

192 Orange

DESIGN DESIGNATION

MICROFILMED
MAY 21 1995

STATE OF OHIO DEPARTMENT OF TRANSPORTATION

CALC. DATE	CAR	F.H.W.A. REGION	STATE	PROJECT
4-1-91	JSD	5	OHIO	BRF-1116(5)
CHECK DATE				
3-19-92				



BUTLER COUNTY
BUT-747-2.12
BRF-1116(5)

CURRENT A.D.T. (1992) - 15,293
DESIGN YEAR A.D.T. (2010) - 18,500

D.H.V. = 1665

D = 75%

T = 6%

DESIGN SPEED AND LEGAL SPEED = 45m.p.h.

FUNCTIONAL CLASSIFICATION = RURAL COLLECTOR

DESIGN EXCEPTIONS = NONE

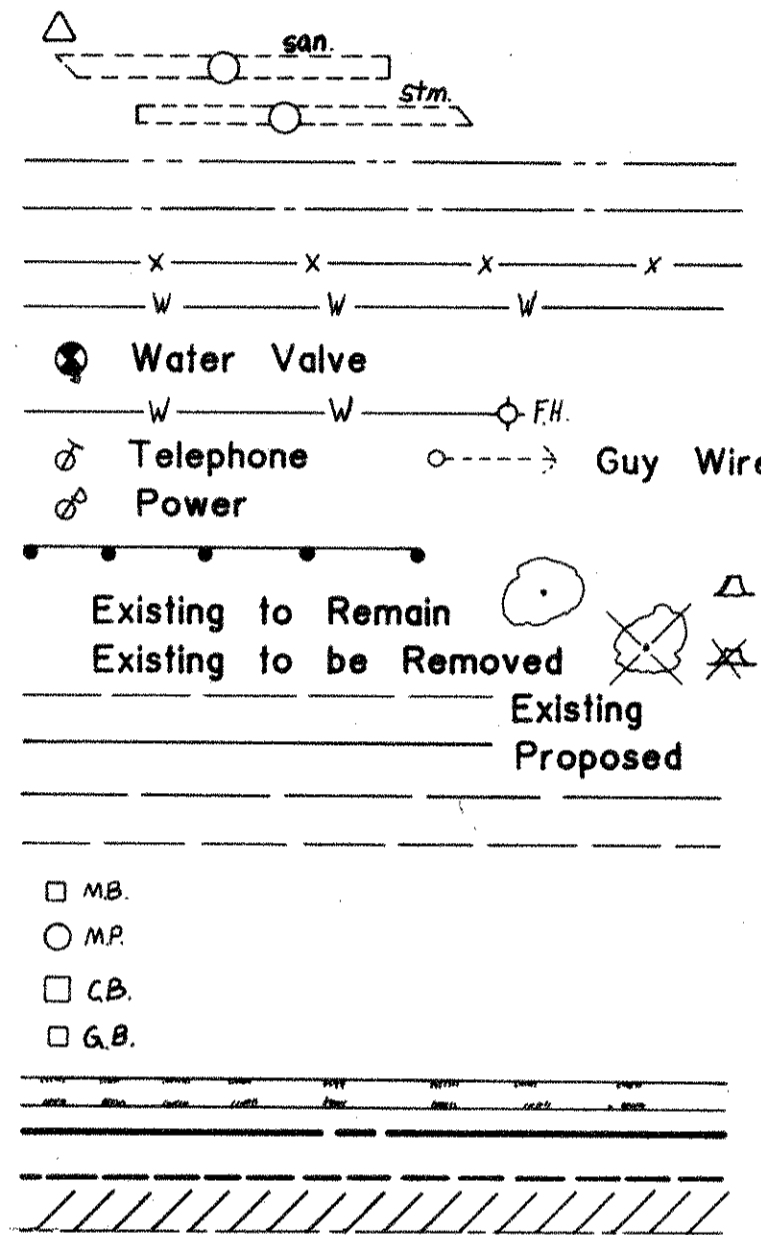
BUT - 747 - 2.12

1993 SPECIFICATIONS

The standard specifications of the State of Ohio, Department of Transportation, including changes and supplemental specifications listed in the proposal shall govern this improvement. I hereby approve these plans and declare that the making of this improvement will not require the closing to traffic of the highway, except as noted on sheet no. 9, and that provisions for the maintenance and safety of traffic will be as set forth on the plans and estimates.

CONVENTIONAL SIGNS

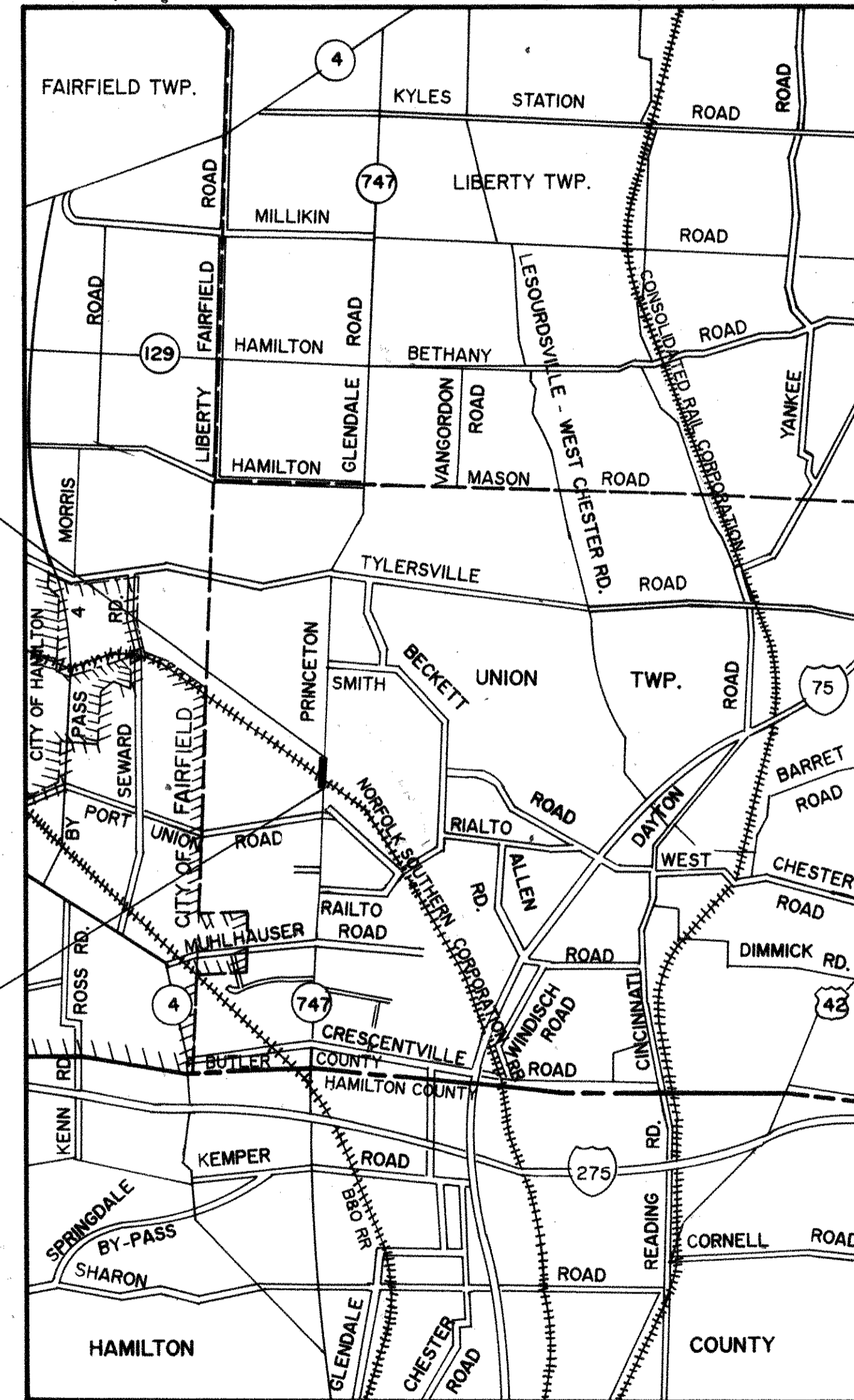
- Angle Point
- Existing Sanitary Sewer
- Existing Storm Sewer
- Survey Line
- Construction Center Line
- Fence Line
- Water Main
- Valves
- Hydrants
- Pole Lines
- Pole Lines
- Guard Rail
- Trees and Stumps
- Trees and Stumps
- Right of Way
- Right of Way
- Temporary Right of Way
- Drainage Easement
- Mail Box
- Water Meter Pit
- Catch Basin
- Gas Box
- Ditch Erosion Protection
- County Line
- Township Line
- Corporation Line



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UNION TOWNSHIP BUTLER COUNTY



END PROJECT
Sta. 136+27
S.L.M. = 2.58

BEGIN PROJECT
Sta. 112+50
S.L.M. = 2.12

UNDERGROUND UTILITIES
2 WORKING DAYS
BEFORE YOU DIG
800-362-2764 (Toll free)
OHIO UTILITIES PROTECTION SERVICE
NON-MEMBERS
MUST BE CALLED DIRECTLY



SCALES

PLAN	0 20 40
PROFILE HORIZONTAL	0 20 40
PROFILE VERTICAL	0 5 10
CROSS SECTIONS	0 5 10

LOCATION MAP
SCALE IN MILES

BUT-747-2.12 LINE DATA			
Begin Work	Sta. 112+50	Begin PROJECT	Sta. 112+50
End Work	Sta. 136+27	Suspend PROJECT	Sta. 124+41.98
		Resume PROJECT	Sta. 124+50.98
		End PROJECT	Sta. 136+27
Length of Work	2377 Lin. Ft. 0.450 Miles	Length of PROJECT	2368 Lin. Ft. 0.448 Miles

Project BUT-747-2.12
Date of Letting _____ 19____, Contract No. _____

STANDARD		CONSTRUCTION		DRAWINGS		SUPPLEMENTAL		SPECIFICATIONS	
BP-3.1	2-21-92	MT-99.10	11-14-86	MH-3	12-18-84	DBR-2-73	4-10-73		
BP-4.1	2-21-92	TC-41.20	3-26-79	MH-1	12-18-84				
GR-2.1	5-6-91	TC-42.20	3-26-79	TC-41.10	8-29-84	LA-1	6-1-79		
GR-3.4	5-6-91	TC-52.10	4-3-79	MT-105.10	7-1-92			942	3-18-92
GR-4.1	5-6-91	TC-52.20	4-3-79	MT-105.11	7-1-92	GR-1.1	5-6-91	944	3-18-92
GR-4.2	5-6-91			CPA-2-73	4-10-73	GR-1.2	10-30-92		
HW-1A	4-1-80	MT-97.10	4-29-88	CPP-2-73	4-10-73	GR-1.3	2-21-92	862	12-16-89
HW-4B	4-1-80	MC-4	7-20-76	CS-2-73	4-10-73	MC-1	6-13-69	962	1-23-90
MC-11	8-1-78	TC-65.10	2-1-90	AS-1-81	11-27-81	MH-2	6-12-75	820	3-18-92

Approved Larry M. Kahan
Date 8-20-92 District Deputy Director of Transportation
Approved B.D. Hankilommi / JTC
Date 10/16/92 Engineer, Bureau of Bridges and Structural Design
Approved Christopher L. Rungren
Date 2-18-93 Deputy Director, Planning and Design
Approved Jerry Wray
Date 2-18-93 Director, Department of Transportation

Plan Prepared By:
BAYER and BECKER ENGINEERS
700 Niles Road
Fairfield, Ohio 45014

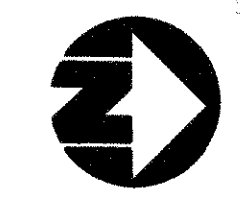
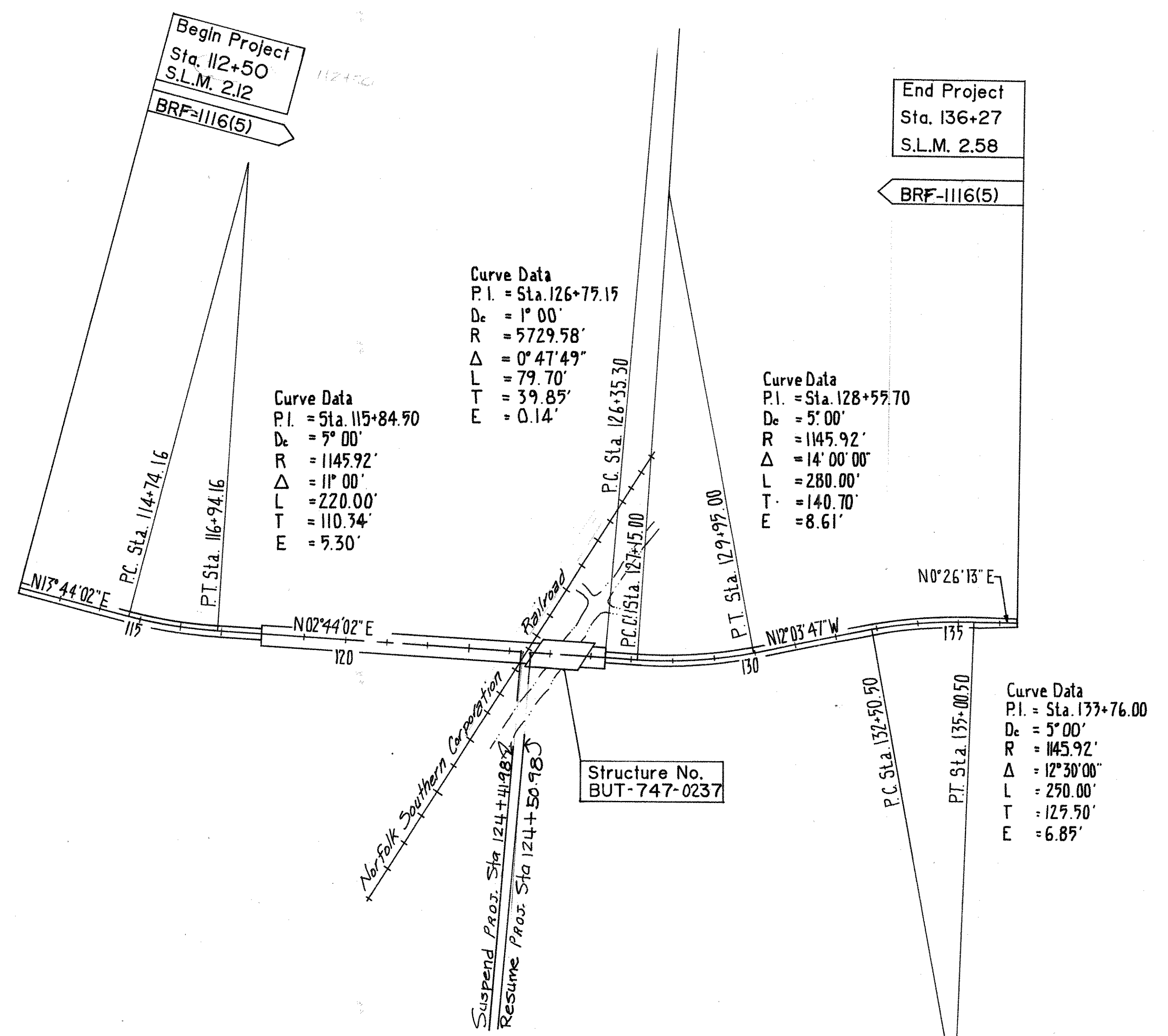
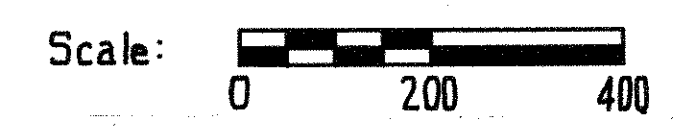
DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
APPROVED:
DIVISION ADMINISTRATOR DATE

DATE: 9/19/19	F.H.W.A. REGION	STATE	PROJECT
CHECK: CAR	5	OHIO	
DATE: 2/17/92			

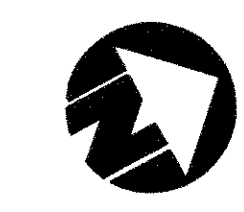
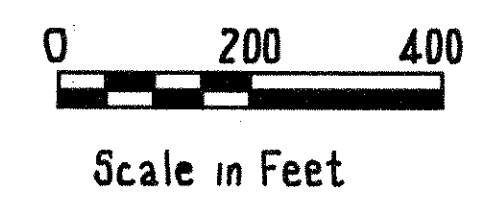
2
50

BUTLER COUNTY
BUT-747- 2.12

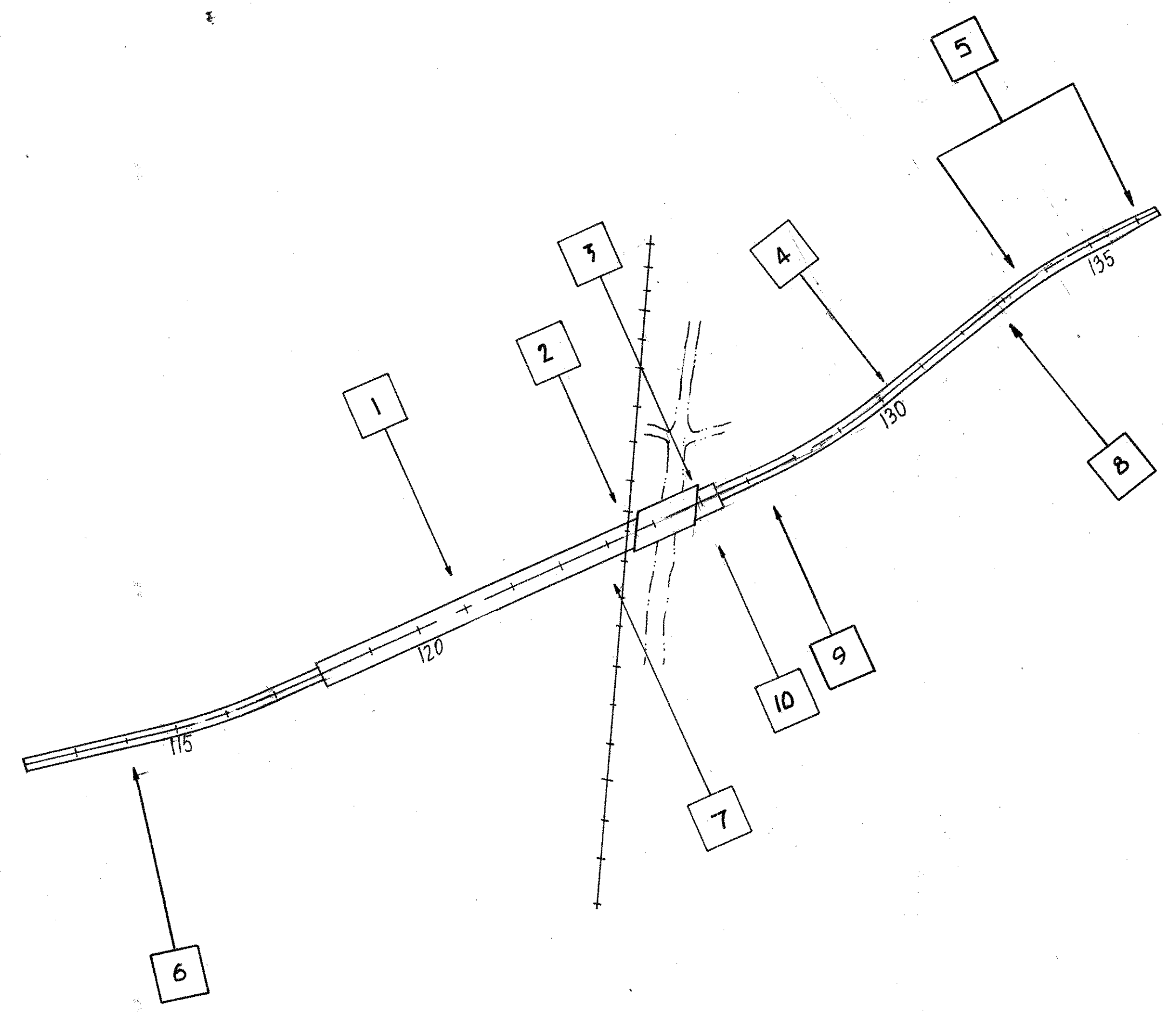
SCHEMATIC PLAN



EROSION CONTROL PLAN



- 1 Begin 100'-18" Conduit, Type A
Sta. 121+00, 71.5' Lt.
1.70 Acre Drainage Area
114 Cu.Yd. Sediment Basin
1.18 Cu. Yd.,RCP, Type C
w/o Filter
- 2 Begin 75'-36" Conduit, Type A
Sta. 124+50, 62.5' Lt.
0.72 Acre Drainage Area
5 Ea. Straw or Hay Bales
- 3 Top of Channel Bank
Sta. 126+00, 61' Lt.
1.23 Acre Drainage Area
83 Cu. yd. Sediment Basin
0.95 Cu.Yd.,RCP, Type C
w/o Filter
- 4 Begin 44'-15" Conduit, Type D
Sta. 130+32, 42' Lt.
0.42 Acre Drainage Area
5 Ea. Straw or Hay Bales
- 5 Meet Existing Slope
Sta. 133+50 to Sta. 136+00, 40' Lt.
0.58 Acre Drainage Area
73 Ea. Straw or Hay Bales
- 6 Proposed Grade Change
Sta. 114+00, 55.5' Rt.
0.19 Acre Drainage Area
5 Ea. Straw or Hay Bales
- 7 Begin 67'-36" Conduit, Type A
Sta. 123+78, 78' Rt.
1.73 Acre Drainage Area
116 Cu. Yd. Sediment Basin
1.19 Cu. Yd. RCP, Type C
w/o Filter
- 8 Begin 68'-18" Conduit, Type D
Sta. 132+82, 39' Rt.
1.44 Acre Drainage Area
97 Cu. Yd. Sediment Basin
1.06 Cu. Yd. RCP, Type C
w/o Filter
- 9 Begin 49'-18" Conduit, Type A
Sta. 127+24, 53.24' Rt.
0.64 Acre Drainage Area
5 Ea. Straw or Hay Bales
- 10 Top of Channel Slope
Sta. 126+00, 57' Rt.
0.16 Acre Drainage Area
5 Ea. Straw or Hay Bales



ESTIMATED QUANTITIES

ITEM	UNIT	DESCRIPTION	TOTAL
207	EA.	Straw or Hay Bales	98
207	CU.YD.	Temporary Benches, Dams & Sediment Basins	410
601	CU.YD.	Rock Channel Protection, Type C, w/o Filter	5

TYPICAL SECTIONS

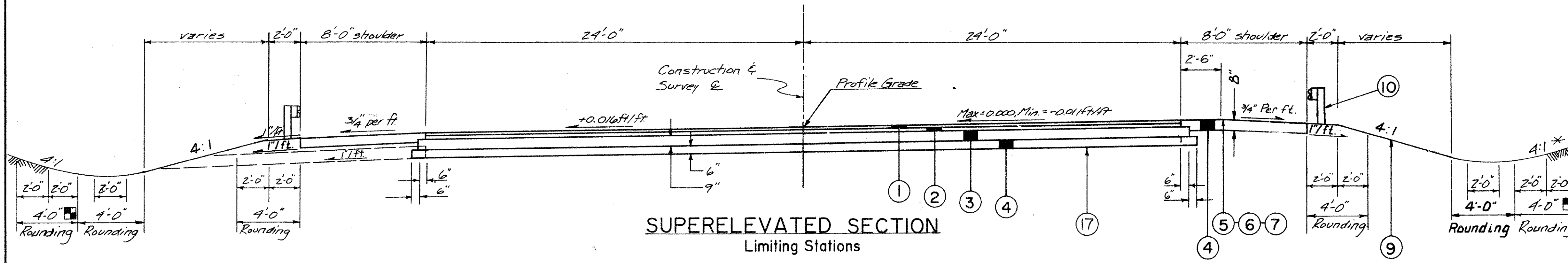
TYPE 404 on 30I

DATE	CAR	F.H.W.A.	STATE	PROJECT
2/21/91	5	OHIO		
CHECK	JSD			
DATE	3/19/92			

BUTLER COUNTY
BUT-747- 2.12

Provide 4' Rounding on all Sections Where Proposed Back Slopes Meet Existing.

Note: When E/P is below crown on both sides of E, Aggregate Drains should also be on both sides of E.

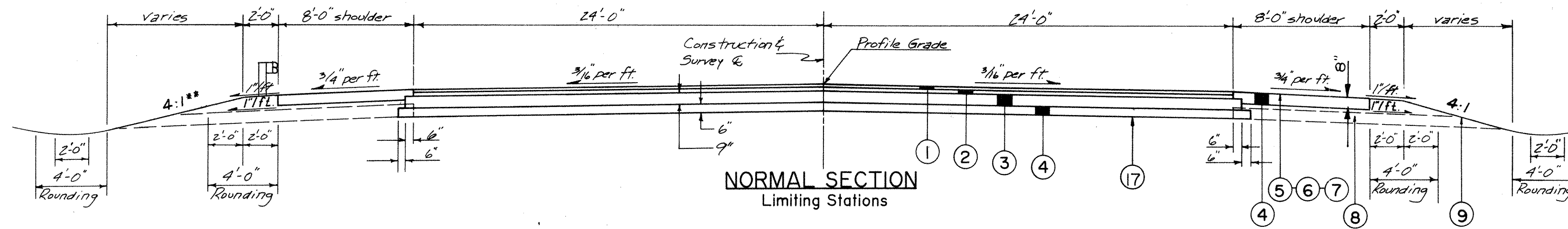


SUPERELEVATED SECTION
Limiting Stations

Sta. 125+88.16 to Sta. 126+35.30 = 47.14 L.F.

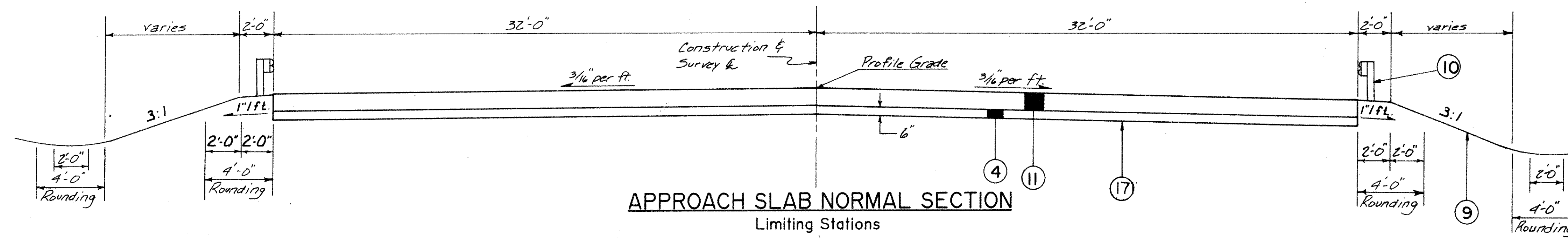
* applies to all sections
** Varies - See Cross Sections

LEGEND



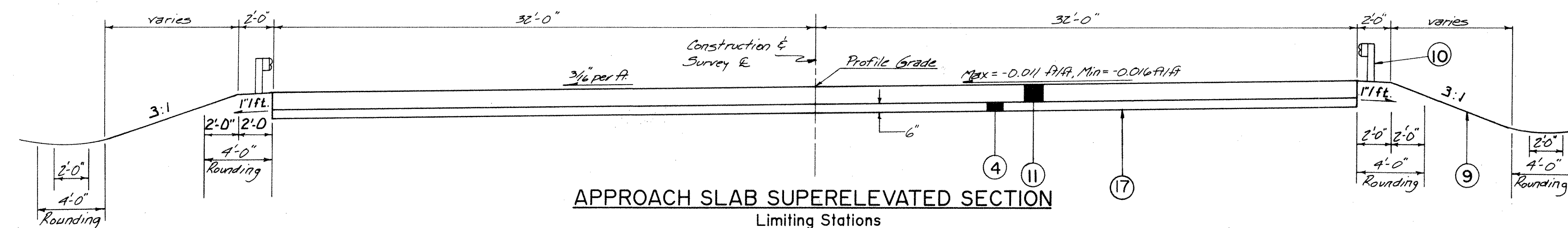
NORMAL SECTION
Limiting Stations

Sta. 118+01.66 to Sta. 124+60.80 = 659.14 L.F.



APPROACH SLAB NORMAL SECTION
Limiting Stations

Sta. 124+60.80 to Sta. 124+80.80 = 20 L.F.



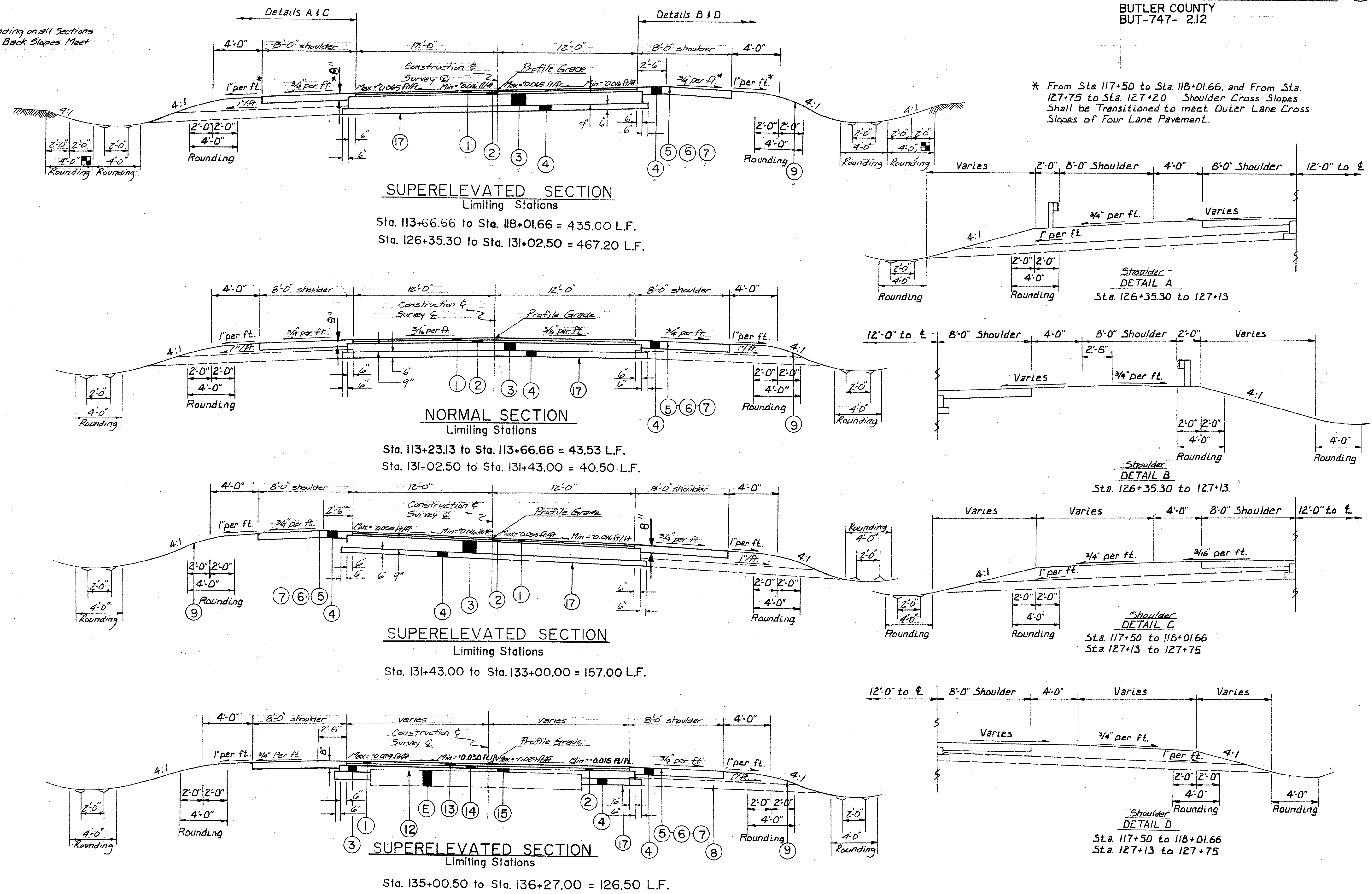
APPROACH SLAB SUPERELEVATED SECTION
Limiting Stations

Sta. 125+68.16 to Sta. 125+88.16 = 20 L.F.

1. Item 404 - 1 1/4" Asphalt Concrete AC-20.
2. Item 402 - 1 3/4" Asphalt Concrete AC-20.
3. Item 301 - Bituminous Aggregate Base AC-20.
4. Item 304 - Aggregate Base, As Per Plan
5. Item 409 - Seal Coat Bituminous Material at 0.30 gal. per sq. yd.
6. Item 409 - Seal Coat Cover Aggregate No. 8 at 0.008 cu. yds. per sq. yd.
7. Item 408 - Bituminous Prime Coat at .40 gal. per sq. yd.
8. Item 605 - Aggregate Drains.
9. Item 659 - Seeding and Mulching.
10. Item 606 - Guardrail, Type 5.
11. Item 611 - Reinforced Concrete Approach Slab (T=13").
- E. Existing Pavement. Asphalt over Aggregate Base.
12. Item 407 - Tack Coat. (See General Note).
13. Item 404 - 1 1/4" (Maximum) Asphalt Concrete AC-20.
14. Item 402 - 1 3/4" (Maximum) Asphalt Concrete AC-20.
15. Item 301 - Bituminous Aggregate Base AC-20.
16. Item 304 - Aggregate Base, As Per Plan
17. Subgrade Compaction

BUTLER COUNTY
BUT-747- 2.12

Provide 4' Rounding on all Sections Where Proposed Back Slopes Meet Existing.



SUPERELEVATED SECTION

Limiting Stations
Sta. 113+66.66 to Sta. 118+01.66 = 435.00 L.F.
Sta. 126+35.30 to Sta. 131+02.50 = 467.20 L.F.

NORMAL SECTION

Limiting Stations
Sta. 113+23.13 to Sta. 113+66.66 = 43.53 L.F.
Sta. 131+02.50 to Sta. 131+43.00 = 40.50 L.F.

SUPERELEVATED SECTION

Limiting Stations
Sta. 131+43.00 to Sta. 133+00.00 = 157.00 L.F.

SUPERELEVATED SECTION

Limiting Stations
Sta. 135+00.50 to Sta. 136+27.00 = 126.50 L.F.

* From Sta 117+50 to Sta. 118+01.66, and From Sta. 127+75 to Sta. 127+20 Shoulder Cross Slopes Shall be Transitioned to meet Outer Lane Cross Slopes of Four Lane Pavement.

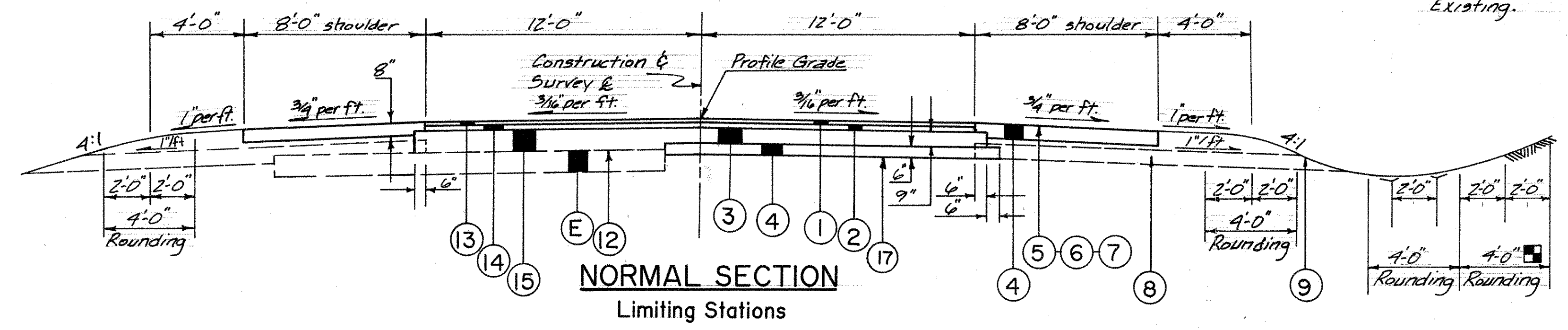
Shoulder
DETAIL A
Sta. 126+35.30 to 127+13

Shoulder
DETAIL B
Sta. 126+35.30 to 127+13

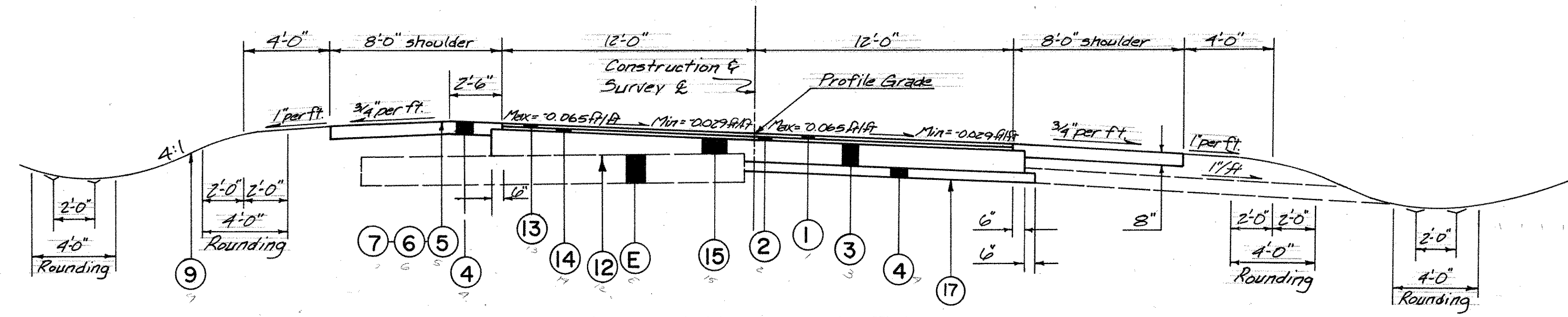
Shoulder
DETAIL C
Sta. 117+50 to 118+01.66
Sta. 127+13 to 127+75

Shoulder
DETAIL D
Sta. 117+50 to 118+01.66
Sta. 127+13 to 127+75

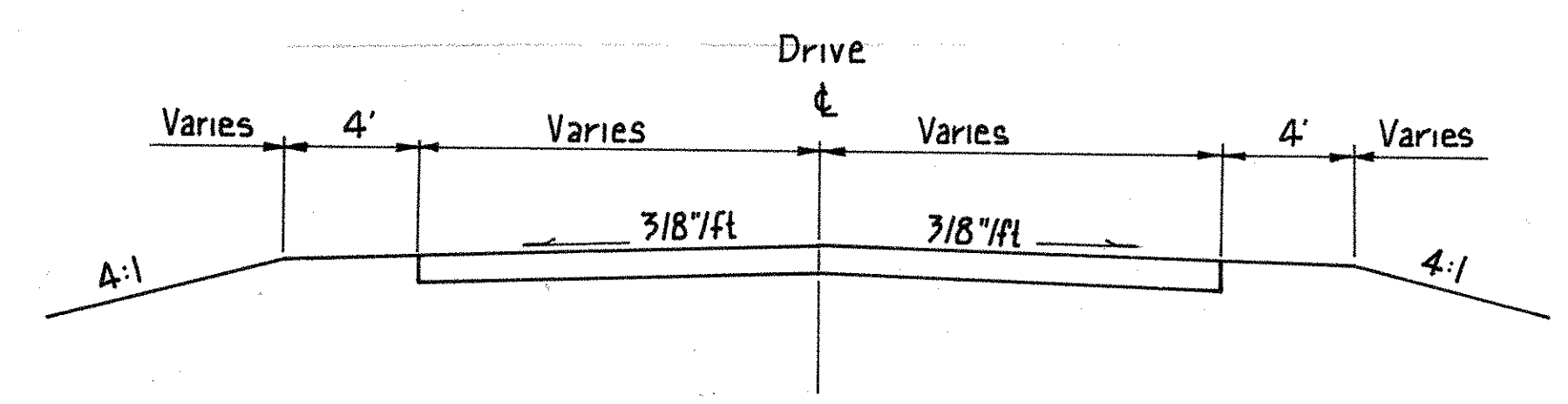
Provide 4' Rounding on all Sections Where Proposed Back Slopes Meet Existing.



