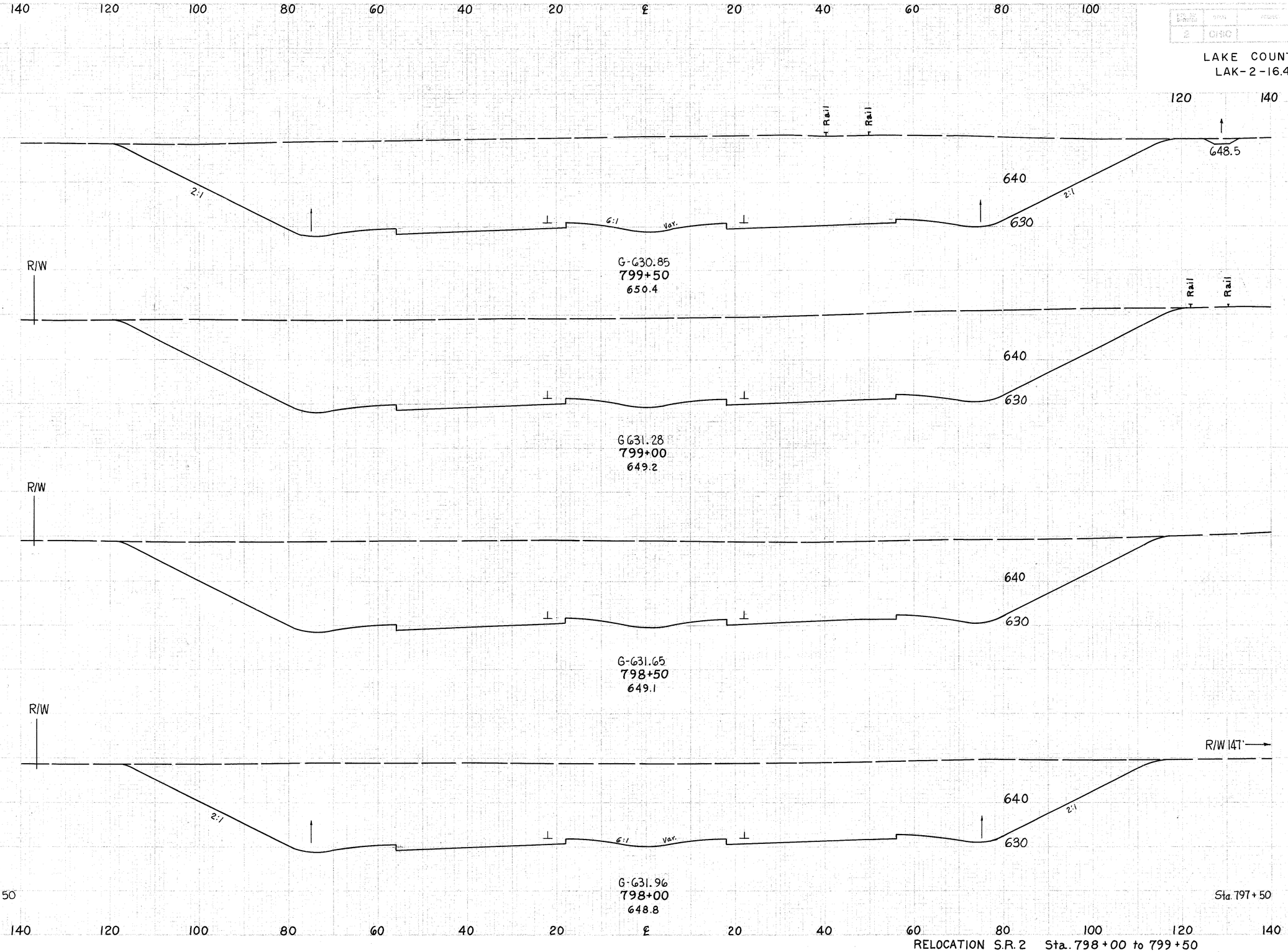
57
313

LAKE COUNTY
LAK-2-16.49



RELOCATION S.R. 2 Sta. 796+00 to 797+50

SEEDING	
END WIDTH	SQ. YDS.
192	
	1072
194	
	1067
190	
	1050
188	
	1041
187	



END AREA		VOLUME	
CUT	FILL	CUT	FILL
3987			
		7251	
3844			
		6929	
3639			
		6671	
3566			
		6533	
3490			

			58
2	CHIC		313

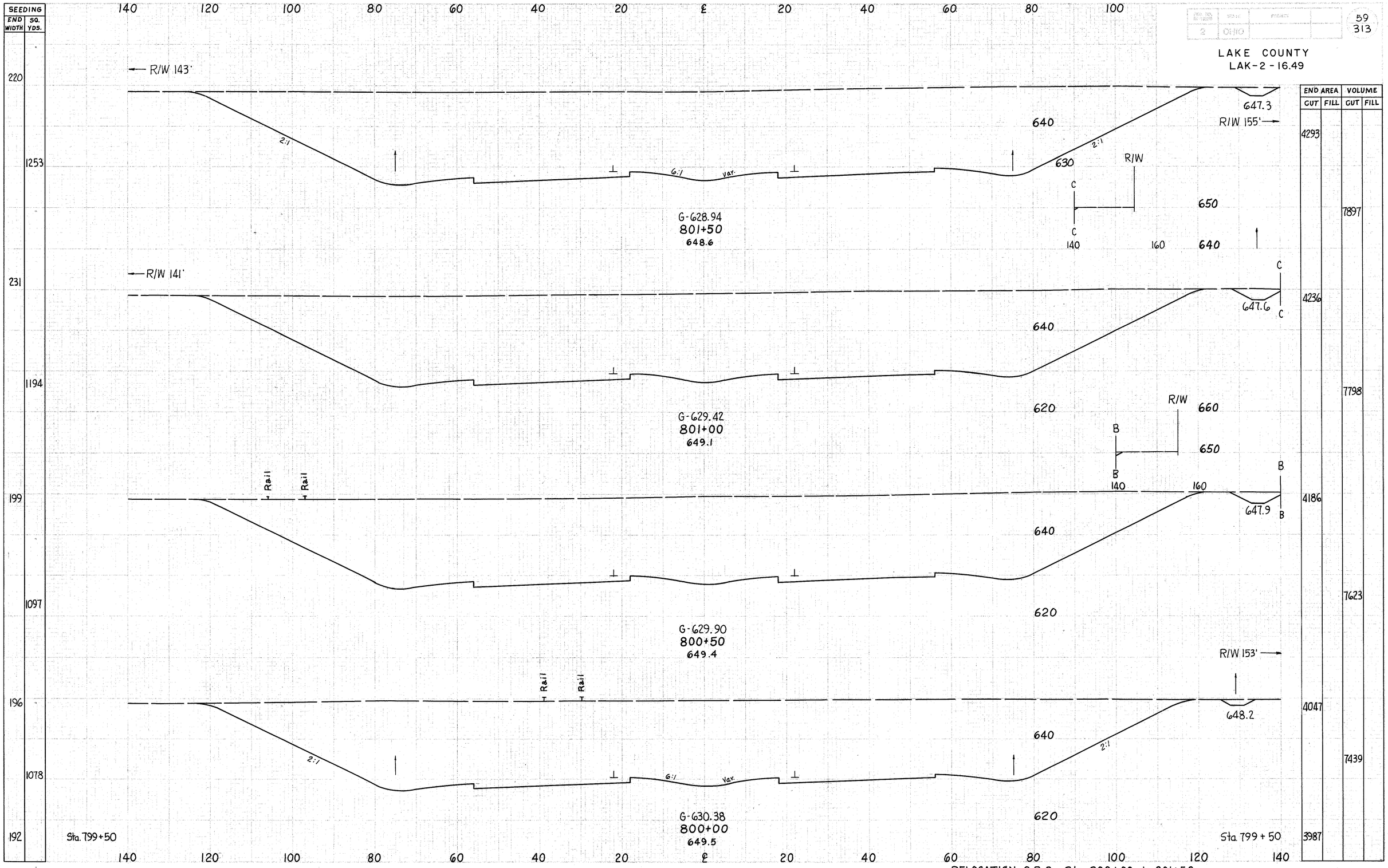
LAKE COUNTY
LAK-2-16.49

RELOCATION S.R. 2 Sta. 798+00 to 799+50

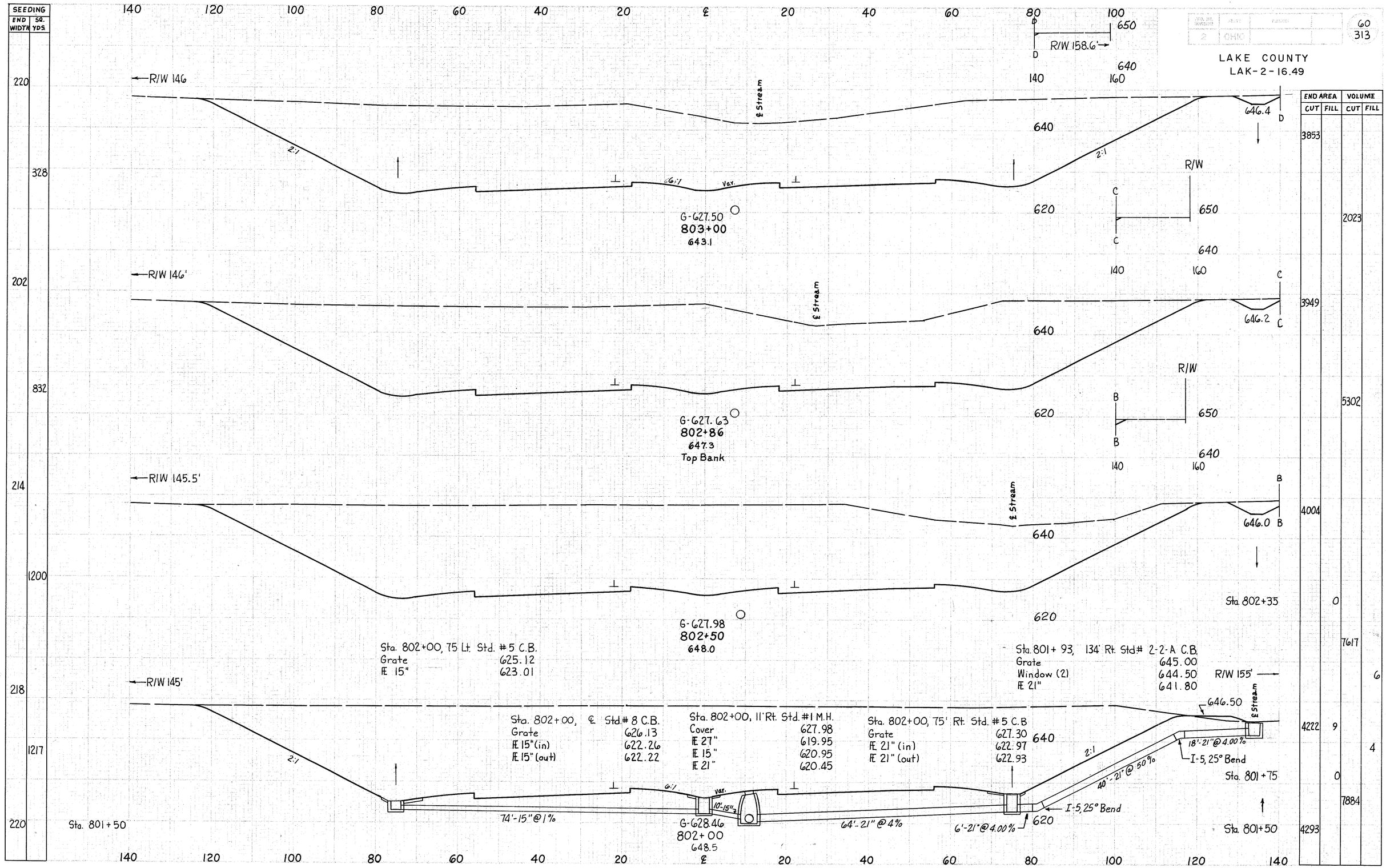
FED. ROAD REGION	STATE	PROJECT	
2	OHIO		

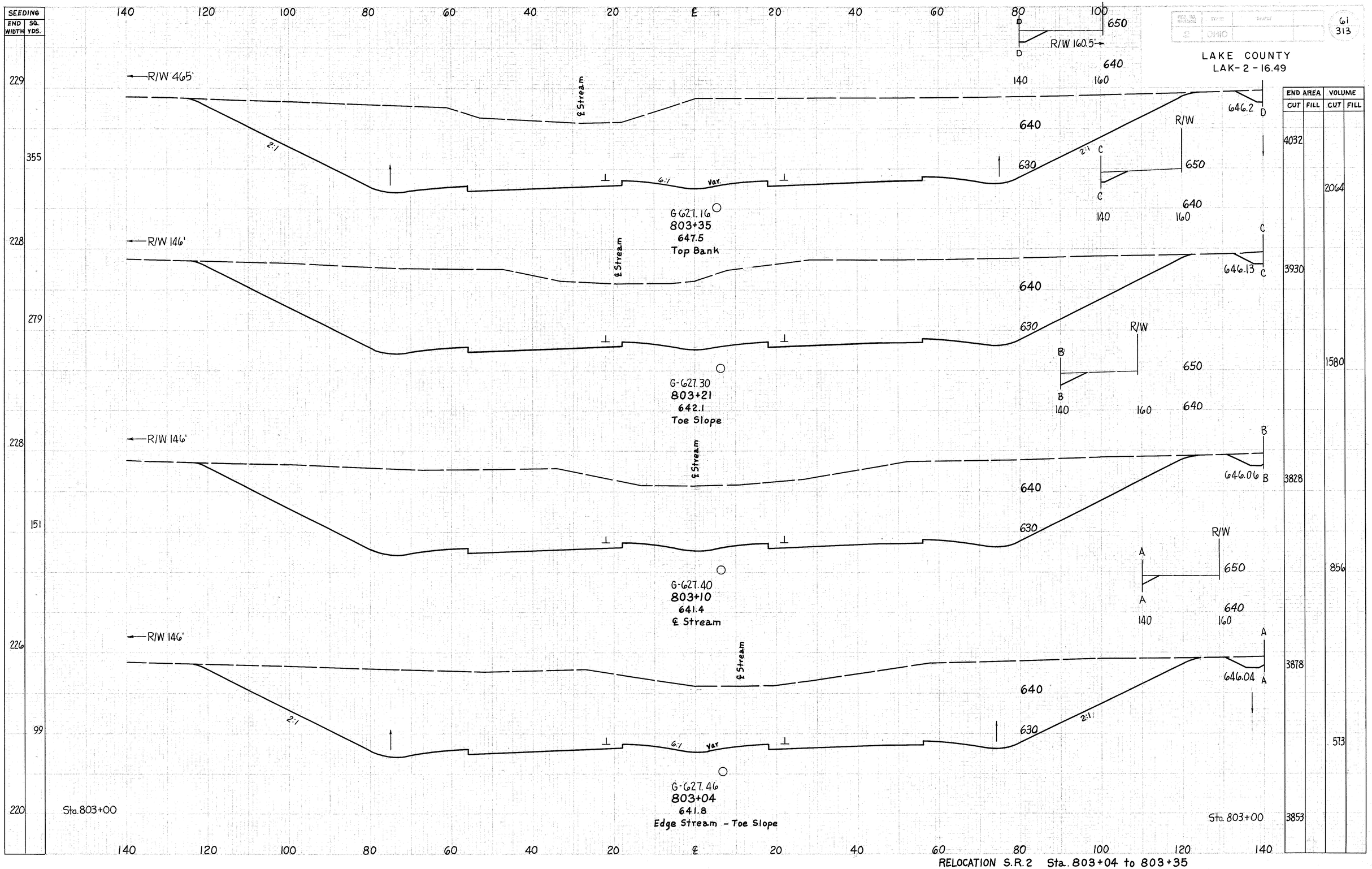
59
313

LAKE COUNTY
LAK-2-16.49



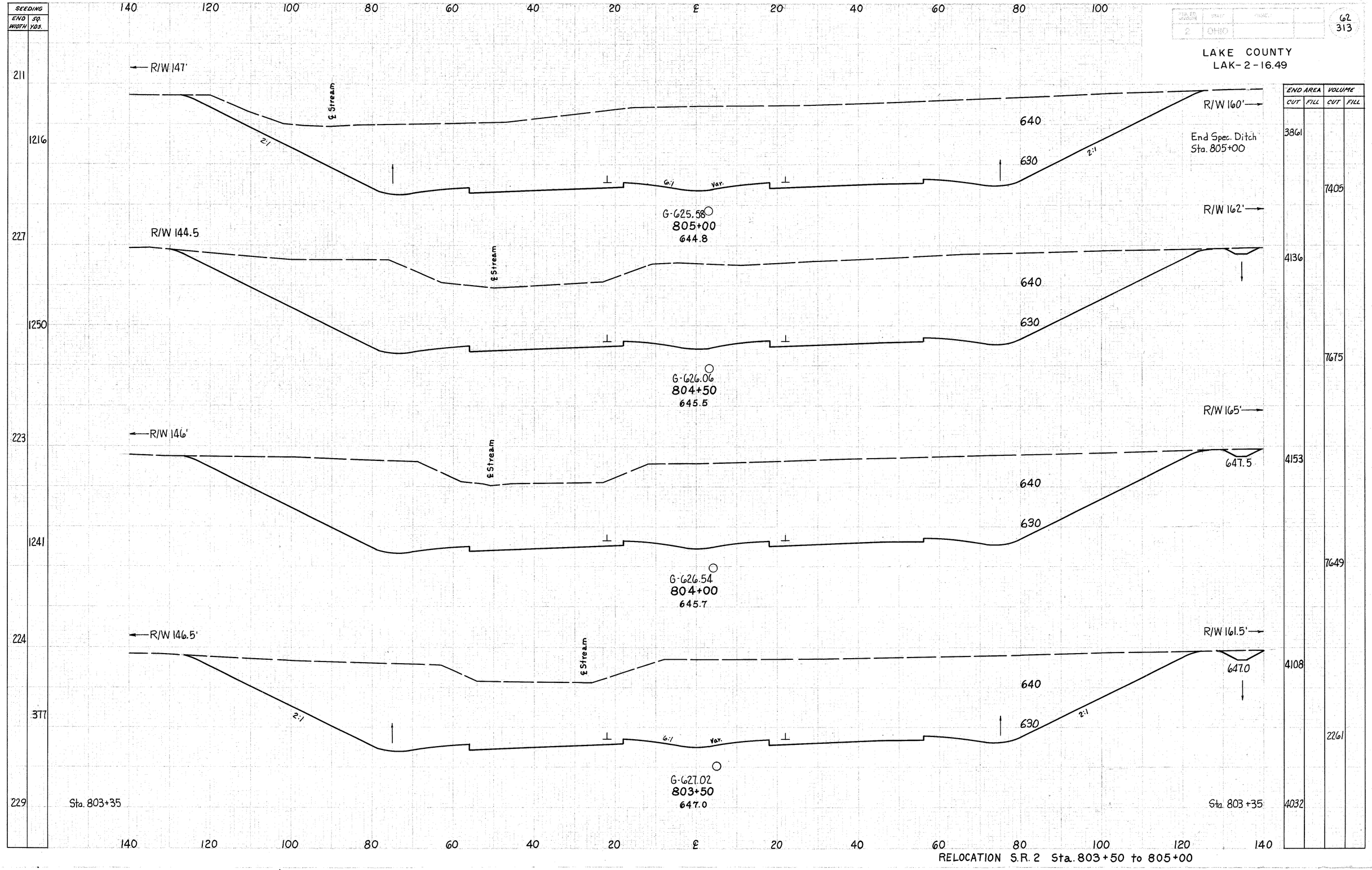
RELOCATION S.R.2 Sta. 800+00 to 801+50


SEEDING
END WIDTH
SQ. YDS.
220
328
202
832
214
1200
218
1217
220
140 120 100 80 60 40 20 ℄ 20 40 60 80 100
R/W 158.6'
650
640
140 160
LAKE COUNTY
LAK-2-16.49
R/W 146
℄ Stream
646.4
2:1
6:1 Var.
G-627.50
803+00
643.1
620
R/W
650
R/W 146'
646.2
G-627.63
802+86
647.3
Top Bank
R/W 145.5'
646.0
Sta. 802+35
G-627.98
802+50
648.0
Sta. 802+00, 75 Lt. Std. #5 C.B.
Grate 625.12
FE 15" 623.01
Sta. 801+93, 134' Rt. Std# 2-2-A C.B.
Grate 645.00
Window (2) 644.50
FE 21" 641.80
R/W 155'
R/W 145'
646.50
Sta. 802+00, ℄ Std.# 8 C.B.
Grate 626.13
FE 15"(in) 622.26
FE 15"(out) 622.22
Sta. 802+00, 11' Rt. Std. #1 M.H.
Cover 627.98
FE 27" 619.95
FE 15" 620.95
FE 21" 620.45
Sta. 802+00, 75' Rt. Std. #5 C.B
Grate 627.30
FE 21"(in) 622.97
FE 21"(out) 622.93
18'-21" @ 4.00%
I-5, 25° Bend
40'-21" @ 50%
Sta. 801+75
10'-15"
74'-15" @ 1%
G-628.46
802+00
648.5
64'-21" @ 4%
6'-21" @ 4.00%
Sta. 801+50
END AREA
CUT FILL
VOLUME
CUT FILL
3853
2023
3949
5302
4004
0
7617
6
4222
9
4
0
7884
4293
RELOCATION S.R. 2 Sta. 802+00 to 803+00


SEEDING
END WIDTH
SQ. YDS.
229
355
228
279
228
151
226
99
220
R/W 465'
R/W 146'
R/W 146'
R/W 146'
R/W 146'
2:1
6:1 var.
℄ Stream
G 627.16
803+35
647.5
Top Bank
G-627.30
803+21
642.1
Toe Slope
G-627.40
803+10
641.4
℄ Stream
G-627.46
803+04
641.8
Edge Stream - Toe Slope
Sta. 803+00
Sta. 803+00
R/W 160.5'
R/W
640
650
630
646.2
646.13
646.06
646.04
END AREA
VOLUME
CUT
FILL
4032
3930
3828
3878
3853
2064
1580
856
573
61
313
LAKE COUNTY
LAK-2-16.49
RELOCATION S.R.2 Sta. 803+04 to 803+35

DISTRICT	STATE	ROUTE	SHEET
2	OHIO		62 / 313

LAKE COUNTY
LAK-2-16.49

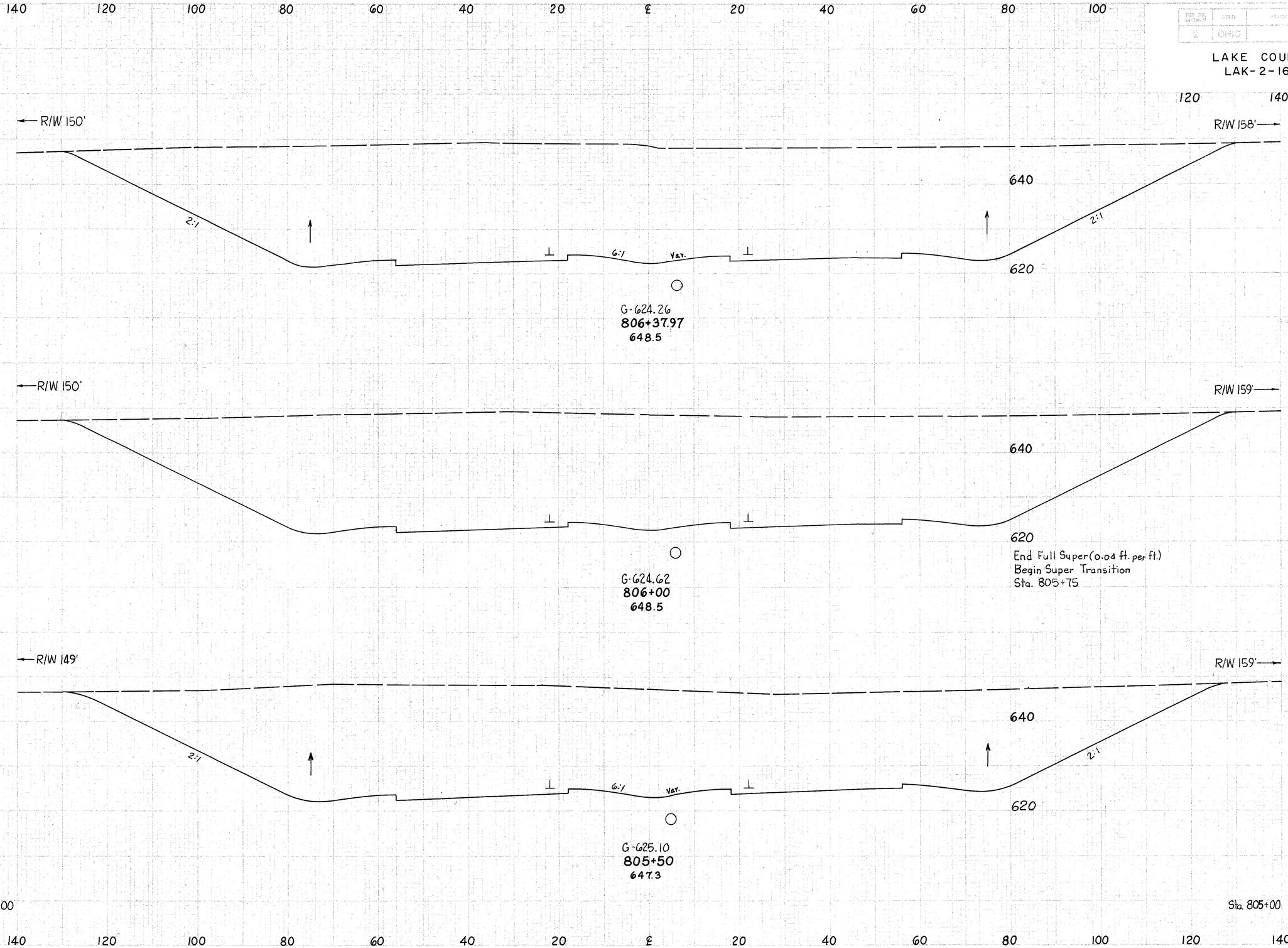


RELOCATION S.R. 2 Sta. 803+50 to 805+00

FED. RD. DIVISION	STATE	PROJECT		63
2	OHIO			313

LAKE COUNTY
LAK-2-16.49

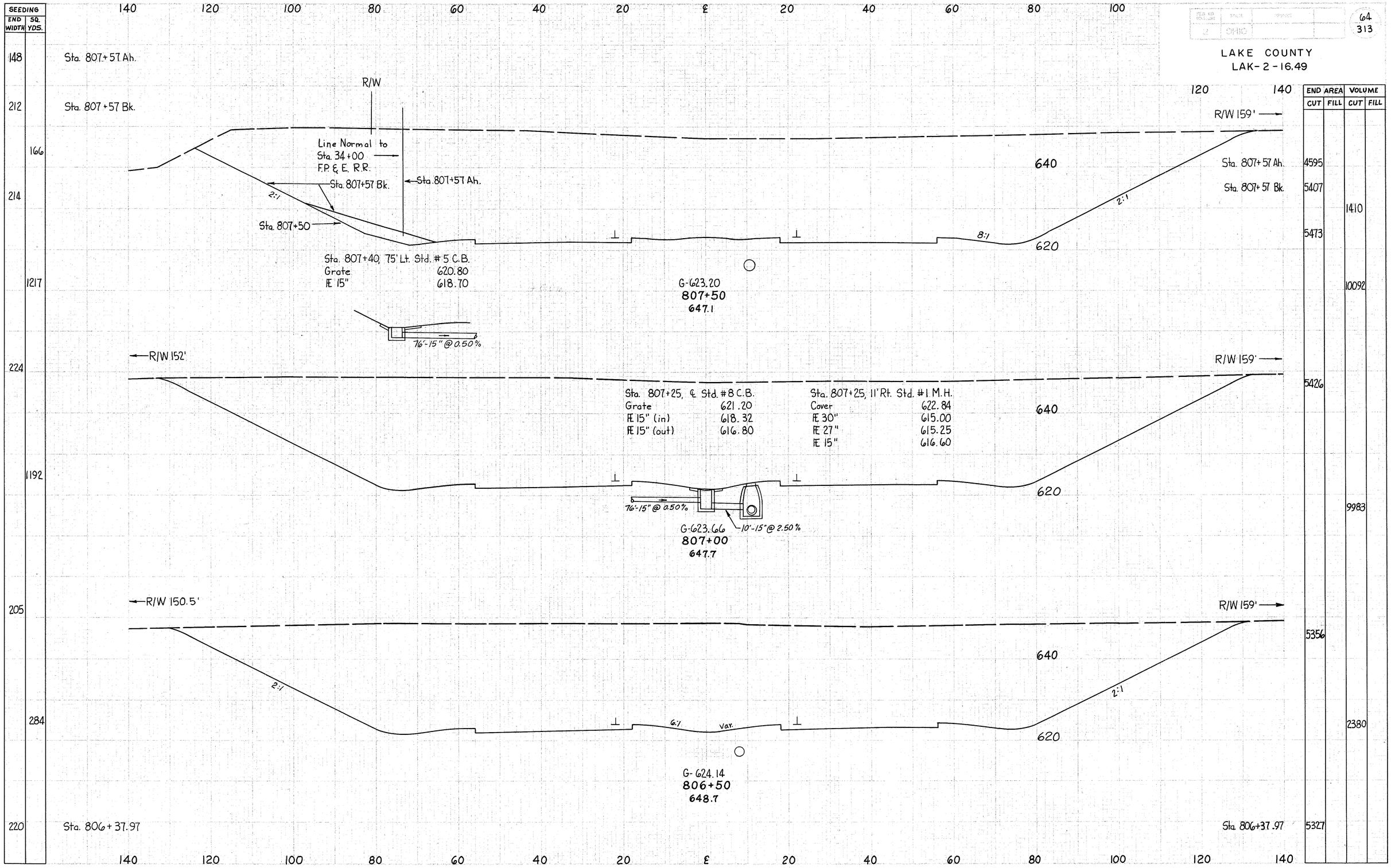
SEEDING	
END WIDTH	SQ. YDS.
220	
	924
218	
	1200
214	
	1180
211	



END AREA		VOLUME	
CUT	FILL	CUT	FILL
5327			
		7407	
5207			
		9312	
4850			
		8066	
3861			

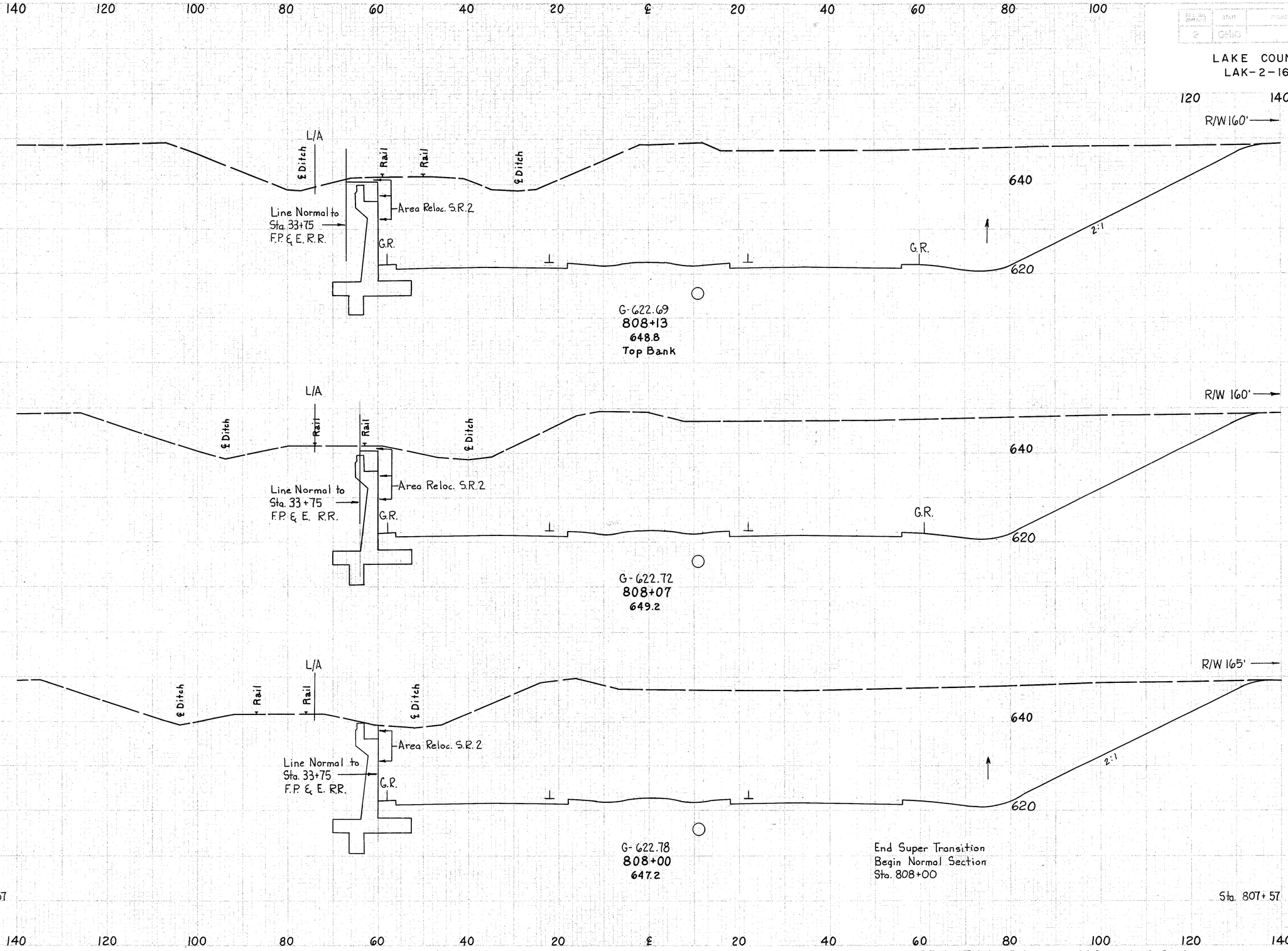
RELOCATION S.R. 2 Sta. 805+50 to 806+37.97

LAKE COUNTY
LAK-2-16.49



RELOCATION S.R.2 Sta. 806+50 to 807+50

SEEDING	
END WIDTH	SQ. YDS.
143	
	94
140	
	107
136	
	678
148	



END AREA		VOLUME	
CUT	FILL	CUT	FILL
4022			
		901	
4085			
		1065	
4131			
		6948	
4595			

REG. NO. DIST.	STATE	STATE	
2	OHIO		

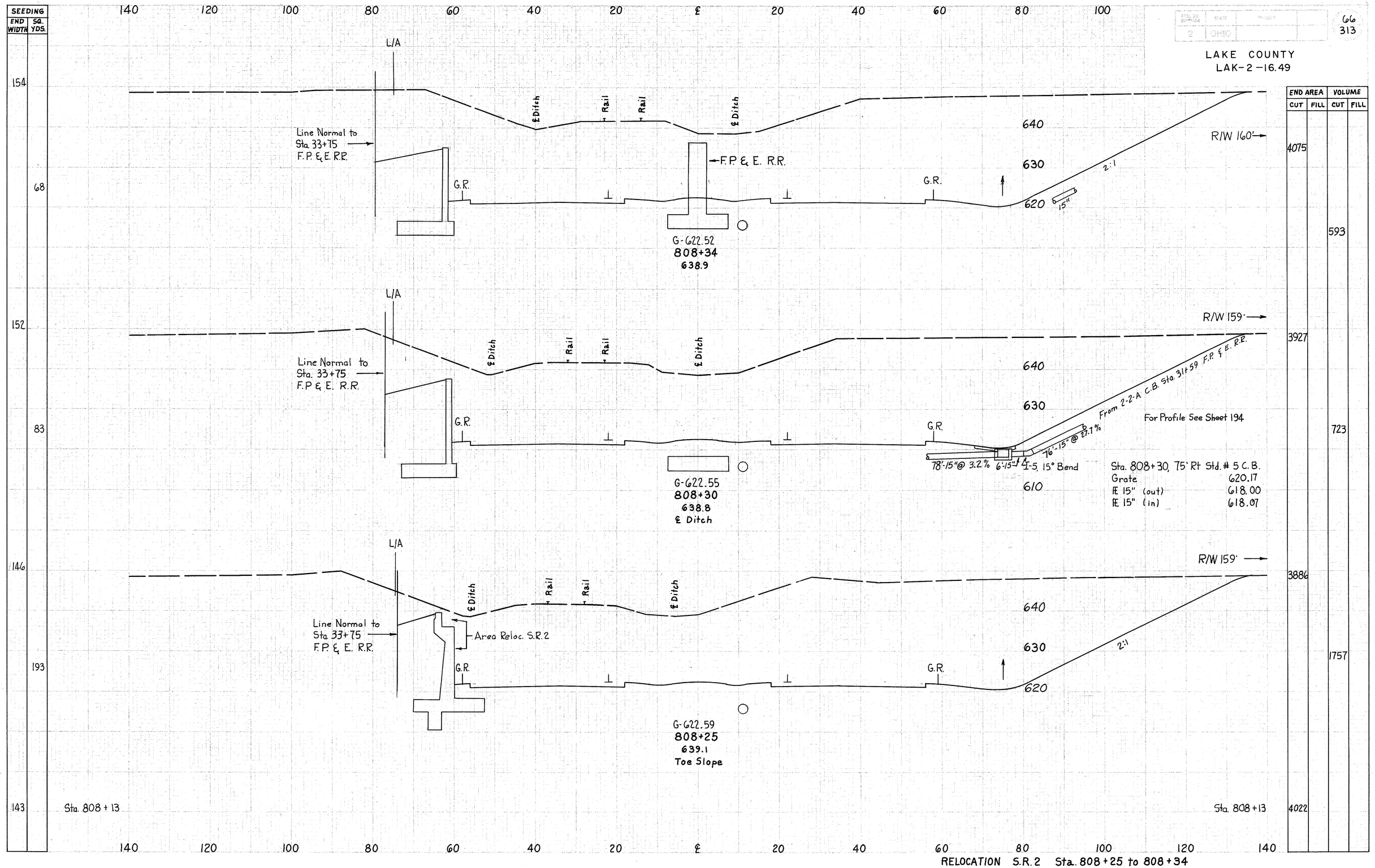
65
313

LAKE COUNTY
LAK-2-16.49

RELOCATION S.R.2 Sta. 808+00 to 808+13

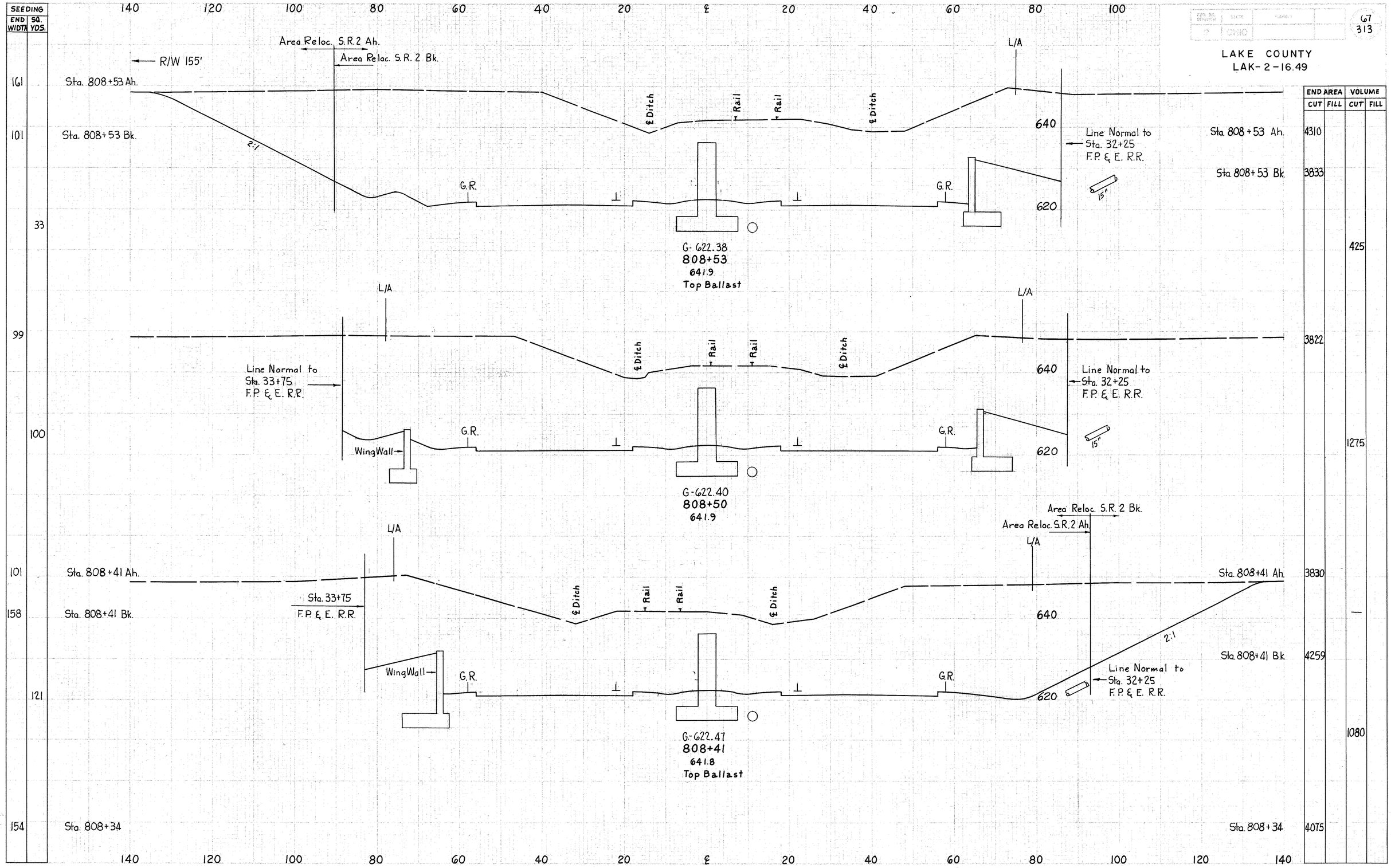
FED. RD. DIVISION	STATE	NUMBER	
2	OHIO		66 / 313

LAKE COUNTY
LAK-2-16.49



RELOCATION S.R.2 Sta. 808+25 to 808+34

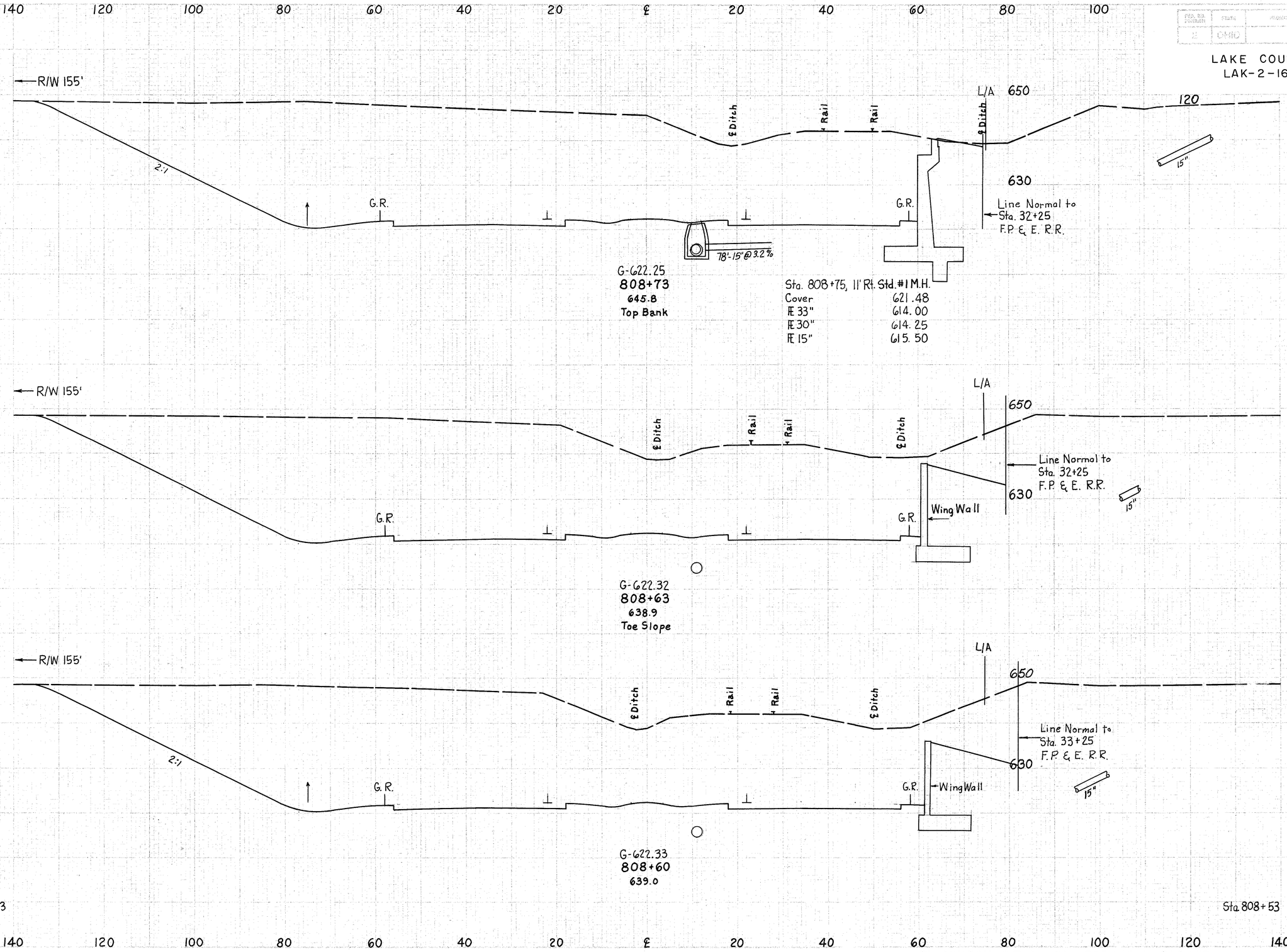
LAKE COUNTY
LAK-2-16.49



RELOCATION S.R.2 Sta. 808+41 to 808+53

LAKE COUNTY
LAK-2-16.49

SEEDING	
END WIDTH	SQ. YDS.
148	
168	
155	
52	
158	
124	
161	

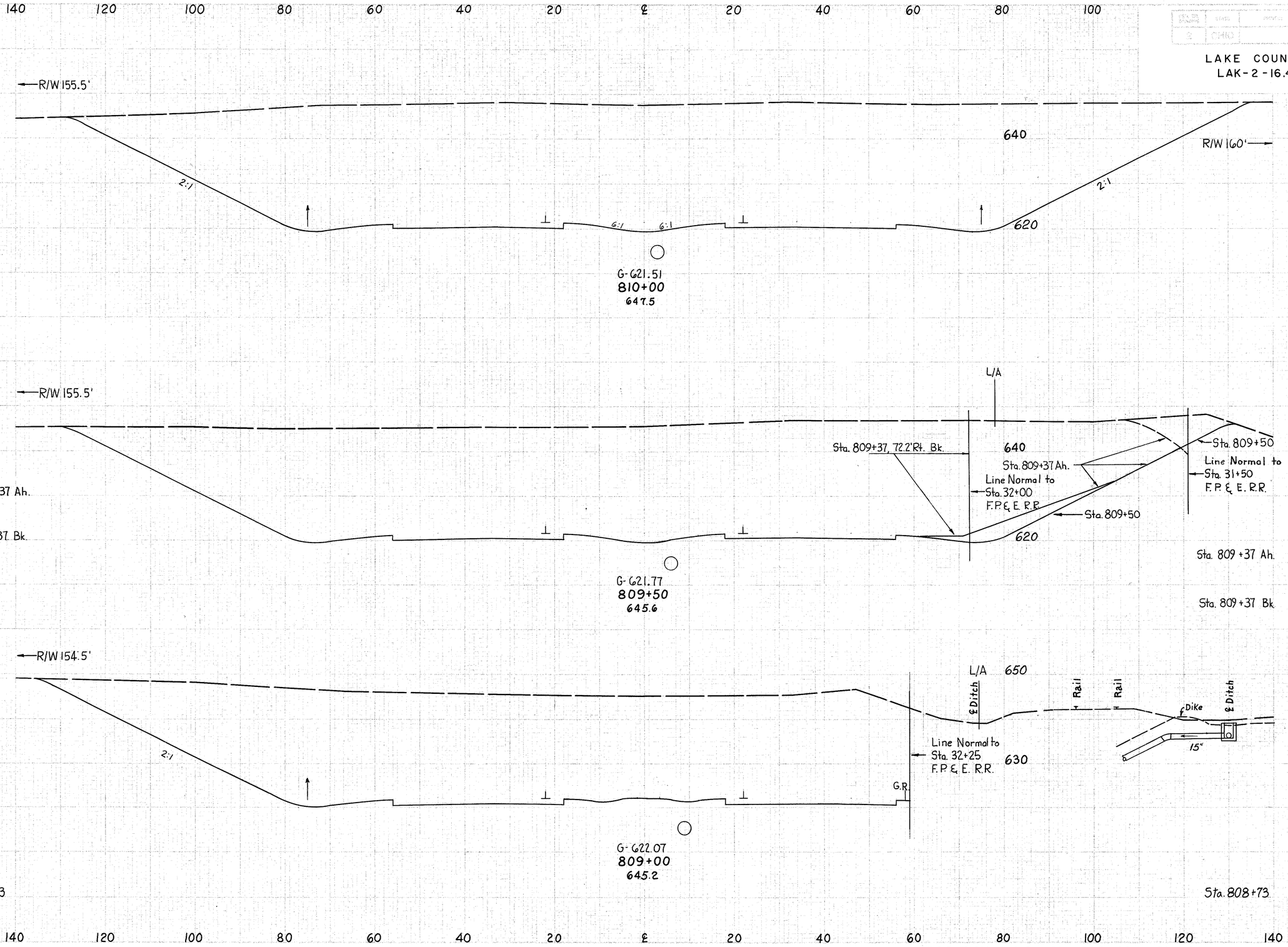


END AREA		VOLUME	
CUT	FILL	CUT	FILL
4048			
		1495	
4025			
		454	
4140			
		1095	
4310			

RELOCATION S.R. 2 Sta. 808+60 to 808+73

LAKE COUNTY
LAK-2-16.49

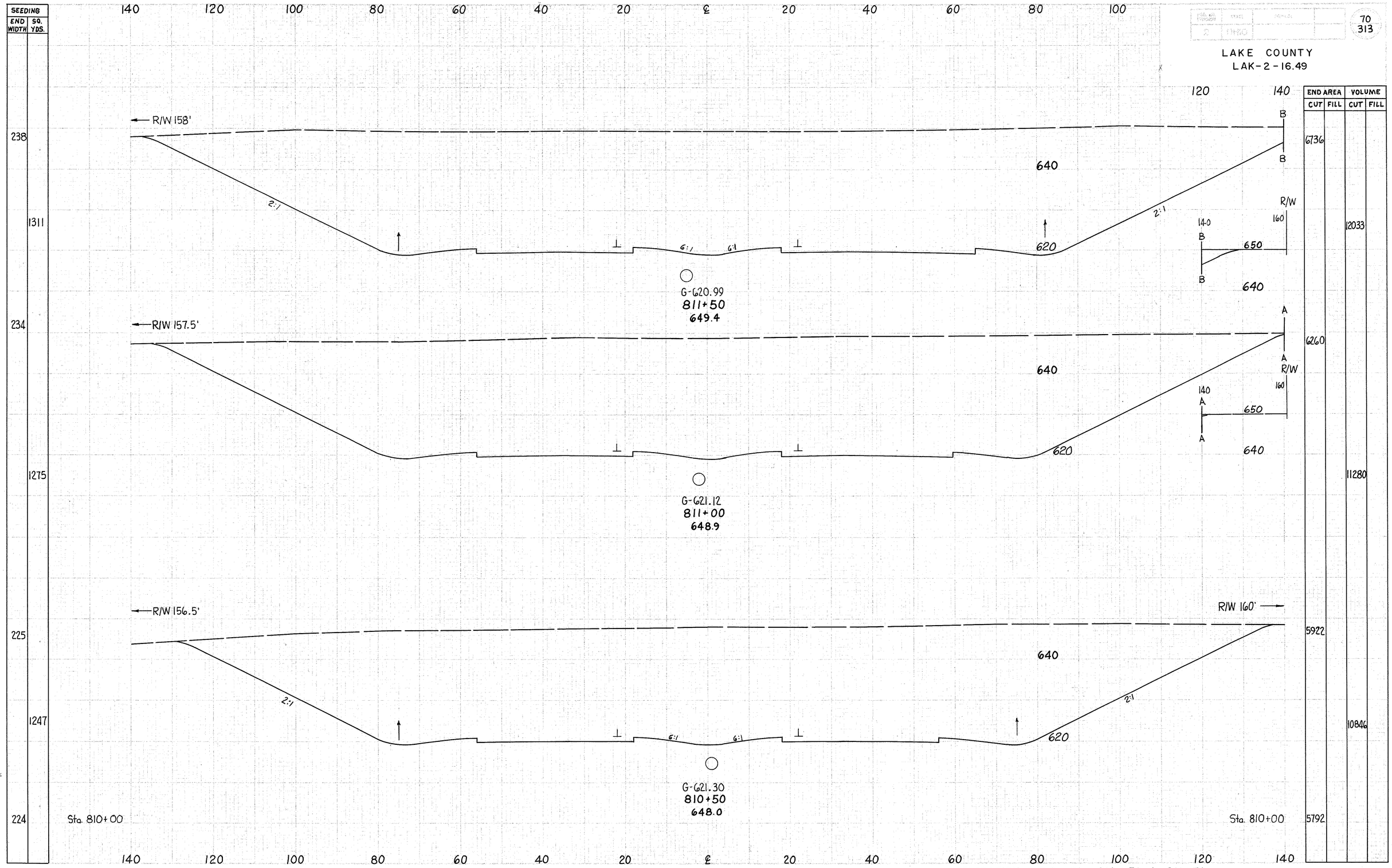
SEEDING END WIDTH	SEEDING SQ. YDS.
224	
	1239
222	
	301
195	
144	
	578
137	
	428
148	



END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
5792			
		10333	
5368			
		2547	
5210			
4465			
		5888	
4128			
		4088	
4048			

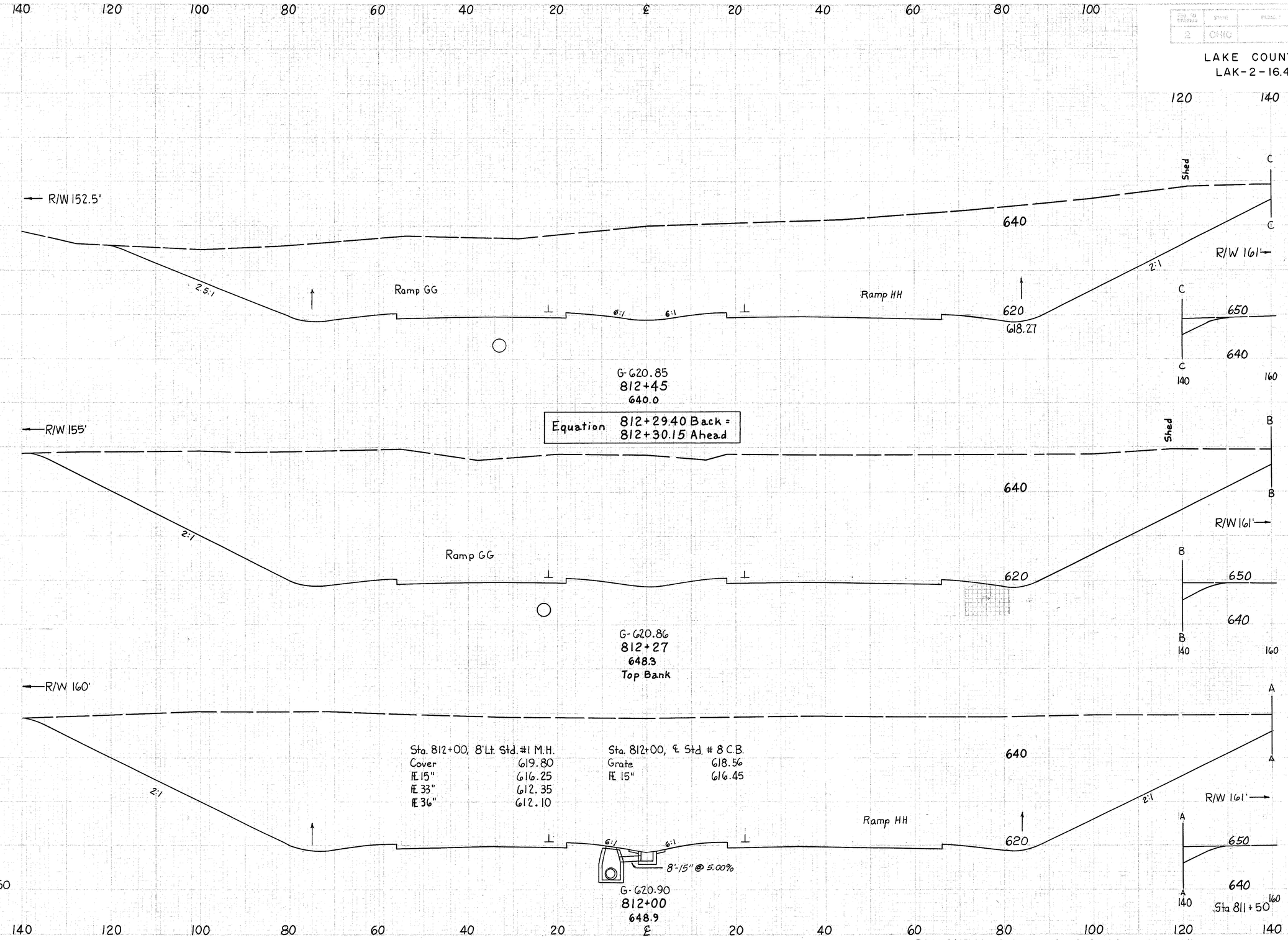
RELOCATION S.R.2 Sta. 809+00 to 810+00

LAKE COUNTY
LAK-2-16.49



RELOCATION S.R.2 Sta. 810+50 to 811+50

SEEDING	
END WIDTH	SQ. YDS.
218	
	438
239	
	720
241	
	1330
238	



END AREA		VOLUME	
CUT	FILL	CUT	FILL
4525			
		3695	
6560			
		6680	
6799			
		12532	
6736			

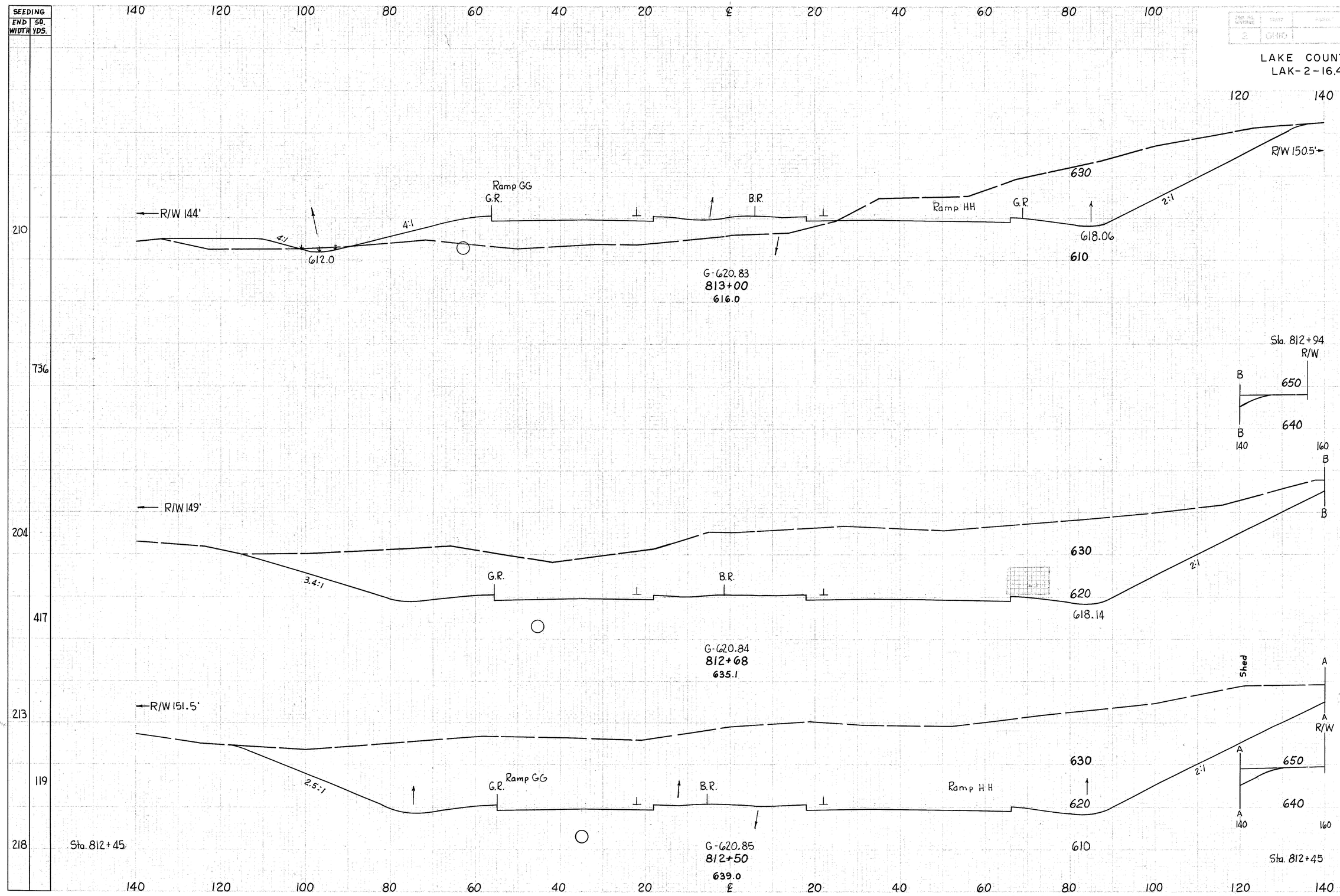
FED. RD. DIST. NO.	STATE	PROJECT	
2	OHIO		

71
313

LAKE COUNTY
LAK-2-16.49

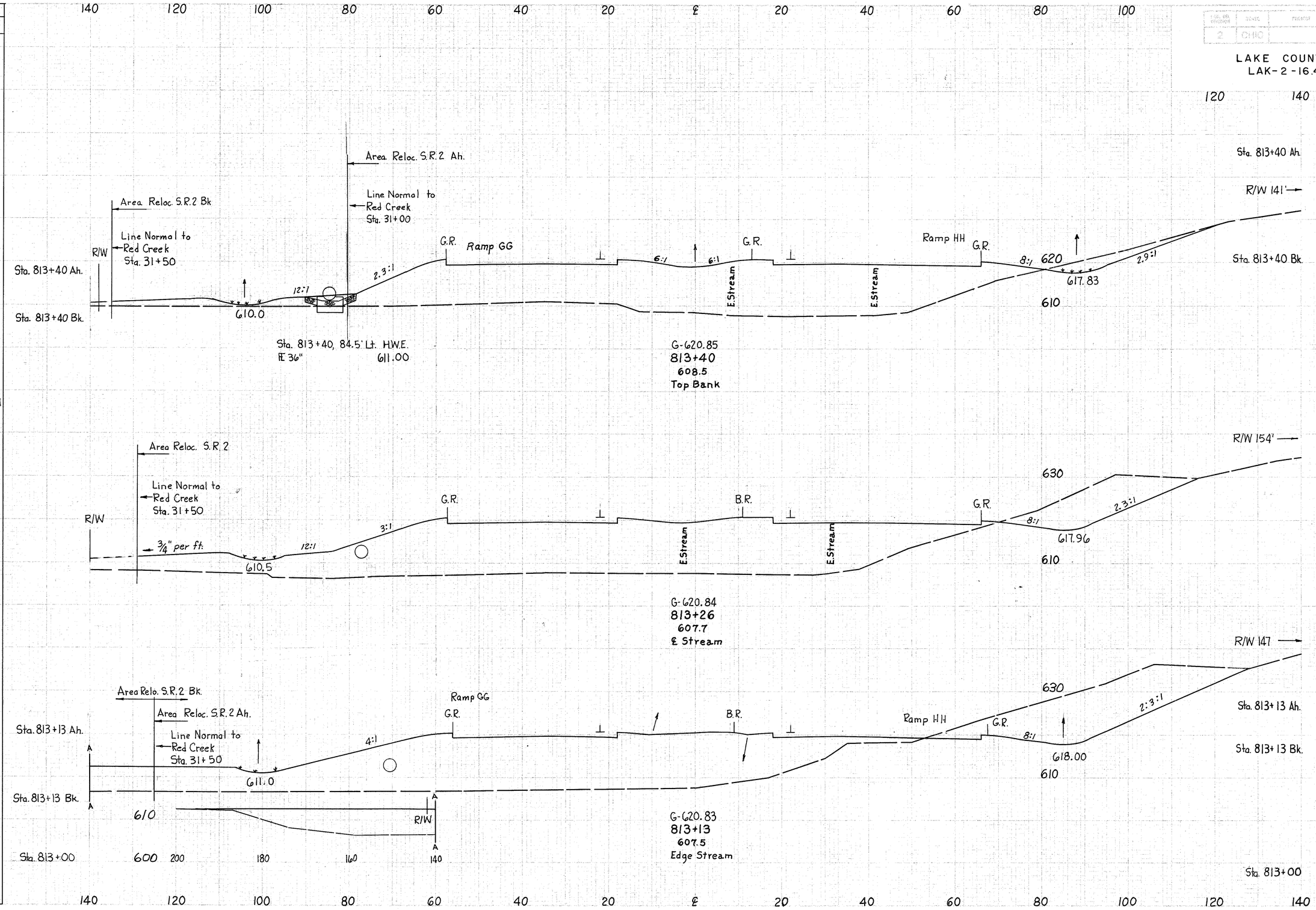
RELOCATION S.R. 2 Sta. 812+00 to 812+45

LAKE COUNTY
LAK-2-16.49



RELOCATION S.R.2 Sta. 812+50 to 813+00

SEEDING	
END WIDTH	SQ. YDS.
115	
154	
	244
160	
	239
171	
241	
	326
210	



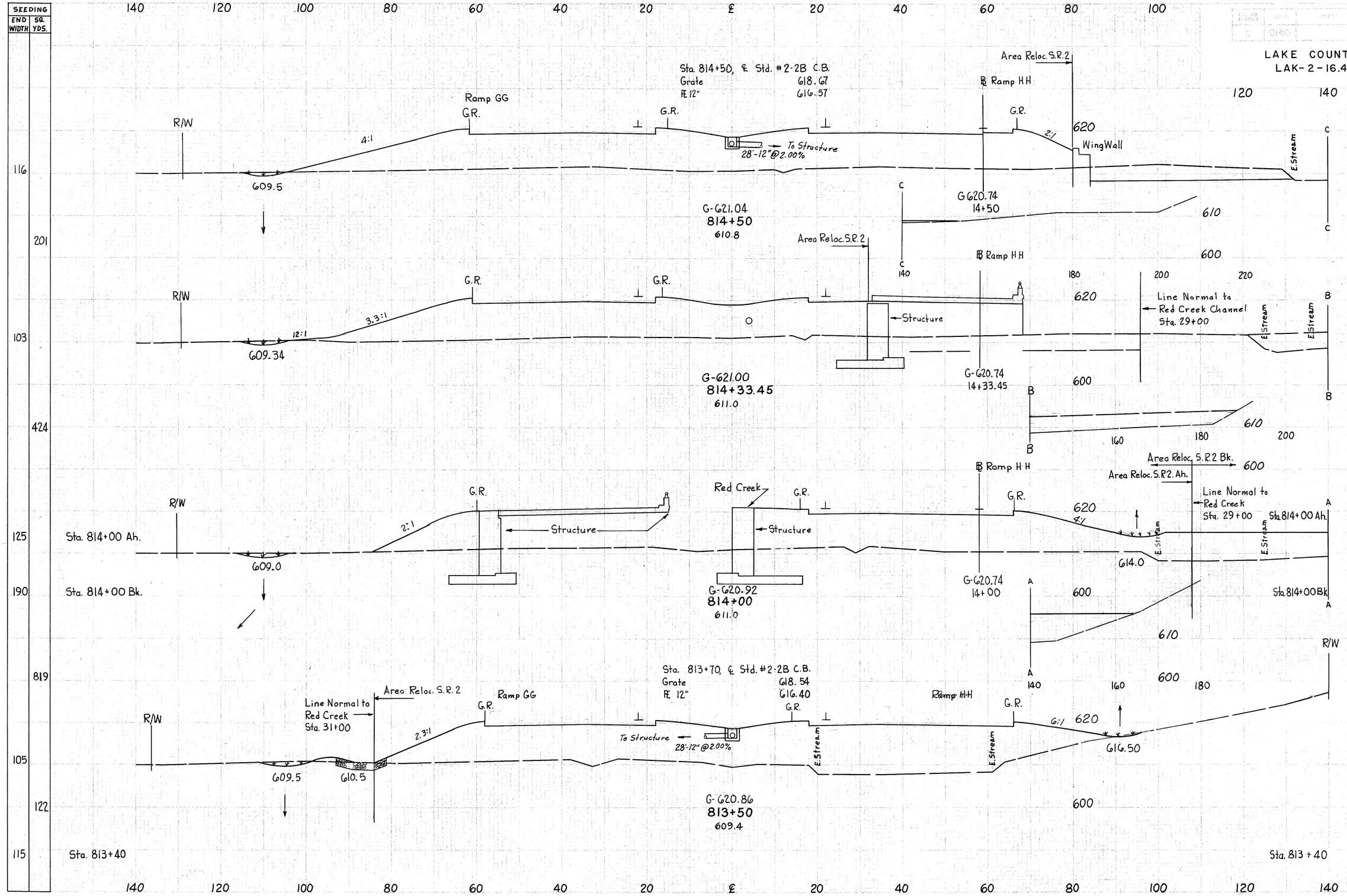
END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
Sta. 813+40 Ah. 60	1434		
Sta. 813+40 Bk. 60	1521		
		78	857
241	1783		
		184	812
Sta. 813+13 Ah. 523	1592		
Sta. 813+13 Bk. 523	1908		
		343	601
Sta. 813+00 901	589		

SIGN. DEL. EXPANSION	SYMBOL	PROJECT	
2	CHRO		

73
313

LAKE COUNTY
LAK-2-16.49

LAKE COUNTY
LAK-2-16.49

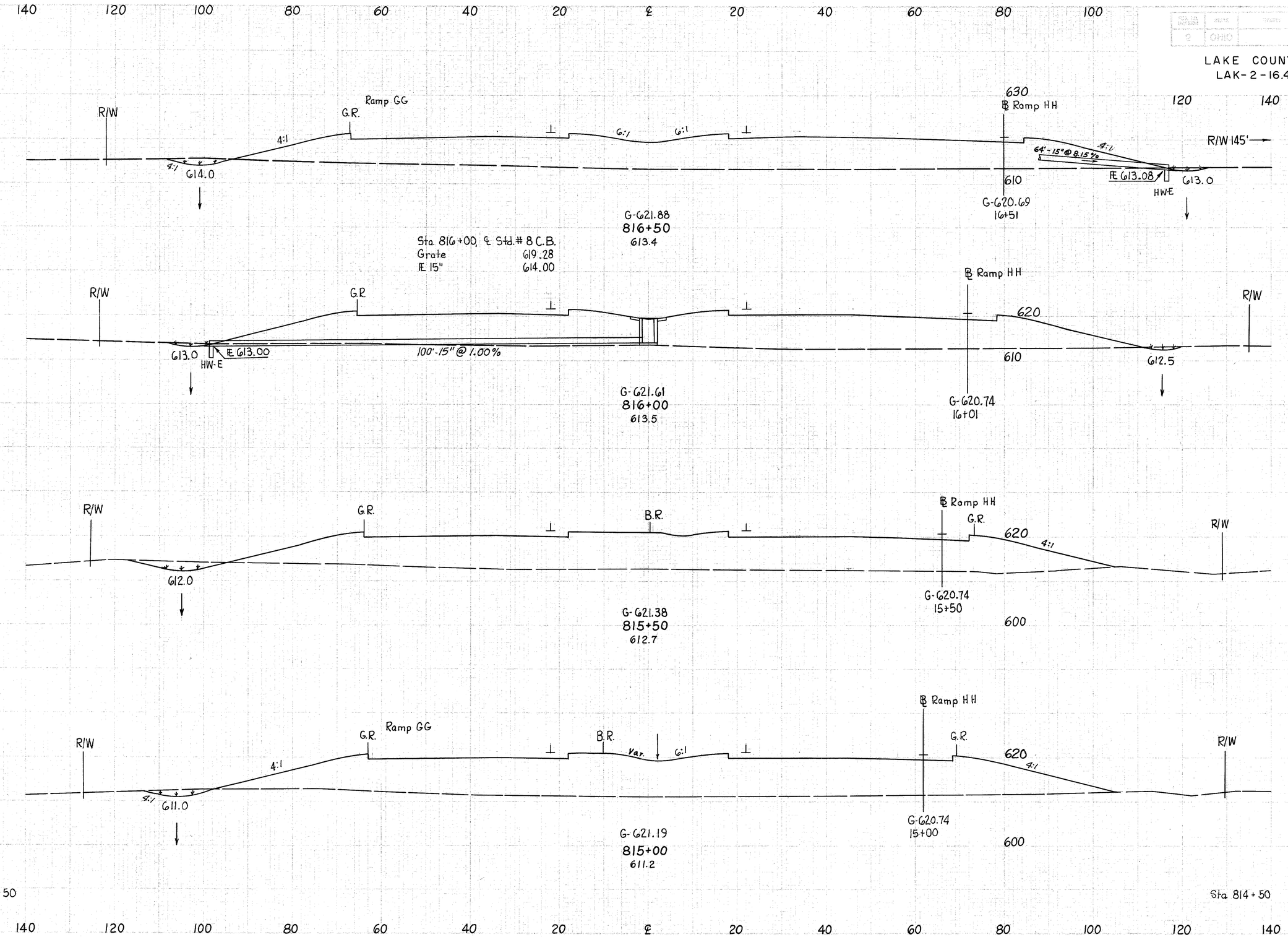


RELOCATION S.R. 2 Sta. 813+50 to 814+50

SEEDING	
END WIDTH	SQ. YDS.
143	
	797
144	
	800
144	
	808
147	
	731
116	

STATE	STATE	FEDERAL		TS 313
2	OHIO			

LAKE COUNTY
LAK-2-16.49

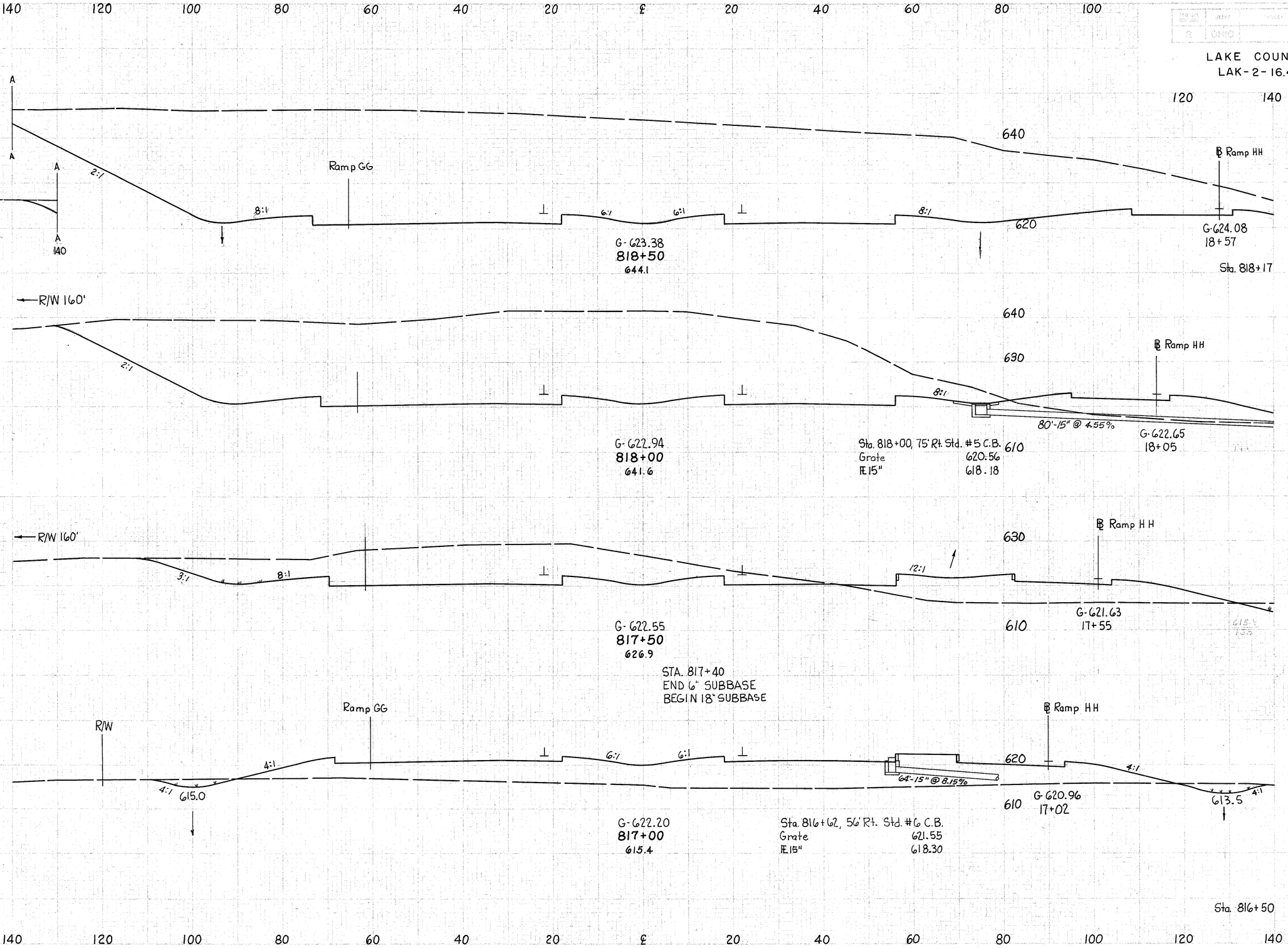


END AREA		VOLUME	
CUT	FILL	CUT	FILL
20	1236		
		26	2345
8	1297		
		32	2394
27	1288		
		39	2543
15	1458		
		19	2631
6	1383		

RELOCATION S.R.2 Sta. 815+00 to 816+50

LAKE COUNTY
LAK-2-16.49

SEEDING END WIDTH	SEEDING SQ. YDS.
216	
	1158
201	
	1041
174	
	925
159	
	839
143	



END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
5168			
		7783	
	0		
			71
3238	224		
		3802	527
868	345		
		847	1233
47	987		
		62	2058
20	1236		

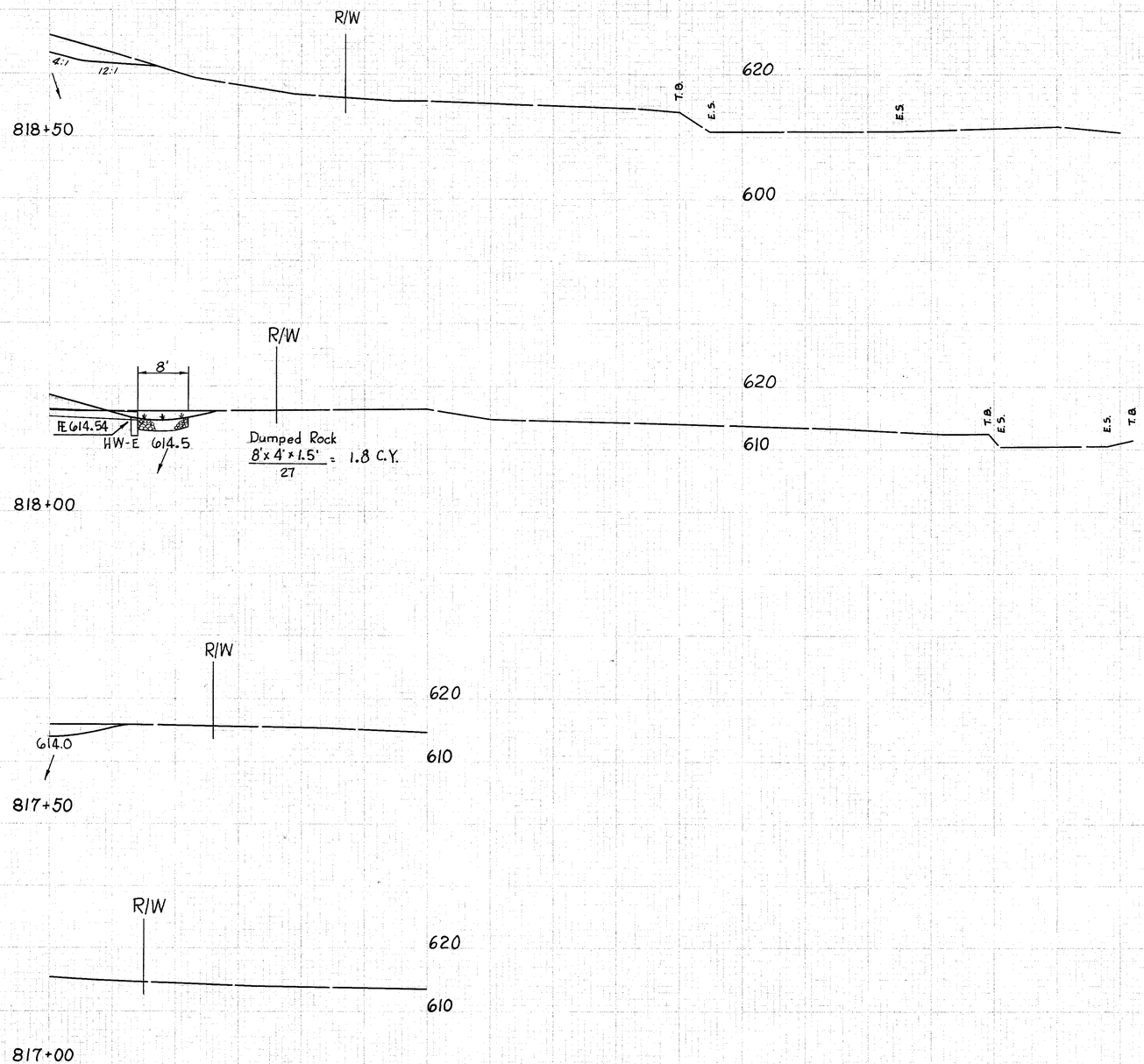
RELOCATION S.R.2 Sta. 817+00 to 818+50

SEEDING	
END WIDTH	SQ. YDS.

LAKE COUNTY
LAK-2-16.49

END AREA		VOLUME	
CUT	FILL	CUT	FILL

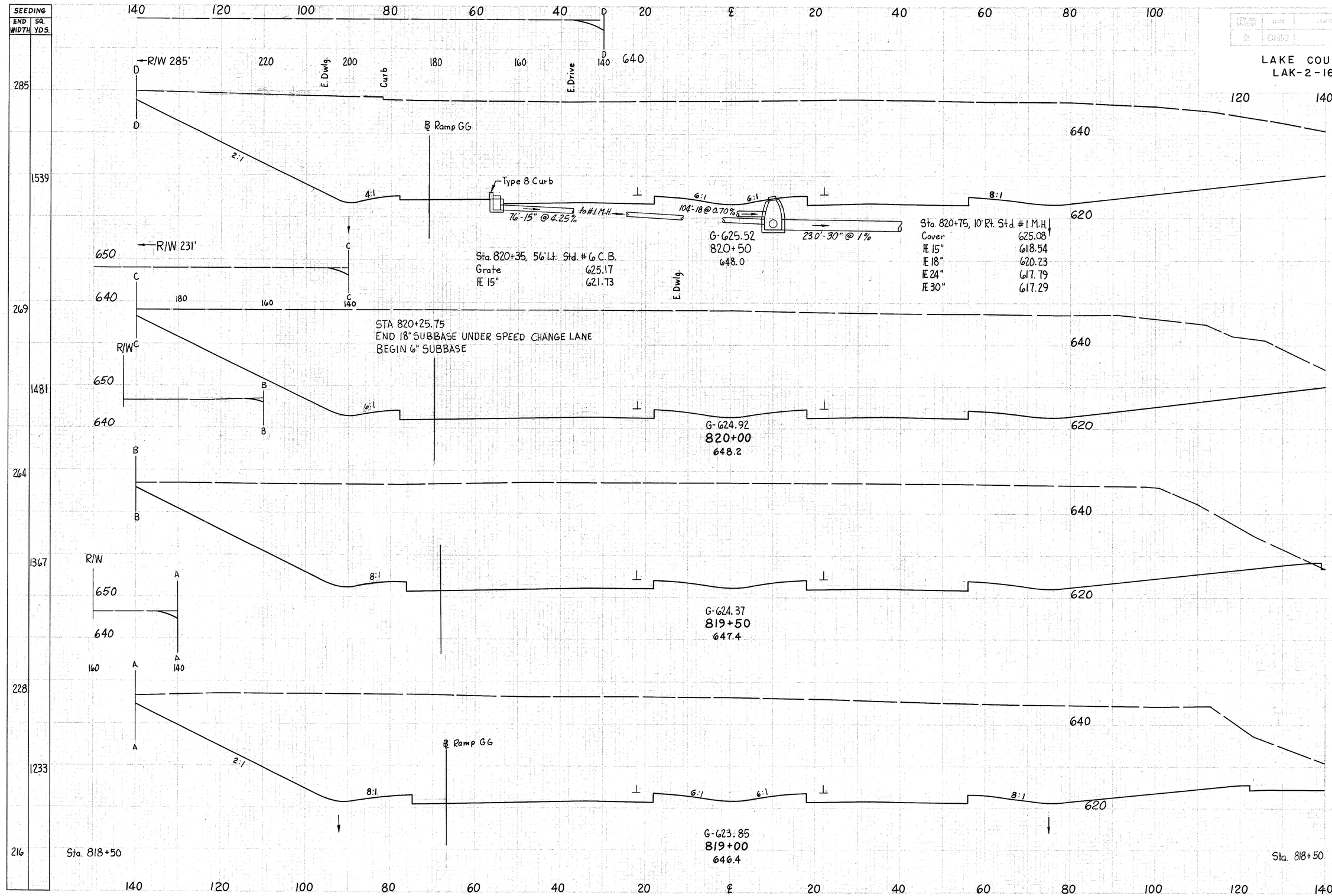
140 160 180 200 220 240 260 280 300 320



140 160 180 200 220 240 260 280 300 320

RELOCATION S.R.2 Sta. 817+00 to 818+50 (Extended Sections)

LAKE COUNTY
LAK-2-16.49

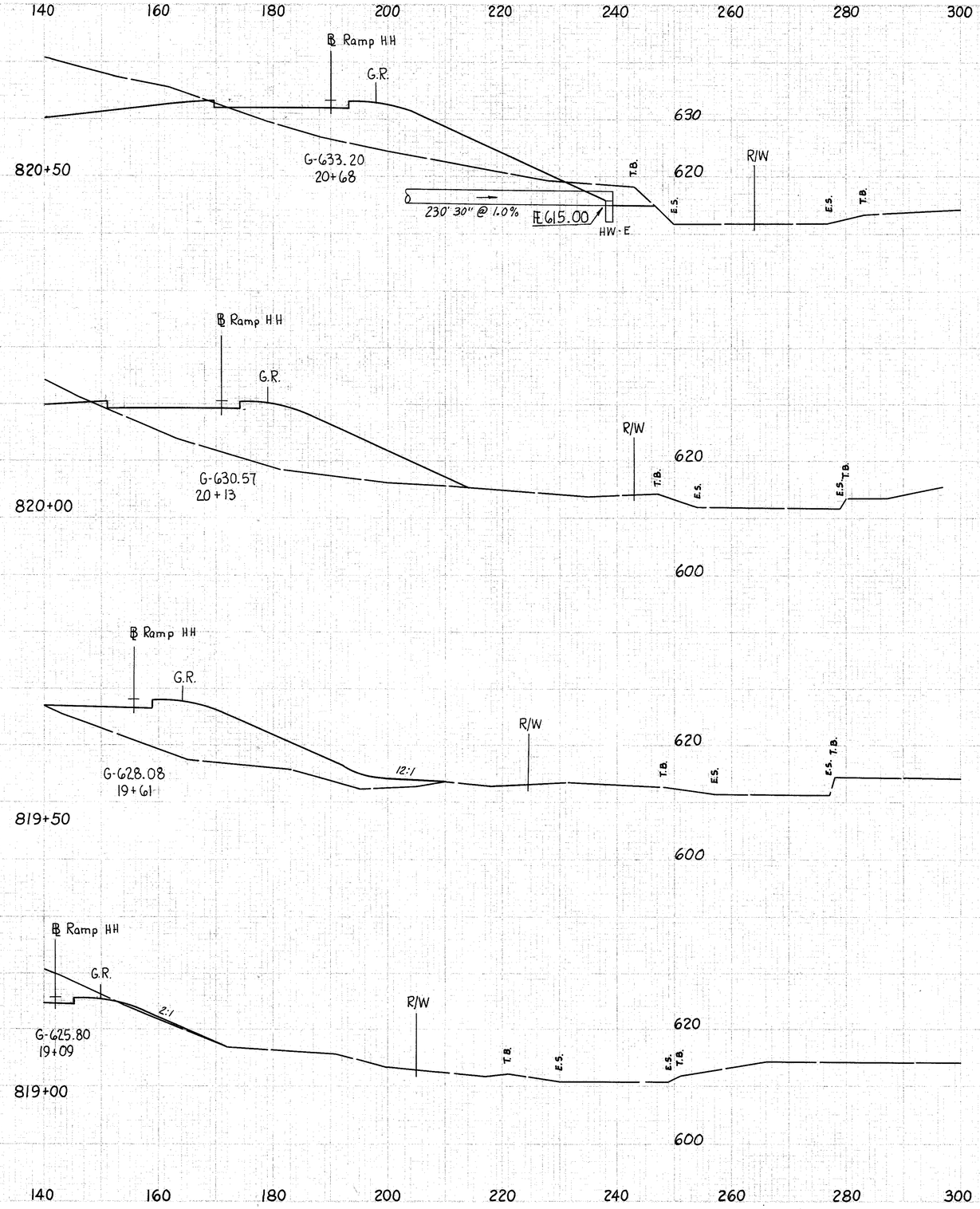


END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
6076	269		
		11180	615
5998	395		
		10880	669
5753	327		
		10975	307
5906	5		
		10254	5
5168	0		

RELOCATION S.R. 2 Sta. 819+00 to 820+50

LAKE COUNTY
LAK-2-16.49

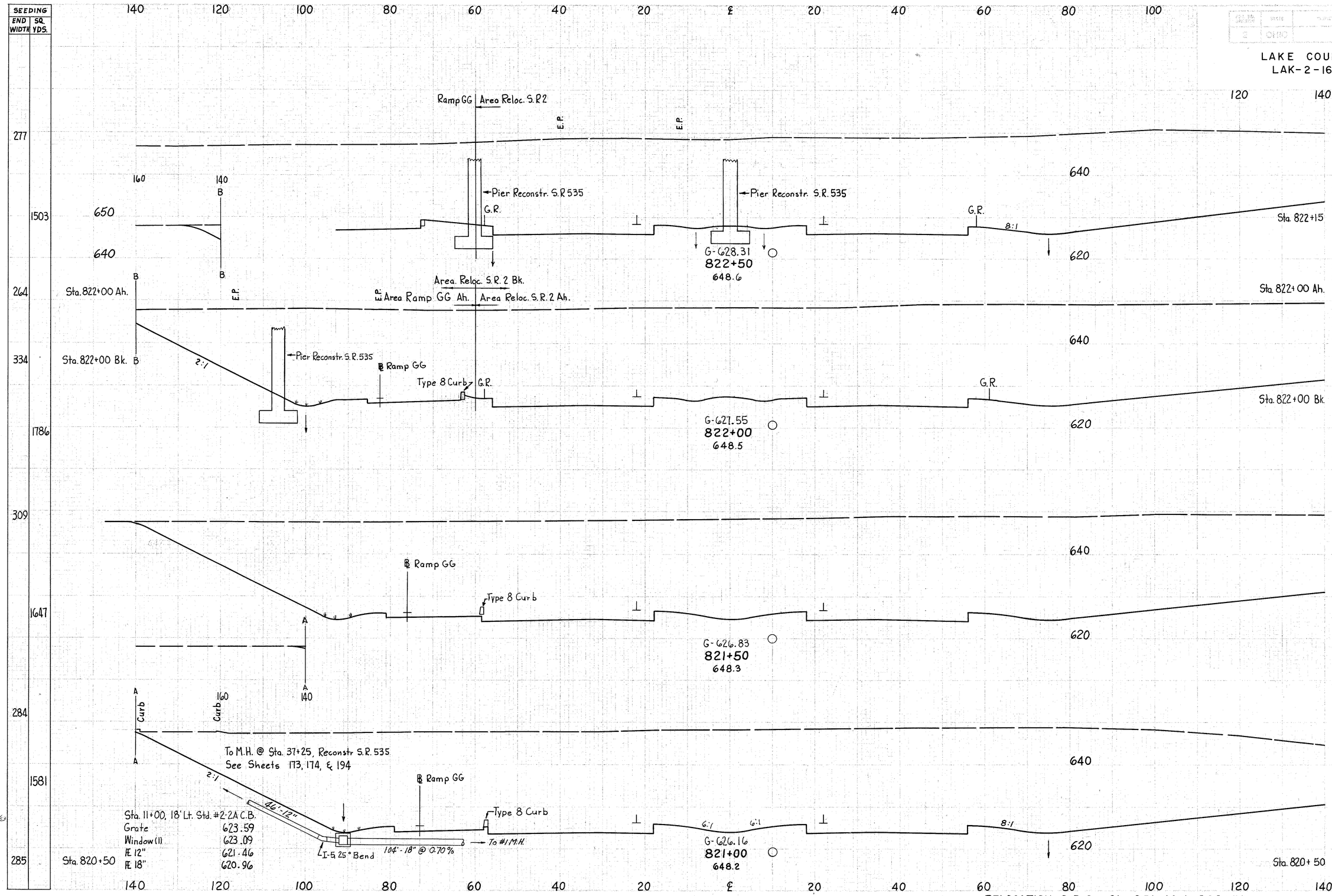
SEEDING	
END WIDTH	SQ. YDS.



END AREA		VOLUME	
CUT	FILL	CUT	FILL

RELOCATION S.R.2 Sta. 819+00 to 820+50 (Extended Sections)

LAKE COUNTY
LAK-2-16.49

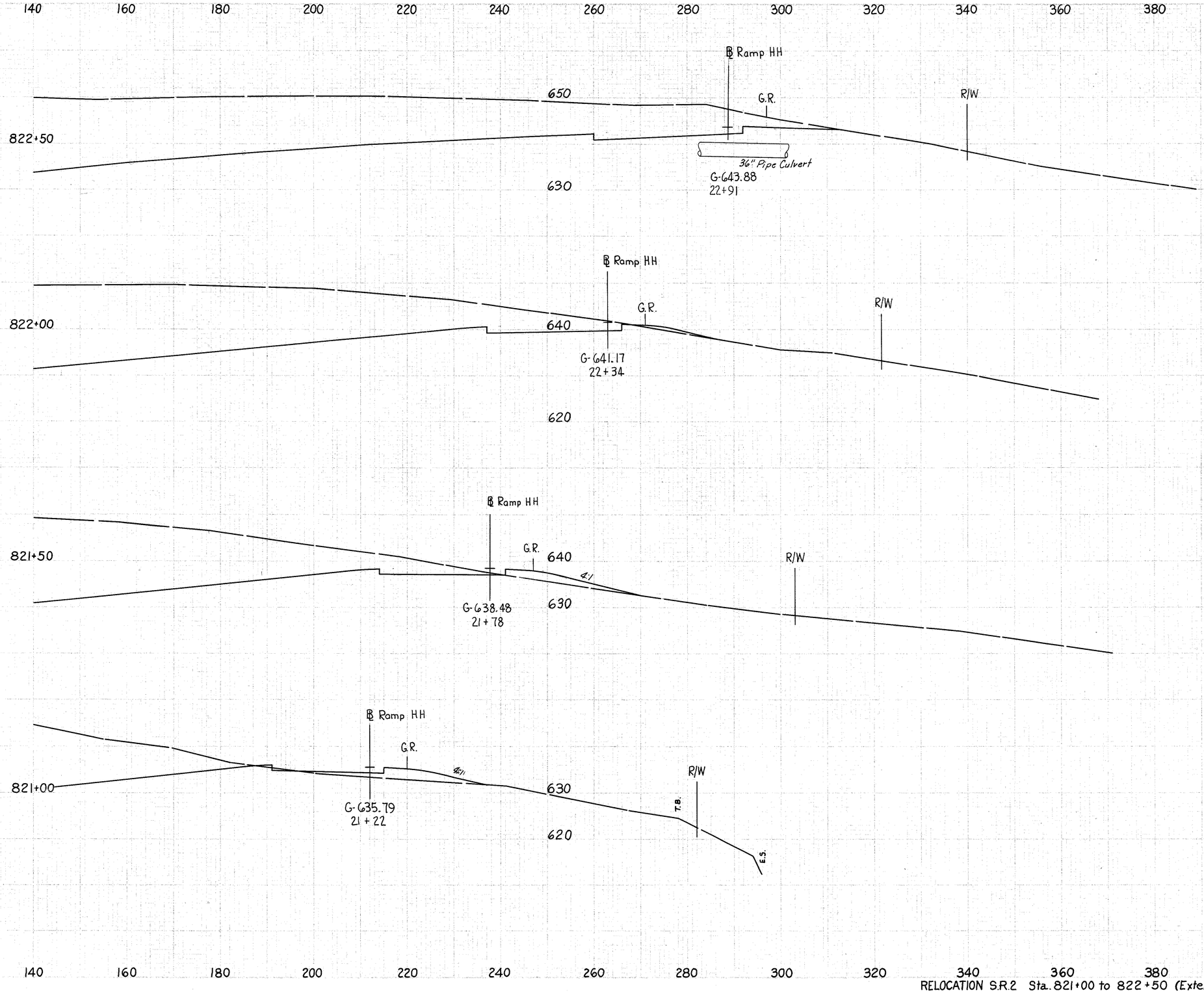


RELOCATION S.R.2 Sta. 821+00 to 822+50

LAKE COUNTY
LAK-2-16.49

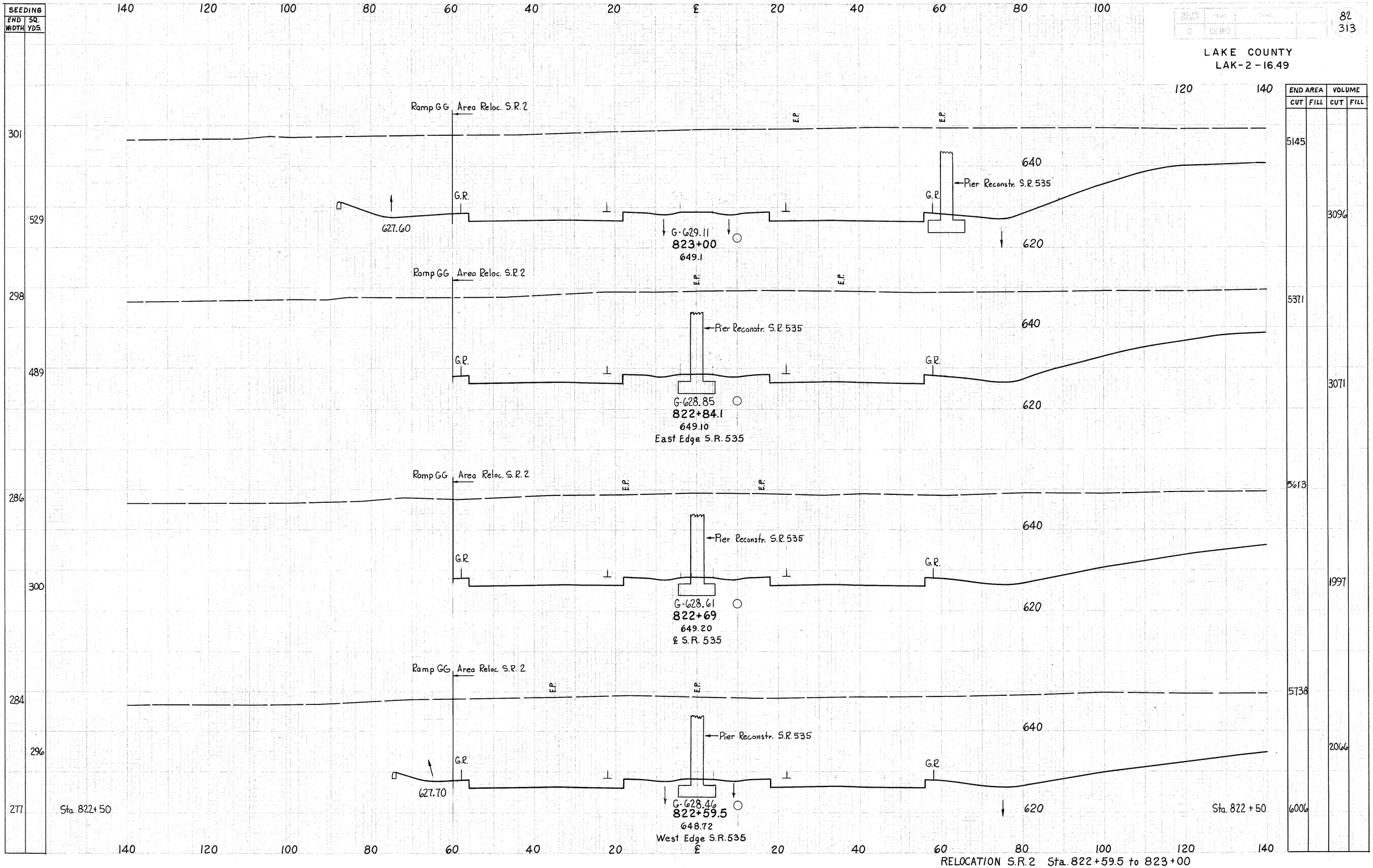
SEEDING	
END WIDTH	SQ. YDS.

END AREA		VOLUME	
CUT	FILL	CUT	FILL



RELOCATION S.R.2 Sta. 821+00 to 822+50 (Extended Sections)

LAKE COUNTY
LAK-2-16.49



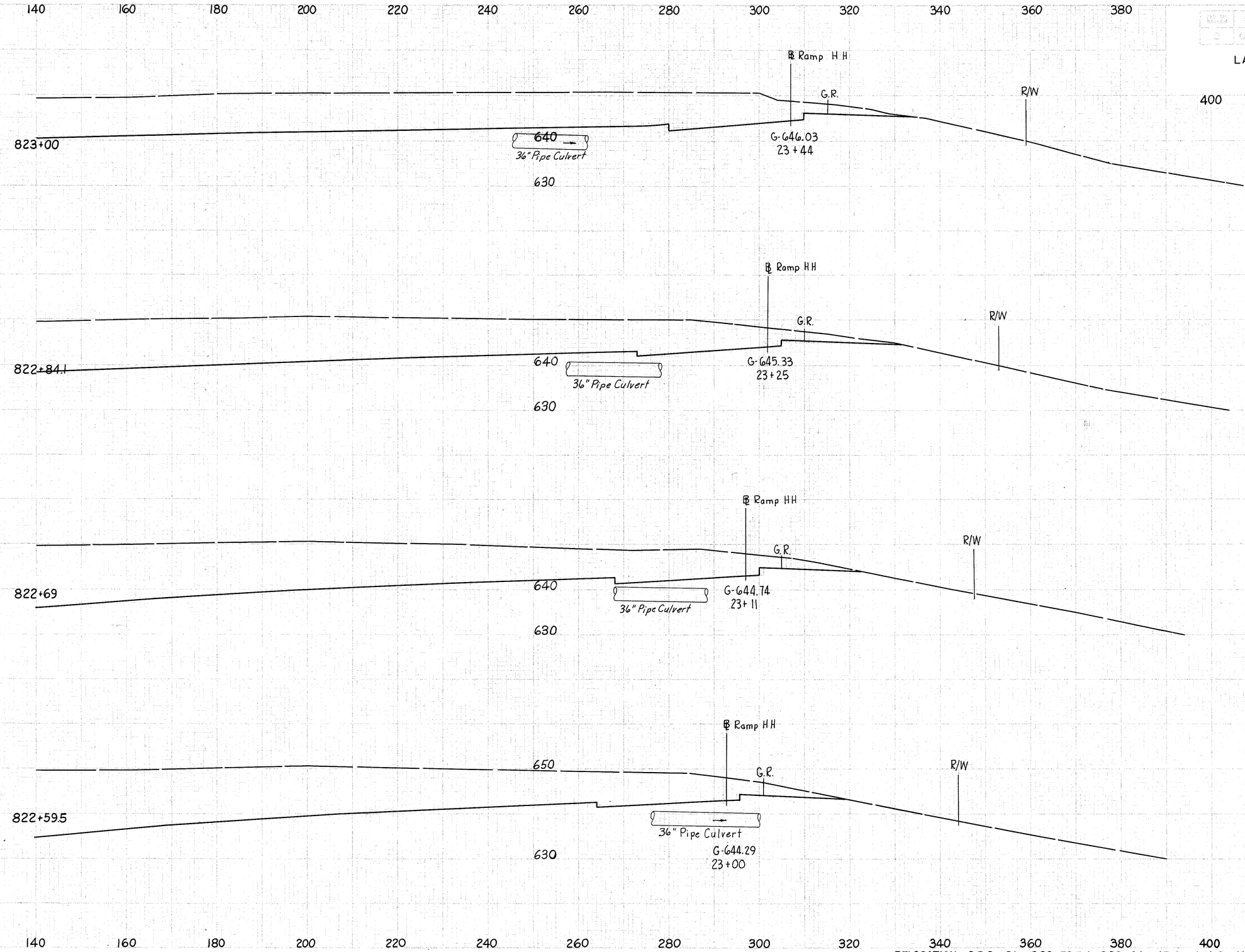
RELOCATION S.R.2 Sta. 822+59.5 to 823+00

SEEDING	
END WIDTH	SQ. YDS.

83
313

LAKE COUNTY
LAK-2-16.49

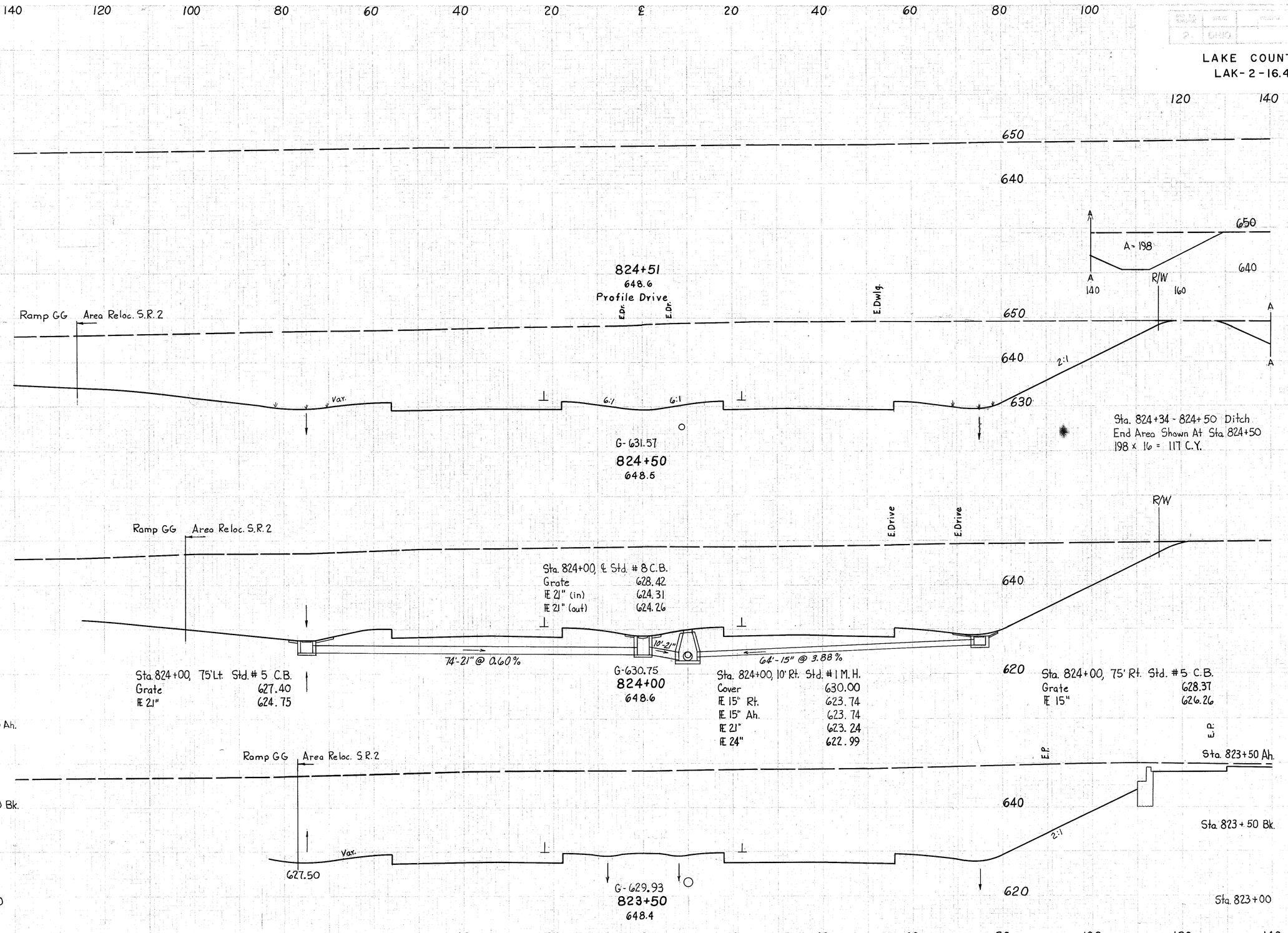
END AREA		VOLUME	
CUT	FILL	CUT	FILL



RELOCATION S.R.2 Sta. 822+59.5 to 823+00 (Extended Sections)

LAKE COUNTY
LAK-2-16.49

SEEDING END WIDTH	SEEDING SQ. YDS.
183	
	1014
182	
	991
175	
	—
315	
	1711
301	



END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
3955 +198			
		7300	
		+117	
3929			
		7042	
3676			
		—	
4435			
		8870	
5145			

RELOCATION S.R.2 Sta. 823+50 to 824+51

F-18

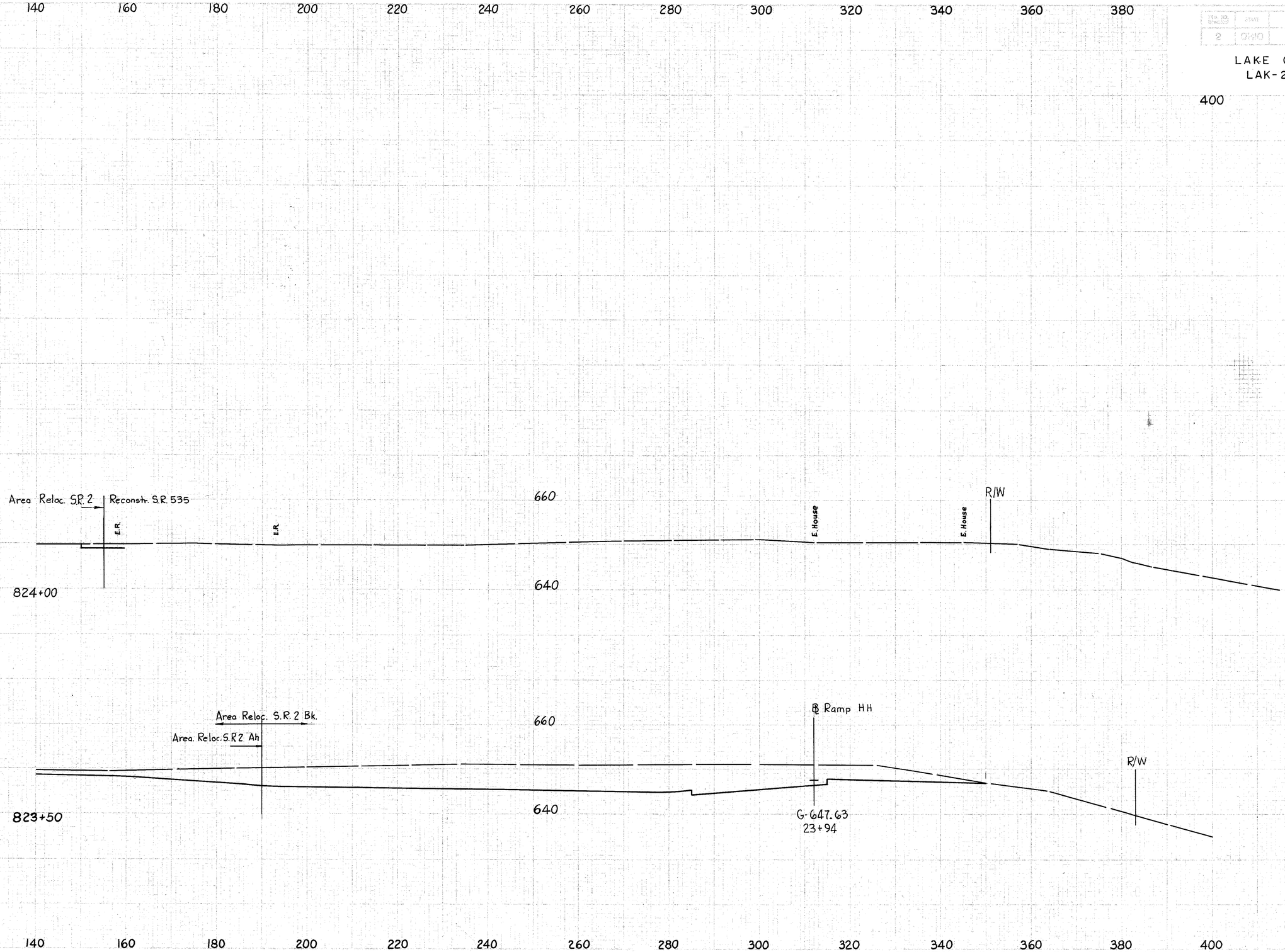
SEEDING	
END WIDTH	SQ. YDS.

ITEM NO.	STATE	PROJECT	
2	OHIO		

85
313

LAKE COUNTY
LAK-2-16.49

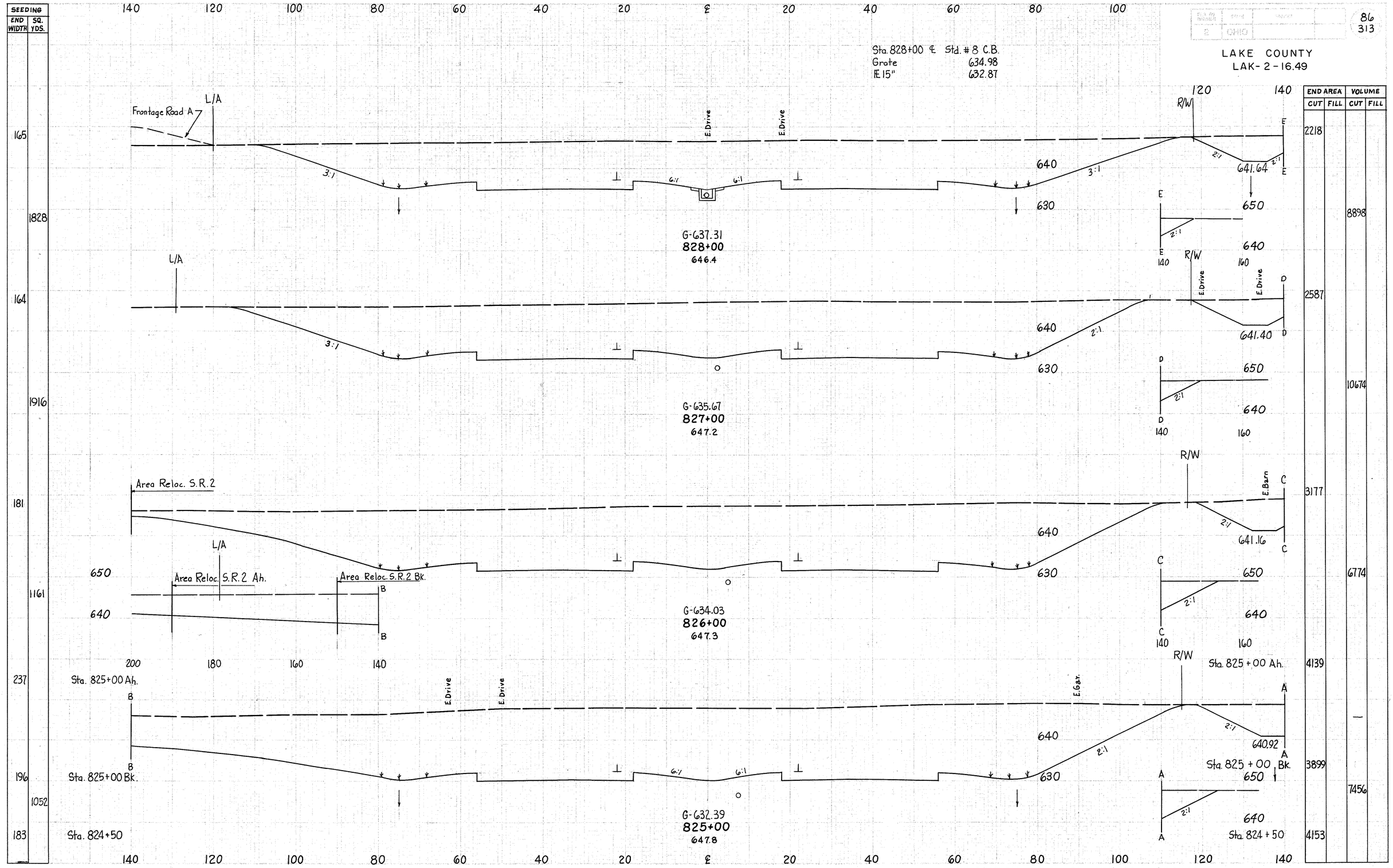
END AREA		VOLUME	
CUT	FILL	CUT	FILL



RELOCATION S.R.2 Sta. 823+50 to 824+00 (Extended Sections)

LAKE COUNTY
LAK-2-16.49

Sta. 828+00 ℄ Std. #8 C.B.
Grate 634.98
IE 15" 632.87



SEEDING END WIDTH	SEEDING SQ. YDS.	END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
165		2218			
1828				8898	
164		2587			
1916				10674	
181		3177			
1161				6774	
237		4139			
196		3899		7456	
1052					
183		4153			

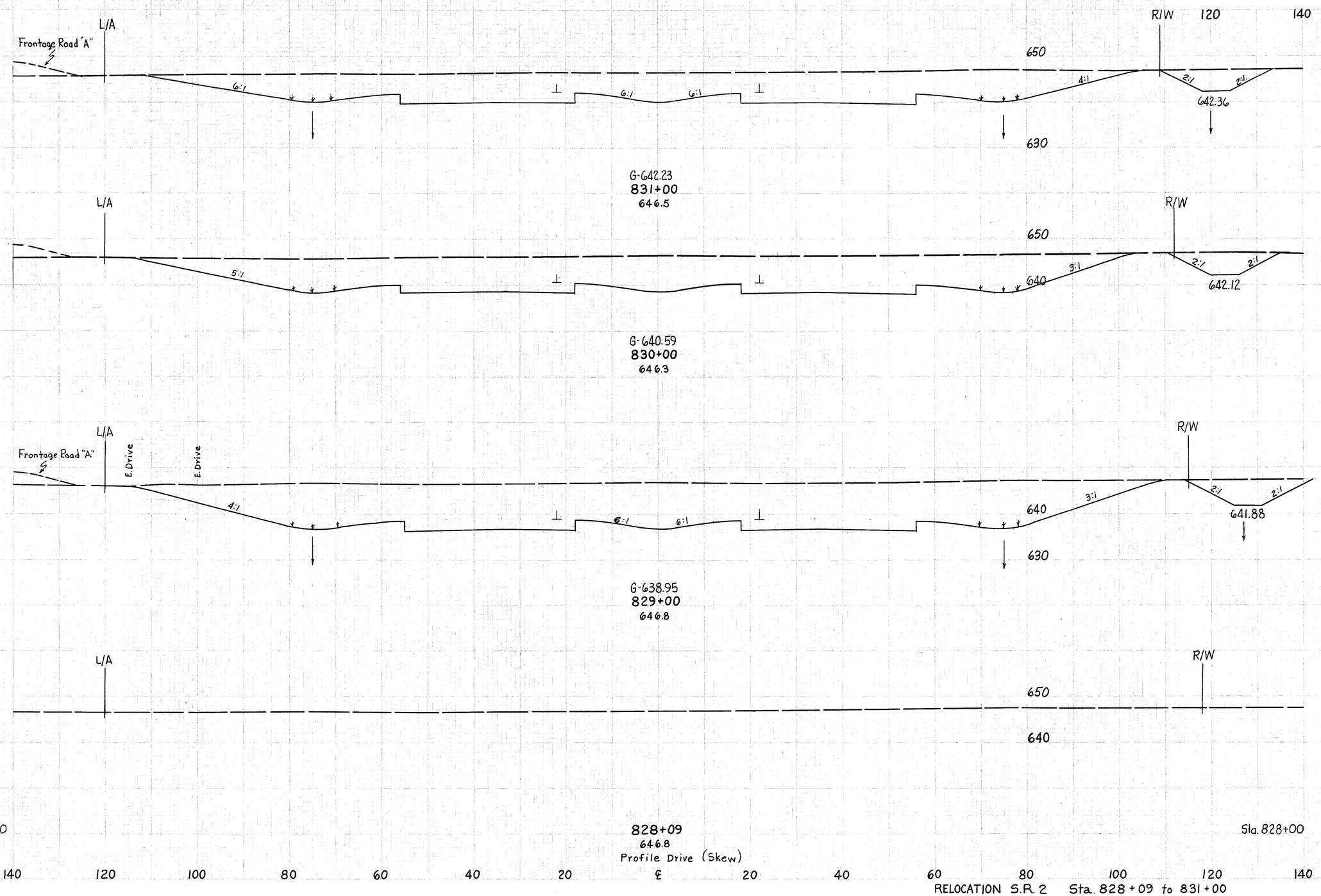
RELOCATION S.R.2 Sta. 825+00 to 828+00

SEEDING	
END WIDTH	SQ. YDS.

END AREA		VOLUME	
CUT	FILL	CUT	FILL

87
313

LAKE COUNTY
LAK-2-16.49

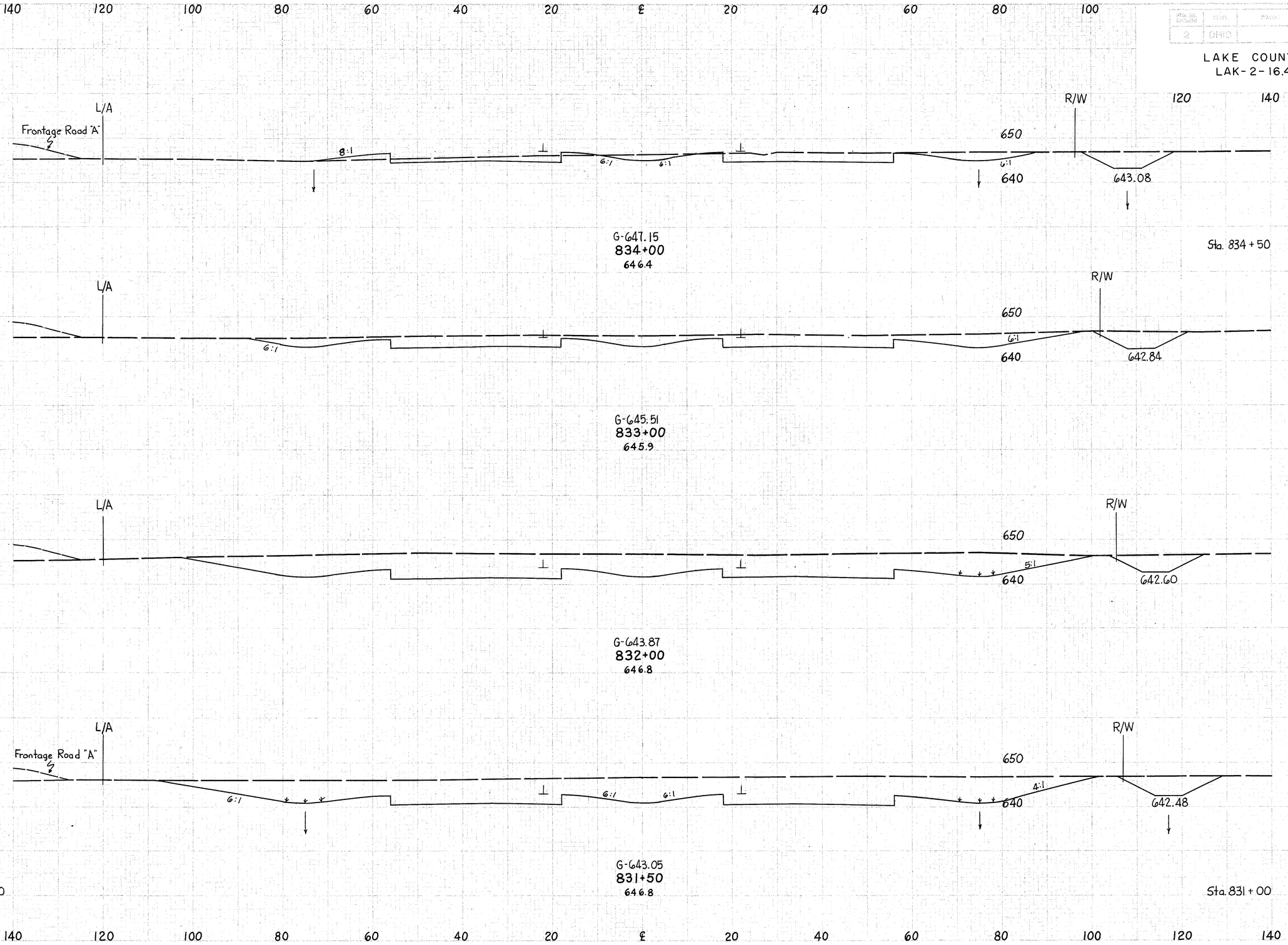


RELOCATION S.R. 2 Sta. 828+09 to 831+00

FED. RD. DIVISION	STATE	ROUTE		TOTAL SHEETS
2	OHIO			88 / 313

LAKE COUNTY
LAK-2-16.49

SEEDING END WIDTH	SEEDING SQ. YDS.	Station	END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
102		Sta. 834+50	189	18		
	1250			0	1122	17
123		Sta. 834+50	417			
	1478				2465	
143		Sta. 831+00	914			
	781				1809	
138		Sta. 831+00	1040			
	814				2092	
155		Sta. 831+00	1219			

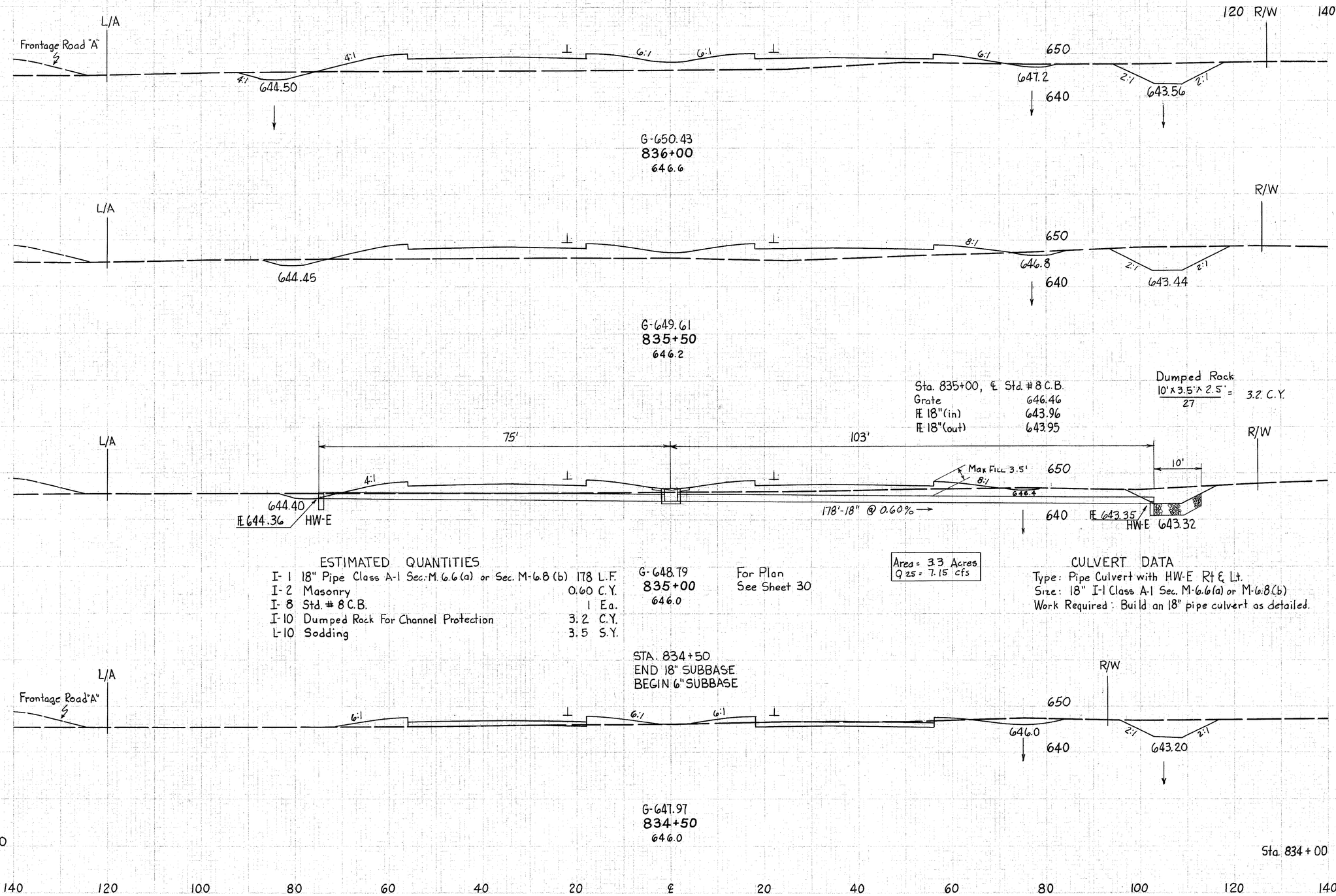


RELOCATION S.R.2 Sta. 831+50 to 834+00

SEEDING	
END WIDTH	SQ. YDS.
157	
	861
153	
	814
140	
	678
104	
	572
102	

PROJ. NO. SEQUENCE	YEAR	PROJECT		89
2	0410			313

LAKE COUNTY
LAK-2-16.49

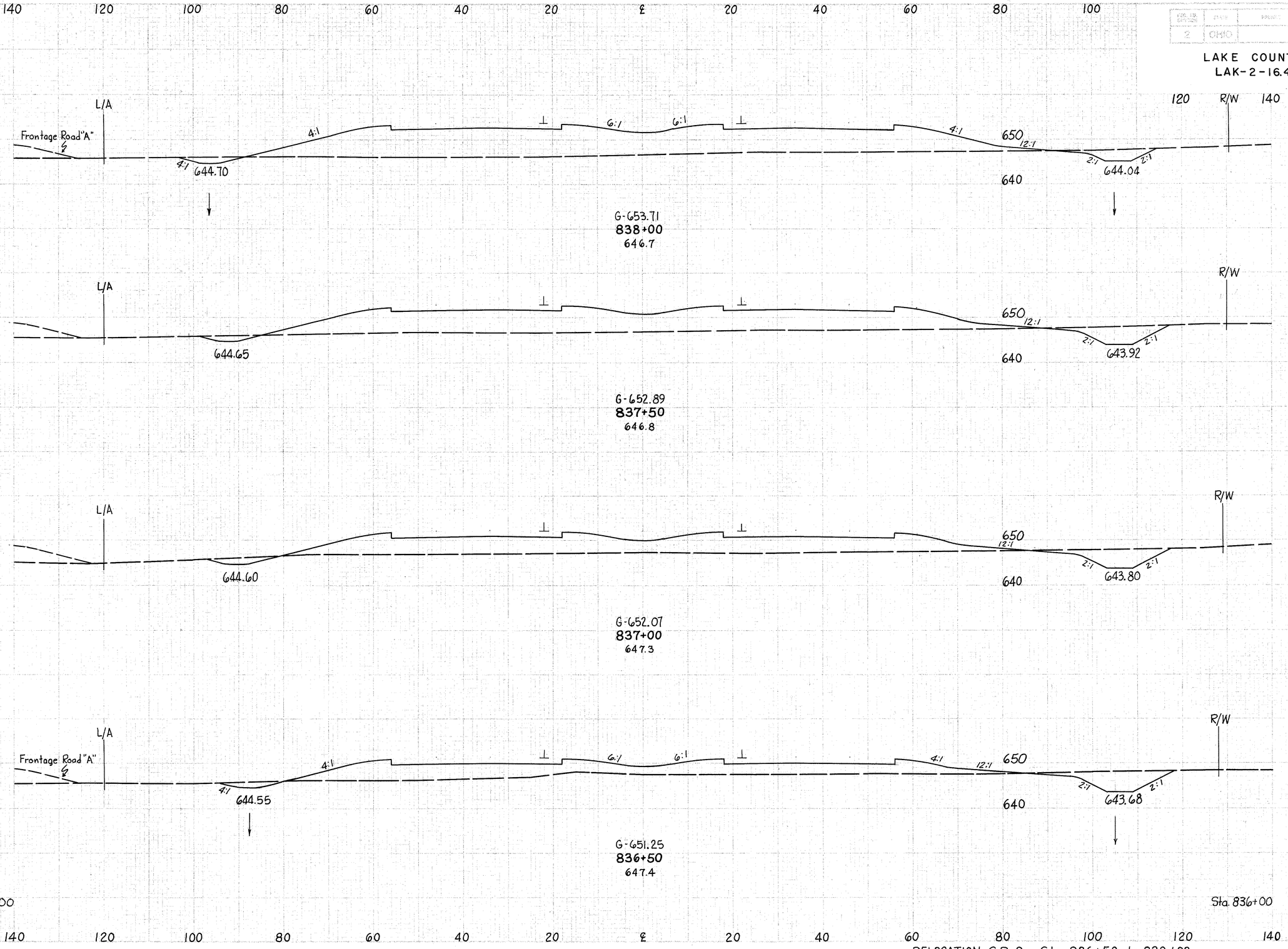


END AREA		VOLUME	
CUT	FILL	CUT	FILL
86	322		
		174	667
102	398		
		146	547
56	193		
		151	223
107	48		
		274	61
189	18		

RELOCATION S.R. 2 Sta. 834+50 to 836+00

SEEDING	
END WIDTH	SQ. YDS.

163	
	914
166	
	911
162	
	894
160	
	881
157	



END AREA		VOLUME	
CUT	FILL	CUT	FILL
46	887		
		107	1465
70	695		
		136	1143
77	539		
		147	876
82	408		
		156	676
86	322		

2	OHIO			90 313

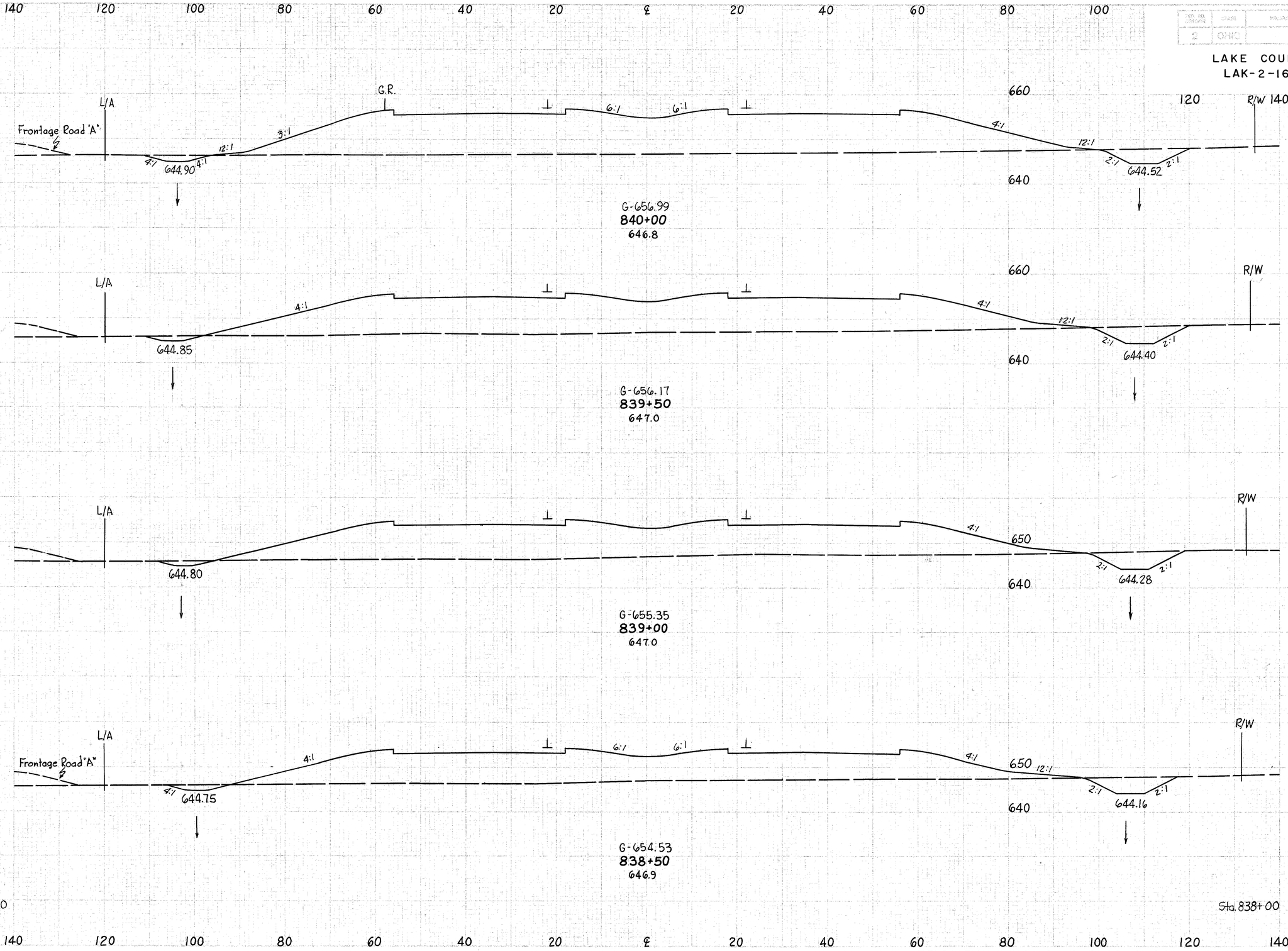
LAKE COUNTY
LAK-2-16.49

RELOCATION S.R. 2 Sta. 836+50 to 838+00

SEEDING	
END WIDTH	SQ. YDS.

TED NO. CONTROL	DATE	PROJECT		91 313
2	ONC			

LAKE COUNTY
LAK-2-16.49

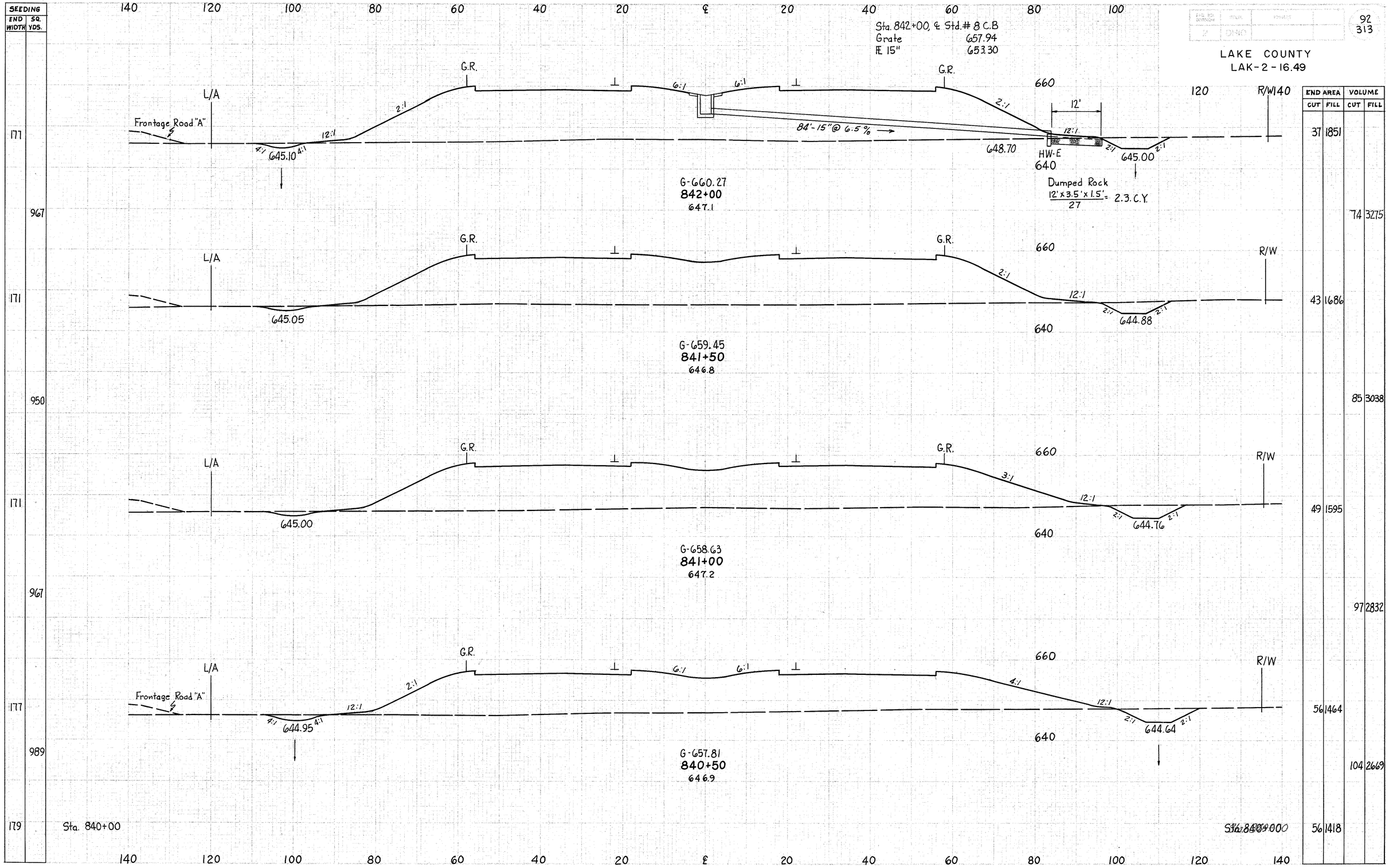


	SEEDING END WIDTH	SEEDING SQ. YDS.	END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
179			56	1418		
		997			109	2487
180			62	1268		
		986			114	2240
175			61	1151		
		964			114	1992
172			62	1000		
		930			100	1747
163			46	887		

RELOCATION S.R.2 Sta. 838+50 to 840+00

LAKE COUNTY
LAK-2-16.49

Sta. 842+00, ℄ Std. # 8 C.B
Grate 657.94
℄ 15" 653.30



FED. RD. DIVISION	STATE	PROJECT		
2	OHIO			

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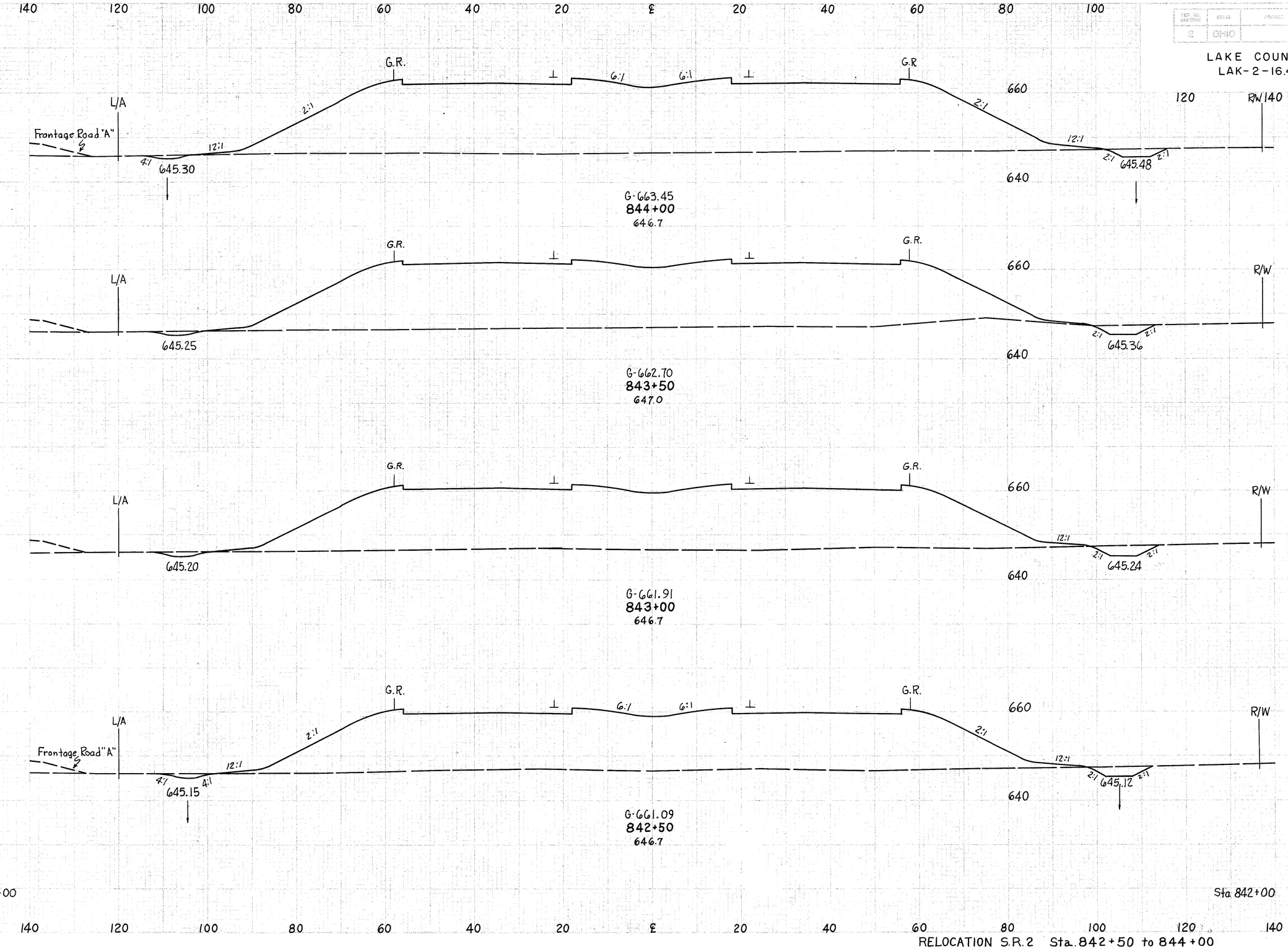
313

LAKE COUNTY
LAK-2-16.49

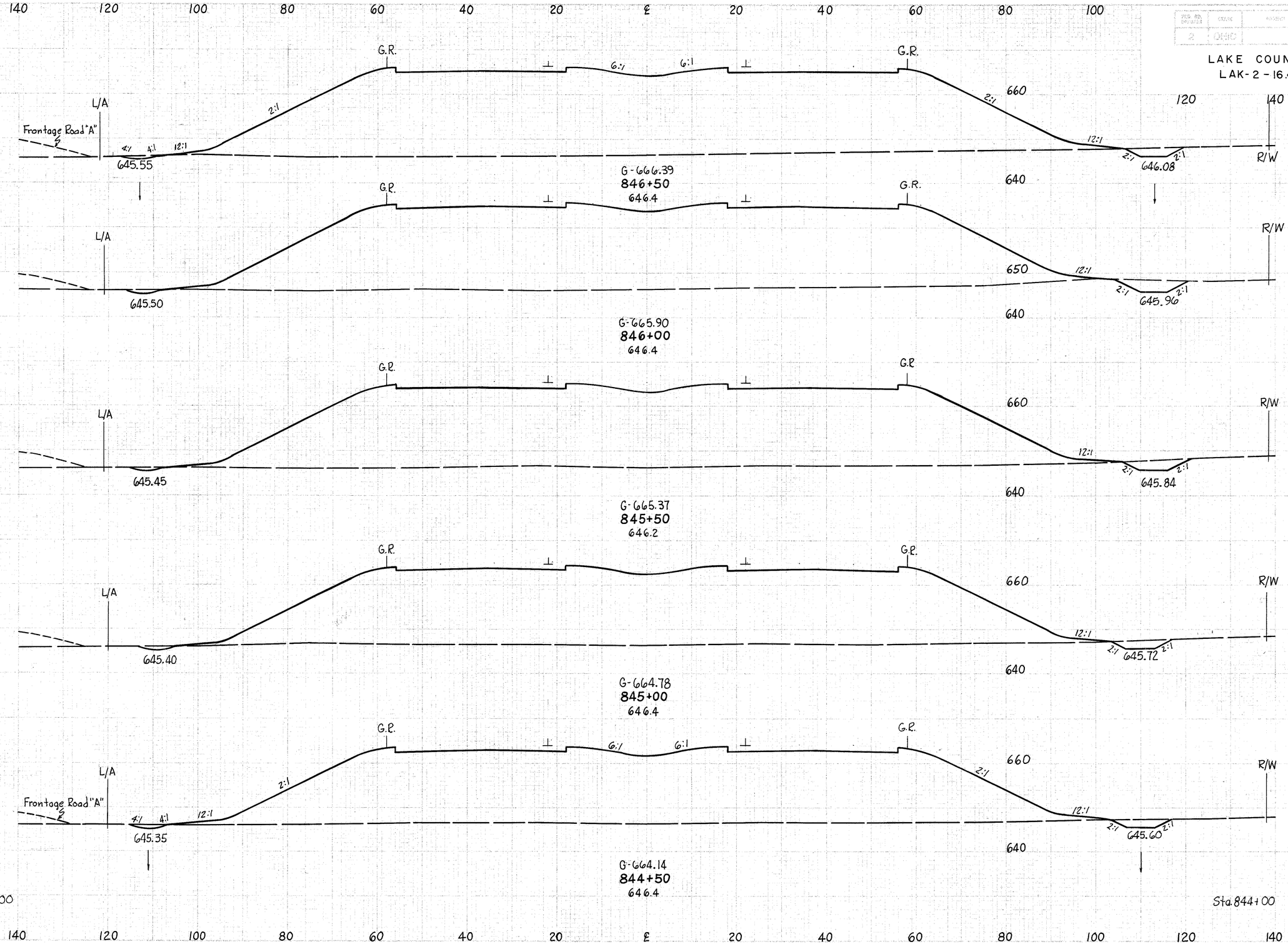
SEEDING END WIDTH	SEEDING SQ. YDS.
181	
	992
176	
	975
175	
	964
172	
	969
177	



END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
24	2435		
		47	4281
27	2189		
		55	3977
32	2106		
		56	3778
29	1974		
		61	3542
37	1851		

RELOCATION S.R.2 Sta. 842+50 to 844+00

SEEDING	
END WIDTH	SQ. YDS.



		END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
188		22	3017		
	1050			52	5470
190		36	2891		
	1053			56	5291
189		27	2823		
	1036			46	5087
184		23	2671		
	1022			44	4847
184		24	2564		
	1014			44	4629
181		24	2435		

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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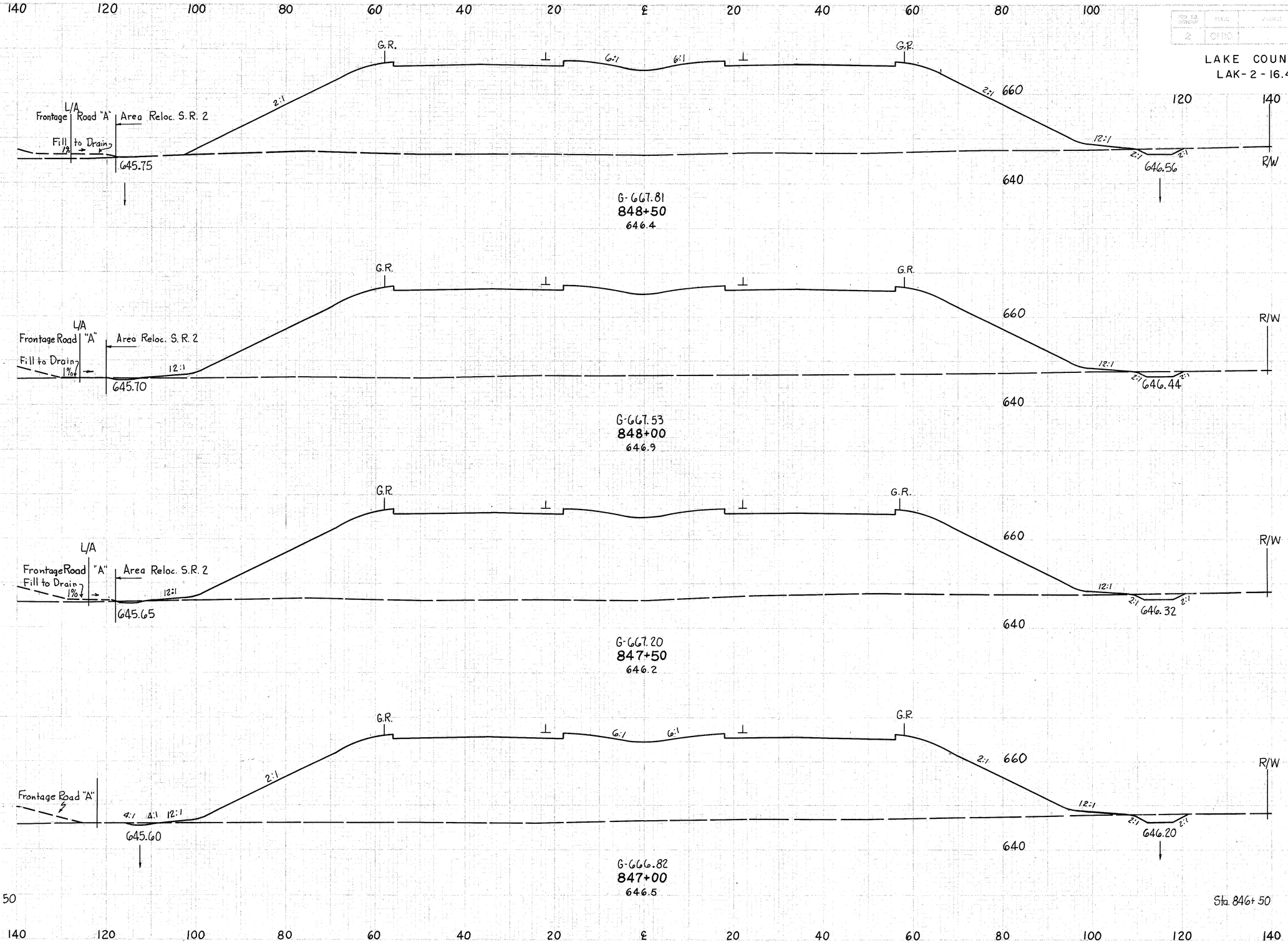
LAKE COUNTY
LAK-2-16.49

RELOCATION S.R.2 Sta. 844+50 to 846+50

SEEDING	
END WIDTH	SQ. YDS.
176	
	1027
194	
	1055
186	
	1014
179	
	1019
188	



END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
10	3257		
		19	5993
11	3215		
		23	5902
14	3159		
		31	5773
19	3076		
		38	5642
22	3017		

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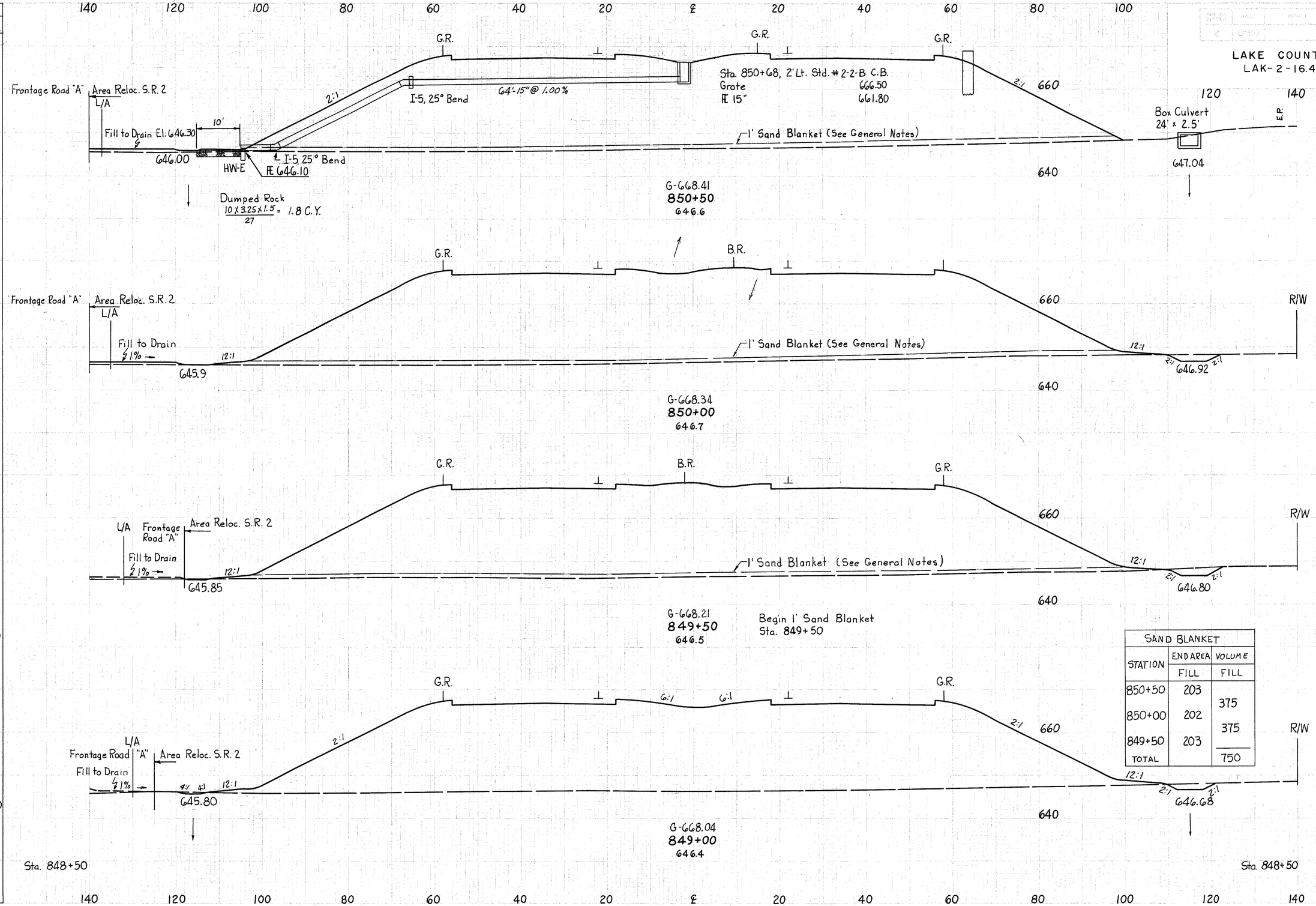
LAKE COUNTY
LAK-2-16.49

RELOCATION S.R. 2 Sta. 847+00 to 848+50

LAKE COUNTY
LAK-2-16.49

SEEDING END WIDTH	SEEDING SQ. YDS.
181	
1067	
203	
1078	
185	
1025	
184	
1000	
176	

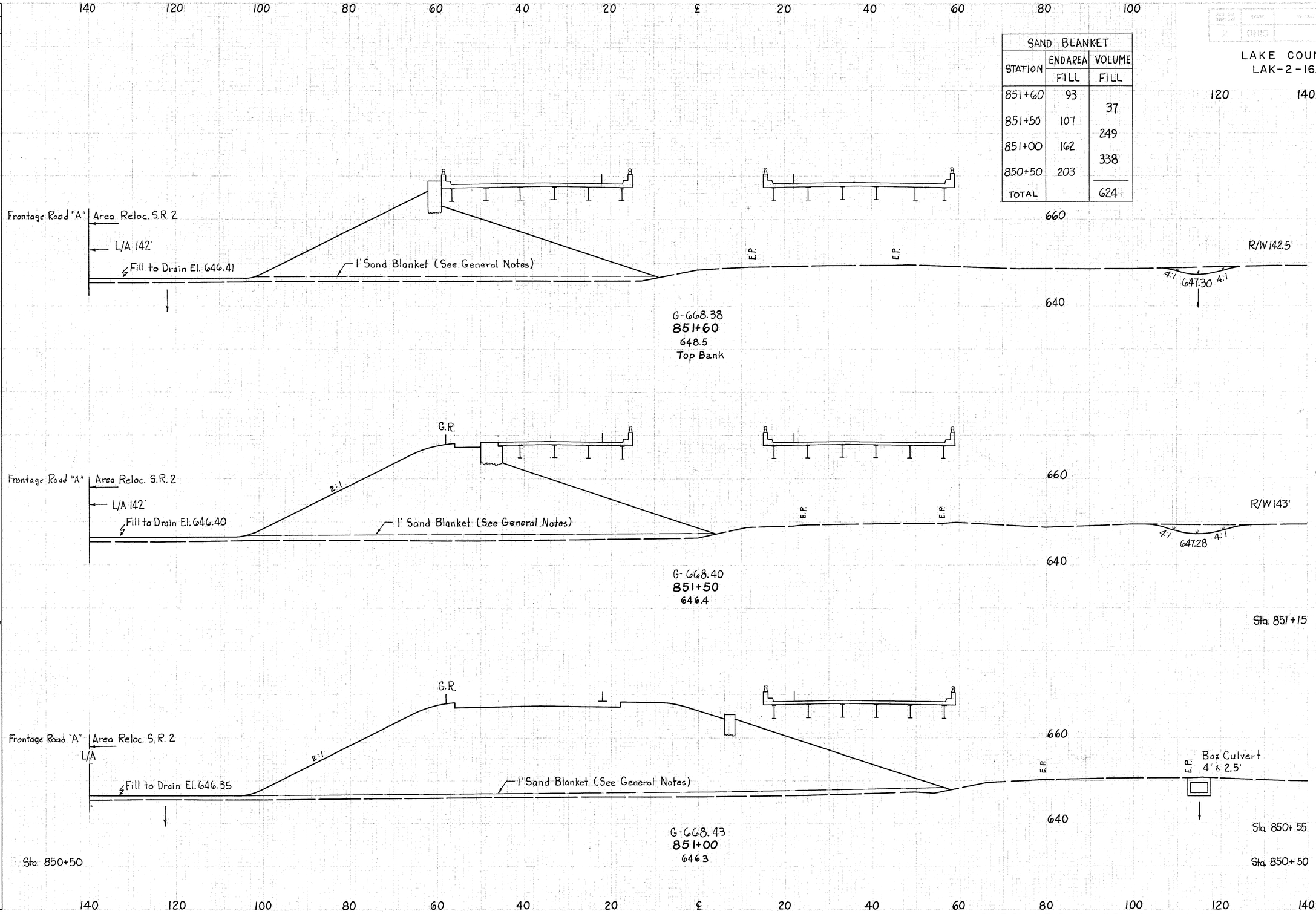


SAND BLANKET		
STATION	END AREA FILL	VOLUME FILL
850+50	203	
		375
850+00	202	
		375
849+50	203	
TOTAL		750

END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
7	3271		
		20	5995
15	3204		
		30	5918
17	3188		
		30	6047
15	3343		
		23	6111
10	3257		

RELOCATION S.R. 2 Sta. 849+00 to 850+50

SEEDING	
END WIDTH	SQ. YDS.
110	
	128
120	
	653
115	
	822
181	



SAND BLANKET		
STATION	END AREA FILL	VOLUME FILL
851+60	93	
		37
851+50	107	
		249
851+00	162	
		338
850+50	203	
TOTAL		624

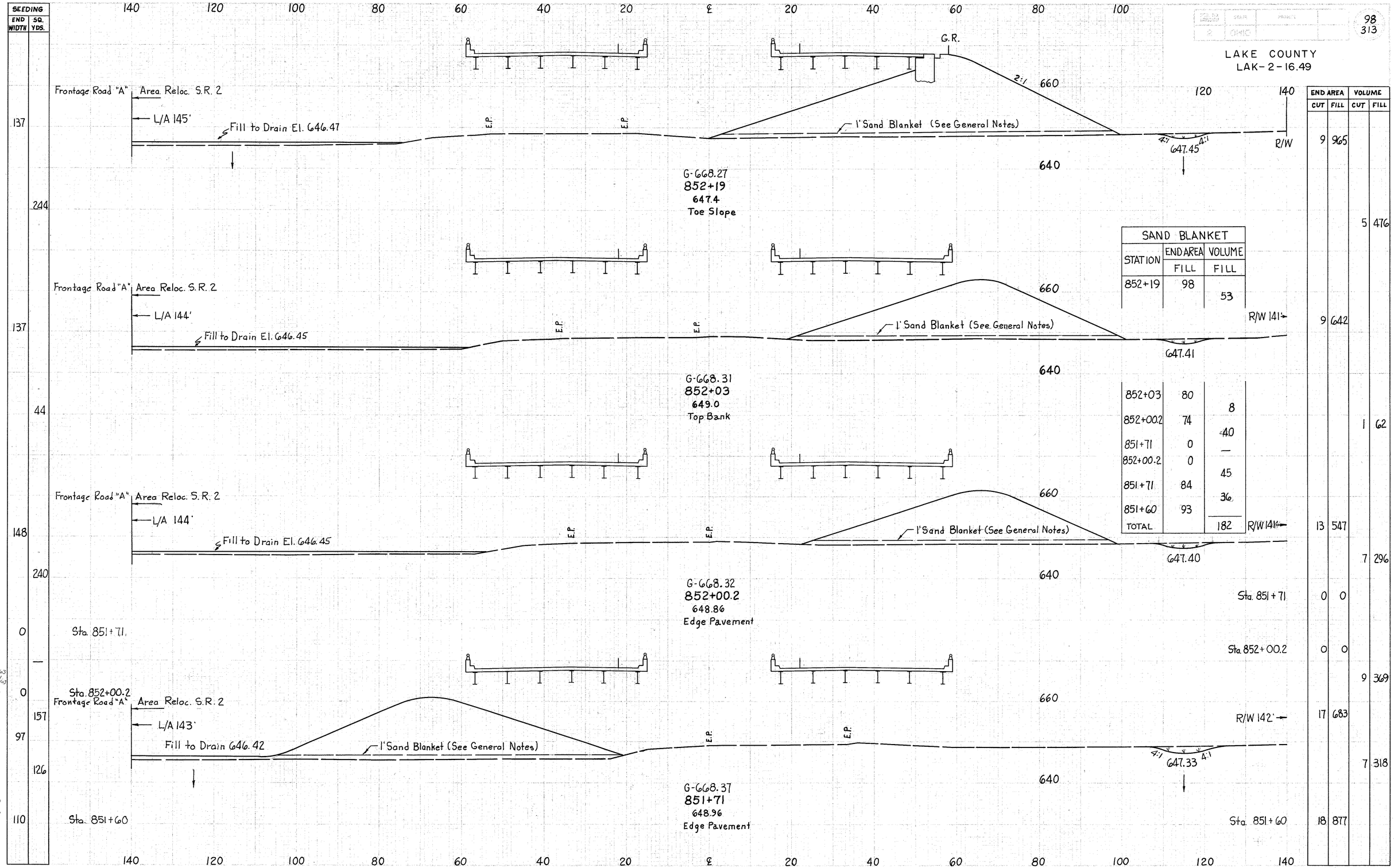
END AREA		VOLUME	
CUT	FILL	CUT	FILL
	18	877	
			8
	391
	27	1236	
			35
	27		
			3237
—		2260	
			5121
	7		
			1
	7	3271	

LAKE COUNTY
LAK-2-16.49

97
313

RELOCATION S.R. 2 Sta. 851+00 to 851+60

LAKE COUNTY
LAK-2-16.49

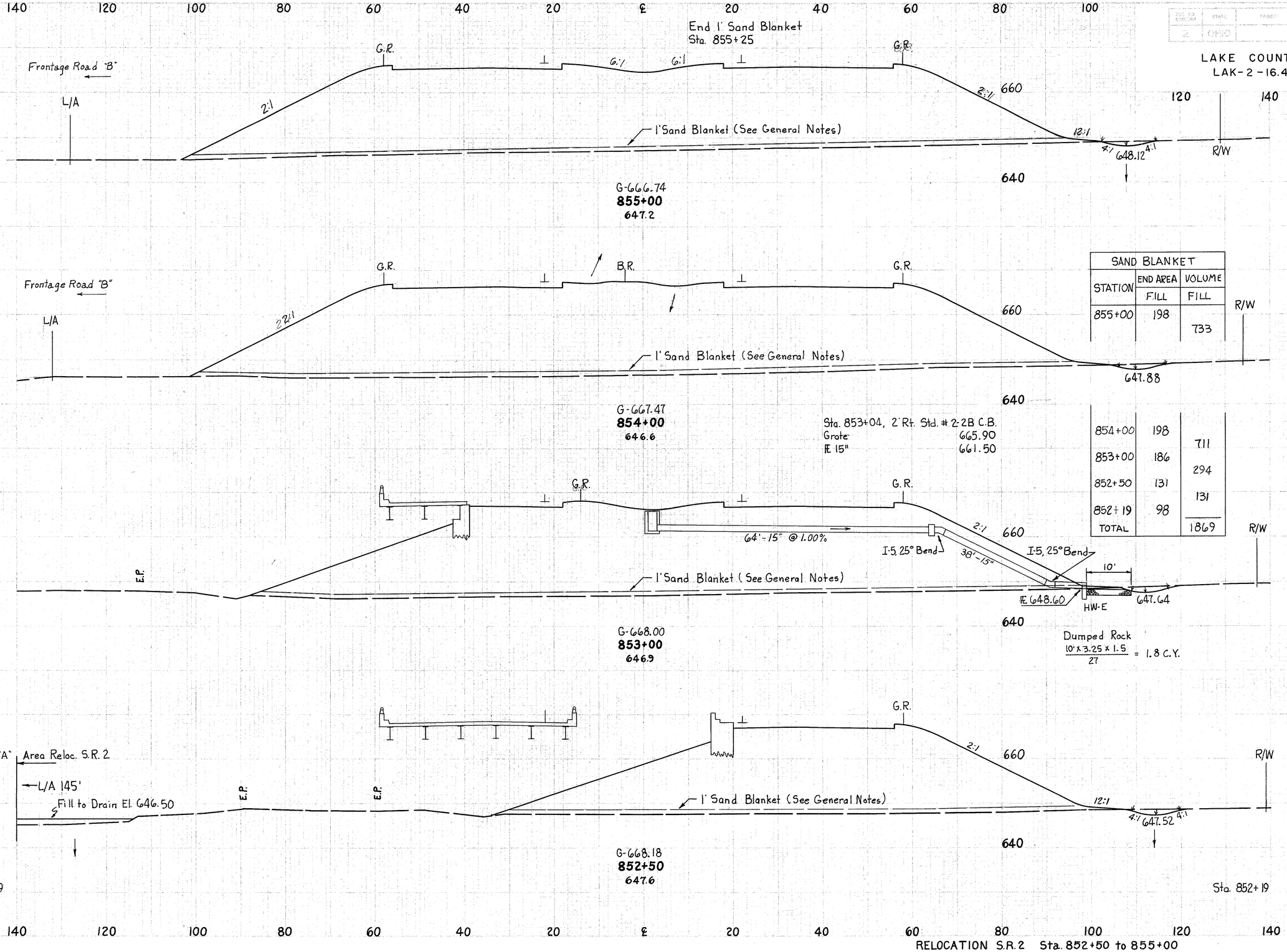


SAND BLANKET		
STATION	END AREA FILL	VOLUME FILL
852+19	98	
		53
852+03	80	
		8
852+00.2	74	
		40
851+71	0	
		—
852+00.2	0	
		45
851+71	84	
		36
851+60	93	
TOTAL		182

END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
9	965		
		5	476
9	642		
		1	62
13	547		
		7	296
0	0		
0	0		
		9	369
17	683		
		7	318
18	877		

RELOCATION S.R. 2 Sta. 851+71 to 852+19

SEEDING	
END WIDTH	SQ. YDS.
171	
173	1911
115	1600
105	611
137	417



SAND BLANKET		
STATION	END AREA FILL	VOLUME FILL
855+00	198	
		733
854+00	198	
		711
853+00	186	
		294
852+50	131	
		131
852+19	98	
TOTAL		1869

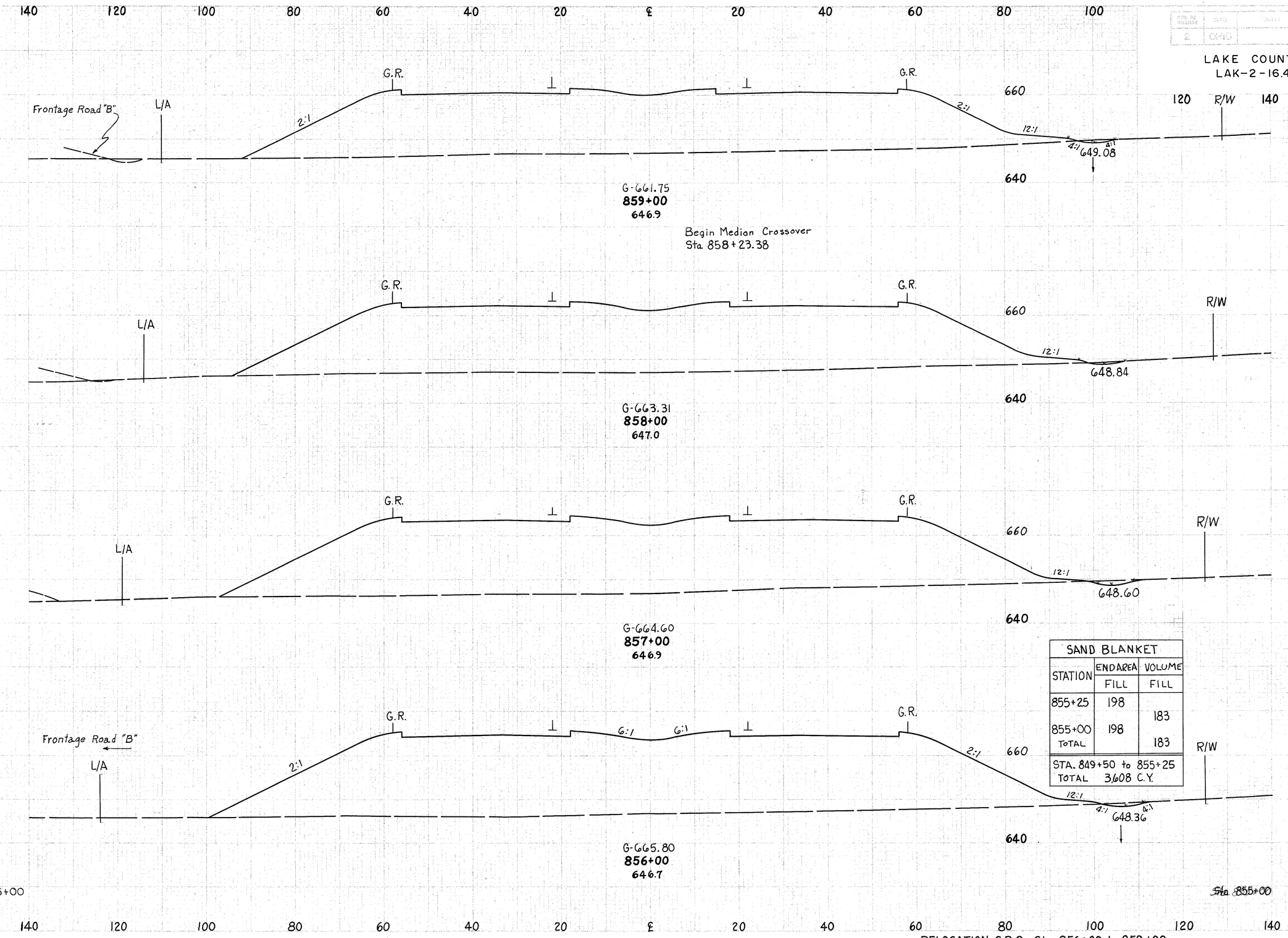
END AREA		VOLUME	
CUT	FILL	CUT	FILL
8	2795		
		30	10670
8	2967		
		33	10369
10	2632		
		19	3875
10	1553		
		11	1446
9	965		

PROJ. NO. EXPLORER	STATE	PROJECT		99 / 313
2	OHIO			

LAKE COUNTY
LAK-2-16.49

RELOCATION S.R. 2 Sta. 852+50 to 855+00

SEEDING END WIDTH	SEEDING SQ. YDS.
158	
	1716
151	
1733	
161	
1800	
163	
1855	
171	



SAND BLANKET		
STATION	ENDAREA FILL	VOLUME FILL
855+25	198	
		183
855+00	198	
TOTAL		183
STA. 849+50 to 855+25		
TOTAL	3,608 C.Y.	

