FED. RD. DIVISION	STATE	PROJECT		
2	OHIO	STATE		1 / 95

HUR-18-15.01

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
HUR-18-15.01
HURON COUNTY
NORWALK TOWNSHIP

LIMITED ACCESS:
This improvement is especially designed for through traffic and has been declared a limited access highway or free way by action of the Director of Highways from Sta. 38+20 to Sta. 59+40 on S.R. 18 in accordance with the provisions of Section 5511.02 of the revised code of Ohio.

CONVENTIONAL SIGNS

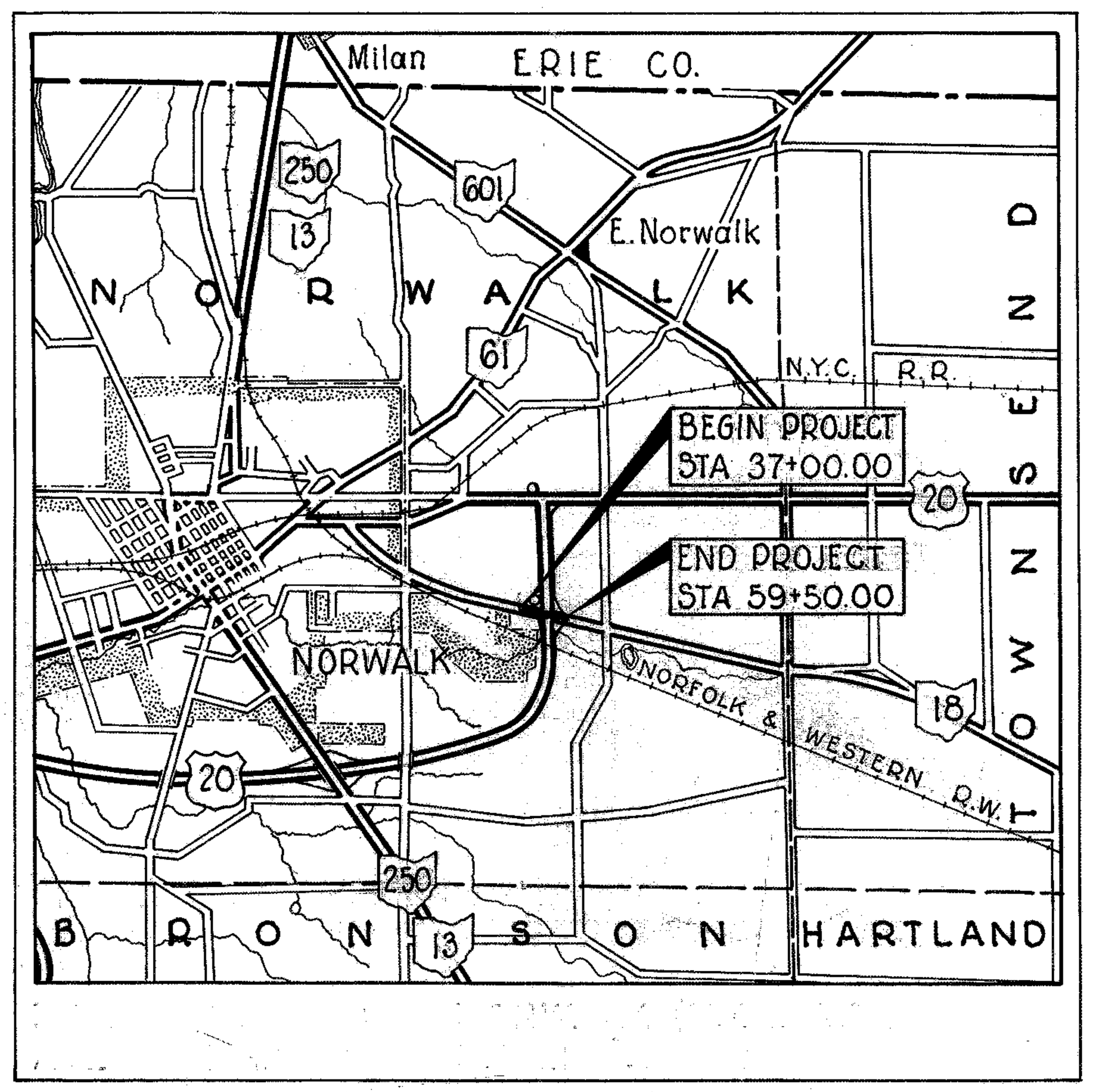
COUNTY LINE
TOWNSHIP LINE

CORPORATION LINE
CENTER LINE
FENCE LINE
POLE LINE (TELEPHONE & POWER)
RAILROAD
GUARD RAIL (EXISTING & PROPOSED)
PROPERTY LINE — P/L
RIGHT OF WAY — R.W.
Limited Access only — L. A.

INDEX OF SHEETS

LINE DATA

	PROJECT	WORK
S.R.18		
BEGIN	STA 37+00.00	STA 35+90.00
END	STA 59+50.00	STA 61+75.00
GROSS LENGTH	2,250.00 LIN.FT.	2,585.00 LIN.FT.
ADDITIONAL FOR SIGNS (SEE SHEET NO. 2)		40.00 LIN.FT.
NET LENGTH	2,250.00 LIN.FT. OR 0.426 MI.	2,625.00 LIN.FT. OR 0.497 MI.
U.S.20		
BEGIN		STA 803+64.00
END		STA 839+66.30
NO ADDITIONS OR DEDUCTIONS		
NET LENGTH		3,602.30 LIN.FT. OR 0.682 MI.
TOTAL NET LENGTH	2,250.00 LIN.FT. OR 0.426 MI.	6,227.30 LIN.FT. OR 1.179 MI.



LOCATION MAP

Scale of Miles
1 in. = 1 mi.

PORTION TO BE IMPROVED
STATE & FEDERAL HIGHWAYS
OTHER ROADS

SCALES

PLAN	1" = 50'
PROFILE-HORIZONTAL	1" = 50'
PROFILE-VERTICAL	1" = 5'
CROSS SECTIONS	1" = 10'
OTHER SHEETS AS SHOWN	

1967 SPECIFICATIONS

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

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

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

Approved D.H. Cummins
Date 2-5-68 Division Deputy Director

Approved C. H. Altwater
Date 3-29-68 Engineer of Bridges

Approved R. E. Catlin
Date 4-5-68 Engineer of Location and Design

Approved R.E. Shultz
Date 4-5-68 Deputy Director of Design and Construction

Approved T.A. Borrand
Date 4-24-68 Deputy Director of Right of Way

No RR
HBV?
4-5-68
Approved Thomas M. Major
Date 4-24-68 Deputy Director of Planning and Programming

Approved E. W. Wilson
Date 4-24-68 First Assistant Director

Approved P. E. Masheter
Date 4-24-68 Director of Highways

SUPPLEMENTAL PRINTS OF STANDARD CONSTRUCTION DRAWINGS							
BP-1	6-1-65	CB-5	6-1-65	MC-1	10-1-67	RB-1-55	2-2-59
BP-2	1-17-68	CB-6	6-1-65	MC-3	5-1-66	SD-1-65 (Sht.1,2&3)	11-8-65
BP-3	1-10-67	F-2	6-1-65	MC-4	6-1-65		
BP-4	1-10-67	GR-1	1-1-67	MC-6	6-1-65		
BP-5	6-1-65	GR-2B	2-15-68	MC-7	3-1-66		
BP-6	6-1-65	GR-6	6-1-65	AS-1-67	1-11-68		
BP-7	1-1-66	HW-E	6-1-65	SP-53	6-30-61		
CB-2-2A & B	6-1-65	L-1	6-1-65	BR-1-65 (Sheet #1)	11-24-65		

SUPPLEMENTAL SPECIFICATIONS			
806	3-1-68	931	5-25-67
808	1-13-67	1001	3-21-66
811	1-1-67		
815	1-1-67		
816	8-6-65		
825	12-19-67		
828	1-1-67		
832	5-25-67		

FILE Nº 203-H	HURON COUNTY	HUR-18-15.01
	DATE OF LETTING	
	CONTRACT Nº	

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

2
95

HUR-18-15.01

MAY 21 1969

WORK LIMITS FOR SIGNS
S.R. 18

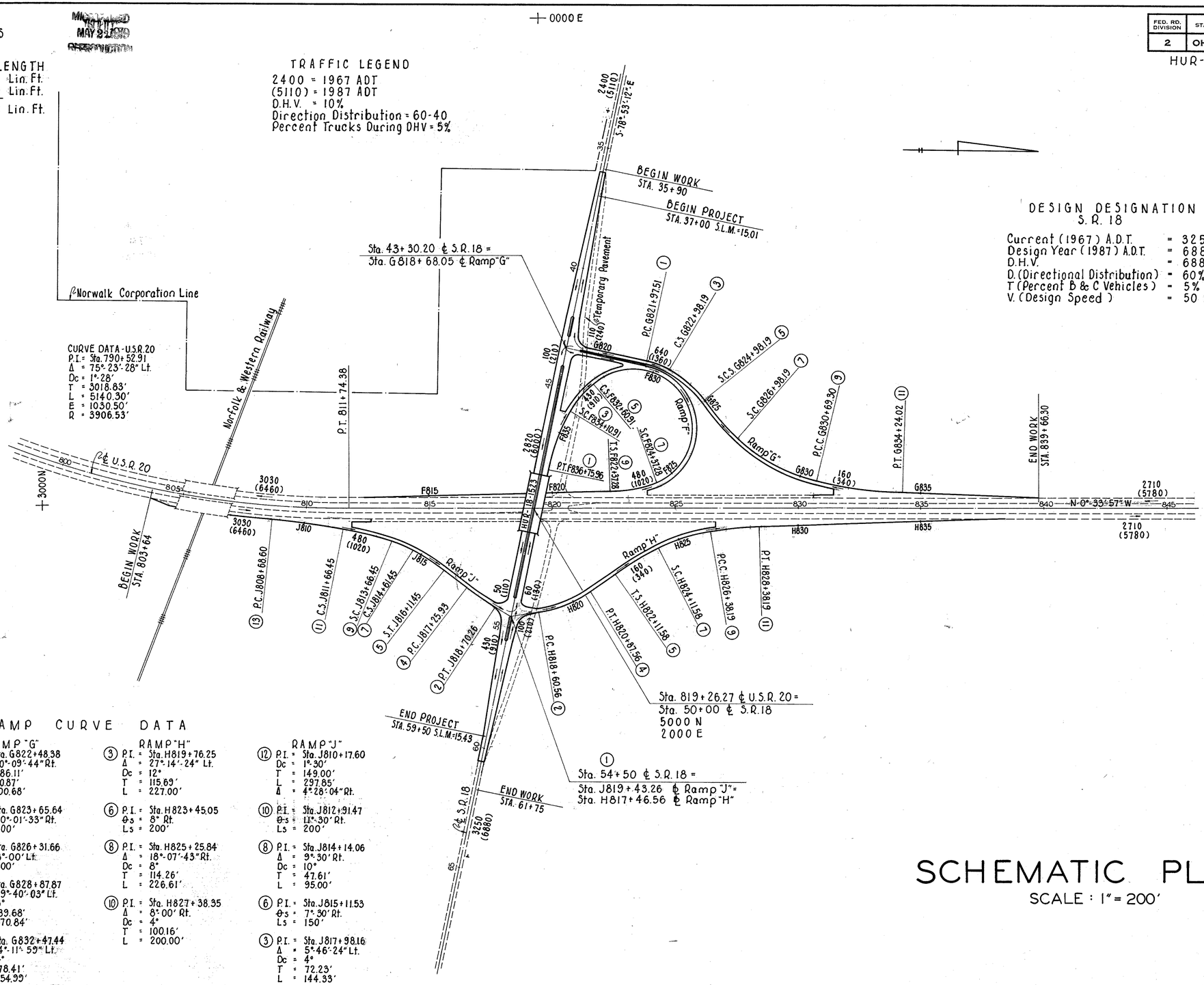
BEGIN	END	NET LENGTH
Sta. 33+40	Sta. 33+60	20.00 Lin. Ft.
Sta. 64+40	Sta. 64+60	20.00 Lin. Ft.
	TOTAL LENGTH =	40.00 Lin. Ft.

PT. NO.	N	E
RAMP "J"		
1	4913.262	2441.562
2	4850.765	2403.842
3	4788.926	2366.518
4	4731.155	2323.163
5	4639.589	2254.447
6	4559.535	2194.369
7	4515.899	2169.795
8	4474.415	2146.433
9	4429.644	2130.238
10	4358.496	2104.501
11	4234.813	2086.266
12	4087.406	2064.534
13	3938.754	2054.351
RAMP "H"		
1	4913.262	2441.562
2	5025.894	2423.951
3	5140.195	2406.079
4	5233.640	2337.871
5	5333.815	2264.750
6	5441.621	2186.060
7	5500.524	2154.574
8	5601.291	2100.709
9	5713.816	2080.872
10	5812.455	2063.483
11	5912.554	2059.991
RAMP "F"		
1	5062.579	1818.901
2	5088.419	1687.355
3	5160.088	1574.060
4	5207.235	1499.530
5	5259.947	1463.393
6	5400.804	1668.856
7	5506.075	1894.630
8	5444.708	1923.243
9	5310.310	1927.932
RAMP "G"		
1	5455.952	1388.111
2	5505.864	1397.915
3	5549.339	1424.323
4	5606.987	1459.340
5	5690.892	1564.076
6	5774.341	1668.242
7	5822.948	1714.049
8	5960.989	1844.138
9	6145.324	1888.849
10	6318.707	1930.903
11	6497.108	1929.141

TRAFFIC LEGEND
2400 = 1967 ADT
(5110) = 1987 ADT
D.H.V. = 10%
Direction Distribution = 60-40
Percent Trucks During DHV = 5%

DESIGN DESIGNATION
S.R. 18

Current (1967) A.D.T.	=	3250
Design Year (1987) A.D.T.	=	6880
D.H.V.	=	688
D. (Directional Distribution)	=	60%
T (Percent B & C Vehicles)	=	5%
V. (Design Speed)	=	50 M.P.H.



RAMP CURVE DATA

RAMP "F"

⑧ P.I. = Sta. F823+71.76
Δ = 23°-00' Lt.
Ls = 200'

⑥ Δ = 189° 26' 06" Lt.
Dc = 23°
L = 823.63'

④ P.I. = Sta. F833+24.82
Δ = 23°-15' Lt.
Ls = 150'

② P.I. = Sta. F835+44.97
Δ = 21°-12'-13" Lt.
Dc = 8°
T = 134.06'
L = 265.05'

RAMP "G"

② P.I. = Sta. G822+48.38
Δ = 20°-09'-44" Rt.
R = 286.11'
T = 50.87'
L = 100.68'

④ P.I. = Sta. G823+65.64
Δ = 20°-01'-33" Rt.
Ls = 200'

⑥ P.I. = Sta. G826+31.66
Δ = 8°-00' Lt.
Ls = 200'

⑧ P.I. = Sta. G828+87.87
Δ = 29°-40'-03" Lt.
Dc = 8°
T = 189.68'
L = 370.84'

⑩ P.I. = Sta. G832+47.44
Δ = 14°-11'-59" Lt.
Dc = 4°
T = 178.41'
L = 354.99'

RAMP "H"

③ P.I. = Sta. H819+76.25
Δ = 27°-14'-24" Lt.
Dc = 12°
T = 115.69'
L = 227.00'

⑥ P.I. = Sta. H823+45.05
Δ = 8° Rt.
Ls = 200'

⑧ P.I. = Sta. H825+25.84
Δ = 18°-07'-43" Rt.
Dc = 8°
T = 114.26'
L = 226.61'

⑩ P.I. = Sta. H827+38.35
Δ = 8°-00' Rt.
Dc = 4°
T = 100.16'
L = 200.00'

RAMP "J"

⑫ P.I. = Sta. J810+17.60
Dc = 1° 30'
T = 149.00'
L = 297.85'
Δ = 4° 28' 04" Rt.

⑩ P.I. = Sta. J812+91.47
Δ = 11°-30' Rt.
Ls = 200'

⑧ P.I. = Sta. J814+14.06
Δ = 9°-30' Rt.
Dc = 10°
T = 47.61'
L = 95.00'

⑥ P.I. = Sta. J815+11.53
Δ = 7°-30' Rt.
Ls = 150'

③ P.I. = Sta. J817+98.16
Δ = 5° 46' 24" Lt.
Dc = 4°
T = 72.23'
L = 144.33'

SCHEMATIC PLAN
SCALE : 1" = 200'

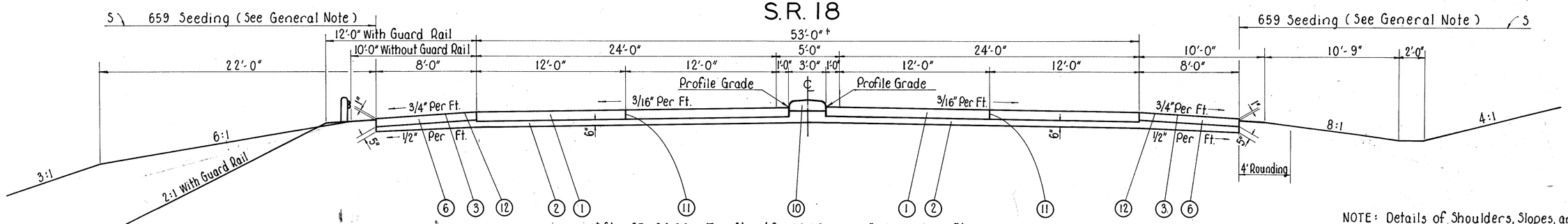
TYPICAL SECTIONS
TYPE 451

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

3/95

HUR-18-15.01

S.R. 18



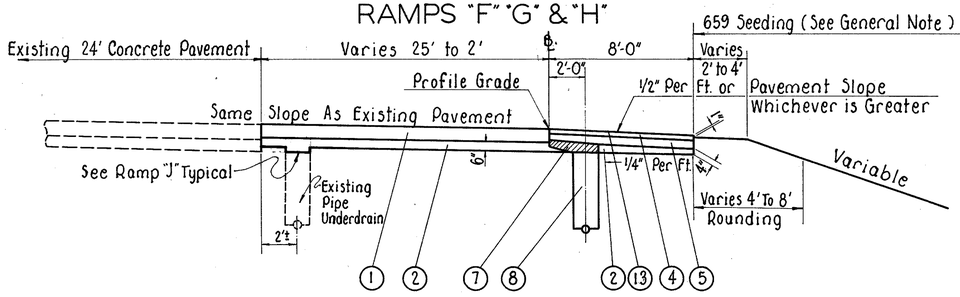
* Varies 29'-0" To 53'-0"

* Sta. 37+00.00	To	Sta. 42+00.00	=	500.00	Lin. Ft.
Sta. 42+00.00	To	Sta. 48+44.12	=	644.12	Lin. Ft.
Sta. 51+33.02	To	Sta. 55+50.00	=	416.98	Lin. Ft.
* Sta. 55+50.00	To	Sta. 59+50.00	=	400.00	Lin. Ft.
		Total	=	1961.10	Lin. Ft.

NOTE: Details of Shoulders, Slopes, and Ditches not shown are to conform with Standard Drawing MC-1 unless otherwise shown on the Cross Sections.

SPEED CHANGE LANES AT U.S.R. 20

RAMPS "F" "G" & "H"



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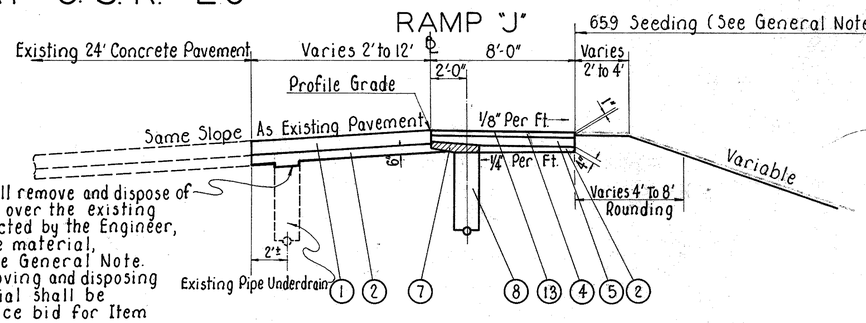
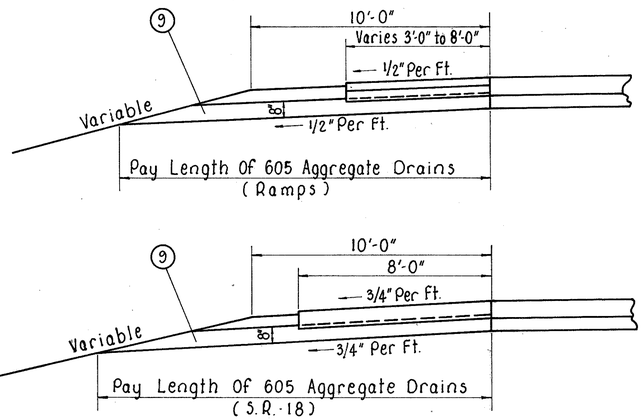
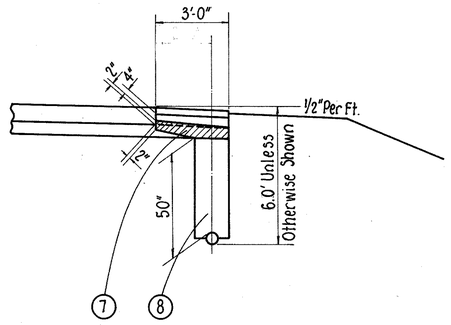


NOTE: The Contractor shall remove and dispose of any non-porous material over the existing pipe underdrain as directed by the Engineer, and replace with Subbase material, as modified by the General Note. Compensation for removing and disposing of the unsuitable material shall be included in the unit price bid for Item 203 Excavation.



DETAILS OF 605 AGGREGATE DRAINS



DETAIL OF SPECIAL DRAINAGE CONNECTOR AND DEEP PIPE UNDERDRAIN

SEE GENERAL NOTE FOR SEQUENCE OF BERM CONSTRUCTION OPERATIONS

(1) 451 9" Reinforced Portland Cement Concrete Pavement
(2) 310 Subbase, As Per Plan (See General Note)
(3) 409 Seal Coat; Cover Aggregate Using 0.008 C.Y. No.8 Aggregate Per S.Y. & 0.30 Gal. Bituminous Material* Per Sq.Yd.
(4) 301 3" Bituminous Aggregate Base 702.01 (85-100) or 702.09, RT-10 (See Note in Proposal) As per plan
(5) 304 6" Aggregate Base
(6) 304 8" Aggregate Base
(7) Special Drainage Connector Using No. 8 Aggregate (See Note in Proposal)
(8) 605 6" Deep Pipe Underdrain
(9) 605 Aggregate Drains (See General Note)
(10) 612 Concrete Median
(11) Standard Longitudinal Joint
(12) 408 Prime Coat; 702.09, RT-2 or RT-3, Applied at the rate of 0.40 Gal. Per Sq. Yd.
(13) 409 Seal Coat; Cover Aggregate, Using 0.008 C.Y. No.8 Aggregate Per S.Y. & 0.30 Gal. Per S.Y. Bituminous Material, As Per Plan, (See Note in Proposal)

* 702.09, RT-9 or RT-10, or 702.02; MC-800 or MC-3000, Applied at the rate of 0.30 Gal. Per Sq. Yd.

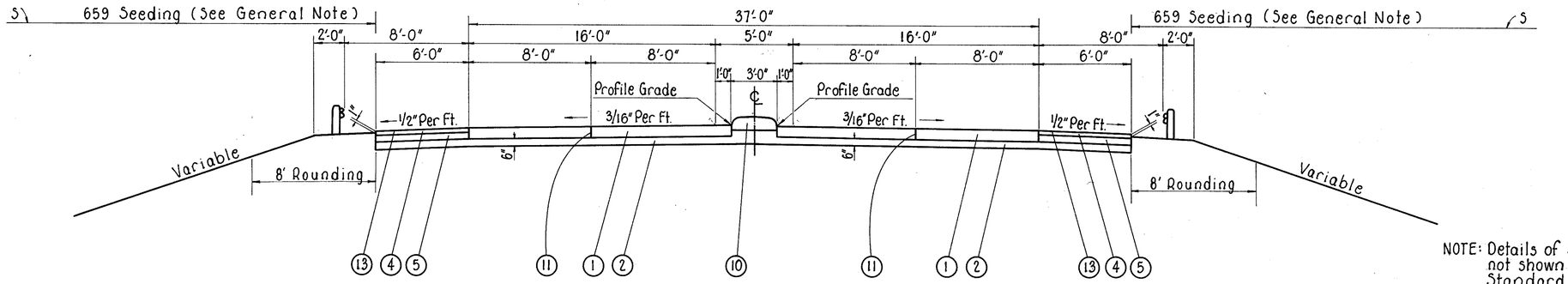
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

4
95

HUR-18-15.01

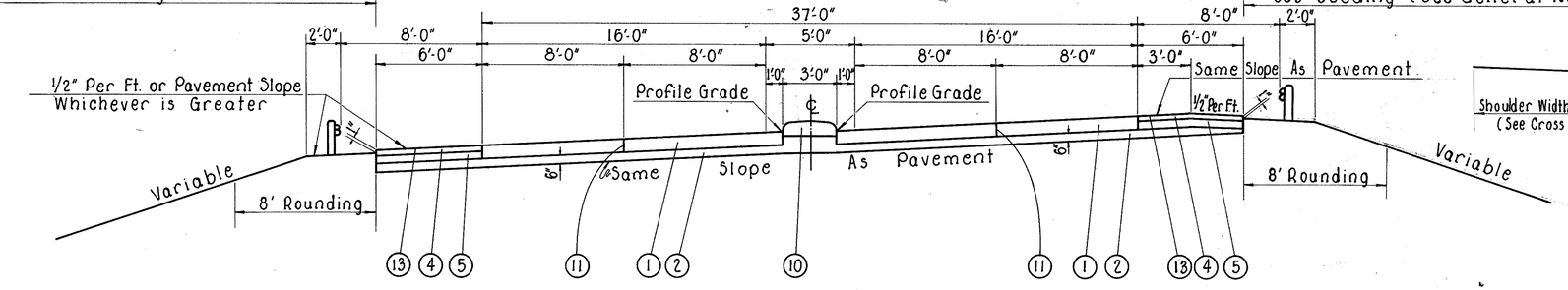
TYPICAL SECTIONS
TYPE 451

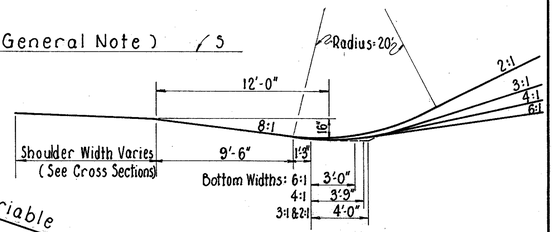
NORMAL TWO WAY RAMP SECTION



NOTE: Details of Shoulders, Slopes, and Ditches not shown are to conform with Standard Drawing MC-1 unless otherwise shown on the Cross Sections.

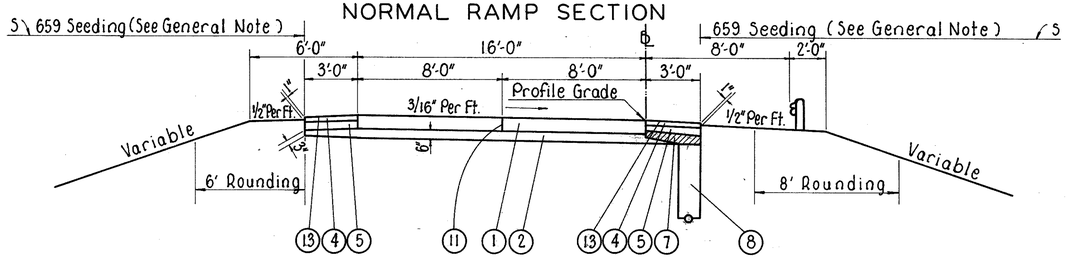
SUPERELEVATED TWO WAY RAMP SECTION



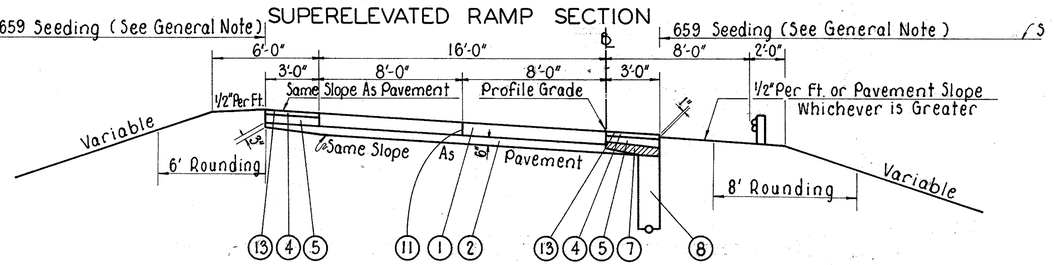


TYPICAL RAMP DITCH SECTION

NORMAL RAMP SECTION



SUPERELEVATED RAMP SECTION

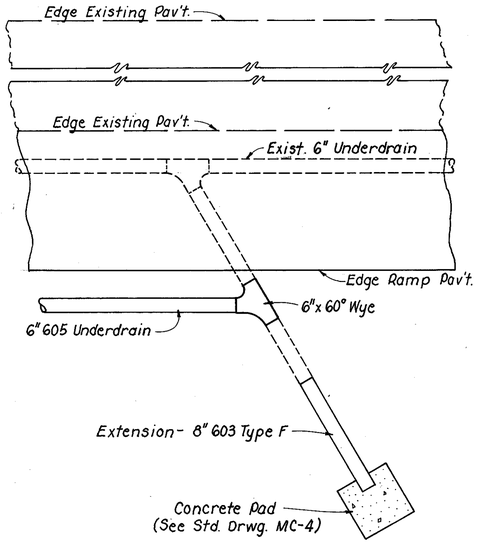


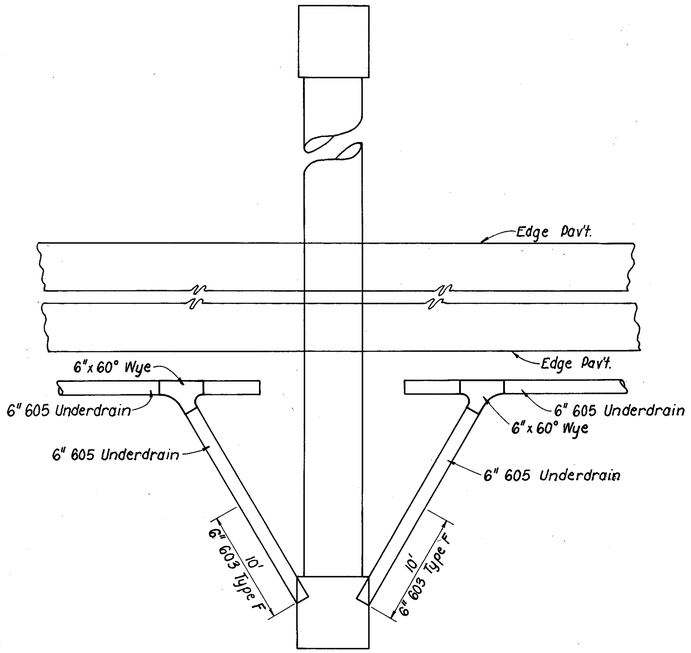
1. 451 9" Reinforced Portland Cement Concrete Pavement
2. 310 Subbase, As Per Plan, (See General Note)
13. 409 Seal Coat; Cover Aggregate Using 0.008 C.Y. No.8 Aggregate Per S.Y. & 0.30 Gal. Per S.Y. Bituminous Material, As Per Plan, (See Note in Proposal)
4. 301 3" Bituminous Aggregate Base, 702.01 (85-100) or 702.09, RT-10 (See Note in Proposal) *As per plan*
5. 304 6" Aggregate Base
6. 304 8" Aggregate Base
7. Special Drainage Connector Using No. 8 Aggregate (See Note in Proposal)
8. 605 6" Deep Pipe Underdrain
9. 605 Aggregate Drains (See General Note)
10. 612 Concrete Median
11. Standard Longitudinal Joint

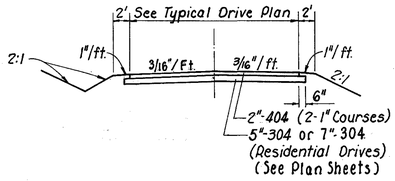
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

5/95

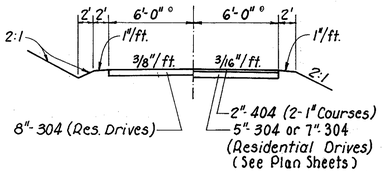
HUR - 18 - 15.01





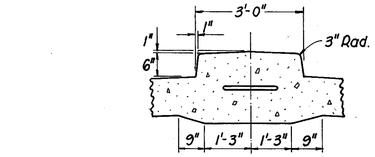


TYPICAL SECTION "A"

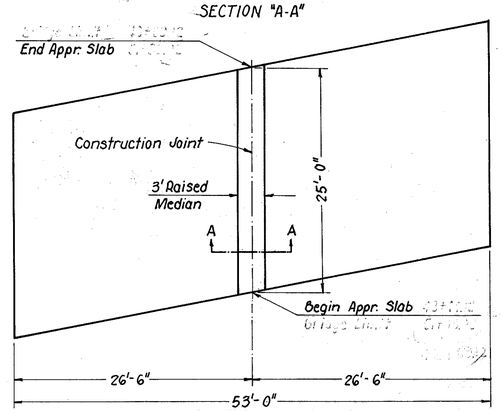


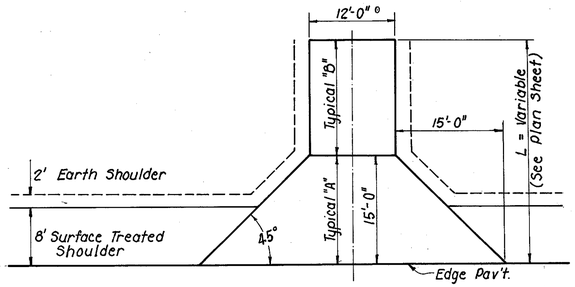
TYPICAL HALF SECTION "B"
(Symmetrical About ℄)

° Unless Otherwise Shown.

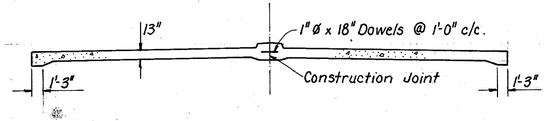


SECTION "A-A"



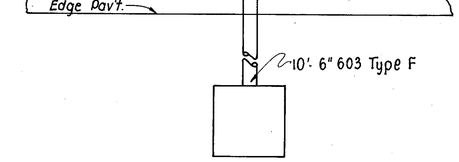


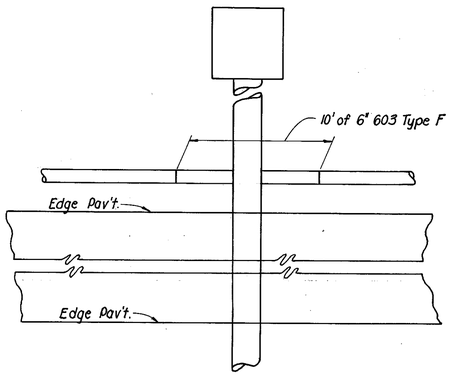
TYPICAL DRIVE DETAILS

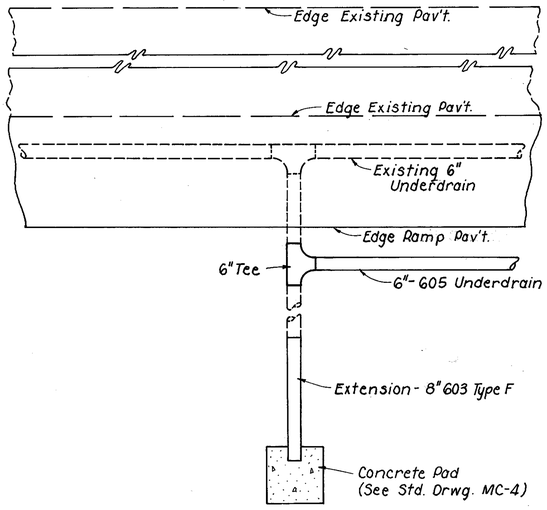


Note: The cost of constructing the raised median shall be included in the unit price bid for Item 611, Reinforced Concrete Approach Slab, As Per Plan. For other details not shown, see Standard Drawings AS-1-67 and MC-6.

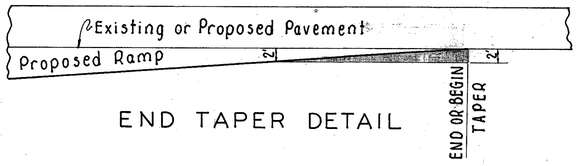
APPROACH SLAB DETAILS





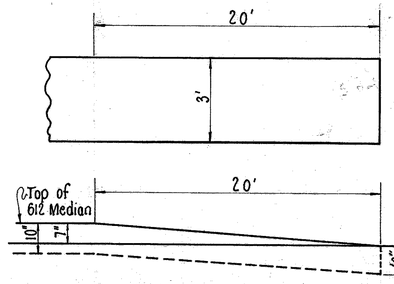


UNDERDRAIN DETAILS
SEE PLAN SHEETS FOR LOCATIONS



END TAPER DETAIL

NOTE: The Shaded Area shall be constructed of Concrete Pavement to an elevation of one-half inch lower than the adjacent pavement and surfaced with 409 Seal Coat using No. 8 Aggregate as the maximum size. The Shaded Area shall be paid for as full depth 451 and the Surface Treatment shall be paid for as 409.



612 MEDIAN NOSE DETAIL

SPECIAL CONSTRUCTION DETAILS

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

6/95

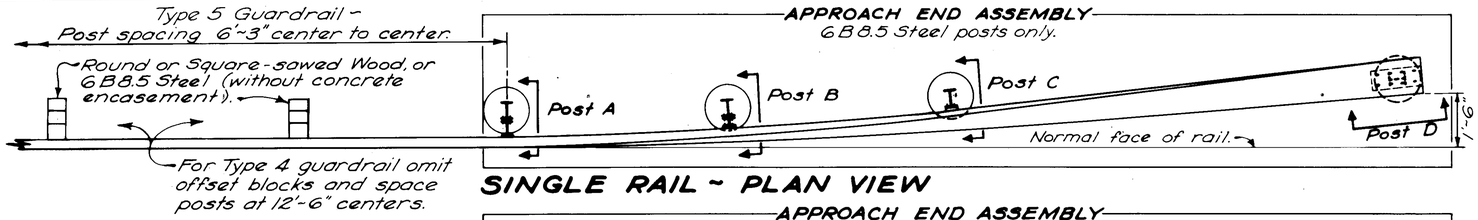
HUR-18-15.01

NOTES

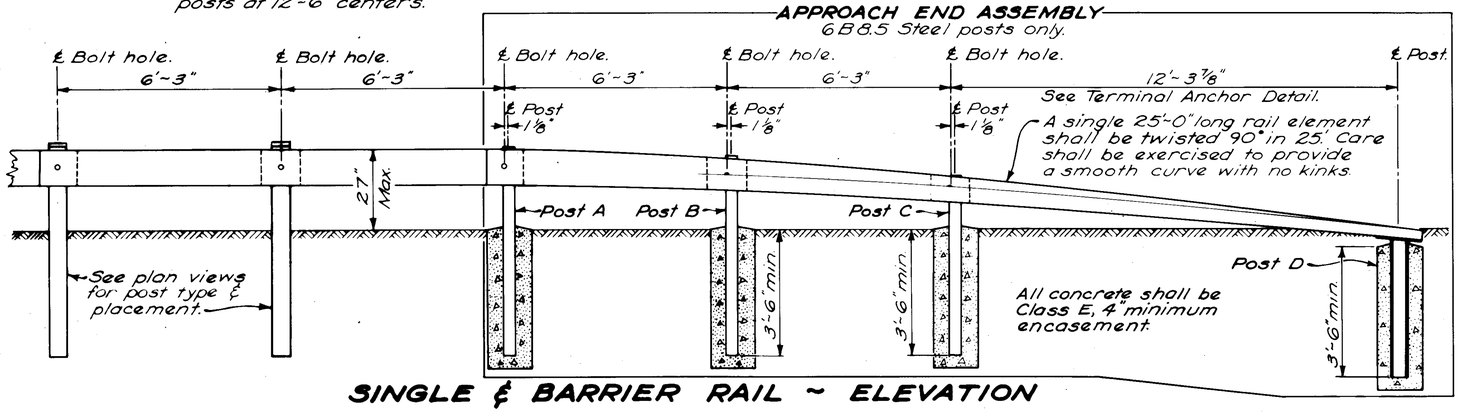
For details not shown, see Standard Drawings GR-2A and GR-2B.

All steel parts shall be galvanized in accordance with ASTM A123, A153 or A525, whichever may apply.

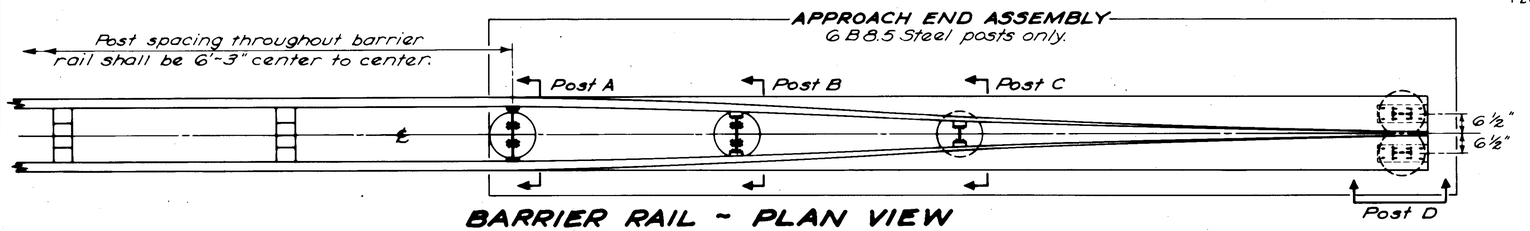
This drawing shall govern where a conflict arises.



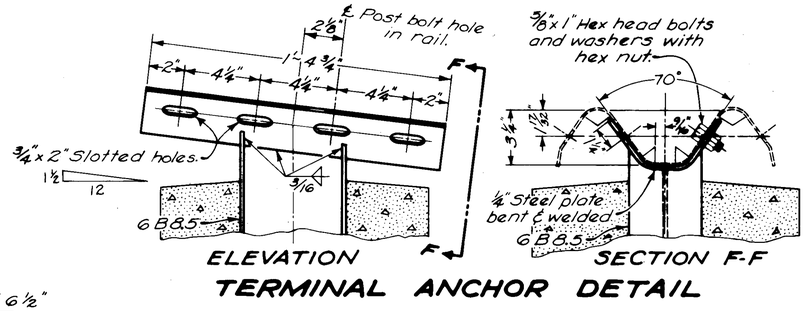
SINGLE RAIL ~ PLAN VIEW



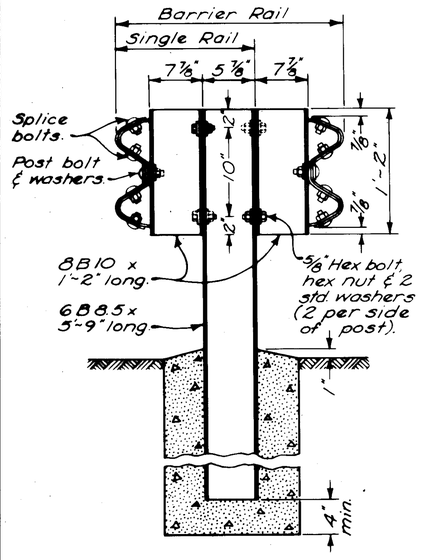
SINGLE & BARRIER RAIL ~ ELEVATION



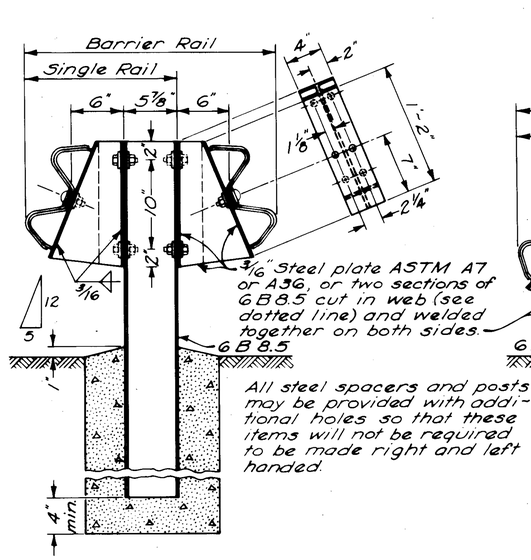
BARRIER RAIL ~ PLAN VIEW



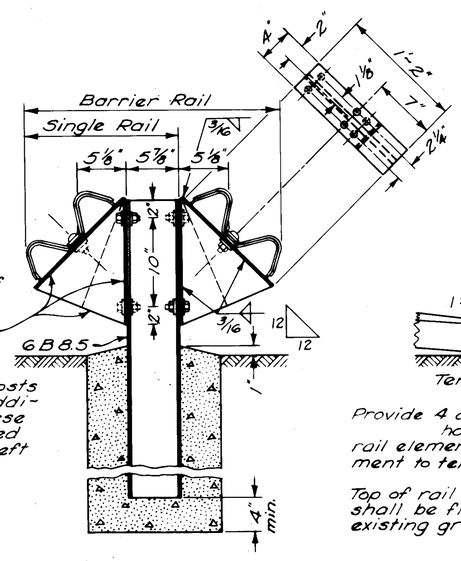
TERMINAL ANCHOR DETAIL



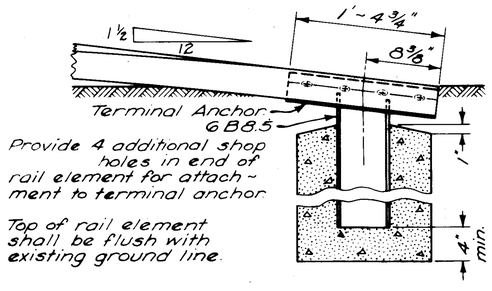
POST A



POST B



POST C



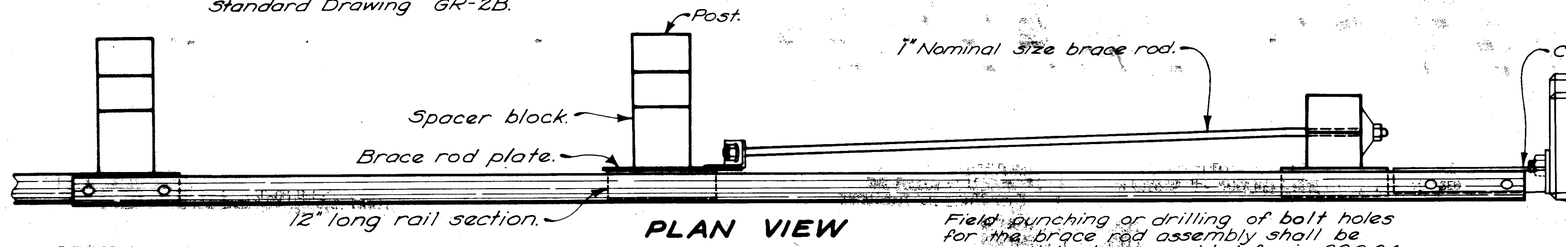
POST D

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

HUR-18-15.01

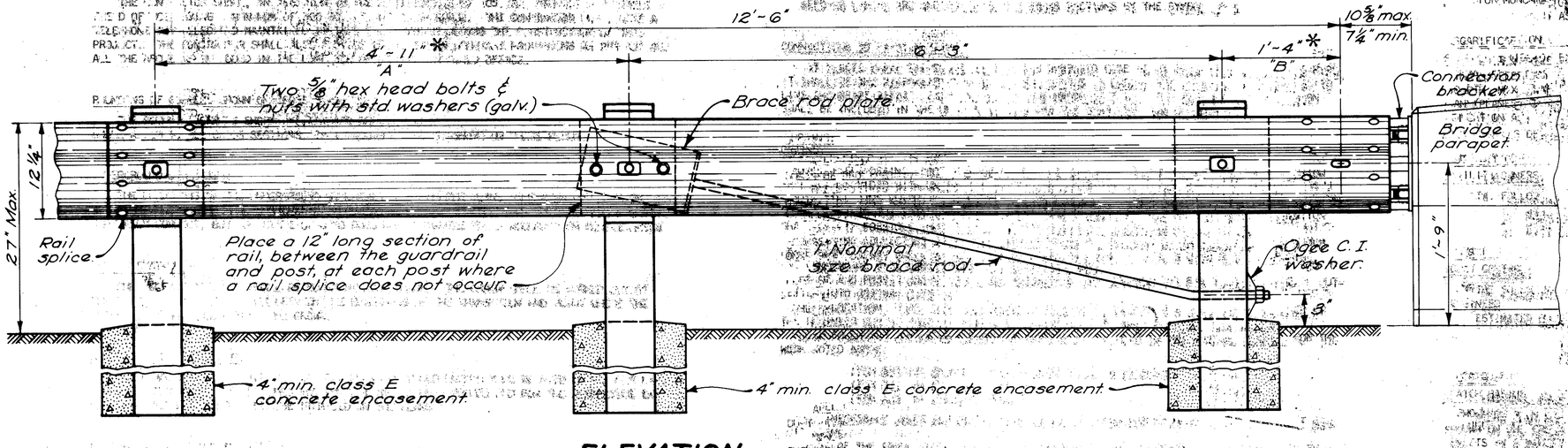
7-95

Posts may be round or square-sawed wood, or 6 B8.5 steel. See Standard Drawing GR-2B.



PLAN VIEW

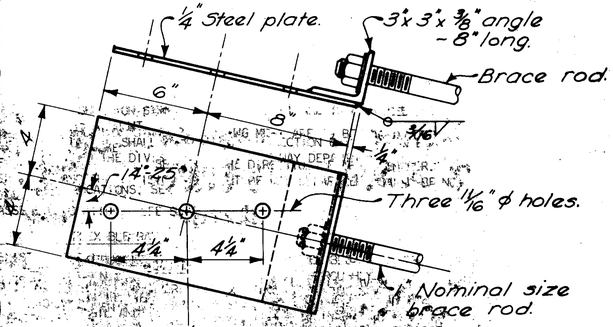
Field punching or drilling of bolt holes for the brace rod assembly shall be accomplished as provided for in 606.04.



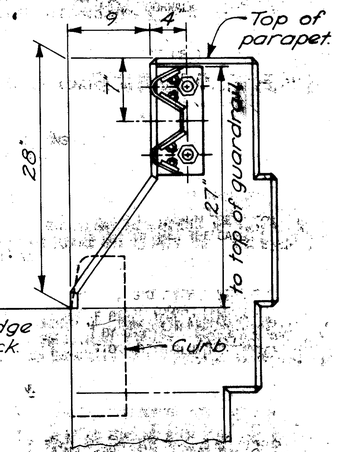
ELEVATION

GUARDRAIL TERMINAL AT BRIDGE

* Dimension "A" shall decrease as dimension "B" increases to accommodate interference by the bridge substructure.

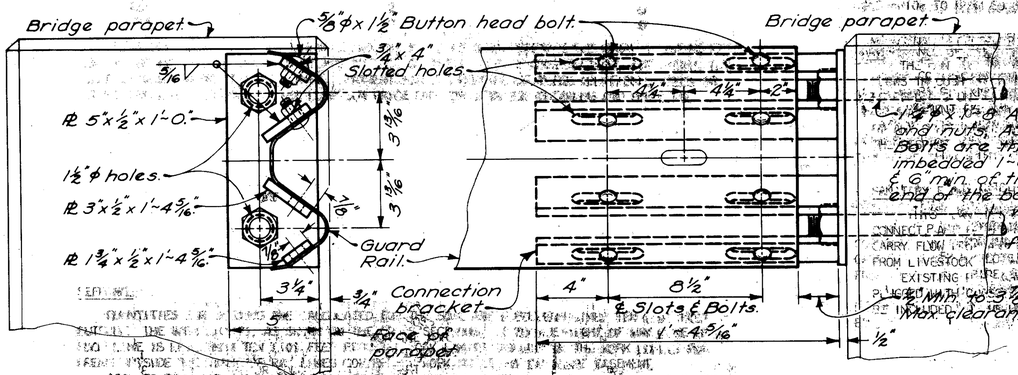


BRACE ROD PLATE



PARAPET APPROACH

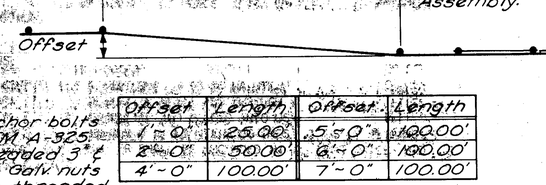
For uncurbed approaches, guardrail shall be set 27" above ground line at face of rail. For curbed approaches guardrail shall be located 27" above gutter line and 9" behind the face of curb.



CONNECTION BRACKET DETAIL

GUARDRAIL ~ BRIDGE CONNECTION

The connection bracket shall be galvanized after welding and shall be included with guardrail for payment.



Offset	Length	Offset	Length
1'-0"	25.00'	5'-0"	100.00'
2'-0"	50.00'	6'-0"	100.00'
4'-0"	100.00'	7'-0"	100.00'

GUARDRAIL OFFSET DETAIL

Rev. 2-19-63

GR-3 : BRIDGE TERMINAL ASSEMBLY

HUR-18-15.01

GENERAL NOTES

ELEVATION DATUM:

ALL ELEVATIONS ARE [illegible] DATUM.

FIELD OFFICE:

THE CONTRACTOR SHALL, [illegible] REQUIREMENTS OF [illegible].152, PROVIDE A SUITABLE FIELD OFFICE HAVING A MINIMUM [illegible] SQ. FT. OF FLOOR SPACE. [illegible] CONTRACTOR SHALL HAVE A TELEPHONE INSTALLED AND [illegible] THIS FIELD OFFICE DURING THE CONSTRUCTION OF THIS PROJECT. THE CONTRACTOR [illegible] PROVIDE AND MAINTAIN SANITARY PROVISIONS AS PER 107.06. [illegible] THE ABOVE IS INCLUDED [illegible] PRICE BID FOR FIELD OFFICE.

ROUNDING OF CORNERS SHOWN [illegible] SECTIONS:

THE ROUNDED CORNERS SHOWN [illegible] STANDARD DRAWING MC-1, [illegible] SHALL APPLY TO ALL CROSS SECTIONS, EVEN THOUGH OTHERWISE SHOWN ON THESE PLANS.

UNDERGROUND UTILITIES:

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

SUPERELEVATION:

SUPERELEVATED CURVES SHALL BE BUILT WITHOUT CROWN. THE CROWN SHALL BE WORKED OUT OF THE PAVEMENT IN THE PORTION BETWEEN THE BEGINNING OF THE TRANSITION AND POINT WHERE THE SUPERELEVATION EQUALS TWICE THE CROWN.

REMOVAL OF EXISTING PIPE:

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

REMOVAL OF TREES AND STUMPS:

ALL TREES AND STUMPS SPECIFICALLY MARKED FOR REMOVAL WITHIN THE CONSTRUCTION LIMITS OF THIS PROJECT SHALL BE REMOVED UNDER THE LUMP SUM PRICE BID FOR ITEM 201 CLEARING AND [illegible] 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
18"	18	2
30"	6	0
48"	2	0
60"	0	0

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.

SEEDING:

QUANTITIES FOR SEEDING ARE CALCULATED [illegible] AREAS [illegible] (10) [illegible] OUTSIDE [illegible] WORK LIMITS, AS SHOWN [illegible] IONS, OR [illegible] THE [illegible] SUCH LINE [illegible] LESS THAN TEN (10) FEET FROM [illegible] LIMITS AND WITHIN [illegible] AREAS [illegible] THE RIGHT OF [illegible] AGREEMENT [illegible]

A [illegible] SEEDED [illegible] IN ACCORDANCE [illegible] MERCURY [illegible] LIZED HAVING [illegible] 12 [illegible].

THE FOLLOWING SEED MIXTURE SHALL, IN LIEU [illegible] ED IN 659.09, BE [illegible] THE LIMITS OF THIS PROJECT:

30% KENTUCKY 31 FESCUE
30% KENTUCKY BLUEGRASS
[illegible]% ALSIKE CLOVER

[illegible] LIMITS [illegible] INDICATED ON THE CROSS [illegible]

LOCATION OF EXISTING PIPE:

[illegible] PLACES WHERE THE PLANS PROVIDE FOR PROPOSED PIPE TO BE CONNECTED TO EXISTING [illegible], [illegible] RESPONSIBILITY OF THE CONTRACTOR TO LOCATE THE EXISTING PIPE BOTH [illegible] BEFORE HE STARTS TO LAY THE PROPOSED PIPE. THE COST OF THIS OPERATION [illegible] UNIT PRICE BID FOR THE PERTINENT 603 CONDUIT ITEMS

[illegible]

[illegible] ROOF AND FOOTING DRAINS WHICH ARE ENCOUNTERED DURING CONSTRUCTION [illegible] OBSTRUCTED OUTLETS UNDER THE DIRECTION OF THE ENGINEER.

[illegible] DRAINS WHICH ARE ENCOUNTERED ABOVE THE ELEVATIONS OF THE ROADWAY DITCH SHALL [illegible] ROADWAY DITCH, BY 603 TYPE F CONDUIT. THE OPTIMUM OUTLET ELEVATION [illegible], ONE FOOT ABOVE THE FLOW LINE ELEVATION OF THE DITCH.

[illegible] WHICH ARE LOCATED BELOW THE ROADWAY DITCH ELEVATIONS AND [illegible] SHALL BE REPLACED BY ITEM 603 CONDUIT, TYPE B WITH CLASS B BEDDING [illegible] SIZE LARGER THAN THE EXISTING CONDUIT.

[illegible] FOOTER DRAINS SHALL BE CONNECTED INTO APPROPRIATE 603 CONDUIT LINE [illegible] ROADWAY DITCHES.

[illegible] LOCATION, TYPE, SIZE AND GRADE OF REQUIRED REPLACEMENTS SHALL BE DETERMINED [illegible] DURING CONSTRUCTION AND PAYMENT SHALL BE MADE ON FINAL MEASUREMENTS.

[illegible] FOLLOWING ESTIMATED QUANTITIES HAVE BEEN INCLUDED IN THE GENERAL SUMMARY [illegible] ABOVE:

ITEM 603 12" CONDUIT, TYPE B WITH CLASS B BEDDING	100 LIN. FT.
ITEM 603 6" CONDUIT, TYPE E	100 LIN. FT.
ITEM 603 6" CONDUIT, TYPE F	50 LIN. FT.

[illegible] ARY BENDS AND BRANCHES SHALL BE INCLUDED FOR PAYMENT IN THE PERTINENT CON- [illegible]

[illegible] ABOVE MATERIALS SHALL BE ORDERED BY THE CONTRACTOR UNTIL REQUESTED BY THE [illegible]

[illegible] AGGREGATE DRAINS:

[illegible] DRAINS SHALL BE PLACED AT TRANSVERSE PAVEMENT JOINTS ON EACH SIDE [illegible] NORMAL [illegible] ELEVATED TWO-WAY RAMP SECTIONS EXCEPT WHERE ITEM 605 PIPE UNDERDRAINS [illegible] HAVE [illegible] CURBED AREAS.

[illegible] AGGREGATE DRAIN SHALL BE PLACED AT THE LOW POINT OF EACH SAG VERTICAL [illegible] AGGREGATE DRAINS SHALL, IN LIEU OF 605.05, BE PLACED AFTER COMPLETION OF [illegible] BERM CONSTRUCTION.

[illegible]

[illegible] SHALL CONDUCT HIS OPERATIONS SO AS [illegible] AT ALL TIMES [illegible] FACILITIES TO REMAIN IN PLACE [illegible] EXISTING FACILITIES [illegible] UTILITIES ARE COMPLETED [illegible] ADDITIONAL COSTS [illegible] BY THE ENGINEER [illegible] UNIT [illegible] FOR [illegible] CONDUIT.

[illegible] DRAINAGE SYSTEM:

[illegible] PROVISION FOR [illegible] DRAINAGE [illegible] FIXTURES [illegible] OF POLLUTION [illegible] OF ANY KIND. [illegible] AT THE [illegible] PAY [illegible] BID [illegible].

