I-77-1(7)15

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	I-77-1(7)15	

1 / 354

WAS-77-15.70
NOB-77-0.00

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
WAS-77-15.70 NOB-77-0.00
AURELIUS TWP. & VILLAGE OF MACKSBURG
WASHINGTON COUNTY
JEFFERSON, ENOCH, & OLIVE TWPS.
NOBLE COUNTY
GRADE SEPARATION WITH PENNA. R.R. CO.

CONVENTIONAL SIGNS

- Property Line
- County Line
- Township Line
- Section Line
- Center Line
- Corporation Line
- Limited Access and Right-of-Way — RW&LA
- Limited Access Only — LA
- Right-of-Way Only — RW
- Existing Right-of-Way
- Fence Line
- Guard Rail (existing)
- Guard Rail (proposed)
- Steam Railroad
- Power Poles
- Telephone Poles
- Trees or Stumps (existing)

INDEX OF SHEETS

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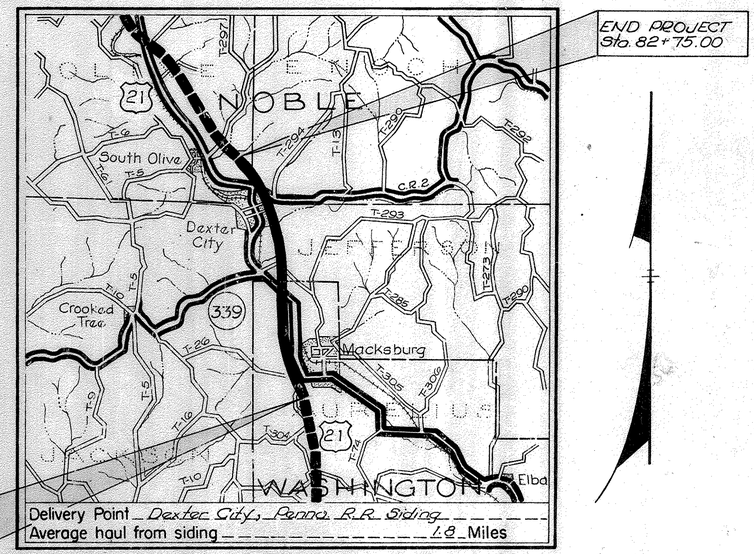
LINE DATA

Begin Project ~ Sta. 831+50
Washington Co. Sta. 930+65.30 = Noble Co. Sta. 0+00
End Project Sta. 82+75

Gross Length of Project	18,190.30 ft.
Deduct for Equation	6.00 ft.
Net Length of Project	18,184.30 ft. ~ 3.444 Miles
Add for Approaches	
Begin Work ~ Sta. 829+77 to Sta. 831+50	173.00 ft.
U.S.R. 21 Relocation ~ Sta. 1201+65 to Sta. 1213+52.80	1,187.80 ft.
T.R. 301 ~ Relocation ~ Sta. 15+50 to Sta. 29+60	1,410.00 ft.
C.R. 2 Relocation ~ Sta. 7+64.56 to Sta. 14+65.00	700.44 ft.
End Work ~ Sta. 82+75 ~ Sta. 86+90	415.00 ft.
TOTAL LENGTH OF WORK	22,070.54 ft. ~ 4.180 Miles



LOCATION MAP

SCALE OF MILES
0 1 2 3 4

- Portion to be improved
- State Roads
- Other Roads
- Portion to be improved under separate contract

SCALE

- Plan
- Profile: Horizontal — 0, 50, 100
- Profile: Vertical — 0, 50, 100
- X-Sections: Horizontal & Vertical — 0, 10, 20

1965 SPECIFICATIONS

LIMITED ACCESS

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

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 Johnnie Drawley
Date 7-1-65 Division Deputy Director

Approved C.H. Abbiatti
Date 8-11-65 Engineer of Bridges

Approved R.D. Ricketts
Date 12-28-65 Engineer of Location and Design

Approved R.E. Shultz
Date 12-29-65 Deputy Director of Design and Construction

Approved T.H. Boswell
Date 1-3-66 Deputy Director of Right of Way

Approved J.W. Wilson
Date 1-3-66 Deputy Director of Planning and Programing

Approved _____
Date _____ First Assistant Director

Approved P.S. Mashuda
Date 1-4-66 Director of Highways

DESIGN DESIGNATION

ADT 1962	2,780
ADT 1975	6,670
DHV	730
Dir. Dis.	55%
Truck Traffic	6%
D.S.	70mph

DEPARTMENT OF COMMERCE
BUREAU OF PUBLIC ROADS

APPROVED:

DIVISION ENGINEER DATE

SUPPLEMENTAL PRINTS OF STANDARD CONSTRUCTION DRAWINGS

FACT-1	6-1-65	L-1	6-1-65	HW-E	6-1-65	MH-1A	6-1-65	MC-6	6-1-65	FSB-1-62	1-15-63
FACT-2	6-1-65	BP-2	6-1-65	MC-4	6-1-65	BP-7	6-1-65	MC-3	6-1-65	GR-1-63 (Sht 1)	2-1-65
F-2	6-1-65	BP-3	6-1-65	CB2-3&24	6-1-65	GR-1	6-1-65	BP-1	6-1-65	P-1-54	2-2-59
F-3	6-1-65	BP-4	6-1-65	CB-4	6-1-65			CB22A&B	6-1-65	AS-1-54	8-10-65
BR-6	6-1-65	HW-1	6-1-65	CB-5	6-1-65	GR-2A	9-1-65	CSB-3 (Sht's 1 & 3)	12-3-63		
MC-1	6-1-65	HW-2	6-1-65	CB-6	6-1-65	GR-5B	6-1-65	SD-1-63 (Sht's 2, 3, 4)	11-12-63	F-4	6-1-65
BP-5	6-1-65	HW-3	6-1-65	MH-1	6-1-65	GR-6	6-1-65	SD-2-64	11-25-64	SP-53	6-30-61

SUPPLEMENTAL SPECIFICATIONS

808	7-14-65	
906	9-2-65	
806	9-2-65	
811	3-29-65	

File No.	
Washington County	WAS - 77 - 15.70
Noble County	NOB - 77 - 0.00
Date of Letting	19
Contract No.	

MICROFILMED
JAN 7 1988

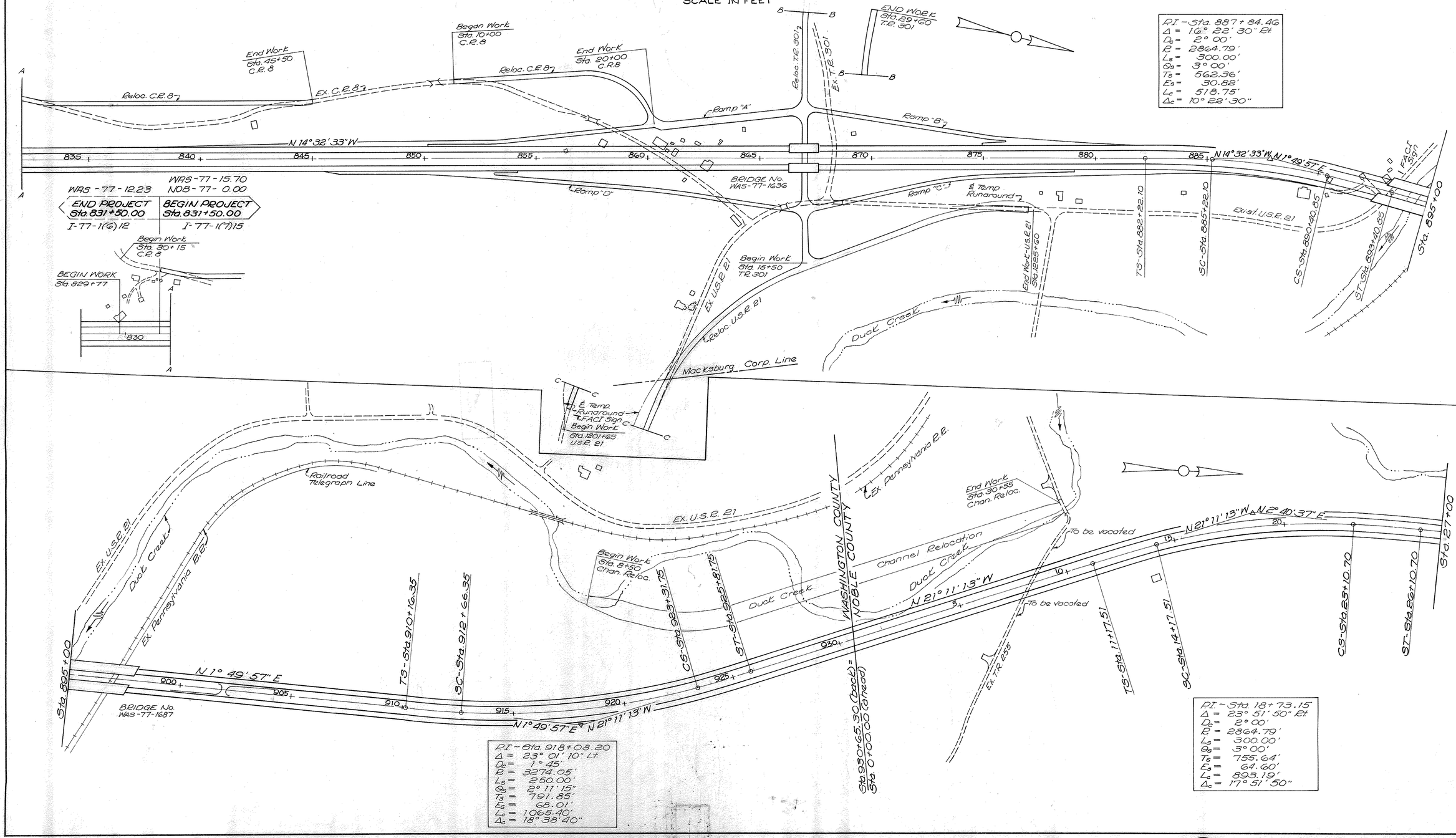
SCHEMATIC PLAN

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	I-77-1(7)15	

2

WAS - 77 - 15.70
NOB - 77 - 0.00

0 500 1000
SCALE IN FEET



P.I. - Sta. 887+84.46
Δ = 16° 22' 30" Et.
D_c = 2° 00'
R = 2864.79'
L_s = 300.00'
Θ_s = 3° 00'
T_s = 562.36'
E_s = 30.82'
L_c = 518.75'
Δ_c = 10° 22' 30"

P.I. - Sta. 918+08.20
Δ = 23° 01' 10" Lt.
D_c = 1° 45'
R = 3274.05'
L_s = 250.00'
Θ_s = 2° 11' 15"
T_s = 791.85'
E_s = 68.01'
L_c = 1065.40'
Δ_c = 18° 38' 40"

P.I. - Sta. 18+73.15
Δ = 23° 51' 50" Et.
D_c = 2° 00'
R = 2864.79'
L_s = 300.00'
Θ_s = 3° 00'
T_s = 755.64'
E_s = 64.60'
L_c = 893.19'
Δ_c = 17° 51' 50"

SCHEMATIC PLAN

MICROFILMED
JAN 7 1986

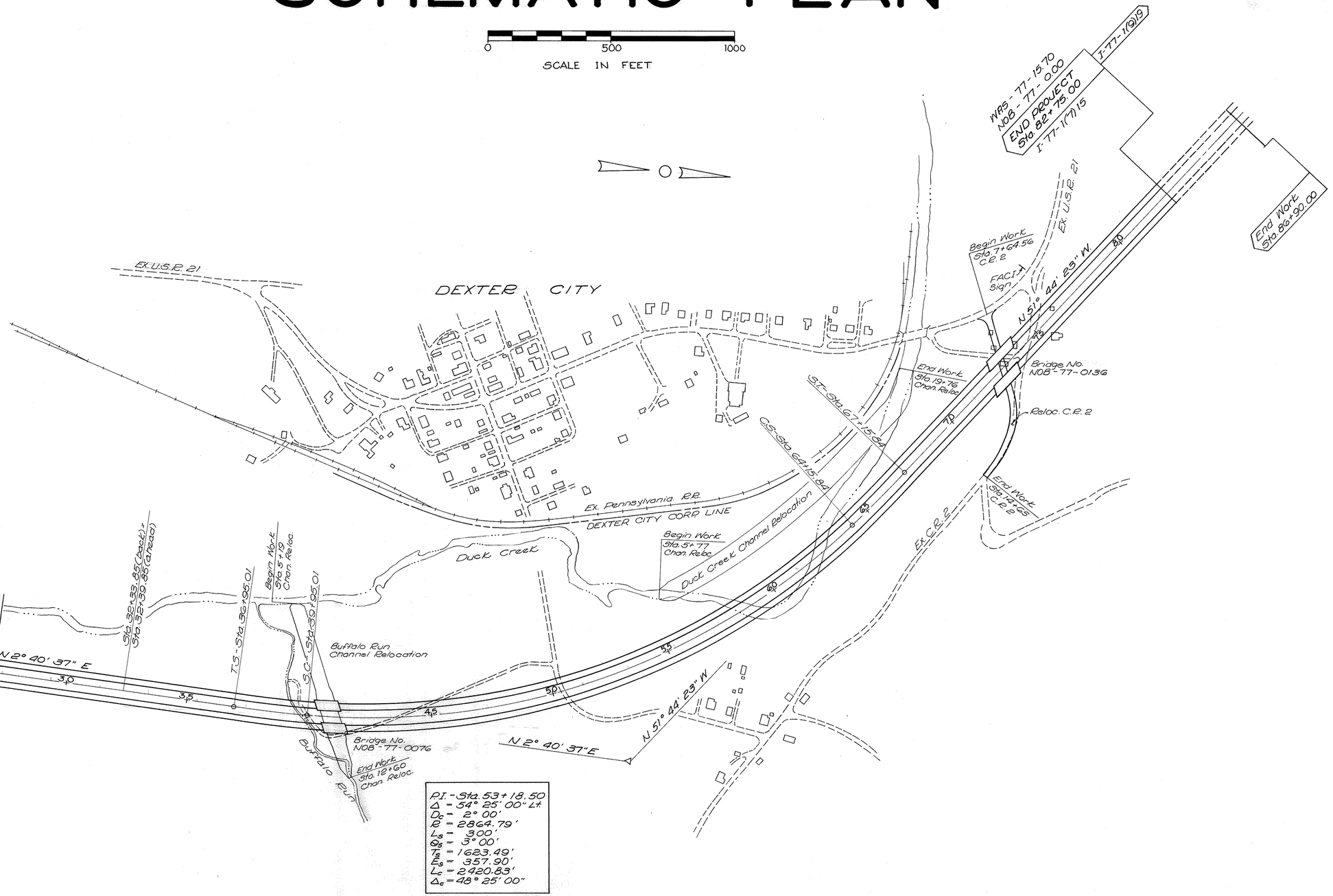
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	I-77-1(7)15	

3

WAS - 77 - 15.70
NOB - 77 - 0.00

SCHEMATIC PLAN

0 500 1000
SCALE IN FEET



P.I. - Sta. 53+18.50
Δ = 54° 25' 00" Lt.
D_c = 2° 00'
R = 2864.79'
L_s = 300'
θ_s = 3° 00'
T_s = 1623.49'
L_s = 357.90'
L_c = 2420.83'
Δ_c = 48° 25' 00"

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	I-77-1(7)15	

4

WAS - 77 - 15.70

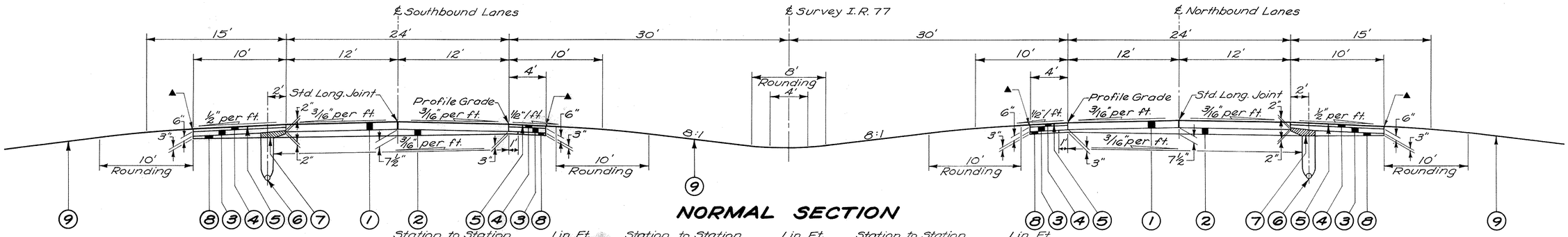
NOB - 77 - 0.00

TYPICAL SECTIONS

TYPE T-71

Scale in Feet

0 10 20



NORMAL SECTION

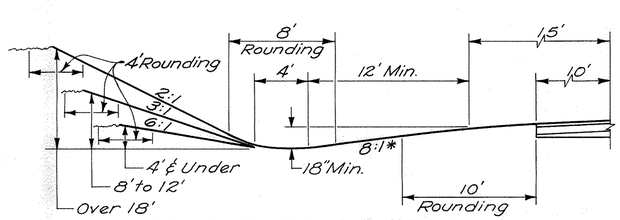
Station to Station			Lin. Ft.
831+50	832+50	=	100
834+00	846+50 S.B.	=	625
850+50	852+00 S.B.	=	75
852+00	866+09	=	1409

Station to Station			Lin. Ft.
867+86	871+50	=	364
897+95.56	903+50	=	554.44
925+50	930+65.30	=	515.30

Station Equation: 930+65.30 Bk. = 0+00 Ah.

Station to Station			Lin. Ft.
0+00	10+50	=	1050
33+00	37+25 S.B.	=	212.5
67+00	72+11.03	=	511.03
74+03.78	77+00	=	296.22

TOTAL LENGTH = 5712.49 Lin. Ft.



CUT SLOPE DETAIL

From 4' cut to 8' cut use a variable backslope with the distance from back of ditch to top of cut being a constant 24'.

From 12' cut to 18' cut use a variable backslope with the distance from back of ditch to top of cut being a constant 36'.

LEGEND

1. T-71 — 9" Reinforced Portland Cement Concrete Pavement.
2. I-22 — Subbase (depth as shown), grading "A" or "B," modified as per General Notes.
3. B-19 — Aggregate Base Course (depth as shown)
4. B-21 — 3" Waterproofed aggregate Base Course, as per plan. See Note in Proposal
5. T-31 — Bituminous Surface Treatment using 0.008 Cu. Yd. No. 6 aggregate per Sq. Yd. and 0.25 Gal. bituminous material per Sq. Yd. (See Note in Proposal)
6. I-1 — 6" Pipe, Class I-3
7. Special drainage connection, using No. 6 aggregate (See Note in Proposal)
8. I-22 — Subbase (Depth as shown)
9. L-9 — Seeding and Protecting, as per plan.

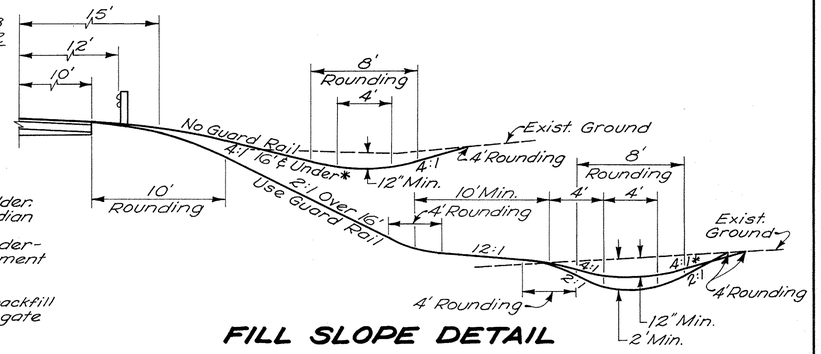
NOTES

Item I-1, 6" Pipe, Class I-3 shall have a minimum of 30" of cover on the median side, and 30" of cover on the outside in fill. The cover is measured from the crown of pipe to the subgrade.

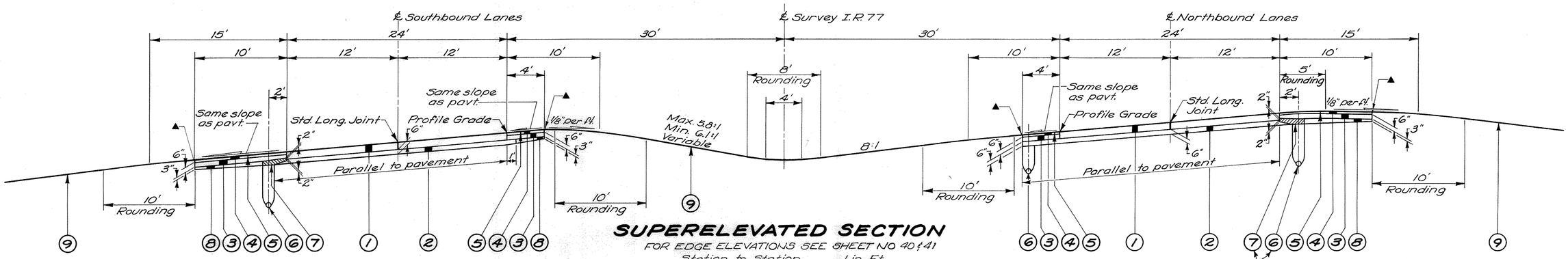
Sequence of operations:
(1) Install pipe underdrain on outside shoulder. Installation of shallow underdrain in median may be deferred until T-71 is placed.
(2) Place subbase out to outside edge of underdrain or to one foot beyond edge of pavement where no underdrain is present.
(3) Construct T-71.
(4) Remove subbase and any contaminated backfill over drain and replace with No. 6 aggregate as shown by (7).
(5) Complete shoulder construction.

* Unless otherwise shown on Cross-Sections.

▲ Drop Earth Shoulder 1" below Paved Berm



FILL SLOPE DETAIL



SUPERELEVATED SECTION

FOR EDGE ELEVATIONS SEE SHEET NO 40 & 41

Station to Station			Lin. Ft.
891+50	892+71.54	=	121.54
916+50	925+50	=	900
37+25	40+12.19	=	287.19
41+67.79	67+00	=	2532.21

TOTAL LENGTH = 3840.94 Lin. Ft.

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	I-77-1(7)15	

5

WAS - 77 - 15.70

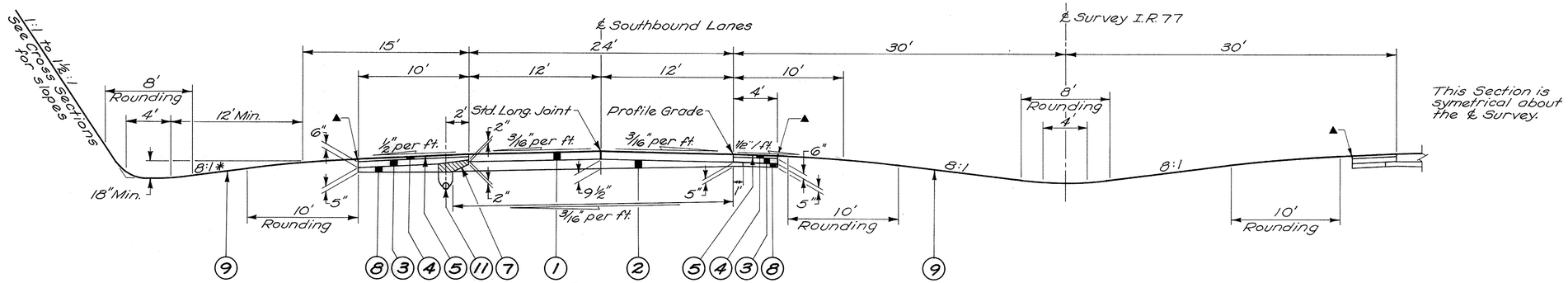
NOB - 77 - 0.00

TYPICAL SECTIONS

TYPE T-71

Scale in Feet

0 10 20



NORMAL ROCK CUT SECTION

Station	to Station		Lin. Ft.
832+50	834+00	=	150
834+00	846+50 N.B.	=	625
846+50	850+50	=	400
850+50	852+00 N.B.	=	75

Station	to Station		Lin. Ft.
871+50	882+75	=	1125
903+50	910+75	=	725
10+50	11+50	=	100
Deduct for Station Equation - 6.00			

TOTAL LENGTH = 4881.50 Lin. Ft.

Station	to Station		Lin. Ft.
26+00	33+00	=	700
33+00	37+25 N.B.	=	212.5
77+00	84+75	=	775

LEGEND

(1) T-71 9" Reinforced Portland Cement Concrete Pavement

(2) I-22 Subbase (depth as shown), grading "A" or "B" modified as per General Note

(3) B-19 Aggregate Base Course (depth as shown)

(4) B-21 3" Waterproofed Aggregate Base Course, as per plan. See Note in Proposal

(5) T-31 Bituminous Surface Treatment using 0.008 Cu. Yd. No. 6 aggregate per Sq. Yd. and 0.25 Gal. bituminous material per Sq. Yd. (See Note in Proposal)

(7) Special drainage connection using No. 6 aggregate (See Note in Proposal)

(8) I-22 Subbase (Depth as shown)

(9) L-9 Seeding and Protecting, as per plan

(11) I-1 6" Pipe, Class I-3, Sec. M-6.4 (h)

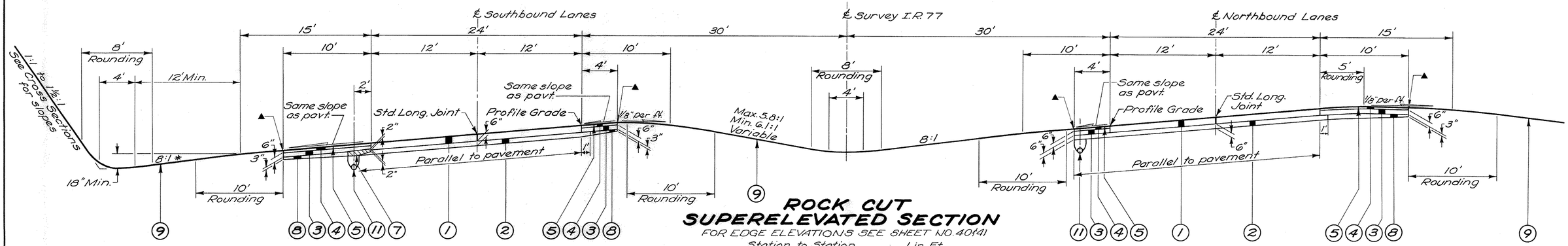
NOTES

Item I-1, 6" Pipe, Class I-3 Sec. M-6.4 (h), shall have a depth of 12" of cover. The cover is measured from the crown of pipe to the subgrade.

Sequence of operations:
(1) Install pipe underdrain on outside shoulder. Installation of shallow underdrain in median may be deferred until T-71 is placed.
(2) Place subbase out to outside edge of underdrain or to one foot beyond edge of pavement where no underdrain is present.
(3) Construct T-71.
(4) Remove subbase and any contaminated backfill over drain and replace with No. 6 aggregate as shown by (7).
(5) Complete shoulder construction.

* Unless otherwise shown on Cross-Sections.

▲ Drop Earth Shoulder 1" below Paved Berm



ROCK CUT SUPERELEVATED SECTION

FOR EDGE ELEVATIONS SEE SHEET NO. 40(41)

Station	to Station		Lin. Ft.
882+75	891+50	=	875
910+75	916+50	=	575
11+50	26+00	=	1450

TOTAL LENGTH = 2900 Lin. Ft.

TYPICAL SECTIONS

TYPE T-71

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	I-77-1(7)15	

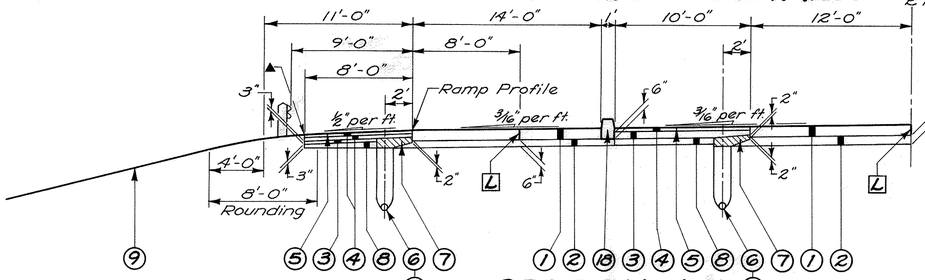
6

WAS - 77 - 15.70

NDB - 77 - 0.00

Scale in Feet 0 10 20

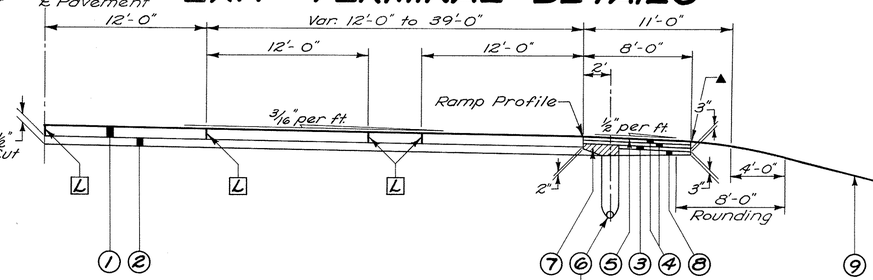
ENTRANCE TERMINAL DETAILS



SECTION A-A (11)

Ramp "A" Sta. 0+00.00 = Sta. 850+12.50 I.R. 77
Ramp "C" Sta. 31+86.19 = Sta. 880+00.00 I.R. 77

EXIT TERMINAL DETAILS



SECTION D-D (11)

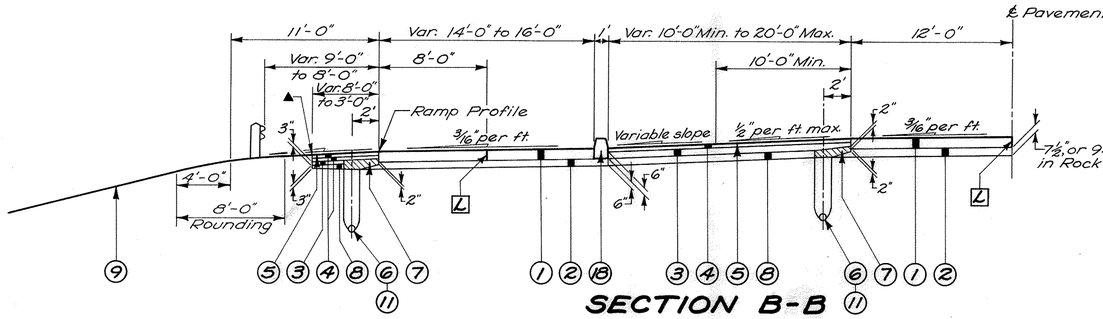
Ramp "B" Sta. 30+61.89 = Sta. 880+55.00 I.R. 77
Ramp "D" Sta. 0+00.00 = Sta. 848+22.00 I.R. 77

NOTES

For Sequence of Operations, see Sheet No. 4

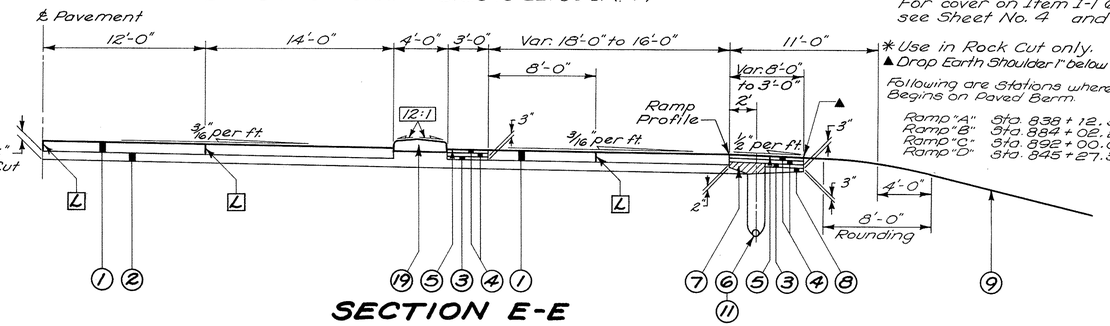
For Cut and Fill Slope Details outside of paved berms, see Sheets No. 4 and 5

For cover on Item I-1 6" pipes, see Sheet No. 4 and 5



SECTION B-B (11)

Ramp "A" Sta. 4+50.00
Ramp "C" Sta. 27+36.19



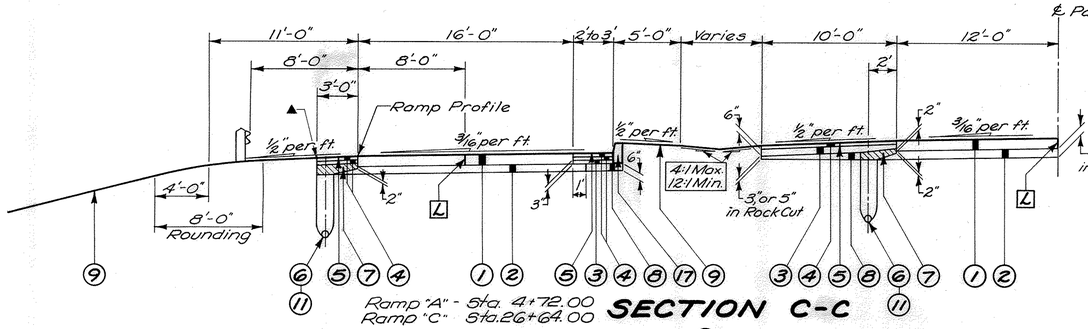
SECTION E-E

Ramp "B" Sta. 26+08.82 = Sta. 876+00.27 I.R. 77
Ramp "D" Sta. 4+86.40 = Sta. 853+29.34 I.R. 77

* Use in Rock Cut only.
▲ Drop Earth Shoulder 1" below Paved Berm.

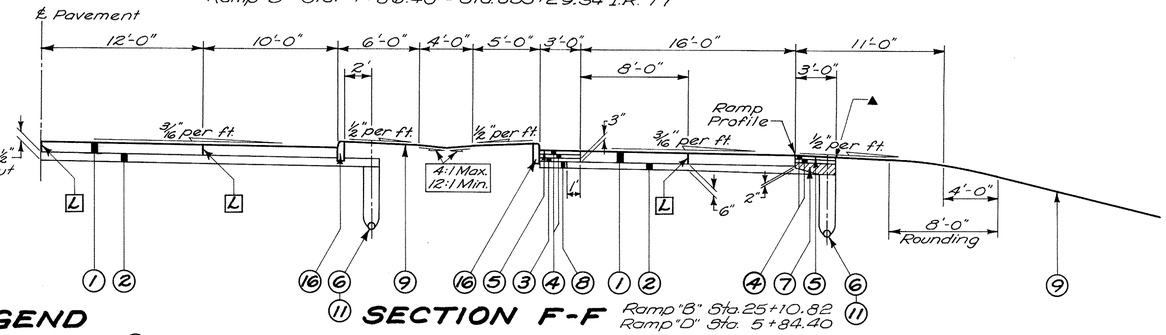
Following are Stations where 6" B-21 Begins on Paved Berm.

Ramp "A" Sta. 838+12.50
Ramp "B" Sta. 884+02.27
Ramp "C" Sta. 892+00.00
Ramp "D" Sta. 845+27.34



Ramp "A" - Sta. 4+72.00
Ramp "C" Sta. 26+64.00

SECTION C-C

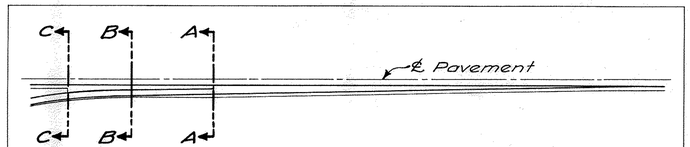


SECTION F-F

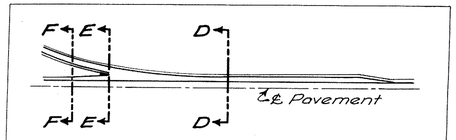
Ramp "B" Sta. 25+10.82
Ramp "D" Sta. 5+84.40

LEGEND

(1)	T-71	9" Reinforced Portland Cement Concrete Pavement
(2)	I-22	Subbase (depth as shown) grading "A" or "B" modified as per General Note.
(3)	B-19	Aggregate Base Course (depth as shown).
(4)	B-21	3" Waterproofed Aggregate Base Course, as per plan See Note in Proposal
(5)	T-31	Bituminous Surface Treatment using 0.008 Cu. Yd. of No. 6 aggregate per Sq. Yd. and 0.25 Gal. bituminous material per Sq. Yd. (See Note in Proposal).
(6)	I-1	6" Pipe, Class I-3.
(7)		Special drainage connection using No. 6 aggregate (See Note in Proposal).
(8)	I-22	Subbase (Depth as shown).
(9)	L-9	Seeding and Protecting, as per plan
* (11)	I-1	6" Pipe, Class I-3, Sec. M-6.4(h).
(16)	I-12	Concrete Curb, Standard Type 6.
(17)	I-12	Concrete Curb, Standard Type 7.
(18)	I-12	Concrete Curb, Standard Type 8.
(19)	I-21	Concrete Median Pavement.
		Standard Longitudinal Joint.



SCHEMATIC ENTRANCE RAMP TERMINAL



SCHEMATIC EXIT RAMP TERMINAL

SPEED CHANGE LANES

TYPICAL SECTIONS

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	I-77-1(7)15	

7

WAS - 77 - 15.70

NOB - 77 - 0.00

TYPICAL SECTIONS

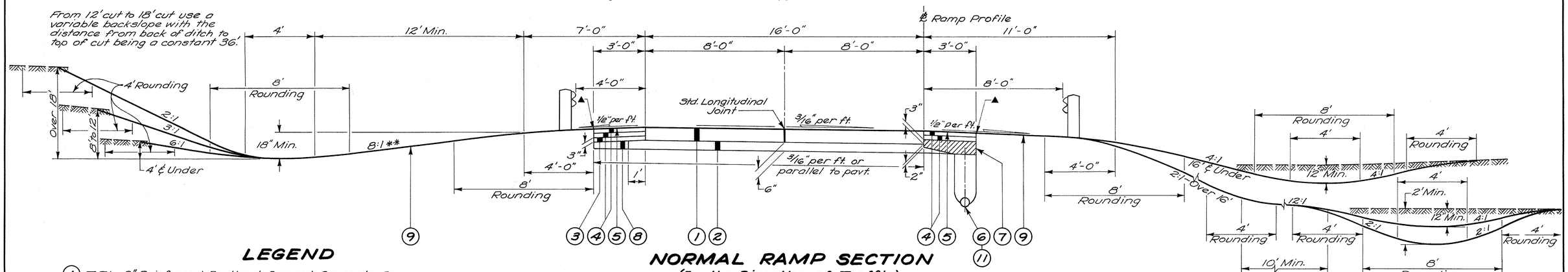
TYPE T-71

From 4' cut to 8' cut use a variable backslope with the distance from back of ditch to top of cut being a constant 24'.

From 12' cut to 18' cut use a variable backslope with the distance from back of ditch to top of cut being a constant 36'.

Scale in Feet

0 10 20



LEGEND

(1) T-71 9" Reinforced Portland Cement Concrete Pavement

(2) I-22 Subbase (depth as shown) grading "A" or "B" modified as per General Note

(3) B-19 Aggregate Base Course (depth as shown)

(4) B-21 3" Waterproofed Aggregate Base Course, as per plan. See Note in Proposal

(5) T-31 Bituminous Surface Treatment, using 0.008 Cu.Yd. No.6 Aggregate per Sq.Yd. and 0.25 Gal. bituminous material per Sq.Yd. (See Note in Proposal)

(6) I-1 6" Pipe, Class I-3

(7) Special Drainage Connection, Using No. 6 Aggregate (See Note in Proposal)

(8) I-22 Subbase (Depth as shown)

(9) L-9 Seeding and Protecting, as per plan

*(11) I-1 6" Pipe, Class I-3, Sec. M-6.4(h)

(19) I-21 Concrete Median Pavement

NORMAL RAMP SECTION

(In the Direction of Traffic)

Ramp "A" Sta.00+00.00 - Sta.10+00.00
Ramp "B" Sta.16+95.41 - Sta.25+10.82
Ramp "C" Sta.18+69.37 - Sta.31+86.19
Ramp "D" Sta. 5+84.40 - Sta.18+69.37

NOTES

For cover on Item I-1 6" Pipes, See Sheets No. 4 & 5.

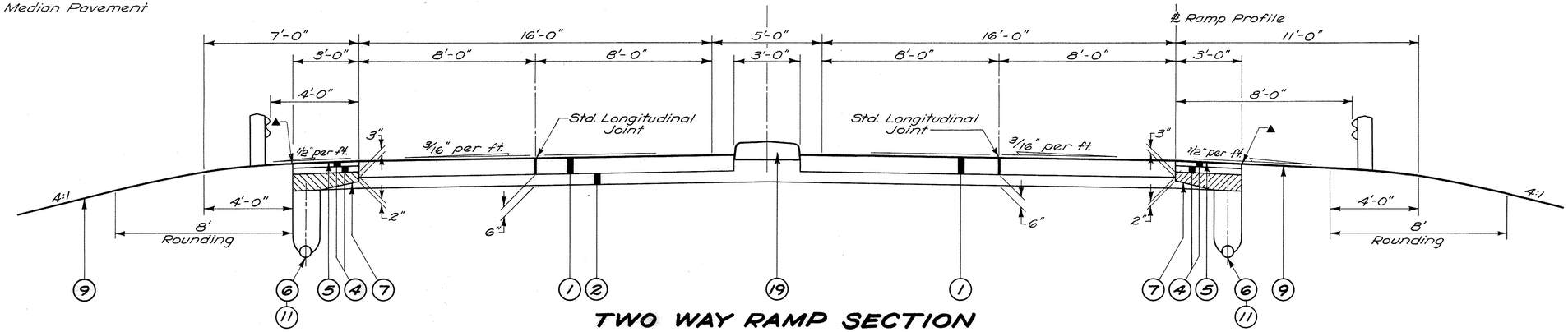
Shoulder slope = 1/8" per ft. on the high side of ramp pavement when superelevation or pavement slope becomes greater than 0.0156 ft. per ft.

* Use in Rock Cut only.

** Unless otherwise shown on cross-sections.

For Sequence of Operations See Sheet No. 4

▲ Drop Earth Shoulder 1" below Paved Berm



TWO WAY RAMP SECTION

Ramp "A" Sta.10+00.00 - Sta.16+95.41

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	I-77-1(7)15	

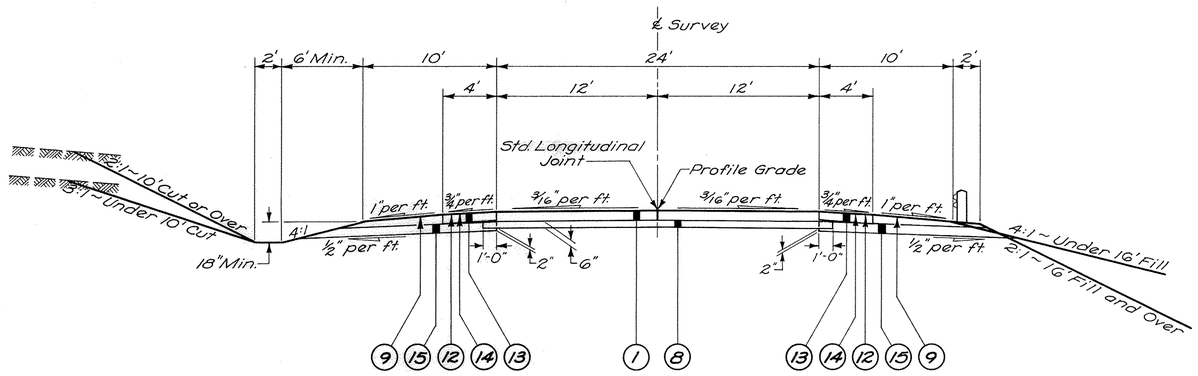
8

WAS - 77 - 15.70
NOB - 77 - 0.00

TYPICAL SECTIONS

TYPE T-71

Scale in Feet
0 10 20



NORMAL SECTION

T.R. 301
Station to Station
Sta. 15 + 50 Sta. 23 + 50

LEGEND

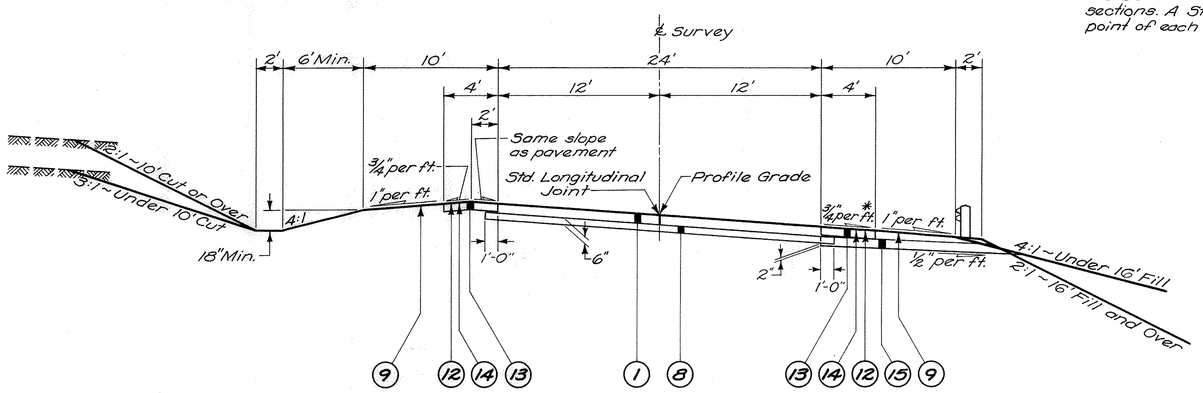
(1)	T-71	9" Reinforced Portland Cement Concrete Pavement.
(8)	I-22	Subbase (Depth as shown)
(9)	L-9	Seeding and Protecting, as per plan
(12)	T-31	Bituminous Surface Treatment using 0.008 Cu.Yd. No. 6 aggregate per Sq.Yd. and 0.30 Gal. bituminous material per Sq.Yd., Sec. M-5.7, RT-8 or RT-9; or Sec. M-5.3, MC-4 or MC-5.
(13)	B-19	8" Aggregate Base Course
(14)	T-30	Bituminous Prime Coat, Sec. M-5.7, RT-2 or RT-3, applied at the rate of 0.4 Gal. per Sq.Yd.
** (15)	I-9	Stone Underdrains, No. 2

NOTES

For Details not shown, see Standard Drawing RI-1.

* Same slope as pavement when pavement slope exceeds ¾" per ft.

** Stone Underdrains shall be placed at transverse joints (60 Ft. intervals) on each side of normal crowned sections and 30 Ft. intervals on the low side only of superelevated sections. A Stone Underdrain shall be placed at the low point of each sag vertical curve.



SUPERELEVATED SECTION

U.S.R. 21
Station to Station
Sta. 1203 + 00 Sta. 1223 + 75

PROP. RELOC. U.S.R. 21
PROP. CONN. T.R. 301

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	I-77-1(7)15	

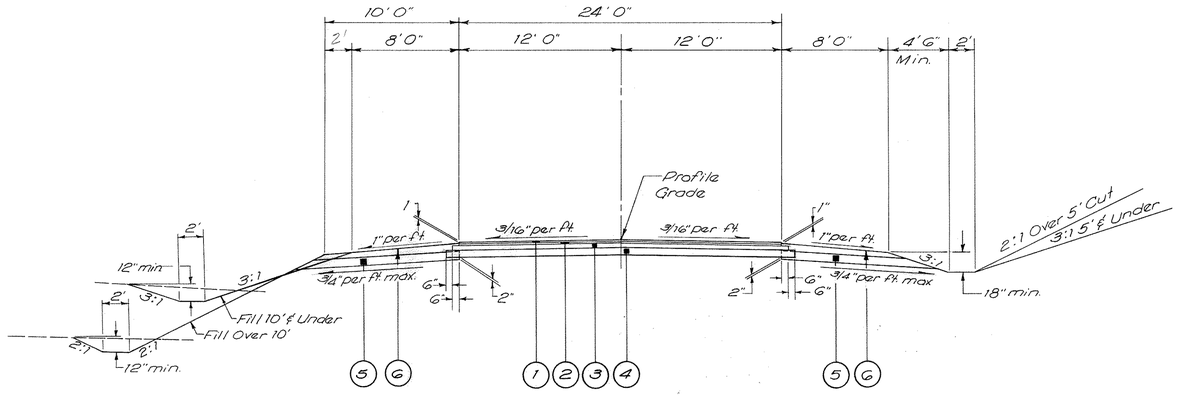
9

WAS · 77 · 15.70
NOB · 77 · 0.00

TYPICAL SECTIONS

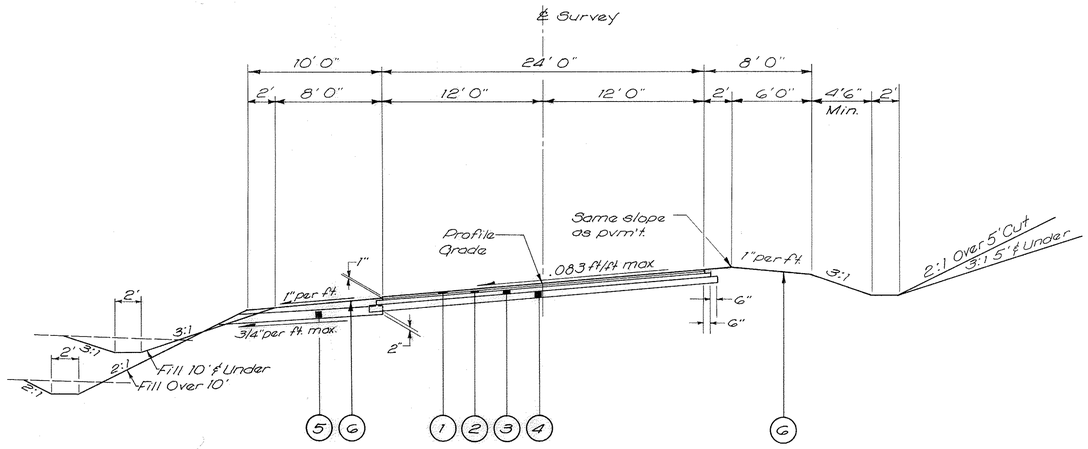
TYPE T-35

0 10 20
SCALE IN FEET



NORMAL SECTION
C.R. 2

Station Sta. 7+64.56 to Station Sta. 10+00.00



SUPERELEVATED SECTION
C.R. 2

Station Sta. 10+00.00 to Station Sta. 13+50.00
Sta. 13+50.00 Sta. 14+50.00 ~ Pvm't. Width Var. 24' to 18'

*U.S.R. 21 Widen & Resurface
Sta. 1202+70 Sta. 1203+00 ~ Pvm't. Width Var. 20' to 24'
Sta. 1223+75 Sta. 1224+25 ~ Pvm't. Width Var. 24' to 20'

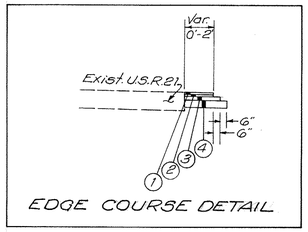
LEGEND
(1) T-35 1¼" Asphaltic Concrete Surface Course, Type "A" (85-100)
(2) B-35 1½" Asphaltic Concrete Leveling Course (85-100)
(3) B-21 4" Waterproofed Aggregate Base Course
(4) I-22 6" Subbase
** (5) I-9 Stone Underdrains No. 2
(6) L-9 Seeding and Protecting, as per plan

NOTES
Reference shall be made to Standard Drawing RI-1 for details not shown.

Thickness shown is Design thickness as described in Sec. T-35.01 and Sec. B-35.01 and Sec. B-21.01

*Exist. U.S.R. 21 shall be resurfaced, using Items No. 1 and No. 2. The portion to be widened shall be constructed using the pvm't. courses and edge course detail as indicated by the Typical Section.

**Stone underdrains shall be placed 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.



EDGE COURSE DETAIL

PROP RELOCATED U.S.R. 21
PROP C.R. 2

TYPICAL SECTIONS

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	I-77-1(7)15	

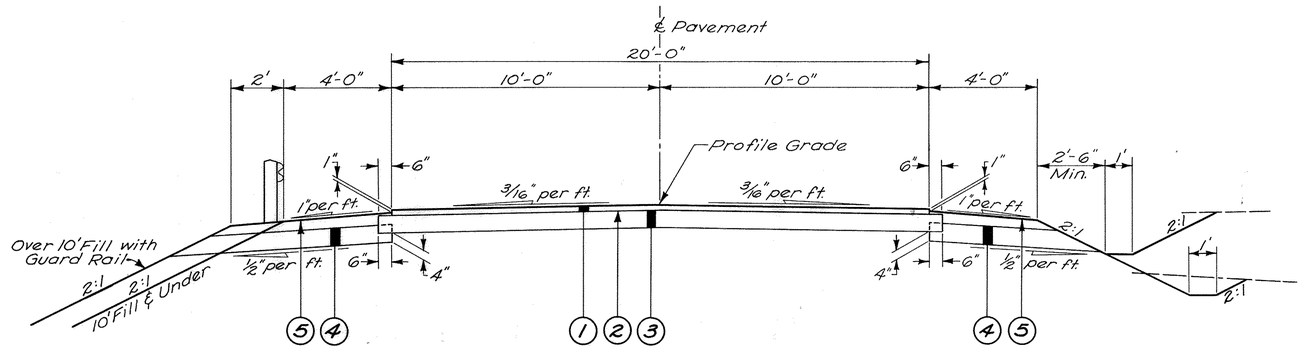
10

WAS - 77 - 15.70
NOB - 77 - 0.00

TYPICAL SECTIONS

TYPE T-35 on B-19

Scale in Feet
0 5 10



NORMAL SECTION

T.R. 301
Station to Station
Sta. 23 + 50 Sta. 24 + 00 ~ Var. Width 24' to 20'

C.R. 8
Sta 35 + 25 Sta. 45 + 25
Sta 10 + 25 Sta. 15 + 50
Sta 19 + 50 Sta. 20 + 00

NOTES

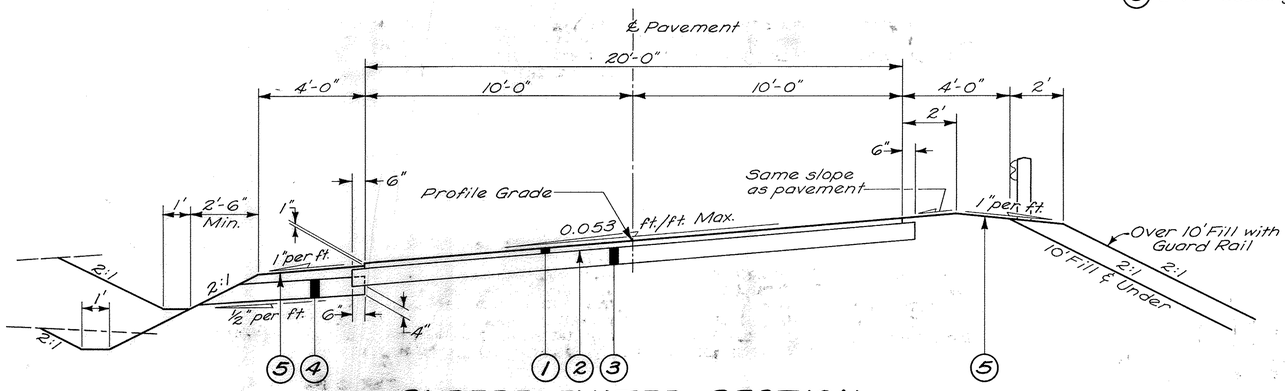
* Thickness shown is design thickness as described in Sec. T-35.01.

Reference shall be made to Standard Drawing RI-1 for details not shown.

** Stone underdrains shall be placed at 100 Ft. intervals on each side of normal crowned sections and 50 Ft. intervals on the low side only of superelevated sections. A stone underdrain shall be placed at the low point of each sag vertical curve.

LEGEND

* (1)	T-35	2" Asphaltic Concrete Surface Course, Type "A" (85-100)
(2)	T-30	Bituminous Prime Coat, Sec. M-5.7, RT-2 or RT-3, applied at the rate of 0.40 Gal. per Sq. Yd.
(3)	B-19	8" Aggregate Base Course
** (4)	I-9	Stone Underdrains No. 2
(5)	L-9	Seeding and Protecting, as per plan



SUPERELEVATED SECTION

T.R. 301
Station to Station
Sta. 24 + 00 Sta. 28 + 50
Sta. 28 + 50 Sta. 29 + 50 ~ Var. Width 20' to 12'

C.R. 8
Sta. 32 + 25 Sta. 35 + 25
Sta. 15 + 50 Sta. 19 + 50

RELOCATED TOWNSHIP ROAD 301
RELOCATED COUNTY ROAD 8

WAS-77-15.70
NOB-77-0.00

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	I-77-1(7)15	

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GENERAL NOTES

SPECIFICATIONS

ALL ITEMS APPEARING THROUGHOUT THE PLANS THAT ARE INDICATIVE OF THE 1963 STATE OF OHIO DEPARTMENT OF HIGHWAYS CONSTRUCTION AND MATERIAL SPECIFICATIONS ARE TO BE USED FOR REFERENCE PURPOSES ONLY. THIS PROJECT SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE REQUIREMENTS OF THE 1965 STATE OF OHIO DEPARTMENT OF HIGHWAYS CONSTRUCTION AND MATERIAL SPECIFICATIONS. THE CROSS REFERENCES TO THE 1965 SPECIFICATIONS ARE SHOWN ON THE GENERAL SUMMARY SHEETS 15, 16, 17, 17A AND 17B.

UTILITIES

GENERAL TELEPHONE CO., MARION, OHIO
WASHINGTON ELECTRIC COOPERATIVE, INC., MARIETTA, OHIO
MARIETTA ELECTRIC CO., FAIRMONT, WEST VIRGINIA
PERMIAN OIL AND GAS CO., CALDWELL, OHIO

FIELD OFFICE

THE CONTRACTOR SHALL, IN ADDITION TO THE REQUIREMENTS OF 105.152 PROVIDE , A SUITABLE FIELD OFFICE HAVING A MINIMUM OF 500 SQ FT OF FLOOR SPACE. THE CONTRACTOR SHALL HAVE A TELEPHONE INSTALLED AND MAINTAINED IN THIS FIELD OFFICE DURING THE CONSTRUCTION OF THIS PROJECT. THE CONTRACTOR SHALL ALSO PROVIDE AND INSTALL WIRING AND OUTLETS SUITABLE FOR CONNECTING ELECTRIC LIGHTS AND OFFICE EQUIPMENT IN THE FIELD OFFICE AND PROVIDE 110-VOLT ALTERNATING CURRENT TO THE OFFICE DURING THE ENTIRE PERIOD OF CONSTRUCTION OF THIS PROJECT. THE CONTRACTOR SHALL ALSO PROVIDE AND MAINTAIN SANITARY PROVISIONS AS PER 107.06. ALL THE ABOVE IS INCLUDED IN THE LUMP SUM PRICE BID FOR FIELD OFFICE.

DESIGN SPEED

THE GEOMETRICS FOR THIS PROJECT HAVE BEEN PLANNED FOR A DESIGN SPEED OF 70 MILES PER HOUR.

UNDERGROUND UTILITIES

THE LOCATIONS OF THE UNDERGROUND UTILITIES SHOWN ON THE PLANS HAVE BEEN OBTAINED BY DILIGENT FIELD CHECKS AND SEARCHES OF AVAILABLE RECORDS. IT IS BELIEVED THAT THEY ARE ESSENTIALLY CORRECT, BUT THE STATE OF OHIO DOES NOT GUARANTEE THEIR ACCURACY OR COMPLETENESS.

ESTIMATED QUANTITIES

SPECIFIC LOCATIONS AND USAGE OF ESTIMATED QUANTITIES SET UP ON THIS PLAN TO BE USED "AS DIRECTED BY THE ENGINEER" SHALL BE MADE A MATTER OF RECORD BY INCORPORATION INTO THE FINAL CHANGE ORDER GOVERNING COMPLETION OF THIS PROJECT. MATERIAL TO BE USED AS DIRECTED BY THE ENGINEER WILL NOT BE DELIVERED UNTIL REQUESTED BY THE ENGINEER.

CONSTRUCTION LAYOUT STAKES

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

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:

RT STA 1201+60 USR 21
215' LT STA 77+00 ALONG EXISTING USR 21
95' LT STA 893+96 ALONG EXISTING USR 21

SIGN DETAILS SHALL BE AS SPECIFIED ON STANDARD DRAWING FACI-1, CODE N-55(1)-120(2). THE SIGNS SHALL BE ERECTED IN ACCORDANCE WITH STANDARD DRAWING FACI-2. ADDITIONAL REQUIREMENTS SHALL BE IN ACCORDANCE WITH NOTES IN THE PROPOSAL.

REMOVAL OF EXISTING PIPE

THE REMOVAL OF ALL EXISTING PIPE DRAINS WHICH WOULD NORMALLY BE REMOVED IN VARIOUS EXCAVATION ITEMS SHALL BE INCLUDED FOR PAYMENT IN THE UNIT PRICES BID FOR THE RESPECTIVE ITEMS, UNLESS OTHERWISE ITEMIZED IN THE PLANS.

REMOVAL OF TREES AND STUMPS

ALL TREES AND STUMPS SPECIFICALLY MARKED FOR REMOVAL WITHIN THE CONSTRUCTION LIMITS OF THIS PROJECT SHALL BE REMOVED UNDER THE LUMP SUM PRICE BID FOR ITEM 201 CLEARING AND GRUBBING , EXCEPT THAT THOSE TREES FOR WHICH PROTECTION AND PRESERVATION WORK IS INDICATED ELSEWHERE IN THESE PLANS SHALL NOT BE REMOVED. THE FOLLOWING IS AN APPROXIMATE ESTIMATE OF THE NUMBER OF TREES AND STUMPS TO BE REMOVED:

SIZES	12"-18"	18"-24"	24"-30"	30"-36"	36"-42"	42"-48"	OVER 48"
	540	178	43	29	9	3	4

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 AND STUMPS SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR ITEM 201 CLEARING AND GRUBBING

BENCHING OF FOUNDATION SLOPES

ALTHOUGH CROSS SECTIONS ON THIS PLAN INDICATE SPECIFIC WIDTHS AND DEPTHS OF PROPOSED BENCHING OF THE EMBANKMENT FOUNDATION IN CERTAIN AREAS, NO WAIVER OF THE SPECIFICATIONS IS INTENDED AND ALL OTHER SLOPES FOUNDATION AREAS SHALL BE BENCHED AS SET FORTH IN 203.09. NO ADDITIONAL PAYMENT WILL BE MADE FOR BENCHING REQUIRED BY THE PROVISIONS OF 203.09 BENCH ELEVATIONS SHOWN ON THE PLANS MAY BE RAISED OR LOWERED DURING CONSTRUCTION TO INSURE A MINIMUM 30' WIDTH OF BENCH ON SOUND BED-ROCK.

CENTERLINE REFERENCE MONUMENTS AS PER PLAN

MONUMENTS SHALL BE CONSTRUCTED OF CLASS "C" CONCRETE, CAST-IN-PLACE IN A CIRCULAR HOLE 8" IN DIAMETER AND 44" IN DEPTH. TOP OF CONCRETE SHALL BE FINISHED AT A DEPTH OF 2" BELOW GROUND LEVEL AND THE UPPER SIX-INCH PORTION OF THE CONCRETE SHALL BE FORMED. ONE-HALF (1/2") INCH STEEL RODS SIX (6") INCHES LONG SHALL BE EMBEDDED IN THE WET CONCRETE AS DIRECTED BY THE ENGINEER TO MARK THE CENTERLINE AND STATION. FOR LOCATIONS SEE SHEET NO. 337.

SEEDING

QUANTITIES FOR SEEDING ARE CALCULATED FOR THE SOIL AREAS BETWEEN THE RIGHT OF WAY FENCE LINES, BETWEEN THE RIGHT OF WAY LINES IN UNFENCED AREAS, AND WITHIN THE WORK LIMITS FOR AREAS OUTSIDE THE RIGHT OF WAY LINES COVERED BY WORK AGREEMENT OR SLOPE EASEMENT. ON COUNTY ROADS, SEEDING IS CALCULATED FOR SOIL AREAS BETWEEN THE WORK LIMITS.

ITEM SPECIAL DRILLED WELL ABANDONED

THE EXISTING CONCRETE OR STONE SLAB WELL COVER AND PUMPING EQUIPMENT SHALL BE REMOVED AND DISPOSED OF. THE CASING SHALL BE CUT OFF AT LEAST TWO FEET BELOW THE PROPOSED FINISHED GRADE OUTSIDE PROPOSED PAVEMENT AREAS OR AT LEAST TWO FEET BELOW THE PROPOSED SUBGRADE ELEVATION INSIDE PROPOSED PAVEMENT AREAS AND CAPPED WITH CLASS "E" CONCRETE OR A STANDARD THREADED PIPE CAP. THE UNIT PRICE BID FOR EACH "DRILLED WELL ABANDONED" SHALL INCLUDE PAYMENT FOR ALL LABOR TOOLS MATERIALS, AND INCIDENTALS NECESSARY TO COMPLETE THIS ITEM.

SPRING DRAINS

REFERENCE IS MADE TO THE DETAILED DRAWING ON SHEET NO. 255 SHOWING THE METHOD DRAINING ANY SPRINGS THAT MAY BE ENCOUNTERED DURING THIS CONSTRUCTION. THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN PROVIDED IN THE GENERAL SUMMARY FOR THIS PURPOSE. MATERIALS SHALL NOT BE ORDERED UNTIL DIRECTED BY THE ENGINEER.

ONE SPRING DRAIN CONSTITUTES 3 LIN FT	
ITEM 605 AGGREGATE *DRAINS FOR SPRINGS*, AS PER PLAN	30 LIN FT
ITEM 605 6" UNCLASSIFIED PIPE UNDERDRAIN, 707.06 or 707.12, AS PER PLAN	600 LIN FT

LOCATION AND SIZE OF EXISTING PIPE

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

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 603 CONDUIT .

PAVED BITUMINOUS COATED CORRUGATED METAL STRUCTURE

THE METAL PLATES THAT ARE INCORPORATED INTO THE LOWER FOURTH OF THIS SECTIONAL PLATE STRUCTURE SHALL BE SHOP COATED IN ACCORDANCE WITH 707.06 , AND FIELD PAVED WITH A BITUMINOUS MATERIAL. THE REMAINDER OF THE PLATES SHALL NOT BE BITUMINOUS COATED. THE PAVING SHALL CONSIST OF A MIXTURE OF HOT SAND AND 702.01 , ASPHALT CEMENT OR OTHER BITUMINOUS MIXTURE ACCEPTABLE TO THE ENGINEER AND SHALL BE SPREAD AND COMPACTED TO THE SATISFACTION OF THE ENGINEER. THE COMPLETED PAVEMENT SHALL BE SMOOTH AND DRAINAGE AND SHALL HAVE A MINIMUM OF THICKNESS OF APPROXIMATELY 1" OVER THE INSIDE CRESTS OF THE CORRUGATIONS. AFTER INSTALLATION OF THE STRUCTURE, DAMAGED OR WORN SPOTS IN THE BITUMINOUS COATING ON THE INSIDE AND OUTSIDE OF THE STRUCTURE SHALL BE RE-COATED USING MATERIALS AND METHODS RECOMMENDED BY THE MANUFACTURER AND AS DIRECTED BY THE ENGINEER. PAYMENT FOR ALL THE ABOVE SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE ITEM 603 CONDUIT

FARM DRAINS

ALL FARM DRAINS 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 603 CONDUIT TYPE E WITH CLASS B BEDDING. EXISTING CONNECTORS AND ISOLATED FARM DRAINS WHICH ARE ENCOUNTERED ABOVE THE ELEVATION OF THE ROADWAY DITCHES SHALL BE OUTLETTED INTO THE ROADWAY DITCHES BY 603 TYPE F CONDUIT. 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 603 TYPE E CONDUIT 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 ON FINAL MEASUREMENTS. THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN INCLUDED IN THE GENERAL SUMMARY FOR THE WORK NOTED ABOVE BUT MATERIALS SHALL NOT BE ORDERED UNTIL DIRECTED BY THE ENGINEER:

ITEM 1-1 6" PIPE	CLASS B-1	100 LIN FT
ITEM 1-1 8" PIPE	CLASS B-1	100 LIN FT
ITEM 1-1 12" PIPE	CLASS B-1	100 LIN FT
ITEM 1-1 6" PIPE	CLASS H-2	150 LIN FT
ITEM 1-1 8" PIPE	CLASS H-2	150 LIN FT
ITEM 1-1 12" PIPE	CLASS H-2	150 LIN FT
ITEM 1-1 6" PIPE	CLASS F-4	50 LIN FT
ITEM 1-1 12" PIPE	CLASS F-4	50 LIN FT
ITEM 1-5 6" PIPE SPECIALS	CLASS H-2	5 EACH
ITEM 1-5 8" PIPE SPECIALS	CLASS H-2	5 EACH
ITEM 1-5 12" PIPE SPECIALS	CLASS H-2	5 EACH
ITEM 1-10 DUMPED ROCK CHANNEL PROTECTION		15 CU YDS

ANY NECESSARY PIPE SPECIALS SHALL BE INCLUDED FOR PAYMENT IN THE PERTINENT CONDUIT ITEM.

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 FIXTURE INCLUDING FLOOR DRAINS AND SINK DRAINS OR DRAINS FROM LIVESTOCK LOTS OR BARNS OR POLLUTED WATER OF ANY KIND. EXISTING PIPE CARRYING FLOW WHICH COMES WITHIN THE CATEGORY OUTLINED ABOVE SHALL BE PLUGGED WITH CLASS "E" CONCRETE AT THE RIGHT OF WAY LINE. PAYMENT FOR SAID PLUGGING SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 203 EXCAVATION."

CUT OFF WALLS FOR ITEM 601 RIPRAP

THE CUT-OFF WALLS FOR ITEM 601 RIPRAP USING 6" REINFORCED CONCRETE SLAB SHALL BE INCLUDED FOR PAYMENT IN THE UNIT PRICE BID FOR ITEM 601 RIPRAP USING 6" REINFORCED CONCRETE AS PER PLAN.

GENERAL NOTES

WAS-77-15.70
NOB-77-0.00

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	I-77-1(7)15	

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CONTRACTION AND EXPANSION JOINTS

ALTHOUGH SPECIFIC LOCATION OF CERTAIN EXPANSION AND CONTRACTION JOINTS HAVE BEEN DETAILED ON THIS PLAN, NO WAIVER OF THE SPECIFICATIONS IS INTENDED. PROVISION OF EXPANSION JOINTS AT ALL MAJOR STRUCTURES AND THE MAXIMUM SPACING BETWEEN CONTRACTION JOINTS SHALL IN ALL CASES BE IN ACCORDANCE WITH STANDARD CONSTRUCTION DRAWING BP-4

ITEM 310 SUBBASE, GRADING "A" OR "B" AS PER PLAN

MATERIAL FOR THIS ITEM SHALL MEET THE REQUIREMENTS OF GRADING "A" OR "B" OF SEC 310.02 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.

SPECIAL DITCHES

FOR SPECIAL DITCH GRADES, SEE CROSS-SECTIONS.

ELEVATION DATUM

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

PLACING SOD

EIGHTEEN INCHES (18") OF SOD SHALL BE PLACED ON ALL SLOPES ADJACENT TO PAVED GUTTER. A 2' SOD COLLAR SHALL BE PLACED AROUND THE EXPOSED ENDS OF ALL CONDUIT BETWEEN 12" AND 27" DIAMETERS INCLUSIVE, AND THREE (3') FOOT SOD COLLAR SHALL BE PLACED AROUND THE EXPOSED ENDS OF ALL CONDUIT OVER 27" DIAMETER.

CATCH BASINS, INLETS AND PIPES

THE PROPOSED ELEVATIONS AND LOCATION OF CATCH BASINS, INLETS, CONDUIT AND THE ESTIMATED LENTHS OF CONDUIT MAY BE ADJUSTED BY THE ENGINEER DURING CONSTRUCTION

203 BORROW USING GRANULAR MATERIAL OR ROCK (STA 917+50 - STA 7+00)

MATERIAL FOR ITEM SHALL BE GRANULAR MATERIAL AS DEFINED IN SEC 203.02 EXCEPT THAT AT LEAST 85 PER CENT OF THE GRAINS OR PARTICLES SHALL BE RETAINED ON A NO. 200 SIEVE. ROCK SHALL BE BROKEN SANDSTONE OR LIMESTONE ESSENTIALLY FREE FROM ADMIXTURES OF SHALE OR SOIL. IN LIEU OF THE REQUIREMENTS OF 203.03 FOR MEASUREMENT AND PAYMENT, PAYMENT FOR THIS MATERIAL SHALL BE BASED ON MEASUREMENTS OF THE COMPACTED LAYER IN-PLACE IN THE EMBANKMENT. THE DEPTH SHALL BE 18" AS SHOWN ON CROSS SECTIONS AT ABOVE-MENTIONED STATIONS.

COOPERATION - TRAFFIC CONTROL DEVICES

A SEPARATE TRAFFIC CONTROL DEVICE CONTRACTOR MAY BE REQUIRED TO INSTALL OR ERECT TRAFFIC CONTROL DEVICES WITHIN CONTFACT WORK LIMITS PRIOR TO COMPLETION OF WORK BY THE CONTRACTOR. THE CONTRACTOR SHALL COOPERATE WITH THE SEPARATE CONTRACTOR TO ARRANGE A SUITABLE WORK SCHEDULE, SUBJECT TO THE APPROVAL OF THE ENGINEER, TO PERMIT THE SEPARATE CONTRACTOR TO WORK AND OPERATE NECESSARY EQUIPMENT WITHIN WORK LIMITS TO CARRY OUT THE PROVISIONS OF HIS CONTRACT. THE ENGINEER SHALL NOTIFY THE CONTRACTOR A MINIMUM OF THIRTY (30) DAYS PRIOR TO ANY SCHEDULED WORK BY THE SEPARATE CONTRACTOR. EACH CONTRACTOR SHALL BE HELD RESPONSIBLE FOR ANY DAMAGE BY HIM, OR HIS AGENTS, TO THE WORK PERFORMED BY THE OTHER CONTRACTOR. COMPENSATION FOR THE ABOVE COOPERATION, SHALL BE INCIDENTAL TO THE VARIOUS PAY ITEMS INCLUDED WITHIN THIS CONSTRUCTION PROJECT.

PAVEMENT REMOVED 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 REMOVED ITEM 202 SEEDING SHALL BE MEASURED FOR IN ACCORDANCE WITH ITEM 659 SEEDING AND MULCHING.

PART WIDTH CONSTRUCTION

BECAUSE OF THE NECESSITY OF BUILDING T.R. 301, C.R. 2 AND C.R. 8 UNDER TRAFFIC AND CONSTRUCTING THE PAVEMENT PART AT A TIME, EXTREME CARE SHALL BE TAKEN TO PREVENT THE CONSTRUCTION OF A BUTT JOINT ON CENTERLINE IN THE 304 AND 310 COURSES. THIS SHALL BE ACCOMPLISHED BY BUILDING THE 304 AND 310 COURSES PLACED WITH THE FIRST PORTION OF THE PAVEMENT BUILT, AT LEAST 18" BEYOND THE CENTERLINE AND BY SURFACING NO CLOSER THAN 18" TO THIS EDGE OF THE ABOVE COURSES. WHEN THE SECOND PORTION OF THE PAVEMENT IS BUILT, AT LEAST 12" OF THESE PROJECTING COURSES SHALL BE BROKEN DOWN AND THOROUGHLY KEYED IN WITH THE NEWLY PLACED CORRESPONDING COURSES IN THE SECOND PORTION OF THE PAVEMENT BUILT. PAYMENT FOR THIS OPERATION SHALL BE INCLUDED IN THE UNIT PRICES BID FOR THE PERTINENT PAVEMENT ITEMS.

APPROACH SLAB LONGITUDINAL JOINTS

LONGITUDINAL IMPRESSED OR SAWED JOINTS SHALL BE PROVIDED BETWEEN LANE ELEMENTS, ON ALL APPROACH SLABS, IN ACCORDANCE WITH "STANDARD CONSTRUCTION DRAWING BP-3."

TOE BERMS STA 917+50 - STA 7+00

PROVISION HAS BEEN MADE IN THE ESTIMATED QUANTITIES TO CONSTRUCT TOE BERMS AS INDICATED ON THE CROSS SECTIONS AT THE ABOVE MENTIONED STATIONS.

PLACING OF EMBANKMENT STA 917+50 - STA 7+00

THE RATE OF EMBANKMENT SHOULD NOT EXCEED 4 FEET PER WEEK FOR THE FIRST 32 FEET; ABOVE 32 FEET, THE EMBANKMENT LOADING SHOULD BE 3 FEET PER WEEK, IN ORDER TO INSURE STEADY INCREASE IN THE STRENGTH OF THE FOUNDATION SOILS.

CLEANING PRIVY VAULTS

PRIVY VAULTS SHALL BE CLEANED AND FILLED WITH SUITABLE MATERIAL AS DIRECTED BY THE ENGINEER, MATERIAL REMOVED FROM THESE VAULTS SHALL BE CLASSIFIED AS UNSUITABLE AND DISPOSED OF OUTSIDE THE LIMITS OF RIGHT OF WAY OR EASEMENT LINES. THE CLEANING OF PRIVY VAULTS SHALL BE PAID FOR UNDER ITEM SPECIAL, CLEANING OF PRIVY VAULTS. THE BACKFILLING OF PRIVY VAULTS SHALL BE PAID FOR UNDER 203, EXCAVATION INCLUDING EMBANKMENT. THE PRICE BID FOR THIS ITEM SHALL CONSTITUTE FULL COMPENSATION FOR PERFORMING ALL THE REQUIREMENTS OF THE ITEM AND FOR ALL LABOR, EQUIPMENT, TOOLS AND INCIDENTALS NECESSARY TO COMPLETE THIS ITEM.

ITEM SPECIAL CLEANING AND DISPOSAL OF SEPTIC TANKS

THIS ITEM SHALL INCLUDE CLEANING, BACKFILLING AND REMOVAL OF ALL OR ANY PORTION OF EXISTING SEPTIC TANKS. ALL SEPTIC TANKS LYING WITHIN THE PROPOSED RIGHT OF WAY LIMITS SHALL BE CLEANED AND EMPTIED. MATERIAL REMOVED FROM THESE TANKS SHALL BE CLASSIFIED AS UNSUITABLE AND DISPOSED OF OUTSIDE THE RIGHT OF WAY OR EASEMENT LINES. WHEN THE SEPTIC TANKS ARE LOCATED ABOVE THE FINISHED PAVEMENT OR GROUND LINES, THEY SHALL BE ENTIRELY REMOVED AND DISPOSED OF IN ACCORDANCE WITH 202.02. WHEN THE TANKS ARE LOCATED BELOW THE FINISHED PAVEMENT OR GROUND LINES, THE TOPS OF THE TANKS SHALL BE REMOVED, AND THE WALLS SHALL BE REMOVED TO A DEPTH OF 3 FEET BELOW THE FINISHED SUBGRADE OR GROUND LINES. THE REMOVED MATERIAL SHALL BE DISPOSED OF AS EXPLAINED ABOVE. THE TANKS SHALL BE BACKFILLED WITH SUITABLE SOIL OR GRANULAR MATERIAL IN ACCORDANCE WITH 203.12 THIS ITEM SHALL BE PAID FOR AT THE UNIT PRICE BID PER EACH FOR "ITEM SPECIAL CLEANING AND DISPOSAL OF SEPTIC TANKS", WHICH PRICE AND PAYMENT SHALL CONSTITUTE FULL COMPENSATION FOR CLEANING, REMOVING AND DISPOSING OF EXCESS MATERIALS, BACKFILLING AND FOR ALL LABOR, TOOLS, EQUIPMENT AND INCIDENTALS NECESSARY TO COMPLETE THIS ITEM INCLUDING INCIDENTAL EXCAVATION.

PLUGGING GAS WELLS AND OIL WELLS

THE GAS AND OIL WELLS LOCATED WITHIN THE LIMITS OF THE RIGHT OF WAY SHALL BE PLUGGED BY THE CONTRACTOR BEFORE ANY OTHER CONSTRUCTION IS STARTED IN THE VICINITY OF THE WELL. THE WELL SHALL BE FILLED SOLID FROM BOTTOM TO TOP AND ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE REQUIREMENTS OF THE STATE OF OHIO DIVISION OF MINES. ALL WORK CONNECTED WITH PLUGGING OF THE WELL MUST BE PERFORMED UNDER THE SUPERVISION OF A REPRESENTATIVE OF THE DIVISION OF MINES. THE CONTRACTOR SHALL NOTIFY THE PROJECT ENGINEER AND THE DIVISION OF MINES AT LEAST 10 DAYS IN ADVANCE OF THE DATE ON WHICH HE INTENDS TO BEGIN WORK. PAYMENT FOR THE WORK SHALL BE MADE AT THE CONTRACT UNIT PRICE BID FOR "ITEM SPECIAL, PLUGGING GAS WELLS AND OIL WELLS WHICH PRICE AND PAYMENT SHALL CONSTITUTE FULL COMPENSATION FOR FURNISHING ALL MATERIAL, LABOR, TOOLS AND EQUIPMENT, AND ALL INCIDENTALS NECESSARY TO COMPLETE THIS ITEM.

ITEM SPECIAL REMOVAL AND DISPOSAL OF EXISTING UNDERGROUND STORAGE TANKS

THIS ITEM SHALL CONSIST OF THE REMOVAL AND DISPOSAL OF UNDERGROUND STORAGE TANKS AS DESIGNATED ON THE PLANS INCLUDING EXCAVATION AND BACKFILL. THE TANKS SHALL BE REMOVED IN THEIR ENTIRETY AND SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE DISPOSED OF BY HIM UNLESS OTHERWISE SHOWN ON THE PLANS. THE BACKFILLING AND COMPACTING OF THE EXCAVATED AREA SHALL BE DONE IN ACCORDANCE WITH THE PROVISIONS OF 203.12. THIS ITEM SHALL BE PAID FOR AT THE LUMP SUM PRICE BID FOR "ITEM SPECIAL, REMOVAL AND DISPOSAL OF EXISTING UNDERGROUND STORAGE TANKS," WHICH LUMP SUM PRICE AND PAYMENT SHALL CONSTITUTE FULL COMPENSATION FOR PERFORMING ALL OF THE REQUIREMENTS OF THIS ITEM, INCLUDING ALL LABOR, EQUIPMENT, TOOLS AND INCIDENTALS NECESSARY TO COMPLETE THIS ITEM.

CONTRACTOR'S MAINTENANCE RESPONSIBILITY

ON THIS PROJECT, THE CONTRACTOR'S RESPONSIBILITY FOR MAINTENANCE OF THE EXISTING PAVEMENT PER ITEM 614 SHALL BE LIMITED TO THOSE PORTIONS OF THE EXISTING PAVEMENT LYING WITHIN THE PROPOSED WORK LIMITS.

MAINTAINING TRAFFIC

TWO-WAY TRAFFIC SHALL BE MAINTAINED ON C. R. 8, T. R. 301 AND C. R. 2 BY USE OF EXISTING C. R. 8, EXISTING T. R. 301 AND EXISTING C. R. 2. THE FOLLOWING QUANTITIES ARE INCLUDED FOR MAINTAINING TRAFFIC ON COUNTY AND TOWNSHIP ROADS:

				410 CU YDS	616 TONS
C. R. 8	STA 32+00	-	STA 45+50	675	14
C. R. 8	STA 10+00	-	STA 12+50	175	3
T. R. 301	STA 26+50	-	STA 29+60	225	4
C. R. 2	STA 11+00	-	STA 14+65	300	6

TEMPORARY ROADS AND PAVEMENTS

THE FOLLOWING QUANTITIES HAVE BEEN CARRIED TO THE GENERAL SUMMARY FOR PAYMENT OF TEMPORARY ROADS AND PAVEMENTS FOR USR 21:

ITEM 615	CLASS B, TEMPORARY PAVEMENT	2,545 SQ YDS
ITEM 659	SEEDING AND PROTECTING *	3,180 SQ YDS **

* TO BE PERFORMED AFTER REMOVAL OF TEMPORARY ROADS AND PAVEMENTS
** TO CALCULATION SHEET NO. 14A

ONE-WAY TRAFFIC WILL BE MAINTAINED ON EXISTING USR 21 AT 262' RT OF STA 885+78 DURING INSTALLATION OF THE 30" PIPE AS DETAILED ON SHEET NO. 27A

SPECIFICATIONS

All items appearing throughout the plans referring to the 1963 Construction and Material Specifications are to be used for reference purposes only. This project shall be Constructed in accordance with the requirements of the 1965 Construction and Materials Specifications. The cross references to the 1965 Specifications are shown on the general summary.

CALCULATIONS

WAS-77-15.70
NOB-77-0.00

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	I-77-1(71)15	

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PERTINENT LENGTHS FOR CALCULATIONS

IR 77

NORMAL SECTION	=	5,712.49 LIN FT
SUPERELEVATED SECTION	=	3,840.94 LIN FT
NORMAL ROCK CUT SECTION	=	4,681.50 LIN FT
SUPERELEVATED ROCK CUT SECTION	=	2,900.00 LIN FT
TOTAL LENGTH	=	17,134.93 LIN FT

ITEM T-71 9" REINFORCED PORTLAND CEMENT CONCRETE PAVEMENT

IR 77
LENGTH = 17,134.93 SQ YDS
WIDTH = 24.00 FT
AREA = 17,134.93 × 24.00 × 2 ÷ 9 = 91,386.29 SQ YDS
TOTAL IR 77 = 91,386.29 SQ YDS

RAMP "A"
ACCELERATION LANE AREA = 15,096.06 SQ FT ÷ 9 = 1,677.34 SQ YDS
RAMP AREA = 35,928.36 SQ FT ÷ 9 = 3,992.04 SQ YDS
INTERSECTION AREA = 5,706.63 SQ FT ÷ 9 = 634.07 SQ YDS
TOTAL RAMP "A" = 6,303.45 SQ YDS

RAMP "B"
DECELERATION LANE AREA = 14,664.00 ÷ 9 = 1,629.33 SQ YDS
RAMP AREA = 13,610.48 ÷ 9 = 1,512.28 SQ YDS
INTERSECTION AREA = 2,356.00 ÷ 9 = 261.78 SQ YDS
TOTAL RAMP "B" = 3,403.39 SQ YDS

RAMP "C"
ACCELERATION LANE AREA = 15,096.06 SQ FT ÷ 9 = 1,677.34 SQ YDS
RAMP AREA = 18,992.16 SQ FT ÷ 9 = 2,110.24 SQ YDS
INTERSECTION AREA = 3,659.67 SQ FT ÷ 9 = 406.63 SQ YDS
TOTAL RAMP "C" = 4,194.21 SQ YDS

RAMP "D"
DECELERATION LANE AREA = 14,991.19 SQ FT ÷ 9 = 1,665.69 SQ YDS
RAMP AREA = 21,075.96 SQ FT ÷ 9 = 2,341.77 SQ YDD
INTERSECTION AREA = 2400.85 SQ FT ÷ 9 = 266.76 SQ YDS
TOTAL RAMP "D" = 4,274.22 SQ YDS

USR 21
STA 1203+00 TO STA 1223+75 = 2075.00 LIN FT
WIDTH = 24.00 FT
AREA = 2075.00 × 24.00 ÷ 9 = 5,533.33 SQ YDS
TOTAL USR 21 = 5,533.33 SQ YDS

TR 301
STA 15+50 TO STA 23+50 = 800.00 LIN FT
WIDTH = 24.00 FT
AREA = 800.00 × 24.00 ÷ 9 = 2,133.33 SQ YDS
ADD FOR INTERSECTION = 179.18 SQ YDS
TOTAL TR 301 = 2,312.51 SQ YDS
GRAND TOTAL = 117,407.40 SQ YDS
TO SUMMARY USE = 117,407 SQ YDS

ITEM T-35 ASPHALTIC CONCRETE SURFACE COURSE TYPE "A" (85-100)

USR 21
WIDEN AND RESURFACE LENGTH = 80.00 LIN FT
AVG WIDTH = 22.00 FT
VOLUME = 80.00 × 22.00 × 0.1042 ÷ 27 = 6.79 CU YDS
ADD FOR FEATHERING = 0.62 CU YDS
TOTAL USR 21 = 7.41 CU YDS

CR 2
STA 7+64.46 TO STA 13+50.00 = 585.54 LIN FT
END AREA = 0.926 CU YDS PER LIN FT
VOLUME = 585.54 × 0.0926 = 54.21 CU YDS
STA 13+50.00 TO STA 14+50.00 = 100.00 LIN FT
AVG WIDTH = 21.00 FT
VOLUME = 100.00 × 21.00 × 0.1042 ÷ 27 = 8.10 CU YDS
ADD FOR INTERSECTION AND FEATHERING = 4.24 CU YDS
TOTAL CR 2 = 66.55 CU YDS

CR 8
STA 10+25 TO STA 20+00 = 975.00 LIN FT
STA 32+25 TO STA 45+25 = 1300.00 LIN FT
TOTAL LENGTH = 2,275.00 LIN FT
END AREA = 0.1235 CU YDS PER LIN FT
VOLUME = 2,275.00 × 0.1235 = 280.96 CU YDS
ADD FOR INTERSECTION = 9.13 CU YDS
TOTAL CR 8 = 290.09 CU YDS

ITEM T-35 ASPHALTIC CONCRETE SURFACE COURSE TYPE "A" (85-100) (CONTINUED)

TR 301
STA 23+50 TO STA 24+00 = 50.00 LIN FT
AVG WIDTH = 22.00 FT
VOLUME = 50.00 × 22.00 × 0.1667 ÷ 27 = 6.79 CU YDS
STA 24+00 TO STA 28+90 = 450.00 LIN FT
END AREA = 0.1235 CU YDS PER LIN FT
VOLUME = 450.00 × 0.1235 = 55.58 CU YDS
STA 28+50 TO STA 29+50 = 100.00 LIN FT
AVG WIDTH = 16.00 FT
VOLUME = 100.00 × 16.00 × 0.1667 ÷ 27 = 9.88 CU YDS
TOTAL TR 301 = 72.25 CU YDS
GRAND TOTAL = 436.30 CU YDS
TO SUMMARY USE 436 CU YDS

ITEM B-35 ASPHALTIC CONCRETE LEVELING COURSE (85-100)

USR 21
LENGTH FROM T-35 TYPE "A" CALCULATIONS
VOLUME = 80.00 × 22.00 × 0.1042 ÷ 27 = 6.79 CU YDS
TOTAL USR 21 = 6.79 CU YDS

CR 2
LENGTHS FROM T-35 TYPE "A" CALCULATIONS
VOLUME = 585.54 × 0.0926 = 54.21 CU YDS
VOLUME = 100.00 × 21.00 × 0.1042 ÷ 27 = 8.10 CU YDS
ADD FOR INTERSECTION = 3.82 CU YDS
TOTAL CR 2 = 66.13 CU YDS
GRAND TOTAL = 72.92 CU YDS
TO SUMMARY USE = 73 CU YDS

ITEM B-21 WATERPROOFED AGGREGATE BASE COURSE

IR 77
LENGTH = 17,134.93 LIN FT
END AREA = 0.2592 CU YDS PER LIN FT
VOLUME = 17,134.93 × 0.2592 = 4,441.37 CU YDS
ADD FOR APPROACH SLABS = 38.88 CU YDS
ADD FOR CROSSOVER = 30.50 CU YDS
DEDUCT FOR INTERCHANGE = 2597.25×0.1852 = − 481.01 CU YDS
TOTAL IR 77 = 4,029.74 CU YDS

RAMP "A"
ACCELERATION LANE
STA 838+12.50 TO STA 850+12.50 = 1200.00 LIN FT
VOLUME = 1200 × 8 × 0.5 ÷ 27 = 177.78 CU YDS
ADD FOR TRANSITION = 1.78 CU YDS
RAMP
LEFT BERM
STA 0+00 TO STA 15+92.76 = 1592.76 LIN FT
VOLUME = 1592.76 × 3 × 0.5 ÷ 27 = 88.49 CU YDS
ADD FOR 8 FT WIDTH AND TRANSITION = 34.72 CU YDS
DEDUCT FOR CR 8 INTERSECTION = − 5.90 CU YDS
RIGHT BERM
STA 850+12.50 TO STA 854+85 = 472.50 LIN FT
AVG WIDTH = 14.08 FT
VOLUME = 472.50 × 14.08 × 0.25 ÷ 27 = 61.60 CU YDS
STA 4+00 TO STA 15+92.76 = 1192.76 LIN FT
VOLUME = 1192.76 × 3 × 0.5 ÷ 27 = 66.26 CU YDS
INTERSECTION
ADD FOR INTERSECTION = 16.94 CU YDS
TOTAL RAMP "A" = 441.67 CU YDS

RAMP "B"
DECELERATION LANE
STA 26+08.82 TO STA 884+02.27 = 800.34 LIN FT
VOLUME = 800.34 × 8 × 0.5 ÷ 27 = 118.57 CU YDS
ADD FOR TRANSITION = 1.85 CU YDS
RAMP
LEFT BERM
STA 17+64.29 TO STA 26+08.82 = 844.53 LIN FT
VOLUME = 844.53 × 3 × 0.5 ÷ 27 = 46.92 CU YDS
ADD FOR TRANSITION = 3.57 CU YDS
RIGHT BERM
STA 17+64.29 TO STA 26+08.82 = 844.53 LIN FT
VOLUME = 844.53 × 3 × 0.5 ÷ 27 = 46.92 CU YDS
INTERSECTION
ADD FOR INTERSECTION = 10.72 CU YDS
TOTAL RAMP "B" = 229.49 CU YDS

ITEM B-21 WATERPROOFED AGGREGATE BASE COURSE (CONTINUED)

RAMP "C"
INTERSECTION
ADD FOR INTERSECTION = 15.19 CU YDS
RAMP
LEFT BERM
STA 19+86.68 TO STA 27+86.19 = 799.51 LIN FT
VOLUME = 799.51 × 3 × 0.5 ÷ 27 = 44.42 CU YDS
DEDUCT FOR TRANSITION = − 0.43 CU YDS
STA 874+78 TO STA 880+00 = 522 LIN FT
AVG WIDTH = 14.25 FT
VOLUME = 522 × 14.25 × 0.25 ÷ 27 = 68.88 CU YDS
RIGHT BERM
STA 19+86.68 TO STA 31+86.19 = 1199.51 LIN FT
VOLUME = 1199.51 × 3 × 0.5 ÷ 27 = 66.64 CU YDS
ADD FOR 8 FT WIDTH AND TRANSITION = 34.78 CU YDS
ACCELERATION LANE
STA 880+00 TO STA 892+00 = 1200 LIN FT
VOLUME = 1200 × 8 × 0.5 ÷ 27 = 177.78 CU YDS
ADD FOR TRANSITION = 1.83 CU YDS
TOTAL RAMP "C" = 409.09 CU YDS

RAMP "D"
DECELERATION LANE
STA 845+27.34 TO STA 4+86.40 = 801.06 LIN FT
VOLUME = 801.06 × 8 × 0.5 ÷ 27 = 118.68 CU YDS
ADD FOR TRANSITION = 1.85 CU YDS
RAMP
LEFT BERM
STA 4+86.40 TO STA 17+97.46 = 1311.06 LIN FT
VOLUME = 1311.06 × 3 × 0.5 ÷ 27 = 72.84 CU YDS
RIGHT BERM
STA 4+86.40 TO STA 17+97.46 = 1311.06 LIN FT
VOLUME = 1311.06 × 3 × 0.5 ÷ 27 = 72.84 CU YDS
ADD FOR TRANSITION = 4.53 CU YDS
INTERSECTION
ADD FOR INTERSECTION = 10.92 CU YDS
TOTAL RAMP "D" = 281.66 CU YDS

USR 21
WIDEN AND RESURFACE LENGTH = 80 LIN FT
AVG WIDTH = 3 FT
VOLUME = 80 × 3 × 0.3333 ÷ 27 = 2.96 CU YDS
TOTAL USR 21 = 2.96 CU YDS

CR 2
LENGTHS FROM T-35 TYPE "A" CALCULATIONS
VOLUME = 585.54 × 25 × 0.3333 ÷ 27 = 180.67 CU YDS
VOLUME = 100 × 22 × 0.3333 ÷ 27 = 27.16 CU YDS
ADD FOR INTERSECTION = 12.51 CU YDS
TOTAL CR 2 = 220.34 CU YDS
GRAND TOTAL = 5,614.95 CU YDS
TO SUMMARY USE 5,615 CU YDS

ITEM B-19 AGGREGATE BASE COURSE

IR 77
LENGTH = 17,134.93 LIN FT
END AREA = 0.5020 CU YDS PER LIN FT
VOLUME = 17,134.93 × 0.5020 = 8,601.73 CU YDS
ADD FOR APPROACH SLABS = 75.30 CU YDS
ADD FOR CROSSOVER = 30.50 CU YDS
DEDUCT FOR INTERCHANGE = 2,597.25 × 0.1852 = − 481.01 CU YDS
TOTAL IR 77 8,226.52 CU YDS

RAMP "A"
ACCELERATION LANE
STA 838+12.50 TO STA 850+12.50 = 1200 LIN FT
END AREA = 0.0494 CU YDS PER LIN FT
VOLUME = 1200 × 0.0494 = 59.28 CU YDS
ADD FOR TRANSITION = 0.59 CU YDS
RAMP
LEFT BERM
STA 0+00 TO STA 4+50 = 450 LIN FT
VOLUME = 450 × 0.0494 = 22.23 CU YDS
DEDUCT FOR TRANSITION = − 3.70 CU YDS
RIGHT BERM
STA 850+12.50 TO STA 854+85 = 472.50 LIN FT
AVG WIDTH = 14.08 FT
VOLUME = 472.50 × 14.08 × 0.5 ÷ 27 = 123.20 CU YDS
DEDUCT FOR UNDERDRAIN STA 854+00 TO STA 854+85 = − 0.70 CU YDS
STA 4+00 TO STA 10+00 = 600 LIN FT
VOLUME = 600 × 3 × 0.25 ÷ 27 = 16.67 CU YDS
DEDUCT FOR TRANSITION = − 0.23 CU YDS
INTERSECTION
ADD FOR INTERSECTION = 4.66 CU YDS
TOTAL RAMP "A" = 222.30 CU YDS

ITEM B-19 AGGREGATE BASE COURSE (CONTINUED)

RAMP "B"
DECELERATION LANE
STA 26+08.82 TO STA 884+02.27 = 800.34 LIN FT
END AREA = 0.0494 CU YDS PER LIN FT
VOLUME = 800.34 × 0.0494 = 39.54 CU YDS
ADD FOR TRANSITION AND LENGTH WITHOUT UNDDRDRAIN = 5.62 CU YDS
RAMP
LEFT BERM
STA 25+10.82 TO STA 26+08.82 = 98.00 LIN FT
AVG END AREA = 0.0247 CU YDS PER LIN FT
VOLUME = 98.00 × 0.0247 = 2.42 CU YDS
RIGHT BERM
STA 17+64.29 TO STA 26+08.82 = 844.53 LIN FT
VOLUME = 844.53 × 3 × 0.25 ÷ 27 = 23.46 CU YDS
INTERSECTION
ADD FOR INTERSECTION = 4.14 CU YDS
TOTAL RAMP "B" 75.18 CU YDS

RAMP "C"
INTERSECTION
ADD FOR INTERSECTION = 5.14 CU YDS
RAMP
LEFT BERM
STA 19+86.68 TO STA 27+86.19 = 799.51 LIN FT
VOLUME = 799.51 × 3 × 0.25 ÷ 27 = 22.21 CU YDS
DEDUCT FOR TRANSITION = − 0.21 CU YDS
STA 874+78 TO STA 880+00 = 522 LIN FT
AVG WIDTH = 14.25 FT
VOLUME = 522 × 14.25 × 0.5 ÷ 27 = 137.75 CU YDS
RIGHT BERM
STA 27+36.19 TO STA 31+86.19 = 450.00 LIN FT
END AREA = 0.0494 CU YDS LER LIN FT
VOLUME = 450.00 × 0.0494 = 22.23 CU YDS
DEDUCT FOR TRANSITION = − 3.70 CU YDS
ACCELERATION LANE
STA 880+00 TO STA 892+00 = 1200 LIN FT
VOLUME = 1200 × 0.0494 = 59.28 CU YDS
ADD FOR TRANSITION = 0.89 CU YDS
TOTAL RAMP "C" 243.59 CU YDS

RAMP "D"
DECELERATION LANE
STA 845+27.34 TO STA 4+86.40 = 801.06 LIN FT
END AREA = 0.0494 CU YDS PER LIN FT
VOLUME = 801.06 × 0.0494 = 39.57 CU YDS
ADD FOR TRANSITION = 1.71 CU YDS
RAMP
LEFT BERM
STA 4+86.40 TO STA 17+97.46 = 1311.06 LIN FT
VOLUME = 1311.06 × 3 × 0.25 ÷ 27 = 36.42 CU YDS
RIGHT BERM
STA 4+86.40 TO STA 5+84.40 = 98.00 LIN FT
AVG END AREA = 0.0247 CU YDS PER LIN FT
VOLUME = 98.00 × 0.0247 = 2.42 CU YDS
INTERSECTION
ADD FOR INTERSECTION 4.21 CU YDS
TOTAL RAMP "D" 84.33 CU YDS

USR 21
STA 1203+00 TO STA 1223+75 = 2075 LIN FT
END AREA = 0.1975 CU YDS PER LIN FT
VOLUME = 2075 × 0.1975 = 409.81 CU YDS
DEDUCT FOR INTERSECTIONS = − 17.97 CU YDS
WIDEN AND RESURFACE LENGTH = 80 LIN FT
VOLUME = 80 × 0.1975 = 15.80 CU YDS
TOTAL USR 21 407.64 CU YDS

CR 8
LENGTH FROM T-35 TYPE "A" CALCULATIONS
VOLUME = 2275 × 21 × 0.6667 ÷ 27 = 1,179.69 CU YDS
ADD FOR INTERSECTION = 37.30 CU YDS
ADD FOR FEATHERING = 4.24 CU YDS
TOTAL CR 8 1,221.23 CU YDS

TR 301
STA 15+50 TO STA 23+50 = 800 LIN FT
VOLUME = 800 × 8 × 0.6667 ÷ 27 = 158.03 CU YDS
DEDUCT FOR RAMP INTERSECTIONS = − 65.18 CU YDS
ADD FOR INTERSECTION = 5.72 CU YDS
STA 24+00 TO STA 28+50 = 450 LIN FT
VOLUME = 450 × 21 × 0.6667 ÷ 27 = 233.35 CU YDS
TRANSITION LENGTHS = 150 LIN FT
AVG WIDTH 19.00 FT
VOLUME = 150 × 19.00 × 0.6667 ÷ 27 = 70.37 CU YDS
ADD FOR FEATHERING = 0.37 CU YDS
TOTAL TR 301 = 402.66 CU YDS
GRAND TOTAL 10,883.45 CU YDS
TO SUMMARY USE 10,883 CU YDS

CALCULATIONS

CALCULATIONS

WAS-77-15.70
NOB-77-0.00

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ITEM SPECIAL - DRAINAGE CONNECTION USING NO. 6 AGGREGATE

IR 77
NORMAL SECTION LENGTH = 5,712.49 LIN FT
END AREA = 0.1096 CU YDS PER LIN FT
VOLUME = 5,712.49 × 0.1096 = 626.09 CU YDS
DEDUCT FOR INTERCHANGE = — 82.19 CU YDS
NORMAL ROCK CUT SECTION LENGTH = 4681.50 LIN FT
END AREA = 0.1422 CU YDS PER LIN FT
VOLUME = 4681.50 × 0.1422 = 665.71 CU YDS
DEDUCT FOR INTERCHANGE = — 187.87 CU YDS
SUPERELEVATED SECTION LENGTH = 6,740.94 LIN FT
END AREA = 0.1011 CU YDS PER LIN FT
VOLUME = 6740.94 × 0.1011 = 681.51 CU YDS
DEDUCT FOR HIGH SHOULDER IN FILL AND ROCK CUT
LENGTH = 6868 LIN FT
END AREA = 0.0499 CU YDS PER LIN FT
VOLUME = 6868 × 0.0499 = — 342.71 CU YDS
DEDUCT FOR INTERCHANGE = — 51.21 CU YDS
TOTAL IR 77 = 1,309.33 CU YDS

RAMP "A"
ACCELERATION LANE
STA 838+12.50 TO STA 846+50 = 837.50 LIN FT
END AREA = 0.0717 CU YDS PER LIN FT
VOLUME = 837.50 × 0.0717 = 60.05 CU YDS
DEDUCT FOR TRANSITION = — 0.81 CU YDS
STA 846+50 TO STA 850+12.50 = 362.50 LIN FT
END AREA = 0.0841 CU YDS PER LIN FT
VOLUME = 362.50 × 0.0841 = 30.49 CU YDS
RAMP
LEFT BERM
STA 0+00 TO STA 0+37.50 = 3750 LIN FT
END AREA = 0.0841 CU YDS PER LIN FT
VOLUME = 37.50 × 0.0841 = 3.15 CU YDS
STA 0+37.50 TO STA 4+50 = 412.50 LIN FT
END AREA = 0.0717 CU YDS PER LIN FT
VOLUME 412.50 × 0.0717 = 29.58 CU YDS
DEDUCT FOR TRANSITION = — 0.24 CU YDS
STA 4+50 TO STA 15+92.76 = 1,142.76 LIN FT
END AREA = 0.0686 CU YDS PER LIN FT
VOLUME = 1,142.76 × 0.0686 = 78.39 CU YDS
RIGHT BERM
STA 854+00 TO STA 854+85 = 85 LIN FT
END AREA = 0.0548 CU YDS PER LIN FT
VOLUME = 85 × 0.0548 = 4.66 CU YDS
STA 10+25 TO STA 15+92.76 = 567.76 LIN FT
END AREA = 0.0686 CU YDS PER LIN FT
VOLUME = 567.76 × 0.0686 = 38.95 CU YDS
ADD FOR TRANSITION = 2.19 CU YDS
INTERSECTION
ADD FOR INTERSECTION = 9.43 CU YDS
TOTAL RAMP "A" = 255.84 CU YDS

RAMP "B"
DECELERATION LANE
STA 26+08.82 TO STA 882+45 = 643.07 LIN FT
END AREA = 0.0824 CU YDS PER LIN FT
VOLUME = 643.07 × 0.0824 = 52.99 CU YDS
RAMP LEFT BERM
STA 17+64.29 TO STA 26+08.82 = 844.53 LIN FT
END AREA = 0.0730 CU YDS PER LIN FT
VOLUME = 844.53 × 0.0730 = 61.65 LIN FT
ADD FOR TRANSITION = 0.48 CU YDS
INTERSECTION
ADD FOR INTERSECTION = 3.07 CU YDS
TOTAL RAMP "B" = 118.19 CU YDS

RAMP "C"
INTERSECTION
ADD FOR INTERSECTION = 6.04 CU YDS
RAMP
LEFT BERM
STA 871+78 TO STA 877+97 = 319 LIN FT
END AREA = 0.0711 CU YDS PER LIN FT
VOLUME = 319 × 0.0711 = 22.68 CU YDS
RIGHT BERM
STA 19+86.68 TO STA 28+96.19 = 899.51 LIN FT
END AREA = 0.0686 CU YDS PER LIN FT
VOLUME = 899.51 × 0.0686 = 61.71 CU YDS
DEDUCT FOR TRANSITION = — 0.46 CU YDS
STA 28+86.19 TO STA 29+85 = 98.81 LIN FT
END AREA = 0.0625 CU YDS PER LIN FT
VOLUME = 98.81 × 0.0625 = 6.18 CU YDS
STA 29+85 TO STA 31+86.19 = 201.19 LIN FT
END AREA = 0.0841 CU YDS PER LIN FT
VOLUME = 201.19 × 0.0841 = 16.92 CU YDS
ACCELERATION LANE
STA 880+00 TO STA 882+75 = 275 LIN FT

ITEM SPECIAL - DRAINAGE CONNECTION USING NO. 6 AGGREGATE (CONTINUED)

RAMP "C" (CONTINUED)
END AREA = 0.0841 CU YDS PER LIN FT
VOLUME = 275 × 0.0841 = 23.13 CU YDS
STA 882+75 TO STA 892+00 = 925 LIN FT
END AREA = 0.0647 CU YDS PER LIN FT
VOLUME = 925 × 0.0647 = 59.85 CU YDS
DEDUCT FOR TRANSITION = — 0.78 CU YDS
TOTAL RAMP "C" = 195.27 CU YDS

RAMP "D"
DECELERATION LANE
STA 885+27.34 TO STA 3+59 = 673.66 LIN FT
END AREA = 0.0824 CU YDS PER LIN FT
VOLUME = 673.66 × 0.0824 = 55.51 CU YDS
DEDUCT FOR TRANSITION = — 0.55 CU YDS
STA 3+59 TO STA 4+86.40 = 127.40 LIN FT
END AREA = 0.0709 CU YDS PER LIN FT
VOLUME = 127.40 × 0.0709 = 9.03 CU YDS
RAMP RIGHT BERM
STA 4+86.40 TO STA 17+97.46 = 1,311.06 LIN FT
END AREA = 0.0730 CU YDS PER LIN FT
VOLUME = 1,311.06 × 0.0730 = 95.71 CU YDS
INTERSECTION
ADD FOR INTERSECTION = 3.29 CU YDS
TOTAL RAMP "D" = 162.99 CU YDS
GRAND TOTAL = 2,041.62 CU YDS
TO SUMMARY USE 2,042 CU YDS

ITEM I-22 SUBBASE, GRADING "A" OR "B" MODIFIED AS PER GENERAL NOTE

IR 77
NORMAL SECTION LENGTH = 5,712.49 LIN FT
END AREA = 1.0788 CU YDS PER LIN FT
VOLUME = 5,712.49 × 1.0788 = 6,162.63 CU YDS
DEDUCT FOR INTERCHANGE = — 86.81 CU YDS
NORMAL ROCK CUT SECTION LENGTH = 4,681.50 LIN FT
END AREA = 1.4202 CU YDS PER LIN FT
VOLUME = 4,681.50 × 1.4202 = 6,648.67 CU YDS
DEDUCT FOR INTERCHANGE = — 196.46 CU YDS
SUPERELEVATED SECTION LENGTH = 6,740.94 LIN FT
END AREA = 1.0651 CU YDS PER LIN FT
VOLUME = 6,740.94 × 1.0651 = 7,179.78 CU YDS
DEDUCT FOR INTERCHANGE = — 51.12 CU YDS
ADD FOR APPROACH SLABS = 220.97 CU YDS
TOTAL IR 77 = 19,877.63 CU YDS

RAMP "A"
ACCELERATION LANE
UNDER PAVEMENT
STA 838+12.50 TO STA 846+50 = 837.50 LIN FT
VOLUME = 837.50 × 8.73 × 0.6250 ÷ 27 = 169.24 CU YDS
STA 846+50 TO STA 850+12.50 = 362.50 LIN FT
VOLUME = 362.50 × 21.23 × 0.7917 ÷ 27 = 225.66 CU YDS
ADD FOR 2 FT TRANSITION = 2.22 CU YDS
UNDER BERM
STA 838+12.50 TO STA 846+50 = 837.50 LIN FT
END AREA = 0.0584 CU YDS PER LIN FT
VOLUME = 837.50 × 0.0584 = 48.91 CU YDS
STA 846+50 TO STA 850+12.50 = 362.50 LIN FT
END AREA = 0.0748 CU YDS PER LIN FT
VOLUME = 362.50 × 0.0748 = 27.12 CU YDS
RAMP
UNDER PAVEMENT
STA 0+00 TO STA 0+37.50 = 37.50 LIN FT
VOLUME = 37.50 × 14.13 × 0.7917 ÷ 27 = 15.54 CU YDS
STA 0+37.50 TO STA 3+00 = 262.50 LIN FT
VOLUME = 262.50 × 15.13 × 0.6250 ÷ 27 = 91.94 CU YDS
STA 3+00 TO STA 4+00 = 100 LIN FT
VOLUME = 100 × 17 × 0.6250 ÷ 27 = 39.35 CU YDS
STA 4+00 TO STA 10+25 = 625 LIN FT
VOLUME = 625 × 16 × 0.5 ÷ 27 = 185.19 CU YDS
ADD FOR TRANSITION = 4.86 CU YDS
STA 10+25 TO STA 10+79 = 54 LIN FT
VOLUME = 54 × 37 × 0.5 ÷ 27 = 37.00 CU YDS
STA 10+79 TO STA 15+92.76 = 513.76 LIN FT
VOLUME = 513.76 × 38 × 0.5 ÷ 27 = 323.48 CU YDS
UNDER I-21 MEDIAN
VOLUME = 513.76 × 3 × 1 ÷ 27 = 57.08 CU YDS
UNDER LEFT BERM
STA 0+00 TO STA 0+37.50 = 37.50 LIN FT
END AREA = 0.0748 CU YDS PER LIN FT
VOLUME = 37.50 × 0.0748 = 2.81 CU YDS
STA 0+37.50 TO STA 4+50 = 412.50 LIN FT
END AREA = 0.0584 CU YDS PER LIN FT
VOLUME = 412.50 × 0.0584 = 24.09 CU YDS
DEDUCT FOR TRANSITION = — 0.54 CU YDS
STA 4+50 TO STA 15+92.76 = 1,142.76 LIN FT
END AREA = 0.0512 CU YDS PER LIN FT

ITEM I-22 SUBBASE GRADING "A" OR "B" MODIFIED AS PER GENERAL NOTE (CONTINUED)

RAMP "A" (CONTINUED)
VOLUME = 1142.76 × 0.0512 = 58.51 CU YDS
UNDER RIGHT BERM
STA 850+12.50 TO STA 850+50 = 37.50 LIN FT
VOLUME = 37.50 × 1 × 0.7917 ÷ 27 = 1.10 CU YDS
STA 850+50 TO STA 854+00 = 350 LIN FT
VOLUME = 350 × 1 × 0.625 ÷ 27 = 8.10 CU YDS
STA 854+00 TO STA 854+85 = 85 LIN FT
END AREA = 0.0579 CU YDS PER LIN FT
VOLUME = 85 × 0.0579 = 4.92 CU YDS
STA 0+00 TO STA 0+37.50 = 37.50 LIN FT
VOLUME = 37.50 × 1 × 0.7917 ÷ 27 = 1.10 CU YDS
STA 0+37.50 TO STA 4+00 = 362.50 LIN FT
VOLUME = 362.50 × 1 × 0.6250 ÷ 27 = 8.39 CU YDS
STA 4+00 TO STA 10+00 = 600 LIN FT
VOLUME = 600 × 1 × 0.5 ÷ 27 = 11.11 CU YDS
STA 10+25 TO STA 15+92.76 = 567.76 LIN FT
VOLUME = 567.76 × 3 × 0.5 ÷ 27 = 31.54 CU YDS
ADD FOR TRANSITION = 1.78 CU YDS
INTERSECTION
UNDER PAVEMENT = 112.05 CU YDS
UNDER LEFT BERM = 5.52 CU YDS
UNDER RIGHT BERM = 5.22 CU YDS
TOTAL RAMP "A" = 1,503.30 CU YDS

RAMP "B"
DECELERATION LANE
PAVEMENT AREA FROM T-71 CALCULATIONS = 14,664.00 SQ FT
VOLUME = 14,664.00 × 0.7917 ÷ 27 = 429.98 CU YDS
ADD FOR CURB AND I-21 = 15.72 CU YDS
LEFT BERM
STA 26+08.82 TO STA 884+02.27 = 800.34 LIN FT
END AREA = 0.0732 CU YDS PER LIN FT
VOLUME = 800.34 × 0.0732 = 58.58 CU YDS
DEDUCT FOR TRANSITION AND LENGTH WITHOUT UNDERDRAIN = — 8.02 CU YDS
RAMP
PAVEMENT AREA FOR T-71 CALCULATIONS = 13,610.48 SQ FT
VOLUME = 13,610.48 × 0.5 ÷ 27 = 252.05 CU YDS
LEFT BERM
STA 17+64.29 TO STA 26+08.82 = 844.53 LIN FT
VOLUME = 844.53 × 3 × 0.5 ÷ 27 = 46.92 CU YDS
ADD FOR TRANSITION = 0.83 CU YDS
RIGHT BERM
STA 17+64.29 TO STA 26+08.82 = 844.53 LIN FT
END AREA = 0.0175 CU YDS PER LIN FT
VOLUME = 844.53 × 0.0175 = 14.78 CU YDS
ADD FOR CURB AREA = 1.29 CU YDS
INTERSECTION
UNDER PAVEMENT = 43.64 CU YDS
UNDER LEFT BERM = 3.90 CU YDS
UNDER RIGHT BERM = 1.22 CU YDS
TOTAL RAMP "B" = 860.89 CU YDS

RAMP "C"
INTERSECTION
UNDER PAVEMENT = 67.79 CU YDS
UNDER LEFT BERM = 1.96 CU YDS
UNDER RIGHT BERM = 5.97 CU YDS
RAMP
UNDER PAVEMENT
STA 19+86.68 TO STA 27+86.19 = 799.51 LIN FT
VOLUME = 799.51 × 16 × 0.5 ÷ 27 = 236.89 CU YDS
STA 27+86.19 TO STA 28+86.19 = 100.00 LIN FT
VOLUME = 100.00 × 17 × 0.5 ÷ 27 = 31.48 CU YDS
STA 28+86.19 TO STA 29+85 = 98.81 LIN FT
VOLUME = 98.81 × 15.67 × 0.5 ÷ 27 = 28.67 CU YDS
STA 29+85 TO STA 31+86.19 = 201.19 LIN FT
VOLUME = 201.19 × 14.67 × 0.7917 ÷ 27 = 86.54 CU YDS
LEFT BERM
STA 19+86.68 TO STA 27+86.19 = 799.51 LIN FT
END AREA = 0.0185 CU YDS PER LIN FT
VOLUME = 799.51 × 0.0185 = 14.79 CU YDS
STA 27+86.19 TO STA 29+85 = 198.81 LIN FT
VOLUME = 198.81 × 1 × 0.5 ÷ 27 = 3.68 CU YDS
STA 29+85 TO STA 31+86.19 = 201.19 LIN FT
VOLUME = 201.19 × 1 × 0.7917 ÷ 27 = 5.90 CU YDS
STA 871+78 TO STA 877+97 = 319 LIN FT
END AREA = 0.0743 CU YDS PER LIN FT
VOLUME = 319 × 0.0743 = 23.70 CU YDS
STA 877+97 TO STA 880+00 = 203 LIN FT
VOLUME = 203 × 1 × 0.7917 ÷ 27 = 5.95 CU YDS
RIGHT BERM
STA 19+86.68 TO STA 28+86.19 = 899.51 LIN FT
END AREA = 0.0512 CU YDS PER LIN FT
VOLUME = 899.51 × 0.0512 = 46.05 CU YDS
ADD FOR TRANSITION = 0.54 CU YDS
STA 28+86.19 TO STA 29+85 = 98.81 LIN FT
END AREA = 0.0584 CU YDS PER LIN FT

ITEM I-22 SUBBASE GRADING "A" OR "B" MODIFIED AS PER GENERAL NOTE (CONT'D)

RAMP "C" (CONTINUED)
VOLUME = 98.81 × 0.0584 = 5.77 CU YDS
STA 29+85 TO STA 31+86.19 = 201.19 LIN FT
END AREA = 0.0748 CU YDS PER LIN FT
VOLUME = 201.19 × 0.0748 = 15.05 CU YDS
ACCELERATION LANE
UNDER PAVEMENT
STA 880+00 TO STA 882+75 = 275 LIN FT
VOLUME = 275 × 22.14 × 0.7917 ÷ 27 = 178.53 CU YDS
STA 882+75 TO STA 892+00 = 925 LIN FT
VOLUME = 925 × 9.61 × 0.5 ÷ 27 = 165.13 CU YDS
ADD FOR 2' TRANSITION = 1.78
RIGHT BERM
STA 880+00 TO STA 882+75 = 275 LIN FT
END AREA = 0.0748 CU YDS PER LIN FT
VOLUME = 275 × 0.0748 = 20.57 CU YDS
STA 882+75 TO STA 892+00 = 925 LIN FT
END AREA = 0.0480 CU YDS PER LIN FT
VOLUME = 925 × 0.0480 = 44.40 CU YDS
TOTAL RAMP "C" 991.14 CU YDS

RAMP "D"
DECELERATION LANE
PAVEMENT AREA FROM T-71 CALCULATIONS = 14,991.19 SQ FT
VOLUME = 9,489.92 × 0.7917 ÷ 27 = 278.12 CU YDS
VOLUME = 5,506.27 × 0.6250 ÷ 27 = 127.46 CU YDS
ADD FOR I-21
RIGHT BERM
STA 885+27.34 TO STA 3+59.00 = 673.66 LIN FT
END AREA = 0.0732 CU YDS PER LIN FT
VOLUME = 673.66 × 0.0732 = 49.31 CU YDS
STA 3+59.00 TO STA 4+86.40 = 127.40 LIN FT
END AREA = 0.0575 CU YDS PER LIN FT
VOLUME = 127.40 × 0.0575 = 7.33 CU YDS
RAMP
PAVEMENT AREA FROM T-71 CALCULATIONS = 21,075.96 SQ FT
VOLUME = 21,075.96 × 0.5 ÷ 27 = 390.30 CU YDS
LEFT BERM
STA 4+86.40 TO STA 17+97.46 = 1,311.06 LIN FT
END AREA = 0.0175 CU YDS PER LIN FT
VOLUME = 1,311.06 × 0.0175 = 22.94 CU YDS
ADD FOR CURB AREA = 1.61 CU YDS
RIGHT BERM
STA 4+86.40 TO STA 17+97.46 = 1,311.06 LIN FT
VOLUME = 1,311.06 × 3 × 0.5 ÷ 27 = 72.84 CU YDS
INTERSECTION
UNDER PAVEMENT = 44.64 CU YDS
UNDER LEFT BERM = 1.24 CU YDS
UNDER RIGHT BERM = 3.99 CU YDS
TOTAL RAMP "D" = 1,013.62 CU YDS
GRAND TOTAL = 24,246.58 CU YDS
TO SUMMARY USE 24,247 CU YDS

ITEM I-22 SUBBASE

IR 77
NORMAL SECTION LENGTH = 5,712.49 LIN FT
END AREA = 0.2696 CU YDS PER LIN FT
VOLUME = 5,712.49 × 0.2696 = 1,540.09 CU YDS
DEDUCT FOR INTERCHANGE = — 160.48 CU YDS
NORMAL ROCK CUT SECTION LENGTH = 4,681.50 LIN FT
END AREA = 0.3972 CU YDS PER LIN FT
VOLUME = 4,681.50 × 0.3972 = 1,859.49 CU YDS
DEDUCT FOR INTERCHANGE = — 402.44 CU YDS
SUPERELEVATED SECTION LENGTH = 6,740.94 LIN FT
END AREA = 0.2556 CU YDS PER LIN FT
VOLUME = 6,740.94 × 0.2556 = 1,722.98 CU YDS
DEDUCT FOR INTERCHANGE = — 102.91 CU YDS
ADD FOR CROSSOVER = 35.51 CU YDS
ADD FOR APPROACH SLABS = 39.03 CU YDS
TOTAL IR 77 = 4,531.27 CU YDS

RAMP "A"
ACCELERATION LANE
STA 838+12.50 TO STA 846+50 = 837.50 LIN FT
END AREA = 0.0795 CU YDS PER LIN FT
VOLUME = 837.50 × 0.0795 = 66.58 CU YDS
ADD FOR TRANSITION
STA 846+50 TO STA 850+12.50 = 362.50 LIN FT
END AREA = 0.0959 CU YDS PER LIN FT
VOLUME = 362.50 × 0.0959 = 34.76 CU YDS
RAMP
LEFT BERM
STA 0+00 TO STA 0+37.50 = 37.50 LIN FT
END AREA = 0.0959 CU YDS PER LIN FT
VOLUME = 37.50 × 0.0959 = 3.60 CU YDS
STA 0+37.50 TO STA 4+50 = 412.50 LIN FT
END AREA = 0.0795 CU YDS PER LIN FT
VOLUME = 412.50 × 0.0795 = 32.79 CU YDS
DEDUCT FOR TRANSITION = — 5.96 CU YDS
RIGHT BERM
STA 850+12.50 TO STA 850+50 = 37.50 LIN FT

CALCULATIONS

WAS - 77-15.70
NOB - 77-0.00

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	I-77-1(7)15	

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ITEM I-22 SUBBASE (CONTINUED)

RAMP "A" (CONT'D)
VOLUME = 37.50 × 9.27 × 0.7917 ÷ 27 = 10.19 CU YDS
STA 850+50 TO STA 854+00 = 350 LIN FT
VOLUME = 350 × 12.01 × 0.6250 ÷ 27 = 97.30 CU YDS
STA 854+00 TO STA 854+85 = 85 LIN FT
VOLUME = 85 × 14.08 × 0.5 ÷ 27 = 22.16 CU YDS
STA 4+00 TO STA 4+50 = 50 LIN FT
VOLUME = 50 × 2.5 × 0.5 ÷ 27 = 2.31 CU YDS
STA 4+50 TO STA 4+70 = 20 LIN FT
VOLUME = 20 × 2 × 0.5 ÷ 27 = 0.74 CU YDS
STA 4+70 TO STA 6+00 = 130 LIN FT
VOLUME = 130 × 2.67 × 0.5 ÷ 27 = 6.43 CU YDS
STA 6+00 TO STA 10+00 = 400 LIN FT
END AREA = 0.0285 CU YDS PER LIN FT
VOLUME = 400 × 0.0285 = 11.40 CU YDS
INTERSECTION
UNDER LEFT BERM = 2.98 CU YDS
UNDER RIGHT BERM = 3.22 CU YDS
TOTAL RAMP "A" 289.82 CU YDS

RAMP "B"
DECELERATION LANE
STA 26+08.82 TO STA 884+02.27 = 800.38 LIN FT
END AREA = 0.0894 CU YDS PER LIN FT
VOLUME = 800.38 × 0.0894 = 71.55 CU YDS
ADD FOR TRANSITION AND LENGTH WITHOUT UNDERDRAIN= 7.74 CU YDS
RAMP
LEFT BERM
STA 25+10.82 TO STA 26+08.82 = 98.00 LIN FT
AVG END AREA = 0.0447 CU YDS PER LIN FT
VOLUME = 98.00 × 0.0447 = 4.38 CU YDS
RIGHT BERM
STA 17+61.29 TO STA 25+10.82 = 746.53 LIN FT
END AREA = 0.0285 CU YDS PER LIN FT
VOLUME = 746.53 × 0.0285 = 21.28 CU YDS
STA 25+10.82 TO STA 25+75.82 = 65.00 LIN FT
VOLUME = 65.00 × 2 × 0.5 ÷ 27 = 2.41 CU YDS
INTERSECTION
UNDER LEFT BERM = 2.93 CU YDS
UNDER RIGHT BERM = 2.00 CU YDS
TOTAL RAMP "B" 112.29 CU YDS

RAMP "C"
INTERSECTION
UNDER LEFT BERM = 3.93 CU YDS
UNDER RIGHT BERM = 2.92 CU YDS
RAMP
LEFT BERM
STA 19+86.68 TO STA 25+36.19 = 549.51 LIN FT
END AREA = 0.0285 CU YDS PER LIN FT
VOLUME = 549.51 × 0.0285 = 15.66 CU YDS
STA 25+36.19 TO STA 26+65.00 = 128.81 LIN FT
VOLUME = 128.81 × 2.67 × 0.5 ÷ 27 = 6.37 CU YDS
STA 26+65.00 TO STA 27+86.19 = 121.19 LIN FT
VOLUME = 121.19 × 3 × 0.5 ÷ 27 = 6.73 CU YDS
DEDUCT FOR TRANSITION = — 0.46 CU YDS
STA 874+78 TO STA 877+97 = 319 LIN FT
AVG WIDTH = 13.37 FT
VOLUME = 319 × 13.37 × 0.5 ÷ 27 = 78.98 CU YDS
STA 877+97 TO STA 880+00 = 203 LIN FT
VOLUME = 203 × 10.43 × 0.7917 ÷ 27 = 62.08 CU YDS
RIGHT BERM
STA 27+36.19 TO STA 29+85.00 = 248.81 LIN FT
END AREA = 0.0671 CU YDS PER LIN FT
VOLUME = 248.81 × 0.0671 = 16.70 CU YDS
DEDUCT FOR TRANSITION = — 5.04 CU YDS
STA 29+85.00 TO STA 31+86.19 = 201.19 LIN FT
END AREA = 0.0959 CU YDS PER LIN FT
VOLUME = 201.19 × 0.0959 = 19.29 CU YDS
ACCELERATION LANE
STA 880+00 TO STA 882+75 = 275 LIN FT
END AREA = 0.0959 CU YDS PER LIN FT
VOLUME = 275 × 0.0959 = 26.37 CU YDS
STA 882+75 TO STA 892+00 = 925 LIN FT
END AREA = 0.0691 CU YDS PER LIN FT
VOLUME = 925 × 0.0691 = 63.92 CU YDS
ADD FOR TRANSITION = 1.31 CU YDS
TOTAL RAMP "C" 288.76 CU YDS

RAMP "D"
DECELERATION LANE
STA 845+27.34 TO STA 852+01.00 = 673.66
END AREA = 0.0894 CU YDS PER LIN FT
VOLUME = 673.66 × 0.0894 = 60.23 CU YDS
ADD FOR TRANSITION = 1.82 CU YDS
STA 852+01 TO STA 853+29.34 = = 128.34 LIN FT
END AREA = 0.0762 CU YDS PER LIN FT
VOLUME = 128.34 × 0.0762 = 9.78 CU YDS
RAMP

ITEM I-22 SUBBASE (CONTINUED)
RAMP "D" (CONTINUED)
LEFT BERM
STA 5+28.40 TO STA 5+84.40 = 56.00 LIN FT
VOLUME = 56.00 × 2 × 0.5 ÷ 27 = 2.07 CU YDS
STA 5+84.40 TO STA 17+97.46 = 1213.06 LIN FT
END AREA = 0.0285 CU YDS PER LIN FT
VOLUME = 1213.06 × 0.0285 = 34.57 CU YDS
RIGHT BERM
STA 4+86.40 TO STA 5+84.40 = 98.00 LIN FT
AVG END AREA = 0.0417 CU YDS PER LIN FT
VOLUME = 98.00 × 0.0417 = 4.67 CU YDS
INTERSECTION
UNDER LEFT BERM = 2.03 CU YDS
UNDER RIGHT BERM = 2.98 CU YDS
TOTAL RAMP "D" 118.15 CU YDS

USR 21
STA 1203+00 TO STA 1225+75 = 2275 LIN FT
END AREA = 0.4815 CU YDS PER LIN FT
VOLUME = 2275 × 0.4815 = 999.11 CU YDS
WIDEN AND RESURFACE LENGTH = 80 LIN FT
VOLUME = 80 × 4 × 0.5 ÷ 27 = 5.93 CU YDS
TOTAL USR 21 = 1,005.04 CU YDS

I CR 2
LENGTHS FROM T-35 TYPE "C" CALCULATIONS
VOLUME = 585.54 × 26 × 0.5 ÷ 27 = 281.88 CU YDS
VOLUME = 100 × 23 × 0.5 ÷ 27 = 42.59 CU YDS
ADD FOR INTERSECTION = 19.19 CU YDS
TOTAL CR 2 = 343.66 CU YDS
GRAND TOTAL = 6,698.99 CU YDS
TO SUMMARY USE 6,699 CU YDS

ITEM T-31 BITUMINOUS SURFACE TREATMENT
RATE OF APPLICATION = 0.25 GALS PER SQ YD BITUMINOUS MATERIAL
0.008 CU YDS PER SQ YD NO. 6 AGGRETATE

IR 77
LENGTH = 17,134.93 LIN FT
WIDTH = 28 FT
AREA = 17,134.93 × 28 ÷ 9 = 53,308.67 SQ YDS
DEDUCT FOR INTERCHANGE = 2,597.25 × 20 ÷ 9 — 5,771.67 SQ YDS
ADD FOR CROSSOVER = 366.00 SQ YDS
ADD FOR APPROACH SLABS = 466.67 SQ YDS
TOTAL AREA = 48,369.67 SQ YDS
BITUMINOUS VOLUME = 48,369.67 × 0.25 = 12,092.42 GALS
NO. 6 AGGRETATE VOLUME = 48,369.67 × 0.008 = 386.96 CU YDS

RAMP "A"
ACCELERATION LANE
AREA = 1,077.33 SQ YDS
RAMP
LEFT BERM AREA = 703.93 SQ YDS
RIGHT BERM AREA = 1,136.10 SQ YDS
INTERSECTION
LEFT BERM AREA = 51.00 SQ YDS
RIGHT BERM AREA = 50.67 SQ YDS
TOTAL AREA = 3,019.03 SQ YDS
BITUMINOUS VOLUME = 3,019 × 0.25 = 754.76 GALS
NO. 6 AGGRETATE VOLUME = 3,019.03 × 0.008 = 24.15 CU YDS

RAMP "B"
DECELERATION LANE
AREA = 722.52 SQ YDS
RAMP
LEFT BERM AREA = 308.73 SQ YDS
RIGHT BERM AREA = 281.51 SQ YDS
INTERSECTION
LEFT BERM AREA = 40.98 SQ YDS
RIGHT BERM AREA = 23.33 SQ YDS
TOTAL AREA = 1,377.07 SQ YDS
BITUMINOUS VOLUME = 1377.07 × 0.25 = 344.27 GALS
NO. 6 AGGRETATE VOLUME = 1377.07 × 0.008 = 11.02 CU YDS

RAMP "C"
INTERSECTION
LEFT BERM AREA = 35.40 SQ YDS
RIGHT BERM AREA = 56 [illegible] 2 YDS
RAMP
LEFT BERM AREA = 1 [illegible] .52 SQ YDS
RIGHT BERM AREA = 602.18 SQ YDS
DECELERATION LANE
AREA = 1,077.33 SQ YDS
TOTAL AREA = 2,866.90 SQ YDS
BITUMINOUS VOLUME = 2,866.90 × 0.25 = 716.73 GALS
NO. 6 AGGREGATE VOLUME = 2,866.90 × 0.008 = 22.94 CU YDS

ITEM T-31 BITUMINOUS SURFACE TREATMENT (CONTINUED)
RAMP "D"
DECELERATION LANE
AREA = 723.16 SQ YDS
RAMP
LEFT BERM AREA = 437.02 SQ YDS
RIGHT BERM AREA = 464.24 SQ YDS
INTERSECTION
LEFT BERM AREA = 23.67 SQ YDS
RIGHT BERM AREA = 41.84 SQ YDS
TOTAL AREA = 1,689.93 SQ YDS
BITUMINOUS VOLUME = 1,689.93 × 0.25 = 422.48 GALS
NO. 6 AGGREGATE VOLUME = 1,689.93 × 0.008 = 13.52 CU YDS

USR 21
RATE OF APPLICATION = 0.30 GAL PER SQ YD BITUMINOUS
0.008 CU YDS PER SQ YD NO. 6 AGGREGATE
AREA = 2155 × 8 ÷ 9 = 1,915.56 SQ YDS
DEDUCT FOR INTERSECTIONS = —80.89 SQ YDS
NET AREA = 1,834.67 SQ YDS
*BITUMINOUS VOLUME = 1,834.67 × 0.30 = *550.40 GALS
NO. 6 AGGREGATE VOLUME = 1,834.67 × 0.008 = 14.68 CU YDS

TR 301
AREA = 800 × 8 ÷ 9 = 711.11 SQ YDS
DEDUCT FOR RAMPS = — 293.33 SQ YDS
ADD FOR INTERSECTION = 25.77 SQ YDS
NET AREA = 443.55 SQ YDS
*BITUMINOUS VOLUME = 443.55 × 0.30 = *133.07 GALS
NO. 6 AGGREGATE VOLUME = 443.55 × 0.008 = 3.55 CU YDS
GRAND TOTAL BITUMINOUS AS PER PLAN = 14,330.66 GALS
*GRAND TOTAL BITUMINOUS = 683.47 GALS
GRAND TOTAL NO. 6 AGGREGATE = 476.82 CU YDS
TO SUMMARY USE, BITUMINOUS MATERIAL AS PER PLAN 14,331 GALS
*TO SUMMARY USE, BITUMINOUS = 683 GALS
TO SUMMARY USE = 477 CU YDS

ITEM T-30 BITUMINOUS PRIME COAT
RATE OF APPLICATION = 0.40 GAL PER SQ YD
USR 21
AREA FROM T-31 CALCULATIONS = 1,834.67 SQ YDS
VOLUME = 1,834.67 × 0.40 = 733.87 GALS

CR 8
LENGTH FROM T-35 TYPE "A" CALCULATIONS = 2275 LIN FT
VOLUME = 2275 × 20 × 0.40 ÷ 9 = 2022.22 GALS
ADD FOR INTERSECTION = 65.65 GALS
TOTAL CR 8 = 2,087.88 GALS

TR 301
BERM AREA FROM T-31 CALCULATIONS = 443.55 SQ YDS
STA 23+50 TO STA 24+00 = 50 LIN FT
AREA 50 × 22 ÷ 9 = 122.22 SQ YDS
STA 24+00 TO STA 28+50 = 450 LIN FT
AREA = 450 × 20 ÷ 9 = 1000 LIN FT
STA 28+50 TO STA 29+50 = 100 LIN FT
AREA = 100 × 16 ÷ 9 = 177.78 SQ YDS
TOTAL AREA = 1743.55 SQ YDS
VOLUME = 1743.55 × 0.40 = 697.42 GALS
GRAND TOTAL = 3,519.17 GALS
TO SUMMARY USE 3,519 GALS

ITEM T-30 BITUMINOUS TACK COAT
RATE OF APPLICATION = 0.10 GAL PER SQ YD
USR 21
WIDEN AND RESURFACE LENGTH = 80 LIN FT
VOLUME = 80 × 20 × 0.10 ÷ 9 = 17.78 GALS
ADD FOR FEATHERING = 4.44 GALS
TOTAL USR 21 = 22.22 GALS

CR 2
ADD FOR FEATHERING = 3.00 GALS
GRAND TOTAL = 25.22 GALS
TO SUMMARY USE = 25 GALS

ITEM I-9 STONE UNDERDRAINS NO. 2
USR 21
NUMBER REQUIRED = 2155 ÷ 30 = 72 EACH
AVG LENGTH PER I-9 = 14.40 FT
LENGTH = 72 × 14.40 = 1,036.80 LIN FT

CR 2
NUMBER REQUIRED = 685.44 ÷ 25 = 27 EACH
LENGTH PER I-9 = 11.54 FT
LENGTH = 27 × 11.54 = 311.58 LIN FT

CR 8
NUMBER REQUIRED = 2275 ÷ 50 = 46 EACH
LENGTH PER I-9 = 6.00 FT
LENGTH = 46 × 6.00 = 276.00 LIN FT

ITEM I-9 STONE UNDERDRAINS NO. 2 (CONTINUED)
TR 301
STA 15+50 TO STA 23+50 = 800 LIN FT
NUMBER REQUIRED = 800 ÷ 30 = 26 EACH
LENGTH PER I-9 = 15.20 FT
LENGTH = 26 × 15.20 = 395.20 LIN FT
STA 23+50 TO STA 29+50 = 600 LIN FT
NUMBER REQUIRED = 600 ÷ 50 = 12 EACH
LENGTH PER I-9 = 6.00 FT
LENGTH = 12 × 6.00 = 72.00 LIN FT
TOTAL TR 301 = 467.20 LIN FT
GRAND TOTAL = 2,091.58 LIN FT
TO SUMMARY USE 2,092 LIN FT

ITEM E-1 COMPACTED SUBGRADE
IR 77
LENGTH NORMAL SECTION = 5,712.49 LIN FT
LENGTH SUPERELEVATED SECTION = 3,840.94 LIN FT
TOTAL LENGTH = 9,553.43 LIN FT
WIDTH = 2 × 38 = 76 FT
AREA = 9,553.43 × 76 ÷ 9 = 80,673.41 SQ YDS
DEDUCT FOR INTERCHANGE = 1,549.84 × 10 ÷ 9 = — 1,722.04 SQ YDS
ADD FOR APPROACH SLABS = 1,611.11 SQ YDS
TOTAL IR 77 = 80,562.48 SQ YDS

RAMP "A"
ACCELERATION LANE
STA 838+12.50 TO STA 846+50
UNDER PAVEMENT = 811.91 SQ YDS
UNDER BERM = 755.11 SQ YDS
RAMP
UNDER PAVEMENT = 3,992.04 SQ YDS
UNDER BERMS = 1,840.03 SQ YDS
UNDER CURB AND I-21 = 237.92 SQ YDS
INTERSECTION
UNDER PAVEMENT = 634.07 SQ YDS
UNDER BERMS = 101.67 SQ YDS
UNDER I-21 = 19.08 SQ YDS
TOTAL RAMP "A" = 8,391.83 SQ YDS

RAMP "B"
RAMP STA 17+61.29 TO STA 20+50
UNDER PAVEMENT = 507.93 SQ YDS
UNDER BERMS = 190.47 SQ YDS
INTERSECTIONS
UNDER PAVEMENT = 261.78 SQ YDS
UNDER BERMS = 64.32 SQ YDS
TOTAL RAMP "B" = 1,024.50 SQ YDS

RAMP "C"
INTERSECTION
UNDER PAVEMENT = 406.63 SQ YDS
UNDER BERMS = 91.07 SQ YDS
RAMP STA 19+86.68 TO STA 25+50
UNDER PAVEMENT = 1,001.46 SQ YDS
UNDER BERM = 375.55 SQ YDS
ACCELERATION LANE STA 881+50 TO STA 892+00
UNDER BERM = 55.56 SQ YDS
TOTAL RAMP "C" 1,930.27 SQ YDS

RAMP "D"
DECELERATION LANE
STA 852+00 TO STA 853+29.34
UNDER PAVEMENT = 611.81 SQ YDS
UNDER BERM = 114.97 SQ YDS
RAMP
UNDER PAVEMENT = 2,330.78 SQ YDS
UNDER BERMS = 901.26 SQ YDS
INTERSECTION
UNDER PAVEMENT = 266.76 SQ YDS
UNDER BERMS = 65.51 SQ YDS
TOTAL RAMP "D" 4,291.09 SQ YDS

USR 21
UNDER T-71 PAVEMENT = 5,533.33 SQ YDS
UNDER WIDENING = 17.78 SQ YDS
TOTAL USR 21 = 5,551.11 SQ YDS

CR 2
UNDER PAVEMENT = 1,794.50 SQ YDS
ADD FOR INTERSECTION = 110.20 SQ YDS
TOTAL CR 2 = 1,904.70 SQ YDS

CR 8
UNDER PAVEMENT = 5,055.56 SQ YDS
UNDER INTERSECTION = 164.16 SQ YDS
TOTAL CR 8 = 5,219.72 SQ YDS

WAS-77-15.70
NOB-77-0.00

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	I-77-1(7)15	

14A

CALCULATIONS

ITEM E-1 COMPACTED SUBGRADE (CONTINUED)

TR 301
UNDER T-71 PAVEMENT = 2,312.51 SQ YDS
ADD FOR INTERSECTION = 25.78 SQ YDS

UNDER T-35 PAVEMENT = 1,300.00 SQ YDS
TOTAL TR 301 3,638.29 SQ YDS
GRAND TOTAL 112,513.99 SQ YDS

TO SUMMARY USE 112,514 SQ YDS

ITEM E-11 WATER

RATE OF APPLICATION = 5 GALS PER CU YD
TOTAL EMBANKMENT + 12 % = 2,781,233 CU YDS
TOTAL B-19 = 10,937 CU YDS
TOTAL I-22 "A" OR "B" = 24,247 CU YDS
TOTAL I-22 = 6,699 CU YDS
TOTAL = 2,823,116 CU YDS
VOLUME = 2,823,116 × 5 ÷ 1000 = 14,115.58 M GALS

TO SUMMARY USE 14,116 M GALS

ITEM L-9 COMMERCIAL FERTILIZER

RATE OF APPLICATION = 20 LBS PER 1000 SQ FT
TOTAL AREA OF SEEDING AND SODDING FROM SUMMARY = 655,899 SQ YDS
WEIGHT = 655,899 × 20 × 9 ÷ 1000 × 2000 = 59.03 TONS

TO SUMMARY USE 59 TONS

ITEM L-9 AGRICULTURAL LIMING MATERIAL

RATE OF APPLICATION = 100 LBS PER 1000 SQ.FT.
TOTAL AREA OF SEEDING AND SODDING FROM SUMMARY = 655,899 SQ YDS
WEIGHT = 655,899 × 100 × 9 ÷ 1000 × 2000 = 295.15 TONS

TO SUMMARY USE 295 TONS

WAS-NOB-77-15.70/0.00 I-125 Pavement Marking

		STATIONS FROM	STATIONS TO	4" Edge Line Lin.Ft.	4" Lane Line Lin.Ft.	6" Lane Line Lin.Ft.	8" Channel Line Lin.Ft.	Diagonal Strips Lump	Curb Island Marking Lump
I-77	Rt.	831+50	845+27.34	1377.34					
I-77	Rt.	854+27.34	885+28.00	3100.66					
I-77	Rt.	892+00.0	930+65.30 Bk	3865.30					
I-77	Rt.	0+00 Ah.	32+33.85 Bk	3233.85					
I-77	Rt.	32+39.85 Ah.	82+75.00	5035.15					
I-77	Lt.	831+50.00	838+12.50	662.50					
I-77	Lt.	844+84.50	875+02.27	3017.77					
I-77	Lt.	884+02.27	930+65.30 Bk	4663.03					
I-77	Lt.	0+00 Ah.	32+33.85 Bk	3233.85					
I-77	Lt.	32+39.85 Ah.	82+75.00	5035.15					
I-77	Med.	831+50.00	930+65.30 Bk	19,830.60		7,436.48			
I-77	Med.	0+00 Ah.	32+33.85 Bk	6,467.70		2,425.39			
I-77	Med.	32+39.85 Ah	82+75.00	10,070.30		3,776.36			
		Sub Totals		69,593.20		13,638.23			
T.R.301				57.50		2,156.25			
USR 21									
Ramp "A"				5294.24	108		240		Lump
Ramp "B"				2676.00	85.74		589	Lump	Lump
Ramp "C"				3470.51	108		240		Lump
Ramp "D"				3613.75	80.63		640	Lump	Lump
		Sub Totals		20,804.50	382.37	2156.25	1709	Lump	Lump
		Totals		90,397.70	382.37	15,794.48	1709	Lump	Lump
		Total Miles		17.121	0.072	2.991	0.324	Lump	Lump

WAS-NOB 77-15.70/0.00 I-127 Delineators

Ref: No.	Side	Stations From	Stations To	Spacing (Ft.)	Post C2	Post C3	Post A1	Brkt. A1
I-77	Rt.	832+00	844+00	200'			6	
I-77	Lt.	832+00	836+00	200'			2	
I-77	Rt.	855+00	865+00	200'			6	
I-77	Lt.	855+00	865+00	200'			6	
I-77	Rt.	867+00						1
I-77	Lt.	867+00						1
I-77	Rt.	869+00	875+00	200'			3	
I-77	Lt.	869+00	875+00	200'			4	
I-77	Lt.	886+00	892+00	200'			4	
I-77	Rt.	894+00	896+00	200'				2
I-77	Lt.	894+00	898+00	200'				3
I-77	Rt.	898+00	39+25	200'			37	
I-77	Lt.	900+00	71+25	200'			52	
I-77	Rt.	41+25						1
I-77	Rt.	43+25	71+25	200'			15	
I-77	Rt.	73+25						1
I-77	Lt.	73+25						1
I-77	Rt.	75+25	81+25	200'			4	
I-77	Lt.	75+25	81+25	200'			4	
Ramp "D"	Rt.	845+25	848+25	100'	4			
Ramp "D"	Rt.	0+80	17+80	100'	18			
Ramp "A"	Lt.	838+00				1		
Ramp "A"	Lt.	839+10	849+10	100'	11			
Ramp "A"	Lt.	0+00	9+00	100'	10			
Ramp "A"	Rt. & Lt.	11+00	16+00	100'	12			
Ramp "B"	Lt.	18+05	30+05	100'	13			
Ramp "B"	Lt.	881+00	884+00	100'	4			
Ramp "C"	Rt.	19+85	31+85	100'	13			
Ramp "C"	Rt.	881+00	891+00	100'	11			
Ramp "C"	Rt.	892+00				1		
TOTAL					96	2	143	10

EARTHWORK & SEEDING TABLES

Station to Station		Excavation	Embankment	Emb+12%	Seeding
833+00	840+00	93,482	96,871	108,496	25,373
840+00	850+00	298,636	118,917	133,187	31,935
850+00	860+00	52,841	181,538	203,323	25,456
860+00	870+00	0	163,214	182,800	5,504
870+00	880+00	137,062	12,512	14,013	23,178
880+00	890+00	154,188	946	1,060	26,635
890+00	900+00	7,123	91,919	102,949	12,675
900+00	910+00	396,778	65,809	73,706	36,113
910+00	920+00	402,005	103,804	116,260	38,684
920+00	930+65.30	1,085	523,616	586,450	50,253
0+00	10+00	2,608	301,169	337,309	38,058
10+00	20+00	396,222	3,364	3,768	40,340
20+00	30+00	153,441	1,638	1,835	30,770
30+00	40+00	43,628	33,062	37,029	28,995
40+00	50+00	1,213	81,324	91,083	22,302
50+00	60+00	1,152	113,001	126,561	25,377
60+00	70+00	697	155,634	174,310	27,073
70+00	80+00	58,953	77,435	86,727	23,336
80+00	86+90	381,213	0	0	29,320
C.R. 8					
32+00	45+50	2,373	5,721	6,408	6,817
10+00	19+50	6,982	7,030	7,874	8,210
T.R. 301					
16+00	29+50	343	26,455	29,630	8,036
U.S.R. 21					
1202+50	1224+00	2,381	51,441	57,614	22,091
Ramp "A"					
6+50	16+50	6,888	104,706	117,271	17,826
Ramp "B"					
17+50	24+50	143,665	12,344	13,825	17,212
Ramp "C"					
19+50	24+50	302	37,635	42,151	10,040
Ramp "D"					
7+50	18+00	9,442	78,338	87,739	17,341
C.R. 2					
8+00	14+50	2,454	2,863	3,207	3,669
TOTALS		2,757,157	2,452,306	2,746,583	652,619

Add for Temporary Runaround (From Gen. Notes) 3,180
Total Seeding & Sodding (To L-9 Calculations) 655,799
Deduct for Sodding 11,743
L-9 Seeding to Summary Use 644,056

NOTE: It is estimated that 40 % of the 104,259 Cu. Yds. of Channel Excavation can be used in Embankment, or 41,704 Cu. Yds.

E-4 GRANULAR BORROW

Station to Station		Cubic Yards
917+50	920+00	4,056
920+00	930+65.30	22,597
0+00	7+50	13,442
TOTAL		41,095 Cu. Yds.

TOE BERM

Station to Station		Embankment
917+50	920+00	4,892
920+00	930+65.30	23,298
0+00	3+50	2,255
TOTAL		30,445 Cu. Yds.
TOTAL + 12%		34,098 Cu. Yds.

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	I-77-1(7)15	

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GENERAL SUMMARY

1963 SPECIFICATIONS

≠ No Federal Participation

*Construction Type Code Y005

WAS - 77 - 15.70

NOB - 77 - 0.00

ITEM	SHEET NUMBER 11&12	13&13A 14&14A	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	190	191	195	200	201	205	206	207	213	214	222	230	235	236	246	337	Total No Fed Partic ≠	Line No.	ITEM	QUANT	UNIT	DESCRIPTION Construction Type Code 7221 (except as shown)
																																								ROADWAY
E-1	2,757,157																																					1	E-1	2,757,157	Cu.Yds.	Roadway Excavation, Method "B", as per plan
E-1	112,514																																					2	E-1	112,514	Sq.Yds.	Compacted Subgrade
																																						3				
E-4		41,095																																					4	E-4	41,095	Cu.Yds.	Borrow Using Granular Material or Rock, as per plan
E-8																										456	511											5	E-8	967	Sq.Yds.	Removal and Disposal of Existing Pavement
E-9																																					6	E-9	Lump	Lump	Removal of Trees and Stumps
E-11		14,116																																			7	E-11	14,116	M.Gals.	Water
I-4	27																																				8	I-4	27	Tons	Calcium Chloride for Dust Control
																																					9				
I-8																																				47		10	I-8	47	Each	Centerline Reference Monuments, as per plan
I-8																																				12		11	I-8	12	Each	Standard Monument Assemblies
																																						12				
I-15			975	1150	393	1057			876.5	723.5	775	2130.6	1747.2	1597		225.1	474.9	80.2	200.3	885.2				112.5	325			562.5		900	1375	300	425		500			13	I-15	17,437.5	Lin.Ft.	Guard Rail, Steel Beam Standard Type (Deep)
I-15						200			200							100	100			200																		14	I-15	800	Lin.Ft.	Guard Rail, Steel Beam Barrier Type (Deep)
																																						15				Included in Roadway Excavation
I-15																																90		116	87.5			16	~~I-15~~	~~293.5~~	~~Lin.Ft.~~	~~Guard Rail, Removed and Disposed of~~
I-25																																				202.48		17	I-25	20,248	Lin.Ft.	Woven Wire Fence, Type 47
																																						18				
I-125		17.12																																					19	I-125	17.12	Miles	4" Edge Lines
I-125		0.07																																					20	I-125	0.07	Miles	4" Lane Lines
I-125		2.99																																					21	I-125	2.99	Miles	6" Lane Lines
I-125		0.32																																					22	I-125	0.32	Miles	8" Channelizing Lines
I-125		Lump																																					23	I-125	Lump	Lump	Diagonal Stripes
I-125		Lump																																					24	I-125	Lump	Lump	Curb and Island Marking
																																						25				
I-127		143																																					26	I-127	143	Each	Delineators, Type A-1, Post Mounted
I-127		96																																					27	I-127	96	Each	Delineators, Type C-2, Post Mounted
I-127		2																																					28	I-127	2	Each	Delineators, Type C-3, Post Mounted
I-127		10																																					29	I-127	10	Each	Delineators, Type A-1, Bracket Mounted
																																						30				
L-9		44056																								604	664											31	L-9	*645,324	Sq.Yds.	Seeding and Protecting
L-9		59																																					32	L-9	* 59	Tons	Commercial Fertilizer (12-12-12)
L-9		295																																					33	L-9	* 295	Tons	Agricultural Liming Material
L-10			500	607	551	1393	6	12*/14	211	1039	194	19	464	508	108	98	16	106	297	717	200	548	342	433	240	408	96	379			510	682	159	390	306	121	12	34	L-10	*1,753	Sq.Yds.	Sodding
L-10									63											84																		35	L-10	* 147	Sq.Yds.	Sodding for Special Berm and Slope Protection, as per plan
																																						36				
L-120			140	140	140		712	15	265	42	140	140	140	224	364	140	140	140	265																		37	L-120	*3,147	Sq.Yds.	Jute Matting
																																						38				
T-10	1375																																					39	T-10	1375	Cu.Yds.	Traffic Compacted Surface Course for Maintaining Traffic
																																						40				
S-15	Lump																									Lump		Lump										41	S-15	Lump	Lump	Temporary Runaround Road Using Class "B" Pavement
Special																				1																		42	Special	1	Each	Cleaning and Disposal of Septic Tanks
Special			1	1	2	2		1												1														1				43	Special	9	Each	Cleaning and Disposal of Privy Vaults
Special																																		Lump				44	Special	Lump	Lump	Removal and Disposal of Existing Underground Storage Tanks
Special												1	1																									45	Special	2	Each	Settlement Platforms
Special				1	1	3	2												1	1	1																	46	Special	10	Each	Plugging Gas Wells & Oil Wells
																																						47				
																																						48				
																																						49				
																																						50				
																																						51				
																																						52				
																																							DRAINAGE
E-3			49	4		2	350	7		1356	74	5,122.4		389	101		120	449.12			462.8		292	2			562				96	77			14		53	E-3	104,259	Cu.Yds.	Channel Excavation
																																						54				
E-12																						67				36		62										55	E-12	165	Lin.Ft.	Pipe Removed, 15" and Under
E-12			25																	190						44									38		56	E-12	297	Lin.Ft.	Pipe Removed, Over 15"
																																						57				
I-1				352																																			68	I-1	352	Lin.Ft.	33" Pipe, Class A-1, Sec. M-6.4(d), 10 Gage
I-1			350																																				69	I-1	350	Lin.Ft.	36" Pipe, Class A-1, Sec. M-6.4(d), 8 Gage
I-1																				244																		60	I-1	244	Lin.Ft.	48" Pipe, Class A-1, Sec. M-6.4(d), 8 Gage
I-1																																				76		61	I-1	76	Lin.Ft.	54" Pipe, Class A-1, Sec. M-6.4(d)
																																						62				
I-1											324																												63	I-1	324	Lin.Ft.	84" Pipe, Class A-1, Sec. M-6.4(g), 7-5 Gage as per plan
I-1						606																																	64	I-1	606	Lin.Ft.	120" Pipe, Class A-1, Sec. M-6.4(g), 5-3 Gage as per plan
																																						65				
I-1														197																									66	I-1	197	Lin.Ft.	24" Pipe, Class A-1, Sec. M-6.6 (a) or Sec. M-6.8 (b)
I-1							175																																67	I-1	175	Lin.Ft.	27" Pipe, Class A-1, Sec. M-6.6 (a) or Sec. M-6.8 (b)
I-1							5%/19%			289					190																							52	68	I-1	725	Lin.Ft.	30" Pipe, Class A-1, Sec. M-6.6 (a) or Sec. M-6.8 (b)
I-1			48											60																									69	I-1	108	Lin.Ft.	36" Pipe, Class A-1, Sec. M-6.6 (a) or Sec. M-6.8 (b)
I-1																									94													70	I-1	94	Lin.Ft.	48" Pipe, Class A-1, Sec. M-6.6 (a)
I-1															186																								71	I-1	186	Lin.Ft.	33" Pipe, Class A-1, Sec. M-6.6 (a) with one-third Vitrified Liner as per plan
																																						72				
I-1														148																									73	I-1	148	Lin.Ft.	42" Pipe, Class A-1, Sec. M-6.6 (a)
I-1																					56																		74	I-1	56	Lin.Ft.	72" Pipe, Class A-1, Sec. M-6.6 (a) with one-third Vitrified Liner as per plan
																																						75				
																																						76				
																																						77				

GENERAL SUMMARY

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	I-77-1(7)15	

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WAS - 77 - 15.70

NOB - 77 - 0.00

GENERAL SUMMARY

≠ No Federal Participation

*Construction Type Code Y005

| ITEM | SHEET NUMBER | | |

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	I-77-1(7)15	

17

WAS - 77 - 15.70

NOB - 77 - 0.00

GENERAL SUMMARY

‡No Federal Participation

*Construction Type Code Y005

ITEM	SHEET NUMBER																																Total No Fed. Partic ‡	Line No.	ITEM	QUANT	UNIT	DESCRIPTION Construction Type Code 7221 (except as shown)
	11 & 12	13 & 13A 14 & 14A	21	22	23	24	25	26	27	28	29	30	32	33	34	35	36	37	190	195	200	205	206	213	214	222	230	231	235	236	246							
																																		156			DRAINAGE (Continued)
I-10	15		109	117	80	10	36	370	396	133	305	2972	151	175		145	2140	202	707	134		5	117	340		56				89	121			157	I-10	*8925	Cu.Yds.	Dumped Rock Channel Protection
I-10			38	44	153		17				38		36	42		52		35	13	28	24		43			135	263			9	40			158	I-10	*1,010	Sq.Yds.	Riprap Using 6" Reinforced Concrete Slab, as per plan
																																		159			
																																		160			
S-22								Lump																										161	S-22	Lump	Lump	Removal of Portions of Existing Structures
S-24																		Lump	Lump	Lump				Lump			Lump			Lump				162	S-24	Lump	Lump	Removal of Existing Structures
																																		163			
																																		164			
																																		165			
																																		166			
																																		167			PAVEMENT
B-19		10883																	14			40												168	B-19	10,937	Cu.Yds.	Aggregate Base Course
B-21		5615					2‡																										2	169	B-21	5,617	Cu.Yds.	Waterproofed Aggregate Base Course, as per Plan
																																		170			
B-35		73					1‡																										1	171	B-35	74	Cu.Yds.	Asphaltic Concrete Leveling Course (85-100)
																																		172			
T-30		3519																																173	T-30	3,519	Gals.	Bituminous Prime Coat: Sec. M-5.7, RT-2 or RT-3
T-30		25																																174	T-30	25	Gals.	Bituminous Tack Coat: Sec. M-5.5, MS-2 or RS-1; or
																																		175			Sec. M-5.2, RC-1 or RC-2, as per Sec. T-30.02
T-31		477																																176	T-31	477	Cu.Yds.	Bituminous Surface Treatment - No. 6 Aggregate
T-31		14,331																																177	T-31	14,331	Gals.	Bituminous Surface Treatment - Bituminous Material,
																																		178			as per plan
T-31		683																																179	T-31	683	Gals.	Bituminous Surface Treatment - Bituminous Material:
																																		180			Sec. M-5.7, RT-8 or RT-9; or Sec. M-5.3, MC-4 or MC-5
T-35		436					1‡															5												1	181	T-35	442	Cu.Yds.	Asphaltic Concrete Surface Course, Type "A" (85-100)
																																		182			
T-71		117,407																																183	T-71	117,407	Sq.Yds.	9" Reinforced Portland Cement Concrete Pavement
																																		184			
I-7					268			350							268			268																185	I-7	1,154	Sq.Yds.	Reinforced Concrete Approach Slabs (T=13")
I-12																										130				110				186	I-12	240	Lin.Ft.	Standard Type 6 Concrete Curb
I-12																								130			130							187	I-12	260	Lin.Ft.	Standard Type 7 Concrete Curb
I-12																								470			234	286						188	I-12	990	Lin.Ft.	Standard Type 8 Concrete Curb
I-21																									190	26			34					189	I-21	250	Sq.Yds.	Portland Cement Concrete Median Pavement
I-22		24,247																																190	I-22	24,247	Cu.Yds.	Subbase, Grading "A" or "B" as per plan
I-22		6699					3‡																										3	191	I-22	6,699	Cu.Yds.	Subbase
																																		192			
Special		2,042																																193	Special	2,042	Cu.Yds.	Drainage Connection, Using No. 6 Aggregate
																																		194			
																																		195			
																																		196			
																																		197			BUILDING REMOVALS
E-10																																		198	E-10	Lump	Lump	Removal of One 2 Story Frame Residence, Two Frame Sheds,
																																		199			Parcel 221 WL
E-10																																		200	E-10	Lump	Lump	Removal of One 2 Story Brick Residence, Two Frame Garages,
																																		201			One Frame Barn, One Concrete Stave Silo, Ten Frame Sheds, One
																																		202			Concrete Block Shed; Parcel 222 WL
E-10																																		203	E-10	Lump	Lump	Removal of One 2 Story Frame Residence, Five Frame Sheds,
																																		204			One Garage; Parcel 223 WL
E-10																																		805			
																																		206			
E-10																																		207	E-10	Lump	Lump	Removal of One 1½ Story Frame Residence, One Quonset Hut,
																																		208			Six Frame Sheds, Parcel 229 WL
E-10																																		209	E-10	Lump	Lump	Removal of One 2 Story Frame Residence, Nine Frame Sheds,
																																		210			One Frame Barn; Parcel 230 WL
																																		211			
E-10																																		212	E-10	Lump	Lump	Removal of One 2 Story Frame Residence, One Frame Barn,
																																		213			One Frame Shed; Parcel 236 WL
E-10																																		214	E-10	Lump	Lump	Removal of One 2 Story Frame Residence, One Frame Barn,
																																		215			Eight Frame Sheds; Concrete Block Garage; Parcel 243 WL
E-10																																		216	E-10	Lump	Lump	Removal of One 1½ Story Frame Residence, One Frame Barn,
																																		217			8 Fr. Sheds, oil well casing, tubing, rods, tank and pump jack; Parcel 244 WL
																																		218	E-10	Lump	Lump	Removal of One Frame Shed; Parcel 237 SL
																																		219	E-10	Lump	Lump	Removal of Two Frame Sheds; Parcel 239 WL
																																		220	E-10	Lump	Lump	Removal of Two Frame Sheds; Parcel 241 WL-SL
																																		221			
																																		222			
																																		223			
																																		224			STRUCTURES OVER 20 FT. SPAN
																																		225			For Estimated Quantities
																																		226			Bridge No. WAS-77-1636 See Sheet No. 309
																																		227			Bridge No. WAS-77-1687 See Sheet No. 317A
																																		228			Bridge No. NOB-77-0076 See Sheet No. 323
																																		229			Bridge No. NOB-77-0136 See Sheet No. 328
																																		230			
																																		231		Lump	Lump	Field Office
																																		232		Lump	Lump	Construction Layout Stakes
I-3																																		233	I-3	Lump	Lump	Maintaining Traffic

Rev. 1-13-66

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	I-77-1(7) 15	

17A

GENERAL SUMMARY (1965 SPECIFICATIONS)

WAS-77-15.70
NOB-77-0.00

* TYPE CODE Y005

*Construction Type Code Y005

FROM SH. 15, 16, 17 LINE NO.	ITEM	TOTAL QUANT	UNIT	DESCRIPTION TYPE CODE 7221 (Except as noted)	No Federal Participation	Normal Partic.
				ROADWAY		
6	201	Lump	Lump	Clearing and Grubbing		
5	202	967	Sq.Yds.	Existing Pavement Removed and Disposed of		
1, 16, 53	203	2,861,416	Cu.Yds.	Excavation Including Embankment Construction		
4	203	41,095	Cu.Yds.	Borrow Using Granular Material or Rock, as per plan		
2	203	112,514	Sq.Yds.	Subgrade Preparation		
7	203	14,061	M.Gals.	Water		
39	410	1,375	Cu.Yds.	Traffic Compacted Surface, Type A or B		
10	604	47	Each	Centerline Reference Monuments, as per plan		
11	604	12	Each	Monument Assemblies, Standard		
13	606	17,437.5	Lin.Ft.	Guard Rail, Type 4		
14	606	800	Lin.Ft.	Guard Rail, Type 4, Barrier Design		
17	607	20,248	Lin.Ft.	Fence, Type 47		
41	615	2,545	Sq.Yds.	Class B, Temporary Pavement		
41	615	Lump	Lump	Temporary Roads		
8	616	27	Tons	Calcium Chloride		
26	620	143	Each	Mono-directional Delineators, Type A-1, Post Mounted		
27	620	96	Each	Mono-directional Delineators, Type C-2, Post Mounted		
28	620	2	Each	Mono-directional Delineators, Type C-3, Post Mounted		
29	620	10	Each	Mono-directional Delineators, Type A-1, Bracket Mounted		
19	621	17.12	Miles	4" Edge Lines		
20	621	0.07	Miles	4" Lane Lines		
21	621	2.99	Miles	6" Lane Lines		
22	621	1709	Lin.Ft.	8" Channelizing Lines		
23	621	Lump	Lump	Broad Transverse Stripes		
24	621	Lump	Lump	Curb and Island Marking		
31	659	*645,324	Sq.Yds.	Seeding and Mulching		
32	659	* 59.03	Tons	Commercial Fertilizer (12-12-12)		
33	659	*295.15	Tons	Agricultural Liming		
34	660	*11,753	Sq.Yds.	Sodding	12	11,741
35	660	* 147	Sq.Yds.	Sodding for Special Berm and Slope Protection		
37	667	*3147	Sq.Yds.	Jute Matting		
42	Special	1	Each	Cleaning and Disposal of Septic Tanks		
43	Special	9	Each	Cleaning and Disposal of Privy Vaults		
44	Special	Lump	Lump	Removal and Disposal of Existing Underground Storage Tanks		
45	Special	2	Each	Settlement Platforms		
46	Special	10	Each	Plugging Gas Wells and Oil Wells		
				DRAINAGE		
162	202	Lump	Lump	Existing Structures Removed		
161	202	Lump	Lump	Portions of Existing Structures Removed		
55	202	165	Lin.Ft.	Pipe Removed, 15" and Under		
56	202	297	Lin.Ft.	Pipe Removed, Over 15"		
158	601	* 1,010	Sq.Yds.	Riprap Using 6" Reinforced Concrete Slab, as per plan		
157	601	*8,325	Cu.Yds.	Dumped Rock Channel Protection		
130	602	366.0	Cu.Yds.	Concrete Masonry	1.0	365.0
58	603	352	Lin.Ft.	33" Conduit, Type A, 707.05, 10 Gage, with Class B Bedding		
59	603	350	Lin.Ft.	36" Conduit, Type A, 707.05, 8 Gage, with Class B Bedding		
60	603	244	Lin.Ft.	48" Conduit, Type A, 707.05, 8 Gage, with Class B Bedding		
61	603	76	Lin.Ft.	54" Conduit, Type A, 707.05, with Class B Bedding		
63	603	324	Lin.Ft.	84" Conduit, Type A, 707.03, 7-5 Gage as per plan with Class B Bedding		
64	603	606	Lin.Ft.	120" Conduit, Type A, 707.03, 5-3 Gage as per plan with Class B Bedding		
66	603	197	Lin.Ft.	24" Conduit, Type A, 706.02 or 706.08 with Class B Bedding		
67	603	175	Lin.Ft.	27" Conduit, Type A, 706.02 or 706.08 with Class B Bedding		
68	603	725	Lin.Ft.	30" Conduit, Type A, 706.02 or 706.08 with Class B Bedding	52	673
69	603	108	Lin.Ft.	36" Conduit, Type A, 706.02 or 706.08 with Class B Bedding		

FROM SH. 15, 16, 17 LINE NO.	ITEM	TOTAL QUANT	UNIT	DESCRIPTION CONSTRUCTION TYPE CODE 7221 (Except as noted)
70	603	94	Lin.Ft.	48" Conduit, Type A, 706.02 with Class B Bedding
71, 72	603	186	Lin.Ft.	33" Conduit, Type A, 706.02 with One-third Vitrified Liner, as per 706.05 with Class B Bedding
73	603	148	Lin.Ft.	42" Conduit, Type A, 706.02 with Class B Bedding
74, 75	603	56	Lin.Ft.	72" Conduit, Type A, 706.02 with One-third Vitrified Liner, as per 706.05 with Class B Bedding
79, 80	603	368	Lin.Ft.	108" Conduit, Type A, 706.02 with One-third Vitrified Liner, as per 706.05 with Class B Bedding
81, 82	603	204	Lin.Ft.	96" Conduit, Type A, 706.02 Class III with, One-third Vitrified Liner, as per 706.05 with Class B Bedding
118, 119	603	54	Lin.Ft.	76" x 48" Conduit, Type A, 706.04 Cl. HE II with, One-third Vitrified Liner, as per 706.05 with Class B Bedding
84	603	274	Lin.Ft.	21" Conduit, Type A, 706.02 Class III or 706.08 with Class B Bedding
85	603	84	Lin.Ft.	24" Conduit, Type A, 706.02 Class III or 706.08 with Class B Bedding
87, 88	603	252	Lin.Ft.	96" Conduit, Type A, 706.03 Cl. V with, One-third Vitrified Liner, as per 706.05 with Class B Bedding
90	603	126	Lin.Ft.	6" Conduit, Type B with Class B Bedding
92	603	100	Lin.Ft.	8" Conduit, Type B with Class B Bedding
93	603	441	Lin.Ft.	12" Conduit, Type B with Class B Bedding
94	603	963	Lin.Ft.	15" Conduit, Type B with Class B Bedding
96	603	82	Lin.Ft.	24" Conduit, Type B with Class B Bedding
101	603	1074	Lin.Ft.	15" Conduit, Type C with Class B Bedding
102	603	236	Lin.Ft.	15" Conduit, Type C, 706.02 Class III or 706.08 E.S. with Class B Bedding
103	603	208	Lin.Ft.	18" Conduit, Type C with Class B Bedding
104	603	242	Lin.Ft.	21" Conduit, Type C, 706.02 Class IV with Class B Bedding
105	603	67	Lin.Ft.	24" Conduit, Type C, with Class B Bedding
106	603	440	Lin.Ft.	27" Conduit, Type C, with Class B Bedding
107	603	216	Lin.Ft.	30" Conduit, Type C, with Class B Bedding
99	603	62	Lin.Ft.	18" Conduit, Type "D"
122, 138	603	150	Lin.Ft.	6" Conduit, Type E
123, 139	603	150	Lin.Ft.	8" Conduit, Type E
124, 140	603	150	Lin.Ft.	12" Conduit, Type E
109	603	570	Lin.Ft.	6" Conduit, Type F
110	603	50	Lin.Ft.	12" Conduit, Type F
111, 131	603	524	Lin.Ft.	15" Conduit, Type F
112, 132	603	60	Lin.Ft.	21" Conduit, Type F
113, 133	603	110	Lin.Ft.	24" Conduit, Type F, 707.01, 707.02 or 906
114, 134	603	167	Lin.Ft.	27" Conduit, Type F
115, 135	603	86	Lin.Ft.	30" Conduit, Type F, 707.01, 707.02 or 906
116, 136	603	78	Lin.Ft.	36" Conduit, Type F, 707.01, 707.02 or 906
144	604	5	Each	Standard No. 2-2-8 Catch Basins
145	604	2	Each	Standard No. 2-4 Catch Basins as per plan
146	604	19	Each	Standard No. 4 Catch Basins
147	604	9	Each	Standard No. 5 Catch Basins
148	604	3	Each	Standard No. 6 Catch Basins
149	604	1	Each	Standard No. 2-3 Catch Basins
150	604	1	Each	Standard No. 1 Manhole, Using Heavy Frame and Cover
126, 142	605	23,033	Lin.Ft.	6" Shallow Pipe Underdrains
127, 143	605	17,438	Lin.Ft.	6" Shallow Pipe Underdrains, 707.06 or 707.12
128	605	600	Lin.Ft.	6" Unclassified Pipe Underdrains as per plan, 707.06 or 707.12
153	605	30	Lin.Ft.	Aggregate Drains for Springs, as per plan
154	605	2092	Lin.Ft.	Aggregate Drains

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	I-77-1(7)15	

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GENERAL SUMMARY (1965 SPECIFICATIONS)

WAS-77-15.70
NOB-77-0.00

FROM SH. 15, Ko, 17 LINE NO.	ITEM	TOTAL QUANT	UNIT	DESCRIPTION CONSTRUCTION TYPE CODE 7221	No Federal Participation	Normal Participation
				PAVEMENT		
169	301	5,617	Cu. Yds	Bituminous Aggregate Base, 702.01(85-100) or 702.09 RT-12, as per plan	2	5,615
168	304	10,937	Cu. Yds	Aggregate Base		
7	304	55	M. Gals.	Water		
190	310	24,247	Cu. Yds	Subbase, Grading A or B as per plan		
191	310	6,699	Cu. Yds	Subbase	3	6,696
171	402	74	Cu. Yds	Asphalt Concrete (85-100)	1	73
181	404	442	Cu. Yds.	Asphalt Concrete (85-100)	1	441
174,175	407	25	Gals.	Tack Coat: 702.04 MS-2 or RS-1; or 702.02 RC-70 or RC-250		
173	408	3,519	Gals.	Bituminous Prime Coat, 702.09 RT-2 or RT-3		
176	409	477	Cu. Yds	Seal Coat Cover Aggregate No. 8		
177,178	409	14,331	Gals.	Seal Coat Bituminous Material as per plan		
179,180	409	683	Gals.	Seal Coat Bituminous Material: 702.09, RT-8 or RT-9; or 702.02, MC-800 or MC-3000		
183	451	117,407	Sq. Yds.	9" Reinforced Portland Cement Concrete Pavement		
186	609	240	Lin. Ft.	Standard Type 6 Concrete Curb		
187	609	260	Lin. Ft.	Standard Type 7 Concrete Curb		
188	609	990	Lin. Ft.	Standard Type 8 Concrete Curb		
185	611	1,154	Sq. Yds	Reinforced Concrete Approach Slabs (T=13")		
189	612	250	Sq. Yds	Standard Concrete Median		
193	Special	2,042	Cu. Yds.	Drainage Connection, Using No. 8 Aggregate		
197				BUILDING REMOVALS		
198,199	202	Lump	Lump	Removal of One 2 Story Frame Residence, Two Frame Sheds, Parcel 221 WL		
200,201,202	202	Lump	Lump	Removal of One 2 Story Brick Residence, Two Frame Garages, One Frame Barn, One Concrete Stave Silo, Ten Frame Sheds, One Concrete Block Shed; Parcel 222 WL		
203,204	202	Lump	Lump	Removal of One 2 Story Frame Residence, Five Frame Sheds, One Garage; Parcel 223 WL		
207,208	202	Lump	Lump	Removal of One 1½ Story Frame Residence, One Quonset Hut, Six Frame Sheds, Parcel 229 WL		
209,210	202	Lump	Lump	Removal of One 2 Story Frame Residence, Nine Frame Sheds, One Frame Barn, Parcel 230 WL		
212,213	202	Lump	Lump	Removal of One 2 Story Frame Residence, One Frame Barn, One Frame Shed; Parcel 236 WL		
214,215	202	Lump	Lump	Removal of One 2 Story Frame Residence, One Frame Barn, Eight Frame Sheds, Concrete block Garage; Parcel 243 WL		
216,217	202	Lump	Lump	Removal of One 1½ Story Frame Residence, One Frame Barn, Eight Frame Sheds, oil well casing, tubing, rods, tank and pump jack, Parcel 244 WL		
218	202	Lump	Lump	Removal of One Frame Shed; Parcel 237SL		
219	202	Lump	Lump	Removal of Two Frame Sheds; Parcel 239 WL		
220	202	Lump	Lump	Removal of Two Frame Sheds; Parcel 241 WL-SL		
224				STRUCTURES OVER 20 FOOT SPAN		
225				For Estimated Quantities		
226				Bridge No. WAS-77-1636 See Sheet No. 304		
227				Bridge No. WAS-77-1687 See Sheet No. 317A		
228				Bridge No. NOB-77-0076 See Sheet No. 323		
229				Bridge No. NOB-77-0136 See Sheet No. 327		
231		Lump	Lump	Field Office		
232		Lump	Lump	Construction Layout Stakes		
233	614	Lump	Lump	Maintaining Traffic		

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GENERAL SUMMARY

REFERENCE POINTS

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	I-77-1(7) 15	

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WAS - 77 - 15.70
NOB - 77 - 0.00

Sta. 833+31.15 ℄ I-77 POT
Nail & Flasher in 12" Oak
24.65
34.79
Nail & Flasher in 12" Oak

Sta. 839+95.65 ℄ I-77 POT
32.38
32.42
Nail & Flasher in 6" White Oak
Nail & Flasher in 12" Beech

Sta. 841+70.25 ℄ I-77 POT
Nail & Flasher in 12" Black Oak
28.25
20.35
Nail & Flasher in 12" Black Oak

Sta. 848+61.75 ℄ I-77 POT
Nail & Flasher in 12" Black Oak
29.99
32.55
Nail & Flasher in 12" Black Oak

Sta. 857+92.60 ℄ I-77 POT
Nail & Flasher in 15" Pear
46.85
26.58
Nail & Flasher in 12" Elm
95.30
Nail & Flasher in 24" Poplar

Sta. 872+29.40 ℄ I-77 POT
Nail & Flasher in 4" Oak in Wood
Nail & Flasher in 8" Elm in Woods
Stump
4.2'
Mud
42'

Sta. 874+04.56 ℄ I-77 POT
Iron Pin
U.S. 21
Iron Pin
Painted + on Bridge Railing
Nail & Flasher in Tel. Pole #10-75

Sta. 878+04.56 ℄ I-77 POT
Hub in Fence
26.55
34.18
Nail & Flasher in Power Pole

Sta. 887+84.46 ℄ I-77 P.I.
Nail & Flasher in twin Wild Cherry in Small Run
Hub 2' in Front of Power Pole
76.05

Sta. 887+84.46 ℄ I-77 P.I.
Nail & Flasher in 24" Poplar, 1' up
Nail & Flasher in 18" Elm, 5' up
Iron Pin 2' From Fence
Iron Pin 3' From Fence
250'+

Sta. 893+40.85 ℄ I-77 S.T.
59.00
46.97
Nail & Flasher in Power Pole
Garden

Sta. 903+84.80 ℄ I-77 POT
Nail & Flasher in 8" Lynn Tree
61.87
49.30
Nail & Flasher in 4" Hickory

Sta. 907+15.20 ℄ I-77 POT
Nail & Flasher in 12" Black Oak
36.70
34.25
Nail & Flasher in 12" Ash, 5' up

POT 4177± Back P.I. at Sta. 918+08.20 ℄ I-77
19.38
19.60
Nail & Flasher in 10" Beech
Nail & Flasher in 10" Black Oak

Sta. 918+08.20 ℄ I-77 P.I.
80.00
30.00
31.00
Hub
Hub

Sta. 925+81.75 ℄ I-77 S.T.
26.00
Small Ditch
30.00
80.00

Sta. 1209+45.00 ℄ Reloc. U.S. 21 P.I.
Nail in Corner of Garage
Garage
Nail & Flasher in Power Pole
43.90
53.80

Sta. 1220+53.56 ℄ Reloc. U.S. 21 P.I.
Iron Pin
Iron Pin
38.60
52.30

Sta. 13+37.55 ℄ I.R. 77 POT
Nail & Flasher in 6" Wild Cherry
Nail & Flasher in 6" Twin Elm
39.95
53.85

Sta. 18+93.15 ℄ I.R. 77 P.I.
29.85
33.00
hub
59.00
hub

POT - Sta. 566.59 Ahead of P.I. - Sta. 18+73.15
Nail & Flasher in 20" Twin Poplar
Nail & Flasher in 24" Poplar
38.18
22.05

Sta. 26+10.70 ℄ I.R. 77 - S.T.
Nail & Flaser in 6" Hickory
Nail & Flasher in 6" Maple
19.65
32.05

Sta. 27+54.35 ℄ I-77 POT
Nail & Flasher in 8" Black Oak
Nail & Flasher in 6" White Oak
41.80
32.20

Sta. 35+49.9 ℄ I.R. 77 POT
Nail & Flasher in 8" Elm
Nail & Flasher in 6" Hickory

Sta. 36+95.01 ℄ I-77 POT
Nail & Flasher in 8" Hickory
Nail & Flasher in 6" Hickory
30.58
28.35

Sta. 53+18.50 ℄ I.R. 77 P.I.
Back Tangent
Hub in Fence
115.00
54.25

Sta. 67+15.84 ℄ I.R. 77 S.T.
Nail & Flasher in 12" Elm
Nail & Flasher in 15" Elm
C.R. 2
Hub on Creek Bank
Hub on Creek Bank
Creek

Sta. 83+48.90 ℄ I.R. 77 POT
55.35
18"
15"
15"
Nail & Flasher in 15" Hickory

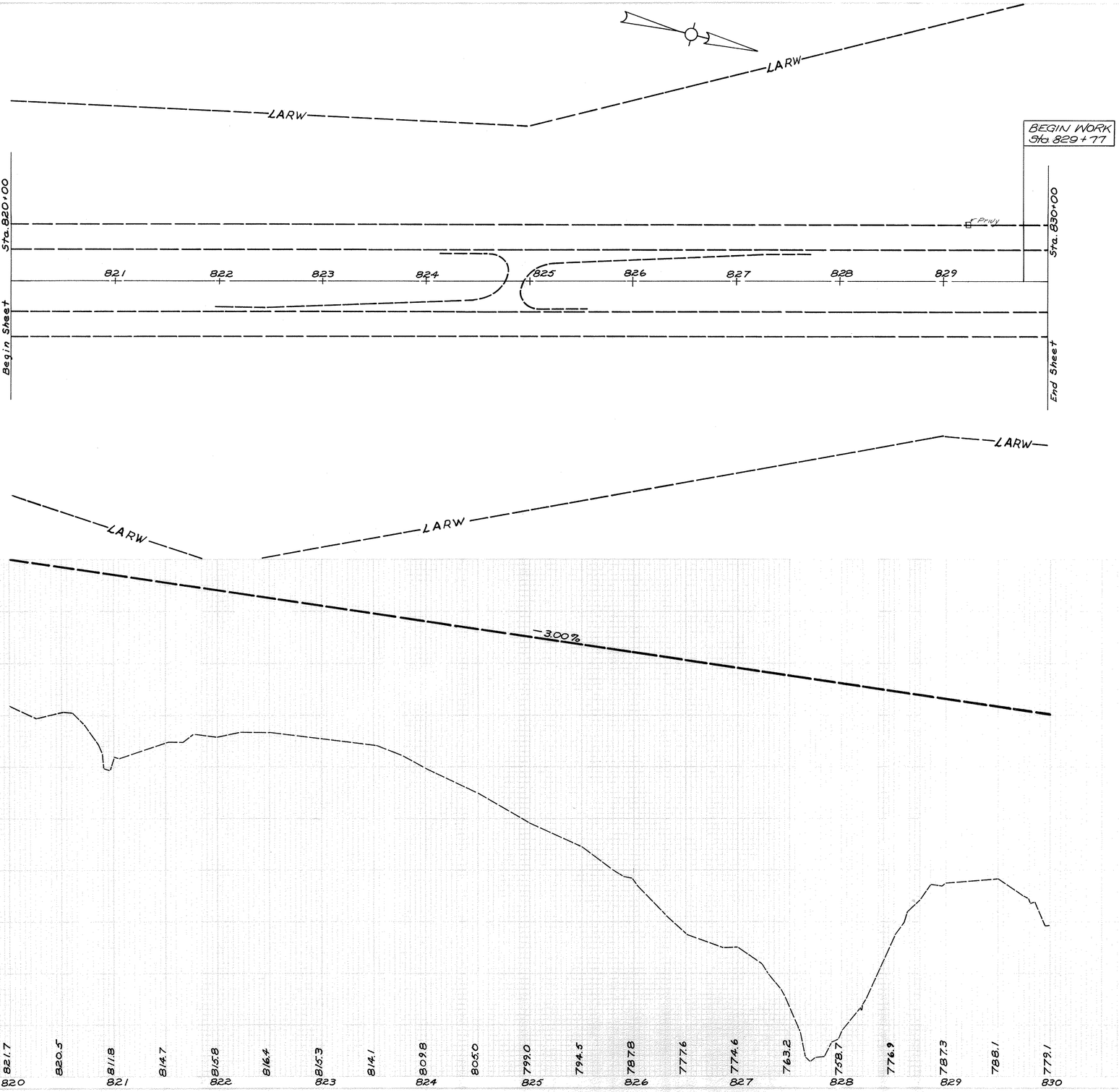
Sta. 85+58.86 ℄ I.R. 77 POT
Nail & Flasher in 6" Wild Cherry 5' up
73.25
38.58
Nail & Flasher in 10" Sassafras 7' up.

REFERENCE POINTS

WAS - 77 - 15.70
NOB - 77 - 0.00

I-77-1(7)15

19

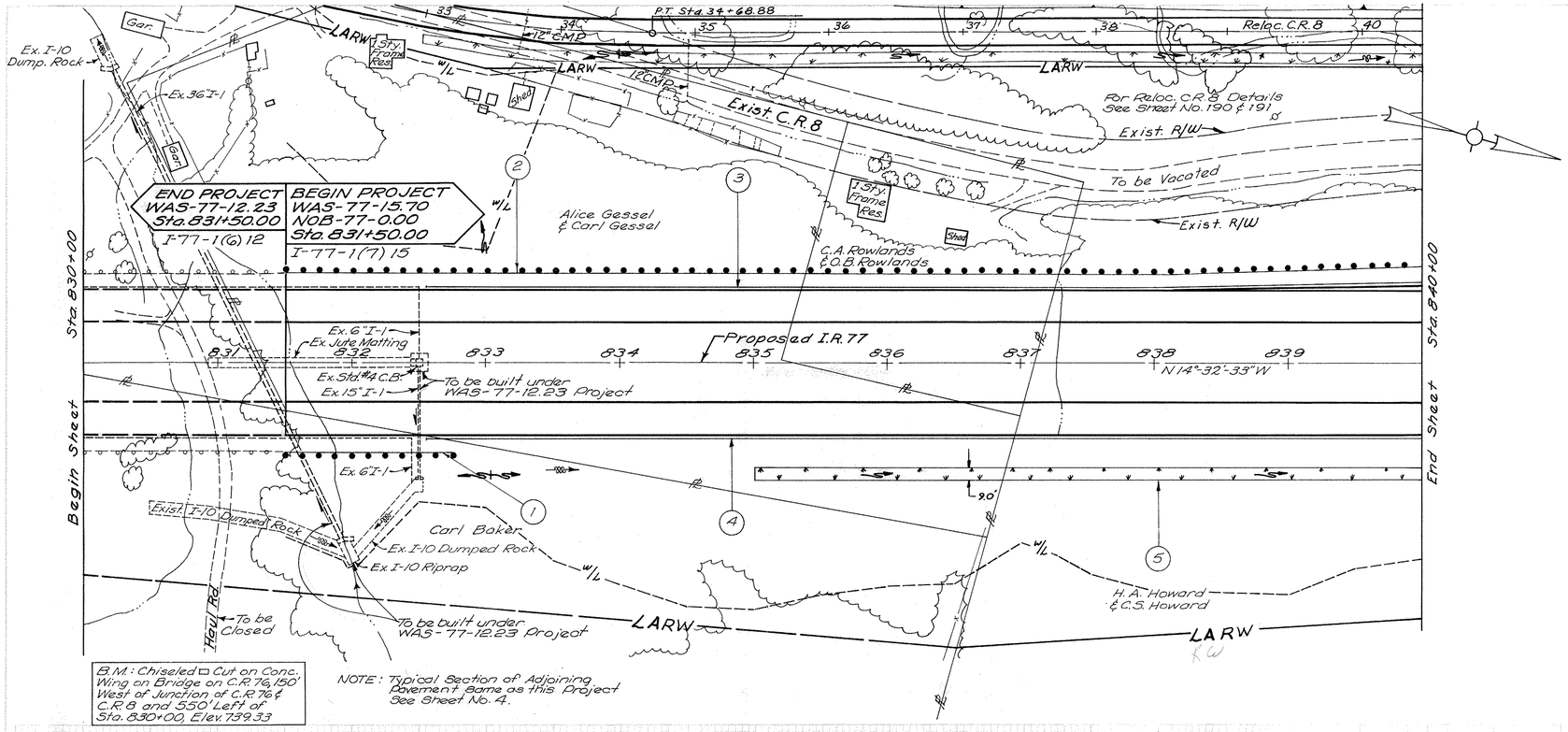


Sta. 820+00 to Sta. 830+00

WAS - 77 - 15.70
NOB - 77 - 0.00

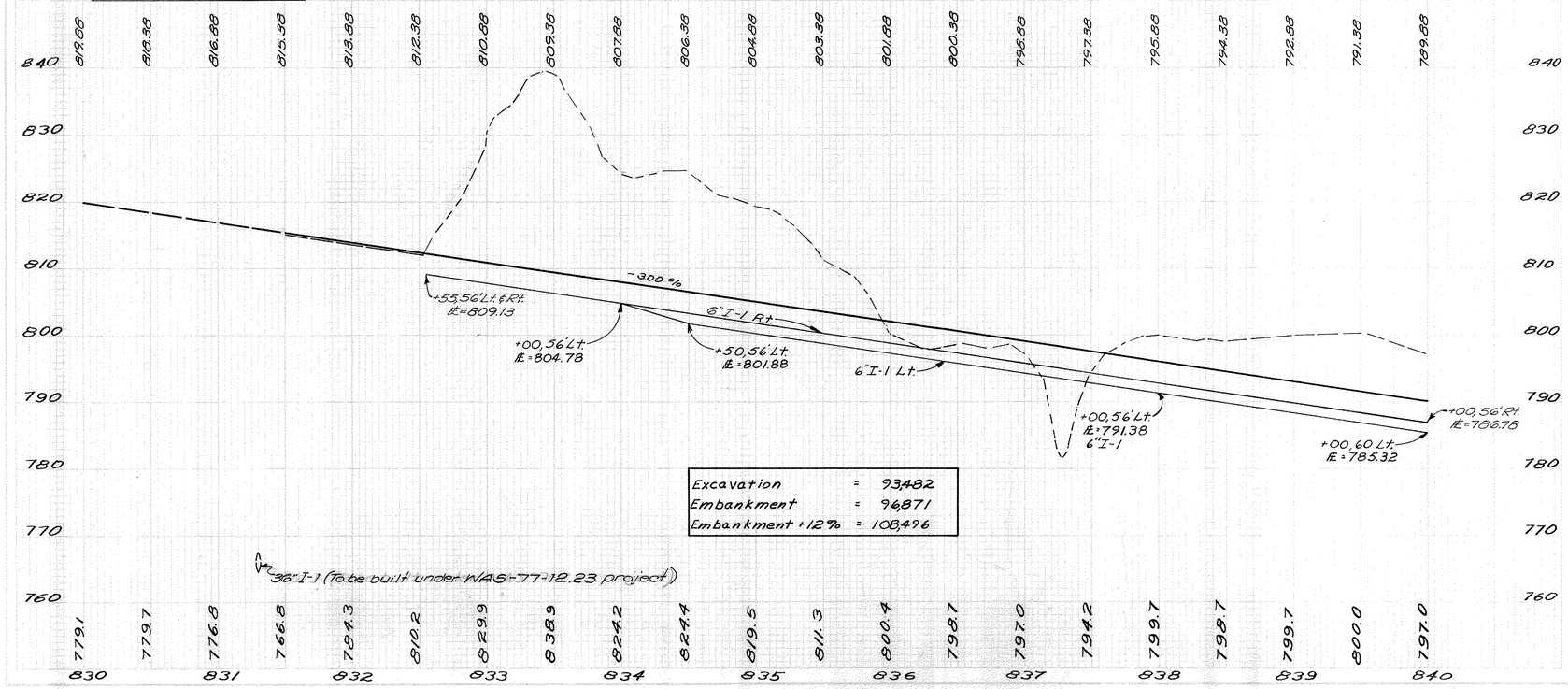
I-77-1(7)15

20



B.M.: Chiseled □ Cut on Conc. Wing on Bridge on C.R. 76, 150' West of Junction of C.R. 76 & C.R. 8 and 550' Left of Sta. 830+00, Elev. 739.33

NOTE: Typical Section of Adjoining Pavement same as this Project See Sheet No. 4.