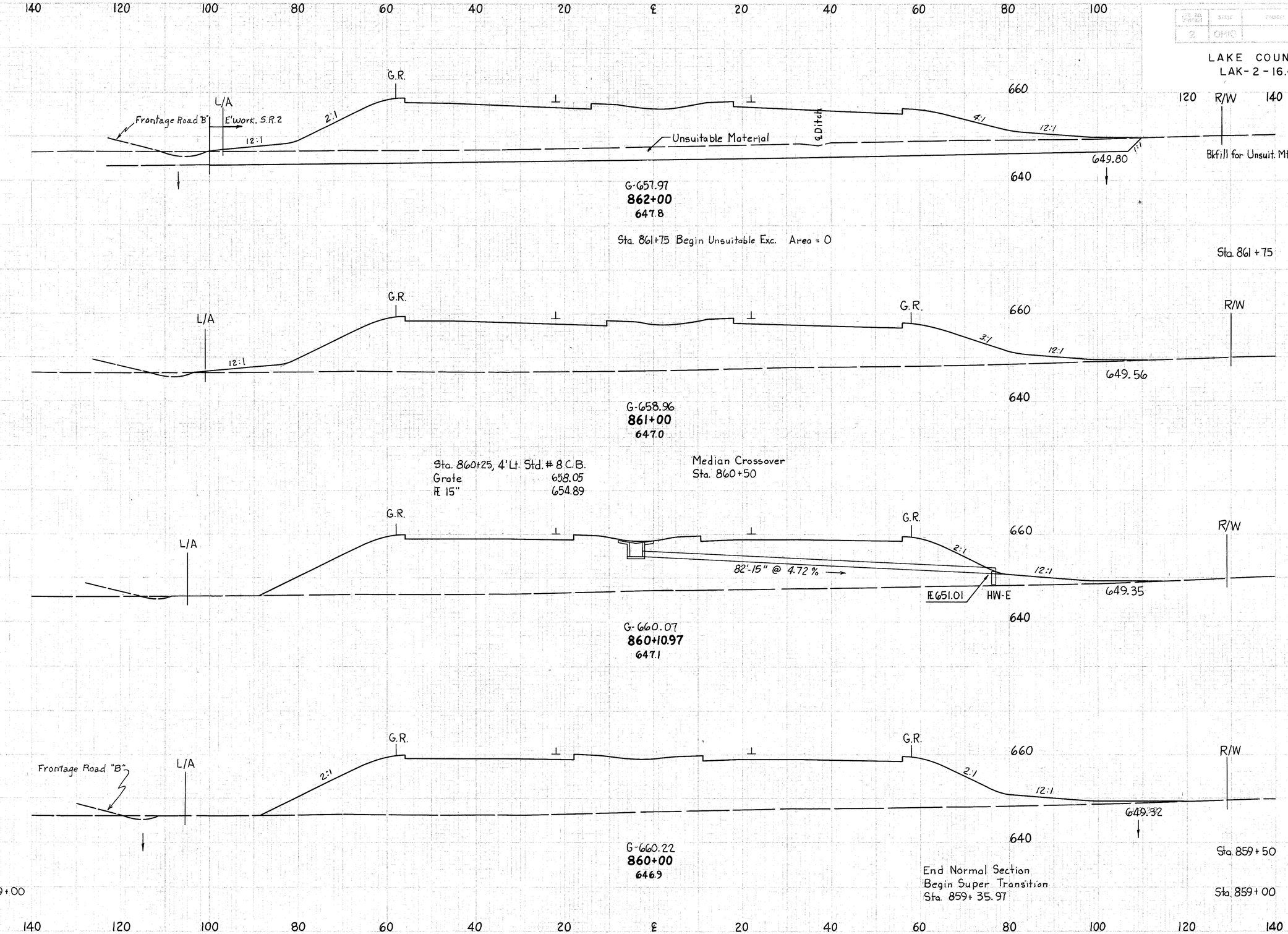
END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
4	2106		
		13	8126
3	2282		
		20	8933
8	2542		
		26	9935
6	2823		
		26	10404
8	2795		

STATE	FED. ROAD DIV.	FED. AID PROJECT		100 313
2	ILLINOIS			

LAKE COUNTY
LAK-2-16.49

RELOCATION S.R.2 Sta. 856+00 to 859+00

SEEDING END WIDTH	SEEDING SQ. YDS.
149	
	1550
130	
	1370
147	
	180
149	
	1705
158	



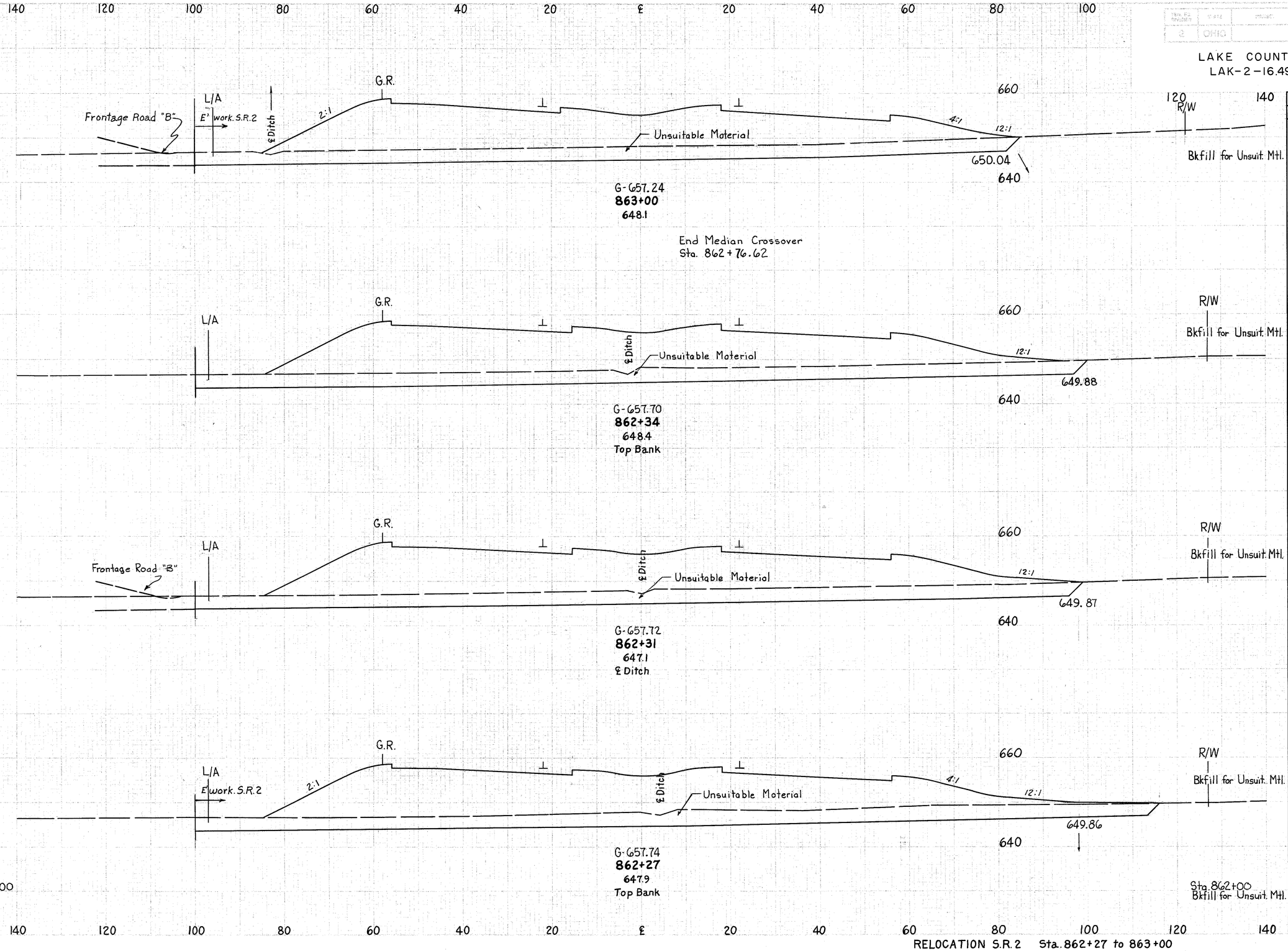
END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
626 +	1386 626 2012		
		290	1597
0	1437		
			4204
	1590		
			5620
	1819		
			743
	1841		
0		4	7309
4	2106		

STATE	FEDERAL PROJECT NO.
OHIO	101 313

LAKE COUNTY
LAK-2-16.49

RELOCATION S.R.2 Sta. 860+00 to 862+00

SEEDING END WIDTH	SEEDING SQ. YDS.
116	
	895
128	
	42
128	
	61
145	
	441
149	



END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
552	1193 + 552 = 1745		
		1403	4428
596	1282 + 596 = 1878		
		66	209
594	1285 + 594 = 1879		
		92	285
645	1321 + 645 = 1966		
		636	1989
626	1386 + 626 = 2012		

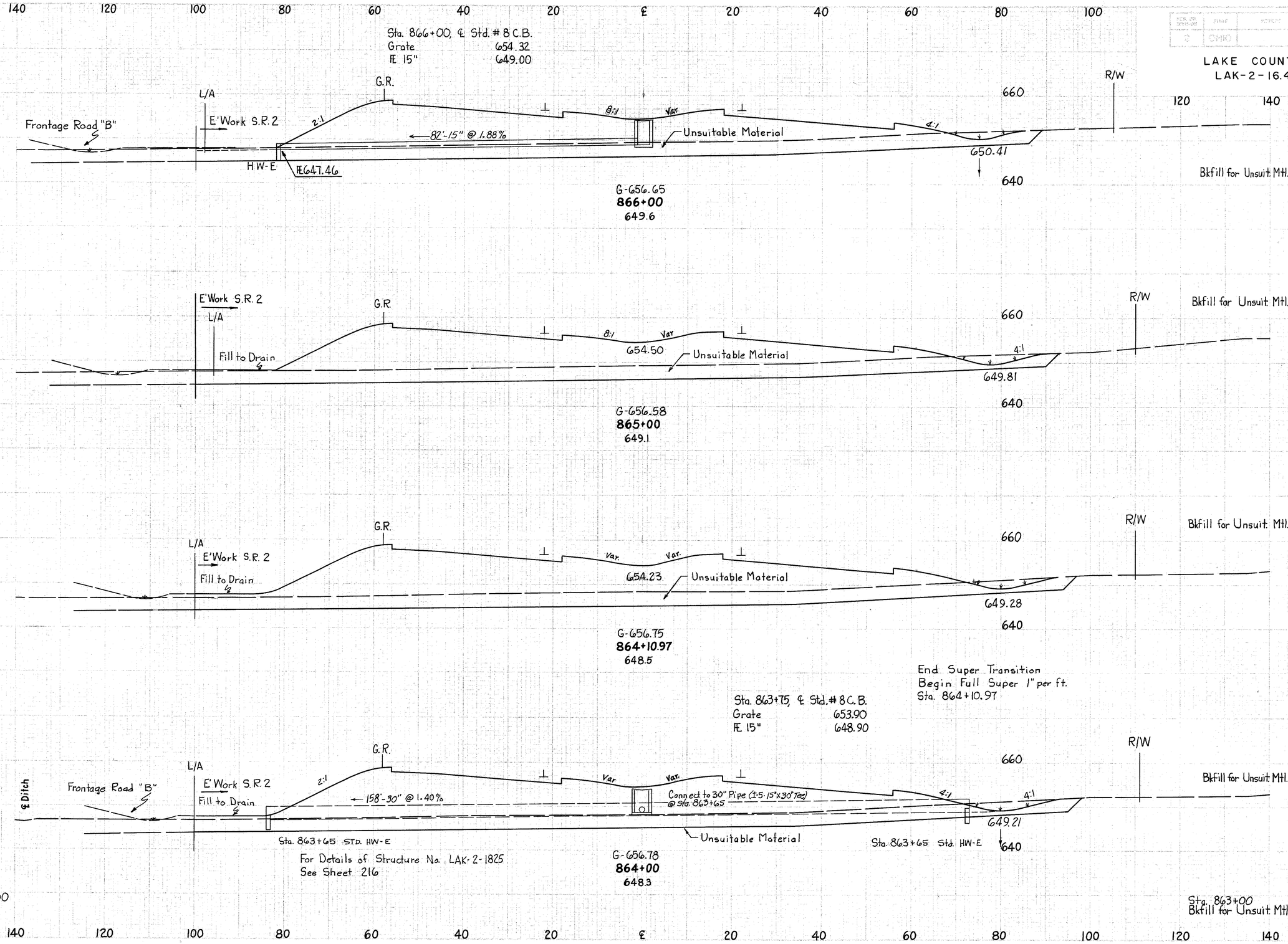
DISTRICT	STATE	PROJECT	102
2	OHIO		313

LAKE COUNTY
LAK-2-16.49

RELOCATION S.R.2 Sta. 862+27 to 863+00

LAKE COUNTY
LAK-2-16.49

SEEDING END WIDTH	SEEDING SQ. YDS.
112	
	1305
123	
	1246
129	
	157
129	
	1361
116	



END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
562 +	853 + 547 = 1400		
		2106	5209
575 +	863 + 550 = 1413		
		1912	5010
585 +	1062 + 564 = 1626		
		238	654
589 +	1029 + 564 = 1593		
		2113	6181
552 +	1193 + 552 = 1745		

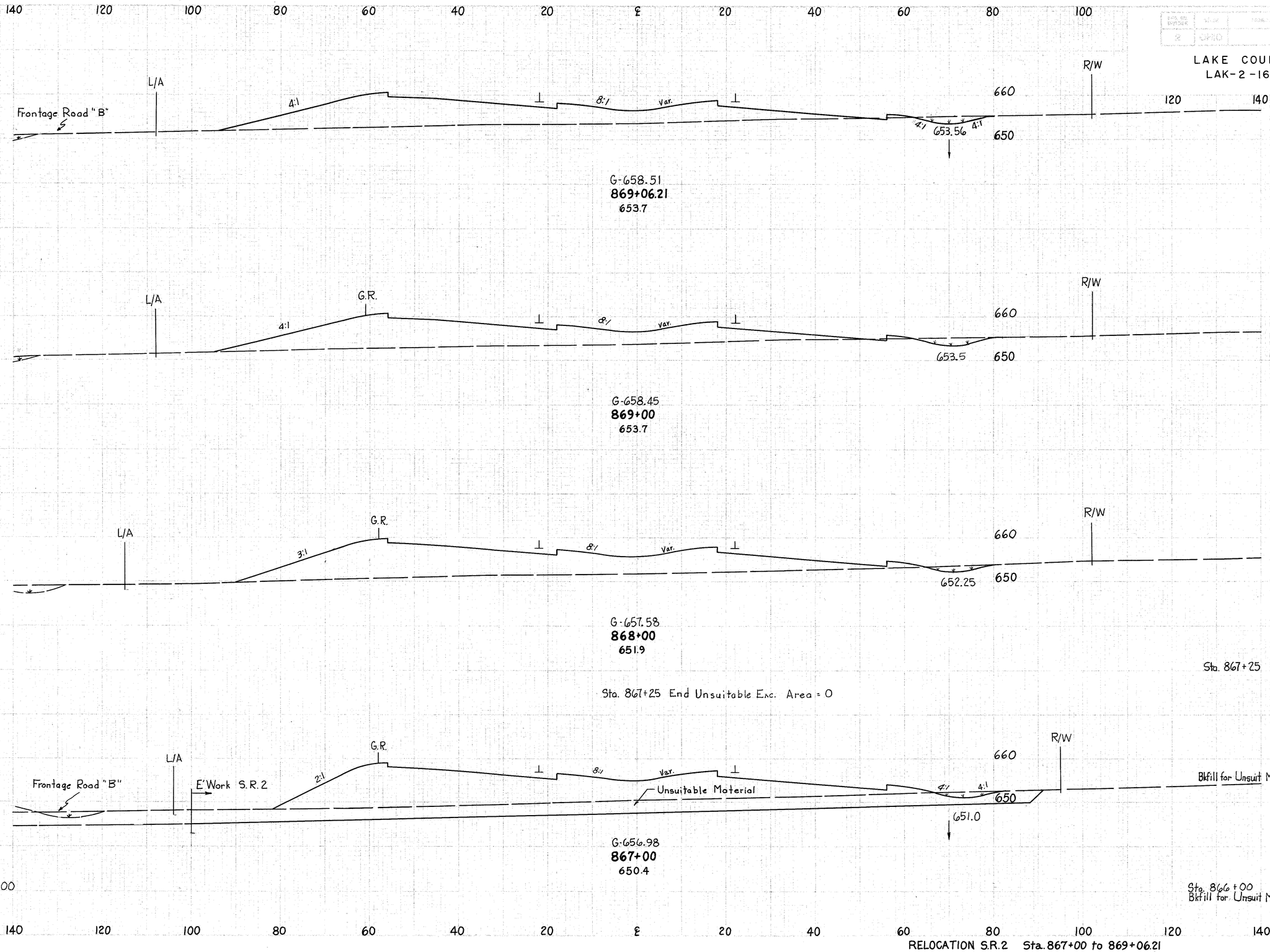
RELOCATION S.R. 2 Sta. 864+00 to 866+00

SEED NO.	SPECIAL	SEED	FERTILIZER
2	GRASS		

104
313

LAKE COUNTY
LAK-2-16.49

SEEDING END WIDTH	SEEDING SQ. YDS.
109	
	79
121	
	1311
115	
	1255
111	
	1239
112	



END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
19	566		
		5	132
22	584		
		65	2365
13	693		
		33	2014
11	757		
		269	969
569 +	778 558 1336		
		2094	5067
562 +	853 547 1400		

Sta. 867+25

Bkfill for Unsuit Mtl.

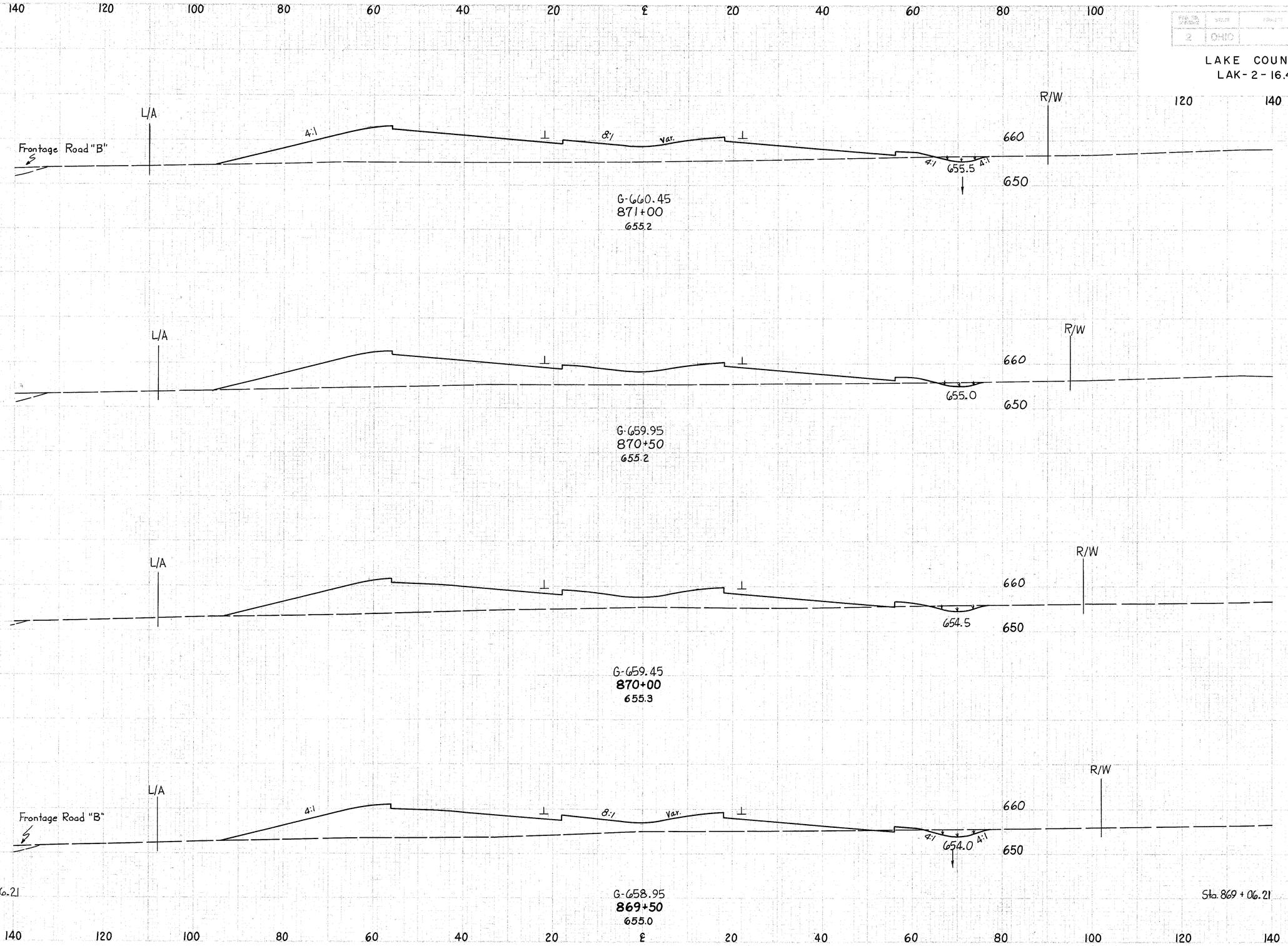
Sta. 866+00
Bkfill for Unsuit Mtl.

RELOCATION S.R.2 Sta. 867+00 to 869+06.21

FED. RD. DIVISION	STATE	FEDERAL AID PROJECT		
2	OHIO			105 / 313

LAKE COUNTY
LAK-2-16.49

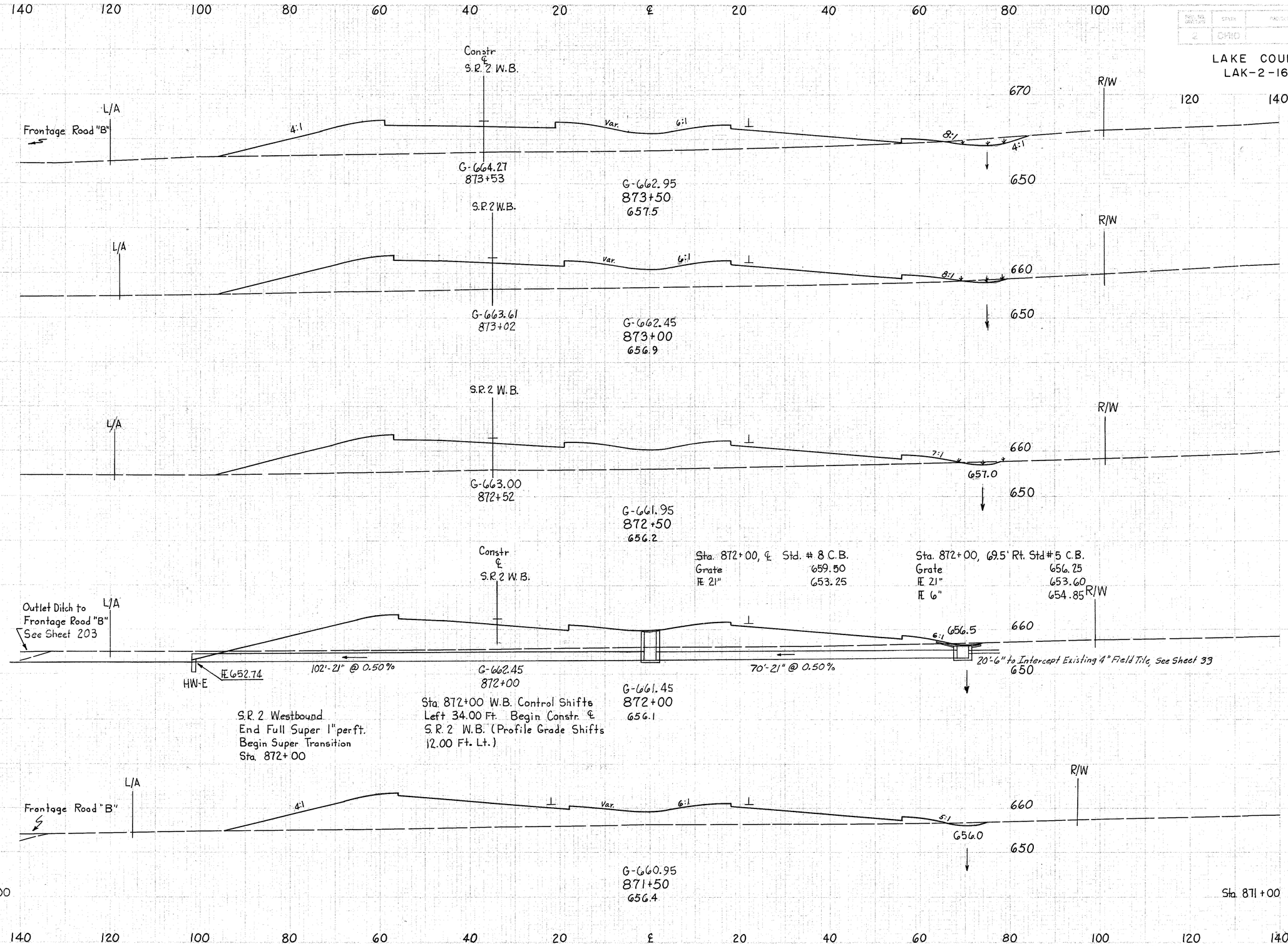
SEEDING END WIDTH	SEEDING SQ. YDS.
116	
	647
117	
	644
115	
	639
115	
	545
109	



END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
8	671		
		13	1187
6	611		
		16	1081
11	557		
		23	1000
14	523		
		27	883
19	566		

RELOCATION S.R.2 Sta. 869+50 to 871+00

Seeding	
END Width	Sq. Yds.
127	
	689
121	
	667
119	
	647
114	
	636
115	
	641
116	



END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
20	693		
		21	1313
3	725		
		6	1359
4	743		
		6	1322
2	685		
		7	1228
6	641		
		13	1215
8	671		

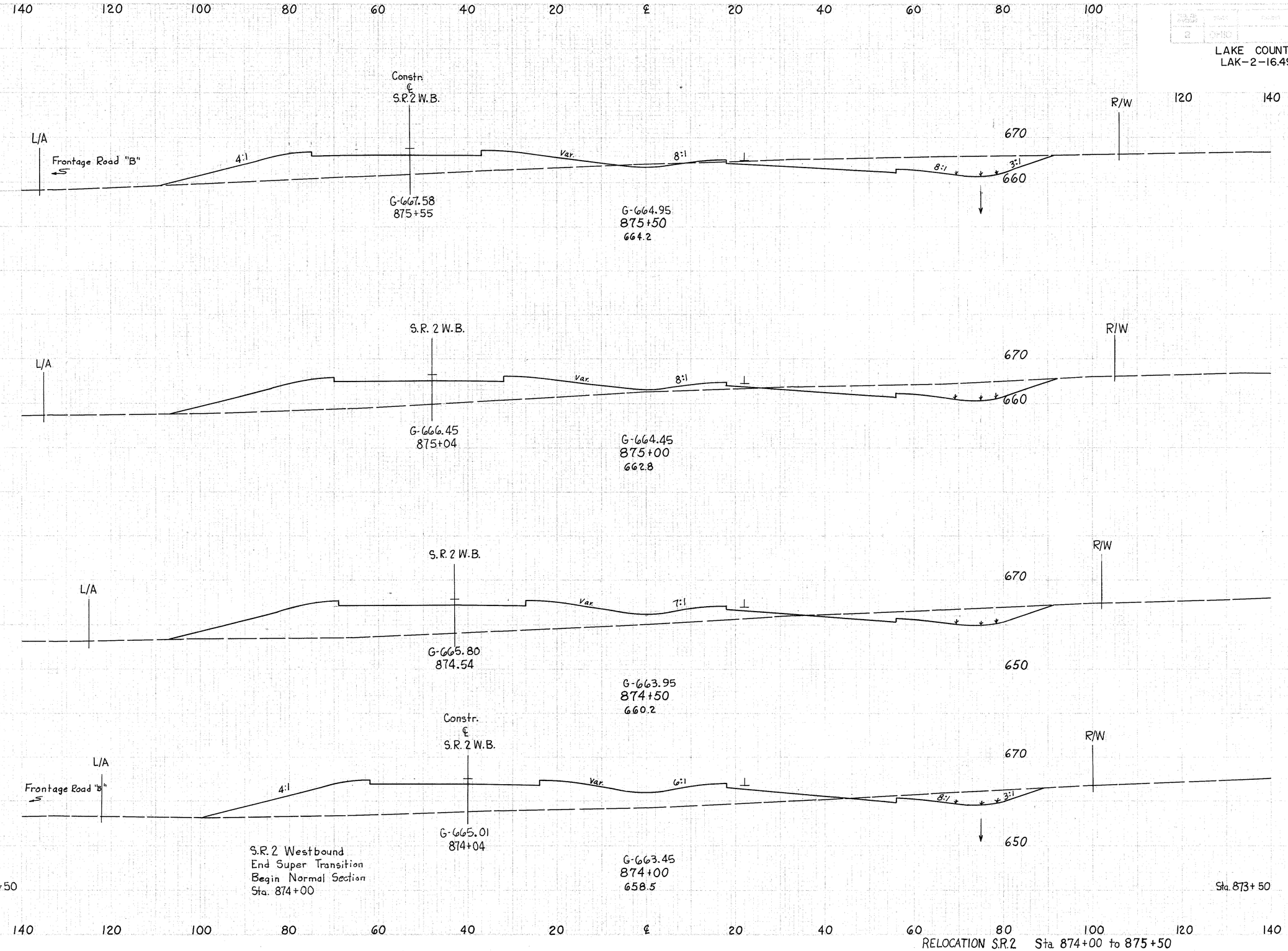
REGION DISTRICT	STATE	FEDERAL	106
2	OHIO		313

LAKE COUNTY
LAK-2-16.49

RELOCATION S.R.2 Sta. 871+50 to 873+50

LAKE COUNTY
LAK-2-16.49

Seeding End Width	Seeding Sq. Yds.	End Area Cut	End Area Fill	Volume Cut	Volume Fill
146		197	368		
	808			316	775
145		144	469		
	794			240	1027
141		115	640		
	766			171	1202
135		70	658		
	728			83	1251
127		20	693		

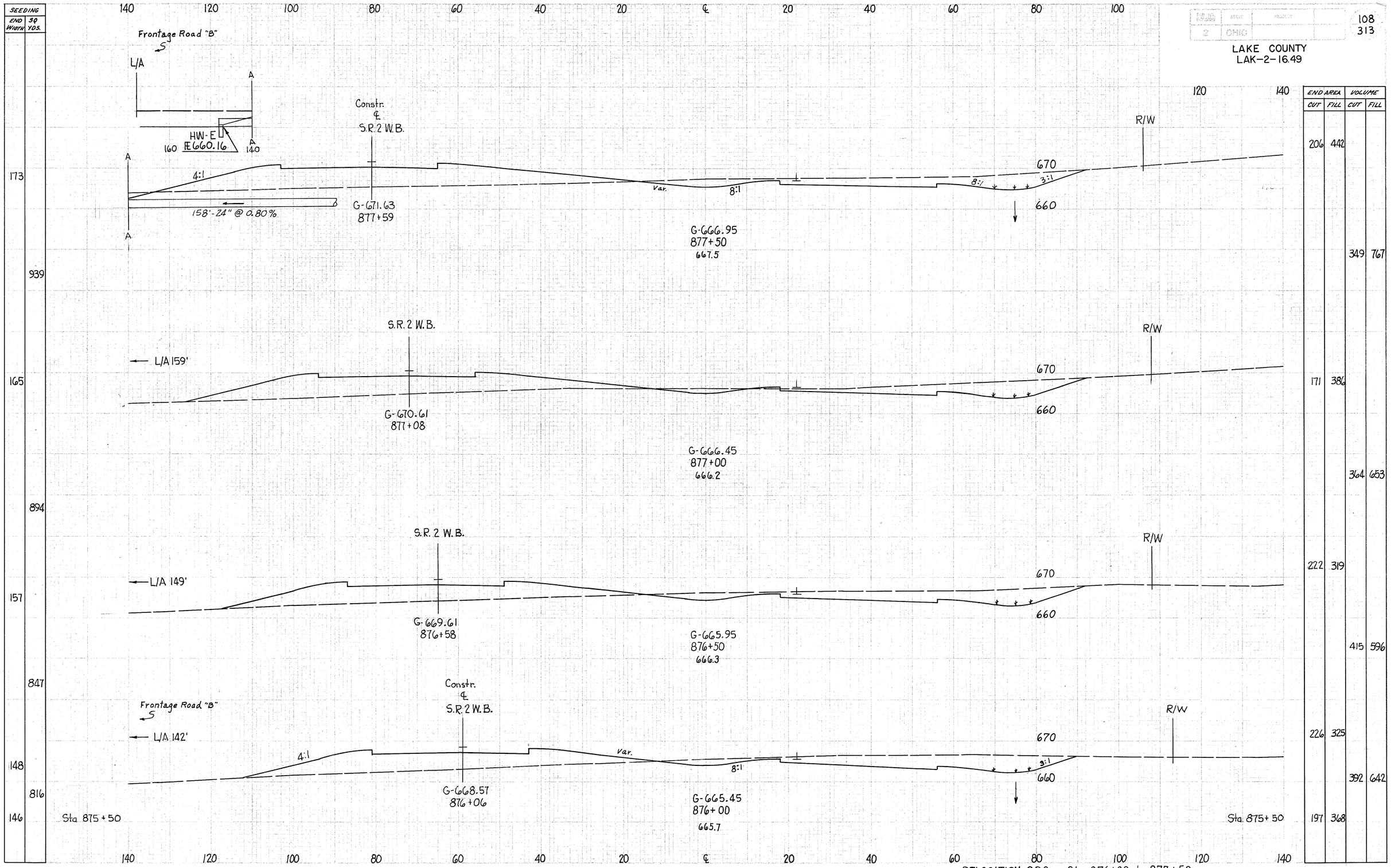


RELOCATION S.R.2 Sta. 874+00 to 875+50

F.A. NO.	STATE	PROJECT	
2	OHIO		

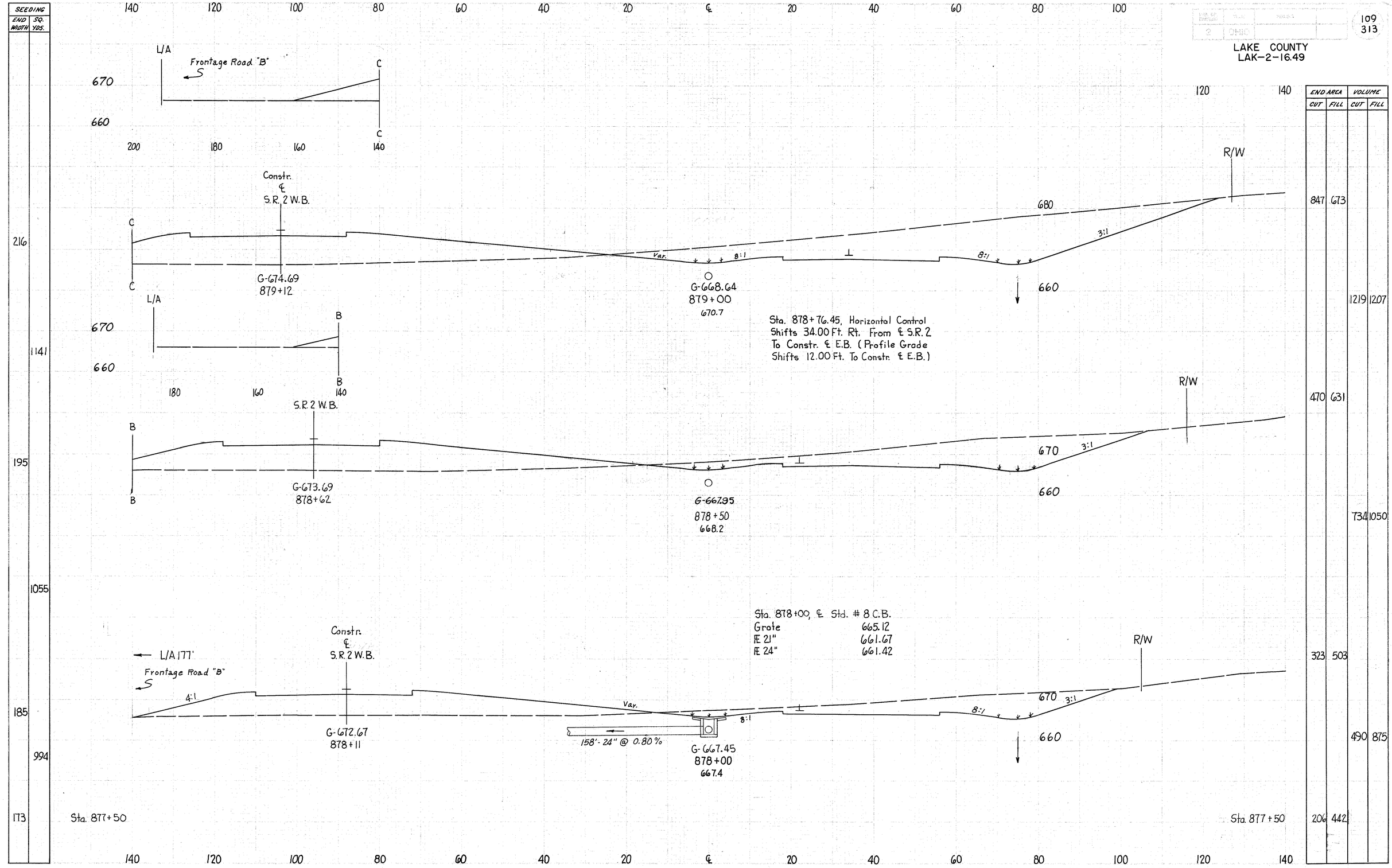
108
313

LAKE COUNTY
LAK-2-16.49



RELOCATION S.R.2 Sta. 876+00 to 877+50

LAKE COUNTY
LAK-2-16.49



RELOCATION S.R.2 Sta 878+00 to 879+00

LAKE COUNTY
LAK-2-16.49

SEEDING END WIDTH	SEEDING SQ. YDS.
335	
	1677
269	
	1255
183	
	764
92	
	319
72	

35'

S.R.2 Sta. 879+00

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

G.R.

E.P. Curb

I-5 25° Bend

66'-15"

S=0.6%

To #5 C.B @ S.R.2 Sta. 881+80
See Sheet 112
For Profile see sheet 194

Sta. 97+68, 26' Lt. Std # 1 M.H
Cover 692.80
FE 15" 683.44

G-692.35
97+50
692.19

R/W

4:1

690

680

120 140

E. House

Floor Elev

E.P. Curb

G-691.85
97+00
691.67

E. Sidewalk

Floor Elev.

G-691.40
96+50
691.27

Note: Sta. 96+00 Connect 15" to
Existing 15" T.C. Pipe, Provide Conc. Collar

FE 684.53
Conc. Collar as Per Std. Dwg. I-1

G-691.02
96+00
690.85

BEGIN WORK
STA. 96+00

S.R.2 Sta. 879+00

END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
3274	795		
		5621	1203
2797	504		
		4348	482
1899	17		
		2657	16
Ahd. 971	0		
Bk. 902			
		941	
550			

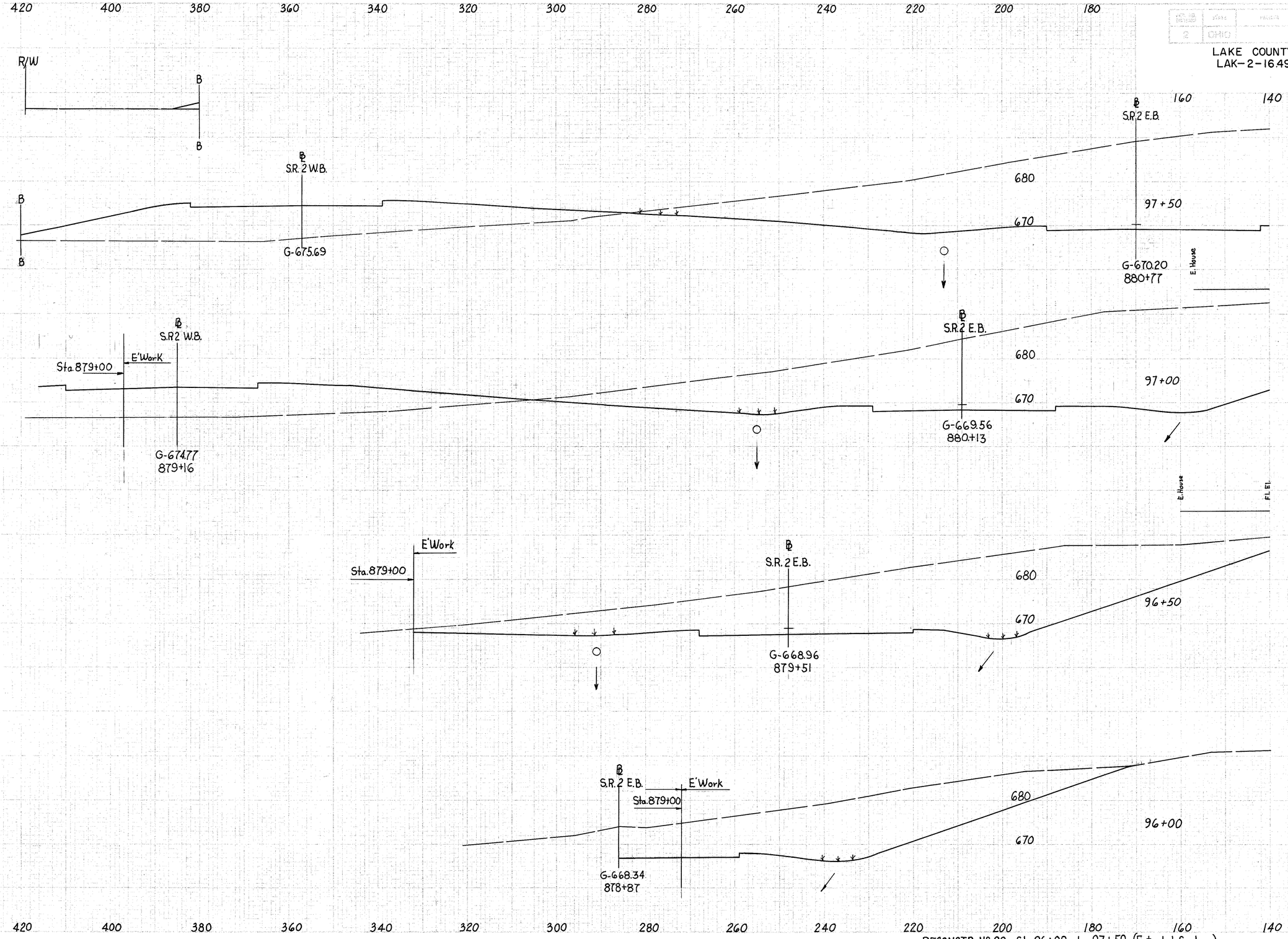
35'

RECONSTR U.S. 20 Sta. 96+00 to 97+50

LAKE COUNTY
LAK-2-16.49

SEEDING	
END WIDTH	SQ. YDS.

END AREA		VOLUME	
CUT	FILL	CUT	FILL

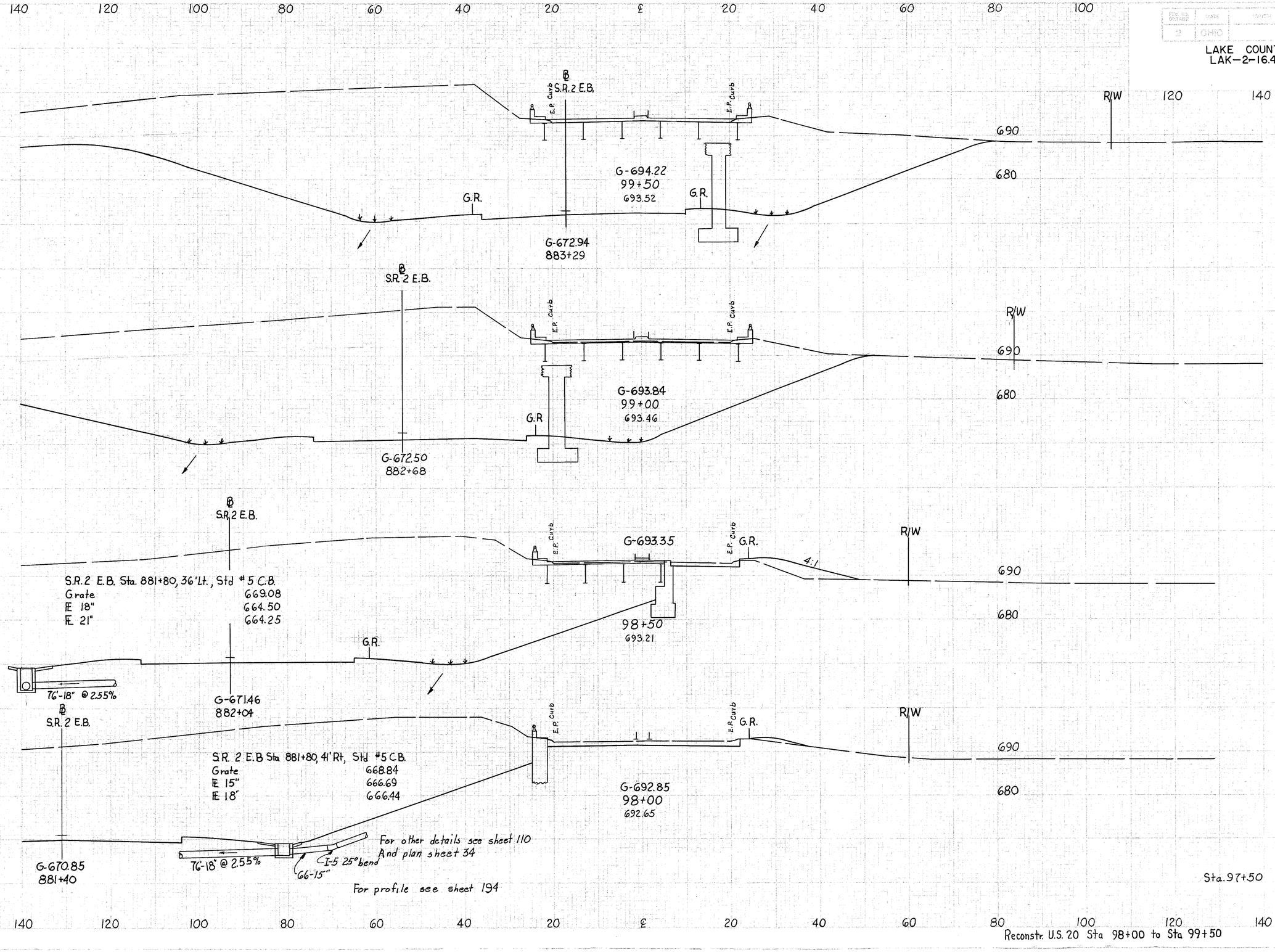


RECONSTR U.S. 20 Sta 96+00 to 97+50 (Extended Sections)

LAKE COUNTY
LAK-2-16.49

Seeding End Width	Seeding Sq. Yds.
316	
	1794
330	
	1752
301	
	1691
308	
	1786
335	

Sta. 97+50



END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
4803	101		
		8901	471
4810	408		
		8571	1073
4447	751		
		7831	1413
4010	775		
		6744	1454
3274	795		

Reconstr. U.S. 20 Sta 98+00 to Sta 99+50

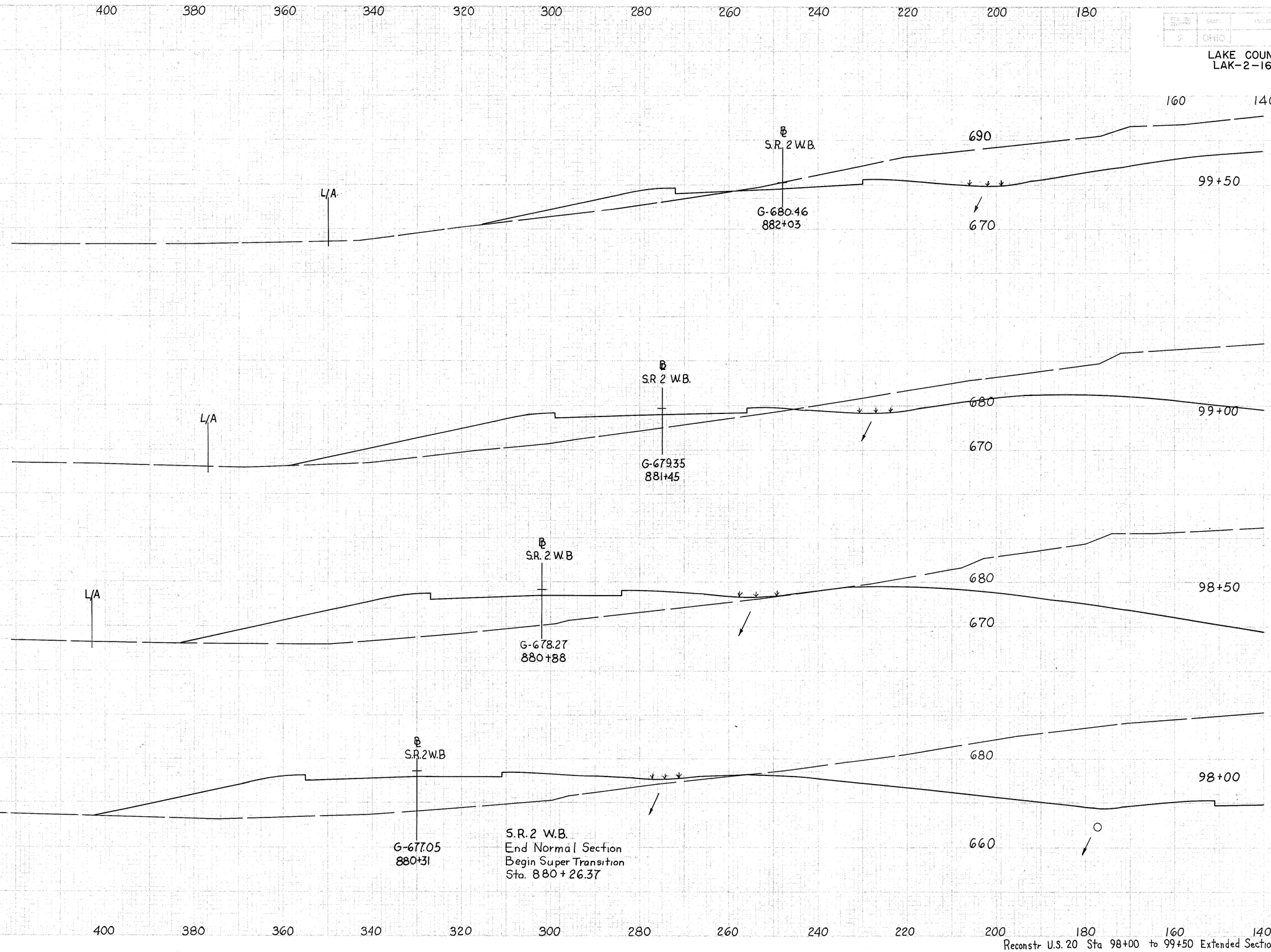
CHECKED 1/30/63
M.E.F.
Rev. SLS 8/8/63

Seeding	
End Width	Sq. Yds.

END AREA		VOLUME	
CUT	FILL	CUT	FILL

STATE	FED. ROAD DIST.	FISCAL YEAR	TOTAL SHEETS
OHIO			113 / 313

LAKE COUNTY
LAK-2-16.49



Reconstr U.S. 20 Sta 98+00 to 99+50 Extended Sections

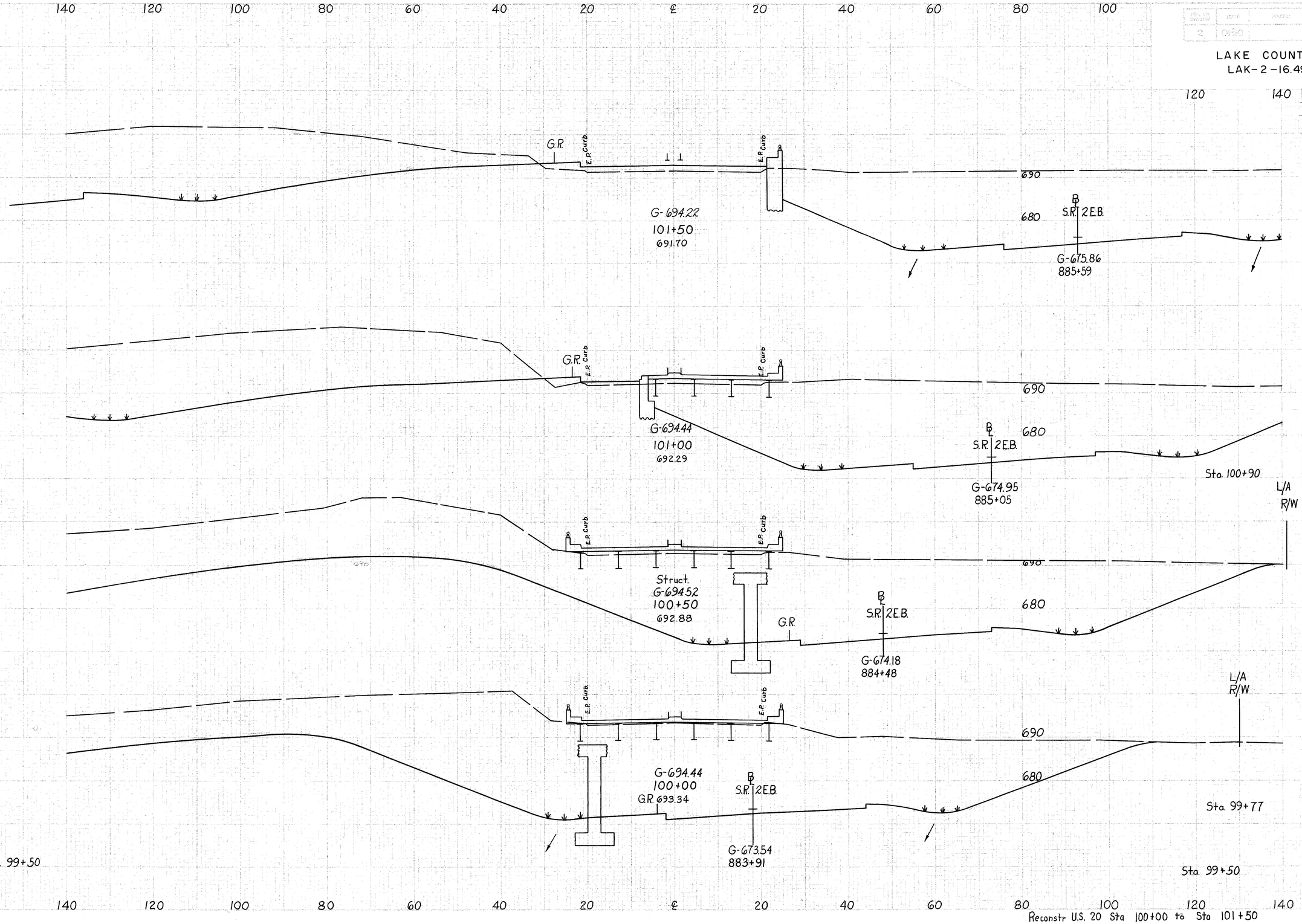
ED 1/20/63
M.E.F.
ED SCS 8/8/63

REVISIONS	DATE	NAME	
2	01-80		

114
313

LAKE COUNTY
LAK-2-16.49

Seeding End Width	Seeding Sq. Yds.
293	
	1694
317	
	1766
319	
	1727
303	
	1719
316	



END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
4380	68		
		8748	84
5068	23		
			4
0		9411	
5096			
		8904	
4520			
0		8632	
			51
4803	101		

Reconstr U.S. 20 Sta 100+00 to Sta 101+50

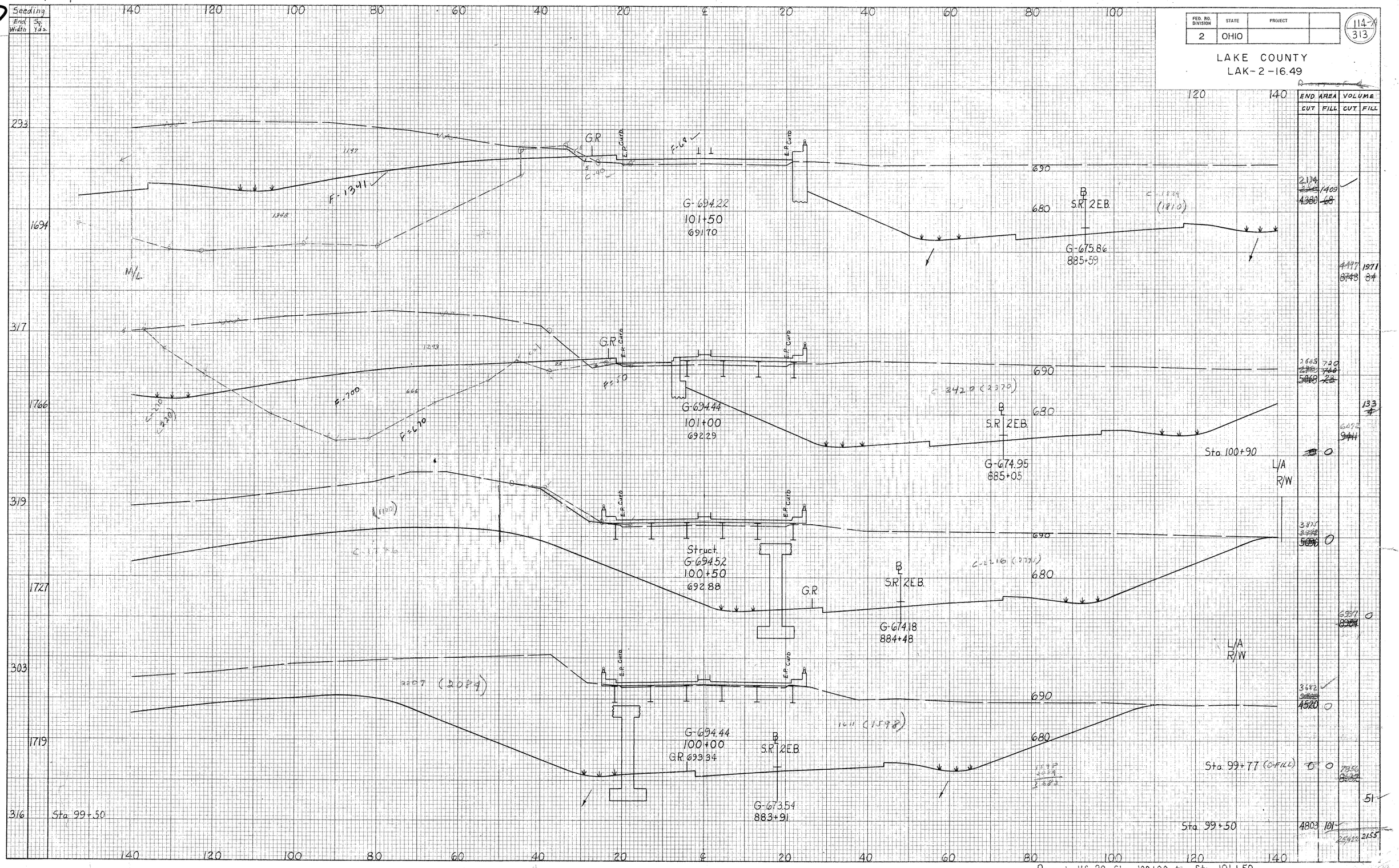
E1.9

F-19

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

114-A
313

LAKE COUNTY
LAK-2-16.49

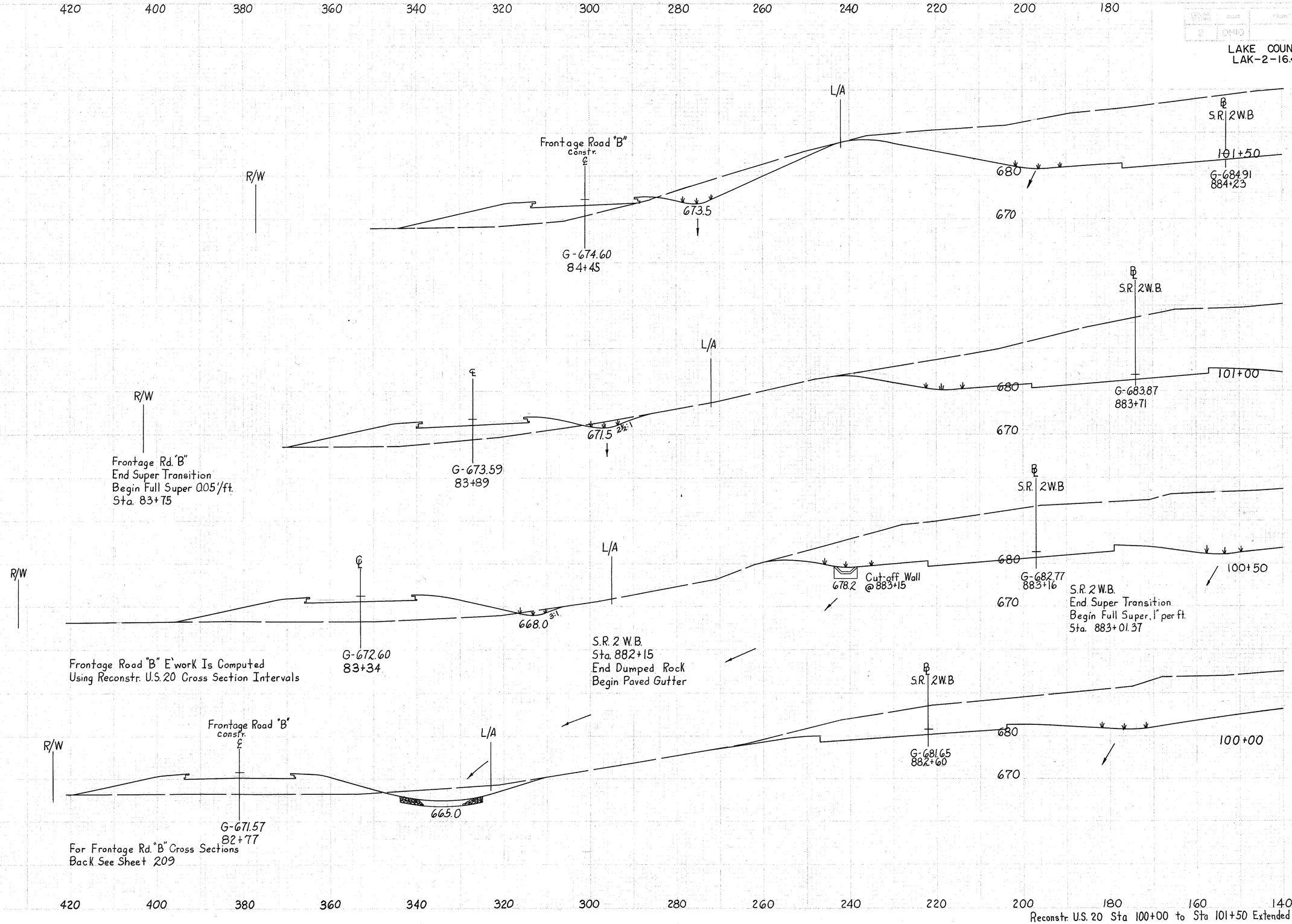


Reconstr U.S. 20 Sta 100+00 to Sta 101+50

LAKE COUNTY
LAK-2-16.49

FRONTAGE ROAD "B" SEEDING	
END WIDTH	SQ. YDS.
83	400
61	358
68	381
69	

FRONTAGE ROAD "B"			
END AREA		VOLUME	
CUT	FILL	CUT	FILL
110	157		
		113	336
12	206		
		18	462
7	293		
		68	480
66	225		



For Frontage Rd. "B" Cross Sections
Back See Sheet 209

Reconstr. U.S. 20 Sta 100+00 to Sta 101+50 Extended Sections Left

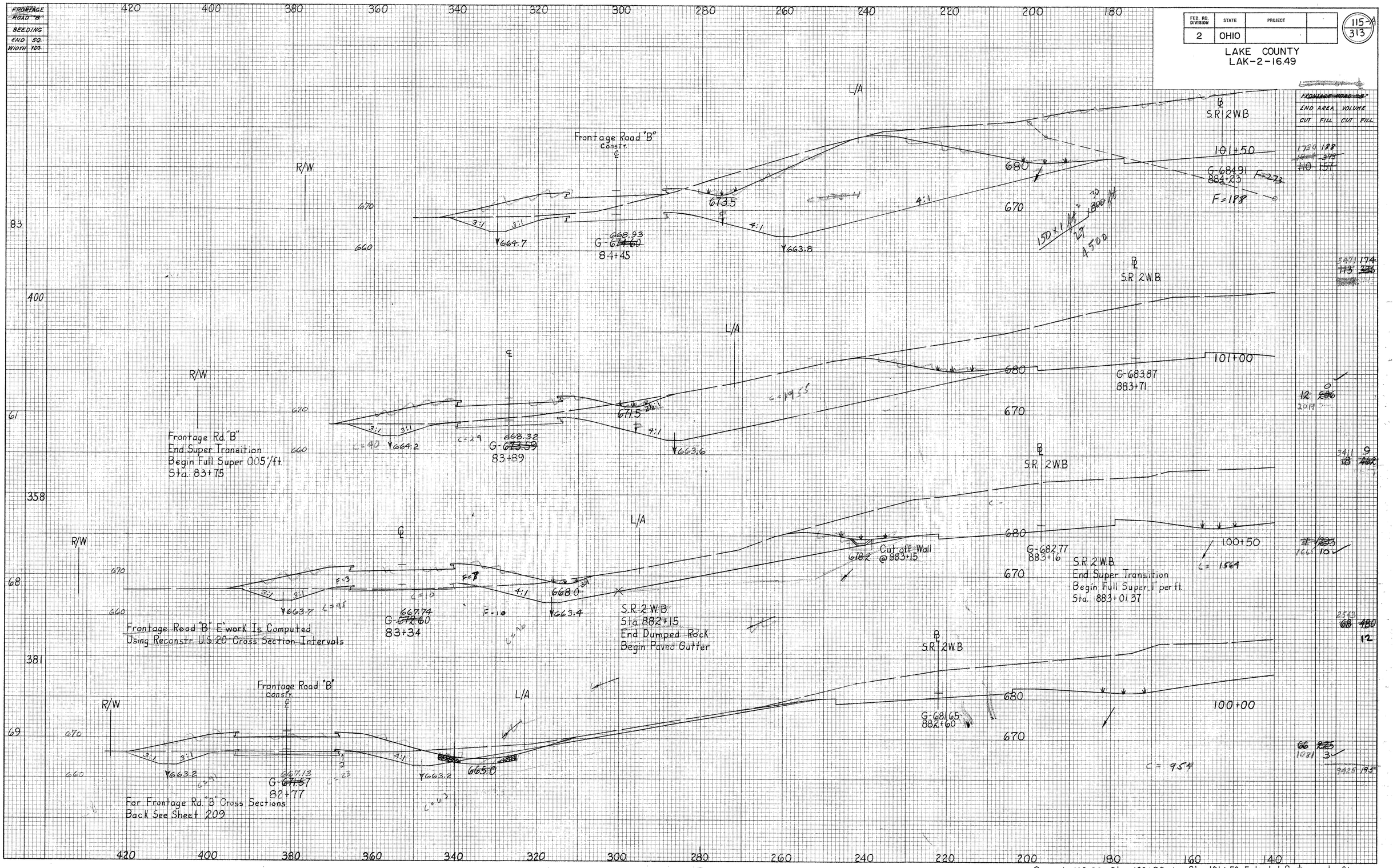
FRONTAGE ROAD "B"	
SEEDING	
END WIDTH	SQ. YDS.

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

115-A
313

LAKE COUNTY
LAK-2-16.49

FRONTAGE ROAD "B"			
END AREA		VOLUME	
CUT	FILL	CUT	FILL
1729	188		
10	157		

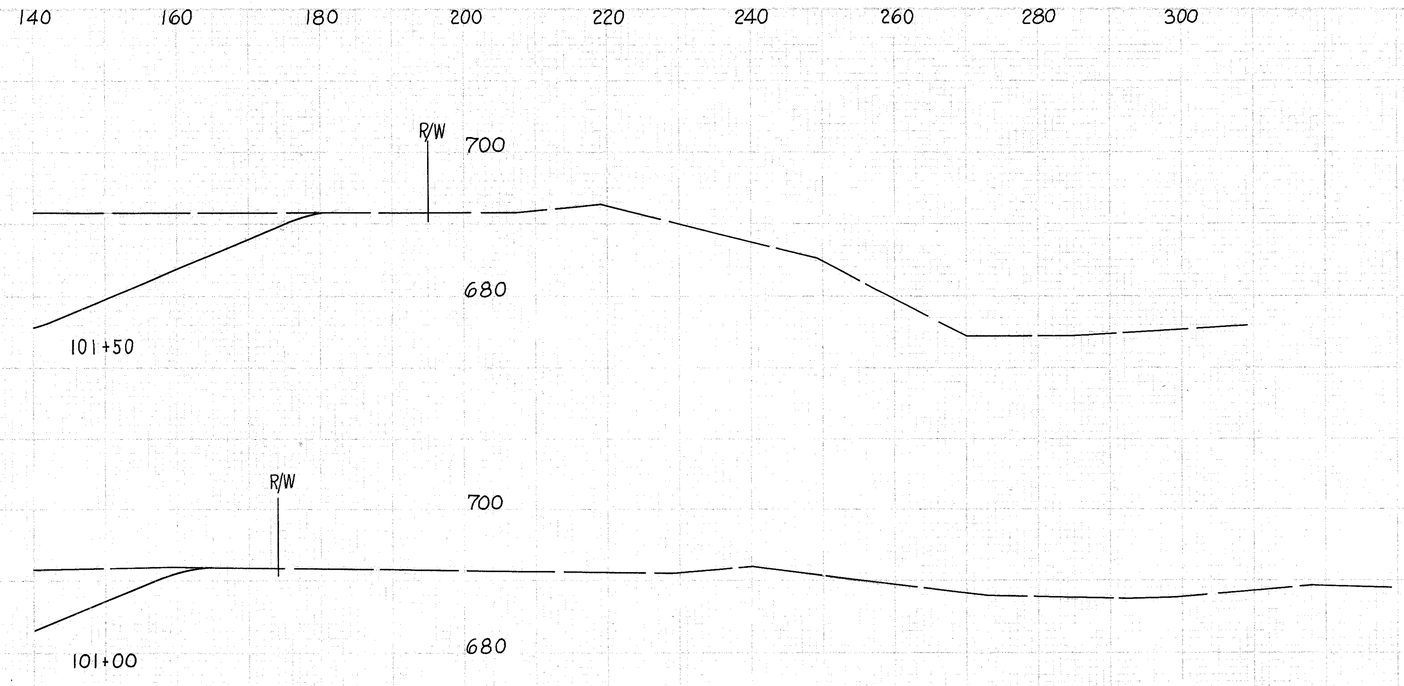


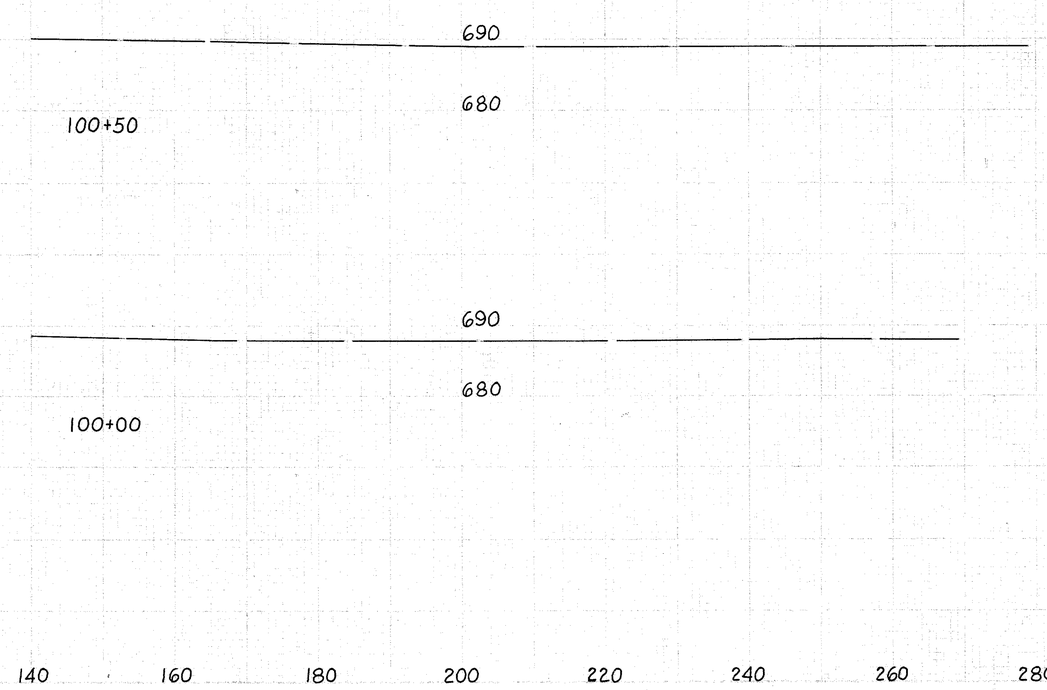
Reconstr. U.S. 20 Sta 100+00 to Sta 101+50 Extended Sections Left

SHT. NO. OF SHEETS	STATE	PROJECT	
2	OHIO		

116
313

LAKE COUNTY
LAK-2-16.49



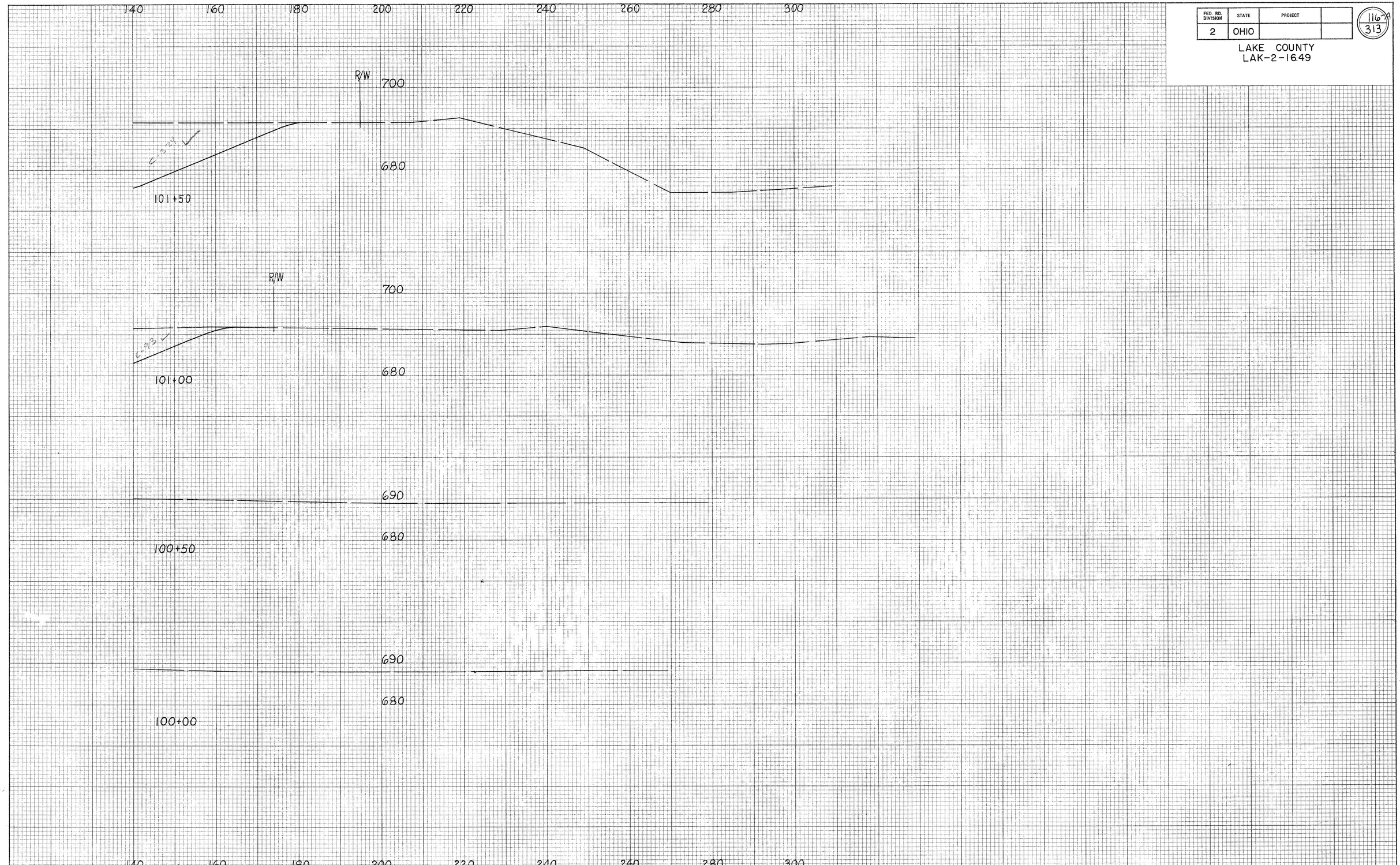


Reconstr U.S. 20 Sta. 100+00 to Sta 101+50 Extended Sections Right

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

116
313

LAKE COUNTY
LAK-2-16.49

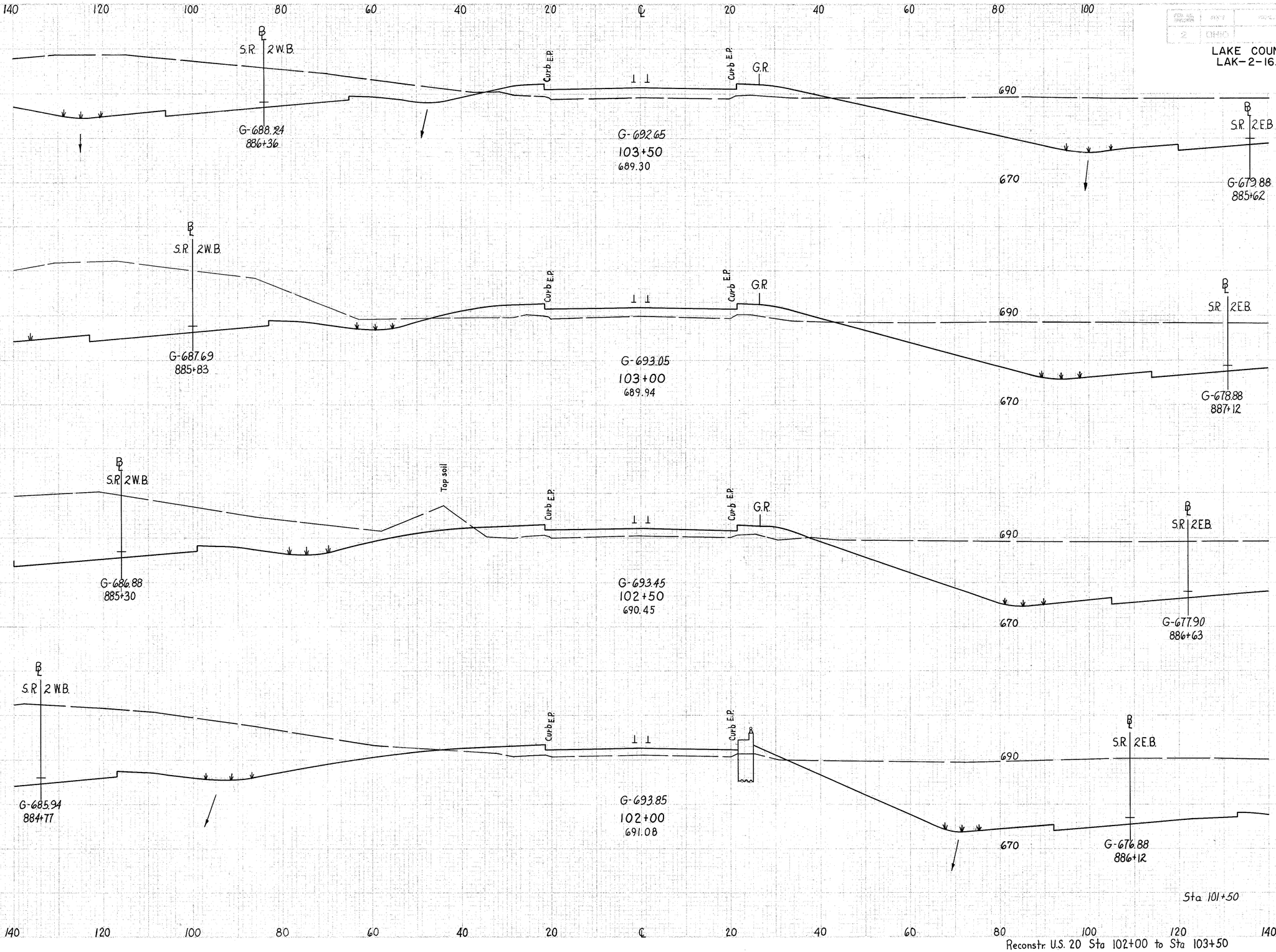


Reconstr U.S. 20 Sta. 100+00 to Sta 101+50 Extended Sections Right

117
313

LAKE COUNTY
LAK-2-16.49

SEEDING END WIDTH	SEEDING SQ YDS.
251	
	1428
263	
	1561
285	
	1644
307	
	1666
293	



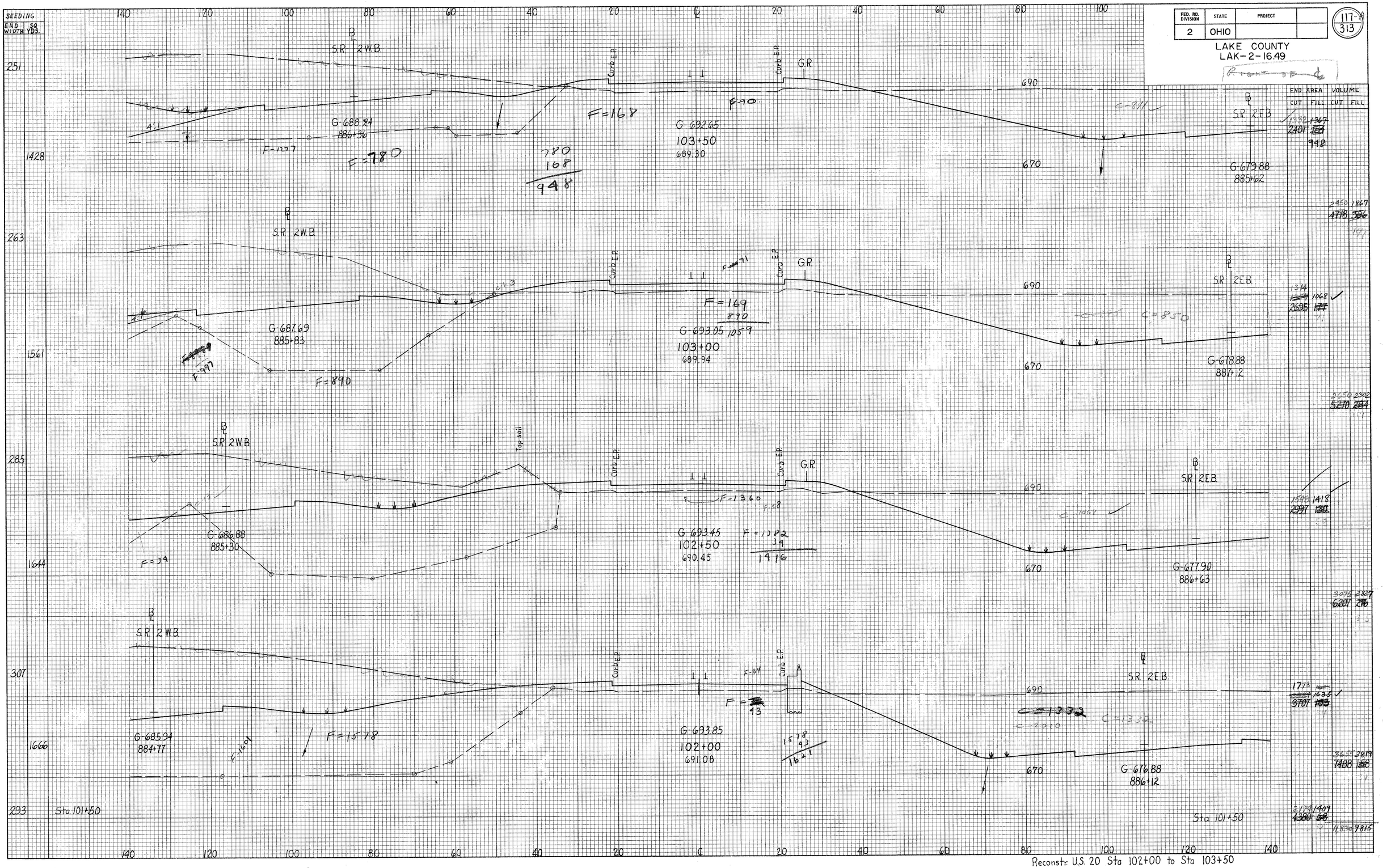
END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
2401	154		
		4718	306
2695	177		
		5270	284
2997	130		
		6207	216
3707	103		
		7488	158
4380	68		

Reconstr. U.S. 20 Sta 102+00 to Sta 103+50

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

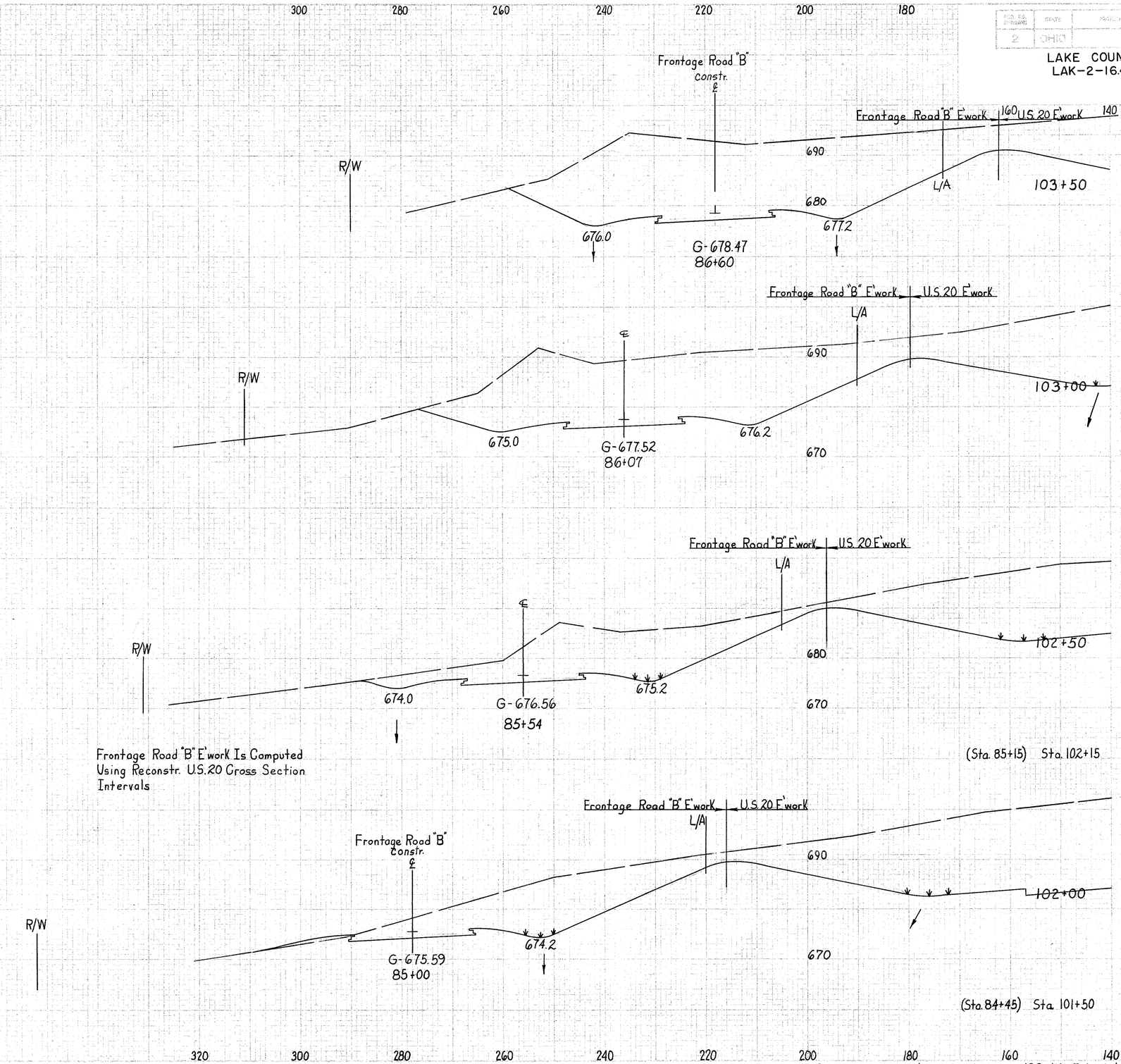
LAKE COUNTY
LAK-2-16.49

117-A
313



Reconstr. U.S. 20 Sta 102+00 to Sta 103+50

FRONTAGE ROAD "B" SEEDING		
	END WIDTH	SQ. YDS.
81		
		444
79		
		422
73		
		403
72		
		431
83		



FRONTAGE ROAD "B"			
END AREA		VOLUME	
CUT	FILL	CUT	FILL
1192			
		2065	
1038			
		1434	
511			
		900	
		0	
			2
461	9		
		529	154
110	157		

2	OHIO		

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LAKE COUNTY
LAK-2-16.49

Reconstr. U.S. 20 Sta 102+00 to Sta 103+50 Extended Sections Left

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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LAKE COUNTY
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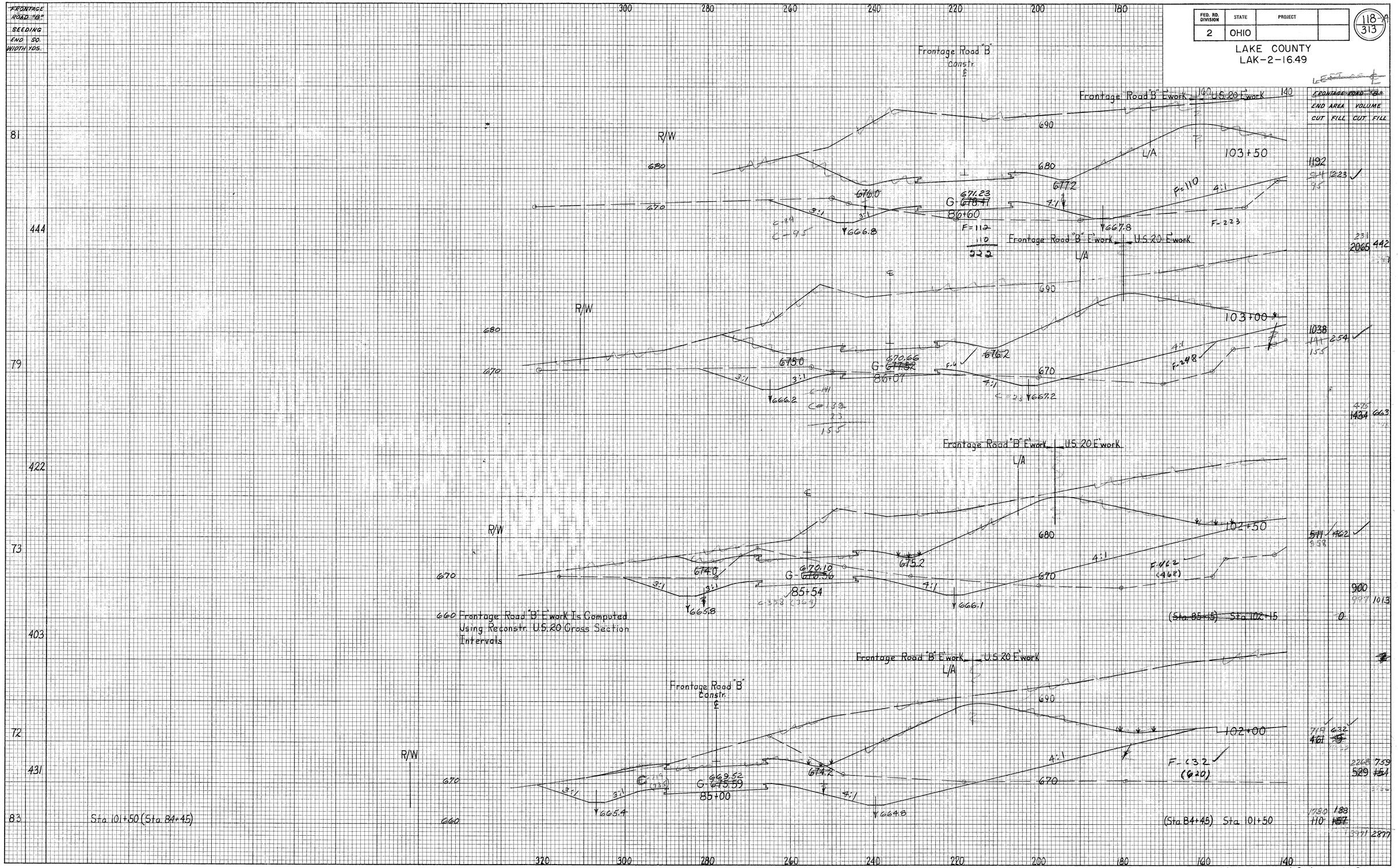
FRONTAGE ROAD "B"		
SEEDING		
END	SQ.	
WIDTH	YDS.	



FRONTAGE ROAD "B"			
END AREA		VOLUME	
CUT	FILL	CUT	FILL
1192	223		
231	2065	442	
1038	254		
475	1434	663	
511	462		
900	1013		
0			
719	632		
2768	759		
529	151		
1050	183		
110	157		
2877			

LAKE COUNTY
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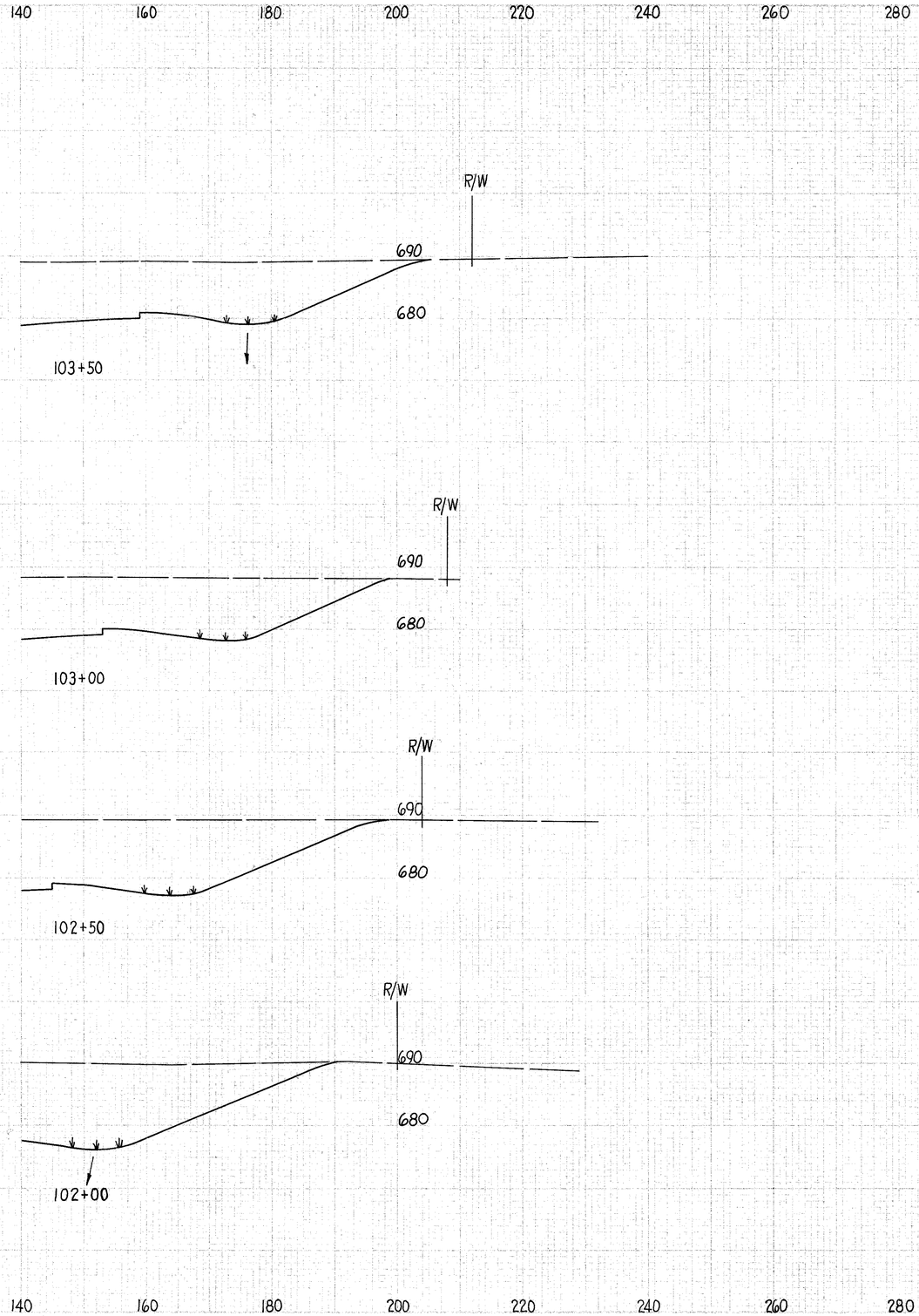

Reconstr. U.S. 20 Sta. 102+00 to Sta 103+50 Extended Sections Right

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

LAKE COUNTY
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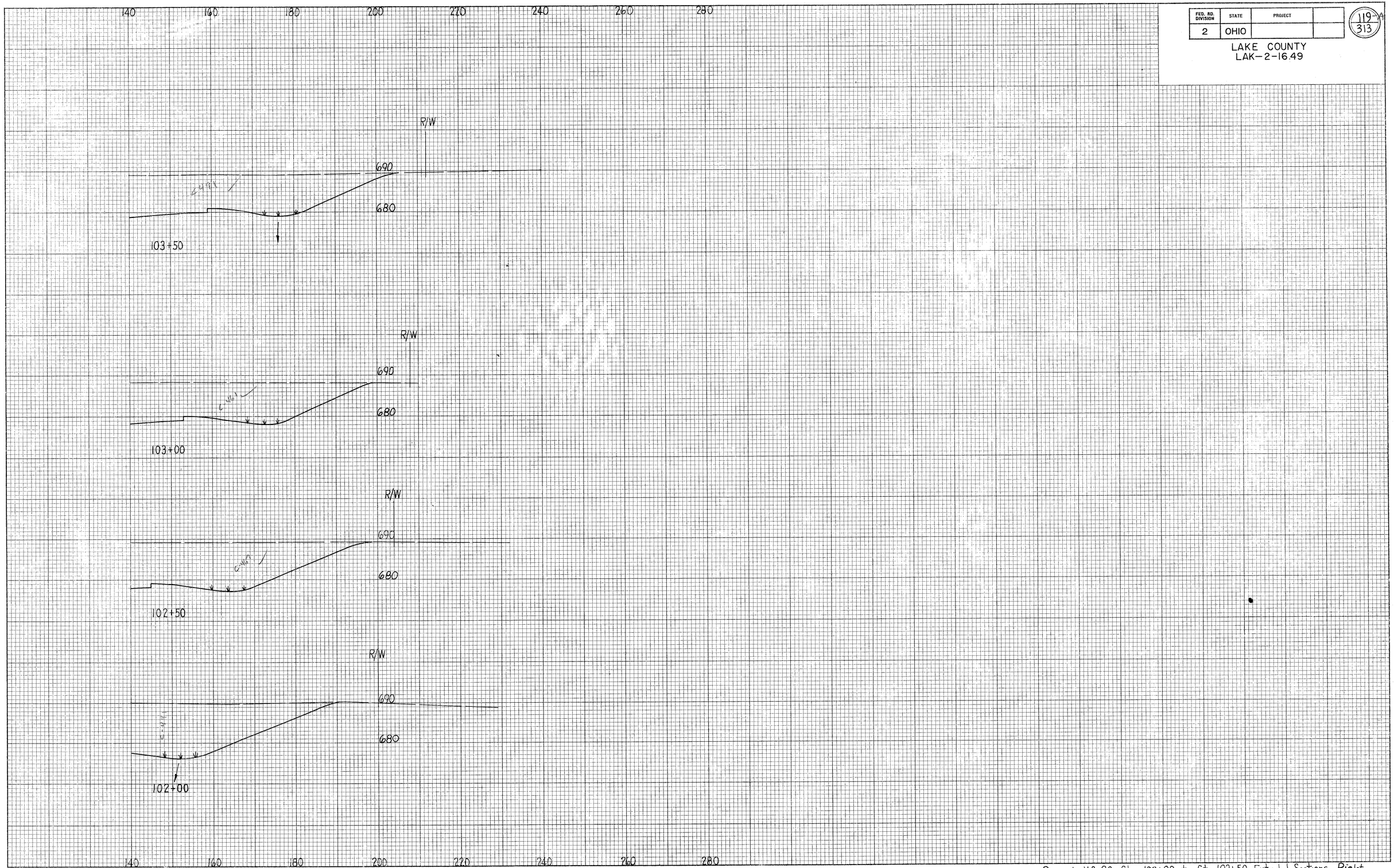

Reconstr. U.S. 20 Sta. 102+00 to Sta 103+50 Extended Sections Right

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LAKE COUNTY
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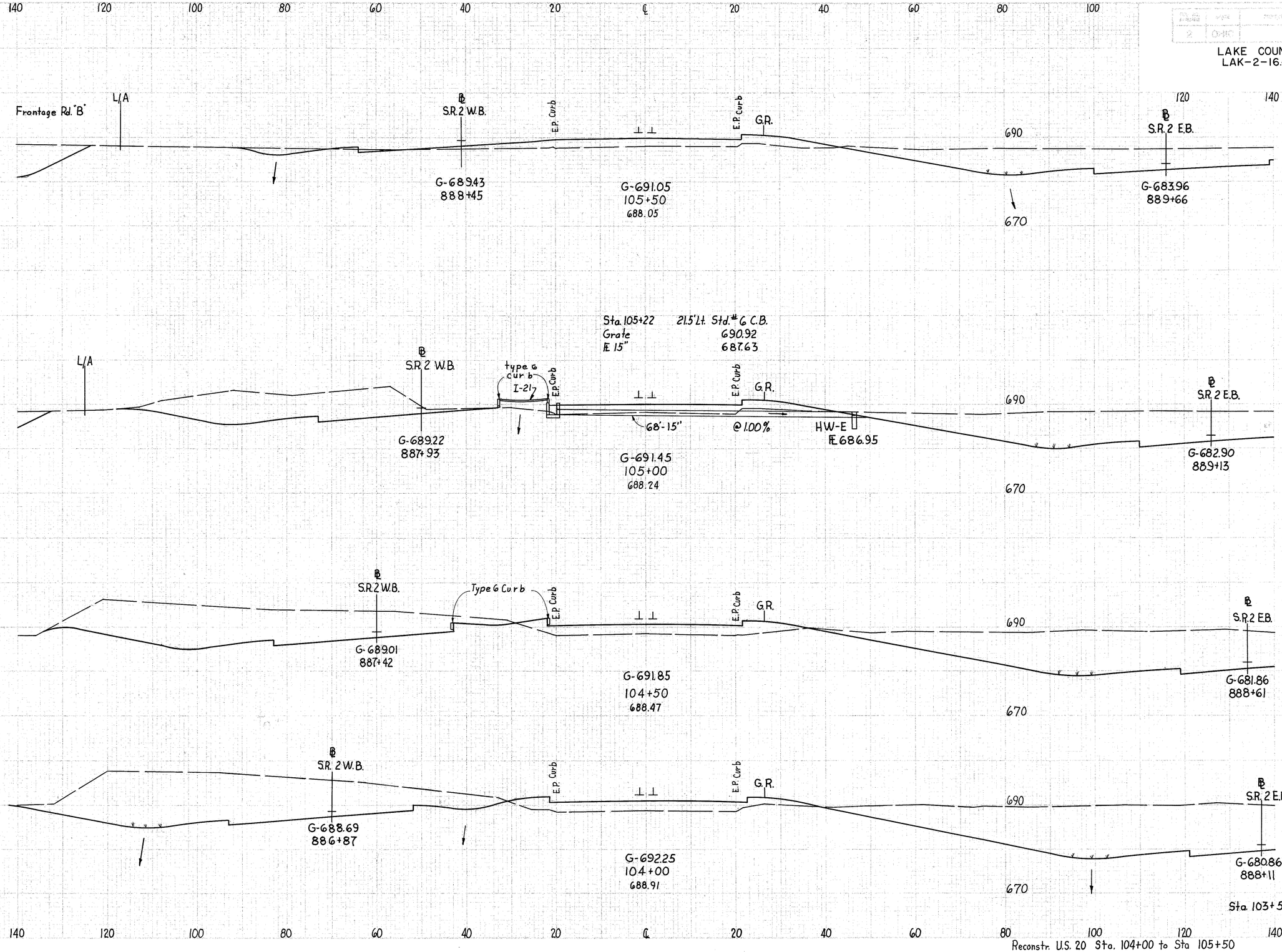
SEEDING	
END WIDTH	SQ. YDS.
162	
	1011
202	
	1175
221	
	1258
232	
	1342
251	



END AREA		VOLUME	
CUT	FILL	CUT	FILL
593	137		
		1634	250
1172	133		
		2721	245
1767	132		
		3656	243
2182	130		
		4243	263
2401	154		

Reconstr. U.S. 20 Sta. 104+00 to Sta 105+50

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

LAKE COUNTY
LAK-2-16.49

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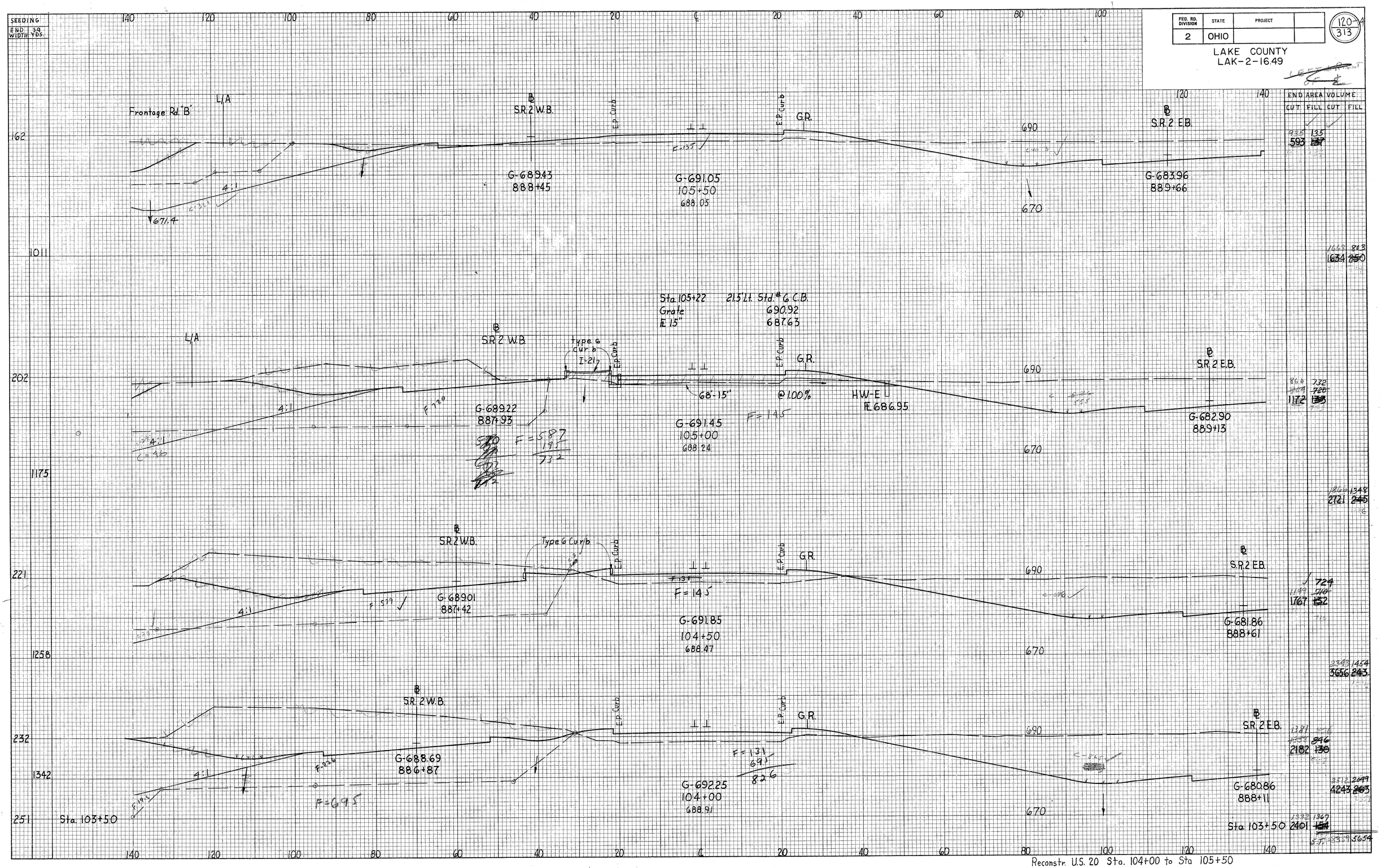

Reconstr. U.S. 20 Sta. 104+00 to Sta 105+50

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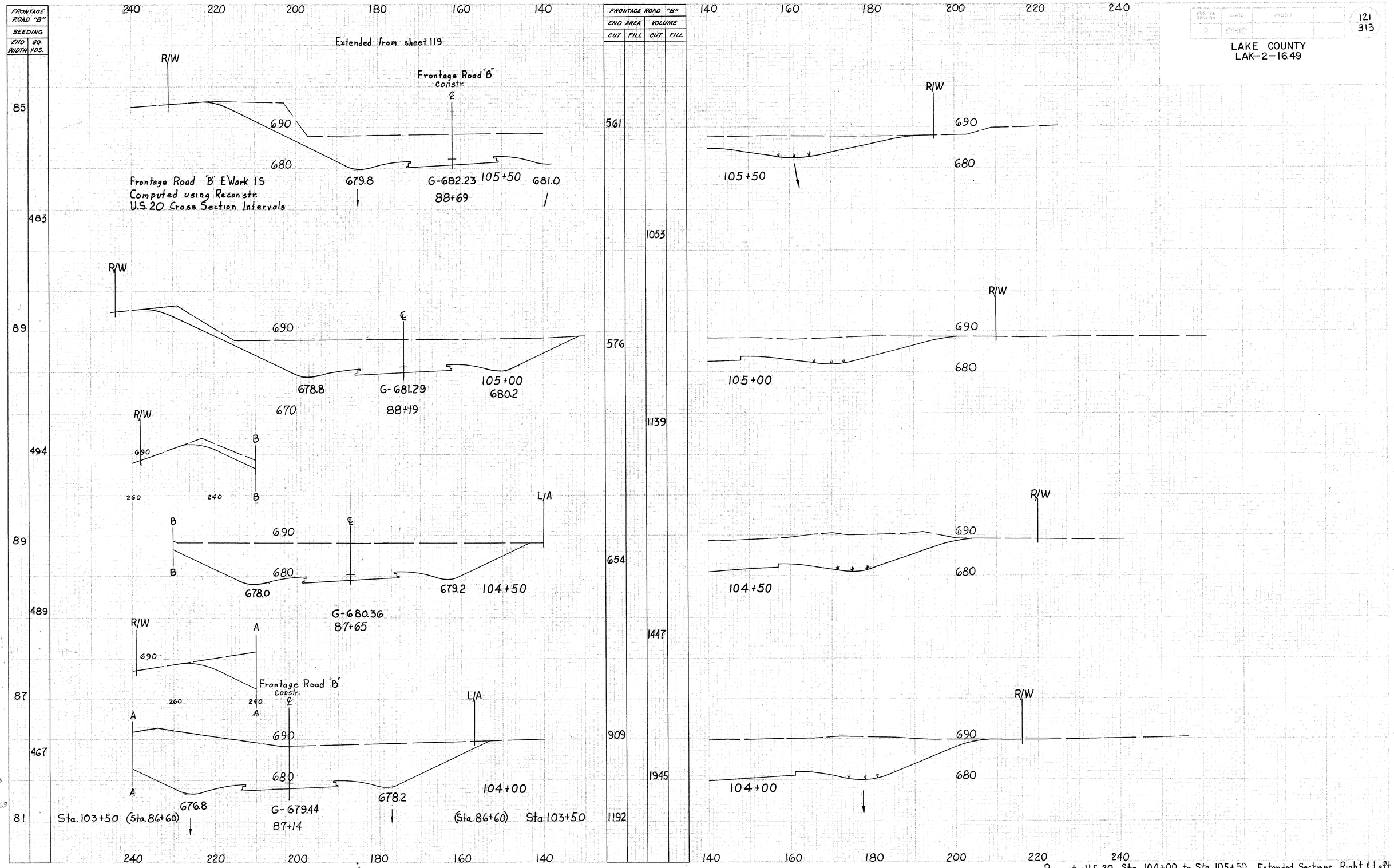
FRONTAGE ROAD "B" SEEDING	
END WIDTH	SQ. YDS.
85	
	483
89	
	494
89	
	489
87	
	467
81	

FRONTAGE ROAD "B"			
END AREA		VOLUME	
CUT	FILL	CUT	FILL
561			
		1053	
576			
		1139	
654			
		1447	
909			
		1945	
1192			



Reconstr. U.S. 20 Sta 104+00 to Sta 105+50 Extended Sections, Right & Left

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

LAKE COUNTY
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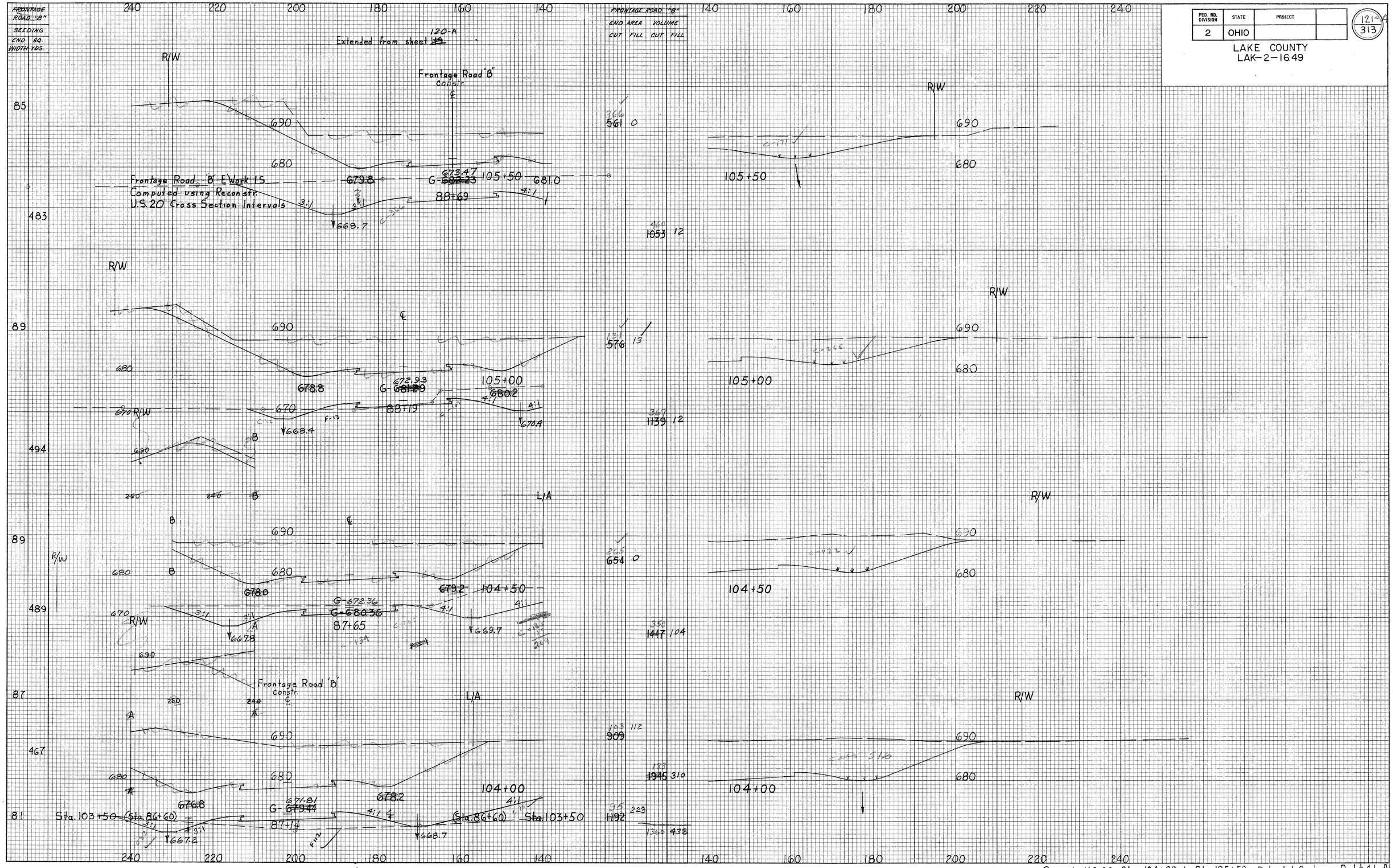

Reconstr. U.S. 20 Sta 104+00 to Sta 105+50 Extended Sections, Right & Left

FED. ROAD DIVISION	STATE	PROJECT	
2	OHIO		

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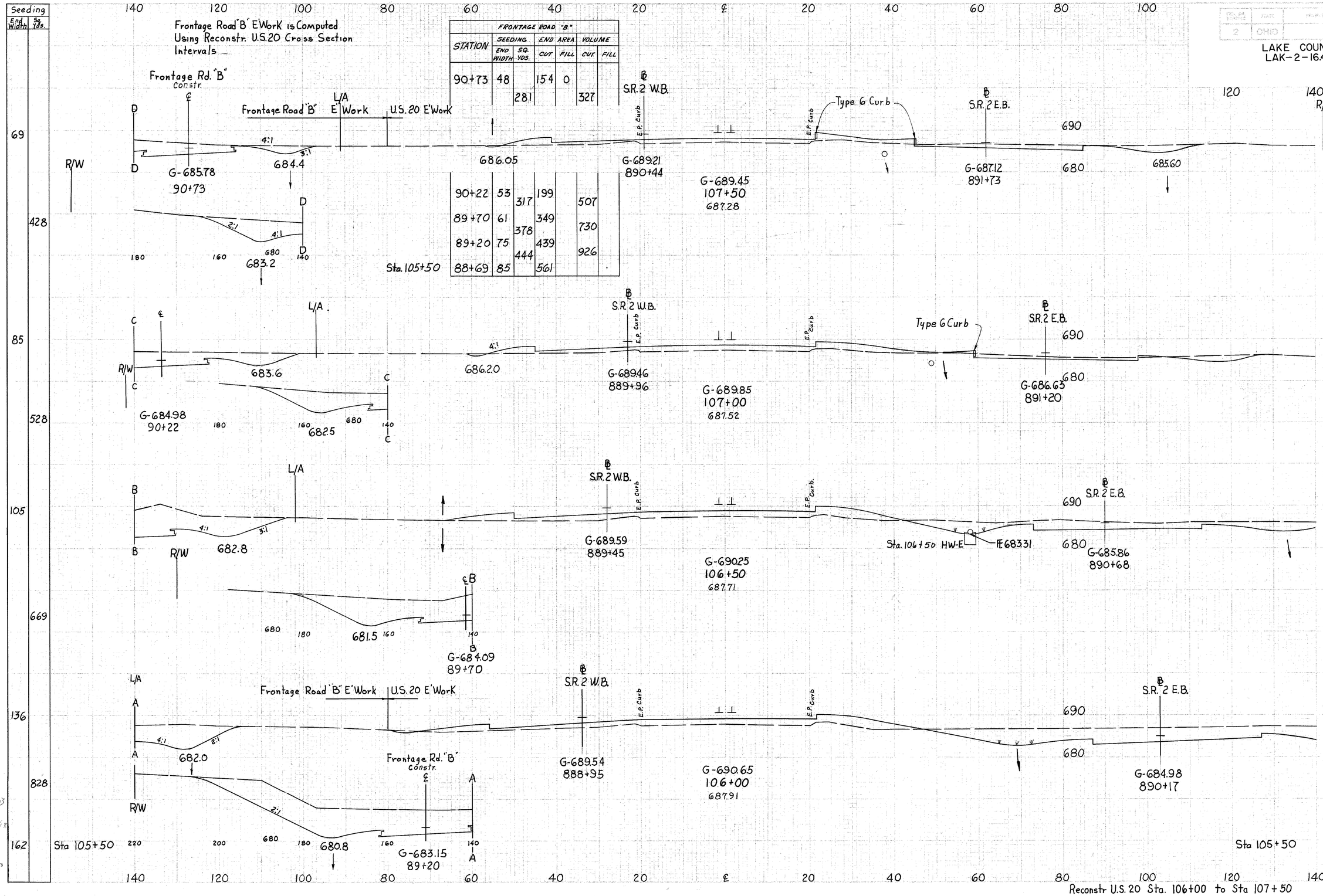
LAKE COUNTY
LAK-2-16.49

Frontage Road "B" E'Work is Computed
Using Reconstr. U.S.20 Cross Section
Intervals

FRONTAGE ROAD "B"						
STATION	SEEDING END WIDTH	SEEDING SQ. YDS.	END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
90+73	48		154	0		
		281			327	
90+22	53		199			
		317			507	
89+70	61		349			
		378			730	
89+20	75		439			
		444			926	
88+69	85		561			



Seeding End Width	Seeding Sq. Yds.	END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
69		56	89		
428				93	194
85		44	121		
528				192	246
105		163	145		
669				482	281
136		358	159		
828				881	274
162		593	137		

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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LAKE COUNTY
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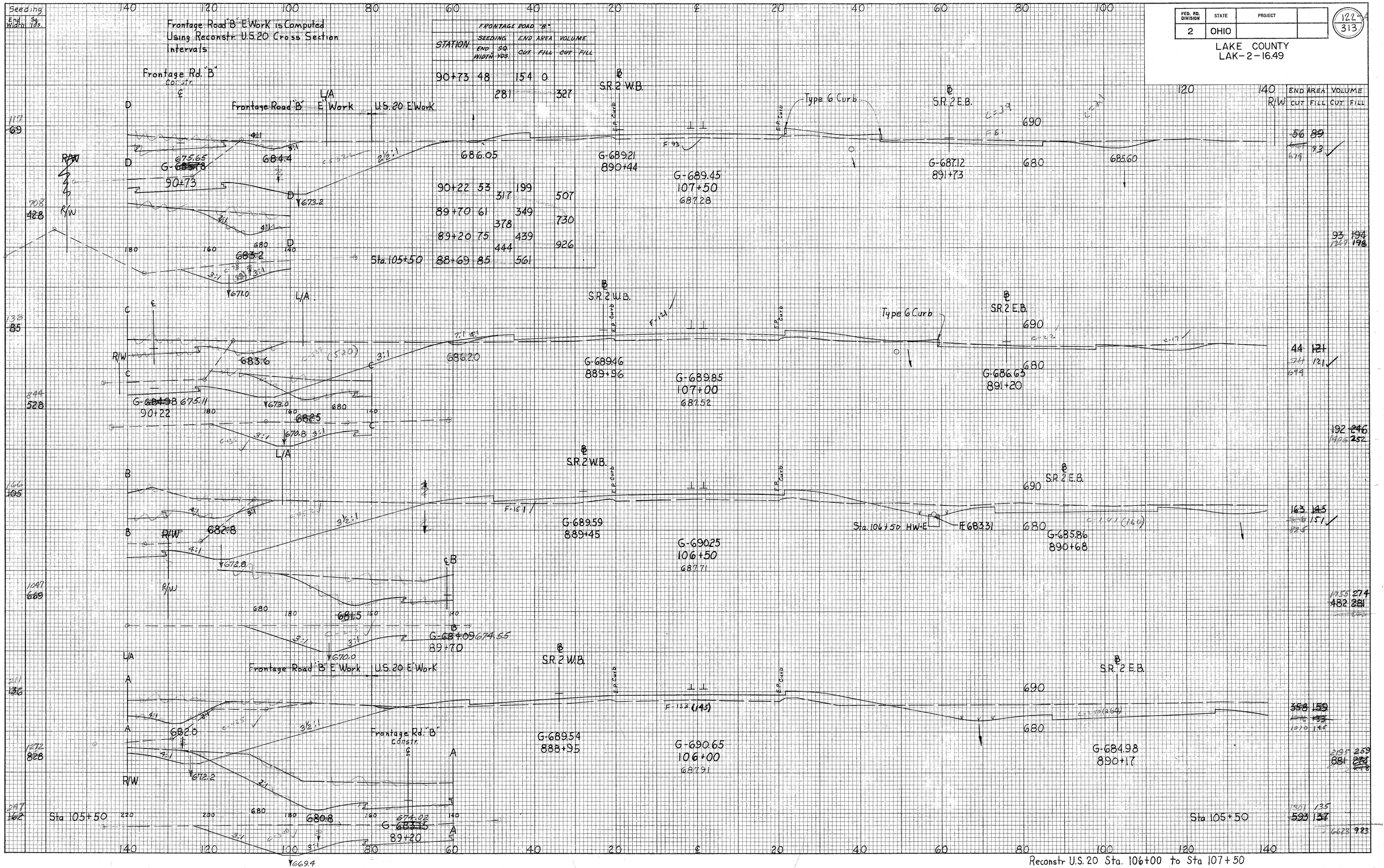
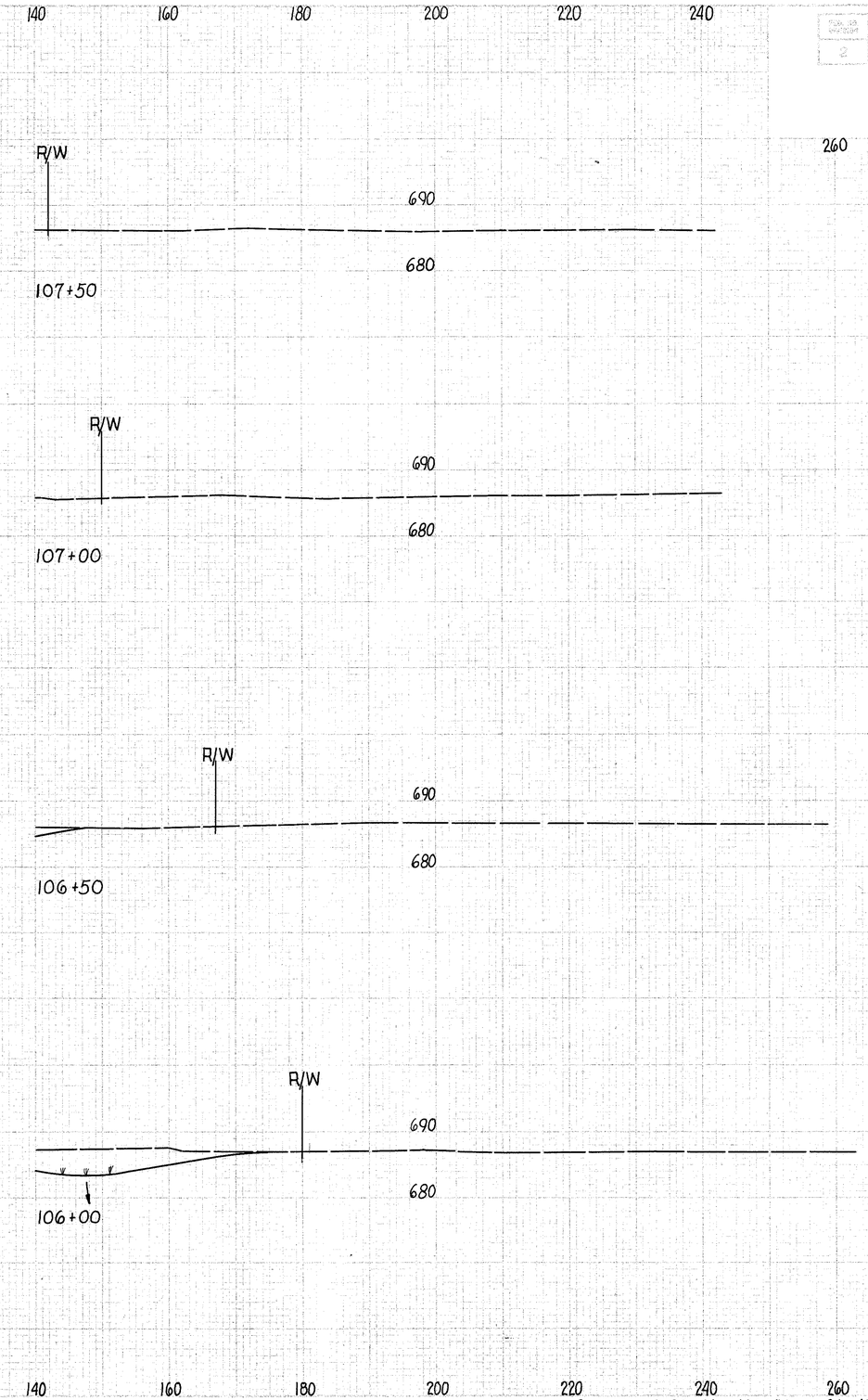
Frontage Road "B" E Work is Computed Using Reconstr. U.S.20 Cross Section Intervals

STATION	FRONTAGE ROAD "B" SEEDING END WIDTH	SEEDING SQ. YDS.	END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
90+73	48		154	0		
		281			327	
90+22	53		199			
		317			507	
89+70	61		349			
		378			730	
89+20	75		439			
		444			926	
88+69	85		561			



LAKE COUNTY
LAK-2-16.49



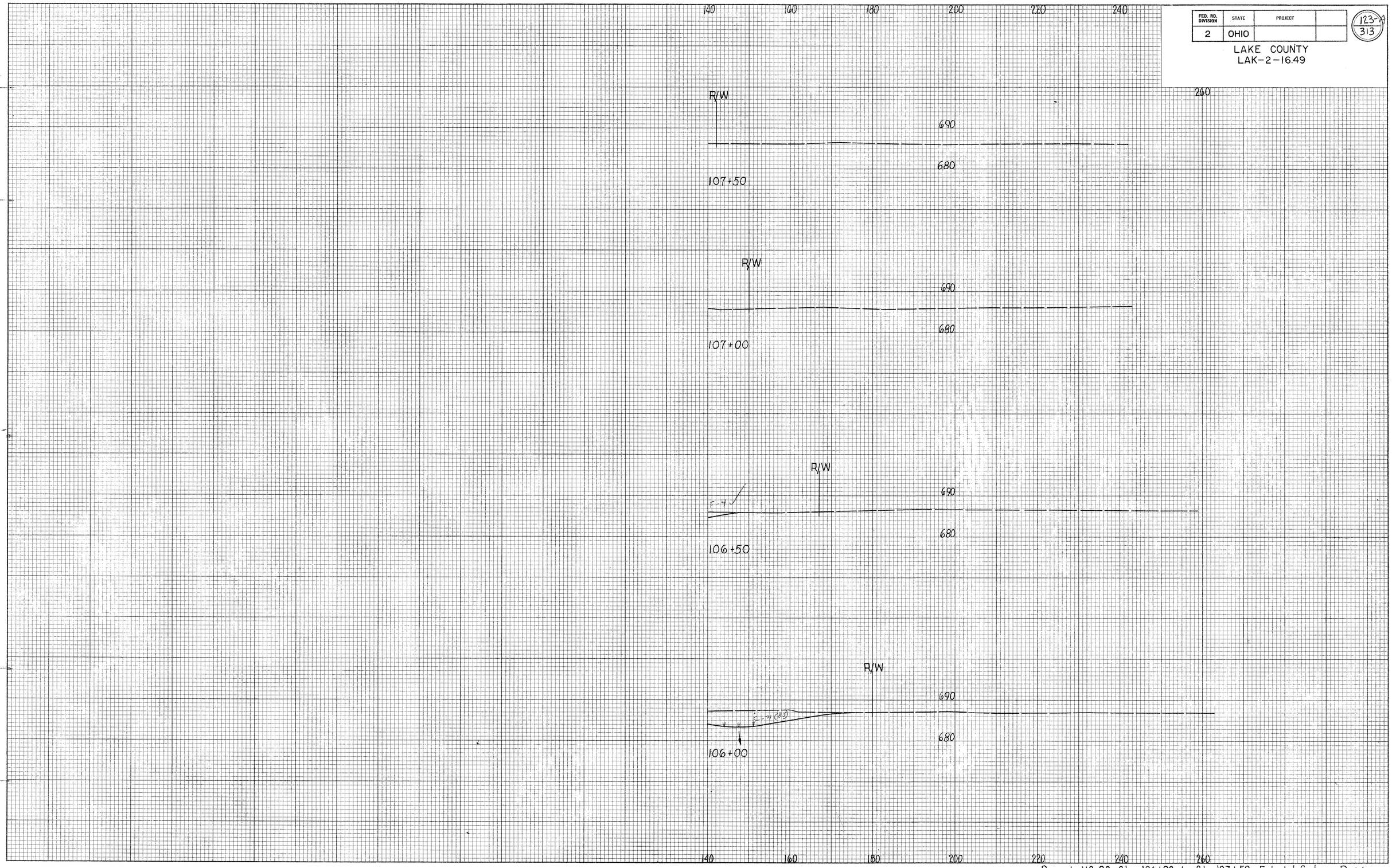
Reconstr. U.S. 20 Sta 106+00 to Sta 107+50 Extended Sections Right

1/31/03
E.B.
SCS 8/8/03
JBW

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

123-A
313

LAKE COUNTY
LAK-2-16.49



Reconstr. U.S. 20 Sta 106+00 to Sta 107+50 Extended Sections Right

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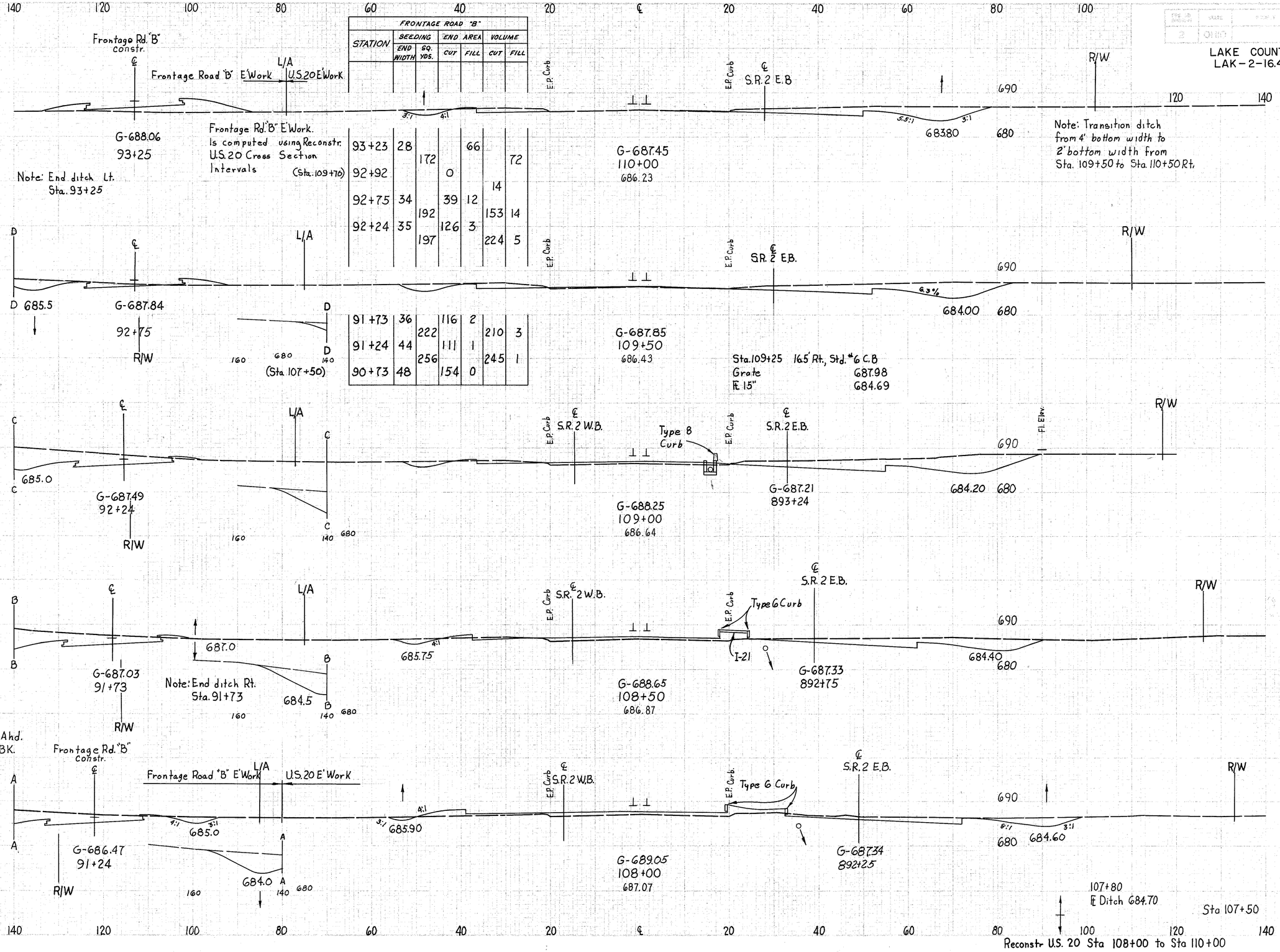
LAKE COUNTY
LAK-2-16.49

SEEDING END WIDTH	SEEDING SQ YDS.
47	
	272
51	
	289
53	
	278
47	
	174
45	
57	
	101
57	
	350
69	



FRONTAGE ROAD "B" STATION	SEEDING END WIDTH	SEEDING SQ. YDS.	END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
93+23	28			66		
		172				72
92+92			0			
					14	
92+75	34		39	12		
		192			153	14
92+24	35		126	3		
		197			224	5
91+73	36		116	2		
		222			210	3
91+24	44		111	1		
		256			245	1
90+73	48		154	0		

END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
112	0		
		214	6
119	7		
		259	25
161	20		
		239	46
97	30		
		143	91
57	68		
		105	145
56	89		

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

LAKE COUNTY
LAK-2-16.49

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SEEDING
END WIDTH SQ. YDS.

FRONTAGE ROAD "B"						
STATION	SEEDING END WIDTH	SEEDING SQ. YDS.	END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
93+23	28			66		
		172				72
92+92			0			
					14	
92+75	34		39	12		
		192			153	14
92+24	35		126	3		
		197			224	5
91+73	36		116	2		
		222			210	3
91+24	44		111	1		
		256			245	1
90+73	48		154	0		

END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
~~112~~ 139	~~0~~ 1		
		1669 ~~214~~	3 ~~6~~
~~119~~ 1054	~~7~~ ~~0~~ 2		
		2156 ~~259~~	24 ~~25~~
~~161~~ 1271	~~29~~ 24		
		2273 ~~239~~	67 ~~46~~
~~97~~ 1208	~~30~~ 49		
		2265 ~~145~~	115 ~~91~~
1230 ~~57~~	75 68		
		1734 ~~105~~	156 ~~145~~
1122	365		

Frontage Rd. "B" Constr.
Frontage Road "B" E Work
U.S. 20 E Work
R/W
L/A
S.R. 2 E.B.
S.R. 2 W.B.
E.P. Curb
Type 8 Curb
Type 6 Curb
I-21
Note: Transition ditch from 4' bottom width to 2' bottom width from Sta. 109+50 to Sta. 110+50 Rt.
Note: End ditch Lt. Sta. 93+25
Frontage Rd. "B" E Work is computed using Reconstr U.S. 20 Cross Section Intervals
Sta. 109+25 16.5' Rt., Std. #6 C.B. Grate R 15"
Note: End ditch Rt. Sta. 91+73
Sta. 108+16 A hd.
Sta. 108+16 B.K.
Sta. 107+50
107+80 E Ditch 684.70
Sta 107+50
G-687.45 110+00 686.23
G-687.85 109+50 686.43
G-688.25 109+00 686.64
G-688.65 108+50 686.87
G-689.05 108+00 687.07
G-687.21 893+24
G-687.33 892+75
G-687.34 892+25
G-688.06 93+25
G-687.84 92+75
G-687.40 92+24
G-687.03 91+73
G-687.47 91+24
Reconstr U.S. 20 Sta 108+00 to Sta 110+00

LAKE COUNTY
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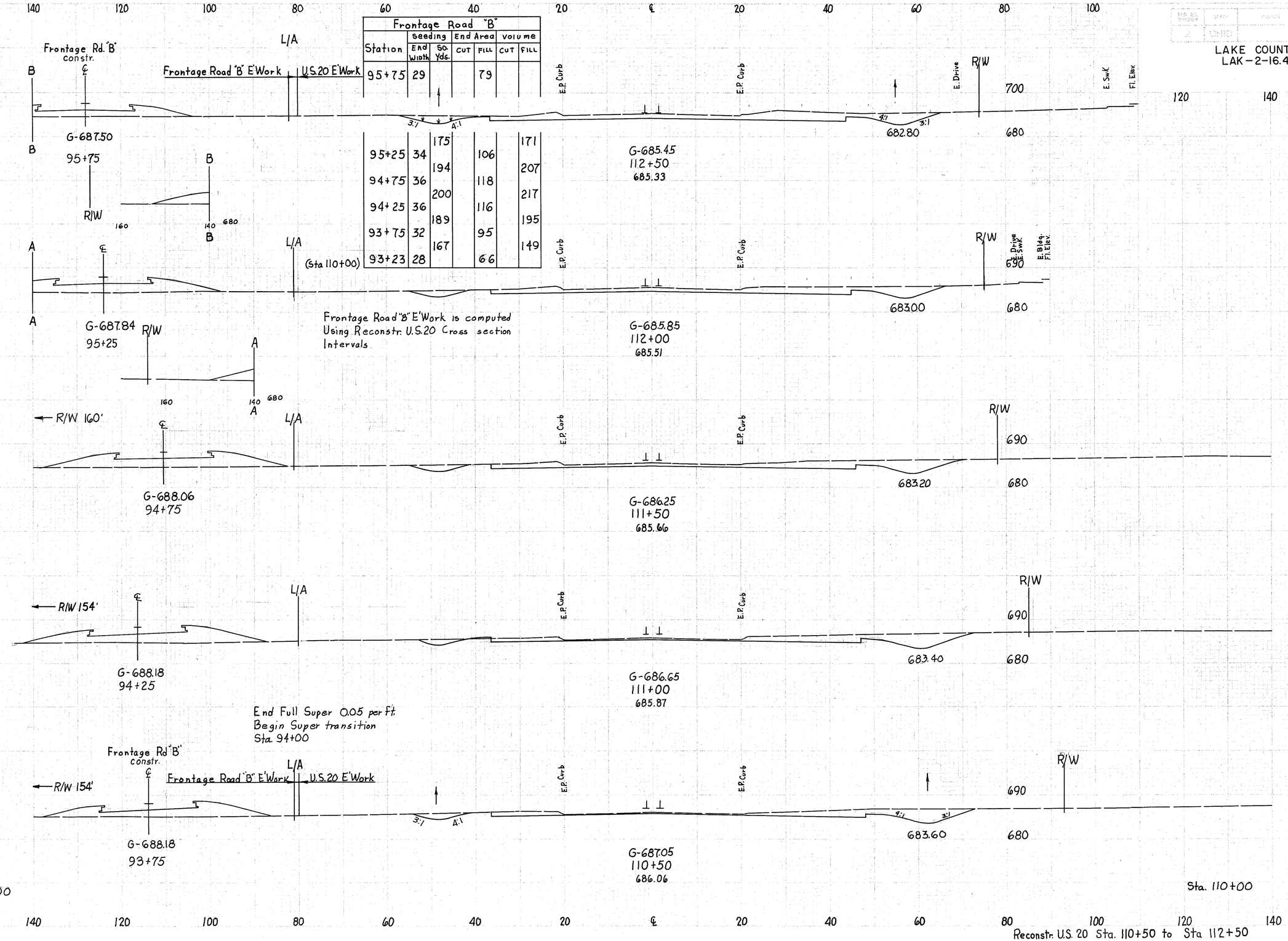
SEEDING END WIDTH	SEEDING SQ. YDS.
38	
	217
40	
	225
41	
	230
42	
	233
42	
	247
47	

Sta. 110+00



Station	Seeding End Width	Seeding Sq. Yds.	End Area Cut	End Area Fill	Volume Cut	Volume Fill
95+75	29			79		
		175				171
95+25	34			106		
		194				207
94+75	36			118		
		200				217
94+25	36			116		
		189				195
93+75	32			95		
		167				149
93+23	28			66		

End Area Cut	End Area Fill	Volume Cut	Volume Fill
141			
		246	
125			
		230	
123	0		
		214	1
108	1		
		192	1
99	0		
		195	
112	0		

Reconstr. U.S. 20 Sta. 110+50 to Sta 112+50

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

LAKE COUNTY
LAK-2-16.49

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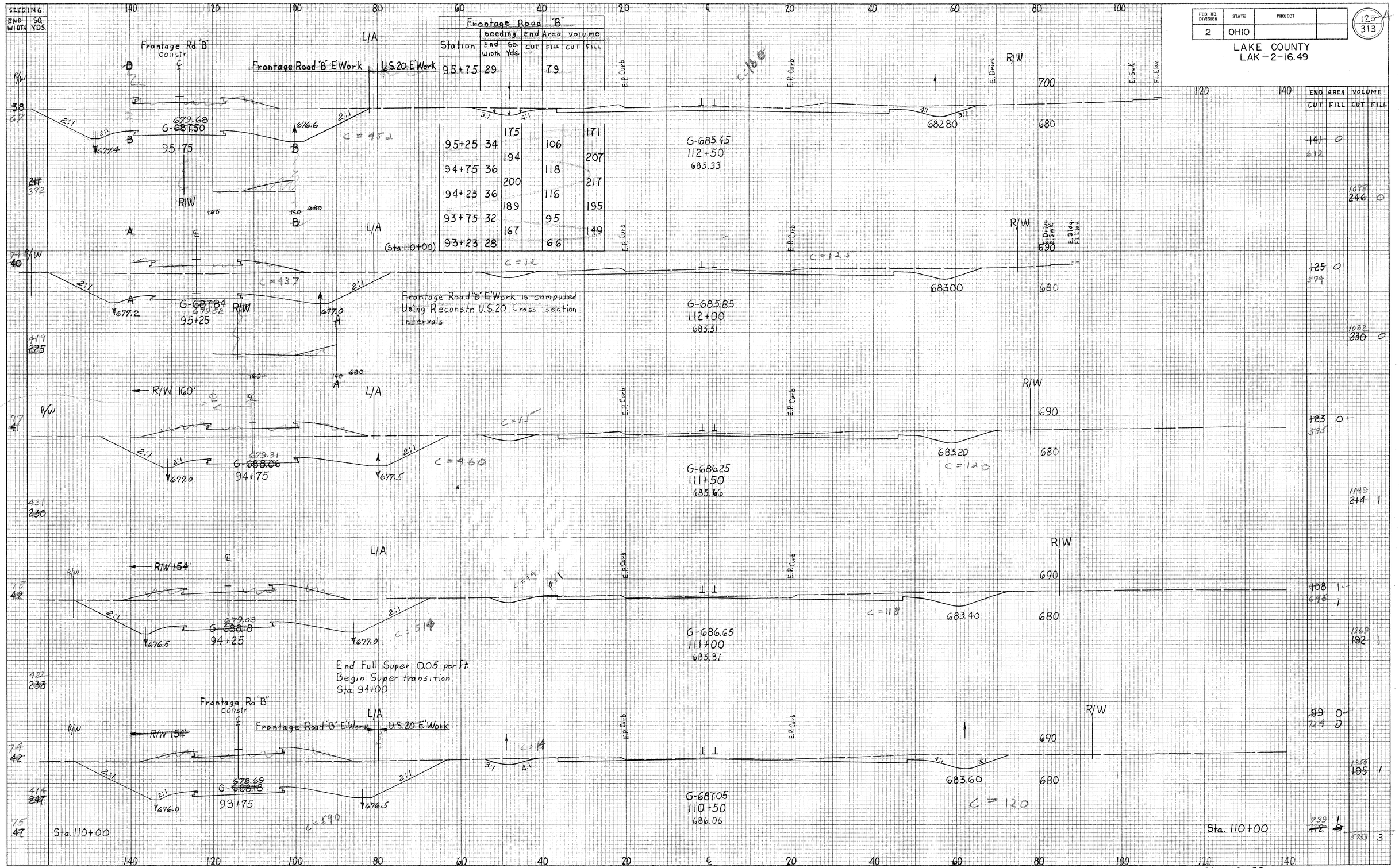
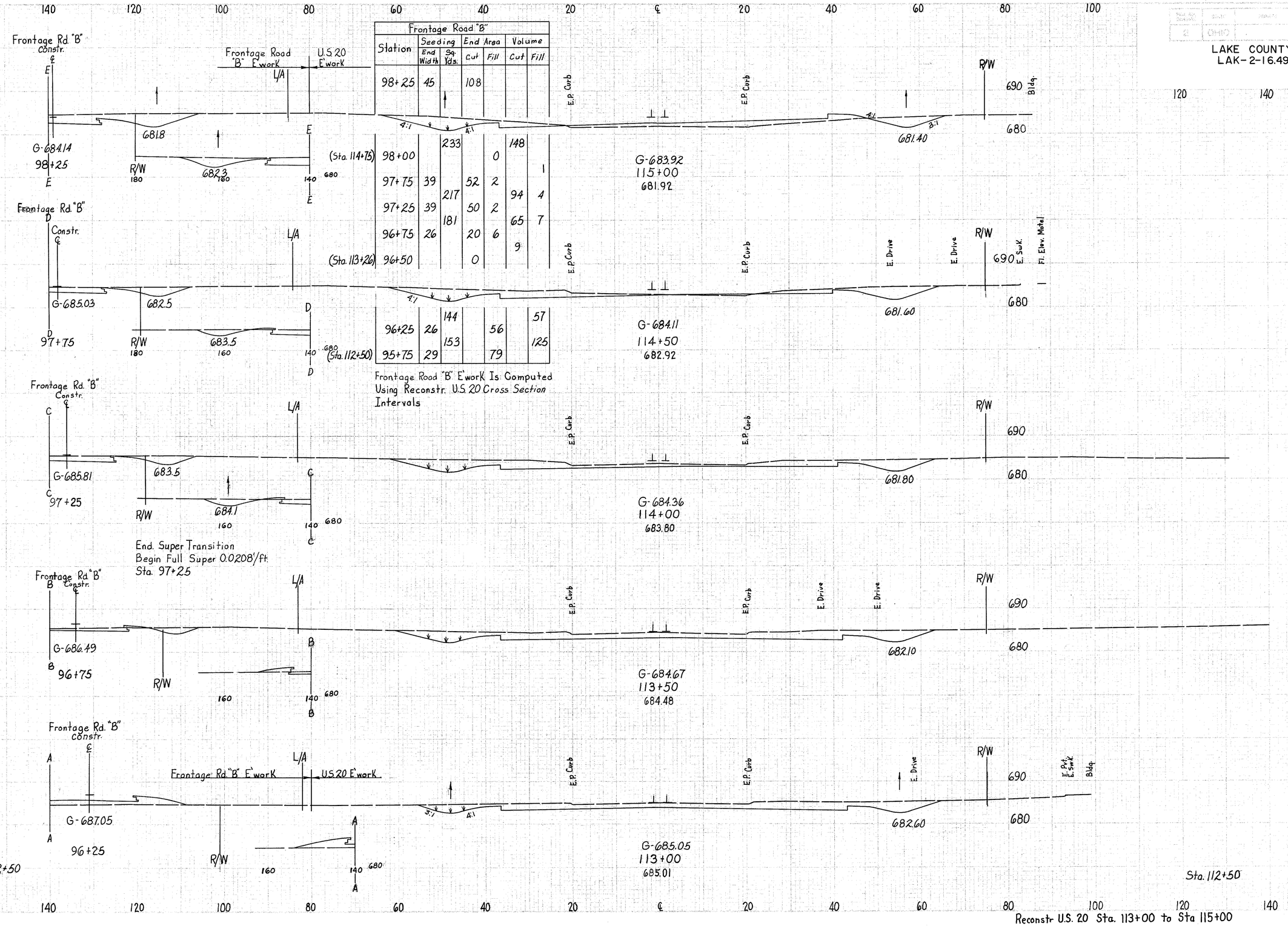


Frontage Road "B"						
Station	Seeding End Width	Seeding Sq. Yds.	End Area Cut	End Area Fill	Volume Cut	Volume Fill
95+75	29			79		
		175				171
95+25	34			106		
		194				207
94+75	36			118		
		200				217
94+25	36			116		
		189				195
93+75	32			95		
		167				149
93+23	28			66		

END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
~~141~~ 612	0		
		1075 246	0
~~125~~ 574	0		
		1082 230	0
~~123~~ 595	0		
		1145 214	1
~~108~~ 646	1		
		1269 192	1
~~99~~ 724	0		
		1555 195	1
~~112~~ 733	0		
		5723	3

Reconstr. U.S. 20 Sta. 110+50 to Sta 112+50

SEEDING END WIDTH	SEEDING SQ YDS.
44	
	236
41	
	233
43	
	250
47	
	217
31	
	192
38	



Frontage Road "B"						
Station	Seeding End Width	Seeding Sq. Yds.	End Area Cut	End Area Fill	Volume Cut	Volume Fill
98+25	45		108			
		233			148	
(Sta. 114+75) 98+00				0		1
97+75	39		52	2		
		217			94	4
97+25	39		50	2		
		181			65	7
96+75	26		20	6		
					9	
(Sta. 113+26) 96+50			0			
		144				57
96+25	26		56			
		153				125
(Sta. 112+50) 95+75	29		79			

Frontage Road "B" E'work Is Computed Using Reconstr. U.S. 20 Cross Section Intervals

END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
61	65		
		151	64
102	4		
		219	5
135	1		
		287	1
175	0		
		294	
143			
		263	
141			

Reconstr. U.S. 20 Sta. 113+00 to Sta 115+00

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FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

LAKE COUNTY
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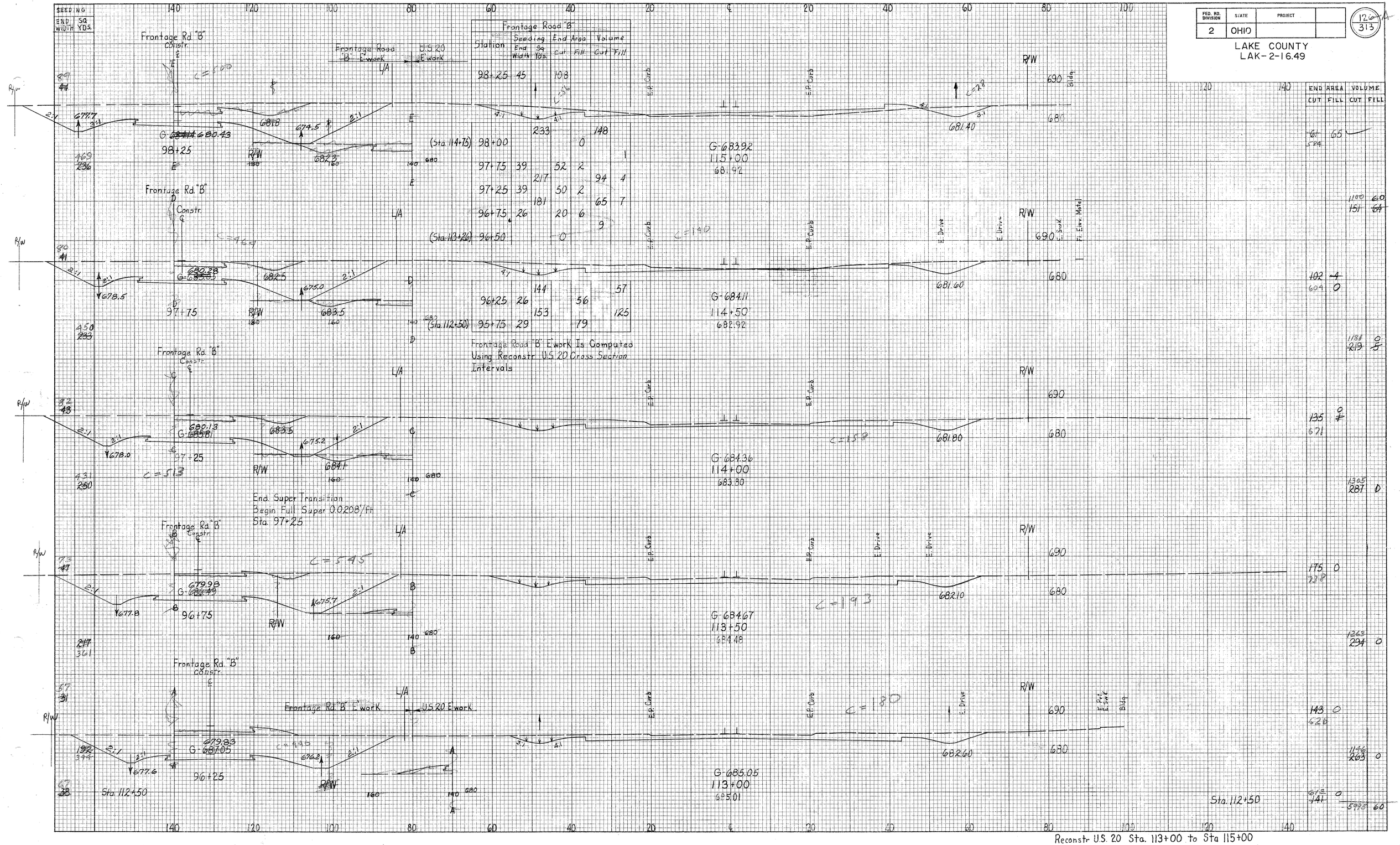

Station	Seeding End Width	Seeding Sq. Yds.	End Area Cut	End Area Fill	Volume Cut	Volume Fill
98+25	45		108			
		233		148		
(Sta. 114+75) 98+00					0	
97+75	39		52	2		
		217			94	4
97+25	39		50	2		
		181			65	7
96+75	26		20	6		
					9	
(Sta. 113+26) 96+50			0			
		144				57
96+25	26		56			
		153				125
(Sta. 112+50) 95+75	29		79			

END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
61 / 584	65		
		1100 / 151	60 / 64
102 / 609	4 / 0		
		1181 / 219	0 / 5
135 / 671	0 / 7		
		1305 / 287	0
175 / 232	0		
		1263 / 294	0
143 / 626	0		
		1146 / 203	0
612 / 141	0		
		5995	60

Reconstr U.S. 20 Sta. 113+00 to Sta 115+00

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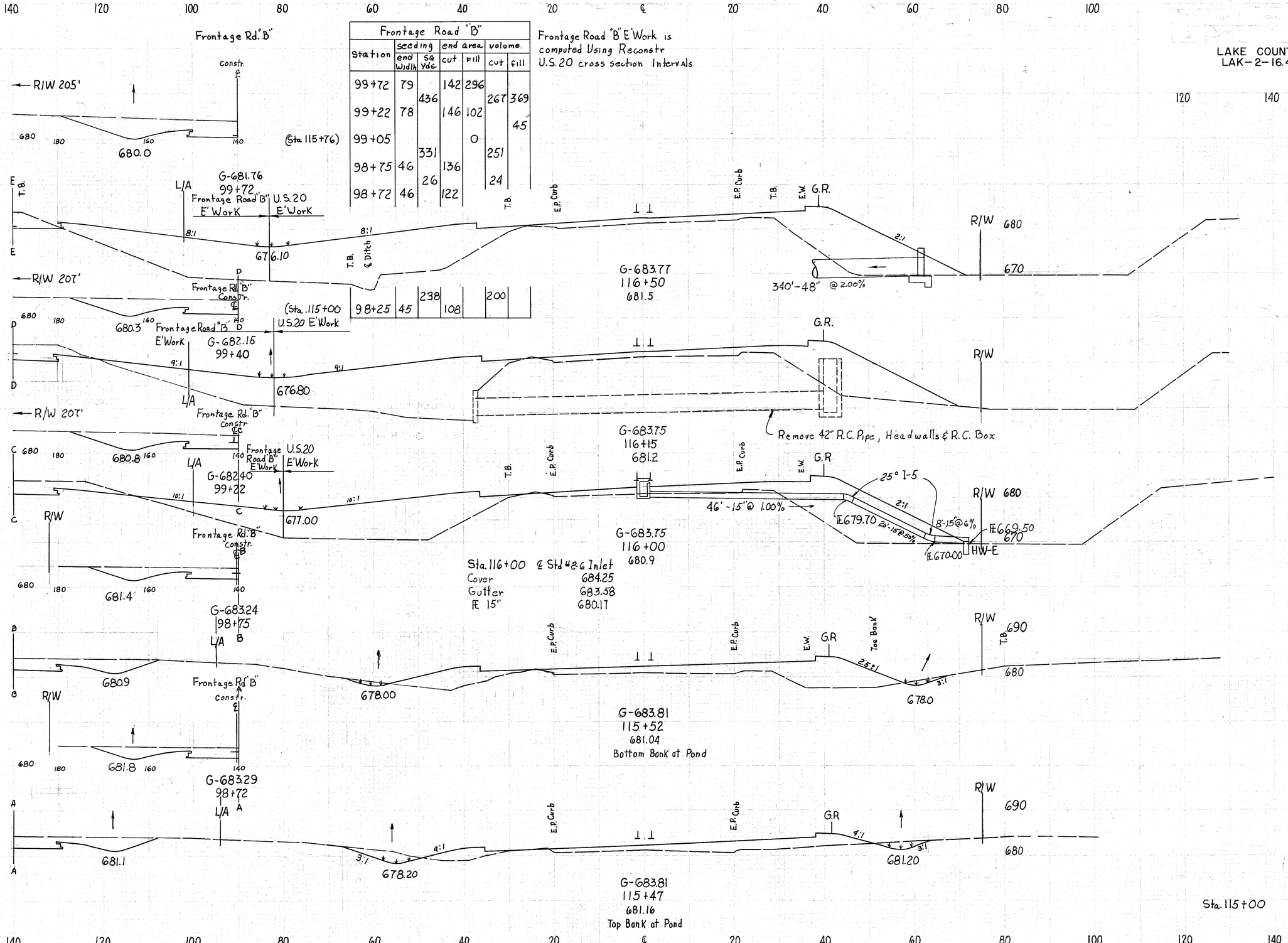
SEEDING END WIDTH	SEEDING SQ. YDS.
86	
	469
83	
	387
62	
	34
60	
	272
44	

Frontage Road "B" E'Work is computed Using Reconstr U.S. 20 cross section Intervals

Frontage Road "B"						
Station	seeding end Width	seeding SQ Yds.	end area cut	end area Fill	volume cut	volume fill
99+72	79		142	296		
		436			267	369
99+22	78		146	102		
						45
99+05				0		
		331			251	
98+75	46		136			
		26			24	
98+72	46		122			
98+25	45	238	108		200	



END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
	719		
	1344		
0	732		
		12	908
13	290		
		5	40
38	146		
		86	184
61	65		

Reconstr. U.S. 20 Sta 115+47 to Sta 116+50

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

LAKE COUNTY
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SEEDING	
END WIDTH	SQ YDS.

Frontage Rd. "B" Constr.

R/W 205'

Frontage Rd. "B" U.S.20 E'Work

G-680.87 99+72

Frontage Rd. "B" Constr.

R/W 207'

Frontage Rd. "B" E'Work

G-680.77 99+40

Frontage Rd. "B" Constr.

R/W 207'

Frontage U.S.20 Road "B" E'Work

G-680.71 99+22

Frontage Rd. "B" Constr.

R/W

Frontage Rd. "B" Constr.

G-680.58 98+75

Frontage Rd. "B" Constr.