[illegible] UTILITIES:

[illegible] UTILITIES AS [illegible] DRAWINGS [illegible] DURING THE CON- [illegible] OR 612 [illegible] THE CONTINGENT [illegible] AL- [illegible] WOULD [illegible] FIED AS [illegible] THE ITEM NO. [illegible]

[illegible] EXISTING PAVEMENT:

[illegible] LIMITS OF CONSTRUCTION WHERE THE EXISTING [illegible] SHALL HAVE LESS [illegible] BEING PLACED UPON [illegible] PAVEMENT SHALL [illegible] ITS FULL [illegible] SUFFICIENT [illegible] PROPERLY RECOMPACT [illegible] ION OF SEPARATION BETWEEN [illegible] AND THE EMBANKMENT [illegible] SCARI- [illegible] SCRIBED ABOVE SHALL [illegible] INCLUDED IN THE UNIT [illegible] EXCAVATION.

[illegible]

[illegible] IS A LIST OF THE UTILITY OWNERS AFFECTED [illegible]:

1. [illegible] NORTHERN OHIO TELEPHONE COMPANY, 117 N. SANDUSKY [illegible] BELLEVUE, OHIO 44811
2. [illegible] OF NORWALK MUNICIPAL LIGHT & POWER DEPARTMENT, [illegible], OHIO 44857

[illegible]:

[illegible] FOLLOWING QUANTITIES [illegible] PROVIDED FOR DUST CONTROL TO BE [illegible] DIRECTED BY THE [illegible].

[illegible] QUANTITIES:

ITEM [illegible] CALCIUM CHLORIDE	2 TONS
[illegible] 616 WATER	20 M-GAL.

[illegible] INLETS AND DITCHES:

[illegible] LOCATIONS FOR [illegible] BASINS AND INLETS DO NOT FALL [illegible] DITCHES AS [illegible] SECTIONS, [illegible] DITCHES SHALL BE TURNED [illegible] TO [illegible] BASINS OR [illegible] THE ENGINEER.

[illegible] REMOVAL:

[illegible] QUANTITIES ITEM 202 SHALL CONSIST [illegible] ONLY. AREAS [illegible] REMOVAL ARE INDICATED ON THE PLAN [illegible] TYPE PAVE- [illegible] AND [illegible] FOR AS ITEM 203 EXCAVATION [illegible] EMBANKMENT CON- [illegible].

[illegible] SE, [illegible] AS PER PLAN:

[illegible] FOR [illegible] ITEM SHALL MEET THE REQUIREMENTS OF [illegible] EXCEPT [illegible] % OF THE MATERIAL SHALL PASS [illegible] INCOR- [illegible].

[illegible] SLAB:

[illegible] THE SU [illegible] SLAB [illegible]

[illegible]

GENERAL NOTES

ITEM SPECIAL - EXPANSION BOLTS:

WHERE NEW CONCRETE PAVEMENT ABUTS EXISTING CONCRETE PAVEMENT, (STA. 820+03 TO 820+63 LT. S.B.L. US 20), EXPANSION BOLTS, AS PER STANDARD DRAWING BP-3, SHALL BE PLACED IN THE EXISTING CONCRETE PAVEMENT AT FIVE (5) FOOT INTERVALS. (SEE NOTE IN PROPOSAL).

DOWEL HOLES SHALL BE FORMED AND PAID FOR IN ACCORDANCE WITH ITEM 510.

QUANTITIES:

ITEM SPECIAL - EXPANSION	BOLTS	12 EACH
ITEM 510 DOWEL HOLES		12 EACH

INSTALLATION OF HOOK BOLTS:

WHERE NEW CONCRETE PAVEMENT ABUTS THE EXISTING HOOK BOLT AND KEY WAY ALONG THE U.S. 20 PAVEMENT, THE REMAINING HALF OF THE HOOK BOLT ASSEMBLY WILL BE FURNISHED BY THE STATE OF OHIO.

INSTALLATION OF THESE HOOK BOLTS SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 451.

ITEM 667 - JUTE MATTING, AS PER PLAN:

THE JUTE MATTING, IN LIEU OF 667.03, SHALL BE PLACED AFTER THE MULCHING MATERIAL. A MINIMUM OF ONE (1) INCH OF MULCHING MATERIAL SHALL BE APPLIED IN THE AREAS TO BE COVERED WITH JUTE MATTING. COST OF THIS OPERATION SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 667, JUTE MATTING, AS PER PLAN.

TRAFFIC SIGNING NOTES:

GENERAL NOTES PERTAINING TO SIGNING ARE ON SHEET NO. 71.

ITEM 202 EXISTING SIDEWALK REMOVED AND DISPOSED OF, AS PER PLAN:

THIS ITEM SHALL INCLUDE THE REMOVAL AND DISPOSAL OF ALL CONCRETE OR STONE SLAB SIDEWALKS AND CONCRETE OR STONE STEPS AND RAILING DESIGNATED FOR REMOVAL IN THE PLANS AS PER 202.05.

WALK SHALL BE MEASURED BY THE SQUARE FOOT OF EXISTING SURFACE TO BE REMOVED. STEPS SHALL BE MEASURED BY THE SQUARE FOOT OF EACH EXISTING TREAD TO BE REMOVED.

BASIS OF PAYMENT SHALL BE AS DESCRIBED UNDER 202.10 AND PAID AT THE UNIT PRICE BID FOR ITEM 202 EXISTING SIDEWALK REMOVED AND DISPOSED OF, AS PER PLAN.

SEQUENCE OF PAVEMENT AND BERM CONSTRUCTION OPERATIONS:

1) INSTALL PIPE UNDERDRAINS AT LOCATIONS CALLED FOR ON PLANS.
2) PLACE SUBBASE OUT TO OUTSIDE EDGE OF UNDERDRAIN OR TO ONE FOOT BEYOND EDGE OF PAVEMENT WHERE NO UNDERDRAIN IS PRESENT. PAYMENT SHALL BE MADE FOR ALL SUBBASE PLACED IN THIS OPERATION.
3) CONSTRUCT 451 CONCRETE PAVEMENT.
4) REMOVE SUBBASE AND ANY CONTAMINATED BACKFILL OVER UNDERDRAIN AND REPLACE WITH DRAINAGE CONNECTOR NO. 8 AGGREGATE AS SHOWN ON TYPICAL SECTION.
5) COMPLETE BERM CONSTRUCTION.

ITEM SPECIAL, DRILLED WELL ABANDONED:

THE EXISTING CONCRETE OR STONE SLAB WELL COVER AND PUMPING EQUIPMENT SHALL BE REMOVED AND DISPOSED OF. THE CASING SHALL BE CUT OFF AT LEAST TWO (2) FEET BELOW THE PROPOSED FINISHED GRADE OUTSIDE PROPOSED PAVEMENT AREAS OR AT LEAST TWO (2) FEET BELOW THE PROPOSED SUBGRADE ELEVATION INSIDE PROPOSED PAVEMENT AREA AND CAPPED WITH CLASS E CONCRETE OR A STANDARD THREAD PIPE CAP.

THE UNIT PRICE BID FOR EACH DRILLED WELL ABANDONED SHALL INCLUDE PAYMENT FOR ALL LABOR, TOOLS, MATERIALS, AND INCIDENTALS NECESSARY TO COMPLETE THIS ITEM.

LOCATION OF DRILLED WELLS TO BE ABANDONED:

UNIT STA. 824+00± LT. S.R. 18 (INSIDE EXISTING BARN)

MAINTAINING LOCAL TRAFFIC:

THE FOLLOWING QUANTITIES ARE INCLUDED IN THE GENERAL SUMMARY FOR MAINTAINING LOCAL TRAFFIC, AS DIRECTED BY THE ENGINEER.

ESTIMATED QUANTITIES:

ITEM 410 TRAFFIC COMPACTED SURFACE TYPE A OR B	25 CU. YDS.
ITEM 616 CALCIUM CHLORIDE	0.5 TONS

MAINTENANCE OF TRAFFIC:

TWO LANES OF TRAFFIC ON U.S. ROUTE 20 AND ONE LANE OF TRAFFIC ON STATE ROUTE 18 SHALL BE MAINTAINED AT ALL TIMES IN EACH DIRECTION EXCEPT AS SPECIFICALLY PROVIDED HEREIN.

DURING CONSTRUCTION OF SPEED CHANGE LANES OR OTHER CONSTRUCTION ADJACENT TO THE EXISTING U.S. ROUTE 20 PAVEMENT, ONE LANE OF TRAFFIC WILL BE PERMITTED ON THE RESPECTIVE NORTH OR SOUTH BOUND PAVEMENT DURING DAYLIGHT HOURS ONLY. ON WEEKENDS, HOLIDAYS, OR ANY OTHER TEMPORARY SUSPENSION OF CONSTRUCTION OPERATIONS, UNINTERRUPTED TWO LANE TRAFFIC IN EACH DIRECTION SHALL BE MAINTAINED. THE CONTRACTOR SHALL ARRANGE HIS OPERATIONS SO AS TO PREVENT ANY INTERFERENCE TO THE CONTINUOUS FLOW OF TRAFFIC IN THE AREAS OF ONE LANE TRAFFIC. LENGTH OF ONE LANE TRAFFIC SHALL BE KEPT TO A MINIMUM AS DIRECTED BY THE ENGINEER. EQUIPMENT AND MATERIALS SHALL NOT BE STORED WITHIN THE MEDIAN OR WITHIN THIRTY (30) FEET OF THE OUTSIDE EDGE OF THE EXISTING U.S. ROUTE 20 PAVEMENT IN AREAS NOT CONTROLLED BY TRAFFIC CONTROL DEVICES. IN ONE LANE TRAFFIC AREAS, 55 GALLON STEEL DRUMS SHALL BE USED AS TRAFFIC CONTROL DEVICES. THE DRUMS SHALL BE PAINTED YELLOW AND SHALL BE THREE-QUARTERS FILLED WITH SAND TO HOLD THEM IN PLACE. THE COST OF PROVIDING, PLACING AND SHIFTING OF THE DRUMS AS NECESSARY SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR ITEM 614 MAINTAINING TRAFFIC.

THE FOLLOWING PROCEDURE OF OPERATIONS IS OFFERED TO INSURE MAINTENANCE OF TRAFFIC DURING CONSTRUCTION. IT IS NOTED THAT OTHER OPERATIONS SUCH AS UTILITY REARRANGEMENTS, DRAINAGE INSTALLATIONS, ETC. HAVE NOT BEEN MENTIONED IN ALL CASES, BUT MUST BE ACCOMPLISHED BEFORE CONSTRUCTING NEW PAVEMENT. ANY OTHER METHOD OR PROCEDURE OF MAINTAINING TRAFFIC DURING CONSTRUCTION MAY BE USED IF APPROVED IN WRITING BY THE DIRECTOR AT LEAST TEN (10) DAYS BEFORE STARTING THE PROPOSED PROCEDURE.

1) WITH STATE ROUTE 18 TWO WAY TRAFFIC BEING MAINTAINED ON THE EXISTING TEMPORARY ROAD, CONSTRUCT THE PROPOSED S.R. 18 PAVEMENT BETWEEN STA. 37+00 AND STA. 59+50, THE PROPOSED S.R. 18 BRIDGE OVER U.S. ROUTE 20 AND RAMP J.

   THE CONTRACTOR SHALL SAFEGUARD THE TRAVELING PUBLIC ON U.S.R. 20 BY PROVIDING PLATFORMS, NETS, OR OTHER SUITABLE PROTECTION ABOVE THE TRAVELED LANES DURING THE S.R. 18 BRIDGE CONSTRUCTION. PAYMENT FOR THIS PROTECTION SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR ITEM 614 MAINTAINING TRAFFIC.
2) CONSTRUCT THE FLEXIBLE PORTION OF S.R. 18 (STA. 36+00 TO STA. 37+00 AND STA. 59+50 TO STA. 60+50), AND OPEN S.R. 18 AND RAMP J TO TRAFFIC. AT THIS TIME THE PORTION OF S.R. 18 TEMPORARY ROAD WEST OF U.S. 20 WILL BE CLOSED AND THE PORTION OF S.R. 18 TEMPORARY ROAD EAST OF U.S. 20 WILL BE LIMITED TO ONE WAY TRAFFIC. (WESTBOUND).
3) THE PORTION OF S.R. 18 TEMPORARY ROAD SHALL BE REMOVED WEST OF U.S. 20 AND THE PAVEMENT FOR RAMPS F AND G SHALL BE CONSTRUCTED. ON COMPLETION, THIS PAVEMENT SHALL BE OPENED TO TRAFFIC.
4) THE REMAINDER OF THE S.R. 18 TEMPORARY ROAD IN THE MEDIAN AREA AND EAST OF U.S. 20 SHALL BE REMOVED. RAMP H SHALL BE CONSTRUCTED.

CLEANING AND DISPOSING OF EXISTING SEPTIC TANKS:

SEPTIC TANKS SHALL BE CLEANED AND REMOVED OR FILLED AS CONDITIONS REQUIRE AND INCLUDED FOR PAYMENT IN THE UNIT PRICE BID FOR ITEM 203 EXCAVATION.

GUARD RAIL MODIFIED AS PER PLAN:

TYPE 4:

1) THE POST SPACING FOR ALL TYPE 4 GUARD RAIL SHALL BE AT 6'-3" INTERVALS WITH SPACER BLOCKS ATTACHED BETWEEN THE POSTS AND RAIL ELEMENT INSTEAD OF 12'-6" SPACING WITHOUT SPACER BLOCKS AS INDICATED ON THE PLANS.
2) ALL APPROACH (ENTRANCE) ENDS OF TYPE 4 GUARD RAIL SHALL BE CONSTRUCTED WITH THE NEW GUARD RAIL APPROACH END ASSEMBLIES AS DETAILED ON SHEET NO. 6. WHERE EITHER END IS ADJACENT TO PROPOSED BRIDGES, THE NEW BRIDGE CONNECTOR WILL APPLY UNLESS OTHERWISE DETAILED ON THE PLANS. THE EXIT (TRAILING) ENDS OF TYPE 4 GUARD RAIL SHALL BE AS DETAILED ON STANDARD DRAWING GR-2B.

TYPE 4 BARRIER DESIGN:

1) THE POST SPACING FOR ALL TYPE 4 BARRIER DESIGN RAIL SHALL BE AT 6'-3" INTERVALS WITH SPACER BLOCKS ATTACHED BETWEEN THE POST AND RAIL ELEMENTS INSTEAD OF 12'-6" SPACING WITHOUT SPACER BLOCKS AS INDICATED ON THE PLANS.
2) ALL APPROACH (ENTRANCE) ENDS OF TYPE 4 BARRIER DESIGN RAIL SHALL BE CONSTRUCTED WITH THE NEW GUARD RAIL APPROACH END ASSEMBLIES AS DETAILED ON SHEET NO. 6.

BASIS OF PAYMENT:

TYPE 4 GUARD RAIL WITH POST SPACING AT 6'-3", SPACER BLOCKS, AND NEW APPROACH END ASSEMBLIES WILL BE PAID FOR AS 606 GUARD RAIL, TYPE 4 MODIFIED AS PER PLAN, COMPLETE IN PLACE.

TYPE 4 BARRIER DESIGN WITH POST SPACING AT 6'-3", SPACER BLOCKS, AND NEW APPROACH END ASSEMBLIES WILL BE PAID FOR AS 606 GUARD RAIL, TYPE 4 BARRIER DESIGN MODIFIED AS PER PLAN, COMPLETE IN PLACE.

ADJUSTING GUARD RAIL LOCATIONS:

PRIOR TO STAKING THE GUARD RAIL THE ENGINEER SHALL MAKE A FIELD INSPECTION AND, IF NECESSARY ADJUST THE STATIONS OF THE END POSTS TO ACCOMMODATE FIELD CONDITIONS AND TO PROVIDE BETTER PROTECTION FOR TRAFFIC.

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

10
95

HUR-18-15.01

SUPERELEVATION TABLES

RAMP "F"

STATION	LT. EDGE PAV'T PROFILE GRADE ELEVATION	RT. EDGE PAV'T ELEVATION
SEE 20 SCALE DETAIL - SHEET NO. 64		
822+37.28	809.63	809.85
+50	809.46	809.68
+75	809.14	809.50
823+00	808.82	809.32
+25	808.50	809.16
+50	808.18	808.90
+75	807.86	808.73
824+00	807.54	808.57
+25	807.22	808.42
+50	806.92	808.25
+75	806.69	808.02
825+00	806.53	807.86
+25	806.43	807.75
+50	806.41	807.74
+75	806.45	807.78
826+00	806.56	807.89
+25	806.74	808.07
+50	806.99	808.32
+75	807.31	808.64
827+00	807.69	809.02
+25	808.14	809.47
+50	808.64	809.97
+75	809.14	810.55
828+00	809.64	811.05
+25	810.14	811.55
SEE 20 SCALE DETAIL - SHEET NO. 65		
832+00	818.05	819.38
+25	818.75	820.08
+50	819.49	820.82
+75	820.26	821.59
833+00	821.07	822.40
+25	821.88	823.21
+50	822.69	824.02
+75	823.50	824.68
834+00	824.31	825.32
+25	825.12	825.92
+50	825.93	826.62
SEE 20 SCALE DETAIL - SHEET NO. 64		

RAMP "G"

STATION	LT. EDGE PAV'T PROFILE GRADE ELEVATION	RT. EDGE PAV'T ELEVATION
SEE 20 SCALE DETAIL - SHEET NO. 65		
824+50	812.21	811.86
+75	811.59	811.41
825+00	810.97	810.97
+25	810.35	810.53
+50	809.73	810.06
+75	809.12	809.62
826+00	808.55	809.22
+25	808.00	808.83
+50	807.47	808.47
+75	806.98	808.14
827+00	806.51	807.84
+25	806.08	807.41
+50	805.67	807.00
+75	805.28	806.61
828+00	804.93	806.26
+25	804.61	805.94
+50	804.33	805.66
+75	804.08	805.41
829+00	803.87	805.20
+25	803.70	805.03
+50	803.57	804.90
+75	803.47	804.80
830+00	803.41	804.74
+25	803.37	804.70
+50	803.33	804.66
+75	803.29	804.40
831+00	803.25	804.14
+25	803.21	803.89
SEE 20 SCALE DETAIL - SHEET NO. 64		

RAMP "H"

STATION	RT. EDGE PAV'T PROFILE GRADE ELEVATION	LT. EDGE PAV'T ELEVATION
SEE 20 SCALE DETAIL - SHEET NO. 67		
818+75	827.22	827.14
819+00	826.60	826.65
+25	825.94	826.10
+50	825.24	825.47
+75	824.54	824.79
820+00	823.78	824.03
+25	822.99	823.24
+50	822.20	822.45
+75	821.41	821.66
821+00	820.64	820.87
+25	819.92	820.08
+50	819.27	819.29
+75	818.63	818.50
822+00	817.98	817.71
+25	817.30	816.92
+50	816.65	816.13
+75	816.00	815.34
823+00	815.34	814.55
+25	814.68	813.76
+50	814.03	812.97
+75	813.38	812.18
824+00	812.69	811.39
+25	811.93	810.60
+50	811.14	809.81
+75	810.38	809.05
825+00	809.70	808.37
+25	809.08	807.75
+50	808.53	807.20
+75	808.04	806.71
826+00	807.63	806.30
+25	807.28	805.95
+50	806.96	805.68
+75	806.63	805.47
827+00	806.38	805.33
+25	806.20	805.25
+50	806.18	805.25
+75	806.06	805.24
828+00	805.96	805.21
+25	805.78	805.14
+38.19	805.73	805.07
SEE 20 SCALE DETAIL - SHEET NO. 67		

RAMP "J"

STATION	RT. EDGE PAV'T PROFILE GRADE ELEVATION	LT. EDGE PAV'T ELEVATION
SEE 20 SCALE DETAIL - SHEET NO. 68		
812+00	831.71	831.02
+25	831.17	830.37
+50	830.67	829.74
+75	830.20	829.16
813+00	829.76	828.62
+25	829.36	828.13
+50	829.00	827.69
+75	828.62	827.29
814+00	828.26	826.93
+25	827.96	826.63
+50	827.69	826.36
+75	827.42	826.15
815+00	827.11	825.97
+25	826.83	825.85
+50	826.57	825.76
+75	826.35	825.73
816+00	826.20	825.74
+25	826.15	825.79
+50	826.18	825.89
+75	826.29	826.04
817+00	826.48	826.23
+25	826.72	826.47
+50	826.98	826.73
+75	827.24	826.99
818+00	827.50	827.25
+25	827.76	827.51
+50	828.02	827.77
+64.15	828.17	827.92
SEE 20 SCALE DETAIL - SHEET NO. 68		

FED. RD. DIVISION	STATE	PROJECT		
2	OHIO			

11
95

HUR-18-15.01

CALCULATIONS
(S.R.-18)

LINE	DESCRIPTION		QUANTITY
1	451 9" Reinforced Portland Cement Concrete Pavement		
2	From Typical Sections : 1961.10 Lin.Ft.		
3	From Line 2 : 1961.10 x 53 ÷ 9 = 11,548.70 Sq.Yds.		
4	Deduct For Tapered Sections : 24 x 500/2x9 + 24 x 400/2x9 = 1200.00 Sq.Yds.		
5	Deduct For 612 Concrete Median (From Plan Sheets) = 291.06 Sq.Yds.		
6	Net Total Lines 3,4, & 5 = 10,062.33 Sq.Yds.	Total =	10,062.3 Sq.Yds.
7			
8	310 Subbase		
9	From Line 6 : 10,062.33 x 6 ÷ 36 = 1677.06 Cu.Yds.		
10	Add For Shoulders : 2 x 8 x 1961.10 ÷ 9 = 3486.40 Sq.Yds.		
11	From Line 10 : 3486.40 x (7+5) ÷ 36 x 2 = 581.07 Cu.Yds.		
12	Add For 612 Concrete Median (From Line 5) : 291.06 x 12 ÷ 36 = 95.46 Cu.Yds.		
13	Deduct For Ramps : 728.57 x 8 ÷ 9 = 647.62 Sq.Yds.		
14	From Line 13 : 647.62 x (7+5) ÷ 36 x 2 = 107.94 Cu.Yds.		
15	Net Total Lines 9, 11, 12, & 14 = 2245.65 Cu.Yds.	Total =	2245.7 Cu.Yds.
16			
17	304 Aggregate Base		
18	From Line 10 : 3486.40 Sq.Yds.		
19	From Line 18 : 3486.40 x 8 ÷ 36 = 774.76 Cu.Yds.		
20	Deduct For Drives : 82.89 Sq.Yds.		
21	From Line 20 : 82.89 x 2 ÷ 36 = 4.61 Cu.Yds.		
22	Deduct For Ramps (From Line 13) : 647.62 x 8 ÷ 36 = 143.92 Cu.Yds.		
23	Net Total Lines 19, 21, & 22 = 626.23 Cu.Yds.	Total =	626.2 Cu.Yds.
24			
25	409 Seal Coat		
26	From Line 10 - Lines 13 & 20 : 3486.40 − (647.62 + 82.89) = 2755.89 Sq.Yds.		
27	Cover Aggregate (From Line 26) : 2755.89 x 0.008 = 22.05 Cu.Yds.	Total =	22.1 Cu.Yds.
28	Bituminous Material (From Line 26) : 2755.89 x 0.30 = 826.77 Gal.	Total =	826.8 Gal.
29			
30	203 Subgrade Preparation		
31	From Lines 5, 6, & 10 - Line 13 : 286.37 + 10,062.33 + 3486.40 − 647.62		
32	Total From Line 31 = 13,187.48 Sq.Yds.	Total =	13,187.5 Sq.Yds.
33			
34	605 Aggregate Drains		
35	From Typical Sections : 1961.10 x 2 = 3922.20 Lin.Ft.		
36	Deduct For Ramps & Drives : 627.48 + 115.00 = − 742.48 Lin.Ft.		
37	Add For Approach Slabs : 4 x 25 = 100.00 Lin.Ft.		
38	Net Total Lines 35, 36, & 37 = 3279.72 Lin.Ft.		
39	From Line 38 : 3279.72 ÷ 60 = 54.66 Drains ; Use 55 Drains		
40	From Line 39 : 55 x 16.22 (Average Pay Length) = 892.10 Lin.Ft.	Total =	892.1 Lin.Ft.
41			
42	659 Commercial Fertilizer (12-12-12) (Project Total)		
43	From Totals 659 Seeding = 116,095 Sq.Yds. ; 660 Sodding = 229 Sq.Yds.		
44	From Line 43 : 116,324 x 9 x 20 ÷ 1000 x 2000 = 10.47 Tons	Total =	10.5 Tons
45			
46	408 Prime Coat		
47	From Line 26 : 2755.89 Sq.Yds.		
48	Berm Sta. 44+85.47 to Sta. 45+86.56 Lt. : 50 x $\frac{10+8}{2}$ ÷ 9 + 51.09 x 8 ÷ 9 = 95.41 Sq.Yds.		
49	From Lines 47 & 48 : 2755.89 + 95.41 = 2851.30 Sq.Yds.		
50	From Line 49 : 2851.30 x 0.40 = 1140.52 Gal.	Total =	1140.5 Gal.
51			
52			
53			
54			
55			
56			
57			
58			
59			
60			

INTERCHANGE PAVEMENT QUANTITIES

Station Limits	451 9" Reinforced Portland Cement Concrete Pavement Sq.Yds.	310 Subbase Cu.Yds.	304 Aggregate Base Cu.Yds.	301 Bituminous Aggregate Base Cu.Yds.	409 Seal Coat: Cover Aggregate Cu.Yds.	409 Seal Coat: Bituminous Material As Per Plan Gal.	203 Subgrade Preparation Sq.Yds.	605 6" Aggregate Drains Lin.Ft.	Special Drainage Connector Using No.8 Aggregate Cu.Yds.		REFER TO SHEET NO.
Ramp "F" - Sta. F822+37.28 to Sta. F836+75.96	2494.2	616.1 *	206.8 *	92.8	9.7 *	365.1 *	3703.4 *	223.6	40.4		43
Acceleration Lane - Sta. 812+37.28 to Sta. 822+37.28 Lt.	1397.8	379.6	146.7	73.3	7.1	266.7	2277.8		3.5		25 & 26
Ramp "G" - Sta. G818+94.55 to Sta. G834+24.02	3513.3	852.0	211.1	105.6	10.1	380.0	4983.9	169.6	51.3		50
Deceleration Lane - Sta. 834+24.02 to Sta. 839+66.30 Lt.	658.2	189.7	80.0	40.0	3.9	144.6	1138.4		19.9		27
Ramp "H" - Sta. H817+74.76 to Sta. H828+38.19	2018.7	493.5	164.9	82.5	7.9	296.8	3008.2	142.6	32.7		55
Acceleration Lane - Sta. 828+38.19 to Sta. 838+38.19 Rt.	1397.8	379.6	146.7	73.3	7.1	266.7	2277.8		2.3		26 & 27
Ramp "J" - Sta. J808+68.60 to Sta. J819+15.06	2211.1	497.2	138.0	69.0	6.6	248.4	3039.2	220.8			59
Deceleration Lane - Sta. 803+64.00 to Sta. 808+68.60 Rt.	330.4	88.0	38.0	19.0	1.8	68.4	556.5				24
* Includes Berm - Sta. 44+85.47 to Sta. 45+86.56 Lt. - S.R.18											
Totals (Carried To Sheet No. 12)	14021.5	3495.7	1132.2	555.5	54.2	2036.7	20985.2	756.6	150.1		

EARTHWORK & SEEDING TABLE

FROM SHEET NO.	EXCAVATION	EMBANKMENT	SEEDING
S.R. 18			
14	3037	40251	12099
15	771	36506	9744
U.S.R. 20			
24	353	42	983
25	2485	10150	10705
26	2231	390	4693
27	1934	867	5085
RAMPS			
43	23533	22681	29718
50	18508	6030	13027
55	8520	12662	17760
59	634	38031	12281
TOTALS	62,006	167,610	116,095

SUB - SUMMARY

From Sheet Number	201 Clearing And Grubbing (Lump)	202 Removal Of Existing Obstructions: Pipe 24" And Under (Lin.Ft.)	Pavement (Sq.Yds.)	Catch Basin (Each)	Inlet (Each)	Sidewalk As Per Plan (Sq.Ft.)	203 Excavation (Cu.Yds.)	203 Embankment (Cu.Yds.)	203 Subgrade Preparation (Sq.Yds.)	604 Standard Monument Assembly (Each)	606 Guard Post (Each)	606 Guard Rail Type-4 (Lin.Ft.)	Type-4 Barrier Design (Lin.Ft.)	607 Fence Type-47 (Lin.Ft.)	410 Traffic Compacted Surface Type A or B (Cu.Yds.)	616 Water (M-Gal.)	616 Calcium Chloride (Tons)	Special Drilled Well Abandoned (Each)	601 Dumped Rock Channel Protection (Cu.Yds.)
8	Lump															20	2.0		
9															25		0.5	(1) Each	
11(Calc)							62006	167610	13187.5										
11(Ramps)									20985.2										
14		50	666.7	1	3	127						576.06							4.0
15		50	391.5						407.6		2	661.44							
24												100.00	135.00						
25									3733			1337.50	165.00						2.0
26									76.7			50.00	75.00						0.5
27												50.00	75.00						3.5
43												387.50	450.00						
50												125.00							
55																			2.0
59												1212.50							
82																			
92														2595					14.0
93										4									
Totals	Lump	100	1058.2	1	3	127	62,006	167,610	34969.7	4	2	4500.00	900.00	2595	25	20	2.5	(1) Each	26.0

From Sheet Number	659 Seeding And Mulching As Per Plan (Sq.Yds.)	659 Commercial Fertilizer (12-12-12) (Tons)	667 Jute Matting As Per Plan (Sq.Yds.)	660 Sodding Special Berm And Slope Protection As Per Plan (Sq.Yds.)	602 Concrete Masonry (Cu.Yds.)	603 Conduit Type A Class B Bedding 706.02 Class IV 60"	Type A 706.02 Rad.=50' 60"	Type B Class B Bedding 6"	Type B 12"	Type B 15"	Type B 21"	Type B 24"	Type C with B Bedding 24"	Type C Class B Bedding 706.02 or 706.08 E.S. 24"	Type D 706.02 Class III, 707.01-14 Gage, 707.02-14 Gage 12"	Type D 15"	Type E 6"	Type F 6"	Type F 8"	From Sheet Number
8									100								100	50		8
9																				9
11(Calc)	116095	10.47																		11(Calc.)
11(Ramps)																				11(Ramps)
14			753.0		0.26					118					36	36				14
15				228.6											28					15
24																				24
25					0.23				14										16	25
26			884.9		0.23				42									10	8	26
27			563.9		0.41									376					12	27
43			358.1									58						20		43
50								46				142		742						50
55			244.2		0.41						64		346					10		55
59			508.3																	59
82					3.60	230	20													82
92																				92
93																				93
Totals	116,095	10.47	3312.4	228.6	5.14	230	20	46	156	118	64	200	346	1118	64	36	100	90	36	Totals

From Sheet Number	604 Catch Basins No. 2-2-B (Each)	No. 5 (Each)	No. 6 Modified (Each)	605 Pipe Underdrains Deep 6" (Lin. Ft.)	Unclassified 6" (Lin. Ft.)	Aggregate Drains (Lin. Ft.)	301 Bituminous Aggregate Base (Cu.Yds.)	304 Aggregate Base (Cu.Yds.)	310 Subbase As Per Plan (Cu.Yds.)	Special Drainage Connector No. 8 Aggregate (Cu.Yds.)	402 Asphalt Concrete (70-85) (Cu.Yds.)	404 Asphalt Concrete (70-85) (Cu.Yds.)	407 Tack Coat (Gal.)	408 Prime Coat (Gal.)	409 Seal Coat Bituminous Material (Gal.)	Cover Aggregate No. 8 (Cu.Yds.)	Bituminous Material As Per Plan (Gal.)	451 Reinforced Portland Cement Concrete Pavement (T=9") (Sq.Yds.)
8																		
9																		
11(Calc)						892.1		626.2	2245.7					1140.5	826.8	22.1		10062.3
11(Ramps)						756.6	555.5	1132.2	3495.7	150.1						54.2	2036.7	14021.5
14	2	1					9.4	61.1	36.0		1.2	16.9	26.7	53.3	40.0	1.1		
15							14.1	76.6	67.0		2.1	29.2	24.5	81.2	61.0	1.8		
24																		
25					170		49.2	114.7	66.6	18.2						4.7	177.2	
26			1	318			10.9	25.5	15.2	4.2						1.0	39.3	
27				366														
43		2		818														
50		2		914														
55		2		306														
59																		
82																		
92																		
93																		
Totals	2	7	1	2722	170	1648.7	639.1	2036.3	5926.2	172.5	3.3	46.1	51.2	1275.0	927.8	84.9	2253.2	24,083.8

From Sheet Number	510 Dowel Hole (Each)	Special Expansion Bolt (Each)	609 Curb Standard Type 6 (Lin. Ft.)	Standard Type 7 (Lin. Ft.)	Standard Type 8 (Lin. Ft.)	611 Reinforced Concrete Approach Slab (T=13") As Per Plan (Sq.Yds.)	612 Standard Concrete Median (Sq.Yds.)	From Sheet Number
8								8
9	12	12						9
11(Calc)								11(Calc.)
11(Ramps)								11(Ramps)
14							159.3	14
15						294.4	127.1	15
24								24
25								25
26								26
27								27
43			142	71	134			43
50			131				204.1	50
55				105	153			55
59								59
82								82
92								92
93								93
Totals	12	12	273	176	287	294.4	490.5	Totals

GENERAL SUMMARY

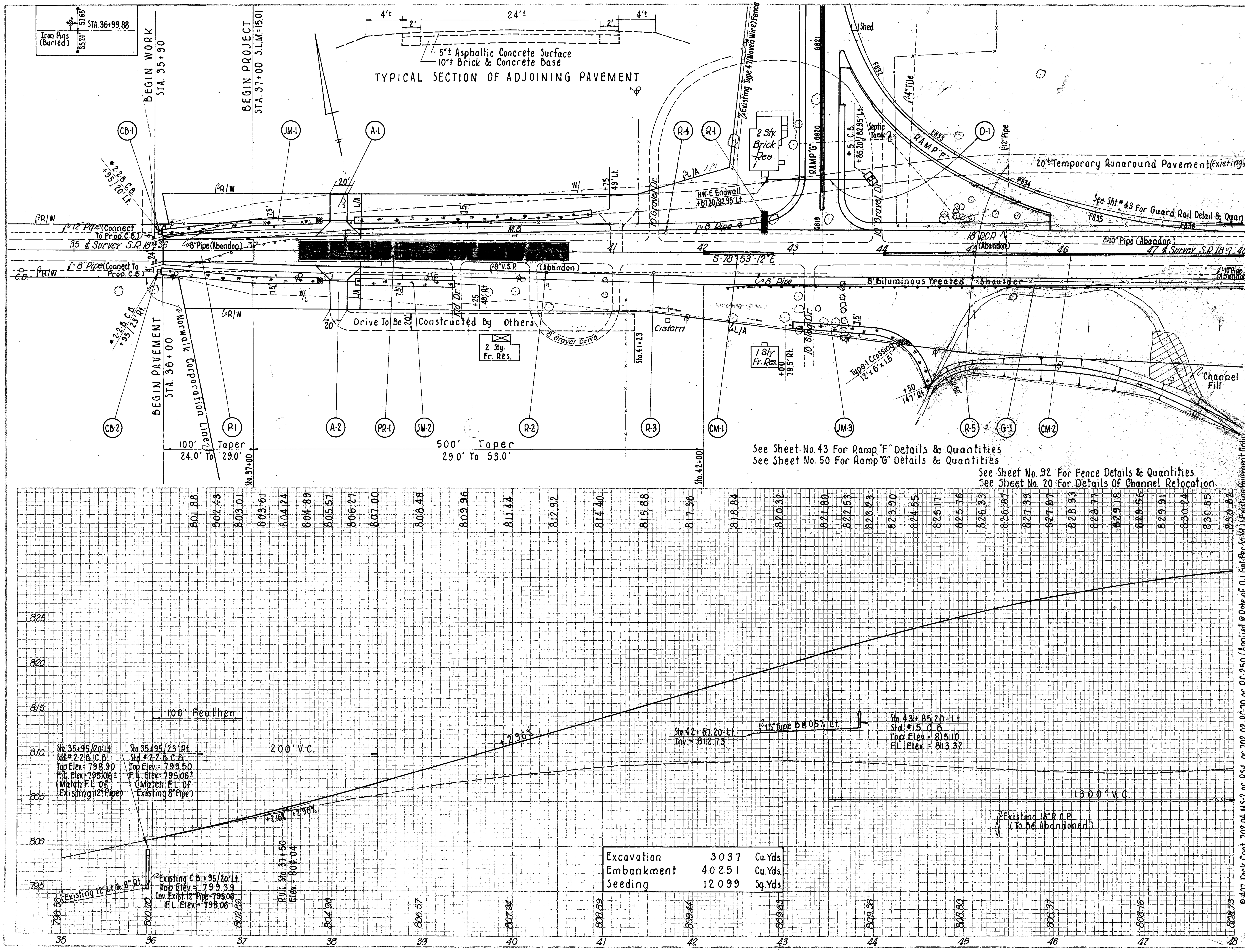
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

HUR-18-15.01

FROM SHEET NO.	ITEM	PLAN TOTAL	UNITS	DESCRIPTION
				ROADWAY
12	201	Lump	Lump	Clearing And Grubbing
	202	100	Lin.Ft.	Pipe Removed, 24" And Under
	202	1058	Sq.Yds.	Existing Pavement Removed And Disposed Of
	202	1	Each	Catch Basin Removed
	202	3	Each	Inlet Removed
	202	127	Sq.Ft.	Existing Sidewalk Removed And Disposed Of, As Per Plan
	203	62,006	Cu.Yds.	Excavation Not Including Embankment Construction, As Per Plan
	203	167,610	Cu.Yds.	Embankment
	203	34,970	Sq.Yds.	Subgrade Preparation
	410	25	Cu.Yds.	Traffic Compacted Surface, Type A or B
	604	4	Each	Standard Monument Assembly
	606	2	Each	Guard Post
	606	4500.00	Lin.Ft.	Guard Rail, Type 4, Modified As Per Plan
	606	900	Lin.Ft.	Guard Rail, Type 4, Barrier Design, Modified As Per Plan
	607	2595	Lin.Ft.	Fence, Type 47
	616	20	M-Gal.	Water
	616	2.5	Tons	Calcium Chloride
	Special	1	Each	Drilled Well Abandoned
				EROSION CONTROL
	601	26	Cu.Yds.	Dumped Rock Channel Protection
	659	116,095	Sq.Yds.	Seeding And Mulching, As Per Plan
	659	10.47	Tons	Commercial Fertilizer (12-12-12)
	660	229	Sq.Yds.	Sodding, Special Berm And Slope Protection, As Per Plan
	667	3312	Sq.Yds.	Jute Matting, As Per Plan
				DRAINAGE
	602	5.1	Cu.Yds.	Concrete Masonry
	603	230	Lin.Ft.	60" Conduit, Type A, 706.02, Class IV, With Class B Bedding
	603	20	Lin.Ft.	60" Conduit, Type A, 706.02, Radius Pipe With Class B Bedding
	603	46	Lin.Ft.	6" Conduit, Type B, With Class B Bedding
	603	156	Lin.Ft.	12" Conduit, Type B, With Class B Bedding
	603	118	Lin.Ft.	15" Conduit, Type B, With Class B Bedding
	603	64	Lin.Ft.	21" Conduit, Type B, With Class B Bedding
	603	200	Lin.Ft.	24" Conduit Type B, With Class B Bedding
	603	1118	Lin.Ft.	24" Conduit, Type C, 706.02 or 706.08 E.S., With Class B Bedding
	603	346	Lin. Ft.	24" Conduit Type C, with Class B Bedding
	603	64	Lin.Ft.	12" Conduit, Type D, 706.02, Class III, 707.01 14 Gage or 707.02 14 Gage
	603	36	Lin.Ft.	15" Conduit, Type D,
	603	100	Lin.Ft.	6" Conduit, Type E
	603	90	Lin.Ft.	6" Conduit, Type F
	603	36	Lin.Ft.	8" Conduit Type F
	604	2	Each	Standard No. 2-2-B Catch Basin
	604	7	Each	Standard No. 5 Catch Basin
	604	1	Each	Standard No. 6 Catch Basin, Modified As Per Plan
	605	170	Lin.Ft.	6" Unclassified Pipe Underdrains
	605	2722	Lin.Ft.	6" Deep Pipe Underdrains
12	605	1649	Lin.Ft.	Aggregate Drains

FROM SHEET NO.	ITEM	PLAN TOTAL	UNITS	DESCRIPTION
				PAVEMENT
12	301	639	Cu.Yds.	Bituminous Aggregate Base, 702.01 (85-100) or 702.09, RT-10 As per plan
	304	2036	Cu.Yds.	Aggregate Base
	310	5926	Cu.Yds.	Subbase, As Per Plan
	Special	173	Cu.Yds.	Drainage Connector, Using No. 8 Aggregate
	402	3	Cu.Yds.	Asphalt Concrete (70-85)
	404	46	Cu.Yds.	Asphalt Concrete (70-85)
	407	51	Gals.	Tack Coat, 702.04, MS-2 or RS-1; or 702.02, RC-70 or RC-250
	408	1275	Gals.	Bituminous Prime Coat 702.09 RT-2 or RT-3
	409	928	Gals.	Seal Coat, Bituminous Material 702.09 RT-9 or RT-10 or 702.02 MC-800 or MC-3000
	409	85	Cu.Yds.	Seal Coat, Cover Aggregate No. 8
	409	2253	Gals.	Seal Coat, Bituminous Material, As Per Plan
	451	24,084	Sq.Yds.	9" Reinforced Portland Cement Concrete Pavement
	510	12	Each	Dowel Hole
	Special	12	Each	Expansion Bolt
	609	273	Lin.Ft.	Standard Type 6 Concrete Curb
	609	176	Lin.Ft.	Standard Type 7 Concrete Curb
	609	287	Lin.Ft.	Standard Type 8 Concrete Curb
	611	294	Sq.Yds.	Reinforced Concrete Approach Slab (T=13"), As Per Plan
12	612	491	Sq.Yds.	Standard Concrete Median
				BUILDING REMOVAL
94	202	Lump	Lump	Parcel No. 46 WL - Removal Of 2 Story Brick Residence, Concrete Block And Frame Garage, Silo, Concrete Block And Corrugated Metal Garage And 2 Frame Sheds
				TRAFFIC CONTROL
72	202	Lump	Lump	Removal Of Existing Signs And Supports
81	620	19	Each	Mono-Directional Delineator, Type A-1, Post Mounted
	620	4	Each	Mono-Directional Delineator, Type A-1, Bracket Mounted
	620	118	Each	Mono-Directional Delineator, Type C-2, Post Mounted
	620	2	Each	Mono-Directional Delineator, Type C-2, Bracket Mounted
81	620	10	Each	Bi-Directional Delineator, Type C-2, Post Mounted
72	815	1068	Sq.Ft.	Sign Erection, Overhead Extrusheet Type
	815	137	Sq.Ft.	Sign Erection, Groundmounted Extrusheet Type
	815	210	Sq.Ft.	Sign Erection, Flat Sheet Type
	816	185	Lin.Ft.	Structural Support, 4 lb. Drive Post
	816	250	Lin.Ft.	Structural Support 6 Lb. Beam
	816	16	Lin.Ft.	Structural Support 6 Lb. Beam, As Per Plan
	816	57	Lin.Ft.	Structural Support 8 Lb. Beam
	816	2	Each	Overhead Sign Support No. 7.3, Design 2, 64' Span
	816	1	Each	Overhead Sign Support No. 7.4, Design 2, 79' Span
	816	2	Each	Overhead Sign Support No. 12.24, Design 4, 20' Arm
	816	2.8	Cu.Yds.	Concrete Foundations For Groundmounted Sign Supports
72	816	32.9	Cu.Yds.	Concrete Foundations For Overhead Sign Supports
		Lump	Lump	Field Office
	614	Lump	Lump	Maintaining Traffic

STRUCTURE OVER 20 FT. SPAN
HUR-18-15.23 - For Estimated Quantities - See Sheet No. 85



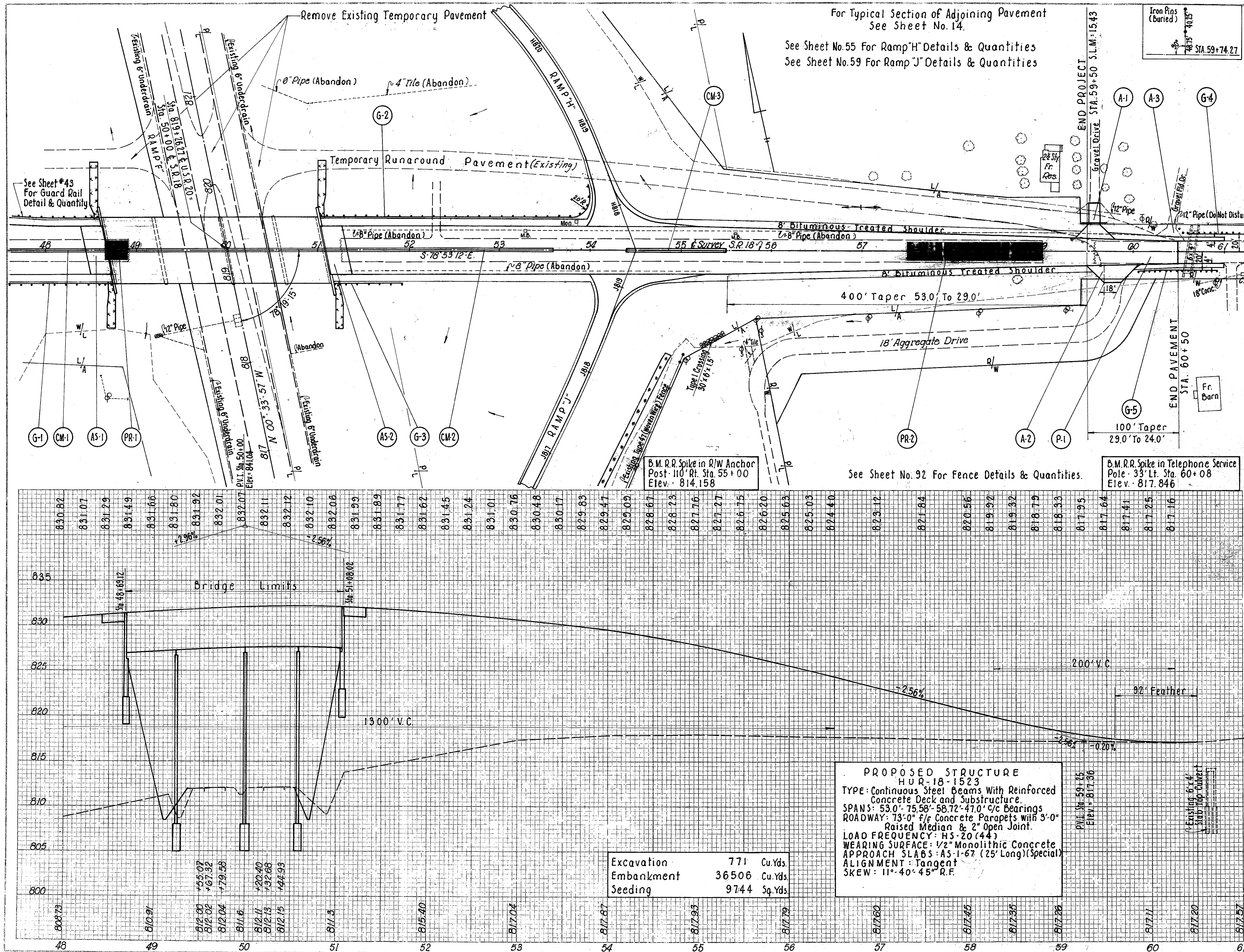
Ref. No.	Station	202 Removal of Existing Obstructions: Catch Basins (Each)	202: Inlets (Each)	202: Pipe 24" & Under (Lin.Ft.)	202: Pavement (Sq.Yds.)	202: Sidewalk As Per Plan (Sq.Ft.)	606 Guard Rail Type-4 (Lin.Ft.)	612 Concrete Median (Sq.Yds.)
PR-1	37+50 to 40+50				666.7			
CM-1	42+00 to 42+78							26.0
CM-2	44+00 to 48+00							133.3
CB-1	35+95 Lt.	1						
G-1	42+23.94 to 48+00 Rt.						576.06	
R-1	42+65 Lt.					127		
R-2	40+24.3 Rt.		1					
R-3	41+45.8 Rt.		1					
R-4	41+60.3 Lt.		1					
R-5	45+37			50				
	Totals	1	3	50	666.7	127	576.06	159.3

Ref. No.	Station	404 Asphalt Concrete Cu.Yds. Var.	404 1"	404 2"*	304 Aggregate Base Cu.Yds. Var.	304 5"	304 8"	402 Asphalt Concrete Cu.Yds. 1½"	407 Tack Coat ⊙ Gal.	408 Prime Coat Gal.	301 Bituminous Aggregate Base Cu.Yds. 2@4"	310 Subbase Cu.Yds. Var.	409 Seal Coat Cover Aggregate Cu.Yds.	409 Seal Coat Bituminous Material Gal.	603 Conduit Type B With Class B Bedding 15" Lin.Ft.	603 Conduit Type D 706.02 Cl. III, 707.01 14 Ga., 707.02 14 Ga. 12" Lin.Ft.	603 Conduit Type D 15" Lin.Ft.	604 Catch Basins Std. No. 2-2-B Each	604 Catch Basins Std. No. 5 Each	601 Dumped Rock Channel Protection Cu.Yds.	667 Jute Matting Sq.Yds.	602 Concrete Masonry HW-E Endwall Cu.Yds.
P-1	36+00 to 37+00 Δ	5.6	0.8		27.9			1.2	26.7	53.3	9.4	36.0	1.1	40.0								
A-1	37+95 Lt. L=48.2'			7.3		13.8											36			2.0*		
A-2	37+95 Rt. L=48.2'			3.2		3.0	16.4									36				2.0*		
CB-1	35+95 Lt.																	1				
CB-2	35+95 Rt.																	1				
D-1	42+67.20 to 43+85.20 Lt.														118				1			0.26
JM-1	35+95 to 40+75 Lt.																				363.6	
JM-2	35+95 to 39+25 Rt.																				238.6	
JM-3	43+00 to 44+50 Rt.																				150.8	
	Totals	116.9			61.1			1.2	26.7	53.3	9.4	36.0	1.1	40.0	118	36	36	2	1	4.0	753.0	0.26

⊙ 407 Tack Coat 702.04 MS-2 or RS-1, or 702.02 RC-70 or RC-250 (Applied @ Rate of 0.1 Gal. Per Sq.Yd.) (Existing Pavement Only)

* 2-1" Courses ΔBituminous Shoulder Varies 4' to 8' / *6' x 6' x 1.5'

HUR-18-15.01



Ref. No.	Station	606 Guard Rail Type-4 Lin.Ft.	606 Guard Posts Each	612 Concrete Median Sq.Yds.	660 Special Berm And Slope Protection Sq.Yds.
CM-1	48+00 to 48+44.12			14.7	
CM-2	51+33.02 to 53+60			75.7	
CM-3	54+50 to 55+50			36.7	
A-3	60+38 Lt.		2*		
AS-1	48+44.12 to 48+69.12				114.5
AS-2	51+08.02 to 51+33.02				114.1
G-1	48+00 to 48+73.94 Rt.	73.94			
G-2	51+03.21 to H818+32.4 Lt.	325.00			
G-3	51+18.30 to 51+93.30 Rt.	75.00			
G-4	60+73 to 61+73 Lt.	100.00			
G-5	60+04 to 60+91.5 Rt.	87.50			
	Totals	661.44	2	127.1	228.6

* Spaced @ 6'-3" Centers-Face of Post 2' From Edge of Drive

Ref. No.	Station	304 Aggregate Base Cu.Yds. Var.	304 5"	304 7"	304 8"	402 Asphalt Concrete Cu.Yds. 1½"	404 Asphalt Concrete Cu.Yds. Var.	404 1"	404 2"*	301 Bituminous Aggregate Base Cu.Yds. 2@4"	310 Subbase Cu.Yds. Var.	407 Tack Coat ⊙ / 408 Prime Coat Gal.	203 Subgrade Preparation Sq.Yds.	409 Seal Coat Cover Aggregate Cu.Yds.	409 Seal Coat Bituminous Material Gal.	202 Removal of Existing Obstructions Pavement Sq.Yds.	202	202 Pipe 24" & Under Lin.Ft.	603 Conduit Type D 706.02 Cl. III 707.01-14 Ga. 707.02-14 Ga. Lin.Ft. 12"	603 Conduit Lin.Ft.	611 Reinforced Concrete Approach Slabs As Per Plan Sq.Yds. T=13"
A-1	59+58 Lt. L=40'		6.5		7.4				2.5									50	28		
A-2	59+77 Rt. L=20'			17.7					4.9												
A-3	60+38 Lt.	0.6□																			
AS-1	48+44.12 to 48+69.12				9.7						15.8	17.4	190.8	0.4	13.1						147.2
AS-2	51+08.02 to 51+33.02				9.7						15.8	17.4	190.8	0.4	13.1						147.2
P-1	59+50 to 61+00 △	25.0				2.1	20.4	1.4		14.1	35.4	24.5 46.4	26.0	1.0	34.8						
PR-1	48+65 to 48+91.20															58.2					
PR-2	57+50 to 59+00															333.3					
	Totals	76.6				2.1	29.2			14.1	67.0	24.5 81.2	407.6	1.8	61.0	391.5		50	28		294.4

⊙ 407 Tack Coat 702.04 MS-2 or RS-1 or 702.02 RC-70 or RC-250 (Applied @ Rate of 0.1 Gal. Per Sq.Yd.) (Existing Pavement Only).

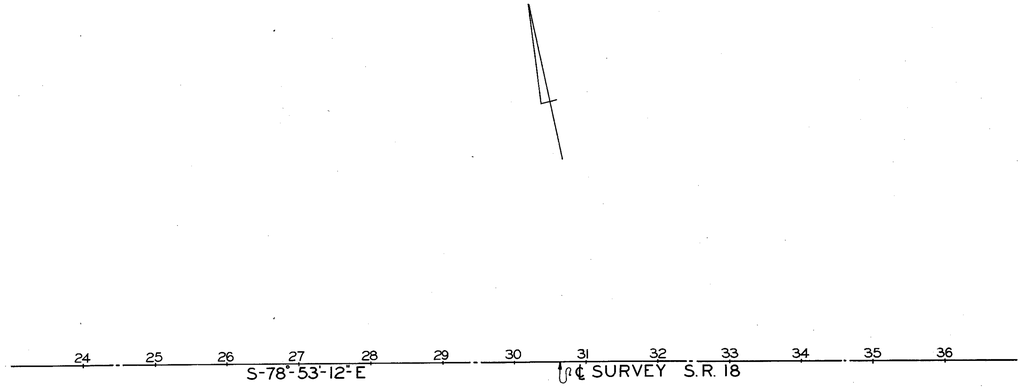
* 2-1" Courses. □ For Dressing Existing Drive. △ Bituminous Shoulder Varies 8' to 4' Sta. 59+50 to Sta. 60+50.