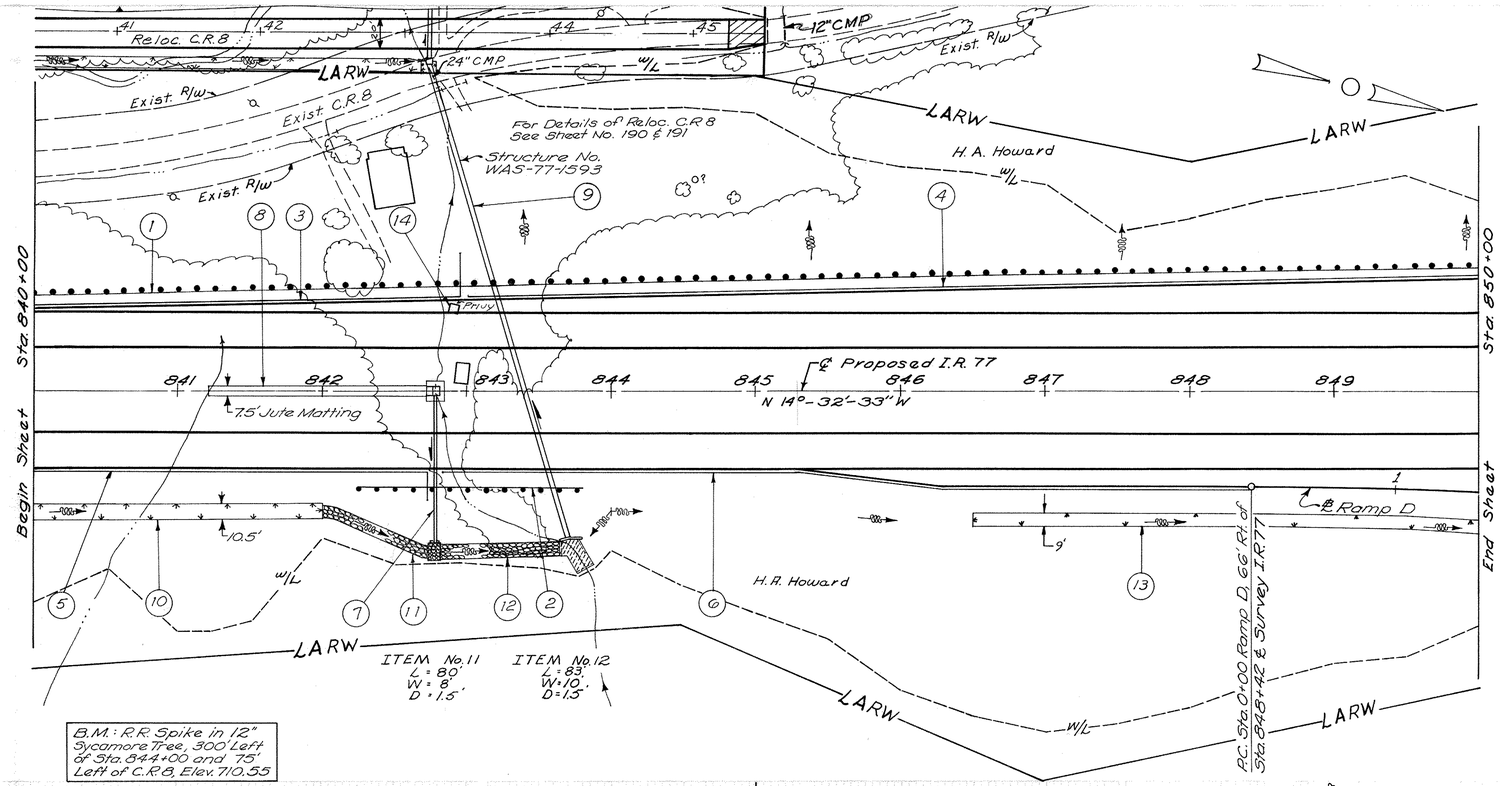
		I-1	I-15	L-10	
		I-1	6" Cl. I-3 M 64 (Fm)	Deep	Sod
		6" Cl. I-3		Lin. Ft.	Lin. Ft.
		Lin. Ft.	Lin. Ft.		Sq. Yds.
1	36.831+50 - 36.832+75	Rt.			125
2	36.831+50 - 36.840+00	Lt.			850
3	36.832+55 - 36.840+00	Lt.		600	425
4	36.832+55 - 36.840+00	Rt.			745
5	36.835+00 - 36.840+00	Rt.			500

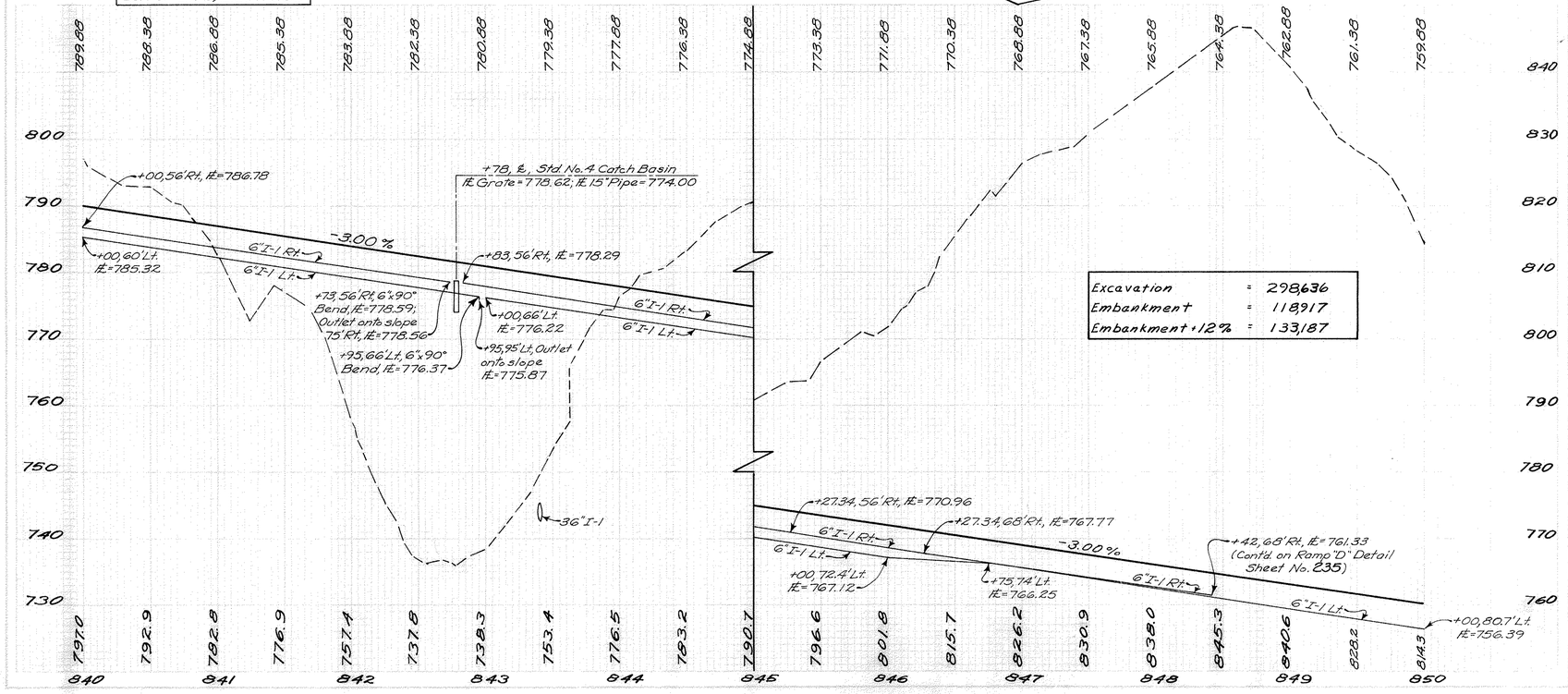
600 850 975 500

STA. 830+00 to STA. 840+00

WAS - 77 - 15.70
NOB - 77 - 0.00

I-77-1(7)15



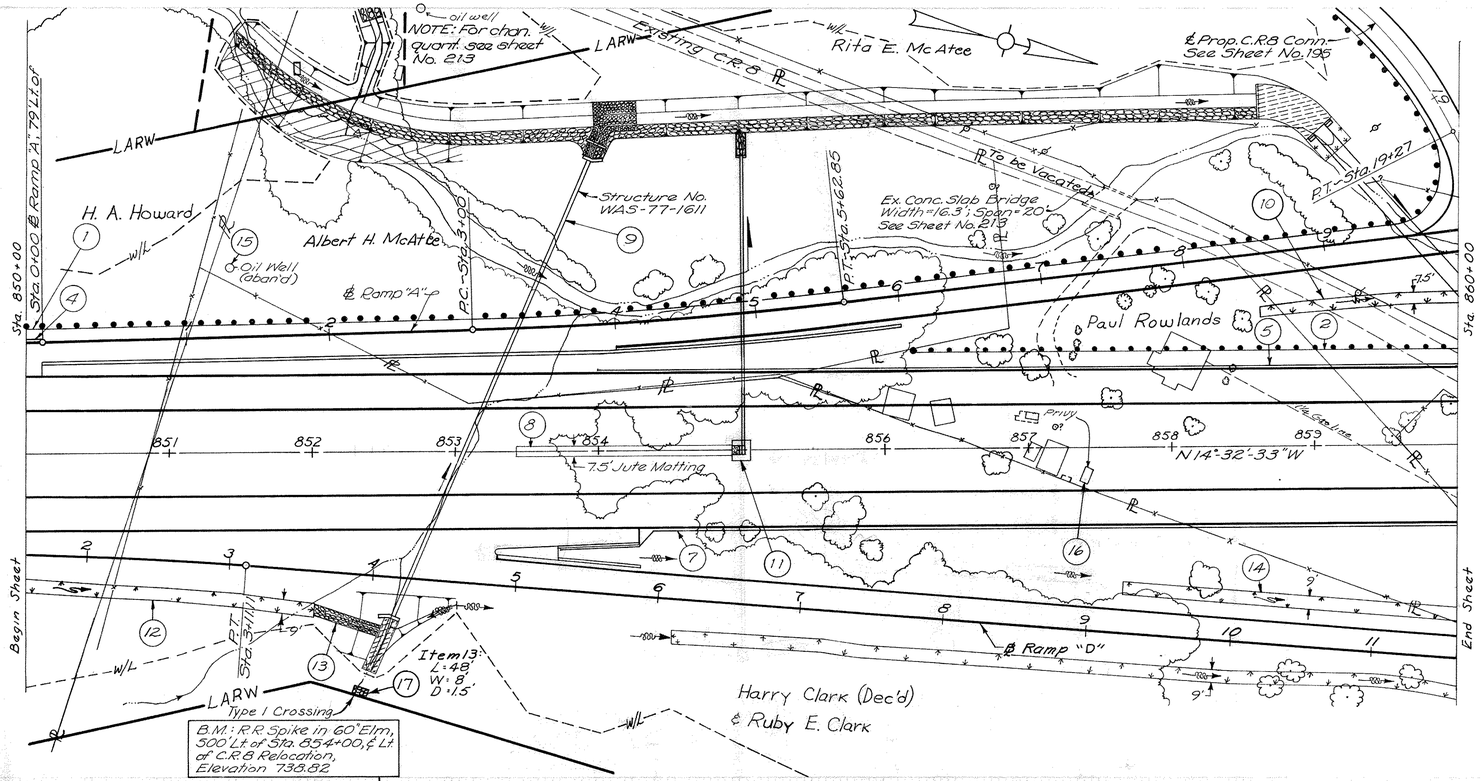


| | | |

WAS - 77 - 15.70
NOB - 77 - 0.00

I-77-1(7)15

22



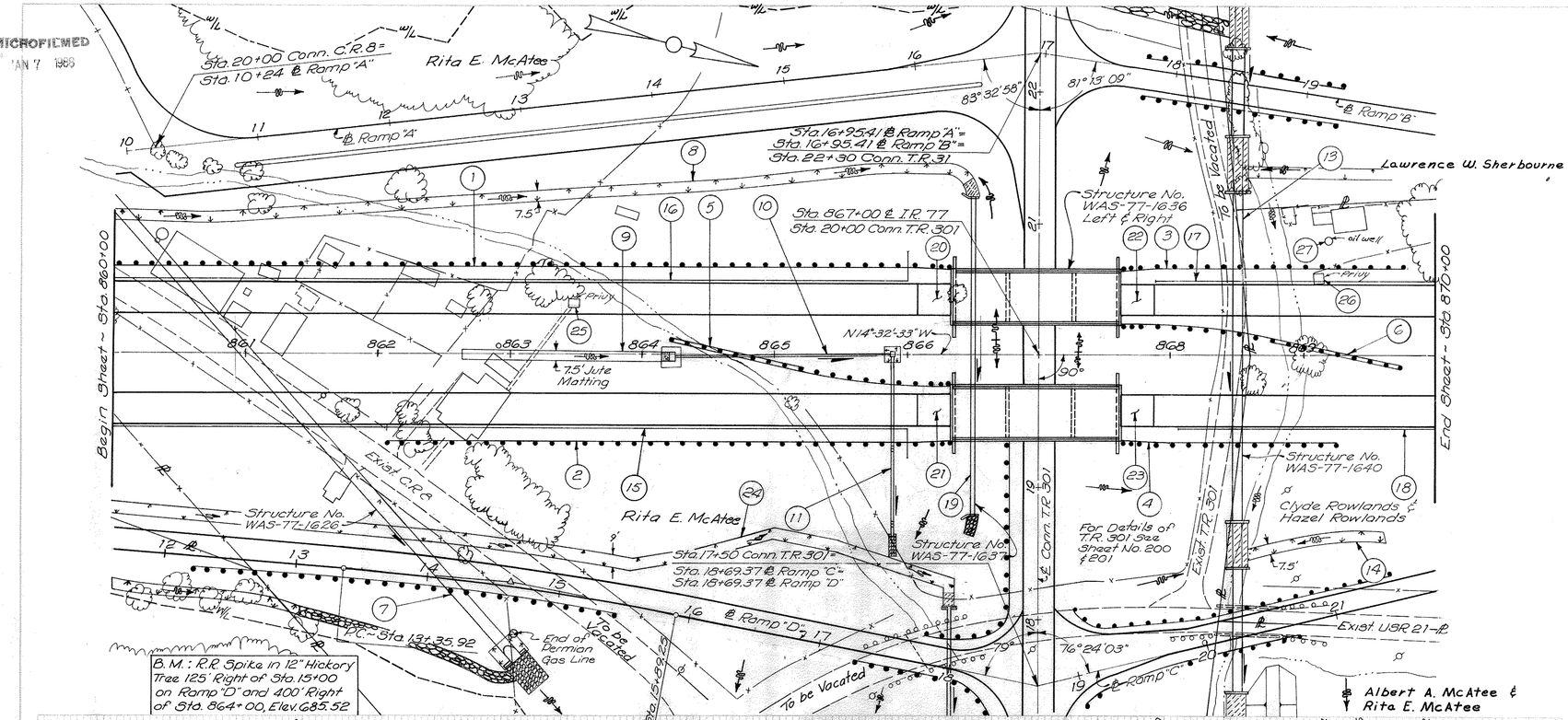
| | | |

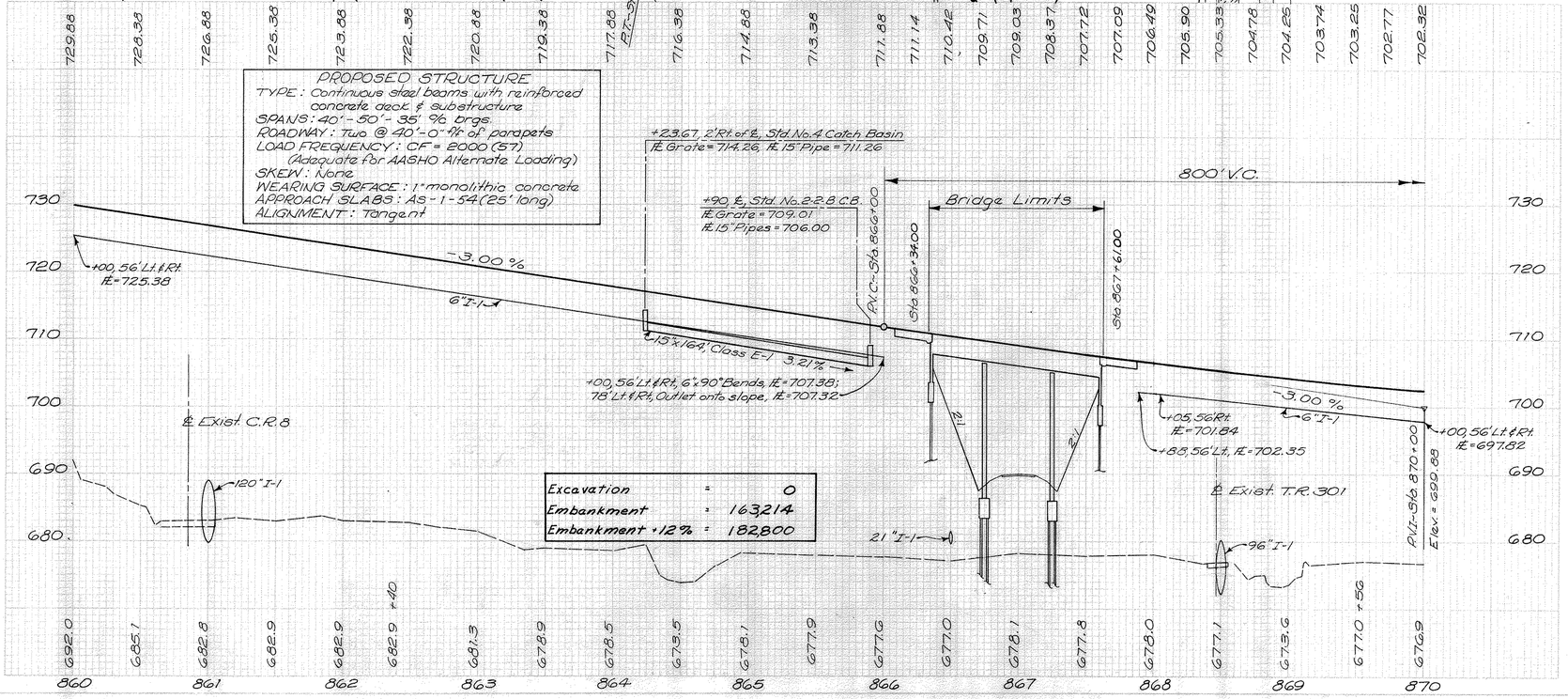
MICROFILMED
JAN 7 1988

WAS - 77 - 15.70
NOB - 77 - 0.00

FED. RD. DIVISION	STATE	PROJECT	TYPE FUNDS
2	OHIO	I-77-1(7)15	

23





Sta. 860+00 to Sta. 870+00

* Sec. M 7.4(g), 5-3 Gage, as per plan

** Sec. M 7.10.6(a) with 1/8 Vinylad Liner, as per plan

ESTIMATED QUANTITIES

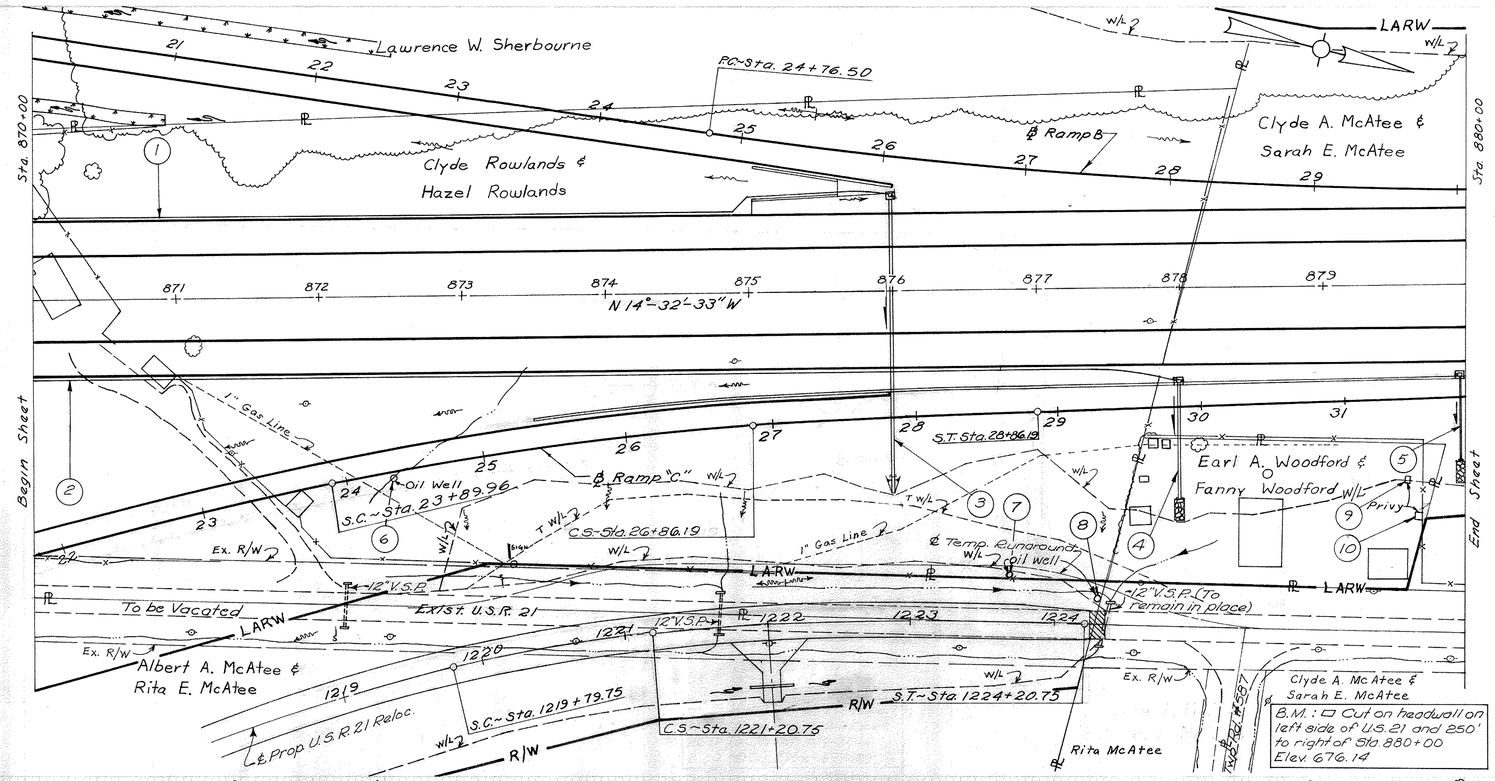
REF. NO.	STATION TO STATION	SIDE	I-7 Approach Slab T=13" Sq. Yds. Each	I-8 Std. No. 4 C.B. Cu. Yds. Each	I-10 O.E.C.P. Barrier Sq. Yds. Lin. Ft.	I-15 Deep Barrier Lin. Ft.	L-10 Sod Sq. Yds.	I-8 Std. 2-2.8 C.B. Each	6" I-3	15" E-1 Lin. Ft.	15" E-1 Lin. Ft.	15" F-4 Lin. Ft.	120" I-1 4"** Lin. Ft.	96" I-1 4"** Lin. Ft.	21" I-1 8½" W4.6 (C) Lin. Ft.	15" E-1 2:1 Lin. Ft.	15" F-4 Lin. Ft.
1	Sta. 860+00 ~ Sta. 866+32	℄			6.32												
2	Sta. 862+07 ~ Sta. 866+32	℄			4.25												
3	Sta. 867+63 ~ Sta. 869+75.5	℄			212.5												
4	Sta. 867+63 ~ Sta. 869+25.5	℄			162.5												
5	Sta. 864+21 ~ Sta. 866+32	℄			112.5	100											
6	Sta. 867+63 ~ Sta. 869+74	℄			112.5	100											
7	Sta. 861+00	℄					57										
8	Sta. 860+00 ~ Sta. 866+54	℄		63	144		530										
9	Sta. 862+66.67 ~ Sta. 864+16.67	℄															
10	Sta. 864+23.67 ~ Sta. 865+90	℄	1														
11	Sta. 865+90	℄		5			11	1									
19	Sta. 868+50	℄					41										
14	Sta. 868+53 ~ Sta. 869+62	℄					86										
15	Sta. 860+00 ~ Sta. 866+00	℄							6.12	10							
16	Sta. 860+00 ~ Sta. 866+00	℄							6.12	10							
17	Sta. 867+88 ~ Sta. 870+00	℄							2.12								
18	Sta. 868+05 ~ Sta. 870+00	℄							1.98								
19	Sta. 866+50	℄															
20	Sta. 866+09 ~ Sta. 866+34	Lt.		12	9		6										
21	Sta. 866+09 ~ Sta. 866+34	Rt.															
22	Sta. 866+09 ~ Sta. 867+86	Lt.															
23	Sta. 867+61 ~ Sta. 867+86	Rt.															
24	Sta. 860+00 ~ Sta. 866+36	℄															
25	Sta. 863+47	Lt.					642										
26	Sta. 863+10	Lt.															
27	Sta. 869+18	Lt.															
	SUB-TOTALS		1	80	153	200	1393	1	1631	20	166	68	242	252	606	74	
	TOTALS		268	1	1657.0	200	1393	1	1631	20	166	68	242	252	606	74	

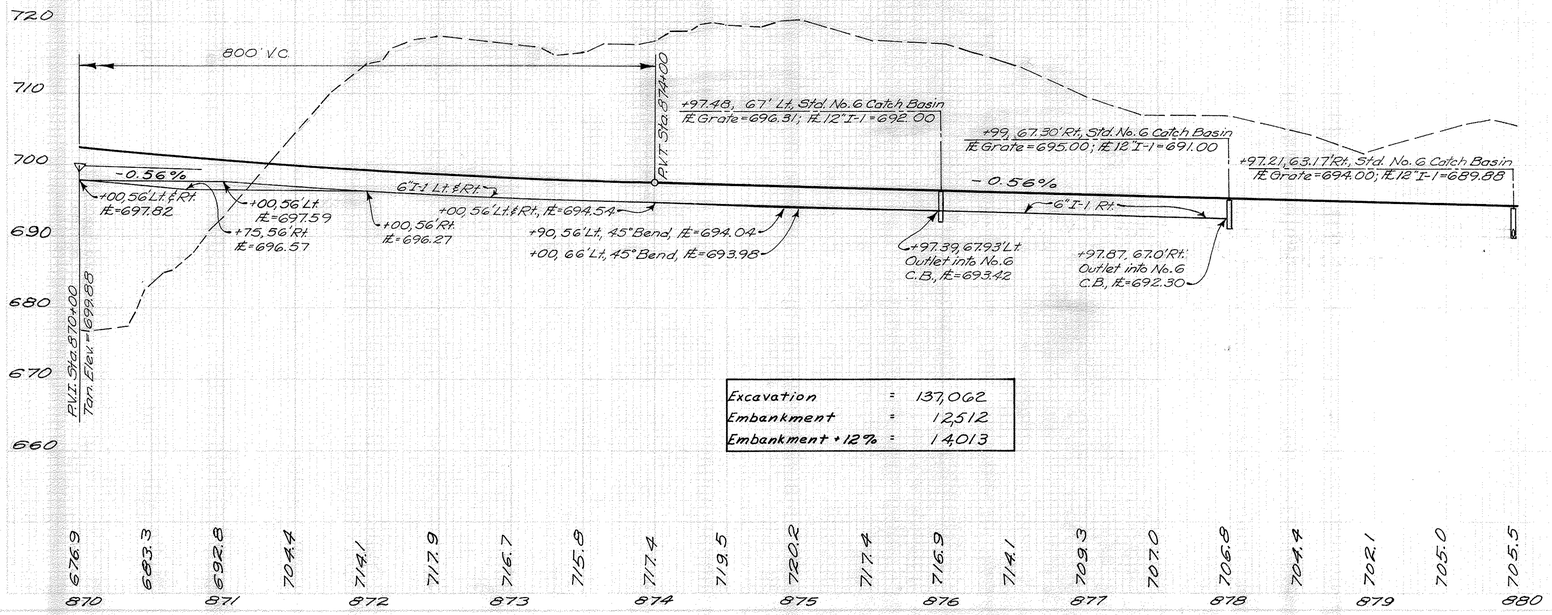
| SEE SHEET NO. | | | | | | | | | | | | | | |

WAS - 77-15.70
NOB - 77-0.00

24

I-77-1(7)15





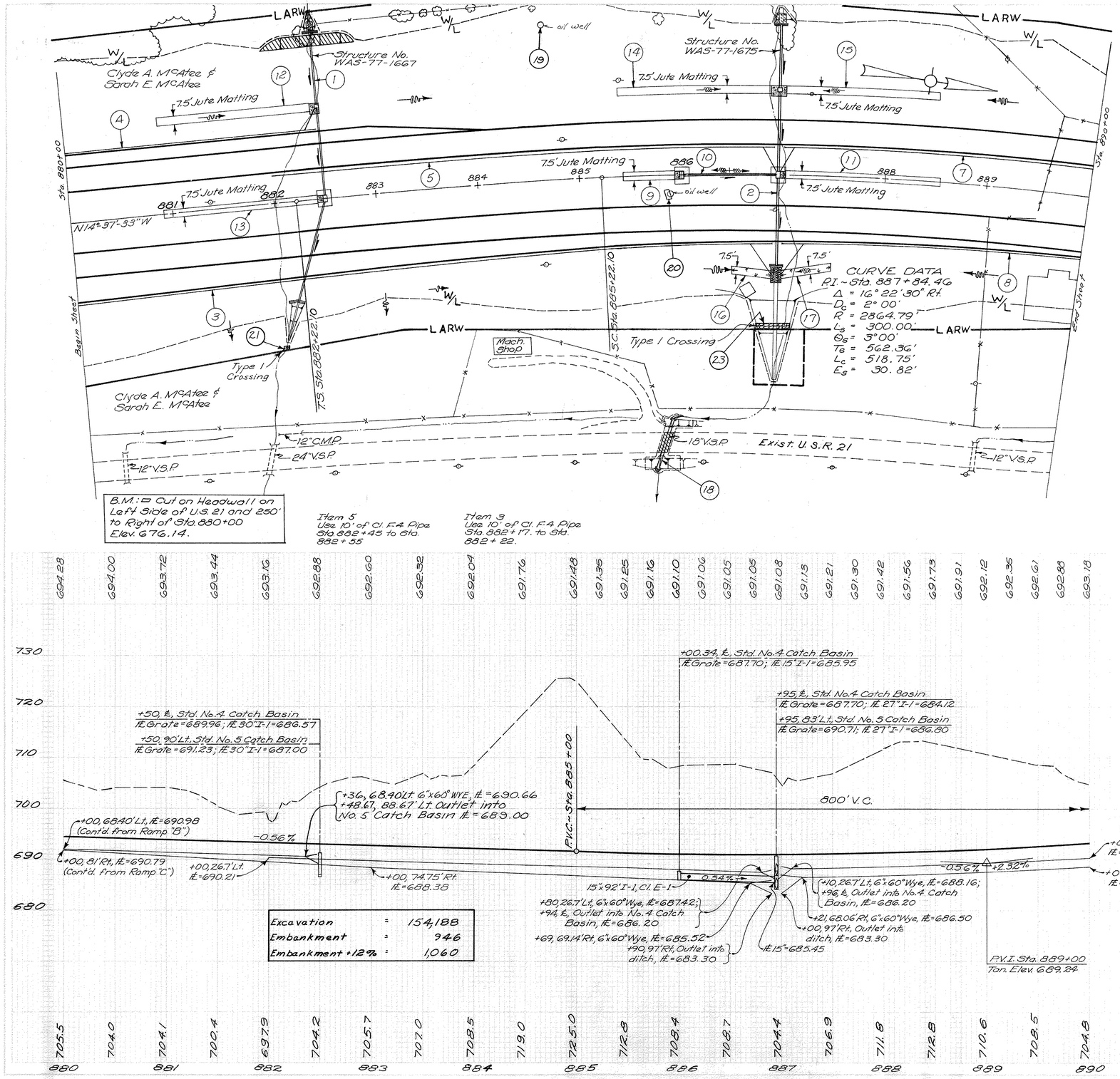
Excavation	= 137,062
Embankment	= 12,512
Embankment +12%	= 14,013

| | | |

WAS - 77 - 15.70
NOB - 77 - 0.00

I-77-1(7)15

25



STA. 880+00 to STA. 890+00

| | | |

MICROFILMED
JAN 7 1986

WAS - 77 - 15.70
NOB - 77 - 0.00

PROJECT			26
STATE	I-77-1(7) 15		

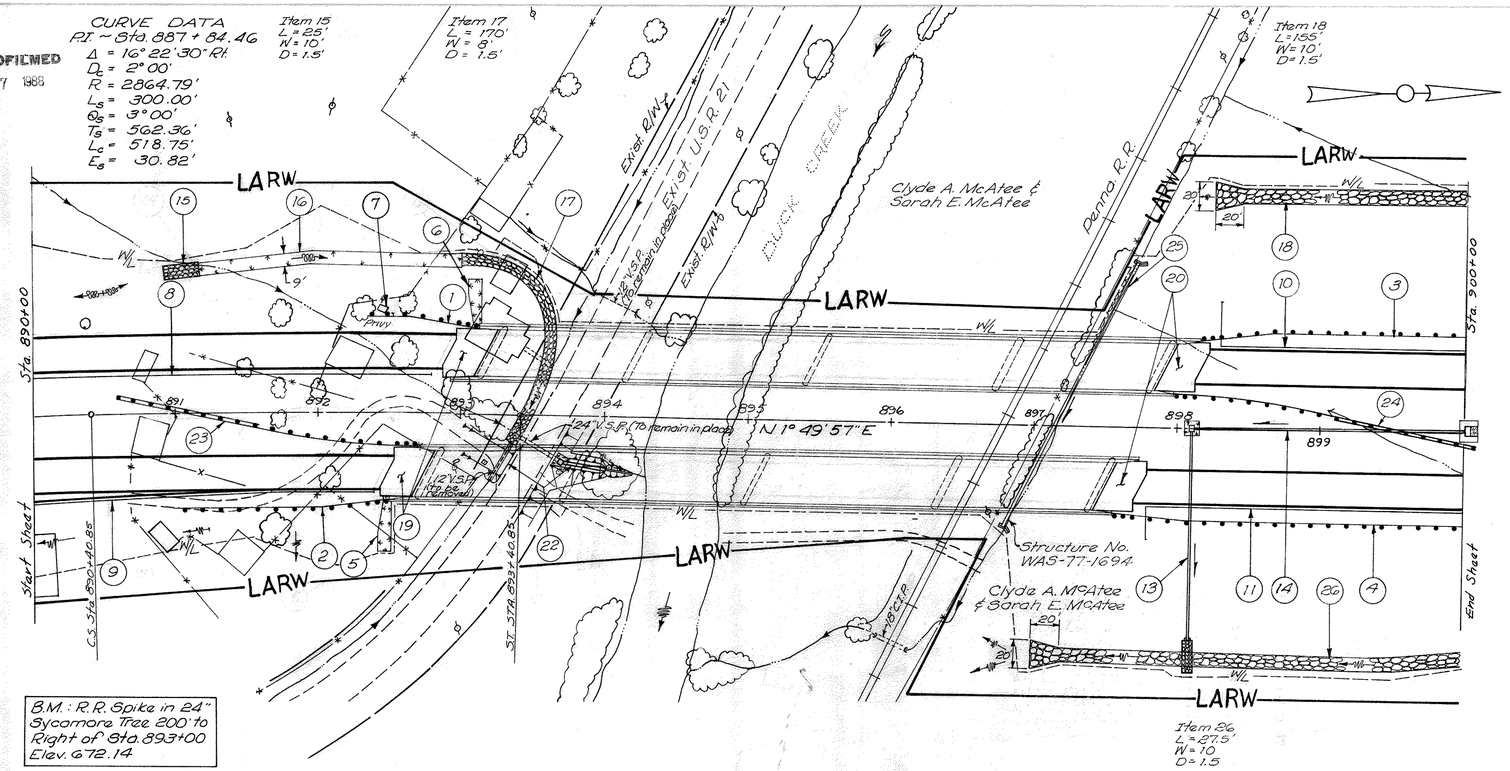
CURVE DATA
P.I. ~ Sta. 887 + 84.46
Δ = 16° 22' 30" Rt.
D_c = 2° 00'
R = 2864.79'
L_s = 300.00'
θ_s = 9° 00'
T_s = 562.36'
L_c = 518.75'
E_s = 30.82'

Item 15
L = 25'
W = 10'
D = 1.5'

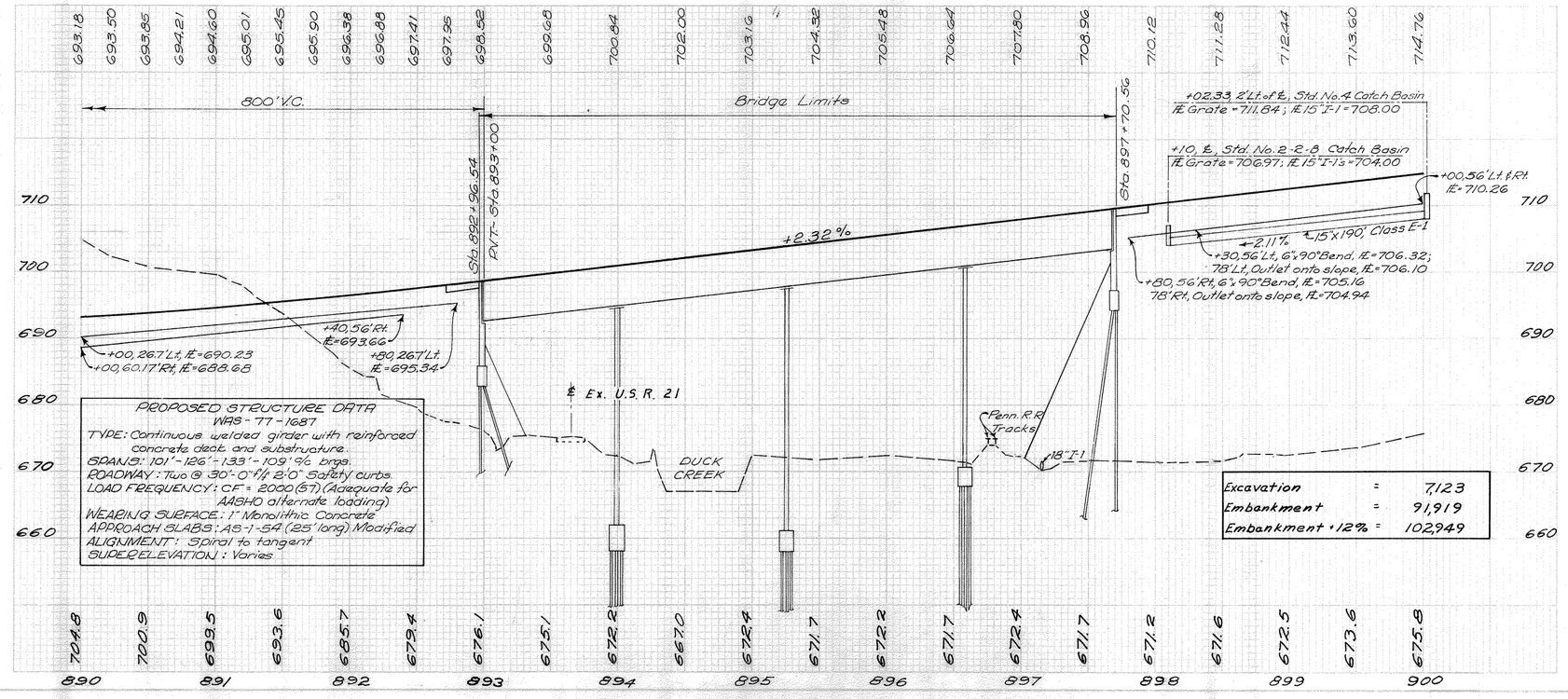
Item 17
L = 170'
W = 9'
D = 1.5'

Item 18
L = 155'
W = 10'
D = 1.5'

Item 26
L = 87.5'
W = 10
D = 1.5



B.M.: R.R. Spike in 24" Sycamore Tree 200' to Right of Sta. 893+00 Elev. 672.14



PROPOSED STRUCTURE DATA
WAS - 77 - 1687
TYPE: Continuous welded girder with reinforced concrete deck and substructure.
SPANS: 101' - 126' - 133' - 109' c/c brgs.
ROADWAY: Two @ 30'-0" f/f & 2'-0" Safety curbs
LOAD FREQUENCY: CF = 2000 (57) (Adequate for AASHO alternate loading)
WEARING SURFACE: 1" Monolithic Concrete
APPROACH SLABS: AS-1-54 (25' long) Modified
ALIGNMENT: Spiral to tangent
SUPERELEVATION: Varies

Excavation	=	7,123
Embankment	=	91,919
Embankment +12%	=	102,949

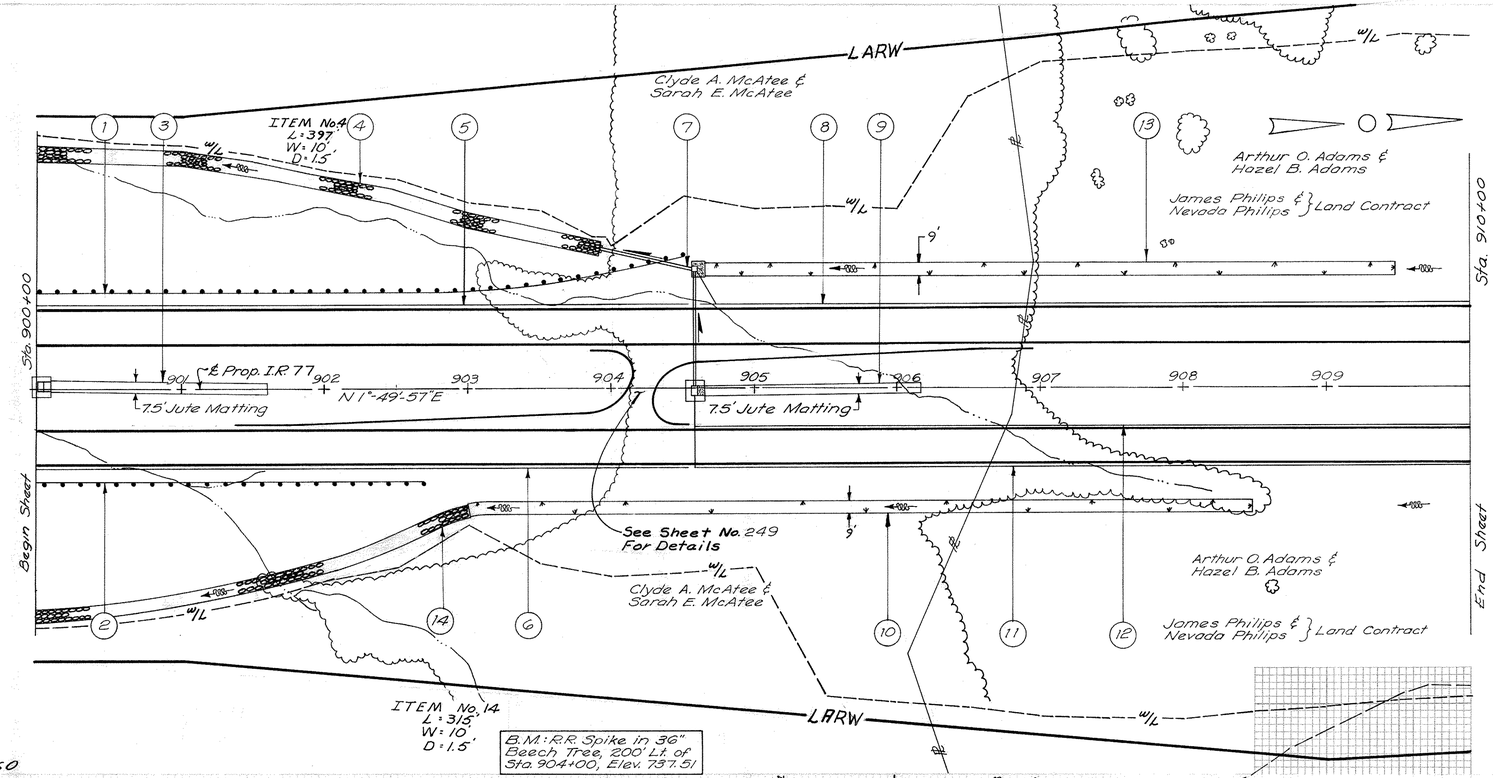
ESTIMATED QUANTITIES

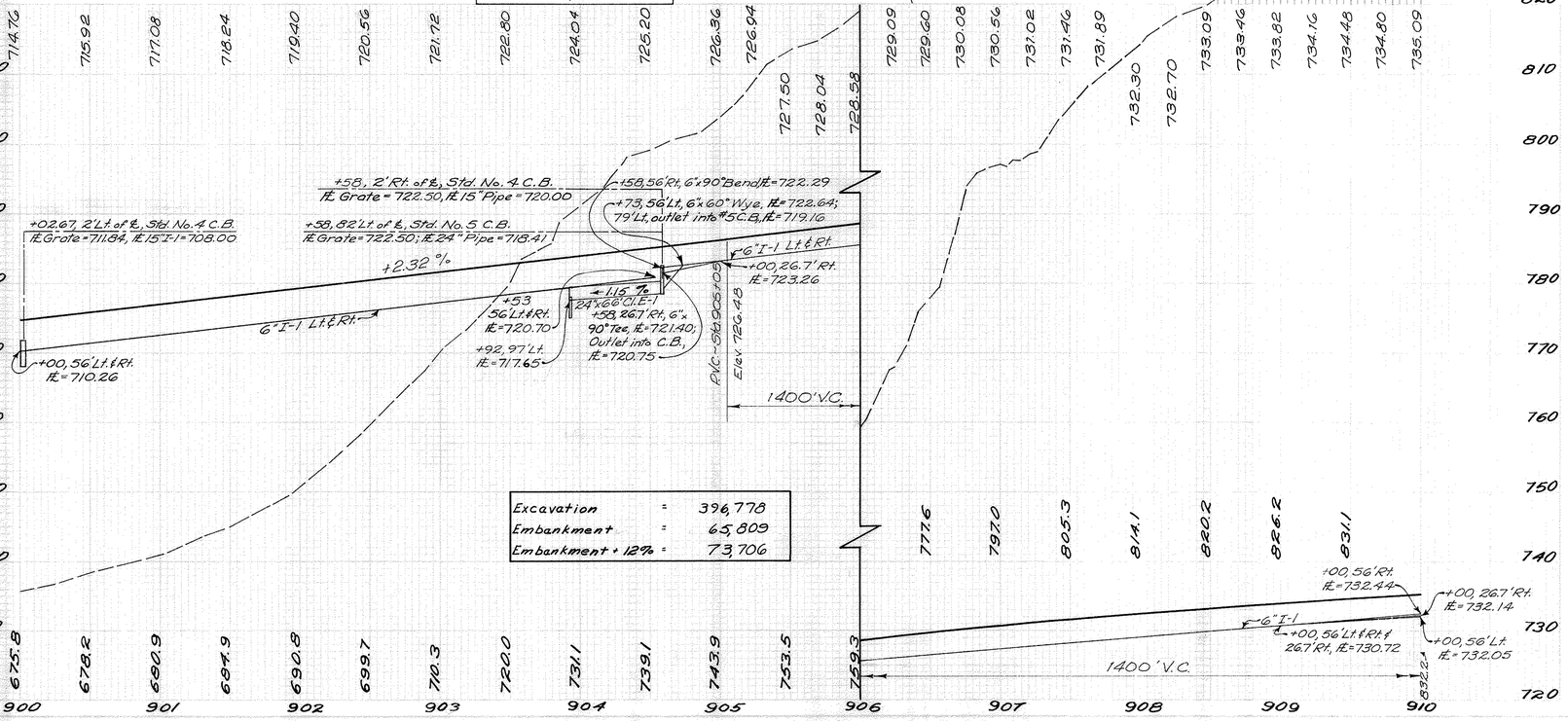
| REF NO. | STATION TO STATION | SIDE | * Sec. M-6.4 (h) 1-15 1-15 Dual Barrel Lin. Ft. | 24" F-4 ** Lin. Ft. | 18" E-1 Lin. Ft. | 15" F-4 Lin. Ft. | 15" E-1 Lin. Ft. | 6" I-3 * Lin. Ft. | 6" F-4 Lin. Ft. | 6" B-1 Lin. Ft. | I-1 | I-10 Std. O.R.C.P. Sq. Yds. | I-10 Slope Prot. Sq. Yds. | L-10 Sod Sq. Yds. | I-8 Std. No. 4 C.B. Each | I-8 Std. 2-2-8 C.B. Each | * Sec. M-6.4 (c) or Sec. M-106.1.5 L-120 1-15 1.5 Ga. 25° Bend Each | I-7 1-8 Std. 7+13" No. 2-3 C.B. | S-22 Special Element of priv. vaults Each | Sq. Yds. | CU. Yds. | CU. Yds. | CU

WAS · 77 · 15.70
NOB · 77 · 0.00

I-77-1(7)15

27





* Class I-3, Sec. M-6.4(7)

| | | |

WAS - 77 - 15.70
NOB - 77 - 0.00

I-77-1(7)15

28

Curve Data
P.I. ~ Sta. 918+08.20
Δ = 23° 01'-10" Lt.
D_e = 1° 45'
R = 3274.05'
L_s = 250'
θ_s = 2°-11'-15"
T_s = 791.85'
E_s = 68.01'
L_c = 1065.40'

Type I Crossing

LARW

W/L

Sta. 910+00

T.S. ~ Sta. 910+16.35

S.C. ~ Sta. 912+66.35

Sta. 920+00

Structure No. WAS-77-1723

Arthur O. Adams
Hazel B. Adams

James Philips & Nevada Philips } Land Contract

Iva Mae Luke

911 912 913 914 915 ℄ Proposed I.R.77 916 917 918 919

Begin Shaat

End Shaat

7.5' Jute Matting

N 11°-49'-54" E

12'

7.5'

Arthur O. Adams & Hazel B. Adams

James Philips & Nevada Philips } Land Contract

Item 6
L = 222
W = 8'
D = 1.5'

Iva Mae Luke

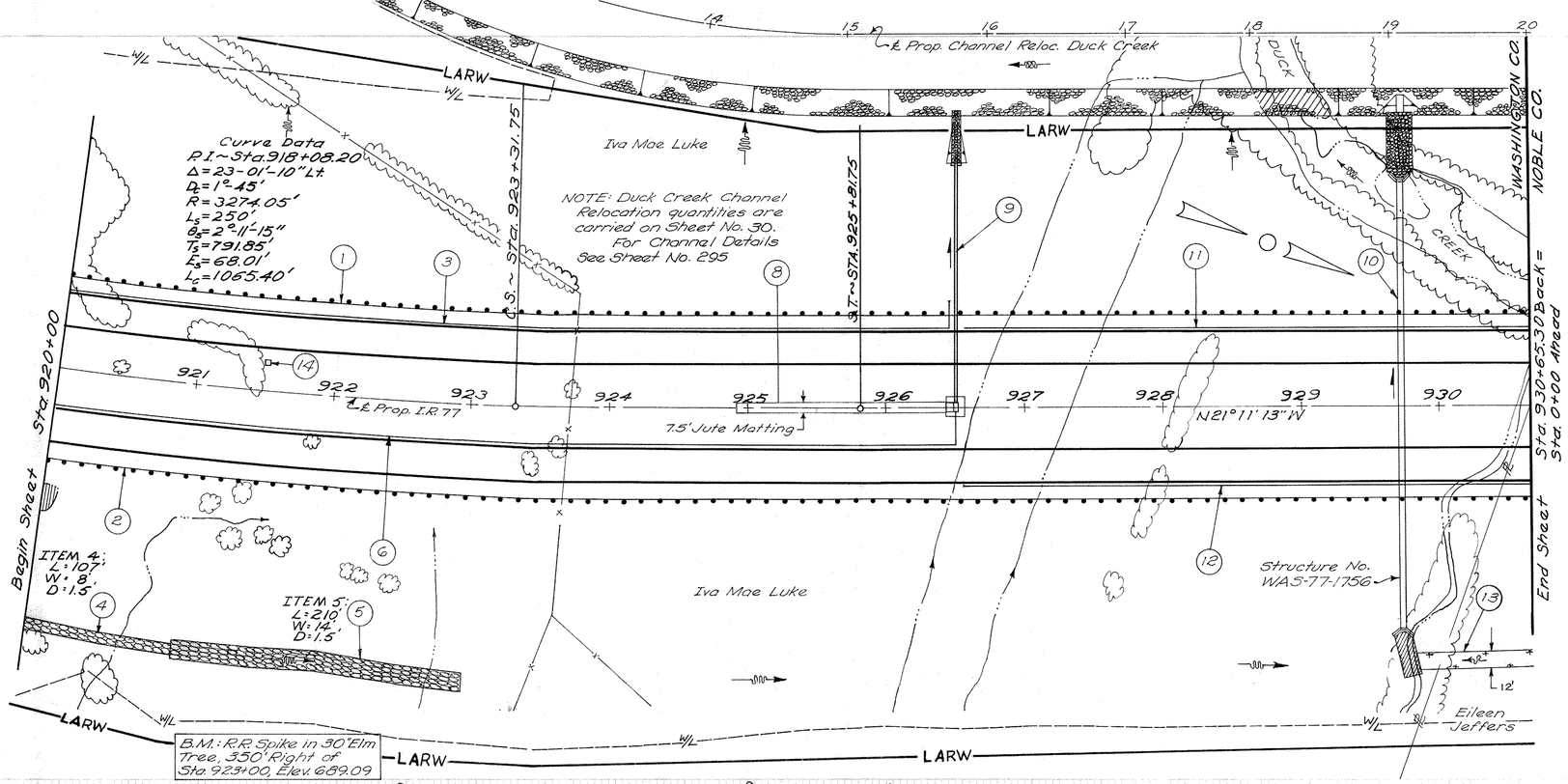
1 Sta. 910+00 – Sta. 920+00 Lt.
2 Sta. 910+00 – Sta. 910+25 Ex.
3 Sta. 910+00 – Sta. 920+00 Ex.
4 Sta. 910+75 – Sta. 920+00 Lt.
5 Sta. 917+00 – Sta. 919+00 Ex.
6 Sta. 918+00 – Sta. 920+00 Ex.
7 Sta. 919+50 – Sta. 920+00 Ex.
8 Sta. 911+57 – Sta. 912+37 Ex.
9 Sta. 916+35 – Sta. 917+00 Ex.
10 Sta. 915+85 – Sta. 916+35 Ex.
11 Sta. 912+40 ℄ Ex.
12 Sta. 912+50 ℄ Ex.
13 Sta. 914+81 – Sta. 914+92 Lt.

| | | |

WAS 77 - 15.70
NOB 77 - 0.00

I-77-1(7)15

29

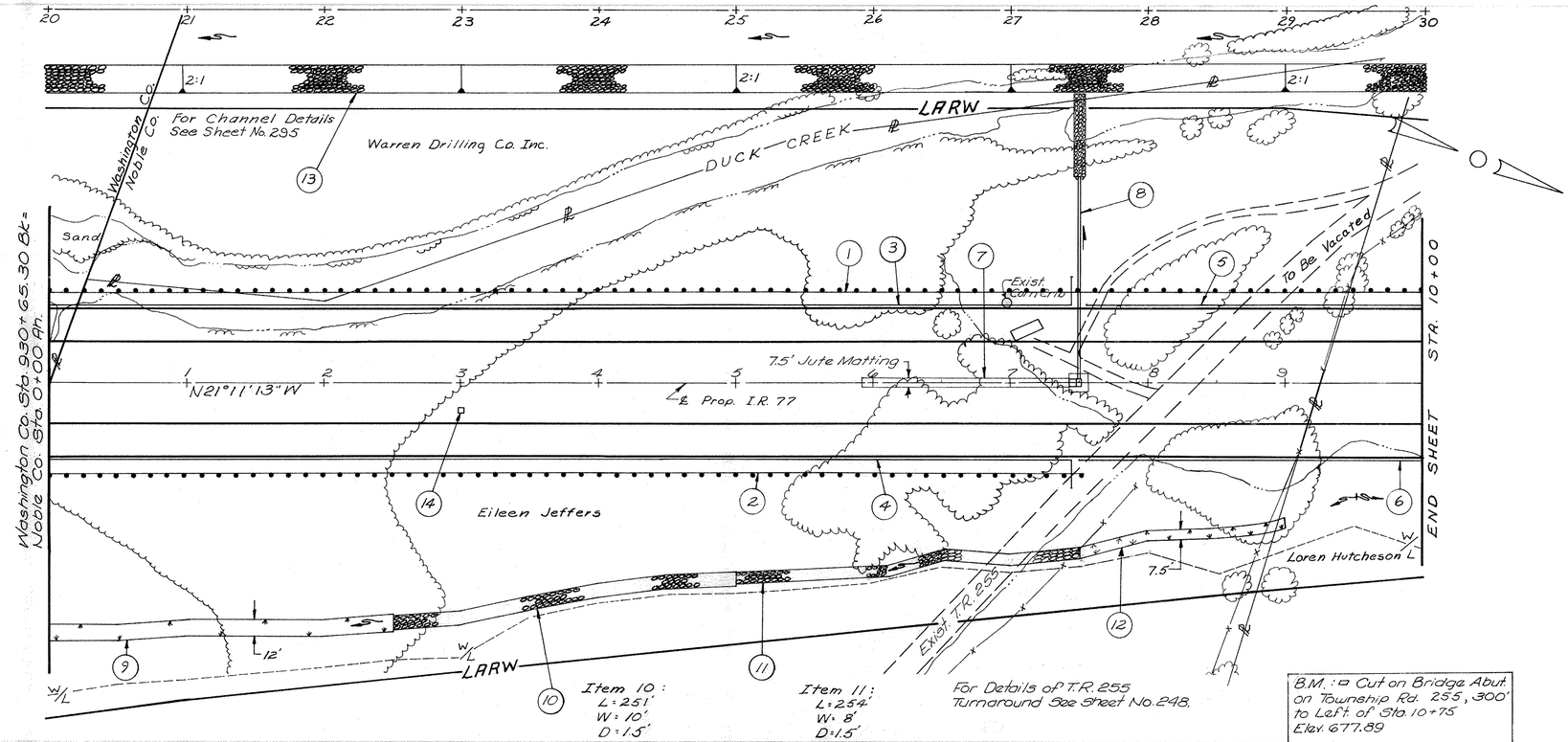


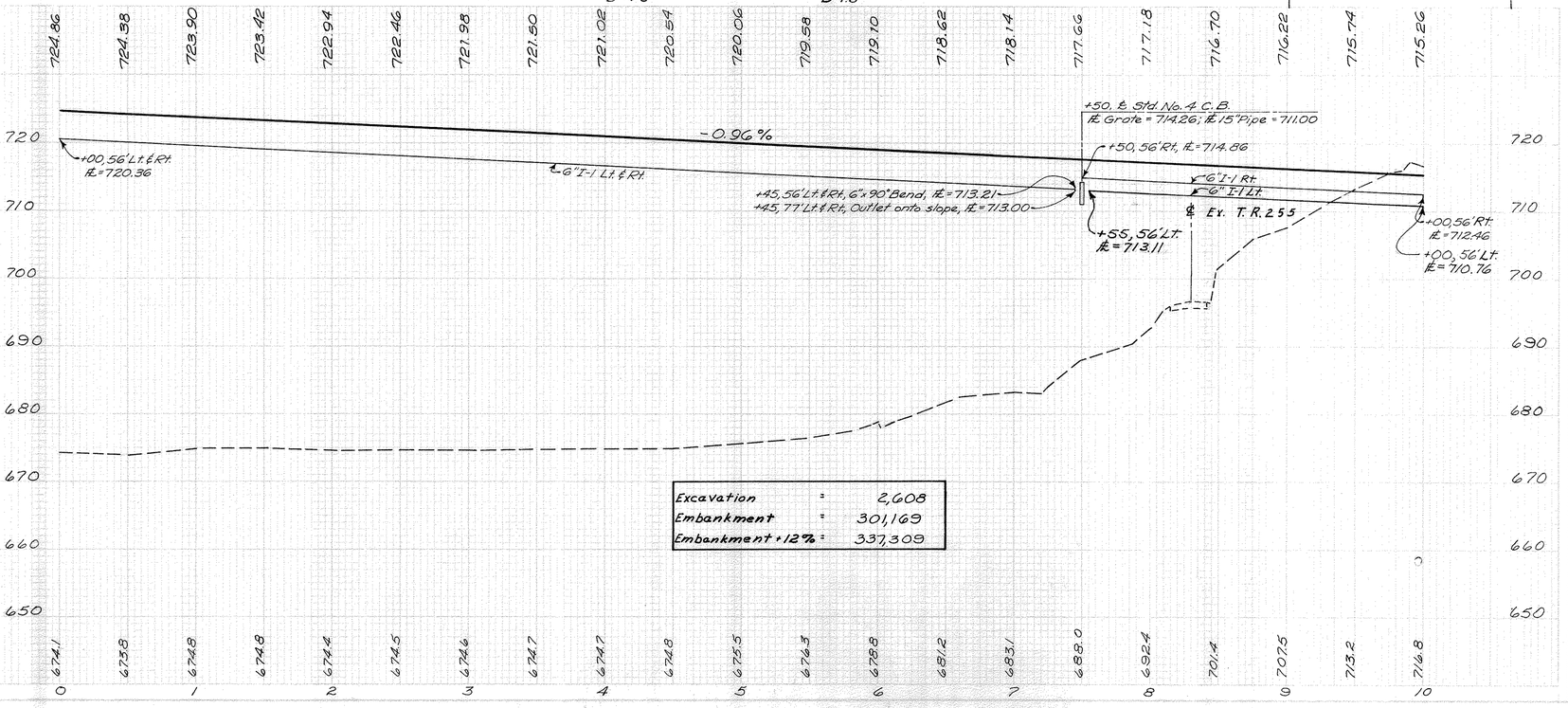
| | | |

WAS - 77 - 15.70
NOB - 77 - 0.00

I-77-1(7)15

30





Excavation	=	2,608
Embankment	=	301,169
Embankment +12%	=	337,309

ESTIMATED QUANTITIES

SEE NO.	ITEM	UNIT	TOTAL	I-1 6"	I-1 6"	I-3 6"	I-4 6"	I-5 15"	I-5 15"	I-5 6"-7.3 90° Bend	I-5 10 Ft. 25° Bend Each	Special Settlement Platform Each
						Mitered		B-1	F-4			
1	Sta. 0+00 - Sta. 10+00	Lin. Ft.	1000									
2	Sta. 0+00 - Sta. 7+47.2	Lin. Ft.	747.2									
3	Sta. 0+00 - Sta. 7+45	Lin. Ft.		735				10			1	
4	Sta. 0+00 - Sta. 7+45	Lin. Ft.		735				10			1	
5	Sta. 7+55 - Sta. 10+00	Lin. Ft.		245								
6	Sta. 7+50 - Sta. 10+00	Lin. Ft.			250							
7	Sta. 5+93 - Sta. 7+43	Each								2		1
8	Sta. 7+50	Lin. Ft.				125						
9	Sta. 0+00 - Sta. 2+50	Lin. Ft.				15						
10	Sta. 2+50 - Sta. 4+50	Lin. Ft.					71					
11	Sta. 5+00 - Sta. 7+50	Lin. Ft.					86					
12	Sta. 7+50 - Sta. 9+00	Lin. Ft.										
13	Sta. 9+50 - Sta. 10+55	Lin. Ft.										
14	Sta. 3+00	20 Ft.										

| | | | | | | | | | |

WAS · 77 · 15.70
NOB · 77 · 0.00

31

I-77-1(7)15

NOTE: Duck Creek Channel & Relocation quantities are carried on Sheet No. 30

3.0 + ℄ Duck Creek Chan. Reloc.

Loren Hutcheson

LARW

W/L

STA 10+00

BEGIN SHEET

N 21° 11' 13" W

℄ Prop. I.R. 77

7.5' Jute Matting

12'

STA. 20+00

END SHEET

T.S.-Sta. 11+17.51

S.C.-Sta. 14+10.51

CURVE DATA
P.I. = STA. 18+73.15
Δ = 23°-51'-50" Rt.
D_c = 2°00'
R = 2864.79'
L_s = 300'
θ_s = 3°00'
T = 755.64'
E = 64.60'
L_c = 893.19'

Excavation = 396,222
Embankment = 3,364
Embankment +12% = 3,768

+00, 56' Rt. ℄ = 712.46
+00, 56' Lt. ℄ = 710.76
+25, 26.7' Lt. ℄ = 711.11
+00, 56' Lt. ℄ = 710.66
+00, 97' Lt. ℄ = 709.00
-0.96%
6" I-1
+00, 56' Lt, 6"x90° Bend, ℄ = 706.32
+00, 26.7' Lt, 6" Tee, ℄ = 704.63
+85, 56' Rt, 6"x60° Bend, ℄ = 703.01
+00, 80.7' Rt. Outlet 6" I-1 into No. 5 C.B., ℄ = 701.20
+00, 82' Rt. Std No. 5 C.B. ℄ Grate = 703.79 – ℄ 24" Pipe = 699.72
+00, ℄, Std. No. 4 C.B. ℄ Grate = 704.44, ℄ 27" Pipe = 698.69
+05, 56' Lt, ℄ = 706.27
+05, 26.7' Lt, ℄ = 704.58
+05, 56' Rt, ℄ = 703.10
6" I-1
+00, 56' Lt. ℄ = 704.40
+00, 26.7' Lt. ℄ = 702.71
27"x43G" Class E-1 0.90%
+00, 56' Rt. ℄ = 701.23
+00, 2.7' Lt, Outlet 6" I-1 into No. 4 C.B., ℄ = 703.00

715.26 714.78 714.30 713.82 713.34 712.86 712.38 711.90 711.42 710.94 710.46 709.98 709.50 709.02 708.54 708.06 707.58 707.10 706.62 706.14 705.66

760 750 740 730 720 710 700

716.8 712.5 714.9 726.9 738.9 748.3 756.7 760.5 759.2 753.7 750.1 748.3 753.9 760.9 760.4 761.3 761.2 757.6 754.2 749.1 746.2

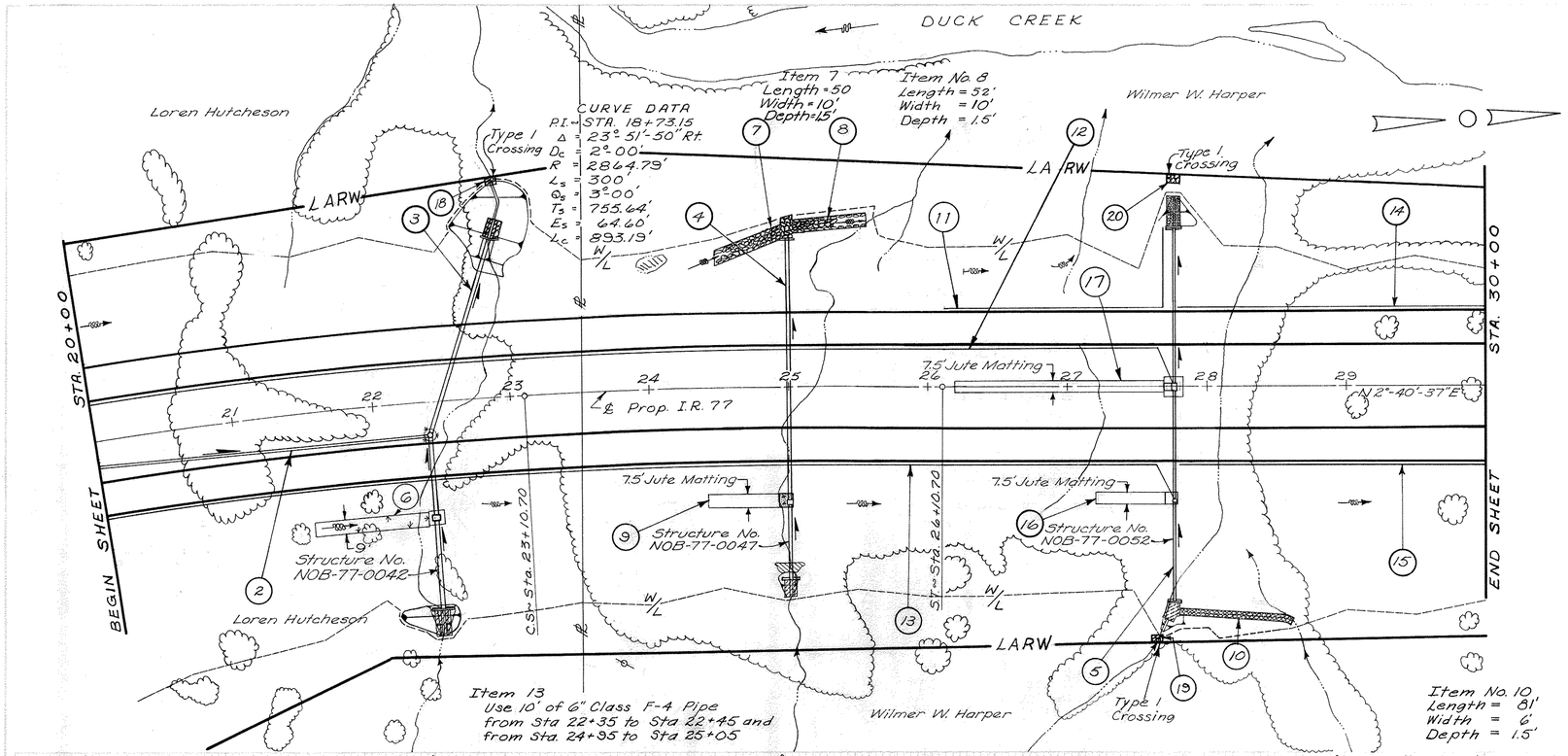
10 11 12 13 14 15 16 17 18 19 20

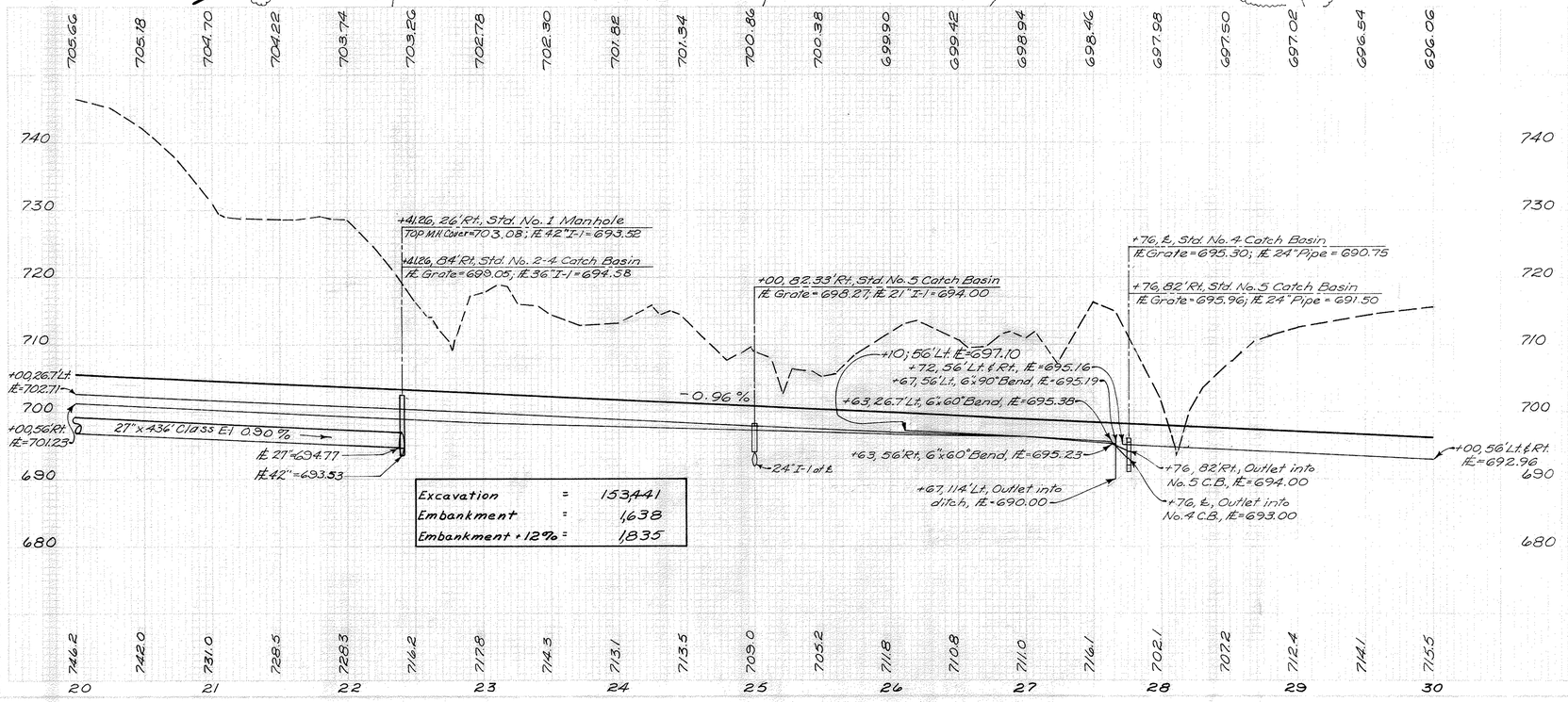
| | | |

WAS 77-15.70
NOB 77-0.00

I-77-1(77)15

32





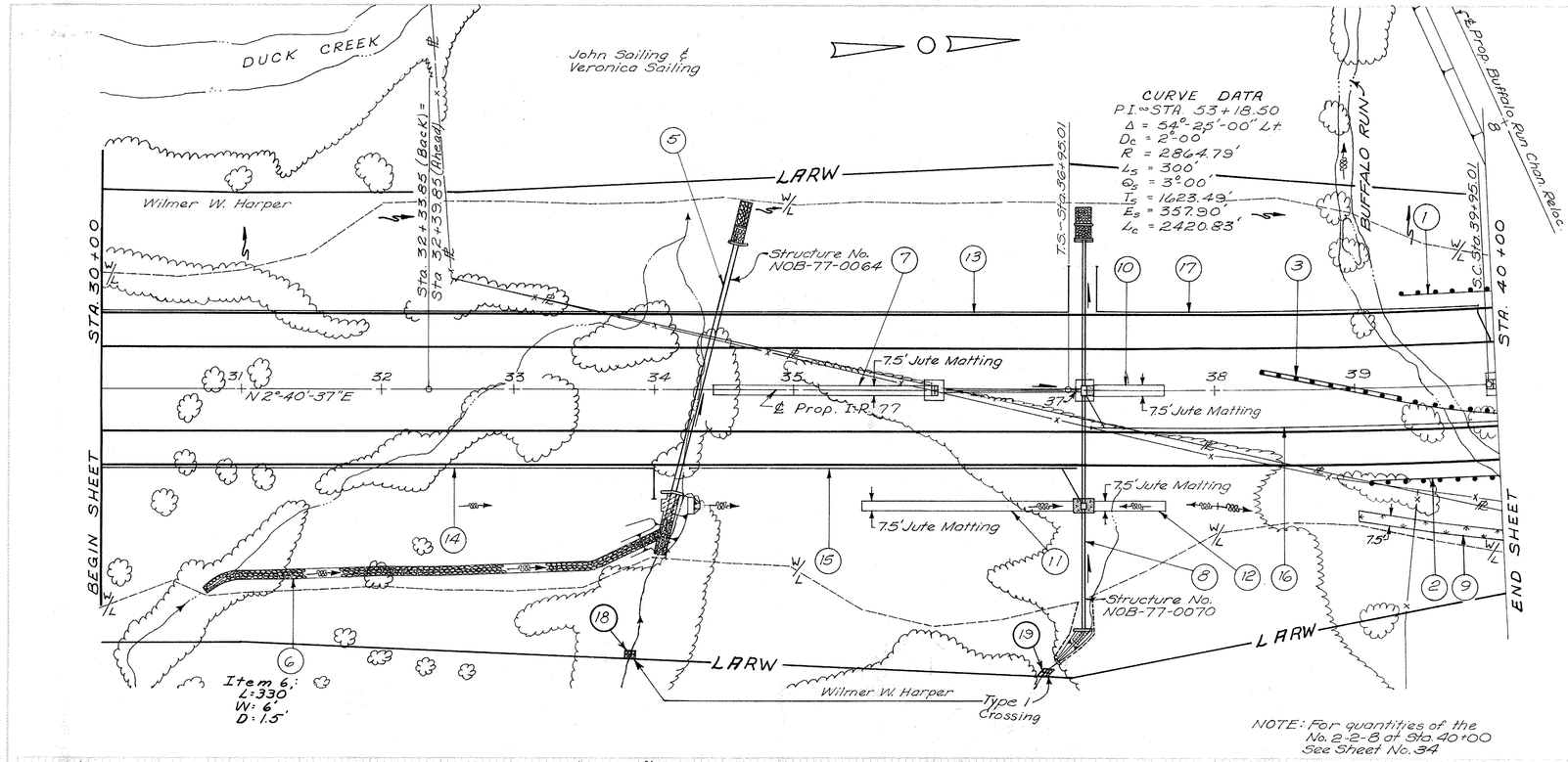
*Sec. M-6.4(a) or M-6.8(a) **Sec. M-6.6(b) or M-6.8(b) ***Sec. M-6.4(c) or Sec. M-106.15 †Sec. M-6.4(n)

| | | |

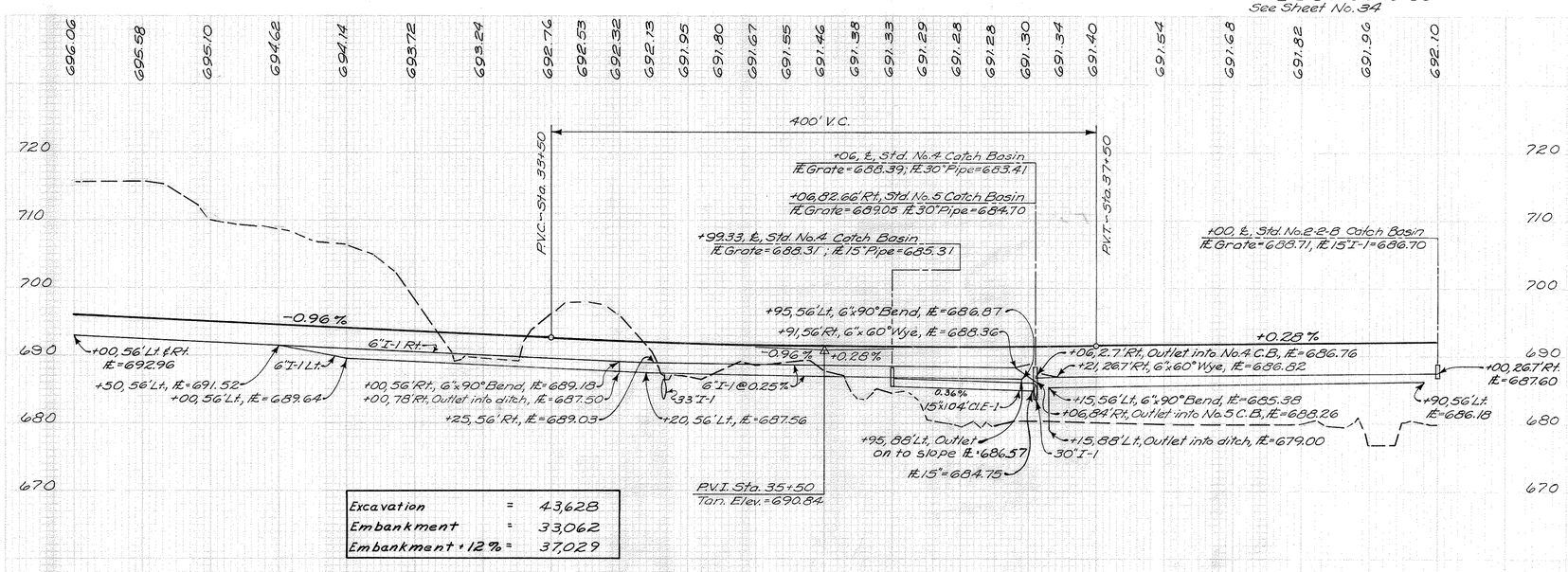
WAS - 77 - 15.70
NOB - 77 - 0.00

33

I-77-1(7)15



NOTE: For quantities of the No. 2-2-8 at Sta. 40+00 See Sheet No. 34



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MICROFILMED
JAN 7 1988

WAS - 77 - 15.70
NOB - 77 - 0.00

I-77-1(7)15

34

For Details of Buffalo Run Channel Reloc. See Sheet 29B

CURVE DATA
P.I. Sta. 53+16.50
Δ = 54°-25'-00" Lt.
D_c = 2°-00'
R = 2864.79'
L_s = 300'
θ_s = 3°00'
T_s = 1623.49'
E_s = 357.90'
L_c = 2420.83'

John Sailing &
Veronica Sailing

Wilmer W. Harper

STA. 40+00

STA. 50+00

BEGIN SHEET

END SHEET

Sta. 10+00 & Prop. Buffalo Run Channel Relocation = Sta. 40+90, & I.R. 77

LARRW

W/L

PL

PL to be Closed

7.5" Jute Matting

℄ & Prop. I.R. 77

Sta. 12+60
℄ Prop. Buffalo Run Channel Relocation

B.M.: R.R. Spike in 36" Elm Tree, 200' Right of Sta. 41+00, Elev. 683.50

692.10 692.24 692.38 692.52 692.66 691.80 692.94 693.08 693.22 693.36 693.50 693.64 693.78 693.92 694.06 694.20 694.34 694.48 694.62 694.76 694.90

+00, ℄, Std. No. 2-2-B Catch Basin
℄ Grate = 688.71, ℄ 15" I-1 = 686.70

Bridge Limits
Buffalo Run

+00, 24.7' Rt. ℄ = 687.60
Sta. 40+37.9

+20, 26.7' Rt. ℄ = 687.66
Sta. 41+42.79

+80, ℄, Std. No. 2-2-B Catch Basin
℄ Grate = 689.21, ℄ 15" I-1 = 686.00

+80, 29' Rt. 6"x90° Bend, ℄ = 687.56; Outlet into No. 4 C.B., ℄ = 687.50

+42.33' 2' Lt. of ℄, Std. No. 4 C.B.
℄ Grate = 689.92, ℄ 15" I-1 = 686.92

+0.28%

+00, 26.7' Rt.
℄ = 690.40

+00, 56' Lt.
℄ = 688.97

6" I-1 Rt.

6" I-1 Lt.

1.00%

0.58% 15"x160' Cl. E-1

15"x38' Cl. E-1
15"x10' Cl. F-4

+55, 56' Lt. 6"x90° Bend, ℄ = 686.60; 78' Lt. Outlet onto slope, ℄ = 686.58

+445, 18' Lt. Outlet 15" onto slope, ℄ = 666.22

15"x26' Class E-1

15"x10' Class F-4

+35, 16' Rt. Outlet 15" onto slope, ℄ = 685.52

50 Yr. Backwater Duck Creek, Elev. 684.01

700 690 680 670

679.9 679.9 679.9 679.7 679.8 680.0 679.5 680.3 679.9 679.8 679.6 679.6 680.1 680.0 680.0 679.6 680.0 679.9 679.1 679.8

40 41 42 43 44 45 46 47 48 49 50

PROPOSED STRUCTURE ~ NOB-77-0076 L & F.
TYPE: Continuous Reinforced Concrete Slab with capped Pile Abutments and Piers.
SPAN: 32'-40'-32' c/c brgs.
ROADWAY: 28@40' Mn. Concrete Parapets.
LOAD FREQUENCY: C.F. = 2000(57) (Adequate for AASHO Alternate Loading).
SKEW: 20° R.F.
WEARING SURFACE: 1" Monolithic Concrete
APPROACH SLABS: AS-1-54 (25' long)
ALIGNMENT: 2°00' Curve left.
SUPERELEVATION: 0.064 Ft/Ft.

Excavation	= 1,213
Embankment	= 81,324
Embankment +12%	= 91,035

| | | |

WAS - 77 - 15.70
NOB - 77 - 0.00

I-77-1(7)15

35

CURVE DATA
P.I.-Sta. 53+18.50
Δ = 54°25'-00" Lt.
D_a = 2°-00'
R = 2864.79'
L_c = 2420.83'
T_s = 1623.49'
L_s = 300'
θ_s = 3°-00'
E_s = 357.90'

Note: For Relocated Duck Creek Details, See Sheet No. 300. For Quantities, See 36.

DUCK CREEK

℄ Relocated Duck Creek

John Sailing & Veronica Sailing

Standing Water

To be Leveled

LARW

STR. 50+00

STR. 60+00

W.A. Vaughn & Edna R. Vaughn

BEGIN SHEET

END SHEET

7.5' Jute Matting

℄ Prop. I.R. 77

Structure No. NOB-77-0109

Wilmer W. Harper

W.A. Vaughn & Edna R. Vaughn

Wilmer W. Harper & Elizabeth Harper

Exist. Twp. Rd. (No number designation)

Verah Lacey

NOTE: For Dike details see Sht. no. 286

B.M. - R.R. Spike in 20" Elm, 500' Rt. of Sta. 51+00, Elev. 681.17

694.90 695.04 695.18 695.32 695.46 695.60 695.74 695.88 696.02 696.16 696.30 696.44 696.58 696.72 696.86 697.00 697.14 697.28 697.42 697.56 697.70

+00, ℄, Std. No. 4 Catch Basin
℄ Grate = 692.32, ℄ 15" Pipe = 690.00

+0.28%

+00, 26.7' Rt. ℄=690.40

+95, 26.7' Rt. ℄=690.95

+00, 26.7' Rt, 6"x90° Bend, ℄=690.96; Outlet into No. 4 C.B., ℄=690.90

+00, 26.7' Rt. ℄=693.20

6" I-1

+00, 56' Lt. ℄=688.97

+95, 56' Lt. ℄=689.52

+0.5, 56' Lt, 6"x90° Bend, ℄=689.53; 78' Lt, Outlet onto slope, ℄=689.47

+00, 56' Lt. ℄=691.77

+87.96 "I-1

710 700 690 680 670 660 650

Excavation	= 1,152
Embankment	= 113,001
Embankment + 12%	= 126,561

6798 6814 6750 6790 6801 6800 6801 6787 6796 6797 6804 6805 6808 6811 6815 6812 6815 6760 6815 6809 6814

50 51 52 53 54 55 56 57 58 59 60

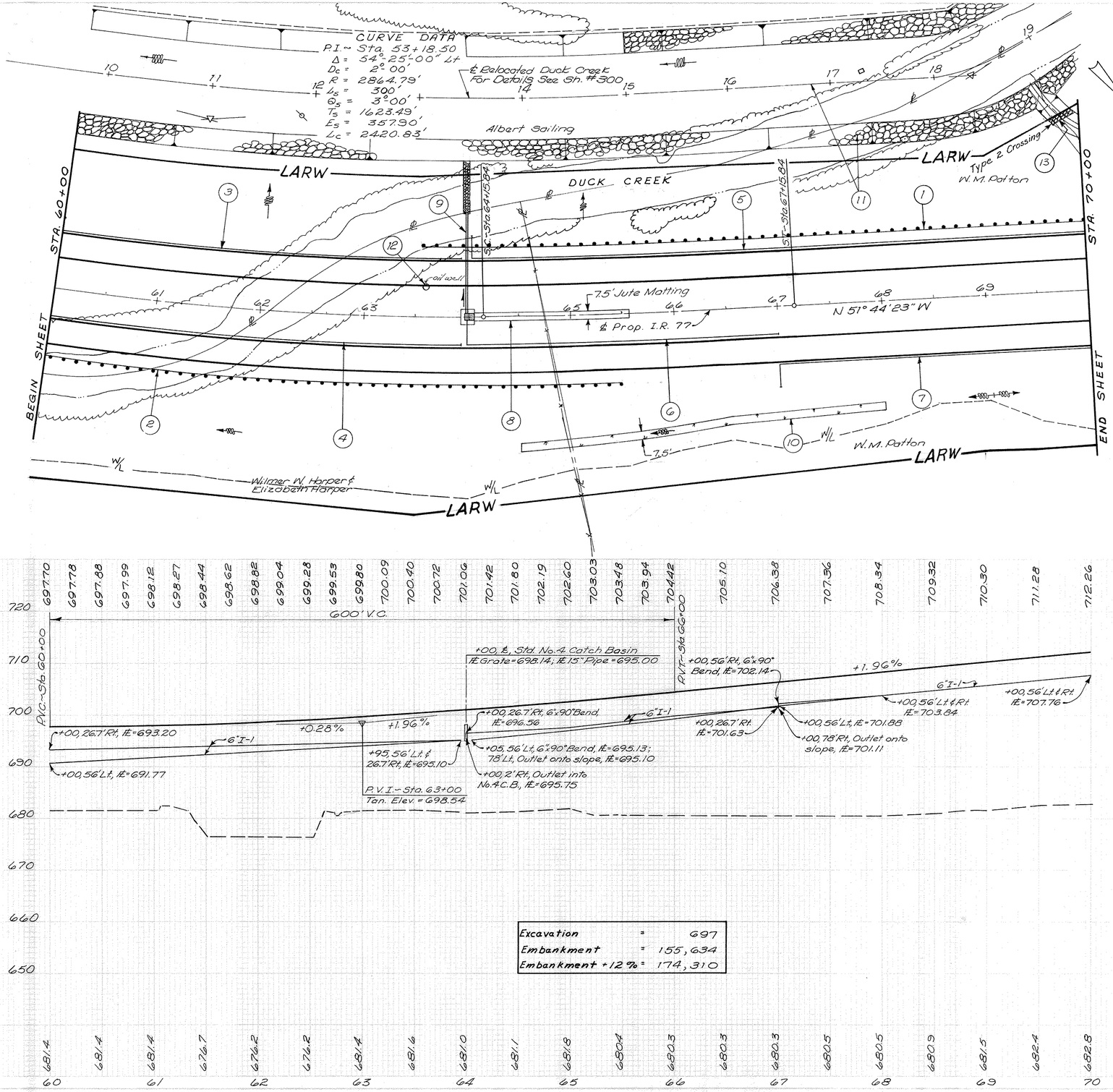
*With 18 Vitrified Liner as per plan.

| | I-1 | | |

WAS - 77 - 15.70
NOB - 77 - 0.00

I-77-1(7)15

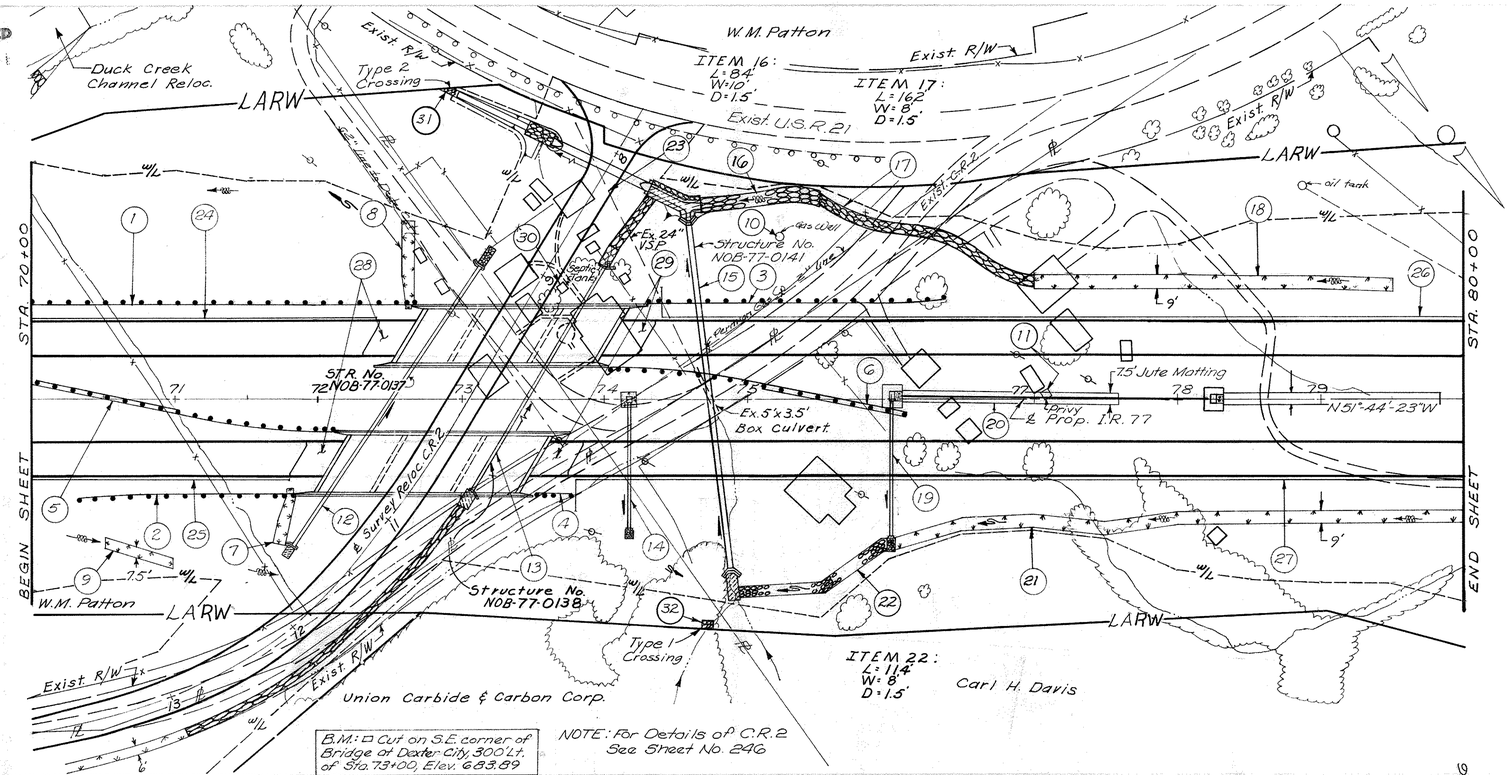
36

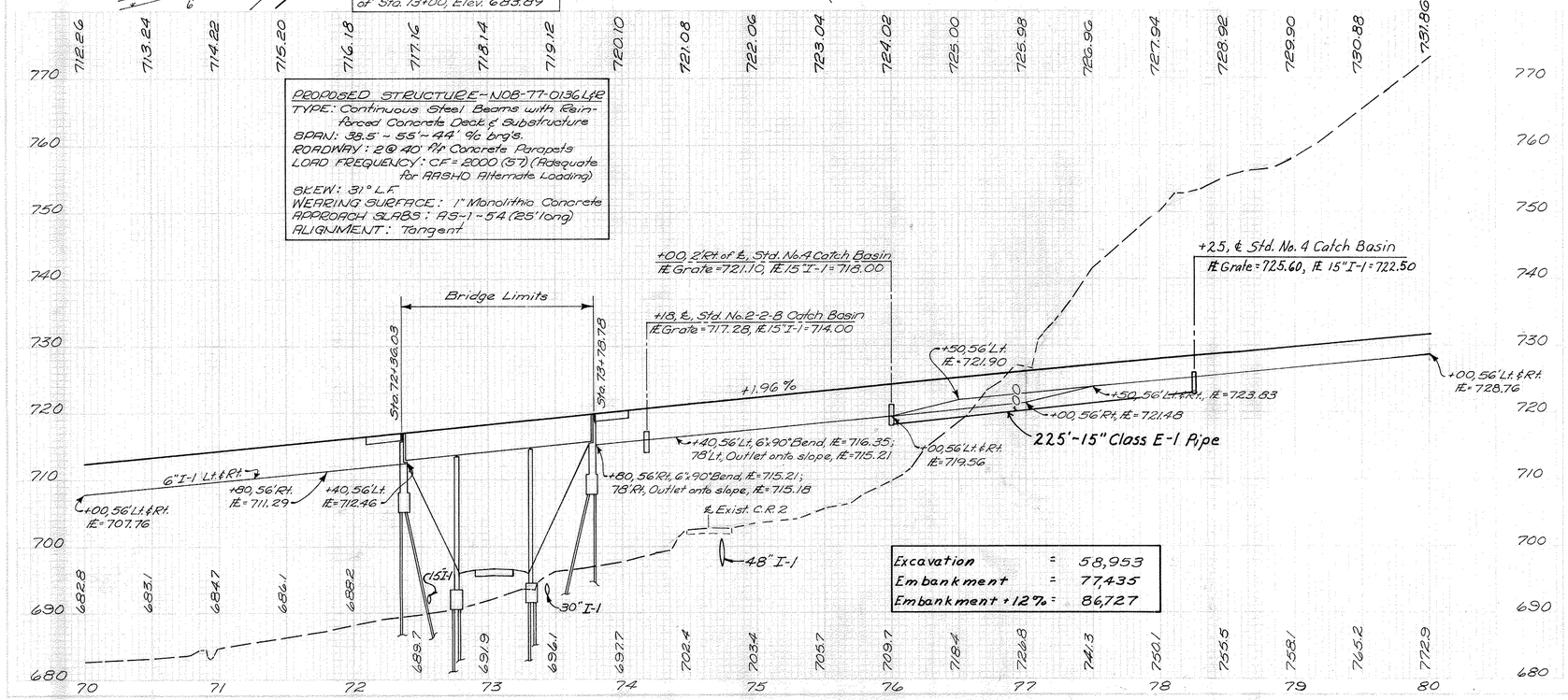


STA. 60+00 TO STA. 70+00

| | | |

MICROFILMED
JAN 7 1988





| Sec. (a)(16) or Sec. (a)(2) | | |

WAS - 77 - 15.70
NOB - 77 - 0.00

FED. RD. DIVISION	STATE	PROJECT	TYPE FUNDS
2	OHIO	I-77-1(7)15	

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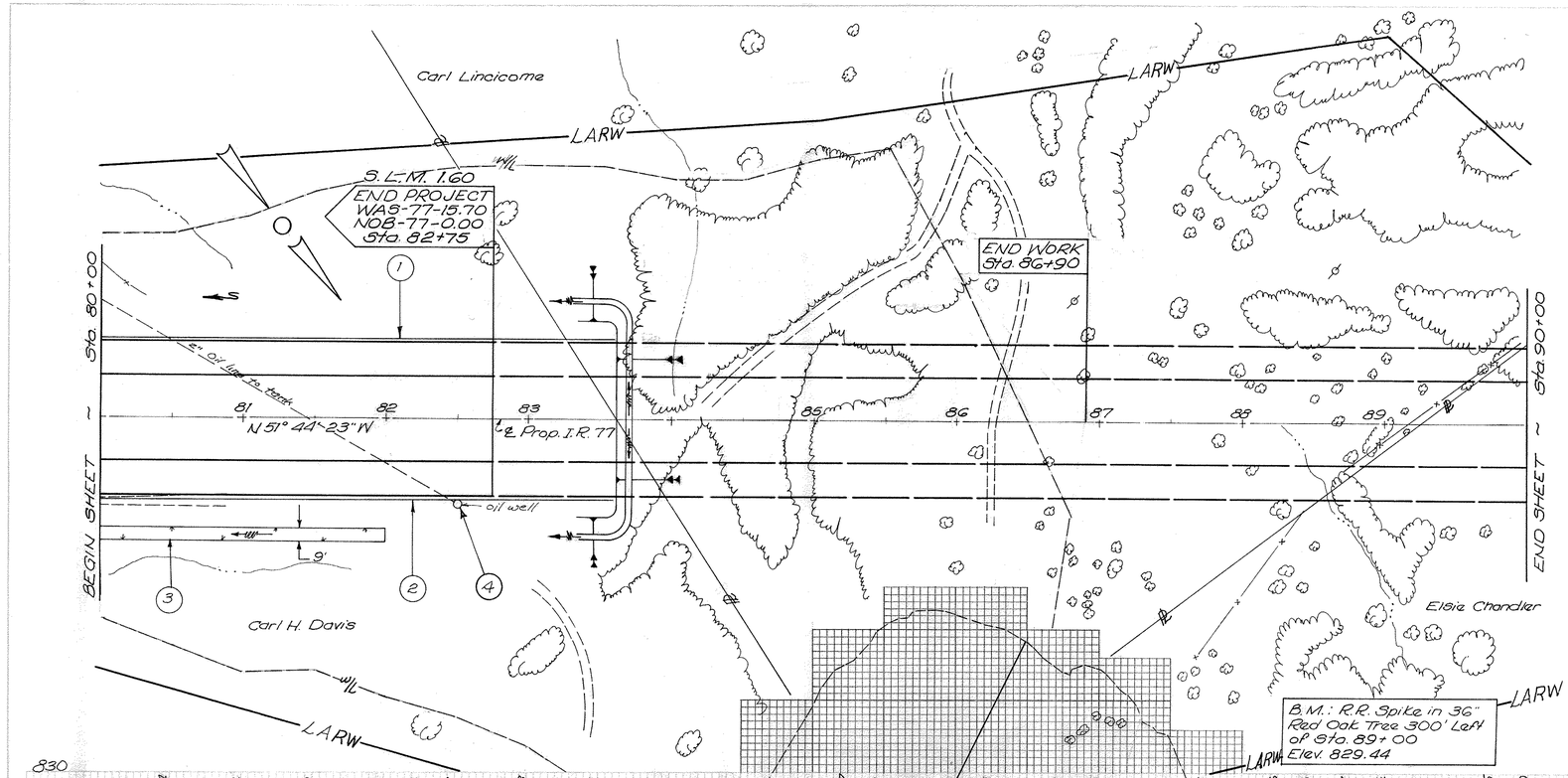

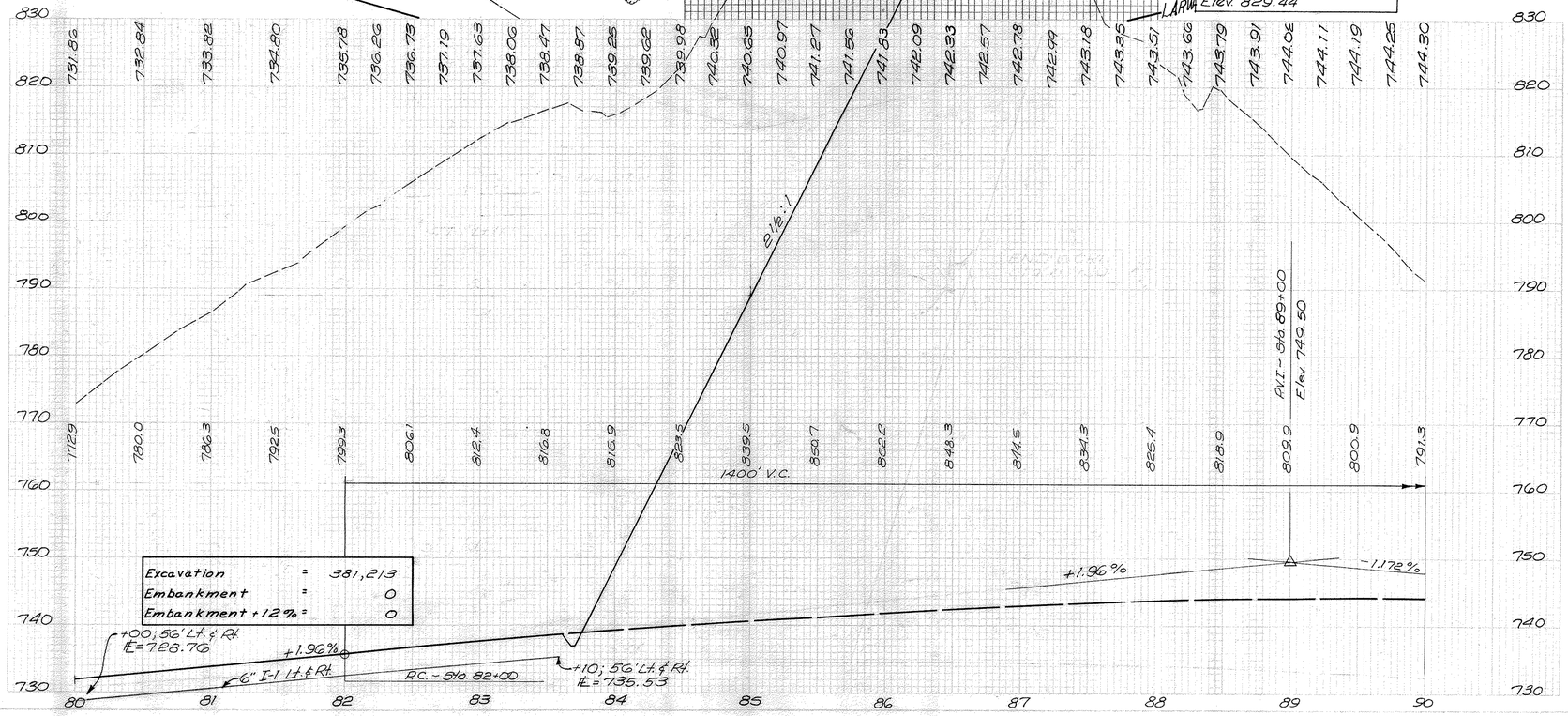

ESTIMATED QUANTITIES

REF. NO.	STATION TO STATION	SIDE						TOTALS
1	Sta. 80+00 - Sta. 83+10	Lt.	I-1	L.10	9.8CY Dump 0.7T			720
2	Sta. 80+00 - Sta. 83+10	Rt.	G-1.3	Sod	Gps			200
3	Sta. 80+00 - Sta. 82+00	Rt.	M16.4(11)		Wells			1
4	Sta. 82+50				Lin. Ft.	360	360	
					Each		200	1

Sta. 80+00 to Sta. 90+00

WAS - 77 - 15.70
NOB - 77 - 0.00

2	OHIO	I-77-1(7)15	

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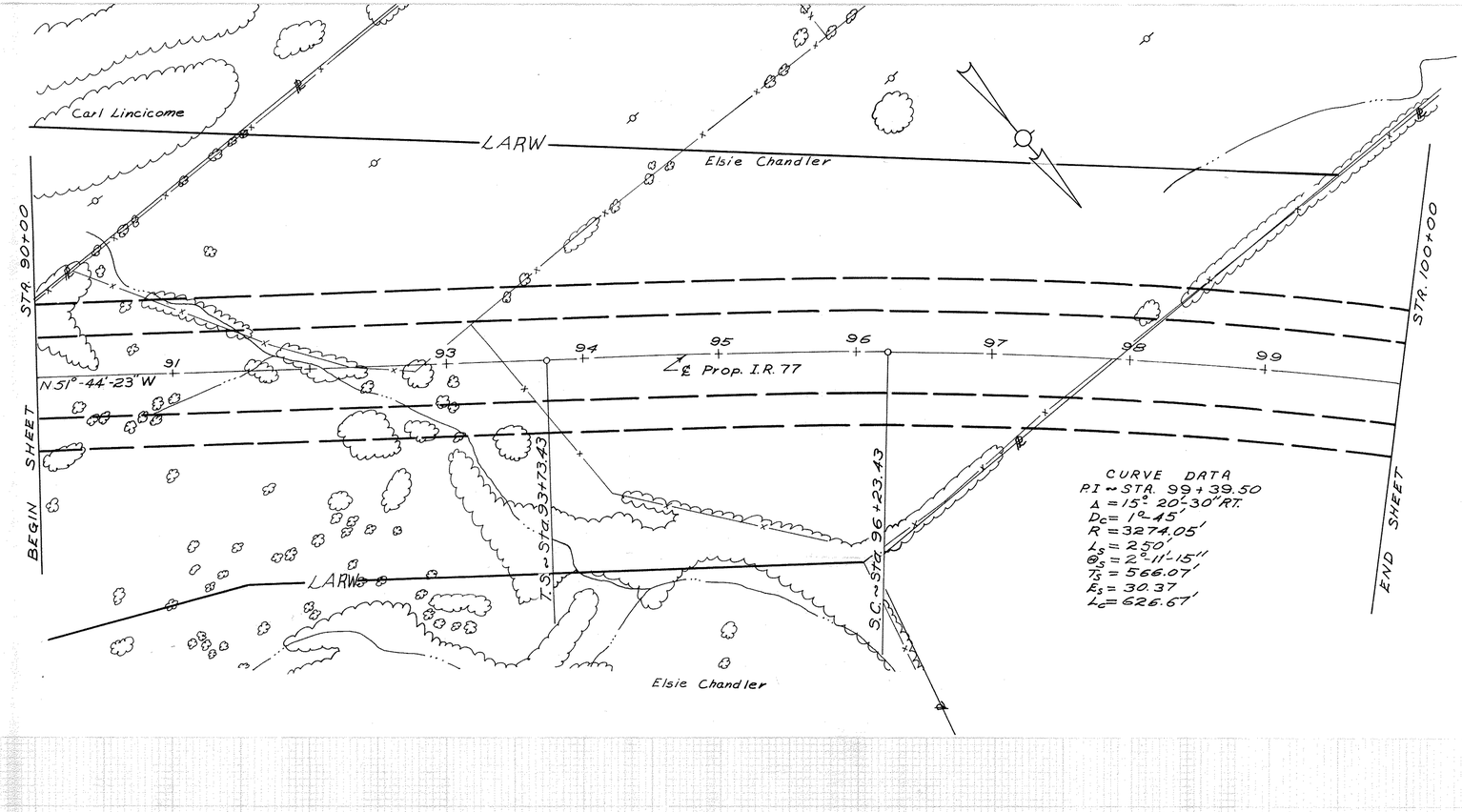

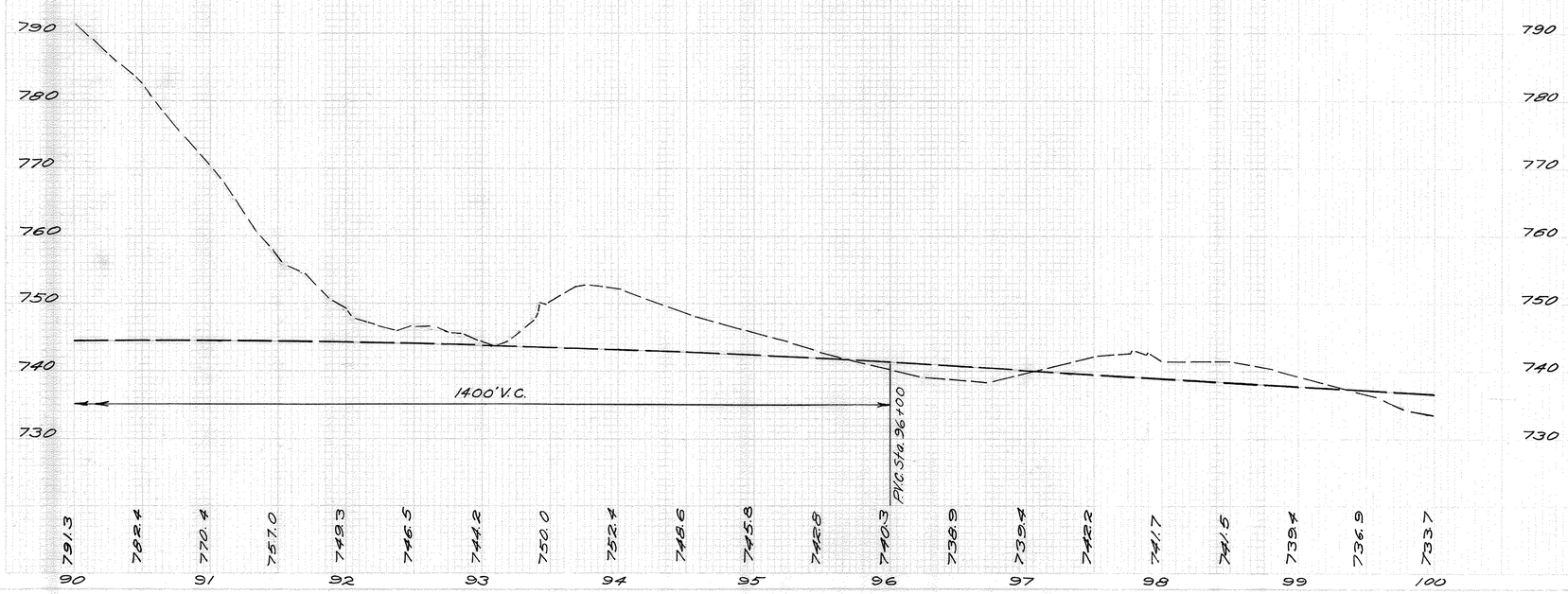

STA. 90+00 to STA. 100+00

SUPERELEVATION TABLES

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	I-77-1(17)15	

40

WAS - 77 - 15.70
NOB - 77 - 0.00

CURVE NO. 1

Δ = 16°22'30" RT

S = 0.064 FT/FT
T. S. = 882+22.10
S. C. = 385+22.10

DC = 2°00'
C.S. = 890+40.85
S.T. = 893+40.85

LEFT LANE ELEVATION						RIGHT LANE ELEVATION
LEFT EDGE	℄	PROFILE AND RT EDGE	STATION	PROFILE AND LT EDGE	℄	RIGHT EDGE
693.58	693.77	693.58	881+25	693.58	693.77	693.58
693.45	693.63	693.44	881+50	693.44	693.62	693.44
693.37	693.49	693.30	881+75	693.30	693.42	693.23
693.29	693.35	693.16	882+00	693.16	693.22	693.03
693.21	693.21	693.02	882+25	693.02	693.02	692.84
693.19	693.07	692.88	882+50	692.88	692.76	692.57
693.16	692.95	692.74	882+75	692.74	692.53	692.33
693.13	692.87	692.60	883+00	692.60	692.34	692.08
693.11	692.79	692.46	883+25	692.46	692.14	691.82
693.08	692.70	692.32	883+50	692.32	691.95	691.57
693.04	692.61	692.18	883+75	692.18	691.75	691.32
693.03	692.53	692.04	884+00	692.04	691.55	691.06
692.99	692.45	691.90	884+25	691.90	691.36	690.81
692.96	692.36	691.76	884+50	691.76	691.16	690.56
692.94	692.28	691.62	884+75	691.62	690.96	690.30
692.91	692.20	691.48	885+00	691.48	690.77	690.05
692.89	692.12	691.35	885+25	691.35	690.58	689.82
692.79	692.02	691.25	885+50	691.25	690.48	689.72
692.70	691.93	691.16	885+75	691.16	690.39	689.63
692.64	691.87	691.10	886+00	691.10	690.33	689.57
692.60	692.83	691.06	886+25	691.06	690.29	689.53
692.59	691.82	691.05	886+50	691.05	690.28	689.52
692.59	691.82	691.05	886+75	691.05	690.28	689.52
692.62	691.85	691.08	887+00	691.08	690.31	689.55
692.67	691.90	691.13	885+25	691.13	690.36	689.60
692.75	691.98	691.21	887+50	691.21	690.44	689.68
692.84	692.07	691.30	887+75	691.30	690.53	689.77
692.96	692.19	691.42	888+00	691.42	690.65	689.89
693.10	692.33	691.56	888+25	691.56	690.79	690.03
693.27	692.50	691.73	885+50	691.73	690.96	690.20
693.45	692.68	691.91	888+75	691.91	691.14	690.38
693.66	692.89	692.12	889+00	692.12	691.35	690.59
693.89	693.12	692.35	889+25	692.35	691.58	690.82
694.15	693.38	692.61	889+50	692.61	691.84	691.09
694.42	693.65	692.88	889+75	692.88	692.11	691.35
694.72	693.95	693.18	890+00	693.18	692.41	691.65
695.04	694.27	693.50	890+25	693.50	692.73	691.97
695.34	694.59	693.85	890+50	693.85	693.11	692.37

CURVE NO. 1 CONTINUED

LEFT LANE ELEVATION						RIGHT LANE ELEVATION
LEFT EDGE	℄	PROFILE AND RT EDGE	STATION	PROFILE AND LT EDGE	℄	RIGHT EDGE
695.59	694.90	694.21	890+75	694.21	693.53	692.84
695.87	695.24	694.60	891+00	694.60	693.97	693.34
696.16	695.59	695.01	891+25	695.01	694.44	693.87
696.49	695.97	695.45	891+50	695.45	694.93	694.42
696.83	696.37	695.90	891+75	695.90	695.44	694.97
697.19	696.79	696.38	892+00	696.38	695.98	695.58
697.58	697.23	696.88	892+25	696.88	696.53	696.18
698.00	697.71	697.41	892+50	697.41	697.12	696.82
698.42	698.19	697.95	892+75	697.95	697.72	697.48
698.89	698.71	698.52	893+00	698.52	698.35	698.16
699.36	699.29	699.10	893+25	699.10	699.04	698.85
699.85	699.87	699.68	893+50	699.68	699.71	699.52
700.36	700.45	700.26	893+75	700.26	700.35	700.16
700.88	701.03	700.84	894+00	700.84	700.99	700.80
701.42	701.61	701.42	894+25	701.42	701.61	701.42

CURVE NO. 2

Δ = 23°01'10" LT

S = 0.056 FT/FT
T. S. = 910+16.35
S.C. = 912+66.35

DC = 1°45'
C.S. = 923+31.75
S.T. = 925+81.75

LEFT LANE ELEVATION						RIGHT LANE ELEVATION
LEFT EDGE	℄	PROFILE AND RT EDGE	STATION	PROFILE AND LT EDGE	℄	RIGHT EDGE
734.16	734.35	734.16	909+25	734.16	734.35	734.16
734.46	734.65	734.48	909+50	734.48	734.67	734.50
734.72	734.91	734.80	909+75	734.80	734.99	734.89
734.95	735.13	735.09	910+00	735.09	735.28	735.24
735.16	735.35	735.38	910+25	735.38	735.57	735.60
735.31	735.49	735.64	910+50	735.64	735.83	735.98
735.45	735.68	735.90	910+75	735.90	736.13	736.36
735.57	735.86	736.14	911+00	736.14	736.43	736.71
735.68	736.02	736.36	911+25	736.36	736.71	737.05
735.77	736.17	736.57	911+50	736.57	736.97	737.37
735.85	736.31	736.76	911+75	736.76	737.22	737.68
735.91	736.43	736.94	912+00	736.94	737.46	737.97
735.97	736.54	737.11	912+25	737.11	737.69	738.26
736.00	736.63	737.26	912+50	737.26	737.90	738.53
736.06	736.73	737.40	912+75	737.40	738.08	738.75
736.18	736.85	737.52	913+00	737.52	738.20	738.87
736.29	736.96	737.63	913+25	737.63	738.31	738.98
736.38	737.05	737.72	913+50	737.72	738.40	739.07
736.46	737.13	737.80	913+75	737.80	738.48	739.15
736.52	737.19	737.86	914+00	737.86	738.54	739.21
736.57	737.24	737.91	914+25	737.91	738.59	739.26
736.60	737.27	737.94	914+50	737.94	738.62	739.29
736.62	737.29	737.96	914+75	737.96	738.64	739.31
736.63	737.30	737.97	915+00	737.97	738.65	739.32
736.62	737.29	737.96	915+25	737.96	738.64	739.31
736.59	737.26	737.93	915+50	737.93	738.61	739.28
736.55	737.22	737.89	915+75	737.89	738.57	739.24
736.50	737.17	737.84	916+00	737.84	738.52	739.19
736.43	737.10	737.77	916+25	737.77	738.45	739.12
736.35	737.02	737.69	916+50	737.69	738.37	739.04
736.25	736.92	737.59	916+75	737.59	738.27	738.94
736.14	736.81	737.48	917+00	737.48	738.16	738.83
736.01	736.68	737.35	917+25	737.35	738.03	738.70
735.87	736.54	737.21	917+50	737.21	737.89	738.56
735.71	736.38	737.05	917+75	737.05	737.73	738.40
735.54	736.21	736.88	918+00	736.88	737.56	738.23

CURVE NO. 2 CONTINUED

LEFT LANE ELEVATION						RIGHT LANE ELEVATION
LEFT EDGE	℄	PROFILE AND RT EDGE	STATION	PROFILE AND LT EDGE	℄	RIGHT EDGE
735.35	736.02	736.69	918+25	736.69	737.37	738.04
735.15	735.82	736.49	918+50	736.49	737.17	737.84
734.94	735.61	736.28	918+75	736.28	736.96	737.63
734.71	735.38	736.05	919+00	736.05	736.73	737.40
734.47	735.14	735.81	919+25	735.81	736.49	737.16
734.23	734.90	735.57	919+50	735.57	736.25	736.92
733.99	734.66	735.33	919+75	735.33	736.01	736.68
733.75	734.42	735.09	920+00	735.09	735.77	736.44
733.51	734.18	734.85	920+25	734.85	735.53	736.20
733.27	733.94	734.61	920+50	734.61	735.29	735.96
733.03	733.70	734.37	920+75	734.37	735.05	735.72
732.79	733.46	734.13	921+00	734.13	734.81	735.48
732.55	733.22	733.89	921+25	733.89	734.57	735.24
732.31	732.98	733.65	921+50	733.65	734.33	735.00
732.07	732.74	733.41	921+75	733.41	734.09	734.76
731.83	732.50	733.17	922+00	733.17	733.85	734.52
731.59	732.26	732.93	922+25	732.93	733.61	734.28
731.35	732.02	732.69	922+50	732.69	733.37	734.04
731.11	731.78	732.45	922+75	732.45	733.13	733.80
730.87	731.54	732.21	923+00	732.21	732.89	733.56
730.63	731.30	731.97	923+25	731.97	732.65	733.32
730.48	731.11	731.73	923+50	731.73	732.36	732.98
730.36	730.93	731.49	923+75	731.49	732.06	732.63
730.23	730.74	731.25	924+00	731.25	731.76	732.27
730.11	730.56	731.01	924+25	731.01	731.47	731.92
729.98	730.38	730.77	924+50	730.77	731.17	731.56
729.86	730.20	730.53	924+75	730.53	730.87	731.21
729.74	730.01	730.29	925+00	730.29	730.57	730.85
729.61	729.83	730.05	925+25	730.05	730.27	730.49
729.49	729.67	729.81	925+50	729.81	730.00	730.14
729.36	729.55	729.57	925+75	729.57	729.76	729.78
729.19	729.38	729.33	926+00	729.33	729.52	729.47
729.01	729.20	729.09	926+25	729.09	729.28	729.17
728.84	729.02	728.85	926+50	728.85	729.04	728.87
728.61	728.80	728.61	926+75	728.61	728.80	728.61

SUPERELEVATION TABLES

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	I-77-1(7)15	

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WAS-77-15.70
NOB-77-0.00

CURVE NO. 3

Δ = 23°51'50" RT

S = 0.064 FT/FT — DC = 2°00'

T.S. = 11+17.51 — C.S. = 23+10.70

S.C. = 14+17.51 — S.T. = 26+10.70

LEFT LANE ELEVATION						RIGHT LANE ELEVATION
LEFT EDGE	℄	PROFILE AND RT EDGE	STATION	PROFILE AND LT EDGE	℄	RIGHT EDGE
715.02	715.21	715.02	10+25	715.02	715.21	715.02
714.80	714.97	714.78	10+50	714.78	714.95	714.76
714.62	714.73	714.54	10+75	714.54	714.65	714.46
714.45	714.49	714.30	11+00	714.30	714.35	714.16
714.28	714.25	714.06	11+25	714.06	714.04	713.85
714.14	714.01	713.82	11+50	713.82	713.69	713.50
714.03	713.81	713.58	11+75	713.58	713.36	713.14
713.89	713.62	713.34	12+00	713.34	713.07	712.79
713.76	713.43	713.10	12+25	713.10	712.77	712.44
713.64	713.25	712.86	12+50	712.86	712.47	712.08
713.51	713.07	712.62	12+75	712.62	712.18	711.73
713.38	712.88	712.38	13+00	712.38	711.88	711.39
713.26	712.70	712.14	13+25	712.14	711.58	711.03
713.13	712.52	711.90	13+50	711.90	711.29	710.68
713.00	712.33	711.66	13+75	711.66	711.00	710.33
712.88	712.15	711.42	14+00	711.42	710.70	709.97
712.72	711.95	711.18	14+25	711.18	710.41	709.65
712.48	711.71	710.94	14+50	710.94	710.17	709.41
712.24	711.47	710.70	14+75	710.70	709.93	709.17
712.00	711.23	710.46	15+00	710.46	709.69	708.93
711.76	710.99	710.22	15+25	710.22	709.45	708.69
711.52	710.75	709.98	15+50	709.98	709.21	708.45
711.28	710.51	709.74	15+75	709.74	708.97	708.21
711.04	710.27	709.50	16+00	709.50	708.73	707.97
710.80	710.03	709.26	16+25	709.26	708.49	707.73
710.56	709.79	709.02	16+50	709.02	708.25	707.49
710.32	709.55	708.78	16+75	708.78	708.01	707.25
710.08	709.31	708.54	17+00	708.54	707.77	707.01
709.84	709.07	708.30	17+25	708.30	707.53	706.77
709.60	708.83	708.06	17+50	708.06	707.29	706.53
709.36	708.59	707.82	17+75	707.82	707.05	706.29
709.12	708.35	707.58	18+00	707.58	706.81	706.05
708.88	708.11	707.34	18+25	707.34	706.57	705.81
708.64	707.87	707.10	18+50	707.10	706.33	705.57
708.40	707.63	706.86	18+75	706.86	706.09	705.33
708.16	707.39	706.62	19+00	706.62	705.85	705.09
707.92	707.15	706.38	19+25	706.38	705.61	704.85
707.68	706.91	706.14	19+50	706.14	705.37	704.61

CURVE NO. 3 CONTINUED

LEFT LANE ELEVATION						RIGHT LANE ELEVATION
LEFT EDGE	℄	PROFILE AND RT EDGE	STATION	PROFILE AND LT EDGE	℄	RIGHT EDGE
707.44	706.67	705.90	19+75	705.90	705.13	704.37
707.20	706.43	705.66	20+00	705.66	704.89	704.13
706.96	706.19	705.42	20+25	705.42	704.65	703.89
706.72	705.95	705.18	20+50	705.18	704.41	703.65
706.48	705.71	704.94	20+75	704.94	704.17	703.41
706.24	705.47	704.70	21+00	704.70	703.93	703.17
706.00	705.23	704.46	21+25	704.46	703.69	702.93
705.76	794.99	704.22	21+50	704.22	703.45	702.69
705.52	704.75	703.98	21+75	703.98	703.21	702.45
705.28	704.51	703.74	22+00	703.74	702.97	702.21
705.04	704.27	703.50	22+25	703.50	702.73	701.97
704.80	704.03	703.26	22+50	703.26	702.49	701.73
704.56	703.79	703.02	22+75	703.02	702.25	701.49
704.32	703.55	702.78	23+00	702.78	702.01	701.25
704.01	703.28	702.54	23+25	702.54	701.81	701.07
703.65	702.98	702.30	23+50	702.30	701.63	700.96
703.30	702.68	702.06	23+75	702.06	701.44	700.82
702.95	702.39	701.82	24+00	701.82	701.26	700.69
702.59	702.09	701.58	24+25	701.58	701.08	700.57
702.24	701.79	701.34	24+50	701.34	700.89	700.48
701.90	701.50	701.10	24+75	701.10	700.71	700.31
701.54	701.20	700.86	24+00	700.86	700.53	700.19
701.19	700.91	700.62	25+25	700.62	700.34	700.06
700.84	700.61	700.38	25+50	700.38	700.15	699.93
700.48	700.33	700.14	25+75	700.14	699.99	699.81
700.13	700.09	699.90	26+00	699.90	699.86	699.68
699.81	699.85	699.66	26+25	699.66	699.70	699.51
699.51	699.61	699.42	26+50	699.42	699.52	699.33
699.21	699.37	699.18	26+75	699.18	699.34	699.16
698.94	699.13	698.94	27+00	698.94	699.13	698.94

CURVE NO. 4

Δ = 54°25'00" LT

S = 0.064 FT/FT — DC = 2°00'

T.S. = 36+95.01 — C.S. = 64+15.84

S.C. = 39+95.01 — S.T. = 67+15.84

LEFT LANE ELEVATION						RIGHT LANE ELEVATION
LEFT EDGE	℄	PROFILE AND RT EDGE	STATION	PROFILE AND LT EDGE	℄	RIGHT EDGE
691.30	691.49	691.30	36+00	691.33	691.52	691.33
691.28	691.47	691.29	36+25	691.29	691.48	691.29
691.21	691.40	691.28	36+50	691.28	691.47	691.36
691.15	691.33	691.28	36+75	691.28	691.47	691.42
691.10	691.29	691.30	37+00	691.30	691.49	691.50
691.03	691.22	691.34	37+25	691.34	691.53	691.65
690.97	691.19	691.40	37+50	691.40	691.62	691.83
690.94	691.20	691.47	37+75	691.47	691.74	692.01
690.90	691.22	691.54	38+00	691.54	691.87	691.19
690.85	691.23	691.61	38+25	691.61	692.00	692.38
690.81	691.25	691.68	38+50	691.68	692.12	692.56
690.77	691.26	691.75	38+75	691.75	692.24	692.74
690.72	691.27	691.82	39+00	691.82	692.38	692.93
690.68	691.29	691.89	39+25	691.89	692.50	693.11
690.64	691.30	691.96	39+50	691.96	392.62	693.28
690.59	691.31	692.03	39+75	692.03	692.75	693.47
690.57	691.33	692.10	40+00	692.10	692.87	693.64
690.64	691.40	692.17	40+25	692.17	692.94	693.71
690.71	691.47	692.24	40+50	692.24	693.01	693.78
690.78	691.54	692.31	40+75	692.31	693.08	693.85
690.85	691.61	692.38	41+00	692.38	693.15	693.92
690.92	691.68	692.45	41+25	692.45	693.22	693.99
690.99	691.75	692.52	41+50	692.52	693.29	694.06
691.06	692.82	692.59	41+75	692.59	693.36	694.13
691.13	691.89	692.66	42+00	692.66	693.43	694.20
691.20	691.96	692.73	42+25	692.73	693.50	694.27
691.27	692.03	692.80	42+50	692.80	693.57	694.34
691.34	692.10	692.87	42+75	692.87	693.64	694.41
691.41	692.17	692.94	43+00	692.94	693.71	694.48
691.48	692.24	693.01	43+25	693.01	693.78	694.55
691.55	692.31	693.08	43+50	693.08	693.85	694.62
691.62	692.38	693.15	43+75	693.15	693.92	694.69
691.69	692.45	693.22	44+00	693.22	693.99	694.76
691.76	692.52	693.29	44+25	693.29	694.06	694.83
691.83	692.59	693.36	44+50	693.36	694.13	694.90
691.90	692.66	693.43	44+75	693.43	694.20	694.97
691.97	692.73	693.50	45+00	693.50	694.27	695.04
692.04	692.80	693.57	45+25	693.57	694.34	695.11
692.11	692.87	693.64	45+50	693.64	694.41	695.18
692.18	692.94	693.71	45+75	693.71	694.48	695.25
692.25	693.01	693.78	46+00	693.78	694.55	695.32
692.32	693.08	693.85	46+25	693.85	694.62	695.39
692.39	693.15	693.92	46+50	693.92	694.69	695.46
692.46	693.22	693.99	46+75	693.99	694.76	695.53
692.53	693.29	694.06	47+00	694.06	694.83	695.60
692.60	693.36	694.13	47+25	694.13	694.90	695.67
692.67	693.43	694.20	47+50	694.20	694.97	695.74
692.74	693.50	694.27	47+75	694.27	695.04	695.81
692.81	693.57	694.34	48+00	694.34	695.11	695.88
692.88	693.64	694.41	48+25	694.41	695.18	695.95
692.95	693.71	694.48	48+50	694.48	695.25	696.02
693.02	693.78	694.55	48+75	694.55	695.32	696.09
693.09	693.85	694.62	49+00	694.62	395.39	696.16
693.16	693.92	694.69	49+25	694.69	695.46	696.23
693.23	693.99	694.76	49+50	694.76	695.53	696.30
693.30	694.06	694.83	49+75	694.83	695.60	696.37
693.37	694.13	694.90	50+00	694.90	695.67	696.44
693.44	694.20	694.97	50+25	694.97	695.74	696.51
693.51	694.27	695.04	50+50	695.04	695.81	696.58
693.58	694.34	695.11	50+75	695.11	695.88	696.65

CURVE NO. 4 CONTINUED

LEFT LANE ELEVATION						RIGHT LANE ELEVATION
LEFT EDGE	℄	PROFILE AND RT EDGE	STATION	PROFILE AND LT EDGE	℄	RIGHT EDGE
693.65	694.41	695.18	51+00	695.18	695.95	696.72
693.72	694.48	695.25	51+25	695.25	696.02	696.79
693.79	694.55	695.32	51+50	695.32	696.09	696.86
693.86	694.62	695.39	51+75	695.39	696.16	696.93
693.93	694.69	695.46	52+00	695.46	696.23	697.00
694.00	694.76	695.53	52+25	695.53	696.30	697.07
694.07	694.83	695.60	52+50	695.60	696.37	697.14
694.14	694.90	695.67	52+75	695.67	696.44	697.21
694.21	694.97	695.74	53+00	695.74	696.51	697.28
694.28	695.04	695.81	53+25	695.81	696.58	697.35
694.35	695.11	695.88	53+50	695.88	696.65	697.42
694.42	695.18	695.95	53+75	695.95	696.72	697.49
694.49	695.25	696.02	54+00	696.02	696.79	697.56
694.56	695.32	696.09	54+25	696.09	696.86	697.63
694.63	695.39	696.16	54+50	696.16	696.93	697.70
694.70	695.46	696.23	54+75	696.23	697.00	697.77
694.77	695.53	696.30	55+00	696.30	697.07	697.84
694.84	695.60	696.37	55+25	696.37	697.14	697.91
694.91	695.67	696.44	55+50	696.44	697.21	697.98
694.98	695.74	696.51	55+75	696.51	697.28	698.05
695.05	695.81	696.58	56+00	696.58	697.35	698.12
695.12	695.88	696.65	56+25	696.65	697.42	698.19
695.19	695.95	696.72	56+50	696.72	697.49	698.26
695.26	696.02	696.79	56+75	696.79	697.56	698.33
695.33	696.09	696.86	57+00	696.86	697.63	698.40
695.40	696.16	696.93	57+25	696.93	697.70	698.47
695.47	696.23	697.00	57+50	697.00	697.77	698.54
695.54	696.30	697.07	57+75	697.07	697.84	698.61
695.61	696.37	697.14	58+00	697.14	697.91	698.68
695.68	696.44	697.21	58+25	697.21	697.98	698.75
695.75	696.51	697.28	58+50	697.28	698.05	698.82
695.82	696.58	697.35	58+75	697.35	698.12	698.89
695.89	696.65	697.42	59+00	697.42	698.19	698.96
695.96	696.72	697.49	59+25	697.49	698.26	699.03
696.03	696.79	697.56	59+50	697.56	698.33	699.10
696.10	696.86	697.63	59+75	697.63	698.40	699.17
696.17	696.93	697.70	60+00	697.70	698.47	699.24
696.25	697.01	697.78	60+25	697.78	698.55	699.32
696.35	697.11	697.88	60+50	697.88	698.65	699.42
696.46	697.22	697.99	60+75	697.99	698.76	699.53
696.59	697.35	698.12	61+00	698.12	698.89	699.66
696.74	697.50	698.27	61+25	698.27	699.04	699.81
696.91	697.67	698.44	61+50	698.44	699.21	699.98
697.09	697.85	698.62	61+75	698.62	699.39	700.16
697.29	698.05	698.82	62+00	698.82	699.59	700.36
697.51	698.27	699.04	62+25	699.04	699.81	700.58
697.75	698.51	699.28	62+50	699.28	700.05	700.82
698.00	698.76	699.53	62+75	699.53	700.30	701.07
698.27	699.03	699.80	63+00	699.80	700.57	701.34
698.56	699.32	700.09	63+25	700.09	700.86	701.63
698.87	699.63	700.40	63+50	700.40	701.17	701.94
699.19	699.95	700.72	63+75	700.72	701.49	702.26
699.53	700.29	701.06	64+00	701.06	701.83	702.60
699.94	700.68	701.42	64+25	701.42	702.16	702.91
700.43	701.12	701.80	64+50	701.80	702.49	703.18
700.93	701.56	702.19	64+75	702.19	702.83	703.46
701.46	702.03	702.60	65+00	702.60	703.18	703.75
702.00	702.51	703.03	65+25	703.03	703.55	704.07
702.55	703.02	703.48	65+50	703.48	703.95	704.41
703.14	703.54	703.94	65+75	703.94	704.35	704.75
703.72	704.07	704.42	66+00	704.42	704.77	705.12
704.32	704.62	704.91	66+25	704.91	705.21	705.50
704.93	705.17	705.40	66+50	705.40	705.64	705.87
705.53	705.72	705.89	66+75	705.89	706.08	706.26
706.13	706.32	706.38	67+00	706.38	706.57	706.64
706.71	706.90	706.87	67+25	706.87	707.06	707.04
707.26	707.45	707.36	67+50	707.36	707.55	707.46
707.81	708.00	707.85	67+75	707.85	708.04	707.89
708.34	708.53	708.34	68+00	708.34	708.53	708.34

SECTIONS

SHEET NO.	OF SHEETS	STATE	PROJECT
2		OHIO	I-77-1(7)15

WAS - 77 - 15.70
NOB - 77 - 0.00

42

END AREA | VOLUME

CUT | FILL | CUT | FILL

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

810 800 790 780 770 760

C C 780 770 760 750 C

220 200 180 160 140

816.88
831+00
776.8

810 10' 800 798.5

790 780 770 760

B B 780 770 760 750 B

220 200 180 160 140

818.38
830+50
779.7

+50 Begin Dumped Rock

A A 780 770 760 750 A

220 200 180 160 140

819.88
830+00
779.1

10' 2:1 802.9

3:1 3:1 809.6

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

Sta. 830+00 to Sta. 831+00

PRINTED IN U. S. A.
TRADE MARK

SEEDING	
LBS. PER ACRE	SQ. YDS.

STATE	PROJECT
OHIO	I-77-1(7)15

WAS - 77 - 15.70
NOB - 77 - 0.00

END AREA

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

830
820
810
800

372 ← Begin Seeding Sta. 833+00

S

3:1

Begin Earthwork Sta. 833+00 → 2748 0

810.88
833+00
829.9

832+50, ℄
Std. No. 4 C.B.
IE Grate = 809.46

15" x 84' Class J-1 1.00% →

IE = 806.00

812.38
832+50
810.1

832+50, 86.7' Rt.
IE = 805.16

Std. HW-E Endwall
+47 End Dumped Rock

810
800
790
780

813.88
832+00
784.3

2:1
781.3

+01 Begin Dumped Rock
+92 End Dumped Rock

10'
795.0

770
760

815.38
831+50
765.1

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

Sta. 831+50 to Sta. 833+00

OHIO I-77-1(7) 15

WAS · 77 · 15.70

NOB · 77 · 0.00

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

B 870 860 850 840 830 B — 120 1:1 140 160 — 1½:1

B 870 860 B — 1:1

800 790 780 770 760 750 740 — 292 1644 — C C — 1:1 — Earthwork C.R. 8 I.R. 77 — ℄ C.R.8 — 731.2 — 240 220 200 180 160 140 — C 770 760 750 C 740

807.88
834+00
824.2

140 A A — 160 180 200 — 770 760 750 740 — 300 1867 — A A — 780 770

809.38
833+50
837.7

860 850 840 830 820 810 800 790 — 1:1 — 1½:1

6971 1927

6318 658

8394 609

123052394

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

Sta. 833+50 to Sta. 834+00

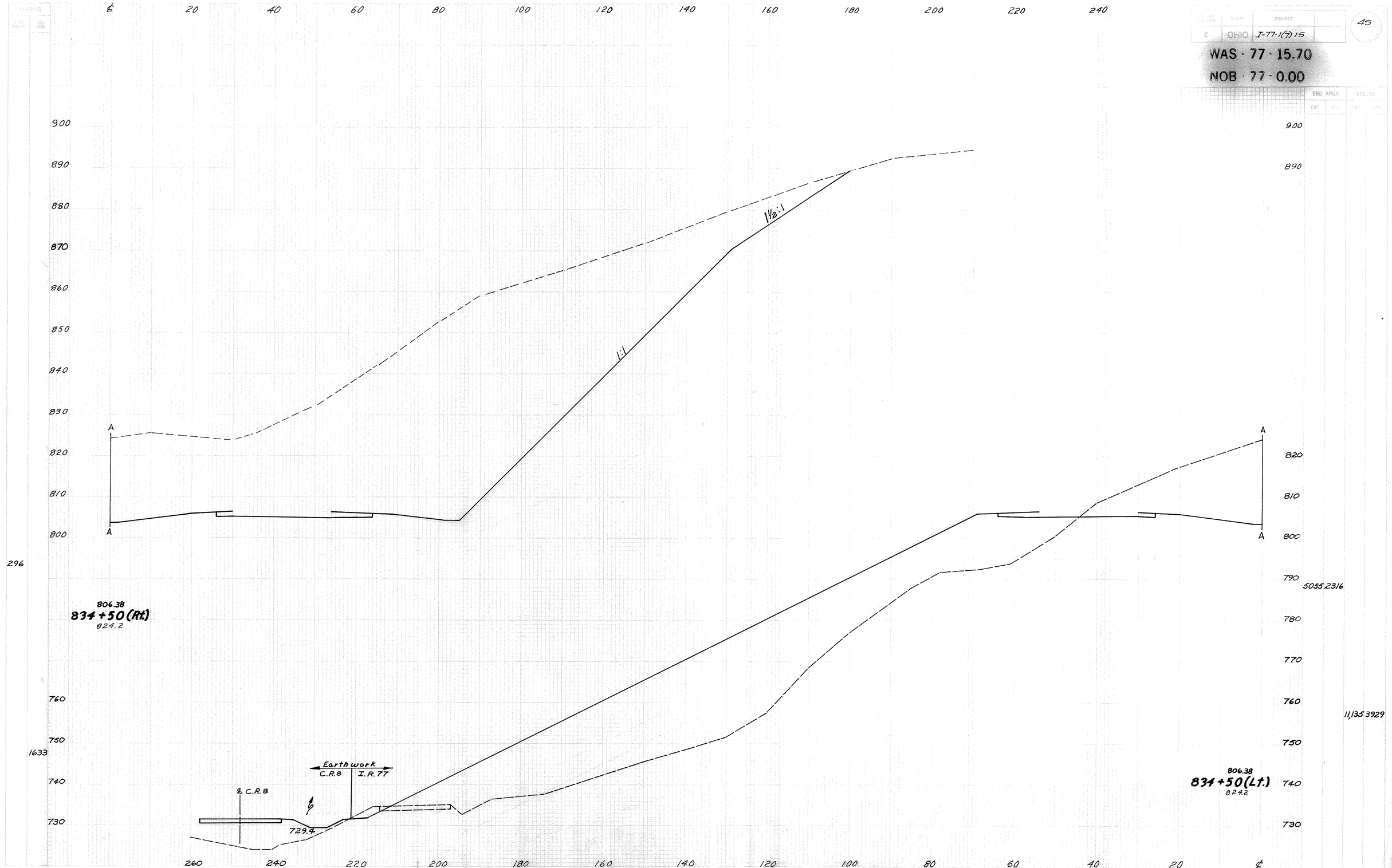
SHEETING
LIN. FEET | SQ. YDS.

SEC. NO.	STATE	PROJECT	
2	OHIO	I-77-1(7)15	

45

WAS · 77 · 15.70
NOB · 77 · 0.00

END AREA
CUT | FILL | CUT | FILL



Sta. 834+50

SHEETING
LIN. FT. WIDTH | SQ. FOS.

STATE	PROJECT
OHIO	I-77-1(7)15

WAS - 77 - 15.70
NOB - 77 - 0.00

46

END AREA
CUT | FILL

¢ 20 40 60 80 100 120 140 160 180 200 220 240

900
890
880
870
860
850
840
830
820
810
800
790
780
770
760
750
740
730

317

1703

1½:1

1:1

A A

804.88
835+00 (Rt)
819.5

804.88
835+00 (Lt.)
819.5

Earthwork
C.R.8 I.R.77

℄ C.R.8

728.0

40823285

8460 5186

260 240 220 200 180 160 140 120 100 80 60 40 20 ℄

Sta. 835+00

SHEETING

END AREA	SQ. YDS.

STATE	PROJECT
OHIO	I-77-1(7)15

WAS · 77 · 15.70
NOB · 77 · 0.00

47

END AREA		VOLUME	
CUT	FILL	CU.	YDS.

¢ 20 40 60 80 100 120 140 160 180 200 220 240

900 890 880 870 860 850 840 830 820 810 800

A A

1:1

½:1

803.38
835+50 (Rt.)
811.3

322

1775

Earthwork
C.R.8 I.R.77

℄ C.R.8

7270

240 220 200 180 160 140 120 100 80 60 40 20 ¢

900 890 810 800 790 780 770 760 750 740 730

A A

803.38
835+50 (Lt.)
811.3

3284 4385

6820 7102

Sta. 835+50

SEEDING
TRG WIDTH | SQ. YDS.

STATE	PROJECT
OHIO	J-77-1(7)15

48

WAS - 77 - 15.70
NOB - 77 - 0.00

END AREA: CUT | FILL
VOLUME: CUT | FILL

℄ 20 40 60 80 100 120 140 160 180 200 220 240

900
890
880
870
860
850
840
830
820
810
800

890
880
790
780
770
760
750
740
730

1:1
1½:1

A A

801.88
836+00 (Rt.)
800.4

801.88
836+00 (Lt.)
800.4

Earthwork
C.R.8 | I.R.77

℄ C.R.8

725.5

240 220 200 180 160 140 120 100 80 60 40 20 ℄

Sta. 836+00

329
1808
2562.4712
54138423

SECTIONS

FND WIDTH | SQ YDS

SEC. NO. DIVISION	STATE	PROJECT	
2	OHIO	I-77-1(7) 15	

40

WAS - 77 - 15.70

NOB - 77 - 0.00

END AREA | VOLUME

CUT | FILL | CUT | FILL

℄ 20 40 60 80 100 120 140 160 180 200 220 240

890
880
870
860
850
840
830
820
810
800

1½:1

1:1

A
A

800.38
836+50 (Rt.)
798.7

359

1911

℄ C.R.8

Earthwork
C.R.8 | I.R.77

724.3

730
720

240 220 200 180 160 140 120 100 80 60 40 20 ℄

800
790
780
770
760
2214.4957
750
740
44228953
730
720

A
A

800.38
836+50 (Lt.)
798.7

Sta. 836+50

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BY CALTRANS GRAPH

SEEDING
EACH SQ. YDS.

DIST. OFF. DIVISION	STATE	PROJECT	
2	OHIO	I-77-1(7)15	

50

WAS - 77 - 15.70
NOB - 77 - 0.00

END AREA		VOLUME	
CUT	FILL	CUT	FILL

℄ 20 40 60 80 100 120 140 160 180 200

860 850 840 830 820 810 800 790 780

B B

798.05
837+27.5(Rt.)
781.7

1:1 1½:1

361

Earthwork
C.R.8 I.R.77

730 ℄ C.R.8
720 722.3

1100

820 810 800 790

359

A A

798.88
837+00 (Rt.)
797.7

1994

Earthwork
C.R.8 I.R.77

730 ℄ C.R.8
720 723.0

240 220 200 180 160 140 120 100 80 60 40 20 ℄

B B

798.05
837+27.5 (Lt.)
781.7

836 5987

790 780 770 760 750

1247 5543

A A

800 790 780 770 760

1613 4899

798.88
837+00 (Lt.)
797.7

750 740 730 720

3543 9126

Sta. 837+00 to Sta. 837+27.5

SEEDING
CRD WIDTH | SQ. YDS.

DIVISION	STATE	PROJECT
2	OHIO	I-77-1(-7) 15

51

WAS - 77 - 15.70
NOB - 77 - 0.00

END AREA: CUT | FILL — VOLUME: CUT | FILL

342

1942

367

898

2835 4938

4099 9233

1593 5034

1012 4592

795.88
838+00
799.7

797.38
837+50
795.1

Earthwork
C.R.8 | I.R.77

℄ C.R.8

720.3

721.6

1:1

1½:1

Sta 837+50 to Sta. 838+00

DIV. OF HIGHWAYS	STATE	PROJECT
2	OHIO	I-77-1(7)15

WAS · 77 · 15.70

NOB · 77 · 0.00

END AREA — VOLUME

GRADING — UNIT PRICE — NO. YDS.

300

312

1700

1817

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

240 220 200 180 160 140 160

790 780 770 760 750 740 730 720 710 700 690 680 670 660 650 640 630 620 610 600 590 580 570 560 550 540 530 520 510 500 490 480 470 460 450 440 430 420 410 400 390 380 370 360 350 340 330 320 310 300 290 280 270 260 250 240 230 220 210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0

860 850 840 830 820 810 800

C C 750 740 730

℄ C.R.8

Earthwork C.R.8 I.R.77

717.5

D D 1:1 1½:1

792.88
839+00
799.7

A A 750 740 730

℄ C.R.8

719.3

794.38
838+50
798.7

B B 1:1 1½:1

4147 3931

7169 7749

3596 4438

5954 8681

Sta. 838+50 to Sta. 839+00

EXISTING
LINE WIDTH | SQ. YDS.

DIVISION	STATE	PROJECT
2	OHIO	I-77-1(7) 15

WAS - 77 - 15.70
NOB - 77 - 0.00

53

END AREA VOLUME
CUT FILL CUT FILL

363

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

750 740 730 820 810 800 790 780

240 220 200 180 160

Earthwork
C.R. 8 I.R.77

℄ C.R.8

715.0

C C

1:1

1½:1

3175 4809

783.88
840+00
797.0

770 760 750 740 730

C C

1878

6304 8082

780 770 760 750 740 730 820 810 800 790

791.38
839+50
800.0

A A

313

3634 3920

B B

850 840

140 160

72057269

240 220 200 180 160

Earthwork
C.R.8 I.R.77

℄ C.R.8

716.0

1703

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

Sta. 839+50 to Sta. 840+00

SEEDING
LBS/1000 SQ. FOS.

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

820 810 800 790 780 770 760 750 740 730 720

350

B B

℄ C.R.8 Earthwork C.R.8 I.R.77

240 713.8 220 200 180 160 140

1944

786.88
841+00
782.8

C C 2:1

820 810 800 790

C C 2:1

120 140 160 180

1048 5074

2866 9376

800 790 780

2:1

788.38
840+50
792.7

2047 5051

A A

℄ C.R.8 Earthwork C.R.8 I.R.77

240 714.3 220 200 180 160 140

1981

750 740 730 720

4835 9130

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

Sta. 840+50 to Sta. 841+00

54

H.D. NO. DIVISION	STATE	PROJECT
2	OHIO	I-77-1(7)15

WAS - 77 - 15.70
NOB - 77 - 0.00

END AREA

SEEDING
LIST WIDTH | SQ. YDS.

FED. AID DIVISION	STATE	PROJECT
2	OHIO	I-77-1(7) 15

WAS - 77 - 15.70
NOB - 77 - 0.00

55

END AREA: CUT | FILL
VOLUME: CUT | FILL

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

820 810 800 790 780 770 760 750 740 730 720

2:1

785.38
841+50
777.6

12544826

344

C C

140 160 180 200 220 240

Earthwork
C.R.8 I.R.77

℄ C.R.8

713.2

1080

B B

13565134

786.22
841+22
773.5

13625075

350

A A

856

713.7

9824135

830 140 160 180

Sta. 841+22 to Sta. 841+50

SHEETING
LIN. FT. | SQ. YDS.

SYSTEM	STATE	PROJECT
2	OHIO	I-77-1(7)15

WAS - 77 - 15.70
NOB - 77 - 0.00

56

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

790 780 770 760 750 740 730

Std. No.4 C.B. ℄ Grate=778.62

+82 Begin 10' Dumped Rock Channel Protection

781.54
842+78
736.4

℄=774.00

15" x 112' Class B-1 5.35 % S

3:1

12'

℄=768.00

Std. HW-E Endwall

For Median Outlet Quantities See Sheet No. 21

For details not shown see Sheet No. 256

240 220 200 180 160

C C

Earthwork C.R.8 I.R.77

℄ C.R.8

Var.

711.2

C C

750 740 730 720

306

+73 End 8' Dumped Rock Channel Protection

782.38
842+50
737.6

4:1

8'

774.0

991

770 760 750 740 730 720

240 220 200 180 160

B B

Earthwork Back C.R.8 I.R.77

Earthwork Ahead

℄ C.R.8

711.9

B B

331

783.88
842+00
757.4

+00 Begin 8' Dumped Rock Channel Protection

8'

2:1

1847

770 760 750 740 730 720

A A

240 220 200 180 160

Earthwork C.R.8 I.R.77

℄ C.R.8

712.3

A A

334

1883

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

770 760 750 740 730 720

800 790 780 770

0 10066

92 10062

177 9339

378 14456

231 6274

1375 10277

Sta. 842+00 to Sta. 842+78

DIVISION	STATE	PROJECT
2	OHIO	I-77-1(7)15

WAS - 77 - 15.70

NOB - 77 - 0.00

END AREA

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

790 780 770 760 750 740 730 720

306

1731

777.88
841+00
776.5

3:1

C C C C

200 180 160

1809 4466

1675 9775

317

1697

779.38
843+50
753.4

B B B B

200 180 160

+65, End 10' Dumped Rock Channel Protection

10'

759.5

6091

14482

294

733

780.88
843+00
738.3

A A A A

Earthwork
C.R.8 I.R.77

C.R.8 ℄

220 200 180 160

Var.

711.8

10'

760.3

9550

7992

Sta. 843+00 to Sta. 844+00

SEC. NO. DIVISION	STATE	PROJECT
2	OHIO	I-77-1(7)15

WAS - 77 - 15.70
NOB - 77 - 0.00

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

120

END AREA

B

200 180 160

740 730 720 710

B

2:1

820 810 800

1:1

790 780 770

4931 2861

774.38
845+00
790.7

770 760 750 740 730

289

B

740 730

B

7879 6323

1672

810 800 790

2:1

1½:1

3578 3968

780 770 760

776.38
844+50
784.1

313

A

740 730 720

A

200 180 160

770 760 750 740 730

1719

A

4988 7809

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

Sta. 844+50 to Sta. 845+00

DIVISION	STATE	PROJECT
2	OHIO	I-77-1(7)15

WAS - 77 - 15.70
NOB - 77 - 0.00

59

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

860 850 840 830 820 810 800 790

120 140 160 180 200 220 240 260

D D 2:1 1:1 12:1 1:1 D D

830 820 810 9960 1237 800 790 780

262

770 760 750 740 730

1542

C C C C 740 730

200 180 160

780 770 760 293 750 740 1617 730

A A A A 750 740 730

180 160 140

771.88
846+00
801.8

773.38
845+50
796.6

B B 2:1 2:1 B B

160 180 200

830 820 810 800 6109 1681 790 780

1:1

14,879,2702

10,222,4206

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

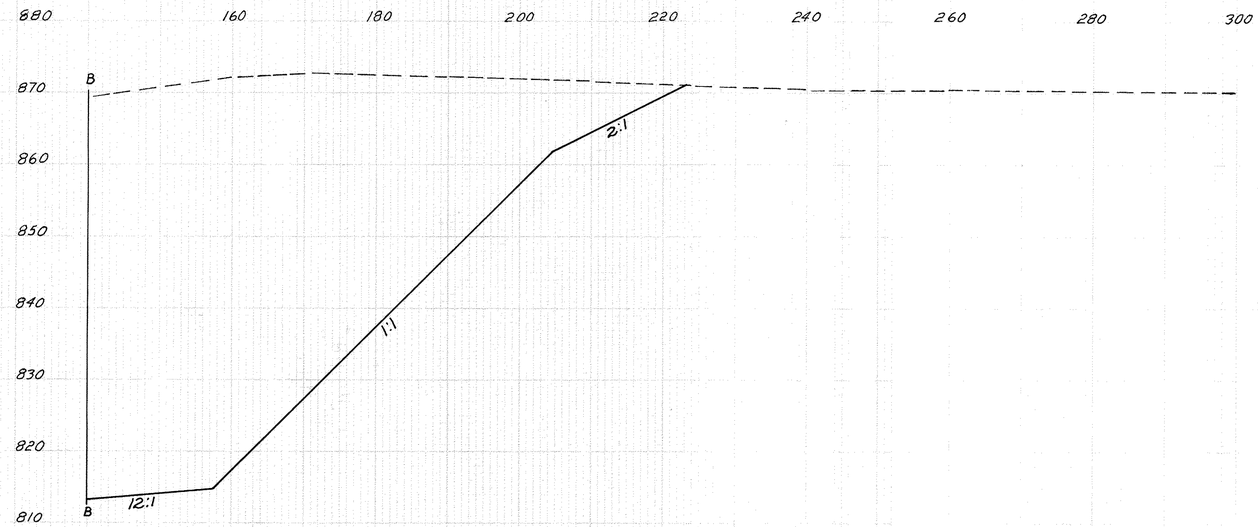
Sta. 845+50 to Sta. 846+00

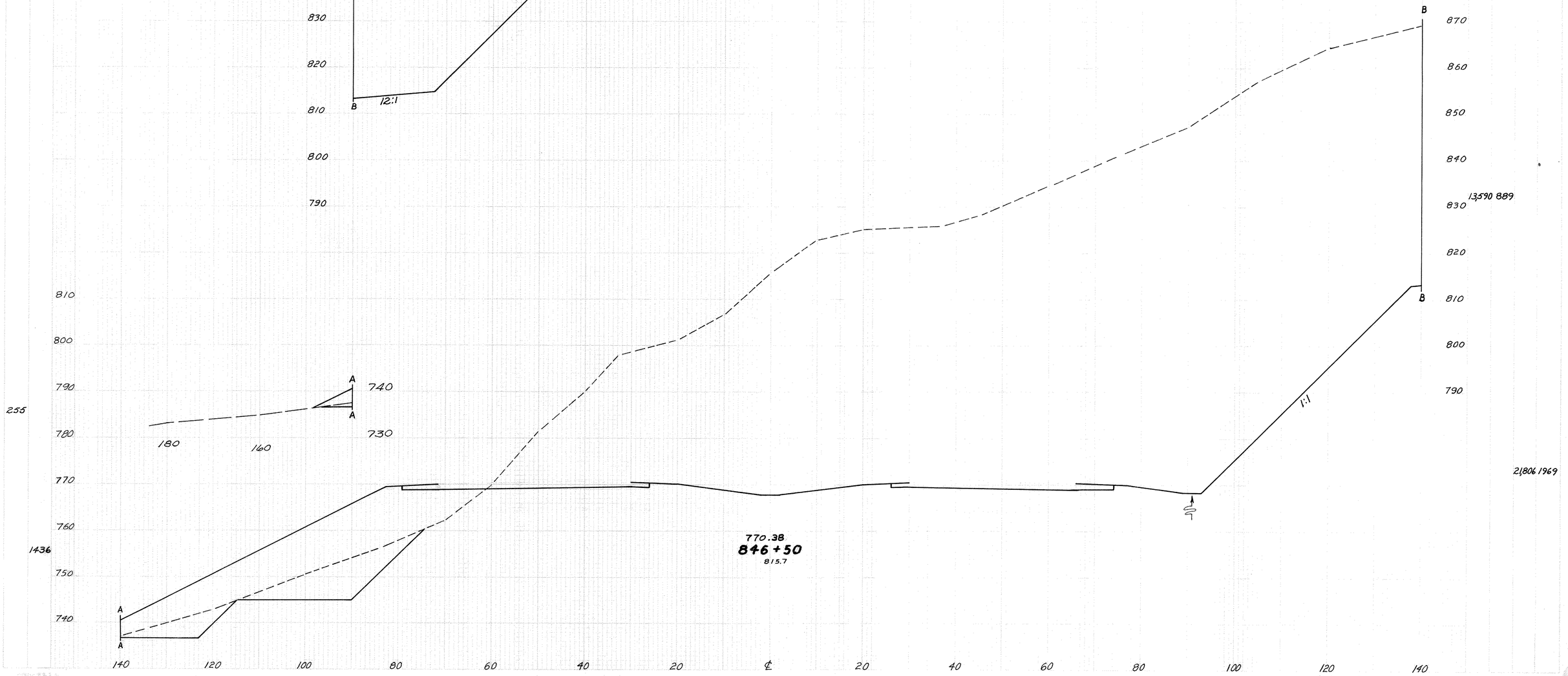
DIVISION	STATE	PROJECT
2	OHIO	I-77-1(7)15

WAS - 77 - 15.70

NOB - 77 - 0.00

60





SEC. NO.	STATE	PROJECT
2	OHIO	I-77-1(7)15

WAS - 77 - 15.70
NOB - 77 - 0.00

END AREA

140 160 180 200 220 240 260 280 300

880 870 860 850 840 830 820 810 800 790

A A

2:1

1:1

12:1

A 880 870 860 850 840 830 820 17,095 143 A 810 800 790

1:1

810 800 790 780 770 760 254 750 740 1414 730

768.88
847+00
826.2

28,412 956

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

Sta. 847+00

SEEDING

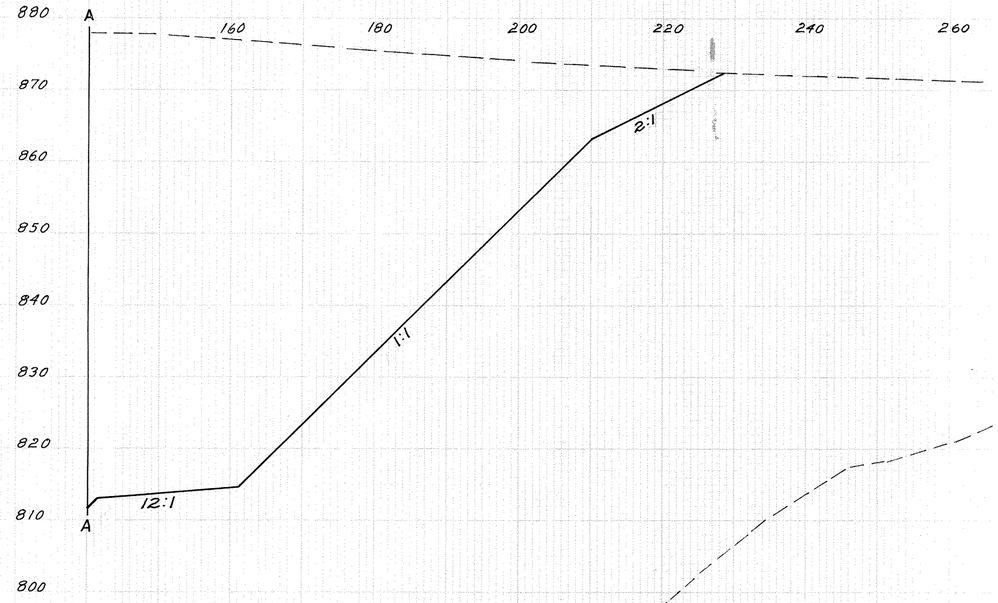
LBS. PER ACRE	NO. LBS.

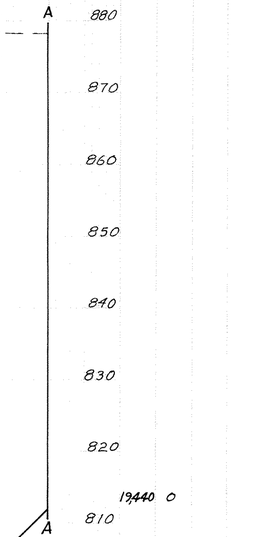
FED. AID DIVISION	STATE	PROJECT
2	OHIO	I-77-1(7)15

WAS · 77 · 15.70
NOB · 77 · 0.00

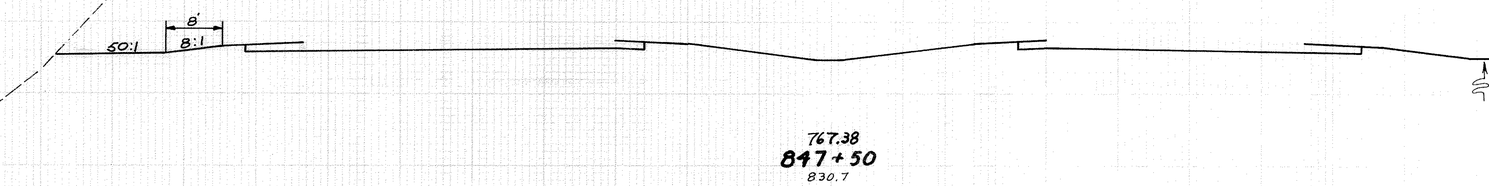
62

END AREA VOLUMES





19,440 0



33,829 133

227

1336

767.38
847+50
830.7

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

Sta. 847+50

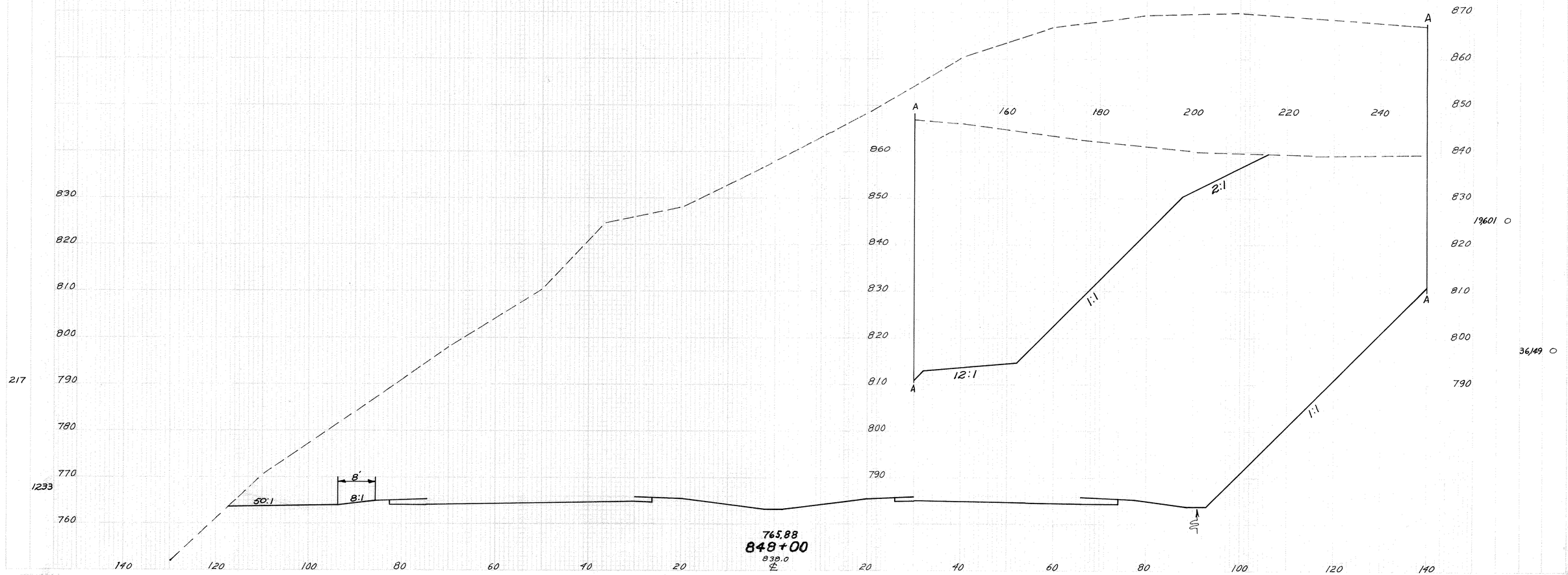
SCALING	
1 INCH =	50 FEET

DIST.	STATE	PROJECT
2	OHIO	I-77-1(7)15

WAS · 77 · 15.70
NOB · 77 · 0.00

63

END AREA		VOLUME	
CUT	FILL	CUT	FILL



SEEDING
SQ. YDS.

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

840 830 820 810 800 790 780 770 760

240

8' 8:1 50:1

B B B B

120 140 160 180 2:1 1:1 12:1 1:1

℄ Ramp "D"

762.88
849+00
840.6

1314

233

1250

A A A A

160 180 200

12:1 1:1 2:1 1:1

764.38
848+50
845.2

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

860 850 840 830 820 810 800 790

Sta. 848+50 to Sta. 849+00

64

2 OHIO I-77-1(7)15

NAS · 77 · 15.70

NOB · 77 · 0.00

END AREA VOLUME
CUT FILL CUT FILL

820 810 17582 O 800 790 780 770

18925 O

35672 O

33803 O

DIVISION	STATE	PROJECT
2	OHIO	I-77-1(7)15

WAS - 77 - 15.70

NOB - 77 - 0.00

65

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

END AREA VOLUME

830 820 810 800 790 780 770 760

239

8'

8:1

50:1

759.88

850+00

814.3

1328

1331

B B

820 810 800 790 780

2:1

1:1

160 180

℄ Ramp "D"

1:1

12,630 ○

26,426 ○

A A

820 810 800 790

12:1

2:1

1:1

160 180 200

15,911 ○

31,012 ○

761.38

849+50

828.4

Sta. 849+50 to Sta. 850+00

SEEDING
UNIT WIDTH | NO. TONS

NO. REVISION	DATE	PROJECT
2		OHIO I-77-1(7)15

WAS - 77 - 15.70
NOB - 77 - 0.00

66

END AREA — VOLUMES — CUT | FILL — CUT | FILL

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

790 780 770 760 750 740 730 820 810 800 790 780 770 760 750 740 730 820 810 800 790 780 770 760 750 740 730

℄ Ramp "A"

℄ Ramp "D"

2:1 1:1

756.88
851+00
785.7

758.38
850+50
799.3

B B B B

A A A A

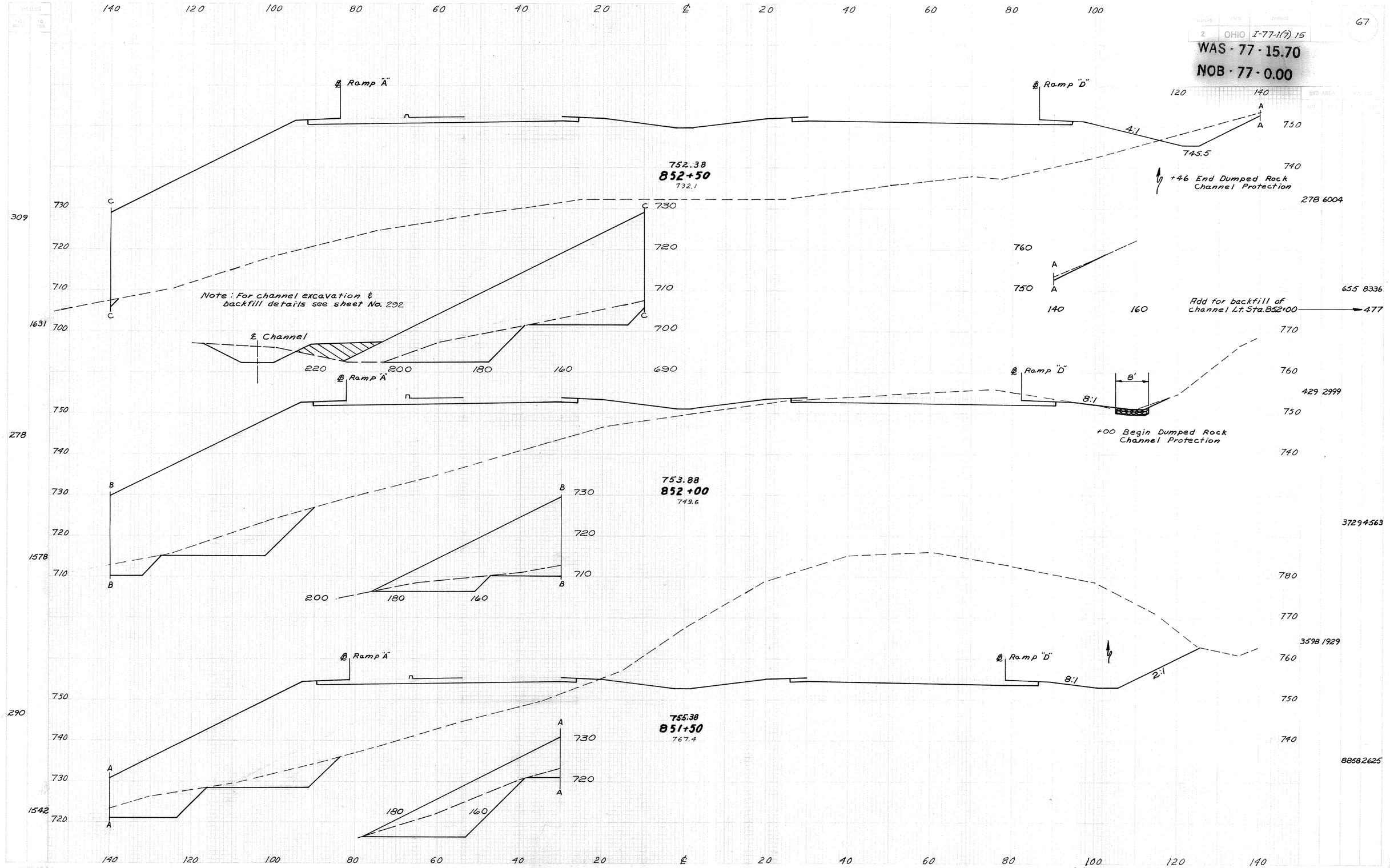
180 160 140 160

265 1431 250 1358

5963 906 13865 1108 9005 291 20032 269

Sta 850+50 to Sta 851+00

2 OHIO I-77-1(7) 15
WAS - 77 - 15.70
NOB - 77 - 0.00



Sta. 851+50 to Sta. 852+50

OHIO I-77-1(7) 15
WAS - 77 - 15.70
NOB - 77 - 0.00

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

℄ Ramp "A"

℄ Ramp "D"

747.88
854+00
718.6

610 8460

1218 15672

705 8466

749.38
853+50
717.8

712 14,966

750.88
853+00
718.7

316 12,687

63 7698

748.8

℄ Ramp"A"

℄ Ramp "D"

8' 10' 24:1 2:1

690.5 691.1 691.8

+15 Begin Ditch
For Detail Of Channel
Back See Sheet NO. 292

1'-6"

1½:1 1:1 8:1 12:1

377 1944 323 1758 310 1719

Sta. 853+00 to Sta. 854+00

2 OHIO I-77-1(7) 15
WAS · 77 · 15.70
NOB · 77 · 0.00

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

℄ Ramp "A"

4:1

C

743.38
855+50
718.4

472 720
710
700
690
2533

50:1

8' 10'

2:1

24:1

688.5

260 240 220 200 180 160 140

℄ Ramp "A"

25° Bend Cl. F-4

15" x 104' Cl. B-1 ← 1.00%

IE = 737.61
IE = 736.64

B

NOTE: For median outlet quan.
see sheet no. 22
For details not shown
see sheet no. 256

25° Bend Cl. F-4

IE = 693.22

15" x 96' Cl. F-4 @ 47.63%

IE = 693.30

IE = 693.28

15" x 6' Cl. F-4

Std. HW-E Endwall

689.1

744.88
855+00
714.6

440 720
710
700
690
2342

℄ Ramp "A"

A

746.38
854+50
714.9

403 720
710
700
690
2167

8' 10'

2:1

24:1

1'-6"

689.8

240 220 200 180 160 140

Std. No. 4 C.B. IE Grate = 741.15

IE = 738.65

Var. Var.
742.5

℄ Ramp "D"

739.0

D

740
730
516 8075

200

1½:1

180

760
750
740
140

℄ Ramp "D"

1½:1

311 8263

740
730

E

180

760
750

E

160

780
770

F

200

180

561 16053

℄ Ramp "D"

743.5

G

1½:1

740
730
720
294 9074

760
750

G

160

180

837 16235

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

Sta. 854+50 to Sta. 855+50

OHIO I-77-1(7)15
WAS 77 · 15.70
NOB 77 · 0.00

70

140 120 100 80 Earthwork Ramp "A" I.R.77 60 40 20 ℄ 20 40 60 Earthwork I.R.77 Ramp D 80 100

℄ Ramp "A"

2:1

731.2

D

730 720 710 700 690

62

738.88
857+00
714.3

80 100 120

740 730

D

730.7

℄ Ramp "D"

Earthwork I.R.77 Ramp D

730 720 710 700 690

0 3206

0 5783

344

For Ramp "A" Earthwork
See Sheet No. 215 to 221

Earthwork Ramp "A" I.R.77 Ahead Back

℄ Ramp "A"

2:1

734.4

4:1

734.3

℄ Ramp "D"

Ahead 0 3040

Back 50 7390

730 720 710 700 690

62

740.38
856+50
719.6

953

℄ Ramp "A"

2:1

737.4

4:1

737.0

Earthwork I.R.77 Ramp D

Ahead

Back

℄ Ramp "D"

A A B B

740 730 720 710 700 690

281

50:1 10' 8' 2:1 24:1 1'-6"

687.8

741.88
856+00
719.1

760 750 740

B 1½:1 160 C 180

C 1½:1 200 220 180

790 780 770 760

730 720 710 700 690

Ahead 27 7746

Back 803 8090

7 1 14,015

12,221 14,968

2092

240 220 200 180 160 140 ℄ 140 120 100 80 60 40 20 ℄ 20 40 60 80 100 120 140

Sta. 856+00 to Sta. 857+00

OHIO I-77-1(7) 15
WAS - 77 - 15.70
NOB - 77 - 0.00

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

Earthwork Ramp "A" I.R.77 | Earthwork I.R.77 Ramp "D"

℄ Ramp "A" | ℄ Ramp "D"

730 720 710 700 690

62 344

734.38
858+50
711.7

724.0

735.88
858+00
714.1

726.7

737.38
857+50
716.7

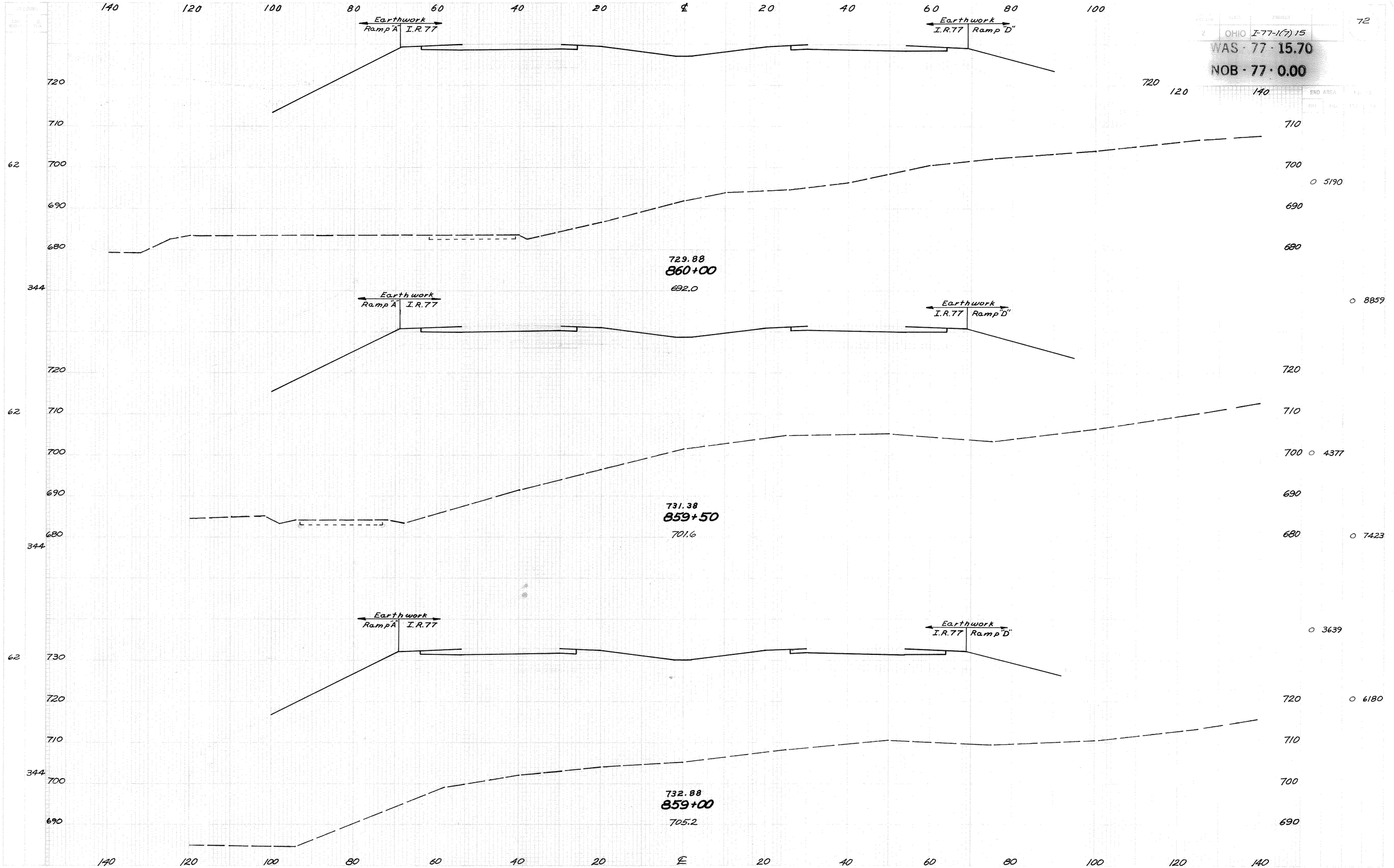
729.0

4:1

0 3035 | 0 5454 | 0 2855 | 0 5206 | 0 2767 | 0 5531

Sta. 857+50 to Sta. 858+50

OHIO I-77-1(7) 15
WAS · 77 · 15.70
NOB · 77 · 0.00



Sta. 859+00 to Sta. 860+00

NO. REVISION	STATE	PROJECT
2	OHIO	I-77-1(7) 15

WAS - 77 - 15.70

NOB - 77 - 0.00

SEEDING

LIN. FT. WIDTH	SQ. YDS.
62	344
62	344
62	344

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

720 710 700 690 680

Earthwork Ramp "A" I.R. 77

Earthwork I.R. 77 Ramp "D"

725.38
861+50
682.9

726.88
861+00
682.8

728.38
860+50
685.1

END AREA VOLUMES

CUT	FILL	CUT	FILL
		0	5752
		0	10695
		0	5798
		0	10517
		0	5560
		0	9954

Sta. 860+50 to Sta. 861+50

2	OHIO	I-77-1(7)15	

WAS - 77 - 15.70

NOB - 77 - 0.00

CLEARING — END WIDTH | NO. TREES

END AREA — CUT | FILL

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

Earthwork Ramp "A" I.R.77 — Earthwork I.R.77 Ramp "D"

720 / 710 / 700 / 690 / 680 / 670

62 — 344

720.88
863+00
681.5

720 / 710 / 700 / 690 / 680

62 — 344

722.38
862+50
682.7

720 / 710 / 700 / 690 / 680

62 — 344

723.88
862+00
682.9

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

END AREA — CUT | FILL

710 / 700 / 690 / 680

○ 5400

○ 10027

720 / 710 / 700 / 690 / 680

○ 5430

○ 10195

720 / 710 / 700 / 690 / 680

○ 5581

○ 10494

Sta. 862+00 to Sta. 863+00

OHIO I-77-1(7)15
WAS - 77 - 15.70
NOB - 77 - 0.00

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

Earthwork Ramp "A" I.R.77 — Earthwork I.R.77 Ramp "D"

15"I-1

716.38
864+50
673.5

+23.33, 2' Rt. ℄ Survey
Std. No. 4 C.B.
IE Grate = 714.26

15"x 164' Class E-1
IE = 711.26

For Catch Basin Quantities
See Sheet No. 23

717.88
864+00
678.5

719.38
863+50
678.9

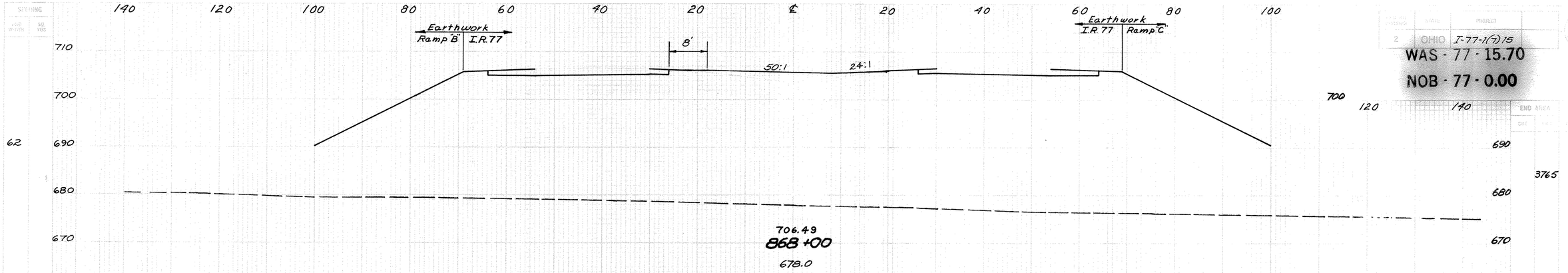
62 344 710 700 690 680 670

0 5210
0 9796
0 5369
0 10077
0 5514
0 10105

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

Sta. 863+50 to Sta. 864+50

Sta. 865+00 to Sta. 866+00



OHIO I-77-1(7)15
WAS - 77 - 15.70
NOB - 77 - 0.00

77

BRIDGE LIMITS
Sta. 867+61.00
Sta. 866+34.00

Add for structure ——————→ 16900

Sta. 868+00

STATE	PROJECT
OHIO	I-77-1(7)15

WAS - 77 - 15.70

NOB - 77 - 0.00

78

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

END AREA

Earthwork Ramp "B" I.R. 77 — Earthwork I.R. 77 Ramp "C"

4:1 | 8:1 | 8:1 | 4' | 7:1 | 7:1

62 | 700 | 690 | 680 | 344 | 670

702.32
870+00
676.7

O 3352

Earthwork Ramp "B" I.R. 77 — Earthwork I.R. 77 Ramp "C"

3:1 | 8:1 | 8:1 | 8' | 8:1 | 11:1 | 4:1

62 | 700 | 690 | 680 | 344 | 670

703.25
869+50
677.0

O 6359

O 3515

Earthwork Ramp "B" I.R. 77 — Earthwork I.R. 77 Ramp "C"

2:1 | 8:1 | 8:1 | 8' | Var. | 21:1 | 3:1

62 | 700 | 690 | 680 | 344 | 670

704.25
869+00
673.6

O 6933

O 3972

Earthwork Ramp "B" I.R. 77 — Earthwork I.R. 77 Ramp "C"

2:1 | 8' | Var. | 24:1

62 | 700 | 690 | 680 | 344 | 670

705.33
868+50
677.2

O 7100

O 3696

O 6908

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

Sta. 868+50 to Sta. 870+00

DIVISION	STATE	PROJECT
2	OHIO	I-77-1(7)15

WAS 77 15.70
NOB - 77 - 0.00

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

END AREA VOLUMES
CUT FILL CUT FILL

730
720
710
700
690
680
670

62
344

Earthwork Ramp "B" I.R. 77
Earthwork I.R. 77 Ramp "C"
℄ Ramp "C"
Var.

699.37
872+00
714.1

2070 33

699.99
871+50
704.4

2810 202

964 186

700.69
871+00
692.0

987 1298

102 1216

701.47
870+50
682.9

94 3323

0 2373

0 5301

Sta. 870+50 to Sta. 872+00

SHEET NO. 2 OF 2 SHEETS

REVISION	STATE	PROJECT
2	OHIO	I-77-(77)15

WAS · 77 · 15.70

NOB · 77 · 0.00

END AREA

80

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

790 780 770 760 750 740 730 720 710 700 690

162

Earthwork Ramp "B" I.R.77

℄ Ramp "B"

Var.

698.35
873+00
716.7

℄ Ramp "C"

4:1 6:1 4:1

695.3

700

2699 231

690

760 750 740 730 720 710 700 690

622

62

344

Earthwork Ramp "B" I.R.77

℄ Ramp "B"

Var.

698.82
872+50
717.9

Earthwork I.R.77 Ramp "C" Ahead

Back

℄ Ramp "C"

4:1 4:1

Ahead 2710 657

Back 2706 7

700

690

5008 822

730 720 710 700 690

4422 37

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

Sta. 872+50 to Sta. 873+00

SEEDING

LBS WATER | SQ YDS

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

DIVISION	STATE	PROJECT
2	OHIO	I-77-1(7)15

WAS 77 · 15.70

NOB · 77 · 0.00

81

END AREA | VOLUME

CUT | FILL | CUT | FILL

760
750
740
730
720
158 710
700
690
889

Earthwork
Ramp "B" I. R. 77

℄ Ramp "B"

Var.

℄ Ramp "C"

5:1 696.0 Var.

3:1

2792 5

700

690

5084 218

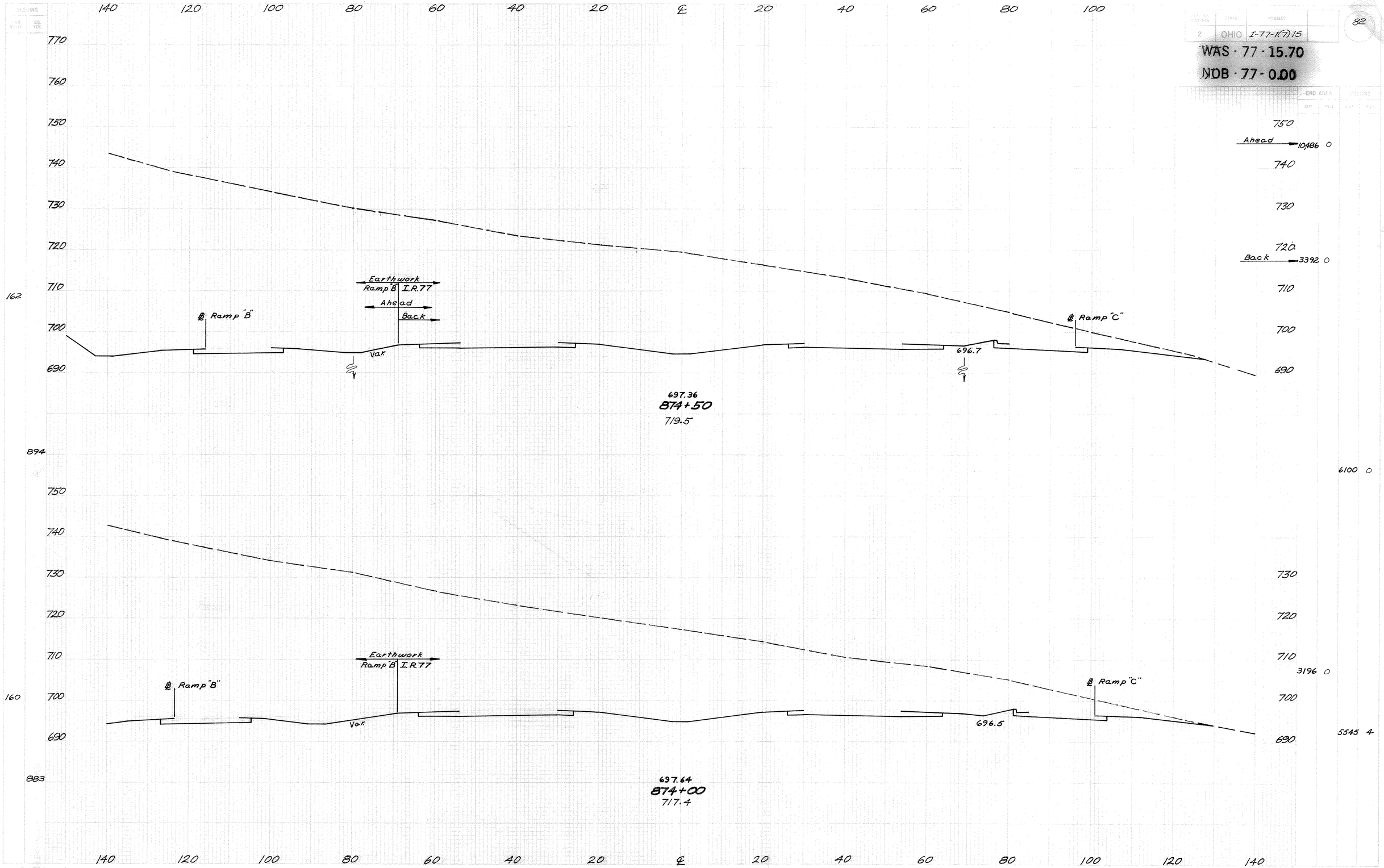
697.96
873+50
715.0

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

Sta. 873+50

	STATE	PROJECT
2	OHIO	I-77-K(7)15

WAS · 77 · 15.70
NOB · 77 · 0.00



Sta. 874+00 to Sta. 874+50

SEEDING

AREA WIDTH	SQ. YDS.

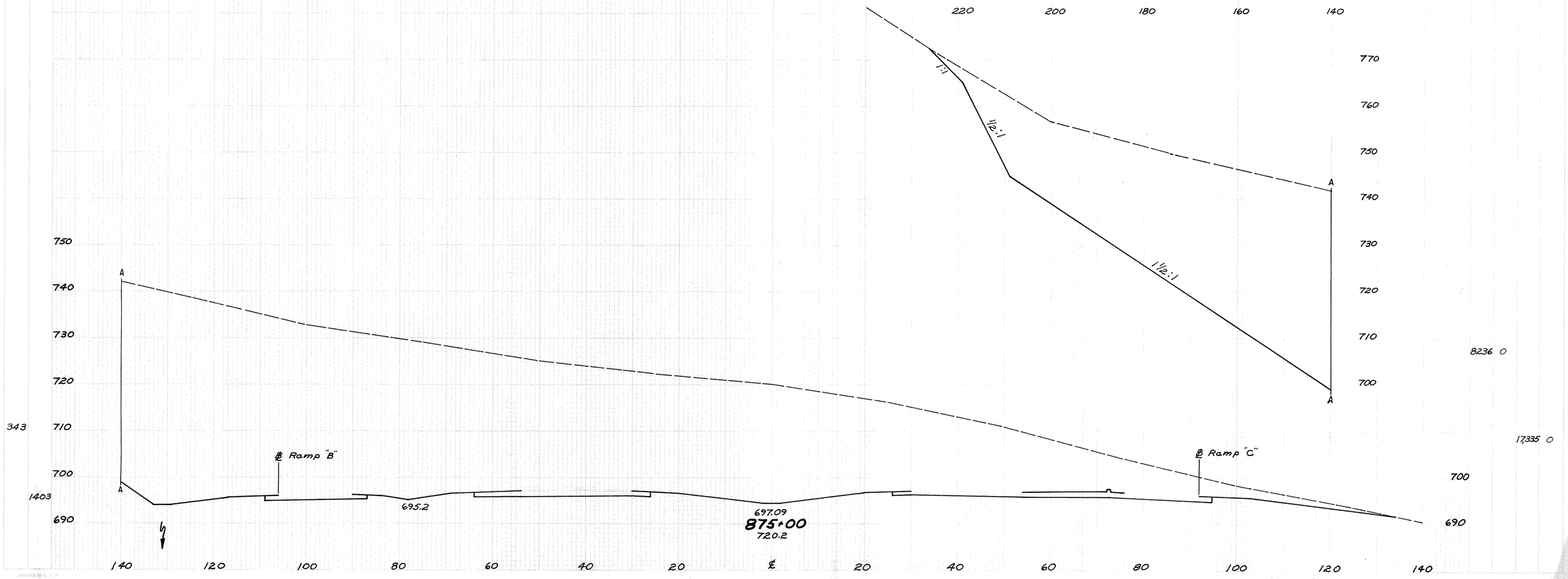
SHEET NO.	STATE	PROJECT
2	OHIO	I-77-1(7)15

WAS - 77 - 15.70

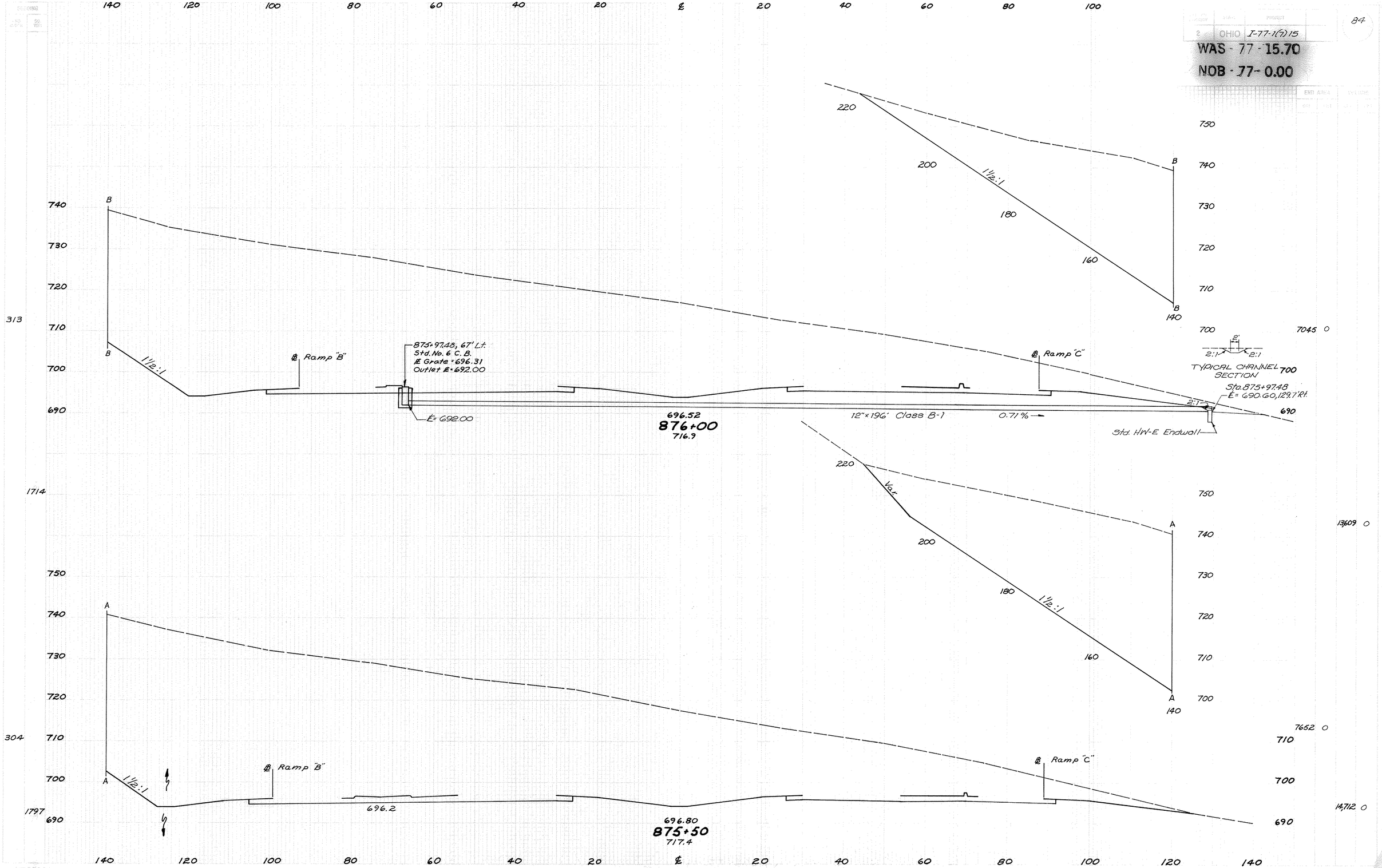
NOB - 77 - 0.00

83

END AREA		VOLUME	
CUT	FILL	CUT	FILL



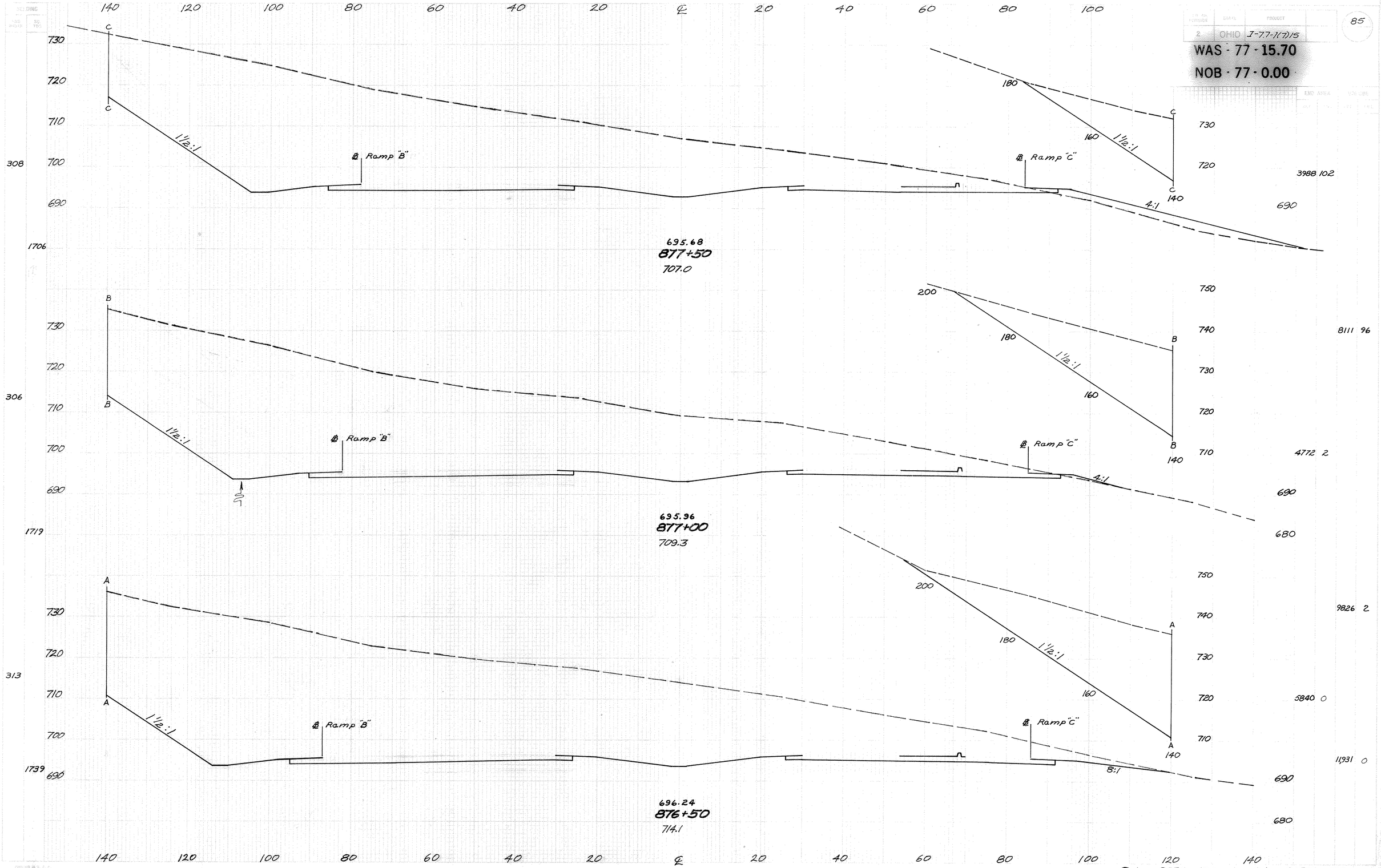
OHIO I-77-1(7)15
WAS - 77 - 15.70
NOB - 77 - 0.00



Sta. 875+50 to Sta 876+00

CO. SEC. DIVISION	STATE	PROJECT
2	OHIO	I-77-7(7)15

WAS - 77 - 15.70
NOB - 77 - 0.00



Sta. 876+50 to Sta. 877+50

PROJECT
OHIO I-77-1(7)15

WAS · 77 · 15.70
NOB · 77 · 0.00

END AREA

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

730 720 710 700 690

E E 1½:1 160 140 E E 730 720

291 1½:1 ℄ Ramp "B" ℄ Ramp "C" 4:1 2901 213

694.84
879+00
702.1

1639

740 730 720 710 700 690

C C 1½:1 160 C C 740 730 720

299 1½:1 ℄ Ramp "B" ℄ Ramp "C" 3327 181

695.12
878+50
704.4

1667

740 730 720 710 700 690

A A 1½:1 160 A A 730 720

301 1½:1 ℄ Ramp "B" 1692

695.40
878+00
706.8

690 680

D D 140 160

5766 365

710 700 690

6452 241

690 680

B B 15' 4:1 2:1 Sta. 877+99, 148' Rt, ℄E=680.00 Std. HW-E Endwall 140 1.5' 160 Dumped Rock Channel Protection Width=6'

3642 79

710 700 690

877+99, 67.30' Rt. Std. No. 6 C.B. ℄E Grate=695.00 Outlet ℄E=691.00 ℄ Ramp "C" 4:1 B B ℄E=691.00 12" x 82' Class B-1 13.41 %

7065 168

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

Sta. 878+00 to Sta. 879+00

SHEET NO.	STATE	PROJECT
2	OHIO	I-77-1(7)15

WAS - 77 - 15.70
NOB - 77 - 0.00

120 100 80 60 40 20 ℄ 20 40 60 80 100

720 710 700 690

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

693.72 / 881+00 / 704.1

D D — 1½:1 — 160 — D 730 — 1½:1 — D 140 — 720 ℄ Ramp "B" — ℄ Ramp "C"

233 — 2895 71

694.00 / 880+50 / 704.0

C C — 1308 — 730 — 1½:1 — 160 — C 730 — 1½:1 — C — 720 — 710 — 700 — ℄ Ramp "B" — ℄ Ramp "C"

238 — 5300 165

B B — 730 — 1319 — 1½:1 — 160 — B 730 — 1½:1 — B 740 — 720 — 710 — 700 — ℄ Ramp "B"

237 — 2829 107

694.28 / 880+00 / 705.5

A A — 730 — 1½:1 — 160 — A 730 — 1½:1 — A — 720 — 710 — 700 — ℄ Ramp "B"

1472 — 6114 159

879+97.21, 63.17 Rt, Std. No. 6 C.B.
℄ Grate = 694.00

℄ Ramp "C" — 15' — 6"I-1 — 2:1 — 684.30 — ℄ = 689.88 — 12"x60" Cl. B-1 — 9.30% — Std. HW-E Endwall Sta. 879+97.21

3775 65

694.56 / 879+50 / 705.0

1622 — 3253 96

720 — 710 — 700 — 690 — 680 — 6507 149 — 5698 286

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

Sta. 879+50 to Sta. 881+00

DIVISION	STATE	PROJECT
2	OHIO	I-77-(K7)15

WAS - 77 - 15.70
NOB - 77 - 0.00

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

720 710 700 690

1½:1 1½:1 1½:1 1½:1

Dike

Std. No. 5 C.B.
Æ Grate: 691.23

Std. No. 4 C.B.
Æ Grate: 689.96

Note: For pipe details and quantities see sheet No. 274

A A

END AREA

225	1267	692.60	883+00	705.7	3397 8
231	1283	692.88	882+50	704.2	5489 84
231	1283	693.16	882+00	697.9	4327 124
231	1289	693.44	881+50	702.4	2142 52
					4424 102
					2636 59
					5121 120

+50 Add For Dike Lt. ——— 117

Sta. 881+50 to Sta. 883+00

SEEDING
LBS/1000 SQ. YDS.