Sta. 112+50.00 to Sta. 113+23.13 = 123.13 L.F.

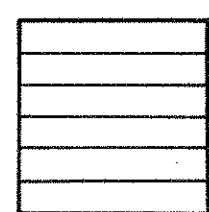
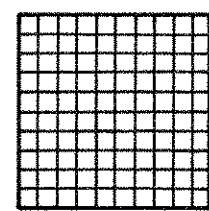
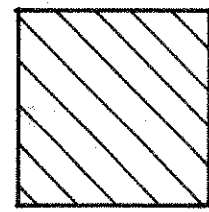

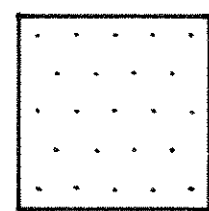
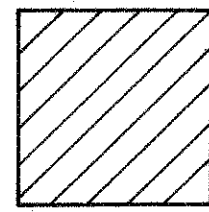
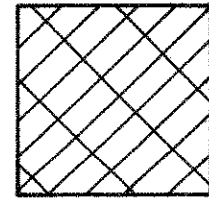
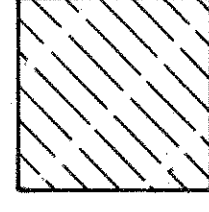


Sta. 133+00.00 to Sta. 135+00.50 = 200.50 L.F.



DRIVE TYPICAL
Sta. 117+50
Sta. 121+32
Sta. 127+00
Sta. 170+09

PAVEMENT LEGEND

-  Item 304 6" Aggregate Base
-  Item 304 8" Aggregate Base
-  Item 404 1 1/4" Asphalt Concrete AC-20
Item 402 1 3/4" Asphalt Concrete AC-20
Item 408 Prime Coat Using 0.4 Gal./S.Y.
-  Item 304 8" Aggregate Base
-  Item 404 2" Asphalt Concrete AC-20
Item 304 6" Aggregate Base
Item 408 Prime Coat Using 0.4 Gal./S.Y.
-  Item 203 Pavement to be Removed
-  Item 407 Tack Coat
-  Item 404 1 1/4" Asphalt Concrete AC-20
Item 402 1 3/4" Asphalt Concrete AC-20
Item 301 Bituminous Aggregate Base (Depth Varies)

SUPERELEVATION TABLES

CALC DATE	CAX 8-30-97	F.H.W.A. REGION	STATE	PROJECT	7 50
CHECK DATE	JSD 3-19-92	5	OHIO		

BUTLER COUNTY
BUT-747- 2.12

Curve 1 P.I. = Sta. 115 + 84.50

STATION	LEFT EIP	CENTERLINE	RIGHT EIP	COMMENTS
113+66.66	603.39	603.58	603.39	BEGIN TRANS.
113+75	603.30	603.49	603.35	
114+00	603.07	603.26	603.25	
114+25	602.89	603.08	603.21	
114+36.66	602.83	603.02	603.21	CROWN REMVL
114+50	602.70	602.96	603.22	
114+75	602.50	602.90	603.30	
115+00	602.36	602.89	603.42	
115+25	602.23	602.89	603.55	
115+46.66	602.11	602.89	603.67	FULL SUPER
115+50	602.11	602.89	603.67	
115+75	602.11	602.89	603.67	
116+00	602.11	602.89	603.67	
116+21.66	602.08	602.86	603.64	FULL SUPER
116+25	602.09	602.86	603.63	
116+50	602.20	602.82	603.44	
116+75	602.28	602.78	603.27	
117+00	602.38	602.74	603.10	
117+25	602.48	602.71	602.94	
117+31.66	602.51	602.70	602.89	CROWN REMVL
117+50	602.48	602.67	602.77	
117+75	602.44	602.63	602.68	
118+00	602.40	602.59	602.41	
118+01.66	602.39	602.59	602.39	END TRANS.

Compound Curve 2 P.I. = Sta. 128 + 55.70

STATION	LEFT EIP	CENTERLINE	RIGHT EIP	COMMENTS
125+67.80	599.81	600.19	599.81	Begin Trans.
125+75	599.81	600.19	599.86	
126+00	599.81	600.19	599.99	
126+25	599.85	600.22	600.16	
126+35.30	599.87*	600.24	600.24**	Tan. Runout * 24' Lt. **24' Rt.
126+50	600.10	600.29	600.33	
126+75	600.19	600.39	600.50	
127+00	600.28	600.49	600.67	
127+15	600.33	600.55	600.77	
127+25	600.24	600.54	600.84	
127+50	600.00	600.52	601.04	
127+80.30	599.72	600.50	601.28	Full Super.
128+00	599.70	600.48	601.26	
128+25	599.69	600.47	601.25	
128+50	599.67	600.45	601.23	
128+75	599.66	600.44	601.22	
129+00	599.64	600.42	601.20	
129+22.5	599.62	600.40	601.18	Full Super.
129+25	599.63	600.40	601.17	
129+50	599.71	600.38	601.05	
129+75	599.81	600.37	600.93	
130+00	599.88	600.35	600.82	
130+25	599.97	600.33	600.69	
130+50	600.05	600.31	600.57	
130+67.5	600.11	600.30	600.49	Crown Remvl.
130+75	600.10	600.29	600.40	
131+00	600.08	600.27	600.10	
131+02.50	600.08	600.27	600.08	End Trans.

Curve 3 P.I. = Sta. 133 + 76

STATION	LEFT EIP	CENTERLINE	RIGHT EIP	COMMENTS
131+43	600.05	600.24	600.05	BEGIN TRANS.
131+50	600.08	600.24	600.05	
131+75	600.21	600.22	600.03	
132+00	600.32	600.20	600.01	
132+13	600.38	600.19	599.99	CROWN REMVL
132+25	600.44	600.19	599.94	
132+50	600.55	600.17	599.79	
132+75	600.68	600.15	599.62	
133+00	600.79	600.13	599.47	
133+23	600.89	600.11	599.33	FULL SUPER.
133+25	600.89	600.11	599.33	
133+50	600.87	600.09	599.31	
133+75	600.86	600.08	599.30	
134+00	600.84	600.06	599.28	
134+25	600.82	600.04	599.26	
134+28	600.82	600.04	599.26	FULL SUPER.
134+50	600.67	600.02	599.39	
134+75	600.51	600.01	599.51	
135+00	600.34	599.99	599.64	
135+25	600.16	599.97	599.77	
135+38	600.13	599.96	599.78	CROWN REMVL
135+50	600.07	599.95	599.78	
135+75	599.93	599.94	599.78	
136+00	599.79	599.92	599.93	
136+27	599.65	599.94	599.93	END TRANS.

GENERAL NOTES

DATE: <u>2-20-91</u>	F.H.W.A. REGION	STATE	PROJECT
CHECKED: <u>JSD</u>	5	OHIO	
DATE: <u>3-19-92</u>			

BUTLER COUNTY
BUT-747- 2.12

WATERING PERMANENT SEEDED AREAS

The following estimated quantities are to be used as directed by the Engineer to promote growth and to care for the permanent seeded areas, as per 659.09: (See Sht. 11 for Calculations)

659 Water 52 M Gal.

SEEDING

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

ITEM 207 TEMPORARY BENCHES, DAMS AND SEDIMENT BASINS

The sediment basin quantities listed in the temporary erosion and sediment control plan on page 3 is the storage volume required for the sediment basin. The pay quantity for each basin shall be determined as the actual amount of excavation or embankment required to provide that storage volume.

CONTINGENCY QUANTITIES

The contractor shall not order materials or perform work listed in the General Summary for items designated by plan note to be used "as directed by the Engineer" unless authorized by the Engineer.

UTILITY OWNERSHIP

The following utilities and owners are located within the limits of this project:

SANITARY SEWERS & WATER LINES

Butler County Sewer and Water
130 High St.
Hamilton, Ohio 45011
513-867-5767

WATER

City of Hamilton
Monument & High Street
Hamilton, Ohio 45011
(513) 868-5966

GAS & ELECTRIC

The Cincinnati Gas and Electric Co.
P.O. Box 960
Cincinnati, Ohio 45202
513-632-2482

TELEPHONE

Cincinnati Bell Telephone
1717 Dixie Highway
Ft. Wright, Kentucky 41011
606-344-7060

CABLE TELEVISION

Warner Cable
11252 Cornell Park Dr.
Cincinnati, Ohio 45242
513-489-5042

UNDERGROUND UTILITIES

The locations of the underground utilities shown on the plans are as obtained from the owners of the utility as required by Section 153.64 ORC.

ROUNDING OF CORNERS SHOWN ON CROSS SECTIONS

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

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 (construction) limits by Item 603 Conduit, Type B, one commercial size larger than the existing conduit.

Existing collectors and isolated farm drains, which are encountered above the elevation of the roadway ditches, shall be outletted into the roadway ditch 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:

- Item 603 6" Conduit, Type E 100 Lin. Ft.
- Item 603 6" Conduit, Type F 100 Lin. Ft.
- Item 603 8" Conduit, Type B 100 Lin. Ft.
- Item 603 8" Conduit, Type E 100 Lin. Ft.
- Item 603 8" Conduit, Type F 100 Lin. Ft.
- Item 601 Rock Channel Protection Type C with Filter 10 Cu. Yds.

Necessary bends or branches shall be included for payment in the pertinent conduit item.

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

ITEM 605 AGGREGATE DRAINS

Aggregate drains shall be placed at fifty (50) foot intervals on each side of normal crowned sections and at twenty-five (25) foot intervals on the low side only of superelevated sections

Item 625, Aggregate Drains, Total: 1986 Lin. Ft.

ITEM 304 AGGREGATE BASE, AS PER PLAN

Materials furnished for this item shall exclude all slag except granular slag or crushed air-cooled blast furnace slag.

The Contractor's option, crushed concrete obtained from concrete pavement on this project or projects constructed under ODOT specifications may be used for Item 304 aggregate base. All crushed concrete passing the No. 4 sieve shall be replaced by material obtained from approved sources. The proposed concrete pavement shall not contain more than 1.0% recycled asphalt pavement. All other requirements of 304 and 604 shall apply.

REMOVAL OF TREES OR 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	No. TREES	No. STUMPS	TOTAL
18"	11	0	11
30"	2	0	2
48"	0	0	0
60"	1	0	1

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

TEMPORARY SOIL EROSION AND SEDIMENT CONTROL

The following estimated quantities are to be used as directed by the Engineer, for temporary erosion and sediment control measures:

- 207 Temporary Seeding and Mulching 5201 Sq. Yd.
- 659 Commercial Fertilizer 0.23 Ton
- 659 Repair Seeding and Mulching 1300 Sq. Yd.
- 659 Water 11.3 M. Gal.

LOCATION OF GUARDRAIL

The locations of guardrail runs, as shown in these plans, are subject to adjustment prior to final acceptance. The Engineer shall be satisfied that all installations will afford maximum protection for traffic.

CROWN AT RAILROAD CROSSING

The crown shall be worked out of the proposed full-depth pavement on South side of the railroad crossing, beginning 50 feet from the crossing, by raising the edge of the new pavement to meet the rail elevation.

ITEM 407 TACK COAT

The rate of application of 407 tack coat shall be subject to adjustment, as directed by the Engineer. Plan quantities indicate average application rates of 0.075 gallons per square yard of tack for estimating purposes only.

ITEM 603 JACKING PIPE

As a part of this contract, it will be necessary to install 36 " Conduit under the existing Norfolk Southern Railroad by the method of boring and jacking.

No trench excavation or equipment shall be closer than 10 feet to the edge of track. Trenches shall be adequately supported and the specification requirement for Class B Bedding shall be disregarded.

GENERAL NOTES

DATE	CALC. CAR.	F.H.W.A. REGION	STATE	PROJECT
11-15-91				
DATE	CHECKED			
12-19-91	VSD	5	OHIO	

9
50

BUTLER COUNTY
BUT-747-2.12

SMOOTH STEEL PIPE
(Uncoated)
(REVISED 1/17/91)

CONSTRUCTION SEQUENCE

Phase One

All proposed bridge and roadway construction, except the drives and channel work affecting the existing bridge, shall be completed from Sta. 115+50 to Sta. 130+00 before any work is begun to connect relocated S.R. 747 to existing S.R. 747.

Phase Two

This phase consists of connecting relocated S.R. 747 with existing S.R. 747. Proposed pavement shall be uniformly placed over existing pavement in stages so that there are no abrupt changes in grade across the pavement. During pavement construction, proposed shoulder and slopes shall be constructed right of centerline only. Use a maximum slope of 1 1/2:1 left of centerline only. A smooth transition shall be provided between existing and proposed pavement using temporary pavement. When work is not being performed, temporary pavement markers shall be provided as directed by the engineer, signs OW-121-36 and OW-125-36 shall be covered, and both lanes shall be opened. Flaggers, one for each direction, shall be used to continuously control traffic for as long as one lane traffic is in effect. Barrels shall be placed at 10' c/c in between existing and proposed S.R.747 for channelization.

Phase Three

Place all signing and striping for the work of Phase Two. Remove barrels, route traffic onto relocated S.R. 747, construct proposed drives, and remove all temporary pavement to be removed. Construct guardrail at the end of the existing pavement to be salvaged south of the existing bridge over the Mill Creek. Construct the remaining earthwork and shoulder left of centerline. Remove the existing bridge superstructure and forward abutment and construct all remaining channel work at the removed bridge. Proposed slope protecting the existing railroad structure and existing rear abutment shall be constructed before the existing bridge superstructure is removed.

MAINTENANCE OF TRAFFIC

All work and traffic control devices shall be in accordance with Item 614 and other applicable portions of the Construction and Material Specifications as well as in accordance with part 7 of OMUTCD. This project shall be in accordance with Standard Drawing MT-97.10.

The following estimated quantities have been included in the General Summary to be used as directed by the Engineer for the maintenance of traffic and shall be paid for separately.

MAINTENANCE OF TRAFFIC QUANTITIES			
ITEM	QUANTITY	UNIT	DESCRIPTION
614	0.78	MILE	TEMPORARY EDGE LINES CLASS I
614	0.39	MILE	TEMPORARY CENTERLINE CLASS I
614	0.13	MILE	TEMPORARY CENTERLINE CLASS II
615	LUMP		TEMPORARY ROADS

Payment for all of the above, except the items listed to be paid for separately, shall be included in the lump sum bid for the Item 614 Maintaining traffic.

SPECIFICATIONS FOR INSTALLATION OF UNDER TRACK CULVERTS BY THE JACK AND BORE METHOD

SCOPE

This specification covers the procedure for installation of undertrack culverts by the "Jack and Bore" Method.

GENERAL

Except as otherwise specified hereafter the current A.R.E.A. Chapter 1, part 4 and 5 apply to all work under this section. Minimum pipe size shall be 36 inches in diameter. The pipe size and gage shall be selected by the Engineer. The use of any size less than 36 inches or greater than 72 inches must be approved by the Engineer.

APPROVED CULVERT TYPES

Culvert installed by the Jack and Bore method shall be limited to either Corrugated Steel Pipe or Smooth Steel Pipe. Reinforced concrete pipe will not be allowed to be installed under main line track.

PIPE CONNECTIONS

Corrugated metal pipes shall be connected with 24 inch wide bands. Connecting bands may be one gage lighter than culvert material. Smooth steel casing pipe shall be connected by welding using a full depth, single "V" groove butt weld.

INSTALLATION

The Contractor shall inspect the site where the culvert is to be installed and familiarize himself with the conditions under which the work will be performed and with all necessary details as to the orderly prosecution of the work. The omission of any details for the satisfactory installation of the work in its entirety, which may not appear herein, shall not relieve the Contractor of full responsibility.

Construction shall be carried on in such a manner that settlement of the ground surface above the pipe line shall be held to an absolute minimum. The installation of the pipe line shall follow the heading or boring excavation as soon as possible. Excavation shall be carried on in such a manner that voids behind the pipe will be held to a minimum. The Contractor shall pressure grout voids using an approved hydraulic pumping device, with grout mix in the proportions of one part Type I cement to three parts sand and sufficient water to produce a free flowing grout.

If, in the opinion of the Engineer, the installation of the pipe is being conducted in an unsafe manner, the Contractor will be required to stop work and bulkhead the heading until suitable agreements are reached between the Contractor and the Company. The Company will not be responsible and shall be saved harmless in the event of delays to the Contractor's work resulting from any cause whatsoever.

TEMPORARY STREAM CROSSING FORDS:

Where stream crossing fords are required for equipment crossing, the crossing shall consist of clean non-toxic granular or rock material, properly maintained to prevent erosion with provisions for conveyance of anticipated high flows, and shall not impede the movement of aquatic life. Construction shall be in accordance with part 330, Appendix A, specific categories of discharges-Nationally permitted, paragraph (14), minor road crossing Fills-the Federal Register-Corps of Engineers final regulations, current edition.

SCOPE

This work shall consist of installation of smooth steel pipe, de-watering, etc., required for the completion of the project in accordance with the drawings, as specified herein, and/or as directed by the Engineer. This specification shall be governed by AREA chapter 1, part 5, section 5.2.

MATERIAL

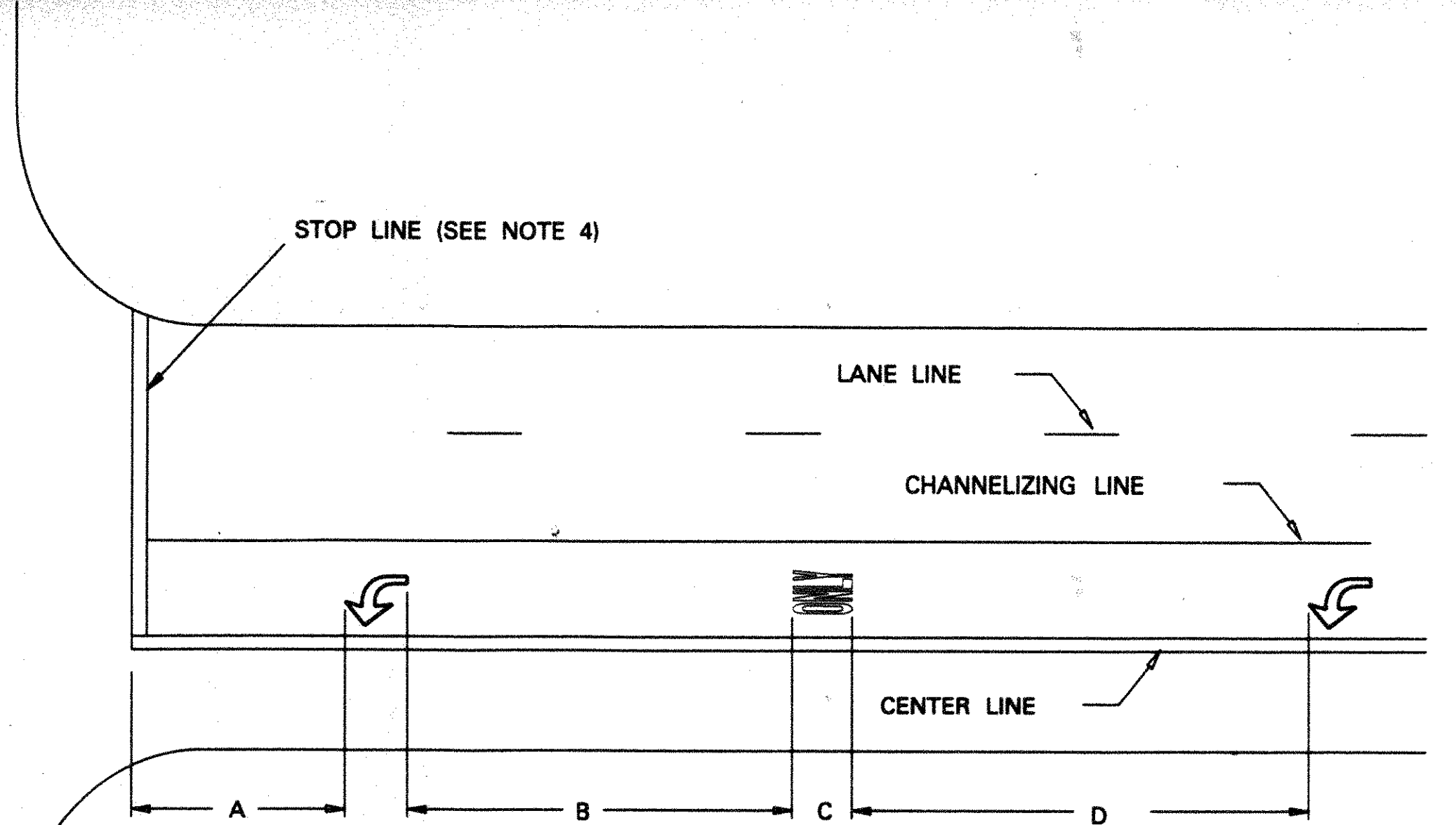
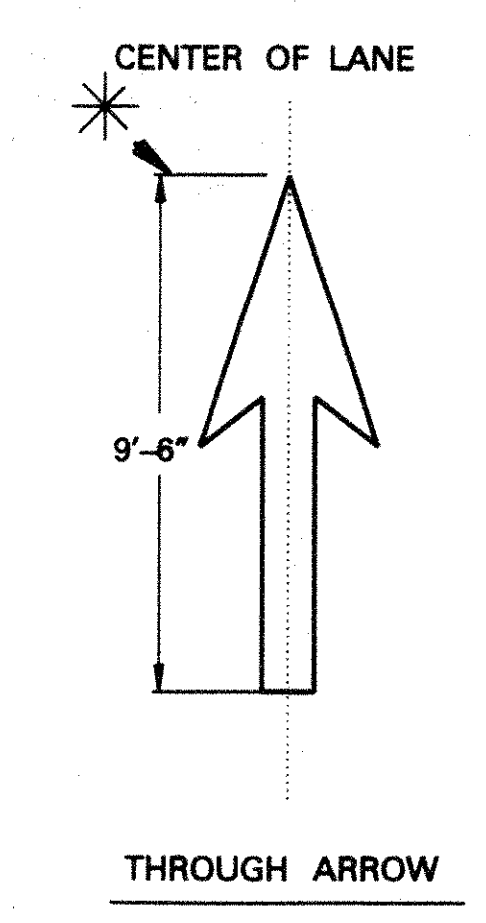
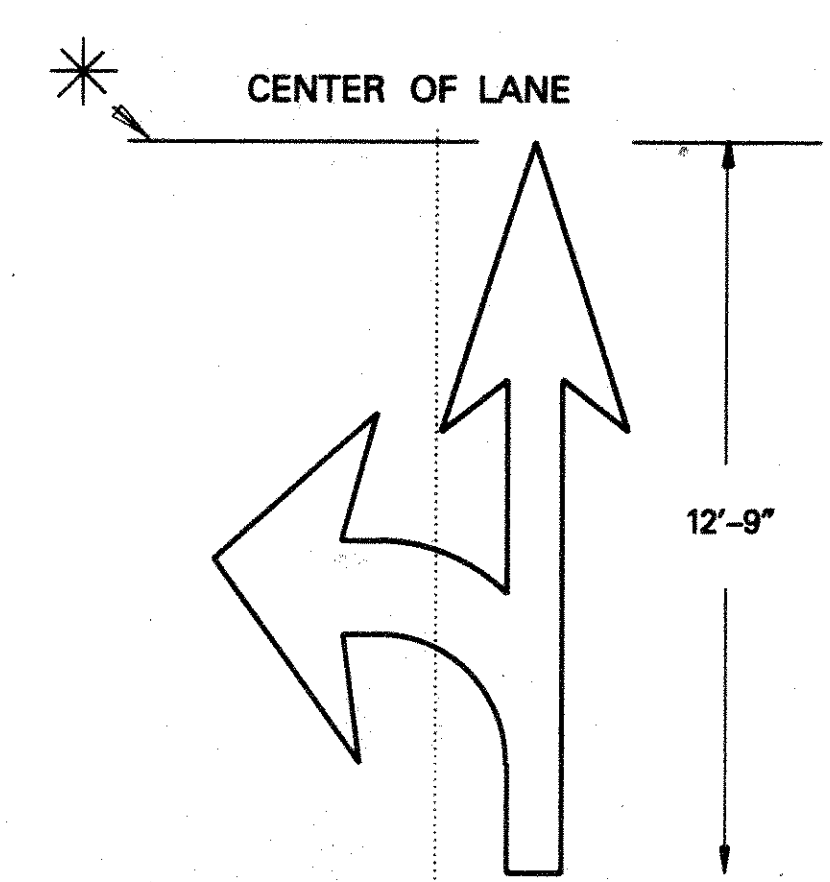
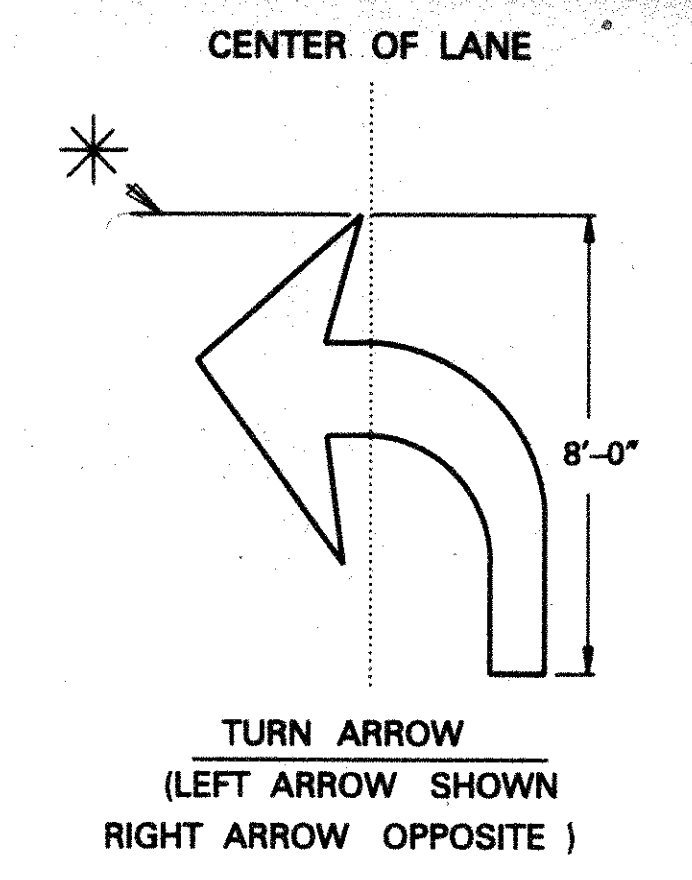
Steel pipe shall conform to ASTM Specifications A 139 Grade B (No Hydro). The minimum yield strength of this pipe shall be 35,000 p.s.i.. The minimum wall thickness is as follows:

Nominal Size (Inches)	Recommended Wall Thickness (Inches)
24	0.500
30	0.500
36	0.500
42	0.625
48	0.625
54	0.750
60	0.875
66	0.875
72	1.000

METHOD OF JOINING PIPES

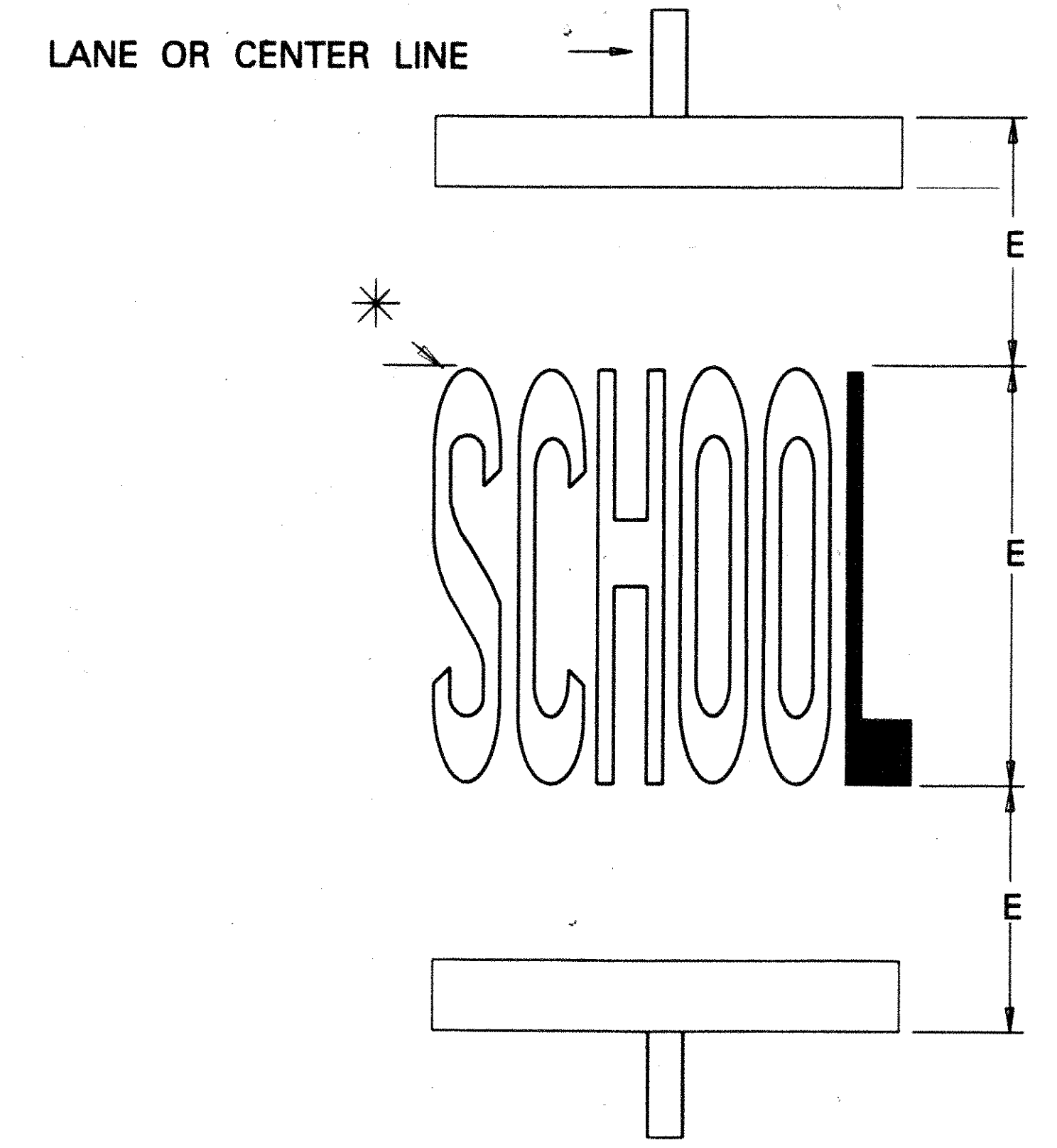
Sections of pipe shall be field welded with a full depth, Single "V" groove (Butt joint) weld

PLAN NO. BUTLER COUNTY
BUT-747-212

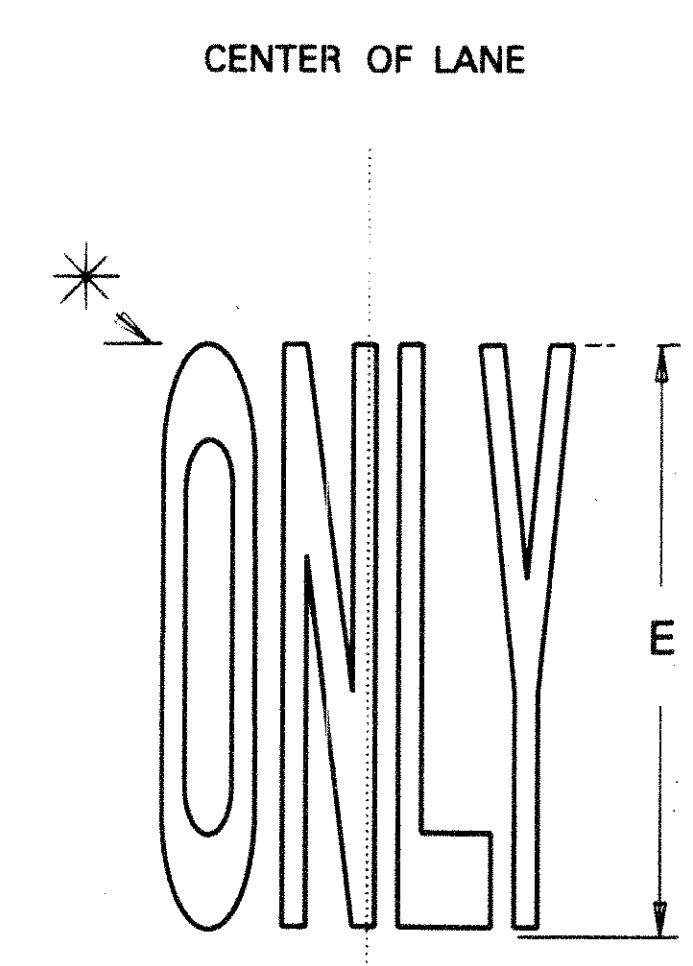
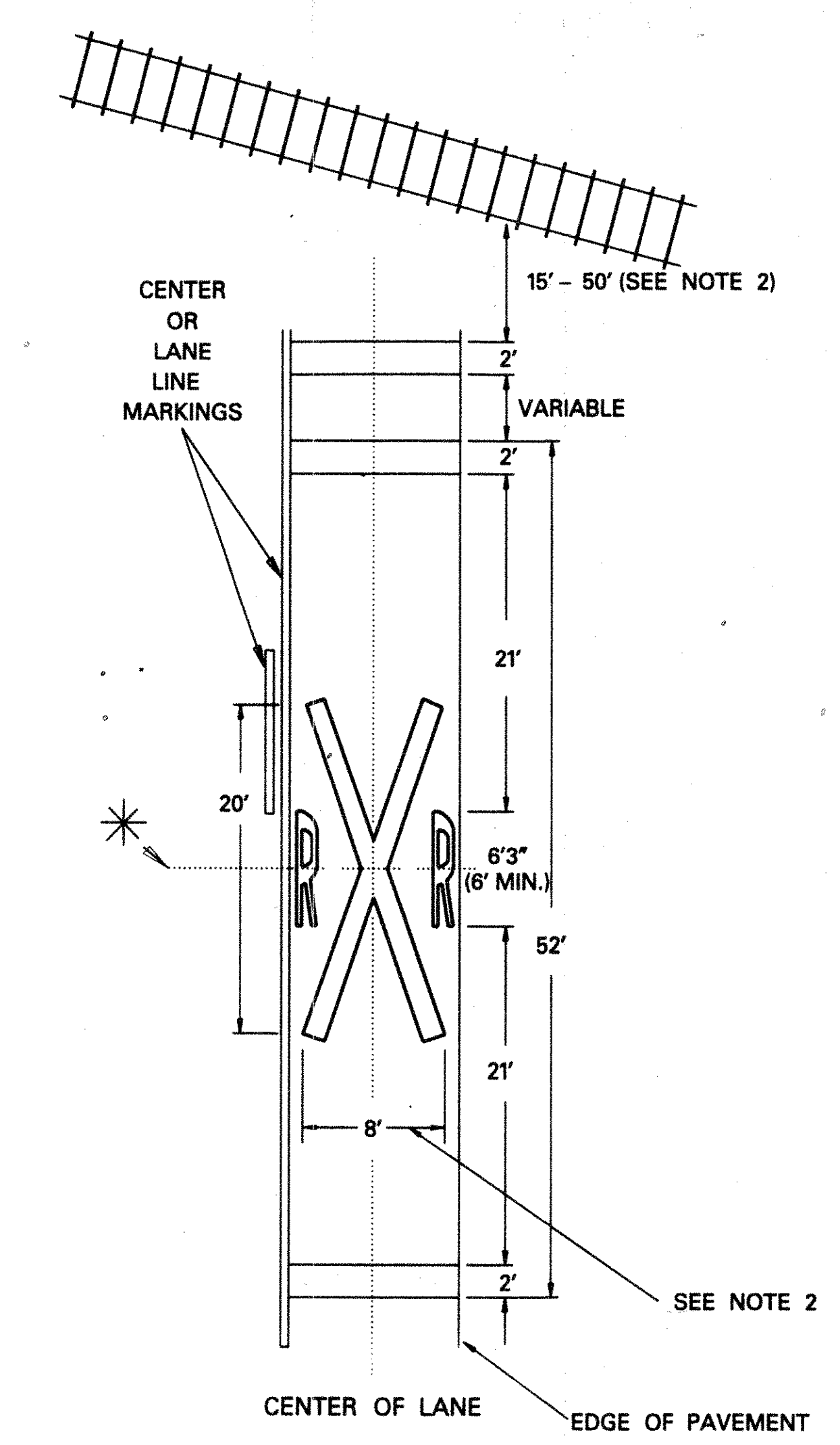


NOTE:
STOP LINE LOCATED MIN. 40' FROM
AT LEAST ONE SIGNAL HEAD WHICH APPLIES
TO THAT APPROACH

TYPE	DIMENSIONS (FEET)			
	A	B	C	D
RURAL	30 MIN.	32-80	8	32-80
URBAN	10 MIN.	32-80	6	24-60



TYPE	INCHES
	E
RURAL	96
URBAN	72



NOTES:

- ON MULTI-LANE APPROACHES, THE TRANSVERSE LINES USED WITH THE RAILROAD SYMBOLS SHALL EXTEND ACROSS ALL APPROACH LANES AND SYMBOLS SHALL BE PLACED IN EACH APPROACH LANE.
- THE RAILROAD SYMBOL SHALL BE LOCATED SO THAT THE W-94, "RAILROAD ADVANCE WARNING SIGN", IS WITHIN THE TWO TRANSVERSE BOUNDARY LINES OF THE RAILROAD SYMBOL. THE STOP LINES SHALL BE LOCATED FOR BEST SIGHT DISTANCE WITHIN 15 FEET TO 50 FEET OF THE NEAR EDGE OF THE TRACKS. STOP LINES SHALL BE PERPENDICULAR TO THE CENTER LINE OF THE ROADWAY. WIDTH OF 'X' MAY VARY ACCORDING TO LANE WIDTH.
- ON MULTI-LANE APPROACHES, THE TRANSVERSE LINES USED WITH THE WORD 'SCHOOL' SHALL EXTEND ACROSS ALL APPROACH LANES WITH A SINGLE WORD 'SCHOOL' CENTERED ACROSS THE APPROACH LANES. ON TWO LANE ROADWAYS, THE TRANSVERSE LINES SHALL EXTEND ACROSS THE ROADWAY WITH THE WORD 'SCHOOL' CENTERED ACROSS THE ROADWAY. CENTER OR LANE LINES SHALL NOT PASS THROUGH THE 'SCHOOL' MARKING.
- THE STOP LINE SHOULD BE PLACED WHERE CROSS-CORNER VISION IS MAXIMUM, IN NO CASE MORE THAN 30 FEET OR LESS THAN 4 FEET FROM THE NEAREST EDGE OF THE INTERSECTING ROADWAY. FOR NORMAL INTERSECTIONS A MAXIMUM DISTANCE OF 10 FEET IS RECOMMENDED.