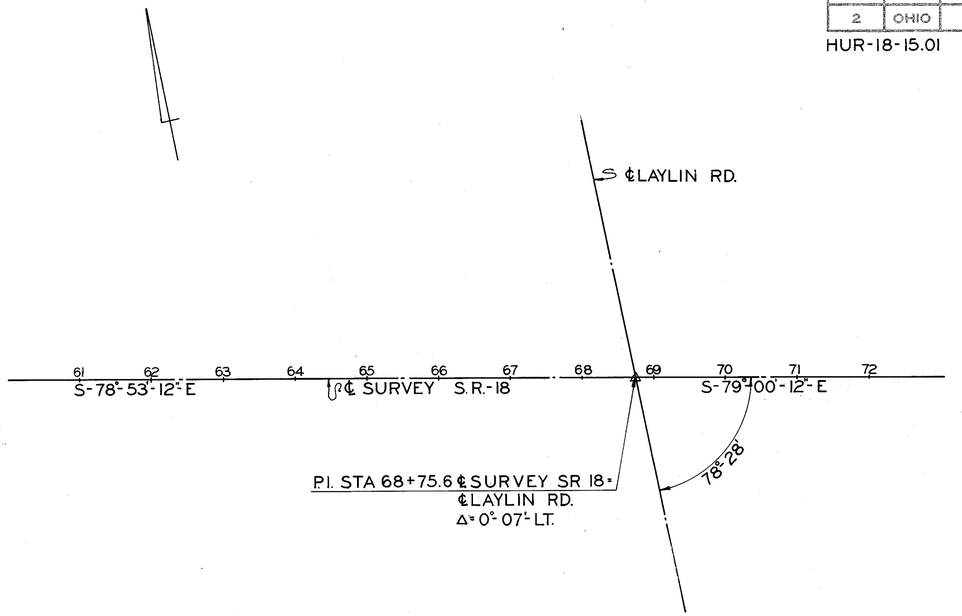
S.R. 18 - STA. 48+00 To STA. 62+00

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

16
95

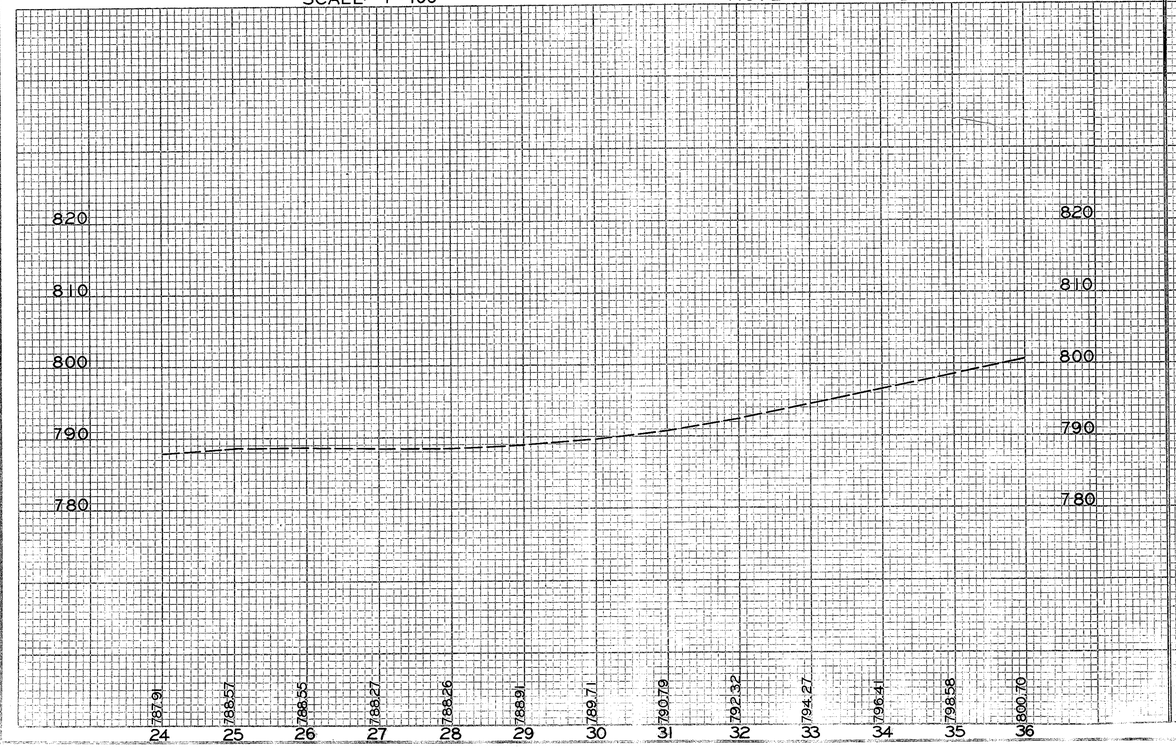
HUR-18-15.01





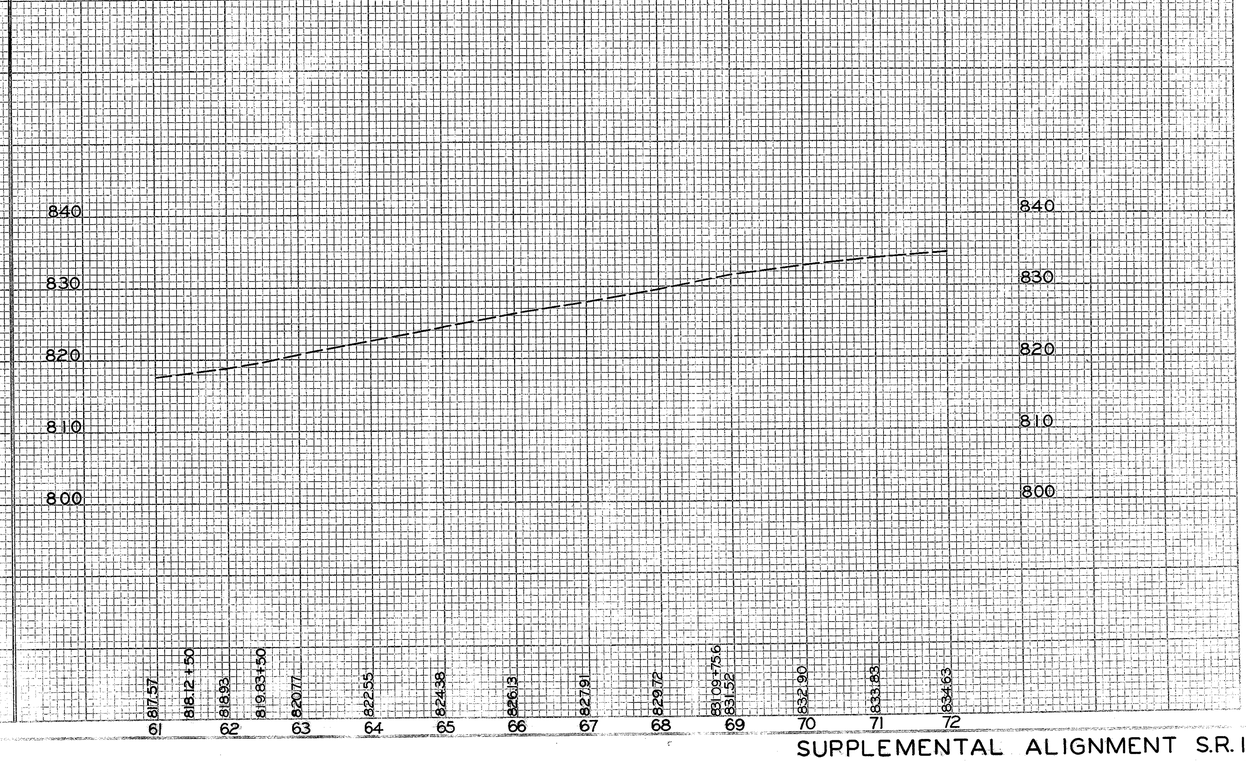
SCALE: 1"=100'

NOTE: CONTINUED ON SHEET NO. 14

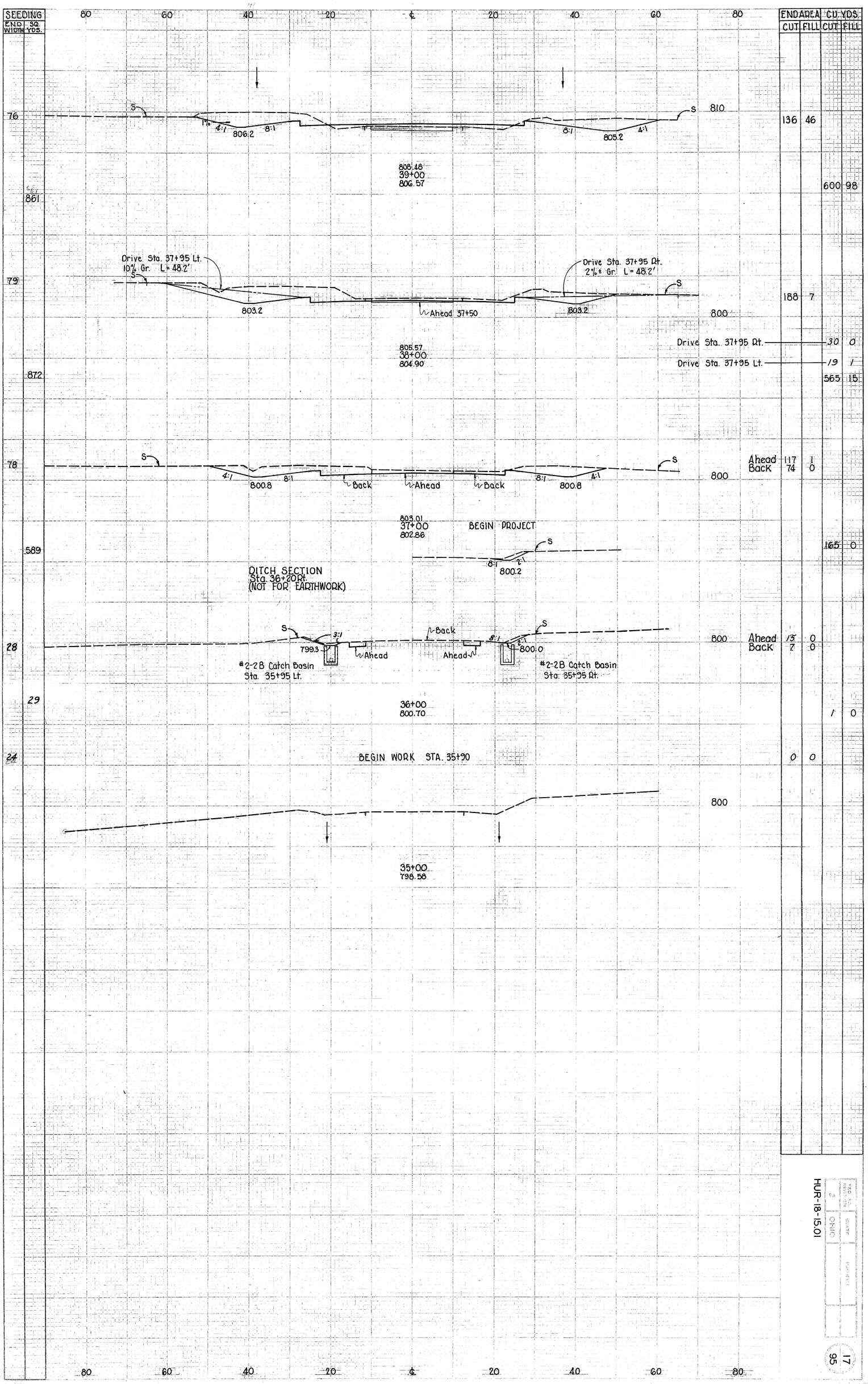


NOTE: CONTINUATION FROM SHEET NO. 15

SCALE: 1"=100'



SUPPLEMENTAL ALIGNMENT S.R. 18


SEEDING
END SQ WIDTH YDS.
80 60 40 20 ℄ 20 40 60 80
END AREA CU YDS
CUT FILL CUT FILL
76
861
79
872
78
589
28
29
24
S
1%
4:1
806.2
8:1
805.2
810
136 46
808.48
39+00
806.57
600 98
Drive Sta. 37+95 Lt.
10% Gr. L=48.2'
Drive Sta. 37+95 Rt.
2 1/2% Gr. L=48.2'
803.2
Ahead 37+50
800
188 7
805.57
38+00
804.90
Drive Sta. 37+95 Rt. 30 0
Drive Sta. 37+95 Lt. 19 1
565 15
800.8
Back
Ahead
Ahead 117 1
Back 74 0
803.01
37+00
802.86
BEGIN PROJECT
165 0
800.2
DITCH SECTION
Sta. 36+20 Rt.
(NOT FOR EARTHWORK)
3:1
799.3
#2-2B Catch Basin
Sta. 35+95 Lt.
800.0
#2-2B Catch Basin
Sta. 35+95 Rt.
Ahead 15 0
Back 7 0
36+00
800.70
1 0
BEGIN WORK STA. 35+90
0 0
35+00
798.58
STA 35+00 TO STA 39+00
HUR-18-15.01
OHIO
17
95

END AREA	CU YDS.
CUT FILL	CUT FILL
0 2466	0 4173
0 2041	0 3339
0 1781	0 1021
0 1600	0 1227
0 1038	7
11 908	18 1532
8 747	19 1231
12 583	11 606
7 494	17 381
16 356	
30 493	78 799
54 370	83 621
36 301	117 435
90 168	174 300
90 188	
98 136	433 337
136 46	

HUR-18-15.01

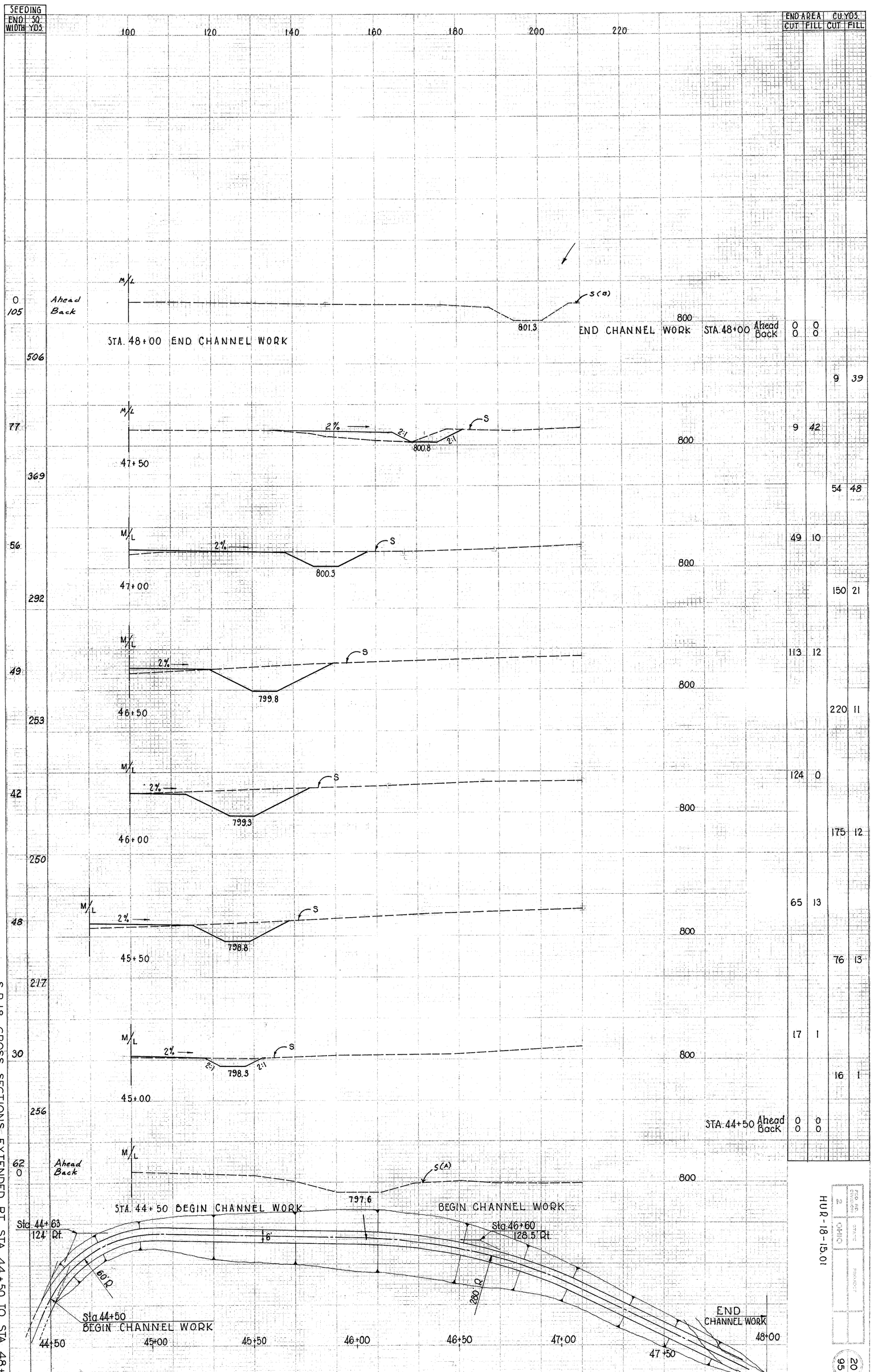
18
95

STA 40+00 TO STA 45+00

FED. DIVISION	STATE	PROJECT	
2	OHIO		19 / 95

HUR-18-15.01

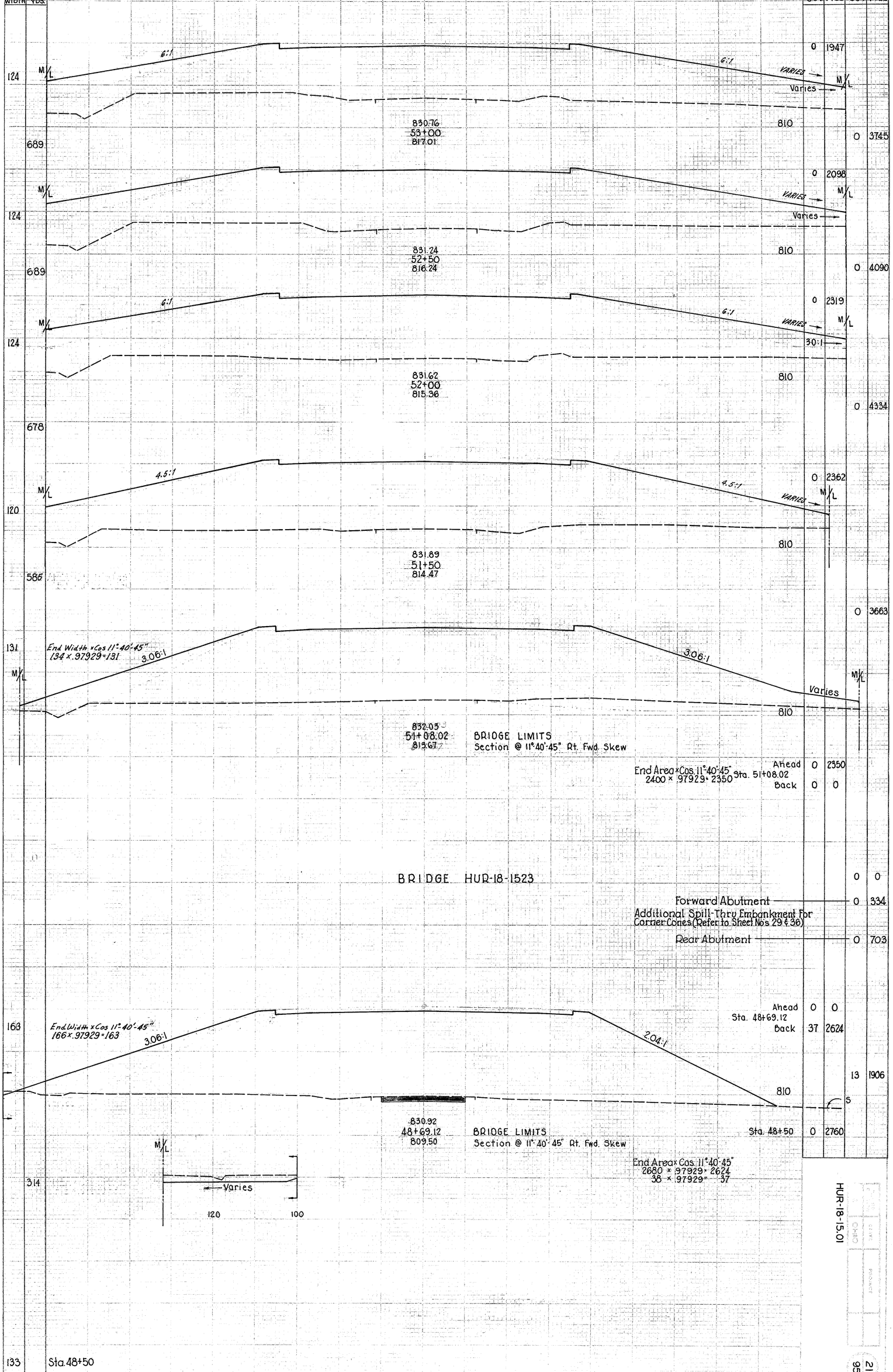
STA 45+50 TO STA 48+50

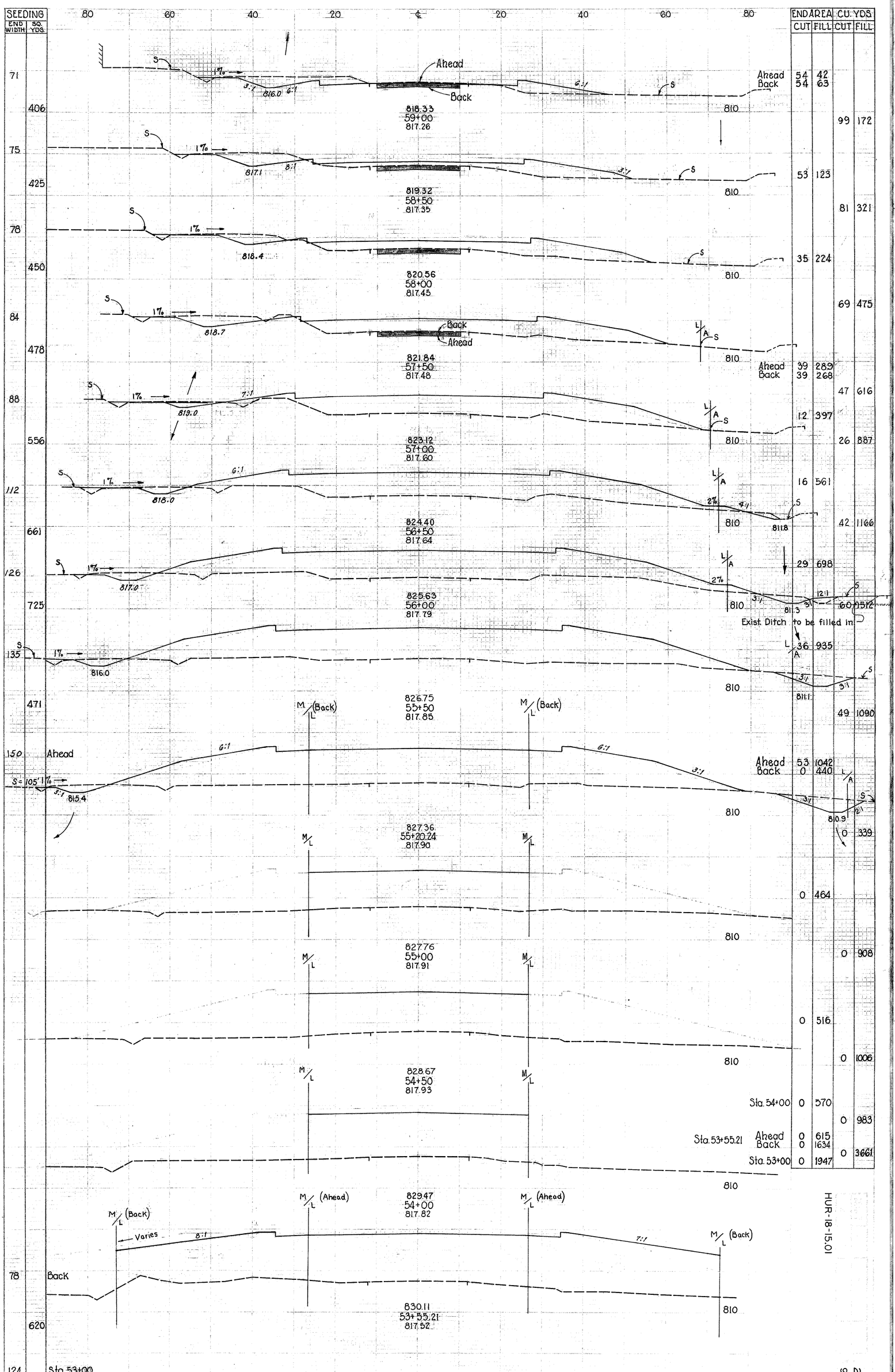


S.R. 18 CROSS SECTIONS EXTENDED RT. STA. 44+50 TO STA. 48+00

HUR-18-15.01

20
95


SEEDING
END WIDTH
SQ. YDS.
80 60 40 20 ℄ 20 40 60 80
END AREA CU. YDS.
CUT FILL CUT FILL
6:1
M/L
VARIES
Varies
124
689
830.76
53+00
817.01
810
0 1947
0 3745
831.24
52+50
816.24
0 2098
0 4090
831.62
52+00
815.36
0 2319
30:1
0 4334
678
4.5:1
120
831.89
51+50
814.47
0 2362
585
0 3663
End Width x Cos 11°40'45"
134 x .97929 = 131
3.06:1
131
832.03
51+08.02
813.67
BRIDGE LIMITS
Section @ 11°40'45" Rt. Fwd. Skew
End Area x Cos 11°40'45"
2400 x .97929 = 2350
Ahead 0 2350
Sta. 51+08.02
Back 0 0
BRIDGE HUR-18-1523
0 0
Forward Abutment 0 334
Additional Spill-Thru Embankment For
Corner Cones (Refer to Sheet Nos 29 & 30)
Rear Abutment 0 703
Ahead 0 0
Sta. 48+69.12
Back 37 2624
End Width x Cos 11°40'45"
166 x .97929 = 163
163
2.04:1
13 1906
830.92
48+69.12
809.50
BRIDGE LIMITS
Section @ 11°40'45" Rt. Fwd. Skew
Sta. 48+50 0 2760
End Area x Cos 11°40'45"
2680 x .97929 = 2624
38 x .97929 = 37
Varies
120
100
314
133
Sta. 48+50
STA 48+69.12 TO STA 53+00
HUR-18-15.01
21
95


SEEDING
END WIDTH
SQ. YDS.
80 60 40 20 ℄ 20 40 60 80
END AREA CU. YDS.
CUT FILL CUT FILL
71
406
75
425
78
450
84
478
88
556
112
661
126
725
135
471
150
S=105' 1%
78
620
124
Sta. 53+00
Ahead
Back
818.33
59+00
817.26
819.32
58+50
817.35
820.56
58+00
817.45
821.84
57+50
817.48
823.12
57+00
817.60
824.40
56+50
817.64
825.63
56+00
817.79
826.75
55+50
817.85
827.36
55+20.24
817.90
827.76
55+00
817.91
828.67
54+50
817.93
829.47
54+00
817.82
830.11
53+55.21
817.52
816.0
817.1
818.4
818.7
819.0
818.0
817.0
816.0
815.4
M/L (Back)
M/L (Ahead)
Varies
8:1
7:1
6:1
3:1
1%
2%
4:1
12:1
Ahead 54 42
Back 54 63
53 123
35 224
Ahead 39 289
Back 39 268
12 397
16 561
811.8
29 698
811.3
60 0512
Exist. Ditch to be filled in
36 935
811.1
Ahead 53 1042
Back 0 440
810.9
0 339
0 464
0 516
Sta. 54+00 0 570
Sta. 53+55.21 Ahead 0 615
Back 0 1634
Sta. 53+00 0 1947
99 172
81 321
69 475
47 616
26 887
42 1166
49 1090
0 908
0 1006
0 983
0 3661
810
HUR-18-15.01
STA 53+55.21 TO STA 59+00
22
95

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

23
95

HUR-18-15.01

STA 59+50 TO STA 63+00

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

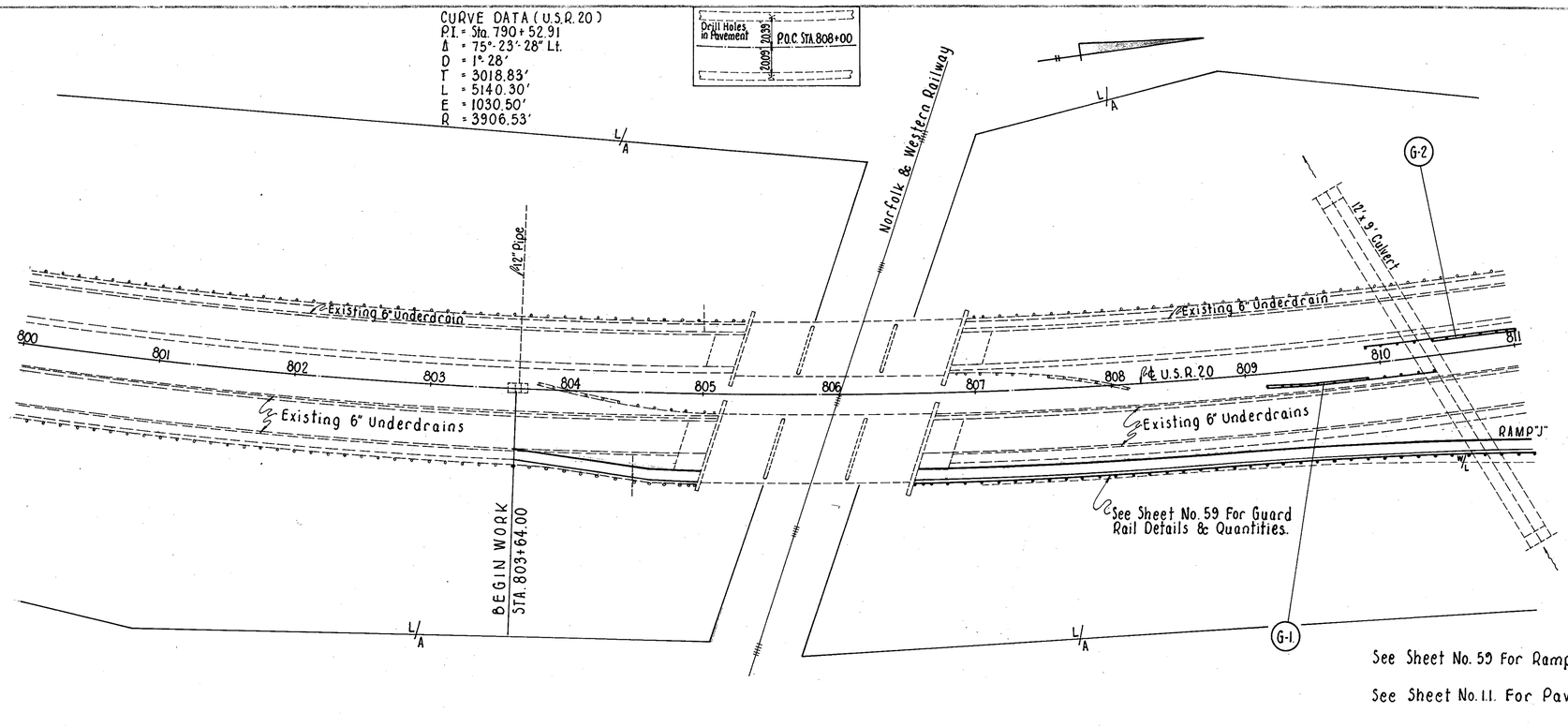
HUR-18-15.01

24
95

CURVE DATA (U.S.R. 20)
P.I. = Sta. 790+52.91
Δ = 75°-23'-28" Lt.
D = 1°-28'
T = 3018.83'
L = 5140.30'
E = 1030.50'
R = 3906.53'

Drill Holes in Pavement 2009 2039

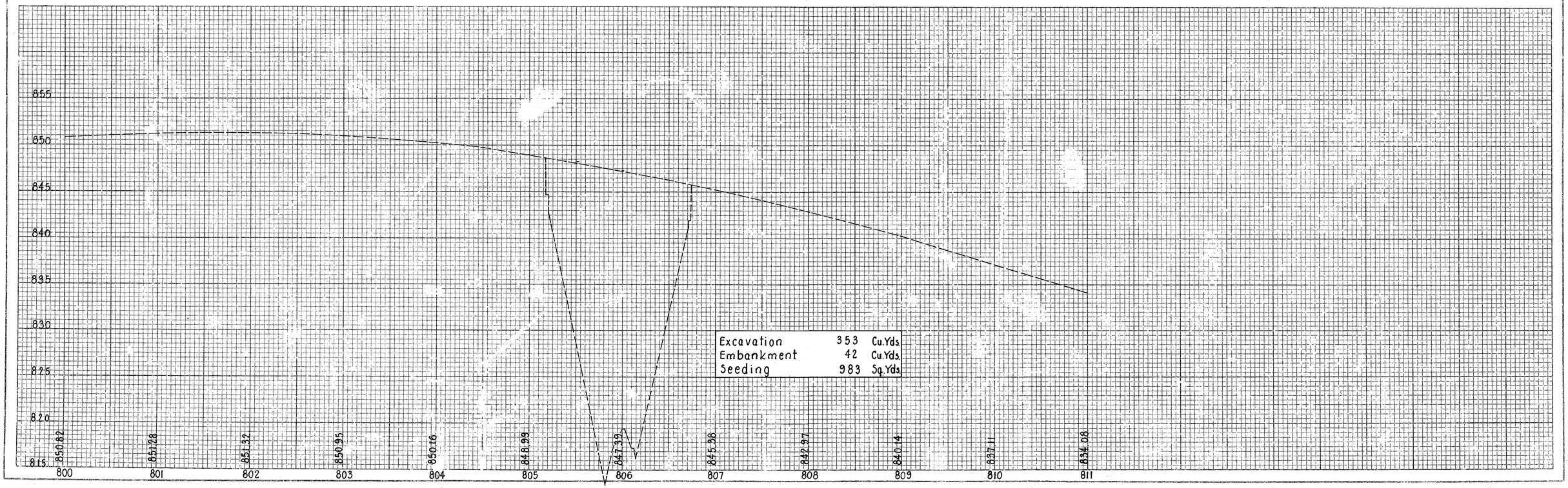
P.O.C. STA. 808+00



Ref. No.	Station	606 Guard Rail Type-4 Lin. Ft.	606 Guard Rail Type-4 Barrier Design Lin. Ft.				
G-1	809+15 to 810+40 Rt.	50.00	75.00				
G-2	809+90 to 811+00 Lt.	50.00	60.00				
	Totals	100.00	135.00				

See Sheet No. 59 For Ramp "J" Details & Quantities.

See Sheet No. 11. For Pavement Quantities.



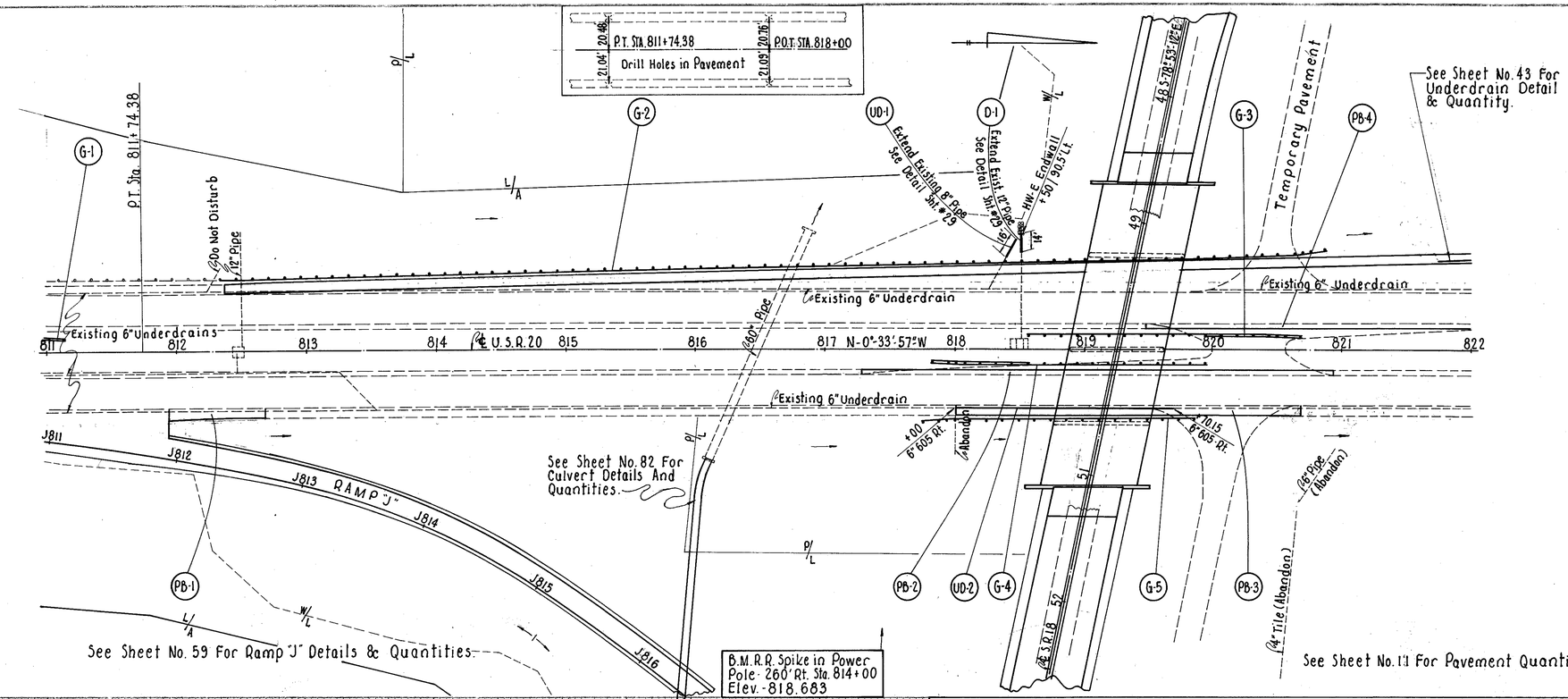
Excavation	353	Cu.Yds.
Embankment	42	Cu.Yds.
Seeding	983	Sq.Yds.

U.S.R. 20- STA. 800+00 TO STA. 811+00

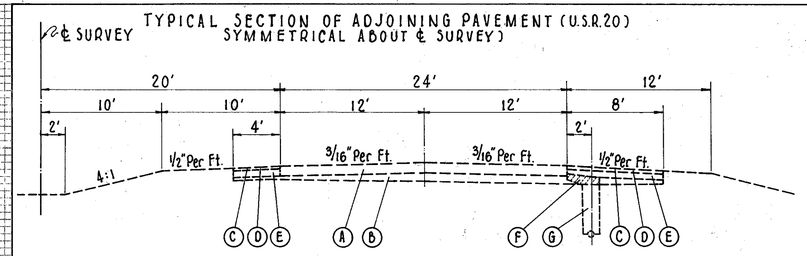
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

25/95

HUR-18-15.01

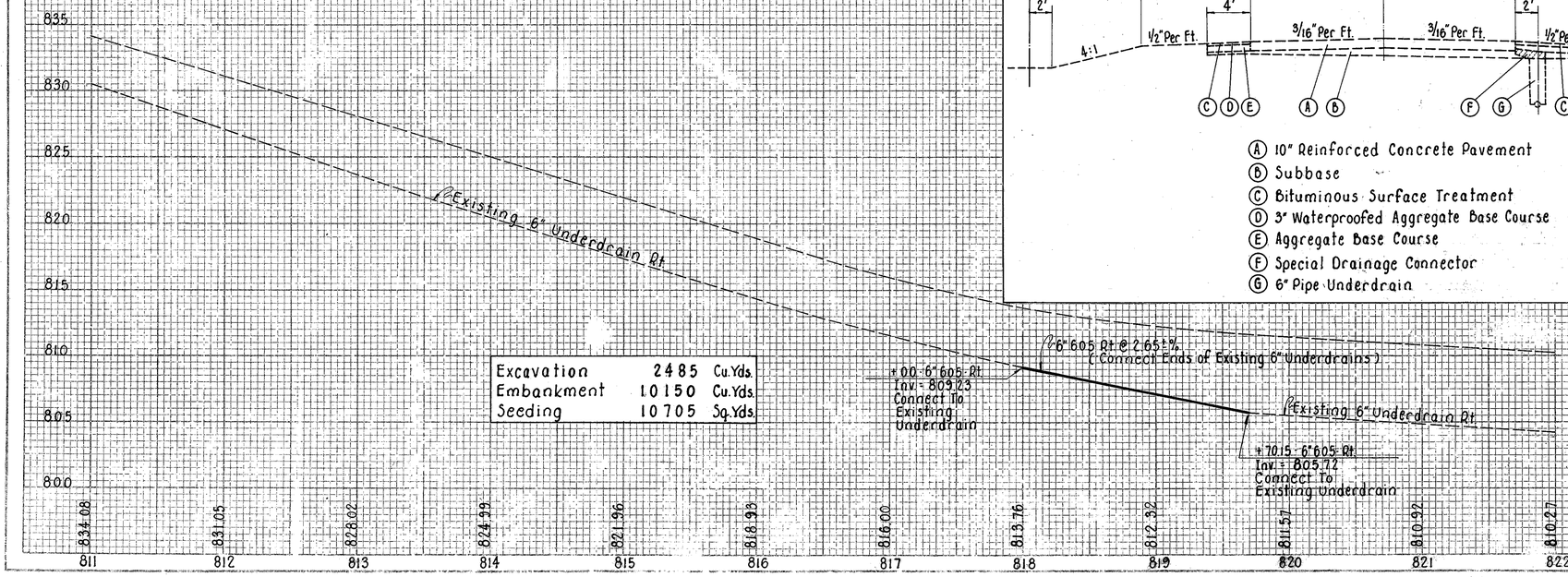


TYPICAL SECTION OF ADJOINING PAVEMENT (U.S.R. 20)
SYMMETRICAL ABOUT ℄ SURVEY)



(A) 10" Reinforced Concrete Pavement
(B) Subbase
(C) Bituminous Surface Treatment
(D) 3" Waterproofed Aggregate Base Course
(E) Aggregate Base Course
(F) Special Drainage Connector
(G) 6" Pipe Underdrain

Excavation	2485	Cu.Yds.
Embankment	10150	Cu.Yds.
Seeding	10705	Sq.Yds.



Ref. No.	Station			606 Guard Rail Type-4 Barrier Design Lin.Ft.	606 Guard Rail Type-4 Lin.Ft.	605 Pipe Underdrains Unclassified Lin.Ft. 6"	603 Conduit Type B With Class B Bedding Lin.Ft. 12"	603 Conduit Type F Lin.Ft. 8"	602 Concrete Masonry Cu.Yds.	601 Dumped Rock Channel Protection Cu.Yds.	409 Seal Coat Cover Aggregate Cu.Yds.	409 Seal Coat Bituminous Material Gal.	203 Subgrade Preparation Sq.Yds.	Spec. Drainage Connector No.8 Aggregate Cu.Yds.	310 Subbase Cu.Yds. Var.	304 Aggregate Base Cu.Yds. 7"	301 Bituminous Aggregate Base Cu.Yds. 3"
UD-1	818+40	Lt.				170		16									
UD-2	818+00 to 819+70.15	Rt.							2.0* 0.23								
D-1	818+50	Lt.					14										
PB-1	811+87.9 to 812+64	Rt.	6.1		850.0								73.2	22.0	0.6	4.0	10.2	14.2
PB-2	817+28.61 to 820+25.81	Rt.	13.6		137.5									49.0	1.3		31.7	13.6
PB-3	818+00 to 820+70.15	Rt.	20.0		137.5								240.1	72.0	1.9	14.2	46.7	33.3
PB-4	819+43.76 to 822+00	Lt.	9.5		212.5									34.2	0.9		22.1	9.5
G-1	811+00.0 to 811+15.0	Lt.		15.0														
G-2	812+33.2 to 820+83.2	Lt.			850.0													
G-3	818+58.0 to 820+70.5	Lt.			137.5													
G-4	817+83.0 to 819+95.5	Rt.			137.5													
G-5	817+75.0 to 819+87.5	Rt.			212.5													
	Totals		49.2	15.0	1337.50	170	14	16	2.0	0.23		4.7	313.3	177.2	* 9'x4'x1.5'	18.2	66.6	114.7

U.S.R. 20 - STA. 811+00 TO STA. 822+00

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

HUR-18-15.01

B.M. R.R. Spike in Right-Of-Way Anchor Post 200' Rt. Sta. 825+00
Elev. - 815.142

B.M. R.R. Spike in Root 20" Oak 261' Rt. Sta. 830+55±
Elev. - 805.924

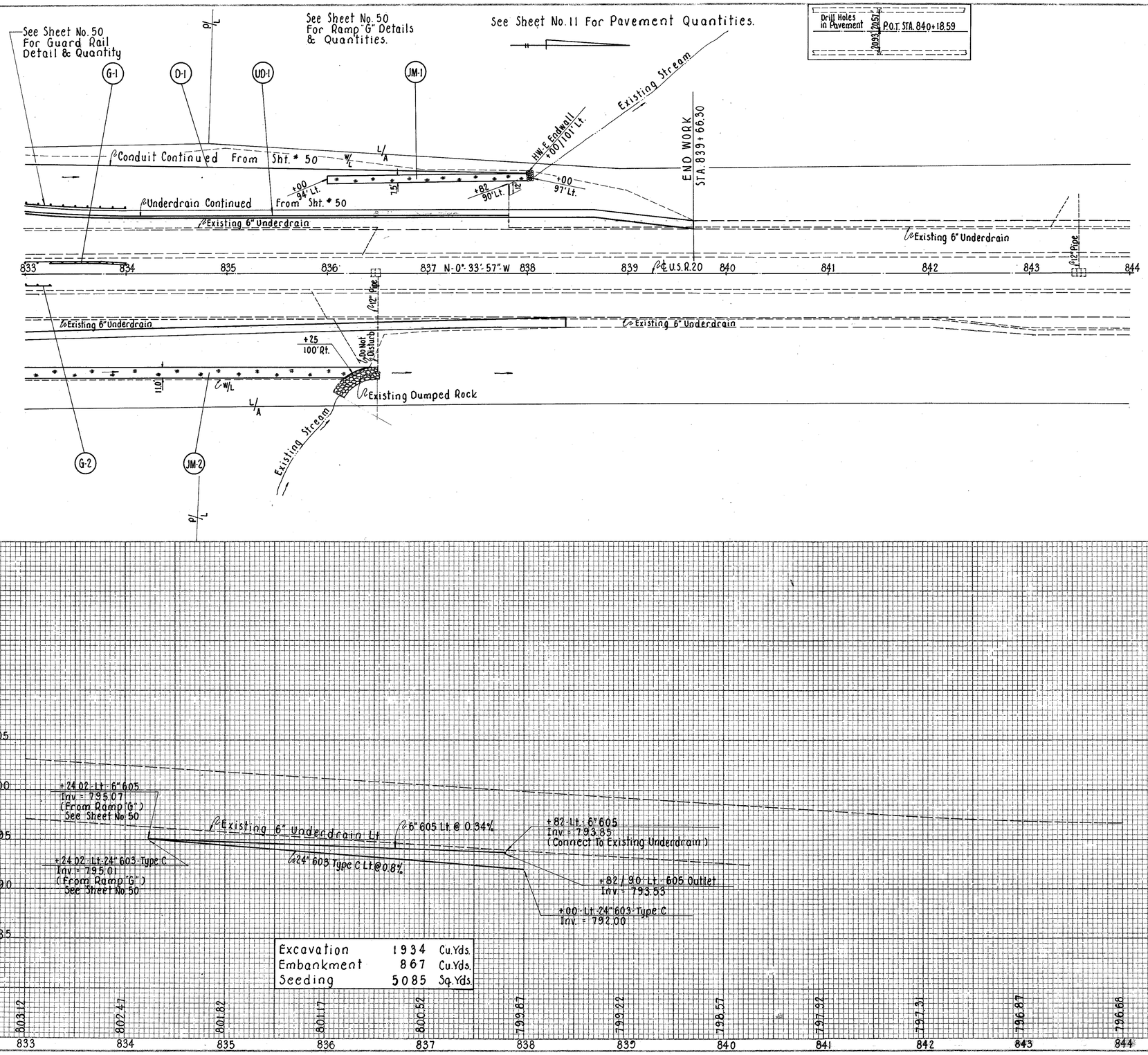
For Additional Notes & Details Refer to Standard Drawing CB-6.

Excavation	2231	Cu. Yds.
Embankment	390	Cu. Yds.
Seeding	4693	Sq. Yds.

Item	Unit	Size	UD-1	D-1	JM-1	JM-2	PB-1	PB-2	G-1	G-2	Totals
Bends & Branches 6" x 60° Wye			1								
604 Catch Basin Std. No. 6 Modified	Each			1							1
Spec. Drainage Connector No. 8 Aggregate	Cu. Yds.							4.2			4.2
203 Subgrade Preparation	Sq. Yds.							76.1			76.1
606 Guard Rail Type-4 Barrier Design	Lin. Ft.									75	75.00
606 Guard Rail Type-4	Lin. Ft.								25	25	50.00
667 Jute Matting	Sq. Yds.				403.3	481.6					884.9
605 Deep Pipe Underdrains	Lin. Ft.	6"	318								318
603 Conduit											
603 Conduit Type F	Lin. Ft.	8"	8								8
603 Conduit Type F	Lin. Ft.	6"	10								10
603 Conduit Type B With Class B Bedding	Lin. Ft.	12"		42							42
602 Concrete Masonry	Cu. Yds.			0.23							0.23
601 Dumped Rock Channel Protection	Cu. Yds.			0.5*							0.5
409 Seal Coat Cover Aggregate	Cu. Yds.						0.4	0.6			1.0
409 Seal Coat Bituminous Material	Gal.						16.5	22.8			39.3
301 Bituminous Aggregate Base	Cu. Yds.	3"					4.6	6.3			10.9
304 Aggregate Base	Cu. Yds.	7"					10.7	14.8			25.5
310 Subbase	Cu. Yds.	Var.					4.6	10.6			15.2
Station			H825+51 Rt. to 828+95 Rt.	828+13 (U.S.R. 20) Rt. to H828+11.5 Rt.	822+00 to 825+37 Rt.	829+06 to 833+00 Rt.	822+00 to 823+23.93 Lt.	830+66.30 to 831+45.66 Lt.	832+75 to 833+00 Lt.	832+00 to 833+00 Rt.	Totals
Ref. No.			UD-1	D-1	JM-1	JM-2	PB-1	PB-2	G-1	G-2	

* 3' x 3' x 1.5'

U.S.R. 20 - STA. 822+00 TO STA. 833+00



FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

27
95

HUR-18-15.01

Ref. No.	Station	601 Dumped Rock Channel Protection Cu.Yds.	602 Concrete Masonry Cu.Yds.	603 Conduit 24" Type C 706.02 or 706.08 E.S. With Class B Bedding Lin.Ft.	603 Conduit 8" Type F Lin.Ft.	605 Deep Pipe Underdrains Lin.Ft. 6"	667 Jute Matting Sq.Yds.	606 Guard Rail Type-4 Barrier Design Lin.Ft.	606 Guard Rail Type-4 Lin.Ft.	Bends & Branches 6"x6" Tee
UD-1	834+24.02 to 837+90 Lt.				12	366				1
D-1	834+24.02 to 838+00 Lt.	3.5	*0.41	376					25	
JM-1	836+00 to 838+00 Lt. *						166.7			
JM-2	833+00 to 836+25 Rt. °						397.2		25	
G-1	833+00 to 834+00 Lt.							75		
G-2	833+00 to 833+25 Rt.								25	
	Totals	3.5	0.41	376	12	366	563.9	75	50	

* 11' Wide * 6'x10.5'x1.5'
° 7.5' Wide

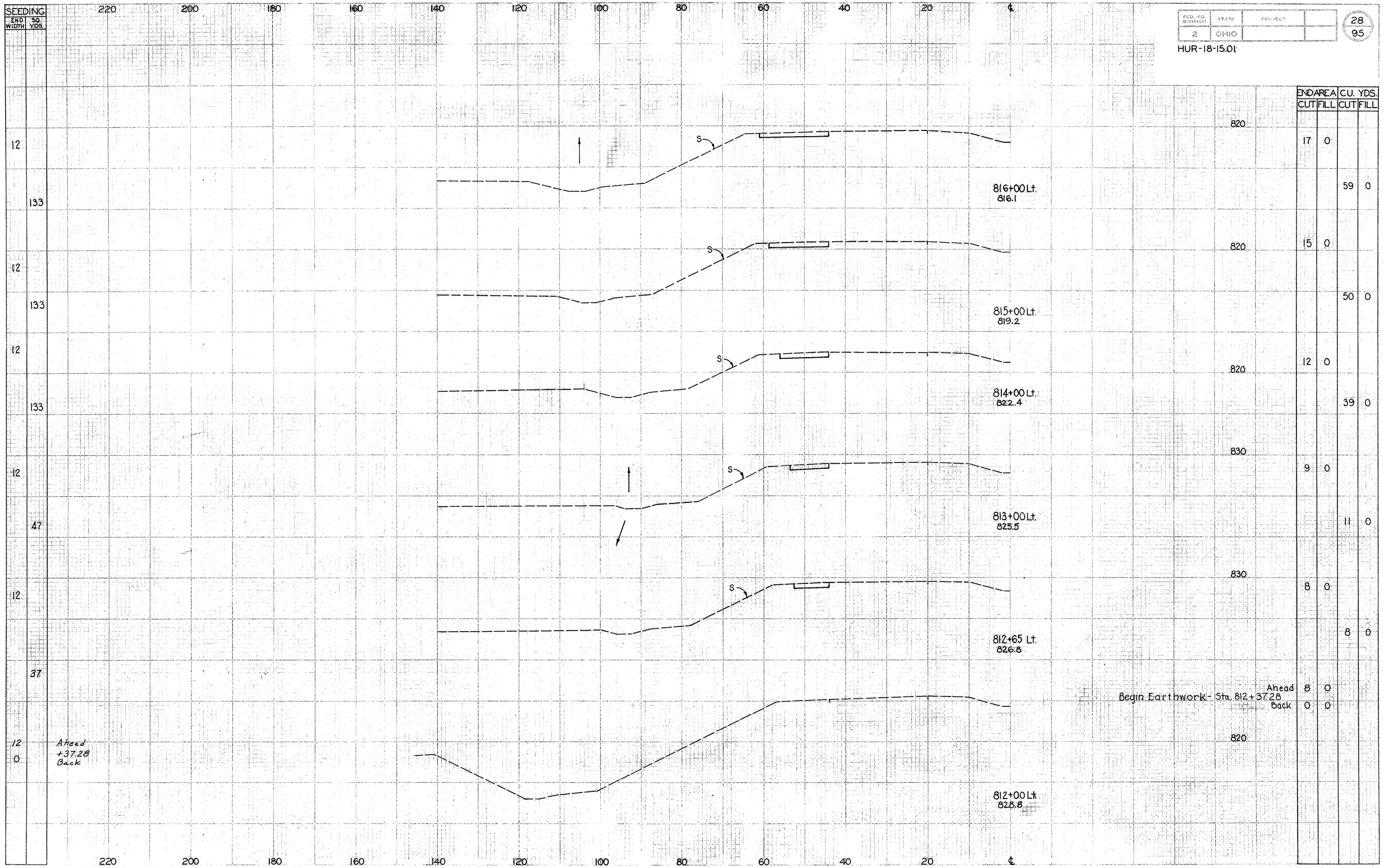
Excavation	1934	Cu.Yds.
Embankment	867	Cu.Yds.
Seeding	5085	Sq.Yds.

U.S.R. 20 STA. 833+00 TO STA. 844+00

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

28
95

HUR-18-15.01



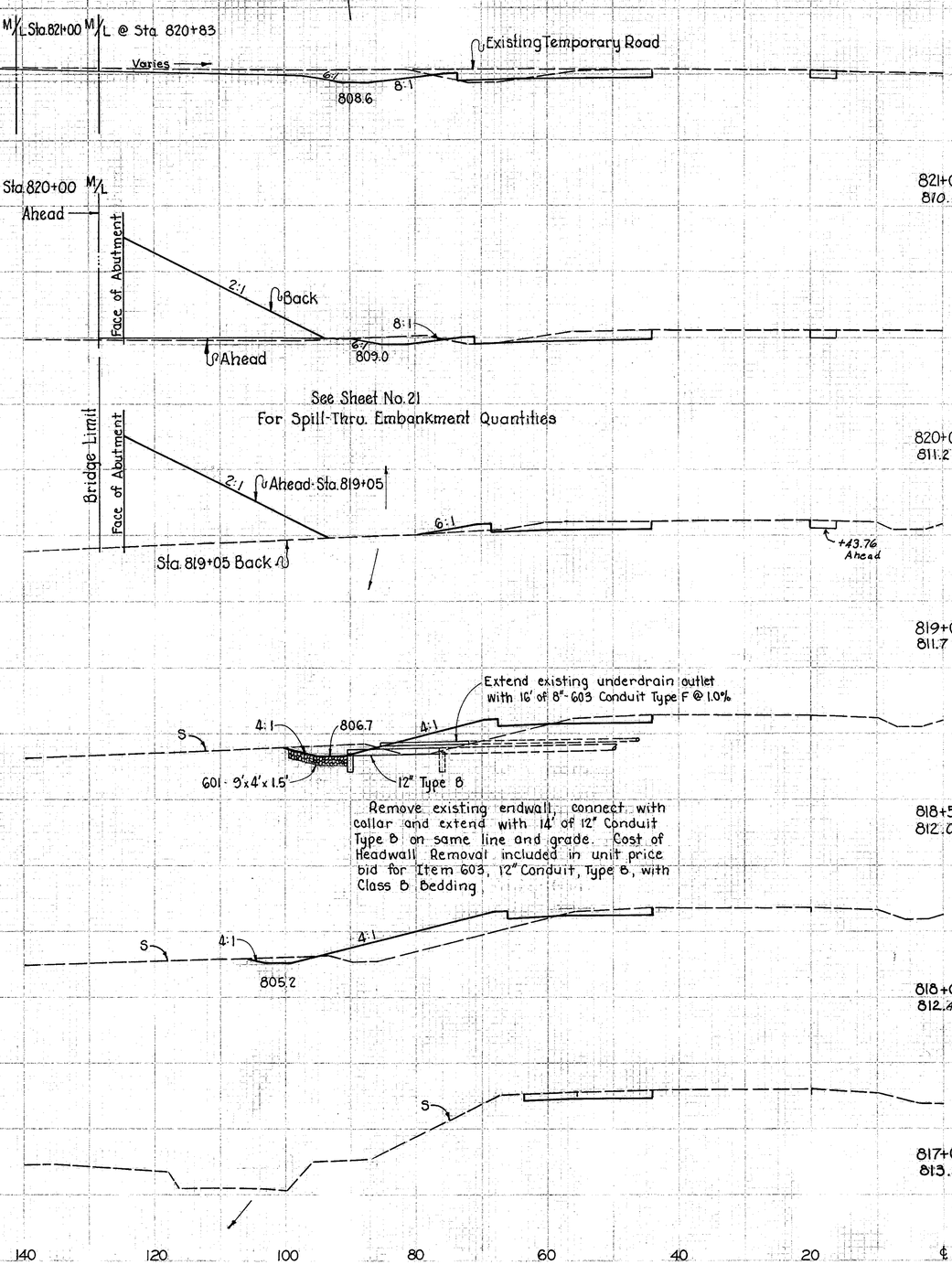
END AREA		CU. YDS.	
CUT	FILL	CUT	FILL
	820		
17	0		
		59	0
	820		
15	0		
		50	0
	820		
12	0		
		39	0
	830		
9	0		
		11	0
	830		
8	0		
		8	0
Ahead		8	0
Begin Earthwork - Sta. 812+37.28			
Back		0	0
	820		

CROSS SECTIONS – USR 20 LT. STA 812+00 TO STA 816+00

SEC. NO. DIVISION	STATE	PROJECT		29
2	OHIO			95

HUR-18-15.01

SEEDING END WIDTH	SEEDING SQ. YDS.	
81		+16
	132	
68		
	116	
55		+83
	516	
	267	Additional Seeding For Removal of Existing Temporary Road (See General Note and Sheet No. 15)
57		
	650	
60		
	295	
46		
	275	
53		
	361	
12		
	133	
12		Sta. 816+00 Lt.



		END AREA CUT	END AREA FILL	CU. YDS. CUT	CU. YDS. FILL
810	Sta. 821+16	69	4		
				40	2
	Sta. 821+00	67	4		
				41	3
Additional Earthwork For Removal of Existing Temporary Road (See General Note and Sheet No. 15)				116	58
	Sta. 820+83	63	4		
				149	11
810	Sta. 820+00 Ahead	34	3		
	Back	34	233		
				58	523
	Ahead Sta. 819+43.76	28	269		
	Back	22	269		
				32	386
810	Sta. 819+05 Ahead	22	269		
	Back	22	8		
	Sta. 819+00	22	8	4	1
				50	56
810		32	53		
				47	128
810		19	85		
				72	157
810		20	0		
				69	0
	Sta. 816+00 Lt.	17	0		

CROSS SECTIONS - USR 20 LT. STA 817+00 TO STA 821+00

FED. RD DIVISION	STATE	PROJECT		30
2	OHIO			95

HUR-18-15.01

SEEDING END WIDTH	SEEDING SQ. YDS.
13	
	89
3	
	17
0	
	0
0	
	0
0	
	0
0	
	0
0	Ahead +37.28 (See Sheet No. 44) Back
93	375
88	
	789
81	Sta. 821+16 Lt.

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

M/L Ramp F
808.0
810

828+00 Lt.
808.9
M/L
809.0
810

827+00 Lt.
804.3
M/L
810

826+00 Lt.
805.5
M/L
810

825+00 Lt.
805.9
M/L
810

824+00 Lt.
806.3
M/L Ramp F
℄ +23.93 Back
810

823+00 Lt.
807.1
M/L +37.28 Ahead
M/L +37.28 Back
8:1
Varies
808.2
810

822+00 Lt.
808.5

	ENDAREA CUT	ENDAREA FILL	CU. YDS. CUT	CU. YDS. FILL
	16	0		
			31	0
	1	0		
			2	0
	0	0		
			0	0
	0	0		
			0	0
	0	0		
Ahead	0	0		
+23.93 Back	6	0		
			6	0
	6	0		
			14	0
Sta. 822+37.28 Ahead	6	0		
(See Sheet No. 44) Back	208	0		
			287	3
Sta. 822+00 Lt.	208	5		
			431	14
Sta. 821+16 Lt.	69	4		

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

CROSS SECTIONS – USR 20 LT. STA 822+00 TO STA 828+00

FED. RD. DIVISION	STATE	PROJECT		31
2	OHIO			95

HUR-18-15.01

SEEDING END WIDTH	SEEDING SQ. YDS.
67	
0	0
0	0
0	0
0	0
0	0
0	0
10	61
14	150
13	161
16	161
13	

Ahead
+24.02 Lt. (See Sheet No. 54)
Back

Ahead
Sta 831+45.66
Back

Sta. 828+00 Lt.

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

M/L

1"/ft.
1½"/ft.

Back Sta. 830+66.30

Ahead Sta. 830+66.30

Varies

Sta. 830+16 Lt.
Std. Nº 5 C.B.

