

STATE OF OHIO DEPARTMENT OF HIGHWAYS

FREMONT BOWLING GREEN ROAD S.H. 278 SEC. "C-1," "C-2" & "D-1" SANDUSKY COUNTY WASHINGTON & JACKSON TOWNSHIPS

NET LENGTH OF PROJECT = 14,262.01 LIN. FT. OR 2.701 MI.

CONVENTIONAL SIGNS

STATE LINE	-----
COUNTY LINE	-----
TOWNSHIP LINE	-----
CENTER LINE	-----
SECTION LINE	-----
PROPERTY LINE	-----
CITY OR VILLAGE LINE	-----
FENCE LINE	-----
STEAM RAILROAD	=====
ELECTRIC RAILROAD	-----
POLE LINE	φ φ φ φ φ
GUARD RAIL	=====
DRAIN PIPE, NEW	=====
DRAIN PIPE, OLD	-----

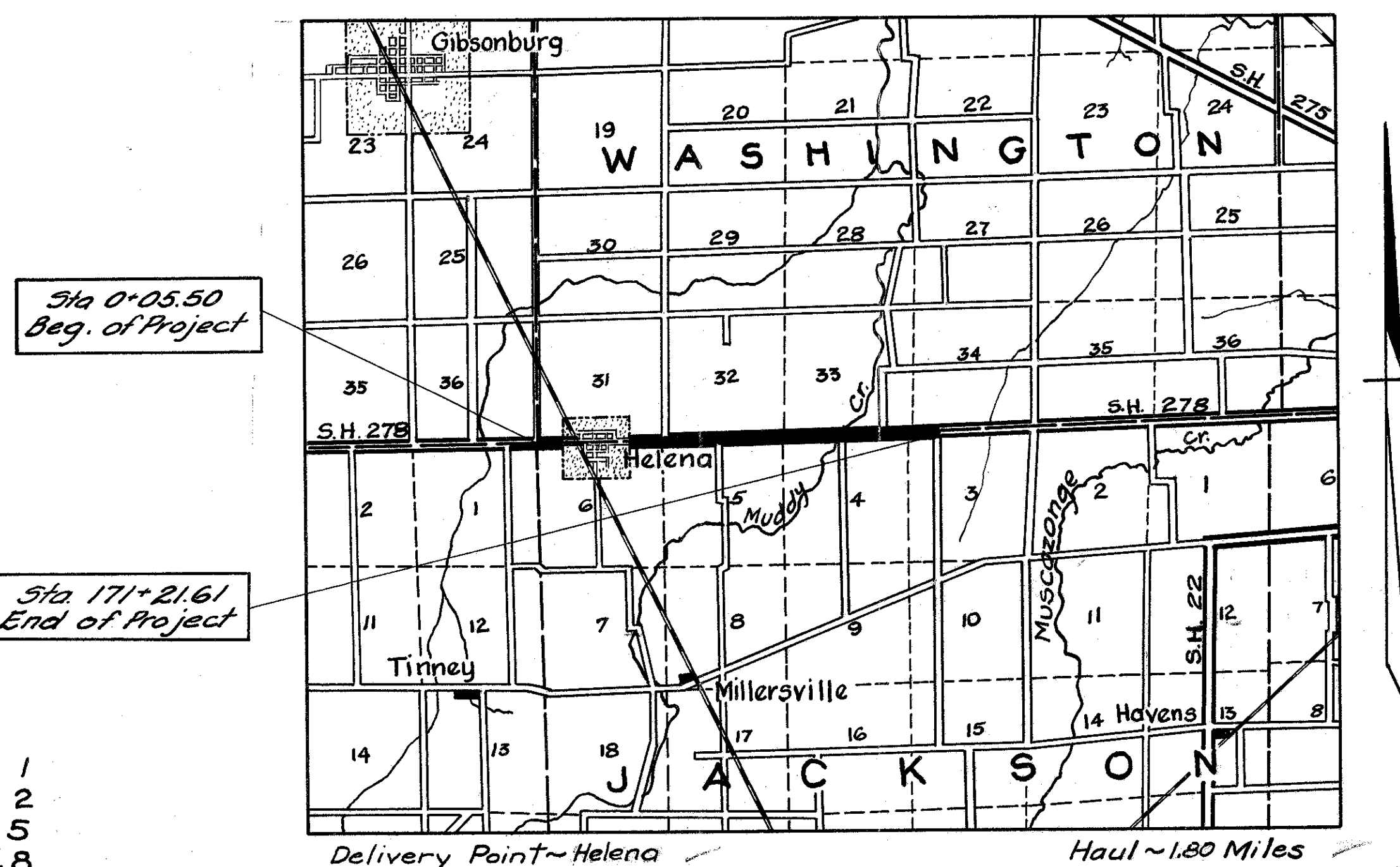
INDEX OF SHEETS

- Title Sheet
- Typical Section
- Plan and Profile
- Cross-Sections
- Pavement Computations
- Summary

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LINE DATA

Beginning of Project Sta. 0+05.50
 End of Project Sta. 171+21.61
 Gross Length = 17116.11 Lin. Ft.
 Additions ~ None
 Deductions ~ Sta. 11+50.60 to Sta. 40+04.70 = 2854.10 Lin. Ft.
 Net Length of Project = 14,262.01 Lin. Ft. or 2.701 Miles.



LOCATION PLAN



PORTION TO BE IMPROVED
 DETOURS SHOWN THUS
 STATE HIGHWAYS
 COUNTY ROADS

SCALES

PLAN 1" = 200'
 PROFILE: HORIZONTAL 1" = 200'
 PROFILE: VERTICAL 1" = 5'
 CROSS-SECTIONS 1" = 5'

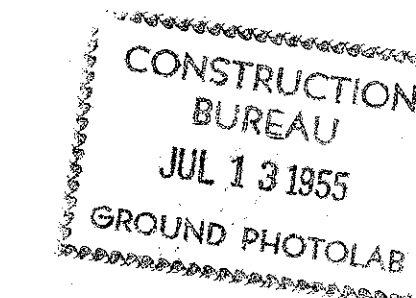
STANDARD DRAWINGS	
Number	Date
G-7.07	10-1933

The Standard Specifications of the State of Ohio, Department of Highways, including changes and Supplemental Specifications listed in the proposal shall govern this improvement.

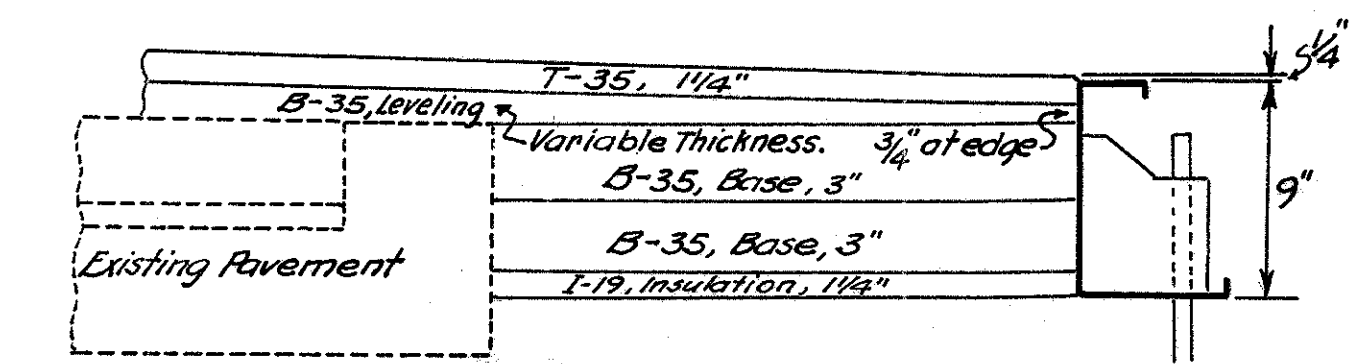
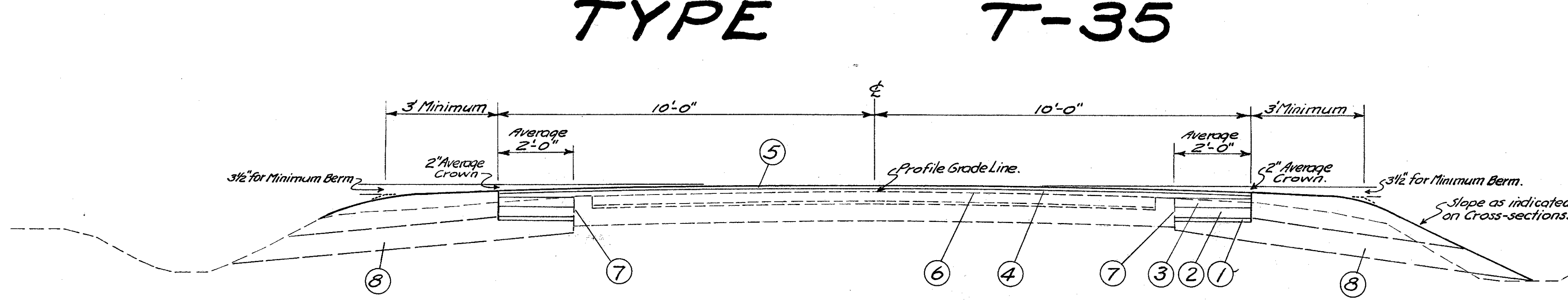
I hereby approve these plans and declare that the making of this improvement will not require the closing to traffic of the Highway.