G-680.57 98+72

Sta. 115+00

Frontage Road "B"						
Station	seeding end width	seeding sq yds.	end area cut	end area fill	volume cut	volume fill
99+72	79		142	296		
		436			267	369
99+22	78		146	102		
						45
99+05				0		
		331			251	
98+75	46		136			
		26			24	
98+72	46		122			
		238			200	
98+25	45		108			

Frontage Road "B" E'Work is computed Using Reconstr. U.S.20 cross section Intervals

(Sta. 115+76)

(Sta. 115+00 U.S.20 E'Work

G-683.77 116+50 681.5

340'-48" @ 2.5:1

Remove 42" R.C. Pipe, Headwalls & R.C. Box

G-683.75 116+15 681.2

46'-15" @ 1.00%

25° 1-5

E 679.70

E 670.00

HW-E

G-683.75 116+00 680.9

Sta. 116+00 ℄ Sta. 42.6 Inlet

Cover	684.25
Gutter	683.38
FL 15"	680.17

G-683.81 115+52 681.04 Bottom Bank at Pond

G-683.81 115+47 681.16 Top Bank at Pond

Sta. 115+00

END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
	719		
318	939		
			1119
			~~1548~~
299	788		
			410
0	732		
368	687		
818	868		
12	~~906~~		
13	290		
648			
104			
5	40		
573			
38	146		
1007			
~~86~~	184		
584			
61	65		
	2506	2621	

Reconstr. U.S. 20 Sta 115+47 to Sta 116+50

21-5

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LAKE COUNTY
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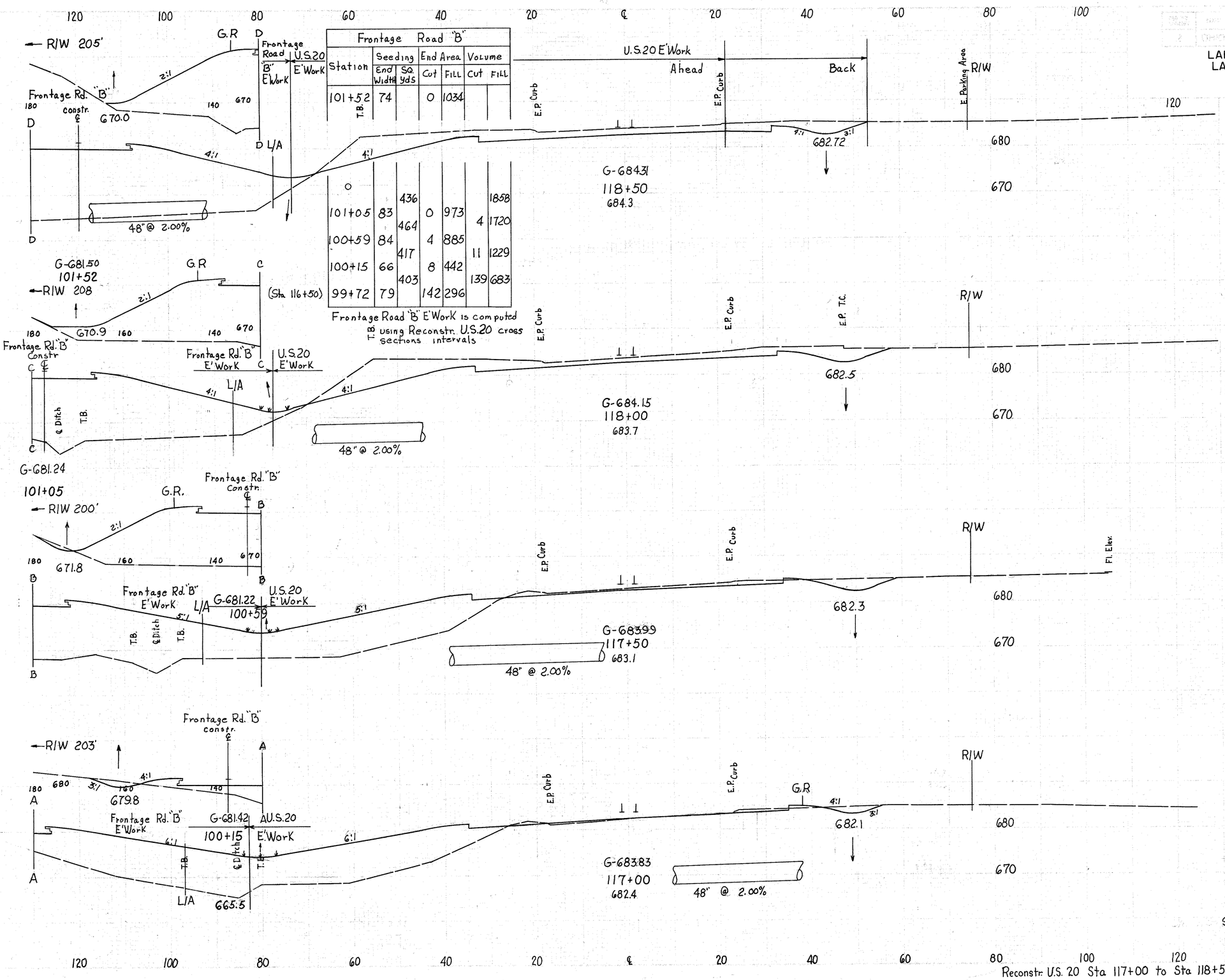
SEEDING END WIDTH	SQ YDS.	
42		Ahd.
64		Bk.
	378	
72		
	403	
73		
	392	
68		
	428	
86		Sta 116+50



Frontage Road "B"						
Station	Seeding End Width	Seeding SQ. yds	End Area Cut	End Area Fill	Volume Cut	Volume Fill
101+52 T.B.	74		0	1034		
0		436				1858
101+05	83		0	973	4	1720
		464				
100+59	84		4	885		
		417			11	1229
100+15	66		8	442		
		403			139	683
99+72	79		142	296		

Frontage Road "B" E'Work is computed using Reconstr. U.S.20 cross sections intervals

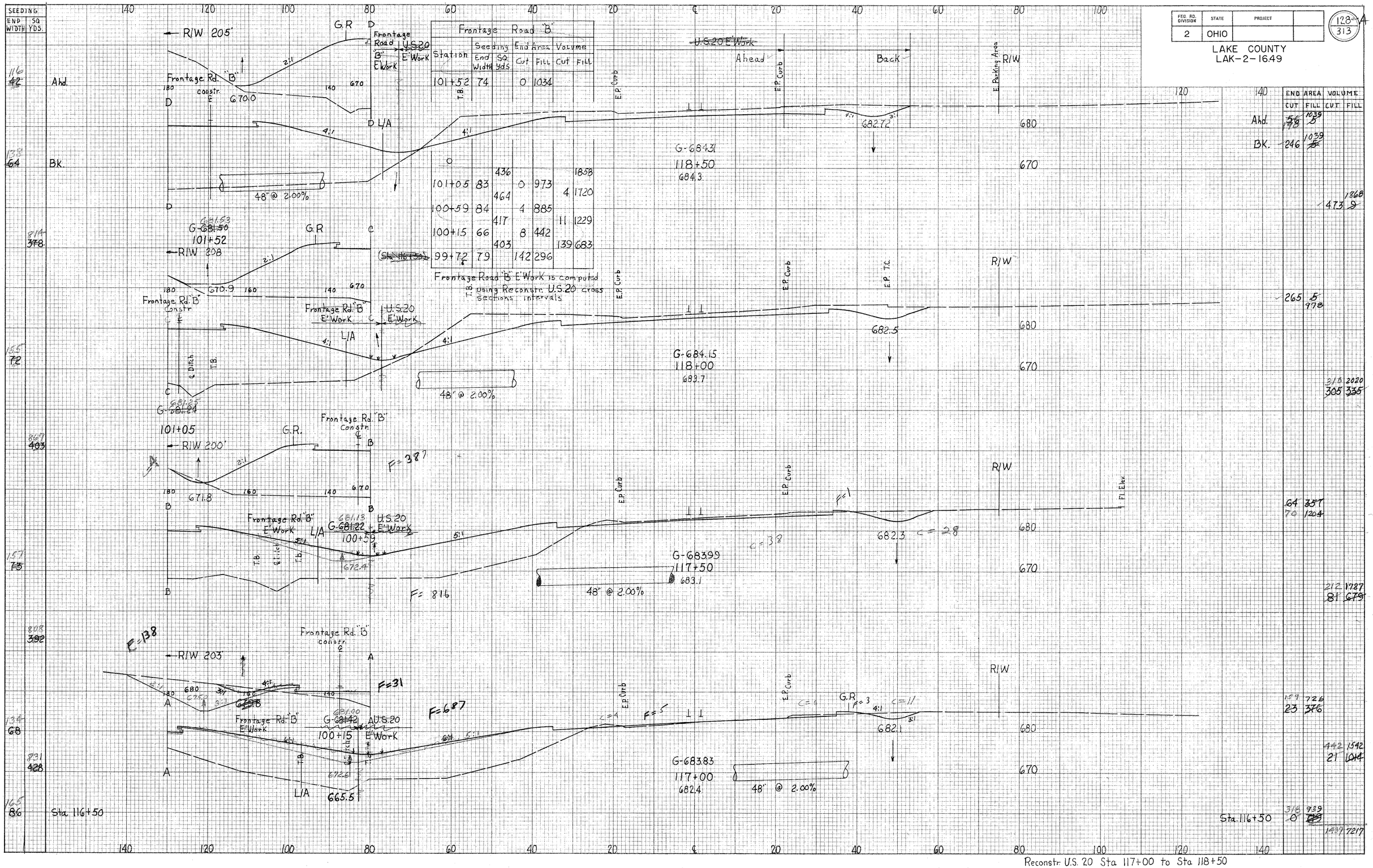
	END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
Ahd.	56	5		
Bk.	246	5		
			473	9
	265	5		
			305	335
	64	357		
			81	679
	23	376		
			21	1014
Sta. 116+50	0	719		

Reconstr. U.S. 20 Sta 117+00 to Sta 118+50

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

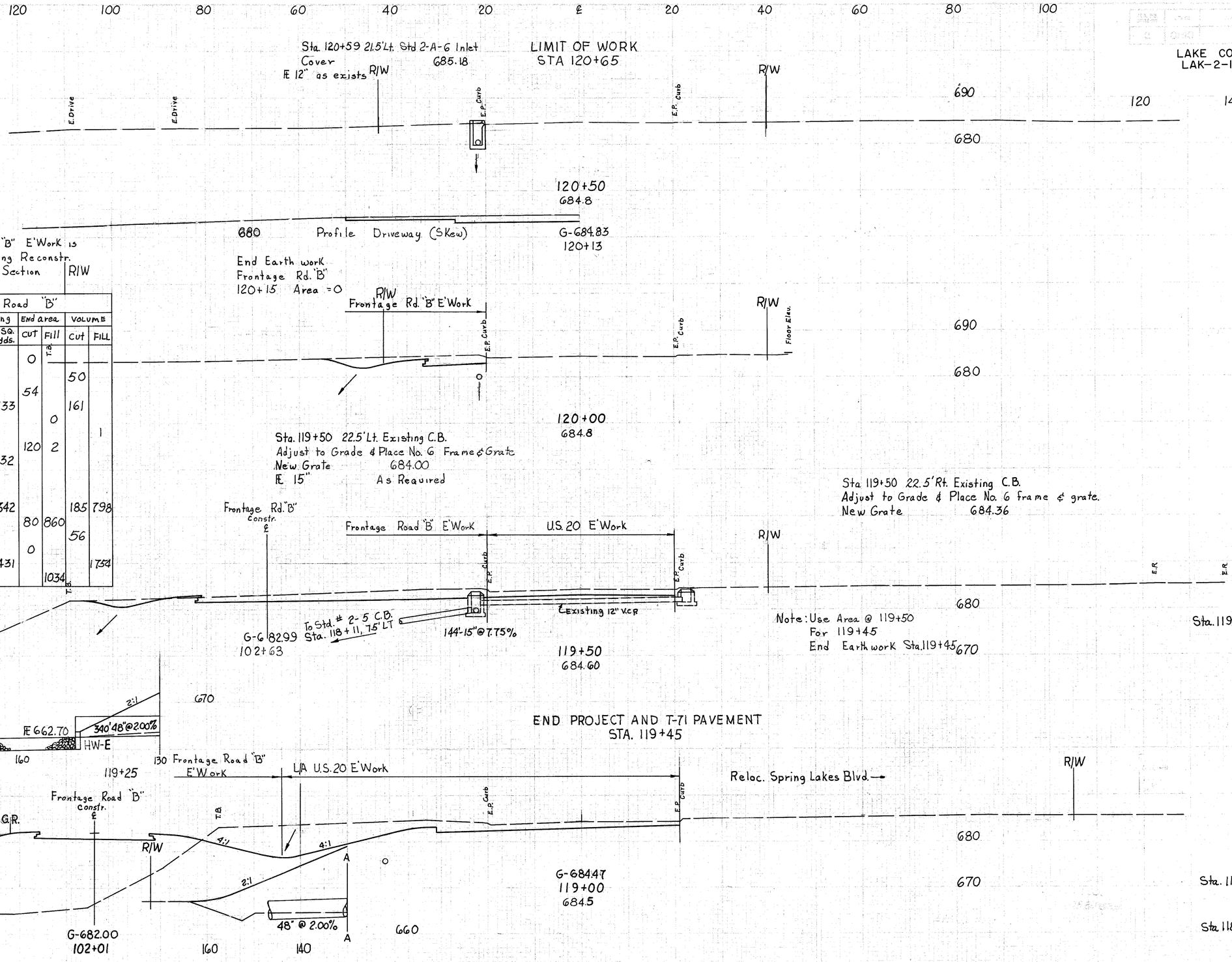
LAKE COUNTY
LAK-2-16.49

128/313 A



Reconstr. U.S. 20 Sta 117+00 to Sta 118+50

LAKE COUNTY
LAK-2-16.49



Frontage Road "B" E'Work is Computed using Reconstr. U.S. 20 Cross Section Intervals

Station	Seeding End Width	Seeding Sq. Yds.	End area CUT	End area FILL	T.B.	VOLUME CUT	VOLUME FILL
50' Distance 50'			0				
						50	
(Sta. 120+00) 103+31	24		54				
		133				161	
(Sta. 119+73) 102+93				0			
							1
102+63	24		120	2			
		32					
(Sta. 119+38) 102+47	24						
(Sta. 119+38) 102+47	81						
		342				185	798
102+01	81		80	860			
						56	
(Sta. 118+62) 10+66			0				
		431					1754
(Sta. 118+50) 101+52	74			1034			

Seeding End Width	Seeding Sq. Yds.
0	
72	
34	
211	
42	

Station	END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
Sta. 119+45	50			
			208	
	200			
			237	
Sta. 118+62		0		
				1
Sta. 118+50	56	5		

Reconstr. U.S. 20 Sta. 119+00 to Sta 120+50

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

LAKE COUNTY
LAK-2-16.49

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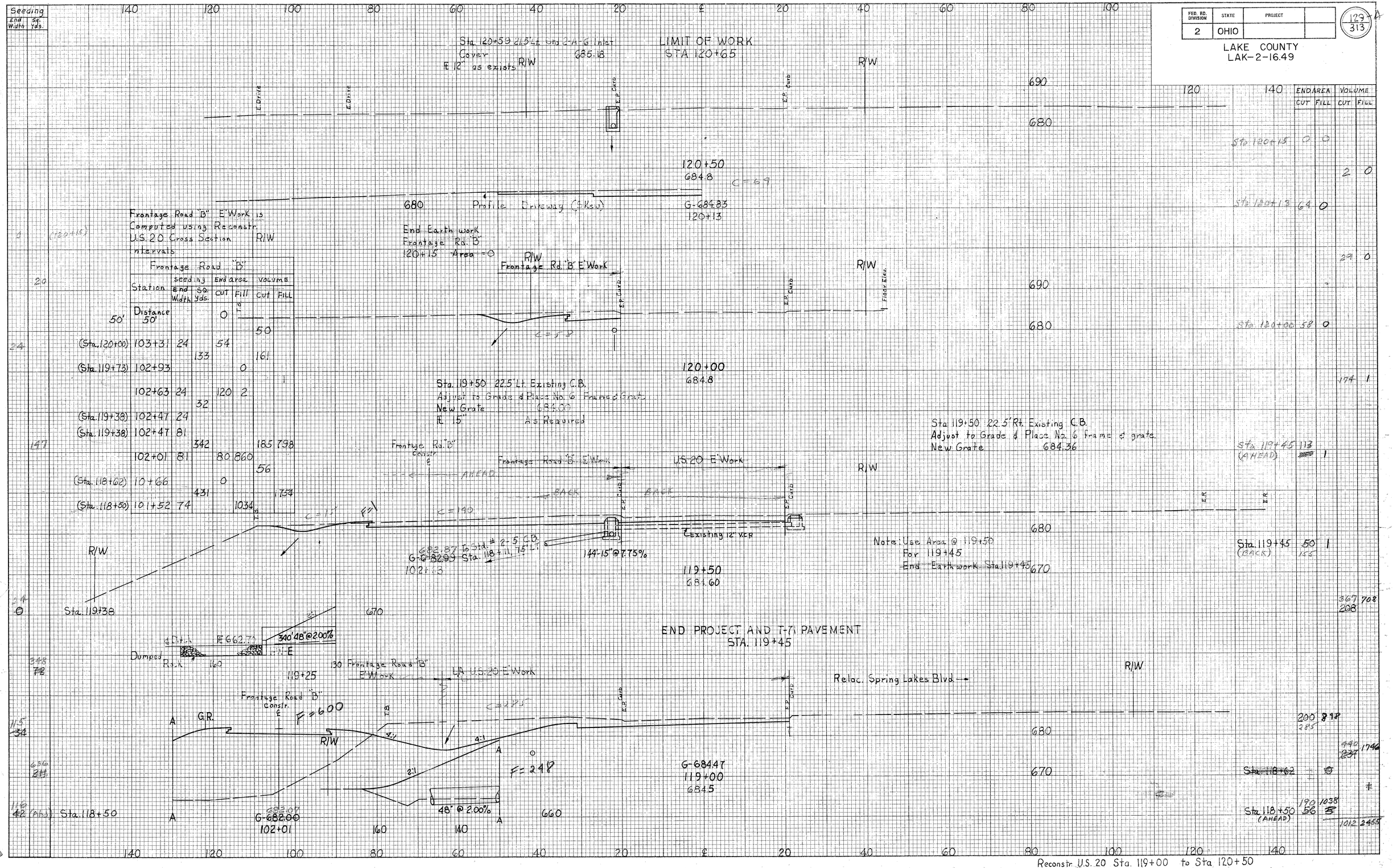
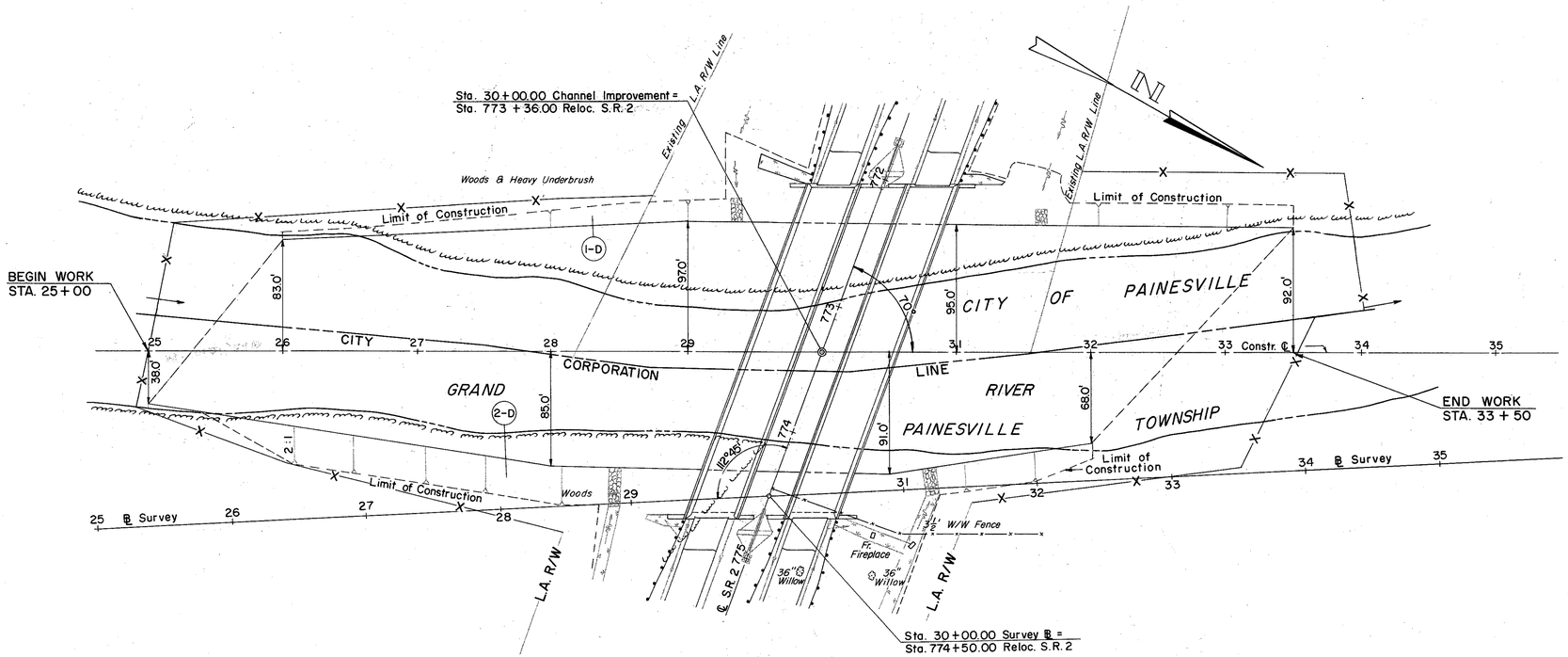


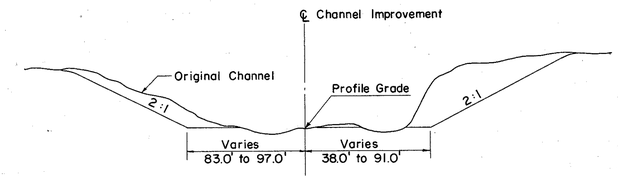
Frontage Road "B"

Station	Seeding End Width	Seeding Sq. Yds.	End area CUT	End area FILL	Volume CUT	Volume FILL
Distance 50'			0	T.B.		
					50	
(Sta. 120+00) 103+31	24		54			
		133			161	
(Sta. 119+73) 102+93				0		
						1
102+63	24		120	2		
		32				
(Sta. 119+38) 102+47	24					
(Sta. 119+38) 102+47	81					
		342			185	798
102+01	81		80	860		
					56	
(Sta. 118+62) 101+66			0			
		431			1734	
(Sta. 118+50) 101+52	74			1034		

MICROFILMED
MAR 29 1984

LAKE COUNTY
LAK-2-16.49





NORMAL CHANNEL SECTION

(D) DRAINAGE U-329(23)

REF. NO.	STATION FROM	STATION TO	SIDE	E-3 CHANNEL EXC. C.Y.
1-D	26+00	33+50	Lt.	6,764
* TOTAL				6,764

(D) DRAINAGE F-329(23)

REF. NO.	STATION FROM	STATION TO	SIDE	E-3 CHANNEL EXC. C.Y.
2-D	25+00	32+00	Rt.	5,884
* TOTAL				5,884

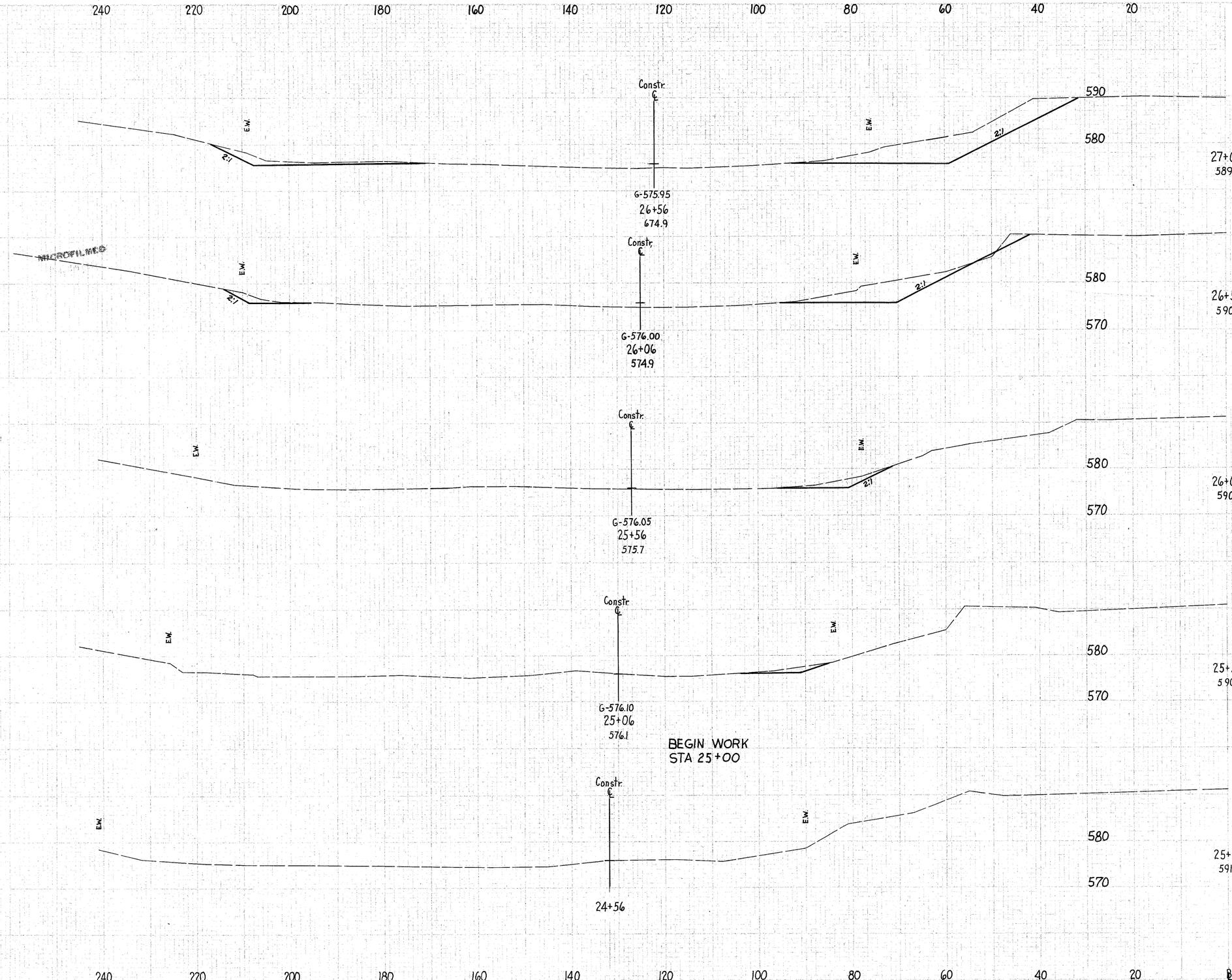
* To Bridge Quantities

EXCAVATION	=	0
EMBANKMENT	=	0
SHRINKAGE	=	0

GRAND RIVER CHANNEL IMPROVEMENT

131
313

LAKE COUNTY
LAK-2-16.49



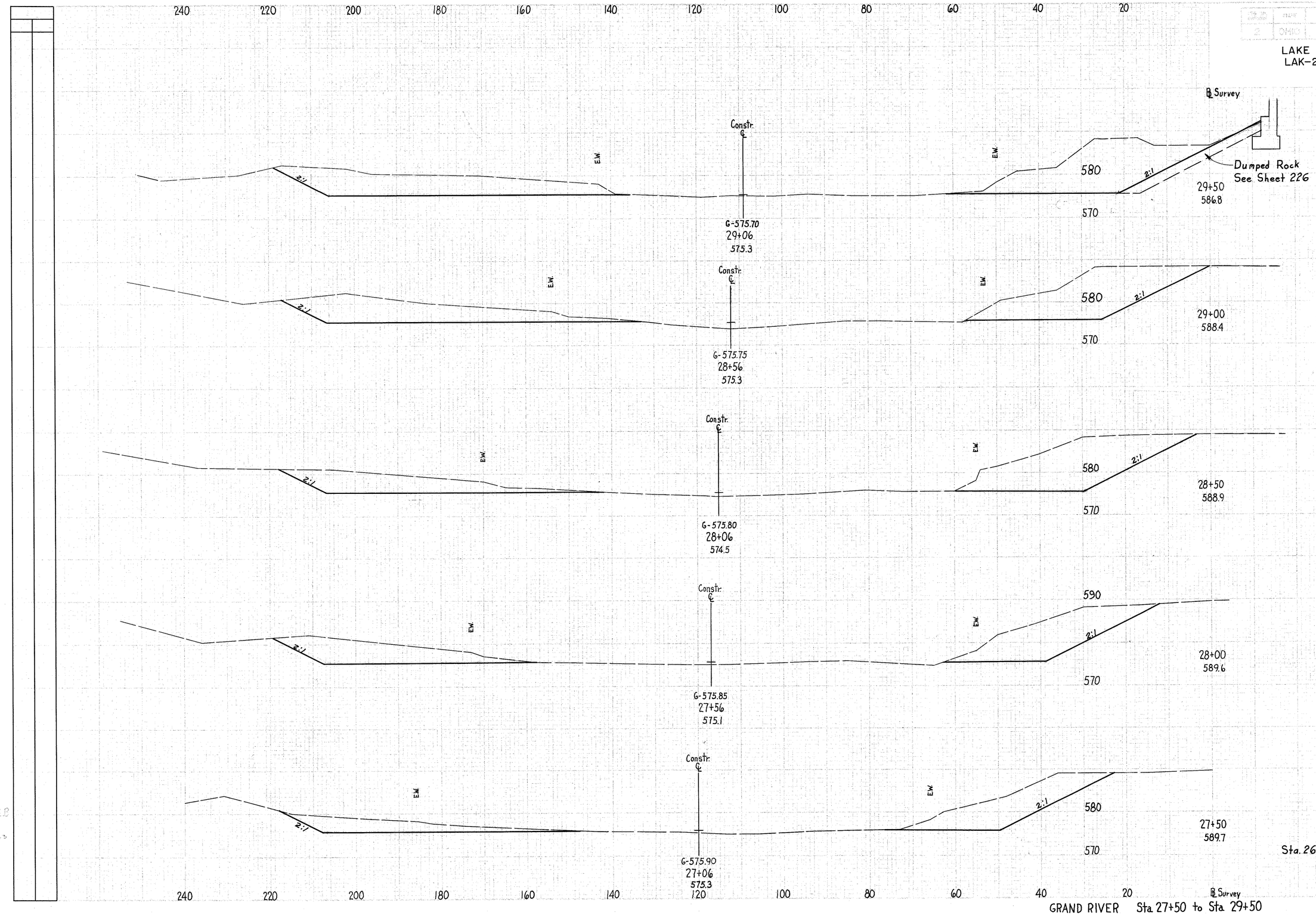
	END AREA CUT Left	END AREA CUT Right	VOLUME CUT Left	VOLUME CUT Right
Lt.	34			
Rt		190		
			41	
				269
Lt	10			
Rt		100		
			1	
Sta 26+00 Lt	0			
				112
Rt.		21		
				29
Rt.	10			
				1
Sta. 25+00 Rt.	0			

GRAND RIVER Sta 25+00 to Sta 27+00

MICROFILMED

BR-S-42
MERGED
7/25/03
7/31/03

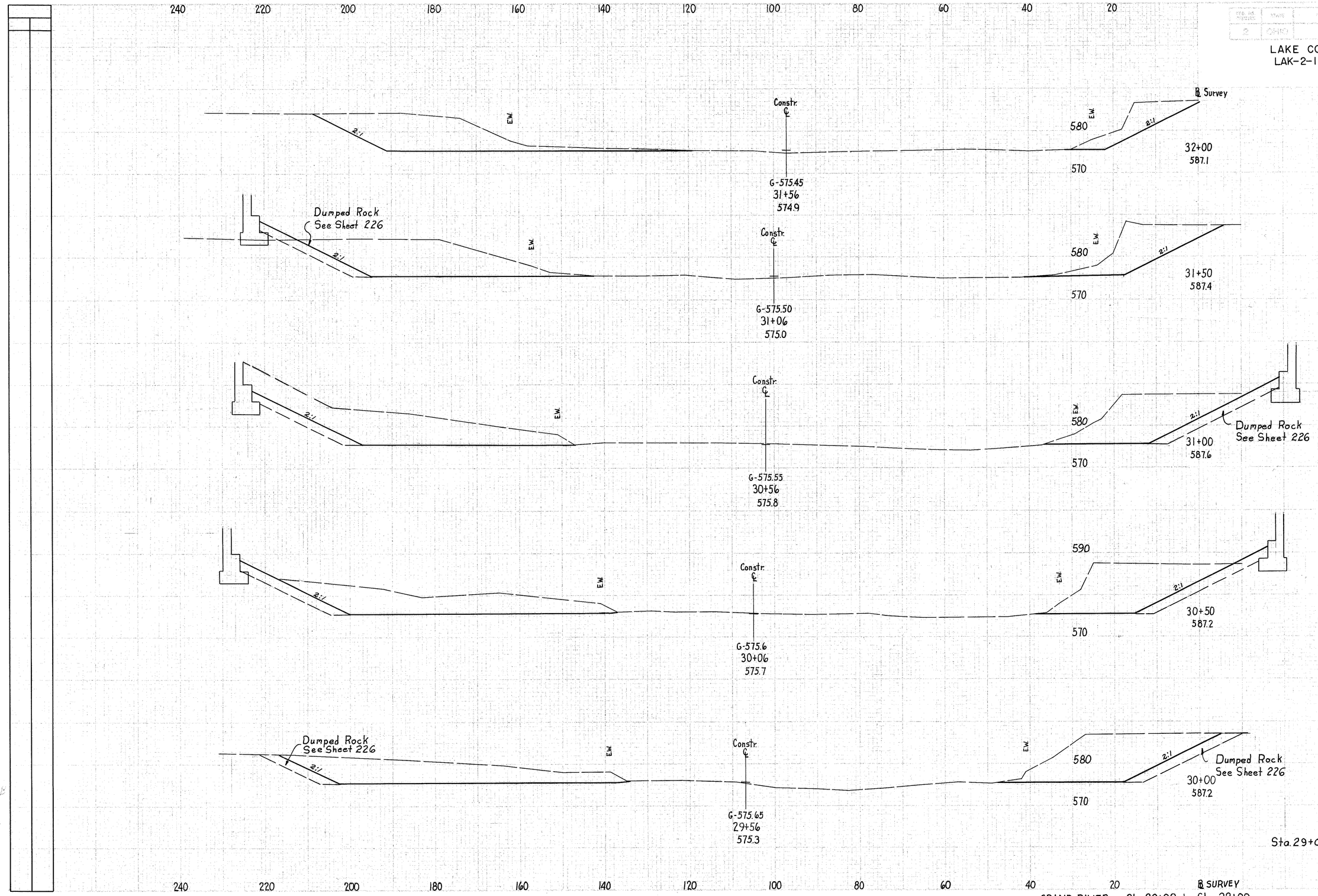
LAKE COUNTY
LAK-2-16.49



	END AREA CUT Left	END AREA CUT Right	VOLUME CUT Left	VOLUME CUT Right
Lt.	335			
Rt.		373		
			583	
				678
Lt.	295			
Rt.		359		
			461	
				691
Lt.	203			
Rt.		387		
			379	
				606
Lt.	206			
Rt.		267		
			311	
				458
Lt.	130			
Rt.		228		
			152	
				387
Sta. 26+56 Rt.		190		
Lt.	34			

GRAND RIVER Sta 27+50 to Sta 29+50

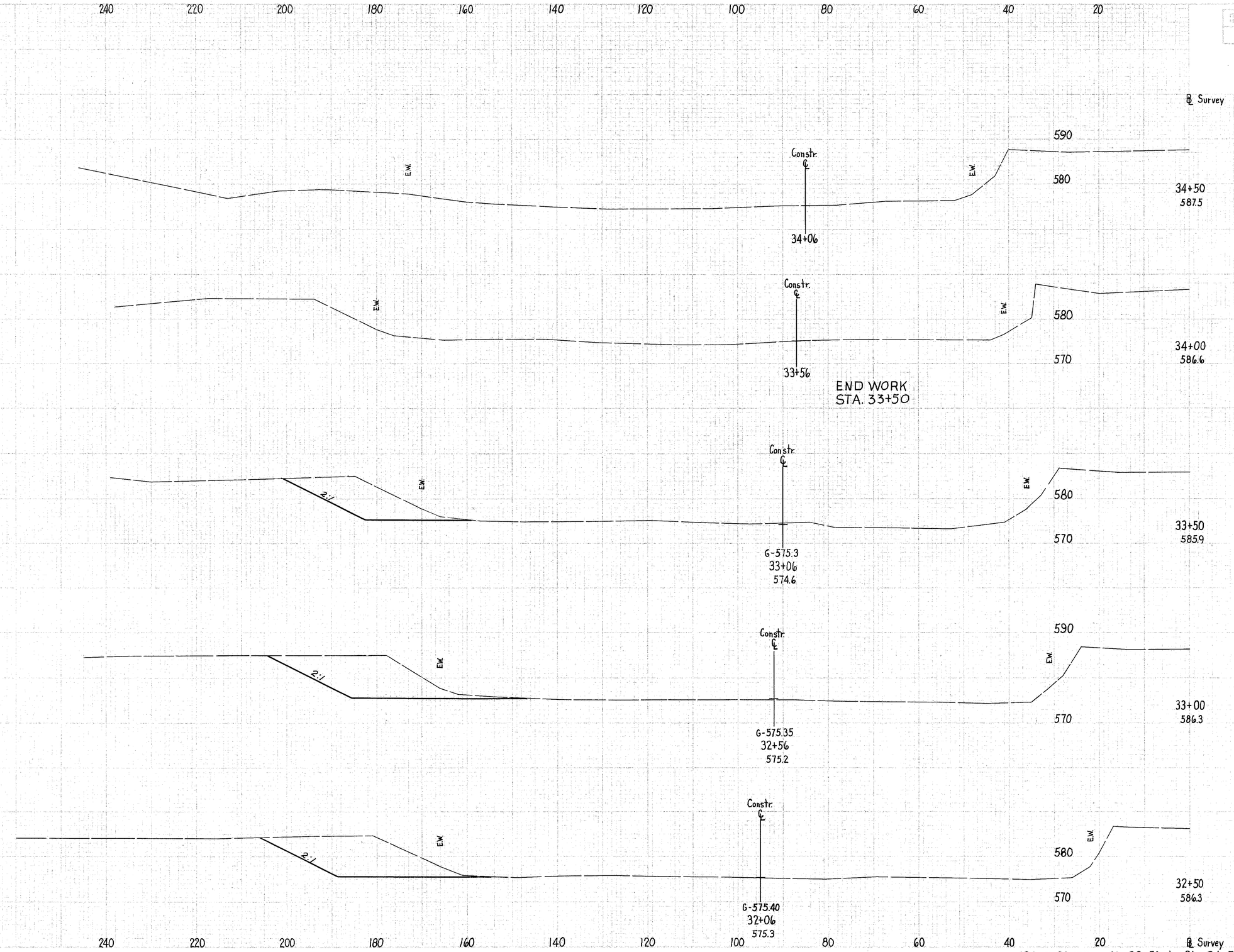
LAKE COUNTY
LAK-2-16.49



	END AREA CUT Left	END AREA CUT Right	VOLUME CUT Left	VOLUME CUT Right
Lt.	325			
Rt		107		
			633	
				279
Lt.	359			
Rt		194		
			741	
				456
Lt.	441			
Rt.		298		
			718	
				567
Lt.	334			
Rt.		314		
			620	
				605
Lt.	336			
Rt.		339		
			621	
				659
Sta. 29+06 Rt.		373		
Lt.	335			

GRAND RIVER Sta. 30+00 to Sta. 32+00

LAKE COUNTY
LAK-2-16.49

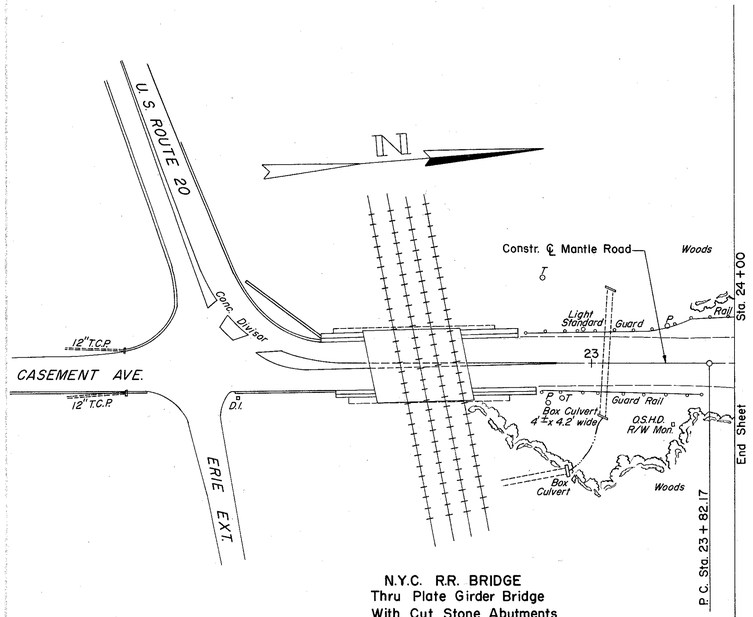


	END AREA CUT Left	END AREA CUT Right	VOLUME CUT Left	VOLUME CUT Right
Sta. 33+50	0			
			138	
Lt.	169			
			386	
Lt.	248			
			454	
Lt.	242			
			525	
Sta. 32+00 Rt.		0		
				87
Sta. 31+56 Rt.		107		
Lt.	325			

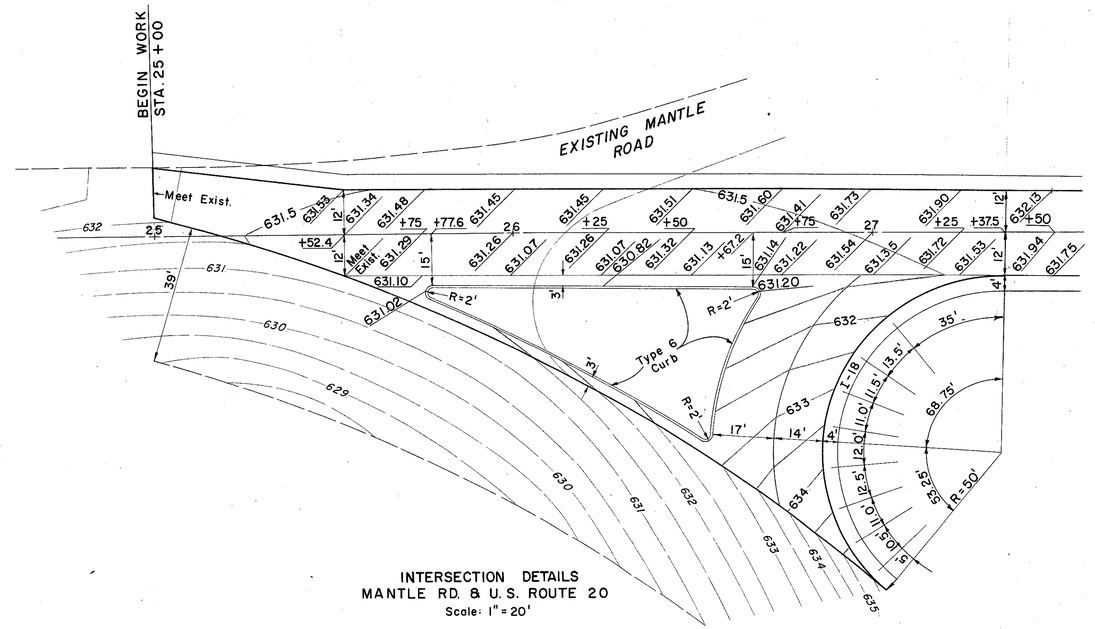
GRAND RIVER Sta. 32+50 to Sta. 34+50

Checked MEF & EB
Bk S-42
a SLS 7/26/63

LAKE COUNTY
LAK-2-1649

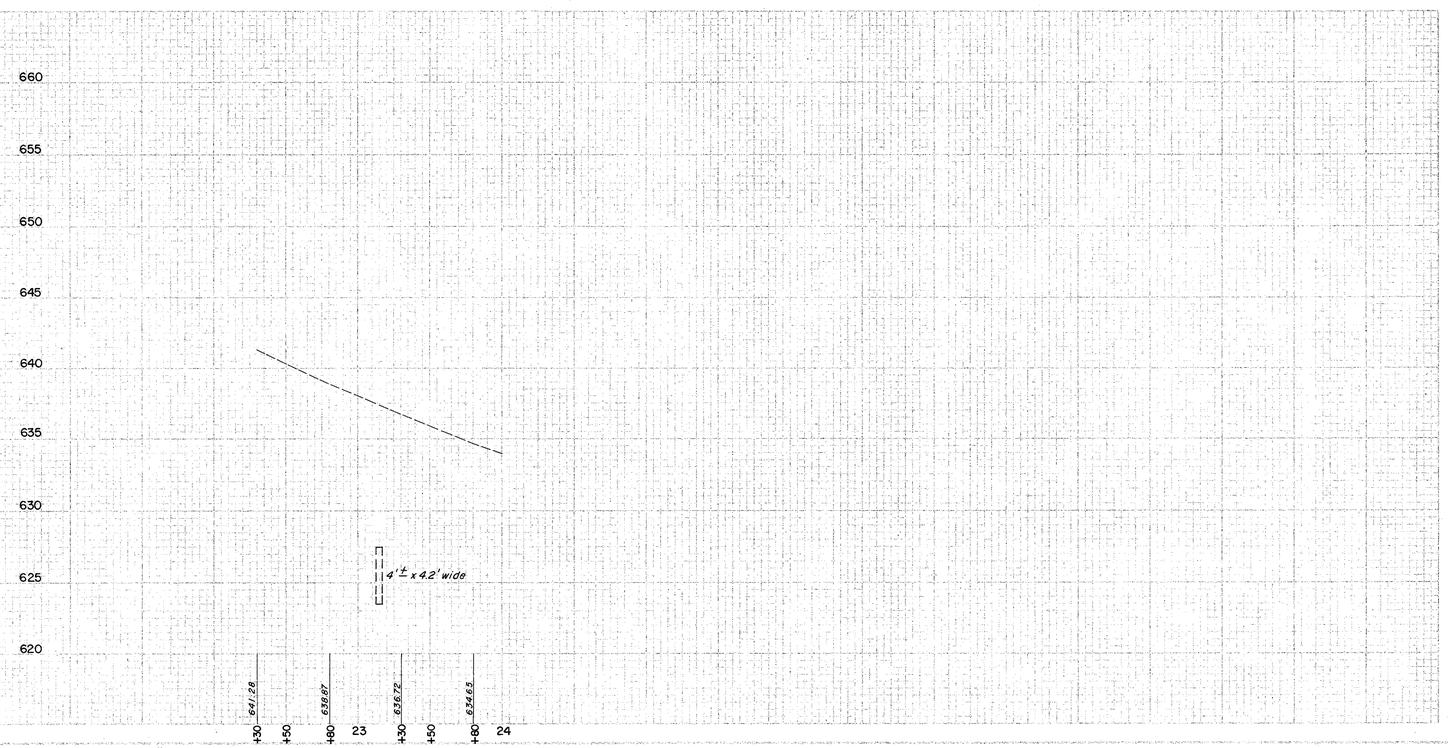


N.Y.C. R.R. BRIDGE
Thru Plate Girder Bridge
With Cut Stone Abutments



INTERSECTION DETAILS
MANTLE RD. & U.S. ROUTE 20
Scale: 1" = 20'

CONTINUED ON SHEET 148



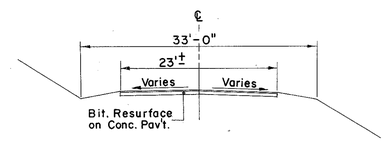
Excavation	cu. yd.	0
Embankment	cu. yd.	0
Overhaul	sta. - mo.	0

RELOC. MANTLE ROAD STA. 22+30 TO STA. 24+00

SHEET NUMBER	DATE			
2	0410			

136
313

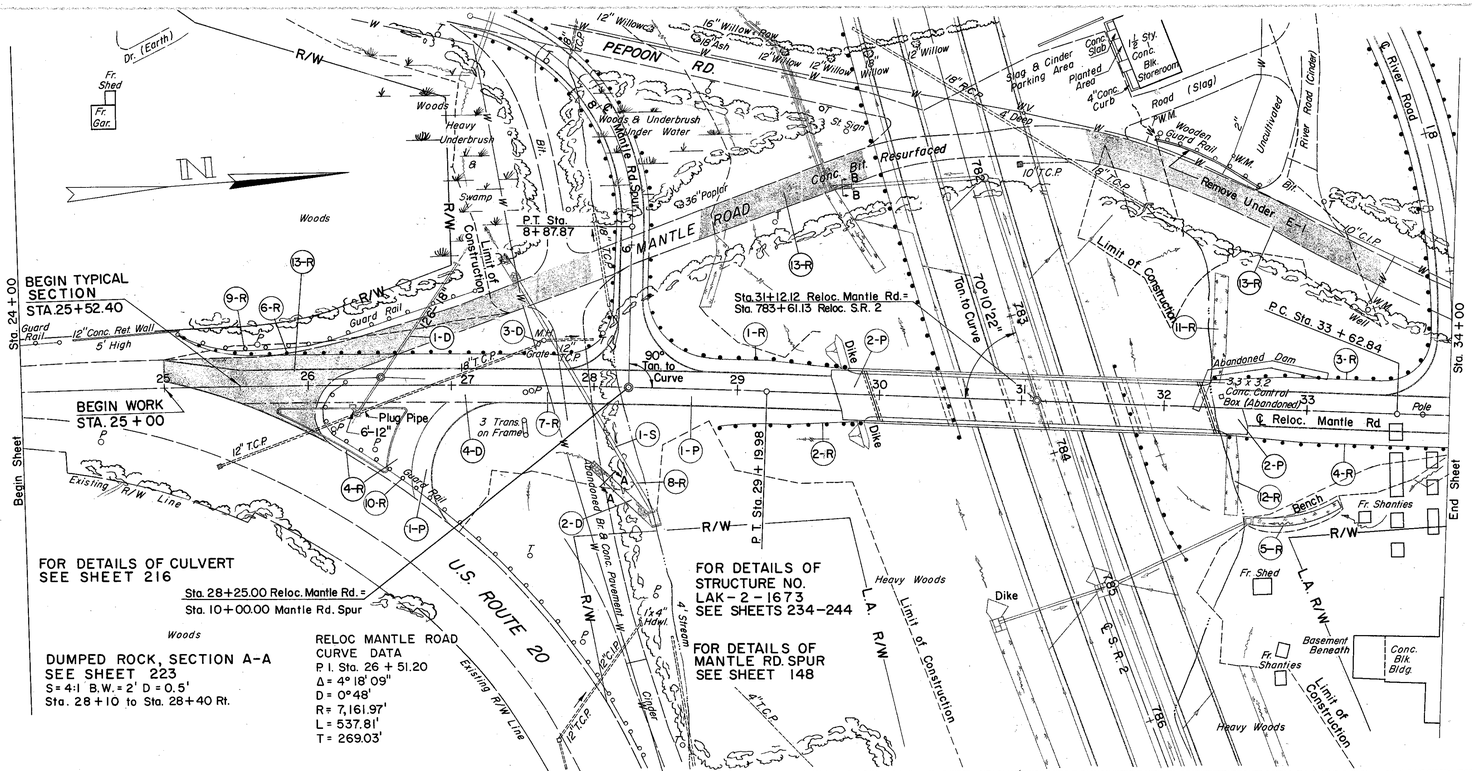
All Utilities on this sheet to be Relocated by Others

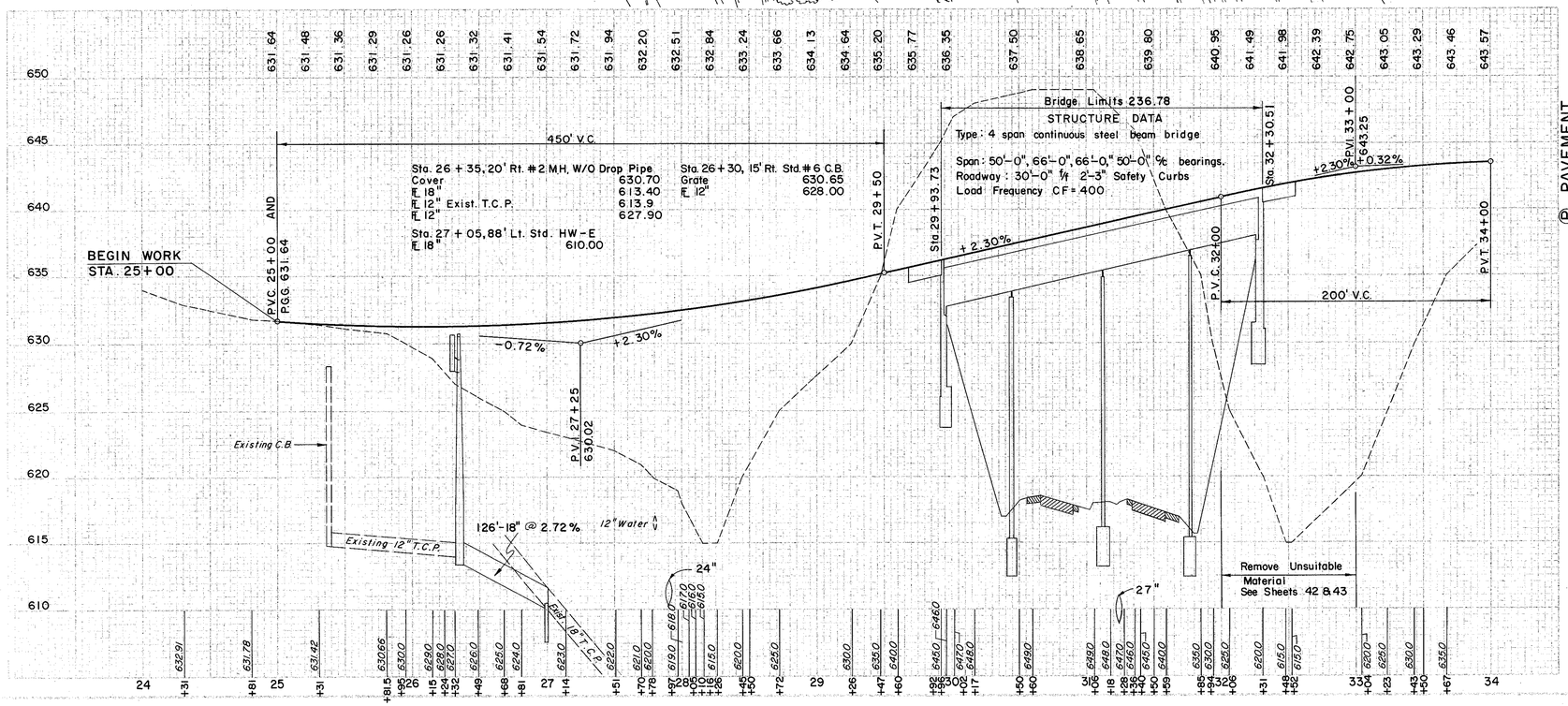


EXISTING TYPICAL SECTION
MANTLE ROAD

LAKE COUNTY
LAK-2-16.49

FOR INTERSECTION DETAILS
MANTLE ROAD AT U.S. 20
SEE SHEET 135
MANTLE ROAD AND MANTLE ROAD SPUR
SEE SHEET 148





(D) DRAINAGE

REF. NO.	STATION FROM	STATION TO	SIDE	I-1 18" PIPE CLASS J-1 Sec. M-6.6(c)	I-2 MASONRY	I-8 STD. #2 M.H. WITHOUT DROP PIPE	I-10 DUMPED ROCK FOR CHANNEL PROTECT.	I-16 ABANDONED INLET	I-16 ABANDONED M.H.	I-9 STONE UNDER DRAINS NO. 2	I-1 12" PIPE CLASS E-1	I-8 STD. #6 C.B.
				L.F.	C.Y.	EA.	C.Y.	EA.		L.F.	L.F.	EA.
1-D	26 + 30	27 + 00	Rt-Lt.	126	0.30	1					6	1
2-D	28 + 10	28 + 36	Rt.				12.0					
3-D	27 + 75		Lt.					1	1			
4-D	25 + 00	40 + 00								640		
TOTAL				126	0.30	1	12.0	1	1	640	6	1

(R) ROADWAY

REF. NO.	STATION FROM	STATION TO	SIDE	E-1 COMP. SUBGRADE		I-15 GUARD RAIL STEEL BEAM STD. TYPE (DEEP)	I-15 GUARD RAIL REMOVED & DISPOSED OF	L-10 SODDING FOR SPECIAL BERM & SLOPE PROTECT.	L-10 SODDING	E-8 REMOVAL & DISPOSAL OF EXISTING PAVEMENT
				S.Y.		L.F.			S.Y.	
1-R	28 + 37	29 + 78	Lt.			162.5				
2-R	28 + 87	29 + 87	Rt.			100.0				
3-R	32 + 35	33 + 46	Lt.			112.5				
4-R	32 + 47	33 + 97	Rt.			150.0				
5-R	32 + 60	33 + 25	Rt.						43	
6-R	25 + 15	28 + 15	Lt.			325.0				
7-R	25 + 00	40 + 00		3,695						
8-R	STRUCTURE								3.5	
9-R	25 + 10	27 + 17	Lt.				218			
10-R	26 + 10	27 + 19	Rt.				170			
11-R	32 + 35	—	Lt.					82		
12-R	32 + 48	—	Rt.					61		
13-R	25 + 00	33 + 60	Lt.							1,575
TOTAL				3,695		850.0	388	143	46.5	1,575

(P) PAVEMENT

REF. NO.	STATION FROM	STATION TO	SIDE	B-19 AGGR. BASE COURSE	B-35 ASPH. CONC. LEVEL COURSE	B-35 ASPH. CONC. BASE COURSE	I-7 REINF. CONC. APPR. SLAB T=13"	I-12 CONC. CURB TYPE 6	I-18 STAB. CRUSHED AGGR. SHLDRS. & APPR.	Spec'l 122 Fertilizing & Preparing Subbase	T-30 BIT. PRIME COAT	T-35 ASPH. CONC. SURFACE COURSE TYPE A
				C.Y.			S.Y.	L.F.	C.Y.	Tons C.Y.	GAL.	C.Y.
1-P	25 + 00	40 + 00		808	122	298		231	147	0.46 438	1451	122
2-P	STRUCTURE		℄				184					
TOTAL				808	122	298	184	231	147	0.46 438	1451	122

SODDING RIGHT DITCH			
STATION	WIDTH OF SODDING FT.	LENGTH OF SODDING FT.	S. Y.
32 + 60	6.0	65	43
33 + 25	6.0		
SUB TOTAL			

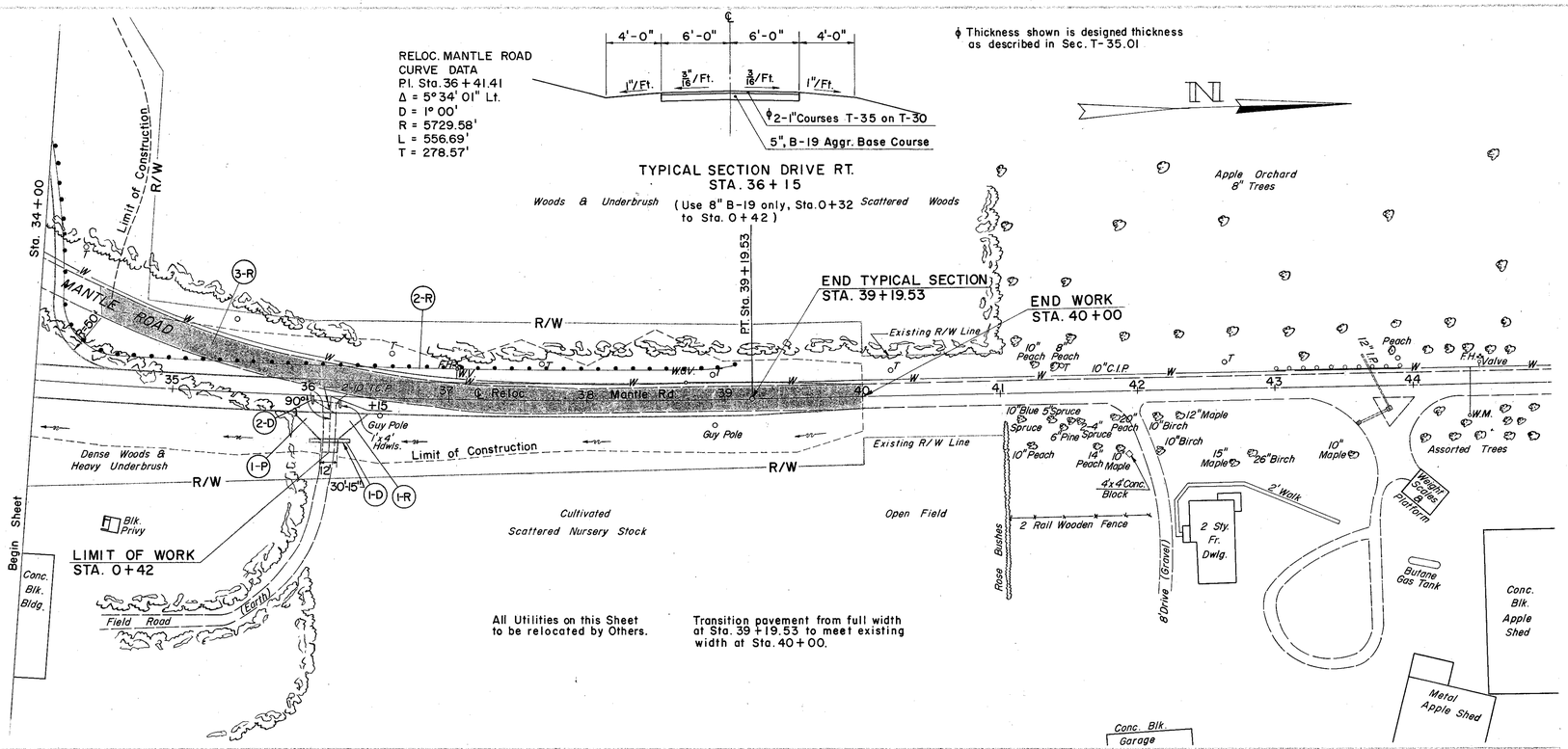
(S) STRUCTURE

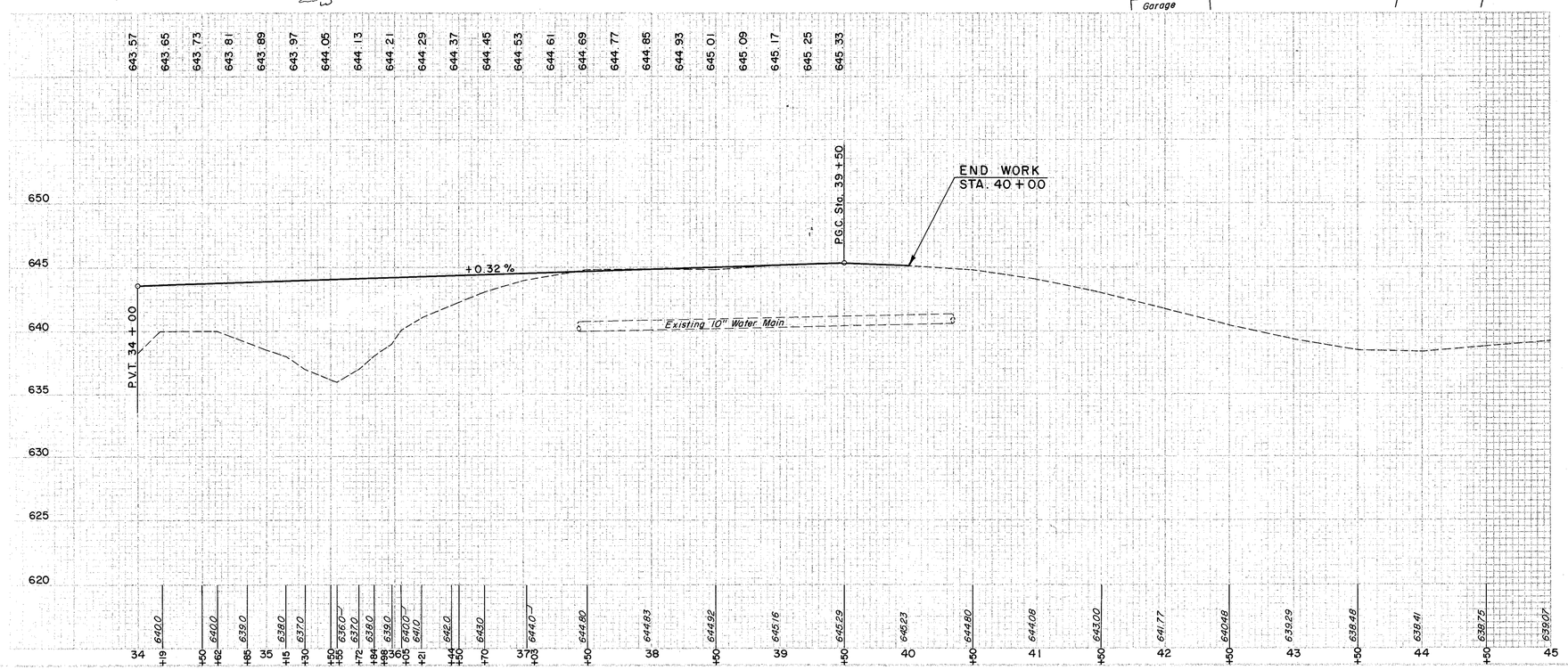
REF. NO.	STATION FROM	STATION TO	SIDE	E-3 CHANNEL EXC.	I-1 24" PIPE CLASS A-1 SEC. M-6.6(d) OR SEC. M-6.4(d) 14 GA.	I-2 MASONRY	I-10 RIPRAP 6" REINF.	I-10 DUMPED ROCK FOR CHANNEL PROTECT.
				C.Y.	L.F.	C.Y.	S.Y.	C.Y.
1-S	27 + 90		Rt-Lt.	348	188	0.82	10.7	11.1
TOTAL				348	188	0.82	10.7	11.1

EXCAVATION		5,084 C.Y.
EMBANKMENT		19,841 C.Y.
EMBANKMENT	+ 20 %	23,809 C.Y.

RELOC. MANTLE ROAD STA. 24 + 00 TO STA. 34 + 00

LAKE COUNTY
LAK-2-16.49





(D) DRAINAGE

REF. NO.	STATION FROM	STATION TO	SIDE	E-12 PIPE REMOVAL 15" AND UNDER	I-1 15" PIPE CLASS F-4
				L.F.	
1-D	36+00	36+30	Rt.		30
2-D	36+02	36+22	Rt.	40	
TOTAL				40	30

(P) PAVEMENT

REF. NO.	STATION FROM	STATION TO	SIDE	B-19 AGGR. BASE COURSE	T-30 BIT. PRIME COAT	T-35 ASPHALTIC CONC. SURFACE COURSE TYPE C
				C.Y.	GAL.	C.Y.
1-P	36+15		Rt.	13	28	4
TOTAL				13	28	4

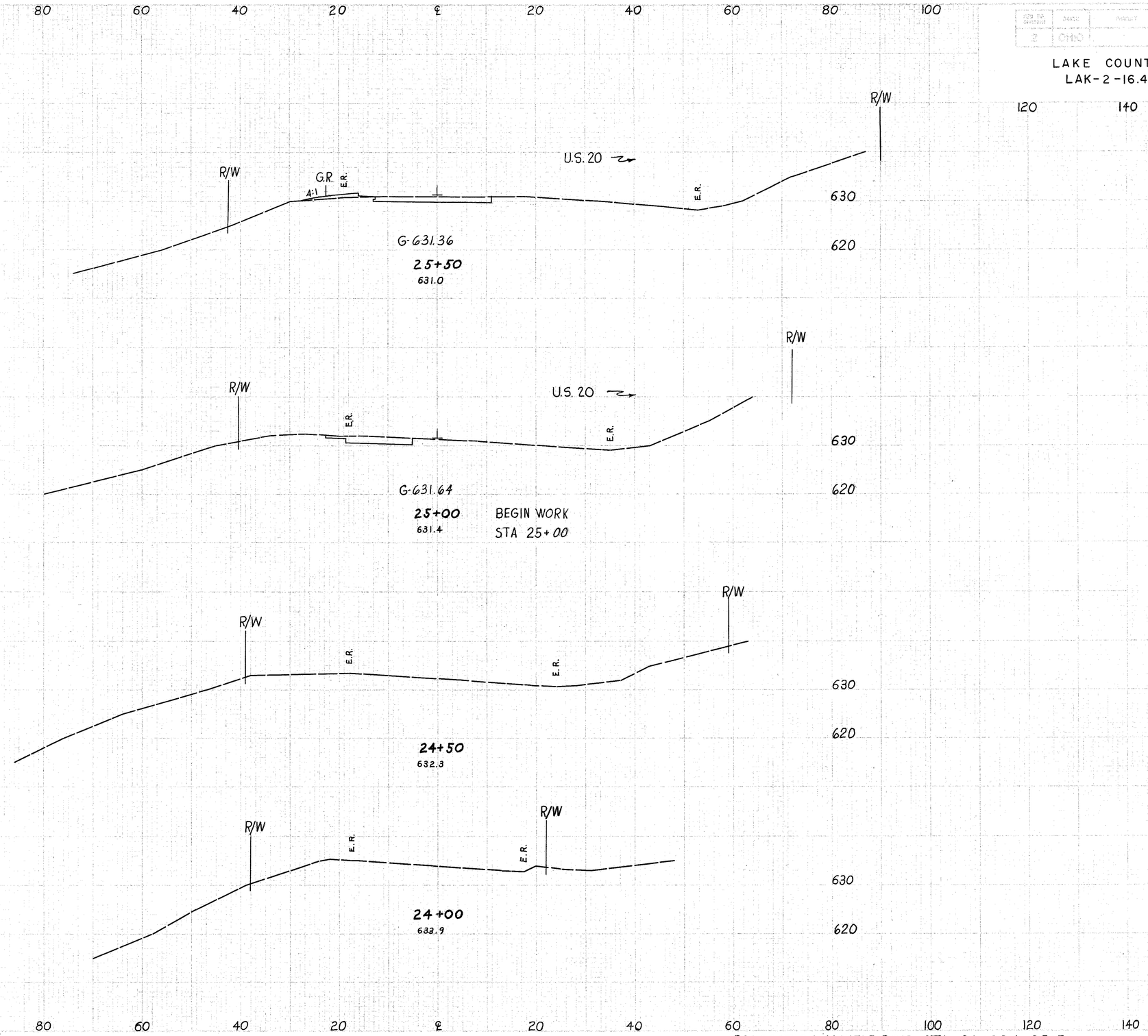
(R) ROADWAY

REF. NO.	STATION FROM	STATION TO	SIDE	E-1 COMP SUB-GRADE.	I-15 GUARD RAIL STEEL BEAM STD. TYPE (DEEP)	E-8 REMOVAL & DISPOSAL OF EXISTING PAVEMENT
				S.Y.	L.F.	S.Y.
1-R	36+15		Rt.	84		
2-R	34+60	39+07	Lt.		450.0	
3-R	34+45	40+00	Rt-Lt			1,120
TOTAL				84	450.0	1,120

EXCAVATION	1,088 C.Y.
EMBANKMENT	2,763 C.Y.
EMBANKMENT 20 %	3,316 C.Y.

RELOC. MANTLE ROAD STA. 34 + 00 TO STA. 45 + 00

SEEDING	
END WIDTH	SQ. YDS.
12	
	33
0	



END AREA		VOLUME	
CUT	FILL	CUT	FILL
24	5		
		41	5
20	0		

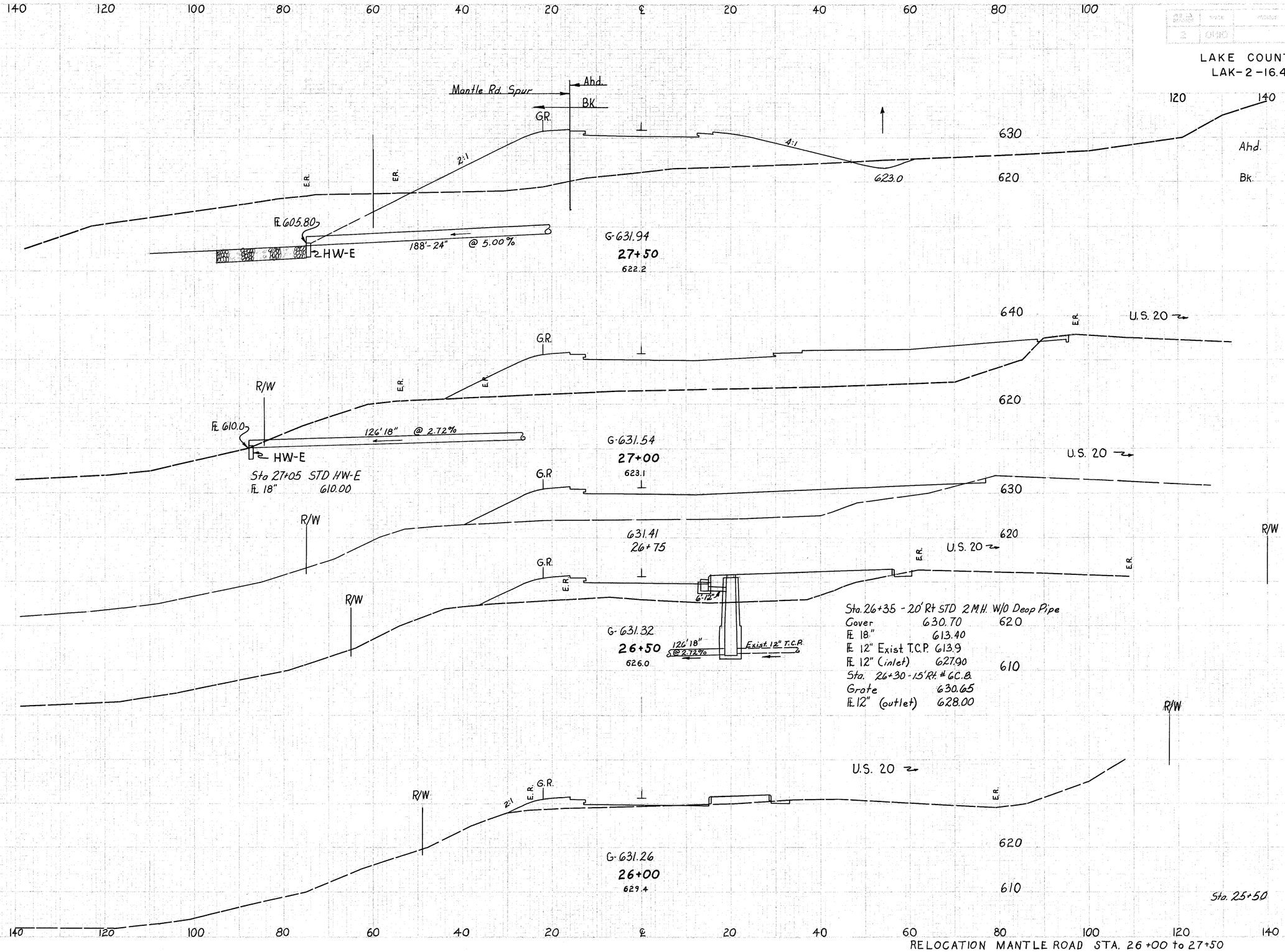
SEE TR. DIVISION	DIST.	ROUTE		138 313
2	CHD			

LAKE COUNTY
LAK-2-16.49

RELOCATION MANTLE ROAD STA. 24+00 to 25+50

SLS 7/26/03
RDK 7/31/03

SEEDING	
END WIDTH	SQ. YDS.
86	
	322
30	
	76
25	
	19
25	Sta. 26+68
	93
104	Sta. 26+55
	46
63	
	253
28	
	42
12	Sta. 25+81
	41
12	Sta. 25+50



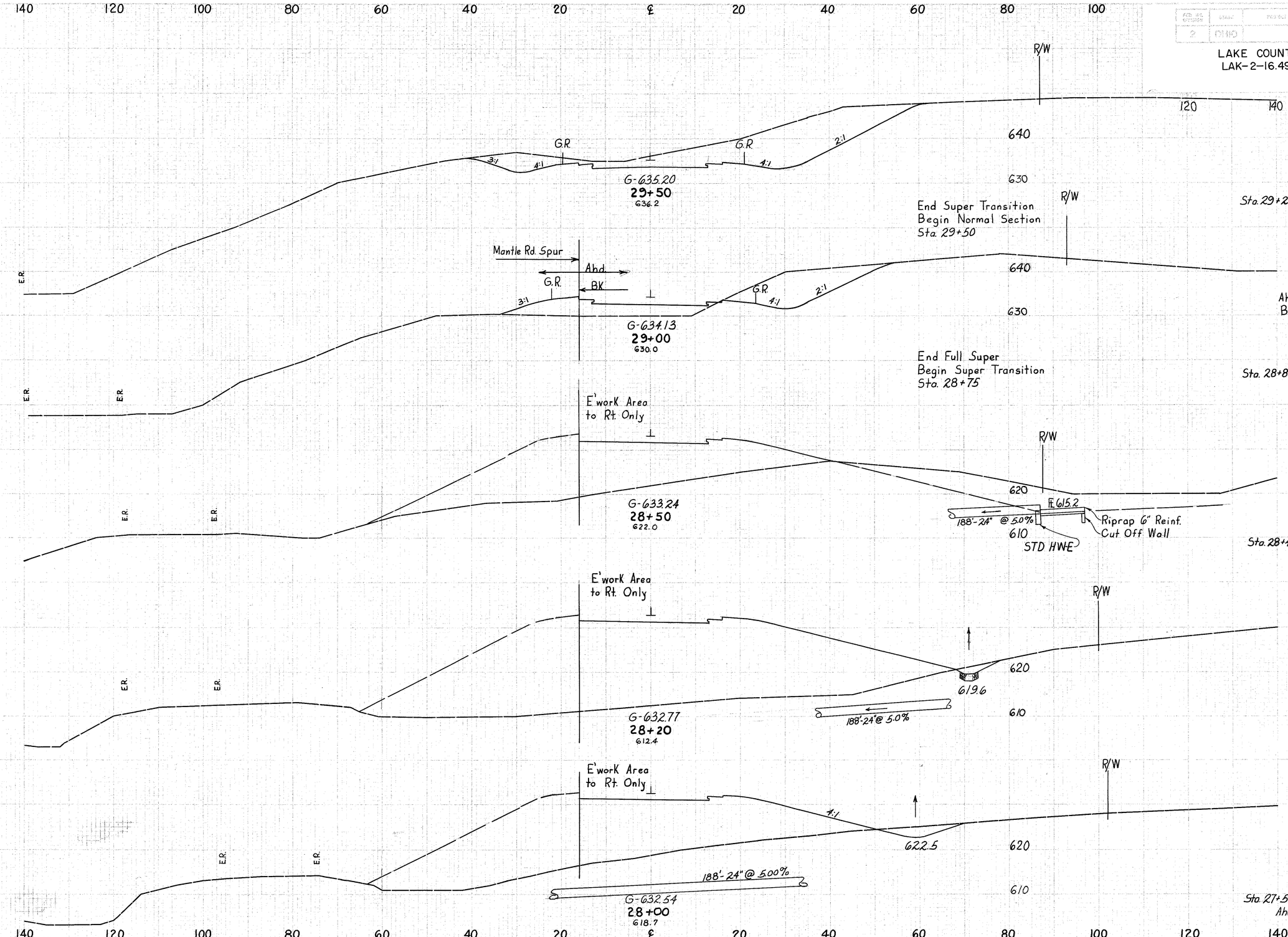
END AREA		VOLUME	
CUT	FILL	CUT	FILL
15	413	—	—
31	700		
		33	1500
5	920		
		4	675
3	538		
		3	437
3	405		
		6	432
4	62		
		26	62
24	5		

2	0810			139 313

LAKE COUNTY
LAK-2-16.49

RELOCATION MANTLE ROAD STA. 26+00 to 27+50

SEEDING		
END WIDTH	SQ. YDS.	
74		
	372	
60		Ahead
42		Back
	286	
61		
	72	
25		Sta. 28+35
	74	
64		
	35	
64		Sta. 28+15
	140	
104		
	528	
86		Sta. 27+50



END AREA		VOLUME		
CUT	FILL	CUT	FILL	
444				
	0			Sta. 29+25
		570	55	
172	120			Ahd.
172	47			BK.
		38		
0				Sta. 28+88
			435	
	423			
0				Sta. 28+42
			893	
		4		
10	1185			
		14	659	
28	594			
		40	932	
15	413			Sta. 27+50 Ahd.

LAKE COUNTY
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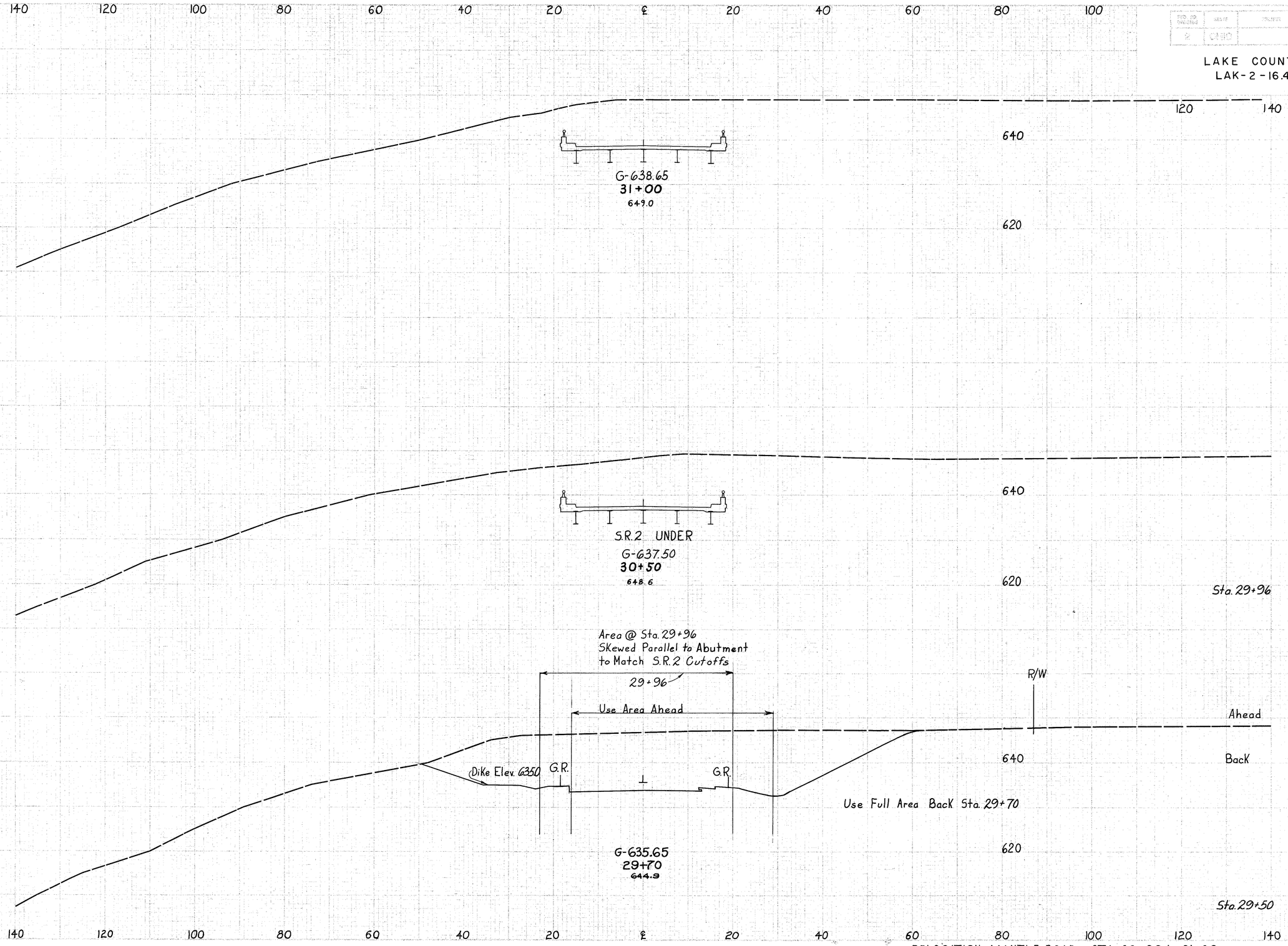
RELOCATION MANTLE ROAD STA. 28+00 to 29+50

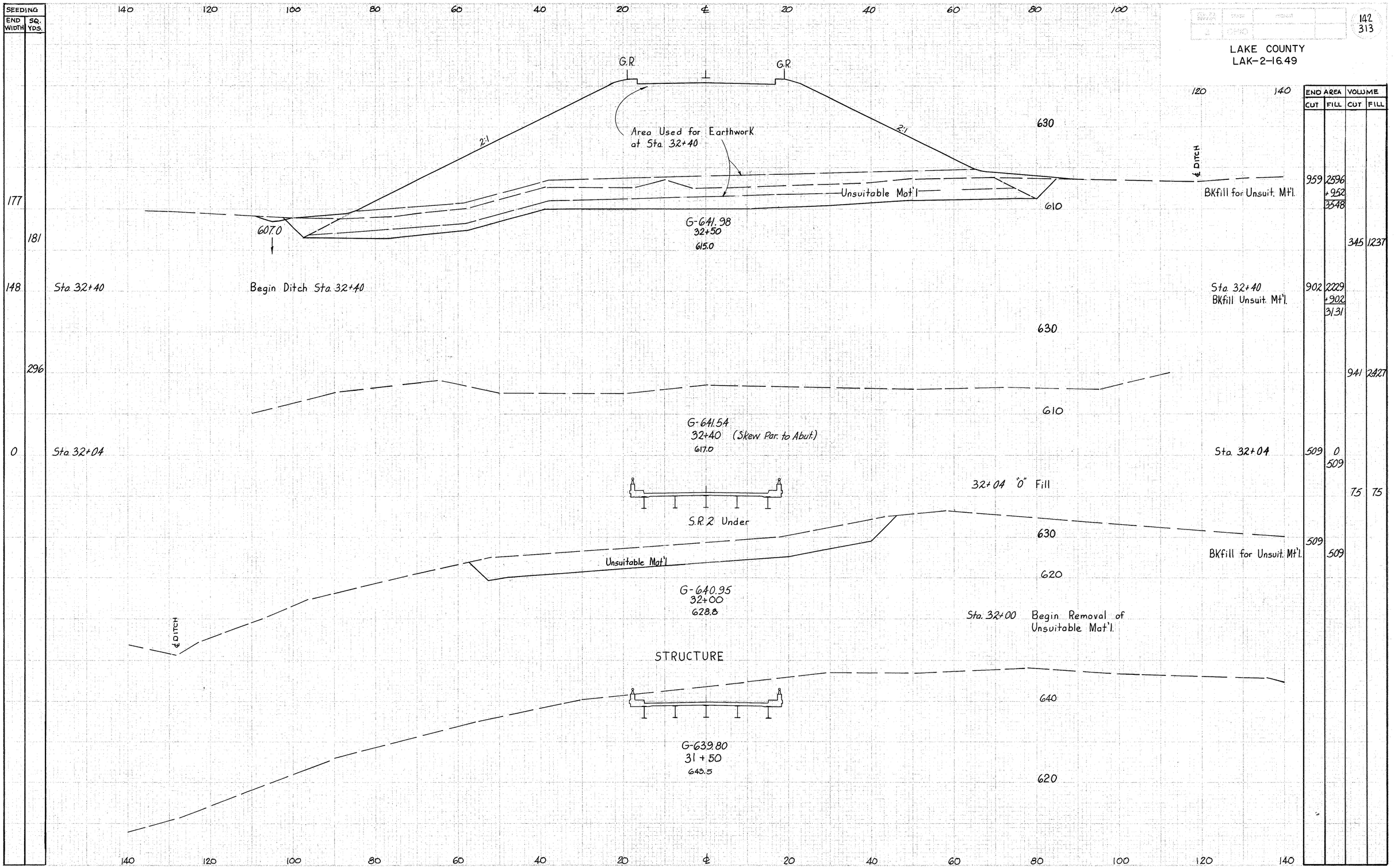
SEEDING	
END WIDTH	SQ. YDS.
82	
	173
74	



END AREA		VOLUME	
CUT	FILL	CUT	FILL
546			
		547	
590			
1112			
		576	
444			

142
313

LAKE COUNTY
LAK-2-16.49



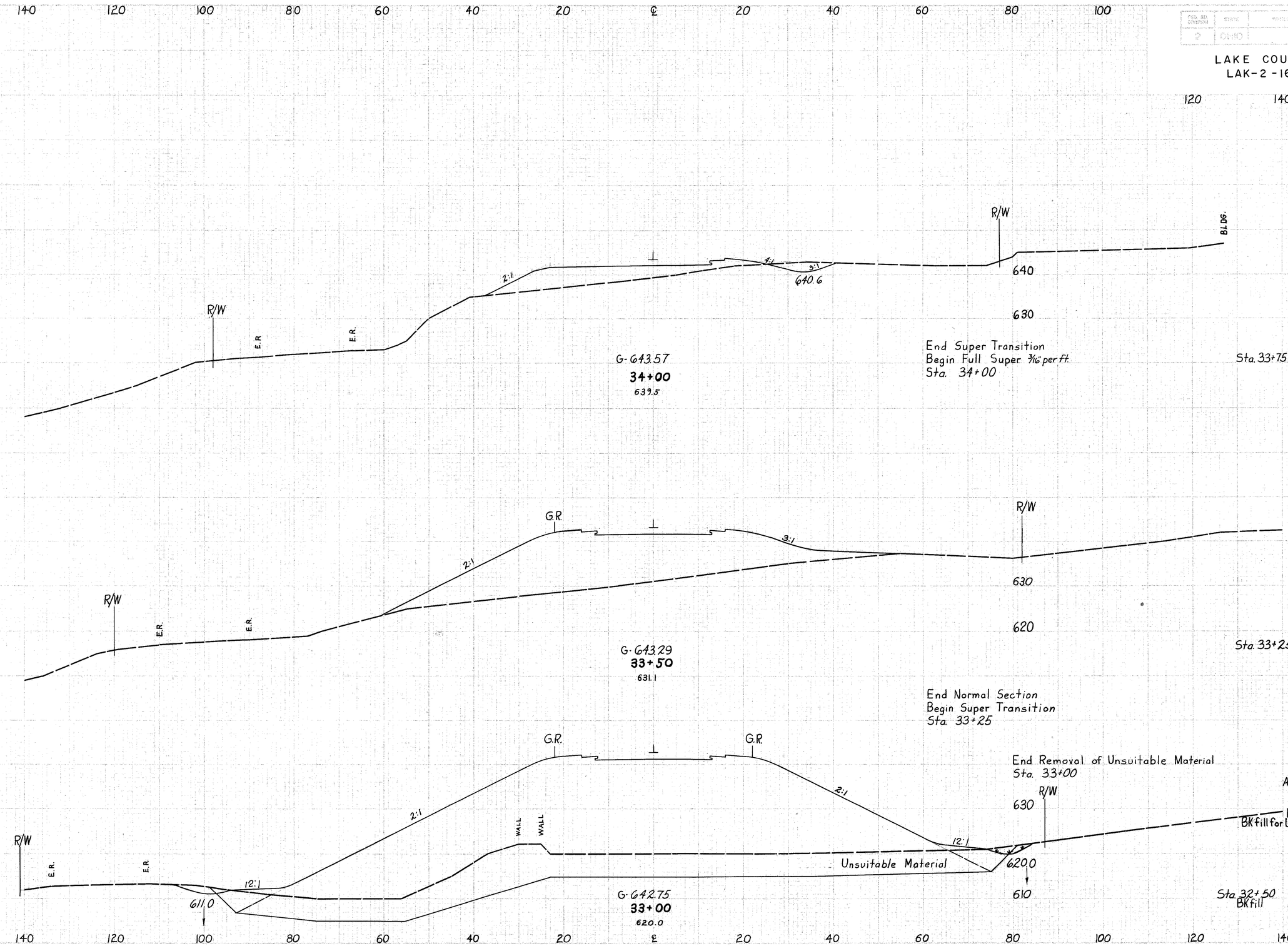
RELOCATION MANTLE ROAD STA. 31+50 to 32+50

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

143
313

LAKE COUNTY
LAK-2 -16.49

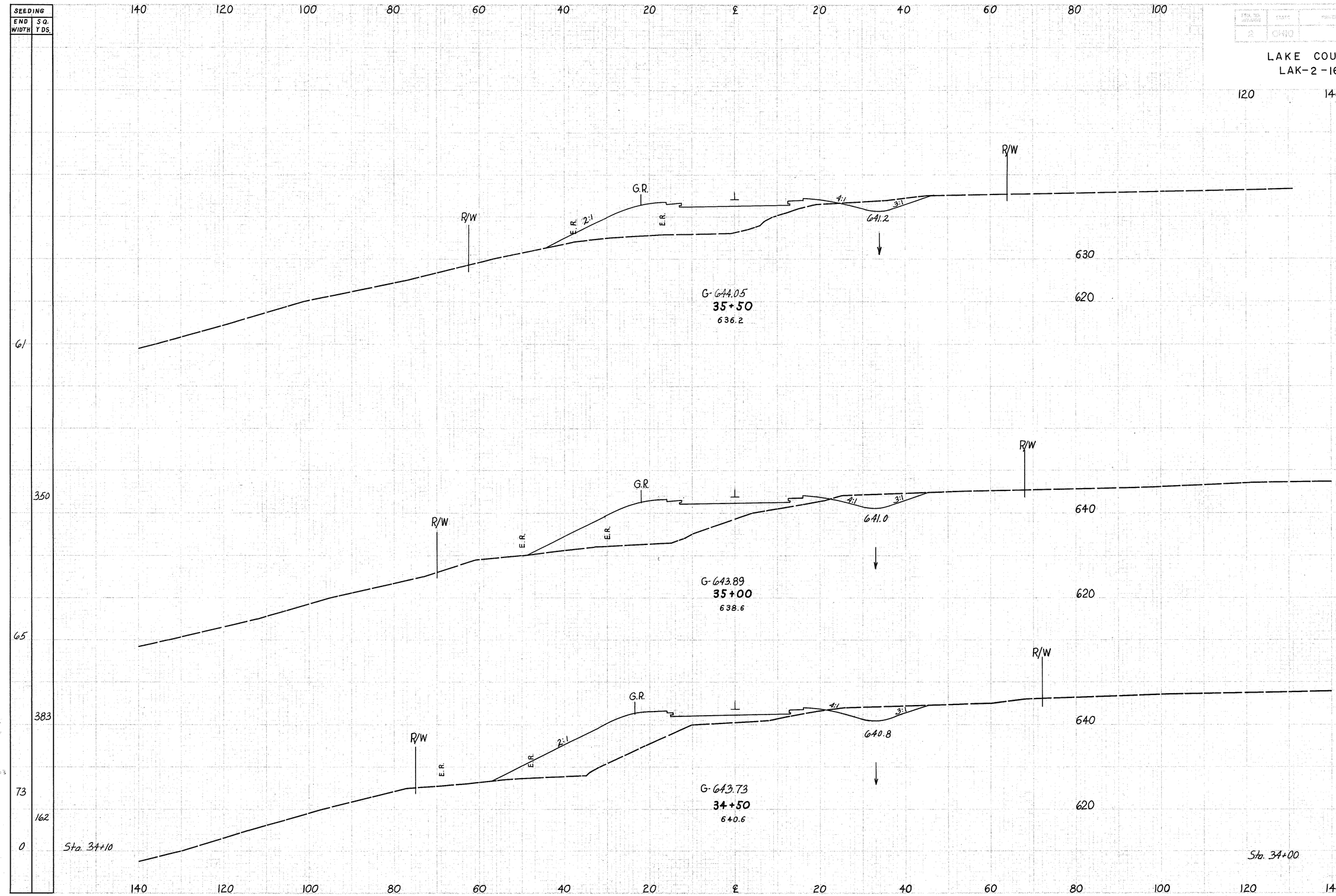
SEEDING END WIDTH	SEEDING SQ. YDS.		END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
0		33+90				
			22	168		
					10	
		Sta. 33+75	0			
						926
	193					
				832		
87						
		Sta. 33+25	0			
						2846
					13	
	733					
		Ahd.	28	2242		
		BK.	983	2242		
		Bkfill for Unsuit. Mtl		955		
				3197		
					1798	6245
177		Sta. 32+50	959	2596		
		Bkfill		952		
				3548		



RELOCATION MANTLE ROAD STA. 33+00 to 34+00

FED. RD. DIVISION	STATE	PROJECT		144 313
2	OHIO			

LAKE COUNTY
LAK-2-16.49

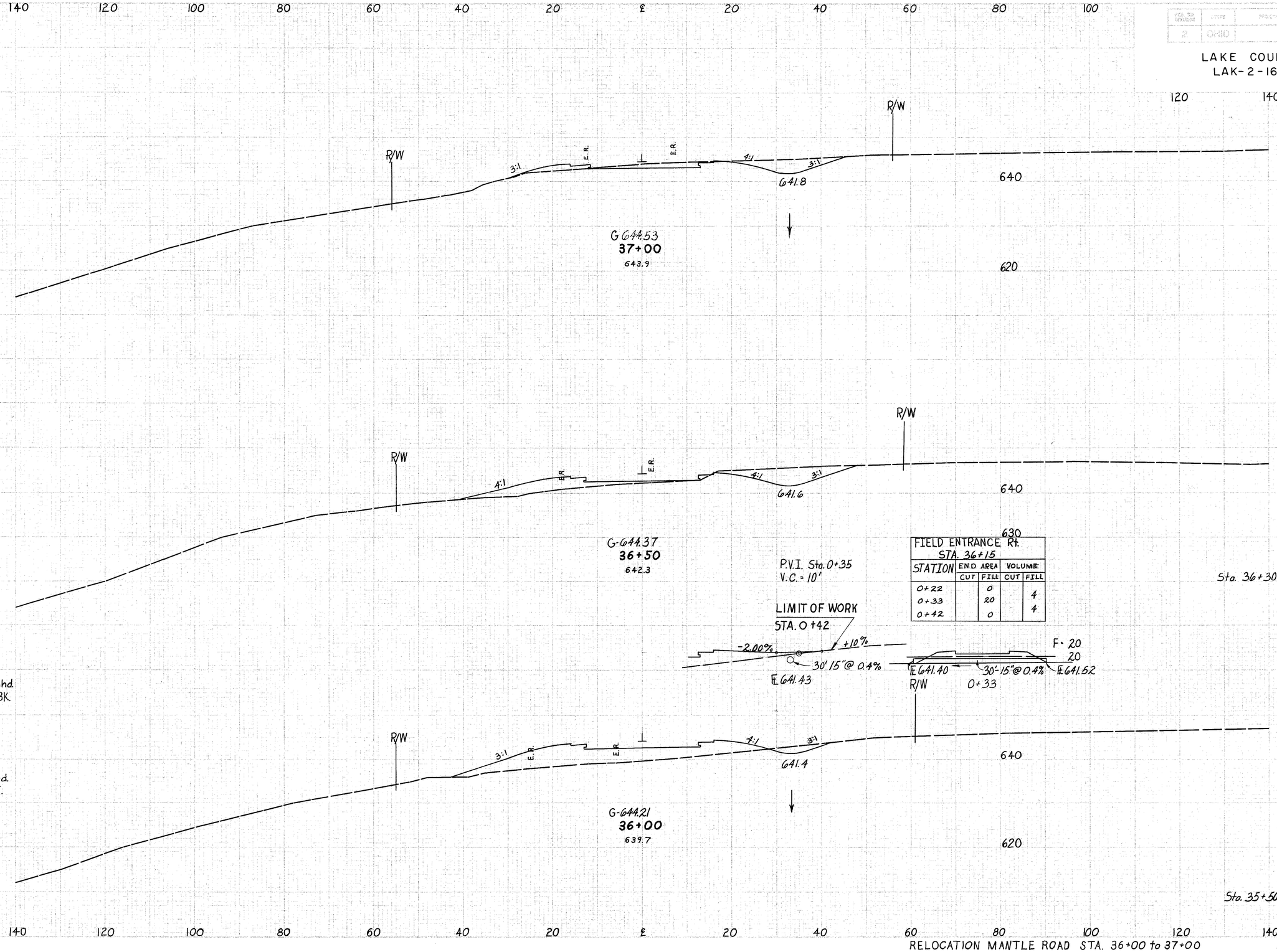


RELOCATION MANTLE ROAD STA. 34+50 to 35+50

SEEDING	
END WIDTH	SQ. YDS.
45	
	292
60	
	179
55	— Sta. 36+22 Ahd.
25	Sta. 36+22 BK.
	39
25	— Sta. 36+08 Ahd.
55	Sta. 36+08 BK.
	49
55	
	322
61	Sta. 35+50

GR. SECTION	DIST.	REGION		145
2	0810			313

LAKE COUNTY
LAK-2-16.49



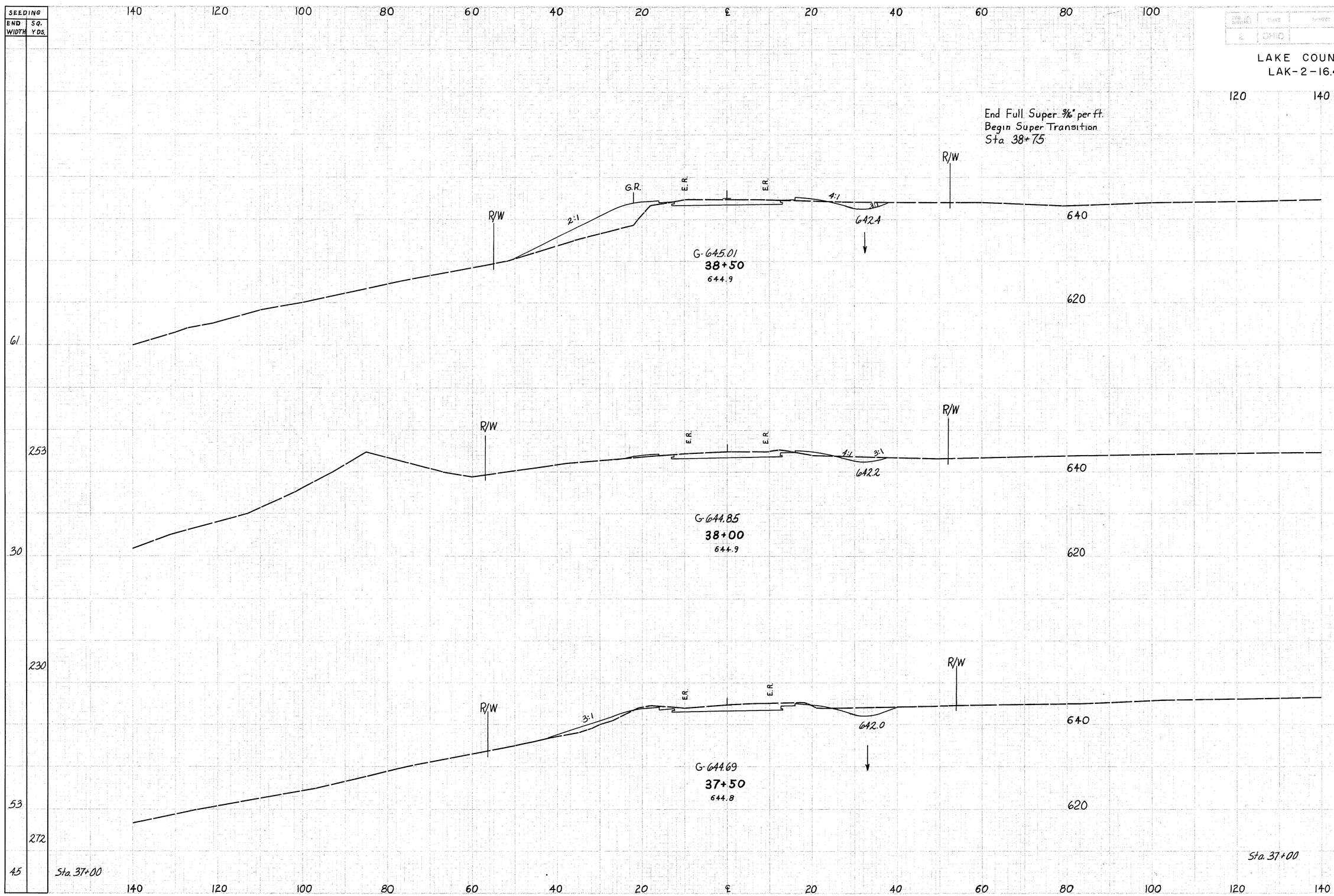
FIELD ENTRANCE Rt. STA. 36+15				
STATION	END AREA		VOLUME	
	CUT	FILL	CUT	FILL
0+22		0		
0+33		20		4
0+42		0		4

END AREA		VOLUME	
CUT	FILL	CUT	FILL
66	14		
		123	77
67	69		
		50	
67			
			250
		44	
13	201		
		42	473
32	310		

RELOCATION MANTLE ROAD STA. 36+00 to 37+00

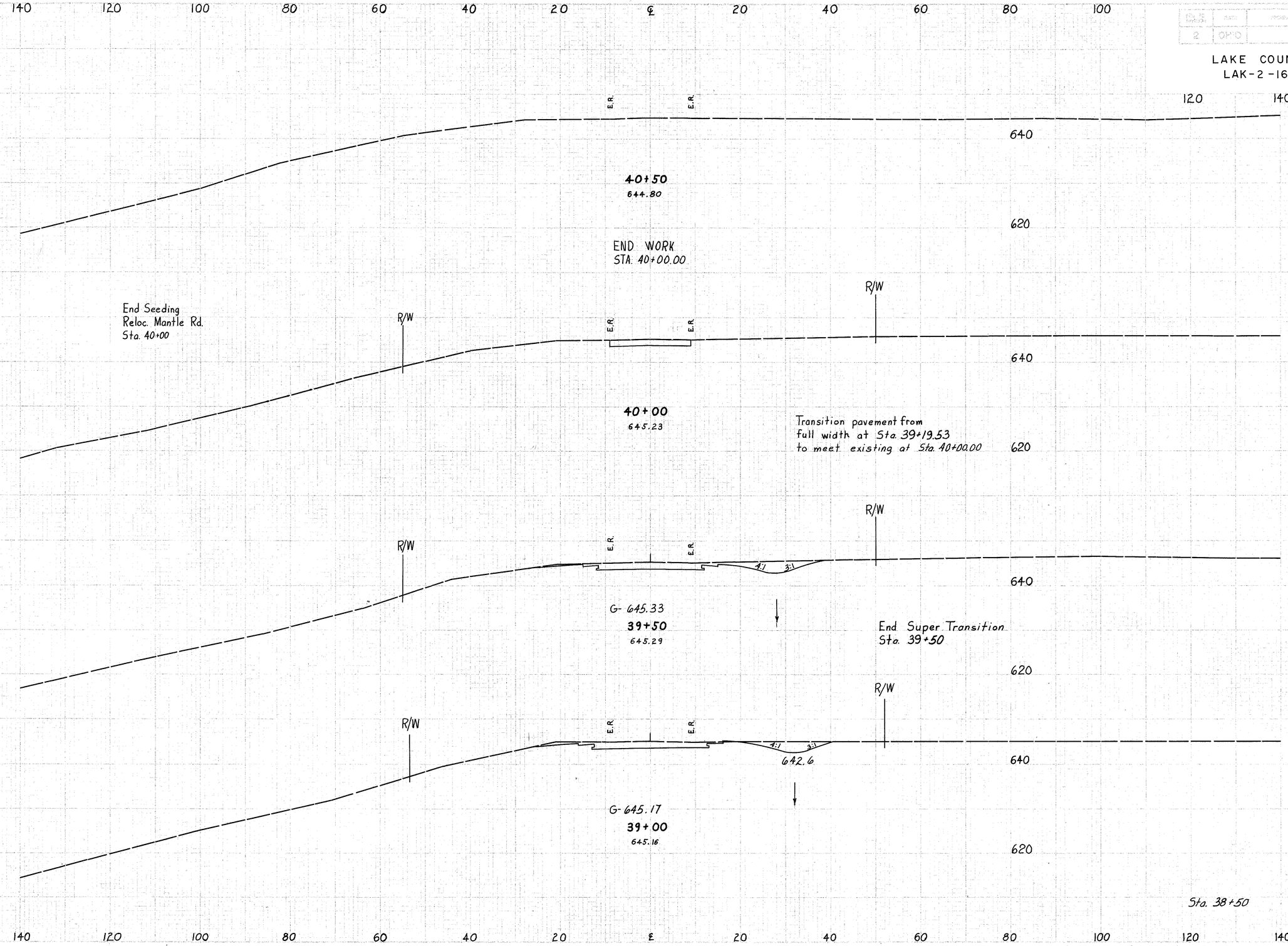
146
313

LAKE COUNTY
LAK-2-16.49



RELOCATION MANTLE ROAD STA. 37+50 to 38+50

SEEDING	
END WIDTH	SQ. YDS.
0	
	106
38	
	208
37	
	272
61	

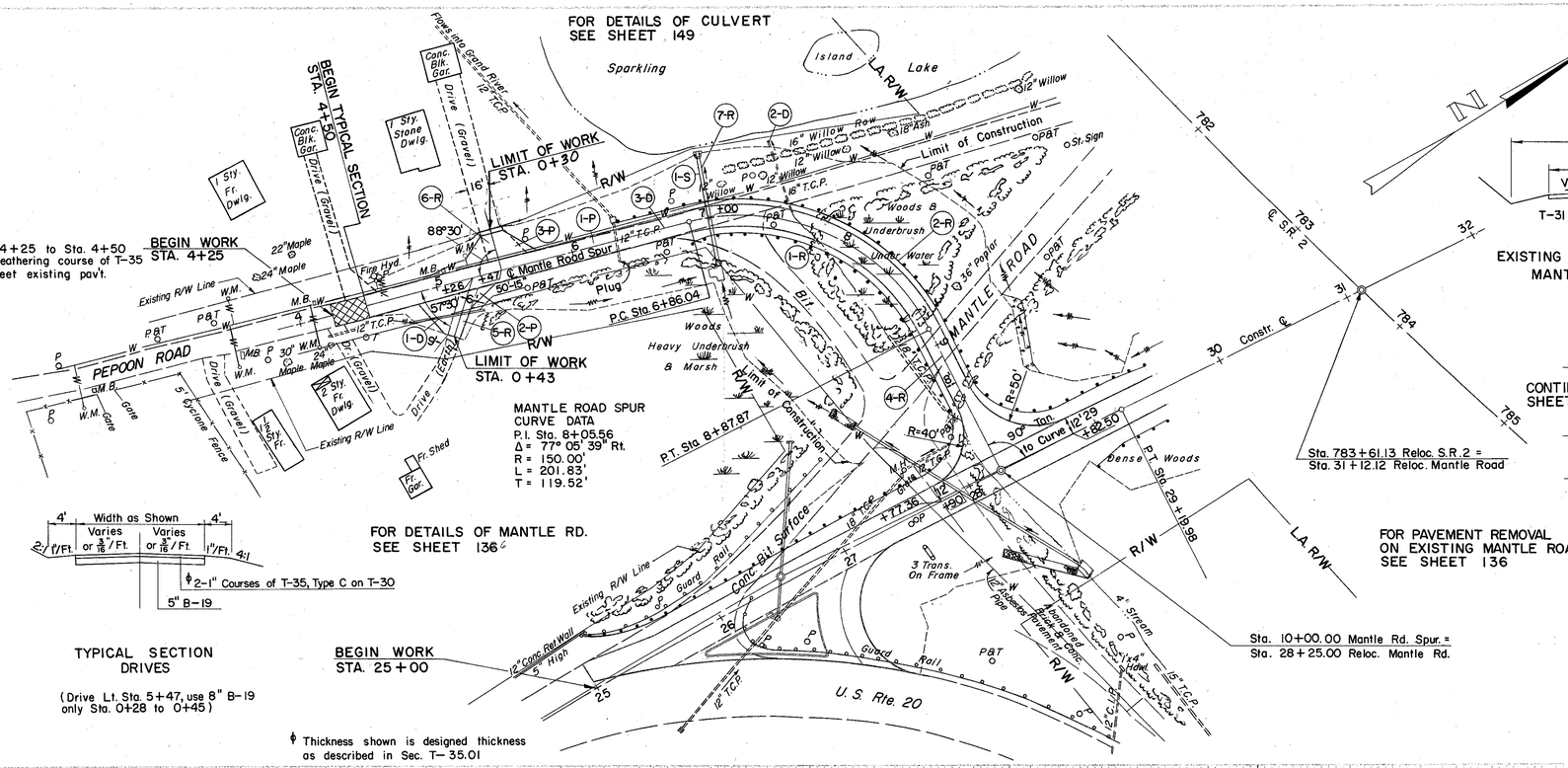


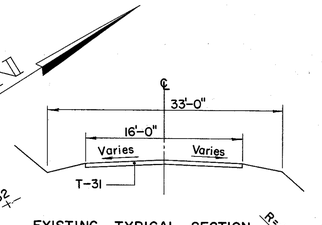
END AREA		VOLUME	
CUT	FILL	CUT	FILL

RELOCATION MANTLE ROAD STA. 39+00 to 40+50

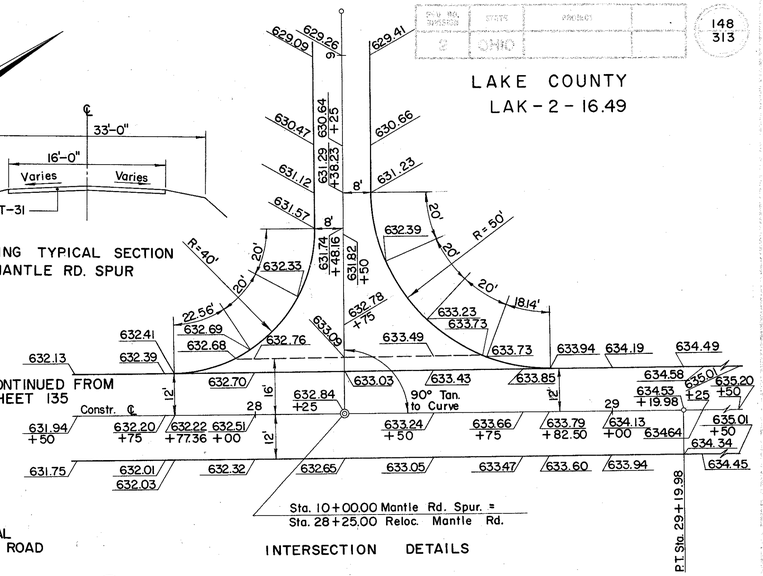
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

LAKE COUNTY
LAK-2-16.49





EXISTING TYPICAL SECTION
MANTLE RD. SPUR

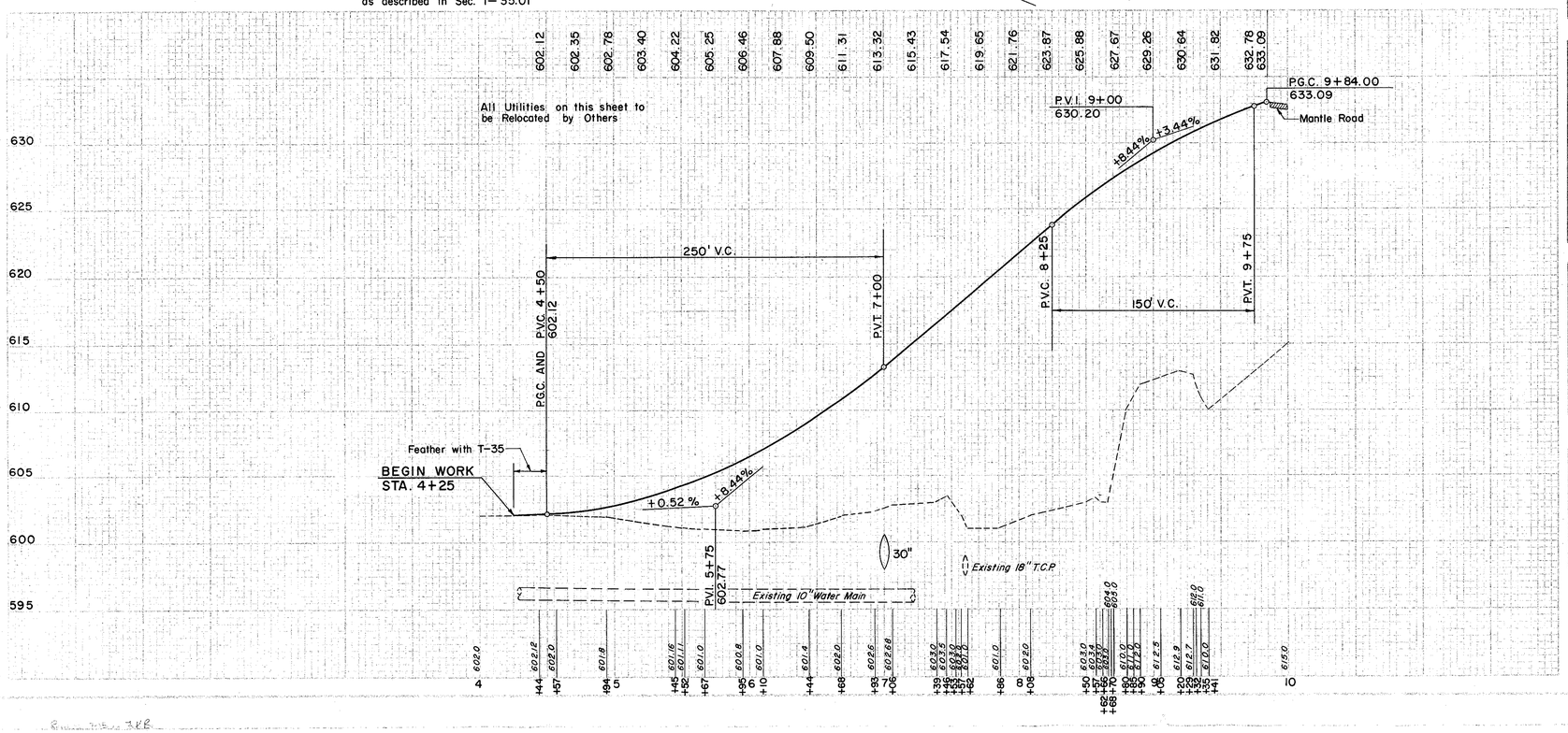


INTERSECTION DETAILS

TYPICAL SECTION
DRIVES

(Drive Lt. Sta. 5+47, use 8" B-19 only Sta. 0+28 to 0+45)

Thickness shown is designed thickness as described in Sec. T-35.01



(D) DRAINAGE

REF. NO.	STATION FROM	STATION TO	SIDE	E-12 PIPE REMOVAL OVER 15"	I-1 15" PIPE CLASS F-4	I-9 STONE UNDER DRAINS NO. 2
					L.F.	
1-D	4+80	5+30	Rt.		50	
2-D	7+60		Lt.	50		
3-D	4+25	9+88				236
TOTAL				50	50	236

(R) ROADWAY

REF. NO.	STATION FROM	STATION TO	SIDE	E-1 COMP. SUB-GRADE		I-15 GUARD RAIL STEEL BEAM STD. TYPE (DEEP)	L-10 SODDING
				S.Y.		L.F.	S.Y.
1-R	6+85	9+40	Rt.			237.5	
2-R	6+36	9+35	Lt.			312.5	
3-R	8+90	9+50	Lt.				24.0
4-R	4+25	9+88		1,054			
5-R	5+26		Rt.	85			
6-R	5+47		Lt.	123			
7-R	7+00						4.5
TOTAL				1,262		550.0	28.5

(P) PAVEMENT

REF. NO.	STATION FROM	STATION TO	SIDE	B-19 AGGR. BASE COURSE	B-35 ASPH. CONC. LEVELING COURSE	B-35 ASPH. CONC. BASE COURSE	I-22 SUBBASE	T-30 BIT. PRIME COAT	T-35 ASPH. CONC. SURF COURSE TYPE A	T-35 ASPH. CONC. SURF COURSE TYPE C
				C.Y.				GAL.	C.Y.	
1-P	4+25	9+88		155	37	90	136	447	38	
2-P	5+26		Rt.	12				34		5
3-P	5+47		Lt.	20				37		5
TOTAL				187	37	90	136	518	38	10

(S) STRUCTURES

REF. NO.	STATION FROM	STATION TO	SIDE	I-1 30" PIPE CLASS A-1 M-64 (d) 14 GA. OR M-66 (b)	I-2 MASONRY	I-10 RIPRAP 6" REINF.
				L.F.	C.Y.	S.Y.
1-S	7+00		℄	88	1.02	6.7
TOTAL				88	1.02	6.7

SODDING LEFT DITCH			
STATION	WIDTH OF SODDING FT.	LENGTH OF SODDING FT.	S.Y.
8+90	40	60	24
9+50	3.0		
SUB TOTAL			

EXCAVATION	=	76 C.Y.
EMBANKMENT	=	14,893 C.Y.
EMBANKMENT	× 20 % =	17,872 C.Y.

MANTLE RD. SPUR STA. 4+25 TO STA. 10+00

SEEDING END WIDTH	SEEDING SQ. YDS.
86	
	431
69	
	358
60	
	270
48	Sta. 5+55 Ahd.
26	Sta. 5+55 BK.
	14
26	
	29
26	Sta. 5+40 Ahd.
48	Sta. 5+40 BK.
	86
14	Sta. 5+15
	23
14	
	56
6	
	8
0	Sta. 4+25

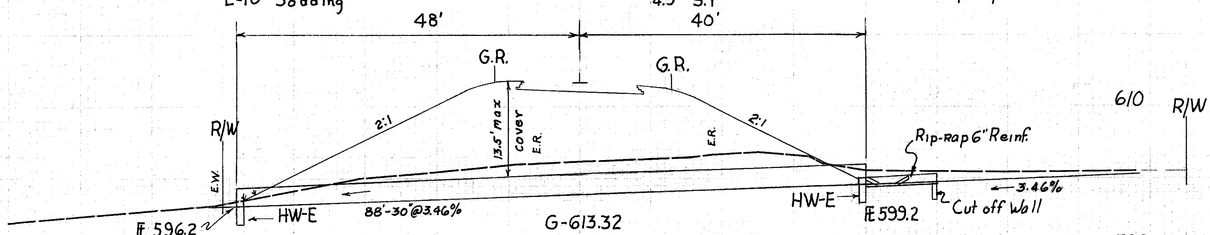
80 60 40 20 ℄ 20 40 60 80

ESTIMATED QUANTITIES

I-1 30" Pipe Class A-1 Sec. M-6.4(b), 14 ga. or M-6.6(b)	88	L.F.
I-2 Masonry	1.02	C.Y.
I-10 Riprap 6" Reinf	12.7	S.Y.
L-10 Sodding	4.5	S.Y.

CULVERT DATA

TYPE: Pipe Culvert with HW-E Headwalls Rt. & Lt.
SIZE: 30"×88'
WORK REQ'D: Build a 15" Pip Culvert and Rip-rap as shown.



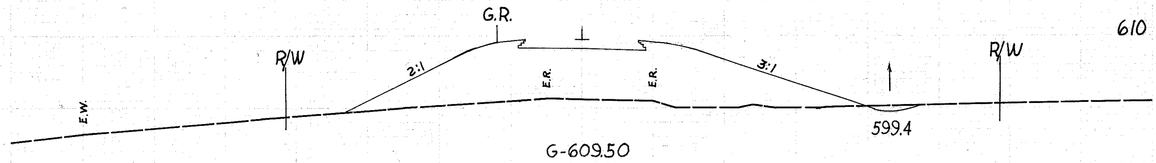
Area: 27 Acres
Q25 = 29 cfs

G-613.32
7+00
602.3

$\frac{10' \times 6' + 9' \times 6'}{9}$ = 12.7 S.Y. Rip Rap

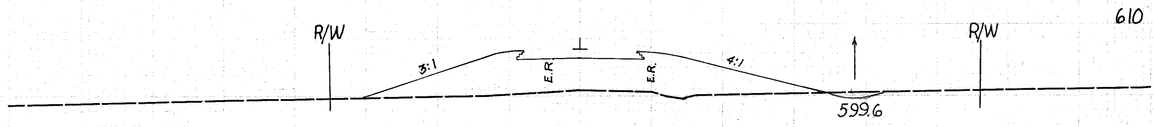
FOR PLAN OF STRUCTURE SEE SHEET 148

FOR DETAILS OF RIPRAP SEE SHEET 216



G-609.50
6+50
601.2

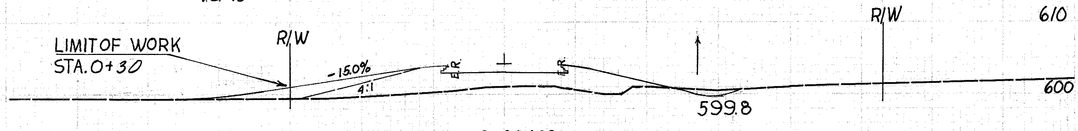
End Normal Section
Begin Super Transition
Sta. 6+16.04



G-606.46
6+00
600.8

P.I. 0+40
V.C. = 10'

LIMIT OF WORK
STA. 0+30

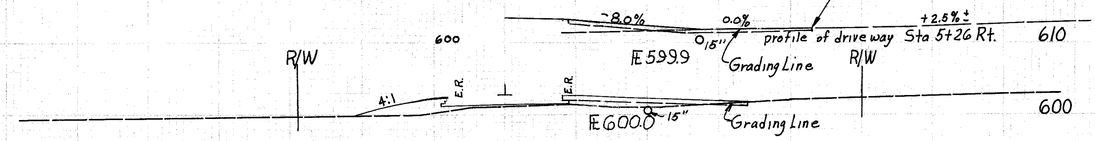


G-604.22
5+50
601.0

P.I. 0+25
V.C. 10'

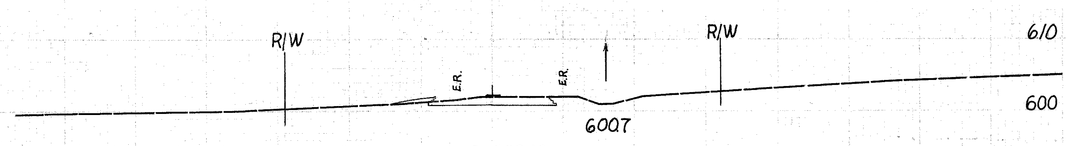
LIMIT OF WORK
STA. 0+43

Sta. 5+30



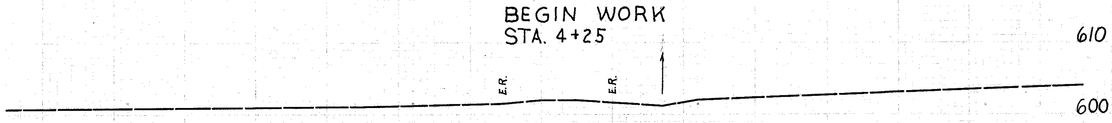
G-602.78
5+00
601.1

Sta. 4+75



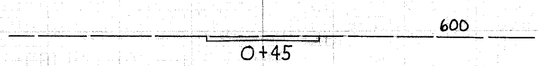
G-602.12
4+50
602.0

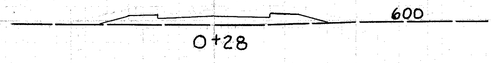
BEGIN WORK
STA. 4+25



4+00
602.0

END WORK
STA 0+45





Drive Lt. Sta. 5+47

DRIVE LT. STA. 5+47				
Station	Endarea		VOLUME	
	CUT	FILL	CUT	FILL
0+18		0		6
0+28		31		6
0+38	0	0	2	
0+45	14			

END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
15	548		
		18	883
4	406		
		8	598
5	240		
		9	321
5	107		
		2	
0			
			127
	30		
0			30
		7	
16	2		

80 60 40 20 ℄ 20 40 60 80

MANTLE ROAD SPUR Sta. 4+00 to 7+00

LAKE COUNTY
LAK-2-16.49

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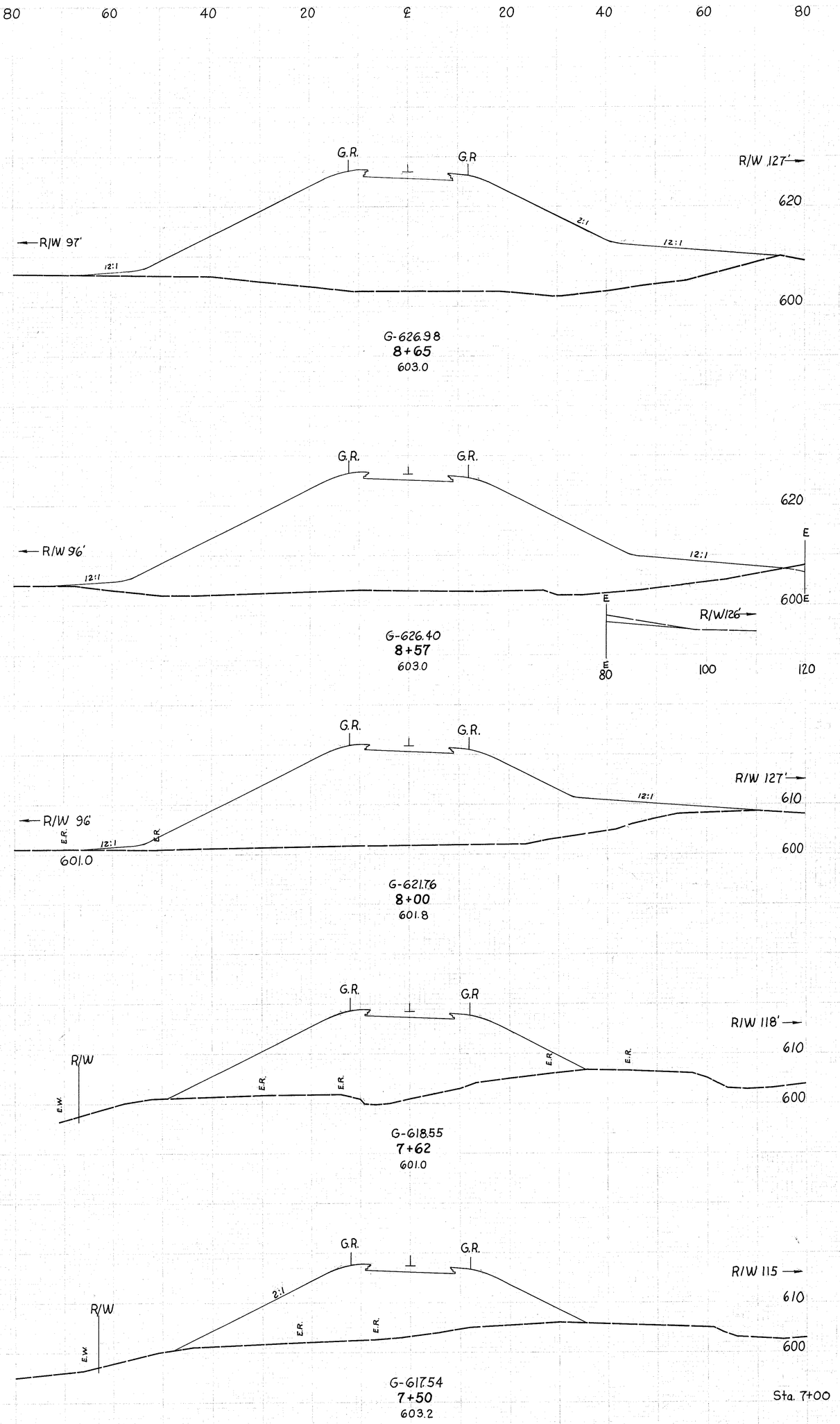
SEEDING END WIDTH	SEEDING SQ. YDS.	END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
134		0	1770		
				2	532
	131				
160		12	1818		
				13	3342
	906				
126		0	1348		
					1573
	426				
76			887		
					361
	100				
74			736		
					1189
	444		548		
86	Sta. 7+00				



End Super Transition
Begin Full Super ½" per ft.
Sta. 7+06.04

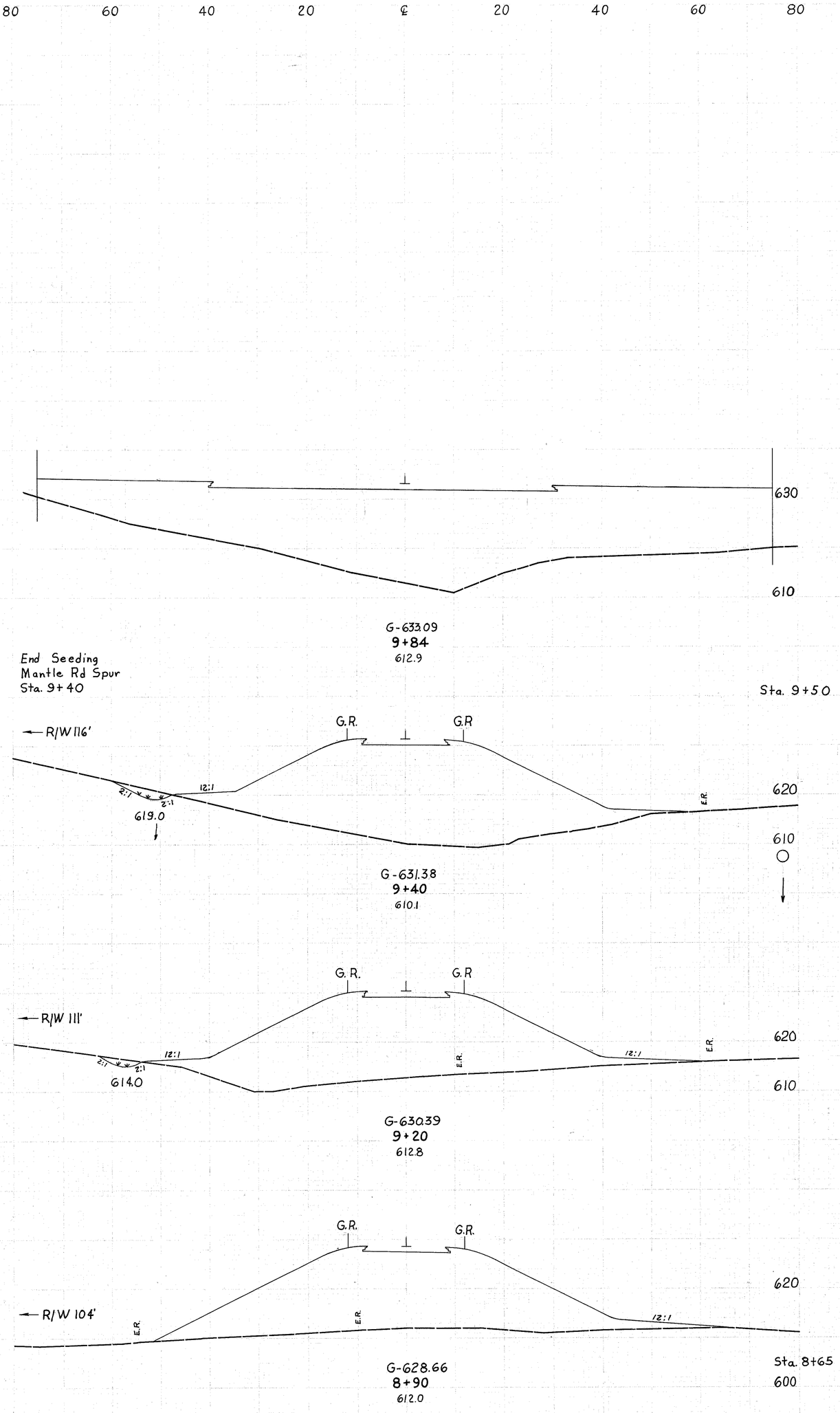
MANTLE ROAD SPUR Sta. 7+50 to 8+65

LAKE COUNTY
LAK-2-16.49

150
313

SEEDING	
END WIDTH	SQ. YDS.
94	
	232
115	
	372
108	
	336
134	

END AREA		VOLUME	
CUT	FILL	CUT	FILL
	2030		2609
0		3	
14	1172		
		8	828
8	1064		
		4	1179
0	1058		
			1309
	1770		



MANTLE ROAD SPUR Sta. 8+90 to 9+84

Sta. 8+65

End Full Super ½" per ft.
Begin Super Transition
Sta. 8+67.87

LAKE COUNTY
LAK-2-16.49

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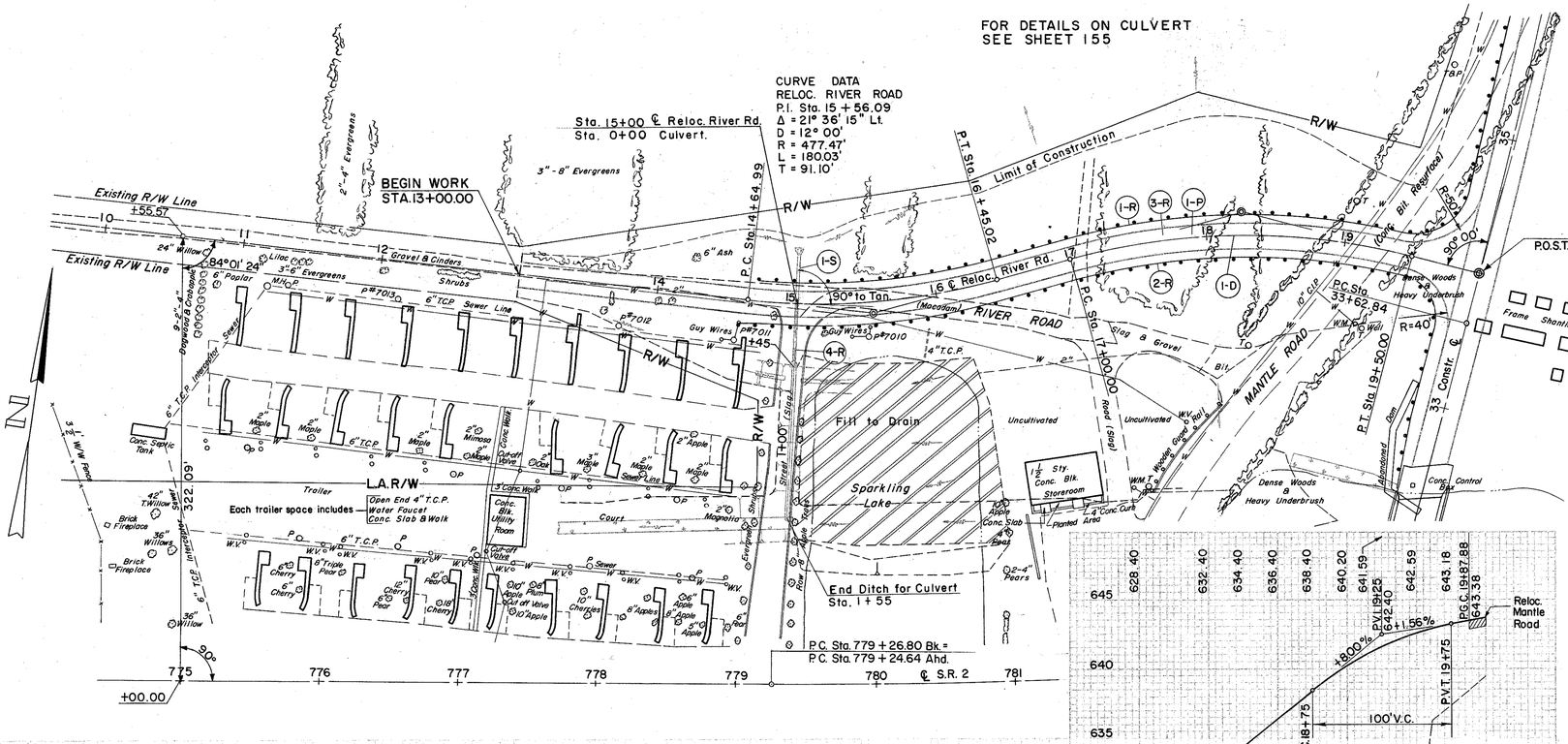
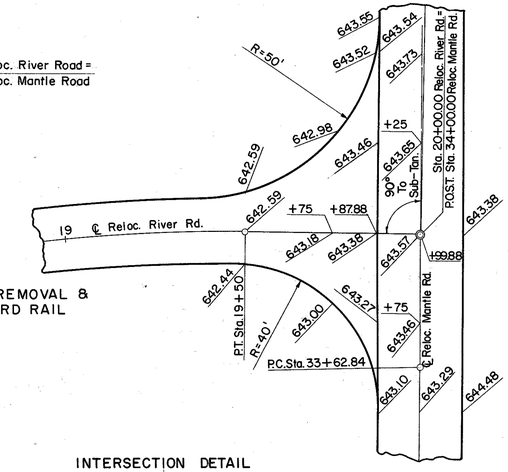
LAKE COUNTY
LAK-2-16.49





INTERSECTION DETAIL
RELOC. RIVER ROAD AT RELOC. MANTLE ROAD

(P) PAVEMENT

REF. NO.	STATION FROM	STATION TO	SIDE	B-19 AGGR. BASE COURSE			I-22 SUBBASE	T-30 BIT. PRIME COAT	T-35 ASPHALTIC CONC. SURFACE COURSE TYPE A
				C.Y.			C.Y.	GAL.	C.Y.
1-P	13 + 00	19+87.88	℄	351			275	632	102
TOTAL				351			275	632	102

(R) ROADWAY

REF. NO.	STATION FROM	STATION TO	SIDE	E-1 COMP. SUBGRADE	I-15 GUARD RAIL STEEL BEAM STD. TYPE (DEEP)	L-10 SODDING
				L.F.	S.Y.	
1-R	14 + 68	19+78	Lt.		537.5	
2-R	14 + 64	19+78	Rt.		537.5	
3-R	13 + 00	19+87.88		1,474		
4-R	15 + 00					3.5
TOTAL				1,474	1,075.0	3.5

(D) DRAINAGE

REF. NO.	STATION FROM	STATION TO	SIDE	I-9 STONE UNDER DRAIN NO. 2
				L.F.
1-D	13 + 00	19+87.88	—	276
TOTAL				276

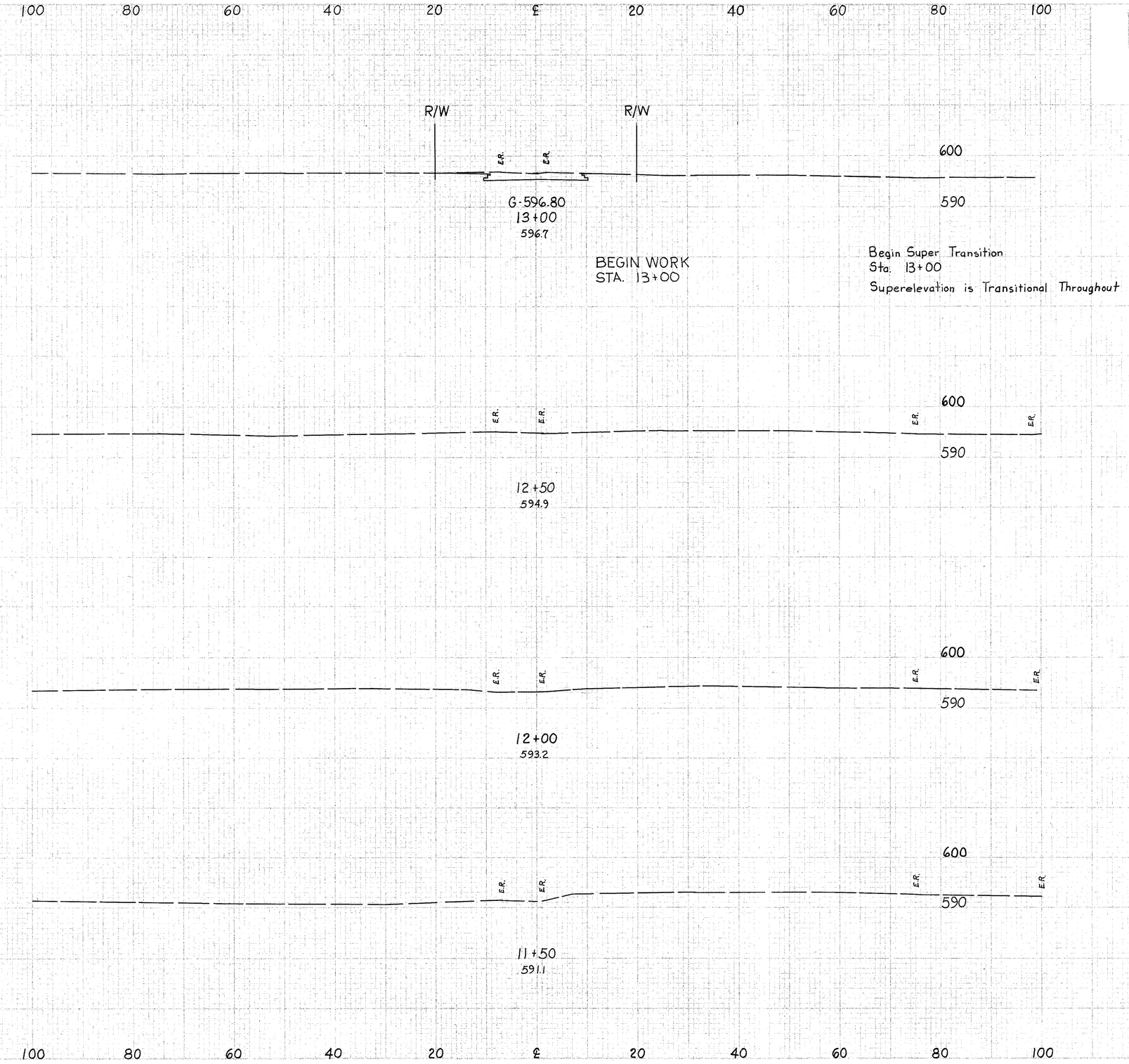
(S) STRUCTURE

REF. NO.	STATION FROM	STATION TO	SIDE	E-3 CHANNEL EXCAVATION	I-1 15" PIPE CLASS A-1 SEC. M-6.4(d), 6.6(b) OR 6.8(b)	I-2 MASONRY
				C.Y.	L.F.	C.Y.
1-S	15+00		℄	146	86	0.52
TOTAL				146	86	0.52

EXCAVATION		165 C.Y.
EMBANKMENT		33,808 C.Y.
EMBANKMENT	20	40,570 C.Y.

RELOC. RIVER ROAD STA. 10+00 TO STA. 20+00

SEEDING	
END WIDTH	SQ. YDS.
8	



FED. AID PROJECT	STATE	PROJECT		153 313
2	OHIO			

LAKE COUNTY
LAK - 2 - 16.49

END AREA		VOLUME	
CUT	FILL	CUT	FILL
29			

RELOCATION RIVER ROAD Sta. 11+50 to 13+00

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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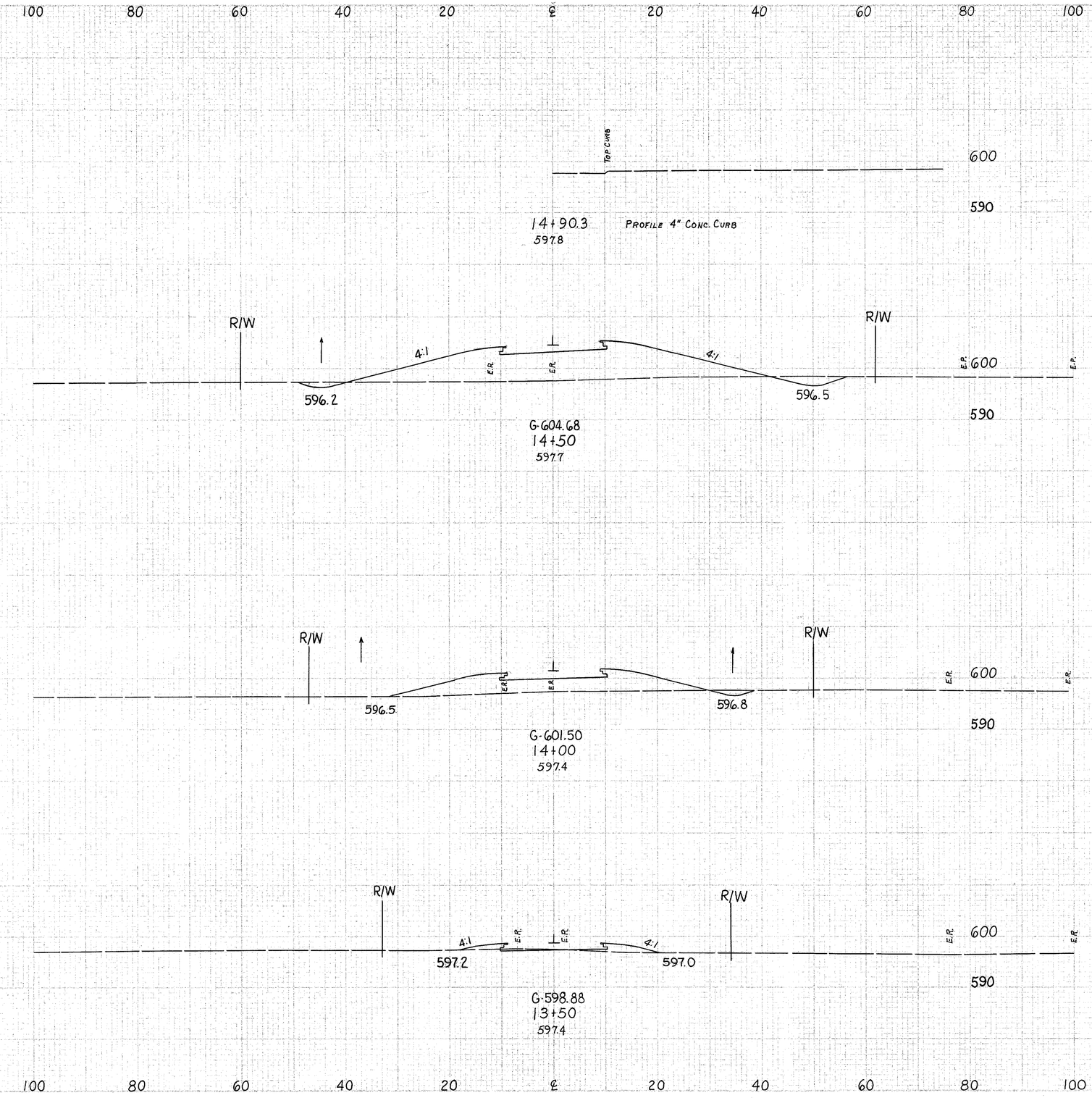
LAKE COUNTY
LAK - 2 - 16.49

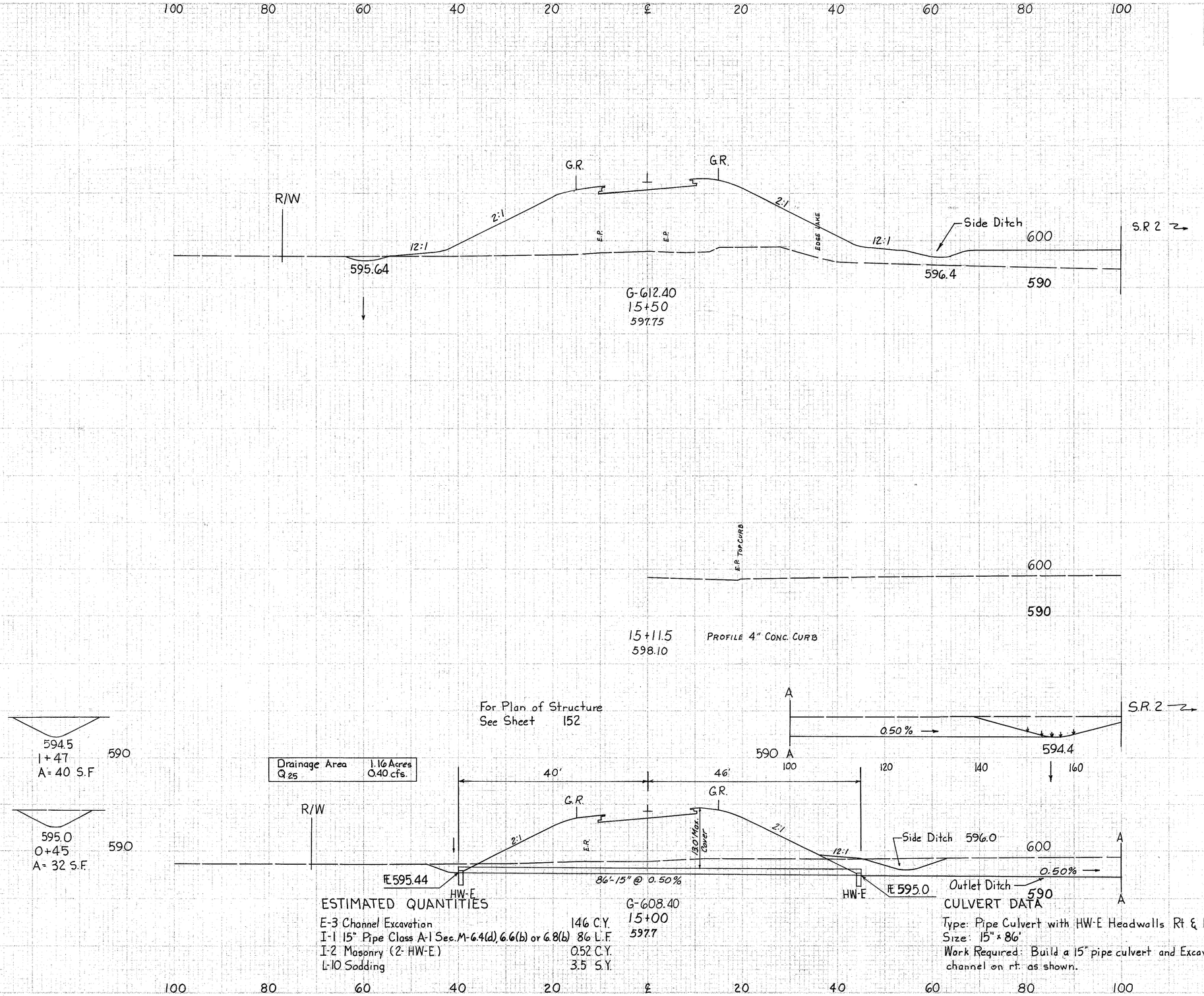
SEEDING	
END WIDTH	SQ. YDS.
90	
	397
53	
	203
20	
	78
8	



END AREA		VOLUME	
CUT	FILL	CUT	FILL
22	353		
		26	468
6	152		
		8	157
3	18		
		30	17
29	0		

RELOCATION RIVER ROAD Sta. 13+50 to 14+90.3

SEEDING	
END WIDTH	SQ. YDS.
152	
694	
98	
522	
90	



ESTIMATED QUANTITIES

E-3 Channel Excavation	146 C.Y.
I-1 15" Pipe Class A-1 Sec. M-6.4(d), 6.6(b) or 6.8(b)	86 L.F.
I-2 Masonry (2- HW-E.)	0.52 C.Y.
L-10 Sodding	3.5 S.Y.

CULVERT DATA

Type: Pipe Culvert with HW-E Headwalls Rt & Lt.
Size: 15" × 86'
Work Required: Build a 15" pipe culvert and Excavate channel on rt. as shown.

Sta. 14+50

Sta. 14+50

END AREA		VOLUME	
CUT	FILL	CUT	FILL
6	1071		
		40	1474
37	521		
		55	809
22	353		

FED. AID PROJECT	STATE	PROJECT	
2	OHIO		

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LAKE COUNTY
LAK - 2 - 16.49

RELOCATION RIVER ROAD Sta. 15+00 to 15+50

SEED. NO. DIVISION	STATE	PROJECT		156 313
2	OHIO			

LAKE COUNTY
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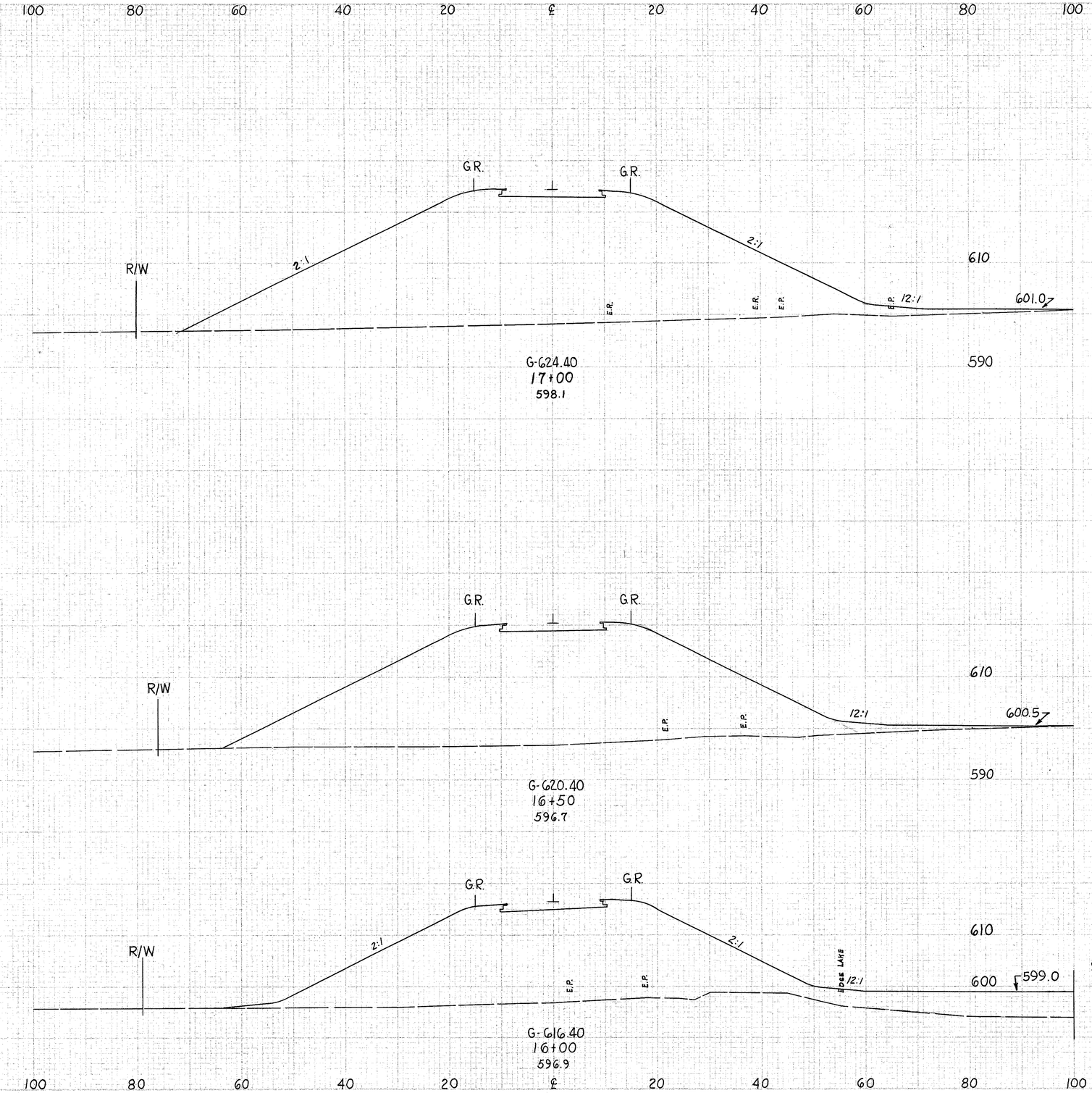
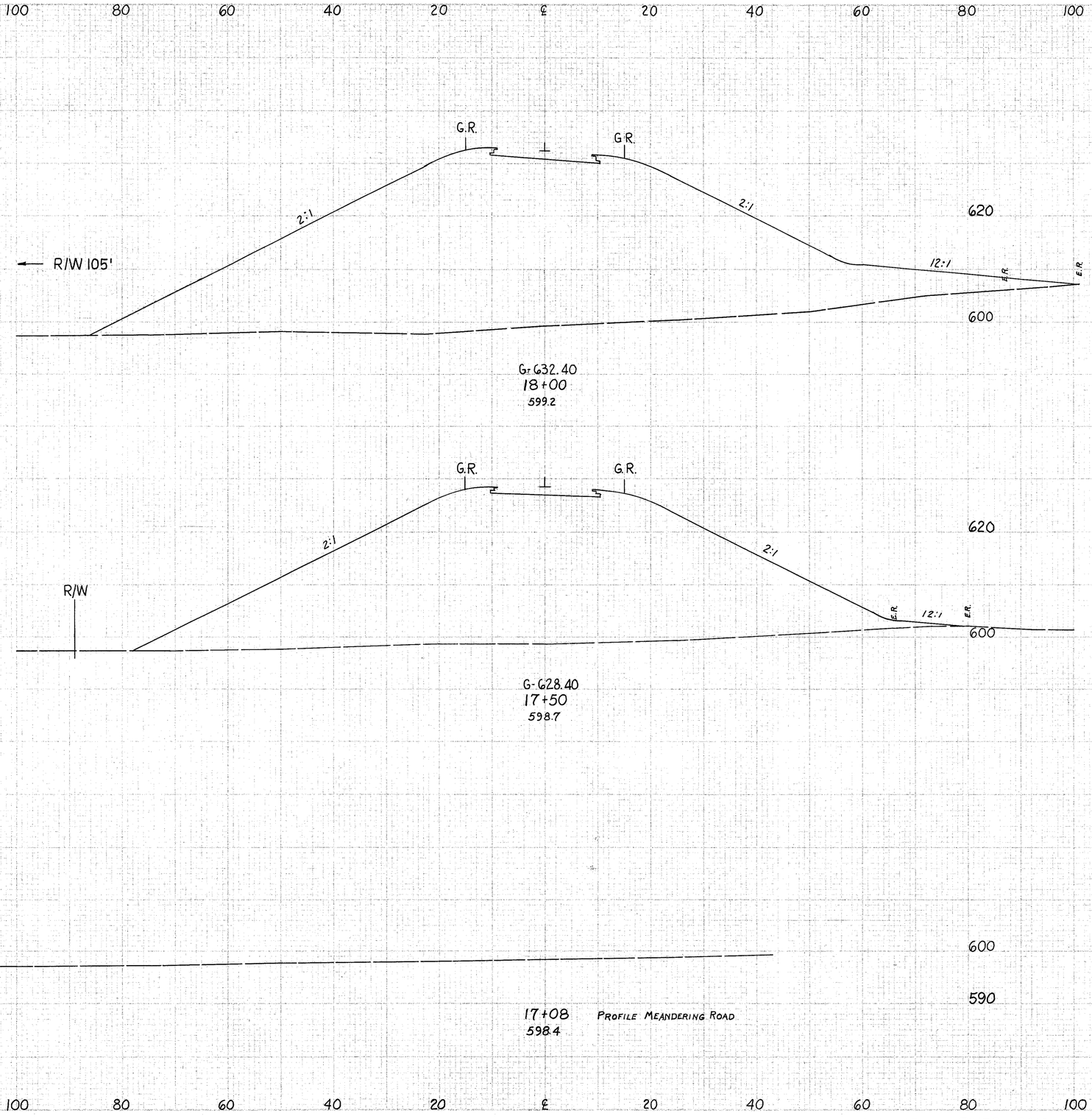
SEEDING END WIDTH	SEEDING SQ. YDS.		END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
167	900			2187		3700
157	864			1809		3104
154	850		0	1543	6	2420
152		Sta. 15+50	6	1071		



Sta. 15+50

RELOCATION RIVER ROAD Sta. 16+00 to 17+00

SEEDING	
END WIDTH	SQ. YDS.
184	
	928
150	
	881
167	



END AREA		VOLUME	
CUT	FILL	CUT	FILL
	3230		
			5401
	2603		
			4435
	2187		

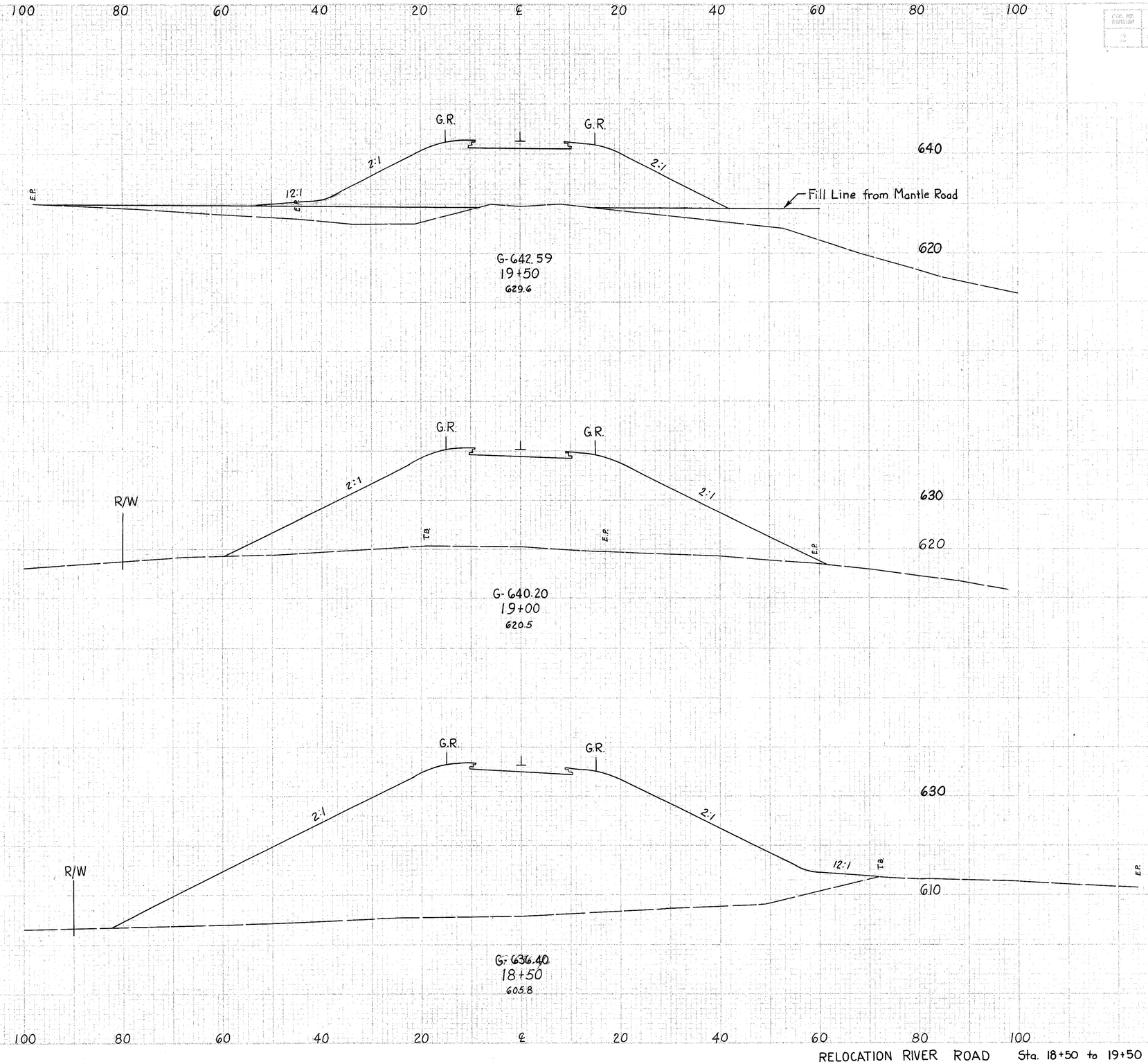
FED. RD. DIVISION	STATE	PROJECT	
5	OHIO		

157
313

LAKE COUNTY
LAK - 2 - 16.49

RELOCATION RIVER ROAD Sta. 17+08 to 18+00

SEEDING	
END WIDTH	SQ. YDS.
82	
	544
114	
	731
149	
	925
184	



Sta. 18+00

Sta. 18+00

END AREA		VOLUME	
CUT	FILL	CUT	FILL
	0		
			337
	727		
			2052
	1489		
			3917
	2735		
			5523
	3230		

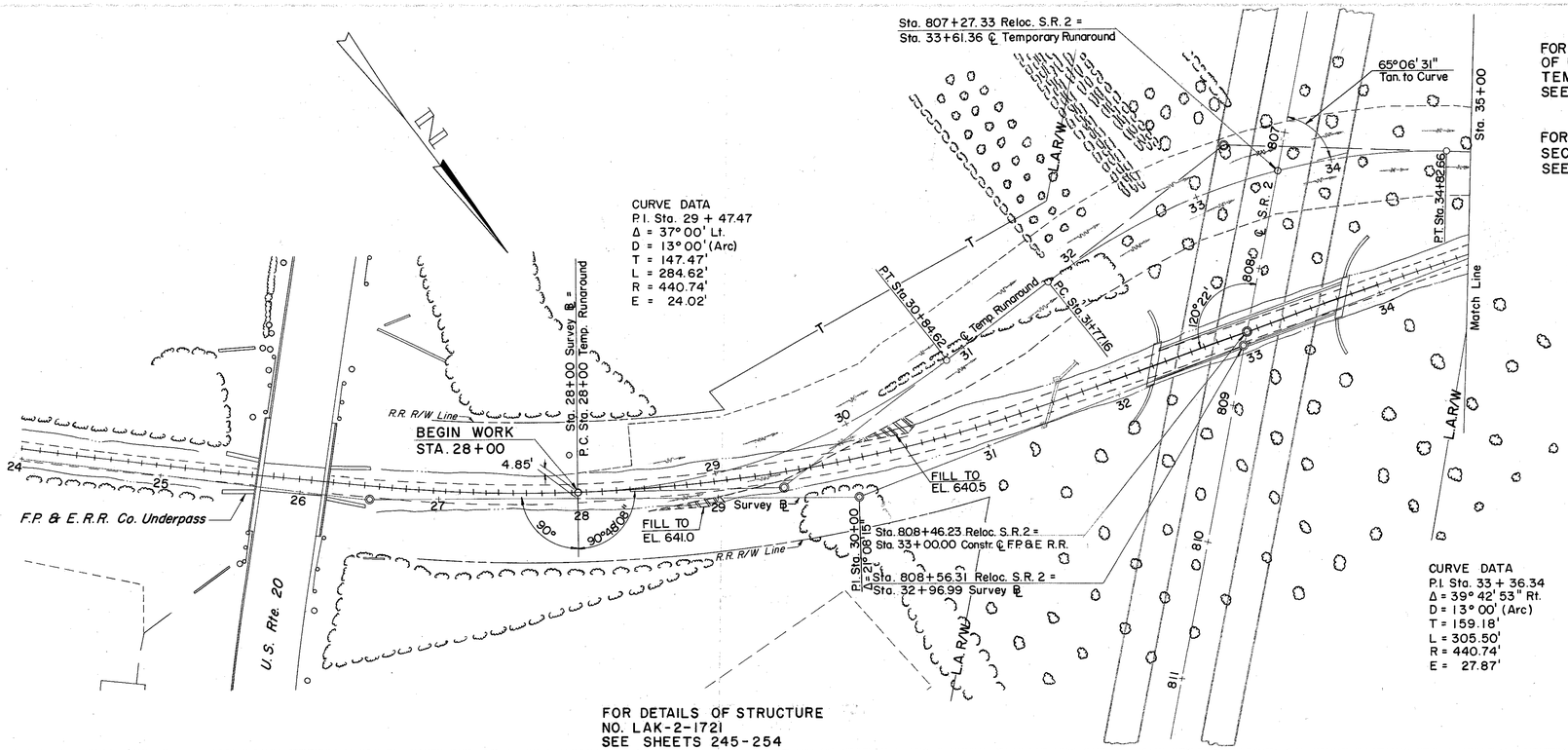
Sta. 19+75

FED. RD. DIVISION	STATE	PROJECT		158 313
2	OHIO			

LAKE COUNTY
LAK - 2 - 16.49

RELOCATION RIVER ROAD Sta. 18+50 to 19+50

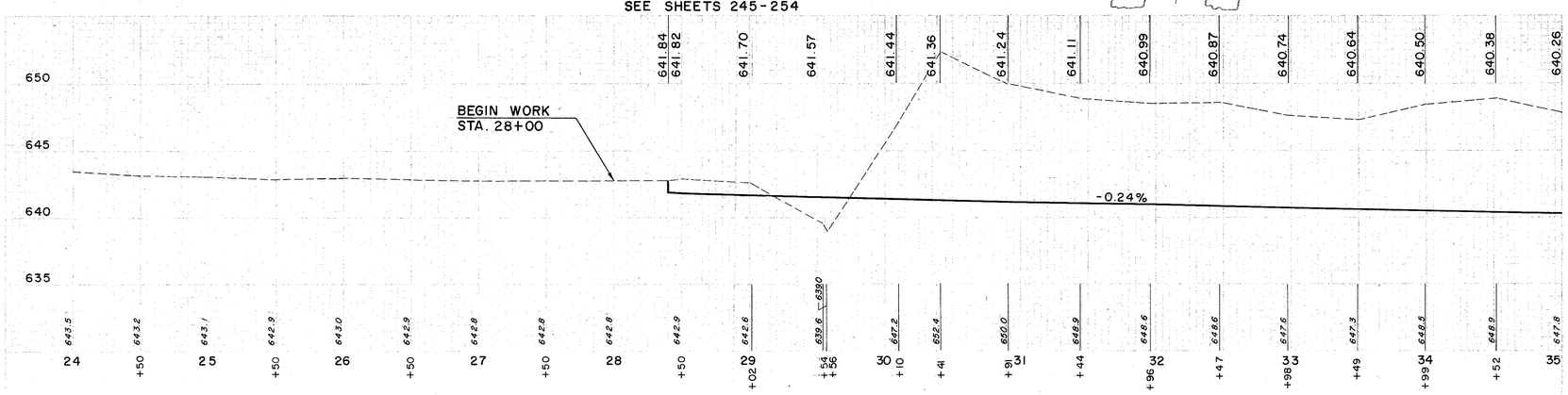
LAKE COUNTY
LAK-2-16.49



FOR TYPICAL SECTION
OF F.P. & E. R.R.
TEMPORARY RUNAROUND
SEE SHEET 160

FOR PROFILE AND TYPICAL
SECTION F.P. & E. R.R.
SEE SHEET 166

FOR DETAILS OF STRUCTURE
NO. LAK-2-1721
SEE SHEETS 245-254



EARTHWORK FOR CONSTRUCTION
OF TEMPORARY RUNAROUND

EXCAVATION	=	4,026 C.Y.
EMBANKMENT	=	74 C.Y.
EMBANKMENT +20 %	=	89 C.Y.

EARTHWORK FOR REMOVAL
OF TEMPORARY RUNAROUND

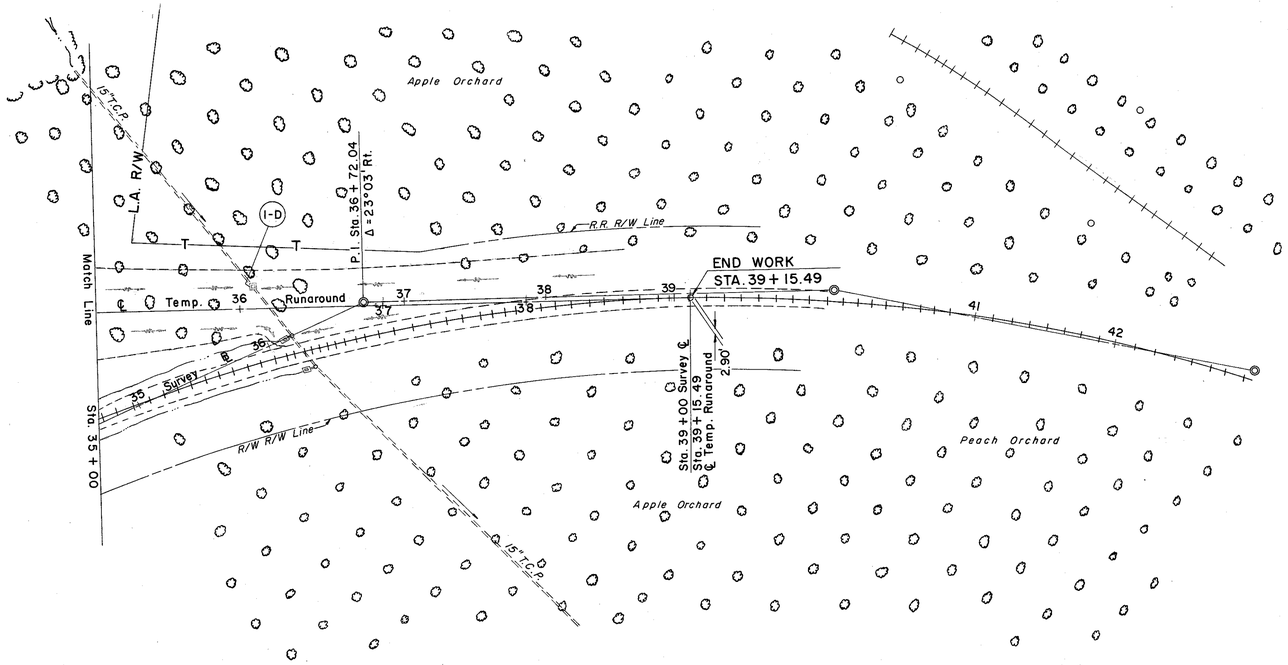
EXCAVATION	=	74 C.Y.
EMBANKMENT	=	4,026 C.Y.
EMBANKMENT 20 %	=	4,831 C.Y.

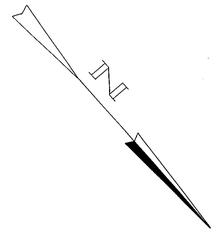
THE FAIRPORT, PAINESVILLE & EASTERN RAILROAD
TEMPORARY RUNAROUND STA. 28+00 TO STA. 35+00

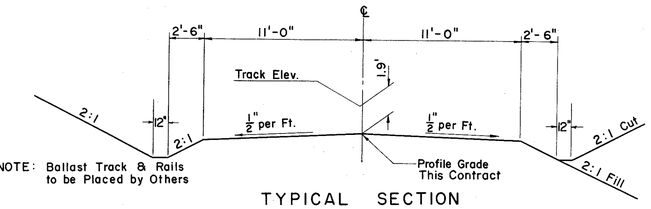
FED. RD. DIVISION	STATE	PROJECT		
2	OHIO			

160
313

LAKE COUNTY
LAK-2 - 16.49







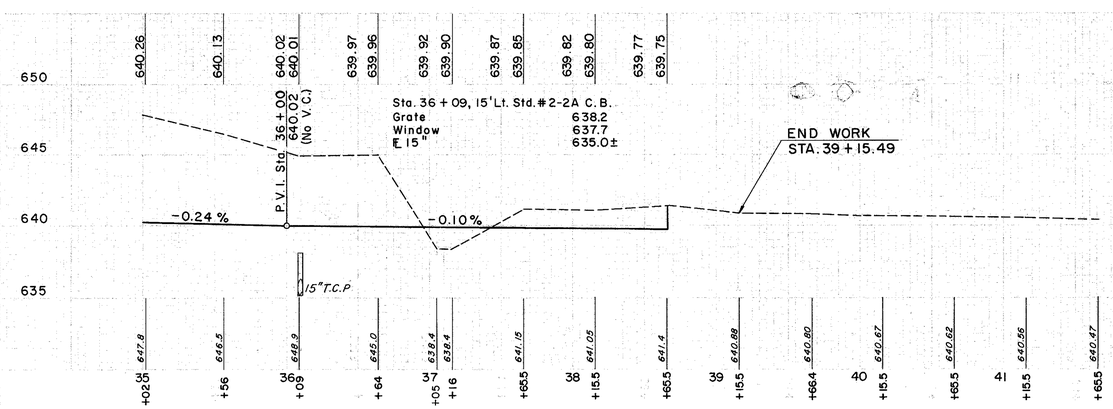
NOTE: Ballast Track & Rails to be Placed by Others

TYPICAL SECTION
F. P. & E. RAILROAD TEMP. RUNAROUND

(D) DRAINAGE

REF. NO.	STATION FROM	STATION TO	SIDE	I-8 STD. #2-2A C.B.	I-16 C.B. ABANDONED
				EA.	
I-D	36 + 09		Lt.	1	1
TOTAL				1	1

NOTE: Abandon the #2-2A C.B. after need is no longer required.