807.0

834+00 Lt.
800.0

833+00 Lt.
800.7

832+00 Lt.
801.4

831+00 Lt.
802.0

830+00 Lt.
802.4

829+00 Lt.
803.2

800

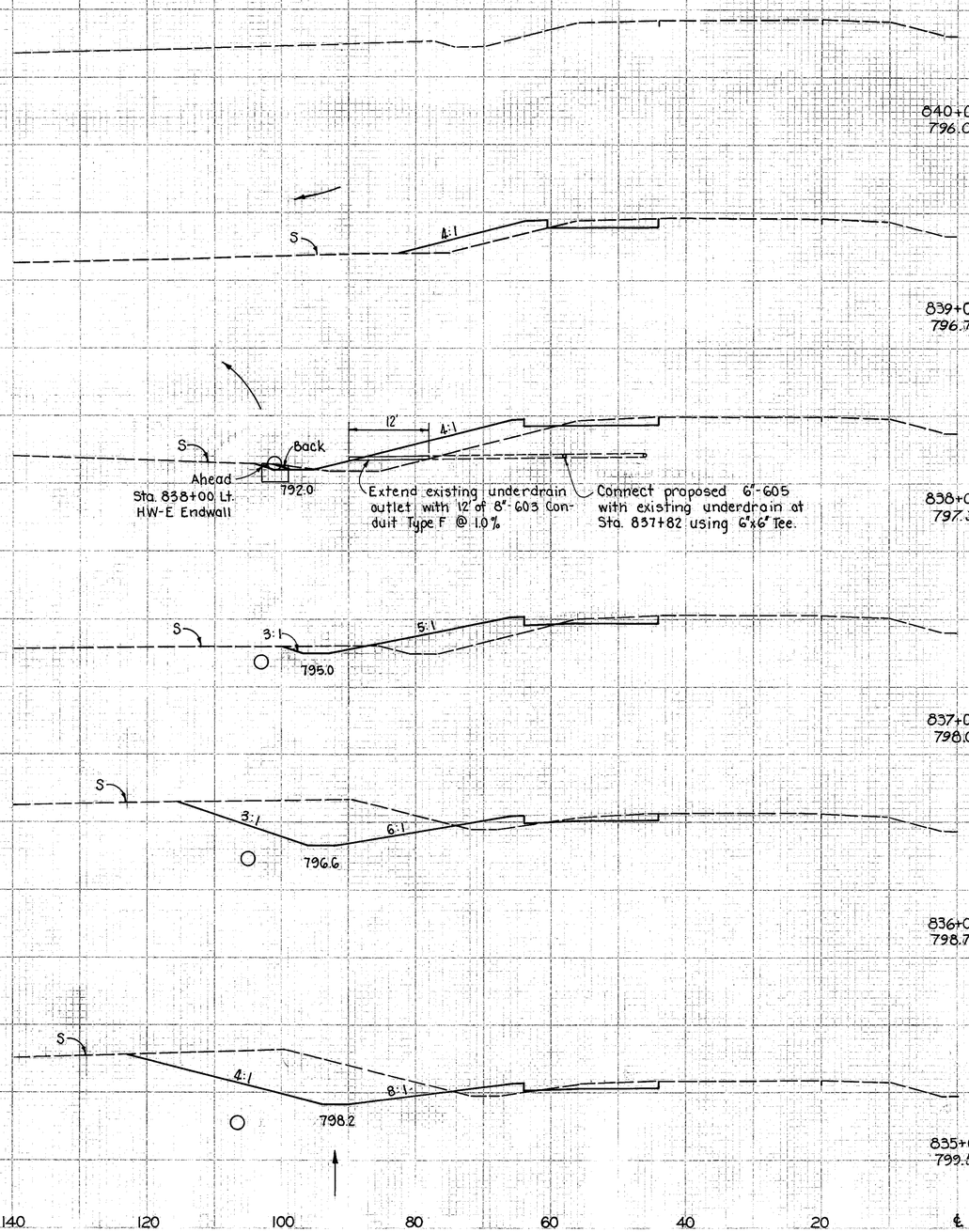
		END AREA CUT	END AREA FILL	CU. YDS. CUT	CU. YDS. FILL
Sta. 834+24.02 (See Sheet No. 54)	Ahead	148	9		
	Back	0	0		
				0	0
		0	0		
				0	0
		0	0		
				0	0
		0	0		
Sta 831+45.66	Ahead	0	0		
	Back	10	6	17	10
		10	6	12	7
Sta. 830+66.30	Ahead	10	6		
	Back	0	6	17	7
		13	0	54	0
		16	0		
				59	0
Sta. 828+00 Lt.		16	0		

CROSS SECTIONS – USR 20 LT. STA 829+00 TO STA 834+00

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

32
95

HUR-18-15.01



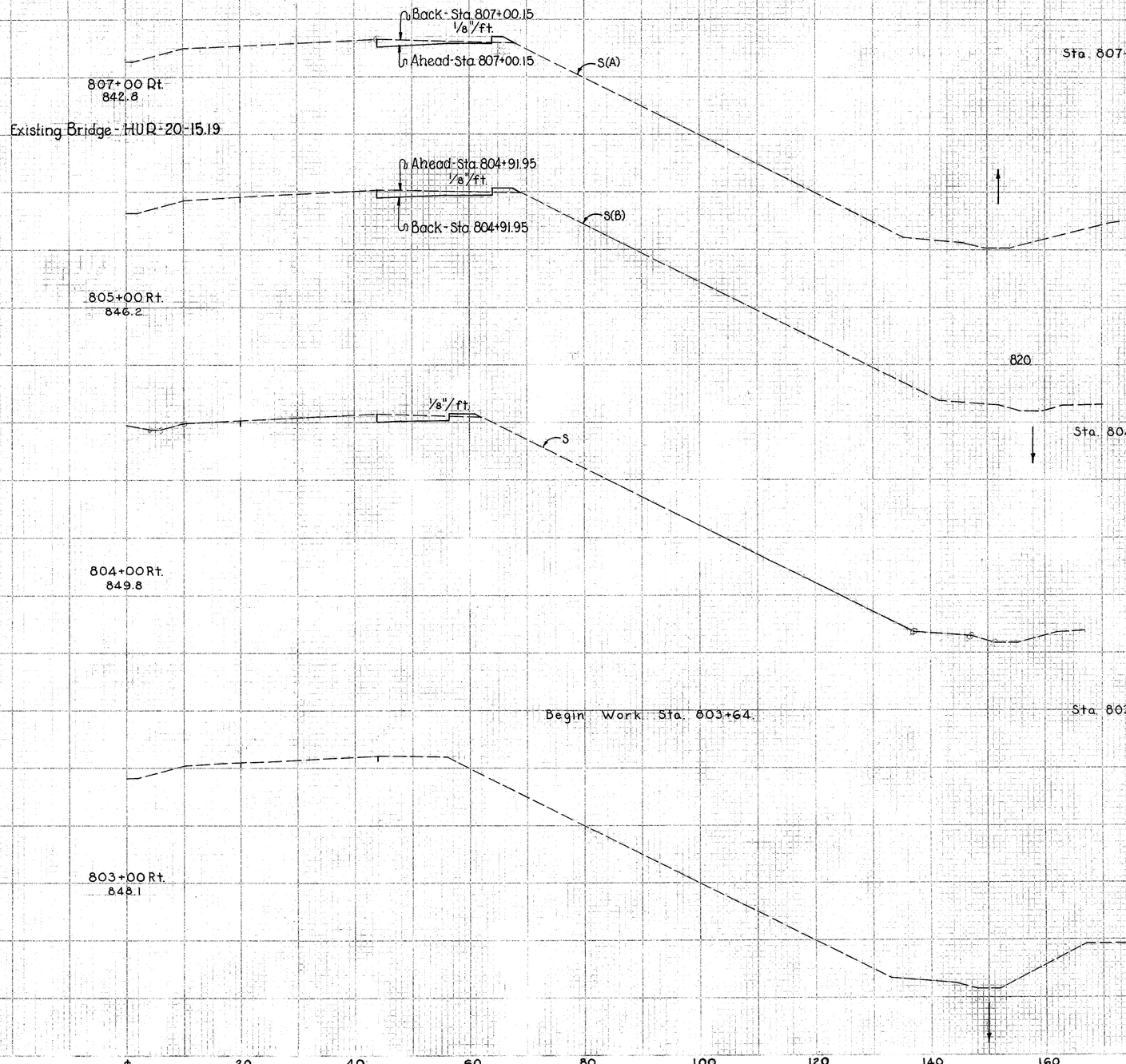
SEEDING END WIDTH	SEEDING SQ. YDS.	ENDAREA CUT	ENDAREA FILL	CU. YDS. CUT	CU. YDS. FILL
0		800			
12	Ahead +66.30 Back			0	0
	173			0	0
		Ahead	0	0	
		END WORK Sta. 839+66.30 Back	10	0	
					37 43
35		800			
			15	35	
					57 202
	461				
		800			
48		Ahead	16	74	
		Back	15	74	
					61 239
	539				
		800			
49				18	55
	611				352 130
61		800			
				172	15
	706				685 54
66		800			
	561			198	14
					487 32
67	Sta. 834+24.02 Lt.	Sta. 834+24.02 Lt.		148	9

CROSS SECTIONS — USR 20 LT. STA 835+00 TO STA 840+00

FED. RD. DIVISION	STATE	PROJECT		33
2	OHIO			95

HUR-18-15.01

Seeding End Width	Seeding Sq. Yds.	
17		Ahead - Sta. 807+00.15 Rt.
0		
18		Back - Sta. 804+91.95 Rt.
184		
18		
60		
12		Ahead - Sta. 803+64 Rt.
0		Back - Sta. 803+64 Rt.



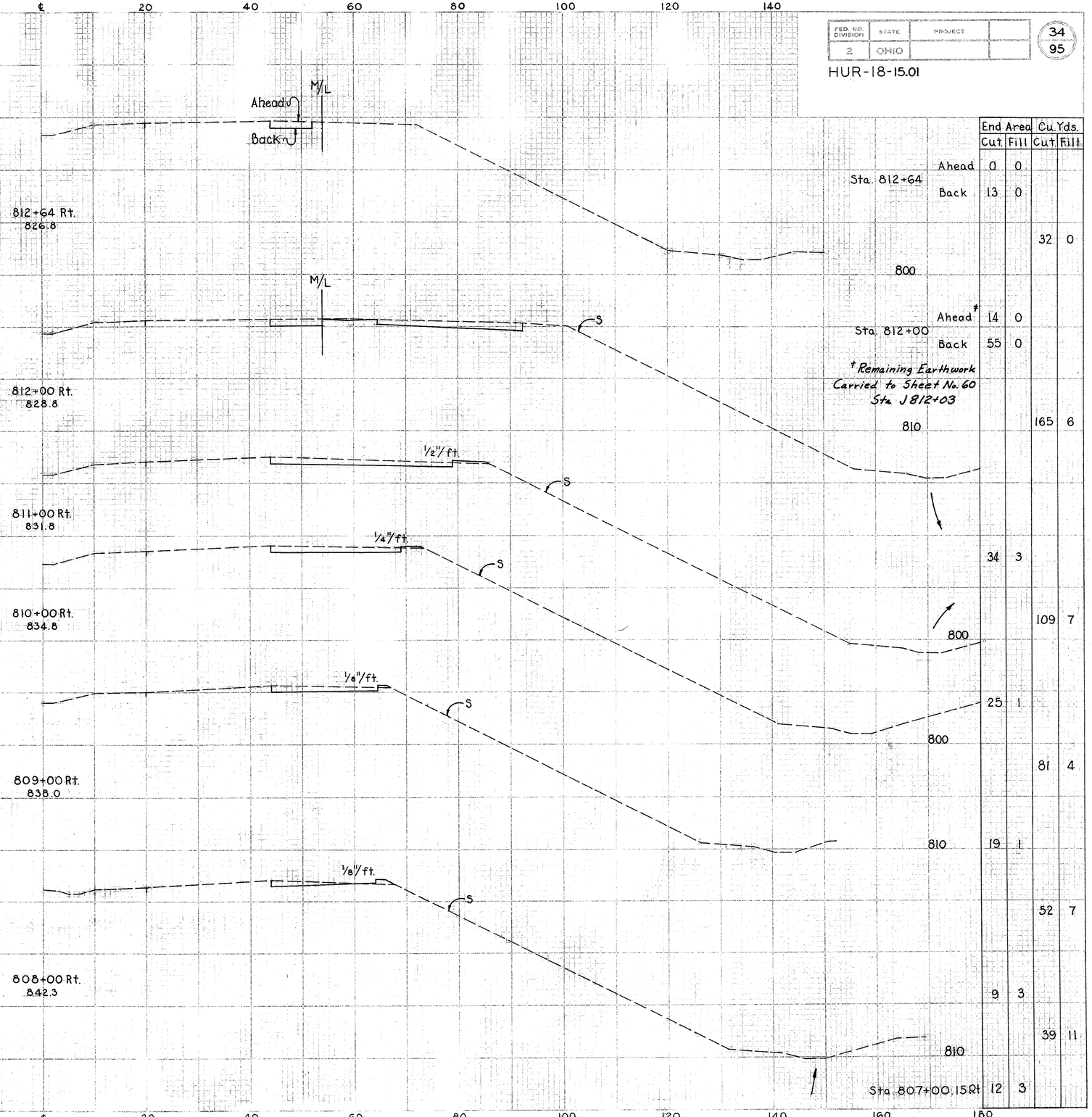
	End Area Cut	End Area Fill	Cu. Yds. Cut	Cu. Yds. Fill
Ahead Sta. 807+00.15	12	3		
Back	0	0		
810			0	0
820				
Ahead Sta. 804+91.95	0	0		
Back	19	4		
			56	11
Sta. 804+00	14	3		
810			16	2
Ahead Sta. 803+64	10	0		
Back	0	0		
			0	0
810			0	0

CROSS SECTIONS - USR 20 RT. STA. 803+00 TO STA. 807+00.15

FED. NO. DIVISION	STATE	PROJECT		34
2	OHIO			95

HUR-18-15.01

Seeding End Width	Seeding Sq. Yds.	
0		Ahead - Sta. 812+64 Rt.
0		Back - Sta. 812+64 Rt.
	0	
0		Ahead Sta. 812+00 Rt.
12		Back
	178	
20		
	206	
17		
	178	
15		
	172	
16		
	183	
17		Ahead - Sta. 807+00.15 Rt.



	End Area Cut	End Area Fill	Cu. Yds. Cut	Cu. Yds. Fill
Ahead	0	0		
Sta. 812+64				
Back	13	0		
			32	0
800				
Ahead†	14	0		
Sta. 812+00				
Back	55	0		
			165	6
810				
			34	3
800				
			109	7
			25	1
800				
			81	4
810	19	1		
			52	7
			9	3
810				
			39	11
Sta. 807+00.15 Rt	12	3		

†Remaining Earthwork Carried to Sheet No. 60 Sta. J812+03

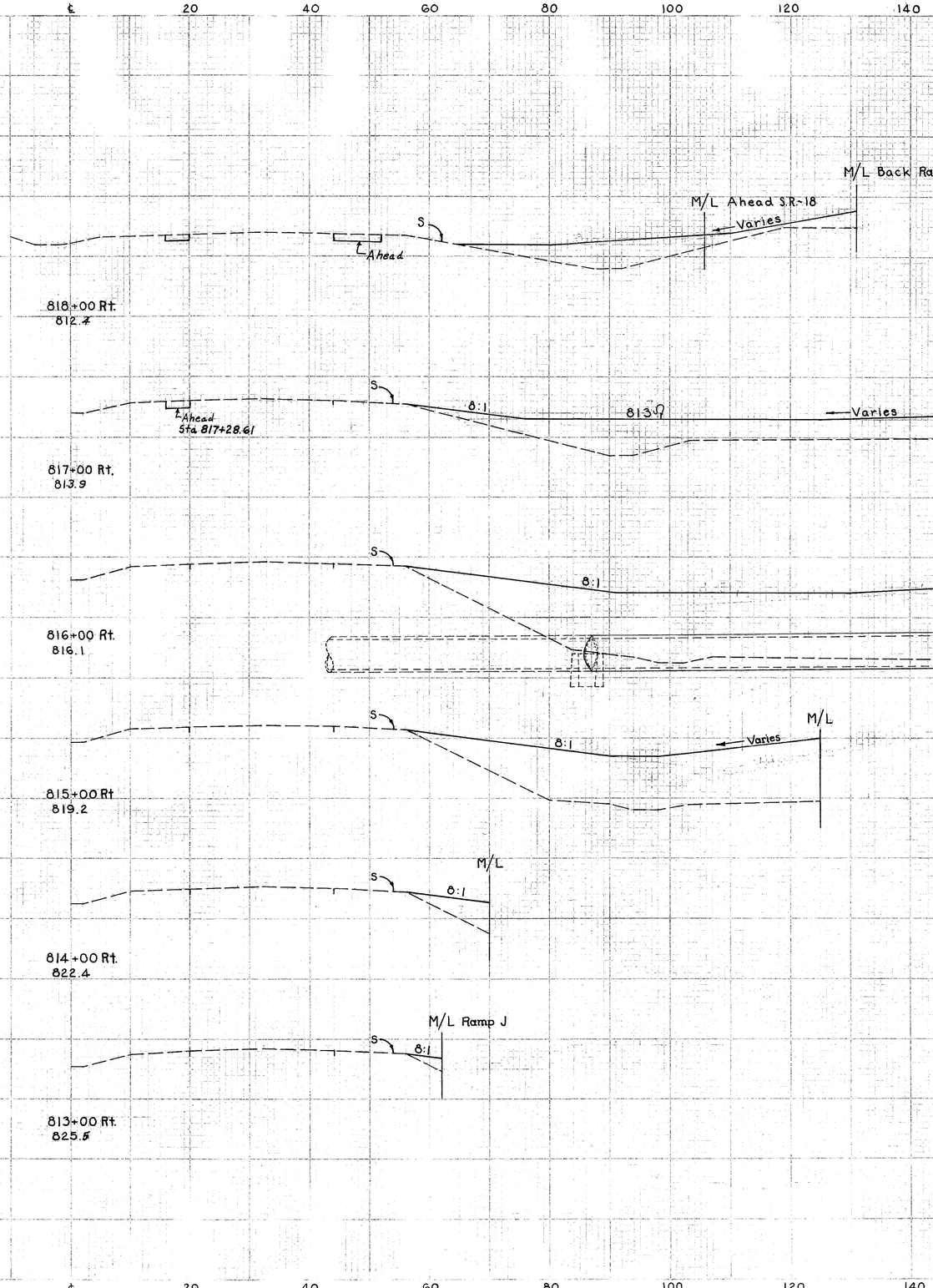
CROSS SECTIONS - USR 20 RT. STA. 808+00 TO STA. 812+64

FED. HIG. DIVISION	STATE	PROJECT	
2	OHIO		

35
95

HUR-18-15.01

Seeding End Width	Seeding Sq. Yds.	
43		Ahead
69		Back
	917	
96		
	1067	
96		
	933	
72		
	489	
16		
	133	
8		
	16	
0		Ahead - Sta. 812+64 Rt.



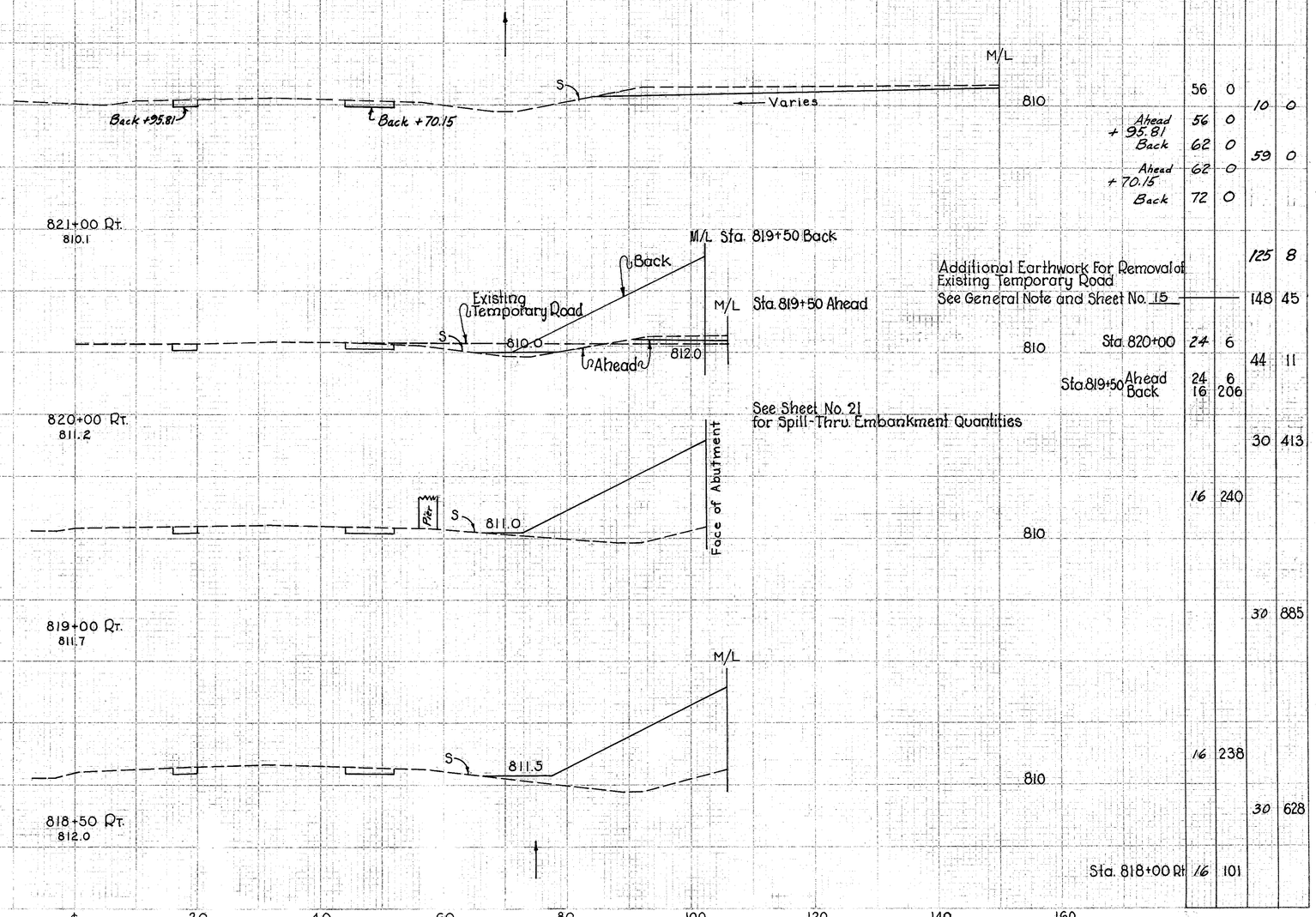
	End Area Cut	End Area Fill	Cu. Yds. Cut	Cu. Yds. Fill
Ahead	16	113		
Back	6	153		
			16	624
Ahead +28.61	6	319		
Back	0	319		
			0	338
	0	319		
			0	2193
	0	865		
			0	2546
	0	510		
			0	1007
	0	34		
			0	74
	0	6		
			0	4
Sta. 812+64 Ahead	0	0		

CROSS SECTIONS - USR 20 RT STA. 813+00 TO STA. 818+00

FED. RD. DIVISION	STATE	PROJECT		36 / 95
2	OHIO			

HUR-18-15.01

Seeding End Width	Seeding Sq. Yds.
68	622
44	339 Additional Seeding For Removal of Existing Temporary Road (See General Note and Sheet No. 15)
	472
41	478
45	244
43	Sta. 818+00 Rt.



See Sheet No. 21 for Spill-Thru Embankment Quantities

		End Area Cut	End Area Fill	Cu. Yds. Cut	Cu. Yds. Fill
		56	0	10	0
	Ahead	56	0		
+ 95.81	Back	62	0	59	0
	Ahead	62	0		
+ 70.15	Back	72	0		
				125	8
Additional Earthwork For Removal of Existing Temporary Road See General Note and Sheet No. 15				148	45
810	Sta. 820+00	24	6		
				44	11
Sta. 819+50	Ahead	24	6		
	Back	16	206		
				30	413
		16	240		
810					
				30	885
		16	238		
810					
				30	628
Sta. 818+00 Rt.		16	101		

CROSS SECTIONS - USR 20 RT - STA. 818+50 TO STA. 821+00

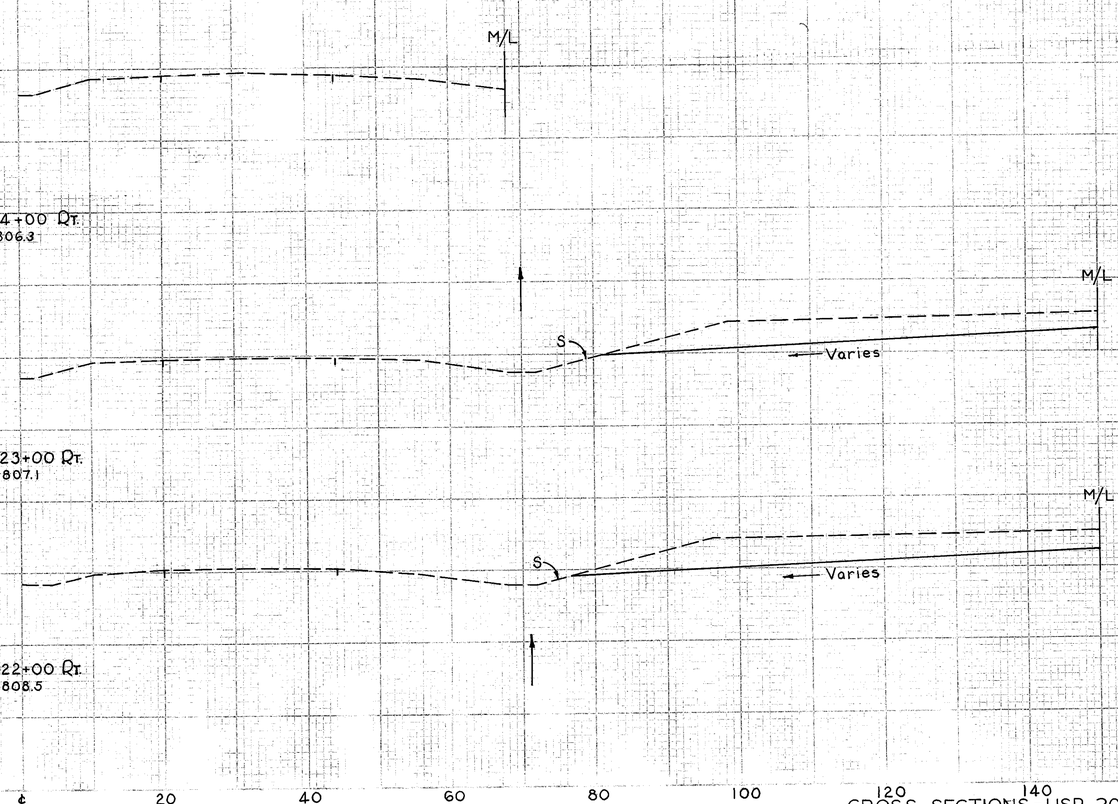
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

37
95

HUR-18-15.01

Seeding	
End Width	Sq. Yds.
0	
	394
71	
	817
76	
	800
68	

Sta. 821+00 Rt.



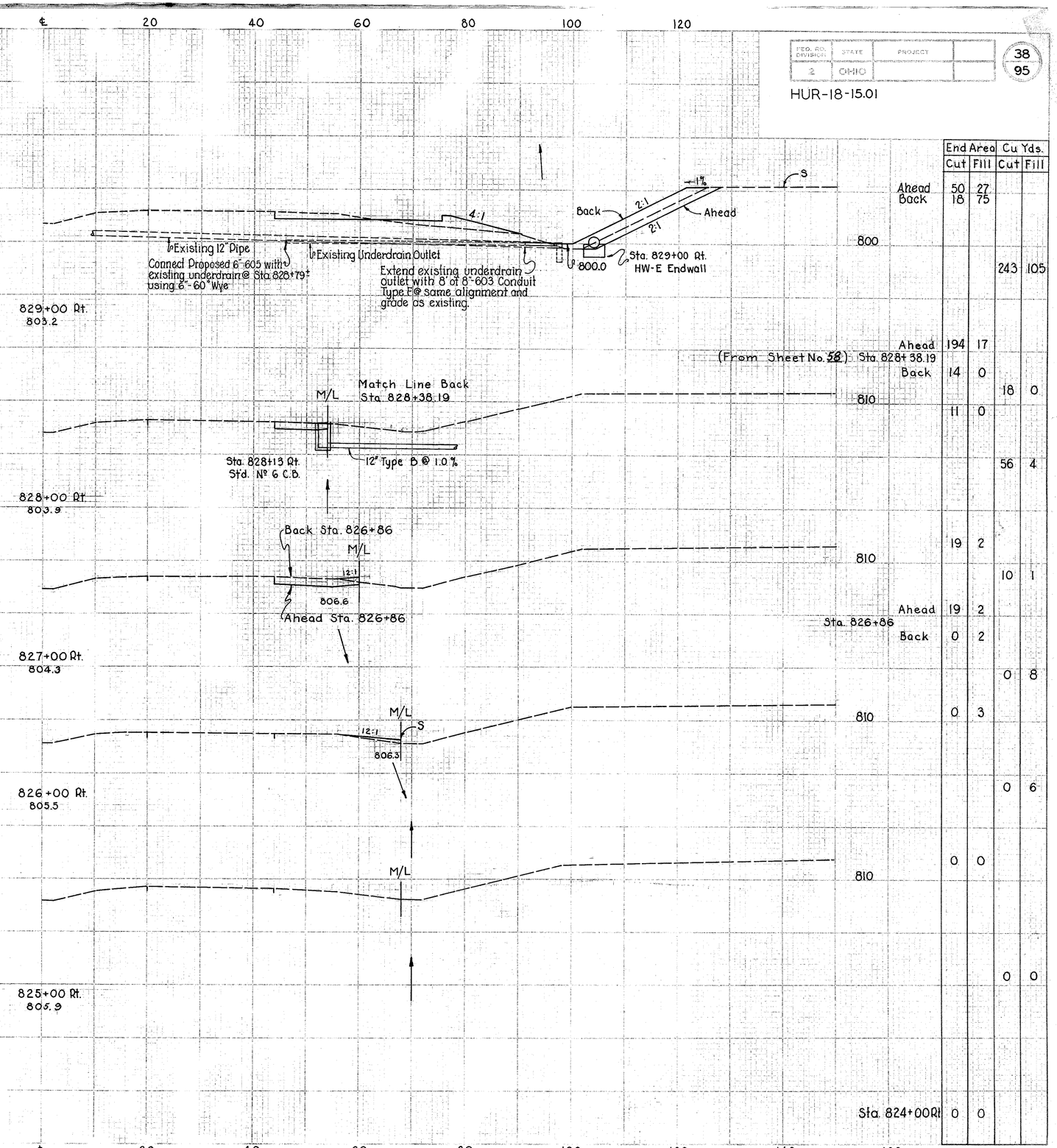
End Area		Cu. Yds.	
Cut	Fill	Cut	Fill
0	0		
800			
		344	0
		186	0
800			
		761	0
		225	0
810			
		520	0
Sta. 821+00 Rt. 56	0		

CROSS SECTIONS - USR 20 RT. - STA. 822+00 TO STA. 824+00

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

38
95

HUR-18-15.01



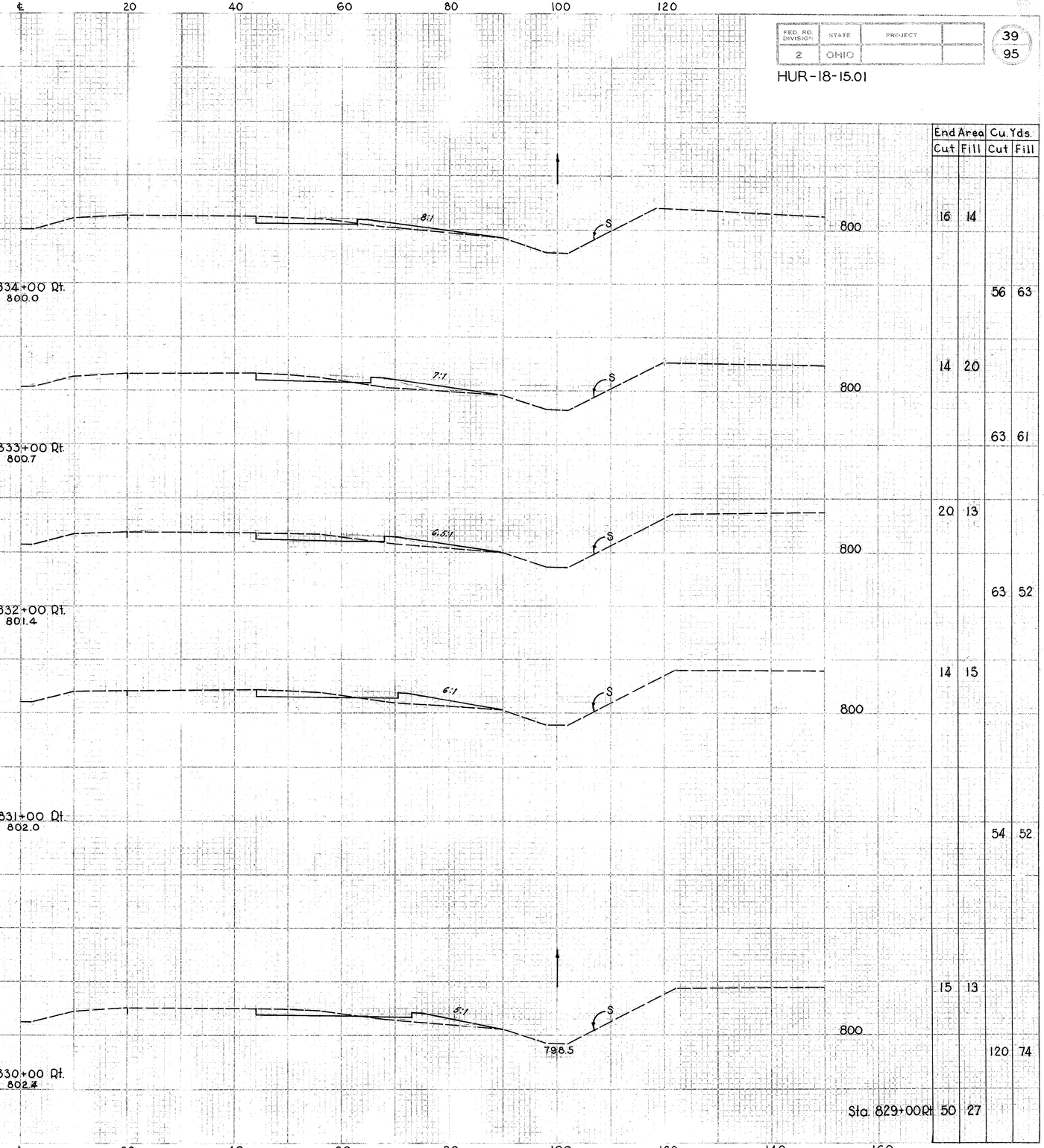
Seeding End Width	Seeding Sq. Yds.		End Area Cut	End Area Fill	Cu Yds. Cut	Cu Yds. Fill
68			Ahead 50	27		
			Back 18	75		
	446		800		243	105
62		Ahead +38.19 (From Sheet No. 58) Back				
0			Ahead 194	17		
	0		(From Sheet No. 58) Sta. 828+38.19 Back 14	0	18	0
0			810			
			11	0		
					56	4
	0					
			19	2		
0			810			
					10	1
			Ahead 19	2		
			Sta. 826+86 Back 0	2		
	61				0	8
11			810	0 3		
	61				0	6
0			810	0 0		
					0	0
	0					
0		Sta. 824+00 Rt.	Sta. 824+00 Rt.	0 0		

CROSS SECTIONS - USR 20 RT. - STA. 825+00 TO STA. 829+00

FED. RD. DIVISION	STATE	PROJECT		39
2	OHIO			95

HUR-18-15.01

SEEDING END WIDTH	SEEDING Sq. YDS.		End Area Cut	End Area Fill	Cu. Yds. Cut	Cu. Yds. Fill
46			16	14		
	500	834+00 Rt. 800.0			56	63
44			14	20		
	472	833+00 Rt. 800.7			63	61
41			20	13		
	439	832+00 Rt. 801.4			63	52
38			14	15		
	411	831+00 Rt. 802.0			54	52
36			15	13		
	578	830+00 Rt. 802.4			120	74
68	Sta. 829+00 Rt.		Sta. 829+00 Rt.		50	27



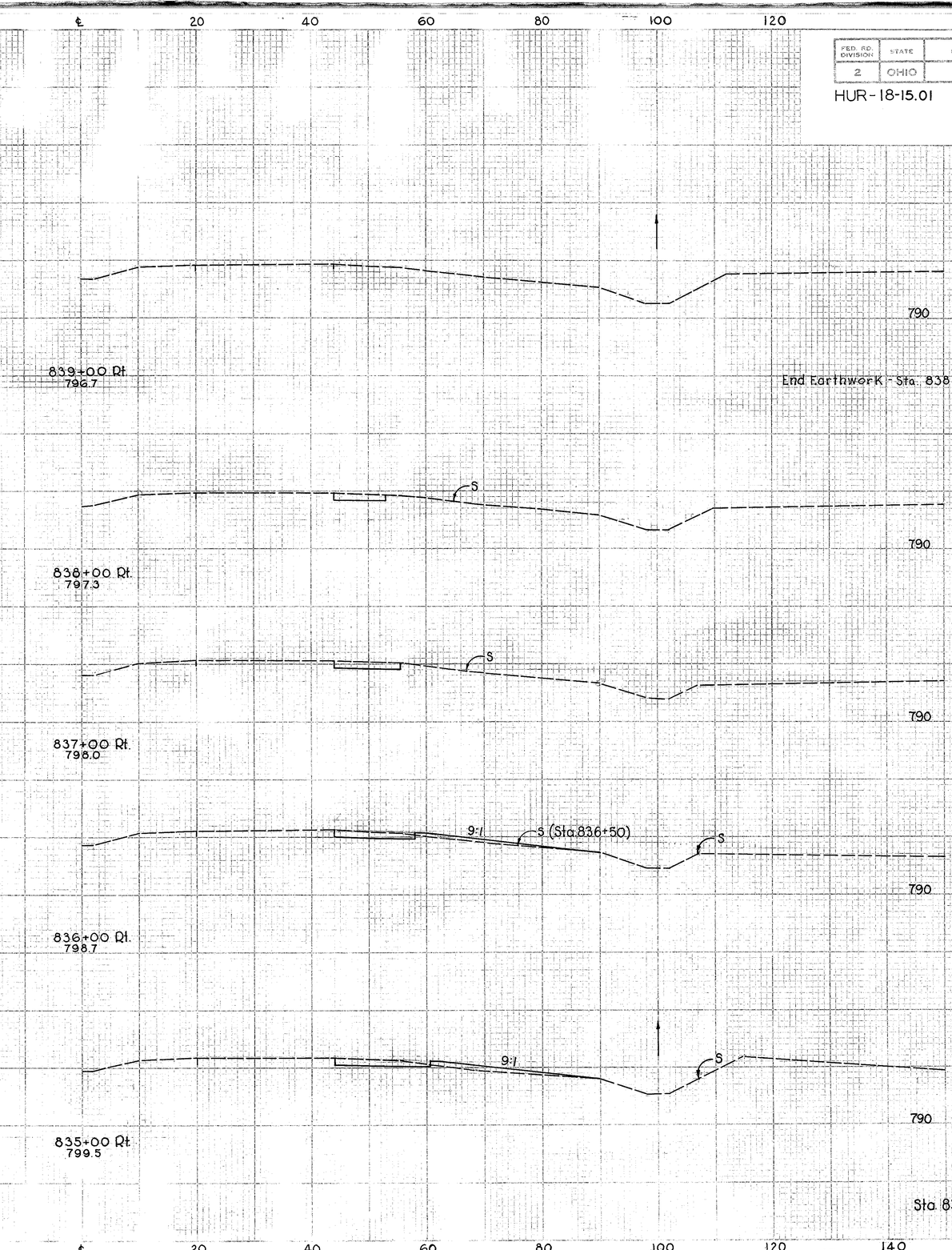
CROSS SECTIONS - USR 20 RT. - STA. 830+00 TO STA. 834+00

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

40
95

HUR-18-15.01

SEEDING END WIDTH	SEEDING SQ. YDS.	
0		
12		Ahead Back Sta. 838+38.19
	51	
12		
	133	
12		Sta. 837+00
	83	
18		Sta. 836+50
	189	
50		Sta. 836+00
	550	
49		
	528	
46		Sta. 834+00 Rt.



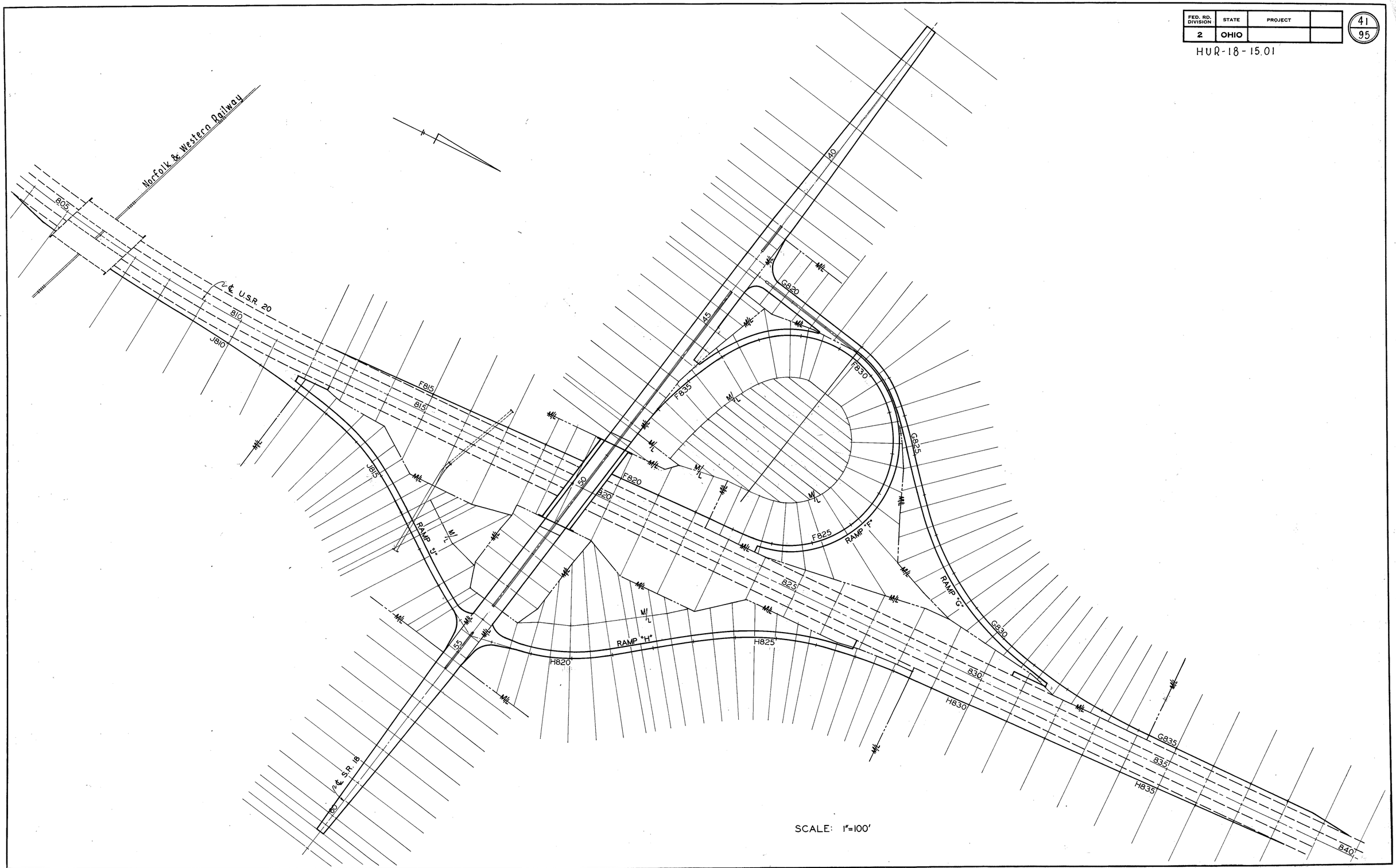
END AREA CUT	END AREA FILL	CU. YDS. CUT	CU. YDS. FILL
0	0		
Ahead	0	0	
End Earthwork - Sta. 838+38.19 Back	9	0	
		13	0
9	0		
		39	0
12	0		
		46	19
13	10		
		50	46
14	15		
		57	39
Sta. 834+00 Rt. 17	6		

CROSS SECTIONS - USR 20 RT. - STA. 835+00 TO 839+00

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

41
95

HUR-18-15.01

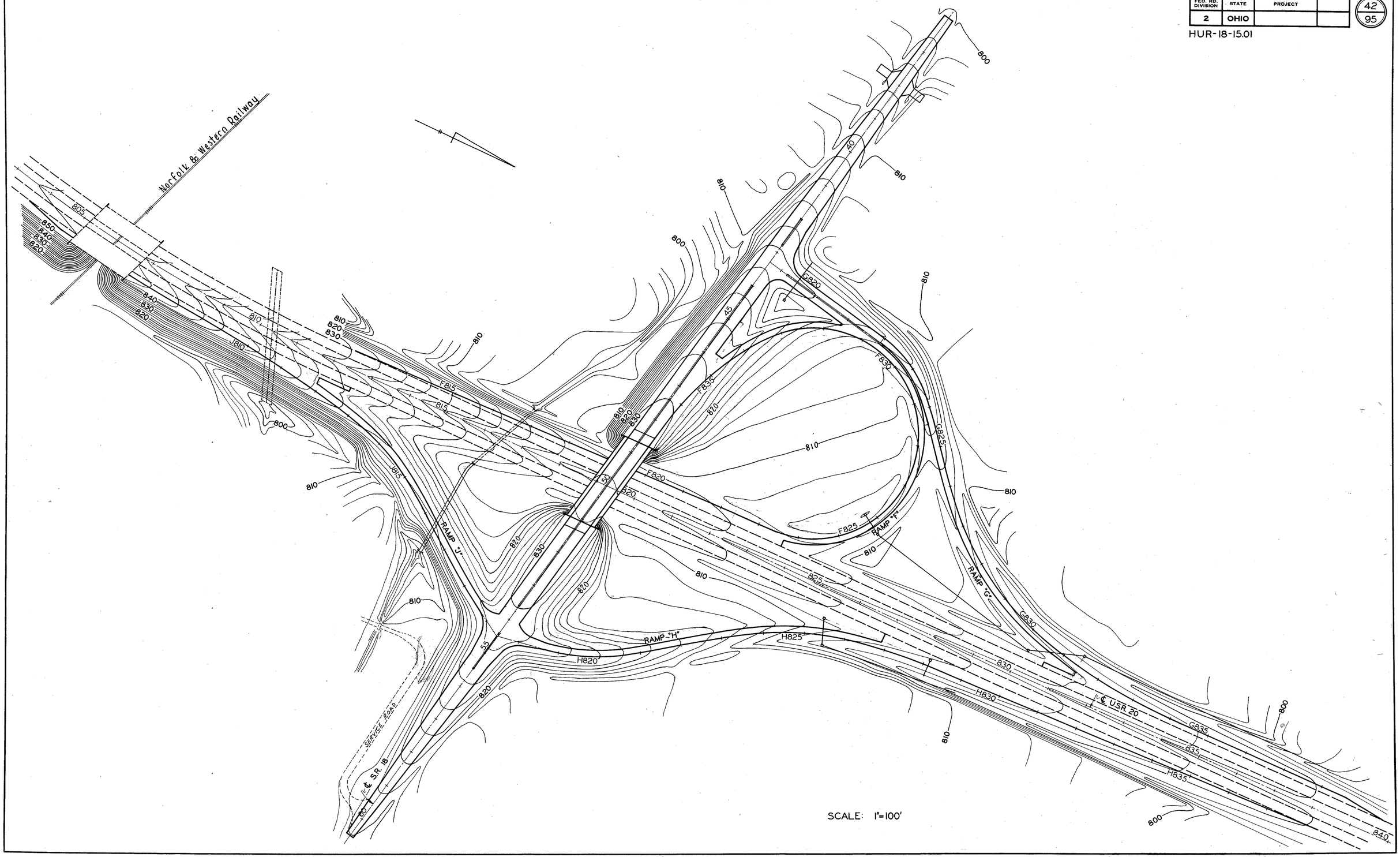


CROSS SECTION LAYOUT PLAN INTERSECTION USR 20 & SR 18

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

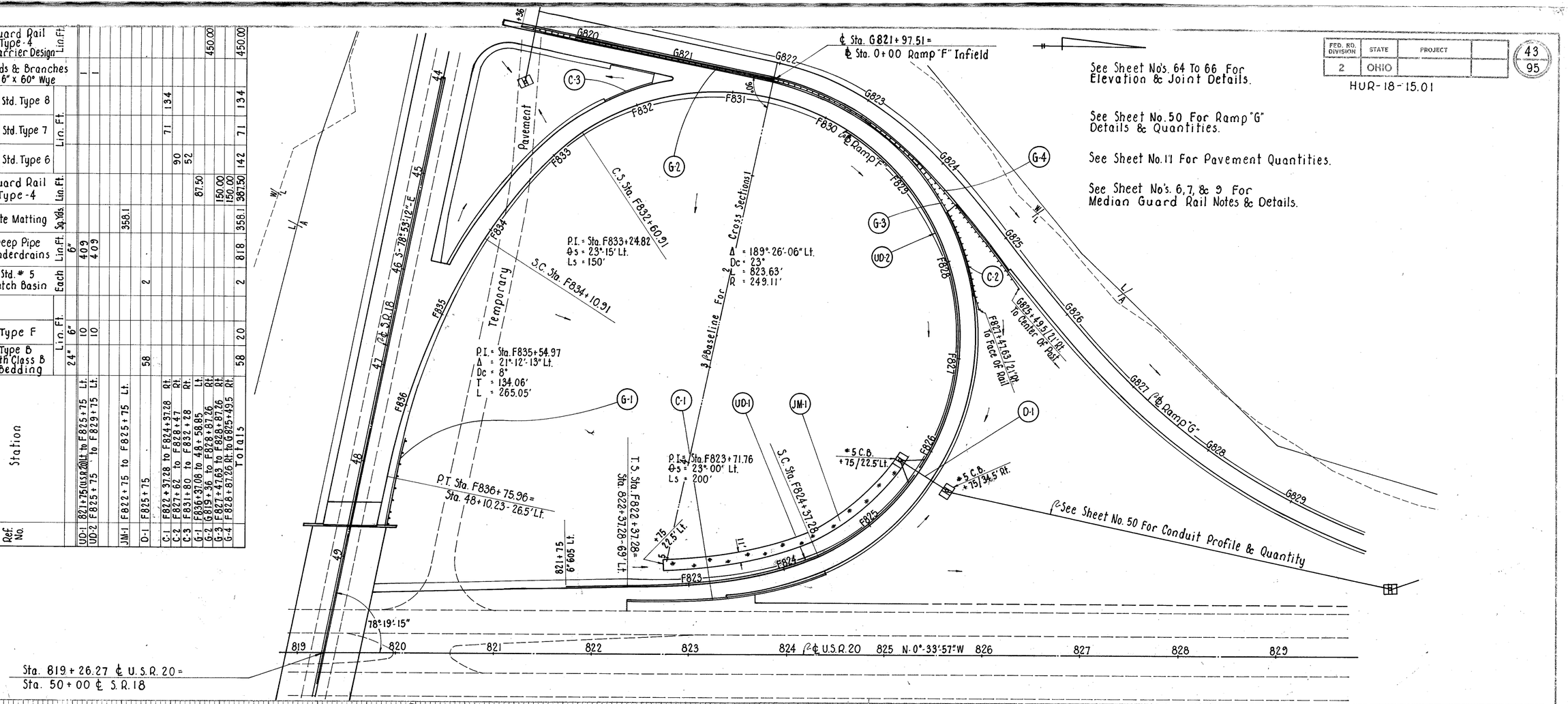
42
95

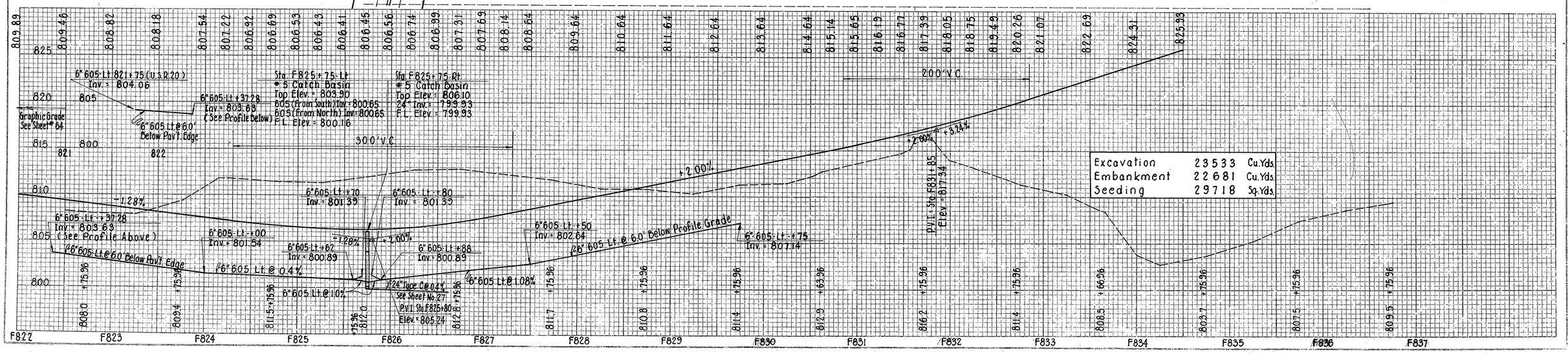
HUR-18-15.01



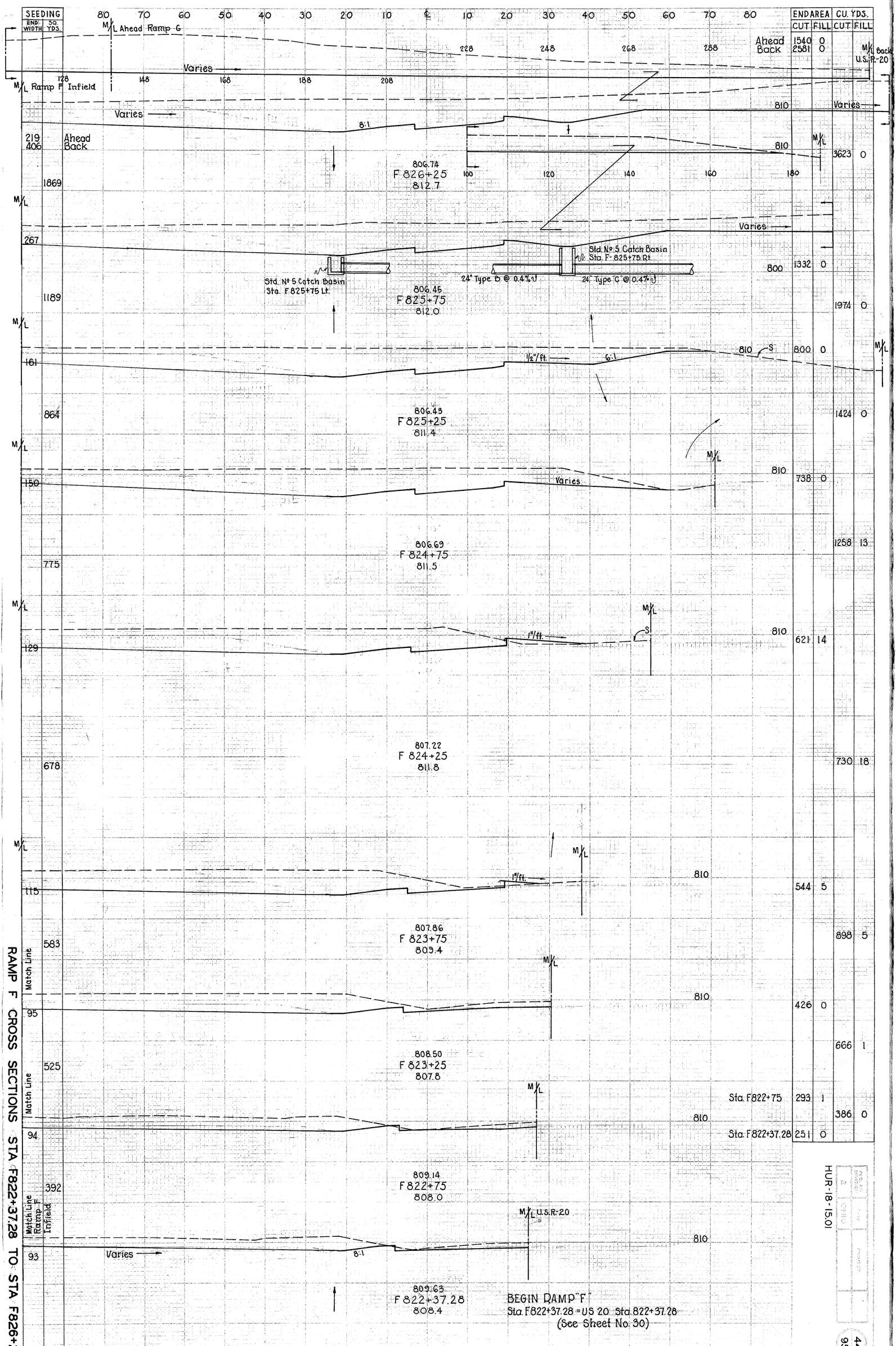
GRADING PLAN INTERSECTION USR 20 & SR 18

Ref. No.	Station	603 Conduit Type B With Class B Bedding 24" Lin.Ft.	603 Conduit Type F 6" Lin.Ft.	604 Std.# 5 Catch Basin Each	605 Deep Pipe Underdrains 6" Lin.Ft.	607 Jute Matting Sq.Yds.	606 Guard Rail Type-4 Lin.Ft.	609 Curb Std. Type 6 Lin.Ft.	609 Curb Std. Type 7 Lin.Ft.	609 Curb Std. Type 8 Lin.Ft.	Bends & Branches 6" x 60° Wye	606 Guard Rail Type-4 Barrier Design Lin.Ft.
UD-1	821+75 (U.S.R.20) Rt. to F825+75		10		409						1	
UD-2	F825+75 to F829+75 Lt.		10		409						1	
JM-1	F822+75 to F825+75 Lt.					358.1						
D-1	F825+75	58		2								
C-1	F822+37.28 to F824+37.28 Rt.								71	134		
C-2	F827+62 to F828+47 Rt.							90				
C-3	F831+80 to F832+28 Rt.							52				
G-1	F836+37.08 to 48+58.85 Lt.						87.50					
G-2	G819+36 to F828+87.26 Rt.						150.00					450.00
G-3	F827+47.63 to F828+87.26 Rt.						150.00					
G-4	F828+87.26 Rt. to G825+49.5 Rt.					358.1	387.50	142	71	134		450.00
	Totals	58	20	2	818							





RAMP "F"

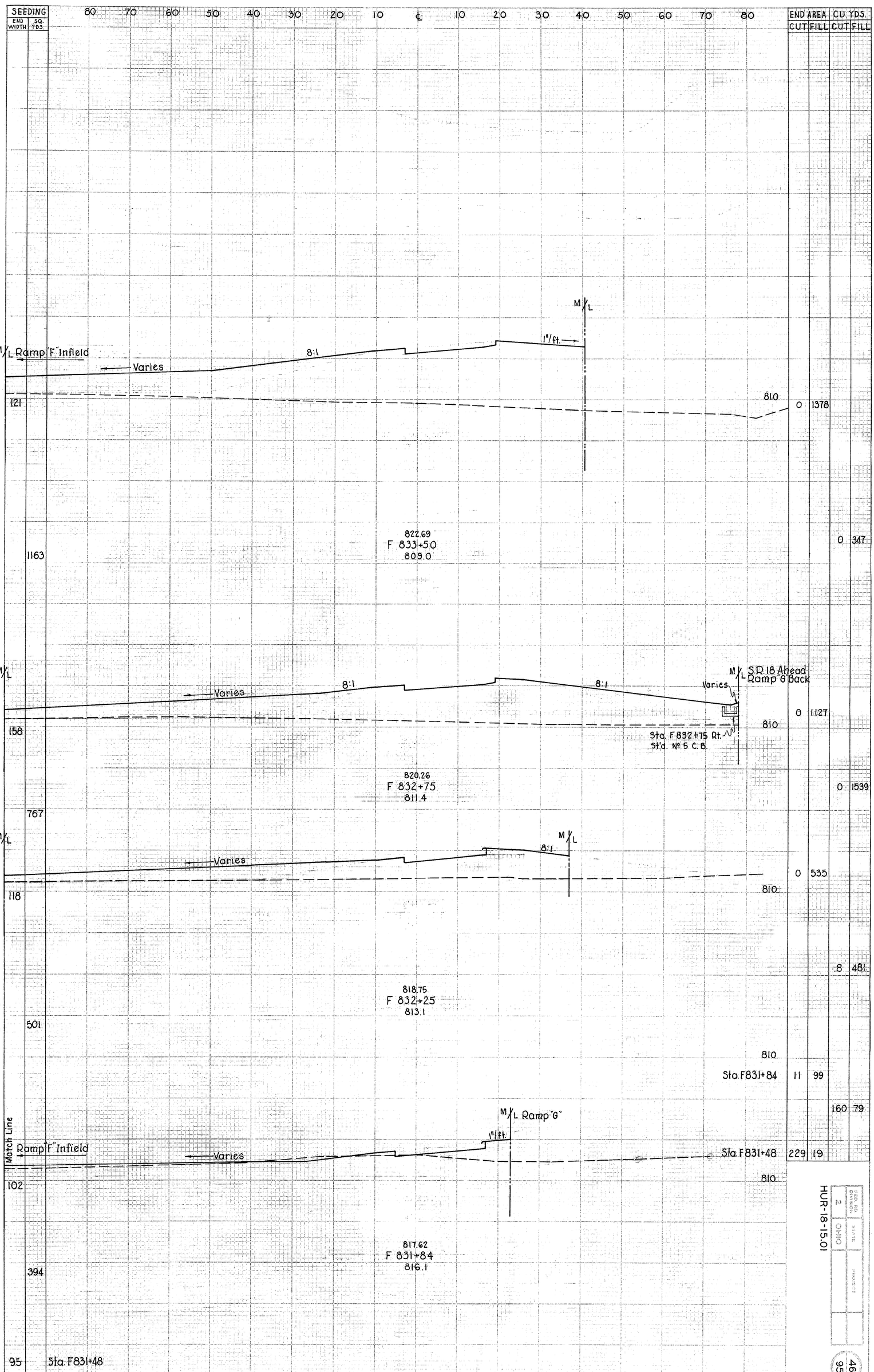

SEEDING
END WIDTH
SQ. YDS.
END AREA
CUT
FILL
CU. YDS.
CUT
FILL
M/L Ahead Ramp G
Varies
M/L Ramp F Infield
Ahead
Back
M/L Back U.S.R-20
8:1
806.74
F 826+25
812.7
806.45
F 825+75
812.0
Std. No. 5 Catch Basin
Sta. F 825+75 Lt.
Std. No. 5 Catch Basin
Sta. F-825+75 Rt.
24" Type B @ 0.4%
24" Type C @ 0.4%
1/2"/ft.
6:1
806.45
F 825+25
811.4
806.69
F 824+75
811.5
1"/ft.
807.22
F 824+25
811.8
807.86
F 823+75
809.4
Match Line
808.50
F 823+25
807.8
Sta. F822+75
Sta. F822+37.28
809.14
F 822+75
808.0
Match Line Ramp F Infield
U.S.R-20
809.63
F 822+37.28
808.4
BEGIN RAMP "F"
Sta. F822+37.28 = US 20 Sta. 822+37.28
(See Sheet No. 30)
RAMP F CROSS SECTIONS STA F822+37.28 TO STA F826+25
HUR-18-15.01
44
95

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

HUR-18-15.01

RAMP F CROSS SECTIONS STA F826+75 TO STA F831+48

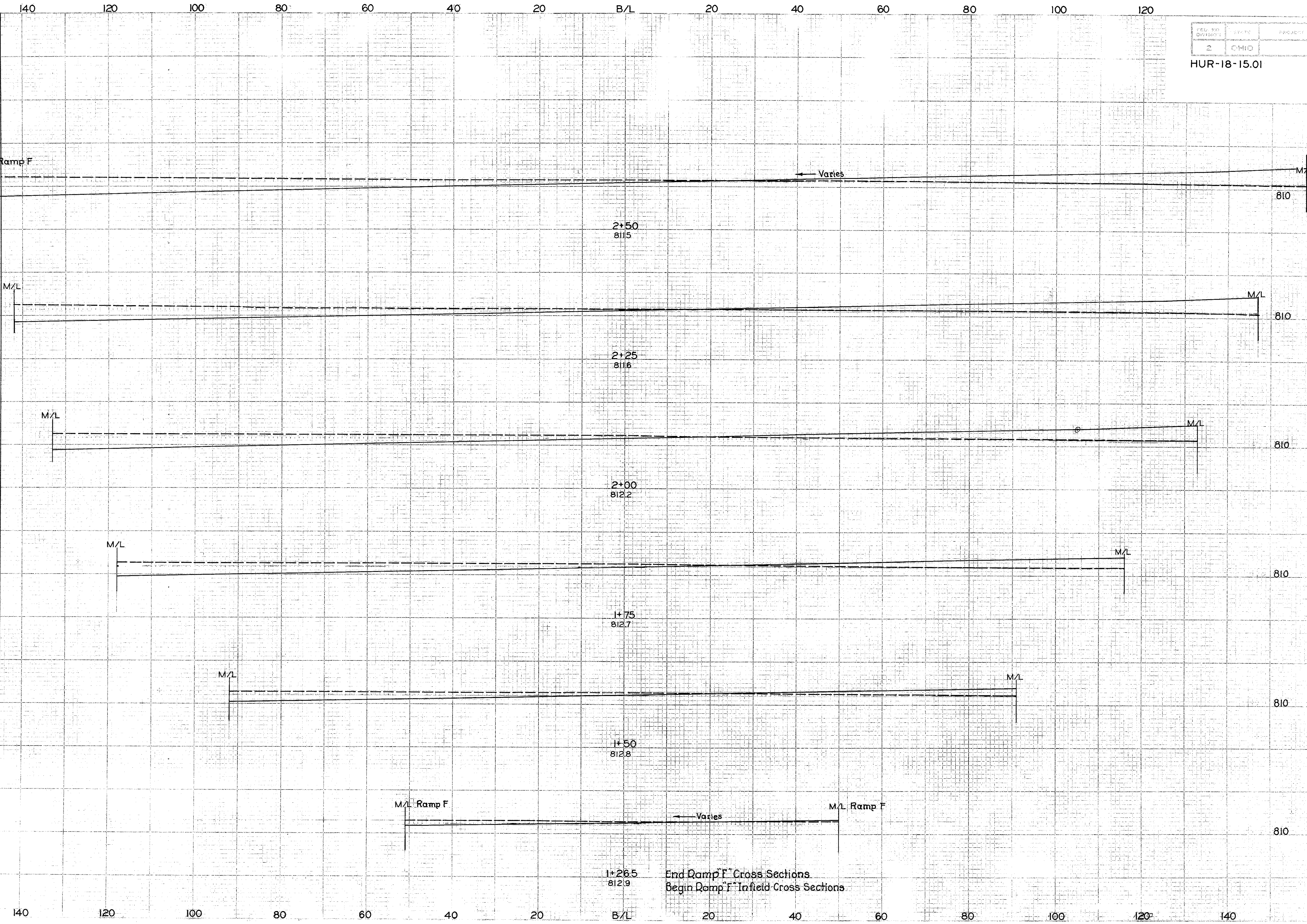
RAMP F CROSS SECTIONS STA F831+84 TO STA F833+50



HUR-18-15.01

RAMP F CROSS SECTIONS STA F834+00 TO STA F836+75.96

SEEDING	
END WIDTH	SQ. YDS.
306	
	826
289	
	771
266	
	696
235	
	581
183	
	371
101	



END AREA		CU. YDS.	
CUT	FILL	CUT	FILL
375	241		
		312	215
299	223		
		280	198
305	205		
		251	150
237	120		
		176	84
143	61		
		83	27
47 / 0	1 / 0		

RAMP "F" INFIELD AREA CROSS SECTIONS-STA 1+26.5 TO STA 2+50

FED. ROAD DIVISION	STATE	PROJECT	
2	OHIO		

49
95

HUR-18-15.01

SEEDING END WIDTH	SEEDING SQ. YDS.
28	221
109	432
202	644
262	772
294	842
312	876
319	888
320	883
316	864
306	

	ENDAREA CUT	ENDAREA FILL	CU. YDS. CUT	CU. YDS. FILL
STA 4+79 AHEAD	0	0		
STA 4+79 BACK	0	1.5		
4+79			45	16
4+50	83	14	178	30
4+25	302	50	374	59
4+00	506	78	482	89
3+75	535	115	518	112
3+50	584	128	544	147
3+25	592	189	475	195
3+00	435	232	376	226
2+75	378	257	348	230
STA 2+50	375	241		

End Ramp "F" Infield Cross Sections
Begin U.S. 20 Cross Sections

RAMP "F" INFIELD AREA CROSS SECTIONS - STA 2+75 TO STA 4+79

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

50 / 95

HUR-18-15.01

See Sheet No's. 64 To 66 For Elevation & Joint Details.