The Right of Way necessary for this improvement will be provided by the State of Ohio.

- Approved _____
Date _____ Resident District Deputy Director.
- Approved J.S. Adams P.E. 447
Date 8-1-39 Resident Division Deputy Director.
- Approved A.D. Miley
Date 8-15-39 Chief Engineer, Bureau of Maintenance.
- Approved A. H. Gou P.E. 25
Date 8-15-39 Chief Engineer, Location and Right-of-Way.
- Approved W. B. Kern
Date 8-15-39 First Asst. Director and Chief Engineer.
- Approved Carl P. Degetau
Date _____ Director of Highways.
- Recommended for Approval _____
Date 8-15-39 District Engineer, Bureau of Public Roads.
- Recommended for Approval _____
Date _____ Chief Engineer, Bureau of Public Roads.
- Approved _____
Date _____ Chief of Bureau.



TYPICAL SECTION T-35



Note - The Forms shall be braced in a manner to prevent lateral and vertical movement.
FORM AND COURSE DETAIL

Typical Section - Sta. 0+05.50 to Sta. 11+50.60 = 1145.10 Lin. Ft.
Sta. 40+04.70 to Sta. 128+52.00 = 8847.30 Lin. Ft.
Sta. 129+34.00 to Sta. 171+21.61 = 4187.61 Lin. Ft.
Total = 14180.01 Lin. Ft.

PAVEMENT COMPUTATIONS

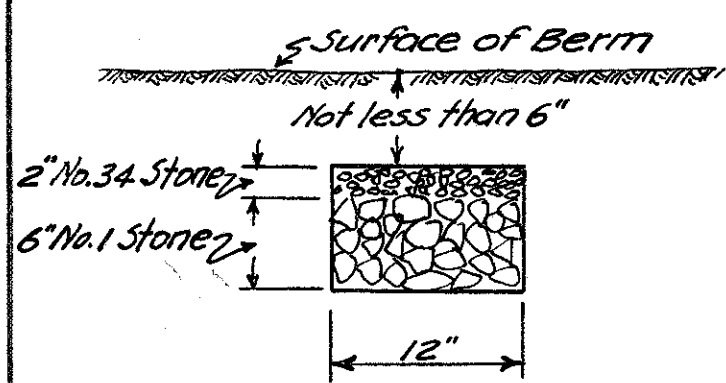
Project Length -
Beginning of Project, Sta. 0+05.5 - End of Project, Sta. 171+21.61. Gross Length = 17116.11 Lin. Ft.
Additions - None.
Deductions - Sta. 11+50.60 to Sta. 40+04.70 (Village of Helena) = 2854.10 Lin. Ft.
Sta. 128+52.00 to Sta. 129+34.00 (Str. No. 3a-6-85) = 82.00 Lin. Ft.
Total Deductions = 2936.10 Lin. Ft.
Net Length = 14180.01 Lin. Ft.

Pavement Areas -
Area of Pavement Widening (2 ft. on each side existing pavement) = (14180.01 x 4) ÷ 9 = 6302.23 Sq. Yds.
Additions - For Transition at beginning of Project (See detail, Sheet No. 3) = 19.44 Sq. Yds.
Total area of Pavement Widening, Items I-19 & B-35 = 6321.67 Sq. Yds.
Area for Leveling and Surface Courses (over existing pavement and widening) = (14180.01 x 20) ÷ 9 = 31511.13 Sq. Yds.
Additions - For surfacing of Bridge Floor, Sta. 128+52.00 to Sta. 129+34.00, = (82 lin. ft. x 20 ft. width of Bridge Floor) ÷ 9 = 182.22 Sq. Yds.
Total area of Pavement, Leveling and Surface Courses, = 31693.35 Sq. Yds.

Quantities
Item E-1, Roadway Excavation (Unclassified), from summation on Sheets No. 6, 7 & 8 = 1047 Cu. Yds.
Item E-4, Borrow (Contractor to furnish), from summation on Sheets No. 6, 7 & 8 = 1344 Cu. Yds.
Item I-9, Estimated length of 8" x 12" Stone Underdrains (French Drain) No. 2 required = 600 Lin. Ft.
Item E-10, Sealing (only) of edge of existing pavement = (2 x 14180.01) = 28360.02 Lin. Ft.
Addition - For Transition at beginning of Project (See detail, Sheet No. 3) = 50.00 Lin. Ft.
Total = 28410.02 Lin. Ft. Use 28410 Lin. Ft.
Item I-19, 1 1/4" Insulation Course = Total area of Pavement Widening = 6321.67 Sq. Yds. Use 6322 Sq. Yds.
Item B-35, Base Courses (2 Courses @ 3" each) = (6321.67 x 6) ÷ 36 = 1053.61 Cu. Yds. Use 1054 Cu. Yds.
Item B-35, 3/4" Minimum Thickness, Leveling Course = (31693.35 x 1 1/4") ÷ 36 = 1100.46 Cu. Yds.
Estimated volume of extra Leveling Course Material to reduce crown in existing pavement; correct minor surface variations; for feathering out at beginning and end of Project, and for transition at beginning of Project = 100 Cu. Yds. per Mile x (14180.01/5280) = 268.56 Cu. Yds.
Total Leveling Course = 1369.02 Cu. Yds. Use 1370 Cu. Yds.
Item T-35, 1 1/4" Surface Course = (31693.35 x 1") ÷ 36 = 880.37 Cu. Yds.
Estimated volume of extra Surface Course Material for Transition at beginning of Project and for feathering out at beginning and end of Project = 15.54 Cu. Yds.
Total Surface Course = 895.91 Cu. Yds. Use 896 Cu. Yds.
Item T-30, Bituminous Prime Coat (0.10 Gal. per Sq. Yd.) applied only to surface of the existing 16 ft. width pavement and to the existing Bridge Floor, Sta. 128+52 to Sta. 129+34 = [(14180.01 x 16) + (82 x 20)] ÷ 9 x 0.10 = 2550.11 Gal. Use 2550 Gal.

- ① - Item I-19, 1 1/4" Insulation Course.
- ② - Item B-35, 3" Asphaltic Concrete First Base Course.
- ③ - Item B-35, 3" Asphaltic Concrete Second Base Course.
- ④ - Item B-35, 3/4" Minimum Thickness, Asphaltic Concrete Leveling Course.
- ⑤ - Item T-35, 1 1/4" Asphaltic Concrete Surface Course, Type "B".
- ⑥ - Item T-30, Bituminous Prime Coating Bituminous Material Sec. M-5.12 A.E.3 applied at the rate of 0.10 Gal. per Sq. Yd.
- ⑦ - Item E-10, Sealing (only) of edge of existing pavement using Bituminous Material Sec. M-5.12 A.E.3 applied at the rate of 0.15 Gal. per Sq. Yd.
- ⑧ - Item I-9, 8" x 12" Stone Underdrains (French Drain) No. 2.

DETAIL OF NO. 2 STONE UNDERDRAIN



(a) Hand tamp lightly the No. 1 Stone to a finished depth of 6" before placing the No. 34 Stone.
(b) Hand tamp lightly the No. 34 Stone to a finished depth of 2" and complete backfilling of trench.
Note - The Stone Underdrains (French Drain) No. 2 shall be placed at the locations indicated by the Engineer in charge.