IF A MARKED CROSSWALK IS PRESENT, THE SLINE SHOULD BE PLACED 4 FEET IN ADVANCE OF AND PARALLEL TO THE NEAREST CROSSWALK.
- FOR TRAFFIC PAINT AND POLYSTER APPLICATION, TEMPLATE GAPS SHALL BE FILLED WITH MARKING MATERIAL IN ACCORDANCE WITH 641.03. FOR EXTRUDED THERMOPLASTIC MATERIAL, THESE GAPS MAY REMAIN UNFILLED IN ACCORDANCE WITH 644.03.
- USE STANDARD DIMENSIONS CONFORMING TO REQUIREMENTS OF OF OMTCD SECTION 3B-40 THROUGH 3B-43 INCLUSIVE. (THAT IS THE 1977 METRIC EDITION STANDARD ALPHABETS FOR HIGHWAY SIGNS AND PAVEMENT MARKING WITH ERRATA).

* - INDICATES STATION REFERENCE POINT

CALCULATIONS

CALC. DATE	CAR 11-15-99	F.H.W.A. REGION	STATE	PROJECT
CHECK DATE	JSD 2-12-04	5	OHIO	

BUTLER COUNTY
BUT-747-2.12



Item 203 Subgrade Compaction

Sta. 112+50.00 to Sta. 113+00.00	(3)(50)+(9)	=	16.67 S.Y.
Sta. 113+00.00 to Sta. 113+50.00	(12.25)(50)+(9)	=	68.06 S.Y.
Sta. 113+50.00 to Sta. 114+00.00	(22.25)(50)+(9)	=	123.61 S.Y.
Sta. 114+00.00 to Sta. 116+00.00	(26)(200)+(9)	=	577.78 S.Y.
Sta. 116+00.00 to Sta. 118+01.66	(201.66)(26)+(9)	=	582.57 S.Y.
Sta. 118+01.66 to Sta. 121+50.00	(348.34)(50)+(9)	=	1935.22 S.Y.
Sta. 121+50.00 to Sta. 124+60.80	(310.8)(50)+(9)	=	1726.67 S.Y.
Sta. 124+60.80 to Sta. 124+80.80	(20)(64)+(9)	=	142.22 S.Y.
Sta. 125+68.16 to Sta. 125+88.16	(20)(64)+(9)	=	142.22 S.Y.
Sta. 125+88.16 to Sta. 126+35.30	(47.14)(50)+(9)	=	261.89 S.Y.
Sta. 126+35.30 to Sta. 127+00.00	(64.7)(26)+(9)	=	186.91 S.Y.
Sta. 127+00.00 to Sta. 132+00.00	(500)(26)+(9)	=	1444.44 S.Y.
Sta. 132+00.00 to Sta. 133+00.00	(26)(100)+(9)	=	288.89 S.Y.
Sta. 133+00.00 to Sta. 133+50.00	(23.25)(50)+(9)	=	129.17 S.Y.
Sta. 133+50.00 to Sta. 134+00.00	(16.9)(50)+(9)	=	93.89 S.Y.
Sta. 134+00.00 to Sta. 134+50.00	(11.3)(50)+(9)	=	62.78 S.Y.
Sta. 134+50.00 to Sta. 135+00.50	(7.65)(50.5)+(9)	=	42.93 S.Y.
Sta. 135+00.50 to Sta. 135+50.00	(6)(49.5)+(9)	=	33.00 S.Y.
Sta. 135+50.00 to Sta. 136+00.00	(4.25)(50)+(9)	=	23.61 S.Y.
Sta. 136+00.00 to Sta. 136+27.00	(1.25)(27)+(9)	=	3.75 S.Y.

Total = 7886.27 S.Y.

Item 301 Bituminous Aggregate Base

Sta. 112+50.00 to Sta. 113+00.00	(5.19/2)(50)+(27)	=	4.81 C.Y.
Sta. 113+00.00 to Sta. 113+50.00	(12.14)(50)+(27)	=	22.48 C.Y.
Sta. 113+50.00 to Sta. 116+00.00	(.75)(25)(250)+(27)	=	173.61 C.Y.
Sta. 116+00.00 to Sta. 118+01.66	(201.66)(25)(.75)+(27)	=	140.04 C.Y.
Sta. 118+01.66 to Sta. 121+50.00	(348.34)(49)(.75)+(27)	=	474.13 C.Y.
Sta. 121+50.00 to Sta. 124+60.80	(310.8)(49)(.75)+(27)	=	423.03 C.Y.
Sta. 125+88.16 to Sta. 126+35.30	(47.14)(49)(.75)+(27)	=	64.16 C.Y.
Sta. 126+35.30 to Sta. 127+00.00	(64.7)(25)(.75)+(27)	=	44.93 C.Y.
Sta. 127+00.00 to Sta. 132+00.00	(500)(25)(.75)+(27)	=	347.22 C.Y.
Sta. 132+00.00 to Sta. 133+00.00	(.75)(25)(100)+(27)	=	69.44 C.Y.
Sta. 133+00.00 to Sta. 133+50.00	(20.91)(50)+(27)	=	38.72 C.Y.
Sta. 133+50.00 to Sta. 134+00.00	(22.44)(50)+(27)	=	41.56 C.Y.
Sta. 134+00.00 to Sta. 134+50.00	(18.89)(50)+(27)	=	34.98 C.Y.
Sta. 134+50.00 to Sta. 135+00.50	(14.07)(50.5)+(27)	=	26.32 C.Y.
Sta. 135+00.50 to Sta. 135+50.00	(8.81)(49.5)+(27)	=	16.15 C.Y.
Sta. 135+50.00 to Sta. 136+00.00	(3.47)(50)+(27)	=	6.43 C.Y.
Sta. 136+00.00 to Sta. 136+27.00	(.75)(27)+(27)	=	0.75 C.Y.

Total = 1928.77 C.Y.

Item 402 1 3/4" Asphalt Concrete AC-20

Sta. 112+50.00 to Sta. 113+00.00	(1.76)(50)+(27)	=	3.26 C.Y.
Sta. 113+00.00 to Sta. 113+50.00	(3.56)(50)+(27)	=	6.59 C.Y.
Sta. 113+50.00 to Sta. 116+00.00	(.15)(24)(250)+(27)	=	33.33 C.Y.
Sta. 116+00.00 to Sta. 118+01.66	(201.66)(24)(.15)+(27)	=	26.89 C.Y.
Sta. 118+01.66 to Sta. 121+50.00	(348.34)(48)(.15)+(27)	=	92.89 C.Y.
Sta. 121+50.00 to Sta. 124+60.80	(310.8)(48)(.15)+(27)	=	82.88 C.Y.
Sta. 125+88.16 to Sta. 126+35.30	(47.14)(48)(.15)+(27)	=	12.57 C.Y.
Sta. 126+35.30 to Sta. 127+00.00	(64.7)(24)(.15)+(27)	=	8.63 C.Y.
Sta. 127+00.00 to Sta. 132+00.00	(500)(24)(.15)+(27)	=	66.67 C.Y.
Sta. 132+00.00 to Sta. 134+00.00	(3.6)(200)+(27)	=	26.67 C.Y.
Sta. 134+00.00 to Sta. 134+50.00	(3.55)(50)+(27)	=	6.57 C.Y.
Sta. 134+50.00 to Sta. 135+00.50	(3.55)(50.5)+(27)	=	6.64 C.Y.
Sta. 135+00.50 to Sta. 135+50.00	(2.9)(49.5)+(27)	=	5.32 C.Y.
Sta. 135+50.00 to Sta. 136+00.00	(1.26)(50)+(27)	=	2.33 C.Y.
Sta. 136+00.00 to Sta. 136+27.00	(.16)(27)+(27)	=	0.16 C.Y.

Total = 381.40 C.Y.

Item 304 Aggregate Base, As Per Plan

Sta. 112+50.00 to Sta. 113+00.00	(1.5)(50)+(27)	=	2.78 C.Y.
Sta. 113+00.00 to Sta. 113+50.00	(6.13)(50)+(27)	=	11.34 C.Y.
Sta. 113+50.00 to Sta. 114+00.00	(11.13)(50)+(27)	=	20.60 C.Y.
Sta. 114+00.00 to Sta. 116+00.00	(.5)(26)(200)+(27)	=	96.30 C.Y.
Sta. 116+00.00 to Sta. 118+01.66	(201.66)(26)(.5)+(27)	=	97.10 C.Y.
Sta. 118+01.66 to Sta. 121+50.00	(348.34)(50)(.5)+(27)	=	322.54 C.Y.
Sta. 121+50.00 to Sta. 124+60.80	(310.8)(50)(.5)+(27)	=	287.78 C.Y.
Sta. 124+60.80 to Sta. 124+80.80	(20)(.5)(64)+(27)	=	23.70 C.Y.
Sta. 125+68.16 to Sta. 125+88.16	(20)(.5)(64)+(27)	=	23.70 C.Y.
Sta. 125+88.16 to Sta. 126+35.30	(47.14)(50)(.5)+(27)	=	43.65 C.Y.
Sta. 126+35.30 to Sta. 127+00.00	(64.7)(26)(.5)+(27)	=	31.15 C.Y.
Sta. 127+00.00 to Sta. 132+00.00	(500)(26)(.5)+(27)	=	240.74 C.Y.
Sta. 132+00.00 to Sta. 133+00.00	(.5)(26)(100)+(27)	=	48.15 C.Y.
Sta. 133+00.00 to Sta. 133+50.00	(10)(50)+(27)	=	18.52 C.Y.
Sta. 133+50.00 to Sta. 134+00.00	(5.75)(50)+(27)	=	10.65 C.Y.
Sta. 134+00.00 to Sta. 134+50.00	(3.88)(50)+(27)	=	7.18 C.Y.
Sta. 134+50.00 to Sta. 135+00.50	(3)(50.5)+(27)	=	5.61 C.Y.
Sta. 135+00.50 to Sta. 135+50.00	(2.88)(49.5)+(27)	=	5.27 C.Y.
Sta. 135+50.00 to Sta. 136+00.00	(2.13)(50)+(27)	=	3.94 C.Y.
Sta. 136+00.00 to Sta. 136+27.00	(.63)(27)+(27)	=	0.63 C.Y.

Total = 1301.36 C.Y.

Surface - Treated Aggregate Shoulder

Sta. 112+50.00 to Sta. 116+00.00	(2)(350)(8)(.67)+(27)	=	138.96 C.Y.
Sta. 116+00.00 to Sta. 118+01.66	(2)(201.66)(8)(.67)+(27)	=	80.08 C.Y.
Sta. 118+01.66 to Sta. 121+50.00	(2)(348.34)(8)(.67)+(27)	=	138.29 C.Y.
Sta. 121+50.00 to Sta. 124+60.80	(2)(310.8)(8)(.67)+(27)	=	123.40 C.Y.
Sta. 125+88.16 to Sta. 126+35.30	(2)(47.14)(8)(.67)+(27)	=	18.72 C.Y.
Sta. 126+35.30 to Sta. 127+00.00	(2)(64.7)(8)(.67)+(27)	=	25.69 C.Y.
Sta. 127+00.00 to Sta. 132+00.00	(2)(500)(8)(.67)+(27)	=	198.52 C.Y.
Sta. 132+00.00 to Sta. 135+00.50	(2)(300.5)(8)(.67)+(27)	=	119.31 C.Y.
Sta. 135+00.50 to Sta. 136+27.00	(2)(126.5)(8)(.67)+(27)	=	50.23 C.Y.

Total = 893.19 C.Y.

Item 404 1 1/4" Asphalt Concrete AC-20

Sta. 112+50.00 to Sta. 113+00.00	(.05)(24)(50)+(27)	=	2.22 C.Y.
Sta. 113+00.00 to Sta. 116+00.00	(.1)(24)(300)+(27)	=	26.67 C.Y.
Sta. 116+00.00 to Sta. 118+01.66	(201.66)(24)(.1)+(27)	=	17.93 C.Y.
Sta. 118+01.66 to Sta. 121+50.00	(348.34)(48)(.1)+(27)	=	61.93 C.Y.
Sta. 121+50.00 to Sta. 124+60.80	(310.8)(48)(.1)+(27)	=	55.25 C.Y.
Sta. 125+88.16 to Sta. 126+35.30	(47.14)(48)(.1)+(27)	=	8.39 C.Y.
Sta. 126+35.30 to Sta. 127+00.00	(64.7)(24)(.1)+(27)	=	5.75 C.Y.
Sta. 127+00.00 to Sta. 132+00.00	(500)(24)(.1)+(27)	=	44.44 C.Y.
Sta. 132+00.00 to Sta. 135+00.50	(.1)(24)(300.5)+(27)	=	26.71 C.Y.
Sta. 135+00.50 to Sta. 135+50.00	(.1)(24)(49.5)+(27)	=	4.40 C.Y.
Sta. 135+50.00 to Sta. 136+00.00	(1.6)(50)+(27)	=	2.96 C.Y.
Sta. 136+00.00 to Sta. 136+27.00	(.4)(27)+(27)	=	0.40 C.Y.

Total = 257.05 C.Y.

Item 659 Commercial Fertilizer

24.175 S.Y. x 9 S.F./S.Y. x 20#/1000S.F. + 2000#/Ton = 2.17 Tons

Item 659 Water

2 x 24.175 S.Y. x 9 S.F./S.Y. x 120Gal./1000S.F. + 1000 = 52.2 M.Gal.

Item 407 Tack Coat

Sta. 112+50.00 to Sta. 113+78.00	(.075Gal/SY)(205.33SY)	=	15.40 Gal.
Sta. 133+20.00 to Sta. 136+27.00	(.075Gal/SY)(495.44SY)	=	37.16 Gal.
Total = 52.56 Gal.			

Item 408 Bituminous Prime Coat @ 0.40 Gal. per S.Y. (Shoulders)

Sta. 112+50.00 to Sta. 116+00.00	(2)(350)(8)(.4)+(9)	=	248.89 Gal.
Sta. 116+00.00 to Sta. 118+01.66	(2)(201.66)(8)(.4)+(9)	=	143.40 Gal.
Sta. 118+01.66 to Sta. 121+50.00	(2)(348.34)(8)(.4)+(9)	=	247.71 Gal.
Sta. 121+50.00 to Sta. 124+60.80	(2)(310.8)(8)(.4)+(9)	=	221.01 Gal.
Sta. 125+88.16 to Sta. 126+35.30	(2)(47.14)(8)(.4)+(9)	=	33.52 Gal.
Sta. 126+35.30 to Sta. 127+00.00	(2)(64.7)(8)(.4)+(9)	=	46.01 Gal.
Sta. 127+00.00 to Sta. 132+00.00	(2)(500)(8)(.4)+(9)	=	355.56 Gal.
Sta. 132+00.00 to Sta. 135+00.50	(2)(300.5)(8)(.4)+(9)	=	213.69 Gal.
Sta. 135+00.50 to Sta. 136+27.00	(2)(126.5)(8)(.4)+(9)	=	89.96 Gal.

Total = 1599.74 Gal.

Item 409 Seal Coat Bituminous Material @ 0.3 Gal. per S.Y. (Shoulders)

Sta. 112+50.00 to Sta. 116+00.00	(2)(350)(8)(.3)+(9)	=	186.67 Gal.
Sta. 116+00.00 to Sta. 118+01.66	(2)(201.66)(8)(.3)+(9)	=	107.55 Gal.
Sta. 118+01.66 to Sta. 121+50.00	(2)(348.34)(8)(.3)+(9)	=	185.78 Gal.
Sta. 121+50.00 to Sta. 124+60.80	(2)(310.8)(8)(.3)+(9)	=	165.76 Gal.
Sta. 125+88.16 to Sta. 126+35.30	(2)(47.14)(8)(.3)+(9)	=	25.14 Gal.
Sta. 126+35.30 to Sta. 127+00.00	(2)(64.7)(8)(.3)+(9)	=	34.51 Gal.
Sta. 127+00.00 to Sta. 132+00.00	(2)(500)(8)(.3)+(9)	=	266.67 Gal.
Sta. 132+00.00 to Sta. 135+00.50	(2)(300.5)(8)(.3)+(9)	=	160.27 Gal.
Sta. 135+00.50 to Sta. 136+27.00	(2)(126.5)(8)(.3)+(9)	=	67.47 Gal.

Total = 1199.81 Gal.

Item 409 Seal Coat Cover Aggregate No.8 @ 0.008 C.Y. per S.Y. (Shoulders)

Sta. 112+50.00 to Sta. 116+00.00	(2)(350)(8)(.008)+(9)	=	4.98 C.Y.
Sta. 116+00.00 to Sta. 118+01.66	(2)(201.66)(8)(.008)+(9)	=	2.87 C.Y.
Sta. 118+01.66 to Sta. 121+50.00	(2)(348.34)(8)(.008)+(9)	=	4.95 C.Y.
Sta. 121+50.00 to Sta. 124+60.80	(2)(310.8)(8)(.008)+(9)	=	4.42 C.Y.
Sta. 125+88.16 to Sta. 126+35.30	(2)(47.14)(8)(.008)+(9)	=	0.67 C.Y.
Sta. 126+35.30 to Sta. 127+00.00	(2)(64.7)(8)(.008)+(9)	=	0.92 C.Y.
Sta. 127+00.00 to Sta. 132+00.00	(2)(500)(8)(.008)+(9)	=	7.11 C.Y.
Sta. 132+00.00 to Sta. 135+00.50	(2)(300.5)(8)(.008)+(9)	=	4.27 C.Y.
Sta. 135+00.50 to Sta. 136+27.00	(2)(126.5)(8)(.008)+(9)	=	1.80 C.Y.

Total = 31.99 C.Y.

Item 605 Aggregate Drains

59 Drains x 24.5 Ft.	=	1445.50 Lin. Ft.
30 Drains x 18.0 Ft.	=	540.00 Lin. Ft.

Total = 1985.50 Lin. Ft.

Item 611 Reinforced Concrete Approach Slab (t=13")

Sta. 124+60.80 to Sta. 124+80.80	(20)(64)+9	=	142.22 S.Y.
Sta. 125+68.16 to Sta. 125+88.16	(20)(64)+9	=	142.22 S.Y.

Total = 284.44 S.Y.

GENERAL SUMMARY

DATE: <u>CAR</u>	F.H.W.A. REGION	STATE	PROJECT
DATE: <u>11-25-91</u>			
CHECK: <u>JSP</u>	5	OHIO	
DATE: <u>3/26/92</u>			

12
50

BUTLER COUNTY
BUT-747-2.12

ITEM	SHEET NUMBER										ITEM	ITEM EXTENSION	GRAND TOTAL	UNIT	DESCRIPTION
	3	8	11	14	15	16	17	18	19	43					
ROADWAY															
201											201	11000	Lump		Clearing & Grubbing
202											202	23000	1828	S.Y.	Pavement Removed
202		58									202	54100	58	Each	Raised Pavement Marker Removed for Storage
203				257	642	3941	772	849			203	12000	6461	C.Y.	Excavation not including Embankment Construction
203				4082	12071	6320	4819	823			203	20000	28115	C.Y.	Embankment
203											203	50000	8259	S.Y.	Subgrade Compaction
606											606	13000	568.75	Lin. Ft.	Guardrail, Type 5
606											606	25000	2	Each	Anchor Assembly, Type A
606											606	26500	4	Each	Anchor Assembly, Type T
606											606	35140	2	Each	Bridge Terminal Assembly, Type 4
604										6	604	40500	6	Each	Reference Monument
EROSION CONTROL															
207		5201									207	10000	5201	S.Y.	Temporary Seeding and Mulching
207	410										207	50000	410	C.Y.	Temporary Benches, Dams, and Sediment Basins
207	98										207	70000	98	Each	Straw or Hay Bales
601										170	601	32300	170	C.Y.	Rock Channel Protection, Type D W/Filter
601	5										601	34200	5	C.Y.	Rock Channel Protection, Type C W/O Filter
601		10									601	32200	10	C.Y.	Rock Channel Protection, Type C, with Filter
659				3204	7298	5601	5225	2842			659	10000	24,175	S.Y.	Seeding and Mulching
659		1300									659	14000	1300	S.Y.	Repair Seeding and Mulching
659		0.23	2.17								659	20000	2,400	Ton	Commercial Fertilizer
659		63									659	35000	63	M.Gal	Water
DRAINAGE															
602										5.28	602	20000	5.28	C.Y.	Concrete Masonry
603		100									603	01400	100	Lin. Ft.	6" Conduit, Type E
603		100									603	01500	100	Lin. Ft.	6" Conduit, Type F
603		100									603	01800	100	Lin. Ft.	8" Conduit, Type B
603		100									603	02500	100	Lin. Ft.	8" Conduit, Type E
603		100									603	02600	100	Lin. Ft.	8" Conduit, Type F
603										44	603	06400	44	Lin. Ft.	15" Conduit, Type D
603										149	603	07200	149	Lin. Ft.	18" Conduit, Type A
603										68	603	07900	68	Lin. Ft.	18" Conduit, Type D
603										152	603	16201	152	Lin. Ft.	36" Conduit, Type A 707.08, (0.500in) under Railroad, As Per Plan
PAVEMENT															
301										1941	301	10002	1941	C.Y.	Bituminous Aggregate Base, AC-20
304										2260	304	20001	2260	C.Y.	Aggregate Base, As Per Plan
402										402	402	20000	402	C.Y.	Asphalt Concrete, AC-20
404										275	404	20000	275	C.Y.	Asphalt Concrete, AC-20
407										53	407	10000	53	Gal	Tack Coat
408										1749	408	10000	1749	Gal	Bituminous Prime Coat
409										32	409	12000	32	C.Y.	Seal Coat Cover Aggregate, No. 8
409										1200	409	20000	1200	Gal	Seal Coat Bituminous Material
605		1986									605	31100	1986	Lin. Ft.	Aggregate Drain
611										285	611	15000	285	S.Y.	Reinforced Concrete Approach Slab (T=13")
TRAFFIC CONTROL															
630										24	630	03100	24	Lin. Ft.	Ground Mounted Support, No. 3 Post
630										61	630	04100	61	Lin. Ft.	Ground Mounted Support, No. 4 Post
630										47	630	80100	47	Sq. Ft.	Sign, Flat Sheet
642										0.90	642	00102	0.90	Mile	Edge Line, TYPE 2
642										0.45	642	00302	0.45	Mile	Center Line, TYPE 2
642										2	642	01002	2	Each	Railroad Symbol Markings, TYPE 2
862										59	862	00100	59	Each	Raised Pavement Markers

GENERAL SUMMARY

CALC. DATE	F.H.W.A. REGION	STATE	PROJECT
11-28-77	5	OHIO	
CHECKED DATE			
3-19-92			

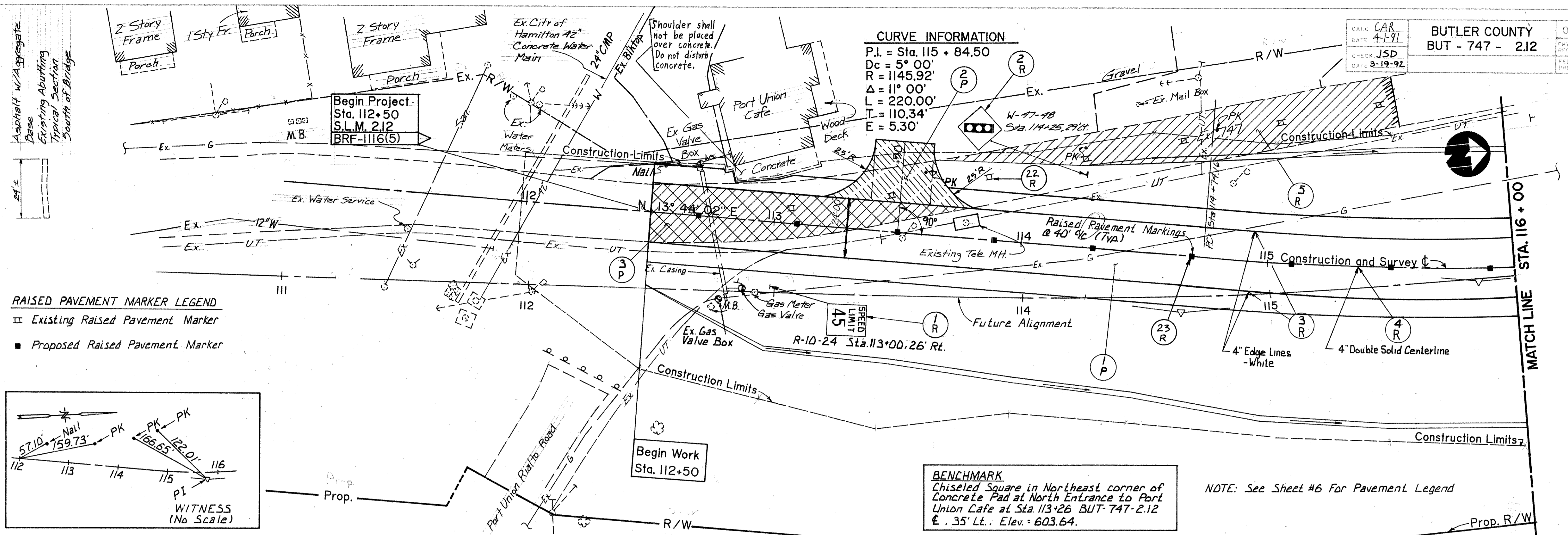
13
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BUTLER COUNTY
BUT-747-2.12

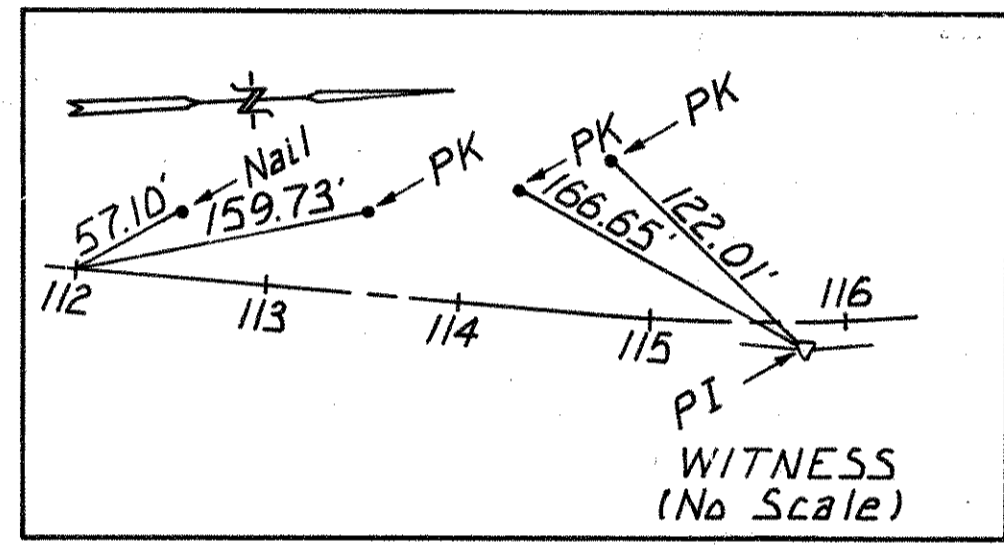
ITEM	SHEET NUMBER										ITEM	ITEM EXTENSION	GRAND TOTAL	UNIT	DESCRIPTION	
	3	8	9	11	14	15	16	17	18	19						
																SANITARY SEWER TYPE CODE Y060
202											201	202	35200	201	Lin.Ft.	Pipe Removed, over 24"
202											1	202	58000	1	Eq.	Manhole Removed
603											180	603	19200	180	Lin. Ft.	42" Conduit, Type A, 706.02 1500 D-LOAD WITH 706.11 JOINTS
604											2	604	31500	2	Eq.	Manhole, No.3
604											2	604	34500	2	Eq.	Manhole Adjusted to Grade
																MAINTENANCE OF TRAFFIC
614			0.39									614	21000	0.39	Miles	Temporary Centerline Class I
614			0.13									614	21400	0.13	Miles	Temporary Centerline Class II
614			0.78									614	22000	0.78	Miles	Temporary Edge Line, Class I
615			Lump									615	10000	Lump		Temporary Roads
																STRUCTURES OVER 20' SPAN (BRIDGE NO. BUT-747-2.37- FOR QUANTITIES SEE SHEET 38)
614			Lump									614	11000	Lump		MAINTAINING TRAFFIC
619			Lump									619	15000	Lump		FIELD OFFICE, TYPE A
623												623	10000	Lump		CONSTRUCTION LAYOUT STAKES
624												624	10000	Lump		MOBILIZATION

CURVE INFORMATION

P.I. = Sta. 115 + 84.50
Dc = 5° 00'
R = 1145.92'
 Δ = 11° 00'
L = 220.00'
T = 110.34'
E = 5.30'

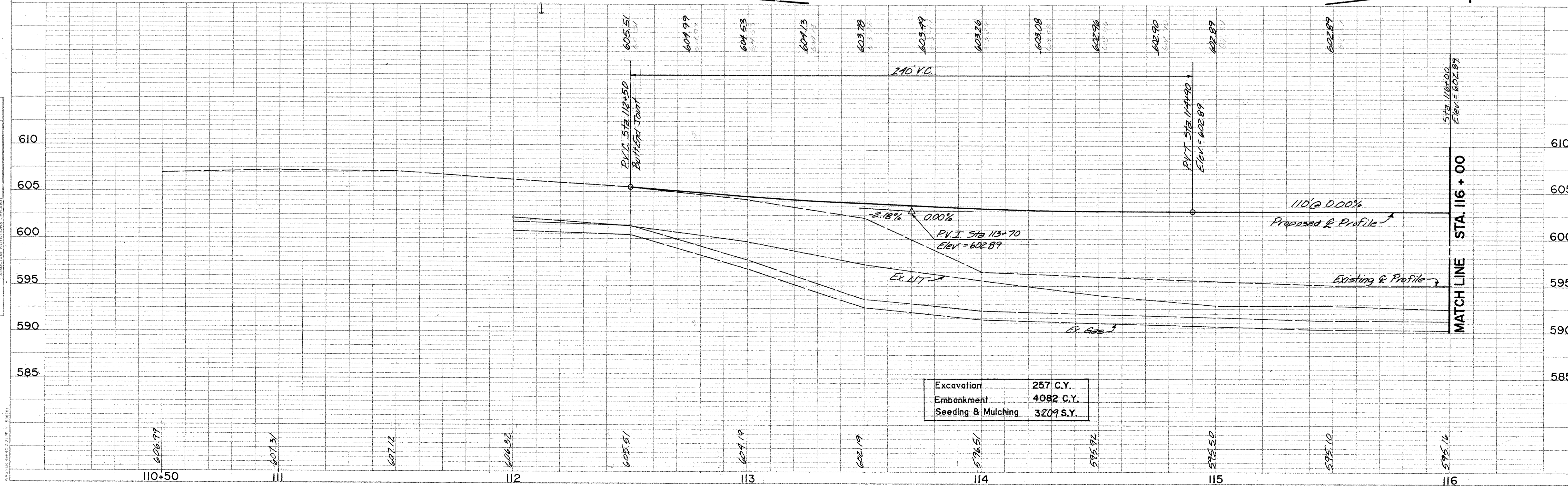


RAISED PAVEMENT MARKER LEGEND
 □ Existing Raised Pavement Marker
 ■ Proposed Raised Pavement Marker



BENCHMARK
 Chiseled Square in Northeast corner of Concrete Pad at North Entrance to Port Union Cafe at Sta. 113+26 BUT-747-2.12 & .35' Lt., Elev. = 603.64.

NOTE: See Sheet #6 For Pavement Legend



PLAN
 SURVEYED BY: []
 PLOTTED BY: []
 NOTE BOOK NO. []
 ALIGNMENT CHECKED BY: []
 BY: []

PROFILE
 SURVEYED BY: []
 PLOTTED BY: []
 NOTE BOOK NO. []
 GRADE CHECKED BY: []
 STRUCTURE LOCATIONS CHECKED BY: []

WAGNER REPORT & SUPPLY 582751

Robert Jr. & Jean Beedle
D.B. 1278 Pg 226

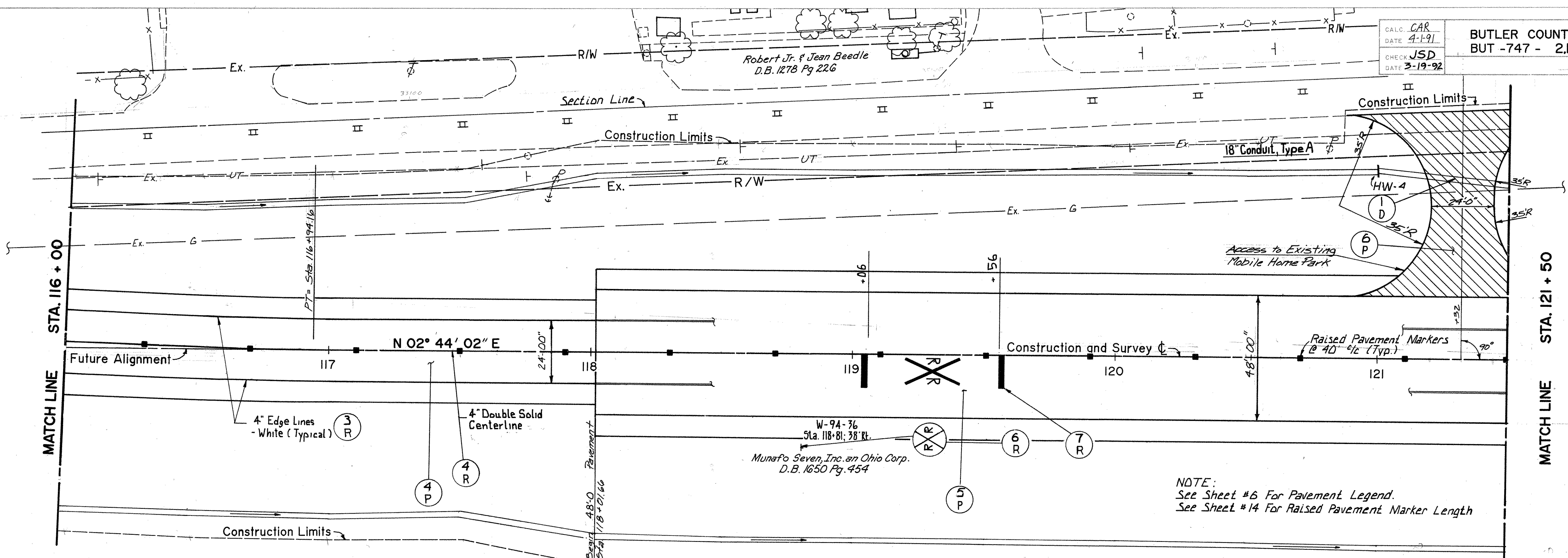


PLAN

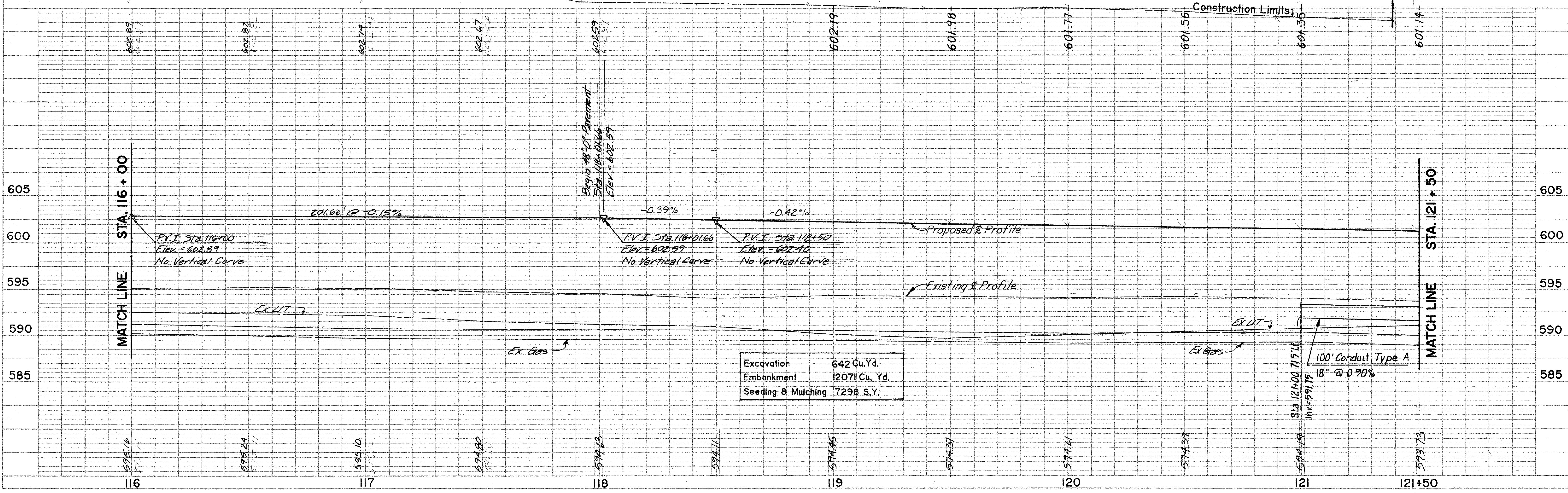
DESIGNED	DATE
BY	
NOTED	
PLOTTED	
ALIGNED	
CHECKED	
NO. OF WAY CHECKED	
NO.	