See Sheet No. 11 For Pavement Quantities.

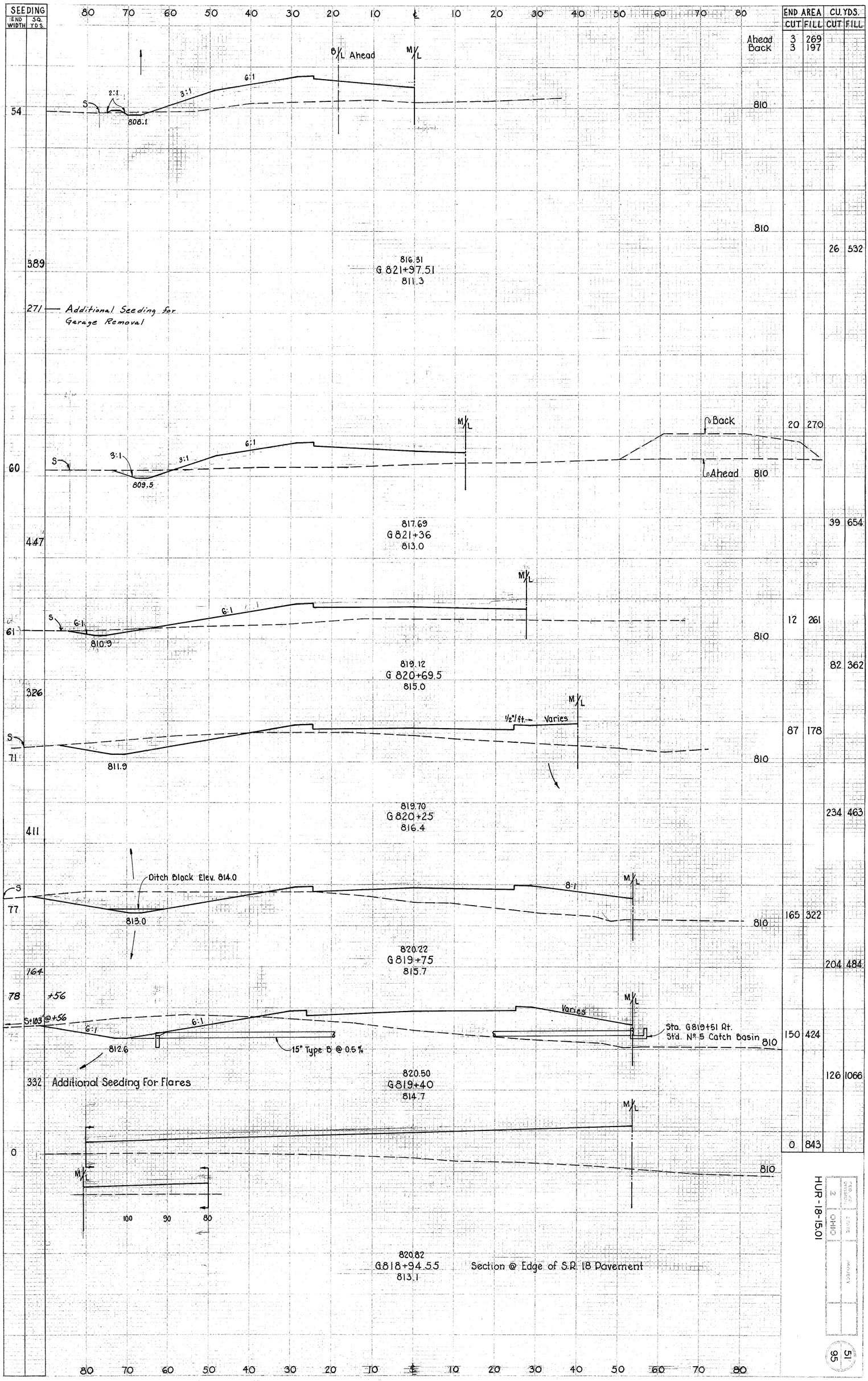
P.I. = Sta. G822+48.38
Δ = 20°-09'-44" Rt.
R = 286.11'
T = 50.87'
L = 100.68'
P.C. Sta. G821+97.51
C.S. Sta. G822+98.19
P.I. = Sta. G823+65.64
θs = 20°-01'-33" Rt.
Ls = 200'
S.C.S. Sta. G824+98.19
P.I. = Sta. G826+31.66
θs = 8°-00' Lt.
Ls = 200'
S.C. Sta. G826+98.19
P.I. = Sta. G828+87.87
Δ = 29°-40'-03" Rt.
Dc = 8°
T = 189.68'
L = 370.84'
P.C.C. Sta. 830+69.03
P.I. = Sta. G832+47.44
Δ = 14°-11'-59" Lt.
Dc = 4°
T = 178.41'
L = 354.99'
P.T. Sta. G834+24.02 = Sta. 834+24.02-56' Lt.
Conduit Continued On Sheet No. 27.
Underdrain Continued On Sheet No. 27.
Temporary Pavement
Sta. 43+30.20 ℄ S.R. 18 = Sta. G818+68.05
HW-E Endwall +51/63' Lt.
#5 C.B. +51/55' Rt.
℄ Ramp "G"
℄ Ramp "F"
See Sheet No. 43 For Ramp "F" Details & Quantities.
Δ = 189°-26'-06" Lt.
Dc = 23°
L = 823.63'
R = 249.11'
F825+75/22.5' Lt. #5 C.B.
F825+75/34.5' Rt. #5 C.B.
#5 C.B. +25/44' Rt.
#5 C.B. +44/30' Lt.
Existing 6" Underdrain
℄ U.S.R. 20 N-0°-33'-57"W
℄ S.R. 18
S-78°-53'-12"-E
CM-1
CM-2
C-1
C-2
UD-1
UD-2
D-1
D-2
D-3
G-1

Graphic Grade
250' V.C.
200' V.C.
15" Type B @ 0.5%
15" Inv. Lt. = 812.73
Sta. G819+51-Rt. #5 Catch Basin Top Elev. = 815.10 F.L. Elev. = 813.32
605+00 Lt. Inv. = 804.97
6" 605 Lt. @ 6.0' Below Profile Grade
24" Type B @ 0.4%
-2.48%
-1.36%
-0.16%
P.I. Sta. G826+75 Elev. 806.83
605+50 Lt. Inv. = 799.67
6" 605 Lt. @ 0.4%
24" Type C Rt. @ 0.4%
605+25 Lt. Inv. = 798.57
P.I. Sta. G829+00 Elev. = 803.57
Sta. G830+25-Rt. #5 Catch Basin Top Elev. = 802.50 6" Inv. = 798.11 24" Inv. = 798.07 F.L. Elev. = 798.07
6" 605 Lt. @ 1.0%
24" Type B @ 0.6%
605+90 Lt. Inv. = 799.22
605+00 Lt. Inv. = 796.17
Sta. G831+44-Lt. #5 Catch Basin Top Elev. = 800.30 24" Inv. = 797.22 F.L. Elev. = 797.22
24" Type C Lt. @ 0.8%
6" 605 Lt. @ 0.34%
Graphic Grade (See Sheet No. 64)
6" 605 +24.02 Lt. Inv. = 795.07 (Connect to U.S. 20) See Sheet No. 27
24" 603 Type C +24.02 Lt. Inv. = 795.01 (Connect to U.S. 20) See Sheet No. 27
825
820
815
810
805
800
795
790
G819
G820
G821
G822
G823
G824
G825
G826
G827
G828
G829
G830
G831
G832
G833
G834

Excavation	18508	Cu. Yds.
Embankment	6030	Cu. Yds.
Seeding	13027	Sq. Yds.

Ref. No.	Station	603 Conduit Type B With Class B Bedding (Lin. Ft.) 6"	603 Conduit Type B	603 Conduit Type B 24"	603 Conduit Type C 706.02 or 706.08 E.S. With Cl. B Bedding 24"	603 Conduit	603 Conduit	604 Catch Basins Std. # 5 (Each)	604 Catch Basins	605 Deep Pipe Underdrains Lin. Ft. 6"	606 Guard Rail Type-4 Lin. Ft.	609 Curb Std. Type 6 Lin. Ft.	612 Standard Concrete Median Sq. Yds.				Bends & Branches 6"x6" Tee
UD-1	G825+00 to G830+90 Lt.	46								590							1
UD-2	G831+00 to G834+24.02 Lt.									324							
C-1	G820+33 to G820+78 Rt.											45					
C-2	G824+41 to G825+27 Rt.											86					
G-1	G832+75 to G834+00 Lt.										125.00						
D-1	F825+75 Rt. to G830+25 Rt.				466			1									
D-2	G830+25 Rt. to G831+44 Lt.			142				1									
D-3	G831+44 to G834+24.02 Lt.				276												
CM-1	G819+15 to G824+41 Rt.												186.8				
CM-2	G820+78 to G820+98 Rt.												17.3				
	Totals	46		142	742			2		914	125.00	131	204.1				

RAMP "G"



RAMP G CROSS SECTIONS STA G818+94.55 TO STA G821+97.51

HUR-18-15.01

51
95

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

52
95

HUR-18-15.01

END AREA	CU. YDS.
CUT / FILL	CUT / FILL
667 / 0	
241 / 0	841 / 0
88 / 4	305 / 4
10 / 50	91 / 50
2 / 120	11 / 157
2 / 203	4 / 299
2 / 273	4 / 441
25 / 315	25 / 544
4 / 300	27 / 569
3 / 269	4 / 290

SEEDING	
FED. SQ. YDS.	
WIDTH	
108	
519	
79	347
46	256
46	242
41	244
47	292
58	319
57	303
52	162
54	

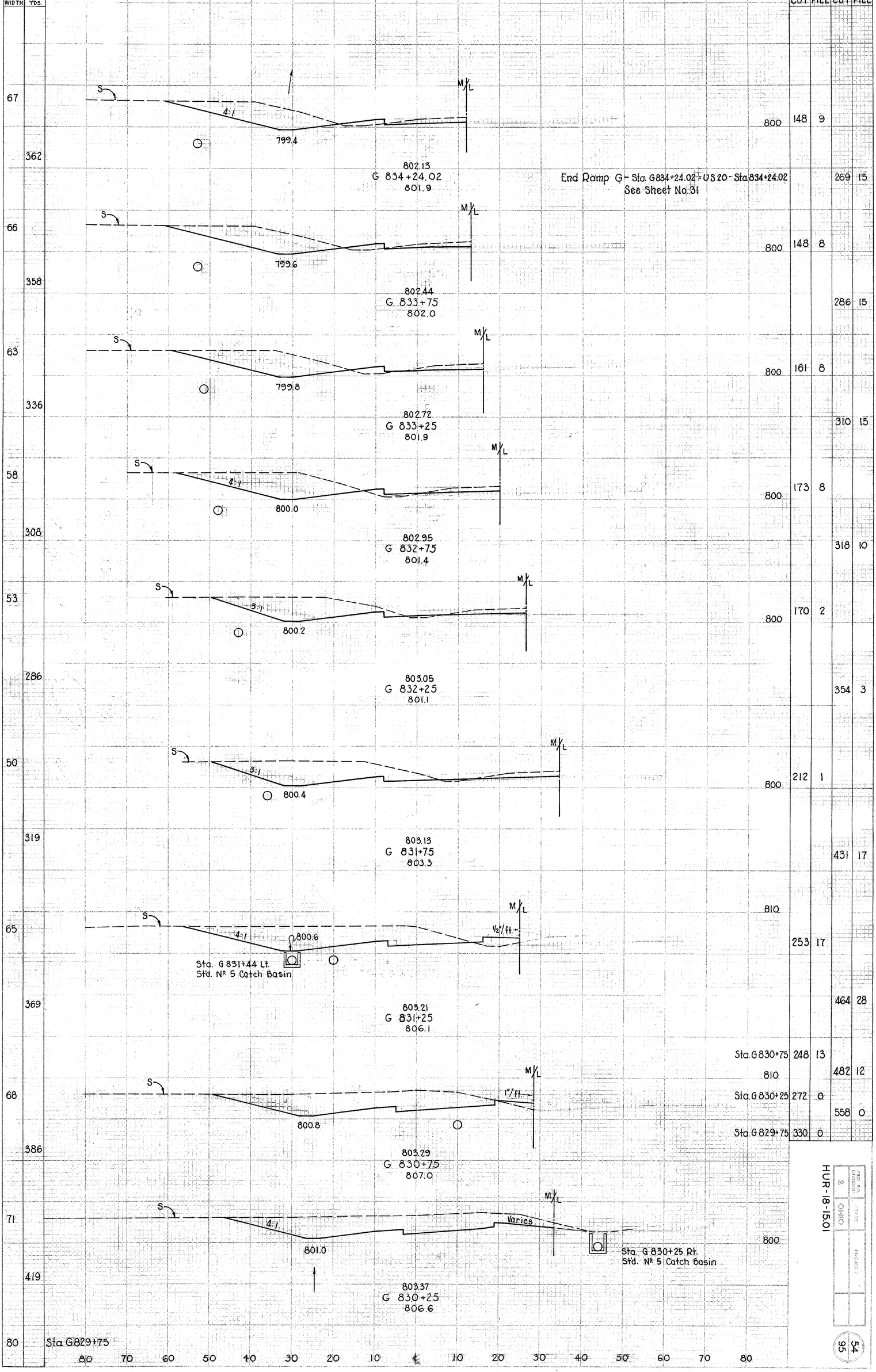
RAMP G CROSS SECTIONS STA G822+25 TO STA G826+25

FED. ROAD DIVISION	STATE	PROJECT	
5	OHIO		

HUR-18-15.01

53
95

RAMP G CROSS SECTIONS STA G826+75 TO STA G829+75



RAMP G CROSS SECTIONS STA G830+25 TO STA G834+24.02

HUR-18-15.01

54
95

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

HUR-18-15.01

55/95

See Sheet No. 11 For Pavement Quantities

Sta. 54+50 ℄ S.R.18 =
Sta. H817+46.56 ℄ Ramp "H"

52.5° 78'53" Rt. ℄ S.R.18

53 ℄ S.R.18

54

55

70°

P.I. = Sta. H819+76.25
Δ = 27°-14'-24" Lt.
Dc = 12°
T = 115.69'
L = 227.00'

P.C. Sta. H818+60.56

P.T. Sta. H820+87.56

H818 H819 H820 H821 H822 H823 ℄ Ramp "H" H824 H825 H826 H827 H828

Temporary Pavement

P.I. Sta. H819+00
Elev. = 827.19

+46.56/41' Lt.
* 5 C.B.

+46.56/23' Rt.
* 5 C.B.

+46.56
30.0' Rt.

W/L

L/A

JM-1

P.I. = Sta. H823+45.05
Δs = 8° Rt.
Ls = 200'

S.C. H824+11.58

T.S. H822+11.58

UD-1

P.I. = Sta. H825+25.84
Δ = 18°-07'-43" Rt.
Dc = 8°
T = 114.26'
L = 226.61'

D-1

P.C. Sta. H826+38.19

D-2

C-1

P.I. = Sta. H827+38.35
Δ = 8°-00' Rt.
Dc = 4°
T = 100.16'
L = 200.00'

See Sheet No. 26 For Under drain Profile & Quantity

See Sheet No. 26 For Conduit Detail & Quantity.

P.T. Sta. H828+38.19 = Sta. 828+38.19-69' Rt.

12" Pipe

+00/104' Rt. (U.S. 20) HW-E Endwall

Existing 6" Underdrain

825 826 827 828 ℄ U.S.R. 20 829 830 N-0°-33'-57"-W 831 832 833

G829 G830 ℄ Ramp "G" G831 G832 G833

W/L L/A

See Sheet No's. 67 & 69 For Elevation & Joint Details.

Excavation	8520	Cu.Yds.
Embankment	12662	Cu.Yds.
Seeding	17760	Sq.Yds.

Sta. H825+46.56 Lt.
* 5 Catch Basin
Top Elev. = 805.85
F.L. Elev. = 802.48

Sta. H825+46.56 Rt.
* 5 Catch Basin
Top Elev. = 804.75
6" 605 Inv. = 802.51
21" Type B Inv. = 801.97
F.L. Elev. = 801.97

6" 605 + 50 Rt.
Inv. = 810.13

6" 605 Rt. @ 2.6%

6" 605 + 47 Rt.
Inv. = 803.25

6" 605 + 34 Rt.
Inv. = 802.75

-3.16%

+0.12%

24" Type C Rt. @ 0.8%

Sta. 829+00 (U.S. 20) Rt.
24" 603 Inv. = 799.20

P.I. Sta. H826+00
Elev. = 805.01

100' V.C

300' V.C

Graphic Grade (See Sheet No. 67)

-1.00%

-3.16%

Ref. No.	Station	601 Dumped Rock Channel Protection Cu.Yds.	602 Concrete Masonary Cu.Yds.	603 Conduit Type B With Class B Bedding Lin Ft. 21"	603 Conduit Type C With Class B Bedding Lin Ft. 24"	603 Conduit Type F 6"	604 Catch Basins Std. No. 5 Each	605 Deep Pipe Underdrains Lin.Ft. 6"	667 Jute Matting Sq.Yds.	609 Curb Std. Type 7 Lin. Ft.	609 Curb Std. Type 8 Lin. Ft.
	Bends & Branches 6"x 60° Wye										
JM-1	H822+46.56 to H825+46.56 Rt.								2442		
UD-1	H822+50 to H825+46.56 Rt.					10		306			
C-1	H825+80 to H828+38.19 Lt.									105	153
D-1	H825+46.56			64		346	2				
D-2	H825+46.56 Rt. to 829+00 (U.S. 20) Rt.	2.0*	0.41								
	Totals	2.0	0.41	64	346	10	2.	306	2442	105	153

* 6' x 6' x 1.5'

RAMP "H"

RAMP H CROSS SECTIONS STA. H 817+74.76 TO STA. H 822+46.56

FED. RD. DIVISION	STATE	PROJECT		57
2	OHIO			95

HUR-18-15.01

Seeding End Width	Seeding Sq. Yds.
40	202
64	358
93	281
118	869
195	1042
180	911
148	717
110	422
42	

260 240 220 200 180 160 140 120 100

M/L — 4% — H 822+46.56 — 810

M/L — 3% — H 822+11.58 — 810

M/L — 2% — H 821+70.56 — 810

M/L — 2% — H 821+46.56 — 810

M/L — 2% — H 820+96.56 — 810

M/L — 2% — H 820+46.56 — 810

M/L — Varies (6:1 Normal to S.R.-18) — H 819+96.56 — 810

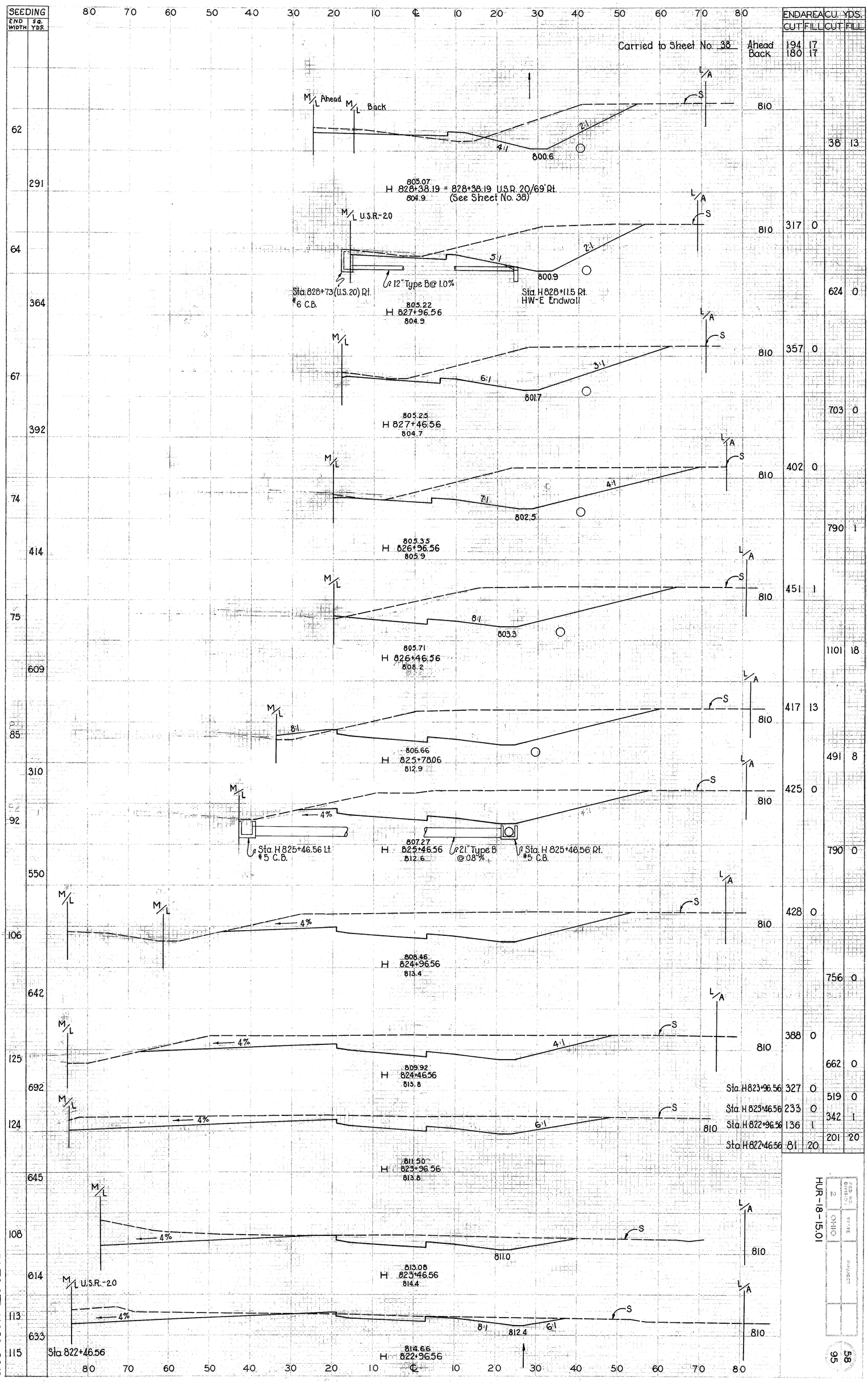
M/L — Varies (6:1 Normal to S.R.-18) — H 819+46.56 — 810

M/L — Varies (6:1 Normal to S.R.-18) Varies — H 818+96.56 — 810

End Area CuT	End Area Fill	Cu. Yds. CuT	Cu. Yds. Fill
106	0		
		172	0
160	0		
		200	0
103	0		
		113	0
150	0		
		324	0
200	0		
		231	83
50	90		
		46	426
0	370		
		0	722
0	410		
		0	519
0	150		

280 260 240 220 200 180 160 140 120 100 80

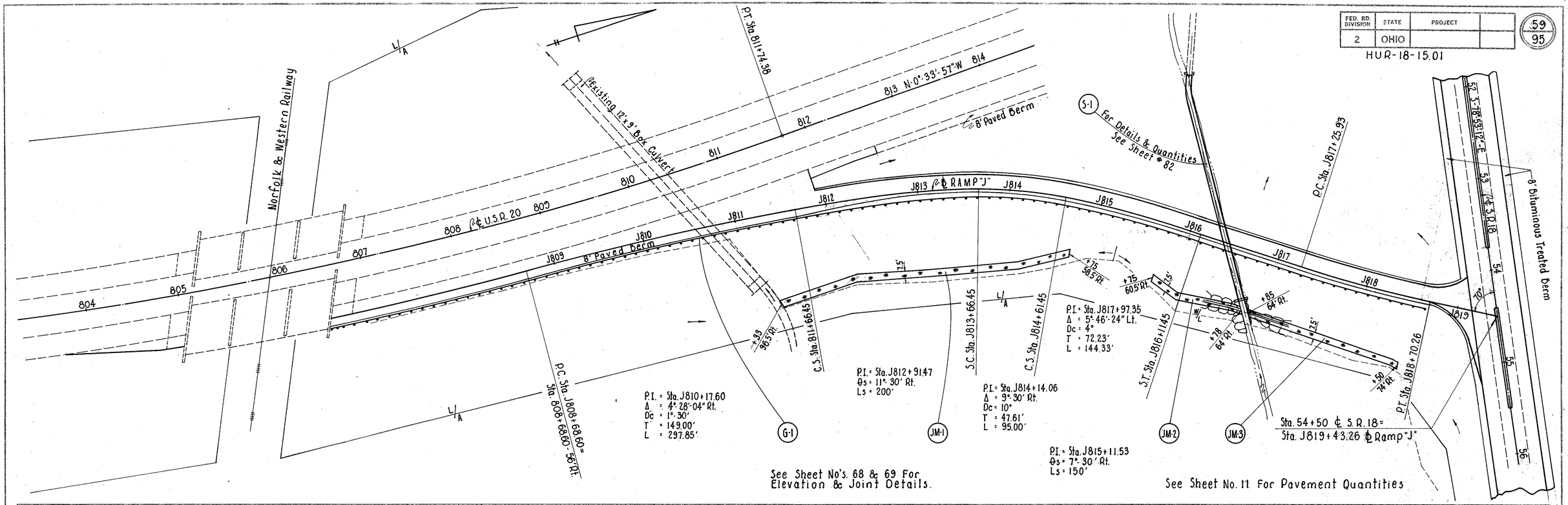
RAMP H – ROADWAY CROSS SECTION EXTENSIONS - LEFT - STA. H 818+96.56 TO STA. H 822+46.56

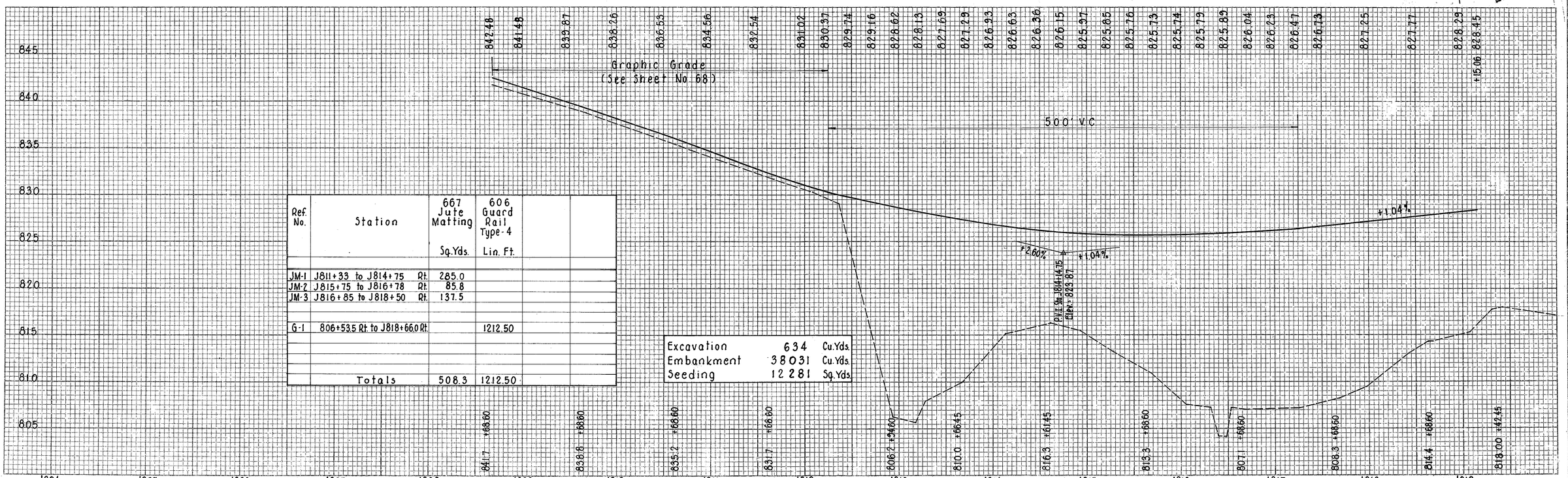

SEEDING
END WIDTH
SQ. YDS.
80 70 60 50 40 30 20 10 ℄ 10 20 30 40 50 60 70 80
ENDAREA CU. YDS.
CUT FILL CUT FILL
Carried to Sheet No. 38
Ahead 194 17
Back 180 17
M/L Ahead
M/L Back
L/A
S
810
2:1
4:1
800.6
62
38 13
291
805.07
H 828+38.19 = 828+38.19 U.S.R. 20/69 Rt.
804.9
(See Sheet No. 38)
M/L U.S.R.-20
810 317 0
64
5:1
2:1
800.9
12" Type B @ 1.0%
Sta. 828+73 (U.S. 20) Rt.
#6 C.B.
Sta. H 828+11.5 Rt.
HW-E Endwall
624 0
364
805.22
H 827+96.56
804.9
67
6:1
3:1
801.7
810 357 0
703 0
392
805.25
H 827+46.56
804.7
74
7:1
4:1
802.5
810 402 0
790 1
414
805.35
H 826+96.56
805.9
75
8:1
803.3
810 451 1
1101 18
609
805.71
H 826+46.56
808.2
85
8:1
810 417 13
310
806.66
H 825+78.06
812.9
491 8
92
4%
Sta. H 825+46.56 Lt.
#5 C.B.
807.27
H 825+46.56
812.6
2" Type B
@ 0.8%
Sta. H 825+46.56 Rt.
#5 C.B.
810 425 0
790 0
550
106
4%
808.46
H 824+96.56
813.4
810 428 0
642
756 0
125
4%
4:1
809.92
H 824+46.56
813.8
810 388 0
692
662 0
Sta. H 823+96.56 327 0
519 0
Sta. H 823+46.56 233 0
342 1
Sta. H 822+96.56 136 1
201 20
Sta. H 822+46.56 81 20
124
4%
6:1
810
811.50
H 823+96.56
813.6
645
108
4%
811.0
810
614
813.08
H 823+46.56
814.4
M/L U.S.R.-20
113
4%
8:1
812.4
6:1
810
633
115
Sta. 822+46.56
814.66
H 822+96.56
80 70 60 50 40 30 20 10 ℄ 10 20 30 40 50 60 70 80
RAMP H CROSS SECTIONS STA. H822+96.56 TO STA. H828+38.19
HUR-18-15.01
OHIO
95
58

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

59
95

HUR-18-15.01





Ref. No.	Station	667 Jute Matting Sq.Yds.	606 Guard Rail Type-4 Lin. Ft.
JM-1	J811+33 to J814+75 Rt.	285.0	
JM-2	J815+75 to J816+78 Rt.	85.8	
JM-3	J816+85 to J818+50 Rt.	137.5	
G-1	806+53.5 Rt. to J818+66.0 Rt.		1212.50
	Totals	508.3	1212.50

Excavation	634	Cu.Yds.
Embankment	38031	Cu.Yds.
Seeding	12281	Sq.Yds.

RAMP "J"

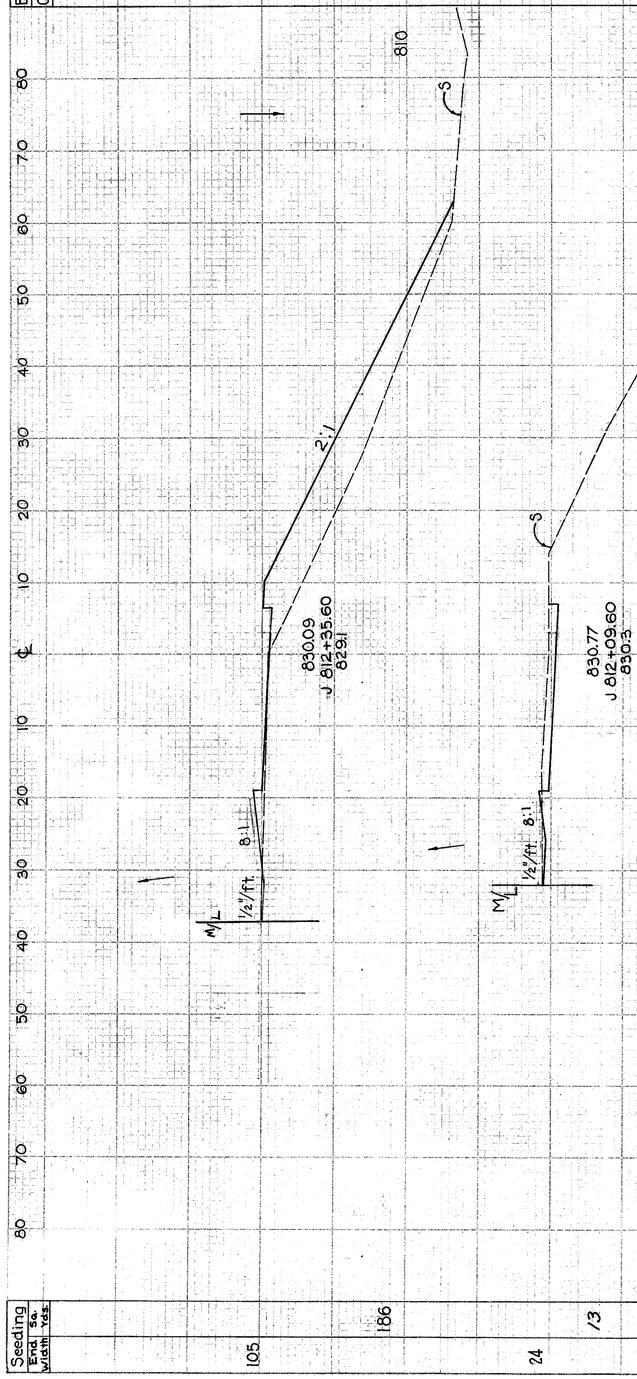
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

60
95

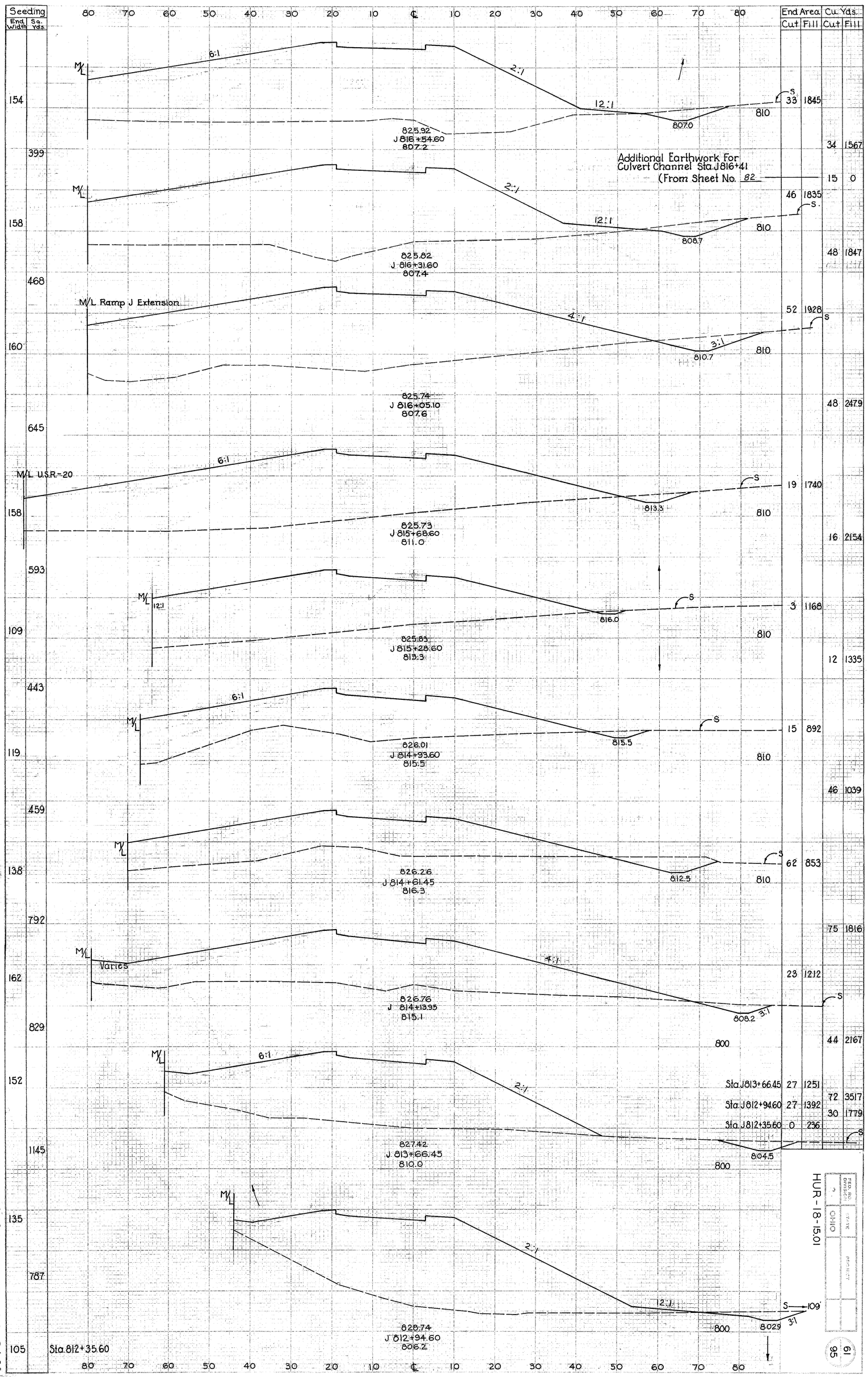
HUR-18-15.01

End Area Cut	End Area Fill	Cu. Yds. Cut	Cu. Yds. Fill
0	236		
23	41	3	0
		11	115

Seeding End Sq. width Yds.
105
186
24
13
12



RAMP J STA J 812+03.00 TO STA J 812+35.60


Seeding
End Width
Sq. Yds.
80 70 60 50 40 30 20 10 ℄ 10 20 30 40 50 60 70 80
End Area
Cut Fill
Cu. Yds.
Cut Fill
154
399
158
468
160
645
158
593
109
443
119
459
138
792
162
829
152
1145
135
787
105
M/L
6:1
2:1
12:1
807.0
810
825.92
J 816+54.60
807.2
S
33 1845
34 1567
Additional Earthwork For
Culvert Channel Sta. J816+41
(From Sheet No. 82
15 0
46 1835
808.7
825.82
J 816+31.60
807.4
48 1847
M/L Ramp J Extension
4:1
3:1
810.7
52 1928
48 2479
825.74
J 816+05.10
807.6
M/L U.S.R.-20
813.3
19 1740
825.73
J 815+68.60
811.0
16 2154
12:1
816.0
3 1168
825.83
J 815+28.60
813.3
12 1335
815.5
15 892
826.01
J 814+93.60
815.5
46 1039
812.5
62 853
826.26
J 814+61.45
816.3
Varies
75 1816
808.2
3:1
23 1212
826.76
J 814+13.95
815.1
800
44 2167
Sta. J813+66.45 27 1251
Sta. J812+94.60 27 1392
Sta. J812+35.60 0 236
72 3517
30 1779
804.5
827.42
J 813+66.45
810.0
109
8029
826.74
J 812+94.60
806.2
Sta. 812+35.60
RAMP J STA J812+94.60 TO STA J816+54.60
HUR-18-15.01
OHIO
61
95

Seeding End Width	Seeding Sq. Yds.
606	Additional Seeding for Flares
147	
326	
132	
775	
178	
1303	
147	
956	
153	
239	
154	Sta. 816+54.60

80 70 60 50 40 30 20 10 ℄ 10 20 30 40 50 60 70 80

RAMP J STA J816+68.60 TO STA J819+15.06

M/L

828.45
J 819+15.06
816.4

Section @ 20° RF Skew
along S.R.18 Pavement Edge

M/L

810

End Area x Cos 20°
1762 × .93969 ÷ 1656

M/L

Varies

6:1

4:1

L/A

S

827.92
J 818+64.15
814.3

2:1

810

810.7

M/L

6:1

3:1

827.70
J 818+43.10
813.1

4:1

2:1

810.6

M/L S.R.18

Varies

6:1

827.23
J 817+98.10
809.5

2.5:1

12:1

4:1

3:1

4:1

809.0

M/L Ramp J Extension

6:1

2:1

12:1

826.48
J 817+25.93
807.2

806.4

M/L

6:1

2:1

12:1

4:1

3:1

826.00
J 816+68.60
807.1

806.1

800

End Area Cut.	End Area Fill.	Cu. Yds. Cut	Cu. Yds. Fill
0	1656		
		42	2859
45	1377		
		24	1012
17	1220		
		17	2450
Sta. J817+98.10	3	1720	
S		19	4591
Sta. J817+25.93	11	1715	
Sta. J816+68.60	40	1822	
		54	3755
Sta. J816+54.60	33	1845	
		19	951

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

HUR-18-15.01

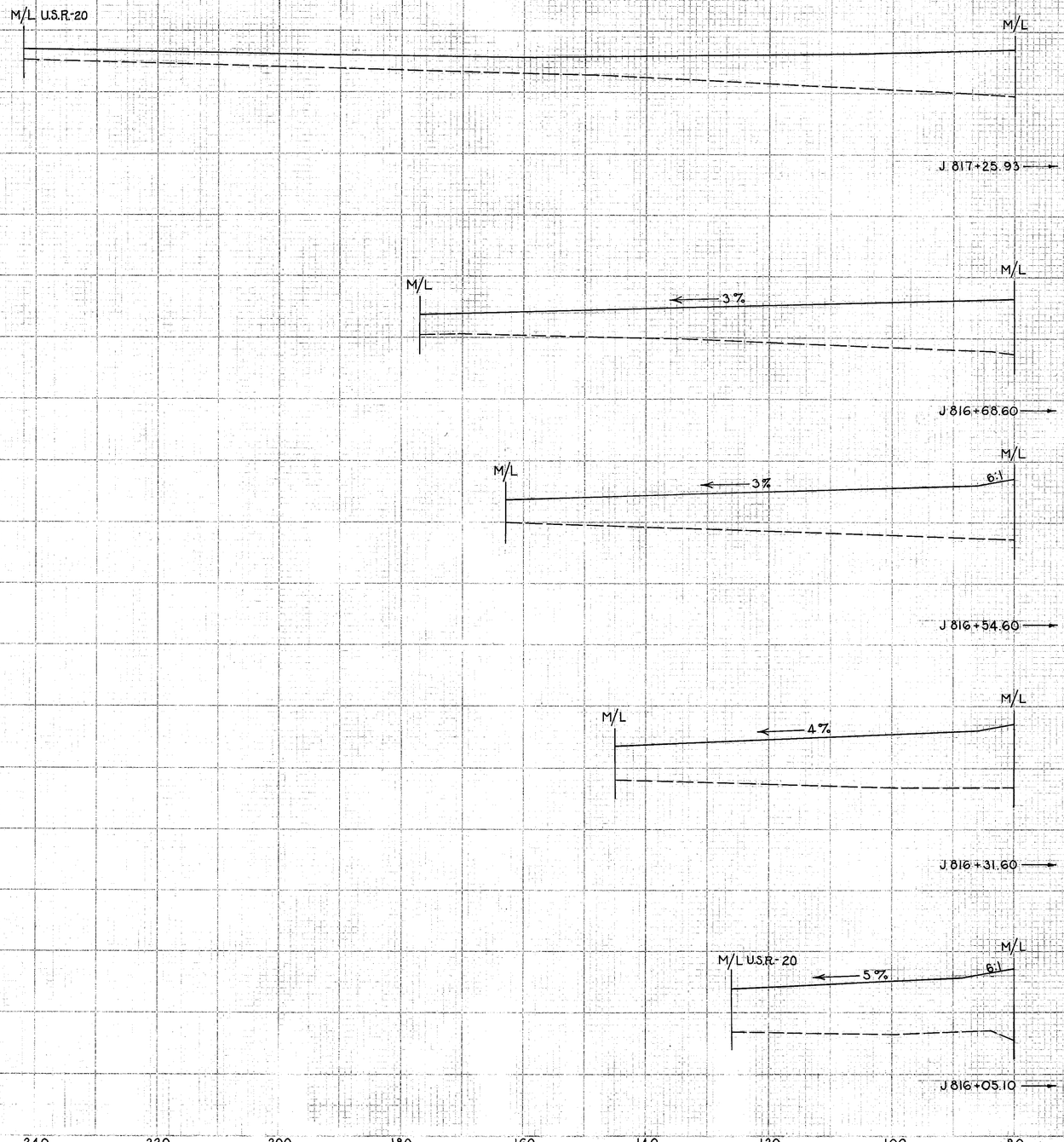
62
95

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

63
95

HUR-18-15.01

240 220 200 180 160 140 120 100 80



Seeding End Width	Seeding Sq. Yds.	End Area Cut	End Area Fill	Cu. Yds. Cut	Cu. Yds. Fill
162		0	550		
	810				
	825			0	1174
97		0	556		
	810				
	140			0	283
83					
	810	0	536		
	189			0	443
65					
	810	0	505		
	163			0	437
46					
	810	0	385		
				0	260
Sta. J 815+68.60		0	0		

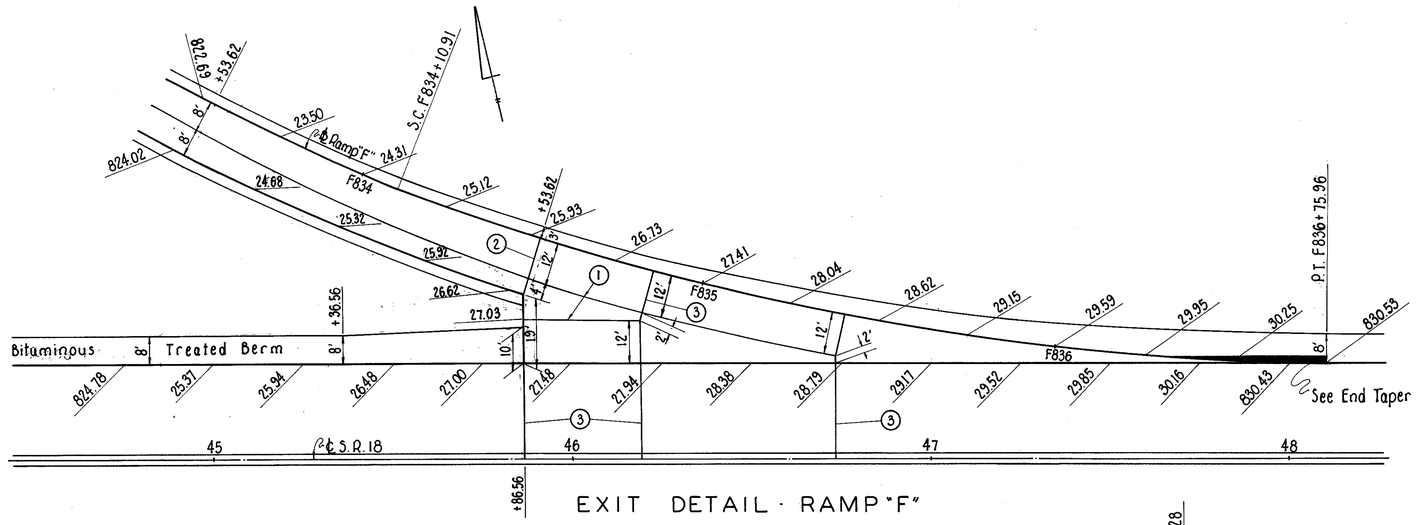
240 220 200 180 160 140 120 100 80

RAMP J ROADWAY CROSS SECTION EXTENSIONS-LEFT - STA. J 816+05.10 TO STA. J 817+25.93

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

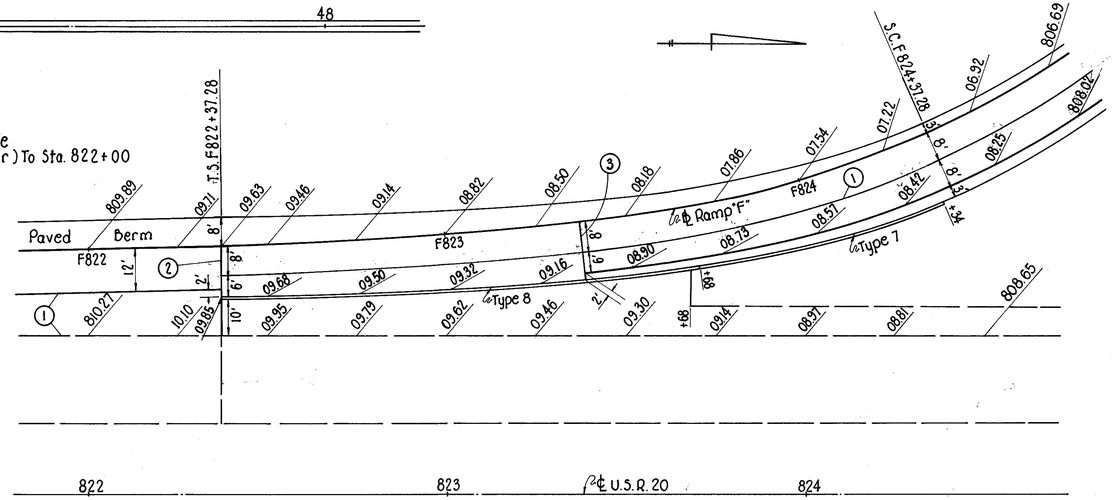
64
95

HUR-18-15.01



EXIT DETAIL - RAMP "F"

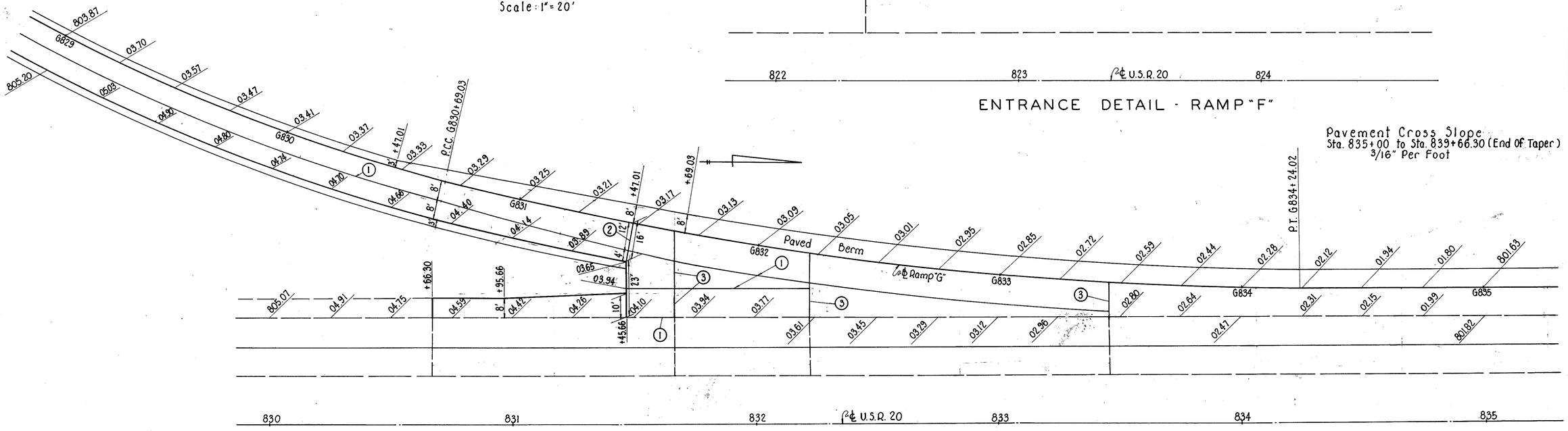
Pavement Cross Slope
Sta. 812+37.28 (Start Of Taper) To Sta. 822+00
3/16" Per Foot



ENTRANCE DETAIL - RAMP "F"

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

Scale: 1" = 20'



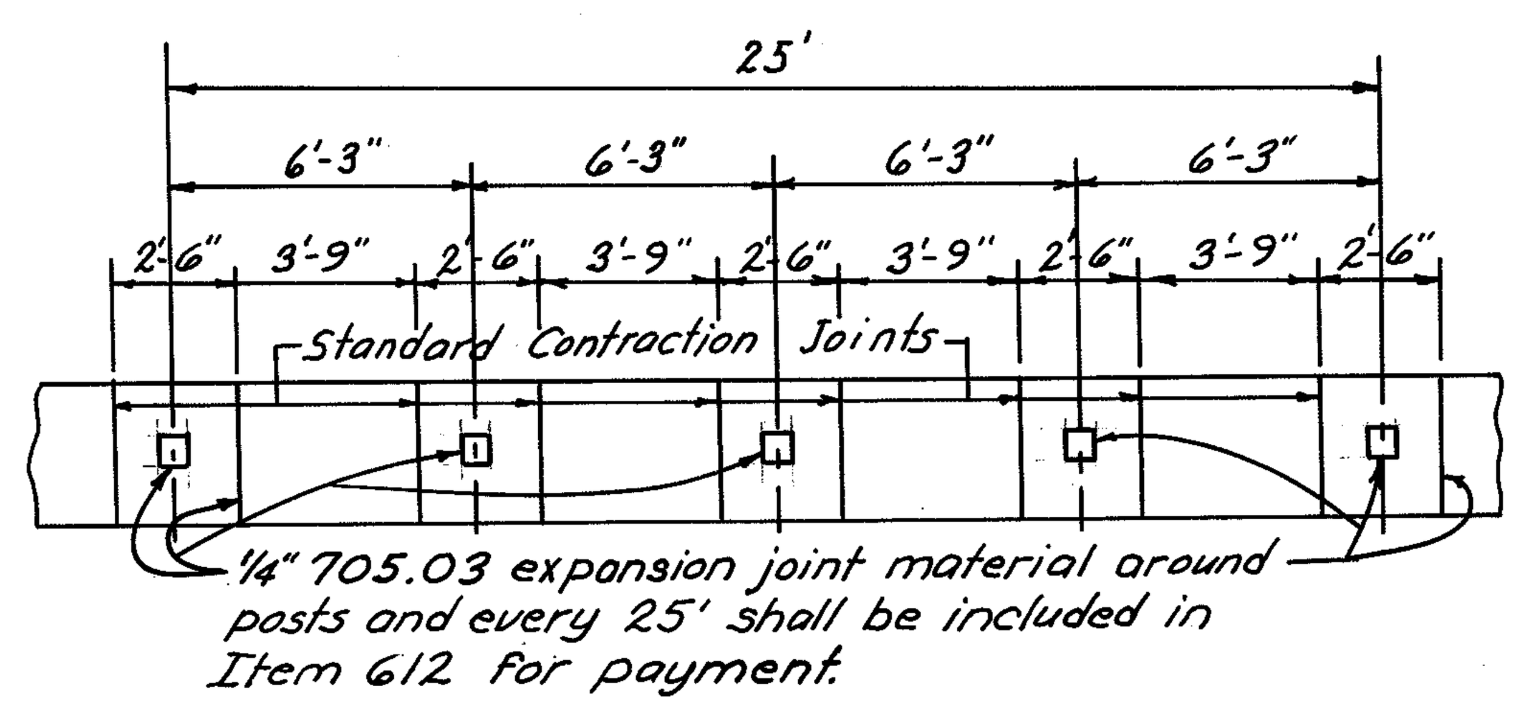
EXIT DETAIL - RAMP "G"

ELEVATION PLAN - RAMPS "F" & "G"

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

HUR-18-15.01

① Standard Longitudinal Joint
④ Key Joint Without Tiebars



In lieu of spacing requirements of Std. Dwg. MC-6, expansion and contraction joints shall be provided in Item 612 Concrete Median, as detailed hereon, whenever guard rail is called for.