EARTHWORK FOR CONSTRUCTION OF TEMPORARY RUNAROUND

EXCAVATION	=	2,049 C.Y.
EMBANKMENT	=	35 C.Y.
EMBANKMENT +20%	=	42 C.Y.

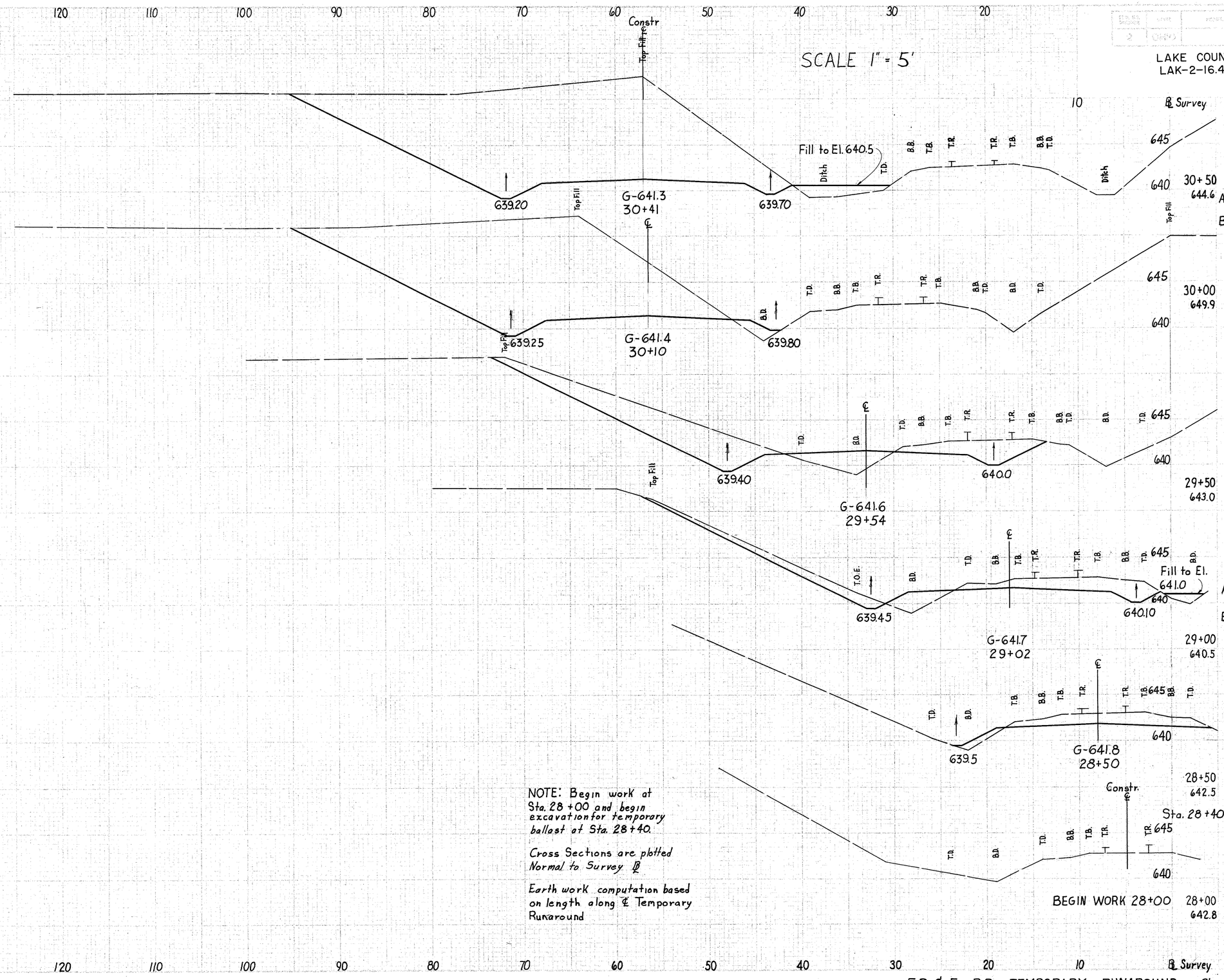
EARTHWORK FOR REMOVAL OF TEMPORARY RUNAROUND

EXCAVATION	=	35 C.Y.
EMBANKMENT	=	2,049 C.Y.
EMBANKMENT +20	=	2,459 C.Y.

THE FAIRPORT, PAINESVILLE & EASTERN RAILROAD
TEMPORARY RUNAROUND STA. 35+00 TO STA. 41+65.5

LAKE COUNTY
LAK-2-16.49

SCALE 1" = 5'



NOTE: Begin work at Sta. 28+00 and begin excavation for temporary ballast at Sta. 28+40.

Cross Sections are plotted Normal to Survey ℄

Earth work computation based on length along ℄ Temporary Runaround

	END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
AH.	396	0		
BK.	396	10		
			412	9
	322	5		
			438	23
	100	17		
			143	25
AH.	48	9		
BK.	48	12		
			68	14
	23	3		
			9	1
	23	3		
			17	2
	–	0		

SEEDING END WIDTH	SEEDING SQ. YDS.

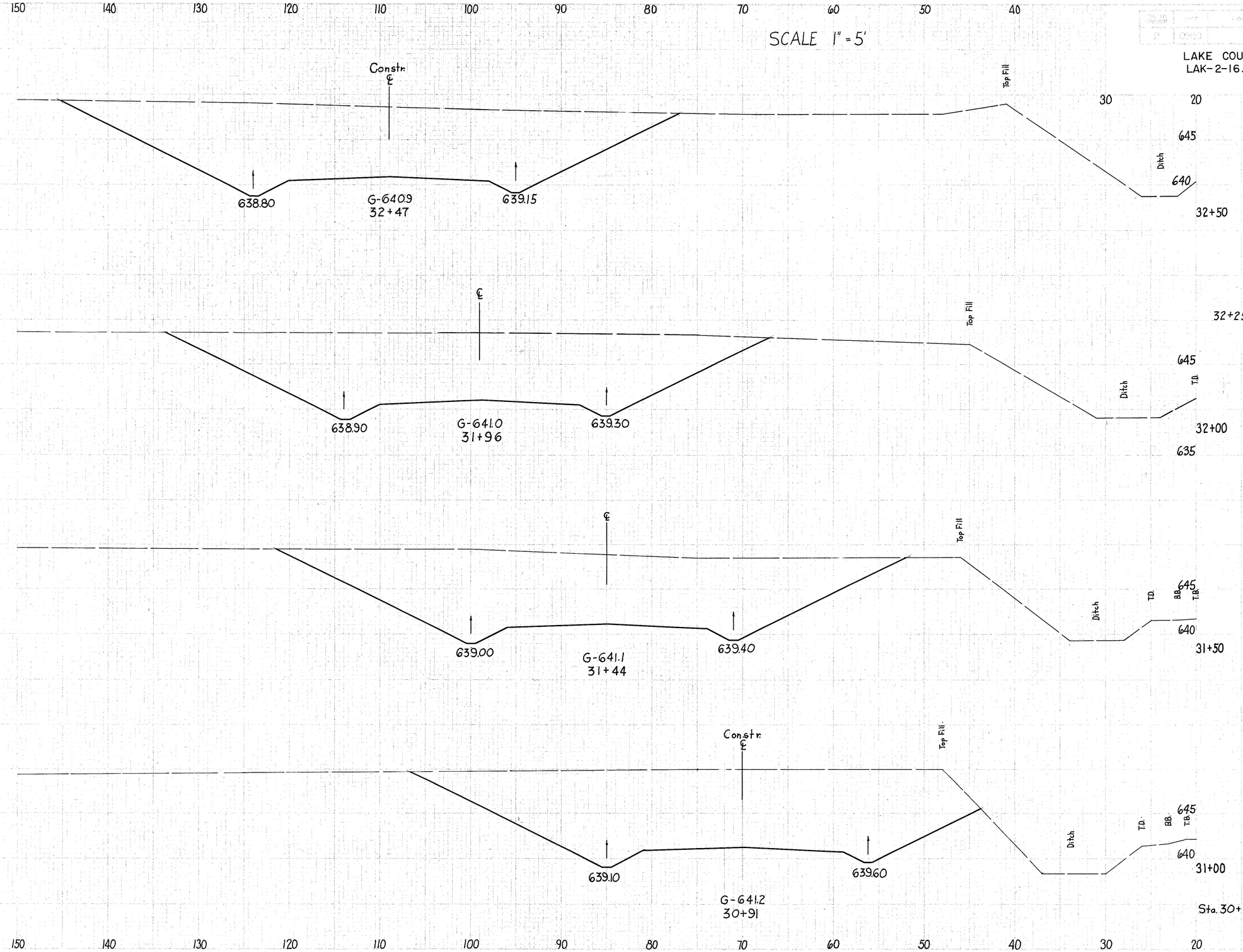
F.P. & E. R.R. TEMPORARY RUNAROUND Sta. 28+00 to 30+00

SEEDING	
END WIDTH	SQ. YDS.

162
313

LAKE COUNTY
LAK-2-16.49

SCALE 1" = 5'



END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
0			
		224	
417			
		832	
447			
		907	
477			
		808	
396	0		

7/63
X-39
td
EA EB
SLS 8/7/63
Inspected was 11/18/63
Z Woelk
SLS 11/19/63

F. P. & E. R.R. TEMPORARY RUNAROUND Sta. 31+00 to 32+00

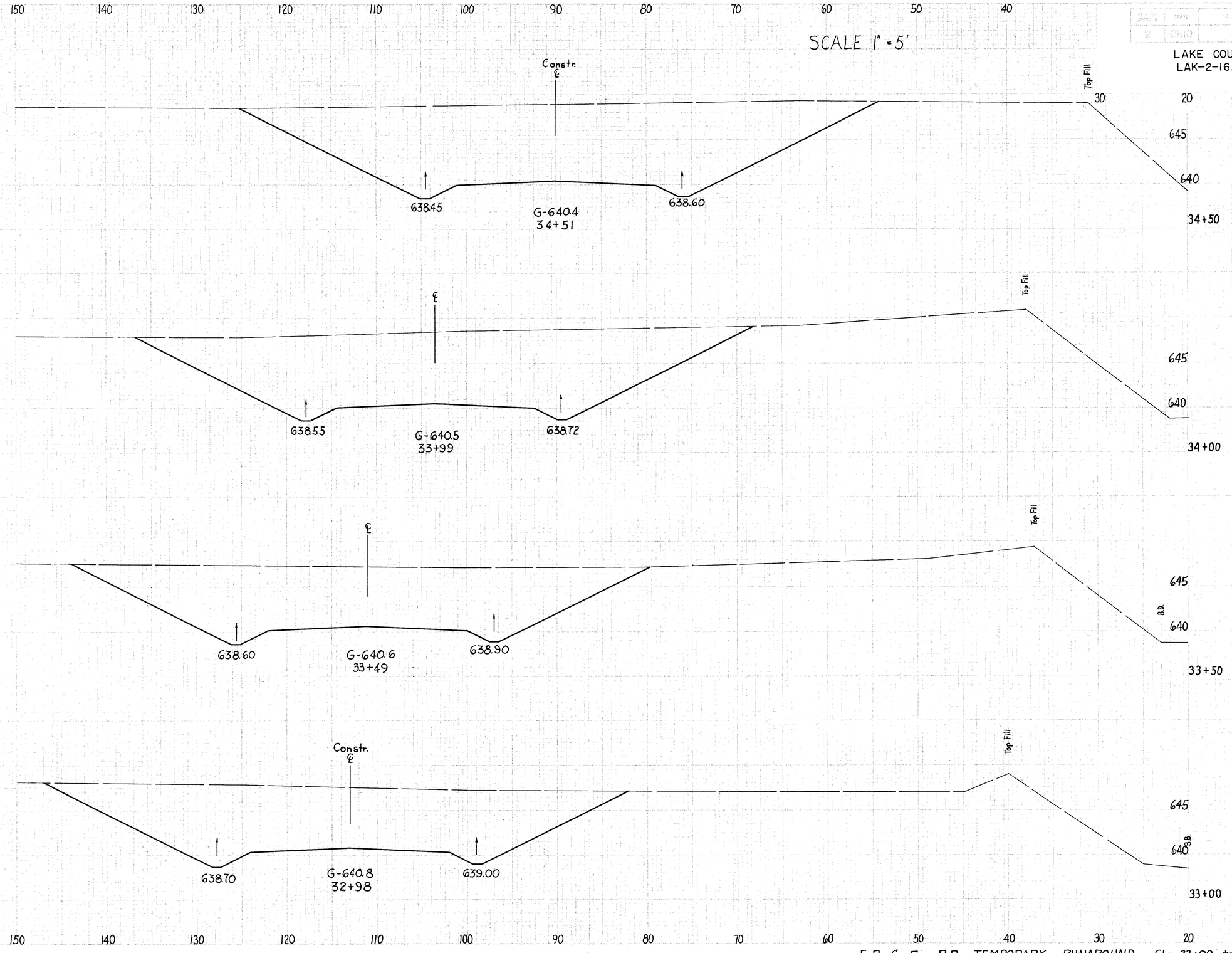
SEEDING	
END WIDTH	SQ. YDS.

SCALE 1" = 5'

163
313

LAKE COUNTY
LAK-2-16.49

END AREA		VOLUME	
CUT	FILL	CUT	FILL

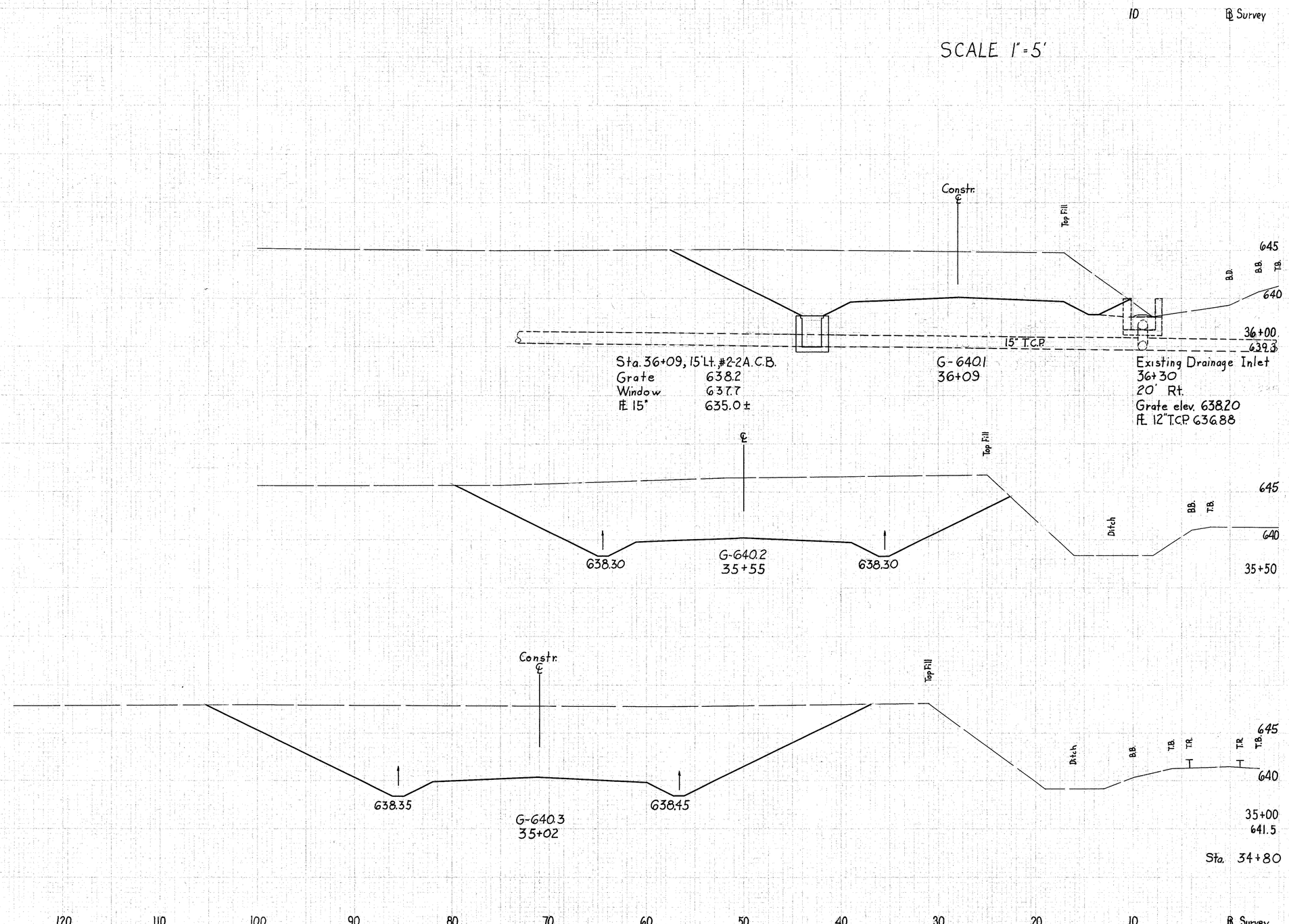


F. P. & E. R.R. TEMPORARY RUNAROUND Sta. 33+00 to 34+50

SEEDING	
END WIDTH	SQ. YDS.

LAKE COUNTY
LAK-2-16.49

SCALE 1" = 5'



END AREA		VOLUME	
CUT	FILL	CUT	FILL
214			
		543	
329			
		728	
413			
		168	
0			

F. P. & E. R.R. TEMPORARY RUNAROUND Sta. 35+00 to 36+00

SEEDING	
END WIDTH	SQ. YDS.

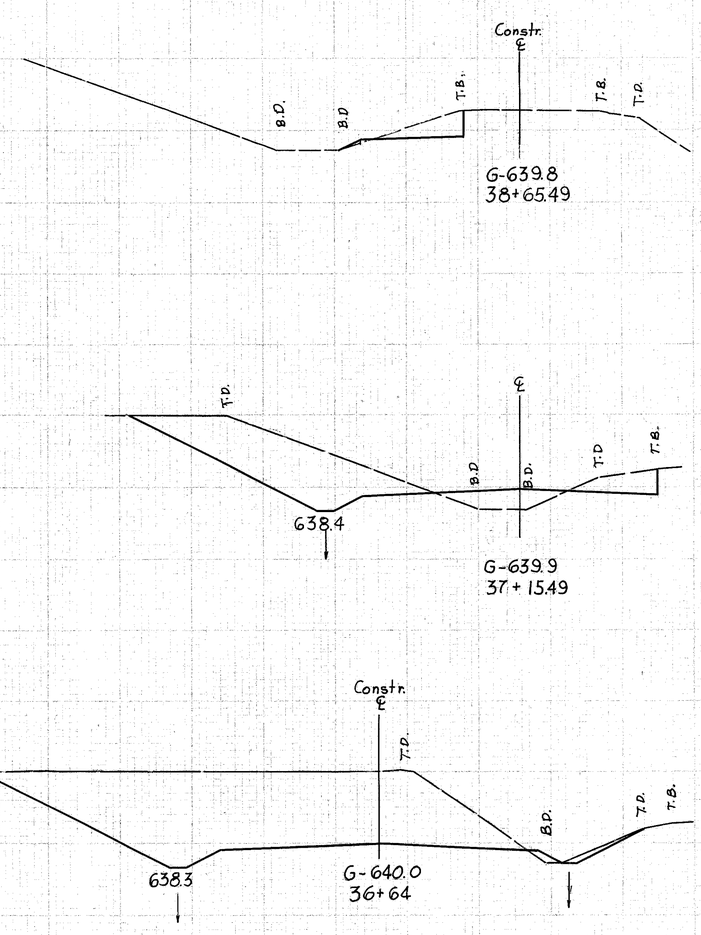
40 30 20 10 ℄ Survey

165
313

LAKE COUNTY
LAK-2-16.49

SCALE 1" = 5'

		END AREA		VOLUME	
		CUT	FILL	CUT	FILL
END WORK 39+15.49	Sta. 39+00	0	0		
	645			4	
	38+50				
	640	6	0		
				183	25
	645				
	37+00	60	9		
	640				
				210	10
	645				
	36+50	160	1		
	640				
				381	
	Sta. 36+09	214			



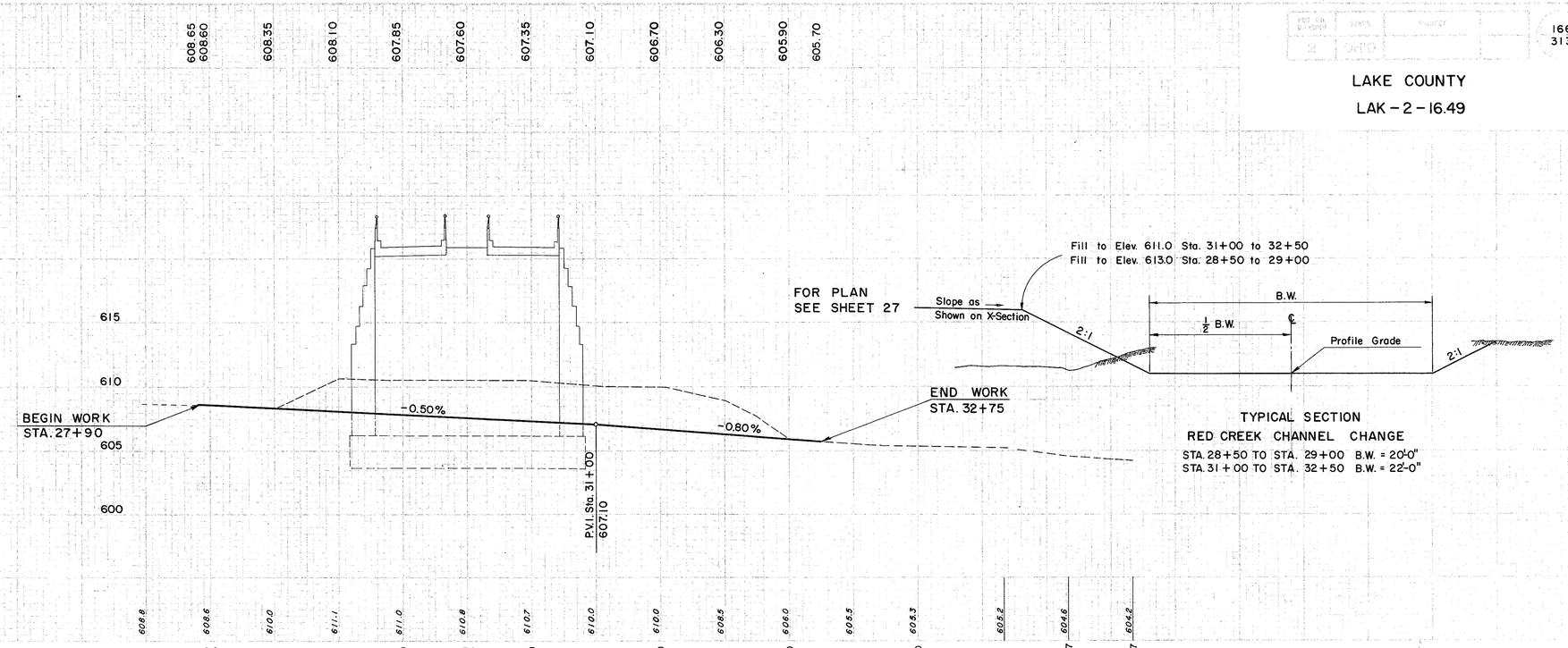
40 30 20 10 ℄ Survey

F.P. & E. R.R. TEMPORARY RUNAROUND Sta. 36+50 to 37+00

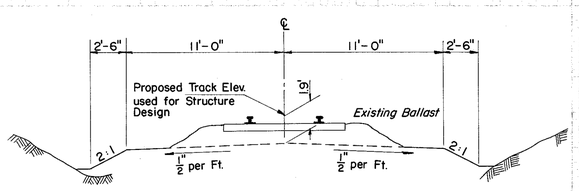
...ed OK WMS 11/4/63
... SLS 11/5/63
...pated WMS 11/8/63
E Work
SLS 11/19/63

LAKE COUNTY

LAK-2-16.49



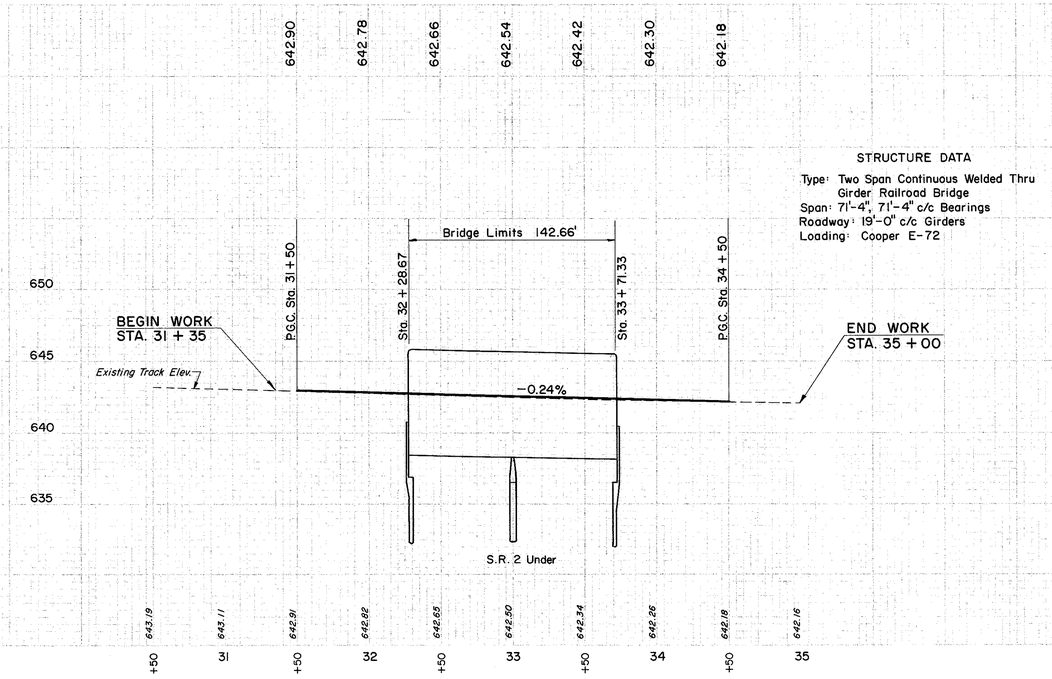
PROFILE RED CREEK CHANNEL CHANGE



TYPICAL SECTION

F. P. & E. R. R. CONSTR.

NOTE: No Excavation will be made within the limits of the existing ballast. For Details, see Sheet 167

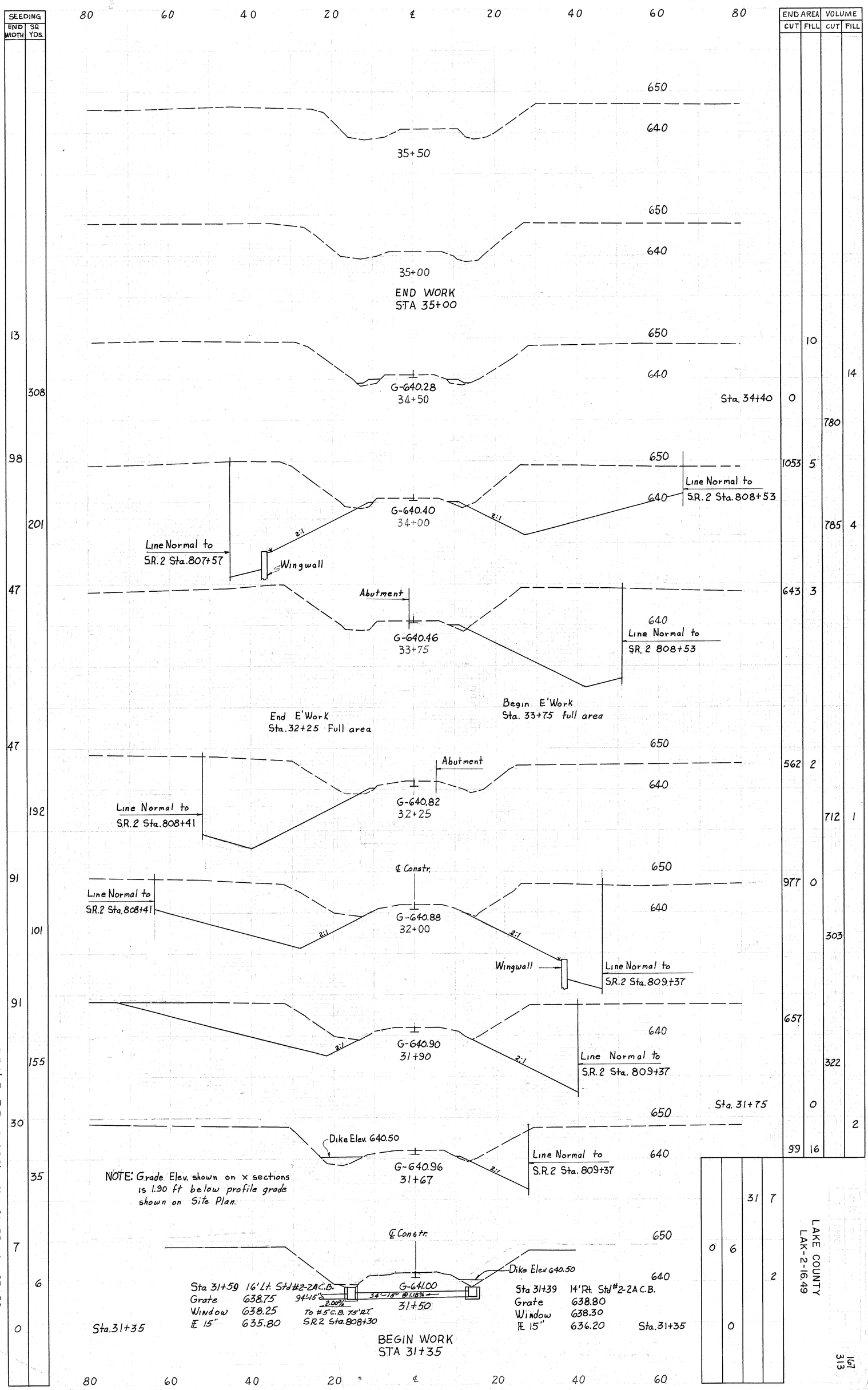


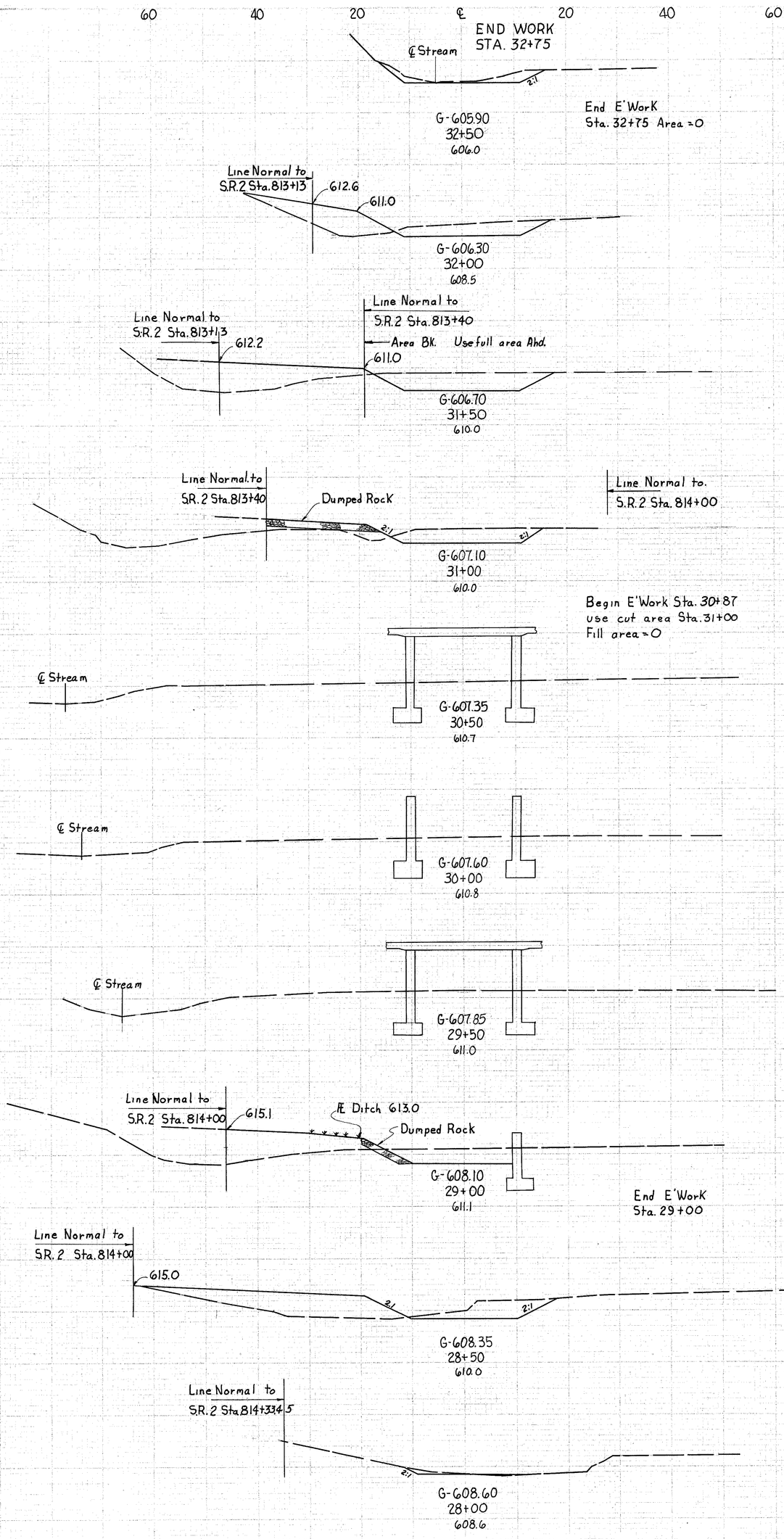
STRUCTURE DATA

Type: Two Span Continuous Welded Thru Girder Railroad Bridge
Span: 71'-4", 71'-4" c/c Bearings
Roadway: 19'-0" c/c Girders
Loading: Cooper E-72

PROFILE F. P. & E. R.R.

PROFILE RED CREEK CHANNEL CHANGE
AND F.P. & E. R.R. BRIDGE CONSTRUCTION


SEEDING
END WIDTH
SQ YDS.
80 60 40 20 ℄ 20 40 60 80
END AREA
CUT FILL
VOLUME
CUT FILL
650
640
35+50
35+00
END WORK
STA 35+00
G-640.28
34+50
Sta. 34+40
G-640.40
34+00
Line Normal to
S.R. 2 Sta. 808+53
Line Normal to
S.R. 2 Sta. 807+57
Wingwall
2:1
Abutment
G-640.46
33+75
Line Normal to
S.R. 2 808+53
End E'Work
Sta. 32+25 Full area
Begin E'Work
Sta. 33+75 full area
G-640.82
32+25
Line Normal to
S.R. 2 Sta. 808+41
℄ Constr.
G-640.88
32+00
Wingwall
Line Normal to
S.R. 2 Sta. 809+37
G-640.90
31+90
Line Normal to
S.R. 2 Sta. 809+37
Sta. 31+75
Dike Elev. 640.50
G-640.96
31+67
NOTE: Grade Elev. shown on x sections is 1.90 ft below profile grade shown on Site Plan.
G-641.00
31+50
Sta 31+59 16' Lt. Std #2-2A C.B.
Grate 638.75
Window 638.25
IE 15" 635.80
94'-15" @
34'-15" @ 1.18%
2.00%
To #5 C.B. 75' Rt.
S.R. 2 Sta. 808+30
Sta 31+39 14' Rt. Std #2-2A C.B.
Grate 638.80
Window 638.30
IE 15" 636.20
Sta. 31+35
BEGIN WORK
STA 31+35
Sta. 31+35
F.P. & E. R.R. (EAST) Sta. 30+50 to 35+50
LAKE COUNTY
LAK-2-16.49
167
313



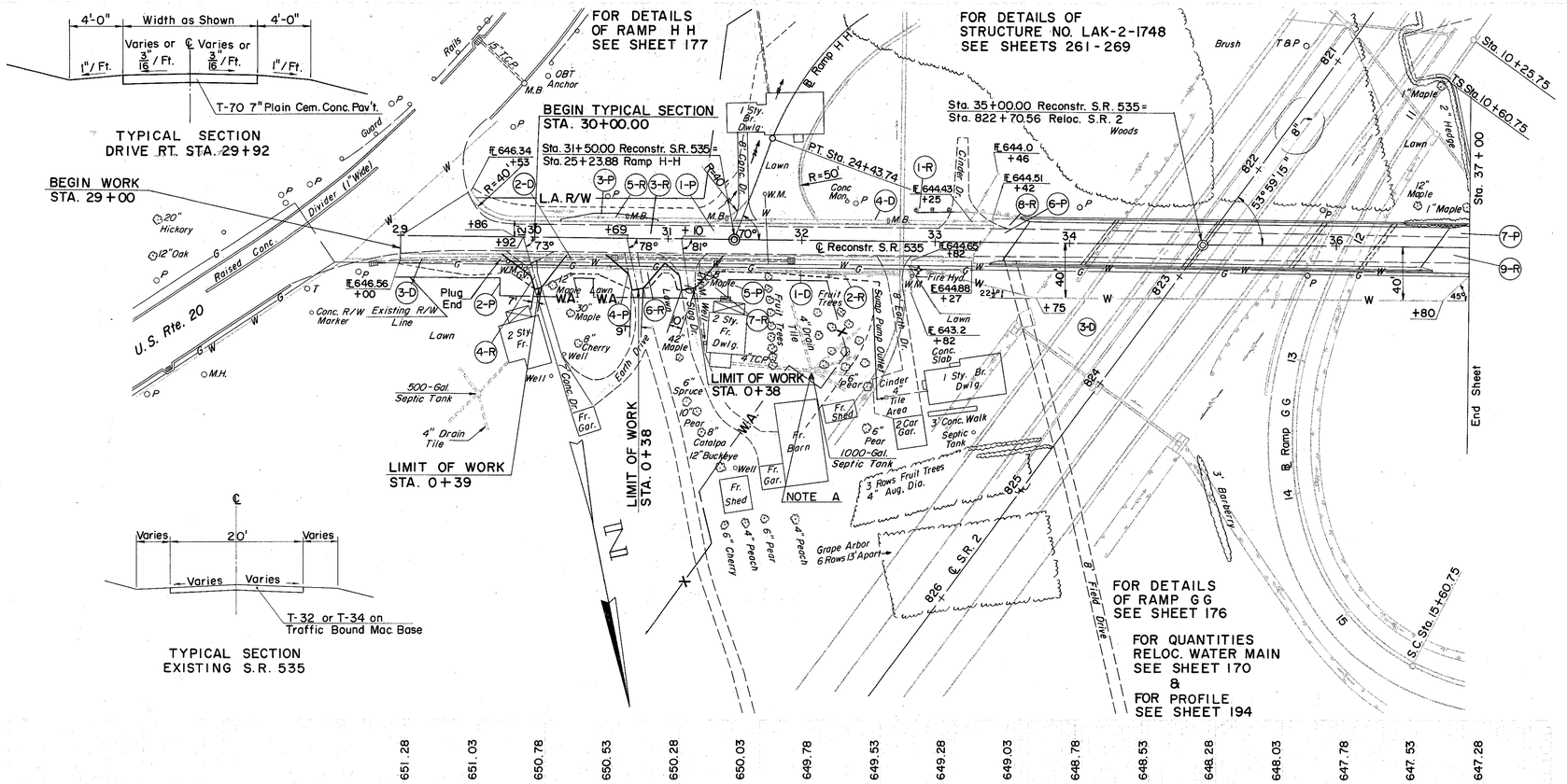
	END AREA		VOLUME	
	CUT	FILL	CUT	FILL
Sta. 32+75	0			
			12	
	26	0		
			81	50
	61	54		
			148	148
Ahead	99	106		
Back	99	1		
			156	39
	70	41		
			34	9
Sta. 30+87	70	0		
			120	248
	55	152		
			56	141
	5	0		
			1	
Sta. 27+90	0			

RED CREEK CHANNEL CHANGE STA. 28+00 to 32+50

LAKE COUNTY
LAK-2-16.49

168
313

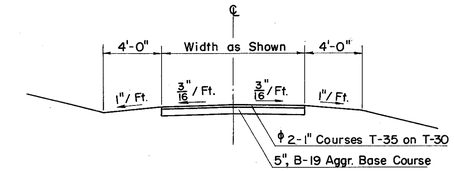
F-19



NOTE A
Quantities for Treating Septic Systems on Sheet 16

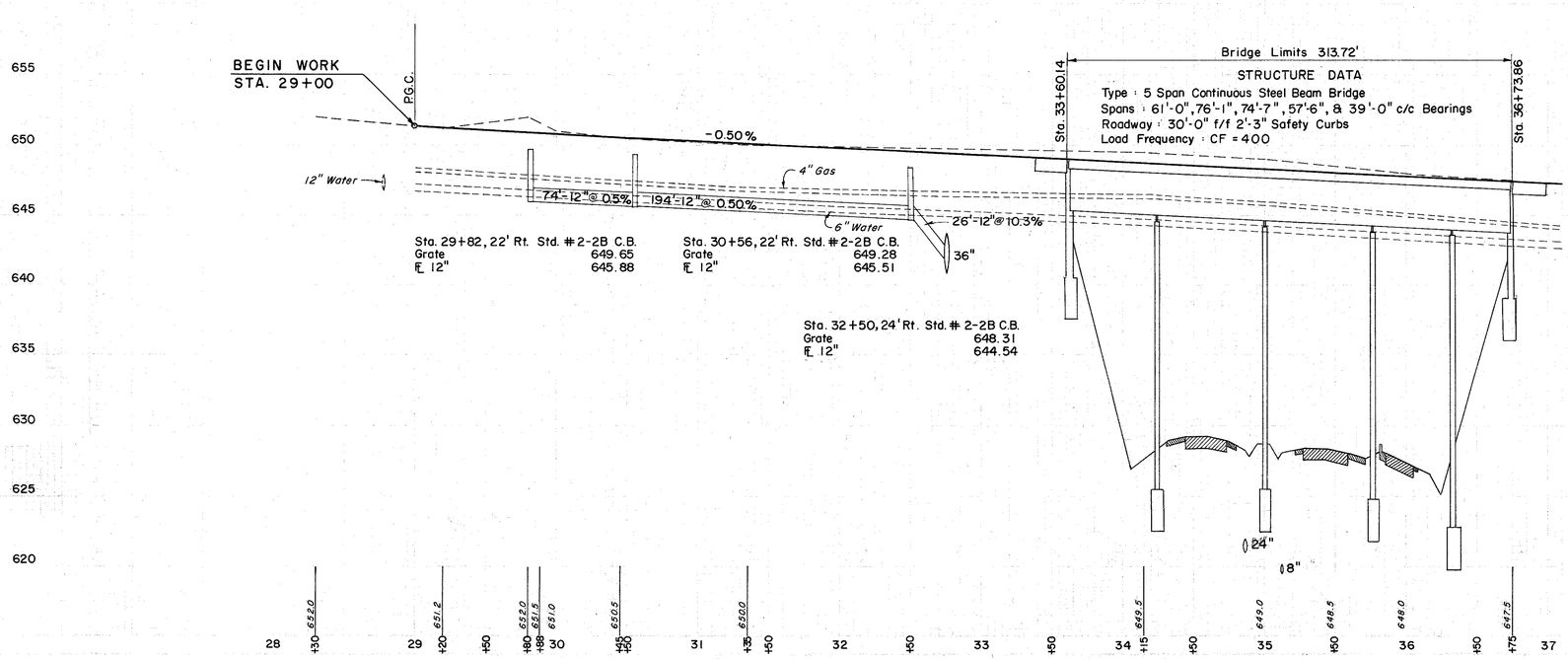
169
313

LAKE COUNTY
LAK-2-16.49



TYPICAL SECTION
DRIVES RT. STA. 30+69
STA. 31+10

ϕ Thickness shown is Designed Thickness as described in Sec. T-35.01.



(R) ROADWAY

REF. NO.	STATION FROM	STATION TO	SIDE	E-1 COMP. SUB-GRADE S.Y.	I-15 GUARD RAIL STEEL BEAM STD. TYPE (DEEPT) L.F.
1-R	32+85	33+60	Lt.	75	
2-R	32+20	33+33	Rt.	112.5	
3-R	28+00	41+00		2,209	
4-R	29+92	—	Rt.	67	
5-R	30+50	—	Lt.	34	
6-R	30+69	—	Lt.	74	
7-R	31+10	—	Rt.	75	
8-R	33+33.14	33+60.14	Rt.	91	
9-R	36+73.86	36+98.86	℄	91	
	TOTAL			2,641	187.5

(D) DRAINAGE

REF. NO.	STATION FROM	STATION TO	SIDE	E-12 PIPE REMOVED 15" & UNDER	I-1 12" PIPE CLASS E-1 L.F.	I-1 6" PIPE CLASS I-3 L.F.	I-1 8" PIPE CLASS I-4 SECM 64(6) L.F.	I-5 CLASS I-3 6" 60° WYE E.A.	I-5 6" 90° TEE E.A.	I-8 STD. #2-2B C.B. E.A.
1-D	29+82	32+75	Rt.	220	294					3
2-D	29+75	31+95	Rt.							
3-D	29+00	33+27	Rt.			440	10		1	
4-D	29+53	33+42	Lt.	220	294	429	10	1	1	3
	TOTAL			220	294	869	20	1	1	3

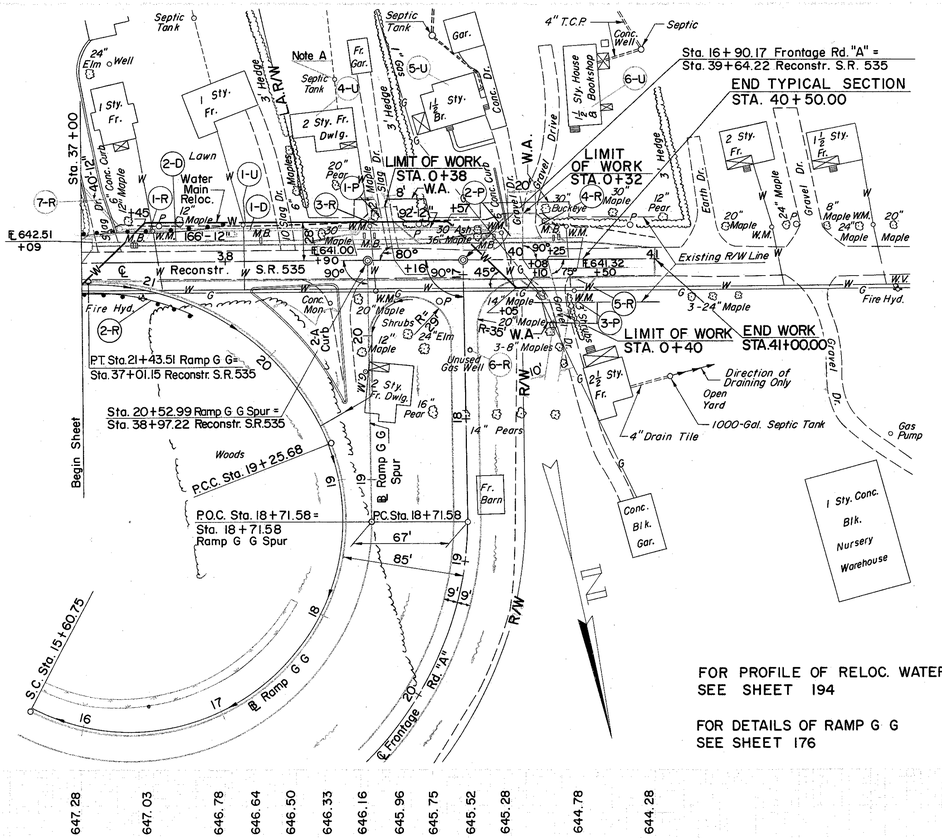
(P) PAVEMENT

REF. NO.	STATION FROM	STATION TO	SIDE	B-19 AGGR. BASE COURSE C.Y.	B-35 ASPHALTIC LEVELING COURSE C.Y.	B-35 ASPHALTIC BASE COURSE C.Y.	I-7 REINF. CONC. APPR. SLABS T=13" S.Y.	I-18 STAB. CRUSHED AGGR. SHLDRS. & APPR. C.Y.	I-22 SUBBASE C.Y.	T-30 BIT. PRIME COAT GAL.	T-35 ASPH. CONC. SURF. COURSE TYPE A C.Y.	T-70 PORT. CEM. CONC. PAV'T. 7" S.Y.	SPECIAL FURNISHING & SPREADING CALCIUM CHLORIDE TONS
1-P	29+00	41+00	—	505	77	187		86	279	896	77	67	0.27
2-P	29+92	—	Rt.										
3-P	30+50	—	Lt.	5						14	2		
4-P	30+69	—	Rt.	10						30	4		
5-P	31+10	—	Rt.	11						30	4		
6-P	33+35.14	33+60.14	℄				91		17				
7-P	36+73.86	36+98.86	℄				91						
	TOTAL			531	77	187	182	86	296	970	77.10	67	0.27

2,180 C.Y.
0 C.Y.
0 C.Y.

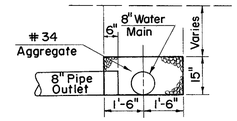
RECONSTR. S.R. 535 STA. 29+00 TO STA. 37+00

LAKE COUNTY
LAK-2-16.49

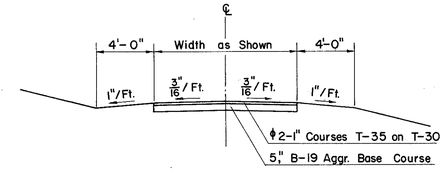


Power, Telephone and Gas Lines shall be Relocated by Others

NOTE A:
Quantities for Treating Septic Systems on Sheet 16



DETAIL OF S-29 FOR WATER MAIN



TYPICAL SECTION
DRIVES LT. STA. 39+16
STA. 40+08
DRIVE RT. STA. 40+25

ϕ Thickness shown is designed thickness as described in Sec. T-35.01

NOTE AS REGARDS WATER LINES:

Contractor shall construct new water main and place services to residences affected by the relocated water main.

Item I-24, New Service Branches shall include furnishing and placing the pipe and corporation stop. No service stop or service box need be provided.

All other items which belong to the City of Painesville - Water, shall be removed by them including all items at house services, abandoned water main and fire hydrants, unless otherwise directed by the engineer. Any abandoned water main which is not removed shall be properly plugged and paid for as shown on Sheet 22.

(D) DRAINAGE

REF. NO.	STATION FROM	STATION TO	SIDE	I-1 12" PIPE CLASS E-1	I-1	I-1 6" PIPE CLASS I-3	I-1 6" PIPE CLASS F-4	I-5	I-5 CLASS I-3 6" 90° TEE	I-8 STD. #2-2B C.B.	I-8 STD. #1 M.H.
				L.F.					EA.		
1-D	37+25	39+82	Lt.	258						2	1
2-D	37+09	40+50	Lt.			341	8		1		
TOTAL				258		341	8		1	2	1

(R) ROADWAY

REF. NO.	STATION FROM	STATION TO	SIDE	E-1 COMP. SUB-GRADE	I-15 GUARD RAIL STEEL BEAM STD. TYPE (DEEP)	I-1 2" Std. Wgt. Galvanized Steel Pipe Using Type 4 Backfill As Per Plan	E-8 REMOVAL & DISPOSAL OF EXISTING CURB	I-2 MASONRY
				S.Y.	L.F.	L.F.	L.F.	CU.YD.
1-R	36+99	38+99	Lt.		100.0			
2-R	36+78	20+66 Ramp G G	Rt.		100.0			
3-R	39+16	—	Lt.	58				
4-R	40+08	—	Lt.	192				
5-R	40+25	—	Rt.	78				
* 6-R	39+71	—	Rt.			50		1.7
7-R	37+15	—	Lt.				20	
TOTAL				328	200.0	50	20	1.7

(P) PAVEMENT

REF. NO.	STATION FROM	STATION TO	SIDE	B-19 AGGR. BASE COURSE	T-30 BIT. PRIME COAT	T-35 ASPH. CONC. SURF COURSE TYPE C
				C.Y.	GAL.	C.Y.
1-P	39+16	—	Lt.	8	23	3
2-P	40+08	—	Lt.	27	77	11
3-P	40+25	—	Rt.	11	31	4
TOTAL				46	131	18

(U) UTILITIES (100% CITY PARTICIPATION)

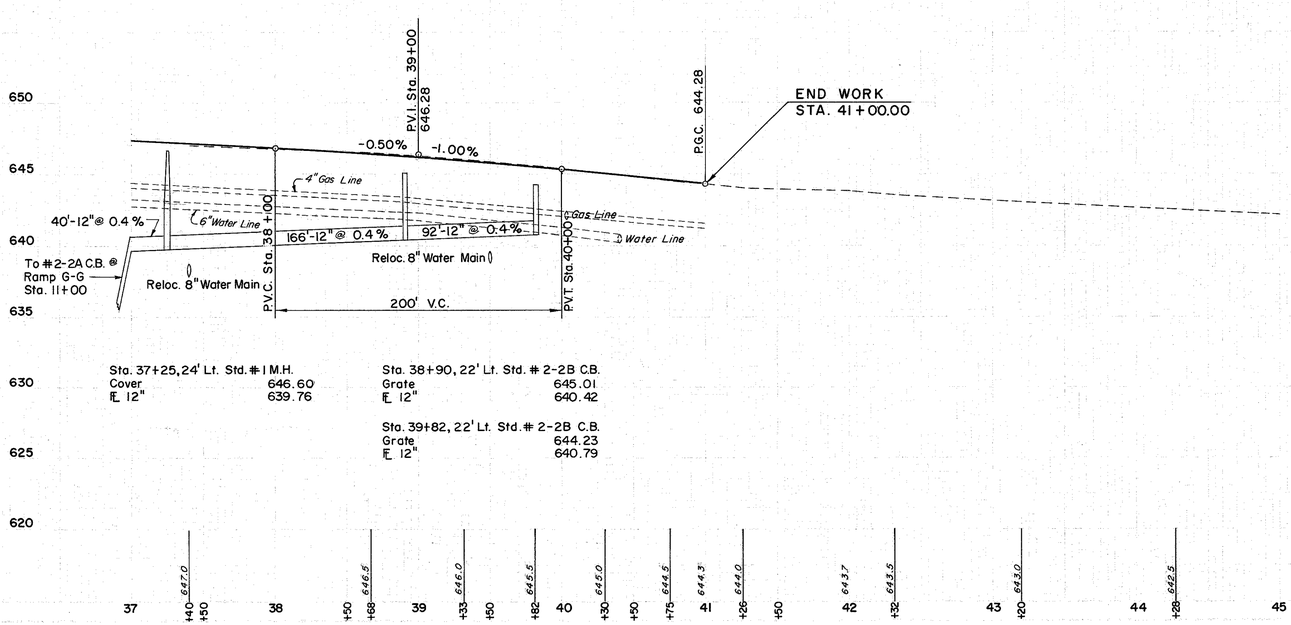
REF. NO.	STATION FROM	STATION TO	SIDE	I-124 8" C.I. WATER MAIN CLASS 200	I-124 1/16 BEND	I-124 1/8 BEND	I-124 REDUCER 8" X 6"	I-124 WATER METERS & BOXES REMOVED & RESET	I-124 NEW SERVICE BRANCHES	S-29 POROUS BACKFILL	SPECIAL REMOVE & PLUG EXIST. 8" WATER MAIN
				L.F.	EA.				L.F.	C.Y.	L.S.
1-U	32+80	40+10	Lt.-Rt.	790	6	4	2			32	Lump
2-U	32+88	—	Rt.								
3-U	33+80	36+80	Rt.								
4-U	38+75	—	Lt.					1	10		
5-U	39+60	—	Lt.					1	10		
6-U	40+45	—	Lt.					1	10		
TOTAL				790	6	4	2	3	30	32	LUMP

FOR PROFILE OF RELOC. WATER MAIN SEE SHEET 194

FOR DETAILS OF RAMP G G SEE SHEET 176

FOR INTERSECTION DETAILS SEE SHEET 185

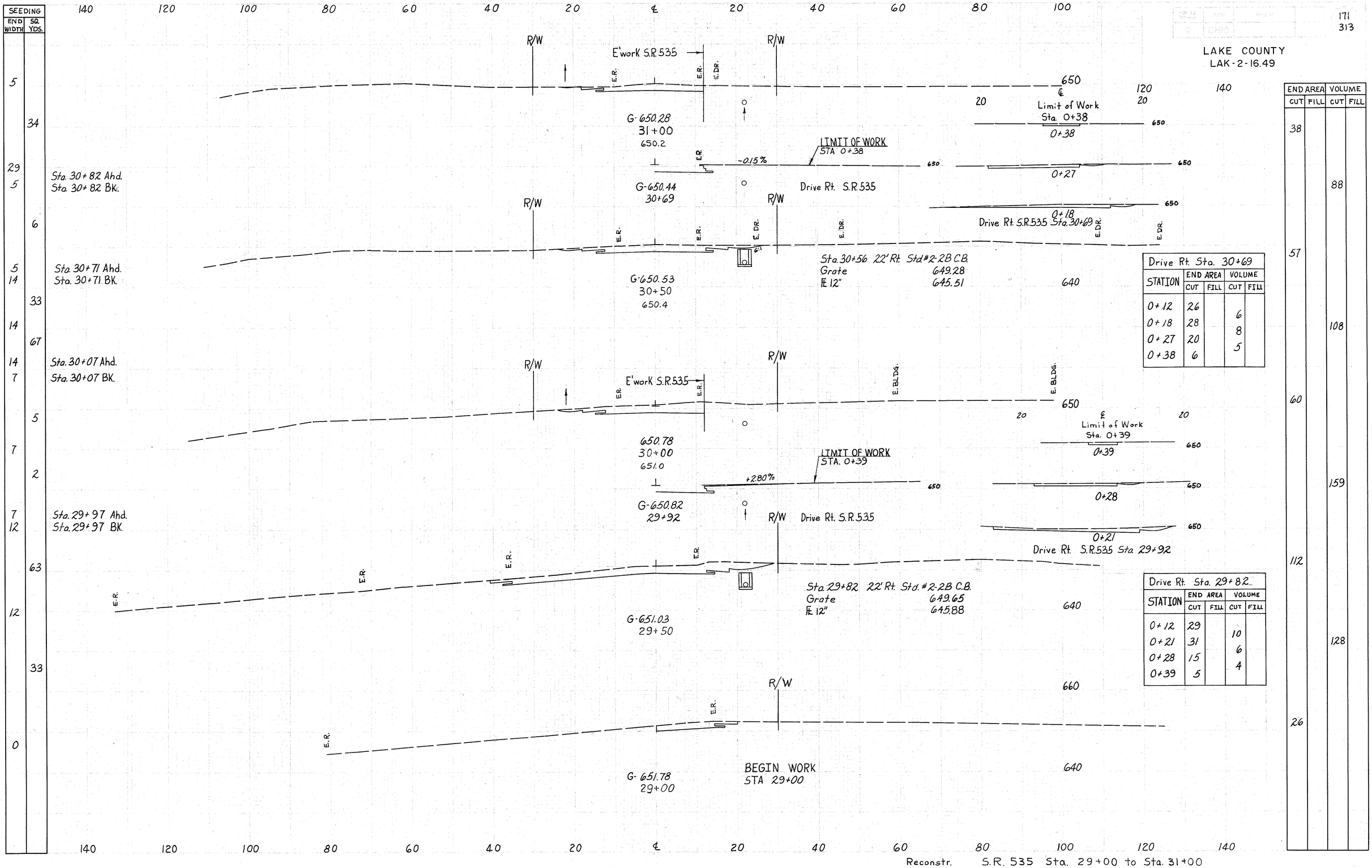
* TO ABANDON GAS WELL SEE NOTE AND DETAILS ON SH. 17.



Excavation	1,399 C.Y.
Embankment	16 C.Y.
Embankment - 20	19 C.Y.

RECONSTR. S.R. 535 STA. 37+00 TO STA. 41+00

LAKE COUNTY
LAK-2-16.49



Drive Rt. Sta. 30+69				
STATION	END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
0+12	26			
0+18	28		6	
0+27	20		8	
0+38	6		5	

Drive Rt. Sta. 29+82				
STATION	END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
0+12	29			
0+21	31		10	
0+28	15		6	
0+39	5		4	

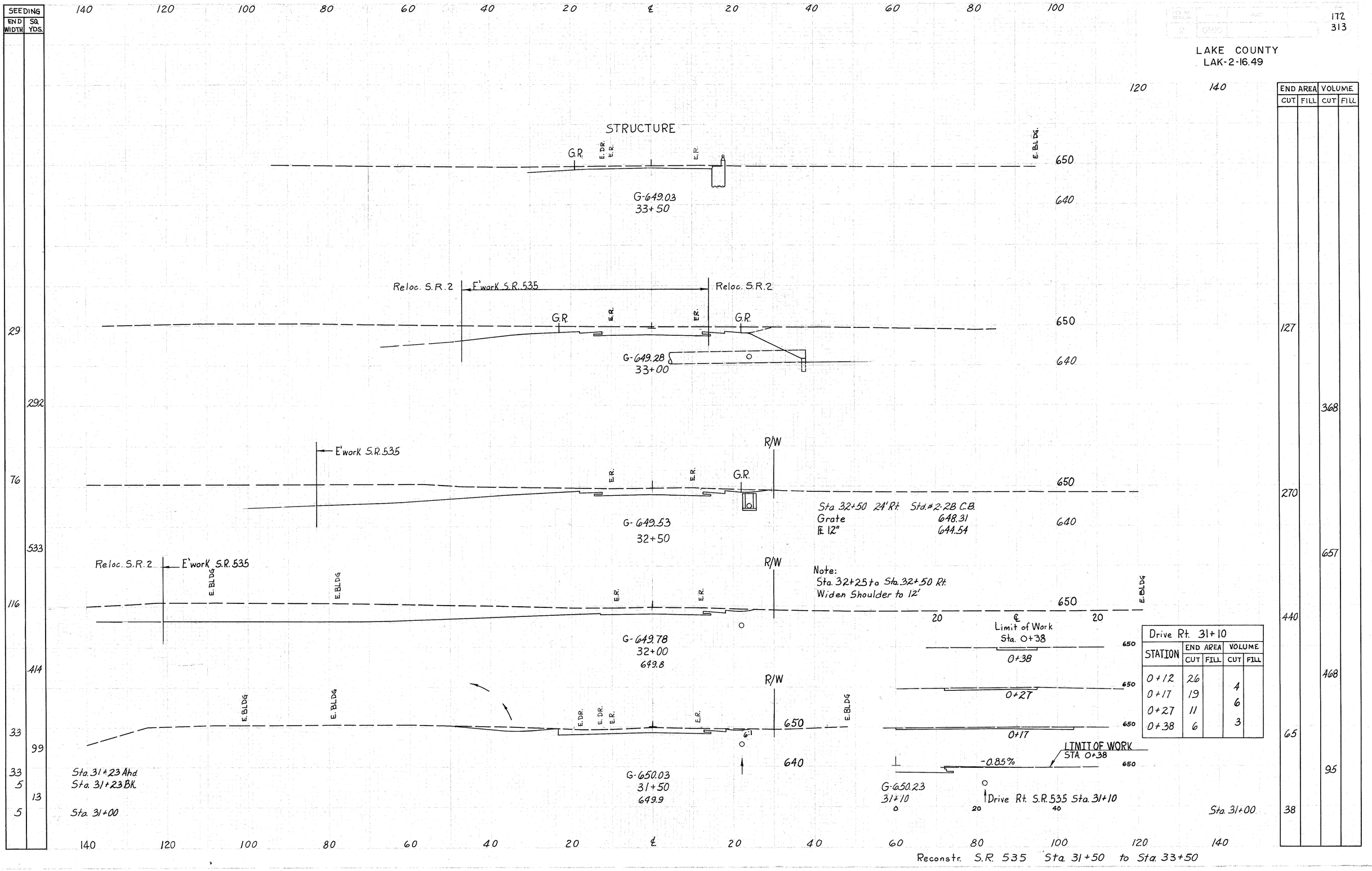
END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
38			
		88	
57			
		108	
60			
		159	
112			
		128	
26			

Reconstr. S.R. 535 Sta. 29+00 to Sta. 31+00

LAKE COUNTY
LAK-2-16.49

SEEDING END WIDTH	SEEDING SQ. YDS.
29	
	292
76	
	533
116	
	414
33	
	99
33	
5	
	13
5	

END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
127			
		368	
270			
		657	
440			
		468	
65			
		95	
38			

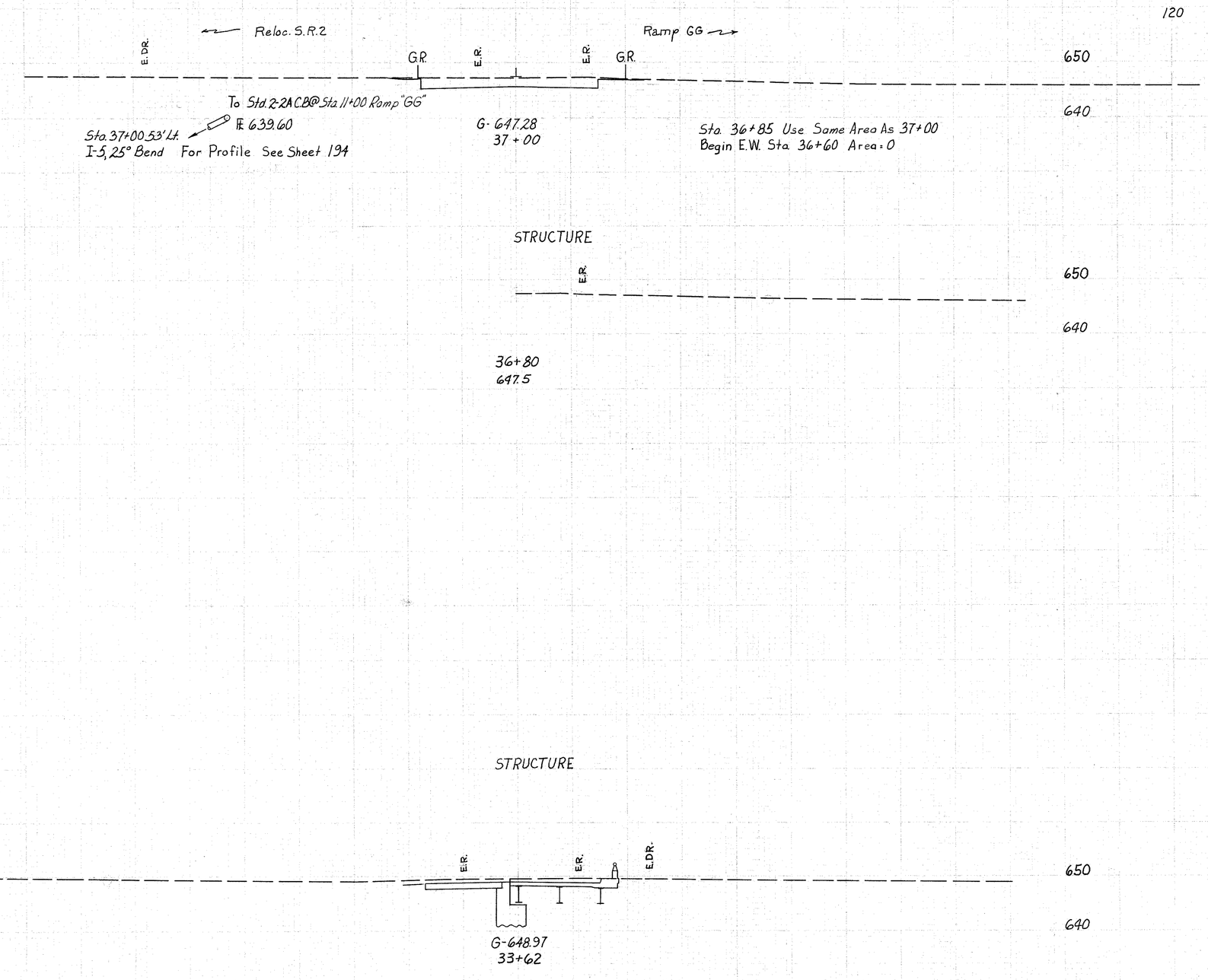


Drive Rt. 31+10				
STATION	END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
0+12	26			
0+17	19		4	
0+27	11		6	
0+38	6		3	

Reconstr. S.R. 535 Sta. 31+50 to Sta. 33+50

LAKE COUNTY
LAK-2-16.49

SEEDING END WIDTH	SEEDING SQ. YDS.
14	

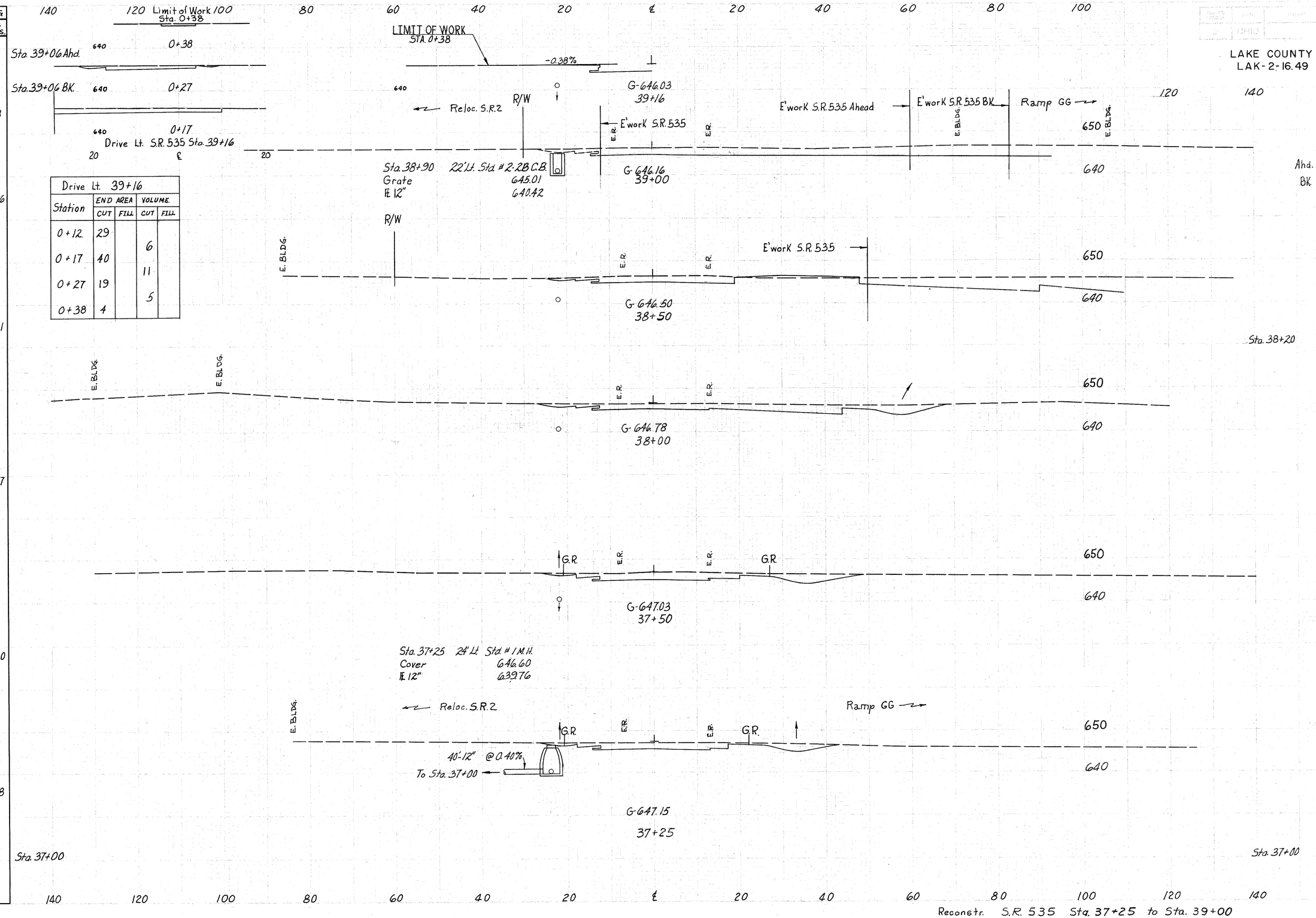


	END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
Sta. 37+00	56			
			31	
Sta. 36+85	56			
			26	
Sta. 36+60	0			

Reconstr. S.R. 535 Sta. 33+62 to Sta. 37+00

LAKE COUNTY
LAK-2-16.49

SEEDING END WIDTH	SEEDING SQ. YDS.
65	
72	48
72	286
31	181
34	197
37	100
35	68
14	



Drive Lt. 39+16				
Station	END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
0+12	29		6	
0+17	40		11	
0+27	19		5	
0+38	4			

	END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
Ahd.	123	0		
BK.	178	0		
			219	10
	58	11		
				6
		0		
			163	
	118			
			196	
	94			
			80	
	78			
			62	
	56			

Reconstr. S.R. 535 Sta. 37+25 to Sta. 39+00

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LAKE COUNTY
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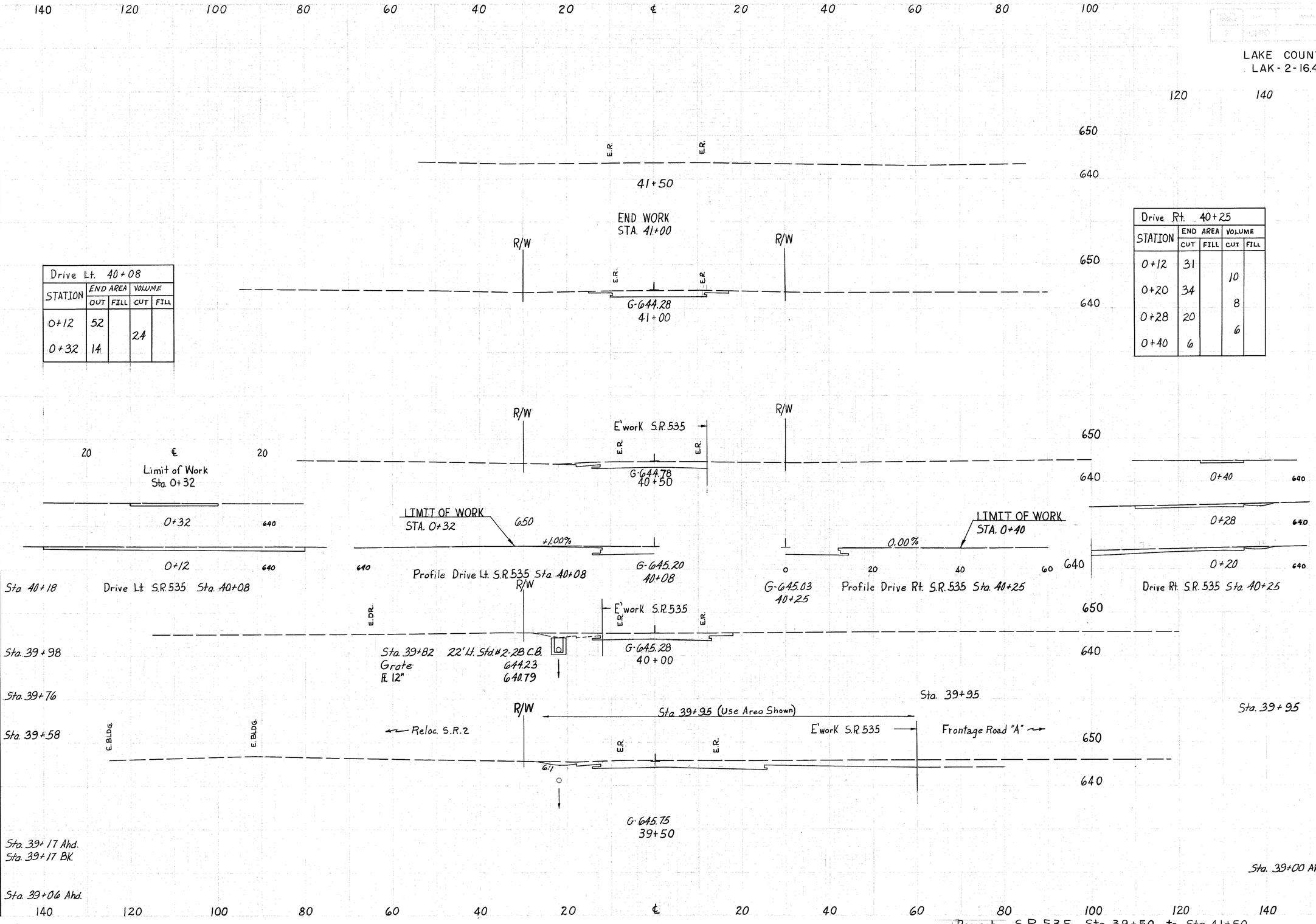
SEEDING END WIDTH	SEEDING SQ. YDS.
0	
	11
4	
25	
10	
—	
10	
	24
10	
	20
10	
	24
45	
	214
72	
65	
	79
65	



Drive Lt. 40+08				
STATION	END AREA OUT	END AREA FILL	VOLUME CUT	VOLUME FILL
0+12	52		24	
0+32	14			

Drive Rt. 40+25				
STATION	END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
0+12	31		10	
0+20	34		8	
0+28	20		6	
0+40	6			

END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
38		72	
40		76	
42		16	
128		213	
128		232	
123	0		

Reconstr. S.R. 535 Sta. 39+50 to Sta. 41+50

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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LAKE COUNTY
LAK-2-16.49

(G G 1) CURVE DATA
P.I. Sta. 14+60.48
Θ_s = 95°29'35" Lt.
L_s = 500.00'
L.T.=399.73'
S.T.=228.36'

(G G 2) CURVE DATA
P.I. Sta. 19+66.17
Δ = 139°23'32" Lt.
R = 150.00'
L = 364.93'
T = 405.42

(G G 3) CURVE DATA
P.I. Sta. 20+50.17
Δ = 69°20'14" Lt.
R = 180.00'
L = 217.83'
T = 124.49'

FRONTAGE RD."A" CURVE DATA
P.I. Sta. 21+51.64
Δ = 100°00' Rt.
R = 235.00'
L = 410.15'
T = 280.06'
E = 130.59'

FRONTAGE RD."A" CURVE DATA
P.I. Sta. 25+54.50
Δ = 63°59'15" Lt.
R = 250.00'
L = 279.16'
T = 156.18'
E = 44.75'

FRONTAGE ROAD "A"

SODDING LEFT DITCH			
STATION	WIDTH OF SODDING FT.	LENGTH OF SODDING FT.	S.Y.
21 + 50	6.5	72	52
22 + 22	6.5		
SUB-TOTAL			

RAMP G G

SODDING RIGHT DITCH			
STATION	WIDTH OF SODDING FT.	LENGTH OF SODDING FT.	S.Y.
824+00 Lt.	8.2	362	330
16 + 50	8.2		
SUB-TOTAL			
SODDING LEFT DITCH			
11 + 00	6.0	629	419
18 + 00	6.0		
SUB-TOTAL			

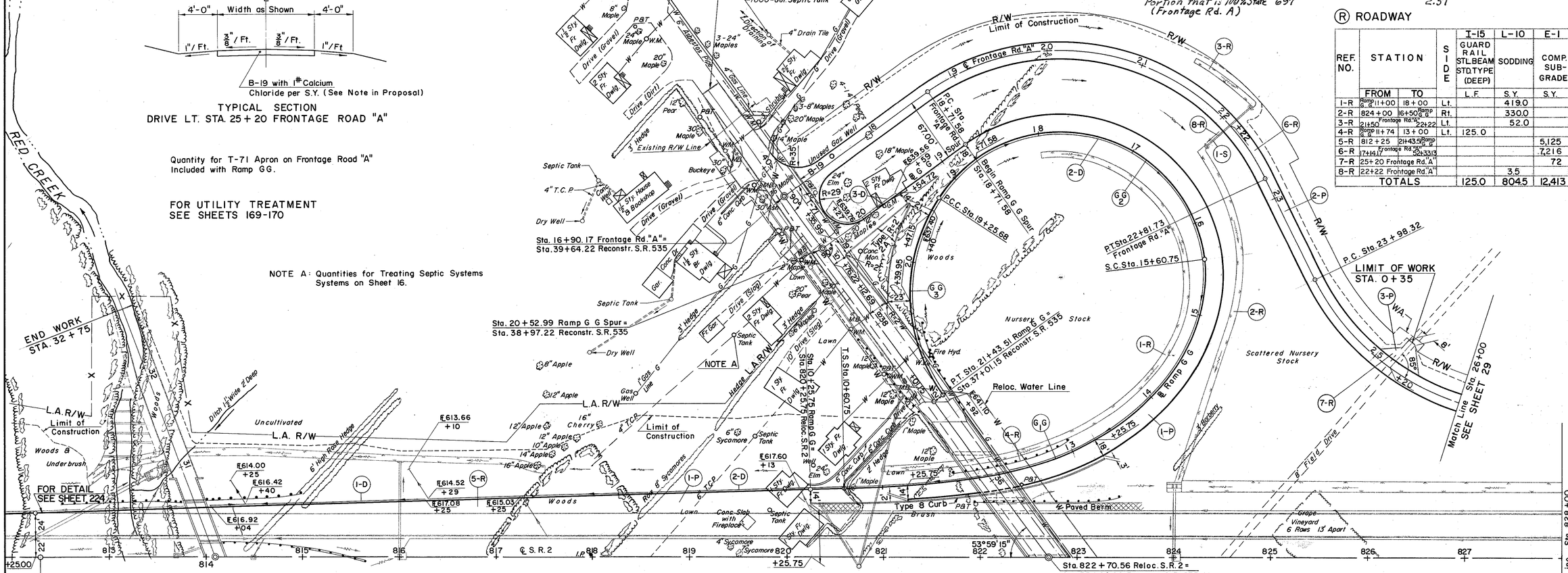
TYPICAL SECTION
DRIVE LT. STA. 25+20 FRONTAGE ROAD "A"

Quantity for T-71 Apron on Frontage Road "A" Included with Ramp GG.

FOR UTILITY TREATMENT
SEE SHEETS 169-170

NOTE A: Quantities for Treating Septic Systems Systems on Sheet 16.

SUPERELEVATION DATA - FRONTAGE ROAD "A"
Transition from Normal Section to Full Super of 1" per Ft. Sta. 17+75 to Sta. 18+75.
Transition from full Super of 1" per Ft. Left to full Super of 1" per Ft. Right Sta. 22+05 to Sta. 24+75.
Transition from full Super of 1" per Ft. to normal Section Sta. 26+75 to Sta. 28+50.



(S) STRUCTURES

REF. NO.	STATION	I-1 15" PIPE CLASS A-1	I-2 MASONRY
		L.F.	C.Y.
I-S	Frontage Rd."A" 22+22	64	0.52

(D) DRAINAGE

REF. NO.	STATION FROM	STATION TO	SIDE	I-1 6" PIPE CLASS J-1 SEC. M6.6(b) OR SEC. M6.8(b)	I-1 8" PIPE CLASS F-4 SEC. M-64(c)	I-1 6" PIPE CLASS I-3 SHALLOW	I-1 6" PIPE CLASS I-3 DEEP	I-5 CLASS J-1 6"-60° BEND	I-5 CLASS I-3 6"-60° WYE	I-5 CLASS J-1 6"-90° TEE	I-5 CLASS I-3 6" 90° TEE
				L.F.				EA.			
I-D	814+04	816+25	Lt.		10	241				1	
2-D	816+25	36+92.83 Ramp G G	Lt.		10		1,593		1	1	1
3-D	Ramp G G 19+59	20+27	Rt.	42			85	1			
TOTALS				42	20	241	1,678	1	1	1	2	1

(P) PAVEMENT

REF. NO.	STATION FROM	STATION TO	SIDE	B-19 AGGR. BASE COURSE	B-21 WATER-PROOFED AGGR. BASE COURSE	B-112 POROUS BASE COURSE	I-12 CONC. CURB TYPE 2-A	I-12 CONC. CURB TYPE 8	SPECIAL FURN. & SPREAD CAL. CHLOR. ON AGGR.	I-22 SUBBASE	T-31 #6 AGGR.	T-31 BIT. MATERIAL	T-71 9" REINF. PORTLAND CEM. CONC. PAVT.
				C.Y.			L.F.		TONS	C.Y.		GAL.	S.Y.
1-P	812+25	21+43.51 Ramp G G			243	121	266	309		1,166	12	364	3,652
2-P	17+14.17	Frontage Rd."A" 30+33.13		1,002					3.60				
3-P	25+20 Frontage Rd."A"			10					0.04				
TOTALS				1,012	243	121	266	309	3.64	1,166	12	364	3,652

Portion that is 100% State 697 (Frontage Rd. A)

2.51

(R) ROADWAY

REF. NO.	STATION FROM	STATION TO	SIDE	I-15 GUARD RAIL STL. BEAM STD. TYPE (DEEP)	L-10 SODDING	E-1 COMP. SUB-GRADE
				L.F.	S.Y.	S.Y.
1-R	Ramp G G 11+00	18+00	Lt.		419.0	
2-R	824+00	16+50 Ramp G G	Rt.		330.0	
3-R	21+50 Frontage Rd."A"	22+22	Lt.		52.0	
4-R	Ramp G G 11+74	13+00	Lt.	125.0		
5-R	812+25	21+43.51 Ramp G G				5,125
6-R	17+14.17 Frontage Rd."A"	30+33.13				7,216
7-R	25+20 Frontage Rd."A"					72
8-R	22+22 Frontage Rd."A"				3.5	
TOTALS				125.0	804.5	12,413

5,018 is 100% State

FRONTAGE RD. "A"

EXCAVATION	=	3,491 C.Y.
EMBANKMENT	=	732 C.Y.
EMBANKMENT +20%	=	878 C.Y.

RAMP G G

EXCAVATION	=	23,588 C.Y.
EMBANKMENT	=	0 C.Y.
EMBANKMENT +20%	=	0 C.Y.

Rev. 10-20-64 C.E.H.

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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LAKE COUNTY
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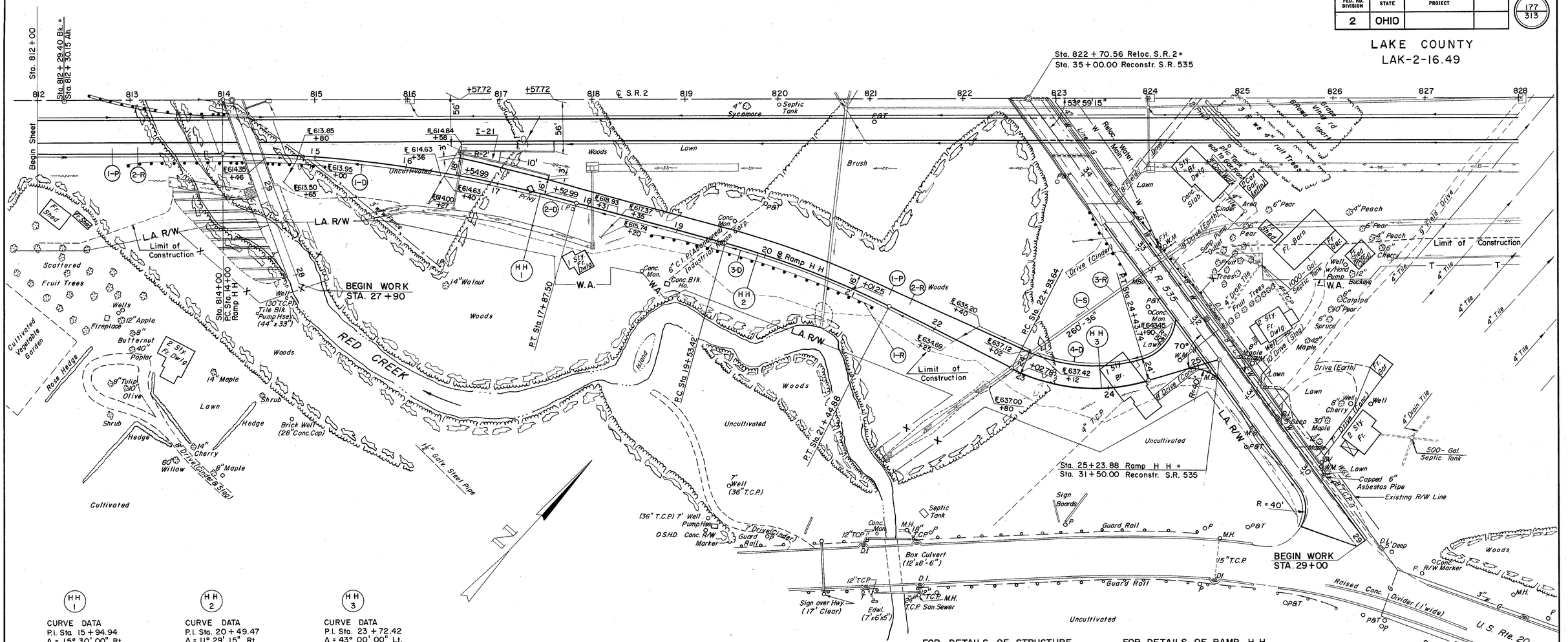

FOR DETAILS OF STRUCTURE NO. LAK-2-1748 SEE SHEETS 261 – 269

FOR DETAILS OF RAMP H H SEE SHEET 186

FOR PLAN AND PROFILE OF S.R. 535 SEE SHEETS 169 & 170

(HH 1)

CURVE DATA
P.I. Sta. 15+94.94
Δ = 15° 30' 00" Rt.
D = 4° 00' 00"
R = 1,432.39'
L = 387.50'
T = 194.94'

(HH 2)

CURVE DATA
P.I. Sta. 20+49.47
Δ = 11° 29' 15" Rt.
D = 6° 00' 00"
R = 954.93'
L = 191.46'
T = 96.05'

(HH 3)

CURVE DATA
P.I. Sta. 23+72.42
Δ = 43° 00' 00" Lt.
R = 200.00'
L = 150.10'
T = 78.78'

(D) DRAINAGE

REF. NO.	STATION FROM	STATION TO	SIDE	I-1: 6" PIPE CLASS J-1 SEC. M-6.6(b) OR SEC. M-6.8(b)	I-1: PIPE F-4 CLASS SEC. M-64(a) 6"	I-1: PIPE F-4 CLASS SEC. M-64(a) 8"	I-1: 6" PIPE CLASS I-3 SHALLOW	I-1: 6" PIPE CLASS I-3 DEEP	I-5: CLASS J-1 6"-60° BEND	I-5: CLASS I-3 6"-60° BEND	I-5: CLASS J-1 6"-60° WYE	I-5: CLASS I-3 6"-60° WYE
				L.F.					EA.			
1-D	14+46	16+36	Rt.			10	208					1
2-D	16+40	18+31	Rt.	62	20	10	171				1	
3-D	18+20	23+02	Lt.-Rt.	30		10		475	2	1		
4-D	23+12	24+90	Lt.	56		10		177	1			
TOTAL				148	20	40	379	652	3	1	1	1

(R) ROADWAY

REF. NO.	STATION FROM	STATION TO	SIDE	E-1 COMP. SUB-GRADE	I-15 GUARD RAIL STL. BEAM STD. TYPE (DEEP)	L-10 SODDING
				S.Y.	L.F.	S.Y.
1-R	18+75	21+25	Rt.		250.0	
2-R	810+85.72	25+10.88		3942		
3-R	STRUCTURE					4
TOTAL				3942	250.0	4

(P) PAVEMENT

REF. NO.	STATION FROM	STATION TO	SIDE	B-21 WATER PROOFED AGGR. BASE COURSE	B-112 POROUS BASE COURSE	I-12 CONC. CURB TYPE 6	I-21 PORT. CEM. CONC. MEDIAN TYPE I	I-22 SUB-BASE	T-31 BIT. MATL.	T-31 # 6 AGGR.	T-71 9" REINF. PORT. CEM. CONC. PAVT.
				C.Y.	C.Y.	L.F.	S.Y.	C.Y.	GAL.	C.Y.	S.Y.
1-P	810+85.72	25+10.88		170	85	206	29	674	255	8	2,842
TOTAL				170	85	206	29	674	255	8	2,842

(S) STRUCTURES

REF. NO.	STATION	E-3 CHANNEL EXCAVATION	I-1 36" PIPE CLASS A-1 SEC. M-6.6(a) OR SEC. M-6.8(b)	I-2 MASONRY	I-5 CLASS A-1 15"x36" TEE SEC. M-6.6(a) OR SEC. M-6.8(b)	I-10 DUMPED ROCK FOR CHANNEL PROTECT.
		C.Y.	L.F.	C.Y.	EA.	C.Y.
1-S	22+93 Ramp H H	62	260	1.18	1	68
	TOTAL	62	260	1.18	1	68

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LAKE COUNTY
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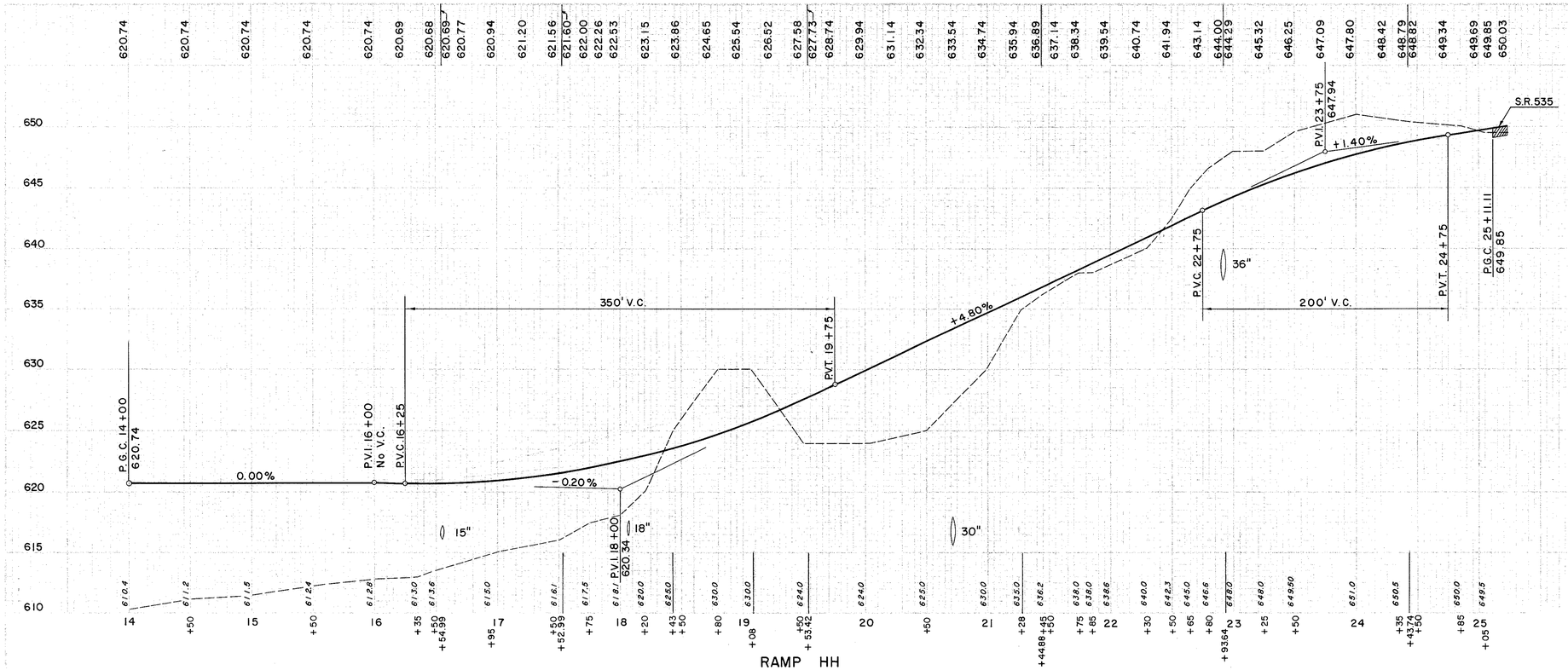
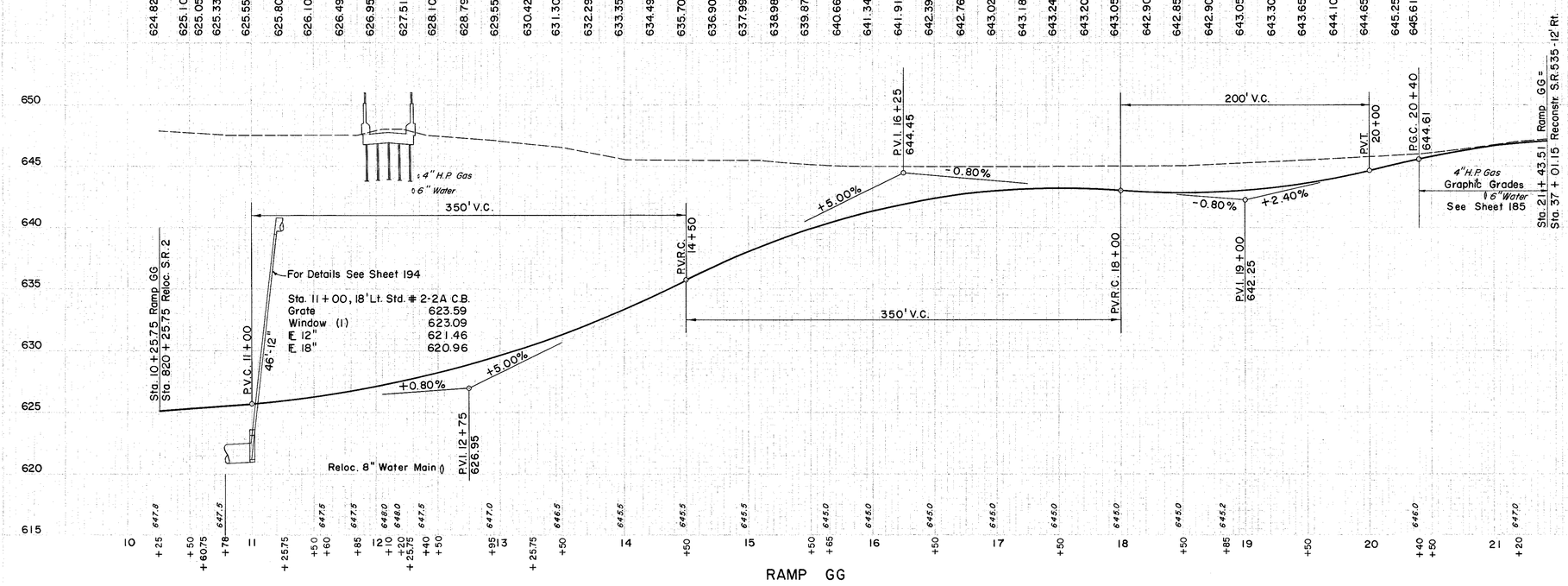
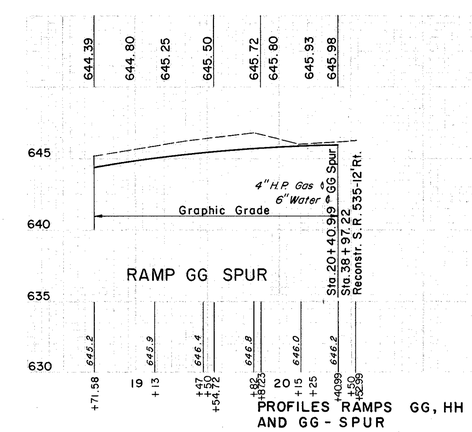


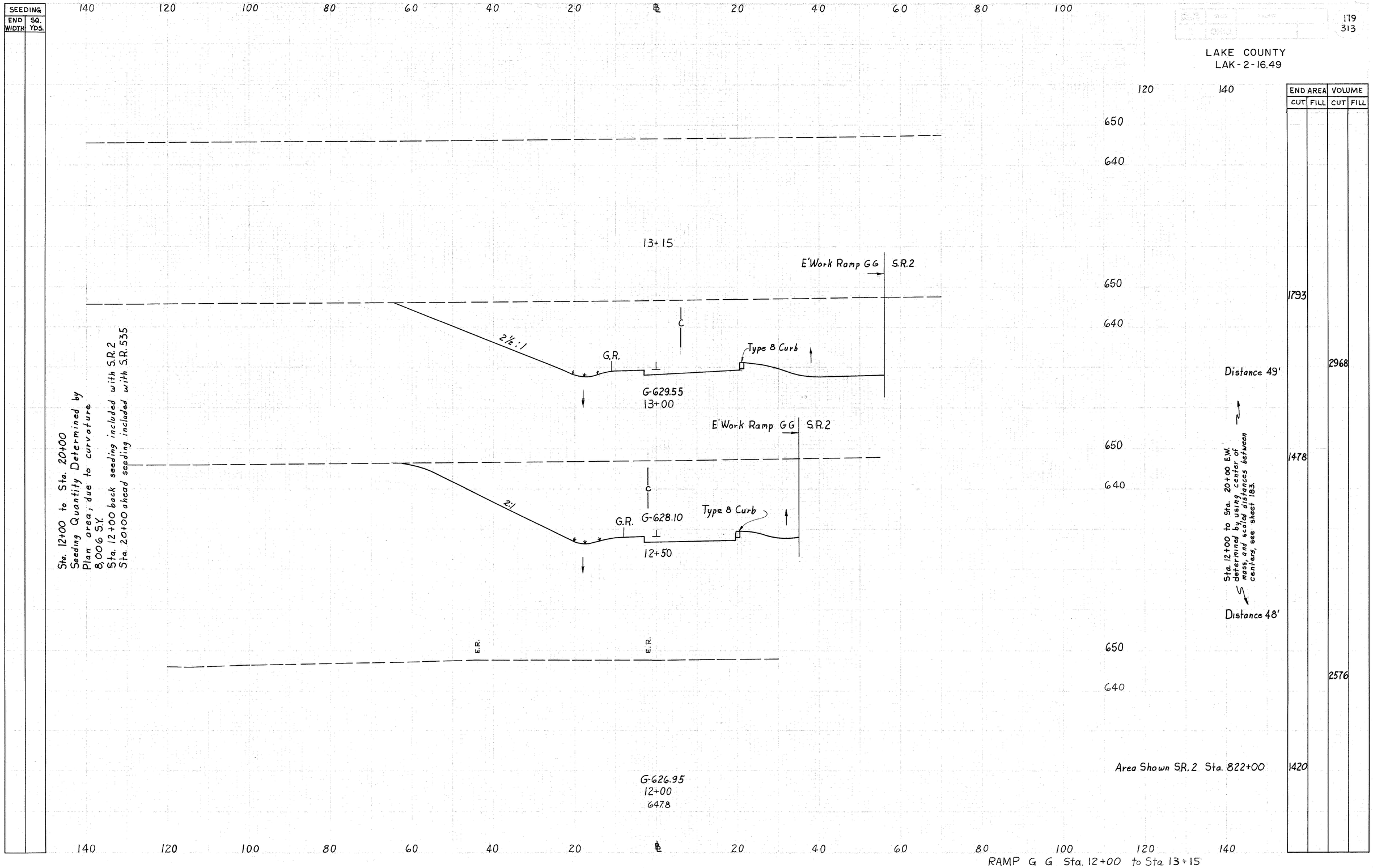




PROFILES RAMPS GG, HH AND GG - SPUR

LAKE COUNTY
LAK-2-16.49

SEEDING	
END WIDTH	SQ. YDS.



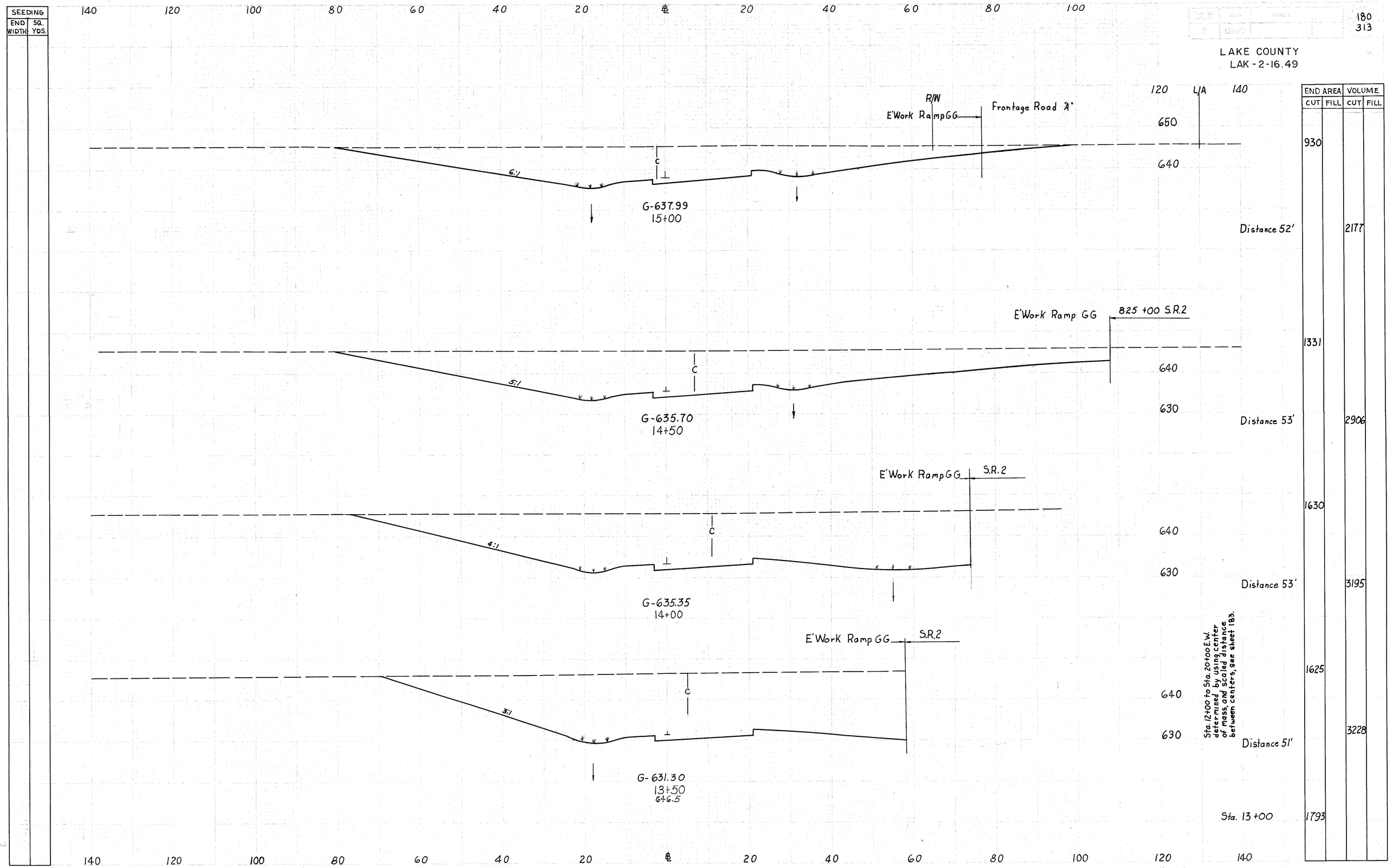
END AREA		VOLUME	
CUT	FILL	CUT	FILL
1793		2968	
1478		2576	
1420			

Sta. 12+00 to Sta. 20+00
Seeding Quantity Determined by
Plan area; due to curvature
8,006 S.Y.
Sta. 12+00 back seeding included with S.R. 2
Sta. 20+00 ahead seeding included with S.R. 535

RAMP G G Sta. 12+00 to Sta. 13+15

LAKE COUNTY
LAK-2-16.49

SEEDING	
END WIDTH	SQ. YDS.

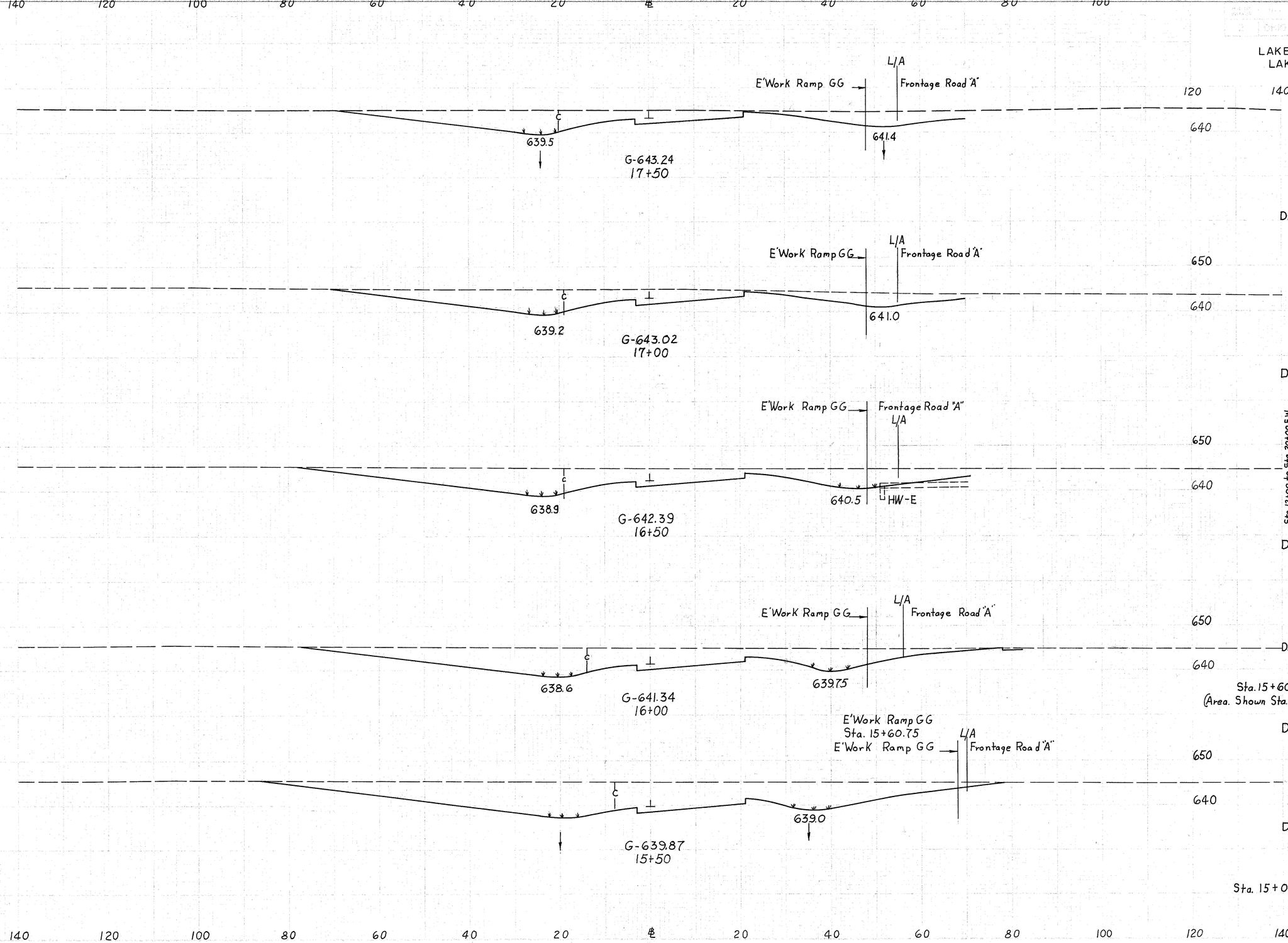


END AREA		VOLUME	
CUT	FILL	CUT	FILL
930			
		2177	
1331			
		2906	
1630			
		3195	
1625			
		3228	
1793			

RAMP G G Sta. 13+50 to Sta. 15+00

LAKE COUNTY
LAK-2-16.49

SEEDING	
END WIDTH	SQ. YDS.

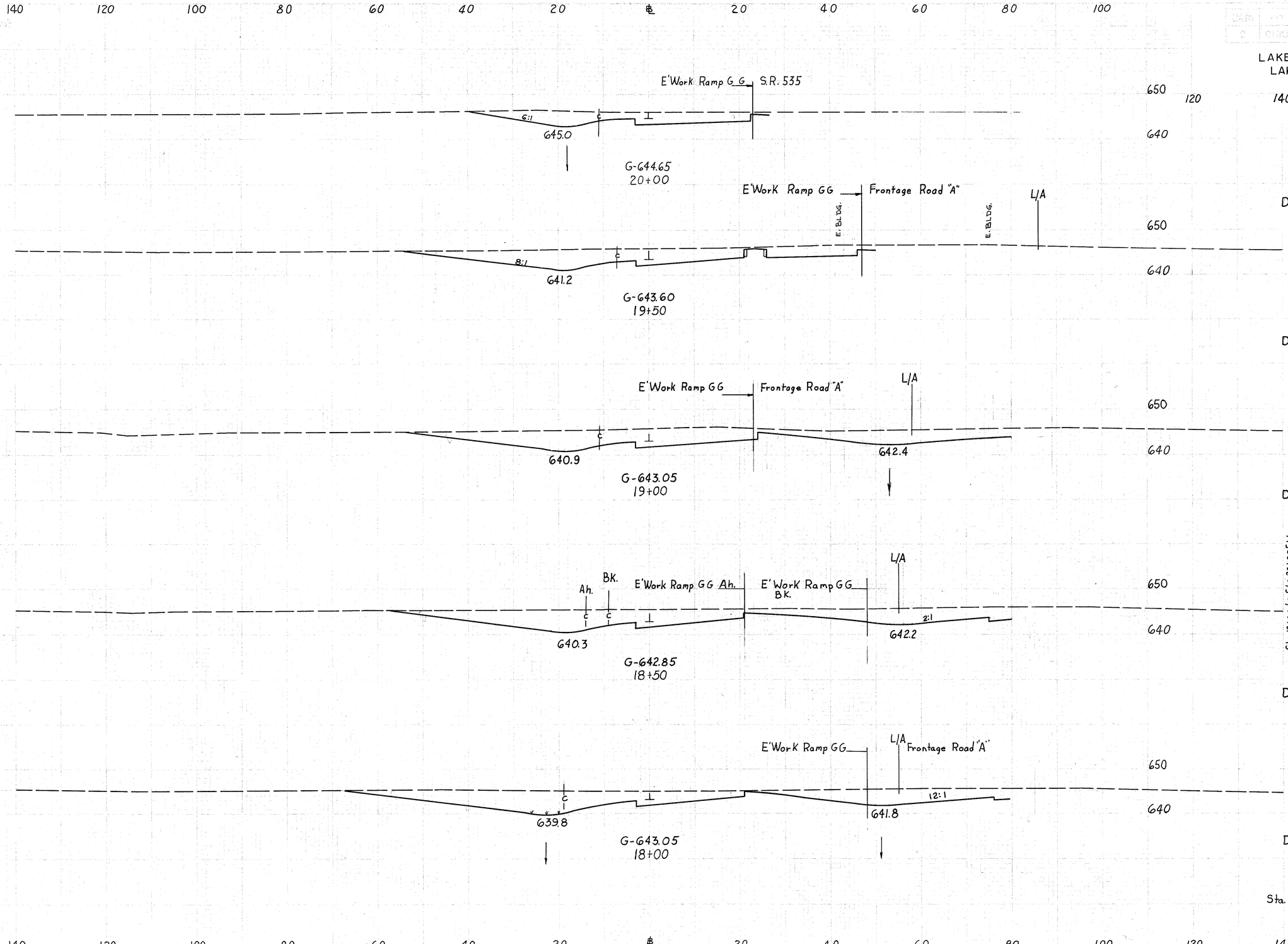


END AREA		VOLUME	
CUT	FILL	CUT	FILL
305			
		509	
320			
		596	
428			
		757	
480			
		799	
719			
		268	
729			
		1444	
930			

RAMP G G Sta. 15+50 to Sta. 17+50

LAKE COUNTY
LAK-2-16.49

SEEDING	
END WIDTH	SQ. YDS.



	END AREA		VOLUME	
	CUT	FILL	CUT	FILL
	130			
Distance 47'			335	
	255			
Distance 45'			412	
	239			
Distance 45'			399	
Ahd.	240			
Bk.	290			
Distance 47'			520	
	308			
Distance 44'			499	
Sta. 17+50	305			

RAMP G G Sta. 18+00 to Sta. 20+00

MICROFILMED
MAR 8 9 1994

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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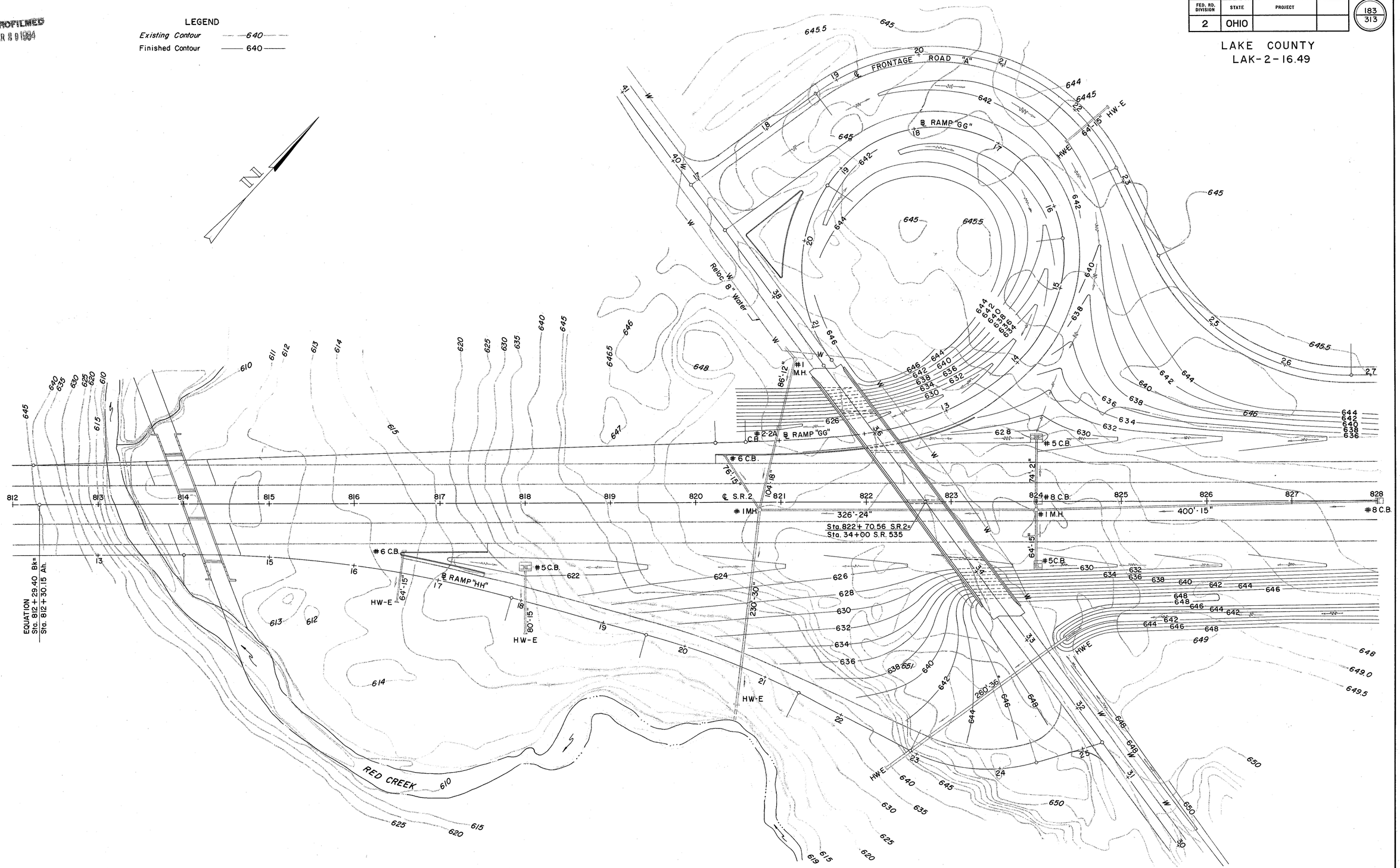
LEGEND

Existing Contour —640—

Finished Contour ——640——



S.R. 535 INTERCHANGE GRADING PLAN

ING BY F.K.B.
9-20-61

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

184
313

LAKE COUNTY
LAK-2-16.49

SPIRAL DATA RAMP GG

TANGENT TO SPIRAL			SPIRAL TO CURVE			Δ	L_s	L.T.	S.T.
STATION	N	E	STATION	N	E				
10+60.75	760,214.031	2,350,152.306	15+60.75	760,639.477	2,350,268.286	95° 29' 35"	500.00'	399.73'	228.36'

CURVE DATA RAMP GG

POINTS	COORDINATES		Δ	T	L	R
	N	E				
S.C. 15+60.75	760,639.476	2,350,268.286				
P.I. 19+66.17	760,904.304	2,349,961.317	139° 23' 32"	405.42'	364.93'	150.00'
P.C.C. 19+25.68	760,503.452	2,350,021.992				
P.I. 20+50.17	760,380.362	2,350,040.623	69° 20' 14"	124.49'	217.83'	180.00'
P.T. 21+43.51	760,354.361	2,350,162.369				

RAMP GG SPIRAL TANGENT OFFSETS

L	X	Y
50'	50.00'	0.28'
100'	99.96'	2.22'
150'	149.66'	7.49'
200'	198.58'	17.69'
250'	245.69'	34.29'
300'	289.38'	58.47'
350'	327.37'	90.83'
400'	356.82'	131.07'
450'	374.62'	177.62'
500'	377.87'	227.31'

CURVE DATA RAMP HH

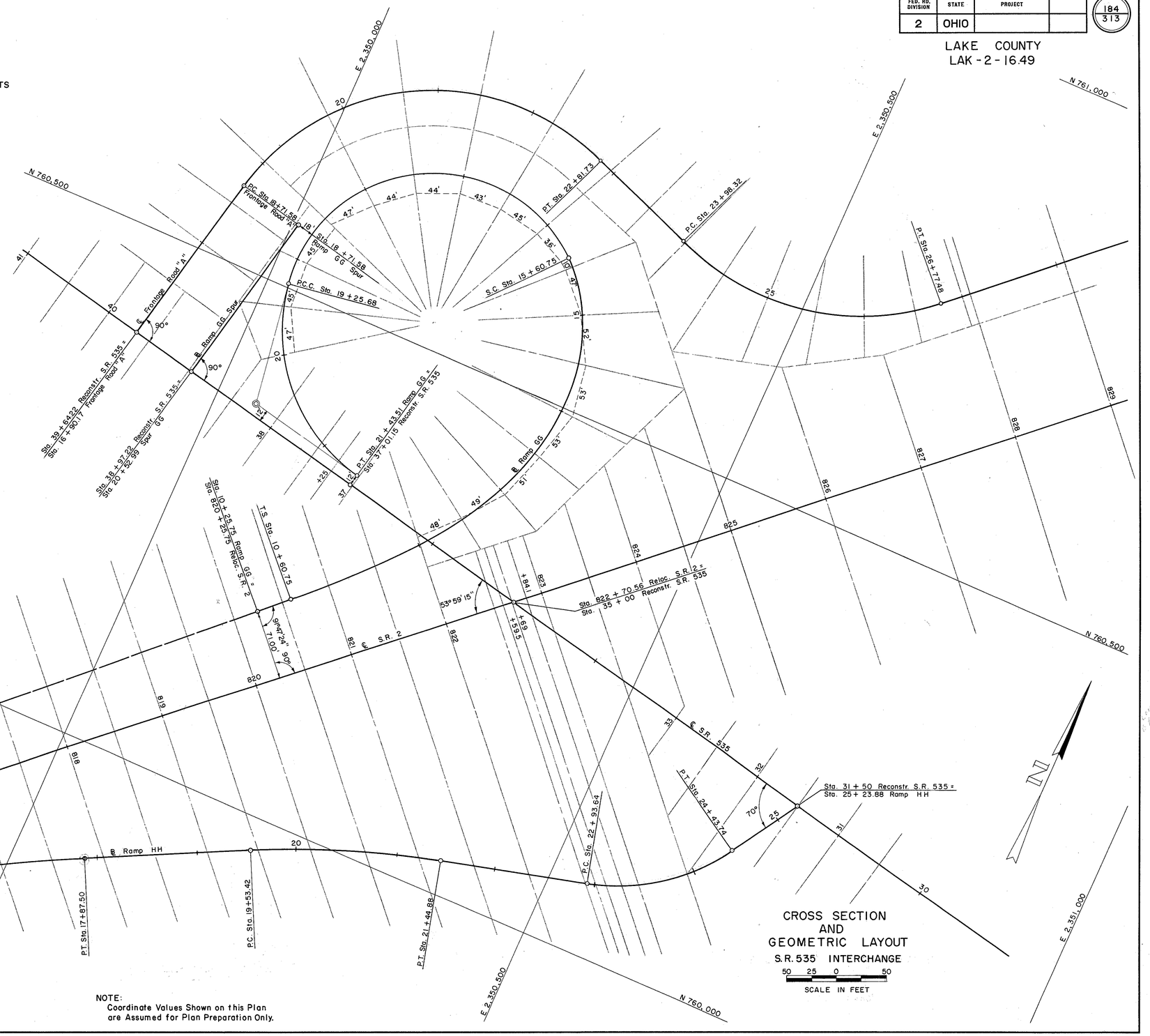
POINTS	COORDINATES		Δ	D	T	L	R
	N	E					
P.C. 14+00	759,675.715	2,349,747.694					
P.I. 15+94.94	759,805.983	2,349,892.717	15° 30' 00"	4° 00'	194.94'	387.50'	1,432.39'
P.T. 17+87.50	759,892.758	2,350,067.279					
P.C. 19+53.42	759,966.615	2,350,216.080					
P.I. 20+49.47	760,009.370	2,350,301.863	11° 29' 15"	6° 00'	96.05'	191.46'	954.93'
P.T. 21+44.88	760,034.140	2,350,394.664					
P.C. 22+93.64	760,072.503	2,350,538.392					
P.I. 23+72.42	760,092.819	2,350,614.507	43° 00' 00"		78.78'	150.10'	200.00'
P.T. 24+43.74	760,159.588	2,350,656.319					

CURVE DATA FRONTAGE ROAD "A"

POINTS	COORDINATES		Δ	T	L	R
	N	E				
P.C. 18+71.58	760,574.979	2,349,940.490				
P.I. 21+51.64	760,848.862	2,349,998.983	100° 00' 00"	280.06'	410.15'	235.00'
P.T. 22+81.73	760,743.698	2,350,258.548				
P.C. 23+98.32	760,699.917	2,350,366.606				
P.I. 25+54.50	760,641.271	2,350,511.357	63° 59' 15"	156.18'	279.16'	250.00'
P.T. 26+77.48	760,745.638	2,350,627.545				

LEGEND

CROSS SECTION LINE
EARTH WORK CUTOFF LINE
CENTER OF MASS LINES FOR EARTHWORK COMPUTATION



NOTE:
Coordinate Values Shown on this Plan are Assumed for Plan Preparation Only.

CROSS SECTION AND GEOMETRIC LAYOUT

S.R. 535 INTERCHANGE

50 25 0 50
SCALE IN FEET

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

185/313

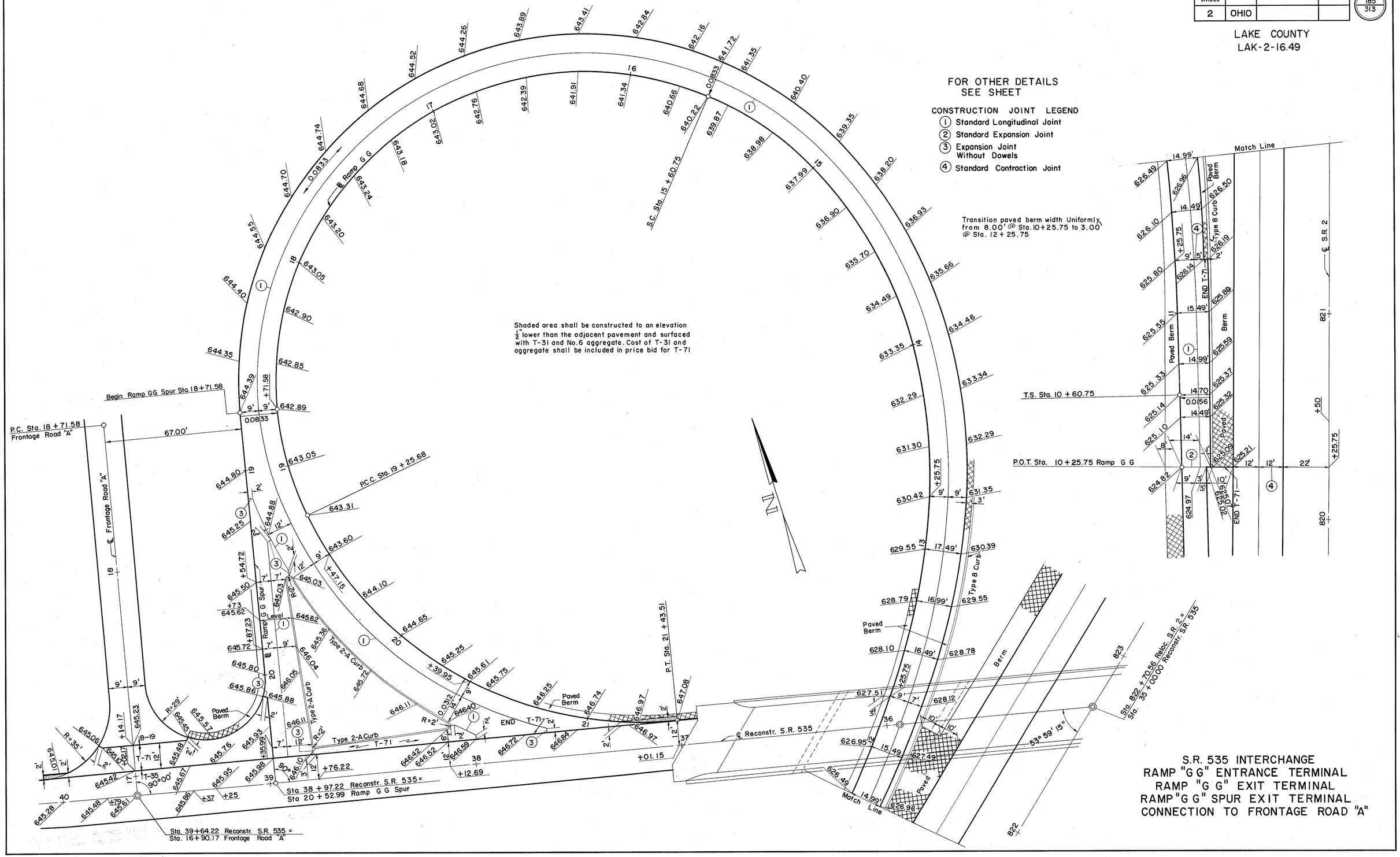
LAKE COUNTY
LAK-2-16.49

FOR OTHER DETAILS
SEE SHEET

CONSTRUCTION JOINT LEGEND
1. Standard Longitudinal Joint
2. Standard Expansion Joint
3. Expansion Joint Without Dowels
4. Standard Contraction Joint

Shaded area shall be constructed to an elevation ½" lower than the adjacent pavement and surfaced with T-31 and No.6 aggregate. Cost of T-31 and aggregate shall be included in price bid for T-71

Transition paved berm width Uniformly, from 8.00' @ Sta. 10+25.75 to 3.00' @ Sta. 12+25.75

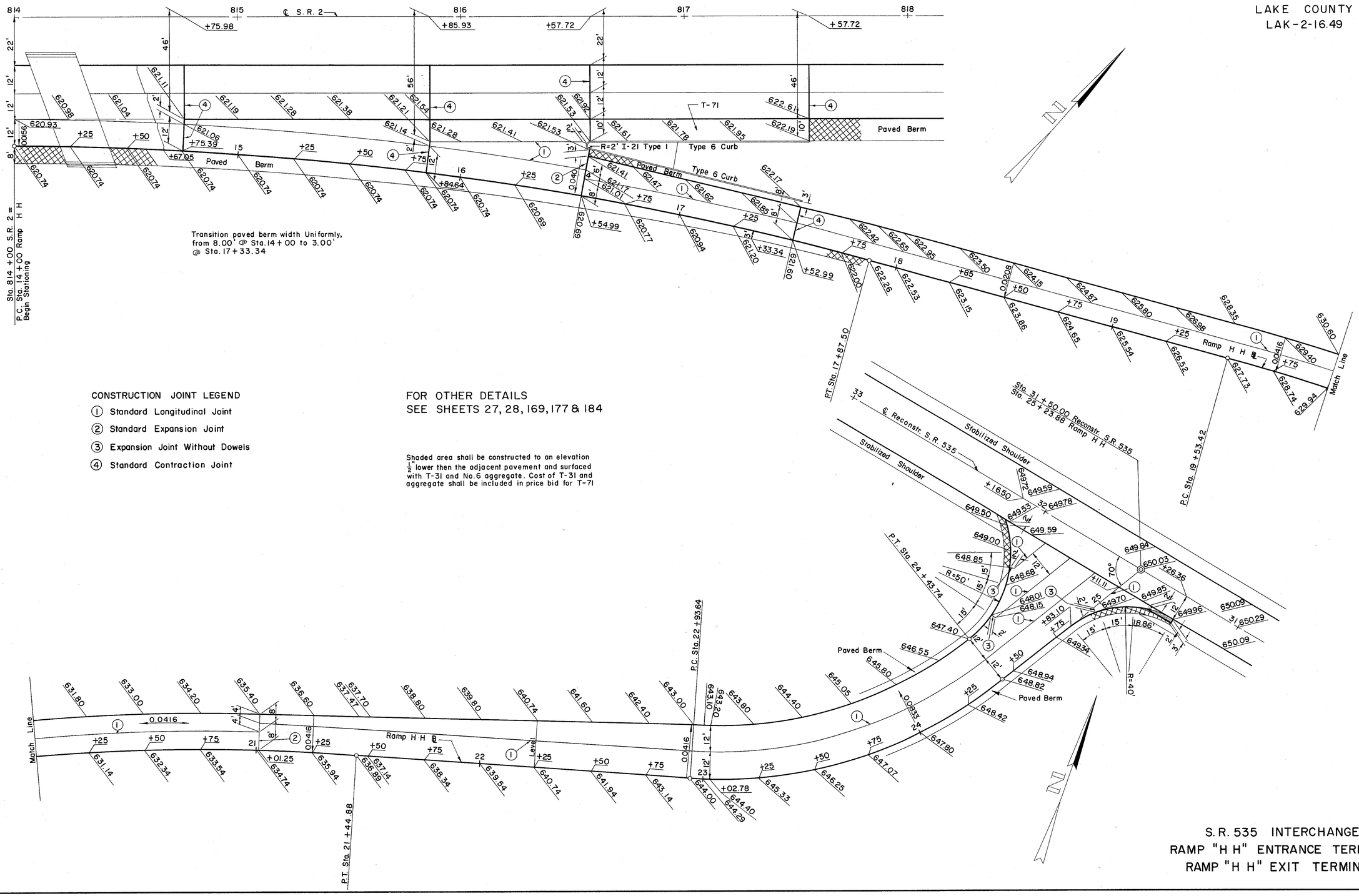


S.R. 535 INTERCHANGE
RAMP "G G" ENTRANCE TERMINAL
RAMP "G G" EXIT TERMINAL
RAMP "G G" SPUR EXIT TERMINAL
CONNECTION TO FRONTAGE ROAD "A"

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

186
313

LAKE COUNTY
LAK-2-16.49



CONSTRUCTION JOINT LEGEND

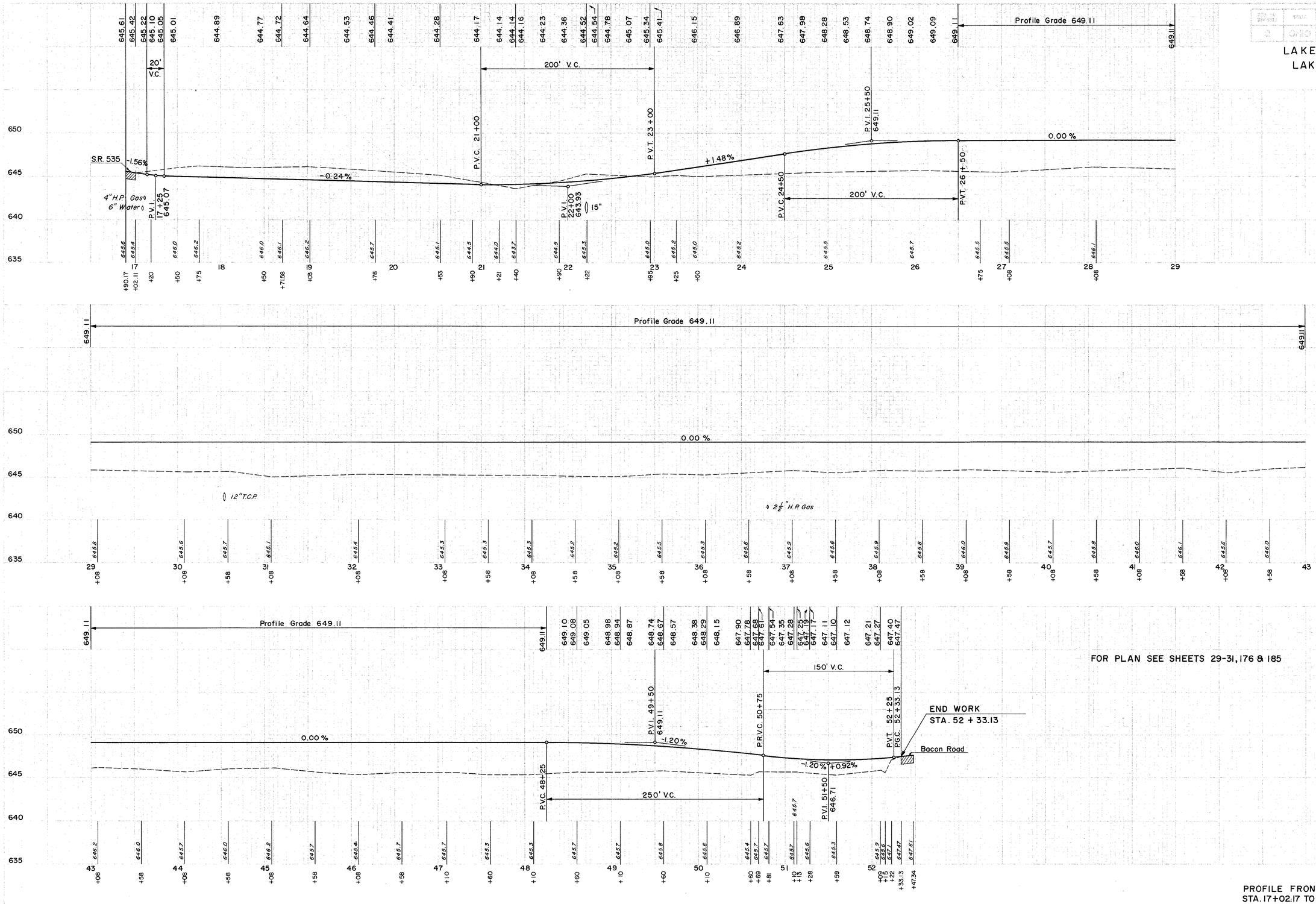
1. Standard Longitudinal Joint
2. Standard Expansion Joint
3. Expansion Joint Without Dowels
4. Standard Contraction Joint

FOR OTHER DETAILS
SEE SHEETS 27, 28, 169, 177 & 184

Shaded area shall be constructed to an elevation $\frac{1}{2}'$ lower then the adjacent pavement and surfaced with T-31 and No. 6 aggregate. Cost of T-31 and aggregate shall be included in price bid for T-71

S.R. 535 INTERCHANGE
RAMP "H H" ENTRANCE TERMINAL
RAMP "H H" EXIT TERMINAL

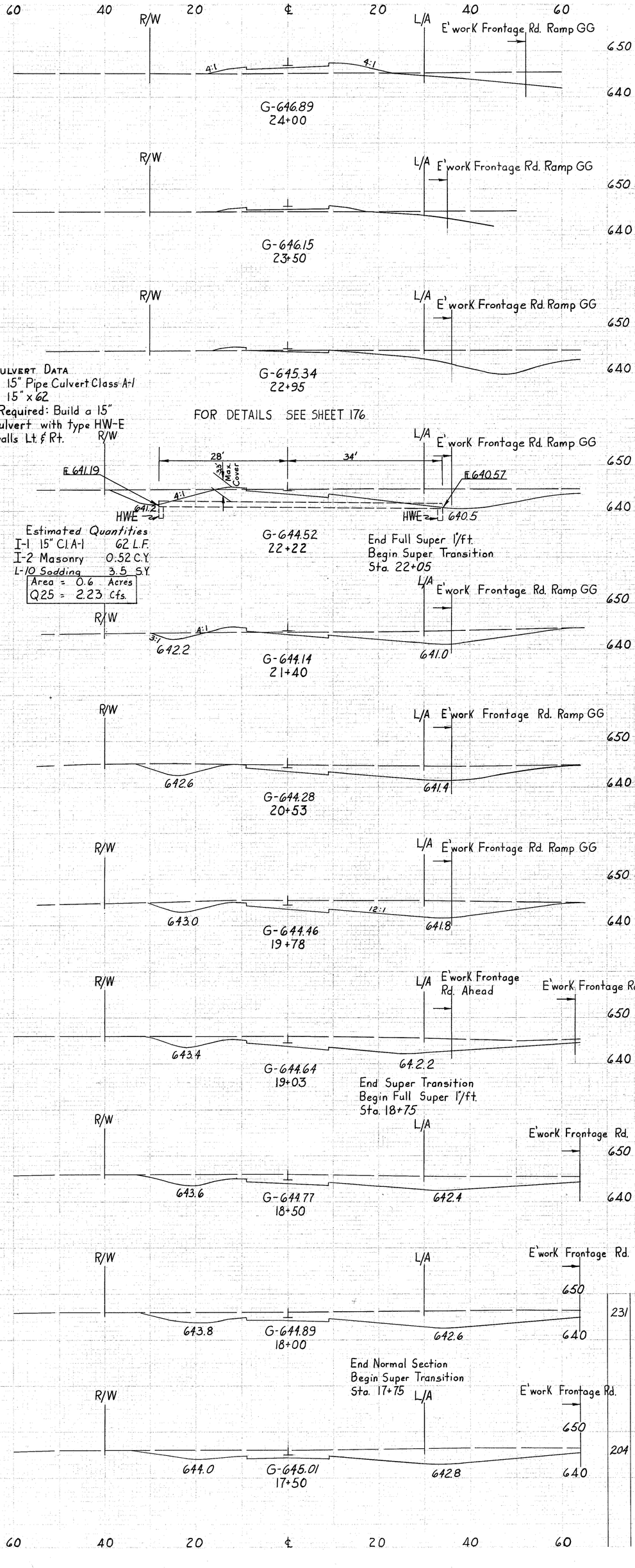
LAKE COUNTY
LAK-2-16.49



FOR PLAN SEE SHEETS 29-31, 176 & 185

PROFILE FRONTAGE ROAD "A"
STA. 17+02.17 TO STA. 52 + 33.13

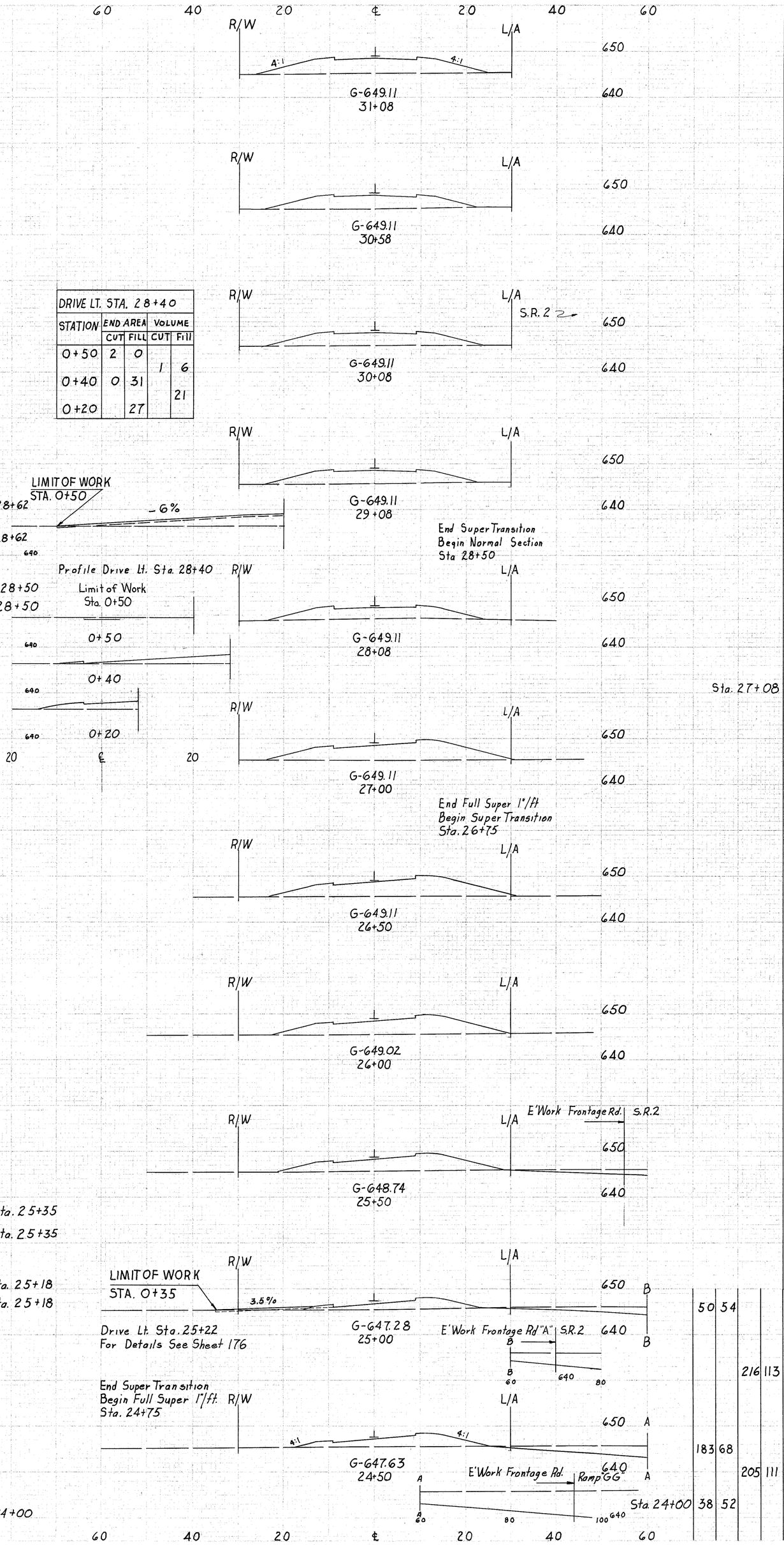
SEEDING END WIDTH	SEEDING SQ. YDS.		END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
52	236	G-646.89 24+00	38	52	45	65
33	205	G-646.15 23+50	11	18	47	22
34	381	G-645.34 22+95	35	4	253	9
60	497	G-644.52 22+22	152	3	352	15
49	488	G-644.14 21+40	80	7	325	11
52	121	G-644.28 20+53	122	0	369	
49	412	G-644.46 19+78	144		408	
50 Ahd. / 78 Bk.	462	G-644.64 19+03	Ahd. 150 / Bk. 192		391	
79	439	G-644.77 18+50	206		405	
79	444	G-644.89 18+00	231	403		
81		G-645.01 17+50	204			



FRONTAGE RD. "A" Sta. 17+50 to Sta. 24+00

LAKE COUNTY
LAK-2-16.49

SEEDING END WIDTH	SEEDING SQ. YDS.		END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
34		G-649.11 31+08		128		
	175					218
29		G-649.11 30+58		107		
	167					195
31		G-649.11 30+08		104		
	339					387
30		G-649.11 29+08		105		
30	153					
14						372
15	19					
30		G-649.11 28+08		96		
30	140					454
	408					36
38		G-649.11 27+00		149		
	211					272
38		G-649.11 26+50		145		
	203					257
35		G-649.02 26+00	0	133		
	261					
59		G-648.74 25+50	14	115	13	230
59	98					
51					59	156
51	96					
58		G-647.28 25+00	50	54		
58	116				216	113
95		G-647.63 24+50	183	68		
	425					
52	408		205	111		
			38	52		



FRONTAGE RD "A" Sta. 24+50 to Sta 31+08

LAKE COUNTY
LAK-2-16.49

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SEEDING END WIDTH	SEEDING SQ. YDS.	Station	END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
30		G-649.11 37+58		109		
	158					195
27		G-649.11 37+08		102		
	164	S.R. 2				199
32		G-649.11 36+58		113		
	192					228
37		G-649.11 36+08		133		
	194					243
33		G-649.11 35+58		129		
	189					237
35		G-649.11 35+08		127		
	194					234
35		G-649.11 34+58		126		
	192					235
34		G-649.11 34+08		128		
	189	S.R. 2				240
34		G-649.11 33+58		131		
	186					235
33		G-649.11 33+08	123			
	367				444	
33		G-649.11 32+08	117			
	372				454	
34		Sta. 31+08	128			

FRONTAGE RD."A" Sta. 32+08 to Sta. 37+58

LAKE COUNTY
LAK-2-16.49

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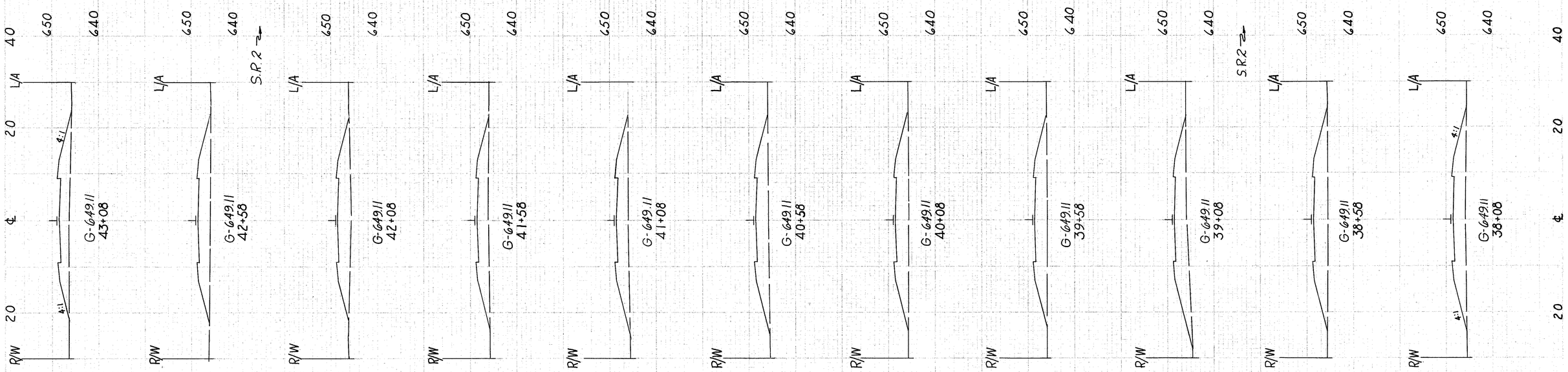
END AREA		VOLUME	
CUT	FILL	CUT	FILL
	78		159
	94		176
	96		171
	89		172
	97		184
	102		192
	105		188
	98		193
	110		207

CONTROL	ROUTE	SHEET
2	040	

191
313

LAKE COUNTY
LAK-2-16.49

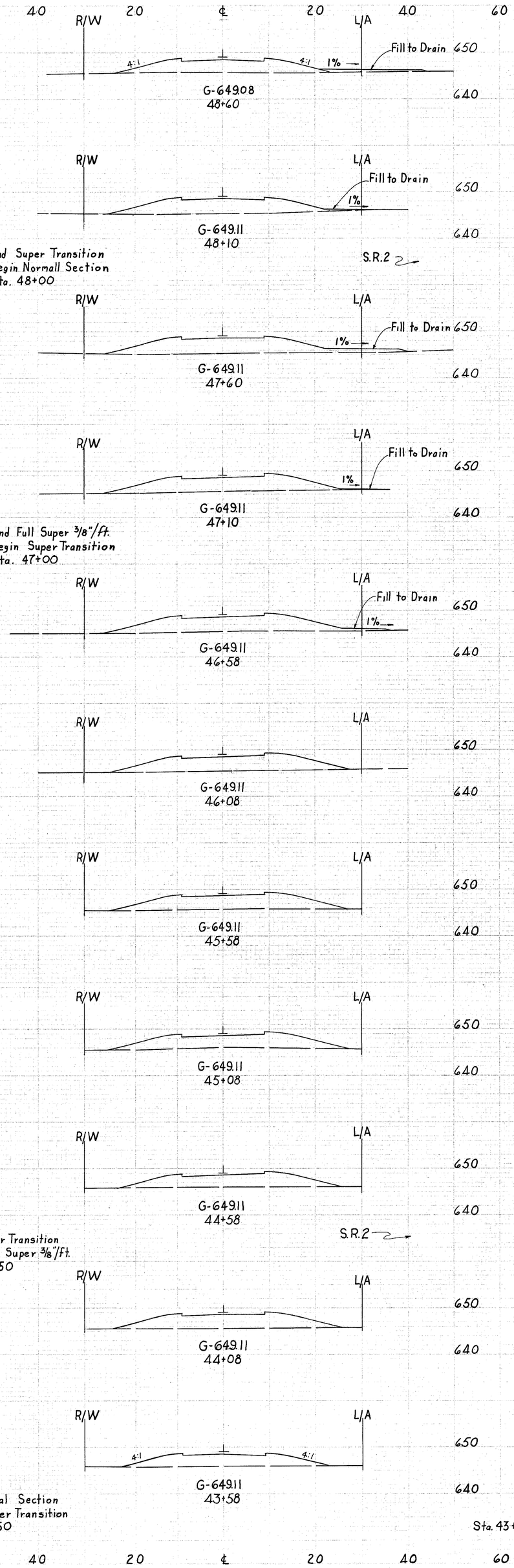
	201	196	
114	103	109	



SEEDING			
END WIDTH	SQ. YDS.		
28	156		
28	150		
26	153		
29	164		
30	167		
30	167		
30	161		
28	169		
33	178		
31	172		
31	169		
30			

FRONTAGE RD. "A" Sta. 38+08 to Sta. 43+08

SEEDING END WIDTH	SEEDING SQ. YDS.		END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
51		G-649.08 48+60		110		
	256					218
41		G-649.11 48+10		125		
	250	End Super Transition Begin Normall Section Sta. 48+00				249
49		G-649.11 47+60		144		
	261					256
45		G-649.11 47+10		132		
	260	End Full Super 3/8"/ft. Begin Super Transition Sta. 47+00				263
45		G-649.11 46+58		141		
	225					254
36		G-649.11 46+08		133		
	197					239
35		G-649.11 45+58		125		
	197					226
36		G-649.11 45+08		119		
	189					209
32		G-649.11 44+58		107		
	181	End Super Transition Begin Full Super 3/8"/ft. Sta. 44+50				210
33		G-649.11 44+08	120		198	
	169					
28		G-649.11 43+58	94		159	
	156	End Normal Section Begin Super Transition Sta. 43+50				
28	Sta. 43+08		78	Sta. 43+08		



FRONTAGE RD. "A" Sta. 43+58 to Sta. 48+60

LAKE COUNTY
LAK-2-16.49

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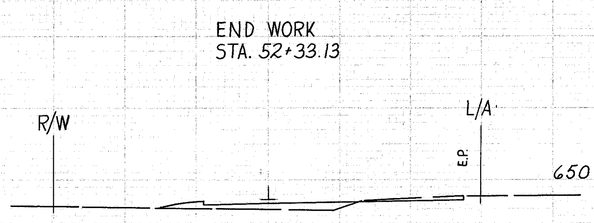
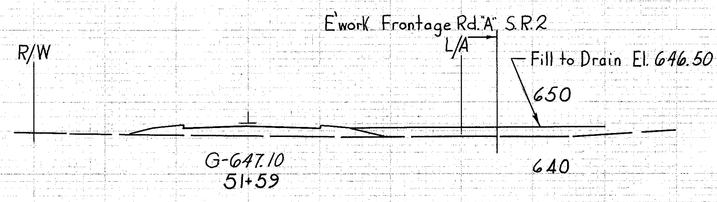
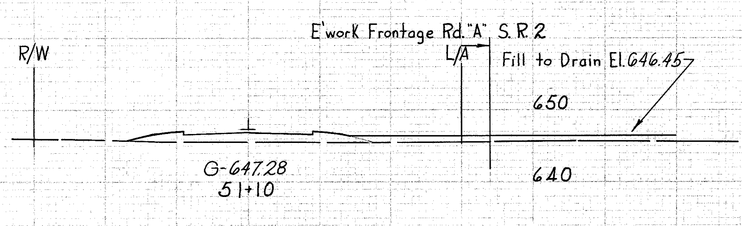
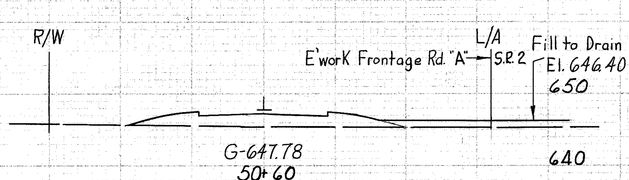
313

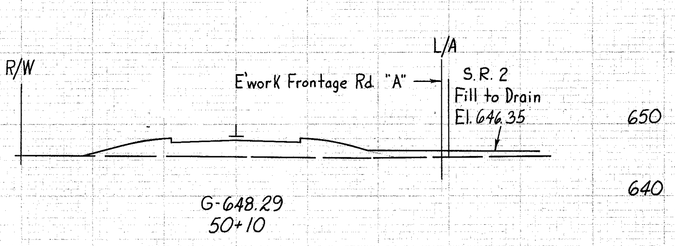
SEEDING END WIDTH	SEEDING SQ. YDS.		END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
0		Sta. 52+33	7	0		
	8				5	9
6			4	21		
	23				2	
8		Sta. 51+80	0			
	47					77
32				62		
	177					104
33				53		
	183					112
33				68		
	183					145
33				89		
	356					339
31			94			
	228					189
51		Sta. 48+60	110			

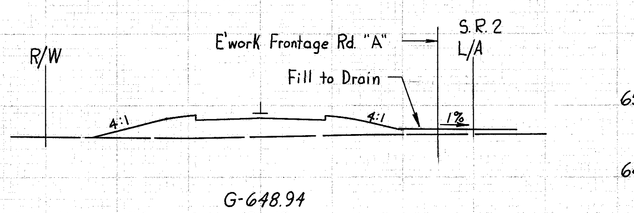












FRONTAGE RD. "A" Sta. 49+10 to Sta. 52+09

LAKE COUNTY
LAK-2-16.49

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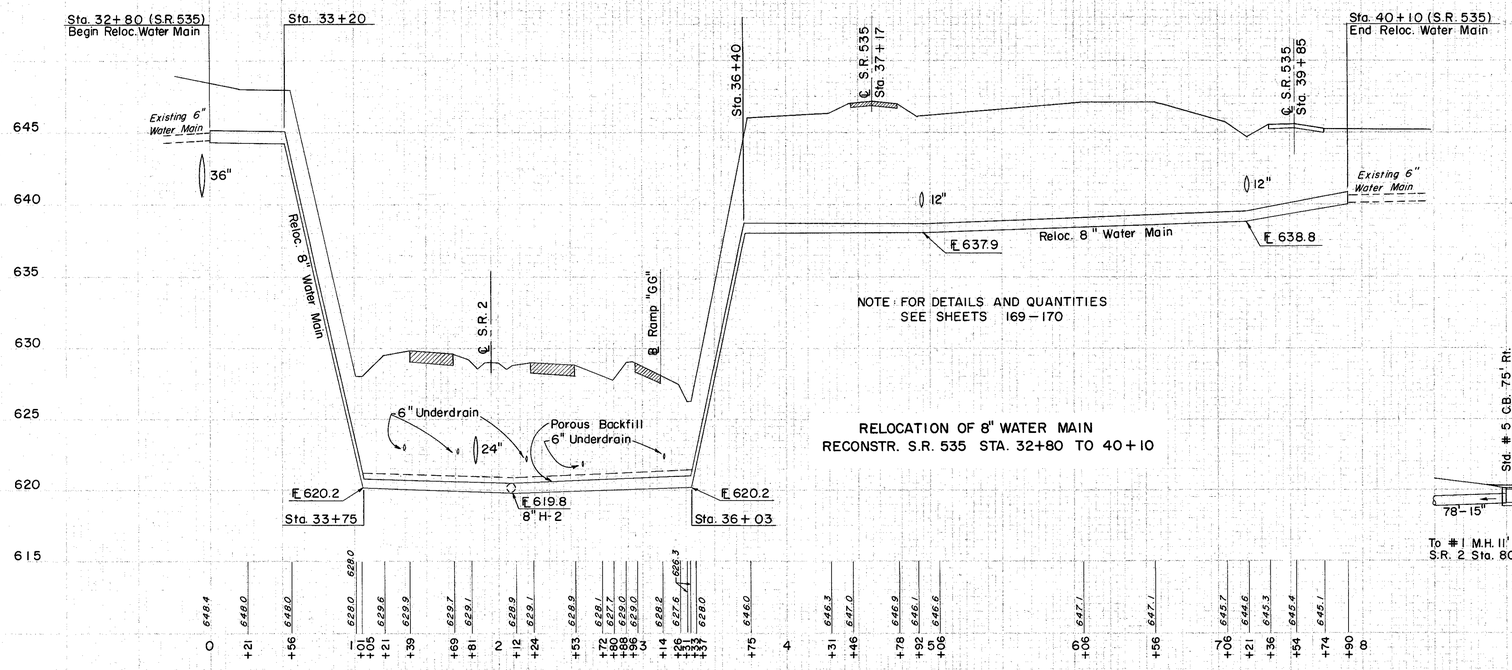
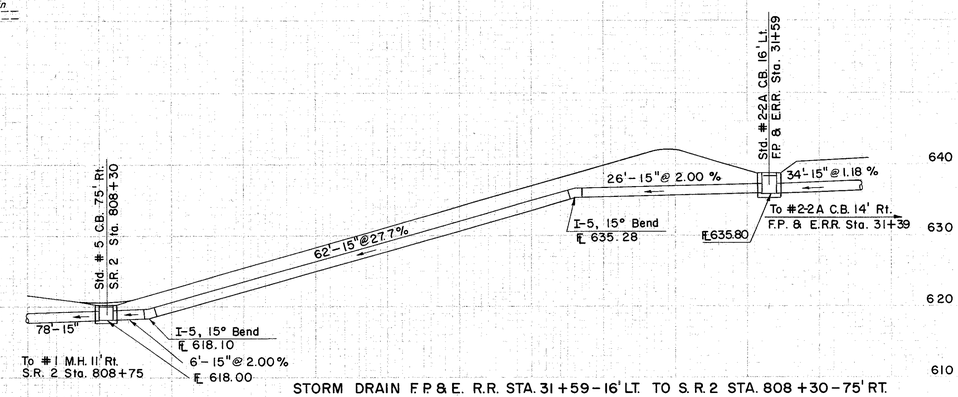
313

LAKE COUNTY
LAK-2-16.49



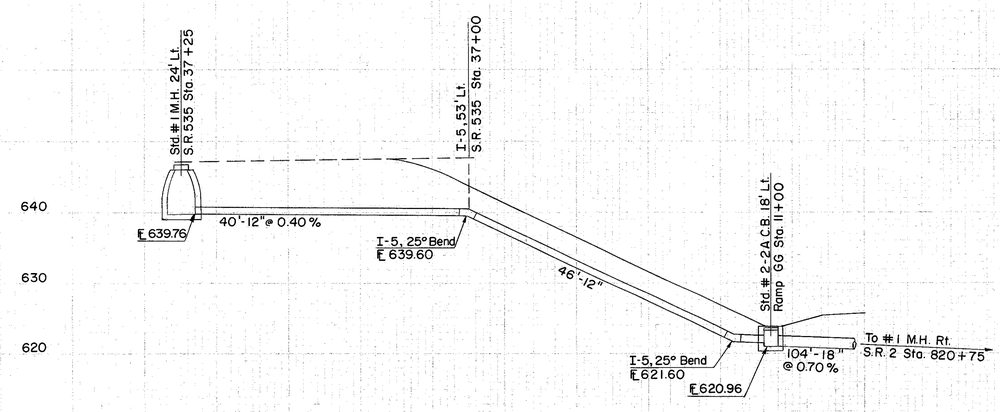
NOTE: FOR DETAILS AND QUANTITIES
SEE SHEETS 169 – 170

RELOCATION OF 8" WATER MAIN
RECONSTR. S.R. 535 STA. 32+80 TO 40+10



STORM DRAIN F.P.& E. R.R. STA. 31+59 – 16' LT. TO S.R. 2 STA. 808+30 – 75' RT.

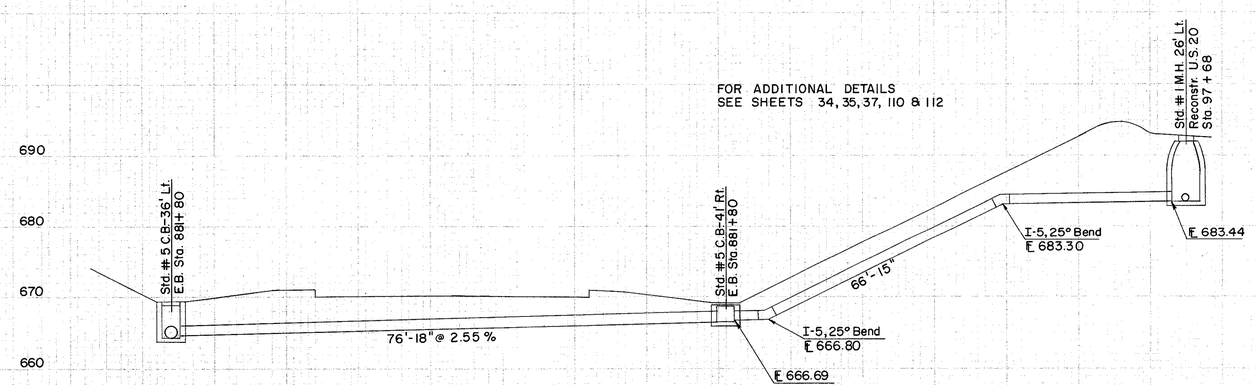
5 0 10 20 30
SCALE IN FEET



STORM DRAIN S.R. 535 STA. 37+25 TO RAMP GG STA. 11+00

5 0 10 20 30
SCALE IN FEET

FOR ADDITIONAL DETAILS
SEE SHEETS 34, 35, 37, 110 & 112



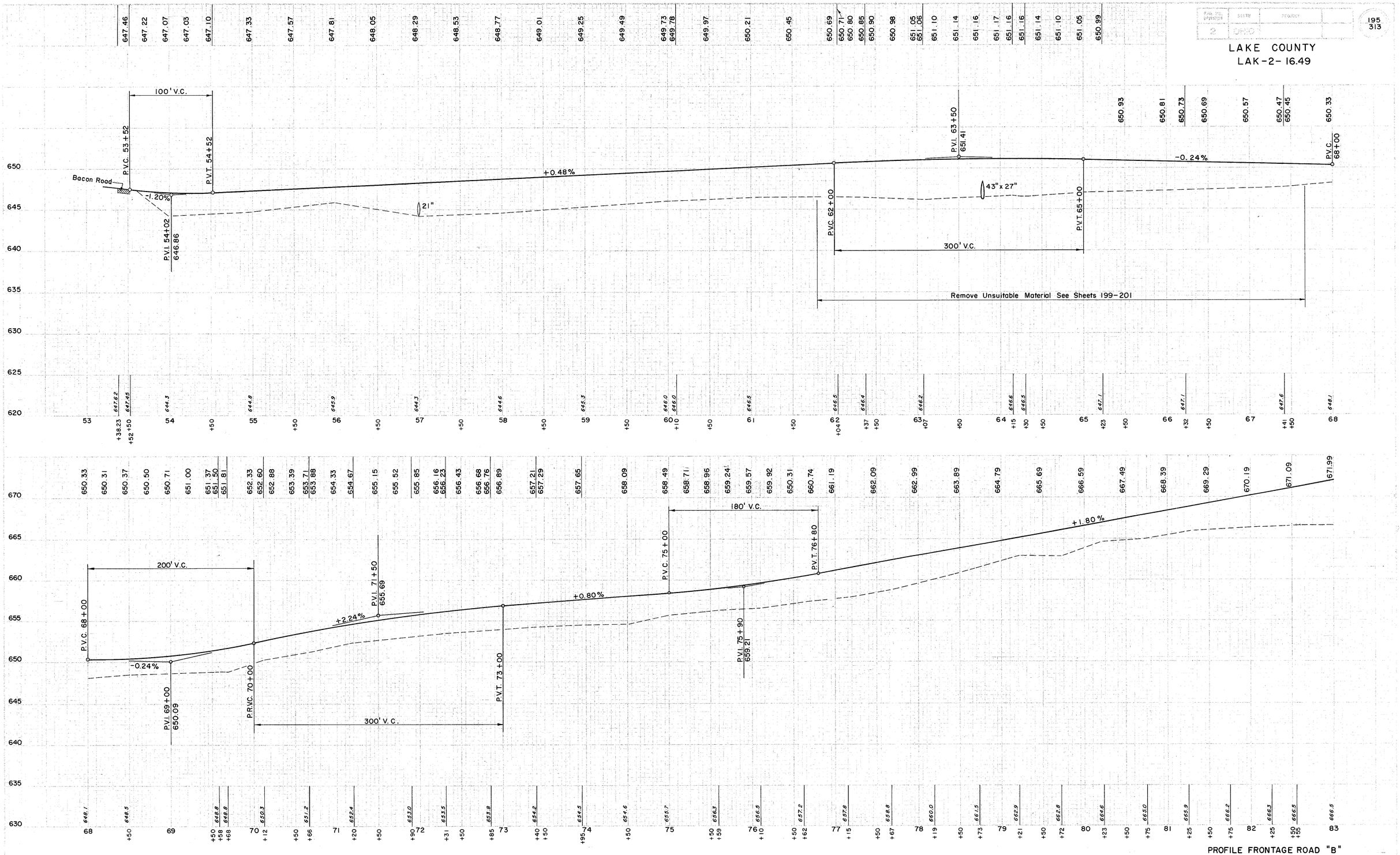
STORM DRAIN E.B. STA. 881+80 – 36' LT. TO U.S. 20 STA. 97+68 – 26' LT.