PROFILE

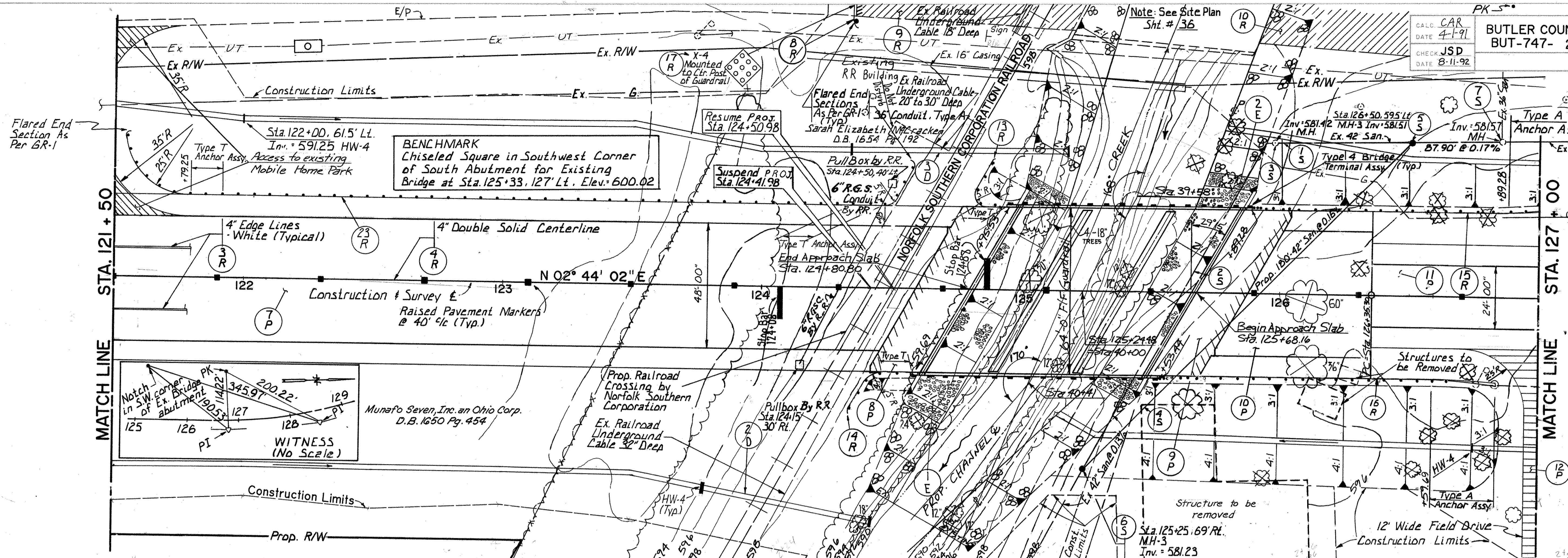
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BY	
NOTED	
PLOTTED	
GRADES CHECKED	
P.M.'S NOTED	
STRUCTURE NOTATIONS CHECKED	
NO.	



NOTE:
See Sheet #6 For Pavement Legend.
See Sheet #14 For Raised Pavement Marker Length

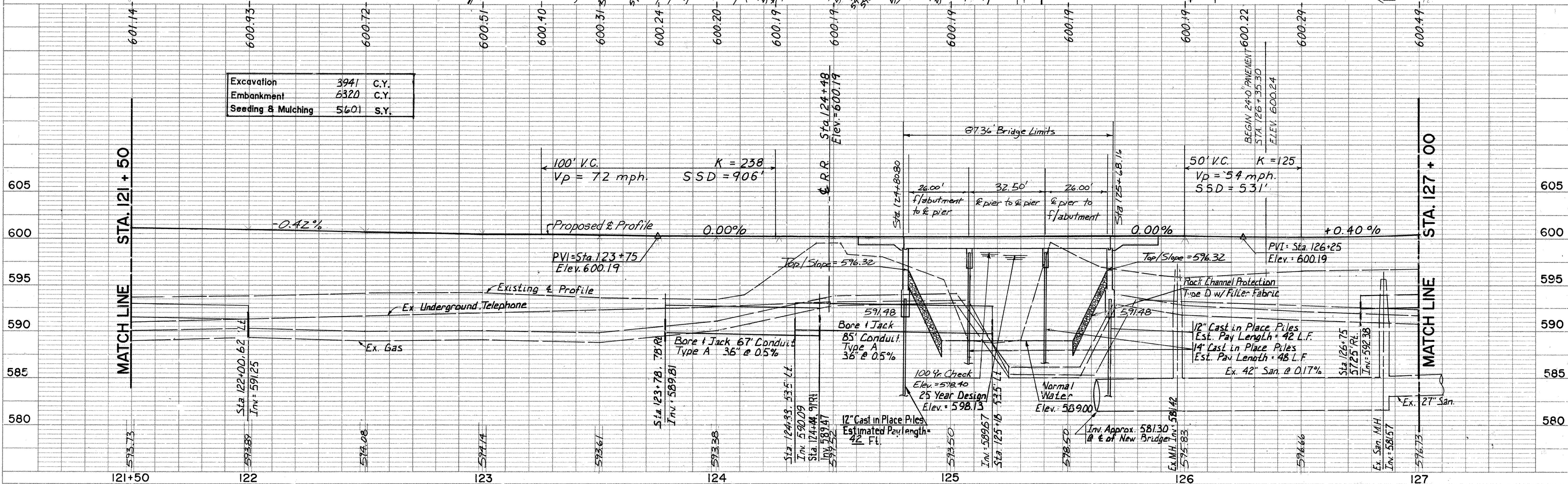


Excavation	642 Cu. Yd.
Embankment	12071 Cu. Yd.
Seeding & Mulching	7298 S.Y.

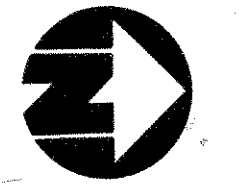


- NOTES:
- 1) Field Verify Inverts of all Proposed Manholes.
 - 2) See Sheet #6 for Pavement Legend.
 - 3) See Sheet #14 for Raised Pavement Marker Legend.
 - 4) See Site Plan for other Details.

Excavation	3941	C.Y.
Embankment	6320	C.Y.
Seeding & Mulching	5601	S.Y.



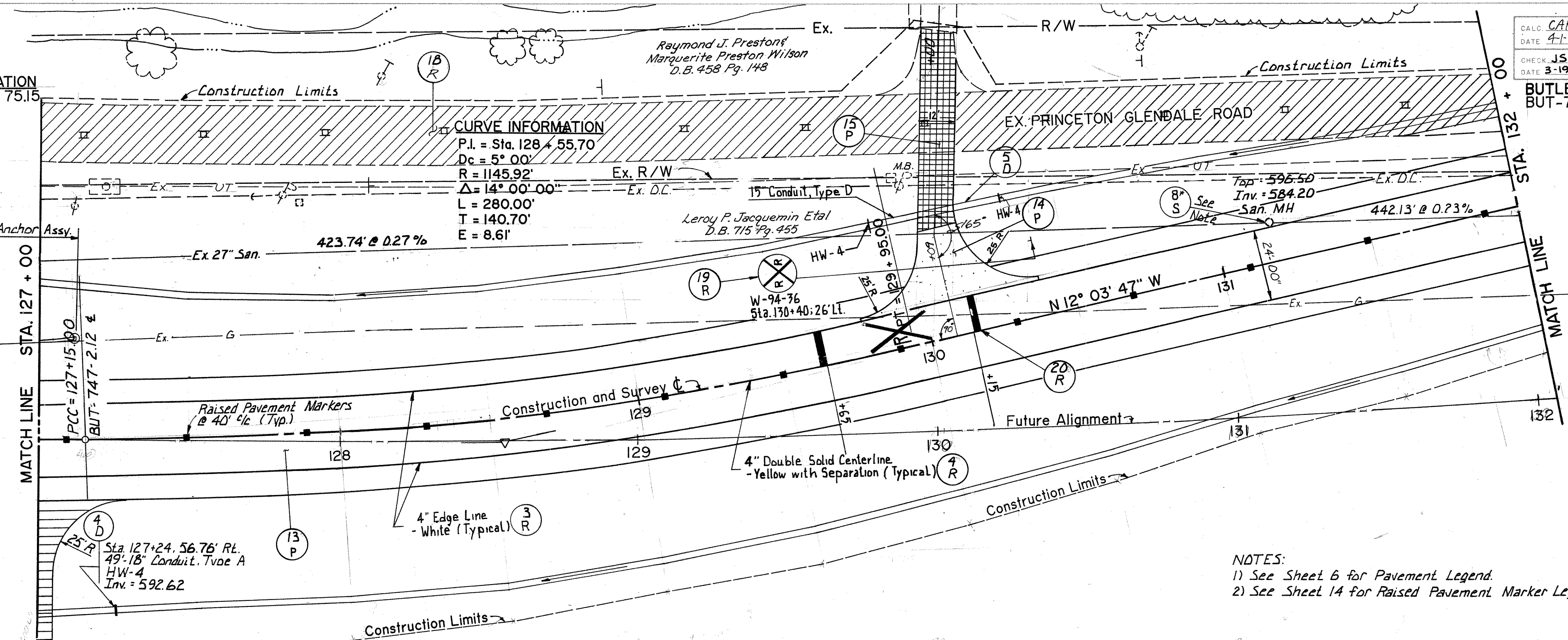
BUTLER COUNTY
BUT-747-2.12



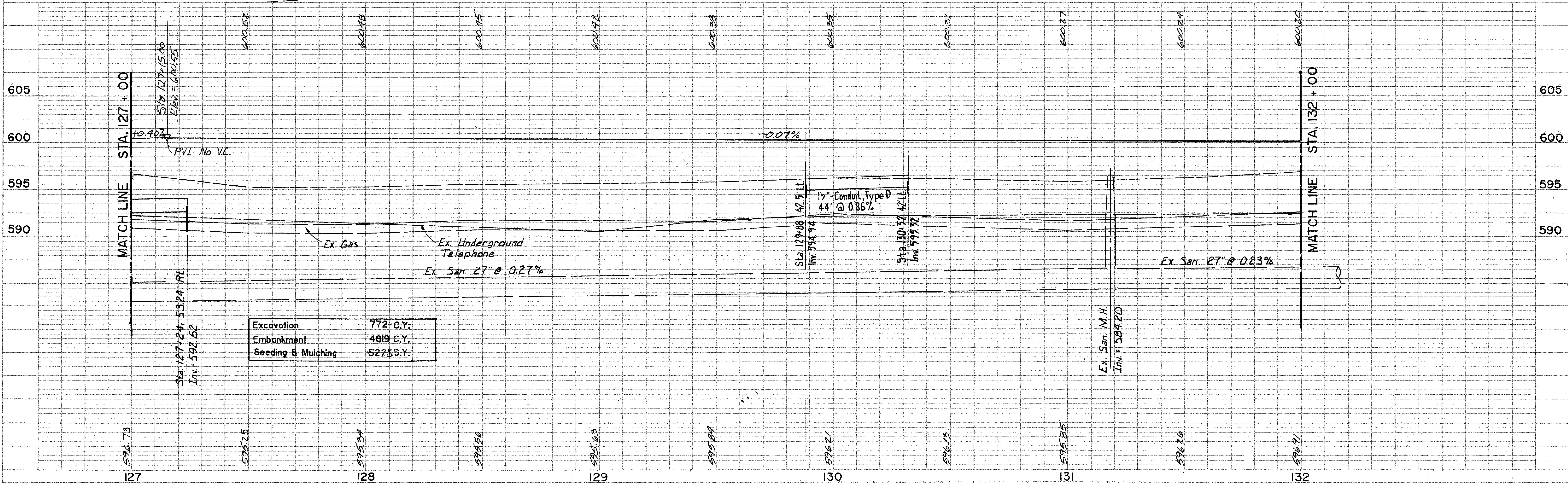
* Existing frame and cover shall be replaced with heavy design as per frame and cover note on standard drawing MH-1. Cost shall be incidental to Item 604, and castings shall meet Item 604 requirements.

CURVE INFORMATION
P.I. = STA. 126 + 75.15
Dc = 1°00'
R = 5729.58'
Δ = 0°47'49"
L = 79.70'
T = 39.85'
E = 0.14'

CURVE INFORMATION
P.I. = Sta. 128 + 55.70
Dc = 5° 00'
R = 1145.92'
Δ = 14° 00' 00"
L = 280.00'
T = 140.70'
E = 8.61'



NOTES:
1) See Sheet 6 for Pavement Legend.
2) See Sheet 14 for Raised Pavement Marker Legend.



STA. 127+00 to STA. 132+00

PLAN
DATE: _____ BY: _____
CHECKED: _____
NO. _____

PROFILE
DATE: _____ BY: _____
CHECKED: _____
NO. _____

WAGNER BROS. AND SONS, INC. N18999

PLAN
 SURVEYED BY: _____
 PLOTTED BY: _____
 NOTE BOOK ALIGNMENT CHECKED BY: _____
 NO. _____

PROFILE
 SURVEYED BY: _____
 PLOTTED BY: _____
 NOTE BOOK GRADE CHECKED BY: _____
 NO. _____

BENCHMARK
 Chiseled Square in Southwest Corner of
 East Abutment of Ex. Bridge at Sta. 136+49
 BUT-747-2.12 & 43' Lt. Elev. = 600.38

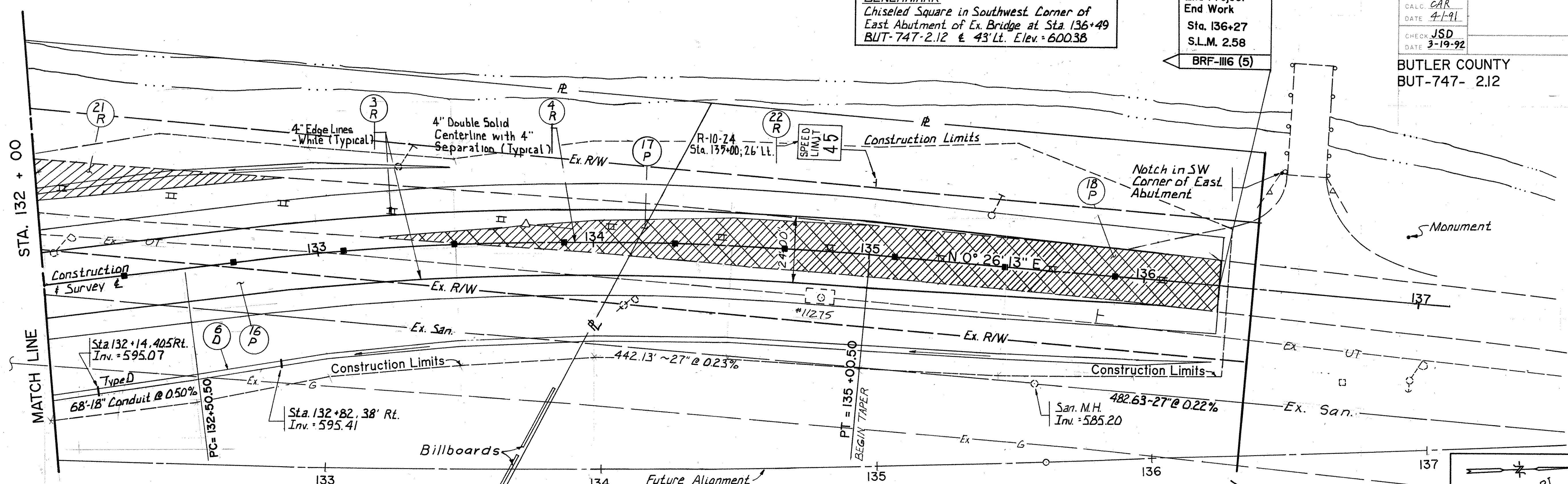
End Project
 End Work
 Sta. 136+27
 S.L.M. 2.58
 BRF-III6 (5)

CALC. CAR
 DATE 4-1-91
 CHECK JSD
 DATE 3-19-92

OHIO
 REGION 5
 FEDERAL PROJECT
 18
 50

BUTLER COUNTY
 BUT-747- 2.12

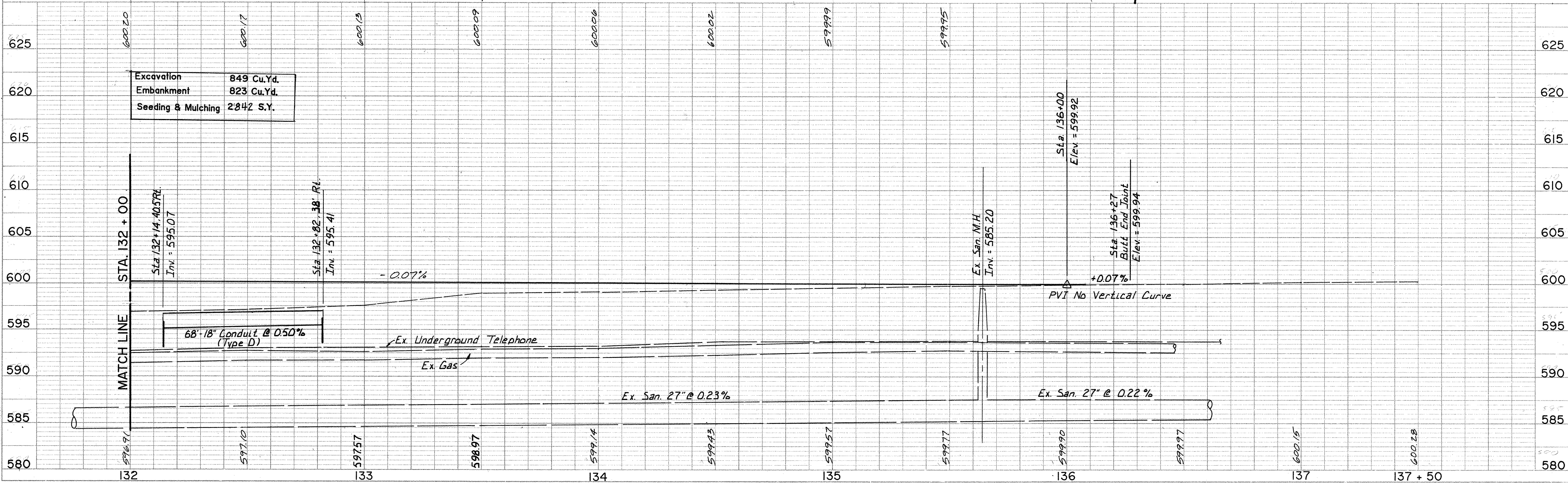
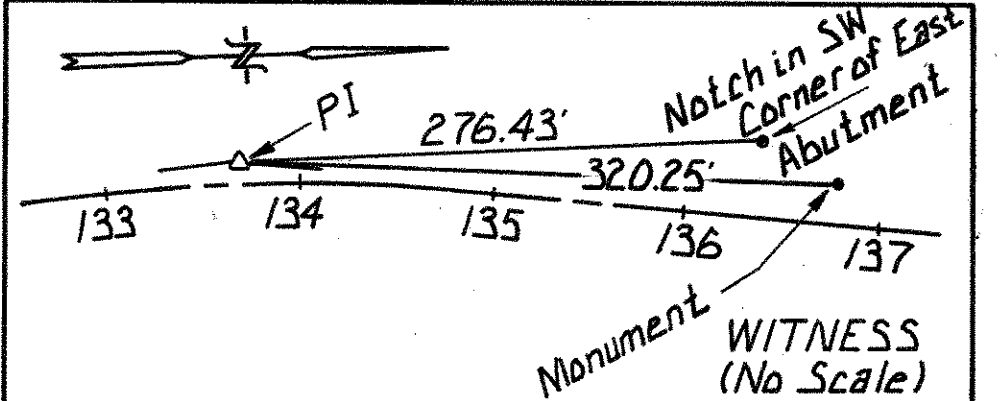
Asphalt with Aggregate Base
 Existing Abutting Typical Section
 North of Bridge



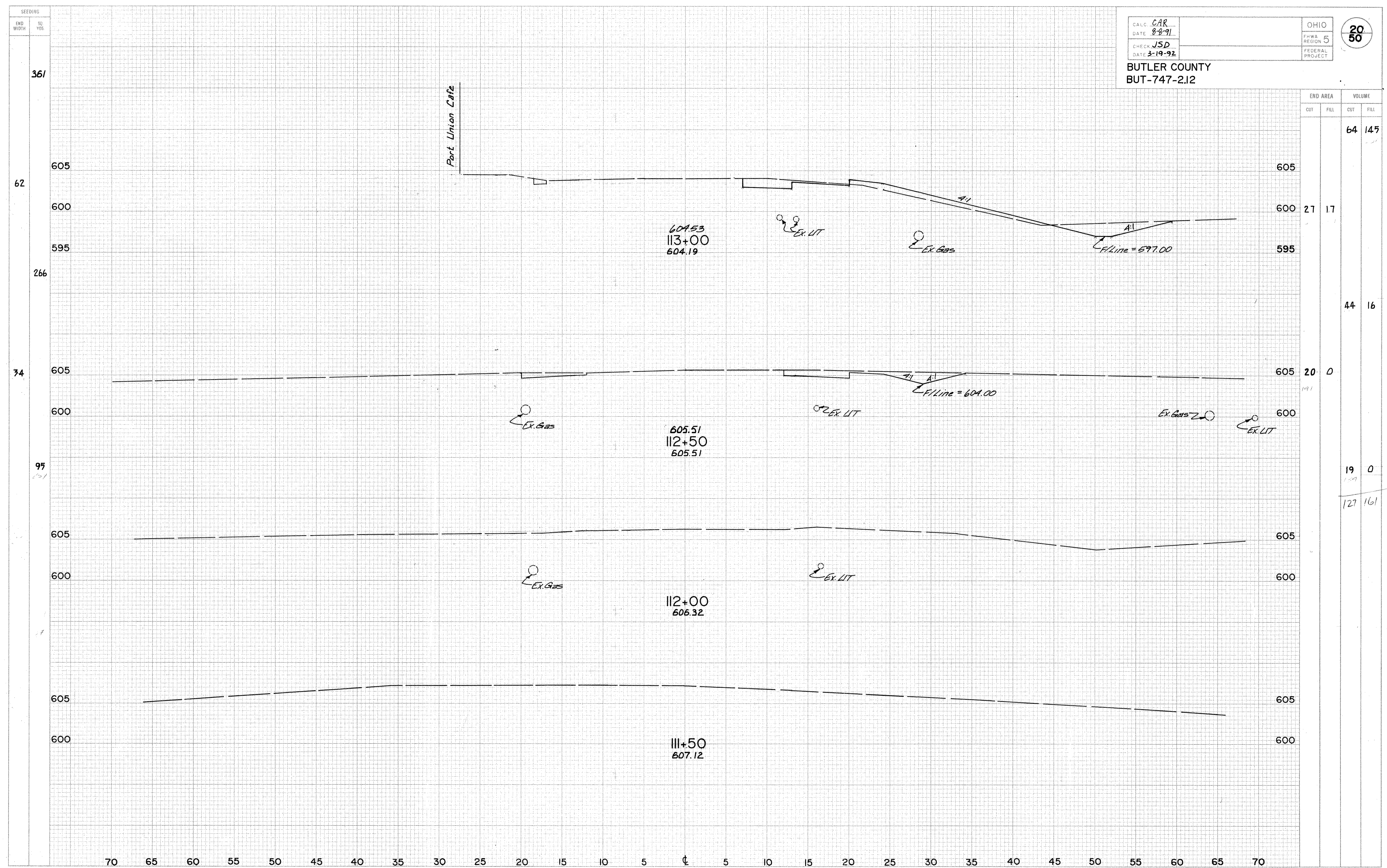
CURVE INFORMATION

P.I. = Sta. 133+76.00 L = 250.00'
 Dc = 5° 00' T = 125.50'
 R = 1145.92' E = 6.85'
 Δ = 12°30'00"

NOTE:
 1) See Sheet 6 for Pavement Legend.
 2) See Sheet 14 for Raised Pavement Marker Legend.

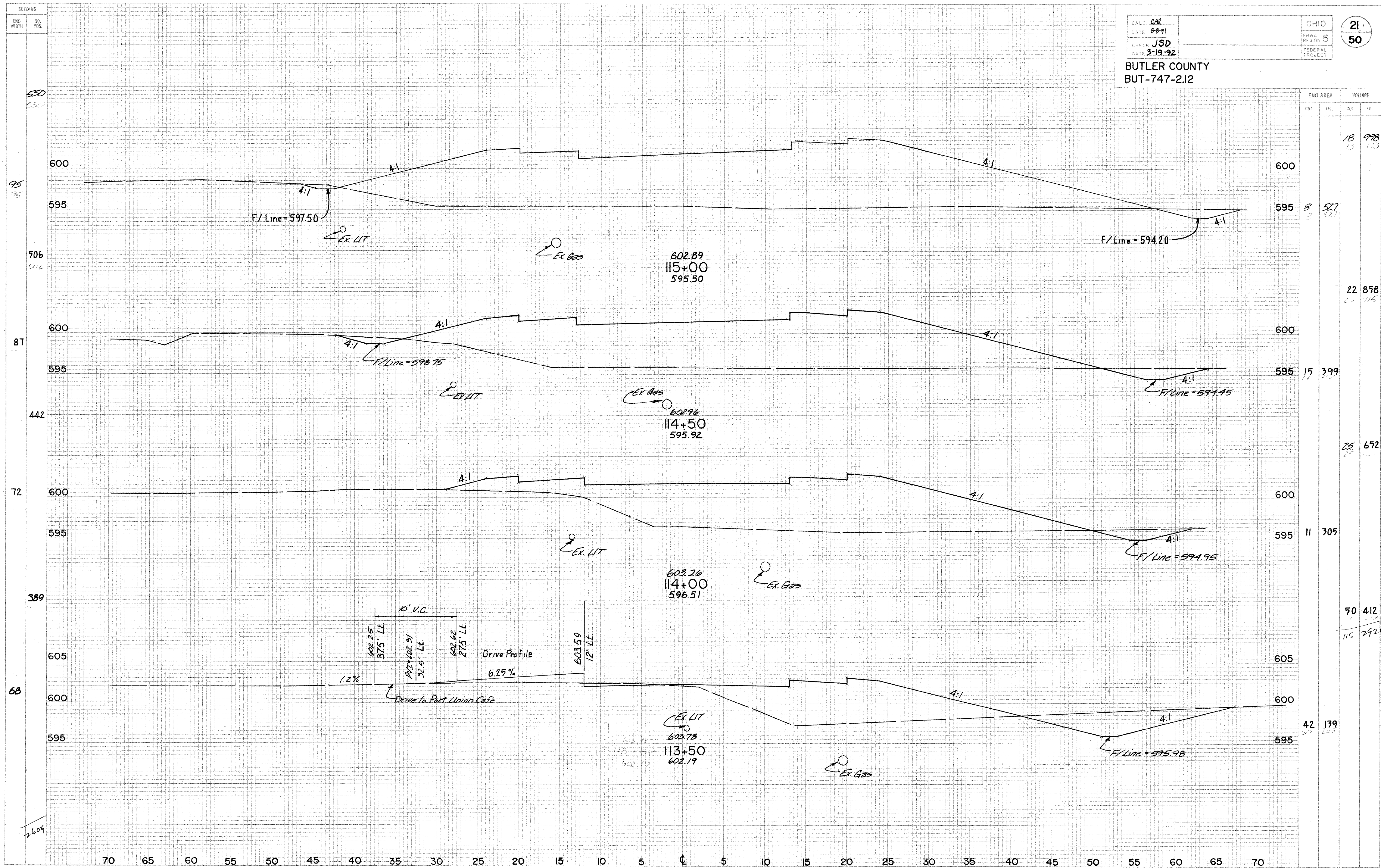


Excavation	849 Cu.Yd.
Embankment	823 Cu.Yd.
Seeding & Mulching	2842 S.Y.



X-SECTIONS Sta. 113+50 to 113+00

BUTLER COUNTY
 BUT-747-2.12



SECTION	END AREA		VOLUME	
	CUT	FILL	CUT	FILL
115+00	8	3	18	978
114+50	15	3	22	878
114+00	11	3	25	672
113+50	42	3	50	412
TOTAL	76	12	115	2920

SEEDING
END WIDTH SO YDS.

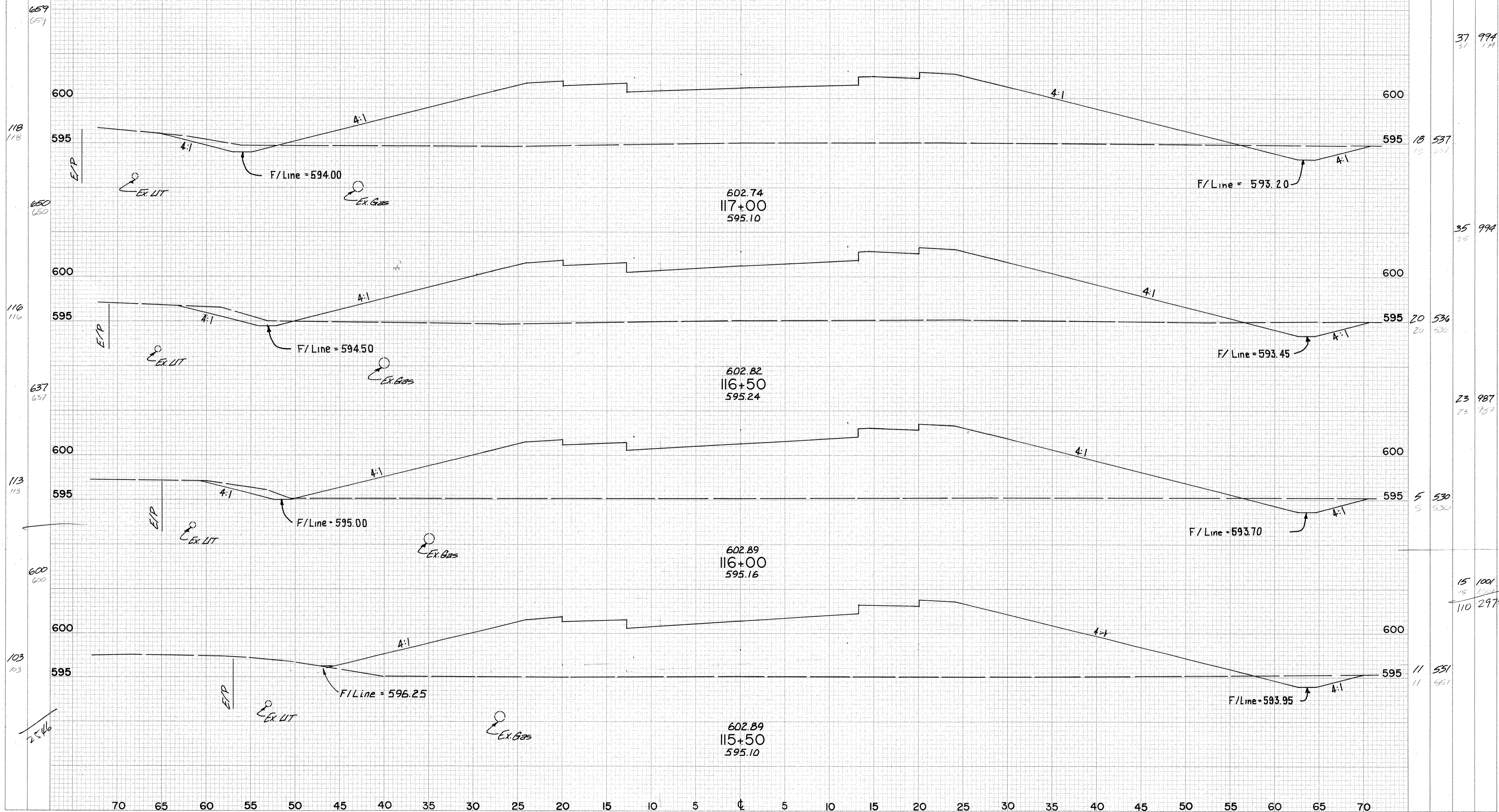
CALC. CAR
DATE 8-29-91
CHECK JSD
DATE 3-19-92