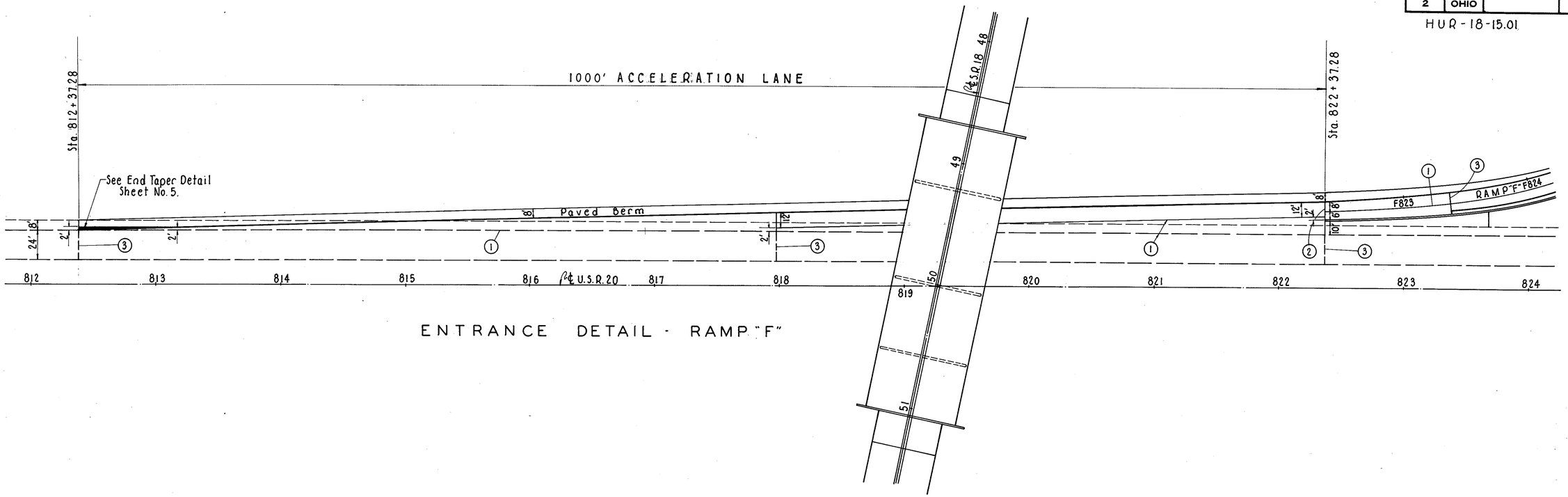
Scale: 1" = 20'

ELEVATION PLAN - RAMPS "F" & "G"

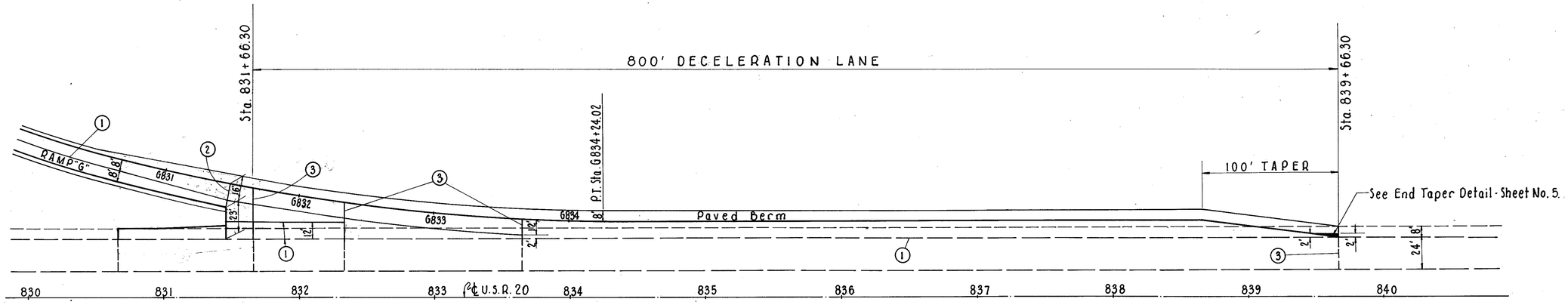
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

66
95

HUR-18-15.01



ENTRANCE DETAIL - RAMP "F"



EXIT DETAIL - RAMP "G"

SCALE: 1" = 40'

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

JOINT DETAILS - RAMPS "F" & "G"

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

67
95

HUR-18-15.01

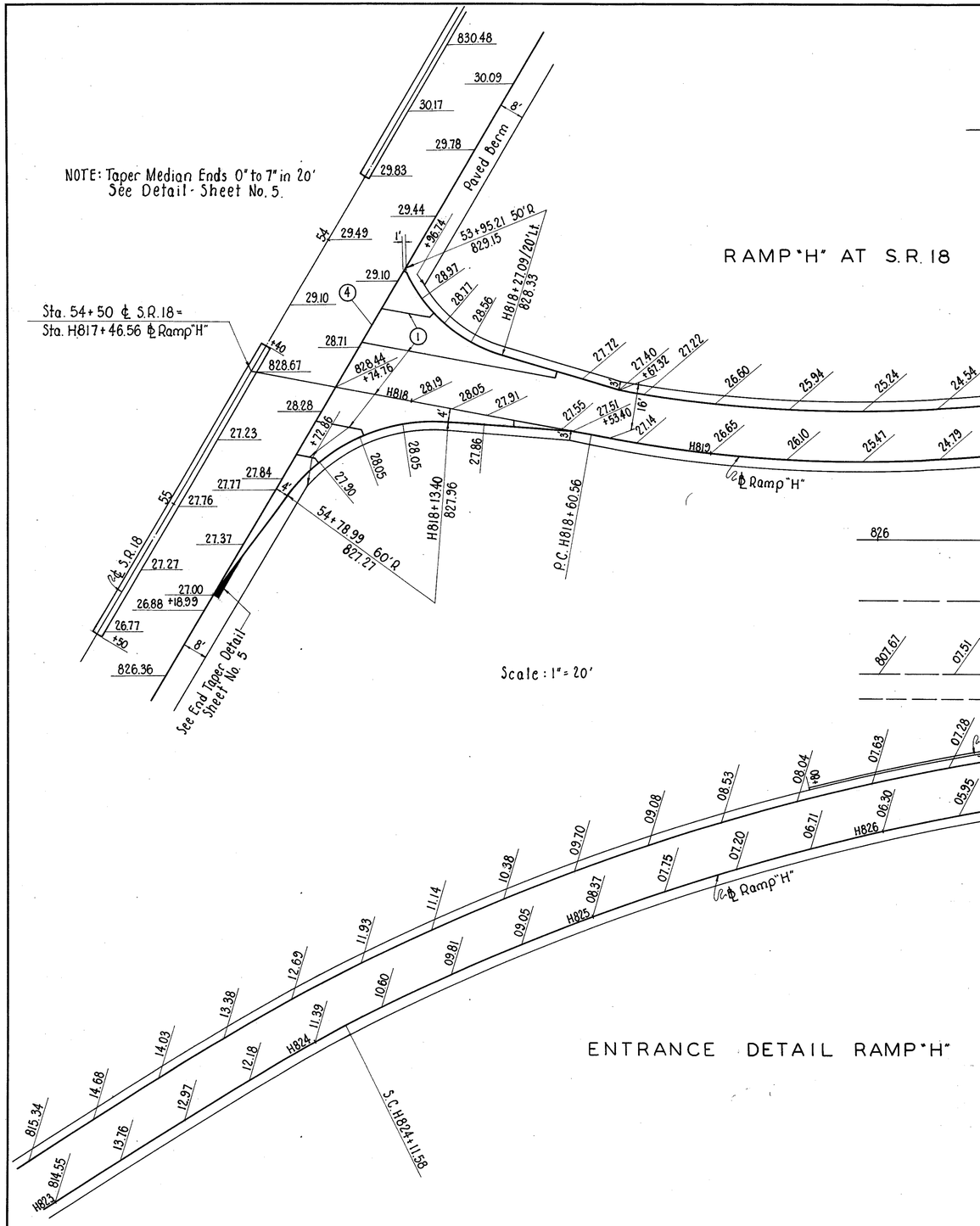
RAMP "H" AT S.R. 18

NOTE: Taper Median Ends 0" to 7" in 20'
See Detail - Sheet No. 5.

Sta. 54+50 ℄ S.R. 18 =
Sta. H817+46.56 ℄ Ramp "H"

Scale: 1" = 20'

ENTRANCE DETAIL RAMP "H"



Pavement Cross Slope
Sta. 833+00 To Sta. 838+38.19 (End Of Taper)
3/16" Per Foot

① Standard Longitudinal Joint
② Standard Expansion Joint
③ Standard Contraction Joint
④ Key Joint Without Tiebars

ELEVATION PLAN - RAMP "H"

FED. RD. DIVISION	STATE	PROJECT		
2	OHIO			

HUR-18-15.01

Pavement Cross Slope
Sta. 803+64.00 (Start Of Taper) To Sta. 807+00
Same Slope As Existing Pavement (.048 Ft. Per Ft.)

Station	Left Edge	Right Edge
807+00	846.53	847.11
807+25	845.96	846.51
807+50	845.38	845.86

① Standard Longitudinal Joint
② Standard Expansion Joint
③ Standard Contraction Joint
④ Key Joint Without Tiebars

Scale: 1" = 20'

NOTE: Taper Median Ends 0" To 7" in 20'
See Detail Sheet No. 5.

Sta. 54+50 ℄ S.R. 18 =
Sta. J819+43.26 ℄ Ramp "J"

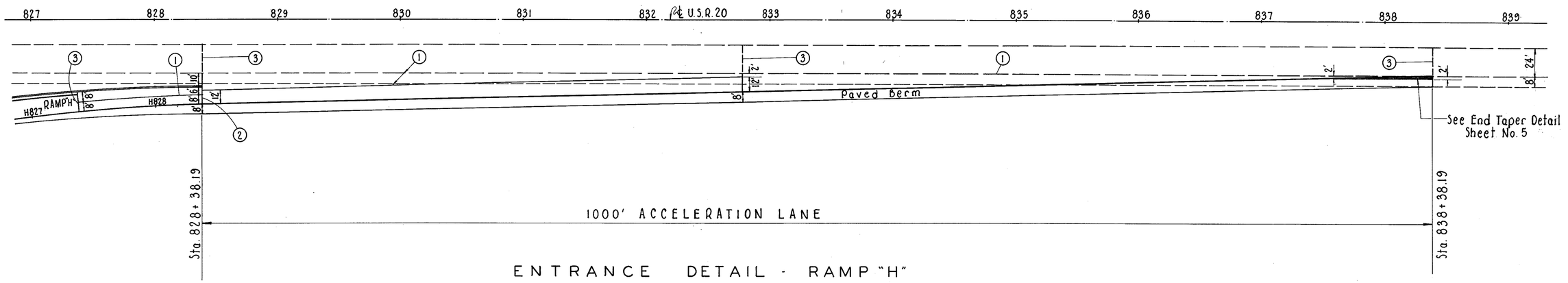
See End Taper Detail
Sheet No. 5.

ELEVATION PLAN - RAMP "J"

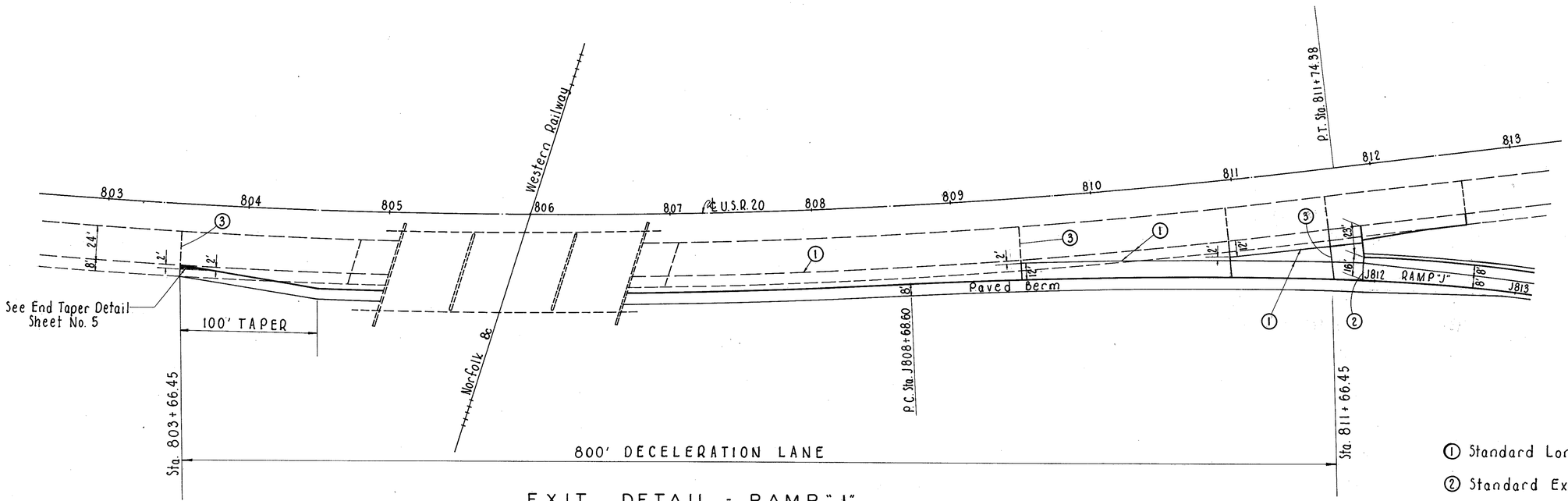
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

69
95

HUR-18-15.01



ENTRANCE DETAIL - RAMP "H"



EXIT DETAIL - RAMP "J"

SCALE: 1"=40'

① Standard Longitudinal Joint

② Standard Expansion Joint

③ Standard Contraction Joint

JOINT DETAILS - RAMPS "H" & "J"

FED. RD. DIVISION	STATE	PROJECT		
2	OHIO			

HUR-18-15.01

NOTE:
All Signs on this Project will be furnished by Others.
The Vertical Dimensions on the Overhead Signs are for the Actual Height. The Supports and Brackets are Designed for the Actual Height, as shown on the Details.


Norfolk & Western Railway
U.S.R. 20
S.R. 18
RAMP "J"
RAMP "H"
RAMP "F"
RAMP "G"
Cleveland EXIT 3/4 MILE 20
12x8.5
18 Medina Norwalk
13x8.5
Medina 39
Norwalk 2
9x4
D-4-2
M-24-20
M-2-24
M-40-24
M-1-24
807+00
810+15
J815+50
J818+75
R-41-36 DO NOT ENTER
R-1-36 STOP
R-43L-36 ONE WAY
R-43R-36 ONE WAY
R-41-24
M-39-24
54+50
56+00
M-39-36
R-16-24 TRUCKS 50
R-10A-24 SPEED LIMIT 60
60+00
61+50
WEST 20 EAST
8x2.5
D-3-24-G
M-17-24 JCT
64+50
55+40
R-37A-24 KEEP RIGHT
53+90
20 EAST Cleveland
11x8.5
11x8
52+00
M-19-20
53+50
H818+60
R-15-36 PROHIBITED
W-49-36 MERGING TRAFFIC
823+00
827+50
833+00
11x8.5
WEST 18 20 Toledo Bellevue
12x8.5
18 EAST Medina Norwalk
G824+00
G819+40
G820+50
R-2-48 YIELD
R-41-24 DO NOT ENTER
R-1-36 STOP
R-37A-24 KEEP RIGHT
42+10
44+10
G819+25
G819+30
F834+00
F834+50
W-98-36 RAMP 30 MPH
R-15-36 PROHIBITED
48+40
14x8.5
20 18 WEST Toledo Bellevue
10x6
Norwalk
14x6.5
20 EAST Cleveland
9x8.5
18 EAST Medina
12x10.5
20 18 WEST Toledo Bellevue
43+50
9x5
WEST 18 EAST
36+50
33+50
M-1-24
M-17-24
JCT 20
JCT 18
Scale: 1" = 100'

See Plan & Profile Sheets For Location & Quantities Of Guard Rail Protection For Sign Supports.
See Signing Summary Sheet No. 72 For Sign Quantities.

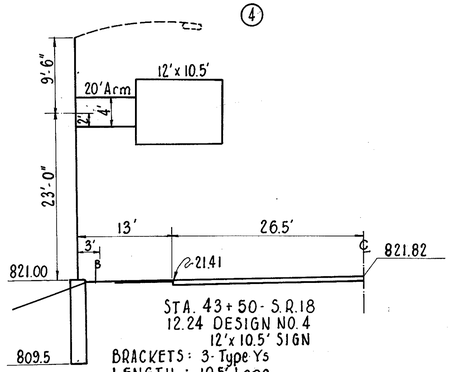
U.S.R. 20 & S.R. 18 SIGNING PLAN

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

7.1
95

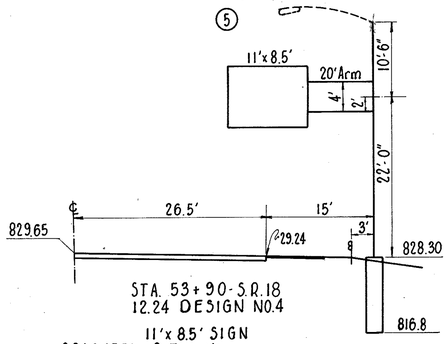
HUR-18-15.01

④



STA. 43+50-S.R.18
12.24 DESIGN NO.4
12'x10.5' SIGN
BRACKETS: 3-Type Ys
LENGTH : 10.5' Long
SPACING : 6", 66", 66", 6"

⑤



STA. 53+90-S.R.18
12.24 DESIGN NO.4
11'x8.5' SIGN
BRACKETS: 3-Type Ys
LENGTH : 8.5' Long
SPACING : 16⅜", 50", 49⅜", 16¼"

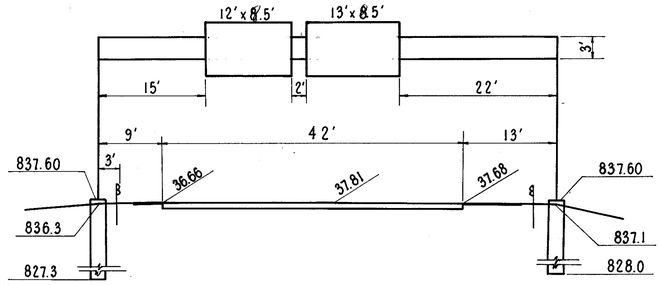
PROHIBITED

PEDESTRIANS
FARM MACHINERY
ANIMALS
BICYCLES OR MOTORCYCLES
(LESS THAN 5 BRAKE H.P.)

THIS SIGN SHALL REPLACE THE EXISTING SIGN R-42C IN THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES. THE CRITERIA FOR THE USE OF THIS SIGN IS SHOWN ON PAGE 46 IN THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES. THIS SIGN SHOULD BE ERECTED ON THE RIGHT HAND SIDE OF THE RESTRICTED ROADWAY APPROXIMATELY 25 FEET TO 125 FEET FROM THE INTERSECTION SO AS TO BE CLEARLY VISIBLE TO ALL DRIVERS AND OTHERS TURNING INTO THE RESTRICTED ROADWAY.

TYPE	CODE NO.	SIZE	LETTER SIZE AND SERIES			
			LINE 1	LINE 2,3 & 4	LINE 5	LINE 6
Expressway And Interstate	R-15-36	36"x36"	4" C	3½" C	2½" B	2" C

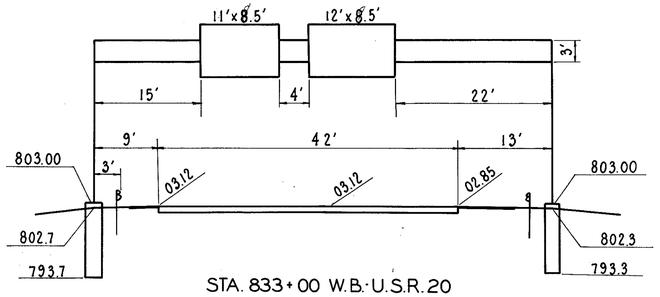
①



STA. 810+15 E.B.-U.S.R. 20
7.3 DESIGN NO.2 64' SPAN

	12'x8.5' SIGN	13'x8.5' SIGN
BRACKETS:	3-Type Ya	3-Type Ya
LENGTH :	8.5' Long	8.5' Long
SPACING :	6", 66", 66", 6"	6", 72", 72", 6"

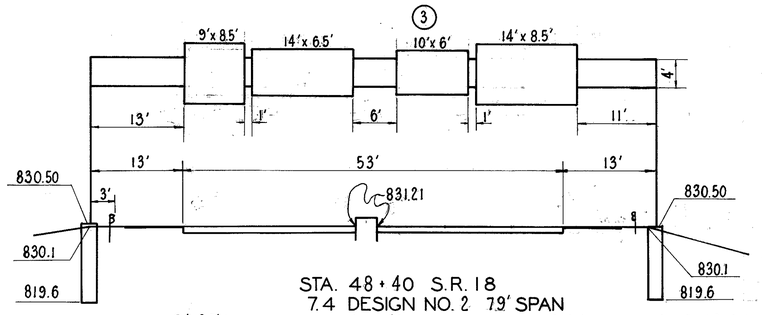
②



STA. 833+00 W.B.-U.S.R. 20
7.3 DESIGN NO.2 64' SPAN

	11'x8.5' SIGN	12'x8.5' SIGN
BRACKETS:	3-Type Ya	3-Type Ya
LENGTH :	8.5' Long	8.5' Long
SPACING :	16⅜", 50", 49⅜", 16¼"	6", 66", 66", 6"

③



STA. 48+40 S.R. 18
7.4 DESIGN NO. 2 79' SPAN

	9'x8.5' SIGN	14'x6.5' SIGN	10'x6' SIGN	14'x8.5' SIGN
BRACKETS:	2-Type Ya	3-Type Xa	3-Type Xa	3-Type Ya
LENGTH :	8.5' Long	6.5' Long	6' Long	8.5' Long
SPACING :	16⅜", 75⅜", 16¼"	8⅝", 75⅜", 75⅜", 8⅝"	10⅜", 50", 49⅜", 10¼"	8⅝", 75⅜", 75⅜", 8⅝"

SIGNING NOTES

SIGN SUPPORT SYMBOLS:
SIGN ON ONE SUPPORT ⊥
SIGN ON TWO SUPPORTS ⊥⊥
DOUBLE SUPPORT OVERHEAD STRUCTURE ●—●
SINGLE SUPPORT OVERHEAD STRUCTURE ●—●

IDENTIFICATION OF TRAFFIC SIGNS:
IDENTIFICATION OF ALL SIGNS IS BY CODE NUMBER. NUMBERS REFER TO THE SIGN DESIGN BEARING THE SAME NUMBER.

ORIENTATION OF SIGN FACES:
SIGNS SHALL BE ERECTED SO THAT THE FACE OF THE SIGN IS VERTICAL AND AT A RIGHT ANGLE TO THE CENTER OF THE LANE WHICH THE SIGN SERVES EXCEPT WHERE OTHERWISE NOTED. WHERE LANES DIVIDE AND ON SHARP HORIZONTAL CURVES, SIGN FACES SHALL BE PLACED PERPENDICULAR TO THE TANGENT POINT OF THE CURVE AT THE STATION LOCATION, SO AS TO BE MOST EFFECTIVE BOTH DAY AND NIGHT.

DIMENSIONS:
DIMENSIONS OF SIGNS ARE INDICATED ON THE PLANS WITH THE HORIZONTAL WIDTH DIMENSION SHOWN FIRST, THEN THE VERTICAL DIMENSION.

GALVANIZED SUPPORTS:
ALL COMPONENTS OF GROUND MOUNTED SIGN SUPPORTS SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A-123. ALL BOLTS, NUTS, AND WASHERS (PLAIN AND LOCK) SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A-153, EXCEPT WHERE ALUMINUM OR STAINLESS STEEL IS REQUIRED.

OVERHEAD SIGN SUPPORTS:
ALL COMPONENTS OF THE OVERHEAD SIGN SUPPORTS, 816, SHALL BE STEEL, EXCEPT THE TRUSS SPANS AND ACCESSORIES TO THE 816 NO. 7 SERIES WHICH SHALL BE ALUMINUM.
THE COST OF FURNISHING AND INSTALLATION OF SIGN BRACKETS, FIXTURE SUPPORT ARMS AND ENCLOSURE MOUNTING BRACKETS FOR PROPOSED OVERHEAD SIGN SUPPORTS SHALL BE INCLUDED IN THE UNIT PRICE BID FOR 816 OVERHEAD SIGN SUPPORTS.
FOR SPECIFIC DETAILS AND MATERIALS SEE SHEET NOS. 78 & 79.

STRUCTURAL SIGN SUPPORT QUANTITIES:
QUANTITIES FOR 816 STRUCTURAL BEAM SUPPORTS APPEARING IN THE SUMMARY TABLES ARE APPROXIMATE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING EXACT SUPPORT LENGTHS PRIOR TO FABRICATION AND GALVANIZING OF SUPPORTS.

ERECTION OF BOX TRUSS AND SIGNS:
THE OVERHEAD TRUSSES SHALL NOT BE ERECTED UPON THEIR SUPPORTS UNTIL THE SIGNS ARE AVAILABLE. A TRUSS AND ITS INDIVIDUAL SIGNS SHALL BE ERECTED THE SAME DAY.

TRAFFIC SIGN ERECTION:
THE CONTRACTOR SHALL ERECT SIGN PANELS FURNISHED BY OTHERS AS NOTED ON THE SCHEMATIC SIGNING LAYOUT SHEET NO. 70 . THE PANELS SHALL BE MOUNTED ON THE BRACKETS OR BEAM SUPPORTS PROVIDED IN THE PLANS.
A SCHEDULE FOR SIGN ERECTION SHALL BE SUBMITTED TO THE DIVISION TRAFFIC ENGINEER AND THE BUREAU OF TRAFFIC 450 EAST TOWN STREET, COLUMBUS, OHIO 43216, 60 CALENDAR DAYS PRIOR TO THE START OF ANY SCHEDULED ERECTION WORK. THE SCHEDULE SHALL INCLUDE PROPOSED DATES, TIME, SIGN NUMBERS AND DELIVERY POINT.
THE PRICE BID PER SQUARE FOOT FOR "815 SIGN ERECTION BY TYPE", SHALL INCLUDE ALL NECESSARY EQUIPMENT, LABOR AND TOOLS TO ERECT THE SIGNS. ALL SIGN MATERIAL AND ACCESSORIES WILL BE FURNISHED AND TRANSPORTED TO A DESIGNATED DELIVERY POINT, ON OR NEAR THE PROJECT, BY OTHERS.
THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE HANDLING AND STORAGE OF THE SIGN PANELS AND ACCESSORIES FROM THE TIME OF ARRIVAL AT THE DELIVERY POINT.
ANY UNUSED MATERIALS SHALL BE RETURNED TO THE STATE HIGHWAY GARAGE IN HURON COUNTY AT NORWALK, OHIO.

REMOVAL OF EXISTING SIGNS AND SUPPORTS:
ALL SIGNS AND SUPPORTS ON THE MAIN ROADWAY, RAMPS, AND APPROACHES WITHIN THE WORK LIMITS OF THIS PROJECT, EXISTING AT THE TIME OF OPENING OF BIDS FOR THIS PROJECT, SHALL BE REMOVED BY THE CONTRACTOR UNLESS OTHERWISE INDICATED ON THE PLAN.
TO ASSURE MAINTENANCE OF ADEQUATE TRAFFIC CONTROL AT ALL TIMES, NO SIGNS ARE TO BE REMOVED WITHOUT THE APPROVAL OF THE ENGINEER.
FOUNDATIONS ENCOUNTERED IN THE REMOVAL OF SUPPORTS SHALL BE REMOVED IN CONFORMANCE WITH SPECIFICATIONS 202. REMOVAL OF EXISTING SIGNS AND SUPPORTS SHALL INCLUDE THE DISPOSAL OF ALL WASTE MATERIALS.
ALL SIGNS, SUPPORTS AND ACCESSORIES REMOVED SHALL BE HAULED TO THE STATE HIGHWAY GARAGE IN HURON COUNTY AT NORWALK, OHIO AND UNLOADED, UNLESS OTHERWISE NOTED.
LUMP SUM BID FOR THIS ITEM SHALL INCLUDE ALL NECESSARY EQUIPMENT AND LABOR REQUIRED TO REMOVE THE EXISTING SIGNS AND SUPPORTS AS INDICATED ABOVE.

816 STRUCTURAL SUPPORTS, 6 LB. BEAM, AS PER PLAN:
THIS ITEM SHALL CONSIST OF THE FURNISHING, ASSEMBLY, AND INSTALLATION OF TWO (2) 3 LB. PER FOOT DRIVE POSTS (6 LB. BEAM) IN COMBINATION WITH A SQUARE SEAMLESS TUBULAR POST EXTENSION SPLICED TO THE TOP OF THE 6 LB. BEAM. DETAILS ARE SHOWN ON SHEET 77.
SQUARE SEAMLESS TUBULAR POST MATERIAL SHALL BE MILD STEEL CONFORMING TO ASA 1020 STEEL, MINIMUM YIELD STRENGTH 35,000 PSI, ULTIMATE YIELD 55,000 PSI.
WORK SHALL INCLUDE ALL LABOR, MATERIALS, EQUIPMENT, TOOLS, AND HARDWARE NECESSARY TO PERFORM THE REQUIRED ITEM OF WORK.
BASIS OF PAYMENT SHALL BE FOR STRUCTURAL SUPPORTS, 6 LB. BEAM, AS PER PLAN PER LINEAR FOOT MEASURED BY TOTAL LENGTH OF COMBINATION BEAM FROM END TO END.

SIGNING SUMMARY

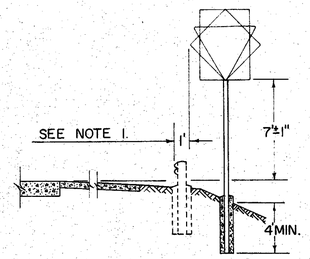
QUANTITIES CARRIED TO SHEET NO. 13

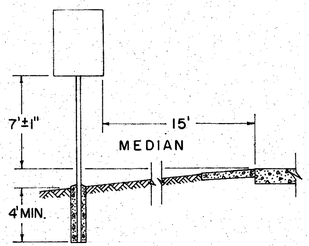
LOCATION	U. S. R. 20										STATE ROUTE 18																																		RAMP "J"								RAMP "H"	RAMP "F"			RAMP "G"												
REFERENCE	M-40-24	M-1-24	M-2-24	13 x 8.5 ①	12 x 8.5	W-49-36	W-49-36	12 x 8.5 ②	11 x 8.5		M-1-24	M-2-24	M-17-24	9 x 5		R-37A-24	12 x 10.5 ④	R-37A-24	14 x 6.5 ③	10 x 6	9 x 8.5	14 x 8.5	M-40-24	M-1-24	M-2-24	M-19-20	R-37A-24	11 x 8.5 ⑤	11 x 8.5				M-39-24	M-1-24	M-24-20	R-37A-24	M-39-24	M-2-24		R-10A-24	R-16-24	D-3-24G	M-1-24	M-17-24	O-4-2	M-2-24	M-24-20	R-41-36	R-1-36	R-43L-36	R-43R-36	R-41-24	R-15-36	R-15-36	W-98-36		R-37A-24	R-15-36	R-1-36	R-41-24	R-2-48	O-4-2	M-2-24	M-24-2	Sheet No.				
STATION	807+00 S.B.L. Lt.			810+15 N.B.L.		823+00-N.B.L.-Rt.	827+50-S.B.L.-Lt.	833+00 S.B.L.			33+50 Rt.			36+50 Rt.		42+10	43+50 Rt.	44+10	48+40				52+00 Lt.				53+50	53+90 Lt.					54+50			55+40	56+00 Rt.			60+00 Rt.		61+50 Lt.	64+50 Lt.		J815+50 Rt.			J818+65 Lt.	J818+75 Rt.				H818+60 Rt.	F834+00 Rt.	F834+50 Lt.		G819+25	G819+30 Rt.	G819+40 Lt.		G820+50 Rt.	G824+00 Lt.				QUAN.	UNIT	ITEM	DESCRIPTION
				110.5	102.0			102.0	93.5								126.0		91.0	60.0	76.5	119.0						93.5	93.5																																					1068	Sq.Ft.	815	Sign Erection Overhead Extrusheet Type
														45																												20			36																	36				137	Sq.Ft.	815	Sign Erection Groundmounted Extrusheet Type
	4	4	4			9	9				4	4	4			5		5					4	4	4	4	5						2	4	2	5	2	4		5	4		4	2		4	2	9	9	3	3	4	9	9	10.5		5	9	9	4	7		4	2		210	Sq.Ft.	815	Sign Erection Flat Sheet Type
		15.0	15.0								15.0	15.0				13.0		13.0									13.0							14.0		13.0		15.0					15.0														13.0				15.5					185	Lin.Ft.	816	Steel Drive Post 4 Lbs. Per Foot
						15.5	15.5							16.0 17.0 18.0										17.0	17.0																14.5	14.5 15.5						15.0					15.0	15.0	15.0			15.0	14.5							250	Lin.Ft.	816	Structural Support 6 Lb. Beam
																																																	15.5																	16	Lin.Ft.	816	Structural Support 6 Lb. Beam, As Per Plan
																																													13.5 15.0																	13.5 15.0				57	Lin.Ft.	816	Structural Support 8 Lb. Beam
		0.1	0.1			0.1	0.1				0.1	0.1		0.3										0.1	0.1													0.1			0.1	0.2	0.1		0.2			0.1	0.1				0.1	0.1	0.1			0.1	0.1		0.1	0.2				2.8	Cu.Yds.	816	Concrete Foundations For Groundmounted Sign Supports
				8.6				8.3									3.1		9.8									3.1																																						32.9	Cu.Yds.	816	Concrete Foundations For Overhead Sign Supports
				1				1																																																										2	Each	816	Overhead Sign Support No. 7.3, Design No. 2, 64' Span
																			1																																															1	Each	816	Overhead Sign Support No. 7.4, Design No. 2, 79' Span
																	1											1																																						2	Each	816	Overhead Sign Support No. 12.24, Design No. 4, 20' Arm
																																																																			Lump	Lump	202	Removal Of Existing Signs And Supports

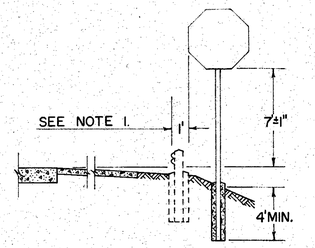
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

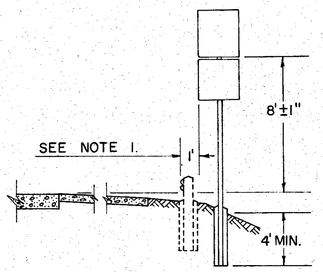
73
95

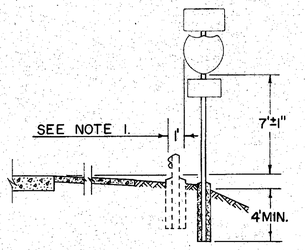
HUR-18-15.01

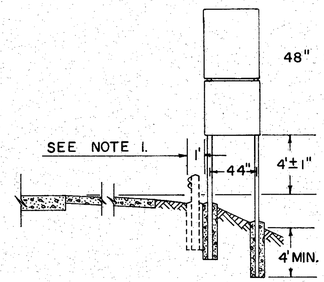


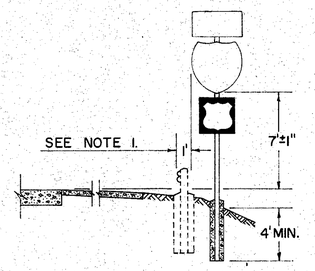


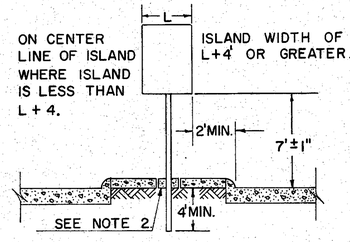


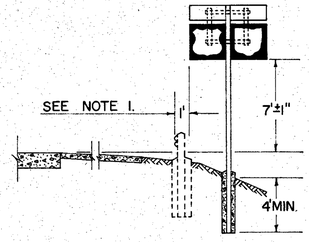


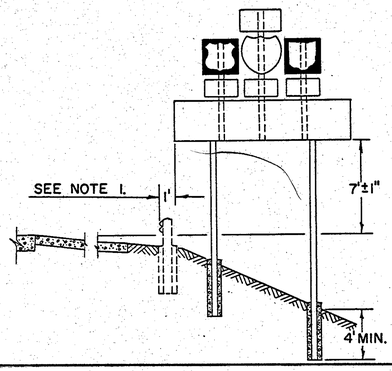


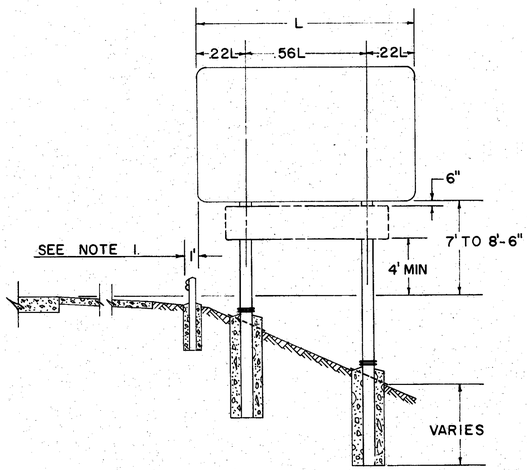


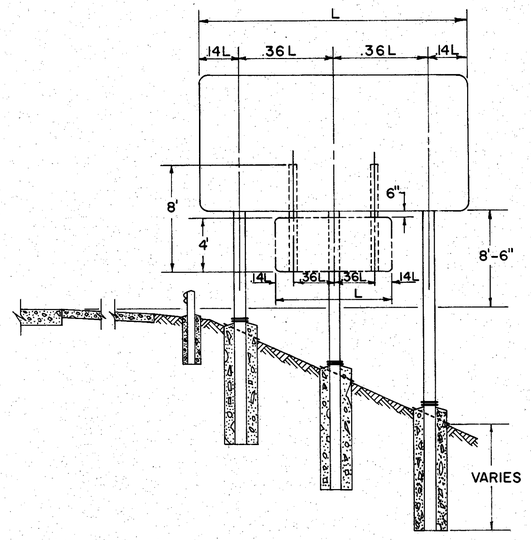


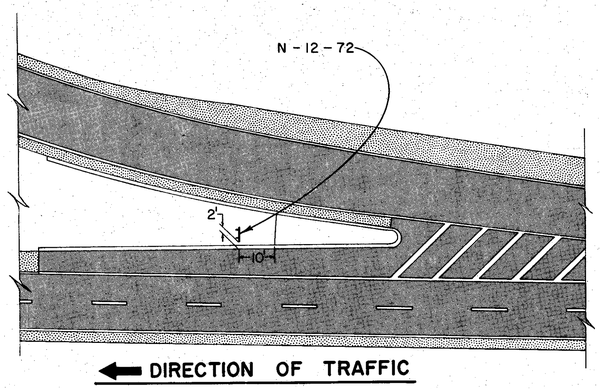


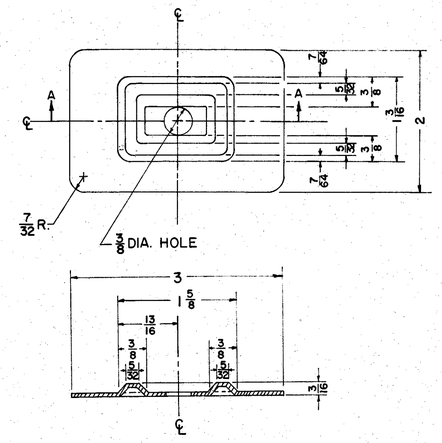








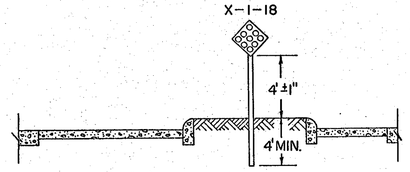




SECTION AA

NOTE:
THE PLATE IS SYMMETRICAL ABOUT EITHER CENTERLINE.
METAL SHALL BE 16 GAUGE STEEL.
ALL DIMENSIONS ARE IN INCHES.

BEARING PLATE DETAIL



SIGN SUPPORT SPACING

L = FT.	2 SUPPORTS .22	2 SUPPORTS .56	3 SUPPORTS .14	3 SUPPORTS .36	L = FT.	2 SUPPORTS .22	2 SUPPORTS .56	3 SUPPORTS .14	3 SUPPORTS .36
5.0	1.1	2.8	0.70	1.80	16.5	3.6	9.3	2.40	5.85
5.5	1.2	3.1	0.80	1.95	17.0	3.7	9.6	2.50	6.00
6.0	1.3	3.4	0.90	2.10	17.5	3.8	9.9	2.55	6.20
6.5	1.4	3.7	0.95	2.30	18.0	3.9	10.2	2.60	6.40
7.0	1.5	4.0	1.00	2.50	18.5	4.0	10.5	2.70	6.55
7.5	1.6	4.3	1.05	2.70	19.0	4.1	10.8	2.80	6.70
8.0	1.8	4.4	1.10	2.90				2.85	6.90
8.5	1.9	4.7	1.20	3.05				2.90	7.10
9.0	2.0	5.0	1.30	3.20				3.00	7.25
9.5	2.1	5.3	1.35	3.40				3.10	7.40
10.0	2.2	5.6	1.40	3.60				3.15	7.60
10.5	2.3	5.9	1.50	3.75				3.20	7.80
11.0	2.4	6.2	1.60	3.90				3.25	8.00
11.5	2.5	6.5	1.65	4.10				3.30	8.20
12.0	2.6	6.8	1.70	4.30				3.40	8.35
12.5	2.7	7.1	1.80	4.45				3.50	8.50
13.0	2.8	7.4	1.90	4.60				3.55	8.70
13.5	2.9	7.7	1.95	4.80				3.60	8.90
14.0	3.1	7.8	2.00	5.00				3.70	9.05
14.5	3.2	8.1	2.10	5.15				3.80	9.20
15.0	3.3	8.4	2.20	5.30				3.85	9.40
15.5	3.4	8.7	2.25	5.50				3.90	9.60
16.0	3.5	9.0	2.30	5.70					

NOTES

1. THE NEAR EDGE OF ALL MAIN LINE SIGNS, EXCEPT GORE INSTALLATIONS, SHALL BE LOCATED ONE FOOT (1') BACK OF GUARD RAIL FACE. THIS DIMENSION SHALL BE DETERMINED BY ROADWAY TYPICAL SECTION & USED WHETHER OR NOT GUARD RAIL IS PRESENT.

ON RAMPS THE NEAR EDGE OF SIGNS SHALL BE LOCATED ONE FOOT (1') BACK OF GUARD RAIL FACE. THIS DIMENSION WILL BE DETERMINED AND AND USED AS FOR MAIN LINE ABOVE.

ON APPROACHES THE NEAR EDGE OF SIGNS SHALL BE

(A) ONE FOOT (1') BEHIND EXISTING GUARD RAIL

(B) TWO FEET (2') FROM THE EDGE OF PAVED OR TRAVELED SHOULDER WITH A MINIMUM OF 6' FROM EDGE OF ROADWAY PAVMENT.

2. POSTS PLACED IN CONCRETE MEDIANS SHALL BE INSTALLED BY DRIVING THROUGH A 6" SLEEVE OR CORE DRILLED HOLE. THE HOLE SHALL BE FILLED WITH ASPHALT OR PORTLAND CONCRETE AFTER THE POST IS IN THE PROPER POSITION.

3. HORIZONTAL BACK BRACING SHALL ALWAYS BE MOUNTED ON THE FRONT FLANGE OF THE SUPPORT EXCEPT WHERE SIGNS ARE MOUNTED BACK TO BACK. BACK BRACING SHALL NEVER EXTEND ABOVE TOP EDGE OF UPPERMOST SIGN PLATE AND SHALL BE ATTACHED TO SUPPORTS USING 5/16" GALVANIZED STEEL BOLTS.

4. SCREWS, NUTS, AND WASHERS FOR SIGN ERECTION SHALL BE ALUMINUM EXCEPT AS NOTED ABOVE. 5/16" TRUSS HEAD SLOTTED MACHINE SCREWS WITH HEX. NUTS PLAIN AND LOCKWASHERS SHALL BE USED. PLAIN WASHERS SHALL BE 5/16" "WIDE", USED ON SIGN FACE ONLY

5. SIGN INSTALLATIONS SHALL BE PLACED SO THAT SUPPORTS ARE NOT PLACED IN DRAINAGE DITCHES.

6. HORIZONTAL CLEARANCES SHOWN PERTAIN TO NON-CURBED SECTIONS. SECTIONS WITH UNMOUNTABLE CURB SHALL HAVE A HORIZONTAL CLEARANCE OF 2'-0" MINIMUM FROM THE CURB FACE TO THE SIGN EDGE.

7. VERTICAL AND HORIZONTAL CLEARANCE BETWEEN SIGNS ON ONE ASSEMBLY SHALL BE A MAXIMUM OF 2" AND A MINIMUM OF 1".

8. GALVANIZED STEEL BEARING PLATES SHALL BE INCLUDED BETWEEN ALL SHEET ALUMINUM SIGNS ATTACHED TO VERTICAL SUPPORTS AT EACH SIGN BOLT LOCATION.

BUREAU OF TRAFFIC
OHIO DEPARTMENT OF HIGHWAYS

TYPICAL PLACEMENT OF SIGNS

TPS-1

DATE 9-27-67

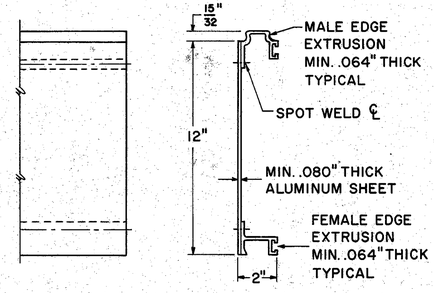
APPROVED _____
ENGINEER OF TRAFFIC

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

74
95

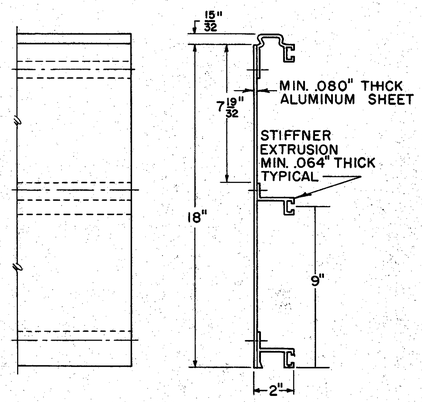
HUR-18-15.01

12" EXTRUSHEET PANEL



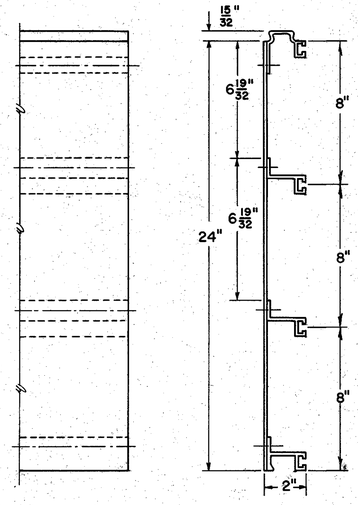
FRONT VIEW SIDE VIEW

18" EXTRUSHEET PANEL



FRONT VIEW SIDE VIEW

24" EXTRUSHEET PANEL



FRONT VIEW SIDE VIEW

NOTES:

EXTRUSHEET PANELS SHALL BE ALUMINUM; SPOT WELDING AND ALL MATERIALS SHALL CONFORM WITH SUPPLEMENTAL SPECIFICATION

COMBINATIONS OF 12", 18", AND 24" PANELS ARE USED TO ATTAIN REQUIRED SIGN HEIGHT.

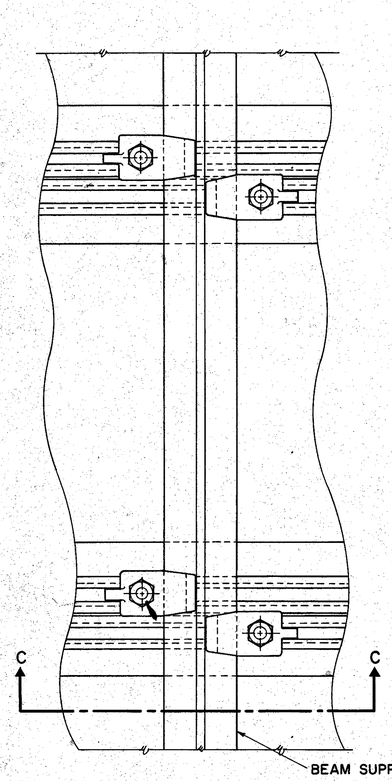
INDIVIDUAL PANELS SHALL BE THE SAME LENGTH AS THE HORIZONTAL LENGTH OF SIGN WITH NO SPLICES.

PANELS SHALL BE INTERLOCKED AND ERECTED WITH THE MALE EXTRUSION LOCATED AT THE TOP EDGE OF THE SIGN.

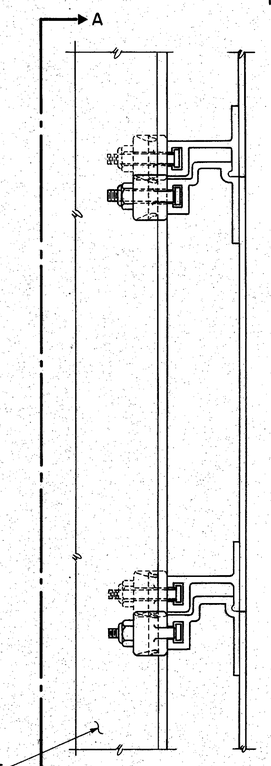
EXTRUSHEET PANELS SHALL BE FASTENED TO EACH VERTICAL SUPPORT MEMBER WITH MOUNTING CLIPS; ALTERNATELY AT EACH HORIZONTAL EXTRUSION; BOTH SIDES AT EACH JOINT, AND ON BOTH SIDES AT TOP AND BOTTOM EDGE OF SIGN.

THE PANELS SHALL BE DESIGNED TO WITHSTAND A WIND LOAD OF 35 POUNDS PER SQUARE FOOT, IN ACCORDANCE WITH THE A.A.S.H.O. SPECIFICATION FOR DESIGN AND CONSTRUCTION OF STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS.

THE MAXIMUM SIGN LENGTH FOR TWO SUPPORTS IS 19'-0".
THE MAXIMUM SIGN LENGTH FOR THREE SUPPORTS IS 29'-0".

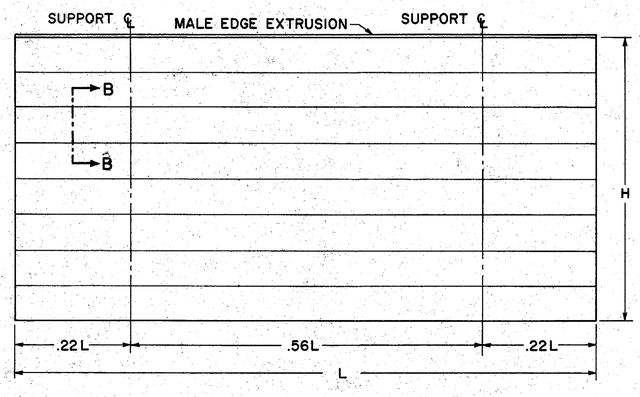


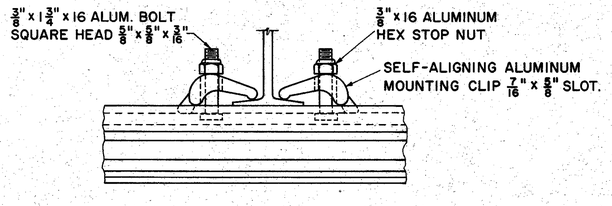
SECTION A-A



SECTION B-B

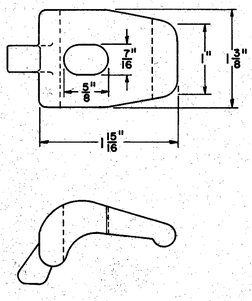
GENERAL ARRANGEMENT





SECTION C-C

CLIP DETAIL



SPOT WELDS

PANEL SIZE	MAXIMUM SPOT WELD SPACING	
	CENTER TO CENTER	BETWN ROWS
12 INCH	4 INCH	10 INCH
18 & 24 INCH	4 INCH	8 INCH

BUREAU OF TRAFFIC
OHIO DEPARTMENT OF HIGHWAYS

ALUMINUM EXTRUSHEET PANEL SIGN

ECD 1

DATE 9-25-63 5-19-64 10-21-65

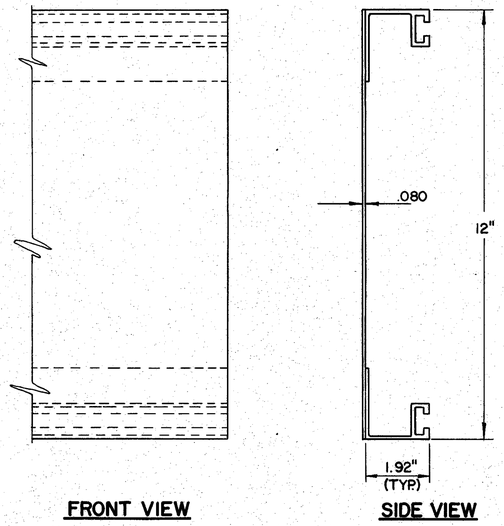
APPROVED Fred C Shelby
ENGINEER OF TRAFFIC

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

75
95

HUR-18-15.01

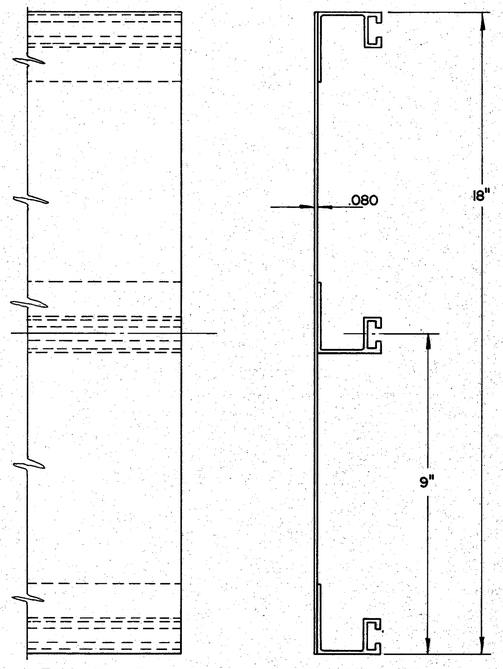
12" BOLTED-EXTRUSHEET PANEL



FRONT VIEW

SIDE VIEW

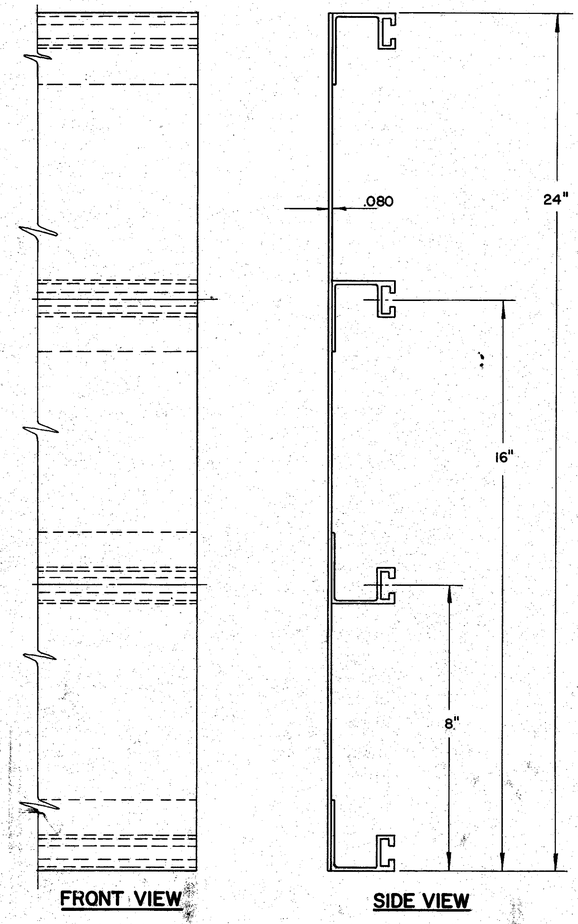
18" BOLTED-EXTRUSHEET PANEL



FRONT VIEW

SIDE VIEW

24" BOLTED-EXTRUSHEET PANEL



FRONT VIEW

SIDE VIEW

NOTES

EXTRU-SHEET PANELS SHALL BE ALUMINUM; SPOT WELDING, MATERIALS AND HARDWARE SHALL CONFORM WITH SPECIFICATION NO. 815.

COMBINATIONS OF 12", 18" AND 24" PANELS ARE TO BE USED TO ATTAIN REQUIRED SIGN HEIGHT.

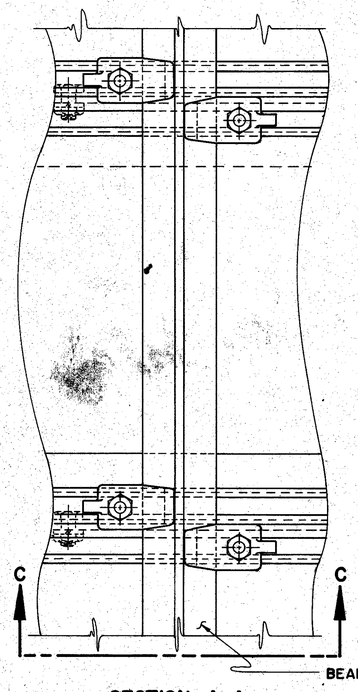
INDIVIDUAL PANELS SHALL BE THE SAME LENGTH AS THE HORIZONTAL LENGTH OF SIGN, WITH NO SPLICES.

THE PANELS SHALL BE ERECTED HORIZONTALLY AND BOLTED ON 24" CENTERS.

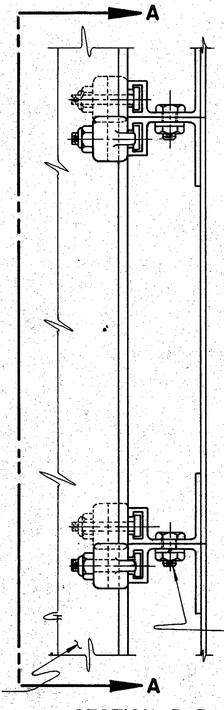
THE PANELS SHALL BE FASTENED TO EACH VERTICAL SUPPORT MEMBER WITH MOUNTING CLIPS; ALTERNATELY AT EACH HORIZONTAL EXTRUSION; BOTH SIDES AT EACH JOINT, AND BOTH SIDES AT TOP AND BOTTOM EDGES OF SIGN.

THE PANELS SHALL BE DESIGNED IN ACCORDANCE WITH THE A.A.S.H.O SPECIFICATION FOR THE DESIGN AND CONSTRUCTION OF STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, BASE ON A WIND LOAD OF 35#/SQ.FT.

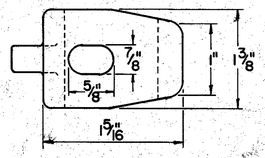
THE MAXIMUM SIGN LENGTH FOR TWO SUPPORTS IS 19'-0". THE MAXIMUM SIGN LENGTH FOR THREE SUPPORTS IS 29'-0".