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

STATE	PROJECT
OHIO	I-77-X(7)15

WAS - 77 - 15.70
NOB - 77 - 0.00

89

END AREA
SQ. FT. | CU. YDS.

740
730
720
710
700
690

265 1450 257 1397 246 1325 231 1267

C C 180 160 140 1½:1 1½:1

B B 160 140 1½:1 1½:1

A A 160 140 1½:1 1½:1

691.48
885+00
725.0

691.76
884+50
719.0

692.04
884+00
708.5

692.32
883+50
707.0

8094 O
13875 O
6890 O
10478 O
4426 O
7520 O
3696
6567 B

Sta. 883+50 to Sta. 885+00

OHIO | I-77-1(7)15
WAS · 77 · 15.70
NOB · 77 · 0.00

140 120 100 80 60 40 20 ℄ 20 40 60 80 100 90

720 710 700 690

246

1356

1½:1

691.08
887+00
704.4

683.0

3537 ○

730 720 710 700 690

242

1381

1½:1

15" I·1

691.05
886+50
708.7

4024 ○

+95 Add for dike → 31

7000 ○

B B

255

1½:1 1½:1

720 710 700 730

160 140

7917 ○

Std. No. 4 C. B. & Sta. 886+00.34 I.E. Grate = 687.70

4526 ○

A A

1433

691.10
886+00
708.4

I.E. 15" = 685.95

+78 Add for Pipe Culvert Replacement on Exist. U.S.R. 21 → 36

9476 ○

261

1461

1½:1 1½:1

730 720 710 700 690

160 140

5705 ○

691.25
885+50
712.8
℄

12,780 ○

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

Sta. 885+50 to Sta. 887+00

OHIO I-77-1(7) 15
WAS - 77 - 15.70
NOB - 77 - 0.00

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

720 710 700 690

233 1311 239 1344 245 1361 245 1364

1½:1 1½:1 1½:1 1½:1

4279 ○ 8874 ○ 5305 ○ 9733 ○ 5207 ○ 8688 ○ 4176 ○ 7141 ○

692.12
889+00
710.6

691.73
888+50
712.8

691.42
888+00
711.8

691.21
887+50
706.9

Sta. 887+50 to Sta. 889+00

2 OHIO I-77-K(7)15
WAS-77-15.70
NOB-77-0.00

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

4:1 687.7 24:1 Var. 8' 3:1

696.38
892+00
685.7

2:1 Var. 8' 8:1 8:1 688.0

695.45
891+50
693.6

*17, End Dumped Rock Channel Protection
10' 11:1 8:1 8' 8:1 8:1 689.0

694.60
891+00
699.5

*92, Begin Dumped Rock Channel Protection
6:1 7:1 7:1 4' 8:1 8:1

693.85
890+50
700.9

693.18
890+00
704.8

2:1

692.61
889+50
708.5

| | | |

STATE	PROJECT
OHIO	I-77-1(7)15

WAS - 77 - 15.70
NOB - 77 - 0.00

END AREA		VOLUME	
CUT	FILL	CUT	FILL
24	8269		
41	15,131		
20	8072		
72	2719		
140	4226		

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

710 700 690 680 670

313

1744

315

200

1122

15"I-1

10'

671.0

671.2

160 140 120

120 140 160

C C D D

898+25, Begin Dumped Rock Channel Protection

711.28
898+50
671.6

+10 ℄, Std. No. 2-2-B E Grate = 706.97

℄ = 703.00
25° Bend Cl. F-4
℄ = 702.97
℄ = 702.09
15"x70' Class B-1 1.47%
℄ = 671.88
25° Bend Cl. F-4
23'
15"x68' Cl. F-4 @ 48.10%
℄ = 704.00
670.2
℄ = 670.88
Std. HW-E Endwall
15"x 6' Cl. F-4 @ 1.47%
℄ = 670.96
℄ = 671.00

A A B B

Note: For median outlet quantities see sheet No. 26
For details not shown see sheet No. 256

710.12
898+00
671.2

Sta. 897+00, Begin Dumped Rock Channel Protection

BRIDGE LIMITS
Sta. 897+70.56
Sta. 892+96.54

Add for structure ——→ 298 23/74
Quantity carried from sheet 277 ——→ 96

8' 2:1 684.5

698.52
893+00
676.1

3:1 24:1 50:1 8'

697.41
892+50
679.4

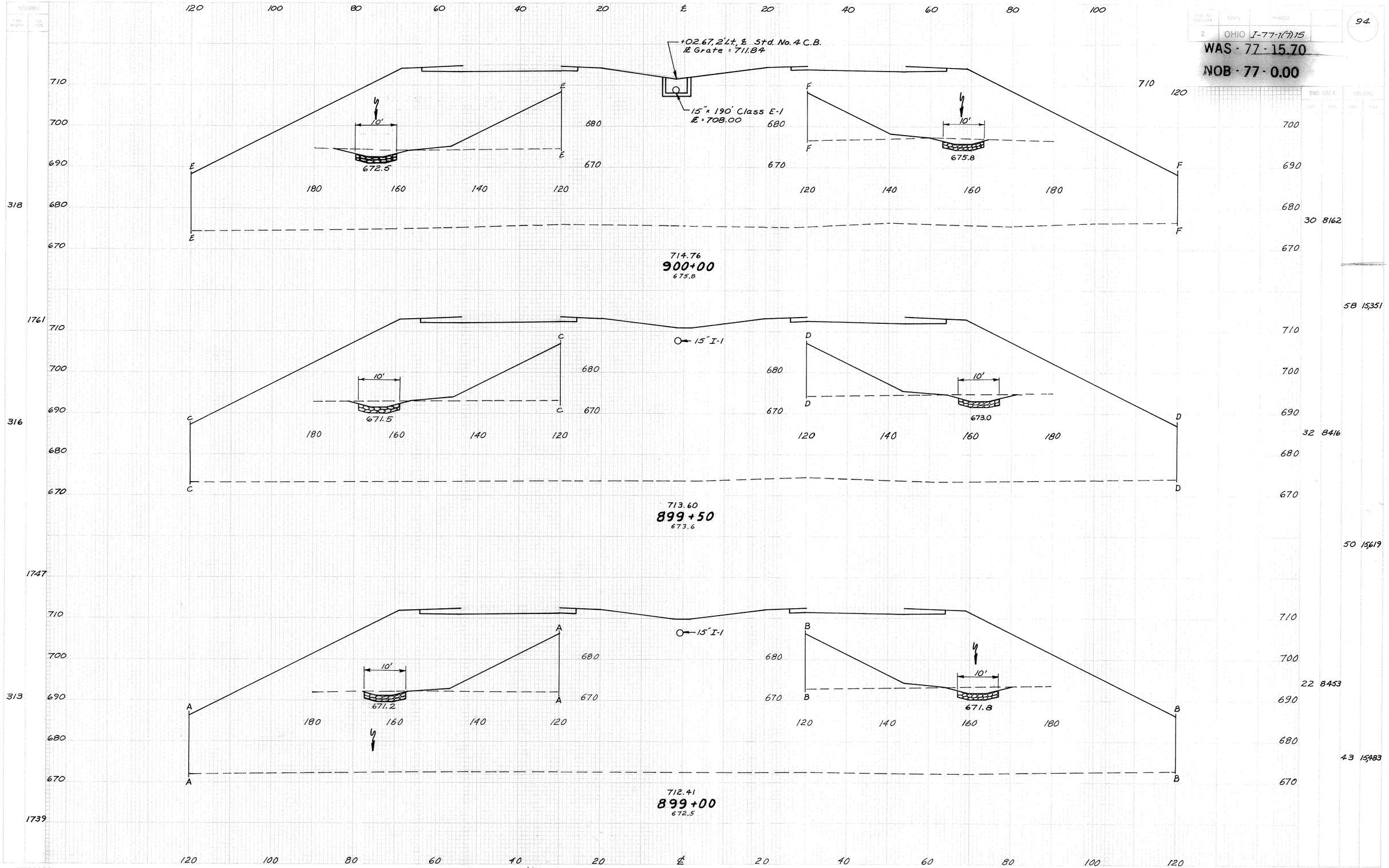
Sta. 892+50 to Sta. 898+50

AREA OR DIVISION	STATE	PROJECT
2	OHIO	I-77-1(7)15

WAS - 77 - 15.70

NOB - 77 - 0.00

	END AREA		VOLUME	
	CUT	FILL	CUT	FILL
30	8162			
58	15,351			
32	8416			
50	15,619			
22	8453			
43	15,483			



Sta. 899+00 to Sta. 900+00

SEEDING
LND WIDTH | SQ. YDS.

FED. ROAD DIVISION | STATE | PROJECT
2 | OHIO | I-77-1(7)15

WAS - 77 - 15.70
NOB - 77 - 0.00

95

END AREA | VOLUME
FILL | CUT | FILL | CUT

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

720
710
700
690
680

327

E E E E
10'
681.8
690
680
160 140 120

718.24
901+50
684.9

1792

710
700
690
680

42 5910
10'
689.5

68 11,916

720
710
700
690
680

318

C C C C
10'
677.8
690
680
160 140 120

717.08
901+00
680.9

1758

D D D D
10'
684.7
690
680
120 140 160

31 6959

720
710
700
690
680

315

A A A A
10'
675.0
690
680
670
180 160 140 120

715.92
900+50
678.2

1758

B B B B
10'
679.7
690
680
120 140 160

32 7686
59 13,560
58 14,674

720
710
700
690
680
670

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

Sta. 900+50 to Sta. 901+50

SEEDING
SQ. YDS.

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

DIVISION 2 | STATE OHIO | PROJECT I-77-1(7)15

WAS - 77 - 15.70

NOB - 77 - 0.00

96

END AREA VOLUME
CUT FILL CUT FILL

+00, End Dumped Rock Channel Protection

720
710
700
690
680

345

10'
703.5

721.72
903+00
710.3

718.0
10'
4:1

1903

340

10'
693.6

720.56
902+50
699.7

708.5
10'
4:1

1861

330

10'
687.7

719.40
902+00
690.8

700.00
10'
3:1

21 1721
55 4787
38 3449
55 7852
21 5031
58 10/31

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

Sta. 902+00 to Sta. 903+00

SEEDING
LAND WIDTH | SQ. YDS.

FED. NO. REVISION | STATE | PROJECT
2 | OHIO | I-77-1(7)15
WAS - 77 - 15.70
NOB - 77 - 0.00

97

END AREA | VOLUME
CUT | FILL | CUT | FILL

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

750 740 730 720 710 700

338 1983 376 2044 360 1969 349 1928

2:1 3:1 1:1 1½:1 2:1 8:1 3:1

726.36
905+00
745.9

+58, 82' Lt. Std. No.5 C.B.
℄ Grate = 722.50

+58, 2' Rt. Std. No.4 C.B.
℄ Grate = 722.50
outlet 15" Pipe ℄ = 720.00

℄=719.16 ℄ 718.41 15"x 80" CLASS B-1 1.05 % ℄=720.00

725.20
904+50
739.1

24" E-1

+92 End Dumped Rock Channel Protection

724.04
904+00
731.1

10' 3:1 3:1

711.0

722.88
903+50
720.0

760 750 740 730 720 710 700

4485 ○ 7257 ○ 3352 ○ 4867 92 1904 99 2288 648 567 600 545 2149

Sta. 903+50 to Sta. 905+00

SEEDING
ENG. WIDTH | SQ. YDS.

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

FED. AID DIVISION	STATE	PROJECT
2	OHIO	I-77-1(7) 15

WAS - 77 - 15.70
NOB - 77 - 0.00

98

END AREA | VOLUME
CUT | FILL | CUT | FILL

820
810
800
790
780
770
760

B
B
2:1
3/4:1
12:1

140 160 180 200 220 240

760
750
740
730
720

291
1758
342
1889

1:1
1½:1

728.58
906+00
759.3

727.50
905+50
753.5

810
800
790
780
770
760

B
B
12:1
1:1

11,604 ○
17,698 ○
7509 ○
11,106 ○

790
780
770
760

A
A
12:1
3/4:1
2:1
1:1

800
790
780
770
760

140 160 180 200

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

Sta. 905+50 to Sta. 906+00

PRINTED IN U. S. A.
ON SEMI-TRACE CLOTH

SEEDING
EXP. WIDTH | SQ. YDS.

FED. AID PROJECT	STATE	PROJECT
2	OHIO	I-77-1(7)15

99

WAS · 77 · 15.70
NOB · 77 · 0.00

END AREA		VOLUME	
CUT	FILL	CUT	FILL

℄ 20 40 60 80 100 120 140 160 180 200 220 240

830
820
810
800
790
780
770
760
750
740
730
720

A
A

2:1
3/4:1
12:1
1:1

729.60
906+50 (Rt.)
777.3

308
1664

16,597 ○
26,112 ○

790
780
770
760
750
740
730
720

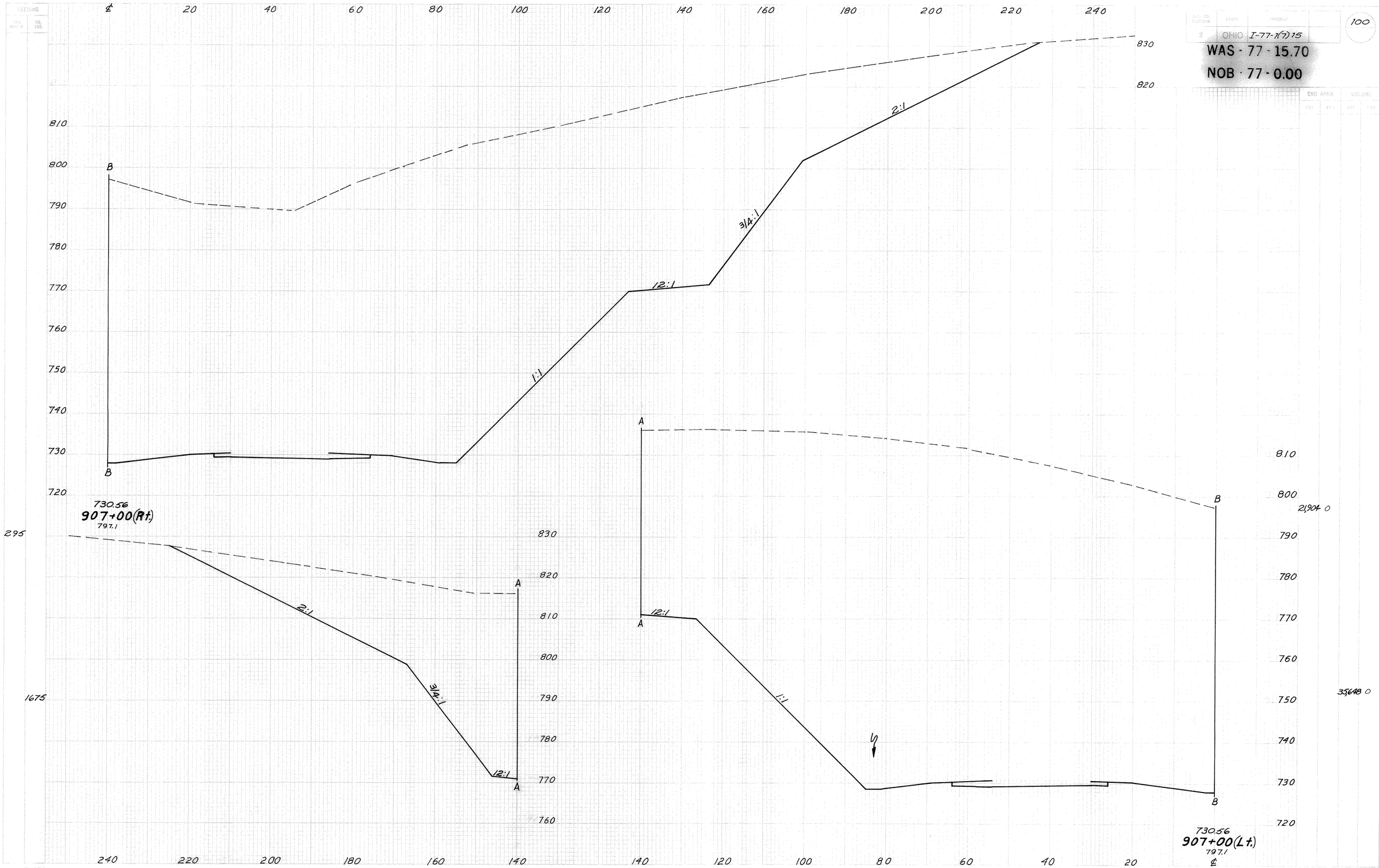
A
A

729.60
906+50(Lt.)
777.3

220 200 180 160 140 120 100 80 60 40 20 ℄

Sta. 906+50

SEEDING
SQ. YDS.



DIST. NO. | STATE | PROJECT
2 | OHIO | I-77-7(7)15
WAS - 77 - 15.70
NOB - 77 - 0.00

100

END AREA | VOLUME
CUT | FILL | CUT | FILL

DIST. NO.	STATE	PROJECT
2	OHIO	I-77-1(7)15

WAS - 77 - 15.70

NOB - 77 - 0.00

	END AREA		VOLUME	
	CUT	FILL	CUT	FILL

℄ 20 40 60 80 100 120 140 160 180 200 220

830 820 810 800 790 780 770 760 750 740 730 720

B

B

731.46
907+50(Rt.)
806.2

1:1 12:1 3¼:1 2:1

301

1656

2:1 3¼:1 12:1

A A

260 240 220 200 180 160 140

140 120 100 80 60 40 20 ℄

A

B

B

731.46
907+50(Lt.)
806.2

12:1 1:1

840 830 820 810 800 790 780 770 760 750 740 730 720

820 810 800 790 780 770 760 750 740 730 720

23,140 ○

41,707 ○

Sta. 907+50

SLOPING

NO. METER	SQ. YDS.

FED. HWY. DIVISION	STATE	PROJECT
2	OHIO	I-77-1(7)15

WAS - 77 - 15.70

NOB - 77 - 0.00

102

END AREA VOLUME

CUT	FILL	CUT	FILL

℄ 20 40 60 80 100 120 140 160 180 200 220 240

830 820 810 800 790 780 770 760 750 740 730

B

2:1

3/4:1

12:1

1:1

A

B

732.30

908+00 (Rt.)

814.1

307

1689

840 830 820 810 800 790 780 770

A

2:1

3/4:1

A

A

3/4:1

12:1

1:1

B

732.30

908+00 (Lt.)

814.1

830 820 810 800 790 780 770 760 750 740 730

24670 ○

44267 ○

260 240 220 200 180 160 140 120 100 80 60 40 20 ℄

Sta. 908+00

SEEDING

END WIDTH	SQ. YDS.

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	I-77-1(7)15

103

WAS - 77 15.70

NOB - 77 - 0.00

END AREA		VOLUME	
CUT	FILL	CUT	FILL

℄ 20 40 60 80 100 120 140 160 180 200 220 240

B

820 810 800 790 780 770 760 750 740 730

733.09
908+50(Rt.)
819.9

B

1:1 12:1 3/4:1 2:1

830 820

312

840

A

830 820 810 800 790 780 770

A

2:1 3/4:1

1719

A

3/4:1 12:1 1:1

B

830 820 810 800 790 780 770 760 750 740 730

26221 O

47121 O

733.09
908+50(Lt.)
819.9

B

260 240 220 200 180 160 140 120 100 80 60 40 20 ℄

Sta. 908+50

SEEDING

LBS. PER ACRE	SQ. YDS.

END NO. DIVISION	STATE	PROJECT	
2	OHIO	I-77-1(7)15	

104

WAS - 77 - 15.70

NOB - 77 - 0.00

END AREA		VOLUME	
CUT	FILL	CUT	FILL

860
850
840
317
1747

2:1
3¼:1
12:1
1:1

850
840
830
820
810
800
790
780
770
760
750
740
730

27,792 0
30012 0

733.82
909+00 (Lt.)
826.2

280 260 240 220 200 180 160 140 120 100 80 60 40 20 ℄

Sta. 909+00 (Lt.)

SEEDING

UNIT WIDTH	SQ. YDS.

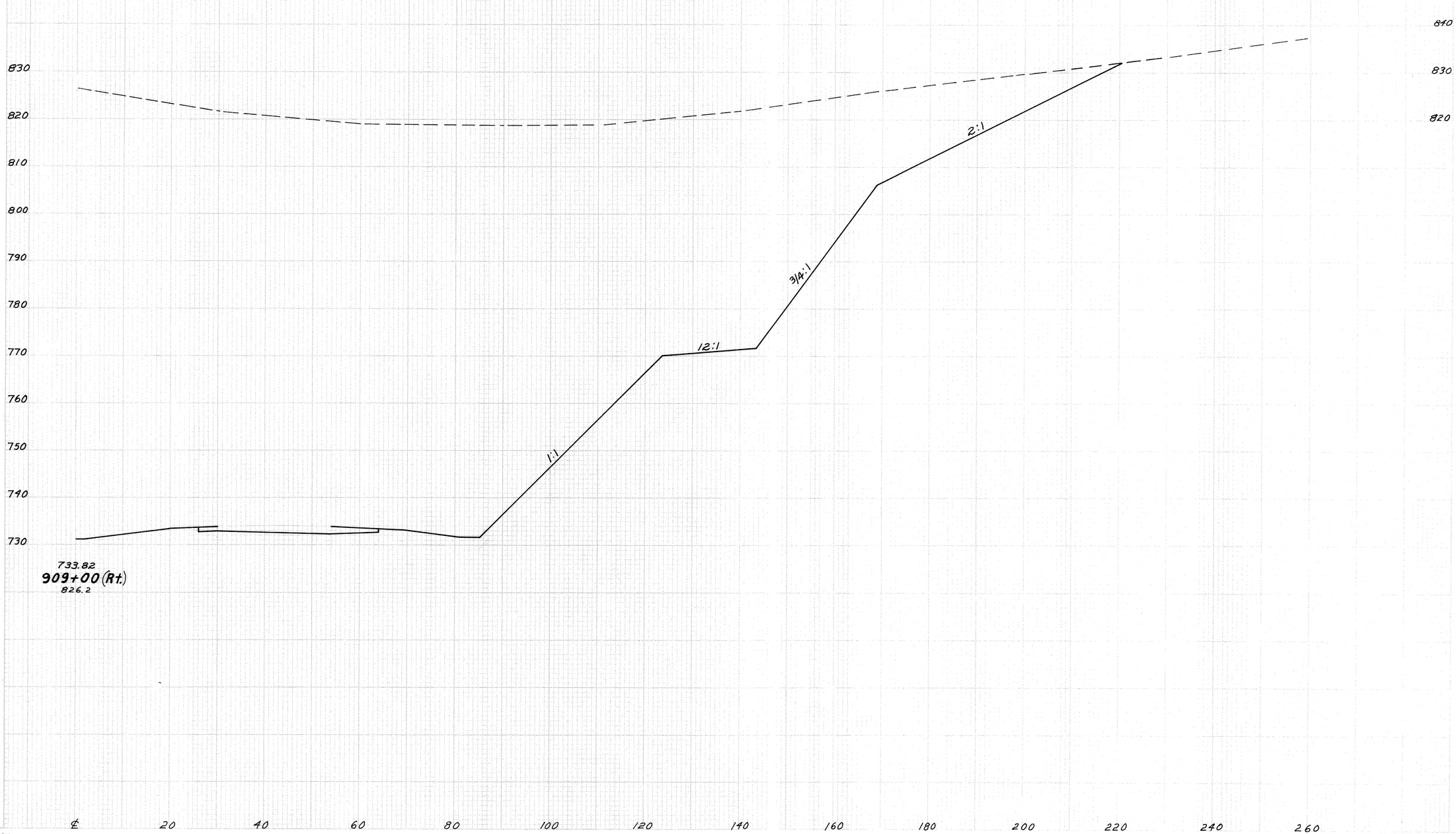
USE BD DIVISION	STATE	PROJECT
2	OHIO	I-77-1(7)15

105

WAS - 77 - 15.70

NOB - 77 - 0.00

END AREA		VOLUME	
CUT	FILL	CUT	FILL



DIST. NO. DIVISION	STATE	PROJECT
2	OHIO	I-77-1(7) 15

WAS - 77 - 15.70

NOB - 77 - 0.00

END AREA

870
860
850
840
314
1753

2:1
3/4:1
12:1
1:1

860
850
840
830
820
810
800
790
780
770
760
750
740
730

29457 O
53009 O

734.48
909+50 (Lt.)
831.1

280 260 240 220 200 180 160 140 120 100 80 60 40 20 ℄

Sta. 909+50 (Lt.)

SEEDING

LBS. WORK	SQ. YDS.

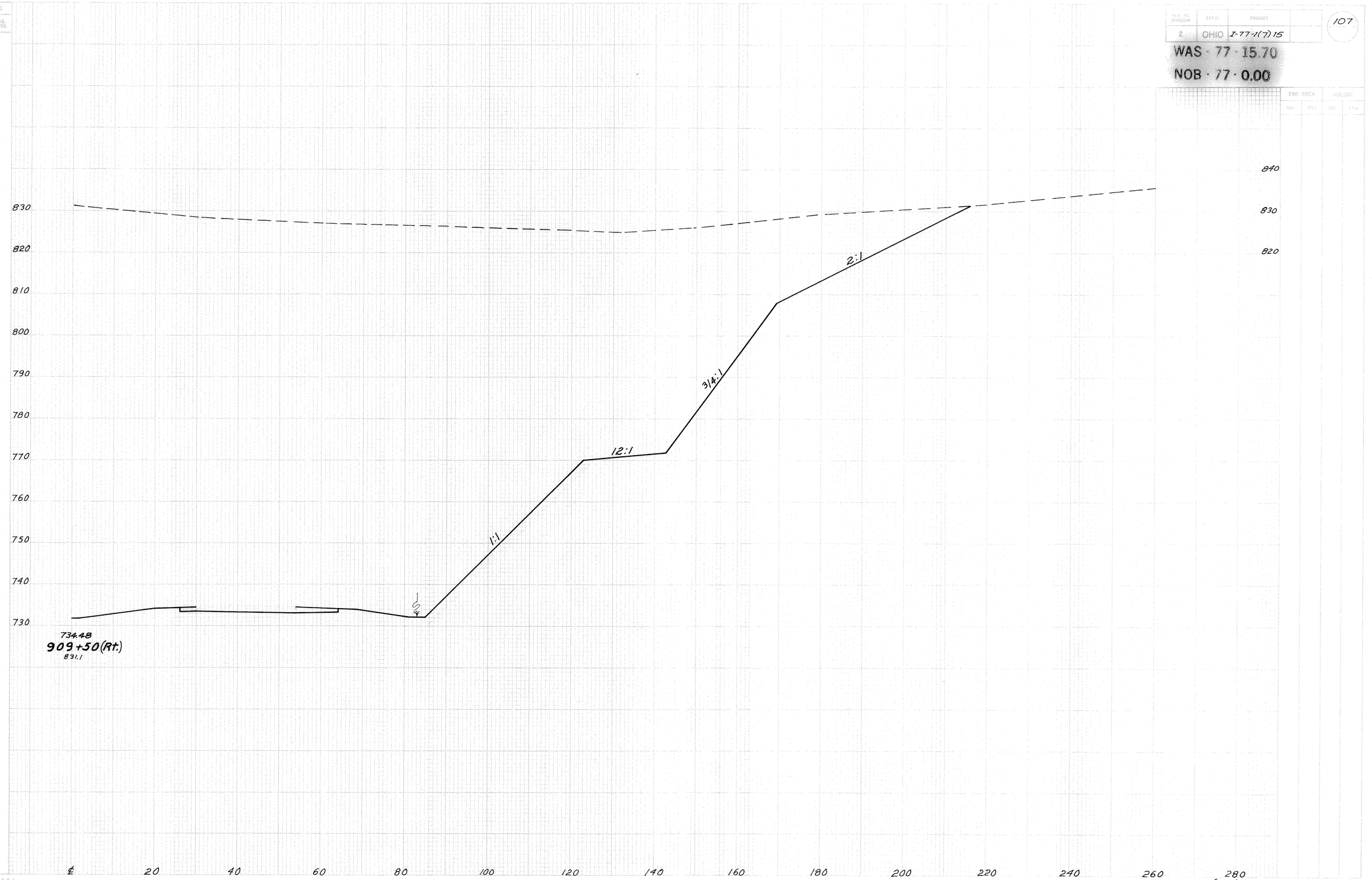
FED. ROAD DIVISION	STATE	PROJECT
2	OHIO	I-77-1(7)15

107

WAS · 77 · 15.70

NOB · 77 · 0.00

END AREA		VOLUME	
CUT	FILL	CUT	FILL



SEEDING
UNO WIDTH | SQ. YDS.

DIST. OFF DIVISION	STATE	PROJECT
2	OHIO	I-77-1(7)15

108

WAS - 77 - 15.70
NOB - 77 - 0.00

END AREA | VOLUME
PDT | TEL | CUT | FILL

870
860
850
840
313
1742

2:1
3/4:1
12:1
1:1

860
850
840
830
820
810
800
29714 ○
790
780
770
760
750
54788 ○
740
730

735.09
910+00(L.t.)
832.2

280 260 240 220 200 180 160 140 120 100 80 60 40 20 ℄

Sta. 910+00(L.t.)

SEEDING

ENG WIDTH	SQ. YDS.

FED. AID DIVISION	STATE	PROJECT	
2	OHIO	I-77-1(7) 15	

109

WAS - 77 - 15.70

NOB - 77 - 0.00

END AREA		VOLUME	
CUT	FILL	CUT	FILL

840

830

820

810

800

790

780

770

760

750

740

730

2:1

3½:1

12:1

1:1

735.09

910+00(Rt.)

832.2

℄ 20 40 60 80 100 120 140 160 180 200 220 240 260 280

Sta. 910+00(Rt.)

SHEETING

LENG	WIDTH	NO.	REQ.

SHEET NO.	STATE	PROJECT
2	OHIO	I-77-1(7) 15

WAS - 77 - 15.70

NOB - 77 - 0.00

110

END AREA		VOLUME	
CUT	FILL	CUT	FILL

860

850

2:1

3/4:1

12:1

1:1

314

1742

850
840
830
820
810
800
28291 ○
790
780
770
760
750
53709 ○
740
730

735.64
910+50(Lt.)
828.3

280 260 240 220 200 180 160 140 120 100 80 60 40 20 ℄

Sta. 910+50 (Lt.)

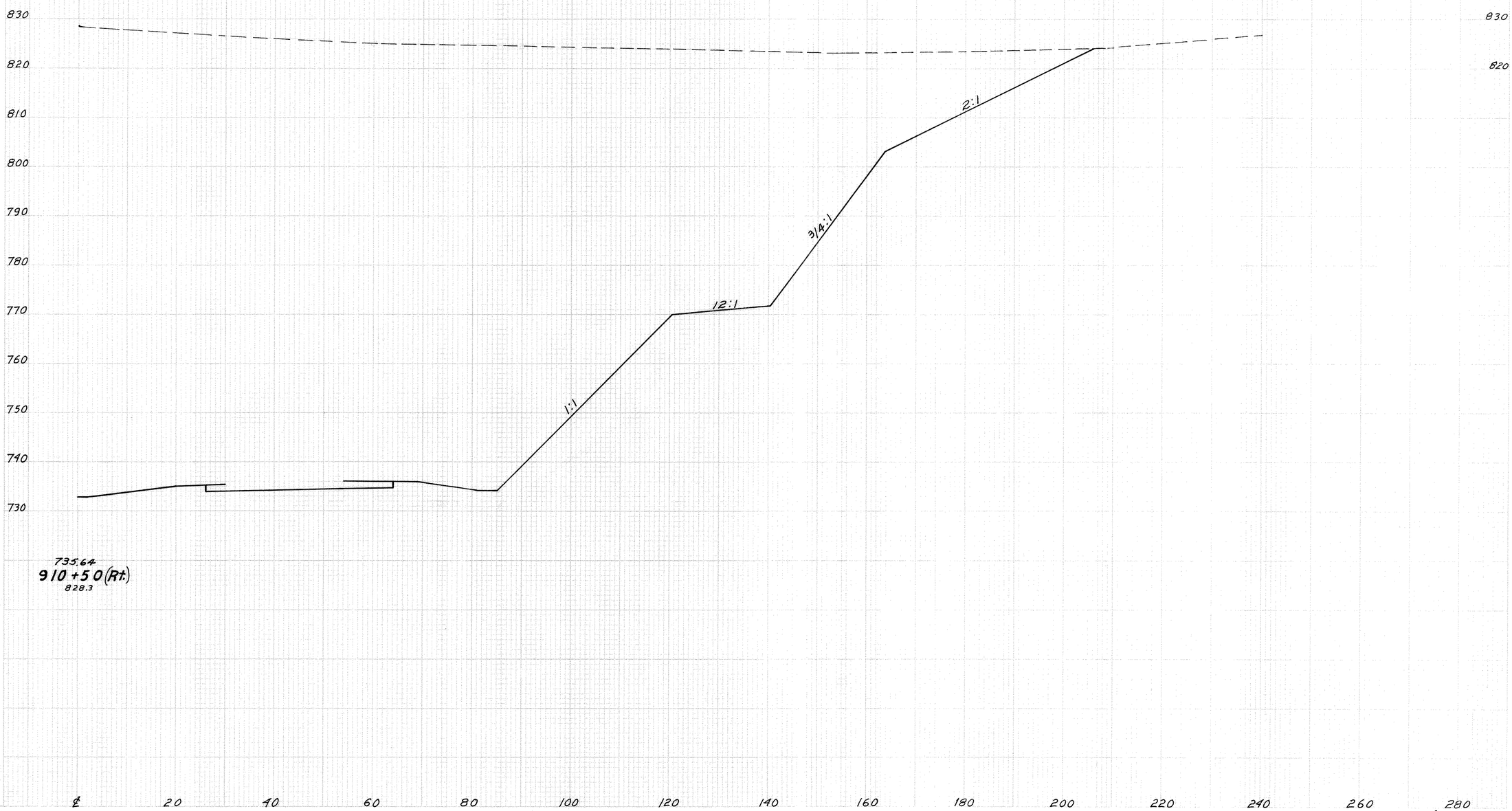
SEEDING	
UNIT WIDTH	SQ. YDS.

FED. AID DIVISION	STATE	PROJECT	
2	OHIO	I-77-K(7)15	111

WAS - 77 - 15.70

NOB - 77 - 0.00

END AREA		VOLUME	
CUT	FILL	CUT	FILL



SEEDING

CUT WIDTH	SQ. YDS.

FED. DIV. DIVISION	STATE	PROJECT
2	OHIO	I-77-1(7)15

112

WAS - 77 - 15.70

NOB - 77 - 0.00

END AREA		VOLUME	
CUT	FILL	CUT	FILL

850

840

315

1747

2:1

3¼:1

12:1

1:1

840
830
820
810
800
790
780
770
760
750
740
730

26283 ○

59531 ○

736.14
911+00(Lt.)
823.2

280 260 240 220 200 180 160 140 120 100 80 60 40 20 ℄

Sta. 911+00 (Lt.)

SEEDING

LIME POUNDS	SEED POUNDS

FED. AID DIVISION	STATE	PROJECT
2	OHIO	I-77-1(7)15

WAS - 77 - 15.70

NOB - 77 - 0.00

113

END AREA		VOLUME	
CUT	FILL	CUT	FILL

850

840

830

820

810

800

790

780

770

760

750

740

730

2:1

3/4:1

12:1

1:1

736.14
911+00 (Rt.)
823.2

℄ 20 40 60 80 100 120 140 160 180 200 220 240 260 280

Sta. 911+00 (Rt.)

SECTIONS
1 INCH = 50 FEET
50 YDS.

2	OHIO	I-77-K(7)15
		WAS - 77 - 15.70
		NOB - 77 - 0.00

114

END AREA VOLUME
CUT FILL CUT FILL

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

820 810 800 790 780 770 760 750 740 730

240 220 200 180 160 140 — 12:1 — 1:1 — 3/4:1 — 2:1 — C — 310

140 160 180 200 220 — D — 2:1 — 3/4:1 — 1:1 — 12:1 — 20277 O

736.94
912+00
802.2

240 220 200 180 160 140 — A — 2:1 — 3/4:1 — 12:1 — 1:1 — 308 — 1717 — 1731

140 160 180 200 220 — B — 2:1 — 3/4:1 — 12:1 — 1:1 — 23729 O — 46307 O

+50, 83' Rt. ℄ Sta. No. 5 C.B.
FE. Grate = 735.46
FE. 15" Pipe = 730.71

40746 O

736.57
911+50
816.7

For Details & Quantities of
Catch Basin, See Sheet No. 28 & 279

Sta. 911+50 to Sta 912+00

SEEDING
FOR WIDTH | SQ. YDS.

115

STATE | PROJECT
2 OHIO | I-77-1(7)15
WAS - 77 - 15.70
NOB - 77 - 0.00

END AREA: SQ. FT. CUT | SQ. FT. FILL
VOLUME: CU. YD. CUT | CU. YD. FILL

316

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

820 810 800 790 780 770 760 750 740 730

220 200 180 160 140 120 140 160 180 200

12:1 2:1 3/4:1 1:1

C C D D

End Dumped Rock
Sta. 912+61

16689 ○

8698 ○

Channel ~ For details
See Sheet No. 293

17'

737.26
912+50
791.0

Add For back fill 145' Rt.
of Sta. 912+50 → 8

495

321

1262

220 200 180 160 140 140 160 180 200 220

A A B B

12:1 2:1 3/4:1 1:1

16861 ○

24759 ○

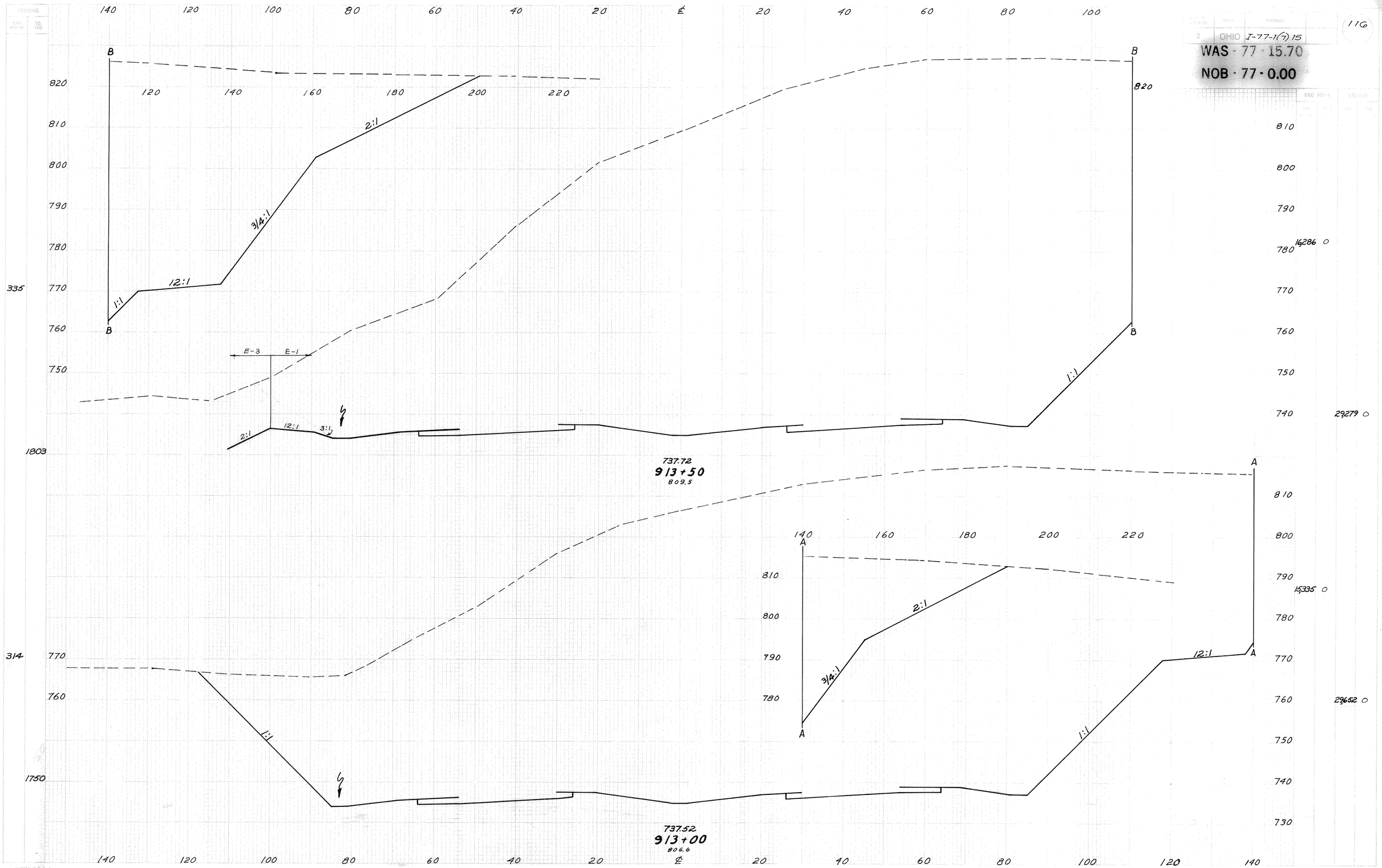
Begin Dumped Rock, Sta. 912+31

737.18
912+36
786.1

Sta. 912+36 to Sta. 912+50

SEEDING
SQ. YDS.

OHIO I-77-1(7)15
WAS · 77 · 15.70
NOB · 77 · 0.00



Sta. 913+00 to Sta. 913+50

SECTIONS

END WIDTH	SQ. YDS

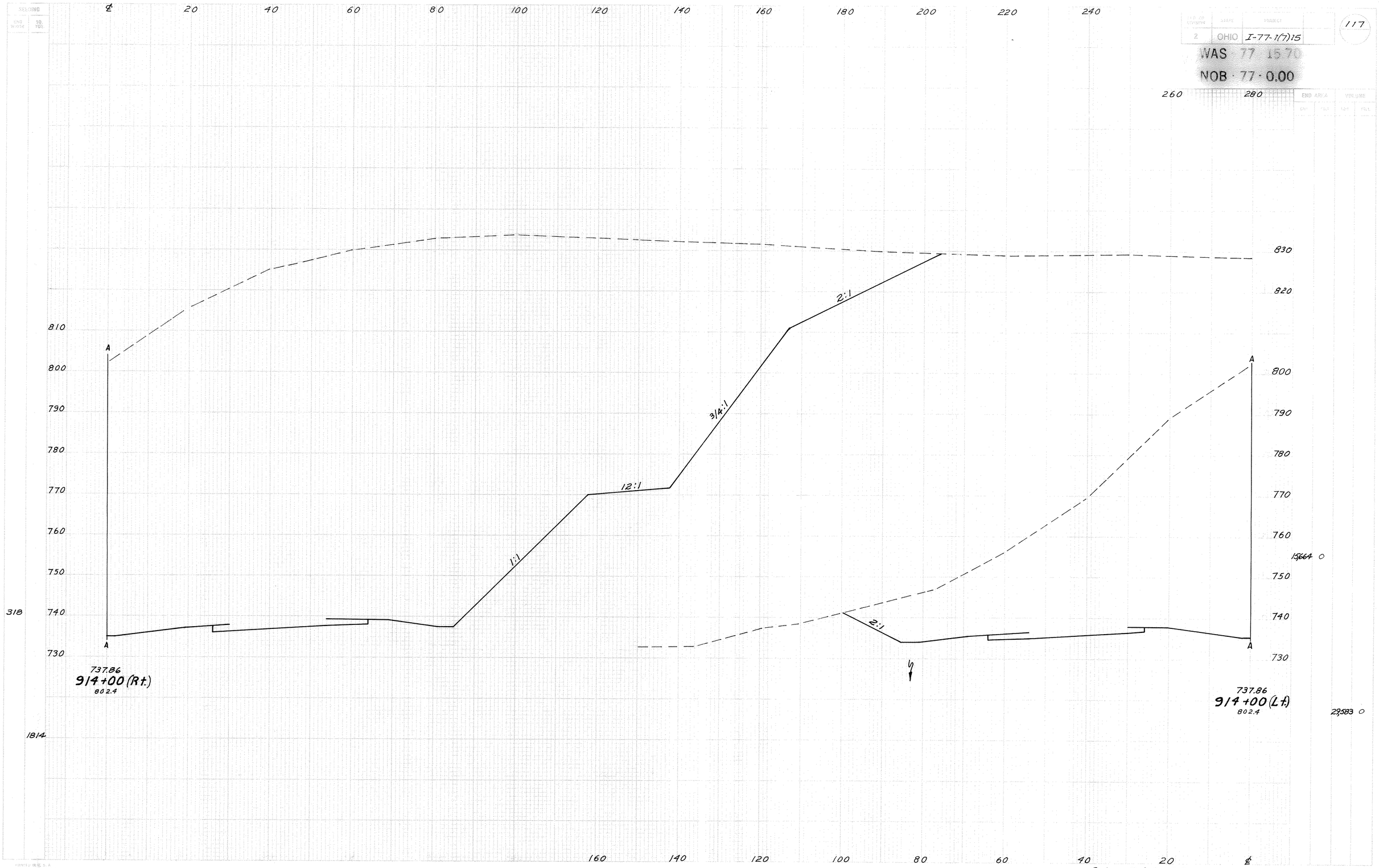
DIST. OR DIVISION	STATE	PROJECT
2	OHIO	I-77-1(7)15

WAS 77 15.70

NOB · 77 · 0.00

117

END AREA		VOLUME	
CUT	FILL	CUT	FILL



Sta. 914+00

SECTIONS

LAND WIDTH	SQ YDS

FILE NO. REVISION	STATE	PROJECT
2	OHIO	I-77-1(7) 15

118

WAS - 77 - 15.70

NOB - 77 - 0.00

END AREA | VOLUME

CUT | FILL | CUM | FILL

℄ 20 40 60 80 100 120 140 160 180 200 220 240 260

830 820 810 800 790 780 770 760 750 740 730 720

306

1733

A

3/4:1

2:1

12:1

1:1

737.94
914+50 (Rt.)
788.9

A

3:1

14,760 ○

28,171 ○

737.94
914+50 (Lt.)
788.9

℄ 140 120 100 80 60 40 20 ℄

Sta. 914+50

SEEDING

KIND (PURE)	SQ. YDS.

STATE PROJECT NUMBER	NAME	PROJECT
2	OHIO	I-77-1(7)15

119

WAS · 77 · 15.70

NOB · 77 · 0.00

END AREA		VOLUME	
CUT	FILL	CUT	FILL

℄ 20 40 60 80 100 120 140 160 180 200 220 240 260

830
820
810
800
790
780
770
760
750
740
730

2:1
3/4:1
12:1
1:1
3:1

A A

737.97
915+00 (Rt.)
774.0

295

1669

12405 ○

25153 ○

737.97
915+00 (Lt.)
774.0

140 120 100 80 60 40 20 ℄

Sta 915+00

PRINTED IN U.S.A.
ON LOG PAPER SLEEW

℄ 20 40 60 80 100 120 140 160 180 200 220 240

120

260

830

820

810

800

790

780

770

760

750

740

730

289

1622

2:1

3/4:1

12:1

1:1

A

A

737.93

915+50 (Rt.)

751.4

8089 ○

760

750

740

730

18976 ○

24:1

8

8:1

A

A

737.93

915+50 (Lt.)

751.4

140 120 100 80 60 40 20 ℄

Sta. 915+50

2	OHIO	I-77-1(7)15	

WAS 77-15.70
NOB 77 0.00

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

120 140

760
750
824 921
740
730

2:1

15" I-I

730
365 720
710

737.69
916+50
735.9

12:1

140 160 180 200 220 240 260 4241 1010

810
800
790
780
770
760

A A A A

2:1

800
790
780
3756 170
770
760
750

12:1

1:1

1897
750
740
318 730
720
1686

3:1

737.84
916+00
744.7

10,968 157

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

Sta. 916+00 to Sta. 916+50

SEEDING	
BASE WIDTH	SQ. YDS.

DIST.	DIVISION	STATE	PROJECT
	2	OHIO	I-77-(K7) 15

WAS - 77 - 15.70
NOB - 77 - 0.00

122

	END AREA		VOLUME	
	CUT	FILL	CUT	FILL

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

730 720 710 700 690

425

C C Toe Berm C C

736.49
918+50
691.8

180 160 140 120

2:1

730 720 710 700 690

711.8

B' 8'

710 o 9167

700

2322

C

B B Toe Berm B B

700 690

180 160 140 120

411

736.88
918+00
702.7

2:1

8'

730 720 710 700

723.0

o 14,392

o 6376

+00, Begin 8' Dumped Rock Channel Protection

	Embankment		E-4 Gran. Brw.	
	Sq. Ft.	Cu. Yds.	Sq. Ft.	Cu. Yds.
Sta. 918+50	735	795	468	813
Sta. 918+00	124	115	410	380
Sta. 917+50	0		0	

9 10,477

2239

730 720 710 700 690

A A 710 A A 700

12:1

160 140 120

4:1

732.0

740 730

10 4939

720 710

194 6880

395

737.21
917+50
711.4

2147

730 720 710

750 740 730 720 710

200 2491

948 3159

378

2:1

737.48
917+00
722.4

Vert.

734.6

2064

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

Sta. 917+00 to Sta 918+50

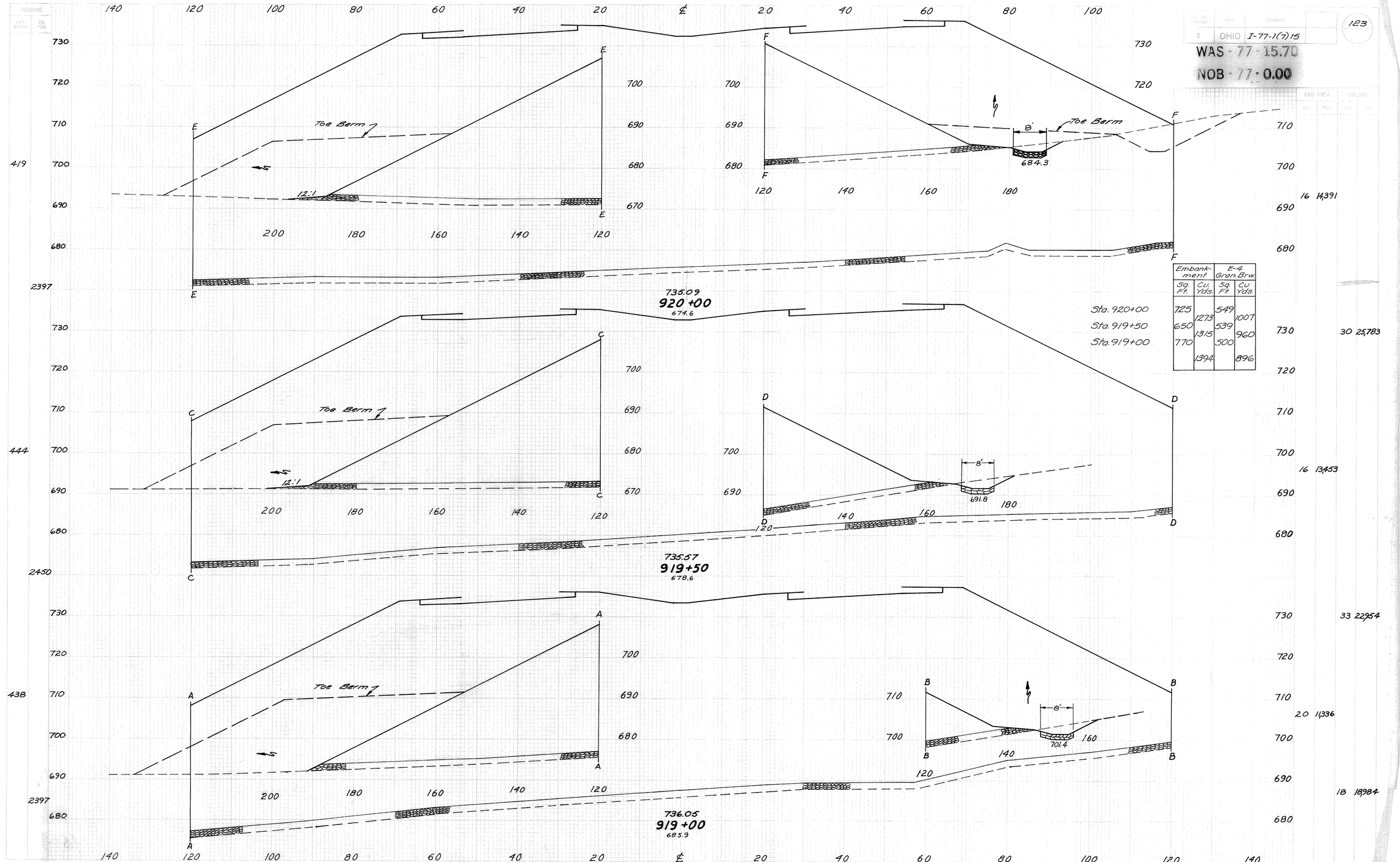
CAL. SEC. NUMBER	STATE	PROJECT
2	OHIO	I-77-1(7)15

WAS - 77 - 15.70
NOB - 77 - 0.00

SEEDING

LINE WIDTH	SQ. YDS.
419	2397
444	2450
438	2397

END AREA		VOLUME	
CUT	FILL	CUT	FILL
		16	14,391
		30	25,783
		16	13,453
		33	22,954
		20	11,336
		18	18,984

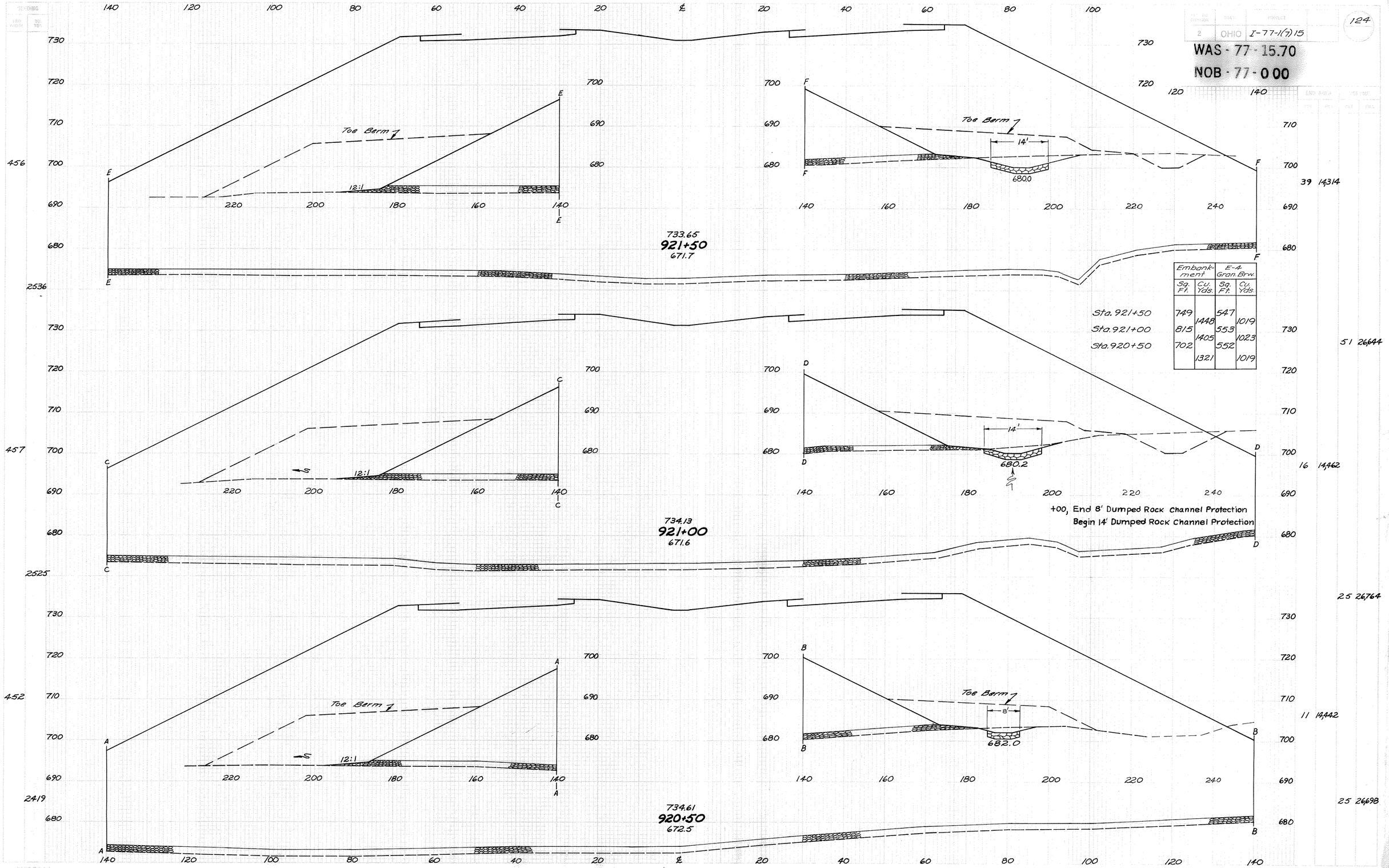


	Embankment		E-4 Gran. Brw.	
	Sq. Ft.	Cu. Yds.	Sq. Ft.	Cu. Yds.
Sta. 920+00	725	1273	549	1007
Sta. 919+50	650	1315	539	960
Sta. 919+00	770	1394	500	896

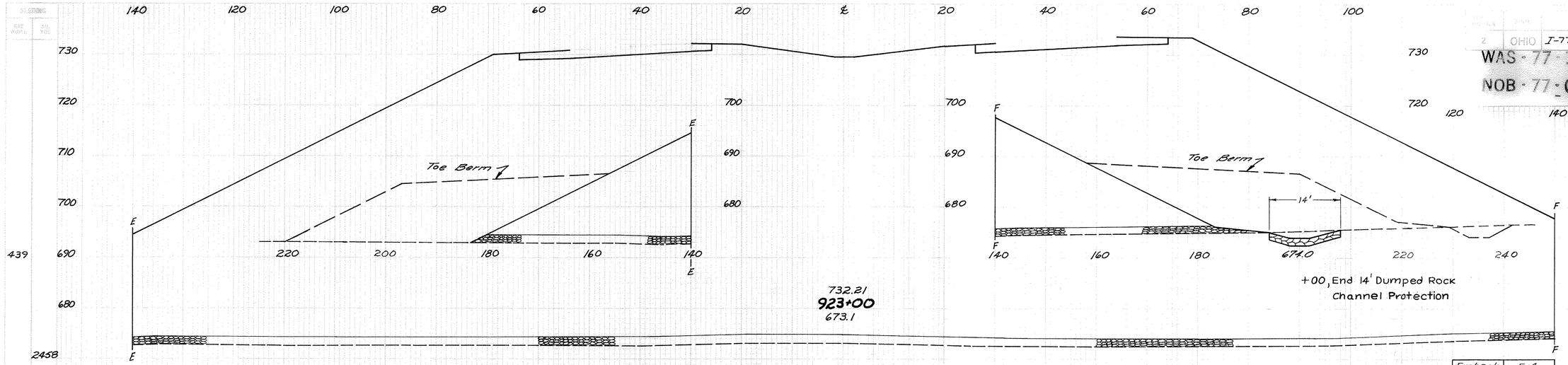
Sta. 919+00 to Sta. 920+00

SHEET NO.	STATE	PROJECT
2	OHIO	I-77-1(7)15

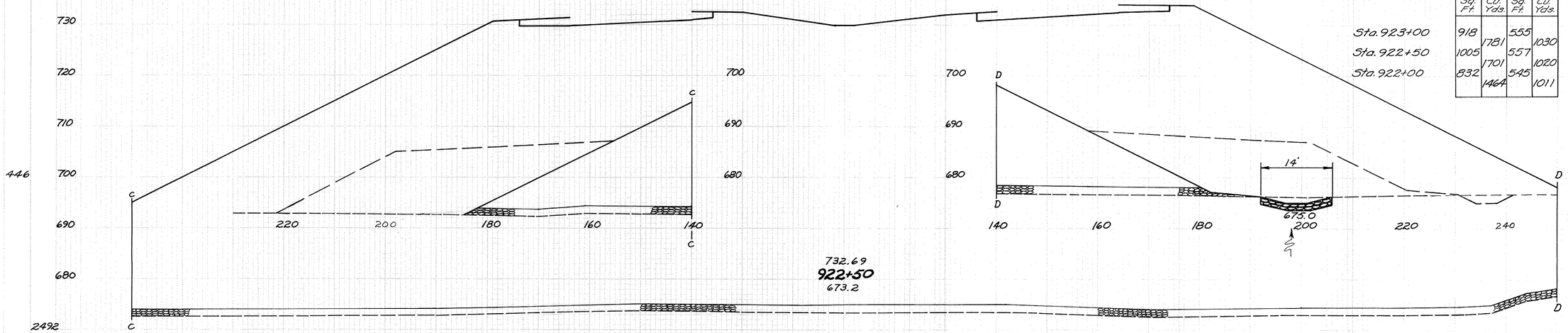
WAS - 77 - 15.70
NOB - 77 - 000

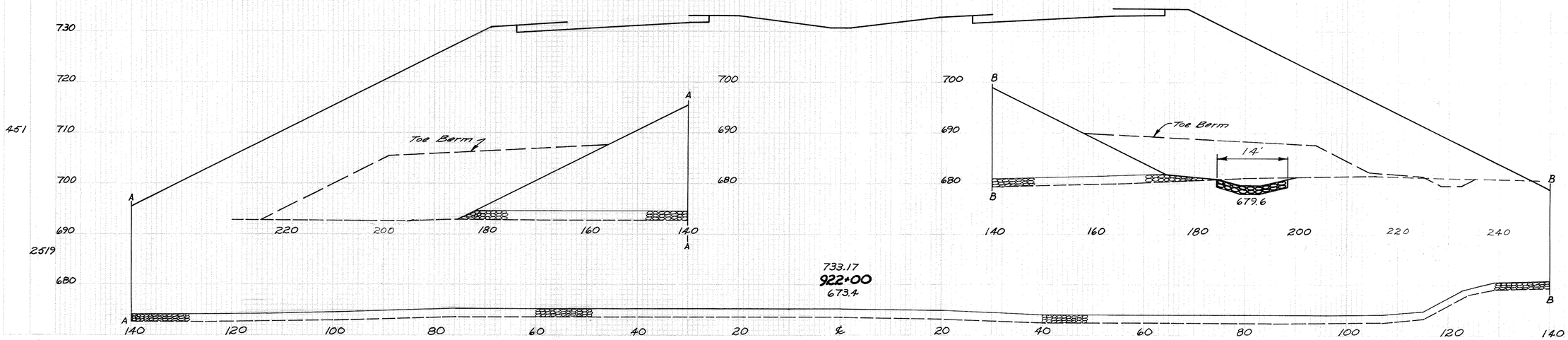


OHIO I-77-1(7)15
WAS-77-15.70
NOB-77-0.00



	Embankment Sq. Ft.	Embankment Cu. Yds.	E-4 Gran. Brm. Sq. Ft.	E-4 Gran. Brm. Cu. Yds.
Sta. 923+00	918		555	
		1781		1030
Sta. 922+50	1005		557	
		1701		1020
Sta. 922+00	532		545	
		1464		1011





Sta. 922+00 to Sta. 923+00

11 14,311
8 14,317
14 14,341
18 26,508
20 26,536
49 26,533

SEEDING
END AREA: CUT SQ. FT. | FILL SQ. FT.
VOLUME: CUT CU. YDS. | FILL CU. YDS.

SHEET NO.	STATE	PROJECT
2	OHIO	I-77-1(7)15

WAS - 77 - 15.70
NOB 77 - 0.00

126

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

730 720 710 700 690 680

E E-3 E-1 Toe Berm 24:1 240 220 200 180 160 140 E

427 2406

730.77
924+50
673.3

F Toe Berm 140 160 180 673.6 200 220 F

16 13676

Embankment		E-4 Gran. Brw.	
Sq. Ft.	Cu. Yds.	Sq. Ft.	Cu. Yds.
626	1247	596	1126
721	1473	620	1085
870	1656	552	1025

Sta. 924+50
Sta. 924+00
Sta. 923+50

46 25508

For details not shown see sheet No.

C E-3 E-1 Duck Creek 240 220 180 160 140 C

439

731.25
924+00
673.2

2428

D 140 160 180 673.7 200 220 240 D

33 13872

A Toe Berm 180 160 140 A

435 2428

731.73
923+50
672.2

B Toe Berm 140 160 180 673.9 200 220 240 B

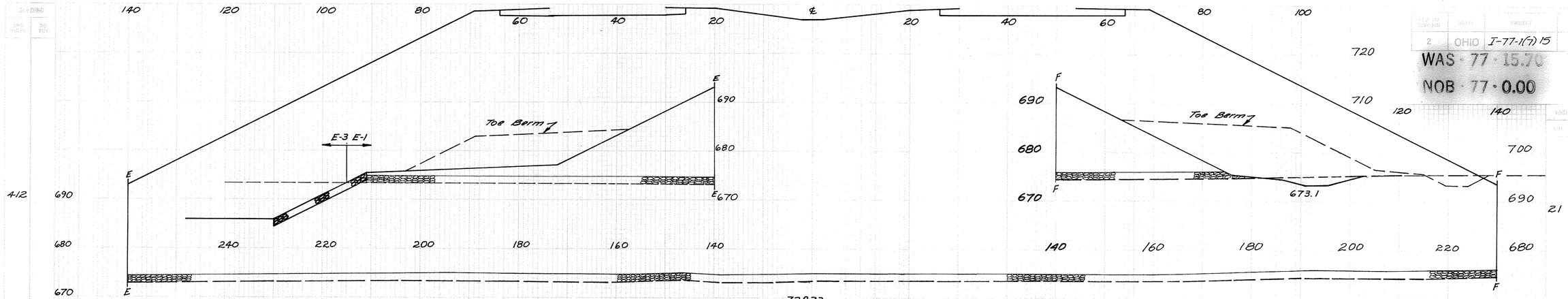
49 26007

20 14215

29 26413

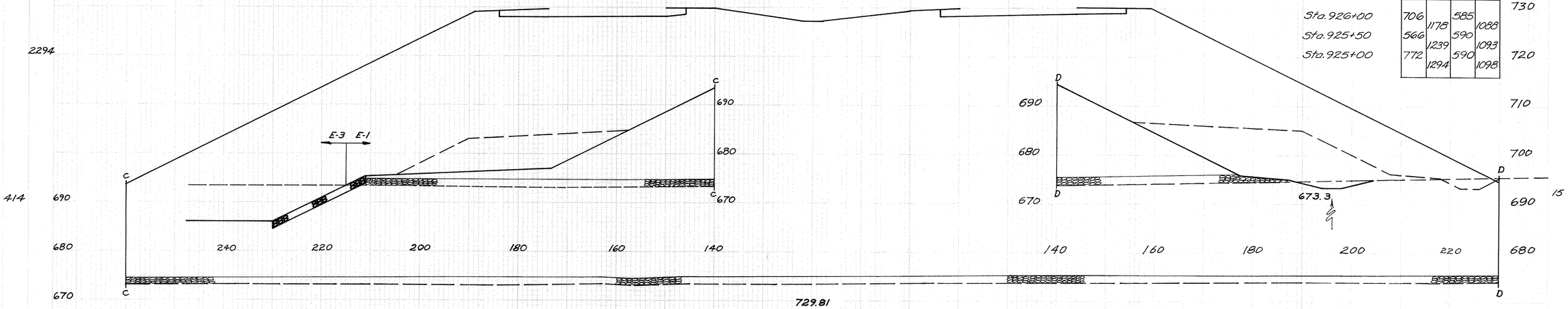
140 120 100 80 60 40 20 ℄ 20 40 60 80 100 120 140

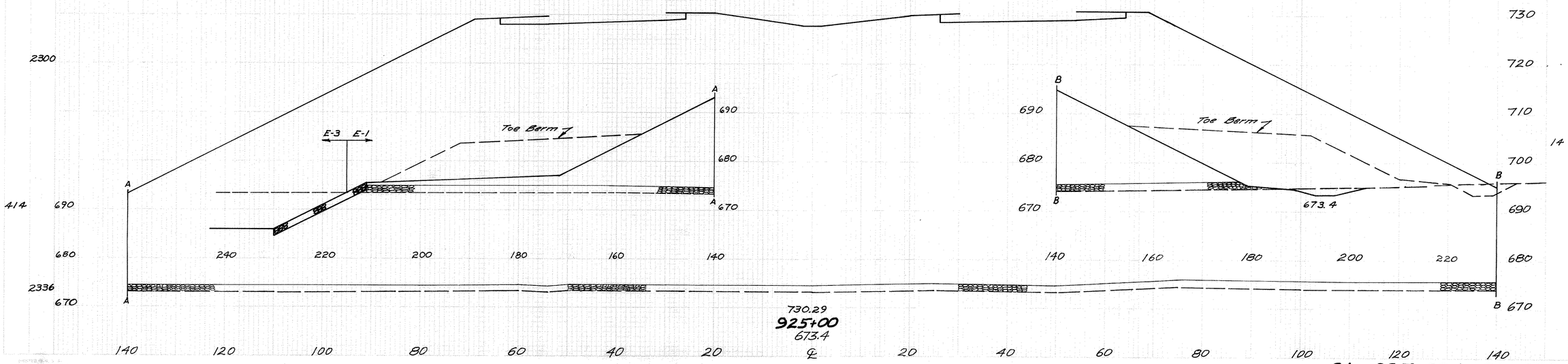
Sta. 923+50 to Sta. 924+50



Embankment		E-4 Gran. Brw.	
Sq. Ft.	Cu. Yds.	Sq. Ft.	Cu. Yds.
706	1178	585	1088
566	1239	590	1093
772	1294	590	1098

Sta. 926+00
Sta. 925+50
Sta. 925+00





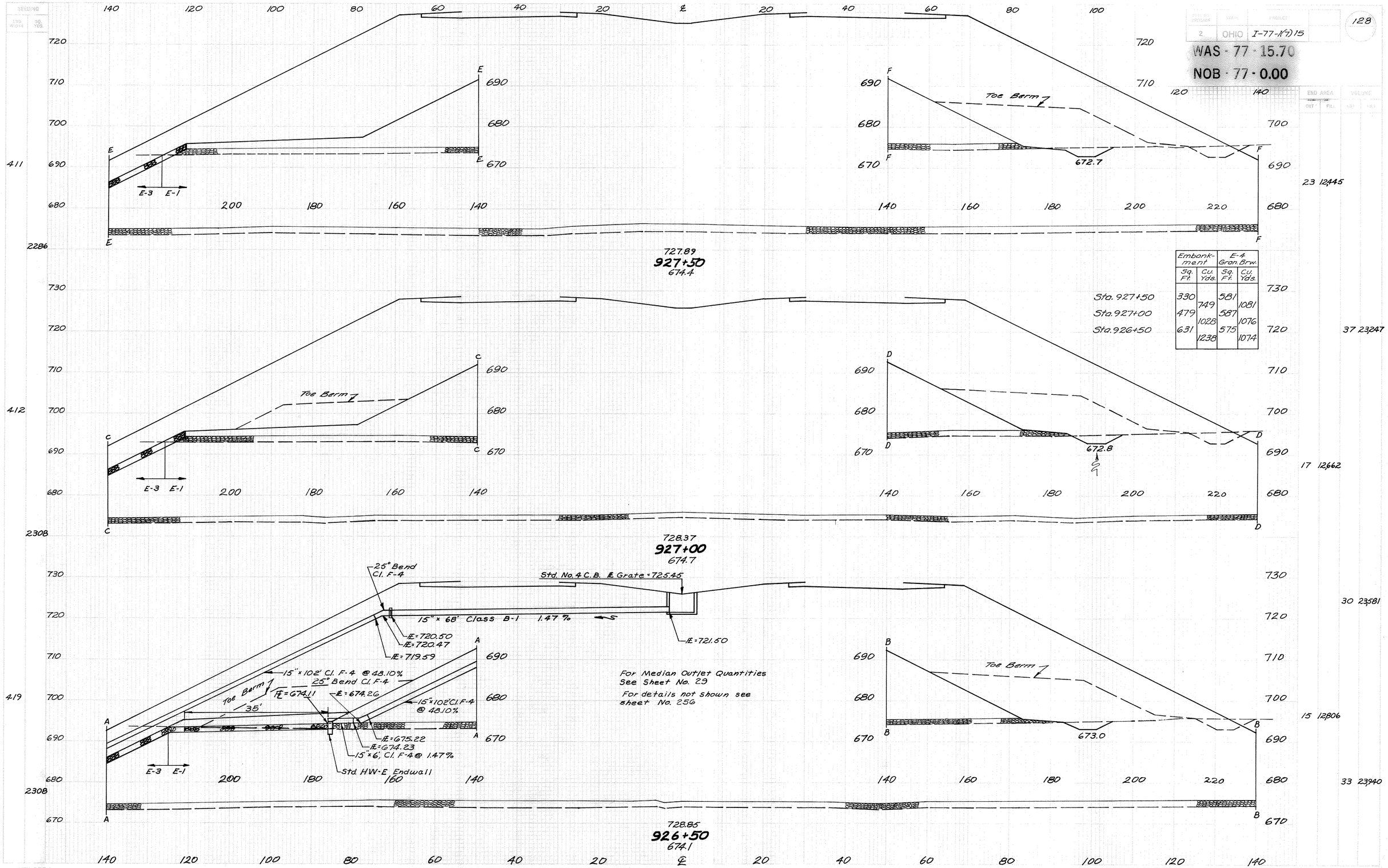
Sta. 925+00 to Sta. 926+00

SEEDING
LNG WIDTH | SQ. YDS.

FED. AID DIVISION	STATE	PROJECT	
2	OHIO	I-77-1(7)15	128

WAS - 77 - 15.70
NOB - 77 - 0.00

END AREA: CUT | FILL — VOLUME: CUT | FILL



Embankment		E-4 Gron. Brw.	
Sq. Ft.	Cu. Yds.	Sq. Ft.	Cu. Yds.
330	749	581	1081
479	1028	587	1076
631	1238	575	1074

Sta. 927+50
Sta. 927+00
Sta. 926+50

For Median Outlet Quantities See Sheet No. 23
For details not shown see sheet No. 256

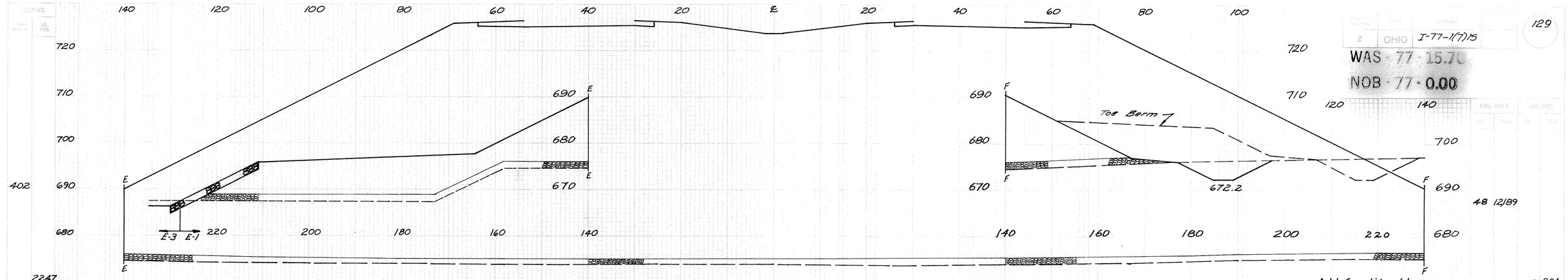
37 23,247
30 23,581

Sta. 926+50 to Sta. 927+50

2 | OHIO | I-77-1(7)15

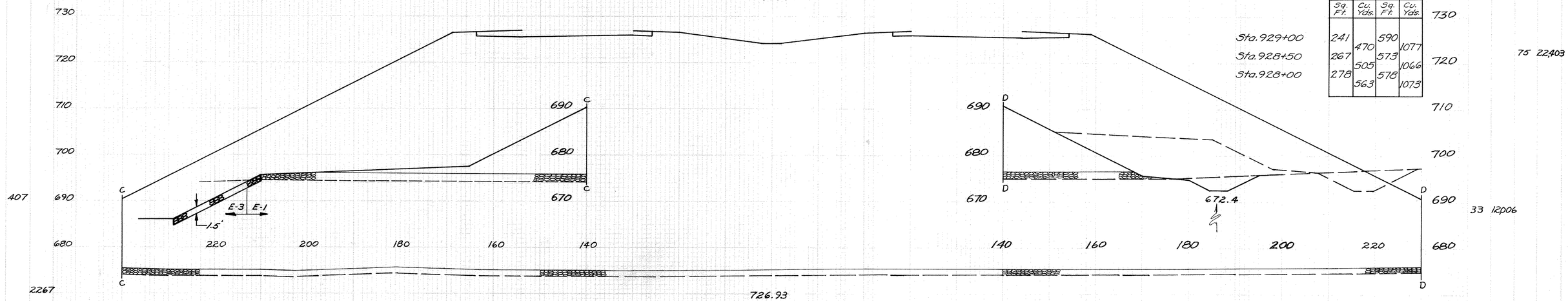
WAS - 77 - 15.70

NOB - 77 - 0.00

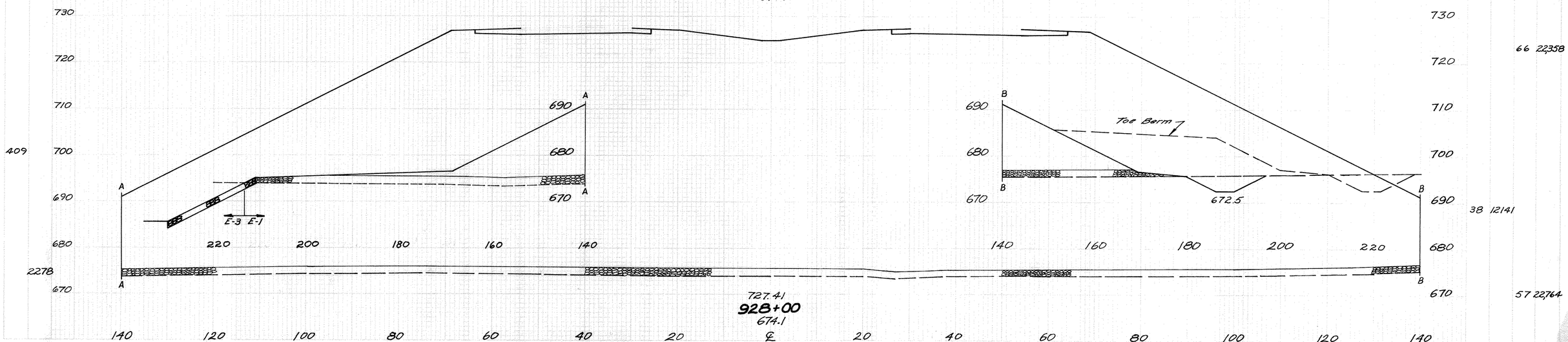


	Embankment		E-4 Gran. Brw.	
	Sq. Ft.	Cu. Yds.	Sq. Ft.	Cu. Yds.
Sta. 929+00	241	470	590	1077
Sta. 928+50	267	505	573	1066
Sta. 928+00	278	563	578	1073

75 22403



66 22358



57 22764

Sta. 928+00 to Sta. 929+00

2 OHIO I-77-1(7)15
WAS-77-15.70
NOB-77-0.00

403 2242

404 2250

406 2244

720 710 700 690 680 670

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

E-3 E-1

220 200 180 160 140

140 160 180 200 220

690 E E 680 670 E

690 F F 680 670 F

Toe Berm

672.5

725.01
930+50
674.3

690 C C 680 670 C

690 D D 680 670 D

672.1

725.49
930+00
673.9

690 A A 680 670 A

690 B B 680 670 B

672.1

725.97
929+50
674.4

	Embankment		E-4 Gran. Brw.	
	Sq. Ft.	Cu. Yds.	Sq. Ft.	Cu. Yds.
Sta. 930+50	228	399	572	1054
Sta. 930+00	203	483	566	1056
Sta. 929+50	319	519	575	1079

730 720 710 700 690 680 670

55 12,007

96 12,916

133 22,101

48 11,853

89 22,261

139 22,243

Sta. 929+50 to Sta. 930+50

OHIO I-77-1(7)15
WAS - 77 - 15.70
NOB - 77 - 0.00

END AREA VOLUME
CUT FILL CUT FILL

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

720 710 700 690 680 670

386

E E-3 E-1 200 180 160 140 680 670 E

F Toe Berm 673.8 140 160 180 200 680 670 F

18 11,244

723.90
1+00
674.8

2161

Embankment		E-4 Gron. Brw.	
Sq. Ft.	Cu. Yds.	Sq. Ft.	Cu. Yds.
211	419	567	1051
241	459	568	1054
255	137	570	324

Sta. 1+00
Sta. 0+50
Sta. 930+65.30 = Sta. 0+00

32 21,141

392

C E-3 E-1 200 180 160 140 680 670 C

D 673.5 140 160 180 200 680 670 D

16 11,588

724.38
0+50
673.8

2197

48 21,830

399

A E-3 E-1 200 180 160 140 680 670 A

B Toe Berm 673.0 140 160 180 200 680 670 B

36 11,988

682

26 6799

724.86
674.1

Sta. 930+65.30 (WAS. CO.) = Sta. 0+00 (NOB. CO.)

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

Sta. 0+00 To Sta. 1+00

OHIO I-77-1(7)15
WAS-77-15.70
NOB-77-0.00
132

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

720 710 700 690 680 670

E-3 E-1

Top Berm 7

10'

+50, Begin 10' Dumped Rock Channel Protection

200 180 160 140 675.6 180 200

368 2058

722.46
2+50
674.5

Sta.	Embankment Sq. Ft.	Embankment Cu. Yds.	E-4 Gron. Brw. Sq. Ft.	E-4 Gron. Brw. Cu. Yds.
Sta. 2+50	138	304	561	1044
Sta. 2+00	190	353	567	1050
Sta. 1+50	191	372	567	1050

12 10,838

20 20,236

373 2086

722.94
2+00
674.4

200 180 160 140 674.2 180 200 220

10 10,909

378 2122

723.42
1+50
674.8

200 180 160 140 674.0 180 200 220

15 11,092

23 20,371

30 20,682

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

Sta. 1+50 To Sta. 2+50

SEEDING
LBS/1000 SQ. YDS.

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

133

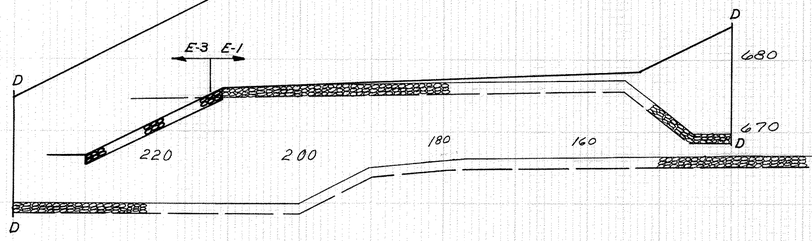
2 OHIO I-77-1(7)15
WAS-77-15.70
NOB-77-0.00

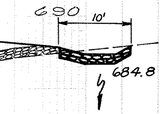
END AREA | VOLUME
CUT FILL | CUT FILL

4 9896

720
710
700
690
680
670

351





1969

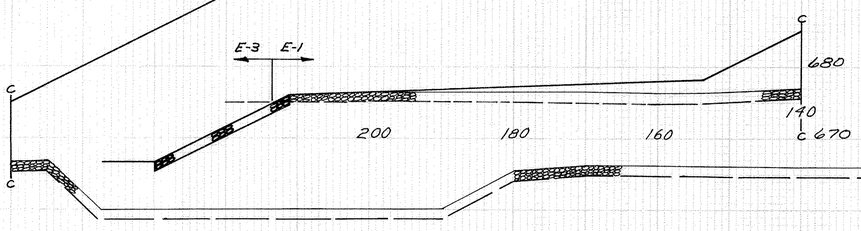
721.02
4+00
674.7

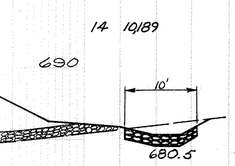
Embankment		E-4 Gran. Brw.	
Sq. Ft.	Cu. Yds.	Sq. Ft.	Cu. Yds.
		527	990
0	110	542	1018
119	238	557	1035

Sta. 4+00
Sta. 3+50
Sta. 3+00

720
710
700
690
680
670

358





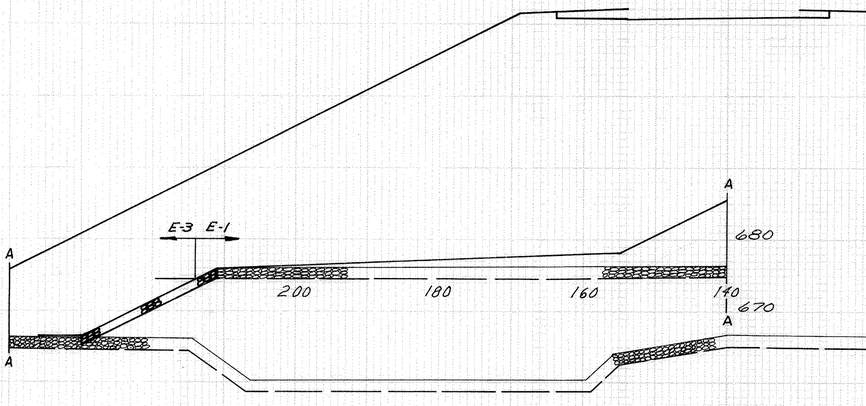
16 18598
14 10189

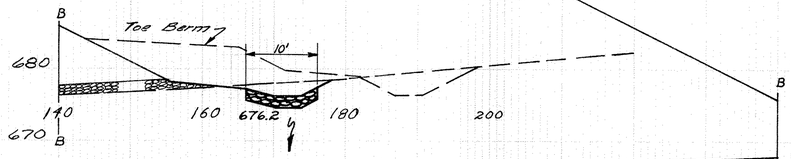
2003

721.50
3+50
674.7

720
710
700
690
680
670

363





33 19155
21 10499

2031

721.98
3+00
674.6

30 19756

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

Sta. 3+00 To Sta. 4+00

SEEDING
ENG MEAS | SQ. YDS

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

STATE | PROJECT
2 OHIO | I-77-1(7)15
WAS - 77 - 15.70
NOB - 77 - 0.00

134

ENG AREA | VOLUME
CUT | FILL | CUT | FILL

710
700
690
680
670

336

E-3 E-1
C 680 C 670
200 180 160 140
C C

8'
13 8836
688.7
680

1883

719.58
5+50
676.3

E-4 Gran. Brw.	
Sq. Ft.	Cu. Yds.
512	951
515	956
517	967

Sta. 5+50
Sta. 5+00
Sta. 4+50

27 16507

710
700
690
680
670

342

B 680 B 670
E-3 E-1
200 180 160 140
B B

10'
16 8991
688.2
680

+00, End 10' Dumped Rock Channel Protection

Begin 8' Dumped Rock Channel Protection

1911

720.06
5+00
675.5

26 17047

720
710
700
690
680
670

346

A 680 A 670
E-3 E-1
200 180 160 140
A A

710
12 9419
700
10'
690
687.8
680

1936

720.54
4+50
674.8

14 17885

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

Sta. 4+50 To Sta. 5+50

OHIO I-77-1(7)15
WAS - 77 - 15.70
NOB - 77 - 0.00

SEEDING SQ. YDS.

END AREA CUT FILL | VOLUME CUT FILL

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

720 710 700 690 680 670

318 1783

E-3 E-1 200 180 160 140

718.14
7+00
683.1

698.4

E-4 Gran. Brw.	
Sq. Ft.	Cu. Yds.
0	461
498	919
495	940
520	956

Sta. 7+50
Sta. 7+00
Sta. 6+50
Sta. 6+00

8 6364

14 13,376

324 1817

E-3 E-1 200 180 160 140

718.62
6+50
680.7

695.1

7 7482

16 14,546

330 1850

Add for Turnaround
279 Rt. Sta. 5+60

E-3 E-1 200 180 160 140

719.10
6+00
678.8

690.0

10 8228

21 15,800

Add for Turnaround Rt. of Sta. 5+60 → 565

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

Sta. 6+00 To Sta. 7+00

OHIO I-77-1(7)15
WAS - 77 - 15.70
NOB 77 - 0.00

END AREA VOLUME
FILL CUT FILL CUT

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

292 690 680 D D E-3 E-1 220 200 180 160 D 680 D

716.22
9+00
707.8

4:1 6:1 707.8 710 700

134 2405

269 6200

1647 690 680 C C E-3 E-1 220 200 180 160 140 C 680 C

716.70
8+50
701.4

710 700 705.0 Var.

157 4291

266 9102

1683 670 E-3 E-1 220 200 180 160 140 B 680 B

710 700 690 705.2

130 5539

124 11,231

305 680 B B E-3 E-1 220 200 180 160 140 B 680 B

717.18
8+00
692.4

25° Bend Cl. F-4
Std. No. 4 C.B. E Grate = 714.26
15" x 68' Class B-1 1.47%
℄E = 710.00
℄E = 709.97
℄E = 709.09
℄E = 711.00
15" x 72' Class F-4 @ 44.0%
℄E = 676.48
61'
A 680 A
℄E = 677.48
℄E = 676.60
15" x 6' Cl. F-4 @ 1.47%
Std. HW-E Endwall

Note: For details not shown see sheet no. 256.

4:1 +50, End Dumped Rock Channel Protection 8' 704.0 710 700

4 6591

1714 690 680 A A E-3 E-1 220 200 180 160

312 690

11 12,551

1750

717.66
7+50
688.5

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

Sta. 7+50 To Sta. 9+00

OHIO I-77-1(7)15
WAS - 77 - 15.70
NOB - 77 - 0.00

SEEDING
LAND WIDTH | SQ. YDS.

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

730 720 710 700 690

269 1511 275 1547 282 1575 285 1603

3:1 2:1 8:1 6:1

714.30
11+00
714.5

714.78
10+50
712.5

715.26
10+00
716.8

715.74
9+50
713.2

Add for Turnaround
Lt. Sta. 10+38
52

Add for Turnaround
Lt. Sta. 10+38 → 16

B B 680 670 140

A A 680 670 140

E-3 E-1 220 200 180 160

END AREA | VOLUME
CUT FILL | CUT FILL

730 720 710 700 690

1360 201
2101 1381
909 1290
1667 1759
891 610
1144 1514
345 1025
444 3176

Sta. 9+50 to Sta. 11+00

OHIO I-77-1(7)15
WAS - 77 - 15.70
NOB - 77 - 0.00

SHEETING
END WIDTH | SQ. YDS.

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

C 770 760 750 740 730 C
1½:1
200
180
160
140
1½:1
C

364
730 720 710
712.38
13+00
756.7

1964
740 730 720 710
712.86
12+50
748.3

343
720 710

1836
740 730 720
713.34
12+00
738.9

318
720

1714
730 720 710
713.82
11+50
726.9

299
720 710

1577

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

B 760 750 740 B
1½:1
140 160 180
B
1½:1
B

A 740 A
140 160
A

3:1 6:1 8:1

760 750 740 730 720 710

11,313 ○
18,058 ○
8190 ○
12,897 ○
5739 ○
8404 11
3337 12
4349 197

Sta 11+50 to Sta. 13+00

2 OHIO I-77-1(7)15
WAS 77-15.70
NOB 77-0.00

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

780 B 770 760 750 740 B 140 200 180 160 1½:1

B 770 760 12,721 ○ 750 740 730 720 23,548 ○ 710 700 A 770 760 750 740 A 12,712 ○ 22,245 ○

740 730 720 710 700 393 2139 377 2088

1½:1 1½:1 1½:1 1½:1

711.42
14+00
759.2

711.90
13+50
760.5

780 A 770 760 750 740 A 140 160 180 200 220

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

Sta. 13+50 to Sta. 14+00

OHIO I-77-1(7)15
WAS - 77 - 15.70
NOB 77 - 0.00

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

790 780 770 760 750 740 730 720 710 700

B B 1½:1 220 200 180 160

A A 1½:1 160 180 200

435 2339 407 2222

710.46
15+00
750.1

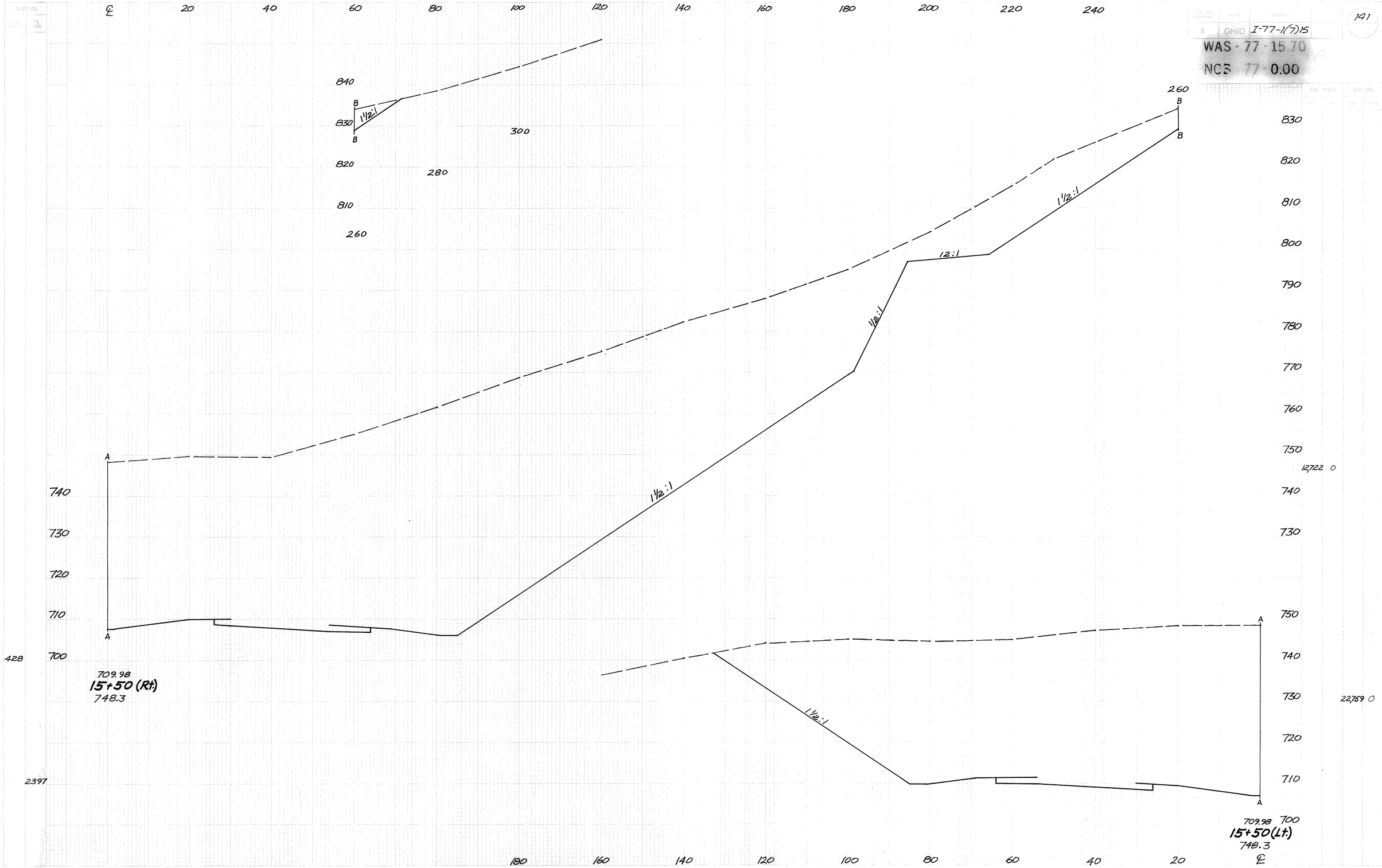
710.94
14+50
752.9

780 770 760 750 740 730 720 710

11,858 ○ 22,090 ○ 11,999 ○ 22,888 ○

Sta. 14+50 to Sta. 15+00

OHIO I-77-1(7)15
WAS-77-15.70
NCE 77-0.00



Sta. 15+50

SHEETING
FOR WIDTH | SQ YDS

℄ 20 40 60 80 100 120 140 160 180 200 220 240

2	OHIO	I-77-1(7)15	142

WAS - 77 - 15.70
NOB - 77 - 0.00

END AREA: FILL / CUT — VOLUME: FILL / CUT

850
840
830
820
260
B
B
1½:1
320
300
280

260
B
B
1½:1
1:1
12:1
½:1
1½:1

770
760
750
740
730
720
710
700
412
A
A
709.50
16+00 (Rt.)
753.9

840
830
820
810
800
790
780
770
760
750
11,951 ○

A
A
750
740
730
720
710
700
709.50
16+00 (Lt.)
753.9
℄
1½:1
22,845 ○

2333

180 160 140 120 100 80 60 40 20

Sta. 16+00

SHEET NO.	STATE	PROJECT
2	OHIO	I-77-K(7)15
	WAS - 77 - 15.70	
	NOB - 77 - 0.00	

℄ 20 40 60 80 100 120 140 160 180 200 220 240

240 260 280 300

B B

840 830 820

1:1 1½:1

790 780 770 760 750 740 730 720 710 700

810 800

A

388

709.02
16+50 (Rt.)
760.9

B B

1:1 12:1 ½:1 1½:1

12,881 0

A A

760 750 740 730 720 710 700

709.02
16+50 (Lt.)
760.9

22,992 0

2222

160 140 120 100 80 60 40 20 ℄

Sta. 16+50

830 820 810 800 790 780

SEEDING
END WIDTH | SQ. YDS.

℄ 20 40 60 80 100 120 140 160 180 200 220 240

240 260 280

840
830
820
810

B
B
1:1
1½:1

760
750
740
730
720
710
700

A
A
1½:1
12:1
1:1
B
B

708.54
17+00 (Rt.)
760.4

378
2128

16992 ○
27,660 ○

708.54
17+00 (Lt.)
760.4

160 140 120 100 80 60 40 20 ℄

Sta. 17+00

830
820
810
800
790
780
770
760
750
740

DIV. OF REVISION | STATE | PROJECT
2 | OHIO | I-77-1(7)15
WAS - 77 - 15.70
NOB - 77 - 0.00

144

END AREA | VOLUME
CUT | FILL | CUT | FILL

PRINTED IN U.S.A.
STANDARD FORM 65-5111

SEEDING
LBS. WIDTH | SQ. YDS.

PROJECT DIVISION | STATE | PROJECT
2 | OHIO | I-77-1(7)15
WAS - 77 - 15.70
NOB - 77 - 0.00

145

END AREA: CUT | FILL
VOLUME: CUT | FILL

℄ 20 40 60 80 100 120 140 160 180 200 220 240 260

830
820
810
800
790
780
770
760
750
740
730
720
710
700

760
750
740
730
720
710
700

A

1½:1
1:1
12:1
1½:1
1½:1

372
2083

17,359 ○
31,807 ○

708.06
17+50 (Rt.)
761.3

708.06
17+50 (Lt.)
761.3
℄

160 140 120 100 80 60 40 20 ℄

Sta. 17+50

PRINTED IN U.S.A.
DU PONT TRADE SECRETS

SEEDING
LBS. PER 1000 SQ. FT. | LBS. PER ACRE

℄ 20 40 60 80 100 120 140 160 180 200 220 240

780 770 760 750 740 730 720 710 700

820 810 800 790 780 770 760 750 740

A

1½:1 12:1 1:1 1½:1

1½:1

+00 ℄ Survey, Std. No. 4 C.B.
℄ Grate = 704.44, ℄ 27" Pipe = 698.69

+00, 82 Rt. Std. No. 5 C.B.
℄ Grate = 703.79
Outlet 24" Pipe ℄ = 699.72

27" I-1
℄ = 698.94
℄ = 698.69
℄ = 699.72

24" × 78' CLASS B:1
1.00%

373

707.58
18+00 (Rt.)
761.2

16588 ○

2069

1½:1

+00 ℄ Survey, Std. No. 4 C.B.
℄ Grate = 704.44

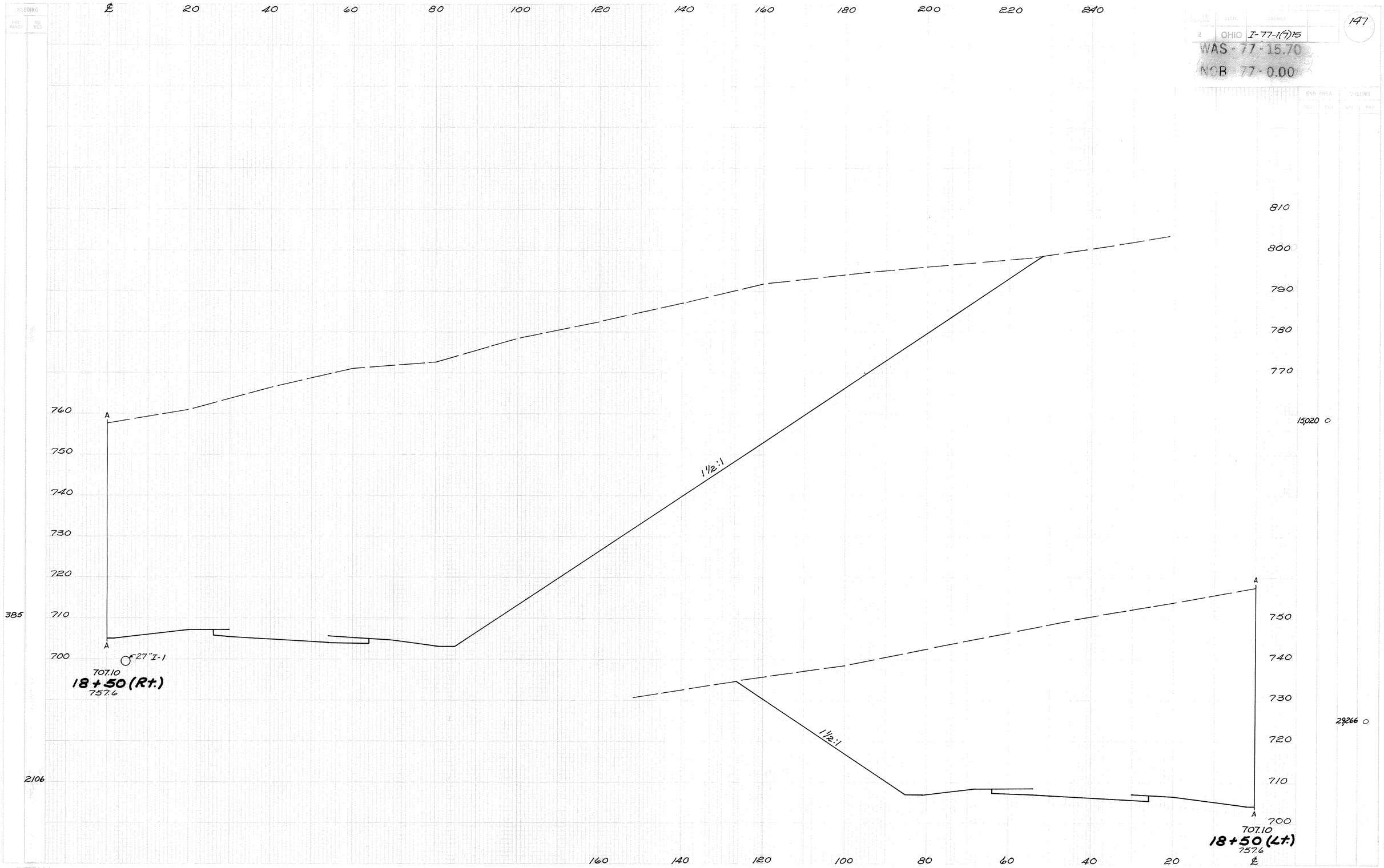
31,432 ○

707.58
18+00 (Lt.)
761.2

140 120 100 80 60 40 20 ℄

Sta. 18+00

2 OHIO I-77-1(7)15
WAS-77-15.70
NOB-77-0.00



SHEET NO.	STATE	PROJECT
2	OHIO	I-77-1(7)15

WAS - 77 - 15.70
NOB - 77 - 0.00

SHEILING

END WIDTH	NO. PTS.
347	
1981	
366	
2086	

EXIST. AREA		VOLUME	
CUT	FILL	CUT	FILL
		11,639	0
		22,929	0
		13,124	0
		26,059	0

706.14
19+50
749.1

706.62
19+00
754.2

1½:1

27"I-1

Sta. 19+00 To Sta. 19+50

PRINTED IN U.S.A.
DEXTER TRACE CLOTH

SEEDING
NO. M.SQ.YDS.
SQ. YDS.

OHIO I-77-1(7)15
VAS 77-15.70
NOR 77-0.00

GRID AREA VOLUME
CUT FILL CUT FILL

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

C 750 740 730 720 C — 120 — 140 — 1½:1

760 C 750 C — 1½:1

720 710 700 — 298

27" I-1

704.70
21+00
731.0

740 7377 ○
730
720
14,969 ○

1697

730 720 710 700 — 313 — 2:1

B 760 750 740 B — 1½:1

760 B — 1½:1

730 720 710
17,588 ○

27" I-1

705.18
20+50
742.0

1786

740 730 720 710 700 — 330 — 2:1

140 160 180

A 760 750 740 A — 1½:1

A 760 750 740 A — 1½:1

760 750 740 730 720 710 700
10,205 ○
20,226 ○

1881

27" I-1

705.66
20+00
746.2

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

Sta. 20+00 To Sta. 21+00

SEEDING
LBS/1000 SQ. YDS.

2 OHIO I-77-1(7)15
WAS - 77 - 15.70
NOB 77 - 0.00

150

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

SHO AREA VOLUME
CUT FILL CUT FILL

266 710 700

757 720 710

258 720 710 700

1450 720 710

264 700

1511 720 710

280 700

1606

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

703.01
22+76
710.0

703.26
22+50
716.2

703.74
22+00
728.3

704.22
21+50
728.5

27" I-1

8:1

1½:1

B B
740 730
140 160

A A
750 740 730
140 160 180

730 720 710 3698 0

730 720 710 3473 0

730 720 710 3514 0

730 720 710 7979 0

22+50 For Dike 80 Rt. → 90

730 720 710 5104 0

730 720 710 10640 0

740 730 720 710 700 6387 0

12745 0

Sta. 21+50 To Sta. 22 + 76

2 OHIO I-77-1(7)15
WAS-77-15.70
NOB-77-0.00

SEEDING
LBS/1000 SQ. YDS.

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

24+96, End Dumped Rock

24+50, Begin Dumped Rock

10'
2%
4:1
1'-6"
696.8
699.0
4:1

710 700 690
286
1594
288

701.34
24+50
713.5

160 180
740 730
1½:1
1½:1
1½:1
3043 0
6126 1
3573 1
6709 1

710 700 690
1586

701.82
24+00
713.1

140 160 180
740 730
1½:1
1½:1
3672 0
7205 0

710 700 690
283

702.30
23+50
714.3

140 160 180
740 730
1½:1
1½:1
4110 0
3470 0

710 700
279
727

702.78
23+00
719.2

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

Sta. 23+00 To Sta. 24+50

2	OHIO	I-77-1(7)15
WAS - 77 - 15.70		
NOB - 77 - 0.00		

SEEDING

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

120 140 B B 730 720

140 160 180 200 B 730 B 1½:1 1½:1 720

710 700 690 287 6593.31

699.42
26+50
710.8

740 730 720 3638.34

740 A A 730 A 1½:1 1½:1 160 180 1567

710 700 690 277 5905.250

24:1 4:1

699.90
26+00
711.8

730 720 2739.236

1½:1 1544

710 700 690 279 3959.415

10' 4:1 688.0

Add for dike Rt. → 26

700.38
25+50
705.2

℄ 719.96 1537.212

+56 Outlet Ditch ℄
End 10' Dumped Rock

Note: For 21" Pipe Quantities
See Sheet No. 32

25+00, 83' Rt.
Std. No. 5 C.B.
℄ Grate = 698.27

1½:1

710 700 690 680 1556

+04 Start 10' Dumped Rock

10' ℄ 688.86 4:1

700 690 281 1575 4241.196

700.86
25+00
709.0

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

Sta. 25+00 To Sta. 26+50

OHIO I-77-1(7)15
WAS 77-15.70
NOB 77-0.00

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

720 D D 720.0 160 180 D D 2318 32 710

700 690 258 1160 4:1 697.50 28+50 707.2 720 C C 719.0 160 180 C C 720 477 159 710 2070 141

700 690 264 293 6:1 695.0 697.88 28+10 694.8 2:1 B B 718.5 160 180 B B 720 1242 2 710 318 30

700 690 264 8:1 636.0 697.98 28+00 702.1 Var. 700 4781 2

Add for Dike For Details See Sheet No. 283 → 15

720 3922 710 1464 8' 8:1 24:1 698.46 27+50 716.1 2:1

730 A A 740 140 160 1½:1 1½:1 720 3041 221 710

700 690 263 276 1497 +08 Outlet Ditch 95' Lt. into existing swale 691.0 698.94 27+00 711.0 6447 205 730 6040 205 700 690 1564

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

Sta. 27+00 To Sta. 28+50

OHIO I-77-1(7)15
WAS - 77 - 15.70
NOB - 77 - 0.00

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

695.58
30+50
715.5

250 1397 253

700 690 700 690

720 730 720 710 4050 0 8108 0 4707 0

140 160
730 720

696.06
30+00
715.5

1419 258

680 700 690 680

730 720 710 4661 0 7839 0

140 160
730 720

696.54
29+50
714.1

1428 256

700 690 680

730 720 710 700 3805 0 5670 30

140 160 180
730 720

697.02
29+00
712.4

1428

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

Sta. 29+00 To Sta. 30+50

SHEET NO. 30 TOT.

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

2 OHIO I-77-7(7) 15

155

WAS - 77 - 15.70

NOB - 77 - 0.00

END AREA VOLUME CUT FILL CUT FILL

5' 4' 2'

710

700

690

680

2:1

4:1

265 1458

678.8

692.76

33+50

696.3

704.0

1321 457

2038 902

260 1431

679.0

693.24

33+00

689.5

705.0

880 517

1890 806

255 1417

679.4

693.72

32+50

699.0

706.0

1161 354

2262 521

32+33.85 (BK.) = 32+39.85 (Ah.)

255 1403

680.0

694.14

32+00

706.4

707.0

1492 286

3336 322

250 1375

694.62

31+50

708.7

708.0

2110 62

4627 66

245 1375

695.10

31+00

710.2

709.0

2887 9

6422 9

+73 Outlet Swale ℄
Start Dumped Rock 144' Rt.

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

Sta. 31+00 To Sta. 33+50

OHIO I-77-1(7)15
WAS - 77 - 15.70
NOB - 77 - 0.00

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

100 120 140 160

720 710 700

C C

291 690 680 677.4 4:1

1611

691.28
36+50
679.3

For Catch Basin Quantities
See Sheet No. 33

+99.33 ; Std. No. 4 C.B.
℄ Grate = 688.31

289 690 680 677.5

℄ 15" = 685.31

691.33
36+00
684.5

1589

283 690 680 677.6

691.46
35+50
688.0

1553

276 690 680 677.7

691.67
35+00
688.6

1528

274 690 680 677.8

691.95
34+50
686.9

1489

140 120 4:1 D D 680 678.5 100

262 690

1464

D D 100 4:1

692.32
34+00
696.2

℄

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

120 140

720 710 700

B B

140 160

B B 720

689.0

A A

720 140 160 A A

710 700

A A

690.0

2' 2:1 2:1

1711 1214

2896 2118

1417 1074

2609 1903

1401 982

2116 1738

884.895

1264 1567

481 797

802 1235

Add for dike Rt. of Sta. 34+33 → 3

386 537

1580 921

Sta. 34 + 00 To Sta. 36 + 50

2	OHIO	I-77-1(7)15	

WAS - 77 - 15.70
NOB - 77 - 0.00

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

END AREA VOLUME
CUT FILL CUT FILL

222 680 670 1267 234 680 1339 690 248 680 1417 690 262 680 1508 690 281 680 1594 690 293 680 1622

3:1 3:1 683.0

691.96
39+50
676.9

4:1 4:1 687.8

691.82
39+00
679.8

Outlet roadside ditch Lt.
into Exist. Buffalo Run
124' Lt. Sta. 38+93
Elev. = 676.8

6:1 689.0

677.0

691.68
38+50
679.8

8:1

677.1

691.54
38+00
679.0

677.2

691.40
37+50
680.0

4:1

677.3

691.30
37+00
680.3

690 2 1893
680 2 3510
690 1897 32 3253
700 34 1616
690 70 3006
700 42 1630
391 2812
710
381 1406
700
973 2515
*06 Add for dike Rt. → 11
720
710 670 1310
700
140 160
720
22052337

Sta. 37+00 To Sta. 39+50

2	OHIO	I-77-1(7)15

WAS - 77 - 15.70
NOB - 77 - 0.00

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

690
680
240
1264
215
690
680

3:1
677.8
15" I-1
3:1
677.7
690
680
53 2066

692.80
42+50
680.0
+80, ℄, Std. No. 22-B C.B.
℄ Grate = 689.21

2:1
677.7
℄ = 686.00, 15" I-1
Note: For Median Outlet Quantities
See Sheet No. 34
For Details Not Shown See Sheet No. 256
2:1
677.6
690
680
43 1889
90 3662

692.66
42+00
679.8

Outlet roadside ditch Rt.
into Prop. Buffalo Run
112' Rt. Sta. 41+47
Elev. = 677.4

Add for Bridge Area ——————→ 177 8236

BRIDGE LIMITS
Sta. 41+42.79
Sta. 40+37.19

Outlet roadside ditch Lt.
into Prop. Buffalo Run
104' Lt. Sta. 40+80
Elev. = 677.4

Outlet roadside ditch Rt.
into Prop. Buffalo Run
111' Rt. Sta. 41+04
Elev. = 679.0

3 1895

+00, ℄, Std. No. 2-℄-B C.B.
℄ Grate = 688.71

195
690
680
1158
Note: For Median Outlet Quantities
See Sheet No. 34
For Details Not Shown See Sheet No. 256
℄ = 686.70, 15" I-1
690
680
5 3507

692.10
40+00
679.9
680.0

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

Sta. 40+00 To Sta. 42+50

OHIO I-77-1(7)15
WAS - 77 - 15.70
NOB - 77 - 0.00

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

690 / 680 — 4:1 — 678.4 — 678.3 — 4:1

255 — 37 2451

693.64
45+50
679.6

1408 — 68 4479

690 / 680 — 678.3 — 678.2

252 — 37 2386

693.50
45+00
679.8

1400 — 82 4412

690 / 680 — 678.2 — 678.1

252 — 52 2379

693.36
44+50
679.5

1408 — 95 4329

690 / 680 — 678.1 — 678.0

255 — 50 2297

693.22
44+00
679.9
+42.33, 2'Lt, Std. No.4 C.B.
℄ Grate = 689.92

1414 — 104 4239

690 / 680 — 678.0 — 677.9

15"x160', Class E-1
E = 686.92

254 — 62 2281

For Catch Basin Quantities
See Sheet No. 34

693.08
43+50
680.3

1406 — 111 4208

690 / 680 — 4:1 — 15" I-1 — 4:1

252 — 58 2263

677.9 — 677.8

692.94
43+00
679.5

1367 — 104 4009

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

Sta. 43+00 To Sta. 45+50

SEETING

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

DIVISION	STATE	NUMBER
2	OHIO	I-77-1(7)15

WAS · 77 · 15.70
NOB · 77 · 0.00

160

END AREA: CUT SQ FT | FILL SQ FT — VOLUME: CUT CU YDS | FILL CU YDS

690 / 680 — 4:1 — 678.4 — 694.48 — **48+50** — 680.0 — 678.9 — 4:1 — 690 / 680

255 — 1411 — 22 2812 — 31 5077

690 / 680 — 678.6 — 694.34 — **48+00** — 679.6 — 678.8 — 4:1 — 690 / 680

253 — 1408 — 12 2671 — 27 4835

690 / 680 — 678.8 — 694.20 — **47+50** — 680.0 — 678.7 — 690 / 680

254 — 1408 — 17 2551 — 43 4596

690 / 680 — 678.7 — 694.06 — **47+00** — 681.0 — 678.6 — 690 / 680

253 — 1411 — 30 2412 — 52 4575

690 / 680 — 678.6 — 693.92 — **46+50** — 680.1 — 678.5 — 690 / 680

255 — 1411 — 26 2530 — 58 4639

690 / 680 — 4:1 — 678.5 — 693.78 — **46+00** — 679.6 — 678.4 — 4:1 — 690 / 680

253 — 1411 — 37 2481 — 68 4566

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

Sta. 46 +00 To Sta. 48 +50

SEEDING
ENG UNITS | SQ YDS

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

SEQ NO NUMBER | STATE | PROJECT
2 | OHIO | I-77-1(7)15

WAS - 77 - 15.70
NOB - 77 - 0.00

101

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

690 / 680 / 670 — 4:1 — 678.0 — 679.5 — 695.32 — **51+50** — 679.0

236 — 34 2980

1319 — 51 5971

690 / 680 / 670 — +03, 141' Lt. Outlet Into Exist. Channel — 674.8 — 679.4 — 695.18 — **51+00** — 675.8

239 — 21 3469

1328 — 77 5576

690 / 680 — 677.6 — 679.3 — 695.04 — **50+50** — 681.4

239 — 63 2553

1336 — 85 4907

690 / 680 — 677.8 — 679.2 — 694.90 — **50+00** — 679.8

242 — 29 2147

1361 — 31 5799

690 / 680 — 678.0 — 679.1 — 694.76 — **49+50** — 679.1

248 — 4 2868

1397 — 28 5757

690 / 680 — 4:1 — 678.2 — 679.0 — 694.62 — **49+00** — 679.9 ℄

255 — 26 2702

1417 — 44 5106

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

Sta. 49+00 To Sta. 51+50

SHEET NO.	STATE	PROJECT
2	OHIO	I-77-1(7)15

WAS - 77 - 15.70
NOB - 77 - 0.00

SLEEDING

END WIDTH	SQ. YDS.			END AREA	VOLUME CU. YDS.	VOLUME CUM.
140	223	690 / 680	678.2	8	3075	
120	1258	+70 Outlet Ditch Into Exist Channel		15	5801	
140	230	680	677.4	8	3190	
120	1289	696.16 / 54+50 / 679.7		23	5946	
140	234	690 / 680	679.0	17	3232	
120	1300	696.02 / 54+00 / 679.6		31	5927	
140	234	690 / 680	679.3	16	3169	
120	1286	695.88 / 53+50 / 678.7		31	5574	
140	229	690 / 680	679.0	17	2851	
120	1272	695.74 / 53+00 / 680.1		40	5314	
140	229	690 / 680	678.7	26	2888	
120	1275	695.60 / 52+50 / 680.0		42	5415	
140	230	690 / 680	678.4	19	2960	
120	1294	695.46 / 52+00 / 680.1		49	5500	

4:1 — 15' — ℄L=679.05 — 15"x118' Class B-1 — 9.28% — Std. H.W.E. Headwall — Std. No. 4 C.B. ℄ Grate: 692.32 — ℄: 690.00

Note:
For Median Outlet Quantities See Sheet No. 35
For details not shown see sheet No. 256

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Sta. 52+00 to Sta. 55+00

2	OHIO	I-77-1(7)15	
WAS	77	15.70	
NOB	77	0.00	

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

690 2:1 2:1 690

225 E-3 E-1 680 ○ 3120

697.06
57+69
680.1

472 E-3 E-1 C 680 ○ 2145
C 670
170 150

222 680 C 3:1 690 ○ 2975
C 680

697.00
57+50
681.2

1211 E-3 E-1 B 680 ○ 5428
B 670 Add for dike Rt of Sta. 57+38 → 272
170 150

214 680 B 4:1 2:1 690 ○ 2887
B 680

696.86
57+00
681.5

1186 E-3 E-1 A 680 ○ 5266
A 670
170 150

213 680 A 3:1 690 ○ 2800
A 680

696.72
56+50
681.1

1178 11 5332

690 4:1 690

211 680 12 2959
679.2 680

696.58
56+00
680.8

1200 23 5522

221 690 4:1 690

680 13 3005
678.9 680

696.44
55+50
680.5

1233 19 5630

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

Sta. 55+50 to Sta. 57+69

SHEET NO.	STATE	PROJECT
2	OHIO	I-77-1(7)15
	WAS - 77 - 15 70	
	NOB - 77 - 0.00	

SHEETING

END WIDTH	SQ. YDS.

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

Sta. 58+00 to Sta. 59+50

---

232 — 1292 — 690 — E-3 | E-1 — 680 — 4:1 — 4:1 — 690 — 680 — C — C — 57 3356

697.56
59+50
680.9

680 — C — C — 4:1 — 678.6 — 140 — 160 — 150 6118

---

233 — 1289 — 690 — E-3 | E-1 — 680 — 690 — 680 — B — B — 105 3251

697.42
59+00
681.5

680 — B — B — 678.5 — 140 — 160 — 208 6122

---

231 — 465 — 690 — E-3 | E-1 — 680 — 4:1 — 4:1 — 690 — 680 — A — A — 120 3361

697.28
58+50
676.0

680 — A — A — 4:1 — 678.4 — 140 — 160 — 73 2165

---

234 — 690 — E-3 | E-1 — 680 — 3:1 — 3:1 — 690 — 680 — 98 3134

697.23
58+32
676.0

678.4

---

232 — 690 — E-3 | E-1 — 680 — 2:1 — 2:1 — 690 — 680 — 75 2894

697.20
58+23
681.8

678.3 — 61 2444

---

231 — 588 — 690 — E-3 | E-1 — 680 — 2:1 — 2:1 — 690 — 680 — 69 2843

697.14
58+00
681.5

678.3 — 40 — 3326

Includes a deduction of 97 cu. yds. for the channel Lt. of Sta. 57+87

SECTIONS

END AREAS	SQ. YDS

SHEET NO.	STATE	PROJECT
2	OHIO	I-77-1(7)15

WAS 77 15.70

NOB 77 - 0.00

165

END AREA		VOLUME	
CUT	FILL	CUT	FILL

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

690 4:1 E-3 E-1 680 232 1292

698.82
62+00
676.0

690 4:1 E-3 E-1 680 233 1292

698.60
61+72
676.0

690 4:1 E-3 E-1 680 232 1289

698.44
61+50
676.5

690 E-3 E-1 680 232 1289

698.12
61+00
681.4

690 E-3 E-1 680 230 1283

697.88
60+50
681.4

690 4:1 E-3 E-1 680 232 1289

697.70
60+00
681.4

F 680 F 16 3926

F 680 4:1 679.2 F 140 160 19 4019

690 E 680 E 20 3824

E 680 679.1 E 140 160 17 3087

690 D 680 D 22 3753

D 680 679.0 D 140 160 42 6817

690 C 680 C 23 3609

C 680 678.9 C 140 160 57 6609

690 B 680 B 32 3529

B 680 678.8 B 140 160 71 6456

690 A 680 A 45 3443

A 680 4:1 678.7 A 140 160 94 6295

Sta. 60+00 to Sta. 62+00

OHIO I-77-1(7)15
WAS - 77 - 15.70
NOB - 77 - 0.00

Note: For Median Outlet Quantities
See Sheet No. 36

For details not shown
see sheet No. 256

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

64+00, ℄
Std. No. 4 C.B.
℄ Grate = 698.14

℄ = 693.60
25° Bend Cl. F-4

64+00, 100.5' Lt.
℄ = 682.77

℄ = 682.94
℄ = 682.98
℄ = 683.86

2:1

15" x 66' Class B-1 — 2.06%

64+00, 68.5' Lt.
℄ = 693.64
℄ = 692.72

℄ = 695.00

15" x 20'
Class F-4
@ 49.6%

15" x 8', Class F-4
@ 2.06%

Std. HW-E Endwall

℄ Channel
(2' Bottom 2:1 Slopes)

Dumped Rock C.P.
Carried With
Channel

Dumped Rock Channel
Protection
(6' Width) (Length 51')

4.17%

E-3 | E-1

241 — 700 / 690 / 680

1314 — 700 / 690 / 680

232 — 700 / 690 / 680

1289 — 700 / 690 / 680

233 — 700 / 690 / 680

361 — 700 / 690 / 680

231 — 700 / 690 / 680

1286 — 700 / 690 / 680

4:1 | 3:1 | 4:1 | 4:1 | 4:1

701.06
64+00
681.0

700.40
63+50
681.6

699.80
63+00
681.4

699.41
62+64
681.2

699.28
62+50
676.0

℄

E — 680 — E — 679.7 — 140 — 160 — 48 7784

D — 680 — D — 679.6 — 140 — 160 — 41 7693

C — 680 — C — 679.5 — 140 — 160 — 27 5463

B — 680 — B — 679.4 — 140 — 160 — 10 2054

A — 680 — A — 679.3 — 140 — 160 — 33 7253

28 4279

24 4128

20 4180

20 4015

20 3907

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

Sta. 62+50 to Sta. 64+00

OHIO I-77-1(7)15
WAS-77-15.70
NOB-77-0.00

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

700 690 680 670 | E-3 E-1 | C C | 170 150
225 1261 | C 680 C
705.40
66+50
680.3
4:1 D D
680 700 690
100 120 | 694.5 | 691.3
3 4428

700 690 680 670 | E-3 E-1 | B B | 170 150
229 1267 | B 680 B
704.42
66+00
680.3
6 8232
4 4463

700 690 680 670 | E-3 E-1 | A A | 170 150
227 1267 | A A
703.48
65+50
680.4
11 8294
700 690 680 | 688.1
8 4495

700 690 680
229 1267 | E-3 E-1
702.60
65+00
681.1
10 8200
700 690 680 | 686.7
3 4361

700 690 680
227 1300 | E-3 E-1
701.80
64+50
681.1
690 680 | A 4:1 A | 683.7 | 140 160
6 8062
4:1 A A
4 4346
690 680
30 7986

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

Sta. 64+50 to Sta. 66+50

OHIO I-77-1(7)15
WAS - 77 - 15.70
NOB 77 - 0.00

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

710
700
690
680

E-3 E-1

229

709.32
68+50
680.9

1261

E-3 E-1 C C 680 670

170 150

225

708.34
68+00
680.5

1256

E-3 E-1 B B 680 670

170 150

227

707.36
67+50
680.5

1261

E-3 E-1 A A 680 670

170 150

227

706.38
67+00
680.3

1256

4:1

702.0

698.5

695.0

694.6

17 4272

27 8032

13 4403

19 8243

8 4499

41 8263

36 4425

36 8197

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

Sta. 67+00 to Sta. 68+50

PROJECT
2 OHIO I-77-1(7)15
WAS - 77 - 15.70
NOB - 77 - 0.00

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

710
700
690

289 681.0 24:1 Var. 8' 2:1 695.6

714.22
71+00
684.7

690 18 5149

68 9356

1594 21:1 Var. 8' 8:1 8:1 3:1 2:1 699.0

710
700
690

55 4955

285 12:1 680 680.6

713.24
70+50
683.1

690

107 8985

1514 11:1 8:1 8' 8:1 8:1 4:1 700.5

710
700
690

60 4749

160 140

700 680 24:1 679.8 B B

260 690 680 B B 24:1

712.26
70+00
682.8

690

85 8644

+62, 190' Rt.
Outlet Ditch into Relocated Channel

1419 7:1 1:1 4' 8:1 8:1 701.0

710
700
690

31 4587

E-3 E-1 A A 160 140 700 680

251 690 A A 24:1

1350

711.28
69+50
682.4

40 8269

710 E-3 E-1 C C 690 680 4:1 703.5

710
700
690

13 4344

235 700 160 140

690 C C 24:1

1289

710.30
69+00
681.5

690
680

27 7977

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

Sta. 69+00 to Sta. 71+00

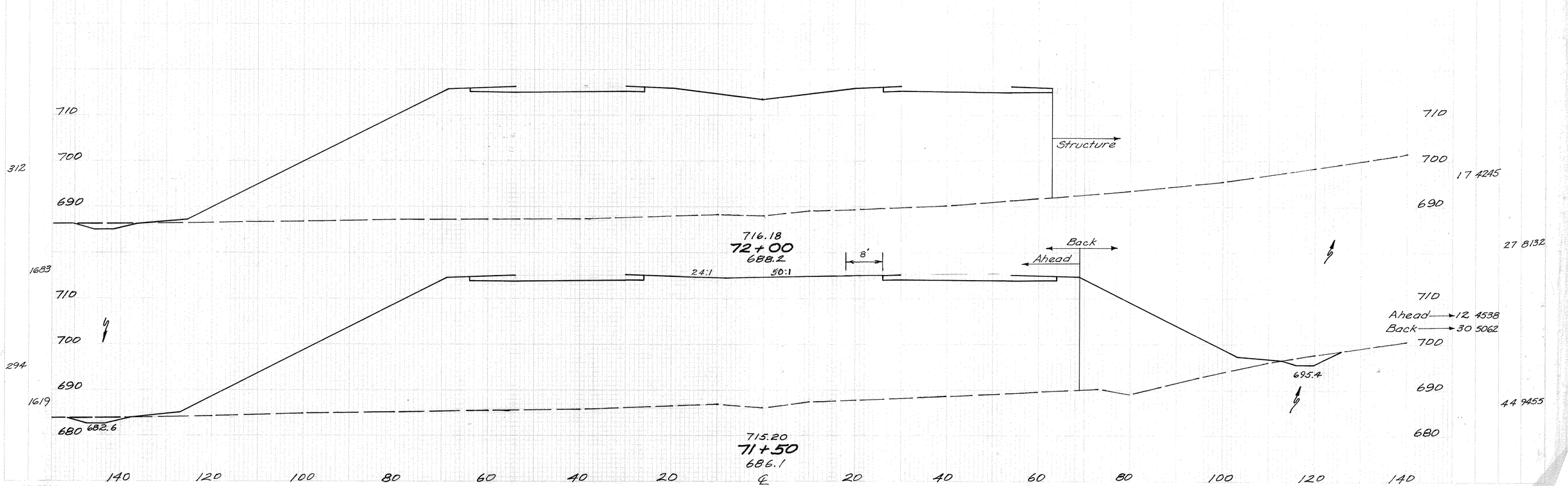
140 120 100 80 60 40 20 ℄ 20 40 60 80 100

170

OHIO I-77-1(7)15
WAS - 77 - 15.70
NOB - 77 - 0.00

BRIDGE LIMITS
Sta. 72+36.03
Sta. 73+78.78

Add for Structure ——→ 415 17.589



Sta. 71+50 to Sta. 72+00

2	OHIO	I-77-K(7)15	
	WAS - 77 - 15.70		
	NOB - 77 - 0.00		

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

730 720 710 700 690

238 1342 245 1369 248 1392 253 1367 239

8' 3:1 709.4

*00, 2' Lt ℄ Std. No. 4 C.B.
℄ Grate = 721.10
15" x 96' Class B-1 2.00%
E = 718.00
9' 1.5' 2:1 4:1
Std. HW-E Endwall
E = 716.08

Note:
For Median Outlet Quantities See Sheet No. 37
For Details Not Shown See Sheet No. 256

724.02
76+00
709.7

+50 Begin 8' Dumped Rock Channel Protection
8' 2:1 693.8

+50 End 10' Dumped Rock Channel Protection
10' 692.8

+67 Begin 10' Dumped Rock Channel Protection

Ahead
Back

722.06
75+00
703.4

723.04
75+50
705.7

721.08
74+50
702.3

720.10
74+00
697.7

+97 End 8' Dumped Rock Channel Protection
8' 2:1 707.7

+90 Begin 8' Dumped Rock Channel Protection
8' 2:1 705.7

Ahead → 1963361
Back → 1741723
8' 2:1 708.5

+18, ℄ Std. No. 2-2-B C.B.
℄ Grate = 717.28
15" x 90' Class B-1 0.50%
-E = 714.00
4:1 6' 2:1 1.5'
Std. H W-E Endwall
E = 713.55

Note: For Median Outlet Quantities See Sheet No. 37
For Details Not Shown See Sheet No. 256

Structure

720 36 1922 710 1704390 720 148 2820 710 700 1685950 720 34 3606 710 2136451 700 329 3273 710 181 1812 710 700 690

Sta. 74+00 to Sta. 76+00

SEEDING
END AREA | VOLUME
SQ. FT. | SQ. YDS.

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

OHIO I-77-1(7)15
WAS 77-15.70
NOB 77-0.00

172

END AREA VOLUME
SQ. FT. | SQ. YDS. | CU. YDS.

120 140

750
740
730
720
710

271

725.60 Grate
No. 4 C.B at 78+25 ~ ℄
FL. 722.50
15" CI. F-1

727.94
78+00
750.1

3:1

740
730
720

3491 0

1456

4976 9

740
730
720

253

Var.

723.6

740
730
720

1884 10

1372

726.96
77+50
741.3

2382 269

740
730
720
710

241

+00 End Dumped Rock Channel Protection

8'

722.3

725.98
77+00
729.6

740
730
720

689 281

1325

703 1028

730
720
710

236

8'

4:1

713.5

720.2

725.00
76+50
718.4

730
720
710

70 830

1317

98 2548

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

Sta. 76+50 to Sta. 78+00

2	OHIO	I-77-1(7)15

WAS - 77 - 15.70

NOB - 77 - 0.00

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

770 760 750 740 730 720

240 1497

730.88
79+50
766.0

2:1 1:1 1:1 2:1

8,259 ○

13,849 ○

760 750 740 730 720

299 1619

729.90
79+00
758.1

1½:1 1½:1

6,697 ○

10,799 ○

760 750 740 730 720

284 1542

728.92
78+50
756.2

2:1 2:1

4,966 ○

7,831 ○

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

Sta. 78+50 to Sta. 79+50

SEEDING
END WIDTH | SQ. YDS.

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

SCIO NO. DIVISION	STATE	PROJECT	
2	OHIO	F-77-1(7)15	174

WAS - 77 - 15.70
NOB - 77 - 0.00

120 140 END AREA (SQ. FEET) VOLUME (CU. FEET)

790 780 770 760 750 740 730

259

2:1 1:1

790 780 770 760 750

A A 1½:1 2:1

140 160 180 200

A A 1½:1 1:1

11,202 ○

732.84
80 + 50
780.7

19,499 ○

1381

780 770 760 750 740 730

238

2:1 1:1 2:1 1:1

9,857

1328

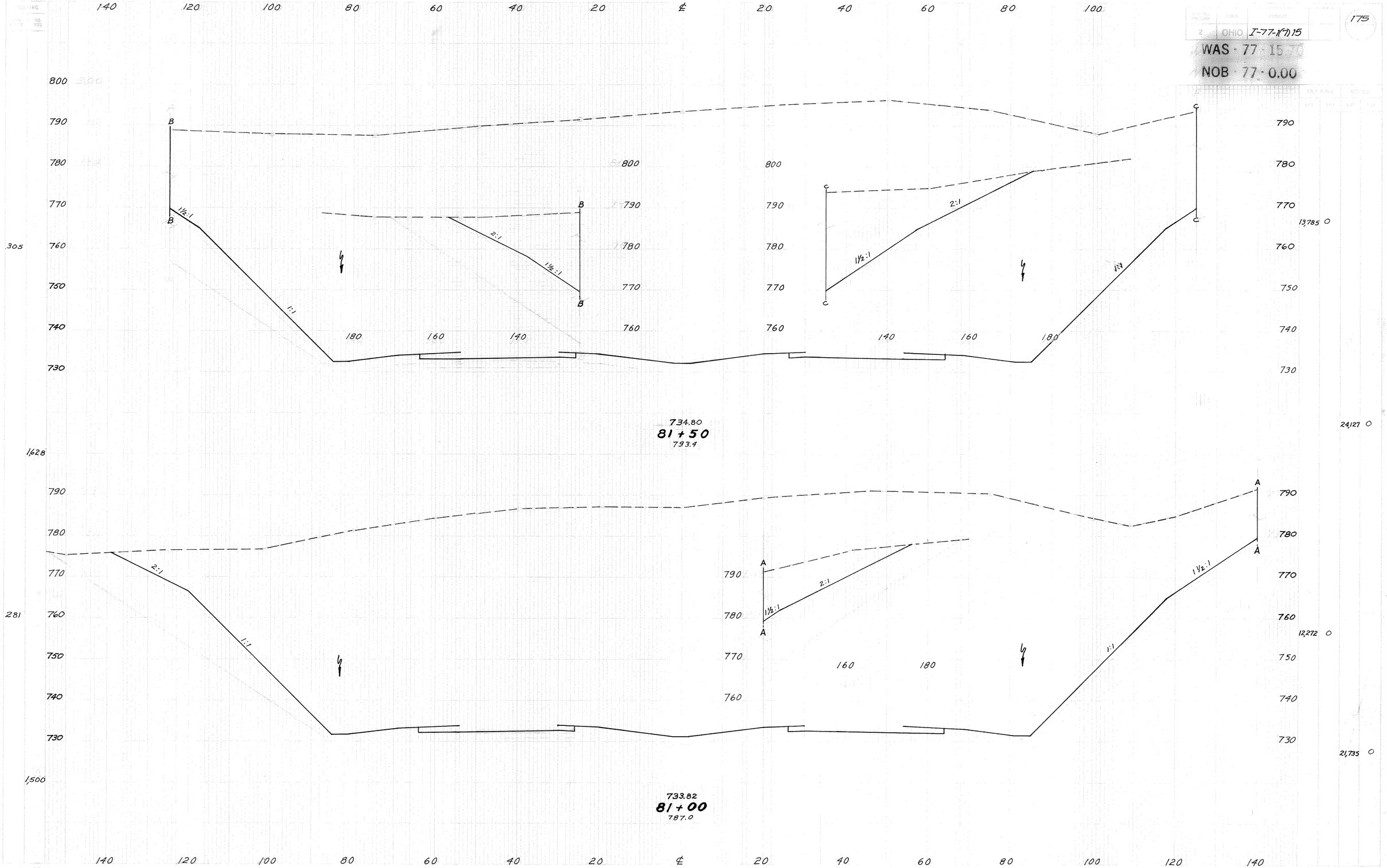
16,774 ○

731.86
80+00
772.9

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

Sta. 80+00 to Sta. 80+50

2	OHIO	I-77-1(7)15	
	WAS - 77 - 15.76		
	NOB - 77 - 0.00		



Sta. 81+00 to Sta. 81+50

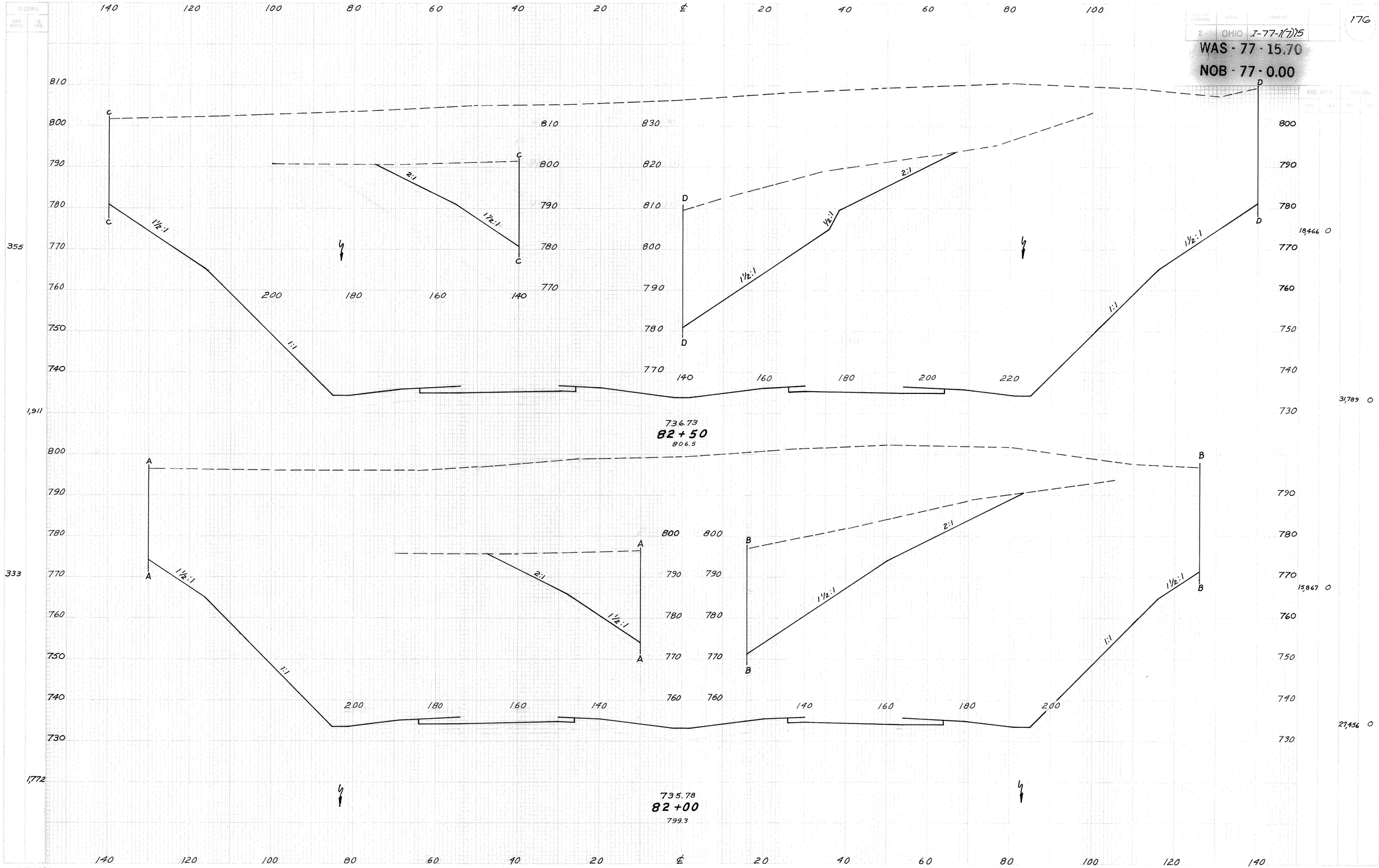
SEC. NO.	STATE	PROJECT
2	OHIO	I-77-1(7)15

WAS - 77 - 15.70

NOB - 77 - 0.00

SECTIONS

END AREA		SQ. YDS.	
	EXT.		CUM.
355		1,911	
333		1,772	



Sta. 82+00 to Sta. 82+50

177

2 OHIO I-77-1(7)15

WAS - 77 - 15.70

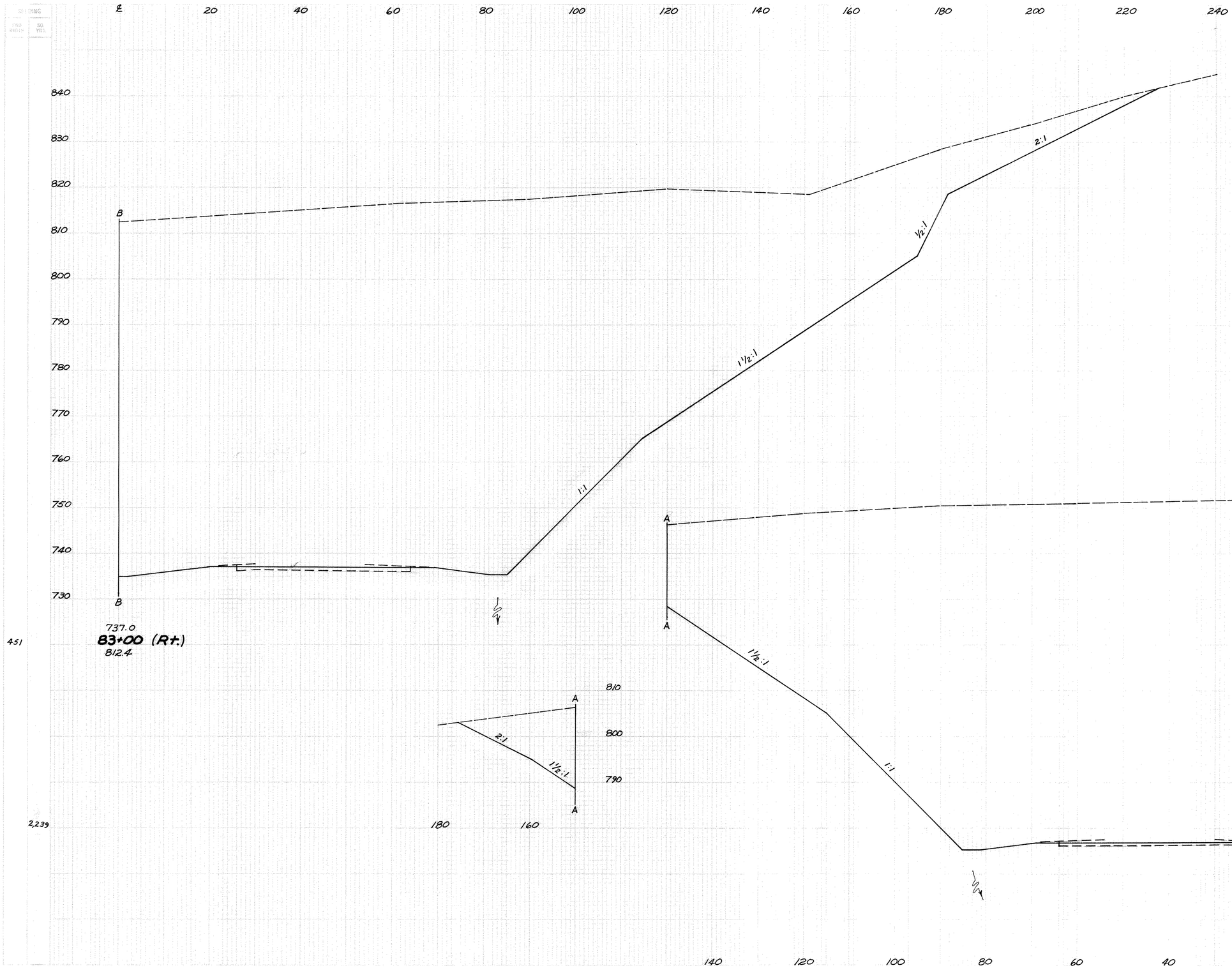
NOB - 77 - 0.00

20,634 O

36,203 O

2,239

451



SEQUENCE	SHEET	PROJECT
2	OHIO	I-77-1(7)15

WAS · 77 · 15.70

NOB · 77 · 0.00

END AREA — VOLUME — CUT — FILL

℄ 20 40 60 80 100 120 140 160 180 200 220 240

A A 850 840

830 820 810 800 790 780 770 760 750 740 730

B

12:1 1:1 2:1 1½:1 ½:1 1:1

737.0
83+50 (Rt)
816.8

465

2,544

870 860 850 840

A A

2:1

260 280 300

22,577 0

820 810 800 790 780 770 760 750 740 730

B B

2:1 1½:1 1:1

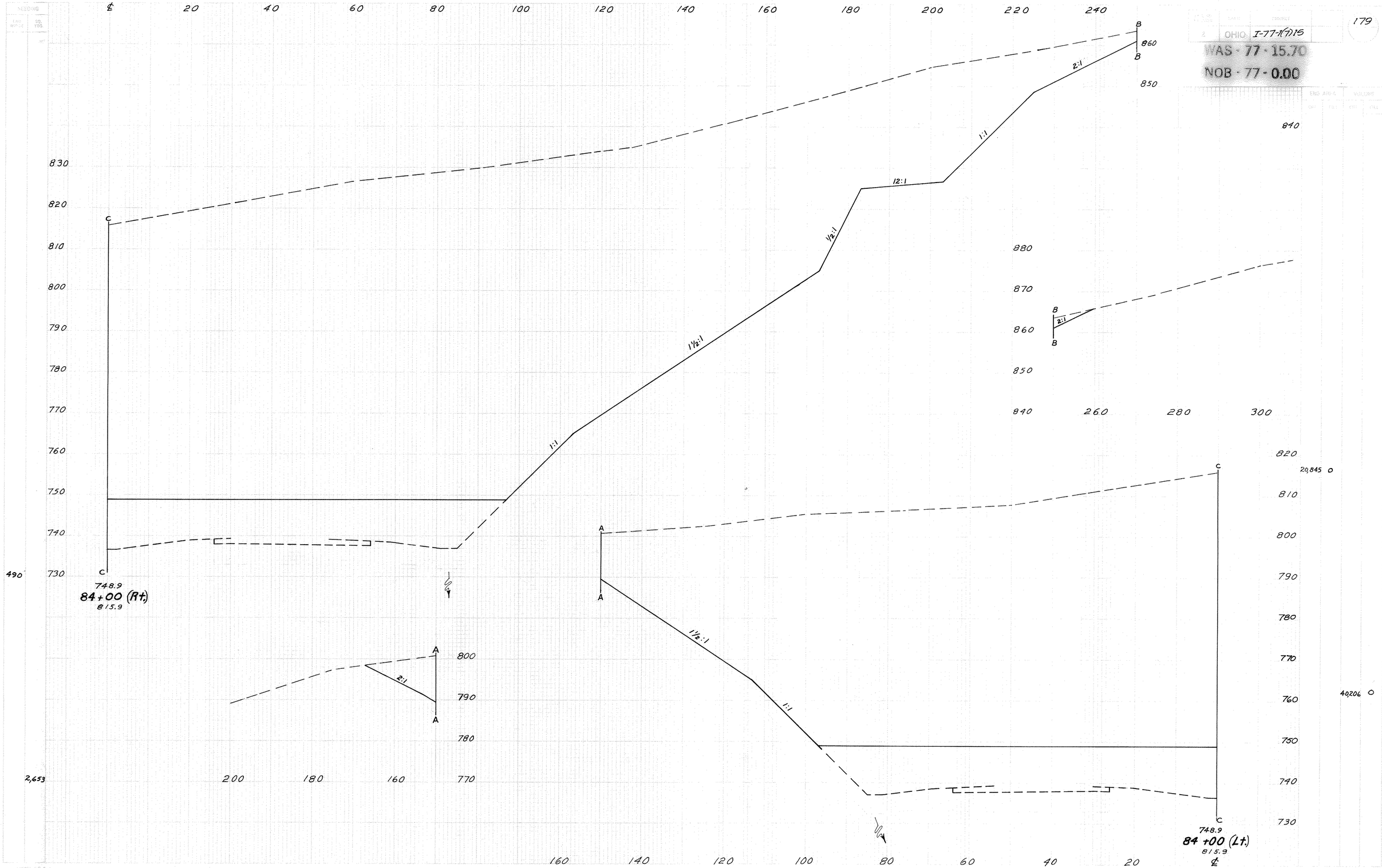
737.0
83+50 (Lt)
816.8

40,010 0

220 200 180 160 140 120 100 80 60 40 20 ℄

Sta. 83+50

OHIO I-77-1(7)15
WAS - 77 - 15.70
NOB - 77 - 0.00



OHIO I-77-1(7)-15
WAS · 77 · 15.70
NOB · 77 · 0.00

180

℄ 20 40 60 80 100 120 140 160 180 200 220 240

880 B 870 B 2:1 1:1 12:1 1½:1

860 850 840

840 830 820 810 800 790 780 770 760 750 740 730

260 280 300 320 340

890 880 870 860 B 2:1 B 1½:1

19,142 O

C C 768.9 84+50 (Rt.) 823.5 1:1

530

2,833

A A 2:1 1½:1 A A 1½:1

200 180 160 140 120 100 80 60 40 20 ℄

C 768.9 84+50 (Lt.) 823.5 1:1

820 810 800 790 780 770 760 750 740 730

37025 O

Sta. 84+50

OHIO I-77-1(7)15
WAS - 77 - 15.70
NOB - 77 - 0.00

℄ 20 40 60 80 100 120 140 160 180 200 220 240

B 870 860 850 840

C 830 820 810 800 790 780 770 760 750 740 730

1:1 12:1 1½:1 1:1

534

788.9
85+00 (Rt.)
839.5

2,956

18,137 O

34,158 O

B 880 870 860 850 B

240 260 280 300 320

2:1 1:1 1½:1

A 810 800 790 780 770 A

2:1 1½:1

200 180 160 140

C 840 830 820 810 800 790 780 770 760 750 740 730

788.9
85+00 (Lt.)
839.5

140 120 100 80 60 40 20 ℄

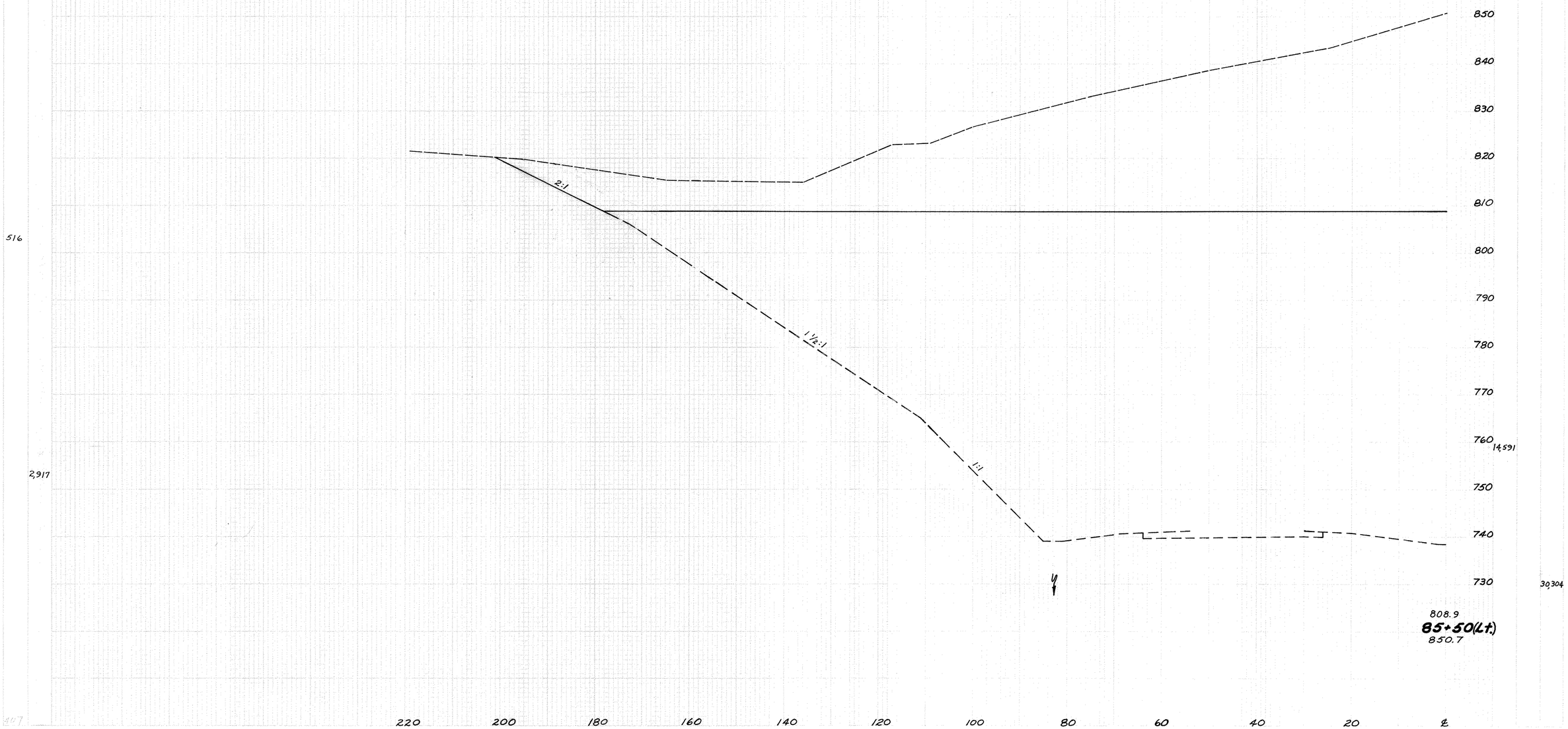
Sta. 85+00

182

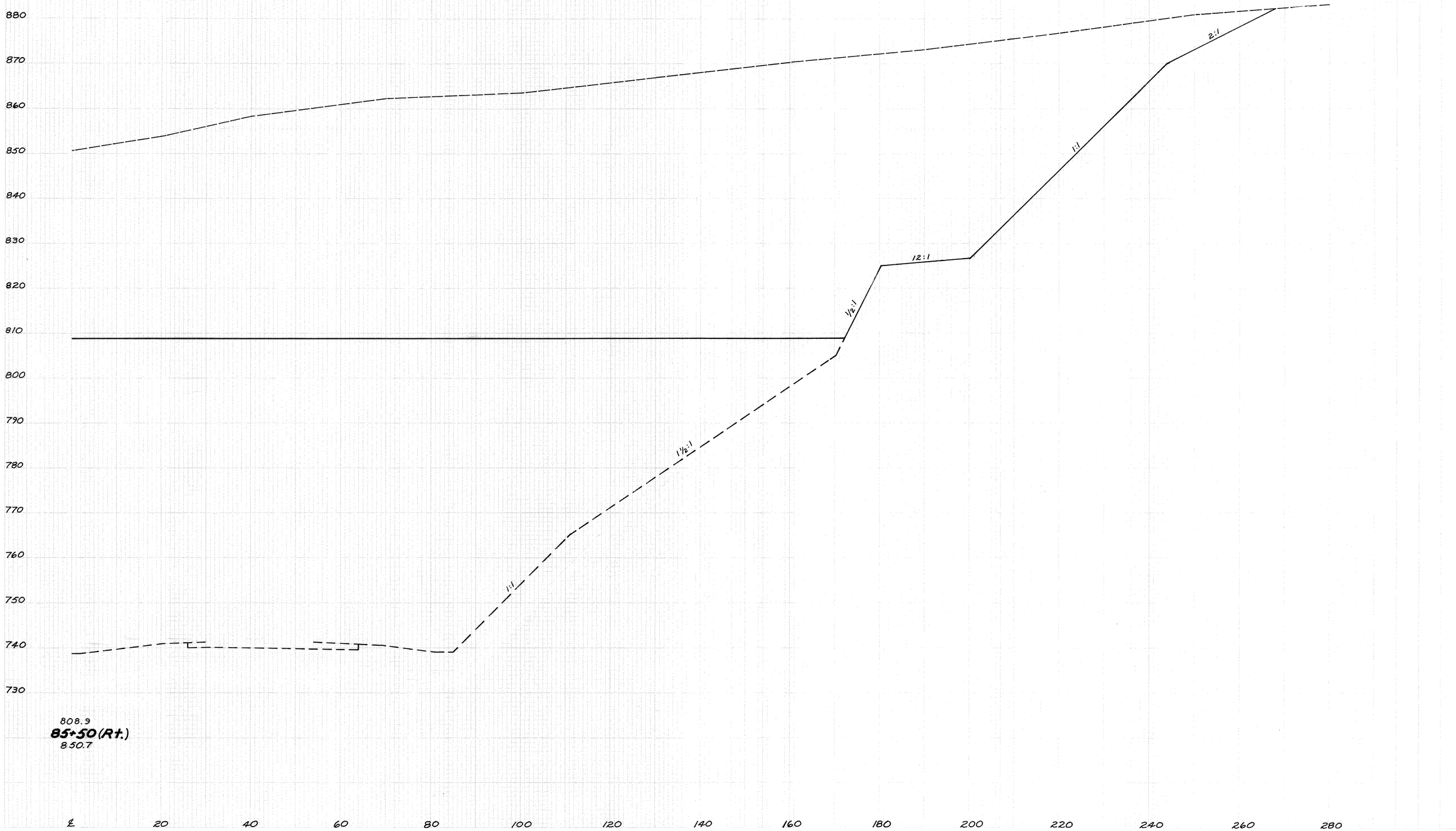
OHIO I-77-1(7)15

WAS - 77 - 15.70

NOB - 77 - 0.00



OHIO I-77-1(7)15
WAS - 77 - 15.70
NOB - 77 - 0.00



SEEDING

END WIDTH	SQ. YDS.

FED. AID DIVISION	STATE	PROJECT
2	OHIO	I-77-1(7)15

184

WAS - 77 - 15.70

NOB - 77 - 0.00

END AREA		VOLUME	
CUT	FILL	CUT	FILL

374

2,472

2:1

1½:1

1:1

850
840
830
820
810
800
790
10,204
780
770
760
750
22,958
740
730

828.9
B6+00 (Lt.)
852.2

240 220 200 180 160 140 120 100 80 60 40 20 ℄

Sta. B6+00 Lt.

SEEDING

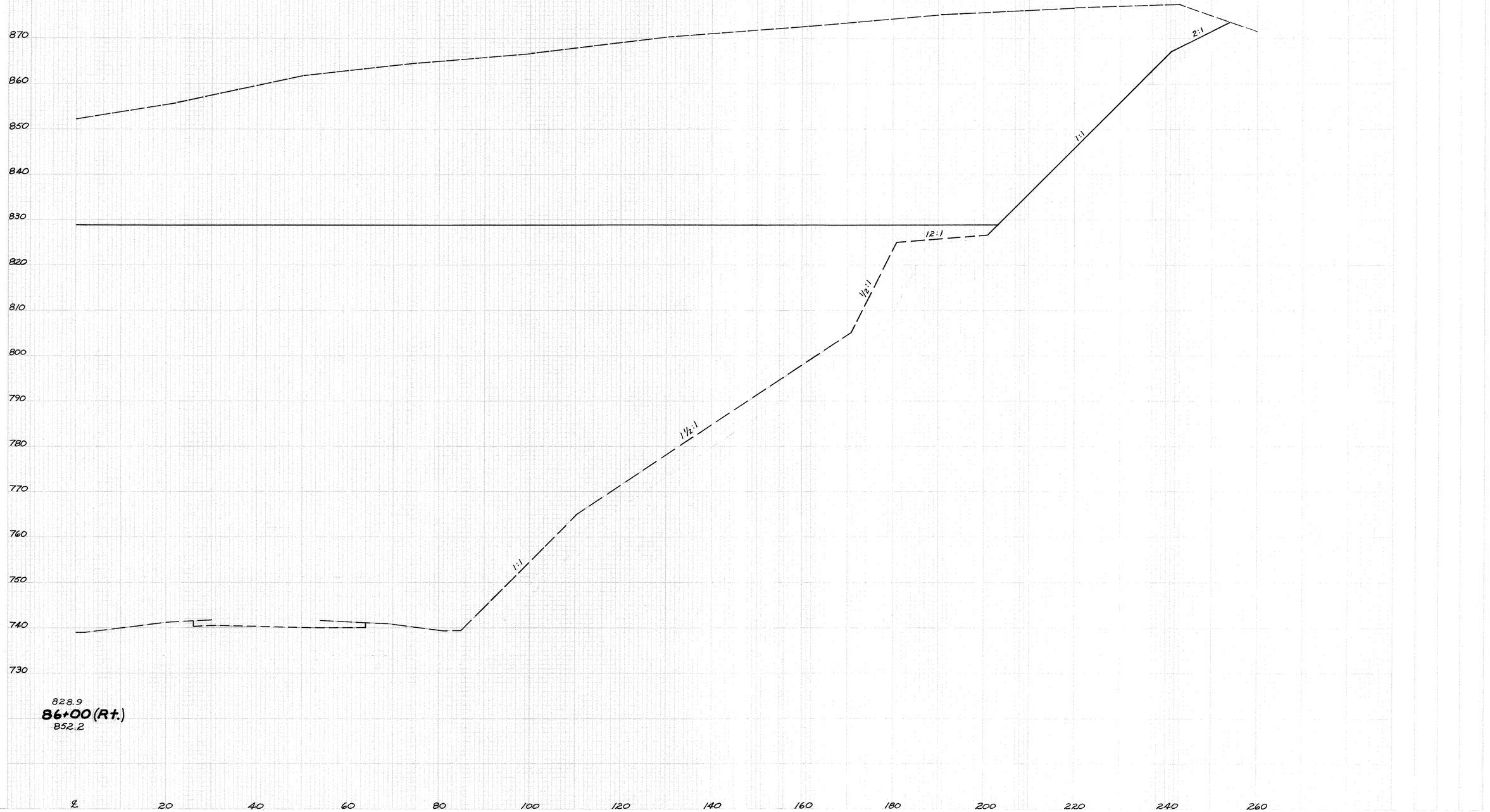
END WIDTH	SQ. YDS.

SHEET NO.	STATE	PROJECT	
2	OHIO	I-77-1(7)15	185

WAS - 77 - 15.70

NOB - 77 - 0.00

END AREA		VOLUME	
CUT	FILL	CUT	FILL



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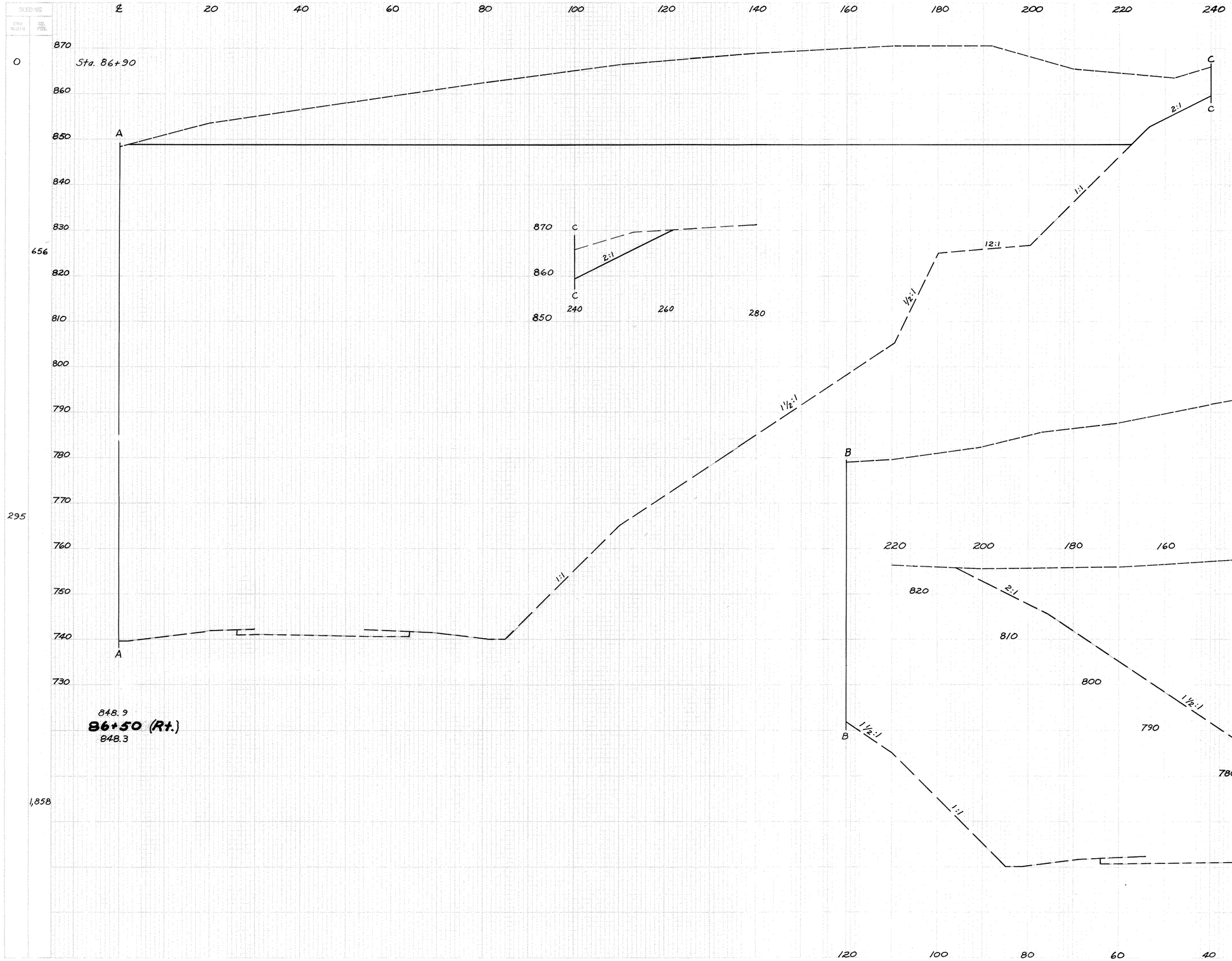
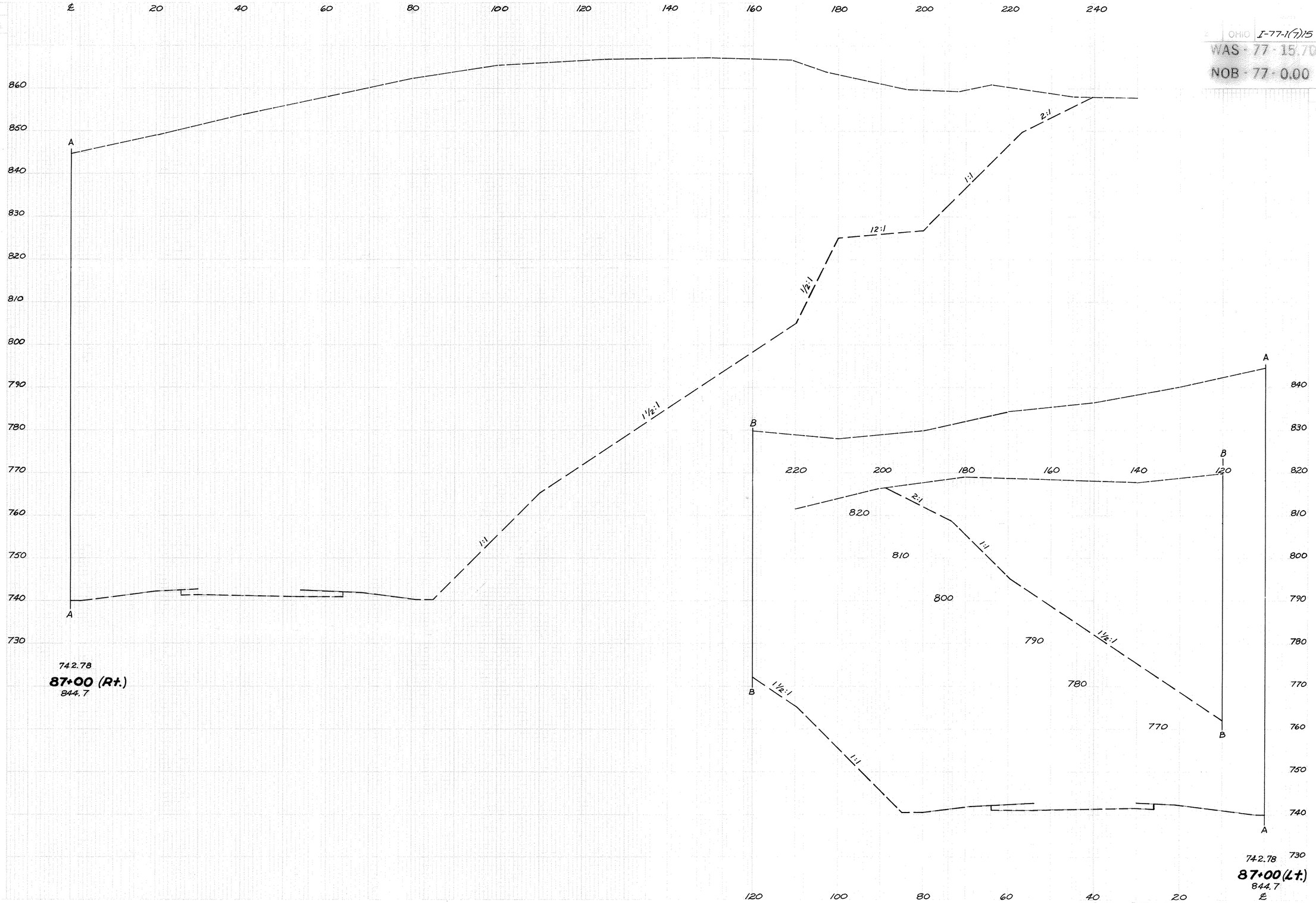
AUSTIN-TOWER CO. LTD.

OHIO I-77-1(7)15
WAS - 77 - 15.70
NOB - 77 - 0.00

Sta. 86+90 0 0



OHIO I-77-1(7)15
WAS - 77 - 15.70
NOB - 77 - 0.00



SEEDING

SEED WIDTH	SQ. YDS.

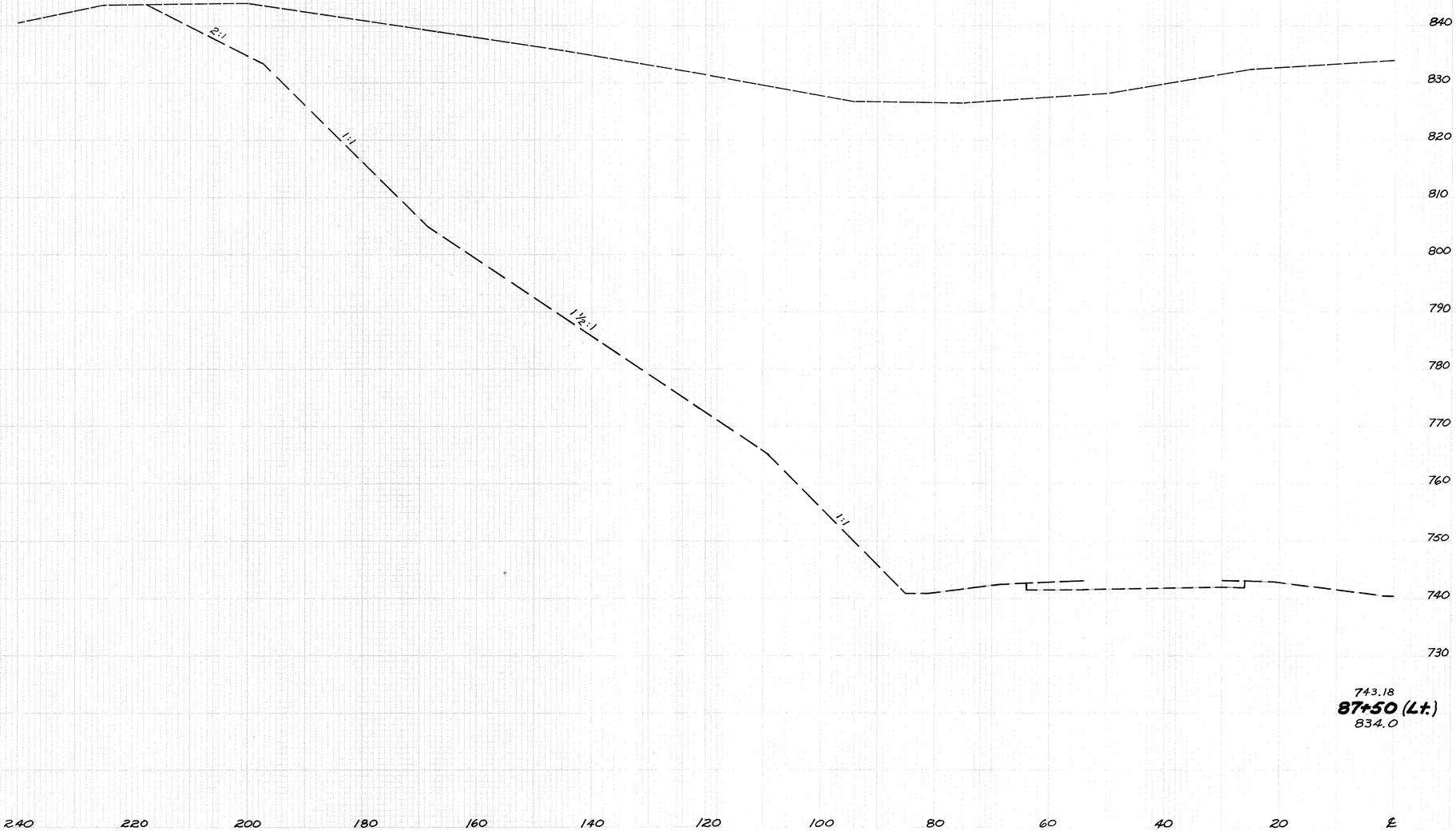
SHEET NO.	STATE	PROJECT
2	OHIO	I-77-1(5)15

188

WAS - 77 - 15.70

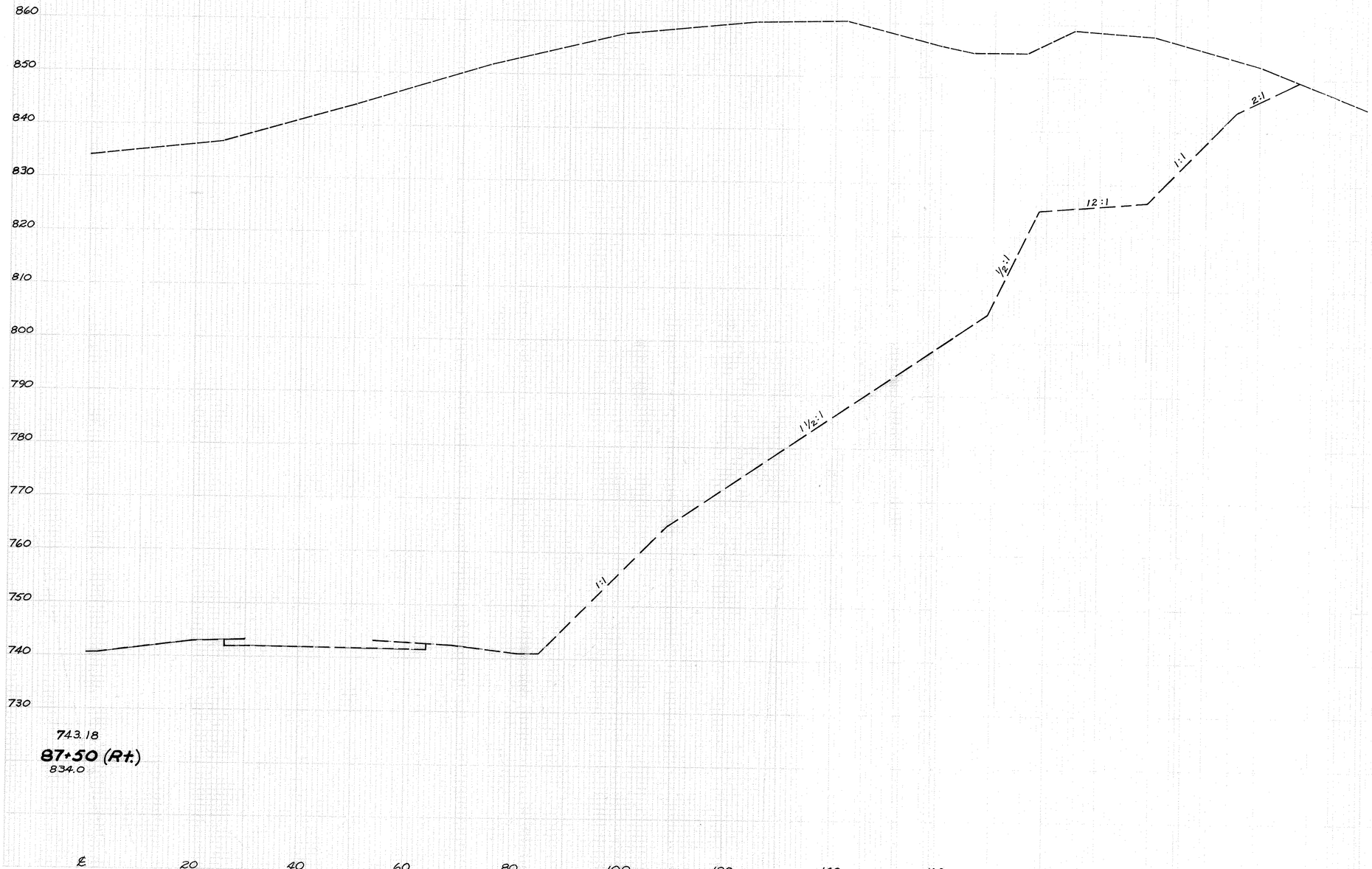
NOB - 77 - 0.00

END AREA		VOLUMES	
CUT	FILL	CUT	FILL



Sta. 87+50 Lt.

I-77-1(7)15
WAS - 77 - 15.70
NOB - 77 - 0.00

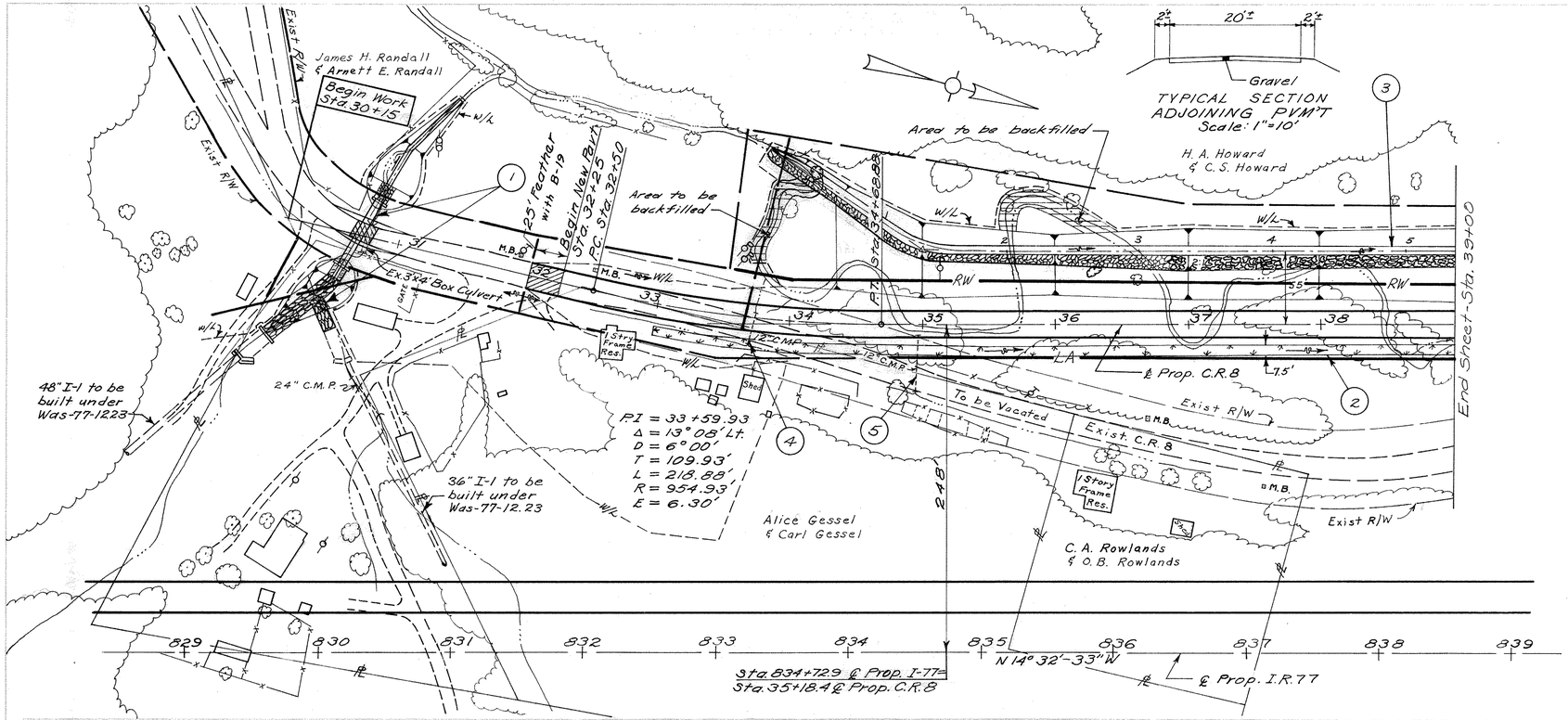


WAS 77-15.70
NOB 77-0.00

FED. RD. DIVISION	STATE	PROJECT	TYPE FUNDS
2	OHIO	I-77-1(7)15	

190

SEE SHEET NO. 258 292



TYPICAL SECTION ADJOINING PVM'T
Scale: 1"=10'

SUPERELEVATION TABLE

STATION	Lt. Edge	℄ Profile	Rt. Edge
32+25	738.39	738.55	738.39
+50	737.75	737.91	737.88
+75	737.11	737.27	737.38
33+00	736.38	736.63	736.88
+25	735.63	735.99	736.35
+50	734.99	735.35	735.71
+75	734.35	734.71	735.07
34+00	733.71	734.07	734.43
+25	733.07	733.43	733.79
+50	732.55	732.79	733.03
+75	731.99	732.15	732.27
35+00	731.35	731.51	731.50
+25	730.71	730.87	730.74
+50	730.07	730.23	730.07

Excavation	= 556
Embankment	= 3,514
Embankment +12%	= 3,936

ESTIMATED QUANTITIES

* Sec. M-6.6(C) with 1/3 vinyled liner, as per plan

SHEET NO.	STATION TO STATION	SIDE	E-3 15" & Under Cu. Yds.	E-12 8-19 8" Lin. Ft.	I-1 72" A-1 * Cu. Yds.	I-2 Cl. "C" Lin. Ft.	I-10 Approp Cu. Yds.	I-10 DEC.P 90d Sq. Yds.	L-10 324 Cu. Yds.	Sq. Yds. Lump
1	Sta. 30+47 - Sta. 31+08	Lt. Rt.	329	14	56	57	13	55		34 Lump
2	Sta. 33+00 - Sta. 39+00	Rt.								514
3	Sta. 33+70 - Sta. 35+83	Lt.	4,299							652
4	Sta. 33+75	Rt.							24	
5	Sta. 34+97	Rt.							43	
TOTALS			4,628	67	14	56	5.7	1.3	707	548 Lump

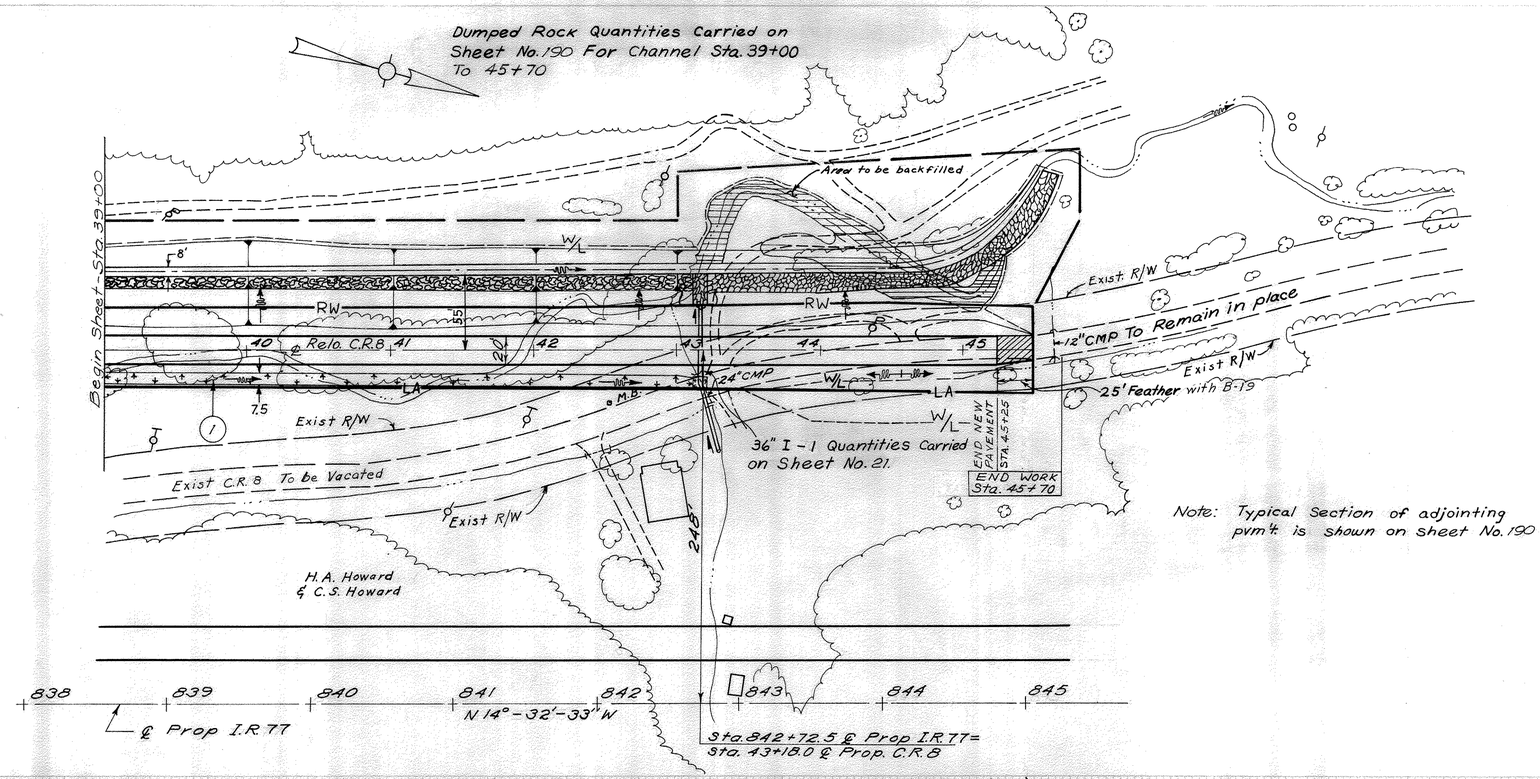
PROP. C.R. 8 RELOC. STA. 32+00 to STA. 39+00

WAS 77-15.70
NOB 77-0.00

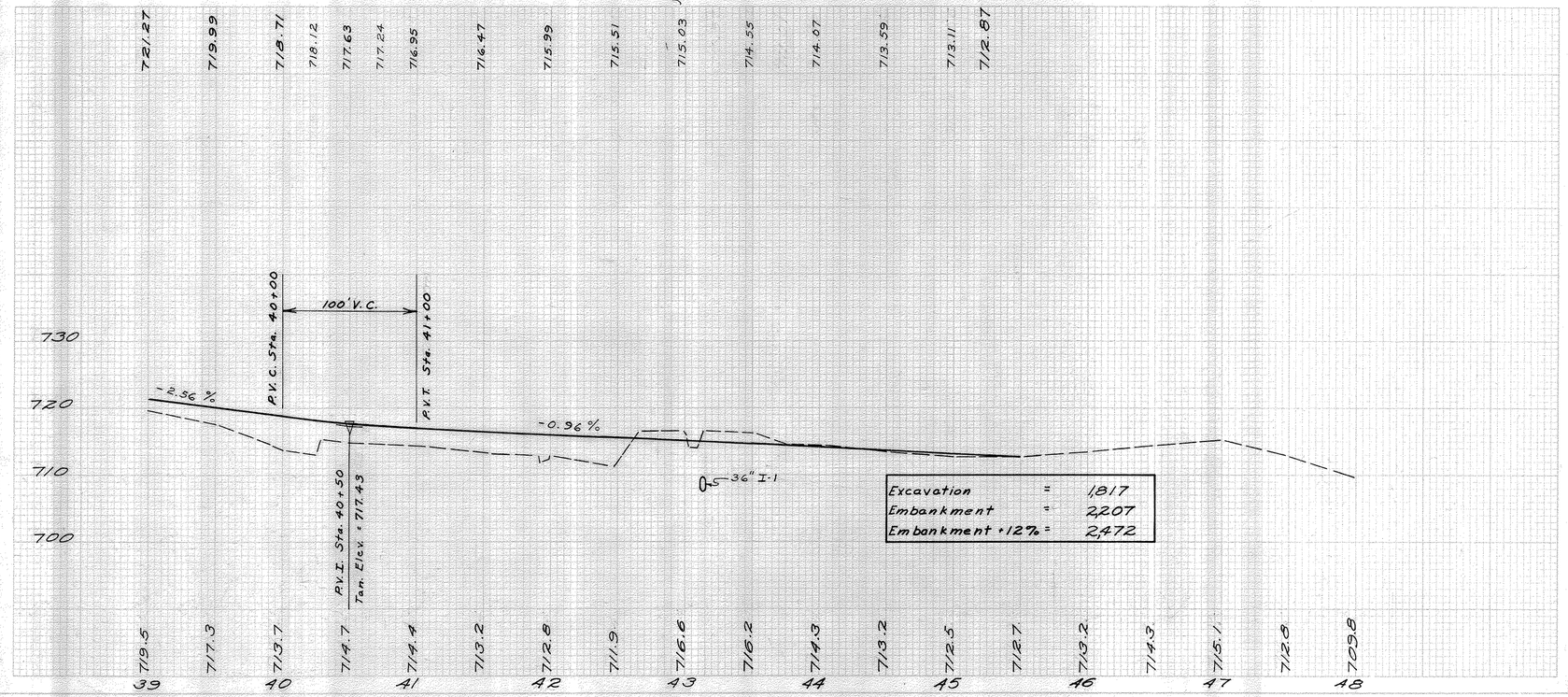
FED. NO. DIVISION	STATE	PROJECT	TYPE FUNDS
2	OHIO	I-77-1(77)15	

191

Dumped Rock Quantities Carried on Sheet No. 190 For Channel Sta. 39+00 To 45+70



Note: Typical Section of adjointing pvm't is shown on Sheet No. 190

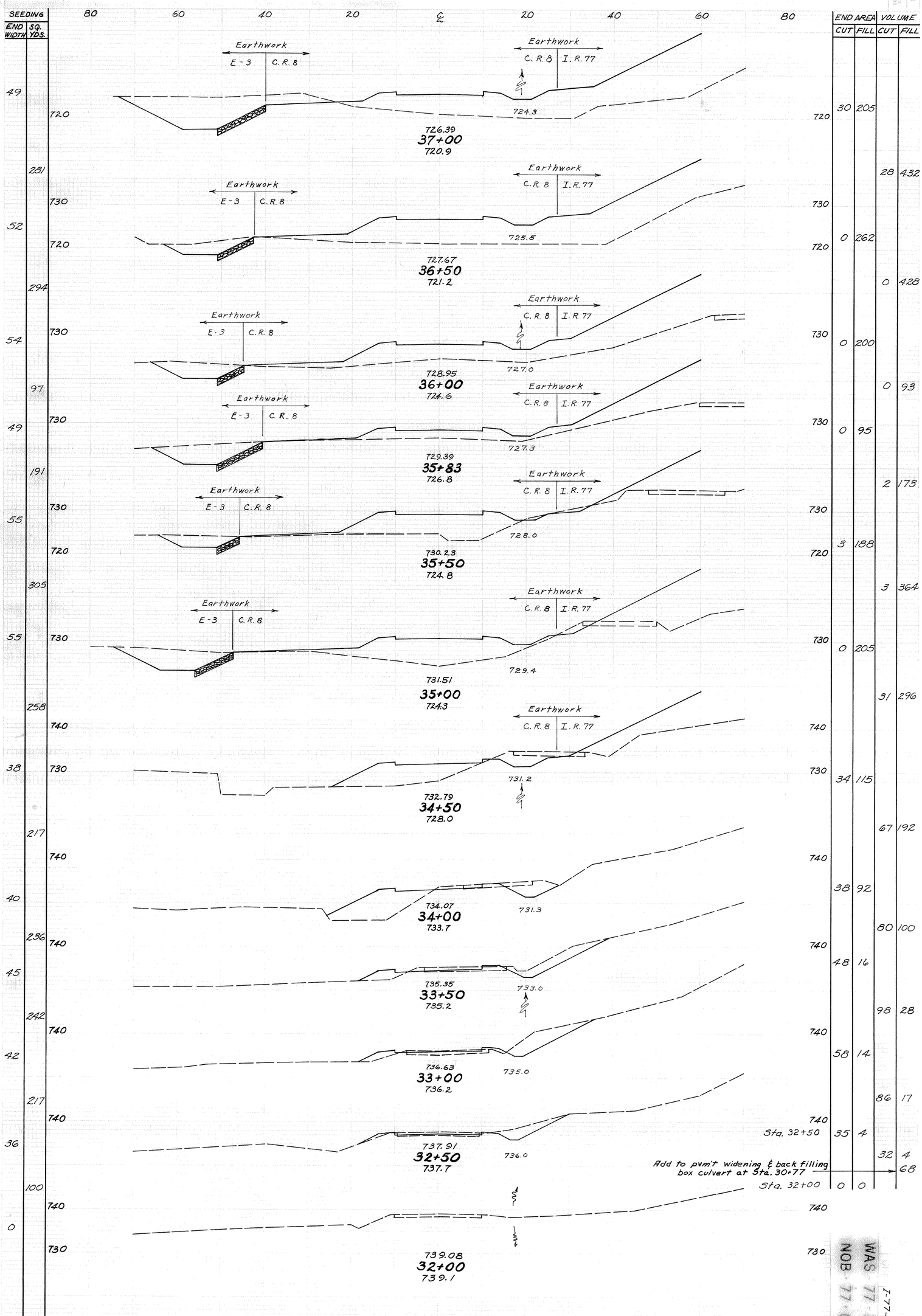


Excavation	=	1,817
Embankment	=	2,207
Embankment +12%	=	2,472

PROP. C.R. 8 RELOC. STA. 39+00 to STA. 45+50

ESTIMATED QUANTITIES

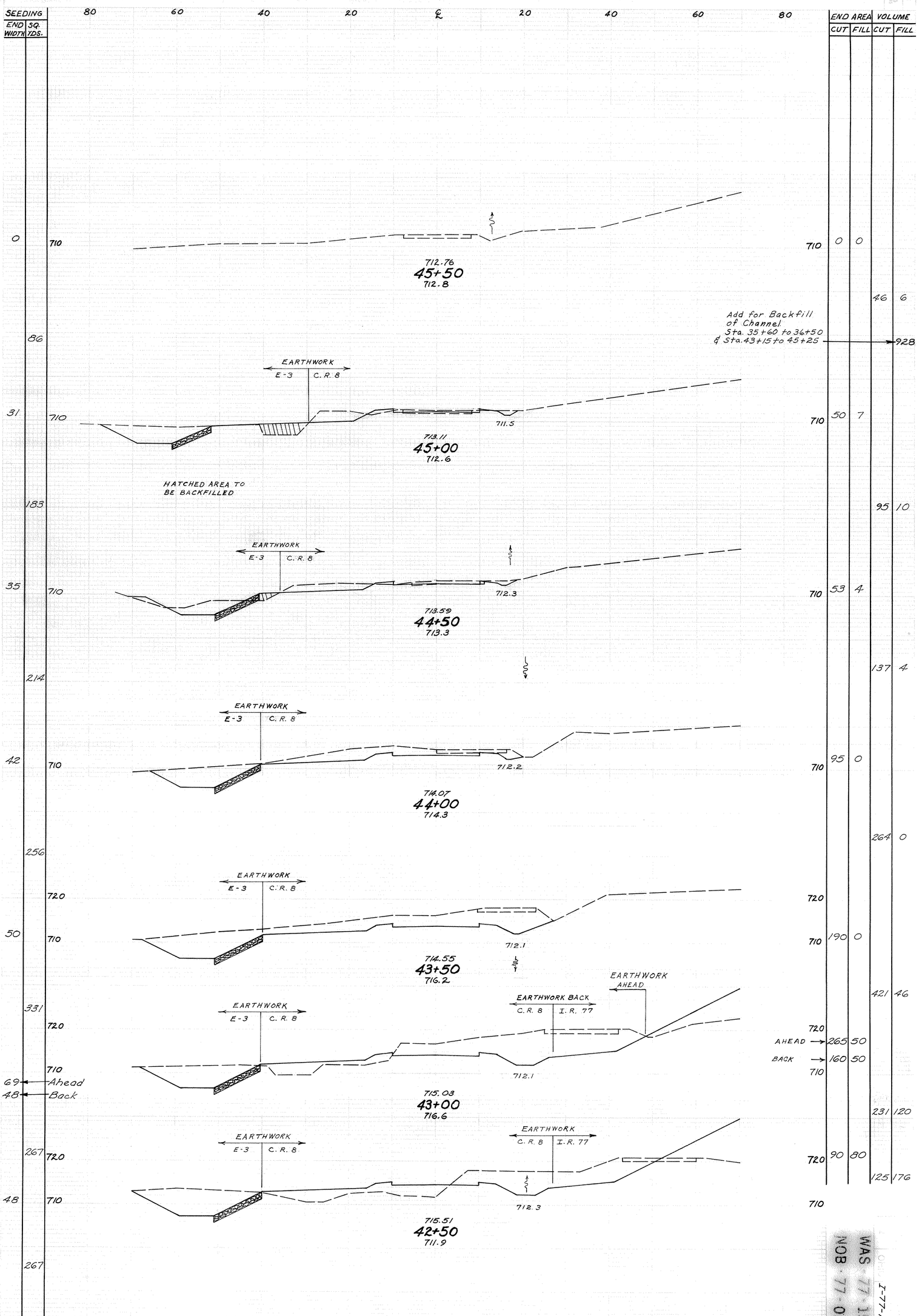
REF. NO.	STATION TO STATION	SIDE		
			L-10	
1	36.39+00-36.43+10	CY	342	342
TOTALS				342


SEEDING
END WIDTH
SQ. YDS.
END AREA
CUT
FILL
VOLUME
CUT
FILL
80 60 40 20 ℄ 20 40 60 80
Earthwork
E - 3
C. R. 8
I. R. 77
726.39
37+00
720.9
724.3
727.67
36+50
721.2
725.5
728.95
36+00
724.6
727.0
729.39
35+83
726.8
727.3
730.23
35+50
724.8
728.0
731.51
35+00
724.3
729.4
732.79
34+50
728.0
731.2
734.07
34+00
733.7
731.3
735.35
33+50
735.2
733.0
736.63
33+00
736.2
735.0
737.91
32+50
737.7
736.0
739.08
32+00
739.1
Sta. 32+50
Sta. 32+00
Add to pvm't widening & back filling box culvert at Sta. 30+77
C.R. 8 Sta. 32+00 to Sta. 37+00
WAS 77-15.70
NOB 77-0.00
I-77-1(7)15
192

SEEDING		END AREA		VOLUME	
END WIDTH	SQ. YDS.	CUT	FILL	CUT	FILL
		45	110	74	176
		35	80	74	130
		45	60	83	153
		45	105	111	153
		75	60	111	120
		45	70	45	185
		4	130	45	324
		45	220	43	356
		1	165	7	301
		7	160	34	338

C.R. 8 Sta. 37+50 to Sta. 42+00

2 OHIO I-77-1(7)15
WAS 77 15 70
NOB 77 000


SEEDING
END WIDTH
SQ. YDS.
80 60 40 20 ℄ 20 40 60 80
END AREA
CUT FILL
VOLUME
CUT FILL
0
710
712.76
45+50
712.8
0 0
46 6
Add for Backfill of Channel Sta. 35+60 to 36+50 & Sta. 43+15 to 45+25
928
86
31
710
EARTHWORK
E-3 C.R. 8
711.5
713.11
45+00
712.6
50 7
HATCHED AREA TO BE BACKFILLED
183
95 10
35
710
EARTHWORK
E-3 C.R. 8
712.3
713.59
44+50
713.3
53 4
214
137 4
42
710
EARTHWORK
E-3 C.R. 8
712.2
714.07
44+00
714.3
95 0
256
264 0
720
710
EARTHWORK
E-3 C.R. 8
712.1
714.55
43+50
716.2
190 0
50
331
EARTHWORK AHEAD
EARTHWORK BACK
C.R. 8 I.R. 77
EARTHWORK
E-3 C.R. 8
421 46
720
710
AHEAD → 265 50
BACK → 160 50
712.1
715.03
43+00
716.6
69 ← Ahead
48 ← Back
231 120
267
720
710
EARTHWORK
E-3 C.R. 8
EARTHWORK
C.R. 8 I.R. 77
90 80
48
712.3
715.51
42+50
711.9
125 176
267
80 60 40 20 ℄ 20 40 60 80
C.R.8 Sta. 42+50 to Sta. 45+50
WAS-77-1570
NOB-77-0.00
I-77-1(215)
194

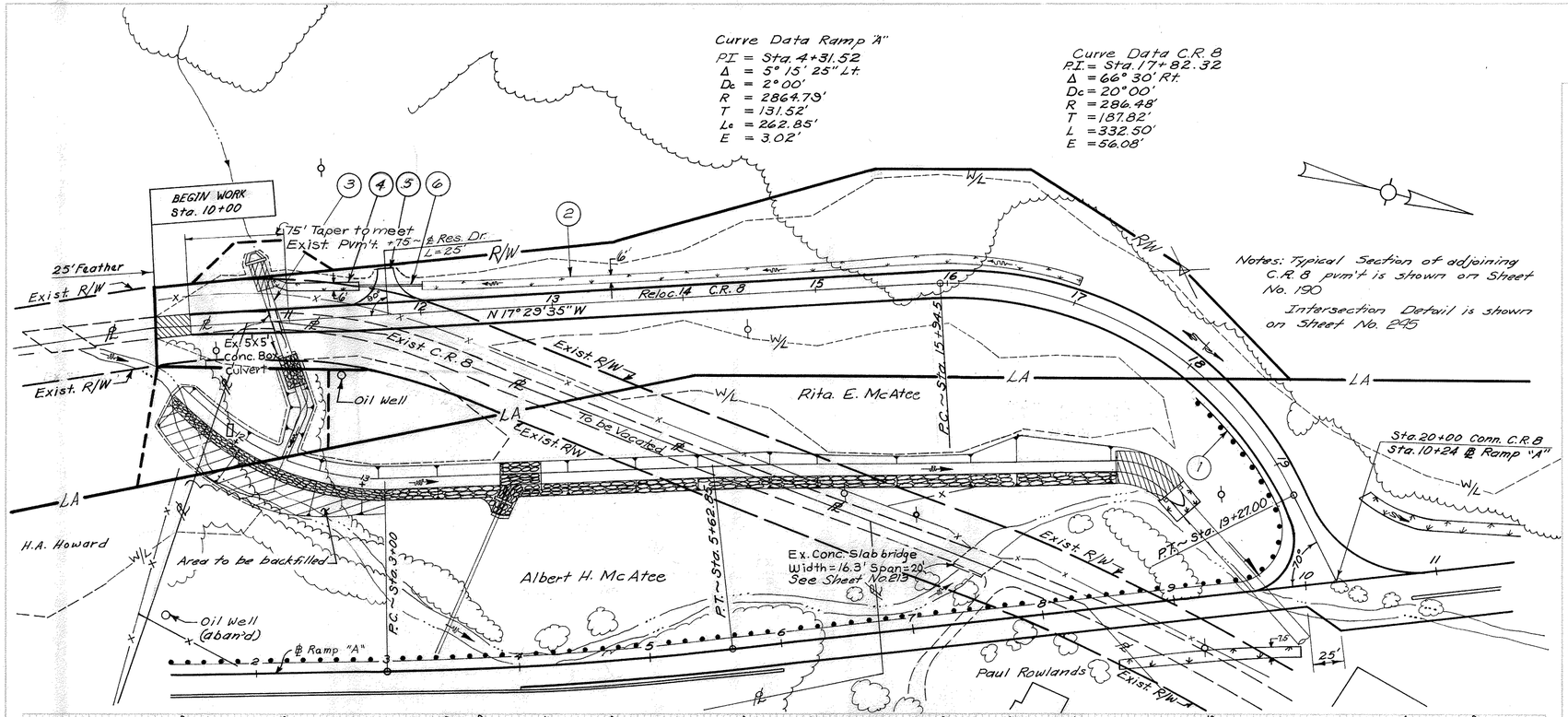
WAS · 77 · 15.70
NOB · 77 · 0.00

FED. RD. DIVISION	STATE	PROJECT	TYPE FUNDS
2	OHIO	I-77-1(7)15	

195

Curve Data Ramp "A"
PI = Sta. 4+31.52
Δ = 5° 15' 25" Lt.
Dc = 2° 00'
R = 2864.79'
T = 131.52'
Lc = 262.85'
E = 3.02'

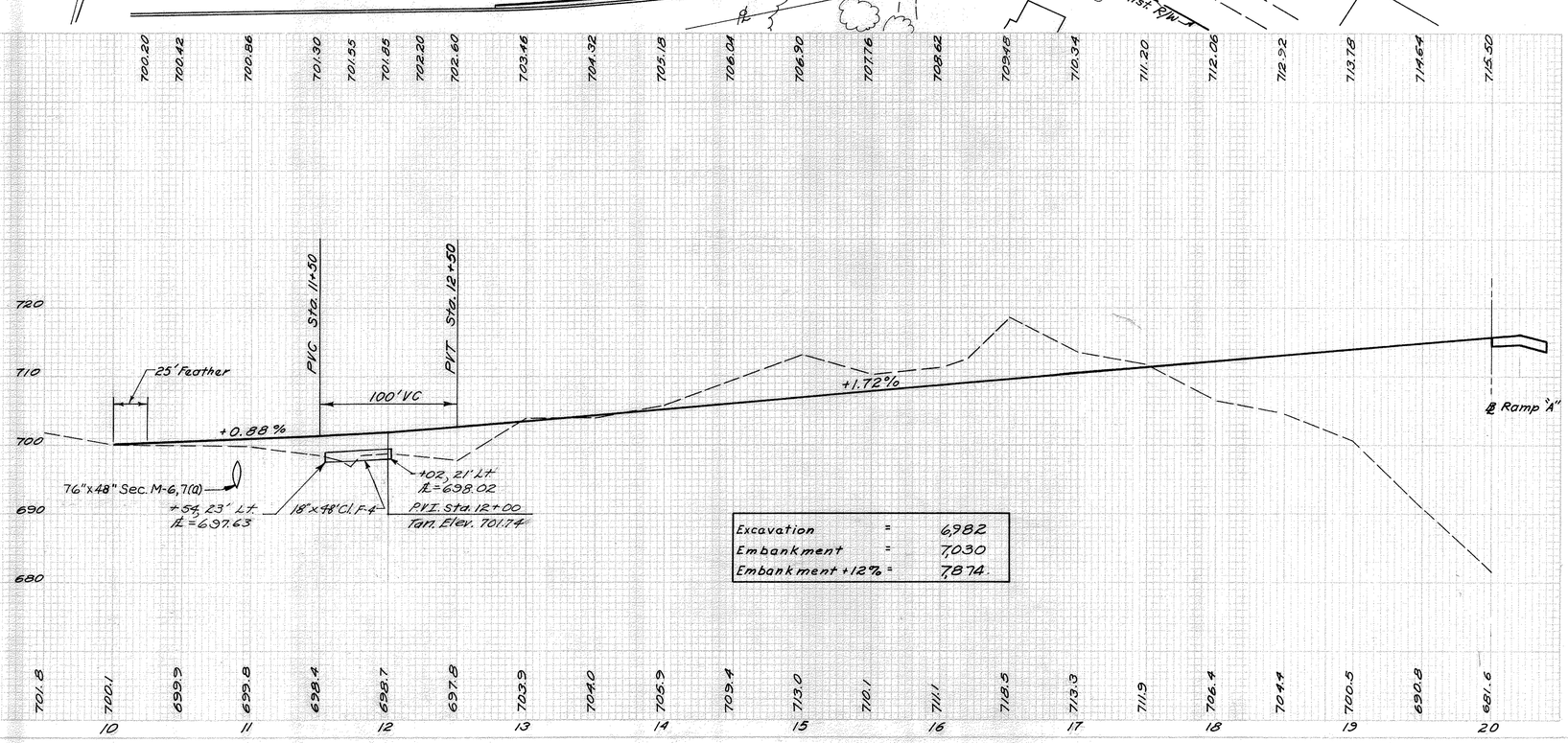
Curve Data C.R. 8
PI = Sta. 17+82.32
Δ = 66° 30' Rt.
Dc = 20° 00'
R = 286.48'
T = 187.82'
L = 332.50'
E = 56.08'



SUPERELEVATION TABLE		
STATION	Lt. Edge of Profile	Rt. Edge
15+25	709.77	707.17
+50	709.66	707.16
+75	708.14	708.03
16+00	708.65	708.13
+25	709.18	708.05
+50	709.76	708.62
+75	710.32	709.18
17+00	710.87	709.73
+25	711.30	710.17
+50	711.73	711.20
+75	712.14	711.63
18+00	712.44	712.06
+25	712.74	712.49
+50	713.05	712.92
+75	713.35	713.35
19+00	713.72	713.78
+25	714.09	714.21
+50	714.48	714.64

SEE SHEET No. 260

*With 18 Vitrified Liner as per plan



Excavation	= 6,982
Embankment	= 7,030
Embankment +12%	= 7,874

ESTIMATED QUANTITIES

| REF. NO. | STATION TO STATION | SIDE | I-15 | L-10 | I-2 | I-10 | I-10 | S-24 | E-3 | T-35 Type 2 | 6-19 5" | T-1 Cl. 8 Cl. 4 | | |

ORIG. I-77-1(7)15
WAS 77 - 16.70
NOB 77 - 0.00

SEEDING
PER WATER | SQ. YDS.