5 0 10 20 30
SCALE IN FEET

PROFILE RELOC. WATER MAIN AND
SLOPE PIPES

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

LAKE COUNTY
LAK-2-16.49

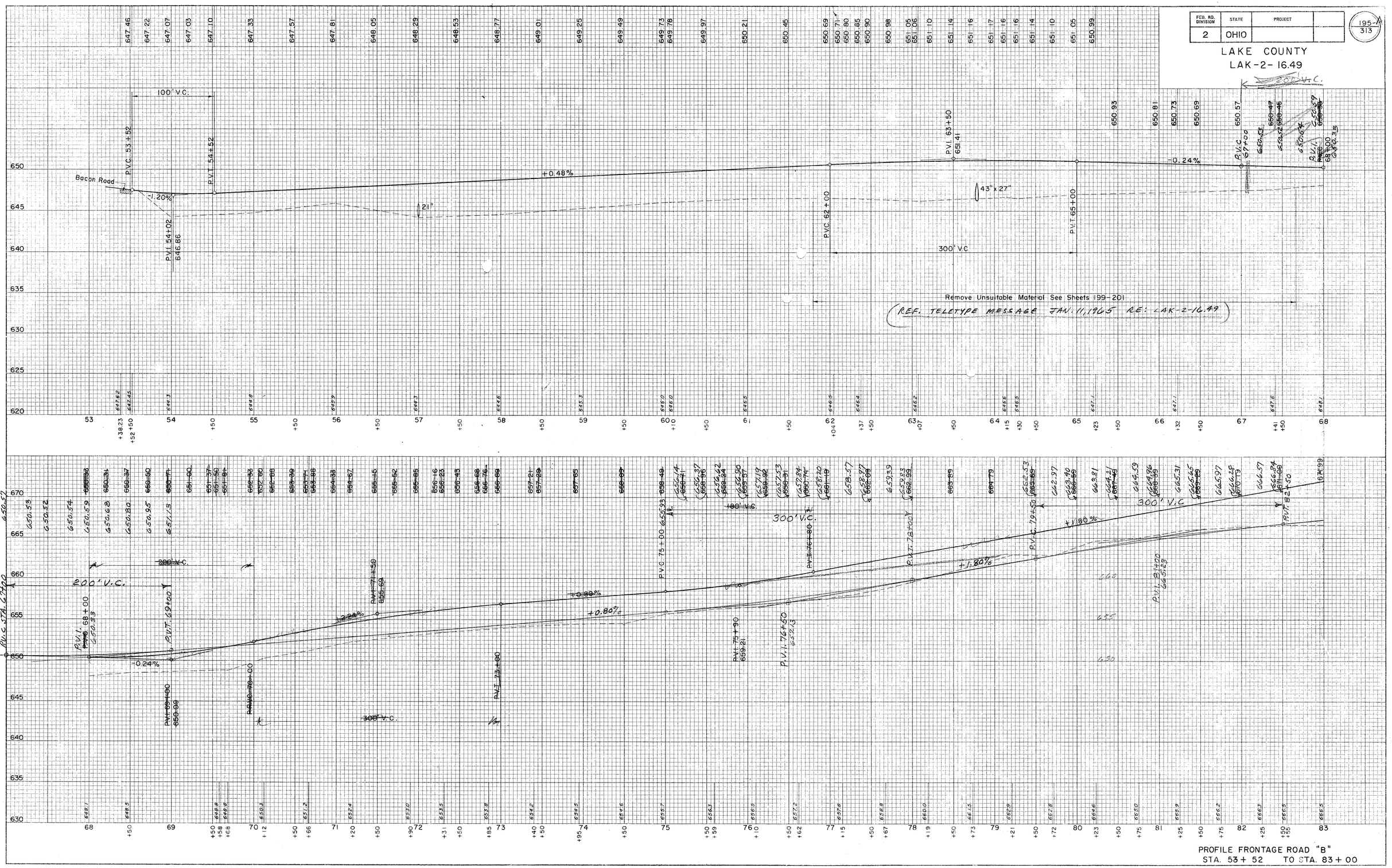


PROFILE FRONTAGE ROAD "B"
STA. 53+52 TO STA. 83+00

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

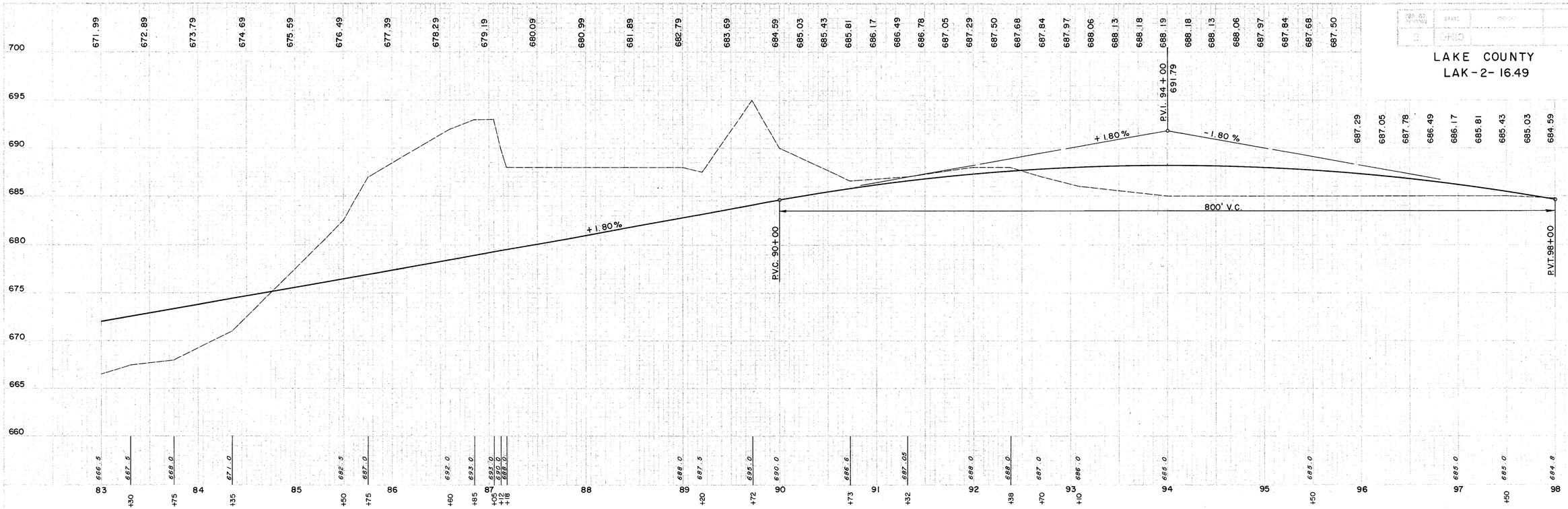
195-A
313

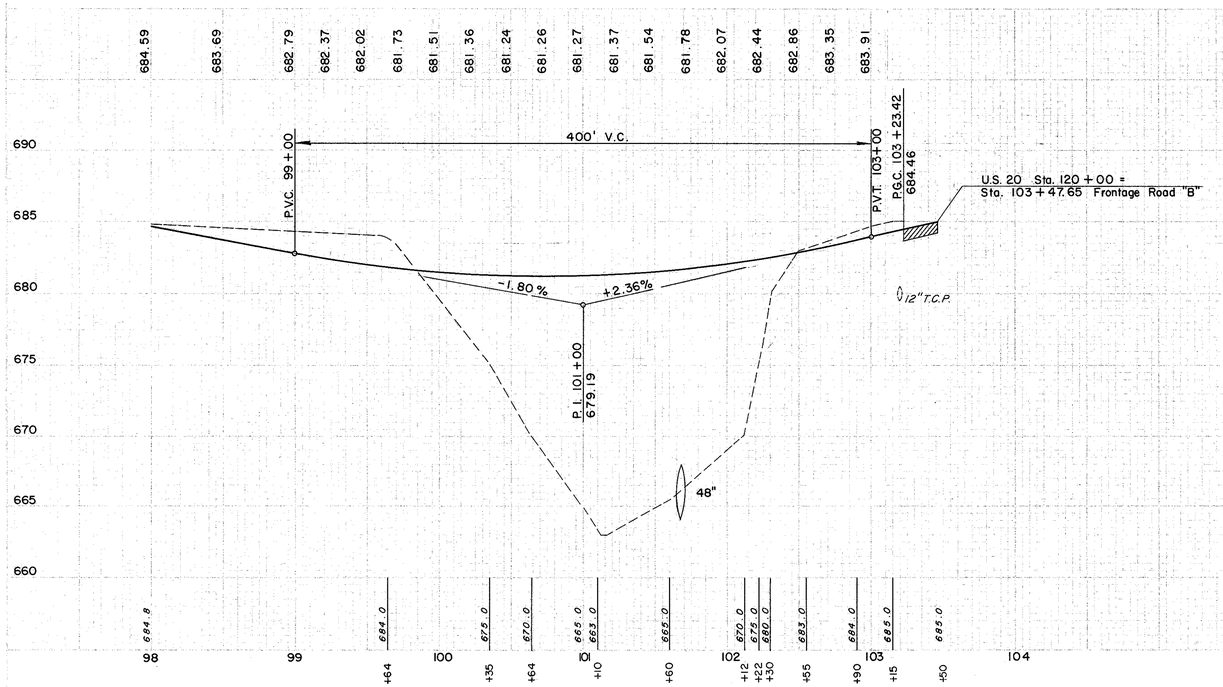
LAKE COUNTY
LAK-2-16.49



PROFILE FRONTAGE ROAD "B"
STA. 53+52 TO STA. 83+00

LAKE COUNTY
LAK-2-16.49





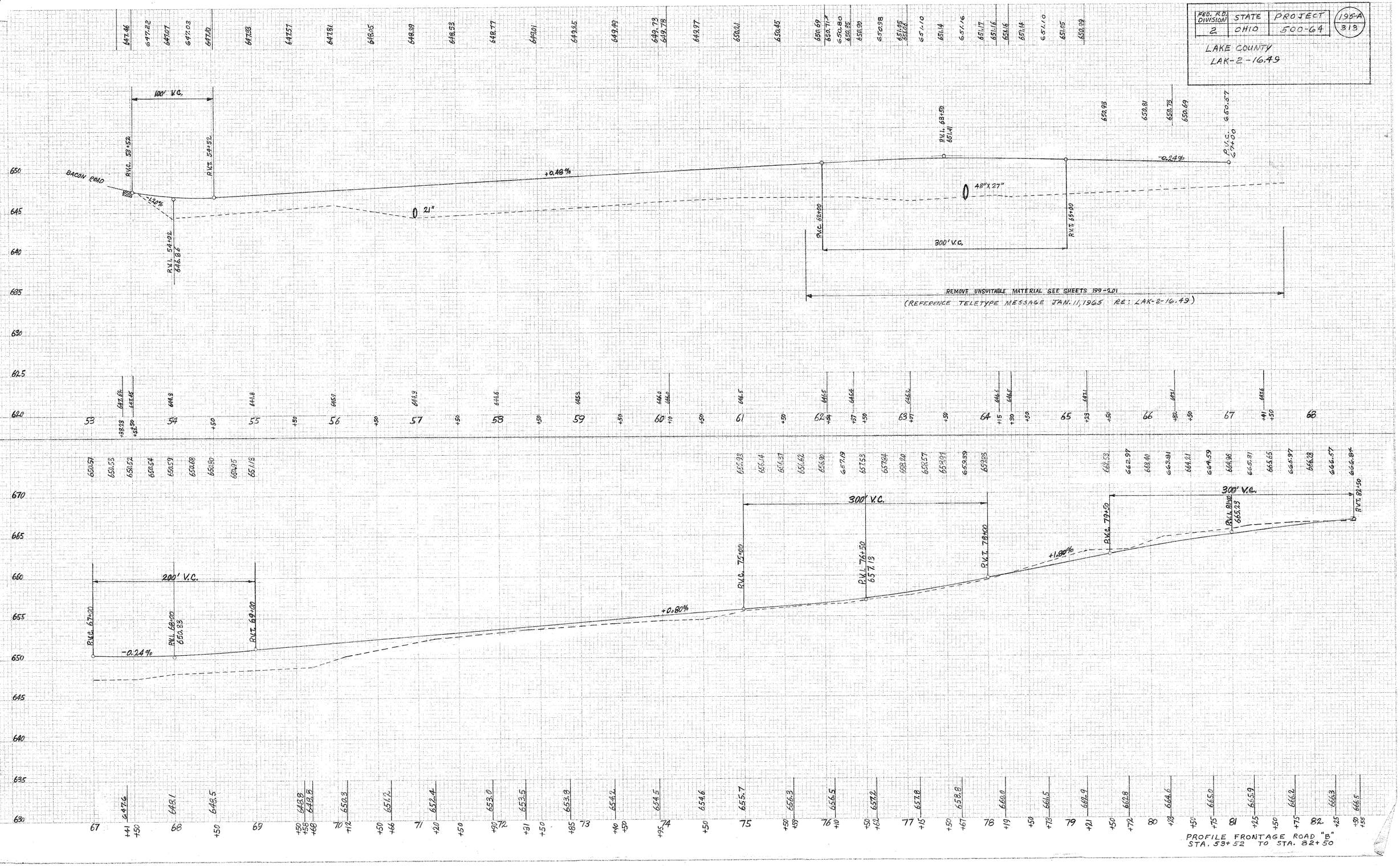
PROFILE FRONTAGE ROAD "B"
STA. 83+00 TO STA. 103+23.42

F-19

E1-9

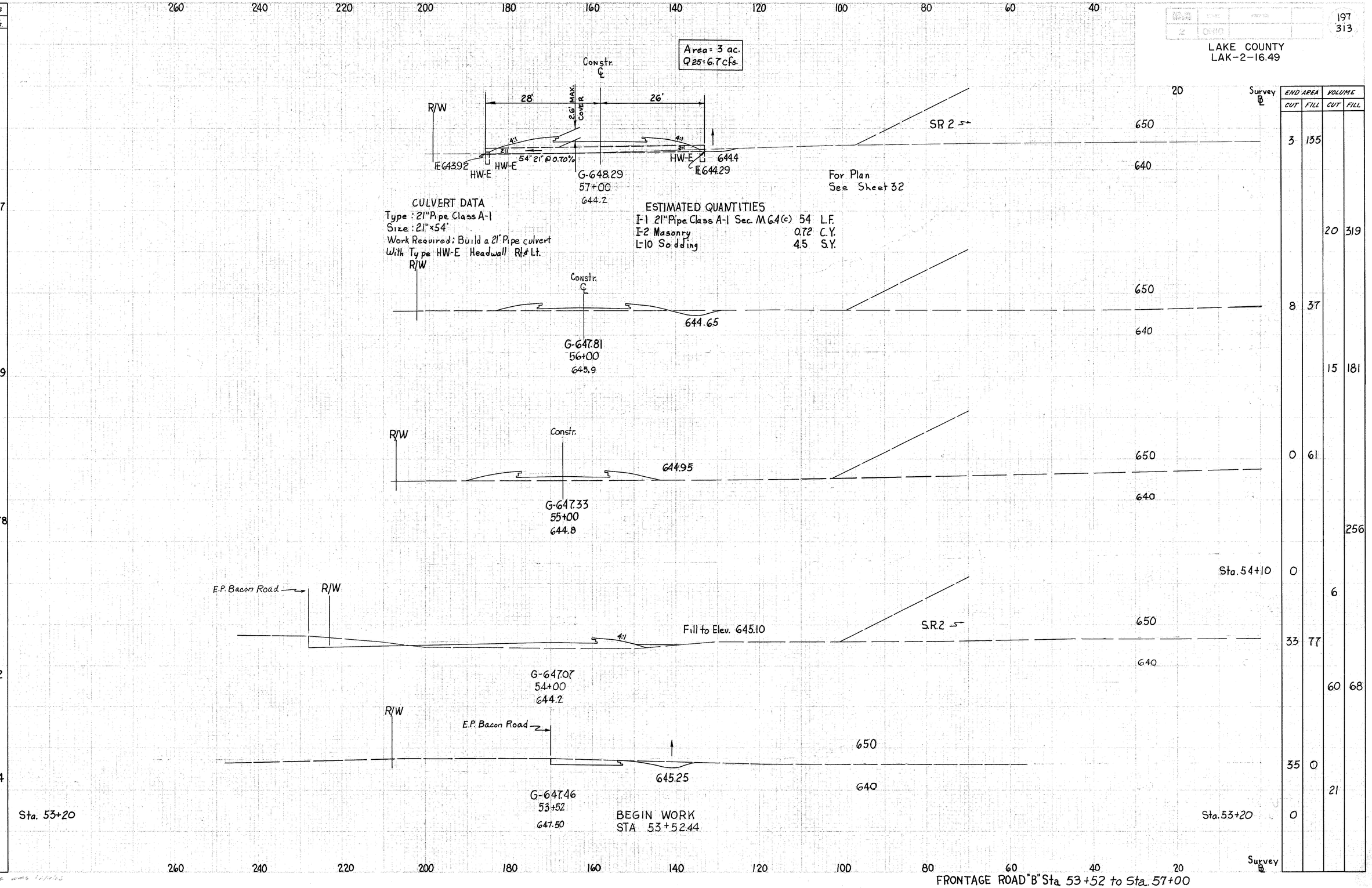
FED. RD. DIVISION	STATE	PROJECT	195-A 313
2	OHIO	500-64	

LAKE COUNTY
LAK-2-16.49



PROFILE FRONTAGE ROAD "B"
STA. 53+52 TO STA. 82+50

SEEDING END WIDTH	SEEDING SQ. YDS.
42	
	427
34	
	339
27	
	278
23	
	112
19	
	34
0	

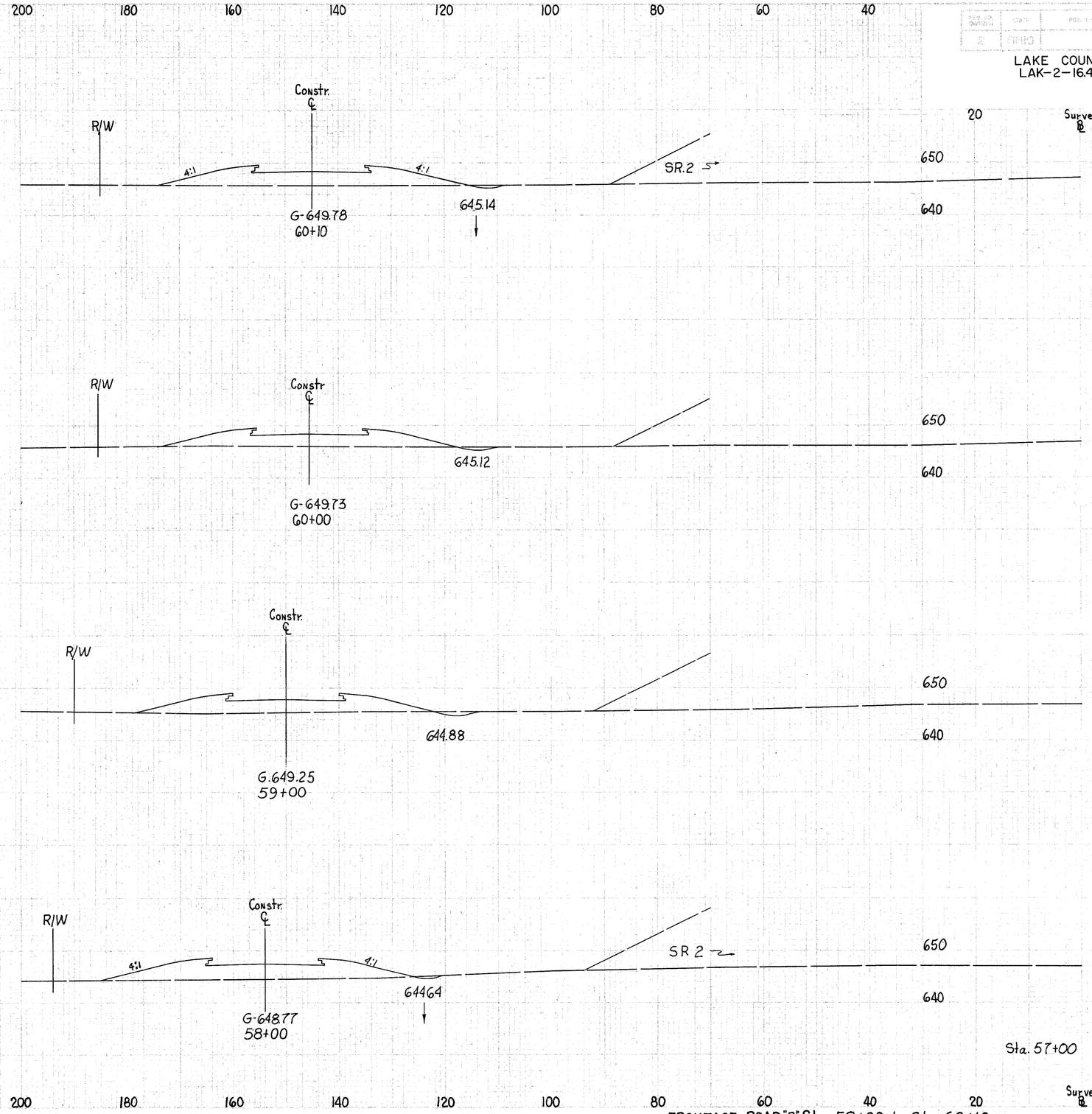


END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
3	135		
		20	319
8	37		
		15	181
0	61		
			256
0		6	
33	77		
		60	68
35	0		
		21	
0			

2	0410		197 313

LAKE COUNTY
LAK-2-16.49

SEEDING	
END WIDTH	SQ. YDS.
45	
	49
44	
	500
46	
	500
44	
	478
42	



END AREA		VOLUME	
CUT	FILL	CUT	FILL
2	142		
		1	49
3	121		
		13	469
4	132		
		11	531
2	155		
		9	537
3	135		

LAKE COUNTY
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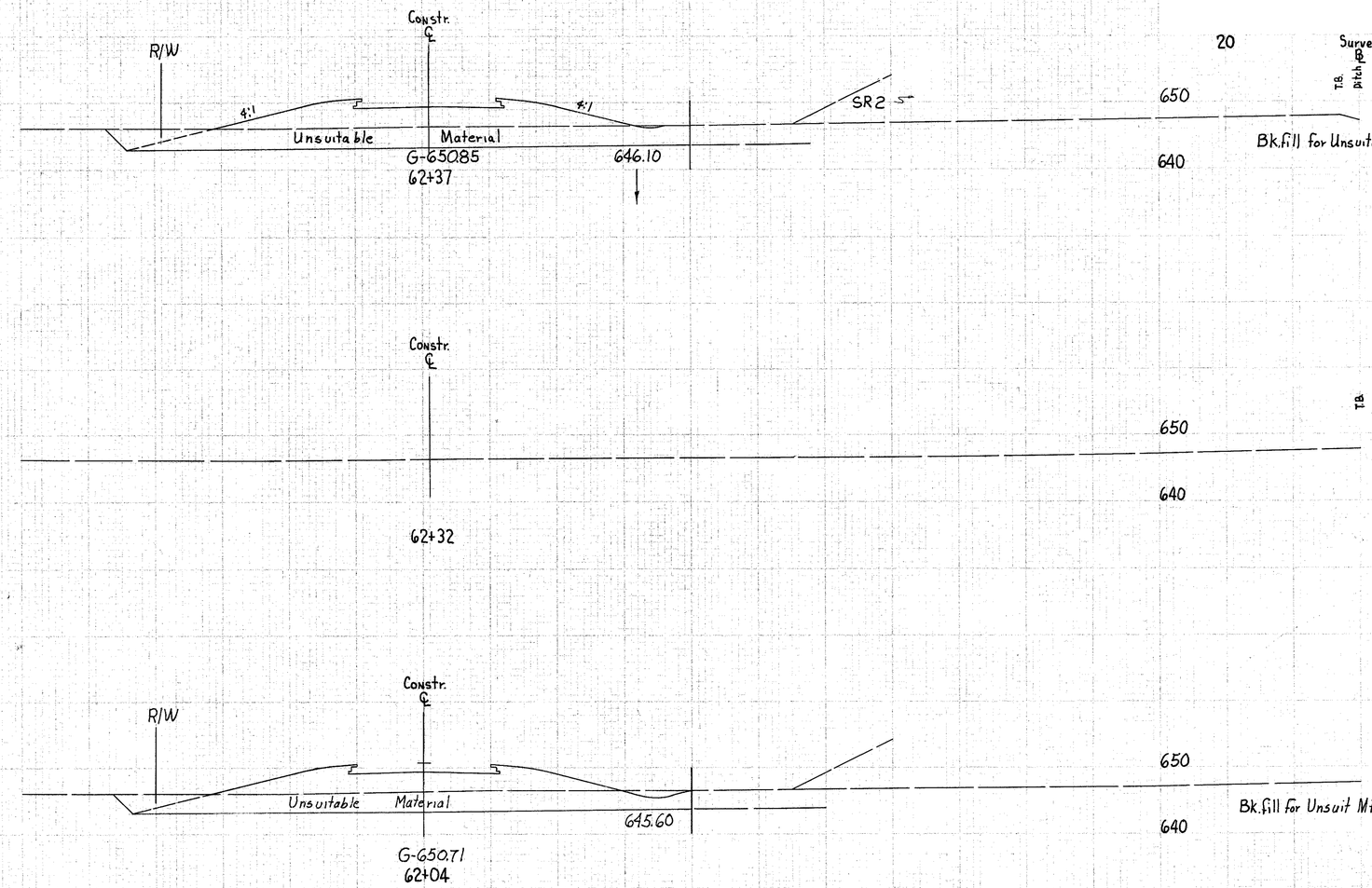
FRONTAGE ROAD "B" Sta. 58+00 to Sta. 60+10

LAKE COUNTY
LAK-2-16.49

SEEDING END WIDTH	SEEDING SQ. YDS.	Station	Description
48			
	185		
53			
	578		Sta. 61+79 Begin Unsuitable Exc. Area = 0
47			
	460		
45		Sta. 60 + 10	

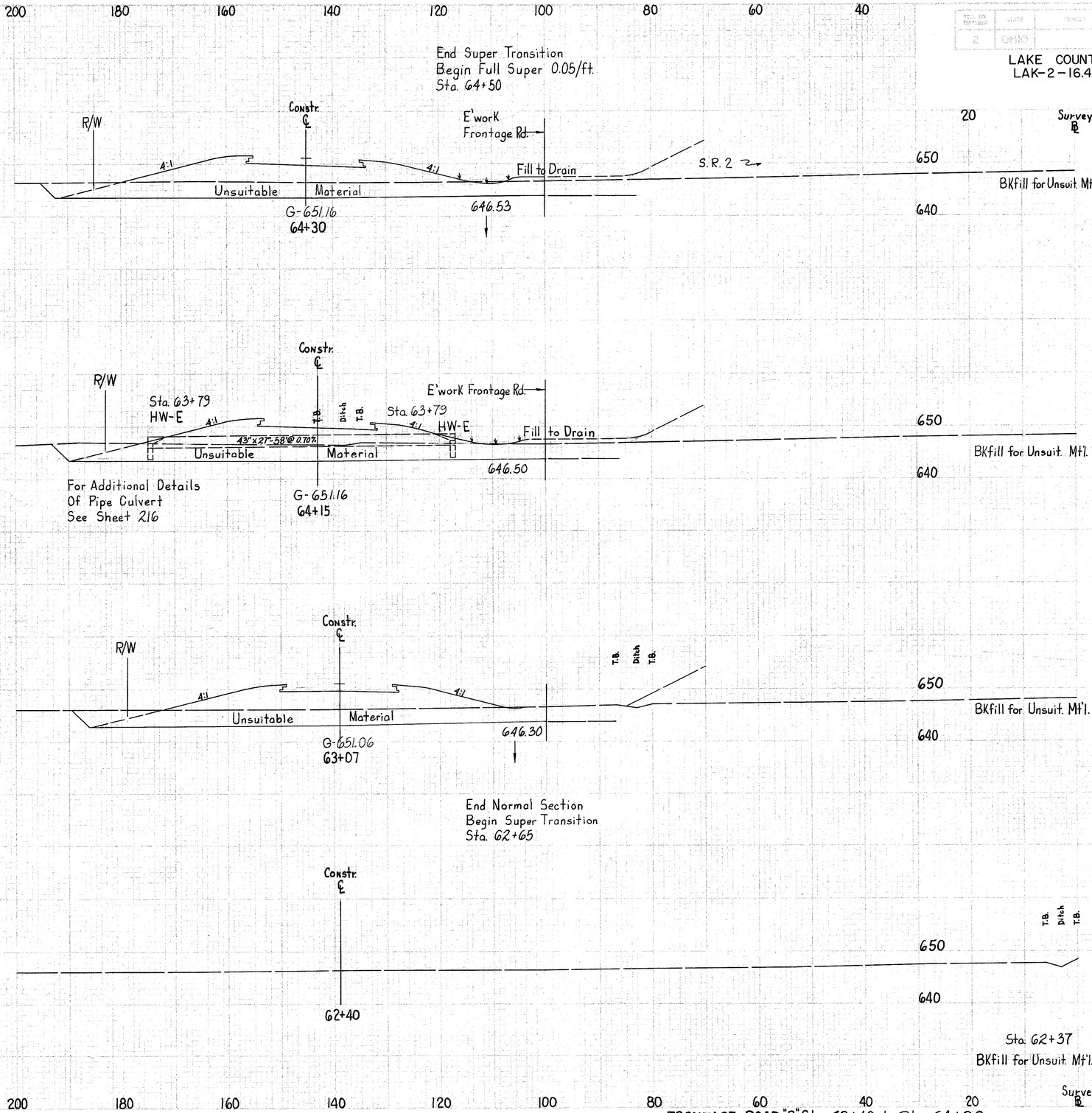


Station	END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
	262	168 + 261 = 429		
			317	513
	256	160 + 250 = 410		
			121	260
Sta. 61+79	6	152		
			18	408
	6	127		
			13	448
Sta. 60+10	2	142		

FRONTAGE ROAD "B" Sta 61+00 to Sta. 62+37

Computed Area 12/4/63 WMS

SEEDING	
END WIDTH	SQ. YDS.
62	
	100
58	
	636
48	
	373
48	



END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
286	193 + 284 = 477		
		165	268
308	182 + 307 = 489		
		1172	1926
278	197 + 277 = 474		
		700	1171
262	168 + 261 = 429		

STATE OF OHIO DEPT. OF HIGHWAYS	COUNTY	TOTAL SHEETS	200
2	OHIO		313

LAKE COUNTY
LAK-2-16.49

FRONTAGE ROAD "B" Sta. 62+40 to Sta. 64+30

Computed By SLS 11/21/63
Checked By WMS 11/22/63

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	500-64	

200-A
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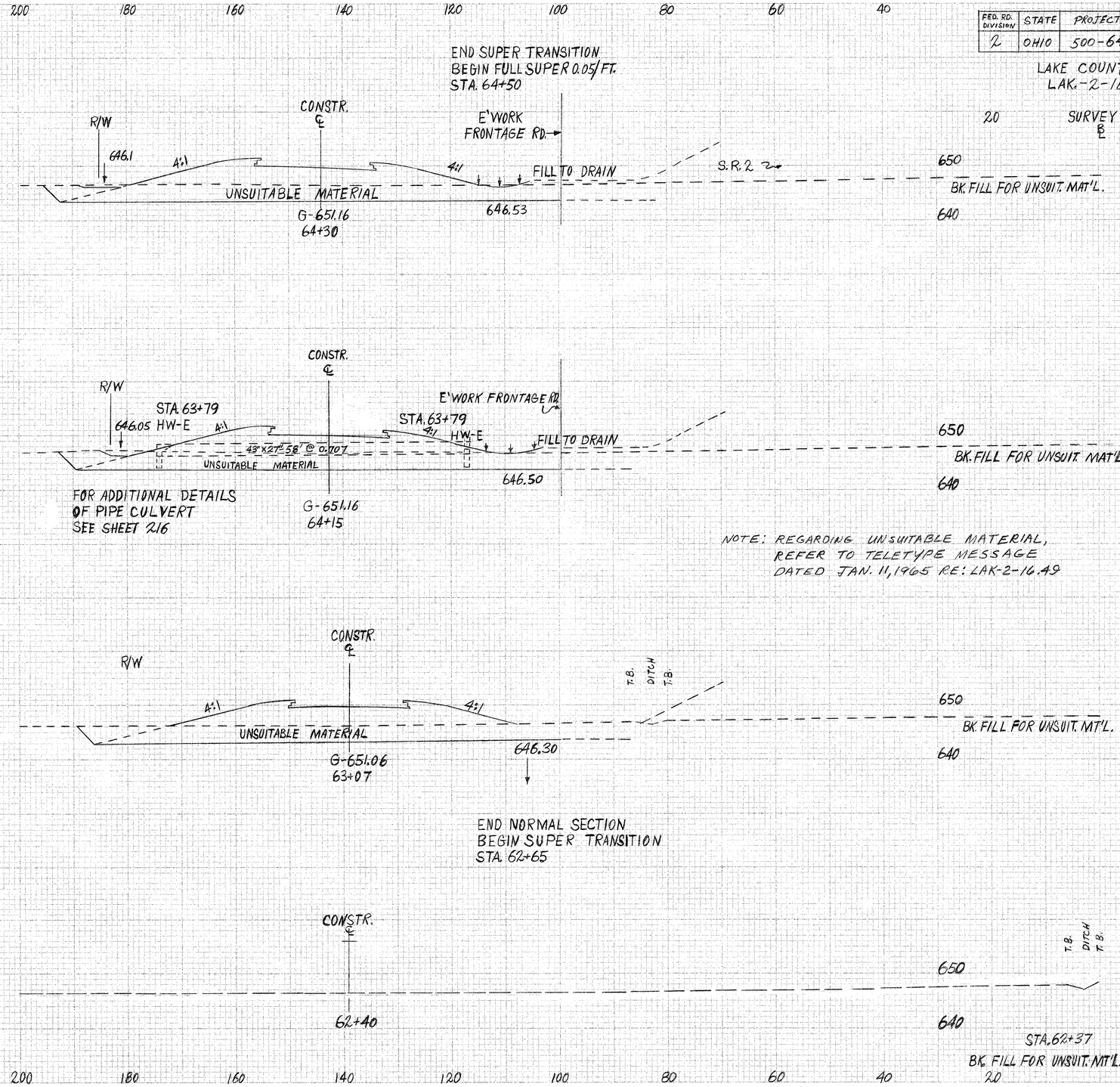
LAKE COUNTY
LAK.-2-16.49

SEEDING & END WIDTH	SQ. YDS.
62	
100	
58	
636	
48	
373	
48	STA. 62+37

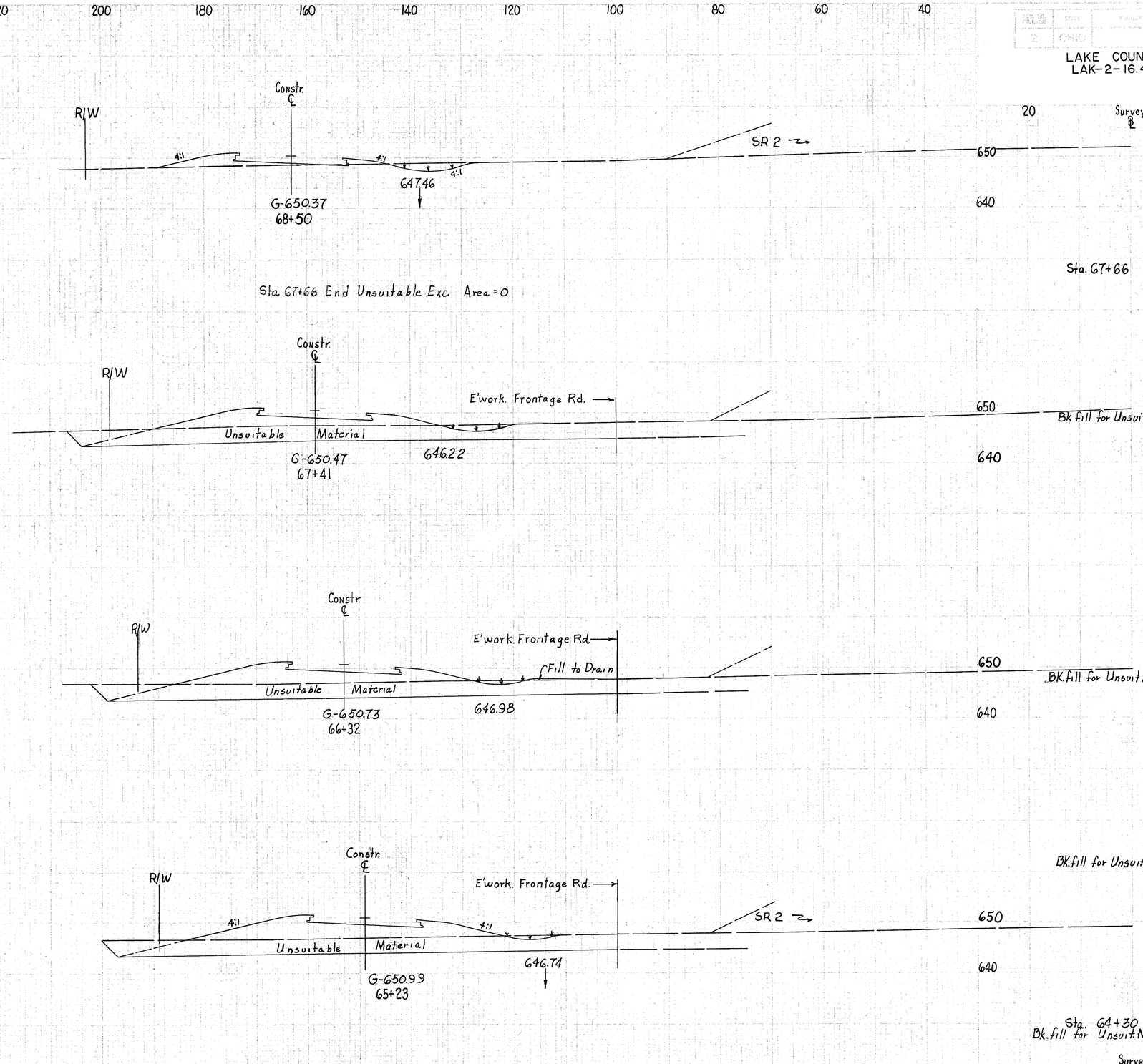


END	AREA	VOLUME
CUT	FILL	CUT	FILL
289	193 + 284 = 477		
		166	268
308	182 + 307 = 489		
		1172	1906
278	197 + 277 = 474		
		700	1171
262	168 + 261 = 429		

201
313

LAKE COUNTY
LAK-2-16.49

SEEDING END WIDTH	SEEDING SQ YDS.
41	
	557
51	
	599
48	
	606
52	
	589
62	Sta. 64+30



	END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
	16	42		
			44	207
Sta. 67+66	12	91		
			157	237
Bk fill for Unsuit. Mtl. + 316	327	105 / 421		
			1308	1774
Bk. fill for Unsuit Mtl. + 316	321	142 / 458		
			1249	1845
Bk. fill for Unsuit Mtl. + 292	298	164 / 456		
			1006	1607
Bk. fill for Unsuit Mtl + 284	286	193 / 477		

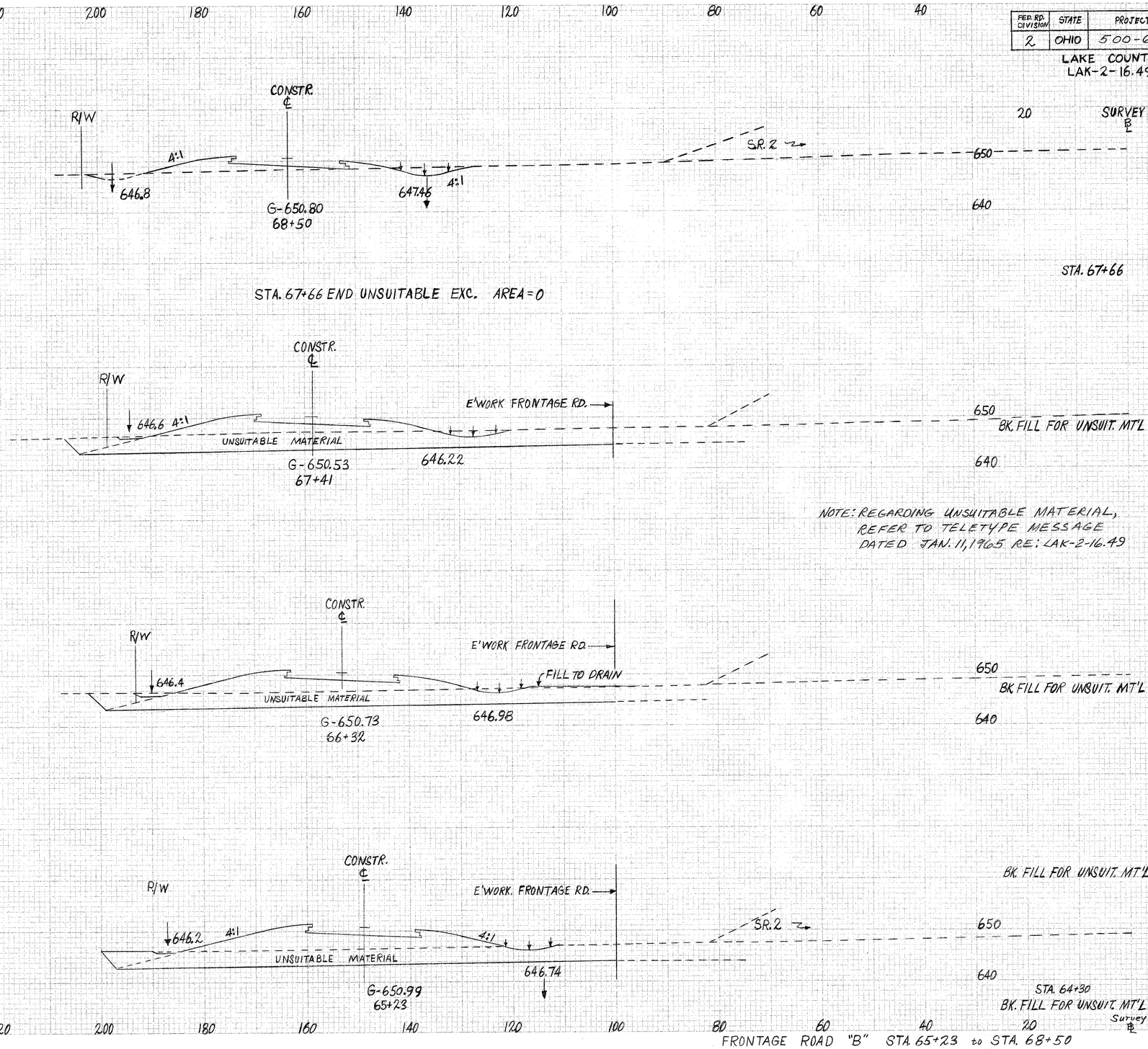
FRONTAGE ROAD "B" Sta 65+23 to Sta. 68+50

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	500-64	

201-A
313

LAKE COUNTY
LAK-2-16.49

SEEDING END WIDTH	SEEDING SQ. YDS.
41	
	557
51	
	599
48	
	606
52	
	589
62	



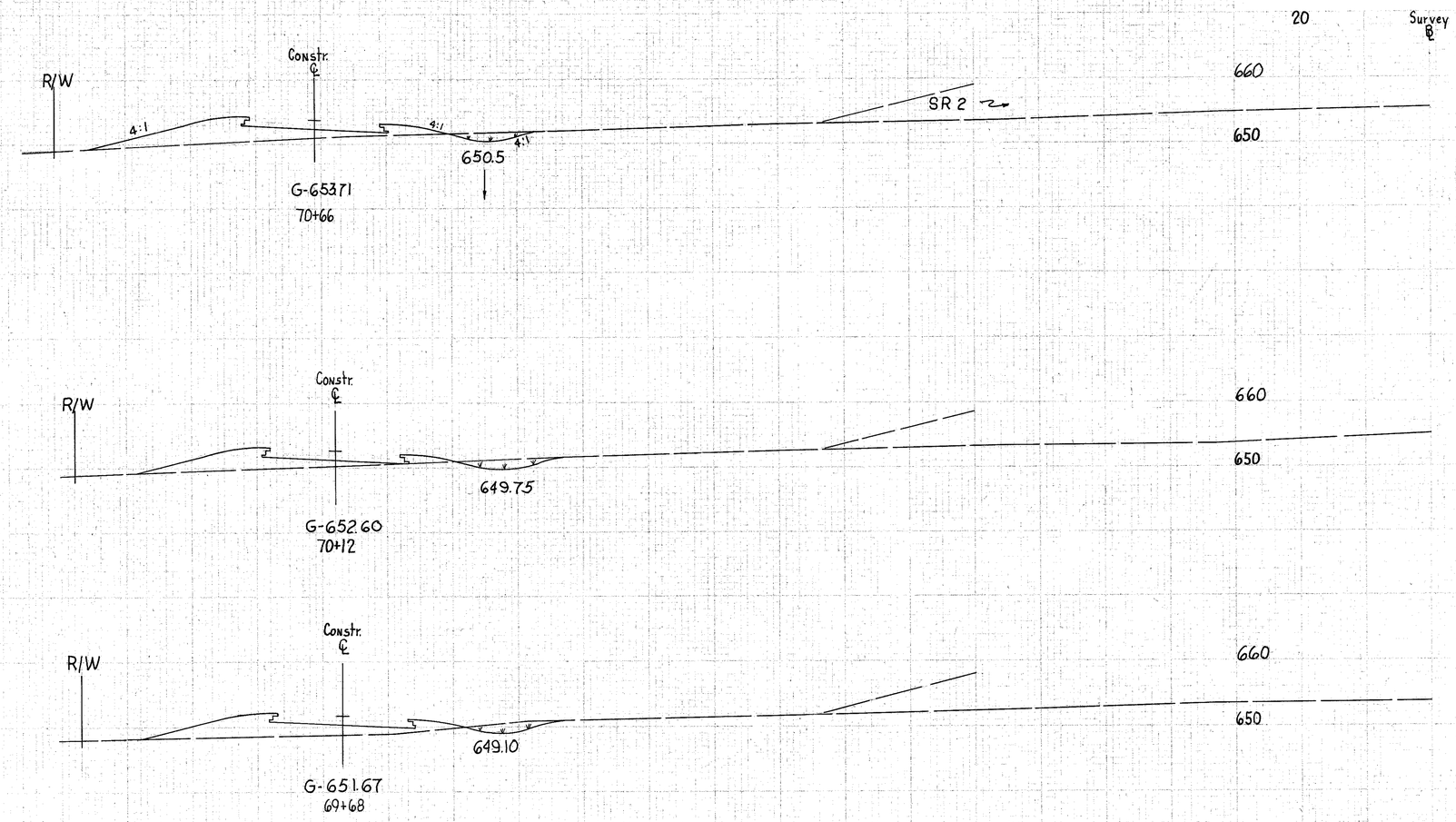
SURVEY ℄	END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
	24	64		
			56	241
STA. 67+66	12	91		
			158	237
BK. FILL FOR UNSUIT. MT'L	330	105 + 316 = 421		
			1320	1774
BK. FILL FOR UNSUIT. MT'L	324	142 + 316 = 458		
			1260	1845
BK. FILL FOR UNSUIT. MT'L	300	164 + 292 = 456		
			1014	1607
STA. 64+30 BK. FILL FOR UNSUIT. MT'L	289	193 + 284 = 477		

FRONTAGE ROAD "B" STA. 65+23 to STA. 68+50

LAKE COUNTY
LAK-2-16.49

SEEDING END WIDTH	SEEDING SQ. YDS.
49	
	285
46	
	220
44	
	49
45	
	516
41	

Sta. 68+50



END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
11	101		
		27	170
16	69		
		24	129
14	89		
		5	31
15	80		
		62	244
16	42		

Sta. 68+50

FRONTAGE ROAD "B" Sta 69+58 to Sta. 70+66

t. 2/8/63
s. & S.S.
x-ICC
S. & E.B.
WMS 11/13/63
SLS 11/20/63
WMS 11/20/63
SLS 11/21/63
WMS 11/22/63
CWPS SLS 11/21/63
Contours checked 12/4/63 WMS

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	500-64	

202-A
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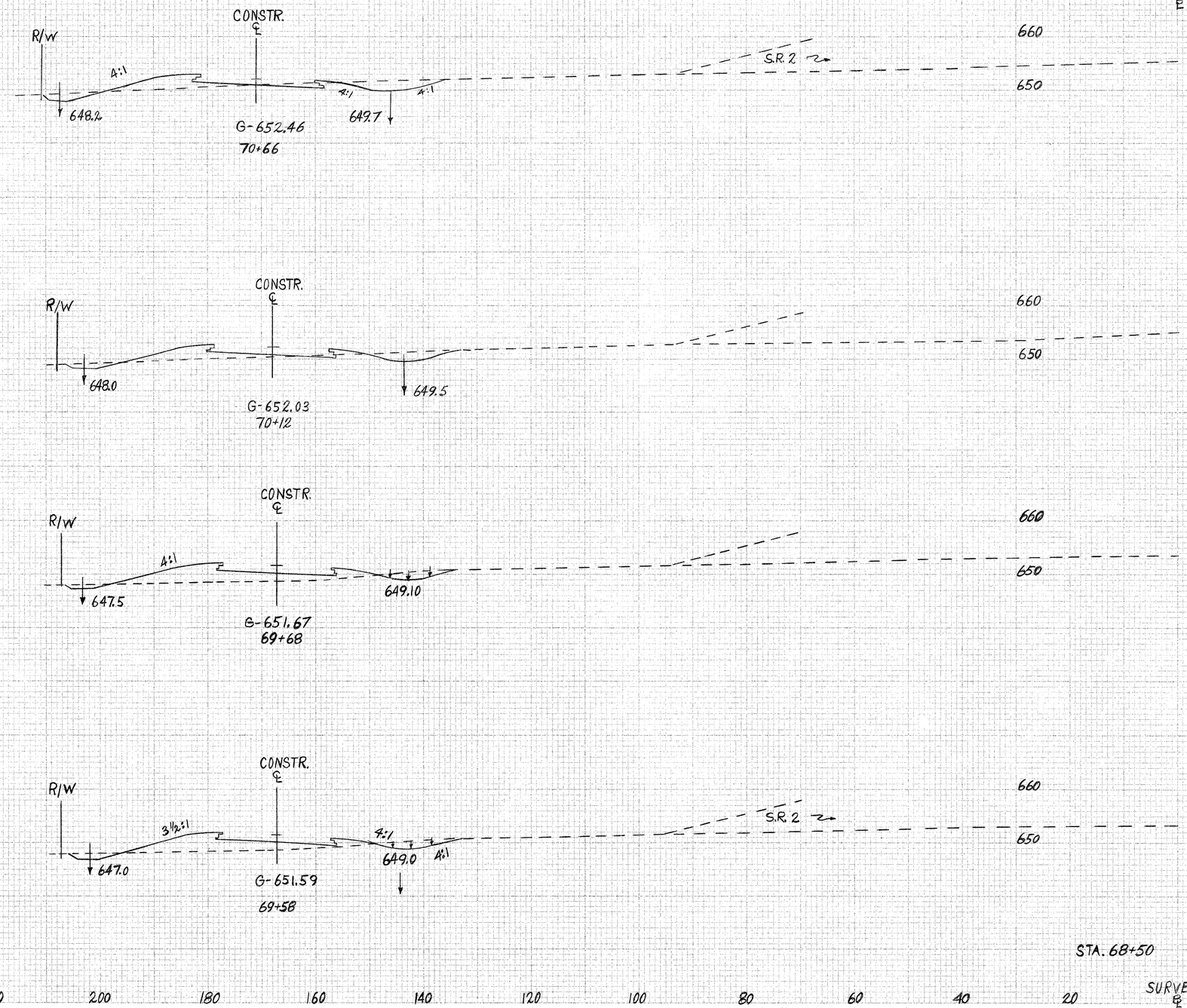
LAKE COUNTY
LAK-2-16.49

SEEDING END WIDTH	SEEDING SQ. YDS.
49	
	285
46	
	220
44	
	49
45	
	516
41	

240 220 200 180 160 140 120 100 80 60 40 20 SURVEY ℄



STA. 68+50

STA. 68+50

240 220 200 180 160 140 120 100 80 60 40 20 SURVEY ℄

FRONTAGE ROAD "B" STA. 69+58 to STA. 70+66

END	AREA CUT	AREA FILL	VOLUME CUT	VOLUME FILL
CUT	FILL	CUT	FILL	
40	42			
			71	88
31	46			
		40	110	
18	89			
		7	31	
22	76			
		92	280	
24	64			

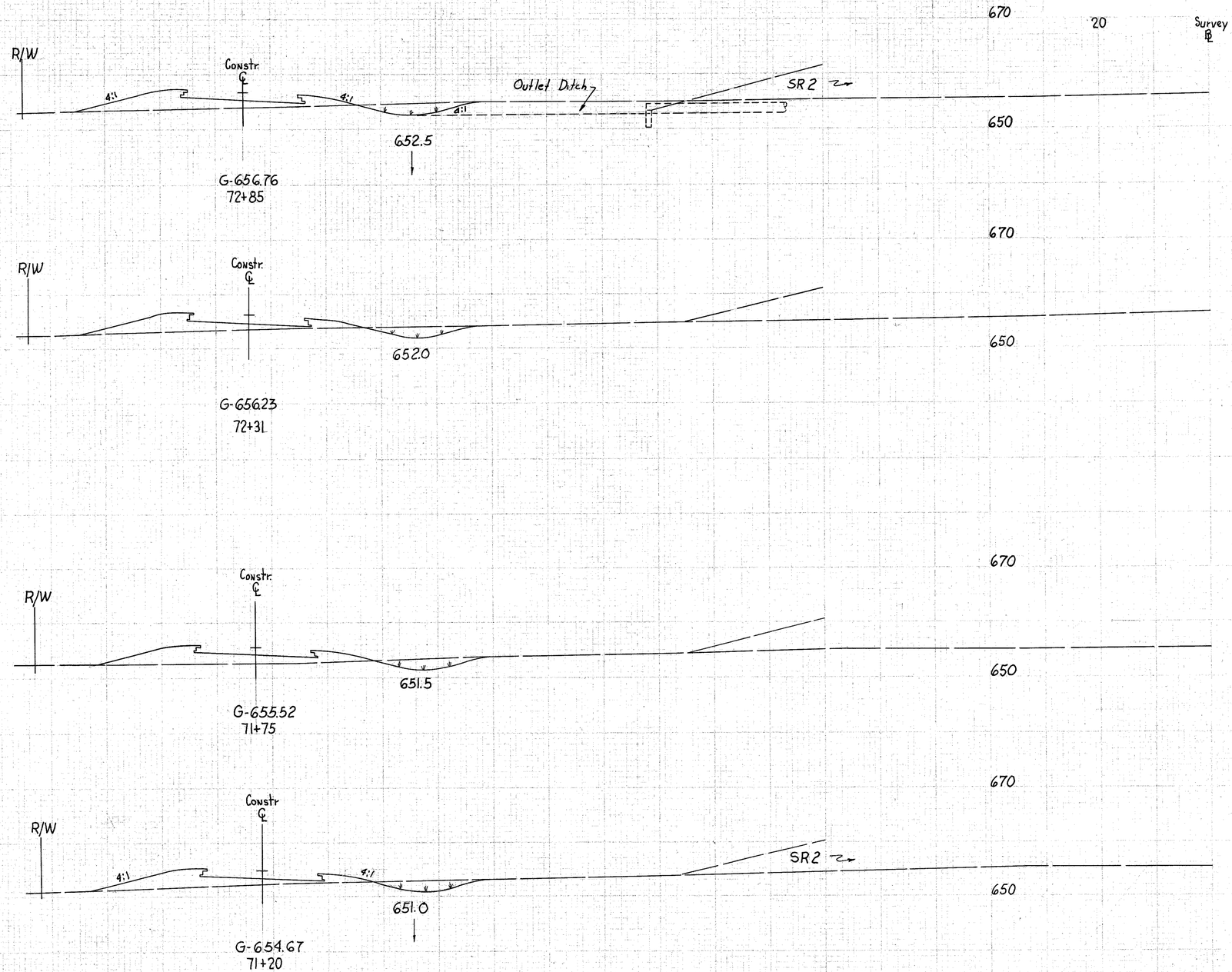
STATE	FEDERAL AID PROJECT NO.	SHEET NO.
OHIO		203 / 313

LAKE COUNTY
LAK-2-16.49

SEEDING END WIDTH	SEEDING SQ. YDS.
55	
	321
52	
	317
50	
	312
52	
	303
49	

Sta. 70+66

260 240 220 200 180 160 140 120 100 80 60 40 20



Survey ℄

END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
30	90		
		54	173
24	83		
		51	177
25	88		
		50	169
24	78		
		35	179
11	101		

Sta. 70+66

FRONTAGE ROAD "B" Sta. 71+20 to Sta. 72+85

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	500-64	

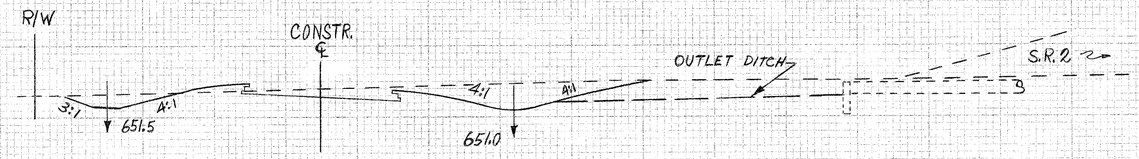
203-A
313

LAKE COUNTY
LAK-2-16.49

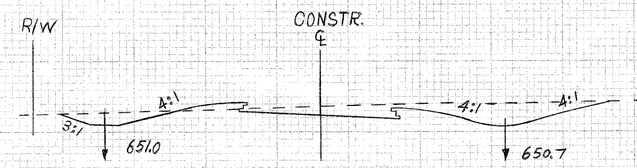
SEEDING END WIDTH	SEEDING SQ. YDS.
55	321
52	317
50	312
52	303
49	

260 240 220 200 180 160 140 120 100 80 60 40 20

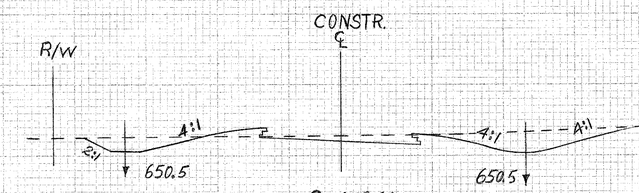
670 650 670 650 670 650 670 650



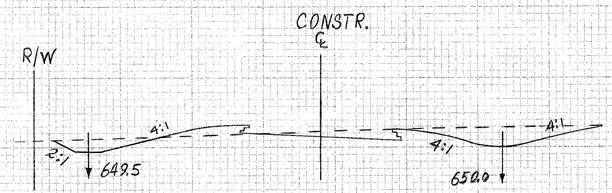
G-654.21
72+85



G-653.78
72+31



G-653.33
71+75



G-652.89
71+20

STA. 70+66

STA. 70+66

END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
120	7		
		229	15
109	8		
		209	18
93	9		
		172	23
76	14		
		116	56
40	42		

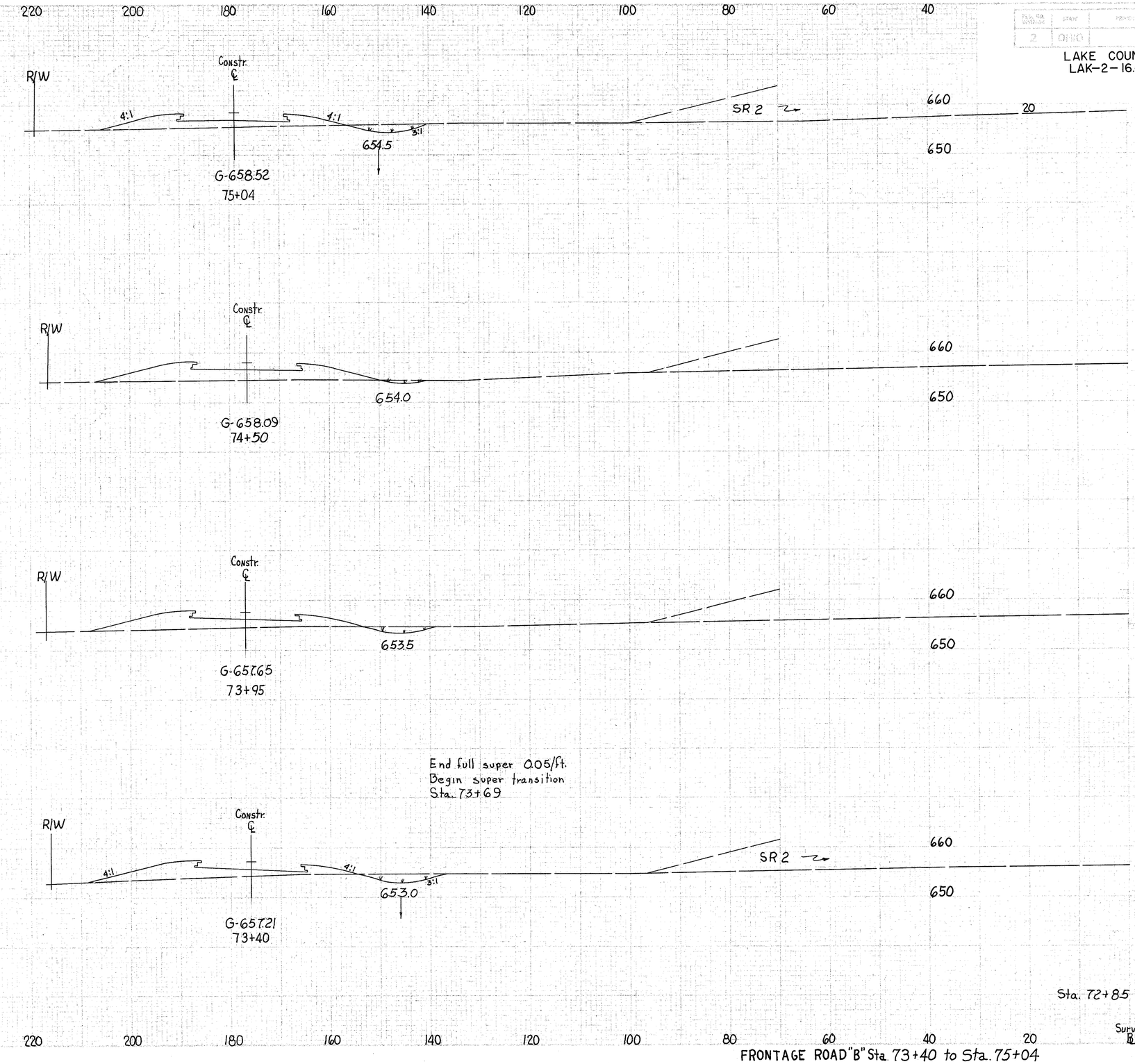
SURVEY ℄

FRONTAGE ROAD "B" STA. 71+20 to STA. 72+85

FED. RD. DIV. NO.	STATE	PROJECT	
2	OHIO		204 313

LAKE COUNTY
LAK-2-16.49

SEEDING END WIDTH	SEEDING SQ. YDS.
47	
	285
48	
	299
50	
	315
53	
	330
55	



END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
18	79		
		22	205
4	126		
		16	239
12	109		
		33	209
20	96		
		51	189
30	90		

Survey ℄

FRONTAGE ROAD "B" Sta. 73+40 to Sta. 75+04

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	500-64	

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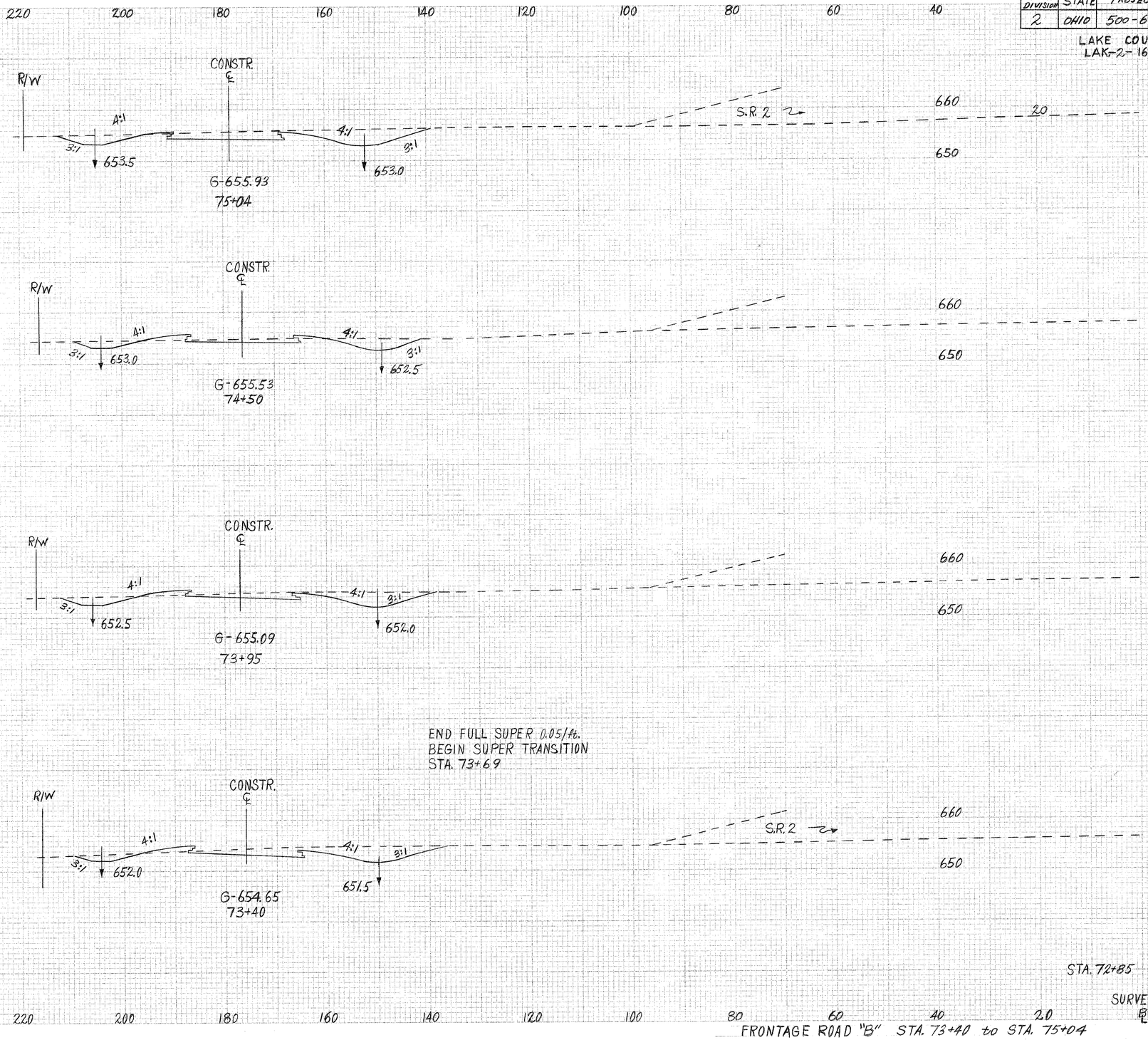
313

LAKE COUNTY
LAK-2-16.49

SEEDING END WIDTH	SEEDING SQ. YDS.
47	
	285
48	
	299
50	
	315
53	
	330
55	

STA. 72+85



END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
100	2		
		151	13
51	11		
		140	20
86	9		
		178	18
89	9		
		213	16
12.0	7		

FRONTAGE ROAD "B" STA. 73+40 to STA. 75+04

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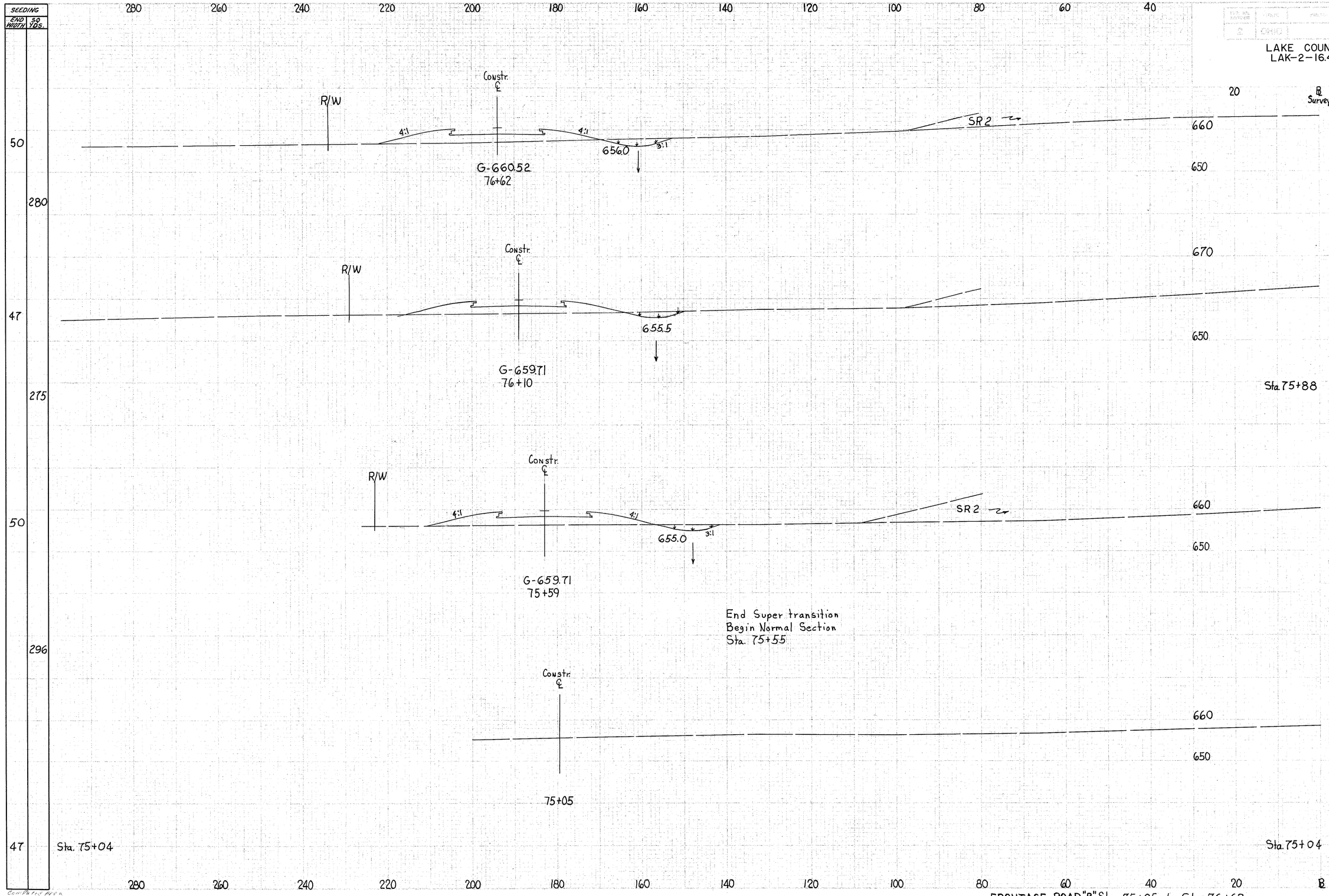
LAKE COUNTY
LAK-2-16.49

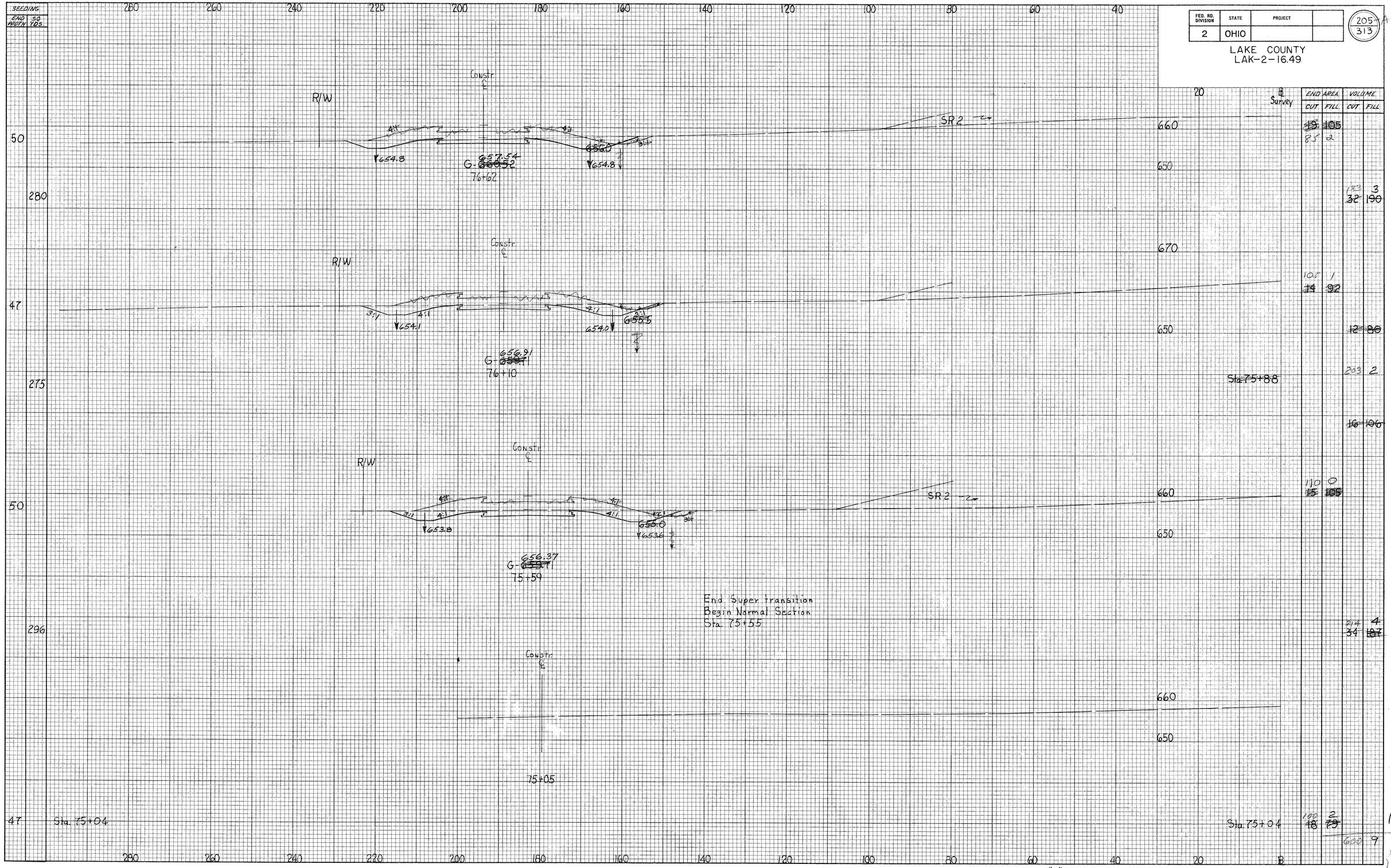


FRONTAGE ROAD "B" Sta. 75+05 to Sta. 76+62

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

LAKE COUNTY
LAK-2-16.49

205/313

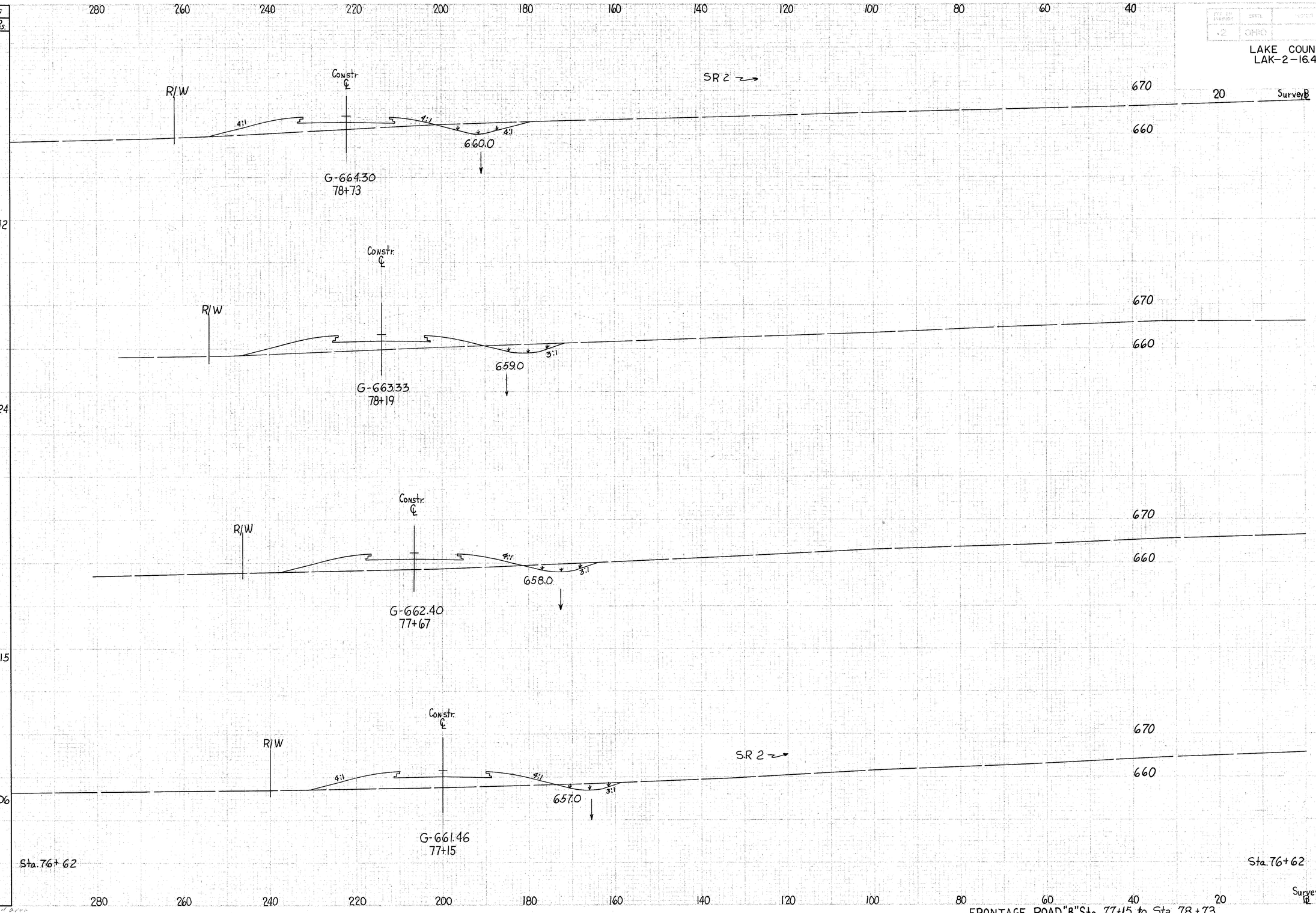


FRONTAGE ROAD "B" Sta 75+05 to Sta. 76+62

PROJECT	DATE	SHEET	NO.
.2	OHIO		206 313

LAKE COUNTY
LAK-2-16.49

SEEDING END WIDTH	SEEDING SQ. YDS.
57	
	342
57	
	324
55	
	315
54	
	306
50	



END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
31	97		
		55	213
24	116		
		43	234
21	127		
		36	249
16	132		
		34	233
19	105		

FRONTAGE ROAD "B" Sta. 77+15 to Sta. 78+73

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

LAKE COUNTY
LAK-2-16.49

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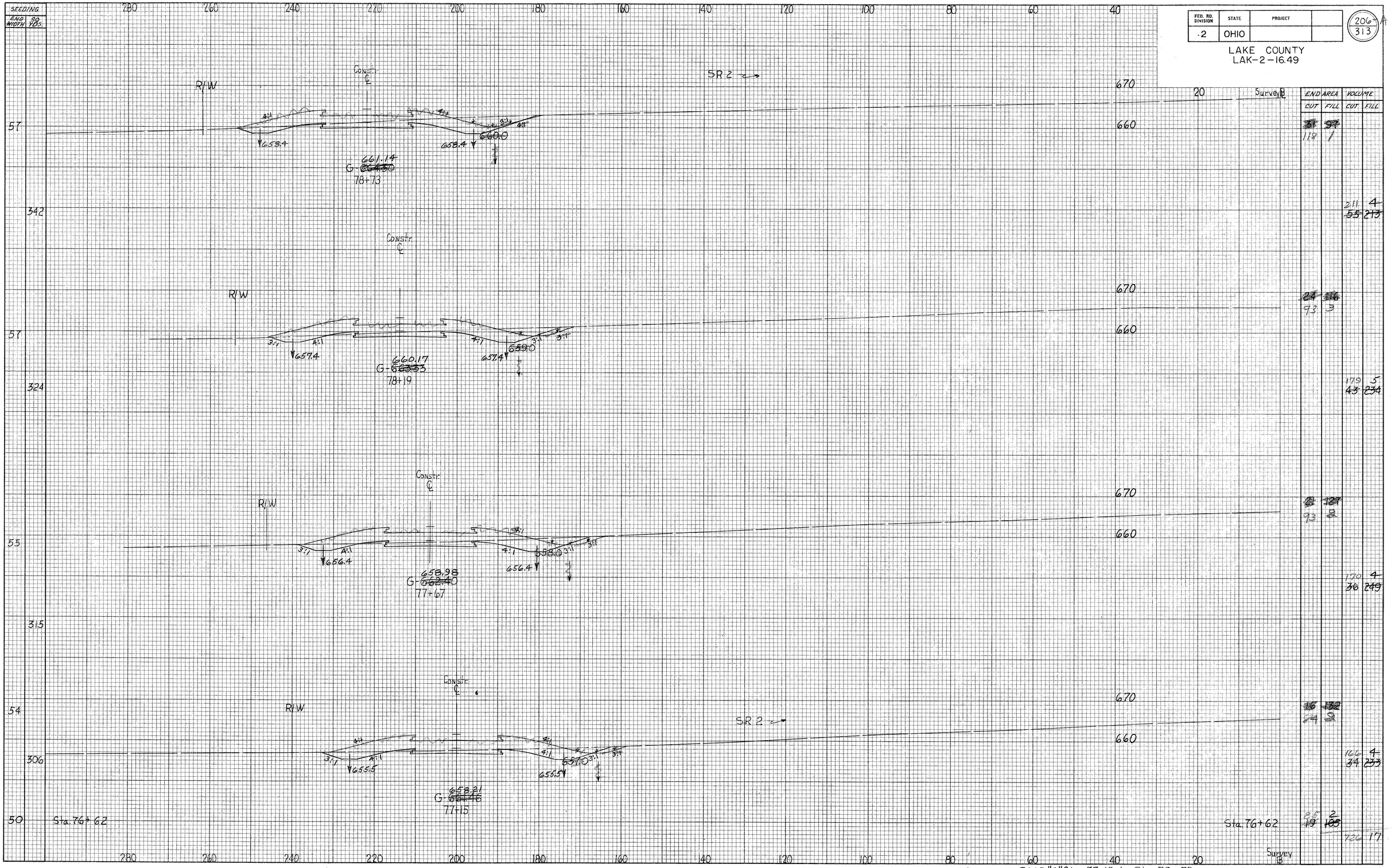
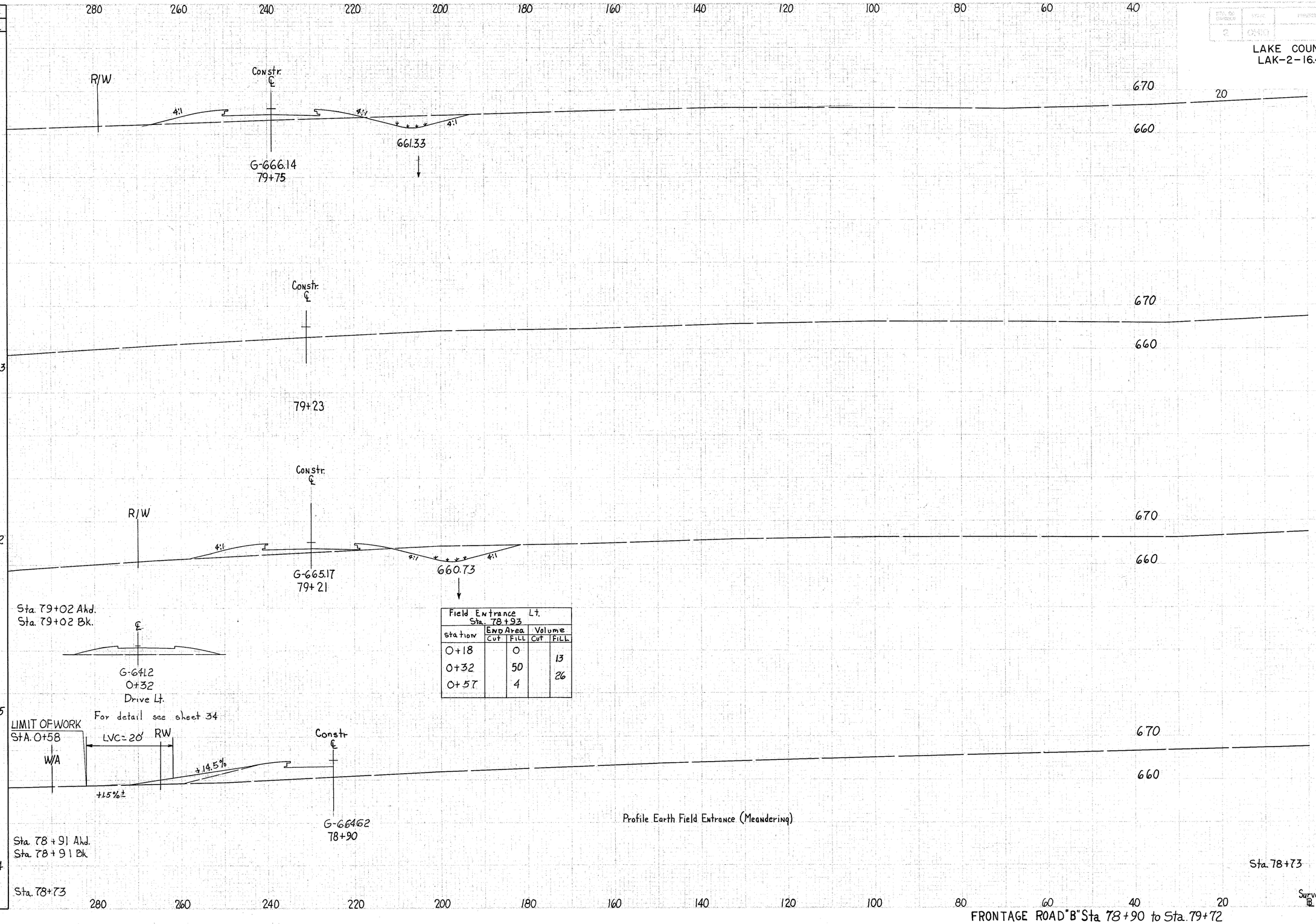


FRONTAGE ROAD "B" Sta. 77+15 to Sta. 78+73

LAKE COUNTY
LAK-2-16.49

207
313

SEEDING END WIDTH	SEEDING SQ. YDS.
56	
	323
58	
	122
58	
40	
	45
34	
57	
	114
57	



Field Entrance Lt. Sta. 78+93				
station	End Area Cut	End Area Fill	Volume Cut	Volume Fill
0+18		0		13
0+32		50		26
0+57		4		

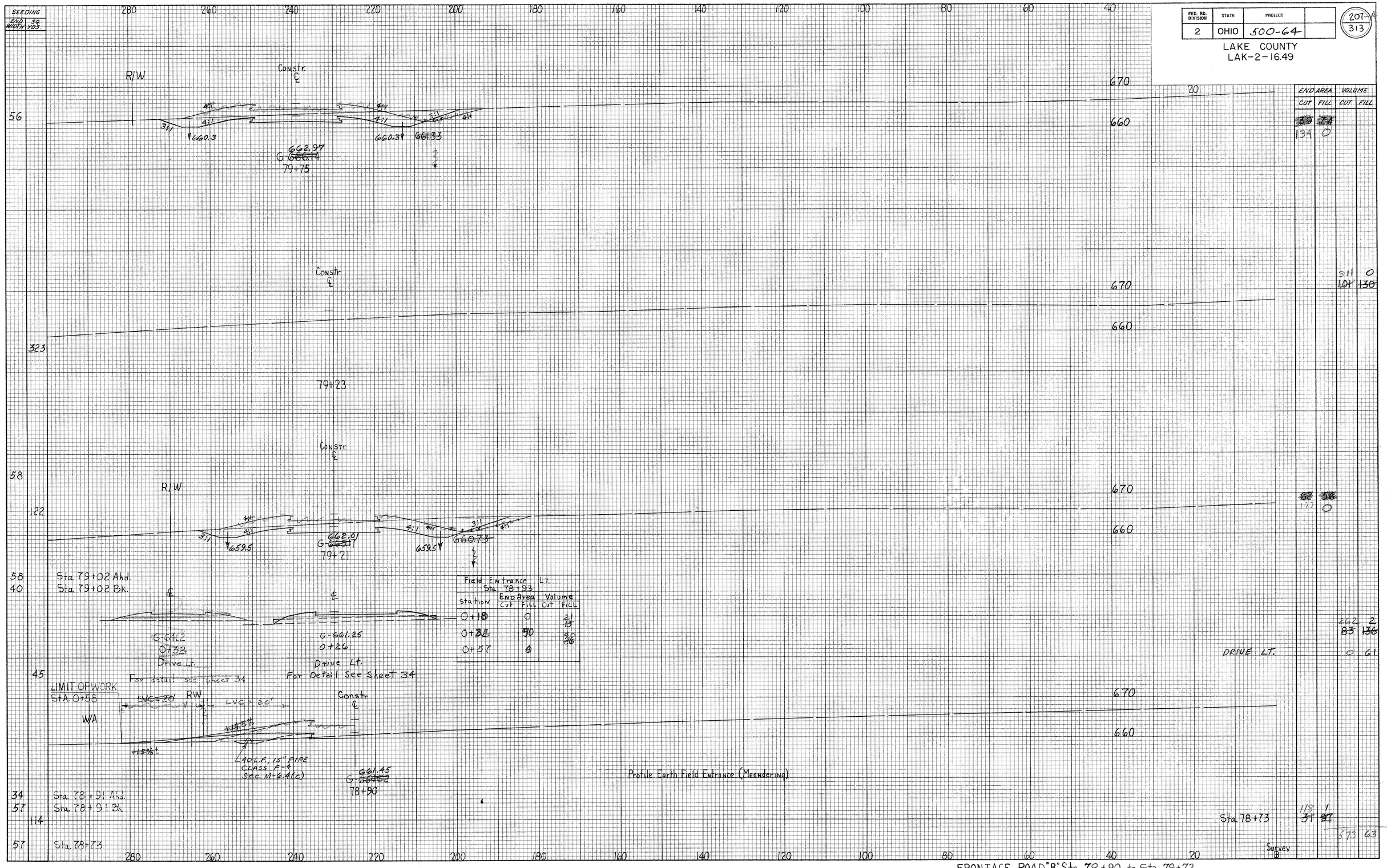
End Area Cut	End Area Fill	Volume Cut	Volume Fill
39	74		
		101	130
62	56		
		83	136
31	97		

FRONTAGE ROAD "B" Sta. 78+90 to Sta. 79+72

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	500-64	

LAKE COUNTY
LAK-2-16.49

207
313



Profile Earth Field Entrance (Meandering)

FRONTAGE ROAD "B" Sta. 78+90 to Sta. 79+72

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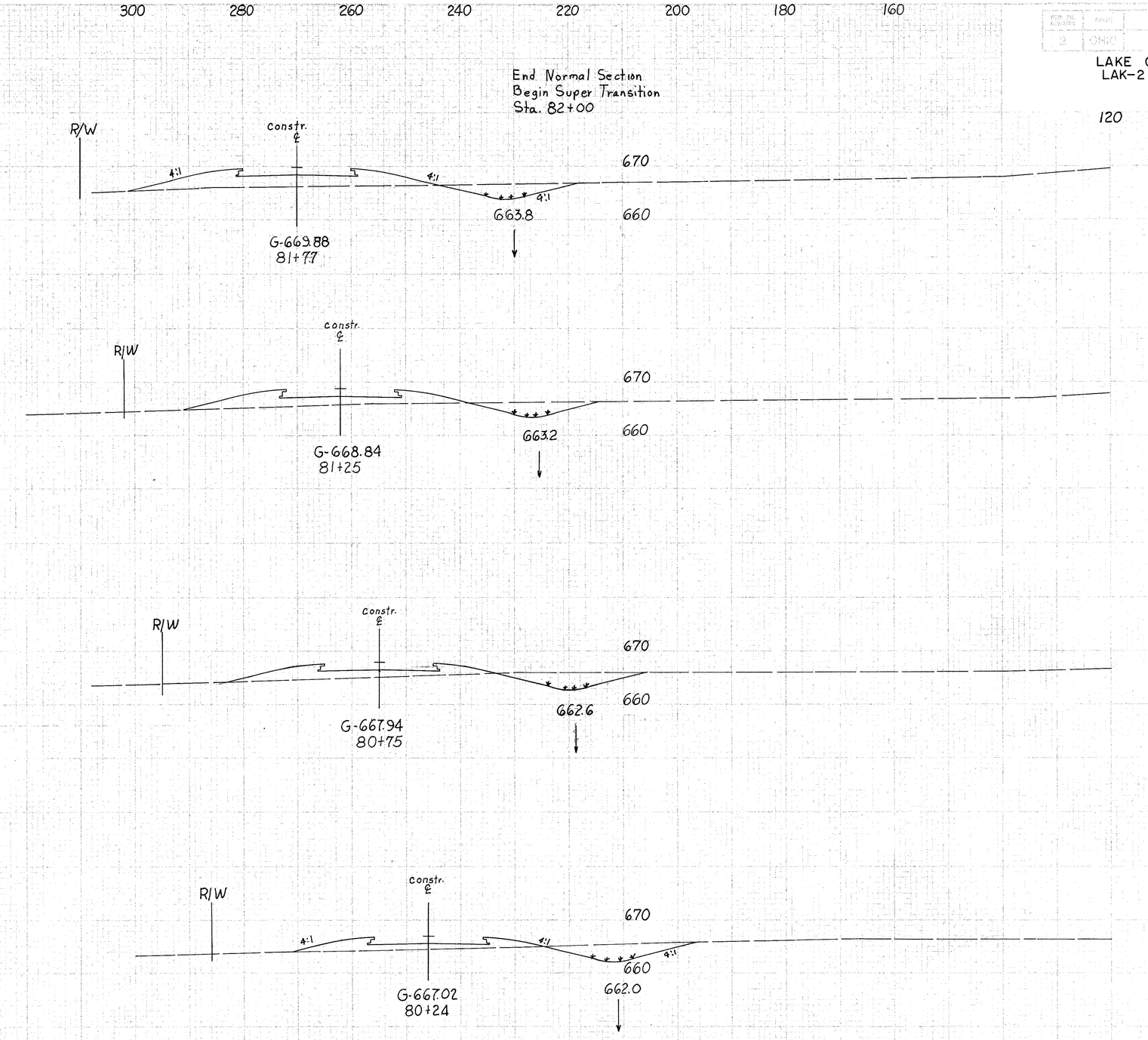
313

LAKE COUNTY
LAK-2-16.49

SEEDING END WIDTH	SEEDING SQ. YDS.
64	
	355
59	
	325
58	
	323
56	
	305
56	

Sta. 79+75



Sta. 79+75

END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
42	115		
		76	200
37	93		
		81	156
51	76		
		98	130
53	62		
		83	123
39	74		

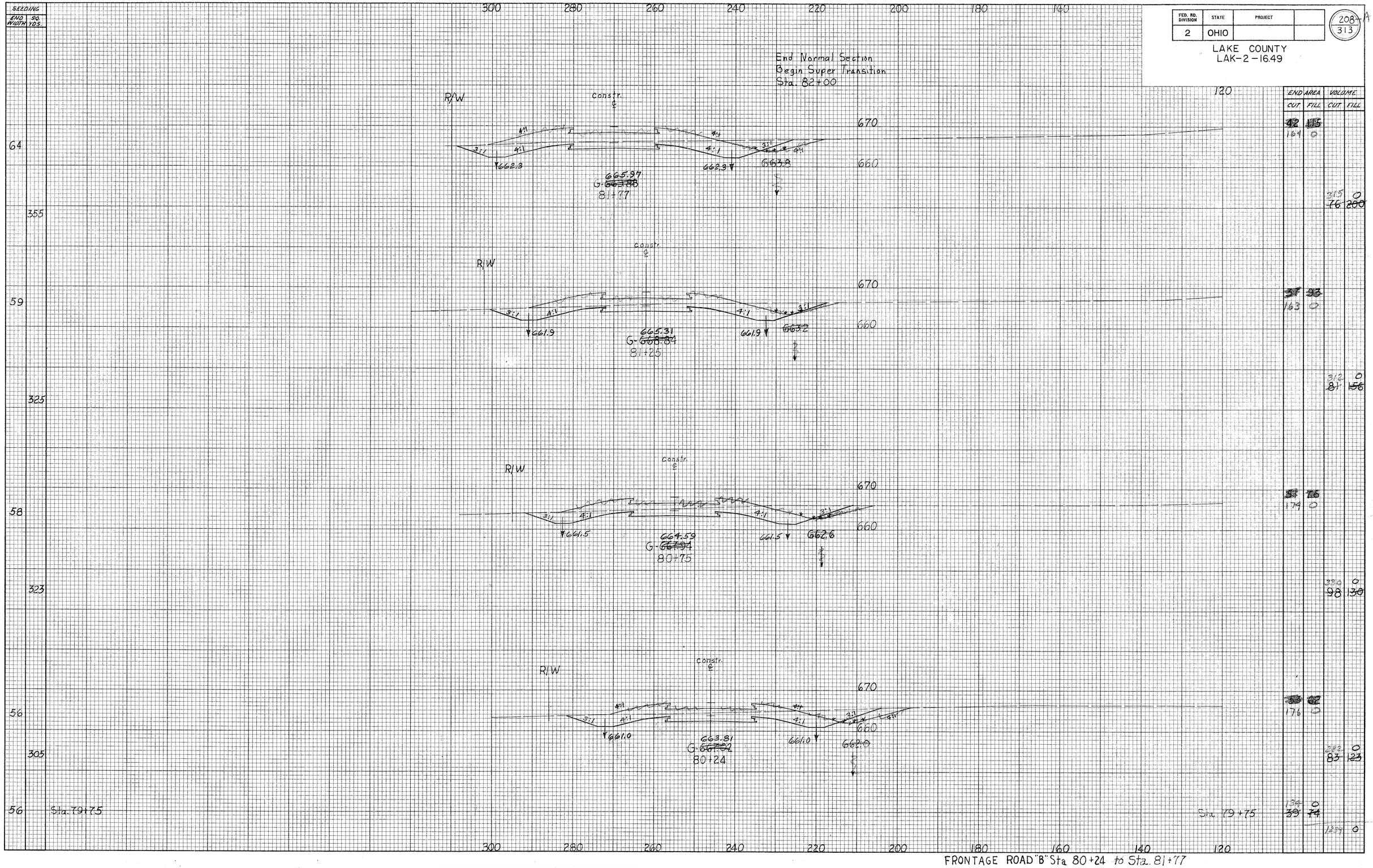
FRONTAGE ROAD "B" Sta 80+24 to Sta. 81+77

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

208/313 A

LAKE COUNTY
LAK-2-16.49

End Normal Section
Begin Super Transition
Sta. 82+00



FRONTAGE ROAD "B" Sta 80+24 to Sta. 81+77

SEEDING		
END WIDTH	SQ. YDS.	
52		82+77
	156	
52		Sta. 82+50
	162	
65		Sta. 82+25
	344	
64		Sta. 81+77

320 300 280 260 240 220 200 180 160

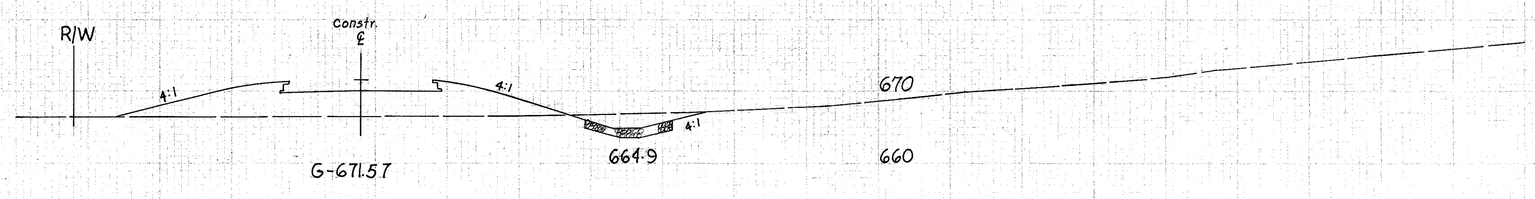
209
313

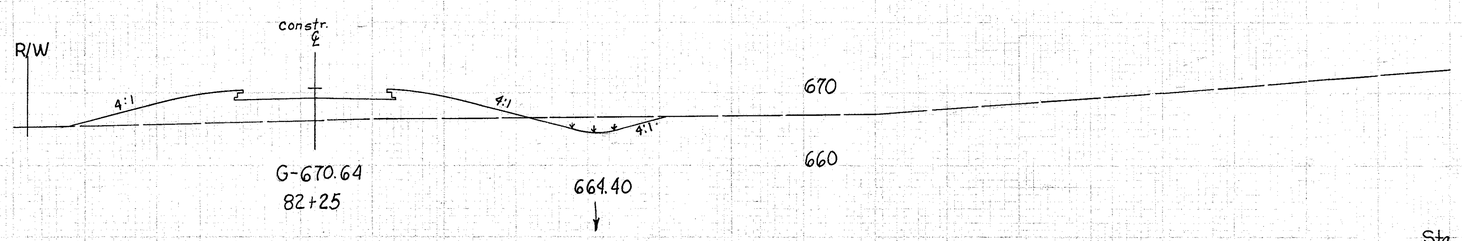
LAKE COUNTY
LAK-2- 16.49

120

END AREA		VOLUME	
CUT	FILL	CUT	FILL
23	203		
		45	363
24	174		
		59	257
42	115		

See Sheet 115 for Frontage Road "B"
X Sections Ahead.





Sta. 81+77

320 300 280 260 240 220 200 180 160 140 120

FRONTAGE ROAD "B" Sta. 82+25 to 82+77

15,081

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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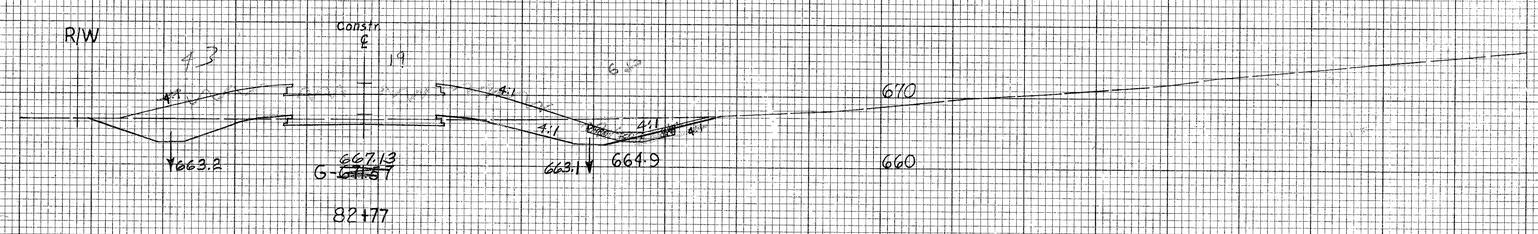
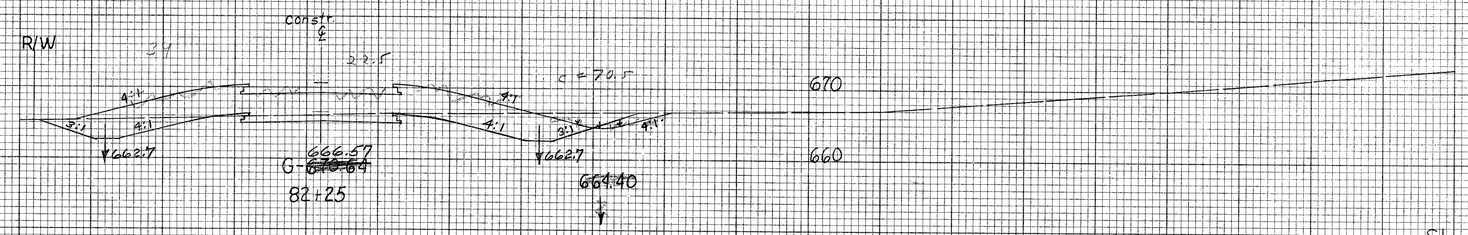
LAKE COUNTY
LAK-2- 16.49

SEEDING END WIDTH	SEEDING SQ. YDS.	
52		82+77
	156	
52		Sta. 82+50
	162	
65		Sta. 82+25
	344	
64		Sta. 81+77

END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
130	~~23~~ 203		
	4		
262	6		
	45		363
132	~~27~~ ~~174~~		
	2		
263	2		
	59		257
164	0		
	42		~~175~~
		515	3

See Sheet 115 for Frontage Road "B" X Sections Ahead.





Sta. 81+77

320 300 280 260 240 220 200 180 160 140 120

FRONTAGE ROAD "B" Sta. 82+25 to 82+77

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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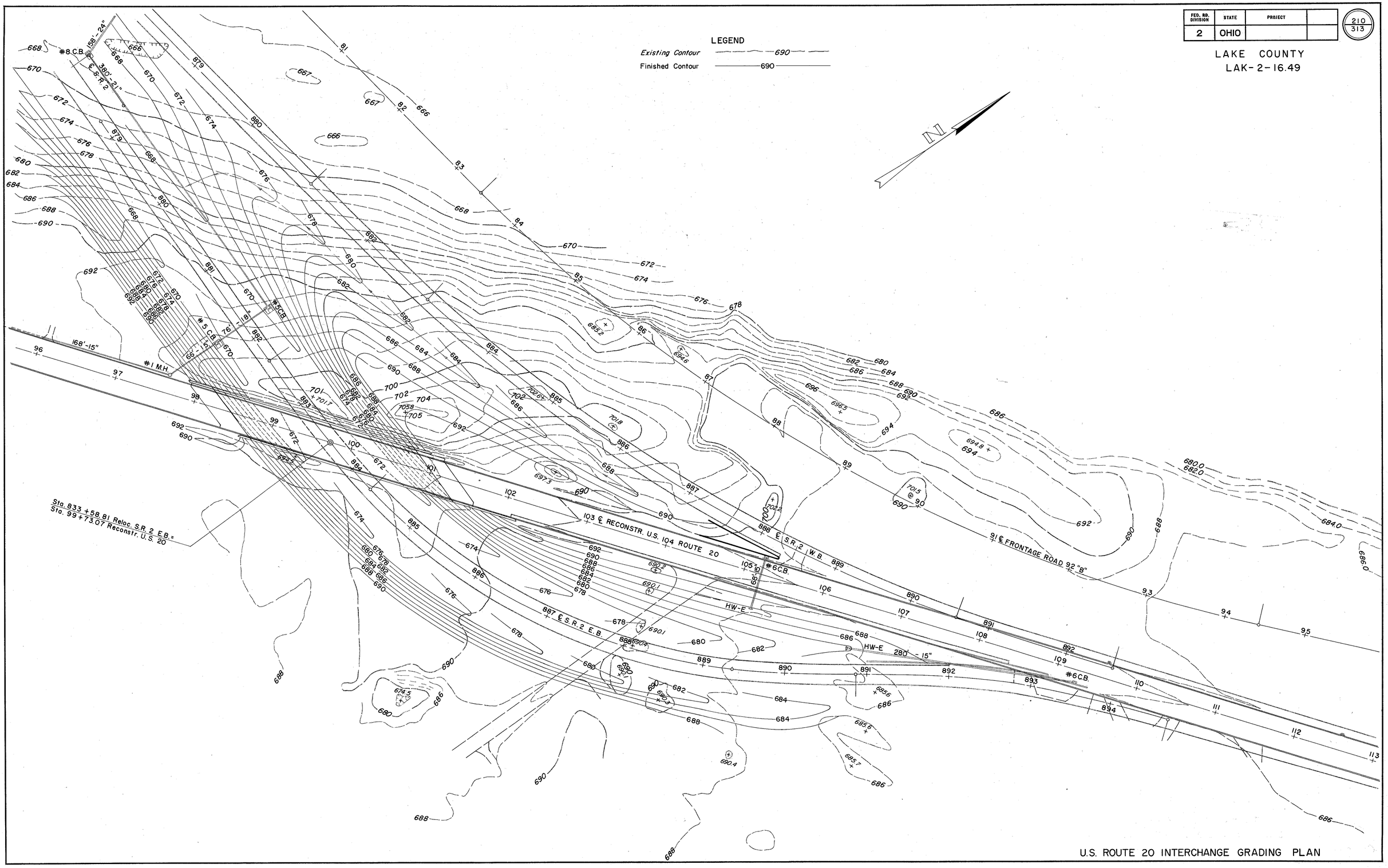
LAKE COUNTY
LAK-2-16.49



U.S. ROUTE 20 INTERCHANGE GRADING PLAN

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

211/313

LAKE COUNTY
LAK-2-16.49

NOTE: Cross Sections for Frontage Road "B" to its terminus with U.S. 20 are plotted on Cross Sections for U.S. 20, all sections being normal to the ℄ of U.S. 20.

SPIRAL DATA RELOC. S.R. 2

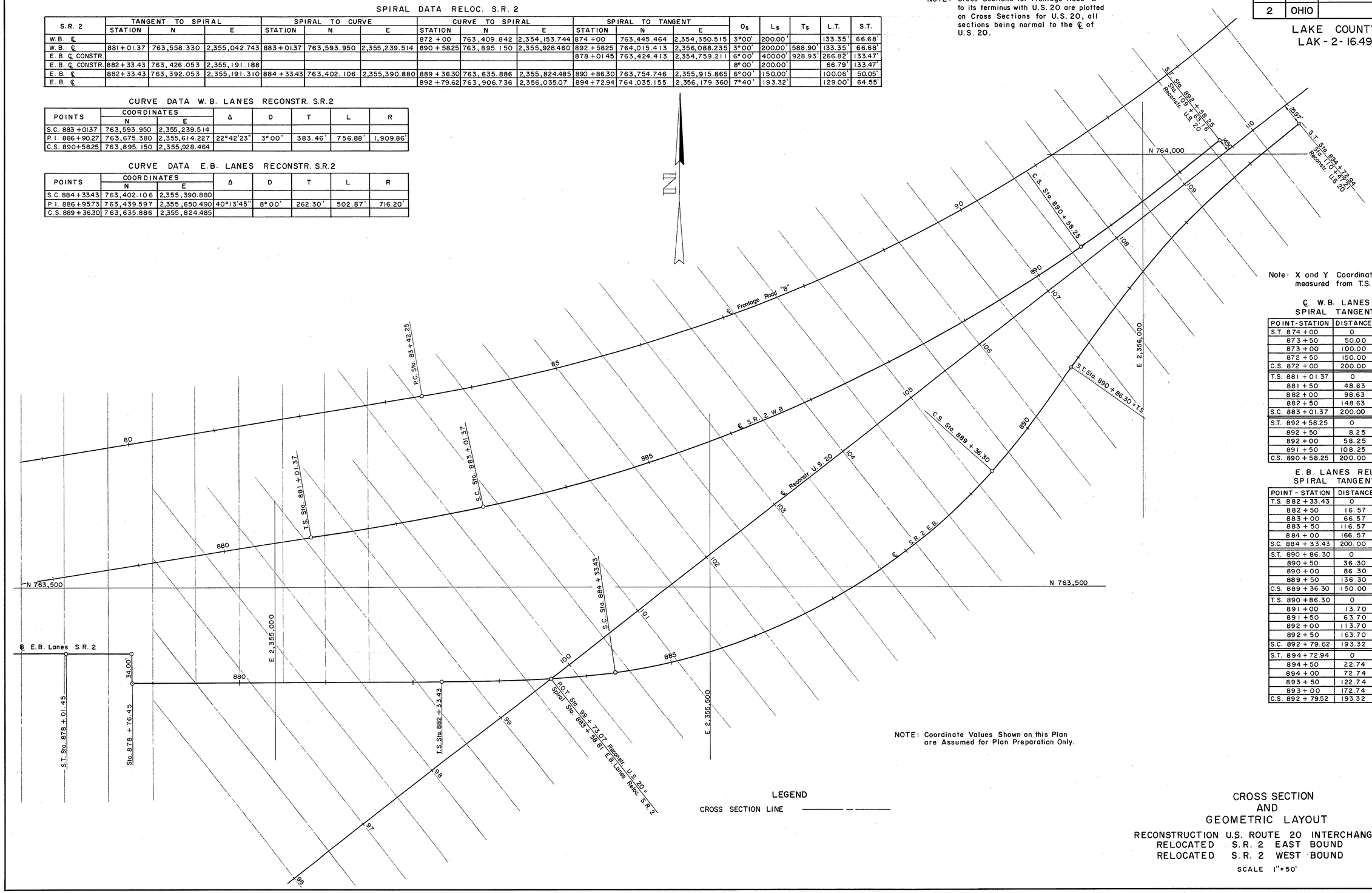
S.R. 2	TANGENT TO SPIRAL			SPIRAL TO CURVE			CURVE TO SPIRAL			SPIRAL TO TANGENT			O_s	L_s	T_s	L.T.	S.T.
	STATION	N	E	STATION	N	E	STATION	N	E	STATION	N	E					
W.B. ℄							872 + 00	763,409.842	2,354,153.744	874 + 00	763,445.464	2,354,350.515	3°00'	200.00'		133.35'	66.68'
W.B. ℄	881 + 01.37	763,558.330	2,355,042.743	883 + 01.37	763,593.950	2,355,239.514	890 + 58.25	763,895.150	2,355,928.460	892 + 58.25	764,015.413	2,356,088.235	3°00'	200.00'	588.90'	133.35'	66.68'
E.B. ℄ CONSTR.										878 + 01.45	763,424.413	2,354,759.211	6°00'	400.00'	928.93'	266.82'	133.47'
E.B. ℄ CONSTR.	882 + 33.43	763,426.053	2,355,191.188										8°00'	200.00'		66.79'	133.47'
E.B. ℄	882 + 33.43	763,392.053	2,355,191.310	884 + 33.43	763,402.106	2,355,390.880	889 + 36.30	763,635.886	2,355,824.485	890 + 86.30	763,754.746	2,355,915.865	6°00'	150.00'		100.06'	50.05'
E.B. ℄							892 + 79.62	763,906.736	2,356,035.07	894 + 72.94	764,035.155	2,356,179.360	7°40'	193.32'		129.00'	64.55'

CURVE DATA W.B. LANES RECONSTR. S.R.2

POINTS	COORDINATES N	COORDINATES E	Δ	D	T	L	R
S.C. 883 + 01.37	763,593.950	2,355,239.514					
P.I. 886 + 90.27	763,675.380	2,355,614.227	22°42'23"	3°00'	383.46'	756.88'	1,909.86'
C.S. 890 + 58.25	763,895.150	2,355,928.464					

CURVE DATA E.B. LANES RECONSTR. S.R.2

POINTS	COORDINATES N	COORDINATES E	Δ	D	T	L	R
S.C. 884 + 33.43	763,402.106	2,355,390.880					
P.I. 886 + 95.73	763,439.597	2,355,650.490	40°13'45"	8°00'	262.30'	502.87'	716.20'
C.S. 889 + 36.30	763,635.886	2,355,824.485					



Note: X and Y Coordinates measured from T.S. and S.T.

℄ W.B. LANES S.R. 2 SPIRAL TANGENT OFFSETS

POINT-STATION	DISTANCE	X	Y
S.T. 874 + 00	0		
873 + 50	50.00	50.00'	0.06'
873 + 00	100.00	100.00'	0.44'
872 + 50	150.00	149.99'	1.40'
C.S. 872 + 00	200.00		
T.S. 881 + 01.37	0		
881 + 50	48.63	48.63'	0.05'
882 + 00	98.63	98.63'	0.42'
882 + 50	148.63	148.62'	1.43'
S.C. 883 + 01.37	200.00		
S.T. 892 + 58.25	0		
892 + 50	8.25	8.25'	0.02'
892 + 00	58.25	58.25'	0.09'
891 + 50	108.25	108.25'	0.55'
C.S. 890 + 58.25	200.00		

E.B. LANES RELOC. S.R.2 SPIRAL TANGENT OFFSETS

POINT - STATION	DISTANCE	X	Y
T.S. 882 + 33.43	0		
882 + 50	16.57	16.57'	0.01'
883 + 00	66.57	66.57'	0.34'
883 + 50	116.57	116.54'	1.84'
884 + 00	166.57	166.32'	5.37'
S.C. 884 + 33.43	200.00		
S.T. 890 + 86.30	0		
890 + 50	36.30	36.30'	0.07'
890 + 00	86.30	86.29'	1.00'
889 + 50	136.30	136.20'	3.93'
C.S. 889 + 36.30	150.00		
T.S. 890 + 86.30	0		
891 + 00	13.70	13.70'	0.00'
891 + 50	63.70	63.70'	0.31'
892 + 00	113.70	113.68'	1.75'
892 + 50	163.70	163.55'	5.23'
S.C. 892 + 79.62	193.32	192.97'	8.61'
S.T. 894 + 72.94	0		
894 + 50	22.74	22.74'	0.01'
894 + 00	72.74	72.74'	0.46'
893 + 50	122.74	122.70'	2.21'
893 + 00	172.74	172.54'	6.15'
C.S. 892 + 79.52	193.32	192.97'	8.61'

NOTE: Coordinate Values Shown on this Plan are Assumed for Plan Preparation Only.

LEGEND

CROSS SECTION LINE ———— — — ————

CROSS SECTION AND GEOMETRIC LAYOUT

RECONSTRUCTION U.S. ROUTE 20 INTERCHANGE
RELOCATED S.R. 2 EAST BOUND
RELOCATED S.R. 2 WEST BOUND

SCALE 1" = 50'

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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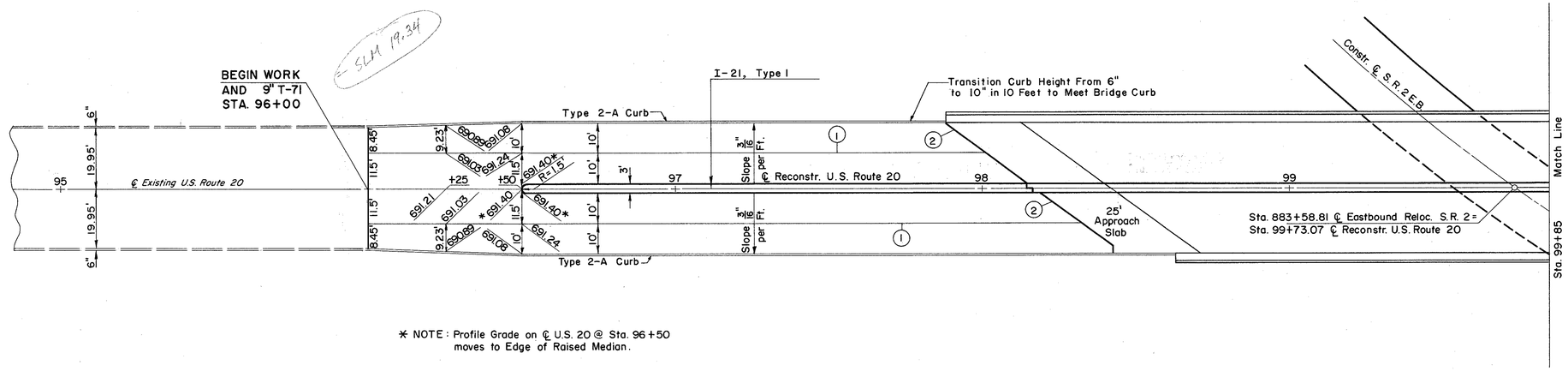
313

LAKE COUNTY
LAK-2-16.49



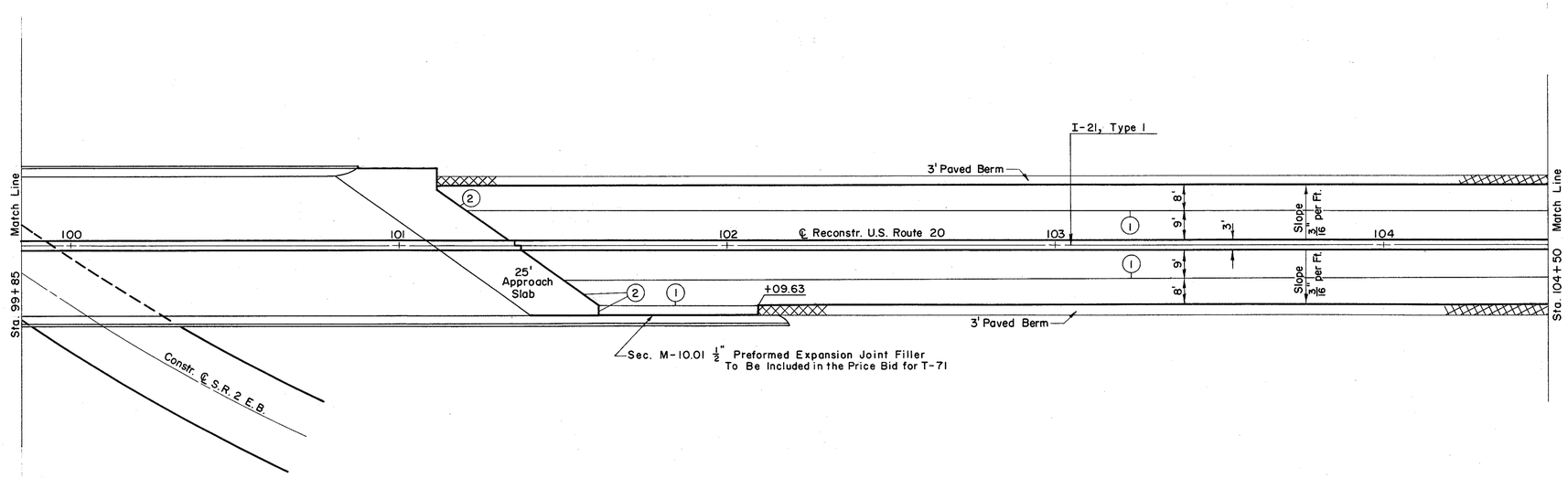
* NOTE: Profile Grade on ℄ U.S. 20 @ Sta. 96+50 moves to Edge of Raised Median.

FOR OTHER DETAILS
SEE SHEETS 34 & 36

CONSTRUCTION JOINT LEGEND

(1) Standard Longitudinal Joint

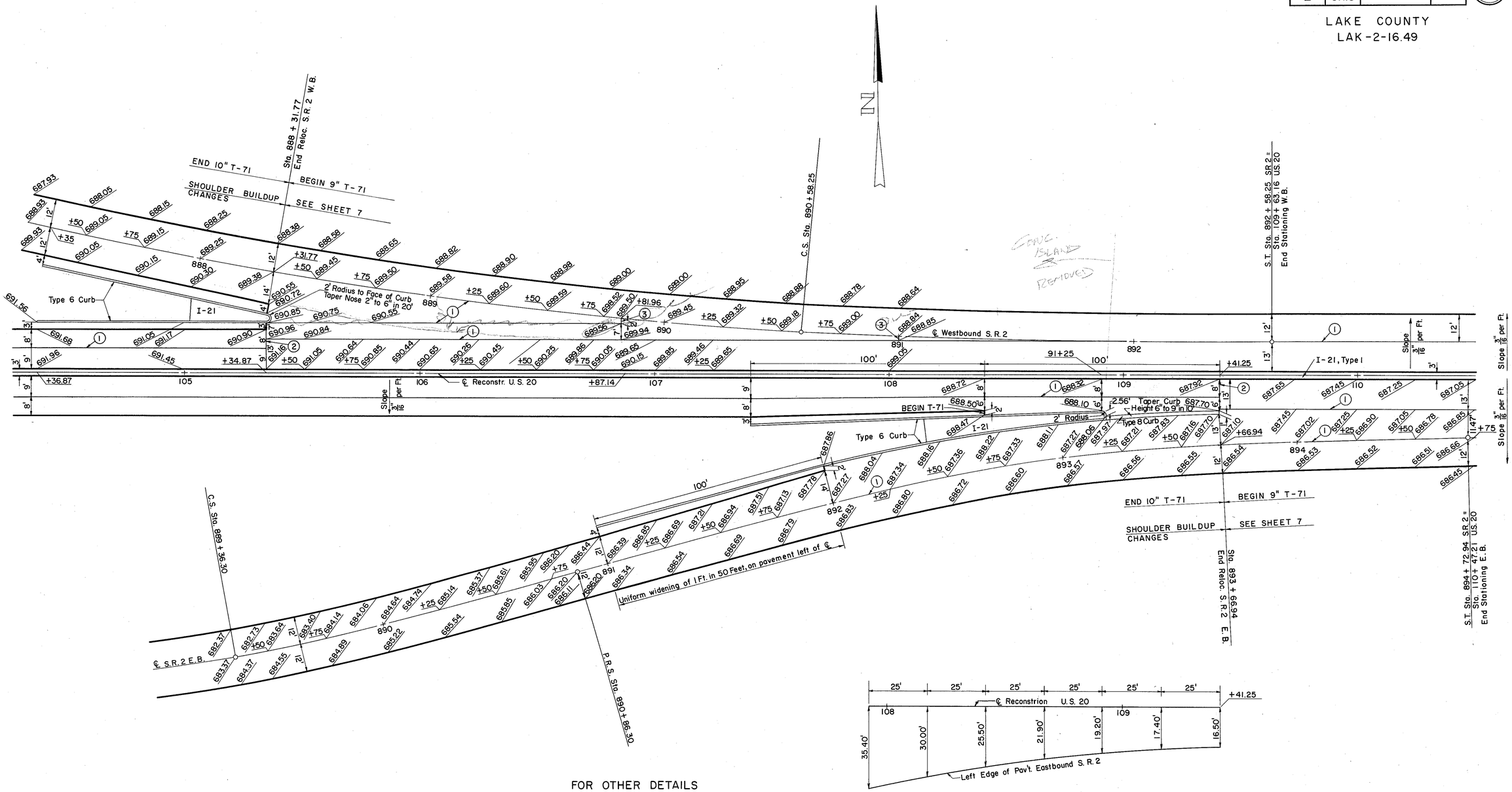
(2) Pavement Construction Joint



PAVEMENT DETAILS
RECONSTR. U.S. 20
STA. 96+00 TO STA. 104+50

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

LAKE COUNTY
LAK-2-16.49



FOR OTHER DETAILS
SEE SHEET 36

CONSTRUCTION JOINT LEGEND

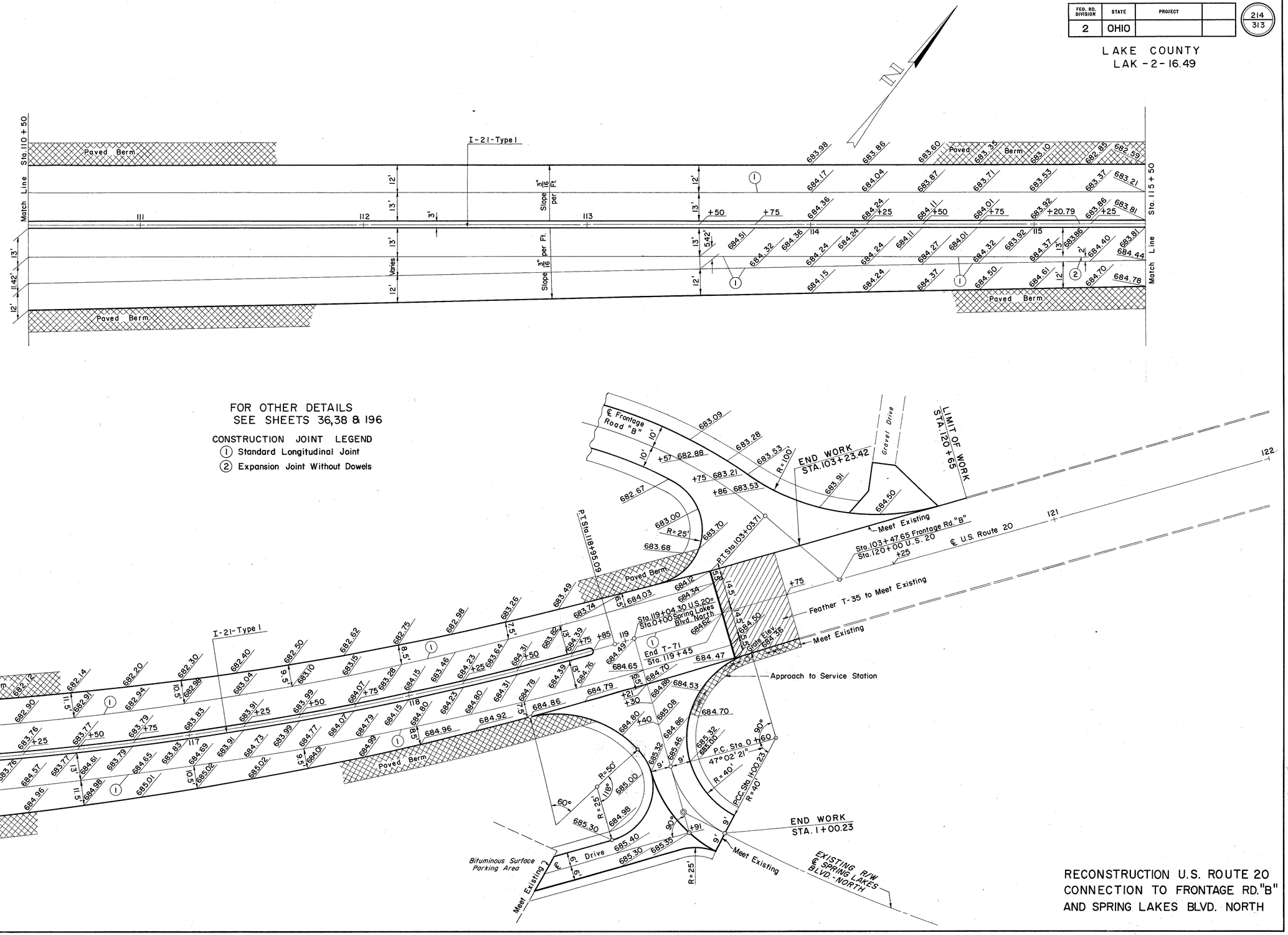
1. Standard Longitudinal Joint
2. Standard Expansion Joint
3. Expansion Joint Without Dowels

RECONSTR. U.S. 20 & S.R. 2 INTERCHANGE
S.R. 2 WESTBOUND ENTRANCE TERMINAL
S.R. 2 EASTBOUND EXIT TERMINAL

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

214
313

LAKE COUNTY
LAK-2-16.49



RECONSTRUCTION U.S. ROUTE 20
CONNECTION TO FRONTAGE RD."B"
AND SPRING LAKES BLVD. NORTH

SEEDING	
END WIDTH	SQ. YDS.

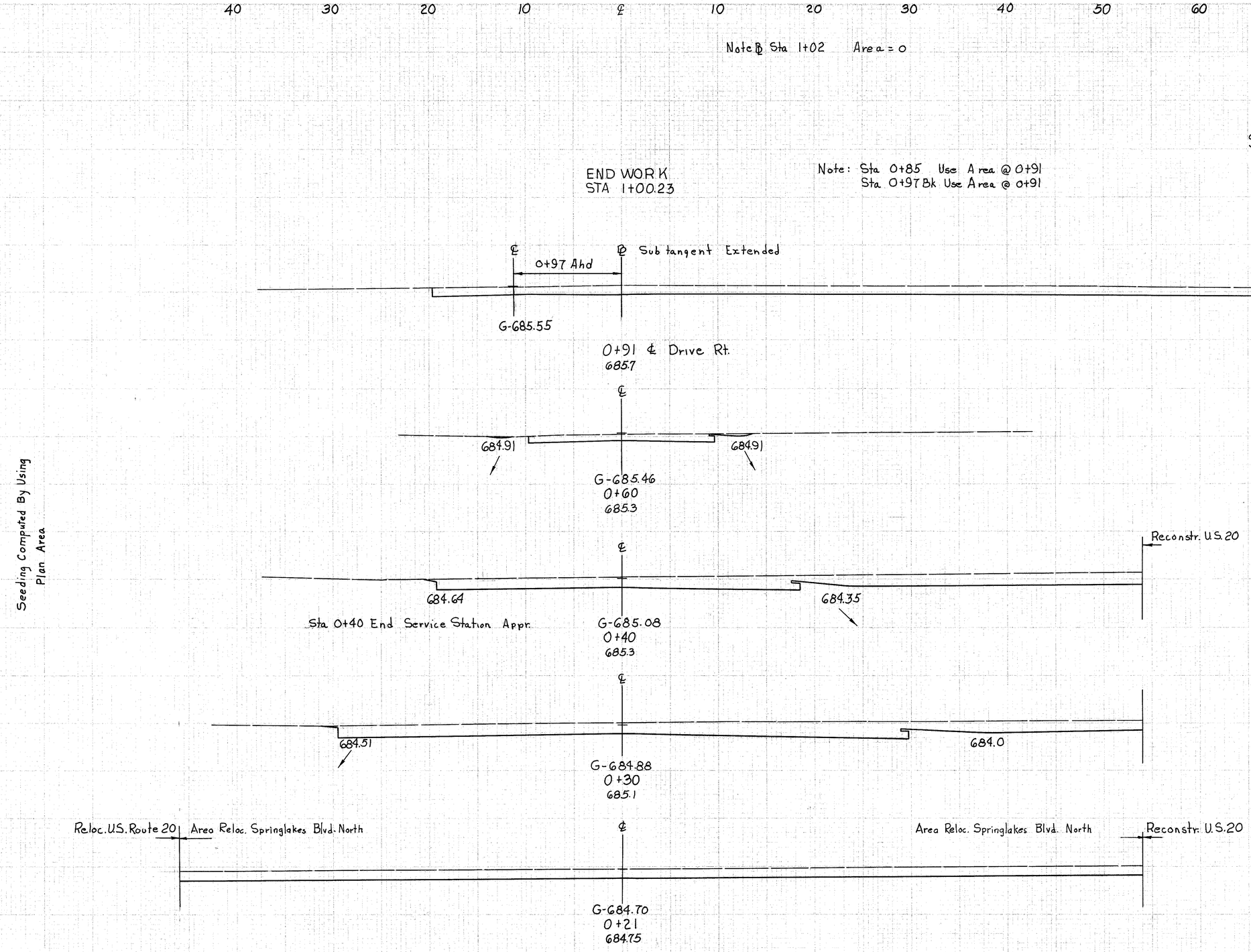
1			
2	END		

215
313

LAKE COUNTY
LAK - 2 - 16.49

SCALE 1" = 5'

Note ℄ Sta 1+02 Area = 0

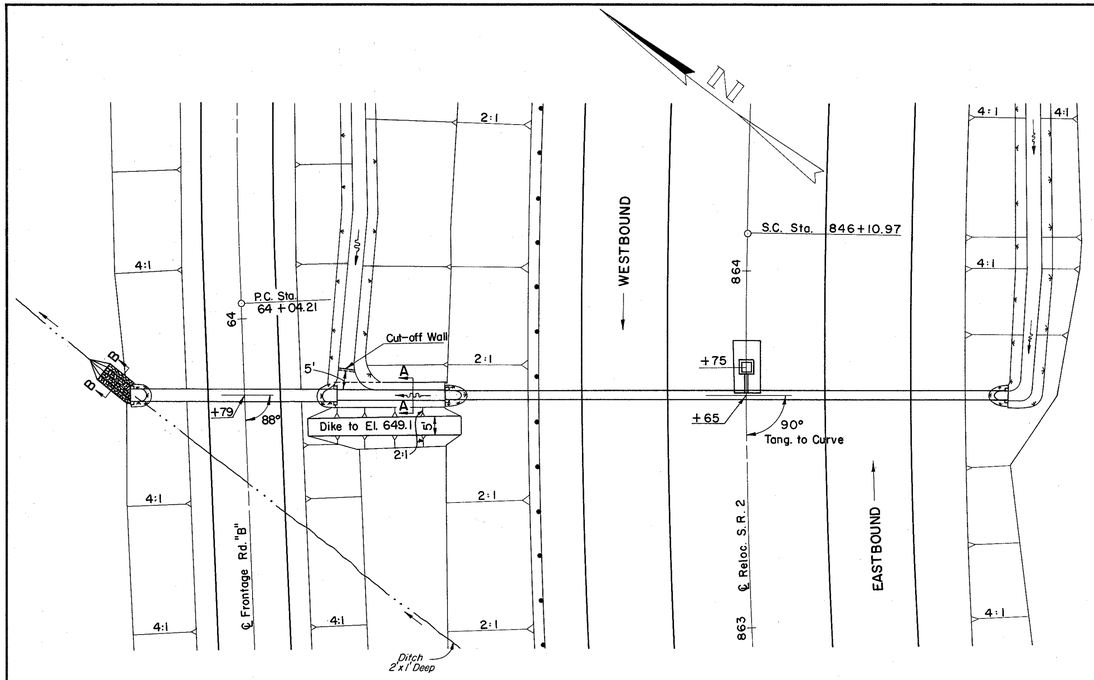


Seeding Computed By Using Plan Area

	END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
Sta. 1+02	0			
			1	
Sta. 0+97 Ahd.	10			
Sta. 0+97 Bk.	78			
			17	
	78			
			17	
Sta. 0+85	78			
			44	
	17			
			39	
	88			
			36	
	107			
			34	
	96			
			188	

RELOC. SPRINGLAKES BLVD. NORTH Sta. 0+21 to 1+02

LAKE COUNTY
LAK-2-16.49

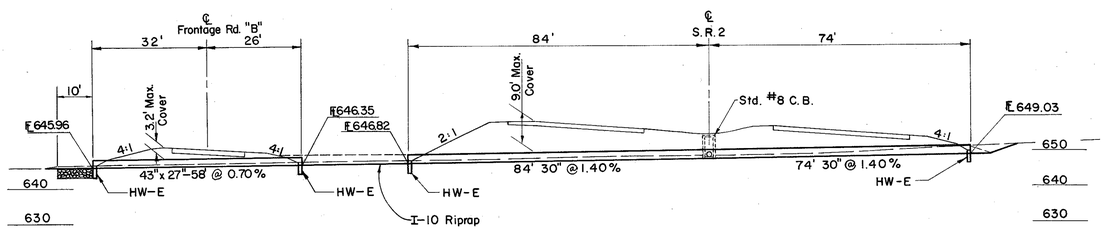


FOR ADDITIONAL DETAILS
SEE SHEETS 32 & 223

Area = 22.7 Acres
Q_{25} = 29.4 C.F.S.

10 0 20 40 60
SCALE IN FEET

Area = 14 Acres
Q_{25} = 22.2 C.F.S.



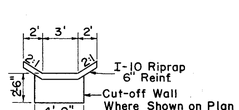
CULVERT DATA

TYPE : Pipe culvert with HW-E Headwalls
SIZE : 30" x 158' & 43" x 27" x 58'
WORK REQUIRED : Build a 30" pipe culvert under S.R.2. Construct dike on left as shown, and build a 43"x 27" pipe culvert under frontage road, constructing outlet ditch as shown.

ESTIMATED QUANTITIES

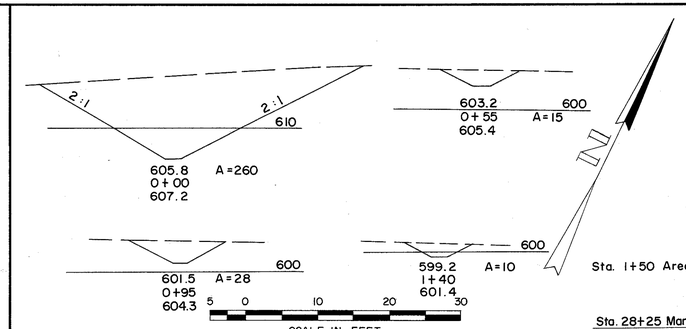
E-3	Channel Excavation	6 C.Y.
L-10	Sodding	13 C.Y.
I-2	Masonry (Headwalls)	2.04 C.Y.
I-1	30" Pipe Class A-1, Sec. M-6.6 (b) or M-6.8 (b)	158 L.F.
I-1	43"x 27" Pipe Class G-1, Sec. M-6.4 (J)(d)	58 L.F.
I-5	15"x 30" Tee for Class A-1, Sec. M-6.6 (b) or M-6.8 (b)	1 Ea.
I-10	Dumped Rock for Channel Protection	6 C.Y.
I-10	Riprap - 6" Reinf.	30 S.Y.

DUMPED ROCK
SECTION B-B
S=2:1 B.W.=3' D=0.5'
SEE SHEET 223



SECTION A-A

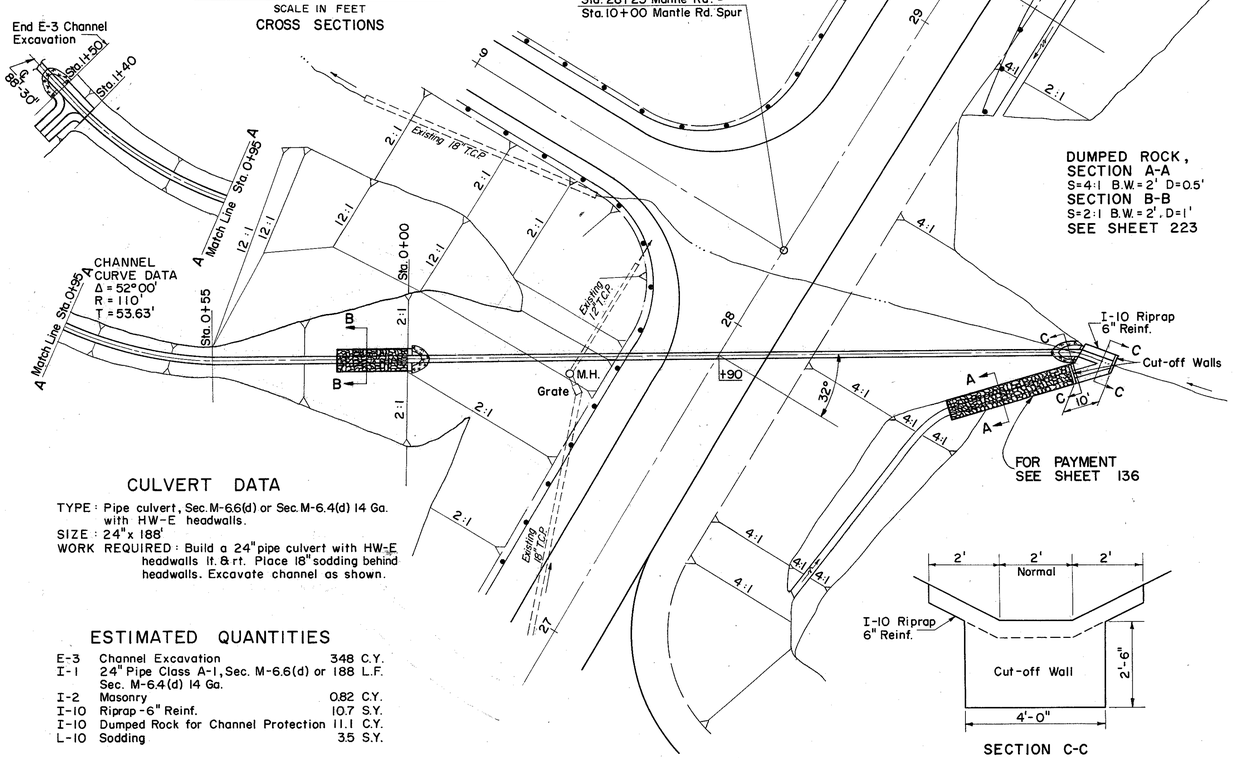
STRUCTURE NO. LAK-2-1825
PIPE CULVERT - S.R.2 STA. 863+65 AND STA. 63+79 FRONTAGE RD. "B"



CROSS SECTIONS

Sta. 1+50 Area = Sta. 1+40

Sta. 28+25 Mantle Rd. =
Sta. 10+00 Mantle Rd. Spur



CULVERT DATA

TYPE : Pipe culvert, Sec. M-6.6(d) or Sec. M-6.4(d) 14 Ga. with HW-E headwalls.
SIZE : 24"x 188'
WORK REQUIRED : Build a 24" pipe culvert with HW-E headwalls lt. & rt. Place 18" sodding behind headwalls. Excavate channel as shown.

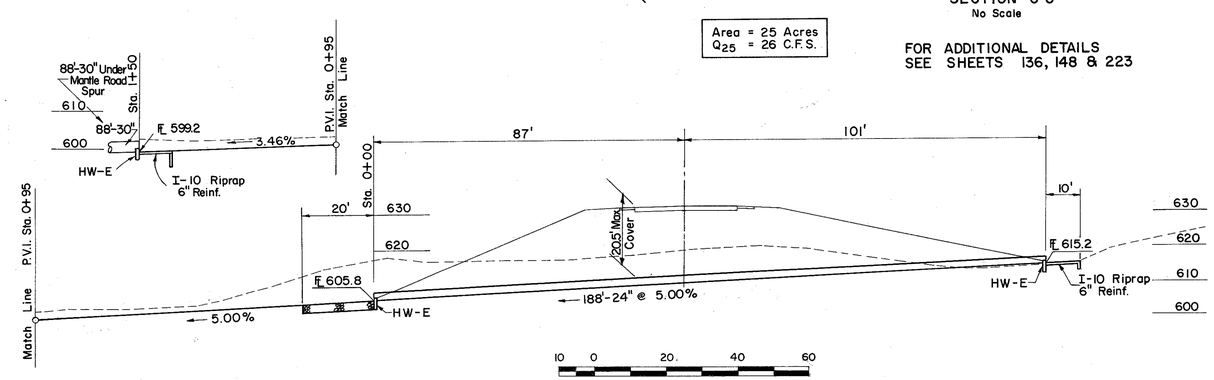
ESTIMATED QUANTITIES

E-3	Channel Excavation	348 C.Y.
I-1	24" Pipe Class A-1, Sec. M-6.6(d) or Sec. M-6.4(d) 14 Ga.	188 L.F.
I-2	Masonry	0.82 C.Y.
I-10	Riprap - 6" Reinf.	10.7 S.Y.
I-10	Dumped Rock for Channel Protection	11.1 C.Y.
L-10	Sodding	3.5 S.Y.

SECTION C-C
No Scale

Area = 25 Acres
Q_{25} = 26 C.F.S.

FOR ADDITIONAL DETAILS
SEE SHEETS 136, 148 & 223



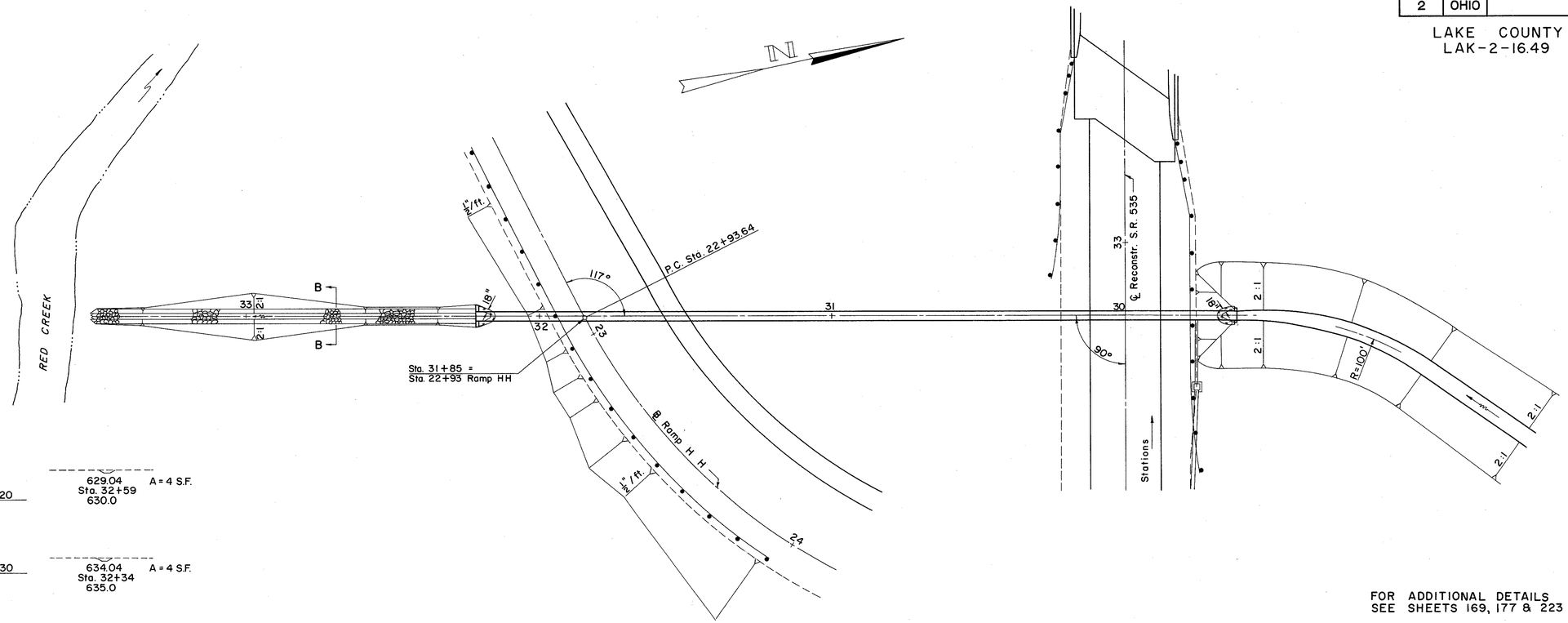
PLAN & PROFILE

PIPE CULVERT MANTLE RD. STA. 27+90

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

217
313

LAKE COUNTY
LAK-2-16.49



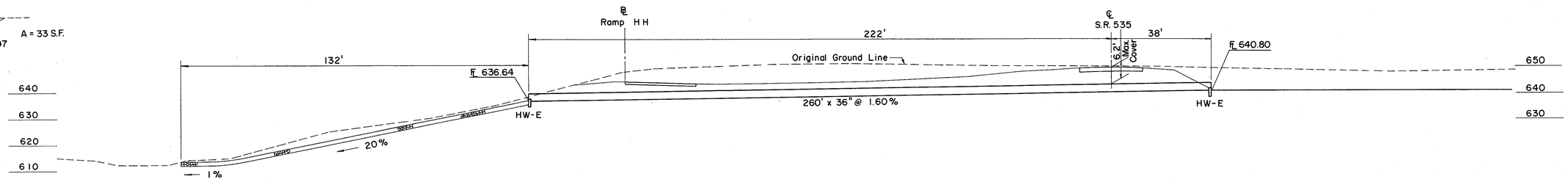
610	613.50 Sta. 33+53 613.5	A = 0 S.F.	620	629.04 Sta. 32+59 630.0	A = 4 S.F.
610	613.53 Sta. 33+51 614.0	A = 2 S.F.	630	634.04 Sta. 32+34 635.0	A = 4 S.F.
610	613.84 Sta. 33+35 615.0	A = 5 S.F.	630	636.44 Sta. 32+22 638.0	A = 8 S.F.
620	621.44 Sta. 32+97 625.0	A = 33 S.F.			

10 5 0 20 40 60
SCALE IN FEET

Area = 51 Acres
Q_{50} = 52 C.F.S.

FOR ADDITIONAL DETAILS
SEE SHEETS 169, 177 & 223

DUMPED ROCK, SECTION B-B
SEE SHEET 223
S = 2:1 B.W. = 2' D = 0.75'



CULVERT DATA

TYPE: Pipe culvert with HW-E lt. & rt.
SIZE: 36" x 260'
WORK REQUIRED: Build a 36" pipe culvert with HW-E headwalls lt. & rt. Place sodding around headwalls and construct channel on lt. as shown. Connect 12" pipe from S.R. 535 as detailed.

ESTIMATED QUANTITIES

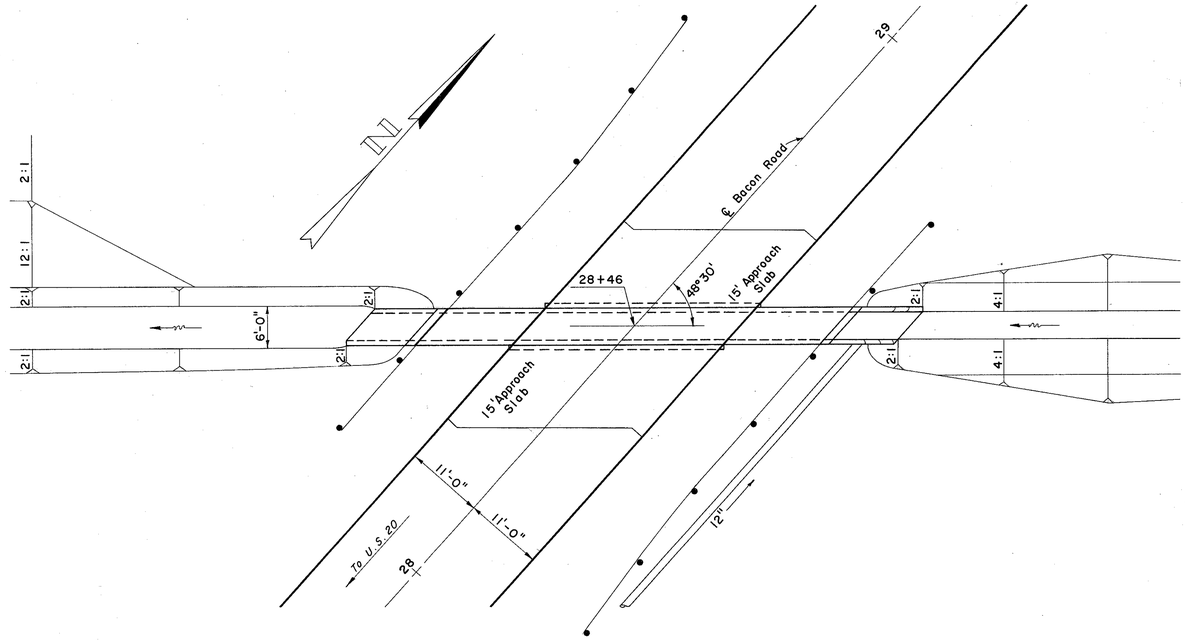
E-3	Channel Excavation	62 C.Y.
L-10	Sodding	4 S.Y.
I-1	36" Pipe Class A-1, Sec. M-6.6 (a) or Sec. M-6.8 (b)	260 L.F.
I-2	Masonry (Headwalls)	1.18 C.Y.
I-10	Dumped Rock for Channel Protection	68 C.Y.
I-5	Pipe Special 12" x 36" Tee For Class A-1, Sec. M-6.6 (a) or Sec. M-6.8 (b)	1 Ea.

PIPE CULVERT RAMP H H STA. 22 + 93

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

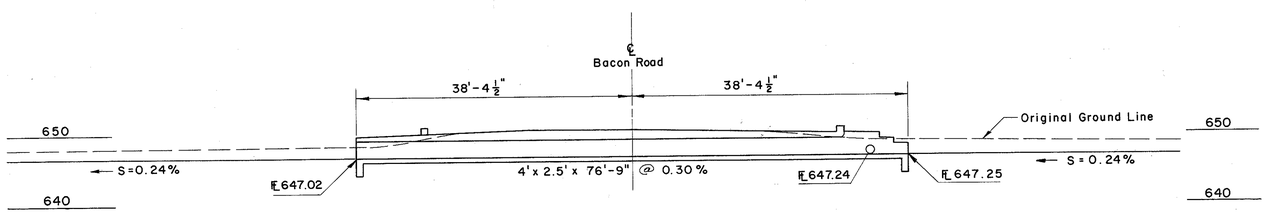
218
313

LAKE COUNTY
LAK-2-16.49



Area = 28 Acres
Q_{25} = 33.6 C.F.S.

FOR STRUCTURAL DETAILS
SEE SHEET 219



CULVERT DATA

TYPE: R.C. Box Culvert (Roof is Roadway Slab)

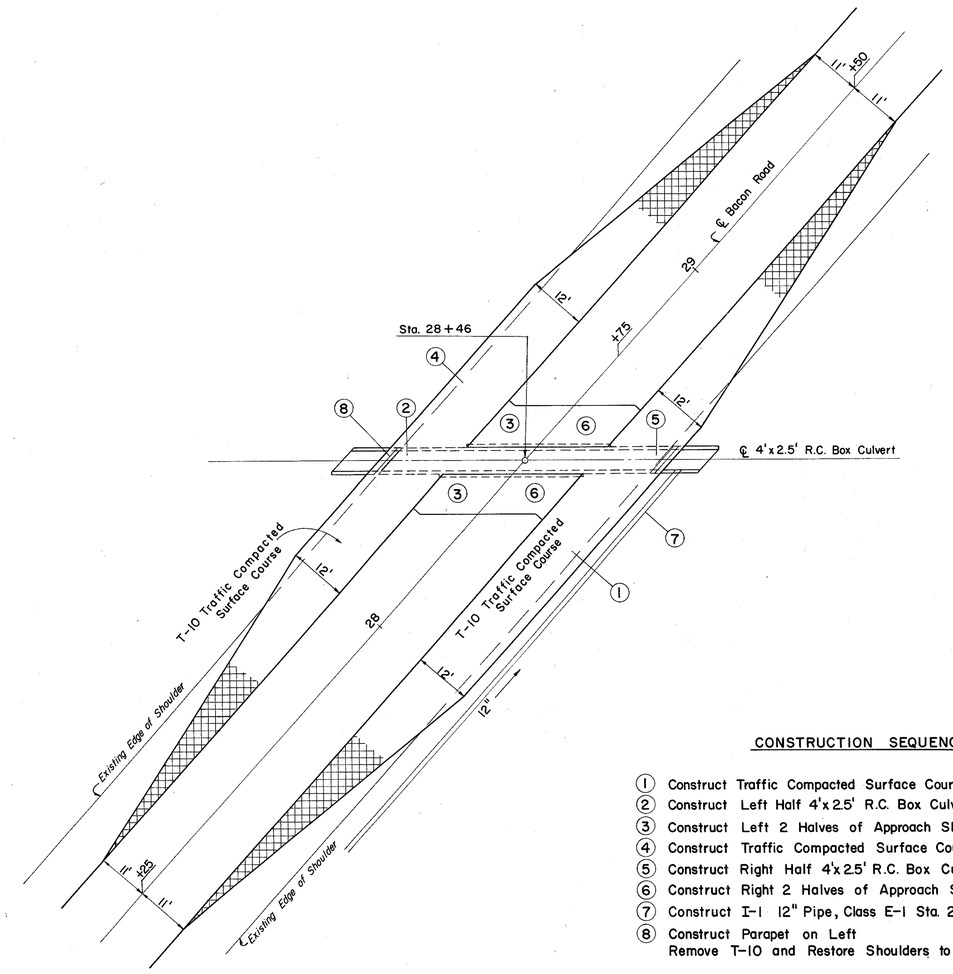
SIZE: 4'x 2.5'

WORK REQUIRED: Build a 4'x 2.5' R.C. Box Culvert. Provide Connection for 12" Pipe Class E-1 shown on Plan.

ESTIMATED QUANTITIES

E-2	Excavation For Structures	86 C.Y.
S-1	Concrete For Structure, Class "C"	38 C.Y.
S-4	Reinforcing Steel	4,340 Lbs.

5 0 10 20 30
SCALE IN FEET



10 5 0 10 20 30
SCALE IN FEET

CONSTRUCTION SEQUENCE

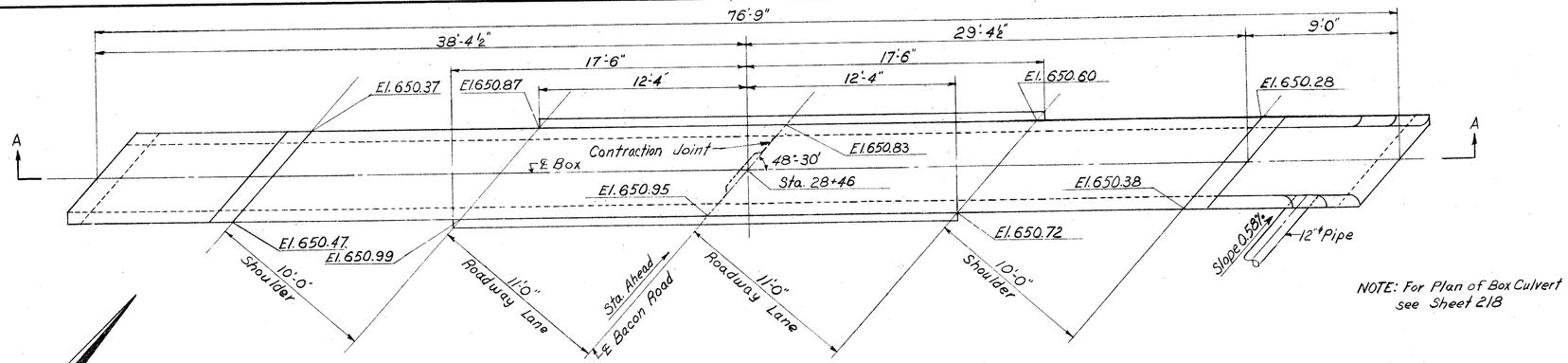
1. Construct Traffic Compacted Surface Course T-10
2. Construct Left Half 4'x 2.5' R.C. Box Culvert
3. Construct Left 2 Halves of Approach Slabs
4. Construct Traffic Compacted Surface Course T-10
5. Construct Right Half 4'x 2.5' R.C. Box Culvert
6. Construct Right 2 Halves of Approach Slabs
7. Construct I-1 12" Pipe, Class E-1 Sta. 27+60 to Culvert
8. Construct Parapet on Left
   Remove T-10 and Restore Shoulders to Culvert

4'x 2.5' R.C. BOX CULVERT
BACON ROAD STA. 28+46.00
&
DETAIL OF TEMPORARY RUNAROUND

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

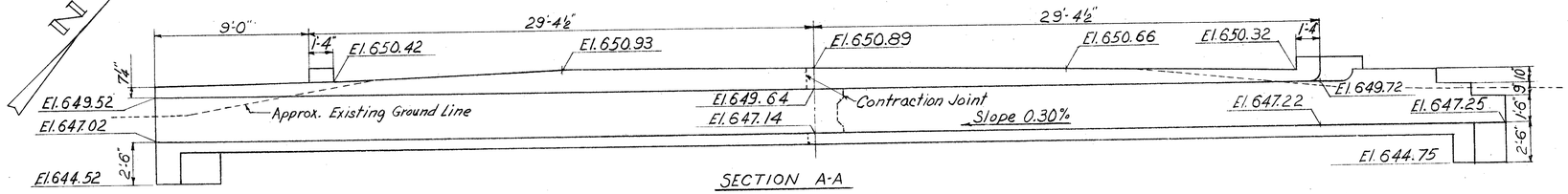
219
313

LAKE COUNTY
LAK-2-16.49

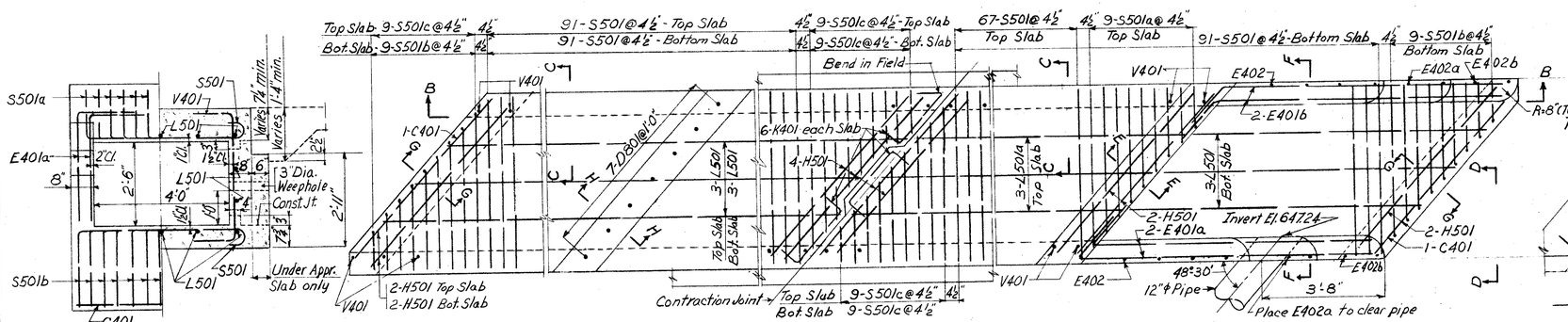


PLAN

NOTE: For Plan of Box Culvert see Sheet 218



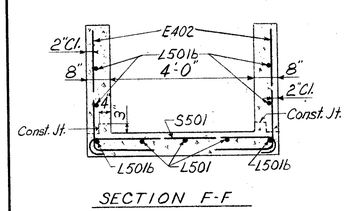
SECTION A-A



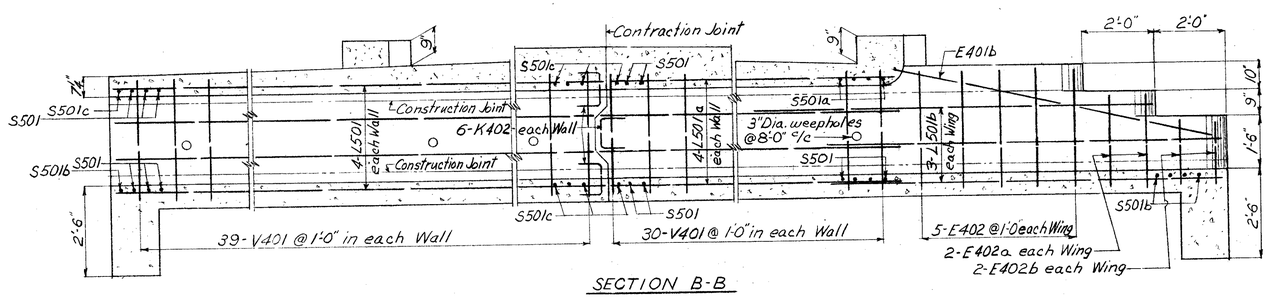
PART PLAN

REINFORCING LIST

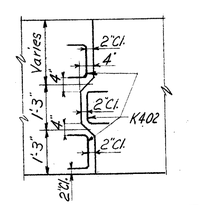
MARK	TOTAL	LENGTH	WEIGHT	TYPE	B	C	D	VARIES BY	NO. OF EACH
C401	2	6'-10"	9	Str.					
D801	7	1'-2"	22	Str.					
E401a	2	11'-1"	15	Bent		9'-6"	1'-8"		
E401b	2	11'-1"	15	Bent		9'-6"	1'-8"		
E402	10	4'-11"	33	Bent		3'-4"	1'-8"		
E402a	4	4'-1"	11	Bent		2'-6	1'-8"		
E402b	4	3'-4"	9	Bent		1'-9"	1'-8"		
H501	12	6'-10"	85	Str.					
K401	12	3'-2"	25	Bent	8"	2'-0"	8"		
K402	12	2'-1"	17	Bent	8"	11"	8"		
L501	17	37'-10"	671	Str.					
L501a	11	29'-0"	333	Str.					
L501b	6	11'-0"	69	Str.					
S501	340	6'-2"	2188	Bent	7"	5'-0"	7"		
S501a	9	2'-9" to 6'-1"	41	Bent	7"	1'-3" to 4'-7"	1'-1"	5"	1
S501b	18	3'-10" to 7'-2"	103	Bent	7"	1'-3" to 4'-7"	2'-2"	5"	2
S501c	45	1'-10" to 5'-2"	164	Bent	7	1'-3" to 4'-7"	—	5	5
V401	138	5'-9"	530	Bent	1'-3"	3'-5"	1'-3"		



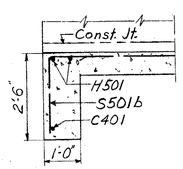
SECTION F-F



SECTION B-B



CONTRACTION JOINT IN WALL



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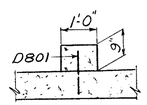
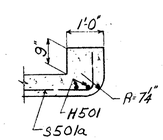
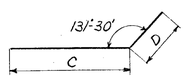


NOTE: D801 dowels and curb to be placed only after East end of Box is completed.

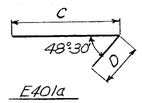
SECTION H-H



SECTION E-E



E401b



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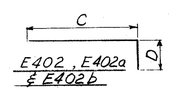
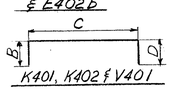
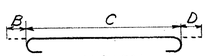


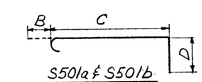
E402, E402a & E402b



K401, K402 & V401



S501 & S501c



S501a & S501b

GENERAL NOTES

EMBANKMENT shall be placed symmetrically on both sides of culvert and preferably simultaneously along its entire length and shall not be placed until after the upper slab is in place.

APPROACH SLAB details as shown on Standard Drawing AS-1-54, revised 12-1-54, with a longitudinal construction joint along ℄ of Roadway. Construction joint to be doweled with 1" ϕ x 18" bars @ 1'-0" c/c.

PREPARED BY
CAPITOL ENGINEERING ASSOCIATES DILLSBURG PA.
FOR

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

DETAILS OF
4' x 2.5' R.C. BOX CULVERT
UNDER BACON ROAD
LAKE COUNTY
STA. 28+46

DESIGNED	DRAWN	TRACED	CHECKED	REVISED	DATE	REVISED
NBP JHT	JHT		NBP			

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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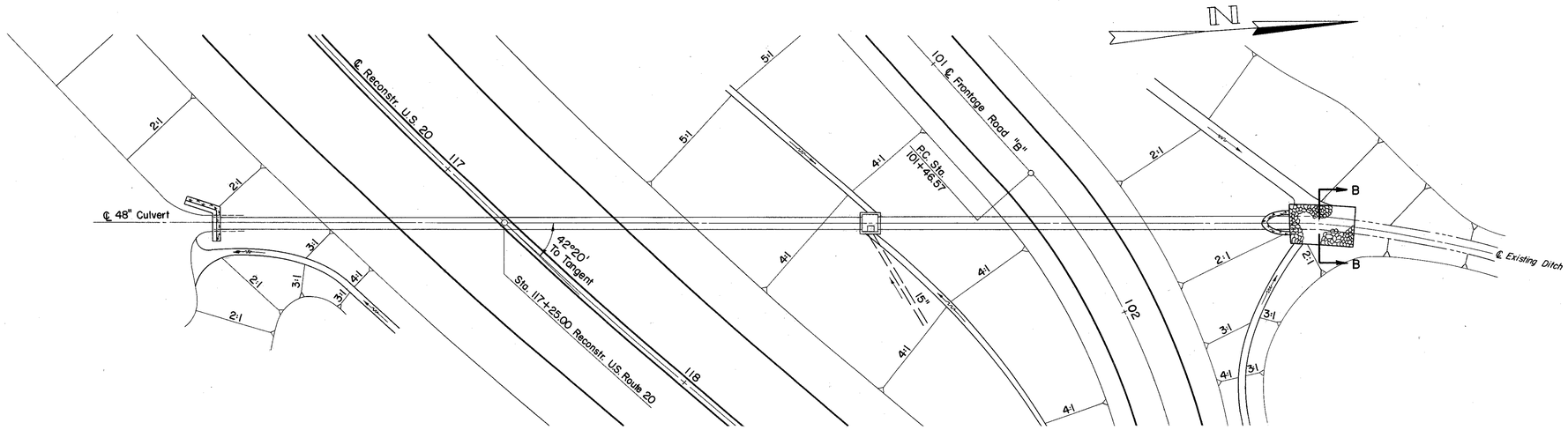
LAKE COUNTY
LAK-2-16.49



DUMPED ROCK, SECTION B-B
SEE SHEET 223
S = 2:1 B.W. = 4.0' D = 1'

FOR SODDING DETAIL
SEE SHEET 223

FOR ADDITIONAL DETAILS
SEE SHEET 38

Area = 257 Acres
Q_{25} = 163 C.F.S.

CULVERT DATA

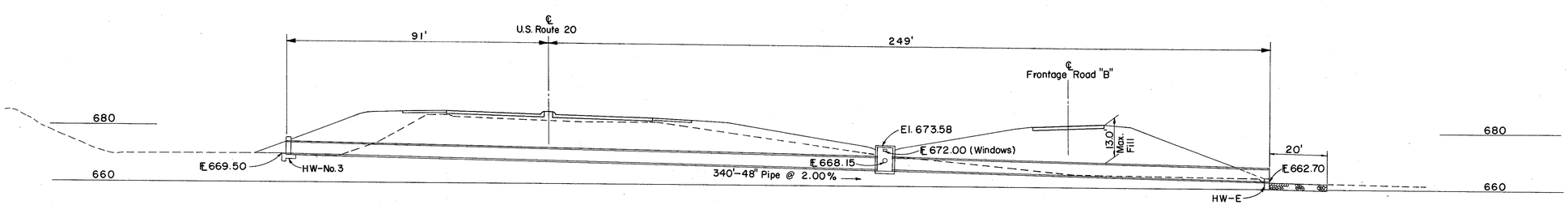
TYPE : Culvert with HW No. 3, Type B Headwall Rt. & HW-E Headwall Lt. & No. 2-5 C.B. Lt.

SIZE : 48" x 340'

WORK REQUIRED : Build a 48" pipe culvert with a HW No. 3, Type B, δ = 45° Headwall on the right, a HW-E Headwall on the left & a No. 2-5 C.B. on the left. Sod on Headwalls as shown.

ESTIMATED QUANTITIES

I-1	48" Pipe Class A-1 Sec. M-6.6(b)	340 L.F.
I-2	Masonry (Headwall)	11.16 C.Y.
I-8	No. 2-5 Catch Basin	1 Ea.
I-10	Dumped Rock For Channel Protection	19 C.Y.
L-10	Sodding	7 S.Y.