OHIO
FHWA REGION 5
FEDERAL PROJECT

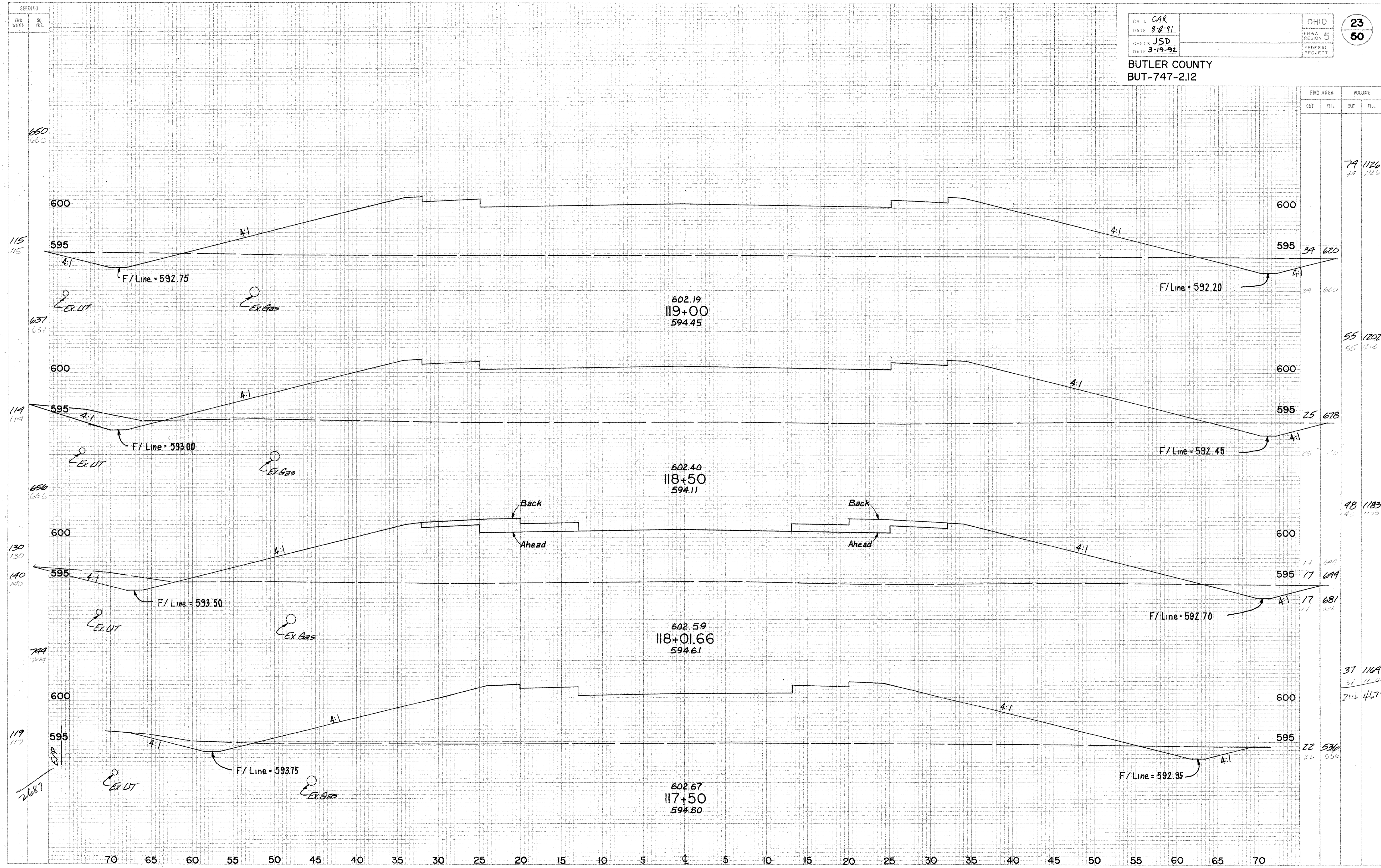
22
50

BUTLER COUNTY
BUT-747-2.12

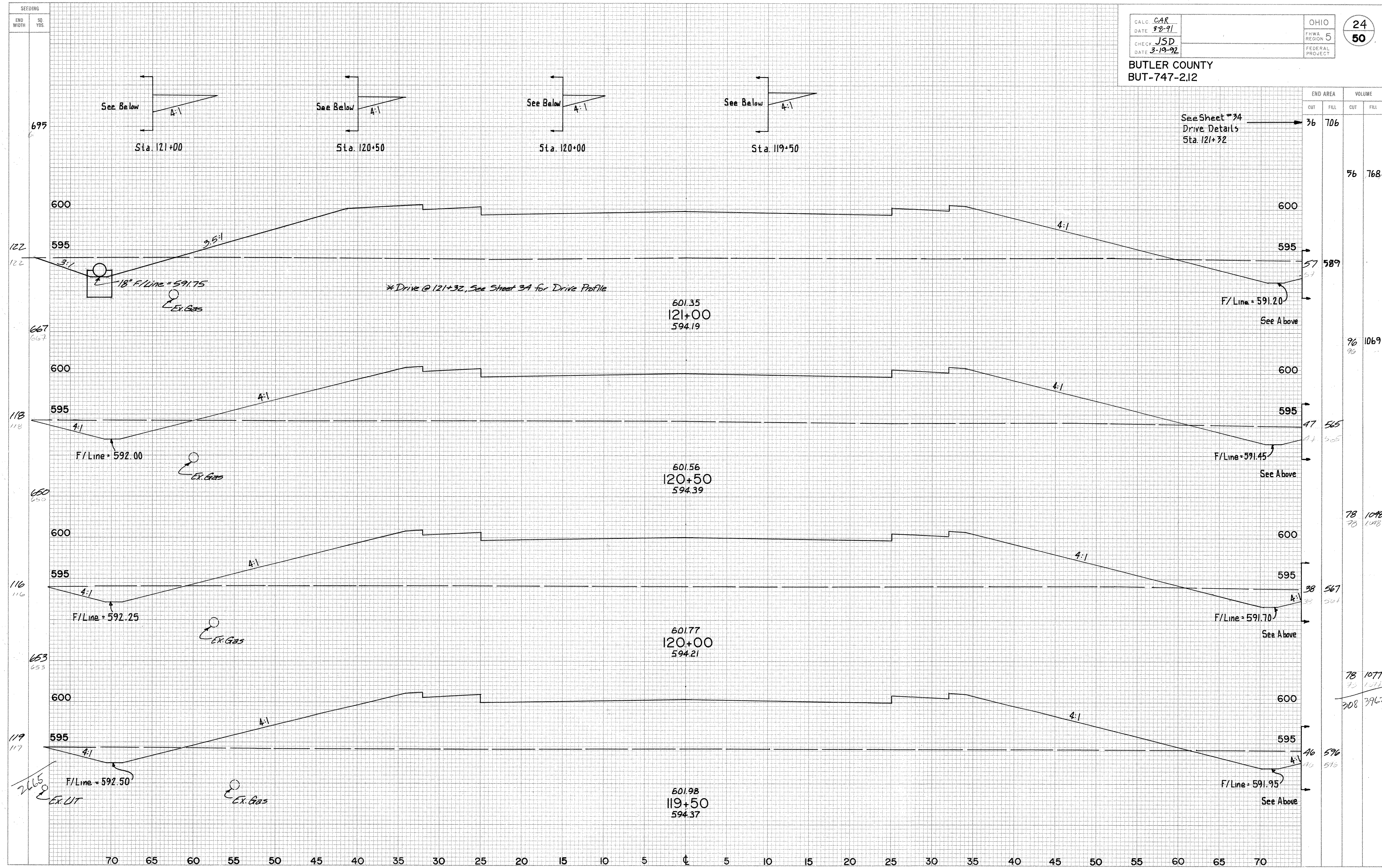
END AREA VOLUME
CUT FILL CUT FILL



BUTLER COUNTY
BUT-747-2.12



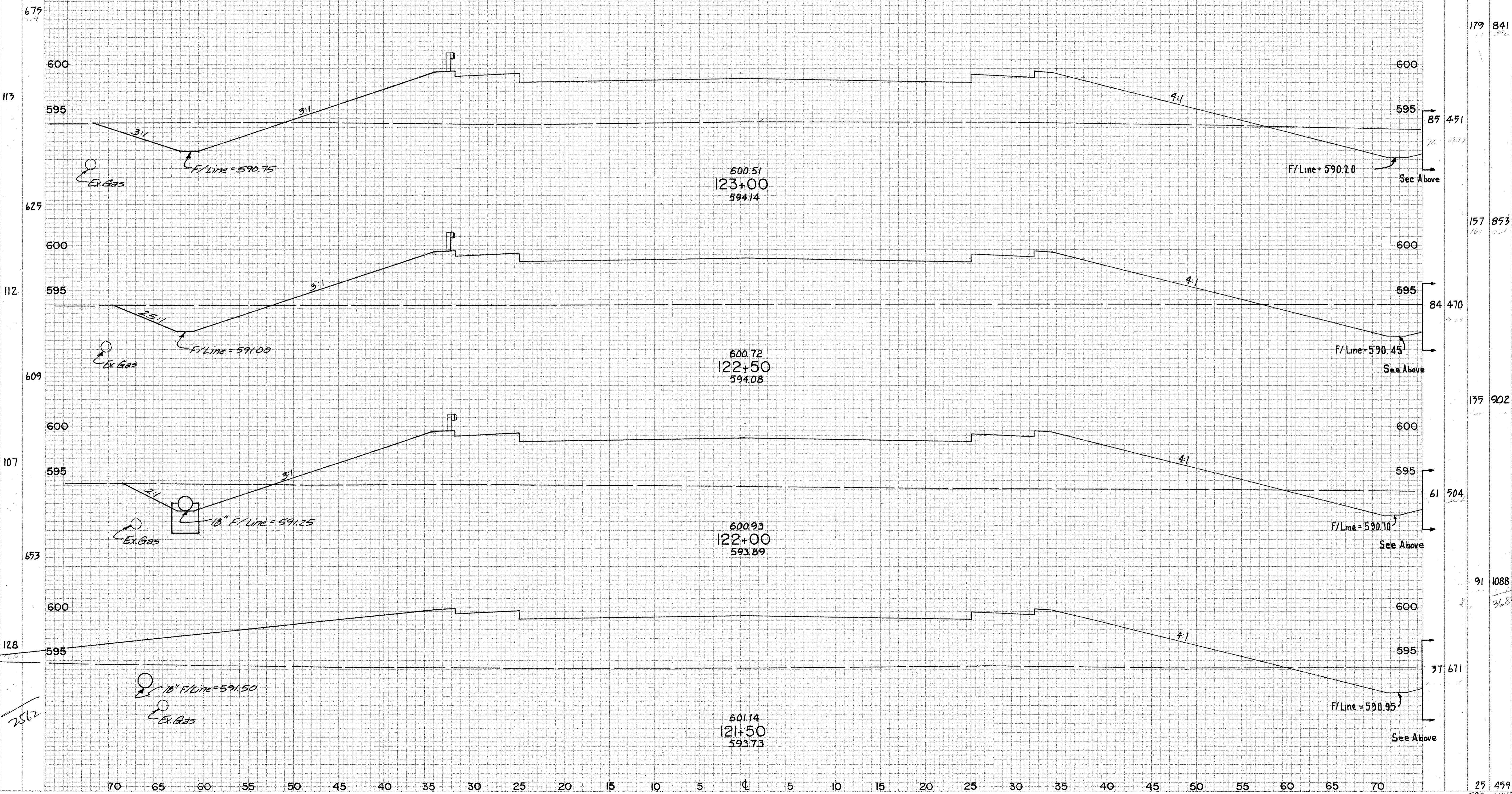
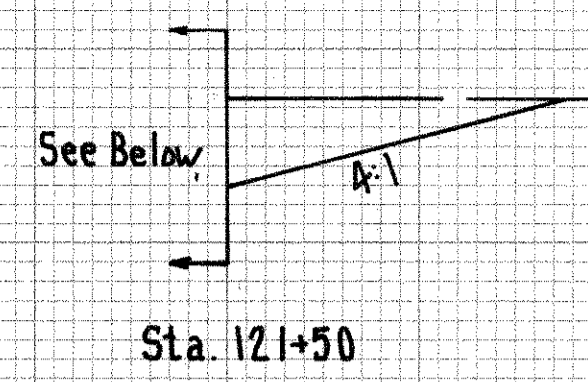
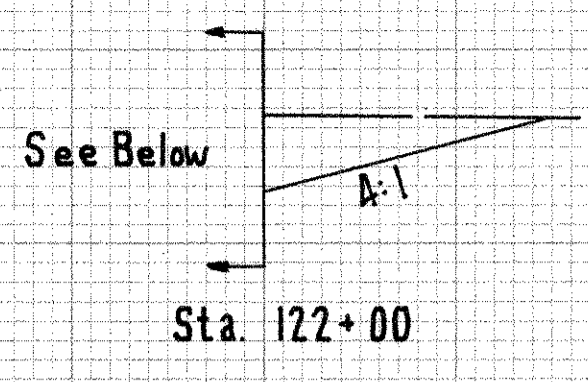
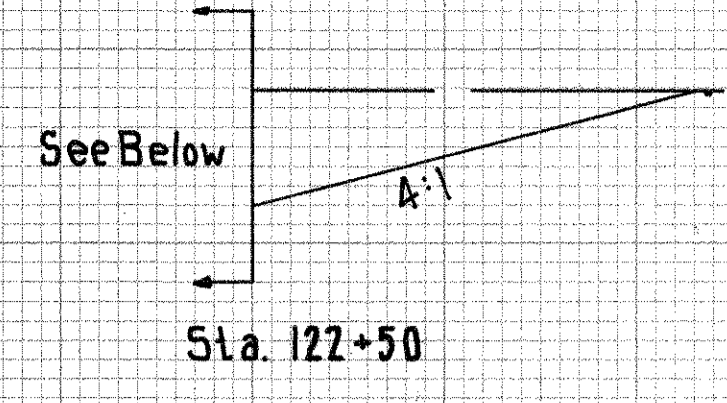
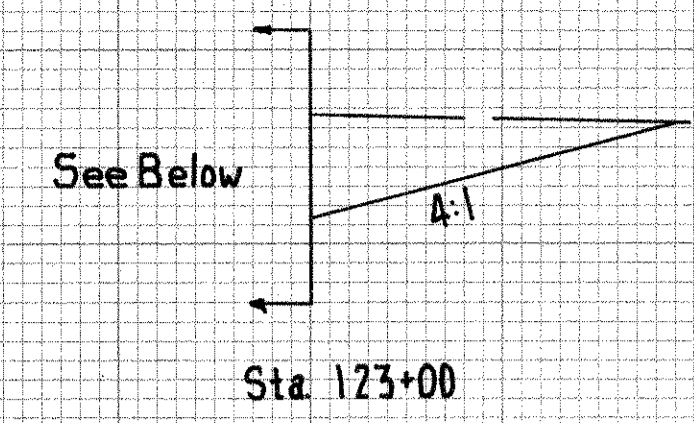
BUTLER COUNTY
BUT-747-2.12



SEEDING
END WIDTH
SQ. YDS.

CALC. CAR
DATE 8-8-91
OHIO 25
FHWA REGION 5 50
CHECK. JSD
DATE 8/11/92
FEDERAL PROJECT

BUTLER COUNTY
BUT-747-2.12



END AREA		VOLUME	
CUT	FILL	CUT	FILL
87	451	179	841
84	470	157	853
61	504	135	902
37	671	91	1088
		25	459

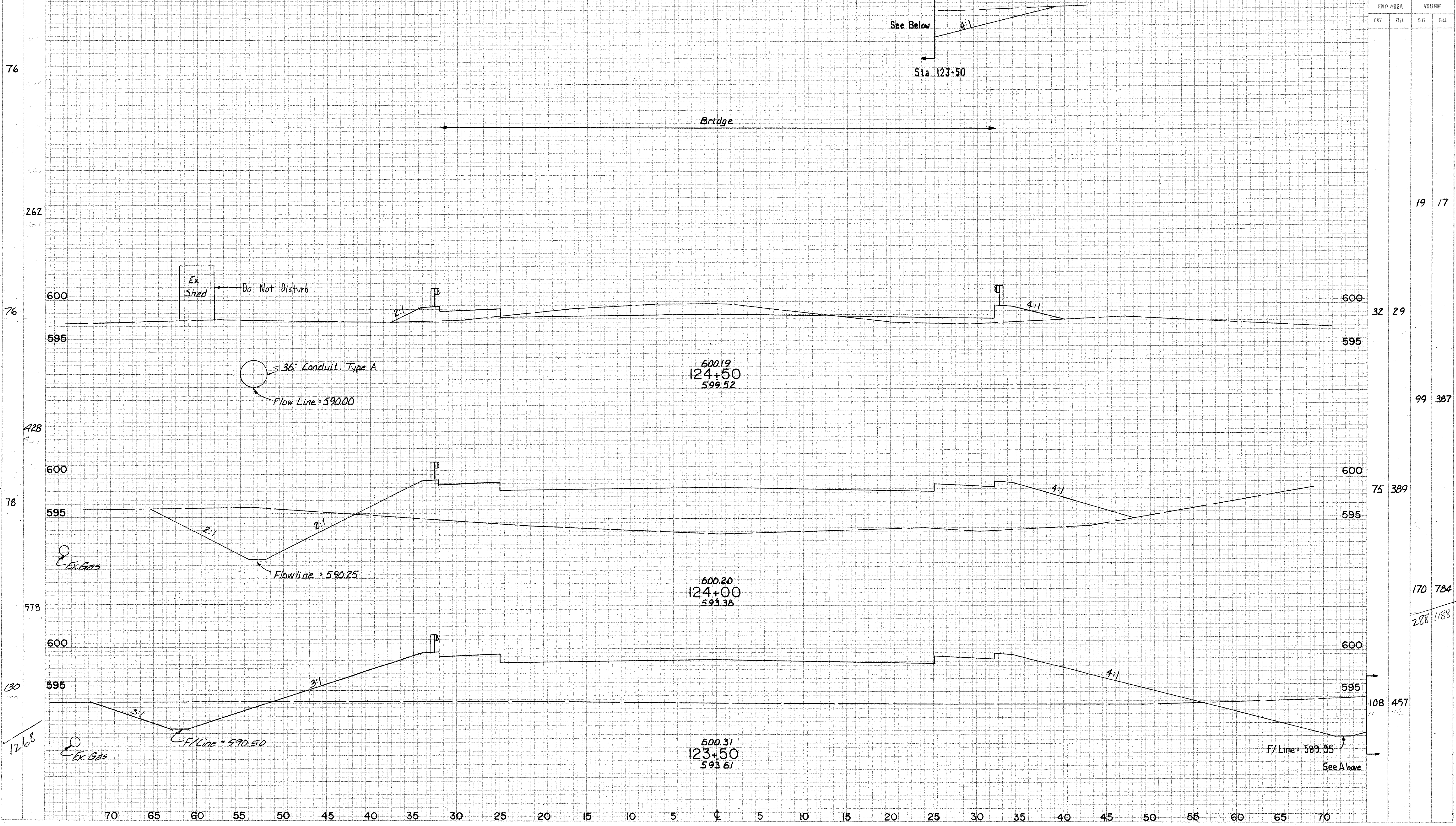
SEEDING
END WIDTH SO. YDS.

CALC. CAR
DATE 8-8-91
CHECK JSD
DATE 8/11/92

OHIO
FHWA REGION 5
FEDERAL PROJECT

26
50

BUTLER COUNTY
BUT-747-2.12



END AREA		VOLUME	
CUT	FILL	CUT	FILL
		19	17
32	29	99	387
75	389	170	784
108	457	288	1188

SEEDING
END WIDTH SQ. YDS.

CALC. GAR
DATE 8-8-91
CHECK JSD
DATE 3-19-92

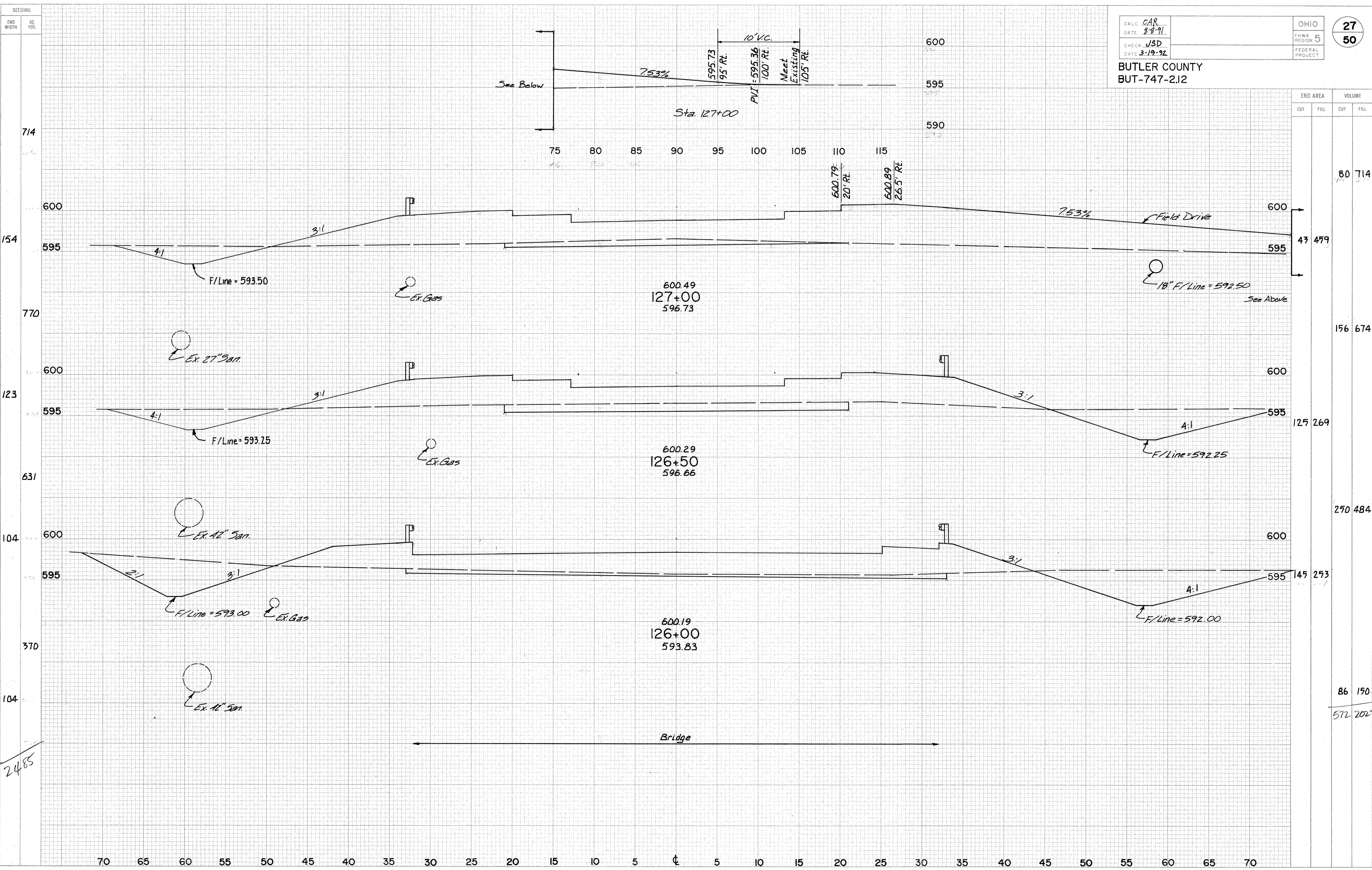
OHIO
REGION 5
FEDERAL PROJECT

27
50

BUTLER COUNTY
BUT-747-2.12

END AREA
CUT FILL

VOLUME
CUT FILL



2485

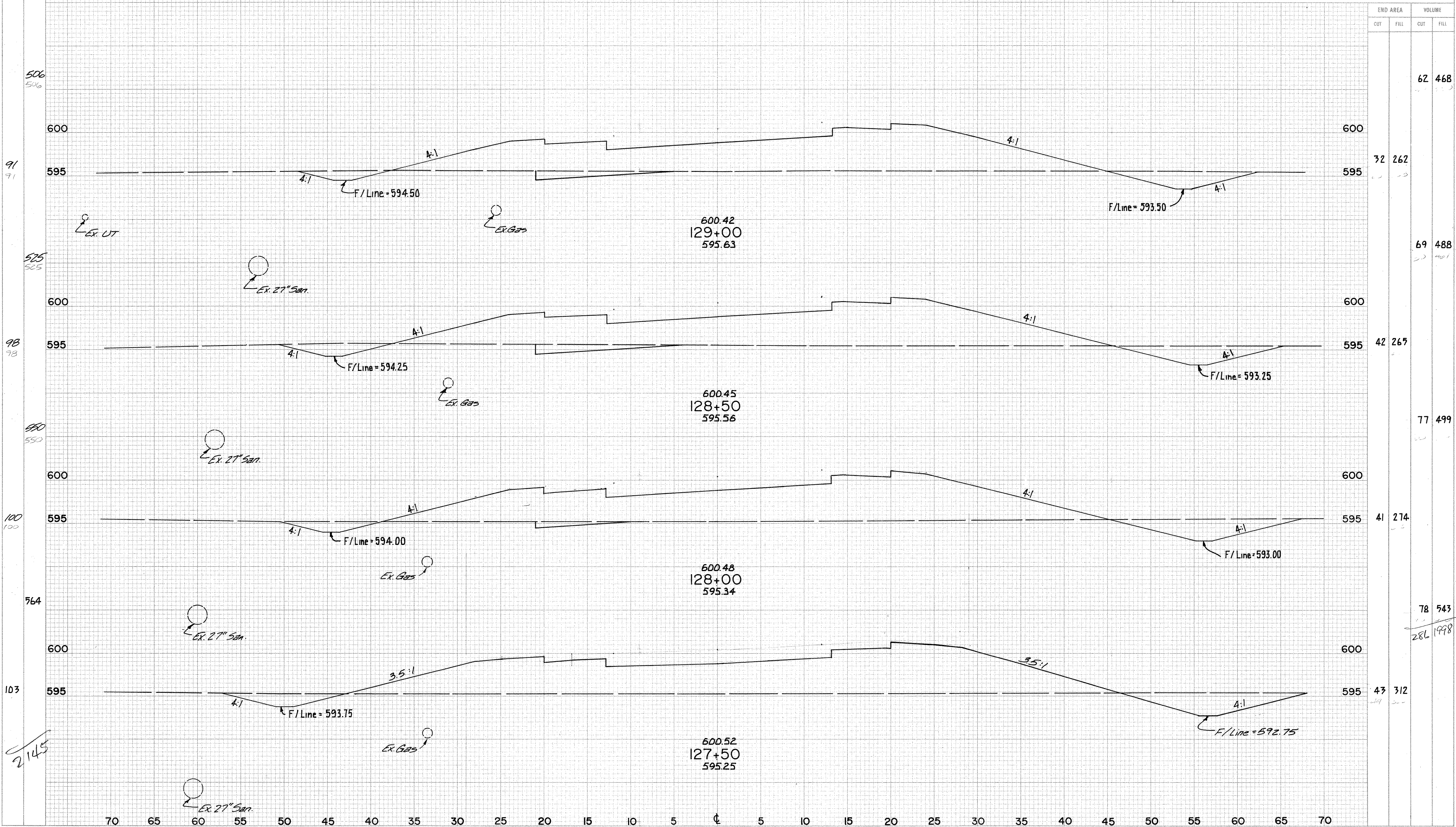
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END WIDTH SQ. YDS.

CALC. CAR
DATE 8-8-91
CHECK. JSD
DATE 3-19-92

OHIO
FHWA REGION 5
FEDERAL PROJECT

28
50

BUTLER COUNTY
BUT-747-2.12



2145

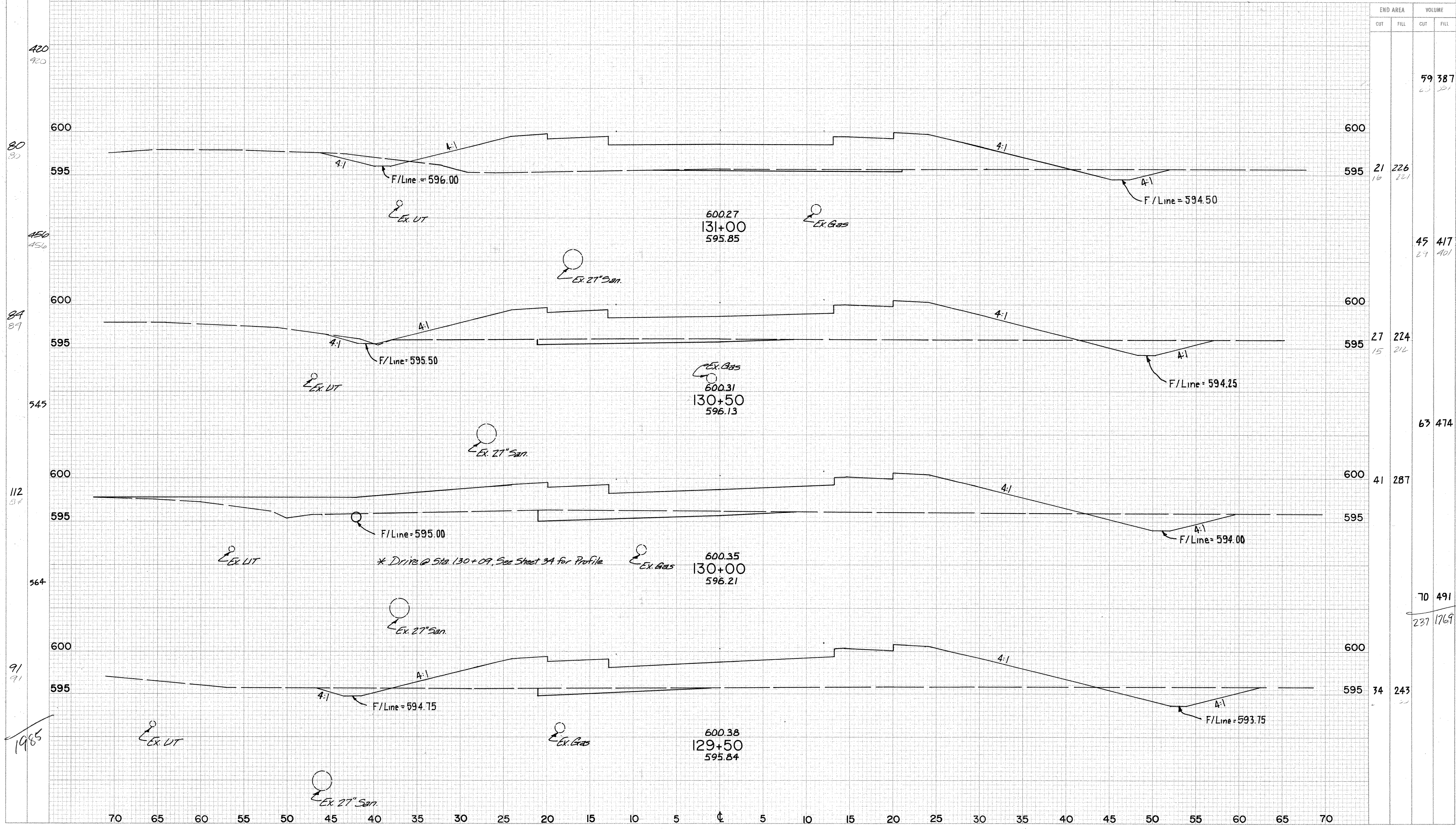
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END WIDTH SQ. YDS.

CALC CAR
DATE 8-8-91
CHECK JSD
DATE 3-19-92

OHIO
FHWA REGION 5
FEDERAL PROJECT

29
50

BUTLER COUNTY
BUT-747-2.12



SEEDING
END WIDTH SO. YDS.

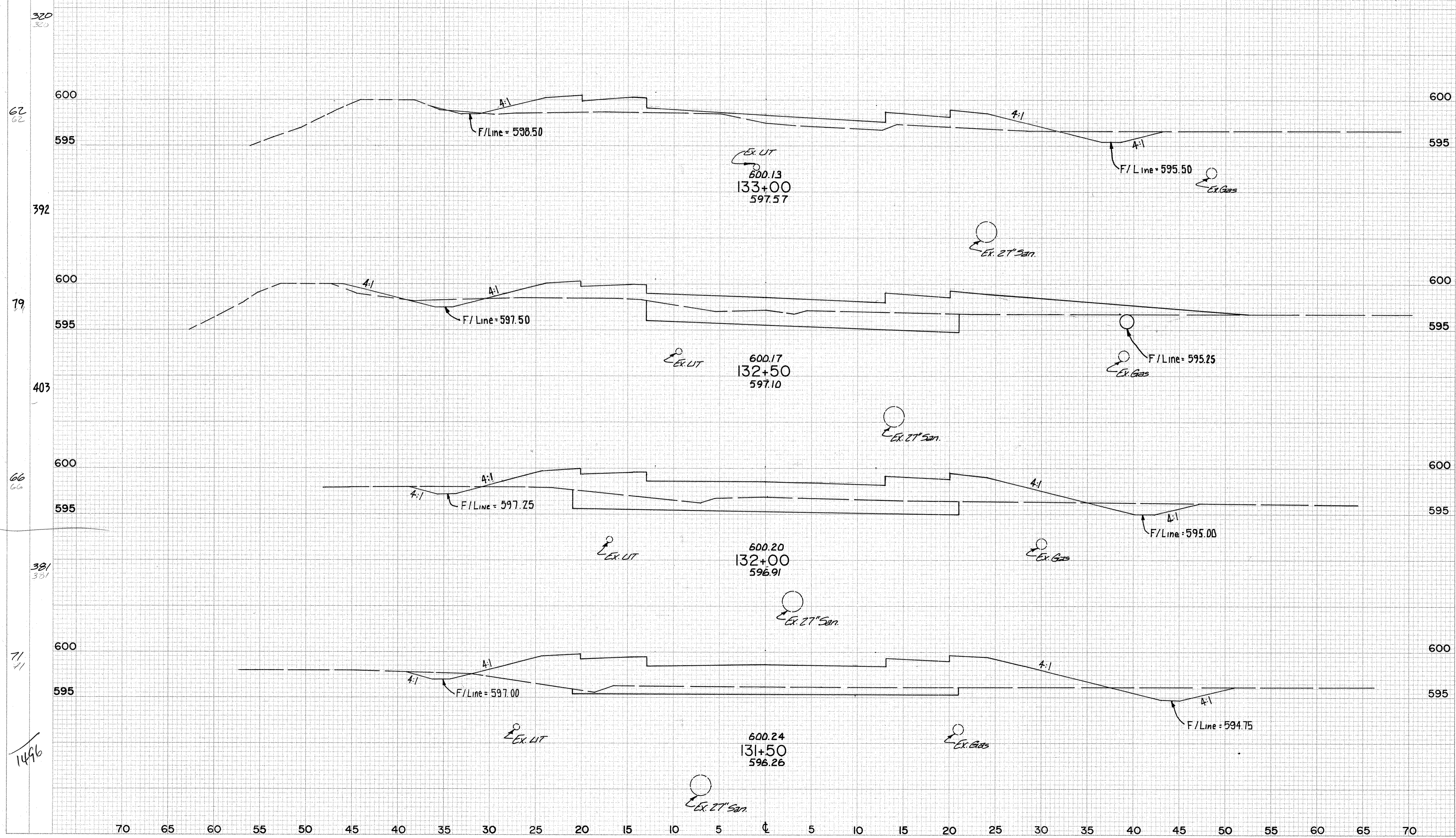
CALC CAR
DATE 8-8-91
CHECK JSD
DATE 3-19-92

OHIO
FHWA REGION 5
FEDERAL PROJECT

30
50

BUTLER COUNTY
BUT-747-2.12

END AREA
CUT FILL
VOLUME
CUT FILL



END AREA		VOLUME	
CUT	FILL	CUT	FILL
		18	86
8	59	18	86
66	209	66	209
63	166	123	314
69	173	103	338
42	192	310	947

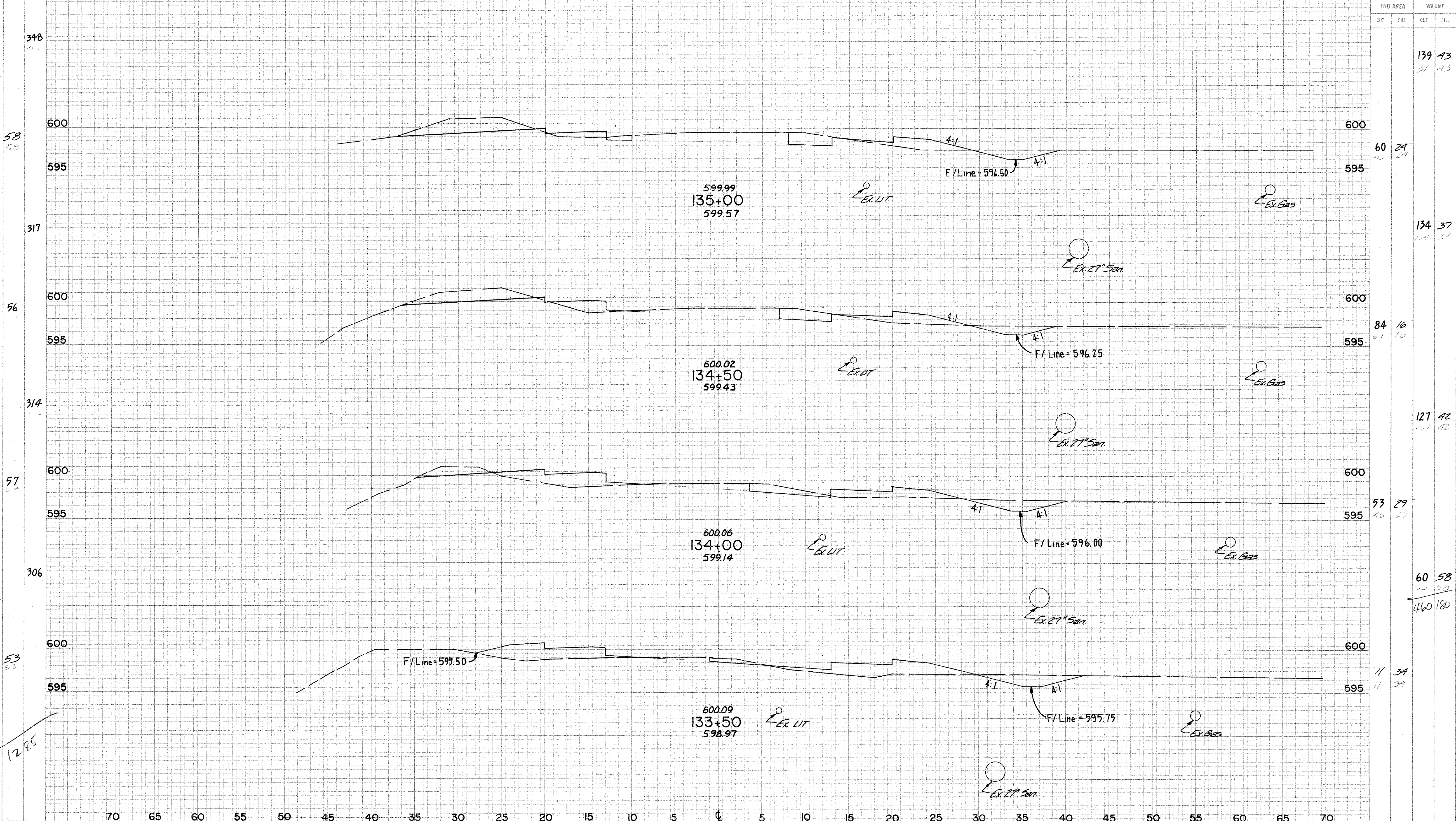
SEEDING
END WIDTH SQ YDS

CALC CAR
DATE 8-2-91
CHECK JSD
DATE 3-19-92

OHIO
REGION 5
FEDERAL PROJECT

31
50

BUTLER COUNTY
BUT-747-2.12



END AREA		VOLUME	
CUT	FILL	CUT	FILL
139	13	139	13
60	24	134	37
84	16	127	42
93	29	60	58
11	34	460	180

SEEDING
END WIDTH SQ YDS

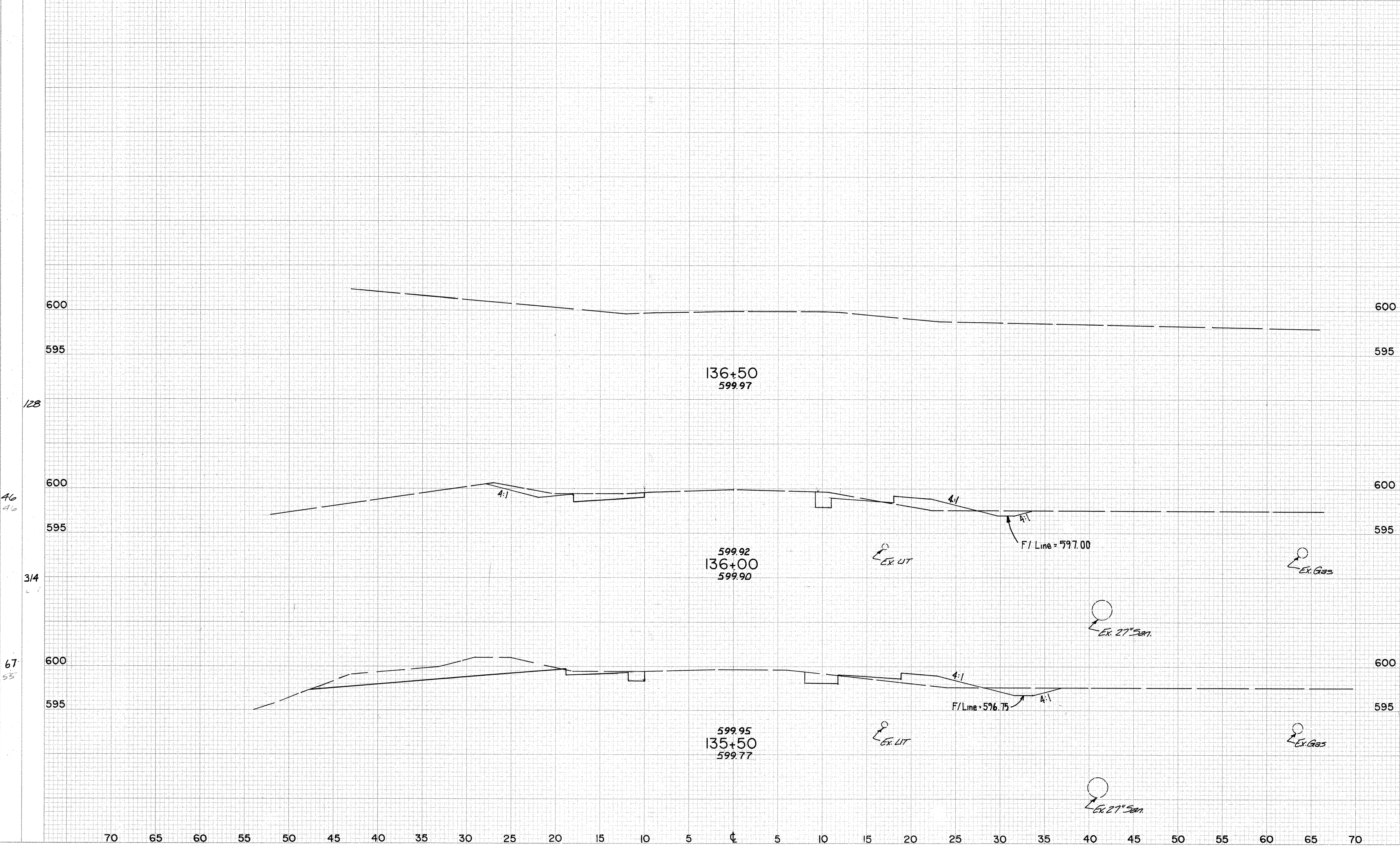
CALC. CAR
DATE 8-8-91
CHECK. JSD
DATE 3-19-92