DATA ON EXISTING PAVEMENT

TYPE - 3 1/2" Brick Wearing Course and 1" Sand Cushion on a 5" Portland Cement Concrete Base with 6" Flush Curbs. (Base Mix 1-2 1/2-5)
WIDTH - 16 feet. Crown - Average 2 inches.
CONDITION - The existing pavement appears to be structurally sound. No evidence of base failures.
The Brick Wearing Course and Flush Curbs have been Surface Treated, building up a mat approximately 1/2 inch thick. This mat will bonded to Brick Wearing Course.

GENERAL NOTES

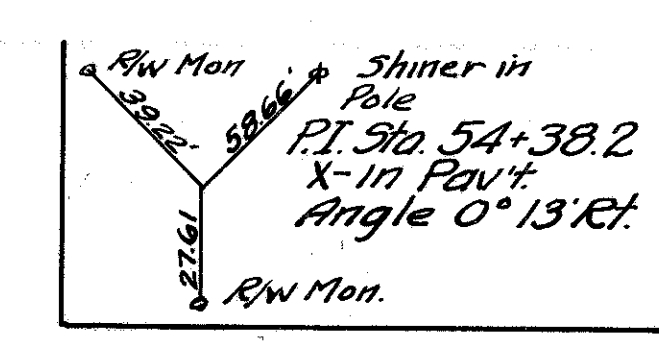
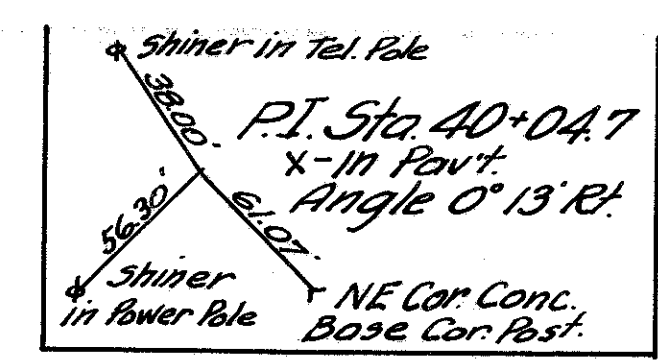
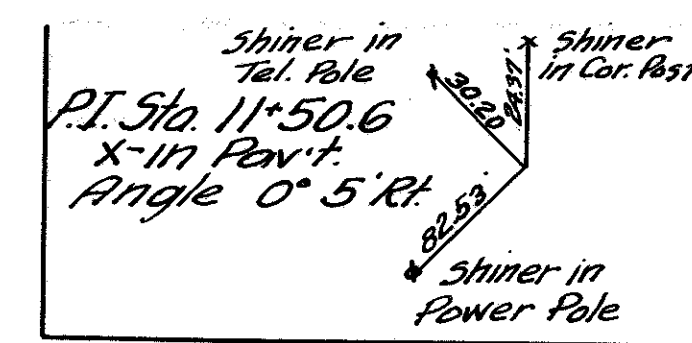
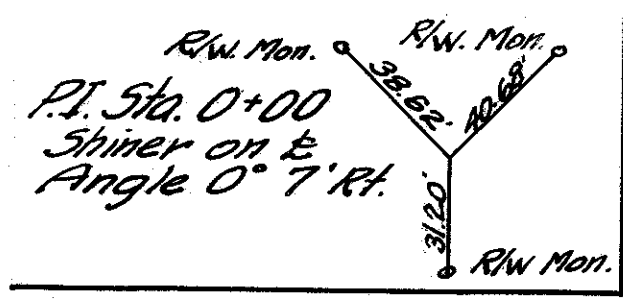
TRAFFIC - Traffic shall be maintained at all times to the satisfaction of the Division Engineer. The item of maintaining shall include the furnishing of lights, signs, barricades and watchmen necessary to secure the unimpeded flow of traffic twenty-four (24) hours daily.
EMBANKMENT - Watering embankment and density requirements, as referred to in Section E-1.05 of the General Specifications will not be required on this project.
FORMS - Side Forms, set to line and grade established by Engineer, will be required.
ROADWAY DRAINAGE AND STRUCTURES - No work required on the existing Roadway Drainage; Side Road Structures; Driveway Structures and Roadway Culverts indicated on the Plan sheets.
BITUMINOUS PRIME COAT - Bituminous prime coat, Item T-30, of bituminous material, Sec. M-5.12 A.E.3, applied by distributor or by broom at the rate of 0.10 gallons per sq. yd., and sand cover, Sec. M-2.1 uniformly spread at the rate of from 4 to 7 lbs. per sq. yd. After the bituminous material is applied, all material not required to give a uniform coating to base shall be swept into all cracks and open joints before the sand cover is placed. Payment for sand cover is included in price bid per gallon for bituminous material.
ASPHALT CEMENT - The asphalt cement used shall meet the requirements of Sec. M-5.1 except that the penetration range shall be 70 to 80.
COMPACTION OF SUBGRADE - Compaction of subgrade in cuts, Sec. E-1.11 will not be required.

PROFILE GRADE - The profile grade line of the new pavement is approximately 2 inches above the profile grade line of the old road.

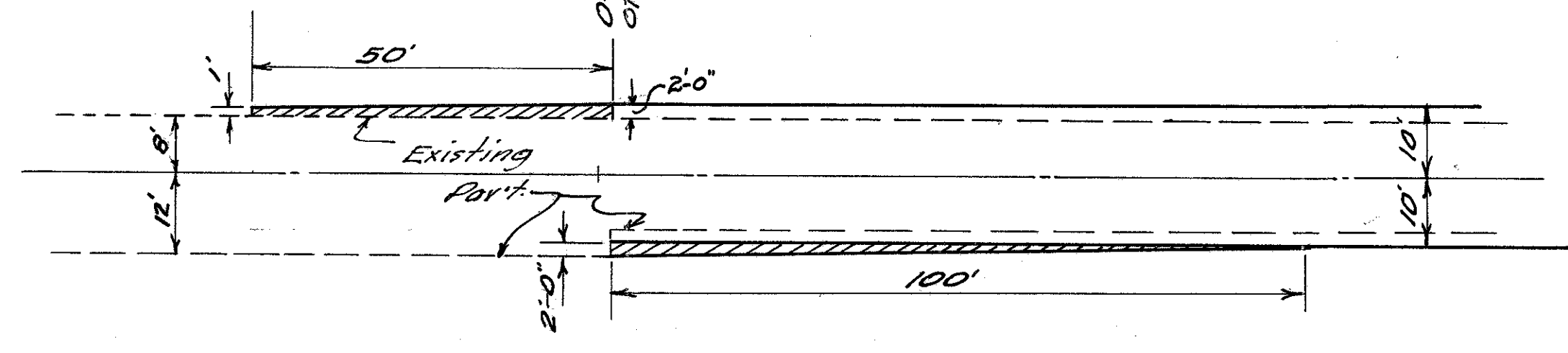
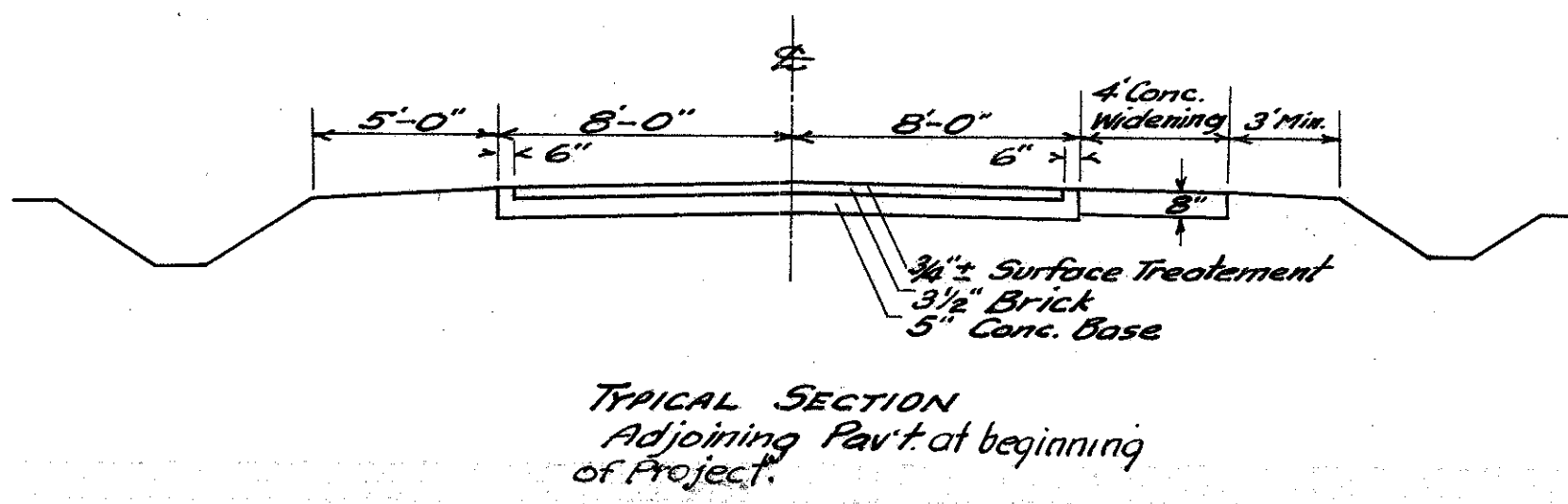
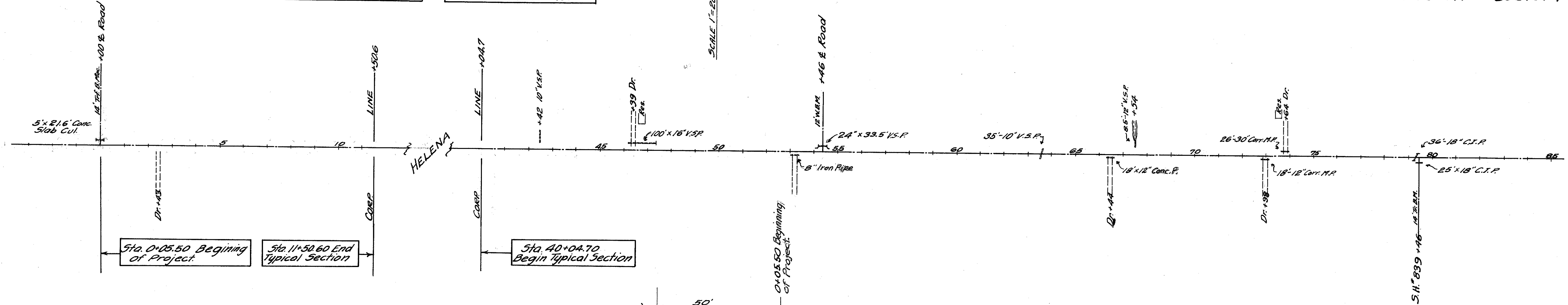
GENERAL SUMMARY