10 0 20 40 60
SCALE IN FEET

STRUCTURE NO. LAK-2-1897
PIPE CULVERT RECONSTR. U.S. 20 STA. 117 + 25

TYPICAL DETAILS OF UNDERDRAIN OUTLETS
ITEM I-1, CLASS J-1, F-4, & I-3

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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LAKE COUNTY
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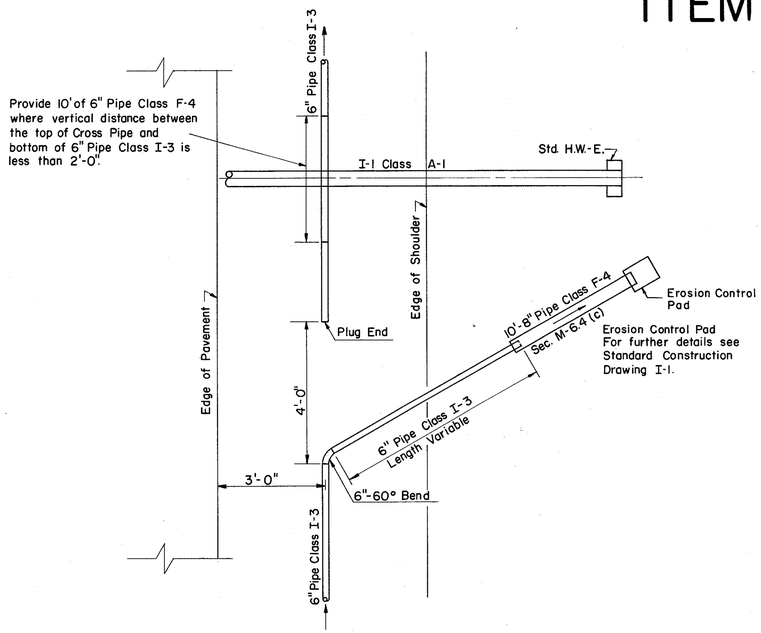
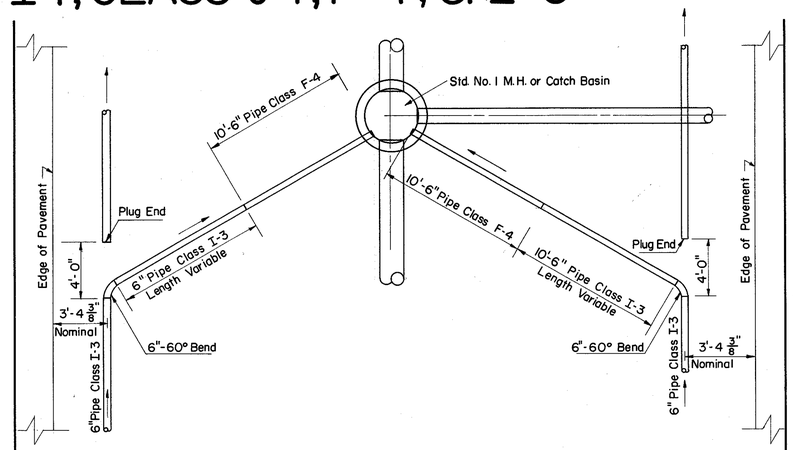
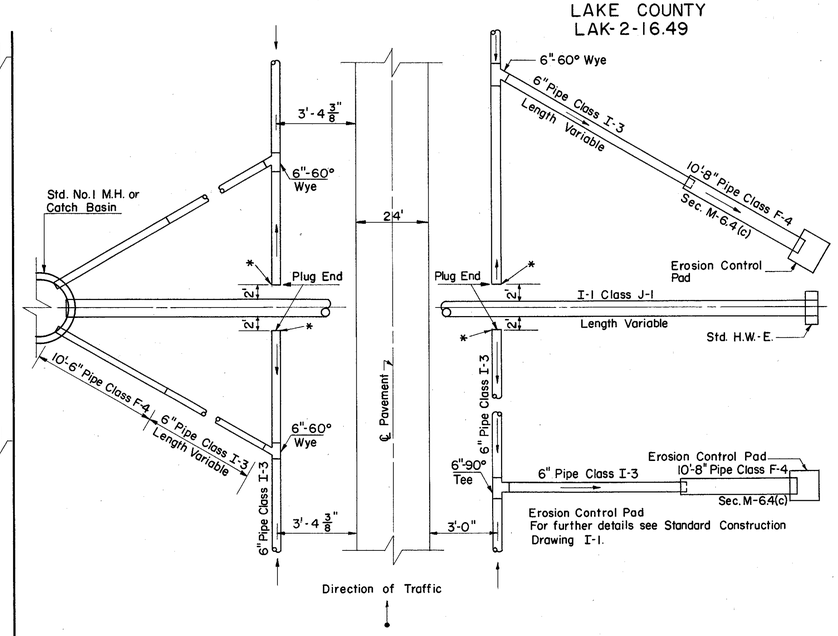


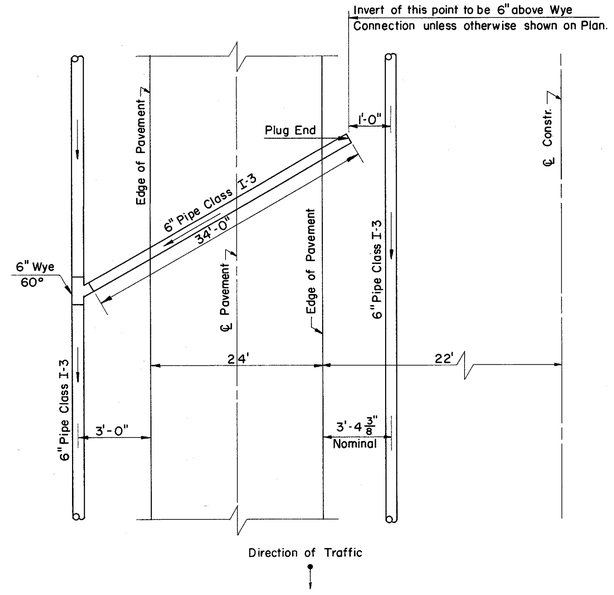
UNDERDRAIN OUTLET DETAIL A



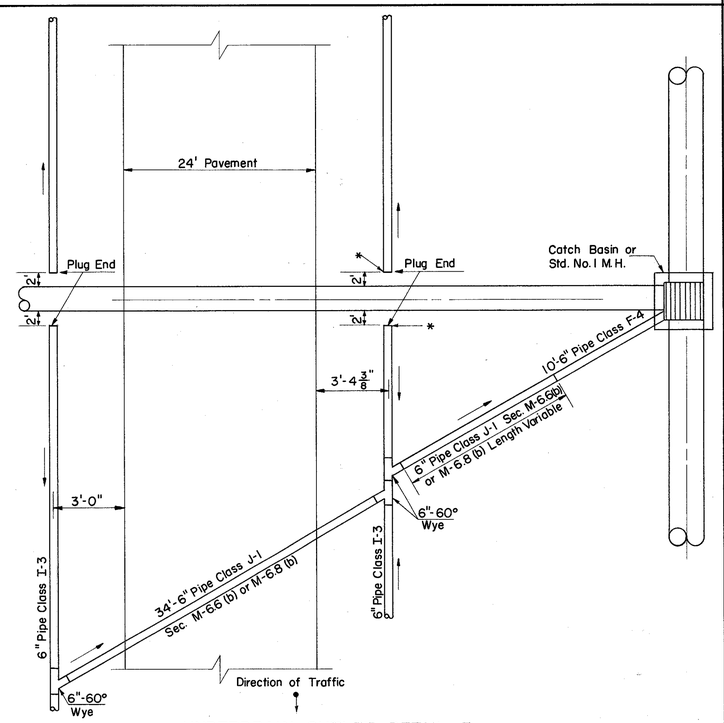
UNDERDRAIN OUTLET DETAIL B



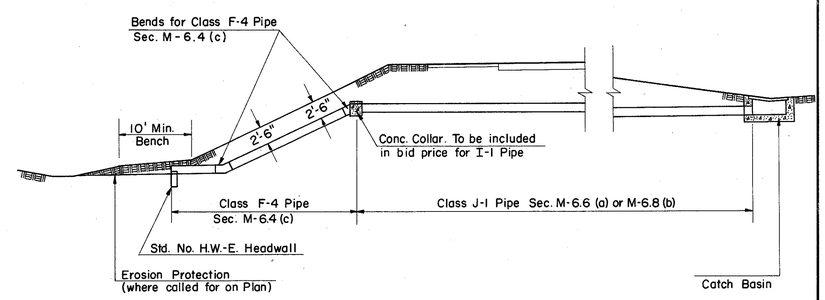
UNDERDRAIN OUTLET DETAIL C



DETAIL CLASS I-3 CROSSOVER CUT TO FILL SECTION



UNDERDRAIN OUTLET DETAIL E



*Invert at this point to be 6" above Wye Connection unless otherwise shown on plan.

MEDIAN OUTLET DETAIL IN HIGH FILL

DRAINAGE DETAILS

TYPICAL MEDIAN CROSSOVER

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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LAKE COUNTY
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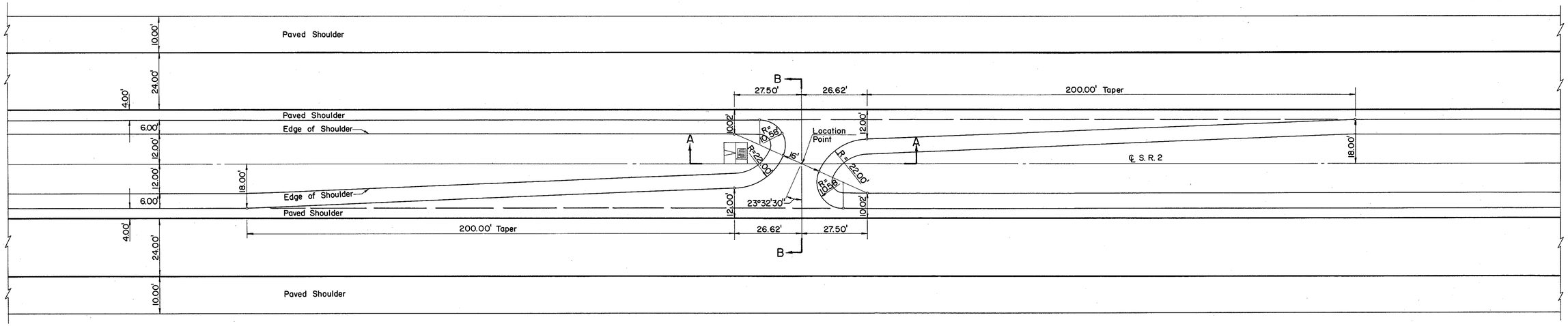
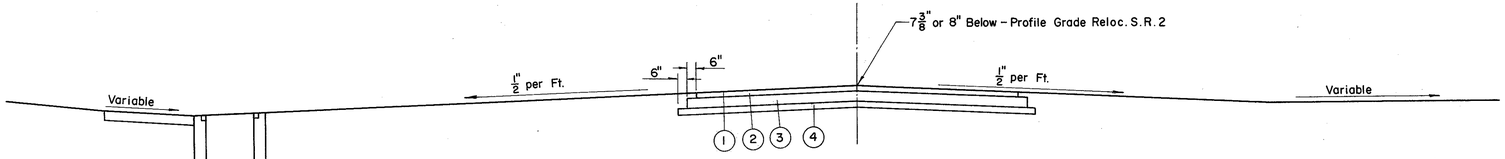
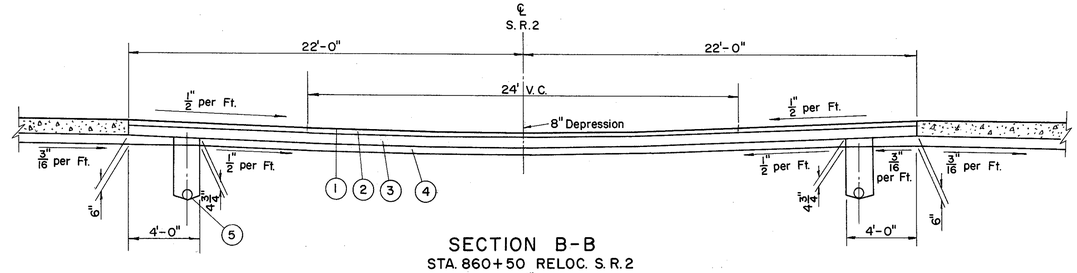


NOTE: Catch Basin to be placed where required by grade of roadway and slope of median.

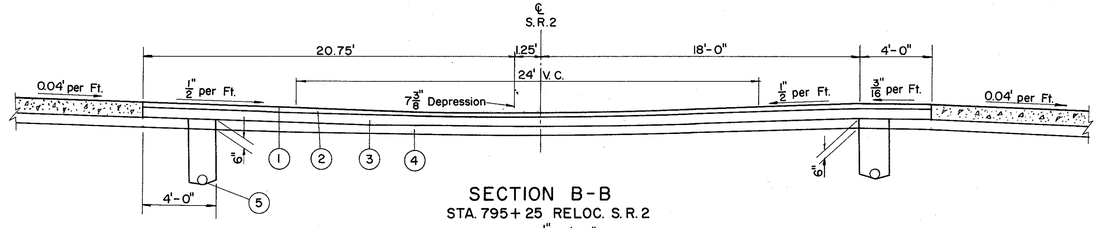
PLAN
SCALE 1" = 20'-0"



SECTION A-A
SCALE: 1/4" = 1'-0"



SECTION B-B
STA. 860+50 RELOC. S.R.2
SCALE: 1/4" = 1'-0"



SECTION B-B
STA. 795+25 RELOC. S.R.2
SCALE 1/4" = 1'-0"

1	T-31	Bituminous Surface Treatment using 0.008 C.Y. No.6 Aggregate and 0.25 Gal. Bit. Mat'l. per S.Y., (See note in proposal)
*2	B-21	3" Waterproofed Aggregate Base Course, Type "A" T-35 Material may be used in construction of this Course, See note in proposal
3	B-112	7" Porous Base Course
4	I-22	Variable Depth Subbase, Grading A or B, Modified as per General Notes
5	I-1	6" Pipe, Class I-3

*NOTE: Thickness shown is designed thickness as described in Section B-21.01.

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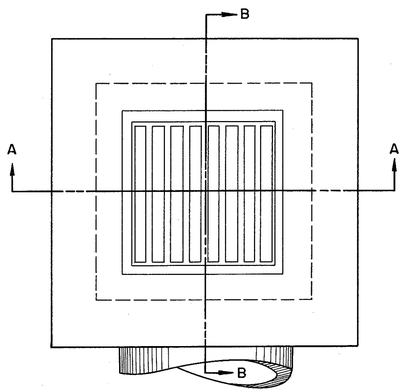
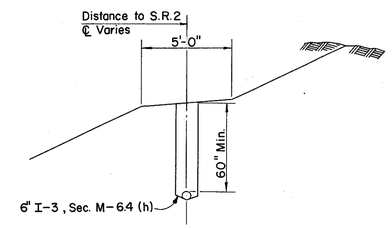
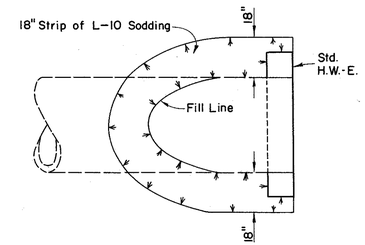


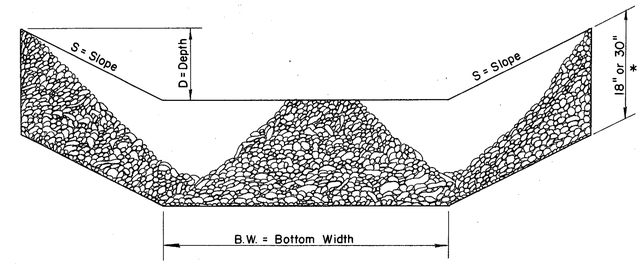
PLAN



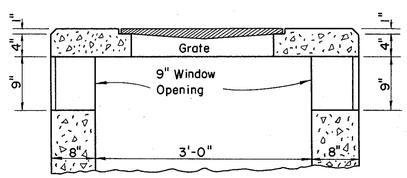
DETAIL OF CLASS I-3 PIPE ON CUT SLOPE
SEE GENERAL NOTE SHEET 16
No Scale



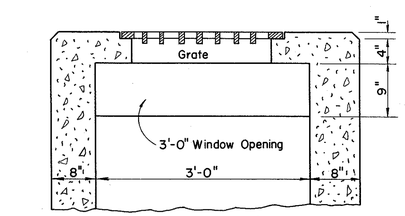
DETAIL OF EROSION CONTROL AT HEADWALLS
SEE GENERAL NOTE SHEET 15
No Scale



DETAIL OF DUMPED ROCK FOR CHANNEL PROTECTION
* SECTION A-A = 18" DEPTH
* SECTION B-B = 30" DEPTH
No Scale



SECTION B-B

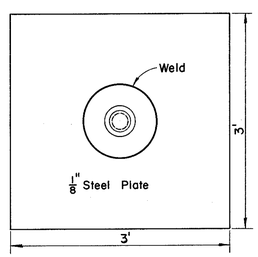


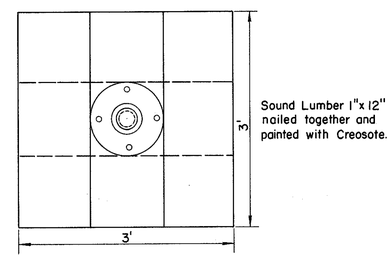
SECTION A-A

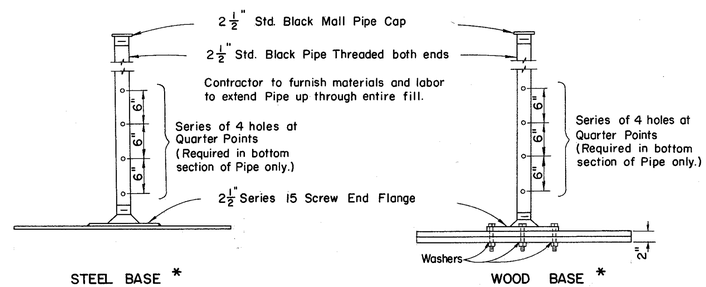
MODIFIED NO. 2-3 CATCH BASIN

NOTE: Window openings and depths to be constructed as shown, all other details and notes shall conform to Standard Construction Drawing I-8 C.B. 2-3 & 2-4.

1 0 1 2







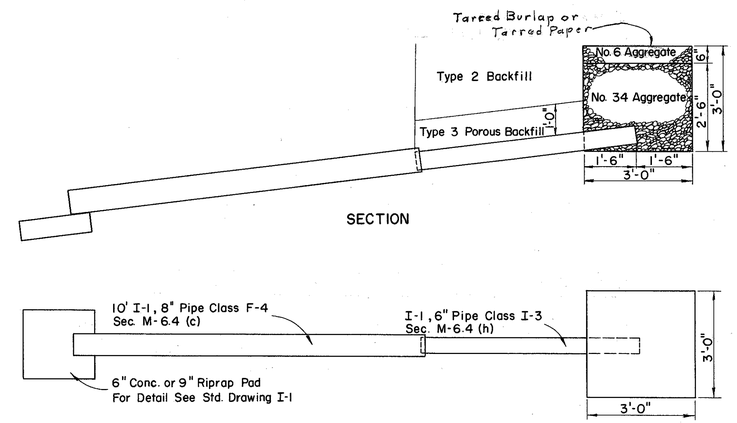
STEEL BASE * WOOD BASE *

Sta. 850+90, 16' Lt. & Sta. 852 + 80, 16' Rt.

DETAILS OF SETTLEMENT PLATFORMS

1 0 1 2

* Contractor has option of using either Steel or Wood Platform Base



The Spring Drain shall be constructed as shown. The Lin. Foot price bid shall include all aggregates, bituminous material and any necessary excavation. The required pipe to outlet the Spring Drain shall be paid for separately as I-1, 6" pipe Class I-3 and I-1, 8" pipe Class F-4. The Class I-3 pipe shall be covered with Type 3 porous backfill material to a height of One (1) Foot above the top of the pipe, the remaining backfill shall meet the specification requirements for Type 2 backfill. Estimated quantities for I-9, Underdrains, I-1, 6" pipe Class I-3 and 8" pipe Class F-4 are called for on the Plan and General Notes. See Sheet No. 15 for note on Item-I-9, Stone Underdrain, No. 1, as per plan.

DETAIL OF SPRING DRAIN

2 1 0 2 4

MISCELLANEOUS DETAILS

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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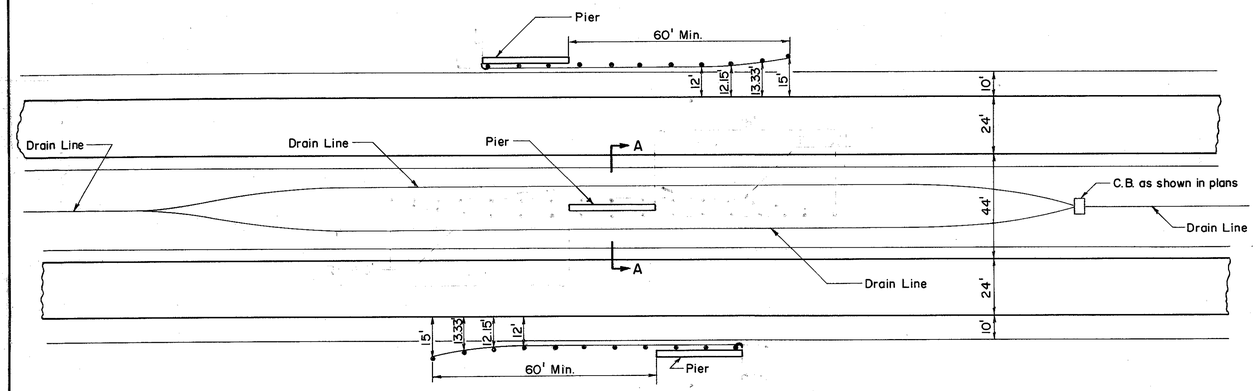
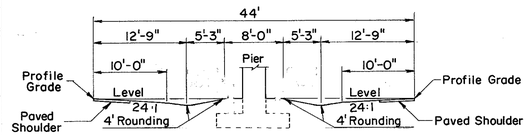
LAKE COUNTY
LAK-2-16.49

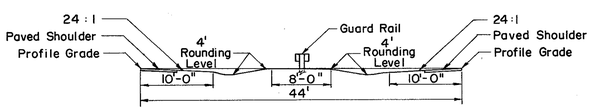
PIER PROTECTION



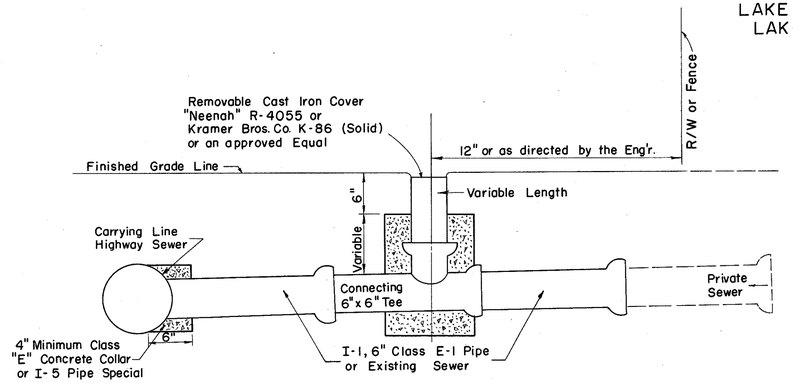
EXPRESSWAY UNDER



SECTION A-A
44' MEDIAN
EXPRESSWAY UNDER



SECTION B-B
44' MEDIAN
EXPRESSWAY OVER

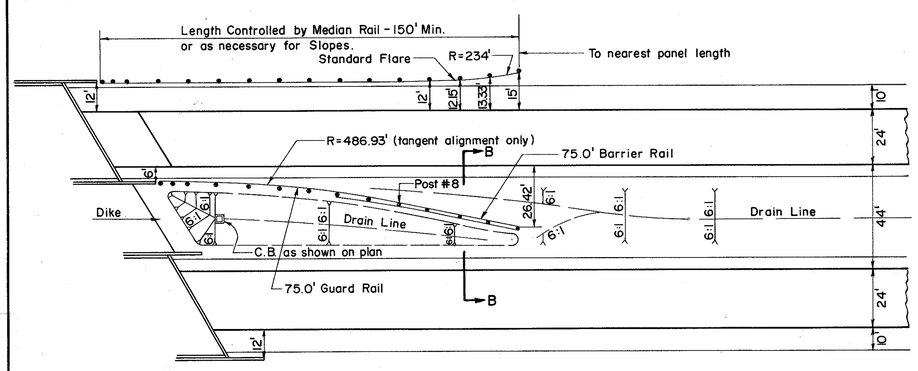


INSPECTION WELL FOR SANITARY TAPS

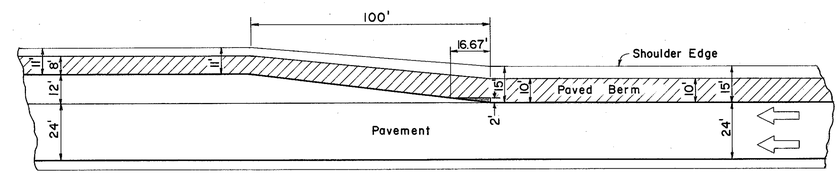
Riser Pipe shall be 6" Sec. M-6.5 (a) Bell and Spigot Pipe or Sec. M-6.8 (a) with a minimum 4" Class "E" Concrete Encasement.

Inspection Wells as shown shall be provided on all existing drains carrying an effluent originating from a domestic source, when these drains are connected to or outlet into any Ditch Culvert or Sewer whose construction is provided for in these Plans. Inspection Well shall be placed where directed by the Engineer. The unit price bid per each for "Item I-8 Inspection Wells as per Plan" shall include furnishing and placing Riser Pipe. Concrete Encasement, Cast Iron Cover and Connecting Tee (for I-1, Class E-1). Estimated Quantities of Pipe Specials Item I-5 of the Carrying Line Type Pipe and the I-1, 6" Class E-1 Pipe to be furnished and installed with the Inspection Wells are listed in the General Notes, Sheet

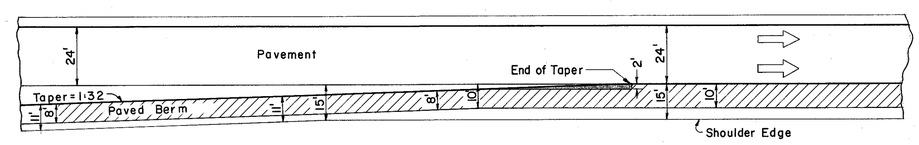
Neither Drain Pipe or Collar shall extend into Main Sewer. The cost of the Tap into the Carrying Line and the Concrete Collar shall be included in the unit price bid per Lin. Ft. for the I-1, Class E-1 Pipe.



EXPRESSWAY OVER



DECELERATION LANE



ACCELERATION LANE

SHOULDER & GRADING LINE TREATMENT AT END OF SPEED CHANGE LANES

Shaded area shall be constructed to an elevation $\frac{1}{2}$" lower then the adjacent pavement and surfaced with T-31 and No.6 aggregate. Cost of T-31 and aggregate shall be included in price bid for T-71.

MEDIAN RAIL LAYOUT

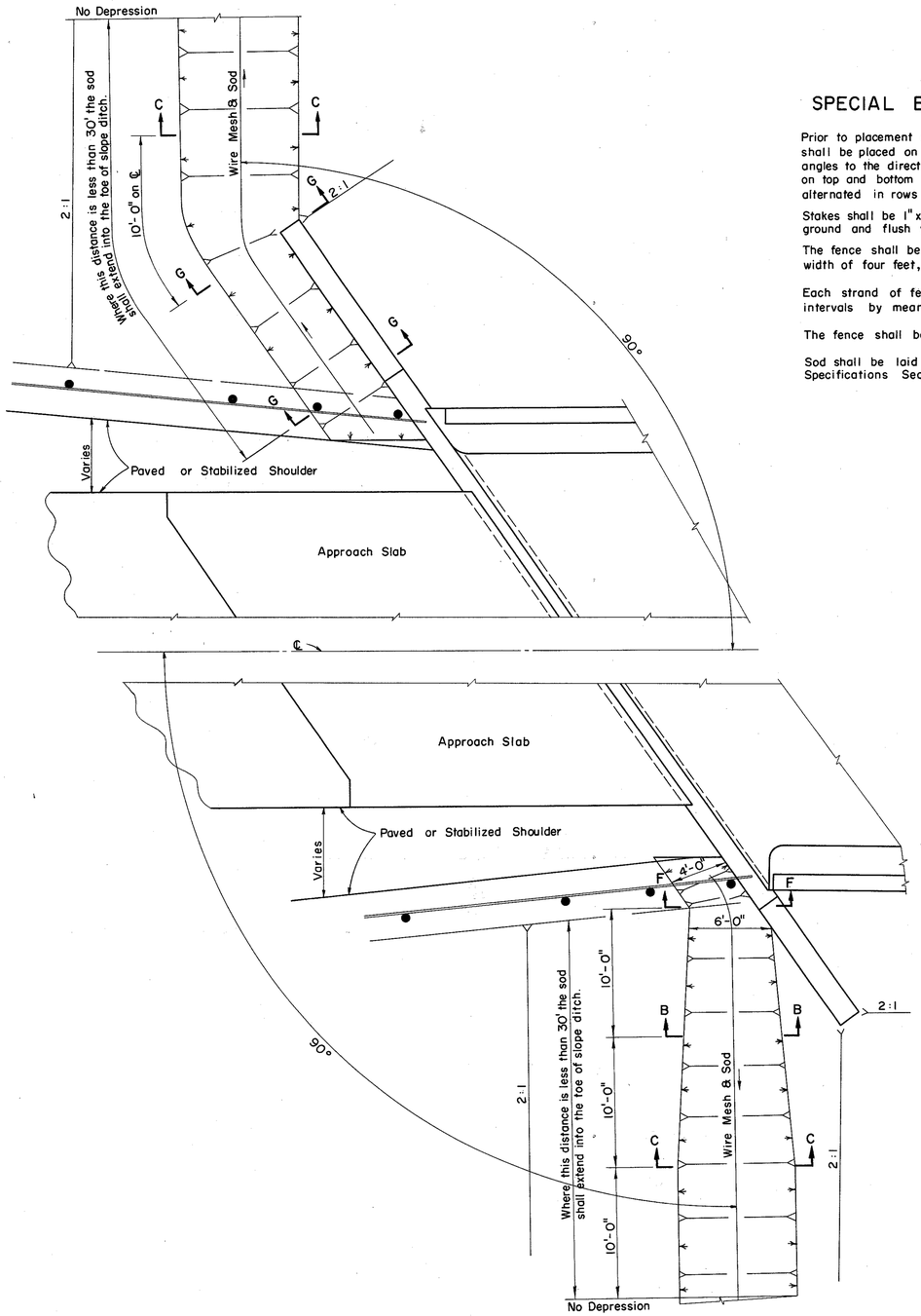
DISTANCE BETWEEN EDGE OF PAVEMENT AND FACE OF GUARD RAIL			
POST	OFFSET	POST	OFFSET
1/2	6.04	7	13.84
1	6.16	8	16.23
2	6.64	9	18.78
3	7.44	10	21.33
4	8.57	11	23.87
5	10.01	12	26.42
6	11.77		

F-19

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

225/313

LAKE COUNTY
LAK-2-16.49



SPECIAL BERM & SLOPE PROTECTION

Prior to placement of sod in the berm and slope, galvanized poultry fence shall be placed on the finished grade in strands which shall be at right angles to the direction of flow. Each strand shall be staked securely on top and bottom with stakes spaced at four foot intervals and alternated in rows four feet apart.

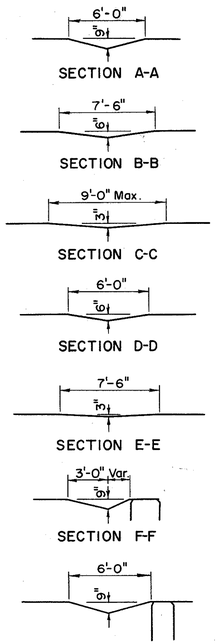
Stakes shall be 1" x 1" x 8" wood stakes and shall be perpendicular to the ground and flush with the finished grade.

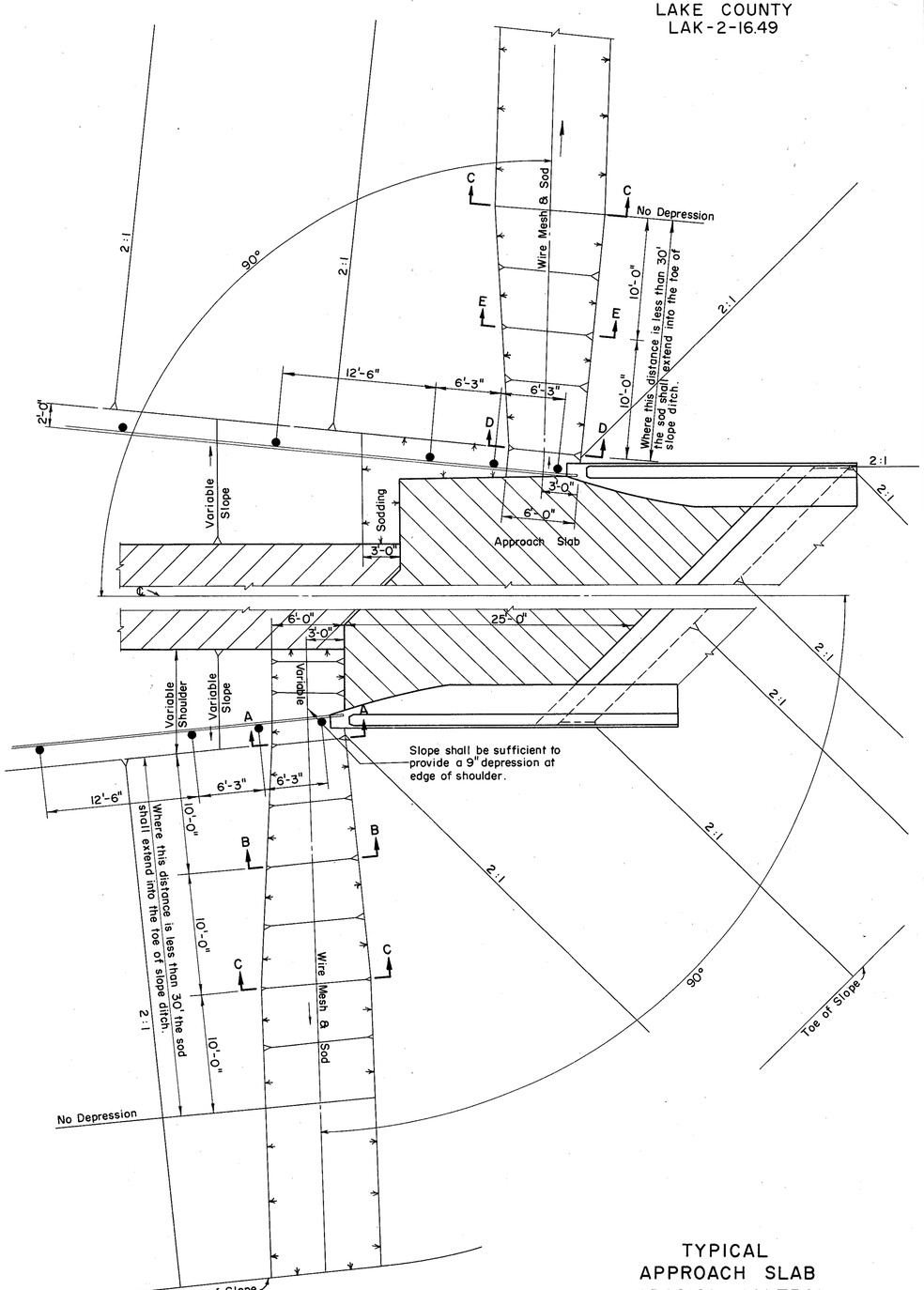
The fence shall be Straight Line Poultry Fence or equivalent with strand width of four feet, having a two inch mesh and all wires No. 20 Gauge.

Each strand of fencing shall be fastened together at twelve inch intervals by means of hog rings.

The fence shall be secured to the wood stakes by metal staples.

Sod shall be laid in accordance with Construction and Materials Specifications Section L-10.07.





TYPICAL
APPROACH SLAB
EROSION CONTROL

MICROFILMED
MAR 2 9 1984

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

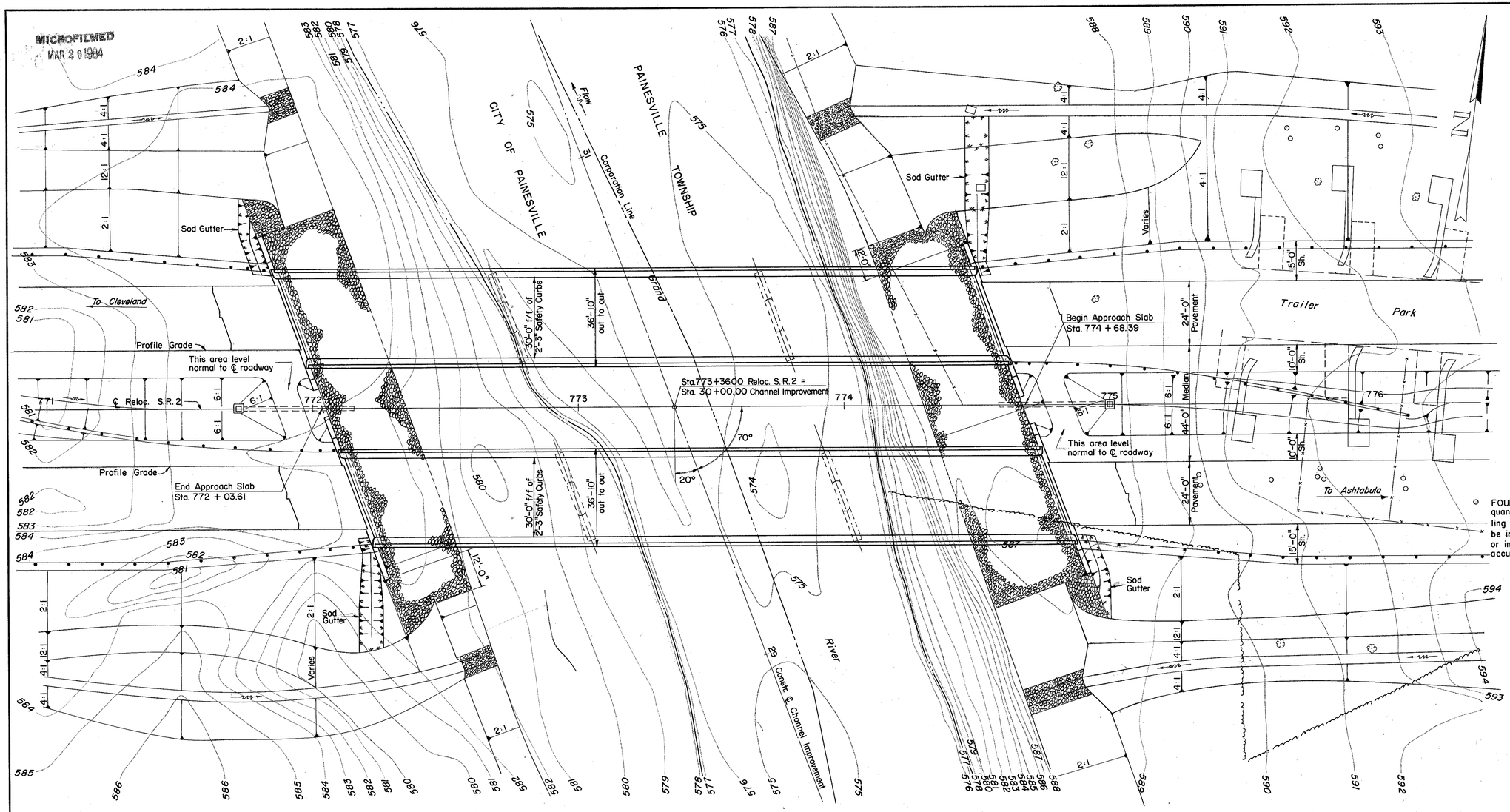
LAKE COUNTY
LAK-2-16.49

Located on East Corporation Line of Painesville

B.M. # 78 – Lag Bolt in root of 24" Poplar
267' Lt. of Sta. 773 + 87
Elev. 587.690

600'± Upstream – New York Central R.R.
Reinforced Concrete Arch Bridge
Center Span = 165.5', Rise = 64'

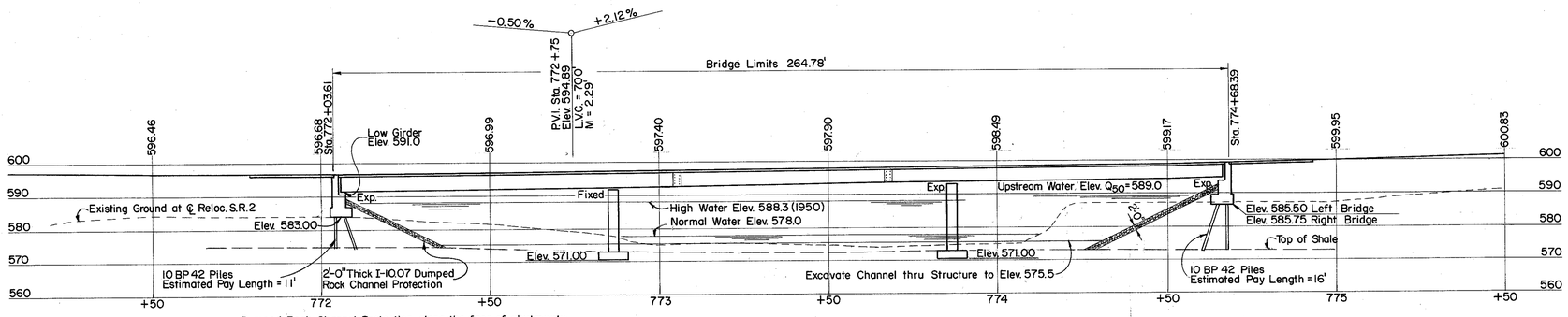
800'± Upstream – U.S. 20
Reinforced Concrete Arch Bridge
Center Span = 122', Rise = 37.8'
Side Spans = 50', Rise = 37.8'



○ FOUNDATION SOUNDINGS: Foundation design and foundation quantities are based on a study of rod soundings and soil-sampling soundings made at the site. This sounding information may be inspected in the office of the Bureau of Bridges in Columbus or in the Division office, but the State does not guarantee the accuracy thereof.

PROPOSED STRUCTURE

TYPE: Two 3 Span continuous welded plate girder with Reinf. Conc. Deck & Substructure.
SPANS: 80'-0", 100'-0", 80'-0" ℃ Brgs.
ROADWAY: 30' f/f of 2'-3" Safety Curbs.
LOAD FREQUENCY: CF = 2000 (57)
WEARING SURFACE: 1" monolithic concrete.
APPROACH SLABS: AS-1-54 (25'-0" Long)
ALIGNMENT: Tangent
SKEW: 20° R.F.
A.D.T. 17,160 (1980)
DRAINAGE AREA: 680 Sq. Miles
50 YEAR Q = 20,500 c.f.s.
BACKWATER: 0.2'
WATERWAY AREA Q_{50} = 3,150 Sq. Ft.



Dumped Rock Channel Protection along the face of abutments shall extend downward to the bottom of channel where the channel is in shale, and to an Elev. 2 feet below the bottom of the channel where the channel is not in shale.

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FOR

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

SITE PLAN
BRIDGE NO. LAK-2-1652 L & R
RELOC. S.R. 2 OVER GRAND RIVER
LAKE COUNTY
STA. 772 + 03.61
STA. 774 + 68.39

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED DATE	REVISED
	M. J. F.	F. W. B.	J. H. T.		

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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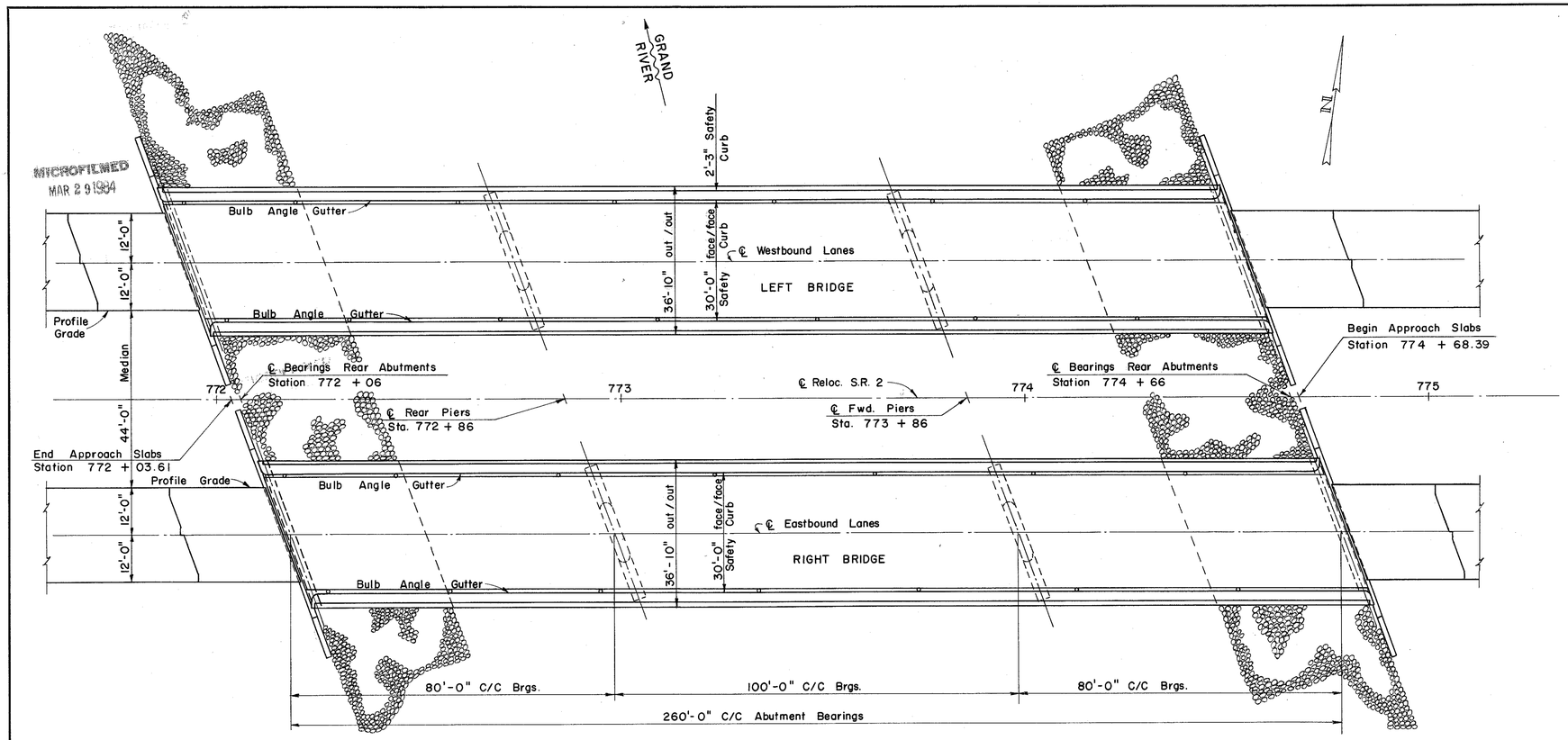
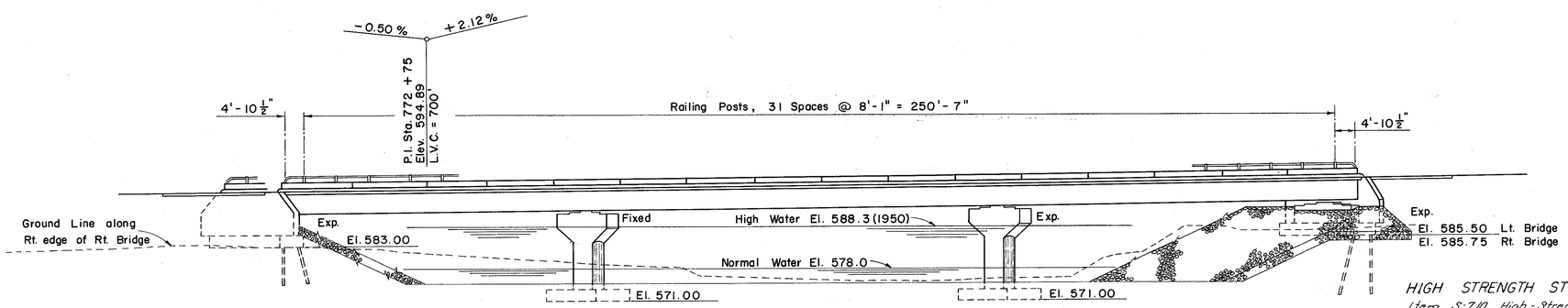
LAKE COUNTY
LAK-2-16.49

MICROFILMED
MAR 29 1984



PLAN



ELEVATION

Pier Footings shall extend a minimum of 3" into undisturbed shale or to the elevation shown, whichever is lower.

Piles shall be driven with a hammer of not less than 7,000 ft. lbs. per blow to firm contact with shale. If the length of penetration is approximately equal to the depth to shale according to the bridge foundation investigation report, the firm contact shall be considered as attained when the capacity according to the formula in Sec. 18.05 is not less than the following value for a pile hammer of the indicated energy rating.

HAMMER FT. LB.	ABUT'S, TONS PER PILE
7,000	40
11,000	35
15,000	30

If the energy rating of the hammer is between the ratings as shown above, the required formula capacity shall be determined by interpolation.
The design load is 26 tons per pile.

GENERAL NOTES

REFERENCE shall be made to Standard Drawings CSB-2-56, sheets No. 2 and No. 3 of 6 revised 2-2-59, RB-1-55 revised 2-2-59, AR-1-57 revised 4-2-62, AS-1-54 revised 7-5-62, and to Supplemental Specifications S-101 dated 7-12-62, and S-307 dated 8-23-60.

DESIGN SPECIFICATIONS: This structure conforms to the requirements of "Design Specifications for Highway Structures" of the State of Ohio Department of Highways, dated 9-1-57, together with current revisions thereof.

PROCEDURE: The embankment for the abutments shall be placed & compacted up to the base of the rock channel protection at the top of the spill-thru slope after which excavation shall be made for the abutments and the piles driven.

EXCAVATION QUANTITY includes the removal of fill material required for construction of the abutments.

PIER FOOTINGS are designed for a max. bearing pressure of 5 tons per sq. ft.

WELDING of structural steel shall be Class "A" except as otherwise shown. Welds shown as field welds may, at the option of the Contractor, be made in the shop.

PLATE GIRDER ERECTION: The Contractor shall submit to the director, for approval, three prints showing proposed erection procedures for the plate girders.

CONCRETE DECK PLACING: In order to faciliate water curing of the concrete of the deck slab, the placing of concrete shall progress upgrade. The slab may be placed in sections, between transverse construction joints which are parallel to transverse reinforcing steel and are located near the center of any span.

MACHINE FINISH: The concrete bridge deck shall be finished by the use of a finishing machine.

ALL STRUCTURAL STEEL: ASTM A36

DESIGN LOADING: CF 2,000(57)

BASIC UNIT WORKING STRESSES:

Concrete, Class C:	1,333 p.s.i.
Concrete, Class E:	1,133 p.s.i.
Structural Steel, ASTM A 36: *(except piling)*	20,000 p.s.i.
Reinforcing Steel, ASTM A 15, A 16 & A 160 Deformed, Intermediate or Hard Grade:	20,000 p.s.i.
Spiral Reinforcement, Plain, Structural Grade:	18,000 p.s.i.

HIGH STRENGTH STEEL BOLTS:

Item S-710, High-Strength Steel Bolts, Nuts and Washers, paragraph two (2), shall be completely revised and the last sentence of paragraph four (4), revised to read as follows:

"In the final assembly of the parts to be bolted, drift pins shall be placed in a sufficient number of holes (not less than 25 percent for field erection) to provide and maintain accurate alignment of holes and parts, and sufficient bolts shall be installed and brought to a snug tight condition to bring the parts into complete contact. Bolts shall then be installed in any remaining open holes and tightened to a snug tight fit, after which all bolts shall be tightened completely by calibrated wrenches or by the turn-of-nut method. Drift pins shall then be replaced with bolts, tightened in the same manner."

"Bolt lengths determined by the use of Table No. 1 shall be adjusted to the next ¼-inch length increment."

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FOR

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

GENERAL PLAN

BRIDGE NO. LAK-2-1652 L&R
RELOC. SR.-2 OVER GRAND RIVER
LAKE COUNTY
STA. 772 + 03.61
STA. 774 + 68.39

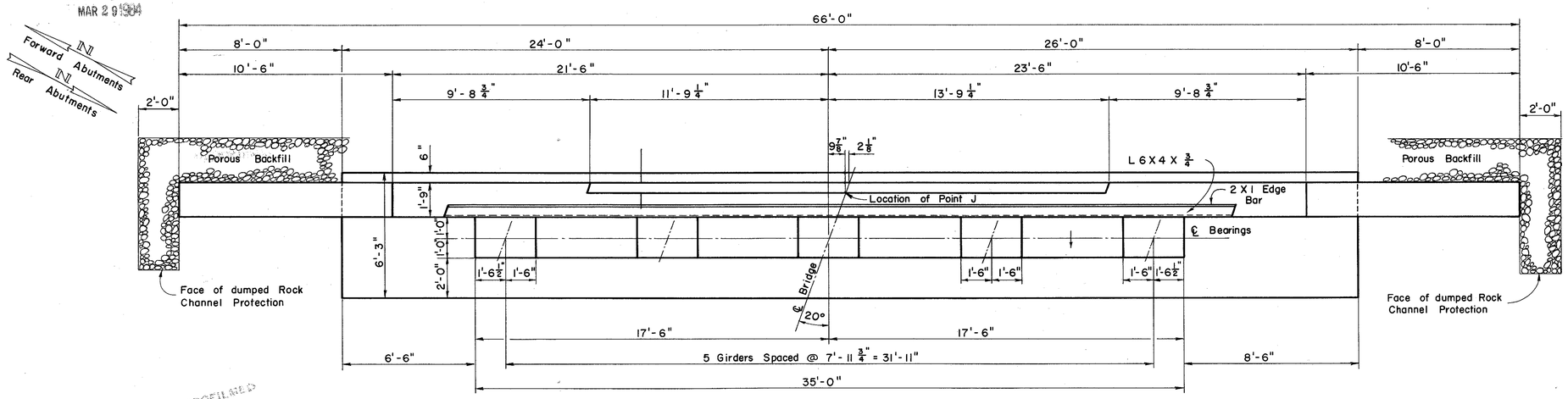
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
	M.J.F.	FWB	L.L.D. M.J.F.	G.S.W. M.C.P.		

MICROFILMED
MAR 29 1984

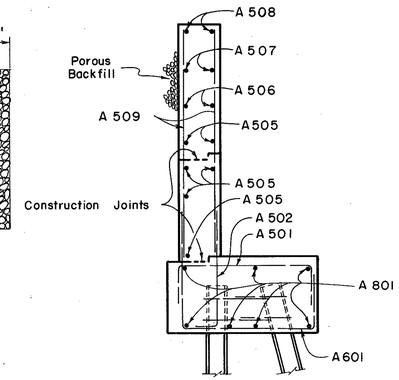
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

228
313

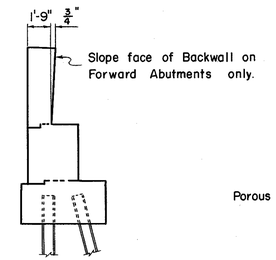
LAKE COUNTY
LAK-2-16.49



PLAN

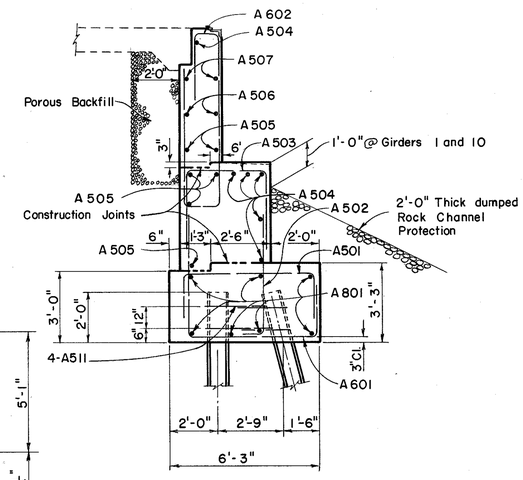


SECTION B-B

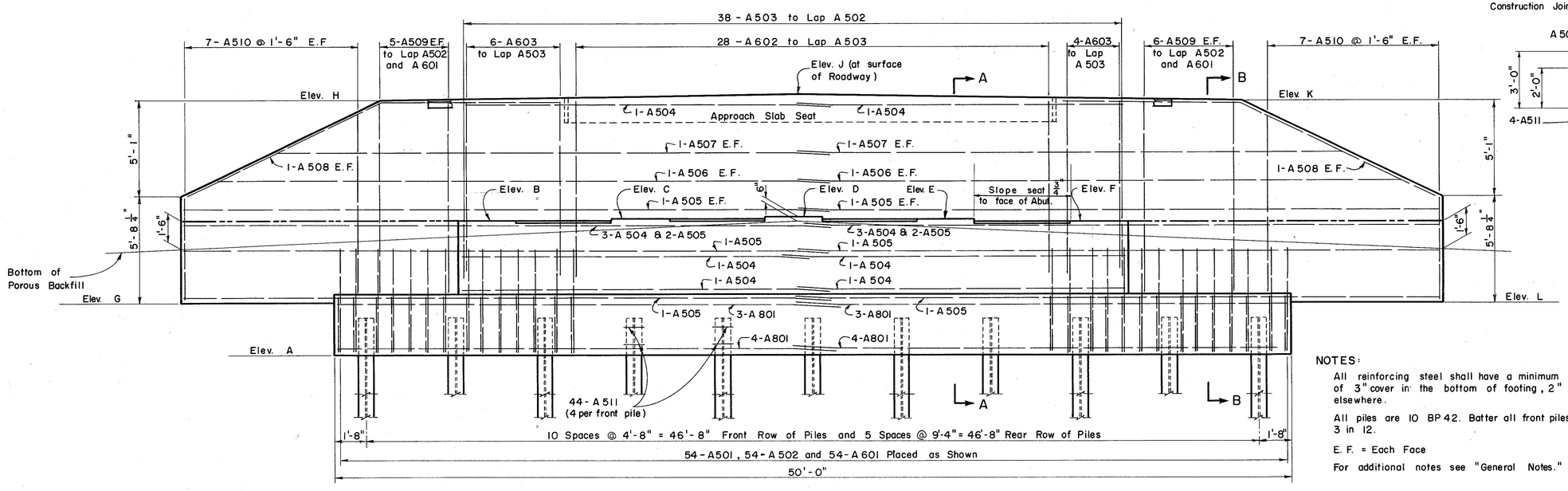


ABUTMENT	ELEVATIONS										
	A	B	C	D	E	F	G	H	J	K	L
Left Rear	583.00	590.17	590.27	590.37	590.24	590.11	585.77	596.54	596.83	596.48	585.71
Right Rear	583.00	590.31	590.41	590.51	590.38	590.24	585.91	596.68	596.96	596.61	585.84
Left Forward	585.50	592.64	592.80	592.95	592.88	592.80	588.24	599.01	599.43	599.17	588.40
Right Forward	585.75	593.01	593.17	593.33	593.26	593.18	588.61	599.38	599.81	599.55	588.78

POROUS BACKFILL shall extend upward to the approach slab and to the surface of the earth shoulders, and outward to the surface of the embankment slopes. Excavation therefor, in excess of that required for construction of the abutment, shall be considered as paid for in the bid price per cu. yd. paid for porous backfill.



SECTION A-A



ELEVATION

NOTES:

All reinforcing steel shall have a minimum of 3" cover in the bottom of footing, 2" elsewhere.

All piles are 10 BP 42. Batter all front piles 3 in 12.

E. F. = Each Face

For additional notes see "General Notes."

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FOR

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DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

ABUTMENT DETAILS

BRIDGE NO. LAK-2-1652 L & R
RELOC. S.R. 2 OVER GRAND RIVER
LAKE COUNTY
STA. 772 + 03.61
STA. 774 + 68.39

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
M.C.P. L.L.D.	M.J.F.	FWB	L.L.D. M.J.F.	G.S.W. M.C.P.		

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MAR 2 9 1984

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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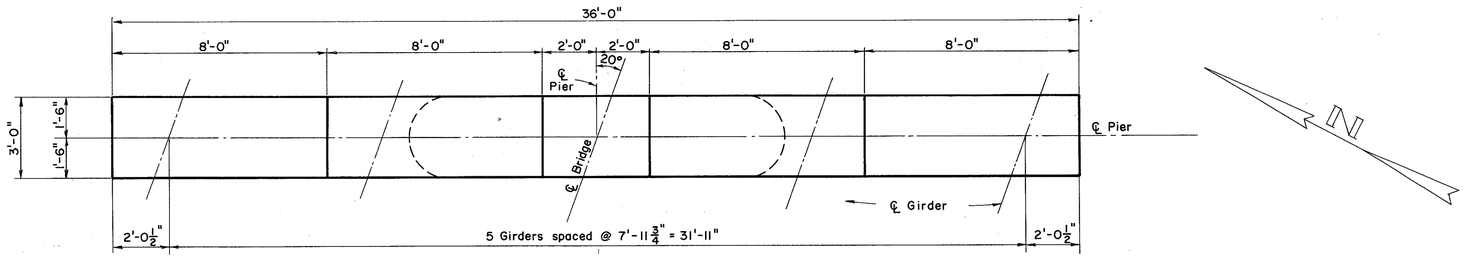
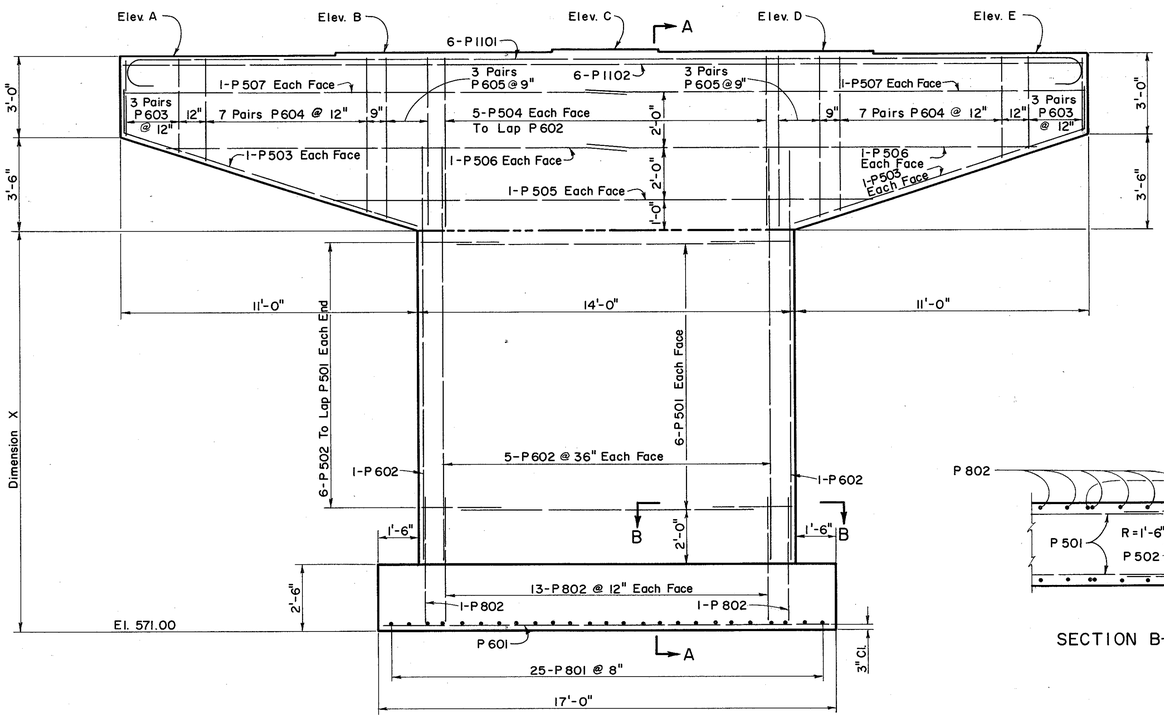
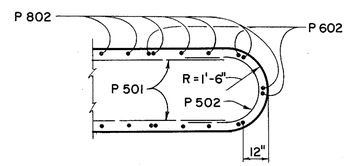
LAKE COUNTY
LAK-2-16.49



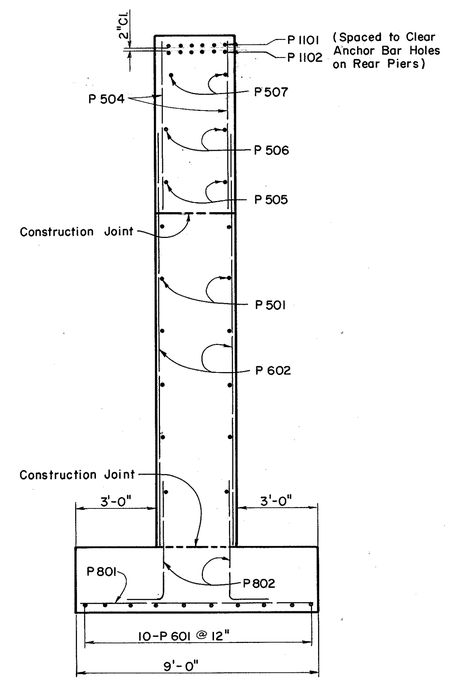
PLAN OF PIER CAP



ELEVATION



SECTION B-B



SECTION A-A

Footing Concrete - Class E

Concrete Above Footing - Class C

Cover of Reinforcement - 3" Bottom of Footing, 2" Elsewhere

PIER	ELEVATIONS					DIM. X
	A	B	C	D	E	
Left Rear	590.05	590.19	590.33	590.23	590.14	12.55
Right Rear	590.26	590.40	590.54	590.45	590.35	12.76
Left Forward	591.02	591.17	591.32	591.24	591.15	13.52
Right Forward	591.32	591.47	591.62	591.54	591.46	13.82

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FOR

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DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

PIER DETAILS

BRIDGE NO. LAK-2-1652 L & R
RELOC. SR. 2 OVER GRAND RIVER
LAKE COUNTY
STA. 772 + 03.61
STA. 774 + 68.39

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
M.C.P. L.L.D	M.J.F.	FWB	L.L.D. M.J.F.	G.S.W. M.C.P.		

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MAR 29 1984

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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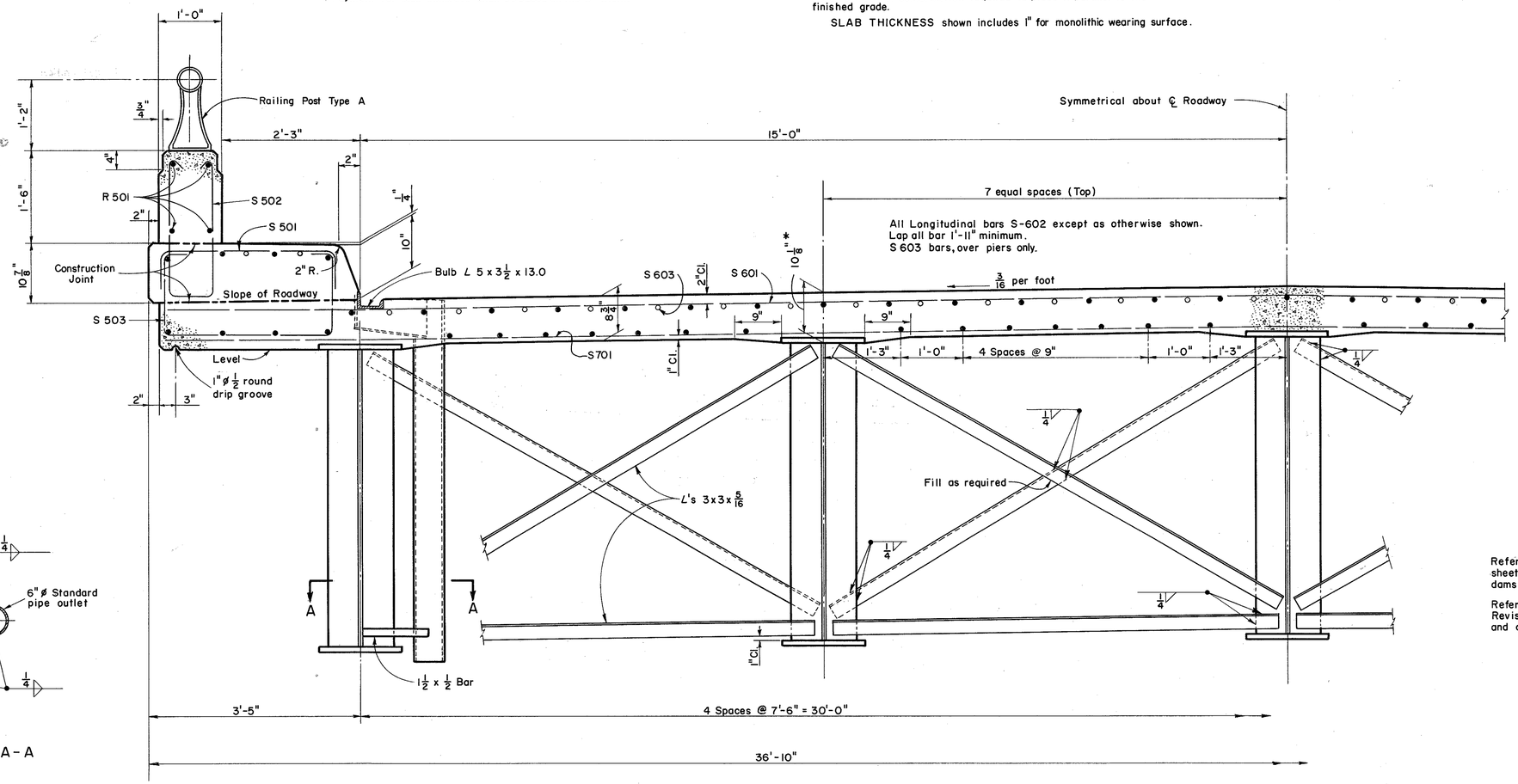
313

LAKE COUNTY
LAK-2-16.49

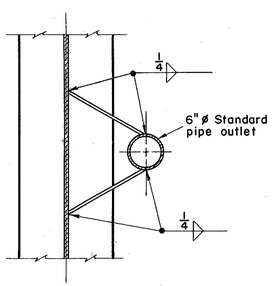
DECK SLAB HAUNCH: The haunch in the deck slab adjacent to the top of steel girders, which is shown as 9" wide, may vary from this dimension between the limits of 6" and 12" except the maximum slope shall not exceed 3" inches per foot. Payment for slab concrete shall be based on the 9" width.

* This is the nominal dimension from top of slab to top of web plate. The quantity of deck concrete to be paid for shall be based on this dimension minus the girder flange thickness, even though deviation from it may be necessary because the top edge of web ℞ may not have the exact camber or conformation required to place it parallel to the finished grade.

SLAB THICKNESS shown includes 1" for monolithic wearing surface.



HALF - SECTION OF SUPERSTRUCTURE



SECTION A-A

Reference shall be made to Standard Drawing CSB-2-56, sheets 2 & 3 of 6, Revised 2-2-59 for details of end dams, gutters, & pipe drains.

Reference shall be made to Standard Drawing AR-1-57, Revised 4-2-62 for details of aluminum railing and details of concrete parapet.

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DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

SUPERSTRUCTURE DETAILS

BRIDGE NO. LAK-2-1652 L & R
RELOC. SR. 2 OVER GRAND RIVER
LAKE COUNTY
STA. 772 + 03.61
STA. 774 + 68.39

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
C.H.	M.J.F.	FWB	L.L.D. M.J.F.	G.S.W. M.C.P.		

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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LAKE COUNTY
LAK-2-16.49

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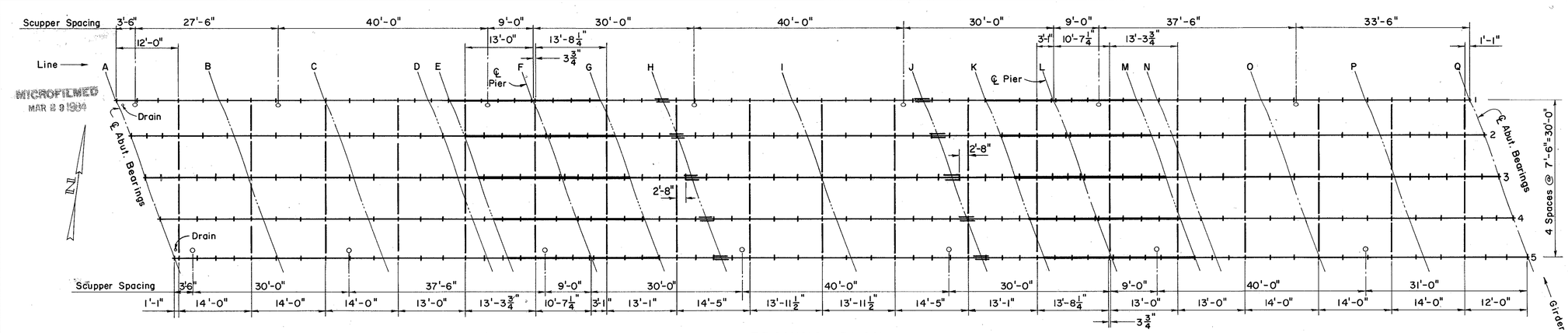
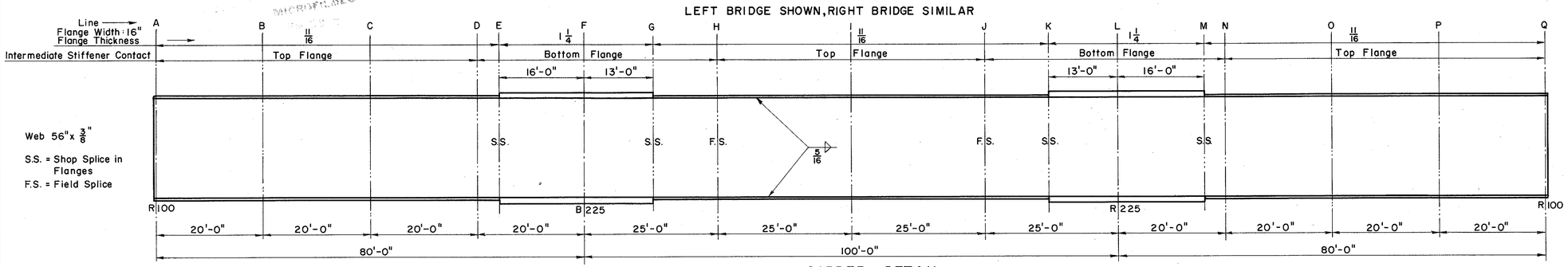
MAR 29 1984



FRAMING PLAN

LEFT BRIDGE SHOWN, RIGHT BRIDGE SIMILAR



GIRDER DETAIL

Intermediate stiffeners are spaced equally between control dimensions shown.

REFERENCE shall be made to Standard Drawing RB-1-55 revised 2-2-59 for details of bearings.

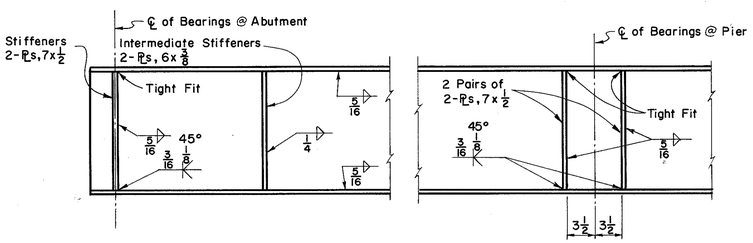
SHOP SPLICES: If additional shop splices are necessary, their location and detail shall be submitted to the Director for approval prior to ordering of material.

WELDING OF STRUCTURAL STEEL shall be Class 'A' except as otherwise shown.

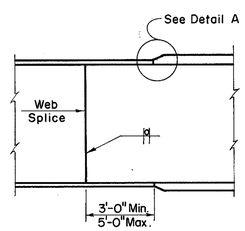
ALL BUTT WELDS shall be radiographically inspected according to Supplemental Specification S-307 dated 8-23-62.

BUTT WELDS shall be formed by welding from both sides with back gouging before welding from the second side.

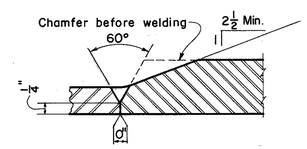
INTERMEDIATE STIFFENERS: Supplementary to Section S-7.14 of the Construction and Material Specifications, intermediate stiffeners of welded, built-up girders shall have contact bearing with the compression flange, but may have a clearance of not more than 1/8 inch from the tension flange at the locations shown. In shop painting, care shall be taken to make certain that paint is forced through from one side to the other of the 1/8 inch opening.



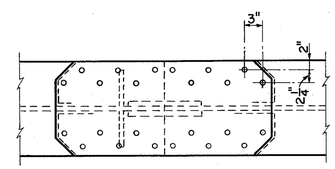
STIFFENER DETAILS



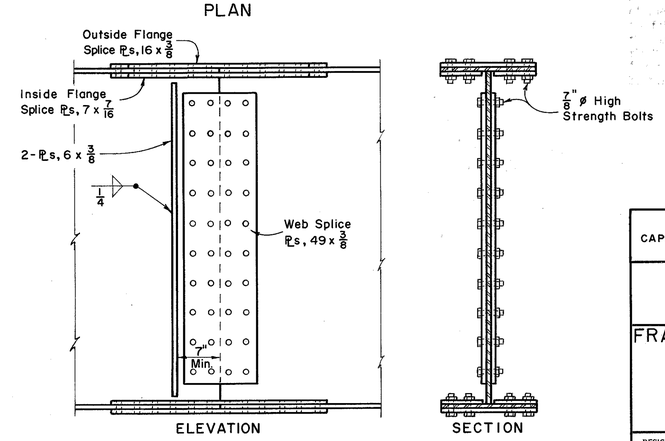
SHOP SPLICE DETAILS



DETAIL A



PLAN



ELEVATION SECTION

FIELD SPLICE DETAILS

DEFLECTION & CAMBER DATA

LINE →	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
Deflection due to weight of steel, each girder	—	1/16"	1/8"	1/16"	1/16"	—	0	1/16"	1/8"	1/16"	0	—	1/16"	1/16"	1/8"	1/16"	—
Deflection due to remaining dead load, each girder	—	7/16"	7/16"	1/4"	3/16"	—	1/16"	3/16"	1/2"	3/16"	1/16"	—	3/16"	1/4"	7/16"	7/16"	—
Vertical Curve Convexity	—	-1/4"	-3/8"	-1/4"	-1/4"	—	-1/4"	-7/16"	-9/16"	-7/16"	-1/4"	—	-1/4"	-1/4"	-3/8"	-1/4"	—
Required Camber	—	0	0	0	0	—	0	0	0	0	0	—	0	0	0	0	—

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STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

FRAMING PLAN & GIRDER DETAILS

BRIDGE NO. LAK-2-1652 L & R
RELOC. SR. 2 OVER GRAND RIVER
LAKE COUNTY
STA. 772 + 03.61
STA. 774 + 68.39

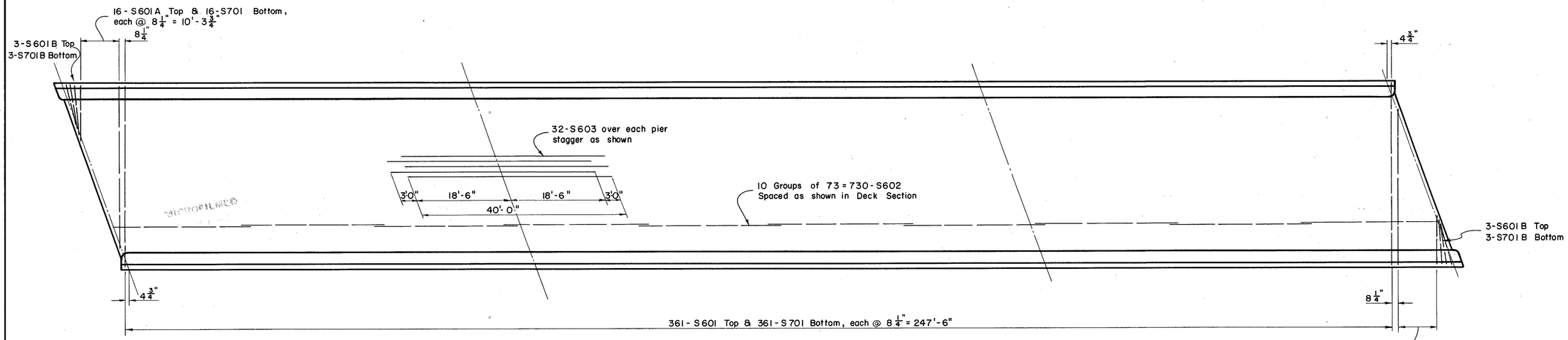
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
M.C.P. L.L.D.	M.J.F.	FWB	L.L.D. M.J.F.	G.S.W. M.C.P.		

MICROFILMED
MAR 3 0 1984

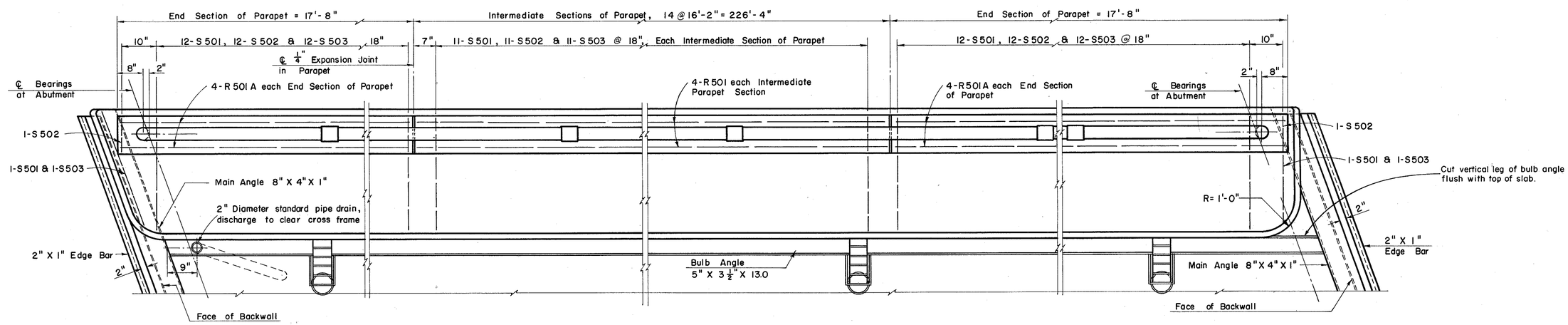
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

232/313

LAKE COUNTY
LAK-2-16.49



DECK REINFORCEMENT PLAN



PARAPET & CURB REINFORCEMENT PLAN

End Dams : Terminate 6" X 4" X 3/4" supporting angle and vertical leg of 8" X 4" X 1" main angle on line of deck fascia.

PREPARED BY
CAPITOL ENGINEERING ASSOCIATES, DILLSBURG, PA.
FOR

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

DETAILS OF SLAB & PARAPET

BRIDGE NO. LAK-2-1652 L & R
RELOC. S.R. 2 OVER GRAND RIVER
LAKE COUNTY
STA. 772 + 03.61
STA. 774 + 68.39

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
	M.J.F.	FWB	L.L.D. M.J.F.	G.S.W. M.C.P.		

MICROFILMED
MAR 29 1984

NOTES : All dimensions are out to out of the bar.
Type "S" is straight bar.
Bar Size is indicated in the bar mark. The first digit where three digits are used, and the first two where four are used, indicate the bar size number. For example, A 700 is a No. 7 size bar & A 1014 is a No. 10 size.

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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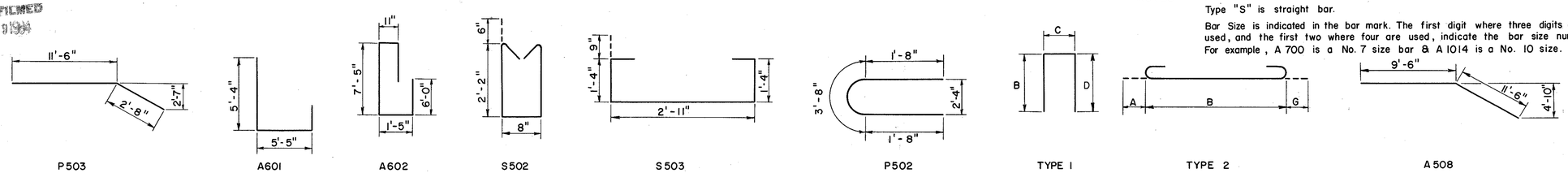
LAKE COUNTY
LAK-2-16.49



REINFORCING STEEL LIST

ABUTMENTS

MARK	LEFT REAR	RIGHT REAR	LEFT FWD.	RIGHT FWD.	TOTAL	LENGTH	WEIGHT LT. BRIDGE	WEIGHT RT. BRIDGE	TYPE	B	C	D	VARIES BY	NO. OF EACH
A801	14	14	14	14	56	26'-1"	1,950	1,950	S					
A601	54	54	54	54	216	12'-6"	2,028	2,028	–					
A602	28	28	28	28	112	18'-0"	1,514	1,514	–					
A603	10	10	10	10	40	17'-2"	516	516	1	8'-0"	1'-5"	8'-0"		
A501	54	54	54	54	216	9'-6"	1,070	1,070	1	2'-2"	5'-5"	2'-2"		
A502	54	54	54	54	216	6'-2"	695	695	1	5'-6"	9"	0		
A503	38	38	38	38	152	10'-0"	793	793	1	3'-5"	3'-5"	3'-5"		
A504	12	12	12	12	48	18'-3"	457	457	S					
A505	12	12	12	12	48	33'-9"	845	845	S					
A506	4	4	4	4	16	32'-0"	267	267	S					
A507	4	4	4	4	16	28'-9"	240	240	S					
A508	4	4	4	4	16	21'-0"	175	175	–					
A509	22	22	22	22	88	9'-9"	447	447	S					
A510	28	28	28	28	112	5'-5" to 9'-9 1/4"	444	444	S				8 3/4"	16
A511	44	44	44	44	176	6'-1"	558	558	1	2'-8"	1'-0"	2'-8"		

SUPERSTRUCTURE

MARK	LEFT BRIDGE	RIGHT BRIDGE	TOTAL	LENGTH	WEIGHT LT. BRIDGE	WEIGHT RT. BRIDGE	TYPE	B	C	D	VARIES BY	NO. OF EACH
S701	361	361	722	36'-2"	26,689	26,689	S					
S701A	32	32	64	34'-10" to 7'-6"	1,385	1,385	S				1'-10"	4
S701B	6	6	12	5'-6"	67	67	S					
S601	361	361	722	36'-2"	19,612	19,612	S					
S601A	32	32	64	34'-10" to 7'-6"	1,018	1,018	S				1'-10"	4
S601B	6	6	12	5'-6"	49	49	S					
S602	730	730	1,460	28'-0"	30,701	30,701	S					
S603	64	64	128	40'-0"	3,845	3,845	S					
S501	360	360	720	4'-2"	1,566	1,566	1	9"	2'-11"	9"		
S502	360	360	720	5'-9"	2,160	2,160	–					
S503	360	360	720	6'-10"	2,563	2,563	–					

PIERS

MARK	LEFT REAR	RIGHT REAR	LEFT FWD.	RIGHT FWD.	3	4	5	6	TOTAL	LENGTH	WEIGHT LT. BRIDGE	WEIGHT RT. BRIDGE	TYPE	A	B	C	D	G
P1101	6	6	6	6					24	38'-10"	2,475	2,475	2	1'-7"	35'-8"			1'-7"
P1102	6	6	6	6					24	35'-8"	2,274	2,274	S					
P 801	25	25	25	25					100	16'-6"	2,203	2,203	S					
P 802	28	28	28	28					112	5'-6"	822	822	1		4'-9"	1'-0"	0	
P 601	10	10	10	10					40	8'-6"	255	255	S					
P 602	12	12	12	12					48	14'-6"	523	523	S					
P 603	12	12	12	12					48	7'-8"	276	276	1		2'-8"	2'-8"	2'-8"	
P 604	28	28	28	28					112	9'-4"	785	785	1		3'-6"	2'-8"	3'-6"	
P 605	12	12	12	12					48	10'-4"	372	372	1		4'-0"	2'-8"	4'-0"	
P 501	12	12	12	12					48	12'-0"	300	300	S					
P 502	12	12	12	12					48	7'-0"	175	175	–					
P 503	4	4	4	4					16	14'-2"	118	118	–					
P 504	10	10	10	10					40	6'-0"	125	125	S					
P 505	2	2	2	2					8	20'-3"	84	84	S					
P 506	4	4	4	4					16	17'-0"	142	142	S					
P 507	4	4	4	4					16	18'-8"	156	156	S					

ESTIMATED QUANTITIES

ITEM	TOTAL	UNIT	DESCRIPTION	LEFT BRIDGE SUPER	LEFT BRIDGE ABUTS.	LEFT BRIDGE PIERS	LEFT BRIDGE GEN'L	RIGHT BRIDGE SUPER	RIGHT BRIDGE ABUTS.	RIGHT BRIDGE PIERS	RIGHT BRIDGE GEN'L	URBAN	RURAL
E- 2	Lump	Sum	Cofferdams, Cribs and Sheeting				Lump				Lump	Lump/2	Lump/2
E- 2	450	Cu. Yds.	Unclassified Excavation		186	39			186	39		225	225
E- 2	72	Cu. Yds.	Shale Excavation			36				36		36	36
S- 1	646	Cu. Yds.	Class C Concrete, Superstructure	323				323				323	323
S- 1	153	Cu. Yds.	Class C Concrete, Piers above Footings			76				77		76	77
S- 1	209	Cu. Yds.	Class E Concrete, Abut. above Footings		104				105			104	105
S- 1	198	Cu. Yds.	Class E Concrete, Footings		71	28			71	28		99	99
S- 4	225,478	Lbs.	Reinforcing Steel	89,655	11,999	11,085		89,655	11,999	11,085		112,739	112,739
S- 7	554,940	Lbs.	Structural Steel	277,470				277,470				277,470	277,470
S- 8	554,940	Lbs.	Field Painting of Structural Steel	277,470				277,470				277,470	277,470
S- 14	1,046.66	Lin. Ft.	Railing (Aluminum Rail. & Type A Posts w/Conc. Parapets)	523.33				523.33				523.33	523.33
S- 16	Lump	Sum	First Test Pile *		Lump							Lump/2	Lump/2
S- 18	918	Lin. Ft.	10 BP 42 Piles		459				459			374	544
S- 29	114	Cu. Yds.	Porous Backfill		57				57			57	57
S- 29	28	Each	Scuppers, Including Supports	14				14				14	14
S-101	646	Each	Water-reducing, Set-retarding Admixtures	323				323				323	323
I- 10	874	Cu. Yds.	Dumped Rock Channel Protection, 2'-0" Thick				437				437	403	471
E- 3	12,048	Cu. Yds.	Channel Excavation									6764	5884

* Payment will be made for only one first test pile. It may be driven for either the Left or Right Bridge.

RAILING

MARK	LEFT BRIDGE	RIGHT BRIDGE	TOTAL	LENGTH	WEIGHT	TYPE	A	B
R501	112	112	224	15'-10"	*	S		
R501A	16	16	32	17'-4"	*	S		

* Included with Item S-14 for Payment.

REPLACEMENT BARS

MARK	NO.	LENGTH	WEIGHT	TYPE
RE 500	2	5'-7"		S
RE 600	6	5'-11"		S
RE 700	3	6'-3"		S
RE 800	1	6'-6"		S
RE 1100	1	7'-7"		S

PREPARED BY
CAPITOL ENGINEERING ASSOCIATES, DILLSBURG, PA.
FOR
STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

ESTIMATED QUANTITIES & REINFORCING STEEL LIST

BRIDGE NO. LAK-2-1652 L & R
RELOC. SR. 2 OVER GRAND RIVER
LAKE COUNTY
STA. 772 + 03.61
STA. 774 + 68.39

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
M.J.F. L.L.D.	M.J.F.	FWB	L.L.D. M.J.F.	G.S.W. M.C.P.		

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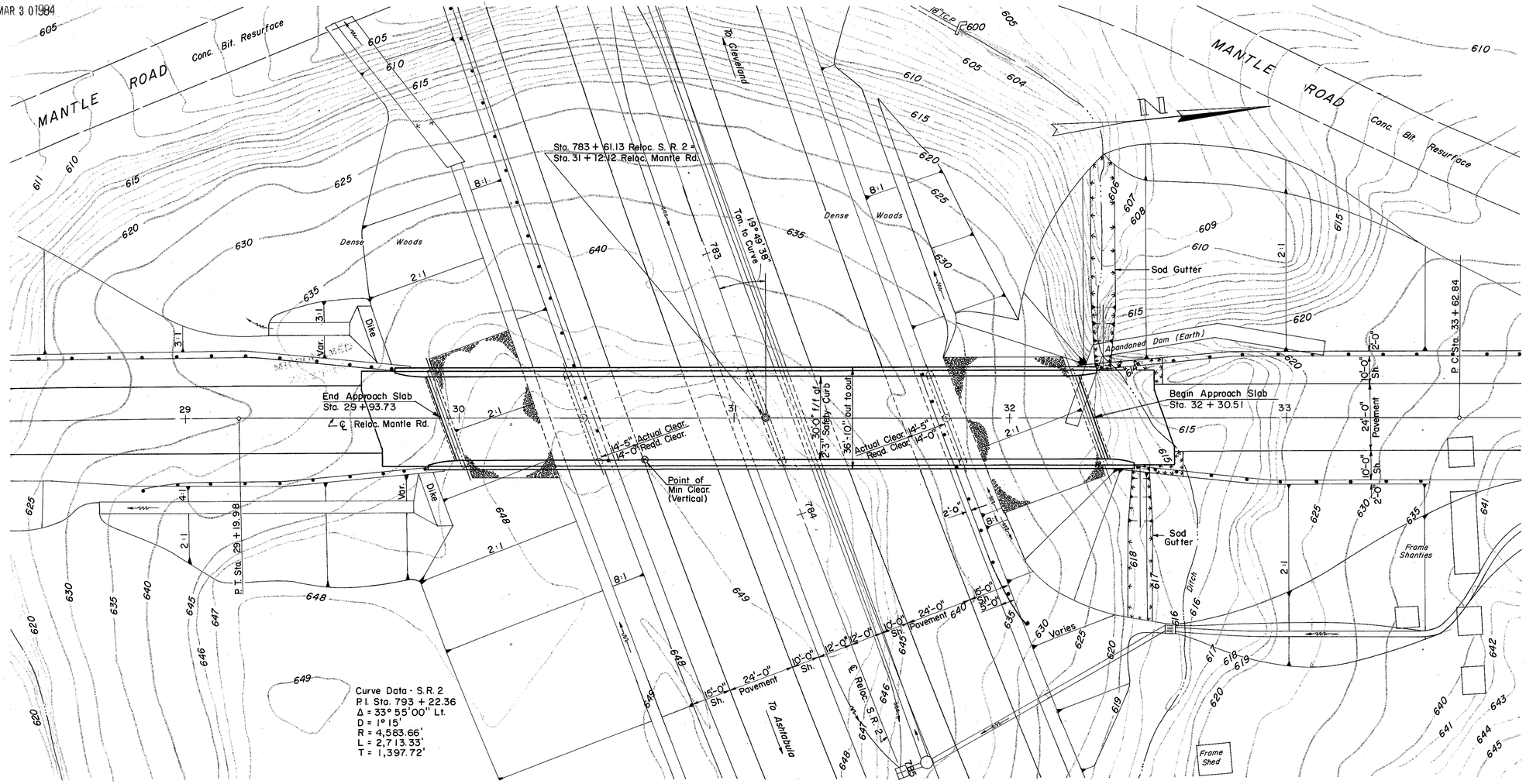
MAR 3 01984

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

234/313

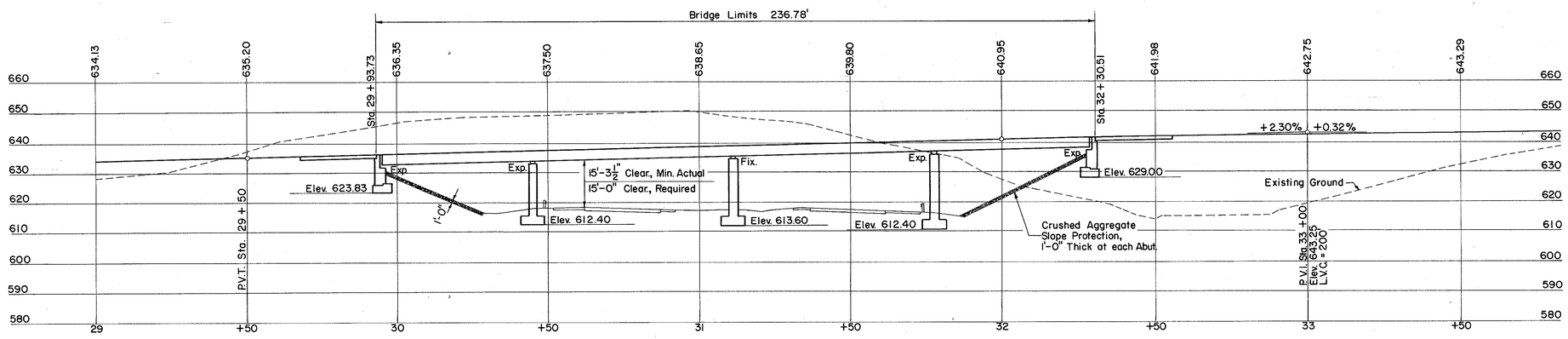
LAKE COUNTY
LAK-2-16.49

Located 0.2 mile East of East Corporation Line of Painesville.



B.M. # 80 - Lag bolt in 8" Wild Cherry
126' Rt. of Sta. 783 + 84
Elev. 648.524

FOUNDATION SOUNDINGS: Foundation design and foundation quantities are based on a study of rod soundings and soil-sampling soundings made at the site. This sounding information may be inspected in the office of the Bureau of Bridges in Columbus or in the Division Office, but the State does not guarantee the accuracy thereof.



PROPOSED STRUCTURE

TYPE: 4 Span continuous Steel Beam with Reinforced Concrete Deck & Substructure.

SPANS: 50'-0", 66'-0", 66'-0", 50'-0" ℅ Brgs.

ROADWAY: 30'-0" f/f 2'-3" Safety Curbs.

LOAD FREQUENCY: CF 400 (57)

WEARING SURFACE: 1" monolithic concrete

APPROACH SLABS: Special (25'-0" Long)

ALIGNMENT: Mantle Rd. – Tangent
S.R. 2 – 1° 15' Curve to Left.

SKEW: 19°49'38" R.F.

A.D.T. Mantle Rd. 4,460 (1980)

A.D.T. Reloc. S.R. 2 17,160 (1980)

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FOR

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

SITE PLAN

BRIDGE NO. LAK-2-1673
RELOC. S.R. 2 UNDER RELOC. MANTLE ROAD
LAKE COUNTY
STA. 783 + 61.13

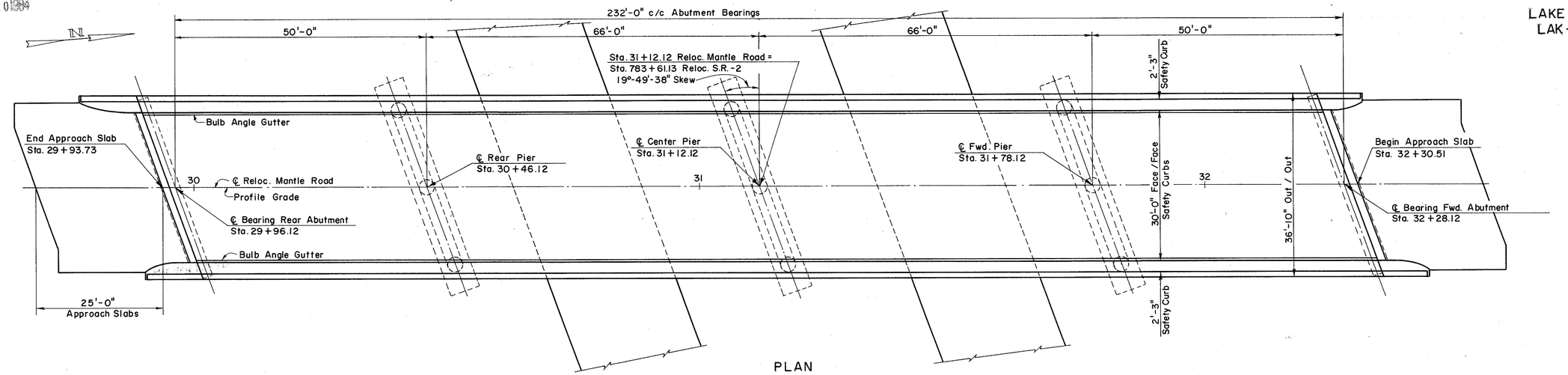
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED DATE	REVISED
	R. McD.	F.W.B.	L.L.D. J.H.T.	G.S.W.	

MICROFILMED
MAR 3 0 1984

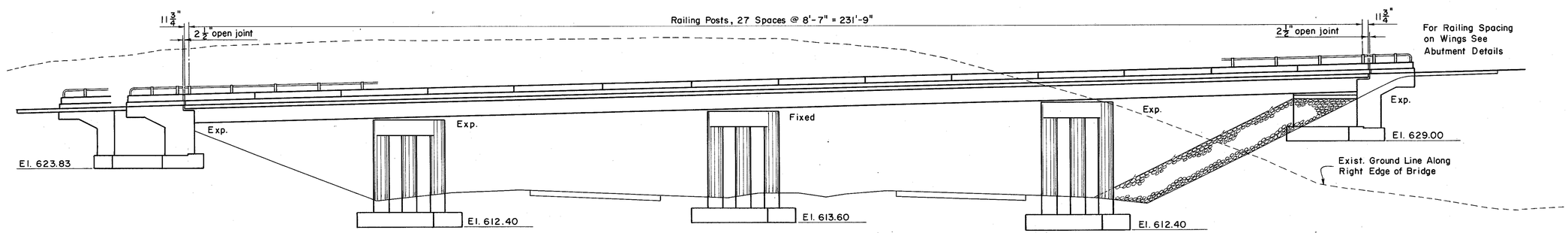
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

235/313

LAKE COUNTY
LAK-2-16.49



PLAN



ELEVATION

ESTIMATED QUANTITIES

ITEM	TOTAL	UNIT	DESCRIPTION	SUPER	ABUTS.	PIERS	GEN'L		
E-2	444	Cu. Yds.	Unclassified Excavation		248	196			
S-1	271	Cu. Yds.	Class C Concrete Superstructure	271					
S-1	80	Cu. Yds.	Class C Concrete, Pier caps & columns			80			
S-1	107	Cu. Yds.	Class E Concrete, Abut. above Footings		107				
S-1	120	Cu. Yds.	Class E Concrete, Footings		46	74			
111,830 S-4	111,988	Lbs.	Reinforcing Steel 69,920	70,078	11,435	30,475			
S-7	202,400	Lbs.	Structural Steel	202,400					
S-8	202,400	Lbs.	Field Painting of Structural Steel	202,400					
S-14	516.00	Lin. Ft.	Railing (Aluminum Railing & Type A Posts w/Conc. Parapets)	516.00					
S-29	22	Cu. Yds.	Porous Backfill		22				
S-29	12	Each	Scuppers, Including Supports	12					
S-101	271	Each	Water-reducing, Set-retarding Admixtures	271					
I-10	439	Sq. Yds.	Crushed Aggregate Slope Protection				439		

GENERAL NOTES

REFERENCE shall be made to Standard Drawings CSB-2-56, sheets No. 2 and No. 3 of 6 revised 2-2-59, FSB-1-62 revised 1-15-63, AR-1-57 revised 4-2-62, and to Supplemental Specifications S-101 dated 7-12-62 and S-307 dated 8-23-60.

DESIGN SPECIFICATIONS: This structure conforms to the requirements of "Design Specifications for Highway Structures" of the State of Ohio Department of Highways, dated 9-1-57, together with current revisions thereof.

EXCAVATION QUANTITY includes the removal of fill material required for construction of the forward abutment.

FOUNDATION BEARING PRESSURE: Abutment footings are designed for a maximum bearing pressure of 1.8 tons per square foot. Piers are designed for a maximum bearing pressure of 2.4 tons per square foot.

WELDING of structural steel shall be Class "A" except as otherwise shown. Welds shown as field welds may, at the option of the Contractor, be made in the shop.

CONCRETE DECK PLACING: In order to facilitate water curing of the deck slab, the placing of concrete shall progress upgrade. The slab may be placed in sections, between transverse construction joints which are parallel to transverse reinforcing steel and are located near the center of any span.

SURFACE FINISH OF CONCRETE: The requirements of Section S-1.22, Rubbed Finish, shall apply to:
(a) The entire superstructure except the top and bottom surfaces of safety curbs and roadways.
(b) The entire surface of piers and abutments except bridge seats, back walls and face of abutments between outside beams.

MACHINE FINISH: The concrete bridge deck shall be finished by the use of a finishing machine.

CONTINUOUS BEAM SHOP ASSEMBLY: Reference paragraph 4, Sec. S-7.12 of the Construction and Material Specifications for the purpose of checking the fit-up of weld joint preparation, only two adjacent beams need be shop assembled at a time in their correct, unloaded positions. All beams shall be assembled and match marked.

ALL STRUCTURAL STEEL: ASTM A 36

DESIGN LOADING: CF 400 (57)

BASIC UNIT WORKING STRESSES:

Concrete, Class C:	1,333 p.s.i.
Concrete, Class E:	1,133 p.s.i.
Structural Steel, ASTM A 36:	20,000 p.s.i.
Reinforcing Steel, ASTM A 15, A 16 & A 160 Deformed, Intermediate or Hard Grade:	20,000 p.s.i.
Spiral Reinforcement, Plain, Structural Grade:	18,000 p.s.i.

PREPARED BY
CAPITOL ENGINEERING ASSOCIATES, DILLSBURG, PA.
FOR

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

GENERAL PLAN

BRIDGE NO. LAK-2-1673
RELOC. S.R. 2 UNDER RELOC. MANTLE ROAD
LAKE COUNTY
STA. 783 + 61.13

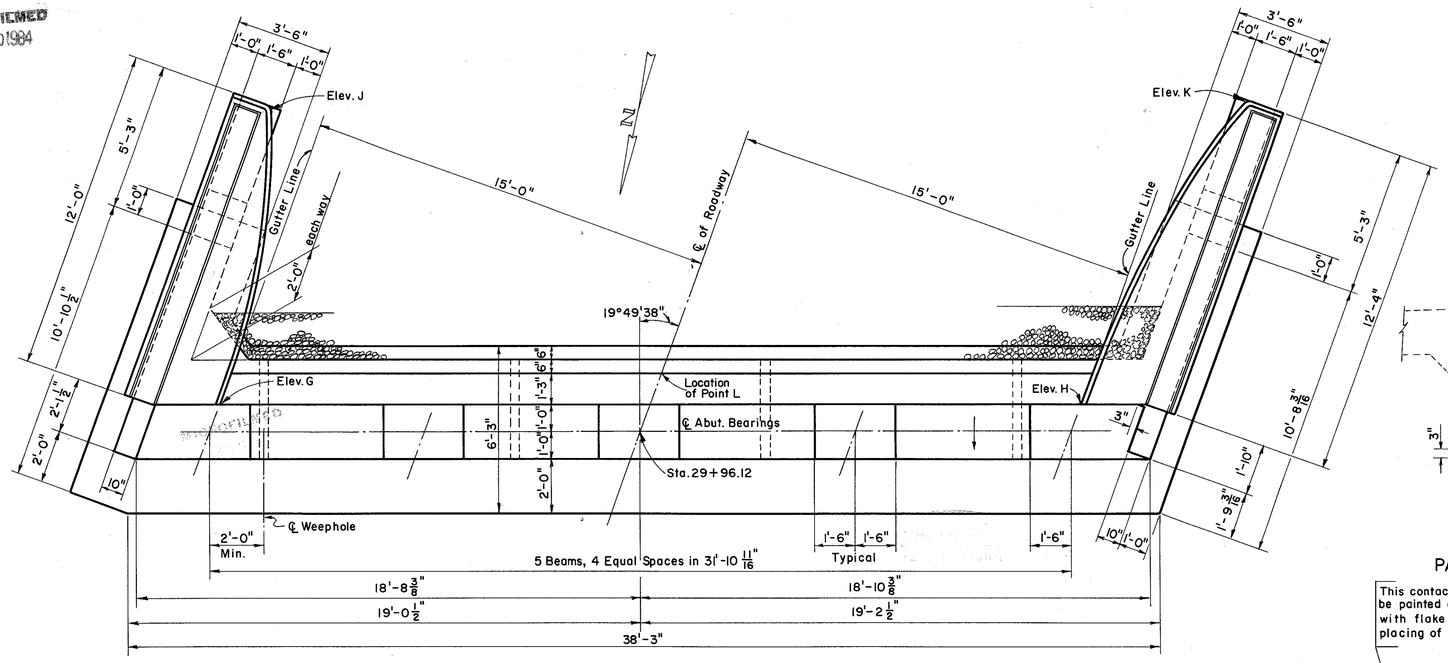
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
	M.J.F.	FWB	L.L.D. M.J.F.	G.S.W. M.C.P.		11-20-64

MICROFILMED
MAR 3 0 1984

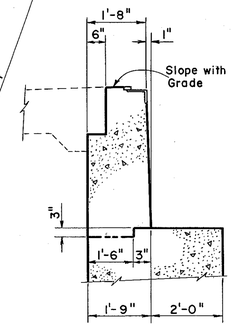
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

236
313

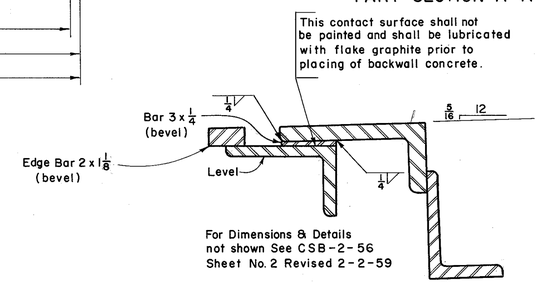
LAKE COUNTY
LAK-2-16.49

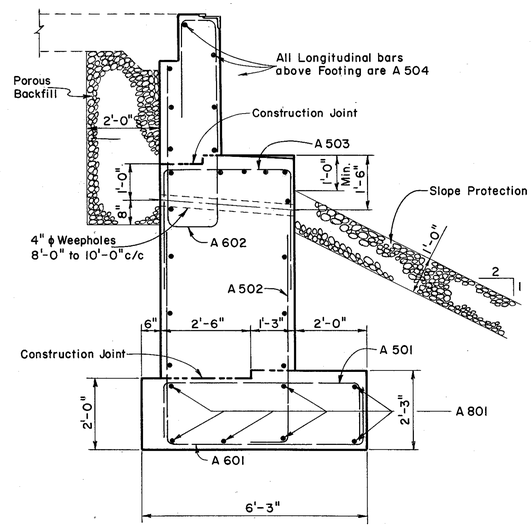


PLAN

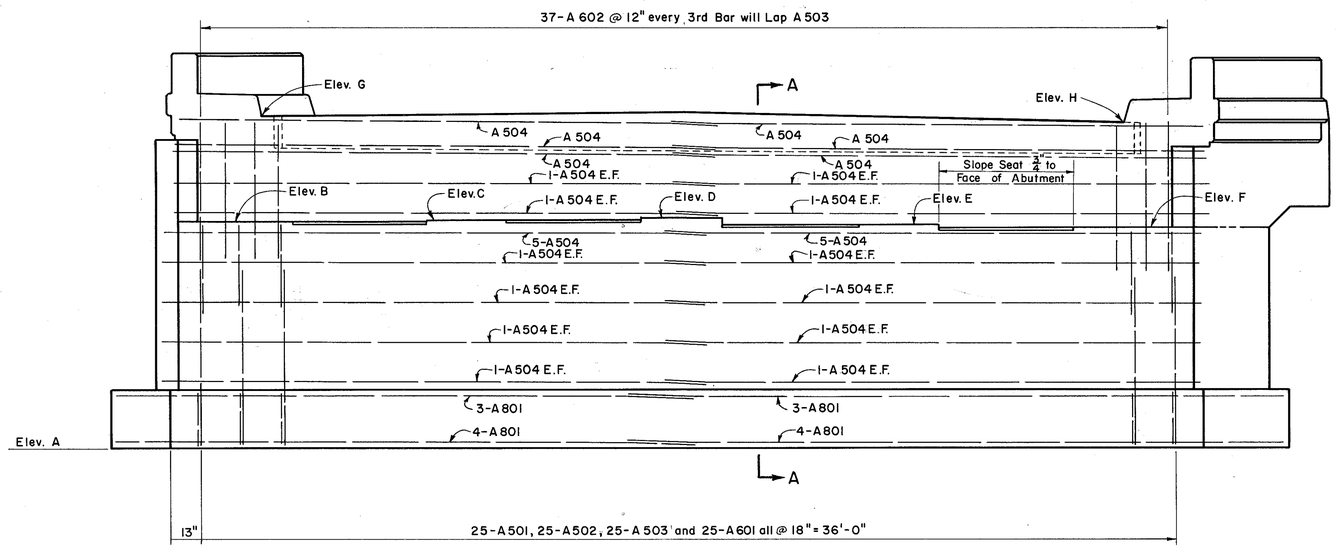


PART SECTION A-A





SECTION A-A



ELEVATION

Point	Elevation
A	623.83
B	632.33
C	632.38
D	632.44
E	632.26
F	632.08
G	636.13
H	635.88
J	635.84
K	635.55
L	636.21

NOTES:

All reinforcing steel shall have a minimum of 3" cover in the bottom of footing, 2" elsewhere.

Bridge Seat Reinforcing: Special care shall be taken in placing reinforcing steel in the vicinity of the bridge seats so as to avoid interference with the drilling of anchor bar holes.

E.F. = each face

The railing tube on the wing walls shall be continuous for a minimum of two panel lengths.

For additional notes see General Plan

Max. foundation pressure 1.8 tons per Sq. Ft.

PREPARED BY
CAPITOL ENGINEERING ASSOCIATES, DILLSBURG, PA.
FOR

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

REAR ABUTMENT

BRIDGE NO. LAK-2-1673
RELOC. S. R. 2 UNDER RELOC. MANTLE ROAD
LAKE COUNTY
STA. 783+61.13

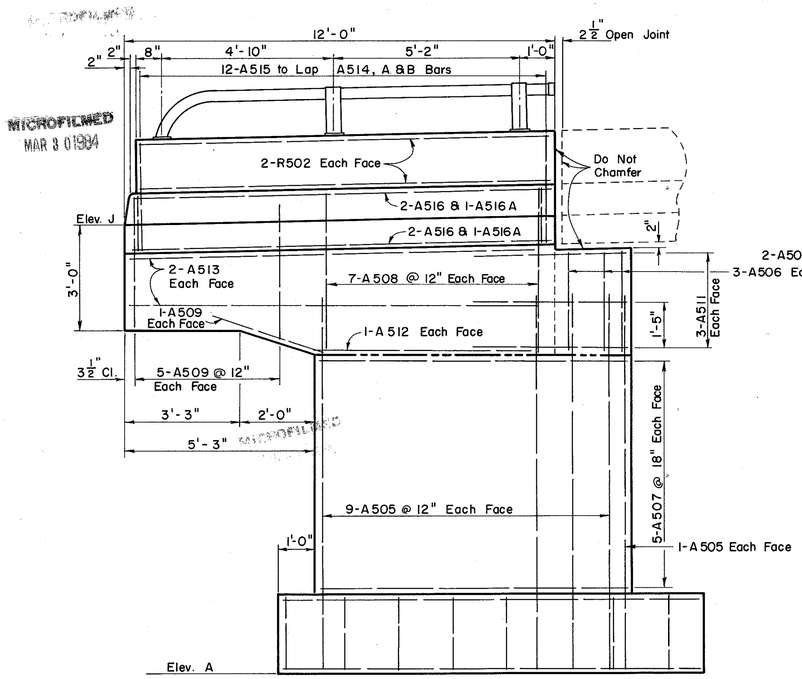
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED DATE	REVISED
M.C.P. L.L.D.	M.J.F.	FWB	L.L.D. M.J.F.	G.S.W. M.C.P.	

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

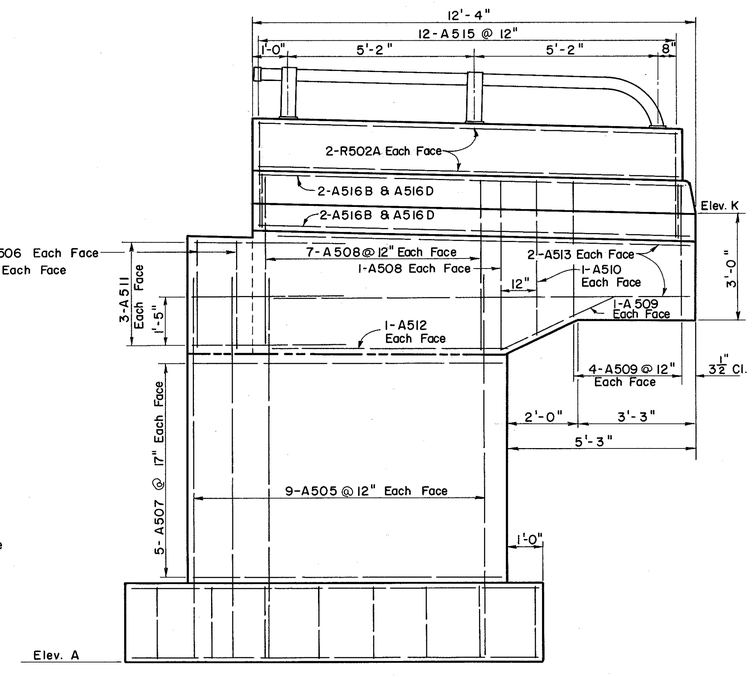
237
313

LAKE COUNTY
LAK-2-16.49

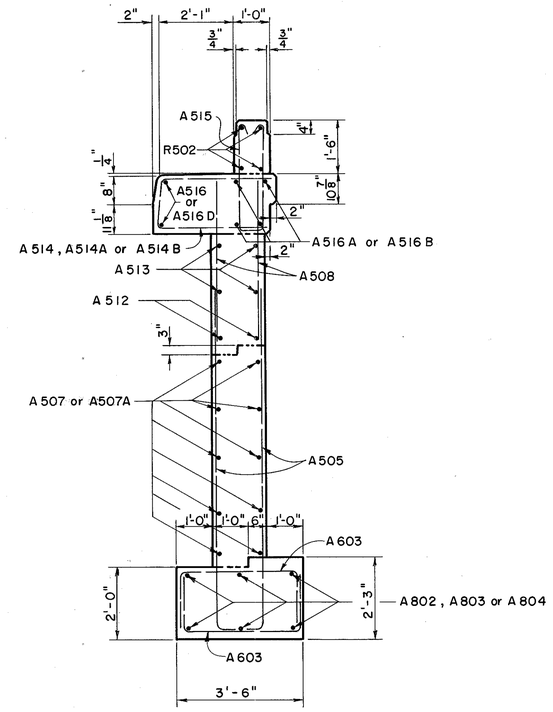
MICROFILMED
MAR 3 0 1984



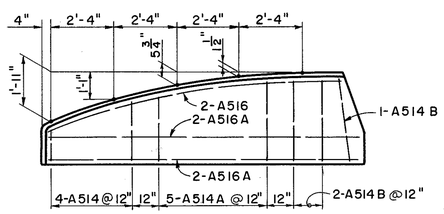
ELEVATION
RIGHT REAR WING



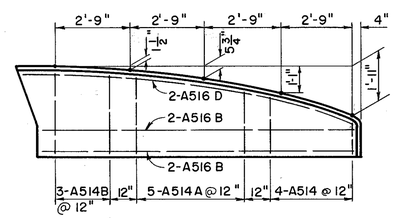
ELEVATION
LEFT REAR WING



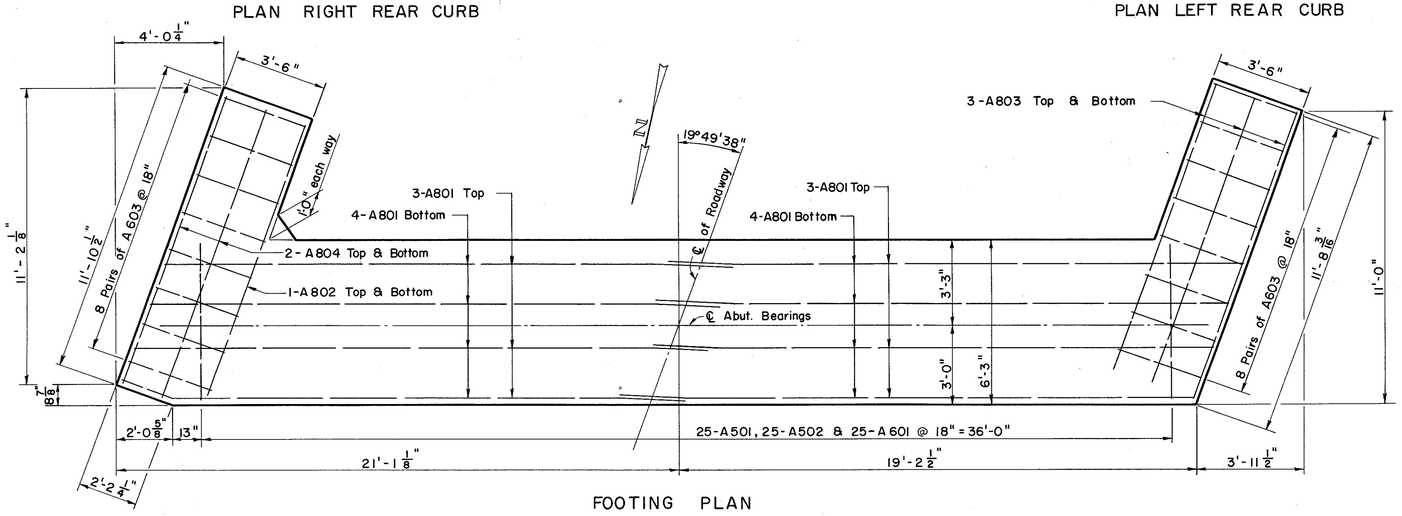
TYPICAL WING WALL SECTION



PLAN RIGHT REAR CURB



PLAN LEFT REAR CURB



FOOTING PLAN

PREPARED BY
CAPITOL ENGINEERING ASSOCIATES, DILLSBURG, PA.
FOR

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

REAR ABUTMENT DETAILS

BRIDGE NO. LAK-2-1673
RELOC. S.R. 2 UNDER RELOC. MANTLE ROAD
LAKE COUNTY
STA. 783+61.13

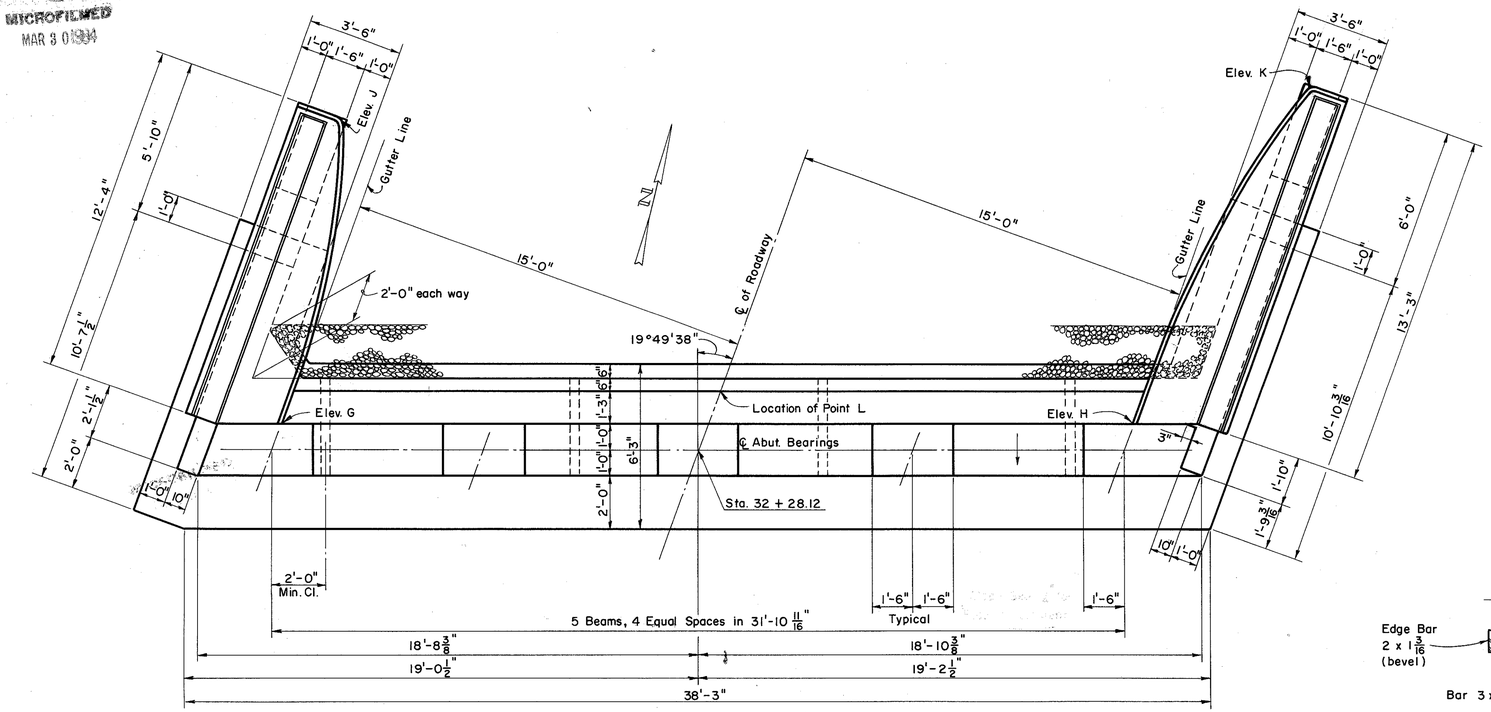
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
M.J.F. L.L.D.	M.J.F.	FWB	L.L.D. M.J.F.	G.S.W. M.C.P.		

MICROFILMED
MAR 3 0 1984

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

238/313

LAKE COUNTY
LAK - 2 - 16.49



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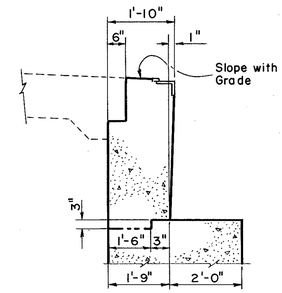
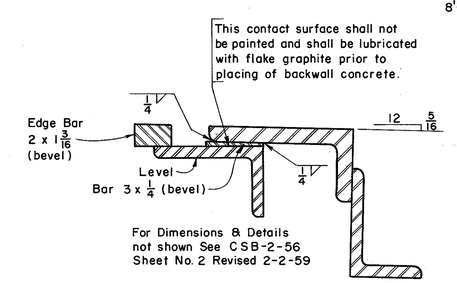
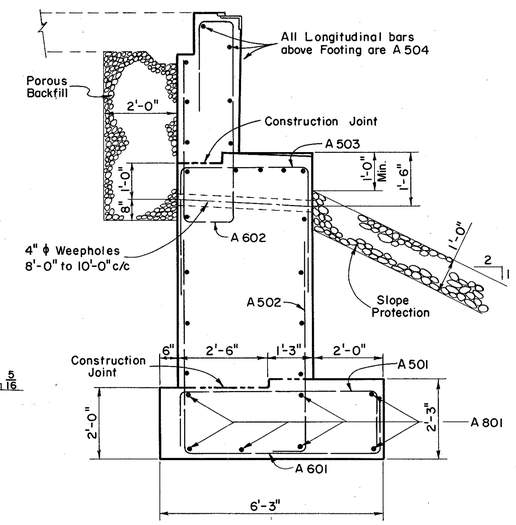
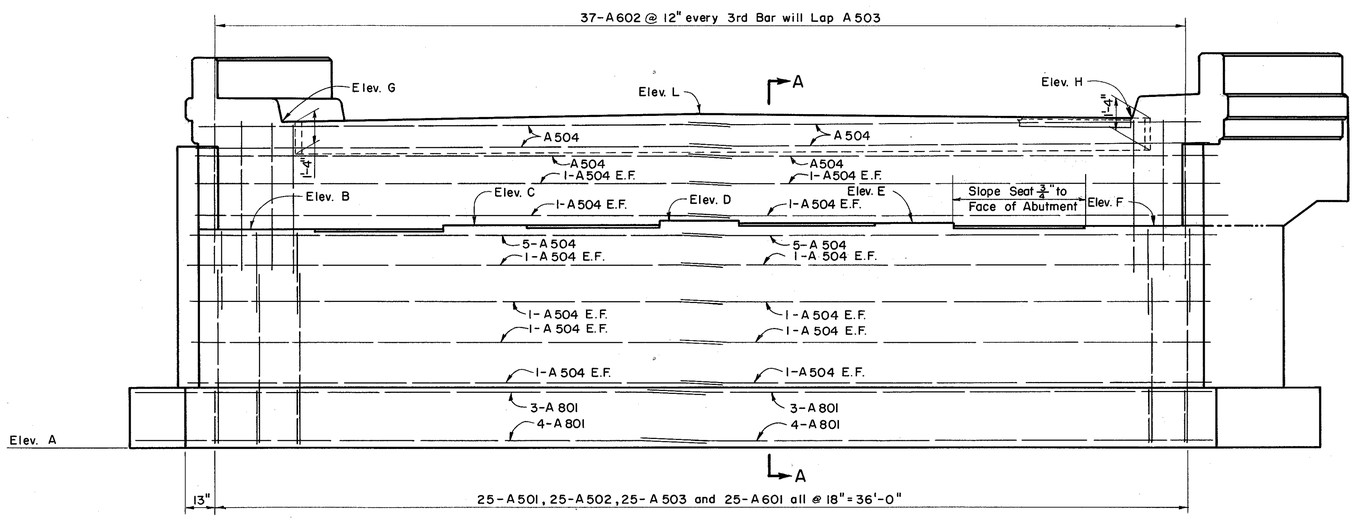


PART SECTION A-A





SECTION A-A



ELEVATION

Point	Elevation
A	629.00
B	637.39
C	637.56
D	637.73
E	637.67
F	637.61
G	641.24
H	641.46
J	641.42
K	641.67
L	641.60

NOTES:

PROCEDURE: The embankment shall be placed and compacted up to finished spill thru slope and to the level of subgrade for a distance of 200' back of the forward abutment after which a delay of 90 days shall occur before excavation for the forward abutment is made.

E.F. = each face

For additional notes see Rear Abutment.

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FOR

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

FORWARD ABUTMENT

BRIDGE NO. LAK-2-1673
RELOC. S.R. 2 UNDER RELOC. MANTLE ROAD
LAKE COUNTY
STA. 783 + 61.13

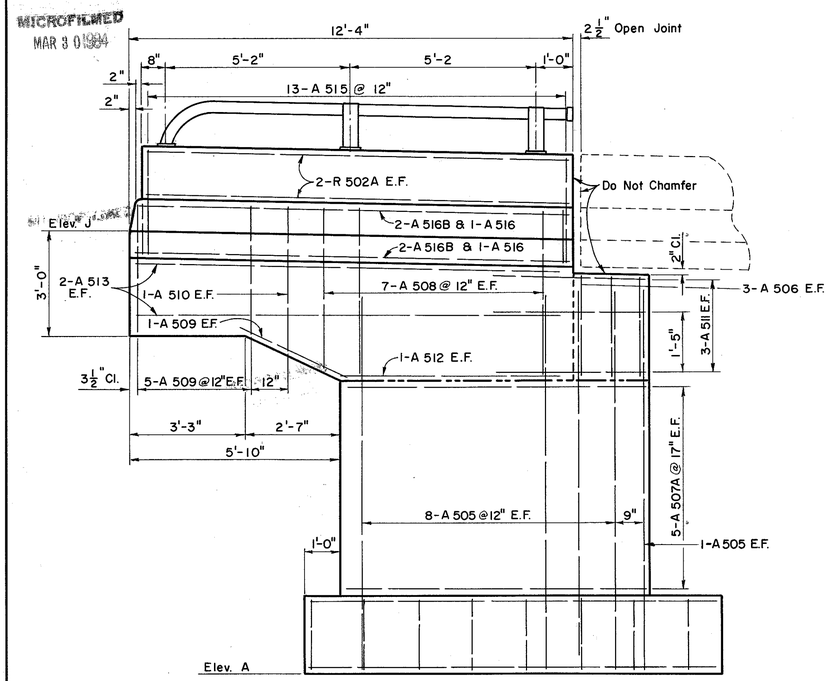
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED DATE	REVISED
M.C.P. L.L.D.	M.J.F.	FWB	L.L.D. M.J.F.	G.S.W. M.C.P.	

MICROFILMED
MAR 3 0 1984

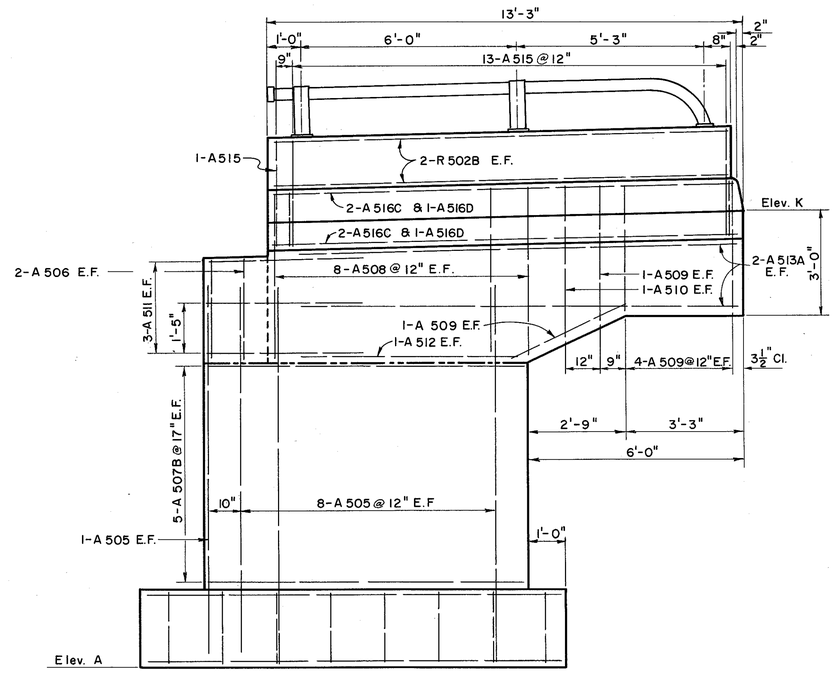
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

239
313

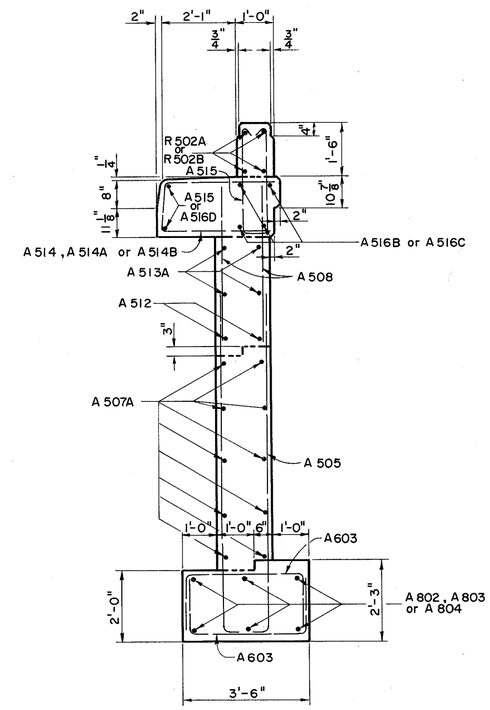
LAKE COUNTY
LAK-2-16.49



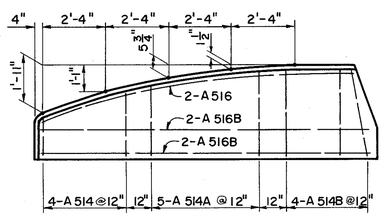
ELEVATION
LEFT FORWARD WING



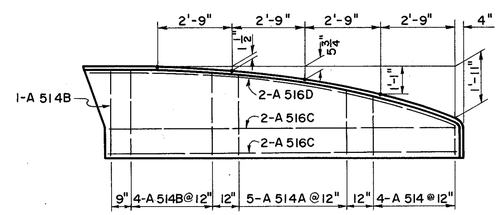
ELEVATION
RIGHT FORWARD WING



TYPICAL WING WALL SECTION



PLAN
LEFT FORWARD CURB



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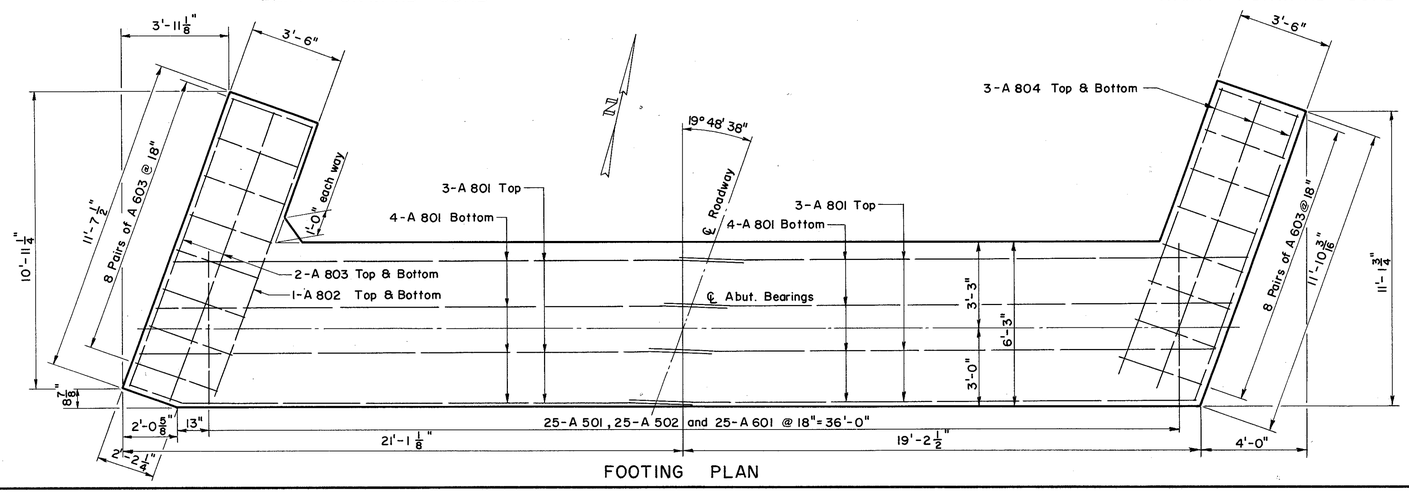

FOOTING PLAN

E.F. = each face

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FOR

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

FORWARD ABUTMENT DETAILS

BRIDGE NO. LAK-2-1673
RELOC. S.R. 2 UNDER RELOC. MANTLE ROAD
LAKE COUNTY
STA. 783 + 61.13

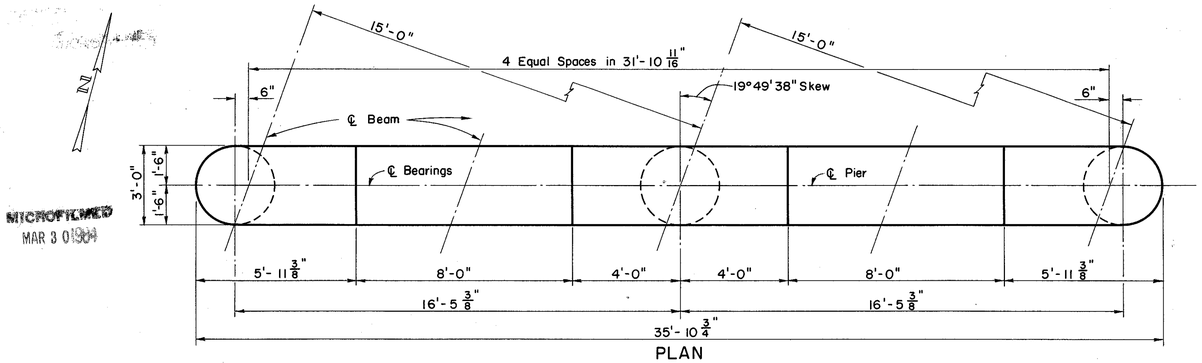
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
M.J.F. L.L.D.	M.J.F.	FWB	L.L.D. M.J.F.	G.S.W. M.C.P.		

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

240
313

LAKE COUNTY
LAK-2-16.49

MICROFILMED
MAR 30 1984



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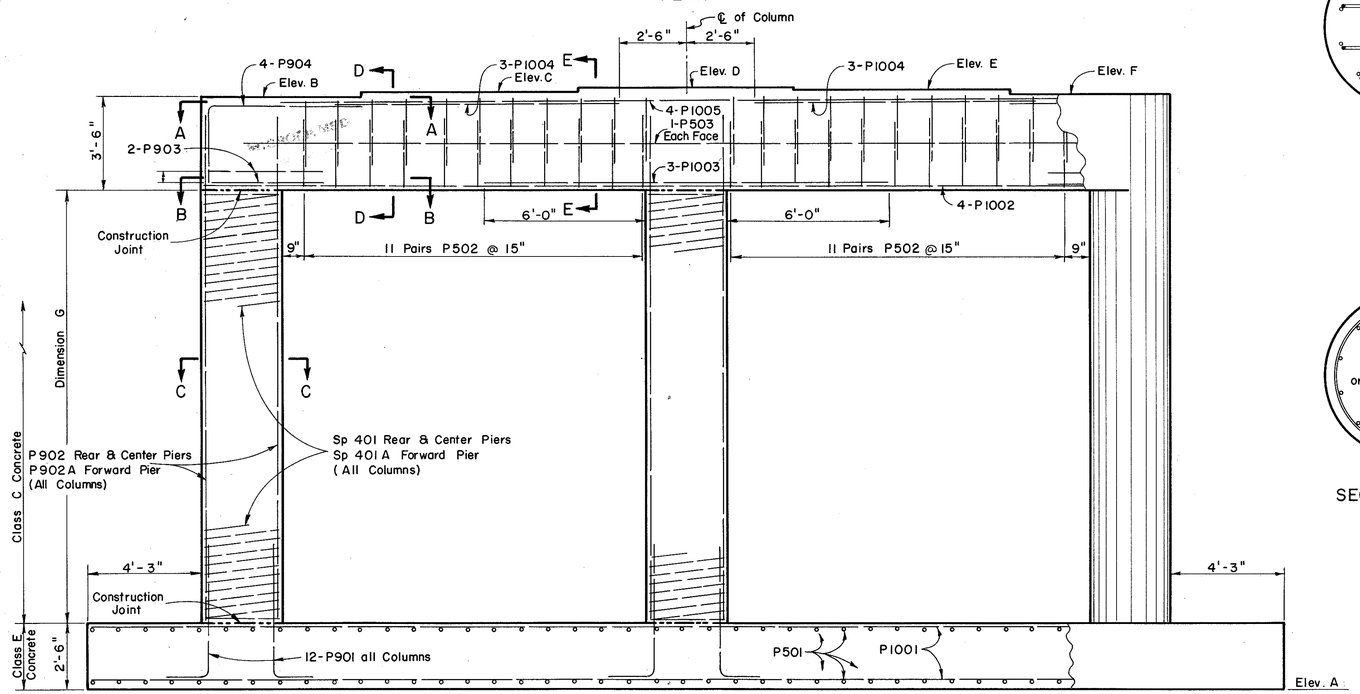

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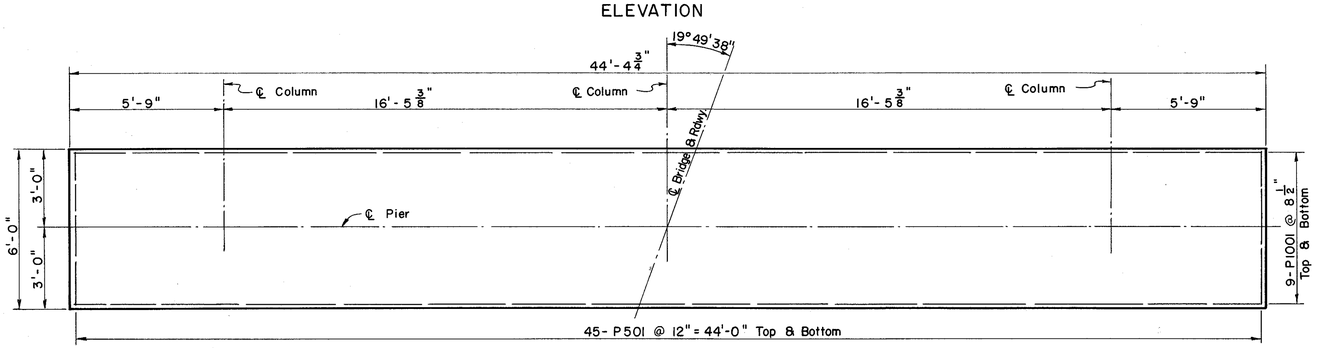
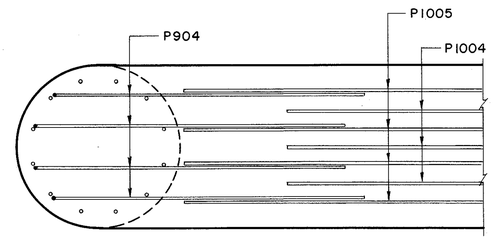
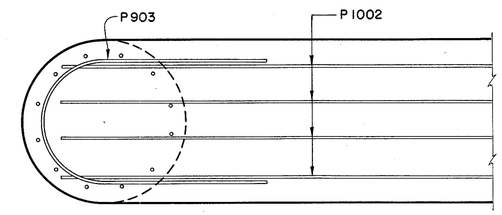


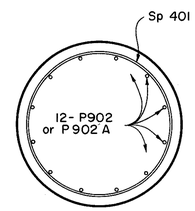
FOOTING PLAN



SECTION A-A



SECTION B-B



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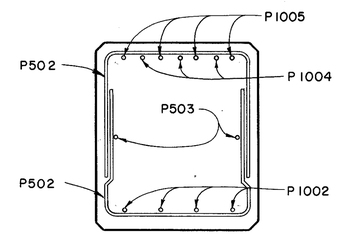

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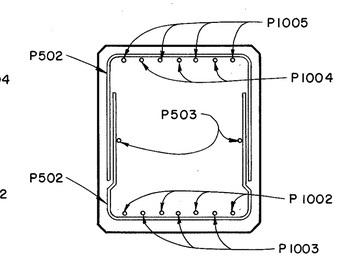

SECTION E-E

NOTES:

BRIDGE SEAT REINFORCING: Special care shall be taken in placing reinforcing steel in the vicinity of the bridge seats so as to avoid interference with the drilling of anchor bar holes.

* REINFORCING BARS are the same for all Piers except the reinforcement in the columns as noted.

MAX. FOUNDATION PRESSURE is 2.4 tons per S.F.

ALL REINFORCING STEEL shall have a minimum cover of 2" unless otherwise shown.

PIER	ELEVATIONS						DIMENSION
	A	B	C	D	E	F	G
Rear Pier	612.40	633.18	633.36	633.54	633.49	633.43	14.78
Center Pier	613.60	634.39	634.57	634.75	634.70	634.64	14.79
Forward Pier	612.40	636.22	636.40	636.58	636.52	636.47	17.82

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FOR

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

PIERS

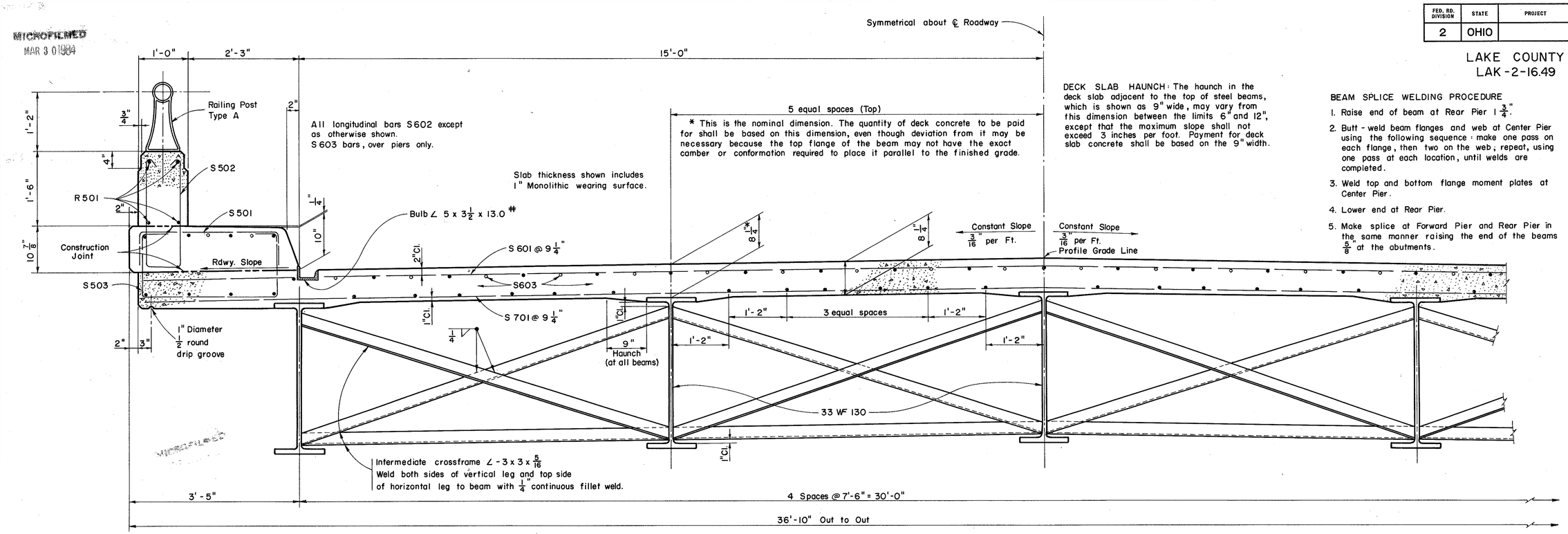
BRIDGE NO. LAK-2-1673
RELOC. S. R. 2 UNDER RELOC. MANTLE ROAD
LAKE COUNTY
STA. 783+ 61.13

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED DATE	REVISED
I.B.M. M.C.P.	M.J.F.	FWB	L.L.D. M.J.F.	G.S.W. M.C.P.	

MICROFILMED
MAR 30 1994

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

LAKE COUNTY
LAK-2-16.49



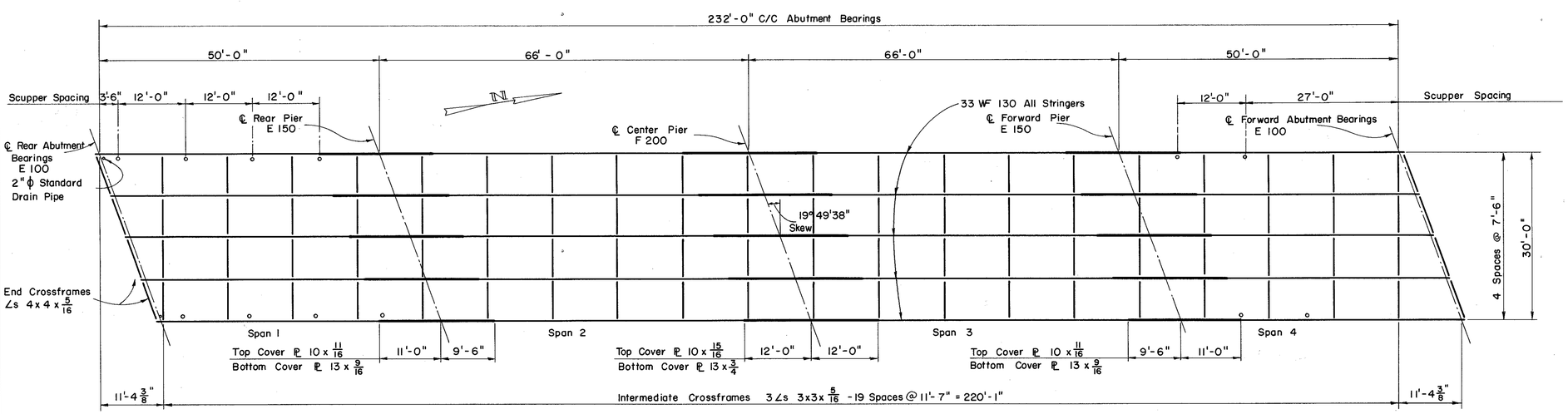
TRANSVERSE SECTION

* This is the nominal 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.

DECK SLAB HAUNCH: The haunch in the deck slab adjacent to the top of steel beams, which is shown as 9" wide, may vary from this dimension between the limits 6" and 12", except that the maximum slope shall not exceed 3 inches per foot. Payment for deck slab concrete shall be based on the 9" width.

BEAM SPLICE WELDING PROCEDURE

1. Raise end of beam at Rear Pier 1 3/4".
2. Butt - weld beam flanges and web at Center Pier using the following sequence: make one pass on each flange, then two on the web; repeat, using one pass at each location, until welds are completed.
3. Weld top and bottom flange moment plates at Center Pier.
4. Lower end at Rear Pier.
5. Make splice at Forward Pier and Rear Pier in the same manner raising the end of the beams 5/8" at the abutments.



STEEL FRAMING PLAN

REFERENCE shall be made to Standard Drawing CSB-2-56, sheets 2 & 3 of 6, Revised 2-2-59 for details of end dams, gutters, scuppers, pipe drains, curb plates and cross frames.

REFERENCE shall be made to Standard Drawings FSB-1-62 revised 1-15-63 for details of bearings.

REFERENCE shall be made to Standard Drawing AR-1-57 revised 4-2-62 for details of aluminum railing Type "A" and concrete parapet details.

WELDING of structural steel shall be Class "A" except as otherwise shown. Welds shown as field welds may, at the option of the Contractor, be made in the shop

BEAM WEB WELDS: Butt welds in webs of beams may have convex reinforcement in accordance with Sect. S-7.22. Finishing flush by grinding is not required.

DEFLECTION AND CAMBER

LOCATION	SPAN 1	SPAN 2	SPAN 3	SPAN 4
Deflection due to weight of steel	0	0	0	0
Deflection due to remaining dead load	3/16"	1/4"	1/4"	3/16"
Convexity required for vertical curve	0	0	0	0
Sum of Deflection and Convexity	3/16"	1/4"	1/4"	3/16"
Required Camber	0	0	0	0

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FOR

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DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

SUPERSTRUCTURE DETAILS

BRIDGE NO. LAK-2-1673
RELOC. S.R. 2 UNDER RELOC. MANTLE ROAD
LAKE COUNTY
STA. 783 + 61.13

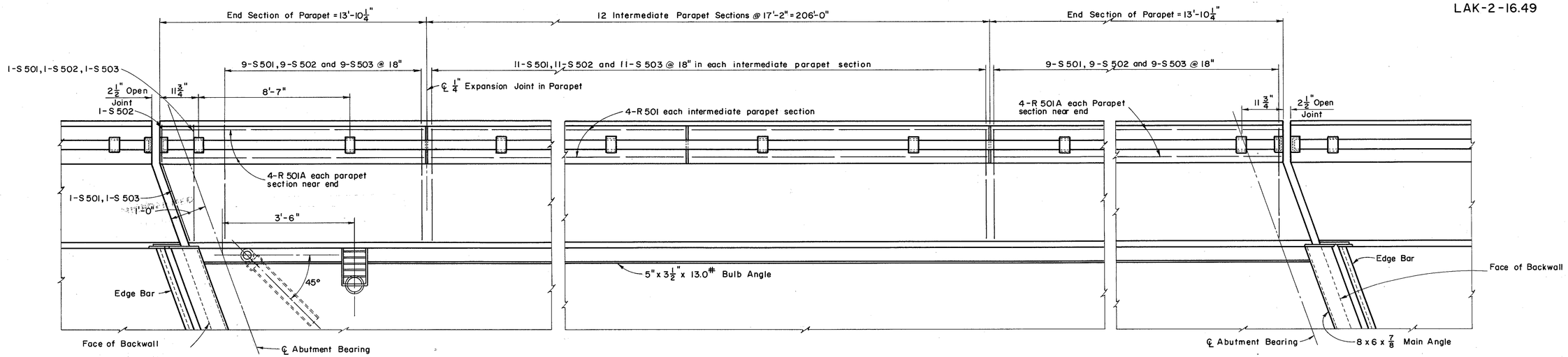
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
M.C.P. L.L.D.	M.J.F.	FWB	L.L.D. M.J.F.	G.S.W. M.C.P.		

MICROFILMED
MAR 3 0 1984

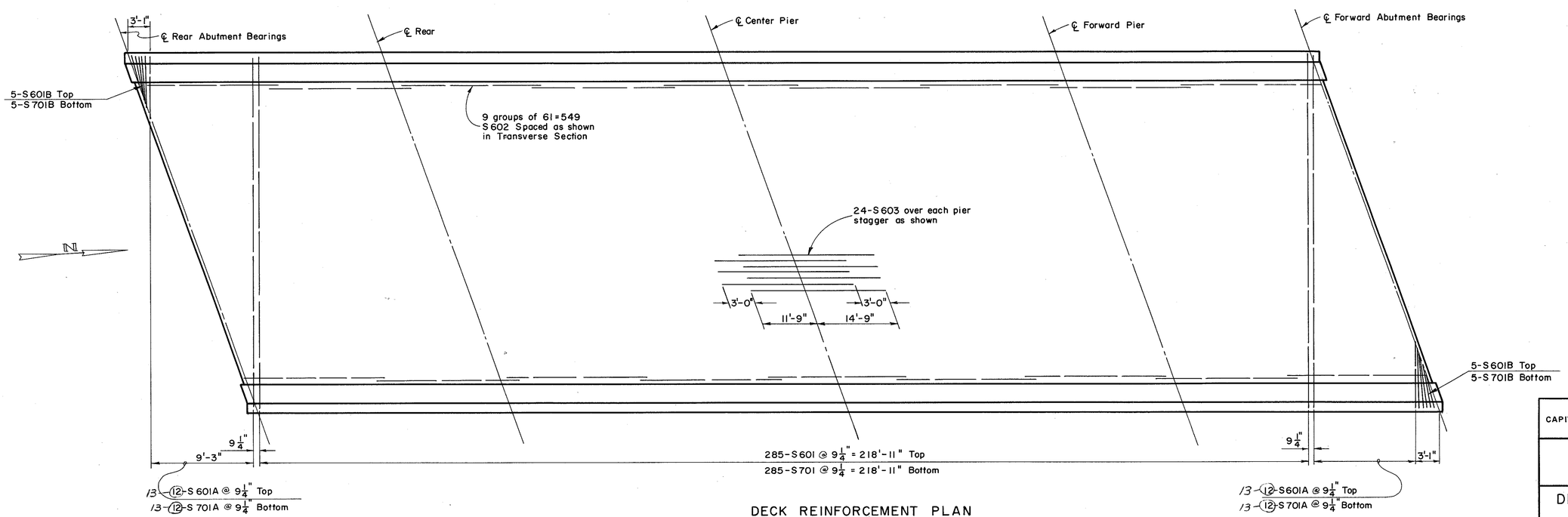
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

242
313

LAKE COUNTY
LAK-2-16.49



PARAPET REINFORCEMENT PLAN



DECK REINFORCEMENT PLAN

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CAPITOL ENGINEERING ASSOCIATES, DILLSBURG, PA.
FOR

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

DETAILS OF DECK & PARAPET

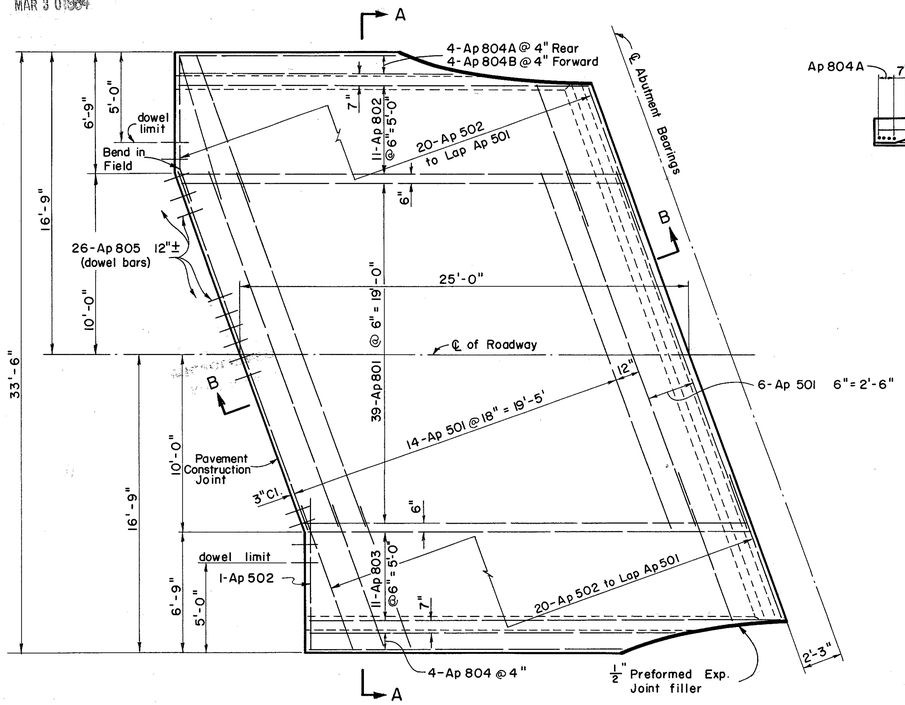
BRIDGE NO. LAK-2-1673
RELOC. S.R. 2 UNDER RELOC. MANTLE ROAD
LAKE COUNTY
STA. 783 + 61.13

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
M.J.F. L.L.D.	M.J.F.	FWB	L.L.D. M.J.F.	G.S.W. M.C.P.		11-20-64

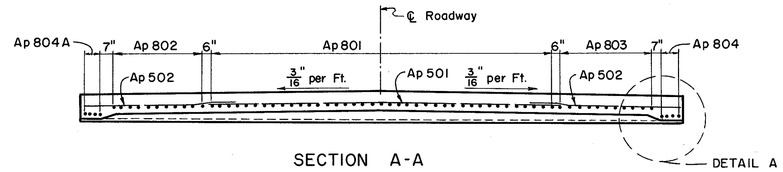
MICROFILMED
MAR 3 0 1984

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

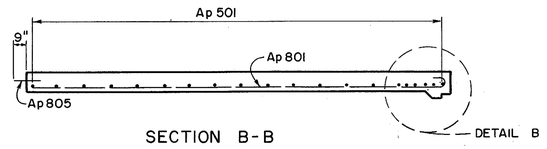
LAKE COUNTY
LAK-2-16.49



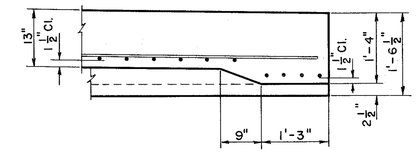
PLAN OF REAR APPROACH SLAB
(FORWARD APPROACH SLAB SYMMETRICAL ABOUT ℄ OF ABUTMENT BEARINGS)



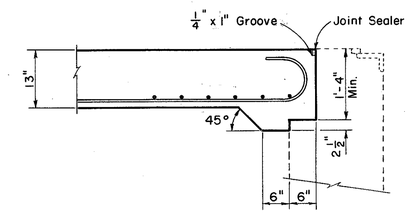
SECTION A-A



SECTION B-B



DETAIL A



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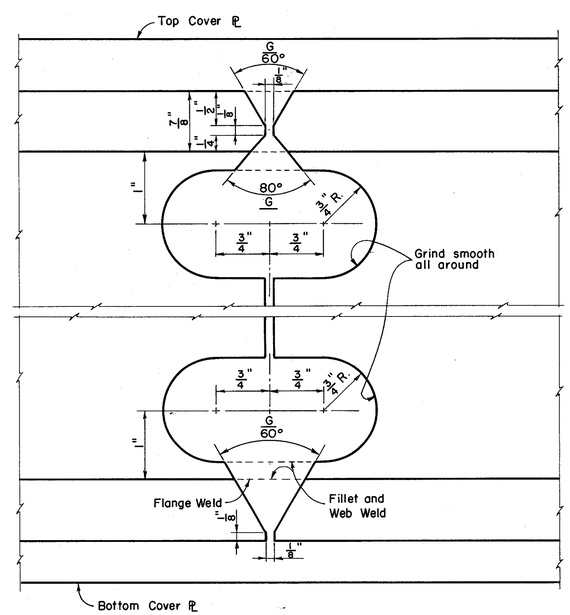


BEAM SPLICE WELDING PROCEDURE

NOTES:

CONCRETE shall be Class C or Class D.

REINFORCING STEEL and premoulded expansion joint filler are included in reinforced concrete approach slab Item I-7 and are not paid for separately.

CONSTRUCTION JOINT: Payment for the construction joints, including dowel bars, is included in the price per Sq. Yd. bid for the approach pavement.

CONTINUOUS BEAM SPLICES: If beams having depths differing by more than 1/8" are to be spliced by butt welding, the depth of the smaller-depth beam shall be increased by splitting the web longitudinally at a distance of 1-1/2" below the bottom of the top flange and for a distance sufficient to allow the flange to be bent up at a slope of not more than 3/4" per foot, after which the split in the web shall be completely welded with full depth penetration and ground flush. A 3/4" hole shall be drilled thru the web at the end of the split which is away from the splice prior to bending up the flange. The edges of the split shall be double bevelled to provide a weld bevel of 60°. The weld of the split shall be radiographed.

REINFORCING BAR LIST

MARK	REQ'D REAR	REQ'D FWD.	TOTAL	LENGTH	TYPE	A	B	G	VARIES BY	NO. OF EACH
Ap801	39	39	78	25'-9"	2	1'-1"	24'-8"	0		
Ap802	11	11	22	25'-9" to 23'-10 1/2"	2	1'-1"	24'-8" to 22'-9 1/2"	0	2 1/4"	2
Ap803	11	11	22	27'-7 1/2" to 25'-9"	2	1'-1"	26'-6 1/2" to 24'-8"	0	2 1/4"	2
Ap804	4	4	8	20'-3 1/2" to 17'-2"	S				1'-0 1/2"	2
Ap804A	4	-	4	15'-9" to 12'-3"	S				1'-2"	1
Ap804B	-	4	4	16'-8" to 13'-2"	S				1'-2"	1
Ap805	26	26	52	1'-6"	S					
Ap501	20	20	40	21'-3"	S					
Ap502	40	40	80	8'-9"	S					

Reinforcement included for payment with item I-7

PREPARED BY
CAPITOL ENGINEERING ASSOCIATES, DILLSBURG, PA.
FOR

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

APPROACH SLAB & BEAM SPLICE DETAILS

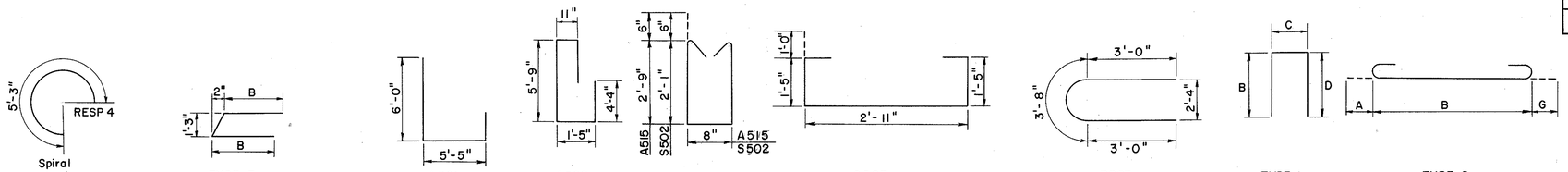
BRIDGE NO. LAK-2-1673
RELOC. S. R. 2 UNDER RELOC. MANTLE ROAD
LAKE COUNTY
STA. 783+61.13

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED DATE	REVISED
M.J.F. L.L.D.	M.J.F	FWB	L.L.D M.J.F.	G.S.W. M.C.P.	

MICROFILMED
MAR 3 0 1994

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

LAKE COUNTY
LAK-2-16.49



NOTES

Bar Size is indicated in the bar mark. The first digit where three digits are used, and the first two digits where four digits are used, indicate the size of the bar. For example A700 is a No. 7 size bar and A1014 is a No. 10 size bar.

All dimensions are out to out of the bar.

Type "S" is straight bar.

The "length" shown in steel list for the spiral bars is the distance from the top of the footing to the bottom of cap.

The "number of turns" shown in the steel list for the spiral bars is the "length" divided by the pitch, plus three (3) turns (total number of closed coils) expressed as the nearest whole number.

Spiral reinforcing bars shall not have deformations but shall in other respects conform to item S-4.

1½ closed coils shall be provided at the ends of each spiral unit.

Four steel channel, tee or angle spacers, weight approximately 0.68 pounds per linear foot of spacer, shall be provided for each spiral unit. They shall be equally spaced along the periphery of the coil. The number of pounds of these spacers, based on 0.68 pounds per linear feet will be paid for as reinforcing steel and is included in the tabulated quantity of spiral bars.

REINFORCING STEEL LIST

PIERS

MARK	REAR PIER	CENTER PIER	FWD. PIER			TOTAL	LENGTH	WEIGHT	TYPE	A	B	C	D	G
P1001	18	18	18			54	44'-0"	10,224	S					
P1002	4	4	4			12	34'-0"	1,756	S					
P1003	3	3	3			9	15'-0"	581	S					
P1004	6	6	6			18	10'-6"	813	S					
P1005	4	4	4			12	30'-0"	1,549	S					
P 901	36	36	36			108	5'-5"	1,990	1		5'-0"	8"	0	
P 902	36	36	–			72	18'-0"	4,406	S					
P902A	–	–	36			36	21'-0"	2,570	S					
P 903	4	4	4			12	9'-8"	394	–					
P 904	8	8	8			24	8'-6"	694	1		3'-0"	5'-9"	0	
P 501	90	90	90			270	5'-8"	1,597	S					
P 502	44	44	44			132	7'-5"	1,022	1		2'-6"	2'-8"	2'-6"	
P 503	2	2	2			6	33'-0"	206	S					

SPIRALS

MARK	REAR PIER	CENTER PIER	FWD. PIER			TOTAL	LENGTH	WEIGHT	PITCH	NO. TURNS	CORE DIA.
Sp401	3	3	–			6	14'-9"	1,663	4 1/2"	42	32"
Sp401A	–	–	3			3	17'-10"	1,010	4 1/2"	51	32"

ABUTMENTS

MARK	REQ'D REAR	REQ'D FWD.	TOTAL	LENGTH	WEIGHT	TYPE	B	C	D	VARIES BY	NO. OF EACH
A801	14	14	28	21'-6"	1,607	S					
A802	2	2	4	10'-9"	115	S					
A803	6	4	10	11'-3"	300	S					
A804	4	6	10	11'-6"	307	S					
A601	25	25	50	12'-8"	951	–					
A602	37	37	74	14'-0"	1,556	–					
A603	32	32	64	6'-0"	577	1	1'-7"	3'-2"	1'-7"		
A501	25	25	50	8'-4"	434	1	1'-7"	5'-5"	1'-7"		
A502	25	25	50	6'-9"	352	1	6'-0"	10"	0		
A503	25	25	50	10'-6"	546	1	3'-8"	3'-5"	3'-8"		
A504	40	40	80	20'-0"	1,669	S					
A505	38	36	74	21'-5" 10'-8"	824	1	10'-3"	7"	0		
A506	10	10	20	2'-6"	52	S					
A507	20	–	20	8'-6"	177	S					
A507A	–	10	10	8'-3"	86	S					
A507B	–	10	10	8'-9"	91	S					
A508	30	30	60	4'-5"	277	S					
A509	22	24	46	3'-6"	168	S					
A510	2	4	6	3'-9"	23	S					
A511	12	12	24	4'-0"	102	S					
A512	4	4	8	6'-6"	54	S					
A513	8	4	12	11'-9"	147	S					
A513A	–	4	4	12'-6"	52	S					
A514	8	8	16	5'-0" to 3'-0"	67	3	2'-0" to 1'-0"			4"	4
A514A	10	10	20	6'-8" to 5'-4"	125	3	2'-10" to 2'-2"			2"	5
A514B	6	9	15	6'-10"	107	3	2'-11"				
A515	24	27	51	6'-11"	368	–					
A516	2	2	4	10'-9"	45	S					
A516A	4	–	4	11'-6"	48	S					
A516B	4	4	8	11'-10"	99	S					
A516C	–	4	4	12'-9"	53	S					
A516D	2	2	4	13'-4"	56	S					

SUPERSTRUCTURE

MARK	TOTAL	LENGTH	WEIGHT	TYPE	B	C	D	VARIES BY	NO. OF EACH
S701	285	36'-2"	21,069	S					
S701A	26 28	35'-2" to 9'-2"	1,269	S	1178			2'-2"	2
S701B	10	8'-3"	169	S					
S601	285	36'-2"	15,483	S					
S601A	26 28	35'-2" to 9'-2"	933	S	866			2'-2"	2
S601B	10	8'-3"	124	S					
S602	549	27'-9"	22,883	S					
S603	72	26'-6"	2,866	S					
S501	304	3'-10"	1,214	1	7"	2'-11"	7"		
S502	304	5'-7"	1,769	–					
S503	304	7'-3"	2,299	–					

RAILING

MARK	TOTAL	LENGTH	WEIGHT	TYPE
R501	96	16'-10"	Included with item S-14 for payment	S
R501A	16	13'-6"		S
R502	4	11'-4"		S
R502A	8	11'-8"		S
R502B	4	12'-7"		S

REPLACEMENT BARS

MARK	NO.	LENGTH	WEIGHT	TYPE
RE 1000	1	7'-3"		S
RE 900	1	6'-10"		S
RE 800	1	6'-6"		S
RE 700	1	6'-3"		S
RE 600	1	5'-11"		S
RE 500	1	5'-7"		S
RESP 4	1	5'-3"		Bent

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FOR

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

REINFORCING BAR LIST

BRIDGE NO. LAK-2-1673
RELOC. S.R. 2 UNDER RELOC. MANTLE ROAD
LAKE COUNTY
STA. 783 + 61.13

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
M.J.F. L.L.D.	M.J.F.	FWB	L.L.D. M.J.F.	G.S.W. M.C.P.		11-20-64

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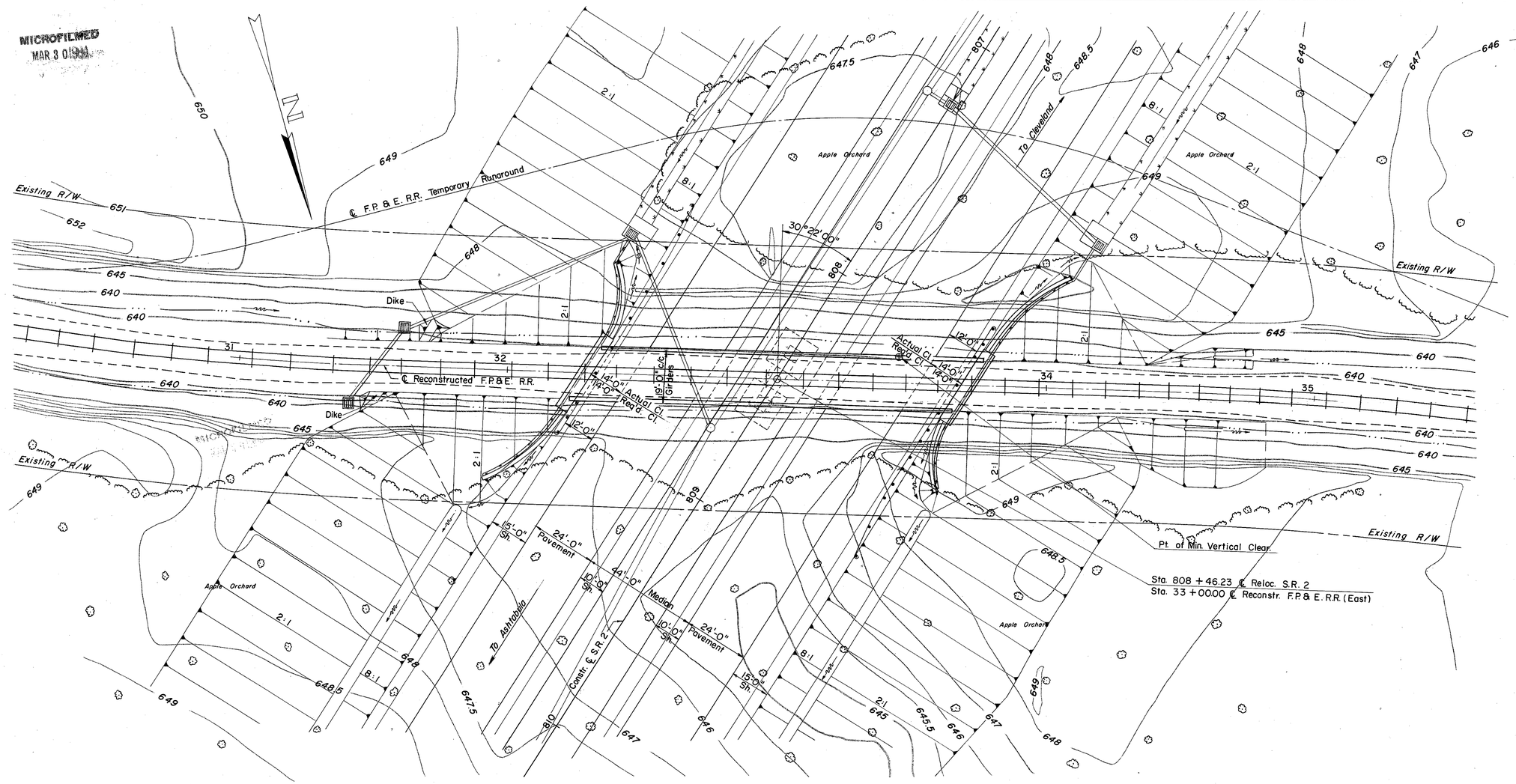
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

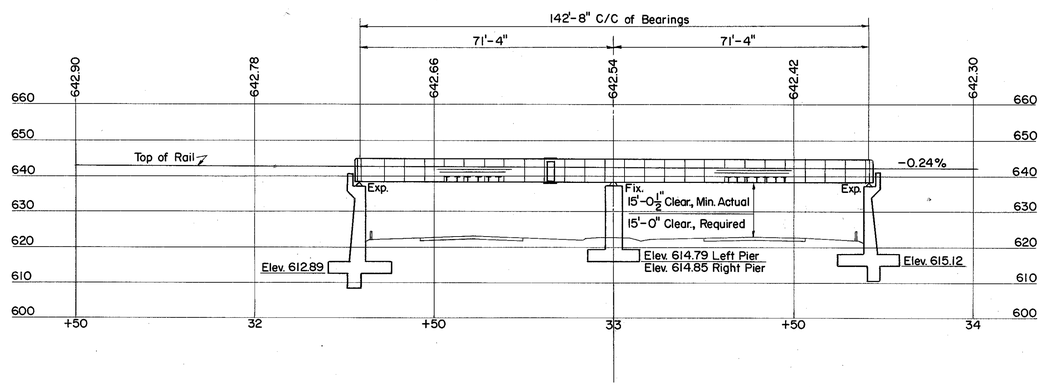
LAKE COUNTY
LAK-2-16.49

Located 0.7 mile East of East Corporation Line of Painesville.