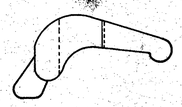


SECTION A-A

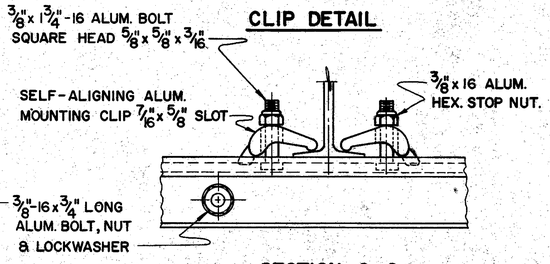


SECTION B-B

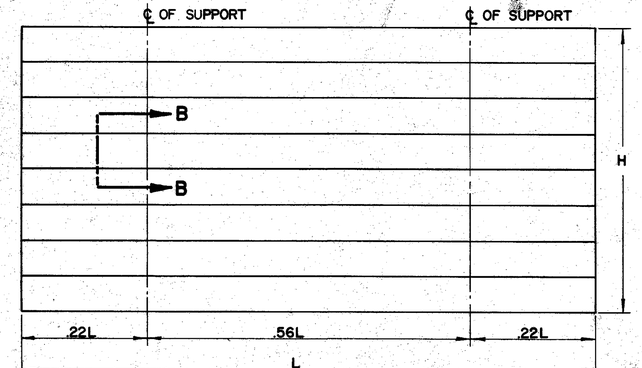




CLIP DETAIL



SECTION C-C



GENERAL ARRANGEMENT

SPOT WELDS

PANEL SIZE	MAXIMUM SPOT WELD SPACING	
	CENTER TO CENTER	BETWN ROWS
12 INCH	4 INCH	10 INCH
18 & 24 INCH	4 INCH	8 INCH

BUREAU OF TRAFFIC
OHIO DEPARTMENT OF HIGHWAYS

ALUMINUM BOLTED EXTRUSHEET PANEL SIGN

ECD 2

DATE 10-14-65

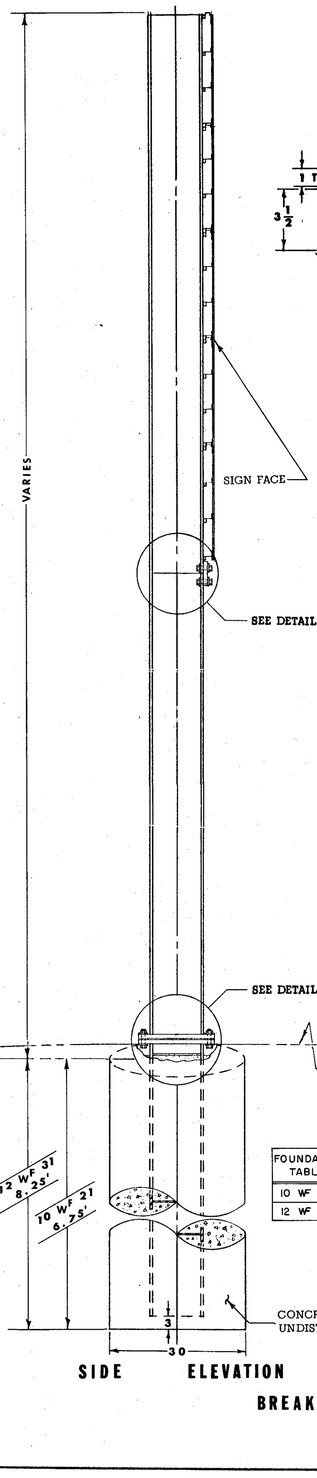
APPROVED Fred C. Tastor
ENGINEER OF TRAFFIC

ALUMINUM BOLTED-EXTRUSHEET PANEL SIGN

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

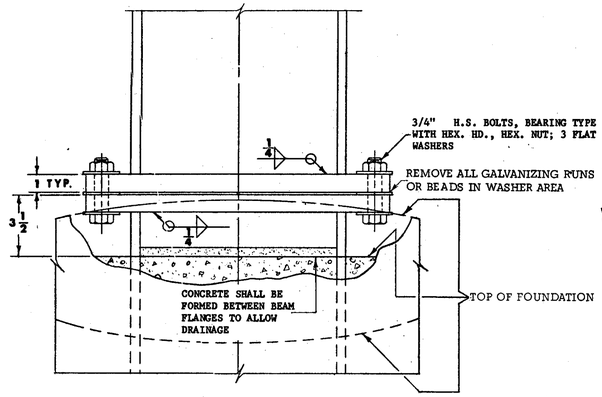
76
95

HUR-18-15.01



SIDE ELEVATION

FOUNDATION TABLE	CU. YDS. CONCRETE 2 POSTS	CU. YDS. CONCRETE 3 POSTS
10 WF 21	2.50	3.75
12 WF 31	3.00	4.50



BOLTING PROCEDURE

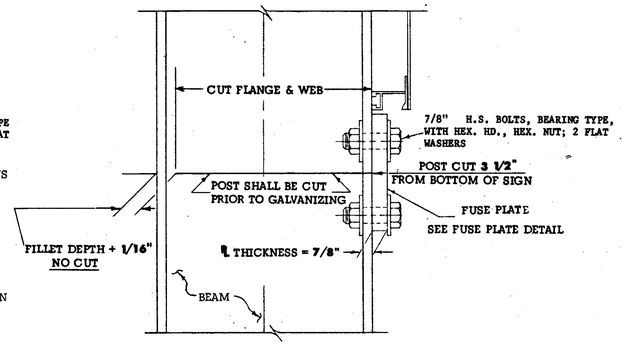
1. ASSEMBLE POST TO STUB W/BOLTS & ONE FLAT WASHER ON EACH BOLT BETWEEN PLATES.

2. TIGHTEN ALL BOLTS THE MAXIMUM POSSIBLE W/12" TO 15" WRENCH TO BED & TO CLEAN BOLT THREADS. LOOSEN EACH BOLT IN TURN & RE-TIGHTEN BOLTS IN A SYSTEMATIC ORDER TO THE PRESCRIBED TORQUE OF 750 IN. LBS.

3. BURR THREADS AT JUNCTION W/NUT USING A CENTER PUNCH TO PREVENT NUT LOOSENING.

NOTE: TIGHTEN THE H.S. BOLTS IN THE BASE CONNECTION ONLY TO GIVEN TORQUE DO NOT OVER TIGHTEN

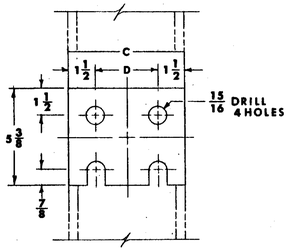
DETAIL 'A'



FABRICATOR NOTE: ALL FRICTION FUSE BOLTS SHALL BE TIGHTENED IN THE SHOP FOLLOWING A METHOD APPROVED BY THE ENGINEER. TIGHTENING SHALL BE TO SUCH A DEGREE AS TO OBTAIN MINIMUM RESIDUAL TENSION IN EACH BOLT OF 36,050 LBS.

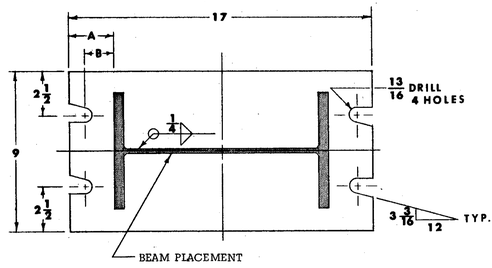
NOTE: INSTALL FUSE PLATE WITH NOTCHES TOWARD BASE

DETAIL B'



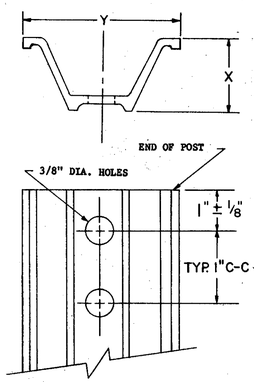
BEAM SIZE	C	D
10 WF 21	5 3/4	2 3/4
12 WF 31	6 1/2	3 1/2

FUSE PLATE DETAIL



BEAM SIZE	A	B
10 WF 21	3 1/2	2 5/8
12 WF 31	2 1/2	1 5/8

BASE PLATE DETAIL

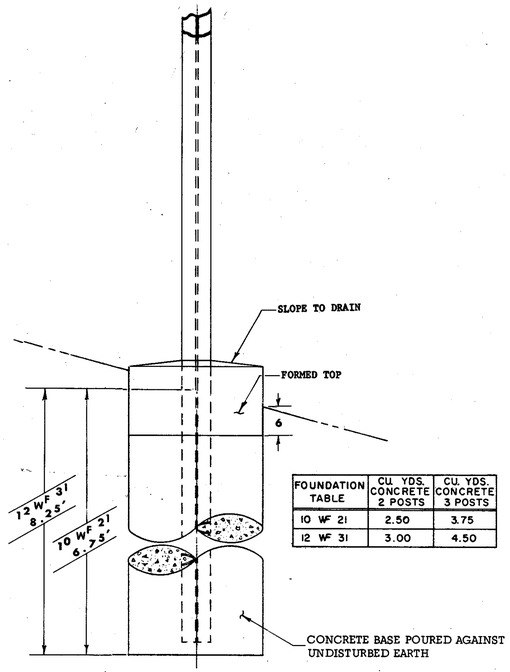


WEIGHT PER FOOT	X ± 3/32"	Y ± 1/8"
2.00 #	1 15/32"	3 1/16"
3.00 #	1 7/8"	3 1/2"
4.00 #	2"	3 5/8"

DRIVE POST DETAIL

NOTE

THE FOUNDATION FOR 4# DRIVE POST IS SIMILAR TO THE FOUNDATION SHOWN FOR 6# & 8# BEAM.



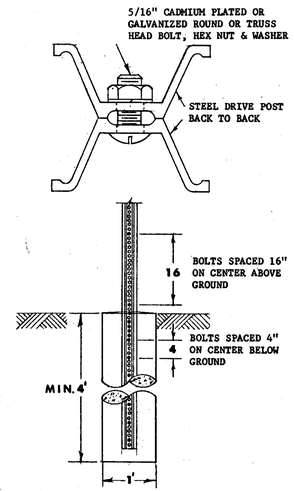
FOUNDATION TABLE	CU. YDS. CONCRETE 2 POSTS	CU. YDS. CONCRETE 3 POSTS
10 WF 21	2.50	3.75
12 WF 31	3.00	4.50

FRONT ELEVATION

STANDARD SUPPORT

FRONT ELEVATION

BREAK-AWAY SUPPORT



6# & 8# BEAM DETAIL

NOTE: ALL MATERIALS SHALL CONFORM TO THE STATE OF OHIO, CONSTRUCTION & MATERIALS SPECIFICATIONS OR AS OTHERWISE SPECIFIED

1) 511 FOUNDATIONS
2) 711.01 STRUCTURAL STEEL SHAPES & PLATES
3) 711.09 H.S. STEEL BOLTS, NUTS & WASHERS

NOTE: ALL DIMENSIONS IN INCHES UNLESS OTHERWISE SHOWN

BUREAU OF TRAFFIC
OHIO DEPARTMENT OF HIGHWAYS

GROUND MOUNTED SIGN SUPPORTS

GMSS

DATE 8-22-67

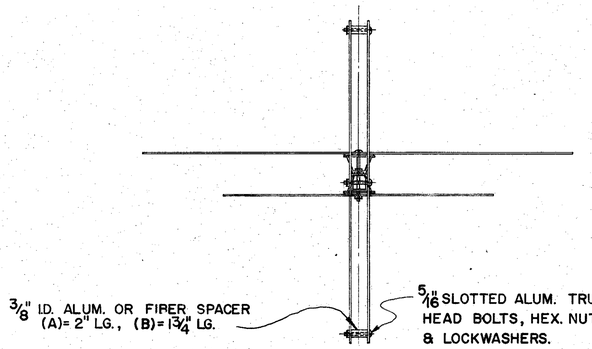
APPROVED _____
ENGINEER OF TRAFFIC

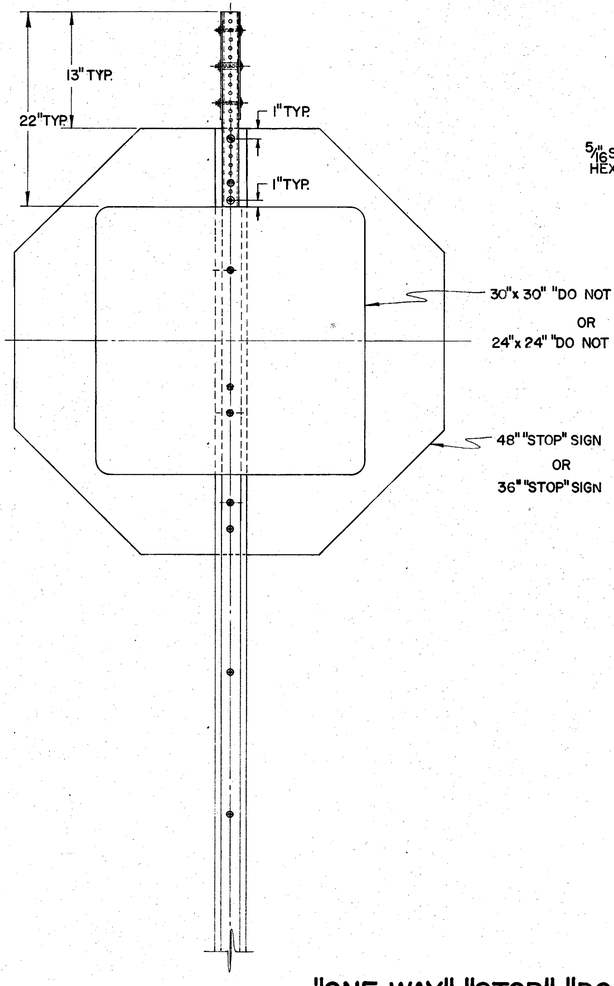
STRUCTURAL SUPPORTS

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

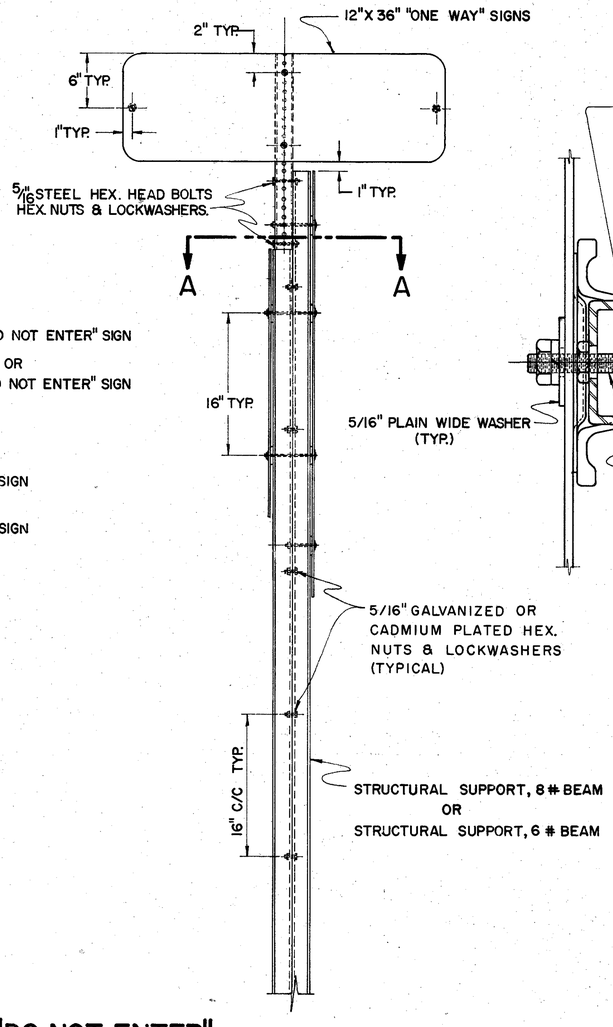
77
95

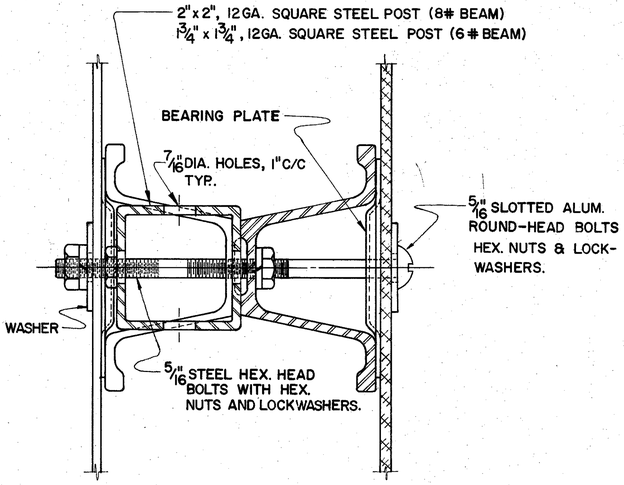
HUR-18-15.01



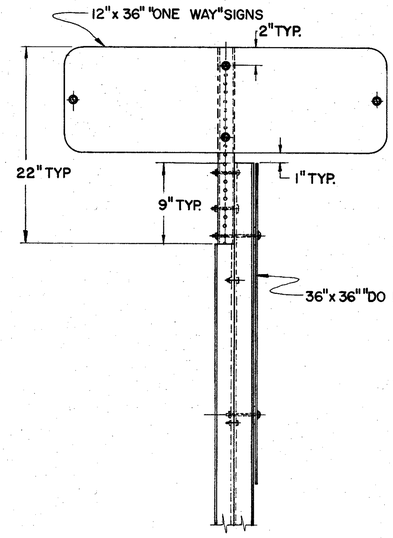


"ONE WAY", "STOP", "DO NOT ENTER",
SIGN INSTALLATION.





SECTION A-A



"ONE WAY", "DO NOT ENTER"
SIGN INSTALLATION

NOTES

MATERIALS

ALL SIGN MATERIALS SHALL BE IN ACCORDANCE WITH SUPPLEMENT SPECIFICATION 815.

ALL STRUCTURAL MATERIALS SHALL BE IN ACCORDANCE WITH SUPPLEMENT SPECIFICATION 816.

FOR SPECIFICATIONS FOR THE 2" & 1 3/4" SQUARE STEEL POST SEE GENERAL NOTES, SHEET NO. 77.

BUREAU OF TRAFFIC
OHIO DEPARTMENT OF HIGHWAYS

SPECIAL "ONE WAY" SIGN SUPPORT DETAILS	SOW	DATE 2-7-66 4-18-67

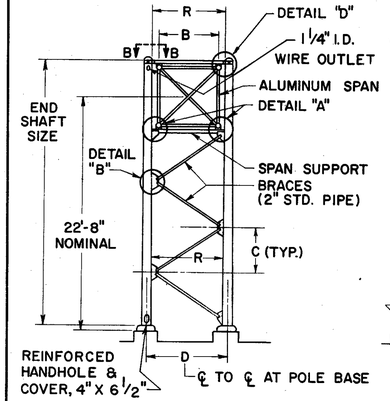
APPROVED _____ ENGINEER OF TRAFFIC

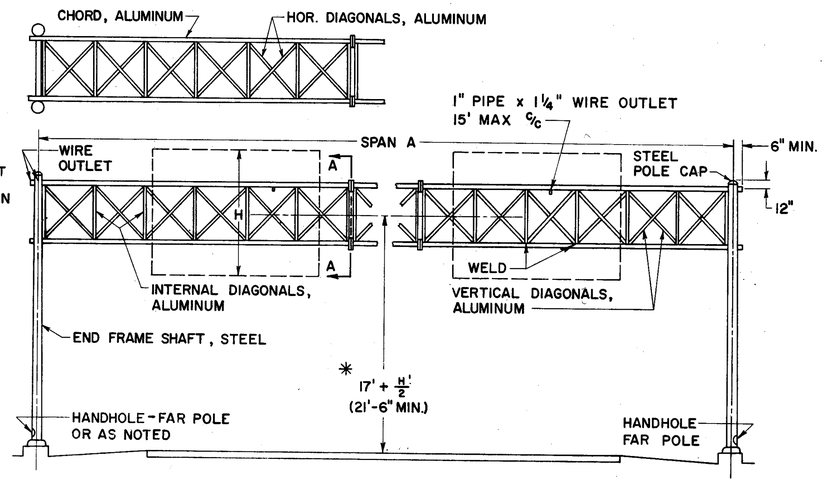
SPECIAL "ONE WAY" SIGN SUPPORT DETAILS

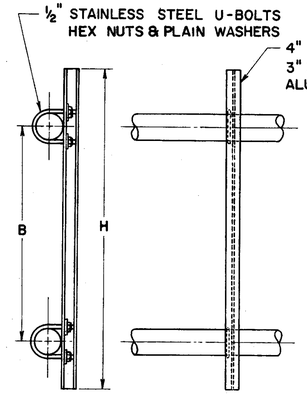
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

78/95

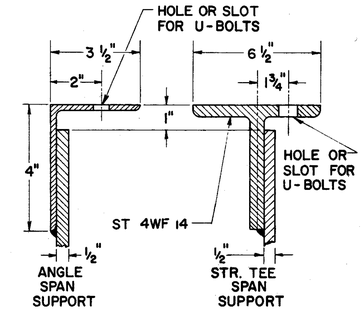
HUR-18-15.01







SIGN BRACKET



SECTION D-D

NOTES

MATERIALS

THE OVERHEAD SPAN TRUSS SHALL BE ALUMINUM AND THE END FRAMES SHALL BE STEEL.

SPAN TRUSS AND END FRAMES, INCLUDING HARDWARE, SHALL BE IN ACCORDANCE WITH SUPPLEMENTAL SPECIFICATION 816 UNLESS OTHERWISE NOTED.

STEEL POLE BASES AND GUSSETS SHALL CONFORM TO THE REQUIREMENTS OF ASTM SPECIFICATION A-373.

AFTER FABRICATION THE TAPERED POLES SHALL HAVE A MINIMUM YIELD STRENGTH OF 48,000 PSI.

FABRICATION

THE ENTIRE STEEL END FRAME SHALL BE HOT DIP GALVANIZED IN ACCORDANCE WITH SEC. M-7.4(d).

MAXIMUM LENGTH OF SPAN SECTIONS IS 30 FT.

ERECTION

USE A MINIMUM OF 1" CAMBER IN SPAN TRUSS MEMBER FOR A 50' SPAN; ADD 1/4" OF CAMBER FOR EACH 5' OF INCREASE IN SPAN OVER 50'.

PAYMENT

PAYMENT FOR THE GALVANIZED CONDUIT SHALL BE INCLUDED IN THE UNIT PRICE BID FOR OVERHEAD SIGN SUPPORTS.

SOILS

THE FOUNDATION DETAILS SHOWN ARE FOR AVERAGE SOIL CONDITIONS (MEDIUM CLAY, CEMENTED SAND AND GRAVEL, SANDY CLAY, OR STIFF CLAY).

FOR POOR SOIL CONDITIONS, INCREASE "D" MIN. BY: 50% IN DRY OR WET SAND, 60% IN SILTY CLAY, 100% IN SOFT CLAY, AND FROM 75% TO 150% IN WET SILT, DEPENDING ON QUICKSAND ACTION.

REINFORCING STEEL

COST OF REINFORCING STEEL SHALL BE INCLUDED IN THE UNIT PRICE FOR ITEM 816 CONCRETE FOR SIGN SUPPORT FOUNDATIONS.

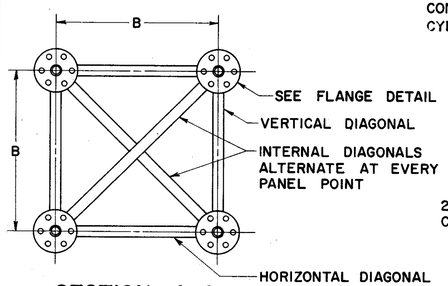
BAR SIZE IS INDICATED IN THE BAR MARK. THE FIRST DIGIT WHERE THREE DIGITS ARE USED AND THE FIRST TWO DIGITS WHERE FOUR ARE USED, INDICATE THE BAR SIZE NUMBER.

*FOUNDATION ELEVATION

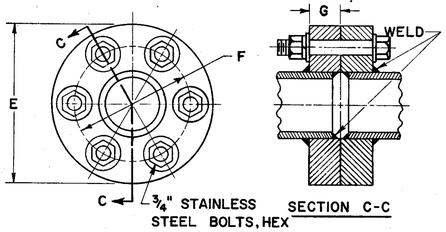
ELEVATION OF TOPS OF FOUNDATIONS SHALL BE BUILT UP SO THAT 17' CLEARANCE IS MAINTAINED OVER THE ENTIRE WIDTH OF THE PAVEMENT AND SHOULDERS.

DESIGN

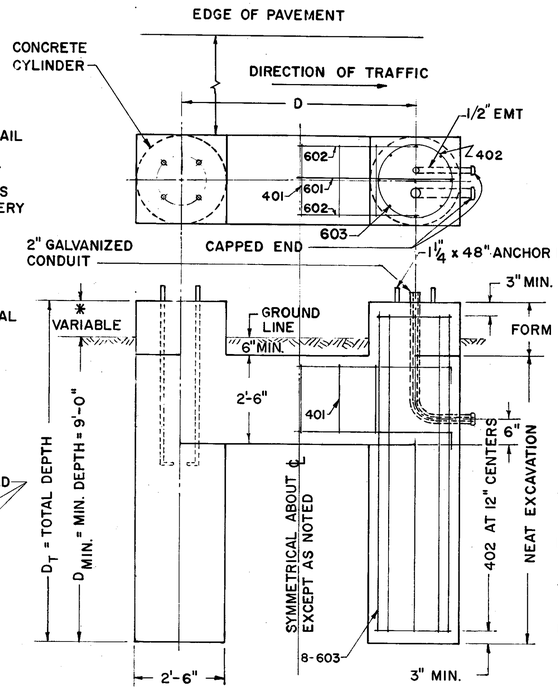
THE DESIGN OF OVERHEAD SUPPORTS IS IN ACCORDANCE WITH A.A.S.H.O. SPECIFICATION FOR THE DESIGN AND CONSTRUCTION OF STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, ADOPTED JUNE 12, 1961.



SECTION A-A

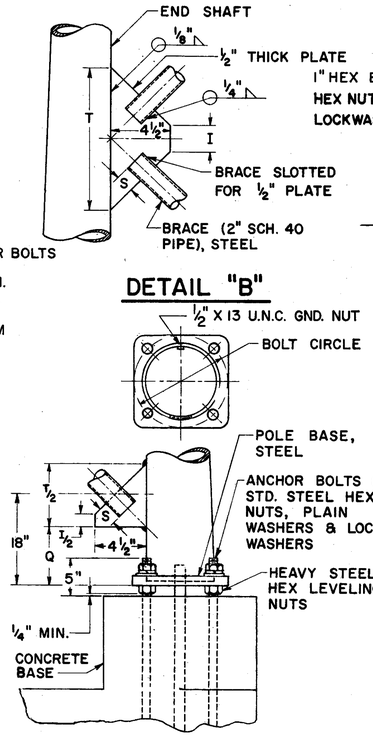


FLANGE DETAIL



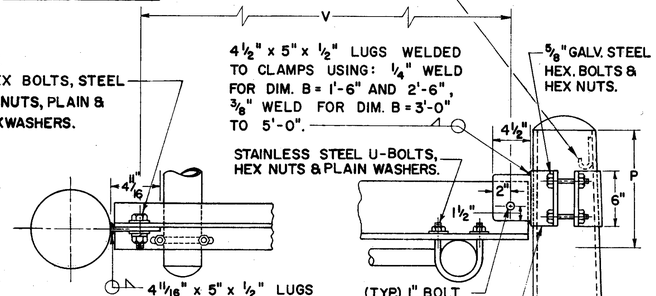
FOUNDATION DETAIL

(RIGHT HAND SHOWN - LEFT HAND OPPOSITE)

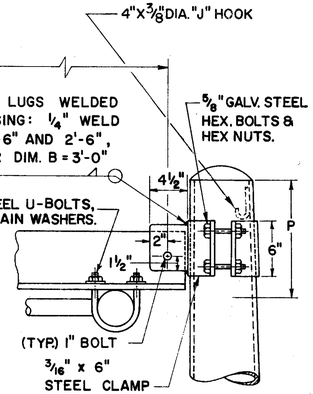


DETAIL "B"

POLE BASE DETAIL

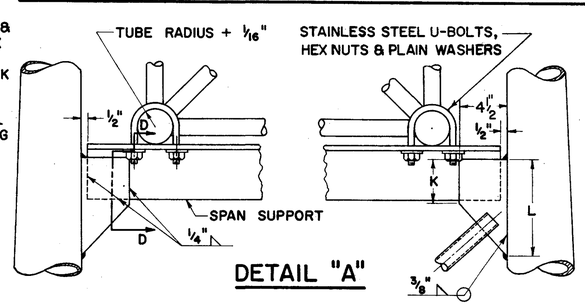


VIEW B-B



DETAIL "D"

UPPER SPAN SUPPORT (ALTERNATE METHODS)

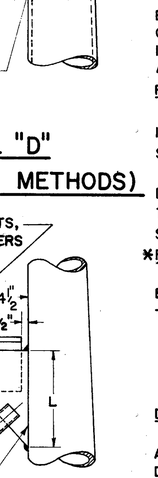


DETAIL "A"

LOWER SPAN SUPPORT

DESIGN NO.	SPAN A	B	C	D	E	END SHAFT	BRACE LENGTH	F	G	I	K	L	P	Q	R	S	T	U BOLTS	V	BOLT CIRCLE	SPAN SUPPORT SECTION D-D	CHORDS	HORIZONTAL AND INTERNAL DIAGONAL	VERTICAL DIAGONAL
1	50' Thru 55'	3'-0"	4'-11 3/4"	4'-5"	7"	8"x4.5"x 25'-0", 3GA	5'-10 13/16"	5 1/2"	1 1/4"	3 1/2"	4 3/8"	8"	12"	6 5/8"	3'-9"	1 1/2"	10"	5/8"	3'-3 5/8"	11"	SPLIT TEE 3'-8"	3 1/2" x .188"	1.660"x .140"	1.660"x .140"
2	56' Thru 80'	3'-0"	4'-11 3/4"	4'-5"	9 1/4"	8"x4.5"x 25'-0", 3GA	5'-10 13/16"	7 7/16"	1 3/8"	3 1/2"	4 3/8"	8"	12"	6 5/8"	3'-9"	1 1/2"	10"	5/8"	3'-3 5/8"	11"	SPLIT TEE 3'-8"	4 3/4" x .188"	1.900"x .145"	1.660"x .140"
3	81' Thru 90'	4'-0"	4'-10 1/4"	5'-7"	9 1/4"	8"x6.22"x 25'-6", 3GA	6'-7 1/8"	7 7/16"	1 3/8"	5/8"	4 3/8"	7 3/4"	12"	6 1/4"	4'-11"	1 1/2"	9 1/2"	5/8"	4'-5 5/8"	11"	SPLIT TEE 4'-10"	4 3/4" x .188"	1.900"x .145"	1.900"x .145"
4	91' Thru 105'	4'-0"	4'-10 1/4"	5'-7"	9 1/4"	8"x6.22"x 25'-6", 3GA	6'-7 1/8"	7 7/16"	1 3/8"	5/8"	4 3/8"	7 3/4"	12"	6 1/4"	4'-11"	1 1/2"	9 1/2"	5/8"	4'-5 5/8"	11"	SPLIT TEE 4'-10"	4 3/4" x .188"	2"x .188"	1.900"x .145"

REINFORCEMENT SCHEDULE			
MARK	NO.	LENGTH	TYPE
401	12" C/C	8'-6"	102
402	12" C/C	7'-6"	103
601	4	D+ 4'-0"	101
602	8	D+ 2'-0"	101
603	32	D_T - 6"	STR.



BUREAU OF TRAFFIC
OHIO DEPARTMENT OF HIGHWAYS

OVERHEAD SIGN SUPPORTS

816 No. 7.3

DATE 7-25-62 5-5-64

APPROVED Robert E. Homer
ENGINEER OF TRAFFIC

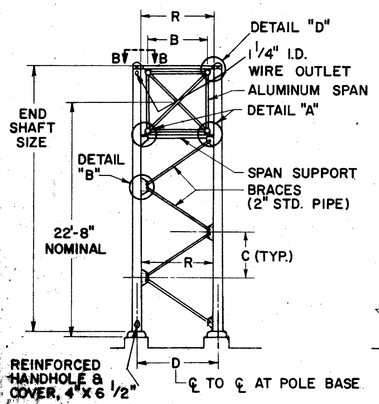
300 SQ. FT. SIGN AREA

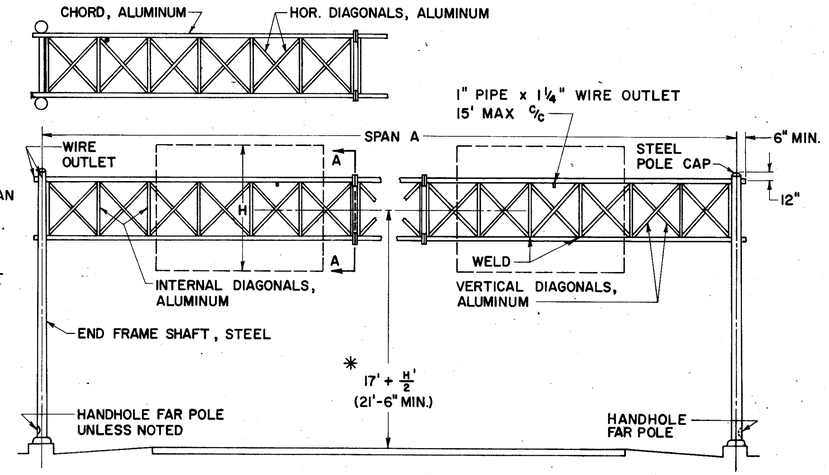
OVERHEAD SIGN SUPPORT, 816 NO. 7.3

FED. RD. DIVISION	STATE	PROJECT		79 / 95
2	OHIO			

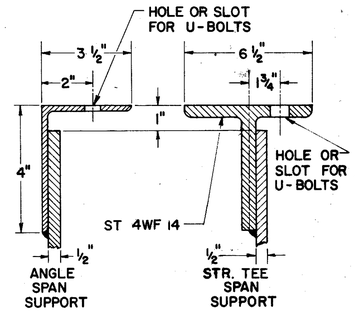
HUR-18-15.01

DIRECTION OF TRAFFIC





SIGN BRACKET



SECTION D-D

NOTES

MATERIALS

THE OVERHEAD SPAN TRUSS SHALL BE ALUMINUM AND THE END FRAMES SHALL BE STEEL.

SPAN TRUSS AND END FRAMES, INCLUDING HARDWARE, SHALL BE IN ACCORDANCE WITH SUPPLEMENTAL SPECIFICATION 816 UNLESS OTHERWISE NOTED.

STEEL POLE BASES AND GUSSETS SHALL CONFORM TO THE REQUIREMENTS OF ASTM SPECIFICATION A-373.

AFTER FABRICATION THE TAPERED POLE SHALL HAVE A MINIMUM YIELD STRENGTH OF 48,000 PSI.

FABRICATION

THE ENTIRE STEEL END FRAME SHALL BE HOT DIP GALVANIZED IN ACCORDANCE WITH SEC. 711.02.

MAXIMUM LENGTH OF SPAN SECTIONS IS 30 FT.

ERECTION

USE A MINIMUM OF 1" CAMBER IN SPAN TRUSS MEMBER FOR A 50' SPAN; ADD 1/4" OF CAMBER FOR EACH 5' OF INCREASE IN SPAN OVER 50'.

PAYMENT

PAYMENT FOR THE GALVANIZED CONDUIT SHALL BE INCLUDED IN THE UNIT PRICE BID FOR OVERHEAD SIGN SUPPORTS.

SOILS

THE FOUNDATION DETAILS SHOWN ARE FOR AVERAGE SOIL CONDITIONS (MEDIUM CLAY, CEMENTED SAND AND GRAVEL, SANDY CLAY, OR STIFF CLAY).

FOR POOR SOIL CONDITIONS, INCREASE THE BY: 50 % IN DRY OR WET SAND, 50 % IN SILTY CLAY, 100 % IN SOFT CLAY AND FROM 100 % TO 150 % IN WET SILT, DEPENDING ON QUICKSAND ACTION.

REINFORCING STEEL

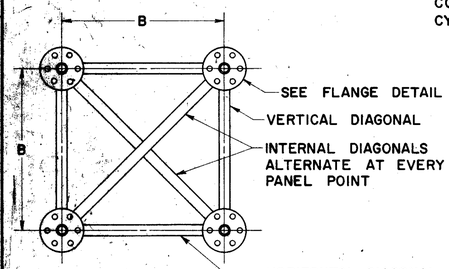
COST OF REINFORCING STEEL SHALL BE INCLUDED IN THE UNIT PRICE FOR ITEM 816 CONCRETE FOR SIGN SUPPORT FOUNDATIONS. BAR SIZE IS INDICATED IN THE BAR MARK. THE FIRST DIGIT WHERE THREE DIGITS ARE USED AND THE FIRST TWO DIGITS WHERE FOUR ARE USED, INDICATE THE BAR SIZE NUMBER.

*FOUNDATION ELEVATION

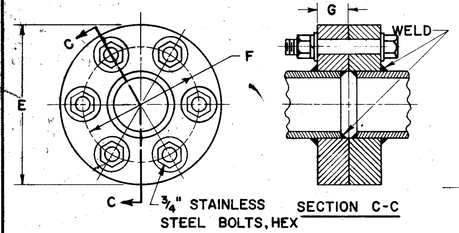
ELEVATION OF TOPS OF FOUNDATIONS SHALL BE BUILT UP SO THAT 17' CLEARANCE IS MAINTAINED OVER THE ENTIRE WIDTH OF THE PAVEMENT AND SHOULDERS.

DESIGN

THE DESIGN OF OVERHEAD SUPPORTS IS IN ACCORDANCE WITH A.A.S.H.O. SPECIFICATION FOR THE DESIGN AND CONSTRUCTION OF STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, ADOPTED JUNE 12, 1961.

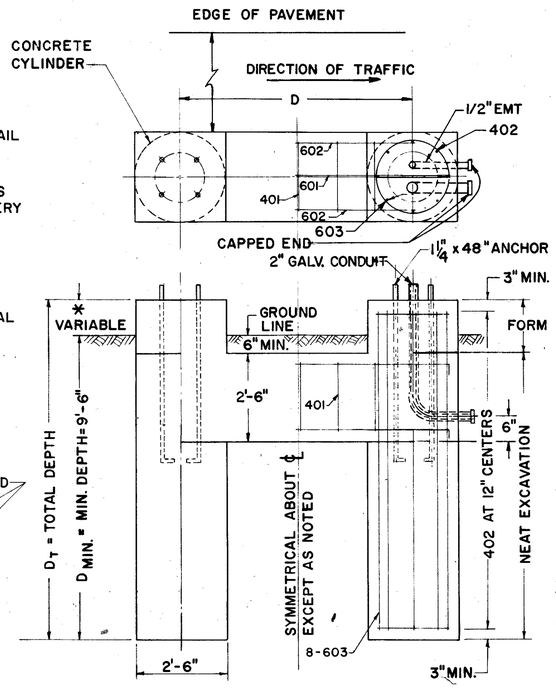


SECTION A-A



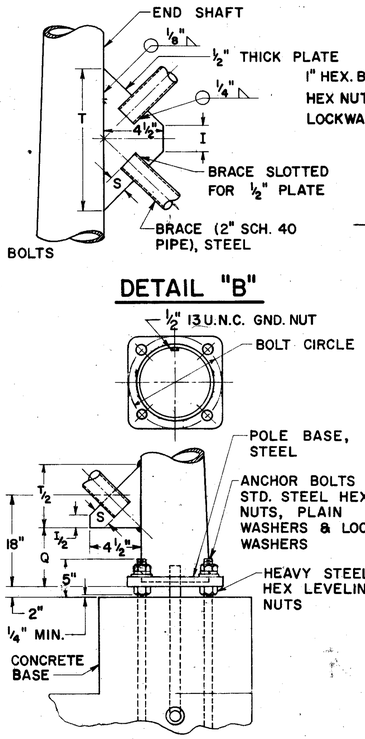
CAST FLANGE, B-26 ALLOY SG 70A-T7 (356-T7)

FLANGE DETAIL

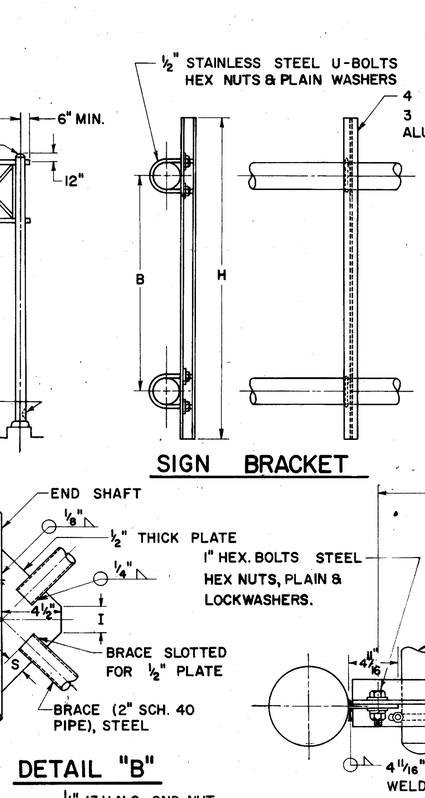


FOUNDATION DETAIL

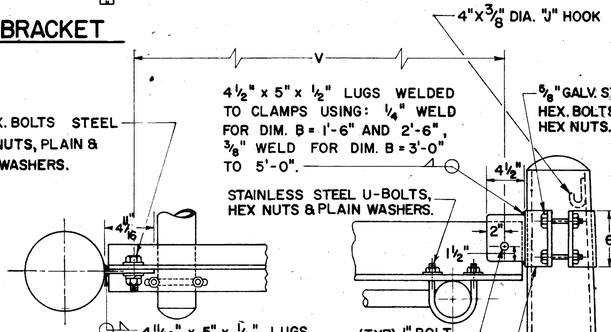
(RIGHT HAND SHOWN — LEFT HAND OPPOSITE)



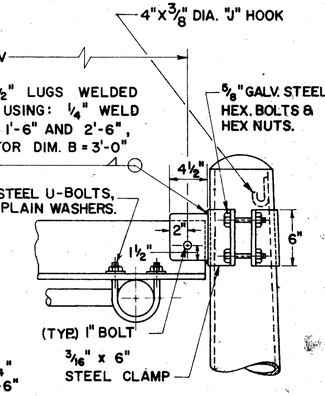
POLE BASE DETAIL



DETAIL "B"

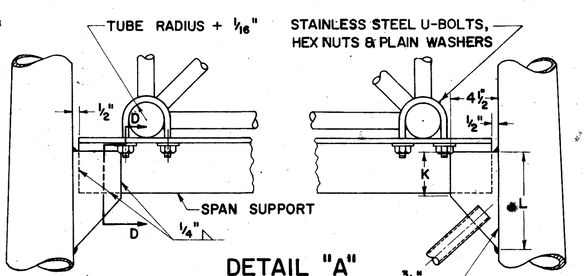


VIEW B-B



DETAIL "D"

UPPER SPAN SUPPORT (ALTERNATE METHODS)



DETAIL "A"

LOWER SPAN SUPPORT

DESIGN NO.	SPAN A	B	C	D	E	END SHAFT	BRACE LENGTH	F	G	I	K	L	P	Q	R	S	T	U BOLTS	V	BOLT CIRCLE	SPAN SUPPORT SECTION D-D	CHORDS	HORIZONTAL AND INTERNAL DIAGONAL	VERTICAL DIAGONAL
1	50' thru 75'	3'-0"	4'-11 3/4"	4'-5"	9 1/4"	8"x4.5"x25'-0", 3 GA.	5'-10 13/16"	7 7/16"	1 3/8"	3 1/2"	4 3/4"	8"	12"	6 5/8"	3'-9"	1 1/2"	10"	5/8"	3'-3 5/8"	11"	SPLIT TEE 3'-8"	4 3/4" x .188"	1.900" x .145"	1.660" x .140"
2	76' thru 85'	4'-0"	4'-10 1/4"	5'-7"	9 1/4"	8"X6.22"x25'-6" 3 GA.	6'-7 1/8"	7 7/16"	1 3/8"	5/8"	4 3/8"	7 3/4"	12"	6 1/4"	4'-10"	1 1/2"	9 1/2"	5/8"	4'-4 5/8"	11"	SPLIT TEE 4'-10"	4 3/4" x .188"	2" x .188"	1.900" x .145"
3	86' thru 90'	4'-0"	4'-10 1/4"	5'-7"	11"	8"X6.22"x25'-6" 3 GA.	6'-7 1/8"	8 1/2"	1 1/2"	5/8"	4 3/8"	7 3/4"	12"	6 1/4"	4'-10"	1 1/2"	9 1/2"	5/8"	4'-4 5/8"	11"	SPLIT TEE 4'-10"	5 1/2" x .250"	2" x .188"	1.900" x .145"
4	91' thru 110"	5'-0"	4'-8 1/2"	6'-7"	11"	8"X6.18"x26'-0", 3 GA.	7'-3 1/4"	8 1/2"	1 1/2"	—	3 1/2"	7 3/4"	12"	7 1/4"	5'-10"	1 3/4"	11 1/4"	3/4"	5'-4 5/8"	11"	SPLIT TEE 5'-10"	5 1/2" x .250"	2 1/2" x .188"	2 1/2" x .188"

REINFORCEMENT SCHEDULE			
MARK	NO.	LENGTH	TYPE
401	12"C/C	8'-6"	102
402	12"C/C	7'-6"	103
601	4	D+ 4'-0"	101
602	8	D+ 2'-0"	101
603	32	D_T - 6"	STR.

BUREAU OF TRAFFIC
OHIO DEPARTMENT OF HIGHWAYS

OVERHEAD SIGN SUPPORTS

816 No. 7.6

APPROVED Robert E. Comer
ENGINEER OF TRAFFIC

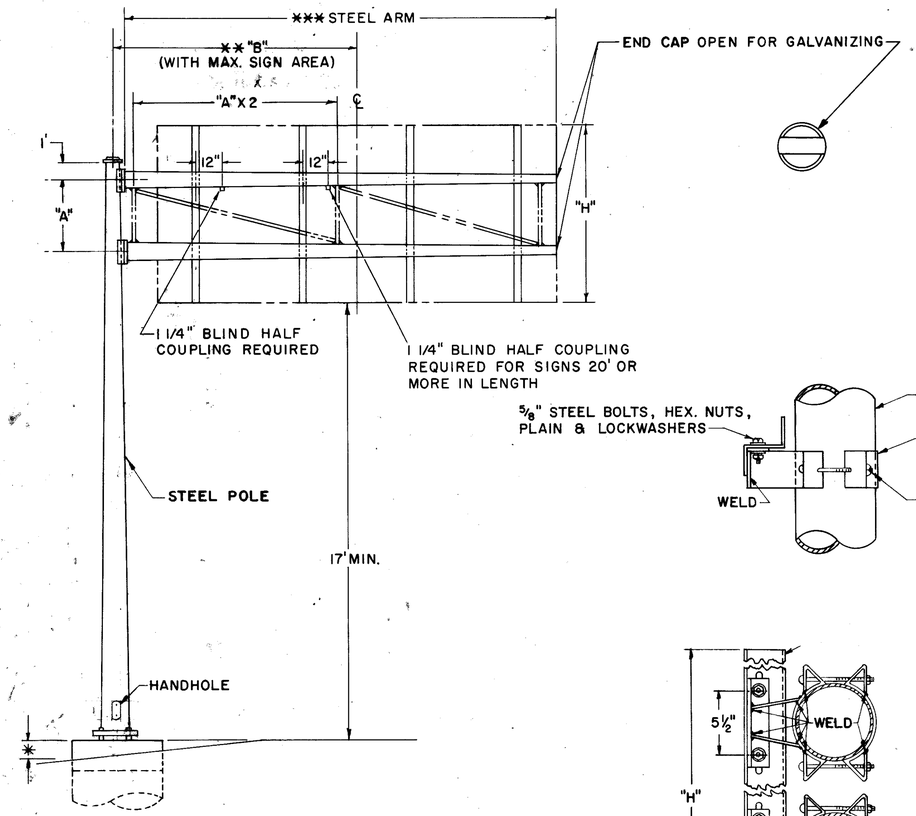
DATE

400 SQ. FT. SIGN AREA OVERHEAD SIGN SUPPORT, 816 NO. 7

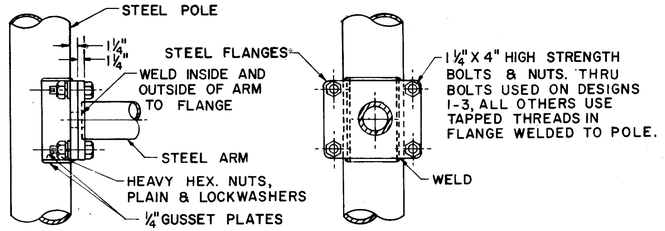
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

79A

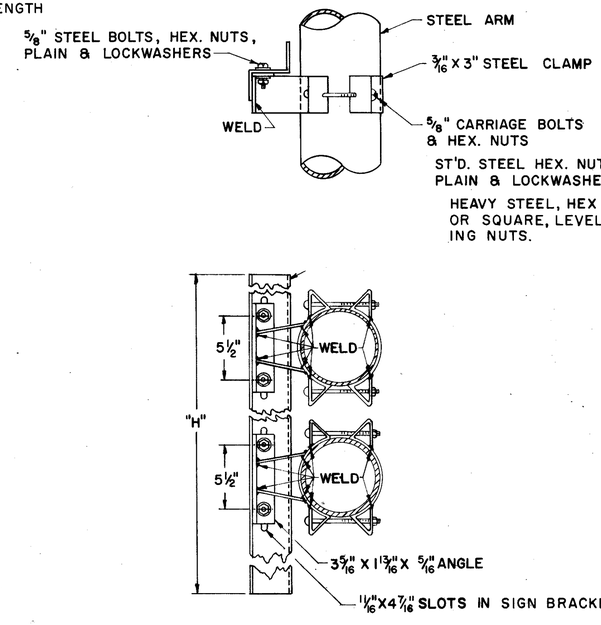
HUR-18-15.01

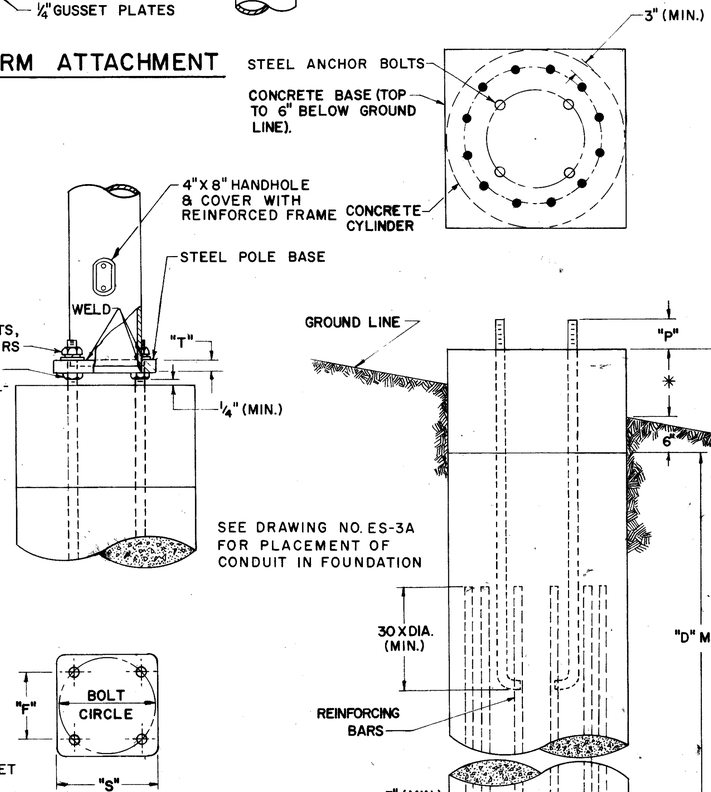


NOTE:
THE 12" DIMENSION SHOWN FOR BLIND HALF COUPLINGS MAY BE INCREASED OR DECREASED WHEN NECESSARY TO TO PREVENT INTERFERENCE WITH OTHER MEMBERS.

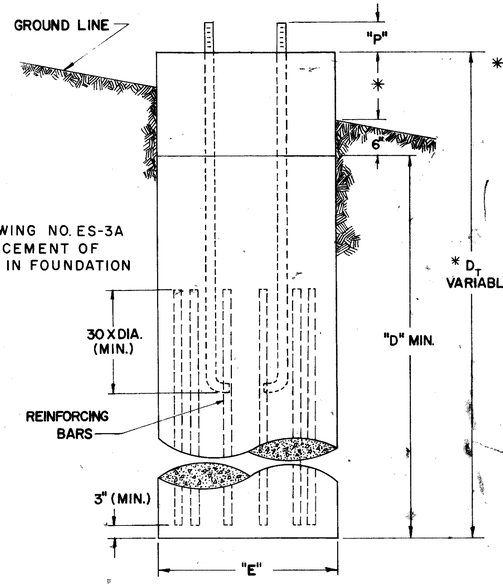


ARM ATTACHMENT





POLE BASE DETAIL



FOUNDATION DETAIL

SIGN ATTACHMENT DETAIL

DESIGN NO.	POLE SIZE	*** ARM SIZE	DIM A	DIM ** B	DIM "D" MIN.	DIM E	DIM F	DIM P	DIM * S	DIM T	BOLT CIRCLE	ANCHOR BOLT SIZE	MAX SIGN AREA	REINF. BARS SIZE	REINF. BARS # REQ'D
1	3 Ga, 12" X 8.78" X 23'-0"	7Ga, 6.9" X 4.66" X16'-0"	4'	12'	9'	3'-0"	11 5/16"	7 3/4"	17"	2"	16"	1 3/4" X 90"	80	3/4"	12
2	3 Ga, 12" X 8.78" X 23'-0"	7 Ga, 8" X 5.2" X 20'-0"	4'	16'	9'	3'-0"	11 5/16"	7 3/4"	17"	2"	16"	1 3/4" X 90"	80	3/4"	12
3	3 Ga, 15" X 11.5" X 25'-0"	7 Ga, 8.3" X 6.06" X 16'-0"	4'	12'	11'	3'-0"	15 1/2"	8 3/8"	23"	2"	22"	2" X 96"	120	1"	12
4	3 Ga, 16" X 12.5" X 25'-0"	3 Ga, 9.2" X 6.40" X 20'-0"	4'	16'	11'	3'-0"	16 5/16"	8 3/8"	24 1/2"	2"	23 1/2"	2" X 96"	120	1"	12
5	0 Ga, 18" X 14.36" X 26'-0"	7 Ga, 11" X 7.92" X 22'-0"	6'	14'	13'	3'-0"	18"	9 3/8"	26 1/2"	2 1/2"	25 1/2"	2 1/4" X 120"	180	1 1/8"	12
6	0 Ga, 18" X 14.36" X 26'-0"	7 Ga, 12.5" X 8.86" X 26'-0"	6'	18'	13'	3'-0"	18"	9 3/8"	26 1/2"	2 1/2"	25 1/2"	2 1/4" X 120"	180	1 1/8"	12
7	2 PLY 7 Ga, 18" X 14.36" X 26'-0"	7 Ga, 12.5" X 9.14" X 24'-0"	6'	14'	15'	3'-0"	18"	9 3/4"	26 1/2"	2 1/2"	25 1/2"	2 1/2" X 144"	240	1 1/4"	12
8	2 PLY 1/4", 18" X 14.36" X 26'-0"	3 Ga, 12.5" X 8.58" X 26'-0"	6'	18'	15'	3'-0"	18"	11 1/4"	26 1/2"	3"	25 1/2"	3" X 144"	240	1 1/4"	12

NOTES

FABRICATION - ALL PORTIONS OF THE SIGN SUPPORT, INCLUDING SIGN ATTACHMENTS, SHALL BE HOT DIP GALVANIZED IN ACCORDANCE WITH THE REQUIREMENTS OF A.S.T.M. DESIGNATIONS A-123 AND A-153. THE CONDUIT SHALL BE GALVANIZED IN ACCORDANCE WITH SEC. 625.13 AND SHALL BE INCLUDED IN THE UNIT PRICE BID FOR OVERHEAD SIGN SUPPORTS FOR PAYMENT.

* FOUNDATION - THE TOP ELEVATION OF FOUNDATIONS SHALL BE VARIED SO AS TO MAINTAIN A MINIMUM CLEARANCE OF 17' BETWEEN THE BOTTOM OF THE SIGN AND THE HIGHWAY CROWN.

** ERECTION - VALUES OF "B" MAY BE EXCEEDED PROVIDED THE PRODUCT OF ACTUAL SIGN AREA TIMES THE DISTANCE FROM ℄ OF POLE TO ℄ OF SIGN DOES NOT EXCEED THE MAX. SIGN AREA TIMES "B".

*** ARMS 20' LONG OR LONGER ARE TO BE TRUSS TYPE WITH 3" X 3" X 3/8" ANGLES WELDED TO GUSSET PLATES.

MATERIAL - STEEL POLE BASES, FLANGES, AND CAPS SHALL CONFORM TO THE REQUIREMENTS OF ASTM SPECIFICATION A 30 GRADE B. HIGH STRENGTH STEEL BOLTS SHALL CONFORM TO ASTM SPECIFICATION A 193 GRADE B7. AFTER FABRICATION TAPERED POLES AND ARMS SHALL HAVE A MINIMUM YIELD STRENGTH OF 48,000 PSI.

SOILS - THE FOUNDATION DETAILS SHOWN ARE FOR AVERAGE SOIL CONDITIONS (MEDIUM CLAY, GRANULAR SAND AND GRAVEL, SANDY CLAY, OR STIFF CLAY). FOR POOR SOIL CONDITIONS, INCREASE "D" AND "E" 50% IN DRY OR WET SAND, 60% IN SILTY CLAY, 100% IN SOFT CLAY, AND FROM 75% TO 300% IN WET SILT, DEPENDING ON QUICKSAND ACTION.

REINFORCING STEEL - REINFORCING STEEL AS SHOWN IN TABLE SHALL BE INSTALLED WHEN "B" EXCEEDS THE ANCHOR BOLT LENGTH BY MORE THAN 3 FT. THE SIZE AND PLACEMENT OF REINFORCING STEEL SHALL BE INCLUDED IN THE UNIT PRICE FOR ITEM 516 [illegible] FOR SIGN SUPPORT FOUNDATIONS.

DESIGN

THE DESIGN OF OVERHEAD SUPPORTS IS IN ACCORDANCE WITH A.A.S.H.O. SPECIFICATIONS FOR THE DESIGN AND CONSTRUCTION OF STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, ADOPTED JUNE 12, 1961.