Item	Description	Quantity	Unit
Roadway			
E-1	Roadway Excavation (Unclassified)	1047	Cu. Yds.
E-4	Borrow (Contractor to furnish)	1344	Cu. Yds.
I-9	8" x 12" Stone Underdrains (French Drain) No. 2	600	Lin. Ft.
E-10	Sealing (only) of Existing Pavement Edge	28410	Lin. Ft.
Pavement			
I-19	1 1/4" Insulation Course	6322	Sq. Yds.
B-35	Asphaltic Concrete Base Course (Laid in two Courses)	1054	Cu. Yds.
T-30	Bituminous Prime Coat (Sec. M-5.12 A.E.3 incl. sand cover)	2550	Gals.
B-35	1 1/4" Minimum Thickness, Asphaltic Concrete Leveling Course	1370	Cu. Yds.
T-35	1" Asphaltic Concrete Surface Course, Type "B"	896	Cu. Yds.

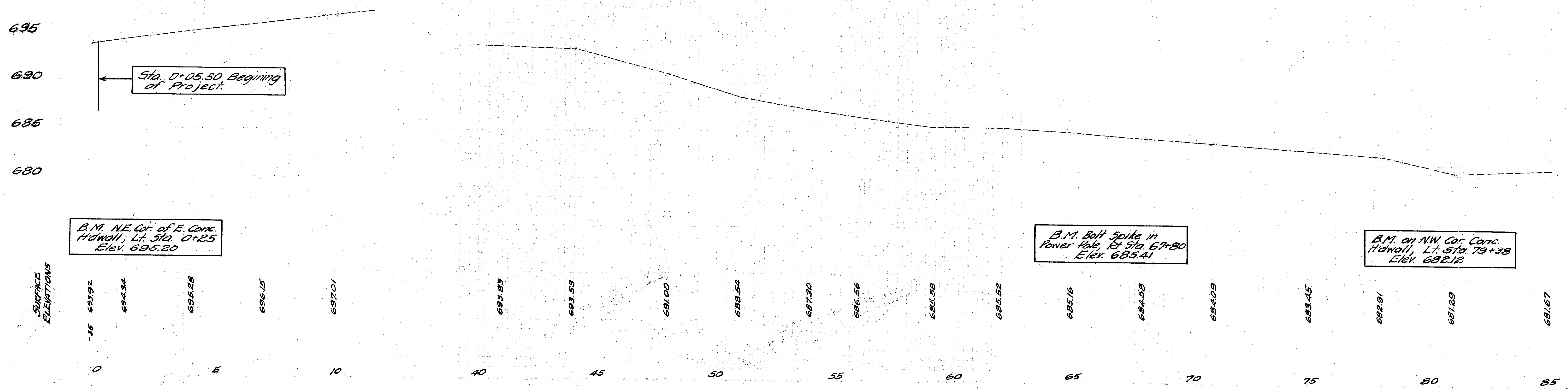
Item E-1 Roadway Excavation and Item E-4, Borrow, shall include the thorough compaction of earthwork and the final operations a grading necessary to finish the shoulders and slopes to the lines indicated on the typical sections or as directed by the engineer. The use of a template and fine hand grading to secure satisfactory results, will not be required.



SCALE 1" = 200'



**DETAIL OF TRANSITION
 STA. 0+05.50**
 Extra Pavement area, sta. 0-44.5 to sta. 0+05.5 = $(50 \times 1.5) \div 9 = 8.33$ Sq. Yds.
 Extra Pavement area, sta. 0+05.5 to sta. 11+05.5 = $(100 \times 1) \div 9 = 11.11$ Sq. Yds.
 Total Extra Pavement Area = 19.44 Sq. Yds.
 Additional length for Sealing (only) of Pavement Edge
 Sta. 0-44.5 to sta. 0+05.5 = 50 Lin. Ft.

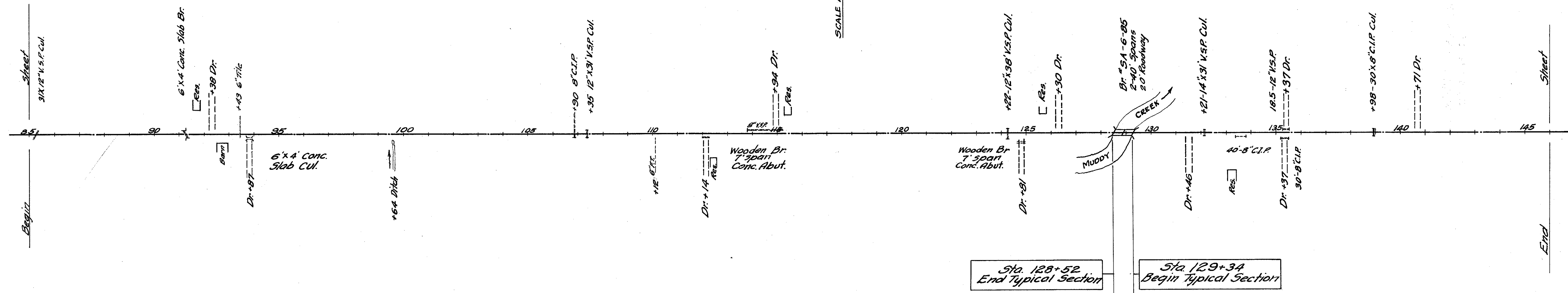


SURFACE ELEVATIONS

- 0 693.92
- 5 694.34
- 10 695.28
- 15 696.45
- 20 697.01
- 25 693.83
- 30 693.53
- 35 691.00
- 40 688.54
- 45 687.30
- 50 686.55
- 55 685.58
- 60 685.52
- 65 685.16
- 70 684.58
- 75 684.09
- 80 683.45
- 85 682.91
- 90 681.29
- 95 681.67

Shiner in Tel. Pole
 Shiner in Fence Post
 Shiner in Tel. Pole
 P.I. Sta. 107+43.0
 Shiner on E
 Angle 0° 15' Lt.