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

| | | |

2 OHIO I-77-1(7)15
WAS-77-15.70
NOB-77-0.00

SLEEPING

END WIDTH	SQ. YDS.
130	731
133	731
130	644
102	556
98	483
76	419

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

720 710 720 710 720 710 720 710 720 710 700

709.48
16+50
718.5

708.62
16+00
711.1

707.76
15+50
710.1

706.90
15+00
713.0

706.04
14+50
709.4

705.18
14+00
705.9

24:1

716	0
1135	0
510	0
1102	0
680	0
1074	0
480	0
783	0
366	0
439	1
108	1
156	84

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

C.R. #8 Sta. 14+00 to Sta. 16+50

I-77-1(7)15
WAS 7 15.70
NOB 77-0.00

Earthwork
C.R. 8 | Ramp "A"

19+50
714.64
690.8
24:1
4:1
705.8

19+00
713.78
700.5
24:1
3:1
707.0

18+50
712.92
704.4
2:1
708.0

18+00
712.06
705.5
710.0

17+50
711.20
711.9

17+00
710.34
713.3
24:1

710 700 690 0 2716
710 700 0 3474
710 700 0 1036
710 700 9 1437
710 700 10 516
710 700 35 685
710 700 28 224
710 700 220 231
710 700 210 25
710 700 513 23
710 700 344 0
710 700 981 0

148 719 111 550 87 740 730 408 60 740 730 425 93 720 730 525 96 710 700 628

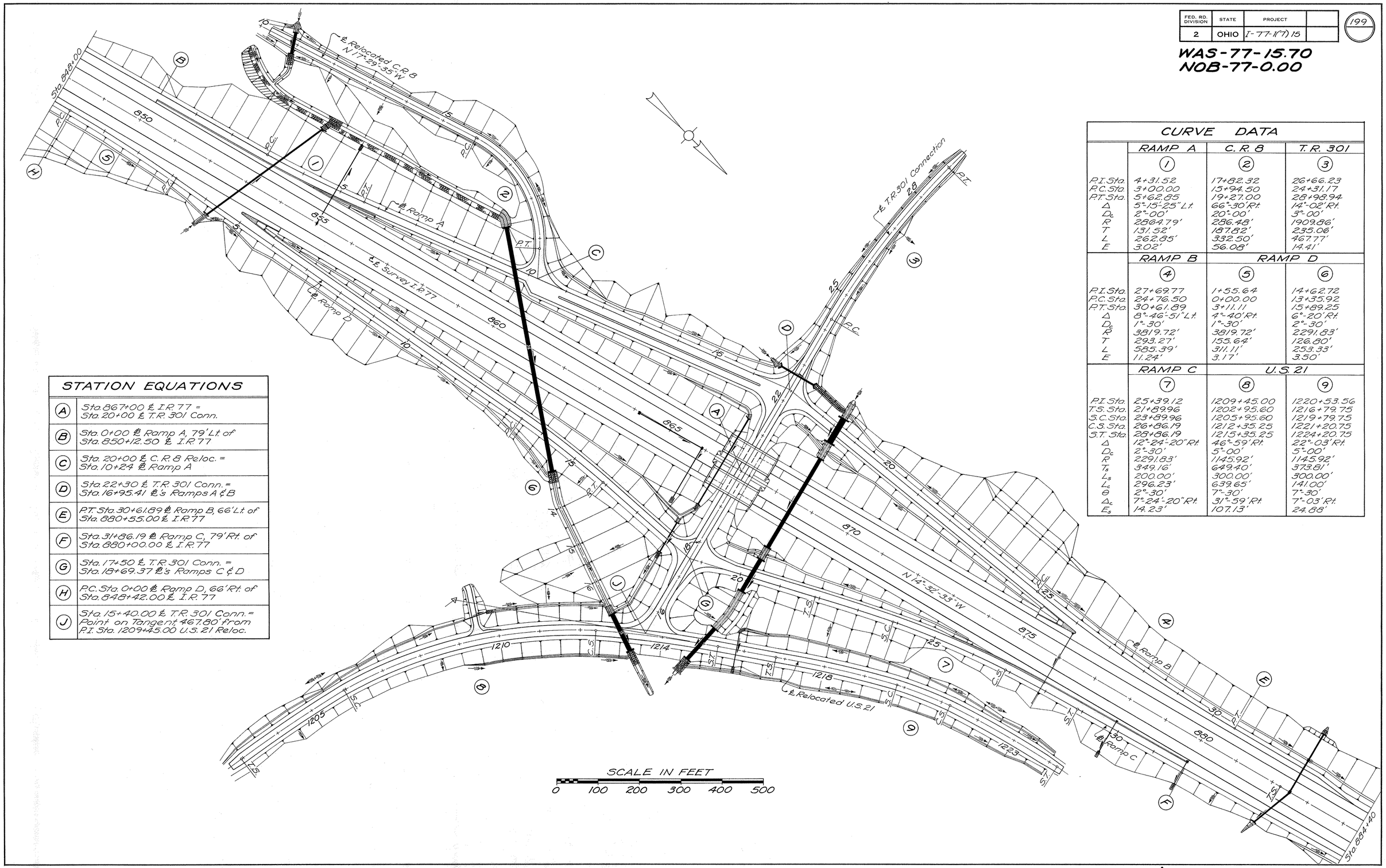
140 120 100 80 60 40 20 ℄ 20 40 60 80 100 120 140

C.R. #8 Sta. 17+00 to Sta. 19+50

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	I-77-1(71) 15	

199

WAS-77-15.70
NOB-77-0.00



STATION EQUATIONS

(A)	Sta. 867+00 ℄ I.R. 77 = Sta. 20+00 ℄ T.R. 301 Conn.
(B)	Sta. 0+00 ℄ Ramp A, 79' Lt. of Sta. 850+12.50 ℄ I.R. 77
(C)	Sta. 20+00 ℄ C.R. 8 Reloc. = Sta. 10+24 ℄ Ramp A
(D)	Sta. 22+30 ℄ T.R. 301 Conn. = Sta. 16+95.41 ℄'s Ramps A & B
(E)	P.T. Sta. 30+61.89 ℄ Ramp B, 66' Lt. of Sta. 880+55.00 ℄ I.R. 77
(F)	Sta. 31+86.19 ℄ Ramp C, 79' Rt. of Sta. 880+00.00 ℄ I.R. 77
(G)	Sta. 17+50 ℄ T.R. 301 Conn. = Sta. 18+69.37 ℄'s Ramps C & D
(H)	P.C. Sta. 0+00 ℄ Ramp D, 66' Rt. of Sta. 848+42.00 ℄ I.R. 77
(J)	Sta. 15+40.00 ℄ T.R. 301 Conn. = Point on Tangent 467.80' from P.I. Sta. 1209+45.00 U.S. 21 Reloc.

CURVE DATA

	RAMP A (1)	C. R. 8 (2)	T. R. 301 (3)
P.I. Sta.	4+31.52	17+82.32	26+66.23
P.C. Sta.	3+00.00	15+94.50	24+31.17
P.T. Sta.	5+62.85	19+27.00	28+98.94
Δ	5°-15'-25" Lt.	66°-30' Rt.	14°-02' Rt.
D_c	2°-00'	20°-00'	3°-00'
R	2864.79'	286.48'	1909.86'
T	131.52'	187.82'	235.06'
L	262.85'	332.50'	467.77'
E	3.02'	56.08'	14.41'

	RAMP B (4)	RAMP D (5)	RAMP D (6)
P.I. Sta.	27+69.77	1+55.64	14+62.72
P.C. Sta.	24+76.50	0+00.00	13+35.92
P.T. Sta.	30+61.89	3+11.11	15+89.25
Δ	8°-46'-51" Lt.	4°-40' Rt.	6°-20' Rt.
D_c	1°-30'	1°-30'	2°-30'
R	3819.72'	3819.72'	2291.83'
T	293.27'	155.64'	126.80'
L	585.39'	311.11'	253.33'
E	11.24'	3.17'	3.50'

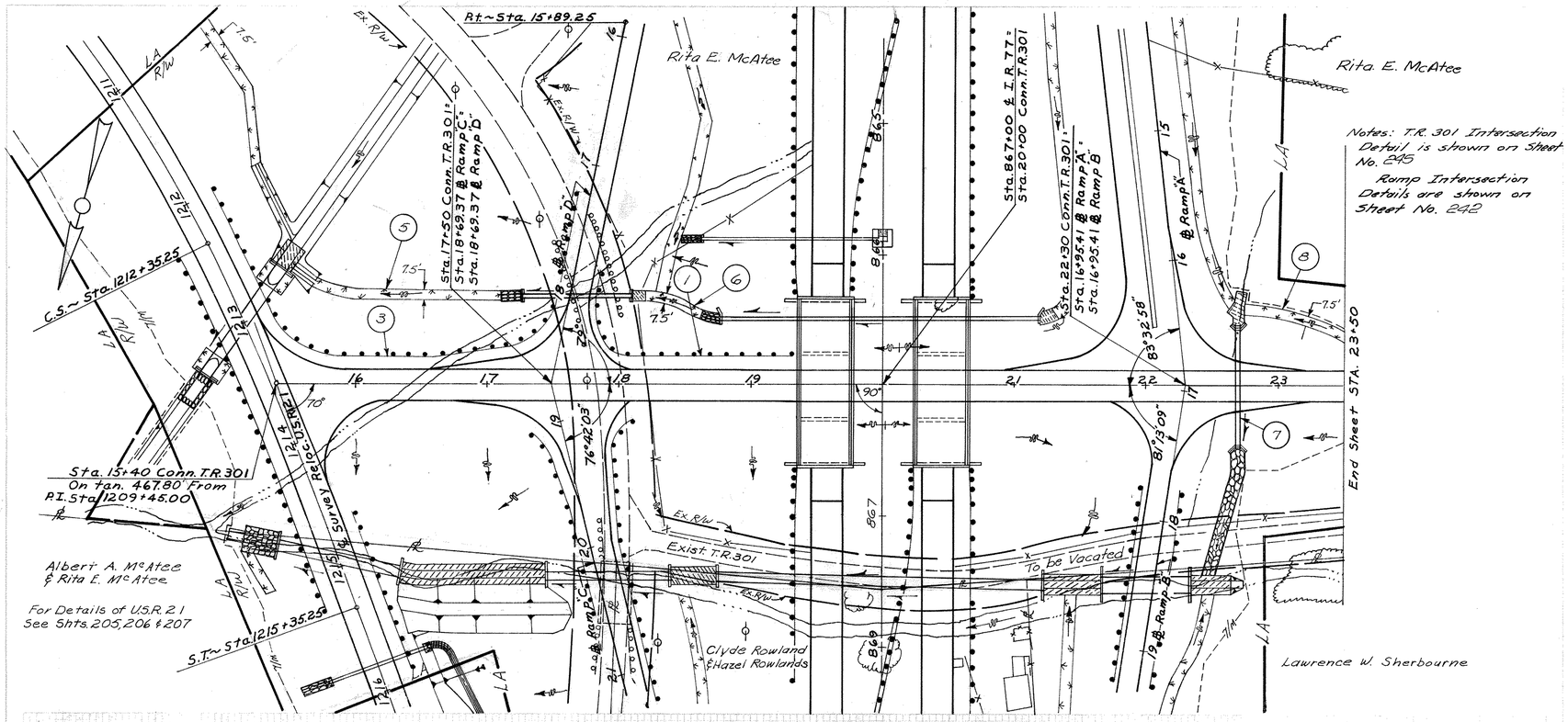
	RAMP C (7)	U.S. 21 (8)	U.S. 21 (9)
P.I. Sta.	25+39.12	1209+45.00	1220+53.56
T.S. Sta.	21+89.96	1202+95.60	1216+79.75
S.C. Sta.	23+89.96	1205+95.60	1219+79.75
C.S. Sta.	26+86.19	1212+35.25	1221+20.75
S.T. Sta.	28+86.19	1215+35.25	1224+20.75
Δ	12°-24'-20" Rt.	46°-59' Rt.	22°-03' Rt.
D_c	2°-30'	5°-00'	5°-00'
R	2291.83'	1145.92'	1145.92'
T_s	349.16'	649.40'	373.51'
L_s	200.00'	300.00'	300.00'
L_c	296.23'	639.65'	141.00'
θ	2°-30'	7°-30'	7°-30'
Δ_c	7°-24'-20" Rt.	31°-59' Rt.	7°-03' Rt.
E_s	14.23'	107.13'	24.88'

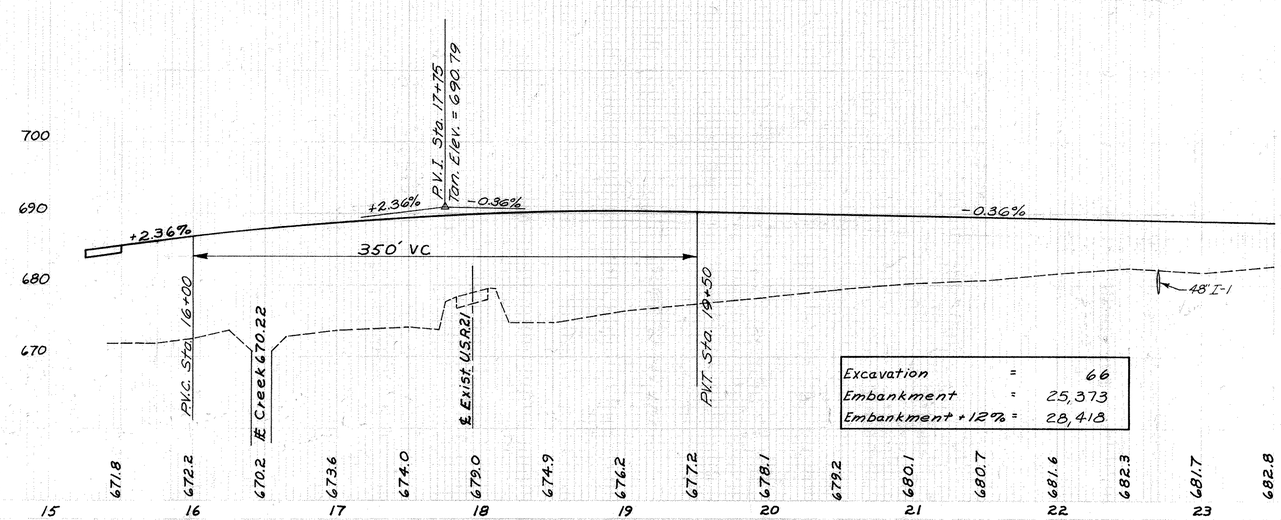
MACKSBURG INTERCHANGE LAYOUT & DRAINAGE DETAIL

WAS - 77 - 15.70
NOB - 77 - 0.00

FED. ROAD DIV. NO.	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
2	OHIO	I-77-1(7)15		200

208



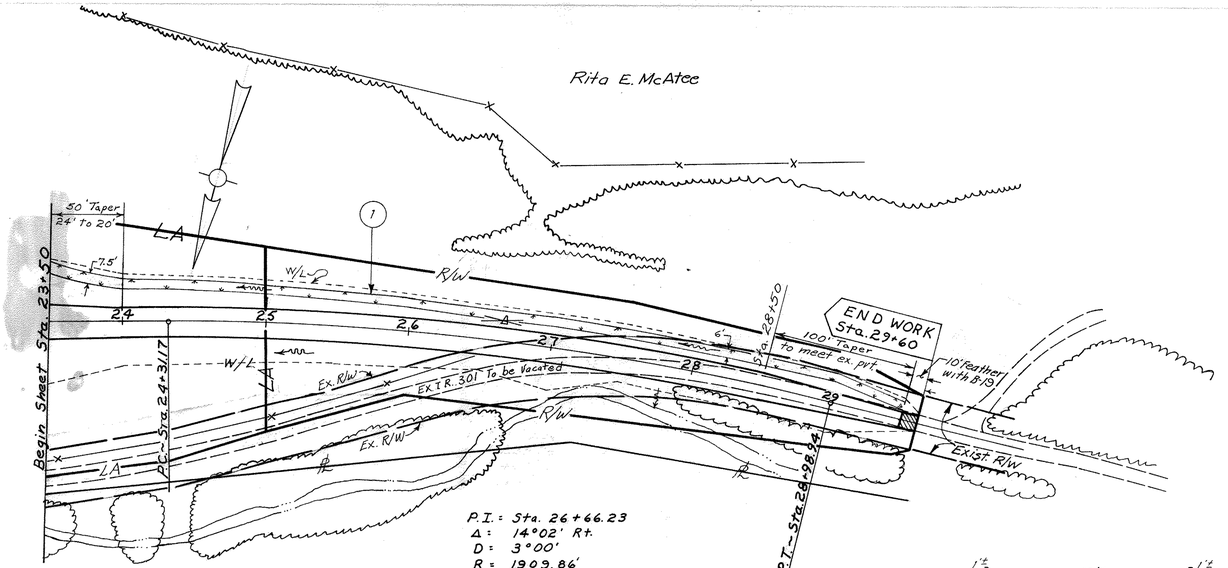


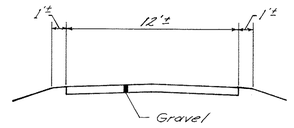
1.	Sta. 17+96 – Sta. 19+32	Lt.	136.5						
3.	Sta. 15+55 – Sta. 17+30	Lt.	187.5						
5.	Sta. 17+50 – Sta. 17+10	Lt.		134					
6.	Sta. 18+20 – Sta. 18+63	Lt.		37					
7.	Sta. 22+10	℄		C	94	24	2	16.4	
8.	Sta. 22+79 – Sta. 23+50	Lt.		63					
				325	240	94	24	2	16.4

WAS - 77 - 15.70
NOB - 77 - 0.00

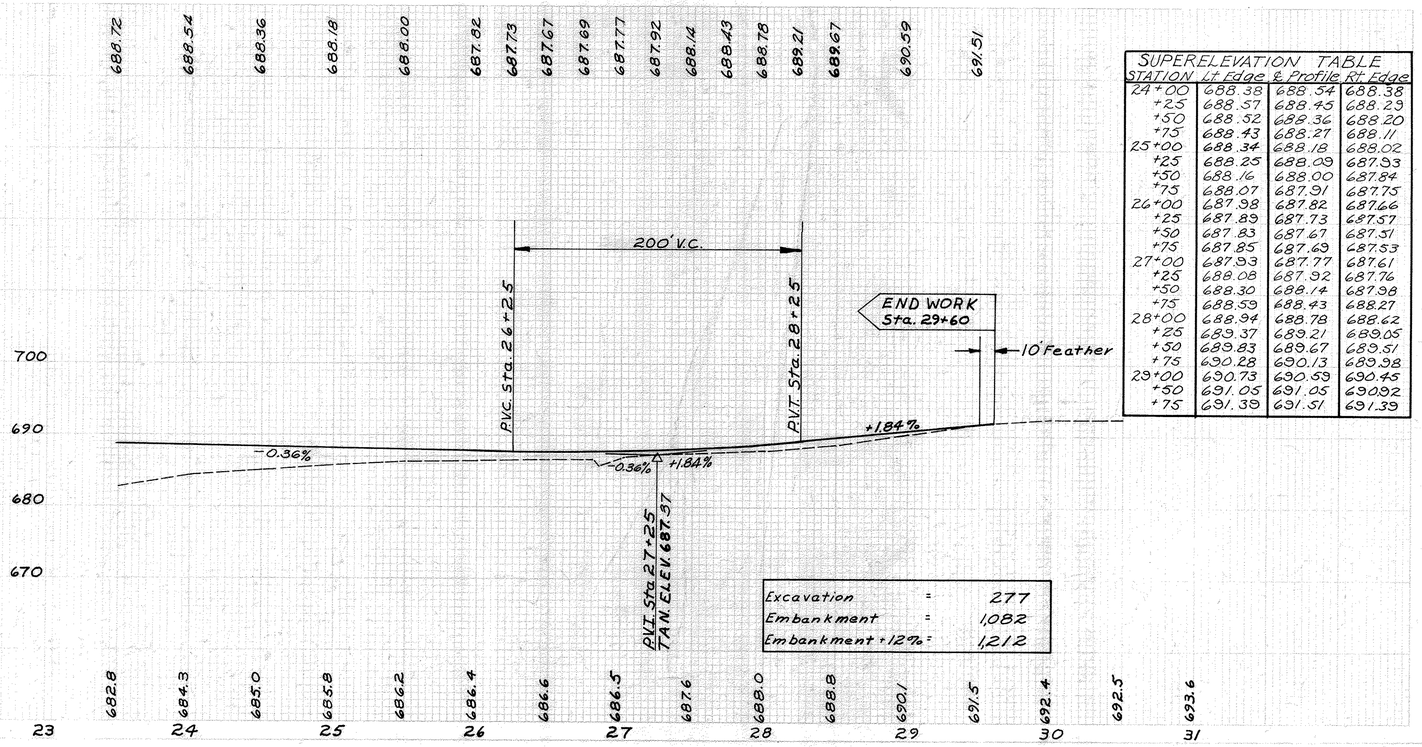
FED. RD. DIVISION	STATE	PROJECT	TYPE FUNDS
2	OHIO	I-77-1(7)15	

201





Typical Section Adjoining Pvm't.
Scale: 1" = 5'



STATION	Lt. Edge	& Profile	Rt. Edge
24+00	688.38	688.54	688.38
+25	688.57	688.45	688.29
+50	688.52	688.36	688.20
+75	688.43	688.27	688.11
25+00	688.34	688.18	688.02
+25	688.25	688.09	687.93
+50	688.16	688.00	687.84
+75	688.07	687.91	687.75
26+00	687.98	687.82	687.66
+25	687.89	687.73	687.57
+50	687.83	687.67	687.51
+75	687.85	687.69	687.53
27+00	687.93	687.77	687.61
+25	688.08	687.92	687.76
+50	688.30	688.14	687.98
+75	688.59	688.43	688.27
28+00	688.94	688.78	688.62
+25	689.37	689.21	689.05
+50	689.83	689.67	689.51
+75	690.28	690.13	689.98
29+00	690.73	690.59	690.45
+50	691.05	691.05	690.92
+75	691.39	691.51	691.39

SUPERELEVATION TABLE

Excavation	=	277
Embankment	=	1,082
Embankment +12%	=	1,212

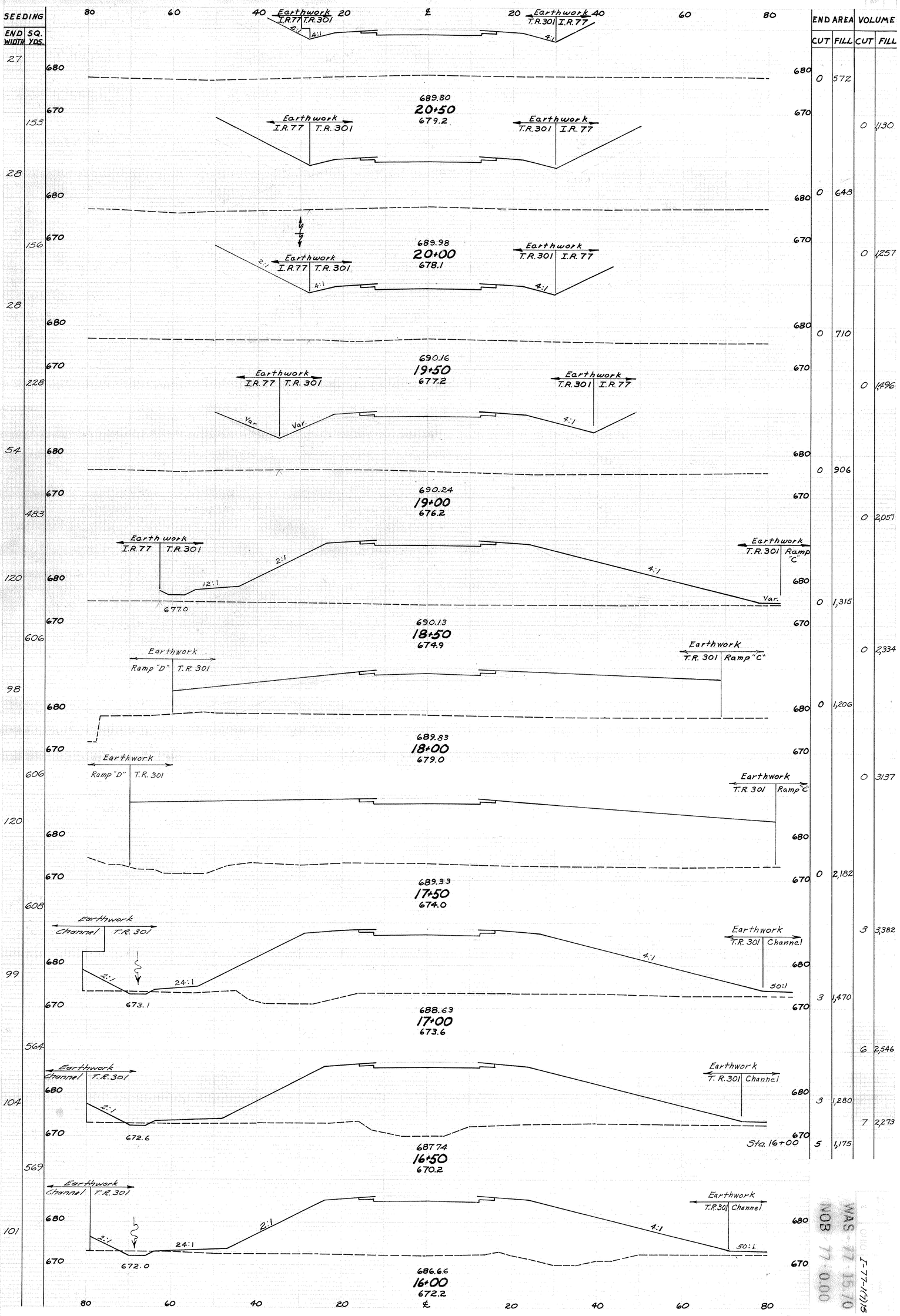
SEE SHEET NO.

ESTIMATED QUANTITIES

REF. NO.	STATION TO STATION	SIDE	TOTALS
1	Sta. 23+50 - Sta. 29+60	Lt.	408
		Rt.	408

7-10

Conn. T.R. 301 Sta. 23+50 to Sta. 29+60

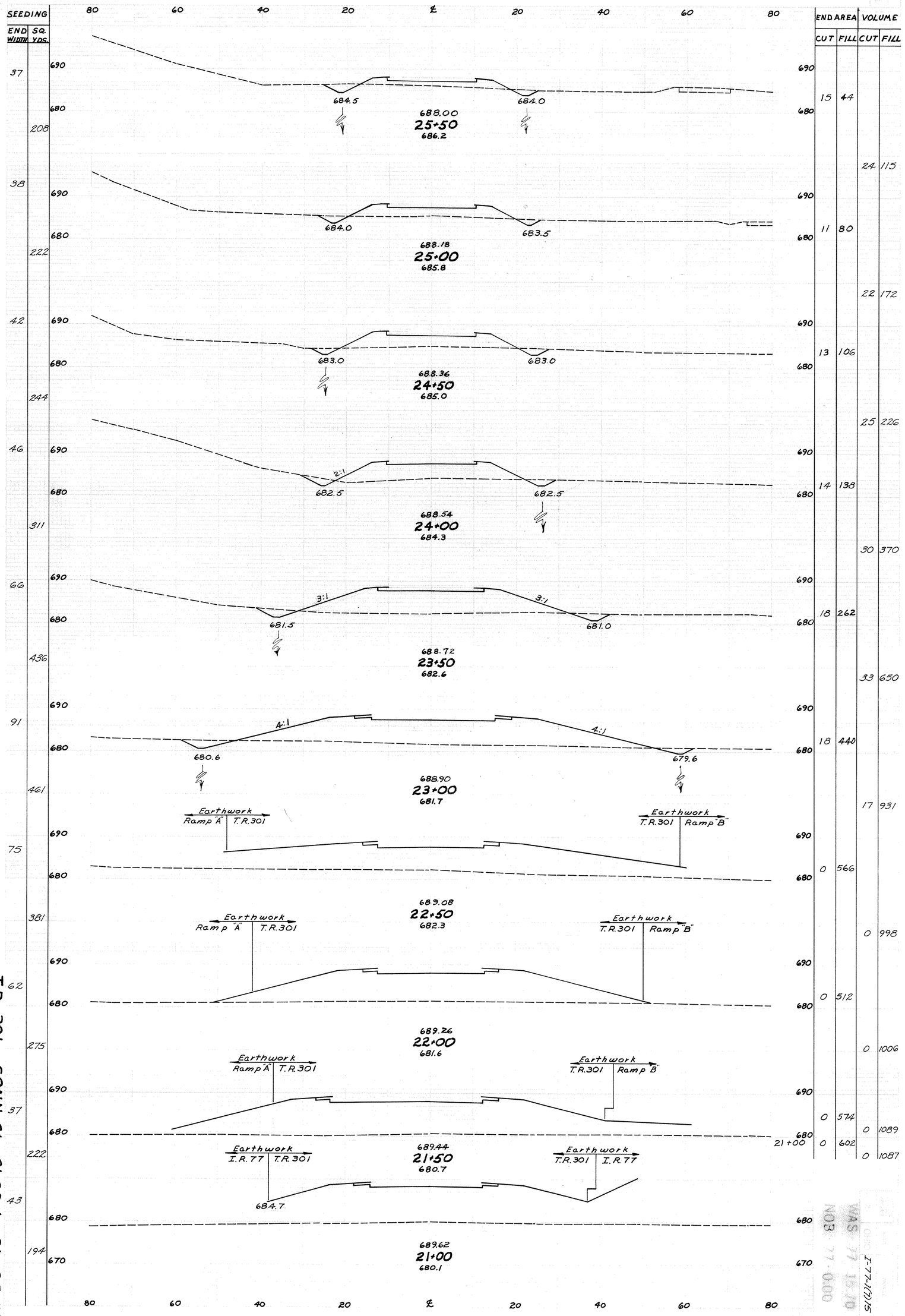


T.R. 301 CONN. Sta. 16+00 to Sta. 20+50

WAS 77 15.70
NOB 77 0.00

I-77-1(9)15

202


SEEDING
END WIDTH
SQ. YDS.
80 60 40 20 ℄ 20 40 60 80
END AREA
CUT FILL
VOLUME
CUT FILL
688.00
25+50
686.2
684.5
684.0
688.18
25+00
685.8
684.0
683.5
688.36
24+50
685.0
683.0
683.0
688.54
24+00
684.3
682.5
682.5
2:1
688.72
23+50
682.6
681.5
681.0
3:1
3:1
688.90
23+00
681.7
680.6
679.6
4:1
4:1
Earthwork
Ramp "A" T.R.301
Earthwork
T.R.301 Ramp "B"
689.08
22+50
682.3
689.26
22+00
681.6
689.44
21+50
680.7
I.R.77 T.R.301
684.7
689.62
21+00
680.1
37 208
38 222
42 244
46 311
66 436
91 461
75 381
62 275
37 222
43 194
15 44
11 80
24 115
13 106
22 172
14 138
25 226
18 262
30 370
18 440
33 650
0 566
17 931
0 512
0 998
0 574
0 1006
0 602
0 1089
0 1087
21+00
T.R. 301 CONN. Sta. 21+00 to Sta. 25+50
WAS 77 1570
NOB 77 000
I-77-1(19)15
203

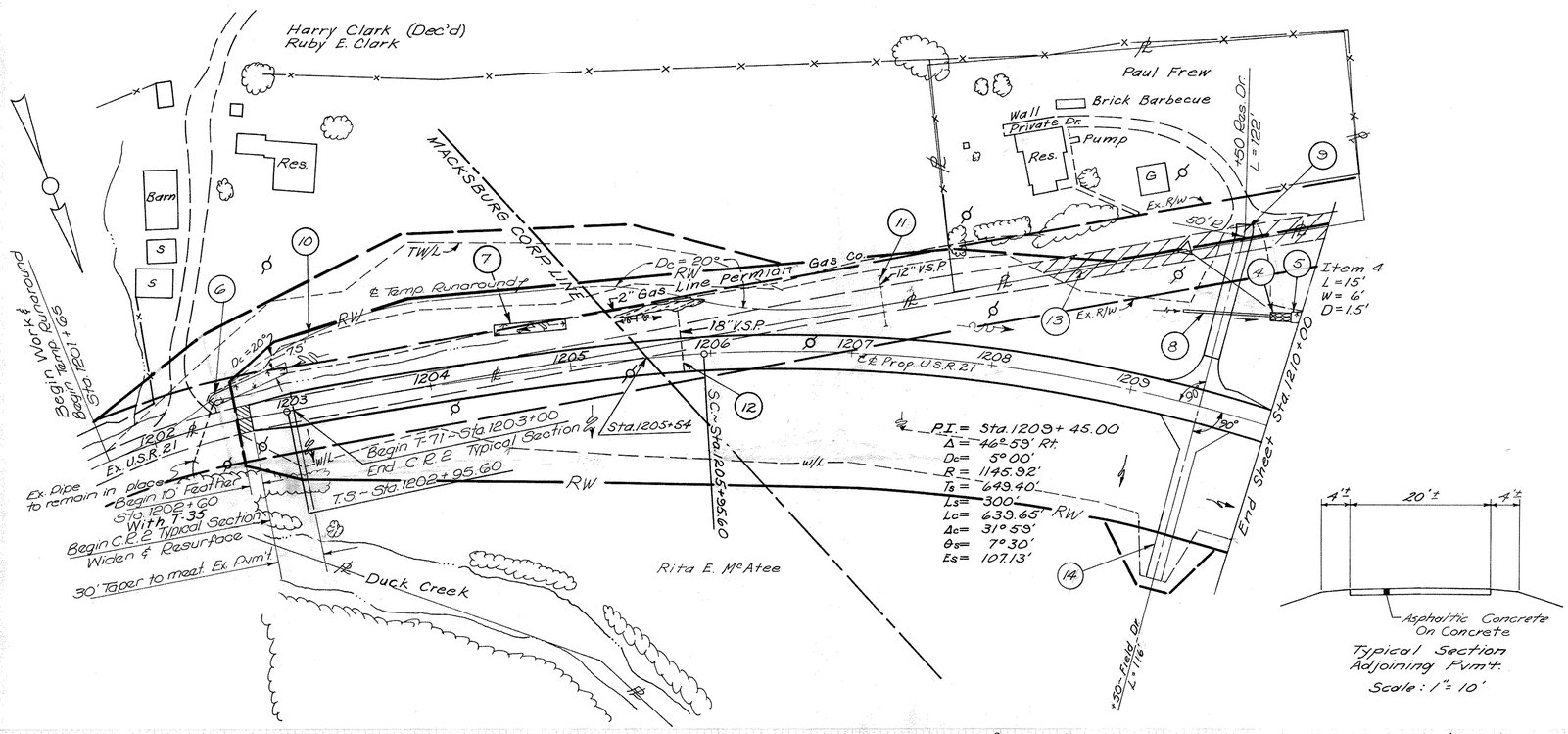
I-77-1(7)15
WAS 77-15.70
NCB 77-0.00

| END AREA VOLUME | | |

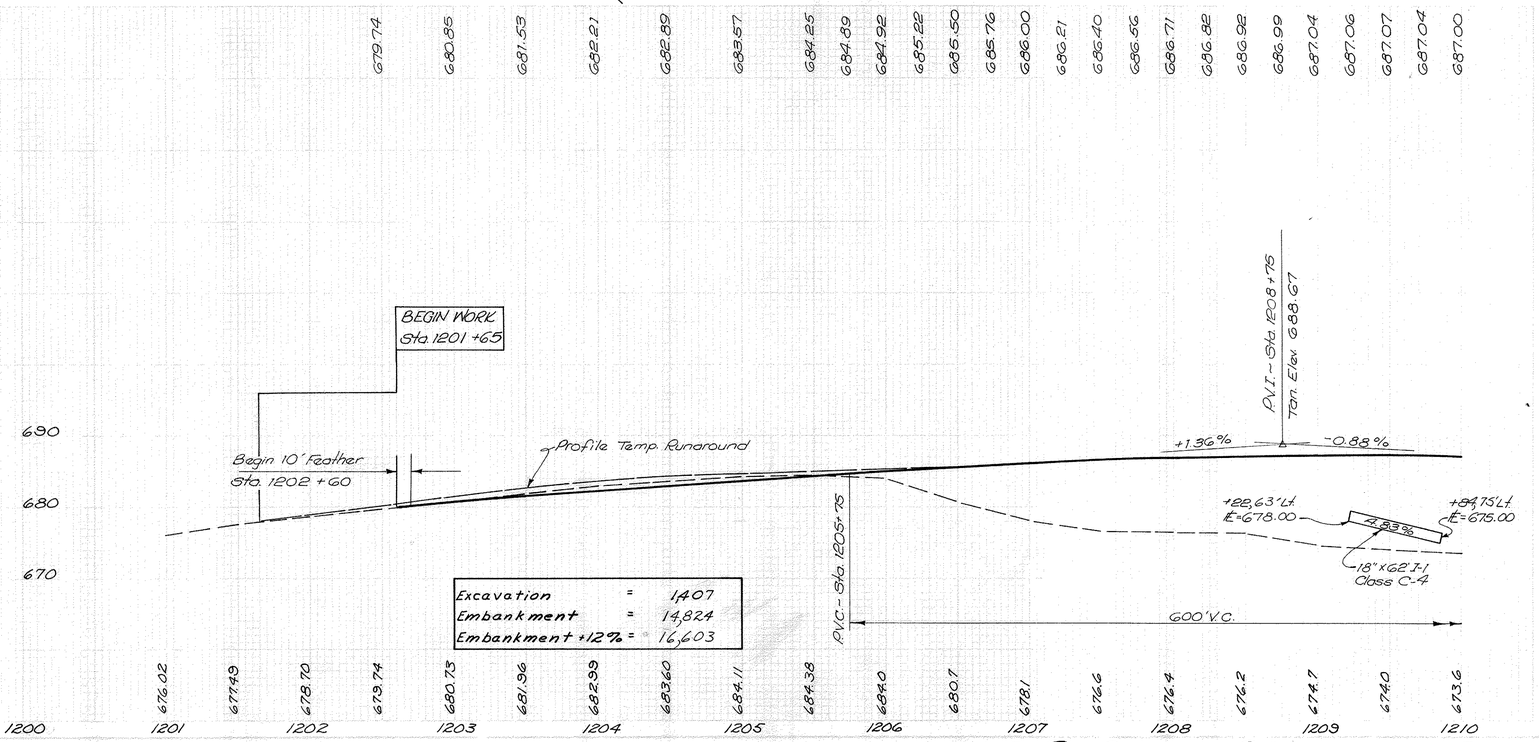
WAS - 77 - 15.70
NOB - 77 - 0.00

I-77-1(7)15

205



SUPERELEVATION TABLE			
STATION	Lt. Edge	& Profile	Rt. Edge
1202+75	680.51	680.31	680.11
1203+00	681.06	680.84	680.66
+25	681.54	681.27	681.00
+50	682.01	681.68	681.34
+75	682.49	682.08	681.68
1204+00	682.96	682.49	682.02
+25	683.44	682.90	682.36
+50	683.91	683.31	682.70
+75	684.39	683.71	683.04
1205+00	684.86	684.12	683.38
+25	685.34	684.53	683.72
+50	685.81	684.94	684.06
+75	686.29	685.34	684.40
1206+00	686.76	685.73	684.73
+25	687.03	686.03	685.03
+50	687.31	686.31	685.31
+75	687.57	686.57	685.57
1207+00	687.81	686.81	685.81
+25	688.02	687.02	686.02
+50	688.21	687.21	686.21
+75	688.37	687.37	686.37
1208+00	688.52	687.52	686.52
+25	688.63	687.63	686.63
+50	688.73	687.73	686.73
+75	688.80	687.80	686.80
1209+00	688.85	687.85	686.85
+25	688.87	687.87	686.87
+50	688.88	687.88	686.88
+75	688.85	687.85	686.85
1210+00	688.81	687.81	686.81



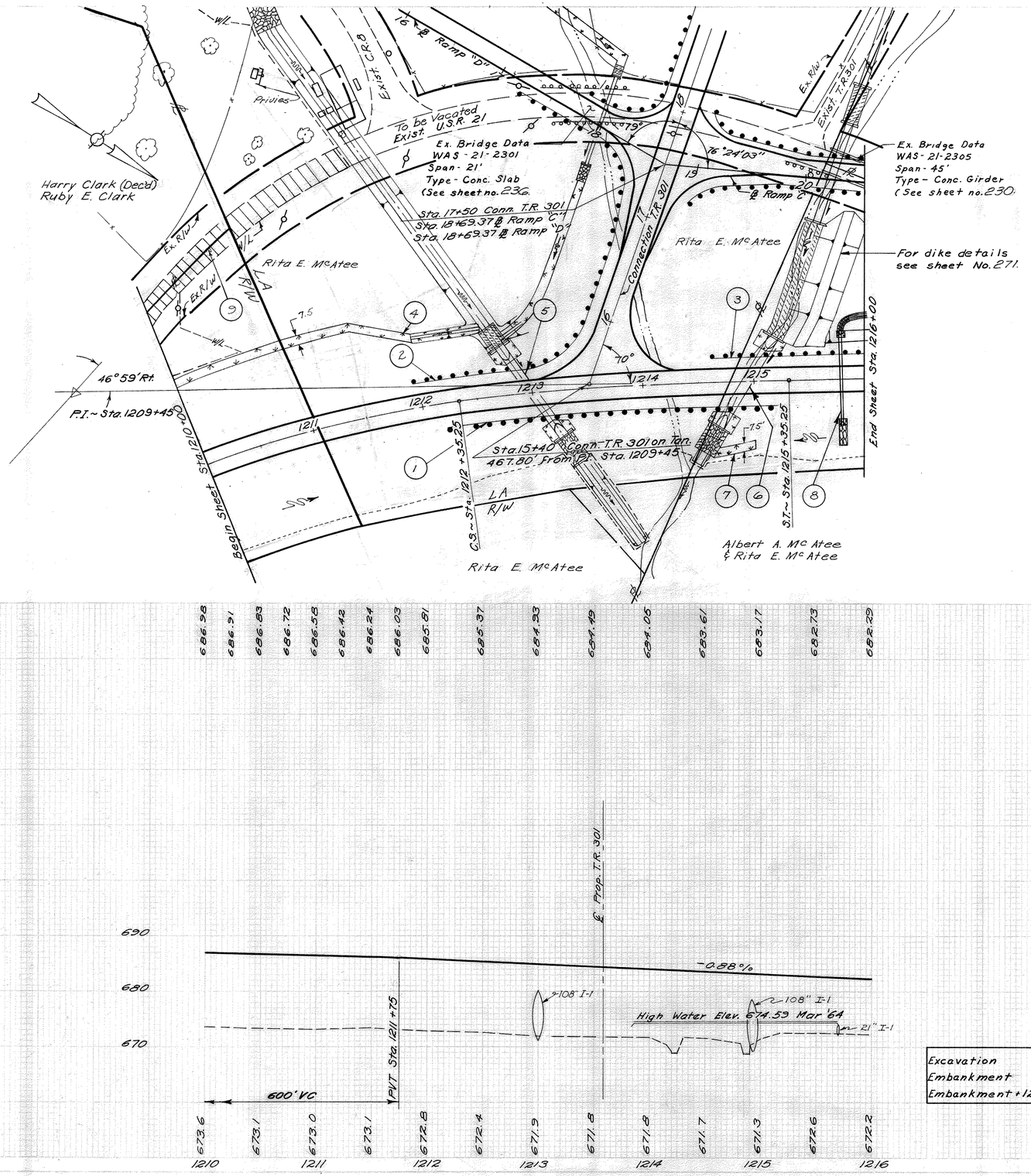
Excavation	=	1,407
Embankment	=	14,824
Embankment +12%	=	16,603

| | | |

WAS - 77 - 15.70
NOB - 77 - 0.00

I-77-1(7)15

206



Excavation	=	219
Embankment	=	27,940
Embankment + 12%	=	31,293

SUPERELEVATION TABLE

STATION	L ℄ Profile	Rt. Edge
12+00.00	688.81	686.81
+25	688.74	686.74
+50	688.66	686.66
+75	688.59	686.59
12+00	688.53	686.53
+25	688.23	686.23
+50	688.08	686.08
+70	687.96	685.96
12+00	687.84	685.84
+25	687.40	685.40
+50	687.08	685.18
+75	686.76	685.46
13+00	686.34	685.34
+25	685.91	685.24
+50	685.60	684.34
+75	685.24	684.66
14+00	684.90	684.38
+25	684.56	684.10
+50	684.22	683.82
+75	683.87	683.54
15+00	683.53	683.26
+25	683.19	682.97
+50	682.92	682.73
+75	682.70	682.51
16+00	682.48	682.29

ESTIMATED QUANTITIES ♯ Sec M-6.6 (5) or Sec M-6.8 (5)

* Sec M-6.6 (6) with 1:9 Vitrified Liner, as per plan.

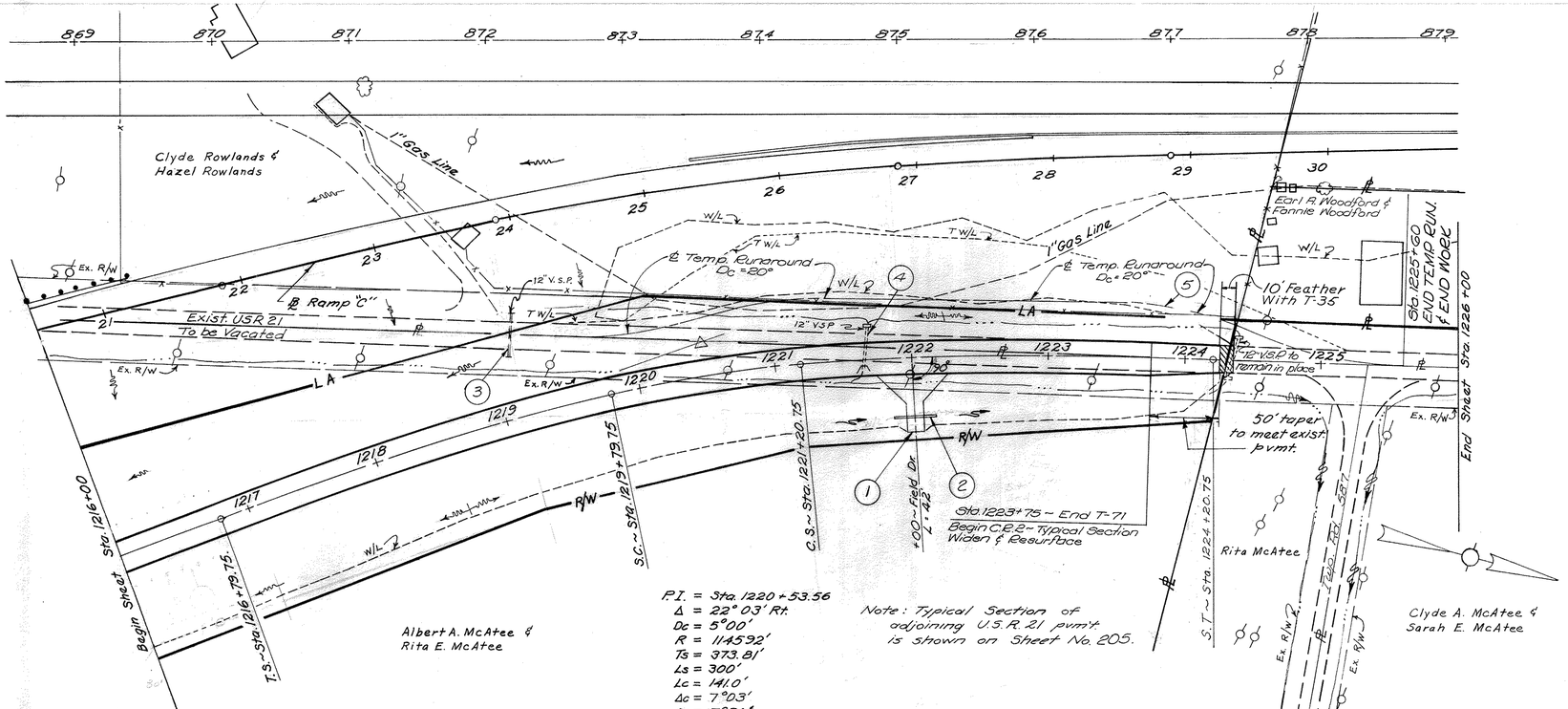
REF. NO.	STATION TO STATION	SIDE	I-15 Deep Ln.Ft.	I-10 DRCP Cu.Yds.	I-10 Riprap Cu.Yds.	I-2 Cl. C Sq.Yds.	I-2 Cl. C Sq.Yds.	E-3 Sq.Yds.	E-8 Lin.Ft.	I-1 21" Cl. A-1 ♯ Lin.Ft.	I-1 108" Cl. A-1 ♯ per plan Sq.Yds.	I-9 Lin.Ft.
1	Sta. 12+12.25 - Sta. 12+15.25	Rt.	300									
2	Sta. 12+01.00 - Sta. 12+39.25	Lt.	125									
3	Sta. 12+14+62.5 Sta. 12+16.00	Lt.	137.5									
4	Sta. 12+00.00 - Sta. 12+29.60	Lt.				230						
5	Sta. 12+39.00	Rt.		557	47	36	56	244				102
6	Sta. 12+14.93	Rt.		5	60		55	272				102
7	Sta. 12+14.93 - Sta. 12+15.00	Rt.					31					
8	Sta. 12+15.80	Rt.			10	7	6	0.7				
9	Sta. 12+00.00 - Sta. 12+11.80	Lt.							84	511		664
	SUB-TOTALS		562.5	117	43	379	52.3	511	84		204	664
	TOTALS									07.51.6		

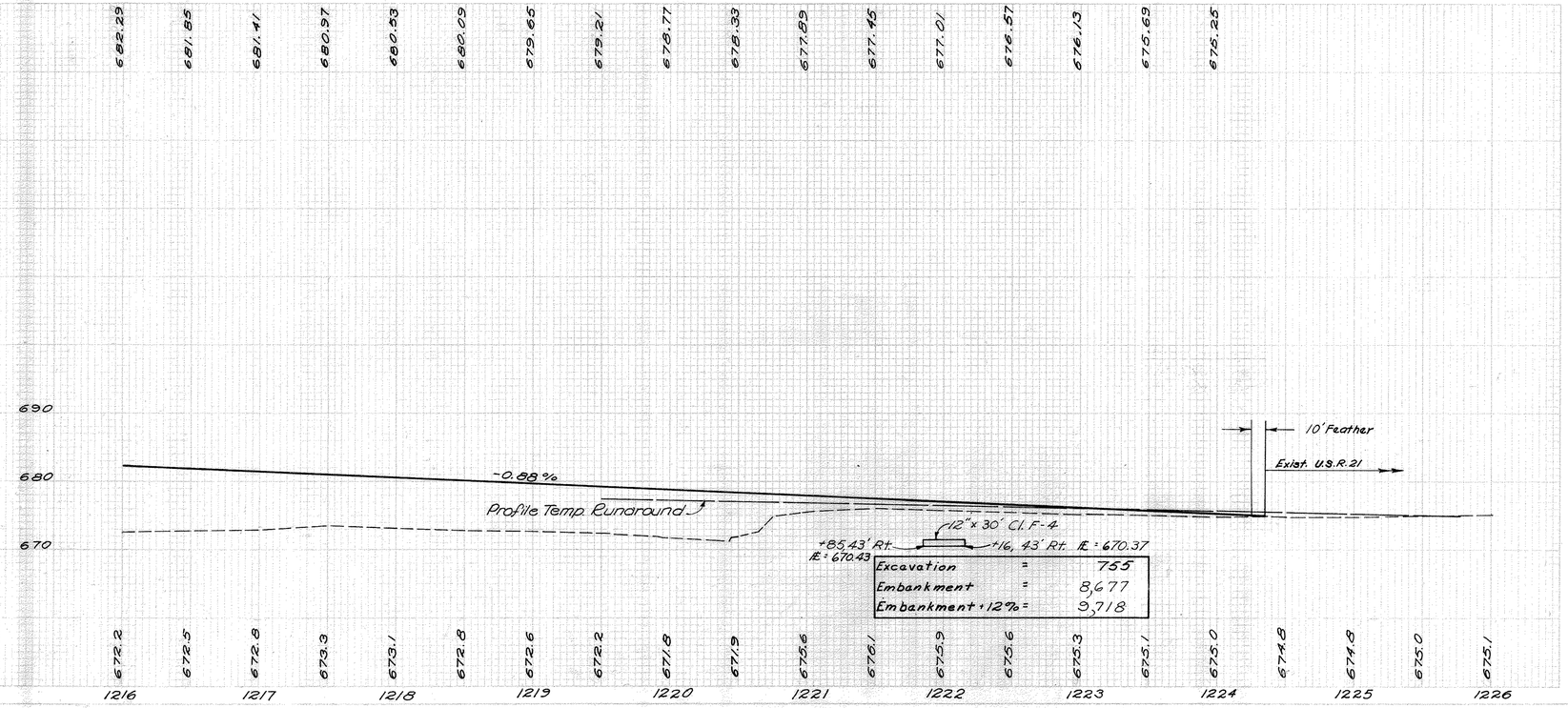
RELOC. U.S.R. 21 STA. 1210+00 to STA. 1216+00

WAS 77-15.70
NOB 77-0.00

FED. RD. DIVISION	STATE	PROJECT	TYPE FUNDS
2	OHIO	I-77-1(7)15	

207





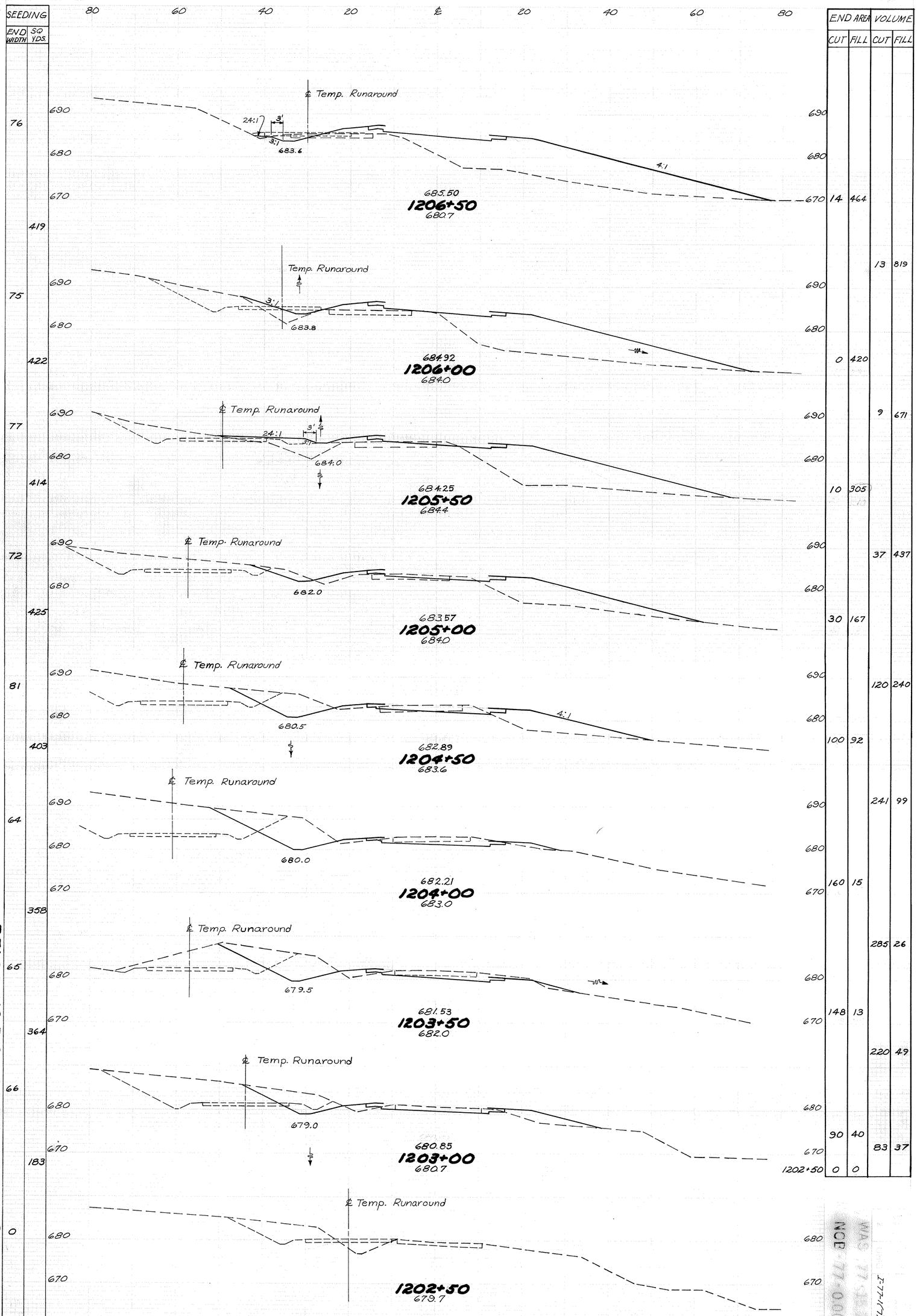
SUPERELEVATION TABLE

STATION	Lt. Edge	℄ Profile	Rt. Edge
1216+00	682.48	682.23	682.10
+25	682.26	682.01	681.88
+50	682.04	681.80	681.66
+75	681.82	681.58	681.44
1217+00	681.65	681.41	681.27
+25	681.50	681.19	680.88
+50	681.35	680.97	680.59
+75	681.20	680.75	680.30
1218+00	681.04	680.53	680.02
+25	680.89	680.31	679.73
+50	680.74	680.09	679.44
+75	680.59	679.87	679.15
1219+00	680.43	679.65	678.87
+25	680.28	679.43	678.58
+50	680.13	679.21	678.29
+75	679.98	678.99	678.00
1220+00	679.77	678.77	677.77
+25	679.55	678.55	677.55
+50	679.33	678.33	677.33
+75	679.11	678.11	677.11
1221+00	678.89	677.89	676.89
+25	678.65	677.67	676.66
+50	678.34	677.45	676.56
+75	678.03	677.23	676.43
1222+00	677.72	677.01	676.30
+25	677.41	676.79	676.17
+50	677.10	676.57	676.04
+75	676.79	676.35	675.91
1223+00	676.48	676.13	675.78
+25	676.17	675.91	675.65
+50	675.86	675.69	675.50
+75	675.51	675.47	675.28
1224+00	675.17	675.25	675.06
+25	674.87	675.03	674.89

ESTIMATED QUANTITIES

REF. NO.	STATION TO STATION	SIDE	8-19 6"	E-12 15" & Under	S-15 Cl. "B"	I.I. 6" Class F-4	1:10
			Cu. Yds.	Lin. Ft.	Lump	Lin. Ft.	Cu. Yds.
1	Sta. 1222+00	Rt.	13			30	4
2	Sta. 1221+85 - Sta. 1222+16	Rt.					
3	Sta. 1219+11 - Sta. 1219+64	Lt.		38			
4	Sta. 1221+64 - Sta. 1221+70	Both		30			
5	Sta. 1219+60 - Sta. 1225+60	Lt.			Lump		
TOTALS			13	68	Lump	30	4

RELOC. U.S.R. 21 STA. 1216+00 to STA. 1224+35


SEEDING
END WIDTH
SQ YDS.
80 60 40 20 ℄ 20 40 60 80
END AREA
CUT FILL
VOLUME
CUT FILL
℄ Temp. Runaround
24:1
3'
3:1
683.6
4:1
685.50
1206+50
680.7
76
419
14 464
Temp. Runaround
3:1
683.8
684.92
1206+00
684.0
75
422
0 420
13 819
℄ Temp. Runaround
24:1
3'
3:1
684.0
684.25
1205+50
684.4
77
414
10 305
9 671
℄ Temp. Runaround
682.0
683.57
1205+00
684.0
72
425
30 167
37 437
℄ Temp. Runaround
680.5
4:1
682.89
1204+50
683.6
81
403
100 92
120 240
℄ Temp. Runaround
680.0
682.21
1204+00
683.0
64
358
160 15
241 99
℄ Temp. Runaround
679.5
681.53
1203+50
682.0
65
364
148 13
285 26
℄ Temp. Runaround
679.0
680.85
1203+00
680.7
66
183
90 40
220 49
℄ Temp. Runaround
1202+50
679.7
0
1202+50
0 0
83 37
690
680
670
RELOC. U.S.R. 21 Sta. 1202+50 to Sta. 1206+50
NCB 77-0.00
WAS 77-0.00
17-74-115
608

OHIO I-77-1(7)15
WAS-77-15.70
NOB-77-0.00

| SEEDING | | |

I-77-1(7)15
WAS 77-15.70
NOB 77-0.00

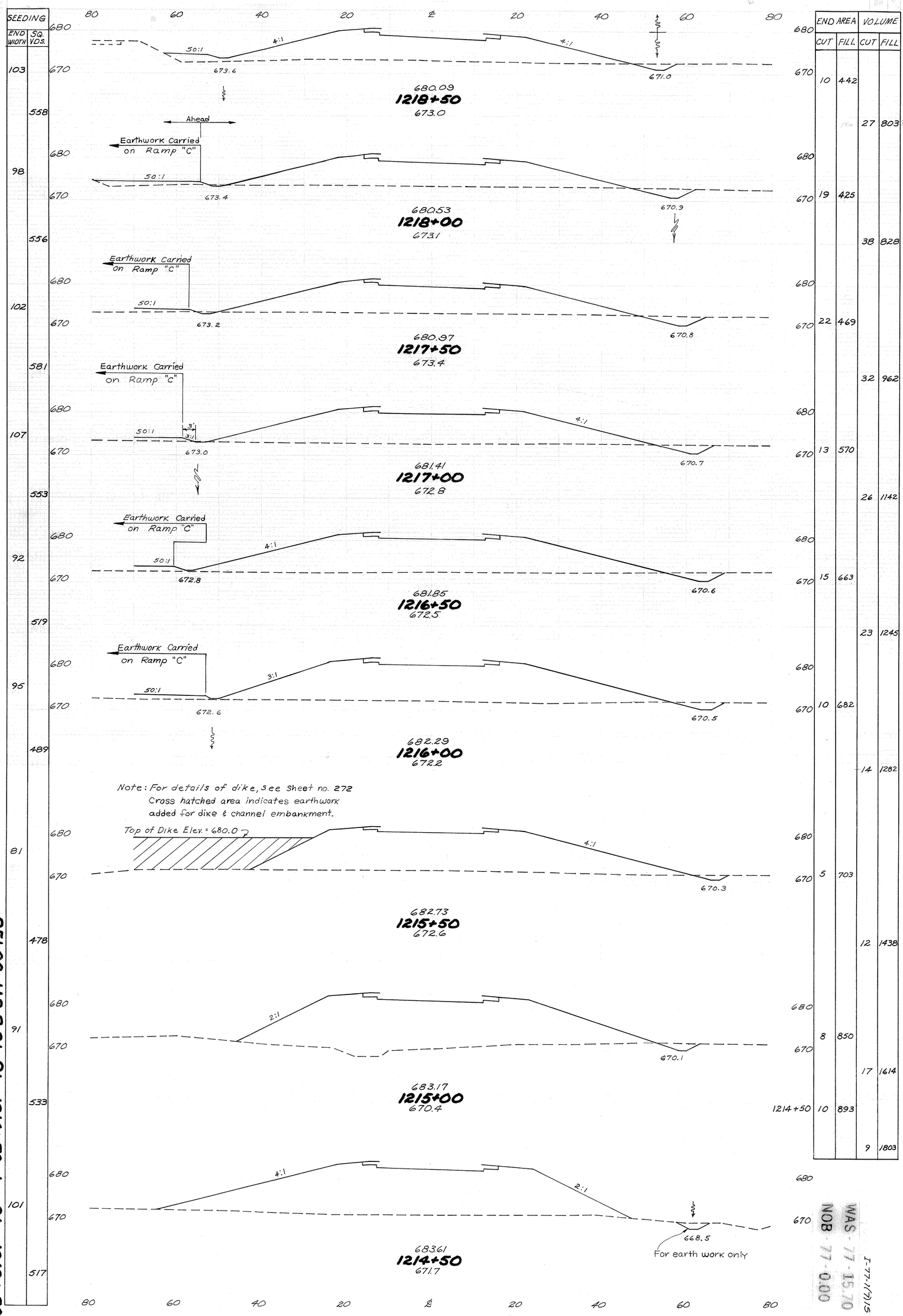
END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
0	1054	0	2196
0	1318	16	2059
17	906	36	1766
12	1001	22	1987
12	1145	24	2218
14	1250	29	2388
17	1329	22	2456

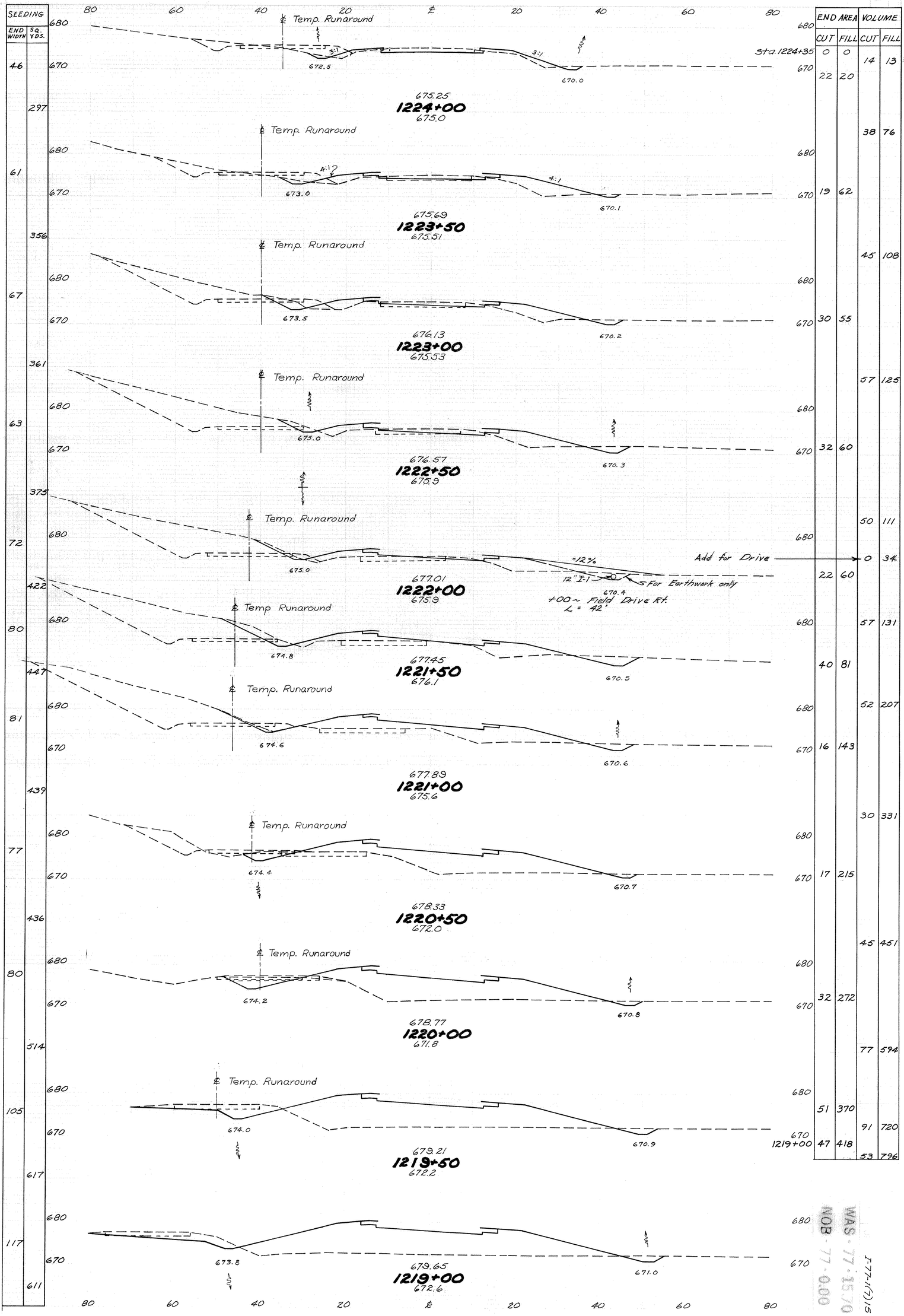
Add for grading Ct

1211+00

SEEDING END WIDTH	SEEDING SQ. YDS.
85	522
103	608
116	653
119	700
133	800
155	864
157	764

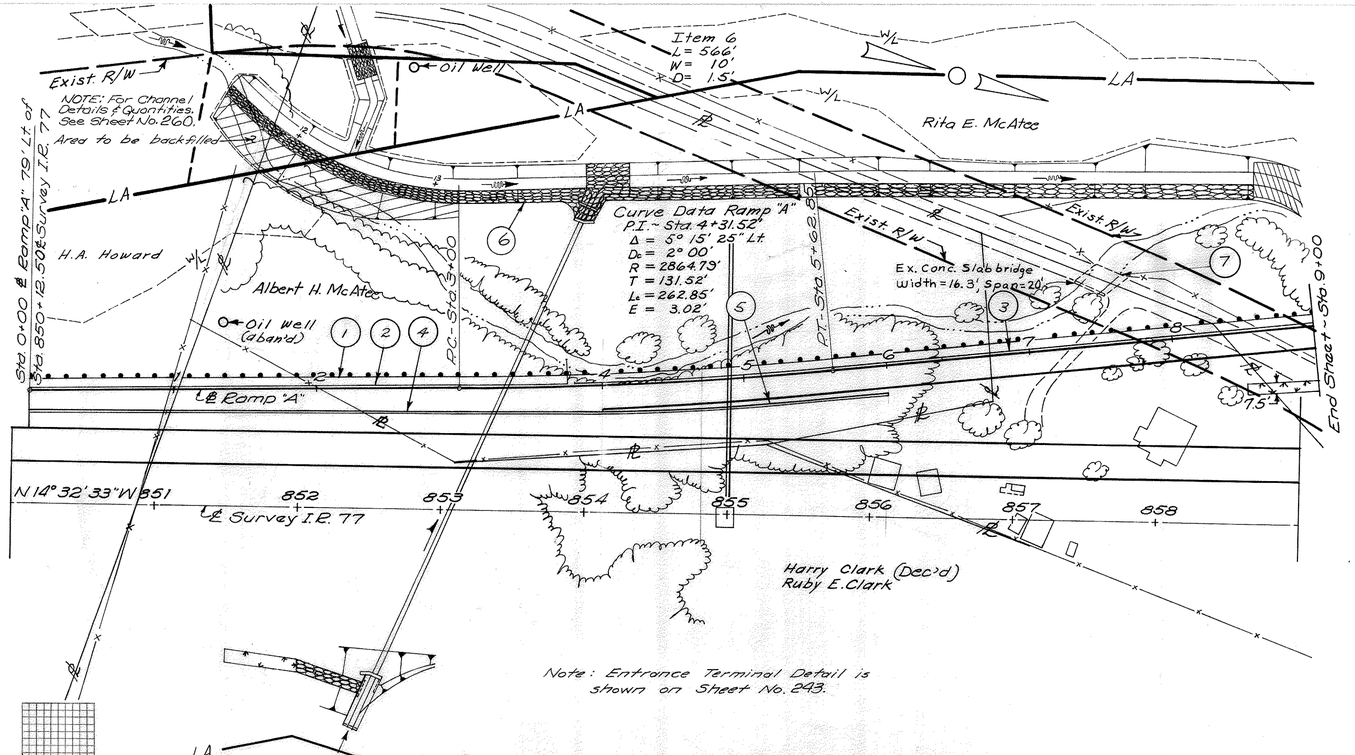
RELOC. U.S.R. 21 Sta. 1211+00 to Sta. 1214+00

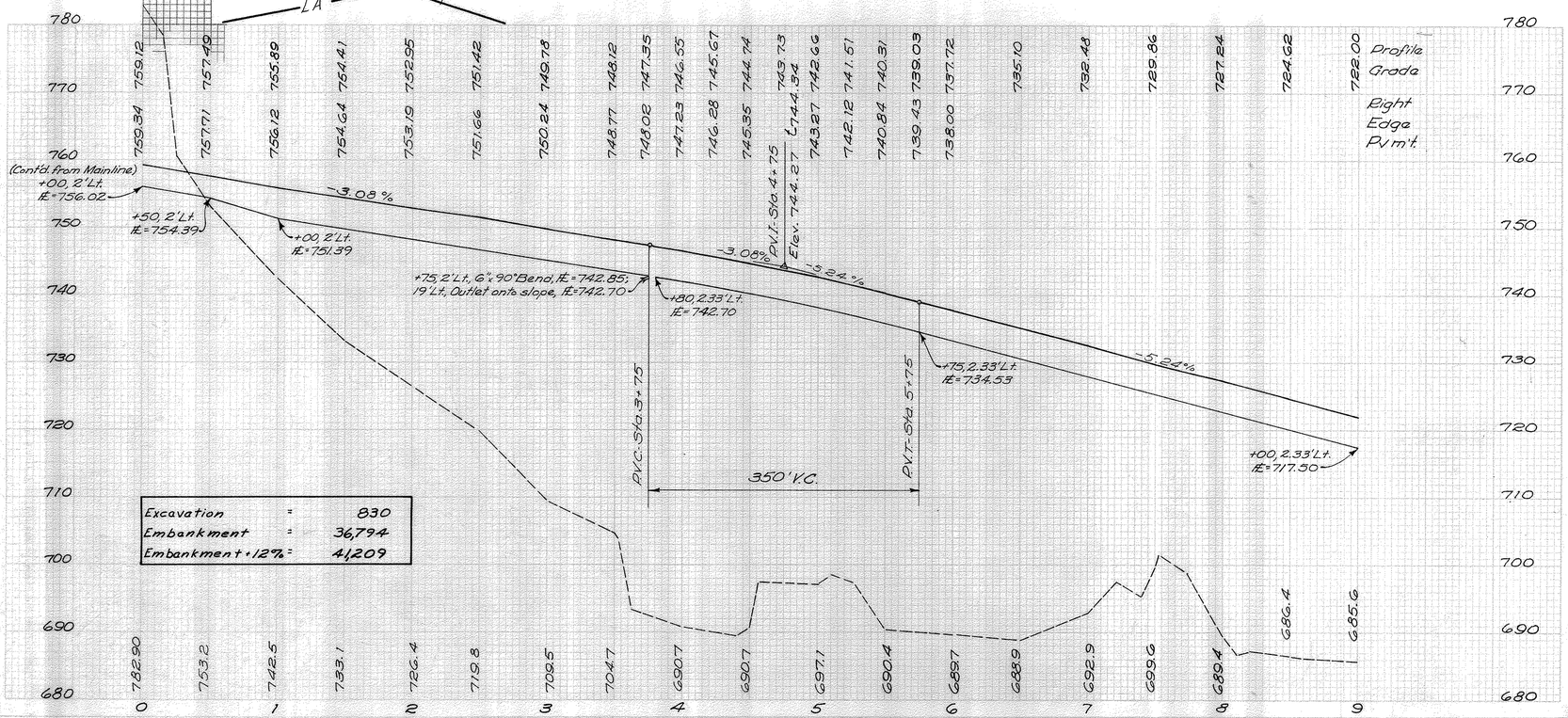

SEEDING
END WIDTH
SQ. YDS.
80 60 40 20 ℄ 20 40 60 80
680
670
50:1
4:1
673.6
671.0
680.09
1218+50
673.0
Ahead
Earthwork Carried on Ramp "C"
673.4
670.9
680.53
1218+00
673.1
673.2
670.8
680.97
1217+50
673.4
3'
3:1
673.0
670.7
681.41
1217+00
672.8
672.8
670.6
681.85
1216+50
672.5
3:1
672.6
670.5
682.29
1216+00
672.2
Note: For details of dike, see Sheet no. 272
Cross hatched area indicates earthwork
added for dike & channel embankment.
Top of Dike Elev. = 680.0
670.3
682.73
1215+50
672.6
2:1
670.1
683.17
1215+00
670.4
668.5
For earth work only
683.61
1214+50
671.7
END AREA
CUT
FILL
VOLUME
CUT
FILL
10 442
27 803
19 425
38 828
22 469
32 962
13 570
26 1142
15 663
23 1245
10 682
14 1282
5 703
12 1438
8 850
17 1614
1214+50 10 893
9 1803
103
558
98
556
102
581
107
553
92
519
95
489
81
478
91
533
101
517
RELOC. U.S.R. 21 Sta. 1214+50 to Sta. 1218+50
WAS - 77 - 15.70
NOB - 77 - 0.00
I-77-1(7)15
211


SEEDING
END WIDTH
SQ. YDS.
80 60 40 20 ℄ 20 40 60 80
Temp. Runaround
3:1
672.5
670.0
675.25
1224+00
675.0
673.0
4:1
670.1
675.69
1223+50
675.51
673.5
670.2
676.13
1223+00
675.53
675.0
670.3
676.57
1222+50
675.9
=12%
12' T-1
670.4
Add for Drive
0 34
S For Earthwork only
677.01
1222+00
675.9
+00 ~ Field Drive Rt.
L = 42'
674.8
670.5
677.45
1221+50
676.1
674.6
670.6
677.89
1221+00
675.6
674.4
670.7
678.33
1220+50
672.0
674.2
670.8
678.77
1220+00
671.8
674.0
670.9
679.21
1219+50
672.2
673.8
671.0
679.65
1219+00
672.6
END AREA
CUT FILL
Sta. 1224+35 0 0
22 20
19 62
30 55
32 60
22 60
40 81
16 143
17 215
32 272
51 370
1219+00 47 418
VOLUME
CUT FILL
14 13
38 76
45 108
57 125
50 111
0 34
57 131
52 207
30 331
45 451
77 594
91 720
53 796
680
670
611
46 297 61 356 67 361 63 375 72 422 80 447 81 439 77 436 80 514 105 617 117
RELOC. U.S.R. 21 Sta. 1219+00 to Sta. 1224+00
WAS-77-1570
NOB-77-0.00
F-77-1(7)15
212

WAS 77-15.70
NOB 77-0.00

SHT. NO.	STATE	PROJECT	TOT. SHTS.
2	OHIO	I-77-1(7)15	213





ESTIMATED QUANTITIES

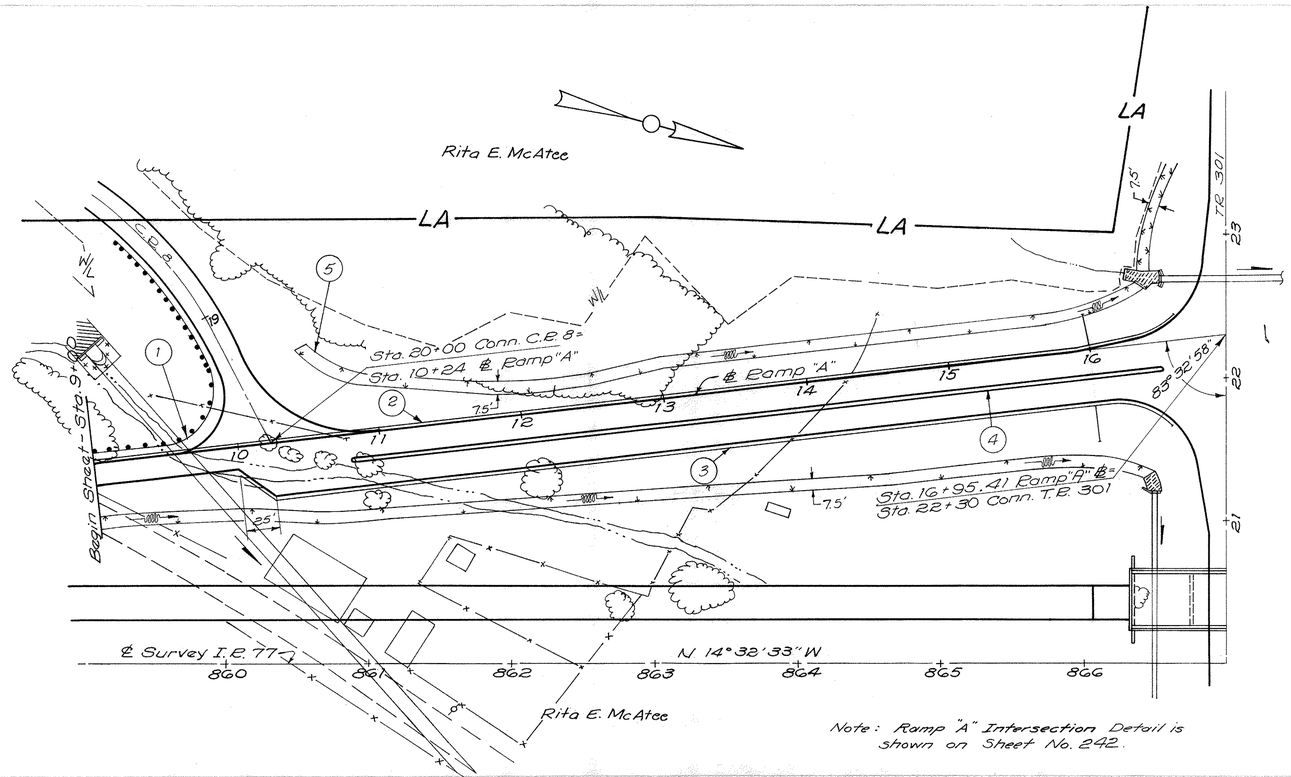
REF NO.	STATION TO STATION	SIDE	I-5 6" I-3 90° Bend Each	I-12 Std. Type 7 Lin. Ft.	I-12 Std. Type 8 Lin. Ft.	I-15 Dasp Lin. Ft.	I-1 6" I-3 Lin. Ft.	I-1 6" I-3 Mes.(R) Lin. Ft.	I-1 6" F-4 Lin. Ft.	529 I-10 DZ C.P. Lump Gl. Yds.
1	Sta. 0+00 ~ Sta. 9+00	Lt.	1			900	332	50	10	
2	Sta. 0+00 ~ Sta. 8+75	Lt.					320			
3	Sta. 8+80 ~ Sta. 9+00	Lt.								
4	Sta. 0+00 ~ Sta. 4+70	Rt.			470					
5	Sta. 4+70 ~ Sta. 6+00	Rt.		130						34.0 Lump
6	Sta. 3+00 ~ Sta. 8+16.6	Lt.								
7	Sta. 7+50	Lt.								
	TOTALS		1	130	470	900	852	50	10	Lump 34.0

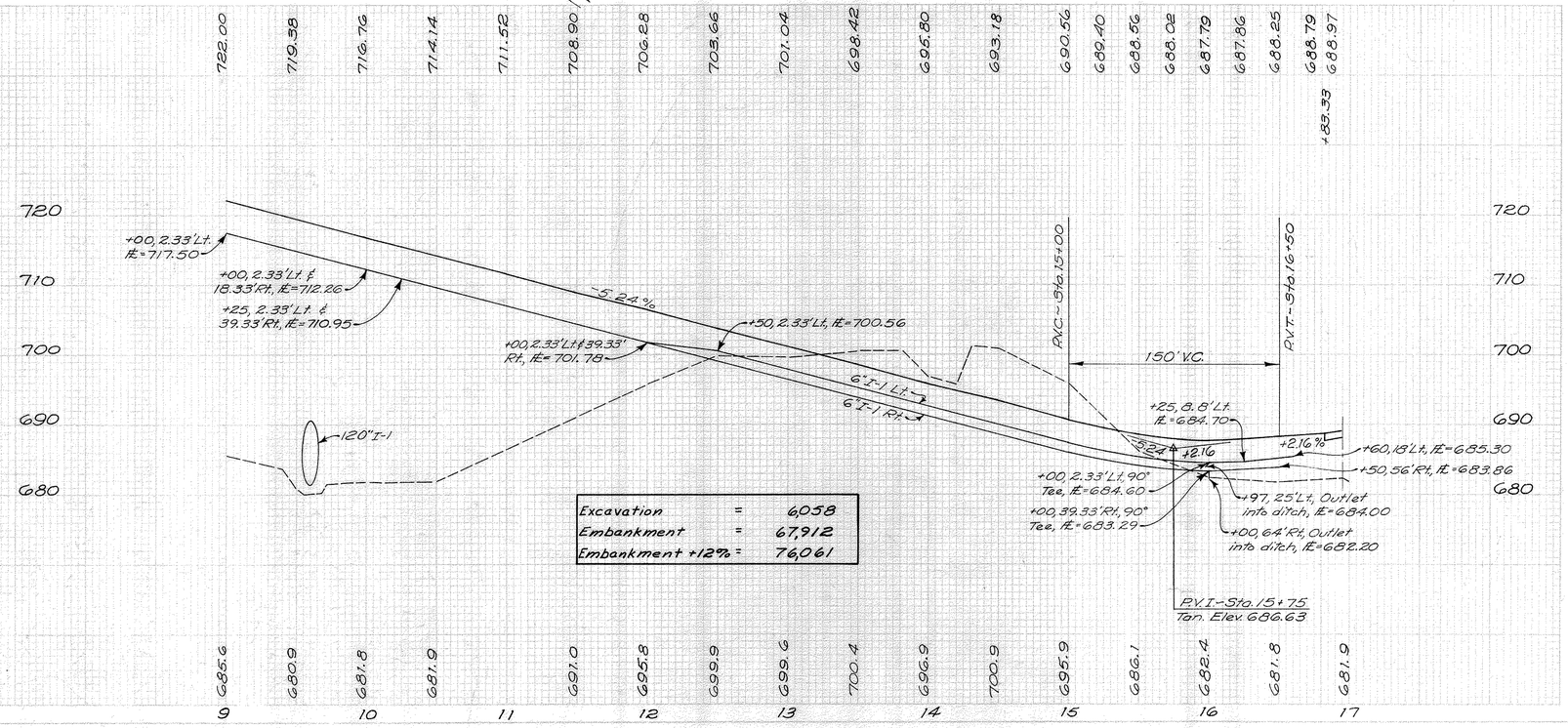
Sta. 0+00 to Sta. 9+00 Ramp "A"

WAS 77-15.70
NOB 77-0.00

FED. RD. DIVISION	STATE	PROJECT	TYPE FUNDS
2	OHIO	I-77-1(7)15	

214



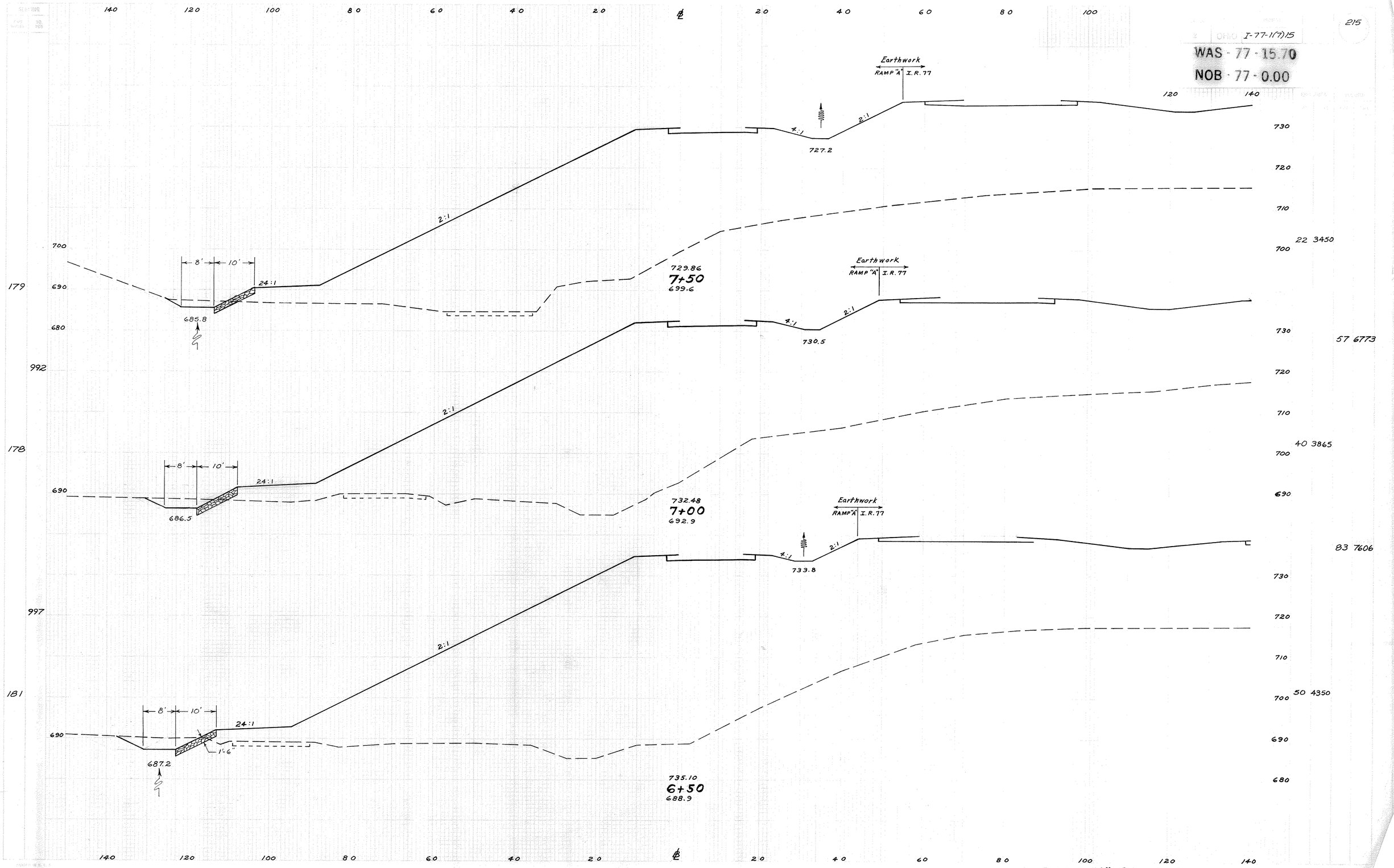


ESTIMATED QUANTITIES * See Nr. 6.4(7)

REF. NO.	STATION TO STATION	SIDE	I-5 6" I-3 Tee Each	I-5 6" I-3 45° Bend Each	I-5 I-15 6" I-3 M.6.4(7) Tee Each	I-5 I-21 Median Pvmt. Deap Lin. Ft.	L-10 Sod Sq. Yds.	I-1 6" I-3 Lin. Ft.	I-1 6" I-3 ✱ I-4 Lin. Ft.	I-1 6" I-4 Lin. Ft.
1	Sta. 9+00 - Sta. 10+87.28	Lt.								
2	Sta. 9+00 - Sta. 16+60	Lt.								
3	Sta. 10+00 - Sta. 16+50	Rt.								
4	Sta. 10+79 - Sta. 16+50	Rt.		1						
5	Sta. 15+50 - Sta. 16+34	Lt.								
SUB-TOTALS			1	1	1	137.5	190	350	426	10
			2	1	1	137.5	190	678		10
TOTALS			2	1	1	137.5	190	510	1028	426 20

Sta. 9+00 to Sta. 16+95.41 Ramp "A"

OHIO I-77-1(7)15
WAS - 77 - 15.70
NOB - 77 - 0.00



RAMP "A" Sta. 6+50 to Sta. 7+50

OHIO I-77-1(7)15
WAS-77-15.70
NOB-77-0.00

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

720 710 700 690 680

Earthwork
RAMP "A" | I.R. 77

2:1 4:1 2:1

718.0

For Earthwork Only

24:1

722.0
9+00
685.6

1097

720 710 700 690 680

2:1 4:1 2:1

721.0

8' 10'

194

684.5

724.62
8+50
686.4

1092

720 710 700 690 680

2:1 4:1 2:1

724.0

Earthwork
RAMP "A" | I.R. 77

8' 10'

24:1

1'-6"

199

685.2

727.24
8+00
689.4

1050

720 710 700 690 680

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

183 4522

271 7981

110 4098

250 7517

160 4020

169 6917

RAMP "A" Sta. 8+00 to Sta. 9+00

OHIO I-77-1(7)15
WAS 77-15.70
NOB 77-0.00

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

720 710 700 690 680 670

118 631 692 109 140 947

Earthwork C.R. 8 Ramp "A"

EARTHWORK RAMP "A" I.R. 77

4:1 2:1 711.8

714.14
10+50
681.9

Earthwork C.R. 8 Ramp "A"

EARTHWORK RAMP "A" I.R. 77

5:1 2:1 712.5

716.76
10+00
681.8

EARTHWORK RAMP "A" I.R. 77

4:1 2:1 715.0

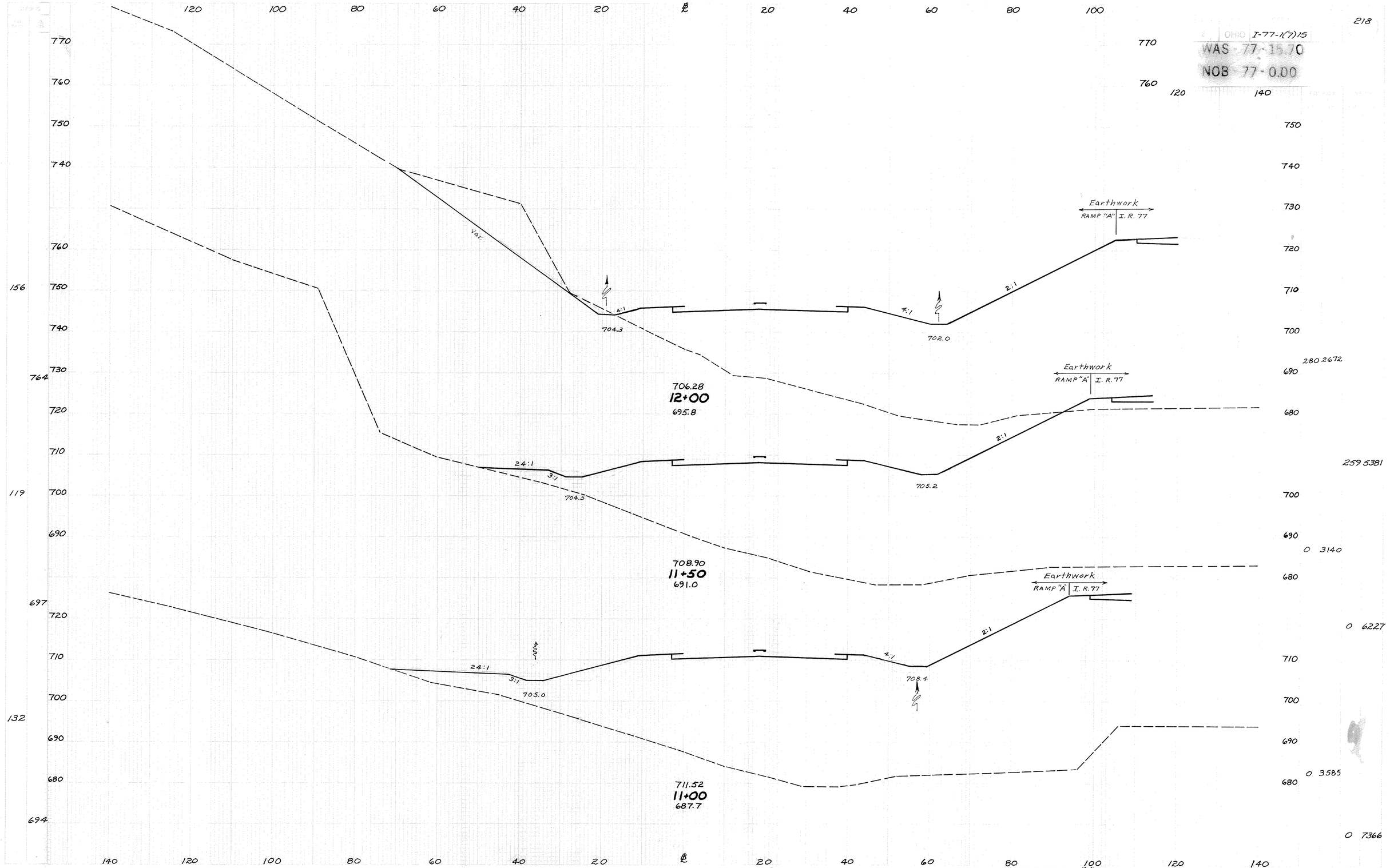
719.38
9+50
680.9

O 4370
O 7977
O 4245
O 7856
O 4240

169 8113

RAMP "A" Sta. 9+50 to Sta. 10+50

OHIO I-77-1(7)15
WAS 77-15.70
NOB 77-0.00



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

2 OHIO I-77-1(7)15
WAS - 77 - 15.70
NOB - 77 - 0.00

SCEEPING
L.F.D. W.S.D.H. SQ. YDS.

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

750 740 730 720 710 700 690 680 670

139 978 213 989 143 831

Earthwork RAMP "A" I. R. 77

Earthwork RAMP "A" I. R. 77

Earthwork RAMP "A" I. R. 77

Earthwork RAMP "A" I. R. 77

Var.

1½:1

8:1

1½:1

4:1

2:1

4:1

2:1

4:1

2:1

698.42
13+50
700.4

692.3

701.04
13+00
699.6

695.5

701.5

703.66
12+50
699.9

698.7

236 1690

9483331

788 1908

791 3674

66 2060

3204381

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

OHIO I-77-1(7)15
WAS - 77 - 15.70
NOB - 77 - 0.00

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

220

700 690 680 670 660 650 640 630 620 610 600 590 580 570 560 550 540 530 520 510 500 490 480 470 460 450 440 430 420 410 400 390 380 370 360 350 340 330 320 310 300 290 280 270 260 250 240 230 220 210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0

170 942

Var. 6:1 4:1

686.4

688.56
15+50
686.1

681.5

9'

EARTHWORK
RAMP "A" | I.R. 77

A A

700 690 680

44 1378

169 975

Var. 8:1 4:1

690.56
15+00
695.7

683.0

5'

A A

690 680

700 690 680 670

Earthwork
RAMP "A" | I.R. 77

491 2276

182 1003

2:1 4:1

693.18
14+50
700.9

685.9

740 730 720 710 700 690 680 670 660 650 640 630 620 610 600 590 580 570 560 550 540 530 520 510 500 490 480 470 460 450 440 430 420 410 400 390 380 370 360 350 340 330 320 310 300 290 280 270 260 250 240 230 220 210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0

Earthwork
RAMP "A" | I.R. 77

1106 2104

708 1092

179 883

1½:1 4:1

695.80
14+00
696.9

689.1

720 710 700 690 680 670 660 650 640 630 620 610 600 590 580 570 560 550 540 530 520 510 500 490 480 470 460 450 440 430 420 410 400 390 380 370 360 350 340 330 320 310 300 290 280 270 260 250 240 230 220 210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0

Earthwork
RAMP "A" | I.R. 77

1174 2562

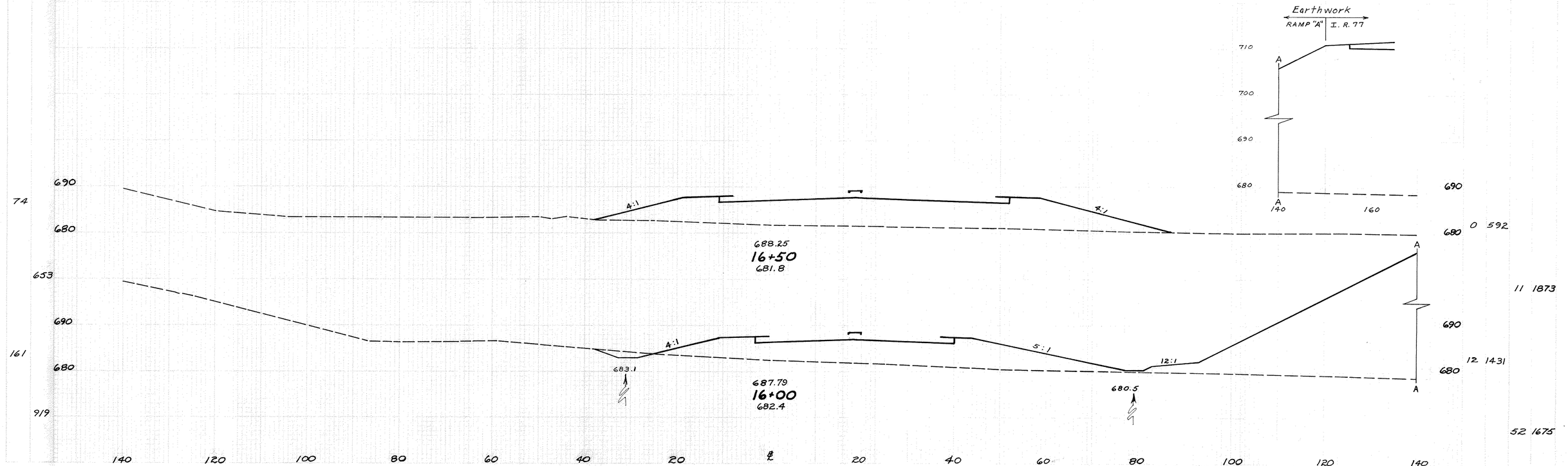
560 1675

737 3116

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

RAMP "A" Sta. 14+00 to Sta. 15+50

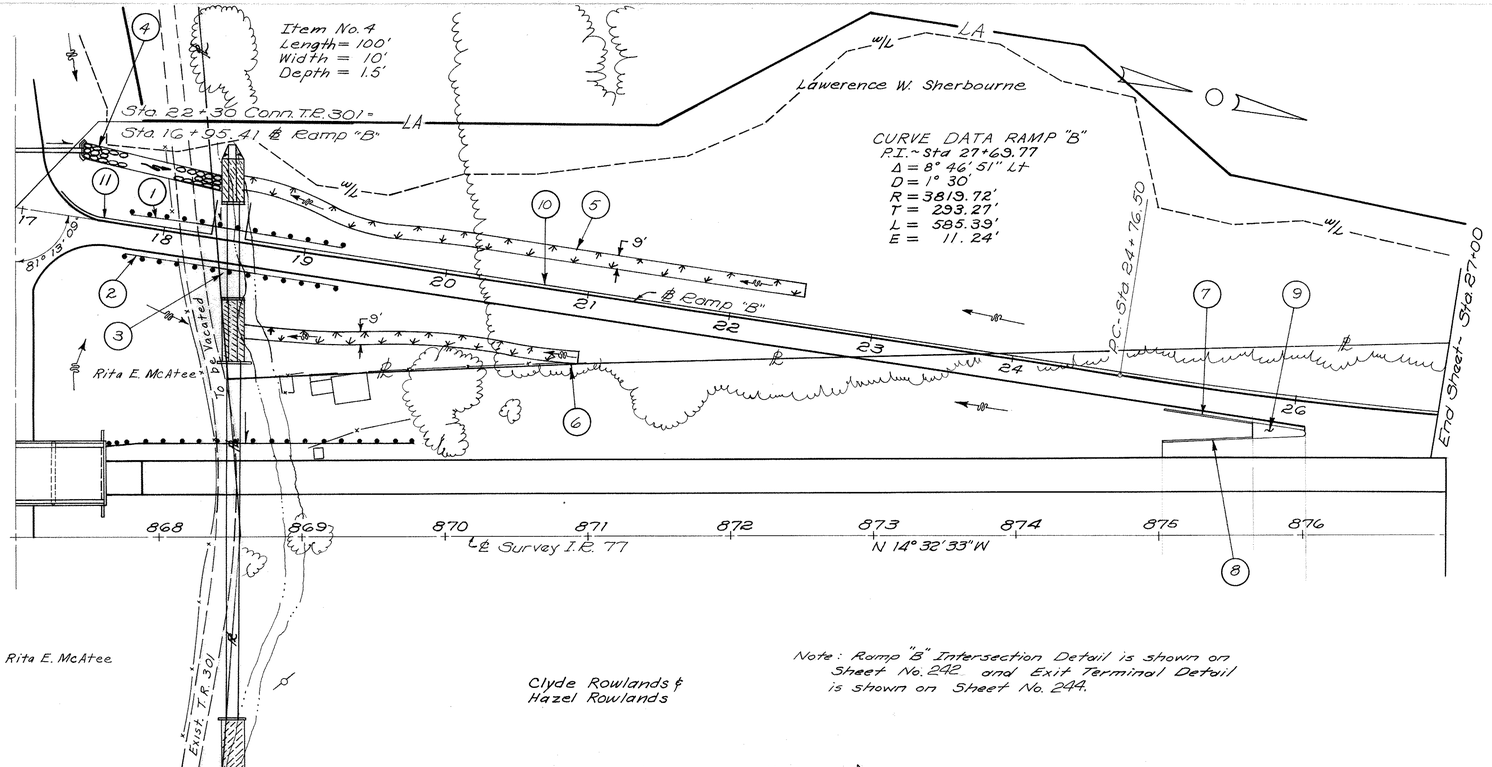
OHIO I-77-1(7)15
WAS - 77 - 15.70
NOB - 77 - 0.00

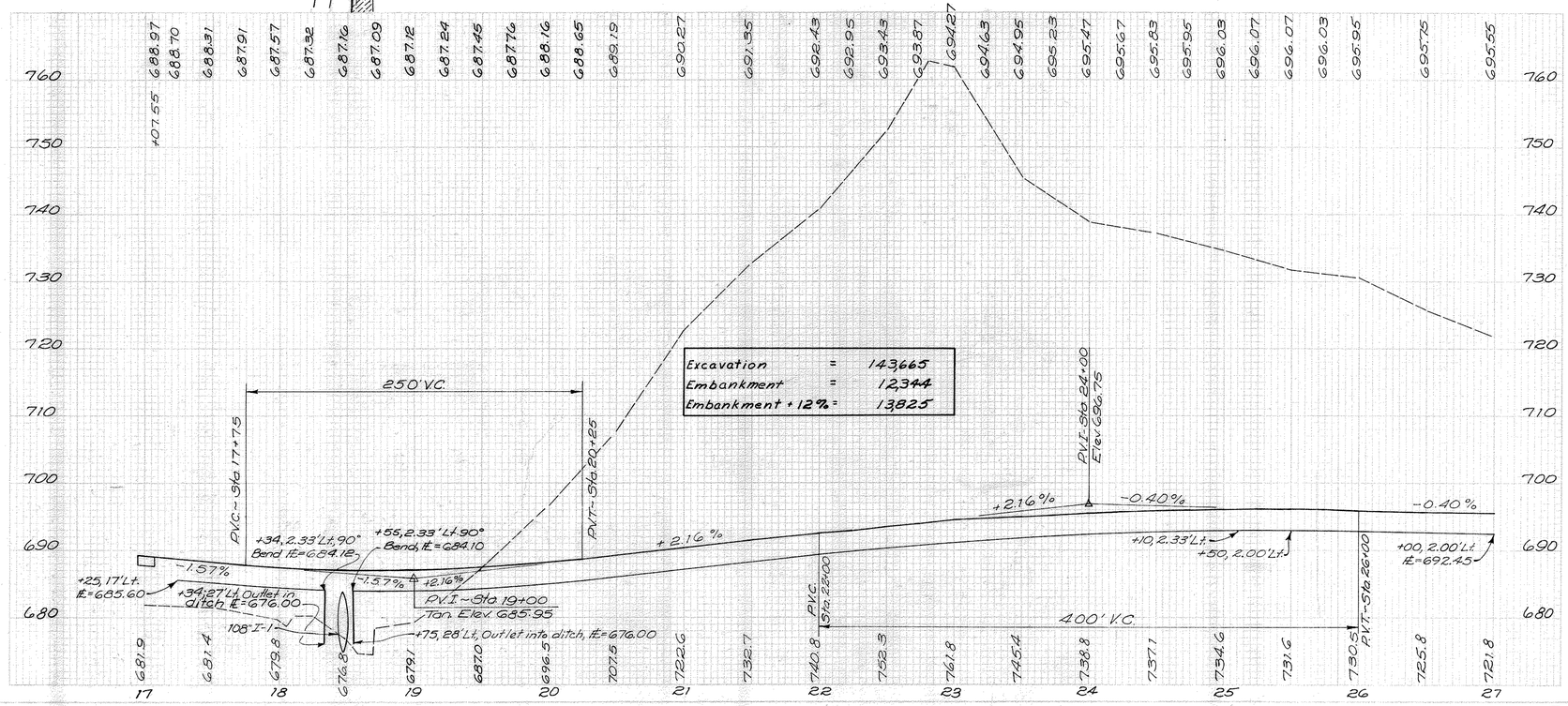


RAMP "A" Sta. 16+00 to Sta. 16+50

WAS · 77 · 15.70
NOB · 77 · 0.00

FED. SEC. DIVISION	STATE	PROJECT	TYPE FUNDS	222
2	OHIO	I-77-1(7) 15		





* Sec. M-6.4(a) with 1/3 Vitrified Liner as per plan

ESTIMATED QUANTITIES ** Sec. M-6.4(n)

MRK NO.	STATION TO STATION	SIDE	C.I.-"E" E-3	12 I-2	15 I-5	10 I-10	10 I-10	10 I-10	12 I-12	21 I-21	6" I-3	6" I-3	108" I-1
					6" I-3 90° Bend	Riprap	D.E.C.P.		Sta. Type G	Concrete Median Pvmt.	I-3	I-3 **	I-1
			CU. Yds.	CU. Yds.	Each	Sq. Yds.	CU. Yds.	Lin. Ft.		Sq. Yds.	Lin. Ft.	Lin. Ft.	Lin. Ft.
1	Sta. 17+75 ~ Sta. 19+25	Lt.											
2	Sta. 17+75 ~ Sta. 19+25	Rt.		96	2	13	135						70
3	Sta. 18+47	℄						56					
4	Sta. 17+36 ~ Sta. 18+35	Lt.											
5	Sta. 18+50 ~ Sta. 22+50	Lt.											
6	Sta. 18+66 ~ Sta. 21+00	Rt.							G5				
7	Sta. 23+10.5 ~ Sta. 25+75.5	Rt.							G5				
8	Sta. 875+02 ~ Sta. 875+68	Lt.											
9	Sta. 25+76 ~ Sta. 26+40.82	Rt.								26			
10	Sta. 18+55 ~ Sta. 27+00	Lt.				1					100	760	10
11	Sta. 17+25 ~ Sta. 18+34	Lt.				1					129		10
	TOTALS			96	21.3	2	135	56	130	26	229	760	20

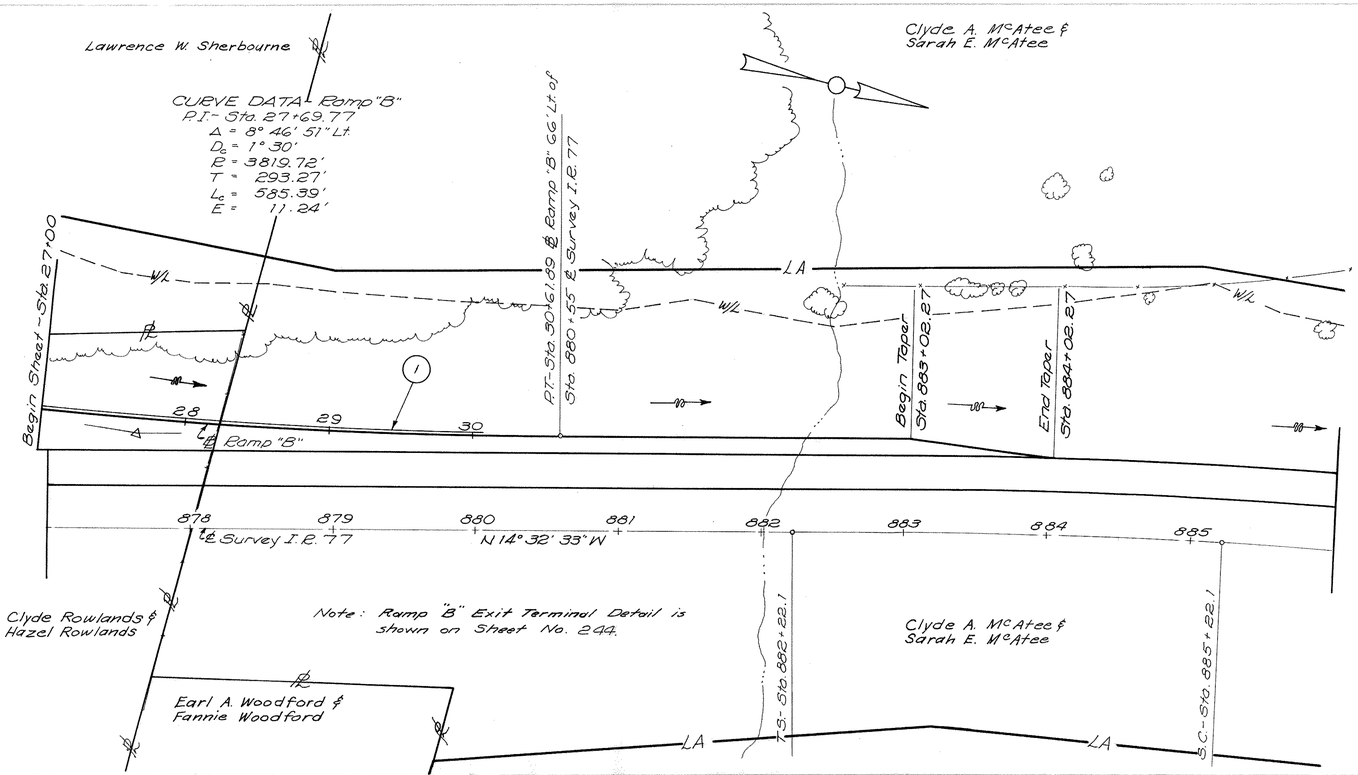
SEE SHEET NO.
269
399
234
70
300 682
70

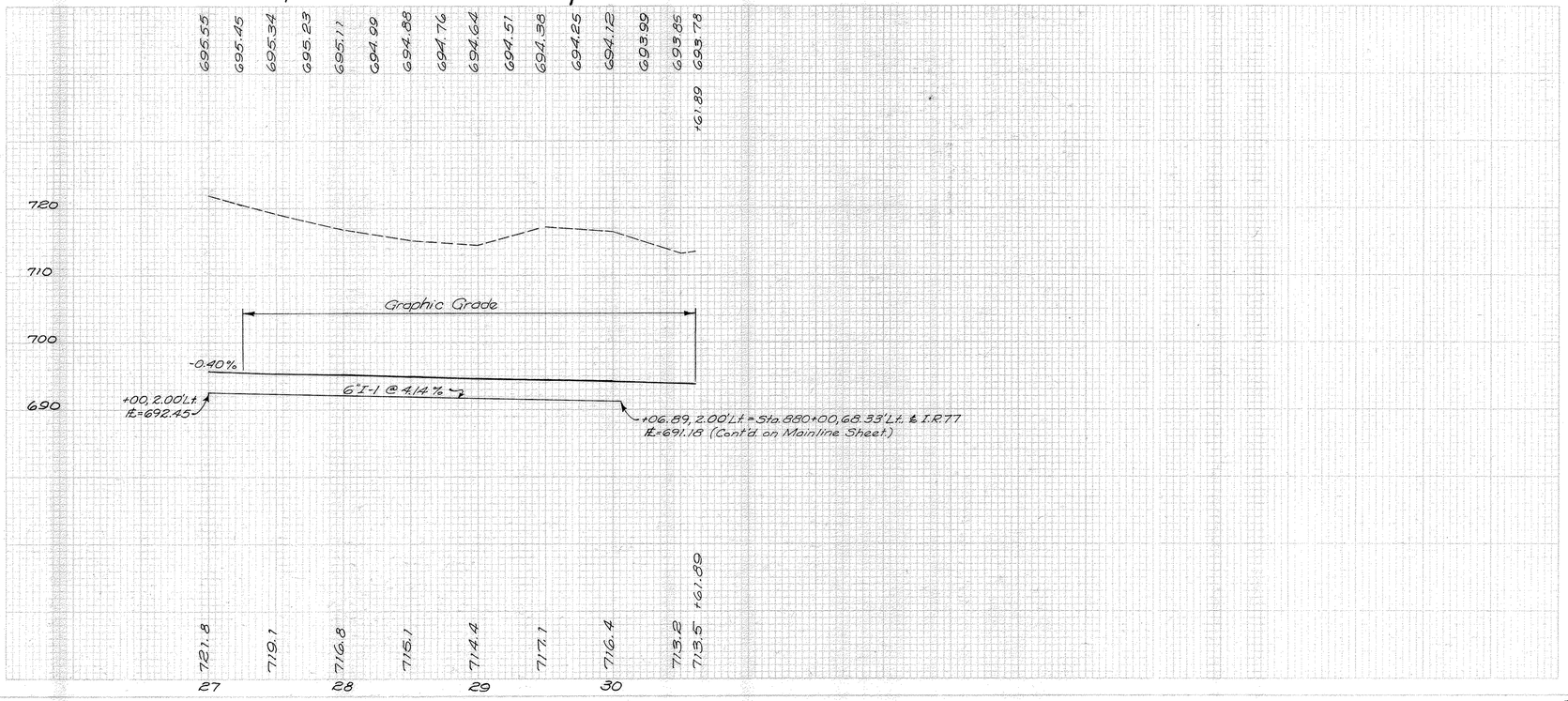
Sta. 17+00 to Sta. 27+00 Ramp "B"

WAS - 77 - 15.70
NOB - 77 - 0.00

FED. RD. DIVISION	STATE	PROJECT	TYPE FUNDS
2	OHIO	I-77-1(7)15	

223





ESTIMATED QUANTITIES

BAR NO.	STATION TO STATION	SIDE	
1	Sta. 27+00 - Sta. 30+06.89	Lt.	

F.I
#8
Mc24(h)
Lin. Ft.
307

TOTALS 307

SEE SHEET NO.

Sta. 27+00 to Sta. 30+61.89 Ramp "B"

224

I-77-1(7)15

WAS 77-15.70

NOB 77-0.00

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

710 700 690 680 670

2:1 8:1 4:1 4:1

685.0

688.16
20+00
696.5

177 944

RAMP "B" I.R.77 EARTHWORK

1194 726

2:1 6:1 4:1 3:1

685.3 680.2

687.45
19+50
687.0

163 933

RAMP "B" I.R.77 EARTHWORK

1237 1644

142 1050

3:1 3:1 3:1 12:1 2:1

680.0 677.0

687.12
19+00
679.1

173 1056

RAMP "B" I.R.77 Earthwork

175 2163

47 1286

95 2469

50:1 2:1 2:1 12:1 12:1 2:1

677.0 676.0

687.16
18+50
676.8

207 1167

RAMP "B" I.R.77 EARTHWORK

80 2275

+41, End Dumped Rock

10' 3:1 3:1 3:1 24:1 2:1

1.5' 677.4 677.5

687.57
18+00
679.8

195 1081

56 1380

30 1167

44 2877

10' 4:1 Var. Var.

679.4

688.31
17+50
681.4

194

17 1940

Ramp "B" I.R.77 Earthwork

+42, Begin Dumped Rock

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

RAMP "B" Sta. 17+50 to Sta. 20+00

OHIO I-77-1(7)15
WAS 77-15.70
NOB 77-0.00

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

225

740 730 720 710 700 690

200

1½:1

8:1

Var.

689.2

691.35
21+50
732.9

EARTHWORK
RAMP "B" I.R.77

6185 0

1092

1½:1

8:1

Var.

688.0

690.27
21+00
722.6

EARTHWORK
RAMP "B" I.R.77

9815 0

4415 0

193

1042

1½:1

6:1

4:1

685.8

689.19
20+50
707.8

EARTHWORK
RAMP "B" I.R.77

6435 122

2535 132

182

997

3453 794

RAMP "B" Sta.20+50 to Sta.21+50

I-77-1(7)15
WAS 77-15.70
NCB 77-0.00

226

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

800 790 780 770 760 750 740 730 720 710 700 690

A A

12:1

½:1

1½:1

693.43
22+50
749.7

EARTHWORK
RAMP "B" I.R. 77

8:1 Var.

691.5

13,700 O

19,889 O

7780 O

12,931 O

1½:1

692.43
22+00
740.8

8:1 Var.

690.4

288 1375 207 1306

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

800 790 120 140

820 810 800 790 780 770

780 770 760 750 740 730 720 710 700 690

200 180 160

A A

1:1

140

RAMP "B" Sta.22+00 to Sta.22+50

SECTIONING
LINEAR FEET | CU. YDS.

OHIO I-77-1(7)15
WAS 77 15 70
NCB 77 - 0.00

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

820
810
800
790
780
770
760
750
740
730
720
710
700
690

A
A
12:1
½:1
1½:1
A
A
1:1
220 200 180 160 140

EARTHWORK
RAMP "B" I.R. 77

8:1
Var.
692.4

694.27
23+00
761.8

309
1658

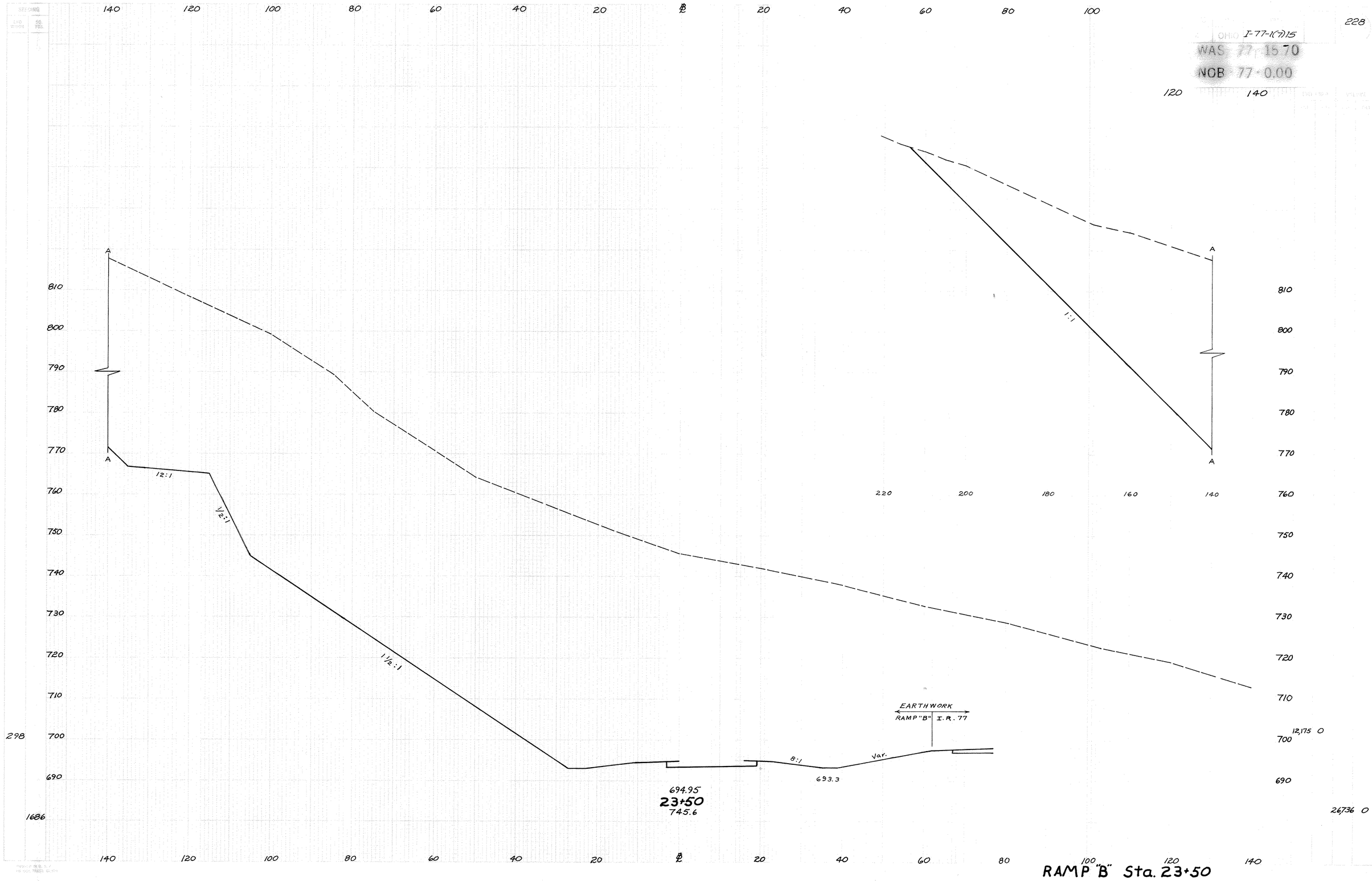
16,700 O
28,148 O

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

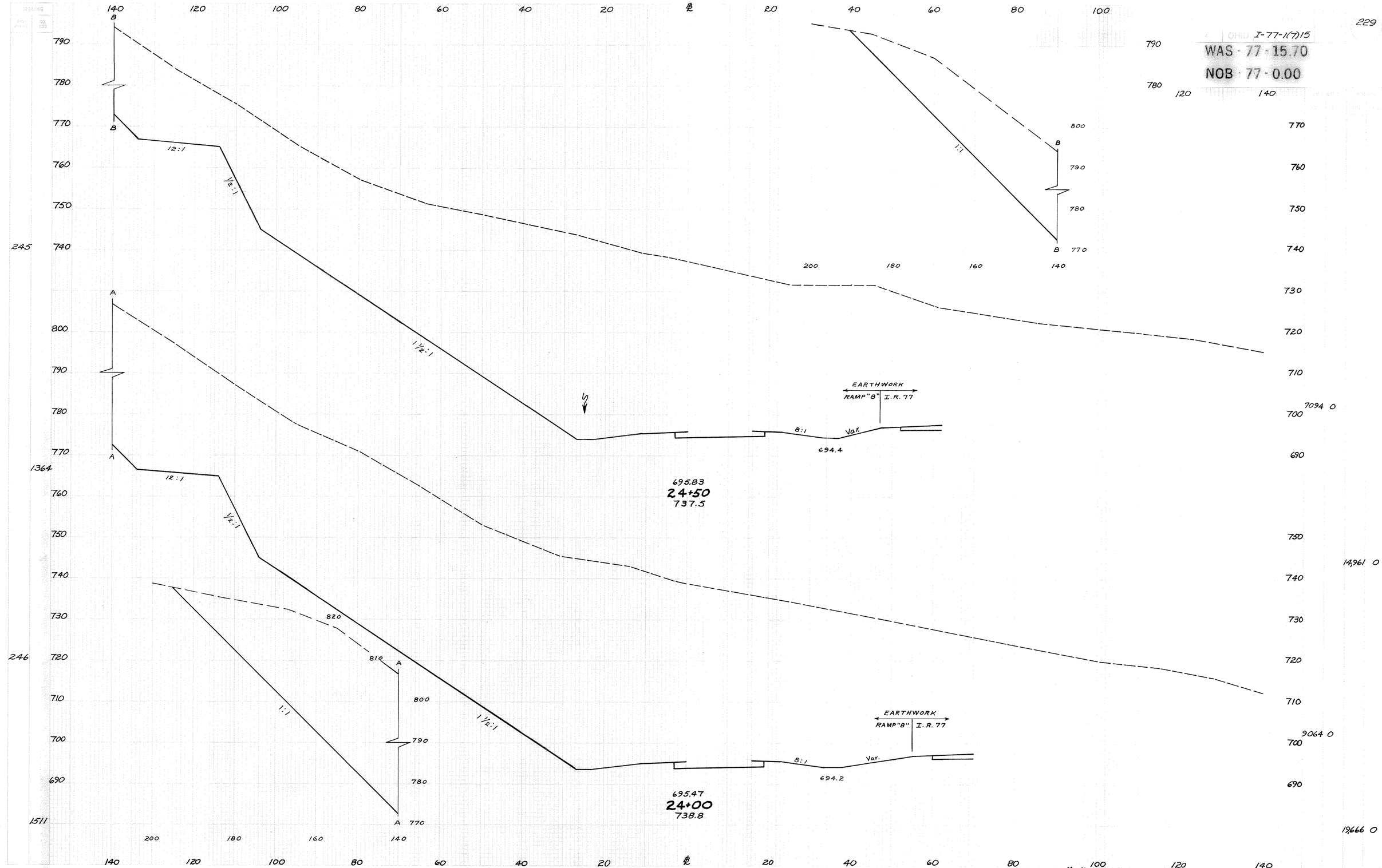
RAMP "B" Sta. 23+00

SEEDING
LIME TONS | SQ. YDS.

OHIO I-77-1(7)15
WAS 77-15.70
NOB 77-0.00



I-77-1(7)15
WAS - 77 - 15.70
NOB - 77 - 0.00

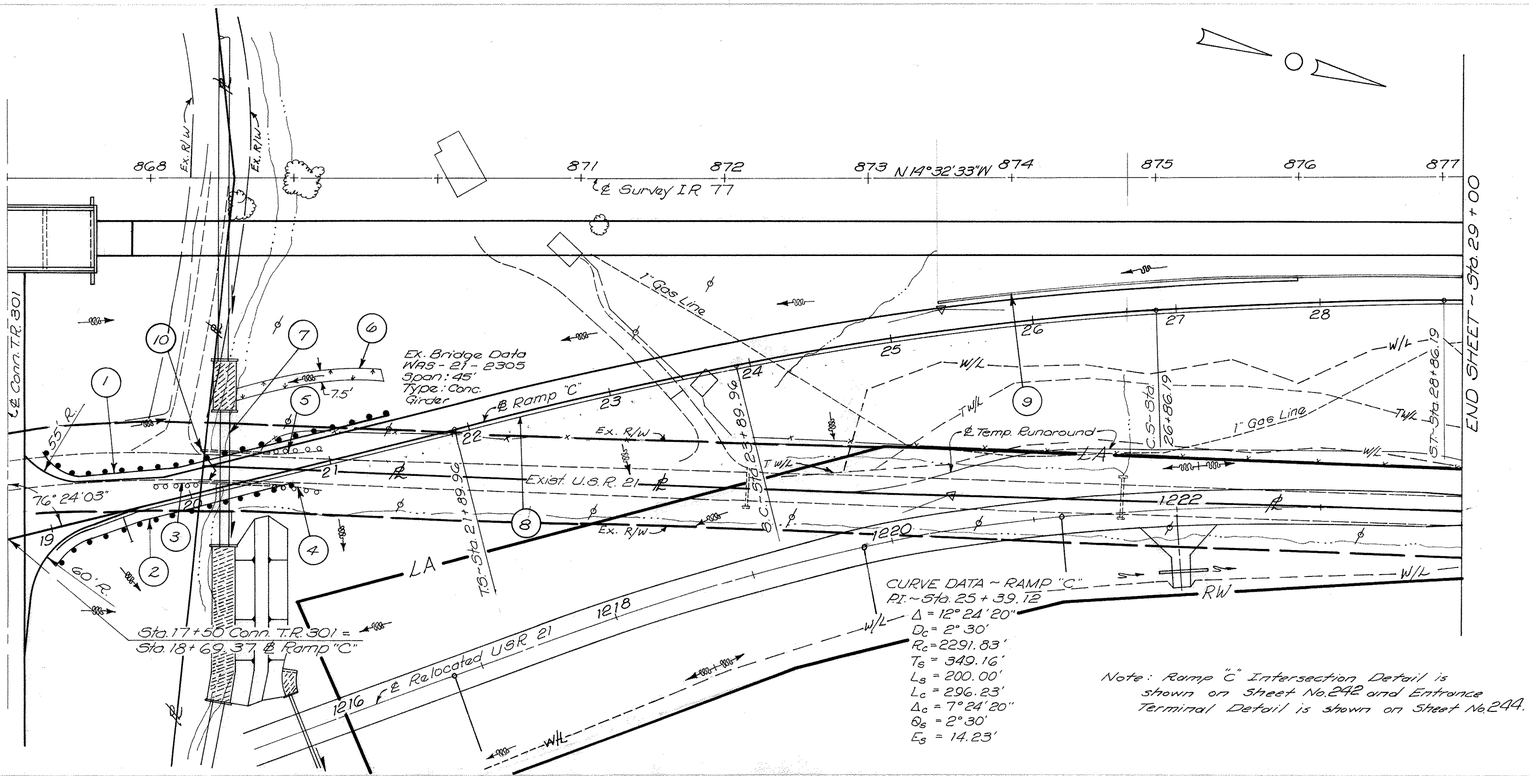


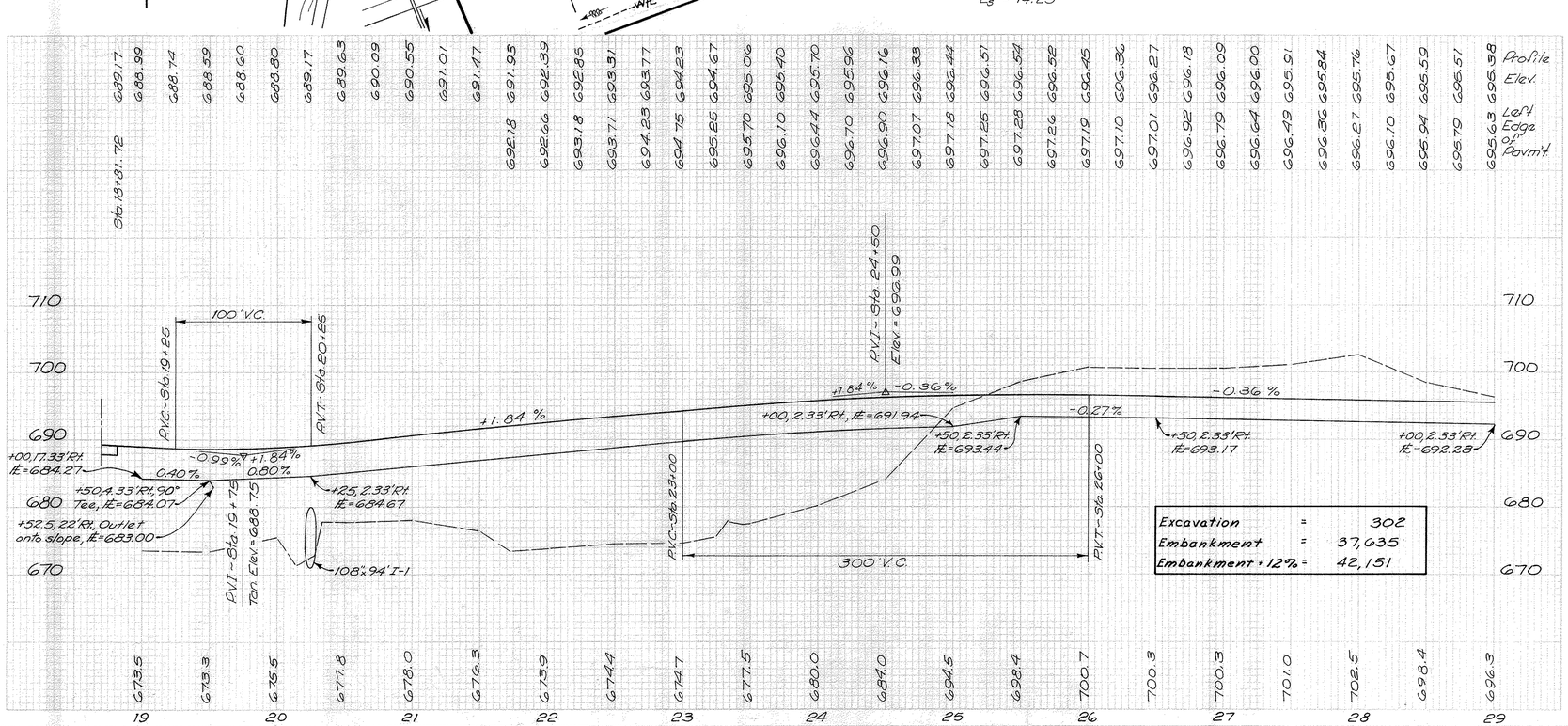
RAMP "B" Sta. 24+00 to Sta. 24+50

WAS - 77-15.70
NOB - 77-0.00

TEN. NO. DIVISION	STATE	PROJECT	TYPE FIELDS
2	OHIO	I-77-1(77)15	

230





* Sec. M-6.4(C) with 1/2 vitrified liner, as per plan ** Sec. M-6.4(A)

ESTIMATED QUANTITIES

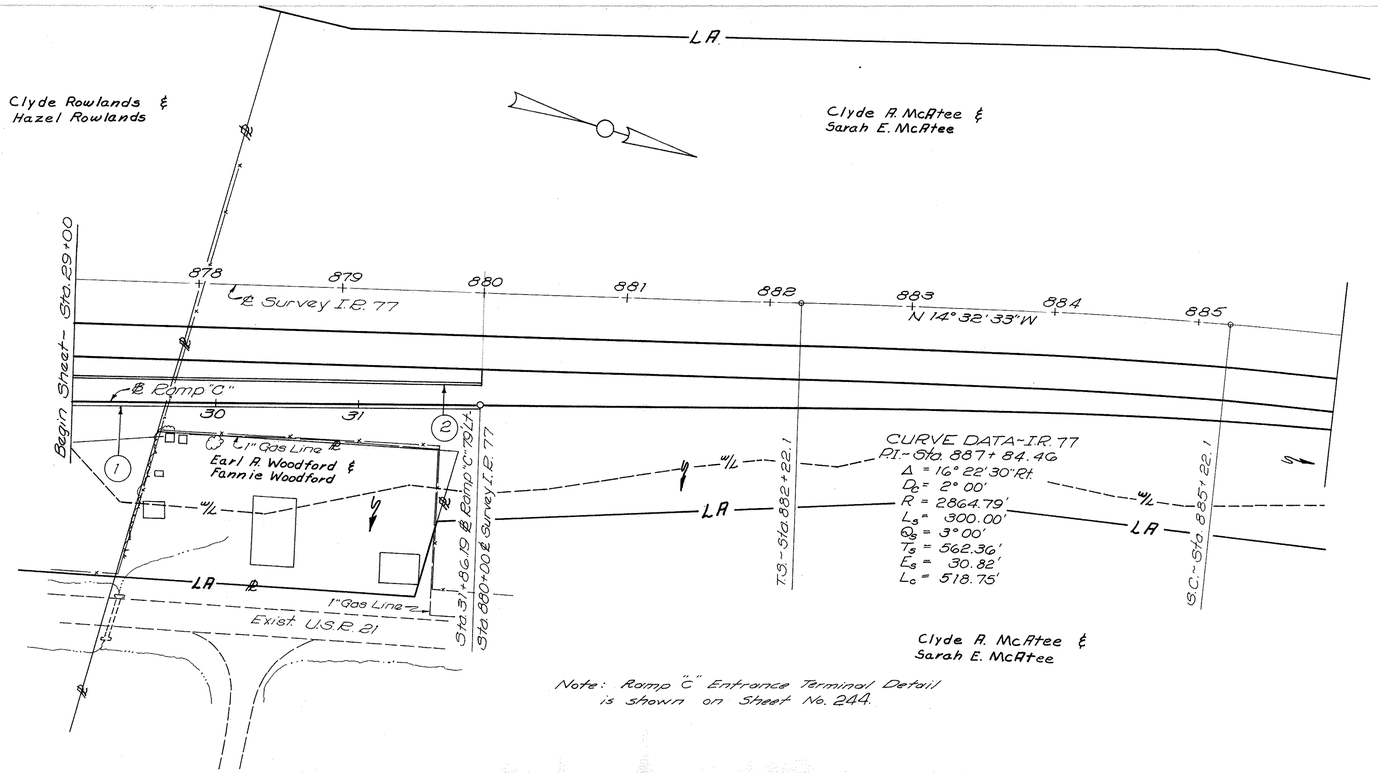
| REF. NO. | STATION TO STATION | SIDE | C.I.E." | E-3 | T-2 | T-5 | T-10 | T-15 | T-15 | L-10 | I-1 | | |

WAS 77-15.70
NOB 77-0.00

FED. RD. DIVISION	STATE	PROJECT	TYPE FUNDS
2	OHIO	I-77-1(7)15	

231

SEE SHEET NO.



Note: Ramp "C" Entrance Terminal Detail is shown on Sheet No. 244.

ESTIMATED QUANTITIES

REF. NO.	STATION TO STATION	SIDE	1"-1 ℄ Type 8 (M.6.4.1) Lin. Ft.
1.	Sta. 29+00 - Sta. 31+86.19	Rt.	286
2.	Sta. 29+00 - Sta. 31+86.19		
TOTALS			286 286.19

Sta. 29+00 to Sta. 31+86.19 Ramp "C"

I-77-1(7)15
WAS-77-15.70
NOB-77-0.00

232

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

Earthwork I.R.77 Ramp "C"

690
680
670

3:1 3:1 4:1 50:1

680.2

Earthwork Carried On U.S.R. 21

242 858 — 690.55 — 21+00 — 678.0 — 0 2638

Earthwork I.R.77 Ramp "C"

2:1 2:1 3:1 50:1

672.3

Earthwork Carried On U.S.R. 21

256 836 — 689.98 — 20+69 — 677.9 — 6 2717

Earthwork I.R.77 Ramp "C"

Earthwork Only

2:1

Top of dike ℄

Note: Hatched area indicates earthwork added for dike & channel embankment

174 532 — 689.34 — 20+34 — 672.8 — 13 2661 — 10 1950

Add For Dike & Channel Embankment → 1062

12:1 12:1

672.4

225 — 688.95 — 20+12 — 673.1 — 41 1642 — 82 1745

Earthwork I.R.77 Ramp "C"

672.8

191 789 — 688.80 — 20+00 — 675.5 — 37 573 — 86 735

Earthwork T.R.301 Ramp "C"

673.0

93 — 688.59 — 19+50 — 673.3 — 96 1416 — 18 796

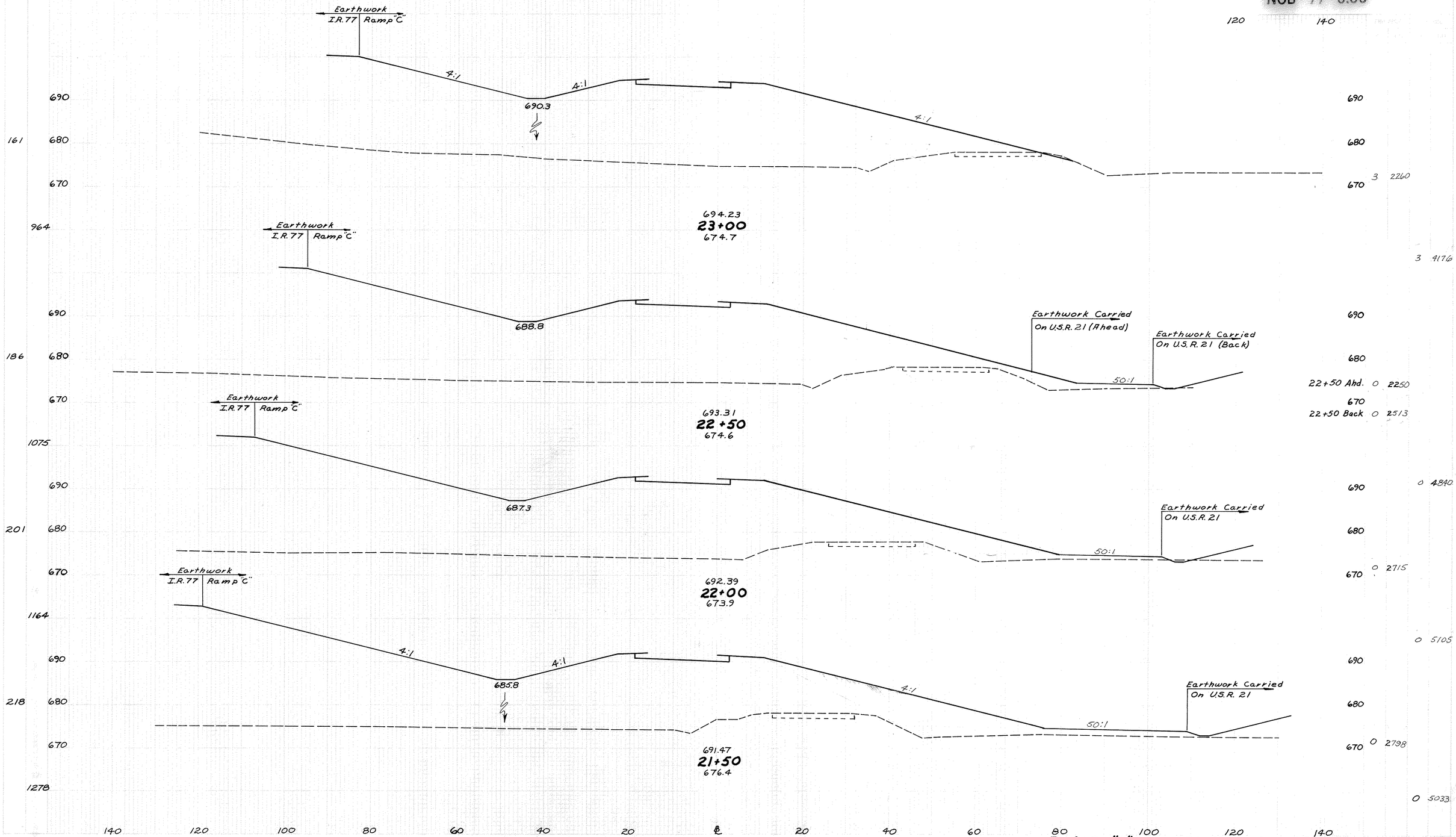
Note: Hatched area indicates earthwork added for dike & channel embankment

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

RAMP "C" Sta. 19+50 to Sta. 21+00

I-77-1(7)15
WAS 77-15.70
NOB 77-0.00

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



RAMP "C" Sta. 21+50 to Sta. 23+00

I-77-1(7)15
WAS - 77 - 15.70
NOB - 77 - 0.00

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

710 700 690 680 670

Earthwork
I.R.77 | Ramp "C"

4:1 4:1 694.0 4:1

127

696.16
24+50
683.9

0 388

717 700 690 680 670

Earthwork
I.R.77 | Ramp "C"

4:1 4:1 693.1

131

695.70
24+00
680.4

0 2160

0 1345

733 690 680 670

Earthwork
I.R.77 | Ramp "C"

4:1 4:1 691.8

133

695.06
23+50
677.5

0 2639

0 1690

817

106 3611

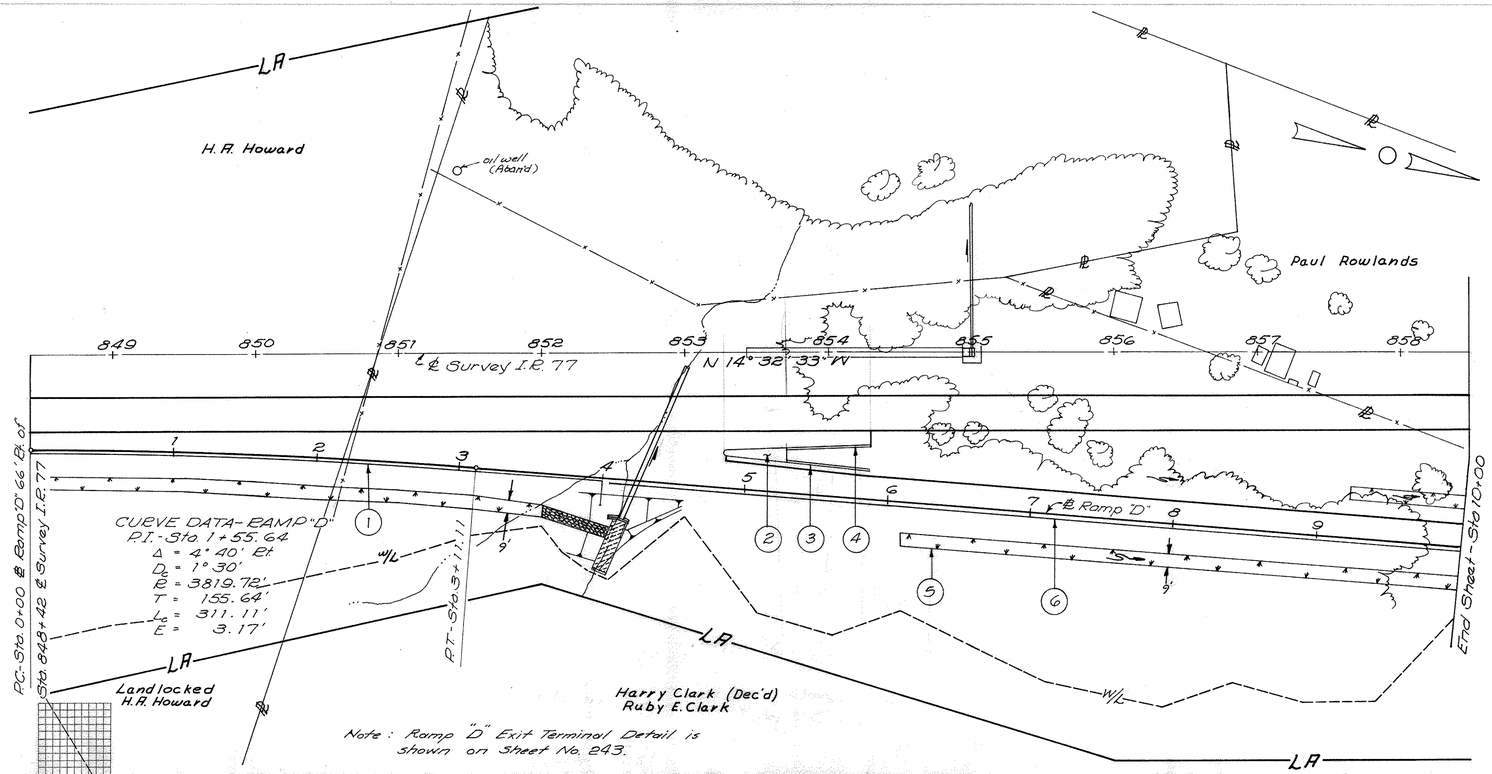
140 120 100 80 60 40 20 ℄ 20 40 60 80 100 120 140

RAMP "C" Sta. 23+50 to Sta. 24+50

WAS - 77 - 15.70
NOB - 77 - 0.00

FED. RD. DIVISION	STATE	PROJECT	TYPE FUNDS
2	OHIO	I-77-1(7)15	

235



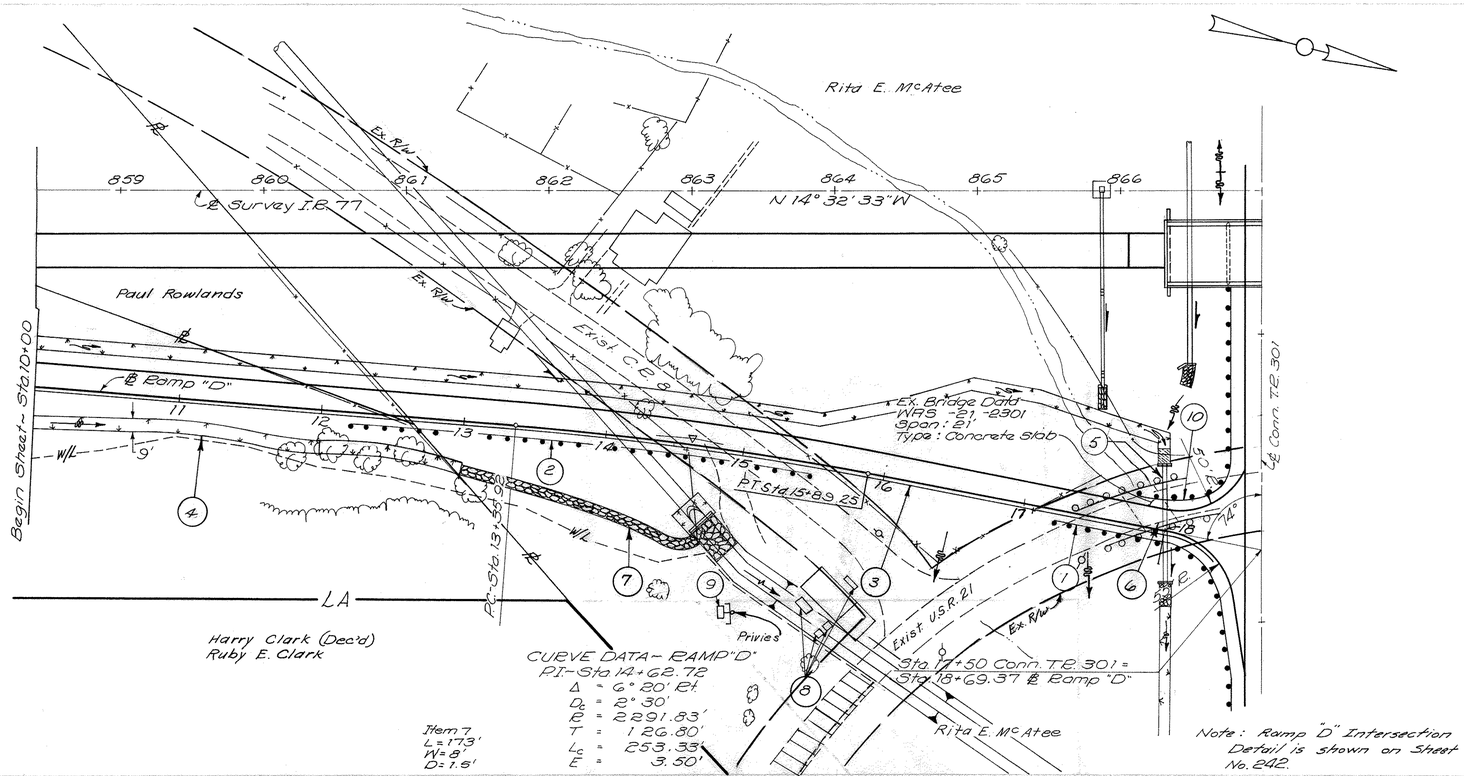
ESTIMATED QUANTITIES

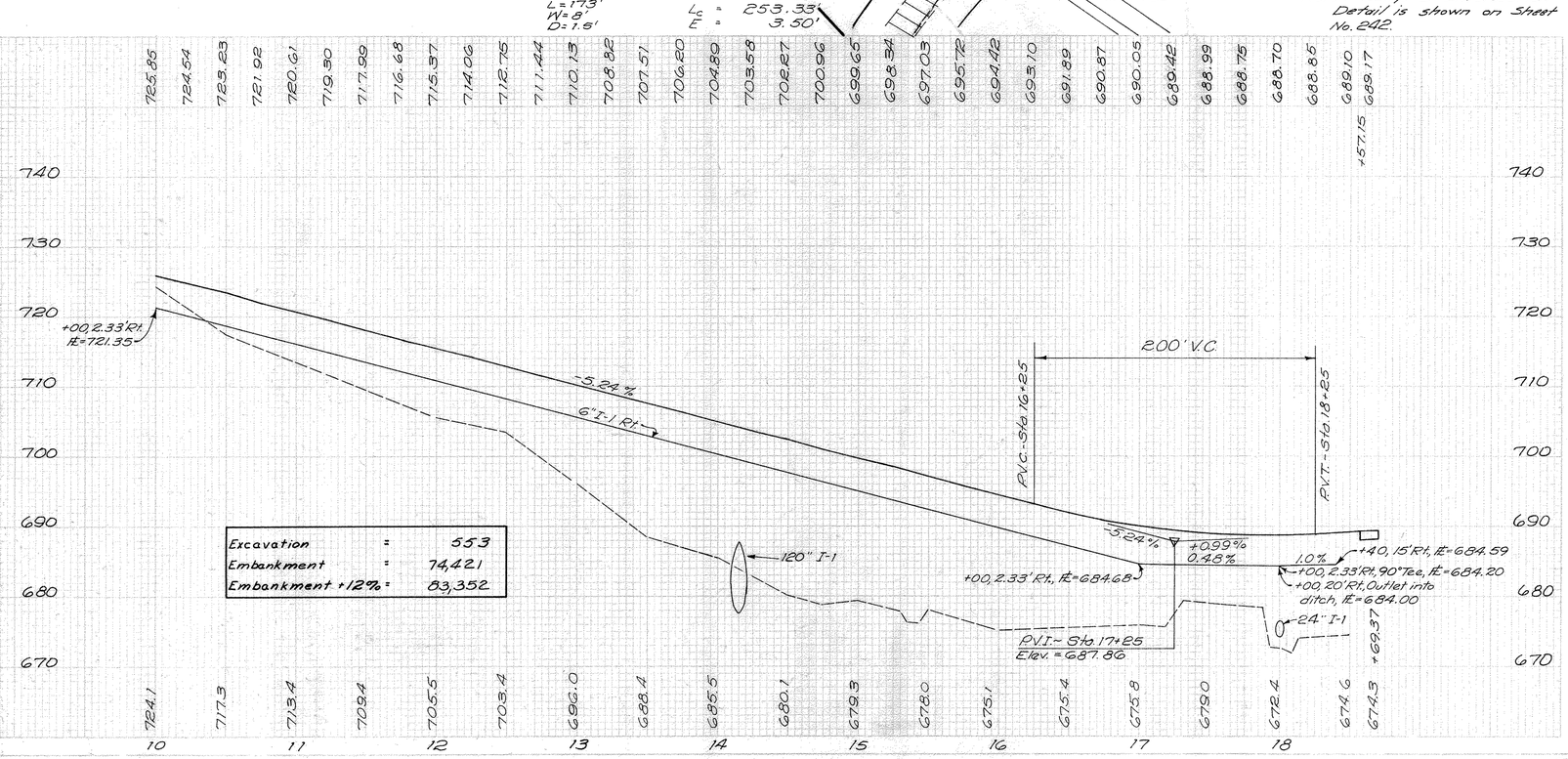
REF. NO.	STATION TO STATION	SIDE	I-1 6" (6"x3" I-3 (45°) F-4	I-1 6" Lin. Ft.	I-10 Sod Sq. Yds.	I-12 Curb, Type 10 Concr. Median Pvmt. Sq. Yds.	I-21 Conc. Median Pvmt. Sq. Yds.	I-5 6"x3" 90° Bend M-64.1(10) Each	I-5 6"x3" 90° Bend M-64.1(10) Each
1	Sta. 0+00 - Sta. 4+00	Rt.	416	10					
2	Sta. 4+83 - Sta. 5+28	Lt.							
3	Sta. 5+28 - Sta. 5+83	Lt.							
4	Sta. 5+87 - Sta. 5+88	Lt.							
5	Sta. 6+10 - Sta. 10+00	Rt.	595	10	390	55	34		
6	Sta. 4+05 - Sta. 10+00	Rt.				55			
TOTALS			595	416	10	390	110	34	1

Sta. 0+00 to Sta. 10+00 Ramp "D"

WAS 77 15.70
NOB 77 0.00

FED. HWY. DIVISION	STATE	PROJECT	SHEET NO.
2	OHIO	I-77-1(7)15	236





Excavation	553
Embankment	74,421
Embankment +12%	83,352

ESTIMATED QUANTITIES * Sec. M-6.6(b) or Sec. M-6.8(b)

| ITEM NO. | 202 | 202 | 204 | 304 | 304 | 304

237

OHIO I-77-1(7)15
WAS - 77 - 15.70
NOB - 77 - 0.00

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

790 780 770 760 750 740 730 720 710

EARTH WORK
I. R. 77 | RAMP "D"
4:1
732.3
733.71
8+50
735.0
Var.
1½:1
165 975

780 770 760 800 790 780 770 760

1130 419

EARTHWORK
I. R. 77 | RAMP "D"
735.2
736.33
8+00
734.4
186 953

750 740 730 720 760 750 740 730 720

800 790 780 770 760 750 740 730 720

1055 459

1799 773

EARTHWORK
I. R. 77 | RAMP "D"
4:1
737.5
738.86
7+50
737.8
167

888 376

2023 813

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

RAMP "D" Sta. 7+50 to Sta. 8+50

I-77-1(7)15
WAS - 77 - 15.70
NOB - 77 - 0.00

238

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

760 750 740 730 720 710

101 581 108 800 180 997 179 956

EARTHWORK
I. R. 77 | RAMP "D"

4:1 6:1 2:1

722.1 721.3

723.23
10+50
717.3

EARTHWORK
I. R. 77 | RAMP "D"

4:1 1½:1

724.3

725.85
10+00
724.1

EARTHWORK
I. R. 77 | RAMP "D"

4:1 1½:1

727.0

728.47
9+50
729.5

EARTHWORK
I. R. 77 | RAMP "D"

4:1 1½:1

723.8

731.09
9+00
737.0

760 750 120 140

780 770 760 34 930

790 780 770 760 184 1382

790 780 770 760 165 563

822 949

790 780 770 760 750 740 730 720 723 462

1934 711

1366 306

740 730 720 2311 671

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

RAMP "D" Sta. 9+00 to Sta. 10+50

I-77-1(7)15

WAS · 77 · 15.70

NOB · 77 · 0.00

239

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

730 720 710 700 690 706 710 700 690 710 700 690 710 700 690 710 700 690 720 710 700

134 120 642 111 575 96 169 86 519

EARTHWORK
I.R. 77 | RAMP "D"

4:1
708.9
2:1
12:1
8'
2:1
703.2
+00 Start Dumped Rock

710.13
13+00
696.0

711.4
3:1
708.2

712.75
12+50
703.4

714.2
4:1
711.7

715.37
12+00
705.5

716.6
715.2

717.99
11+50
709.4

4:1
719.4
4:1
718.7

720.61
11+00
713.4

730 750 740 750 760 750 770 760 750 770 760 750 740 730 720 710 700

25 2692
44 4433
23 2096
29 3533
8 1720
7 2831
0 1337
0 2370
0 1223
31 1994

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

RAMP "D" Sta. 11+00 to Sta. 13+00

I-77-1(7)15
WAS 77-15.70
NOB 77-0.00

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

700 690 680 670

A — 4:1 — 695.8 — 3:1 — Earthwork Ramp "D" Channel — 50:1 — Earthwork I. R. 77 Ramp "D" — A

EARTHWORK I. R. 77 RAMP "A"

697.03
15+50
678.0

698.2

2:1

EARTHWORK I. R. 77 RAMP "D"

Earthwork Ramp "D" Channel

30:1

699.65
15+00
679.3

701.0

2:1

+75 End Dumped Rock

8'

681.7

EARTHWORK I. R. 77 RAMP "D"

702.27
14+50
680.1

703.6

8'

688.3

EARTHWORK I. R. 77 RAMP "D"

704.89
14+00
685.5

4:1

706.2

2:1

8'

696.5

707.51
13+50
688.4

157 894 165 981 188 1006 174 883 144 722

0 3959 0 7152 0 3765 56 6982 60 3776 95 6678 43 3436 62 6144 24 3200 45 5456

RAMP "D" Sta. 13+50 to Sta. 15+50

J-77-1(7)15
WAS · 77 · 15.70
NOB · 77 · 0.00

241

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

690
680
670

203 | 680 | 670

B — 2:1 — 24:1 — 675.5 — 12:1 — 2:1 — Earthwork Ramp "D" Channel — 2:1 — 12:1
B

688.70
18+00
672.4

I.R. 77 RAMP "D" EARTHWORK
B 700 690 680
B

0 2118

1094 | 670

EARTHWORK I.R. 77 RAMP "D"
A — 2:1 — 3:1 — 675.7 — 3:1 — Earthwork Ramp "D" Channel — 50:1
A

688.99
17+50
679.0

180 160 I.R. 77 RAMP "D" EARTHWORK A 700 690 680
140

0 3794

191 | 670

1058 | 190 | 670

2:1 — 24:1 — 678.0 — 4:1 — 4:1 — Earthwork Ramp "D" Channel — 50:1

690.05
17+00
675.8

I.R. 77 RAMP "D" EARTHWORK

0 4158

180 160 140

680
670

0 2512

1000 | 690

2:1 — 4:1 — 4:1 — Earthwork Ramp "D" Channel — 50:1

0 4740

EARTHWORK I.R. 77 RAMP "D"

170 | 680 | 670

679.5

691.88
16+50
675.4

0 2607

933 | 690

3:1 — 4:1 — 4:1 — Earthwork Ramp "D" Channel — 50:1

0 5761

688.3

166 | 680 | 670

694.41
16+00
675.1

0 3615

897

0 7013

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

RAMP "D" Sta. 16+00 to Sta. 18+00

WAS - 77 - 15.70
NOB - 77 - 0.00

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	I-77-1(7)15	

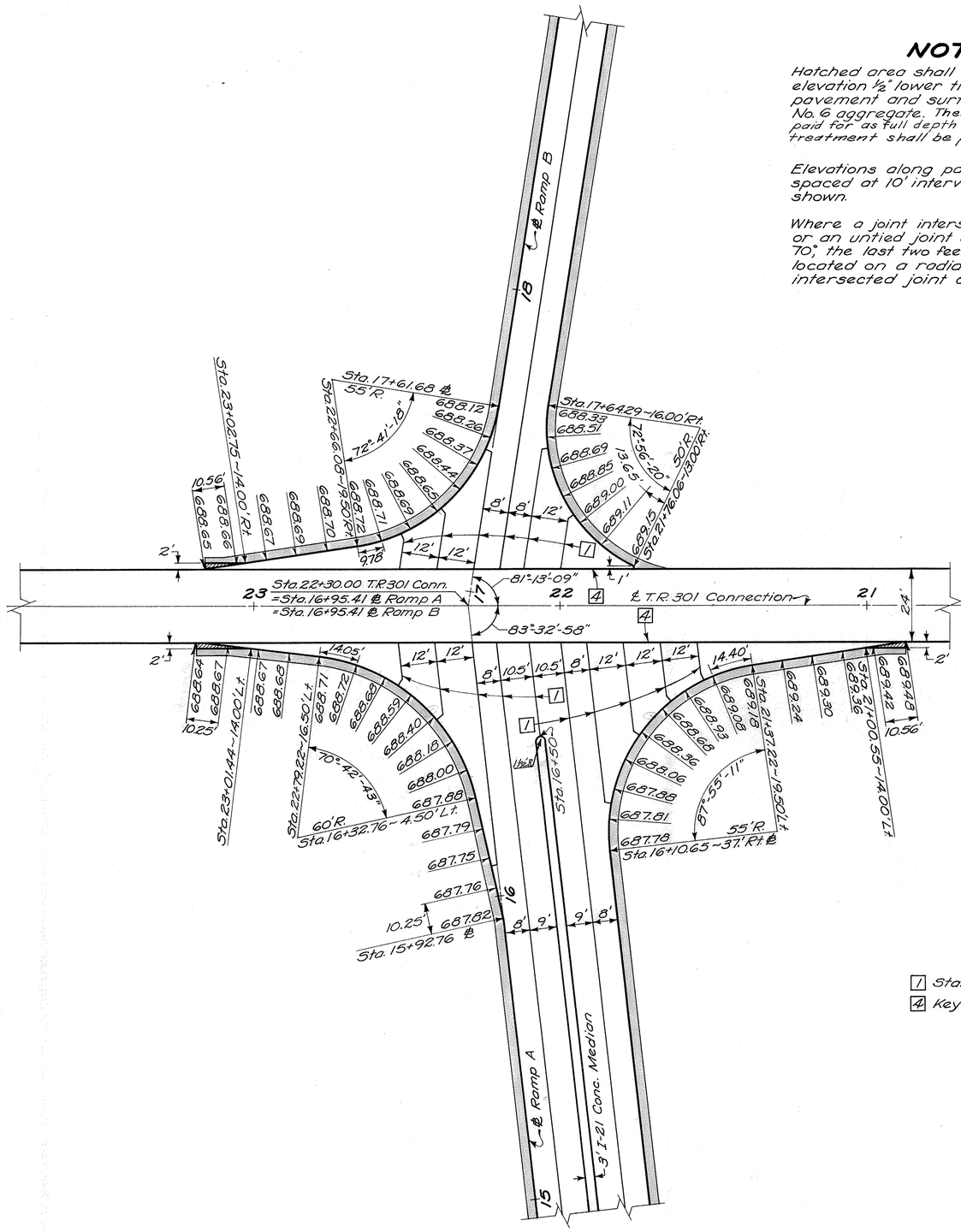
242

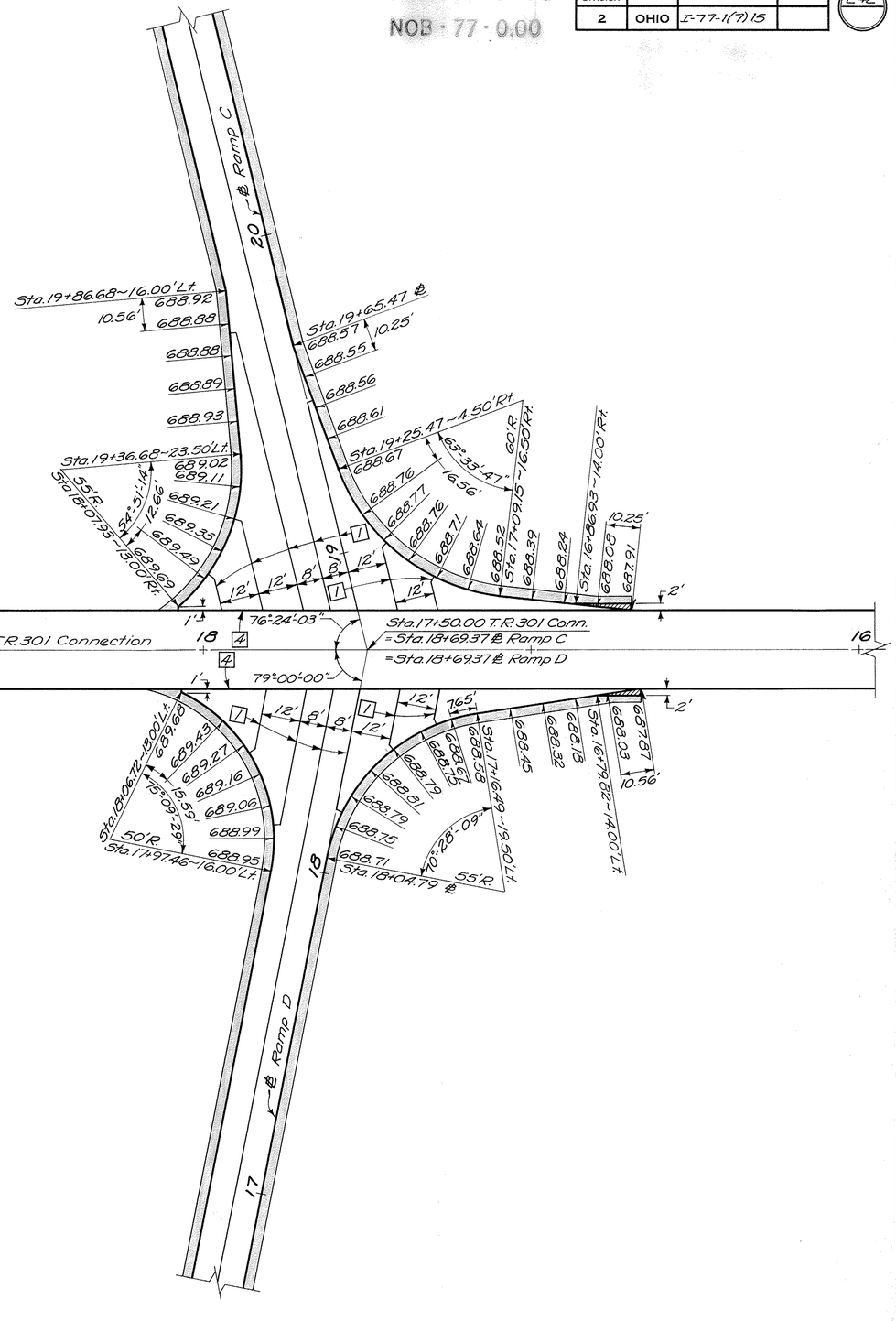
NOTES

Hatched area shall be constructed to an elevation ½" lower than the adjacent pavement and surface with T-31 and No. 6 aggregate. These areas shall be paid for as full depth T-71 and the surface treatment shall be paid for as T-31

Elevations along pavement returns are spaced at 10' intervals unless otherwise shown.

Where a joint intersects a pavement edge or an untied joint at an angle less than 70°, the last two feet of the joint shall be located on a radial line or at 90° to the intersected joint or pavement edge.





JOINT LEGEND

- / Standard Longitudinal Joint
- ⊿ Key Joint without tie bars

RAMP TERMINAL DETAILS

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	I-77-1(7)15	

243

WAS - 77 - 15.70

NOB - 77 - 0.00

NOTES

Hatched areas shall be constructed to an elevation ½" lower than the adjacent pavement and surfaced with T-31 and No. 6 aggregate. These areas shall be paid for as full depth T-71 and the surface treatment shall be paid for as T-31.

Transverse Joints not shown on this detail shall be placed at same location as Main Line Contraction Joints with a maximum spacing of 60'.

Elevations are at 25' intervals on ramp pavement and at 50' intervals on main line pavement.

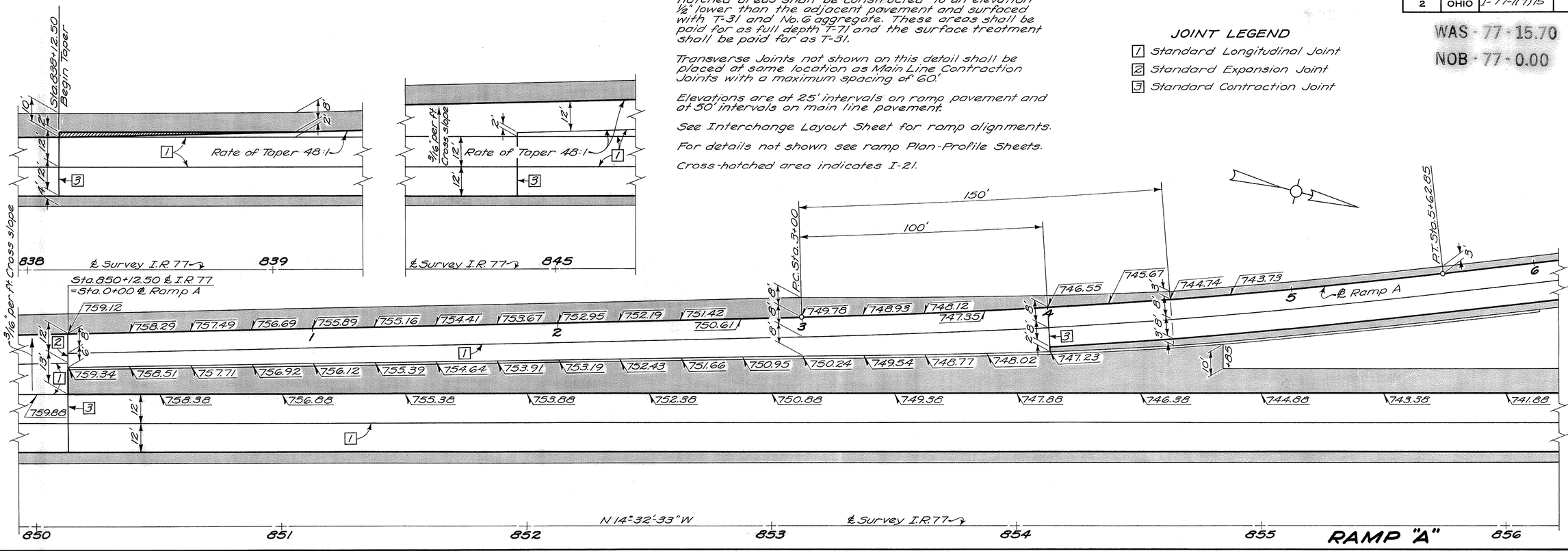
See Interchange Layout Sheet for ramp alignments.

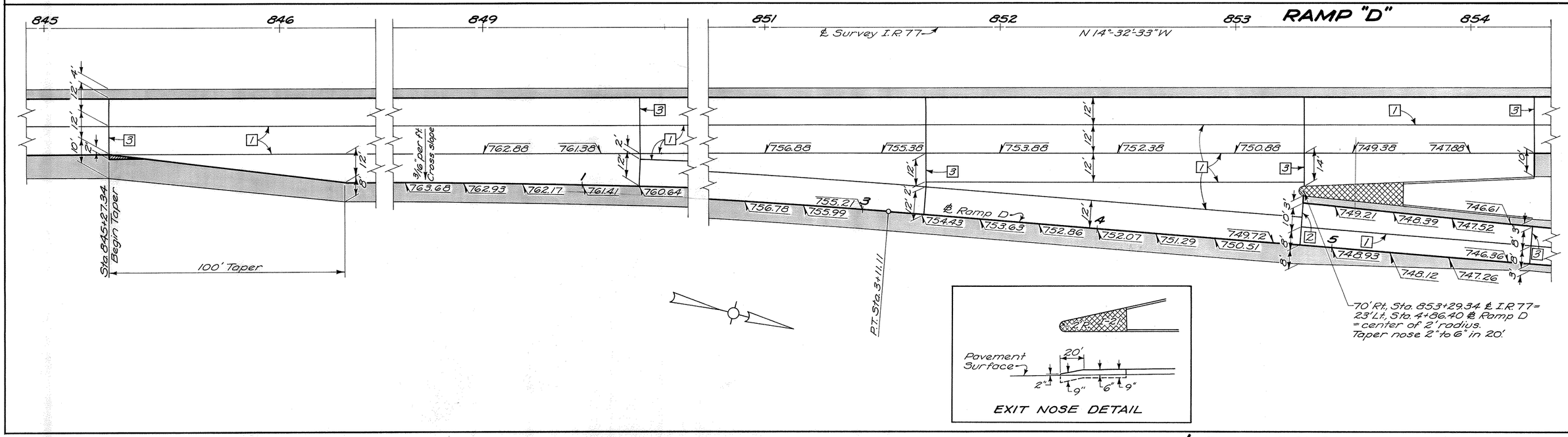
For details not shown see ramp Plan-Profile Sheets.

Cross-hatched area indicates I-21.

JOINT LEGEND

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





RAMPS A & D ~ U.S.R. 21 INTERCHANGE

WAS - 77 - 15.70
NOB - 77 - 0.00

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	I-77-1(7)15	

244

NOTES

Hatched areas shall be constructed to an elevation 1/2" lower than the adjacent pavement and surfaced with T-31 and No.6 aggregate. These areas shall be paid for as full depth T-71 and the surface treatment shall be paid for as T-31.

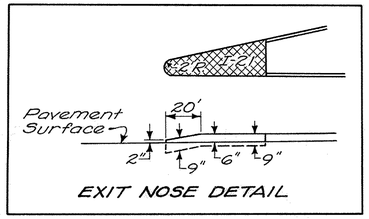
Transverse Joints not shown on this detail shall be placed at same location as Main Line Contraction Joints with a maximum spacing of 60'.

Elevations are at 25' intervals on ramp pavement and at 50' intervals on main line pavement.

See Interchange Layout Sheet for ramp alignments.

For details not shown see ramp Plan-Profile Sheets.

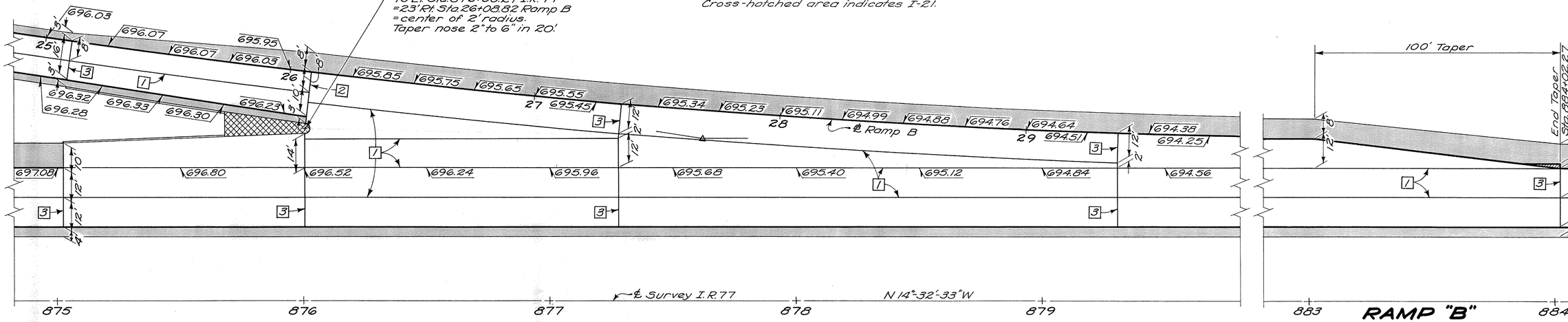
Cross-hatched area indicates I-21.

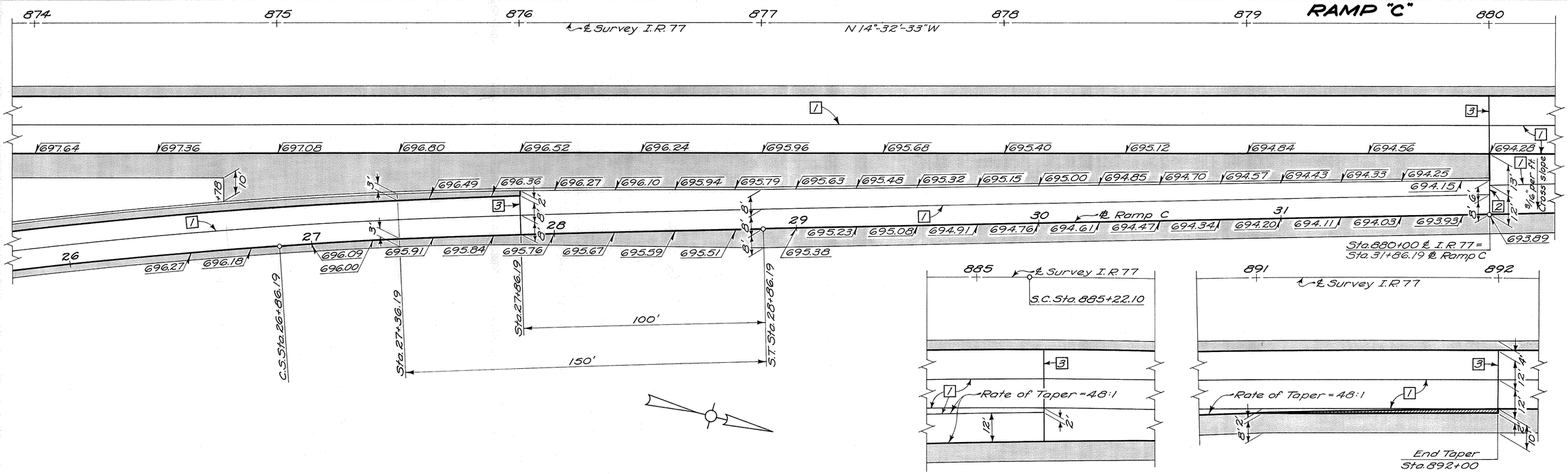


EXIT NOSE DETAIL

JOINT LEGEND

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





RAMPS B & C ~ U.S.R. 21 INTERCHANGE

WAS - 77 - 15.70
NOB - 77 - 0.00

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	I-77-1(7)15	

245

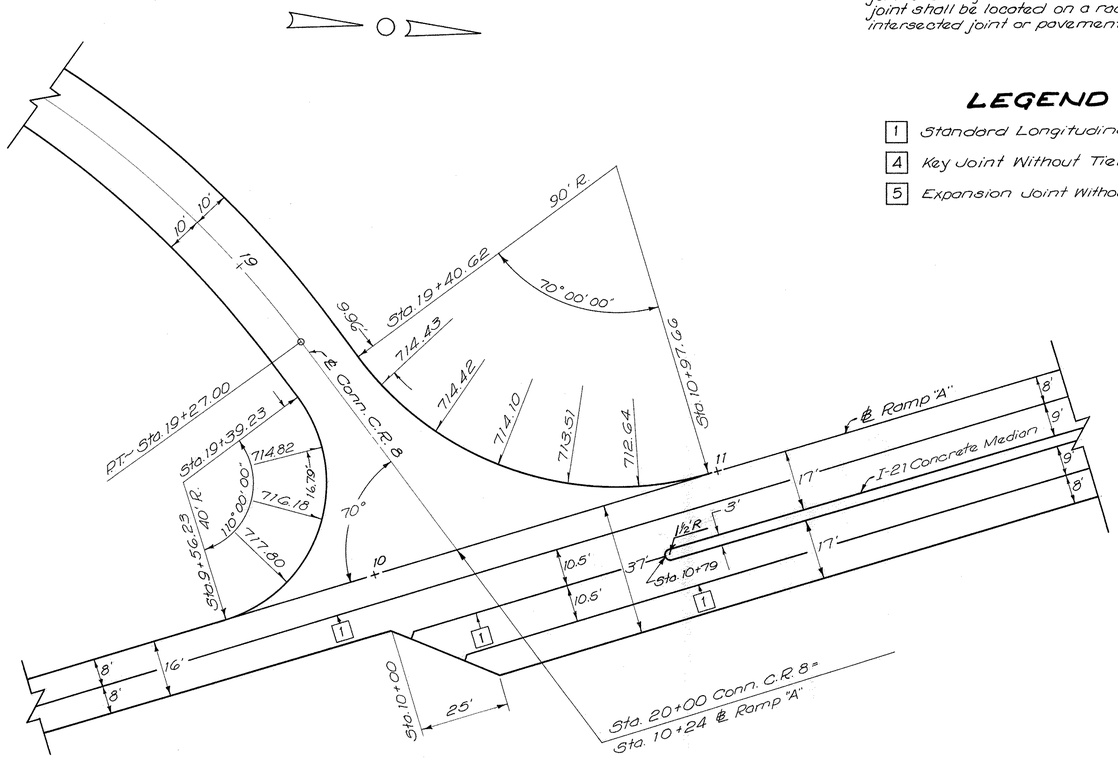
NOTES

Elevations along pavement returns are spaced at 20' intervals unless otherwise indicated.