B.M. # 83 A - Southwest corner of Headwall on East side of F.P. & E. RR.
280' Lt. of Sta. 807 + 07
Elev. 639.810

FOUNDATION SOUNDINGS: Foundation design and foundation quantities are based on a study of rod soundings and soil-sampling soundings made at the site. This sounding information may be inspected in the office of the Bureau of Bridges in Columbus or in the Division Office, but the State does not guarantee the accuracy thereof.



PROPOSED STRUCTURE

TYPE : 2 Span continuous Welded Thru Girder Railroad Bridge. Shop welded steel girders with floor beams and waterproof ballasted steel deck Reinforced Concrete Substructure.

SPANS : 71'-4" - 71'-4" c/c Bearings

SINGLE TRACK RAILROAD : 19'-0" c/c Girders

LOADING : Cooper E-72

SKEW : 30° 22' 00" L.F.

ALIGNMENT : S.R. 2 and F.P. & E. R.R. -Tangent

SPECIFICATIONS : Design - AREA
Construction - Ohio Dept. of Highways

A.D.T. : Reloc. S.R. 2 = 17160 (1980)

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FOR

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DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

SITE PLAN

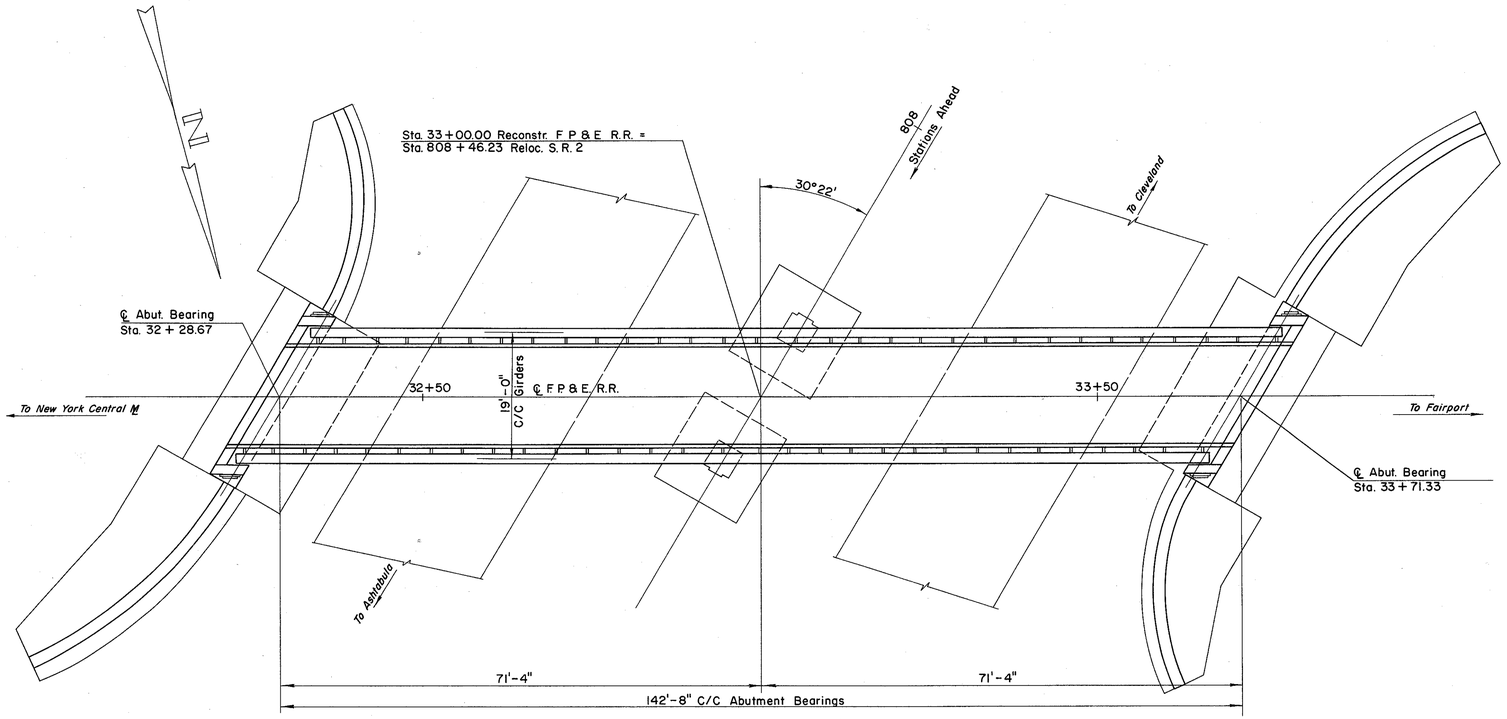
BRIDGE NO. LAK-2-1721
RELOC. S.R.2 UNDER
FAIRPORT, PAINESVILLE AND EASTERN R.R.
LAKE COUNTY
STA. 808 + 46.23

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
	M.J.F.	F.W.B.	J.H.T.			

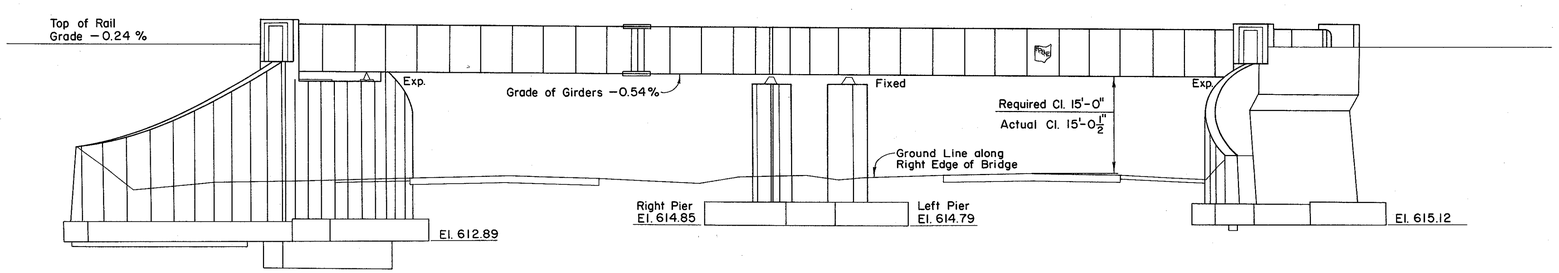
MICROFILMED
MAR 3 0 1984

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

LAKE COUNTY
LAK-2-16.49



PLAN



ELEVATION

GENERAL NOTES

REFERENCE shall be made to Standard Drawing RB-1-55, revised 2-2-59, and to Supplemental Specifications S-103, revised 2-16-55, S-107, revised 2-16-55 and S-307 dated 8-23-60.

DESIGN SPECIFICATIONS: This structure conforms to the design requirements of "Specification for Steel Railway Bridges", (current) of the A.R.E.A. & "Ohio Highway Specifications for Structures" dated 9-1-57, with current revisions, for Concrete.
DESIGN LOADING: Cooper E72

BASIC UNIT WORKING STRESSES:

Concrete, Class C:	1,333 p.s.i.
Concrete, Class E:	1,133 p.s.i.
Structural Steel, ASTM A36	20,000 p.s.i.
Reinforcing Steel, ASTM A15	20,000 p.s.i.

CONSTRUCTION AND MATERIALS shall conform to the requirements of "Construction and Material Specifications" of the State of Ohio, Department of Highways, dated 1-1-63, together with current revisions thereof.

ALL STRUCTURAL STEEL: ASTM A36

FOUNDATION BEARING PRESSURE: Abutment and wingwall footings are designed for a maximum bearing pressure of 3 tons per sq. ft., and pier footings for 3½ tons per sq. ft.

WELDING of structural steel shall be Class "A".

MEMBRANE WATERPROOFING: Type a & d waterproofing shall consist of four layers of asphalt treated felt, three layers of asphalt treated cotton fabric, and eight moppings of asphalt.

Type d waterproofing shall consist of four layers of asphalt treated felt, one layer of asphalt treated cotton fabric, and six moppings of asphalt.

ASPHALT ROOFING FELT shall be asphalt-saturated and coated asbestos felt, 50 lb. type conforming with ASTM Designation D 655.

WELDED WIRE FABRIC shall be lapped a minimum of 6" and shall be continuous through joint between mastic and mortar protection.

ASPHALT CONCRETE DECK COVER – See Sheet 254.

FIELD CONNECTIONS shall be made with ⅞ ϕ high strength bolts unless otherwise noted. Bolt heads shall be positioned outward in girder webs and downward in girder flanges.

REINFORCING STEEL: All reinforcing steel shall be deformed bars and shall meet the requirements of Sec. M-7.1 intermediate grade billet steel.

ALIGNING RAILROAD TRACKS: After the Contractor has completed all excavation and backfill adjacent to the railroad tracks in compliance with Sec. E-2.04 and E-2.08 of the Construction and Material Specification, subject to the Supervision of the Railroad Company, nothing in Sec. E-2.04, E-2.08 or G-8.07 of the Specifications shall be construed to hold the Contractor liable for aligning and resurfacing the railroad tracks.

HIGH STRENGTH STEEL BOLTS: See note, sheet 227.

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FOR

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DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

GENERAL PLAN
BRIDGE NO. LAK-2-1721
RELOC. S.R. 2 UNDER F P & E R. R.
LAKE COUNTY
STA. 808 + 46.23

DESIGNED	DRAWN	TRACED	CHECKED	REVISED	DATE	REVISED
B.O.L.	B.O.L.	R.E.B.	L.L.D.			

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MAR 30 1989

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

247
313

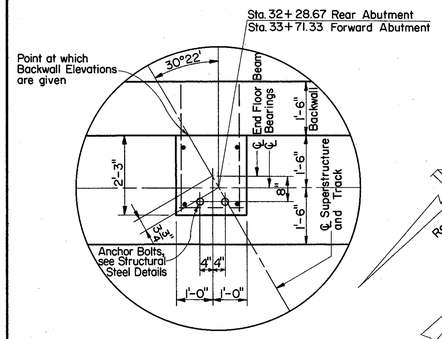
LAKE COUNTY
LAK-2-16.49

POROUS BACKFILL shall extend upward to the bottom of ballast and to the surface of the subgrade, and outward to the surface of the embankment slopes.

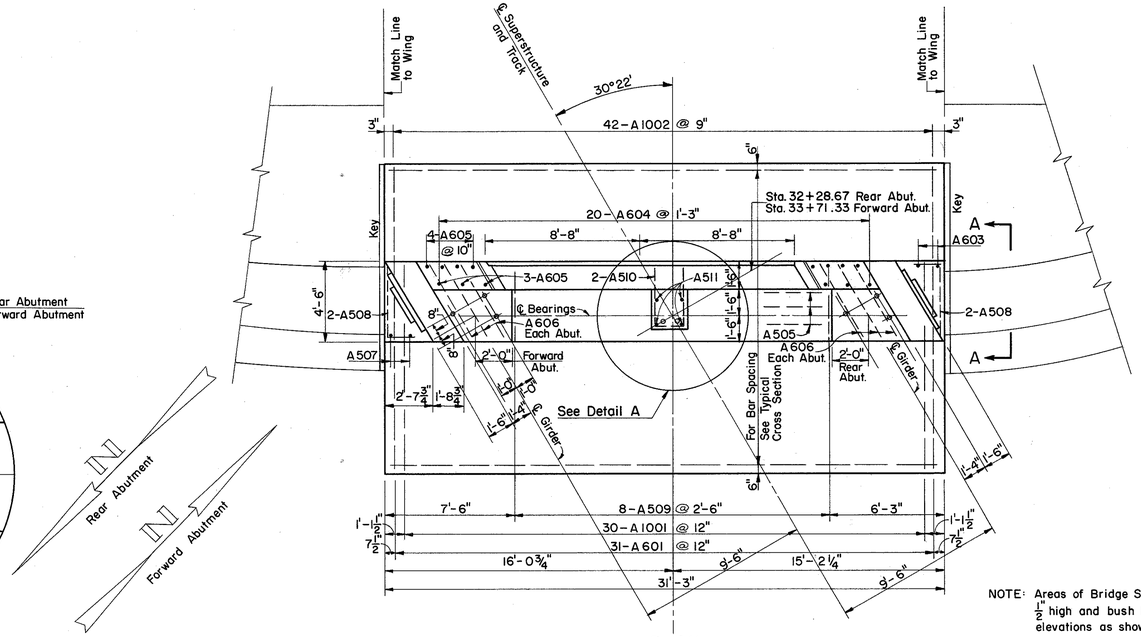
BRIDGE SEAT REINFORCING: Special care shall be taken in placing reinforcing steel in the vicinity of the bridge seat so as to avoid interference with the drilling of anchor bolt holes.

Keyway in footing shall be poured against undisturbed ground.

REINFORCEMENT: 2" cover unless otherwise shown.

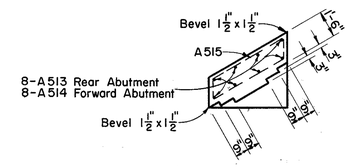


DETAIL A

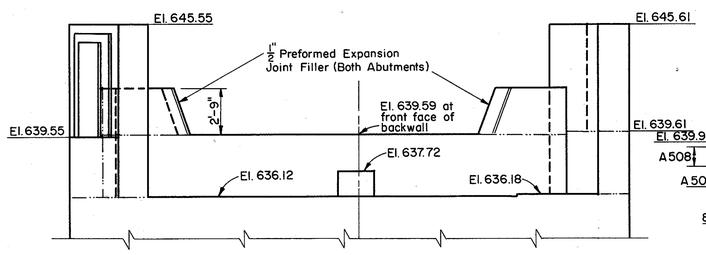


PLAN
(Abutments similar except as noted)

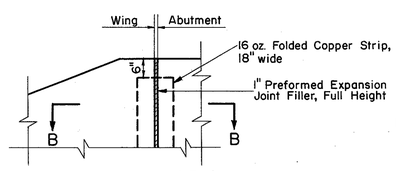
NOTE: Areas of Bridge Seats to be poured ¼" high and bush hammered to exact elevations as shown.



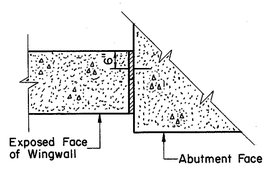
SECTION D-D



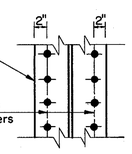
PART ELEVATION – FORWARD ABUTMENT

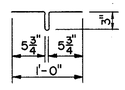


WINGWALL JOINT

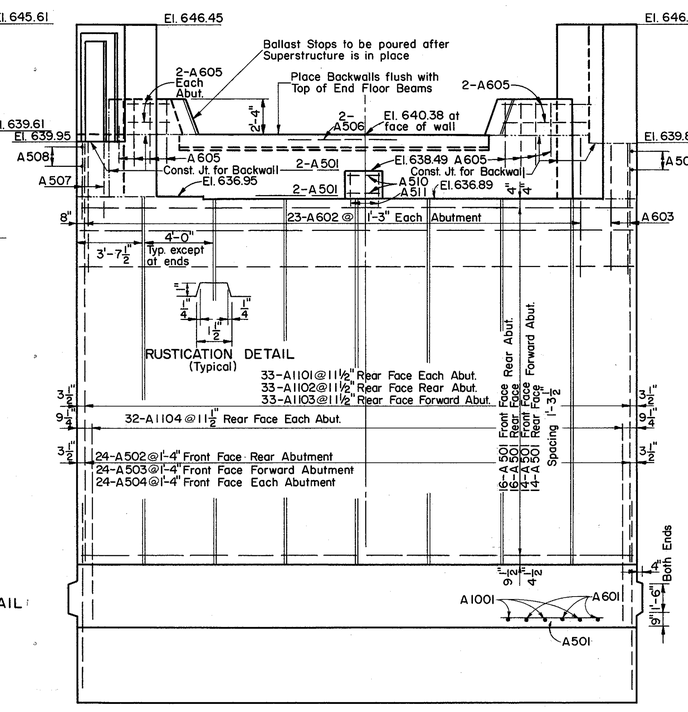


SECTION B-B

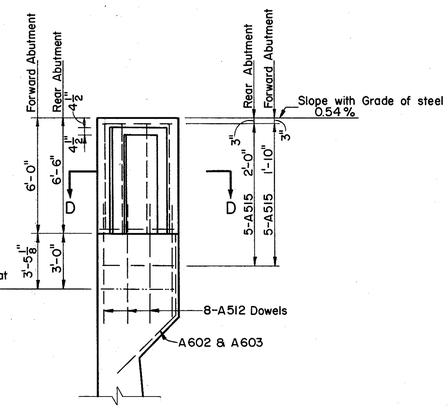




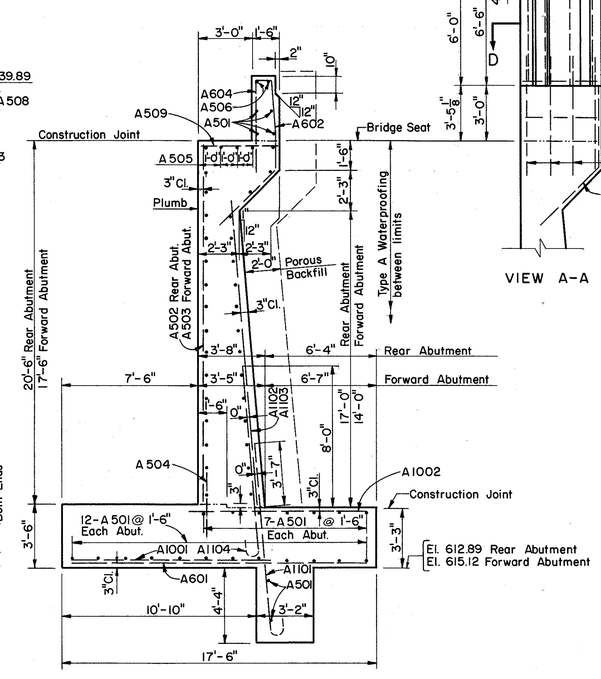
FOLDED COPPER STRIP DETAIL
(Included in the price of 1" Premoulded Expansion Joint)



ELEVATION – REAR ABUTMENT



VIEW A-A



TYPICAL CROSS SECTION

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FOR

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DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

ABUTMENT DETAILS

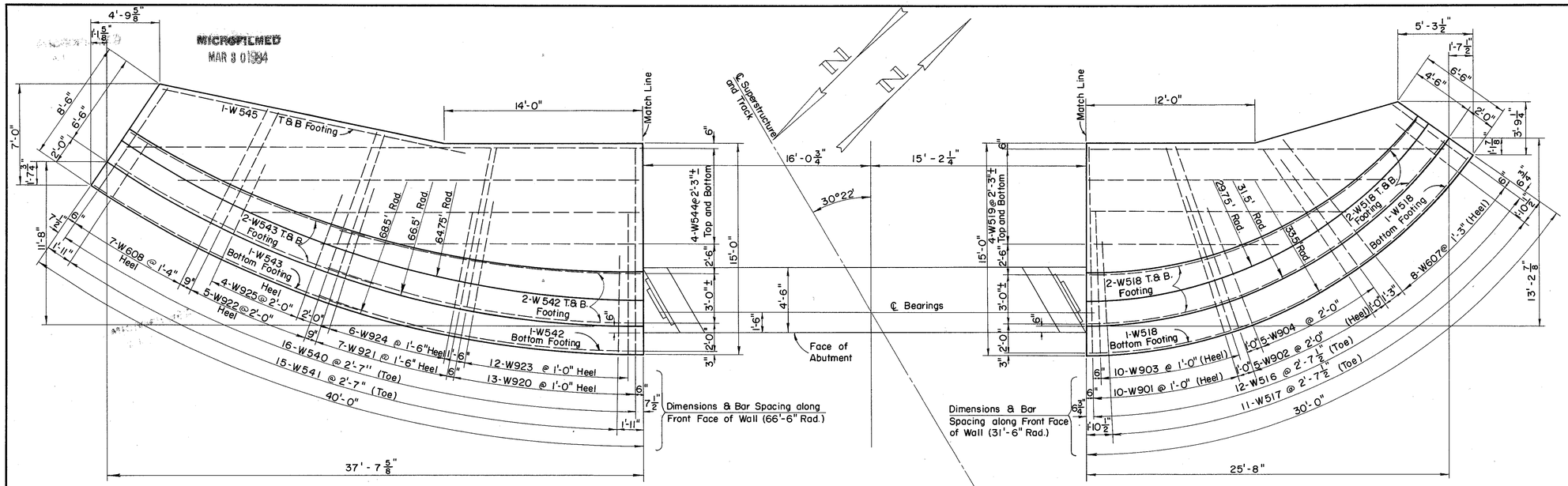
BRIDGE NO. LAK-2-1721
RELOC. S.R.2 UNDER F P & E R. R.
LAKE COUNTY
STA. 808+46.23

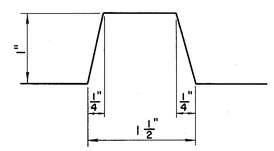
DESIGNED	DRAWN	TRACED	CHECKED	REVISED	DATE	REVISED
B.O.L.	B.O.L.	E.L.M.	L.L.D.			

MICROFILMED
MAR 30 1994

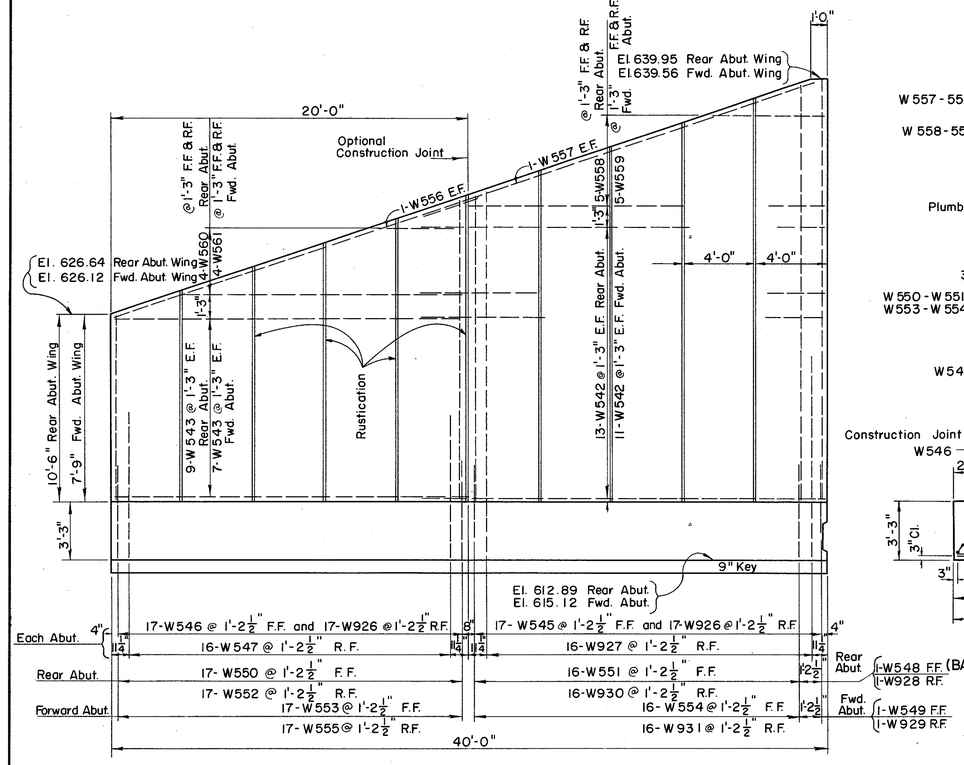
FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

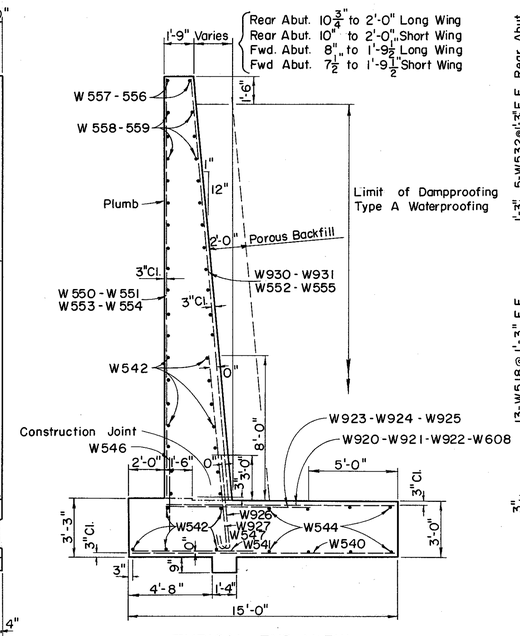
LAKE COUNTY
LAK-2-1649

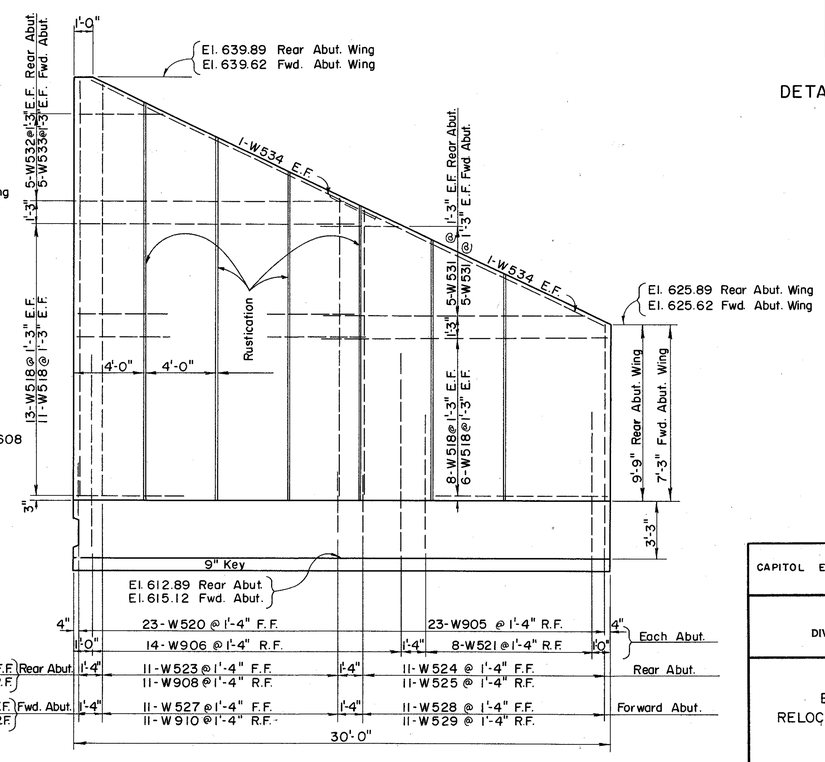




DETAIL OF RUSTICATION







NOTES:

Key in footings shall be placed against undisturbed earth.

F.F. = Front Face

R.F. = Rear Face

E.F. = Each Face

T.&B. = Top and Bottom

Reinforcement 2" Cover unless otherwise shown.

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FOR

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

WING WALLS

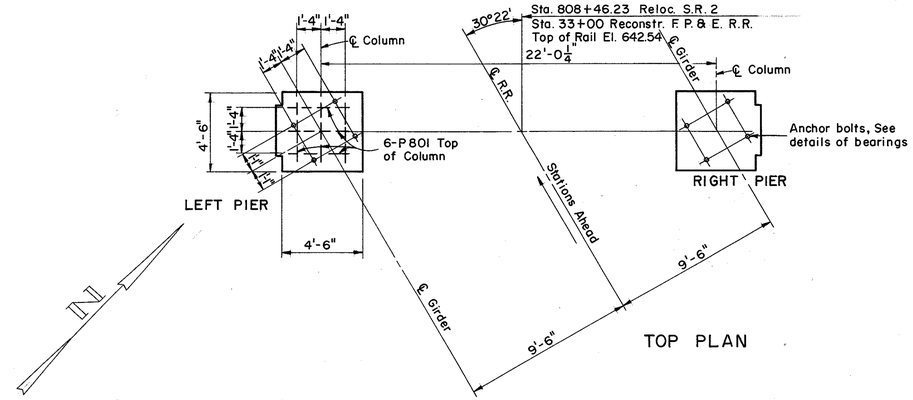
BRIDGE NO. LAK-2-1721
RELOC. S.R. 2 UNDER F.P.&E. R.R.
LAKE COUNTY
STA. 808 + 46.23

DESIGNED	DRAWN	TRACED	CHECKED	REVISED	DATE	REVISED
B.O.L.	B.O.L.	R.E.B.	L.L.D.			

MICROFILMED
MAR 3 0 1994

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

LAKE COUNTY
LAK-2-16.49

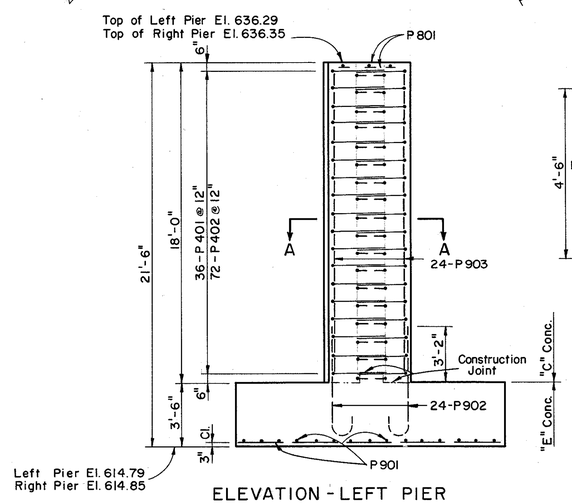


TOP PLAN

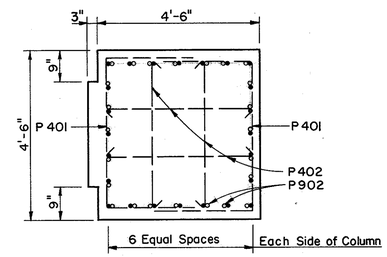
BRIDGE SEAT REINFORCING: Special care shall be taken in placing reinforcing steel in the vicinity of the bridge seat so as to avoid interference with the drilling of Anchor Bolt holes.

REINFORCING STEEL shall have 2" cover unless otherwise noted.

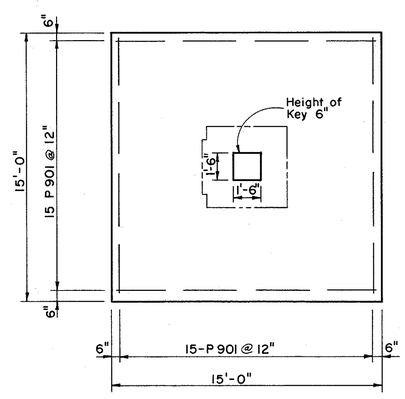
TOP OF COLUMN to be poured 1/2" high and bush hammered to exact Elevations as shown.



ELEVATION - LEFT PIER



SECTION A-A



FOOTING PLAN

PREPARED BY
CAPITOL ENGINEERING ASSOCIATES, DILLSBURG, PA.
FOR

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

PIERS

BRIDGE NO. LAK-2-1721
RELOC. S.R. 2 UNDER F.P.& E. R.R.
LAKE COUNTY
STA. 808+46.23

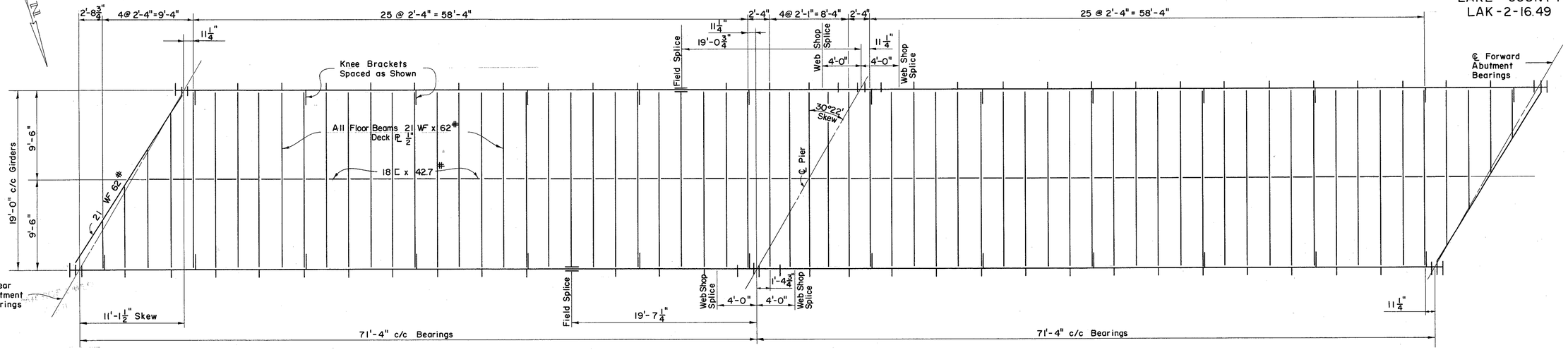
DESIGNED	DRAWN	TRACED	CHECKED	REVISED	DATE	REVISED
B.O.L.	B.O.L.	E.L.M.	L.L.D.			

MICROFILMED
MAR 30 1984

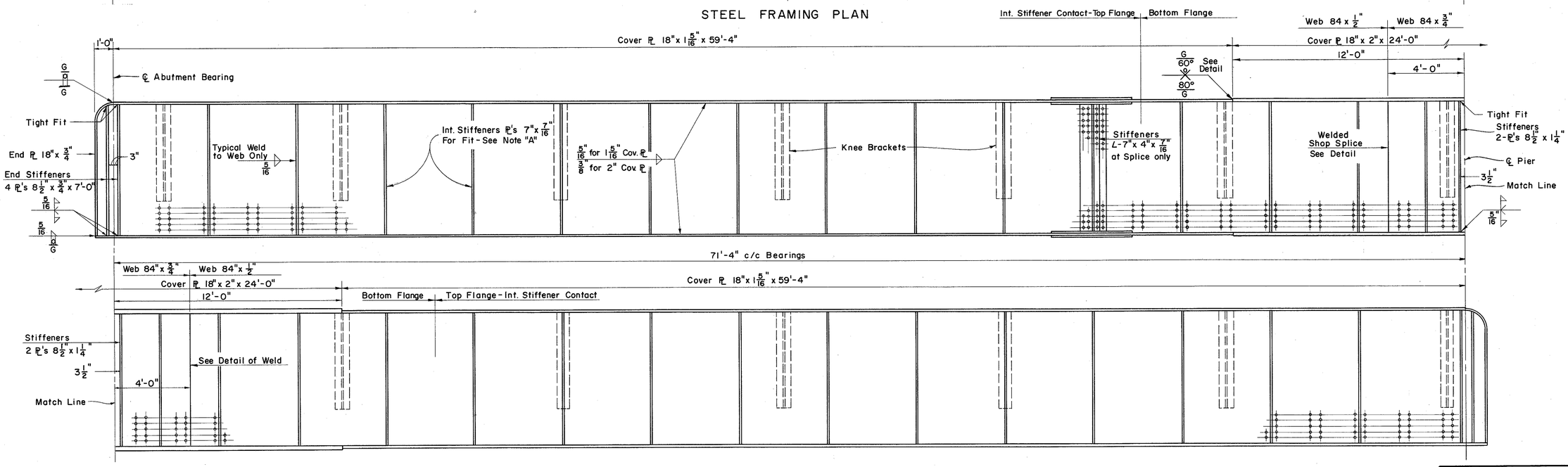
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

250/313

LAKE COUNTY
LAK-2-16.49



STEEL FRAMING PLAN



GIRDER ELEVATION

NOTE "A"

FIT OF INTERMEDIATE STIFFENERS: Supplementary to Section S-7.14 of the Construction and Material Specifications intermediate stiffeners shall have contact bearing with the compression flange but may have a clearance of not more than 1/8 inch from the tension flange at the locations shown. In shop painting care shall be taken to make certain that paint is forced through from one side to the other of the 1/8 inch opening.

ALL FIELD CONNECTIONS shall be made with 7/8" ϕ high strength bolts except where field welding is shown on Plans.

NO CAMBER required.

HIGH STRENGTH STEEL BOLTS, NUTS & WASHERS [illegible]

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BUREAU OF BRIDGES

STEEL FRAMING PLAN

BRIDGE NO. LAK-2-1721
RELOC. S.R. 2 UNDER F P & E R. R.
LAKE COUNTY
STA. 808+46.23

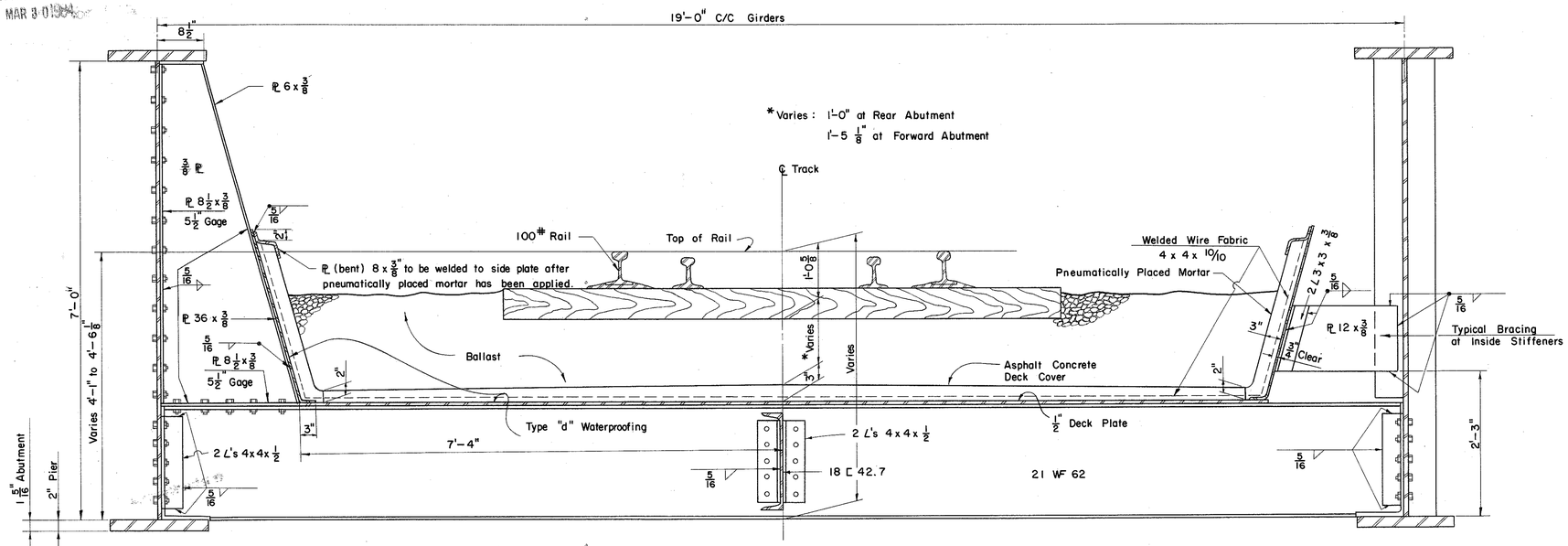
DESIGNED	DRAWN	TRACED	CHECKED	REVISED	DATE	REVISED
B.O.L.	B.O.L. K.D.L.	J.S.	L.L.D.			

MICROFILMED
MAR 3 0 1994

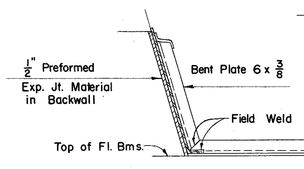
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

251
313

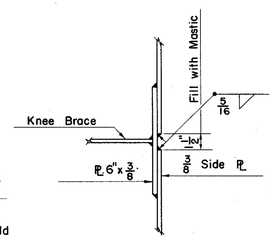
LAKE COUNTY
LAK -2-16.49



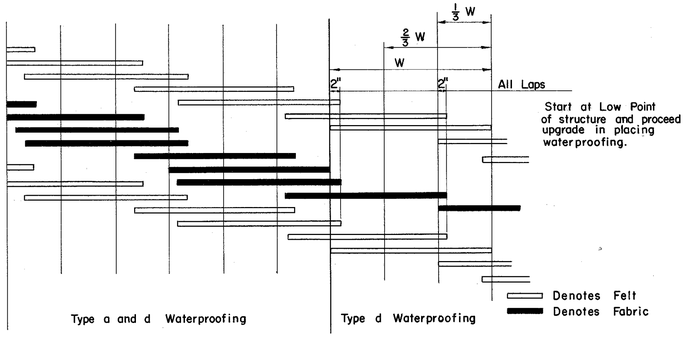
TYPICAL CROSS SECTION



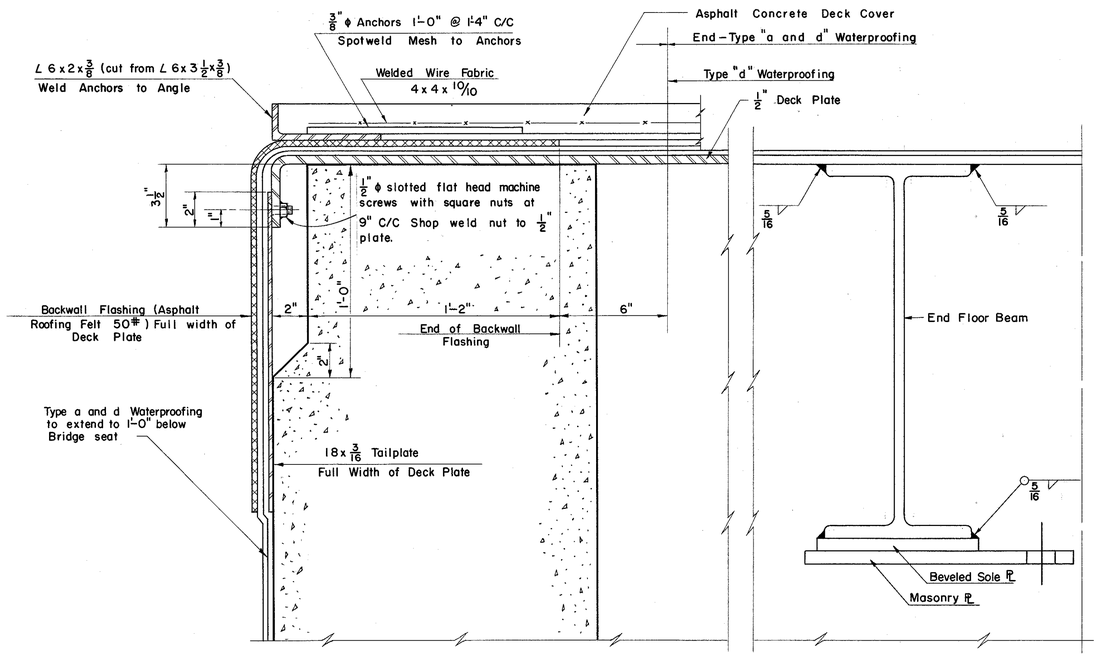
END VIEW OF FLOOR PLATE & SIDE PLATE



SIDE PLATE JT. DETAIL



SCHEMATIC DETAIL OF WATERPROOFING



WATERPROOFING DETAILS AT BACKWALL

PREPARED BY
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FOR

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

DETAILS OF SUPERSTRUCTURE AND WATERPROOFING

BRIDGE NO. LAK-2-1721
RELOC. S.R. 2 UNDER F P & E R.R.
LAKE COUNTY
STA. 808 + 46.23

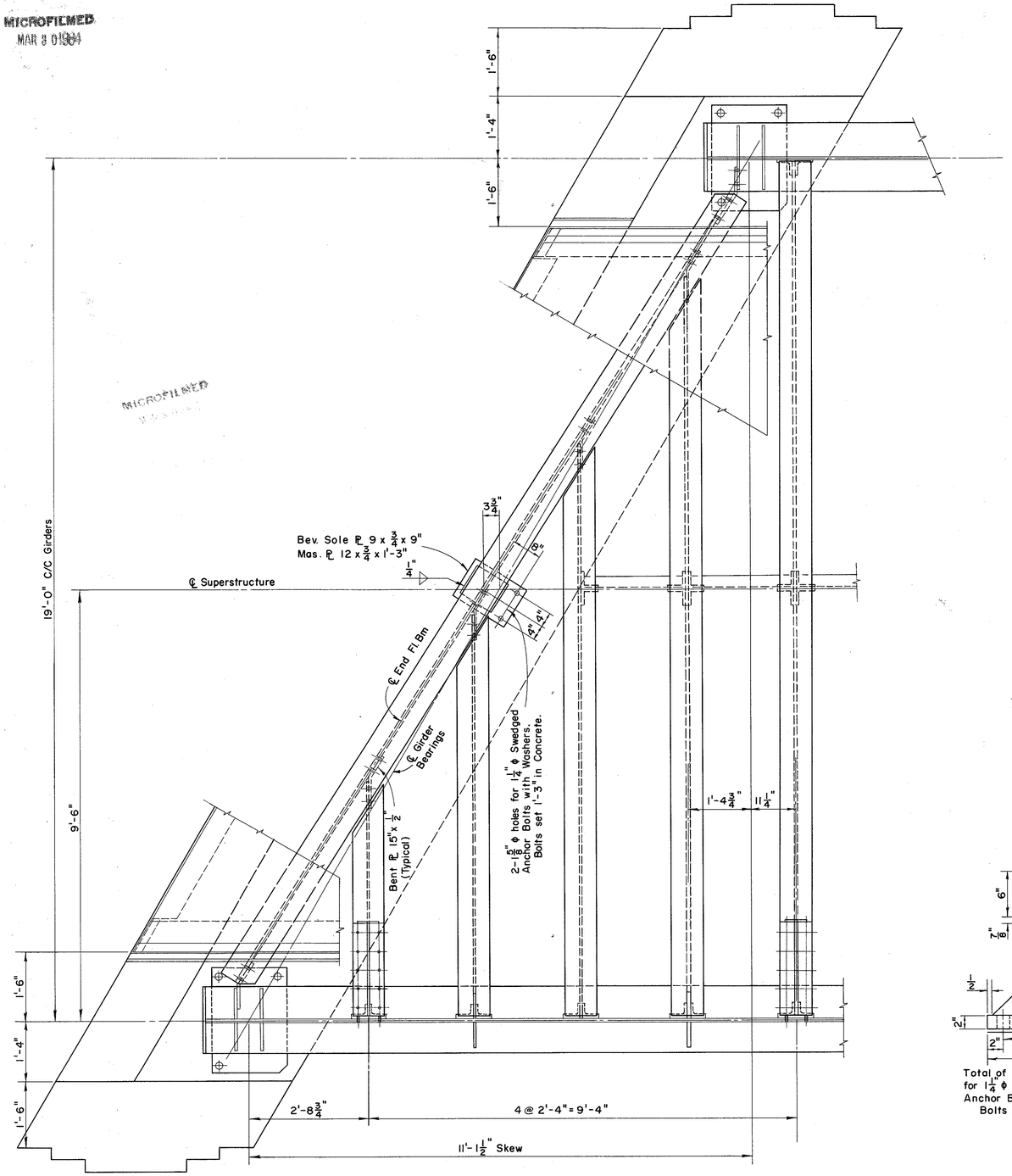
DESIGNED	DRAWN	TRACED	CHECKED	REVISED	DATE	REVISED
B.O.L.	R.J.A. K.D.L.		L.L.D.			

MICROFILMED
MAR 8 1984

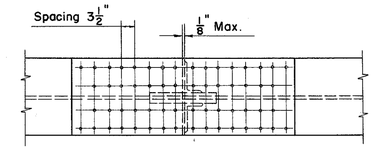
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

252
313

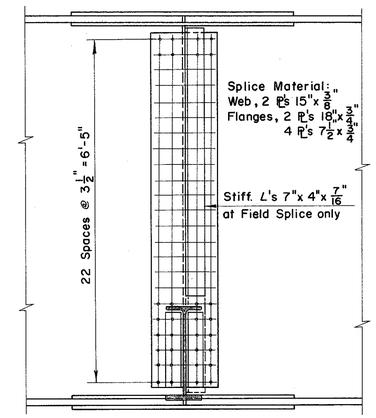
LAKE COUNTY
LAK-2-16.49



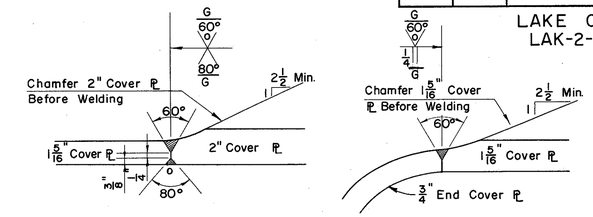
FLOOR PLAN AT SKEWED ENDS



DETAILS OF FLANGE FIELD SPLICE

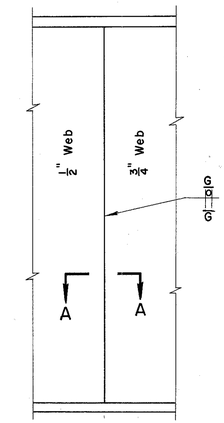


DETAILS OF WEB FIELD SPLICE

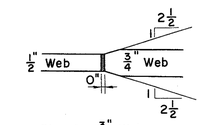


COVER PLATE SPLICES - WELDING DETAILS
No Scale

Butt Welds shall be formed by welding from both sides with back gouging before welding from the other side.

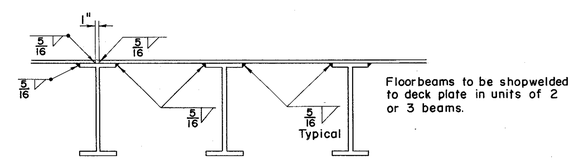


DETAILS OF SHOP WEB SPLICE



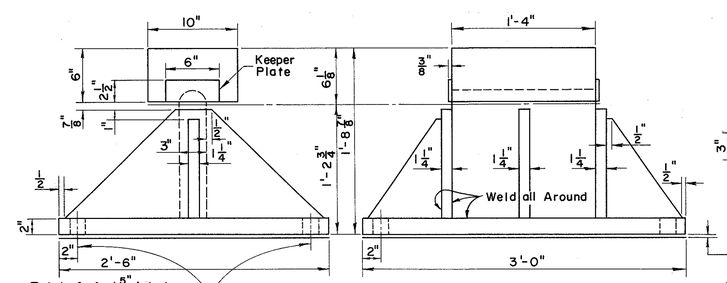
Chamfer 3/4" Web before Welding

SECTION A-A
No Scale



Floorbeams to be shopwelded to deck plate in units of 2 or 3 beams.

SECTION THRU FLOOR SYSTEM

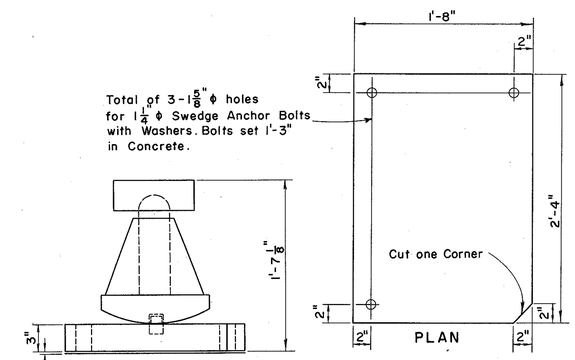


Total of 4 - 1 5/8" ϕ holes for 1 1/4" ϕ x 1'-8" Swedge Anchor Bolts with Washers. Bolts set 1'-3" in Concrete.

STRUCTURAL STEEL BOLSTER

All welds 3/4", except Keeper PL, where 5/16" welds will be required.

Abutments to be backfilled to within 6" of Bridge Seat Elevations before Anchor Bolts are placed.



STRUCTURAL STEEL ROCKER R-300

Rocker Dimensions same as Ohio State Highway Dept. Standard RB-1-55 Rev. 2-2-59 except bearing plate as shown above.

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FOR

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

STRUCTURAL STEEL DETAILS

BRIDGE NO. LAK-2-1721
RELOC. S.R. 2 UNDER FP & E R.R.
LAKE COUNTY
STA. 808+46.23

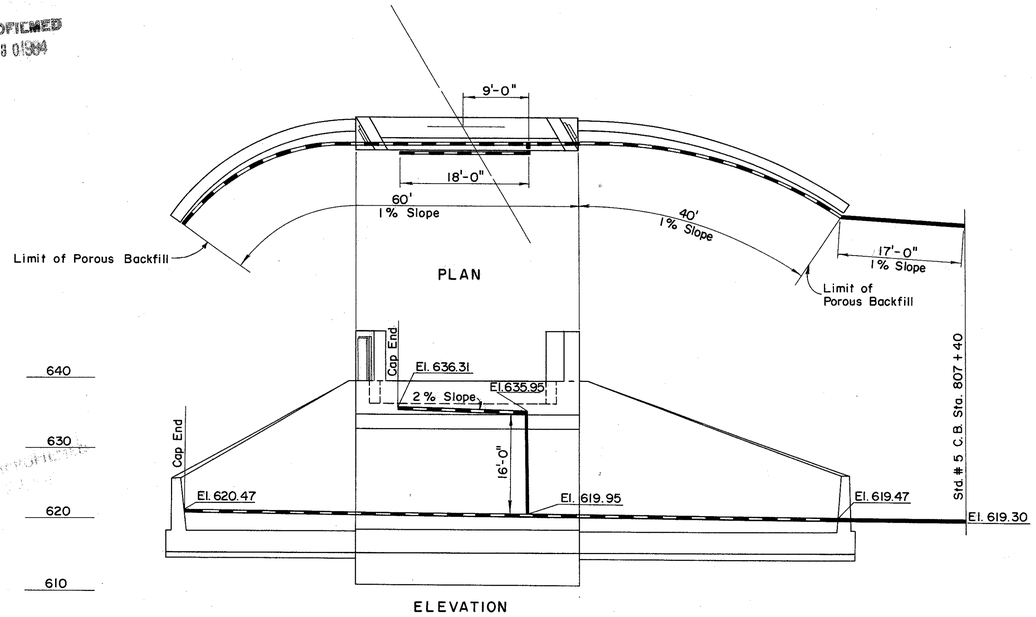
DESIGNED	DRAWN	TRACED	CHECKED	REVISED	DATE	REVISED
B.O.L.	B.O.L. K.D.L.	R.E.B.	L.L.D.			

MICROFILMED
MAR 3 0 1984

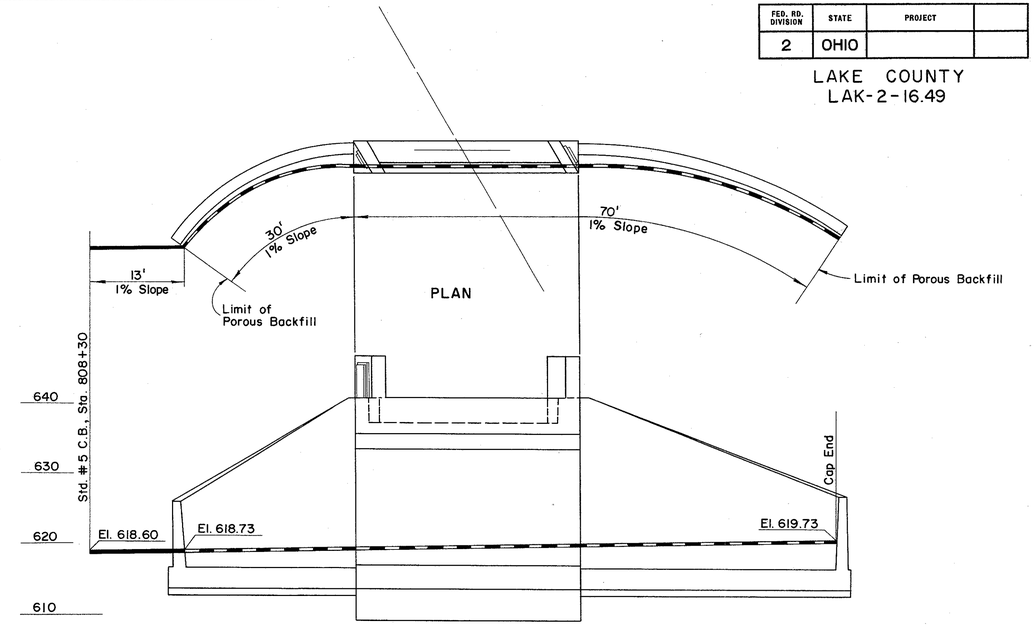
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

253
313

LAKE COUNTY
LAK-2-16.49



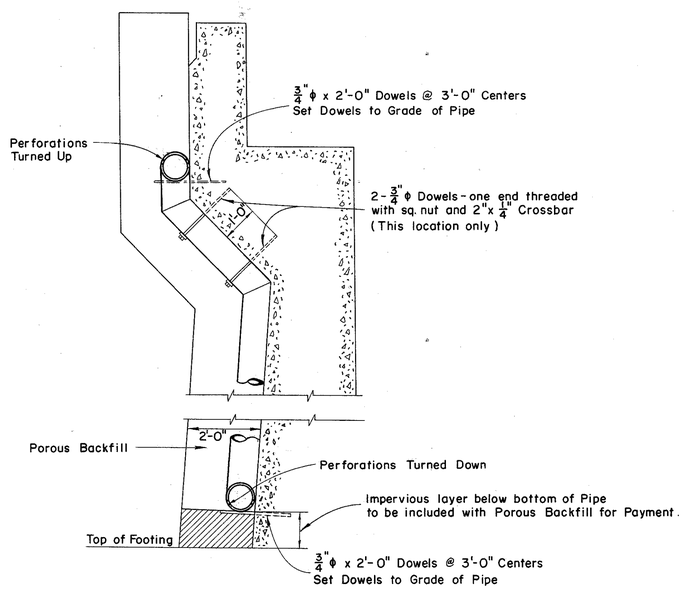
DRAINAGE OF FORWARD ABUTMENT



DRAINAGE OF REAR ABUTMENT

Perforated Pipe

Non-Perforated Pipe



DRAIN DETAILS

DRAINAGE PIPE is 8" corrugated bituminous coated metal pipe.

ELEVATIONS given are Flow Line Elevations.

LENGTHS OF PIPES are approximate.

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FOR

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

DRAINAGE PLAN

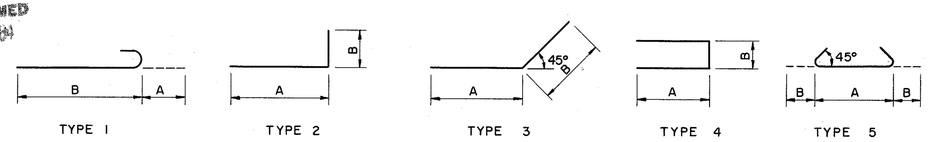
BRIDGE NO. LAK-2-1721
RELOC. S.R. 2 UNDER F P & E R.R.
LAKE COUNTY
STA. 808+46.23

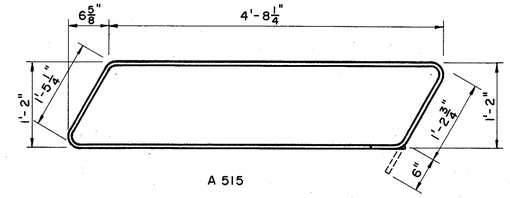
DESIGNED	DRAWN	TRACED	CHECKED	REVISED	DATE	REVISED
B.O.L.		R.E.B.	L.L.D.			

MICROFILMED
MAR 3 0 1984

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

LAKE COUNTY
LAK-2-16.49





REINFORCING STEEL LIST

ABUTMENTS

MARK	REAR	FWD.	TOTAL	LENGTH	WEIGHT	TYPE	A	B	VARIES BY	NO OF EACH
A 501	57	53	110	30'-11"	3,547	S				
A 502	24	–	24	20'-2"	505	S				
A 503	–	24	24	17'-2"	430	S				
A 504	24	24	48	4'-0"	200	S				
A 505	3	3	6	26'-0"	163	S				
A 506	2	2	4	29'-0"	121	S				
A 507	2	2	4	5'-0"	21	S				
A 508	4	4	8	5'-9"	48	2	4'-0"	1'-10 1/2"		
A 509	8	8	16	5'-0"	83	2	4'-0"	1'-1 1/2"		
A 510	2	2	4	7'-8"	32	4	3'-1 1/2"	1'-8"		
A 511	4	4	8	3'-0"	25	S				
A 512	16	16	32	6'-0"	200	S				
A 513	16	–	16	6'-3"	104	S				
A 514	–	16	16	5'-9"	96	S				
A 515	10	10	20	12'-6"	261	See	Sketch			
A 601	31	31	62	17'-0"	1,583	S				
A 602	23	23	46	9'-4"	645	3	4'-8"	4'-8"		
A 603	2	2	4	8'-8"	52	3	4'-8"	4'-0"		
A 604	20	20	40	5'-0"	300	2	4'-1 1/2"	1'-0"		
A 605	22	22	44	5'-0"	330	S				
A 606	6	6	12	4'-10"	87	S				
A 1001	30	30	60	11'-0"	2,840	S				
A 1002	42	42	84	10'-0"	3,615	S				
A 1101	33	33	66	12'-4"	4,324	1	1'-7"	10'-9"		
A 1102	33	–	33	17'-6"	3,068	S				
A 1103	–	33	33	14'-6"	2,542	S				
A 1104	32	32	64	12'-7"	4,278	1	1'-7"	11'-0"		

TOTAL 29,500

SHORT WINGS

MARK	REAR	FWD.	TOTAL	LENGTH	WEIGHT	TYPE	A	B	VARIES BY	NO OF EACH
W 516	12	12	24	6'-0" to 14'-8 1/2"	259	S			9 1/2"	2
W 517	11	11	22	6'-0"	138	S				
W 518	52	44	96	16'-0"	1,602	S	Bend in Field			
W 519	8	8	16	14'-0" to 23'-9"	315	S			3'-3"	2
W 520	23	23	46	4'-0"	192	S				
W 521	8	8	16	8'-0"	134	1	7'	7'-5"		
W 522	1	–	1	23'-6"	25	S				
W 523	11	–	11	16'-9" to 23'-0"	228	S			7 1/2"	1
W 524	11	–	11	9'-9" to 16'-0"	148	S			7 1/2"	1
W 525	11	–	11	10'-0" to 16'-3"	151	S			7 1/2"	1
W 526	–	1	1	20'-6"	21	S				
W 527	–	11	11	14'-0" to 20'-3"	197	S			7 1/2"	1
W 528	–	11	11	7'-2" to 13'-5"	118	S			7 1/2"	1
W 529	–	11	11	7'-5" to 13'-8"	121	S			7 1/2"	1
W 531	10	10	20	4'-6" to 15'-0"	203	S	Bend in	Field	2'-7 1/2"	4
W 532	10	–	10	4'-9" to 15'-5"	105	S	Bend in	Field	2'-8"	2
W 533	–	10	10	4'-4" to 15'-0"	101	S	Bend in	Field	2'-8"	2
W 534	4	4	8	17'-3"	144	S	Bend in	Field		
W 607	8	8	16	4'-6" to 8'-7"	157	S			7"	2
W 901	10	10	20	13'-0"	884	S				
W 902	5	5	10	9'-0" to 12'-0"	357	S			9"	2
W 903	10	10	20	8'-0"	544	S				
W 904	5	5	10	7'-0"	238	S				
W 905	23	23	46	6'-9"	1,056	1	1'-3"	5'-6"		
W 906	14	14	28	11'-9"	1,119	1	1'-3"	10'-6"		
W 907	1	–	1	23'-9"	81	S				
W 908	11	–	11	17'-0" to 23'-3"	753	S			7 1/2"	1
W 909	–	1	1	20'-9"	71	S				
W 910	–	11	11	14'-3" to 20'-6"	650	S			7 1/2"	1

TOTAL 10,112

LONG WINGS

MARK	REAR	FWD.	TOTAL	LENGTH	WEIGHT	TYPE	A	B	VARIES BY	NO OF EACH
W 540	16	16	32	8'-3" to 14'-6"	380	S			5"	2
W 541	15	15	30	6'-0"	188	S				
W 542	31	27	58	22'-7"	1,366	S	Bend in	Field		
W 543	23	19	42	19'-0"	832	S	Bend in	Field		
W 544	8	8	16	22'-0" to 36'-0"	484	S			4'-8"	4
W 545	2	2	4	22'-0"	92	S				
W 546	34	34	68	4'-0"	284	S				
W 547	16	16	32	8'-0"	267	1	7"	7'-5"		
W 548	1	–	1	23'-6"	25	S				
W 549	–	1	1	20'-11"	22	S				
W 550	17	–	17	10'-2" to 16'-10"	239	S			5"	1
W 551	16	–	16	17'-0" to 23'-3"	336	S			5"	1
W 552	17	–	17	10'-5" to 17'-1"	244	S			5"	1
W 553	–	17	17	7'-4" to 14'-0"	189	S			5"	1
W 554	–	16	16	14'-5" to 20'-8"	293	S			5"	1
W 555	–	17	17	7'-7" to 14'-3"	194	S			5"	1
W 556	2	2	4	20'-6"	86	S				
W 557	2	2	4	23'-0"	96	S				
W 558	10	–	10	6'-6" to 21'-2"	144	S	Bend in	Field	3'-8"	2
W 559	–	10	10	6'-0" to 20'-8"	139	S	Bend in	Field	3'-8"	2
W 560	8	–	8	4'-6" to 15'-6"	83	S	Bend in	Field	3'-8"	2
W 561	–	8	8	4'-3" to 15'-3"	81	S	Bend in	Field	3'-8"	2
W 608	7	7	14	7'-0" to 9'-0"	168	S			4"	2
W 920	13	13	26	13'-0"	1,150	S				
W 921	7	7	14	10'-6" to 12'-0"	536	S			3"	2
W 922	5	5	10	9'-0" to 10'-6"	332	S			4 1/2"	2
W 923	12	12	24	8'-0"	653	S				
W 924	6	6	12	7'-0"	286	S				
W 925	4	4	8	6'-0"	163	S				
W 926	34	34	68	6'-9"	1,561	1	1'-3"	5'-6"		
W 927	16	16	32	11'-9"	1,278	1	1'-3"	1'-3"		
W 928	1	–	1	23'-9"	81	S				
W 929	–	1	1	21'-2"	72	S				
W 930	16	–	16	7'-4" to 23'-7"	1,113	S			5"	1
W 931	–	16	16	14'-8" to 20'-11"	968	S			5"	1

TOTAL 14,425

PIERS

MARK	SIZE	TOTAL	LENGTH	WEIGHT	TYPE	A	B
P 401	4	72	9'-9"	469	4	2'-10 1/2"	4'-3"
P 402	4	144	5'-0"	481	5	4'-3"	4 1/2"
P 801	8	12	4'-0"	128	S	–	–
P 901	9	60	14'-8"	2,993	S	–	–
P 902	9	48	7'-6"	1,224	1	1'-3"	6'-3"
P 903	9	48	17'-9"	2,897	S	–	–

TOTAL 8,192

REPLACEMENT BARS

MARK	NO.	LENGTH		TYPE
RE 400	1	5'-3"		S
RE 500	1	5'-7"		S
RE 600	1	5'-11"		S
RE 900	1	6'-10"		S
RE 1000	1	7'-3"		S
RE 1100	1	7'-7"		S

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. For example, A 700 is a No. 7 size bar and A 1014 is a No. 10 size.

All dimensions are out to out of bars.

Type "S" bars are straight.

ESTIMATED QUANTITIES

ITEM	TOTAL	UNIT	DESCRIPTION	ABUTMENTS	PIER	SUPER	GENERAL
E-2	2,230	Cu. Yds.	Unclassified excavation	2,065	165		
E-2	Lump	Sum	Cofferdams, cribs and sheeting				Lump
S-1	28	Cu. Yds.	Class C concrete, pier above footings		28		
S-1	203	Cu. Yds.	Class E concrete, abut. walls and wingwalls above footings	203			
S-1	413	Cu. Yds.	Class E concrete, footings	354	59		
S-3	351	Sq. Yds.	Waterproofing, Type A	351			
S-4	900	Lbs.	Welded wire fabric			900	
S-4	62,229	Lbs.	Reinforcing steel bars	54,037	8,192		
S-6	845	Sq. Ft.	Pneumatically placed mortar			845	
S-8	278,500	Lbs.	Field painting of structural steel			278,500	
S-9	246	Sq. Ft.	1" preformed expansion joint filler	246			
S-9	19	Sq. Ft.	1/2" preformed expansion joint filler	19			
S-29	46	Lin. Ft.	8" non-perforated bituminous coated corrugated metal pipe,				
			M6.4(c), including specials	46			
S-29	218	Lin. Ft.	8" perforated bituminous coated corrugated metal pipe,				
			M6.4(f), including specials	218			
S-29	251	Cu. Yds.	Porous backfill	251			
S-103	318	Sq. Yds.	Waterproofing, Type d			318	
S-103	24	Sq. Yds.	Waterproofing, Type a and d			24	
S-107	278,500	Lbs.	Structural steel			278,500	
Special	233	Sq. Yds.	Asphalt concrete deck cover		233		
Special	14	Sq. Yds.	Asphalt roofing felt, 50 lbs.				14

NOTES

ASPHALT CONCRETE DECK COVER: Contractor shall furnish and place complete as shown on the drawings the Asphalt Concrete specified hereinafter.

MATERIALS

1. Emulsified Asphalt shall be in accordance with Federal Specifications SS-A-674 b.
2. Fine aggregate shall be as specified for concrete.
3. Coarse aggregate shall be as specified for concrete with the following gradation:

Sieve Size (inches)	Percent Passing by weight
3/4"	100
1/2"	90 - 100
3/8"	40 - 70
No.4	0 - 15

MIX

The asphalt concrete shall be proportioned by volume, 1 part portland cement, 2 parts fine aggregate, three parts coarse aggregate & 1 1/2 parts emulsified asphalt Type SS-1 and minimum amount of water required to make a workable mix. The dry materials shall first be thoroughly mixed then the water added to produce a uniform mixture after which the emulsified asphalt is added and mixing continued until of uniform color.

APPLICATION

Work shall be done only when the temperature will be above 40°F for a period of at least 24 hours after starting application.

Surface to be covered shall be thoroughly cleaned and given a uniform primer or bond coating of Emulsified Asphalt Type RS-1, using not less than 1 gallon per 80 sq.ft.

The asphalt concrete shall then be screeded over the primed area to the thickness indicated on the drawings. After the asphalt concrete has set sufficently to allow a man to walk upon it without indentation but prior to final set, it shall be given a uniform coating of emulsified asphalt Type RS-2 applied at the rate of one gallon per 50 sq.ft. This final coating shall be covered with clean sand.

PREPARED BY
CAPITOL ENGINEERING ASSOCIATES, DILLSBURG, PA.
FOR

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

REINFORCING STEEL LIST
& ESTIMATED QUANTITIES
BRIDGE NO. LAK - 2 - 1721
RELOC. S.R.2 UNDER F.P.&E. R.R.
LAKE COUNTY
STA. 808+46.23

DESIGNED	DRAWN	TRACED	CHECKED	REVISED	DATE	REVISED
B.O.L.		E.L.M.	L.L.D.			

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

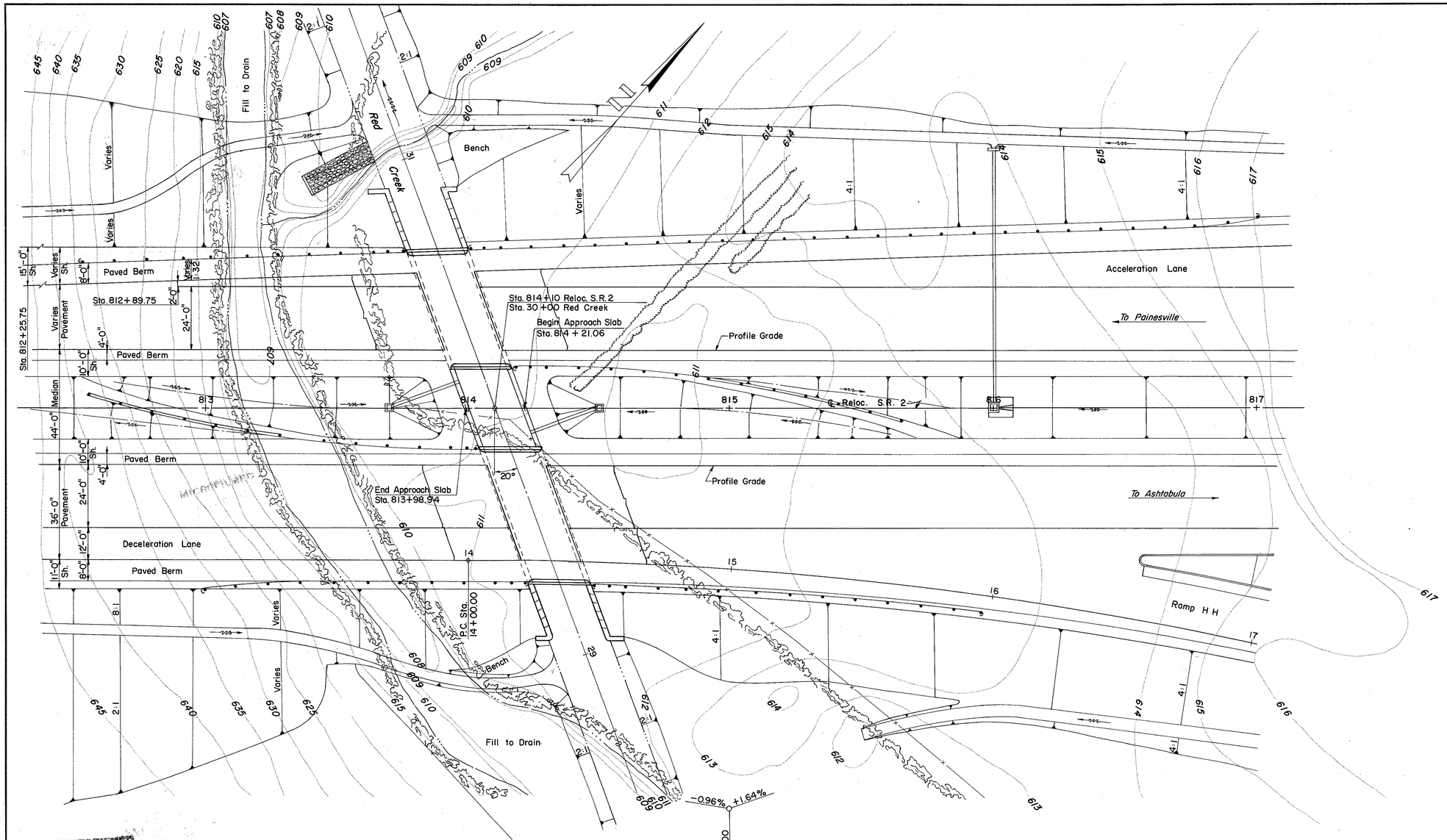
255/313

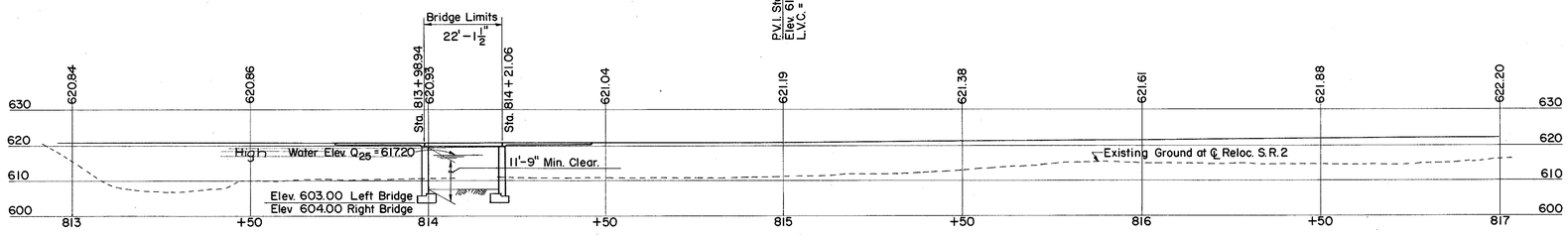
LAKE COUNTY
LAK-2-16.49

Located 0.8 Miles East of East Corporation Line of Painesville.

B.M. # 85A – R.R. Spike in North Side of 18" Walnut Tree 199' Rt. of Sta. 816+38
Elev. 614.919

FOUNDATION SOUNDINGS: Foundation design and foundation quantities are based on a study of soil-sampling soundings made at the site. This sounding information, the accuracy of which the State does not guarantee, may be examined in the office of the Bureau of Bridges in Columbus or in the Division office.





MICROFILMED
MAR 3 0 1984

PROPOSED STRUCTURE

TYPE: Two 1-Span Reinf. Conc. Slab and Substructure.
SPAN: 20'-0"
ROADWAY: Full width, distance f/f of parapets varies.
LOAD FREQUENCY: CF = 2000 (57)
WEARING SURFACE: 1" monolithic concrete.
APPROACH SLABS: AS-1-54 (25'-0" Long)
ALIGNMENT: Tangent
SKEW: 20° R.F.
A.D.T. 17,160 (1980)
DRAINAGE AREA: 5,700 Acres
DESIGN FLOW: 1,570 c.f.s. (Q_{25})

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CAPITOL ENGINEERING ASSOCIATES, DILLSBURG, PA.
FOR

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

SITE PLAN

BRIDGE NO. LAK-2-1731 L. & R.
RELOC. S.R.2 OVER RED CREEK
LAKE COUNTY
STA. 813 + 98.94
STA. 814 + 21.06

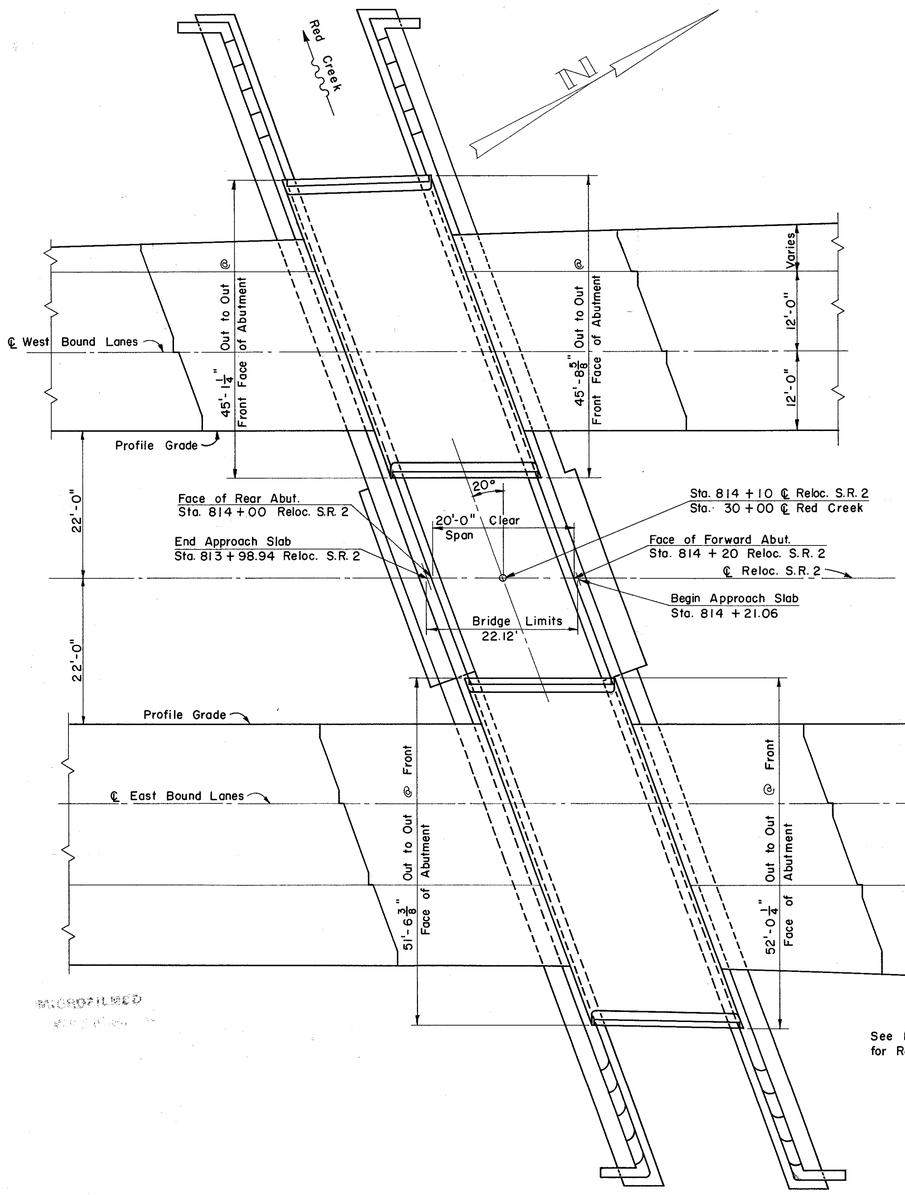
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
	M.J.F.	F.W.B.	J.H.T.			

MICROFILMED
MAR 3 0 1984

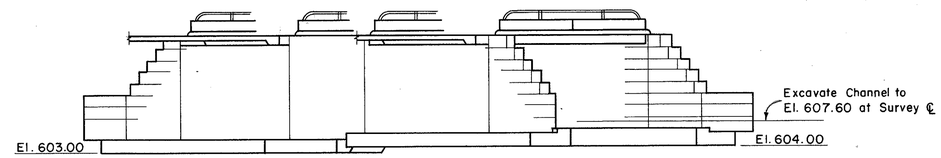
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

256/313

LAKE COUNTY
LAK-2-16.49



GENERAL PLAN



ELEVATION

GENERAL NOTES

REFERENCE shall be made to Standard Drawings AR-1-57 revised 4-2-62 and AS-1-54 revised 7-5-62, and to Supplemental Specifications S-101 dated 7-12-62.

DESIGN SPECIFICATIONS: This structure conforms to the requirements of "Design Specifications for Highway Structures" of the State of Ohio Department of Highways, dated 9-1-57, together with current revisions thereof.

FOOTINGS shall extend a minimum of 3" into undisturbed Shale or to the elevation shown, whichever is lower.

FOUNDATION BEARING PRESSURE: Abutment footings are designed for a maximum bearing pressure of 3.0 tons per square foot.

DESIGN LOADING: CF 2,000(57)

BASIC UNIT WORKING STRESSES:

Concrete, Class C:	1,333 p.s.i.
Concrete, Class E:	1,133 p.s.i.
Reinforcing Steel, ASTM A 15, A 16 & A 160 Deformed, Intermediate or Hard Grade:	20,000 p.s.i.

ESTIMATED QUANTITIES

ITEM	TOTAL	UNIT	DESCRIPTION	SUPER.	ABUTS.	GEN'L.		
E- 2	420	Cu. Yds.	Unclassified Excavation		420			
E- 2	751	Cu. Yds.	Shale Excavation		751			
S- 1	108	Cu. Yds.	Class C Concrete Superstructure	108				
S- 1	166	Cu. Yds.	Class E Concrete, Abut. above Footings		166			
S- 1	172	Cu. Yds.	Class E Concrete, Footings		172			
S- 3	111	Lin. Ft.	Premolded Sealing Strip		111			
S- 4	60,421	Lbs.	Reinforcing Steel	22,937	37,484			
S- 14	84.00	Lin. Ft.	Railing (Aluminum Railing & Type A Posts w/Conc. Parapets)	84.00				
S- 29	238	Cu. Yds.	Porous Backfill		238			
S-101	108	Each	Water-reducing, Set-retarding Admixtures for Conc.	108				
E-3	584	Cu. Yd	Channel Excavation			584		

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FOR

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

GENERAL PLAN

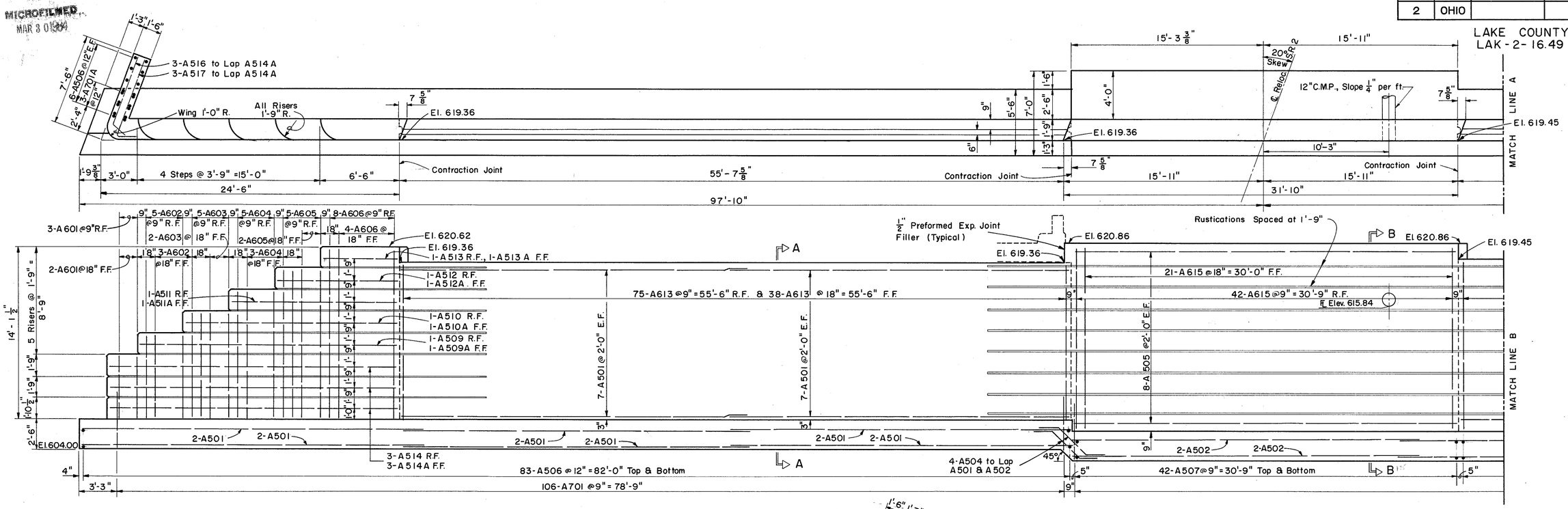
BRIDGE NO. LAK-2-1731 L.&R.
RELOC. S.R. 2 OVER RED CREEK
LAKE COUNTY
STA. 813 + 98.94
STA. 814 + 21.06

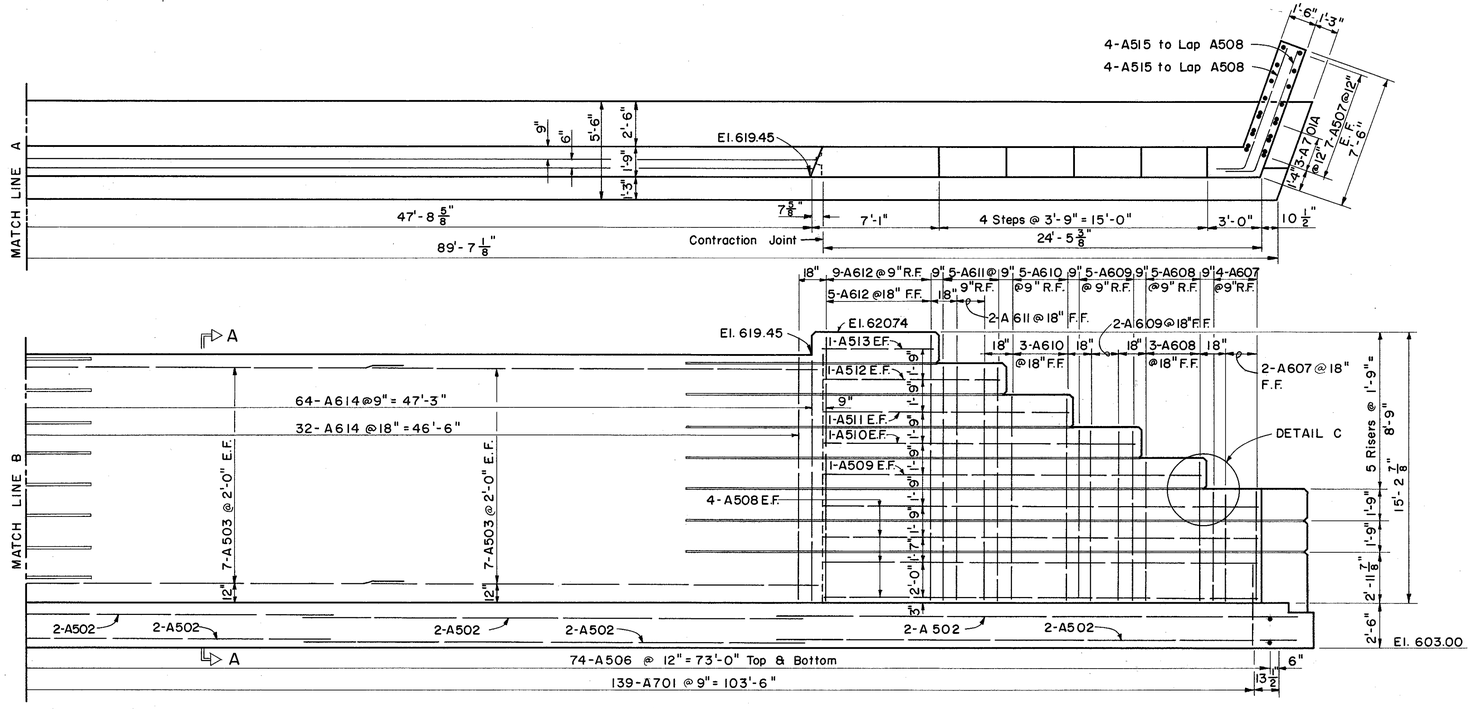
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
	R.J.A. M.J.F.	E.L.M.	M.C.P. M.J.F.	G.S.W. M.C.P.		

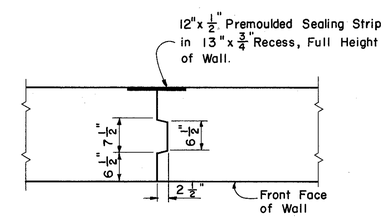
MICROFILMED
MAR 3 0 1984

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

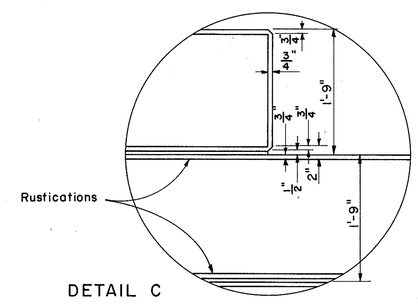
LAKE COUNTY
LAK-2-16.49







TYPICAL SECTION OF CONSTRUCTION JOINT



DETAIL C

NOTES:

RUSTICATIONS shall terminate 7'-0" beyond the contraction joint on exposed faces and a minimum of 2'-0" beneath finished surface on buried faces.

E. F. = Each Face

F. F. = Front Face

R. F. = Rear Face

ALL REINFORCING STEEL shall have 3" cover in the bottom of footing and 2" elsewhere.

See Forward Abutment Details for Sections A-A and B-B.

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FOR

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

REAR ABUTMENT DETAILS

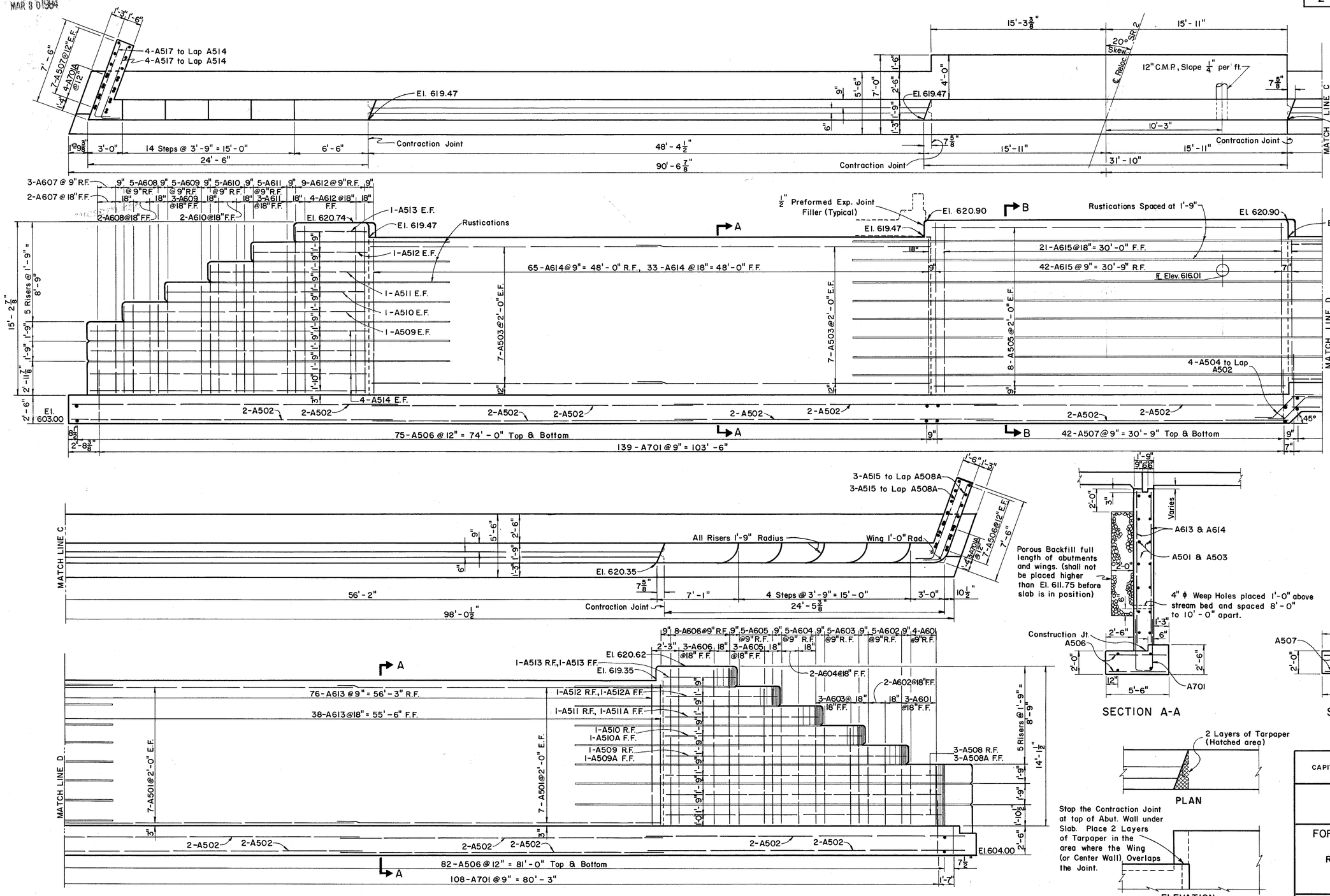
BRIDGE NO. LAK-2-1731 L. & R.
RELOC. S.R. 2 OVER RED CREEK
LAKE COUNTY
STA. 813 + 98.94
STA. 814 + 21.06

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
G.S.W. R.J.A. M.C.P.	M.J.F.	E.L.M.	M.C.P. M.J.F.	G.S.W. M.C.P.		

MICROFILMED
MAR 8 0 1984

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

LAKE COUNTY
LAK-2-16.49



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FOR

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

FORWARD ABUTMENT DETAILS

BRIDGE NO. LAK-2-1731 L. & R.
RELOC. S.R. 2 OVER RED CREEK
LAKE COUNTY
STA. 813 + 98.94
STA. 814 + 21.06

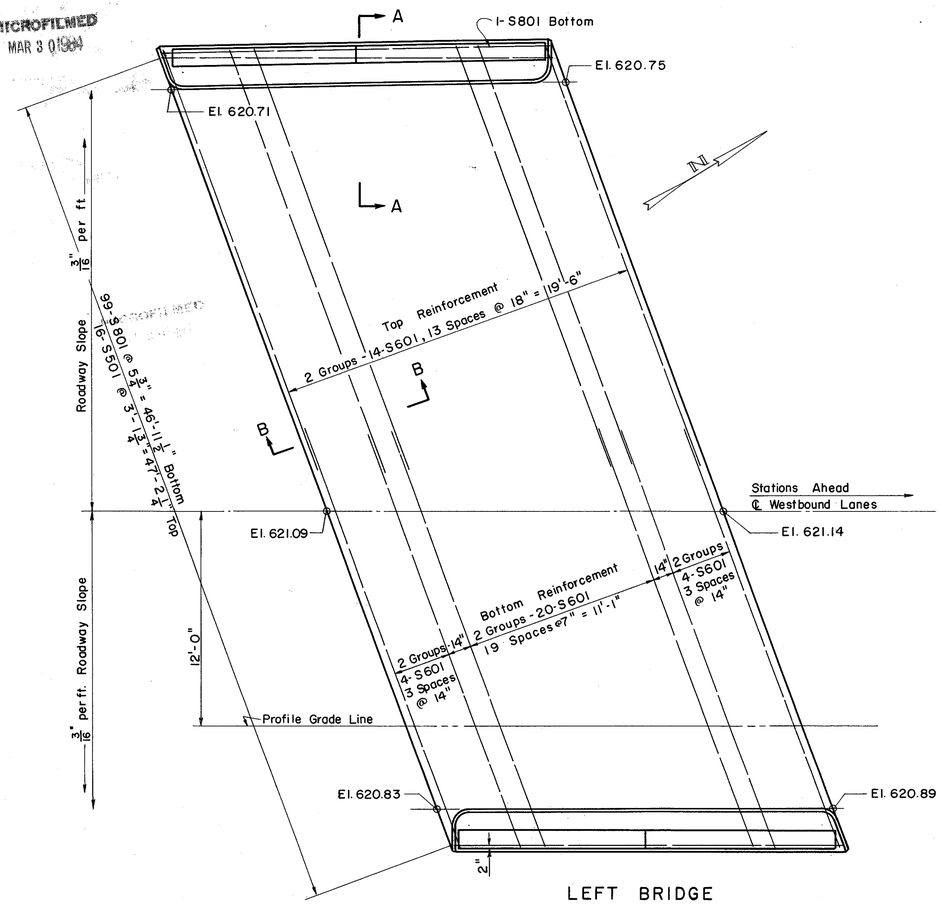
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
G.S.W. R.J.A. M.C.P.	M.J.F.	E.L.M.	M.C.P. M.F.F.	G.S.W. M.C.P.		

MICROFILMED
MAR 3 0 1984

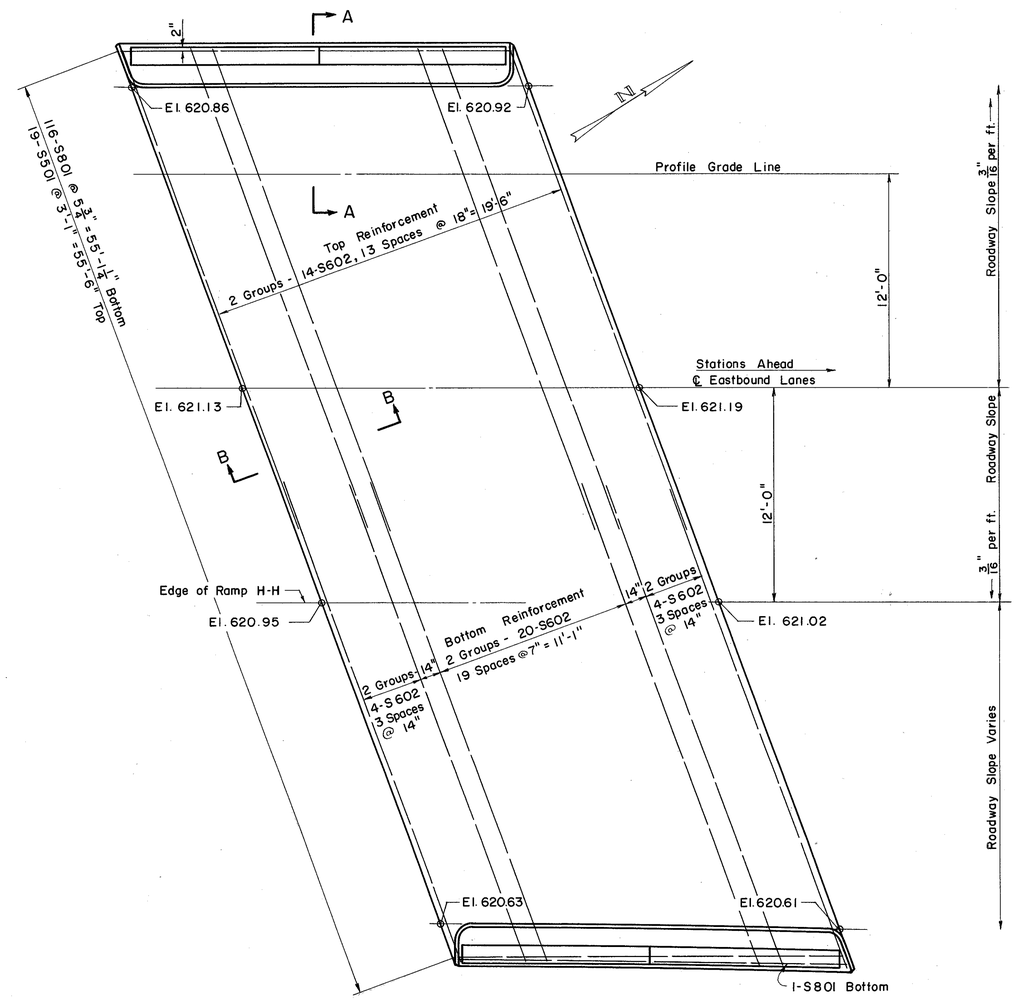
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

259/313

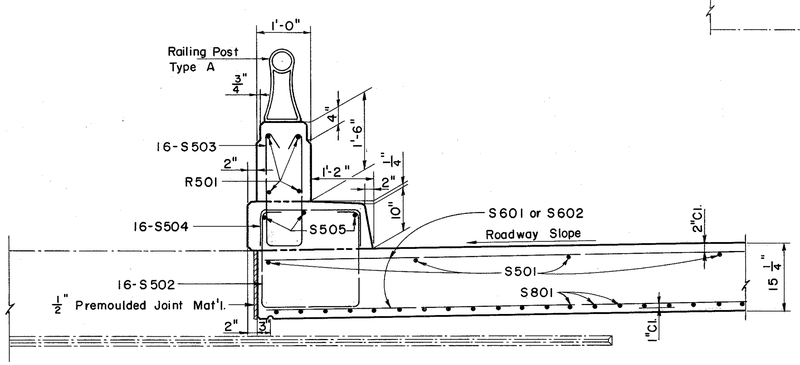
LAKE COUNTY
LAK-2-16.49



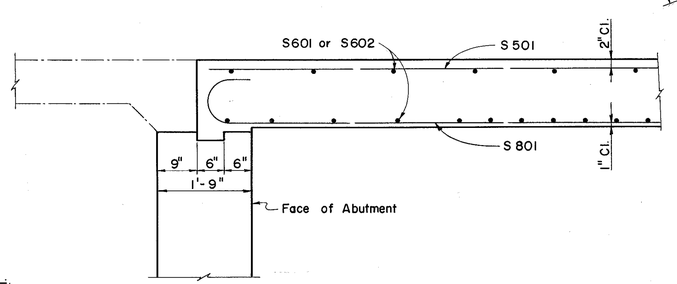
LEFT BRIDGE



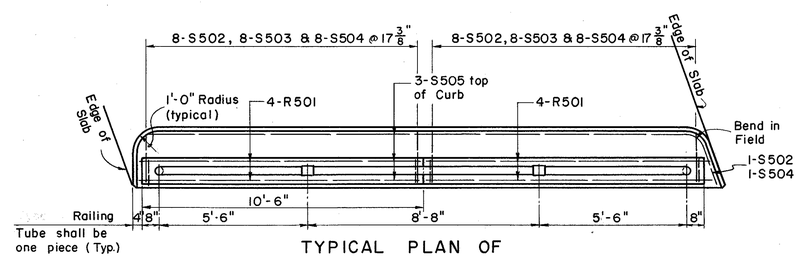
RIGHT BRIDGE



SECTION A-A



SECTION B-B



TYPICAL PLAN OF PARAPET & CURB

PREPARED BY
CAPITOL ENGINEERING ASSOCIATES, DILLSBURG, PA.
FOR

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

DECK DETAILS

BRIDGE NO. LAK-2-1731 L. & R.
RELOC. S.R.2 OVER RED CREEK
LAKE COUNTY
STA. 813 + 98.94
STA. 814 + 21.06

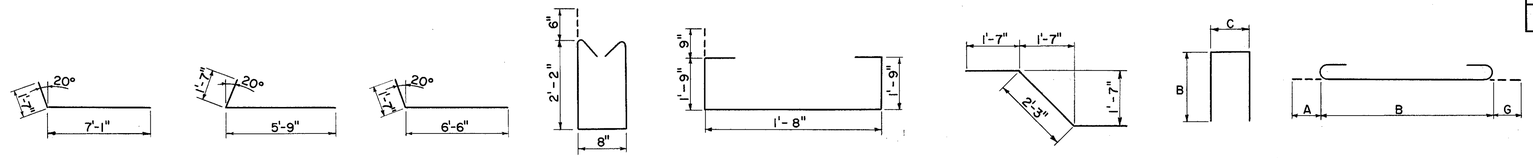
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
G.S.W. M.C.P.	R.J.A. M.J.F.	FWB	M.C.P. M.J.F.	G.S.W M.C.P.		

MICROFILMED
MAR 3 0 1994

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

260
313

LAKE COUNTY
LAK-2-16.49



A 515 A 516 A 517 S 503 S 502 A 504 TYPE 1 TYPE 2

REINFORCING STEEL LIST

SUPERSTRUCTURE

MARK	LEFT BRIDGE	RIGHT BRIDGE				TOTAL	LENGTH	WEIGHT	TYPE	A	B	C	D	G
S801	100	117				217	24'-1"	13,953	2	1'-1"	21'-11"			1'-1"
S601	84	-				84	25'-2"	3,175	S					
S602	-	84				84	29'-1"	3,669	S					
S501	16	19				35	21'-11"	800	S					
S502	34	34				68	6'-5"	455	-					
S503	32	32				64	6'-0"	400	-					
S504	34	34				68	3'-1"	219	1		10"	1'-8"		
S505	6	6				12	21'-4"	267	S					

ABUTMENTS

MARK	REQ'D REAR	REQ'D FWD.	TOTAL	LENGTH	WEIGHT	TYPE	B	C	D	VARIES BY	NO. OF EACH
A701	245	247	492	10'-1"	10,140	1	4'-6"	1'-5"			
A701A	6	7	13	9'-10"	262	1	4'-6"	1'-2"			
A601	5	7	12	5'-2"	93	S					
A602	8	7	15	6'-11"	156	S					
A603	7	8	15	8'-8"	195	S					
A604	8	7	15	10'-5"	234	S					
A605	7	8	15	12'-2"	274	S					
A606	12	11	23	13'-11"	480	S					
A607	6	5	11	6'-3"	103	S					
A608	8	7	15	8'-0"	180	S					
A609	7	8	15	9'-9"	220	S					
A610	8	7	15	11'-6"	259	S					
A611	7	8	15	13'-3"	299	S					
A612	14	13	27	15'-0"	608	S					
A613	113	114	227	12'-8"	4,318	S					
A614	96	98	194	13'-9"	4,006	S					
A615	63	63	126	15'-2"	2,870	S					
A501	40	44	84	29'-3"	2,562	S					
A502	16	28	44	27'-10"	1,278	S					
A503	28	28	56	25'-3"	1,475	S					
A504	4	4	8	5'-5"	45	-					
A505	16	16	32	31'-6"	1,051	S					
A506	326	328	654	5'-2"	3,524						
A507	98	98	196	6'-8"	1,363	S					
A508	8	3	11	24'-2"	277	S					
A508A	-	3	3	23'-3"	73	S					
A509	3	3	6	21'-2"	132	S					
A509A	1	1	2	19'-6"	41	S					
A510	3	3	6	17'-5"	108	S					
A510A	1	1	2	15'-10"	34	S					
A511	3	3	6	13'-8"	85	S					
A511A	1	1	2	12'-0"	25	S					
A512	3	3	6	9'-11"	62	S					
A512A	1	1	2	8'-3"	18	S					
A513	3	3	6	6'-2"	39	S					
A513A	1	1	2	4'-6"	9	S					
A514	3	8	11	23'-6"	269	S					
A514A	3	-	3	22'-6"	70	S					
A515	8	6	14	8'-8"	126	-					
A516	3	-	3	7'-4"	23	-					
A517	3	8	11	8'-0"	92	-					

MARK	TOTAL	LENGTH	WEIGHT	TYPE	B	C	D	VARIES BY	NO. OF EACH

RAILING

MARK	TOTAL	LENGTH	WEIGHT	TYPE
R501	32	10'-2"	*	S

* To be Included with Item S-14 for Payment.

REPLACEMENT BARS

MARK	NO.	LENGTH	WEIGHT	TYPE
RE 800	1	6'-6"		S
RE 700	1	6'-3"		S
RE 600	1	5'-11"		S
RE 500	1	5'-7"		S

Bar Size is indicated in the bar mark. The first digit where three digits are used, and the first two digits where four digits are used indicate the size of the bar. For example A 700 is a No. 7 size bar and A 1014 is a No. 10 size bar.

All dimensions are out to out of the bar.

Type "S" is straight bar.

PREPARED BY
CAPITOL ENGINEERING ASSOCIATES, DILLSBURG, PA.
FOR

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

REINFORCING BAR LIST

BRIDGE NO. LAK-2-1731 L. & R.
RELOC. S.R. 2 OVER RED CREEK
LAKE COUNTY
STA. 813 + 98.94
STA. 814 + 21.06

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
M.C.P. M.J.F.	M.J.F.	C.L.S	M.C.P. M.J.F.	G.S.W. M.C.P.		

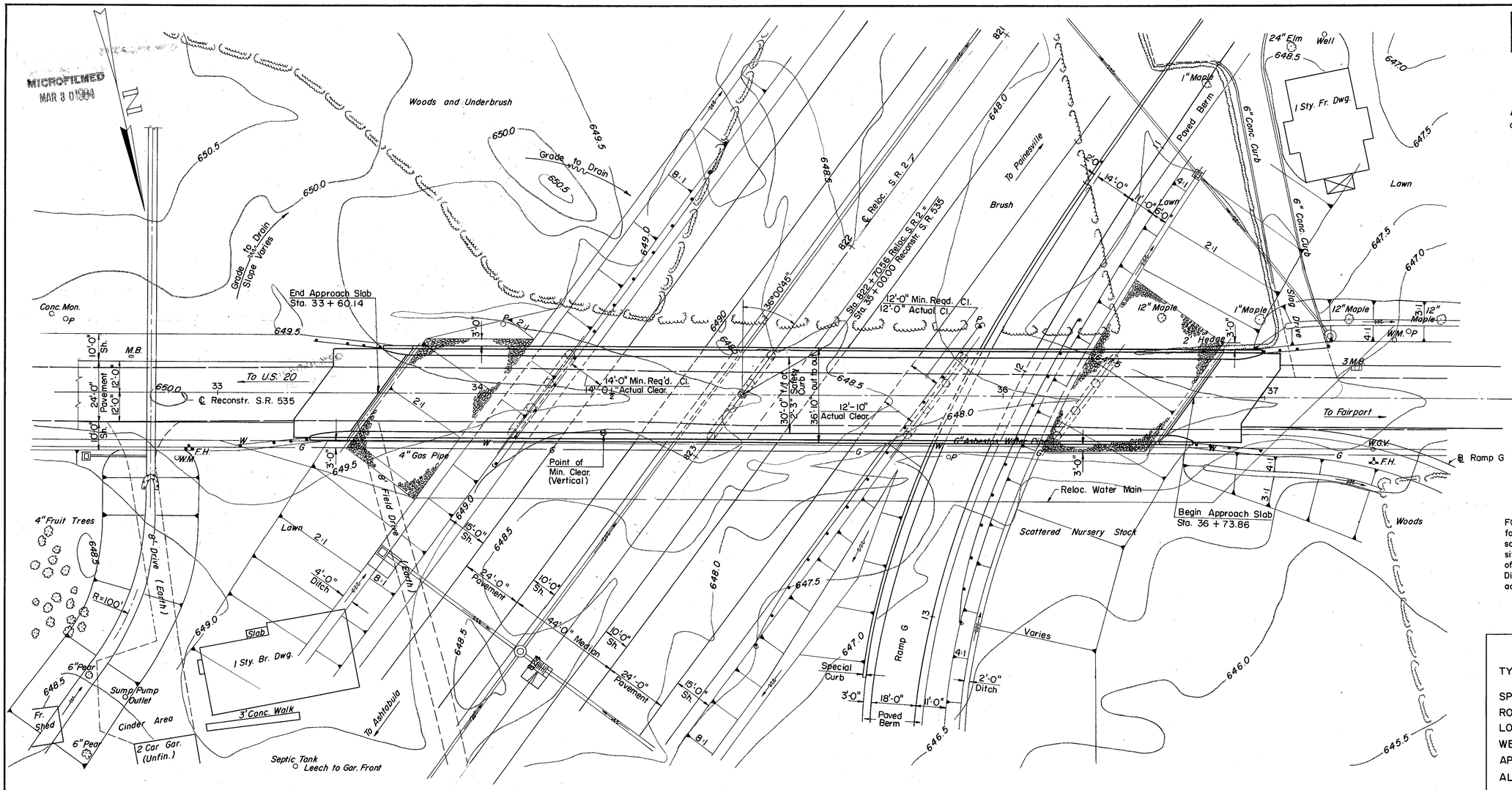
MICROFILMED
MAR 8 0 1984

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

261/313

LAKE COUNTY
LAK-2-16.49

Approx. 1 mile East of East Corporation Line of Painesville.



B.M. # 84 - Iron pin in concrete property corner. Northeast corner of intersection S.R. 535 and U.S. Rt. 20
26' Lt. of ℄ Sta. 55 + 50 on U.S. 20
508' Rt. of ℄ Sta. 827 + 09.5 on Reloc. S.R. 2
El. 655.560

FOUNDATION SOUNDINGS: Foundation design and foundation quantities are based on a study of rod soundings and soil-sampling soundings made at the site. This sounding information may be inspected in the office of the Bureau of Bridges in Columbus or in the Division Office, but the State does not guarantee the accuracy thereof.

PROPOSED STRUCTURE

TYPE: 5 Span continuous Steel Beam with Reinforced Concrete Deck & Substructure.
SPANS: 61'-0", 76'-1", 74'-7", 57'-6", 39'-0" ℄ Brgs.
ROADWAY: 30'-0" f/f Safety Curbs
LOAD FREQUENCY: CF 400 (57)
WEARING SURFACE: 1" monolithic concrete
APPROACH SLABS: Special (25'-0" Long)
ALIGNMENT: S.R.2 & S.R.535 – Tangent
SKEW: 36° 00' 45" L.F.
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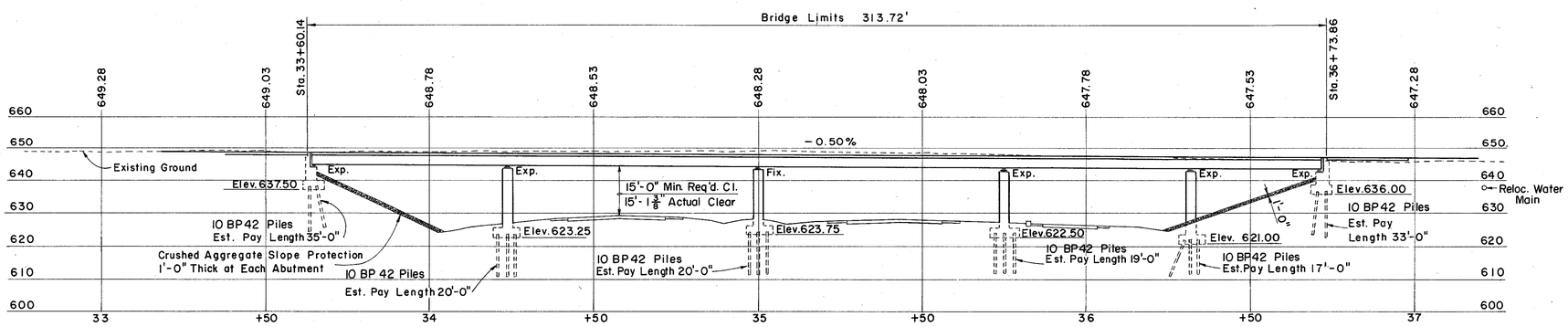
A.D.T. Reconstr. S.R. 535 4,170 N., 1,100 S. (1980)



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CAPITOL ENGINEERING ASSOCIATES, DILLSBURG, PA.
FOR

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

SITE PLAN

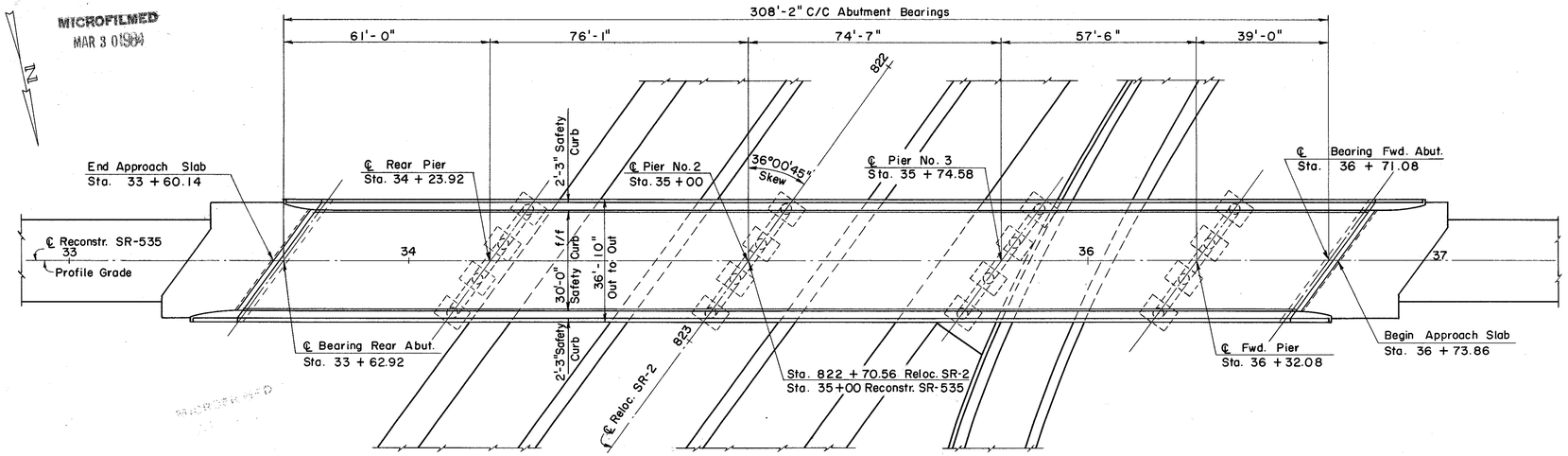
BRIDGE NO. LAK-2-1748
RELOC. S.R. 2 UNDER RECONSTR. S.R. 535
LAKE COUNTY
STA. 822 + 70.56

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
	M.J.F.	F.W.B.	L.L.D. J.H.T.			

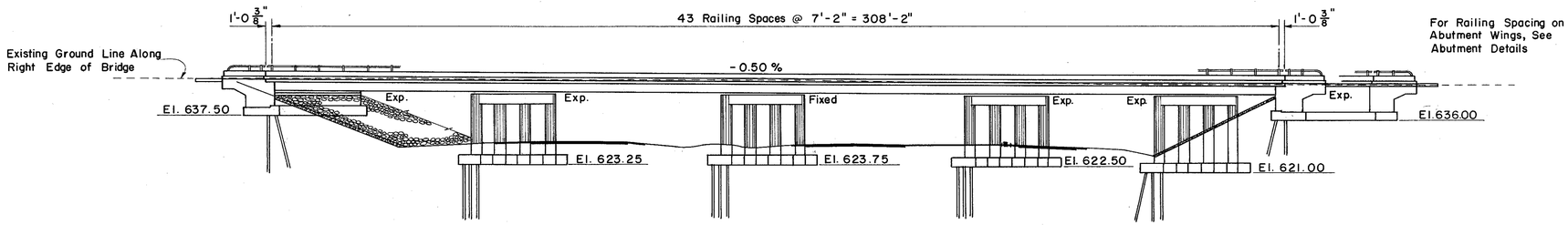
MICROFILMED
MAR 3 0 1984

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

LAKE COUNTY
LAK-2-16.49



PLAN



ELEVATION

ESTIMATED QUANTITIES

ITEM	TOTAL	UNIT	DESCRIPTION	SUPER.	ABUT'S	PIERS	GEN'L		
E- 2	539	Cu. Yds.	Unclassified Excavation		252	287			
S- 1	360	Cu. Yds.	Class C Concrete Superstructure	360					
S- 1	126	Cu. Yds.	Class C Concrete, Pier caps & columns			126			
S- 1	98	Cu. Yds.	Class E Concrete, Abut. above Footings		98				
S- 1	184	Cu. Yds.	Class E Concrete, Footings		80	104			
S- 4	151,719	Lbs.	Reinforcing Steel	100,546	13,452	37,721			
S- 7	294,400	Lbs.	Structural Steel	294,400					
S- 8	294,400	Lbs.	Field Painting of Structural Steel	294,400					
S- 14	675.88	Lin. Ft.	Railing (Aluminum Railing, Type A Posts w/Conc. Parapets)	620.46	55.42				
S- 16	Lump	Sum	First Test Piles				Lump		
S- 18	2,770	Lin. Ft.	10 BP 42 Piles		950	1,820			
S-29	28	Cu. Yds.	Porous Backfill		28				
S-29	16	Each	Scuppers, Including Supports	16					
S-101	360	Each	Water-reducing, Set-retarding Admixtures for Conc.	360					
I- 10	552	Sq. Yds.	Crushed Aggregate Slope Protection				552		

GENERAL NOTES

REFERENCE shall be made to Standard Drawings CSB-2-56, sheets No. 2 and No. 3 of 6 revised 2-2-59, FSB-1-62 revised 1-15-63, AR-1-57 revised 4-2-62, and to Supplemental Specifications S-101 dated 7-12-62 and S-307 dated 8-23-60.

DESIGN SPECIFICATIONS: This structure conforms to the requirements of "Design Specifications for Highway Structures" of the State of Ohio Department of Highways, dated 9-1-57, together with current revisions thereof.

WELDING of structural steel shall be Class "A" except as otherwise shown. Welds shown as field welds may, at the option of the Contractor, be made in the shop.

CONCRETE DECK PLACING: In order to facilitate water curing of the deck slab, the placing of concrete shall progress upgrade The slab may be placed in sections, between transverse construction joints which are parallel to transverse reinforcing steel and are located near the center of any span.

SURFACE FINISH OF CONCRETE: The requirements of Section S-1.22, Rubbed Finish, shall apply to:
(a) The entire superstructure except the top and bottom surfaces of safety curbs and roadways.
(b) The entire surface of piers and abutments except bridge seats, backwalls and face of abutments between outside beams.

MACHINE FINISH: The concrete bridge deck shall be finished by the use of a finishing machine.

CONTINUOUS BEAM SHOP ASSEMBLY: Reference paragraph 4, Sec. S-7.12 of the Construction and Material Specifications for the purpose of checking the fit-up of weld joint preparation, only two adjacent beams need be shop assembled at a time in their correct, unloaded positions. All beams shall be assembled and match marked.

PILES shall be driven with a hammer of not less than 11,000 foot-pounds per blow to firm contact with shale. If the length of penetration is approximately equal to the depth to shale according to the bridge foundation investigation report the firm contact shall be considered as attained when the capacity according to the formula in Sec.-1805 of the Construction Specifications, is not less than the following value for a pile hammer of the indicated energy rating.

HAMMER FOOT-POUND	ABUTMENTS TONS PER PILE	PIERS TONS PER PILE
11,000	36	50
15,000	31	43

If the energy rating of the hammer is between the ratings as shown above, the required formula capacity shall be determined by interpolation. The design load is 35 tons per pile at the piers and 31 tons per pile at the abutments.

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 will be held to a minimum.

ALL STRUCTURAL STEEL: ASTM A 36

DESIGN LOADING: CF 400 (57)

BASIC UNIT WORKING STRESSES:

Concrete, Class C:	1,333 p.s.i.
Concrete, Class E:	1,133 p.s.i.
Structural Steel, ASTM A 36 (Except Piling)	20,000 p.s.i.
Reinforcing Steel, ASTM A 15, A 16 & A 160 Deformed, Intermediate or Hard Grade:	20,000 p.s.i.
Spiral Reinforcement, Plain, Structural Grade:	18,000 p.s.i.

PREPARED BY
CAPITOL ENGINEERING ASSOCIATES, DILLSBURG, PA.
FOR

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

GENERAL PLAN
BRIDGE NO. LAK-2-1748
RELOC. S.R. 2 UNDER RECONSTR. S.R. 535
LAKE COUNTY
STA. 822 + 70.56

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED DATE	REVISED
	M.J.F.	FWB	L.L.D. M.J.F.	G.S.W. M.C.P.	

MICROFILMED
MAR 30 1984

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

263/313

LAKE COUNTY
LAK-2-16.49

NOTES:

BRIDGE SEAT REINFORCING: Special care shall be taken in placing reinforcing steel in the vicinity of the bridge seats so as to avoid interference with drilling of anchor bar holes.

ALL REINFORCING STEEL shall have 3" of cover in the bottom of the footing and 2" elsewhere.

ALL PILES are 10 BP 42, design load 31 tons per pile.

Indicates vertical pile.

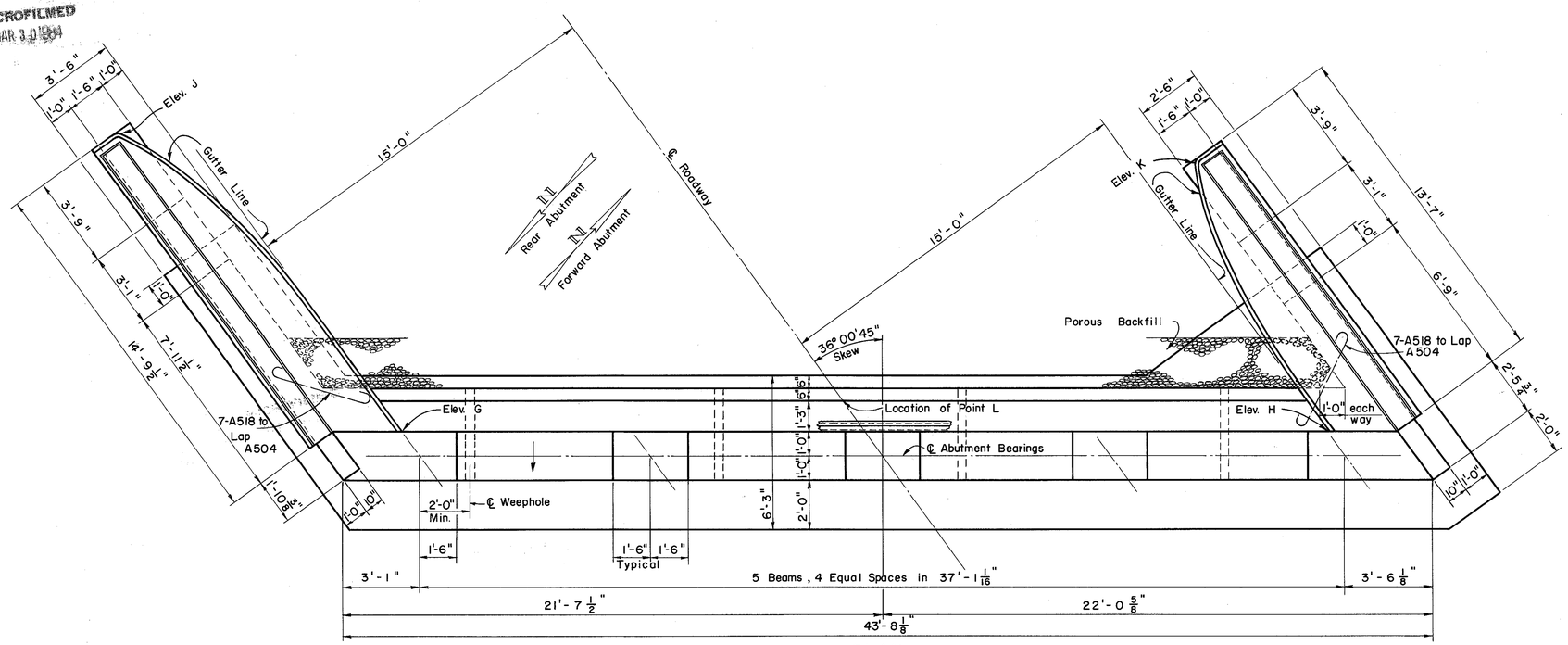
Indicates battered pile 1:4 and direction of batter.

E. F. - Indicates Each Face

The railing tube on the wing walls shall be continuous.

For additional notes see General Plan.

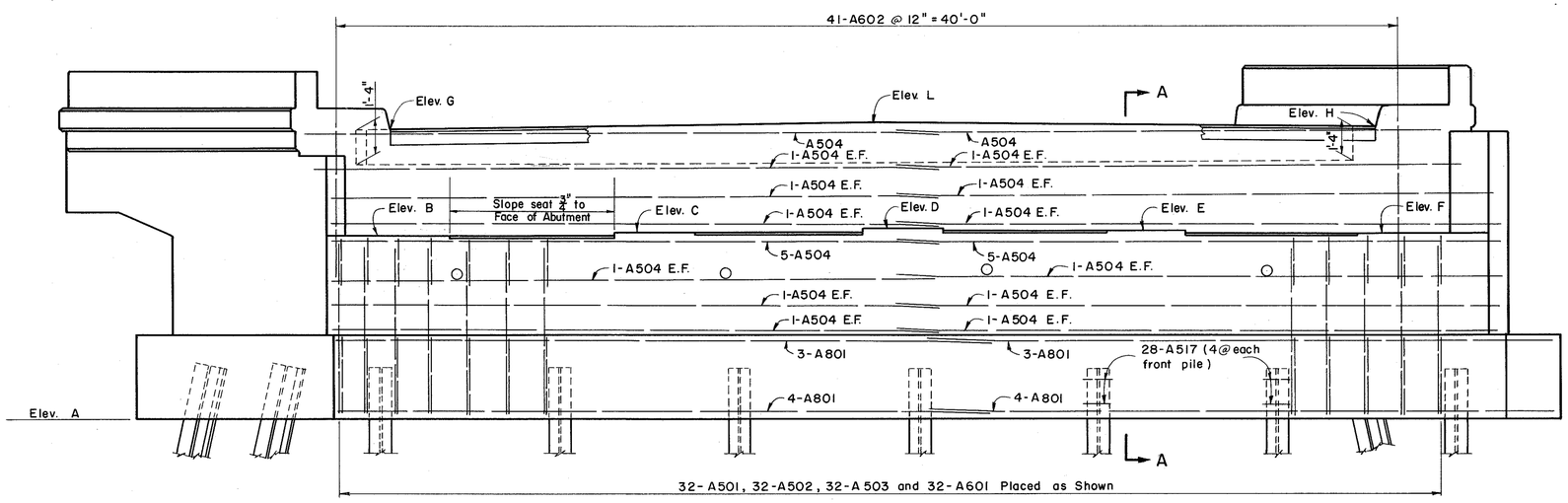
Excavation required for placing porous backfill in excess of that required for construction of the abutments, shall be considered as paid for in the bid price per Cu. Yd. paid for porous backfill.



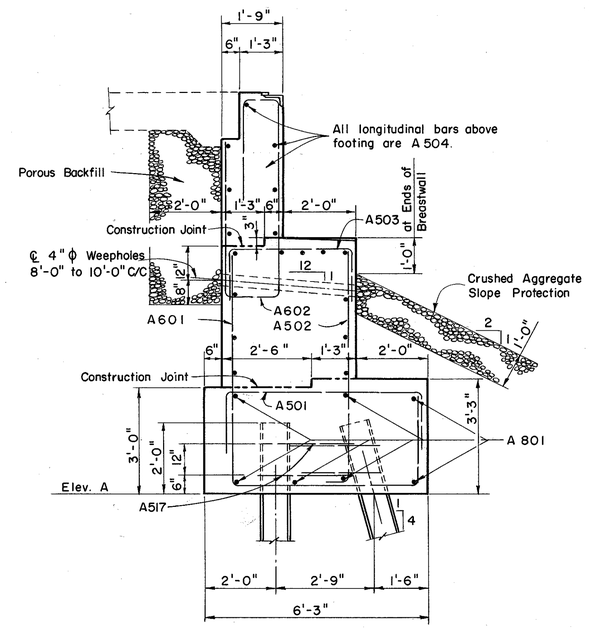
PLAN

ELEVATIONS

ABUTMENT		A	B	C	D	E	F	G	H	J	K	L
Rear		637.50	644.72	644.81	644.90	644.76	644.61	648.79	648.68	648.84	648.71	648.97
Forward		636.00	643.07	643.22	643.36	643.27	643.18	647.13	647.24	647.02	647.15	647.42



ELEVATION



SECTION A-A

PREPARED BY
CAPITOL ENGINEERING ASSOCIATES, DILLSBURG, PA.
FOR

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

ABUTMENT DETAILS

BRIDGE NO. LAK-2-1748
RELOC. S.R. 2 UNDER RECONSTR. S.R. 535
LAKE COUNTY
STA. 822 + 70.56

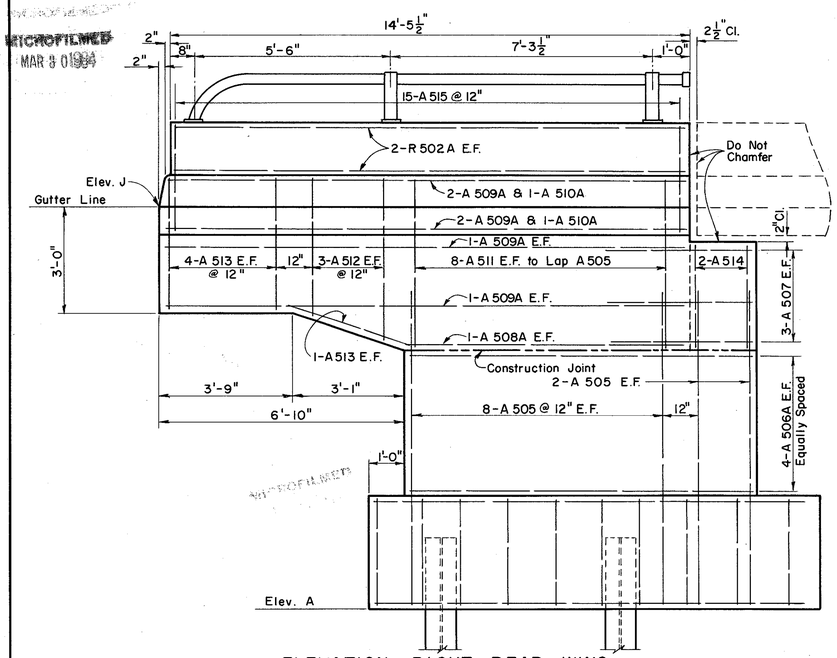
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED DATE	REVISED
M.C.P.	M.J.F.	FWB	L.L.D. M.J.F.	G.S.W. M.C.P.	

MICROFILMED
MAR 8 01994

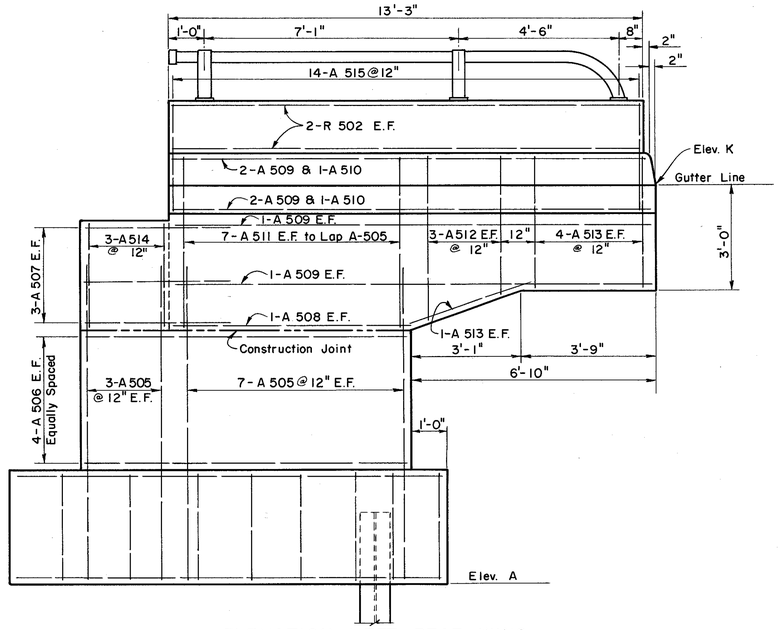
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

264/313

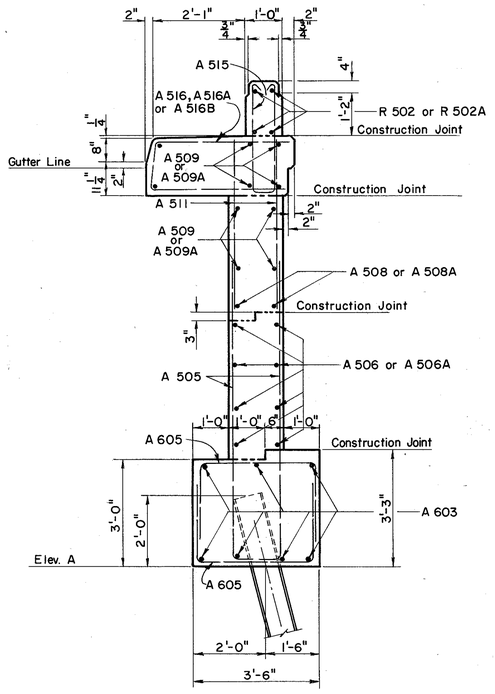
LAKE COUNTY
LAK-2-16.49



ELEVATION RIGHT REAR WING
OR LEFT FORWARD WING

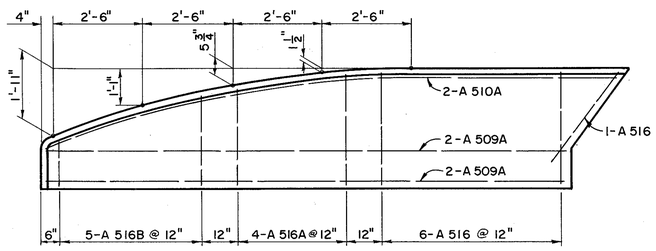


ELEVATION LEFT REAR WING
OR RIGHT FORWARD WING

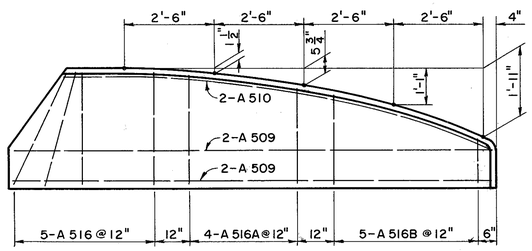


TYPICAL WING WALL SECTION
EXCEPT FOOTING

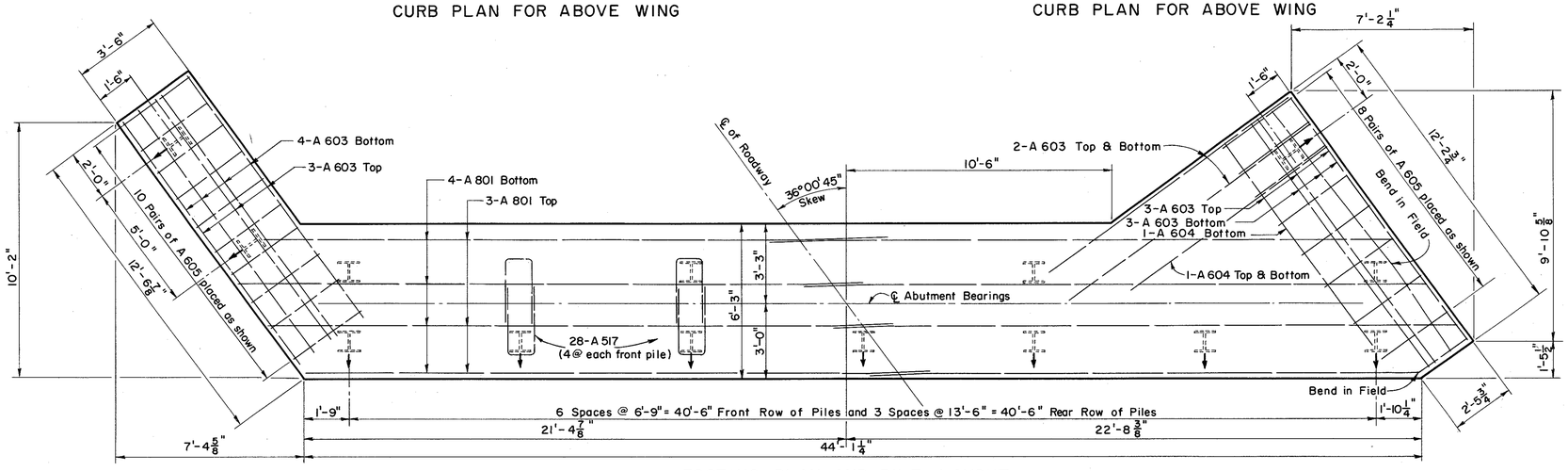
E.F. = Each Face



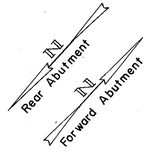
CURB PLAN FOR ABOVE WING



CURB PLAN FOR ABOVE WING



FOOTING PLAN AND PILE LAYOUT



PREPARED BY
CAPITOL ENGINEERING ASSOCIATES, DILLSBURG, PA.
FOR

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

ABUTMENT DETAILS

BRIDGE NO. LAK-2-1748
RELOC. S.R. 2 UNDER RECONSTR. S.R. 535
LAKE COUNTY
STA. 822 +70.56

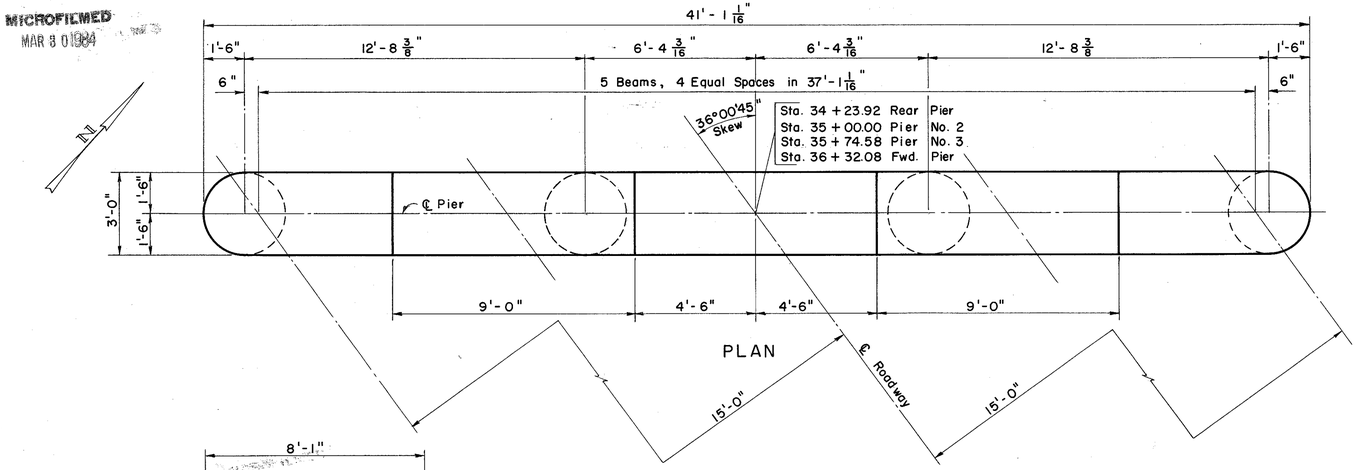
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
	M.J.F.	FWB	L.L.D. M.J.F.	G.S.W. M.C.P.		

MICROFILMED
MAR 8 0 1984

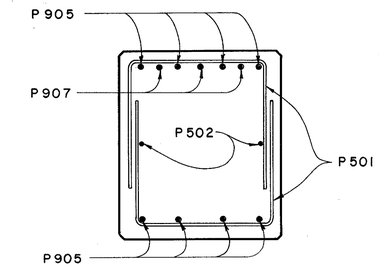
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

265/313

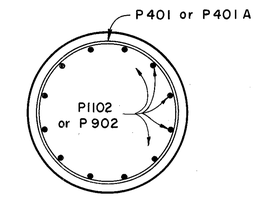
LAKE COUNTY
LAK-2-16.49



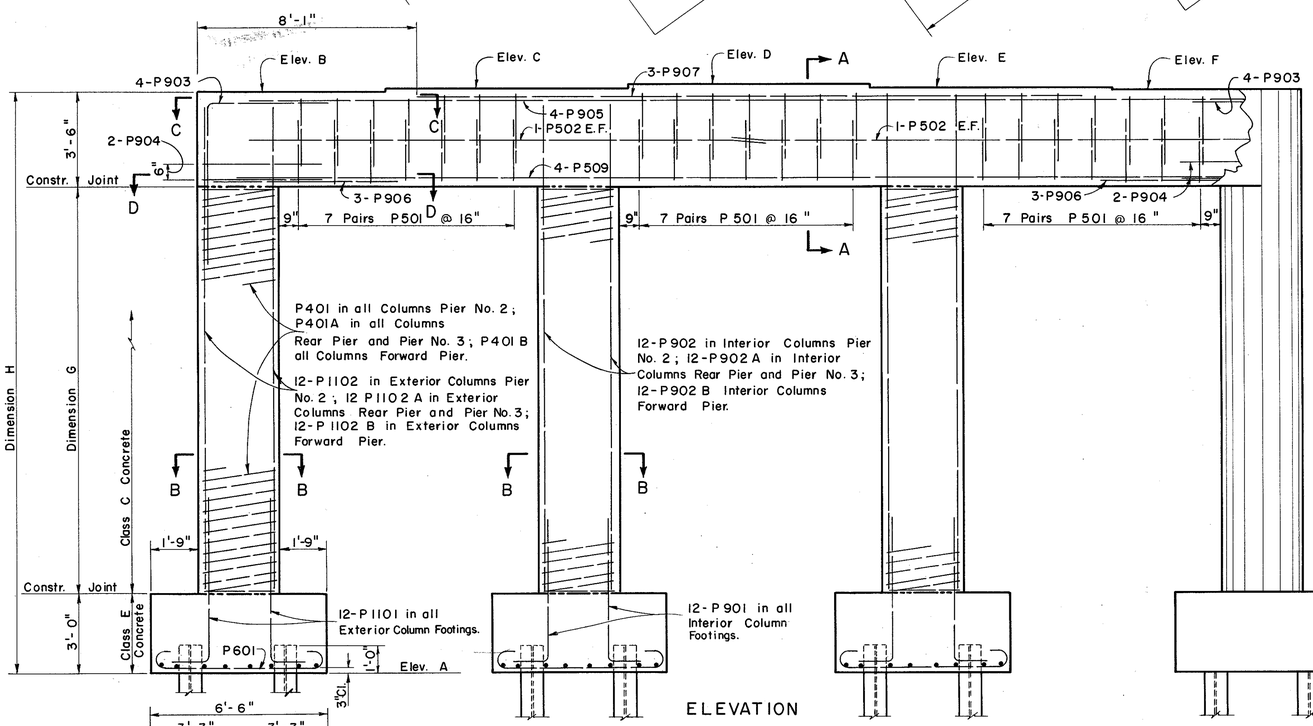
PLAN



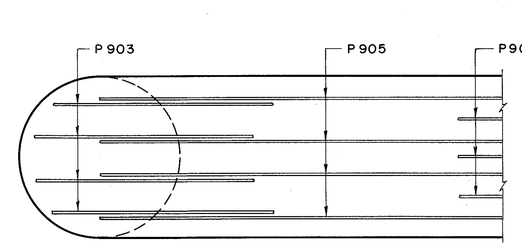
SECTION A-A



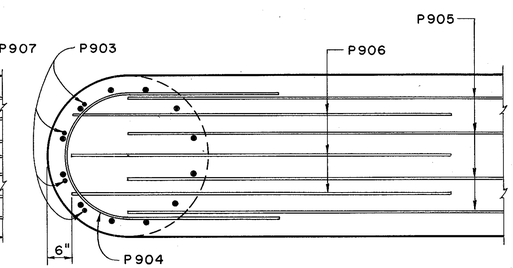
SECTION B-B



ELEVATION



SECTION C-C



SECTION D-D

PIER	ELEVATIONS						DIMENSIONS	
	A	B	C	D	E	F	G	H
Rear Pier	623.25	644.25	644.39	644.53	644.44	644.35	14'-6"	21'-0"
Pier No. 2	623.75	643.56	643.70	643.85	643.76	643.67	13'-3 3/4"	19'-9 3/4"
Pier No. 3	622.50	643.50	643.65	643.79	643.70	643.61	14'-6"	21'-0"
Forward Pier	621.00	643.27	643.41	643.56	643.47	643.38	15'-9 1/4"	22'-3 1/4"

E.F. = Each Face

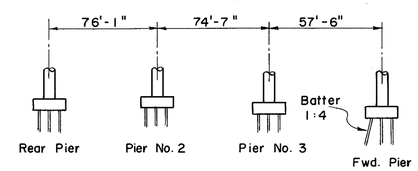
BRIDGE SEAT REINFORCING: Special care shall be taken in placing reinforcing steel in the vicinity of the bridge seats so as to avoid interference with drilling of anchor bar holes.

ALL REINFORCING STEEL shall have a minimum of cover of 2" unless otherwise shown.

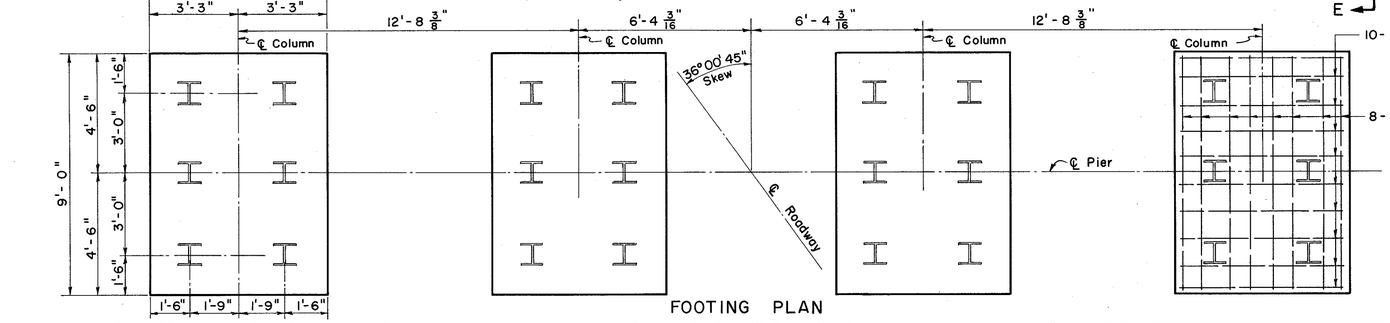
ALL PILES are 10 BP42.

All Piles are vertical except in forward pier. Batter rear row 1:4 (See Section E-E)

For additional notes see General Plan.



SECTION E-E



FOOTING PLAN

10-P601 Placed as Shown

8-P701 Placed as Shown

NOTE:
Pile Spacing and Reinforcement is the same for all Footings.

PREPARED BY
CAPITOL ENGINEERING ASSOCIATES, DILLSBURG, PA.
FOR

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

PIERS

BRIDGE NO. LAK-2-1748
RELOC. S.R. 2 UNDER RECONSTR. S.R. 535
LAKE COUNTY
STA. 822+70.56

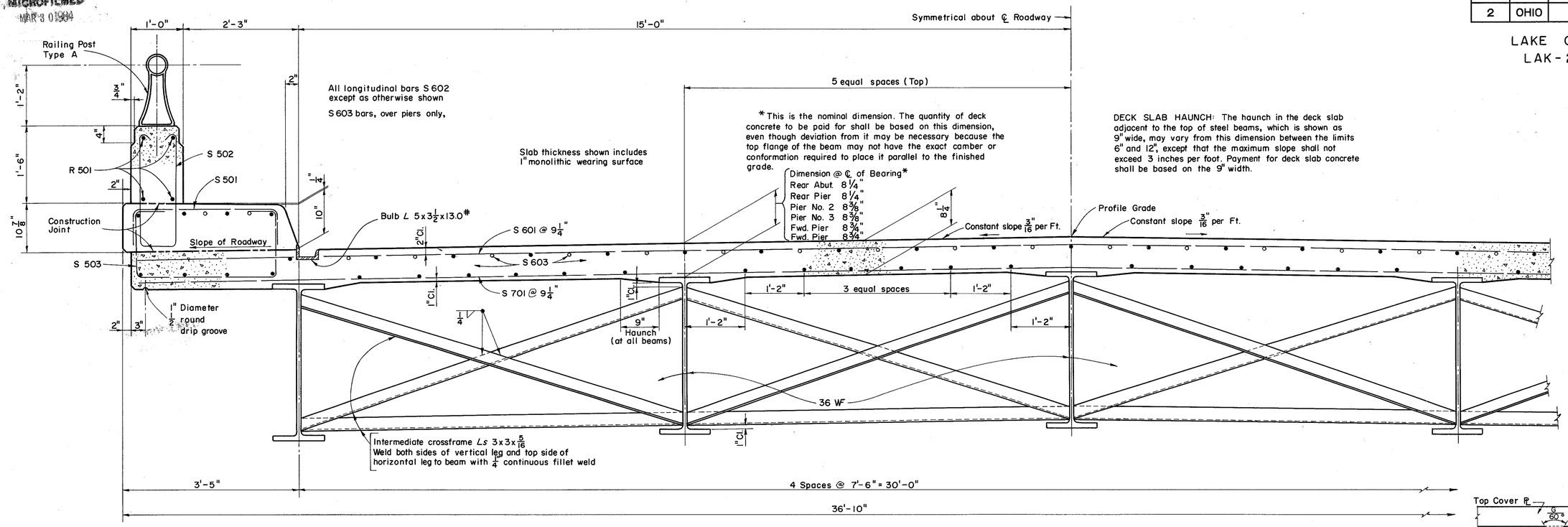
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED DATE	REVISED
M.C.P. L.L.D.	M.J.F.	FWB	L.L.D. M.J.F.	G.S.W. M.C.P.	

MICROFILMED
MAR 3 0 1984

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

266
313

LAKE COUNTY
LAK-2-16.49



TRANSVERSE SECTION

DEFLECTION AND CAMBER					
LOCATION	SPAN 1	SPAN 2	SPAN 3	SPAN 4	SPAN 5
Deflection due to weight of steel	1/16	1/16	1/16	0	0
Deflection due to remaining dead load	5/16	1/4	5/16	1/16	1/16
Sum of deflection	3/8	5/16	3/8	1/16	1/16
Required Camber	0	0	0	0	0

NOTES

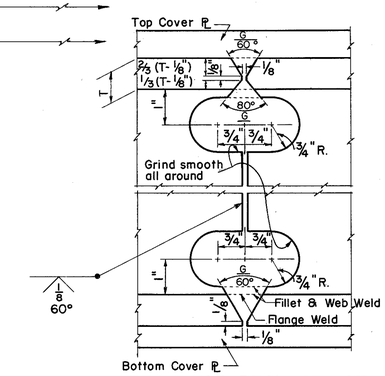
BEAM SPLICE WELDING PROCEDURE:
1. Raise end of beams at Pier No. 3, 2 5/8".
2. Butt weld beam flanges and web at Pier No. 2 using the following sequence make one pass on each flange, then two on the web; repeat, using one pass at each location, until welds are completed.
3. Weld top and bottom flange moment plates at Pier No. 2.
4. Lower end of beam at Pier No. 3.
5. Make splices at Pier No. 3 and Fwd. pier, in same manner, raising the ends of the beams 1 1/8" at Fwd. pier and 0 at Forward Abutment.
6. Then, make splice at Rear Pier in the same manner, raising the ends of the beams 1 1/8" at Rear Abutment.

REFERENCE shall be made to Standard Drawing CSB-2-56, Sheets 2 and 3 of 6, Revised 2-2-59 for details of end dams, gutters, pipe drains, scuppers, crossframes and beam splices.

REFERENCE shall be made to Standard Drawing FSB-1-62 revised 1-15-63 for details of bearings.

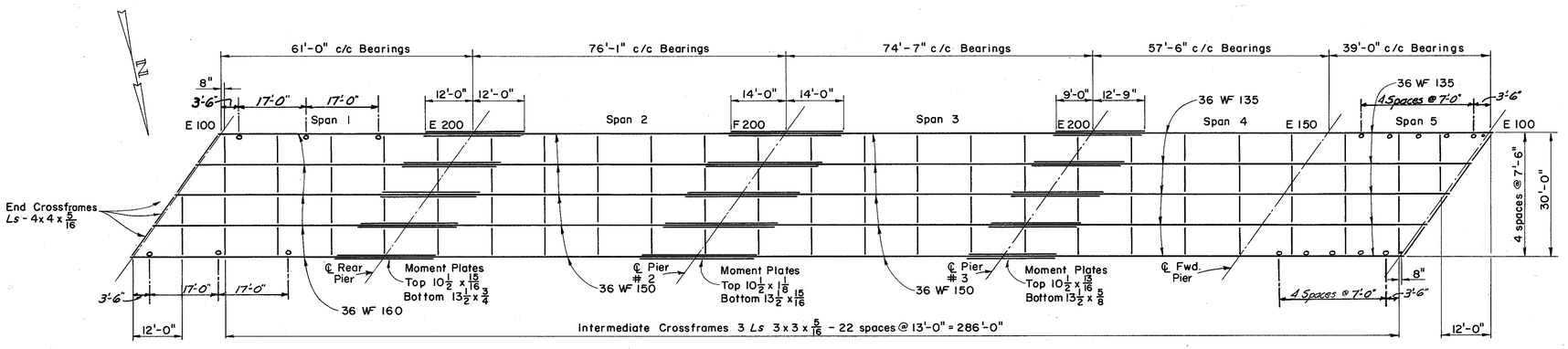
REFERENCE shall be made to Standard Drawing AR-1-57 revised 4-2-62 for details of aluminum railing and concrete parapet details.

BEAM WEB WELDS: Butt welds in webs of beams may have convex reinforcement in accordance with Sect. S-7.22. Finishing flush by grinding is not required.



DETAIL OF BEAM SPLICE

CONTINUOUS BEAM SPLICES: If beams having depths differing by more than 1/8" are to be spliced by butt welding, the depth of the smaller-depth beam shall be increased by splitting the web longitudinally at a distance of 1 1/2" below the bottom of the top flange and for a distance sufficient to allow the flange to be bent up at a slope of not more than 3/8" per foot, after which the split in the web shall be completely welded with full depth penetration and ground flush. A 3/4" hole shall be drilled thru the web at the end of the split which is away from the splice prior to bending up the flange. The edges of the split shall be double bevelled to provide a weld bevel of 60°. The weld of the split shall be radiographed.



STEEL FRAMING PLAN

PREPARED BY
CAPITOL ENGINEERING ASSOCIATES, DILLSBURG, PA.
FOR

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

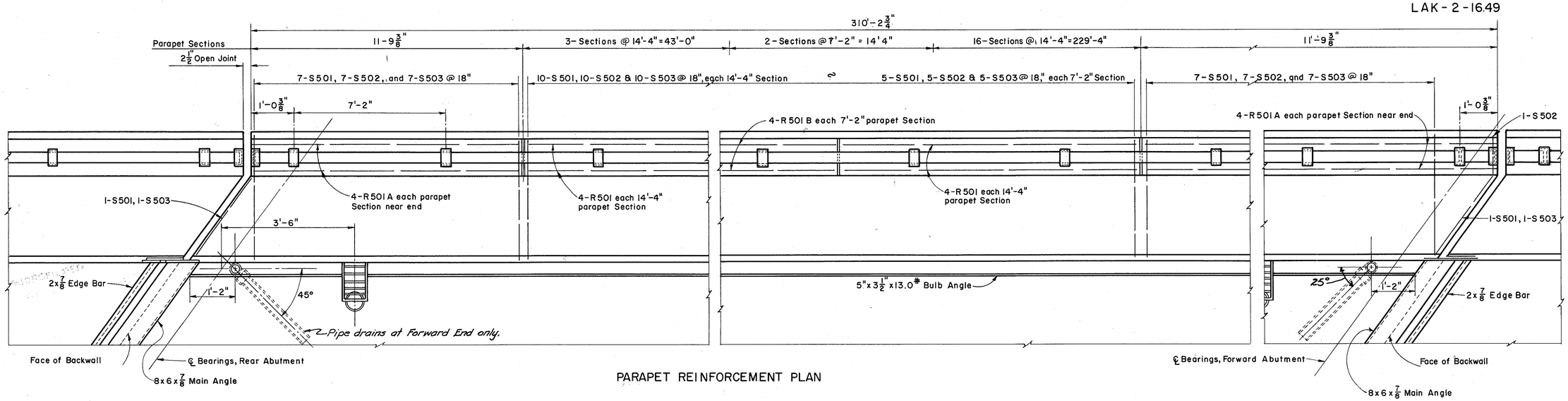
SUPERSTRUCTURE DETAILS
BRIDGE NO. LAK-2-1748
RELOC. S.R. 2 UNDER RECONSTR. S.R. 535
LAKE COUNTY
STA. 822+70.56

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
M.C.P. R.J.A.	M.J.F.	FWB	L.L.D M.J.F.	G.S.W. M.C.P.		

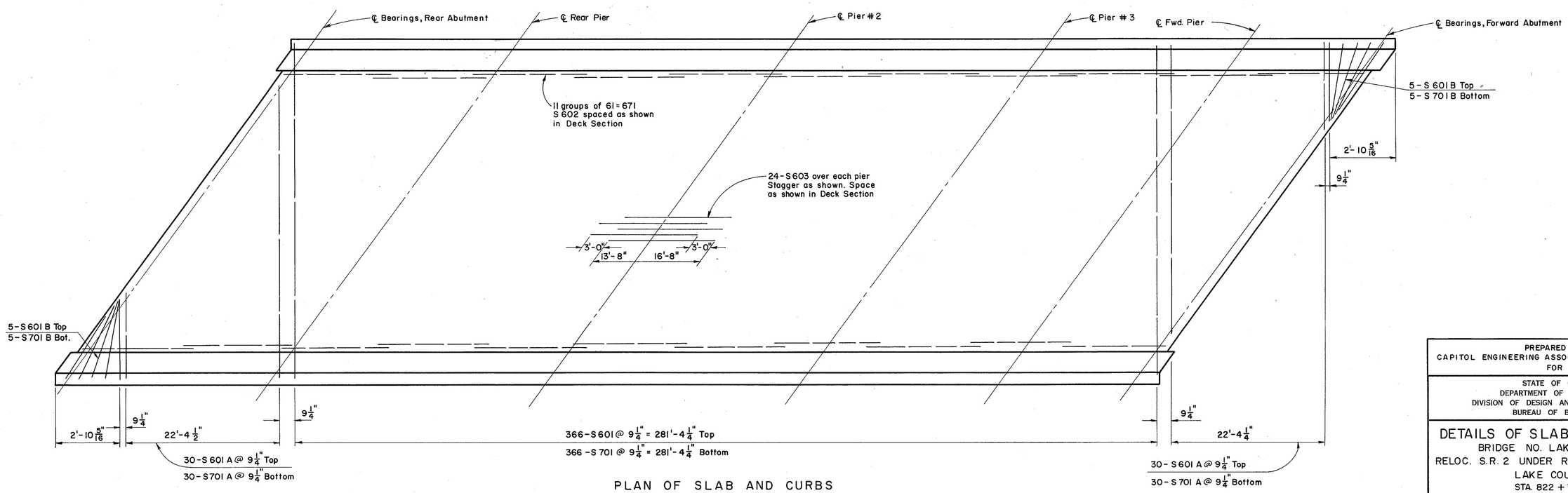
MICROFILMED
MAR 3 0 1984

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

LAKE COUNTY
LAK-2-16.49



PARAPET REINFORCEMENT PLAN



PLAN OF SLAB AND CURBS

PREPARED BY
CAPITOL ENGINEERING ASSOCIATES, DILLSBURG, PA.
FOR

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

DETAILS OF SLAB & PARAPET

BRIDGE NO. LAK-2-1748
RELOC. S.R. 2 UNDER RECONSTR. S.R. 535
LAKE COUNTY
STA. 822 + 70.56

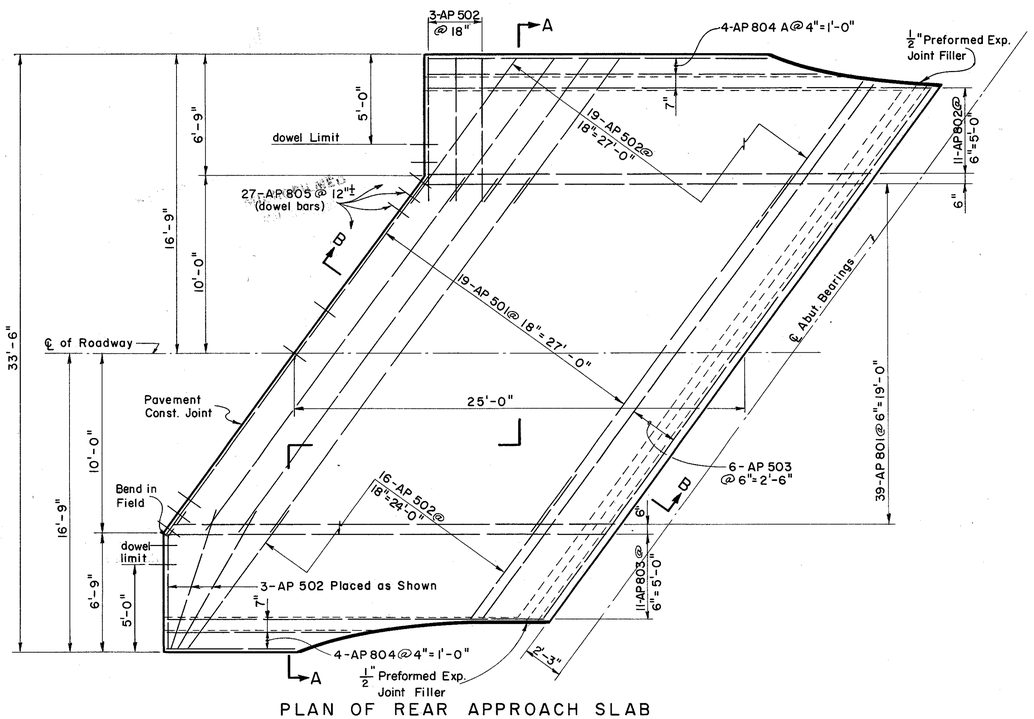
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED DATE	REVISED
C.H.	M.J.F.	FWB	L.L.D. M.J.F.	G.S.W. M.C.P.	

MICROFILMED
MAR 30 1994

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

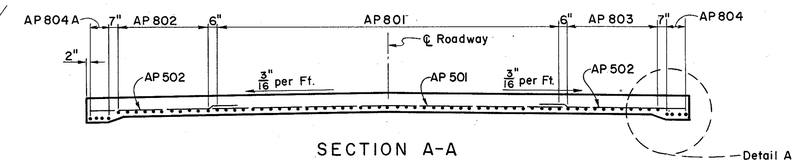
268/313

LAKE COUNTY
LAK-2-16.49

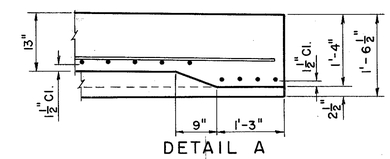


PLAN OF REAR APPROACH SLAB

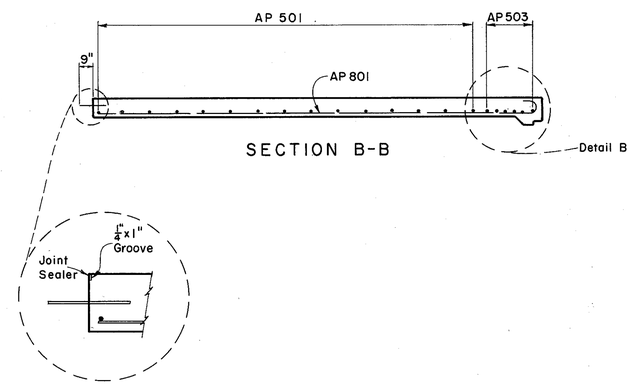
(FORWARD APPROACH SLAB SYMMETRICAL ABOUT ℄ ABUTMENT BEARINGS)



SECTION A-A



DETAIL A



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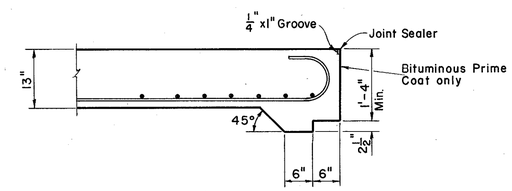

DETAIL B

NOTES:
Concrete shall be class C or class D.

Preformed Expansion Joint Filler at the edges of approach slab shall be included with the approach slab for payment.

Construction Joint: Payment for the construction joints, including dowel bars, is included in the price per Sq. Yd. bid for the approach pavement.