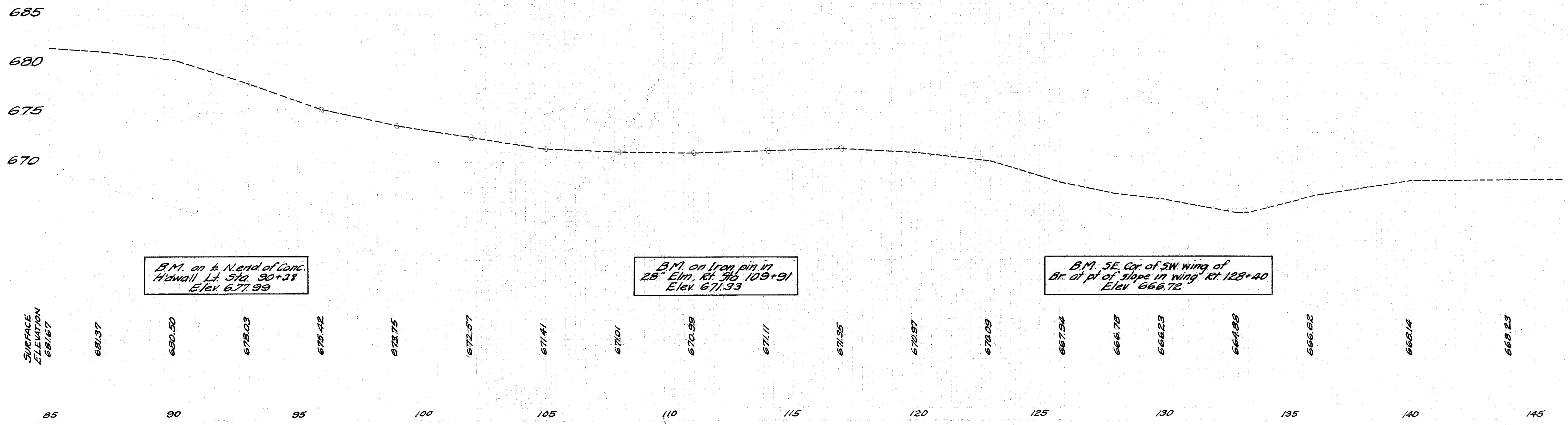
SCALE 1" = 200'



Sta. 128+52
 End Typical Section

Sta. 129+34
 Begin Typical Section

Data on Existing Structure No. Sa-6-85, @ Sta. 128+93
 Type - Concrete Girder Bridge.
 Span - 2 @ 40ft. each. Rdwy 20ft. Skew 30° L.F.
 Loading - H-15
 Wearing Course - Brick.
 Condition - Fair.
 Work Required - Surface existing Bridge Floor, Sta. 128+52 to Sta. 129+34 with Asphaltic Concrete Leveling and Wearing Course, Items B-35 and T-35.
 See Pavement Computations, Sheet No. 2.



B.M. on E. End of Conc. Midwall Lt. Sta. 90+38
 Elev. 677.99

B.M. on Iron pin in 28' Elm. Rt. Sta. 109+91
 Elev. 671.33

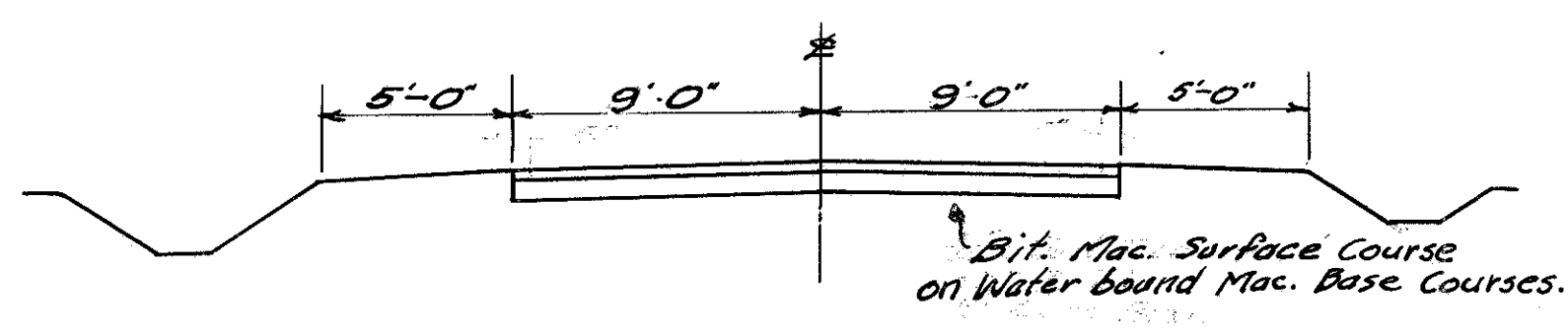
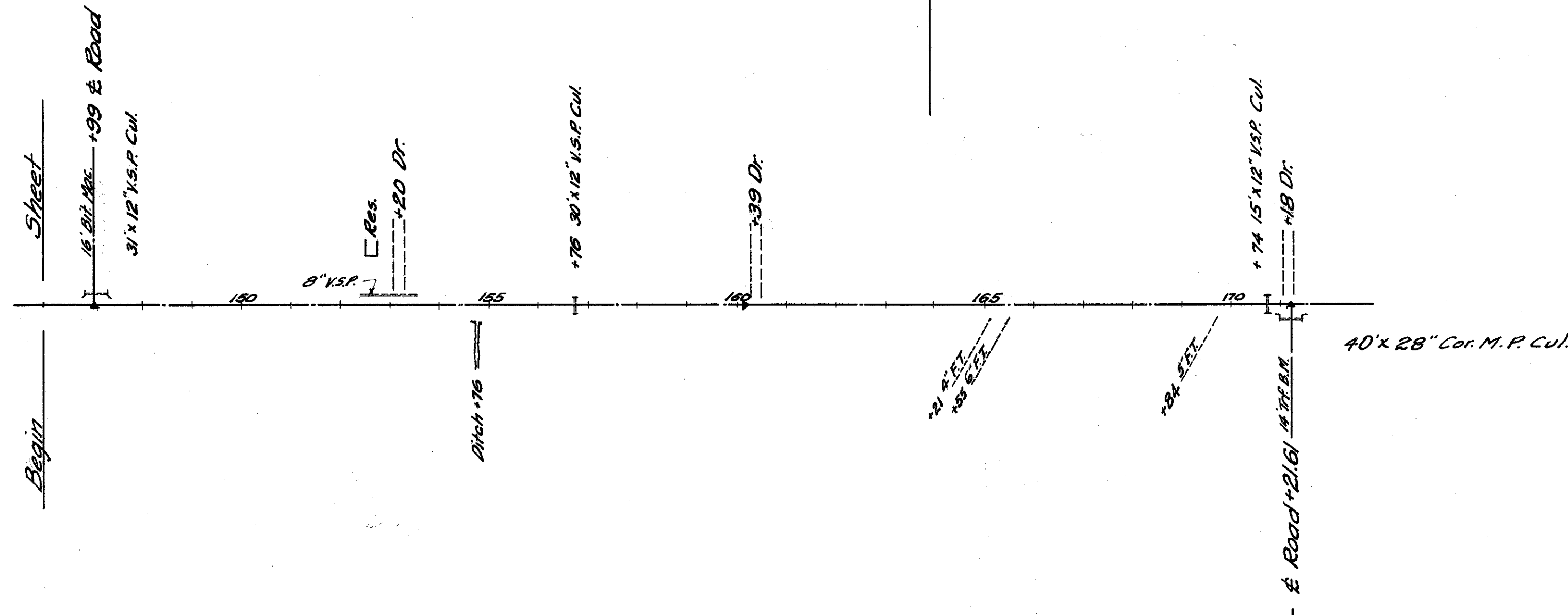
B.M. SE. Cor. of SW wing of Br. at pt. of slope in wing Rt. 128+40
 Elev. 666.72

NW Cor. E. Hawaii
Shiner in Cor. Post
P.I. Sta. 146+99.00
Angle 0° 4' Lt.
x-in Pav't

P.I. Sta. 160+13.75
Shiner on E.
Angle 0° 2' Lt.

P.I. Sta. 171+21.61
Shiner on E.
Angle 0° 4' Lt.
Shiner in 36 Elm
x-SW Cor. Conc. Hawaii

10 OHIO 1939 58
S.H. 278 SEC. C-1, C-2 & D-1
SANDUSKY COUNTY



TYPICAL SECTION of the
Adjoining Pav't. at end of Project.