OHIO
FHWA REGION 5
FEDERAL PROJECT

32
50

BUTLER COUNTY
BUT-747-2.12

END AREA
CUT FILL
VOLUME
CUT FILL



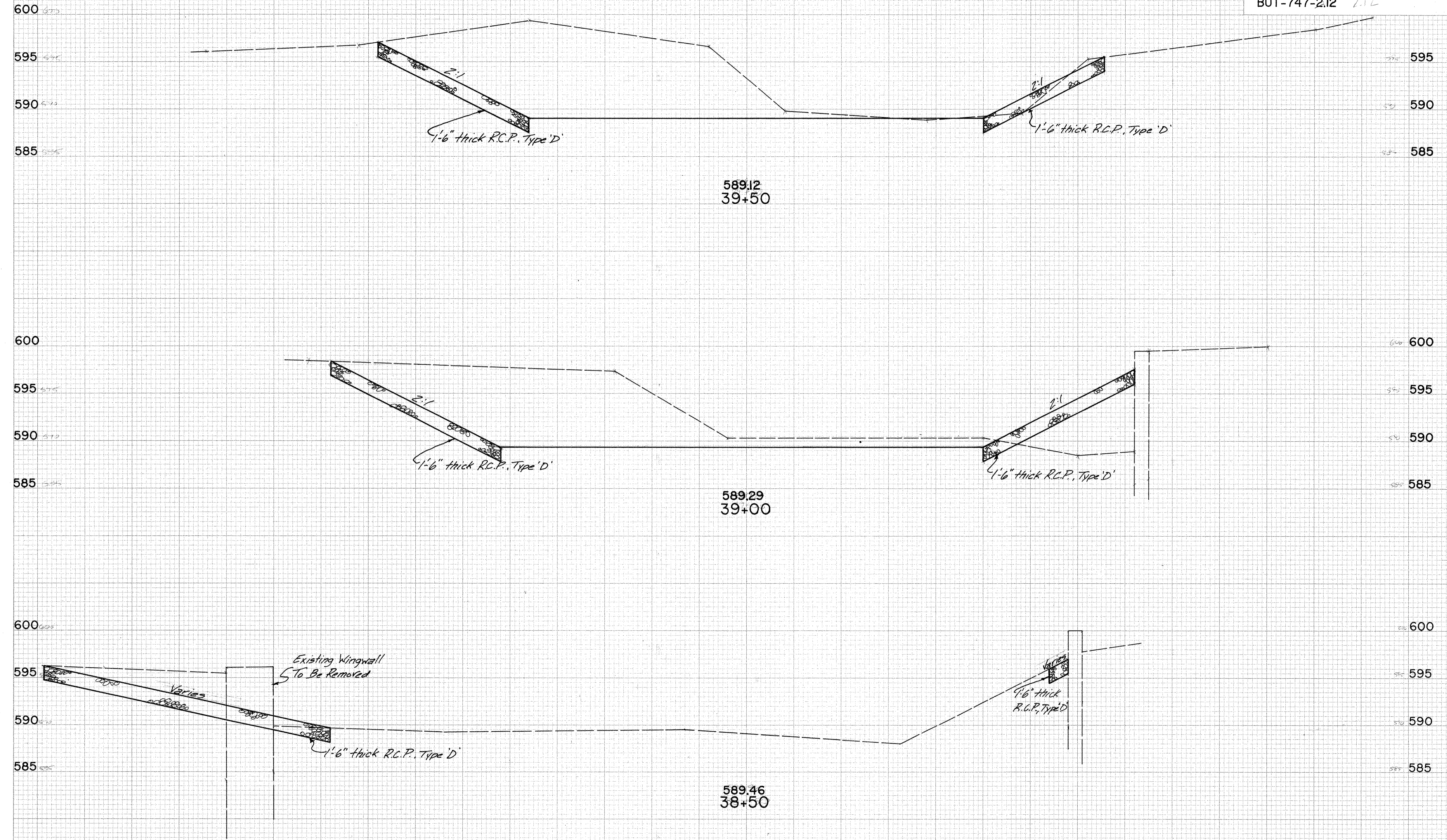
END AREA		VOLUME	
CUT	FILL	CUT	FILL
		49	7
		46	7
53	7	133	27
50	1	79	27
		182	34
90	22		
51	22		

SEEDING
END WIDTH 50 YDS

CALC. CAR
DATE 8-30-91
CHECK JSD
DATE 3-19-92
OHIO
REGION 5
FEDERAL PROJECT

33
50

BUTLER COUNTY
BUT-747-2.12 7.12



END AREA		VOLUME	
CUT	FILL	CUT	FILL
329	0		
		569	45
285	48		
		356	45
99	0		
		92	0
		107	90

65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 CHANNEL X-SECTIONS

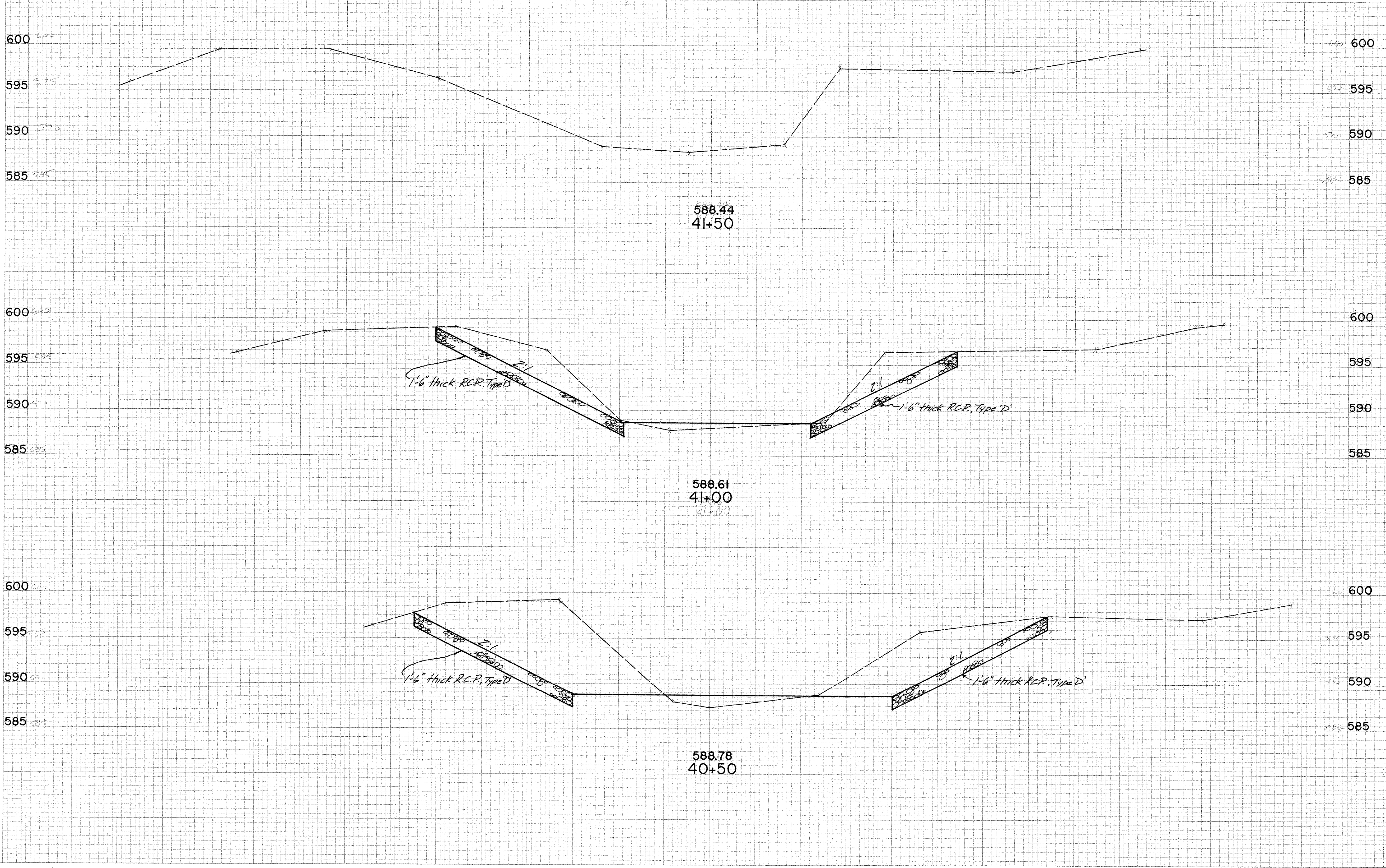
SEEDING
END WIDTH 30 YDS

CALC CAR
DATE 8-30-91
CHECK JSD
DATE 3-19-92

OHIO
FHW REGION 5
FEDERAL PROJECT

34
50

BUTLER COUNTY
BUT-747-2.12 2.12



END AREA		VOLUME	
CUT	FILL	CUT	FILL
			114.8
123.8			
		362.17	
268.12			
		1106.23	
		1582.50	

65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 CHANNEL X-SECTIONS

SEEDING
END WIDTH SQ YDS.

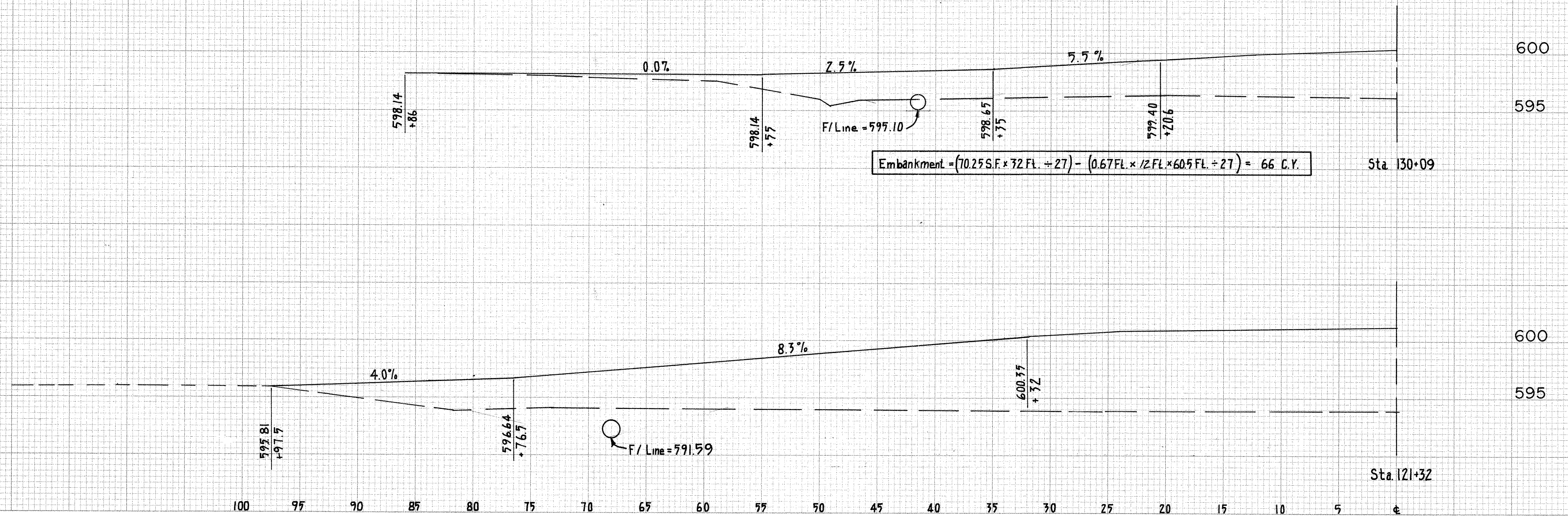
CALC. JSD
DATE 9/11/91
CHECK JSD
DATE 3-19-92

OHIO
FHWA REGION 5
FEDERAL PROJECT

35
50

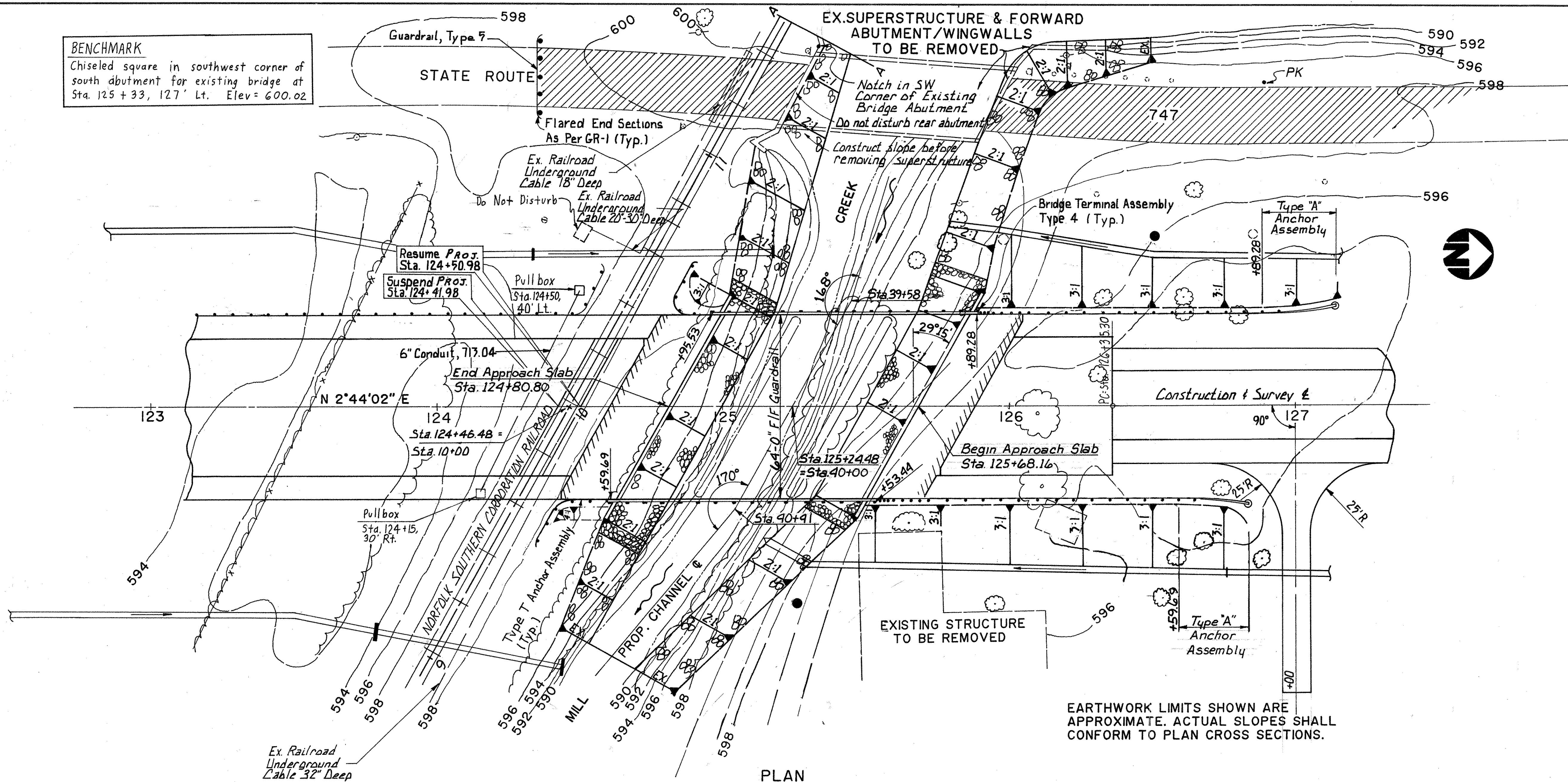
BUTLER COUNTY
BUT-747- 2.12

END AREA		VOLUME	
CUT	FILL	CUT	FILL



BUTLER COUNTY
BUT-747-2.12

BENCHMARK
Chiseled square in southwest corner of south abutment for existing bridge at Sta. 125+33, 127' Lt. Elev = 600.02



DRAINAGE AREA = 22 SQUARE MILES

HYDRAULIC DATA

25 YEAR DESIGN	100 YEAR CHECK
Q = 2471 CFS	Q = 2608 CFS
V = 4.8 FPS	V = 4.9 FPS
HW = 598.13	HW = 598.40

EXISTING STRUCTURE

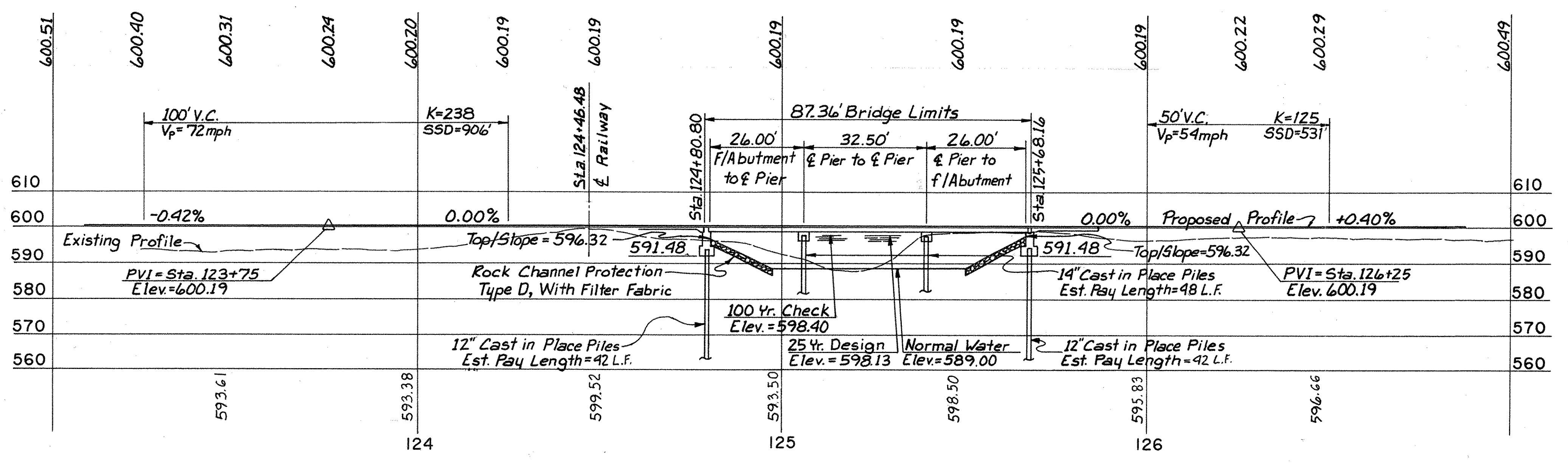
TYPE: Through Girder
SPAN: 70'-0"±
ROADWAY: 25'-0"±
SKEW: 24"±
ALIGNMENT: Tangent
WEARING SURFACE: Asphalt Concrete
CONDITION: Poor Structurally Deficient
STRUCTURE FILE NO.: 0904023

PROPOSED STRUCTURE

TYPE: Continuous Reinforced Concrete Slab
Deck on capped pile Abutments and Piers.
SPAN: 26'-0" ; 32'-6" ; 26'-0"
ROADWAY: 64'-0" Face to Face of Guardrail
SKEW: 29°15'
ALIGNMENT: Tangent
WEARING SURFACE: Monolithic Concrete
LOADING: HS-20-44 & Alternate Military Loading
TRAFFIC: (1992)=15293, (2010)=18,500
APPROACH SLAB: 20'-0" Long (AS-1-81)
CROWN: 3/16"/ft.

BAYER BECKER ENGINEERS 1/7
Engineers Planners Surveyors
Fairfield, Ohio

SITE PLAN
BRIDGE NO. BUT-747-2.37
STATE ROUTE 747
OVER MILL CREEK



PROFILE ALONG @ RELOCATED S.R.747

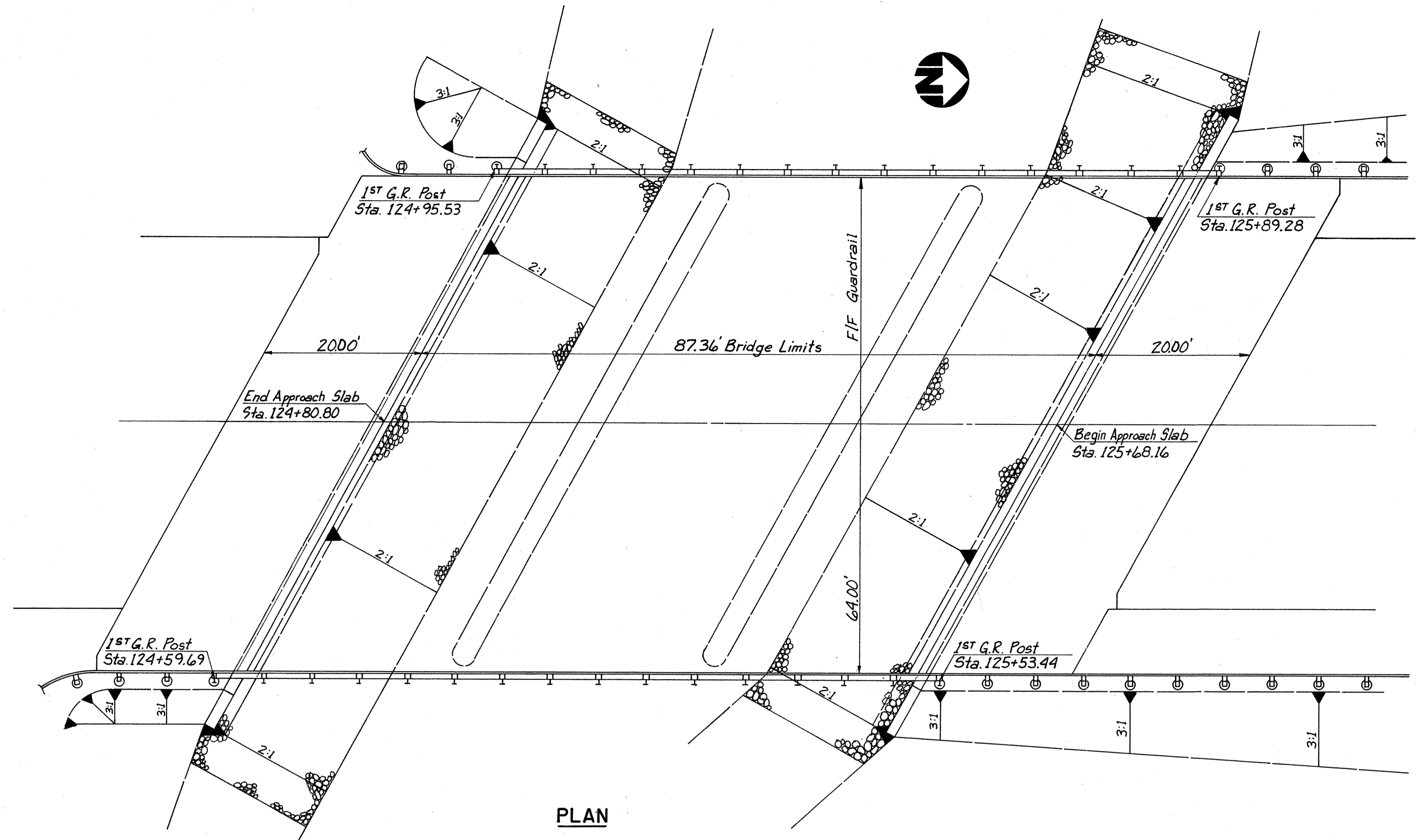
STA. 124+80.80 TO
BUTLER COUNTY STA. 125+68.16

DESIGN	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
RLG	MAR	MAR	GRS	JSD	2/28/92	

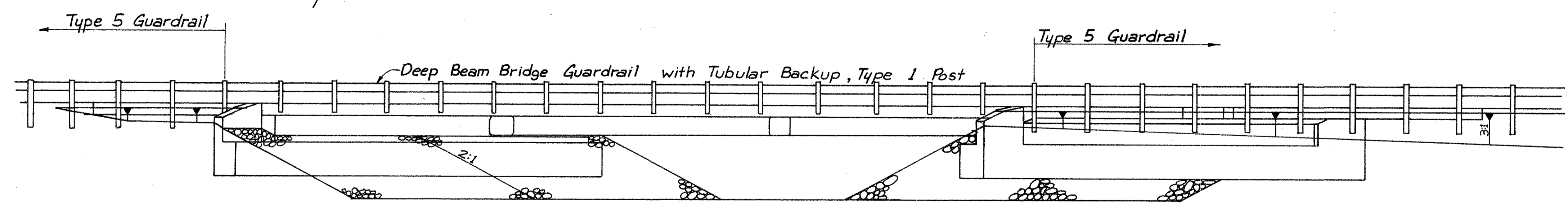
DATE	4-2-91	F.N.R.A. REGION	5	STATE	OHIO	PROJECT	
CHECKED	JFB						
DATE	4-18-91						

37
50

BUTLER COUNTY
BUT-747-2.12



PLAN



ELEVATION

BAYER BECKER ENGINEERS 2/7
Engineers Planners Surveyors
Fairfield, Ohio

GENERAL PLAN & ELEVATION
BRIDGE NO. BUT-747-2.37
STATE ROUTE 747
OVER MILL CREEK

STA. 124+80.80 TO
BUTLER COUNTY STA. 125+68.16

DESIGN	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
RLG	MAR	MAR	JFB	JSD	2/28/92	

ESTIMATED QUANTITIES

ITEM	EXT.#	TOTAL	UNIT	DESCRIPTION	ABUTS.	PIERS	SUPER	GEN.
202	11200	LUMP		PORTIONS OF STRUCTURES REMOVED				LUMP
503	11100	LUMP		COFFERDAMS, CRIBS & SHEETING				LUMP
503	21100	215	CU.YD.	UNCLASSIFIED EXCAVATION	215			
505	11100	LUMP		PILE DRIVING EQUIPMENT MOBILIZATION				LUMP
507	21101	924	LIN.FT.	12" CAST-IN-PLACE REINFORCED CONCRETE PILES, AS PER PLAN	924			
507	41101	960	LIN.FT.	14" CAST-IN-PLACE REINFORCED CONCRETE PILES, AS PER PLAN		960		
SPECIAL	50711200	206	LIN.FT.	PILE ENCASEMENT		206		
509	15800	87791	LBS.	EPOXY COATING REINFORCING STEEL, GRADE 60	12134	6625	69032	
511	32201	296	CU.YD.	CLASS S CONCRETE, SUPERSTRUCTURE, AS PER PLAN			296	
511	42500	25	CU.YD.	CLASS C CONCRETE, PIER CAP		25		
511	44000	111	CU.YD.	CLASS C CONCRETE, ABUTMENT INCLUDING FOOTING	111			
512	33300	26	SQ.YD.	TYPE A WATERPROOFING	26			
SPECIAL	51267500	46	SQ.YD.	SEALING OF CONCRETE SURFACES (SEE PROPOSAL NOTE)			46	
SPECIAL	51267502	43	SQ.YD.	SEALING OF CONCRETE SURFACES, EPOXY (SEE PROPOSAL NOTE)	43			
517	72200	187.5	LIN.FT.	RAILING (DEEP BEAM RAIL WITH STEEL TUBULAR BACKUP AND TYPE I STEEL POSTS AND ANCHOR BOLTS)			187.5	
518	21200	42	CU.YD.	POROUS BACKFILL WITH FILTER FABRIC	42			
518	41100	182	LIN.FT.	6" PERFORATED HELICAL CORRUGATED STEEL PIPE 707.01	182			
518	41200	24	LIN.FT.	6" NON-PERFORATED HELICAL CORRUGATED STEEL PIPE, INCLUDING SPECIALS, 707.01	24			
α 511	33404	296	CU.YD.	CLASS S CONCRETE, SUPERSTRUCTURE, USING SHRINKAGE COMPENSATING CEMENT (See Proposal Note)			296	
α 511	33410	LUMP		CLASS S CONCRETE, USING SHRINKAGE COMPENSATING CEMENT FOR PRE-PLACEMENT TESTING (See Proposal Note)			LUMP	
523	11100	3	HOUR	DYNAMIC LOAD TEST				3

DESIGN DATA

Design Loading HS-20-44 and Alternate Military Loading
 Concrete Class C Unit Stress 1333 psi (substructure)
 Concrete Class S Unit Stress 1500 psi (superstructure)
 The slab design is based on Class C Concrete. See Standard Drawing CS-2-73 for Design Data.
 Reinforcing Steel ASTM A615, A616, A617 - Grade 60 Unit Stress 20000 psi

PILE DESIGN LOAD

Design Load is 39 tons per pile, at abutments and 44 tons per pile at piers.

***ITEM 507, 14 & 12 INCH CAST-IN-PLACE REINFORCED CONCRETE PILES, AS PER PLAN*:**

Pile Wall Thickness: The responsibility of choosing and providing a satisfactory pile wall thickness for this project shall be borne by the Contractor except that the pile wall thickness shall not be less than 0.40 inch. If a pile wall thickness greater 0.40" is necessary to resist the pile installation driving stress, the Contractor shall make this determination and shall furnish a pile with an acceptable wall thickness. If monotube piles are used monotube piles shall have a minimum wall thickness of 0.38 inch.
Pile Hammer: The pile hammer used to install the cast-in-place piles shall have a State's Energy Rating of not less than 16,500 foot-pounds. This requirement does not relieve the Contractor from 108.5 which states that the Contractor is to provide sufficient equipment for prosecuting the work. Refer to "ODOT's Manual of Procedures for Structures" to obtain the State's Energy Rating.

ITEM SPECIAL - PILE ENCASEMENT: All piles for the capped pile piers shall be encased in Item 511 Class C concrete. The concrete shall be placed within a form that consists of polyethylene pipe (Supplemental Specification 944 dated June 6, 1989) or PVC pipe (Supplemental Specification 942 dated November 27, 1989). The encasement shall extend from 3 feet below the finished ground surface up to the concrete pier cap and shall be positioned so that at least 3 inches of concrete cover is provided around the exterior of the pile.

The length of the pile encasement shall be measured in feet along the length of the pile. This item includes all work and materials necessary to furnish the required encasement. Payment will be made at the contract unit price per linear foot of encasement approved in place.

***ITEM 518, POROUS BACKFILL WITH FILTER FABRIC:** Filter fabric 712.09 Type A, shall be placed between the 518 porous backfill material and the 203 embankment material to the limits as shown in the plans. The cost of the filter fabric will be paid for as an incidental item to be included with the unit price bid per cubic yard for the Item 518 Porous Backfill with filter fabric which shall include all labor, materials, equipment and incidentals necessary to complete this work.

511 Class S Concrete Superstructure, As Per Plan
 Concrete shall be cured by method (a) water curing

α These two items shall constitute one alternate bid to Class S concrete, superstructure, as per plan

DESIGN SPECIFICATIONS

This structure conforms to "Standard Specifications for Highway Bridges" adopted by the American Association of State Highway and Transportation Officials, 1989 and the Ohio "Supplement" to these specifications.

ITEM SPECIAL, SEALING OF CONCRETE SURFACES

An epoxy concrete sealer shall be applied to the abutment concrete surfaces shown on sheet 4. An epoxy concrete sealer or silane shall be applied to the superstructure concrete surfaces shown on sheet 6. See proposal note for preparation requirements, application rates, material requirements, and application procedures.

REFERENCE SHALL BE MADE TO STANDARD DRAWINGS:

- CPA-2-73 DATED 4-10-73
- CPP-2-73 DATED 4-10-73
- CS-2-73 DATED 4-10-73
- AS-1-81 DATED 11-27-81
- DBR-2-73 DATED 4-10-73

REFERENCE SHALL BE MADE TO SUPPLEMENTAL SPECIFICATION

- 942 DATED 3-18-92
- 944 DATED 3-18-92

DECK PROTECTION METHOD

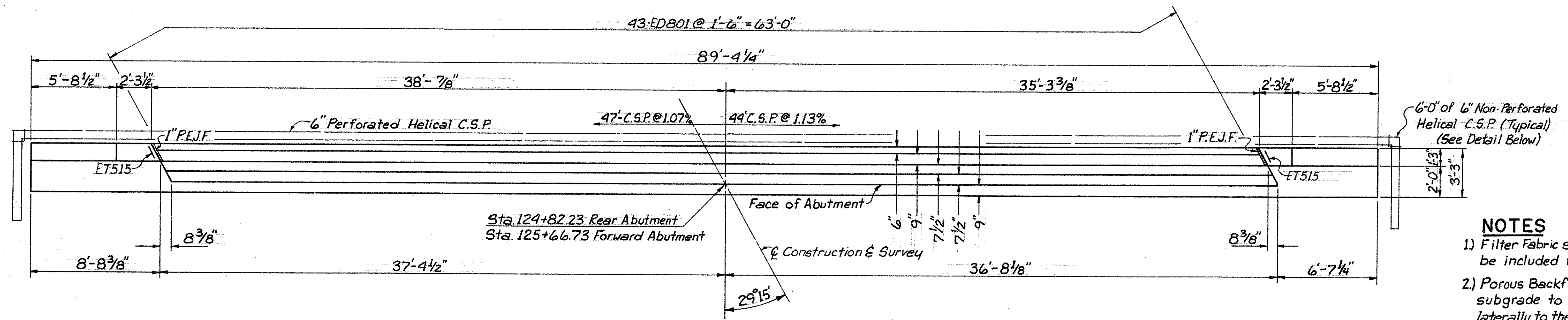
Epoxy coated reinforcing steel, top and bottom mats with 2 1/2" of cover over the top mat and sealing of concrete surfaces.

BAYER BECKER ENGINEERS 3/7
 Engineers Planners Surveyors
 Fairfield, Ohio

ESTIMATED QUANTITIES AND GENERAL NOTES
 BRIDGE NO. BUT-747-2.37
 STATE ROUTE 747
 OVER MILL CREEK

STA. 124+80.80 TO
 STA. 125+68.16

DESIGN	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
MAR	MAR	MAR	JFB	JSD	2/28/92	



PLAN

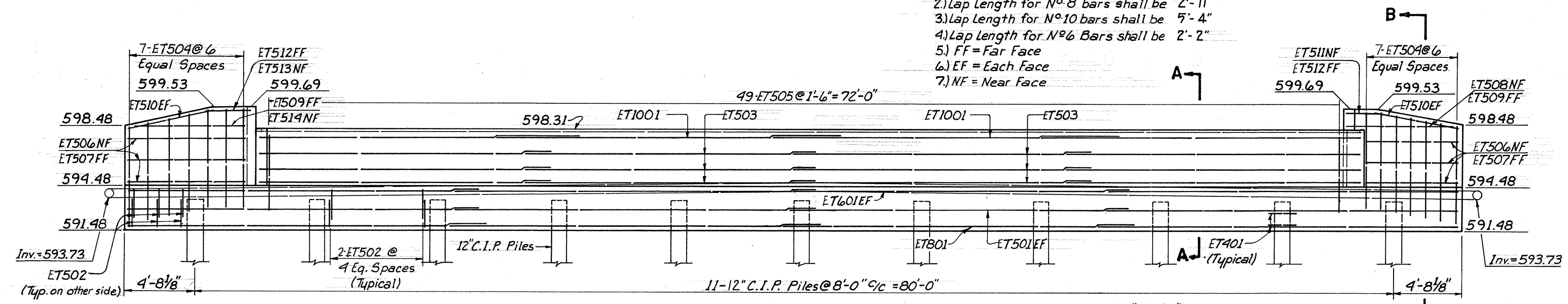
FOR ADDITIONAL DETAILS & NOTES SEE STANDARD DRAWING CPA-2-73

REINFORCING STEEL NOTES

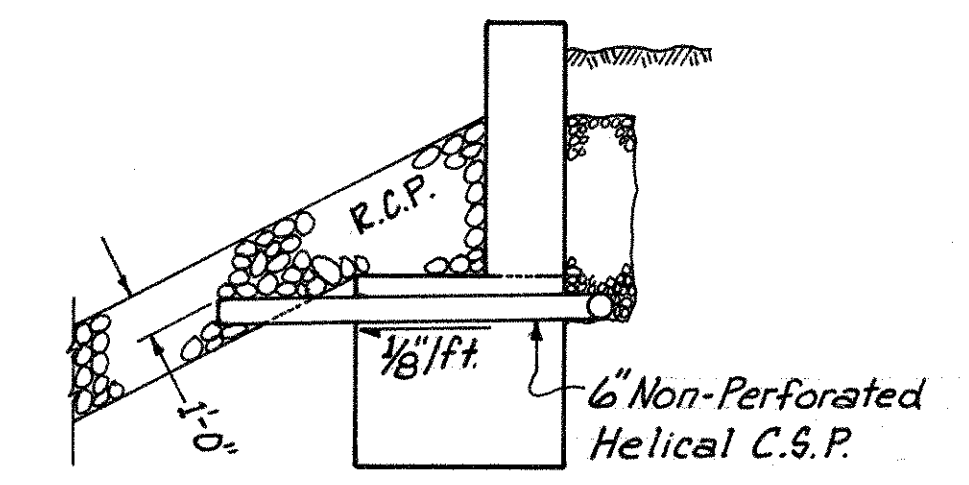
- 1) Lap Length for N^o.5 bars shall be 1'-10"
- 2) Lap Length for N^o.8 bars shall be 2'-11"
- 3) Lap Length for N^o.10 bars shall be 7'-4"
- 4) Lap Length for N^o.6 Bars shall be 2'-2"
- 5) FF = Far Face
- 6) EF = Each Face
- 7) NF = Near Face

NOTES

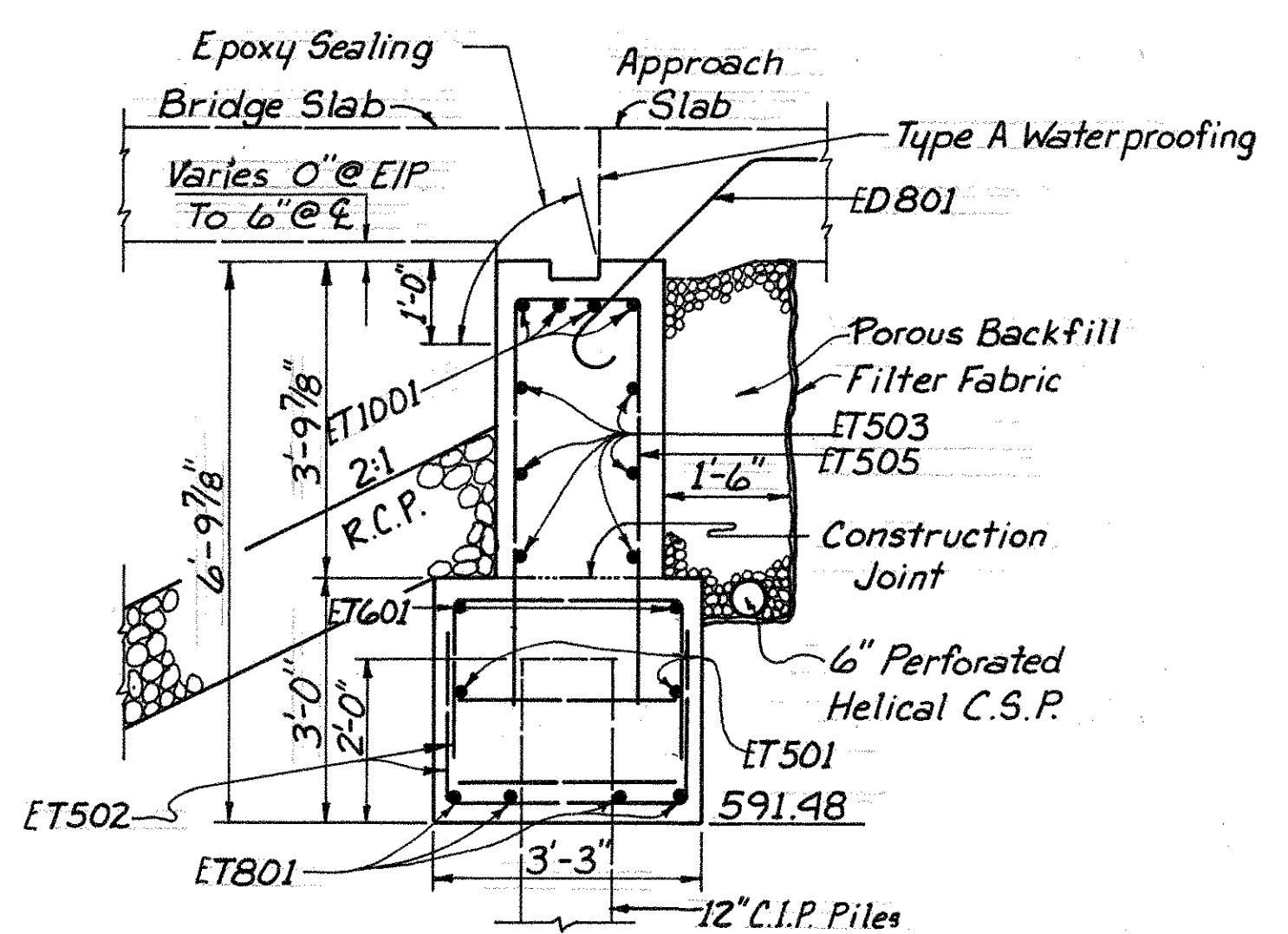
- 1) Filter Fabric shall conform to 712.09, Type A and shall be included with porous backfill for payment.
- 2) Porous Backfill shall extend from the plane of the subgrade to one foot below embankment surface, and laterally to the ends of the wingwalls.
- 3) 1" Prefomed Expansion Joint Filler shall be included with approach slab for payment.
- 4) Wingwall Backfill shall not be placed above the adjacent bridge seat elevation until the deck slab has cured.