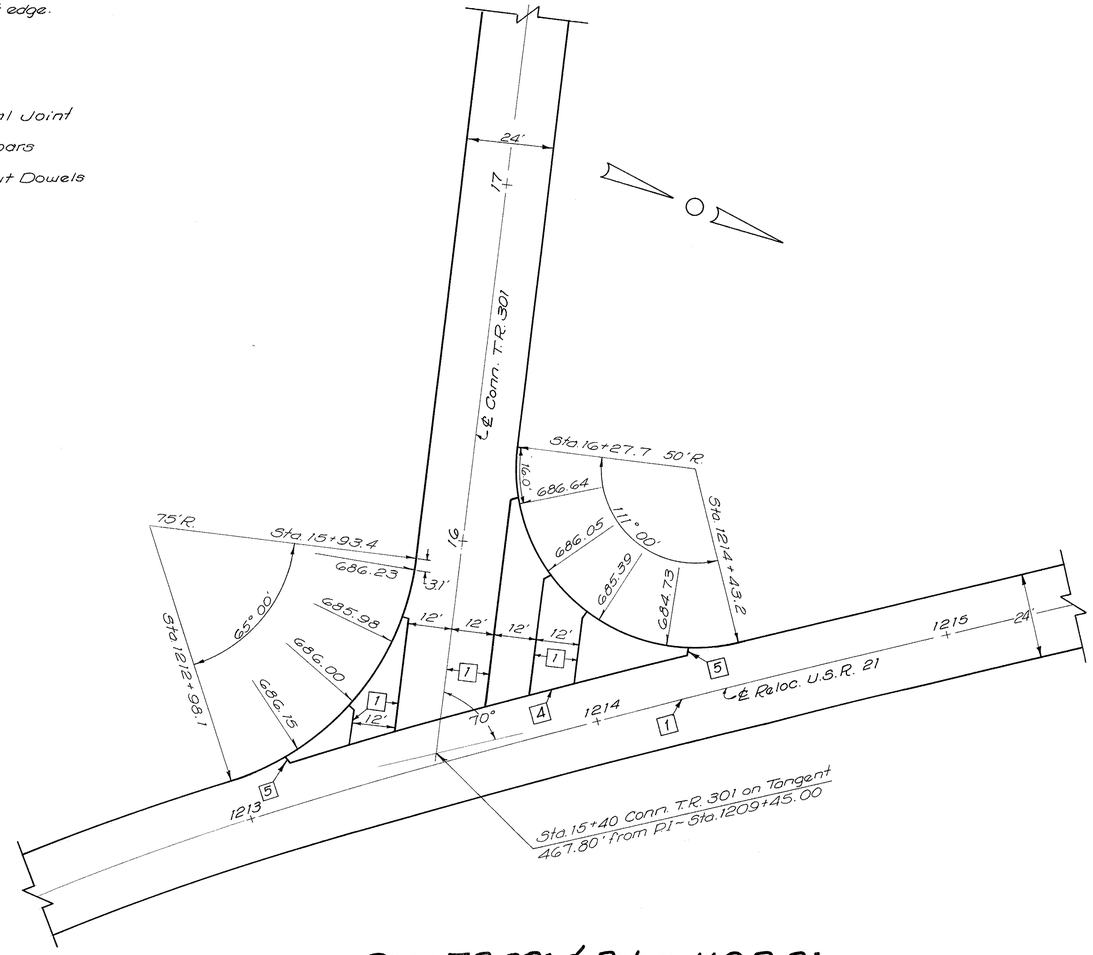
Where a joint intersects a pavement edge or an untied joint at an angle less than 70°, the last two feet of the joint shall be located on a radial line or at 90° to the intersected joint or pavement edge.

LEGEND

1 Standard Longitudinal Joint
4 Key Joint Without Tiebars
5 Expansion Joint Without Dowels



Conn. C.R. 8 & Ramp "A"
SCALE: 1" = 20'



Conn. T.R. 301 & Reloc. U.S.R. 21
SCALE: 1" = 20'

INTERSECTION DETAILS

WAS · 77 · 15.70
NOB · 77 · 0.00

I-77-1(7)15

246

Sta. 7+64.56 ℄ C.R.2 = Sta. 1+50 Rt. Edge U.S.R. 21

Exist. 24" I.S.P. to be removed.

Septic Tank

Exist. R/W

Existing U.S.R.21

Existing C.R.2

℄ Survey Reloc. C.R.2

59°00'

78°20'

ITEM 3: L=43 W=6 D=1.5

ITEM 4: L=244 W=6 D=1.5

Curve Data
P.I.~ Sta. 12+42.0
Δ = 50°-04' Rt.
D_c = 18°00'
L_s = 150'
Θ_s = 13°-30'
L_c = 128.14
T_s = 224.89
R_c = 318.31
E_s = 36.25

Union Carbide & Carbon Corp.

Exist. 24"x36' C.M.P.

Exist. 48"x 30' C.M.P.

Duck Creek

W.M. Patton

Sta. 10+00 ℄ Survey C.R.2 = Sta. 73+04 ℄ Survey I.R.77

TS~Sta. 10+17.11

SC~Sta. 11+67.11

CS~Sta. 12+95.25

ST~Sta. 14+45.25

Sta. 13+50

Sta. 14+50

100' Width Transition 24' to 18'

End Work Sta. 14+65

15' Feather

Sta. 7+64.56 ℄ C.R.2 = Sta. 1+50 Rt. Edge USR 21

INTERSECTION OF USR 21 & C.R.2
Scale: 1" = 20'

Rt. Edge U.S.R. 21

Sta. 1+93.0
697.86
697.18
696.10
695.91 40'R
Sta. 7+53.1

℄ C.R.2

78°20'

694.33
693.63
692.48 50'R
Sta. 0+83.0

694.90
696.34
Sta. 8+24.8

21.3'

14.00

TYPICAL SECTION ADJOINING PAVEMENT
Scale: 1" = 5'

±4' 18' ±4'

T-32

15' Feather

695.70 696.23 696.53 696.60 696.44 696.16 695.97 695.98 696.16 696.54 697.10 697.86 698.79 699.92 701.23 702.74 704.42 706.30 710.24 714.18 718.18 722.06 726.00

720
710
700
690

℄ Exist U.S.R.21

P.V.I. Sta. 8+25 Tan. Elev. 697.00

P.V.C. Sta. 2+00

P.V.T. Sta. 12+00

300' V.C.

+2.60% -1.12% -1.12% +7.88% +7.88%

54" I-1

100' V.C.

P.V.C. Sta. 7+75

P.V.T. Sta. 8+75

P.V.I. Sta. 10+50 Tan. Elev. 694.48

695.4 689.5 692.5 693.5 692.0 692.1 695.0 700.0 705.1 711.0 716.29 719.79 722.19 725.85 728.95 729.05 728.85

8 9 10 11 12 13 14 15 16

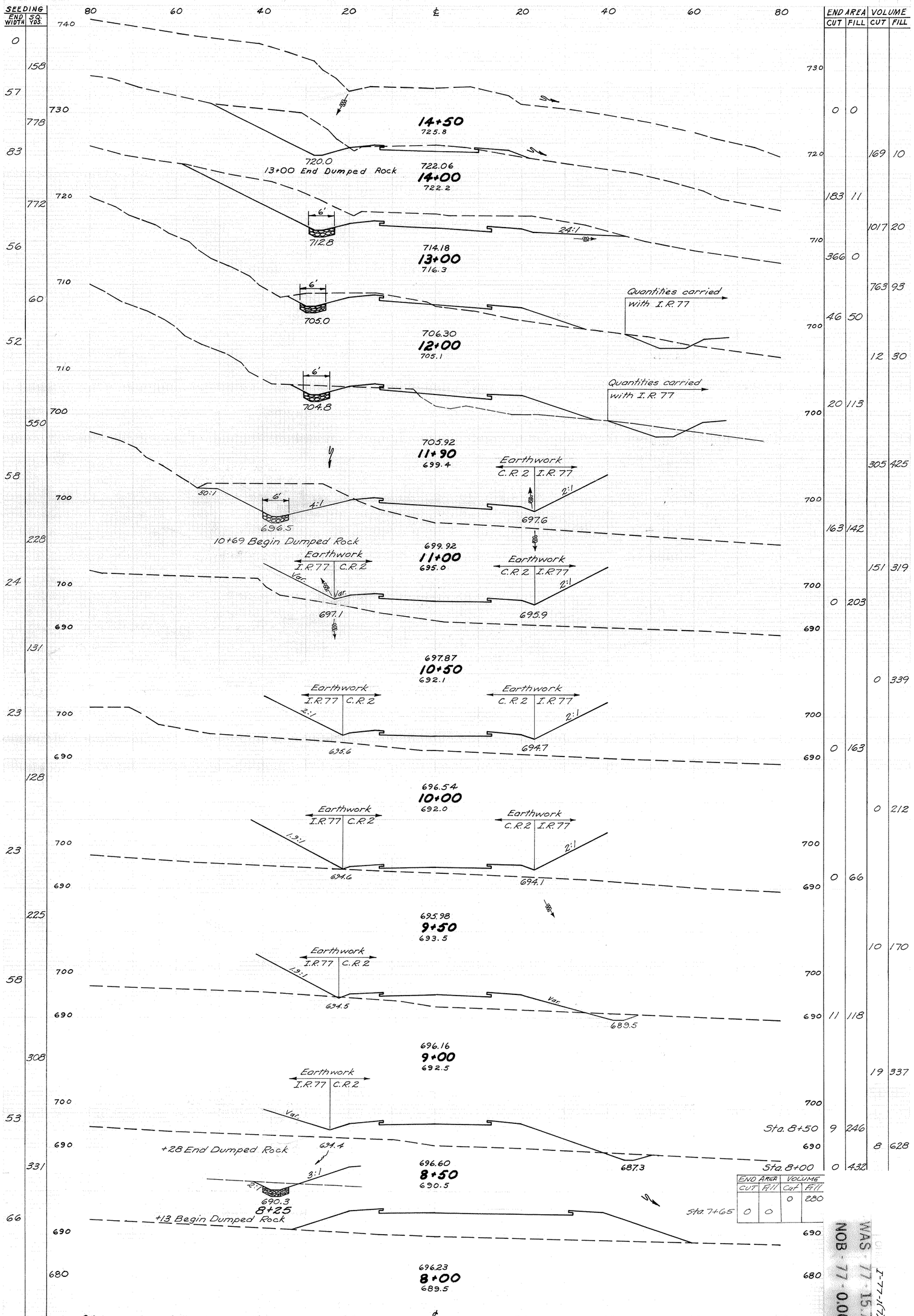
Excavation	=	2,454
Embankment	=	2,863
Embankment · 12%	=	3,207

SUPERELEVATION TABLE

STATION	Lt. Edge	℄ Profile	Rt. Edge
9+50	695.79	695.98	695.79
+75	696.06	696.16	695.97
10+00	696.59	696.54	696.35
+25	697.29	697.10	696.91
+50	698.19	697.86	697.53
+75	699.26	698.79	698.32
11+00	700.53	699.92	699.31
+25	701.99	701.23	700.47
+50	703.64	702.74	701.84
+75	705.42	704.42	703.42
12+00	707.30	706.30	705.30
+25	709.27	708.27	707.27
+50	711.19	710.24	709.29
+75	713.02	712.21	711.40
13+00	714.85	714.18	713.51
+25	716.67	716.15	715.63
+50	718.50	718.12	717.74
+75	720.33	720.09	719.88
14+00	722.16	722.06	721.92
+25	723.98	724.03	723.91
+50	725.81	726.00	725.91

ESTIMATED QUANTITIES

| | | |

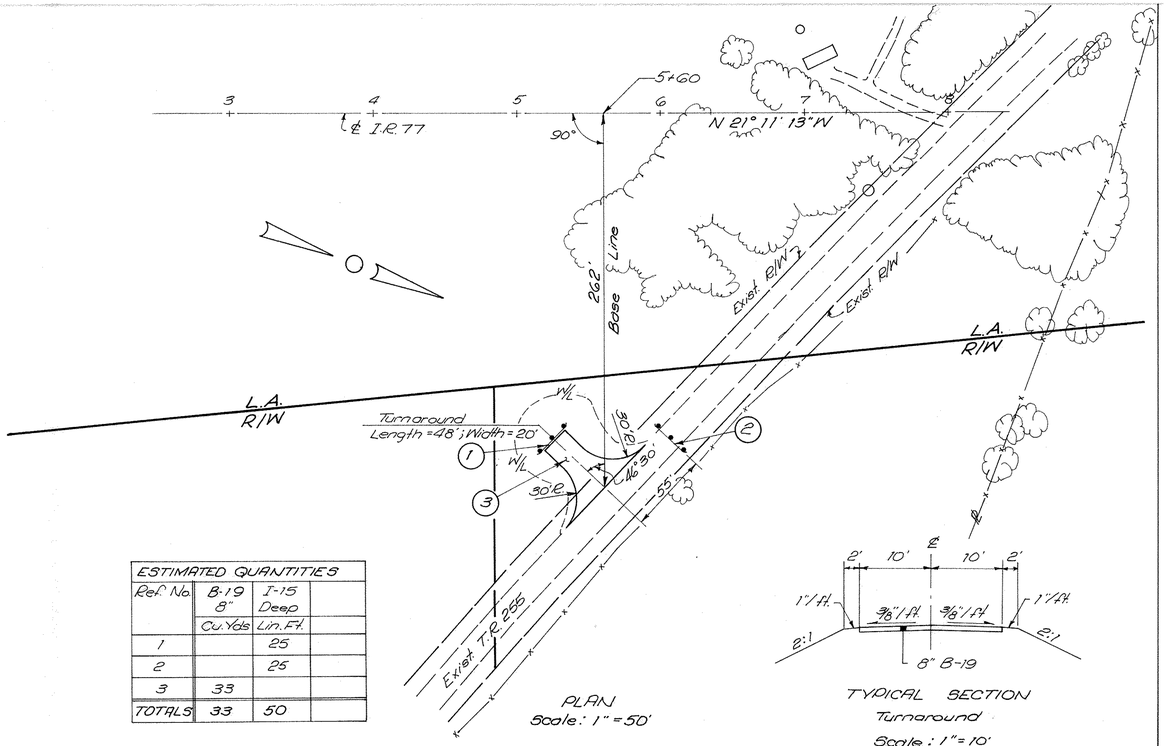

SEEDING
END WIDTH
S.Q. YDS.
END AREA
CUT
FILL
VOLUME
CUT
FILL
80 60 40 20 ℄ 20 40 60 80
14+50
725.8
720.0
13+00 End Dumped Rock
722.06
14+00
722.2
712.8
714.18
13+00
716.3
705.0
Quantities carried with I.R. 77
706.30
12+00
705.1
704.8
Quantities carried with I.R. 77
705.92
11+90
699.4
Earthwork
C.R. 2 I.R. 77
2:1
697.6
30:1
4:1
6'
696.5
10+69 Begin Dumped Rock
699.92
11+00
695.0
Earthwork
I.R. 77 C.R. 2
Var.
697.1
695.9
697.87
10+50
692.1
694.7
695.6
696.54
10+00
692.0
694.6
694.1
695.98
9+50
693.5
694.5
689.5
696.16
9+00
692.5
687.3
+28 End Dumped Rock
694.4
3:1
696.60
8+50
690.5
690.3
8+25
+13 Begin Dumped Rock
696.23
8+00
689.5
Sta. 8+50
Sta. 8+00
Sta. 7+65
END AREA
CUT FILL
VOLUME
Cut Fill
0 0 0 280
0 0
183 11
366 0
46 50
20 113
163 142
0 203
0 163
0 66
11 118
9 246
0 432
169 10
1017 20
763 93
12 30
305 425
151 319
0 339
0 212
0 170
19 337
8 628
Sta. 8+00 to Sta. 14+50 C.R. 2
WAS 77 15.70
NOB 77-0.00
F-77-1(7)5
247

		PROJECT	
	OHIO	I-77-1(7) 15	

248

WAS · 77 · 15.70

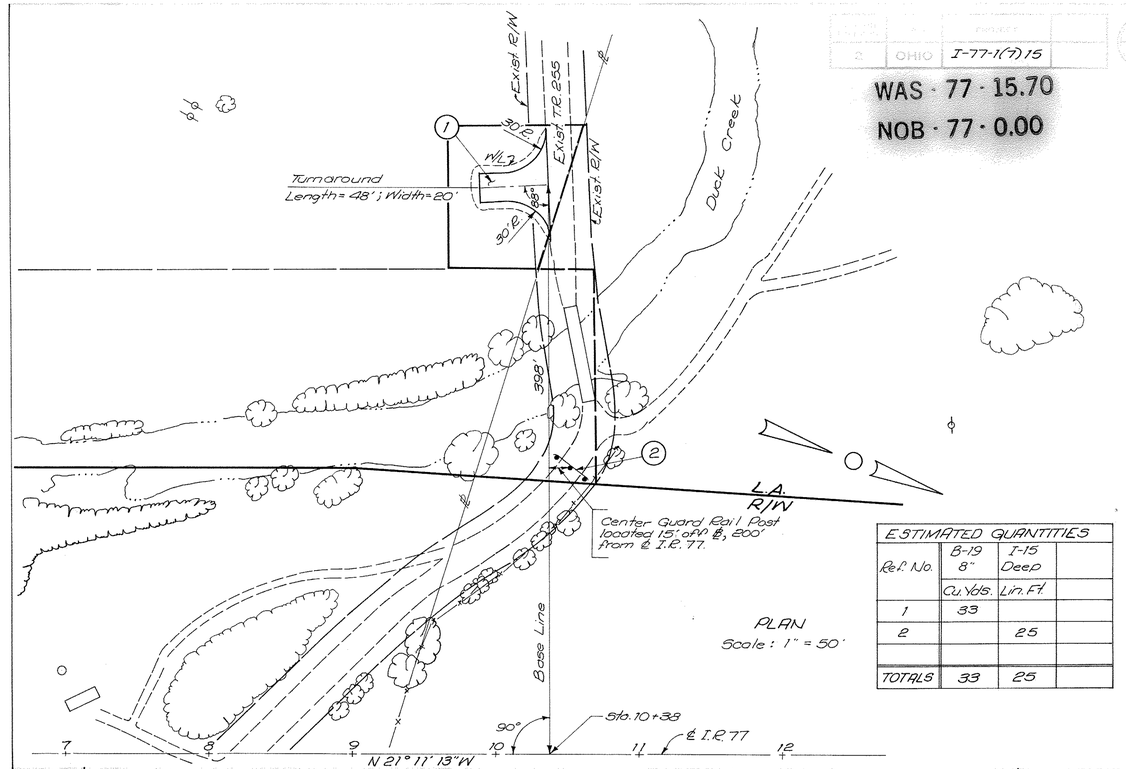
NOB · 77 · 0.00



PLAN
Scale: 1" = 50'

ESTIMATED QUANTITIES			
Ref. No.	B-19 8"	I-15 Deep	
	Cu. Yds.	Lin. Ft.	
1		25	
2		25	
3	33		
TOTALS	33	50	

TYPICAL SECTION
Turnaround
Scale: 1" = 10'

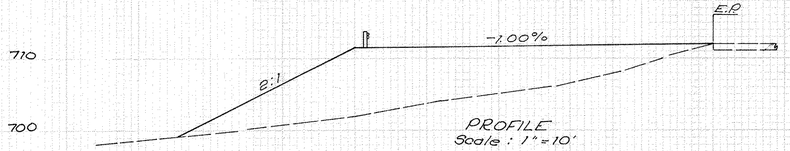


PLAN
Scale: 1" = 50'

ESTIMATED QUANTITIES			
Ref. No.	B-19 8"	I-15 Deep	
	Cu. Yds.	Lin. Ft.	
1	33		
2		25	
TOTALS	33	25	

Seeding E.W.	Seeding S.Y.		END AREA Cut	END AREA Fill	VOLUME Cut	VOLUME Fill
0	99	Sta. 0+75	0	0	0	185
71	16	710				
71			0	400		30
51		Sta. 0+48 (ahead) Sta. 0+48 (back)	0	400		
	89	700	0	386	0	205
		711.5 0+50 702.0				
		710				
38			0	228		
	53	711.7 0+30 704.8			0	104
		700				
		710				
26			0	146		
	22	711.8 0+15 707.3			0	41
		700				
0		Sta. 0+00	0	0		
	279	Total Seeding Carried to Sheet 135			Total Earthwork Carried to Sheet 135	565

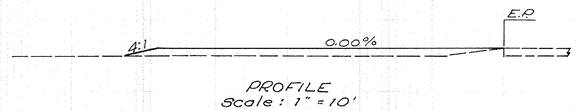
CROSS SECTIONS
Scale: 1" = 10'



PROFILE
Scale: 1" = 10'

Seeding E.W.	Seeding S.Y.		END AREA Cut	END AREA Fill	VOLUME Cut	VOLUME Fill
0	7	Sta. 0+52	0	0	0	2
30		G80 (ahead)		26		
10		G70 (back)	0	12		
	20	676.0 0+48 674.9			0	6
		G80				
10					0	7
		G70 676.0 0+30 675.0				
	17				0	5
		G80				
10					0	10
	8	G70 676.0 0+15 675.0			0	3
0		Sta. 0+00	0	0		
	52	Total Seeding Carried to Sheet 137			Total Earthwork Carried to Sheet 137	16

CROSS SECTIONS
Scale: 1" = 10'



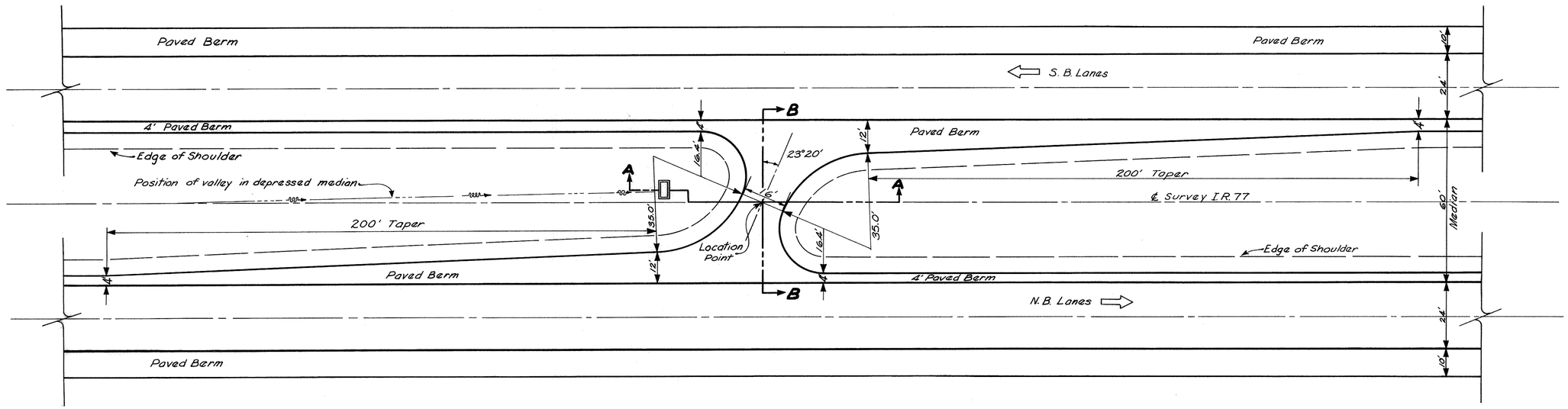
PROFILE
Scale: 1" = 10'

T.R. 255 TURNAROUND

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	I-77-1(7)15	

249

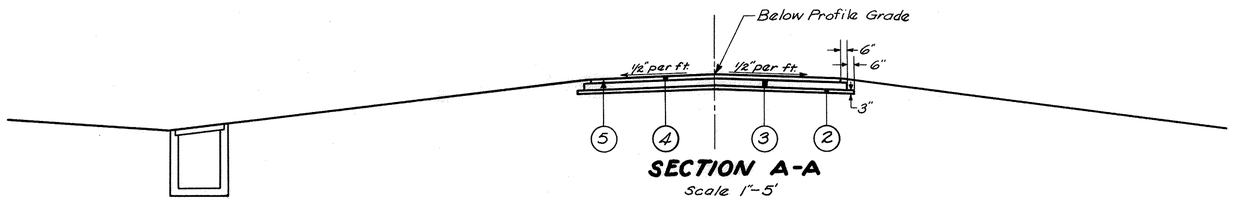
WAS - 77 - 15.70
NOB - 77 - 0.00



TYPICAL CROSSOVER

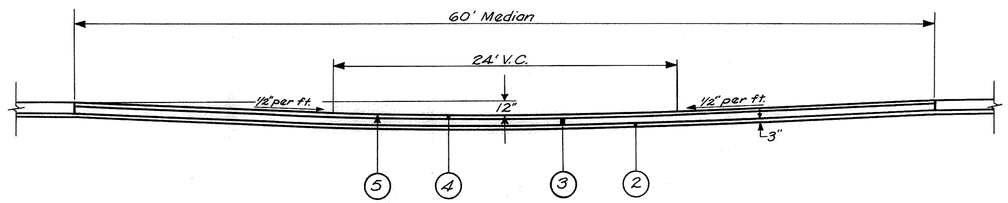
Scale 1"-20'

Sta. 904+22



SECTION A-A

Scale 1"-5'



SECTION B-B

Scale 1"-5'

LEGEND

(2)	I-22	Subbase as per I.R. 77 Typical Section.
(3)	B-19	6" Aggregate Base Course.
(4)	B-21	3" Waterproofed Aggregate Base Course (Type "A" T-35 may be used in construction of this course ~ See note in proposal.) Thickness shown is "design" thickness as described in Section B-21.01.
(5)	T-31	Bituminous Surface Treatment using 0.008 Cu. Yd. No. 6 aggregate per Sq. Yd. and 0.25 gal. bituminous material per Sq. Yd. (See note in proposal)

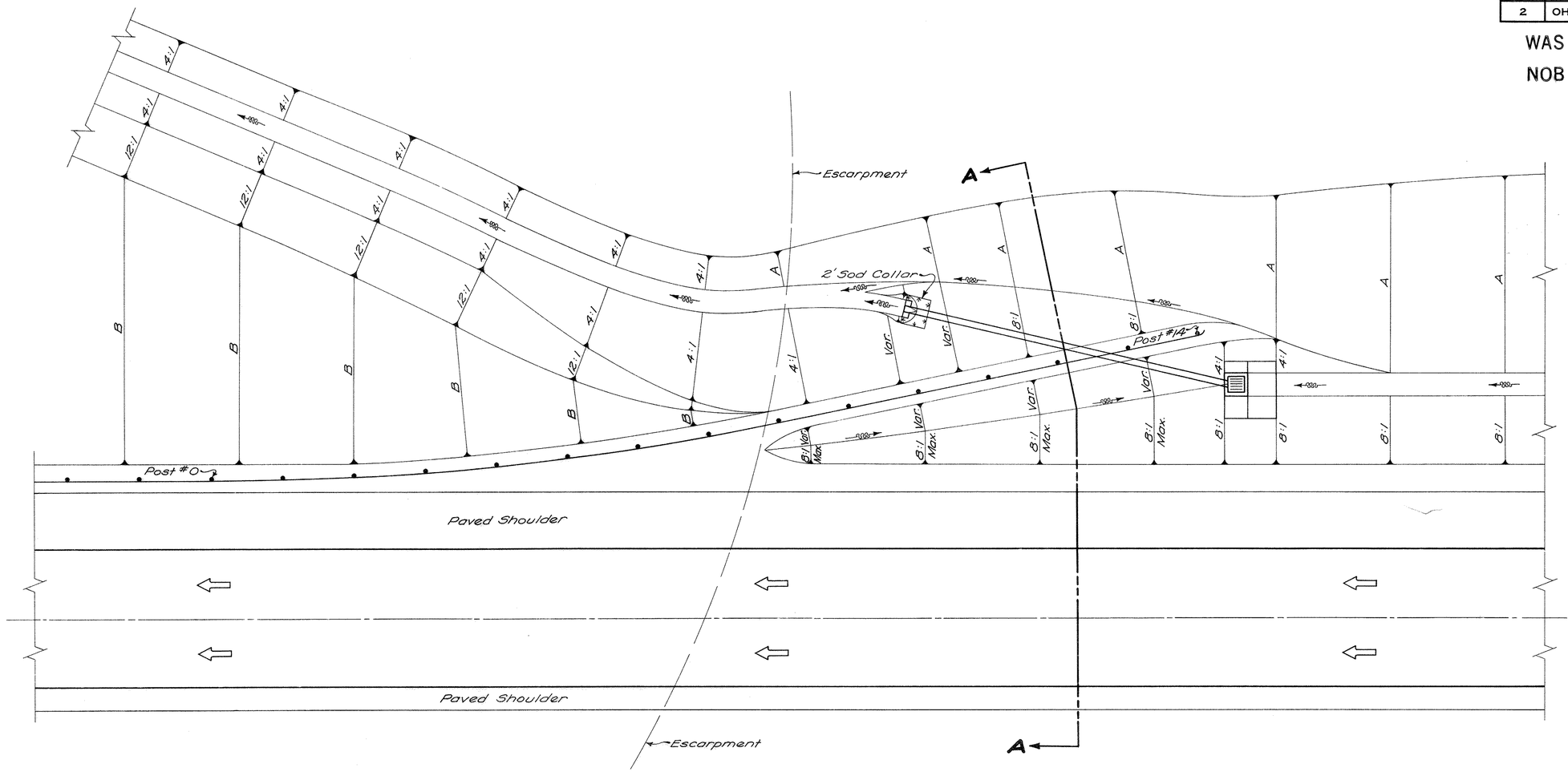
U TURN MEDIAN OPENING DETAIL

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	I-77-1(7) 15	

250

WAS - 77 - 15.70

NOB - 77 - 0.00



Distance between Edge of Pavement and Face of Guard Rail	
Post No.	Offset (feet)
0	12.00
1	12.16
2	12.64
3	13.44
4	14.57
5	16.01
6	17.77
7	19.84
8	22.23
9	24.78
10	27.33
11	29.57
12	32.42
13	34.97
14	37.52

GUARD RAIL NOTES

Design details shown shall govern the construction of Guard Rail at hazardous cut to fill areas unless otherwise shown on plans.

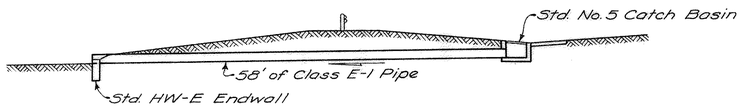
Backslope "A" and Fill slope "B" shall be constructed as shown on Typical Sections.

Storm Sewer and Catch Basin shall be constructed at locations shown on the plan & profile sheets.

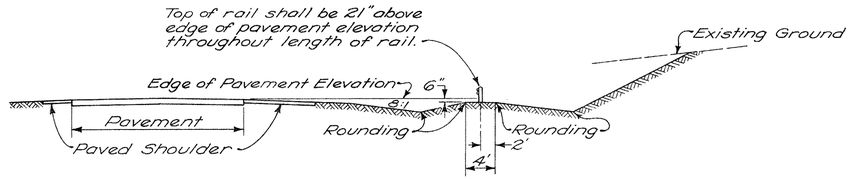
SPECIAL GUARD RAIL PROTECTION
CUT To FILL AREAS

Scale in Feet

0 10 20



STORM SEWER PROFILE



SECTION A-A

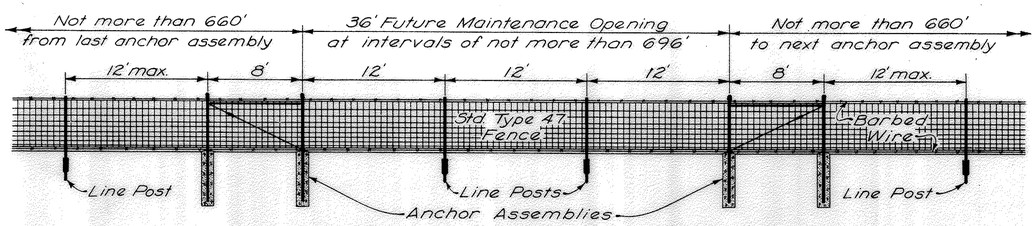
SPECIAL GUARD RAIL PROTECTION

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	I-77-1(7)15	

251

WAS - 77 - 15.70

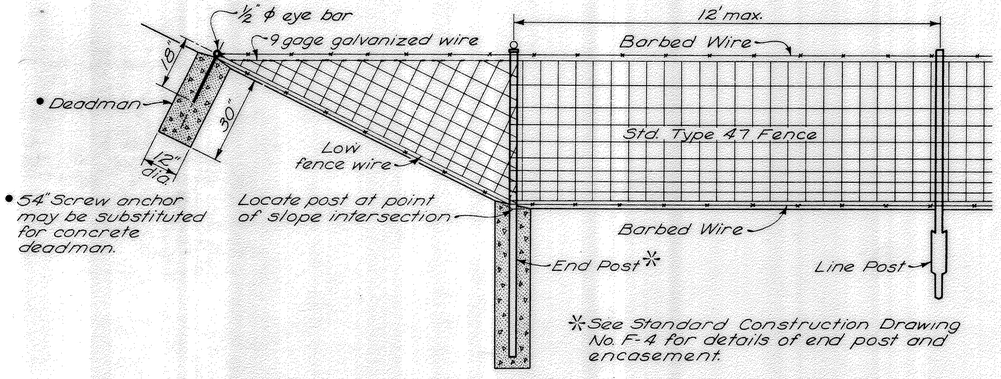
NOB - 77 - 0.00



FUTURE MAINTENANCE OPENING

At locations where channels are located in channel easements, and fencing is provided between the channel and a freeway, at least one maintenance opening shall be provided, as indicated above, and others at intervals of 696 feet if the length of the parallel channel exceeds 1800 feet.

See Standard Construction Drawing No. F-4 for details of anchor assemblies.

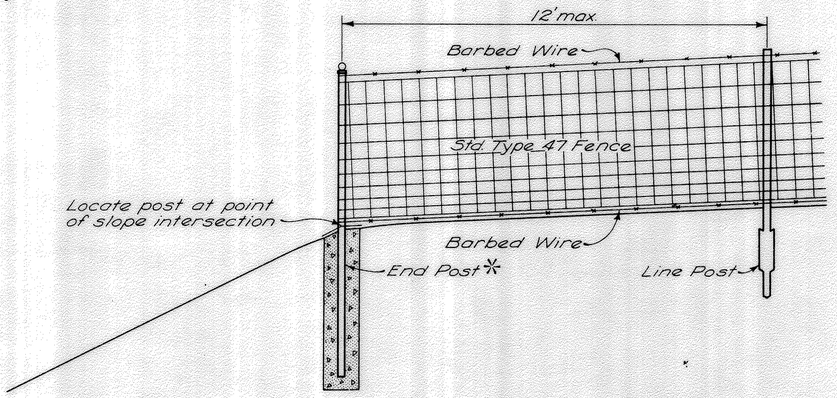


✲See Standard Construction Drawing No. F-4 for details of end post and encasement.

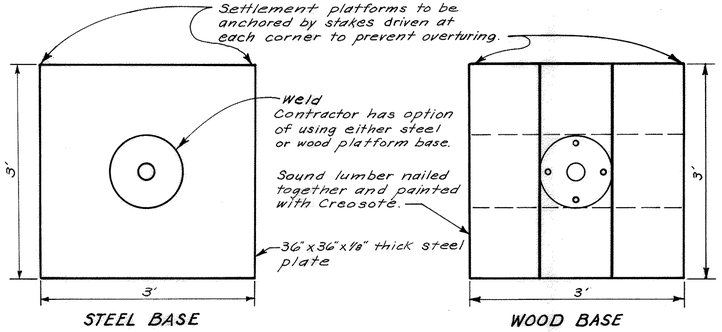
FENCE TERMINAL AT TOE OF DEEP FILL SLOPE

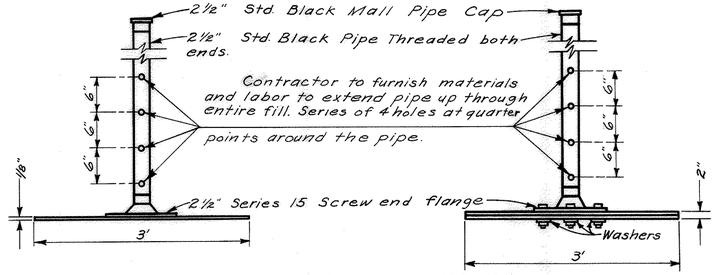
NOTE

Barbed wire shall not be installed below fence fabric unless required on adjacent fencing.



FENCE TERMINAL AT TOP OF DEEP CUT SLOPE





DETAIL OF SETTLEMENT PLATFORMS
Scale 1"=1'-0"

LOCATION OF SETTLEMENT PLATFORMS
Sta. 321+50 -20' Lt. of ℄
Sta. 3+00 -20' Rt. of ℄

FENCE TERMINAL DETAILS & SETTLEMENT PLATFORM DETAILS

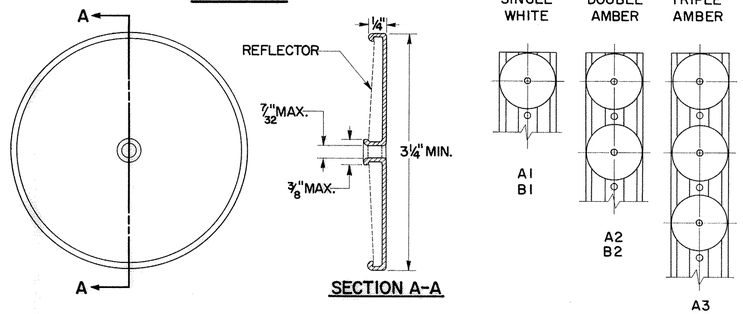
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	I-77-1(7)15	

252

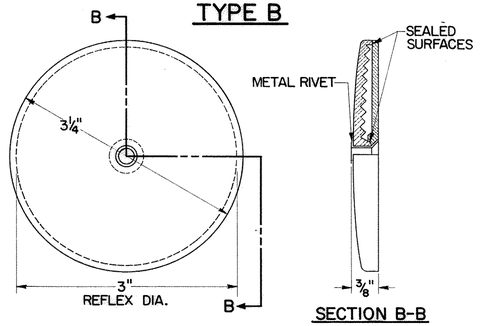
WAS - 77 - 15.70

NOB - 77 - 0.00

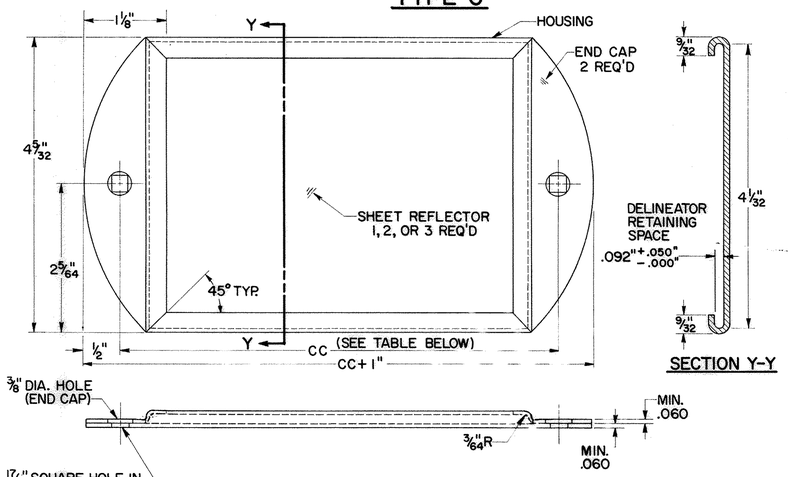
TYPE A



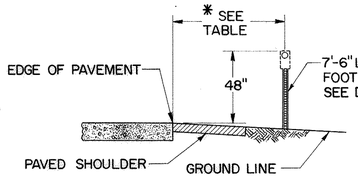
TYPE B



TYPE C



TYPE	DIM. CC
C1- SINGLE WHITE	6"
C2- DOUBLE AMBER	11"
C3- TRIPLE AMBER	16"

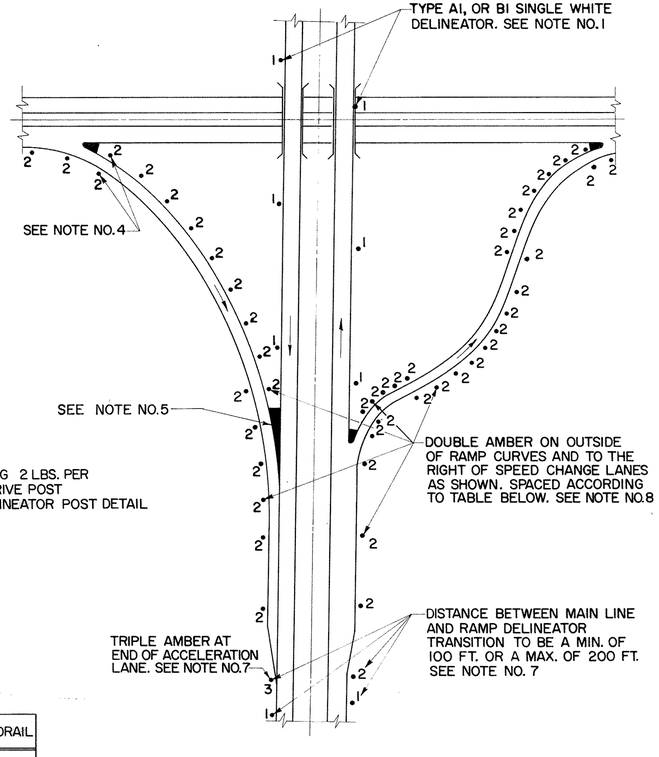


LATERAL PLACEMENT OF DELINEATORS

* TABLE

TYPE DELINEATOR	NO GUARDRAIL	GUARDRAIL
SINGLE WHITE	12'-6"	6" OUTSIDE
DOUBLE AMBER RIGHT SIDE	** 8'-6"	6" OUTSIDE
DOUBLE AMBER LEFT SIDE	4'-6"	6" OUTSIDE
TRIPLE AMBER	12'-6"	6" OUTSIDE

** THIS DIMENSION SHALL VARY ON SPEED CHANGE LANES TO MAINTAIN MINIMUM DISTANCE OF 2'-6" FROM EDGE OF PAVED SHOULDER.



TYPICAL DELINEATOR PLACEMENT

DELINEATOR SPACING ON RAMP HORIZONTAL CURVES

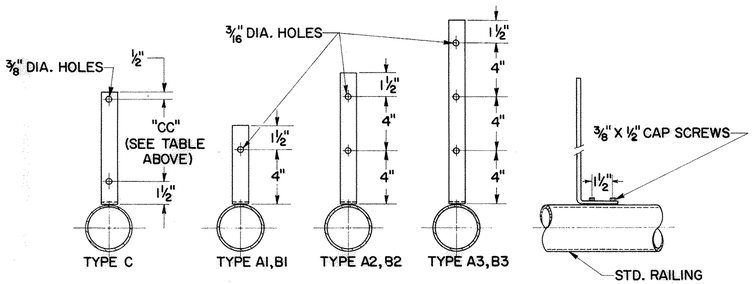
RADII, FT. FROM	RADII, FT. TO	SPACING ON CURVE	*TRANSITION SPACING	
TANGENT	1,801	100'	100'	100'
1,800	1,401	80'	100'	100'
1,400	1,001	70'	100'	100'
1,000	751	60'	100'	100'
750	551	50'	80'	100'
550	326	40'	70'	100'
325	———	30'	60'	100'

* SUCH AS 40' TO 70' TO 100' OR 100' TO 80' TO 50' OR ANY OTHER COMBINATION SHOWN ABOVE.

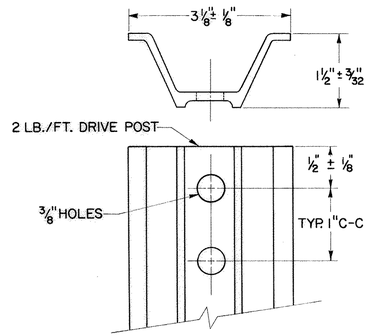
NOTES

1. TYPE A1 OR B1 DELINEATORS ON THE RIGHT OF THE THROUGH ROADWAY ARE TO BE SPACED AT 200 FT. INTERVALS THROUGHOUT, REGARDLESS OF CURVES, BEGINNING AT STA. +00, +25, +50, OR + 75.
2. DELINEATORS SHALL BE FURNISHED AND ERECTED IN ACCORDANCE WITH SUPPLEMENTAL SPECIFICATION NO. I-127, (1-15-62).
3. PAYMENT FOR SUPPORTS (DRIVEPOST OR BRACKET) SHALL BE INCLUDED IN THE UNIT PRICE BID PER EACH FOR "ITEM I-127 DELINEATORS".
4. WHEN CROSSING FROM LEFT TO RIGHT OR FROM RIGHT TO LEFT ON THE RAMPS THE DELINEATORS AT THE POINT OF CROSSOVER ARE TO BE AT THE SAME STATION ON EACH SIDE.
5. NO DELINEATORS ARE TO BE PLACED IN PAVED BERM
6. WHEN RADII OF CURVE ON RAMPS REQUIRE 100' SPACING THE DELINEATORS SHALL BE PLACED ON THE RIGHT IN RELATION TO THE FLOW OF TRAFFIC.
7. RAMP DELINEATOR AT END OF ACCELERATION & BEGINNING OF DECELERATION LANES TO BE A MAXIMUM OF 5' FROM POINT OF TANGENCY AT MAIN LINE.
8. ALL RAMP DELINEATORS SHALL BE PLACED TO THE NEAREST 5' INCREMENTS, SUCH AS +05, +10, +15, +20 AND SO ON.

ALL BRACKETS 1/4" X 1 1/4" STAINLESS STEEL



BRIDGE RAIL BRACKET



DELINEATOR POST

BUREAU OF TRAFFIC
OHIO DEPARTMENT OF HIGHWAYS

DELINEATOR DETAILS | I-127 | DATE 9-25-62, 10-2-63

APPROVED Robert L. Comer
ENGINEER OF TRAFFIC

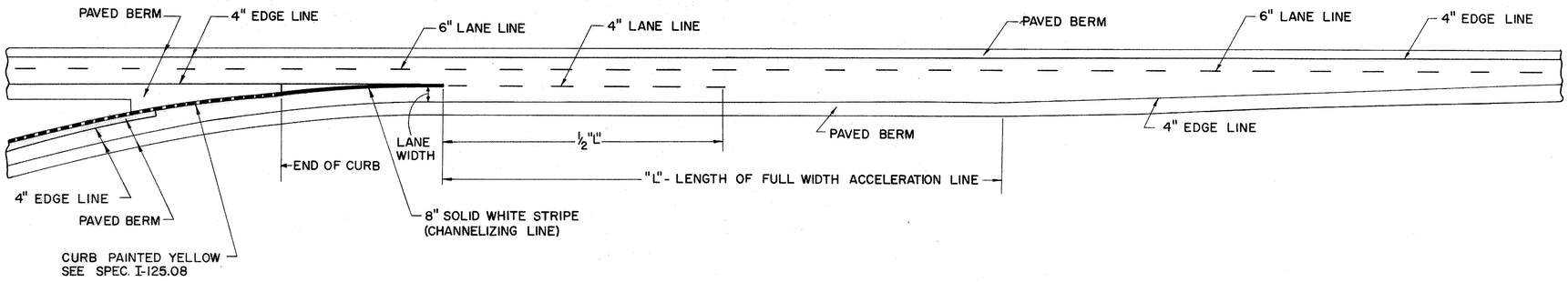
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	I-77-1(7)15	

253

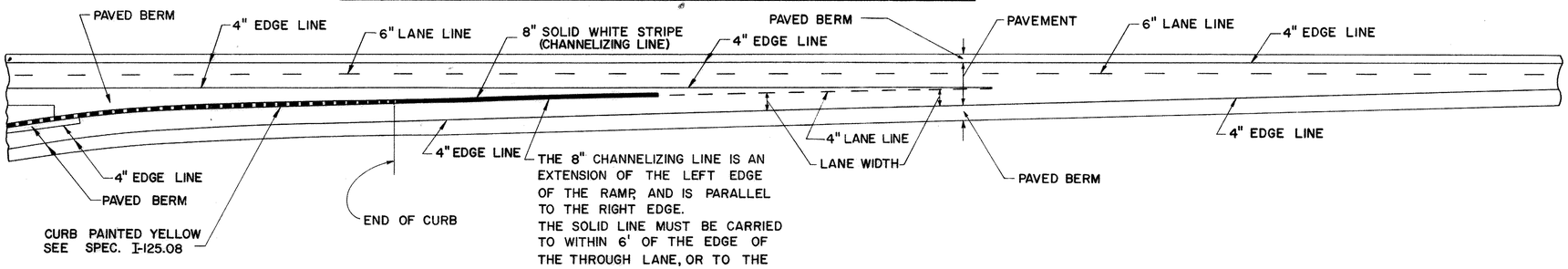
WAS - 77 - 15.70

NOB - 77 - 0.00

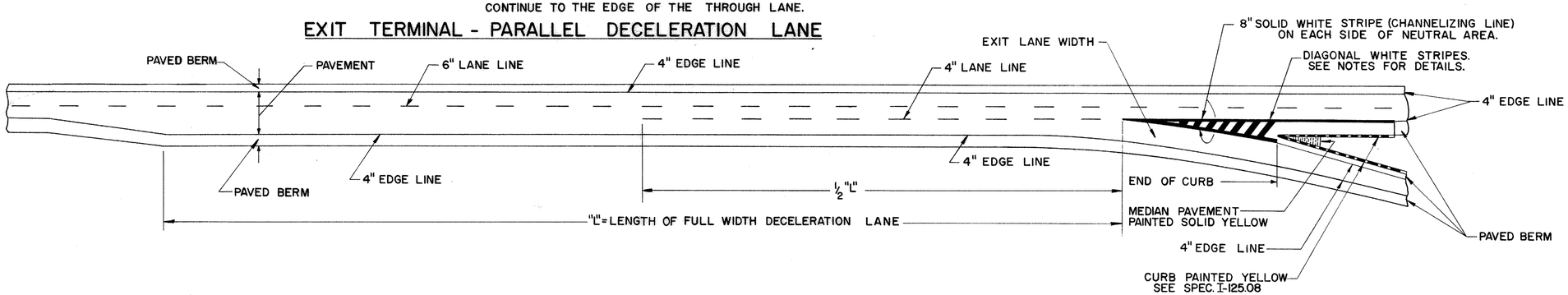
ENTRANCE TERMINAL - PARALLEL ACCELERATION LANE



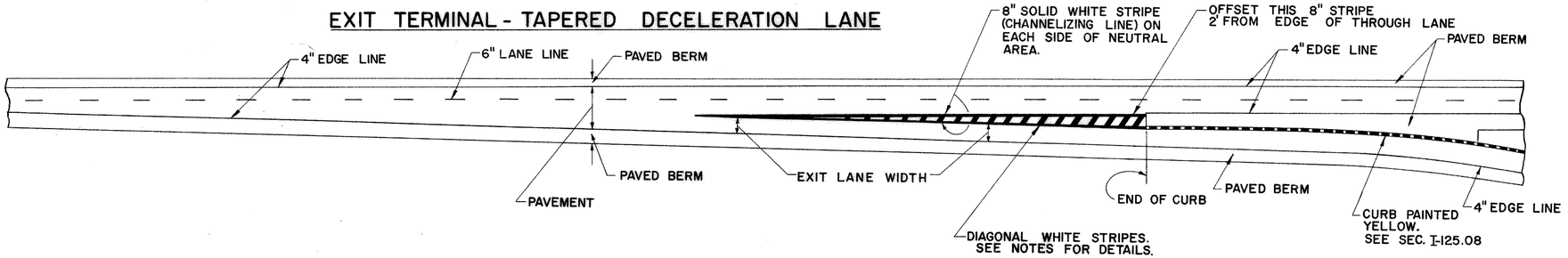
ENTRANCE TERMINAL - TAPERED ACCELERATION LANE



EXIT TERMINAL - PARALLEL DECELERATION LANE



EXIT TERMINAL - TAPERED DECELERATION LANE



NOTES

EDGE LINES SHALL BE PLACED IN THE LOCATIONS AS SHOWN TO CONFORM TO SUPPLEMENTAL SPECIFICATION No. I-125 AND DEFINED IN SECTION I-125.06.

LANE LINES SHALL BE PLACED IN THE LOCATIONS AS SHOWN TO CONFORM TO SUPPLEMENTAL SPECIFICATION No. I-125 AND DEFINED IN SECTION I-125.07.

CHANNELIZING LINES SHALL BE CONTINUOUS WHITE BEADED STRIPES 8" IN WIDTH PLACED IN THE LOCATIONS AS SHOWN TO CONFORM TO SUPPLEMENTAL SPECIFICATION No. I-125 AND DEFINED IN SECTION I-125.07 b.

DIAGONAL STRIPES IN EXIT RAMP MARKINGS SHALL BE 2' WIDE WHITE BEADED STRIPES SET AT A 45° ANGLE TO THE CENTER LINE OF THE THROUGH PAVEMENT AND SLANTED IN THE DIRECTION OF THE FLOW OF TRAFFIC ON SAID PAVEMENT. SPACE BETWEEN THE 2' DIAGONAL STRIPES SHALL BE 6' AS MEASURED PARALLEL TO THE CENTER LINE OF THE THROUGH PAVEMENT. PAINT ON THE DIAGONAL STRIPES SHALL BE APPLIED AT THE RATE OF ONE GALLON TO EACH 100 SQUARE FEET AND GLASS BEADS SHALL BE APPLIED AT THE RATE OF SIX POUNDS PER GALLON OF PAINT. DIAGONAL WHITE STRIPES SHALL BE PLACED BETWEEN THE TWO 8" WHITE CHANNELIZING LINES AT EXIT RAMPS AS SHOWN TO CONFORM TO SUPPLEMENTAL SPECIFICATION No. I-125 AND DEFINED IN SECTION I-125.07 c.

BUREAU OF TRAFFIC
OHIO DEPARTMENT OF HIGHWAYS

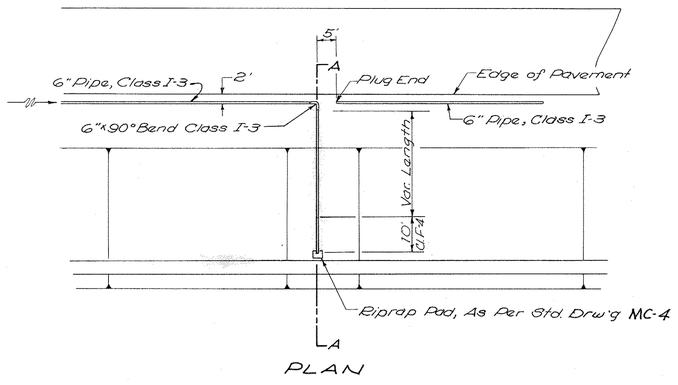
PAVEMENT MARKING	PM-1	DATE 7-17-61 4-6-62

APPROVED Robert E. Lower
ENGINEER OF TRAFFIC

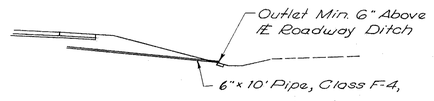
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	I-77-1(7) 15	

254

WAS - 77 - 15.70
NOB - 77 - 0.00

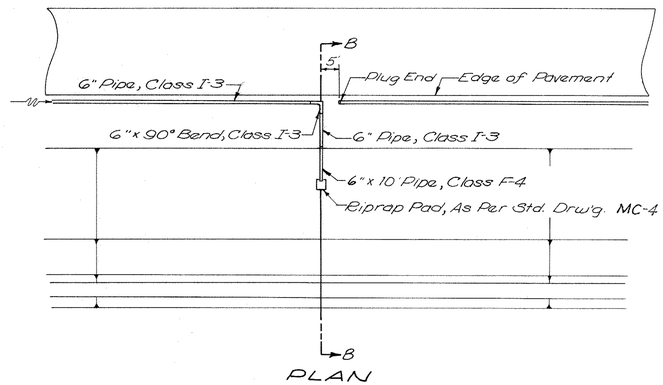


PLAN

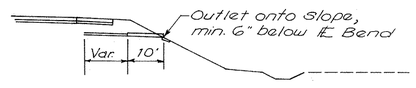


SECTION A-A

UNDERDRAIN OUTLET DETAIL "A"

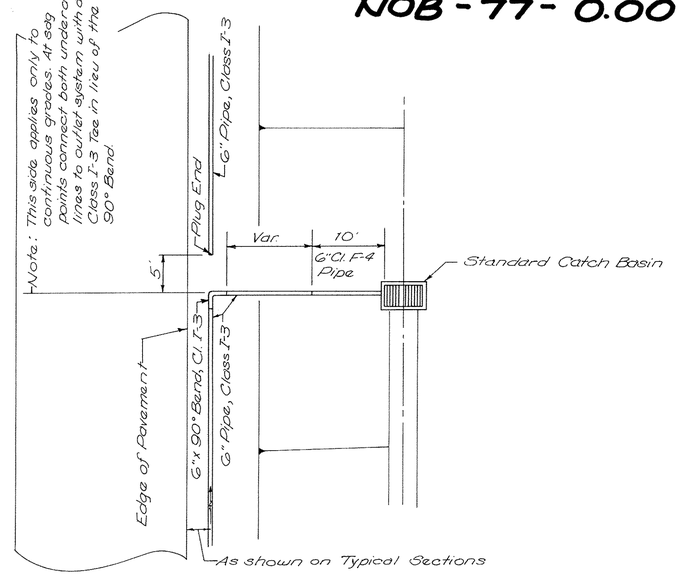


PLAN

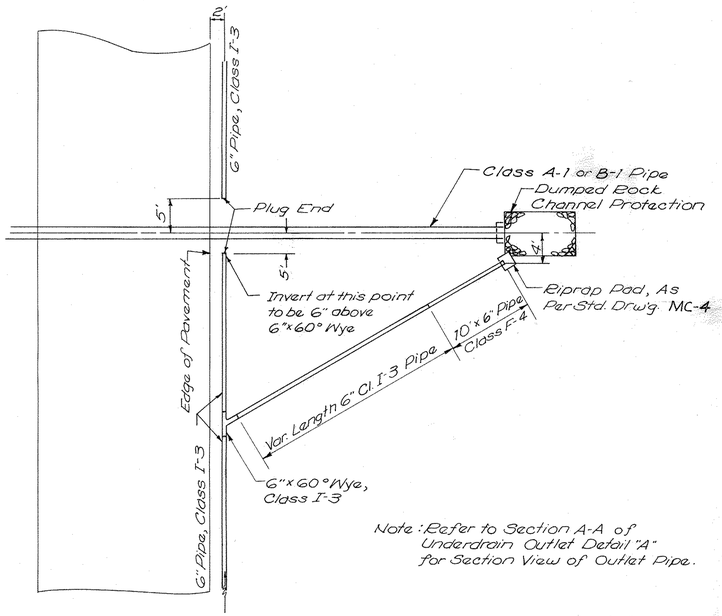


SECTION B-B

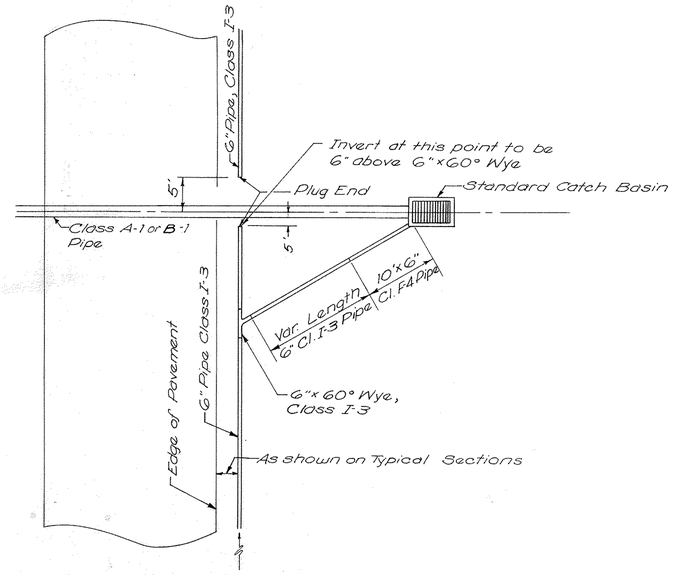
UNDERDRAIN OUTLET DETAIL "B"



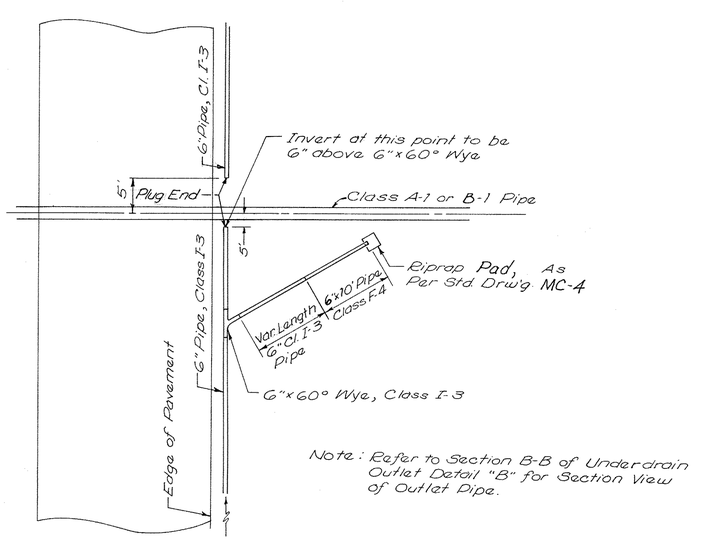
UNDERDRAIN OUTLET DETAIL "C"



UNDERDRAIN OUTLET DETAIL "D"



UNDERDRAIN OUTLET DETAIL "E"



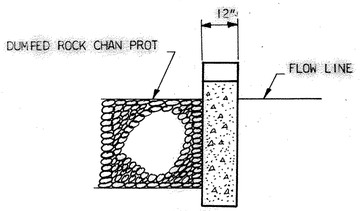
UNDERDRAIN OUTLET DETAIL "F"

UNDERDRAIN OUTLET DETAILS

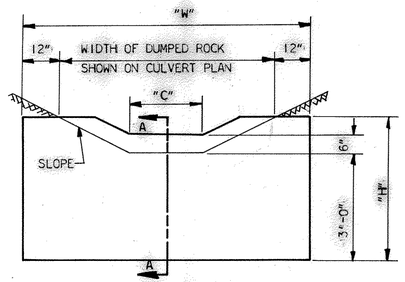
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	I-77-1(7)15	

255

WAS - 77 - 15.70
NOB - 77 - 0.00



SECTION A-A



END VIEW

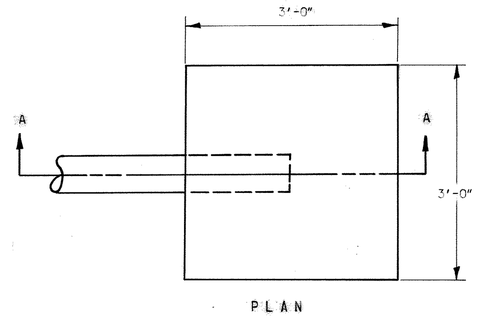
SCALE: 1/2" = 1"-0"

NOTES

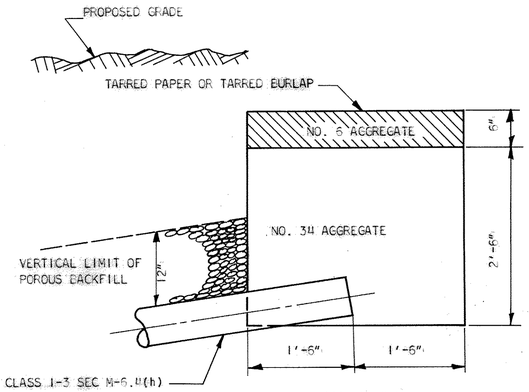
ESTIMATED QUANTITIES: THE ESTIMATED QUANTITY OF CONCRETE FOR EACH ENDSILL IS CARRIED ON THE CULVERT PLAN THAT SHOWS THE ENDSILL

LOCATION STATION	CHAN WIDTH "C"	CHAN SIDE SLOPES	HEIGHT "H"	WIDTH "W"	CONC CU YDS 1 ENDSILL
686+50	6'	2:1	6'	20'	2.7
853+06	11'	2:1	5'-6"	111'	2.4
34+33	4'	2:1	4'-6"	10	1.4
37+06	2'	-	3'-6"	14'	2.2
U.S.R. 21 1214+93	6'	2:1	6'-6"	22'	2.6
R+11 CR2	4'	2:1	4'-0"	10'	1.4
U.S.R. 21 1213+00	8'	2:1	5'	18'	2.6

TYPICAL ENDSILL DETAIL & DIMENSIONS



PLAN



SECTION A-A

NOTES: NO. 34 AGGREGATE SHALL BE USED WITH A 6" LAYER OF NO 6 AGGREGATE OVER THE TOP, AND SEALED WITH TARRED PAPER OR TARRED BURLAP.

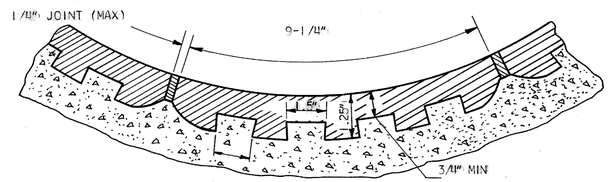
PAYMENT FOR NECESSARY EXCAVATION, AGGREGATES, AND TARRED PAPER OR TARRED BURLAP SHALL BE INCLUDED IN THE UNIT PRICE BID PER LINEAR FOOT FOR ITEM 1-9 STONE UNDERDRAINS NO. 1 AS PER PLAN. SPRING DRAINS WILL BE PLACED AT LOCATIONS DESIGNATED BY THE ENGINEER.

THE CLASS I-3 PIPE FOR SPRING DRAINAGE SHALL BE COVERED WITH TYPE 3 POROUS BACKFILL MATERIAL TO A HEIGHT OF ONE (1) FOOT ABOVE THE TOP OF THE PIPE. THE REMAINDER OF THE BACKFILL FOR THIS ITEM SHALL MEET THE SPECIFICATION REQUIREMENTS FOR TYPE 2 BACKFILL.

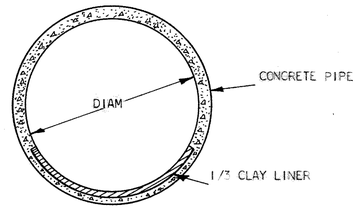
ESTIMATED QUANTITIES OF 30 LIN FT OF 1-9 STONE UNDERDRAINS NO. 1 AS PER PLAN AND 600 LIN FT OF 6" PIPE, SEC M-6.4(h) CLASS I-3 AS PER PLAN, ARE CARRIED IN THE GENERAL SUMMARY FOR DRAINING SPRINGS. THIS ITEM SHALL BE NON-PERFORMED IN THE EVENT THAT NONE ARE ENCOUNTERED.

ONE SPRING DRAIN CONSTITUTES 3 LIN FT

SPRING DRAIN DETAIL SECTION



ONE THIRD VITRIFIED CLAY LINER PLATE DETAIL



NOTE: THE JOINTS BETWEEN PLATES OF ADJACENT SECTIONS OF PIPE AND BETWEEN PLATES SHALL BE SEALED AS INDICATED IN THE PROPOSAL.

THE COST OF FURNISHING AND PLACING THE VITRIFIED CLAY LINER PLATES AND SPECIAL JOINTS SHALL BE INCLUDED IN THE UNIT PRICE BID PER LINEAR FOOT OF PIPE.

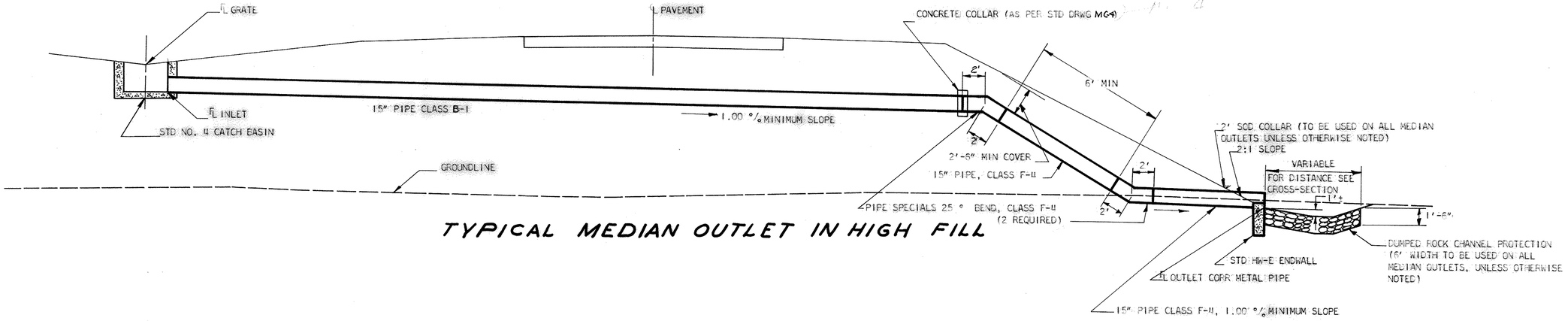
VITRIFIED CLAY LINER PLATE DETAIL

SPECIAL DRAINAGE DETAILS

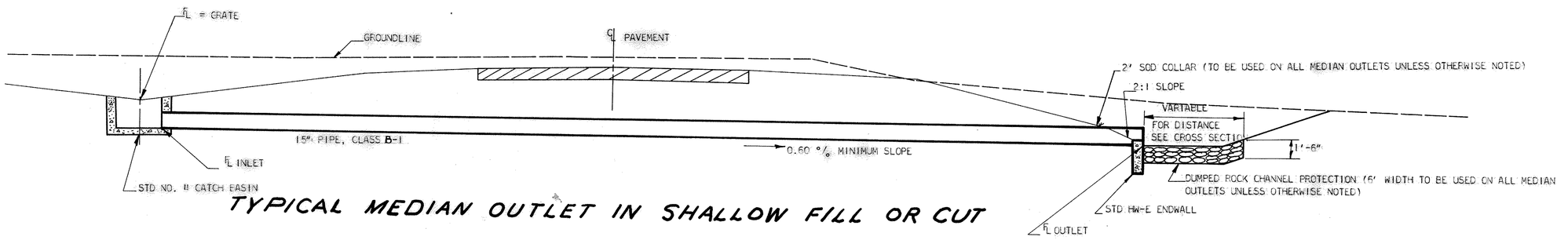
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	I-77-1(7)15	

250

WAS - 77 - 15.70
NOB - 77 - 0.00



TYPICAL MEDIAN OUTLET IN HIGH FILL



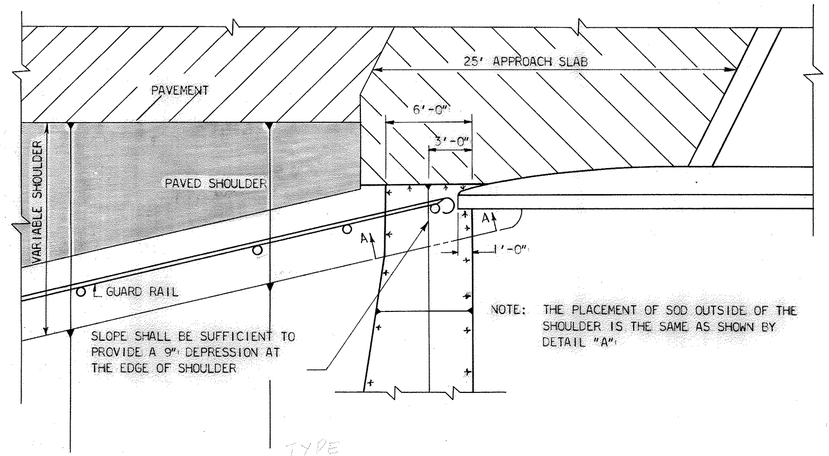
TYPICAL MEDIAN OUTLET IN SHALLOW FILL OR CUT

DESIGN STANDARD FOR TYPICAL MEDIAN OUTLETS

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	I-77-1(7)15	

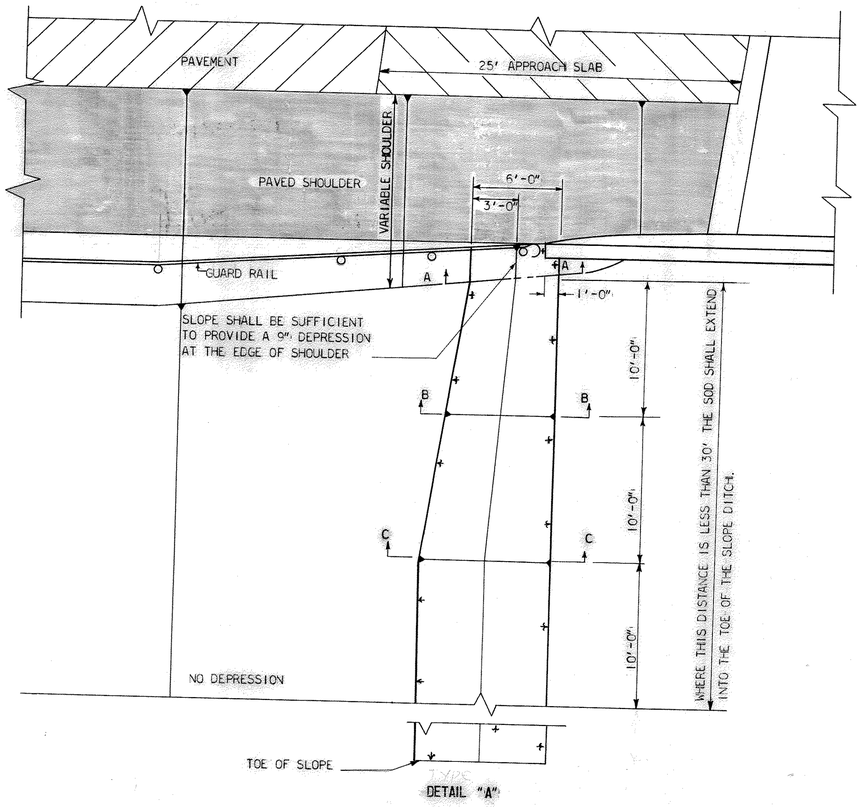
257

WAS - 77 - 15.70
NOB - 77 - 0.00

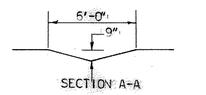


DETAIL "B"

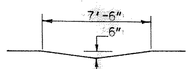
SCALE: 1" = 5'-0"



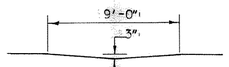
DETAIL "A"



SECTION A-A



SECTION B-B



SECTION C-C

SPECIAL BERM AND 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" × 1" × 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 GAGE.

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.

THE WIDTH OF SOD INCREASES BY 1'-6" FOR EACH 10'-0" OF LENGTH BEGINNING WITH 6'-0" WIDTH AT THE EDGE OF SHOULDER TO 9'-0" AT SEC C-C. THE SOD THEN CONTINUES AT 9'-0" WIDTH TO BOTTOM OF SLOPE.

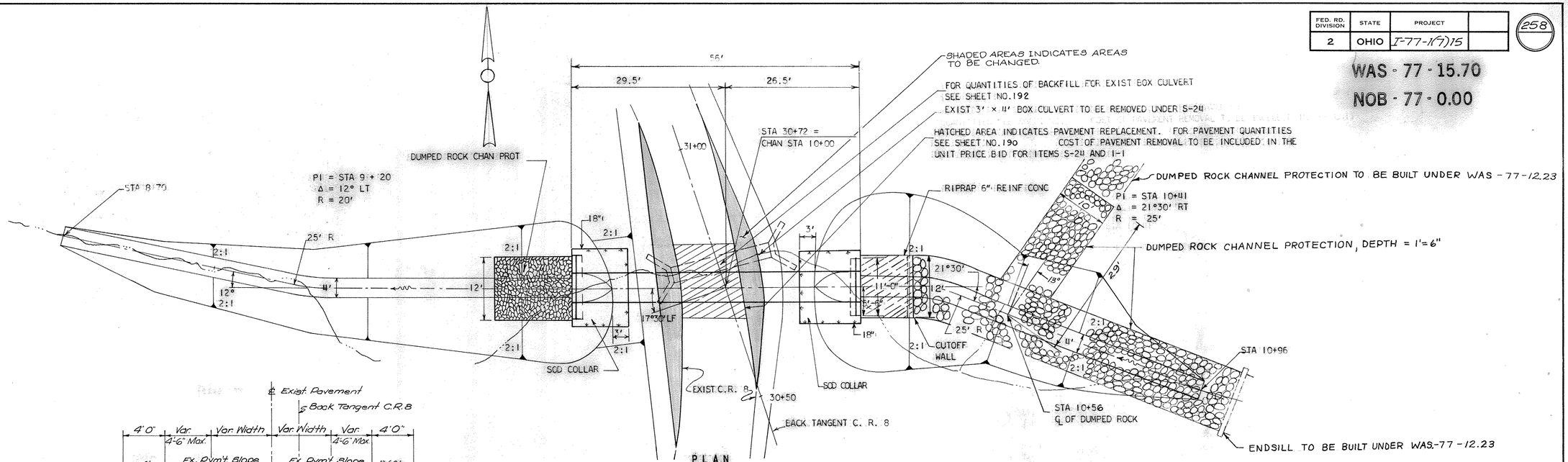
PAYMENT FOR ALL THE ABOVE SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM L-10 SODDING FOR SPECIAL BERM AND SLOPE PROTECTION

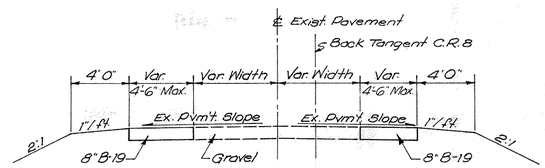
APPROACH SLAB EROSION CONTROL

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	I-77-1(7)15	

258

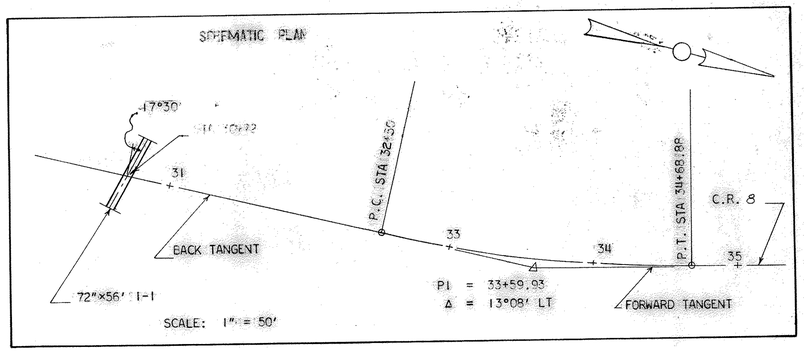
WAS - 77 - 15.70
NOB - 77 - 0.00

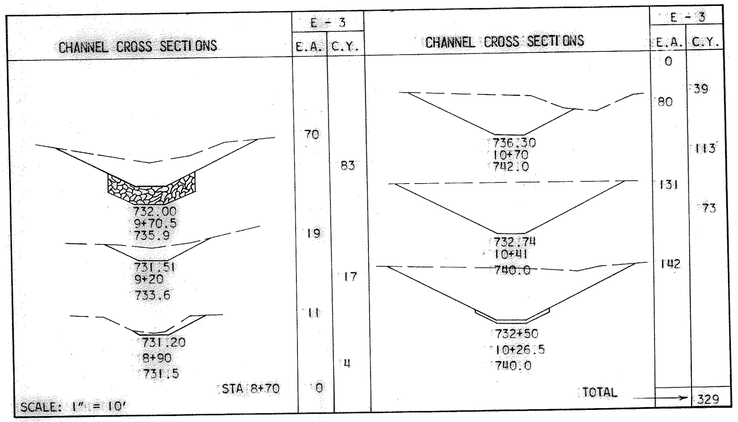




TYPICAL WIDENING SECTION
Scale : 1" = 5'

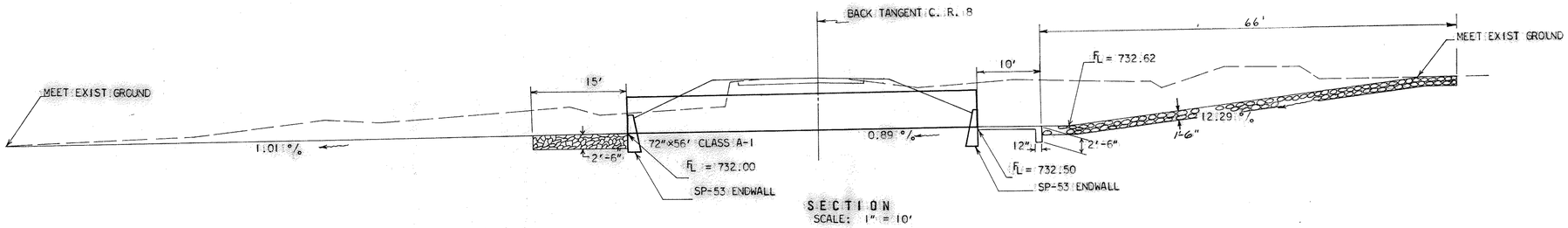
DRAINAGE AREA = 114 AC
Q50 = 186 CFS





ESTIMATED QUANTITIES

E-3	CHANNEL EXCAVATION	329	CU YDS
I-1	72" PIPE CLASS A-1 SEC M-6.6(a) WITH 1/3 VITRIFIED LINER AS PER PLAN	56	LIN FT
I-2	MASONRY CLASS "E"	5.7	CU YDS
I-10	RIPRAP 6" REINFORCED CONCRETE	13	SQ YDS
I-10	DUMPED ROCK CHANNEL PROTECTION	55	CU YDS
L-10	SODDING	34	SQ YDS
S-24	REMOVAL OF EXISTING STRUCTURE	LUMP	
B-19	8" AGGREGATE BASE COURSE	14	CU YDS.
	STD DRWGS: SP-53		



SECTION
SCALE: 1" = 10'

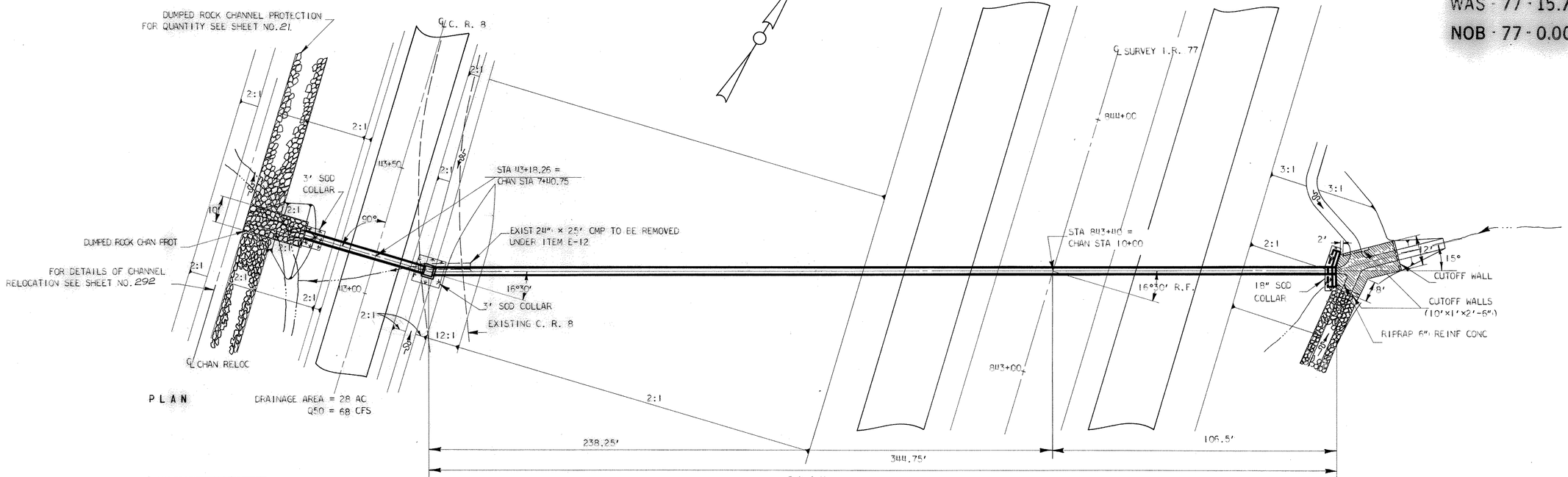
DESIGNED	CHECKED	INKED
J. H. W. 12-30-64	D. F. H. 1-22-65	D. O. W. 2-2-65

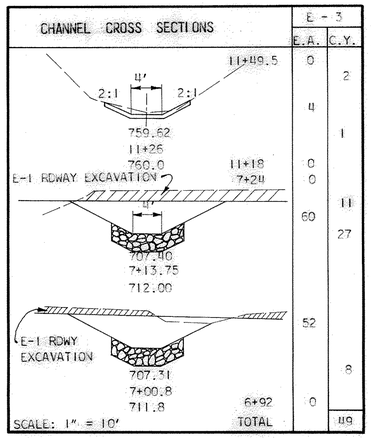
PIPE DETAIL ~ C.R. 8 Sta. 30+72

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	I-77-K(7)15	

259

WAS - 77 - 15.70
NOB - 77 - 0.00



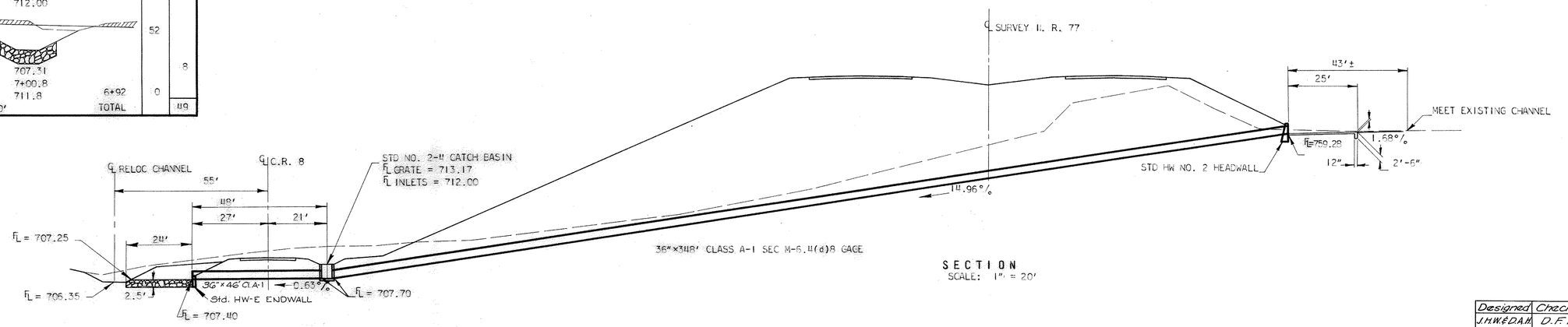


ESTIMATED QUANTITIES

E-3	CHANNEL EXCAVATION	49 CU YDS
E-12	PIPE REMOVED, OVER 15"	25 LIN FT
I-1	36" PIPE, CLASS A-1 SEC M-6.4(d) 8 GAGE	350 LIN FT
I-1	36" PIPE, CLASS A-1 SEC M-6.6(a) OR SEC M-6.8(b)	49 LIN FT
I-2	MASONRY CLASS "C"	6.0 CU YDS
I-8	STANDARD NO. 2-4 CATCH BASIN AS PER PLAN	1 EACH
I-10	RIPRAP 6" REINFORCED CONCRETE	38 SQ YDS
I-10	DUMPED ROCK CHANNEL PROTECTION	23 CU YDS
L-10	SODDING	21 SQ YDS

STD DRWGS: HW-E; HW NO. 2; I-8 C.B. 2-3 AND 2-4

NOTE: FOR HEADWALL DIMENSIONS SEE SHEET NO. 286



SECTION
SCALE: 1" = 20'

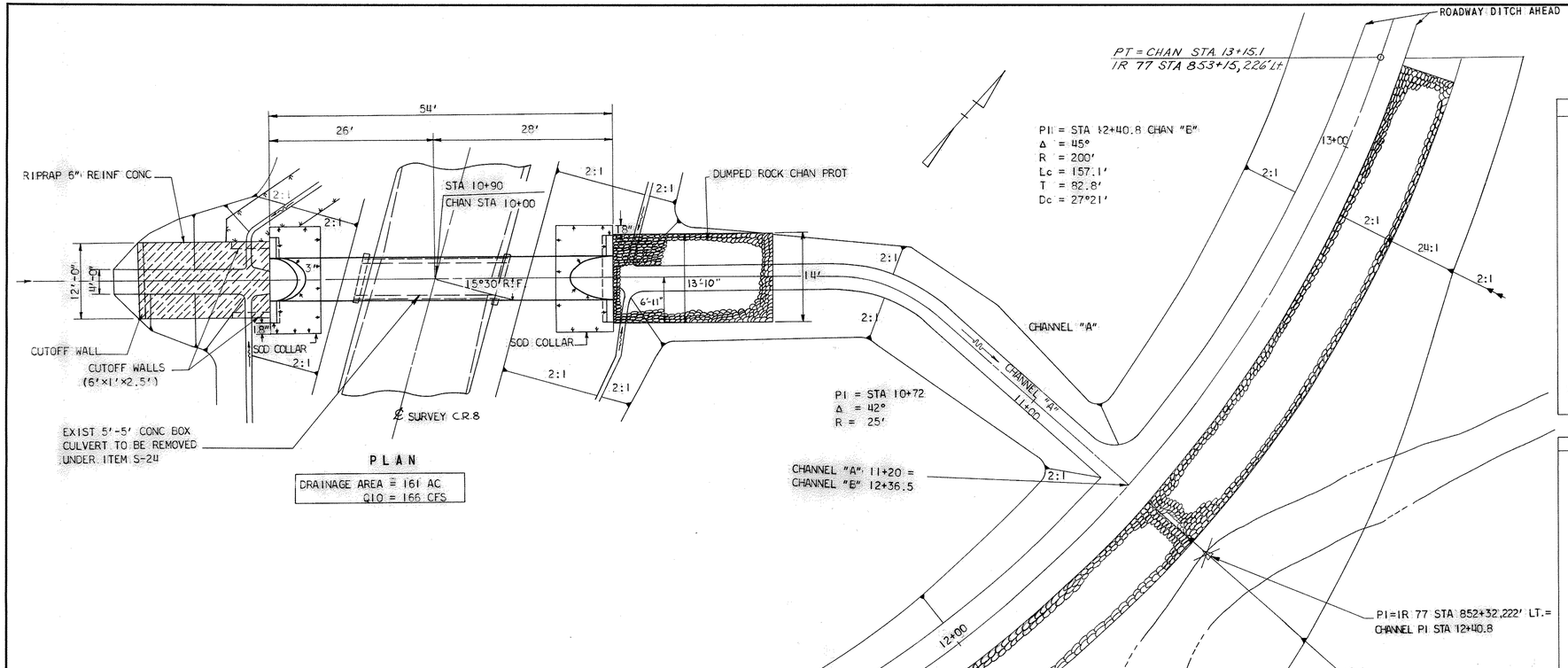
Designed	Checked	Inked
J.H.W.E.D.A.M. 9:29:64 M.R.A.	D.F.H. 11-12-64	R.F.B. 1-26-65

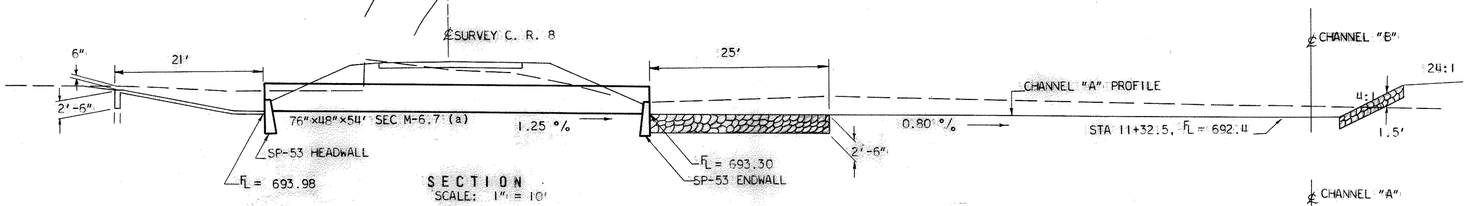
PIPE DETAIL STA. 843+40 IR 77

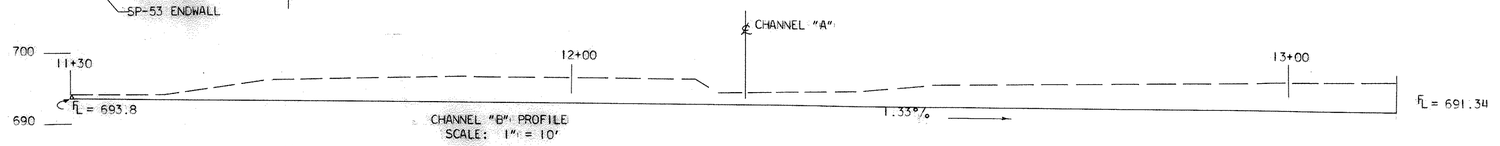
WAS-77-15.70
NOB-77-0.00

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	I-77-1(7)15	

260







CHANNEL "A" CROSS SECTIONS	E - 3 E.A.	E - 3 C.Y.
693.21 10+10 695.5 STA 10+32	22	
	0	3
STA 9+68	0	
695.02 9+65 697.0	0	2
STA 9+19	0	13
SCALE: 1" = 10' TOTAL		61

CHANNEL "A" CROSS SECTIONS	E-3 E.A.	E-3 C.Y.
STA 11+32.5	0	4
692.65 11+00 693.5	6	19
	23	
693.03 10+64 695.3		20
SCALE: 1" = 10' TOTAL		61

CHANNEL "E" CROSS SECTIONS	EMB. E.A.	EMB. C.Y.	E-3 E.A.	E-3 C.Y.
692.20 12+50 695.0	10		72	
		110		125
	81		32	
692.87 12+00 696.0		195		60
	130		33	
		157		42
693.53 11+50 694.0	40		12	
		15		4
11+30	0			0
SCALE: 1" = 10' TOTAL		* 477		231

* NOTE: EMBANKMENT CARRIED TO SHEET NO. 67

ESTIMATED QUANTITIES

E-3	CHANNEL EXCAVATION	292	CU YDS
I-1	76"×48" REINFORCED ELLIPTICAL CONCRETE PIPE, CLASS G-1, SEC M-6.7(a) WITH 1/3 VITRIFIED LINER AS PER PLAN	54	LIN FT
I-2	MASONRY, CLASS "E"	6.9	CU YD
I-10	RIPRAP 6" REINFORCED CONCRETE	28	SQ YDS
I-10	DUMPED ROCK CHANNEL PROTECTION	134	CU YDS
L-10	SODDING	21	SQ YDS
S-24	REMOVAL OF EXISTING STRUCTURE	LUMP	

STD DRWGS: SP-53

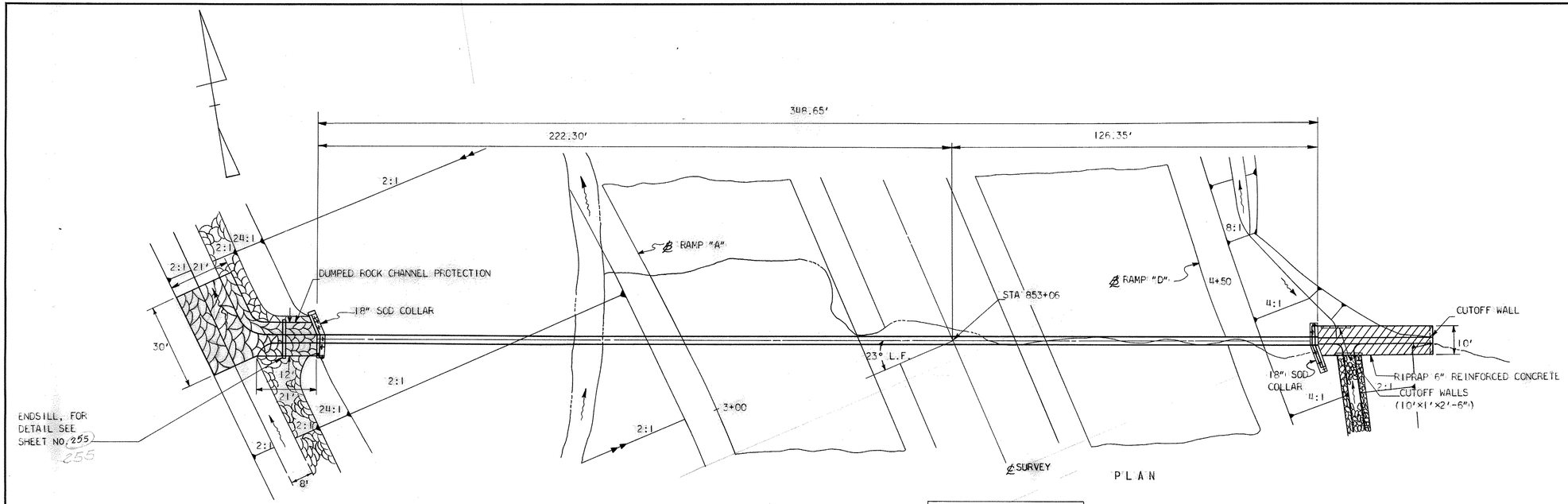
Designed	Checked	Inked
J.W.K & D.F.H. ~~5-28-64~~ 10-28-64	D. F. H. 10-28-64	J.D.L. 1-15-65

CHANNEL & PIPE DETAIL STA. 10+90 "C.R.8"

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	I-77-X(7)15	

261

WAS - 77 - 15.70
NOB - 77 - 0.00



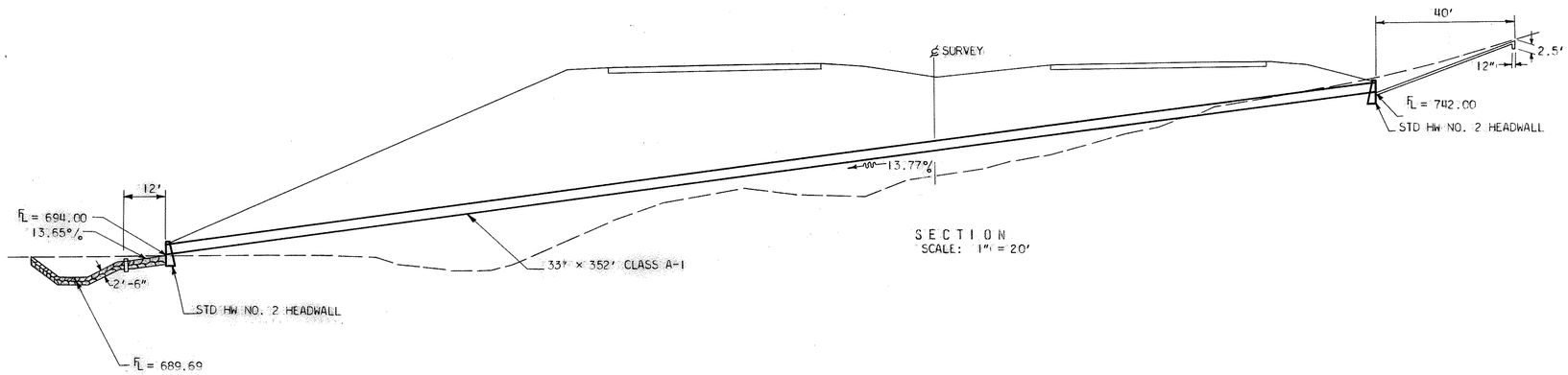
DRAINAGE AREA = 14 AC
Q50 = 47 CFS

ESTIMATED QUANTITIES

E-3 CHANNEL EXCAVATION	4	CU YDS
I-1 33" PIPE, CLASS A-1, SEC M-6.4(d) 10 GAGE	352	LIN FT
I-2 MASONRY, CLASS "C"	12.0	CU YDS
I-10 RIPRAP 6" REINFORCED CONCRETE	44	SQ YDS
I-10 DUMPED ROCK CHANNEL PROTECTION	85	CU YDS
L-10 SODDING	6	SQ YDS

STD DRWGS: HW NO. 2

NOTE: FOR HEADWALL DIMENSIONS SEE SHEET NO. 286



SECTION
SCALE: 1" = 20'

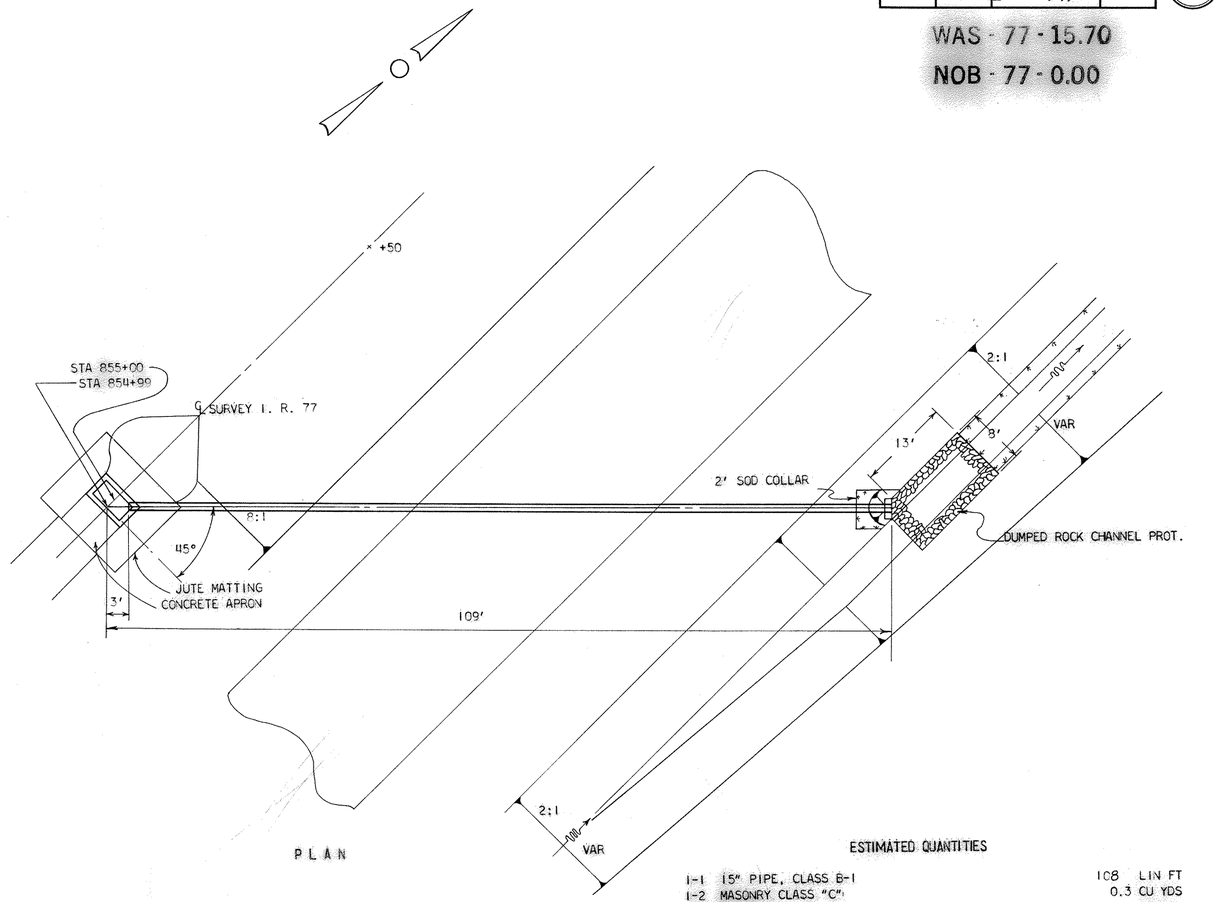
Designed	Checked	Inked
J.H.W.	D.F.H.	J.D.L.
10-21-64	12-21-64	1-19-65

PIPE DETAIL ~ STA. 853+06

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	I-77-1(7)15	

262

WAS - 77 - 15.70
NOB - 77 - 0.00

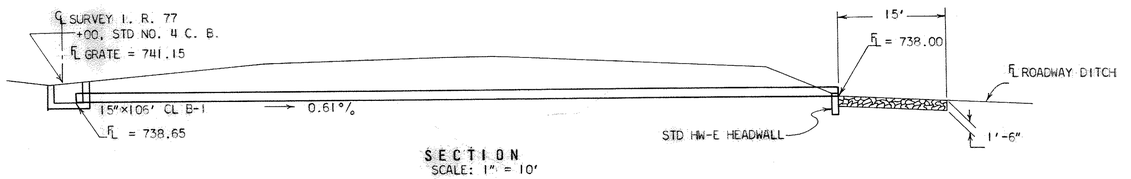


PLAN

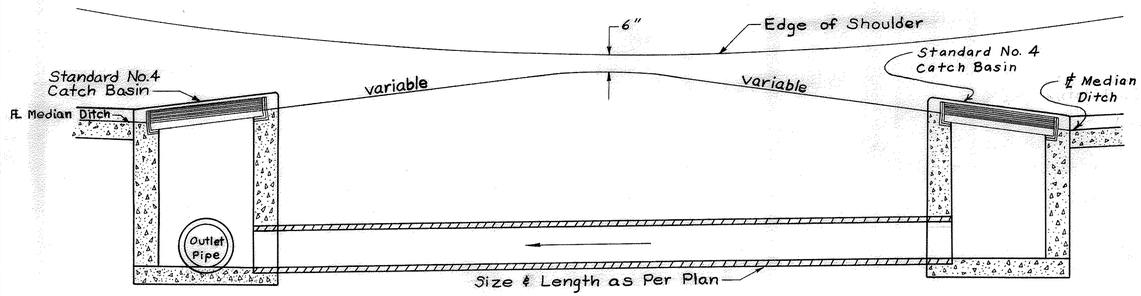
ESTIMATED QUANTITIES

I-1	15" PIPE, CLASS B-1	108 LIN FT
I-2	MASONRY CLASS "C"	0.3 CU YDS
I-8	STANDARD NO. 4 CATCH BASIN	1 EACH
L-10	SODDING	2 SQ YDS
I-10	DUMPED ROCK CHANNEL PROTECTION	7 CU YDS
L-120	JUTE MATTING	15 SQ YDS

STD DRWGS: HW-E; I-8 C. B. NO. 4



SECTION
SCALE: 1" = 10'



MEDIAN CATCH BASIN DETAIL IN SAG

CATCH BASIN IN SAG

VOID

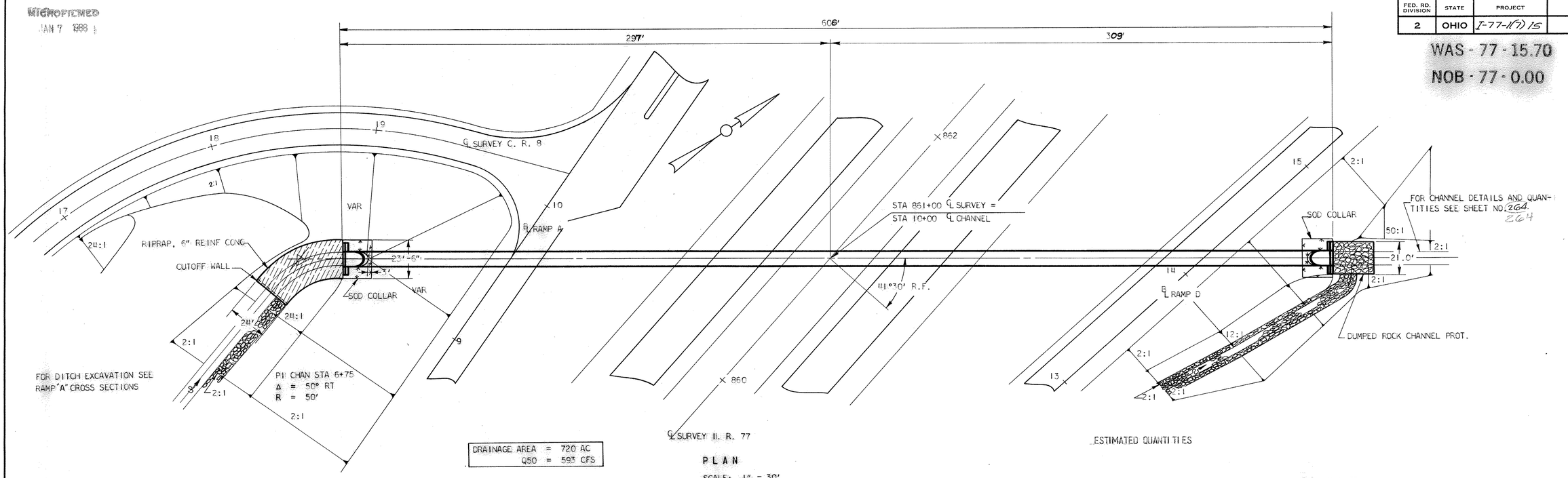
CATCH BASIN DETAILS

MICROFILMED
JAN 7 1988

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	I-77-1(7) 15	

263

WAS - 77 - 15.70
NOB - 77 - 0.00



DRAINAGE AREA = 720 AC
Q50 = 593 CFS

PLAN
SCALE: 1" = 30'

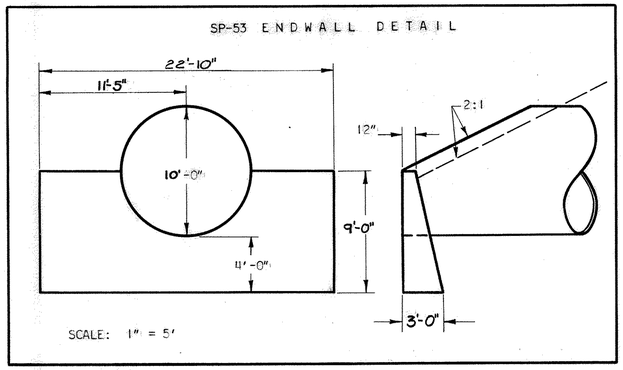
ESTIMATED QUANTITIES

I-1 120" CLASS A-1, SEC M-6.4(g) 5-3 GAGE AS PER PLAN	606	LIN FT
I-2 MASONRY, CLASS E	22.0	CU YDS
I-10 DUMPED ROCK CHANNEL PROTECTION	63	CU YDS
I-10 RIPRAP, 6" REINFORCED CONCRETE	144	SQ YDS
L-10 SODDING	57	SQ YDS

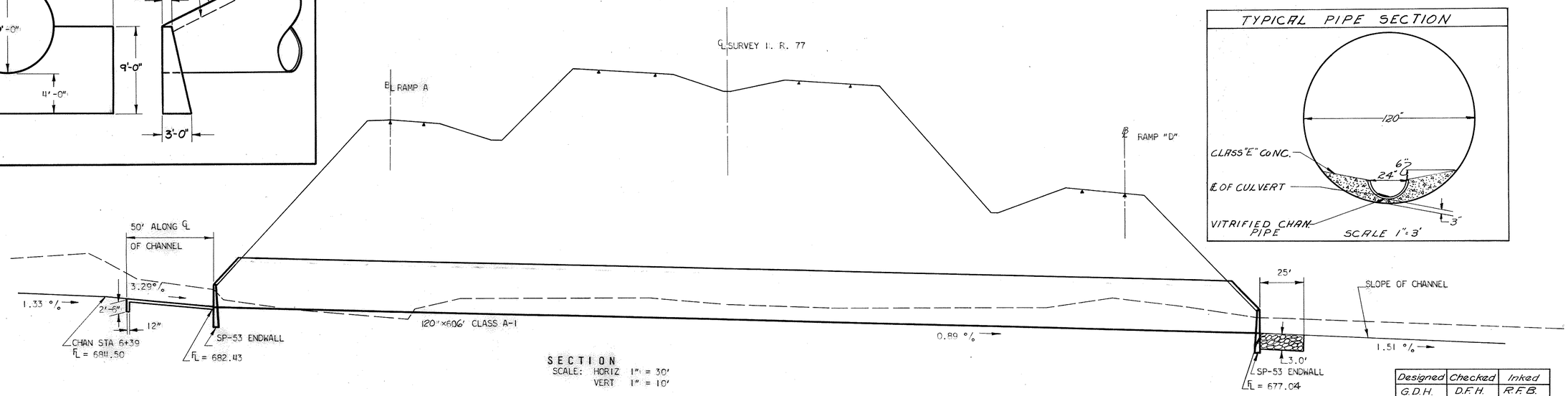
STD DRWGS: SP-53

NOTE: COST OF THE VITRIFIED CHANNEL PIPE AND THE CONCRETE INVERT PAVING SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM I-1.

SP-53 ENDWALL DETAIL



SCALE: 1" = 5'



SECTION
SCALE: HORIZ 1" = 30'
VERT 1" = 10'

TYPICAL PIPE SECTION

SCALE 1"=3'

Designed	Checked	Inked
G.D.H. 10-5-64	D.F.H. 12-7-64	R.F.B. 1-12-65

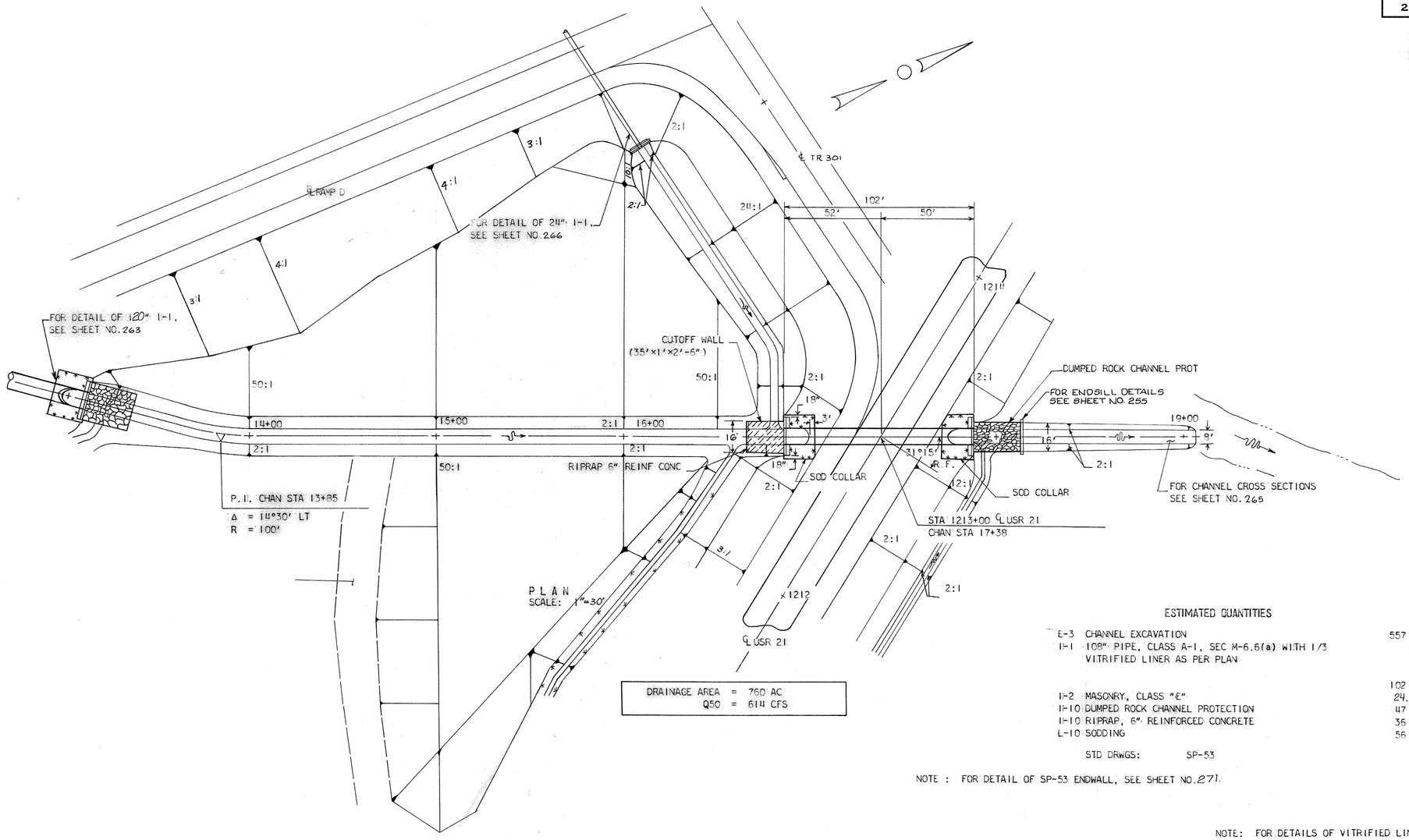
PIPE DETAIL ~ STA. 861+00

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	I-77-1(7)15	

264

WAS - 77 - 15.70

NOB - 77 - 0.00



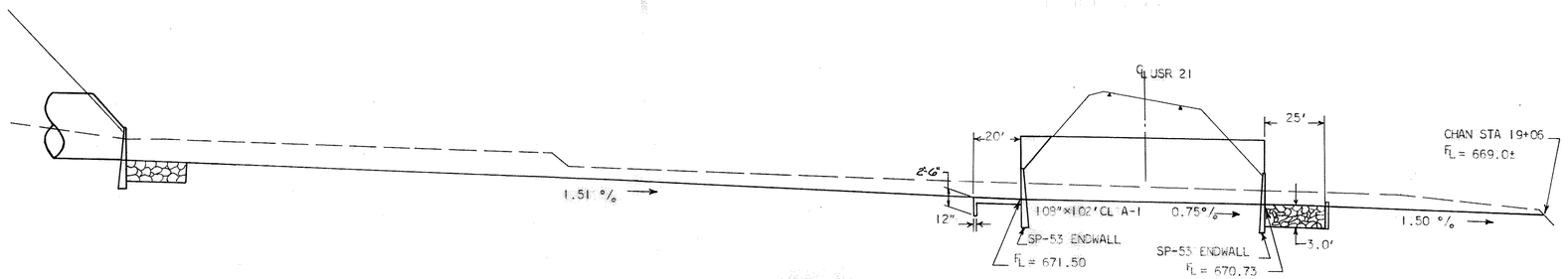
ESTIMATED QUANTITIES

E-3 CHANNEL EXCAVATION	557	CU YDS
I-1 108" PIPE, CLASS A-1, SEC M-6.6(a) WITH 1/3 VITRIFIED LINER AS PER PLAN	102	LIN FT
I-2 MASONRY, CLASS "E"	24.4	CU YDS
I-10 DUMPED ROCK CHANNEL PROTECTION	47	CU YDS
I-10 RIPRAP, 6" REINFORCED CONCRETE	36	SQ YDS
L-10 SODDING	56	SQ YDS

STD DRWGS: SP-53

NOTE : FOR DETAIL OF SP-53 ENDWALL, SEE SHEET NO. 271.

NOTE: FOR DETAILS OF VITRIFIED LINER SEE SHEET NO. 255



SECTION
SCALE: HORIZ - 1" = 30'
VERT - 1" = 10'

DESIGNED	CHECKED	INKED
G.D.H. 11-10-64	D.F.H. 12-7-64	D.O.W. 1-14-65

PIPE DETAIL ~ STA. 1213+00 U.S.R. 21

OHIO I-77-1(7) 15
WAS - 77 - 15.70
NOB - 77 - 0.00

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

670

669.0
19+03
670.0

670

669.98
18+38
672.0

8'

670

670.52
18+00
672.5

Earthwork Ramp "D" Channel

10:1

B 680 B 670

160

Earthwork T.R. 301 Channel

50:1

Earthwork Channel U.S.R.21

671.88
16+50
674.0

680

B

50:1

Earthwork Channel U.S.R.21

50:1

20:1

680

672.64
16+00
674.7
Ahead
Back

Earthwork Ramp "D" Channel

50:1

A 680 A

50:1

20:1

680

674.15
15+00
675.8

Earthwork Ramp "D" Channel

50:1

680

675.66
14+00
679.0

50:1

676.11
13+70
679.5

8'

680

676.79
13+25
680.0

140 120 100 80 60 40 20 ℄ 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300

8'
4'
℄ Channel
2:1 2:1

TYPICIAL CHANNEL SECTION
Scale: 1"=5'

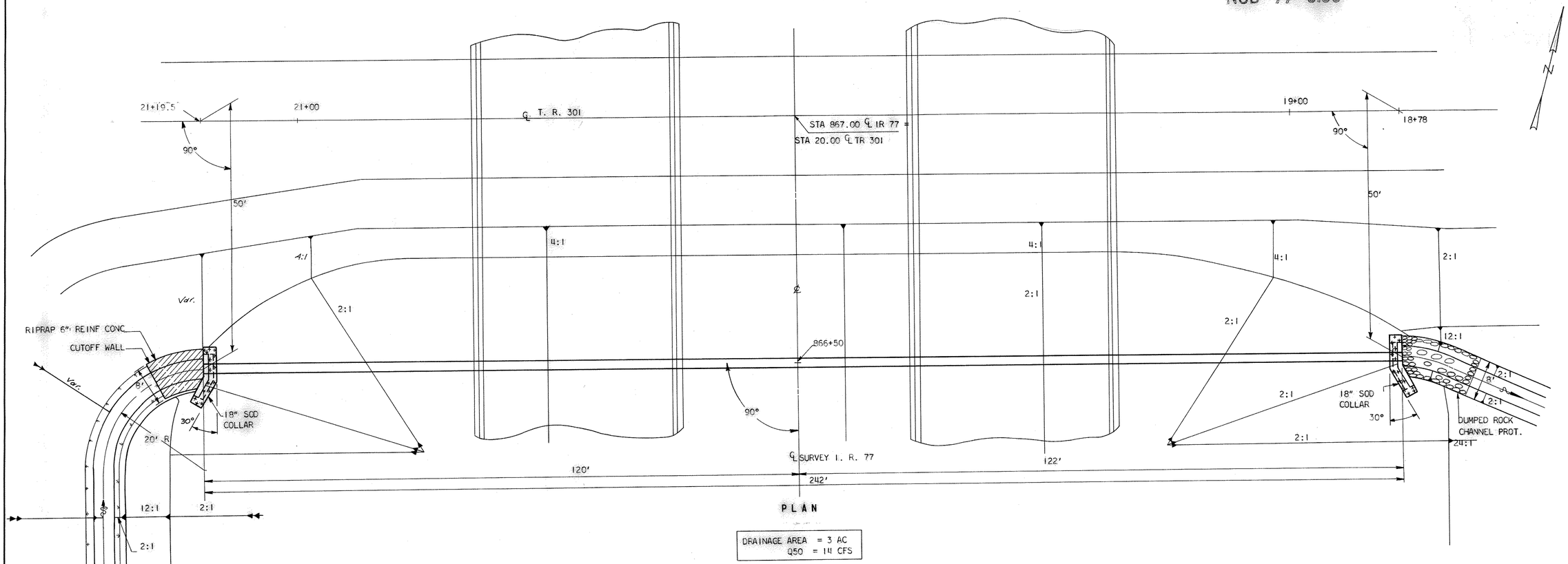
	E-3 Emb.	
	E.A.	C.Y.
End 19+06	0	
	1	
	12	
670	44	
	24	
	35	
670	25	
	20	
Begin 17+88	25	
End 16+86	27	0
680	36	91
	27	136
	47	668
680	24	585
	69	2398
680 Ahead	13	710
Back	13	133
Add for grading off existing U.S.R. 21		397
	122	463
680	53	117
		161
	59	
680	53	172
		143
	96	
680	50	0
	28	0
Begin 13+10	50	0
Total E-3		557
Total Emb. To Be Carried Between 1212+50 & 1213+00 U.S.R. 21, See Sheet No.		4321

Channel Cross Sections ~ Sta. 13+10 To Sta. 19+06

WAS - 77 - 15.70
NOB - 77 - 0.00

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	I-77-1(7)15	

266



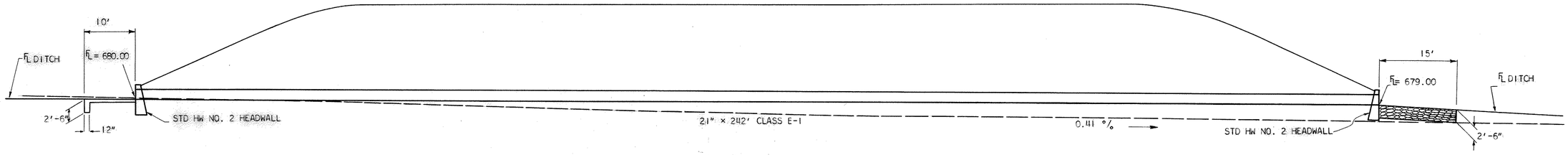
DRAINAGE AREA = 3 AC
Q50 = 14 CFS

ESTIMATED QUANTITIES

I-1	21" PIPE CLASS E-1 SEC M-6.6(c)	242 LIN FT
I-2	MASONRY CLASS "C"	4.8 CU YDS
I-10	DUMPED ROCK CHANNEL PROTECTION	12 CU YDS
I-10	RIPRAP 6" REINFORCED CONCRETE	9 SQ YDS
L-10	SODDING	6 SQ YDS

STD DRWGS: HW NO. 2

NOTE: FOR HEADWALL DIMENSIONS SEE SHEET NO. 286.



SECTION
SCALE: 1" = 10'

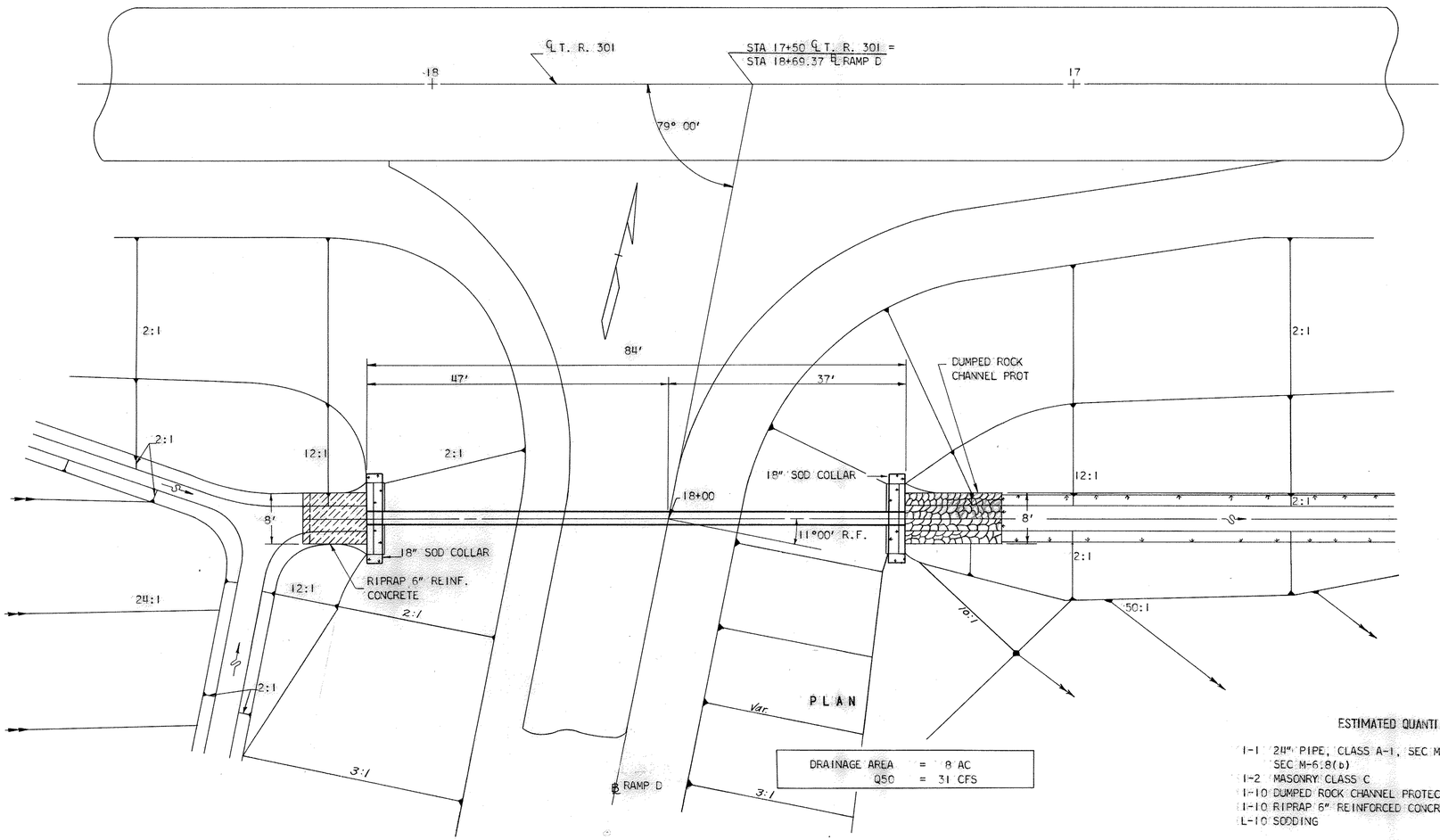
Designed	Checked	Inked
G. D. H. 10-26-64	D. F. H. 2-11-65	J. D. L. 2-15-65

PIPE DETAIL ~ STA. 866+50

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	I-77-1(7) 15	

267

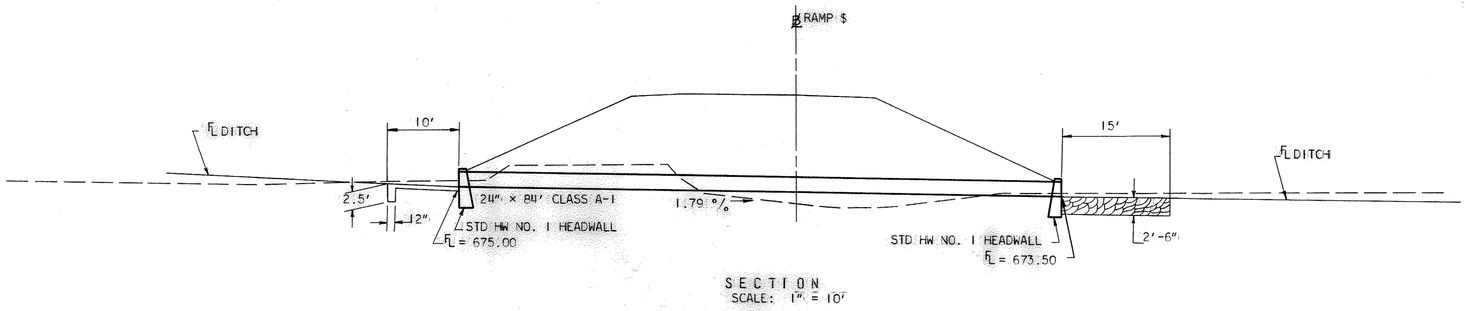
WAS - 77 - 15.70
NOB - 77 - 0.00



ESTIMATED QUANTITIES

1-1	24" PIPE, CLASS A-1, SEC M-6.6(b) OR SEC M-6.8(b)	84 LIN FT
1-2	MASONRY CLASS C	6.6 CU YDS
1-10	DUMPED ROCK CHANNEL PROTECTION	12 CU YDS
1-10	RIPRAP 6" REINFORCED CONCRETE	9 SQ YDS
L-10	SODDING	6 SQ YDS

STD DRWGS: HW NO. 1



SECTION
SCALE: 1" = 10'

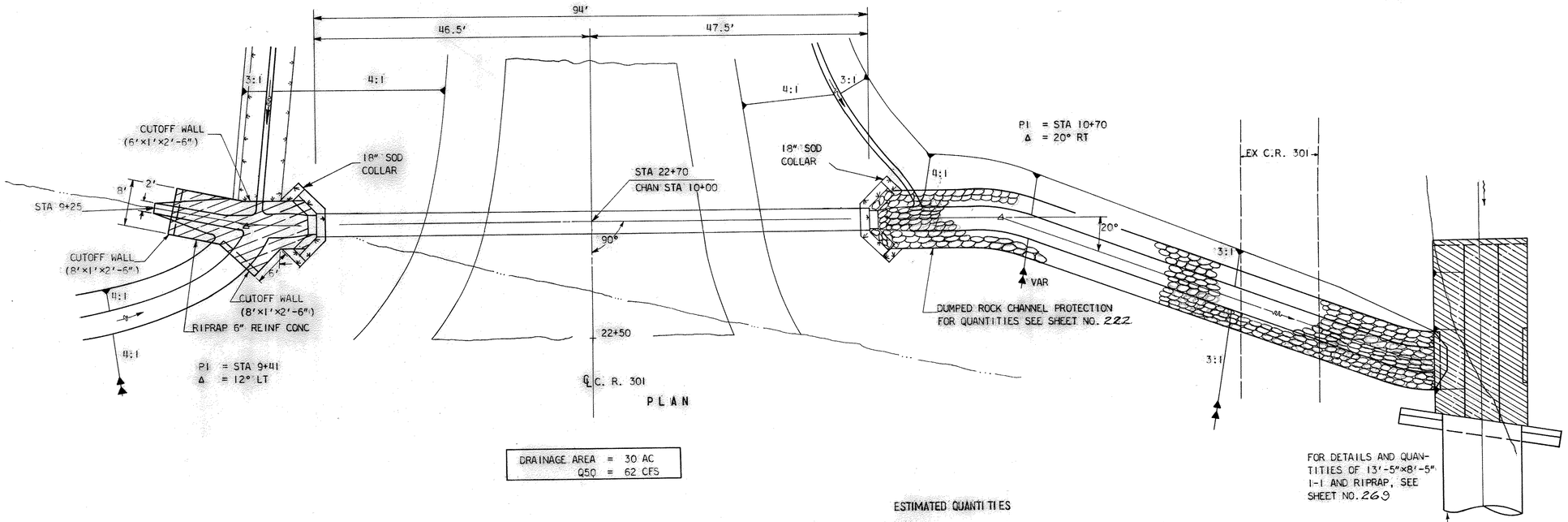
Designed	Checked	Inked
G. D. H. 10-28-64	D. F. H. 12-9-64	J. D. L. 1-13-65

PIPE DETAIL ~ Sta. 18+00 RAMP "D"

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	I-77-1(7)15	

268

WAS - 77 - 15.70
NOB - 77 - 0.00



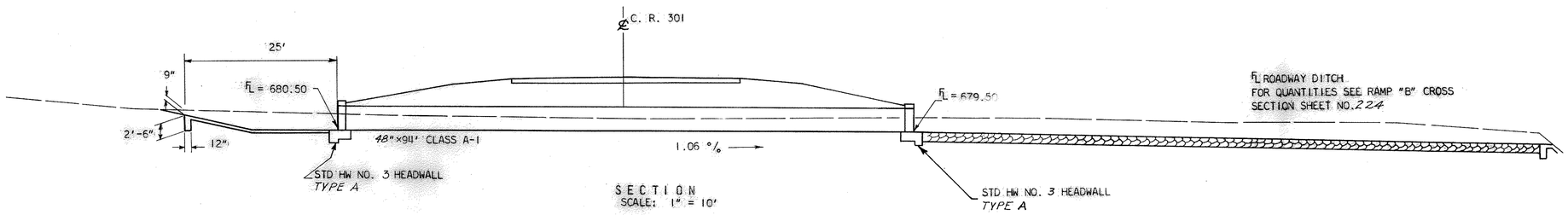
DRAINAGE AREA = 30 AC
Q50 = 62 CFS

FOR DETAILS AND QUANTITIES OF 13'-5"×8'-5" I-1 AND RIPRAP, SEE SHEET NO. 269

ESTIMATED QUANTITIES

E-3	CHANNEL EXCAVATION	2 CU YDS
I-1	48" PIPE, CLASS A-1, SEC M-6.6(a)	94 LIN FT
I-2	MASONRY CLASS "C"	16.4 CU YDS
I-10	RIPRAP 6" REINFORCED CONCRETE	24 SQ YDS
L-10	SODDING	6 SQ YDS

STD DRWGS: HW NO. 1



Designed	Changed	Inked
J. H. W. 10-8-64	P. M. G. 1-28-65	J. D. L. 2-8-65

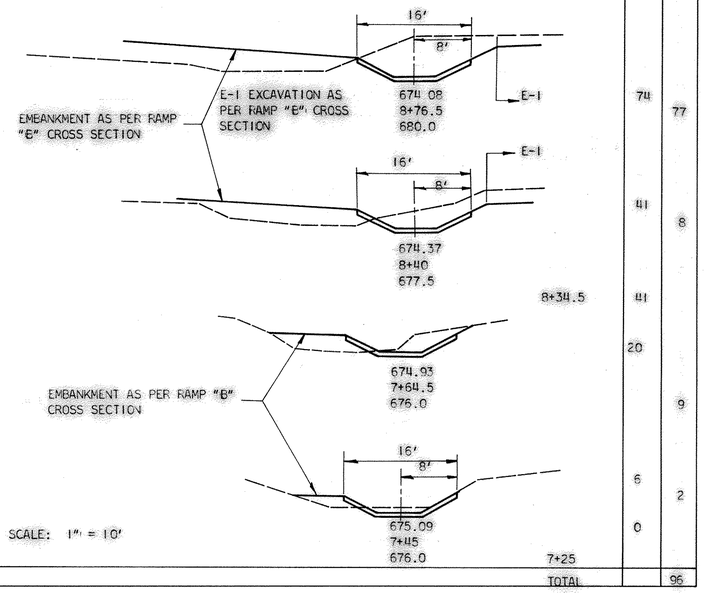
PIPE DETAIL ~ STA. 22+70 C.R.301

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	I-77-1(17)15	

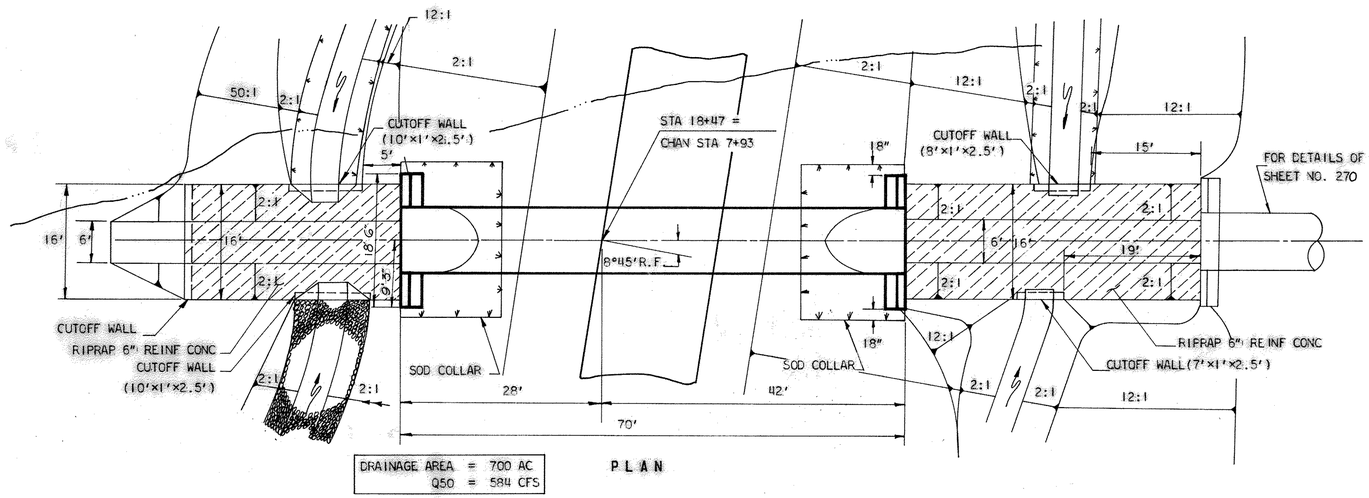
269

WAS - 77 - 15.70
NOB - 77 - 0.00

CHANNEL CROSS SECTION



E - 3	E.A.	C.Y.
	74	77
	41	8
	41	
	20	
		9
	6	2
	0	
TOTAL		96



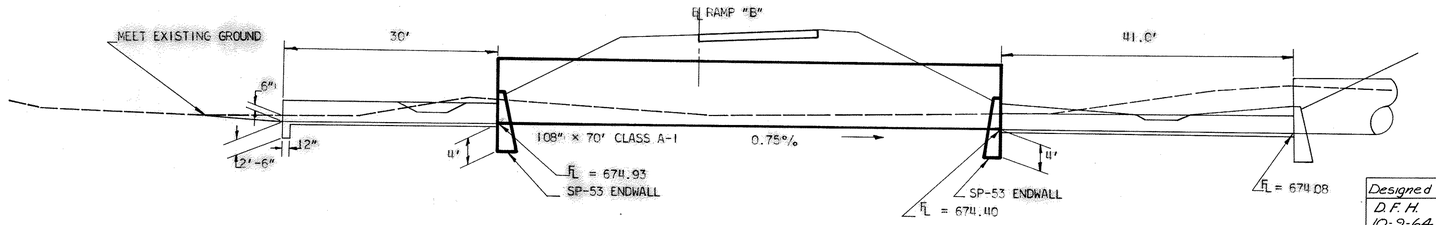
DRAINAGE AREA = 700 AC
Q50 = 584 CFS

PLAN

ESTIMATED QUANTITIES

E-3	CHANNEL EXCAVATION	96	CU YDS
I-1	108" PIPE, CLASS A-1, SEC M-6.6(a) WITH 1/3 VITRIFIED LINER AS PER PLAN	70	LIN FT
I-2	MASONRY, CLASS "E"	21.3	CU YDS
I-10	RIPRAP 6" REINFORCED CONCRETE	135	SQ YDS
L-10	SODDING	49	SQ YDS

STD DRWGS: SP-53



SECTION
SCALE: 1" = 10'

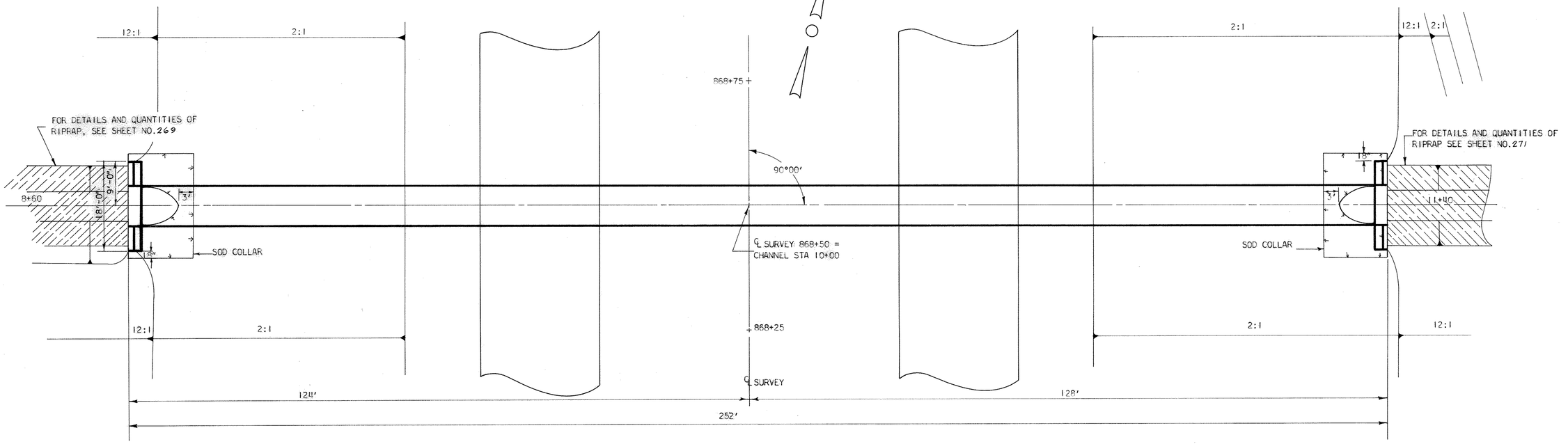
Designed	Checked	Inked
D.F.H. 10-9-64	J.H.W. 4-1-65	R.D.E. 4-13-65

PIPE DETAIL - RAMP "B" - STA. 18+47

WAS - 77 - 15.70
NOB - 77 - 0.00

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	I-77-1(7)15	

270



PLAN

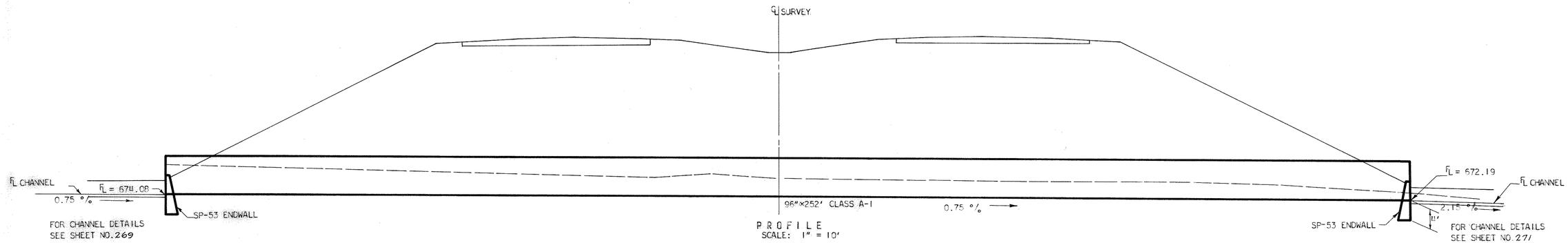
DRAINAGE AREA = 701 AC
Q50 = 581 CFS

ESTIMATED QUANTITIES

1-1	96" PIPE CLASS A-1, SEC M-106.6(d) WITH 1/3 VITRIFIED LINER AS PER PLAN	252 LIN FT
1-2	MASONRY CLASS "E"	16.6 CU YDS
L-10	SODDING	41 SQ YDS

STD DRWGS: SP-53

FOR DETAIL OF VITRIFIED LINER SEE SHEET NO. 255



PROFILE
SCALE: 1" = 10'

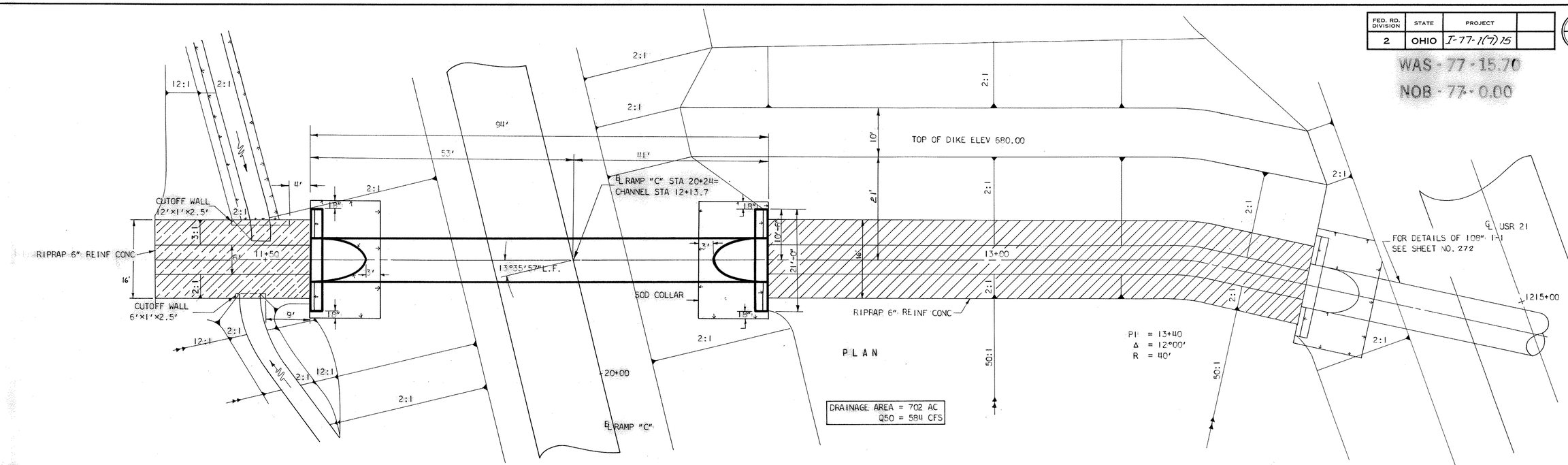
Designed	Checked	In Kad
D.F.H. 10-6-64	G.D.H. 11-19-64	P.A.L. 1-13-65

PIPE DETAIL ~ Sta. 868+50

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	I-77-1(7)15	

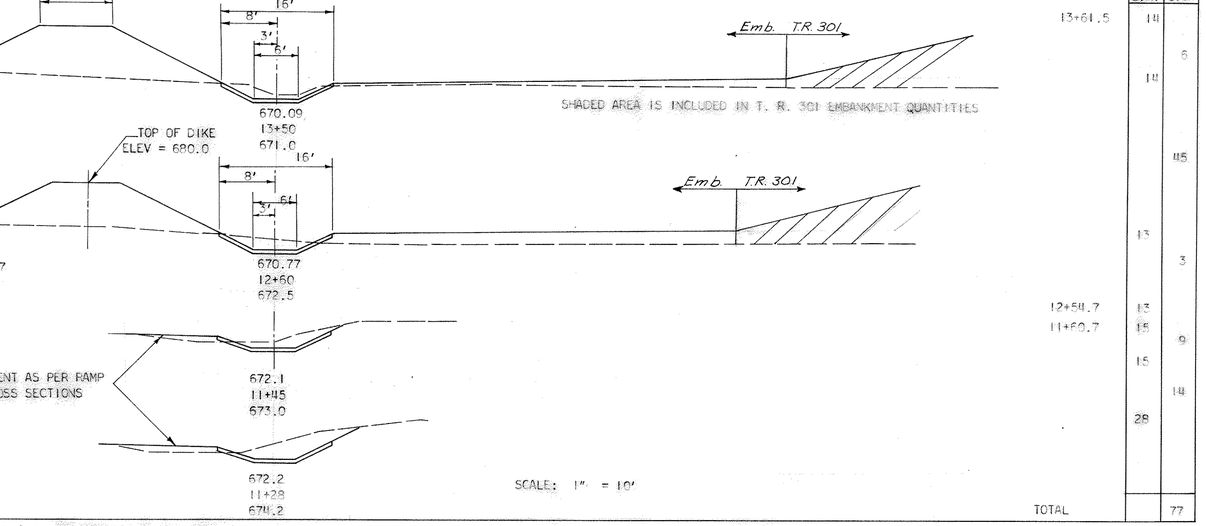
271

WAS - 77 - 15.70
NOB - 77 - 0.00



CHANNEL CROSS SECTIONS

EMB E.A.	EMB C.Y.		E-3 E.A.	E-3 C.Y.
		13+61.5	14	
220				6
	94			
220			14	
	816			115
270	53		13	
270	99	12+54.7		3
0		12+38	13	
			15	9
			15	
			28	14
	1062		TOTAL	77

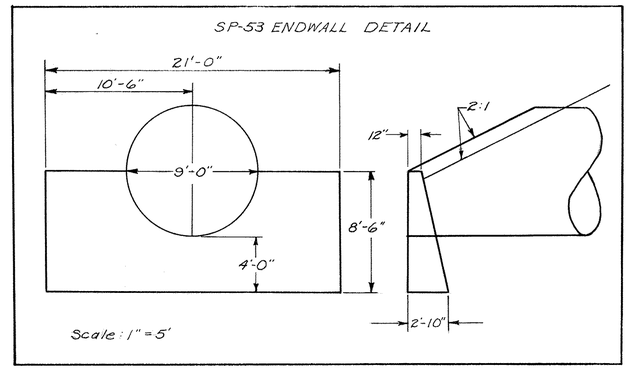


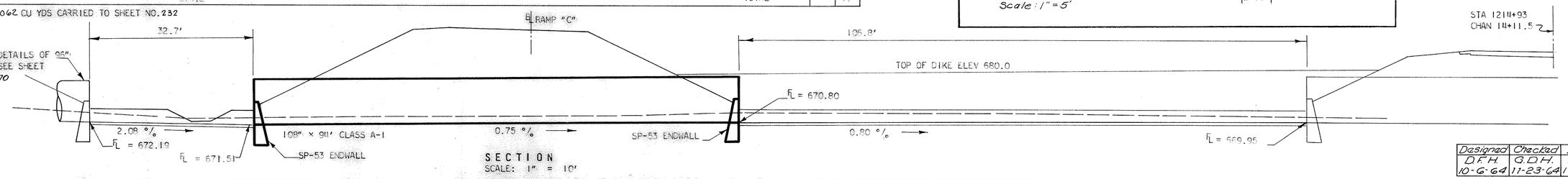
NOTE: EMBANKMENT 1062 CU YDS CARRIED TO SHEET NO. 232

ESTIMATED QUANTITIES

E-3	CHANNEL EXCAVATION	77	CU YDS
I-1	108" PIPE CLASS A-1 SEC M-6.6(a) WITH 1/3 VITRIFIED LINER AS PER PLAN	94	LIN FT
I-2	MASONRY CLASS "E"	21.8	CU YD
I-10	RIPRAP 6" REINFORCED CONCRETE	263	SQ YDS
L-10	SODDING	57	SQ YDS

STD DRWGS: SP-53





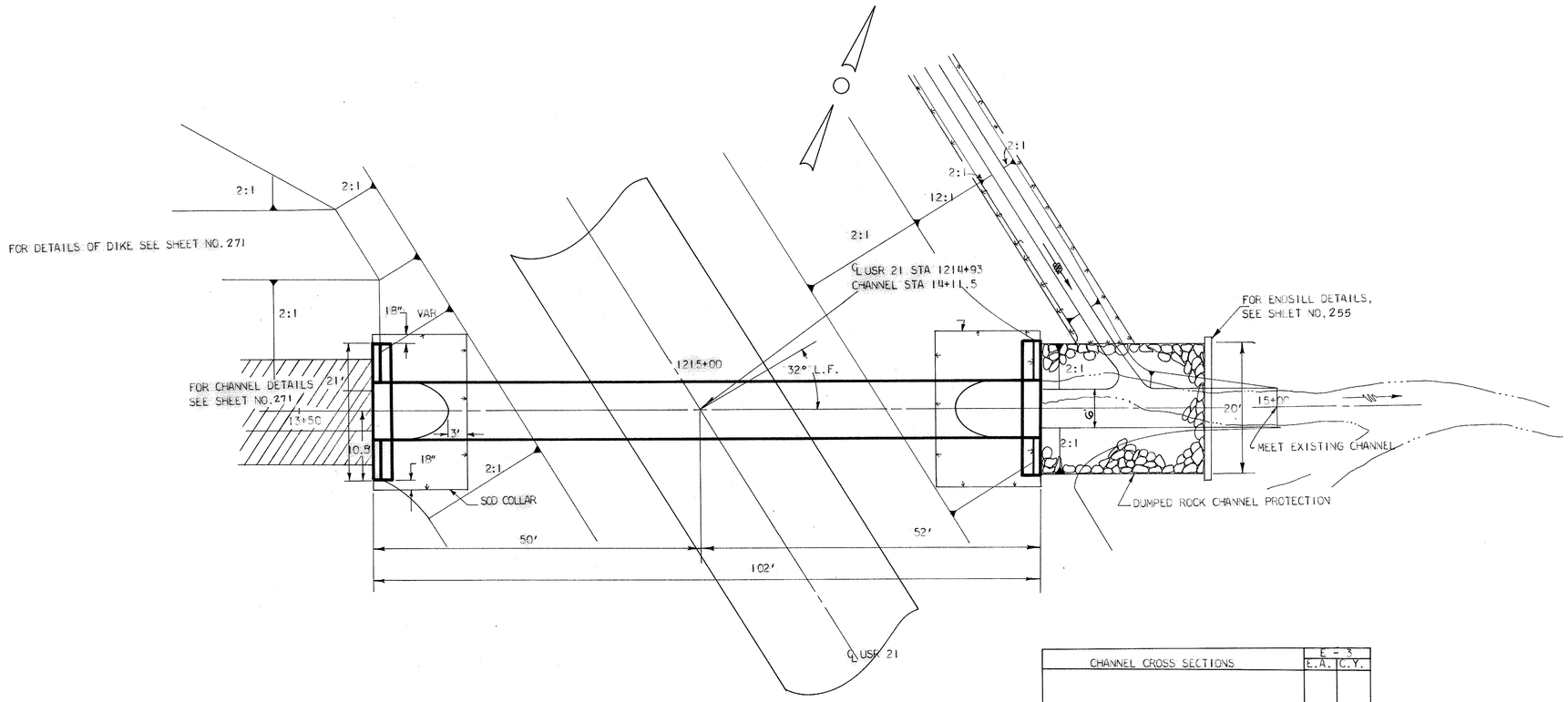
Designed	Checked	Inked
D.F.H. 10-6-64	G.D.H. 11-23-64	P.A.L. 1-18-65

CHANNEL & PIPE DETAIL ~ RAMP "C" ~ Sta. 20+24

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	I-77-1(7)15	

272

WAS - 77 - 15.70
NOB - 77 - 0.00



PLAN

DRAINAGE AREA = 700 AC
Q50 = 584 CFS

CHANNEL CROSS SECTIONS	E-3 E.A.	E-3 C.Y.
669.18 14+63.5 670.0	7	5
EXISTING CHANNEL 15+00 669.0	0	
SCALE: 1" = 10' TOTAL		0

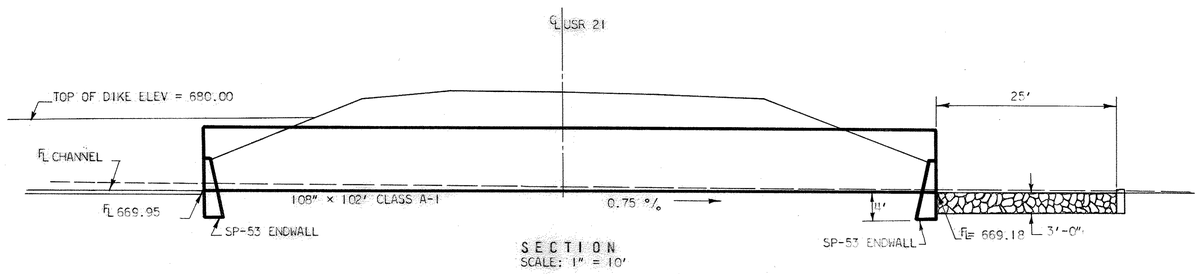
ESTIMATED QUANTITIES

E-3	CHANNEL EXCAVATION	5 CU YDS
I-1	108" PIPE, CLASS A-1, SEC M-6.6(a) WITH 1/3 VITRIFIED LINER AS PER PLAN	102 LIN FT
I-2	MASONRY CLASS "E"	27.2 CU YDS
I-10	DUMPED ROCK CHANNEL PROTECTION	60 CU. YDS
L-10	SODDING	56 SQ YDS

STD DRWGS.: SP-53

NOTE: FOR DETAIL OF SP-53 ENDWALL SEE SHEET NO. 271

NOTE: FOR DETAILS OF VITRIFIED LINER SEE SHEET NO. 255



SECTION
SCALE: 1" = 10'

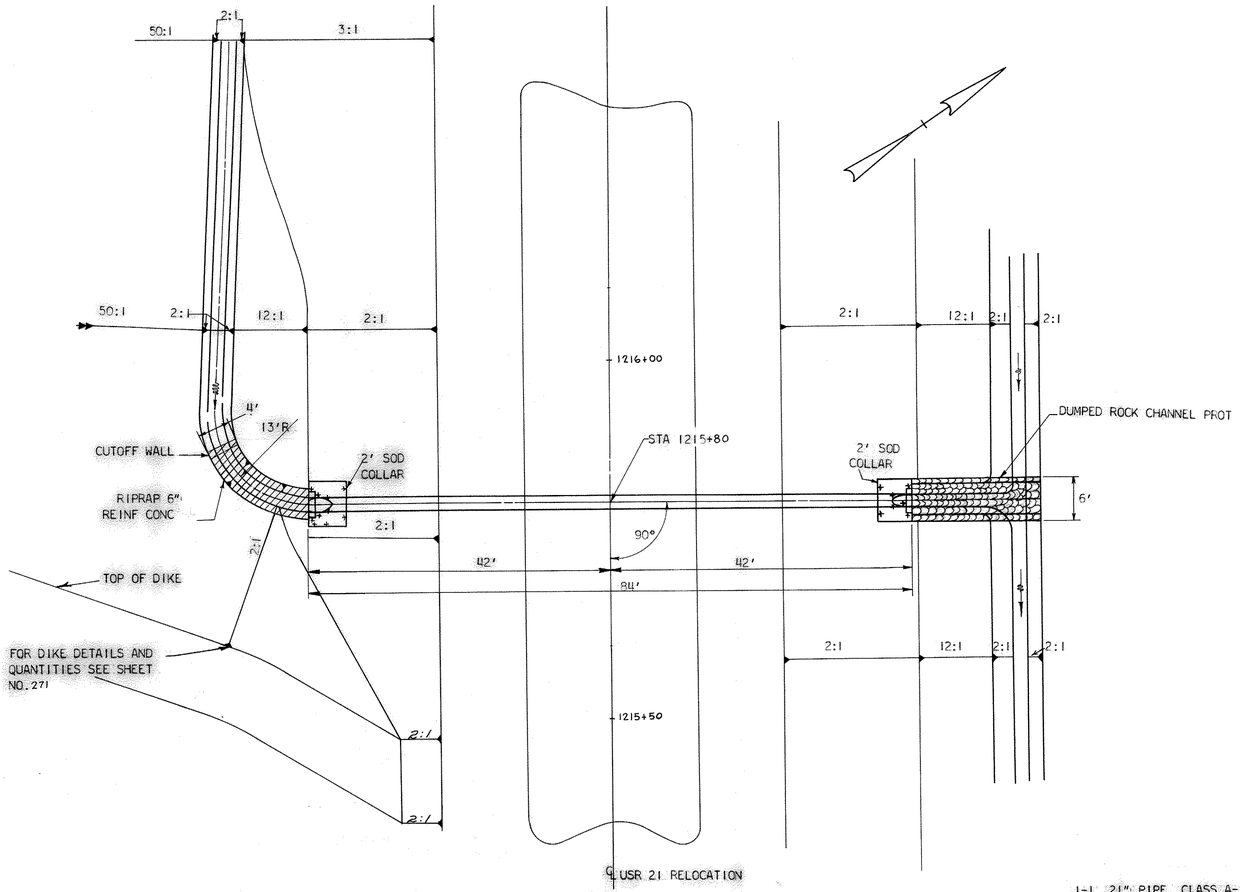
Designed	Checked	Inked
D.F.H. 10-6-64	G.D.H. 11-25-64	P.A.L. 1-13-65

PIPE DETAIL — Sta. 1214+93 U.S.R. 21

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	I-77-1(7)15	

273

WAS - 77 - 15.70
NOB - 77 - 0.00



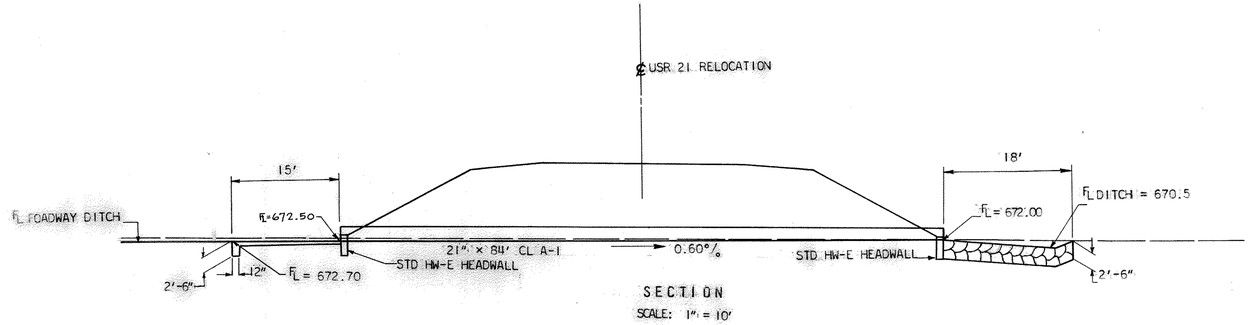
PLAN

DRAINAGE AREA = 3 AC
Q50 = 14.4 CFS

ESTIMATED QUANTITIES

1-1	21" PIPE, CLASS A-1, SEC M-6.6(b) OR M-6.8(b)	84 LIN FT
1-2	MASONRY, CLASS "C"	0.7 CU YDS
1-10	RIPRAP, 6" REINFORCED CONCRETE	7 SQ YDS
1-10	DUMPED ROCK CHANNEL PROTECTION	10 CU YDS
L-10	SODDING	6 SQ YDS

STD DRWGS: HW-E;



SECTION

SCALE: 1" = 10'

DESIGNED	CHECKED	INKED
D.F.H. 10-15-64	G.D.H. 11-24-64	J.D.L. 2-2-65

PIPE DETAIL - STA. 1215+80 (RELOCATED U.S. 21)

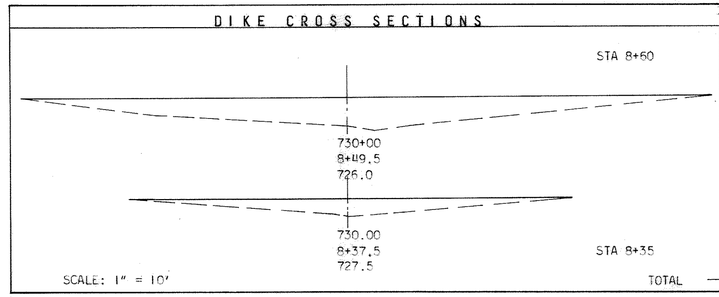
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	I-77-1(7)15	

274

WAS - 77 - 15.70

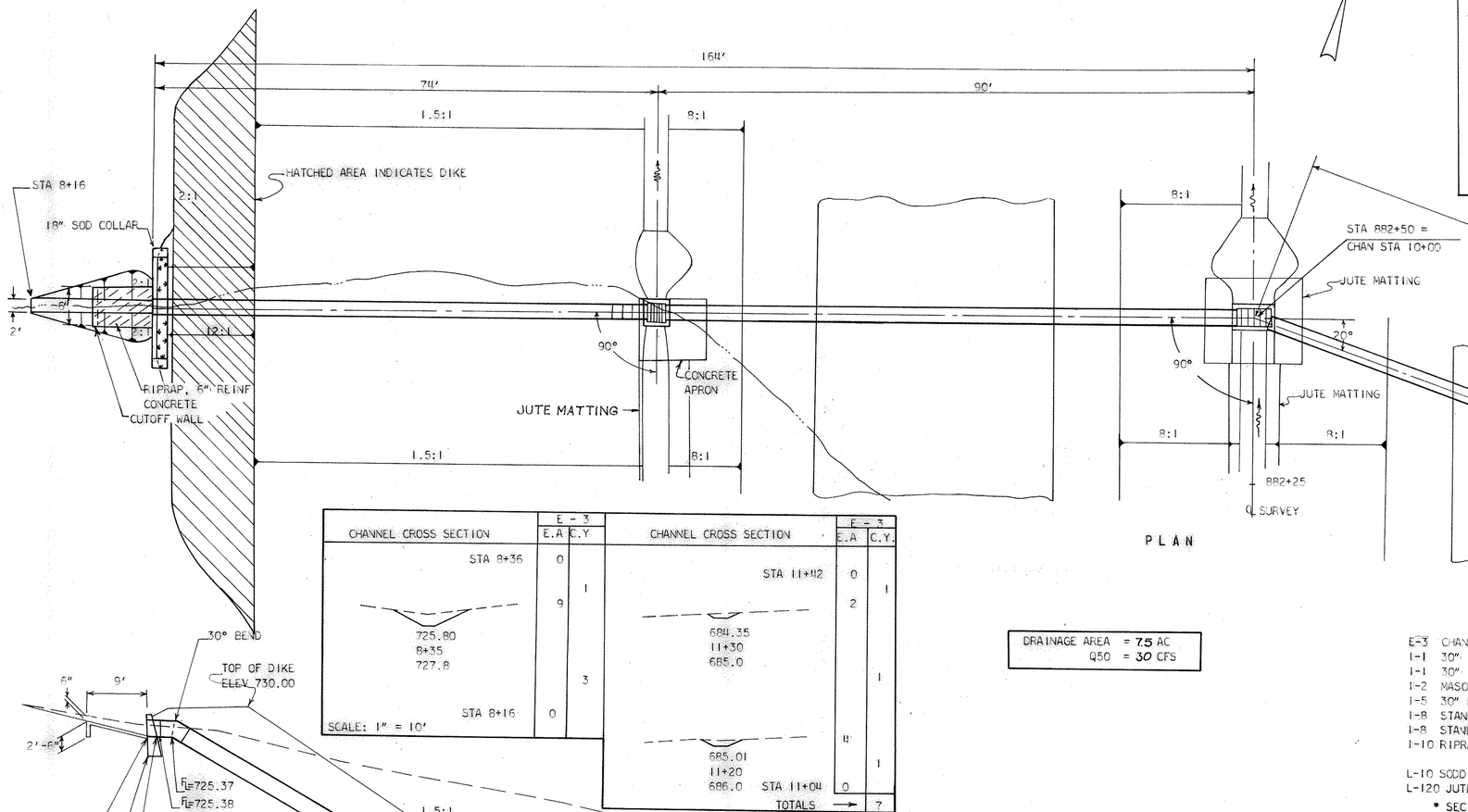
NOB - 77 - 0.00

DIKE CROSS SECTIONS



EMB	
E.A	C.Y.
0	
	46
237	
	68
66	
	3
0	
TOTAL →	117

TOTAL CARRIED TO SHEET NO. 88



PLAN

CHANNEL CROSS SECTION	E - 3 E.A	E - 3 C.Y.
STA 8+36	0	
		1
	9	
725.80 8+35 727.8		
		3
STA 8+16	0	

SCALE: 1" = 10'

CHANNEL CROSS SECTION	E - 3 E.A	E - 3 C.Y.
STA 11+42	0	
		1
	2	
684.35 11+30 685.0		
		1
	4	
685.01 11+20 686.0		
STA 11+04	0	1
TOTALS →	7	

DRAINAGE AREA = 7.5 AC
Q50 = 30 CFS

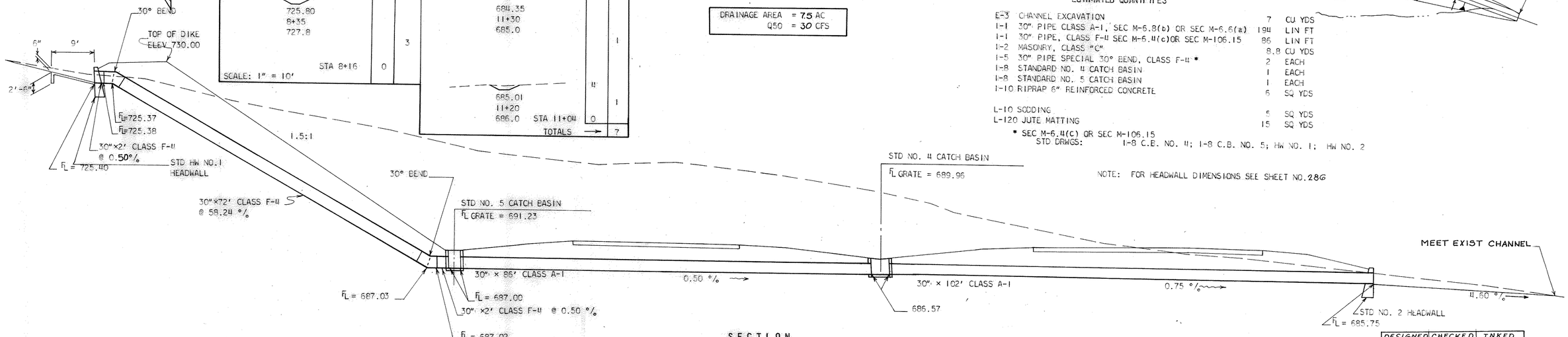
ESTIMATED QUANTITIES

E-3	CHANNEL EXCAVATION	7	CU YDS
I-1	30" PIPE CLASS A-1, SEC M-6.8(b) OR SEC M-6.6(a)	194	LIN FT
I-1	30" PIPE, CLASS F-4 SEC M-6.4(c)OR SEC M-106.15	86	LIN FT
I-2	MASONRY, CLASS "C"	8.8	CU YDS
I-5	30" PIPE SPECIAL 30° BEND, CLASS F-4 *	2	EACH
I-8	STANDARD NO. 4 CATCH BASIN	1	EACH
I-8	STANDARD NO. 5 CATCH BASIN	1	EACH
I-10	RIPRAP 6" REINFORCED CONCRETE	6	SQ YDS
L-10	SODDING	5	SQ YDS
L-120	JUTE MATTING	15	SQ YDS

* SEC M-6.4(C) OR SEC M-106.15

STD DRWGS: I-8 C.B. NO. 4; I-8 C.B. NO. 5; HW NO. 1; HW NO. 2

NOTE: FOR HEADWALL DIMENSIONS SEE SHEET NO. 286



SECTION
SCALE: 1" = 10'

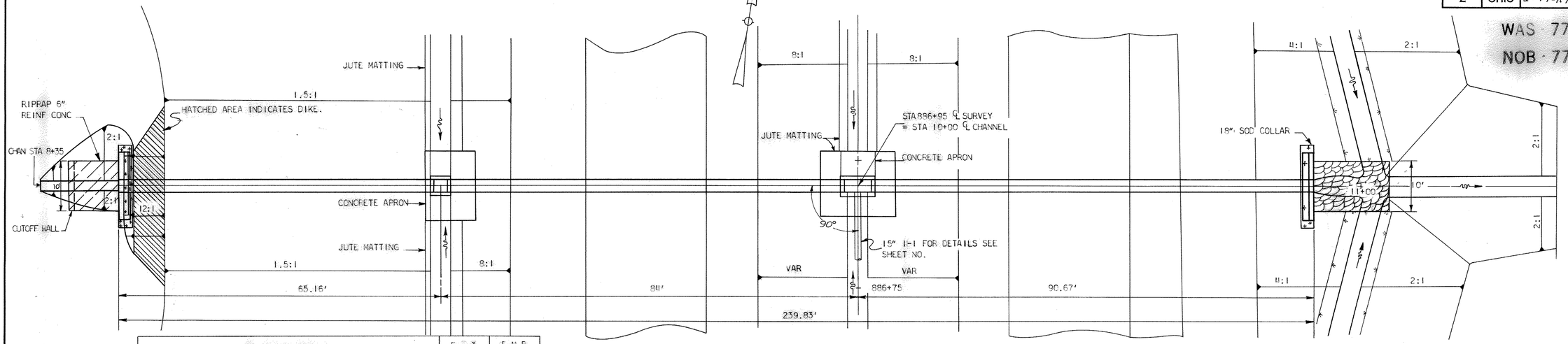
DESIGNED	CHECKED	INKED
J.H.W. 11-21-64	D.F.H. 12-16-64	D.O.W. 1-19-65

PIPE DETAIL ~ STA. 882+50

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	I-77-1(7) 15	

275

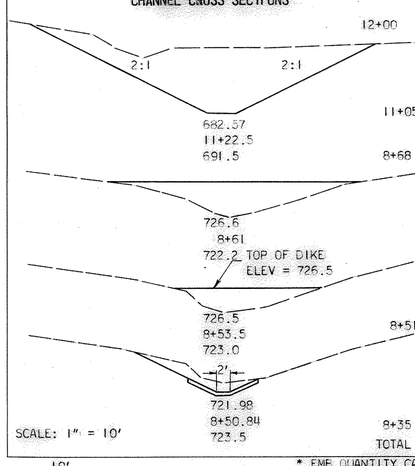
WAS 77 · 15.70
NOB · 77 · 0.00



PLAN

DRAINAGE AREA = 7.6 AC
Q50 = 29 CFS

CHANNEL CROSS SECTIONS



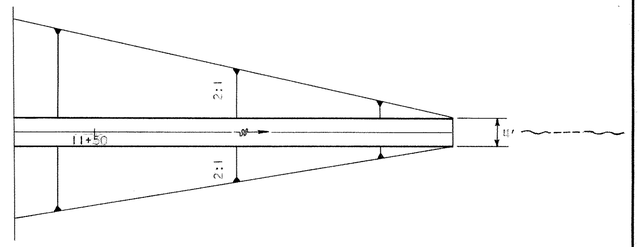
	E - 3		E M B.	
	E.A.	C.Y.	E.A.	C.Y.
12+00	0			
	192	276		
11+05	0	62		
8+68			0	
				11
8+61			84	
				18
8+51			42	
			0	2
8+35	17	5		
TOTAL	0			
	343		* 31	

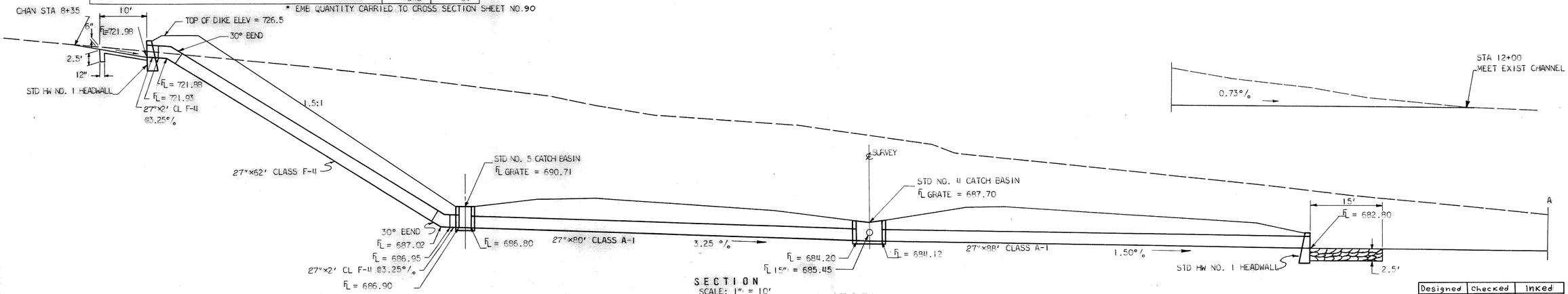
* EME QUANTITY CARRIED TO CROSS SECTION SHEET NO.90

ESTIMATED QUANTITIES

E-3	CHANNEL EXCAVATION	343 CU YDS
I-1	27" PIPE SEC M-6.6(a)OR SEC M-6.8(b) CLASS A-1	175 LIN FT
I-1	27" PIPE CLASS F-4	75 LIN FT
I-2	MASONRY CLASS "C"	8.2 CU YDS
I-5	27" PIPE SPECIAL 30° BEND CLASS F-4	2 EACH
I-8	STANDARD NO. 4 CATCH BASIN	1 EACH
I-8	STANDARD NO. 5 CATCH BASIN	1 EACH
I-10	DUMPED ROCK CHANNEL PROTECTION	10 CU YDS
I-10	RIPRAP 6" REINFORCED CONCRETE	11 SQ YDS
L-10	SODDING	7 SQ YDS
L-120	JUTE MATTING	15 SQ YDS

STD DRWGS: HW NO. 1; I-8 C. B. NO. 4; I-8 C. B. NO. 5.





SECTION
SCALE: 1" = 10'

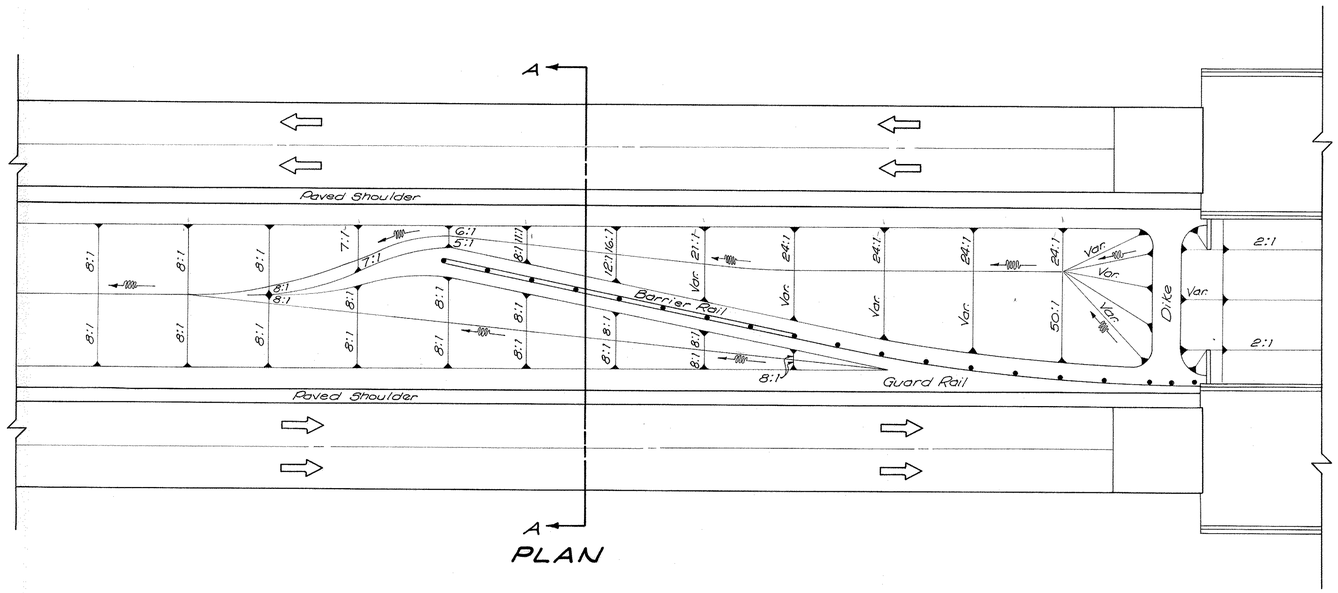
Designed	Checked	Inked
D. F. H.	P.M.G.	J.D.L.
12-1-64	1-15-65	1-22-65

PIPE DETAIL 886+95

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	I-77-1(7)15	

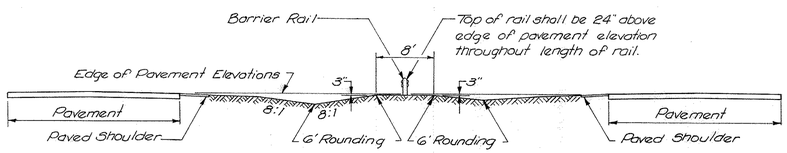
276

WAS - 77 - 15.70
NOB - 77 - 0.00



PLAN

SCALE IN FEET
0 10 20 40

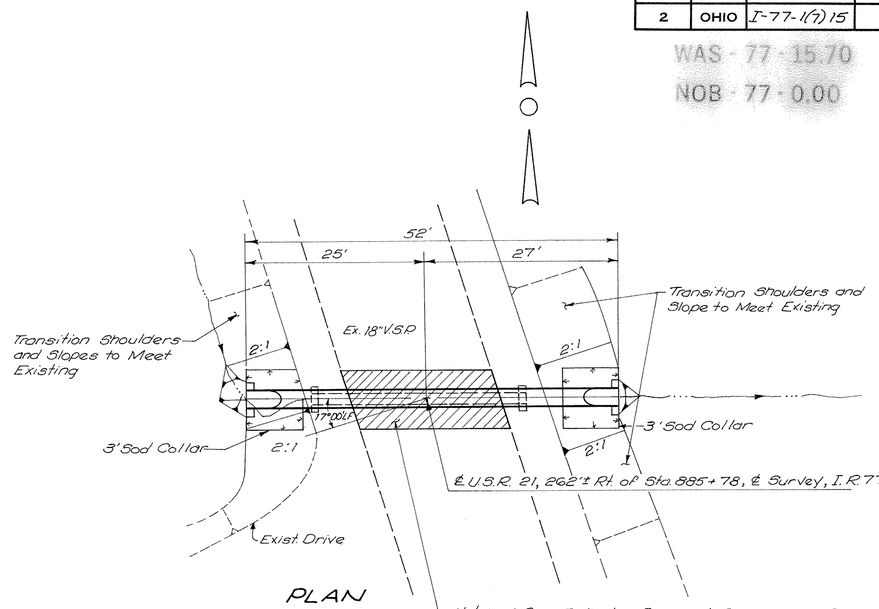


SECTION A-A

SCALE IN FEET
0 5 10 20

NOTE: Detail shown is for median treatment down grade from structures.
For Details not shown and for median treatment upgrade from structures see Std. Drwg. I-15 No. 5-B

SPECIAL MEDIAN TREATMENT



PLAN

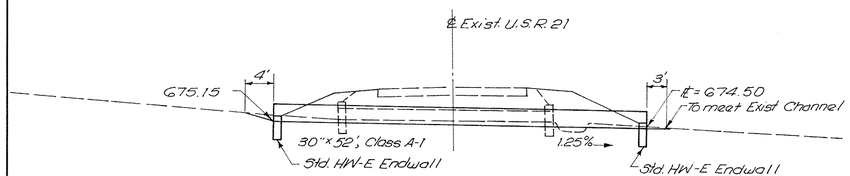
Hatched Area Indicates Pavement Removal and Replacement. Pavement Replacement Type is Same as Used on C.R. #2, See Sheet No. 9. Pavement Quant. are Carried Below in Estimated Quantities. Cost of Pavement Removal and Pipe Removal to be included in the Unit Price Bid for Item I-1.

ESTIMATED QUANTITIES

I-1	30" Pipe, Class A-1, Sec. 6.6(B) or Sec. 6.8(B) =	52 Lin. Ft.
I-2	Masonry, Class "C"	1.0 Cu. Yds.
L-10	Sodding	12 Sq. Yds.
T-35	1¼ Asphaltic Concrete Surface Course, Type "A" (85-100)	1.0 Cu. Yds.
B-35	1¼ Asphaltic Concrete Leveling Course (85-100)	1.0 Cu. Yds.
B-21	4" Waterproofed Aggregate Base Course	2.0 Cu. Yds.
I-22	6" Subbase	3.0 Cu. Yds.

Std. Drwg's. : HW-E

NOTE: E-1 Quantities Carried to Sheet No. 90.



SECTION
SCALE: 1" = 10'

PIPE DETAIL ~ U.S.R. 21 ~ 262' Rt. ~ Sta. 885+78, I.R. 77

Designed	Checked	Inked
G.D.H.	P.M.G.	P.A.L.
3-31-65	4-8-65	4-12-65

SPECIAL MEDIAN TREATMENT AND PIPE DETAILS

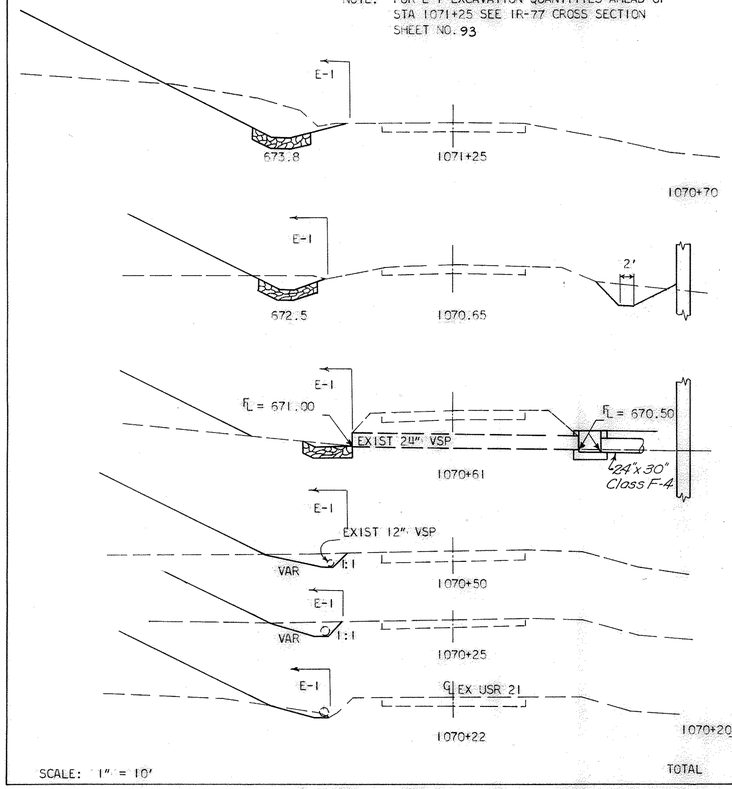
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	I-77-1(7)15	

277

WAS - 77 - 15.70
NOB - 77 - 0.00

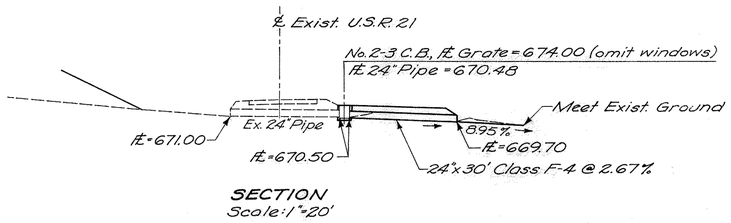
CHANNEL EXCAVATION

NOTE: FOR E-1 EXCAVATION QUANTITIES AHEAD OF STA 1071+25 SEE IR-77 CROSS SECTION SHEET NO. 93

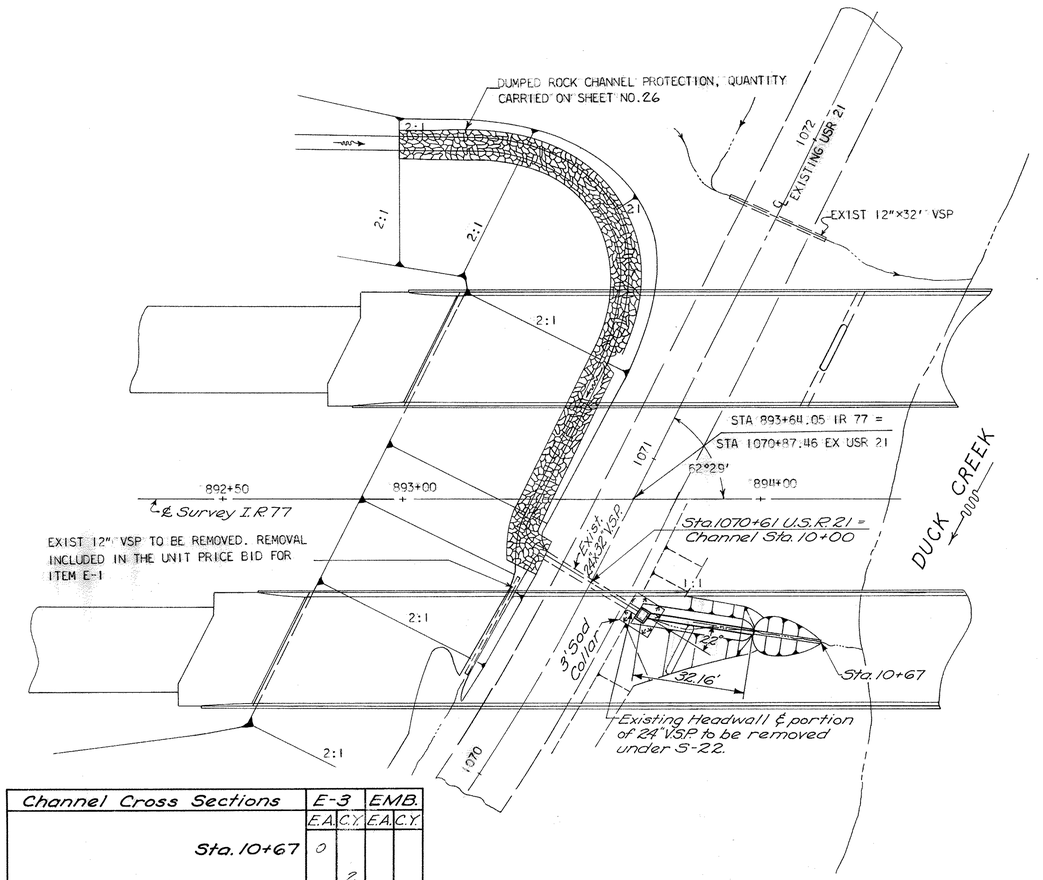


	E - 3		E - 1	
	E.A.	C.Y.	E.A.	C.Y.
1070+70	0			
			60	
				81
		1		
	16		13	
		1		1
	0		3	
				2
			11	
				10
			11	
				1
			3	
1070+20			0	1
TOTAL	2	*	96	

* QUANTITY CARRIED TO IR 77 CROSS SECTION SHEET NO. 93



SECTION
Scale: 1"=20'



Channel Cross Sections	E-3		E.M.B.	
	E.A.	C.Y.	E.A.	C.Y.
Sta. 10+67	0			
		2		
4' 2:1 2:1 668.80	12			
10+60 669.5		2		
Sta. 10+49.5	0		0	
				1
11' 2:1 2:1 674.30			26	
10+47 671.8				22
2:1 Var. 674.50			37	
10+28 672.0 Sta. 10+20			0	5
Scale: 1"=10' Totals	4		*28	

ESTIMATED QUANTITIES

E-3	Channel Excavation	6 Cu. Yds.
I-1	24" Pipe, Class F-4, Sec. M-6.4(c) or Sec. 706.15	32 Lin. Ft.
I-8	Standard No. 2-3 Catch Basin	1 Each
I-10	Dumped Rock Channel Protection	76 Cu. Yds.
L-10	Sodding	10 Sq. Yds.
S-22	Removal of Portions of Existing Structure	Lump

Std. Drawings: I-8 C.B. 2-3 & 2-4

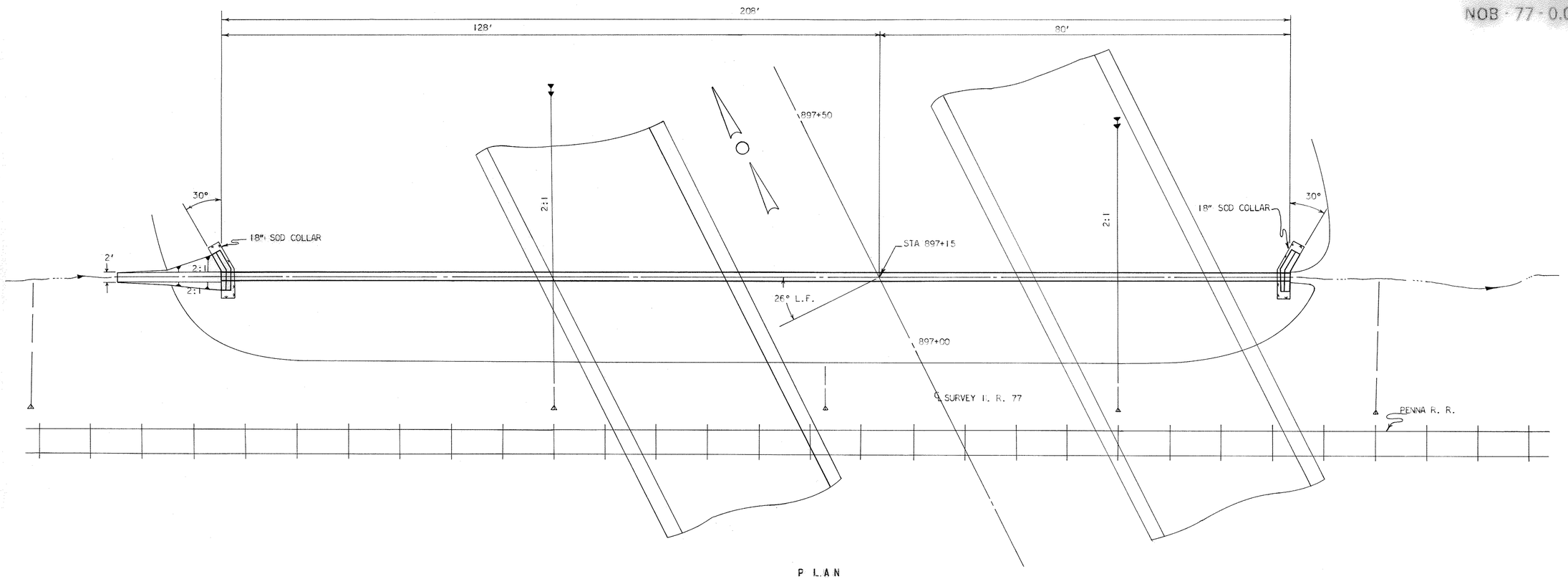
DESIGNED	CHECKED	INKED
D.F.H. 12-23-64	P.M.G 2-15-65	D.O.W 2-19-65

DRAINAGE DETAIL ~ 893+64

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	I-77-1(7)15	

278

WAS - 77 - 15.70
NOB - 77 - 0.00



PLAN

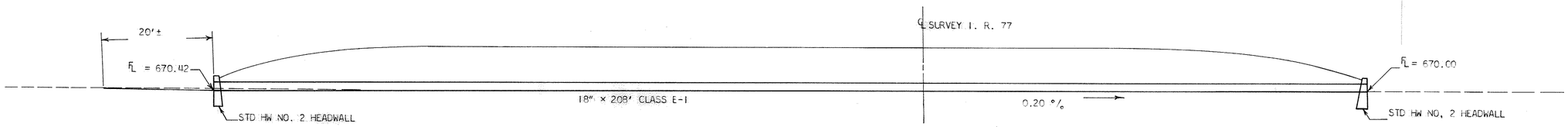
ESTIMATED QUANTITIES

I-1	18" PIPE CLASS E-1	208 LIN FT
I-2	MASONRY CLASS "C"	4.0 CU YDS
L-10	SODDING	5 SQ YDS
E-3	CHANNEL EXCAVATION	1 CU YD

STD DRWGS: HW NO. 2

NOTE-FOR HEADWALL DIMENSIONS SEE SHEET NO.286

PIPE DESIGNED AS EQUALIZER, SIZE DETERMINED BY EXISTING 18" PIPE UNDER PENNA R.R.