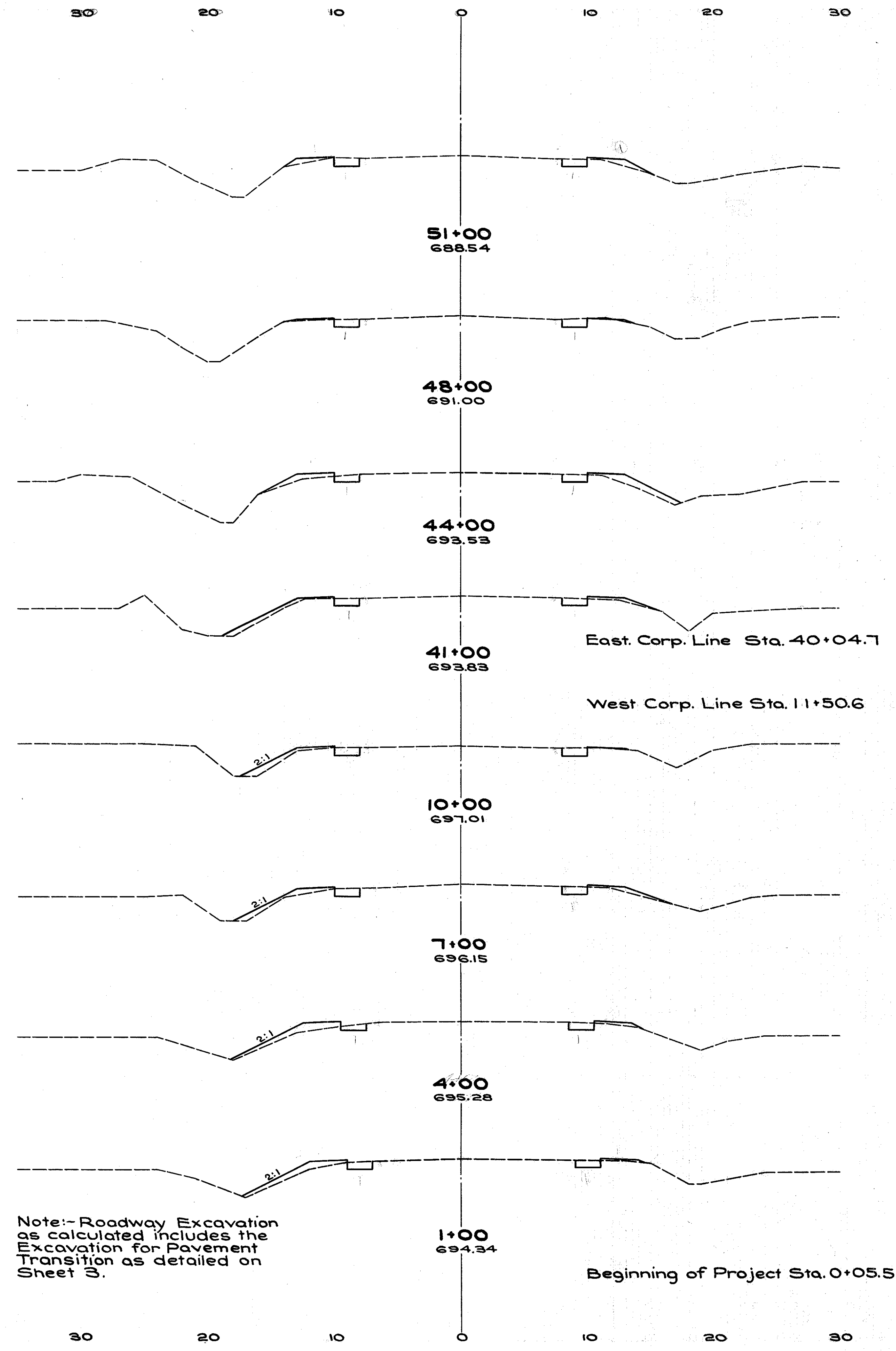
Sta. 171+21.61
End of Project

Sta. 171+21.61
End of Project

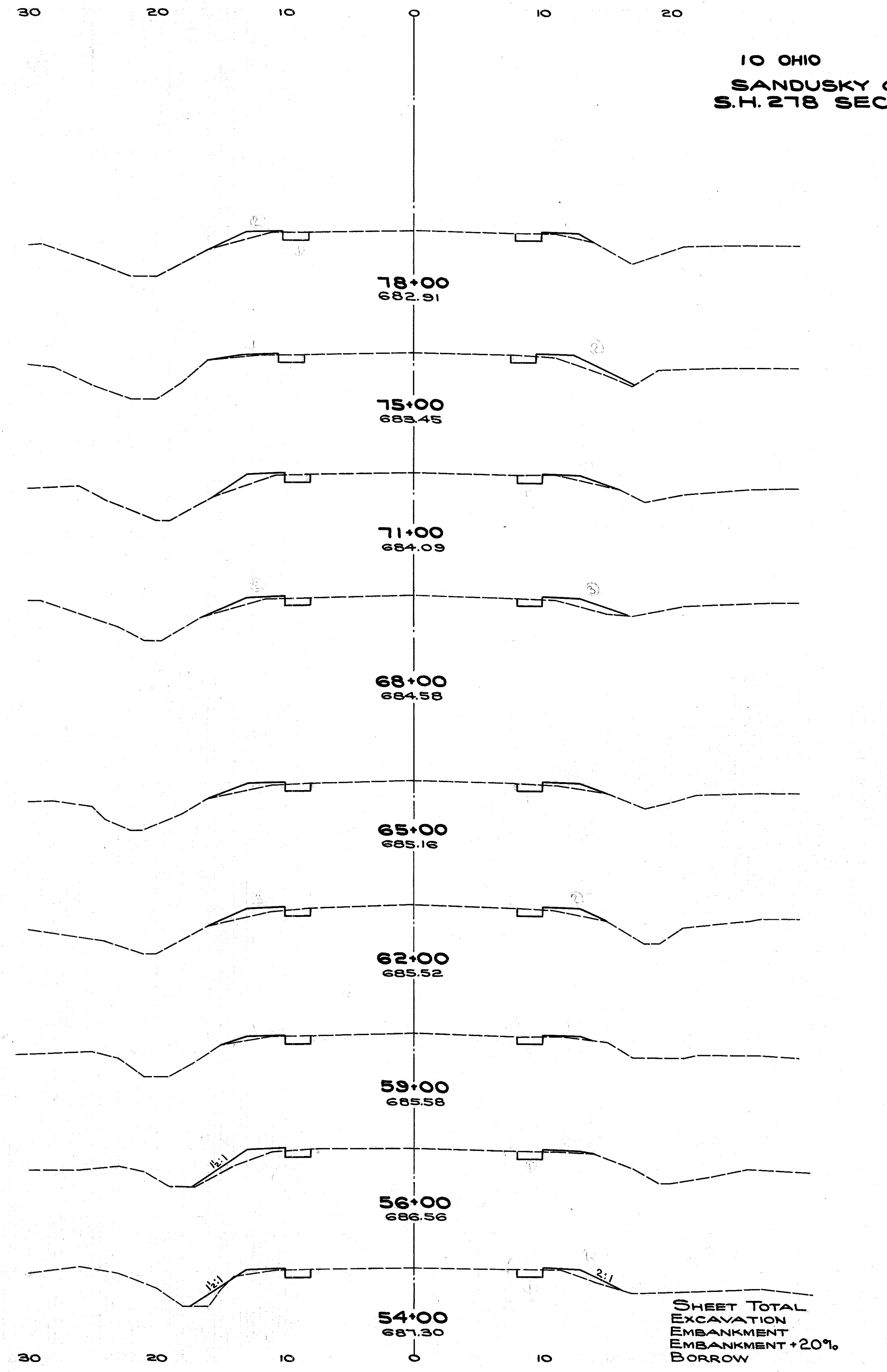
B.M. on NE Cor. East
Hawaii Lt. Sta. 147+14
Elev. 668.57