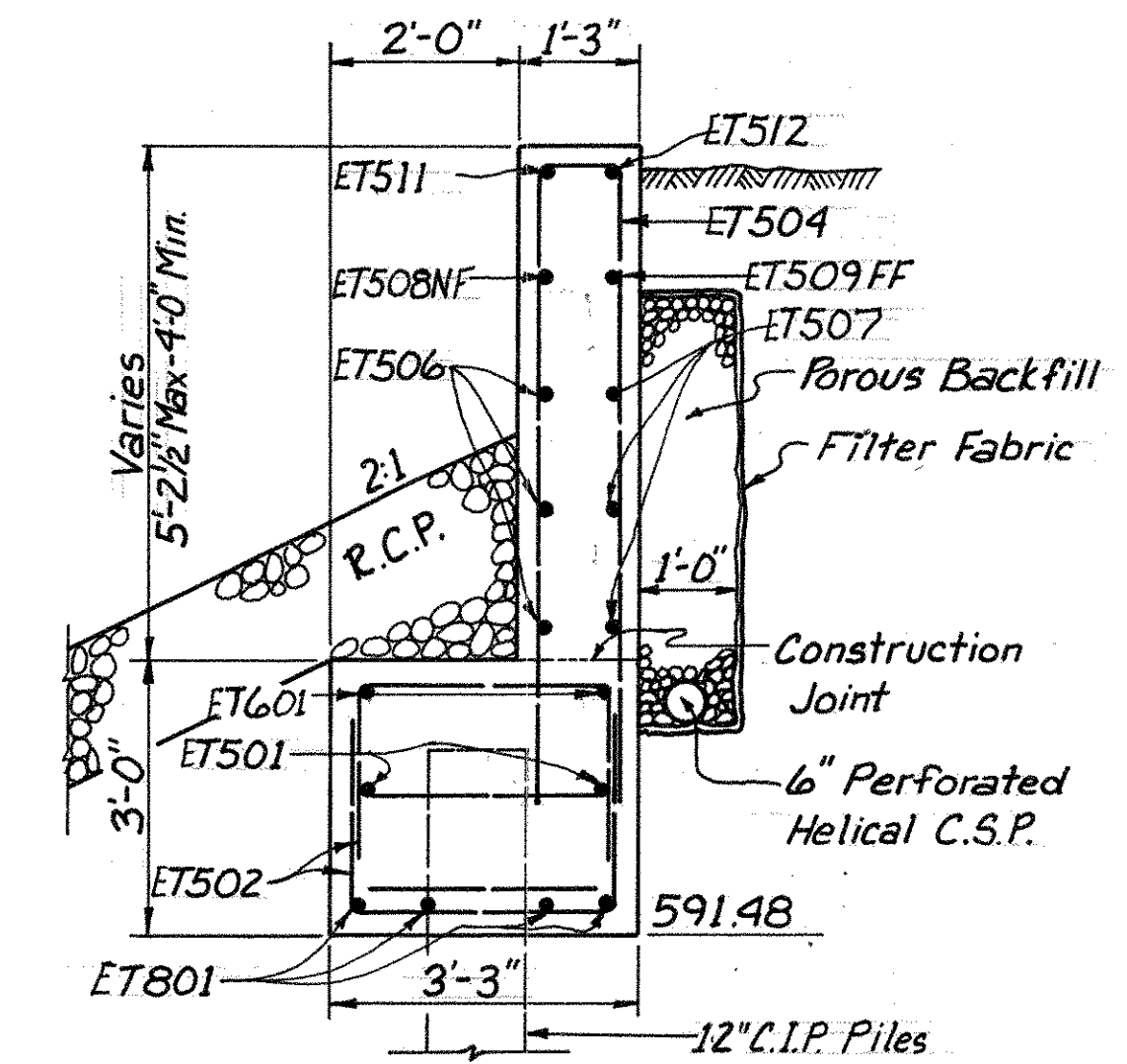
ELEVATION



TERMINATION OF C.S.P.



SECTION A-A



SECTION B-B

BAYER BECKER ENGINEERS 4/7
 Engineers Planners Surveyors
 Fairfield, Ohio

ABUTMENT DETAILS

BRIDGE NO. BUT-747-2.37
 STATE ROUTE 747
 OVER MILL CREEK

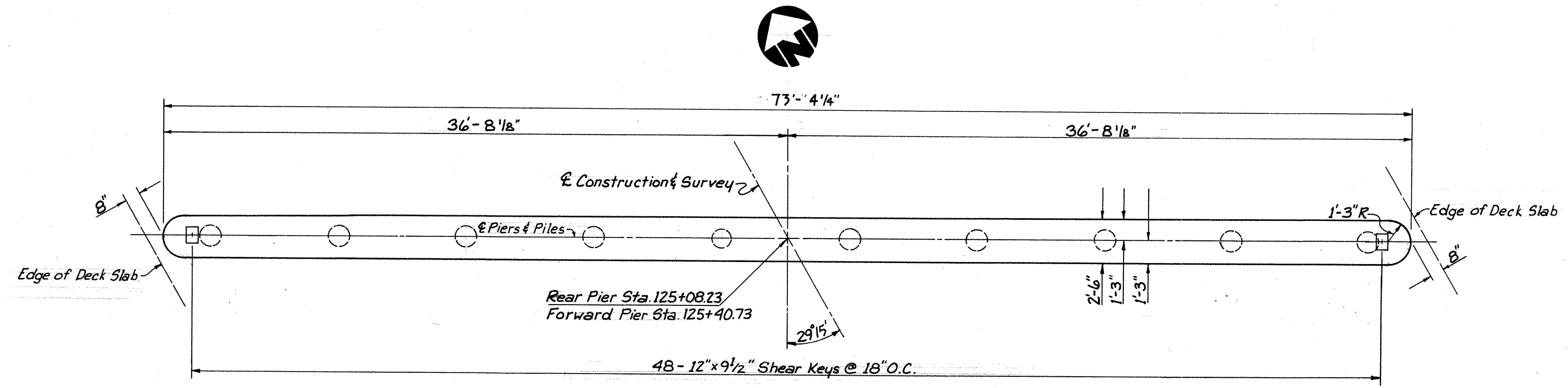
BUTLER COUNTY STA. 124+80.80 TO
 STA. 125+68.16

DESIGN	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
MAR	MAR	MAR	JFB	JSD	2/28/92	

DATE	M.A.R.	F.H.W.A.	STATE	PROJECT
4-2-91		REGION		
CHECK	JFB	5	OHIO	
DATE	4-18-91			

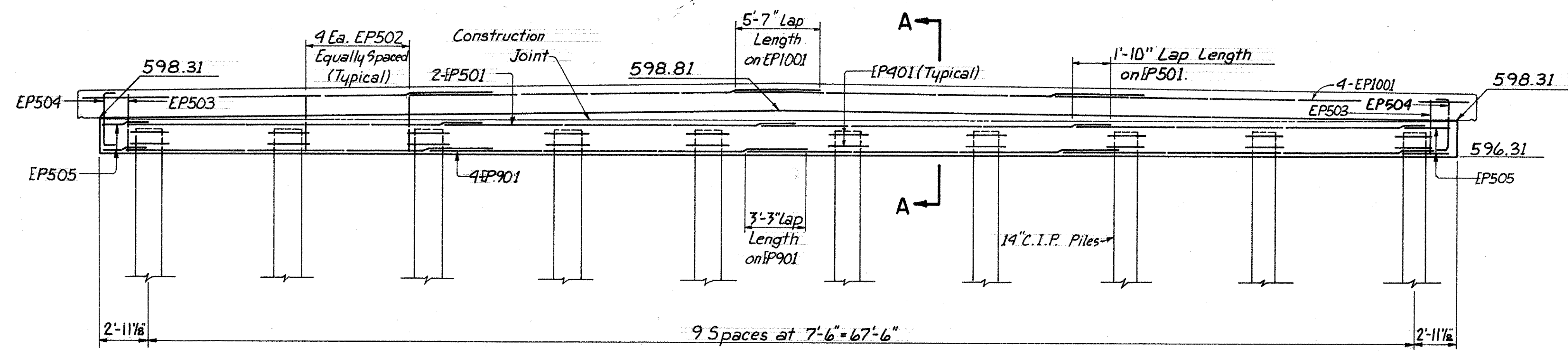
40
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BUTLER COUNTY
BUT-747-2.12

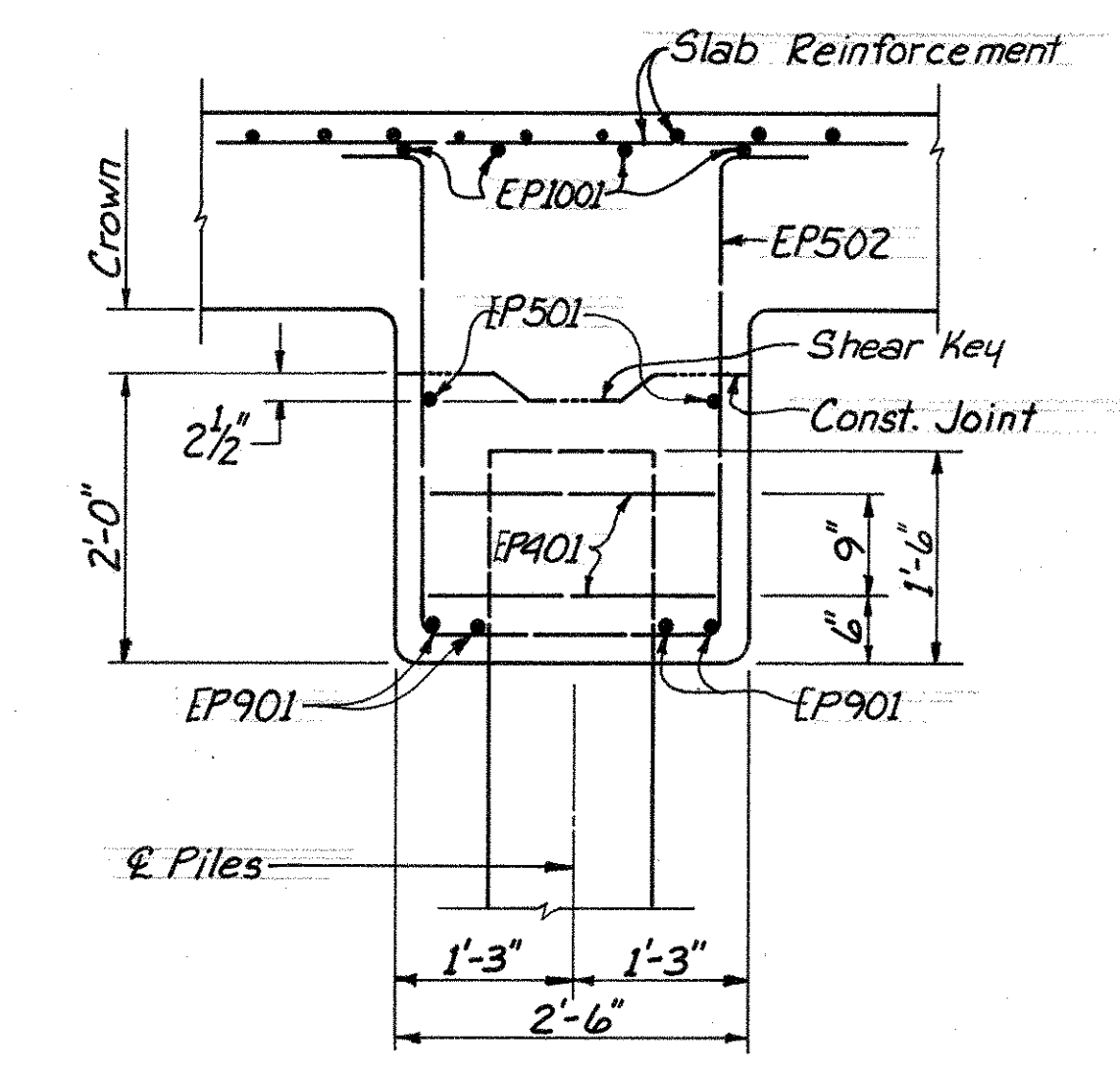


PLAN

FOR ADDITIONAL DETAILS AND NOTES
SEE STANDARD DRAWING CPP-2-73.



ELEVATION



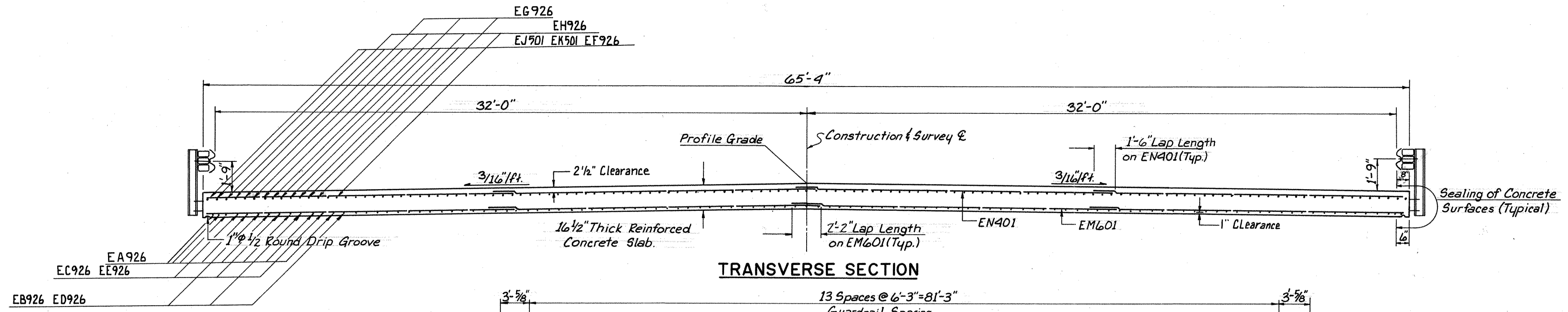
SECTION A-A

BAYER BECKER ENGINEERS 5/7
Engineers Planners Surveyors
Fairfield, Ohio

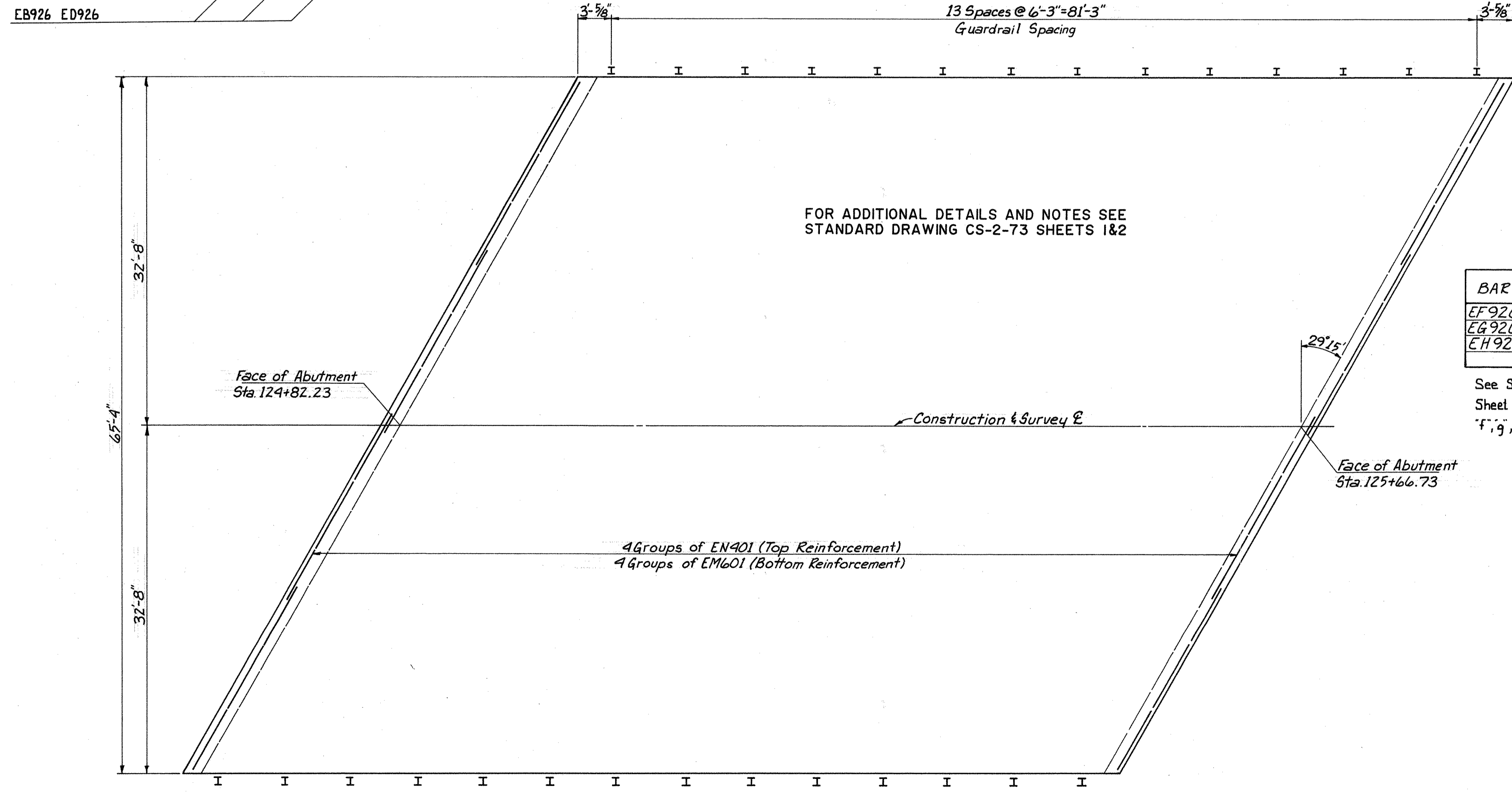
PIER DETAILS
BRIDGE NO. BUT-747-2.37
STATE ROUTE 747
OVER MILL CREEK

BUTLER COUNTY STA. 124+80.80 TO
STA. 125+68.16

DESIGN	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
MAR	MAR	MAR	JFB	JSD	2/28/92	



TRANSVERSE SECTION



FOR ADDITIONAL DETAILS AND NOTES SEE
STANDARD DRAWING CS-2-73 SHEETS 1&2

BAR	Table Dimension Label	Length
EF926	f	10'-4"
EG926	g	5'-8"
EH926	h	4'-2"

See Standard Drawing CS-2-73, Dated 4-10-73,
Sheet 1 of 2 for Diagram Showing Locations of
"f", "g", and "h" Dimensions.

PLAN

BAYER BECKER ENGINEERS 6/7
Engineers Planners Surveyors
Fairfield, Ohio

SUPERSTRUCTURE DETAILS
BRIDGE NO. BUT-747-2.37
STATE ROUTE 747
OVER MILL CREEK

BUTLER COUNTY STA. 124+80.80 TO
STA. 125+68.16

DESIGN	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
MAR	MAR	MAR	JFB	JSD	2/28/92	

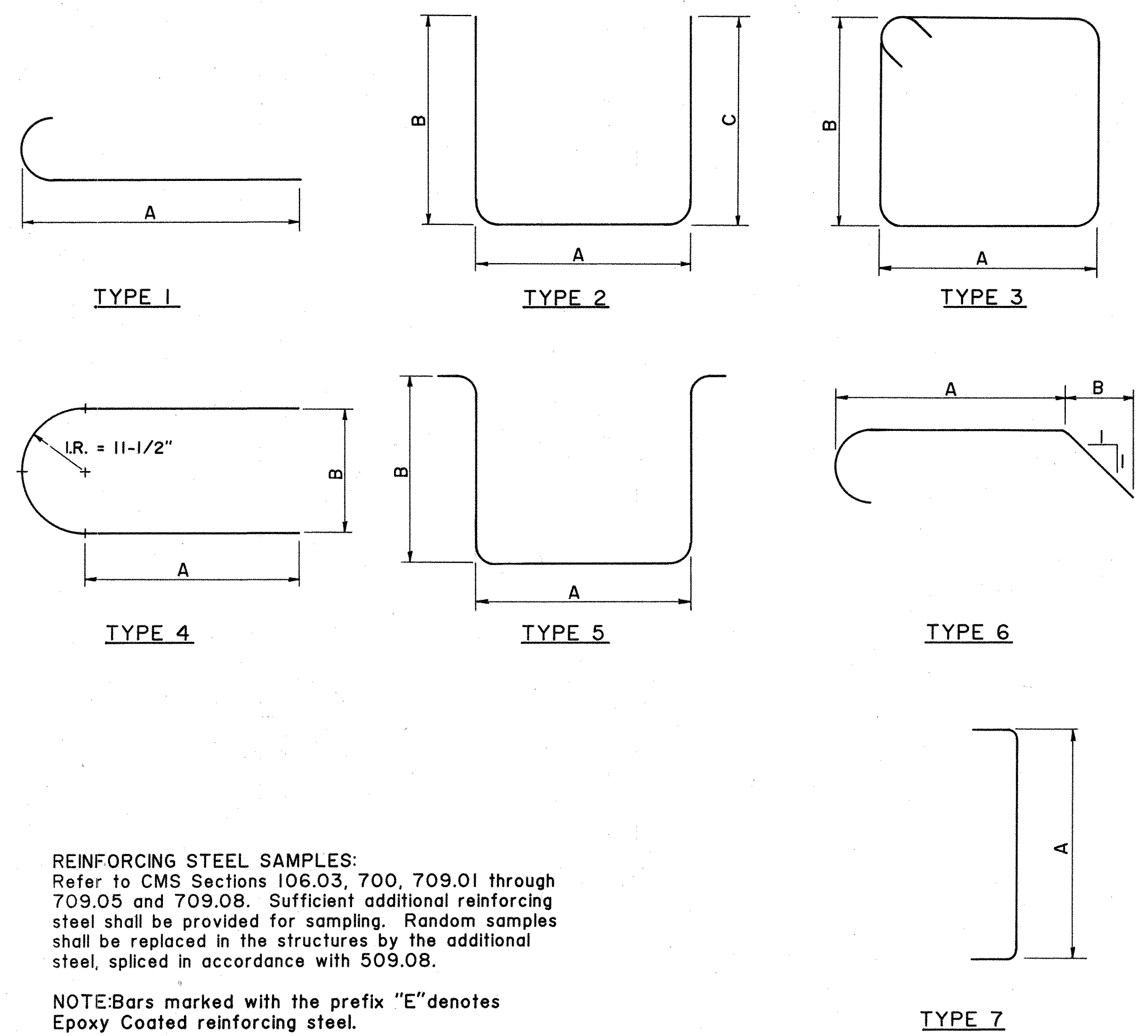
REINFORCING STEEL LIST

MARK	NO.	LENGTH	WEIGHT	TYPE	DIMENSIONS					
					A	B	C	D	E	F
REAR & FORWARD ABUTMENT										
ET401	44	9'-3 1/2"	273	3	1'-9"	2'-7 3/4"				
ET501	16	23'-8"	395	STR						
ET502	224	6'-10"	1596	2	2'-11"	2'-1"	2'-1"			
ET503	48	19'-8"	985	STR						
ET504	28	13'-8"	399	2	11"	6'-6"	6'-6"			
ET505	98	11'-7"	1184	2	1'-8"	5'-1"	5'-1"			
ET506	12	10'-0"	125	STR						
ET507	12	7'-6"	94	STR						
ET508	2	6'-9"	14	STR						
ET509	4	7'-6"	31	STR						
ET510	8	5'-7"	47	STR						
ET511	2	1'-4"	3	STR						
ET512	4	1'-10"	8	STR						
ET513	2	2'-9"	6	STR						
ET514	2	8'-2"	17	STR						
ET515	4	13'-9"	57	2	1'-0"	6'-6"	6'-6"			
ET601	16	23'-11"	575	STR						
ET801	32	24'-6"	2094	STR						
ET1001	32	22'-3"	3064	STR						
ET901	86	5'-1"	1167	6	2'-9"	1'-1"				
			12134							

REINFORCING STEEL LIST

MARK	NO.	LENGTH	WEIGHT	TYPE	DIMENSIONS					
					A	B	C	D	E	F
REAR & FORWARD PIERS										
EP401	40	8'-0"	214	3	2'-0 1/4"	1'-9"				
EP501	16	19'-2"	320	STR						
EP505	8	6'-4"	53	4	1'-7"	2'-0 1/4"				
EP901	32	20'-1"	2185	STR						
			2772							
EP502	72	8'-9"	657	5	2'-2"	2'-9 1/2"				
EP503	4	8'-7"	36	5	2'-0"	2'-9 1/2"				
EP504	4	3'-9 1/2"	16	7	2'-9 1/2"					
EP1001	32	22'-10"	3144	STR						
			7853							
SUPERSTRUCTURE										
EA926	177	31'-1"	18706	STR						
EB926	56	22'-10"	4347	1	21'-7"					
EC926	56	21'-5"	4077	1	20'-2"					
ED926	28	21'-0"	1999	STR						
EE926	28	17'-11"	1706	STR						
EF926	134	27'-6"	12529	STR						
EG926	66	18'-11"	4245	STR						
EH926	66	16'-2"	3628	STR						
EJ501	134	19'-0"	2656	STR						
EK501	67	9'-9"	682	STR						
EM402	140	2'-10"	267	2	1'-0"	1'-0"	1'-0"			
EN401	348	19'-8 1/2"	4581	STR						
EM601	316	20'-3"	9611	STR						
			69032							

BENDING DIAGRAMS



REINFORCING STEEL SAMPLES:
Refer to CMS Sections 106.03, 700, 709.01 through 709.05 and 709.08. Sufficient additional reinforcing steel shall be provided for sampling. Random samples shall be replaced in the structures by the additional steel, spliced in accordance with 509.08.

NOTE: Bars marked with the prefix "E" denotes Epoxy Coated reinforcing steel.

BAYER BECKER ENGINEERS 7/7
Engineers Planners Surveyors
Fairfield, Ohio

REINFORCING STEEL LIST
BRIDGE NO. BUT-747-2.37
STATE ROUTE 747
OVER MILL CREEK

STA. 124+80.80 TO
STA. 125+68.16

DESIGN	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
MAR	MAR	RTK	JFB	JSD	2/28/92	

CENTERLINE SURVEY PLAT

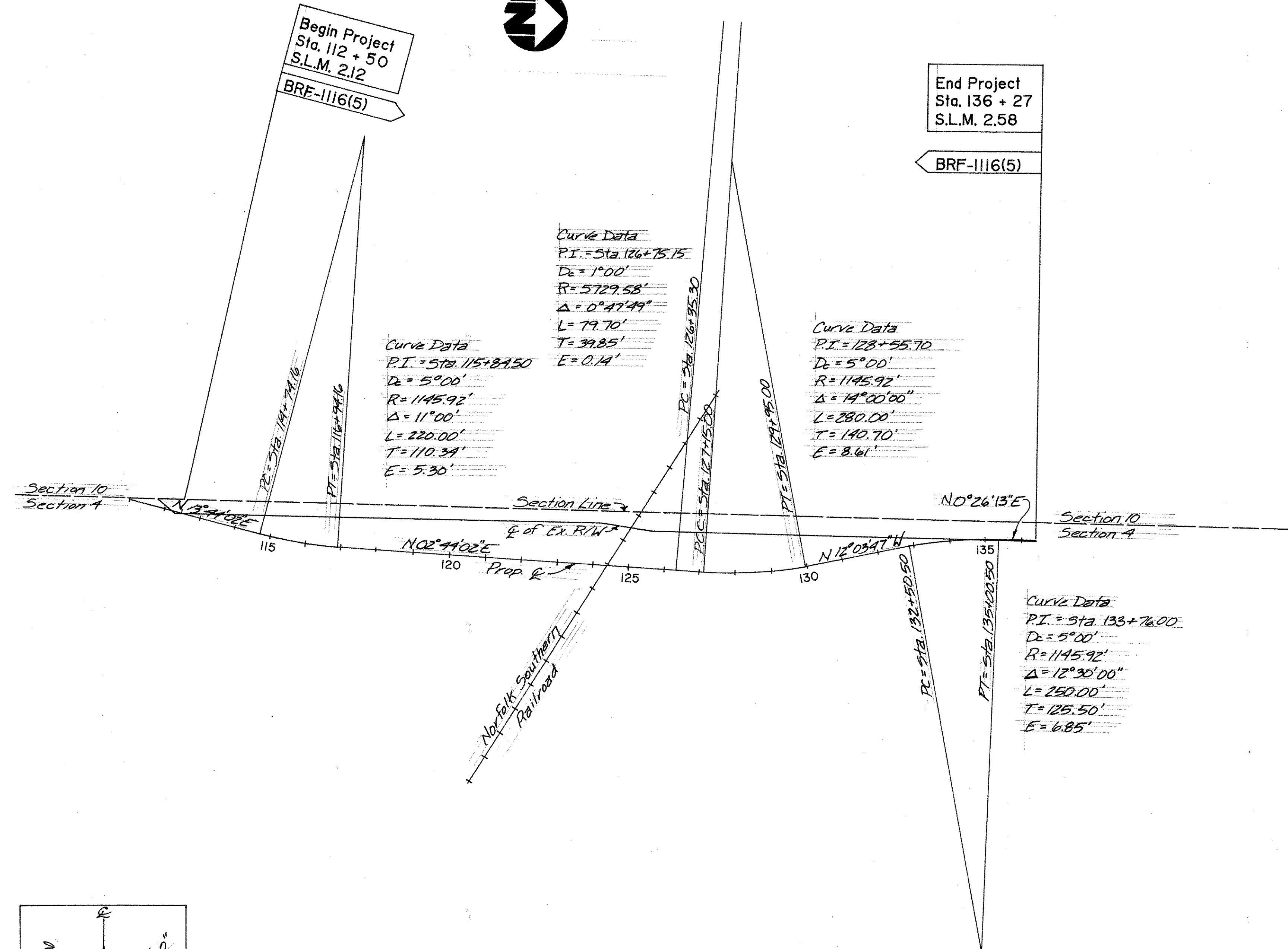
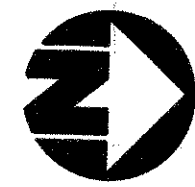
PID 9784

STATE JOB No.	CALC CAR DATE 12-2-91	F.H.W.A. REGION	STATE	PROJECT
0815B(o)	CHECK CAR DATE 2-18-92	5	OHIO	

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1
8

Sections 4 & 10
T2, R2
Union Township
Butler County, Ohio



APPROVED _____
District Deputy Director of Transportation

DATE _____

RECEIVED _____ 19 ____

RECORDED _____ 19 ____

VOLUME _____ PAGE _____

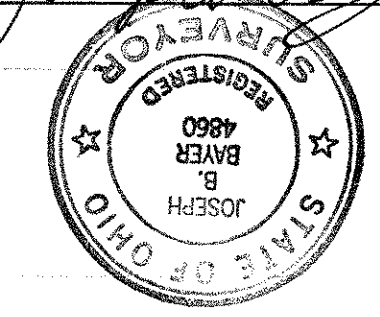
SIGNED _____
Butler County Recorder

SIGNED _____
Butler County Engineer

DATE _____ 19 ____

I HEREBY CERTIFY THAT THIS PLAT IS A TRUE DELINEATION OF A SURVEY MADE FOR THE BUTLER COUNTY ENGINEER

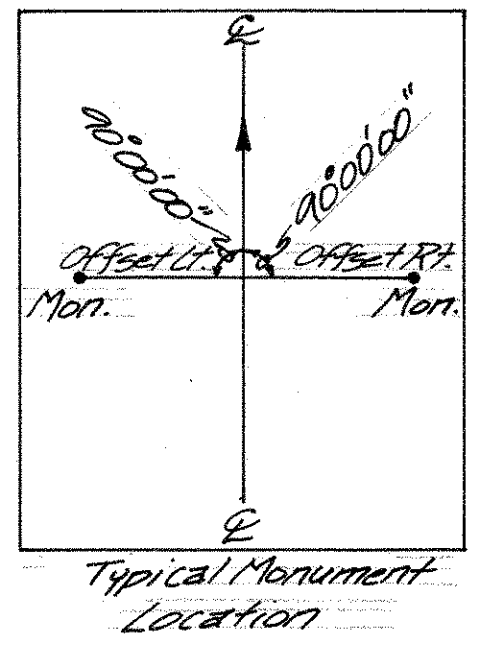
Joseph B. Huber DATE 4-1-92



Centerline Reference Monuments are to be set at the following locations by a registered surveyor

Station	Offset	
	Lt.	Rt.
118+50.00	110'	80'
122+00.00	115'	90'
126+35.30	110'	90'

609 Reference Monument
Total = 6



DATE	REVISIONS	
	REMARKS	BY

PROPERTY MAP

Sections 4 & 10
T2, R2
Union Township
Butler County, Ohio



PID 9784	STATE JOB No.	CALC. DATE	REG. NO.	STATE	PROJECT
	08158(0)	CAR 12-2-91 CHECK DATE 3-18-92	5	OHIO	

44
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2
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BUTLER COUNTY
BUT-747-2.12
BRS-III6(5)

Notes: The locations of the underground utilities shown on the plans are as obtained from the owners of the utility as required by Sec. 153.64 O.R.C.

Reference point information is contained in the Construction Plan.