REINFORCING BAR LIST

MARK	REQ'D REAR	REQ'D FWD.	TOTAL	LENGTH	TYPE	A	B	G	VARIES BY	NO. OF EACH
Ap801	39	39	78	25'-9"	2	1'-1"	24'-8"	0		
Ap802	11	11	22	25'-9" to 29'-4 3/4"	2	1'-1"	24'-8" to 28'-3 3/4"	0	4 3/4"	2
Ap803	11	11	22	22'-1 1/4" to 25'-9"	2	1'-1"	21'-0 1/4" to 24'-8"	0	4 3/4"	2
Ap804	4	4	8	7'-3" to 10'-3"	S				1'-0"	2
Ap804A	4	4	8	19'-0" to 21'-6"	S				10"	2
Ap805	27	27	54	1'-6"	S					
Ap501	19	19	38	24'-9"	S					
Ap502	41	41	82	10'-10"	S					
Ap503	6	6	12	36'-9"	S					

Reinforcement included for payment with item I-7

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FOR

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

APPROACH SLAB DETAILS

BRIDGE NO. LAK-2-1748
RELOC. S.R. 2 UNDER RECONSTR. S.R. 535
LAKE COUNTY
STA. 822 + 70.56

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED DATE	REVISED
M.J.F. L.L.D.	M.J.F.	FWB	L.L.D M.J.F.	G.S.W. M.C.P.	

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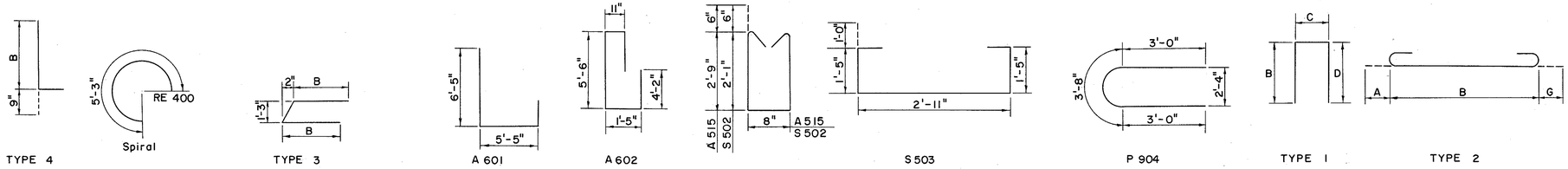
2	OHIO		

LAKE COUNTY
LAK - 2 - 16.49



NOTES

Bar Size is indicated in the bar mark. The first digit where three digits are used, and the first two digits where four digits are used, indicate the size of the bar. For example A 700 is a No. 7 size bar and A 1014 is a No. 10 size bar.

All dimensions are out to out of the bar.

Type "S" is straight bar.

The "length" shown in steel list for the spiral bars is the distance from the top of the footing to the bottom of cap.

The "number of turns" shown in the steel list for the spiral bars is the "length" divided by the pitch, plus three (3) turns (total number of closed coils) expressed as the nearest whole number.

Spiral reinforcing bars shall not have deformations but shall in other respects conform to Item S-4.

$1\frac{1}{2}$ closed coils shall be provided at the ends of each spiral unit.

Four steel channel, tee or angle spacers, weight approximately 0.68 pounds per linear foot of spacer, shall be provided for each spiral unit. They shall be equally spaced along the periphery of the coil. The number of pounds of these spacers, based on 0.68 pounds per linear feet will be paid for as reinforcing steel and is included in the tabulated quantity of spiral bars.

REINFORCING STEEL LIST

PIERS

MARK	REAR PIER	PIER NO. 2	PIER NO. 3	FWD. PIER		TOTAL	LENGTH	WEIGHT	TYPE	A	B	C	D	G
P1101	24	24	24	24		96	6'-10"	3,484	1		10"	6'-4"	0	
P1102	—	24	—	—		24	16'-6"	2,104	S					
P1102A	24	—	24	—		48	17'-6"	4,463	S					
P1102B	—	—	—	24		24	18'-9"	2,391	S					
P901	24	24	24	24		96	6'-0"	1,958	1		8"	5'-7"	0	
P902	—	24	—	—		24	16'-6"	1,346	S					
P902A	24	—	24	—		48	17'-6"	2,856	S					
P902B	—	—	—	24		24	18'-9"	1,530	S					
P903	8	8	8	8		32	10'-3"	1,115	1		6'-3"	4'-3"	0	
P904	4	4	4	4		16	9'-8"	526	–					
P905	8	8	8	8		32	38'-0"	4,134	S					
P906	6	6	6	6		24	7'-0"	571	S					
P907	3	3	3	3		12	25'-0"	1,020	S					
P701	32	32	32	32		128	10'-4"	2,703	2	10"	8'-8"			10"
P601	40	40	40	40		160	7'-6"	1,802	2	8"	6'-2"			8"
P501	42	42	42	42		168	7'-5"	1,300	1		2'-6"	2'-8"	2'-6"	
P502	4	4	4	4		16	19'-10"	331	S					

SPIRAL BARS

MARK	REAR PIER	PIER NO. 2	PIER NO. 3	FWD. PIER		TOTAL	LENGTH	WEIGHT	PITCH	NO. TURNS	CORE DIA.
P401	–	4	–	–		4	13'-$3\frac{3}{8}$"	924	$4\frac{1}{2}$"	35	32"
P401A	4	–	4	–		8	14'-6"	2,056	$4\frac{1}{2}$"	39	32"
P401B	–	–	–	4		4	15'-$9\frac{1}{4}$"	1,108	$4\frac{1}{2}$"	42	32"

ABUTMENTS

MARK	REQ'D REAR	REQ'D FWD.	TOTAL	LENGTH	WEIGHT	TYPE	B	C	D	VARIES BY	NO. OF EACH
A801	14	14	28	24'-9"	1,850	S					
A601	32	32	64	14'-2"	1,362	–					
A602	41	41	82	14'-6"	1,786	–					
A603	17	17	34	11'-10"	604	S					
A604	3	3	6	9'-6"	86	S					
A605	36	36	72	7'-1"	766	1	2'-1"	3'-2"	2'-1"		
A501	32	32	64	8'-8"	579	1	1'-9"	5'-5"	1'-9"		
A502	32	32	64	7'-2"	479	4	6'-5"				
A503	32	32	64	7'-2"	479	1	2'-0"	3'-5"	2'-0"		
A504	36	36	72	23'-0"	1,727	S					
A505	40	40	80	9'-9"	813	4	9'-0"				
A506	8	8	16	8'-11"	149	S					
A506A	8	8	16	9'-5"	157	S					
A507	12	12	24	4'-0"	100	S					
A508	2	2	4	6'-6"	27	S					
A508A	2	2	4	7'-7"	32	S					
A509	8	8	16	13'-3"	221	S					
A509A	8	8	16	14'-5"	241	S					
A510	2	2	4	12'-0"	50	S					
A510A	2	2	4	16'-0"	67	S					
A511	30	30	60	4'-6"	282	S					
A512	12	12	24	3'-8" to 4'-4"	100	S				4"	4
A513	20	20	40	3'-6"	146	S					
A514	10	10	20	3'-0"	62	S					
A515	29	29	58	6'-11"	418						
A516	12	12	24	7'-2"	179	3	3'-1"				
A516A	8	8	16	6'-0" to 7'-0"	108	3	2'-6" to 3'-0"			2"	2
A516B	10	10	20	3'-4" to 5'-10"	95	3	1'-2" to 2'-5"			$3\frac{3}{4}$"	2
A517	28	28	56	5'-9"	336	1	2'-6"	1'-0"	2'-6"		
A518	14	14	28	5'-2"	151	2	4'-0"		A & G 7"		

SUPERSTRUCTURE

MARK	TOTAL	LENGTH	WEIGHT	TYPE	B	C	D	VARIES BY	NO. OF EACH
S701	366	36'-2"	27,058	S					
S701A	60	$4'-9\frac{1}{4}$" to 35'-7"	2,475	S				$1'-0\frac{3}{4}$"	2
S701B	10	3'-6"	7,154	S					
S601	366	36'-2"	19,883	S					
S601A	60	$4'-9\frac{1}{4}$" to 35'-7"	1,819	S				$1'-0\frac{3}{4}$"	2
S601B	10	3'-6"	53	S					
S602	671	30'-0"	30,235	S					
S603	96	30'-4"	4,374	S					
S501	432	3'-10"	1,726	1	7"	2'-11"	7"		
S502	430	5'-7"	2,502	–					
S503	432	7'-3"	3,267	–					

RAILING

MARK	TOTAL	LENGTH	WEIGHT	TYPE
R501	152	14'-0"	Included with item S-14 for payment	S
R501A	16	11'-5"		S
R501B	16	6'-10"		S
R502	8	2'-11"		S
R502A	8	14'-1"		S

REPLACEMENT BARS

MARK	NO.	LENGTH		TYPE
RE 1100	1	7'-7"		S
RE 900	1	6'-10"		S
RE 800	1	6'-6"		S
RE 700	1	6'-3"		S
RE 600	1	5'-11"		S
RE 500	1	5'-7"		S
RE 400	1	5'-3"		Bent

PREPARED BY
CAPITOL ENGINEERING ASSOCIATES, DILLSBURG, PA.
FOR

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

REINFORCING BAR LIST
BRIDGE NO. LAK-2-1748
RELOC. S.R. 2 UNDER RECONSTR. S.R. 535
LAKE COUNTY
STA. 822 + 70.56

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
M.J.F. L.L.D	M.J.F.	F.W.B.	L.L.D. M.J.F.	G.S.W. M.C.P.		

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FED. RD. DIVISION	STATE	PROJECT	
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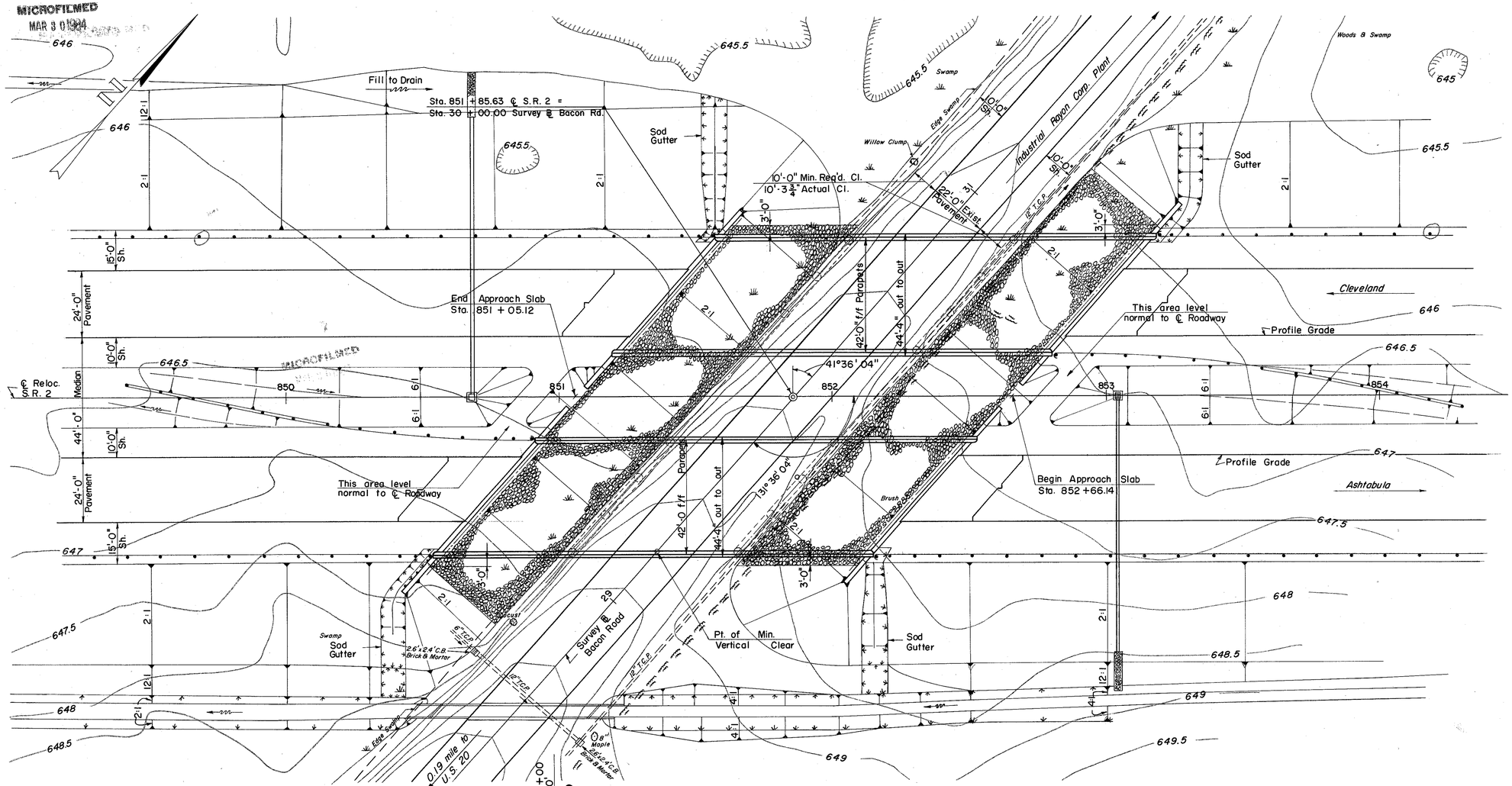
270/313

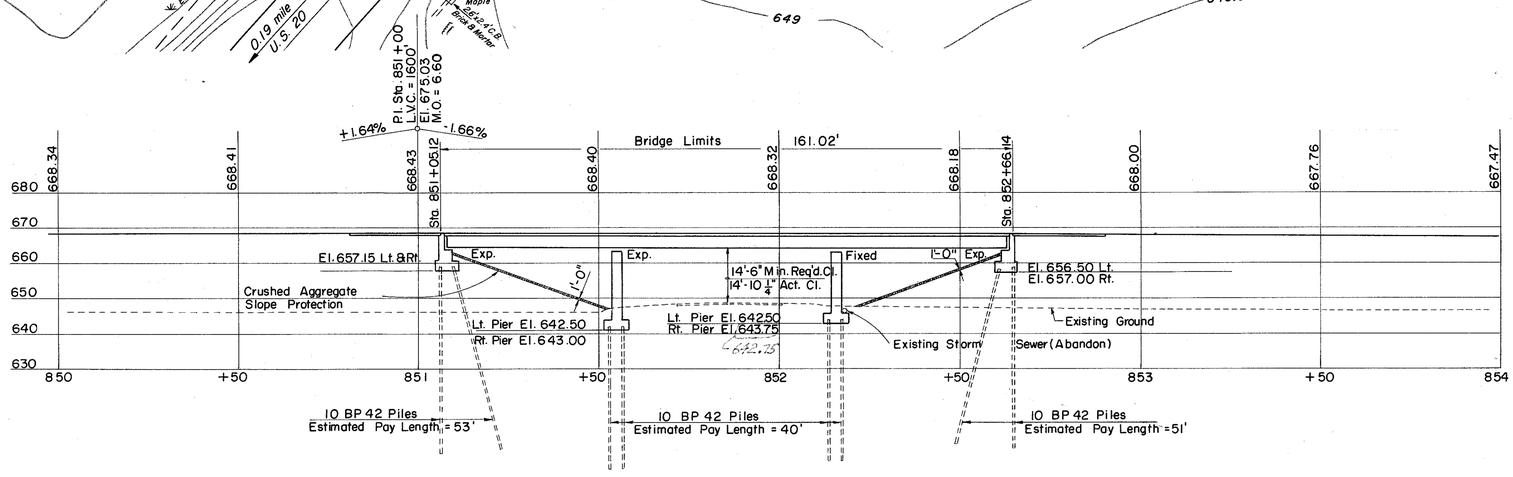
LAKE COUNTY
LAK-2-16.49

Located 1.6 miles East of East Corporation Line of Painesville.

B.M. # 89 A - R.R. Spike in Twin 8" Poplar 2.14' Rt. of Sta. 849 + 00 El. 651.635

FOUNDATION SOUNDINGS: Foundation design and foundation quantities are based on a study of rod soundings and soil - sampling soundings made at the site. This sounding information may be inspected in the office of the Bureau of Bridges in Columbus or in the Division Office, but the State does not guarantee the accuracy thereof.





PROPOSED STRUCTURE

TYPE: Two-3 Span Continuous Steel Beam Bridges with Reinforced Concrete Deck and Substructure.
SPANS: 47'-0", 61'-0" and 47'-0" c/c bearings
ROADWAY: 42'-0" f/f Parapets
LOAD FREQUENCY: CF = 2,000 (57)
WEARING SURFACE: 1" monolithic concrete
APPROACH SLABS: AS-1-54 (25' long)
ALIGNMENT: S.R. 2 and Bacon Road; tangent
SKEW: 41°36' 04" L.F.
A.D.T.: Reloc. S.R. 2 = 11,020 (1980)
NO CONST. PROPOSED FOR BACON ROAD

PREPARED BY
CAPITOL ENGINEERING ASSOCIATES, DILLSBURG, PA.
FOR
STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

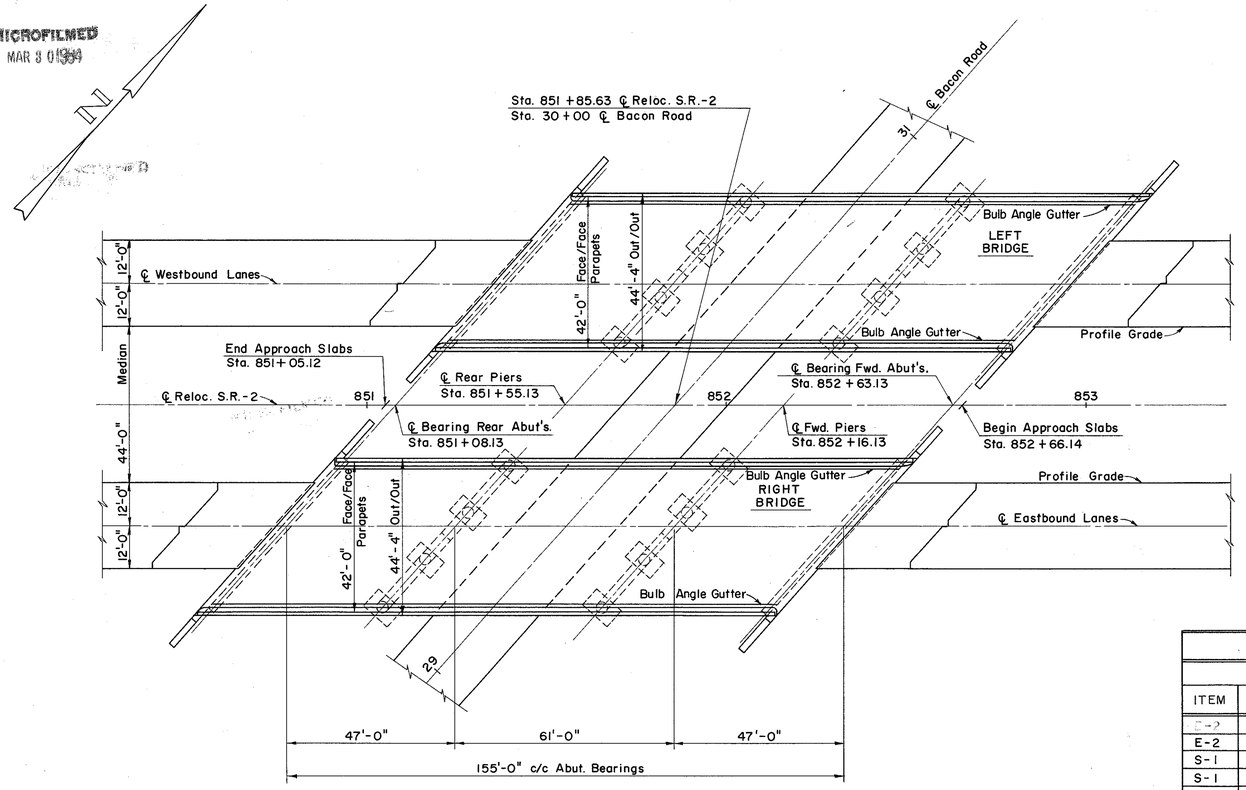
SITE PLAN
BRIDGE NO. LAK-2-1801 L & R
RELOC. S.R. 2 OVER BACON ROAD
LAKE COUNTY
STA. 851 + 05.12
STA. 852 + 66.14

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
M.P. L.L.D.	M.J.F.	F.W.B.	L.L.D. J.H.T.			10-23-65

MICROFILMED
MAR 3 0 1984

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

LAKE COUNTY
LAK-2-16.49



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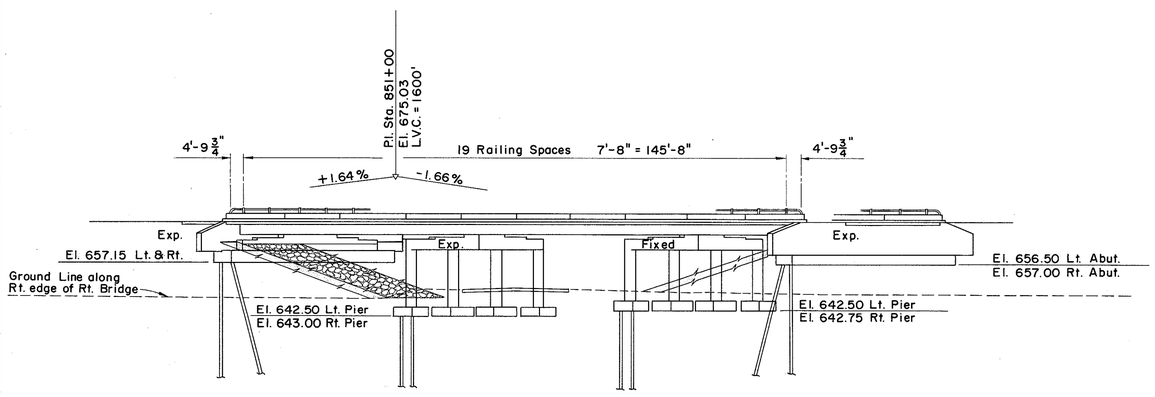

ELEVATION

GENERAL NOTES

REFERENCE shall be made to Standard Drawings CSB-2-56, sheets No. 2 and No. 3 of 6 revised 2-2-59, FSB-1-62 revised 1-15-63, AR-1-57 revised 4-2-62, AS-1-54 revised 7-5-62, and to Supplemental Specifications S-101 dated 7-12-62 and S-307 dated 8-23-60.

DESIGN SPECIFICATIONS: This structure conforms to the requirements of "Design Specifications for Highway Structures" of the State of Ohio Department of Highways, dated 9-1-57, together with current revisions thereof.

PROCEDURE: The embankment shall be placed and compacted up to finished spill thru slope and to the level of subgrade for a distance of 200' back of abutments after which piers may be constructed. A waiting period of 90 days after compaction of the embankment is required before the construction for the abutments is begun.

MAINTENANCE AND PROTECTION OF TRAFFIC: Two lanes of traffic with a minimum horizontal width of 22' shall be maintained on Bacon Road at all times. The Contractor shall safeguard the traveling public by providing platforms, nets or other suitable protection above the traveled lanes. A minimum clearance of 12'-9" shall be provided at all times.

EXCAVATION QUANTITY includes the removal of fill material required for construction of the abutments.

PILES shall be driven to a minimum bearing capacity of 32 tons per pile for the abutments and 32 tons per pile for the piers.

ALL STRUCTURAL STEEL: ASTM A36

DESIGN LOADING: CF 2,000 (57)

WELDING of structural steel shall be Class "A" except as otherwise shown. Welds shown as field welds may, at the option of the Contractor, be made in the shop.

CONCRETE DECK PLACING: In order to facilitate water curing of the concrete of the deck slab, the placing of concrete shall progress upgrade. The slab may be placed in sections, between transverse construction joints which are parallel to transverse reinforcing steel and are located near the center of any span.

SURFACE FINISH OF CONCRETE: The requirements of Section S-1.22, Rubbed Finish, shall apply to:
(a) The entire superstructure except the top and bottom surfaces of curbs and roadways.
(b) The entire surface of piers and abutments except bridge seats, back walls and face of abutments between outside beams.

MACHINE FINISH: The concrete bridge deck shall be finished by the use of a finishing machine.

CONTINUOUS BEAM SHOP ASSEMBLY: Reference paragraph 4, Sec. S-7.12 of the Construction and Material Specifications, for the purpose of checking the fit-up of weld joint preparation, only two adjacent beams need be shop assembled at a time in their correct, unloaded positions. All beams shall be assembled and match marked.

BASIC UNIT WORKING STRESSES:

Concrete, Class C:	1,333 p.s.i.
Concrete, Class E:	1,133 p.s.i.
Structural Steel, ASTM A 36: (Except Piling)	20,000 p.s.i.
Reinforcing Steel, ASTM A 15, A16 & A 160 Deformed, Intermediate or Hard Grade:	20,000 p.s.i.
Spiral Reinforcement, Plain, Structural Grade:	18,000 p.s.i.

ESTIMATED QUANTITIES

				LEFT BRIDGE					RIGHT BRIDGE				
ITEM	TOTAL	UNIT	DESCRIPTION	SUPER	ABUTS	PIERS	GEN'L		SUPER	ABUTS	PIERS	GEN'L	
E-2	743	Cu. Yds.	Unclassified Excavation		238	124				238	143		
S-1	460	Cu. Yds.	Class C Concrete, Superstructure	230					230				
S-1	154	Cu. Yds.	Class C Concrete, Pier caps and columns			78					76		
S-1	230	Cu. Yds.	Class E Concrete, Abut. above Footings		116					114			
S-1	284	Cu. Yds.	Class E Concrete, Footings		94	48				94	48		
S-4	190,480	Lbs.	Reinforcing Steel	60,920	13,144	21,176			60,920	13,144	21,176		
S-7	334,000	Lbs.	Structural Steel	167,000					167,000				
S-8	334,000	Lbs.	Field Painting of Structural Steel	167,000					167,000				
S-14	626.50	Lin. Ft.	Railing (Aluminum Railing & Type A Posts w/Conc. Parapets)	313.25					313.25				
S-18	6,120	Lin. Ft.	10 BP 42 Piles		1,460	1,600				1,460	1,600		
S-29	96	Cu. Yds.	Porous Backfill		48					48			
S-29	32	Each	Scuppers, Including Supports	16					16				
S-101	460	Each	Water-reducing, Set-retarding Admixtures	230					230				
I-10	1,460	Sq. Yds.	Crushed Aggregate Slope Protection				730					730	
S-16	Lump	Sum	First Test Pile *				Lump						

* Payment will be made for only first test pile. It may be driven for either the Left or Right Bridge.

SETTLEMENT HUBS:
Hubs shall be driven IN the compacted embankment at location shown in table below. If elevations of the tops of hubs as determined at approx. one week intervals, indicate that all settlement has ceased before the end of the waiting period, construction of the Abutments may proceed after approval from the Director.

LOCATION FOR WOODEN HUBS	
STATION	FROM ℄ RELOC. S.R. 2
850+70	34' Right
851 + 30	34' Left
852 + 40	34' Right
853 + 00	34' Left

PREPARED BY
CAPITOL ENGINEERING ASSOCIATES, DILLSBURG, PA.
FOR

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

GENERAL PLAN

BRIDGE NO. LAK-2-1801 L & R
RELOC. S.R. 2 OVER BACON ROAD
LAKE COUNTY
STA. 851 + 05.12
STA. 852 + 66.14

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
M.J.F. L.L.D.	M.J.F.	J. S.	L.L.D. M.J.F.	G.S.W. M.C.P.		

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313

LAKE COUNTY
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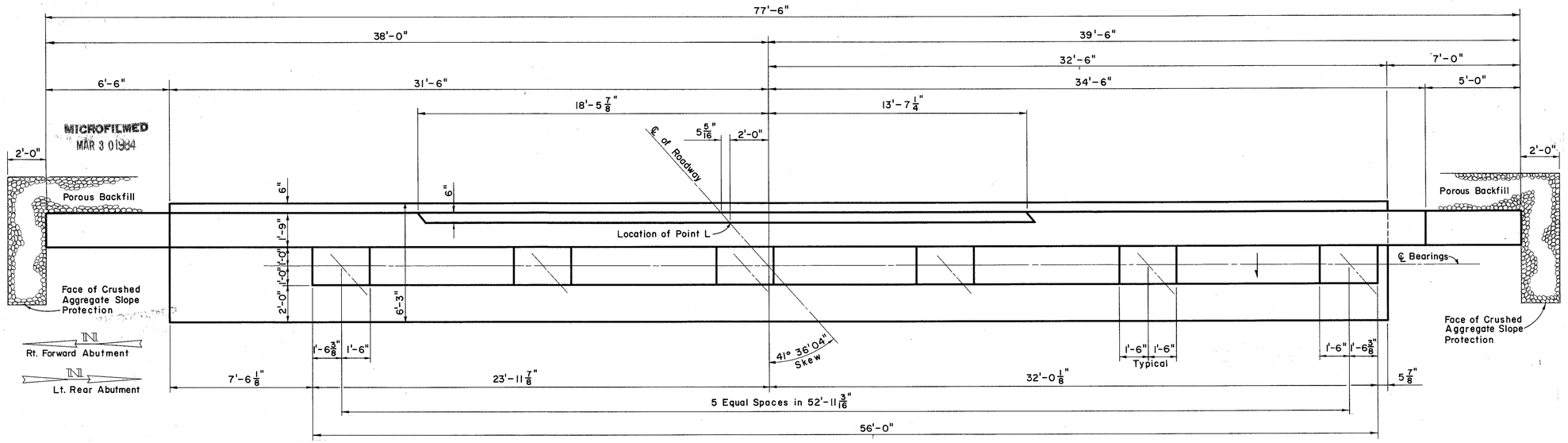

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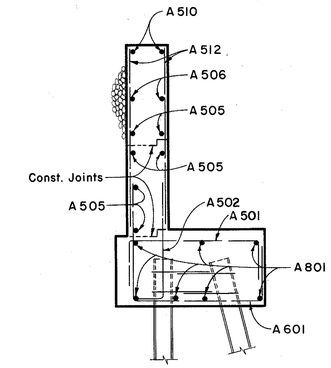


SECTION B-B

NOTES:

All reinforcing steel have a minimum of 3" cover in the bottom of footing, 2" elsewhere

All piles are 10 BP 42. Batter all front piles 3 in 12.

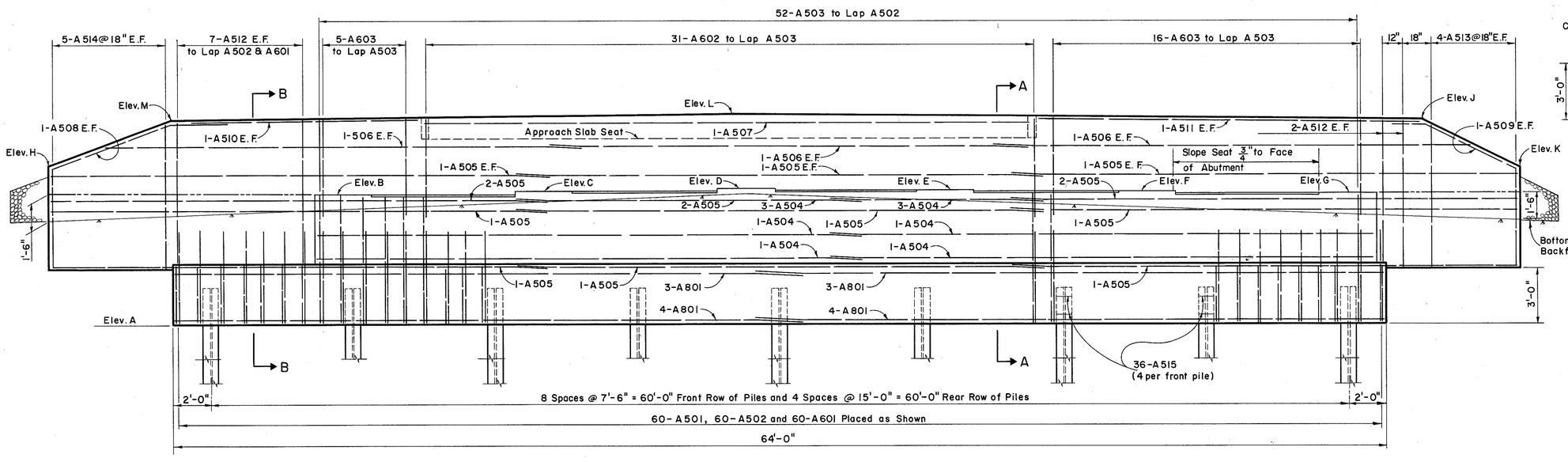
E.F. = Each Face

For additional notes see General Notes.

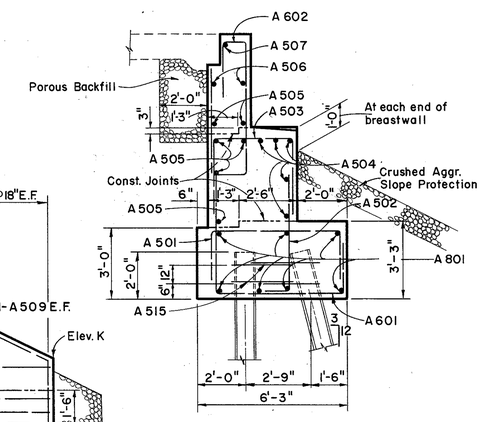
POROUS BACKFILL shall extend upward to the approach slab and to the surface of the earth shoulders, and outward to the surface of the embankment slopes. Excavation therefore, in excess of that required for construction of the abutments, shall be considered as paid for in the bid price per cu. yd. paid for porous backfill.

BRIDGE SEAT REINFORCING: Special care shall be taken in placing reinforcing steel in the vicinity of the bridge seats so as to avoid interference with the drilling of anchor bar holes in all abutments.

ELEVATIONS												
ABUTMENT	A	B	C	D	E	F	G	H	J	K	L	M
Left Rear	657.15	664.48	664.60	664.72	664.62	664.49	664.36	665.86	668.16	665.74	668.60	668.28
Right Forward	657.00	664.25	664.40	664.54	664.47	664.36	664.25	665.58	668.04	665.62	668.41	668.00



ELEVATION



SECTION A-A

PREPARED BY
CAPITOL ENGINEERING ASSOCIATES, DILLSBURG, PA.
FOR

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

ABUTMENT DETAILS
LT. REAR & RT. FORWARD ABUT'S.

BRIDGE NO. LAK-2-1801 L & R
RELOC. S.R. 2 OVER BACON ROAD
LAKE COUNTY
STA 851 + 05.12
STA. 852 + 66.14

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED DATE	REVISED
M.C.P. L.L.D.	M.J.F.	J. S.	L.L.D. G.S.W.	G.S.W. M.C.P.	

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MAR 30 1984

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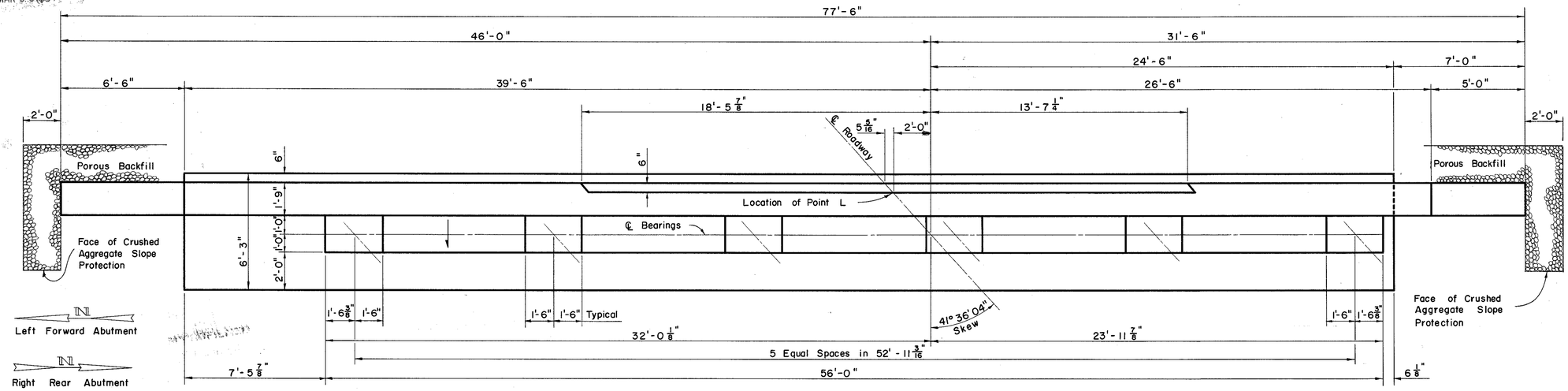
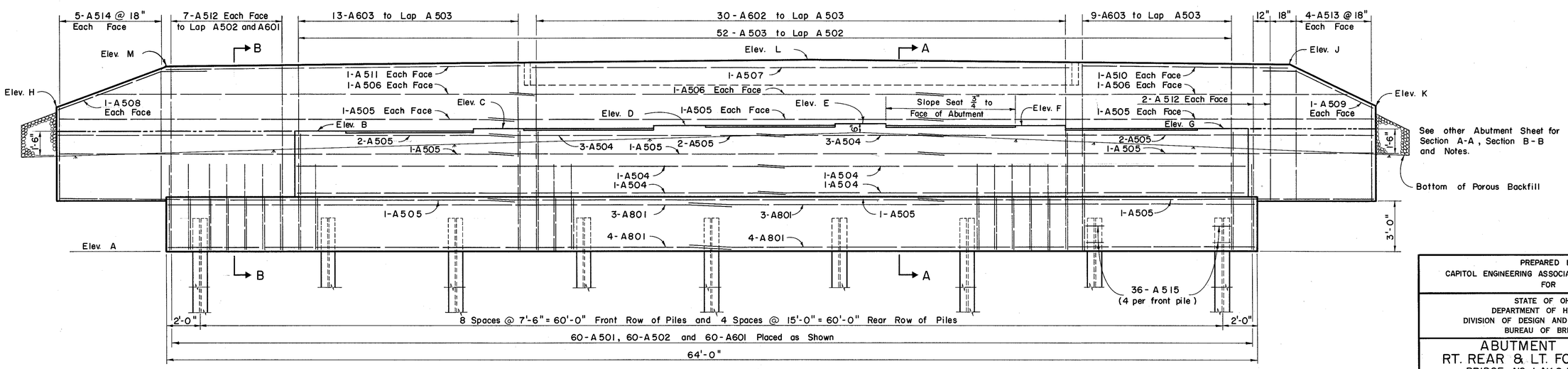
2	OHIO		

LAKE COUNTY
LAK-2-16.49



PLAN

ABUTMENT	ELEVATIONS											
	A	B	C	D	E	F	G	H	J	K	L	M
Right Rear	657.15	664.38	664.51	664.64	664.74	664.61	664.49	665.75	668.28	665.86	668.61	668.17
Left Forward	656.50	663.90	664.06	664.21	664.34	664.24	664.14	665.24	667.94	665.52	668.20	667.66



ELEVATION

PREPARED BY
CAPITOL ENGINEERING ASSOCIATES, DILLSBURG, PA.
FOR

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

ABUTMENT DETAILS
RT. REAR & LT. FORWARD ABUTS

BRIDGE NO. LAK-2-1801 L & R
RELOC. S.R. 2 OVER BACON ROAD
LAKE COUNTY
Sta. 851 + 05.12
Sta. 852 + 66.14

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
M.C.P. L.L.D.	M.J.F.	J.S.	L.L.D. M.J.F.	G.S.W. M.C.P.		

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MAR 3 0 1984

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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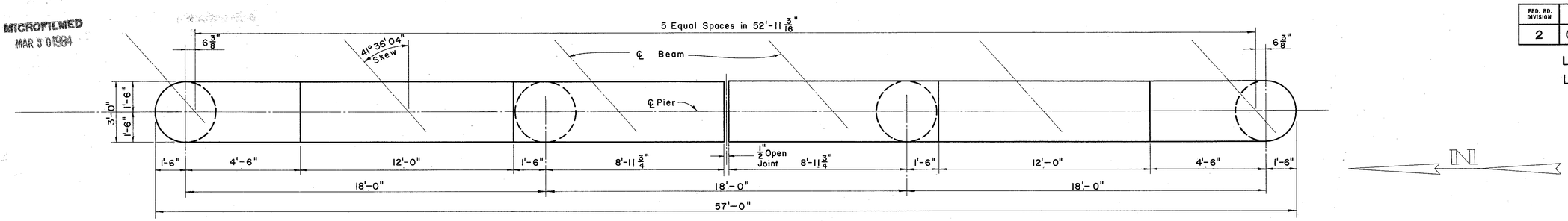
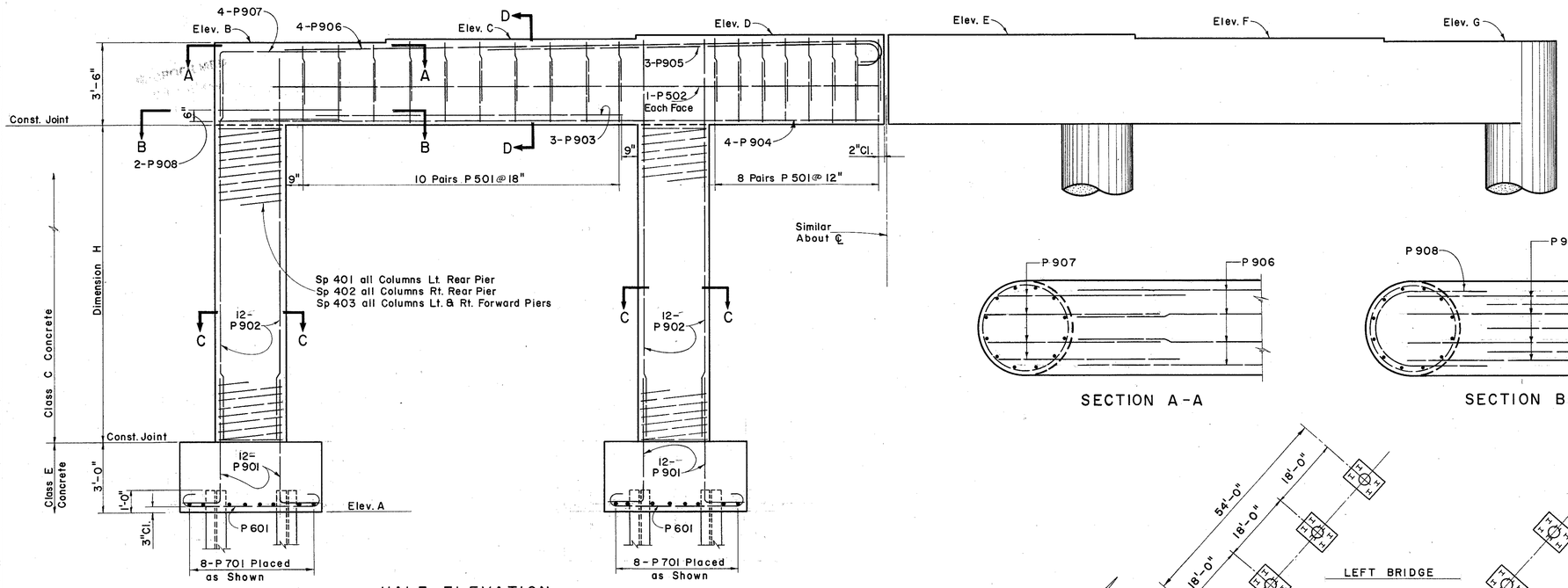
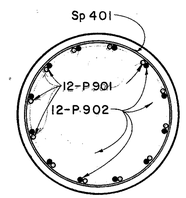
LAKE COUNTY
LAK - 2 - 16.49



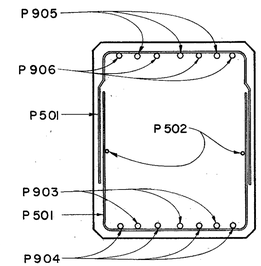
PLAN



HALF ELEVATION

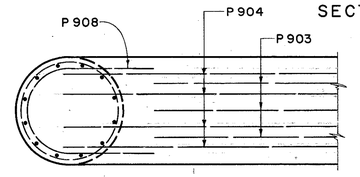


SECTION C-C



SECTION D-D

SECTION A-A



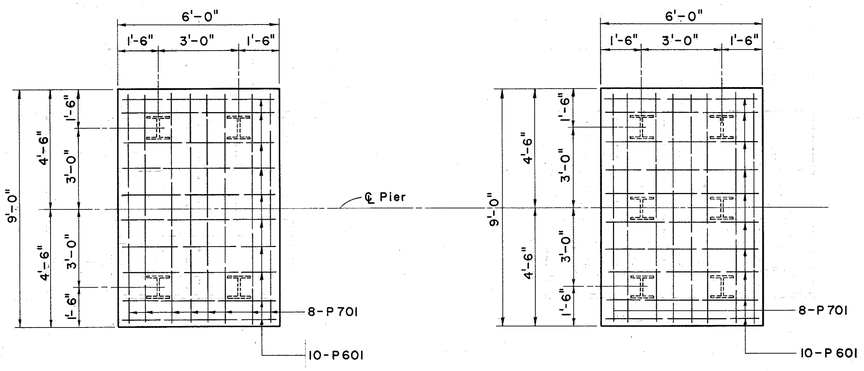
SECTION B-B

NOTES

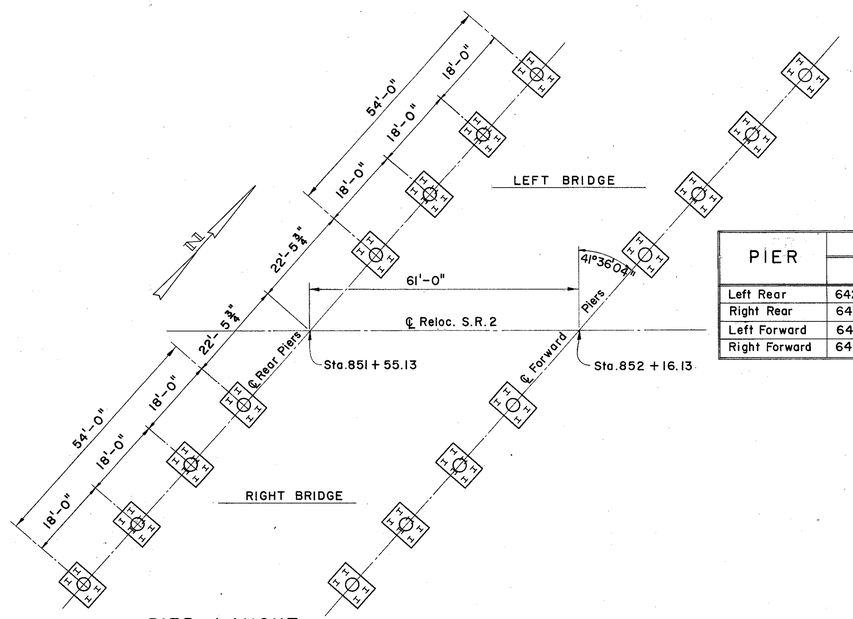
All piles are 10BP42

All reinforcing steel shall have a miminum cover of 2" unless otherwise shown.

BRIDGE SEAT REINFORCING: Special care shall be taken in placing reinforcing steel in the vicinity of the bridge seats so as to avoid interference with the drilling of anchor bar holes.



HALF FOOTING PLAN



PIER LAYOUT

PIER	ELEVATIONS							DIM. H
	A	B	C	D	E	F	G	
Left Rear	642.50	664.23	664.37	664.51	664.62	664.50	664.39	15'-2 3/4"
Right Rear	643.00	664.43	664.56	664.69	664.60	664.48	664.36	14'-11 1/4"
Left Forward	642.50	663.76	663.91	664.06	664.18	664.07	663.97	14'-9 1/2"
Right Forward	642.75	664.05	664.18	664.32	664.24	664.13	664.02	14'-9 5/8"

PREPARED BY
CAPITOL ENGINEERING ASSOCIATES, DILLSBURG, PA.
FOR

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

PIERS
BRIDGE NO. LAK-2-1801 L.&R.
RELOC. S.R. 2 OVER BACON ROAD
LAKE COUNTY
STA. 851 + 05.12
STA. 852 + 66.14

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
M.C.P. G.S.W.	M.J.F.	J.S.	L.L.D. M.J.F.	G.S.W. M.C.P.		

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2	OHIO		

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LAKE COUNTY
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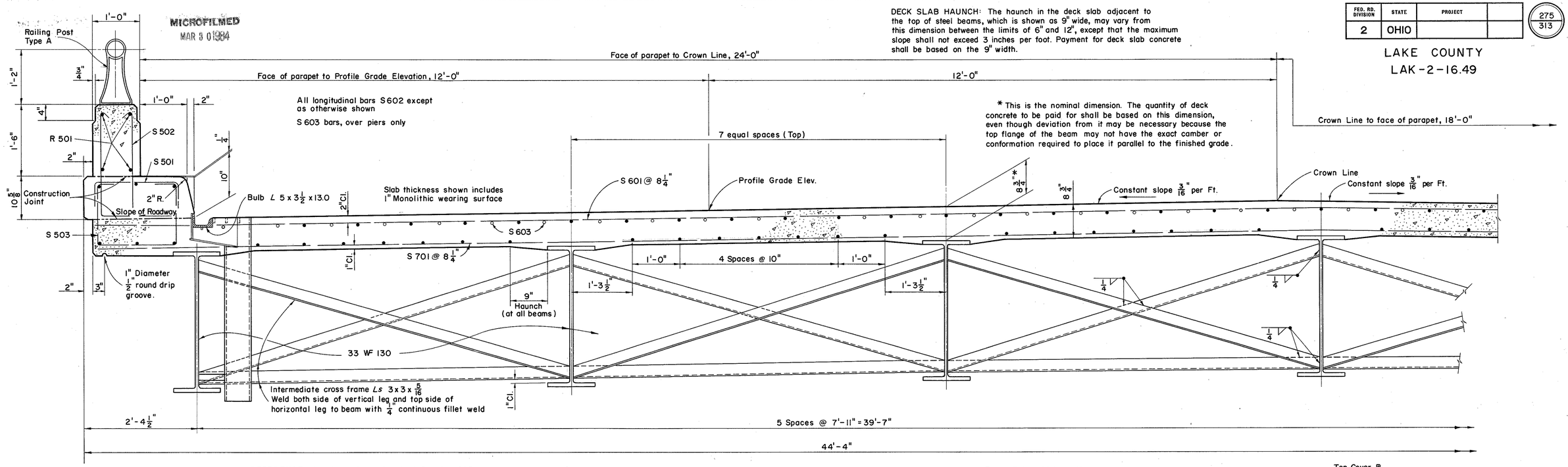
DECK SLAB HAUNCH: The haunch in the deck slab adjacent to the top of steel beams, which is shown as 9" wide, may vary from this dimension between the limits of 6" and 12", except that the maximum slope shall not exceed 3 inches per foot. Payment for deck slab concrete shall be based on the 9" width.



REFERENCE shall be made to Standard Drawing CSB-2-56, Sheets 2 and 3 of 6, Revised 2-2-59 for details of end dams, gutters, pipe drains, scuppers, cross frames and beam splices.

REFERENCE shall be made to Standard Drawing FSB-1-62 revised 1-15-63 for details of bearings.

REFERENCE shall be made to Standard Drawing AR-1-57 revised 4-2-62 for details of aluminum railing and concrete parapet details.

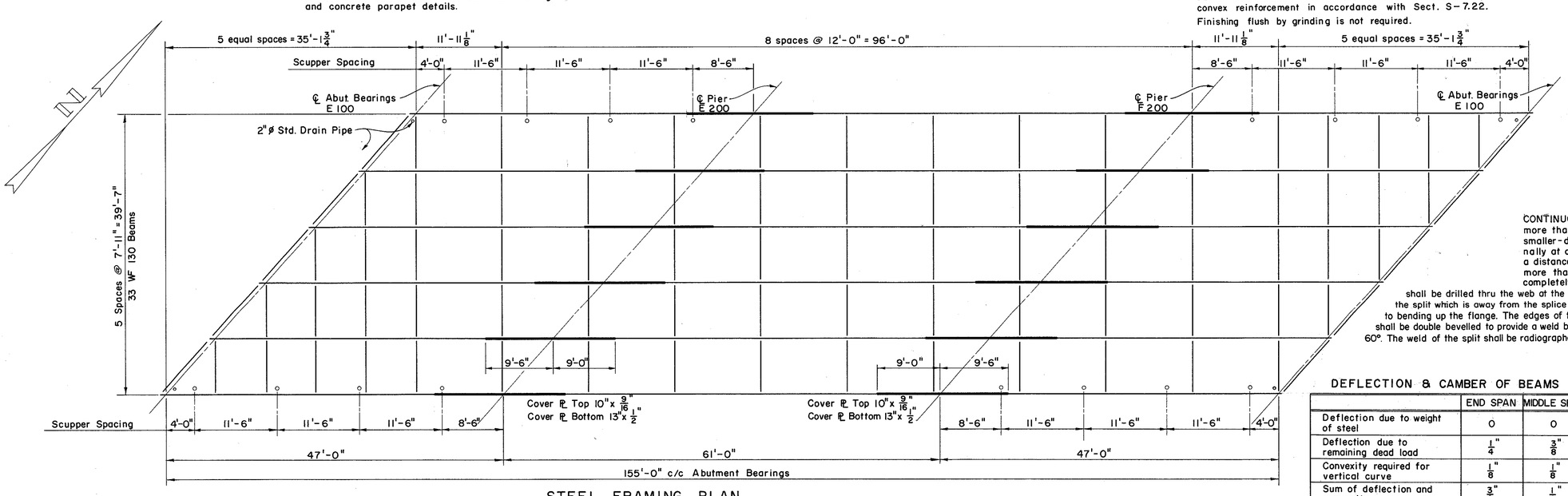
TRANSVERSE SECTION OF
LEFT BRIDGE LOOKING AHEAD
OR
RIGHT BRIDGE LOOKING BACK

Beam Splice Welding Procedure

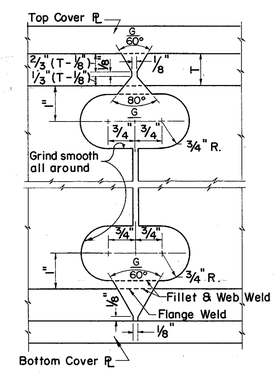
1. Raise the abutment ends of beams ¾".
2. Butt-weld the beam flanges and web, using the following sequence: make one pass on each flange, then two on the web, repeat, using one pass at each location until welds are completed.
3. Weld the bottom and the top moment plates.
4. Lower the beam ends to final position.

BEAM WEB WELDS: Butt welds in webs of beams may have convex reinforcement in accordance with Sect. S-7.22.

Finishing flush by grinding is not required.



STEEL FRAMING PLAN
ONE OF TWO BRIDGES SHOWN



BEAM SPLICE DETAIL

CONTINUOUS BEAM SPLICES: If beams having depths differing by more than 3/32" are to be spliced by butt welding, the depth of the smaller-depth beam shall be increased by splitting the web longitudinally at a distance of 1½" below the bottom of the top flange and for a distance sufficient to allow the flange to be bent up at a slope of not more than 3/32" per foot, after which the split in the web shall be completely welded with full depth penetration and ground flush. A 3/8" hole shall be drilled thru the web at the end of the split which is away from the splice prior to bending up the flange. The edges of the split shall be double bevelled to provide a weld bevel of 60°. The weld of the split shall be radiographed.

DEFLECTION & CAMBER OF BEAMS

	END SPAN	MIDDLE SPAN
Deflection due to weight of steel	0	0
Deflection due to remaining dead load	¼"	⅜"
Convexity required for vertical curve	⅛"	⅛"
Sum of deflection and convexity	⅜"	½"
Required camber	0	0

PREPARED BY
CAPITOL ENGINEERING ASSOCIATES, DILLSBURG, PA.
FOR

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

SUPERSTRUCTURE DETAILS
BRIDGE NO. LAK-2-1801 L & R
RELOC. S.R. 2 OVER BACON ROAD
LAKE COUNTY
STA. 851 + 05.12
STA. 852 + 66.14

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
M.C.P. L.L.D.	M.J.F.	J.S.	L.L.D. M.J.F.	G.S.W. M.C.P.		

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2	OHIO		

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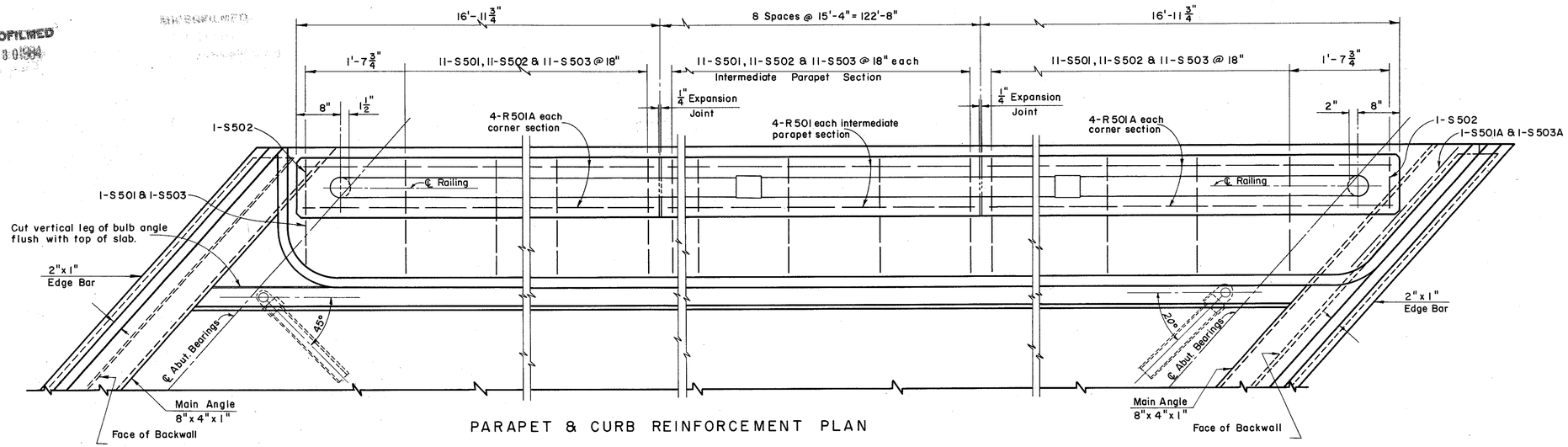
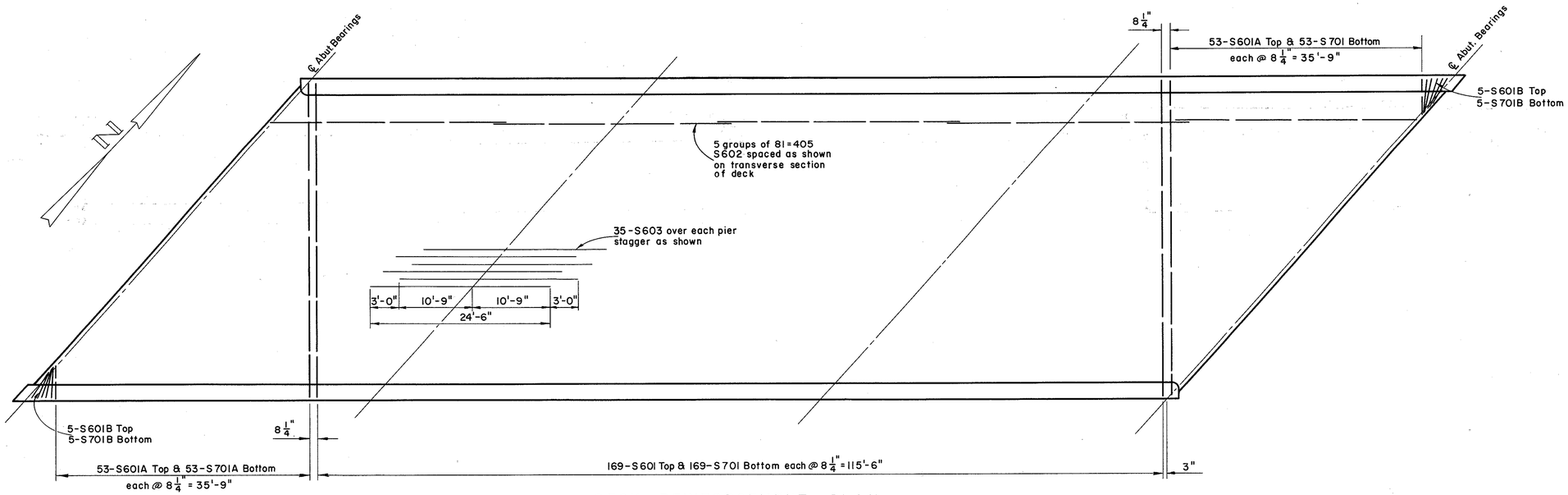
LAKE COUNTY
LAK-2-16.49



PARAPET & CURB REINFORCEMENT PLAN

Terminate 6"x4"x 3/4" supporting angle and vertical leg of 8"x4"x1" main angle on line of deck fascia



DECK REINFORCEMENT PLAN

ONE OF TWO BRIDGES SHOWN

PREPARED BY
CAPITOL ENGINEERING ASSOCIATES, DILLSBURG, PA.
FOR

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

DETAILS OF DECK & PARAPET

BRIDGE NO. LAK-2-1801 L&R
RELOC. S.R. 2 OVER BACON ROAD
LAKE COUNTY
STA. 851 + 05.12
STA. 852 + 66.14

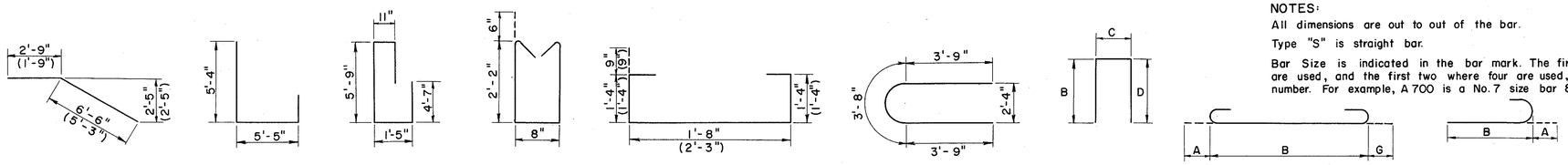
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
M.J.F. L.L.D.	M.J.F.	REB	L.L.D. M.J.F.	G.S.W. M.C.P.		

MICROFILMED
MAR 3 0 1984

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

LAKE COUNTY
LAK-2-16.49

NOTES:
All dimensions are out to out of the bar.
Type "S" is straight bar.
Bar Size is indicated in the bar mark. The first digit where three digits are used, and the first two where four are used, indicate the bar size number. For example, A 700 is a No. 7 size bar & A1014 is a No. 10 size.



REINFORCING STEEL LIST

ABUTMENTS

MARK	LEFT REAR	RIGHT REAR	LEFT FWD.	RIGHT FWD.	TOTAL	LENGTH	WEIGHT LT. BRIDGE	WEIGHT RT. BRIDGE	TYPE	B	C	D	VARIES BY	NO. OF EACH
A801	14	14	14	14	56	33'-1"	2,473	2,473	S					
A601	60	60	60	60	240	12'-9"	2,298	2,298	-					
A602	31	30	30	31	122	14'-9"	1,351	1,351	-					
A603	21	22	22	21	86	12'-7"	812	812	1	5'-9"	1'-5"	5'-9"		
A501	60	60	60	60	240	9'-8"	1,210	1,210	1	2'-3"	5'-5"	2'-3"		
A502	60	60	60	60	240	5'-8"	710	710	1	5'-0"	10 1/4"	0		
A503	52	52	52	52	208	10'-2"	1,103	1,103	1	3'-6"	3'-5"	3'-6"		
A504	10	10	10	10	40	28'-9"	600	600	S					
A505	18	18	18	18	72	26'-9"	1,004	1,004	S					
A506	6	6	6	6	24	25'-6"	319	319	S					
A507	1	1	1	1	4	32'-0"	67	67	S					
A508	2	2	2	2	8	9'-3"	39	39	-					
A509	2	2	2	2	8	7'-0"	29	29	-					
A510	2	2	2	2	8	12'-0"	50	50	S					
A511	2	2	2	2	8	20'-0"	83	83	S					
A512	18	18	18	18	72	7'-7"	285	285	S					
A513	8	8	8	8	32	5'-4" to 7'-6 1/2"	107	107	S				8 3/4"	8
A514	10	10	10	10	40	5'-4" to 7'-7"	135	135	S				6 3/4"	8
A515	36	36	36	36	144	6'-3"	469	469	1	2'-9"	1'-0"	2'-9"		

SUPERSTRUCTURE

MARK	LEFT BRIDGE	RIGHT BRIDGE	TOTAL	LENGTH	WEIGHT LT. BRIDGE	WEIGHT RT. BRIDGE	TYPE	B	C	D	VARIES BY	NO. OF EACH
S701	169	169	338	43'-8"	15,085	15,085	S					
S701A	106	106	212	42'-11" to 3'-11"	5,074	5,074	S				9"	4
S701B	10	10	20	4'-6"	92	92	S					
S601	169	169	338	43'-8"	11,085	11,085	S					
S601A	106	106	212	42'-11" to 3'-11"	3,729	3,729	S				9"	4
S601B	10	10	20	4'-6"	68	68	S					
S602	405	405	810	32'-9"	19,922	19,922	S					
S603	70	70	140	24'-6"	2,576	2,576	S					
S501	222	222	444	2'-9"	637	637	1	8 1/4"	1'-8"	8 1/4"		
S501A	2	2	4	3'-4"	7	7	1	8 1/4"	2'-3"	8 1/4"		
S502	224	224	448	5'-9"	1,343	1,343	-					
S503	222	222	444	5'-7"	1,292	1,292	-					
S503A	2	2	4	6'-2"	13	13	-					

PIERS

MARK	LEFT REAR	RIGHT REAR	LEFT FWD.	RIGHT FWD.	TOTAL	LENGTH	WEIGHT LT. BRIDGE	WEIGHT RT. BRIDGE	TYPE	A	B	C	D	G
P901	48	48	48	48	192	7'-1"	2,311	2,311	1		5'-9"	1'-7"	0	
P902	48	48	48	48	192	18'-0"	5,875	5,875	S					
P903	6	6	6	6	24	13'-0"	530	530	S					
P904	8	8	8	8	32	26'-9"	1,455	1,455	S					
P905	6	6	6	6	24	18'-0"	734	734	3	1'-4"	16'-8"			
P906	8	8	8	8	32	26'-6"	1,442	1,442	3	1'-4"	25'-2"			
P907	8	8	8	8	32	8'-6"	462	462	1		3'-0"	5'-9"	0	
P908	4	4	4	4	16	11'-2"	304	304	-					
P701	32	32	32	32	128	10'-4"	1,351	1,351	2	10"	8'-8"			10"
P601	40	40	40	40	160	7'-0"	841	841	2	8"	5'-8"			8"
P501	72	72	72	72	288	7'-9"	1,164	1,164	1		2'-8"	2'-8"	2'-8"	
P502	4	4	4	4	16	26'-9"	223	223	S					

MARK	LEFT REAR	RIGHT REAR	LEFT FWD.	RIGHT FWD.	TYPE	TOTAL	LENGTH	WEIGHT LT. BRIDGE	WEIGHT RT. BRIDGE	PITCH	NO. TURNS	CORE DIA.
Sp 401	4	-	-	-	Spiral	4	15'-2"	1,150	—	4 1/2"	44	32"
Sp 402	-	4	-	-	Spiral	4	14'-11"	—	1,150	4 1/2"	44	32"
Sp 403	-	-	4	4	Spiral	8	14'-9"	1,135	1,135	4 1/2"	43	32"

RAILING

MARK	LEFT BRIDGE	RIGHT BRIDGE	TOTAL	LENGTH	WEIGHT	TYPE	A	B	VARIES BY	NO. OF EACH
R501	64	64	128	15'-0"	*	S				
R501A	16	16	32	16'-9"	*	S				

* Included with Item S-14 for Payment.

SPIRAL REINFORCING LIST NOTES

The "length" shown in steel list for the spiral bars is the distance from the top of the footing to the bottom of cap.

The "number of turns" shown in the steel list for the spiral bars is the "length" divided by the pitch, plus three (3) turns (total number of closed coils) expressed as the nearest whole number.

Spiral reinforcing bars shall not have deformations but shall in other respects conform to Item S-4.

1 1/2 closed coils shall be provided at the ends of each spiral unit.

Four steel channel, tee or angle spacers, weight approximately 0.68 pounds per linear foot of spacer, shall be provided for each spiral unit. They shall be equally spaced along the periphery of the coil. The number of pounds of these spacers, based on 0.68 pounds per linear foot will be paid for as reinforcing steel and is included in the tabulated quantity of spiral bars.

REPLACEMENT BARS

MARK	NO.	LENGTH	WEIGHT	TYPE
RE 900	2	6'-10"		S
RE 700	4	6'-3"		S
RE 600	8	5'-11"		S
RE 500	2	5'-7"		S

PREPARED BY
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FOR

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

REINFORCING STEEL LIST
BRIDGE NO. LAK-2-1801 L&R
RELOC. S.R. 2 OVER BACON ROAD
LAKE COUNTY
STA. 851 + 05.12
STA. 852 + 66.14

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
M.J.F. G.S.W.	M.J.F.	PEB	L.L.D. M.J.F.	G.S.W. M.C.P.		

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

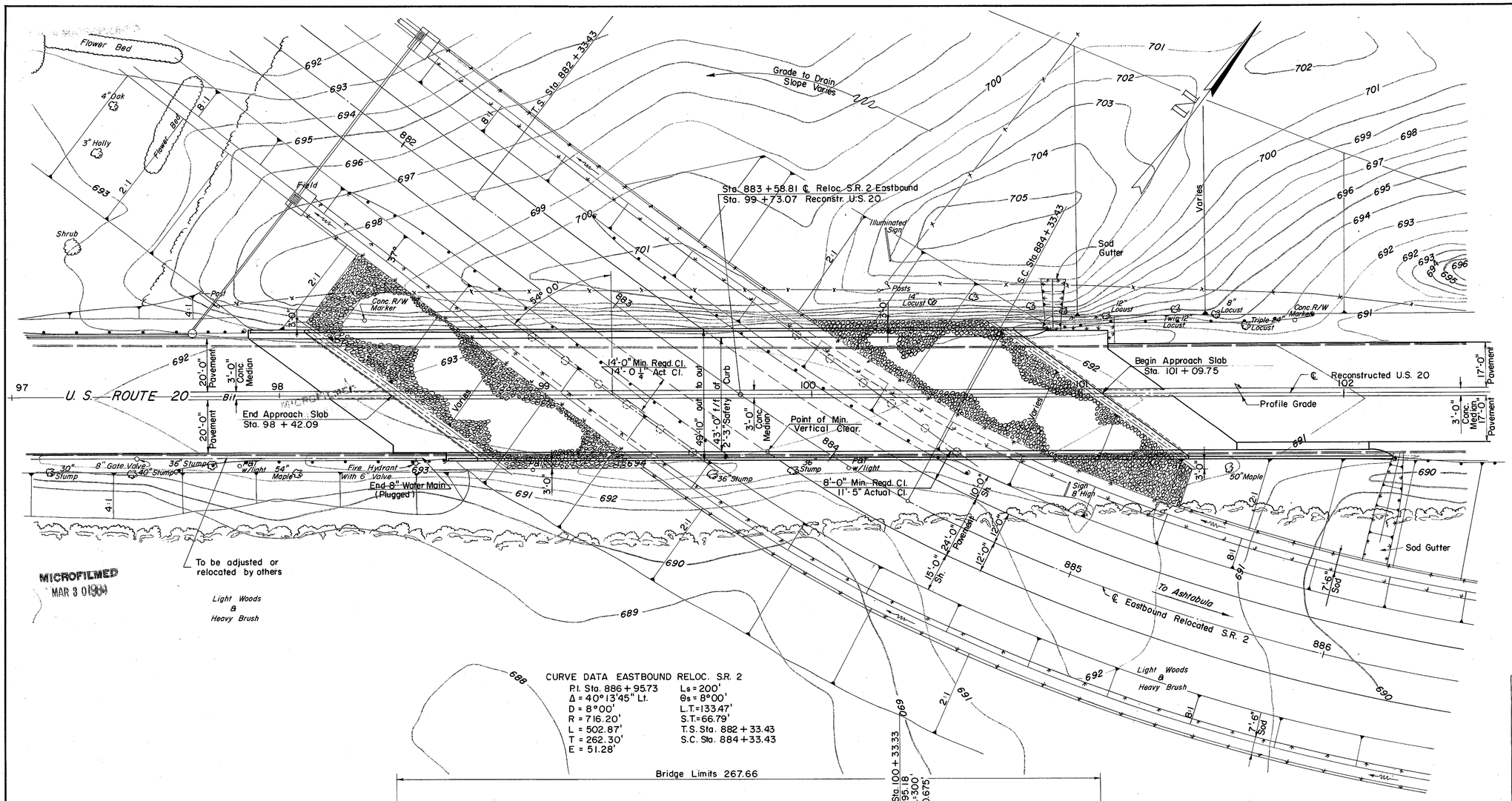
278/313

LAKE COUNTY
LAK-2-16.49

Located 2.2 miles East of East Corporation Line of Painesville.

B.M. # 92 A - Railroad Spike in 18" Maple N. Side Rte. 20 adjacent to Sivon Dr. 10' Lt. of ℄ Sta. 93 + 17 on U.S. 20, 31.55' Lt. of ℄ of Reconstr. Sta. 93 + 17 Elev. 690.930

FOUNDATION SOUNDINGS: Foundation design and foundation quantities are based on a study of rod soundings and soil-sampling soundings made of the site. This sounding information may be inspected in the office of the Bureau of Bridges in Columbus or in the Division Office, but the State does not guarantee the accuracy thereof.



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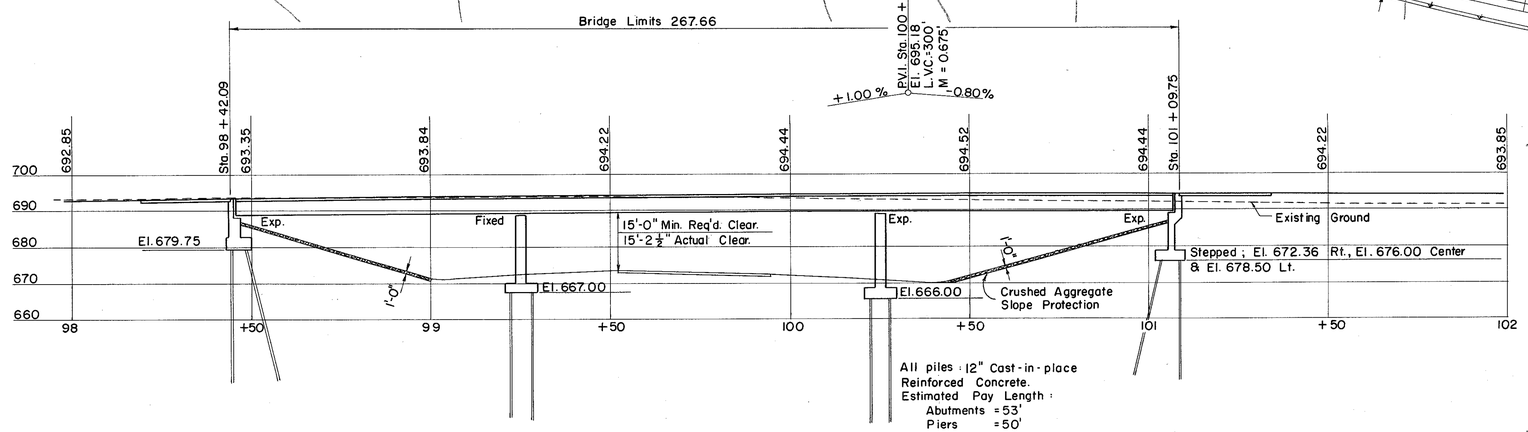
CURVE DATA EASTBOUND RELOC. S.R. 2

P.I. Sta. 886 + 95.73	Ls = 200'
Δ = 40° 13' 45" Lt.	θs = 8° 00'
D = 8° 00'	L.T. = 133.47'
R = 716.20'	S.T. = 66.79'
L = 502.87'	T.S. Sta. 882 + 33.43
T = 262.30'	S.C. Sta. 884 + 33.43
E = 51.28'	



PROPOSED STRUCTURE

TYPE: 3 Span Continuous Welded Plate Girder with Reinforced Concrete Deck & Substructure.
SPANS: 80'-0", 100'-0" and 80'-0" Ctr. to Ctr. bearing.
ROADWAY: 43'-0" f/f 2'-3" Safety Curbs.
LOAD FREQUENCY: C.F. = 400 (57)
WEARING SURFACE: 1" monolithic concrete.
APPROACH SLABS: Special (25'-0" long)
ALIGNMENT: Tangent U.S. 20, Curve S.R. 2
A.D.T. U.S. 20: 8220 (1980)
A.D.T. Reloc. S.R. 2: 5510 (1980)
SKEW of Substructure: 54° 00' R.F.

PREPARED BY
CAPITOL ENGINEERING ASSOCIATES, DILLSBURG, PA.
FOR
STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

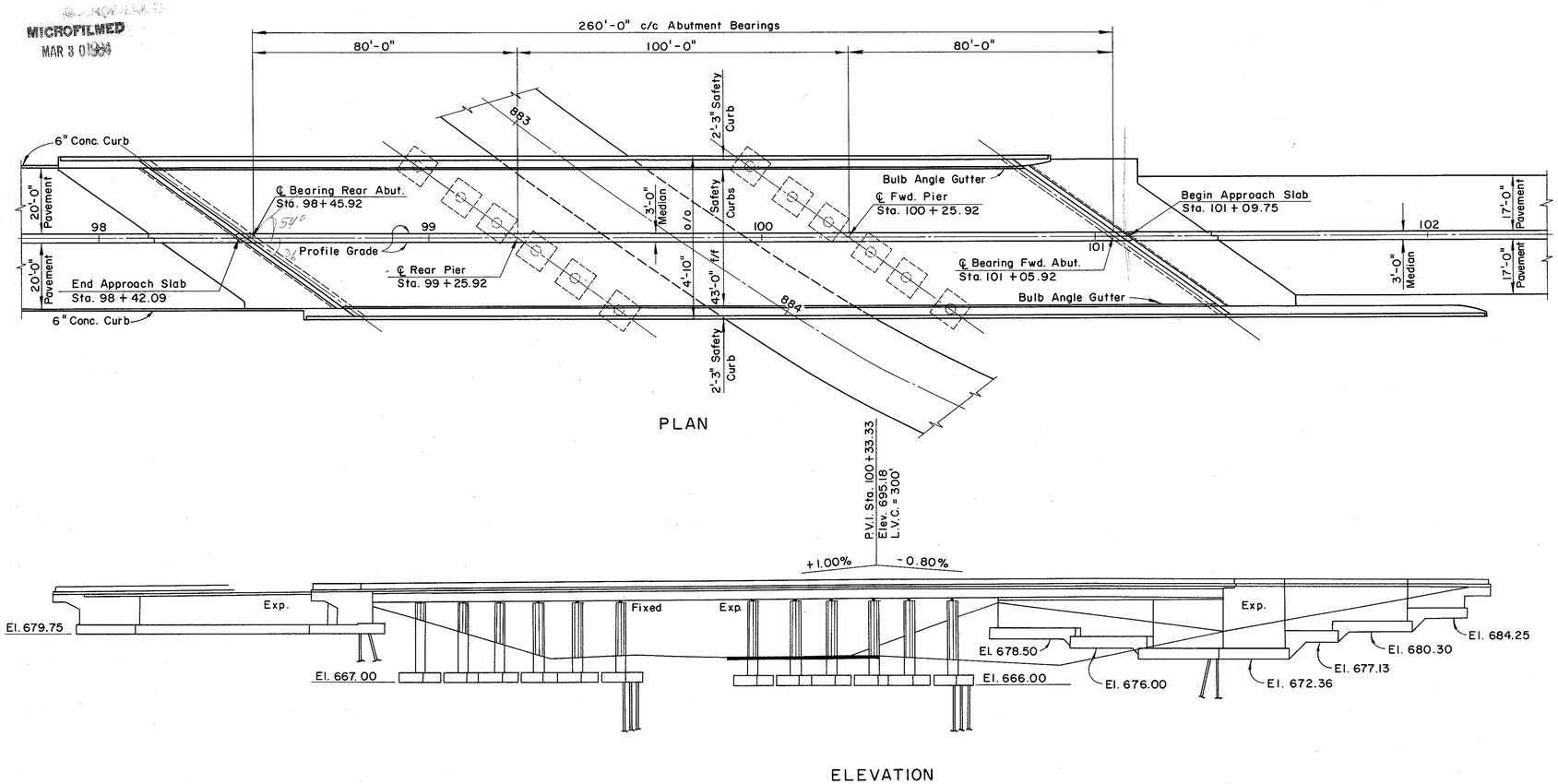
SITE PLAN
BRIDGE NO. LAK-2-1862
RELOC. S.R. 2 UNDER RECONSTR. U.S. 20
LAKE COUNTY
STA. 99 + 73.07

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED DATE	REVISED
	M.J.F.	F.W.B.	L.L.D. J.H.T.		

MICROFILMED
MAR 3 0 1984

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

LAKE COUNTY
LAK-2-16.49



GENERAL NOTES

REFERENCE shall be made to Standard Drawings CSB-2-56, sheets No. 2 and No. 3 of 6 revised 2-2-59, RB-1-55 revised 2-2-59, AR-1-57 revised 4-2-62, and to Supplemental Specifications S-101 dated 7-12-62, and S-307 dated 8-23-60.

DESIGN SPECIFICATIONS: This structure conforms to the requirements of "Design Specifications for Highway Structures" of the State of Ohio Department of Highways, dated 9-1-57, together with current revisions thereof.

ALL STRUCTURAL STEEL: ASTM A 36

DESIGN LOADING: CF 400 (57)

BASIC UNIT WORKING STRESSES:

Concrete, Class C:	1,333 p.s.i.
Concrete, Class E:	1,133 p.s.i.
Structural Steel, ASTM A 36: (except piling)	20,000 p.s.i.
Reinforcing Steel, ASTM A 15, A 16 & A 160 Deformed, Intermediate or Hard Grade:	20,000 p.s.i.
Spiral Reiforcement, Plain, Structural Grade:	18,000 p.s.i.

PLATE GIRDER ERECTION: The Contractor shall submit to the Director, for approval, three prints showing proposed erection procedures for the plate girders.

PILES shall be driven to a minimum bearing capacity of 35 tons per pile for the abutments and 40 tons per pile for the piers.

WELDING of structural steel shall be Class "A" except as otherwise shown. Welds shown as field welds may, at the option of the Contractor, be made in the shop.

CONCRETE DECK PLACING: In order to facilitate water curing of the concrete of the deck slab, the placing of concrete shall progress upgrade. The slab may be placed in sections, between transverse construction joints which are parallel to transverse reinforcing steel and are located near the center of any span.

SURFACE FINISH OF CONCRETE: The requirements of Section S-1,22, Rubbed Finish, shall apply to, (a) The entire superstructure except the top and bottom surfaces of safety curbs and roadways, (b) The entire surface of piers and abutments except bridge seats, backwalls and the face of spill-through abutments between outside girders.

MACHINE FINISH: The concrete bridge deck shall be finished by the use of a finishing machine.

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 will be held to a minimum.

HIGH STRENGTH STEEL BOLTS: See note Sheet 227.

ESTIMATED QUANTITIES

ITEM	TOTAL	UNIT	DESCRIPTION	SUPER.	ABUT'S.	PIERS	GEN'L.		
E- 2	892	Cu. Yds.	Unclassified Excavation		722	170			
S- 1	428	Cu. Yds.	Class C Concrete, Superstructure	428					
S- 1	57	Cu. Yds.	Class C Concrete, Pier columns			57			
S- 1	284	Cu. Yds.	Class E Concrete, Abut. above footings		284				
S- 1	310	Cu. Yds.	Class E Concrete, Footings		241	69			
S- 3	44	Lin. Ft.	Premoulded Sealing Strip		44				
S- 4	171,347	Lbs.	Reinforcing Steel	110,312	41,675	19,360			
S- 7	409,600	Lbs.	Structural Steel	409,600					
S- 8	409,600	Lbs.	Field Painting of Structural Steel	409,600					
S- 14	655.87	Lin. Ft.	Railing (Aluminum Railing & Type A Posts w/Conc. Parapet)	525.96	129.91				
S- 16	Lump	Sum	First Test Pile				Lump		
S- 18	6,110	Lin. Ft.	12" ϕ Cast-in-Place Reinforced Conc. Piles		3,710	2,400			
S- 29	142	Cu. Yds.	Porous Backfill		142				
S- 29	16	Each	Scuppers, Including Supports	16					
S- 29	77.5	Lin. Ft.	6" Perforated Bit. Coated C.M.P. M 64 (b)		77.5				
S-101	428	Each	Water-reducing, Set-retarding Admixtures	428					
I- 10	790	Sq. Yds.	Crushed Aggregate Slope Protection				790		

PREPARED BY
CAPITOL ENGINEERING ASSOCIATES, DILLSBURG, PA.
FOR

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

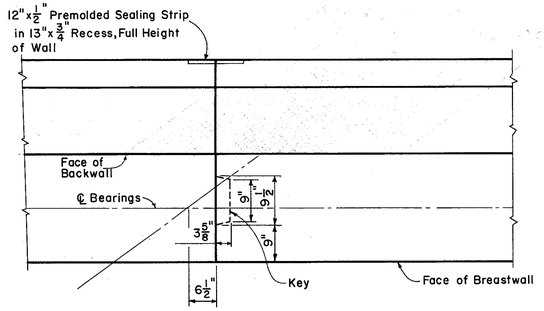
GENERAL PLAN
BRIDGE NO. LAK-2-1862
RELOC. S.R. 2 UNDER RECONSTR. U.S. 20
LAKE COUNTY
STA. 99+73.07

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
	M.J.F.	R.E.B.	L.L.D. M.J.F.	G.S.W. M.C.P.		

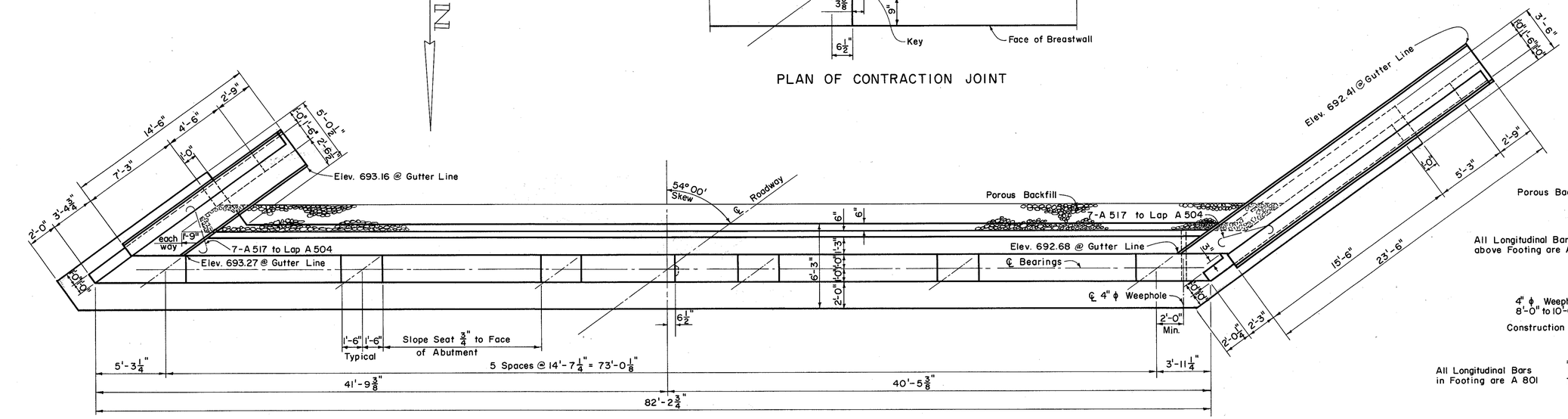
MICROFILMED
MAR 8 0 1984

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

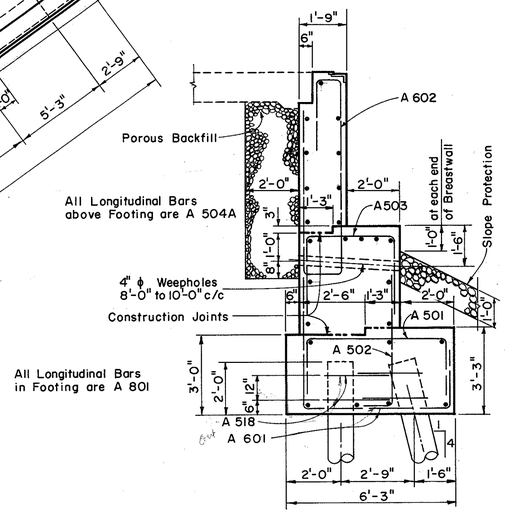
LAKE COUNTY
LAK-2-16.49



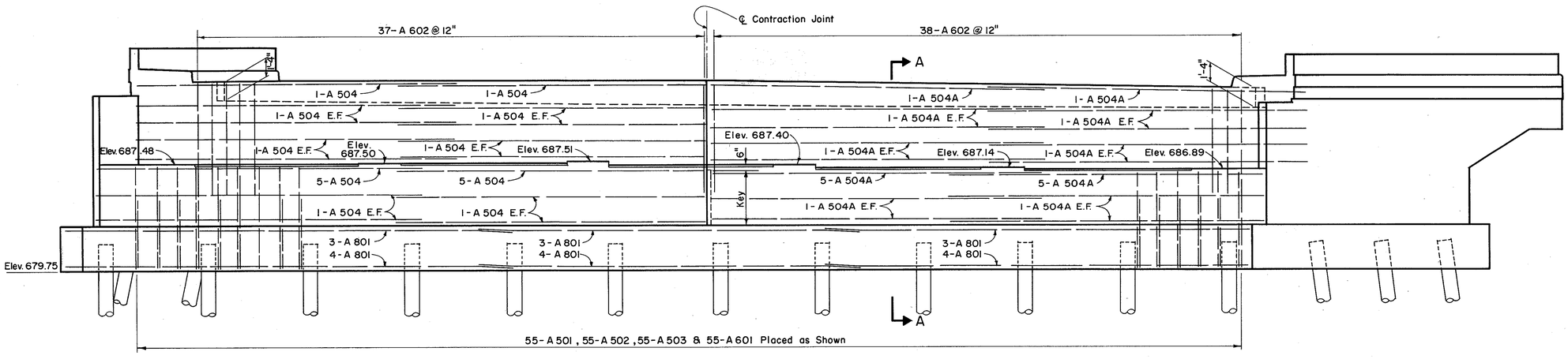
PLAN OF CONTRACTION JOINT



PLAN



SECTION A-A



ELEVATION

ALL REINFORCING STEEL shall have 3" cover in the bottom of the footing and 2" elsewhere.

EXCAVATION required for placing porous backfill in excess of that required for construction of the abutments shall be considered as paid for in the bid price per cu. yd. paid for porous backfill.

ALL PILES are 12" C.I.P. reinforced concrete. Design load 35 tons per pile.

E.F. = Each Face

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CAPITOL ENGINEERING ASSOCIATES, DILLSBURG, PA.
FOR

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

REAR ABUTMENT DETAILS

BRIDGE NO. LAK-2-1862
RELOC. S.R. 2 UNDER RECONSTR. U.S. 20
LAKE COUNTY
STA. 99 + 73.07

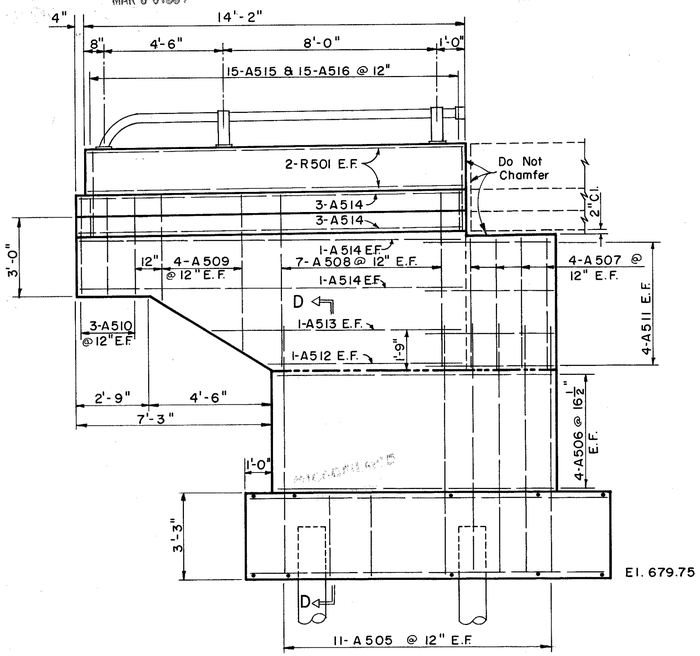
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
M.C.P. R.J.A.	M.J.F.	E.L.M.	L.L.D. M.J.F.	G.S.W. M.C.P.		

MICROFILMED
MAR 3 0 1984

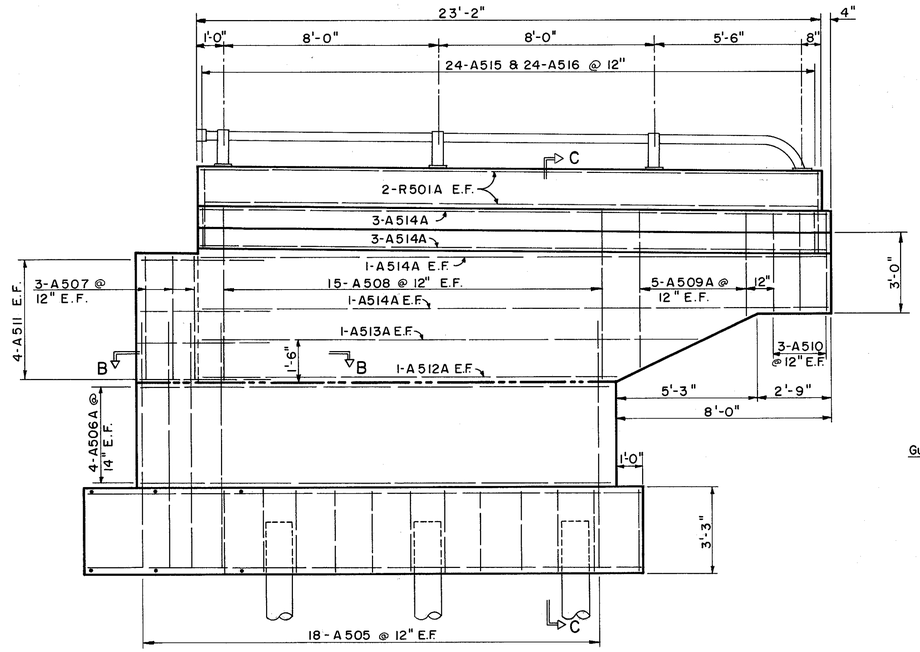
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

281/313

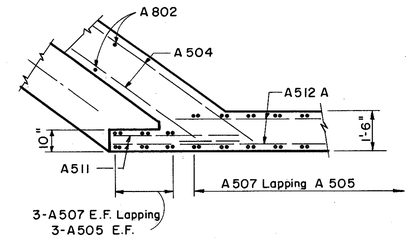
LAKE COUNTY
LAK-2-16.49



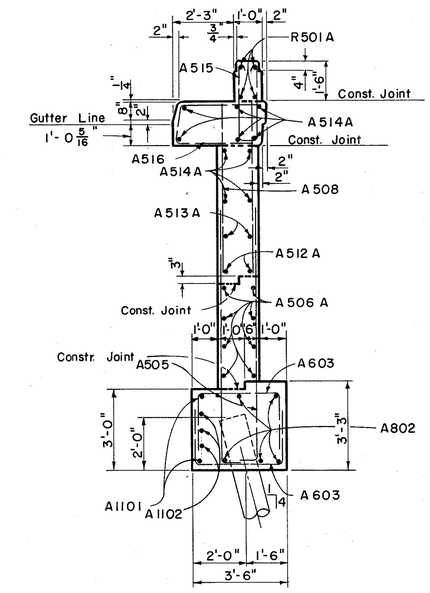
ELEVATION RIGHT WING



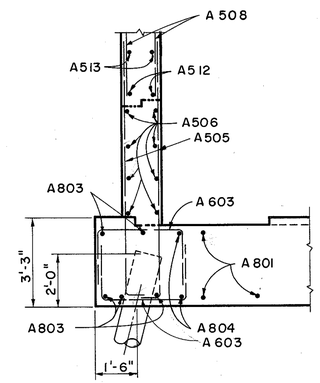
ELEVATION LEFT WING



SECTION B-B



SECTION C-C



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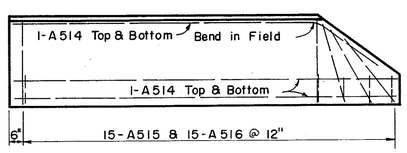
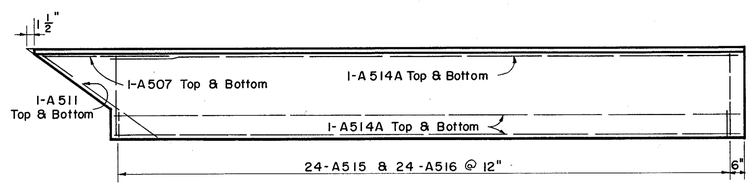
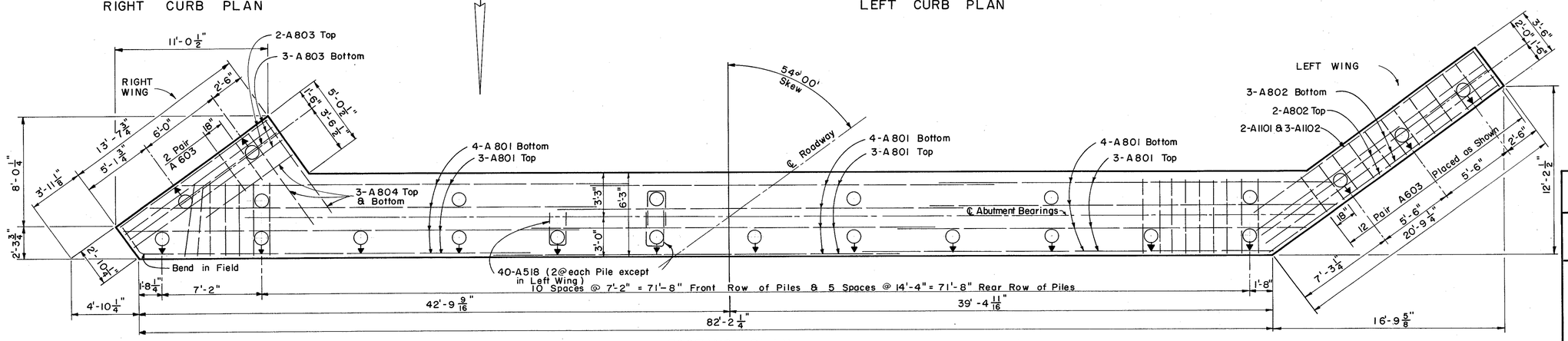


RIGHT CURB PLAN



LEFT CURB PLAN



FOOTING PLAN

All reinforcing steel shall have 3" cover in the bottom of the footing and 2" elsewhere.

E. F. = Each Face

Railing tube on wing walls shall be continuous.

Indicated pile battered 1:4 and direction of batter.

PREPARED BY
CAPITOL ENGINEERING ASSOCIATES, DILLSBURG, PA.
FOR

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

REAR ABUTMENT DETAILS

BRIDGE NO. LAK-2-1862
RELOC. S.R. 2 UNDER RECONSTR. U.S. 20
LAKE COUNTY
STA. 99 + 73.07

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
M.J.F. L.L.D.	M.J.F.	E.L.M.	L.L.D. M.J.F.	G.S.W. M.C.P.		

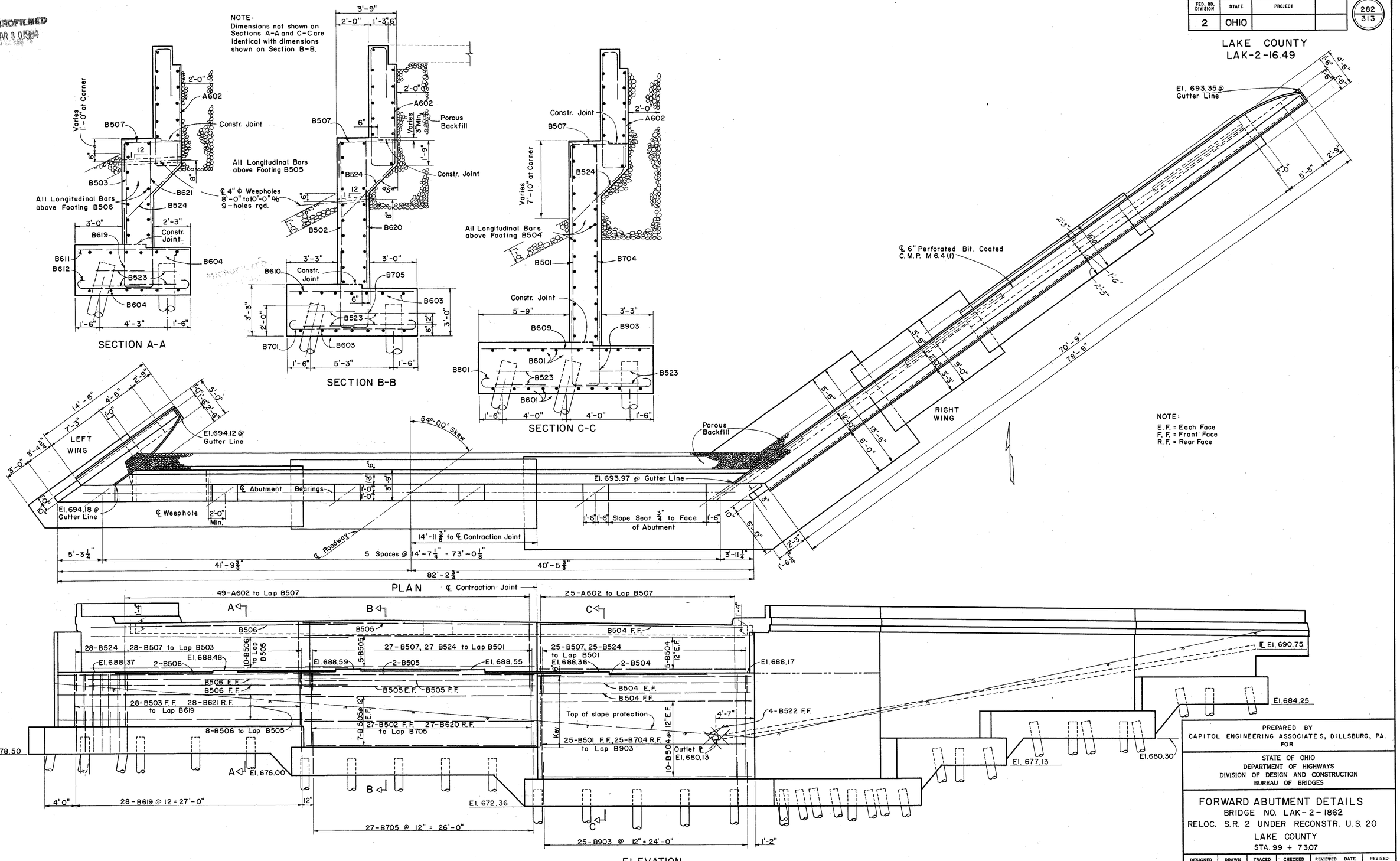
MICROFILMED
MAR 3 0 1984

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

282/313

LAKE COUNTY
LAK-2-16.49

NOTE:
Dimensions not shown on Sections A-A and C-C are identical with dimensions shown on Section B-B.



NOTE:
E.F. = Each Face
F.F. = Front Face
R.F. = Rear Face

PREPARED BY
CAPITOL ENGINEERING ASSOCIATES, DILLSBURG, PA.
FOR

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

FORWARD ABUTMENT DETAILS

BRIDGE NO. LAK-2-1862
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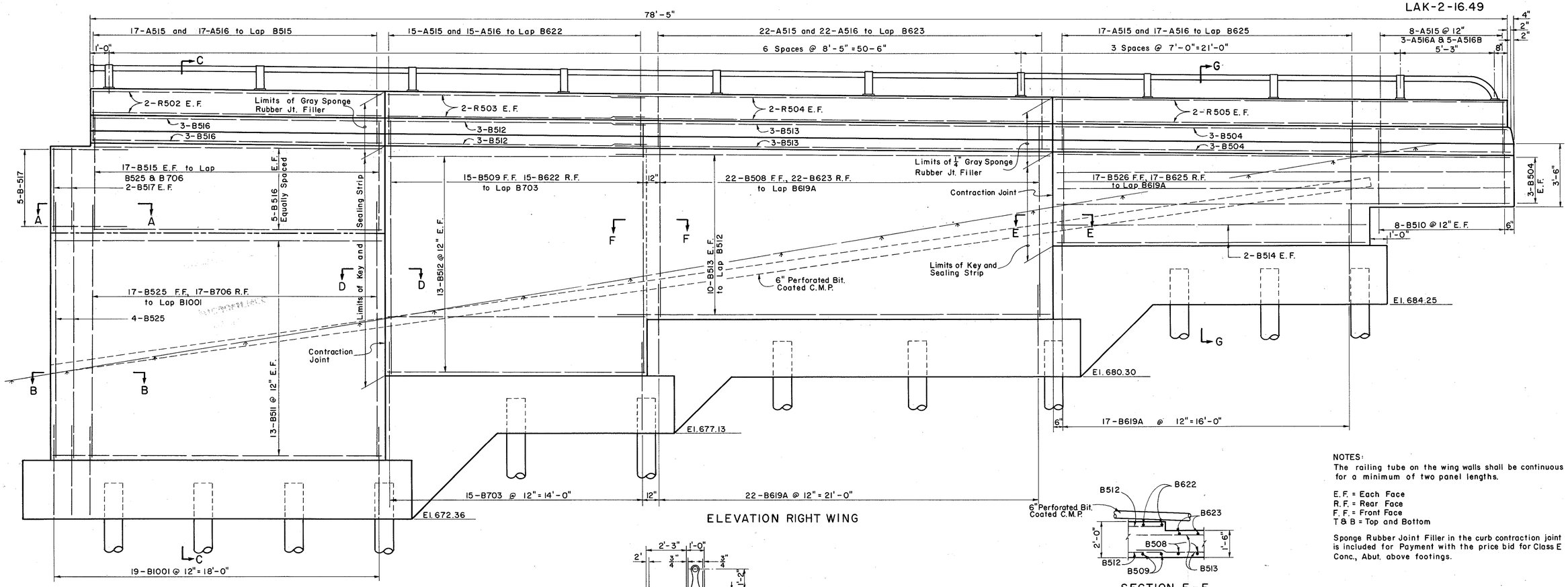
LAKE COUNTY
STA. 99 + 73.07

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
M.C.P. R.J.A.	M.J.F.	F.W.B.	L.L.D. M.J.F.	G.S.W. M.C.P.		

MICROFILMED
MAR 3 0 1994

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

LAKE COUNTY
LAK-2-16.49

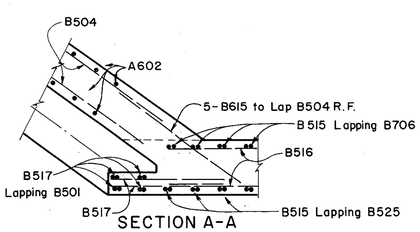


ELEVATION RIGHT WING

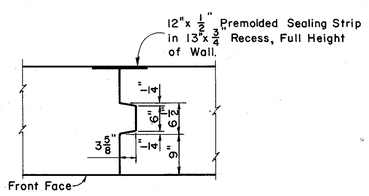
NOTES:
The railing tube on the wing walls shall be continuous for a minimum of two panel lengths.

E.F. = Each Face
R.F. = Rear Face
F.F. = Front Face
T & B = Top and Bottom

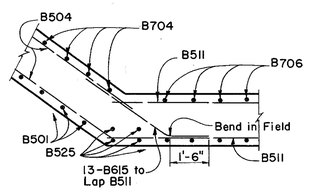
Sponge Rubber Joint Filler in the curb contraction joint is included for Payment with the price bid for Class E Conc., Abut. above footings.



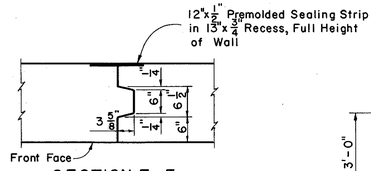
SECTION A-A



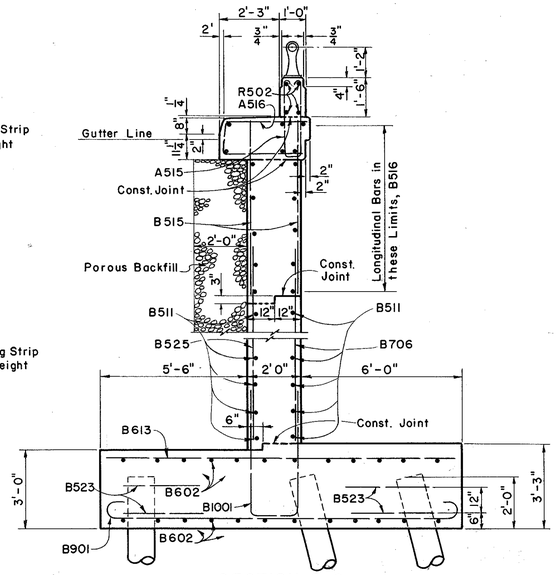
SECTION D-D



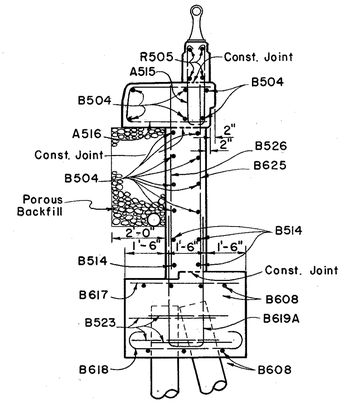
SECTION B-B



SECTION E-E

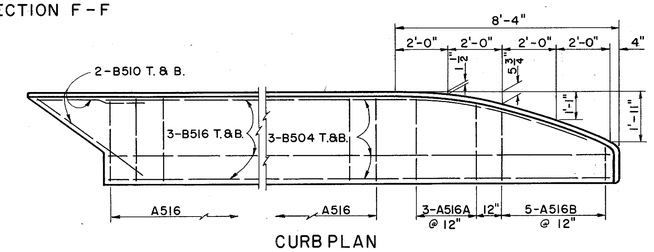


SECTION C-C



SECTION G-G

SECTION F-F



CURB PLAN

PREPARED BY
CAPITOL ENGINEERING ASSOCIATES, DILLSBURG, PA.
FOR

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

FORWARD ABUTMENT DETAILS

BRIDGE NO. LAK-2-1862
RELOC. S.R. 2 UNDER RECONSTR. U.S. 20
LAKE COUNTY
STA. 99 + 73.07

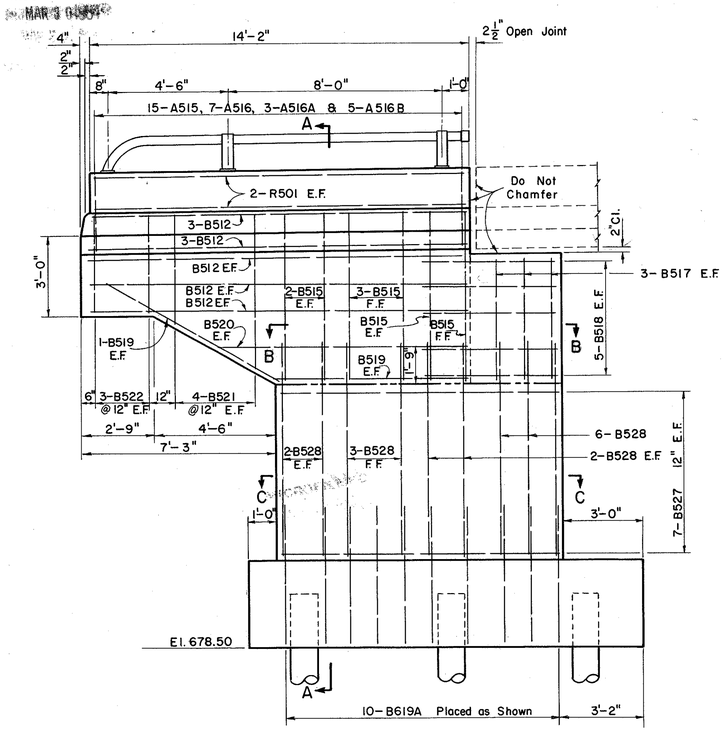
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
	M.J.F.	FWB	L.L.D. M.J.F.	G.S.W. M.C.P.		

MICROFILMED
MAR 3 1988

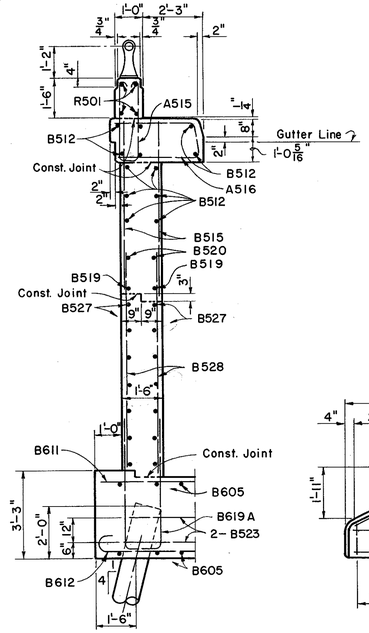
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

284/313

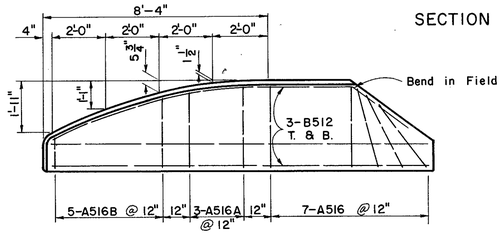
LAKE COUNTY
LAK-2-16.49



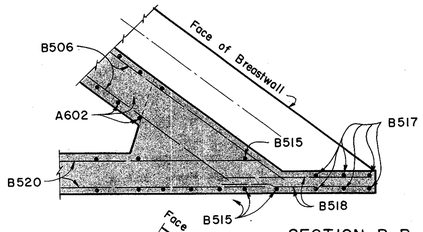
ELEVATION LEFT WING



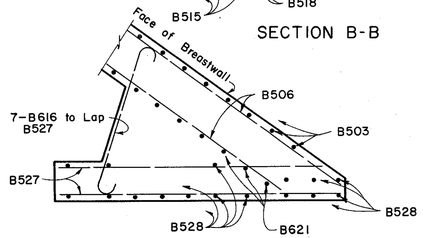
SECTION C-C



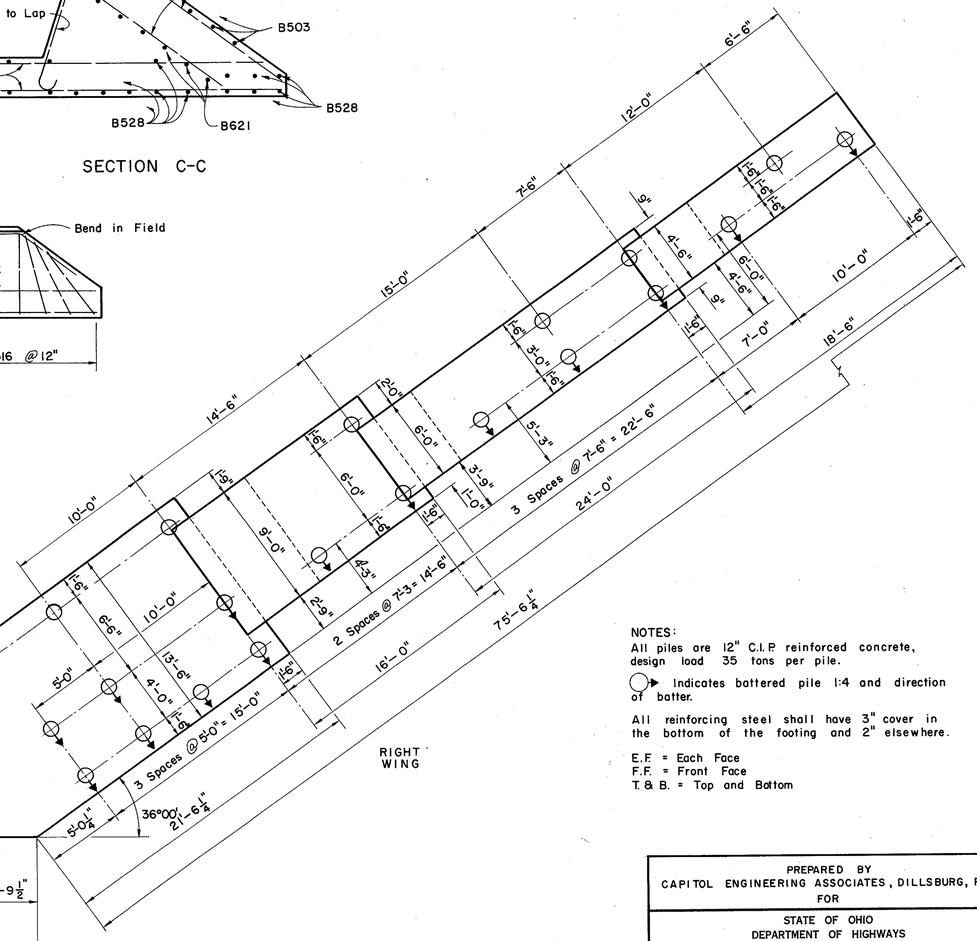
CURB PLAN



SECTION B-B



SECTION C-C



FOOTING PLAN
AND
PILE LAYOUT

NOTES:

All piles are 12" C.I.P. reinforced concrete, design load 35 tons per pile.

Indicates battered pile 1:4 and direction of batter.

All reinforcing steel shall have 3" cover in the bottom of the footing and 2" elsewhere.

E.F. = Each Face
F.F. = Front Face
T. & B. = Top and Bottom

PREPARED BY
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FOR

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BUREAU OF BRIDGES

FORWARD ABUTMENT DETAILS

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LAKE COUNTY
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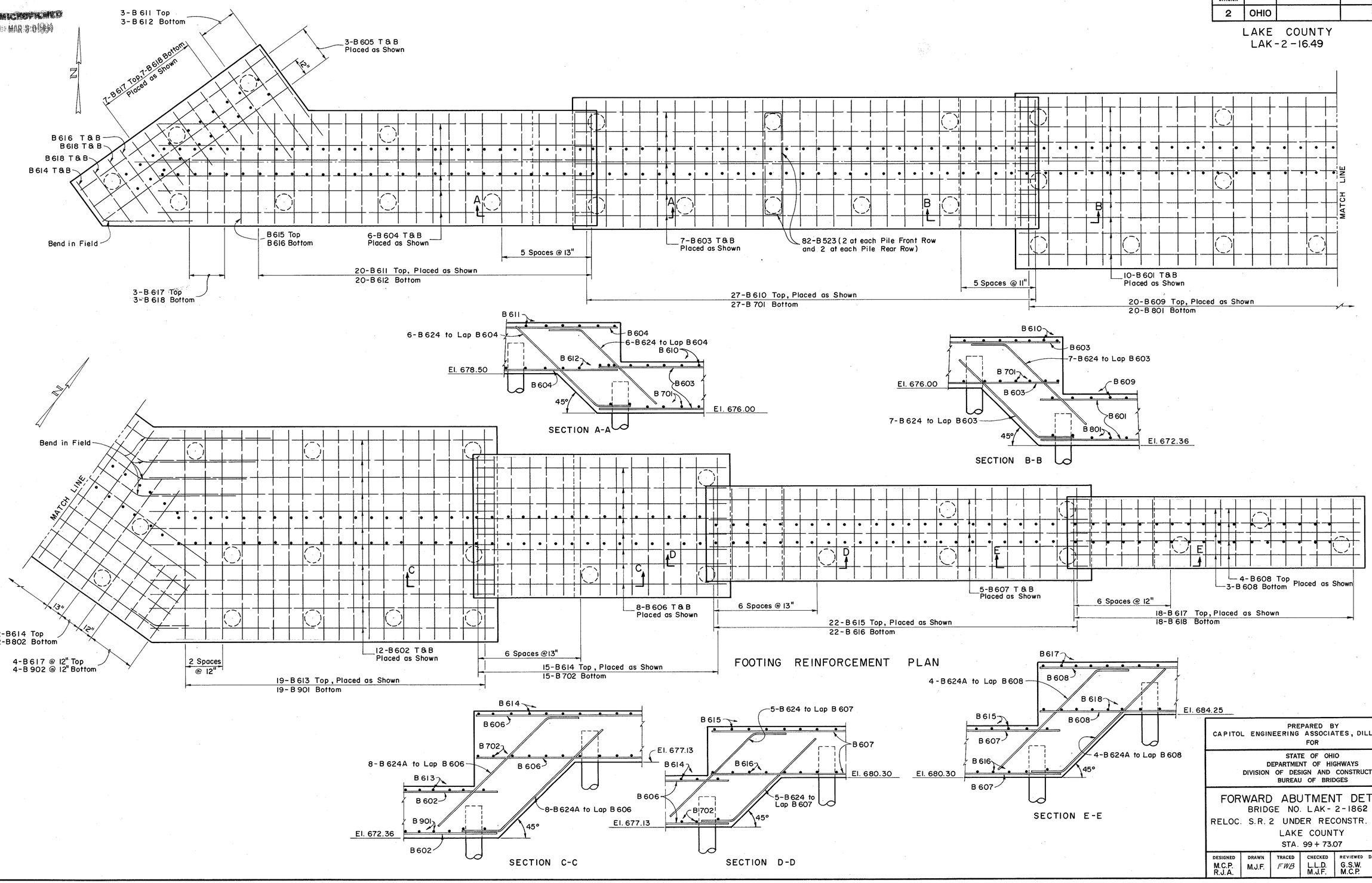
M.C.P. R.J.A.	M.J.F.	FWB	L.L.D. M.J.F.	G.S.W. M.C.P.		

MICROFILMED
MAR 8 0 1994

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

285
313

LAKE COUNTY
LAK-2-16.49



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BUREAU OF BRIDGES

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BRIDGE NO. LAK-2-1862
RELOC. S.R. 2 UNDER RECONSTR. U.S. 20
LAKE COUNTY
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DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
M.C.P. R.J.A.	M.J.F.	FWB	L.L.D. M.J.F.	G.S.W. M.C.P.		

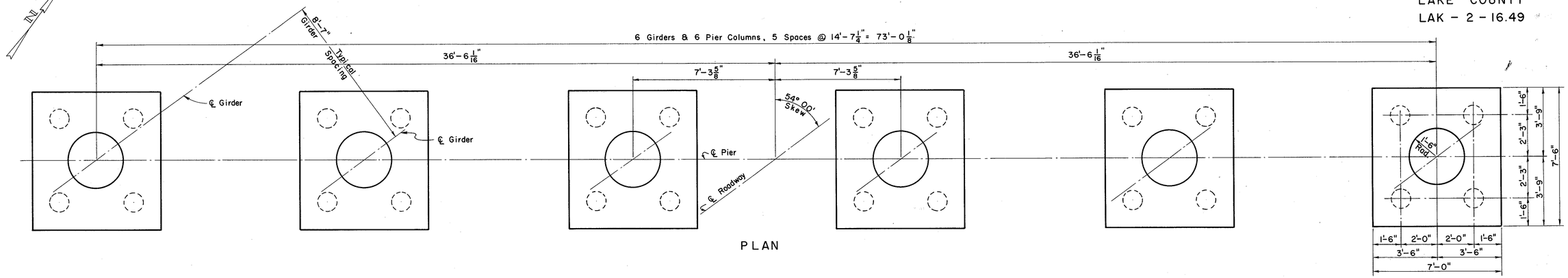
MICROFILMED
MAR 3 0 1984

NOTES:
All reinforcing shall have a minimum of 3" cover in the bottom of footing and 2" elsewhere.
All piles are vertical 12" C.I.P. reinforced concrete.

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

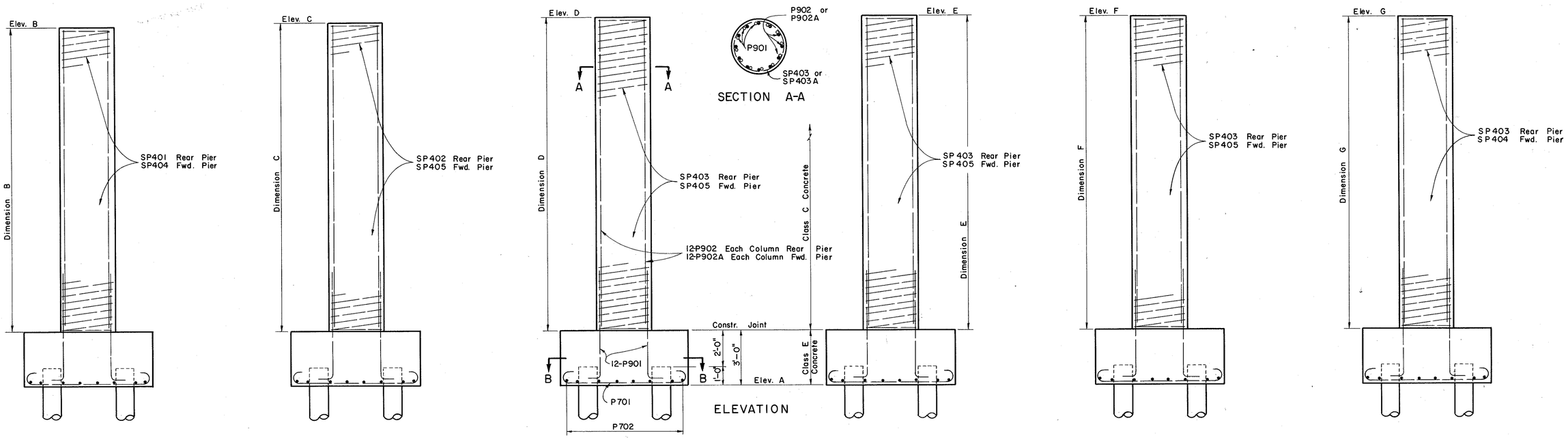
286/313

LAKE COUNTY
LAK - 2 - 16.49

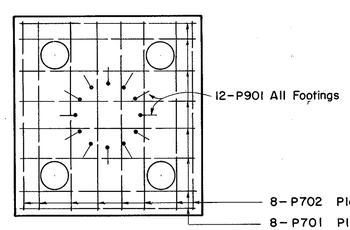


PLAN

Pile Spacing and Footing Dimensions Shown are the Same for all Footings.



ELEVATION



Footing Reinforcement Shown is the Same for all Footings.

SECTION B-B

PIERS		A	B	C	D	E	F	G
REAR PIER	Elevations	667.00	687.17	687.41	687.64	687.73	687.67	687.61
	Dimensions	——	17'-2"	17'-4 7/8"	17'-7 3/8"	17'-8 3/4"	17'-8"	17'-7 3/8"
FORWARD PIER	Elevations	666.00	687.79	687.96	688.12	688.14	688.01	687.88
	Dimensions	——	18'-9 1/8"	18'-11 1/8"	19'-1 1/8"	19'-1 3/4"	19'-0 1/8"	18'-10 5/8"

PREPARED BY
CAPITOL ENGINEERING ASSOCIATES, DILLSBURG, PA.
FOR

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

PIERS

BRIDGE NO. LAK-2-1862
RELOC. SR. 2 UNDER RECONSTR. US-20
LAKE COUNTY
STA. 99 + 73.07

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
M.C.P. L.L.D.	M.J.F.	FWB	L.L.D. M.J.F.	G.S.W. M.C.P.		

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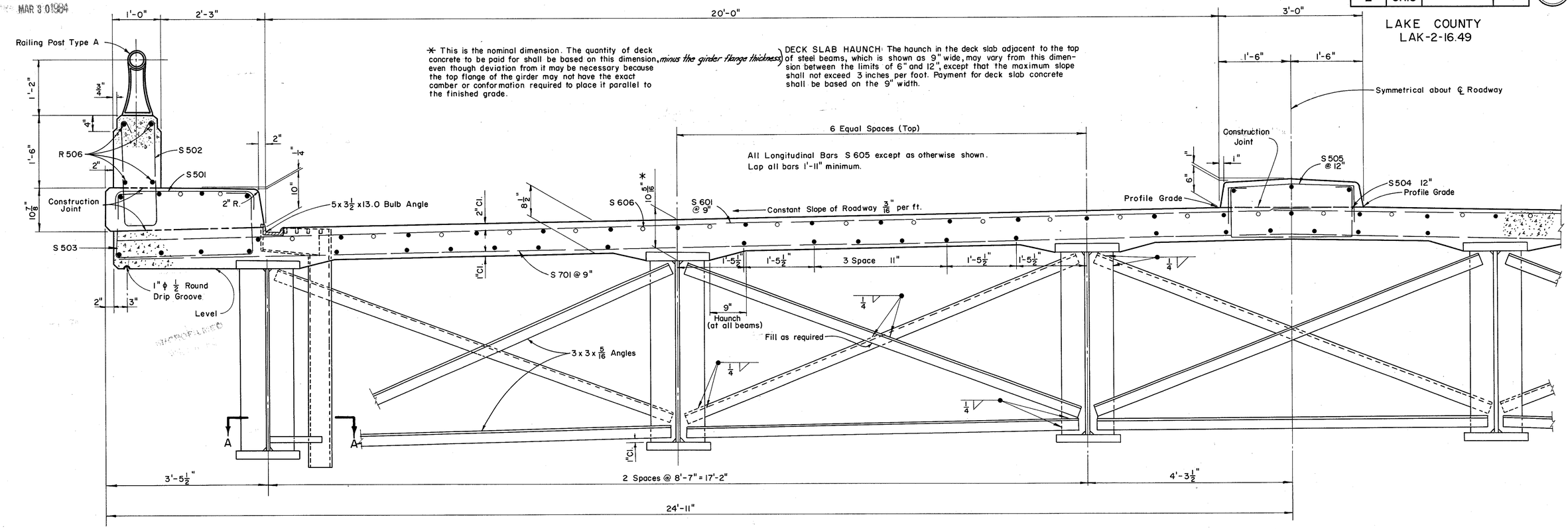
MAR 3 0 1984

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

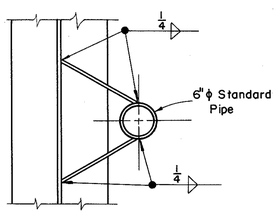
LAKE COUNTY
LAK-2-16.49



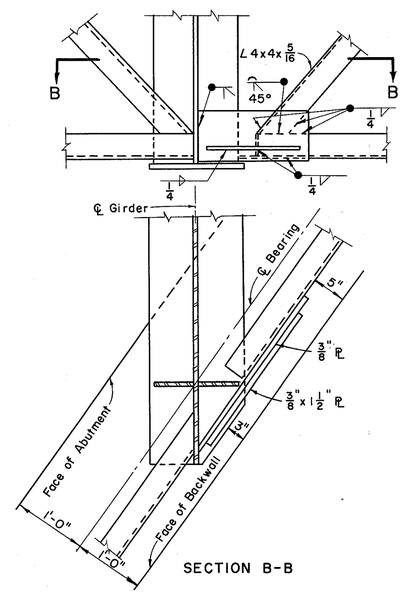
* This is the nominal dimension. The quantity of deck concrete to be paid for shall be based on this dimension, *minus the girder flange thickness*, even though deviation from it may be necessary because the top flange of the girder may not have the exact camber or conformation required to place it parallel to the finished grade.

DECK SLAB HAUNCH: The haunch in the deck slab adjacent to the top of steel beams, which is shown as 9" wide, may vary from this dimension between the limits of 6" and 12", except that the maximum slope shall not exceed 3 inches per foot. Payment for deck slab concrete shall be based on the 9" width.

TRANSVERSE SECTION



SECTION A-A



SECTION B-B

DETAIL OF END FRAME CONNECTION

REFERENCE shall be made to Standard Drawing AR-1-57 Revised 4-2-62 for Details of Aluminum Railing and Details of Concrete Parapet.

REFERENCE shall be made to Standard Drawing CSB-2-56 Sheets 2 & 3 Revised 2-2-59 for Additional Details of End Dams, Gutters & Pipe Drains.

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CAPITOL ENGINEERING ASSOCIATES, DILLSBURG, PA.
FOR

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

SUPERSTRUCTURE DETAILS

BRIDGE NO. LAK-2-1862
RELOC. S.R. 2 UNDER RECONSTR. U.S. 20
LAKE COUNTY
STA. 99 + 73.07

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
	M.J.F.	E.L.M.	L.L.D. M.J.F.	G.S.W. M.C.P.		

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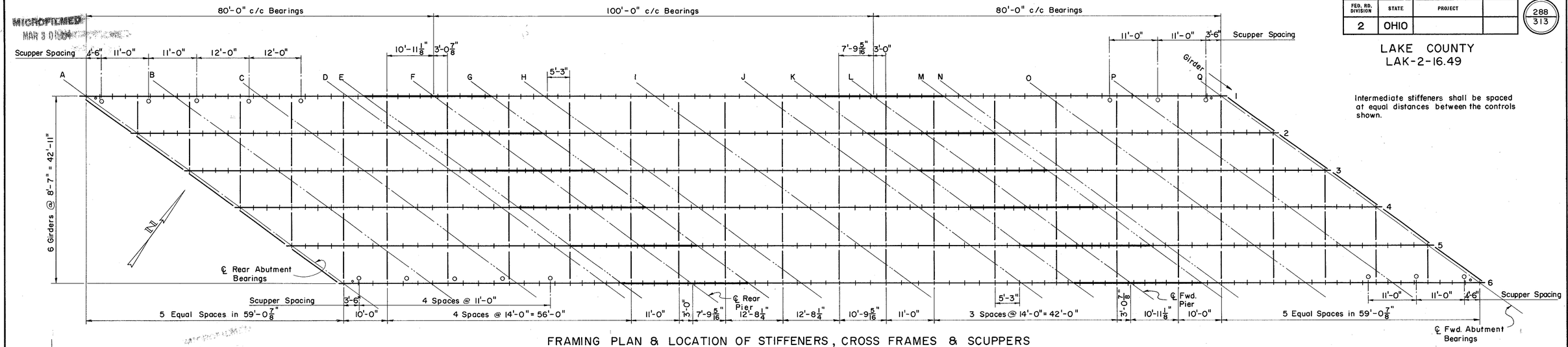
MAR 3 01 1984

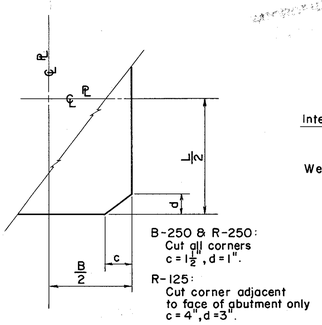
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

LAKE COUNTY
LAK-2-16.49

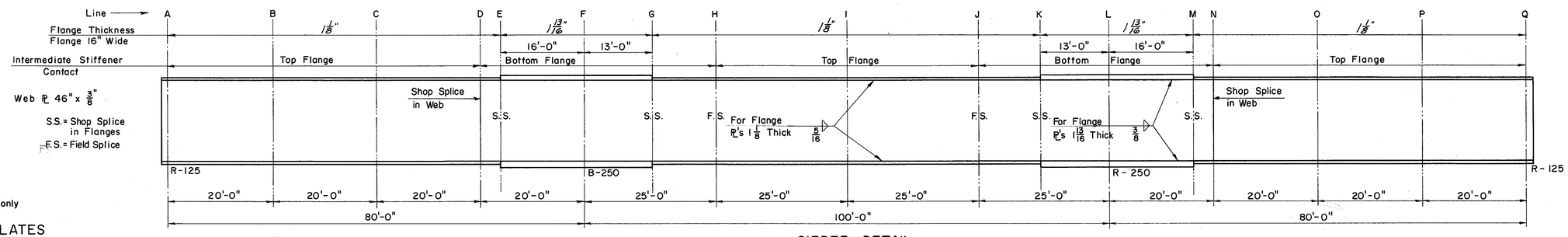
Intermediate stiffeners shall be spaced at equal distances between the controls shown.



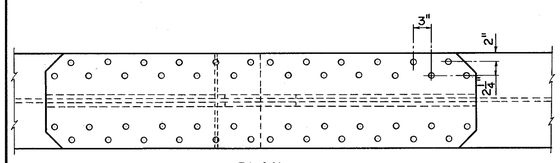
FRAMING PLAN & LOCATION OF STIFFENERS, CROSS FRAMES & SCUPPERS



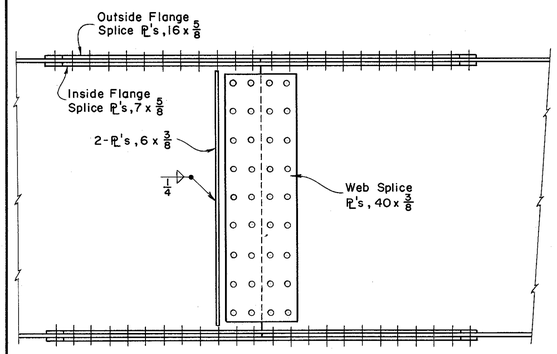
MODIFICATION OF MASONRY PLATES



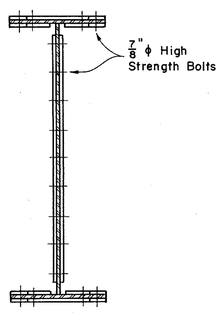
GIRDER DETAIL



PLAN

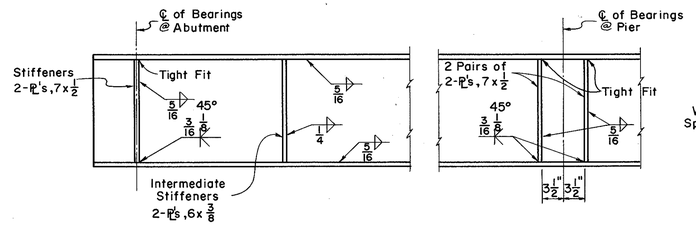


ELEVATION

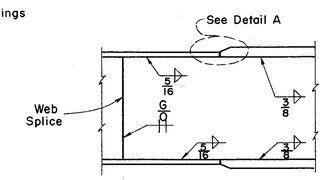


SECTION

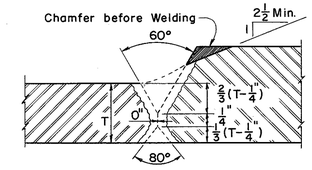
FIELD SPLICE DETAILS



STIFFENER DETAILS



SHOP SPLICE DETAILS



DETAIL A

NOTES:

REFERENCE shall be made to Standard Drawing RB-1-55 Revised 2-2-59 for details of bearings. Cut corners of masonry plates in accordance with detail shown on this sheet.

WELDING of structural steel shall be class A.

ALL BUTT WELDS shall be radiographically inspected according to supplemental specifications S-307 dated 8/23/62.

SHOP SPLICES: If additional shop splices are necessary, their location and detail shall be submitted to the Director for approval prior to ordering of material.

BUTT WELDS shall be formed by welding from both sides with back gouging before welding from second side.

DEFLECTION & CAMBER DATA

LINE	B	C	D	H	I	J	N	O	P
Deflection due to weight of steel each girder	1/8"	1/8"	0	0	1/8"	0	0	1/8"	1/8"
Deflection due to remaining dead load, each girder	1/2"	5/8"	3/8"	1/4"	5/8"	1/4"	3/8"	5/8"	1/2"
Convexity required for vertical curve	1/8"	1/4"	1/4"	5/8"	7/8"	5/8"	3/8"	5/8"	3/8"
Sum of deflection and convexity	3/4"	1"	5/8"	7/8"	1 5/8"	7/8"	3/4"	1 3/8"	1"
Required Camber	3/4"	1"	5/8"	7/8"	1 5/8"	7/8"	3/4"	1 3/8"	1"

PREPARED BY
CAPITOL ENGINEERING ASSOCIATES, DILLSBURG, PA.
FOR

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

FRAMING PLAN & GIRDER DETAILS

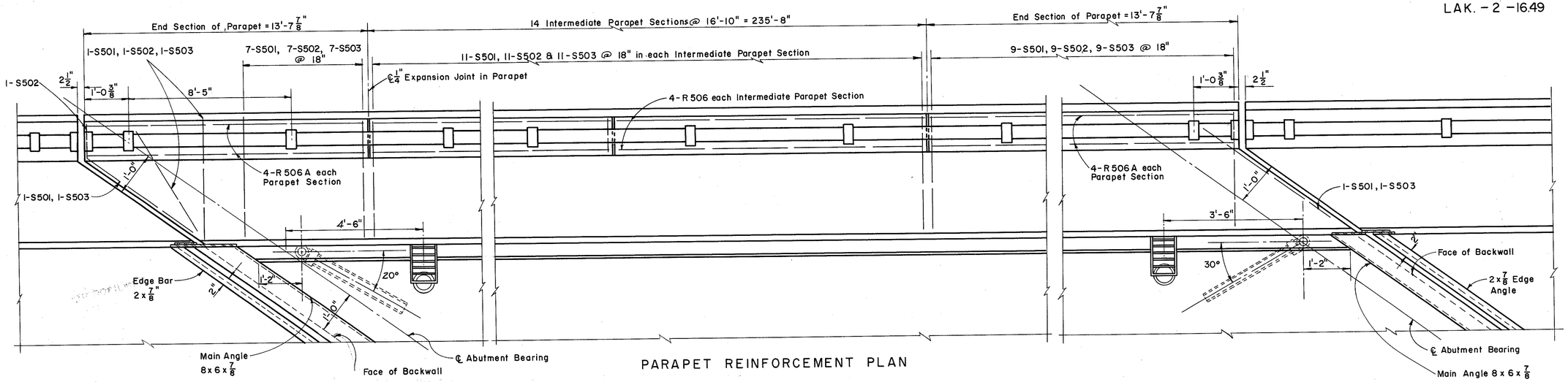
BRIDGE NO. LAK-2-1862
RELOC. S.R. 2 UNDER RECONSTR. U.S. 20
LAKE COUNTY
STA. 99 + 73.07

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
M.C.P. L.L.D.	M.J.F.	FWB	L.L.D. M.J.F.	G.S.W. M.C.P.		

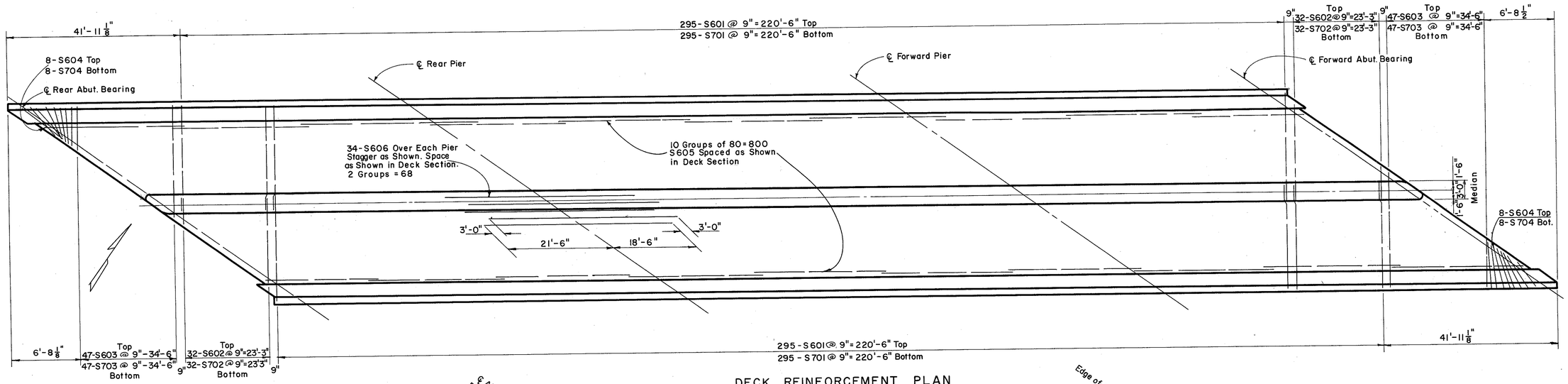
MICROFILMED
MAR 8 01994

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

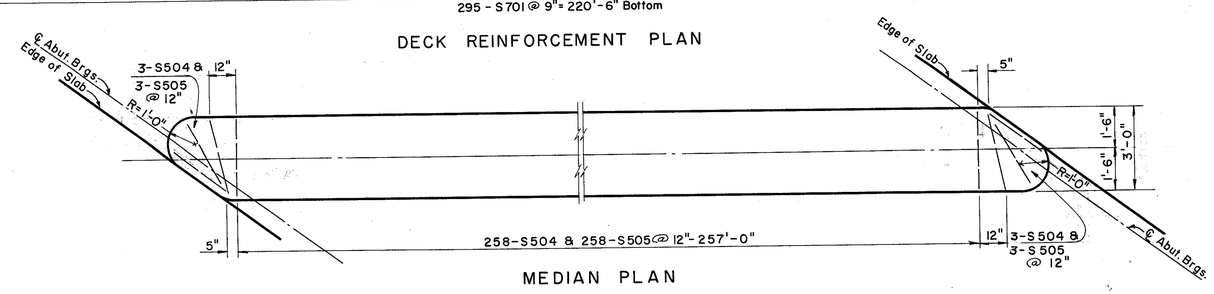
LAKE COUNTY
LAK. - 2 - 16.49



PARAPET REINFORCEMENT PLAN



DECK REINFORCEMENT PLAN



MEDIAN PLAN

PREPARED BY
CAPITOL ENGINEERING ASSOCIATES, DILLSBURG, PA.
FOR

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

DETAILS OF DECK AND PARAPET

BRIDGE NO. LAK - 2 - 1862
RELOC. SR. 2 UNDER RECONSTR. U.S. 20
LAKE COUNTY
STA. 99 + 73.07

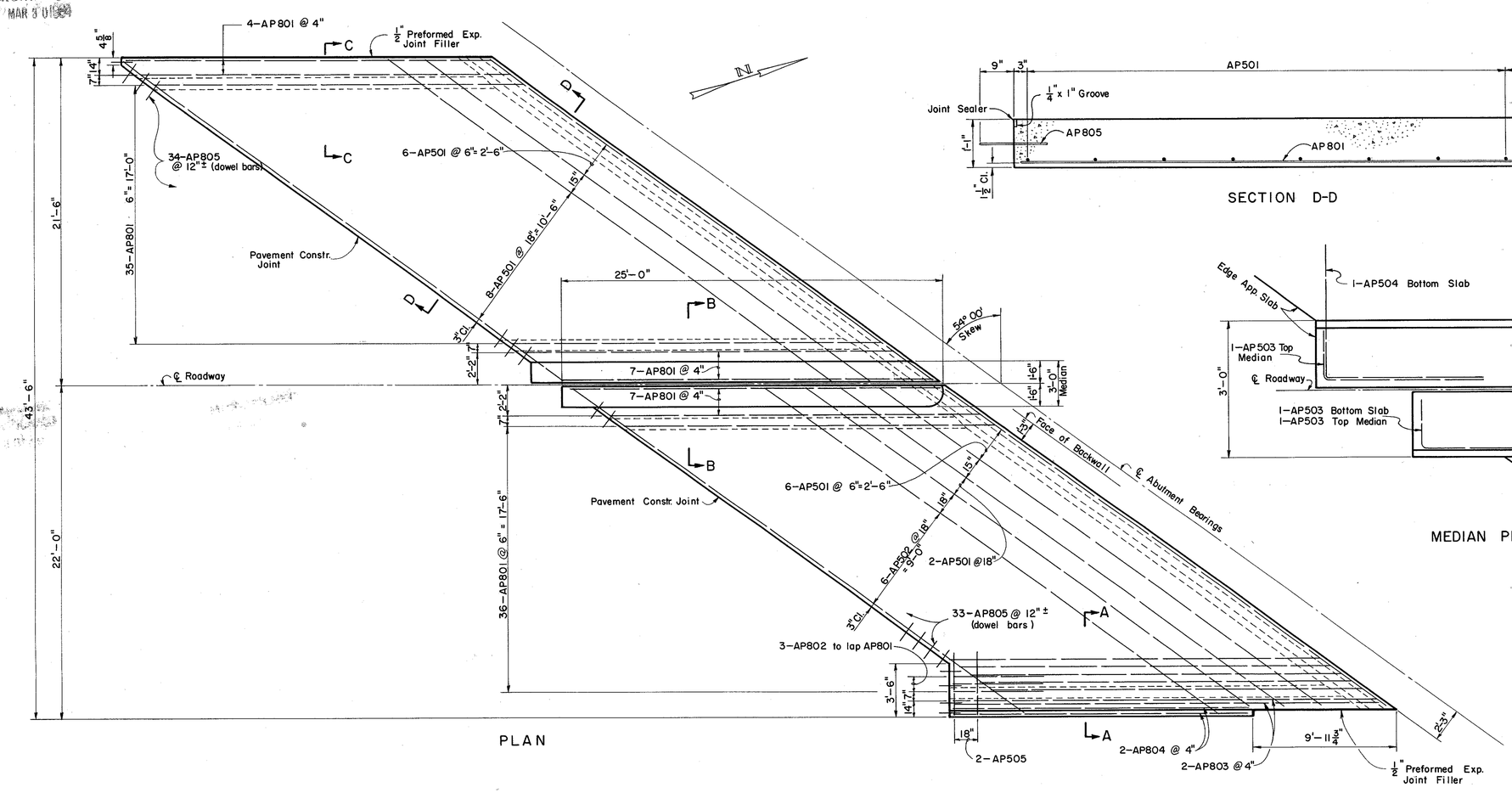
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
M.J.F. L.L.D.	M.J.F.	L.C.Z.	L.L.D. M.J.F.	G.S.W. M.C.P.		

MICROFILMED
MAR 5 1984

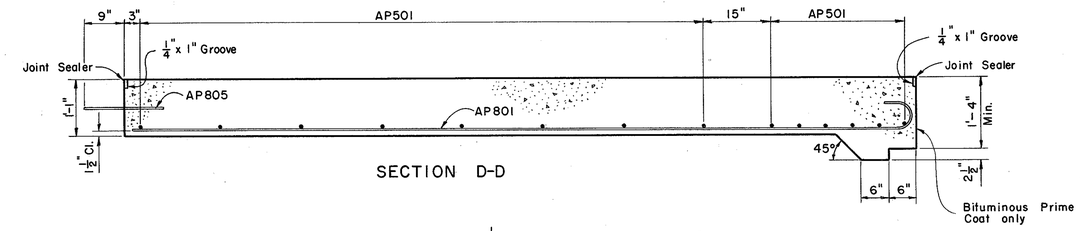
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

290
313

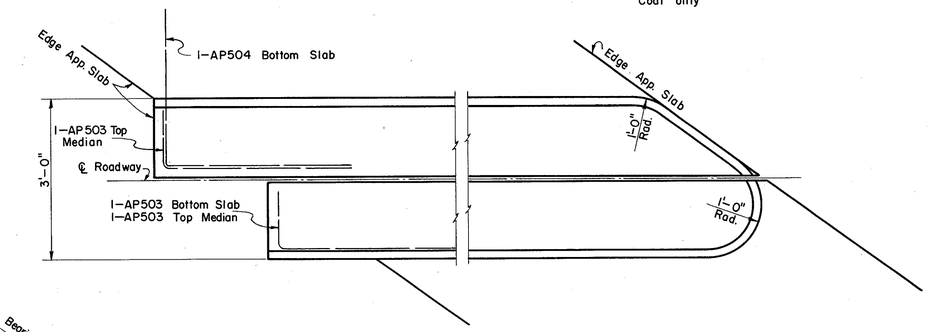
LAKE COUNTY
LAK-2-16.49



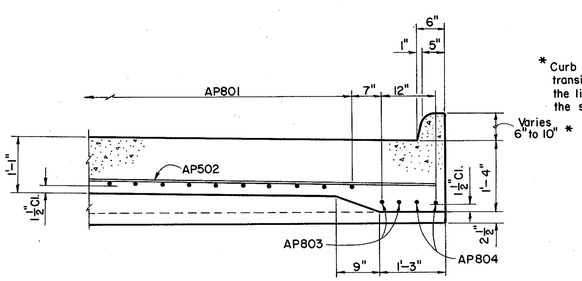
PLAN



SECTION D-D

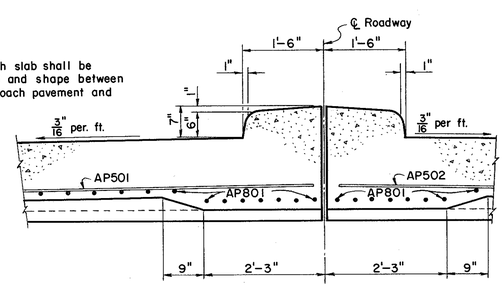


MEDIAN PLAN

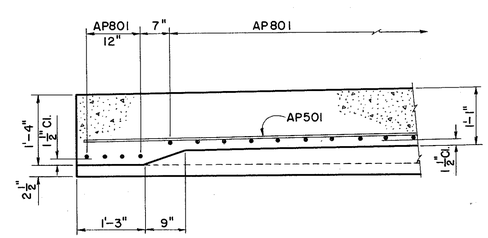


SECTION A-A

* Curb on the approach slab shall be transitioned in height and shape between the limits of the approach pavement and the safety curb.



SECTION B-B



SECTION C-C

CONCRETE shall be class C or class D.

PREFORMED EXPANSION Joint Filler at the edges of approach slab shall be included with the approach slab for payment.

CONSTRUCTION JOINT: Payment for the median, Constr. joints, including dowel bars, is included in the price per sq. yd. bid for the approach pavement.

REINFORCING BAR LIST: See following sheet

PREPARED BY
CAPITOL ENGINEERING ASSOCIATES, DILLSBURG, PA.
FOR

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

REAR APPROACH SLAB DETAILS

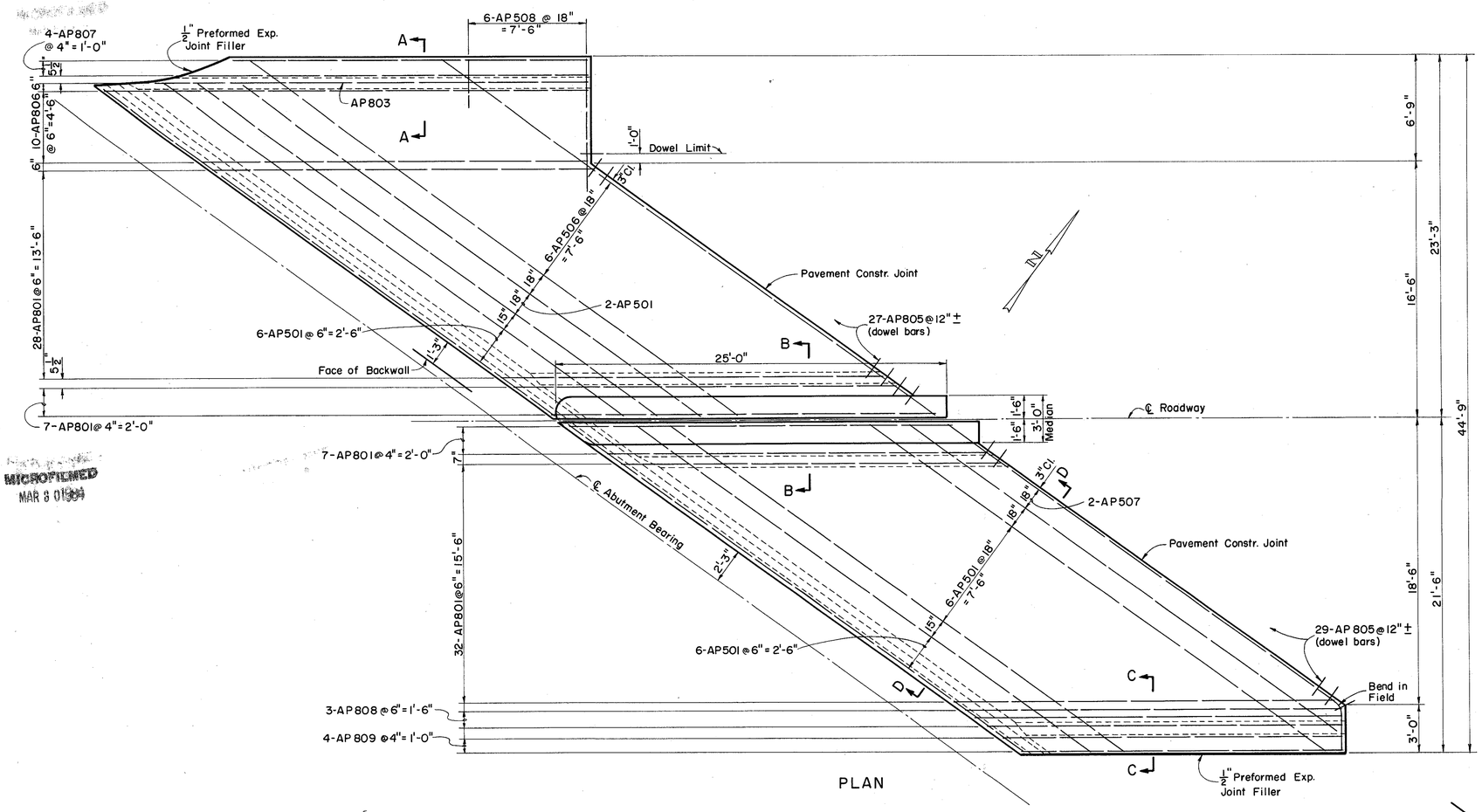
BRIDGE NO. LAK-2-1862
RELOC. SR. 2 UNDER RECONSTR US-20
LAKE COUNTY
STA. 99+73.07

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
	M.J.F. L.L.D.	FWB	L.L.D. M.J.F.	G.S.W. M.C.P.		

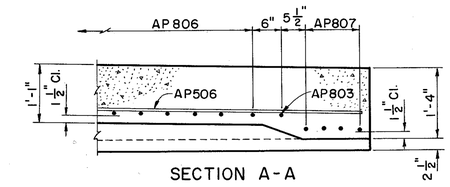
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

291
313

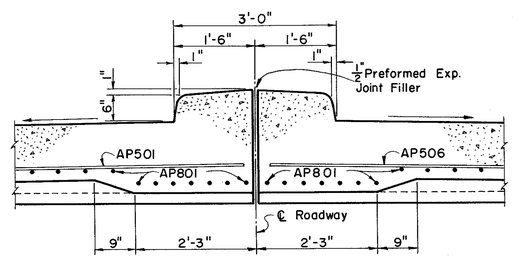
LAKE COUNTY
LAK-2-16.49



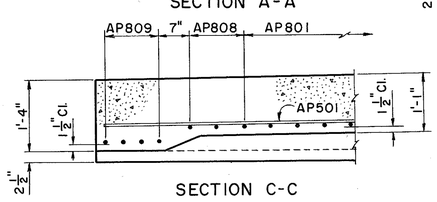
PLAN



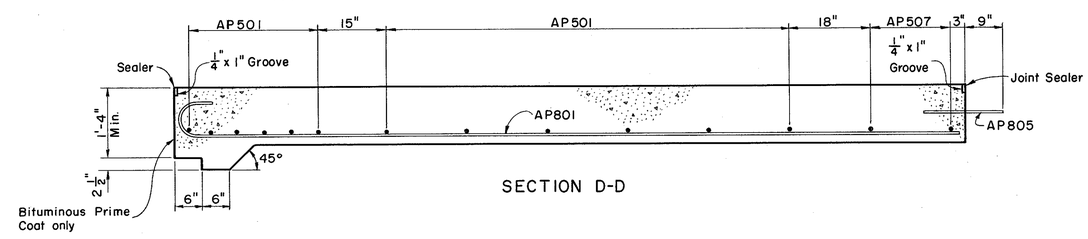
SECTION A-A



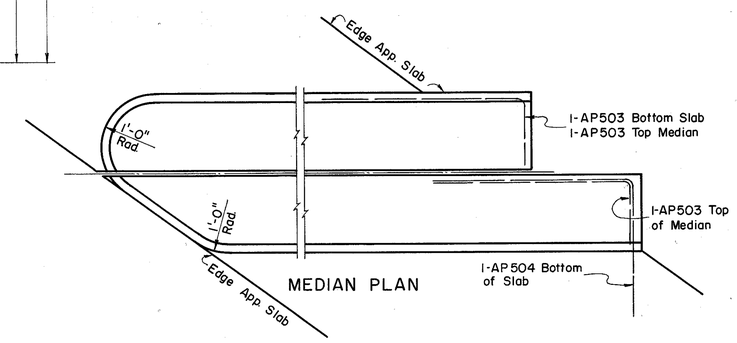
SECTION B-B



SECTION C-C



SECTION D-D



MEDIAN PLAN

REINFORCING STEEL FOR APPROACH SLABS

MARK	REQ'D REAR	REQ'D FWD.	TOTAL	LENGTH	WEIGHT	TYPE	A	B	G	VARIES BY	NO. OF EACH
AP801	89	74	163	25'-9"		2	1'-1"	24'-8"	0		
AP802	2	–	2	5'-3"		S					
AP803	2	1	3	29'-1"		2	1'-1"	28'-0"	0		
AP804	2	–	2	20'-7"		2	1'-1"	19'-6"	0		
AP805	67	56	123	1'-6"		S					
AP806	–	10	10	25'-10"/31'-10"	To be included with item I-7 for payment.	2	1'-1"	24'-9"/30'-9"	0	8"	1
AP807	–	4	4	23'-7"/26'-1"		2	1'-1"	22'-6"/25'-0"	0	10"	1
AP808	–	3	3	23'-10"/25'-4"		2	1'-1"	22'-9"/24'-3"	0	9"	1
AP809	–	4	4	21'-4"/22'-10"		2	1'-1"	20'-3"/21'-9"	0	6"	1
AP501	22	20	42	36'-2"		S					
AP502	6	–	6	37'-0"		S					
AP503	3	3	6	4'-5"		–		1'-1"			
AP504	1	1	2	6'-4"		–		3'-0"			
AP505	2	–	2	4'-0"		S					
AP506	–	6	6	39'-2"		S					
AP507	–	2	2	34'-0"		S					
AP508	–	6	6	3'-0"/8'-5"		S				13"	1

NOTES

Bar Size is indicated in the bar mark. The first digit where three digits are used, and the first two digits where four digits are used indicate the size of the bar. For example A700 is a No. 7 size bar and A1014 is a No. 10 size bar.

All dimensions are out to out of the bar.

Type "S" is straight bar.

For additional details see Rear Approach Slab Details Sheet.

PREPARED BY
CAPITOL ENGINEERING ASSOCIATES, DILLSBURG, PA.
FOR

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

FORWARD APPROACH SLAB DETAILS

BRIDGE NO. LAK-2-1862
RELOC. S.R. 2 UNDER RECONSTR. U.S. 20
LAKE COUNTY
STA. 99 + 73.07

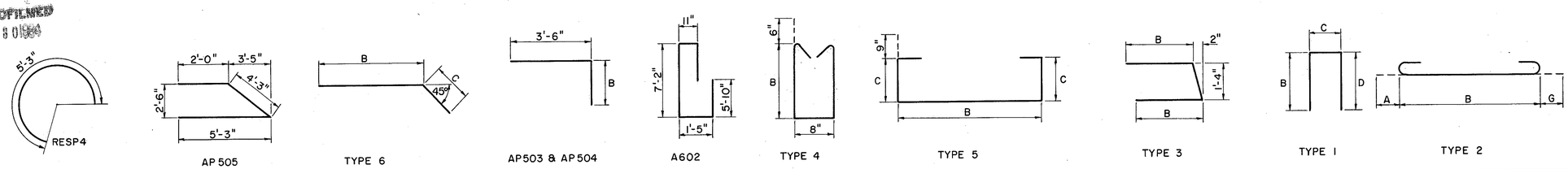
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
	M.J.F. L.L.D.	FWB	L.L.D. M.J.F.	G.S.W. M.C.P.		

MICROFILMED
MAR 3 01994

MICROFILMED
MAR 8 0 1984

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

LAKE COUNTY
LAK-2-16.49



NOTES

Bar Size is indicated in the bar mark. The first digit where three digits are used, and the first two digits where four digits are used indicate the size of the bar. For example A700 is a No. 7 size bar and A1014 is a No. 10 size bar.

All dimensions are out to out of the bar.

Type "S" is straight bar.

The "length" shown in steel list for the spiral bars is the vertical distance from the top of the spiral to the bottom of spiral.

The "number of turns" shown in the steel list for the spiral bars is the "length" divided by the pitch, plus three (3) turns (total number of closed coils) expressed as the nearest whole number.

Spiral reinforcing bars shall not have deformations but shall in other respects conform to Item S-4.

1½ closed coils shall be provided at the ends of each spiral unit.

Four steel channel, tee or angle spacers, weight approximately 0.68 pounds per linear foot of spacer, shall be provided for each spiral unit. They shall be equally spaced along the periphery of the coil. The number of pounds of these spacers, based on 0.68 pounds per linear foot will be paid for as reinforcing steel and is included in the tabulated quantity of spiral bars.

RAILING

MARK	TOTAL	LENGTH	WEIGHT	TYPE
R501	8	13'-10"	To be included with item S-14 for payment	S
R501A	4	22'-10"		S
R502	4	15'-11"		S
R503	4	14'-2"		S
R504	4	24'-0"		S
R505	4	24'-10"		S
R506	112	16'-6"		S
R506A	16	13'-3"		S

REINFORCING STEEL LIST

PIERS

MARK	REAR PIER	FWD. PIER	TOTAL	LENGTH	WEIGHT	TYPE	A	B	C	D	G
P901	72	72	144	6'-7"	3222	1		6'-4"	6"	0	
P902	72	-	72	17'-0"	4162	S					
P902A	-	72	72	18'-7"	4548	S					
P701	48	48	96	8'-4"	1635	2	10"	6'-8"			10"
P702	48	48	96	8'-10"	1733	2	10"	7'-2"			10"

SPIRAL BARS

MARK	REAR PIER	FWD. PIER	TOTAL	LENGTH	WEIGHT	PITCH	NO. TURNS	CORE DIA.
SP401	1	-	1	17'-0"	317	4½"	48	32"
SP402	1	-	1	17'-3"	323	4½"	49	32"
SP403	4	-	4	17'-5½"	1320	4½"	50	32"
SP404	-	2	2	18'-7½"	700	4½"	53	32"
SP405	-	4	4	18'-10"	1400	4½"	53	32"

SUPERSTRUCTURE

MARK	TOTAL	LENGTH	WEIGHT	TYPE	B	C	D	VARIES BY	NO. OF EACH
S701	590	25'-8"	30957	S				6½"	2
S702	64	7'-8½"/24'-6"	2106	S				6½"	2
S703	94	5'-1"/30'-0"	3370	S				6½"	2
S704	16	4'-6"	147	S					
S601	590	25'-6"	22598	S					
S602	64	7'-6½"/24'-4"	1531	S				6½"	2
S603	94	5'-1"/30'-0"	2476	S				6½"	2
S604	16	4'-6"	108	S					
S605	800	28'-0"	33645	S					
S606	68	40'-0"	4085	S					
S501	348	5'-10"	2116	1	1'-7"	2'-11"	1'-7"		
S502	346	5'-7"	2014	4	2'-1"				
S503	348	6'-10"	2479	5	2'-11"	1'-4"			
S504	264	5'-7"	1537	5	2'-6"	11"			
S505	264	4'-1"	1124	1	11"	2'-6"	11"		

FORWARD ABUTMENT

MARK			TOTAL	LENGTH	WEIGHT	TYPE	B	C & A	D & G	VARIES BY	NO. OF EACH
A602			74	17'-9"	1973	-					
A515			94	7'-4"	719	4	2'-10"				
A516			78	7'-3"	590	3	3'-1"				
A516A			6	6'-9"/7'-1"	43	3	2'-10"/3'-0"		-	1"	2
A516B			10	3'-5"/6'-5"	51	3	1'-2"/2'-8"			4½"	2
B1001			19	13'-6"	1104	1	6'-3"	1'-8"	6'-3"		
B901			19	15'-8"	1012	2	13'-2"	1'-3"	1'-3"		
B902			4	6'-8"	91	2	4'-2"	1'-3"	1'-3"		
B903			25	12'-8"	1077	1	5'-9"	1'-8"	5'-9"		
B801			20	12'-10"	685	2	10'-8"	1'-1"	1'-1"		
B802			2	10'-10"	58	2	8'-8"	1'-1"			
B701			27	9'-7"	529	2	7'-11"	10"	10"		
B702			15	10'-4"	317	2	8'-8"	10"	10"		
B703			15	11'-10"	363	1	5'-3"	1'-8"	5'-3"		

FORWARD ABUTMENT (CONTINUED)

MARK	TOTAL	LENGTH	WEIGHT	TYPE	B	C & A	D & G	VARIES BY	NO. OF EACH
B704	25	12'-5"	635	S					
B705	27	11'-10"	653	1	5'-3"	1'-8"	5'-3"		
B706	17	14'-9"	513	S					
B601	20	29'-0"	871	S					
B602	24	21'-3"	766	S					
B603	14	28'-6"	599	S					
B604	12	27'-0"	487	S					
B605	6	14'-3"	128	S					
B606	16	15'-9"	378	S					
B607	10	23'-9"	357	S					
B608	7	18'-0"	189	S					
B609	20	10'-8"	320	S					
B610	27	7'-11"	321	S					
B611	23	6'-11"	239	S					
B612	23	8'-3"	285	2	6'-11"	8"	8"		
B613	19	13'-2"	376	S					
B614	19	8'-8"	247	S					
B615	41	5'-8"	349	S					
B616	32	7'-0"	336	2	5'-8"	8"	8"		
B617	32	4'-0"	200	S					
B618	32	5'-6"	264	2	4'-2"	8"	8"		
B619	28	11'-4"	476	1	5'-0"	1'-8"	5'-0"		
B619A	49	10'-10"	797	1	5'-0"	1'-2"	5'-0"		
B620	27	9'-0"	365	S					
B621	28	6'-5"	270	S					
B622	15	14'-0"	315	S					
B623	22	11'-0"	363	S					
B624	36	9'-0"	487	6	7'-0"	2'-0"			
B624A	24	11'-0"	396	6	9'-0"	2'-0"			
B625	17	6'-9"	172	S					
B501	25	12'-5"	324	S					
B502	27	9'-0"	253	S					
B503	28	6'-5"	187	S					
B504	48	25'-2"	1260	S					
B505	30	27'-2"	850	S					
B506	24	30'-9"	770	S					
B507	80	5'-0"	417	1	1'-9"	3'-5"	0		
B508	22	11'-0"	252	S					
B509	15	14'-0"	219	S					
B510	20	4'-0"	83	S					
B511	26	18'-2"	493	S					
B512	44	14'-2"	650	S					
B513	26	24'-0"	651	S					
B514	4	17'-2"	72	S					
B515	44	6'-3"	287	S					
B516	16	15'-11"	266	S					
B517	20	4'-6"	94	S					
B518	10	4'-9"	50	S					
B519	4	7'-0"	29	S					
B520	2	9'-3"	19	S					
B521	8	4'-0"/5'-9"	41	S				7"	2
B522	10	3'-6"	36	S					
B523	82	6'-6"	556	1	2'-9"	1'-3"	2'-9"		
B524	80	5'-7"	466	6	4'-0"	1'-7"			
B525	21	14'-0"	307	S					
B526	17	6'-9"	120	S					
B527	14	10'-3"	150	S					
B528	17	8'-3"	146	S					

REAR ABUTMENT

MARK	TOTAL	LENGTH	WEIGHT	TYPE	B	C	D	VARIES BY	NO. OF EACH
A1101	2	20'-0"	213	S					
A1102	3	8'-0"	127	S					
A801	21	29'-9"	1668	S					
A802	5	20'-3"	270	S					
A803	5	13'-3"	177	S					
A804	6	7'-0"	112	S					
A601	55	13'-0"	1074	1	5'-4"	5'-5"	2'-7"		
A602	75	17'-9"	2000	-					
A603	28	7'-0"	294	1	2'-1"	3'-2"	2'-1"		
A501	55	8'-4"	478	1	1'-7"	5'-5"	1'-7"		
A502	55	5'-8"	325	1	5'-4"	6"	0		
A503	55	10'-0"	574	1	3'-5"	3'-5"	3'-5"		
A504	36	22'-7"	848	S					
A504A	36	23'-1"	867	S					
A505	58	9'-10"	595	1	9'-6"	6"	0		
A506	8	10'-3"	86	S					
A506A	8	17'-3"	144	S					
A507	16	4'-6"	75	S					
A508	44	6'-0"	275	S					
A509	8	3'-9"/5'-6"	38	S				7"	2
A509A	10	3'-8"/5'-8"	49	S				6"	2
A510	12	3'-6"	44	S					
A511	18	4'-9"	89	S					
A512	6	6'-9"	42	S					
A512A	2	15'-0"	31	S					
A513	2	9'-3"	19	S					
A513A	2	18'-6"	39	S					
A514	10	14'-2"	148	S					
A514A	10	23'-2"	242	S					
A515	39	7'-1"	288	4	2'-10"				
A516	39	7'-3"	295	3	3'-1"				
A517	14	5'-8"	83	2	4'-6"	7"	7"		
A518	40	6'-6"	271	1	2'-9"	1'-3"	2'-9"		

REPLACEMENT BARS

MARK	NO.	LENGTH	WEIGHT	TYPE
RESP 4	1	5'-3"		Bent
RE 500	2	5'-7"		
RE 600	5	5'-11"		
RE 700	3	6'-3"		
RE 800	1	6'-6"		
RE 900	1	6'-10"		
RE 1000	1	7'-3"		
RE 1100	1	7'-7"		

PREPARED BY
CAPITOL ENGINEERING ASSOCIATES, DILLSBURG, PA.
FOR

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

REINFORCING BAR LIST

BRIDGE NO. LAK-2-1862
RELOC. S.R. 2 UNDER RECONSTR. U.S. 20
LAKE COUNTY
STA. 99 + 73.07

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
	M.J.F. L.L.D.	FWB	L.L.D. M.J.F.	G.S.W. M.C.P.		