B.M. on SW Cor. East
Hawaii Rt. Sta. 171+42
Elev. 667.36

STATION	SURFACE ELEVATION
149	668.46
150	668.36
155	668.60
155	668.79
160	668.43
165	667.83
165	667.61
170	667.42

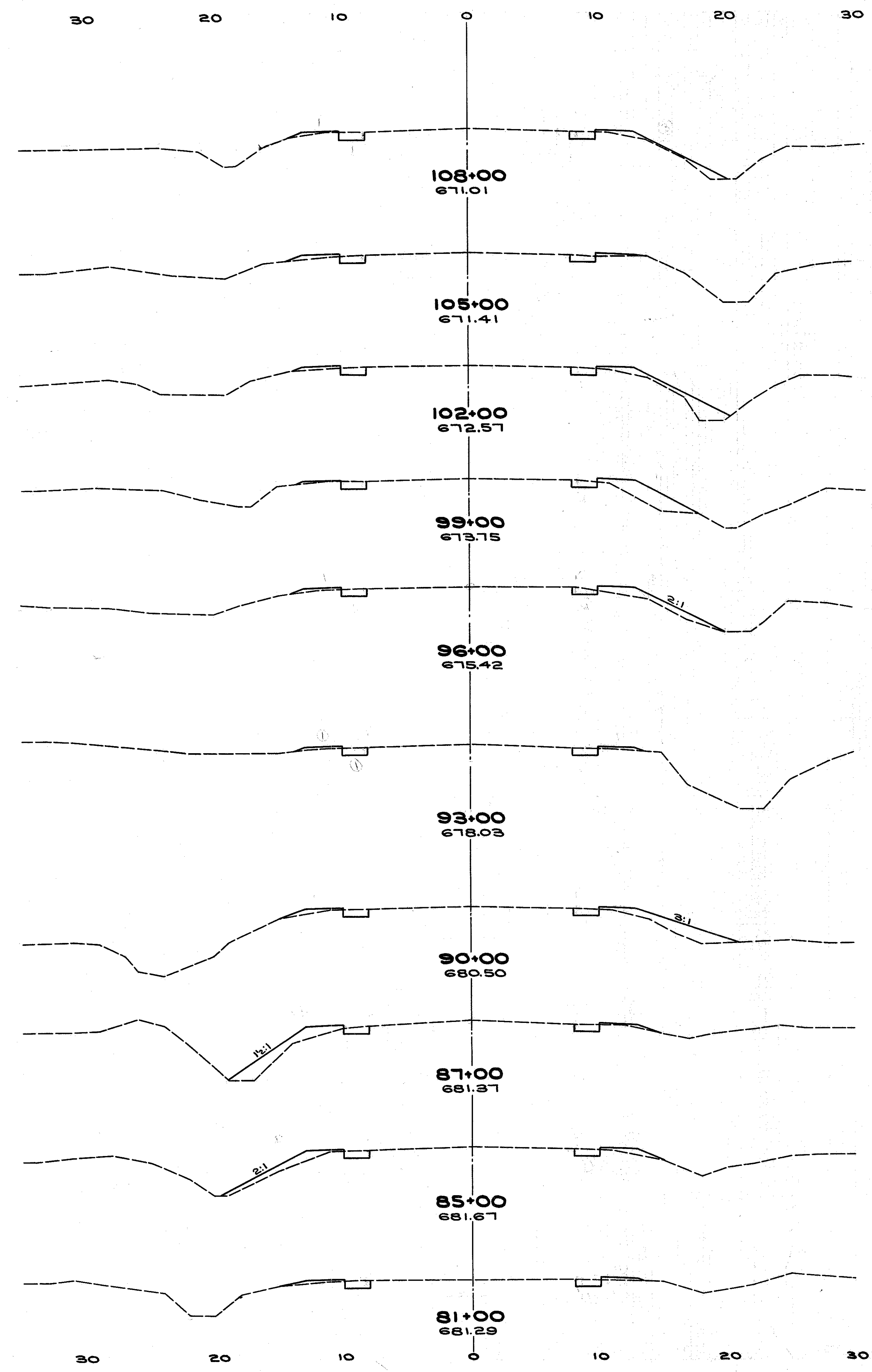


END AREA		CU. YDS.	
CUT	FILL	CUT	FILL
2	2	22	17
2	1	30	44
2	5	22	56
2	5	7	18
2	5	0	0
2	3	11	17
2	3	22	39
2	4	22	56
2	6	22	61
2	5	7	18
2	5		

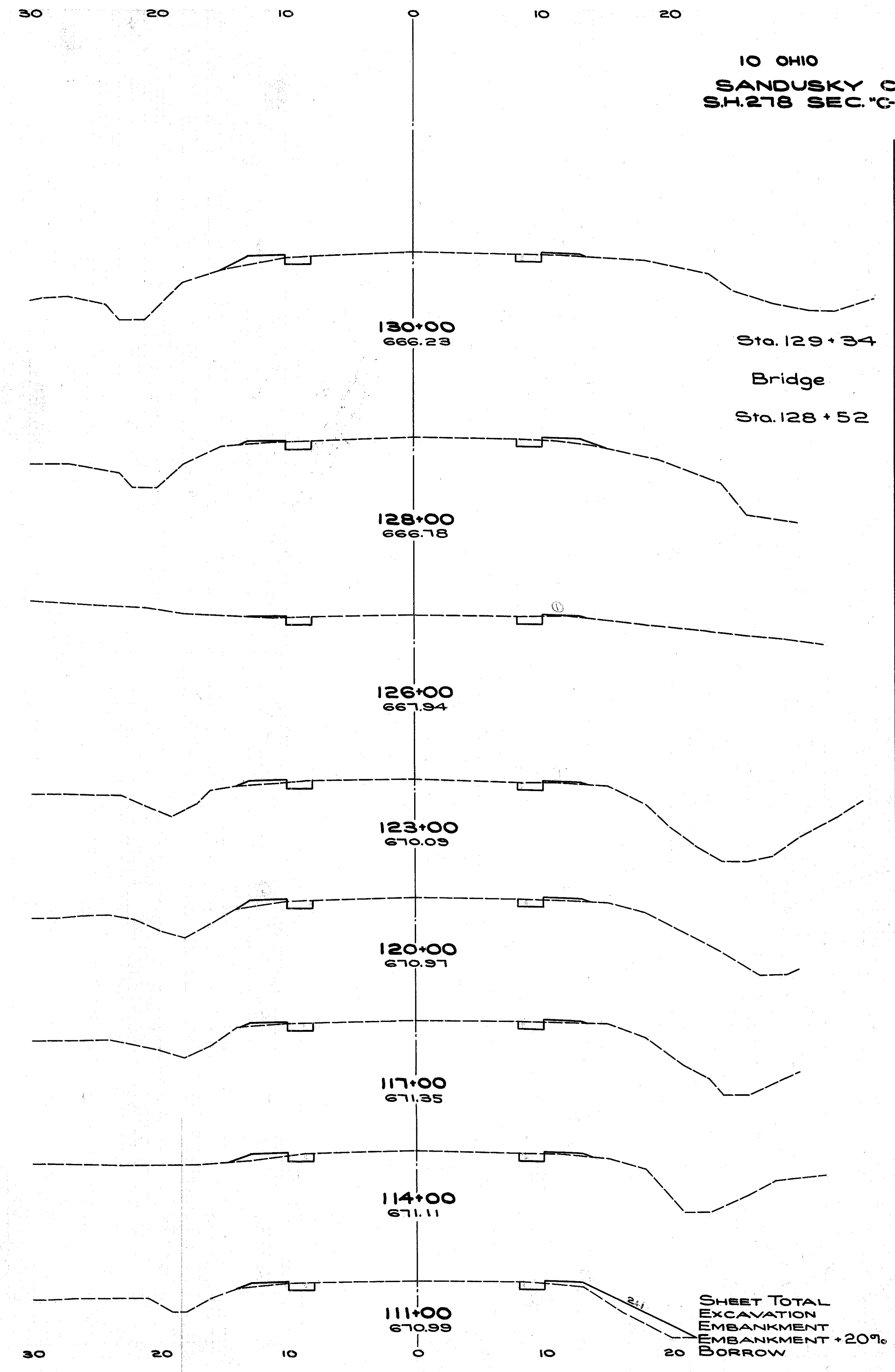


END AREA		CU. YDS.	
CUT	FILL	CUT	FILL
2	3	22	33
2	3	30	52
2	4	22	50
2	5	22	50
2	4	22	50
2	5	22	39
2	2	22	39
2	5	15	37
2	5	22	39
2	5	22	39
2	5	364	715
2	5		494

Note:- Roadway Excavation as calculated includes the Excavation for Pavement Transition as detailed on Sheet 3.