LEGEND

- Construction & Survey
- Section Line
- Property Line
- Proposed R/W
- Existing R/W
- Buildings
- Warranty Deed
- Temporary Right of Way

UTILITY OWNERSHIP

SANITARY SEWERS & WATER LINES

Butler County Sewer and Water
130 High Street
Hamilton, Ohio 45011
(513) 867-5767

GAS & ELECTRIC

The Cincinnati Gas & Electric Co.
P.O. Box 960
Cincinnati, Ohio 45202
(513) 632-2482

TELEPHONE

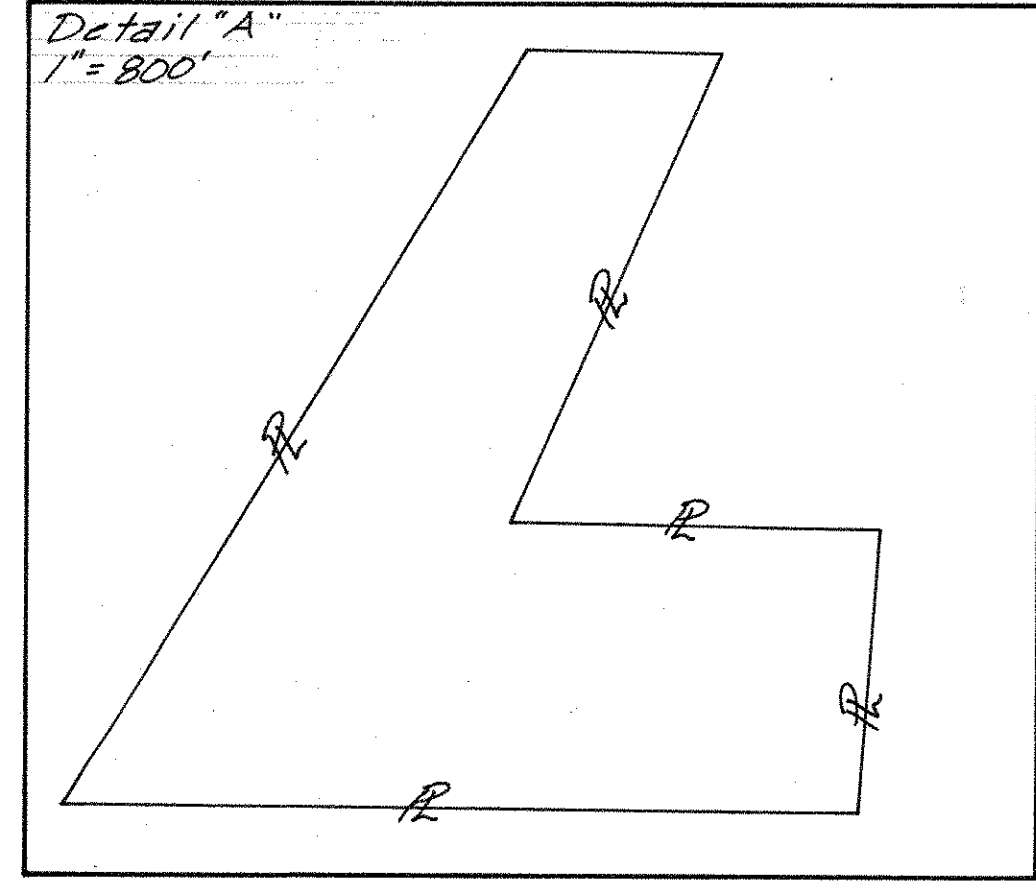
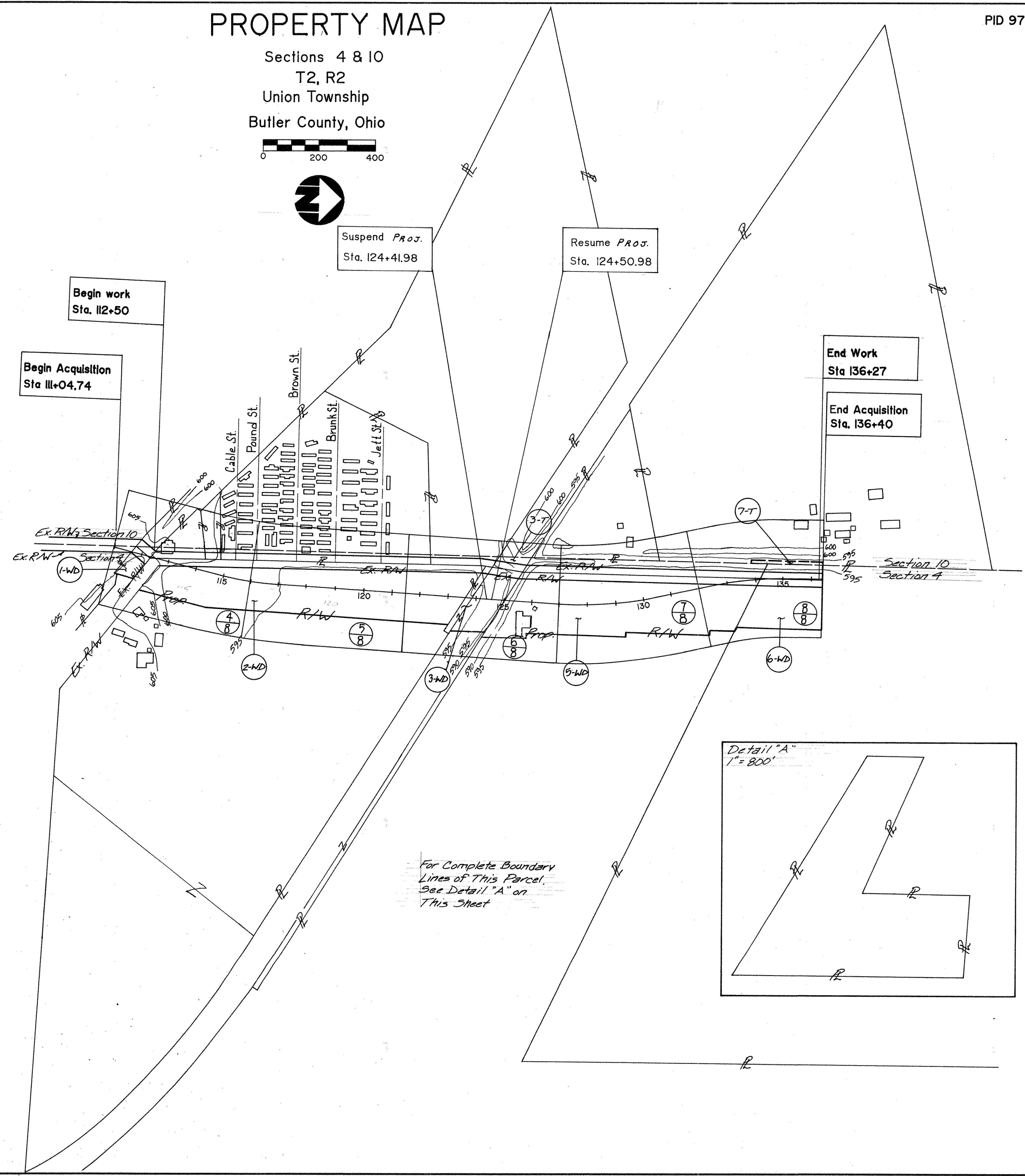
Cincinnati Bell Telephone
1717 Dixie Highway
Ft. Wright, Kentucky 41011
(606) 344-7060

CABLE TELEVISION

Warner Cable
11252 Cornell Park Drive
Cincinnati, Ohio 45242
(513) 489-5042

WATER

City of Hamilton
Monument & High Street
Hamilton, Ohio 45011
(513) 868-5966



For Complete Boundary Lines of This Parcel, See Detail "A" on This Sheet

2
8

SUMMARY OF ADDITIONAL RIGHT OF WAY REQUIRED

PARCEL	OWNER	SHEET No.	OWNERS REC.		RECORD AREA ACRES	TOTAL P.R.O. ACRES	GROSS TAKE ACRES	P.R.O. IN TAKE ACRES	NET TAKE ACRES	STRUC.	NET RESIDUE		TYPE FUNDS	REMARKS AND PERSONALTY	AS ACQUIRED		AUDITORS PARCEL NUMBER
			BK.	PAGE							LEFT ACRES	RIGHT ACRES			BOOK	PAGE	
1-WD	Board of County Commissioners of Butler County	13	777	201	8.195	0.074	0.194	0.074	0.120		0.043	7.958	80% Fed				M-5610-003-000-010
2-WD	Munafó Seven, Inc.	13	1650	454	285043	1.182	4.904	0.776	4.128			23.194	20% State				M-5610-003-000-012
3-WD	Norfolk Southern Corporation (Formerly The Cincinnati & Richmond Railroad Company)	15	93	451	9.908	0.171	0.952	0.171	0.781		2.360	6.596					
3-T	Norfolk Southern Corporation (Formerly The Cincinnati & Richmond Railroad Company)	15	91	632	9.78		0.069		0.069					Channel Work			
5-WD	Leroy P. Jacquemin	15	715	455	127.25	0.937	5.019	0.937	4.082	P		122.231		Old Barn, Shed, & Billboards			M-5610-003-000-005
6-WD	Charles H. Shepherd, Etal.	17	778	411	154	1639	1.290	0.255	1.035			151.326	80% Fed				M-5610-003-000-008
7-T	Cappinelli's Glendale Nurseries, Inc.	17	1310	465	59.846		0.057		0.057				20% State	Channel Work			M-5610-008-000-002

TOTAL NUMBER OF:

- 6 OWNERSHIPS
- 0 TOTAL TAKES
- 1 OWNERSHIPS WITH STRUCTURES INVOLVED

Note: Time duration for temporary easements shall be 24 months, beginning at the time of initial construction.

RECORDING INFORMATION

Butler County Sewer and Water

Leroy Jacquemin (Bk. 715, Pg. 456): Bk. 1364, Pg. 404
 Charles H. Shepherd, Etal. (Bk. 778, Pg. 411): Bk. 1364, Pg. 410

Cincinnati Gas and Electric Co. -- Gas

Leroy Jacquemin (Bk. 715, Pg. 456): Vol. 1660, Pg. 602
 Charles H. Shepherd, Etal. (Bk. 778, Pg. 411): Vol. 1652, Pg. 204

Cincinnati Gas and Electric Co. -- Electric

Munafó Seven (Vol. 1650, Pg. 454): Misc. Bk. 8, Pg. 392

Easement Overlap Area

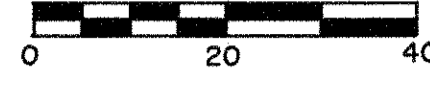
Parcel	C.G. & E. Gas	Butler Co. Sewer & Water	C.G. & E. Electric	Total
	Acres	Acres	Acres	Acres
2-WD			0.043	0.043
7-WD	0.953	0.451		1.004
6-WD	0.174	0.107		0.281

Note: The locations of the underground utilities shown on the plans are as obtained from the owners of the utility as required by section 153.64 O.R.C.

The right of way for this project will be acquired and provided by the State of Ohio.

RIGHT-OF-WAY PLAN

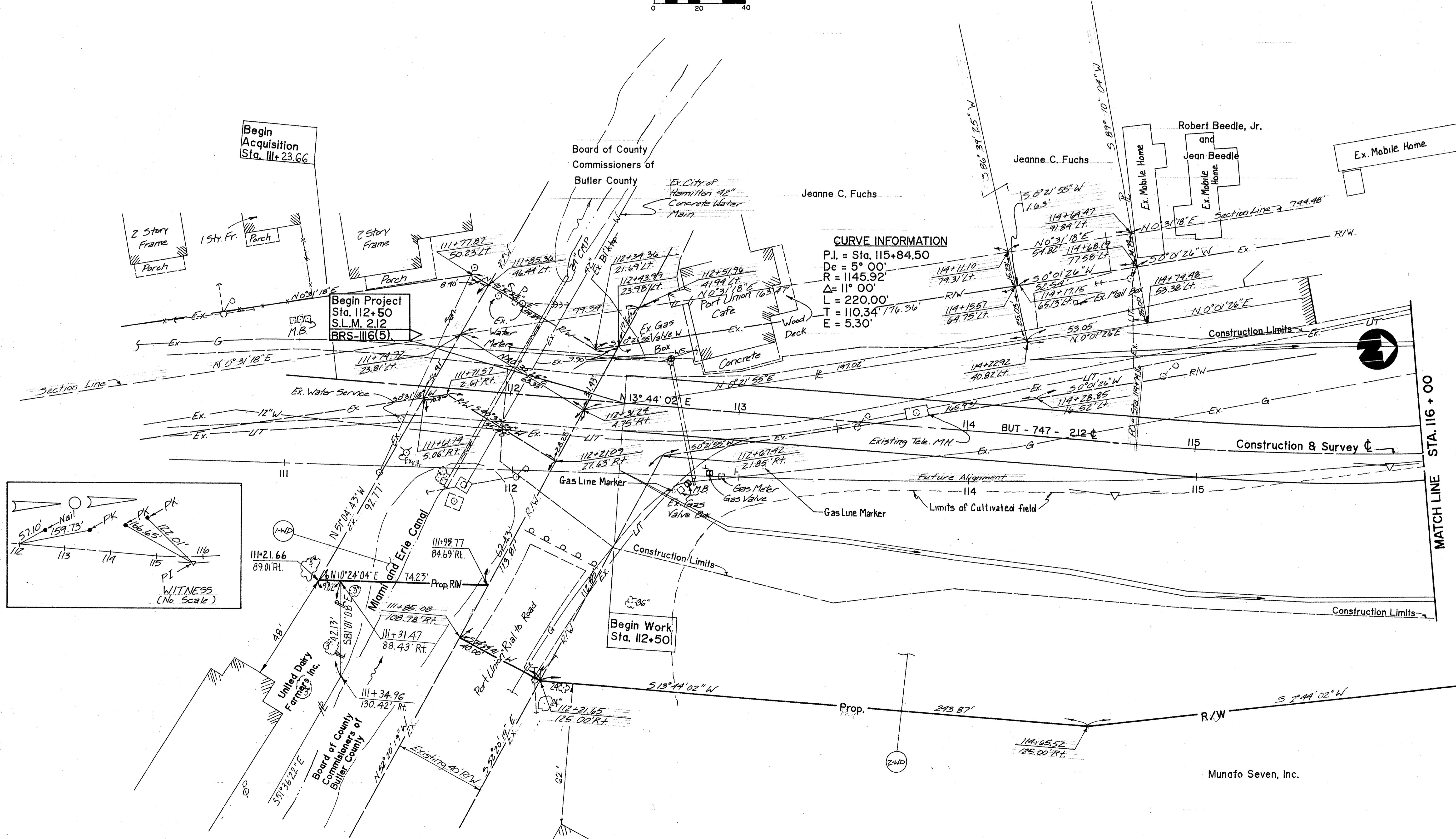
Sections 4 & 10
T2, R2
Union Township
Butler County, Ohio



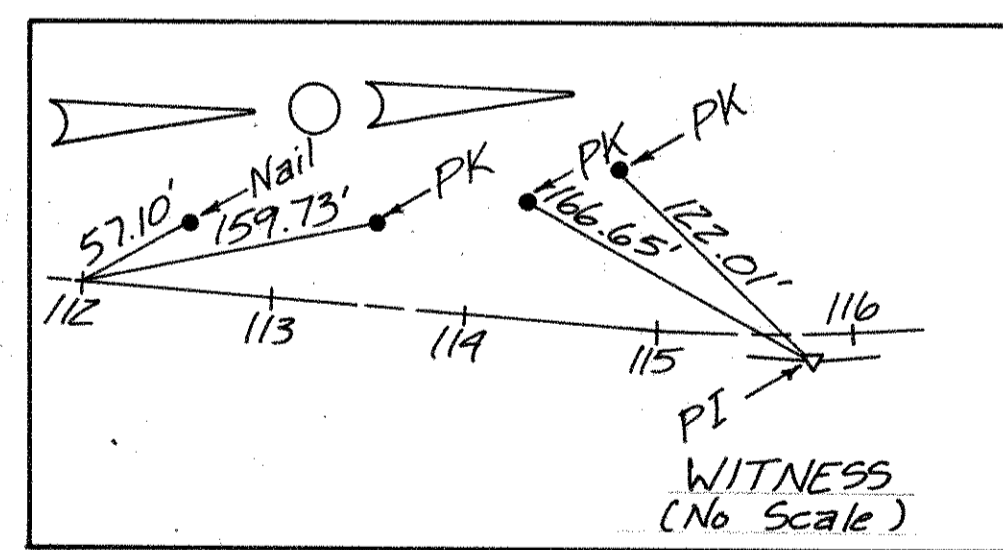
PID 9784	STATE JOB No.	CALC. DATE	CAR DATE	F.H.W.A. REGION	STATE	PROJECT
	08158(0)	11-1-91	3-18-92	5	OHIO	

BUTLER COUNTY
BUT-747-212
BRS-III6(5)

46
50
4
8



CURVE INFORMATION
 P.I. = Sta. 115+84.50
 Dc = 5° 00'
 R = 1145.92'
 Δ = 11° 00'
 L = 220.00'
 T = 110.34' / 76.36'
 E = 5.30'



4
8

RIGHT-OF-WAY PLAN

Sections 4 & 10
T2, R2
Union Township
Butler County, Ohio

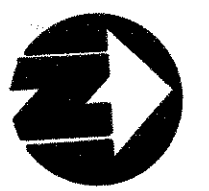
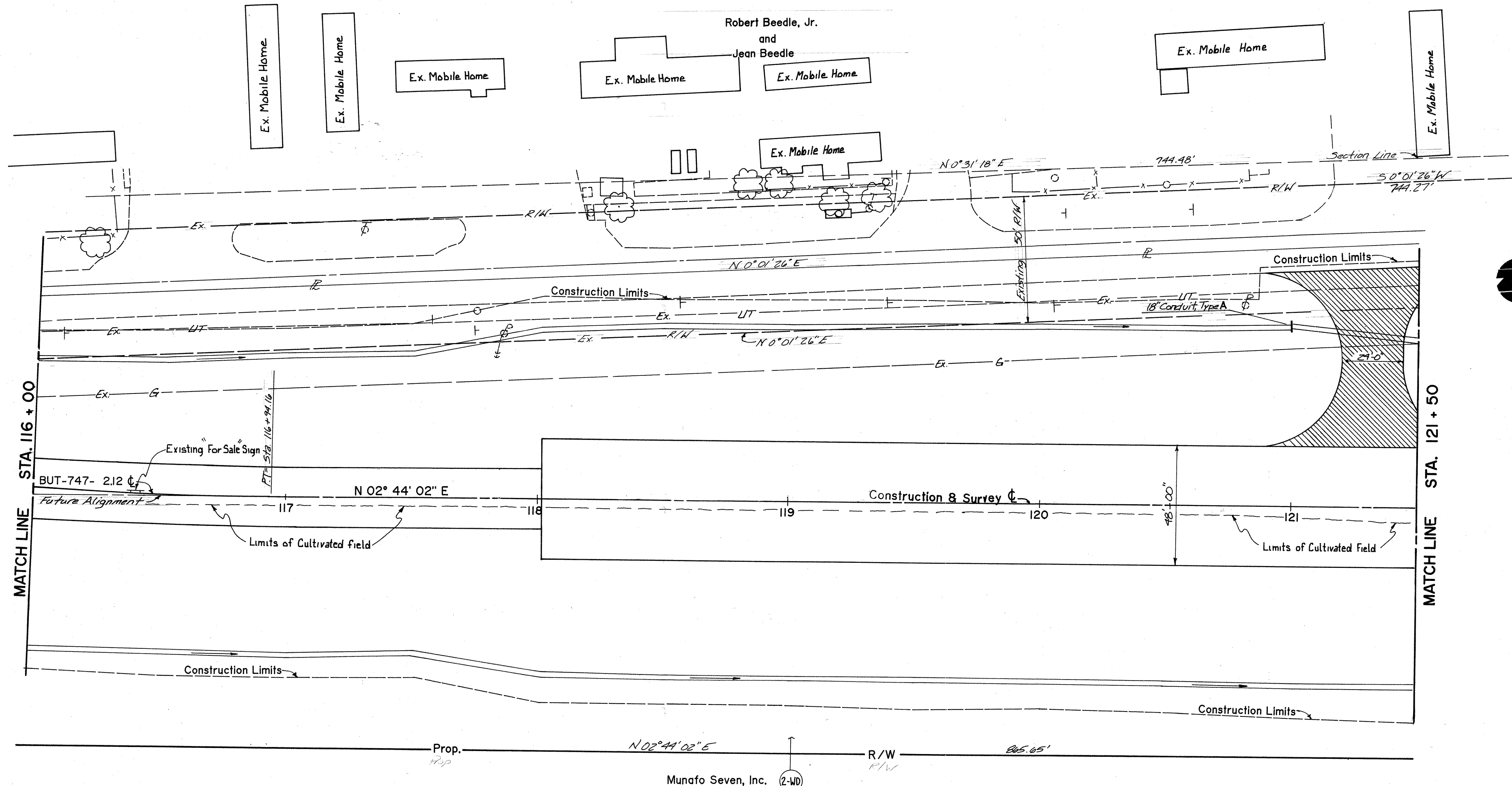


PID 9784

STATE JOB No.	CALC. DATE	CAR DATE	F.H.W.A. REGION	STATE	PROJECT
08158(0)	11-1-91	3-18-92	5	OHIO	

BUTLER COUNTY
BUT-747-212

47
50
5
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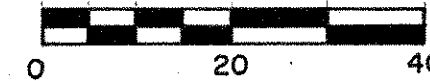


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RIGHT-OF-WAY PLAN

Sections 4 & 10
T2, R2
Union Township
Butler County, Ohio



Norfolk Southern Corporation
(formerly The Cincinnati & Richmond
Railroad Company)

PID 9784

STATE JOB No.	CALC. DATE	CAR. DATE	F.H.W.A. REGION	STATE	PROJECT
08158(0)	11-91	11-92	5	OHIO	

BUTLER COUNTY
BUT-747-212

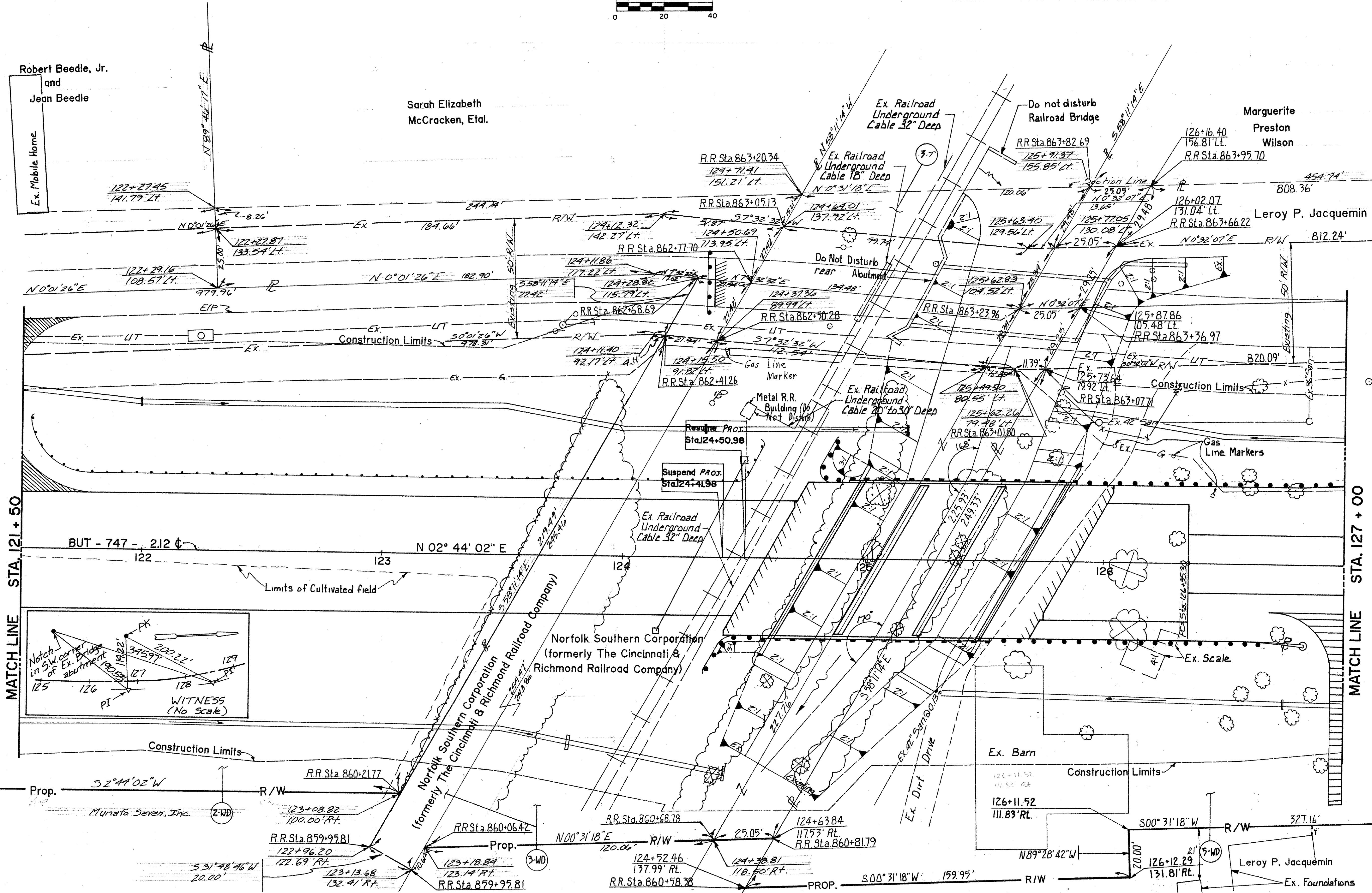
48
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Robert Beedle, Jr.
and
Jean Beedle

Sarah Elizabeth
McCracken, Etal.

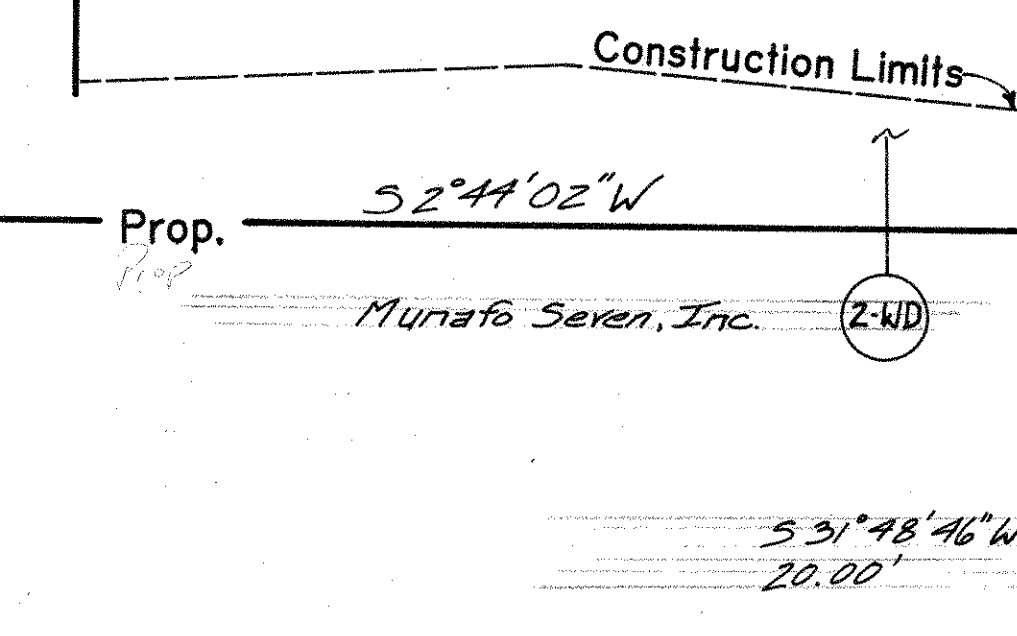
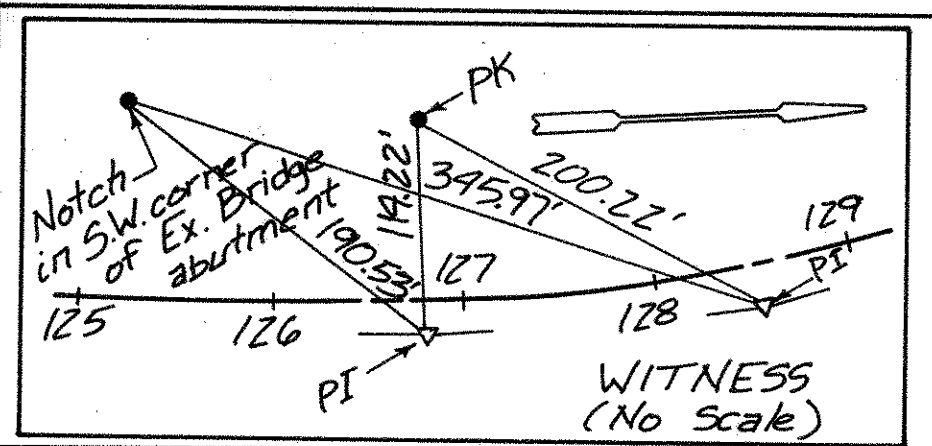
Marguerite
Preston
Wilson

Leroy P. Jacquemin



MATCH LINE STA. 121 + 50

MATCH LINE STA. 127 + 00



Sta. 121+50 to Sta. 127+00

RIGHT-OF-WAY PLAN

Sections 4 & 10
T2, R2
Union Township
Butler County, Ohio



PID 9784

STATE JOB No.	CAR DATE 11-1-97	F.H.W.A. REGION	STATE	PROJECT
08158(0)	CAR DATE 3-18-98	5	OHIO	

BUTLER COUNTY
BUT-747-2.12

49
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7
8

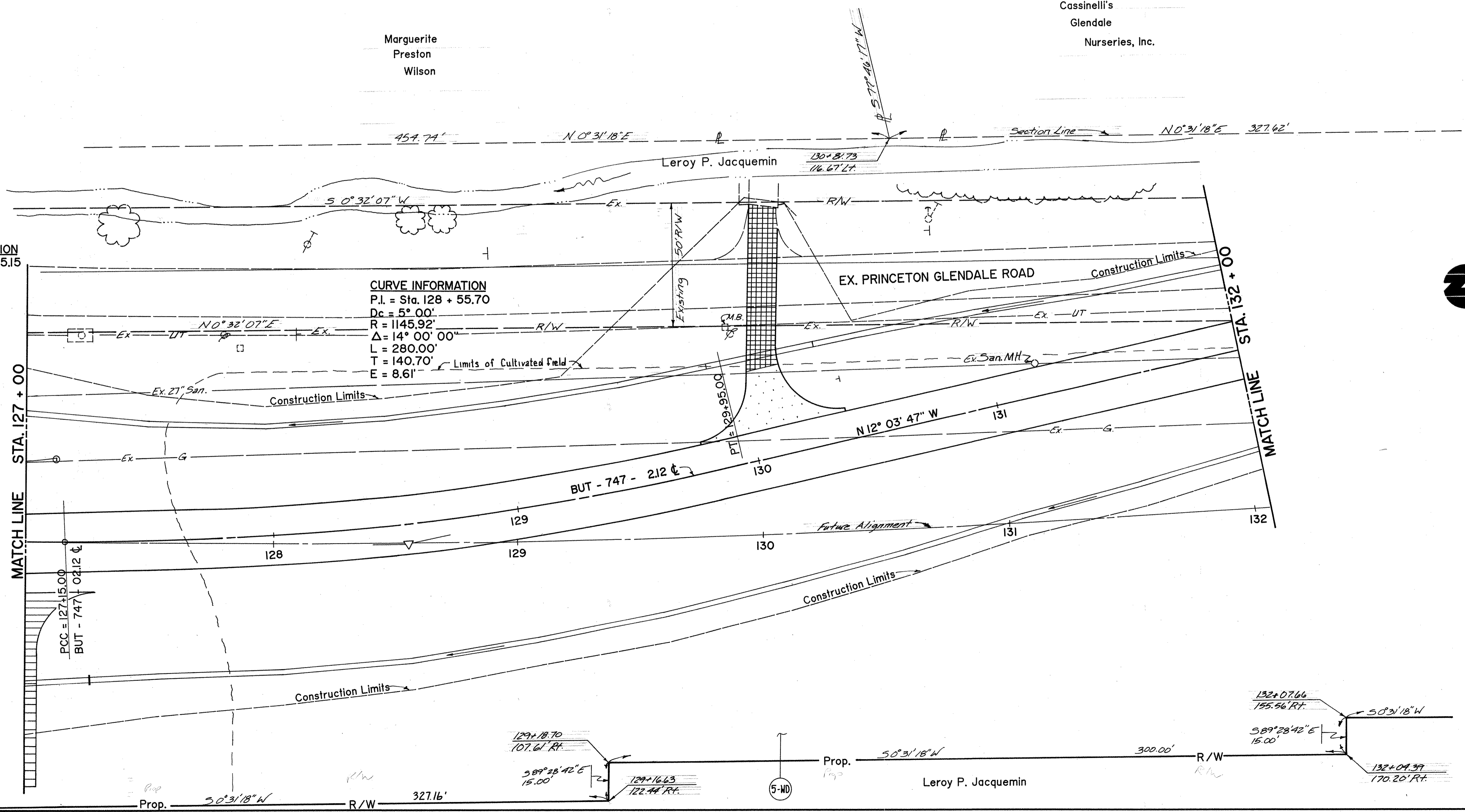
Cassinelli's
Glendale
Nurseries, Inc.

Marguerite
Preston
Wilson

Leroy P. Jacquemin

CURVE INFORMATION
P.I. = STA. 126 + 75.15
Dc = 1° 00'
R = 5729.58'
Δ = 0° 47' 49"
L = 79.70'
T = 39.85'
E = 0.14'

CURVE INFORMATION
P.I. = Sta. 128 + 55.70
Dc = 5° 00'
R = 1145.92'
Δ = 14° 00' 00"
L = 280.00'
T = 140.70'
E = 8.61'



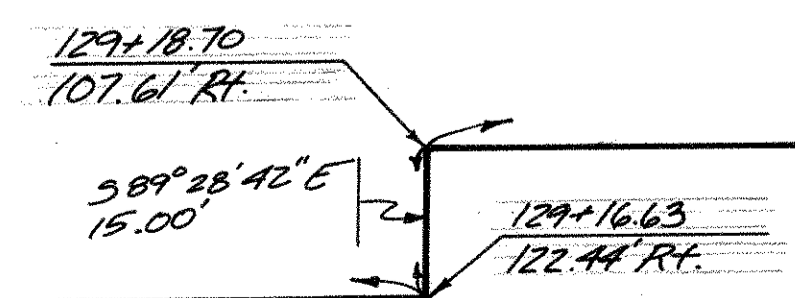
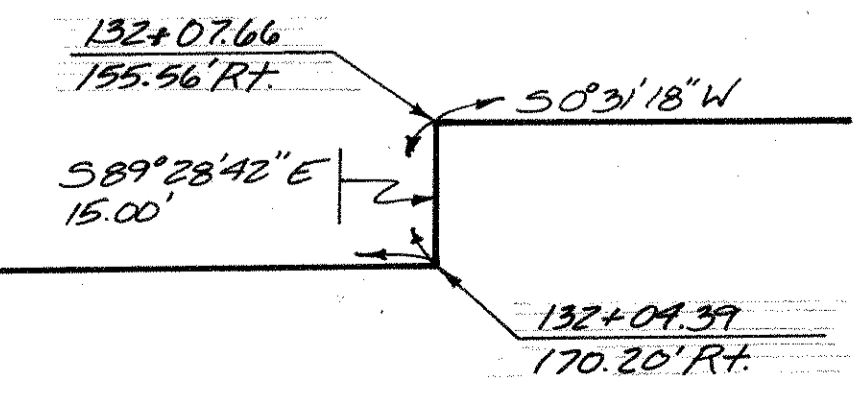
MATCH LINE STA. 127 + 00

MATCH LINE STA. 132 + 00

Prop. 30°31'18" W R/W 327.16'

Prop. 50°31'18" W R/W 300.00'

Leroy P. Jacquemin



7
8

RIGHT-OF-WAY PLAN

PID 9784

STATE JOB No.	CALC. CAR. DATE	F.W.A. REGION	STATE	PROJECT
08158 (0)	11-1-91	5	OHIO	

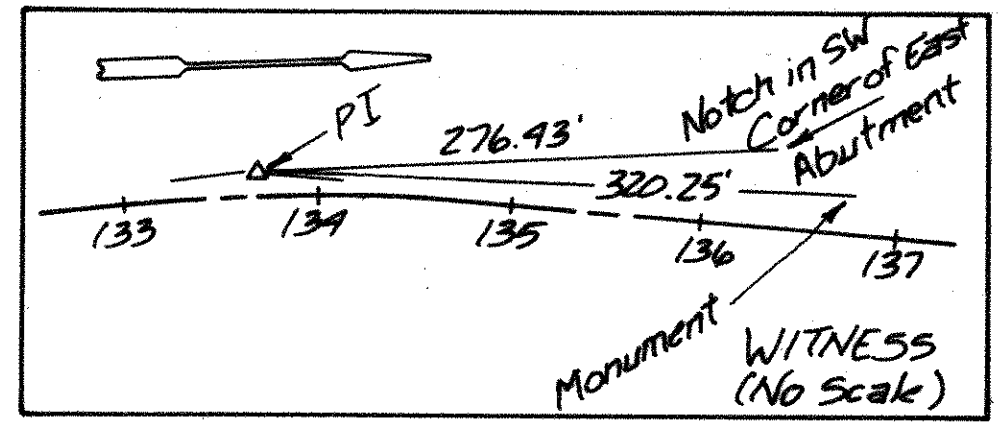
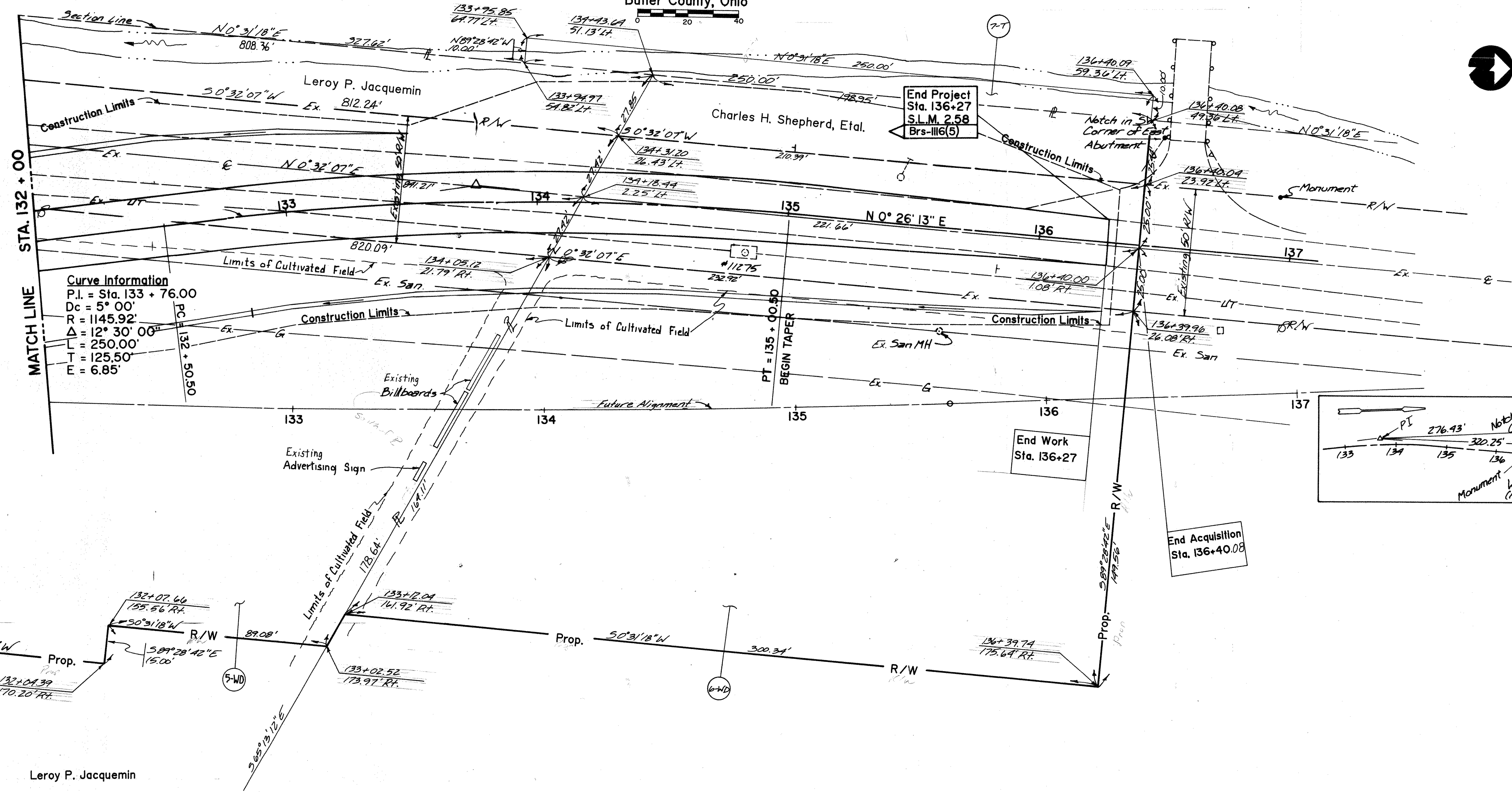
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50

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Sections 4 & 10
T2, R2
Union Township
Butler County, Ohio

Cassinelli's Glendale
Nurseries, Inc.

BUTLER COUNTY
BUT-747-2.12



Leroy P. Jacquemin

Charles H. Shepherd, Etal.

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