SECTION
SCALE: 1" = 10'

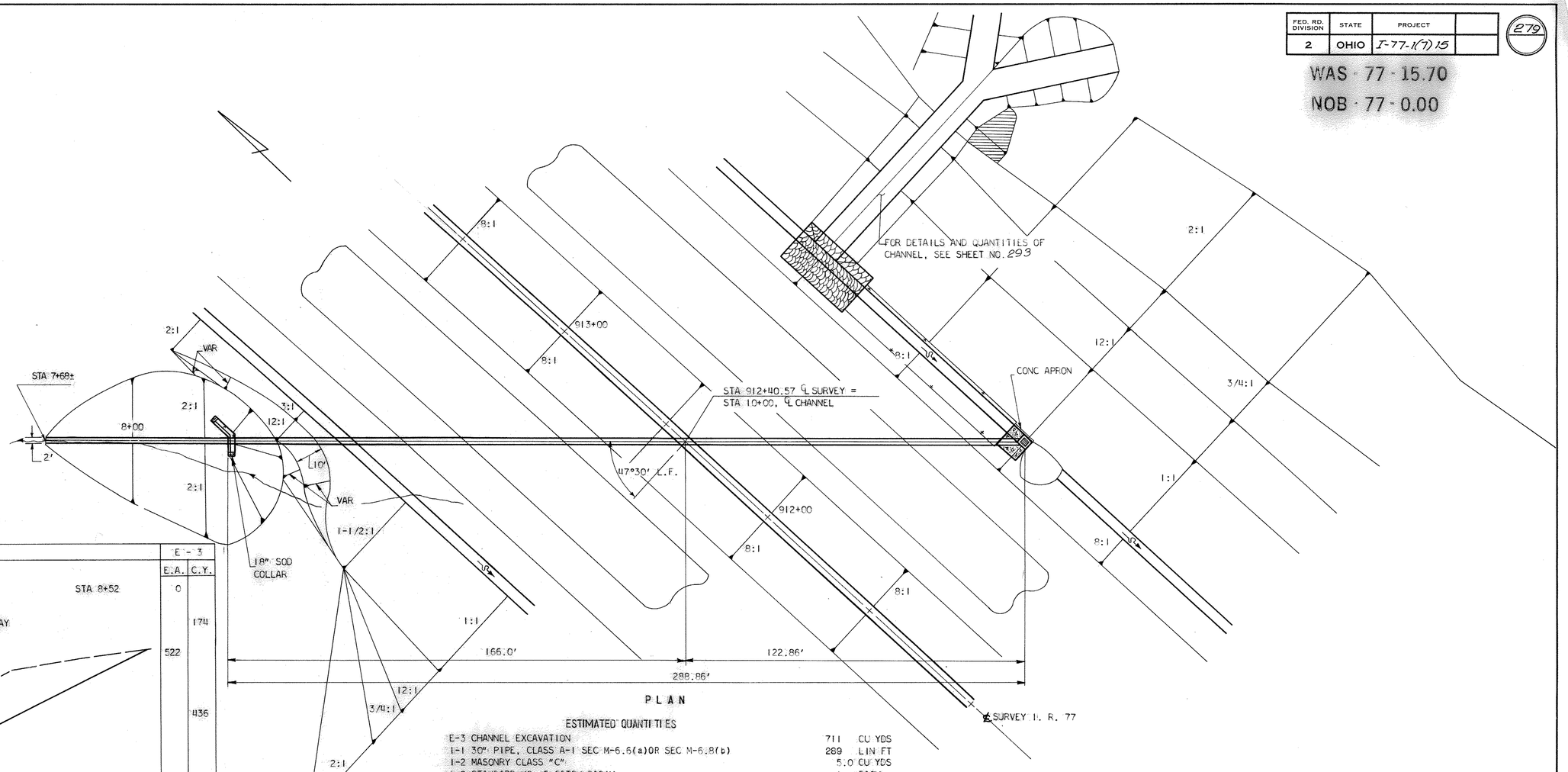
Designed	Checked	Inked
P.M.G. 2-10-65	G.D.H. 2-17-65	D.O.W. 2-23-65

PIPE DETAIL ~ Sta. 897+15

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	I-77-1(7)15	

279

WAS - 77 - 15.70
NOB - 77 - 0.00



CHANNEL CROSS SECTIONS

E - 3

STA	E.A.	C.Y.
8+52	0	
		174
	522	
		436
7+68	170	
		101
	0	
TOTAL		711

* E-1 ← E-3

*CARRIED WITH ROADWAY CROSS SECTIONS

727.36
8+34
743.4

727.02
8+00
734.0

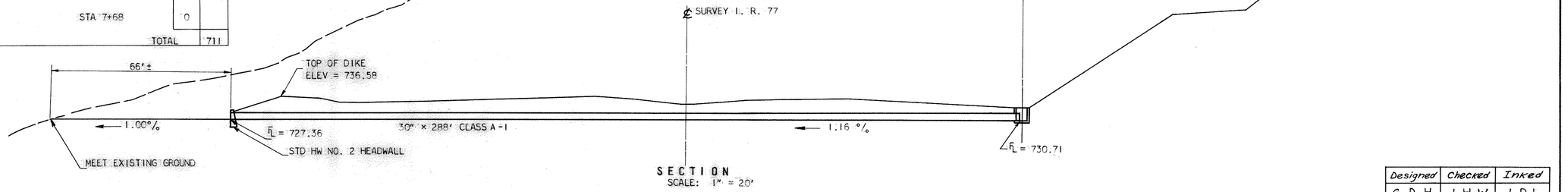
SCALE: 1" = 10'

ESTIMATED QUANTITIES

E-3	CHANNEL EXCAVATION	711 CU YDS
I-1	30" PIPE, CLASS A-1 SEC M-6.6(a)OR SEC M-6.8(b)	289 LIN FT
I-2	MASONRY CLASS "C"	5.0 CU YDS
I-8	STANDARD NO. 5 CATCH BASIN	1 EACH
L-10	SODDING	3 SQ YDS

STD DRWGS: I-8 C.B. NO. 5; HW NO. 2

NOTE: FOR HEADWALL DIMENSIONS SEE SHEET NO. 286



SECTION
SCALE: 1" = 20'

Designed	Checked	Inked
G. D. H. 2-16-65	J. H. W. 2-19-65	J. D. L. 3-2-65

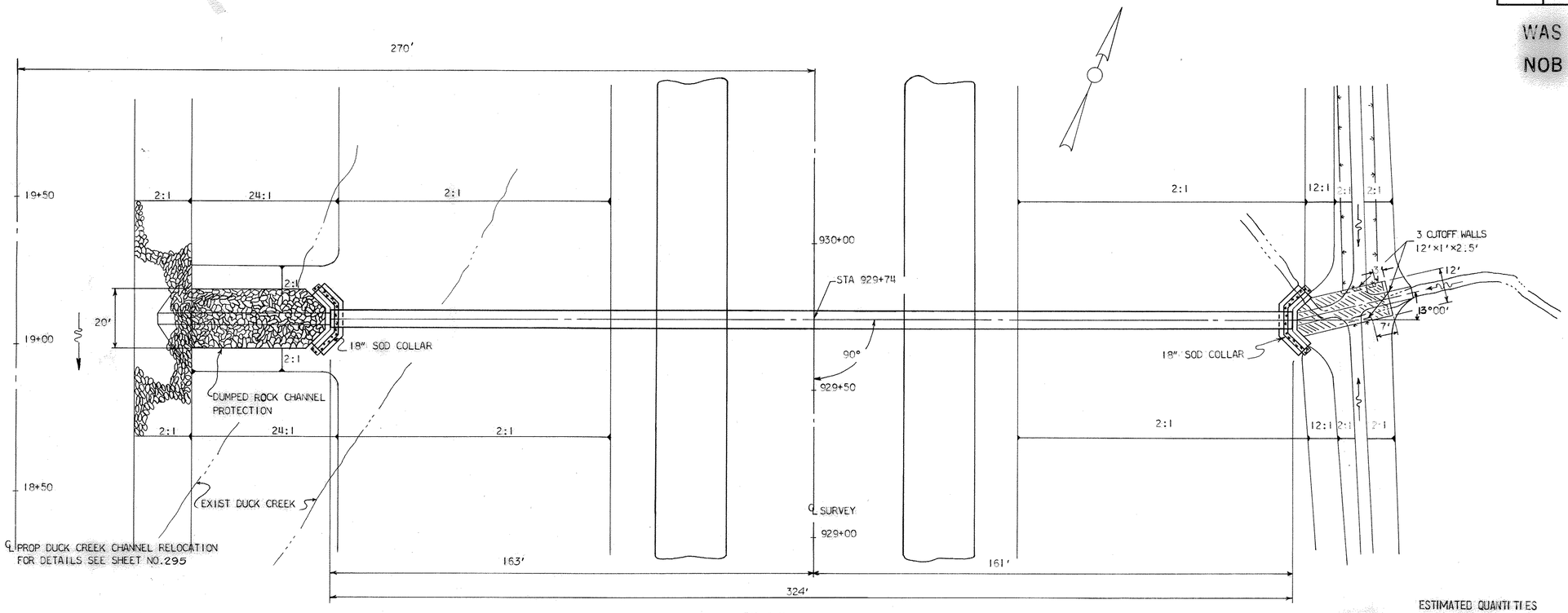
PIPE DETAIL ~ STA. 912+40

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	I-77-1(7)15	

280

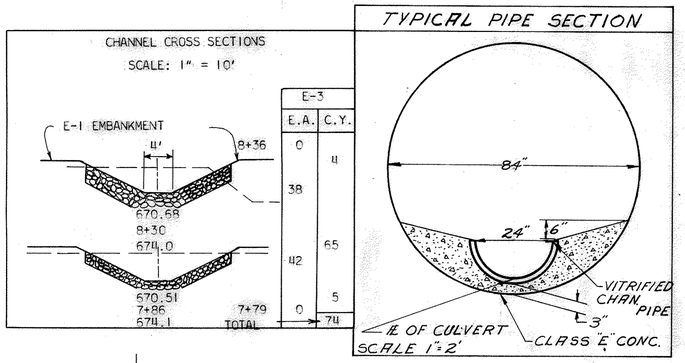
WAS - 77 - 15.70

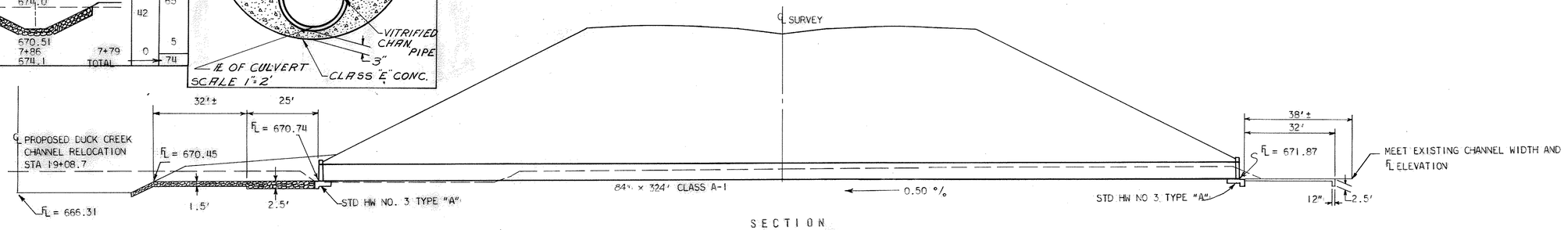
NOB - 77 - 0.00



PLAN

DRAINAGE AREA = 230 AC
Q50 = 275 CFS





SECTION
SCALE: 1" = 20'

ESTIMATED QUANTITIES

I-1	84" CLASS A-1, SEC M-6.4(g) AS PER PLAN 7-5 GAGE	324	LIN FT
I-2	MASONRY CLASS "C"	47.4	CU YDS
I-10	DUMPED ROCK CHANNEL PROTECTION	81	CU YDS
I-10	RIPRAP 6" REINFORCED CONCRETE	38	SQ YDS
L-10	SODDING	7	SQ YDS
E-3	CHANNEL EXCAVATION	74	CU YDS

STD DRWGS: HW NO. 3

NOTE: COST OF THE VITRIFIED CHANNEL PIPE AND THE CONCRETE INVERT PAVING SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM I-1

DESIGNED	CHECKED	INKED
J.H.W. 10-31-64	D.F.H. 11-18-64	D.O.W. 1-12-65

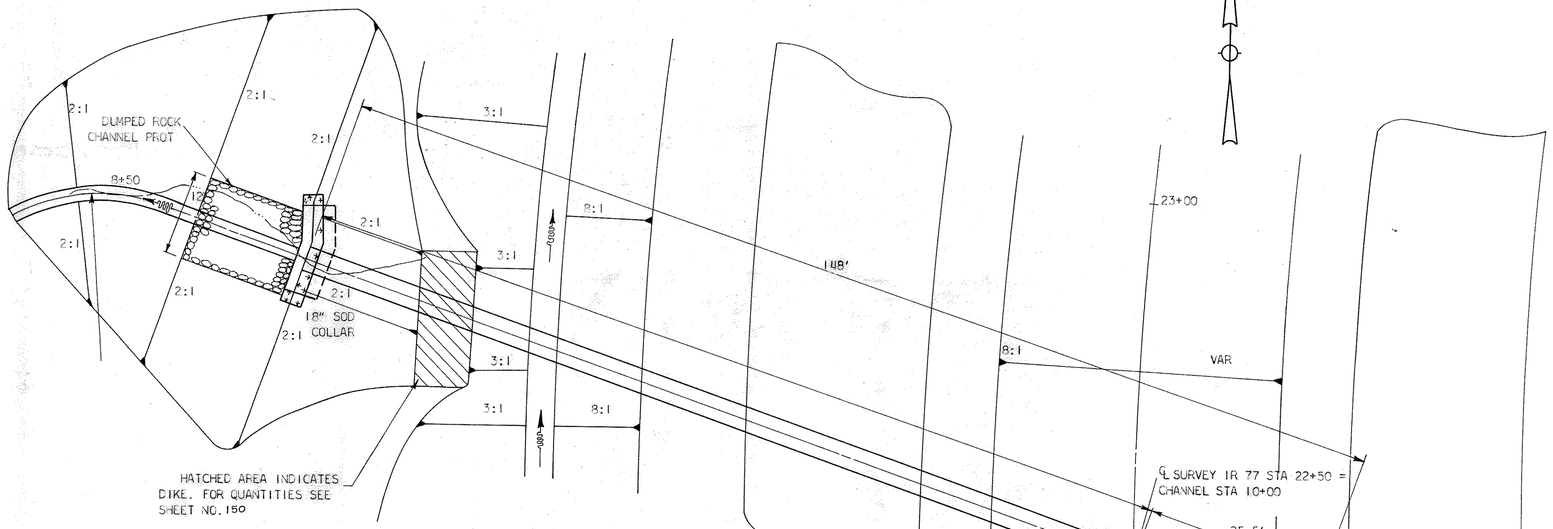
PIPE DETAIL ~ STA. 929+74

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	I-77-1(7)15	

281

WAS - 77 - 15.70

NOB - 77 - 0.00



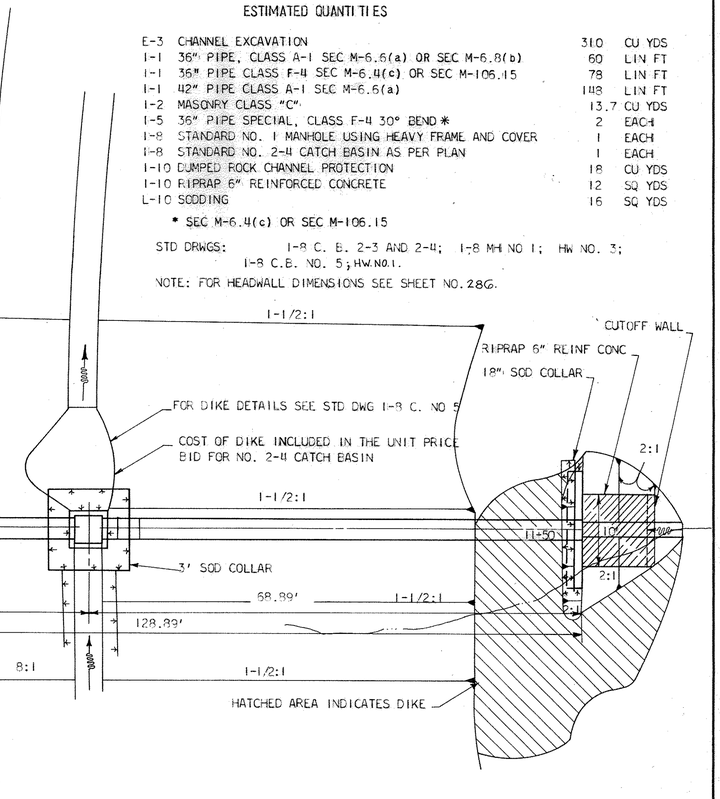
ESTIMATED QUANTITIES

E-3	CHANNEL EXCAVATION	310	CU YDS
I-1	36" PIPE, CLASS A-1 SEC M-6.6(a) OR SEC M-6.8(b)	60	LIN FT
I-1	36" PIPE CLASS F-4 SEC M-6.4(c) OR SEC M-106.15	78	LIN FT
I-1	42" PIPE CLASS A-1 SEC M-6.6(a)	148	LIN FT
I-2	MASONRY CLASS "C"	13.7	CU YDS
I-5	36" PIPE SPECIAL, CLASS F-4 30° BEND *	2	EACH
I-8	STANDARD NO. 1 MANHOLE USING HEAVY FRAME AND COVER	1	EACH
I-8	STANDARD NO. 2-4 CATCH BASIN AS PER PLAN	1	EACH
I-10	DUMPED ROCK CHANNEL PROTECTION	18	CU YDS
I-10	RIPRAP 6" REINFORCED CONCRETE	12	SQ YDS
L-10	SODDING	16	SQ YDS

* SEC M-6.4(c) OR SEC M-106.15

STD DRWGS: I-8 C. B. 2-3 AND 2-4; I-8 MH NO 1; HW NO. 3; I-8 C.B. NO. 5; HW.NO.1.

NOTE: FOR HEADWALL DIMENSIONS SEE SHEET NO. 286.



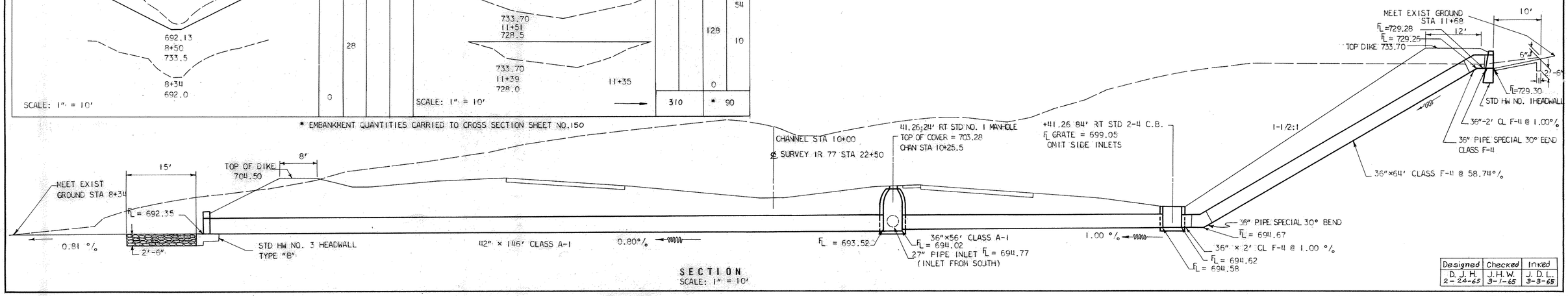
DIKE AND CHANNEL CROSS SECTIONS	E-3 EA	E-3 CY	EME EA	EME CY
9+02			0	5
701.5			36	
8+89	0		0	3
701.5		38		
12'		208		
697.0				
8+79				
701.0		30		
2:1 2:1		340		
2'				
692.34				
8+76		210		
700.5				
692.13		96		
8+50				
733.5				
8+34		28		
692.0		0		

SCALE: 1" = 10'

DIKE AND CHANNEL CROSS SECTIONS	E-3 EA	E-3 CY	EME EA	EME CY
11+68	0		0	
		1		5
	6	1	32	
731.05				
11+59				
731.0		2		5
2'	12		22	
729.30				
11+54				8
730.0			115	
733.70				54
11+51				
728.5			128	
733.70				10
11+39				
728.0			0	
11+35	310		* 90	

SCALE: 1" = 10'

* EMBANKMENT QUANTITIES CARRIED TO CROSS SECTION SHEET NO. 150



SECTION
SCALE: 1" = 10'

Designed	Checked	Inked
D. J. H. 2-24-65	J.H.W. 3-1-65	J. D. L. 3-3-65

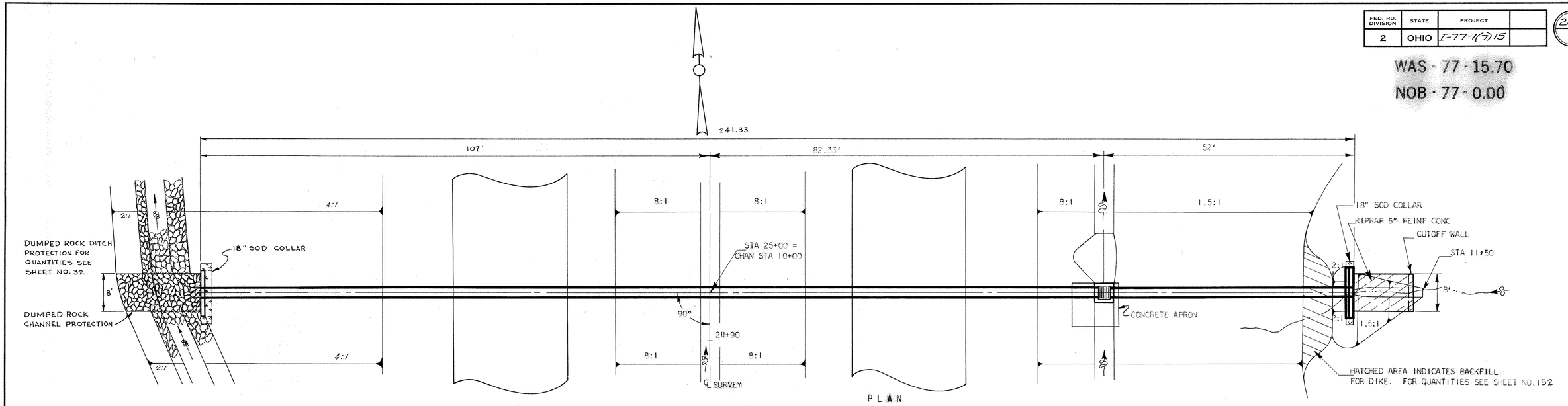
PIPE DETAIL ~ STA. 22+50

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	I-77-1(7)15	

282

WAS - 77 - 15.70

NOB - 77 - 0.00



PLAN

DRAINAGE AREA = 3.0 AC
Q50 = 15 CFS

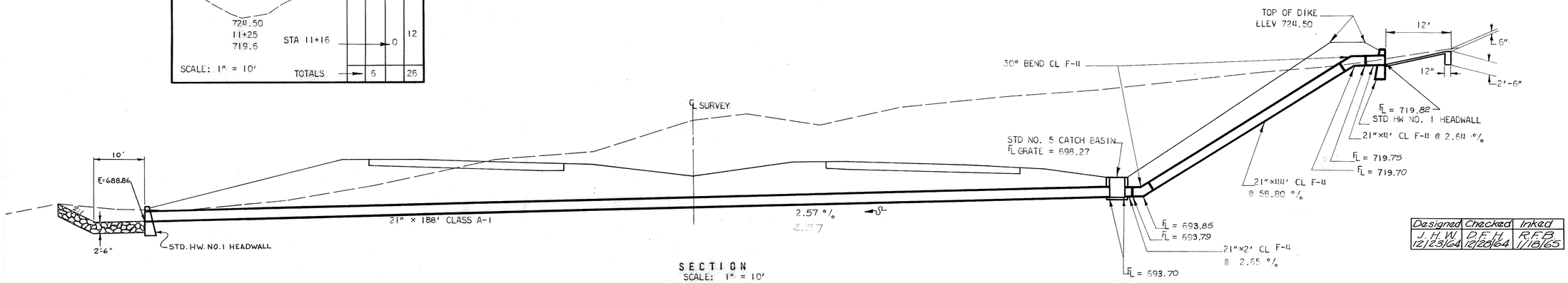
CHANNEL CROSS SECTION	E-3 E.A.	E-3 C.Y.	EMB. E.A.	EMB. C.Y.
11+50	0			
1.5:1		6		
720.16 11+35 722.0 11+35	22			
STA 11+36		0		3
			30	
724.50 11+31 719.7				11
			71	
724.50 11+25 719.6 STA 11+16		0		12
SCALE: 1" = 10' TOTALS	6			26

ESTIMATED QUANTITIES

E-3	CHANNEL EXCAVATION	6	CU YDS
I-1	21" PIPE, CLASS A-1, SEC M-6.8(b) OR SEC M-6.9(b)	190	LIN FT
I-1	21" PIPE, CLASS F-4 SEC M-6.4(c) OR SEC M-106.15	60	LIN FT
I-2	MASONRY, CLASS "C"	5.6	CU YDS
I-5	21" PIPE, SPECIAL 30° BEND, CLASS F-4 *	2	EACH
I-8	STANDARD NO. 5 CATCH BASIN	1	EACH
I-10	RIPRAP 6" REINFORCED CONCRETE	11	SQ YDS
I-10	DUMPED ROCK CHANNEL PROTECTION	13	CU YDS
L-10	SODDING	5	SQ YDS

* SEC M-6.4(c) OR SEC M-106.15

STD DRWGS: I-8 C.B. NO. 5 ; HW NO. 1



SECTION
SCALE: 1" = 10'

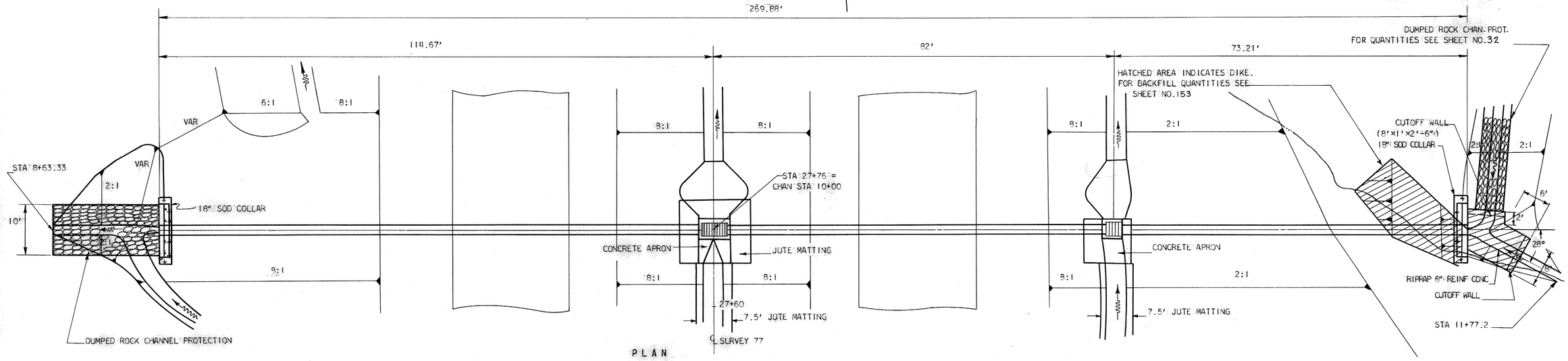
Designed	Checked	Inked
J.H.W. 12/23/64	D.E.H. 12/28/64	R.F.B. 1/16/65

PIPE DETAIL ~ STA. 25+00

WAS - 77 - 15.70
NOB - 77 - 0.00

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	I-77-1(7)15	

283



PLAN

DIKE AND CHANNEL CROSS SECTION	E - 3		EMB.	
	E.A.	C.Y.	E.A.	C.Y.
STA 11+77	0			
		5		
	25			
		15		
	47			
STA 11+54	0			
		1		
	16			
		9		
	31			
		5		
STA 11+32	0			
TOTALS	→ 73		→ 15*	

SCALE: 1"=10'

CHANNEL CFOSS SECTION	E - 3	
	E.A.	C.Y.
689.50		
8+85.3	148	
698.0		
		44
2'		
	50	
689.36		
8+73		9
694.0 STA 8+63	0	
TOTALS		53

SCALE: 1"=10'

* EMBANKMENT QUANTITIES CARRIED TO CROSS SECTION SHEET NO.153

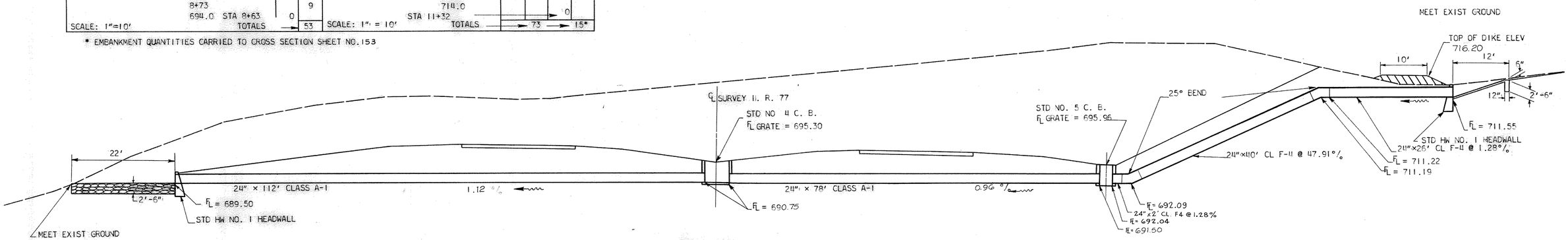
DRAINAGE AREA = 5.0 AC
Q50 = 22 CFS

ESTIMATED QUANTITIES

E-3	CHANNEL EXCAVATION	73	CU YDS
I-1	24" PIPE, CLASS A-1 SEC M-6.6(a) OR SEC M-6.8(b)	197	LIN FT
I-1	24" PIPE, CLASS F-4 SEC M-6.4(c) OR SEC M-106.15	78	LIN FT
I-2	MASONRY CLASS "C"	6.6	CU YDS
I-5	24" PIPE SPECIAL, CLASS F-4, 25° BEND *	2	EACH
I-8	STANDARD NO. 4 CATCH BASIN	1	EACH
I-8	STANDARD NO. 5 CATCH BASIN	1	EACH
I-10	DUMPED ROCK CHANNEL PROTECTION	22	CU YDS
I-10	RIPRAP 6" REINFORCED CONCRETE	13	SQ YDS
L-10	SODDING	5	SQ YDS
L-120	JUTE MATTING	15	SQ YDS

* SEC M-6.4(c) OR SEC M-106.15

STD DRWGS: I-8 C.B. NO. 4; I-8 C.B. NO. 5; HW NO. 1



SECTION
SCALE: 1" = 10'

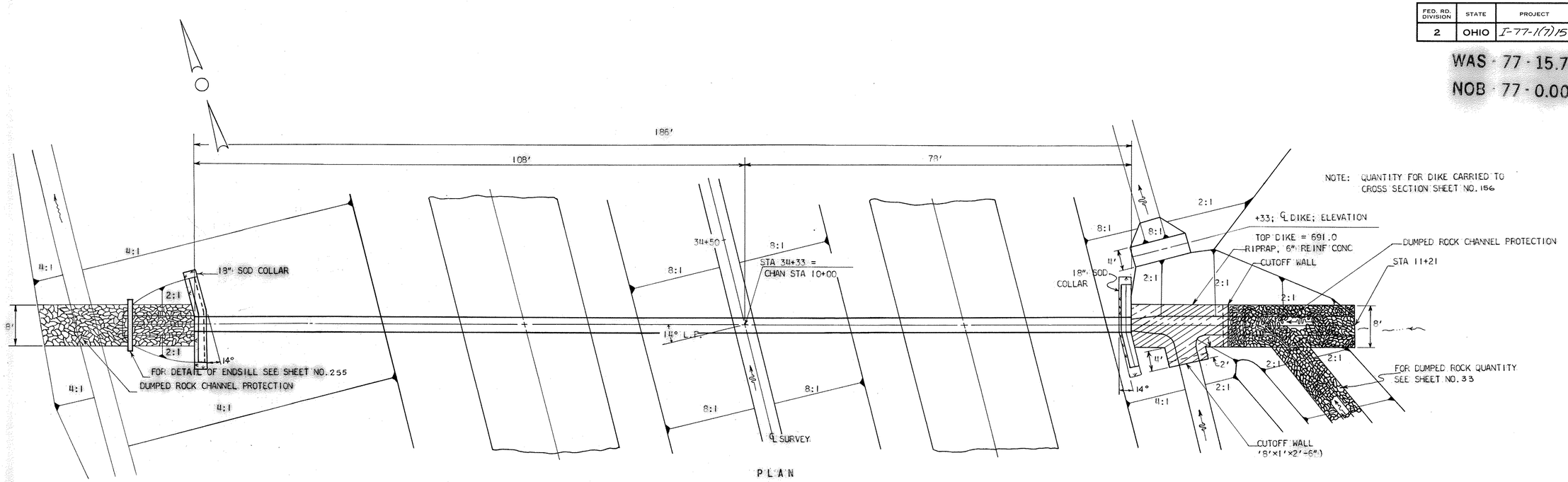
Designed	Checked	Inked
J. H. W. 2-3-65	D. F. H. 2-17-65	J. D. L. 2-19-65

PIPE DETAIL ~ STA. 27+76

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	I-77-1(7)15	

284

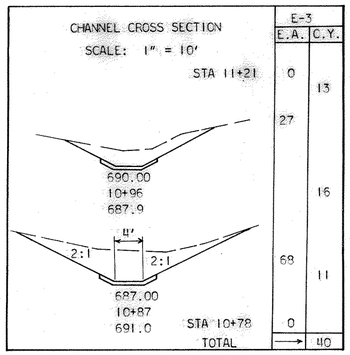
WAS · 77 · 15.70
NOB · 77 · 0.00



PLAN

DRAINAGE AREA = 16 AC
Q50 = 117 CFS

CHANNEL CROSS SECTION
SCALE: 1" = 10'



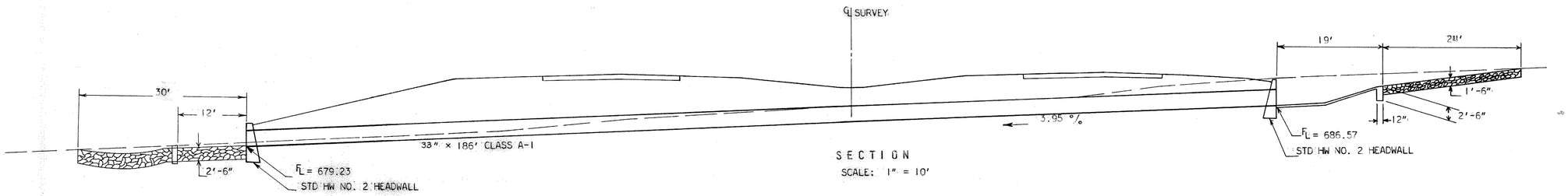
	E-3 E.A.	C.Y.
	0	13
	27	16
	68	11
	0	
TOTAL	→	40

ESTIMATED QUANTITIES

E-3	CHANNEL EXCAVATION	40	CU. YDS.
I-1	33" PIPE, CLASS A-1 SEC. M-6.6(d) WITH 1/8 VITRIFIED LINER AS PER PLAN	186	LIN. FT.
I-2	MASONRY CLASS "C"	12.8	CU YDS
I-10	RIPRAP 6" REINFORCED CONCRETE	21	SQ YDS
I-10	DUMPED ROCK CHANNEL PROTECTION	33	CU YDS
L-10	SODDING	7	SQ YDS

STD DRWGS: HW NO. 2

NOTE FOR HEADWALL DIMENSIONS SEE SHEET NO. 286



SECTION
SCALE: 1" = 10'

DESIGNED	CHECKED	INKED
J.R.E. 12-11-63	D.F.H. 12-22-64	D.O.W. 1-13-65

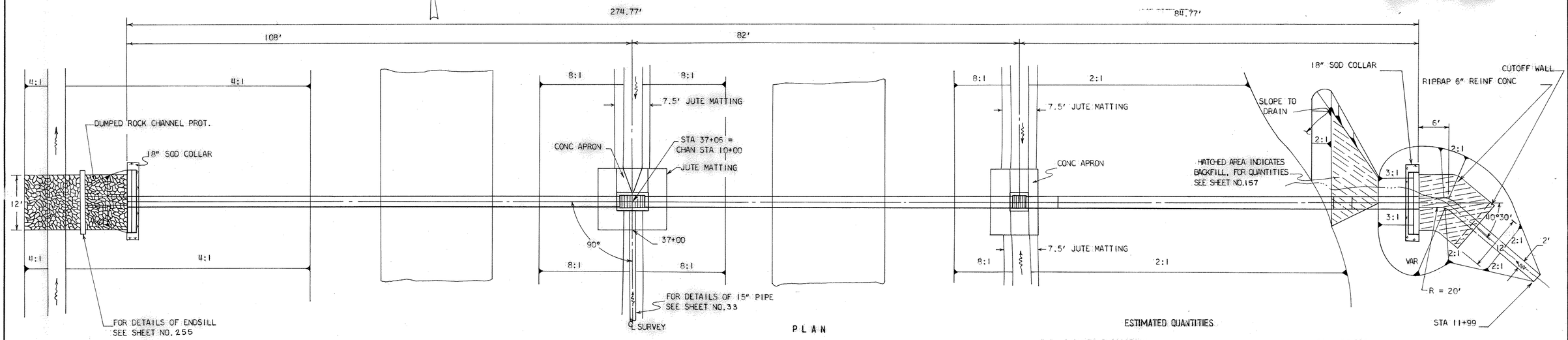
PIPE DETAIL ~ STA. 34+33

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	I-77-1(7)15	

285

WAS - 77 - 15.70

NOB - 77 - 0.00



PLAN

DRAINAGE AREA = 10.5 AC
Q50 = 35 CFS

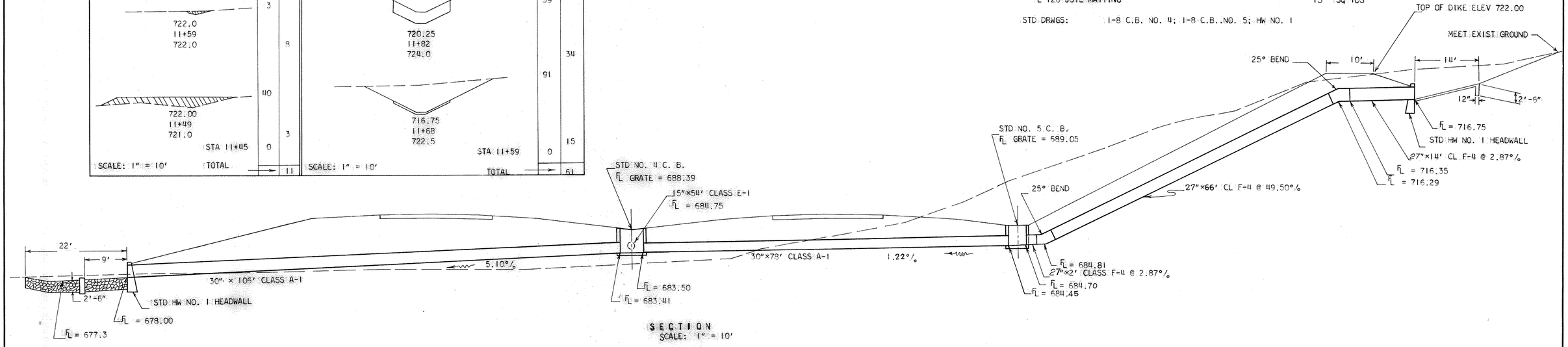
DIKE CROSS SECTION	EMB E.A.	EMB C.Y.
722.0 11+59 722.0	3	9
722.00 11+49 721.0	40	3
STA 11+45	0	
SCALE: 1" = 10' TOTAL	43	12

CHANNEL CROSS SECTION	E - 3 E.A.	E - 3 C.Y.
STA 11+99	0	12
720.25 11+82 724.0	39	34
716.75 11+68 722.5	91	15
STA 11+59	0	
SCALE: 1" = 10' TOTAL	130	61

ESTIMATED QUANTITIES

E-3	CHANNEL EXCAVATION	61	CU YDS
I-1	30" PIPE, CLASS A-1 SEC M-6.6(a) OR SEC M-6.8(b)	190	LIN FT
I-1	27" PIPE, CLASS F-4	92	LIN FT
I-2	MASONRY CLASS "C"	10.9	CU YDS
I-5	27" PIPE SPECIAL 25° BEND CLASS F-4	2	EACH
I-8	STANDARD NO. 5 CATCH BASIN	1	EACH
I-8	STANDARD NO. 4 CATCH BASIN	1	EACH
I-10	DUMPED ROCK CHANNEL PROTECTION	25	CU YDS
I-10	RIPRAP 6" REINFORCED CONCRETE	21	SQ YDS
L-10	SODDING	6	SQ YDS
L-120	JUTE MATTING	15	SQ YDS

STD DRWGS: I-8 C.B. NO. 4; I-8 C.B. NO. 5; HW NO. 1



SECTION
SCALE: 1" = 10'

DESIGNED	CHECKED	INKED
J. H. W. 1-28-65	G. D. H. 2-9-65	D. O. W. 2-11-65

PIPE DETAIL ~ Sta. 37+06

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	I-77-1(9) 15	

286

WAS - 77 - 15.70

NOB - 77 - 0.00

STANDARD HEADWALL NUMBER 2

PIPE DETAILS					HEADWALL DIMENSIONS								Quantities (One Headwall)	
LOCATION		SKEW	SIDE SLOPE	PIPE DIA	L	L_1	L_2	W	Z	H	H_1	H_2	Conc. Cu.Yds.	Steel Lbs.
843+40	Rt.	16°30'	2:1	36"	7'0"	1'10"	3'4"	6'8"	6'4"	7'0"	4'0"	2'6"	5.4	88
853+06	Lt.&Rt.	23°00'	2:1	33"	6'6"	1'9"	3'1"	5'10"	5'9"	6'5"	3'5"	4'9"	4.8	108
866+50	Lt.&Rt.	30°00'	2:1	21"	4'1"	1'3"	2'2"	4'3"	3'8"	5'8"	2'8"	1'8"	2.4	52
897+15	Lt.&Rt.	30°00'	2:1	18"	3'7"	1'1"	1'10"	3'8"	3'2"	5'5"	2'5"	1'7"	2.0	48
912+40	Lt.	47°30'L.F.	2:1	30"	5'11"	1'7"	2'10"	7'10"	5'2"	6'5"	3'5"	2'2"	5.0	93
27+40	Lt.	20°00'L.F.	2:1	36"	7'0"	1'10"	3'4"	7'0"	6'4"	7'0"	4'0"	2'6"	5.6	87
34+33	Lt.&Rt.	14°00'L.F.	4:1	33"	8'6"	1'9"	3'1"	5'6"	6'4"	6'5"	3'5"	0'9"	5.7	102
72+50.5	Lt.&Rt.	33°00'L.F.	2:1	15"	2'11"	0'11"	1'7"	3'3"	2'8"	5'2"	2'2"	1'5"	1.6	42
73+44	Lt.&Rt.	31°00'	2:1	30"	5'11"	1'7"	2'10"	6'0"	5'2"	6'5"	3'5"	2'2"	4.2	78

NOTE: For Details and Notes not shown, See Std. Drwgs. HW No. 2

STANDARD HEADWALL NUMBER 3

PIPE DETAILS					HEADWALL DIMENSIONS								Quantities (One Headwall)	
LOCATION		SKEW	SIDE SLOPE	PIPE DIA.	A	L_1	L_2	B	C	H	H_1	H_2	Conc. Cu.Yds.	Steel Lbs.
22+50	Lt.	20°L.F.	2:1	42"		7'6"	5'4"			4'11"	3'0"	3'3"	7.3	628

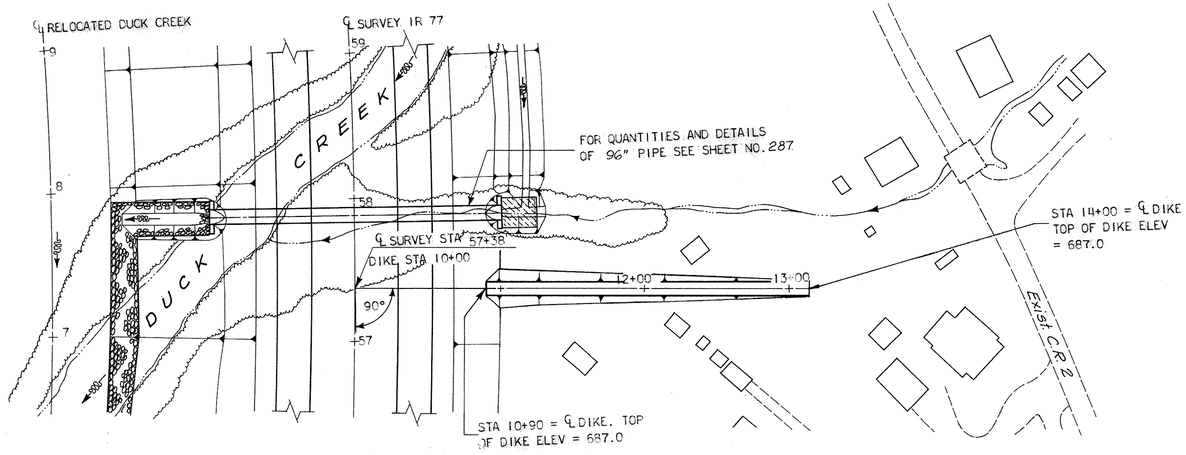
NOTE: For Details and Notes not shown, See Std. Drwgs. HW No. 3 (Type B)

ST'D. HEADWALL NO. 1

PIPE DETAILS			HEADWALL DIMEN'S.		Quantities (One Headwall)	
LOCATION		PIPE DIA.	H	L	Conc. Cu.Yds.	Steel lbs.
882+50	Lt.	30"	6'5"	13'8"	4.7	92
886+95	Rt.&Lt.	27"	6'0"	12'4"	4.0	75
Ramp "D" 18+00	Rt.&Lt.	24"	5'11"	11'0"	3.3	69
22+50	Rt.	36"	7'0"	16'4"	6.5	105
25+00	Rt.&Lt.	21"	5'8"	9'8"	2.8	62
27+76	Rt.&Lt.	24"	5'11"	11'0"	3.3	69
37+06	Rt.	27"	6'0"	12'4"	4.0	75
37+06	Lt.	30"	6'5"	13'8"	4.7	92

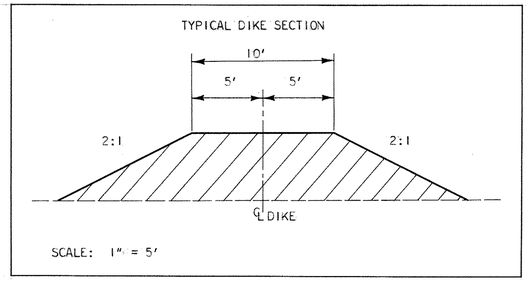
NOTE: For Details and Notes not shown, See Std. Drwgs. HW No. 1

HEADWALL TABLES



PLAN
SCALE: 1" = 50'

DIKE CROSS SECTIONS	EMB. E.A.	EMB. C.Y.
SCALE: 1" = 10'		
STA 13+14	0	
687.0 12+00 684.8	31	66
		128
687.0 11+25 683.4	61	
		64
687.0 11+00 682.7	78	
		14
STA 10+90	0	
TOTAL EMB CARRIED TO SHEET NO. 163 →		272



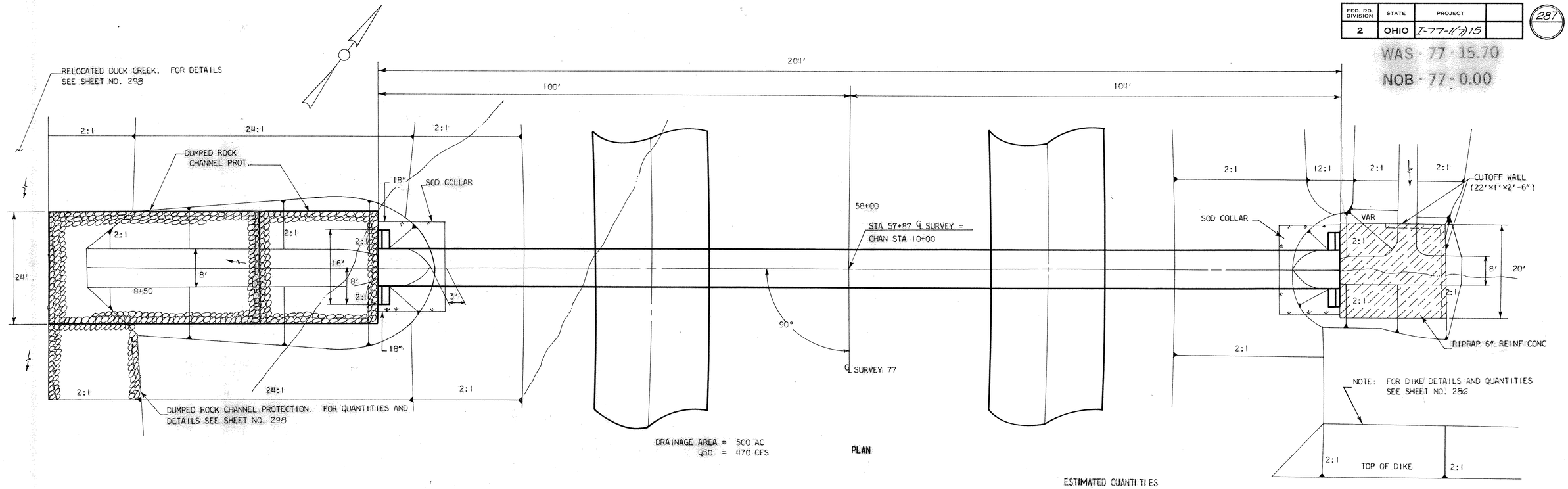
Designed	Checked	Inked
F.W.L. 11-18-63	J.H.W. 12-7-64	M.J.B. 1-11-65

HEADWALL TABLES and DIKE DETAIL - Sta. 57+38 Rt.

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	I-77-1(7)15	

287

WAS - 77 - 15.70
NOB - 77 - 0.00



DRAINAGE AREA = 500 AC
Q50 = 470 CFS

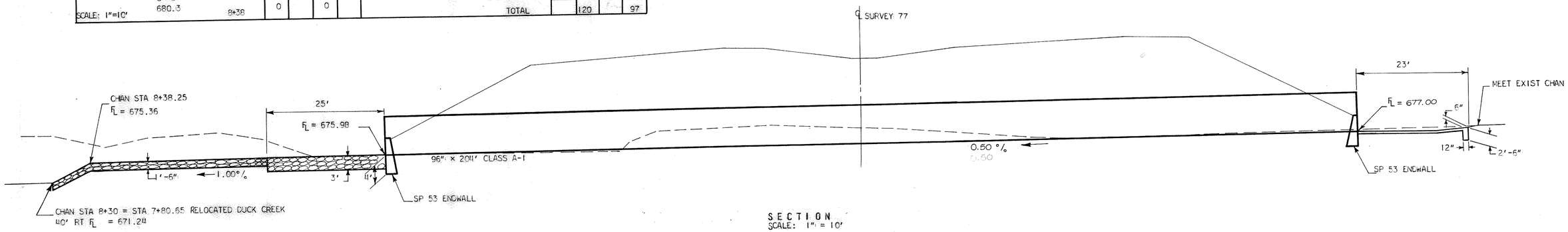
PLAN

CHANNEL CROSS SECTION	E - 3		EMB		CHANNEL CROSS SECTION	E - 3		EMB	
NOTE: HATCHED AREA INDICATES E-1 EMBANKMENT	E.A.	C.Y.	E.A.	C.Y.	NOTE: FOR DISPOSITION OF E-1 EMB QUANTITY SEE SHEET NO. 164	E.A.	C.Y.	E.A.	C.Y.
675.63 8+65 681.0	89	44	15	53	675.98 9+00 675.0 BACK	2			
		55		5		5	1	114	39
675.46 8+48 680.3	90	17	0	0	675+88 8+90 877.2			99	
					ADD FOR INLET CHANNEL →		3		
SCALE: 1"=10' 8+38	0		0		TOTAL		120		97

ESTIMATED QUANTITIES

E-3	CHANNEL EXCAVATION	120	CU YDS
I-1	96" PIPE, CLASS A-1 SEC M-6.6(b)WITH 1/3 VITRIFIED LINER AS PER PLAN	204	CU YDS
I-2	MASONRY CLASS "E"	13.4	CU YDS
I-10	DUMPED ROCK CHANNEL PROTECTION	140	CU YDS
I-10	RIPRAP 6" REINFORCED CONCRETE	52	SQ YDS
L-10	SODDING	41	SQ YDS

STD DRWGS: SP-53



SECTION
SCALE: 1" = 10'

Designed	Checked	Inked
F.W.L. 11-15-63	J.H.W. 12-19-64	D.W.R. 4-12-65

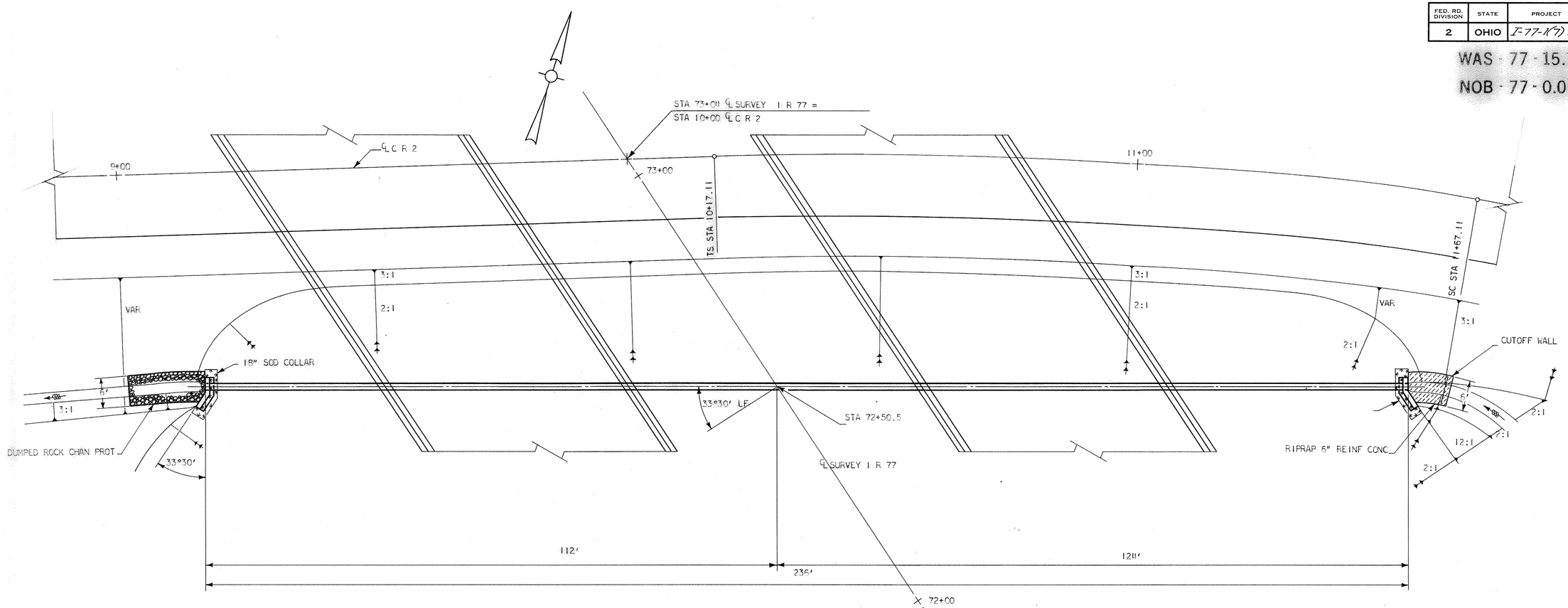
PIPE DETAIL ~ STA. 57+87

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	F-77-1(7) 15	

288

WAS - 77 - 15.70

NOB - 77 - 0.00



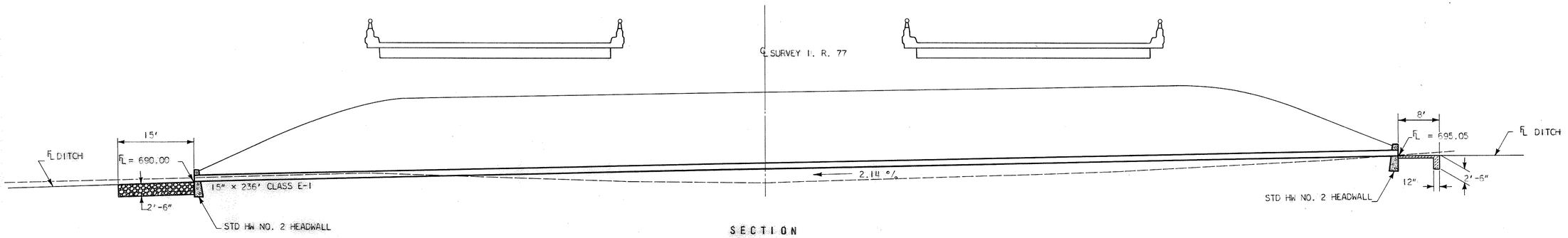
DRAINAGE AREA = 1.0 AC
Q50 = 5 CFS

PLAN

ESTIMATED QUANTITIES

1-1	15" PIPE, CLASS E-1	SEC 6.6(b) OR SEC 6.8(b)	236 LIN FT
1-2	MASONRY CLASS "C"		3.2 CU YDS
1-10	DUMPED ROCK CHANNEL PROTECTION		9 CU YDS
1-10	RIPRAP 6" REINFORCED CONCRETE		5 SQ YDS
L-10	SODDING		3 SQ YDS

STD DRWGS: HW NO. 2



SECTION

SCALE: 1" = 10'

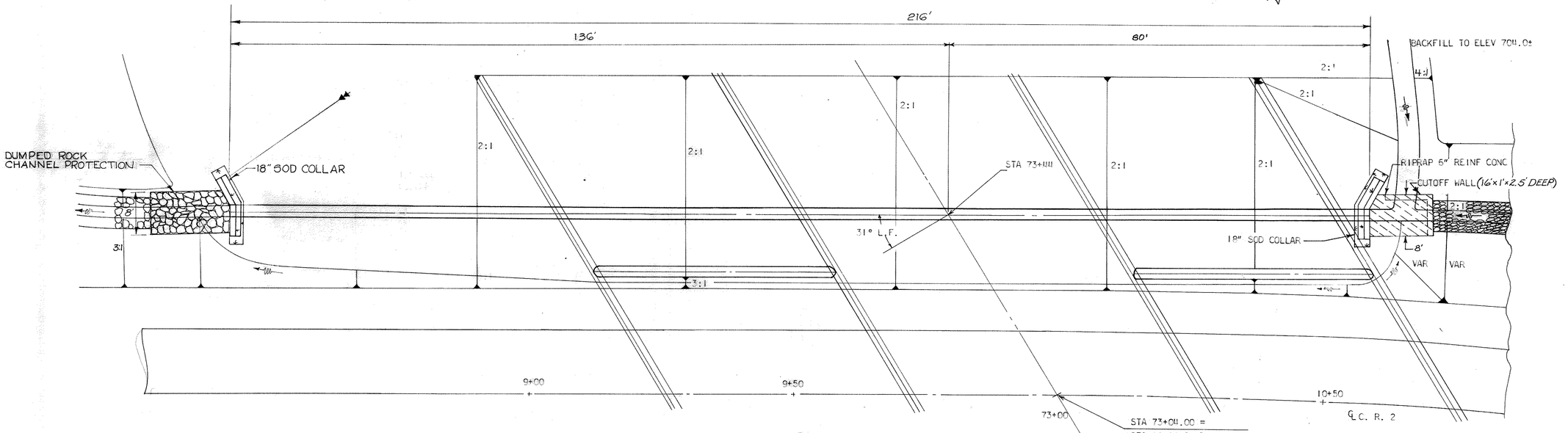
Designed	Checked	Inked
G.D.H. 3-26-65	D.F.H. 3-30-65	M.J.B. 4-12-65

PIPE DETAIL - Sta. 72+50.5

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	I-77-1(7) 15	

289

WAS - 77 - 15.70
NOB - 77 - 0.00



PLAN

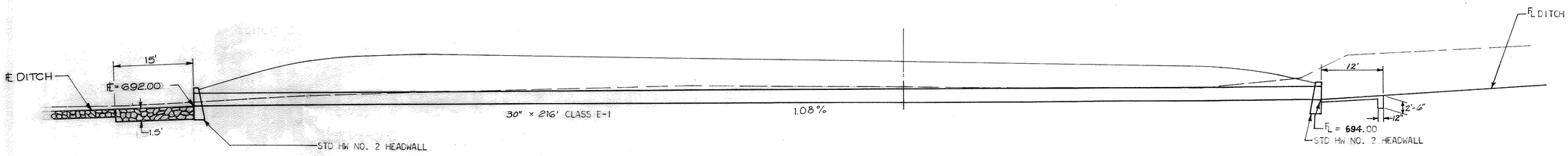
DRAINAGE AREA = 7.0 AC
Q50 = 27 CFS

ESTIMATED QUANTITIES

	21G	
1-1 30" PIPE, CLASS E-1		LIN FT
1-2 MASONRY CLASS "C"	8.4	CU YDS
1-10 DUMPED ROCK CHANNEL PROTECTION	12	CU YDS
1-10 RIPRAP 5" REINF CONC	11	SQ YDS
L-10 SODDING	4	SQ YDS

STD DRWGS: HW NO. 2

NOTE: FOR HEADWALL DIMENSIONS SEE SHT. NO. 286



SECTION
SCALE: 1" = 10'

DESIGNED	CHECKED	INKED
J.H.W. 1-25-65	D.F.H. 1-25-65	D.O.W. 2-1-65

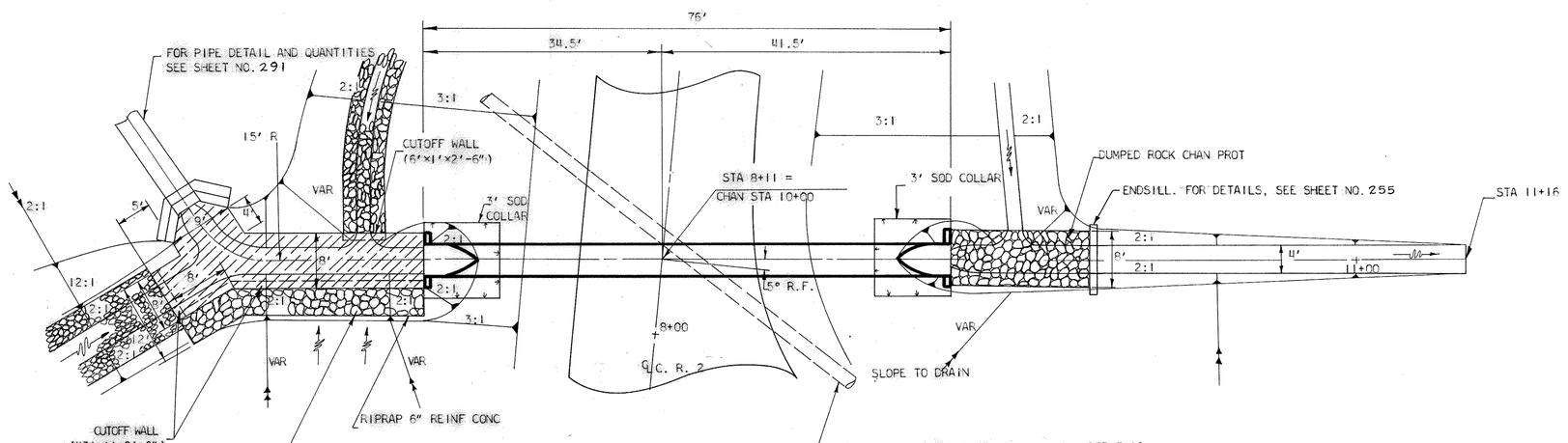
PIPE DETAIL ~ Sta. 73+44

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	I-77-1(7)15	

290

WAS · 77 · 15.70

NOB · 77 · 0.00

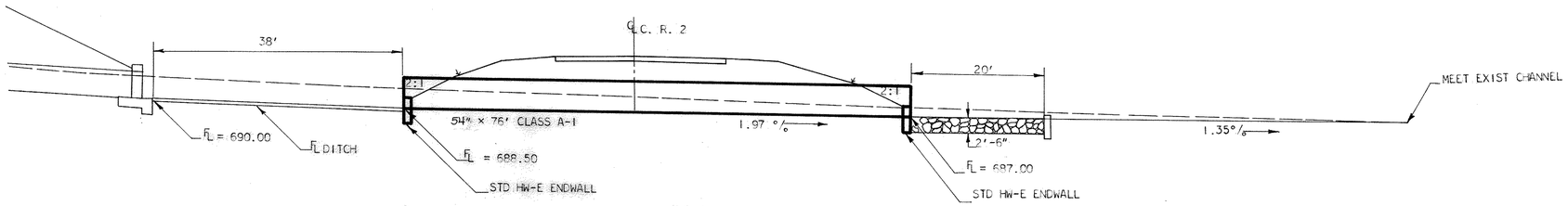


PLAN

DRAINAGE AREA = 56 AC
Q 50 = 119 CFS

CHANNEL CROSS SECTIONS	E - 3	
	E.A	C.Y.
STA 11+16	0	
		1
686.22	2	
11+00		4
686.7		
	5	
686.62		
10+70		8
687.5		
686.94	11	
10+44		1
688.5 STA 10+41.5	0	
TOTAL		14

SCALE: 1" = 10'



SECTION
SCALE: 1" = 10'

ESTIMATED QUANTITIES

E-3	CHANNEL EXCAVATION	14	CU YDS
I-1	54" PIPE, CLASS A-1 SEC M-6.4(d)	76	LIN FT
I-2	MASONRY CLASS "C"	3.3	CU YDS
I-10	DUMPED ROCK CHANNEL PROTECTION	24	CU YDS
I-10	RIPRAP 6" REINFORCED CONCRETE	40	SQ YDS
L-10	SODDING	15	SQ YDS

STD DRWGS: HW-E

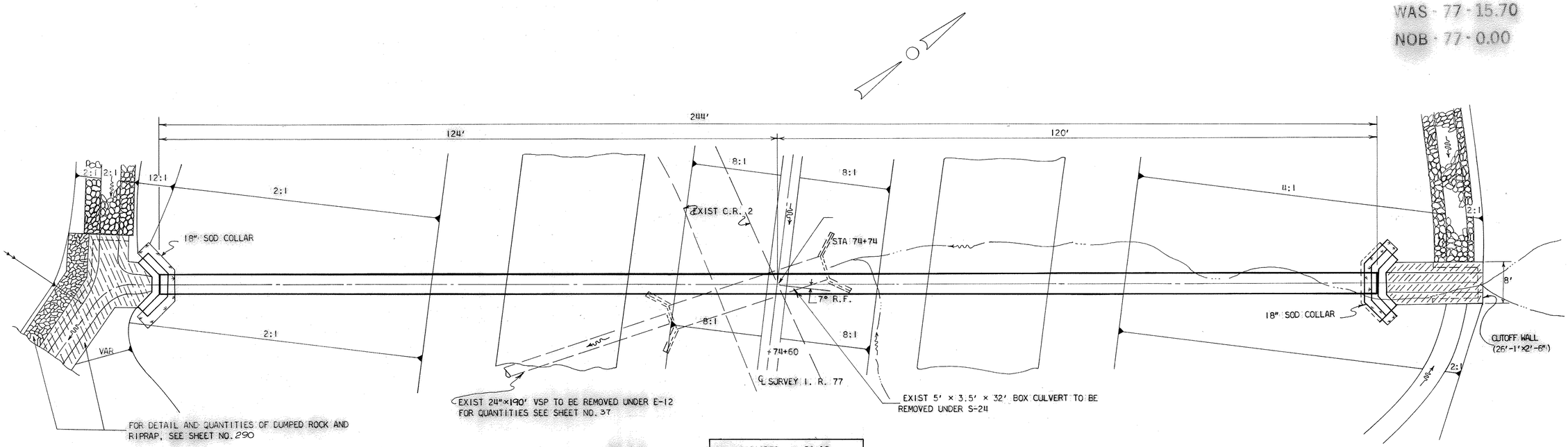
Designed	Checked	In Ked
J.H.W. 1-15-65	D.F.H. 1-19-65	P.A.L. 1-26-65

PIPE DETAIL - Sta. 8+11 - C.R. 2

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	I-77-1(17) 15	

291

WAS - 77 - 15.70
NOB - 77 - 0.00



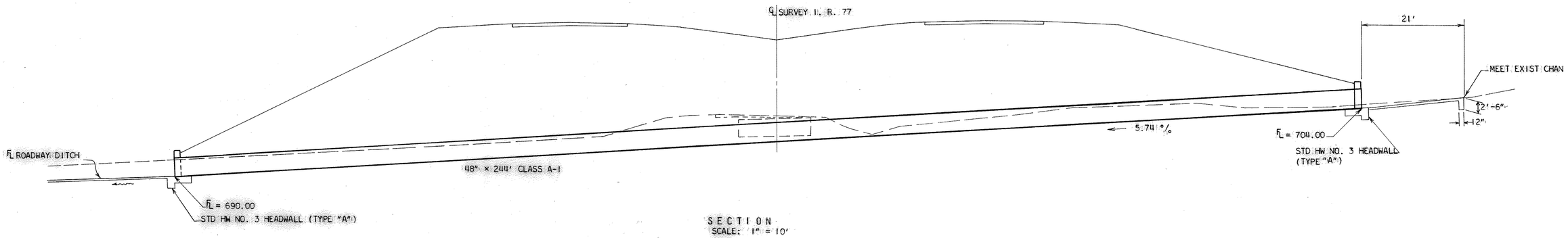
PLAN

DRAINAGE AREA = 50 AC
Q50 = 110 CFS

ESTIMATED QUANTITIES

I-1	48" PIPE, CLASS A-1, SEC M-6.4(d) 8 GAGE	244 LIN FT
I-2	MASONRY, CLASS "C"	17.0 CU YDS
I-10	RIPRAP 6" REINFORCED CONCRETE	19 SQ YDS
L-10	SODDING	7 SQ YDS
S-24	REMOVAL OF EXISTING STRUCTURES	LUMP

STD DRWGS: HW NO. 3



SECTION
SCALE: 1" = 10'

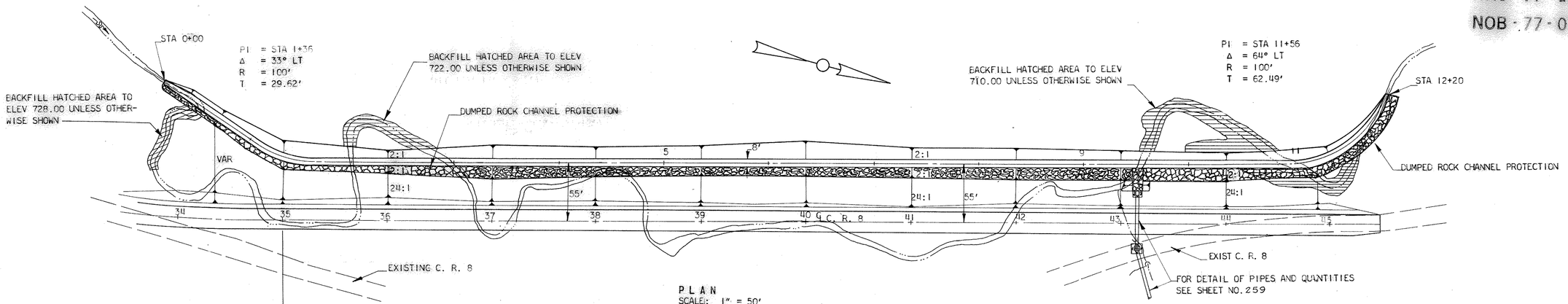
DESIGNED	CHECKED	INKED
J.H.W. 1-13-65	D.F.H. 1-19-65	D.O.W. 2-4-65

PIPE DETAIL ~ Sta. 74+74

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	I-77-1(7)15	

292

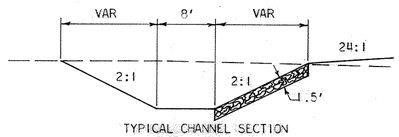
WAS - 77 - 15.70
NOB - 77 - 0.00



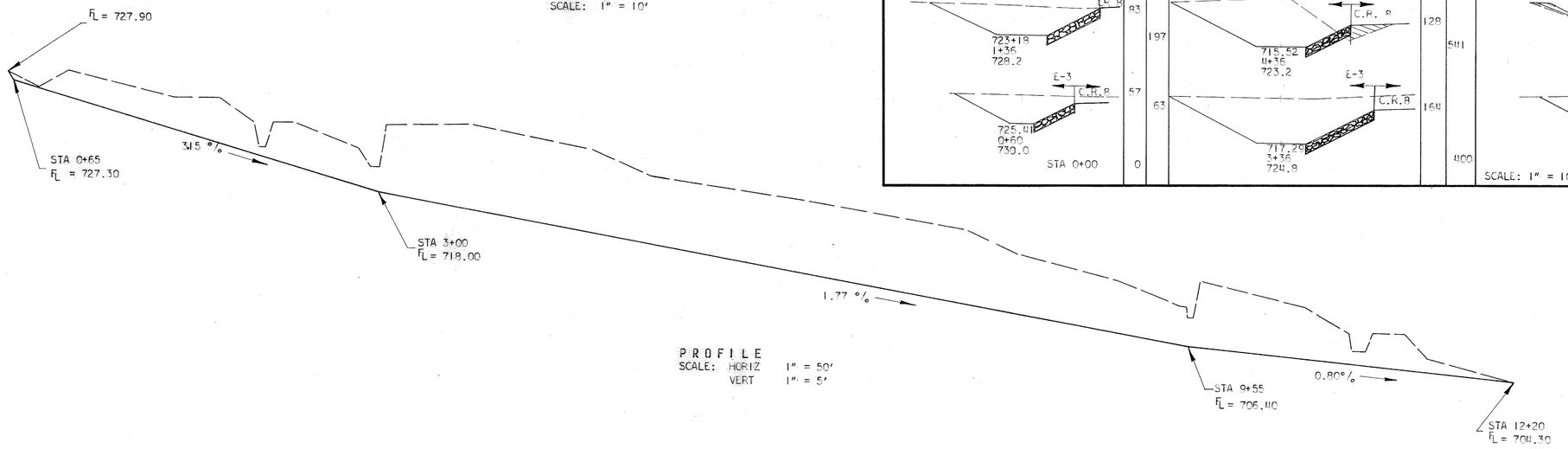
PLAN
SCALE: 1" = 50'

ESTIMATED QUANTITIES

E-3	CHANNEL EXCAVATION	4,299 CU YDS
I-10	DUMPED ROCK CHANNEL PROTECTION	652 CU YDS



TYPICAL CHANNEL SECTION
SCALE: 1" = 10'



PROFILE
SCALE: HORIZ 1" = 50'
VERT 1" = 5'

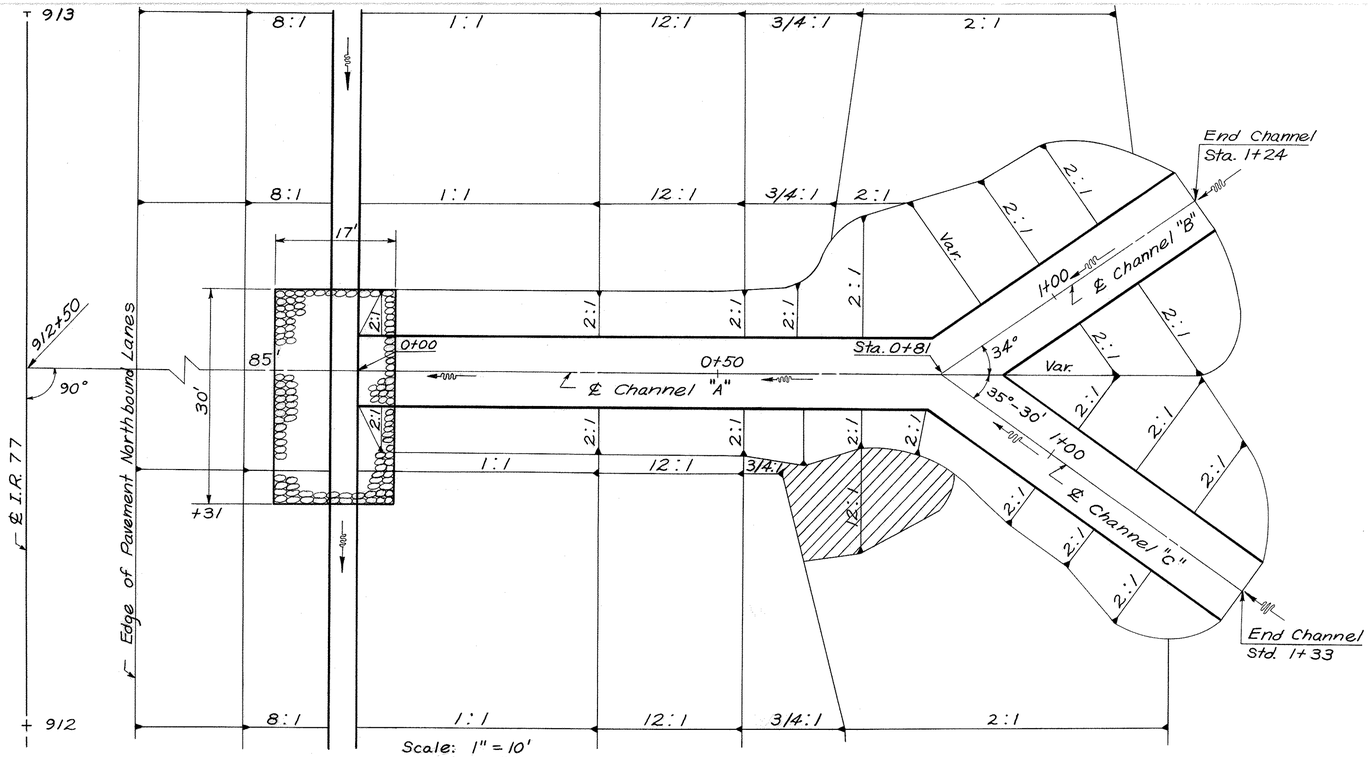
CHANNEL CROSS SECTIONS	E-3 E.A.	E-3 C.Y.
E-3 C.R.8 720.02 2+36 724.0	52	81
E-3 C.R.8 721.59 1+86 724.4	35	109
E-3 C.R.8 723+18 1+36 728.2	83	197
E-3 C.R.8 725.41 0+50 730.0	57	63
STA 0+00	0	

CHANNEL CROSS SECTIONS	E-3 E.A.	E-3 C.Y.
E-3 C.R.8 709.12 7+86 716.0	134	775
E-3 C.R.8 711.78 6+36 718.2	145	1011
E-3 C.R.8 715.52 4+36 723.2	128	541
E-3 C.R.8 717.29 3+36 724.9	164	400

CHANNEL CROSS SECTIONS	E-3 E.A.	E-3 C.Y.
STA 12+20	0	39
E-3 C.R.8 704.84 11+50 706.50	30	25
E-3 C.R.8 704.92 11+36 708.8	65	92
E-3 C.R.8 705.32 10+86 708.8	34	344
E-3 C.R.8 706.46 9+36 711.8	90	622
SCALE: 1" = 10' TOTALS		4,299

Designed	Checked	Inked
J.H.W. 9/23/64	D.F.H. 11/13/64	R.F.B. 1/20/65

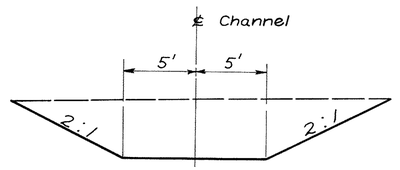
CR*8 CHANNEL RELOCATION ~ STA. 0+00 TO STA. 12+20



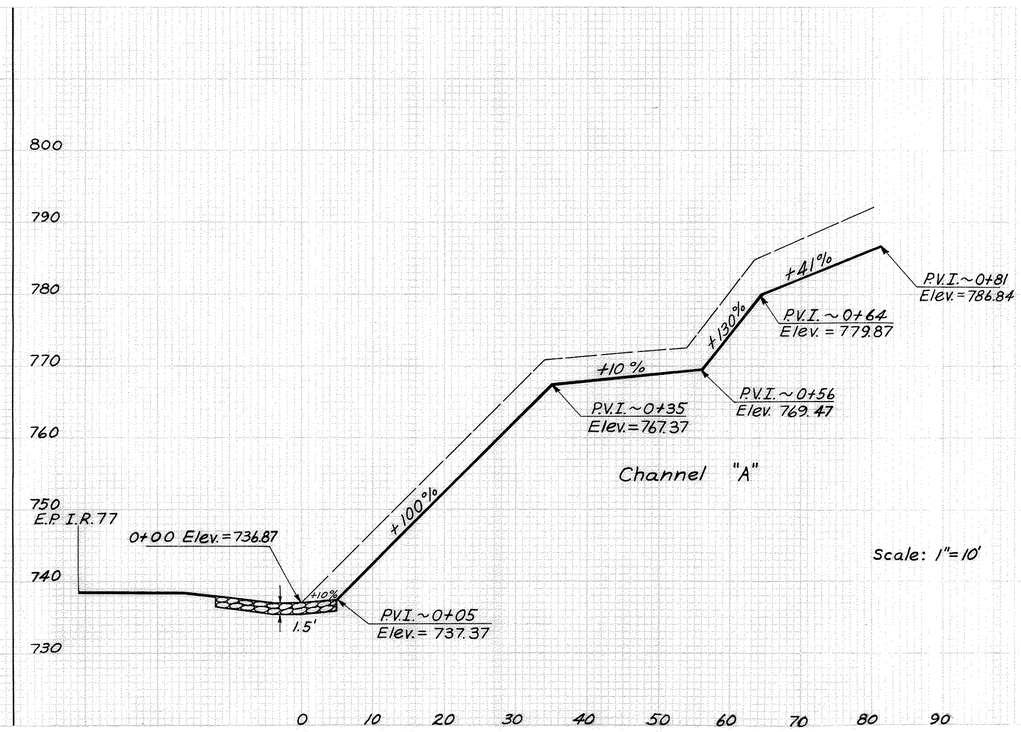
Estimated Quantities

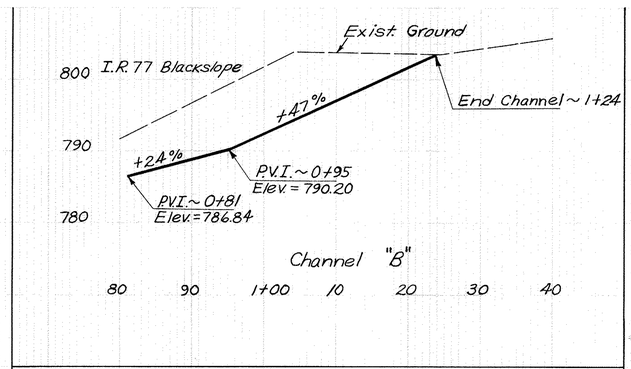
E-3 Channel Excavation = 645 Cu. Yds.
I-10 Dumped Rock Channel Protection = 30 Cu. Yds.

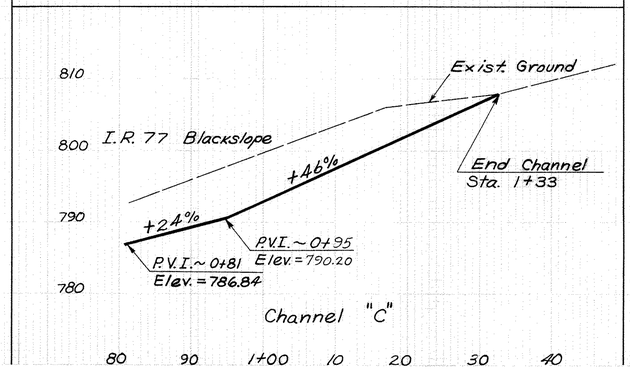
Note: Hatched Area indicates area to be back filled. Quantity Carried on Sheet No. 115



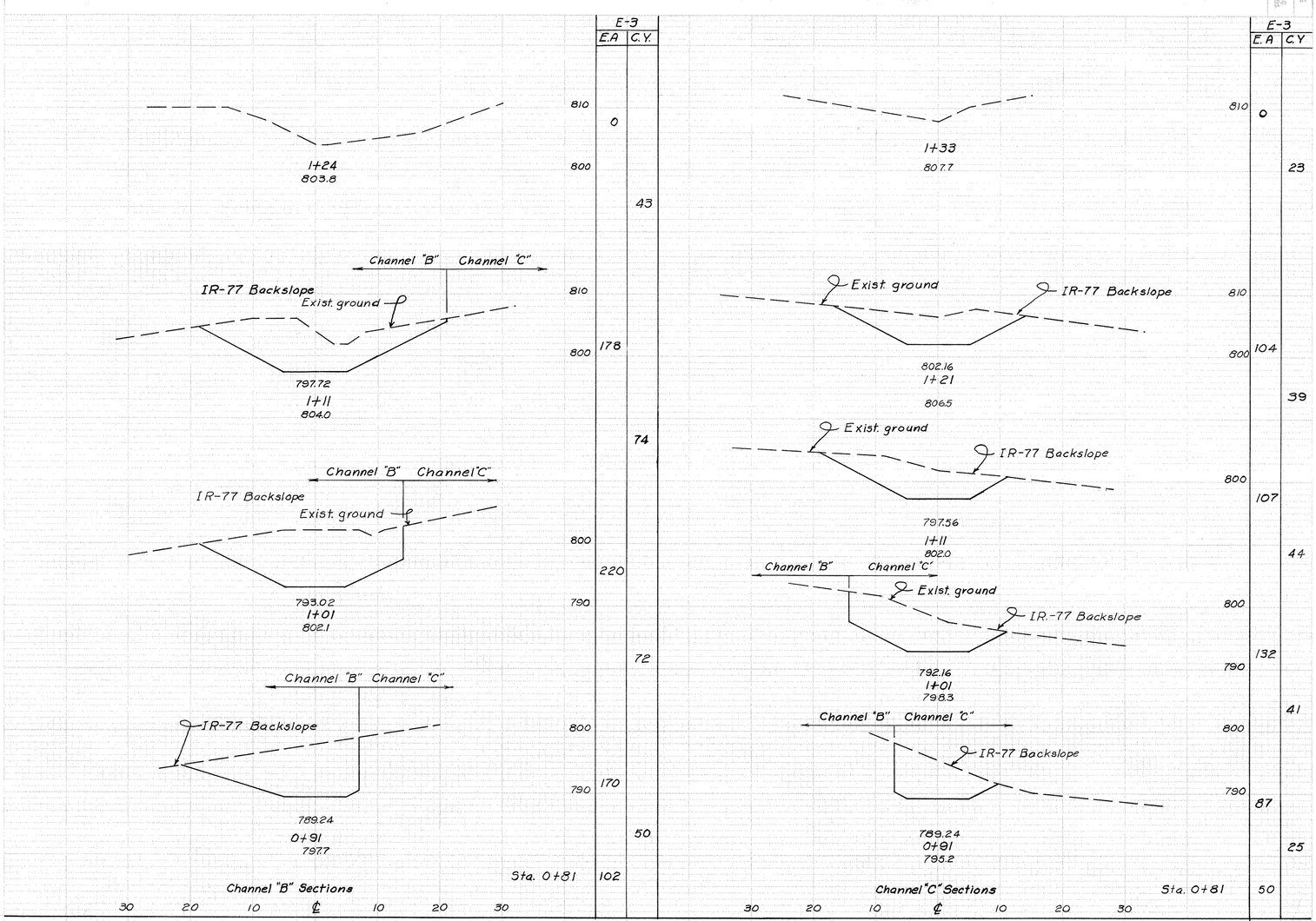
Typical Channel Section
Scale: 1" = 5'

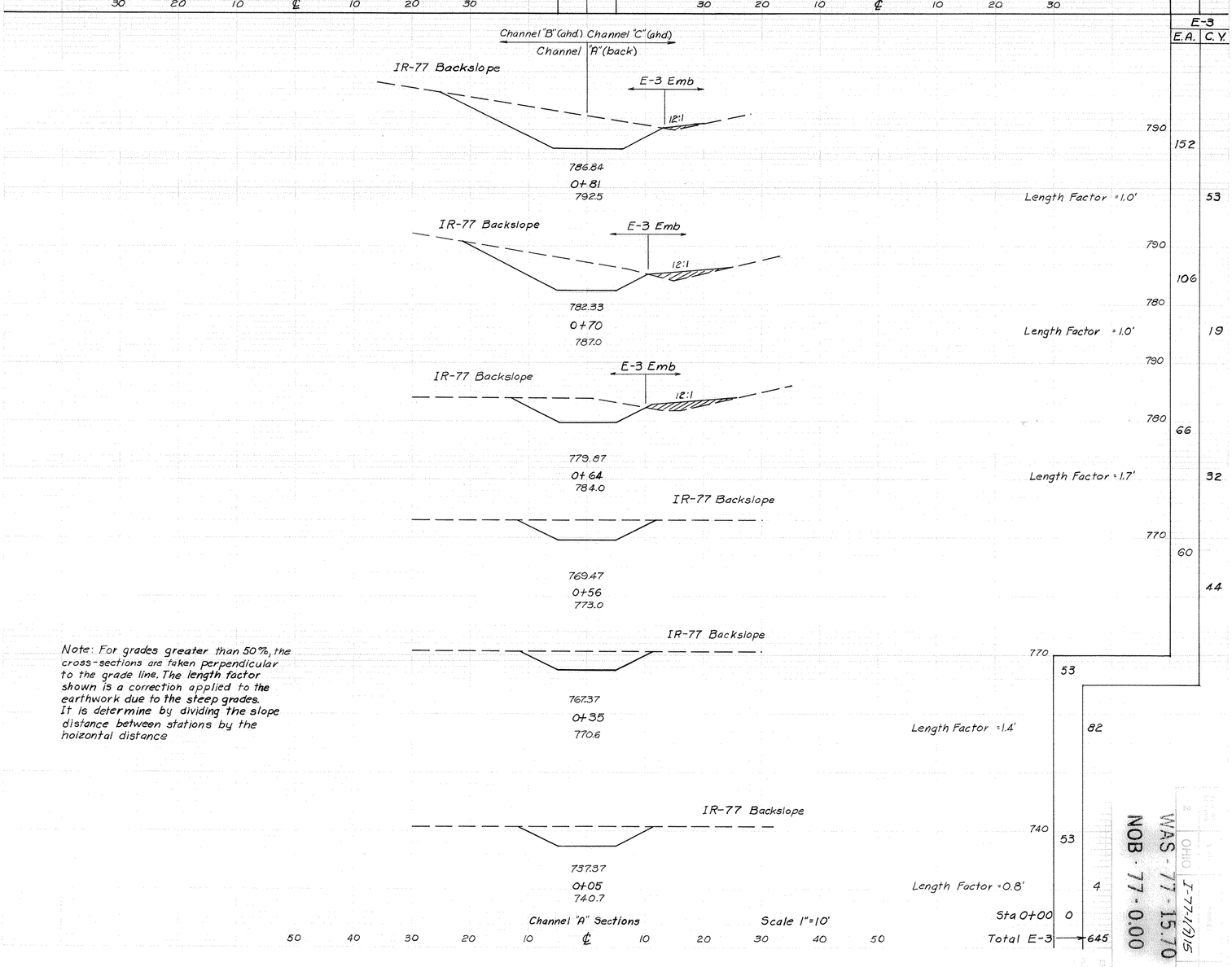






Channel Detail ~ Sta. 912+50 Rt.





Note: For grades greater than 50%, the cross-sections are taken perpendicular to the grade line. The length factor shown is a correction applied to the earthwork due to the steep grades. It is determine by dividing the slope distance between stations by the hoizontal distance

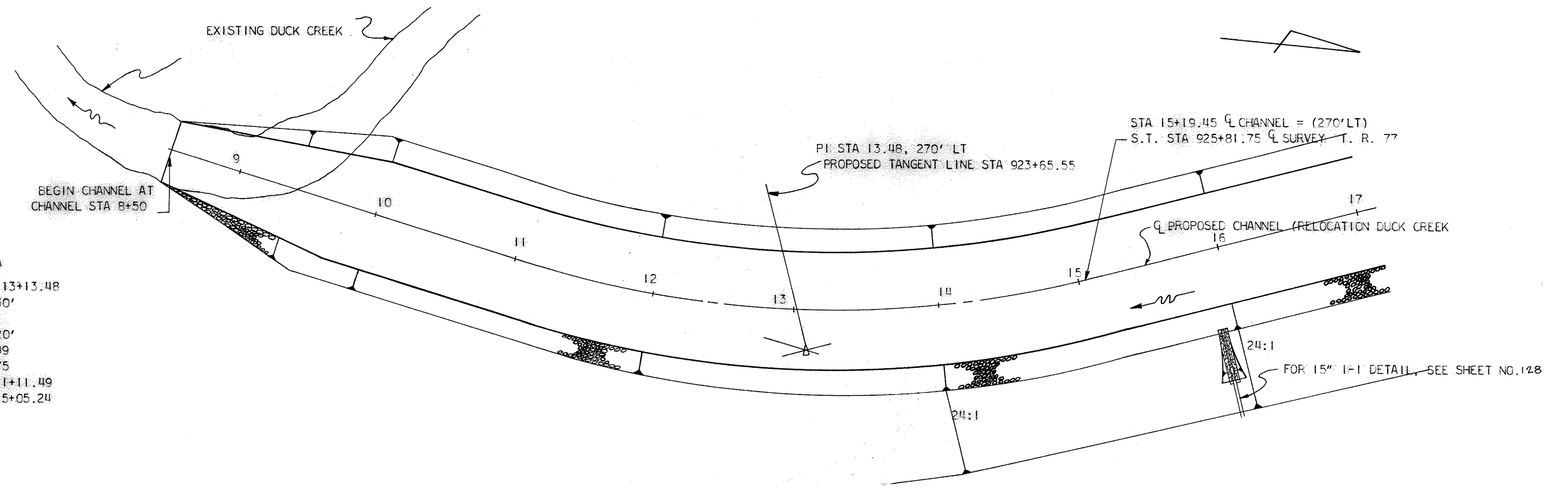
CHANNEL CROSS SECTIONS ~ Sta. 912 + 50 Rt

WAS-77-15.70
NOB-77-0.00
OHIO
I-77 & I-75

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	I-77-1(7)15	

295

WAS - 77 - 15.70
NOB - 77 - 0.00

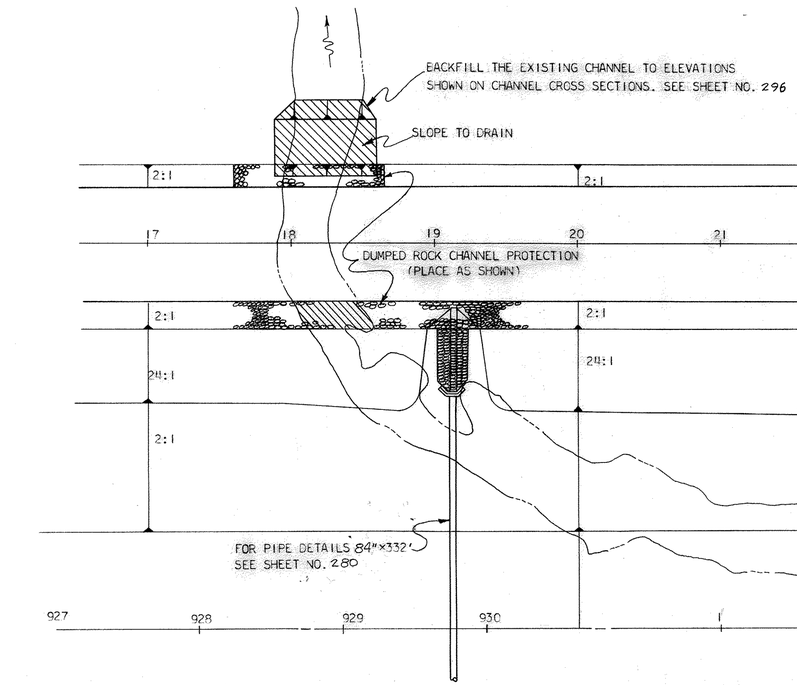


CURVE DATA

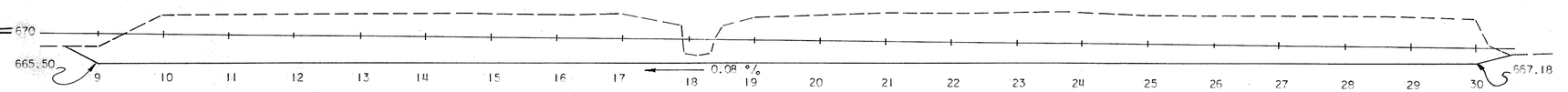
PI = STA 13+13.48
Δ = 31°30'
D = 8°00'
R = 716.20'
T = 201.99
L = 393.75
PC = STA 11+11.49
PT = STA 15+05.24

ESTIMATED QUANTITIES

E-3 CHANNEL EXCAVATION	51,224 CU YDS
I-10 DUMPED ROCK CHANNEL PROTECTION	2,700 CU YDS

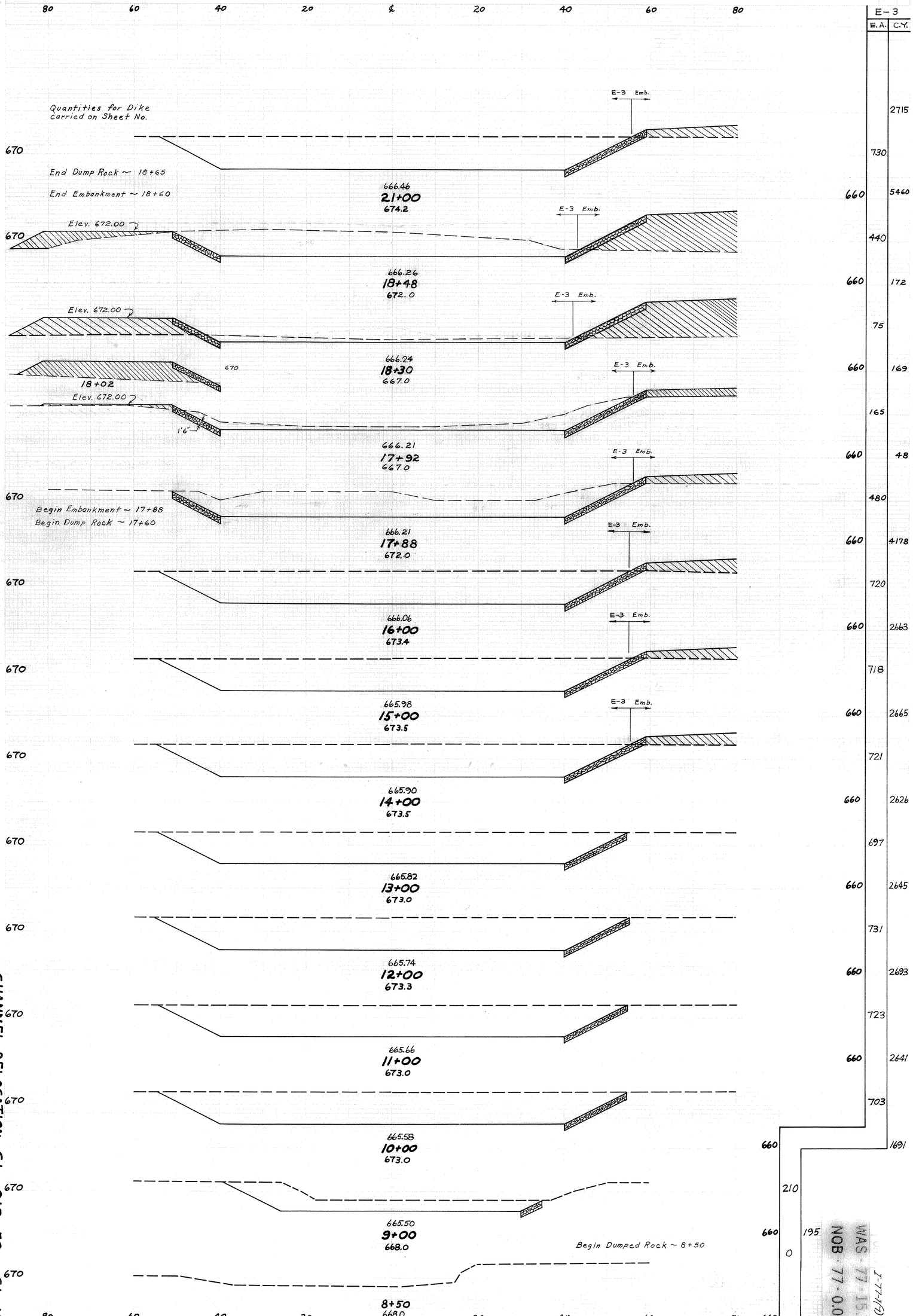


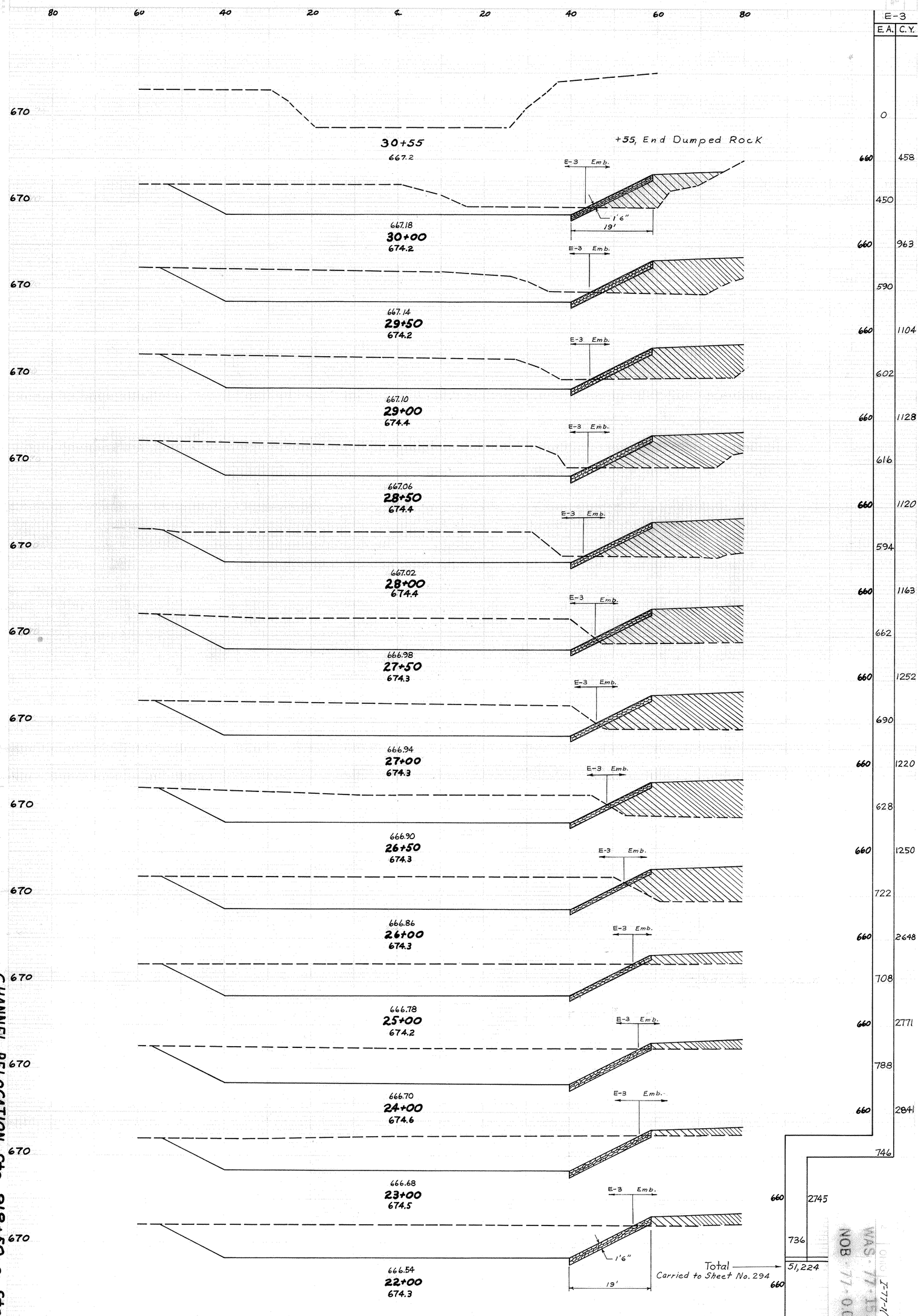
TYPICAL CHANNEL CROSS SECTION
SCALE: 1" = 20'



CHANNEL PROFILE
SCALE: VERT 1" = 10'
HORIZ 1" = 100'

Channel Relocation Sta. 918+50 To Sta. 10+55


80 60 40 20 ℄ 20 40 60 80
E-3
E. A. C. Y.
Quantities for Dike carried on Sheet No.
E-3 Emb.
End Dump Rock ~ 18+65
End Embankment ~ 18+60
666.46
21+00
674.2
Elev. 672.00
666.26
18+48
672.0
666.24
18+30
667.0
18+02
1'6"
666.21
17+92
667.0
Begin Embankment ~ 17+88
Begin Dump Rock ~ 17+60
666.21
17+88
672.0
666.06
16+00
673.4
665.98
15+00
673.5
665.90
14+00
673.5
665.82
13+00
673.0
665.74
12+00
673.3
665.66
11+00
673.0
665.58
10+00
673.0
665.50
9+00
668.0
Begin Dumped Rock ~ 8+50
8+50
668.0
670
660
2715
730
5460
440
172
75
169
165
48
480
4178
720
2663
718
2665
721
2626
697
2645
731
2693
723
2641
703
1691
210
195
0
WAS 77-15.70
NOB 77-0.00
I-77-15
CHANNEL RELOCATION Sta. 918+50 ~ Sta. 10+55
206



CHANNEL RELOCATION Sta. 918+50 ~ Sta. 10+55

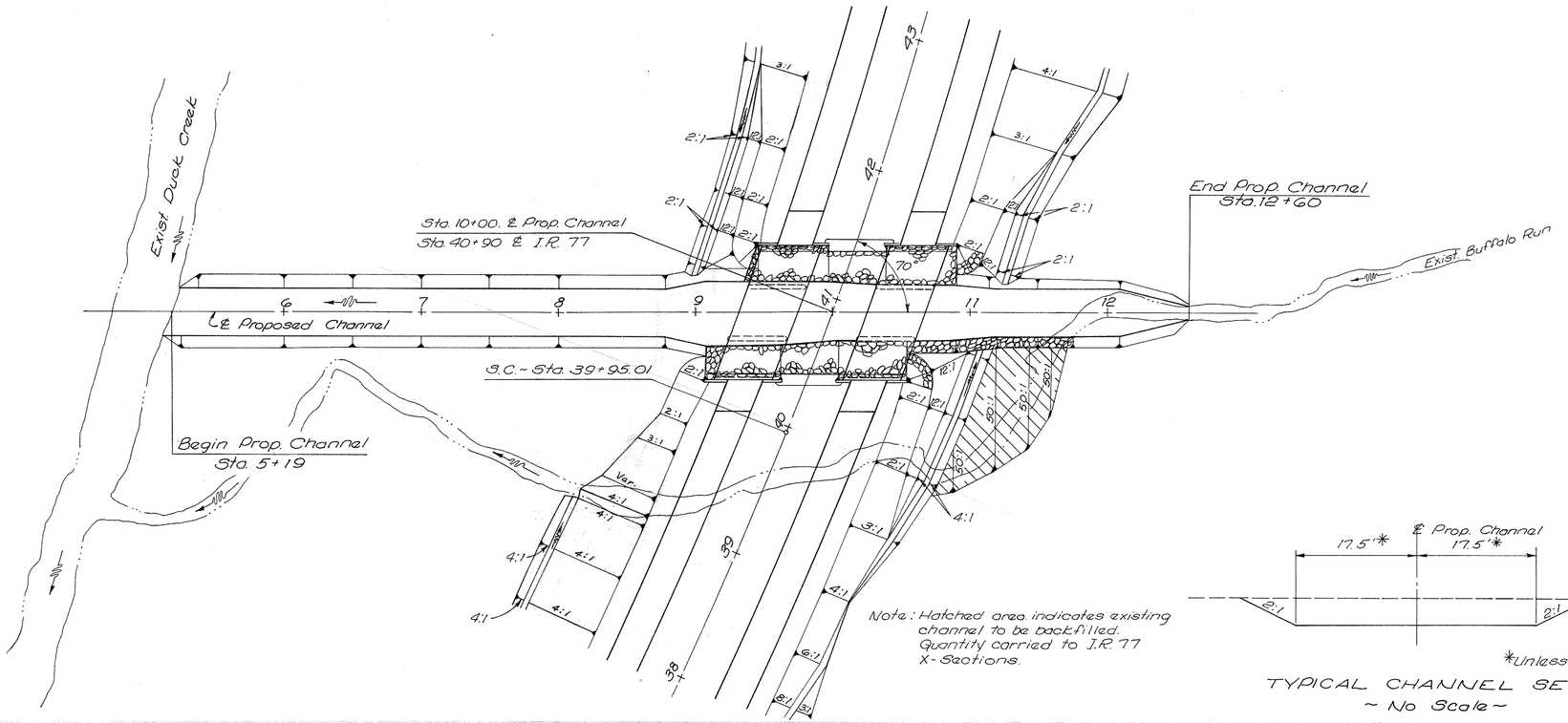
WAS. 77-157(
NOB 77-000

277-(15)

2	OHIO	I-77-1(7)15		298

WAS - 77 - 15.70

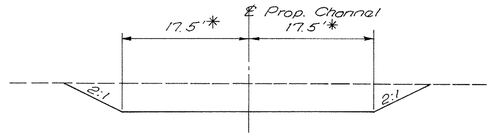
NOB - 77 - 0.00



ESTIMATED QUANTITIES

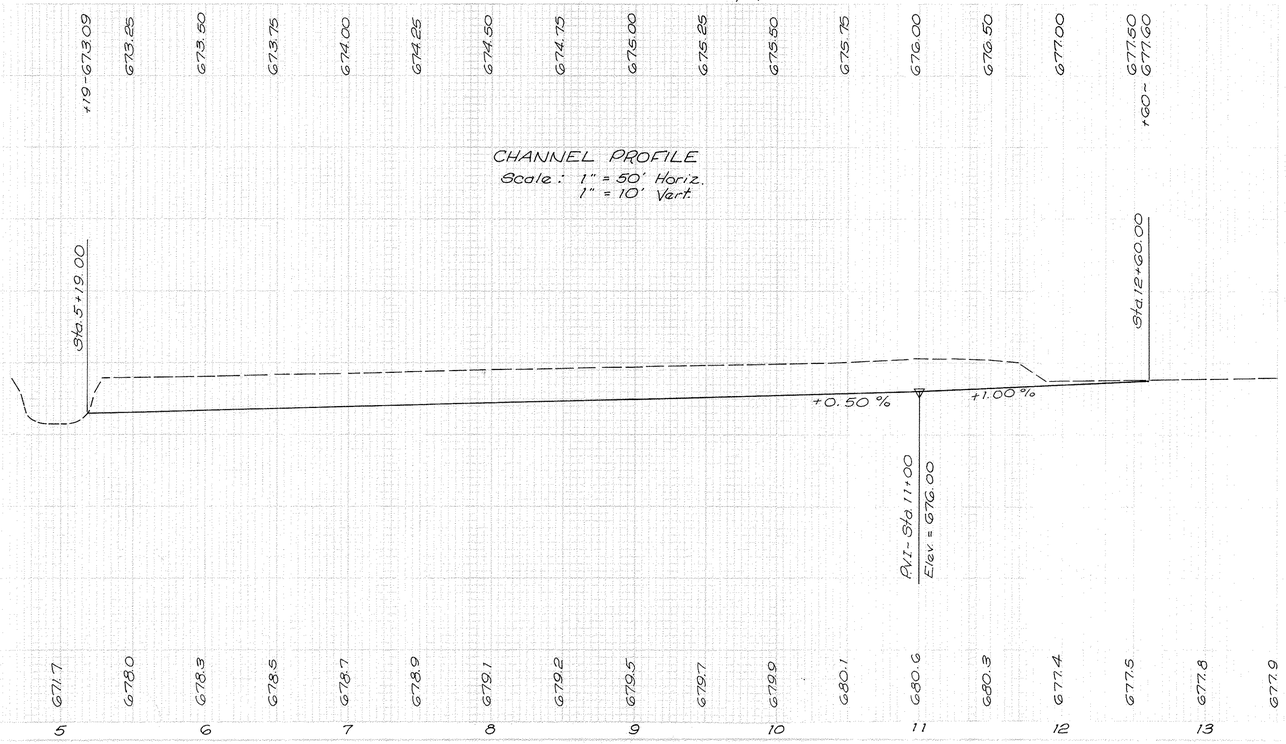
**E-3	Channel Excavation	5,182 Cu. Yds.
** I-10	Dumped Rock Channel Protection	727 Cu. Yds.

** Quantity carried to Bridge Plans.



*Unless otherwise indicated

TYPICAL CHANNEL SECTION
~ No Scale ~



BUFFALO RUN CHANNEL RELOCATION - Sta. 40+90

OHIO I-77-1(7) 15
WIAS · 77 · 15.70
NOB · 77 · 0.00

End Area		Volume	
E-3	Emb.	E-3	Emb.
0			
		62	
67	0		
		276	88
162	189		
		160	190
183	222		
		224	184
221	110		
		426	31
211	0		
		284	
227			
		321	
242			
		483	
250			
		249	
198			
		575	
200			
		754	
207			
		383	
207			
		330	
214	435		
		70	
210	0		
		5182	
		493	

For Emb. Sta. 11+70

For Emb. Sta. 10+75

Note: Hatched area indicates existing channel to be backfill

Excavation carried with I.R.77

End Dumped Rock C.P. Lt. Sta. 11+75 (Depth = 1.5')

Sta. 10+65 ~ Dumped Rock C.P. Rt. Depth = 2' back, 1.5' ahead.

End Dumped Rock C.P. Lt. Sta. 10+90 (Depth = 2')

Begin Dumped Rock C.P. Rt. Sta. 9+08 (Depth = 2')

Begin Dumped Rock C.P. Lt. Sta. 9+36 (Depth = 2')

Emb. carried with I.R.77

E-3

50:1

1.5

2'

8'

9'

8.5'

17.5'

20'

23'

24'

12+60 677.6

12+10 677.3

11+45 680.2

11+20 680.5

10+90 680.5

10+33 680.0

9+98 679.9

9+61 679.7

9+08 679.5

8+78 679.4

8+00 679.1

7+00 678.7

6+50 678.5

6+00 678.3

5+37 678.0

676.45

676.20

675.95

675.67

675.49

675.31

675.04

674.89

674.50

674.00

673.75

673.50

673.19

Sta. 5+19
Total E-3
Total Emb. (Channel Backfill)

BUFFALO RUN CHANNEL CROSS SECTIONS

WAS - 77 - 15.70
NOB - 77 - 0.00

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	I-77-1(7)15	

300

CURVE NO. 1
PI STA 56+13, 209.13 LT. ℄ SURVEY
= CHANNEL STA 6+23.80
Δ = 37°30' LT
R = 100'
T = 33.95'
Lc = 65.45'
P. C. = CHAN STA 5+89.85
P. T. = CHAN STA 6+55.30

CURVE NO. 2
PI STA 51+32.92, 179.50' LT ℄ SURVEY
= CHANNEL STA 11+04.27
Δ = 17°19' LT
DC = 2°09'30"
R = 265.79'
T = 40.27'
Lc = 80.33'
P. C. = CHAN STA 7+00.00
P. T. = CHAN STA 15+02.33

CURVE NO. 3
PI STA 69+00, 211.31' LT ℄ SURVEY
= CHANNEL STA 18+36.68
Δ = 30° LT
R = 200'
T = 53.59'
Lc = 104.72'
P. C. = CHAN STA 17+82.99
P. T. = CHANNEL STA 18+87.61

Toledo, Columbus & Ohio River R.R. Operated by The Pennsylvania Railroad Co.

FOR DETAILS OF ROADWAY DITCH SEE MAINLINE CROSS-SECTIONS

DUMPED ROCK CHAN PROT
FOR DETAILS SEE SHEET NO.300

℄ RELOCATED DUCK CREEK

DUMPED ROCK CHANNEL PROT
FOR DETAILS SEE SHEET No.300

FOR DETAILS OF ROADWAY DITCH, SEE MAINLINE CROSS SECTIONS

EXIST. DUCK CREEK

FOR QUANTITIES AND DETAILS OF C. B., 15" PIPE AND DUMPED ROCK CHANNEL PROTECTION SEE SHEET NO.166

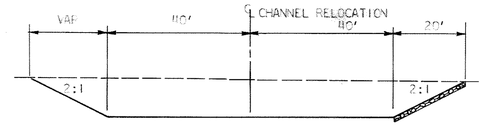
℄ SURVEY PROP I. R. 77

FOR QUANTITIES AND DETAILS OF 120" PIPE, RIPRAP AND DUMPED ROCK CHANNEL PROTECTION, SEE SHEET NO. 286

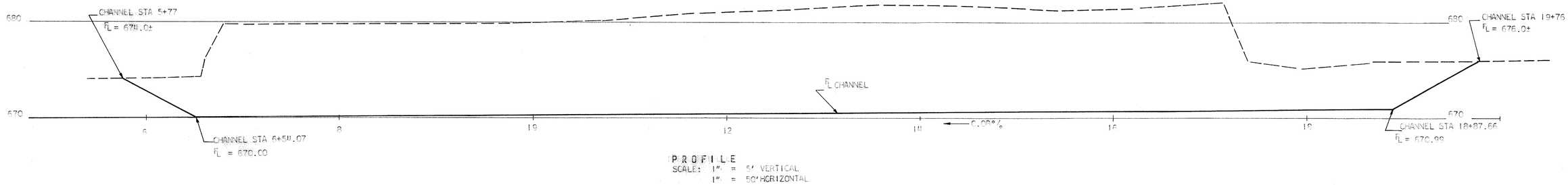
PLAN
SCALE: 1"=50'

ESTIMATED QUANTITIES

E-7 CHANNEL EXCAVATION	48,912 CU YDS
1-10 DUMPED ROCK CHANNEL PROTECTION	2109 CU YDS



TYPICAL CHANNEL CROSS SECTION
SCALE: 1" = 20'



PROFILE
SCALE: 1" = 5' VERTICAL
1" = 50' HORIZONTAL

Duck Creek Channel Relocation ~ Sta. 55+75 To 70+25 Lt.

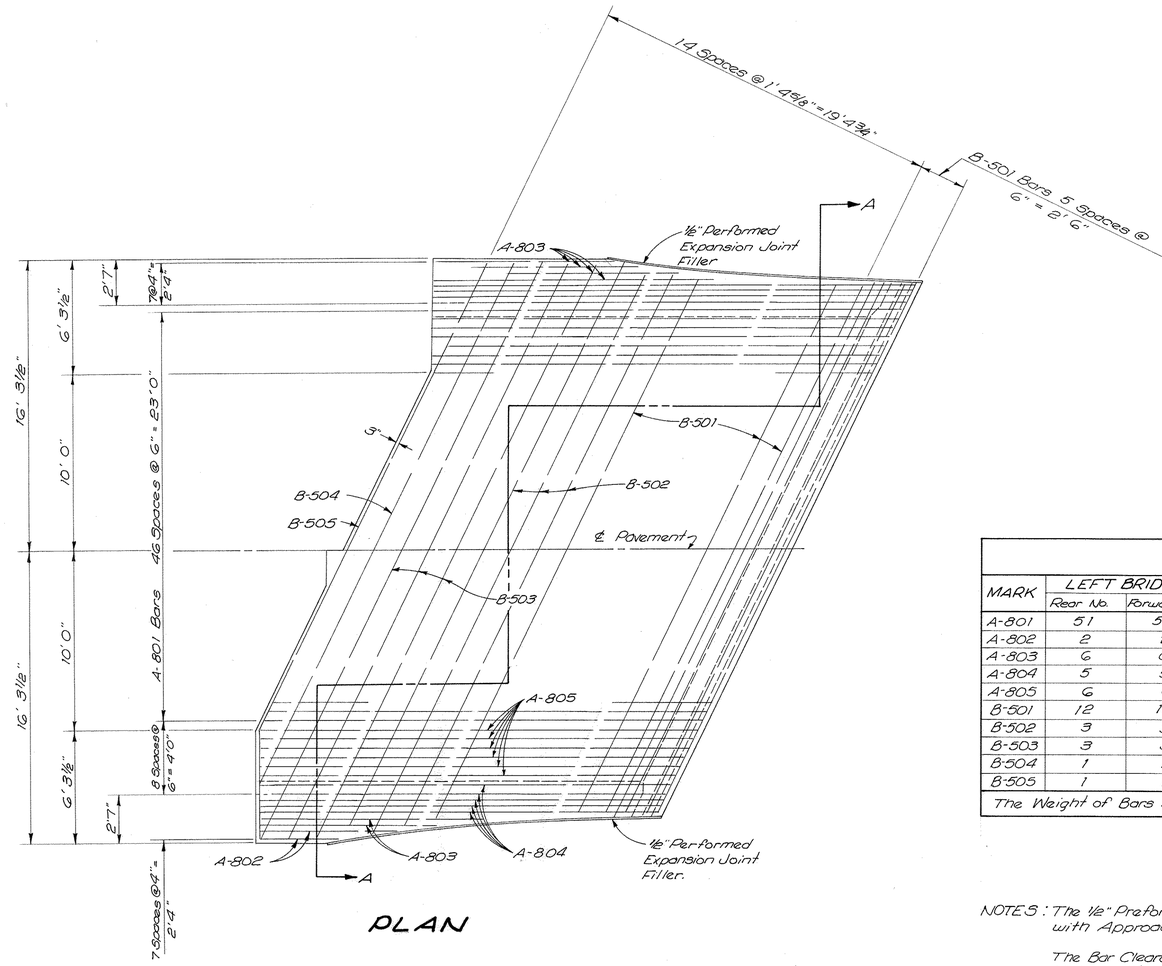
I-77-1(7)15
WAS · 77 · 15.70
NOB · 77 · 0.00

| E — 3 | | |

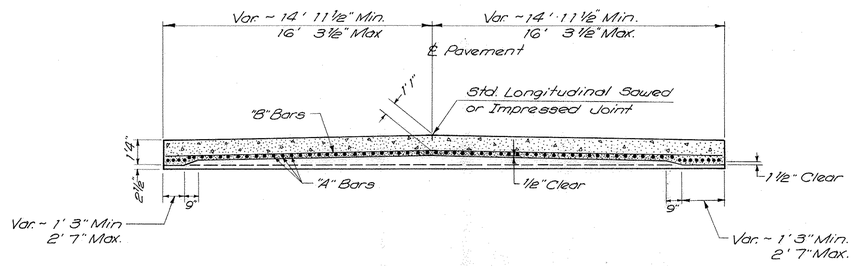
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	I-77-1(7)15	

302

WAS - 77 - 15.70
NOB - 77 - 0.00



PLAN

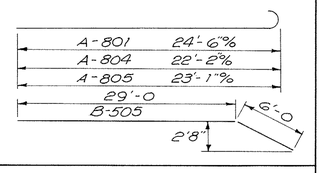


SECTION A-A

REINFORCING STEEL

MARK	LEFT BRIDGE Rear No.	LEFT BRIDGE Forward No.	RIGHT BRIDGE Rear No.	RIGHT BRIDGE Forward No.	TOTAL NO.	LENGTH	SHAPE
A-801	51	51	51	51	204	25'7"	B
A-802	2	2	2	2	8	4'5"	S
A-803	6	6	6	6	24	9'5"	S
A-804	5	5	5	5	20	23'3"	B
A-805	6	6	6	6	24	24'2"	B
B-501	12	12	12	12	48	32'9"	S
B-502	3	3	3	3	12	34'3"	S
B-503	3	3	3	3	12	35'9"	S
B-504	1	1	1	1	4	32'6"	S
B-505	1	1	1	1	4	35'0"	B

BENDING DIAGRAM



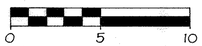
The Weight of Bars is Included with Approach Slab for Payment.

NOTES: The 1/2" Preformed Expansion Joint Filler is Included with Approach Slab for Payment.

The Bar Clearance from the Face of Concrete Shall be 2" Minimum When Not Shown.

The Transverse Slope is Normal for the Forward Slabs and Superelevated for the Rear Slabs.

See Std. Drwgs. AS-1-54 for Details not Shown.



SCALE IN FEET

APPROACH SLAB DETAILS ~ BRIDGE NO. WAS-77-1687 L&R

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

303

WAS-77-15.70
NOB-77-0.00
0.3 mi ± S.W. of Macksburg

MICROFILMED
JAN 7 1988

End Appr. Slab ~ Sta. 866 + 34.00

Begin Appr. Slab ~ Sta. 867 + 61.06

Southbound Lanes

Northbound Lanes

℄ Prop. I.R. 77

N 14° 32' 33" W

Sta. 867+00 ℄ I.R. 77 =
Sta. 20+00 ℄ Conn. T.R. 301

96" pipe

21" pipe

Critical clearance point "A"

Reloc. T.R. 301

Exist. T.R. 301

BRIDGE LIMITS

Estimated 1975 Traffic = 6670 V.P.D.

PROPOSED STRUCTURE

TYPE: Continuous steel beams with reinforced concrete deck and substructure.
SPANS: 40'-50'-35' ℄ brgs.
ROADWAY: Two @ 40'-0" ℄ of parapets
LOAD FREQUENCY: CF = 2000 (57)
(Adequate for AASHO Alternate Loading)
SKEW: None
WEARING SURFACE: 1" monolithic concrete
APPROACH SLABS: AS-1-54 (25' long)
ALIGNMENT: Tangent

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
BUREAU OF BRIDGES

SITE PLAN

BRIDGE NO. WAS-77-1636 L & R
OVER T.R. 301
WASHINGTON CO. IR-77
SEC.
STA. 866 + 34.00
867 + 61.00
SCALE 1" = 20'

PRESENT TOPOGRAPHY		PROPOSED WORK			
SURVEYED	DRAWN	DESIGNED	DRAWN	CHECKED	REVIEWED
Aerial Survey	Aerial Survey	D.G.M.	D.G.M.		P.E.S.

BFG 6-1-65

-3.00%

800' V.C.

Top of slope El. 705.8±

Top of slope El. 702.4±

Ftg. El. 700.60

Ftg. El. 683.30

Ftg. El. 683.00

Footing El. 697.20

Steel "H" piles 10BP42, estimated ave. pay length 52'

Steel "H" piles 10BP42 estimated ave. pay length 50'

Steel "H" piles 10BP42, est. ave. 867 pay length 40' (both piers)

Vertical Curve Data
Length = 800'
P.I. Sta. 870+00, El. 699.88
$g_1 = -3.00\%$; $g_2 = -0.56\%$

Vert. Cl. @ pt. "A"
15.0' min.
15.04' act.

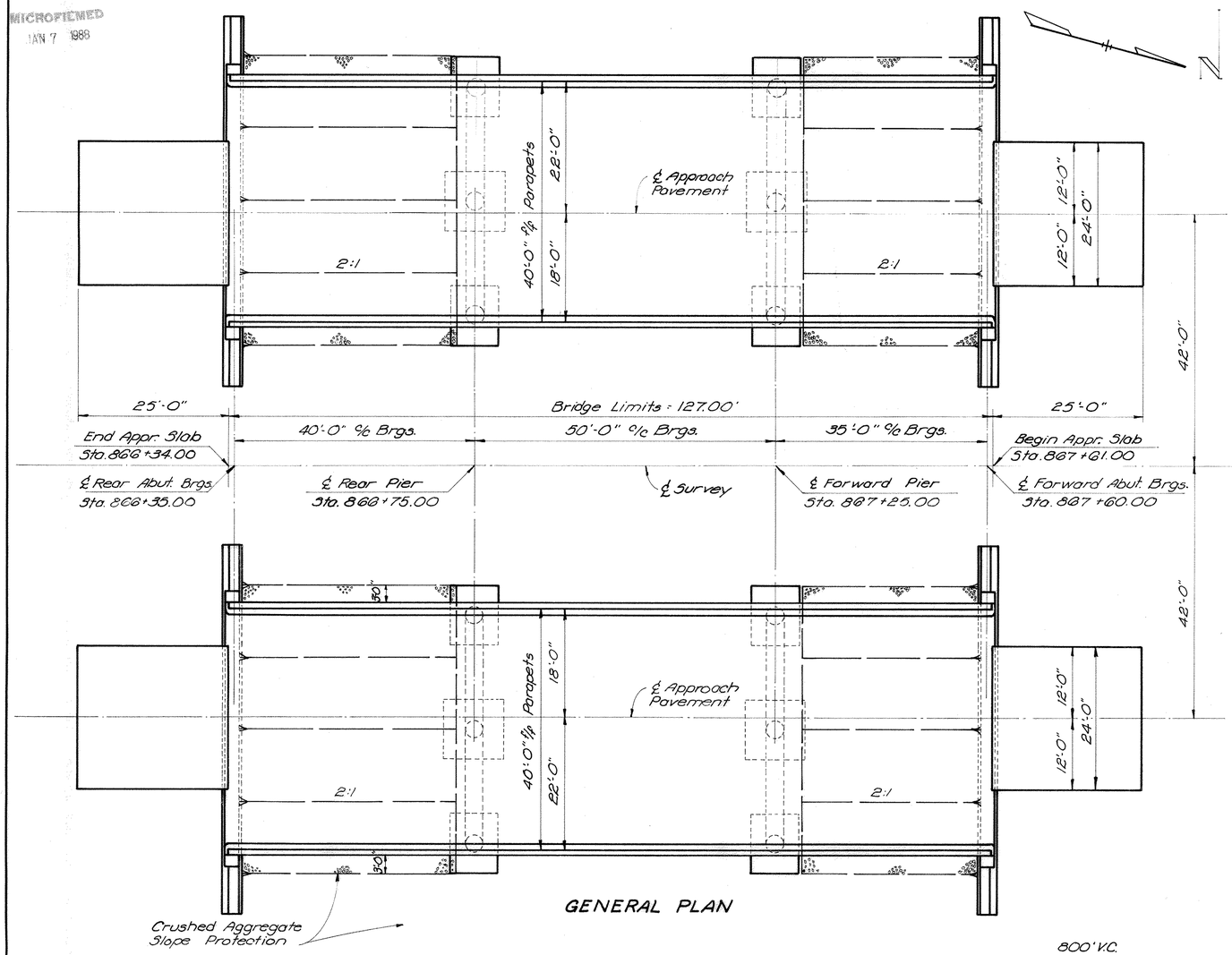
11.5' act.
10.0' min.

Sta. 866+00
Sta. 867+00

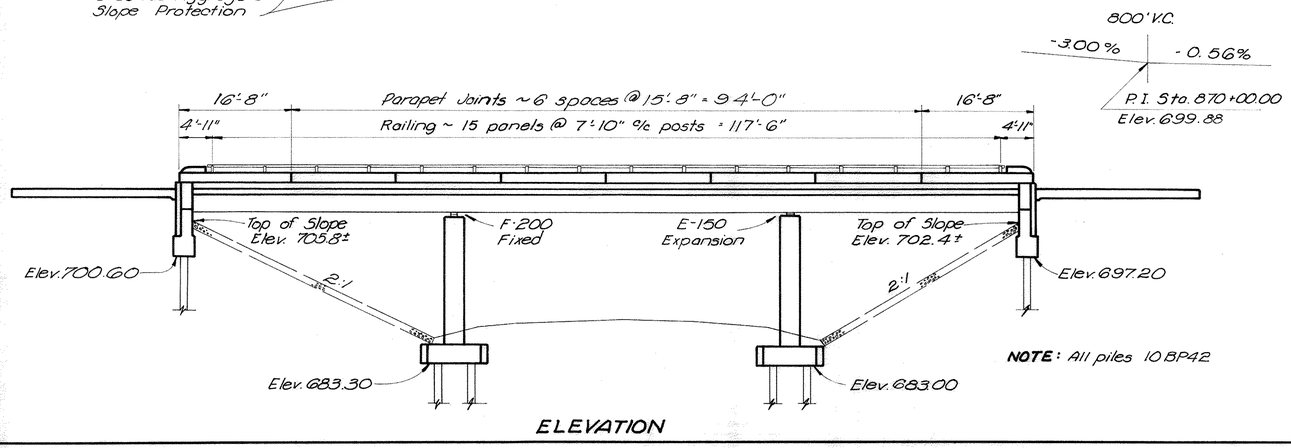
MICROFILMED
JAN 7 1988

FED. RD. DIVISION	STATE	PROJECT		304
2	OHIO			

WAS-77-15.70
NOB-77-0.00



GENERAL PLAN



NOTE: All piles 10BP42

ELEVATION

ESTIMATED QUANTITIES

Item	Total	Unit	Description	Super.	Abuts.	Piers	Genl	As-Built
503	560	Cu. Yds.	Unclassified excavation		275	285		
511	378	Cu. Yds.	Class "C" concrete, superstructure	378				
511	121	Cu. Yds.	Class "C" concrete, pier caps and columns			121		
511	116	Cu. Yds.	Class "E" concrete, pier footings			116		
511	177	Cu. Yds.	Class "E" concrete, abutments		177			
512	170	Lin. Ft.	Waterproofing, premolded sealing strip		170			
509	148,129	Lbs.	Reinforcing steel	103,100	14,545	30,484		
513	197,800	Lbs.	Structural steel	197,800				
514	197,800	Lbs.	Field painting of structural steel	197,800				
516	145	Sq. Ft.	¼" Preformed expansion joint filler AASHO M-153		145			
516	190	Sq. Ft.	1" Preformed expansion joint filler AASHO M-153		190			
517	509.33	Lin. Ft.	Railing, Type 1	509.33				
505	Lump	Sum	First test pile				Lump	
507	5040	Lin. Ft.	Steel piles 10BP42		1840	3200		
518	92	Cu. Yds.	Porous backfill		92			
518	12	Each	Scuppers, including supports	12				
601	785	Sq. Yds.	Crushed aggregate slope protection				785	
808	378	Each	Water-reducing, set-retarding admixture	378				

GENERAL NOTES

REFERENCE shall be made to Standard Drawings C5B-3-63 sheets 1and 3 dated 12-9-63, 5D-1-63 sheet 3 dated 11-12-63, 5D-2-64 dated 11-25-64, F5B-1-62 revised 1-15-63, and BR-1-65 sheet 1 dated 2-1-65; and to Supplemental Specifications 808 dated 7-14-65, and 811 revised 3-29-65

DESIGN LOADING CF=2000 (57)

BASIC STRESSES

Concrete Class C-basic unit stress 1,333 p.s.i.
Concrete Class E-basic unit stress 1,133 p.s.i.
Structural Steel-ASTM A36-basic unit stress 20,000 p.s.i. (ASTM A7 and A373 steel not permitted)
Reinforcing Steel-ASTM A15, A16, A160, Deformed, Intermediate or Hard Grade. Basic unit stress 20,000 psi. Except, spiral reinforcement may be plain, Structural Grade with basic unit stress of 18,000 p.s.i.

EXCAVATION QUANTITY includes the removal of fill material required for construction of the abutments and piers.

FIRST TEST PILE. Payment will be made for only one first test pile. It may be driven for either the Right or Left Bridge.

PILES shall be driven to firm contact with rock. If the length of penetration is approximately equal to the depth to rock according to the bridge foundation report, the firm contact shall be considered as attained when the capacity according to the formula in Sec. 507.05 is not less than the following value for a pile hammer of the indicated energy rating:

For the **abutment** piles:
38 tons per pile using a 7000 ft. lb. hammer
30 tons per pile using an 11,000 ft. lb. hammer
30 tons per pile using a 15,000 ft. lb. or greater hammer

For the pier piles:
40 tons per pile using a 7000 ft. lb hammer
34 tons per pile using an 11,000 ft. lb. hammer
32 tons per pile using a 15,000 ft. lb. or greater hammer

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 30 tons per pile for the abutment piles and 32 tons per pile for the pier piles.

MACHINE FINISH: The concrete bridge deck shall be finished by the use of a finishing machine.

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

GENERAL PLAN & ELEVATION, NOTES & ESTIMATED QUANTITIES

BRIDGE No. WAS-77-1636 L & R
OVER T. R. 301
WASHINGTON COUNTY Sta. 866+34.00
Sta. 867+61.00

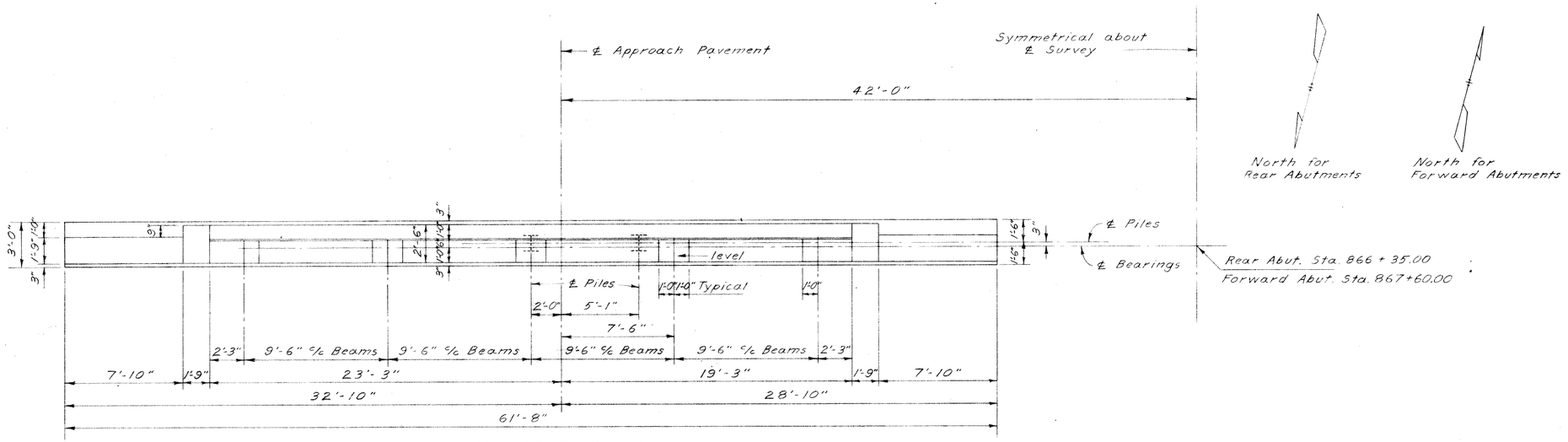
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
FFE	FFE	CAM	WCK	BFG	6-1-65	

MICROFILMED
JAN 7 1988

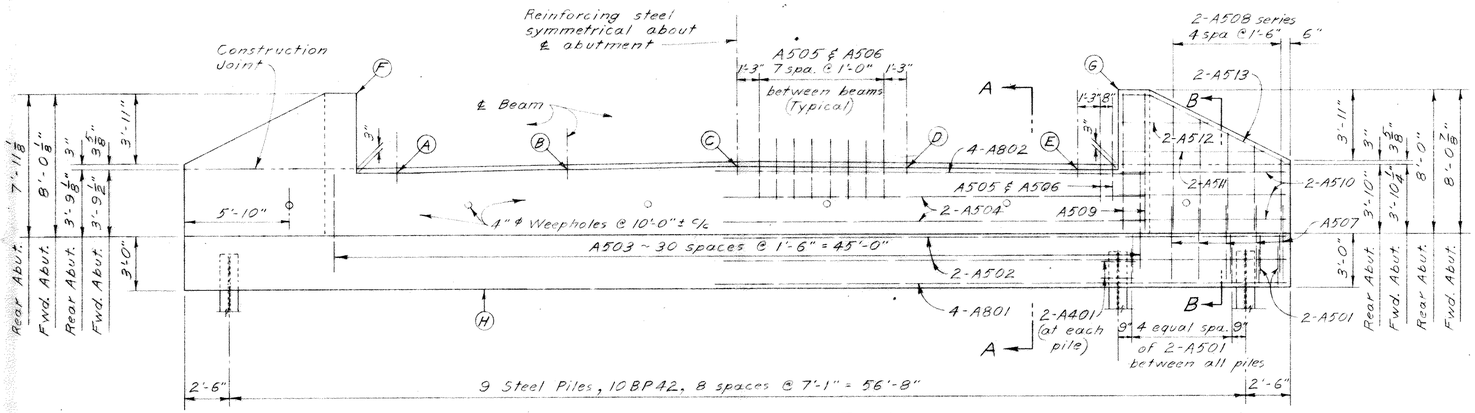
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

305

WAS-77-15.70
NOB-77-0.00



ABUTMENT PLAN

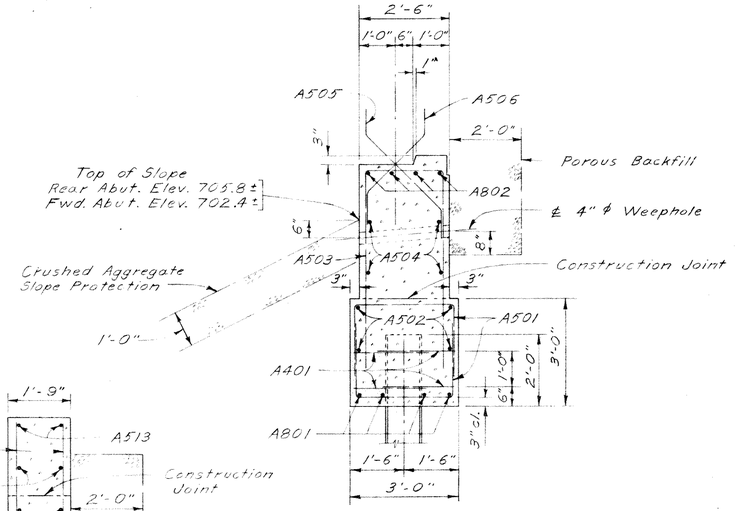


ABUTMENT ELEVATION

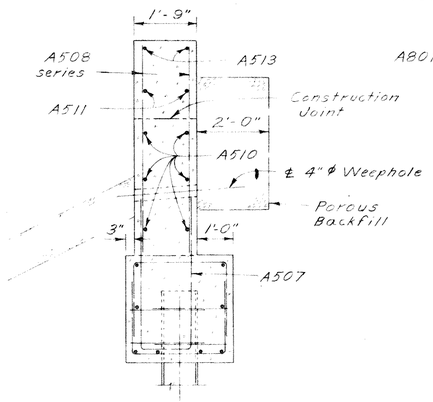
PROCEDURE: The embankment shall be placed and compacted up to the finished spill-thru slope and to the level of the subgrade for a distance of 200 feet back of the abutments, after which excavation shall be made for the abutments and for the piers and the piles driven.

POROUS BACKFILL, 2 ft. thick, full length of abutment and wings shall extend up to the underside of the approach slab or to the finished ground surface. 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.

ELEVATIONS								
	A	B	C	D	E	F	G	H
Rear Abutments	707.11	707.26	707.41	707.33	707.18	711.53	711.60	700.60
Forward Abutments	703.74	703.88	704.03	703.95	703.80	708.21	708.27	697.20



SECTION A-A



SECTION B-B

3

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

ABUTMENT DETAILS

BRIDGE No. WAS-77-1636 L & R
OVER T. R. 301
WASHINGTON COUNTY Sta 866+34.00
Sta. 867+61.00

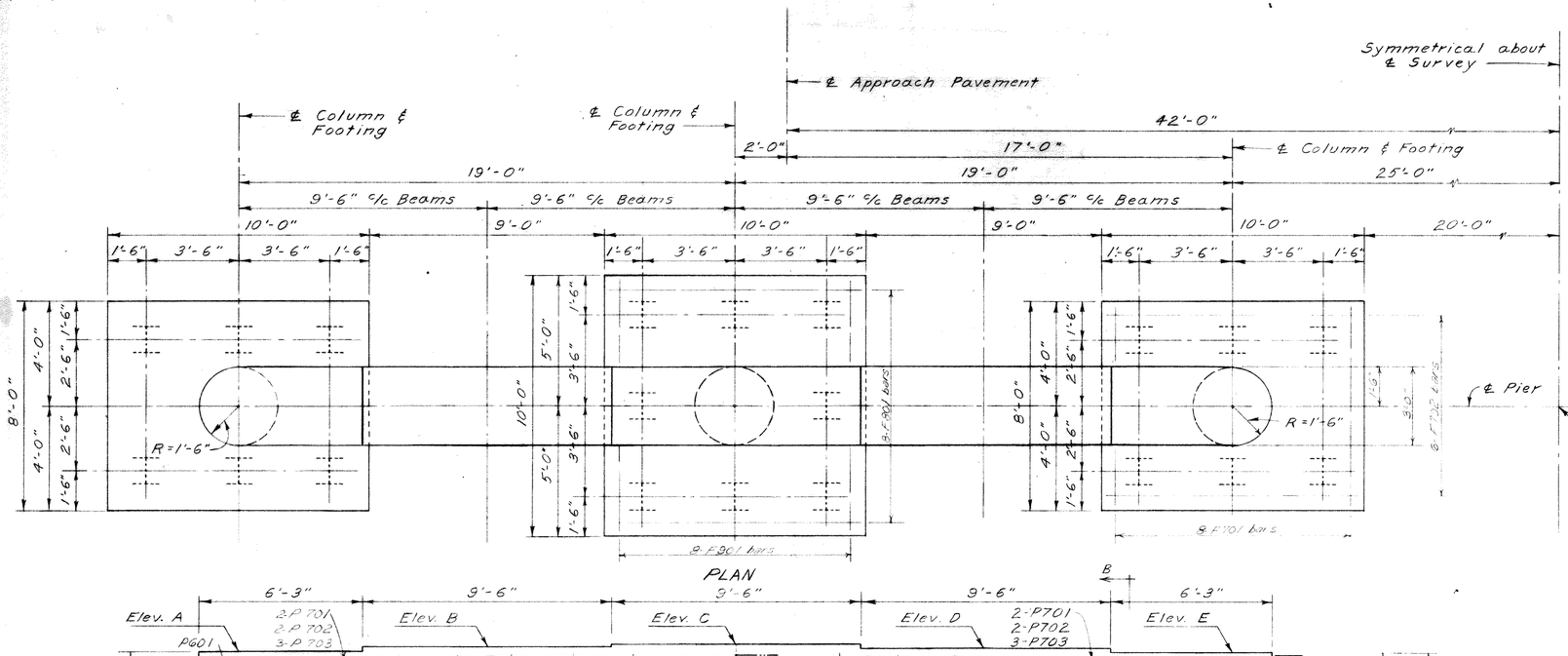
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
FFE	FFE		WCK	BFG	6-1-65	

MICROFILMED
JAN 7 1966

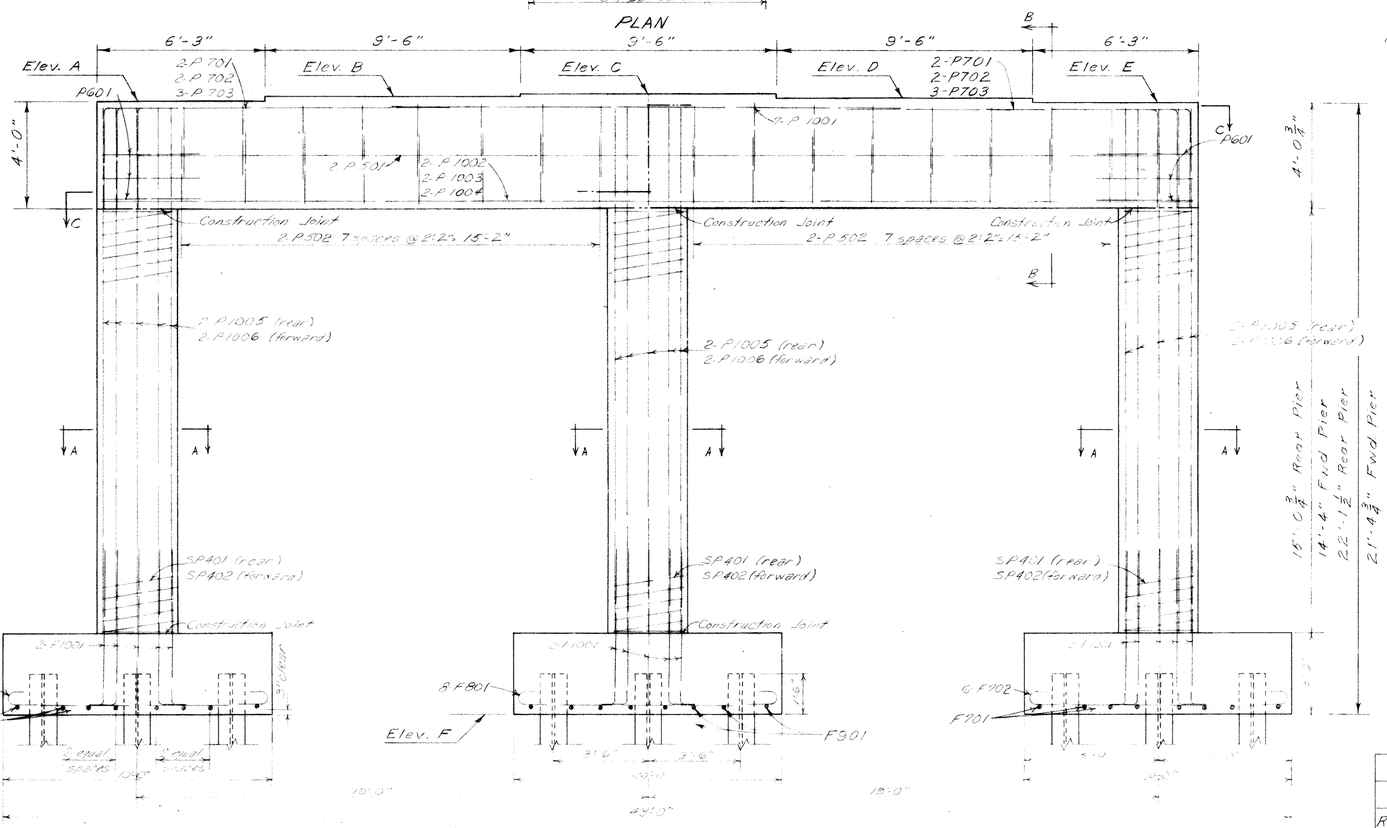
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

306

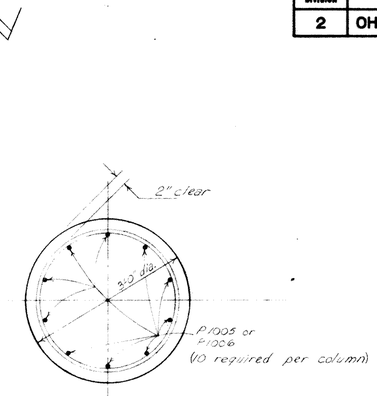
WAS-77-15.70
NOB-77-0.00



PLAN

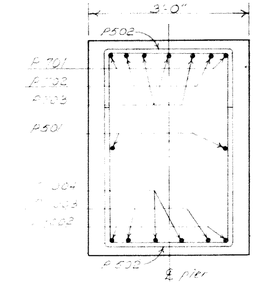


ELEVATION

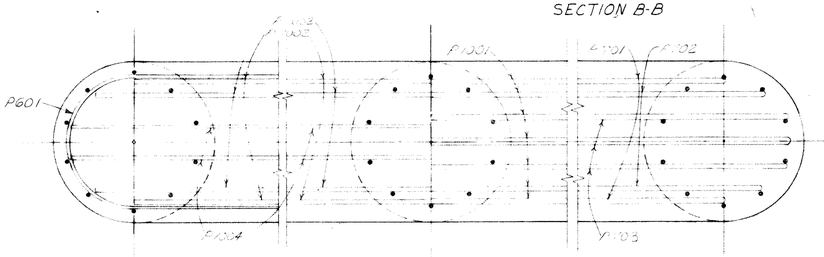


SECTION A-A

Rear Pier Sta. 866+75.00
Fwd. Pier Sta. 867+25.00



SECTION B-B



SECTION C-C

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 bar holes.

ELEVATION						
	A	B	C	D	E	F
Rear Pier	705.35	705.50	705.65	705.57	705.42	683.30
Fwd. Pier	704.34	704.49	704.64	704.55	704.40	683.00

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

PIER DETAILS

BRIDGE NO. WAS-77-1536 L & R
S.F.N. FAP 301

WASHINGTON COUNTY

Station 866+34.00
867+61.00

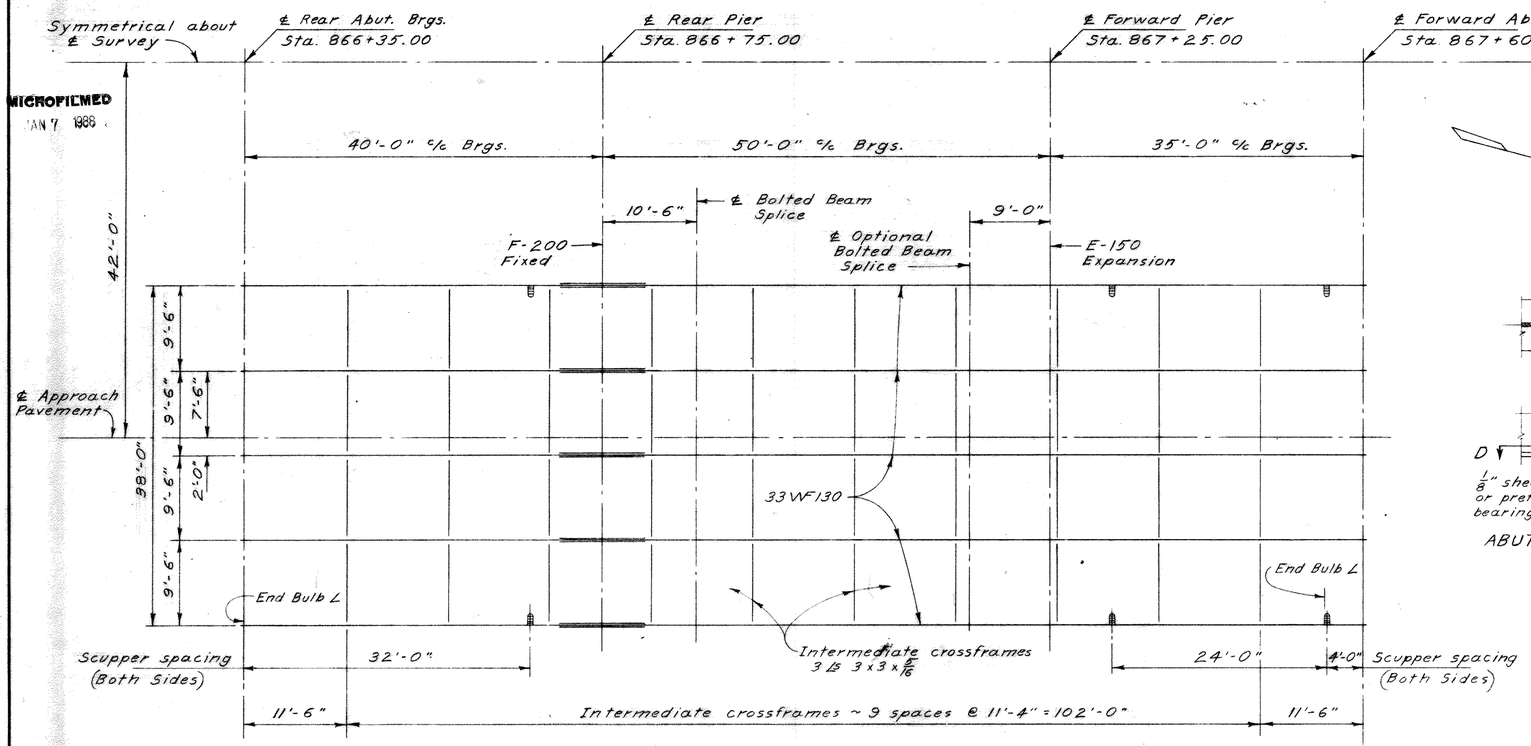
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
- -	- -		W.C.K.	B.F.G.	6-1-65	

MICROFILMED
JAN 7 1988

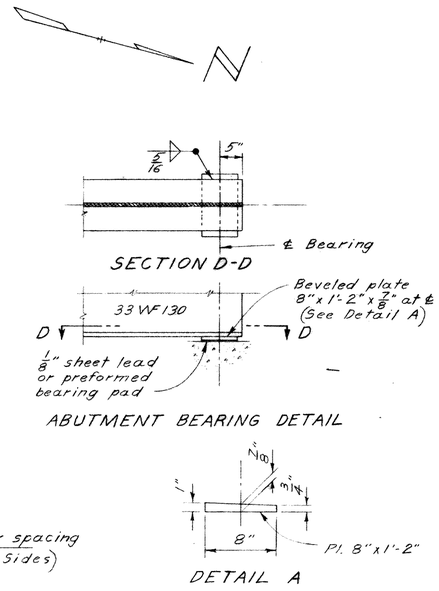
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

307

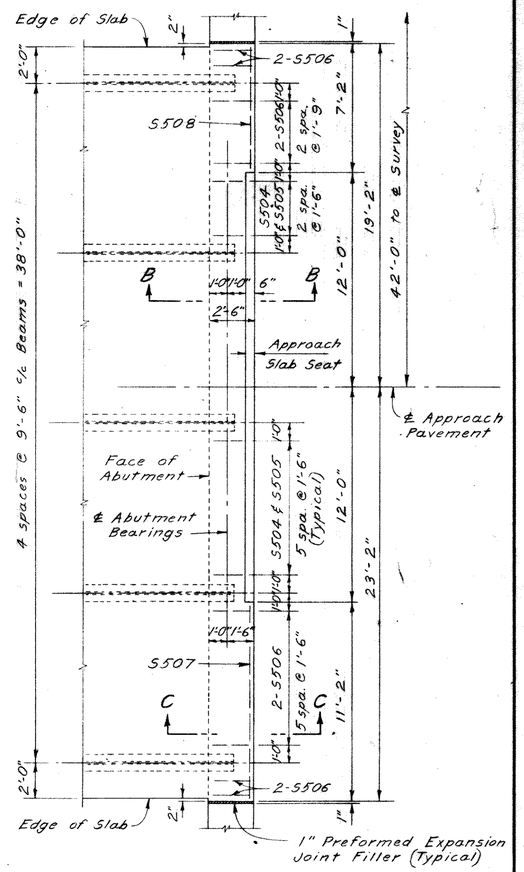
WAS-77-15.70
NOB-77-0.00



PLAN OF STEEL FRAMING
(Right structure shown)

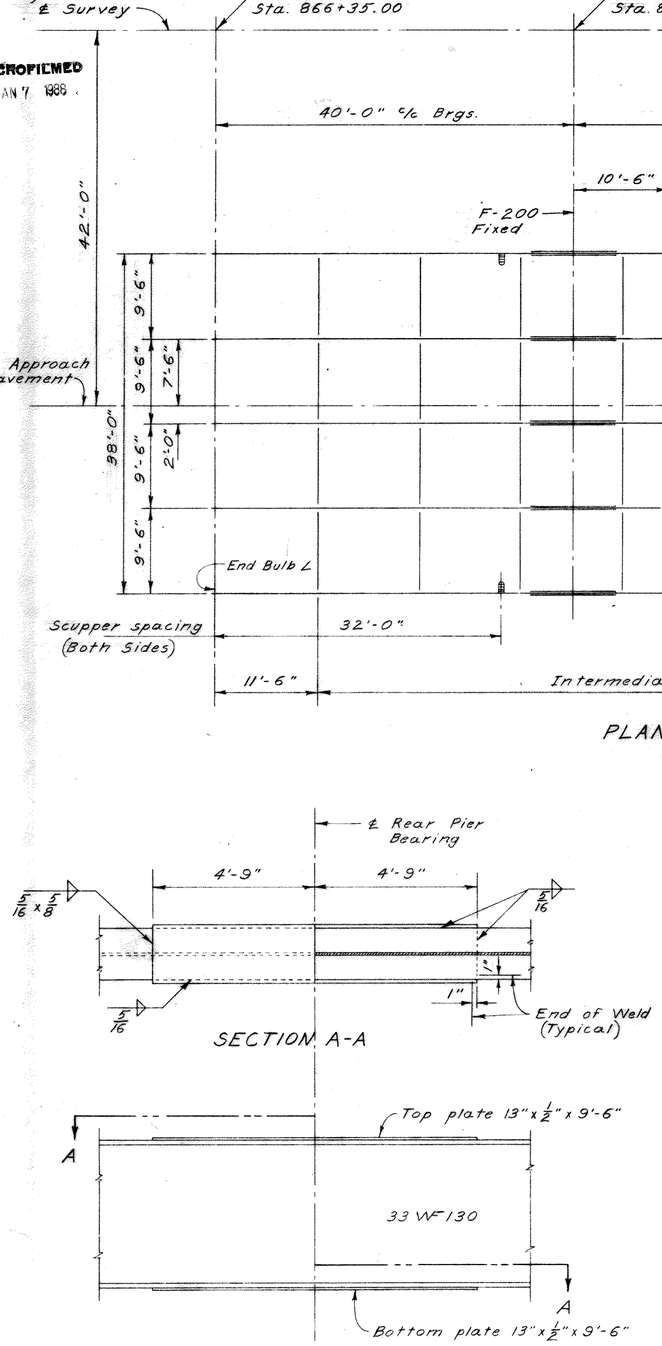


REFERENCE shall be made to Standard Drawings CSB-3-63, sheets 1 and 3; SD-1-63, sheet 3; SD-2-64; BR-1-65, sheet 1; and FSB-1-62 for additional details.



DECK PLAN AT ABUTMENT

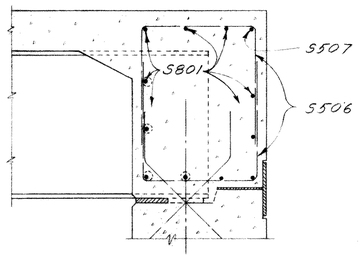
Curbs and parapets not shown, see sheet No. 308



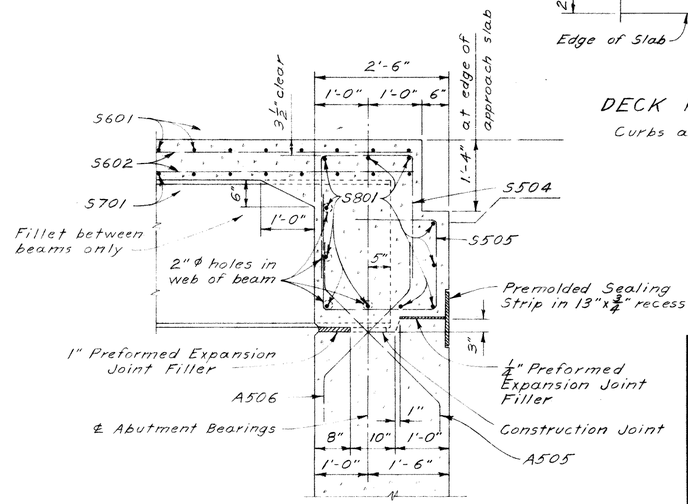
MOMENT PLATE DETAIL
Moment plates required at rear pier only

DEFLECTION AND CAMBER

	Rear End Span	Middle Span		Forward End Span
	at Mid-span	at Field Splice	at Mid-span	at Mid-span
Deflection due to weight of steel	0	0	+ 1/32"	0
Deflection due to remaining dead load	+ 1/8"	+ 3/32"	+ 3/16"	+ 1/16"
Convexity required for vertical curve	- 1/16"	- 1/16"	- 1/8"	- 1/16"
Sum of Deflection and Convexity	+ 1/16"	+ 1/32"	+ 3/32"	0
Required Camber	0	0	0	0



SECTION C-C



SECTION B-B

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

SUPERSTRUCTURE DETAILS

BRIDGE No. WAS-77-1636 L & R
OVER T. R. 301
WASHINGTON COUNTY Sta. 866+34.00
Sta. 867+61.00

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
FFE	FFE		WCK	BFG	6-1-65	

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JAN 7 1988

SPIRAL REINFORCING BARS: The "Length" shown in the steel list for the spiral bars is the distance from the top of the footing to the bottom of the pier cap.

The "No. of Turns" shown is the "Length" divided by the pitch, plus 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 509.

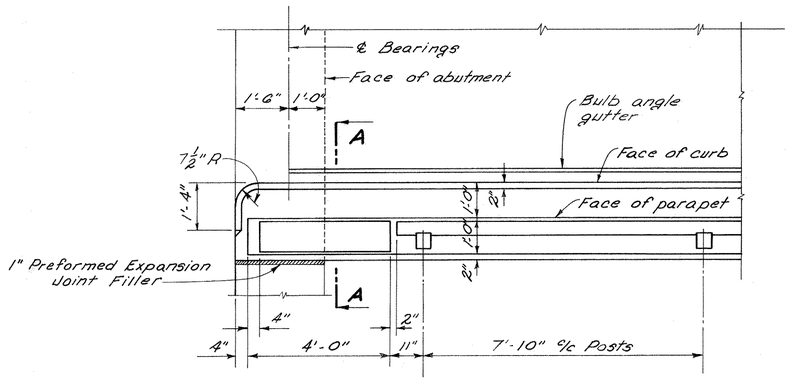
1½ closed coils shall be provided at the ends of each spiral units.

SPIRAL REINFORCING BARS CONT. Four steel channel, tee or angle spacers, weighing approximately 0.68 lb. per lin. ft. 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 lb. per lin. ft., will be paid for as reinforcing steel and is included in the tabulated quantity of spiral bars.

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

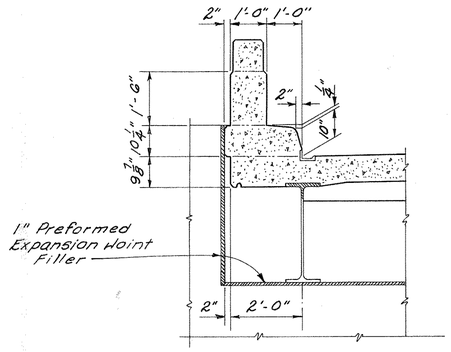
308

WAS-77-15.70
NOB-77-0.00



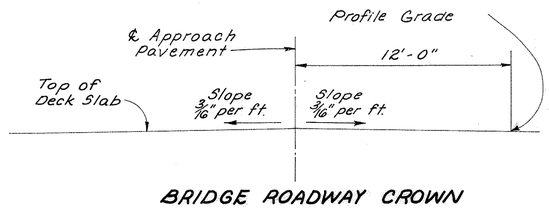
PART PLAN AT ABUTMENT

SPIRAL REINFORCING STEEL							
Mark	No.	Coil Dia. ℄ Spiral	Length	Pitch	No. of Turns	Weight	
SP401	6	32"⅞	15'-1"	4½"	43	1668	
SP402	6	32"⅞	14'-4"	4½"	41	1589	



SECTION A-A

For additional details see Standard Drawing CSB-3-63

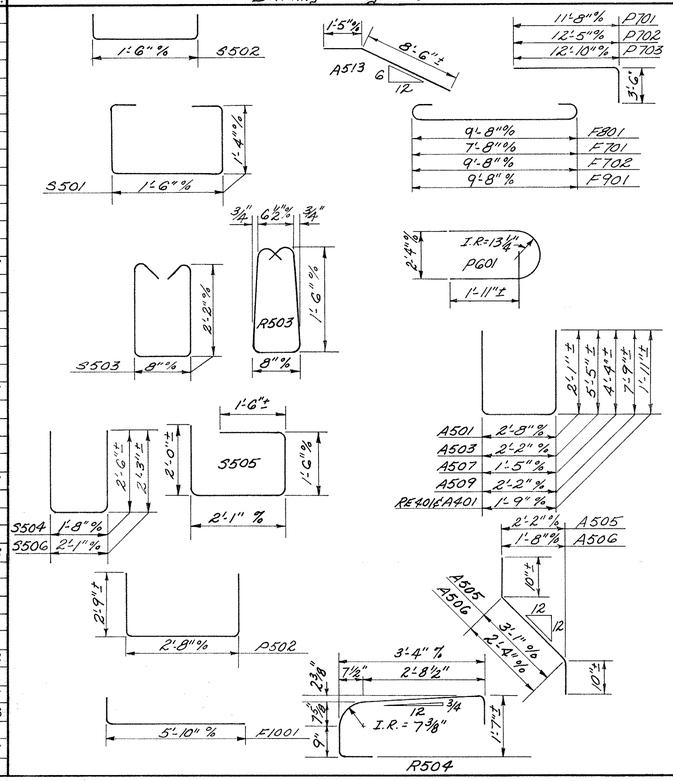


BRIDGE ROADWAY CROWN

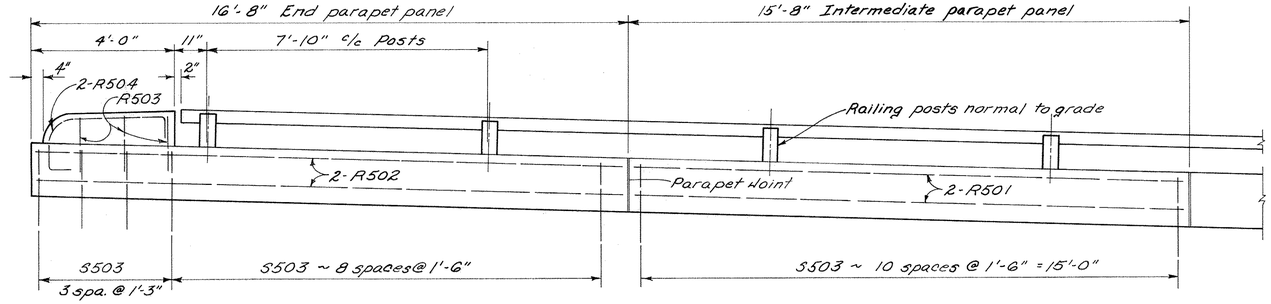
REINFORCING STEEL LIST

Mark	No.	Length	Weight	Shp.
Superstructure				
S801	88	22'-3"	5,228	S
S701	382	41'-8"	32,534	S
SG01	382	41'-8"	23,907	S
SG02	632	33'-2"	31,484	S
SG03	120	20'-0"	3,605	S
S501	344	4'-11"	1,764	B
S502	344	2'-6"	897	B
S503	360	5'-7"	2,096	B
S504	60	6'-5"	402	B
S505	60	6'-9"	422	B
S506	104	6'-4"	687	B
S507	4	10'-10"	45	S
S508	4	6'-10"	29	S
Railing				
R501	96	15'-4"	Included with railing for payment	S
R502	32	16'-4"		S
R503	24	4'-2"		B
R504	16	5'-4"		B
Piers				
P1001	28	19'-0"	2,289	S
P1002	8	38'-0"	1,308	S
P1003	8	39'-0"	1,343	S
P1004	8	40'-0"	1,377	S
P1005	60	18'-3"	4,712	S
P1006	60	17'-6"	4518	S
P701	16	15'-0"	491	B
P702	16	15'-9"	515	B
P703	24	16'-2"	793	B
PG01	24	7'-5"	267	B
P501	8	38'-0"	317	S
P502	128	7'-11"	1,057	B
F1001	120	6'-11"	3,572	B

Bending Diagrams

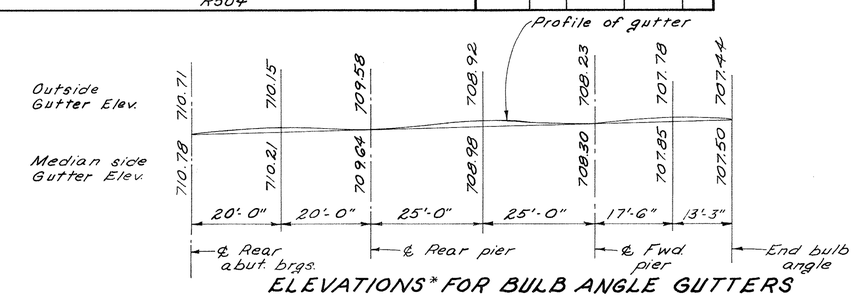


Mark	No.	Length	Weight	Shp.	
Piers Cont.					
F901	32	12'-2"	1,324	B	
F801	32	11'-10"	1,011	B	
F701	64	9'-4"	1,221	B	
F702	48	11'-4"	1,112	B	
Abutments					
A801	32	31'-11"	2,727	S	
A802	32	24'-1"	2,058	S	
A501	352	6'-7"	2,417	B	
A502	32	31'-6"	1,051	S	
A503	124	12'-9"	1,649	B	
A504	32	23'-8"	790	S	
A505	144	4'-9"	713	B	
A506	144	4'-0"	601	B	
A507	40	9'-10"	410	B	
	16	4'-1"			Vary by 9" increments
A508	of	to	466	S	
	5	7'-1"			
A509	16	17'-5"	291	B	
A510	48	9'-5"	471	S	
A511	16	8'-0"	134	S	
A512	16	4'-10"	81	S	
A513	16	9'-11"	165	B	
A401	144	5'-5"	521	B	
Replacement Bars					
RE1001	1	7'-2"	—	S	
RE901	1	6'-10"	—	S	
RE801	1	6'-6"	—	S	
RE701	2	6'-2"	—	S	
RE601	3	5'-11"	—	S	
RE501	1	5'-7"	—	S	
RE401	1	5'-5"	—	B	



PARAPET AND RAILING DETAIL

For additional details see Standard Drawing BR-1-65, sheet 1



ELEVATIONS* FOR BULB ANGLE GUTTERS PRIOR TO CONCRETING DECK

*Elevations are given for this point

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

SUPERSTRUCTURE DETAILS & REINFORCING STEEL LIST

BRIDGE No. WAS-77-1636 L & R
OVER T.R. 301
WASHINGTON COUNTY Sta. 866+34.00
Sta. 867+61.00

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
FFE	FFE		WCK	BFG	6-1-65	

MICROFILMED
JAN 8 1988

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

309

WAS-77-15.70
NOB-77-0.00
0.2 ± Mi. Northwest of Macksburg

Creek

Duck Creek

Penna R.R.

℄ Existing U.S.R. 21

℄ Southbound Lanes

℄ Survey I.R. 77

℄ Northbound Lanes

℄ Prop. Pipe

End Approach Slab
Sta. 892+96.54

Begin Approach Slab
Sta. 897+70.56

Sta. 893+64.05 ℄ I.R. 77
Sta 1070+87.46 ℄ Ex. U.S.R. 21

Sta. 896+78.55 ℄ I.R. 77
Sta. 4089+16.04 ℄ Penna R.R.

N 1°-49'-57" E

26°-08' Skew

63°-29'

63°-52'

16.0' (Min)
16.1' (Act)

16.0' (Min)
16.0' (Act)

10.0' (Min)

Sod gutters

Critical clearance Point "A"

Critical clearance Point "B"

Curve Data
PI Sta 887+84.46
Δ = 16°-22'-30" Rt.
D_c = 2°-00'
R = 2864.79'
L_s = 300'
θ_s = 3°-00'
T_s = 562.36'
L_c = 518.75'
E_s = 30.82'

Drainage Area
85.1 Sq. Mi.

BRIDGE LIMITS

Top of slope
Elev. 691.6 ± (Lt), 691.1 ± (Rt) S.B.
Elev. 690.6 ± (Lt), 689.6 ± (Rt.) N.B.

Top of slope
Elev. 702.3 ± (Lt) 702.0 ± (Rt) S.B.
Elev. 701.4 ± (Lt), 701.0 ± (Rt) N.B.

Estimated average pay lengths:
Rear Abut.-28' 10BP42
Fwd. Pier-25' 12BPS53
Fwd. Abut.-55' 10BP42

-0.56%
+2.32%
800' V.C.
+2.32%

Pt. Sta. 889+00
Elev. 689.24

Sta. 892+96.54
Sta. 893+40.85
Sta. 897+70.56

Clearance 15.0' (Min)
Pt. "A" 17.4' (Actual)

Clearance Pt. "B"
23.0 (Min)
25.8 ± (Actual)

50 yr. H.W. Elev. 676.8

Elev. 685.08 S.B.
Elev. 683.63 N.B.

El. 6525

El. 650.0 N.B.
℄ El. 648.0 S.B.

Elev. 667.7

Elev. 695.95 S.B.
Elev. 695.00 N.B.

2:1 (Norm.)

C.S. Sta 890+40.85

PROPOSED STRUCTURE
TYPE: Continuous welded girder with reinf. conc. deck and substructure
SPANS: 101'-126'-133'-109' ℄ brgs.
ROADWAY: Two @ 30'-0" ℄ 2'-0" Safety curbs
LOAD FREQUENCY: CF=2000(57) (Adequate for AASHO alternate loading)
SKEW: 26°-08' L.F.
WEARING SURFACE: 1" Mono. Conc.
APPR SLABS: AS-1-54 (25' long) Modified
ALIGNMENT: Spiral to tangent
SUPERELEVATION: Varies

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
BUREAU OF BRIDGES

SITE PLAN

BRIDGE NO. WAS-77-1687 L + R
over Existing USR 21, Duck Creek & Penna R.R.
WASHINGTON CO. IR-77
SEC.
STA. 892+96.54
897+70.56
SCALE 1" = 30'

PRESENT TOPOGRAPHY		PROPOSED WORK			
SURVEYED	DRAWN	DESIGNED	DRAWN	CHECKED	REVIEWED
Aerial Survey	Aerial Survey	N.J.B.	N.J.B.	B.D.H.	P.E.S.

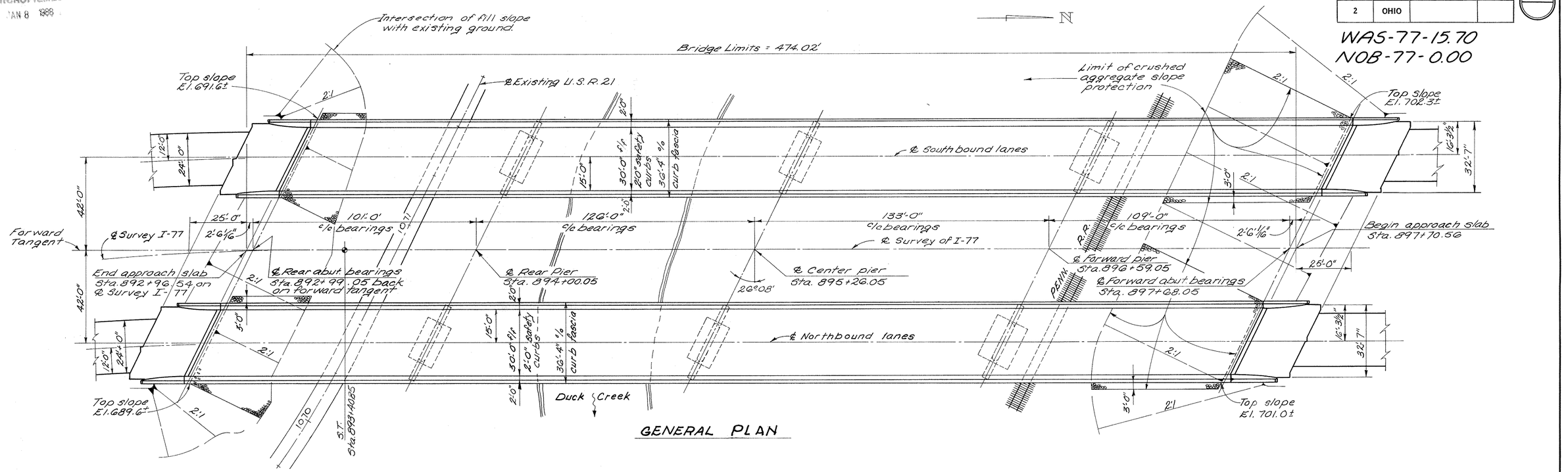
BFG 6-1-65

MICROFILMED
JAN 8 1988

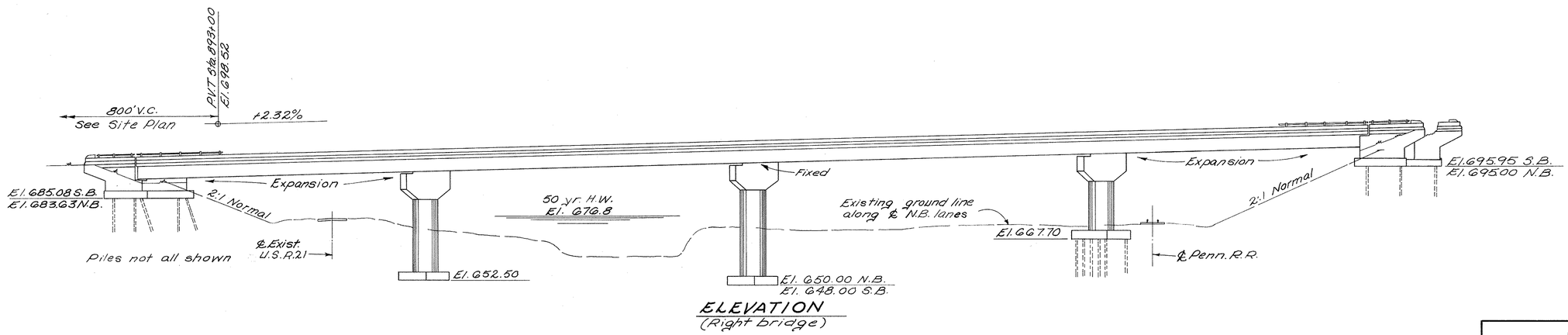
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

3/10

WAS-77-15.70
NOB-77-0.00



GENERAL PLAN



ELEVATION
(Right bridge)

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

GENERAL PLAN AND ELEVATION

BRIDGE No. WAS-77-1687 1/R
OVER EXIST. U.S.R. 21, DUCK CR., PENN. R.R.
WASHINGTON CO. STA. 892+96.54
STA. 897+70.56

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
Innes	Innes	SHS	Roy	BFG	6-1-65	

MICROFILMED
JAN 8 1986

GENERAL NOTES

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

311

WAS-77-15.70
NOB-77-0.00

REFERENCE shall be made to Standard Drawings BR-1-65, dated 2-1-65, FSB-1-62, revised 1-15-63, SD-1-63, Sheets 2, 3 and 4 dated 11-12-63, and to Supplemental Specifications 808 dated 7-14-65 and 811 dated 3-29-65

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.

Design Loading - CF 2000 (57).

Concrete Class C - basic unit stress 1,333 p.s.i.
Concrete Class E - basic unit stress 1,193 p.s.i.

Structural Steel - ASTM A36 - basic unit stress 20,000 p.s.i. (except piling)
(ASTM A7 and A373 steel not permitted)

Reinforcing Steel - ASTM A15, A16, A160, Deformed, Intermediate or Hard Grade. Basic unit stress 20,000 p.s.i.

EXCAVATION QUANTITY includes the removal of fill material required for construction of the abutments.

PILES shall be driven with a hammer of not less than 11,000 ft. lbs. per blow to Firm contact with rock. If the length of penetration is approximately equal to the depth to rock according to the bridge foundation investigation report, the firm contact shall be considered as attained when the capacity according to the formula in Sec. 507.05 is not less than the following value for a pile hammer of the indicated energy rating.

For the rear abutment piles:

35 tons per pile using an 11000 ft. lb. hammer
35 tons per pile using a 15000 ft. lb. or greater hammer

For the foward abutment piles:

38 tons per pile using an 11000 ft. lb. hammer
35 tons per pile using a 15000 ft. lb. or greater hammer

For the forward pier piles:

58 tons per pile using an 11000 ft. lb. hammer
53 tons per pile using a 15000 ft. lb. or greater hammer

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 for the abutment piles and 40 tons per pile for the forward pier piles.

REAR AND CENTER PIER FOOTINGS shall extend a minimum of 3" into undisturbed rock or to the elevation shown, whichever is lower.

FOUNDATION BEARING PRESSURE: Rear and center pier footings are designed for a maximum bearing pressure of 5 tons per sq. ft.

Gutter Elevations Prior to Placing Deck Concrete

Left Bridge		Station or ℄ Bearing	Right Bridge	
Left Gutter	Right Gutter		Left Gutter	Right Gutter
709.98	709.64	Forward Abutment	709.03	708.68
707.45	707.11	Forward Pier	706.50	706.15
704.37	704.03	Center Pier	703.41	703.07
701.44	701.10	Rear Pier	700.50	700.04
699.40	698.76	Rear Abutment	698.25	697.31
709.54	709.51	+75	-	-
708.99	708.98	+50	708.93	-
708.39	708.40	+25	708.40	708.37
707.77	707.79	897+00	707.82	707.82
707.19	707.18	+75	707.21	707.23
706.64	706.62	+50	706.60	706.62
706.09	706.08	+25	706.04	706.02
705.50	705.51	896+00	705.50	705.46
704.88	704.90	+75	704.93	704.93
704.28	704.29	+50	704.32	704.34
703.73	703.71	+25	703.71	703.73
703.18	703.16	895+00	703.13	703.12
702.59	702.60	+75	702.58	702.56
701.98	702.00	+50	702.02	702.01
701.38	701.39	+25	701.42	701.44
700.88	700.81	894+00	700.82	700.79
700.39	700.26	+75	700.25	700.12
699.89	699.69	+50	699.71	699.50
-	699.09	+25	699.17	698.86
-	-	893+00	698.59	698.17
-	-	892+75	-	697.43

Gutter elevations are given for location shown on Sheet 7, "Scupper Details."

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 owner. The Contractor and Owner are requested to cooperate by arranging their work in such a manner that inconvenience to either will be held to a minimum.

RAILROAD AERIAL LINES shall be relocated by the railroad. The Contractor shall use all precautions necessary to see that the lines are not disturbed during the construction stage and shall cooperate with the railroad in the relocation of these lines. The cost of the relocation shall be included in the railroad force account work.

MAINTENANCE AND PROTECTION OF TRAFFIC: Two lanes of traffic with a minimum horizontal width of 26'-0" shall be maintained on Existing U.S.R. 21 at all times.

A minimum vertical clearance of 12'-9" shall be provided at all times.

CONSTRUCTION CLEARANCE of 22'-0" vertically above the top of the railroad rails and 8'-0" horizontally from the center of tracks shall be maintained at all times.

SHEETING AND BRACING: Before construction is started, nine sets of prints showing details of the sheeting and bracing to be used for excavation adjacent to the railroad tracks shall be submitted to the Director for approval by the Department of Highways and by the Railroad Company.

ALIGNING RAILROAD TRACKS: After the Contractor has completed all excavation and backfill adjacent to the railroad tracks in compliance with Sec. 503.04 and 503.09 of the Construction and Material Specifications, subject to the Supervision of the Railroad Company, nothing in Sec. 503.04, 503.09 or 108.04 of the Specifications shall be construed to hold the Contractor liable for aligning and resurfacing the railroad tracks.

RAILROAD FORCE ACCOUNT WORK: Plans for force account work may be seen at the Division Office in Marietta, Ohio or at the Bureau of Bridges, Construction Bureau, or Office of Contract Sales in Columbus, Ohio.

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

GENERAL NOTES

BRIDGE NO. WAS-77-1687 L & R
over existing U.S.R. 21, Duck Creek & Penna. R.R.

WASHINGTON COUNTY

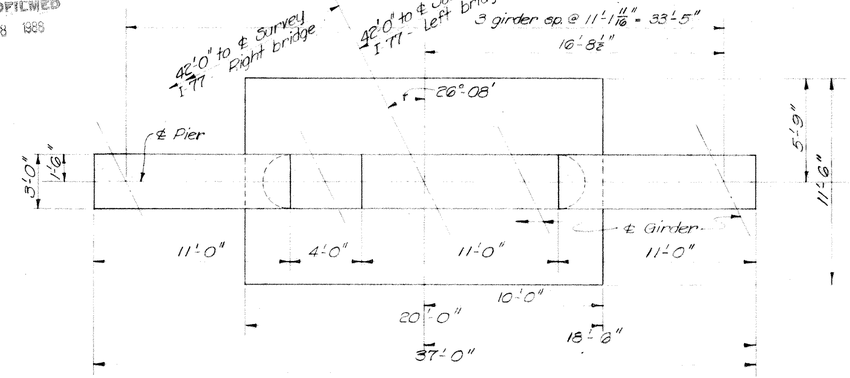
Sta. 892+96.54
Sta. 897+70.56

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
Innes	Innes	Nancy	Ray	BFG	6-1-65	

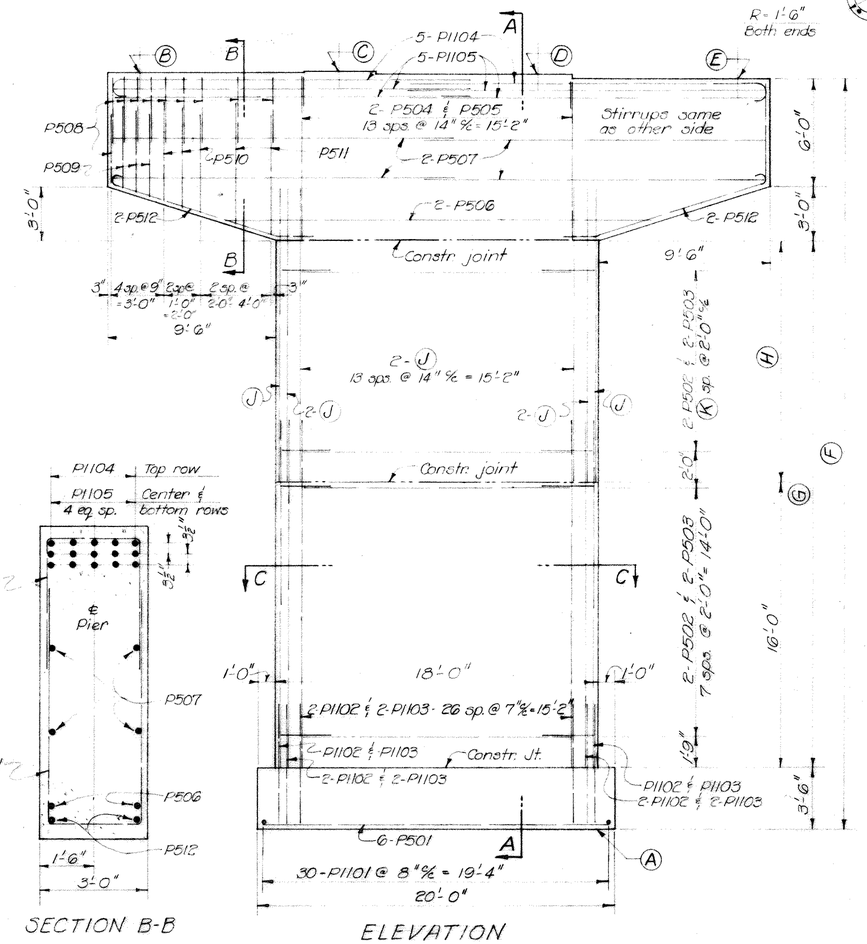
MICROFILMED
JAN 8 1985

FED. RD. DIVISION	STATE	PROJECT		3/12
2	OHIO			

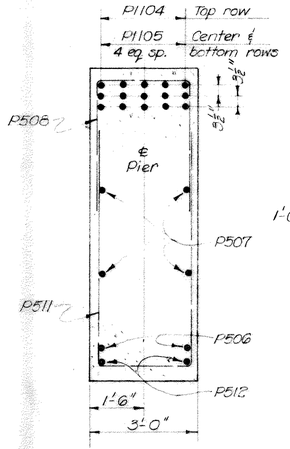
WAS-77-15.70
NOB-77-0.00



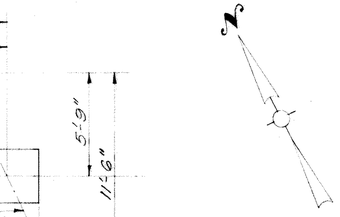
PLAN

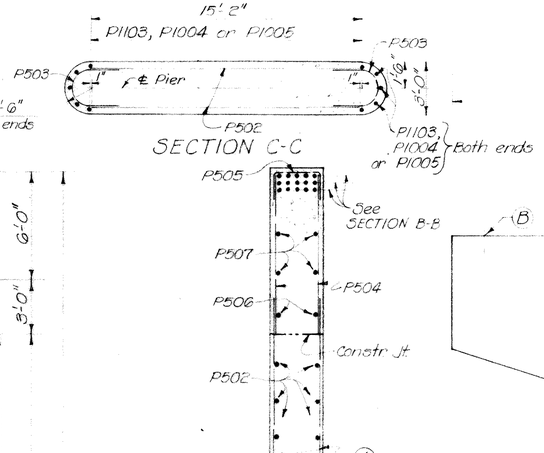


ELEVATION



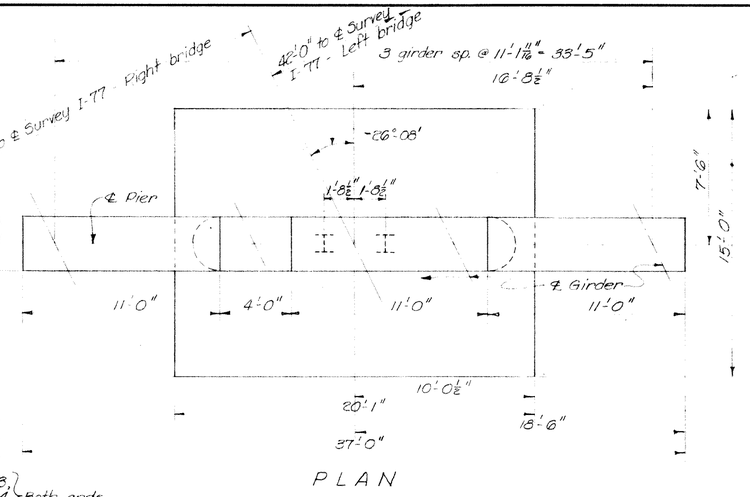
SECTION B-B



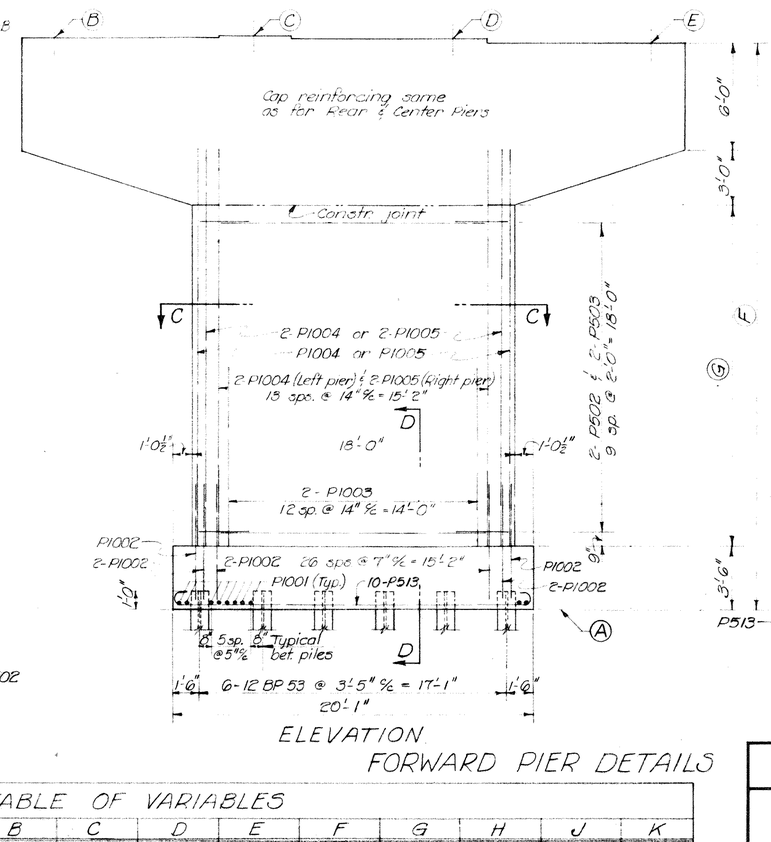


SECTION C-C

SECTION A-A



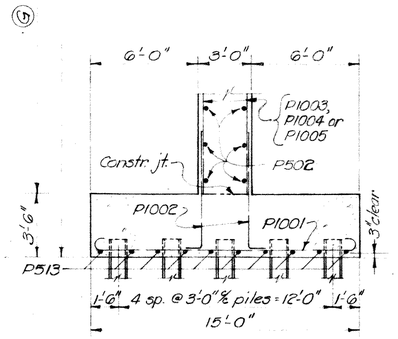
PLAN



ELEVATION

FORWARD PIER DETAILS

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 bar holes.