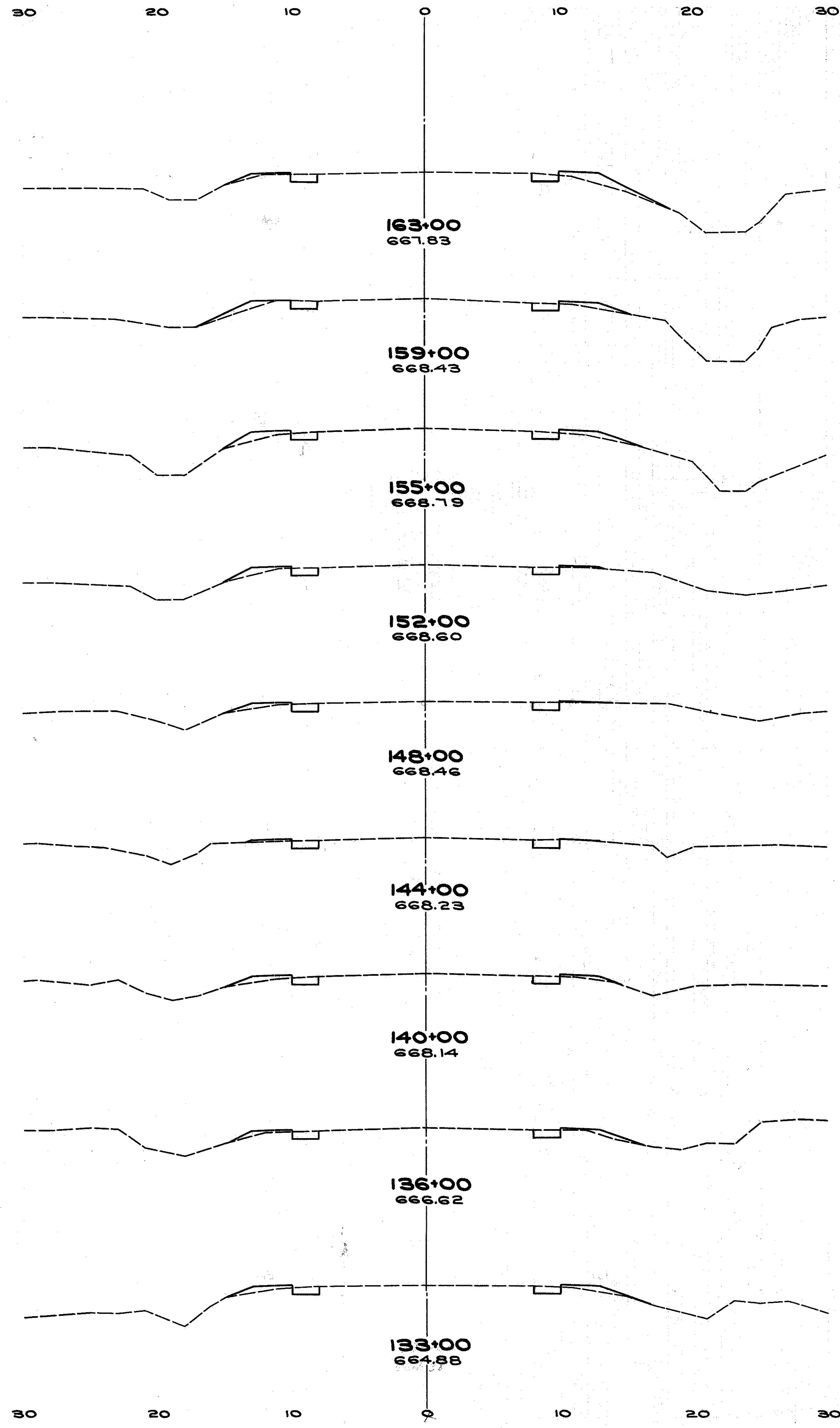


END AREA		CU. YDS.	
CUT	FILL	CUT	FILL
2	4		
		22	33
2	2		
		22	44
2	6		
		22	78
2	8		
		22	78
2	6		
		22	44
2	2		
		22	56
2	8		
		22	89
2	8		
		15	52
2	6		
		30	59
2	2		
		22	28
2	3		

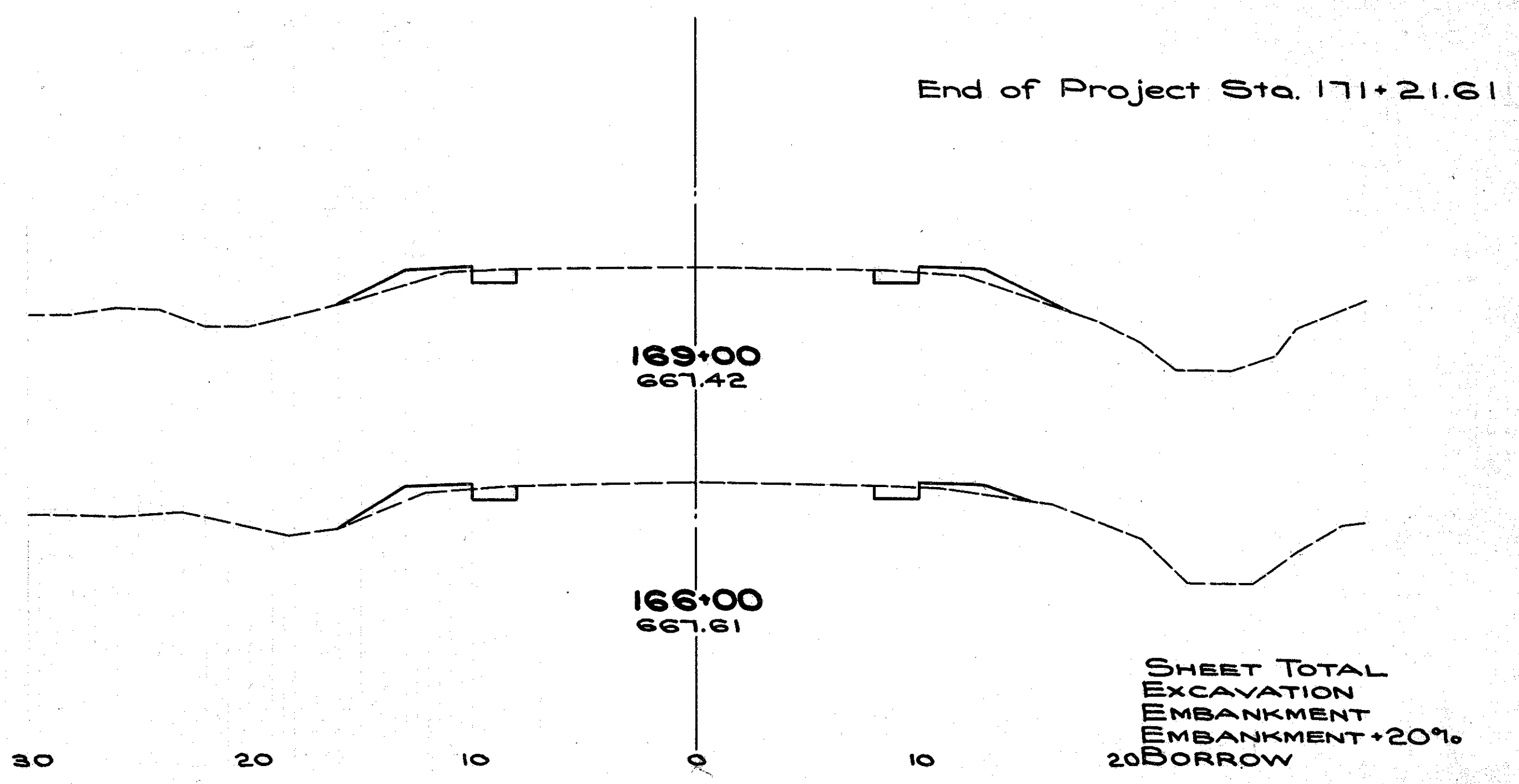


END AREA		CU. YDS.	
CUT	FILL	CUT	FILL
2	3		
		5	7
2	3		
		0	0
2	2		
		4	4
2	2		
		15	15
2	2		
		22	22
2	2		
		22	28
2	3		
		22	28
2	2		
		22	28
2	3		
		22	61
2	8		
		22	74
		377	
		828	
		994	
		617	

SHEET TOTAL
 EXCAVATION
 EMBANKMENT
 EMBANKMENT + 20%
 BORROW



END AREA		CU. YDS.	
CUT	FILL	CUT	FILL
2	3	30	44
2	3	30	52
2	4	22	39
2	3	30	37
2	2	30	22
2	1	30	22
2	2	30	30
2	2	22	28
2	3	22	33
2	3		



END AREA		CU. YDS.	
CUT	FILL	CUT	FILL
2	5		
2	5	16	41
2	5	22	56
2	5		
		22	44
		306	448
			539
			233

SHEET TOTAL
 EXCAVATION
 EMBANKMENT +20%
 BORROW