SECTION D-D

REAR & CENTER PIER DETAILS

TABLE OF VARIABLES

PIER		A	B	C	D	E	F	G	H	J	K
REAR	Left	El. 652.50	El. 694.67	El. 694.71	El. 694.60	El. 694.33	41'-10"	29'-4"	13'-4"	P601	5
	Right	El. 652.50	El. 693.73	El. 693.71	El. 693.55	El. 693.27	40'-9½"	28'-3½"	12'-3½"	P602	5
CENTER	Left	El. 648.00	El. 697.21	El. 697.25	El. 697.14	El. 696.87	48'-10½"	36'-4½"	20'-4½"	P603	9
	Right	El. 650.00	El. 696.25	El. 696.30	El. 696.18	El. 695.91	45'-10⅞"	33'-4⅜"	17'-4⅜"	P604	7
FORWARD	Left	El. 667.70	El. 700.66	El. 700.70	El. 700.59	El. 700.32	32'-7½"	20'-1½"	–	–	–
	Right	El. 667.70	El. 699.70	El. 699.75	El. 699.63	El. 699.36	31'-7⅝"	19'-1⅝"	–	–	–

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

4

PIER DETAILS

BRIDGE NO. WAS-77-1687 4/R
OVER EXIST. U.S.R. 21, DUCK CR, PENN. R.R.
WASHINGTON CO. STA. 892 + 96.54
STA. 897 + 70.56

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
NAA	NAA		Ray	BFG	6-1-65	

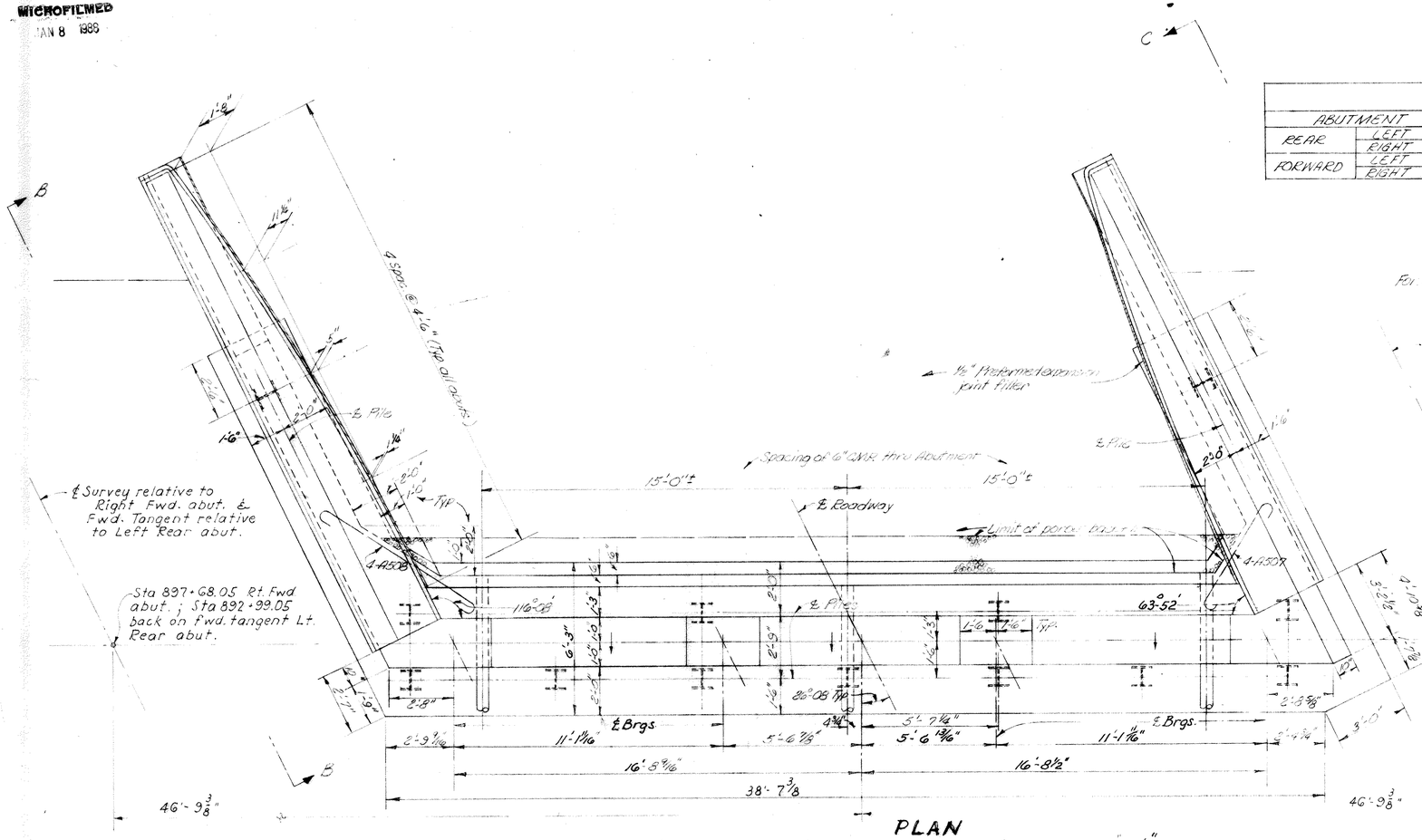
MICROFILMED
JAN 8 1986

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

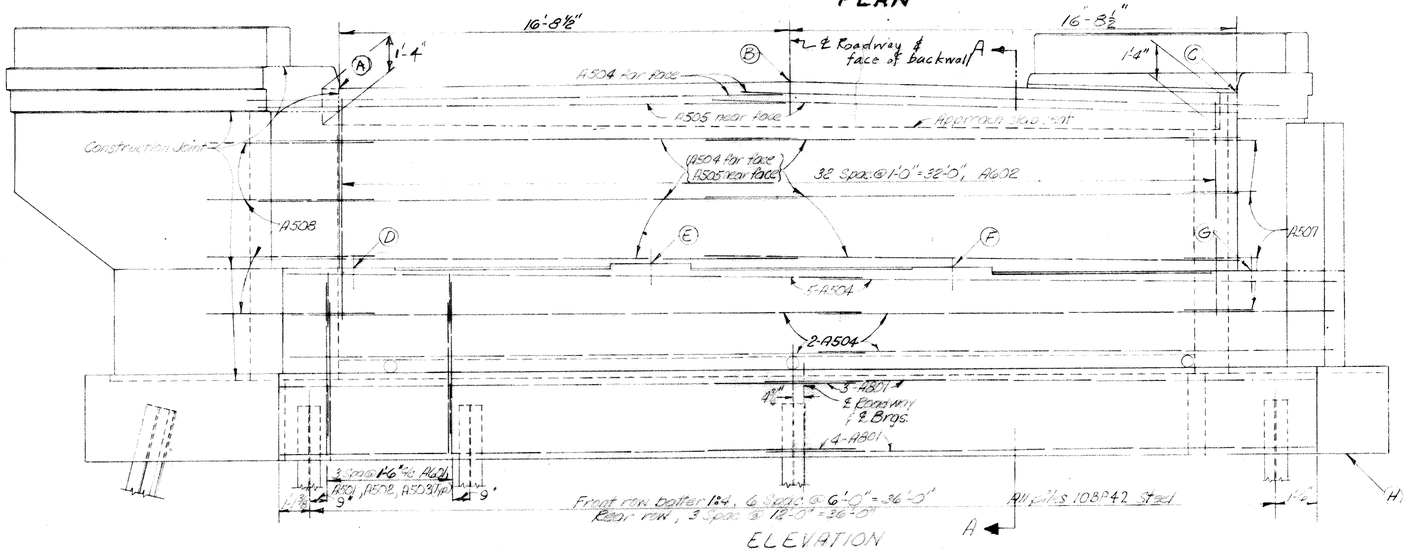
313

WAS-77-15.70
NOB-77-0.00

ELEVATIONS									
ABUTMENT		A	B	C	D	E	F	G	H
REAR	LEFT	698.74	698.14	699.36	692.11	692.35	692.60	692.75	693.08
	RIGHT	697.28	697.78	698.23	689.65	690.99	691.30	691.59	693.63
FORWARD	LEFT	710.51	710.07	709.67	703.31	703.36	703.24	702.97	695.35
	RIGHT	709.05	709.12	708.71	702.36	702.40	702.25	702.02	695.00



PLAN



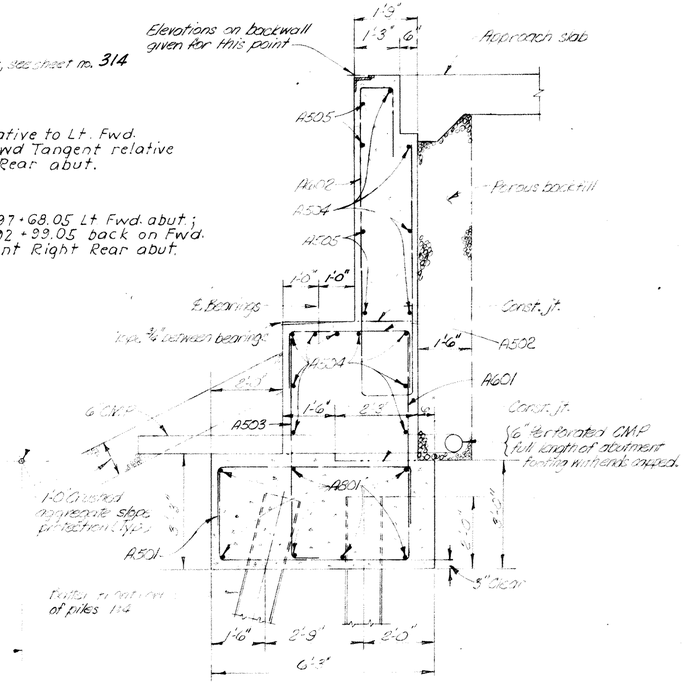
ELEVATION

Elevations on backwall given for this point

For wingwall details, see sheet no. 314

℄ Survey relative to Lt. Fwd. abut & Fwd Tangent relative to Right Rear abut.

Sta 897+68.05 Lt Fwd. abut; Sta 892+99.05 back on Fwd. Tangent Right Rear abut.



SECTION A-A

POROUS BACKFILL shall extend upward to the underside of the approach slab and outward to the limits shown in the plan. Excavation therefor, in excess of that required for construction of the abutments, shall be considered as paid for in the bid price per cu. yd. for porous backfill.

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.

PROCEDURE: The embankment shall be placed and compacted up to the finished spill-thru slope and to the level of the subgrade for a distance of 200 feet back of the abutments, after which excavation shall be made for the abutments and the piles driven.

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

ABUTMENT DETAILS

BRIDGE NO. WAS-77-16.57 L&R
OVER U.S.R.W., DUCK CREEK & PENNA R.R.
WASHINGTON COUNTY

Sta 595+90.54
Sta 597+70.54

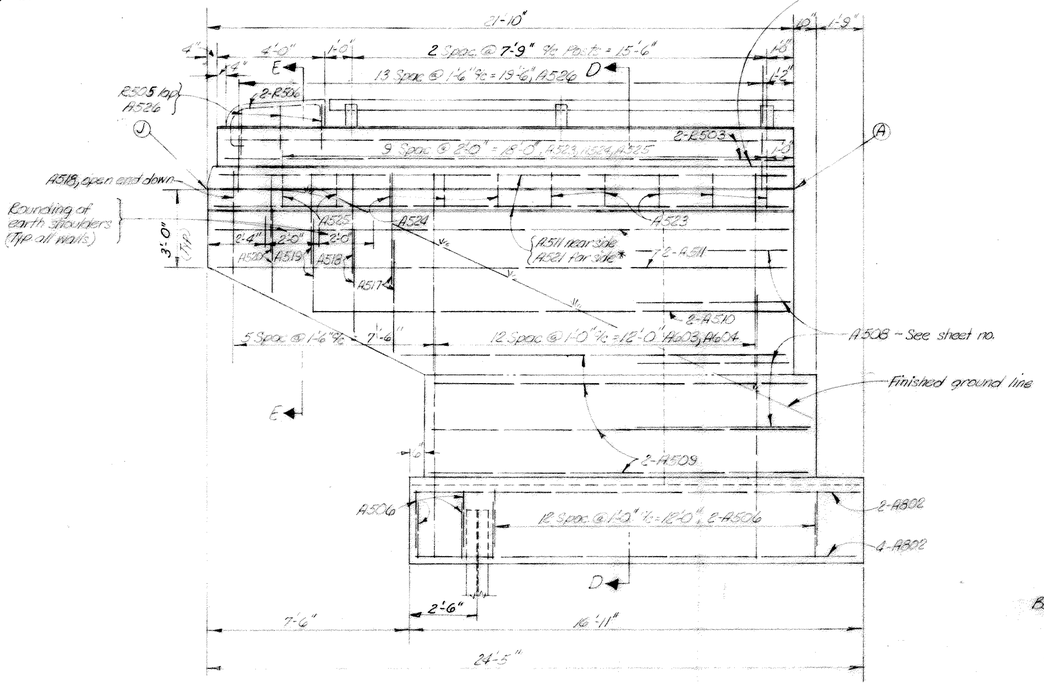
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JF	FB		Hwy	BFG	6-1-65	

MICROFILMED
JAN 8 1986

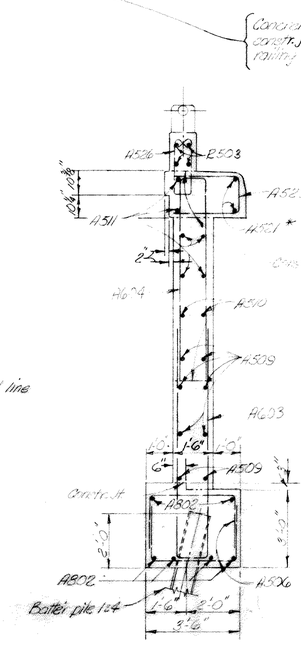
WAS-77-15.70
NOB-77-0.00

FED. RD. DIVISION	STATE	PROJECT		
2	OHIO			

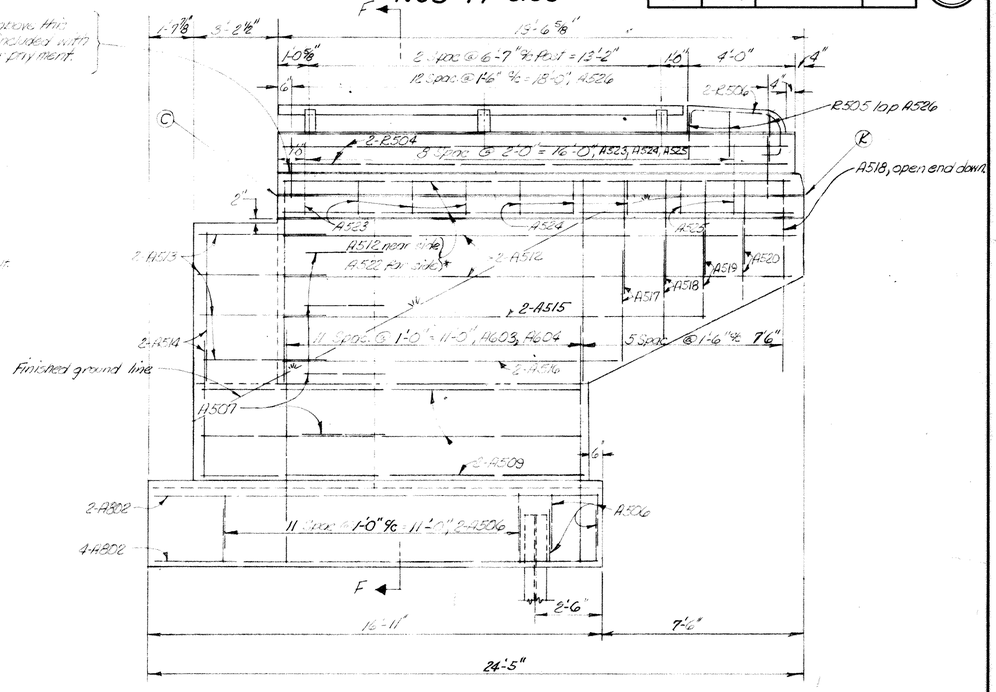
314



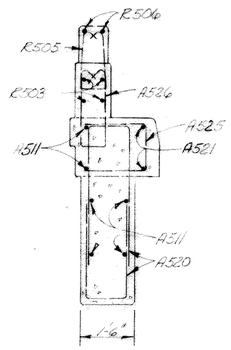
VIEW B-B



SECTION D-D
(Section F-F similar)



VIEW C-C



SECTION E-E

ELEVATIONS						
ABUTMENT		J	A	C	K
REAR	LEFT	698.22	698.14	699.35	699.05
	RIGHT	696.70	697.28	698.23	697.80
FORWARD	LEFT	710.52	710.41	709.67	710.13
	RIGHT	709.56	709.55	708.71	709.17

* A521 & A522 bars shall be bent in the field to fit. Payment for bending shall be considered as included with item 509

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

ABUTMENT DETAILS

BRIDGE NO. WAS-77-1687 L & R
OVER U.S.R. 21, DUCK CREEK & PENNA. R.R.
Sta 892+86.54
897+70.56
WASHINGTON COUNTY

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JFS	JFS			BFG	6-1-65	

MICROFILMED
JAN 8 1986

HAUNCH width of 9" shall be used to compute the quantity of concrete. However the haunch width may vary between 6" and 12" provided that the slope shall not be more than 1:4 for a haunch less than 9".

* 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 girder may not have the exact camber or conformation required to place it parallel to the finished grade. Deduction shall be made for volume of encased steel plates as per Sec. 511.13 of the Construction and Material Specifications.

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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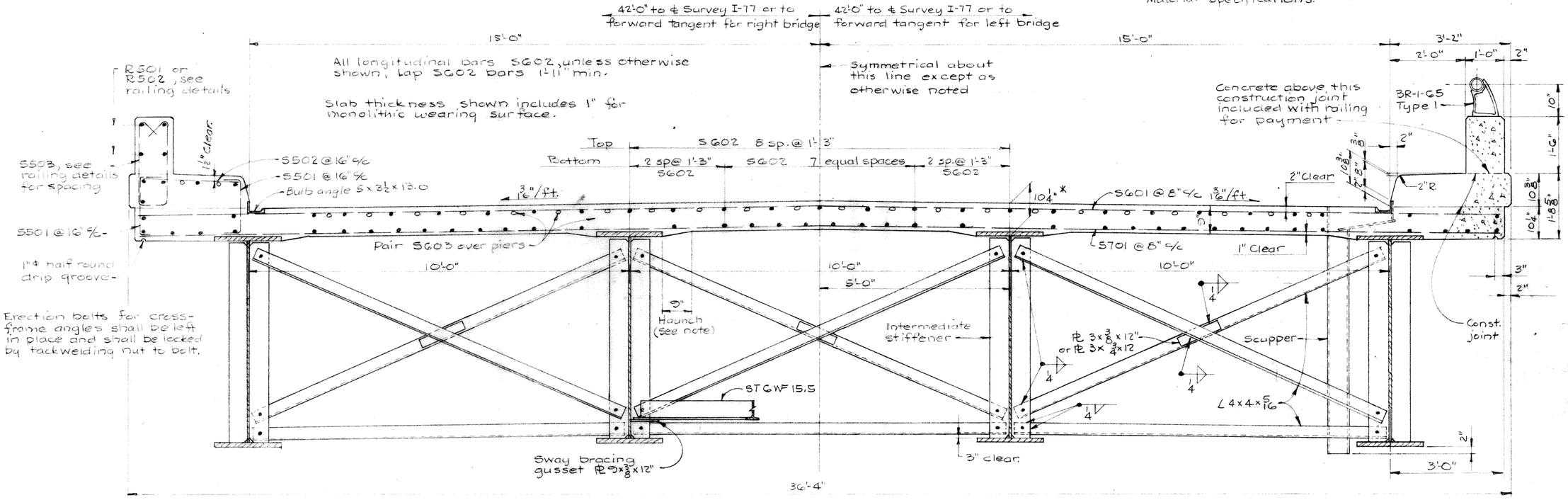
WAS-77-15.70.
NOB-77-0.00

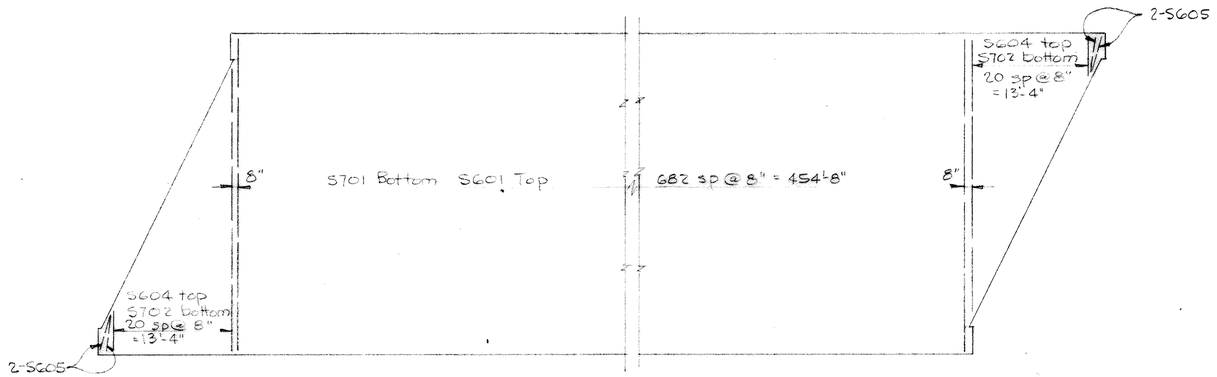


Profile grade 36'-0" from ℄ Survey I-77

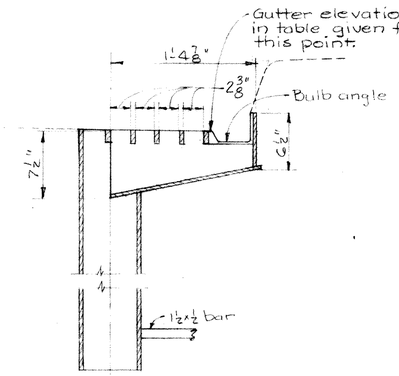
¾"ϕ Erection bolts for cross-frame angles shall be left in place and shall be locked by tackwelding nut to bolt.

TYPICAL SECTION FORWARD OF STA 894+15.85

Section back of Sta 894+15.85 same except for cross slope.



TRANSVERSE REINFORCING STEEL IN DECK



SCUPPER DETAILS

For details not shown see Std. Dwg. SD-1-63, Sheet 3.

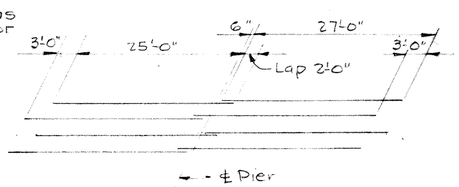


DIAGRAM SHOWING STAGGER OF S603 BARS OVER PIERS

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

SUPERSTRUCTURE DETAILS TYPICAL SECTION

BRIDGE NO. WAS-77-1687 4/R
OVER EXIST. U.S.R. 21, DUCK CR., PENN. R.R.
WASHINGTON CO. STA. 892+36.54
STA. 897+70.56

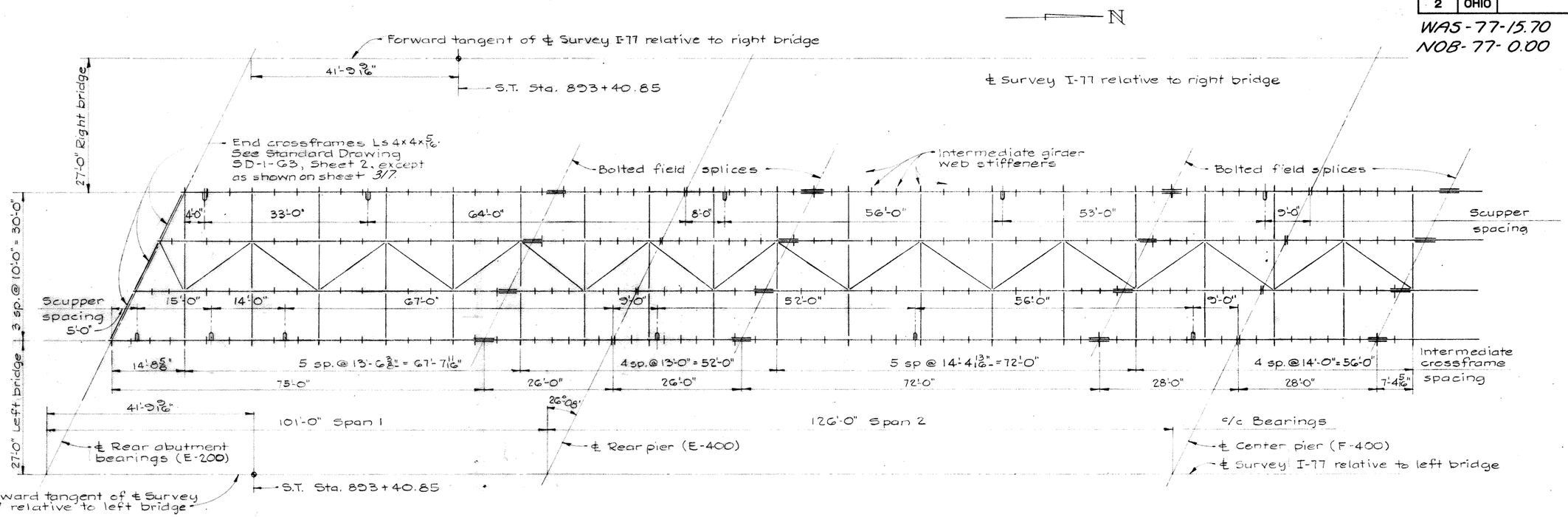
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
INNES	INNES		Kay	BFG	6-1-65	

MICROFILMED
JAN 8 1966

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

3/6

WAS-77-15.70
NOB-77-0.00



STRUCTURAL STEEL FRAMING PLAN
℄ Spiral of I-77 ending at Sta. 893+40.85 not shown.

END DAM AND CURB PLATE DETAILS are shown on Standard Drawing SD-1-G3, sheets 2 and 4.

End crossframes Ls 4x4x5/16. See Std. Dwg. SD-1-G3, Sheet 2, except as shown on sheet .

INTERMEDIATE GIRDER WEB STIFFENERS shall be placed in pairs and at all crossframe locations, except at bearing points. In addition they shall be placed between crossframes; the number being as shown on the framing plan and spacing being even except as otherwise shown.

FRAMING PLANS for both bridges are identical.

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

SUPERSTRUCTURE DETAILS STEEL FRAMING PLAN

BRIDGE NO. WAS-77-1687 L/R
OVER EXIST U.S.R. 21, DUCK CR., PENN. R.R.
WASHINGTON CO. STA. 892+96.54
STA. 897+70.56

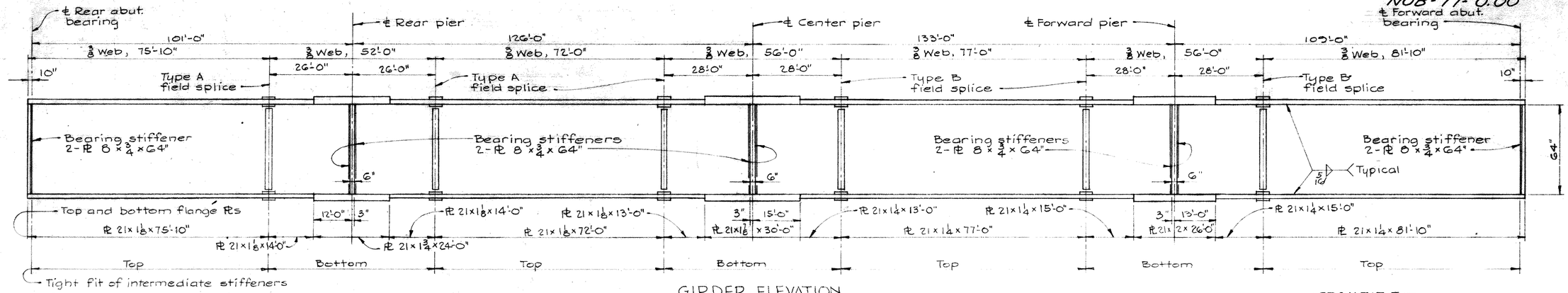
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
INNES	INNES		Rap	BFG	6-1-65	

MICROFILMED
JAN 8 1988

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

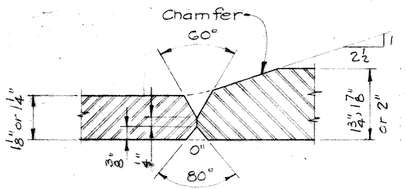
3/7

WAS-77-15.70
NOB-77-0.00



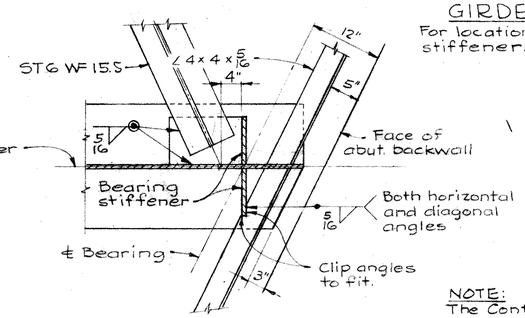
GIRDER ELEVATION

For location of intermediate stiffeners see Framing Plan

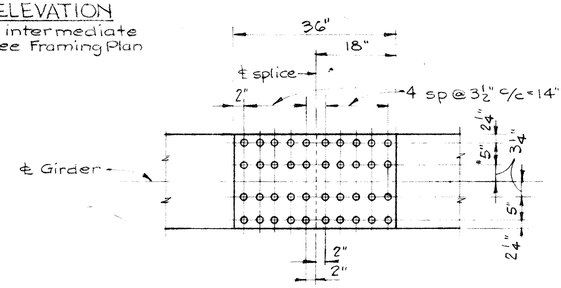


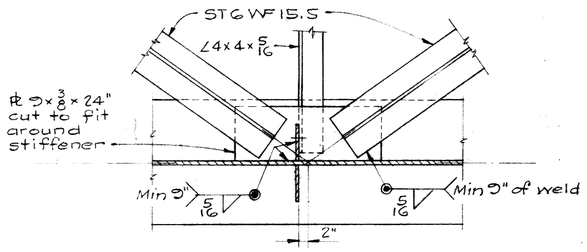
JOINT PREPARATION FOR BUTT WELDING OF GIRDER FLANGE PLATES

Girder flange welds shall be full penetration, back gouged and welded after welding far side and shall be ground flush (dashed lines above), finished grinding being parallel to the direction of stress.
All butt shop welds and flange to web shop welds shall be made by the submerged arc process.
Inspection of welds shall be in accordance with Supplemental Specification 813.



SECTION THRU GIRDER AT ABUTMENT

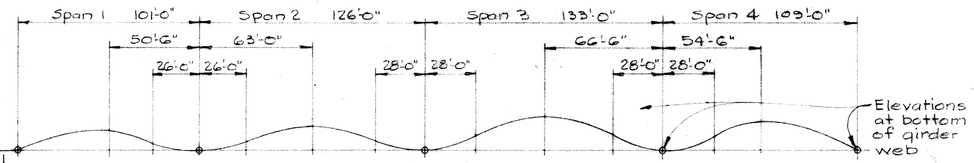




NOTE:
The Contractor shall submit to the Director, for approval, 3 prints showing the proposed erection procedure for the plate girders.

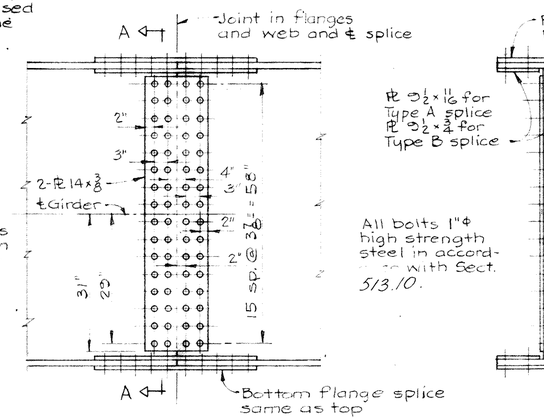
GIRDER DESIGNATION

In the deflection and camber table below, girders are designated by letters A thru H; girder A being the left outside girder of the left bridge, D being the right outside girder of the left bridge, and E and H being corresponding girders of the right bridge.

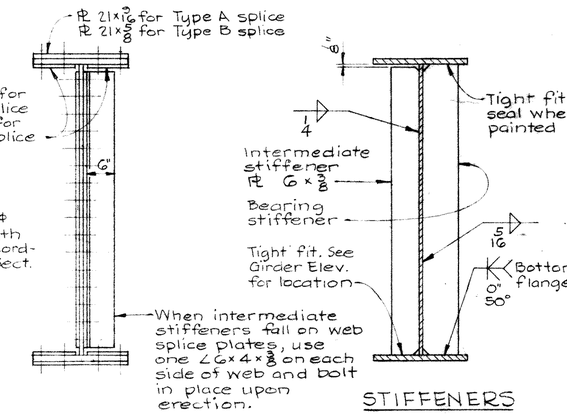


Girder														
Deflection due to weight of steel		0	+3/16"	+1/16"	0	+1/16"	+3/16"	+1/16"	0	+1/8"	+1/4"	+1/8"	0	+1/8"	+1/4"	0
Deflection due to remaining dead load		0	+5/8"	+5/16"	0	+5/16"	+3/4"	+5/16"	0	+7/16"	+15/16"	+7/16"	0	+3/8"	+3/4"	0
Geometric camber due to superelevation transition	A	0	-1/2"	-5/8"	0	0	0	0	0	0	0	0	0	0	0	0
	B		-1/8"	-1/16"												
	C		0	0												
	D		0	0		0	0	0								
	E		-1/8"	-1/16"		-1/8"	-1/8"	-1/16"								
	F		+1/8"	+1/8"		+1/4"	+5/16"	+1/16"								
	G		+1/4"	+1/16"		+1/2"	+5/16"	+1/4"								
	H	0	+1/4"	+1/4"	0	+1/2"	+11/16"	+5/16"								
Sum of deflections and geometric camber and Required camber	A	0	+5/16"	0	0	+3/8"	+15/16"	+3/8"	0	+9/16"	+1 3/16"	+9/16"	0	+1/2"	+1"	0
	B		+1/16"	+1/16"												
	C		+1/16"	+1/16"												
	D		+1/2"	+1/2"		+3/8"	+5/8"	+3/8"								
	E		+1/16"	+1/16"		+1/4"	+1/16"	+1/16"								
	F		+1/8"	+1/2"		+3/8"	+1/4"	+1/2"								
	G		+1/16"	+1/16"		+1/8"	+1 1/16"	+3/8"								
	H	0	+1/16"	+5/8"	0	+7/8"	+1 5/16"	+11/16"								

DEFLECTION AND CAMBER

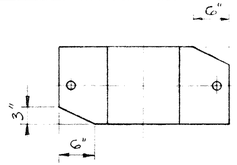


FIELD SPLICE



SECTION A-A

STIFFENERS



For additional details see FSB-1-62.

CLIPPING OF E-200 MASONRY PLATE

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

SUPERSTRUCTURE DETAILS GIRDER & CAMBER DIAGRAM

BRIDGE NO. WAS-77-1687 L/R
OVER EXIST. U.S.R. 21, DUCK CR., PENN. R.R.
WASHINGTON CO. STA. 892+96.54
STA. 897+70.56

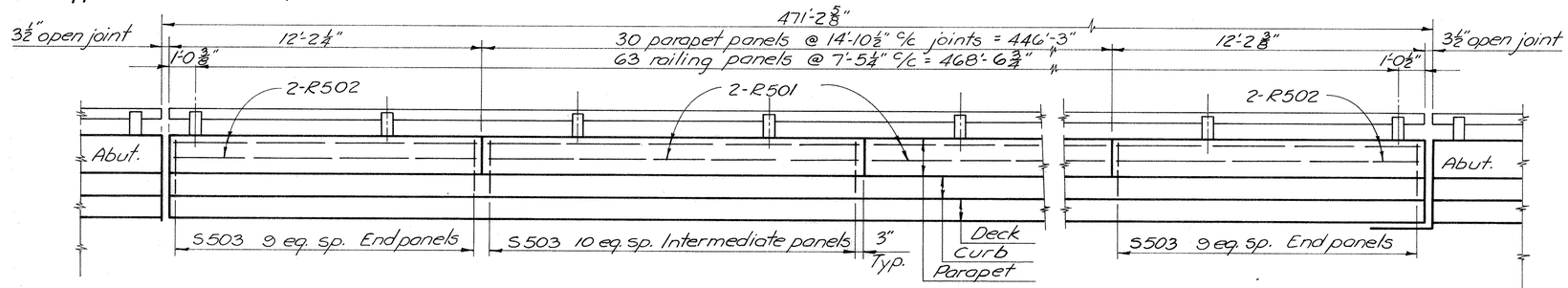
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
INNES	INNES		Reg.	BFG	6-1-65	

MICROFILMED
JAN 8 1988

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

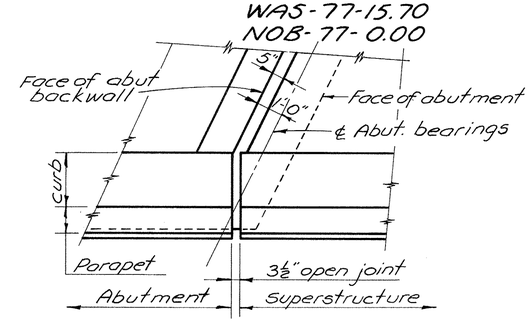
317A

WAS-77-15.70
NOB-77-0.00



RAILING AND PARAPET DETAILS

Refer to BR-1-65 for details not shown.



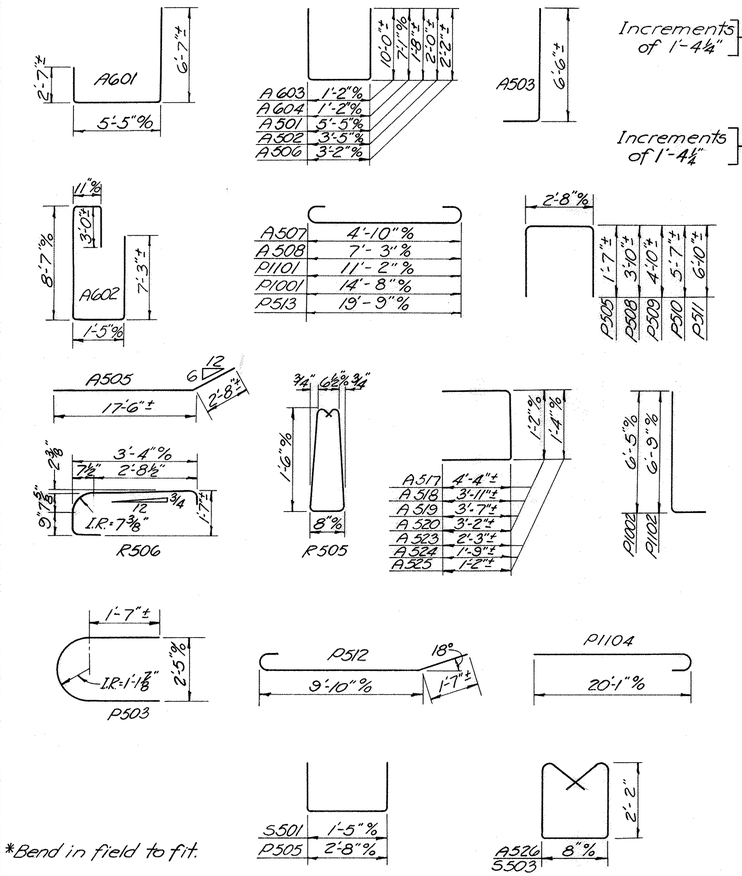
VIEW A-A

Typical

REINFORCING STEEL LIST

Mark	No.	Length	Weight	Shp
Abutments				
A801	56	22'-1"	3301	S
A802	48	16'-6"	2115	S
A601	96	14'-4"	2067	B
A602	132	20'-6"	4064	B
A603	100	20'-11"	3142	B
A604	100	15'-1"	2265	B
A501	96	8'-6"	851	B
A502	96	7'-2"	718	B
A503	96	7'-0"	701	B
A504	104	20'-5"	2215	S
A505	32	20'-2"	673	B
A506	232	7'-3"	1754	B
A507	16	6'-0"	100	B
A508	16	8'-5"	141	B
A509	56	14'-4"	837	S
A510	8	17'-1"	143	S
A511	24	21'-4"	534	S
A512	24	19'-0"	476	S
A513	32	4'-9"	159	S
A514	16	5'-10"	97	S
A515	8	16'-0"	134	S
A516	8	12'-8"	106	S
A517	16	9'-7"	160	B
A518	24	8'-9"	219	B
A519	16	8'-1"	134	B
A520	16	7'-3"	121	B
A521	8	21'-4"	178	*
A522	8	19'-0"	159	*
A523	36	5'-7"	210	B
A524	24	4'-7"	115	B
A525	16	3'-5"	57	B
A526	108	5'-7"	629	B
Railing				
R501	480	14'-6"	Included	S
R502	32	11'-10"	with	S
R503	16	21'-1"	railing	S
R504	16	18'-10"	for	S
R505	24	4'-2"	pay-	B
R506	16	5'-4"	ment	B
Replacement Bars				
RE1101	4	7'-6"	——	S
RE1001	1	7'-2"	——	S
RE801	1	6'-6"	——	S
RE701	6	6'-2"	——	S
RE601	11	5'-11"	——	S
RE501	3	5'-7"	——	S

Bending Diagrams



*Bend in field to fit.

Superstructure

Mark	No.	Length	Weight	Shp
S701	1366	35'-8"	99,585	S
S702	4 series of 21 bars	32'-4" to 5'-3"	32,26	S
S601	1366	35'-8"	73,179	S
S602	2100	35'-4"	111,448	S
S603	312	27'-0"	12,653	S
S604	4 series of 21 bars	32'-4" to 5'-3"	2371	S
S605	16	5'-0"	120	S
S501	2824	2'-5"	7,118	B
S502	1412	2'-6"	3682	S
S503	1400	5'-7"	8153	B

Piers

Mark	No.	Length	Weight	Shp
P1101	120	14'-4"	9138	B
P1102	240	7'-11"	10,095	B
P1103	240	19'-6"	24,865	S
P1104	60	21'-8"	6907	B
P1105	120	20'-1"	12,804	S
P1001	68	17'-6"	5121	B
P1002	120	7'-6"	3873	B
P1003	52	10'-0"	2238	S
P1004	34	23'-4"	3414	S
P1005	34	22'-4"	3267	S
P601	34	16'-4"	834	S
P602	34	15'-3"	779	S
P603	34	23'-5"	1196	S
P604	34	20'-5"	1043	S
P501	24	19'-8"	492	S
P502	164	15'-0"	2566	S
P503	164	6'-11"	1183	B
P504	168	8'-10"	1548	S
P505	84	5'-7"	489	B
P506	12	24'-0"	300	S
P507	48	19'-2"	960	S
P508	120	10'-1"	1262	B
P509	36	12'-1"	454	B
P510	36	13'-7"	510	B
P511	24	16'-1"	403	B
P512	24	12'-0"	300	B
P513	20	20'-11"	436	B

ESTIMATED QUANTITIES

Item	Total	Unit	Description	Super	Abuts.	Piers	Genl	As-Built
503	Lump	Sum	Cofferdams, cribs and sheeting				Lump	
503	1650	Cu.Yd.	Unclassified excavation		600	1050		
503	15	Cu.Yd.	Rock excavation			15		
511	1,145	Cu.Yd.	Class "C" concrete, Superstructure	1145				
511	539	Cu.Yd.	Class "C" concrete, Piers above footings			539		
511	354	Cu.Yd.	Class "E" concrete, footings		156	198		
511	250	Cu.Yd.	Class "E" concrete, Abutments above footings		250			
509	446587	Lb.	Reinforcing Steel	321,535	28575	96,477		
513	1267000	Lb.	Structural Steel	1267000				
514	1267000	Lb.	Field painting of structural steel	1267000				
517	2047.75	Lin.Ft.	Railing, Type 1					
				1884.88	162.87			
505	Lump	Sum	First Test Pile				Lump	
507	1500	Lin.Ft.	Steel Piles, 12BP53			1500		
507	2160	Lin.Ft.	Steel Piles, 10BP42		2160			
518	69	Cu.Yd.	Porous backfill		69			
518	128	Lin.Ft.	6"ϕ perforated C.M.P., 707.06					
			including specials		128			
518	106	Lin.Ft.	6"ϕ C.M.P. 707.06 non-perforated		106			
518	38	Each	Scuppers, including supports	38				
808	1145	Each	Water-reducing, Set-retarding admixture	1145				
601	1250	Sq.Yd.	Crushed aggregate slope protection		1250			

BAR SIZE is indicated in the bar mark. The first digit where three digits are used, and the first two digits where four are used, indicate the bar size number. For example, A700 is a No. 7 size bar and A1014 is a No. 10 size.

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

RAILING DETAILS, ESTIMATED QUANTITIES AND REINFORCING STEEL LIST
BRIDGE No. WAS-77-1687 4R
OVER EXIST. U.S.R. 21, DUCK CR., PENN. R.R.
WASHINGTON CO. STA. 892+96.54
STA. 897+70.56

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
Innes	Innes	H.C.	Ray	BFG	6-1-65	

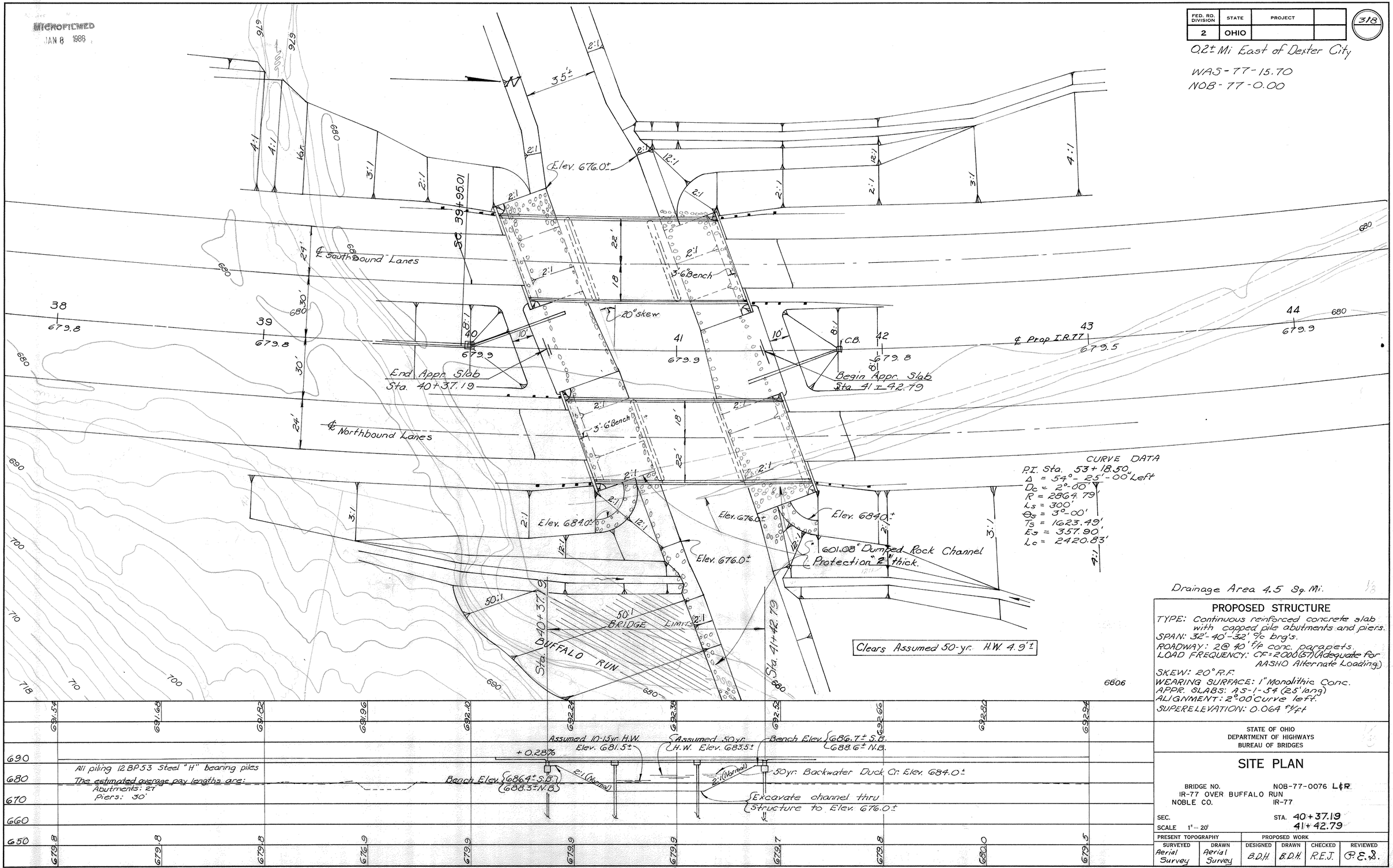
MICROFILMED
JAN 8 1988

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

318

0.2± Mi East of Dexter City

WAS-77-15.70
NOB-77-0.00



Drainage Area 4.5 Sq. Mi.

PROPOSED STRUCTURE

TYPE: Continuous reinforced concrete slab with capped pile abutments and piers.
SPAN: 32'-40'-32' ℄ brg's.
ROADWAY: 2@ 40' ᵗ/ₚ conc. parapets.
LOAD FREQUENCY: CF=2000(57) (Adequate for AASHO Alternate Loading)
SKEW: 20° R.F.
WEARING SURFACE: 1" Monolithic Conc.
APPR. SLABS: AS-1-54 (25' long)
ALIGNMENT: 2°00' Curve left.
SUPERELEVATION: 0.064 ᶠᵗ/ₛₛ

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
BUREAU OF BRIDGES

SITE PLAN

BRIDGE NO. NOB-77-0076 L&R
IR-77 OVER BUFFALO RUN
NOBLE CO. IR-77
SEC.
SCALE 1" = 20'
STA. 40+37.19
41+42.79

PRESENT TOPOGRAPHY		PROPOSED WORK			
SURVEYED	DRAWN	DESIGNED	DRAWN	CHECKED	REVIEWED
Aerial Survey	Aerial Survey	B.D.H.	B.D.H.	R.E.J.	P.E.S.

BFG 5-19-65

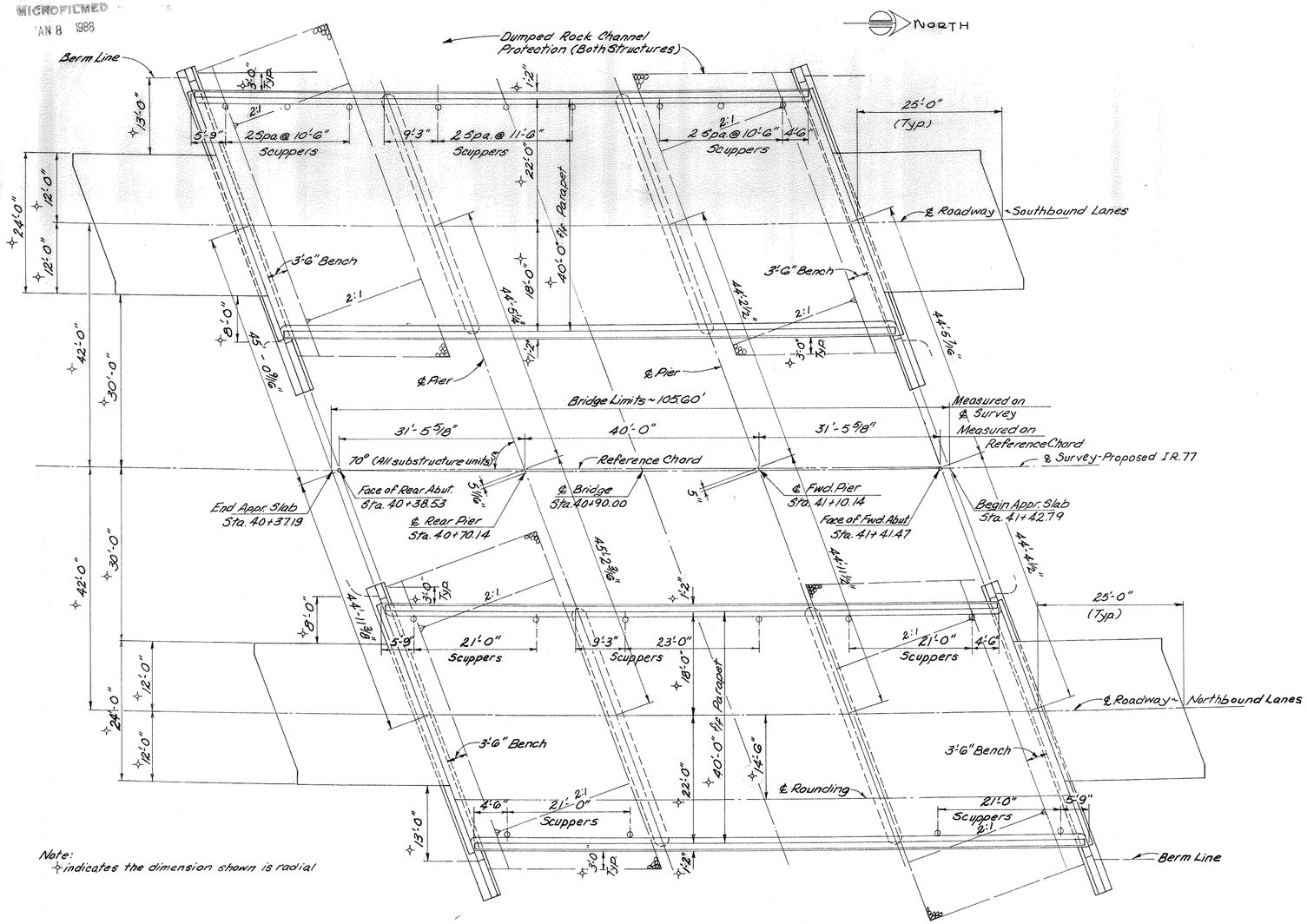
64 10492

MICROFILMED
JAN 8 1988

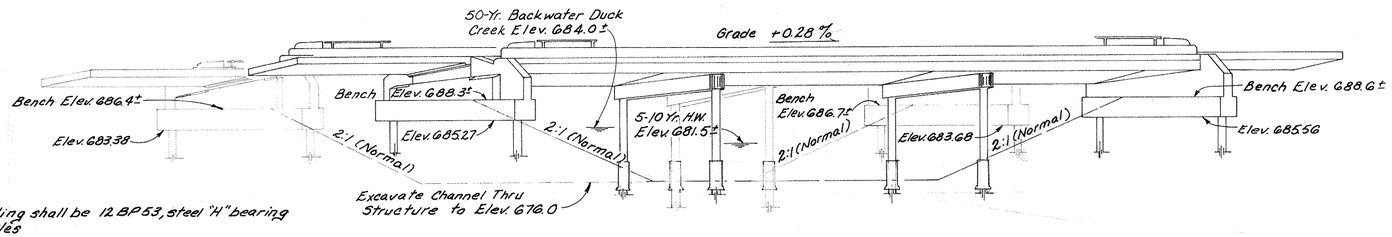
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

319

WAS-77-15.70
NOB-77-0.00



GENERAL PLAN



Piling shall be 12 BP 53, steel "H" bearing piles

Piling not all shown

ELEVATION

GENERAL NOTES

REFERENCE shall be made to Standard Drawings P-1-54 revised 2-2-59, BR-1-65 sheet 1 dated 2-1-65, and to Supplemental Specification 808 dated 7-14-65.

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.

DESIGN LOADING - CF 2000(57)

CONCRETE CLASS C: basic unit stress 1,333 p.s.i.
CONCRETE CLASS E: basic unit stress 1,133 p.s.i.

STRUCTURAL STEEL - ASTM A36 - basic unit stress 20,000 p.s.i. (except piling) (ASTM A7 and A373 steel not permitted)
REINFORCING STEEL - ASTM A15, A16, A160, Deformed, Intermediate or Hard Grade. Basic unit stress 20,000 p.s.i.

EARTH EMBANKMENT shall be placed up to the elevation of the earth bench, after which the excavation shall be made for the abutments and piles driven.

EXCAVATION QUANTITY includes the removal of fill material between the top of the earth bench and the bottom of the abutment cross beam.

PILES shall be driven to firm contact with rock. If the length of penetration is approximately equal to the depth to rock according to the bridge foundation investigation report, the firm contact shall be considered as attained when the capacity according to the formula in Sec. 507.05 is not less than the following value for a pile hammer of the indicated energy rating:

55 tons per pile using a 7,000 ft. lb. hammer
50 tons per pile using a 11,000 ft. lb. hammer

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 31 tons per pile for the abutment piles and 35 tons per pile for the pier piles.

PIER PILE ENCASEMENT as shown in these Plans is required. The painting of the piles shall extend to low water elevation or, if the proposed surface of the ground is above low water, it shall extend to at least one foot below the proposed surface of the ground. Pile encasement shall be 21" Vitrified Sewer Pipe filled with concrete. The pile encasement shall extend 3'-0" above the flowline.

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

GENERAL PLAN & ELEVATION, AND GENERAL NOTES

BRIDGE No. NOB-77-0076 L & R
OVER BUFFALO RUN
NOBLE COUNTY
STA. 40+37.19
STA. 41+42.79

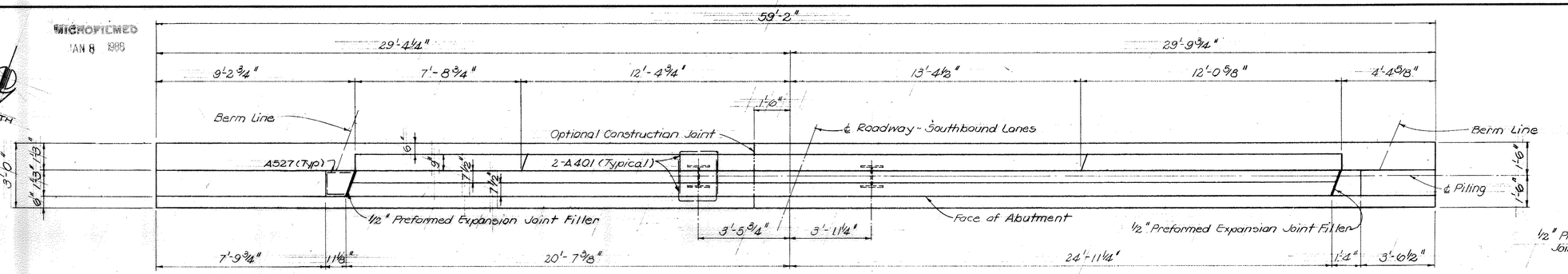
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
J E F	J E F		J.V.G.	BFG	5-19-65	

MICROFILMED
JAN 8 1986

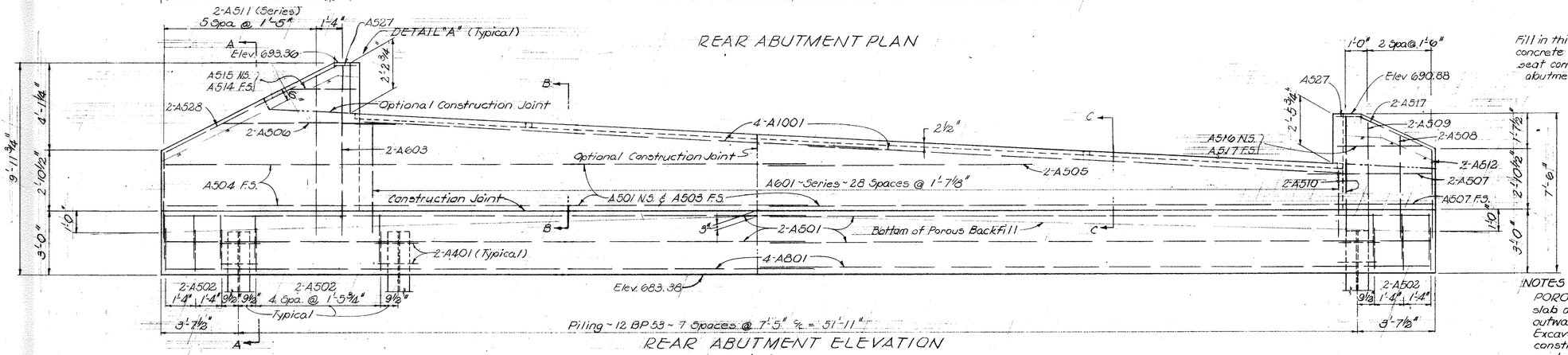
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	/	

320

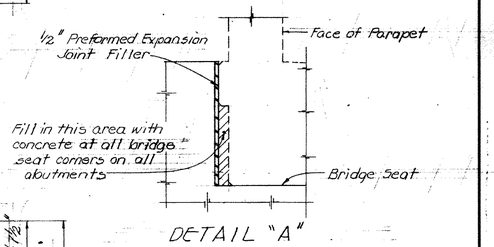
WAS-.77-15.70
NOB-77-0.00



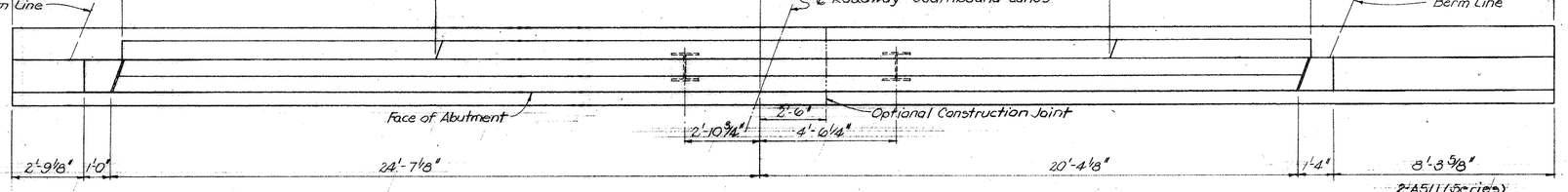
REAR ABUTMENT PLAN



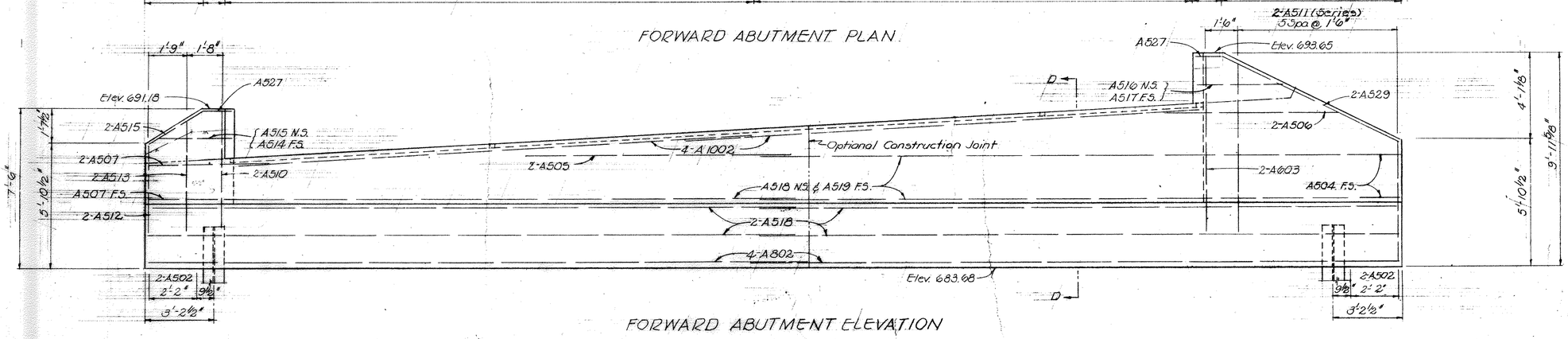
REAR ABUTMENT ELEVATION



DETAIL "A"



FORWARD ABUTMENT PLAN



FORWARD ABUTMENT ELEVATION

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 therefor, in excess of that required for construction of the footing, shall be considered as paid for in the bid price per Cu. Yd. paid for porous backfill.

CONCRETE shall be Class "E" and payment will be made on this basis, but Class "C" concrete may be used for any or all parts of the abutments.

ADDITIONAL DETAILS: For details of Section ~~A-A, B-B, C-C and D-D,~~ see ABUTMENT DETAILS, Sheet No. 322

FORWARD ABUTMENT DETAILS, unless otherwise shown, are the same as REAR ABUTMENT DETAILS except opposite hand.

N.S. denotes near side
F.S. denotes far side

3

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

ABUTMENT DETAILS SOUTHBOUND LANES

BRIDGE No. NOB-77-0076 L & R
OVER BUFFALO RUN
NOBLE COUNTY
STA. 40+37.19
STA. 41+42.79

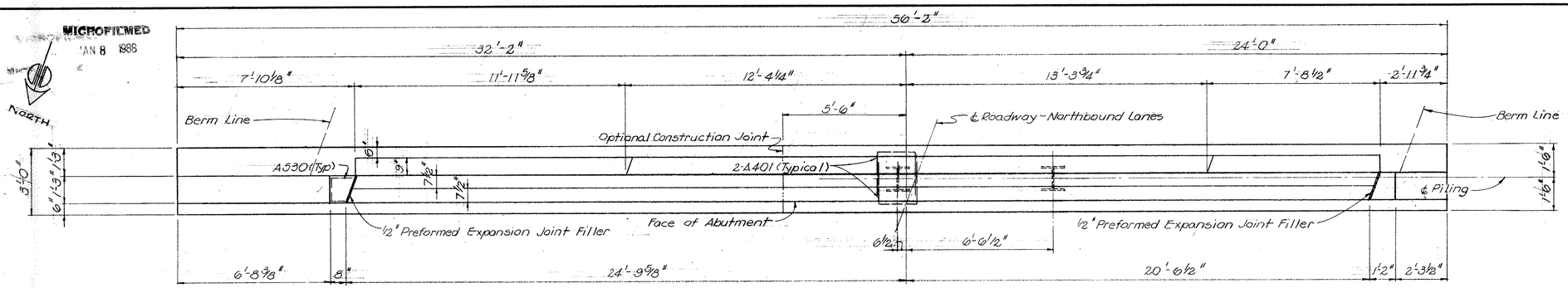
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
J E F	J E F		J.V.G.	BFG	5-19-65	

MICROFILMED
JAN 8 1986

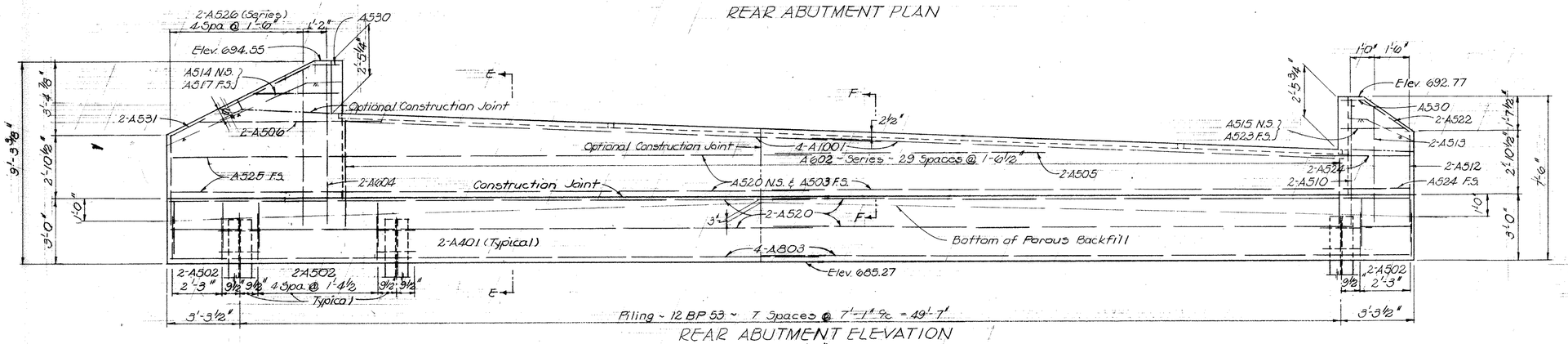
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

321

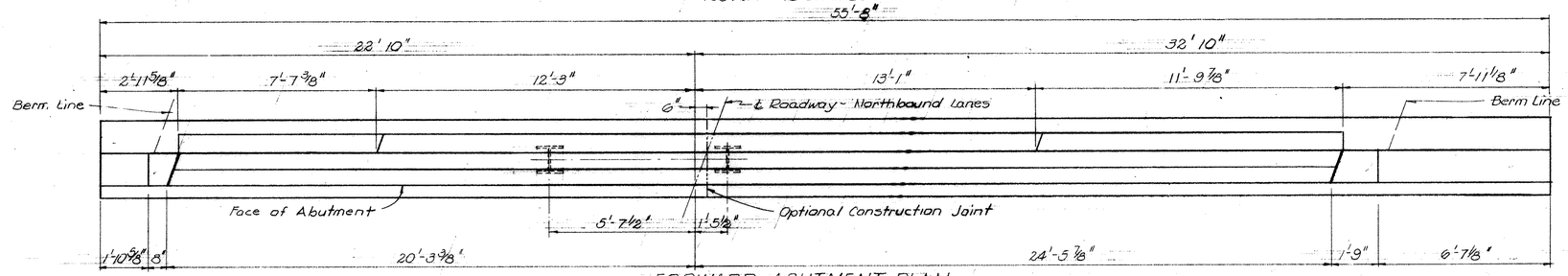
WAS-77-15.70
NOB-77-0.00



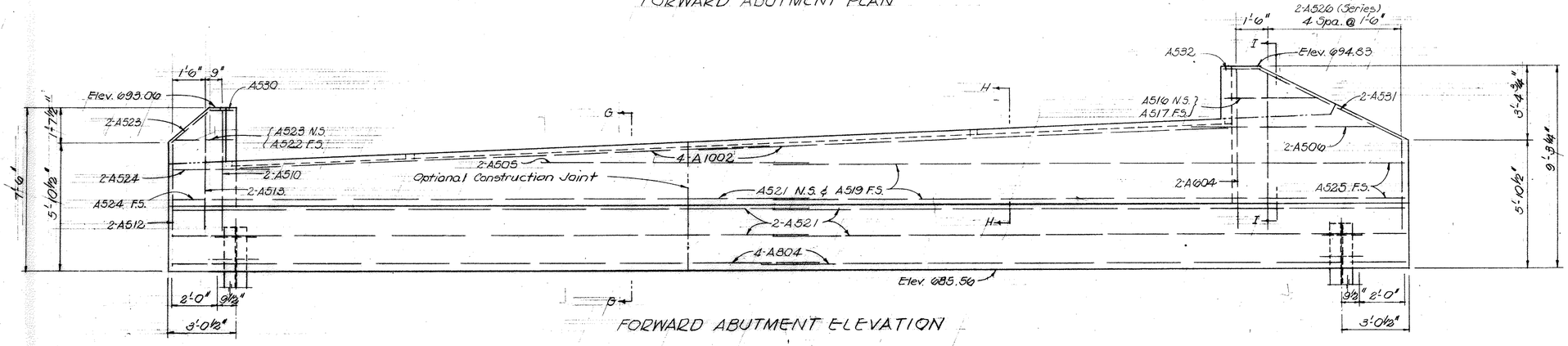
REAR ABUTMENT PLAN



REAR ABUTMENT ELEVATION



FORWARD ABUTMENT PLAN



FORWARD ABUTMENT ELEVATION

ADDITIONAL DETAILS: For additional notes and details see ABUTMENT DETAILS, SOUTHBOUND LANES, Sheet No. For Sections E-E, F-F, G-G, H-H and I-I, see ABUTMENT DETAILS, Sheet No. 322

FORWARD ABUTMENT DETAILS, unless otherwise shown, are the same as REAR ABUTMENT DETAILS except opposite hand.

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STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

ABUTMENT DETAILS
NORTHBOUND LANES
BRIDGE No. NOB-77-0076 L & R
OVER BUFFALO RUN

NOBLE COUNTY — STA. 40+37.19 — STA. 41+42.79

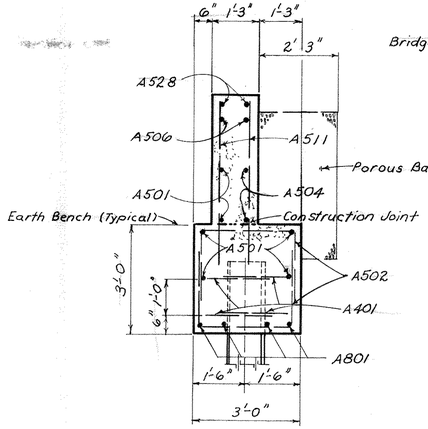
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
J E F	J E F		J.V.G.	BFG	5-19-65	

MICROFILMED
JAN 8 1988

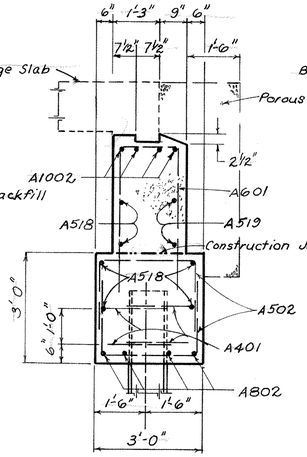
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

322

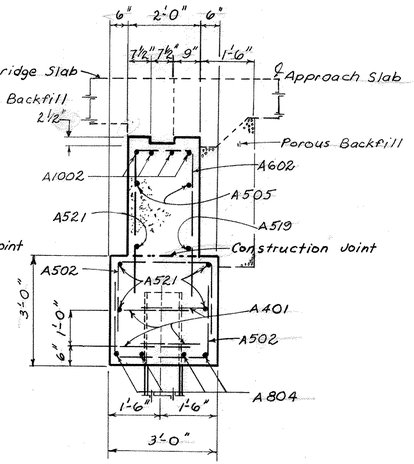
WAS-77-15.70
NOB-77-0.00



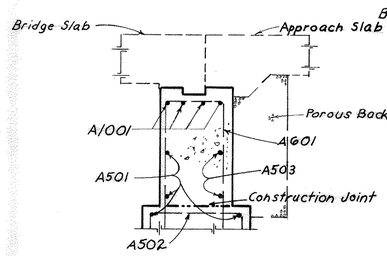
SECTION A-A



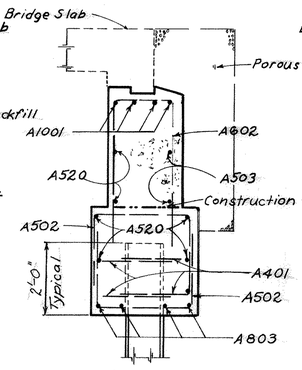
SECTION D-D



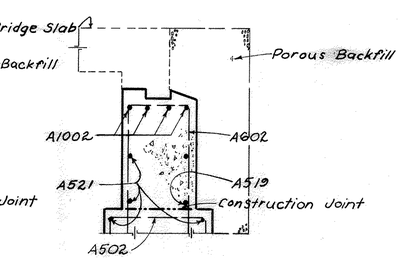
SECTION G-G



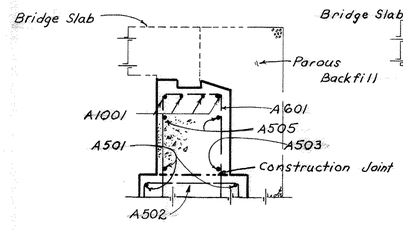
SECTION B-B



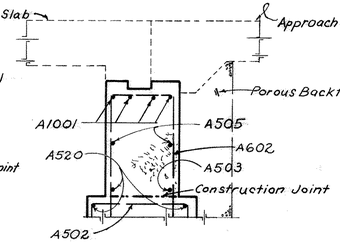
SECTION E-E



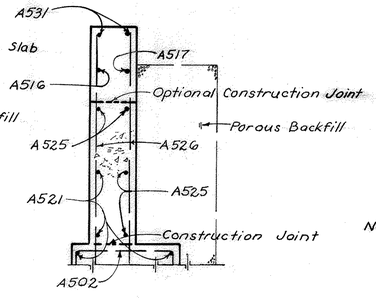
SECTION H-H



SECTION C-C



SECTION F-F

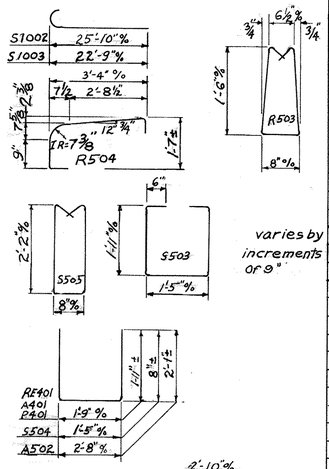


SECTION I-I

REINFORCING STEEL LIST

Mark	No.	Length	Weight	Shp
Superstructures				
S1001	210	37'-2"	33585	S
S1002	68	27'-3"	7,973	B
S1003	68	24'-2"	7071	B
S1004	34	18'-8"	2,731	S
S1005	34	24'-4"	3,560	S
S1006	156	31'-6"	21,145	S
S1007	76	16'-6	5396	S
S1008	76	12'-11"	4224	S
S901	40	22'-0"	2992	S
S701	396	23'-2	18752	S
S601	80	20'-5"	2453	S
S602	40	13'-1"	780	S
S603	268	2.3-1"	9292	S
S501	12	21'-2"	265	S
S502	24	23'-2"	580	S
S503	480	5'-9"	2,879	B
S504	480	2'-6"	1,252	B
S505	312	5'-7"	1817	B
Railing				
R501	80	13'-9"	—	S
R502	12	18'-0"	—	S
R503	24	4'-2"	—	B
R504	16	5'-4"	—	B
R505	8	18'-2"	—	S
R506	8	18'-4"	—	S
Piers				
P1001	32	23'-7"	3247	S
P901	32	22'-2"	2412	S
P501	16	21'-5"	357	S
P502	136	9'-0"	1277	B
P503	16	6'-4"	106	B
P401	144	5'-5"	521	B
Abutments				
A1001	16	24'-2"	1664	S
A1002	16	23'-10"	1691	S
A801	8	30'-8"	655	S
A802	8	30'-3"	646	S
A803	8	29'-2"	623	S
A804	8	28'-11"	618	S
A601	2	7'-10"		
	Series of 29	to 13'-8"	937	B
A602	2	7'-10"		
	Series of 30	to 11'-5½"	869	B
A603	4	8'-4"	50	S
A604	4	7'-8"	46	S

Bending Diagrams



Mark	No.	Length	Weight	Shp
Abutments (continued)				
A501	11	30'-3"	347	S
A502	316	6'-7"	2170	B
A503	6	23'-5"	147	S
A504	4	10'-10"	45	S
A505	8	17'-0"	142	S
A506	8	8'-2"	68	S
A507	6	5'-11	37	S
A508	2	4'-9"	10	S
A509	2	5'-4"	11	S
A510	8	5'-7"	47	S
A511	4	3'-11"		
	Series of 6	to 7'-8"	145	S
A512	8	3'-11"	33	S
A513	6	5'-2"	32	S
A514	3	3'-4"	10	S
A515	5	2'-10"	15	S
A516	3	4'-2"	13	S
A517	6	3'8"	23	S
A518	11	29'-10"	342	S
A519	6	23'-1"	144	S
A520	11	28'-9"	330	S
A521	11	28'-6"	327	S
A522	3	2'-8"	8	S
A523	4	2'-3"	9	S
A524	6	4'-6"	28	S
A525	4	9'-5"	39	S
A526	4	3'-11"		
	Series of 5	to 7'-3"	116	S
A527	4	2'-7"	11	B
A528	2	8'-7"	18	S
A529	2	9'-0"	19	S
A530	3	2'-1"	7	B
A531	4	7'-2"	30	S
A532	1	3'-5"	4	B
A401	128	5'-5"	463	B
Replacement Bars				
RE1001	5	7'-2"	—	S
RE901	1	6'-10"	—	S
RE801	1	6'-6"	—	S
RE701	1	6'-2"	—	S
RE601	1	5'-11"	—	S
RE501	1	5'-7"	—	S
RE401	1	5'-5"	—	B

BAR SIZE is indicated in the bar mark. The first digit where three digits are used, and the first two digits where four are used, indicate the bar size number. For example, A801 is a No. 8 size bar and A1001 is a No. 10 size.

NOTES

Dimensions and details for Section I-I are the same as those shown for Section A-A unless otherwise indicated.

Dimensions and details for Sections C-C, E-E and H-H are the same as those shown for Section D-D unless otherwise indicated.

Dimensions and details for Sections B-B and F-F are the same as those shown for Section G-G unless otherwise indicated.

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

ABUTMENT DETAILS & REINFORCING STEEL LIST

BRIDGE No. NOB-77-0076 L & R
OVER BUFFALO RUN

NOBLE COUNTY
STA. 40+37.19
STA. 41+42.79

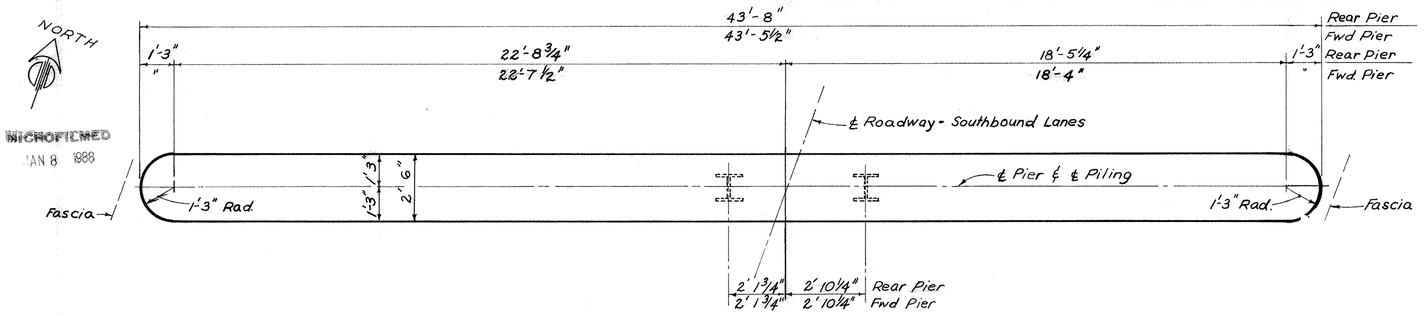
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
J.E.F.	J.E.F.	J.V.A.	J.V.G.	B.F.G.	5-19-65	

MICROFILMED
JAN 8 1968

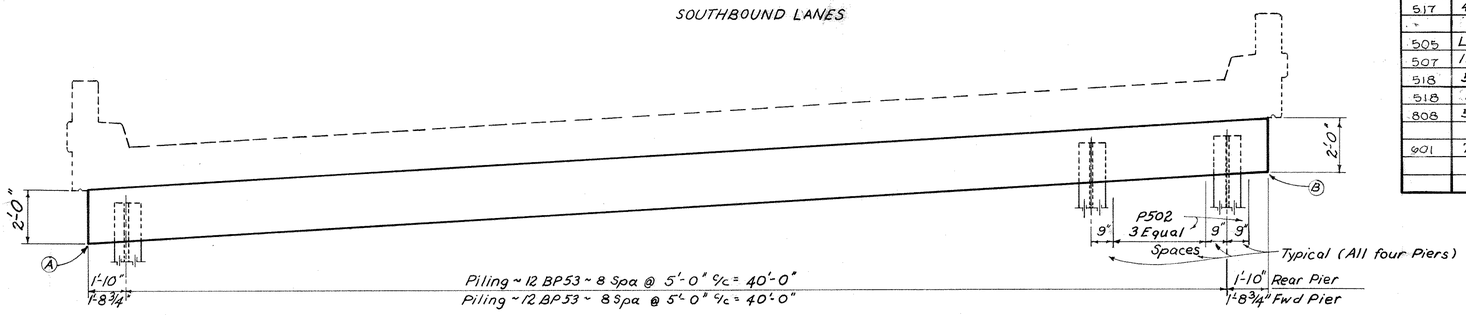
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

323

WAS-77-15.70
NOB-77-0.00



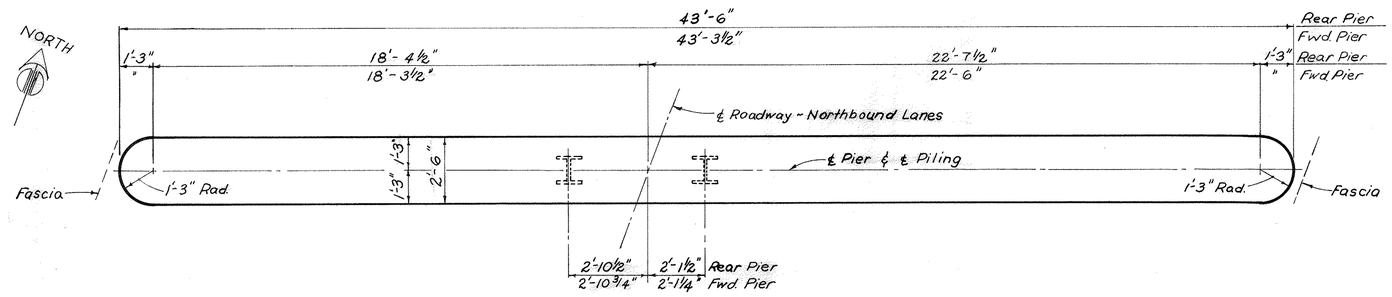
PIER PLAN
SOUTHBOUND LANES



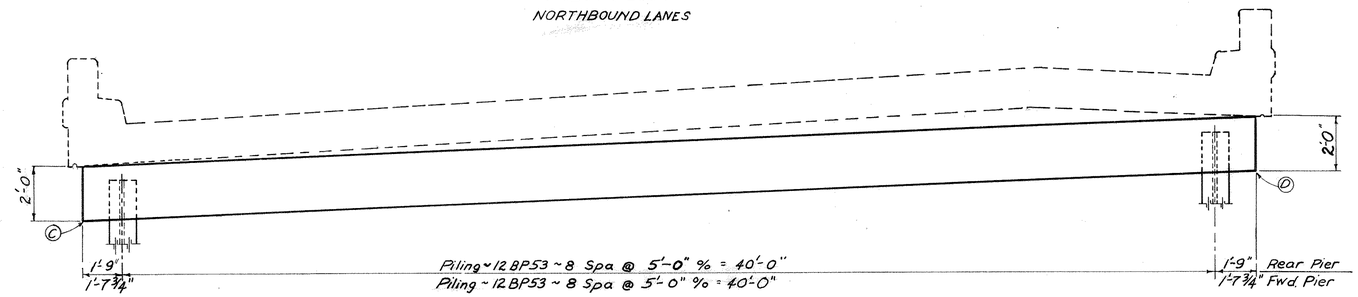
PIER ELEVATION
SOUTHBOUND LANES

ESTIMATED QUANTITIES

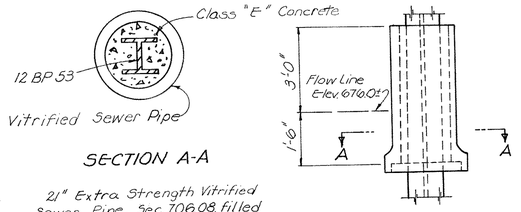
Item	Total	Unit	Description	Superstr	Piers	Abut.	Gen'l		
503	132	Cu. Yds.	Unclassified excavation			132			
203	5182	Cu. Yds.	Excavation not including embankment construction (Channel).				5182		
511	558	Cu. Yds.	Class "C" concrete, superstructures and pier caps	526	32				
511	128	Cu. Yds.	Class "E" concrete, abutments			128			
509	147,612	Lbs.	Reinforcing steel	126,753	7920	12939			
510	26	Sq. Ft.	½ Preformed expansion joint filler, AASHO, M-153.			26			
517	418.50	Lin. Ft.	Railing, Type 1 and end posts)	41850					
505	Lump	Sum	First test pile				Lump		
507	1940	Lin. Ft.	Steel piles, 12 BP53, including encasement.		1080	860			
518	56	Cu. Yds.	Porous backfill			56			
518	19	Each	Scuppers	19					
808	558	Each	Water-reducing, set-retarding admixture	526	32				
901	727	Cu. Yds.	Dumped rock channel protection				727		



PIER PLAN
NORTHBOUND LANES



PIER ELEVATION
NORTHBOUND LANES



SECTION A-A

2" Extra Strength Vitrified Sewer Pipe, Sec. 706.08, filled with concrete around pier piles Include with piles for payment.

PILE ENCASEMENT
(Typical for all pier piles)

ELEVATIONS

Location	Southbound Lanes		Northbound Lanes	
	A	B	C	D
Rear Pier	686.52	689.19	688.40	690.22
Forward Pier	686.64	689.30	688.52	690.33

Notes
REFERENCE shall be made to Standard Drawing P-1-54 for details and notes not shown on this sheet.

Lap P901 bars 2'-10" minimum

Lap P501 bars 1'-7" minimum

Lap P1001 bars 3'-2" minimum

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

PIER DETAILS & ESTIMATED QUANTITIES

BRIDGE No. NOB-77-0076 L&R
OVER BUFFALO RUN
NOBLE COUNTY
STA. 40+37.19
STA. 41+42.79

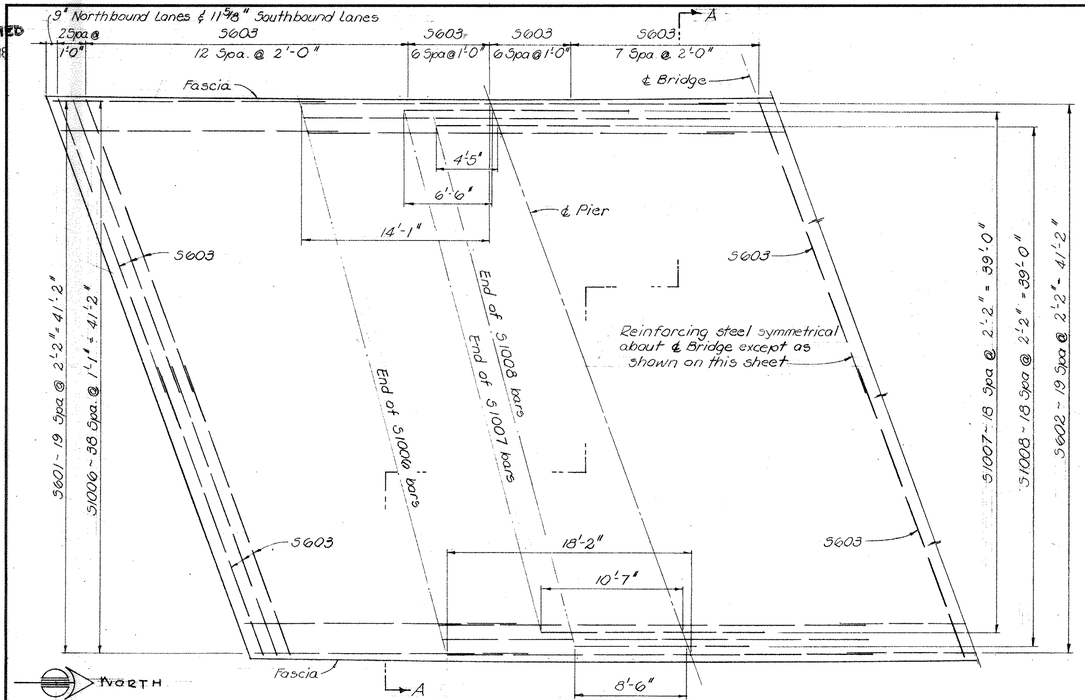
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
J.E.F.	J.E.F.	J.V.A.	J.V.G.	BFG	5-19-65	

MICROFILMED
JAN 8 1988

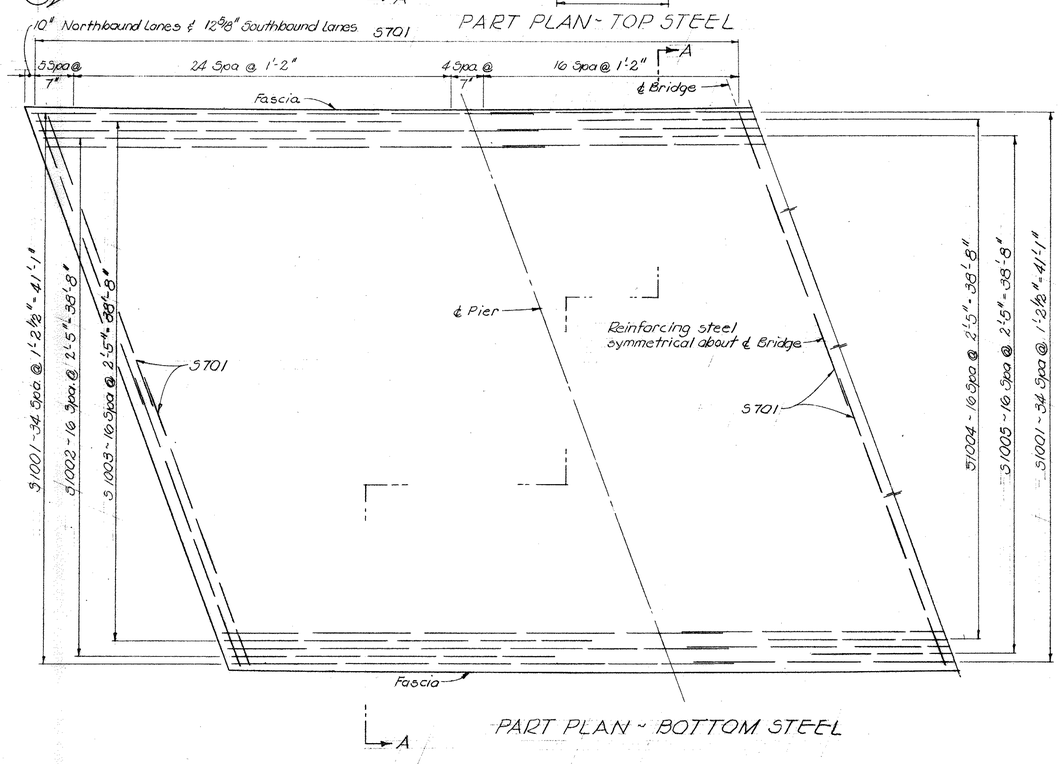
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

324

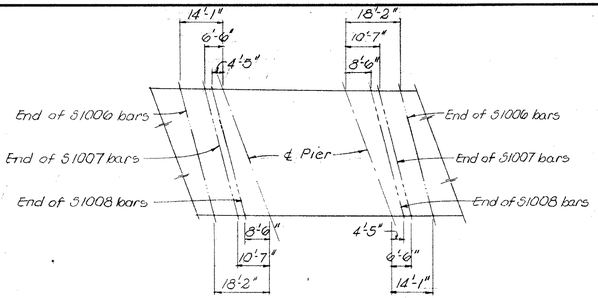
WAS-77-15.70
NOB-77-0.00



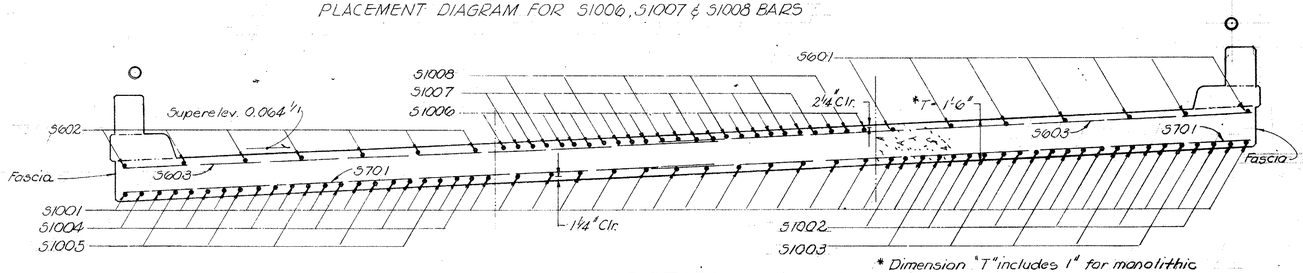
PART PLAN - TOP STEEL



PART PLAN - BOTTOM STEEL

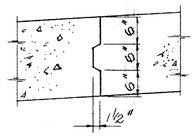


PLACEMENT DIAGRAM FOR 51006, 51007 & 51008 BARS

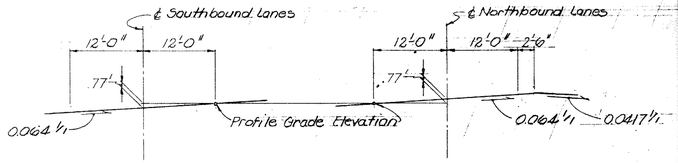


SECTION A-A
Southbound Lanes

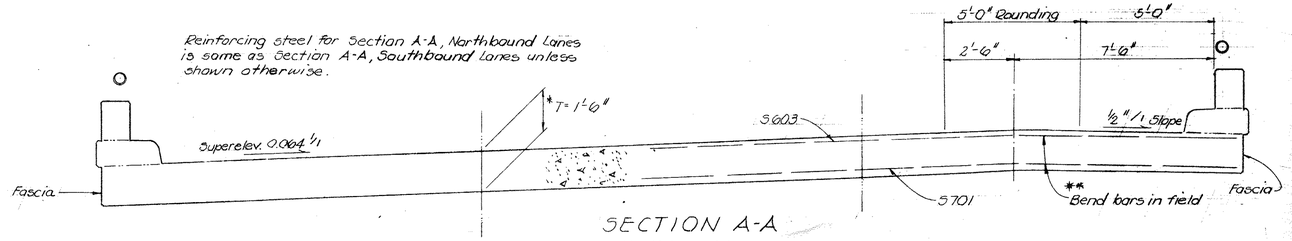
* Dimension "T" includes 1" for monolithic wearing surface.



CONSTRUCTION JOINT



BRIDGE ROADWAY CROWN



SECTION A-A
Northbound Lanes

** PAYMENT for the field bending of 3601 and 5701 shall be included in Item 509

CONCRETE shall be Class "C"

CONSTRUCTION JOINT: One construction joint in the bridge slab shall be placed on the transverse centerline of the middle span or 1'-0" ± off the transverse centerline if necessary to miss railing posts and transverse reinforcing bars. One longitudinal joint on the centerline of roadway will be permitted. A horizontal construction joint shall be placed between each curb and the top of the slab.

CAMBER of 1/800 span shall be provided in each span to allow for dead load deflection. This is the amount of camber required before the falsework is released. To obtain this, proper allowance shall be made for the deflection of falsework members.

7

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

SUPERSTRUCTURE DETAILS

BRIDGE No. NOB-77-0076 L&R
OVER BUFFALO RUN

NOBLE COUNTY — STA. 40+37.19
STA 41+42.79

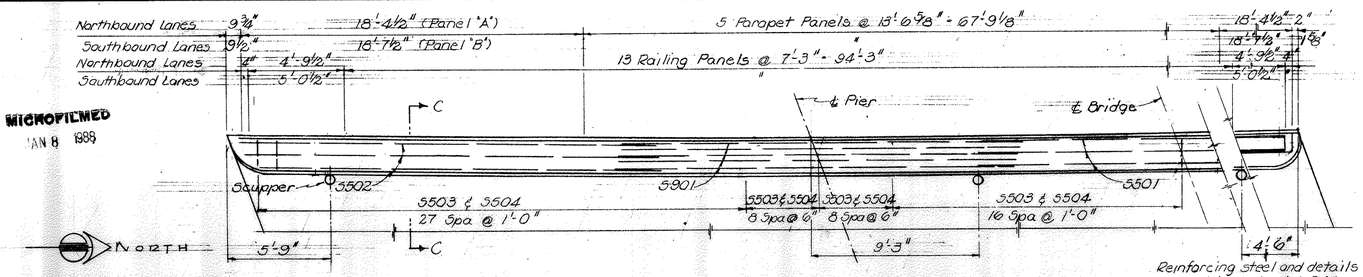
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
J E F	J E F		J.V.G.	B F G	5-19-65	

MICROFILMED
JAN 8 1988

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

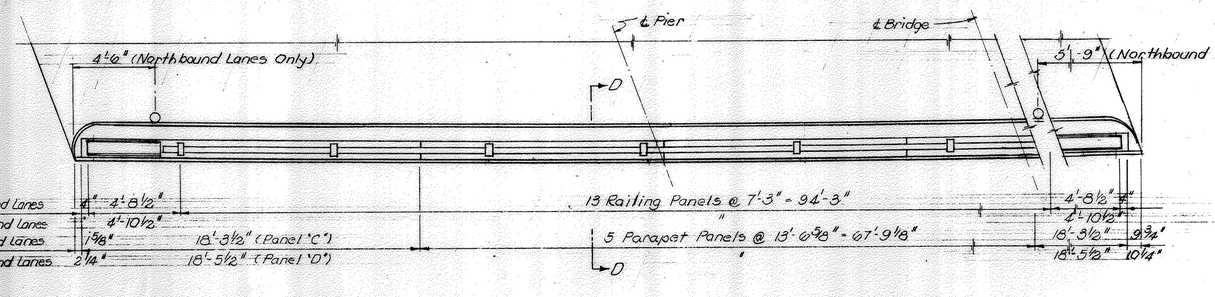
325

WAS-77-15.70
NOB-77-0.00

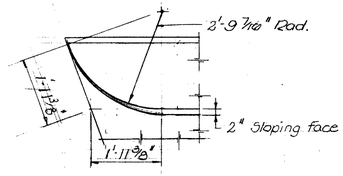


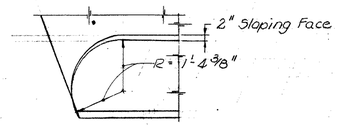
For Scupper Spacing see GENERAL PLAN, Sheet No. 319

Reinforcing steel and details are symmetrical about ℄ Bridge except as shown.



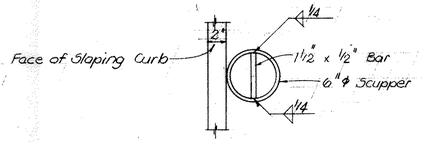
PART PLAN - CURB STEEL & RAILING



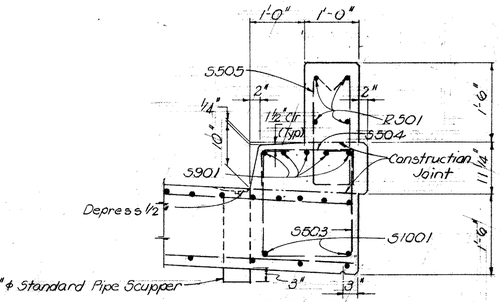


CURB DETAILS

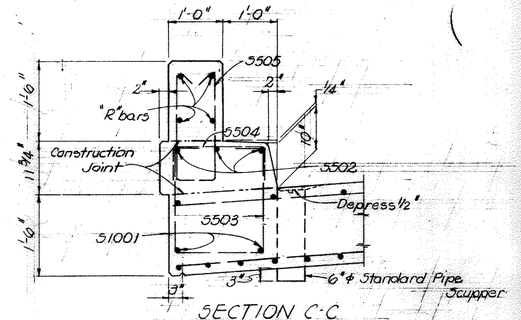
Note:
CURBS shall be placed after the shoring under the slab has been released sufficiently to permit the slab spans to attain full dead load deflection.



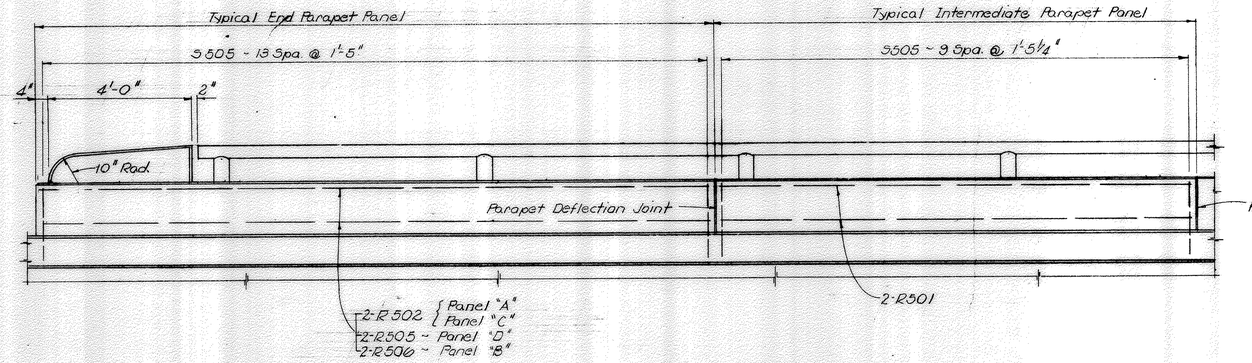
SCUPPER PLAN



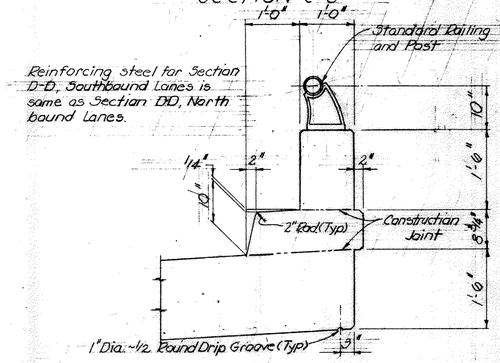
SECTION D-D
Northbound Lanes



SECTION C-C



PART ELEVATION - PARAPET
For additional railing details see Standard Drawing BR-1-65



SECTION D-D
Southbound Lanes

8/8

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

SUPERSTRUCTURE DETAILS

BRIDGE No. NOB-77-0076 L & R
OVER BUFFALO RUN
NOBLE COUNTY
STA. 40+37.19
STA. 41+42.79

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
J E F	J E F		JVG.	BFG	5-19-65	

MICROFILMED
JAN 8 1988

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

326

.1± Mi. North of Dexter City
WAS-77-15.70
NOB-77-0.00

Sta. 73+04.00 I.R. 77 =
Sta 10+00 C.R. 2

Sod Gutter

℄ Survey Relocated C.R. 2

8.0 min.
10.88 actual

℄ Southbound lanes

℄ Northbound Lanes

30'

N51°-44'-23"W

℄ Survey I.R.-77

End Appr. Slab
Sta. 72+36.03

Begin Appr. Slab
Sta 73+78.78

C.B.

31° skew

Critical Clearance Pt.

8.0' min.
8.43' actual

EXIST. C.R. 2

BRIDGE LIMITS

Sta 72+36.03

Sta 73+78.78

Top of Slope Elev. {711.1 N.B. / 712.2 S.B.

Top of Slope Elev. {718.8 N.B. / 714.9 S.B.

+1.36%

+1.96%

14.5 (min. cl.)
14.73 (actual)

All piles are 10BP42

Ftg. Elev. {705.0 N.B. / 706.1 S.B.

Ftg. Elev. {692.0 N.B. / 690.5 S.B.

Ftg. Elev. {707.7 N.B. / 708.8 S.B.

Elev. 691.5

2:1 (Normal)

Estimated average pay lengths for piles → 50' 35' 15' to 35' 25' to 40'

℄ Exist. CR 2

PROPOSED STRUCTURE

TYPE: Continuous steel beams with reinf. conc. deck and substructure.
SPAN: 38.5'-55'-44'-9½" brg's.
ROADWAY: 2@ 40'-1½" concrete parapets.
LOAD FREQUENCY: CF=2000(ST) (Adequate for AASHO Alternate Loading)
SKEW: 31° L.F.
WEARING SURFACE: 1" Mono. Conc.
APPR. SLABS: AS-1-54 (25' long)
ALIGNMENT: Tangent.

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
BUREAU OF BRIDGES

SITE PLAN

BRIDGE NO. NOB-77-0136 L&R
IR-77 OVER C.R. 2
NOBLE CO. IR-77
SEC. STA. 72+36.03
73+78.78
SCALE 1" = 20'

PRESENT TOPOGRAPHY		PROPOSED WORK			
SURVEYED	DRAWN	DESIGNED	DRAWN	CHECKED	REVIEWED
Aerial Survey	Aerial Survey	B.O.H.	B.O.H.	N.J.B.	J.E.S.

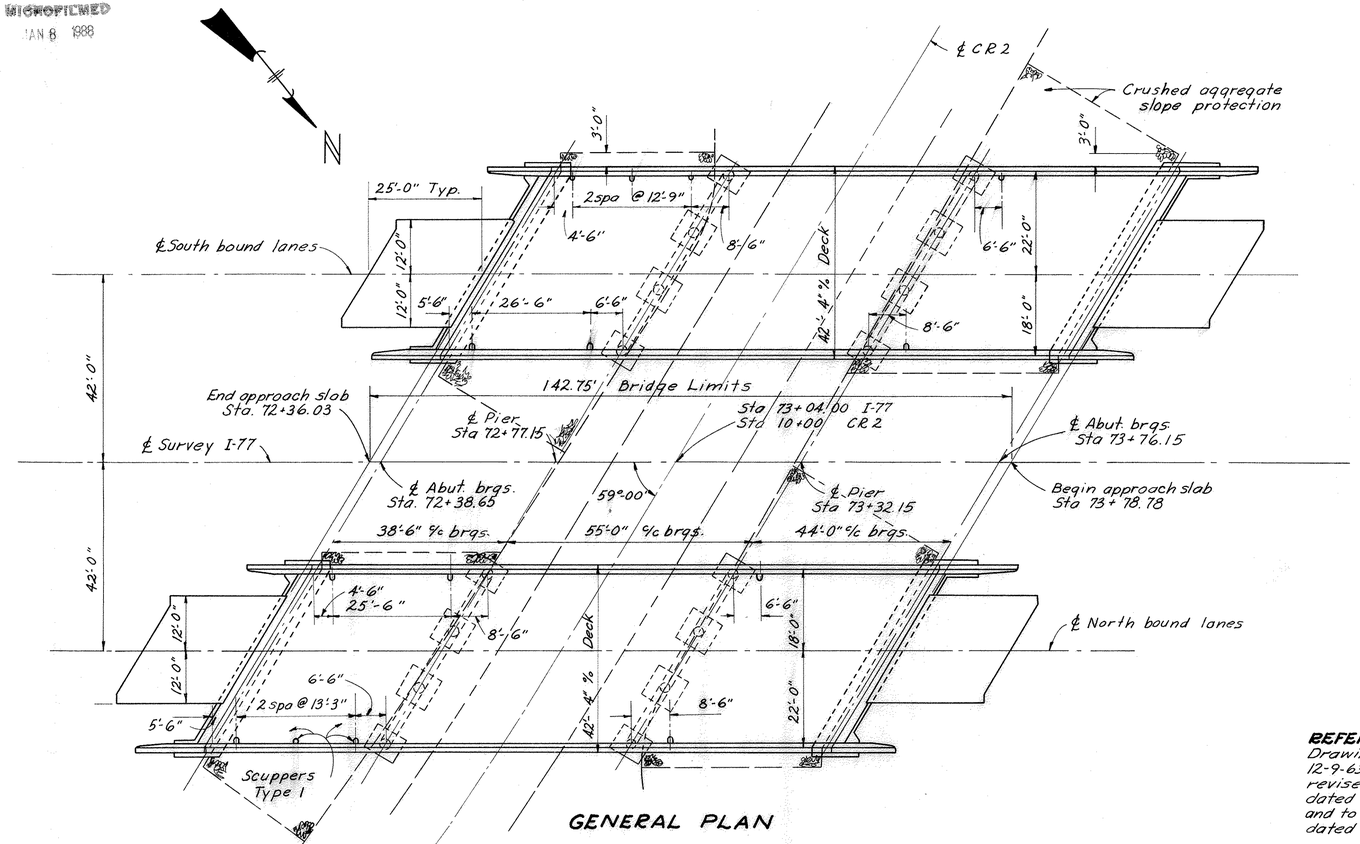
BFG 3-10-65

MICROFILMED
JAN 8 1988

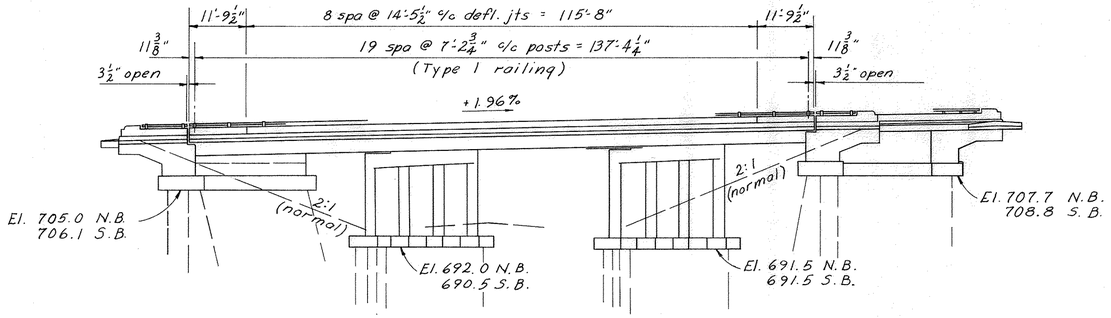
WAS-77-15.70
NOB-77-0.00

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

327



GENERAL PLAN



ELEVATION

ESTIMATED QUANTITIES

Item	Total	Unit	Description	Super.	Abuts	Piers	Gen'l	As Built	
503	720	cu. yd.	Unclassified excavation		510	210			
511	368	cu. yd.	Class "C" concrete, superstructure	368					
511	105	cu. yd.	Class "C" concrete, pier caps and columns			105			
511	203	cu. yd.	Class "E" concrete, abutments above footings		203				
511	75	cu. yd.	Class "E" concrete, pier footings			75			
511	160	cu. yd.	Class "E" concrete, abutment footings		160				
509	161,432	lb.	Reinforcing steel	104,915	22,502	34,015			
513	254,500	lb.	Structural steel	254,500					
514	254,500	lb.	Field painting of structural steel	254,500					
517	663.01	lin. ft.	Railing, Type I	559.34	103.67				
505	lump	sum	First test pile			lump			
507	4310	lin. ft.	Steel piles, 10 BP 42		2150	2160			
518	73	cu. yd.	Porous backfill		73				
518	170	lin. ft.	6" Perforated helical C.M.P. T07.06 incl. specials		170				
518	128	lin. ft.	6" helical corrugated metal pipe T07.06 non-perforated		128				
518	14	Each	Scuppers, including supports	14					
601	1170	sq. yd.	Crushed aggregate slope protection				1170		
808	368	each	Water-reducing, set-retarding admixture	368					

GENERAL NOTES

REFERENCE shall be made to Standard Drawings CSB-3-63 (sheets 1 & 3) dated 12-9-63, BR-1-65 dated 2-1-65, FSB-1-62 revised 1-15-64, SD-1-63 (sheets 2, 3 & 4) dated 11-12-63 and SD-2-64 dated 11-25-64, and to Supplemental Specifications 808, dated 7-14-65 and 811 dated 3-29-65.

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.

DESIGN LOADING - CF 2000 (57).

CONCRETE CLASS C - basic unit stress 1,333 psi

CONCRETE CLASS E - basic unit stress 1,133 psi

STRUCTURAL STEEL (Except piling) - ASTM A36 - basic unit stress 20,000 psi (ASTM A7 and A373 steel not permitted)

REINFORCING STEEL - ASTM A15, A16, A160, Deformed, Intermediate or Hard Grade. Basic unit stress 20,000 p.s.i. Except, spiral reinforcement may be plain Structural Grade with basic unit stress of 18,000 p.s.i.

EXCAVATION QUANTITY includes the removal of fill material required for construction of abutments and piers.

PILES shall be driven to firm contact with rock. If the length of penetration is approximately equal to the depth to rock according to the bridge foundation investigation report, the firm contact shall be considered as attained when the capacity according to the formula in Sec. 507.05 is not less than the following value for a pile hammer of the indicated energy rating:

Piles (Con't)

For the abutment piles:

45 tons per pile using a 7000 ft. lb hammer
40 tons per pile using an 11000 ft. lb. hammer
35 tons per pile using a 15000 ft. lb. or greater hammer

For the pier piles:

48 tons per pile using a 7000 ft. lb. hammer
42 tons per pile using an 11000 ft. lb. hammer
37 tons per pile using a 15000 ft. lb. or greater hammer

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.

MACHINE FINISH: The concrete bridge deck shall be finished by the use of a finish machine.

SPIRAL REINFORCING BARS: The "No. of Turns" shown is the length divided by the pitch, plus 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 509 1½ closed coils shall be provided at the ends of each spiral unit.

Three steel channel, tee or angle spacers, weighing approximately 0.68 lb. per lin. ft. 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 lb. per lin. ft., will be paid for as reinforcing steel and is included in the tabulated quantity of spiral bars.

DECK SLAB THICKNESS is 9" which includes 1" for monolithic wearing surface.

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

GENERAL PLAN & ELEVATION NOTES & ESTIMATED QUANTITIES

BRIDGE NO. NOB-77-0136 L&R
OVER C.R. 2
STA. 72+36.03
73+78.78
NOBLE COUNTY

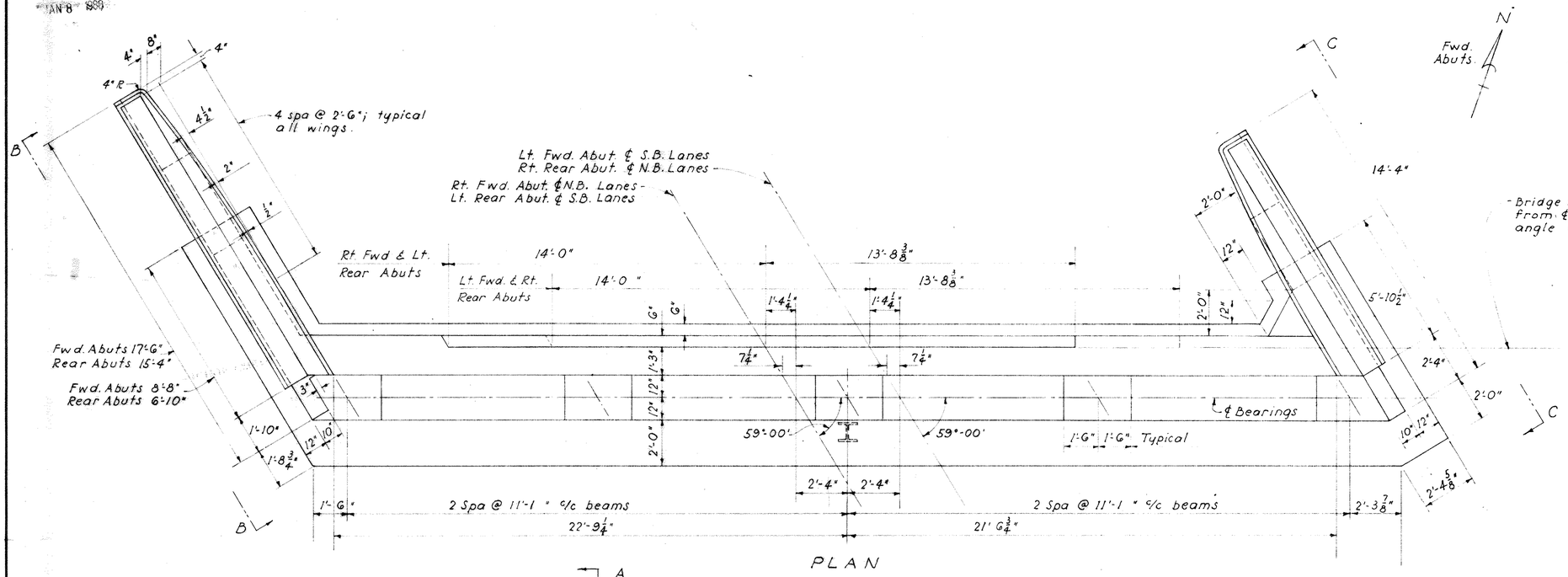
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
Ray		MP	J.D.R.	BFG	3-10-65	

MICROFILMED
JAN 8 1969

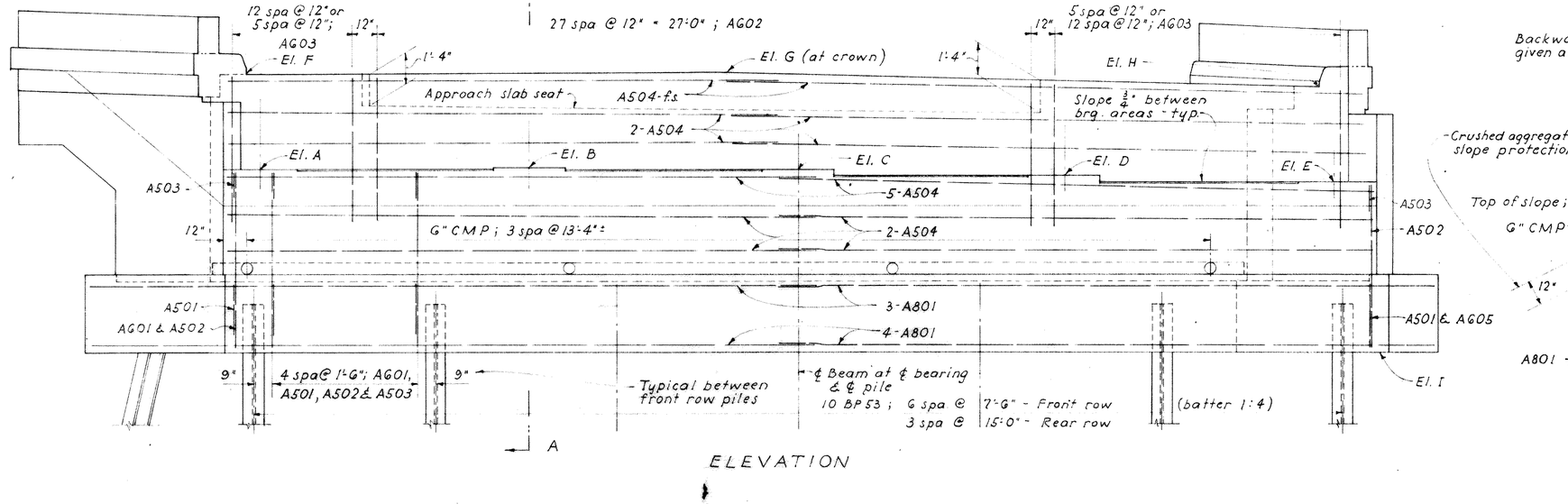
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

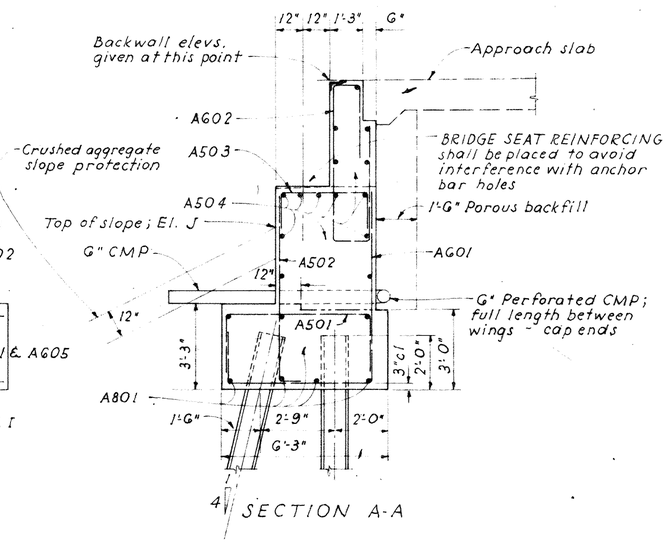
328

WAS-77-15.70
NOB-77-0.00



ELEV.	Fwd Abuts. Left	Fwd Abuts. Right	Rear Abuts Left	Rear Abuts Right
A	716.33	715.35	713.26	712.16
B	716.36	715.39	713.52	712.42
C	716.40	715.37	713.72	712.68
D	716.20	715.10	713.68	712.71
E	715.94	714.85	713.65	712.67
F	720.26	719.28	717.13	716.03
G	720.34	719.35	717.60	716.61
H	719.67	718.77	717.52	716.54
I	708.8	707.7	706.1	705.0
J	714.9	713.8	712.2	711.1
K	720.58	719.61	716.85	715.75
L	720.09	719.00	717.29	716.32





THE EMBANKMENT shall be placed and compacted up to the finished spill-thru slopes and to the level of the subgrade for a distance of 200 feet back of the abutments, after which excavation shall be made for the abutments and for the piers.

POROUS BACKFILL, 1'-6" thick, full length of abutment breast wall shall extend up to the underside of the approach slab and to the surface of the earth shoulders.

See Sheet 329 for VIEWS B-B & C-C

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

3-17

ABUTMENT DETAILS

BRIDGE NO. NOB-77-0136 L & R
OVER C.R. 2
STA: 72+36.03
73+78.78

NOBLE COUNTY

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
RAY			J.D.R.	BFG	3-10-65	

MICROFILMED
JAN 8 1986

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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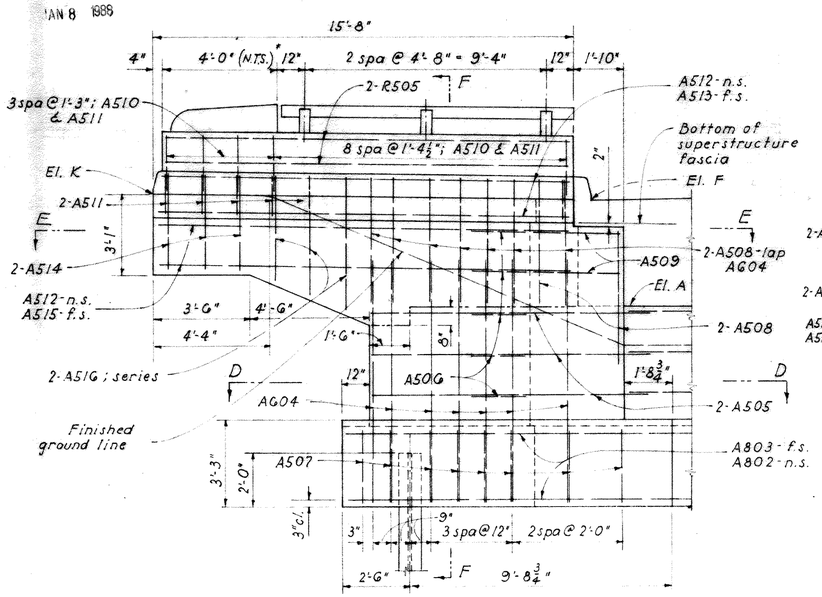
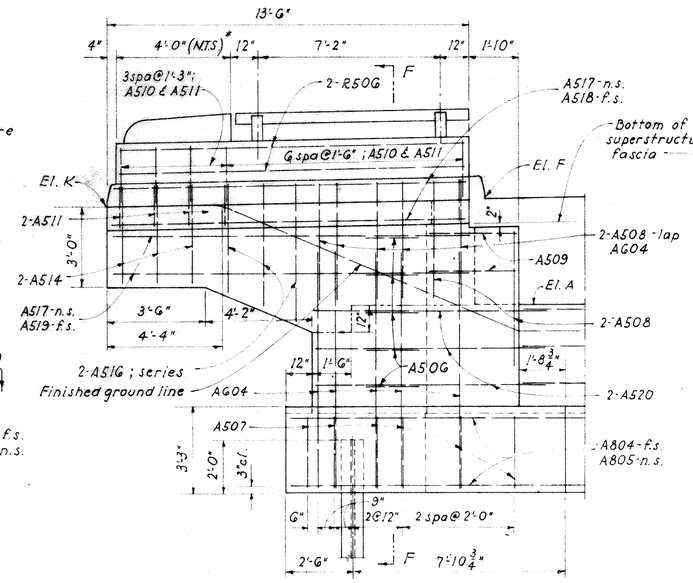
WAS-77-15.70
NOB-77-0.00

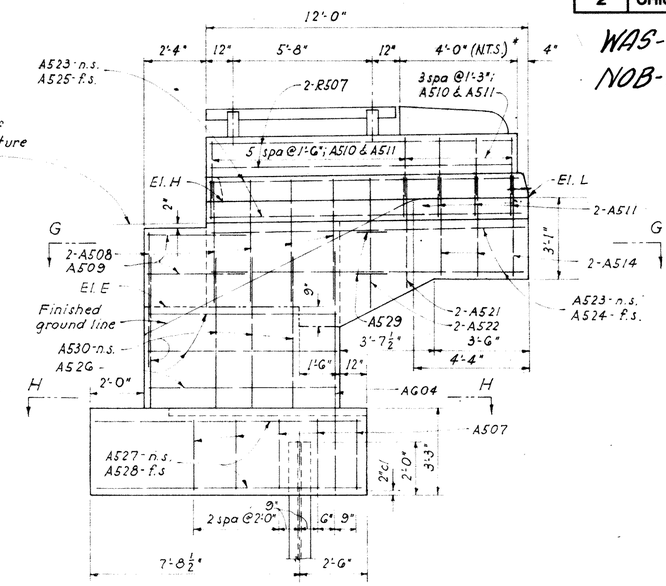


VIEW B-B; FWD ABUTS.

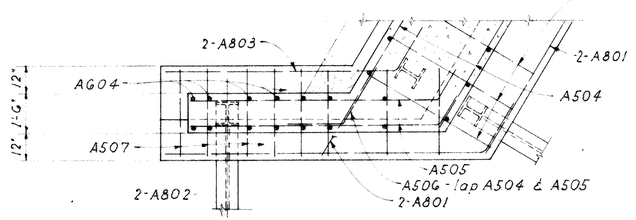


VIEW B-B; REAR ABUTS.

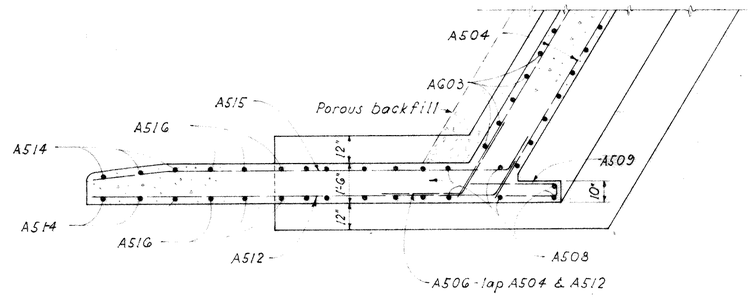
Plan of reinforcing is similar to Secs D-D & E-E of Fwd. Abut. wings



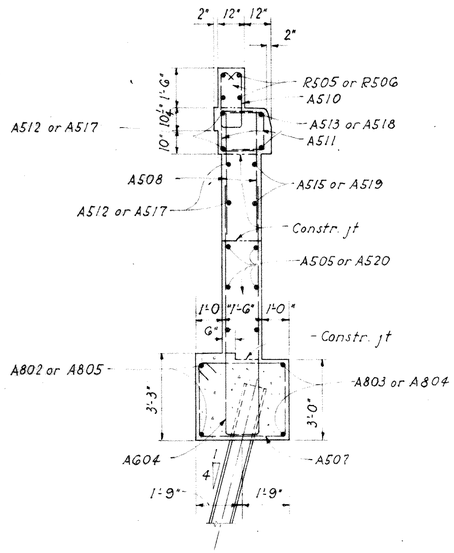
VIEW C-C



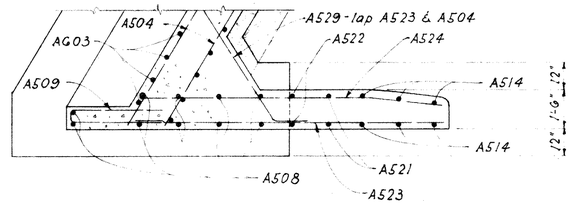
SECTION D-D



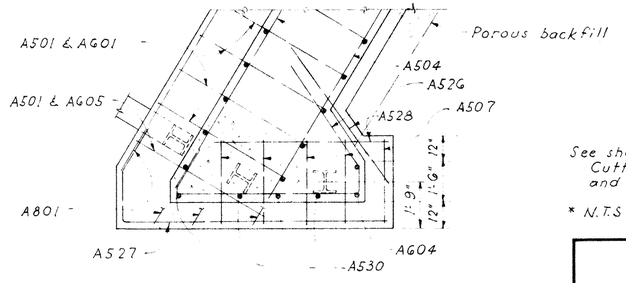
SECTION E-E



SECTION F-F



SECTION G-G



SECTION H-H

See sheet 328 for Cutting plane for VIEW B-B & C-C and ELEVATION TABLE

* N.T.S. - Not to scale

4

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

4/7

ABUTMENT DETAILS

BRIDGE NO. NOB-77-0136 L&R OVER C.R. 2

STA 72+36.03
73+78.78

NOBLE COUNTY

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
RAY	e		J.D.R	BFG	3-10-65	

MICROFILMED
JAN 8 1969

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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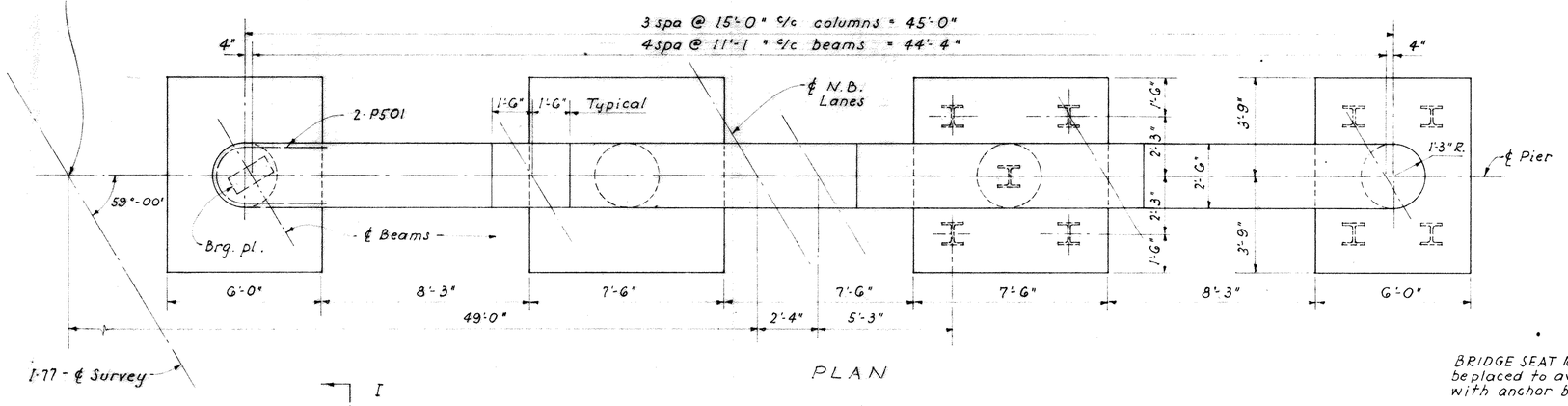
WAS-77-15.70
NOB-77-0.00

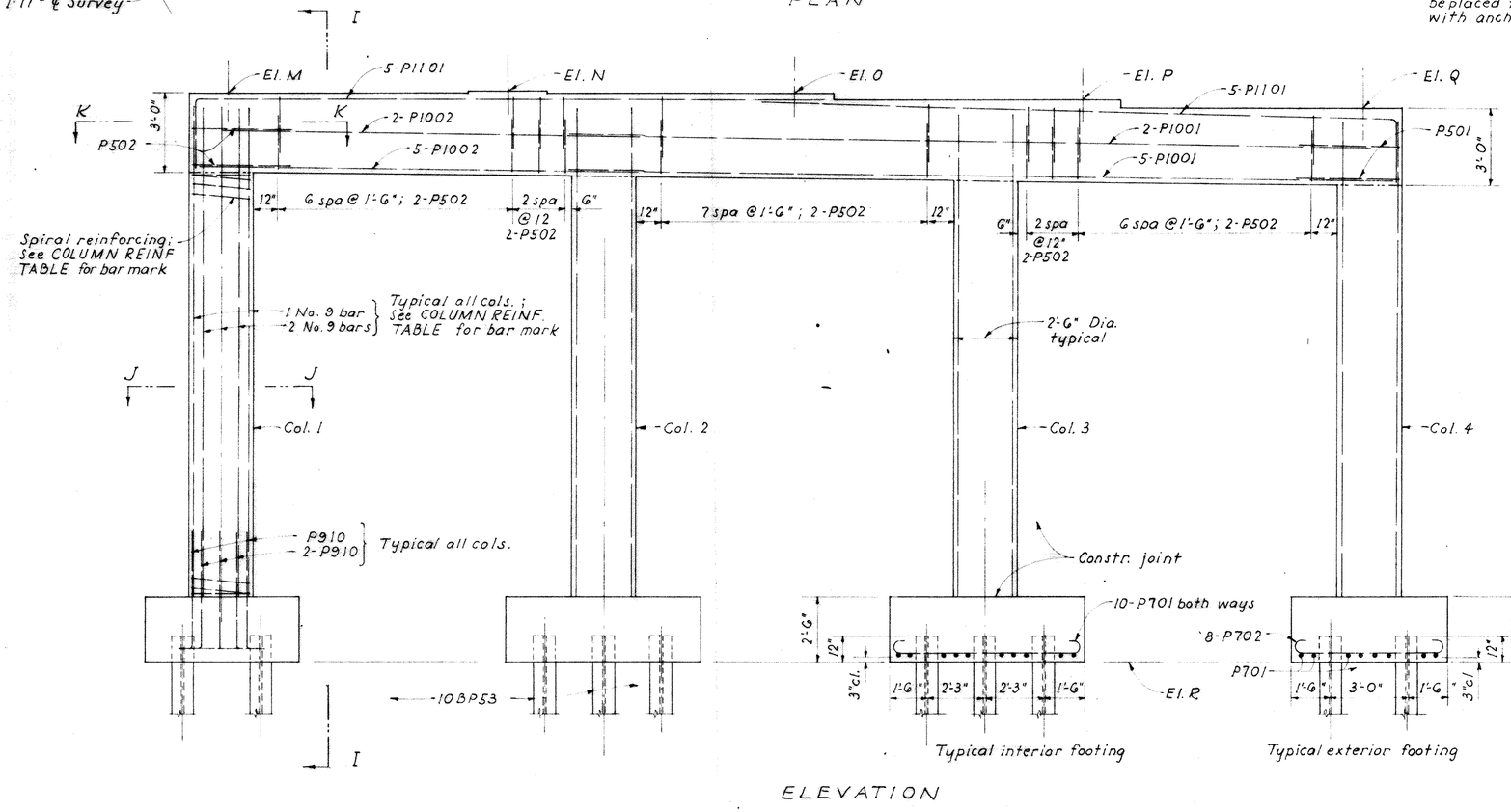
Rear Piers - Sta 72+77.15 } Symmetrical about this point by rotation
Fwd. Piers - Sta 73+32.15 }



PLAN

ELEVATION TABLE				
ELEV.	Fwd. Piers		Rear Piers	
	Left	Right	Left	Right
M	715.27	714.68	714.22	713.63
N	715.53	714.71	714.48	713.67
O	715.72	714.69	714.68	713.64
P	715.69	714.43	714.65	713.38
Q	715.65	714.17	714.61	713.12
R	691.5	691.5	690.5	692.0

COLUMN REINFORCING TABLE					
Reinf.	Col.	Fwd. Piers		Rear Piers	
		Left	Right	Left	Right
Vert.	1	P901	P903	P901	P907
	2	P902	P903	P902	P907
	3	P902	P904	P902	P908
	4	P902	P905	P906	P909
Spiral	1	P402	P403	P402	P405
	2	P402	P403	P402	P405
	3	P401	P404	P401	P406
	4	P401	P404	P401	P406

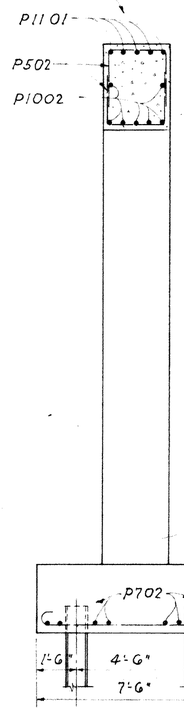


ELEVATION

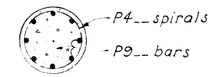
Typical interior footing

Typical exterior footing

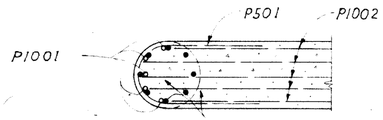
BRIDGE SEAT REINFORCING shall be placed to avoid interference with anchor bar holes



SECTION I-I



SECTION J-J



SECTION K-K

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

5/7

PIER DETAILS

BRIDGE NO NOB-77-0136 L&R OVER C.R.2

NOBLE COUNTY

STA. 72 + 36.03
73 + 78.78

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
Ray			J.D.R.	BFG	3-10-65	

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JAN 8 1969

SHEET NO.	STATE	PROJECT	
2	OHIO		

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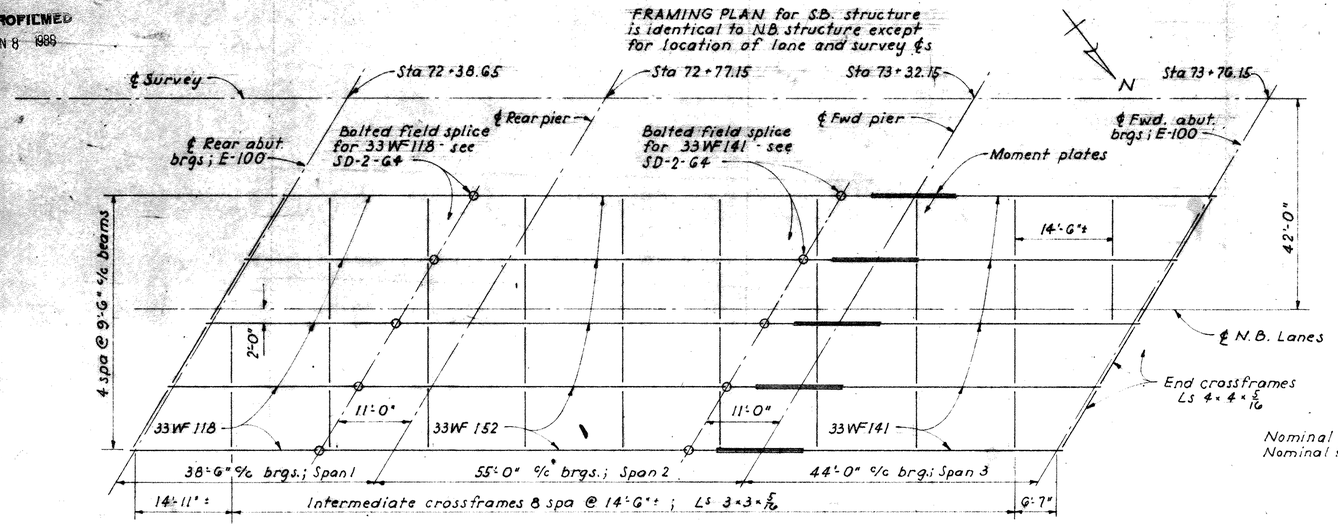
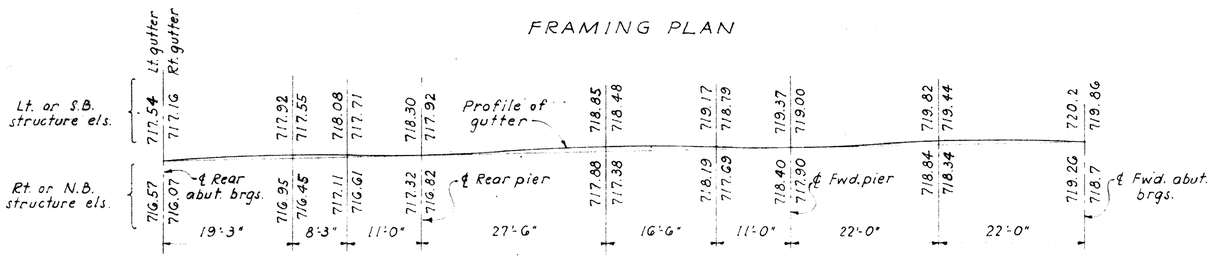
WAS-77-15.70
NOB-77-0.00

FRAMING PLAN for S.B. structure is identical to N.B. structure except for location of lane and survey ℄s

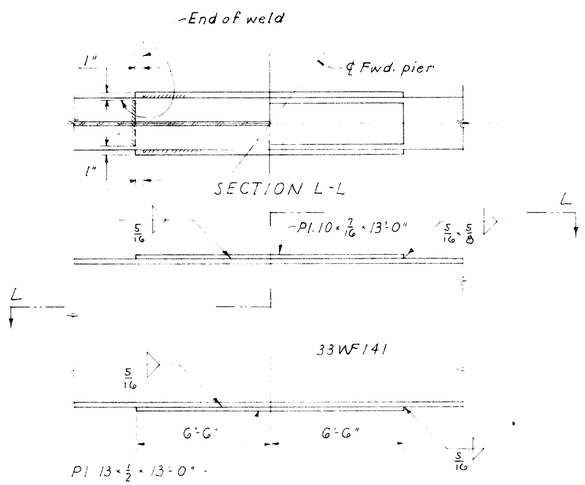


FRAMING PLAN

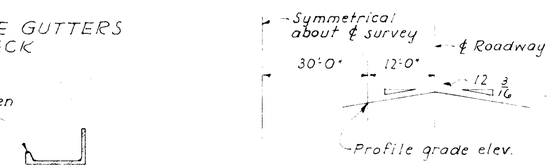


ELEVATIONS* FOR BULB ANGLE GUTTERS PRIOR TO CONCRETING DECK

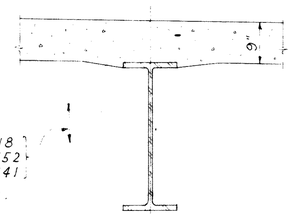
* Elevations are given for this point



MOMENT PLATE DETAIL
(Required at forward pier only)



ROADWAY PROFILE



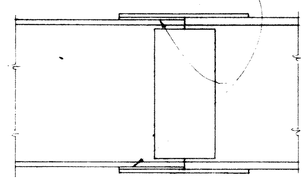
SLAB DEPTH OVER BEAMS

TRANSVERSE SECTION OF SUPERSTRUCTURE shall be as shown on CSB-3-G3 sheet 3 except slab depth over beams and parapet and railing details. Railing and parapet details shall be as shown on BR-1-G4 sheet 1.

DEAD LOAD DEFLECTION					
SPAN →	1		2		3
POINT →	Midpoint	Splice	Midpoint	Sptice	Midpoint
Due to wt. of steel	.01"	.01"	.03"	.02"	.02"
Due to remaining D.L	.09"	.07"	.20"	.12"	.16"
Total	.10"	.08"	.23"	.14"	.18"

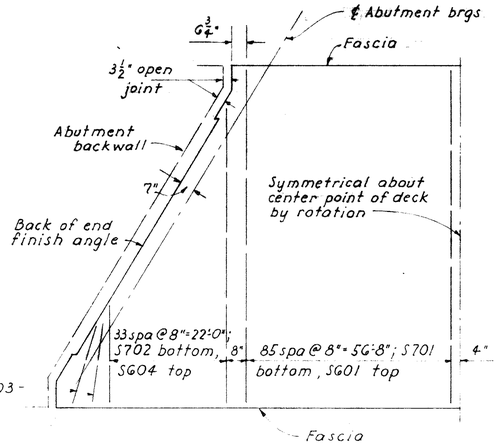
No shop camber is required.

Nominal fills 10 x 5/16 x 0'-10 3/4" for 33WF118 splice
Nominal fills 10 x 1/8 x 1'-2 1/4" for 33WF141 splice

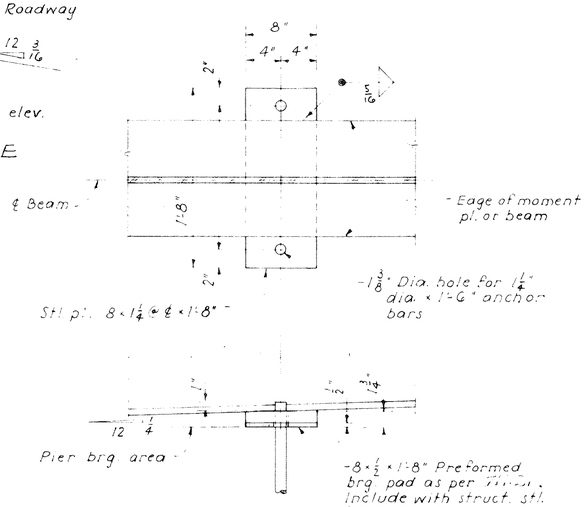


Additional splice details are shown on SD-1-G4

NOMINAL FILLS FOR BOLTED FIELD SPLICES



PLAN OF TRANSVERSE DECK REINFORCING



PIER BEARING DETAILS

ABUTMENT BEARINGS shall be E-100 as shown on FSB-1-G2

See CSB-3-G3 sheet 3 for deck details

See BR-1-G4 for end post, parapet and Type 1 railing details

See FSB-1-G2 for abutment brg. details

See SD-1-G3 for details of:
Interior and end crossframes
End dams
Gutters and scuppers
Curb plates

See SD-2-G4 for bolted field splice details

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STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

SUPERSTRUCTURE DETAILS

BRIDGE NO. NOB-77-0136 L&R OVER CR 2

NOBLE COUNTY — STA. 72+36.03 / 73+78.78

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
Ray	"		DR	BFG	3-10-65	

MICROFILMED
JAN 8 1988

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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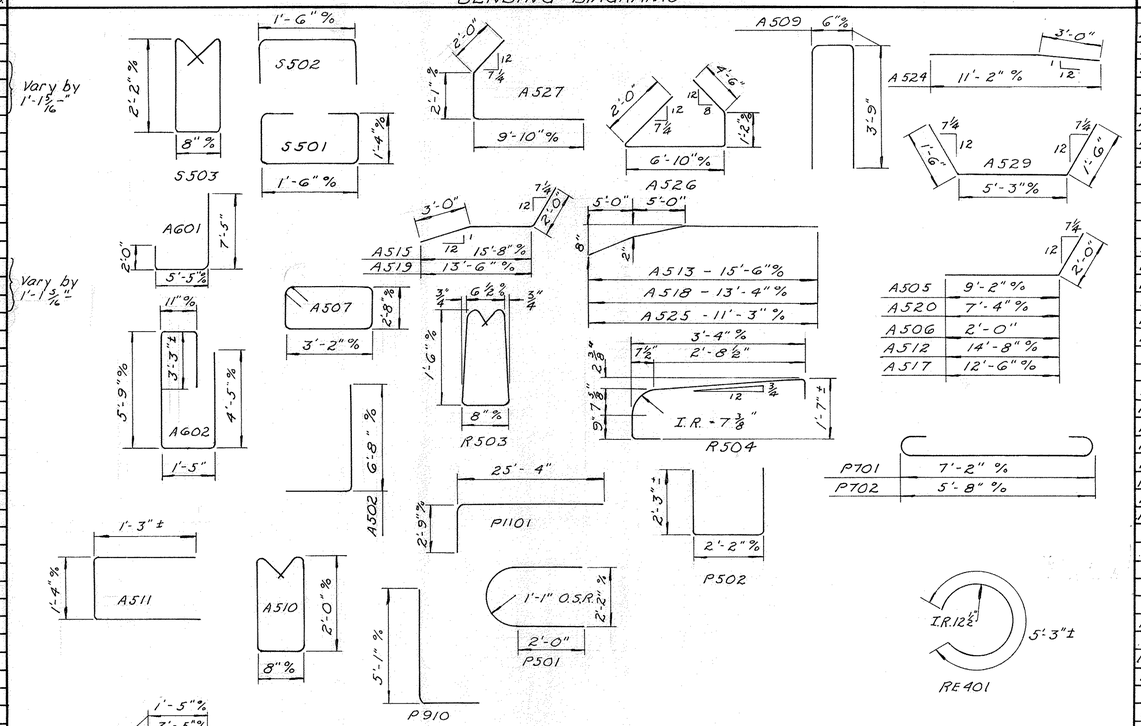
WAS-77-15.70
NOB-77-0.00

REINFORCING STEEL LIST

MARK	NO.	LENGTH	WEIGHT	SHP.
Superstructure				
S701	344	41'-8"	29,297	S
S702	4 series of 34	40'-5" to 3'-9"	6,139	S
S703	16	3'-0"	98	S
SG01	344	41'-8"	21,329	S
SG02	632	36'-2"	34,332	S
SG03	120	22'-0"	3,965	S
SG04	4 series of 34	40'-5" to 3'-9"	4,511	S
S501	372	4'-11"	1908	B
S502	372	2'-6"	970	B
S503	372	5'-7"	2,166	B
Abutments				
A801	56	26'-6"	3,962	S
A802	4	14'-4"	153	B
A803	4	11'-0"	117	B
A804	4	9'-2"	98	B
A805	4	12'-6"	133	B
A601	124	14'-6"	2701	B
A602	112	15'-1"	2537	B
A603	76	12'-7"	1436	B
A604	28	19'-8"	827	B
AG05	4	9'-1"	55	B
A501	128	9'-2"	1,224	B
A502	128	7'-2"	957	B
A503	128	7'-8"	1,024	B
A504	112	25'-0"	2,920	S
A505	12	11'-1"	139	B
A506	20	4'-0"	83	B
A507	48	12'-2"	609	B
A508	104	4'-4"	470	S
A509	16	7'-9"	129	B
A510	80	5'-3"	438	B
A511	160	3'-7"	598	B
A512	8	16'-8"	139	B
A513	4	15'-8"	65	B
A514	48	3'-6"	175	S
A516	9 Series of 3 Bars	3'-9" to 5'-0"	110	B
A518	4	13'-6"	56	B
A519	4	15'-5"	64	B
A520	12	9'-3"	116	B
A521	8	4'-0"	33	S
A522	8	4'-8"	39	S
A523	16	11'-6"	192	S
A524	8	11'-2"	93	B

BENDING DIAGRAMS



BAR SIZE is indicated in the bar mark. The first digit where three digits are used, and the first two digits where four are used, indicate the bar size number. For example, A801 is a No. 8 size bar and P1101 is a No. 11 size.

SPIRAL REINFORCING BARS: The "Length" shown in the steel list for the spiral bars is the distance from the top of the footing to the bottom of the pier cap.

The "No of Turns" shown is the "Length" divided by the pitch, plus 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 509. 1 1/2 closed coils shall be provided at the ends of each spiral unit.
Three steel channel, tee or angle spacers, weighting approximately 0.68 lb. per lin. ft. 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 lb. per lin. ft., will be paid for as reinforcing steel and is included in the tabulated quantity of spiral bars.

MARK	NO	LENGTH	WEIGHT	SHP.
Abutments Con't				
A525	8	11'-3"	94	B
A526	12	14'-3"	178	B
A527	8	13'-9"	115	B
A528	8	6'-6"	54	S
A529	8	8'-2"	68	B
A530	16	6'-5"	107	S
A515	4	17'-7"	73	B
A517	8	14'-6"	121	B
Railing				
R501	128	14'-1"	—	S
R502	32	11'-5"	—	S
R503	24	4'-2"	—	B
R504	16	5'-4"	—	B
R505	8	15'-0"	—	S
R506	8	12'-10"	—	S
R507	16	11'-4"	—	S
Replacement Bars				
RE1101	1	7'-6"	—	S
RE1001	1	7'-2"	—	S
RE901	1	6'-10"	—	S
RE801	1	6'-6"	—	S
RE701	3	6'-2"	—	S
REG01	4	5'-11"	—	S
RE501	1	5'-7"	—	S
RE401	1	5'-3"	—	B
Piers				
P1101	40	27'-10"	5915	B
P1001	28	32'-4"	3896	S
P1002	28	18'-0"	2169	S
P901	16	20'-10"	1133	S
P902	40	21'-4"	2901	S
P903	16	20'-4"	1106	S
P904	8	20'-1"	546	S
P905	8	19'-10"	539	S
P906	8	21'-3"	578	S
P907	16	18'-9"	1020	S
P908	8	18'-6"	503	S
P909	8	18'-3"	496	S
P910	128	6'-1"	2647	B
P701	224	8'-10"	4044	B
P702	64	7'-4"	959	B
P501	16	7'-3"	121	B
P502	208	6'-5"	1392	B

Spiral Steel

Mark	No.	Length	weight	Core Dia.	No Turns	Pitch
P401	4	18'-6"	1078	26"	52	4 1/2"
P402	4	18'-2"	1058	26"	51	4 1/2"
P403	2	17'-6"	517	26"	50	4 1/2"
P404	2	17'-2"	507	26"	49	4 1/2"
P405	2	16'-0"	473	26"	46	4 1/2"
P406	2	15'-8"	465	26"	45	4 1/2"

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

REINFORCING STEEL LIST

BRIDGE NO. NOB-77-0136 L&R
OVER C.R. 2
NOBLE COUNTY
STA 72+36.03
73+78.78

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
Ray		P.K.I.	J.D.R.	BFG 3-10-65		

TE-95
400-1-63

GENERAL INFORMATION

INTRODUCTION

The project consists of the construction of a section of IR 77, approximately 2.5 miles in length, beginning approximately 0.5 mile south of Macksburg, 1000 feet south of existing USR 21, extending north and terminating approximately 0.25 mile north of Dexter City. The alignment generally parallels existing County Road 8. Also included in this report are the profiles of the proposed Twp. Rd. 301 interchange and the associated ramps, as well as a short section of Relocated USR 21 and Co. Rd. 8 (Connector).

The proposed grade indicates the following:

Mainline (IR 77) - cuts, maximum 125 feet in depth; embankments, maximum 58 feet in height.

Twp. Rd. 301 Interchange

Twp. Rd. 301 - cuts, maximum 2 feet in depth; fill embankment, maximum 14 feet in height.

Ramp A - cuts, maximum 22 feet in depth; fill embankments, maximum 55 feet in height.

Ramp B - cuts, maximum 70 feet in depth; fill embankments maximum 10 feet in height.

Ramp C - cuts, maximum 7 feet in depth; fill embankments, maximum 17 feet in height.

Ramp D - cuts, maximum 70 feet in depth; fill embankment, maximum 23 feet in height.

Relocated USR 21 - fill embankments, 12 feet in height.

Co. Rd. 8 (Connector) - cut, maximum 9 feet in depth; fill embankments, maximum 33 feet in height.

GEOLOGY AND OBSERVATIONS OF THE PROJECT

The alignment incepts on the upland portion of the highly dissected Allegheny Plateau, and traverses the upland portion and several deep narrow valleys, descends onto and crosses a flood plain of a tributary of West Fork of Duck Creek, ascends the steep west valley wall, descends and crosses West Fork of Duck Creek, ascends the steep east valley wall, descends onto the flood plain of West Fork of Duck Creek, ascends the steep east valley wall, descends onto the flood plain and crosses West Fork of Duck Creek, again ascends and terminates on the upland portion of the valley of West Fork of Duck Creek. Generally, shallow residual soil cover and moderately deep alluvium overlies bedrock, comprised of indurated clay, shale, sandstone, limestone and associated coal and clay, of Pennsylvanian age.

EXPLORATION

The exploration was made by means of truck-mounted mechanical earth auger, hand auger (in areas of difficult access), and rotary type-drill rigs, during the months of September and October, 1963, and April and May, 1964. No exploration was made on Twp. Rd. 301 or Relocated USR 21, however, no foundation problems are anticipated.

INVESTIGATIONAL DISCLOSURES

Materials occurring immediately below proposed grade consist of silt clays and clays in the A-6 and A-7-6 classifications, generally having moisture contents in the lower portions of the plastic range, as well as bedrock.

Bedrock is anticipated to occur at the following approximate locations:

Mainline (IR 77)

Stations 836+00 to 840+50 - shale, sandstone, and indurated clay at the right grade, in the right and median ditch and right backslope.

Stations 840+50 to 842+00 - shale, sandstone, and indurated clay in the right ditch and backslope.

Stations 844+00 to 846+50 - shale and sandstone at the right grade and portion of left grade in the right and median ditches and lower portion of the right backslope; shale, indurated clay, limestone, and some coal in the upper portion of the right backslope.

Stations 846+50 to 851+00 - shale and sandstone at both grades, in the ditches and lower portion of both backslopes; shale indurated clay, limestone, and some coal in the upper portion of the right backslope.

Stations 851+00 to 851+50 - shale and sandstone at the right grade, in the median and right ditches and lower portion of the right backslope; shale indurated clay, limestone and some coal in the upper portion of the right backslope.

Stations 871+00 to 871+50 - indurated clay in the left ditch and left backslope.

Stations 871+50 to 890+00 - indurated clay at left grade, in the left ditch and occasionally in the median ditch, and lower portion of the left backslope; limestone, shale, indurated clay, and sandstone in the upper portion of the left backslope.

Stations 903+50 to 904+50 - indurated clay at the right grade, in the right ditch, and right backslope.

Stations 904+50 to 914+00 - indurated clay at both grades, in the ditches, and lower portions of the backslopes; limestone, sandstone, and shale in the upper portions of the backslopes.

Stations 914+00 915+50 - indurated clay at both grades, in the ditches and lower portion of the right backslope; limestone, sandstone, and shale in the upper portion of the backslope.

Stations 915+50 to 916+50 - indurated clay at the right grade, in the right ditch, and right backslope.

Stations 10+00 to 11+00 - indurated clay at the right grade, in the right ditch, and right backslope.

Stations 11+00 to 23+75 - indurated clay at both grades, in the ditches, and lower portion of the backslopes; limestone, shale and indurated clay in the upper portion of the backslope.

Stations 23+75 to 24+50 - indurated clay at both grades, in the ditches, and right backslope.

Stations 24+50 to 37+00 - possible shale and indurated clay in the right ditch and lower-most portion of the right backslope.

Stations 77+50 to 78+00 - shale and indurated clay at both grades and in the ditches.

Stations 78+00 to 86+00 - shale and indurated clay at both grades, in the ditches, and lower portions of the backslopes; sandstone, indurated clay, and shale in the upper portions of the backslopes.

Ramp A

Stations 0+00 to 0+50 - shale and sandstone at grade, in the ditches, and right backslope.

Ramp B

Stations 20+50 to 26+00 - indurated clay at grade, in the ditches, and lower portions of the left backslope; limestone, shale, indurated clay, and sandstone in the upper portion of the left backslope.

LEGEND FOR PROJECT AVERAGE RESULTS OF TESTS — 434 SAMPLES TESTED

DESCRIPTION	H.R.B. CLASS	OHIO CLASS	% AGG	% C SAND	% F SAND	% SILT	% CLAY	LIQUID LIMIT	PLASTICITY INDEX	WATER CONTENT	SAMPLES TESTED
Gravel and/or stone fragments with sand	A-1-b(0)	A-1-b	52	12	13	12	10	NP	NP	18	6
Gravel and/or stone fragments with sand and silt	A-2-4(0)	A-2-4	54	8	12	14	12	22	4	19	17
Gravel and/or stone fragments with sand, silt, and clay	A-2-6(0)	A-2-6	66	5	6	9	14	38	15	18	17
Sandy silt	A-4(1)	A-4a	10	7	28	29	26	24	7	25	30
Silt	A-4(8)	A-4b	0	3	12	55	30	31	9	31	4
Silt and clay	A-6(8)	A-6a	16	3	10	34	37	34	12	21	115
Silty clay	A-6(10)	A-6b	16	4	6	32	42	39	16	19	41
Elastic clay	A-7-5(15)	A-7-5	23	2	2	32	41	53	22	28	10
Clay	A-7-6(14)	A-7-6	17	2	4	30	47	47	22	23	136
Bouldery zone				VISUAL CLASSIFICATION							
Coal				VISUAL CLASSIFICATION							
Coal blossom				VISUAL CLASSIFICATION							
Clay bedrock				VISUAL CLASSIFICATION							2
Weathered indurated clay				VISUAL CLASSIFICATION							62
Weathered shale				VISUAL CLASSIFICATION							19
Weathered sandstone				VISUAL CLASSIFICATION							8
Indurated clay				VISUAL CLASSIFICATION							3
Shale				VISUAL CLASSIFICATION							14
Sandstone				VISUAL CLASSIFICATION							
Limestone				VISUAL CLASSIFICATION							
Various other materials				VISUAL CLASSIFICATION							

Sod and/or Topsoil =X'= Approximate depth.

Auger boring - plan view.

Drive sample and/or core boring - plan view.

Auger boring plotted to vertical scale only.

Drive sample and/or core boring plotted to vertical scale only.

Water content nearly equal to or greater than liquid limit.

Indicates a non-plastic material with a high water content.

W Free water.

Number of blows for "Standard Penetration" test.
X=number of blows for first 6 inches.
Y=number of blows for second 6 inches.

B Indicates broken rock interval.

NOTE: Figures beside borings indicate water content in percent. e.g. 15

Ramp D

Stations 0+00 to 2+50 - shale and sandstone at grade, in the ditches, and lower portion of the right backslope; shale, indurated clay, limestone, and some coal in the upper portion of the right backslope.

Material occurring in the embankment foundation areas are predominantly comprised of sandy silts, silt clays and clays, in the A-4a, A-6 and A-7-6 classification, generally having high moisture contents or moisture contents in the upper portion of the plastic range as well as containing various amounts of organic material.

The sidehill embankment foundation areas comprise shallow soil cover overlying sloping bedrock surface throughout the project.

SOIL PROFILE
WASHINGTON-NOBLE COS.
WAS - IR 77 - 15.70
NOB - IR 77 - 0.00
OHIO DEPARTMENT OF HIGHWAYS
SOIL PROFILE
1
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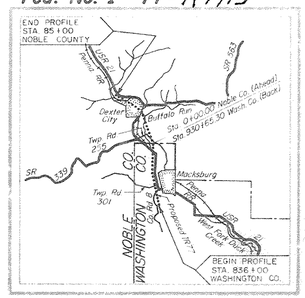
NOTE: INFORMATION SHOWN ON THIS SOIL PROFILE WAS OBTAINED FOR THE USE OF THE DEPARTMENT OF HIGHWAYS IN DESIGNING THE PROJECT AND IS MADE AVAILABLE FOR INFORMATION ONLY. IT IS NOT TO BE CONSIDERED A PART OF THE PLANS OR CONTRACT. CONDITIONS MAY VARY FROM THOSE INDICATED.

Fed. No. I - 77 - 1(7)15



LOCATION MAP

Recon - J.S.M - 9/26/63

Drilling - Auger - A.J.P., T.R.S. - 9/30/63 - 10/11/63, 10/29/63, 4/16/64, 4/17/64, 4/21/64, 5/5/64, 5/6/64
Core - J.R.V., J.H.S., A.V., W.L.T - 10/16/63 - 10/29/63, 4/30/64 - 5/1/64, 5/6/64 - 5/13/64, 5/27/64 - 5/29/64

Drafting - R.C.B., R.L.M. - 6/25/64

SOIL PROFILE
WASHINGTON - NOBLE COS.
WAS - IR77 - 15.70
NOB - IR77 - 0.00
OHIO STATE HIGHWAY TESTING LABORATORY
1600 W. BROAD ST. COLUMBUS 4, OHIO

2/46

SUMMARY OF SOIL TEST DATA (Cont'd)

NOTE: NP shown in Liquid Limit and Plasticity Index columns indicates that the material is non-plastic.
*Denotes sample taken at or near grade.

STATION & OFFSET		DEPTH FROM-TO	% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	% W.C.	SHTL CLASS.
836+00	CL	0.0-1.0	Brown Weathered Sandstone							15	Visual*
836+50	165'Lt	0.0-5.0	34	6	5	22	33	37	15	13	A-6a
		5.0-10.0	14	4	3	44	35	34	12	17	A-6a
		10.0-15.0	53	5	5	15	22	-	-	15	A-6a
		15.0-20.0	Red Weathered Indurated Clay							16	Visual
		20.0-25.0	Red Indurated Clay							10	Visual
836+50	CL	0.0-1.5	Brown Broken Clay Shale							-	Visual*
836+75	85'Lt	0.0-3.0	Brown Weathered Shale							12	Visual
839+00	140'Lt	0.0-5.0	0	2	6	51	41	35	12	22	A-6a
		5.0-8.0	5	5	3	34	53	40	15	17	A-6a
		8.0-13.0	Reddish-Brown Broken Clay Shale							17	Visual
		13.0-18.0	Purple Weathered Indurated Clay							10	Visual
		18.0-23.0	Purple Weathered Indurated Clay							10	Visual
839+00	80'Lt	0.0-5.0	35	7	4	26	28	38	13	17	A-6a
		5.0-8.5	Brown Weathered Siliceous Shale							7	Visual
839+00	CL	0.0-3.0	Brown Weathered Sandstone							9	Visual
841+00	CL	0.0-1.5	Brown Weathered Siliceous Shale							10	Visual
842+70	CL	0.0-2.0	0	3	7	32	58	48	21	29	A-7-6
		2.0-5.5	41	3	3	25	28	38	16	19	A-6b
		5.5-8.0	0	1	1	36	62	41	17	24	A-7-6
		8.0-12.0	70	3	4	11	12	39	21	21	A-2-6
		12.0-14.0	Red Weathered Indurated Clay							8	Visual
		14.0-16.0	Red Indurated Clay							11	Visual
844+00	75'Lt	0.0-3.0	Brown Weathered Sandstone							6	Visual
852+00	50'Lt	0.0-6.0	0	0	1	33	66	46	19	23	A-7-6
		6.0-12.0	Red Weathered Indurated Clay							14	Visual
		12.0-18.0	Red Weathered Indurated Clay							16	Visual
852+10	15'Lt	0.2-3.0	0	1	1	34	64	42	17	21	A-7-6
		3.0-7.0	0	4	3	32	61	38	17	17	A-6b
		7.0-12.5	Brownish-Gray Weathered Indurated Clay							15	Visual
		12.5-18.0	Red Weathered Indurated Clay							13	Visual
		18.0-22.0	Red Weathered Indurated Clay							11	Visual
		22.0-23.5	Red Broken Clay Shale							10	Visual
854+00	150'Lt	0.0-6.0	41	5	12	21	21	34	13	25	A-6a
		6.0-11.0	0	1	4	43	47	44	19	29	A-7-6
		11.0-13.0	39	6	16	21	18	29	7	15	A-4a
		13.0-15.0	Red Silty Clay and Stone Fragments							-	Visual
854+00	38'Lt	0.3-2.0	0	2	5	46	47	37	12	19	A-6a
		2.0-7.0	0	4	3	41	52	39	17	17	A-6b
		7.0-11.5	52	4	4	20	20	30	11	11	A-6a
854+00	CL	0.3-5.0	0	2	2	49	47	35	12	19	A-6a
		5.0-9.5	38	4	6	22	30	33	12	15	A-6a
857+00	100'Lt	0.0-5.0	13	10	6	17	54	40	16	16	A-6b
		5.0-10.0	13	17	7	34	29	39	16	13	A-6b
		10.0-15.0	24	9	9	30	28	36	13	14	A-6a
		15.0-20.0	28	8	5	31	28	38	15	15	A-6a
		20.0-25.0	20	8	5	29	38	40	16	17	A-6b
		25.0-26.0	Gray Weathered Indurated Clay							11	Visual
857+00	CL	0.3-5.0	0	4	2	40	54	40	18	19	A-6b
		5.0-10.0	0	5	3	37	55	38	14	18	A-6a
		10.0-15.5	0	9	4	37	50	37	16	16	A-6b
860+60	CL	0.0-6.0	0	5	5	41	49	42	15	20	A-7-6
		6.0-11.0	51	2	3	22	22	45	18	17	A-7-6
		11.0-15.0	52	5	6	17	20	33	11	13	A-6a
862+50	CL	0.3-4.0	50	5	9	16	20	37	12	18	A-6a
		4.0-10.0	71	6	5	7	11	43	20	16	A-2-7
		10.0-15.0	77	3	6	5	9	33	13	22	A-2-6
		15.0-20.0	70	3	6	9	10	30	9	18	A-2-4
		20.0-24.0	72	5	6	7	10	31	11	19	A-2-6
865+50	CL	0.3-3.0	61	3	5	12	19	40	18	14	A-2-6
		3.0-5.0	65	11	6	5	13	37	12	19	A-2-6
		5.0-8.0	68	5	6	6	21	38	15	23	A-2-6
		8.0-14.0	0	2	7	45	46	36	14	24	A-6a
		14.0-21.0	66	2	4	14	14	27	8	20	A-2-4
		21.0-24.0	63	5	10	10	12	29	10	15	A-2-4
868+40	CL	0.0-3.0	70	5	4	7	14	39	13	12	A-2-6
		3.0-9.0	58	6	7	8	21	39	19	21	A-2-6
		9.0-15.0	69	6	6	6	13	37	15	22	A-2-6
		15.0-21.0	58	7	8	12	15	29	11	18	A-2-6
		21.0-24.0	60	2	3	18	17	35	13	18	A-2-6
870+00	25'Rt	0.4-4.0	69	4	8	8	11	39	16	12	A-2-6
		4.0-10.0	60	6	6	6	13	39	16	20	A-2-6
		10.0-16.0	54	3	5	14	24	43	24	23	A-7-6
		16.0-22.0	58	2	1	17	22	46	25	20	A-7-6
		22.0-27.0	33	3	2	21	41	36	13	14	A-6a
871+00	75'Rt	0.0-5.0	0	3	11	41	45	51	24	30	A-7-6
		5.0-9.0	0	3	12	39	46	46	20	28	A-7-6
		9.0-14.0	37	5	2	25	31	38	13	16	A-6a
		14.0-17.0	Gray Broken Clay Shale							15	Visual
		17.0-19.0	Gray Clay Bedrock							20	Visual
871+15	130'Lt	0.0-2.0	16	3	4	27	50	55	27	26	A-7-6
		2.0-7.0	Red Weathered Indurated Clay							17	Visual
		7.0-12.0	Red Weathered Indurated Clay							13	Visual
		12.0-17.0	Red Weathered Indurated Clay							10	Visual

STATION & OFFSET		DEPTH FROM-TO	% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	% W.C.	SHTL CLASS.
871+20	CL	0.2-5.0	21	2	2	17	58	49	23	16	A-7-6
		5.0-9.0	20	2	2	20	47	39	14	14	A-6a
		9.0-10.0	25	2	4	33	36	32	11	14	A-6a
873+00	275'Lt	0.0-3.0	0	1	1	34	64	53	24	26	A-7-6
		3.0-7.0	Reddish-Gray Weathered Indurated Clay							13	Visual
		7.0-10.0	Brown Weathered Shale							15	Visual
873+00	140'Lt	0.0-4.5	6	9	4	35	46	39	13	22	A-6a
873+50	65'Lt	0.3-1.5	56	1	1	13	29	54	26	25	A-7-6
		1.5-4.0	0	1	1	34	64	45	19	22	A-7-6
		4.0-10.0	Red Weathered Indurated Clay							13	Visual
		10.0-16.0	Red Weathered Indurated Clay							13	Visual
		16.0-18.0	Reddish-Gray Weatherec Indurated Clay							7	Visual
873+50	CL	0.3-3.5	39	2	3	16	40	48	23	25	A-7-6
		3.5-6.0	25	2	3	22	48	41	15	21	A-7-6
		6.0-11.0	26	1	2	31	40	35	13	14	A-6a
		11.0-15.0	Red Weathered Indurated Clay							8	Visual
		15.0-16.0	Red Weathered Indurated Clay							9	Visual
		16.0-21.5	Red Weathered Indurated Clay							9	Visual*
873+50	75'RT	0.3-5.0	40	2	2	16	40	50	25	23	A-7-6
		5.0-10.0	49	1	1	17	32	46	23	21	A-7-6
		10.0-11.0	39	2	2	14	43	58	33	25	A-7-6
876+00	75'Lt	0.3-3.0	44	1	1	18	36	-	-	28	A-7-6
		3.0-4.0	Sandstone Boulders							-	Visual
		4.0-10.0	36	2	4	19	39	49	22	24	A-7-6
		10.0-15.0	Red Weathered Indurated Clay							13	Visual
		15.0-19.0	Red Weathered Indurated Clay							12	Visual
876+00	CL	0.3-4.0	0	5	5	23	67	53	23	28	A-7-5
		4.0-9.0	41	3	3	20	33	46	20	22	A-7-6
		9.0-15.0	52	3	3	16	26	45	17	23	A-7-6
		15.0-17.0	0	2	6	23	64	44	18	24	A-7-6
		17.0-22.0	32	5	7	22	34	37	15	20	A-6a*
		22.0-27.0	34	2	2	30	32	33	12	13	A-6a*
876+00	75'Rt	0.3-6.0	43	1	4	19	33	41	20	22	A-7-6
		6.0-11.0	39	2	3	25	31	41	18	21	A-7-6
		11.0-17.0	50	0	4	21	25	34	11	21	A-6a
		17.0-22.0	41	5	3	24	27	33	11	17	A-6a
		22.0-26.0	50	1	3	3	43	35	14	18	A-6a
		26.0-28.0	52	3	4	5	36	35	12	19	A-6a
879+00	50'Lt	0.3-3.0	40	2	2	19	37	47	17	23	A-7-5
		3.0-5.0	61	2	1	13	23	49	18	24	A-7-5
		5.0-8.0	41	3	3	23	30	57	25	29	A-7-5
		8.0-11.0	47	4	1	18	30	48	18	25	A-7-5
		11.0-16.0	Red Weathered Indurated Clay							8	Visual*
		16.0-21.0	Red Weathered Indurated Clay							13	Visual*
879+00	CL	0.3-5.0	38	2	2	19	39	56	26	26	A-7-5
		5.0-9.0	40	3	3	18	36	49	23	19	A-7-6*
		9.0-11.0	32	1	1	24	42	52	27	23	A-7-6*
		11.0-15.0	45	3	2	17	33	49	25	23	A-7-6
		15.0-18.0	35	2	2	24	37	44	16	21	A-7-6
		18.0-20.0	56	5	1	18	20	38	15	20	A-6a
879+00	50'Rt	0.3-6.0	35	3	3	23	36	48	23	24	A-7-6*
		6.0-11.0	50	3	3	19	25	41	18	22	A-7-6
		11.0-14.0	55	1	1	15	28	52	28	23	A-7-6
		14.0-20.0	41	2	2	24	31	39	12	24	A-6a
		20.0-26.0	40	2	3	28	27	34	11	18	A-6a
		26.0-30.0	Gray Weathered Shale							13	Visual
882+00	75'Lt	0.3-4.0	45	2	2	16	31	48	24	25	A-7-6
		4.0-9.0	Red Weathered Indurated Clay							12	Visual
		9.0-15.0	Red Weathered Indurated Clay							11	Visual
		15.0-16.0	Red Clay Bedrock							18	Visual
		16.0-22.0	Red Weathered Indurated Clay							12	Visual
		22.0-23.0	Gray Indurated Clay							6	Visual
882+00	CL	0.3-2.0	44	7	5	22	22	-	-	22	A-6a
		2.0-3.0	47	3	1	31	32	47	22	23	A-7-6
		3.0-7.0	43	1	1	33	22	41	16	26	A-7-6*
		7.0-12.0	Brown Weathered Siliceous Shale							12	Visual*
		12.0-15.0	Red Weathered Indurated Clay							10	Visual
882+00	75'Rt	0.3-6.0	45	6	5	19	22	49	22	21	A-7-6
		6.0-11.0	45	3	3	18	31	46	21	19	A-7-6
		11.0-13.0	38	3	2	19	38	40	18	18	A-6b
		13.0-17.0	45	4	3	21	32	43	21	20	A-6a
		17.0-20.0	52	6	3	15	24	36	15	19	A-6a
884+00	CL	0.3-2.0	0	0	1	26	73	55	27	26	A-7-6
		2.0-5.5	0	3	2	40	55	36	15	18	A-6a
		5.5-11.0	Red Weathered Indurated Clay							12	Visual
		11.0-15.0	Red Weathered Indurated Clay							13	Visual
		15.0-19.0	Red Weathered Indurated Clay							12	Visual
		19.0-20.0	Reddish-Gray Weathered Indurated Clay							11	Visual*
885+00	75'Lt	0.3-3.0	Brown Weathered Siliceous Shale							13	Visual
		3.0-6.0	Brown Weathered Shale							13	Visual
		6.0-11.0	Red Weathered Indurated Clay							12	Visual
		11.0-16.0	Red Weathered Indurated Clay							11	Visual
		16.0-21.0	Red Weathered Indurated Clay							11	Visual
		21.0-26.0	Red Weathered Indurated Clay							10	Visual
		26.0-30.0	Red Weathered Indurated Clay							11	Visual
885+05	CL	0.3-4.0	0	2	8	35	55	40	20	19	A-6b
		4.0-7.0	48	2	7	18	25	39	16	19	A-6b
		7.0-12.0	0	1	1	40	58	39	17	18	A-6b
		12.0-18.0	Red Weathered Indurated Clay							14	Visual
		18.0-25.0	Red Weathered Indurated Clay							9	Visual
		25.0-27.0	Red and Gray Weathered Indurated Clay							10	Visual
		27.0-32.0	Red Weathered Indurated Clay							10	Visual

STATION & OFFSET		DEPTH FROM-TO	% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	% W.C.	SHTL CLASS.
886+95	CL	0.3-4.0	35	1	3	26	35	48	25	23	A-7-6
		4.0-8.0	33	2	3	24	38	37	13	20	A-6a
		8.0-13.0	0	2	2	41	55	38	16	20	A-6b
		13.0-18.0	26	1	1	34	38	35	13	17	A-6a*
		18.0-20.0	40	3	2	22	33	35	13	17	A-6a*
887+00	65'Lt	0.3-3.0	36	4	6	21	33	39	11	26	A-6a
		3.0-6.0	42	2	2	20	34	43	17	20	A-7-6
		6.0-9.0	37	3	3	24	33	38	16	19	A-6b
		9.0-15.0	54	3	2	16	25	38	19	12	A-6b
		15.0-19.0	Red Weathered Indurated Clay							11	Visual
		19.0-23.0	Red Weathered Indurated Clay							10	Visual
887+00	50'Rt	0.3-2.5	Shale Fragments & Boulders							-	Visual
		2.5-6.0	44	9	8	20	19	31	11	18	A-6a
		6.0-11.0	41	5	4	19	31	38	17	15	A-6b*
		11.0-14.5	45	5	4	16	30	42	22	16	A-7-6*
		14.5-16.0	45	1	1	19	34	37	14	17	A-6a
		16.0-19.0	38	2	2	20	38	38	15	15	A-6a
		19.0-21.0	Red and Gray Broken Shale							3	Visual
890+00	CL	0.3-3.0	Shale Fragments and Boulders							-	Visual
		3.0-7.0	42	0	3	24	31	47	20	22	A-7-6
		7.0-13.0	0	1	3	43	48	41	19	19	A-7-6*
		13.0-15.0	Red Weathered Indurated Clay							18	Visual*
		15.0-17.0	Brownish-Gray Weathered Indurated Clay							15	Visual
891+40	CL	0.3-3.0	0	3	9	46	42	39	16	19	A-6b*
		3.0-7.0	0	1	7	32	60	55	31	22	A-7-6
894+00	CL	0.5-4.0	16	2	14	32	36	32	11	12	A-6a
		4.0-6.0	0	0	23	19	58	31	11	25	A-6a
		6.0-8.0	0	0	16	48	36	35	15	28	A-6a
		8.0-14.0	0	0	23	46	31	32	11	28	A-6a
		14.0-17.5	Gray Weathered Shale							12	Visual
895+50	CL	0.4-6.0	0	0	4	50	46	44	20	17	A-7-6
		6.0-12.0	0	1	48	24	27	26	8	24	A-4a
		12.0-17.0	Brown and Gray Sandy Silty Clay							14	Visual
		17.0-19.0	Gray Silty Sand and Stone Fragments							-	Visual
		19.0-21.0	Red Silty Clay and Stone Fragments								Visual
898+00	CL	0.5-5.0	0	0	2	36	62	52	27	26	A-7-6
		5.0-11.0	0	1	5	48	46	42	20	24	A-7-6
		11.0-14.0	0	0	26	38	36	30	11	26	A-6a
		14.0-19.0	0	4	11	34	51	38	13	28	A-6a
		19.0-24.0	46	13	11	14	16	26	8	12	A-2-4
901+00	CL	0.5-4.0	13	8	10	31	38	39	17	16	A-6b
		4.0-10.0	26	0	2	29	43	50	27	27	A-7-6
		10.0-11.0	Brown Weathered Sandstone							11	Visual
903+60	CL	0.4-3.0	0	0	1	37	62	59	35	21	A-7-6*
		3.0-7.0	Red Weathered Indurated Clay							15	Visual*
		7.0-10.0	Red Weathered Indurated Clay							11	Visual
906+00	CL	0.0-1.0	Brown Weathered Sandstone							15	Visual
910+00	250'Lt	0.0-5.5	0	2	2	33	63	49	21	32	A-7-6
		5.5-6.5	Coal Blossom								Visual
		6.5-11.0	27	2	3	30	38	45	20	18	A-7-6
		11.0-16.0	29	8	5	22	36	49	27	35	A-7-6
		16.0-21.0	22	6	7	27	38	43	19	18	A-7-6
		21.0-26.0	0	2	3	40	55	34	14	12	A-6a
		26.0-30.0	Dark-Gray to Red Weathered Indurated Clay							9	Visual
913+50	28'Rt	0.0-2.0	Light-Brown Weathered Sandstone							6	Visual
916+00	CL	0.0-5.0	37	1	2	18	42	52	24	19	A-7-6
		5.0-9.0	28	3	2	30	37	38	16	15	A-6b
		9.0-13.0	23	1	1	34	41	40	15	16	A-6a*
		13.0-15.0	Red Weathered Indurated Clay							9	Visual*
916+55	CL	0.3-4.0	9	2	3	25	61	53	27	28	A-7-6*
		4.0-10.0	18	3	2	31	46	43	19	15	A-7-6
916+65	65'Rt	0.0-5.5	18	3	3	32	44	19	19	19	A-7-6
		5.5-10.0	13	2	2	27	56	46	17	16	A-6b
		10.0-15.5	21	2	2	27	48	42	19	14	A-7-6*
919+00	CL	0.4-5.0	40	4	3	20	33	49	23	20	A-7-6
		5.0-7.0	0	1	2	32	65	57	29	25	A-7-6
		7.0-9.0	24	5	3	29	39	46	20	23	A-7-6
		9.0-14.0	28	1	2	27	42	43	17	24	A-7-6
		14.0-17.0	47	9	3	13	22	43	19	21	A-7-6
921+00	CL	0.5-5.0	0	0	2	24	49	42	16	34	A-7-6
		5.0-10.0	0	1	2	24	45	39	17	28	A-4a
		10.0-17.0	0	3	2	27	42	37	9	27	A-4a
		17.0-20.0	12	6	5	28	29	32	7	20	A-4a
		20.0-24.0	65	6	4	11	13	28	4	17	A-2-4
924+00	CL	0.4-3.0	0	0	4	50	46	44	20	17	A-7-6
		3.0-6.0	0	0	6	51	43	38	12	26	A-6a
		6.0-11.0	0	0	1	51	48	42	18	28	A-6a
		11.0-16.0	0	0	28	40	32	29	11	31	A-6a
		16.0-18.0	0	2	38	36	24	34	11	31	A-6a
		18.0-21.0	45	8	16	15	16	23	3	20	A-1-b
		21.0-26.0	26	5	17	28	24	27	8	24	A-4a
927+00	CL	0.4-5.0	0	1	1	48	50	39	21	24	A-7-6
		5.0-11.0	0	0	1	46	53	45	25	26	A-7-6
		11.0-16.0	0	0	23	37	37	36	16	35	A-7-6
		16.0-21.0	56	14	11	11	8	45	13	31	A-6a
		21.0-28.0						NP	NP	13	A-1-b

STATION & OFFSET		DEPTH FROM-TO	% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	% W.C.	SHTL CLASS.
0+15	15'Rt	0.3-4.0	0	0	4	51	45	38	11	18	A-6a
		4.0-9.0	0	1	11	50	38	37	11	30	A-6a
		9.0-15.0	0	1	42	30	27	35	14	55	A-6a
		15.0-20.5	11	9	31	27	22	NP	NP	34	A-4a
		20.5-23.0	19	11	25	23	22	27	7	15	A-4a
3+00	CL	0.5-5.0	0	0	2	55	43	40	15	24	A-6a
		5.0-9.0	0	0	21	46	33	36	11	32	A-6a
		9.0-14.0	0	0	26	39	35	29	11	31	A-6a
		14.0-17.0	0	14	30	29	18	25	4	31	A-4a
		17.0-20.0	13	6	29	27	25	NP	NP	14	A-4a
		20.0-25.0	45	16	17	13	9	NP	NP	17	A-1-b
		25.0-28.5	10	6	11	44	29	30	11	15	A-6a
6+00	CL	0.5-5.0	0	2	4	36	58	52	25	23	A-7-6
		5.0-11.0	0	1	4	39	56	45	21	23	A-7-6
		11.0-15.0	0	0	6	47	47	40	18	24	A-6b
		15.0-17.0	0	2	30	32	36	33	11	36	A-6a
		17.0-18.0	44	9	15	20	12	NP	NP	15	A-2-4
7+20	CL	0.3-5.0	15	5	6	41	33	39	11	14	A-6a
		5.0-8.0	44	7	5	19	25	41	17	17	A-7-6
		8.0-10.0	56	10	5	12	17	41	16	17	A-2-7
8+00	CL	0.0-4.0	0	10	15	35	40	40	17	12	A-6b*
		4.0-8.0	33	7	6	27	27	42	19	17	A-7-6
9+50	CL	0.3-3.5	20	3	3	32	42	42	19	15	A-7-6*
10+30	60'Rt	0.3-5.0	Red Weathered Indurated Clay							14	Visual
		5.0-10.0	Red Weathered Indurated Clay							16	Visual*
		10.0-15.0	Red Weathered Indurated Clay							13	Visual*
		15.0-18.0	Brown Broken Clay Shale							9	Visual
		18.0-23.0	Red Broken Clay Shale							12	Visual
		23.0-25.0	Gray Broken Clay Shale							9	Visual
10+50	75'Lt	0.3-3.0	Reddish-Brown Weathered Clay Shale							14	Visual
		3.0-7.0	Brown Weathered Siliceous Shale							9	Visual
10+50	CL	0.3-5.0	23	0	1	17	59	61	34	23	A-7-6*
		5.0-8.0	Red Weathered Indurated Clay							15	Visual
		8.0-10.5	Brown Broken Shale and Limestone Nodules							3	Visual
18+50	CL	0.3-2.5	31	1	1	19	48	58	35	26	A-7-6
		2.5-7.0	Red Weathered Indurated Clay							14	Visual
		7.0-10.0	Red Weathered Indurated Clay							14	Visual
		10.0-15.0	Red Weathered Indurated Clay							11	Visual
		15.0-20.0	Red Weathered Indurated Clay							9	Visual
		20.0-22.5	Red Weathered Indurated Clay							10	Visual
22+90	65'Lt

SOIL PROFILE
WASHINGTON - NOBLE COS.
WAS - IR77 - 15.70
NOB - IR77 - 0.00
OHIO STATE HIGHWAY TESTING LABORATORY
1600 W BROAD ST COLUMBUS 23, OHIO

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SUMMARY OF SOIL TEST DATA (Cont'd)

NOTE: NP shown in Liquid Limit and Plasticity Index columns indicates that the material is non-plastic.
*Denotes sample taken at or near grade.

STATION & OFFSET		DEPTH FROM-TO	% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	% W.C.	SHTL CLASS.
36+50	100'Rt	0.0-5.0	0	2	7	39	52	37	13	23	A-6a
		5.0-10.0	12	2	2	35	49	40	15	18	A-6a
		10.0-15.0	0	0	2	26	72	65	36	33	A-7-6
		15.0-16.0	Brown Weathered Shale							13	Visual
40+00	CL	0.0-3.0	0	1	12	41	46	30	11	26	A-6a
		3.0-6.0	0	1	16	63	20	39	16	25	A-6b
		6.0-9.0	0	9	34	25	32	27	7	26	A-4a
		9.0-11.0	9	12	30	24	25	29	8	26	A-4a
		11.0-12.5	0	1	11	41	47	35	15	25	A-6a
		12.5-15.0	0	4	32	28	36	46	17	14	A-7-6
		15.0-18.0	31	12	20	20	17	25	3	19	A-4a
43+00	CL	0.4-3.0	0	1	11	44	44	34	11	24	A-6a
		3.0-8.0	0	1	3	45	51	46	20	24	A-7-6
		8.0-13.0	14	15	27	22	22	28	10	22	A-4a
		13.0-15.0	0	2	31	33	34	29	7	31	A-4a
46+00	CL	0.4-4.0	0	4	4	45	47	41	18	20	A-7-6
		4.0-10.0	0	1	6	43	50	38	16	23	A-6b
		10.0-13.5	0	1	2	54	43	31	14	23	A-6a
		13.5-16.0	15	8	20	32	25	32	13	11	A-6a
		16.0-19.5	53	18	11	9	9	NP	NP	15	A-1-b
49+00	CL	0.4-4.0	0	1	4	47	48	41	15	21	A-7-6
		4.0-9.0	0	1	2	36	61	48	24	25	A-7-6
		9.0-11.5	0	0	2	51	47	44	20	26	A-7-6
		11.5-15.0	0	0	14	51	35	35	14	33	A-6a
51+00	CL	0.5-2.0	0	0	1	49	50	50	18	33	A-7-5
		2.0-6.0	0	3	31	35	31	29	8	42	A-4a
		6.0-12.0	38	9	20	17	16	NP	NP	18	A-2-4
		12.0-18.0	39	11	19	18	13	NP	NP	21	A-2-4
		18.0-20.0	0	2	12	48	38	34	11	28	A-6a
53+65	CL	0.0-1.5	0	1	1	47	51	53	23	36	A-7-5
		1.5-3.0	0	2	6	51	41	42	13	45	A-7-6
		3.0-7.0	23	12	20	21	24	46	21	37	A-7-6
		7.0-11.0	51	4	17	16	12	NP	NP	28	A-2-4
		11.0-14.5	45	9	15	16	15	NP	NP	27	A-2-4
		14.5-15.5	35	9	20	21	15	NP	NP	15	A-4a
57+00	CL	0.0-4.0	0	2	14	41	43	37	15	29	A-6a
		4.0-7.0	0	0	13	54	33	32	10	30	A-4b
		7.0-12.0	0	0	13	40	47	33	12	31	A-6a
		12.0-15.0	52	6	13	11	12	27	8	19	A-2-4
60+00	CL	0.0-4.0	0	11	30	24	35	32	10	16	A-4a
		4.0-6.0	0	1	13	44	42	33	13	25	A-6a
		6.0-10.0	0	2	12	40	46	39	16	30	A-6b
		10.0-14.0	60	9	12	9	10	26	4	16	A-1-b
		14.0-19.0	73	4	7	8	8	30	7	17	A-2-4
63+00	CL	0.3-5.0	0	0	2	53	45	39	14	19	A-6a
		5.0-10.0	0	0	11	53	36	34	12	32	A-6a
		10.0-14.0	0	9	25	33	33	30	9	33	A-4a
		14.0-17.0	0	7	19	57	17	32	10	36	A-4b
		17.0-22.0	55	7	13	13	12	NP	NP	26	A-1-b
66+00	100'Lt	0.0-5.0	0	0	7	53	40	34	12	27	A-6a
		5.0-10.0	0	1	12	51	36	32	11	26	A-6a
		10.0-15.0	0	2	32	34	32	28	7	33	A-4a
		15.0-19.0	0	9	23	40	28	28	8	37	A-4a
		19.0-25.0	0	7	26	36	31	28	7	31	A-4a
66+00	CL	0.3-5.0	0	1	9	50	40	35	12	24	A-6a
		5.0-10.0	0	0	11	50	39	35	14	27	A-6a
		10.0-14.5	0	1	25	38	36	31	11	38	A-6a
		14.5-16.0	36	13	21	17	13	NP	NP	29	A-2-4
		16.0-20.0	0	3	15	39	43	32	14	22	A-6a
		20.0-25.0	41	14	13	21	11	NP	NP	14	A-2-4
66+00	100'Rt	0.0-5.0	0	3	14	38	45	43	23	26	A-7-6
		5.0-10.0	5	7	19	29	40	37	17	18	A-6b
		10.0-15.0	19	6	19	23	33	33	14	19	A-6a
		15.0-20.0	0	6	17	29	48	35	16	19	A-6b
		20.0-25.0	0	4	33	33	30	26	9	27	A-4a
		25.0-30.0	18	10	22	23	27	27	8	21	A-4a
69+00	CL	0.4-5.0	0	1	4	38	57	44	21	25	A-7-6
		5.0-10.0	0	0	1	48	50	43	19	23	A-7-6
		10.0-13.5	0	0	4	58	38	33	11	27	A-6a
		13.5-18.0	0	0	7	55	38	31	9	29	A-4b
		18.0-21.5	48	10	14	16	12	NP	NP	26	A-2-4
72+00	CL	0.3-3.0	0	2	5	74	19	55	18	32	A-7-5
		3.0-8.0	0	5	8	37	50	42	18	22	A-7-6
		8.0-13.0	0	3	15	28	54	42	23	16	A-7-6
		13.0-15.0	0	1	9	41	49	35	14	22	A-6a
		15.0-16.5	0	9	27	25	39	30	12	20	A-6a
		16.5-20.0	0	1	4	40	55	39	16	27	A-6b
		20.0-23.0	49	5	11	18	17	31	13	24	A-2-6
		23.0-26.5	0	7	18	39	36	29	11	22	A-6a
		26.5-28.0	32	3	6	21	38	38	16	19	A-6b
		28.0-30.0	0	2	34	30	34	26	7	23	A-4a
74+95	CL	0.0-2.0	37	3	3	28	29	38	11	17	A-6a
		2.0-7.0	33	7	8	21	31	44	19	22	A-7-6
		7.0-13.0	0	5	9	28	58	45	21	19	A-7-6
		13.0-16.5	67	3	4	8	18	-	-	16	A-2-4
		16.5-20.0	0	5	13	38	44	32	11	20	A-6a
		20.0-21.0	66	8	5	12	9	29	9	12	A-2-4
77+00	CL	0.3-2.5	0	4	5	44	47	31	11	18	A-6a
		2.5-5.0	0	1	2	31	66	51	27	25	A-7-6 *
		5.0-10.0	52	2	3	19	24	40	16	21	A-6b *
77+50	110'Lt	0.0-2.5	0	2	1	30	67	61	35	27	A-7-6
		2.5-9.0	Brown Broken Clay Shale							14	Visual
		9.0-14.0	Red Weathered Indurated Clay							22	Visual
77+50	CL	0.0-3.0	0	0	1	34	65	60	30	27	A-7-5
		3.0-8.0	0	0	6	41	53	43	20	21	A-7-6
		8.0-9.0	Brown Weathered Siliceous Shale							12	Visual
78+00	75'Rt	0.0-5.0	14	2	2	26	56	47	22	27	A-7-6
		5.0-9.0	Red Weathered Indurated Clay							13	Visual
78+60	15'Rt	0.0-5.0	55	2	3	14	26	52	30	22	A-7-6
		5.0-10.0	44	4	5	22	25	36	14	17	A-6a
		10.0-15.0	24	7	6	32	31	34	12	15	A-6a
		15.0-20.0	36	3	5	26	30	33	15	15	A-6a
81+00	CL	0.3-3.0	21	5	3	34	37	41	18	17	A-7-6
		3.0-8.0	0	5	3	32	60	44	22	21	A-7-6
		8.0-11.0	Gray Weathered Indurated Clay							16	Visual
		11.0-16.0	Red Weathered Indurated Clay							12	Visual
		16.0-18.5	Light-Brown and Gray Weathered Clay Shale							19	Visual
		18.5-22.0	Red Weathered Indurated Clay							11	Visual
84+00	CL	0.0-3.0	28	4	3	36	29	33	11	11	A-6a
		3.0-7.0	0	3	2	35	60	46	24	18	A-7-6
		7.0-13.0	0	5	5	41	49	36	13	20	A-6a
		13.0-19.0	0	7	6	39	48	35	12	15	A-6a
86+00	CL	0.0-4.0	Brown Weathered Sandstone							7	Visual
		4.0-7.0	Brown Weathered Shale							9	Visual
		7.0-8.5	Red Broken Clay Shale							10	Visual
		8.5-10.0	Brown Broken Clay Shale							9	Visual

CO. RD. 8 (Connector)

STATION & OFFSET		DEPTH FROM-TO	% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	% W.C.	SHTL CLASS.
13+00	CL	0.0-5.0	24	3	5	29	39	45	17	21	A-7-6 *
		5.0-10.0	49	3	5	18	25	46	16	14	A-6b
15+00	50'Lt	0.0-4.0	Brown Weathered Siliceous Shale							11	Visual
15+00	CL	0.0-5.0	14	2	4	34	46	46	18	21	A-7-6
		5.0-9.5	73	1	2	8	16	48	22	12	A-2-7 *
		9.5-15.0	6	1	4	42	47	33	11	13	A-6a
17+00	CL	0.0-5.0	25	3	5	25	42	46	15	20	A-6a *
		5.0-9.0	24	2	7	29	38	38	15	15	A-6a *
		9.0-11.0	20	4	2	29	45	44	17	18	A-7-6

RAMP C

STATION & OFFSET		DEPTH FROM-TO	% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	% W.C.	SHTL CLASS.
21+63	12'Lt	0.0-6.0	53	4	6	15	22	42	19	19	A-7-6
		6.0-10.0	30	3	3	25	39	39	17	17	A-6b
		10.0-14.0	25	2	3	27	43	43	22	16	A-7-6
		14.0-17.0	30	2	4	27	37	41	19	25	A-7-6
		17.0-22.0	19	4	2	29	44	39	18	16	A-6b
		22.0-27.0	7	2	3	33	55	45	21	20	A-7-6
		27.0-30.0	36	2	3	26	34	37	16	20	A-6b

RAMP D

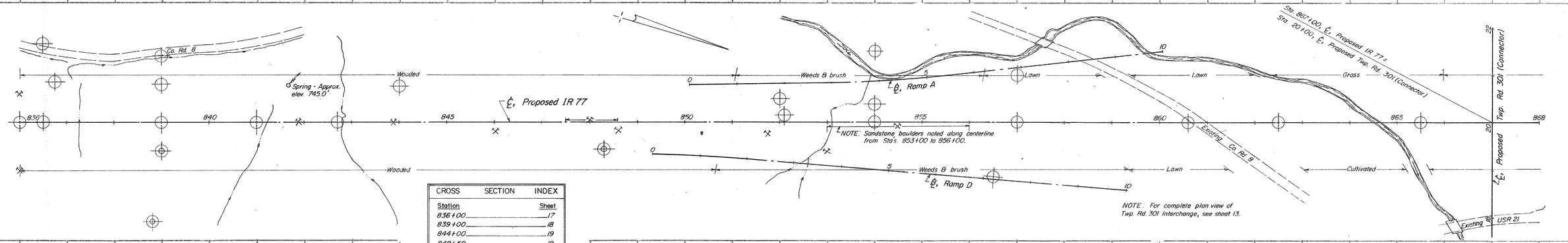
STATION & OFFSET		DEPTH FROM-TO	% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	% W.C.	SHTL CLASS.
7+20	5'Lt	0.0-5.0	17	3	5	41	34	36	13	19	A-6a
		5.0-10.0	21	0	3	39	37	43	20	20	A-7-6
		10.0-14.0	63	0	1	18	18	37	16	15	A-6b
		14.0-16.0	22	2	3	37	36	39	16	17	A-6b
13+20	BL	0.0-4.0	Brown Weathered Shale							11	Visual

DRIVE SAMPLE SOIL TEST DATA

STATION & OFFSET		DEPTH FROM-TO	% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	% W.C.	SHTL CLASS.
873+50	90'Lt	5.0-6.0	9	3	1	37	50	40	17	21	A-6b
		10.0-11.0	16	2	2	31	49	41	17	17	A-2-7
910+00	CL	5.0-6.0	0	0	0	21	79	55	27	28	A-7-6
		10.0-11.0	0	1	7	26	66	46	22	25	A-7-6
		15.0-16.0	0	14	28	30	28	29	8	21	A-4a
14+00	CL	10.0-11.0	22	2	4	35	37	34	11	19	A-6a
18+50	200'Rt	10.0-11.0	12	3	6	34	45	36	11	14	A-6a
30+00	100'Rt	5.0-6.0	0	1	8	29	62	46	21	22	A-7-6
		10.0-11.0	0	1	2	25	72	49	24	26	A-7-6
		15.0-16.0	0	1	3	34	62	41	17	20	A-7-6
		25.6-26.0	0	3	15	34	48	40	15	20	A-6b
		29.0-29.5	0	3	15	37	45	40	17	21	A-6b
		30.0-31.0	52	2	8	16	22	33	13	22	A-6a

SOIL PROFILE
WASHINGTON-NOBLE COS.
WAS-IR 77-15.70
NOB-IR 77-0.00
OHIO STATE HIGHWAY TESTING LABORATORY
1520 W. BROAD ST. COLUMBUS 23, OHIO

4
46



CROSS SECTION INDEX	
Station	Sheet
836+00	17
839+00	18
844+00	19
848+50	19
852+00	20
854+00	20
857+00	21

NOTE: For complete plan view of Twp. Rd. 301 interchange, see sheet 13.

SOIL PROFILE

WASHINGTON-NOBLE COS.

WAS-IR 77-15.70

NOB-IR 77-0.00

OHIO STATE HIGHWAY TESTING LABORATORY

1620 W. BROAD ST. COLUMBUS 23, OHIO

5/46

Refusal (Hand auger)

Refusal (Hand auger)

Refusal (Hand auger)

60' Rt.

NOTE: For complete log of core boring, see sheet 18.

Refusal (Hand auger)

Sandstone, gray, firm.

Shaly sandstone interbedded with siliceous shale

Sandstone, gray to brown, firm.

Weak siliceous shale

57' Rt.

Rock Section 11'-17' Rt.

Firm sandstone

Shaly sandstone

NOTE: For complete log of boring, see sheet 19.

Rock Section 25' Rt.

Sandstone, gray, firm.

Sod=0.2'

Refusal

Sod=0.3'

Refusal

Sod=0.3'

Refusal

Refusal

Sod=0.3'

Refusal

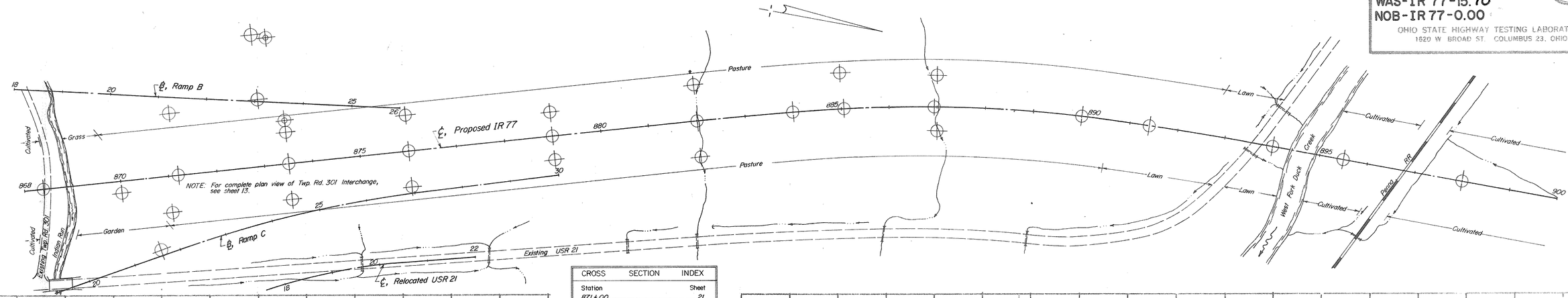
Sod=0.3'

Refusal

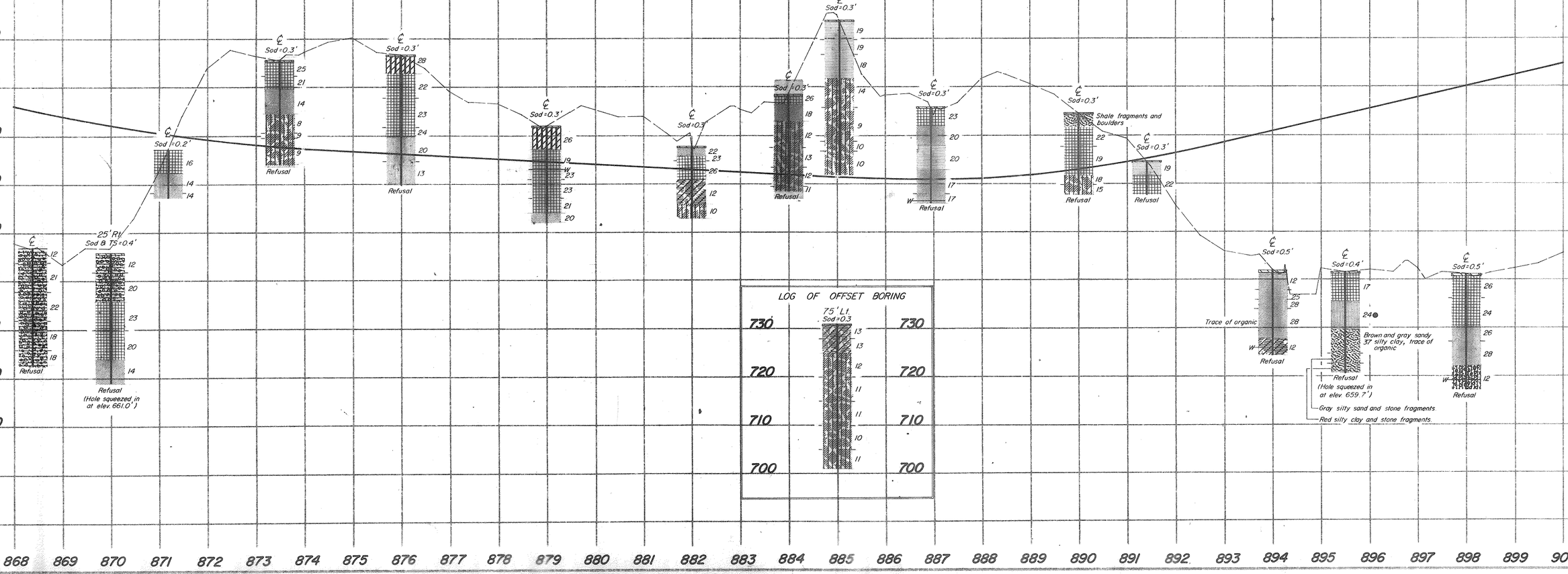
Proposed grade Twp. Rd. 301 (Connector.)

SOIL PROFILE
WASHINGTON-NOBLE COS.
WAS-IR 77-15.70
NOB-IR 77-0.00
OHIO STATE HIGHWAY TESTING LABORATORY
1620 W. BROAD ST. COLUMBUS 23, OHIO

6
46



CROSS SECTION INDEX	
Station	Sheet
871+00	21
873+50	22
876+00	23
879+00	23
882+00	24
887+00	24



SOIL PROFILE

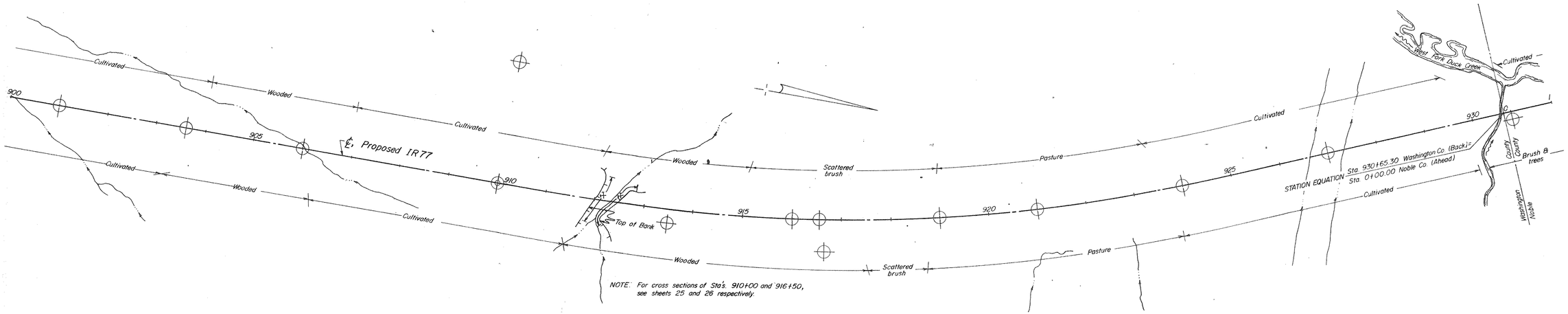
WASHINGTON-NOBLE COS.

WAS-IR 77-15.70

NOB-IR77-0.00

OHIO STATE HIGHWAY TESTING LABORATORY
1620 W. BROAD ST. COLUMBUS 23, OHIO

7
46



NOTE: For cross sections of Sta's. 910+00 and 916+50, see sheets 25 and 26 respectively.

SOIL PROFILE

WASHINGTON-NOBLE COS.
WAS-IR 77-15.70
NOB-IR 77-0.00

OHIO STATE HIGHWAY TESTING LABORATORY
1620 W. BROAD ST. COLUMBUS 23, OHIO

8/46

830 820 810 800 790 780 770 760 750 740 730 720 710 700 690 680 670 660 650 640

900 901 902 903 904 905 906 907 908 909 910 911 912 913 914 915 916 917 918 919 920 921 922 923 924 925 926 927 928 929 930 0 1

℄ 6/11 28 — 7/18 25 — 10/14 21

Top of Rock-In-Place

A B C D

NOTE: For complete log of boring, see sheet 25.

Rock Section
50' Lt.-50' Rt.

Sandstone, gray, firm.

℄ Sod = 0.4'
21 15 11

℄ Sod=0.5'
16 27 11
Refusal

TRACE OF 15 Refusal (Hand auger)

℄ 19 15 16 9
Refusal

℄ Sod=0.3'
28 15

LOG OF OFFSET BORING

820	28' Rt. 6 Refusal	820
810		810

℄ Sod=0.4'
20 25 23 24 W 21
Refusal

℄ Sod=0.5'
34 28 Trace of organic 27 W 20 17
Refusal

℄ Sod=0.4'
27 29 38 31 Trace of organic W 31 20 24
Refusal

℄ Sod=0.4'
24 26 35 Trace of organic 31 Trace of organic W 13
Refusal

Sta. 930+65.30 Washington County (Back) = STATION EQUATION Sta. 0+00.00 Noble County (Ahead)

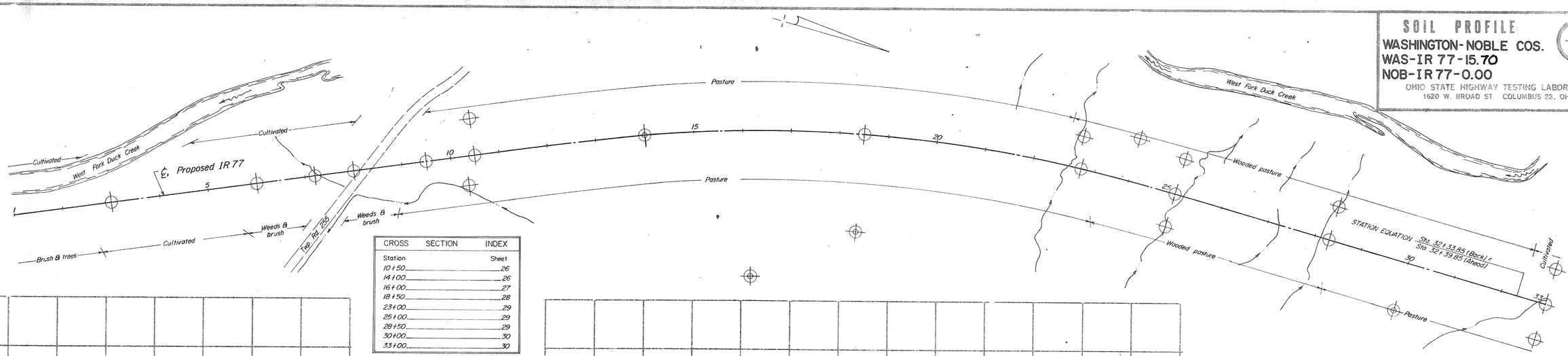
15' Rt.
Sod=0.3'
18 30 Trace of organic 55 34 15
Refusal
(Hole squeezed in at elev. 659.0')

SOIL PROFILE

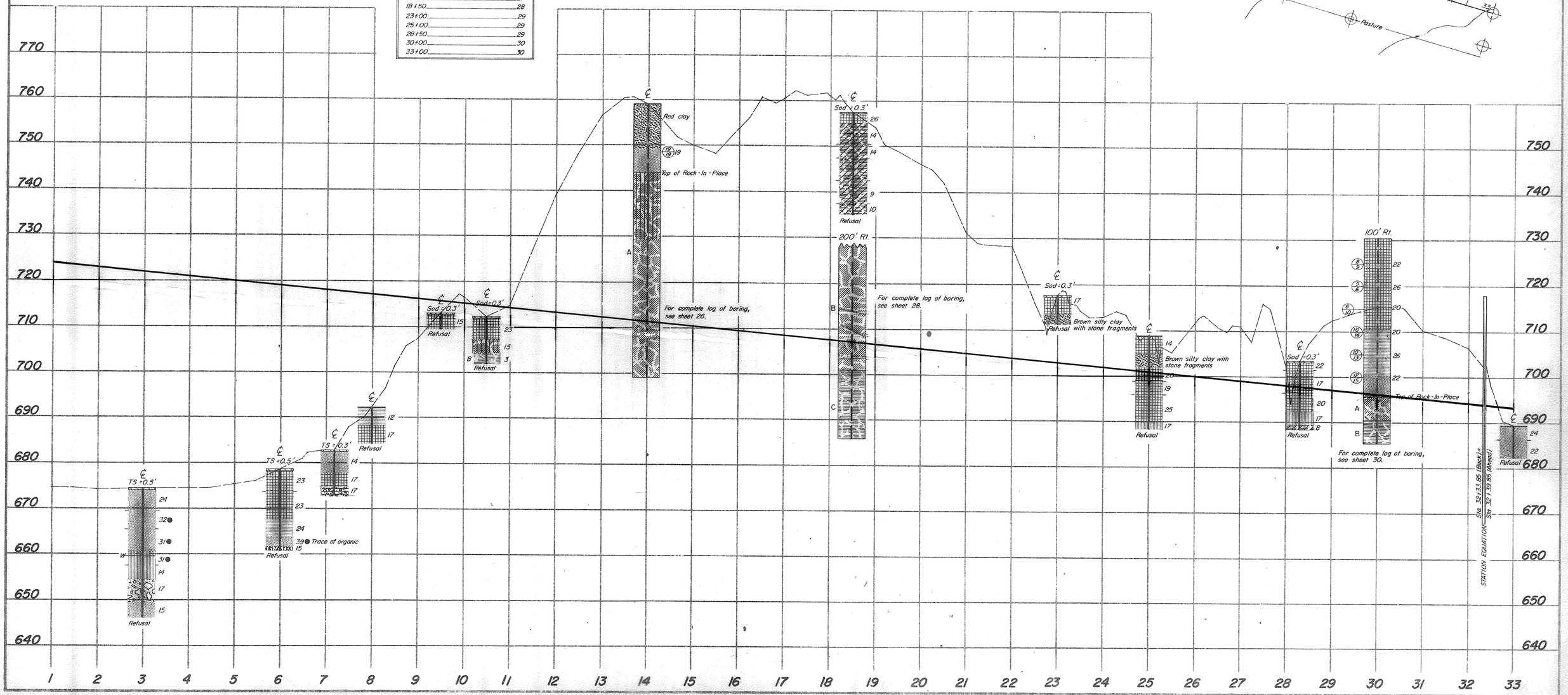
WASHINGTON-NOBLE COS.
WAS-IR 77-15.70
NOB-IR 77-0.00

OHIO STATE HIGHWAY TESTING LABORATORY
1620 W. BROAD ST. COLUMBUS 23, OHIO

9
46



CROSS SECTION INDEX	
Station	Sheet
10+50	26
14+00	26
16+00	27
18+50	28
23+00	29
25+00	29
28+50	29
30+00	30
33+00	30



SOIL PROFILE

WASHINGTON-NOBLE COS.
WAS-IR 77-15.70
NOB-IR 77-0.00

OHIO STATE HIGHWAY TESTING LABORATORY
1620 W. BROAD ST. COLUMBUS 23, OHIO

10
46

NOTE: For cross sections of Sta's. 33+00 and 36+50, see sheet 30.

Cultivated
Buffalo Run
℄ Proposed IR77
Meander Scar
Wooded
West Fork Duck Creek
Oil well
Abandoned, uncased well, approx. 20" diameter
Pasture

℄ 24 22 Refusal

Sod =0.4' 21 23 21 27● Trace of organic

℄ 26 25 26● W 26● 25 44● Trace of organic 19 Refusal

TS =0.4' 24 24 22 31●

Sod =0.4' 20 23 W 23 11 15 Refusal

Sod =0.4' 21 25 26 33●

TS =0.5' 33 42● 18 21⊖ 28 Refusal (Hole squeezed in at elev. 665.0')

36 45● 37 Trace of organic W 28⊖ 27⊖ 15 Refusal

29 30● 31● 19

16 25 30 W 16 17 Refusal

Sod =0.3' 19 32● 33● Trace of organic 36● Trace of organic 26⊖ Refusal

710 700 690 680 670 660 650

33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65

SOIL PROFILE

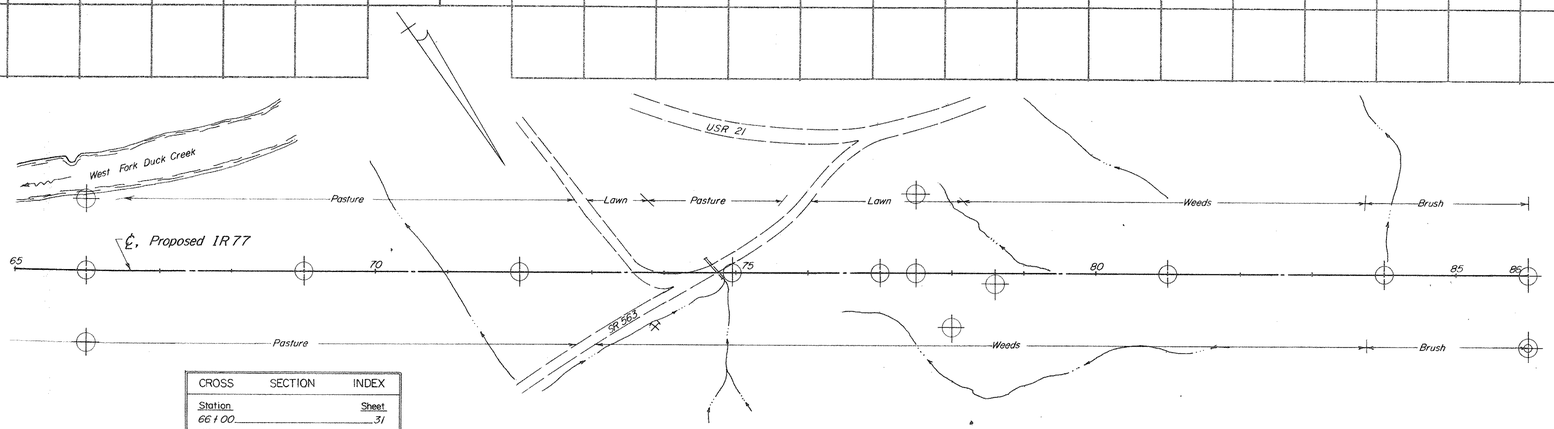
WASHINGTON-NOBLE COS.

WAS-IR 77-15.70

NOB-IR 77-0.00

OHIO STATE HIGHWAY TESTING LABORATORY
1620 W. BROAD ST. COLUMBUS 23, OHIO

11/46



CROSS SECTION INDEX	
Station	Sheet
66+00	31
77+50	31
86+00	32

SOIL PROFILE

WASHINGTON-NOBLE COS.
WAS-IR 77-15.70
NOB-IR 77-0.00

OHIO STATE HIGHWAY TESTING LABORATORY
1620 W. BROAD ST. COLUMBUS 23, OHIO

12/46

850 840 830 820 810 800 790 780 770 760 750 740 730 720 710 700 690 680 670 660

65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86

℄ Sod=0.3' 24 27 38● 29⊖ 22 14 Refusal

℄ Sod=0.4' 25 23 27 29● 26⊖ Refusal

℄ Sod=0.3' 32 22 18 22 20 27 24 W 22 19 23●

℄ 17 22 19 16 20 12

℄ Sod=10.3' 17 21 16 12 B 19 11 Refusal

℄ 15' Rt 22 17 15 15 Refusal

℄ 27 21 12 Refusal

℄ Sod=0.3' 18 25 21

℄ 11 18 20 15 Refusal

NOTE: For complete log and descriptions of core boring, see sheet 32.

LOG OF OFFSET BORING

75' Rt 27 13 Refusal

℄ 7 9 10 9 B 6 Refusal

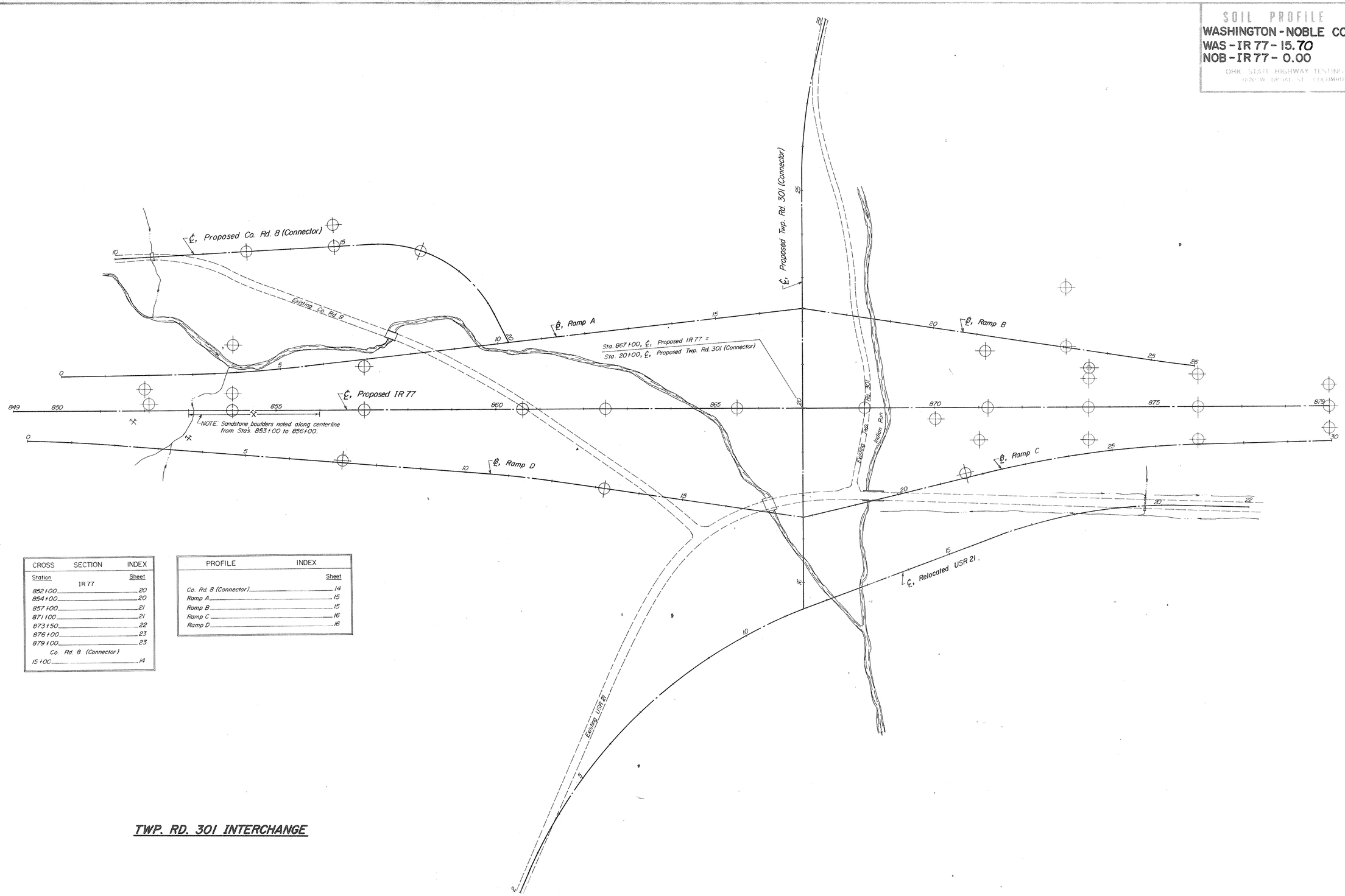
100' Rt

B C D E F

TE-95
400-1-63

SOIL PROFILE
WASHINGTON - NOBLE COS.
WAS - IR 77 - 15.70
NOB - IR 77 - 0.00
OHIO STATE HIGHWAY TESTING LABORATORY
1620 W. BROAD ST. COLUMBUS 23, OHIO

13
46

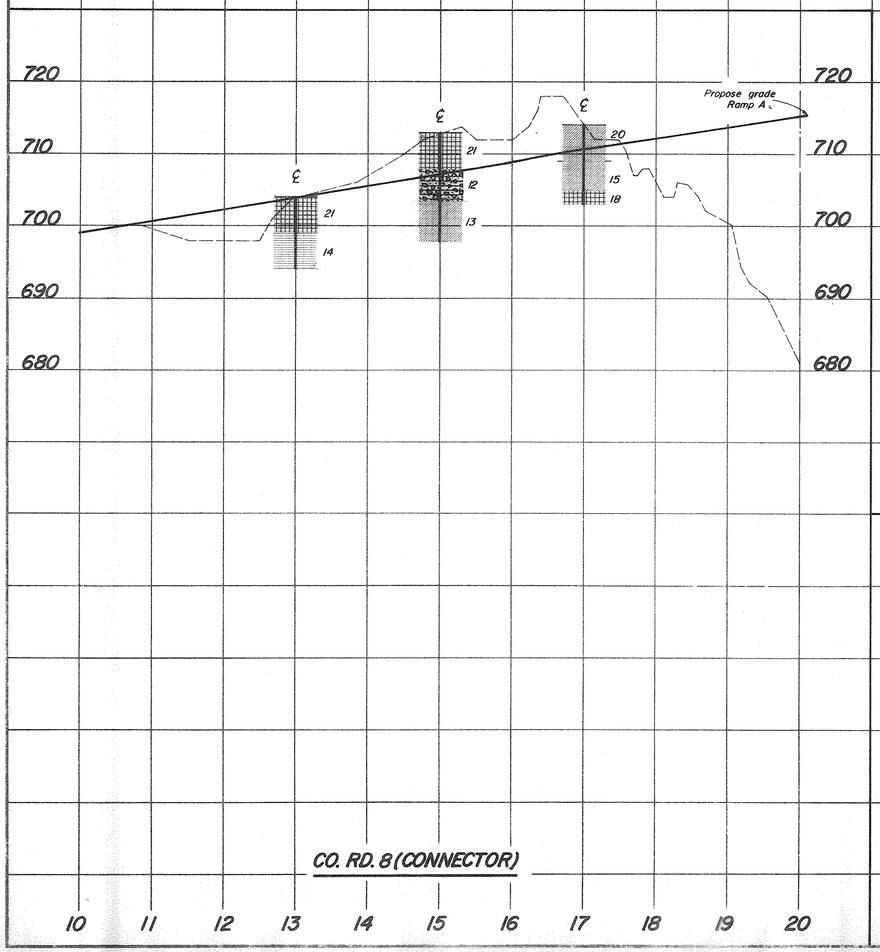


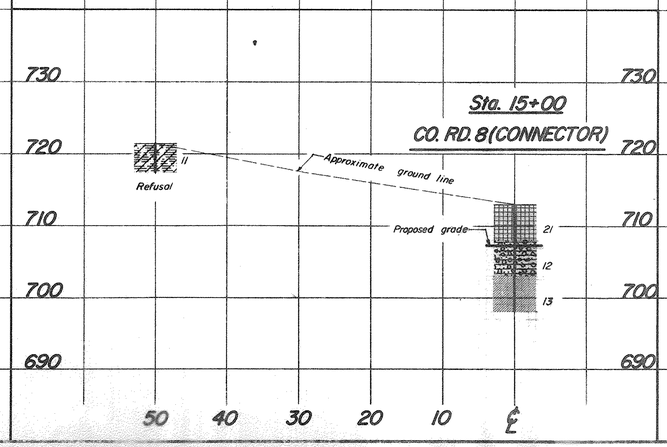
CROSS SECTION INDEX	
Station	Sheet
IR 77	
852+00	20
854+00	20
857+00	21
871+00	21
873+50	22
876+00	23
879+00	23
Co. Rd. 8 (Connector)	
15+00	14

PROFILE INDEX	
	Sheet
Co. Rd. 8 (Connector)	14
Ramp A	15
Ramp B	15
Ramp C	16
Ramp D	16

TWP. RD. 301 INTERCHANGE

SOIL PROFILE
WASHINGTON-NOBLE COS. 14/46
WAS-IR 77-15.70
NOB-IR 77-0.00
OHIO STATE HIGHWAY TESTING LABORATORY
1620 W. BROAD ST. COLUMBUS 23, OHIO





SOIL PROFILE

WASHINGTON - NOBLE COS.

WAS - IR 77 - 15.70

NOB - IR 77 - 0.00

OHIO STATE HIGHWAY TESTING LABORATORY
1620 W. BROAD ST. COLUMBUS 23, OHIO

15
46

780
770
760
750
740
730
720
710
700
690
680
670
660
650

(Sta. 852+00 — 50' Lt., IR77)
32' Rt.
23
14
16
Refusal

(Sta. 854+00 — 150' Lt., IR77)
62' Lt.
25
29 Trace of organic
W
15
Red silty clay and stone fragments
Refusal

(Sta. 857+00 — 100' Lt., IR77)
15' Rt.
16
13
14
15
17
11
Refusal

℄, Proposed Co. Rd. 8 (Connector)

(Sta. 865+50 — IR77)
℄
210' Rt., Sod=03'
14
19
23
24
20
15
Refusal

℄, Proposed Twp. Rd. 301 (Connector)

(Sta. 871+15 — 130' Lt., IR77)
35' Rt.
26
17
13
10
Refusal

(Sta. 873+00 — 140' Lt., IR 77)
3' Lt.
22
Refusal (Hand auger)

(Sta. 873+50 — 90' Lt., IR77)
38' Rt.
21 (11/12)
17 (8/16)
Top of Rock — In — Place
A
For complete log of boring, see sheet 22.

RAMP A
RAMP B

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26

SOIL PROFILE

WASHINGTON - NOBLE COS.

WAS - IR 77 - 15.70

NOB - IR 77 - 0.00

OHIO STATE HIGHWAY TESTING LABORATORY
1620 W. BROAD ST. COLUMBUS 23, OHIO

16
46

(Sta. 852+10-
15' Lt., IR 77)
100' Lt.
Sod=0.2'
21
17
15
13
11
10
B
Refusal

5' Lt.
19
20
19
17
Refusal

℄
11
Refusal

℄, Proposed Twp. Rd. 301 (Connector)

12' Lt.
19
17
16
W
25
16
20
20

(Sta. 873+50-75' Rt.,
IR 77)
30' Lt.
Sod=0.3'
23
21
25
Refusal

(Sta. 876+00-75' Rt.,
IR 77)
10' Lt.
Sod=0.3'
22
21
21
17
18
19
Refusal
(Boulders)

(Sta. 879+00-50' Rt.,
IR 77)
30' Lt.
Sod=0.3'
24
22
23
24
18
13

RAMP D

RAMP C

830 820 810 800 790 780 770 760 750 740 730 720 710 700 690 680 670 660 650 640

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

SOIL PROFILE

WASHINGTON - NOBLE COS. 17/46
WAS - IR77 - 15.70
NOB - IR77 - 0.00

OHIO STATE HIGHWAY TESTING LABORATORY
1620 W. BROAD ST. COLUMBUS 23, OHIO

760 750 740 730 720 710

220 210 200 190 180 170 160 150 140

(Sta. 836+50)
13
17
15
16
10
Refusal

LINE
MATCH

850 840 830 820 810 800 790 780 770 760 750 740

Sta. 836+00

Shaly sandstone

880 870 860 850 840 830 820 810 800 790 780 770 760 750 740

(Sta. 836+50)
Refusal
(Hand auger)

B
Refusal
(Hand auger)

Proposed section

Sandstone, gray, firm.

(Sta. 836+75)
12
Refusal

LINE
MATCH

140 130 120 110 100 90 80 70 60 50 40 30 20 10 ℄ 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180

SOIL PROFILE

WASHINGTON-NOBLE COS.
WAS - IR77 - 15.70
NOB - IR77 - 0.00

OHIO STATE HIGHWAY TESTING LABORATORY
1620 W. BROAD ST. COLUMBUS 23, OHIO

18
46

(Sta. 838+80)

Top of Rock In-Place

A. REDDISH-BROWN SILTY CLAY.

B. SANDSTONE, GREENISH-GRAY, FINE-GRAINED, SLIGHTLY ARGILLACEOUS, WITH THIN SEAMS OF CLAY AND SOFT SHALE, FIRM, BROKEN. CORE LOSS 4%.

C. SHALE, BROWN TO GREENISH-GRAY, FISSILE, SOFT TO MEDIUM-FIRM, CRUMBLY. CORE LOSS 13%.

D. LIMESTONE, BROWN TO GRAY, ARGILLACEOUS, HARD, BROKEN. NO CORE LOSS.

E. INDURATED CLAY, MOTTLED MOROON TO GRAY, SOFT TO MEDIUM-FIRM, CRUMBLY. NO CORE LOSS.

F. SHALE, GREENISH-GRAY TO GRAY, ARGILLACEOUS AND MEDIUM-FIRM BETWEEN ELEVS. 838.8' AND 836.8' AND BELOW ELEV. 834.8', GENERALLY FIRM IN REMAINDER, JOINTED AND BADLY BROKEN IN TOP 9', BROKEN IN PART IN REMAINDER, WITH 0.4' CALCAREOUS SANDSTONE BED AT ELEV. 849.2'. CORE LOSS 11%.

G. COAL, BLACK, SHALY, PYRITIFEROUS, WITH 0.2' COALY SHALE AT BASE. NO CORE LOSS.

H. LIMESTONE, IMPURE, DARK-GRAY, ARGILLACEOUS, HARD, DENSE, JOINTED IN PART, WITH 1.0' SHALE BED (DARK-GRAY, CARBONACEOUS, CALCAREOUS, MEDIUM-FIRM AND CRUMBLY TO FIRM) AT ELEV. 830.2'. NO CORE LOSS.

I. INDURATED CLAY, GRAY, CALCAREOUS, MEDIUM-FIRM AND CRUMBLY, WITH NODULAR TO MAX. 0.4' LIMESTONE BEDS COMPRISING ABOUT 15% OF THE INTERVAL. CORE LOSS 56%.

J. INDURATED CLAY, MOTTLED REDDISH-BROWN AND GRAY, MEDIUM-FIRM, SLICKENSIDED, CRUMBLY. CORE LOSS 26%.

K. INDURATED CLAY, BLUISH-GRAY, SLIGHTLY PYRITIFEROUS, SLICKENSIDED, MEDIUM-FIRM TO FIRM, CRUMBLY IN PART. CORE LOSS 12%.

Sta. 839+00

9
Refusal
(Hand auger)

Proposed section

Clay with stone fragments

Top of Rock - In - Place

A. CLAY SHALE, YELLOWISH-BROWN, CRUMBLY TO FIRM, CALCAREOUS, IRON-STAINED, INTERBEDDED WITH FEW GRAY, FINE-GRAINED, FIRM SANDSTONE BEDS 0.9' THICK; CLAY SHALE IS IN BEDS 0.6' THICK, SEPARATED BY SOFT SEAMS AND BEDS WHICH COMPRISE 20% OF INTERVAL. CORE LOSS 3%.

B. SHALE, GRAY, FIRM, DENSE, IN BEDS 0.3' THICK, BROKEN BY SOFT SEAMS WHICH COMPRISE 10% OF INTERVAL. ABOVE ELEV. 798.9' INTERVAL IS BADLY BROKEN, JOINTED AND IRON-STAINED. CORE LOSS 41%.

C. INDURATED CLAY, MOTTLED RED AND GRAY, FIRM TO HARD, WITH SLICKENSIDES, WAXY, BROKEN IN FRAGMENTS 0.1' TO 0.3' THICK, WITH CRUMBLY CLAY SEAMS WHICH COMPRISES 10% OF INTERVAL. BELOW ELEV. 786.9', INTERVAL IS DARK-GRAY AND DENSE WITH FEW SLICKENSIDES, IN BEDS 0.8' THICK AND BROKEN AT SOFT SEAMS WHICH COMPRISE 5% OF INTERVAL. NO CORE LOSS.

D. SANDSTONE, GRAY, FIRM, FINE-GRAINED, CALCAREOUS, ARGILLACEOUS, WITH FEW DIAGONAL IRON-STAINED FRACTURES WHICH SEPARATE THE INTERVAL INTO BEDS 0.6' THICK. CORE LOSS 5%.

E. CLAY SHALE, BROWNISH-GRAY, CRUMBLY TO FIRM, SLIGHTLY CALCAREOUS, BROKEN INTO BEDS 0.3' THICK BY CLAY SEAMS WHICH COMPRISE 15% OF INTERVAL. CORE LOSS 21%.

17
7
Refusal

22
17
17
10
10
Refusal

LINE
MATCH
LINE
MATCH

870 860 850 840 830 820 810 800 790 780 770 760 750 740 730 720 710 700

120 130 140 150 160 170 180 190 200 210

200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 ℄ 10 20 30 40 50 60 70 80 90 100 110 120

SOIL PROFILE

WASHINGTON - NOBLE COS. (19/46)

WAS - IR 77 - 15.70

NOB - IR 77 - 0.00

OHIO STATE HIGHWAY TESTING LABORATORY
1620 W. BROAD ST. COLUMBUS 23, OHIO

Sta. 848+50

Sandstone, brown, shaly.

Partially covered weak siliceous shale.

Proposed section

Sta. 844+00

Shaly sandstone interbedded with siliceous shale.

Proposed section

Sandstone, gray to brown, firm.

6
Refusal

(Sta. 848+29)

Brown clay

Top of Rock-In-Place

A. CLAY SHALE, YELLOWISH-BROWN, FIRM, IN BEDS 0.3' THICK AND SEPARATED BY SOFT CLAY SEAMS WHICH COMPRISE 10% OF INTERVAL. BELOW ELEV. 842.9', INTERVAL IS GRAY, SUB-FISSILE, AND BROKEN BY NUMEROUS DIAGONAL IRON-STAINED JOINTS. CORE LOSS 16%.

B. COAL, BLACK, HARD, BRITTLE, VITREOUS LUSTER, BROKEN. CORE LOSS 2%.

C. LIMESTONE, FRESH WATER, BROWNISH-GRAY, HARD, DENSE, ARGILLACEOUS, BROKEN IN BEDS 0.4' THICK AND SEPARATED BY GRAY CALCAREOUS CLAY SEAMS WHICH COMPRISE 20% OF INTERVAL. WITH A 0.9' LIGHT-GRAY, VERY CALCAREOUS, CARBONACEOUS UNDER CLAY BED AT ELEV. 836.8' BELOW ELEV. 833.9', INTERVAL IS FRACTURED BY IRON-STAINED VERTICAL JOINTS, BADLY BROKEN IN BOTTOM 1.5'. CORE LOSS 50%.

D. INDURATED CLAY, MOTTLED RED AND GRAY, FIRM TO HARD, SLICKENSIDED IN BEDS 0.3' THICK AND SEPARATED BY CLAY SEAMS WHICH COMPRISE 10% OF INTERVAL. CORE LOSS 63%.

E. CLAY SHALE, GRAY, HARD, SILICEOUS, VERY ARENACEOUS, FINELY MICACEOUS, JOINTED, IN BEDS 0.3' THICK AND SEPARATED BY SOFT CLAY SEAMS WHICH COMPRISE 10% OF INTERVAL, WITH A INTERVAL OF VERY HARD, CALCAREOUS, SLICKENSIDED, INDURATED CLAY AT ELEV. 798.9'. CORE LOSS 43%.

F. SHALE, GRAY, HARD, FISSILE, SILICEOUS WITH FEW THIN BEDS (0.4' THICK); OF HARD, GRAY, SLICKENSIDED, INDURATED CLAY. SHALE IS IN BEDS 0.5' THICK AND SEPARATED BY BRITTLE CLAY SHALE SEAMS. BELOW ELEV. 775.1' INTERVAL IS FRACTURED BY VERTICAL JOINTS UP TO 2.0' LONG, WITH NUMEROUS ARENACEOUS CLAY FILLED JOINTS. THE BASAL 10.0' OF INTERVAL IS ARENACEOUS AND FINELY MICACEOUS. CORE LOSS 2%.

G. SANDSTONE, YELLOWISH-BROWN, FIRM, FINE TO MEDIUM-GRAINED, FINELY MICACEOUS, CALCAREOUS IN BEDS 0.8' TO 2.0' THICK, SEPARATED BY BROWN, ARENACEOUS, CALCAREOUS CLAY SEAMS WHICH COMPRISE 2% OF INTERVAL. CORE LOSS 5%.

H. LIMESTONE, FRESH WATER, GRAY, HARD, DENSE, VERY ARGILLACEOUS, BROKEN IN BEDS 0.4' THICK AND JOINTED THROUGHOUT. CORE LOSS 6%.

I. INDURATED CLAY, MOTTLED RED AND GRAY, FIRM TO HARD, CALCAREOUS AND CRUMBLY AT BASE. CORE LOSS 30%.

860 850 840 830 820 810 800 790 780 770 760 750 740 730 720

170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 ℄ 10 20 30 40 50 60 70 80 90 100 110 120 130 140

SOIL PROFILE

WASHINGTON-NOBLE COS.
WAS-IR77-15.70
NOB-IR77-0.00

OHIO STATE HIGHWAY TESTING LABORATORY
1620 W. BROAD ST. COLUMBUS 23, OHIO

20/46

Sta. 854+00

Proposed section

Sod=0.3'
19
17
11
Refusal

Sod=0.3'
19
15
Refusal

25
29 Trace of organic
W
15 Red silty clay and stone fragments
Refusal

750 740 730 720 710 700 690 680

180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 ℄ 10 20 30 40 50 60 70 80 90 100 110 120

Sta. 852+00

Proposed section

(Sta. 852+10)
Sod=0.2'
21
17
15
13
11
B 10
Refusal

23
14
16
Refusal

770 760 750 740 730 720 710

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 ℄ 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

SOIL PROFILE

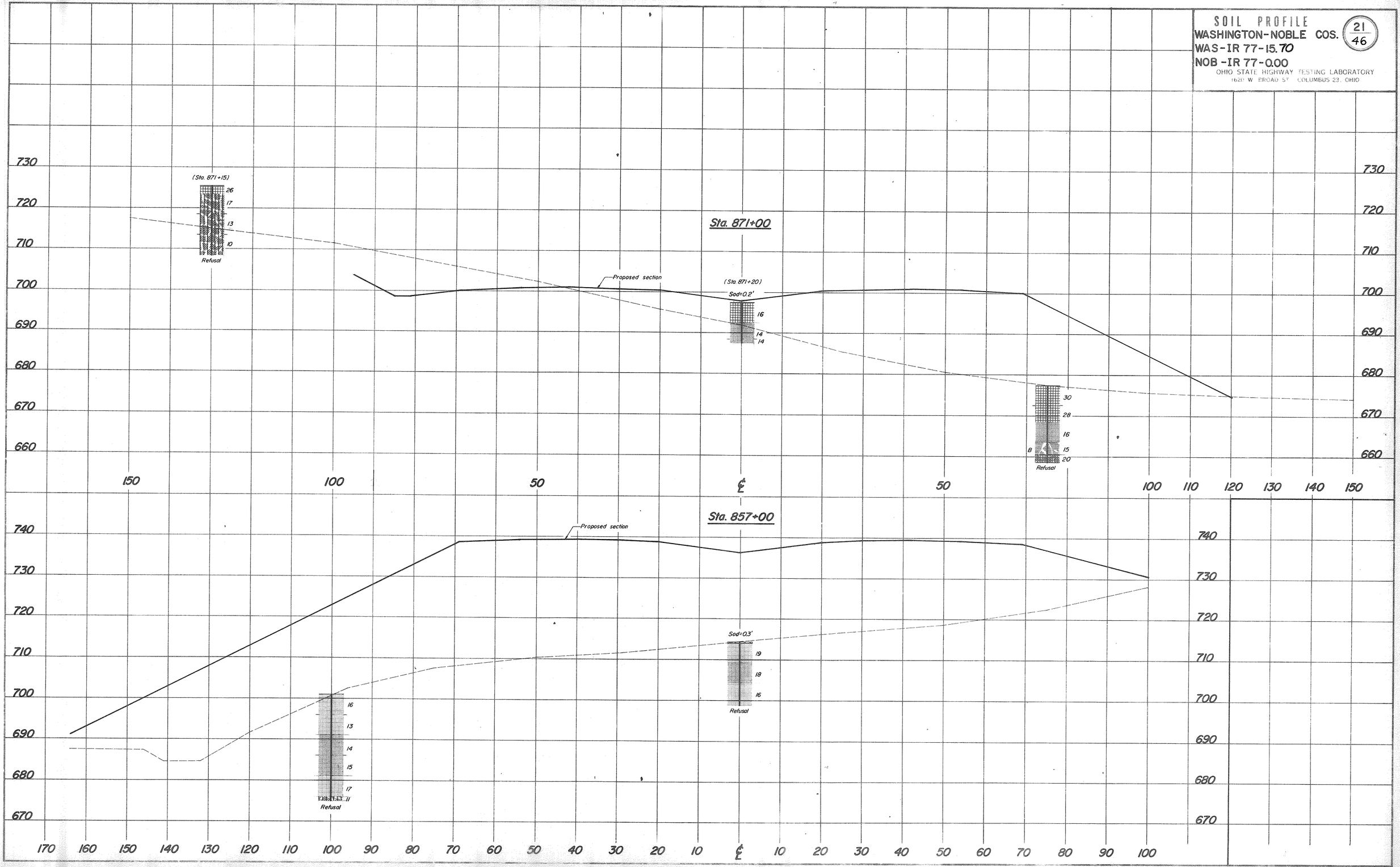
WASHINGTON-NOBLE COS. (21/46)

WAS-IR 77-15.70

NOB-IR 77-0.00

OHIO STATE HIGHWAY TESTING LABORATORY

1620 W. BROAD ST. COLUMBUS 23, OHIO



SOIL PROFILE

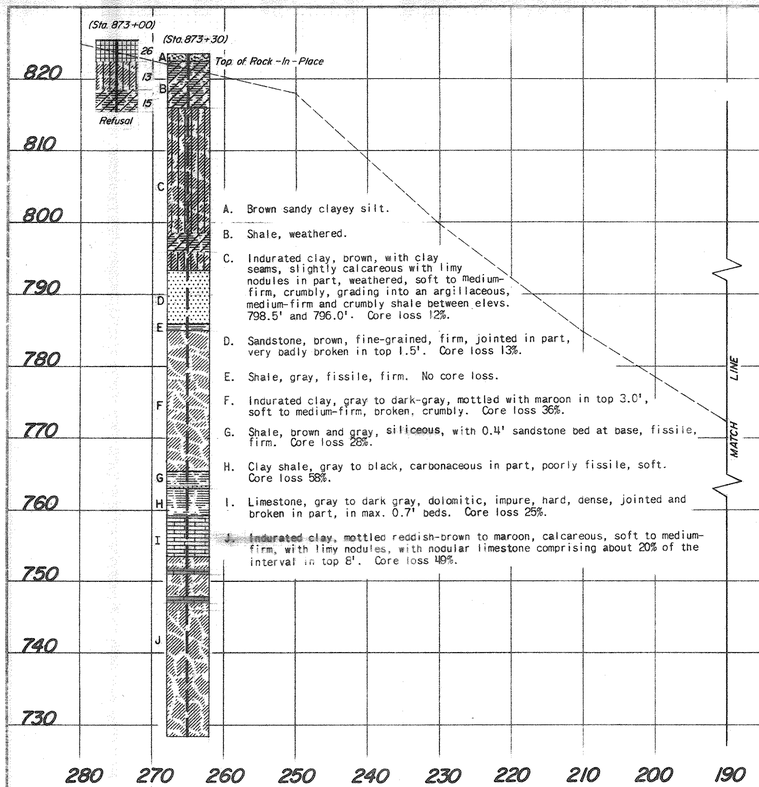
WASHINGTON-NOBLE COS.

WAS-IR 77-15.70

NOB-IR 77-0.00

OHIO STATE HIGHWAY TESTING LABORATORY
1620 W. BROAD ST. COLUMBUS 23, OHIO

22
46



A. Brown sandy clayey silt.

B. Shale, weathered.

C. Indurated clay, brown, with clay seams, slightly calcareous with limy nodules in part, weathered, soft to medium-firm, crumbly, grading into an argillaceous, medium-firm and crumbly shale between elevs. 798.5' and 796.0'. Core loss 12%.

D. Sandstone, brown, fine-grained, firm, jointed in part, very badly broken in top 1.5'. Core loss 13%.

E. Shale, gray, fissile, firm. No core loss.

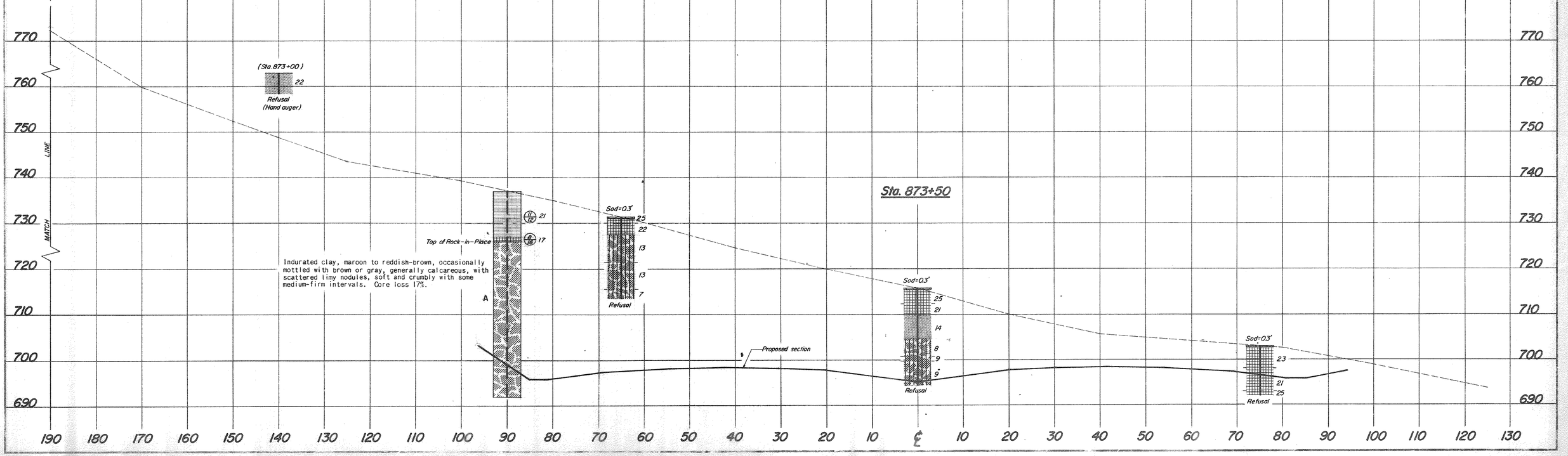
F. Indurated clay, gray to dark-gray, mottled with maroon in top 3.0', soft to medium-firm, broken, crumbly. Core loss 36%.

G. Shale, brown and gray, siliceous, with 0.4' sandstone bed at base, fissile, firm. Core loss 28%.

H. Clay shale, gray to black, carbonaceous in part, poorly fissile, soft. Core loss 58%.

I. Limestone, gray to dark gray, dolomitic, impure, hard, dense, jointed and broken in part, in max. 0.7' beds. Core loss 25%.

J. Indurated clay, mottled reddish-brown to maroon, calcareous, soft to medium-firm, with limy nodules, with nodular limestone comprising about 20% of the interval in top 8'. Core loss 49%.



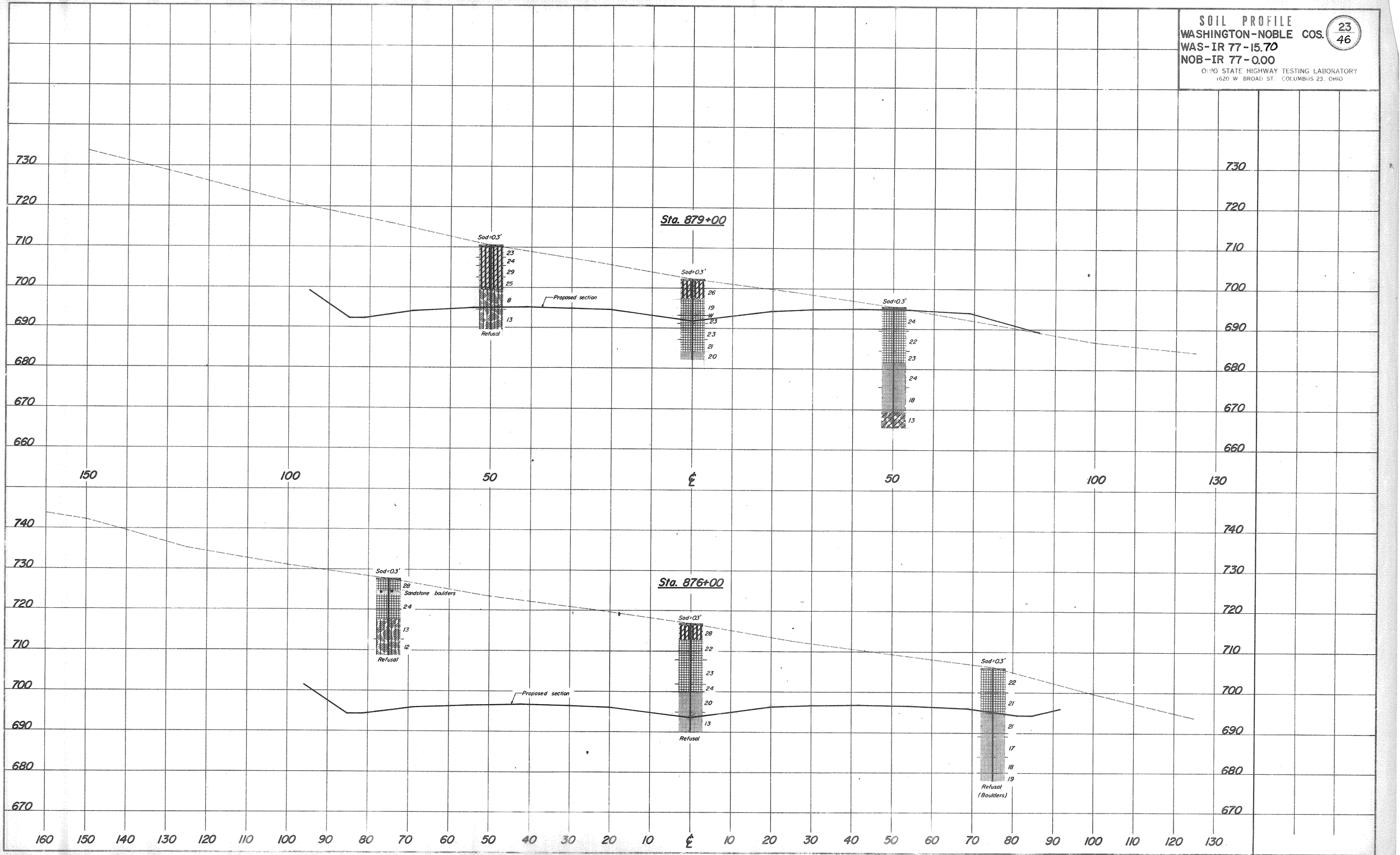
SOIL PROFILE

WASHINGTON-NOBLE COS. 23/46

WAS-IR 77-15.70

NOB-IR 77-0.00

OHIO STATE HIGHWAY TESTING LABORATORY
1620 W. BROAD ST. COLUMBUS 23, OHIO



SOIL PROFILE
WASHINGTON-NOBLE COS. 24/46
WAS-IR 77-15.70
NOB-IR 77-0.00
OHIO STATE HIGHWAY TESTING LABORATORY
1620 W. BROAD ST. COLUMBUS 23, OHIO

730
720
710
700
690
680
670

150 100 50 ℄ 50 100 140

Sta. 887+00

(Sta. 886+95)

Sod=0.3'
26
20
19
12
11
10
Refusal

Proposed section

Sod=0.3'
23
20
20
17
W 17
Refusal

Shale fragments & boulders

Sod=0.3'
18
15
16
17
15
8
Refusal

730
720
710
700
690
680
670

Sta. 882+00

Sod=0.3'
25
12
11
W 18
12
6
Refusal

Proposed section

Sod=0.3'
22
23
26
12
10

Sod=0.3'
21
19
18
20
19

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 ℄ 10 20 30 40 50 60 70 80 90 100 110 120 130 140

SOIL PROFILE

WASHINGTON - NOBLE COS.

WAS - IR 77 - 15.70

NOB - IR 77 - 0.00

OHIO STATE HIGHWAY TESTING LABORATORY
1620 W. BROAD ST. COLUMBUS 23, OHIO

25
46

Sta. 910+00

32
CPD
18
35
18
W
12
9

28
25
21

Top of Rock - In - Place

A SHALE, GRAY, FIRM, SUB-FISSILE, IN BEDS 0.2' TO 0.6' THICK, SEPARATED BY GRAY CRUMBLY CLAY SEAMS AND THIN BEDS WHICH COMPRISES 15% OF INTERVAL. INTERVAL IS VERY ARENACEOUS, CALCAREOUS, AND FIRM IN BOTTOM 2.6'. CORE LOSS 17%.

B SANDSTONE, GRAY, HARD, FINE-GRAINED, IN BEDS 0.6' TO 2.0' THICK AND SEPARATED BY FRIABLE SEAMS WHICH COMPRISE 6% OF INTERVAL, WITH 1.0' HIGH ANGLE DIAGINAL JOINT AT ELEV. 785.2'. BELOW ELEV. 784.2' INTERVAL IS CROSS-BEDDED AT MICACEOUS CARBONACEOUS LAMINAE AND IS CALCAREOUS AT BASE. NO CORE LOSS.

C LIMESTONE, FRESH WATER, GRAY, HARD, DENSE, VERY ARGILLACEOUS, IN BEDS, 0.3' THICK, INTERBEDDED WITH CRUMBLY, GRAY, CALCAREOUS, CLAY, WHICH COMPRISES 30% OF INTERVAL. NO CORE LOSS.

D INDURATED CLAY, MOTTLED DARK-RED AND YELLOWISH-GRAY, HARD, DENSE, IN BEDS 0.4' THICK AND SEPARATED BY SOFT RED AND GRAY CLAY SEAMS WHICH COMPRISES 30% OF INTERVAL. FROM ELEVATIONS 756.2' TO 751.2' INTERVAL IS GRAY AND 30% CLAY SHALE. BELOW ELEV. 751.2' INTERVAL IS DARK-RED, CALCAREOUS SLICKINSIDES AND CRUMBLY WITH LIMESTONE NODULES IN BASAL 12.0' OF INTERVAL. CORE LOSS 3%.

Proposed section

860 850 840 830 820 810 800 790 780 770 760 750 740 730 720

250 140 130 120 110 100 90 80 70 60 50 40 30 20 10 ℄ 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160

SOIL PROFILE

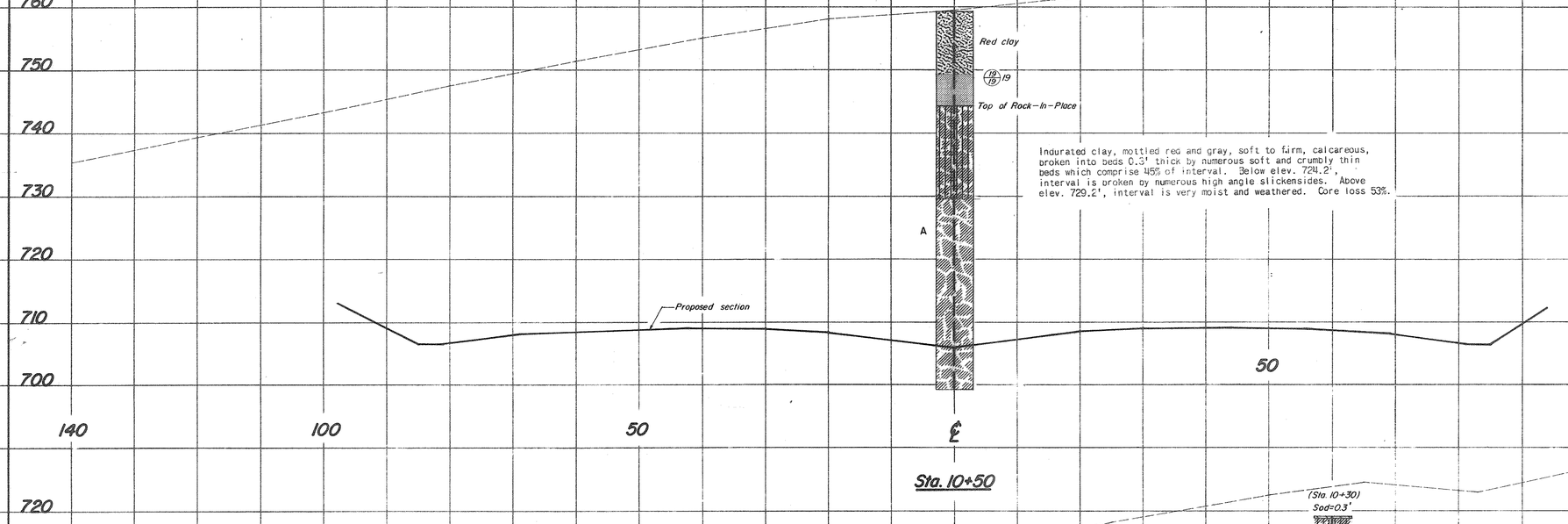
WASHINGTON-NOBLE COS. 26/46

WAS-IR 77-15.70

NOB-IR 77-0.00

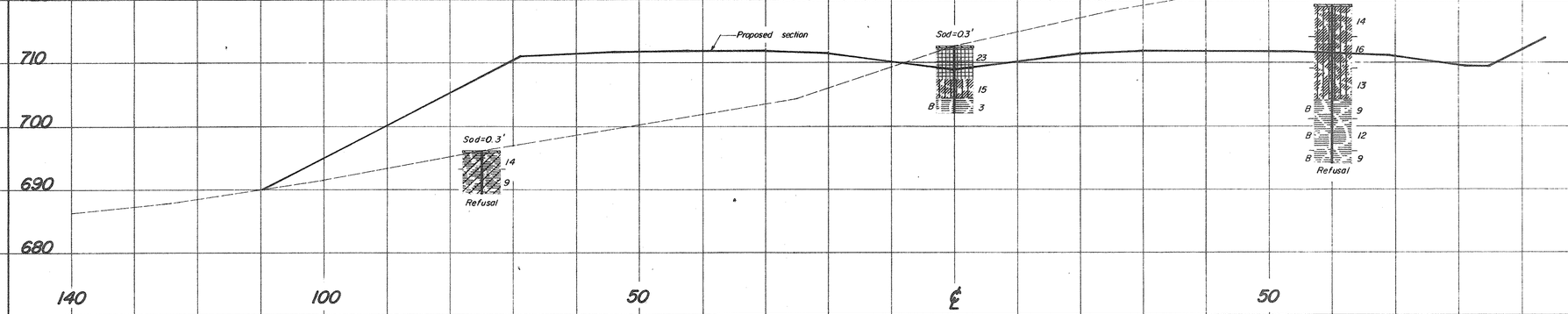
OHIO STATE HIGHWAY TESTING LABORATORY
1620 W BROAD ST COLUMBUS 23 OHIO

Sta. 14+00

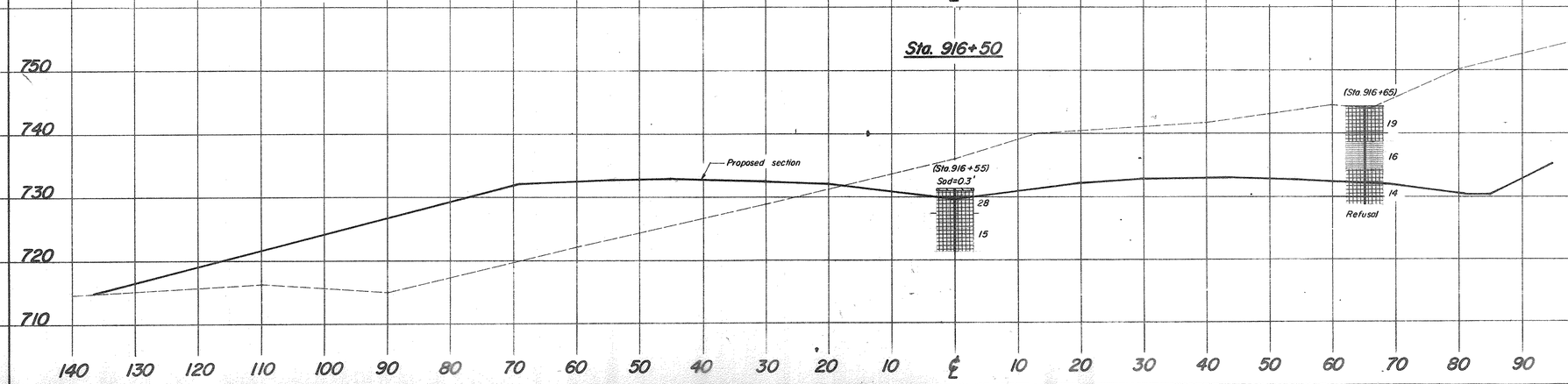


Indurated clay, mottled red and gray, soft to firm, calcareous, broken into beds 0.3' thick by numerous soft and crumbly thin beds which comprise 45% of interval. Below elev. 724.2', interval is broken by numerous high angle slickensides. Above elev. 729.2', interval is very moist and weathered. Core loss 53%.

Sta. 10+50



Sta. 916+50



SOIL PROFILE

27
46

WASHINGTON-NOBLE COS.
WAS-IR77-15.70
NOB-IR77-0.00

OHIO STATE HIGHWAY TESTING LABORATORY
1620 W BROAD ST COLUMBUS 23 OHIO

(Sta.16+15)

Top of Rock-In-Place

A. Brown silty clay.

B. Clay shale, brown with clay seams, soft, extremely weathered. Core loss 10%.

C. Indurated Clay, gray to reddish-brown, slightly calcareous in part, soft and crumbly, weathered. Core loss 3%.

D. Clay shale, gray to greenish-brown, generally soft and crumbly, poorly fissile, weathered. Core loss 2%.

E. Shale, gray, with limy nodules, argillaceous, slightly arenaceous, firm, broken, with clay shale intervals, very badly broken below elev. 813.2', with 2.5' clay seam at elev. 807.2'. Core loss 27%.

F. Sandstone, gray, fine-grained, firm, broken. Core loss 50%.

G. Limestone, gray, hard, very badly broken intervals, with 1.0' clay seam at base. Core loss 64%.

LINE MATCH

850 840 830 820 810 800 790 780

220 230 240 250 260 270 280 290 300 310

Sta. 16+00

790 780 770 760 750 740 730 720 710 700

Proposed section

100 90 80 70 60 50 40 30 20 10 ℄ 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220

830 820 810 800 790 780 770 760 750 740 730 720 710 700

LINE MATCH

SOIL PROFILE

WASHINGTON - NOBLE COS. (28/46)
WAS - IR77 - 15.70
NOB - IR77 - 0.00

OHIO STATE HIGHWAY TESTING LABORATORY
1620 W. BROAD ST. COLUMBUS 23, OHIO

Sta. 18+50

Sod = 0.3'
26
14
14
9
10
Refusal

Brown silty clay with sandstone boulders

14 (12/28)

Top of Rock-In-Place

A. INDURATED CLAY, MOTTLED MAROON TO LIGHT-BROWN WEATHERED. NO CORE LOSS.

B. INDURATED CLAY, RED, FIRM TO CRUMBLY, CALCAREOUS, BROKEN, WITH SLICKENSIDES, IN FRAGMENTS 0.3' THICK AND NUMEROUS CRUMBLY BEDS WHICH COMPRISE 90% OF INTERVAL. BELOW ELEV. 716.0', INTERVAL IS GREENISH-GRAY, VERY CALCAREOUS AND VERY BROKEN, WITH FEW FRESH WATER LIMESTONE BEDS 0.5' THICK (COMPRISING 5% OF THE BASAL INTERVAL). CORE LOSS 46%.

C. CLAY SHALE, GRAY, FIRM TO CRUMBLY, SUB-FISSILE IN PART, BROKEN IN BEDS 0.3' THICK AND SEPARATED BY CRUMBLY THIN BEDS AND SEAMS WHICH COMPRISE 70% OF INTERVAL. CORE LOSS 28%.

Proposed section

800 790 780 770 760 750 740 730 720 710 700 690 680

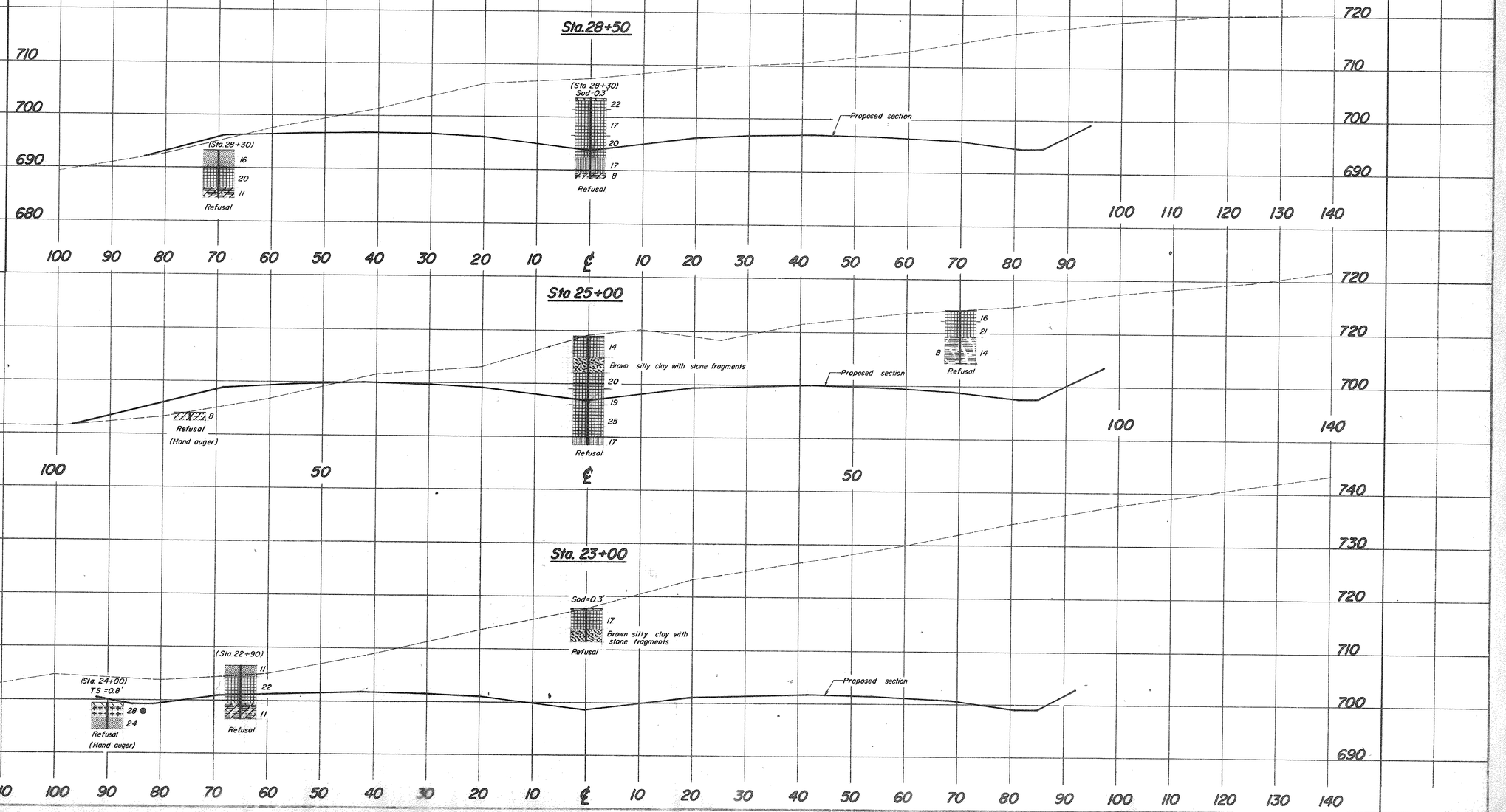
110 100 90 80 70 60 50 40 30 20 10 ℄ 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210

SOIL PROFILE

29
46

WASHINGTON-NOBLE COS.
WAS-IR 77-15.70
NOB-IR 77-0.00

OHIO STATE HIGHWAY TESTING LABORATORY
1620 W. BROAD ST. COLUMBUS 23, OHIO



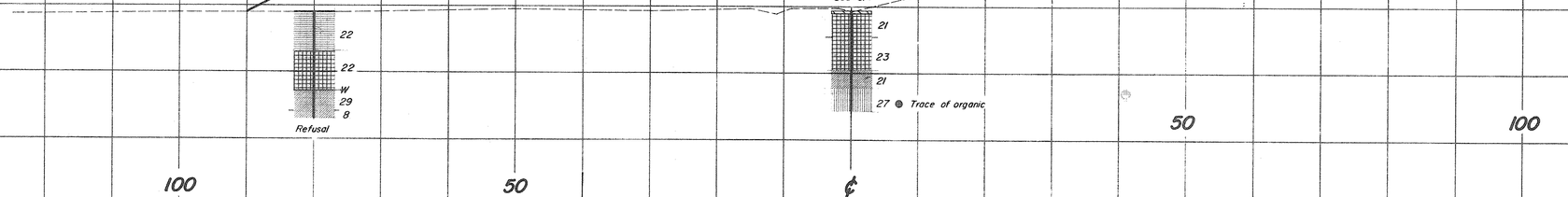
SOIL PROFILE

30
46

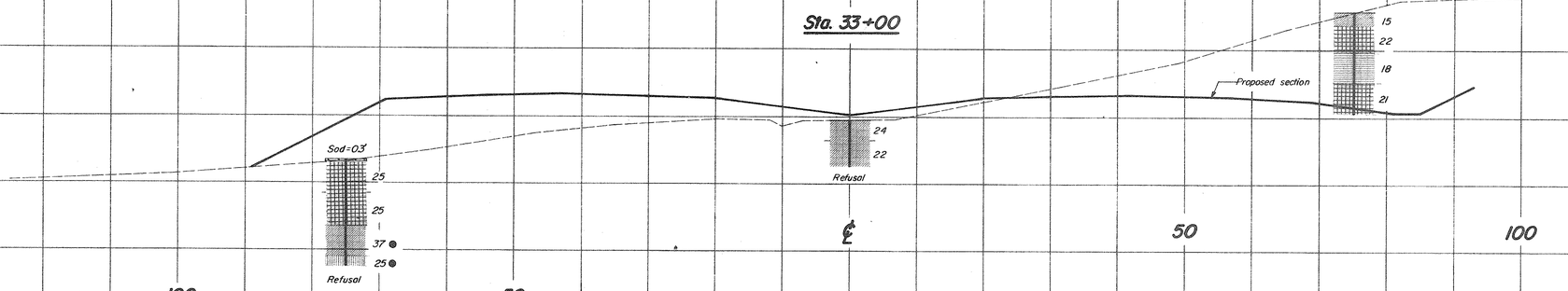
WASHINGTON-NOBLE COS.
WAS-IR77-15.70
NOB-IR77-0.00

OHIO STATE HIGHWAY TESTING LABORATORY
1620 W BROAD ST. COLUMBUS 23, OHIO

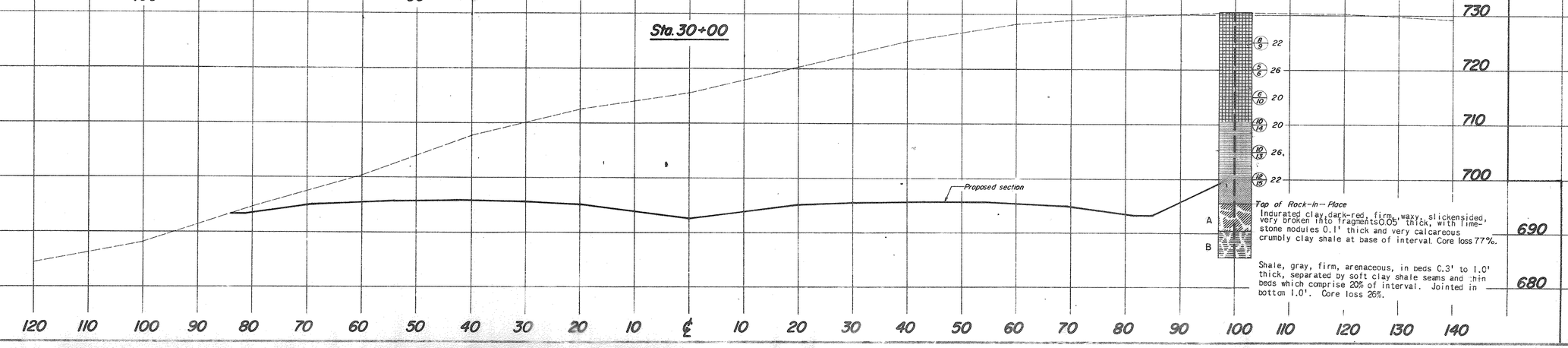
Sta. 36+50



Sta. 33+00



Sta. 30+00



SOIL PROFILE

WASHINGTON–NOBLE COS.
WAS–IR77–15.70
NOB–IR77–0.00

OHIO STATE HIGHWAY TESTING LABORATORY
1620 W BROAD ST COLUMBUS 23, OHIO

31
46

Sta. 77+50

Proposed section

B 27 14 22 Refusal

27 21 12 Refusal

Sta. 66+00

Proposed section

27 26 W 33 ● Trace of organic 37 ● Slightly organic 31 ● Trace of organic Refusal

Sod-0.3' 24 27 38 ● 29 ⊖ 22 14 Refusal

20 18 19 19 27 ● Trace of organic W 21

740 730 720 710 700 690 680 670 660 650

140 100 50 ℄ 50 100 140

140 130 120 110 100 90 80 70 60 50 40 30 20 10 ℄ 10 20 30 40 50 60 70 80 90 100 110 120 130 140

SOIL PROFILE

WASHINGTON - NOBLE COS.
WAS - IR 77 - 15.70
NOB - IR 77 - 0.00

OHIO STATE HIGHWAY TESTING LABORATORY
1620 W. BROAD ST. COLUMBUS 23, OHIO

32
46

Sta. 86+00

B 7
B 9
10
9
Refusal

Brown silty clay
Top of Rock-In-Place

A

Clay shale, yellowish-brown, firm to soft and crumbly, in beds 0.3' thick, separated by soft thin beds and seams which comprise 40% of interval. Core loss 30%.

B

Shale, gray, firm, carbonaceous, dense, very uniform, in beds 0.2' to 1.5' thick and separated by soft clay shale seams which comprise 10% of interval. Interval becomes arenaceous in bottom 8.0'. Core loss 6%.

C

Sandstone, gray, firm to hard, fine-grained, calcareous, argillaceous in part, broken into beds 0.2' to 1.5' thick, separated by clay seams which comprise 5% of interval. No core loss.

D

Indurated clay, mottled red and gray, soft and crumbly to firm, very calcareous, with numerous diagonal slickensides, in beds 0.3' thick, broken by crumbly thin beds which comprise 60% of interval. Below elev. 763.7', 60% of interval is very firm, with numerous limestone nodules, seams and granules, broken at diagonal slickensides into fragments 0.4' thick. Core loss 21%.

E

Shale, gray, firm to moderately firm, dense, in beds 0.2' to 1.0' thick, separated by soft clay shale seams which comprise 20% of interval. Core loss 33%.

F

Clay shale, greenish-gray, crumbly and calcareous. No core loss.

Proposed section

870 860 850 840 830 820 810 800 790 780 770 760 750 740 730 720 710

160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 ℄ 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160

GEOLOGY OF THE SITE

The structure site is located at the confluence of Buffalo Run and West Fork of Duck Creek, adjacent to the east valley wall, in an area where moderately deep alluvium overlies shale bedrock, of Pennsylvanian age.

EXPLORATION

The exploration consisted of two drive sample-core borings, made on November 4 and 5, 1964, and twelve drive rod penetration tests, made on October 20, 1964.

INVESTIGATIONAL DISCLOSURES

The borings disclosed that bedrock surface is overlain by very loose and dense, stiff and very stiff silts, sands, and clays, containing various amounts of organic material. The borings encountered relatively flat-lying bedrock surface at 18 and 20-foot depths, elevations 662 and 660 feet. Borings were terminated 5 and 12 feet below bedrock surface, elevations 655 and 650 feet.

The rod soundings met gradual increase in penetration resistance with increase in depth and were terminated upon encounter with refusal to penetration at 17 and 20-foot depths, elevations 662 feet and 660 feet, considered to be on bedrock surface, as revealed by the borings.

No free water was observed in any of the rod sounding holes.

LEGEND

- Auger Boring Location - Plan View.
- Press and/or Drive Sample and/or Core Boring Location - Plan View.
- Drive Rod Penetration Resistance Sounding Location - Plan View.
- Capped Pile
- Footing
- Footing on Pile
- TR — Top of Rock
- Horizontal Bar on Boring Log Indicates the Depth the Sample Was Taken.
- X/Y — Figures Beside the Boring Log in Profile Indicate the Number of Blows For Standard Penetration Test.
  X = Number of Blows for First 6 Inches.
  Y = Number of Blows for Second 6 Inches.
- Drive Rod Penetration Resistance Sounding Log - Profile.
- Casing
- Resistance "R" < 10,000 lbs.
- Resistance "R" > 10,000 lbs.
- Z — Indicates Final Measurement of Penetration, in Inches.
- W — Indicates Free Water Elevation.
- S — Indicates Static Water Elevation.

SYMBOLS OF ROCK TYPES

- Coal
- Weathered Indurated Clay
- Indurated Clay
- Weathered Shale
- Shale
- Weathered Sandstone
- Sandstone
- Leached Dolomite
- Dolomite
- Leached Limestone
- Limestone

GENERAL INFORMATION

Drive Rod Penetration Sounding Tests

Drive rod penetration resistance tests constitute driving a 1.315-inch diameter steel rod, with a 45° cone point, into the ground, using a 122-pound drop-hammer with a free fall of five feet. At one or two-foot depth intervals, a measurement is taken to determine the amount of penetration achieved in three hammer drops. This reading is converted to an empirical value for capacity "R", in thousands of pounds (which is a measure of both the point resistance and frictional resistance on the rod), by using charts prepared by the Ohio Department of Highways, Bureau of Bridges, on the basis of correlation study of rod penetration with past performance of pile driving. For interpretation, a graph is prepared by plotting the value "R" against the depth at which the reading was taken, and connecting the plotted points. The curve so obtained reflects the density of subsurface materials in a manner that can be readily compared with data from similar tests at other locations on the structure site. From this comparison, the overall uniformity of subsurface condition may be evaluated.

Drive Sample Borings — Drive-Press Sample Borings

Drive sample borings are made by means of a rotary-type drill rig, employing a 2" O.D., 1-3/8" I.D. sampler, at 2-1/2 and/or 5-foot depth intervals, driven by means of a 140-pound drop-hammer, with a free fall of 30 inches. The number of blows required to drive the sampler 12 inches is considered the standard penetration test.

Drive-press sample borings are made by means of a rotary-type drill rig, employing a 2" O.D., 1-3/8" I.D. drive sampler, and 3" O.D. thin-wall press sampler. The press sampler is advanced by continuous uniform pressure, applied by the drill rig.

The boring log sheets show a graphic plot of the information obtained, including depth and elevation of the sample, number of blows for the standard penetration tests in two 6-inch increments, depth of press samples, field sample number, sample description — based on laboratory tests and the Casagrande AC classification system - and gradation, plasticity, and moisture content determinations. Results of strength and consolidation testing, if performed, appear on separate enclosures.

At depths where materials are bouldery or gravelly to the extent that the sampler can not be driven, a wash sample is procured for visual classification, in order to determine the general character of the material. These samples are not considered sufficiently representative to warrant laboratory testing.

Particle Size Definitions

Boulders	Cobbles	Gravel	Coarse Sand	Fine Sand	Silt	Clay
	8" – 3"	3" – 2.0mm	2.0mm – 0.42mm	0.42mm – 0.074mm	0.074mm – 0.005mm	
			No. 10 sieve	No. 40 sieve	No. 200 sieve	

LOG OF BORING

Date Started 11-4-64 | Sampler Type SS | Dia 1 3/8"
Date Completed 11-5-64 | Casing Length 17.5' | Dia 3 1/2"
Boring No. B-1 | Station & Offset 40+43, 50' Lt (REAR ABUTMENT)
Water Elev. | Surface Elev. 679.6'

Elev.	Depth	Sample No.	Rec. In.	Loss Ft.	Description	Physical Characteristics: Gravel %	Coarse Sand %	Fine Sand %	Silt %	Clay %	Plasticity	Moisture %
679.6	0											
	2											
674.6	4											
	6	3/3			Red Silty Clay	1	0	0	4	47	49	45	16	30
670.1	8	3/4			Red Silt and Clay	2	0	0	18	40	42	36	13	26
669.6	10	2/2			Gray Sandy Silt, Slightly Organic	3	0	4	49	21	26	NP	NP	49
667.1	12	4/4			Brownish-Gray Silty Gravelly Sand, Trace of Organic	4	20	19	31	12	18	PL=	22	13
664.6	14	2/3			Grayish-Brown Gravelly Silt, Slightly Organic	5	40	10	4	30	16	PL=	25	19
662.1	16	5/5*			Grayish-Brown Silty Sandy Gravel	6	63	8	11	9	9	NP	NP	15
661.6	18		12.0	0.0	TOP OF ROCK									
	20													
	22													
	24		4.6	0.4	Shale, gray, extremely arenaceous, firm, fissile, with sandstone seams. Core loss 3%.									
	26													
	28		5.0	0.0										
649.6	30				BOTTOM OF BORING									

*REFUSAL

LOG OF BORING

Date Started 11-4-64 | Sampler Type SS | Dia 1 3/8"
Date Completed 11-5-64 | Casing Length 20' | Dia 3 1/2"
Boring No. B-16 | Station & Offset 41+56, 50' Rt (FORWARD ABUTMENT)
Water Elev. | Surface Elev. 680.4'

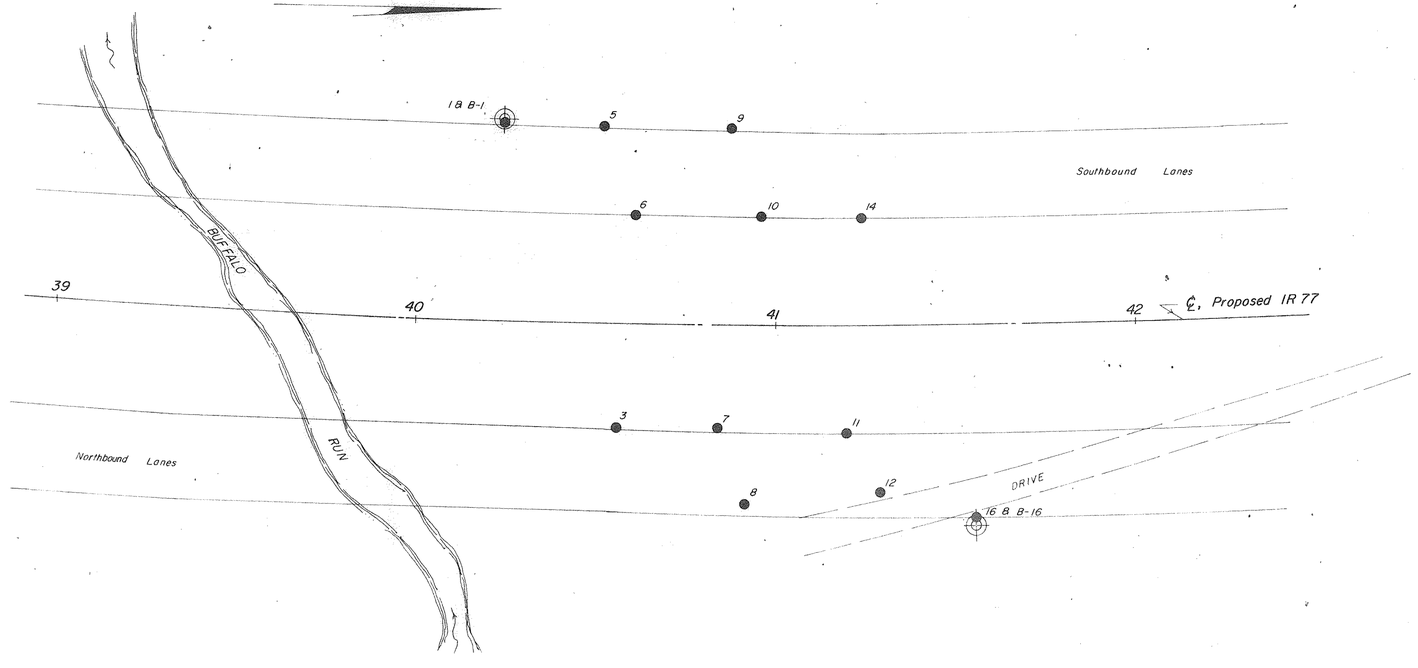
Elev.	Depth	Sample No.	Rec. In.	Loss Ft.	Description	Physical Characteristics: Gravel %	Coarse Sand %	Fine Sand %	Silt %	Clay %	Plasticity	Moisture %
680.4	0											
	2											
675.4	4											
	6	2/3			Brown Silt and Clay	1	0	1	7	54	38	37	14	32
672.9	8	3/3			Brown Sandy Silt	2	0	9	37	21	33	28	9	30
670.4	10	3/3			Brownish-Gray Silt and Clay, Trace of Organic	3	0	1	9	42	48	33	12	28
667.9	12	3/4			Gray Silt and Clay, Trace of Organic	4	0	1	9	44	46	32	12	29
665.4	14	2/3			Gray Sandy Clay, Slightly Organic	5	0	5	30	35	30	46	14	41
662.9	16	5/13			Sandy Clayey Silt and Gravel, Trace of Organic	6	V	I	S	U	A	L	25	7	13
660.4	18				TOP OF ROCK									
	20													
	22		4.4	0.6	Shale, gray, extremely arenaceous, fissile, firm, with sandstone seams. Core loss 12%.									
655.4	24				BOTTOM OF BORING									

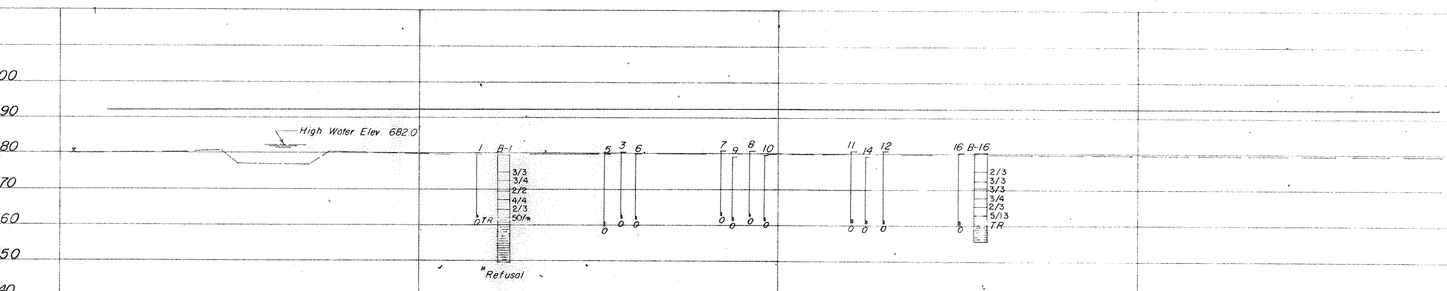
NOTE: Information shown by this subsurface investigation was obtained solely for the use in establishing design controls for the project. The State of Ohio does not guarantee the accuracy of this data and it is not to be construed as a part of the plans governing construction of the project.

OHIO STATE HIGHWAY
TESTING LABORATORY
1620 WEST BROAD STREET, COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. NOB-IR 77-0076 L/R
IR 77 OVER BUFFALO RUN
SEC. WAS-NOB-IR 77-(15.83) (0.00)

CHECKED BY	REVIEWED BY	DATE
R.H.P.	R.D.R.	11/23/64





SCALE: 1" = 20'

OHIO STATE HIGHWAY
TESTING LABORATORY
1620 WEST BROAD ST., COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. NOB-IR 77-0076 L/R
IR 77 OVER BUFFALO RUN
SEC. WAS-NOB-IR 77-(15.83)(0.00)

PLAN AND PROFILE

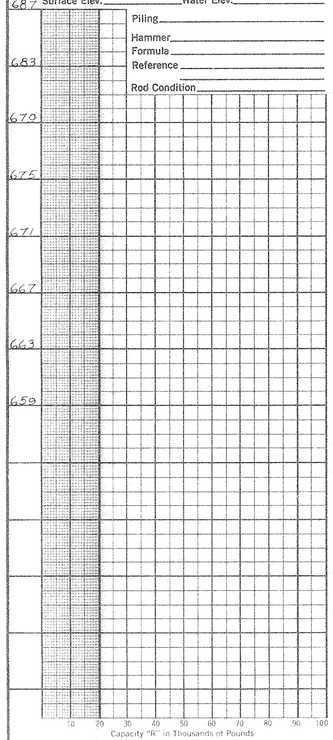
DRAWN BY	CHECKED BY	REVIEWED BY	DATE
R.L.F.	R.H.P.	R.D.R.	11/23/64

TE-165
500-11-64

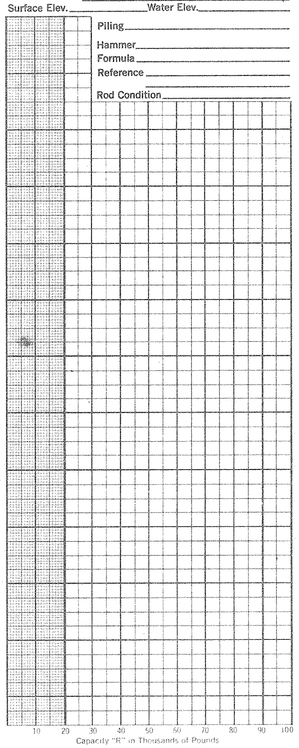
35
46
3
3

WAS-IR 77-15.10
NOB-IR 77-0.00

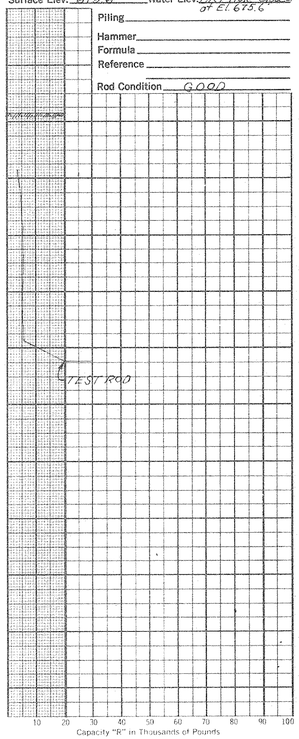
Test Location No. ____
Station & Offset ____
Surface Elev. ____ Water Elev. ____
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition ____



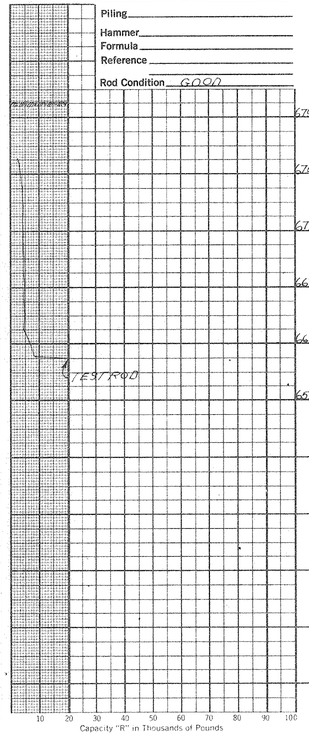
Test Location No. ____
Station & Offset ____
Surface Elev. ____ Water Elev. ____
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition ____



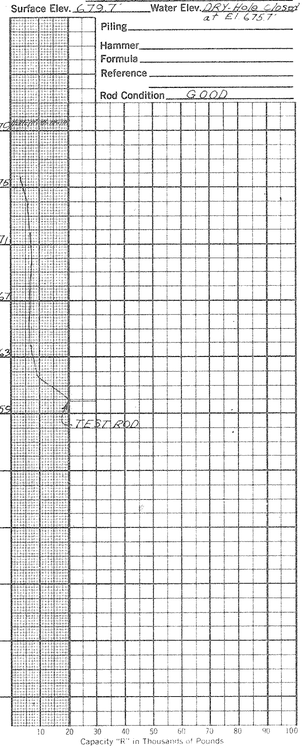
Test Location No. 1
Station & Offset 40+23.55' LT
REAR ABUTMENT
Surface Elev. 679.6' Water Elev. DRY Hole Closed at El 675.6
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition GOOD



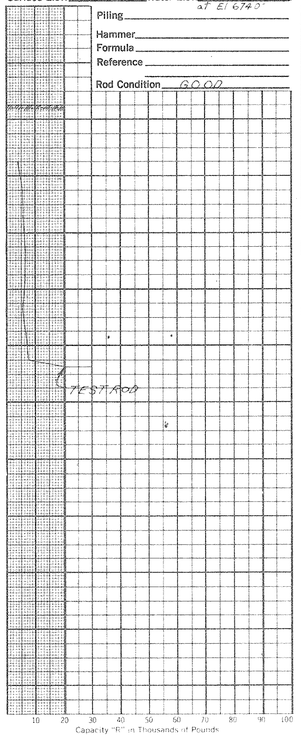
Test Location No. 3
Station & Offset 40+56.29' RT
REAR ABUTMENT
Surface Elev. 680.1 Water Elev. ____
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition GOOD



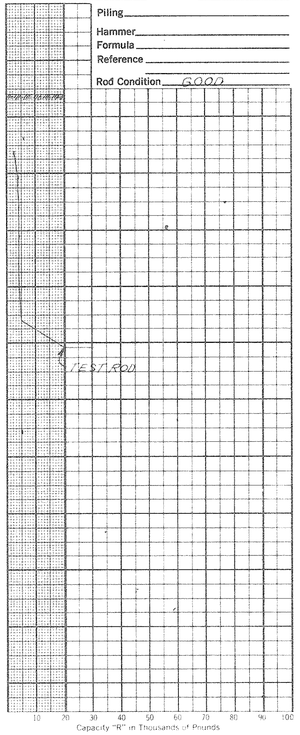
Test Location No. 5
Station & Offset 40+51.55' LT
REAR PIER
Surface Elev. 679.7' Water Elev. DRY Hole Closed at El 675.7'
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition GOOD



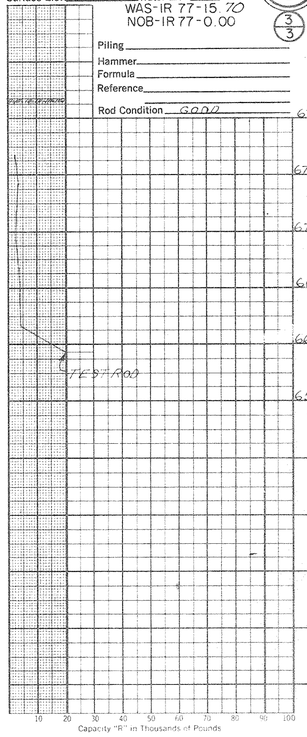
Test Location No. 6
Station & Offset 40+60.31' LT
REAR PIER
Surface Elev. 680.0 Water Elev. DRY Hole Closed at El 674.0'
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition GOOD



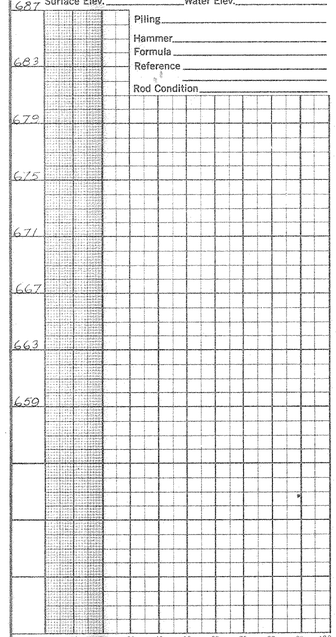
Test Location No. 7
Station & Offset 40+84.29' RT
REAR PIER
Surface Elev. 680.6 Water Elev. ____
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition GOOD



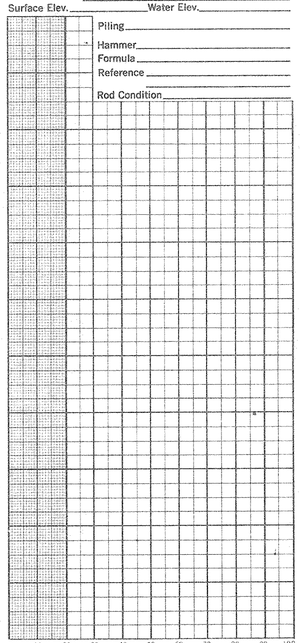
Test Location No. 8
Station & Offset 40+92.50' RT
REAR PIER
Surface Elev. 680.4 Water Elev. ____
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition GOOD



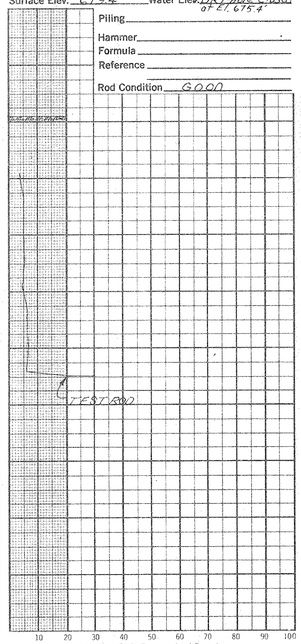
Test Location No. ____
Station & Offset ____
Surface Elev. ____ Water Elev. ____
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition ____



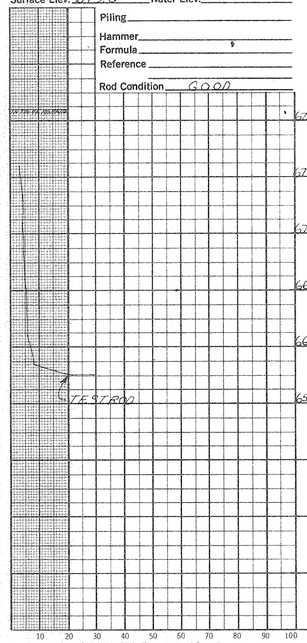
Test Location No. ____
Station & Offset ____
Surface Elev. ____ Water Elev. ____
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition ____



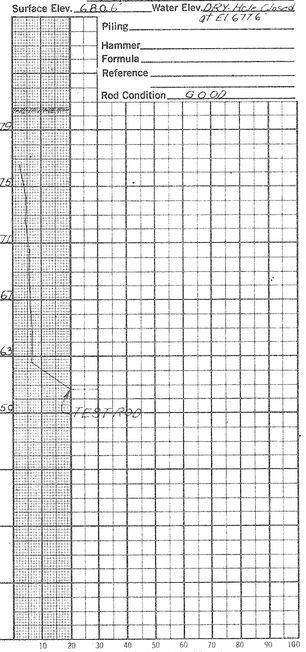
Test Location No. 9
Station & Offset 40+87.55' LT
FORWARD PIER
Surface Elev. 679.4' Water Elev. DRY Hole Closed at El 675.4'
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition GOOD



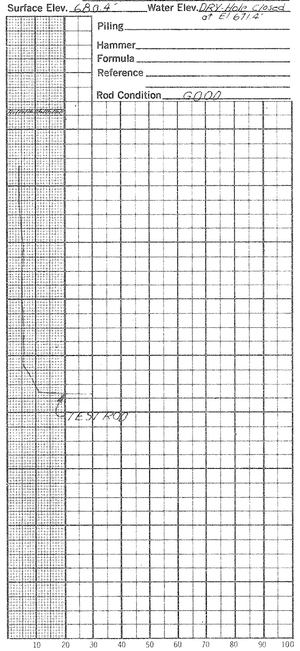
Test Location No. 10
Station & Offset 40+96.30' LT
FORWARD PIER
Surface Elev. 675.8' Water Elev. ____
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition GOOD



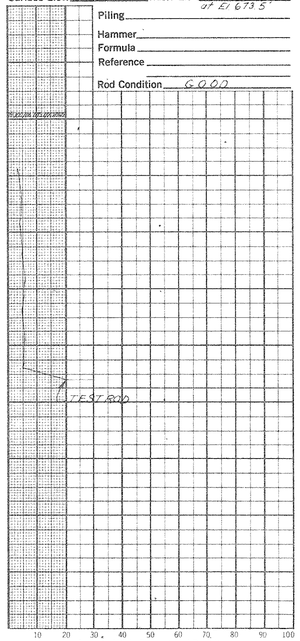
Test Location No. 11
Station & Offset 41+20.30' RT
FORWARD PIER
Surface Elev. 680.6' Water Elev. DRY Hole Closed at El 676.6
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition GOOD



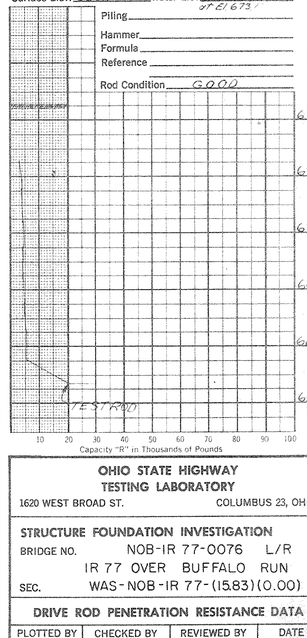
Test Location No. 12
Station & Offset 41+29.47' RT
FORWARD PIER
Surface Elev. 680.4' Water Elev. DRY Hole Closed at El 676.4
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition GOOD



Test Location No. 14
Station & Offset 41+24.30' LT
FORWARD ABUTMENT
Surface Elev. 679.5 Water Elev. DRY Hole Closed at El 673.5
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition GOOD



Test Location No. 16
Station & Offset 41+56.54' RT
FORWARD ABUTMENT
Surface Elev. 680.1 Water Elev. DRY Hole Closed at El 673.1
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition GOOD



OHIO STATE HIGHWAY TESTING LABORATORY
1620 WEST BROAD ST. COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. NOB-IR 77-0076 L/R
IR 77 OVER BUFFALO RUN
SEC. WAS-NOB-IR 77-(15.83)(0.00)

DRIVE ROD PENETRATION RESISTANCE DATA

PLOTTED BY	CHECKED BY	REVIEWED BY	DATE
R.C.	R.H.P.	R.D.R.	11/23/64

GEOLOGY OF THE SITE

The structure site is located on the east terrace of the West Fork of Duck Creek, adjacent to the east valley wall, in an area where moderately deep alluvium overlies shale, indurated clay, and associated coal bedrock, of Pennsylvanian age.

EXPLORATION

The exploration consisted of two drive sample-core borings, made between November 2 and 4, 1964, and eight drive rod penetration tests, made between October 15 and 20, 1964.

INVESTIGATIONAL DISCLOSURES

The borings disclosed that bedrock surface is overlain by very loose and dense, stiff and very stiff silts, sands, and clays, containing various amounts of organic material. The borings encountered sloping bedrock surface at 25 and 35-foot depths, elevations 660 and 648 feet. Borings were terminated 10 feet below bedrock surface, elevations 656 and 648 feet.

The rod soundings met gradual increase in penetration resistance with increase in depth and were terminated upon encounter with refusal to penetration at 15 and 34-foot depths, elevations 686 feet and 697 feet, considered to be slightly above bedrock surface, as revealed by the borings.

No free water was observed in any of the rod sounding holes.

LEGEND

- Auger Boring Location - Plan View.
- Press and/or Drive Sample and/or Core Boring Location - Plan View.
- Drive Rod Penetration Resistance Sounding Location - Plan View.
- Capped Pile
- Footing
- Footing on Pile
- TR — Top of Rock
- Horizontal Bar on Boring Log Indicates the Depth the Sample Was Taken.
- X/Y — Figures Beside the Boring Log in Profile Indicate the Number of Blows For Standard Penetration Test. X = Number of Blows for First 6 Inches. Y = Number of Blows for Second 6 Inches.
- Drive Rod Penetration Resistanee Sounding Log - Profile
- Casing
- Resistance "R" < 10,000 lbs.
- Resistance "R" ≥ 10,000 lbs.
- Z — Indicates Final Measurement of Penetration, in Inches.
- W — Indicates Free Water Elevation.
- ▽ — Indicates Static Water Elevation.

SYMBOLS OF ROCK TYPES

- Coal
- Weathered Indurated Clay
- Indurated Clay
- Weathered Shale
- Shale
- Weathered Sandstone
- Sandstone
- Leached Dolomite
- Dolomite
- Leached Limestone
- Limestone

GENERAL INFORMATION

Drive Rod Penetration Sounding Tests

Drive rod penetration resistance tests constitute driving a 1.315-inch diameter steel rod, with a 45° cone point, into the ground, using a 122-pound drop-hammer with a free fall of five feet. At one or two-foot depth intervals, a measurement is taken to determine the amount of penetration achieved in three hammer drops. This reading is converted to an empirical value for capacity "R", in thousands of pounds (which is a measure of both the point resistance and frictional resistance on the rod), by using charts prepared by the Ohio Department of Highways, Bureau of Bridges, on the basis of correlation study of rod penetration with past performance of pile driving. For interpretation, a graph is prepared by plotting the value "R" against the depth at which the reading was taken, and connecting the plotted points. The curve so obtained reflects the density of subsurface materials in a manner that can be readily compared with data from similar tests at other locations on the structure site. From this comparison, the overall uniformity of subsurface condition may be evaluated.

Drive Sample Borings — Drive-Press Sample Borings

Drive sample borings are made by means of a rotary-type drill rig, employing a 2" O.D., 1-3/8" I.D. sampler, at 2-1/2 and/or 5-foot depth intervals, driven by means of a 140-pound drop-hammer, with a free fall of 30 inches. The number of blows required to drive the sampler 12 inches is considered the standard penetration test.

Drive-press sample borings are made by means of a rotary-type drill rig, employing a 2" O.D., 1-3/8" I.D. drive sampler, and 3" O.D. thin-wall press sampler. The press sampler is advanced by continuous uniform pressure, applied by the drill rig.

The boring log sheets show a graphic plot of the information obtained, including depth and elevation of the sample, number of blows for the standard penetration tests in two 6-inch increments, depth of press samples, field sample number, sample description — based on laboratory tests and the Casagrande AC classification system - and gradation, plasticity, and moisture content determinations. Results of strength and consolidation testing, if performed, appear on separate enclosures.

At depths where materials are bouldery or gravelly to the extent that the sampler can not be driven, a wash sample is procured for visual classification, in order to determine the general character of the material. These samples are not considered sufficiently representative to warrant laboratory testing.

Particle Size Definitions

Boulders	Cobbles	Gravel	Coarse Sand	Fine Sand	Silt	Clay
8"	3"	2.0mm	0.42mm	0.074mm	0.005mm	
		No. 10 sieve	No. 40 sieve	No. 200 sieve		

LOG OF BORING

Date Started 11-2-64 — Sampler Type SS — Dia 1 3/8" — Water Elev.
Date Completed 11-3-64 — Casing Length — Dia
Boring No. B-5 — Station & Offset 72+84, 54' Rt (REAR PIER) — Surface Elev. 691.0'

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	Physical Characteristics Agg. %	C %	F.S. %	Si. %	Cl. %	LL	PI	W %	Unit Class
691.0	0														
	2														
	4														
686.0	6	6/8			Red Silt	1	0	8	11	30	51	33	5	21	
683.5	8	7/9			Brown Silty Clay	2	0	2	3	36	59	47	20	27	
681.0	10	7/8			Red Sandy Gravelly Clay	3	30	7	17	17	29	37	14	22	
678.5	12	6/7			Red Sandy Gravelly Clay	4	36	4	15	18	27	35	11	21	
676.0	14	3/4			Brown Clayey Silt	5	0	0	17	43	40	30	8	24	
673.5	16	2/3			Reddish-Brownish-Gray Clayey Silt, Trace of Organic	6	0	0	4	50	46	33	9	30	
671.0	18	3/3			Gray Silt and Clay, Slightly Organic	7	0	0	1	46	53	37	13	31	
668.5	20	3/3			Gray Silt and Clay, Slightly Organic	8	0	0	4	57	39	35	12	33	
666.0	22														
	24														
	26				TOP OF ROCK										
	28		3.9	1.1	Shale, gray, extremely arenaceous, fissile, medium-firm to firm, with few slightly weathered intervals. Core loss 12%.										
	30														
	32														
	34		4.6	0.4											
656.0					BOTTOM OF BORING										

LOG OF BORING

Date Started 11-3-64 — Sampler Type SS — Dia 1 3/8" — Water Elev.
Date Completed 11-4-64 — Casing Length — Dia
Boring No. B-11 — Station & Offset 73+58, 30' Lt (FORWARD PIER) — Surface Elev. 693.3'

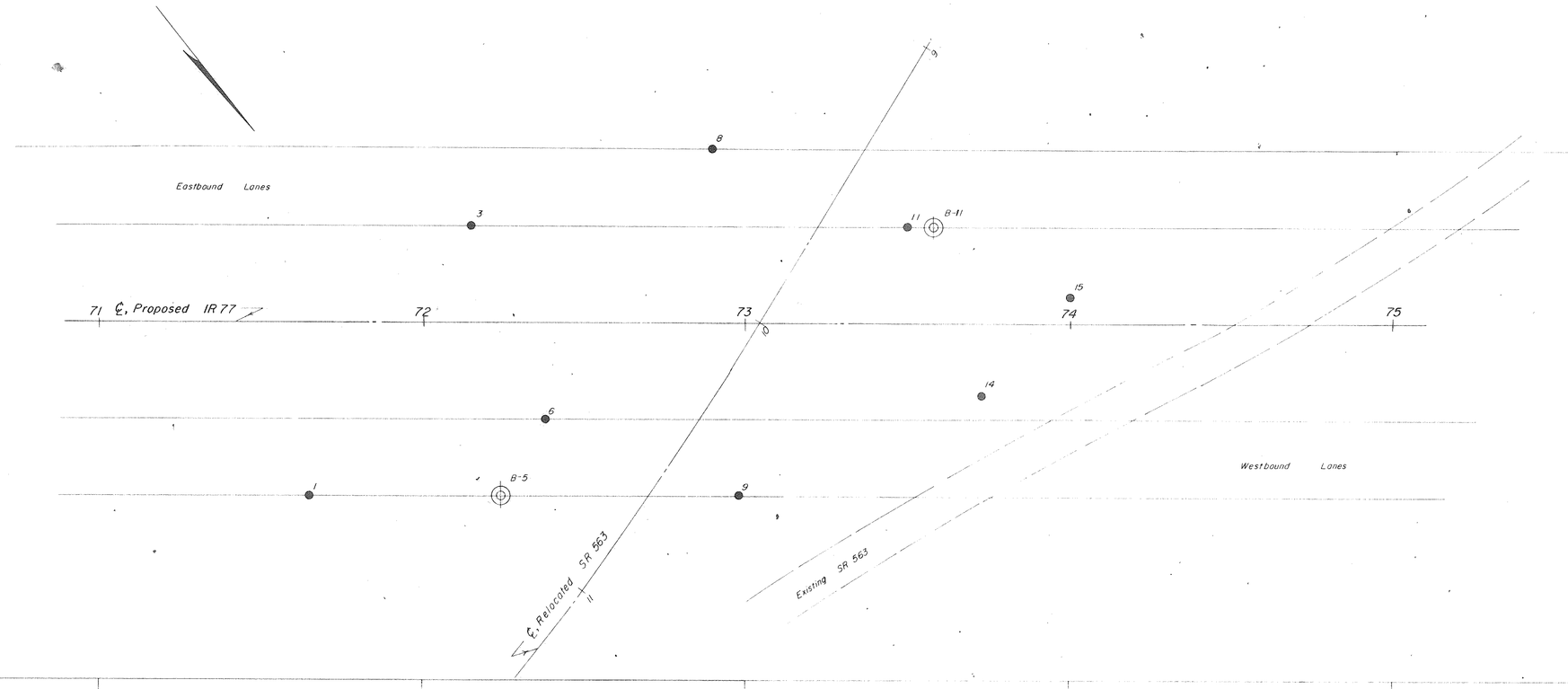
Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	Physical Characteristics Agg. %	C %	F.S. %	Si. %	Cl. %	LL	PI	W %	Unit Class
693.3	0														
	2														
	4														
688.3	6	7/10			Red Silty Sandy Gravel	1	47	7	10	15	21	32	9	22	
685.8	8	7/10			Red Clayey Sandy Gravel	2	54	6	12	10	18	33	12	20	
683.3	10	6/9			Red Sandy Gravelly Silt	3	39	6	11	18	26	32	10	19	
680.8	12	6/10			Reddish-Brown Sandy Gravelly Silt	4	38	3	14	23	22	29	9	20	
678.3	14	7/10			Reddish-Brown Silty Gravel	5	52	4	10	12	22	PL=	23	27	
675.8	16	5/7			Grayish-Brown Sandy Silt, Slightly Organic	6	0	4	30	30	36	26	7	26	
673.3	18	5/7			Brownish-Gray Clayey Silt, Trace of Organic	7	0	2	12	41	45	32	9	24	
670.8	20	5/6			Gray Sandy Silt, Slightly Organic	8	0	15	25	41	19	33	7	24	
668.3	22	5/8			Gray Gravelly Silt, Slightly Organic	9	40	0	4	26	30	NP	NP	21	
	24														
	26														
663.3	28	7/13			Gray Silty Gravel	10	56	5	9	15	15	27	6	17	
	30														
	32														
	34				TOP OF ROCK										
658.3	36														
	38		2.9	1.1	Shale, black, carbonaceous, fissile, medium-firm, with 0.5' coal seam at base. Core loss 42%.										
653.3	40														
	42														
	44		4.4	0.6	Underclay, gray, soft to medium-firm, broken and crumbly, slightly weathered. Core loss 12%.										
648.3					BOTTOM OF BORING										

NOTE: Information shown by this subsurface investigation was obtained solely for the use in establishing design controls for the project. The State of Ohio does not guarantee the accuracy of this data and it is not to be construed as a part of the plans governing construction of the project.

OHIO STATE HIGHWAY
TESTING LABORATORY
1620 WEST BROAD STREET, COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. NOB-IR 77-0136 L/R
IR 77 OVER SR 563 RELOCATED
SEC. WAS-NOB-IR 77-(15.83)(0.00)

DESIGNED BY — DRAWN BY — CHECKED BY — DATE

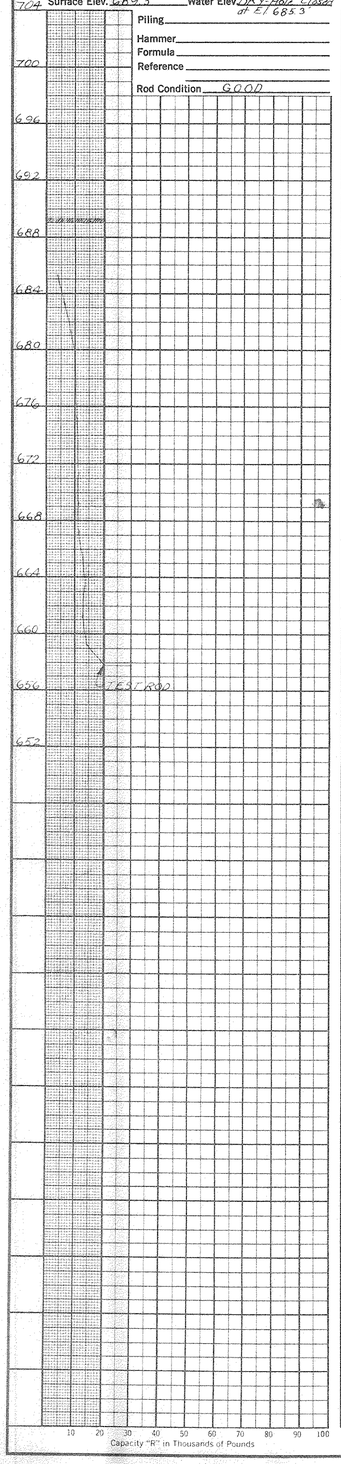


SCALE: 1" = 20'

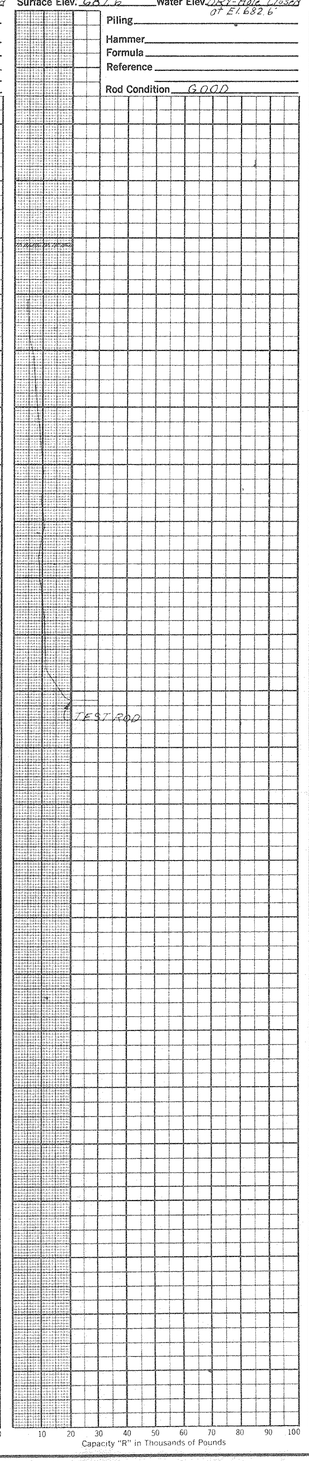
OHIO STATE HIGHWAY TESTING LABORATORY			
1620 WEST BROAD ST., COLUMBUS 23, OHIO			
STRUCTURE FOUNDATION INVESTIGATION			
BRIDGE NO. NOB - IR 77 - 0136 L/R			
IR 77 OVER SR 563 RELOCATED			
SEC. WAS - NOB - IR 77 - (15.83) (0.00)			
PLAN AND PROFILE			
DRAWN BY R.L.F.	CHECKED BY R.H.P.	REVIEWED BY R.D.R.	DATE 11/18/64

TE-114
1000-1-64

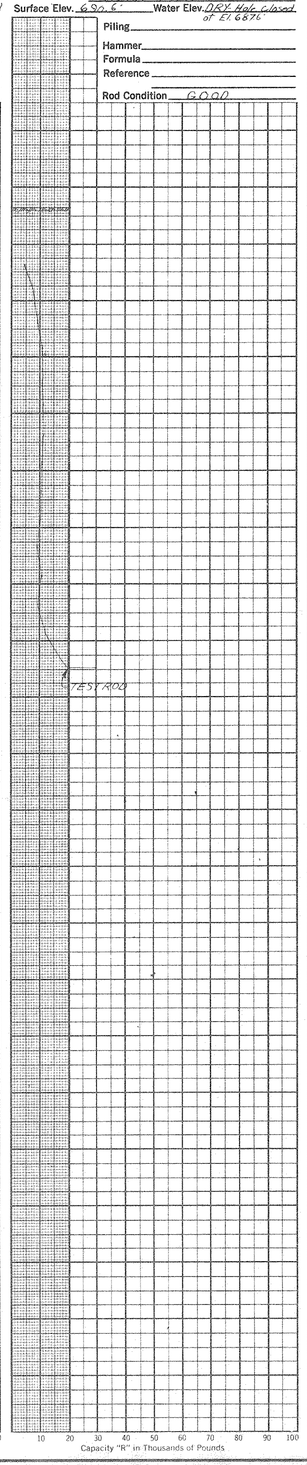
Test Location No. 1
Station & Offset 71+65, 54' RT
REAR ABUTMENT
Surface Elev. 689.3 Water Elev. DRY Hole Closed at El 685.3
Piling
Hammer
Formula
Reference
Rod Condition GOOD



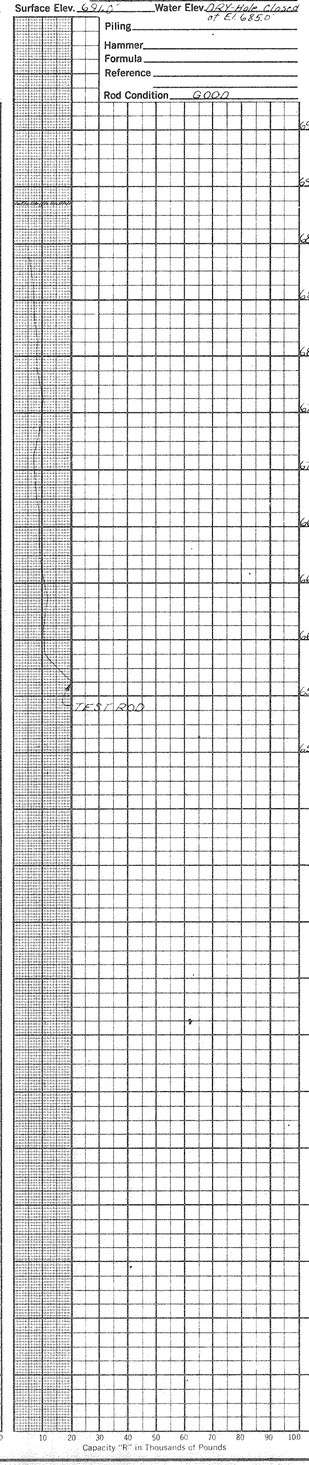
Test Location No. 3
Station & Offset 72+15, 30' LT
REAR ABUTMENT
Surface Elev. 687.6 Water Elev. DRY Hole Closed at El 682.6
Piling
Hammer
Formula
Reference
Rod Condition GOOD



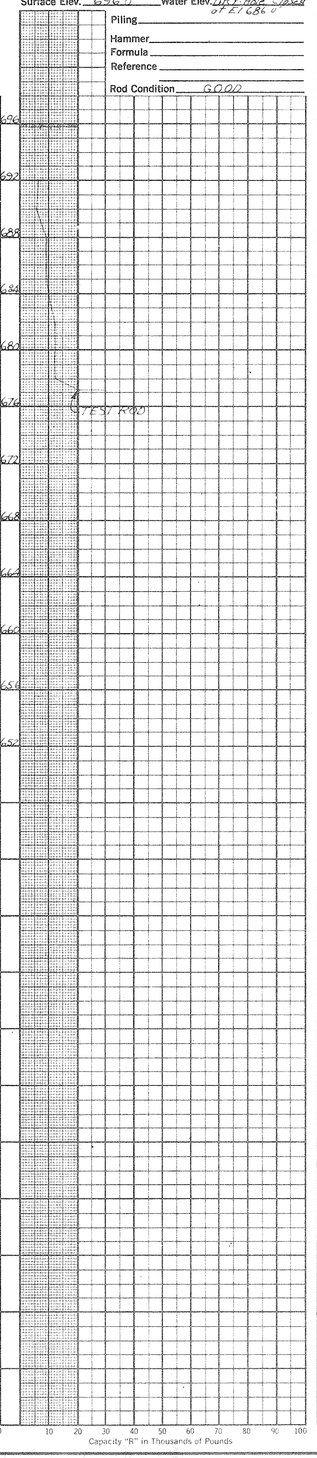
Test Location No. 6
Station & Offset 72+38, 30' RT
REAR PIER
Surface Elev. 690.6 Water Elev. DRY Hole Closed at El 687.6
Piling
Hammer
Formula
Reference
Rod Condition GOOD



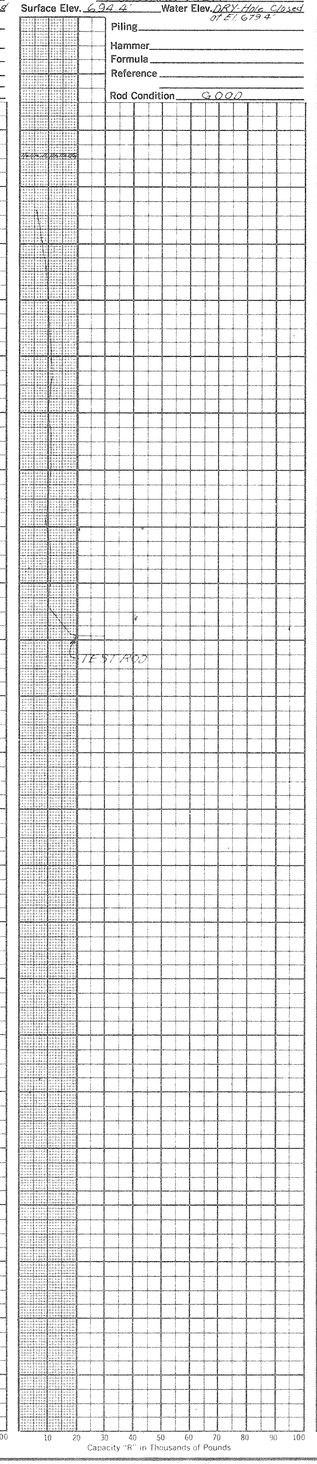
Test Location No. 8
Station & Offset 72+90, 54' LT
REAR PIER
Surface Elev. 691.0 Water Elev. DRY Hole Closed at El 685.0
Piling
Hammer
Formula
Reference
Rod Condition GOOD



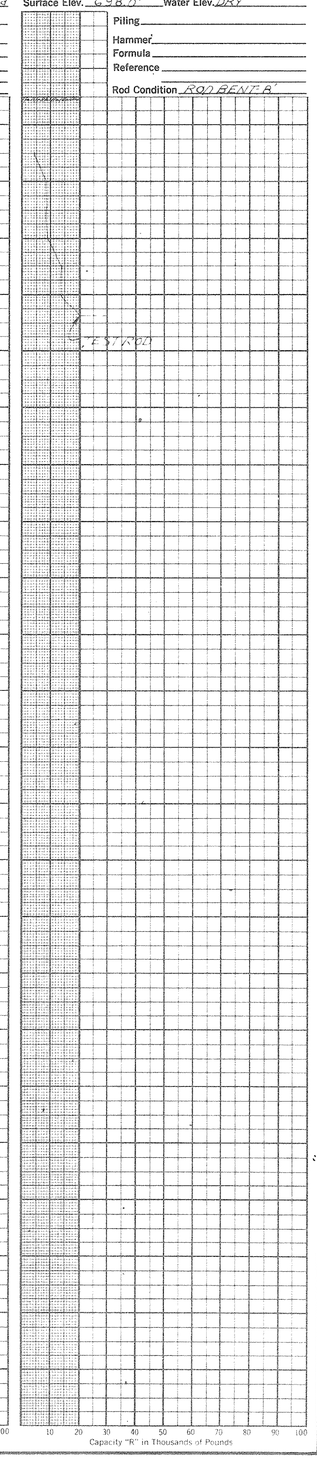
Test Location No. 9
Station & Offset 72+98, 54' RT
FORWARD PIER
Surface Elev. 696.0 Water Elev. DRY Hole Closed at El 686.0
Piling
Hammer
Formula
Reference
Rod Condition GOOD



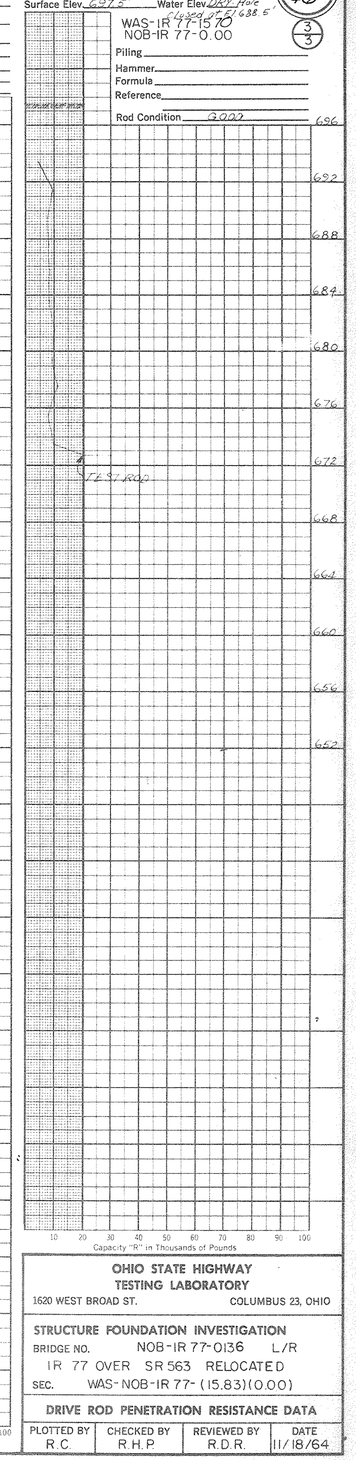
Test Location No. 11
Station & Offset 73+50, 30' LT
FORWARD PIER
Surface Elev. 694.2 Water Elev. DRY Hole Closed at El 679.2
Piling
Hammer
Formula
Reference
Rod Condition GOOD



Test Location No. 14
Station & Offset 73+73.23' RT
FORWARD ABUTMENT
Surface Elev. 698.0 Water Elev. DRY
Piling
Hammer
Formula
Reference
Rod Condition ROD BENT 8"



Test Location No. 15
Station & Offset 74+00.8' LT
FORWARD ABUTMENT
Surface Elev. 692.5 Water Elev. DRY Hole Caved at El 688.5'
Piling
Hammer
Formula
Reference
Rod Condition GOOD



38
46
3
3

WAS-IR 77-15.70
NOB-IR 77-0.00

OHIO STATE HIGHWAY TESTING LABORATORY
1620 WEST BROAD ST. COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. NOB-IR 77-0136 L/R
IR 77 OVER SR 563 RELOCATED
SEC. WAS-NOB-IR 77-(15.83)(0.00)

DRIVE ROD PENETRATION RESISTANCE DATA

PLOTTED BY	CHECKED BY	REVIEWED BY	DATE
R.C.	R.H.P.	R.D.R.	11/18/64

GEOLOGY OF THE SITE

The structure site is located on the flood plain of the West Fork of Duck Creek, adjacent to the west valley wall, in an area where moderately deep alluvium overlies shale and indurated clay bedrock, of Pennsylvanian age.

EXPLORATION

The exploration consisted of two drive sample-core borings, made between August 24 and 27, 1964, and eight drive rod penetration tests, made between October 13 and 15, 1964.

INVESTIGATIONAL DISCLOSURES

The borings disclosed that bedrock surface is overlain by very loose and dense, stiff and very stiff silts, sands, and clays, containing various amounts of organic material. The borings encountered sloping bedrock surface at 39 and 47-foot depths, elevations 650 and 640 feet. Borings were terminated 14 and 19 feet below bedrock surface, elevations 609 and 627 feet.

The rod soundings met gradual increase in penetration resistance with increase in depth and were terminated upon encounter with medium-high resistance and refusal to penetration at 26 and 38-foot depths, elevations 652 feet and 645 feet, considered to be slightly above bedrock surface, as revealed by the borings.

No free water was observed in any of the rod sounding holes.

LEGEND

- Auger Boring Location - Plan View.
- Press and/or Drive Sample and/or Core Boring Location - Plan View.
- Drive Rod Penetration Resistance Sounding Location - Plan View.
- Capped Pile
- Footing
- Footing on Pile
- TR — Top of Rock
- Horizontal Bar on Boring Log Indicates the Depth the Sample Was Taken.
- X/Y — Figures Beside the Boring Log in Profile Indicate the Number of Blows For Standard Penetration Test. X = Number of Blows for First 6 Inches. Y = Number of Blows for Second 6 Inches.
- Drive Rod Penetration Resistance Sounding Log - Profile
- Casing
- Resistance "R" < 10,000 lbs.
- Resistance "R" > 10,000 lbs.
- Z — Indicates Final Measurement of Penetration, in Inches.
- W — Indicates Free Water Elevation.
- W — Indicates Static Water Elevation.

SYMBOLS OF ROCK TYPES

- Coal
- Weathered Indurated Clay
- Indurated Clay
- Weathered Shale
- Shale
- Weathered Sandstone
- Sandstone
- Leached Dolomite
- Dolomite
- Leached Limestone
- Limestone

GENERAL INFORMATION

Drive Rod Penetration Sounding Tests

Drive rod penetration resistance tests constitute driving a 1.315-inch diameter steel rod, with a 45° cone point, into the ground, using a 122-pound drop-hammer with a free fall of five feet. At one or two-foot depth intervals, a measurement is taken to determine the amount of penetration achieved in three hammer drops. This reading is converted to an empirical value for capacity "R", in thousands of pounds (which is a measure of both the point resistance and frictional resistance on the rod), by using charts prepared by the Ohio Department of Highways, Bureau of Bridges, on the basis of correlation study of rod penetration with past performance of pile driving. For interpretation, a graph is prepared by plotting the value "R" against the depth at which the reading was taken, and connecting the plotted points. The curve so obtained reflects the density of subsurface materials in a manner that can be readily compared with data from similar tests at other locations on the structure site. From this comparison, the overall uniformity of subsurface condition may be evaluated.

Drive Sample Borings - Drive - Press Sample Borings

Drive sample borings are made by means of a rotary-type drill rig, employing a 2" O.D., 1-3/8" I.D. sampler, at 2-1/2 and/or 5-foot depth intervals, driven by means of a 140-pound drop-hammer, with a free fall of 30 inches. The number of blows required to drive the sampler 12 inches is considered the standard penetration test.

Drive-press sample borings are made by means of a rotary-type drill rig, employing a 2" O.D., 1-3/8" I.D. drive sampler, and 3" O.D. thin-wall press sampler. The press sampler is advanced by continuous uniform pressure, applied by the drill rig.

The boring log sheets show a graphic plot of the information obtained, including depth and elevation of the sample, number of blows for the standard penetration tests in two 6-inch increments, depth of press samples, field sample number, sample description - based on laboratory tests and the Casagrande AC classification system - and gradation, plasticity, and moisture content determinations. Results of strength and consolidation testing appear on separate enclosures.

At depths where materials are bouldery or gravelly to the extent that the sampler can not be driven, a wash sample is procured for visual classification, in order to determine the general character of the material. These samples are not considered sufficiently representative to warrant laboratory testing.

Particle Size Definitions

Boulders	Cobbles	Gravel	Coarse Sand	Fine Sand	Silt	Clay
8"	3"	2.0mm (No. 10 sieve)	0.42mm (No. 40 sieve)	0.074mm (No. 200 sieve)	0.005mm	

NOTE: Information shown by this subsurface investigation was obtained solely for the use in establishing design controls for the project. The State of Ohio does not guarantee the accuracy of this data and it is not to be construed as a part of the plans governing construction of the project.

OHIO STATE HIGHWAY
TESTING LABORATORY
1620 WEST BROAD STREET, COLUMBUS 23, OHIO

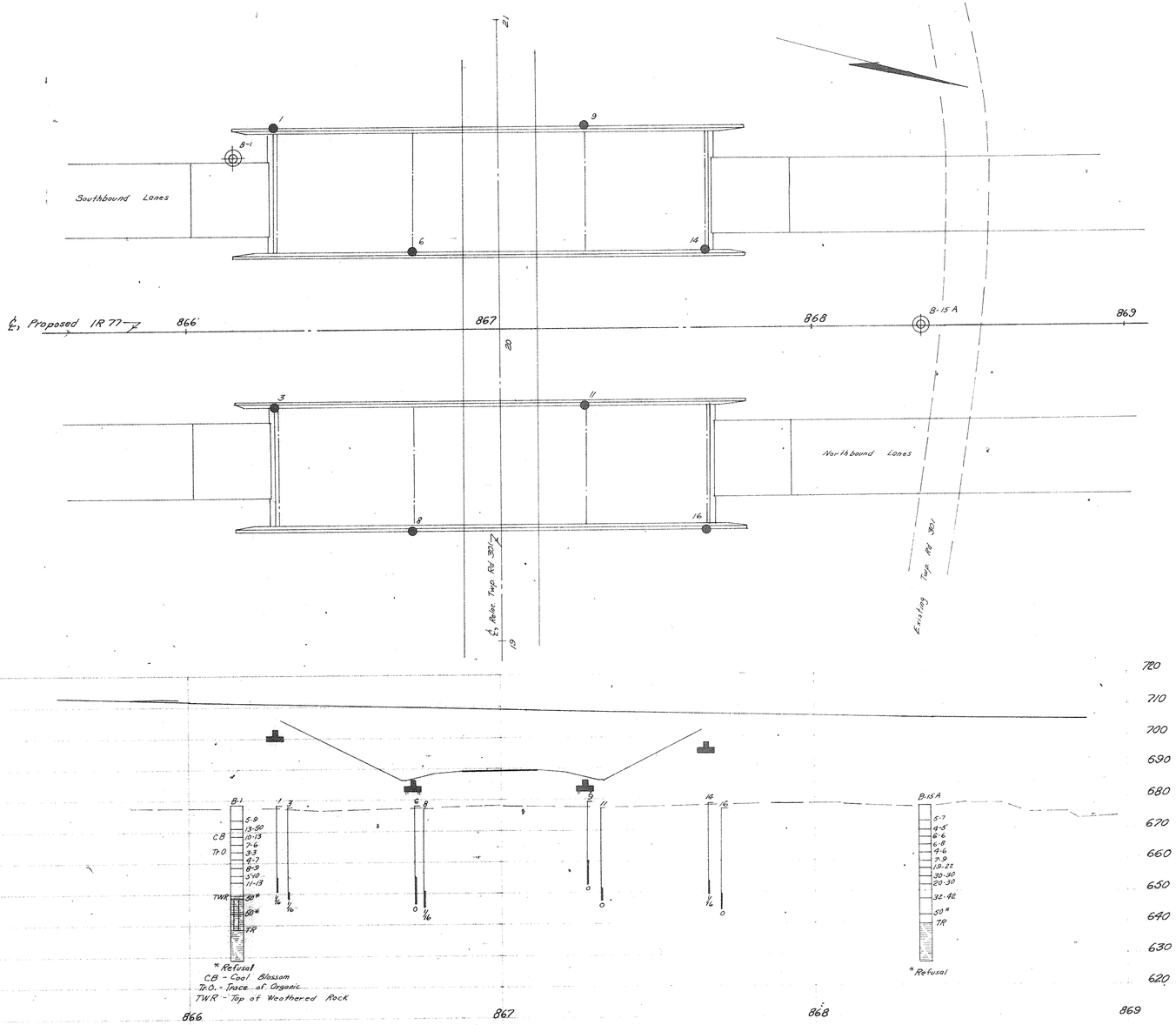
STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. WAS-IR 77-1640 L/R
IR 77 OVER TWP. RD. 301
SEC. WAS-NOB-IR 77-(15.83)(0.00)

CHECKED BY	REVIEWED BY	DATE
R. H. P.	R. D. R.	10-23-64

40
46

2
4

WAS-NOB-IR 77 $\frac{\text{S}}{\text{N}}$ (15.70)(0.00)



SCALE: 1" = 20'

OHIO STATE HIGHWAY TESTING LABORATORY			
1620 WEST BROAD ST., COLUMBUS 23, OHIO			
STRUCTURE FOUNDATION INVESTIGATION			
BRIDGE NO. WAS-IR 77-1640 L/R			
IR 77 OVER TWP. RD. 301			
SEC. WAS-NOB-IR 77-(15.83)(0.00)			
PLAN AND PROFILE			
DRAWN BY	CHECKED BY	REVIEWED BY	DATE
R.L.F.	R.H.P.	R.D.R.	10-23-64

WAS-JOB-IR 77-(15.70)(0.00).

LOG OF BORING

Date Started 8-24-64 | Sampler Type SS | Dia. 1 3/8" | Water Elev. —
Date Completed 8-26-64 | Casing: Length 20' | Dia. 3 1/2" | Surface Elev. 678.7'
Boring No. B-1 | Station & Offset 866+15, 55' Lt (REAR ABUTMENT)

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	Physical Characteristics: % Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	Pl.	W.C.	SHTL Class.
678.7	0														
	2														
673.7	4														
	6	5/9			Brown Gravelly Clay	1	23	1	5	34	37	38	13	16	
671.2	8	13/50			Reddish-Brown Gravelly Sandy Silt	2	18	10	22	26	24	28	10	25	
668.7	10	10/13			Reddish-Brown and Gray Gravelly Clay with Coal Blossom	3	31	7	8	29	25	35	14	25	
666.2	12														
	14	7/6			Brown Clayey Sandy Gravel	4	42	9	12	19	18	32	11	22	
663.7	16	3/3			Gray Silt and Clay, Trace of Organic	5	0	4	6	47	43	34	14	26	
661.2	18	4/7			Gray Silty Clay	6	0	1	4	36	59	41	16	28	
658.7	20	8/9			Gray Silty Clay	7	0	1	8	37	54	40	17	24	
656.2	22														
	24	5/10			Gray Gravelly Clay	8	30	2	10	24	34	33	13	25	
653.7	26	11/13			Gray Gravelly Clay	9	V	I	S	U	A	L	34	14	15
	28				TOP OF WEATHERED ROCK										
649.7	30	50* (0.6')			Red Weathered Indurated Clay	10	V	I	S	U	A	L		15	
648.7	32														
	34														
643.7	36	50* (0.6')			Red and Gray Weathered Indurated Clay	11	V	I	S	U	A	L		17	
	38														
638.7	40				TOP OF FIRM ROCK										
	42														
	44		5.0	0.0	Shale, gray, siliceous, non-fissile, with sandstone stringers, firm, with limy nodules throughout. No core loss.										
	46														
	48		5.0	0.0											
628.7	50				BOTTOM OF BORING										

*REFUSAL

LOG OF BORING

Date Started 8-26-64 | Sampler Type SS | Dia. 1 3/8" | Water Elev. —
Date Completed 8-27-64 | Casing: Length 20' | Dia. 3 1/2" | Surface Elev. 677.2'
Boring No. B-1A | Station & Offset 868+35 C.L. (FORWARD ABUTMENT)

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	Physical Characteristics: % Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	Pl.	W.C.	SHTL Class.
677.2	0														
	2														
672.2	4														
	6	5/7			Reddish-Brown Gravelly Clay	1	V	I	S	U	A	L	35	14	12
669.7	8	4/5			Brown Gravelly Clay	2	V	I	S	U	A	L	32	11	13
667.2	10	6/6			Brown Gravelly Clay	3	V	I	S	U	A	L	28	7	17
664.7	12														
	14	6/8			Reddish-Brown Gravelly Sandy Silt	4	V	I	S	U	A	L		16	
662.2	16	4/6			Brown Silty Sandy Gravel	5	55	7	10	16	12	27	8	14	
659.7	18	7/9			Brown Silty Sandy Gravel	6	60	9	7	14	10	28	7	14	
657.2	20	19/22			Brown Clayey Gravel	7	53	7	7	19	14	31	11	14	
654.7	22														
	24	30/30			Brown Silt and Clay	8	0	0	1	51	48	37	12	17	
652.2	26	20/30			Light Brown Gravelly Clay	9	V	I	S	U	A	L	35	13	23
	28														
647.2	30	32/42			Red Clayey Silt	10	0	2	1	53	44	35	8	18	
	32														
	34														
642.2	36	50* (0.8')			Red and Gray Clayey Silt	11	0	5	5	52	38	30	7	12	
639.7	38														
	40		2.2	0.4	TOP OF ROCK										
	42														
	44		4.6	0.4	Shale, gray, siliceous, calcareous, non-fissile, firm, with sandstone stringers. Core loss 13%.										
	46														
	48		4.0	1.5											
627.2	50				BOTTOM OF BORING										

*REFUSAL

OHIO STATE HIGHWAY
TESTING LABORATORY
1620 WEST BROAD ST. COLUMBUS 23, OHIO

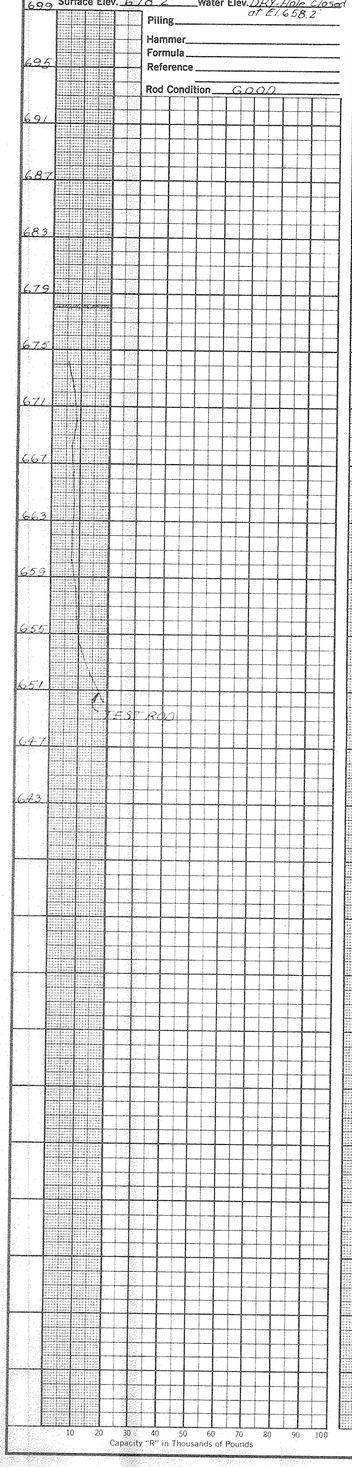
STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. WAS-IR 77-1640 L/R
IR 77 OVER TWP. RD. 301
SEC. WAS-IR 77-(15.83)(0.00)

BORING DATA

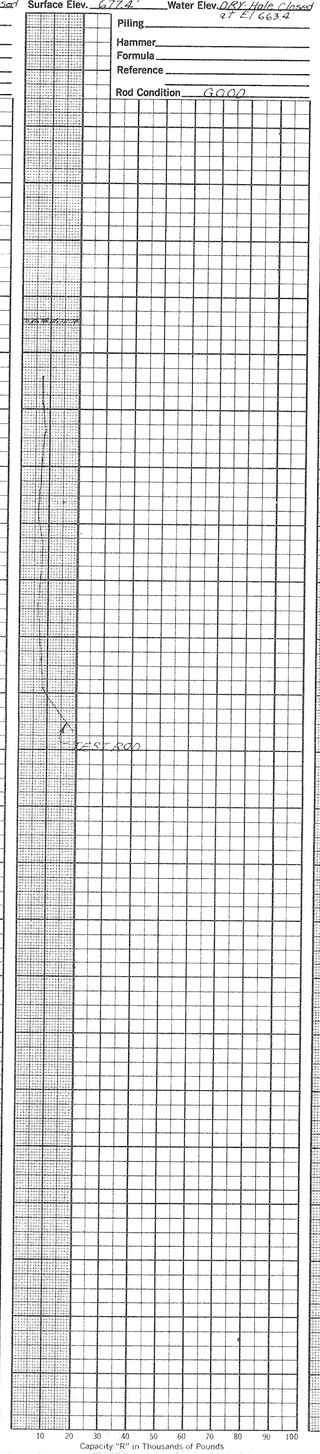
TYPED BY	CHECKED BY	REVIEWED BY	DATE
J.A.G.	R.C.	R.D.R.	10/15/

TE-114
DOD-1-64

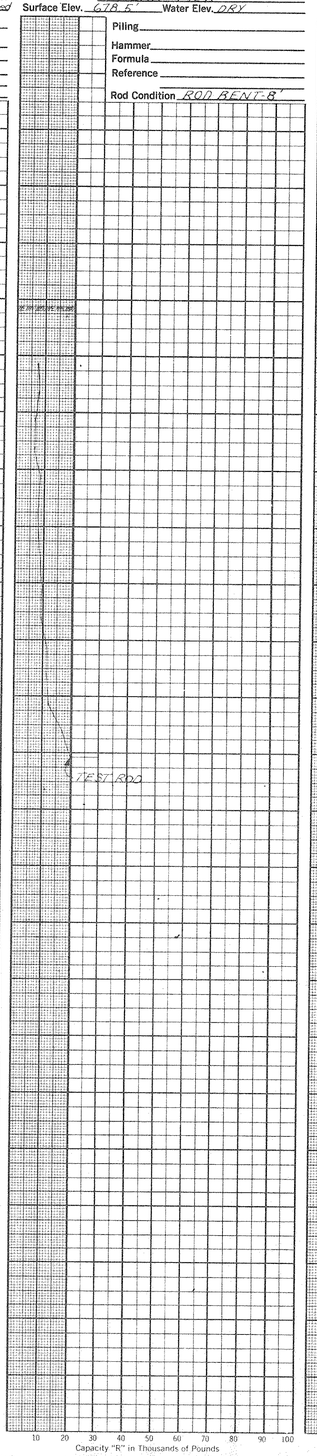
Test Location No. 1
Station & Offset 866+28 65' LT
REAR ABUTMENT
Surface Elev. 678.2 Water Elev. DRY-Hole Closed at El 658.2'
Piling
Hammer
Formula
Reference
Rod Condition GOOD



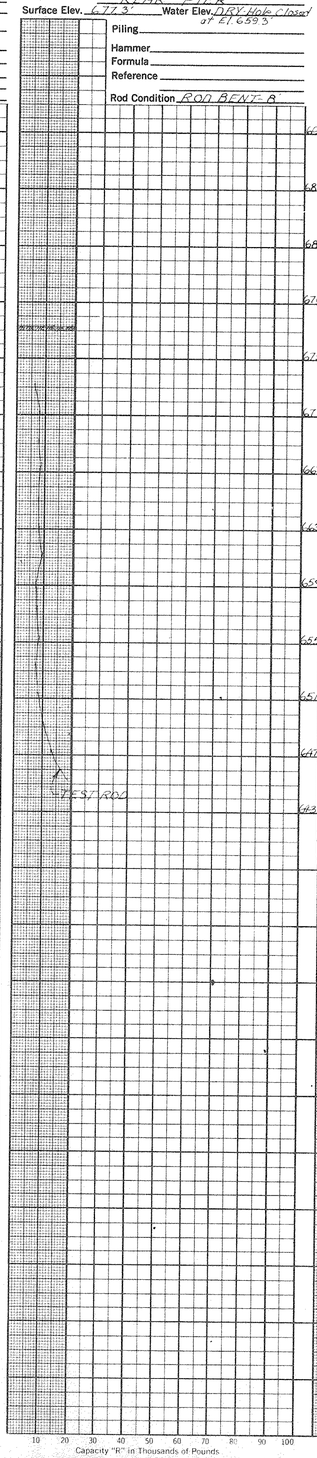
Test Location No. 3
Station & Offset 866+28 25' RT
REAR ABUTMENT
Surface Elev. 677.4 Water Elev. DRY-Hole Closed at El 663.4
Piling
Hammer
Formula
Reference
Rod Condition GOOD



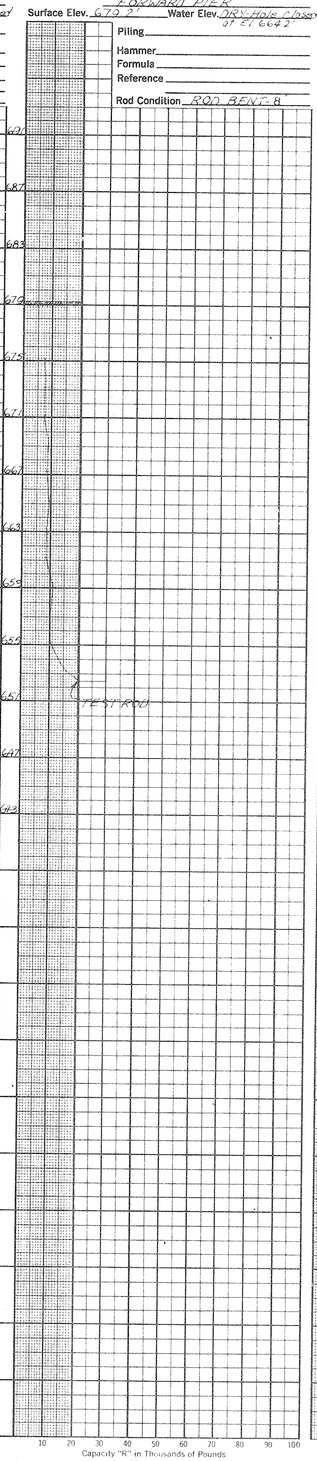
Test Location No. 6
Station & Offset 866+72 25' LT
REAR PIER
Surface Elev. 678.5 Water Elev. DRY
Piling
Hammer
Formula
Reference
Rod Condition ROD BENT-8"



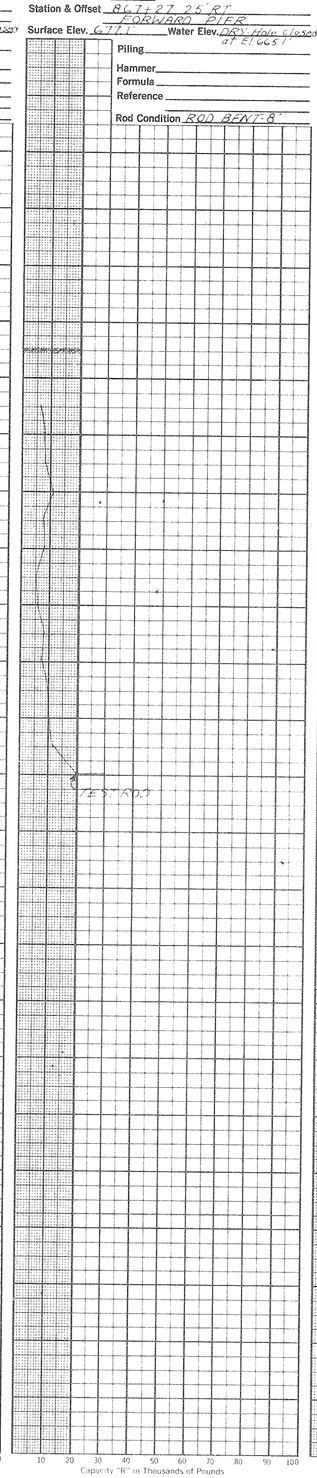
Test Location No. 8
Station & Offset 866+72 65' RT
REAR PIER
Surface Elev. 677.3 Water Elev. DRY-Hole Closed at El 659.3'
Piling
Hammer
Formula
Reference
Rod Condition ROD BENT-8"



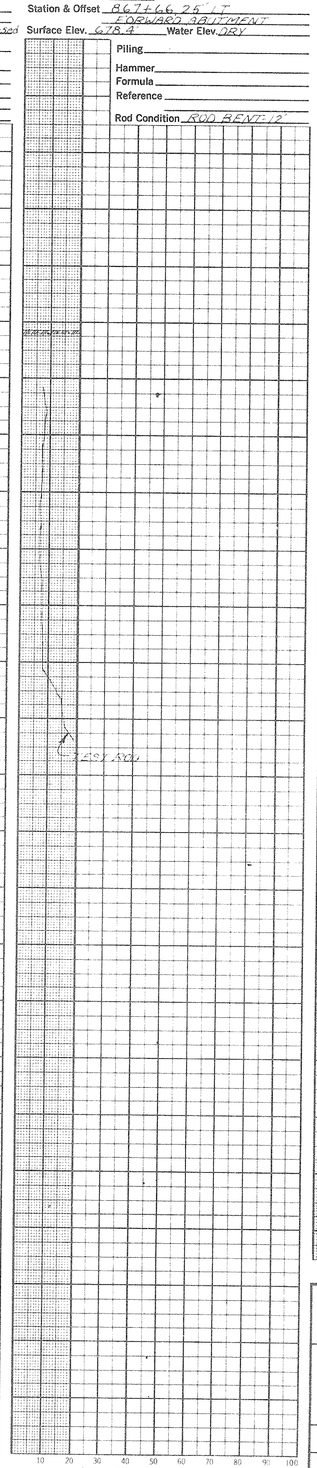
Test Location No. 9
Station & Offset 867+27.65' LT
FORWARD PIER
Surface Elev. 670.2 Water Elev. DRY-Hole Closed at El 664.2
Piling
Hammer
Formula
Reference
Rod Condition ROD BENT-8"



Test Location No. 11
Station & Offset 867+27.25' RT
FORWARD PIER
Surface Elev. 677.1 Water Elev. DRY-Hole Closed at El 665.1'
Piling
Hammer
Formula
Reference
Rod Condition ROD BENT-8"



Test Location No. 14
Station & Offset 867+66.25' LT
FORWARD ABUTMENT
Surface Elev. 678.4 Water Elev. DRY
Piling
Hammer
Formula
Reference
Rod Condition ROD BENT-12"

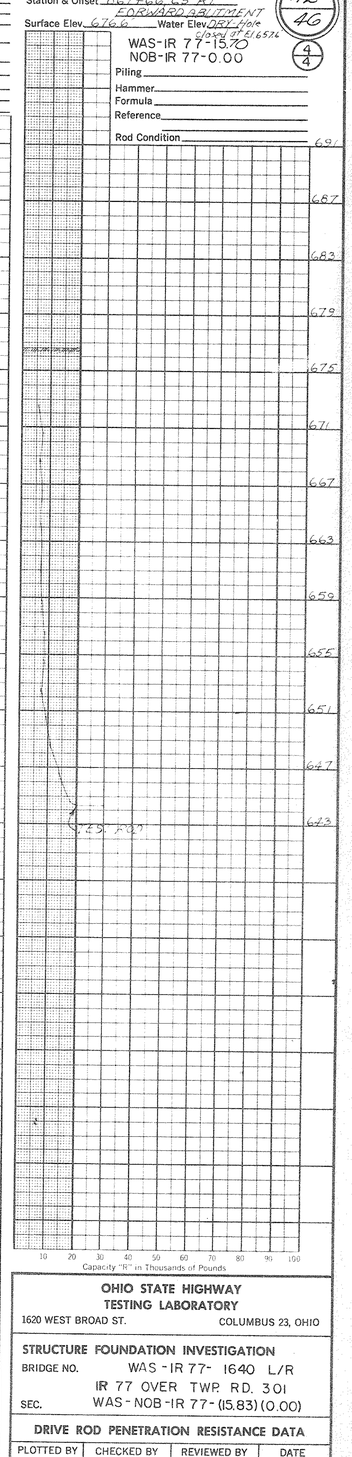


Test Location No. 16
Station & Offset 867+66.65' RT
FORWARD ABUTMENT
Surface Elev. 676.6 Water Elev. DRY-Hole Closed at El 656.6'

42/46
4/4

WAS-IR 77-15.70
NOB-IR 77-0.00

Piling
Hammer
Formula
Reference
Rod Condition



OHIO STATE HIGHWAY TESTING LABORATORY
1620 WEST BROAD ST. COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. WAS-IR 77-1640 L/R
IR 77 OVER TWP. RD. 301
SEC. WAS-NOB-IR 77-(15.83)(0.00)

DRIVE ROD PENETRATION RESISTANCE DATA

PLOTTED BY	CHECKED BY	REVIEWED BY	DATE
R.C.	R.H.P.	R.D.R.	10-23-64

WASHINGTON COUNTY
WAS-NOB-IR 77-(15.70)(0.00)

GEOLOGY OF THE SITE

The structure is located on the flood plain and over the West Fork of Duck Creek in an area where moderately deep alluvium overlies shale bedrock, of Pennsylvanian age.

EXPLORATION

The exploration consisted of five drive sample-core borings and ten drive rod penetration tests, made between May 15 and 26, 1964.

INVESTIGATIONAL DISCLOSURES

The borings disclosed that bedrock surface is overlain by very loose and dense, stiff and very stiff silts, sands, and clays, containing various amounts of organic material. The borings encountered sloping bedrock surface at 24 and 28-foot depths, elevations 656 and 644 feet. Borings were terminated 10 and 12 feet below bedrock surface, elevations 645 and 632 feet.

The rod soundings met gradual increase in penetration resistance with increase in depth and were terminated generally upon abrupt refusal to penetration at 17 and 32-foot depths, elevations 660 feet and 640 feet, on or slightly above bedrock surface, as revealed by the borings.

On the basis of the tests bedrock surface is considered to slope downward from the rear portion of the structure site, elevation 656 feet to the forward portion of the structure site, elevation 644 feet.

No free water was observed in any of the rod sounding holes.

LEGEND

- Auger Boring Location - Plan View
- Press and/or Drive Sample and/or Core Boring Location - Plan View.
- Drive Rod Penetration Resistance Sounding Location - Plan View.
- (R) Electrical Resistivity Probe Location - Plan View.
- Footing — Capped Pile
- Footing on Pile
- (R) Electrical Resistivity Probe - Profile.
- TR Top of Rock
- Interval of Relatively High Moisture.
- TD Total Depth

- Horizontal Bar on Boring Log Indicates the Depth the Sample Was Taken.
- X/Y Figures Beside the Boring Log in Profile Indicate the Number of Blows For Standard Penetration Test.
  X = Number of Blows for First 6 Inches.
  Y = Number of Blows for Second 6 Inches.
- Drive Rod Penetration Resistance Sounding Log - Profile.
- Casing
- Resistance "R" < 10,000 lbs.
- Resistance "R" > 10,000 lbs.
- Z Indicates Final Measurement of Penetration, in Inches.
- W Indicates Free Water Elevation.
- Indicates Static Water Elevation.

SYMBOLS OF ROCK TYPES

- Coal
- Weathered Indurated Clay
- Indurated Clay
- Weathered Shale
- Shale
- Weathered Sandstone
- Sandstone
- Leached Dolomite
- Dolomite
- Leached Limestone
- Limestone

GENERAL INFORMATION

Drive Rod Penetration Sounding Tests

Drive rod penetration resistance tests constitute driving a 1.315-inch diameter steel rod, with a 45° cone point, into the ground, using a 122-pound drop-hammer with a free fall of five feet At one or two-foot depth intervals, a measurement is taken to determine the amount of penetration achieved in three hammer drops. This reading is converted to an empirical value for capacity "R", in thousands of pounds (which is a measure of both the point resistance and frictional resistance on the rod), by using charts prepared by the Ohio Department of Highways, Bureau of Bridges, on the basis of correlation study of rod penetration with past performance of pile driving. For interpretation, a graph is prepared by plotting the value "R" against the depth at which the reading was taken, and connecting the plotted points. The curve so obtained reflects the density of subsurface materials in a manner that can be readily compared with data from similar tests at other locations on the structure site. From this comparison, the overall uniformity of subsurface condition may be evaluated.

Drive Sample Borings - Drive - Press Sample Borings

Drive sample borings are made by means of a rotary-type drill rig, employing a 2" O.D., 1-3/8" I.D. sampler, at 2-1/2 and/or 5 foot depth intervals, driven by means of a 140-pound drop-hammer, with a free fall of 30 inches. The number of blows required to drive the sampler 12 inches is considered the standard penetration test.

Drive-press sample borings are made by means of a rotary-type drill rig, employing a 2" O.D., 1-3/8" I.D. drive sampler, and 3" O.D. thin-wall press sampler. The press sampler is advanced by continuous uniform pressure, applied by the drill rig.

The boring log sheets show a graphic plot of the information obtained, including depth and elevation of the sample, number of blows for the standard penetration tests in two 6-inch increments, depth of press samples, field sample number, sample description - based on laboratory tests and the Casagrande AC classification system - and gradation, plasticity, and moisture content determinations. Results of strength and consolidation testing appear on separate enclosures.

At depths where materials are bouldery or gravelly to the extent that the sampler can not be driven, a wash sample is procured for visual classification, in order to determine the general character of the material. These samples are not considered sufficiently representative to warrant laboratory testing.

Particle Size Definitions

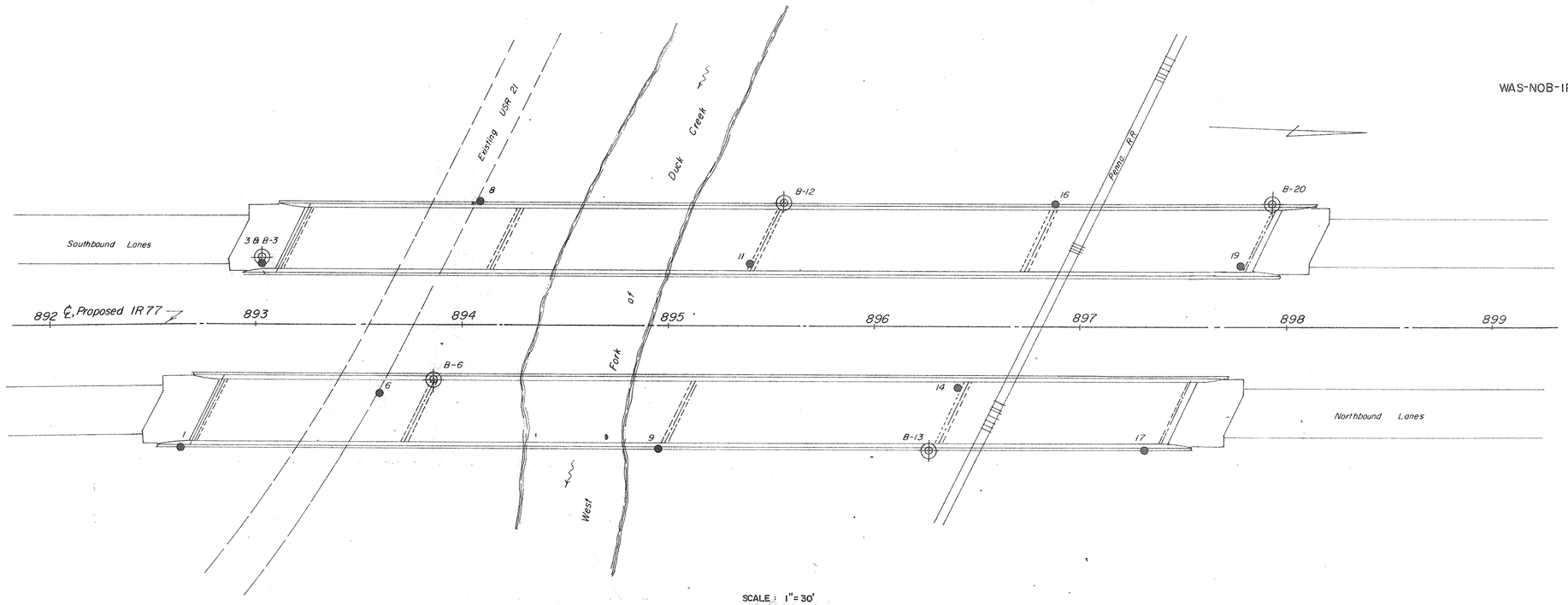
Boulders	Cobbles	Gravel	Coarse Sand	Fine Sand	Silt	Clay
	8"	3" / 2.0mm (No. 10 sieve)	0.42mm (No. 40 sieve)	0.074mm (No. 200 sieve)	0.005mm	

NOTE Information shown by this subsurface investigation was obtained solely for the use in establishing design controls for the project. The State of Ohio does not guarantee the accuracy of this data and it is not to be construed as a part of the plans governing construction of the project.

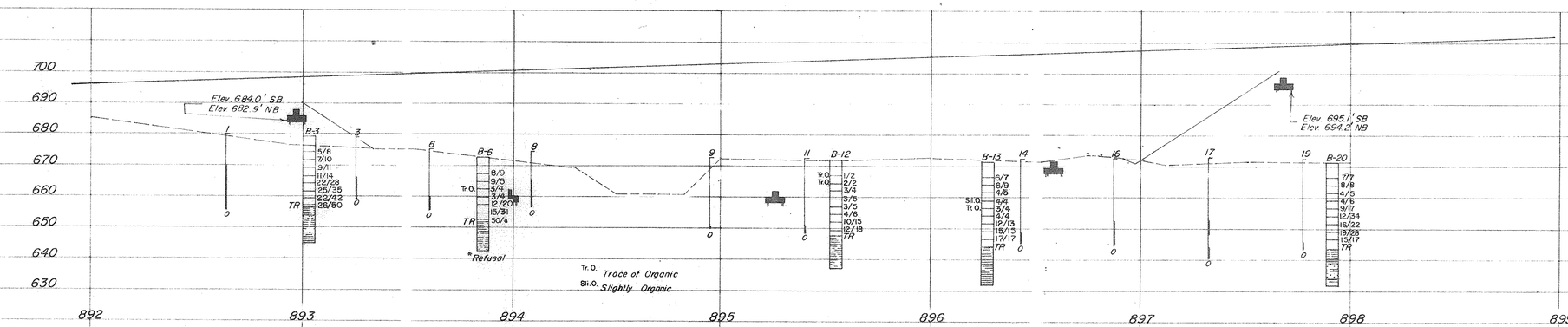
OHIO STATE HIGHWAY
TESTING LABORATORY
1620 WEST BROAD STREET, COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. WAS-IR 77-1691 L&R
IR 77 OVER USR 21, DUCK CR., & PENNA RR
SEC. WAS-NOB-IR 77-(15.83)(0.00

CHECKED BY	REVIEWED BY	DATE
R.P.W.	R.D.R.	6/19/64



SCALE : 1"= 30'



HORT. SCALE: 1"= 30'
VERT. SCALE: 1"= 20'

OHIO STATE HIGHWAY
TESTING LABORATORY
1620 WEST BROAD ST., COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. WAS-IR 77-1691 L&R
IR 77 OVER USR 21, DUCK CR. & PENNA. RR
SEC. WAS-NOB-IR 77-(15.83)(0.00)

PLAN AND PROFILE

DRAWN BY	CHECKED BY	REVIEWED BY	DATE
R.L.F.	R.P.W.	R.D.R.	6/19/64

WAS-NOB-IR77-(1572)(0.00)

LOG OF BORING

Date Started 5-22-64 | Sampler Type SS | Dia. 1 3/8" | Water Elev.
Date Completed 5-26-64 | Casing: Length | Dia.
Boring No. B-3 | Station & Offset 893+03, 33' Lt (REAR ABUTMENT) | Surface Elev. 679.6'

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	% Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	Pl.	W.C.	SHTL Class.
679.6	0														
	2														
674.6	4														
	6	5/8			Reddish-Brown Sandy Clay	1	5	10	13	33	39	36	16	24	
672.1	8	7/10			Brown Clay	2	0	1	12	22	65	50	30	23	
669.6	10														
		9/11			Brown Gravelly Sandy Clay	3	17	10	18	27	28	33	12	24	
667.1	12														
	14	11/14			Reddish-Brown Gravelly Sandy Clay	4	19	10	17	27	27	32	11	20	
664.6	16														
		22/28			Gray Silty Clay	5	5	1	1	54	39	47	19	19	
662.1	18														
		25/35			Gray Silty Clay	6	4	2	1	43	50	43	16	12	
659.6	20														
		22/42			Reddish-Gray Silt and Clay	7	13	1	1	41	44	38	13	19	
657.1	22														
656.1		26/50			Red and Gray Silty Clay / TOP OF ROCK	8	9	1	0	39	51	42	17	16	
	24		1.5	0.0	Clay shale, mottled brown and gray, calcareous, medium-firm, crumbly, 0.8' limestone seam at base. No core loss.										
653.6	26														
	28		5.0	0.0	Shale, gray, argillaceous, siliceous, with limy stringers throughout, firm, poorly fissile. Core loss 9%.										
	30														
	32														
			4.2	0.8											
644.6	34														

BOTTOM OF BORING

LOG OF BORING

Date Started 5-19-64 | Sampler Type SS | Dia. 1 3/8" | Water Elev.
Date Completed 5-19-64 | Casing: Length | Dia.
Boring No. B-12 | Station & Offset 895+55, 60' Lt (CENTER PIER) | Surface Elev. 672.1'

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	% Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	Pl.	W.C.	SHTL Class.
672.1	0														
	2														
667.1	4														
	6	1/2			Brown Sandy Silt, Trace of Organic	1	0	1	34	35	30	23	6	35	
664.6	8	2/2			Brownish-Gray Sandy Silt, Trace of Organic	2	0	3	29	51	17	27	8	37	
662.1	10	3/4			Brownish-Gray Sandy Silt	3	0	3	28	28	41	NP	NP	35	
659.6	12														
	14	3/5			Brown and Gray Sandy Silt, Trace of Decayed Wood	4	0	3	52	25	20	NP	NP	29	
657.1	16	3/5			Brownish-Gray Sandy Silt	5	0	15	32	26	27	25	5	25	
654.6	18	4/6			Brown and Gray Sandy Silt	6	0	5	24	46	25	23	4	29	
652.1	20	10/15			Grayish-Brown Silt	7	0	12	3	54	31	NP	NP	27	
649.6	22	12/18			Brown Sandy Silt / TOP OF ROCK	8	0	9	29	11	51	32	12	15	
647.9	24														
	26														
	28		5.0	0.0	Shale, gray, slightly calcareous with firm limy nodules in top 0.8 feet and in part below 30 feet, siliceous with few sandstone laminae in part, firm, jointed and badly broken between 26.5' and 29'. No core loss.										
	30														
	32														
637.1	34		5.0	0.0											

BOTTOM OF BORING

LOG OF BORING

Date Started 5-21-64 | Sampler Type SS | Dia. 1 3/8" | Water Elev.
Date Completed 5-21-64 | Casing Length 25' | Dia. 3 1/2"
Boring No. B-20 | Station & Offset 897+92, 60' Lt (FORWARD ABUTMENT) | Surface Elev. 671.6'

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	% Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	Pl.	W.C.	SHTL Class.
671.6	0														
	2														
666.6	4														
	6	7/7			Reddish-Brown Silt and Clay	1	0	1	15	41	43	31	11	26	
664.1	8	8/8			Reddish-Brown Silt and Clay	2	0	1	13	48	38	34	15	24	
661.6	10	4/5			Gray Organic Sandy Clay	3	0	3	32	35	30	69	42	36	
659.1	12	4/6			Gray Silty Sand	4	0	33	31	17	19	24	5	24	
656.6	14														
	16	9/17			Gray Silty Sandy Gravel	5	41	13	16	12	18	NP	NP	17	
654.1	18	12/34			Reddish-Brownish-Gray Gravelly Silt	6	48	5	2	34	11	22	6	14	
651.6	20	16/22			Gray Silty Gravelly Sand	7	35	40	14	-1	1-	NP	NP	16	
649.1	22	19/28			Greenish-Brown Silty Sandy Gravel	8	47	11	12	21	9	NP	NP	10	
646.6	24														
	26	15/17			Reddish-Brownish-Gray Silty Sand and Stone Fragments	9	60	11	12	9	8	NP	NP	10	
643.6	28				/ TOP OF ROCK										
	30		1.3	0.7	Shale, gray, calcareous in part, with clay seams, poorly fissile to fissile, medium firm to firm, crumbly in part. Core loss 60%.										
640.2	32														
	34		4.4	0.6	Shale, gray, siliceous, grading into a fine-grained sandstone (comprising about 50% of the interval), poorly fissile, firm, jointed in top 2.5'. No core loss.										
	36														
634.0	38														
			4.4	0.6	Shale, gray, fissile, firm. No core loss.										
631.6	40														

BOTTOM OF BORING

LOG OF BORING

Date Started 5-18-64 | Sampler Type SS | Dia. 1 3/8" | Water Elev.
Date Completed 5-19-64 | Casing: Length 20' | Dia. 3 1/2"
Boring No. B-6 | Station & Offset 893+86, 27' Rt (REAR PIER) | Surface Elev. 672.4'

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	% Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	Pl.	W.C.	SHTL Class.
672.4	0														
	2														
667.4	4														
	6	8/9			Dark Brown Sandy Gravelly Clay	1	V	I	S	U	A	L		13	
664.9	8	9/5			Brown and Gray Silt and Clay	2	0	4	12	44	40	36	12	30	
662.4	10	3/4			Gray Clay, Trace of Organic	3	0	1	11	47	41	51	21	44	
659.9	12	3/4			Brown and Gray Sandy Silt	4	0	1	24	48	27	29	8	28	
657.4	14														
	16	12/20			Red and Gray Silty Gravel	5	V	I	S	U	A	L	30	7	24
654.9	18	15/31			Reddish-Gray Silt and Clay	6	0	3	5	47	45	33	12	18	
652.4	20	50/*			Gray Clay with Shale Fragments	7	35	8	3	33	21	35	11	10	
652.9					/ TOP OF ROCK										
	22														
	24		4.5	0.5	Shale, gray, slightly calcareous with limy nodules at 26', siliceous with few sandstone laminae in part, poorly fissile, firm, broken in part. No core loss.										
	26														
	28														
			5.0	0.0											
642.4	30														

*REFUSAL

BOTTOM OF BORING

LOG OF BORING

Date Started 5-20-64 | Sampler Type SS | Dia. 1 3/8" | Water Elev.
Date Completed 5-20-64 | Casing Length 27' | Dia. 3 1/2"
Boring No. B-13 | Station & Offset 896+27, 60' Rt (FORWARD PIER) | Surface Elev. 671.8'

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	% Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	Pl.	W.C.	SHTL Class.
671.8	0														
	2														
666.8	4														
	6	6/7			Reddish-Brown Sandy Clay	1	0	1	22	37	40	31	11	27	
664.3	8	6/9			Reddish-Brown Silt and Clay	2	0	1	2	61	36	31	12	22	
661.8	10	4/5			Brownish-Gray Silty Sand	3	0	17	43	24	16	NP	NP	23	
659.3	12														
	14	4/4			Brownish-Gray Clay, Slightly Organic	4	0	2	17	44	37	76	30	54	
656.8	16	3/4			Brownish-Gray Gravelly Sandy Clay, Trace of Organic	5	25	9	16	35	15	31	11	29	
654.3	18	4/4			Brownish-Gray Silty Sandy Gravel	6	50	7	18	14	11	NP	NP	16	
651.8	20														
		12/13			Brownish-Gray Silty Sandy Gravel	7	51	23	12	-1	4-	NP	NP	11	
649.3	22														
	24	15/15			Brown Silty Sandy Gravel	8	37	19	18	12	14	NP	NP	13	
646.8	26	17/17			Brown Silty Sand and Stone Fragments	9	42	21	3	25	9	NP	NP	12	
644.3	28				/ TOP OF ROCK										
	30		2.0	0.5	Shale, gray, siliceous with thin sandstone laminae in part above 35.5' slightly calcareous and becoming argillaceous with limy nodules (Max. 0.2' thick) in remainder, poorly fissile, fissile in part below 35.5', med. firm with clay seams in top 1.5', firm in remainder, jointed in part, badly broken in bottom 2.5'. Core loss 4%.										
	32														
	34		5.0	0.0											
	36														
	38		5.0	0.0											
631.8	40														

BOTTOM OF BORING

OHIO STATE HIGHWAY
TESTING LABORATORY
1620 WEST BROAD ST. COLUMBUS 23, OHIO

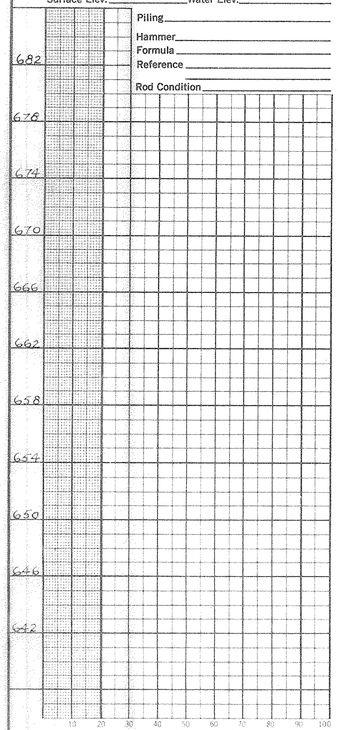
STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. WAS-IR 77-1691 L&R
IR 77 OVER USR 21, DUCK CR, & PENNA. RR
SEC. WAS-NOB-IR 77-(1583)(0.00)

BORING DATA

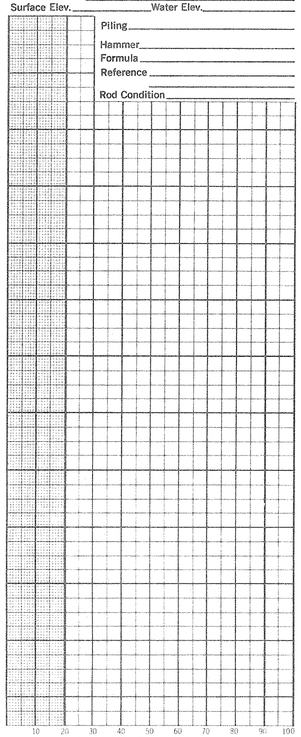
TYPED BY	CHECKED BY	REVIEWED BY	DATE
J.A.G.	R.P.W.	R.D.R.	6/19/64

TR-115
500-11-64

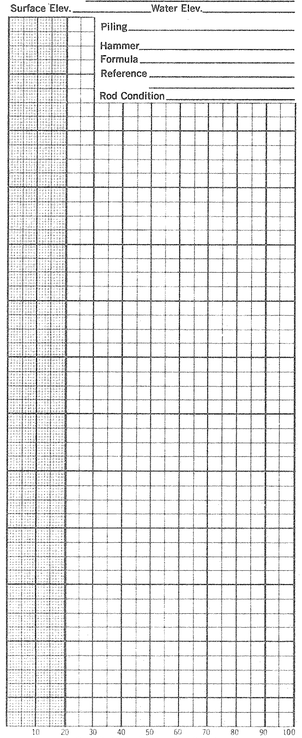
Test Location No. ____
Station & Offset ____
Surface Elev. ____ Water Elev. ____
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition ____



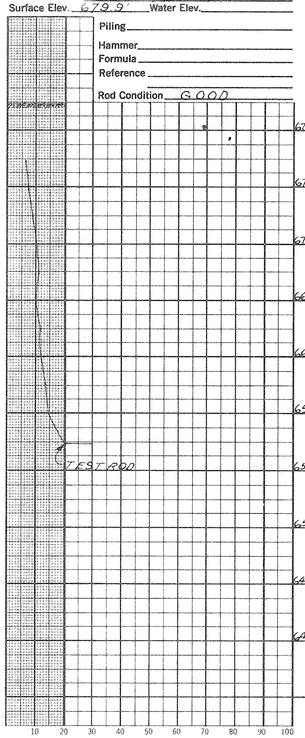
Test Location No. ____
Station & Offset ____
Surface Elev. ____ Water Elev. ____
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition ____



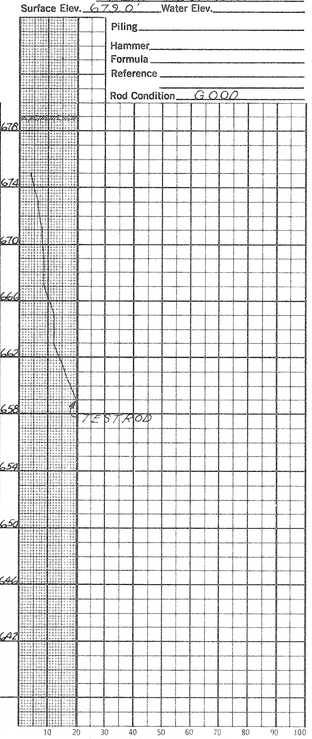
Test Location No. ____
Station & Offset ____
Surface Elev. ____ Water Elev. ____
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition ____



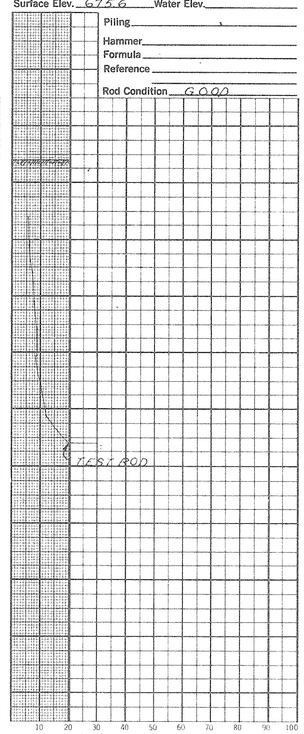
Test Location No. ____
Station & Offset 893+63.60 RT
REAR ABUTMENT
Surface Elev. 679.9 Water Elev. ____
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition GOOD



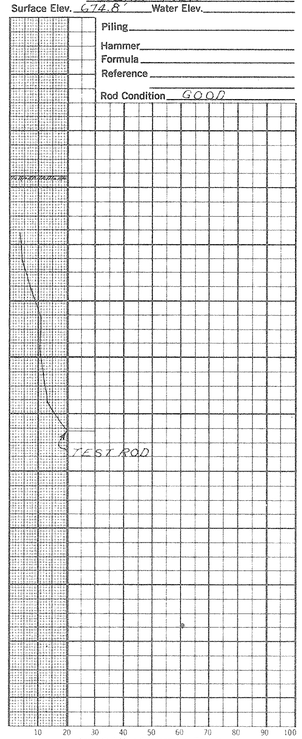
Test Location No. 3
Station & Offset 893+03.30 LT
REAR ABUTMENT
Surface Elev. 679.0 Water Elev. ____
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition GOOD



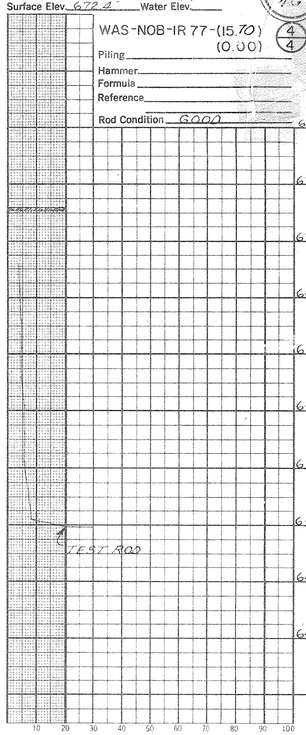
Test Location No. 6
Station & Offset 893+60.30 RT
REAR PIER
Surface Elev. 675.6 Water Elev. ____
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition GOOD



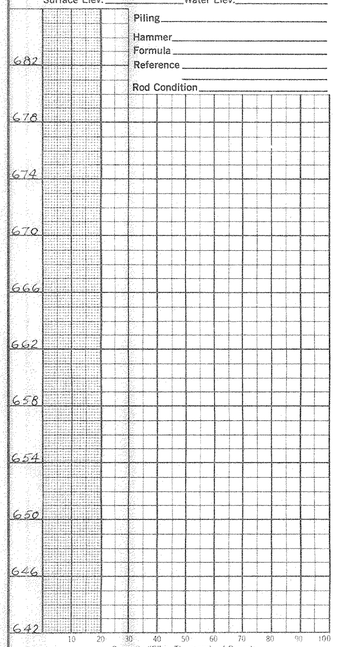
Test Location No. 8
Station & Offset 894+08.60 LT
REAR PIER
Surface Elev. 674.8 Water Elev. ____
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition GOOD



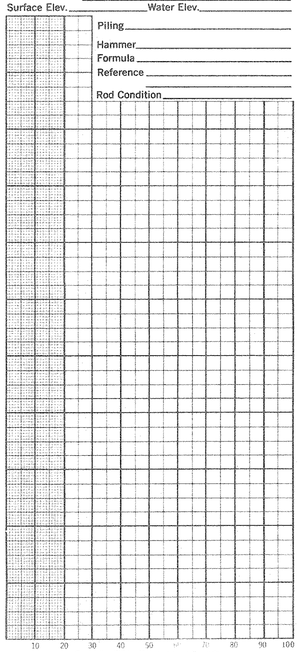
Test Location No. 9
Station & Offset 894+95.60 RT
CENTER PIER
Surface Elev. 672.4 Water Elev. ____
WAS-NOB-IR 77-(15.70)
(0.00)
4/4
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition GOOD



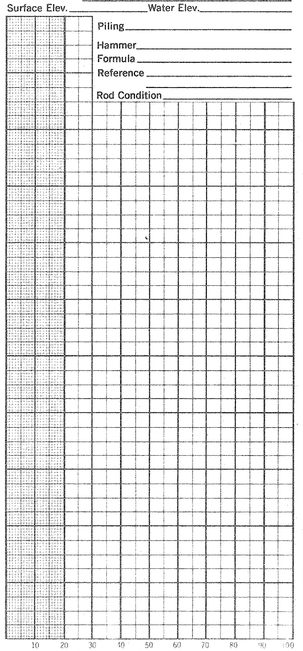
Test Location No. ____
Station & Offset ____
Surface Elev. ____ Water Elev. ____
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition ____



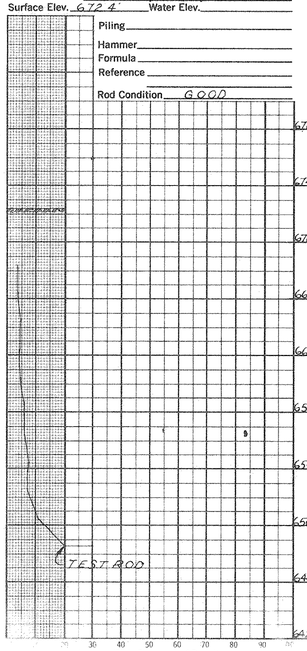
Test Location No. ____
Station & Offset ____
Surface Elev. ____ Water Elev. ____
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition ____



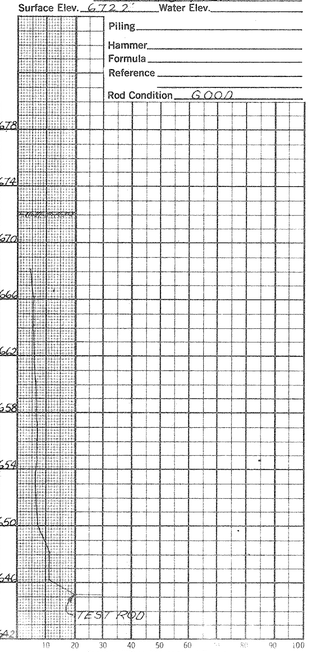
Test Location No. ____
Station & Offset ____
Surface Elev. ____ Water Elev. ____
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition ____



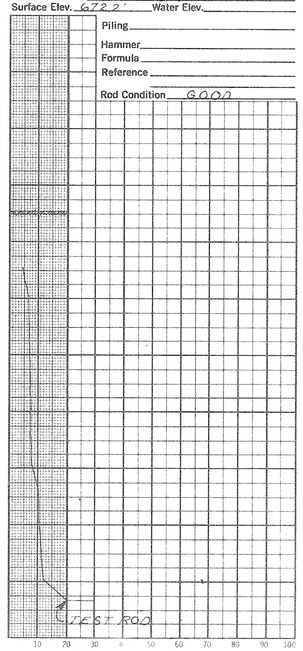
Test Location No. 11
Station & Offset 895+40.30 LT
CENTER PIER
Surface Elev. 672.4 Water Elev. ____
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition GOOD



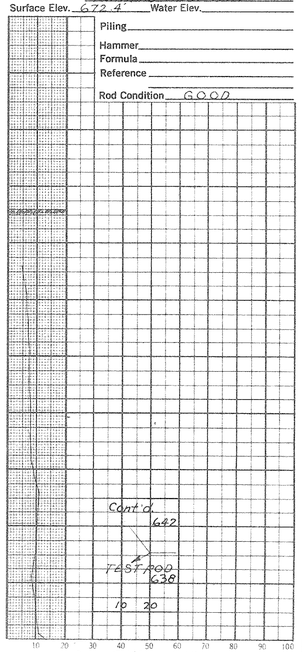
Test Location No. 14
Station & Offset 896+41.30 RT
FORWARD PIER
Surface Elev. 672.2 Water Elev. ____
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition GOOD



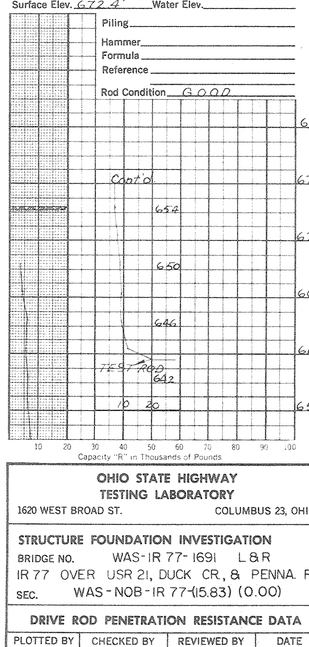
Test Location No. 16
Station & Offset 896+87.60 LT
FORWARD PIER
Surface Elev. 672.2 Water Elev. ____
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition GOOD



Test Location No. 17
Station & Offset 897+32.60 RT
FORWARD ABUTMENT
Surface Elev. 672.4 Water Elev. ____
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition GOOD



Test Location No. 19
Station & Offset 897+77.30 LT
FORWARD ABUTMENT
Surface Elev. 672.4 Water Elev. ____
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition GOOD



OHIO STATE HIGHWAY TESTING LABORATORY
1620 WEST BROAD ST. COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. WAS-IR 77-1691 L&R
IR 77 OVER USR 21, DUCK CR, & PENNA. RR
SEC. WAS-NOB-IR 77-(15.83) (0.00)

DRIVE ROD PENETRATION RESISTANCE DATA

PLOTTED BY	CHECKED BY	REVIEWED BY	DATE
R.C.	R.P.W.	R.D.R.	6/19/64