BUREAU OF TRAFFIC
OHIO DEPARTMENT OF HIGHWAYS

OVERHEAD SIGN SUPPORT — 816 No. 12.24 — 4-15-57

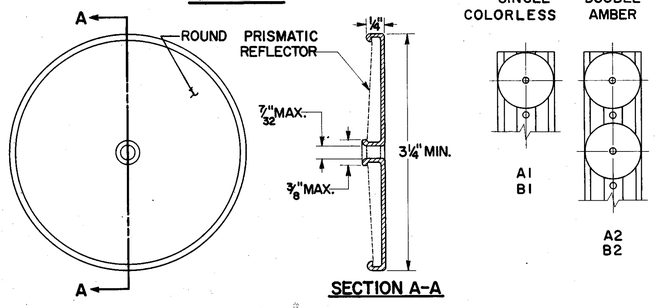
APPROVED Robert E. Cronin
ENGINEER OF TRAFFIC

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

80

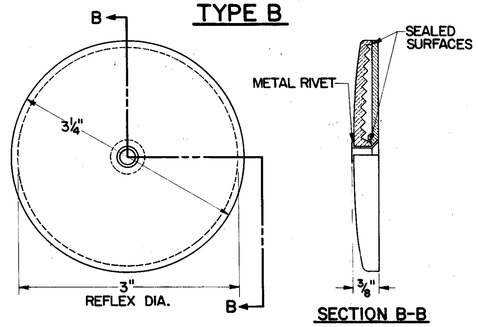
HUR-18-15.01

TYPE A



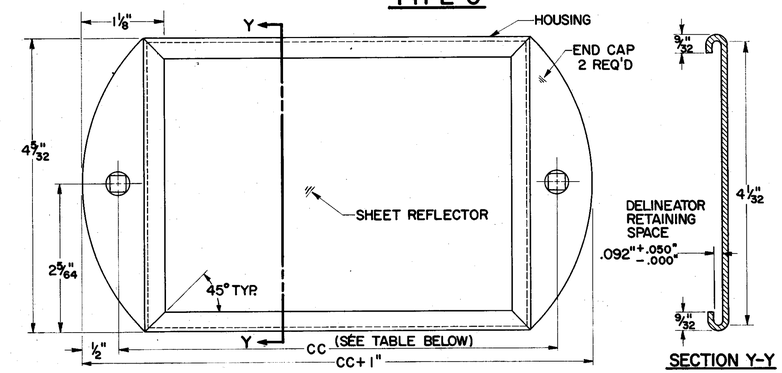
SECTION A-A

TYPE B

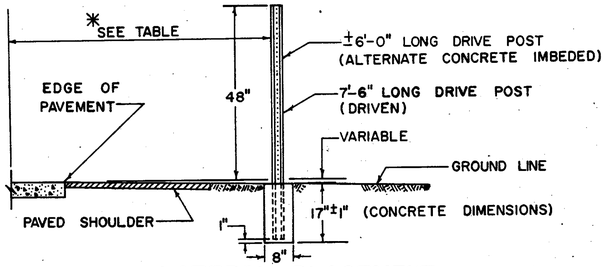


SECTION B-B

TYPE C



TYPE	DIM. CC
C1 – SINGLE COLORLESS	6"
C2 – DOUBLE AMBER	11"



LATERAL PLACEMENT OF DELINEATORS

* TABLE

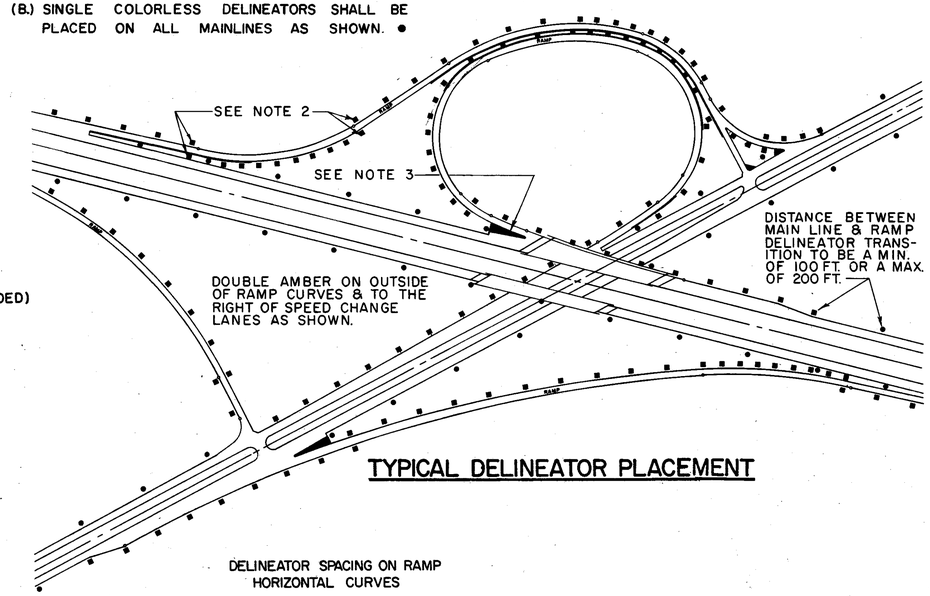
TYPE DELINEATOR	NO GUARDRAIL	GUARDRAIL
SINGLE COLORLESS	12'-6"	6" OUTSIDE
DOUBLE AMBER RIGHT SIDE	** 8'-6"	6" OUTSIDE
DOUBLE AMBER LEFT SIDE	4'-6"	6" OUTSIDE

** THIS DIMENSION SHALL VARY ON SPEED CHANGE LANES TO MAINTAIN MINIMUM DISTANCE OF 2'-6" FROM EDGE OF PAVED SHOULDER.

NOTE:

(A.) DOUBLE AMBER DELINEATORS SHALL BE PLACED ON ALL RAMPS AS SHOWN. ■

(B.) SINGLE COLORLESS DELINEATORS SHALL BE PLACED ON ALL MAINLINES AS SHOWN. ●



TYPICAL DELINEATOR PLACEMENT

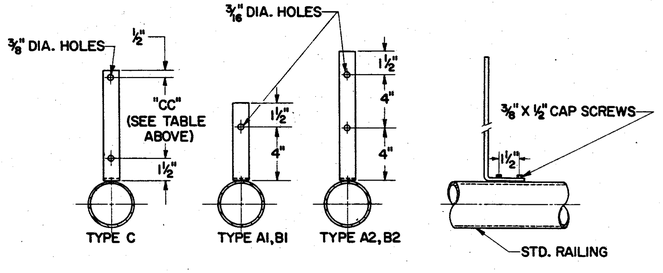
DELINEATOR SPACING ON RAMP HORIZONTAL CURVES

RADII, FT. FROM	RADII, FT. TO	SPACING ON CURVE	* TRANSITION SPACING	
TANGENT	1,801	100'	100'	100'
1,800	1,401	80'	100'	100'
1,400	1,001	70'	100'	100'
1,000	751	60'	100'	100'
750	551	50'	80'	100'
550	326	40'	70'	100'
325	———	30'	60'	100'

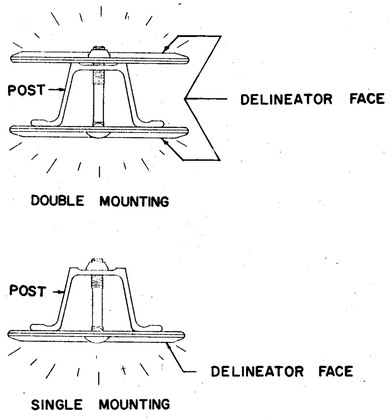
* SUCH AS 40' TO 70' TO 100' OR 100' TO 80' TO 50' OR ANY OTHER COMBINATION SHOWN ABOVE.

NOTES

1. TYPE A1 OR B1 DELINEATORS ON THE RIGHT OF THE THROUGH ROADWAY ARE TO BE SPACED AT 200 FT. INTERVALS THROUGHOUT, REGARDLESS OF CURVES.
2. WHEN CROSSING FROM LEFT TO RIGHT OR FROM RIGHT TO LEFT ON THE RAMPS, THE DELINEATORS AT THE POINT OF CROSSOVER ARE TO BE AT THE SAME STATION ON EACH SIDE.
3. NO DELINEATORS ARE TO BE PLACED IN PAVED BERM
4. WHEN RADII OF CURVE ON RAMPS REQUIRE 100' SPACING THE DELINEATORS SHALL BE PLACED ON THE RIGHT IN RELATION TO THE FLOW OF TRAFFIC.



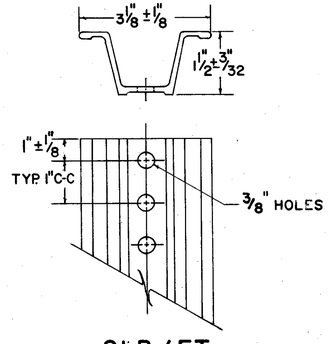
BRIDGE RAIL BRACKET



DELINEATOR MOUNTING

TAMPER RESISTANT FASTENERS SHALL BE USED TO FASTEN DELINEATORS TO POST AS/OR SIMILAR TO ONE SHOWN ABOVE.

TAMPER RESISTANT FASTENERS



2 LB./FT.

DEINEATOR DRIVE POST

BUREAU OF TRAFFIC
OHIO DEPARTMENT OF HIGHWAYS

DELINEATOR DETAILS

620

DATE
9-25-62
5-24-65
9-12-67

APPROVED Robert E. Lomer
ENGINEER OF TRAFFIC

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

81
95

HUR-18-15.01

DELINEATORS

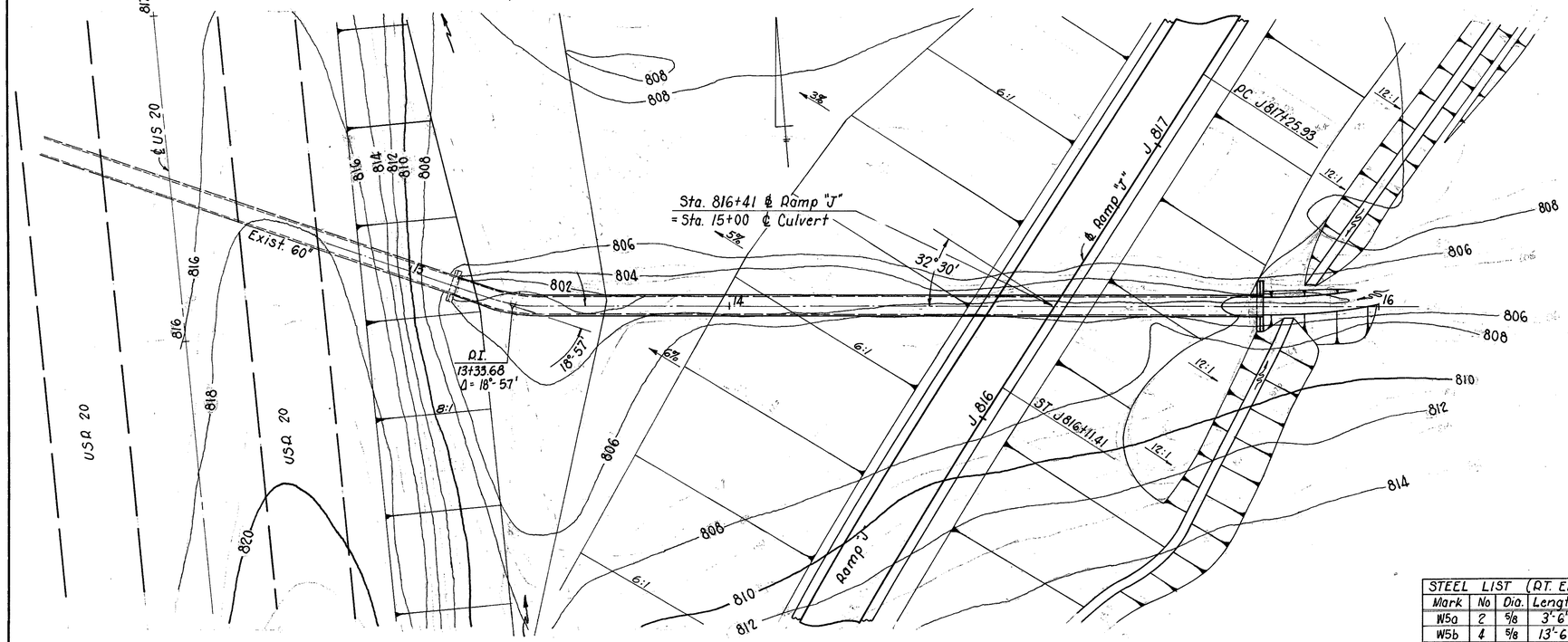
QUANTITIES CARRIED TO SHEET NO. 13

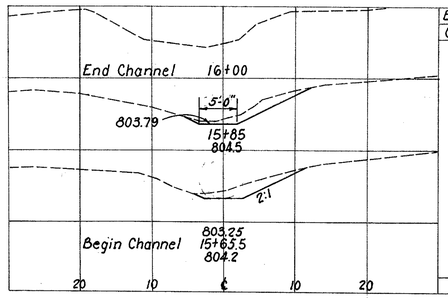
LOCATION	STATION	SIDE	SPACING (FEET)	MONO - DIRECTIONAL					BI-DIRECTIONAL
				A-1		C-2			C-2
				POST	BRACKET	POST	BRACKET		POST
S.R. 18	37+00 to 41+00	Lt.	200	3					
	45+00	Lt.		1					
	49+00 to 53+00	Lt.	200	1	2				
	55+00 to 61+00	Lt.	200	4					
	37+00 to 53+00	Rt.	200	7	2				
	55+00 to 59+00	Rt.	200	3					
U.S.R. 20	812+40	Lt.				1			
	813+40 to 821+40	Lt.	100			9			
	834+60 to 838+60	Lt.	100			5			
	839+60	Lt.				1			
	803+65 to 804+65	Rt.	100			2			
	805+65 to 806+65	Rt.	100				2		
	807+65 to 808+65	Rt.	100			2			
	829+30 to 837+30	Rt.	100			9			
	838+30	Rt.				1			
RAMP "F"	F822+40 to F823+00	Lt.	60			2			
	F823+30 to F823+90	Lt.	30			3			
	F823+90	Rt.				1			
	F824+20 to F828+10	Rt.	30			14			
	F828+40	Rt.							1
	F832+00	Rt.				1			
	F832+30 to F833+50	Rt.	30			5			
	F833+50 to F836+50	Lt.	50			7			
RAMP "G"	G820+50	Lt.				1			
	G821+50 to G822+10	Lt.	60						2
	G822+40 to G824+20	Lt.	30						7
	G824+50 to G825+10	Lt.	30			3			
	G825+10 to G830+60	Rt.	50			12			
	G830+60 to G833+80	Lt.	80			5			
RAMP "H"	H819+00 to H822+20	Rt.	40			9			
	H822+20 to H825+70	Lt.	50			8			
	H825+70 to H826+70	Rt.	50			3			
	H827+50 to H828+30	Rt.	80						
RAMP "J"	J809+65 to J812+65	Rt.	100			4			
	J812+65 to J813+45	Lt.	80			2			
	J813+95 to J815+45	Lt.	50			4			
	J816+25	Lt.				1			
	J816+25 to J817+85	Rt.	80			3			
TOTALS				19	4	118	2		10

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

82
95

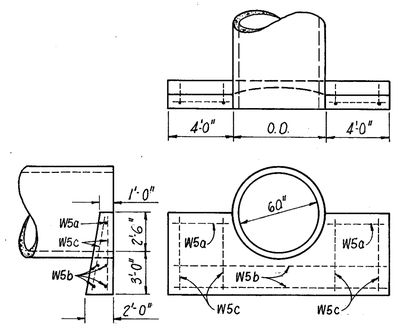
HUR-18-15.01





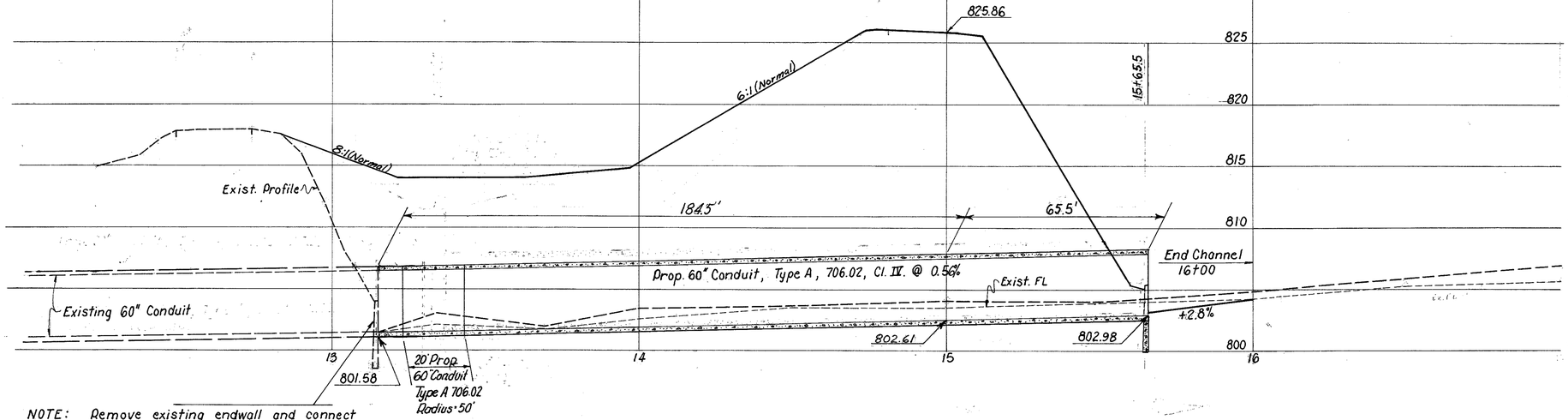
END AREA		CU. YARDS	
CUT	FILL	CUT	FILL
0	0		
		4	0
14	0		
		11	0
15	0		
Total:		15	0

STEEL LIST (RT. ENDWALL)				
Mark	No	Dia.	Length	Spacing
W5a	2	5/8	3'-6"	As Shown
W5b	4	5/8	13'-6"	1'-6"
W5c	8	5/8	5'-0"	3'-0"



RIGHT ENDWALL DETAILS

Note: For additional notes and details see Standard Construction Drawing SP-53 with the following exceptions:
(a). Concrete shall be Class "C".
(b). Do not cut off the end of the pipe which extends above the endwall to conform to the slope.



NOTE: Remove existing endwall and connect 60" Conduit, Type A, 706.02, Class IV to existing 60" Pipe. Payment for headwall removal shall be included in the unit price bid for Item 603, 60" Conduit, Type A, 706.02, Class IV with Class B Bedding, as per plan.

SCALES

Plan	1"=20'
Profile Horizontal	1"=20'
Profile Vertical	1"= 5'
Cross Sections	1"=10'
Details	1"= 5'

STRUCTURE Nº S-1 Sta. J816+41

Drainage Area = 505 Acres
Q_{25} = 220 cfs
Existing: None
Proposed: 60" Conduit, Type A, 706.02, Class IV.
℄ 60" Conduit, Type A, 706.02, Radius = 50'

ESTIMATED QUANTITIES

Quant.	Unit	Item	Description
230	Lin. Ft.	603	60" Conduit, Type A, 706.02, Class IV with Class B Bedding.
20	Lin. Ft.	603	60" Conduit, Type A, 706.02, Radius=50' with Class B Bedding.
3.6	Cu. Yards	602	Concrete Masonry.
15	Cu. Yards	203	Excavation. (Carried to Sheet No. 61)

Culvert Details @ Sta. J 816+41 (RAMP J)

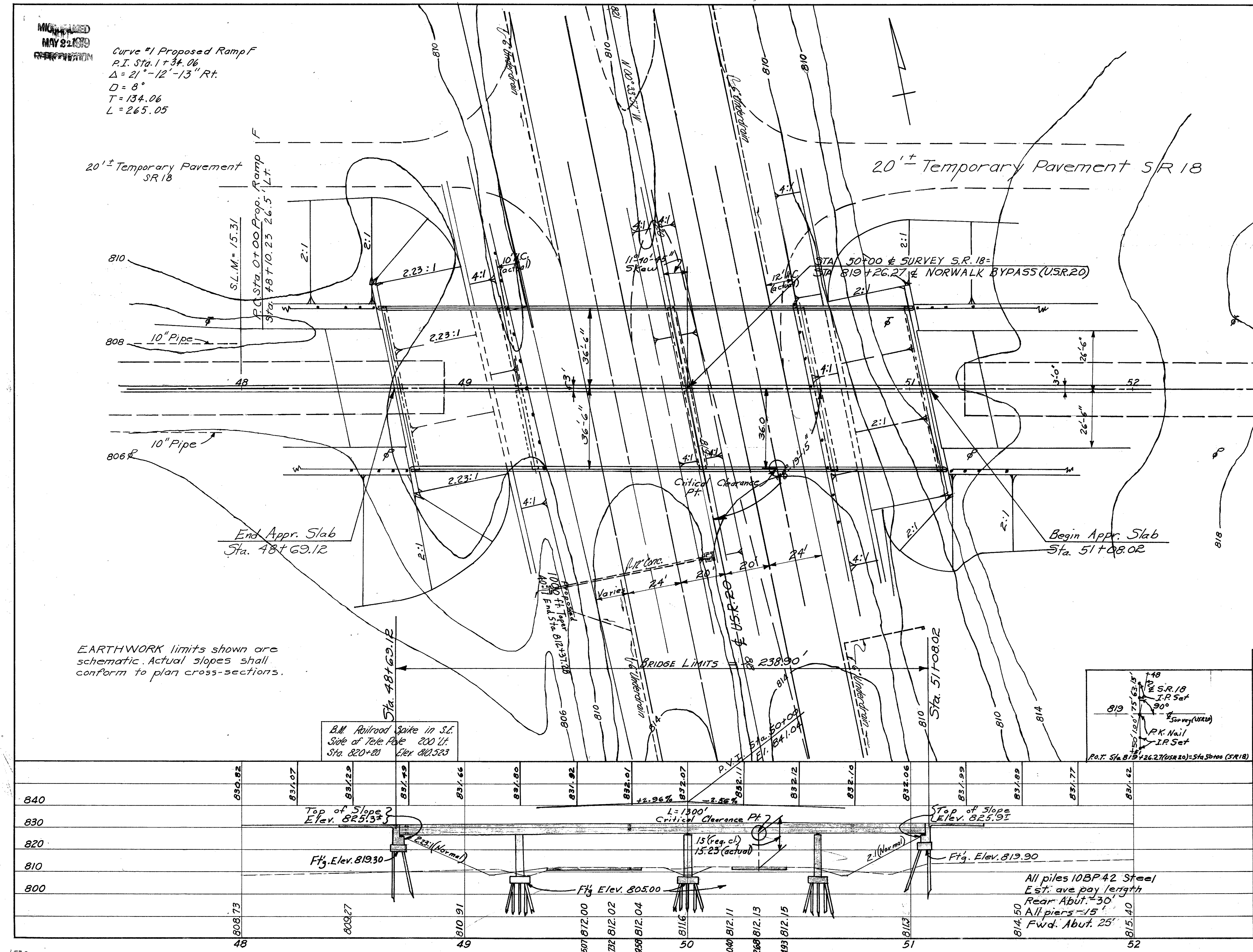
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	68 B	

83/95

HUR-18-15.01
HURON COUNTY
1.6± Miles West of Intersection S.R. 18 and S.R. 601

0.6± Mi. East of Norwalk

Curve #1 Proposed Ramp F
P.I. Sta. 1+34.06
Δ = 21°-12'-13" Rt.
D = 8°
T = 134.06
L = 265.05



EARTHWORK limits shown are schematic. Actual slopes shall conform to plan cross-sections.

℄ Survey Stationing SR 18 has nails and shiners every 100 ft. in conjunction with the HUR-20-10.51 project now under construction.

All piles 10BP42 Steel
Est. ave pay length
Rear Abut. - 30'
All piers - 15'
Fwd. Abut. 25'

PROPOSED STRUCTURE

TYPE: Continuous steel beams with reinf. conc. deck and substructure.
SPANS: 53.0' - 75.58' - 58.72' - 47'% brgs.
ROADWAY: 73'-0" f/f conc. parapets with 3'-0" raised median & 2" open joint.
LOADING: HS 20-44
SKEW: 11°-40'-45" R.F.
WEARING SURFACE: 1" Mono. Conc.
APPR. SLABS: AS-1-67 (25' long) (Special)
ALIGNMENT: Tangent

1/9

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
BUREAU OF BRIDGES

SITE PLAN

BRIDGE NO HUR-18-1532
OVER USR 20 SR 18
HURON CO. STA. 48+69.12 51+08.02

PRESENT TOPOGRAPHY		PROPOSED WORK			
SURVEYED	DRAWN	DESIGNED	DRAWN	CHECKED	REVIEWED
		B.D.H.	B.D.H.	D.H.S.	G.E.S.

BFG 10-31-67

03747

HUR-18-1532

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

84
95

HUR-18-15.01

25'-0" (Typ.)

Bridge Limits ~ 238.90'

53'-0" | 75'-7" | 58'-8 3/8" | 47'-0"

℄ Bearings
Railing Post Spacing
Deflection Joint Spacing

Typ. each side: 4'-0" (11 1/16") | 11'-2 3/8"

6 Spaces @ 7'-3 1/4" = 43'-7 1/2" | 12 Spaces @ 7'-10 1/2" = 94'-6" | 6 Spaces @ 7'-11" = 47'-6" | 6 Spaces @ 7'-3 1/4" = 43'-7 1/2" | 1'-0" | 4'-0"

3 Spaces @ 13'-1" = 39'-3" | 5'-0" | 5'-0" | 4 Spaces @ 13'-1" = 52'-4" | 13'-3" | 5'-0" | 5'-0" | 3 Spaces @ 12'-2" = 36'-6" | 12'-2 3/8" | 5'-0" | 5'-0" | 2 Spaces @ 14'-10" = 29'-8" | 14'-9 3/8"

Acceleration Lane

3'-0"

1'-0"

Curb face

Limits of Crushed Aggregate Slope Protection (Typ.)

25'-0"

1'-6"

25'-0"

℄ Brgs-Rear Abut
Sta. 48+71.42

℄ Brgs-Rear Piers
Sta. 49+28.42

1'-6" Parapets

3'-0" Raised median

3'-0"

℄ Survey S.R.18 Sta. 50+00 =
℄ Survey Norwalk By-Pass
Sta. 819+26.27

℄ Brgs.-Fwd. Piers
Sta. 50+58.72

Begin Approach Slab
Sta. 51+08.02

49+00

51+00

℄ Survey S.R. 18

End Approach Slab
Sta. 48+69.12

2:3:1

℄ Brgs-Cntr. Piers
Sta 50+00

℄ Brgs.-Fwd. Abut.
Sta 51+05.72

℄ Pier

℄ Pier

℄ Pier

2:1

73'-0"

34'-0"

819+00

11°-40'-45"

Curb face

Berm Line (Typ.)

℄ Survey Norwalk By-Pass (USR 20)

GENERAL PLAN

S.R. 18
P.V.I. Sta. 50+00
Elev. 841.04
L = 1300'

+2.96%

-2.56%

Exp.

Exp.

Fixed Bearings

Exp.

Exp.

El. 819.30

℄ El. 805.00

℄ El. 805.00

℄ El. 805.00

℄ El. 819.90

1:0"

Crushed Aggregate Slope Protection

Finished Ground Line at ℄ Survey S.R. 18

ELEVATION

Note: Piles not all shown.
All piles are 10BP42 steel.

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

2/9

GENERAL PLAN AND ELEVATION
BRIDGE NO. HUR-18-1532 OVER USR 20

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
WTF	WTF		MPB	BFG	10-31-67	

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

85/95

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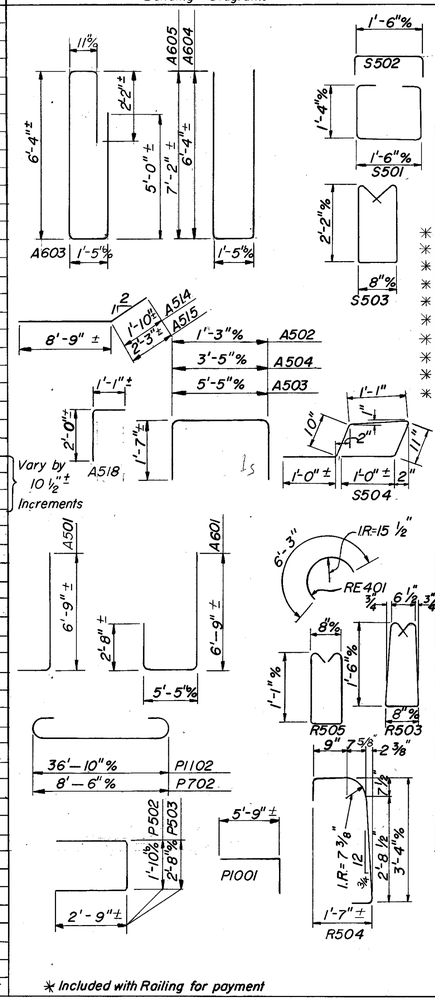
REINFORCING STEEL LIST

Mark	No.	Length	Weight	Shp
Abutments				
A801	28	39'-9"	2972	S
A601	104	14'-6"	2265	B
A602	4	7'-2"	43	S
A603	108	15'-2"	2460	B
A604	36	13'-9"	743	B
A605	4	15'-5"	93	B
A501	104	7'-3"	786	B
A502	4	4'-2"	17	B
A503	104	8'-4"	904	B
A504	102	6'-4"	674	B
A505	18	37'-7"	706	S
A506	18	37'-2"	698	S
A507	12	10'-1"	126	S
A508	12	11'-1"	139	S
A509	10	28'-4"	296	S
A510	10	29'-0"	302	S
A511	8	19'-5"	162	S
A512	8	16'-5"	137	S
A513	8	13'-9"	115	S
A514	4	10'-7"	44	B
A515	4	11'-4"	46	B
A516	8 Series of 5	8'-9" to 5'-3"	292	S
A517	8	11"	8	S
A518	8	2'-11"	24	B
Piers				
P1101	42	36'-10"	8219	S
P1102	42	40'-0"	8926	B
P1001	96	6'-10"	2823	B
P1002	32	17'-11"	2467	S
P1003	32	18'-3"	2513	S
P1004	32	18'-6"	2547	S
P701	336	10'-2"	6983	B
P501	12	36'-10"	461	S
P502	144	7'-1"	1064	B
P503	216	7'-11"	1784	B

Bending Diagrams



Mark	No.	Length	Weight	Shp
Superstructure				
S601	1560	37'-8"	88258	S
S501	316	4'-11"	1621	B
S502	316	2'-6"	824	B
S503	434	5'-7"	2527	B
S504	316	4'-4"	1428	B
S505	1376	30'-0"	43055	S
S506	172	8'-1"	1450	S
S507	192	33'-4"	6675	S
Railing				
✳ R501	8	10'-8"	—	S
✳ R502	8	14'-5"	—	S
✳ R503	12	4'-2"	—	B
✳ R504	8	5'-4"	—	B
✳ R505	8	3'-5"	—	B
✳ R506	8	3'-6"	—	S
✳ R507	48	4'-8"	—	S
✳ R508	64	12'-9"	—	S
✳ R509	32	11'-10"	—	S
✳ R510	16	14'-6"	—	S
Replacement Bars				
RE1101	1	8'-6"	—	S
RE1001	1	8'-2"	—	S
RE801	1	7'-6"	—	S
RE701	1	7'-2"	—	S
RE601	5	6'-11"	—	S
RE501	4	6'-7"	—	S
RE401	1	6'-3"	—	B
Spirals				
For details not shown, see CRSI Manual of Standard Practice.				
Core Diameter 32"% *Pitch* 3½"%				
SP401	4	14'-0"	1321	B
SP402	4	14'-3"	1343	B
SP403	4	14'-6"	1366	B

✳ *Included with Railing for payment*

BAR SIZE is indicated in the bar mark. The first digit where three digits are used, and the first two digits where four are used, indicate the bar size number. For example, A700 is a No. 7 size bar and A1014 is a No. 10 size.

ESTIMATED QUANTITIES

Item	Total	Unit	Description	Super	Pier	Abuts.	Gen'l	As Built	
503	Lump	Sum	Cofferdams, Cribs and sheeting				Lump		
503	627	Cu. yds.	Unclassified excavation		287	340			
505	Lump	Sum	First test pile				Lump		
507	2200	Lin. Ft.	Steel piles, 10BP42		1260	940			
509	201,707	Lbs.	Reinforcing steel	145838	41817	14052			
511	485	Cu. yds.	Class C concrete, superstructure	485					
511	156	Cu.yds.	Class C concrete, pier caps and columns		156				
511	147	Cu.yds.	Class C concrete, abutments above footing			147			
511	223	Cu. yds.	Class C concrete, footings		108	115			
512	16	Lin. Ft.	Premolded sealing strip			16			
513	425000	Lbs.	Structural steel	425000					
517	478.48	Lin. Ft.	Railing, Type 1	478.48					
518	82	Cu. yds.	Porous backfill			82			
518	155	Lin. Ft.	6" Perforated helical C.M.P. including specials 707.06			155			
518	96	Lin. Ft.	6" Non-perforated helical C.M.P. 707.06			96			
518	16	Each	Scuppers, including supports.	16					
601	770	Sq. yds.	Crushed aggregate slope protection			770			
808	485	Units	Water-reducing, set-retarding admixture	485					
825	2165	Sq. yds.	Concrete surface treatment	2116		49			
828	139	Lin. Ft.	Joint sealer	139					
832	425,000	Lbs.	Field painting of structural steel	425000					

GENERAL NOTES

REFERENCE shall be made to Standard Drawings SD-1-65, Sheets No. 1, 2 and 3 dated 11-8-65, RB-1-55 revised 2-2-59, BR-1-65 Sheet No. 1 revised 11-24-65 and to Supplemental Specifications 808 dated 1-13-67, 811, and 828 all dated 1-1-67 and 832 and 931 both dated 5-25-67, and 825 dated 12-19-67.

DESIGN SPECIFICATIONS: This structure conforms to the requirements of "Standard Specifications for Highway Bridges" of the AASHO, dated 1965.

DESIGN DATA:

Design Loading - HS 20-44
Concrete Class C - basic unit stress 1333 p.s.i. (substructure design)
Concrete Class C - basic unit stress 1200 p.s.i. (superstructure design)
Structural Steel - ASTM A36: basic unit stress 20,000 p.s.i.
Reinforcing Steel - ASTM A15, A16, A160, Deformed, Intermediate or Hard Grade. Basic unit stress 20,000 p.s.i Except that, spiral reinforcement may be plain rods, Structural Grade with basic unit stress of 18,000 p.s.i.

EXCAVATION QUANTITY includes the removal of fill material required for construction of the abutments.

PILES shall be driven to a minimum bearing capacity of 35 tons per pile.

PAINTING of structural steel shall be in accordance with Supplemental Specification 832.

CONCRETE SURFACE TREATMENT shall be applied to the top surface of the abutment backwalls.

WELDS on secondary stress carrying members are shown thus: S>

WELDED ATTACHMENTS: No field attachments shall be made by welding to the top flanges of the beams within a distance of 7'-6" on either side of the pier bearings. Welding for attachments to the top flanges at other ports of the spans shall be kept at least 2 inches from edge of flange.

MAINTENANCE OF TRAFFIC: Two lanes of traffic with a minimum horizontal width of 30'-0" and a minimum vertical clearance of 12'-9" shall be maintained in each direction on U.S.R. 20 at all times.

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

3/9

ESTIMATED QUANTITIES GENERAL NOTES REINFORCING STEEL LIST BRIDGE NO. HUR-18-1532 OVER U.S.R. 20

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
W.T.F.		J.E.P.	MPB	BFG	10-31-67	

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

86/95

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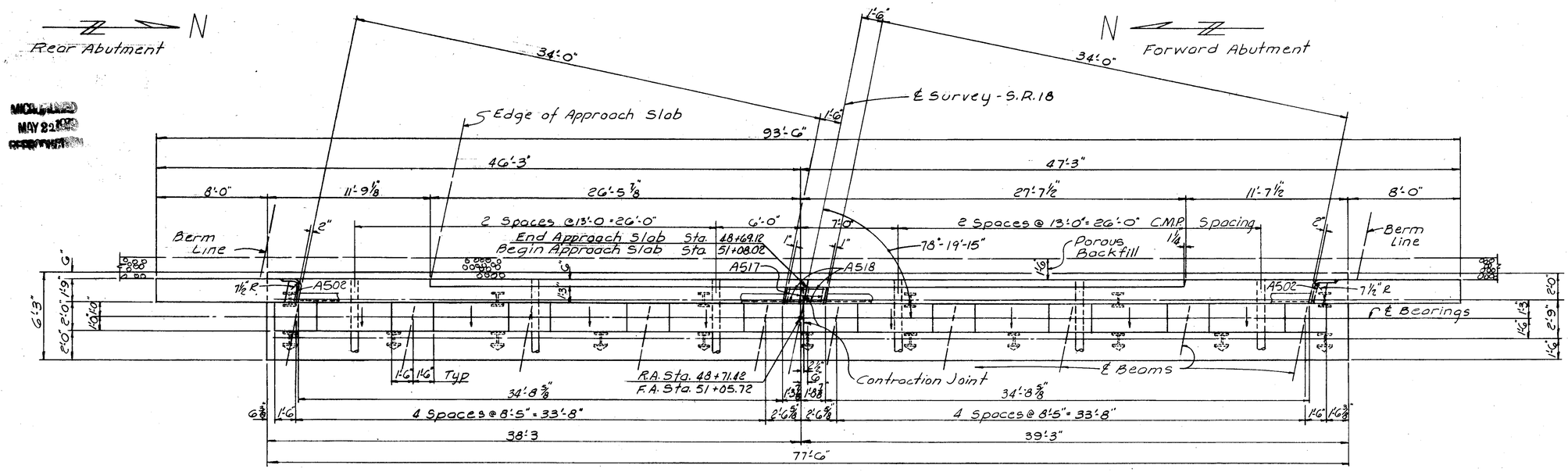

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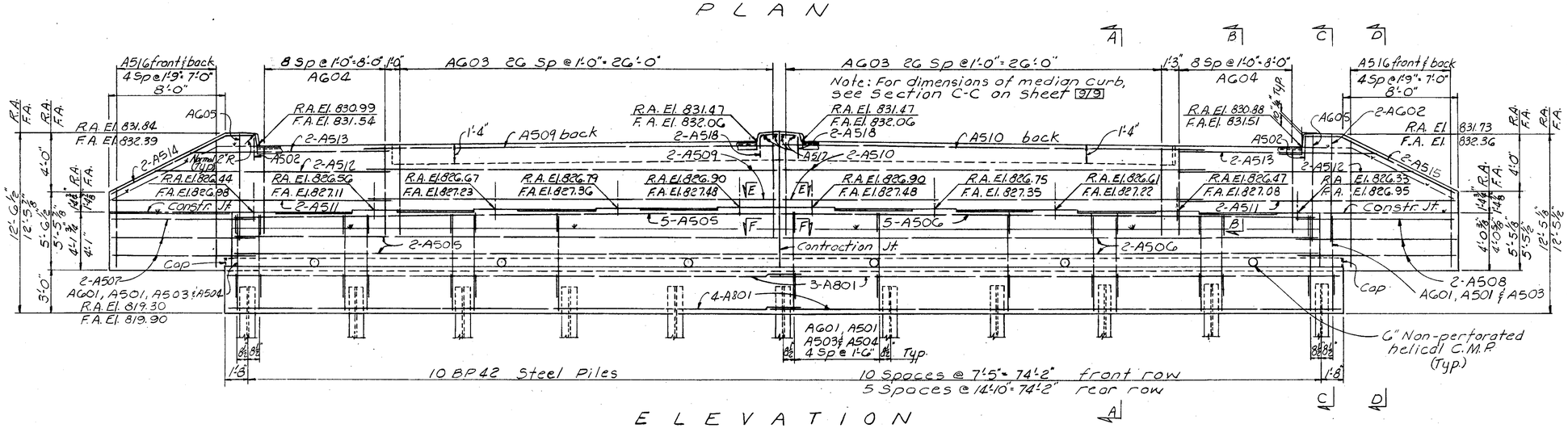


E L E V A T I O N

POROUS BACKFILL shall extend upward to the level of the subgrade and to the surface of the earth shoulders and outward to the surface of the embankment slopes.

PROCEDURE: The embankment shall be placed and compacted up to the finished spill-thru slope and to the level of the subgrade for a distance of 200 feet back of the abutments after which excavation shall be made for the abutments and the piles shall be driven.

LEGEND

R.A. ~ Rear Abutment
F.A. ~ Forward Abutment

Vertical Pile

Battered Pile

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

4/9

ABUTMENT DETAILS

BRIDGE NO. HUR-18-1532
OVER USR 20

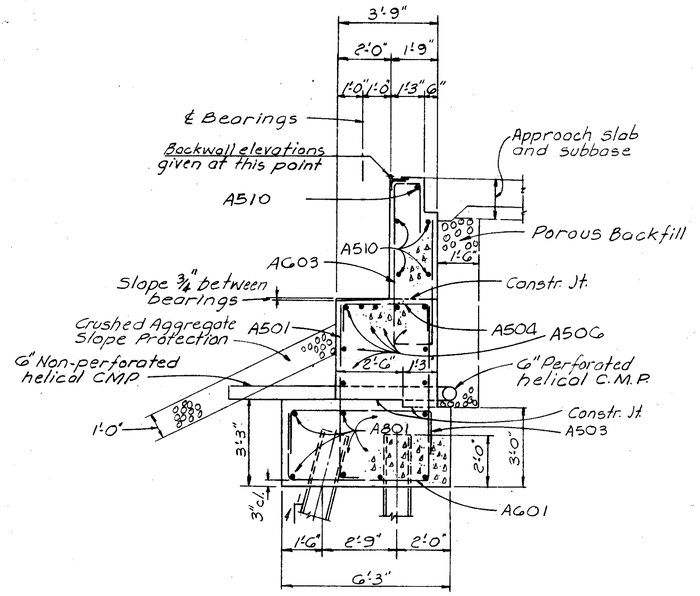
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
WTF	WTF		MPB	BFG	10-31-67	

MAY 22

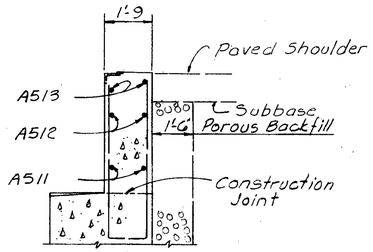
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

87/95

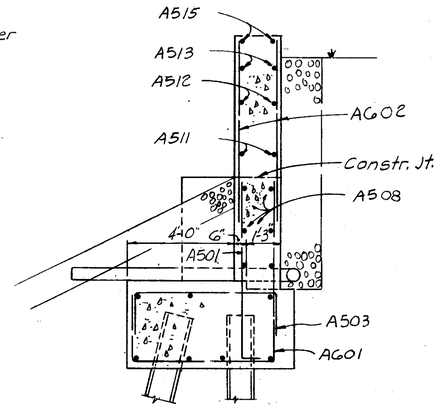
HUR-18-15.01



SECTION A-A

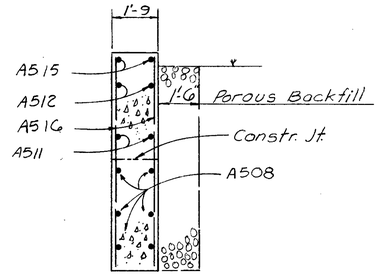


SECTION B-B

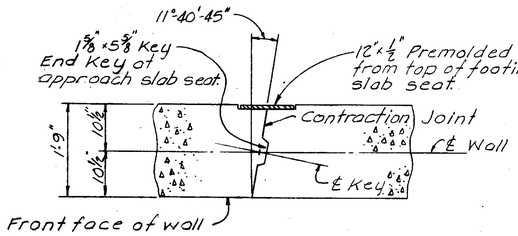


SECTION C-C

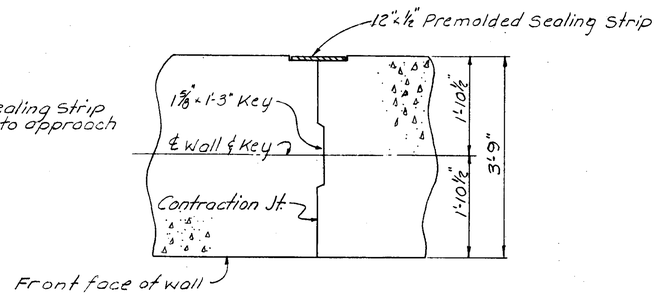
Reinf. details and dimensions not shown similar to Sec. A-A



SECTION D-D



SECTION E-E



SECTION F-F

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BUREAU OF BRIDGES

5/9

ABUTMENT DETAILS
BRIDGE NO. HUR-18-1532 OVER USR 20

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
WTF	WTF		MPB	BFG	10-31-67	

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

88/95

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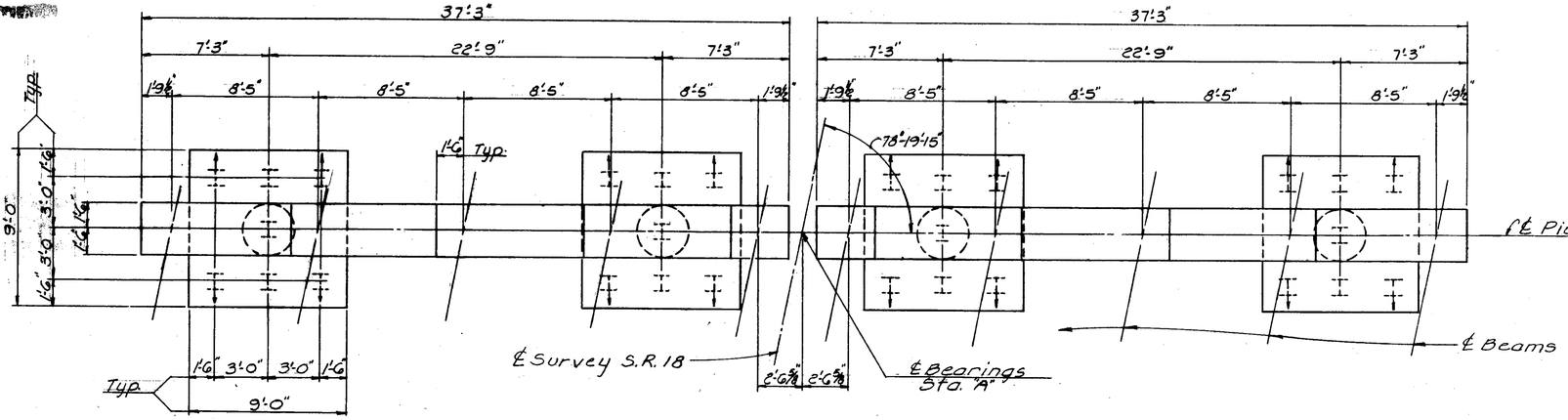

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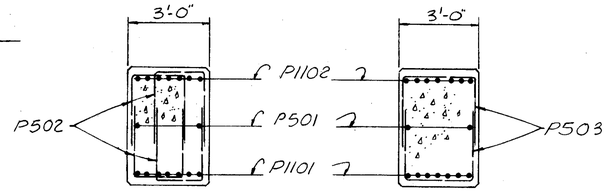
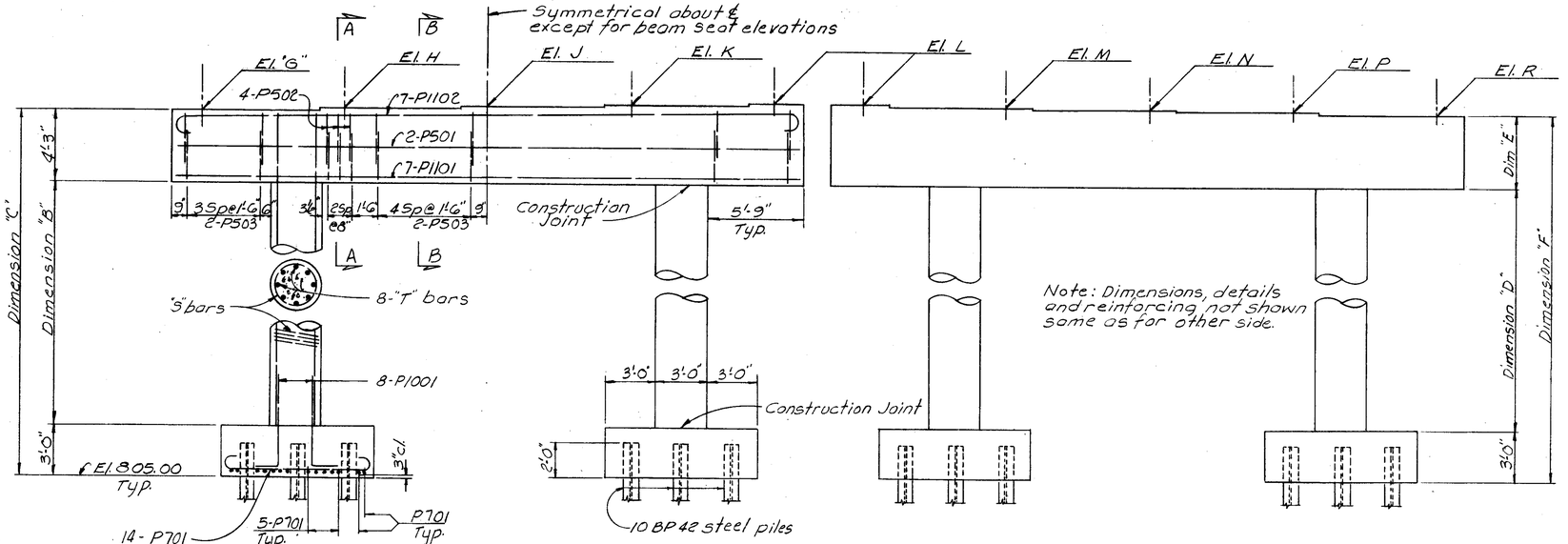
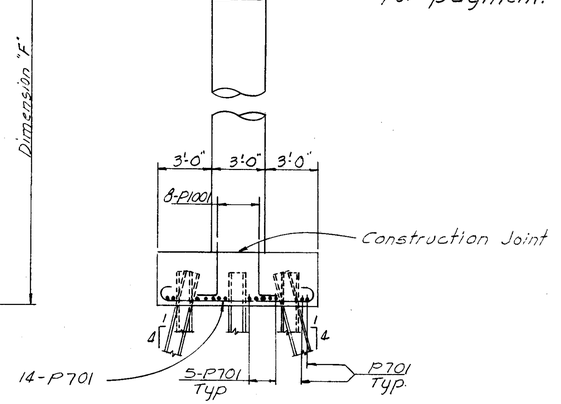


SECTION A-A SECTION B-B



E L E V A T I O N



END VIEW

BRIDGE SEAT REINFORCING: Special care shall be taken in placing reinforcing steel in the vicinity of the bridge seats at the Center Pier so as to avoid interference with the drilling of anchor bolt holes. Anchor bolt holes are included with Item 513 for payment.

P I E R D A T A

LOCATION	Station "A"	DIMENSION					ELEVATION									RE BARS	
		B	C	D	E	F	G	H	J	K	L	M	N	P	R	S	T
Rear Pier	Sta. 49+24.42	14'-0¼"	21'-3¼"	14'-0¼"	4'-3⅞"	21'-4⅛"	826.27	826.40	826.54	826.68	826.82	826.70	826.58	826.46	826.34	SP401	P1002
Center Pier	Sta. 50+00	14'-4"	21'-7"	14'-4"	4'-3¼"	21'-7¼"	826.58	826.71	826.84	826.97	827.11	826.98	826.86	826.73	826.60	SP402	P1003
Forward Pier	Sta. 50+58.72	14'-6¾"	21'-9¾"	14'-6¾"	4'-2⅞"	21'-9⅝"	826.81	826.94	827.07	827.20	827.32	827.19	827.06	826.93	826.80	SP403	P1004

LEGEND:

Vertical Pile

Batter Pile 1:4

STATE OF OHIO
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DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

6/9

PIER DETAILS

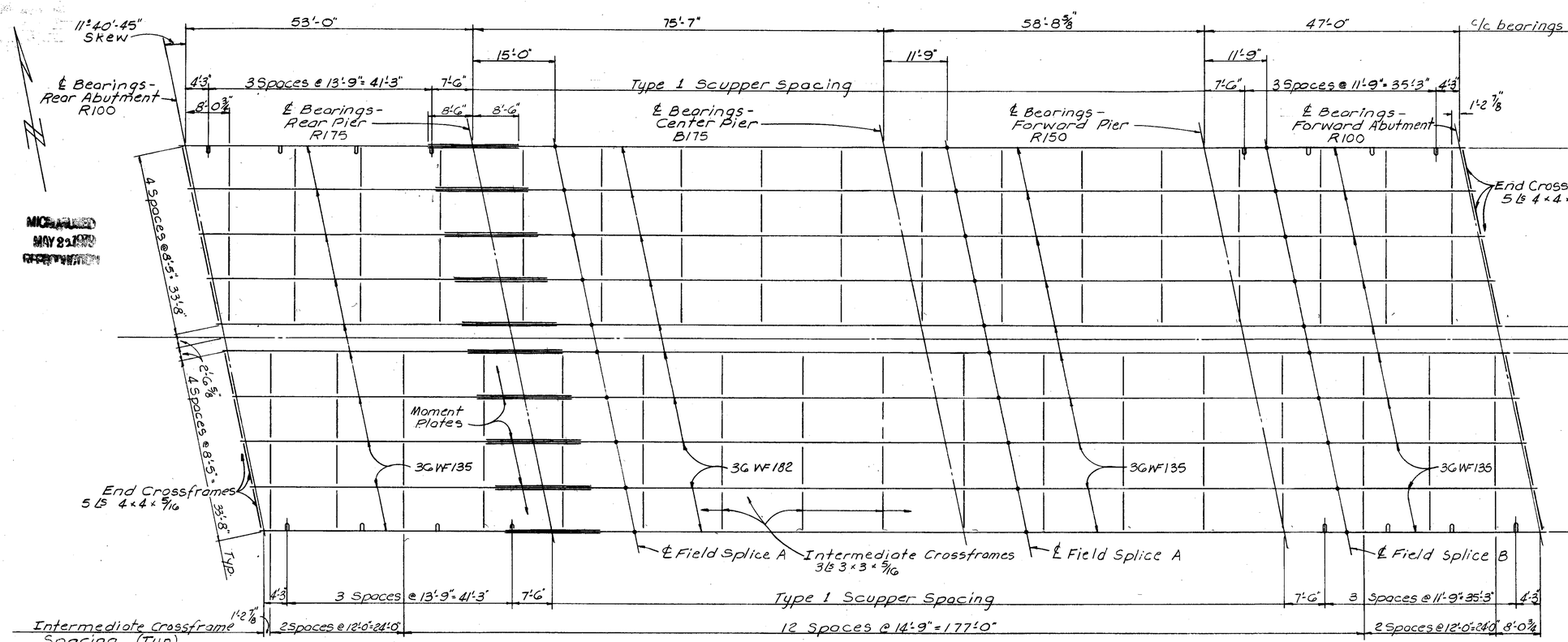
BRIDGE NO. HUR-18-1532
OVER USR 20

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
WTF	WTF		MPB	BFG	10-31-67	

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

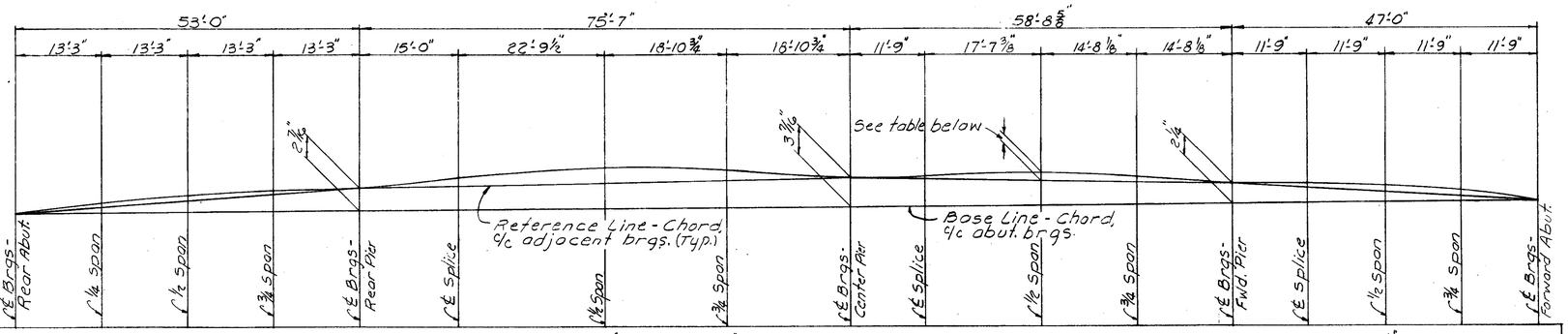
89/95

HUR-18-15.01



Moment Plates: $10\frac{5}{8}" \times \frac{1}{2}" \times 17'-0"$ Top
$13\frac{1}{8}" \times \frac{5}{8}" \times 17'-0"$ Bottom

STEEL FRAMING PLAN



Deflection due to Weight of Steel	0	—	—	—	0	1/16"	3/16"	1/8"	0	—	—	—	0	—	1/16"	—	0
Deflection due to Remaining Dead Load	0	3/16"	3/16"	1/16"	0	5/16"	5/8"	3/8"	0	—	1/8"	1/16"	0	1/8"	3/16"	3/16"	0
Convexity Required for Vertical Curve	0	1/8"	3/16"	1/8"	0	1/4"	3/8"	1/4"	0	1/8"	1/4"	3/16"	0	1/8"	1/8"	1/8"	0
Sum of deflection and convexity equals Required Shop Camber	0	5/16"	3/8"	3/16"	0	5/8"	1 3/16"	3/4"	0	1/8"	3/8"	1/4"	0	1/4"	3/8"	5/16"	0

BEAM CAMBER DIAGRAM

See Standard Drawing SD-1-65 for details of:
- End Crossframes
- End Dams
- Exterior Curb Plates and Moment Plates
- Scuppers
- Bolted Beam Splice Details

See Standard Drawing RB-1-65 for Bearing Devices

See Standard Drawing BR-1-65 Sheet 1 for Type 1 Bridge Railing

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

7/9

SUPERSTRUCTURE DETAILS

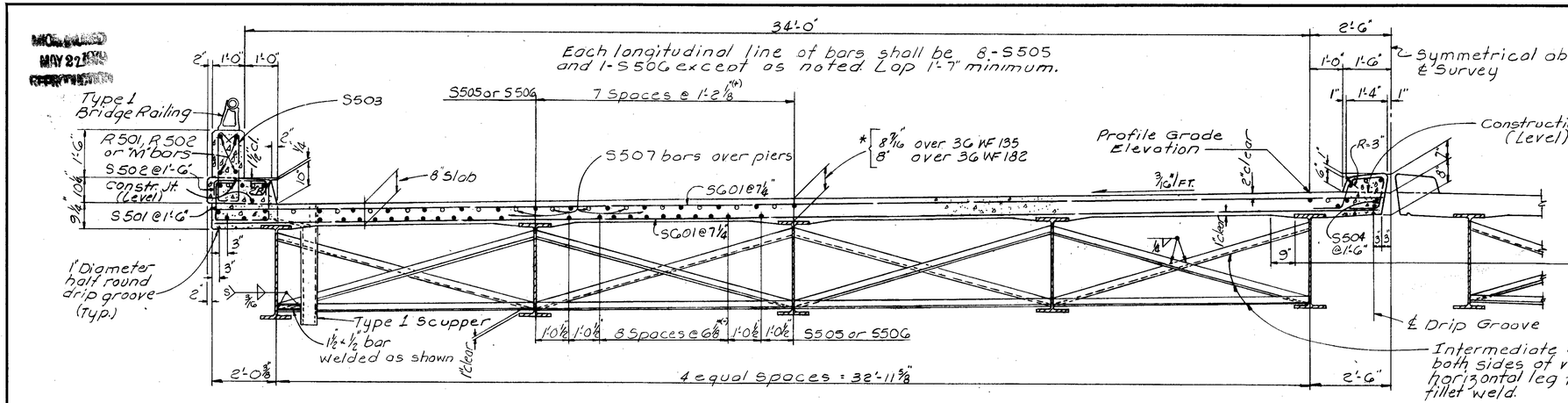
BRIDGE NO. HUR-18-1532 OVER USR 20

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
WTF	WTF		MPB	BFG	10-31-67	

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

90/95

HUR-18-15.01



* These are nominal dimensions. The quantity of deck concrete to be paid for shall be based on these dimensions even though deviation from them may be necessary because the top flange of the beam may not have the exact camber or conformation required to place it parallel to the finished grade.

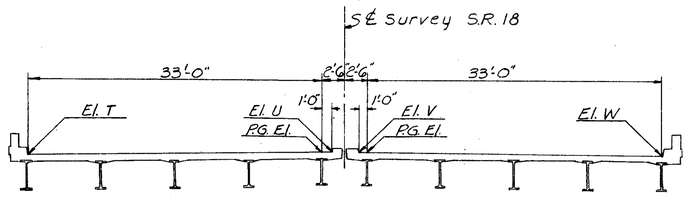
A haunch width of 9" shall be used for computing pay quantity of concrete; however the width may vary between 6" and 12" provided that the slope shall not be more than 3" per ft.

Intermediate crossframe angles 3"x3"x5/16". Weld both sides of vertical leg and top side of horizontal leg to beam with ¼" continuous fillet weld.

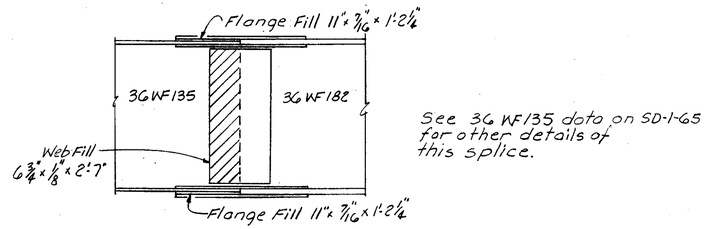
S601 bars shall be placed parallel to substructures. Spacing (7¼") is measured along ℄ Survey.

Slab thickness shown includes 1" for monolithic wearing surface.

HALF TRANSVERSE SECTION



ROADWAY SECTION
(Looking ahead)



See 36 WF 135 data on SD-1-65 for other details of this splice.

BEAM SPLICE A

For details of Beam Splice B and additional details of Splice A see Std. Dwg. SD-1-65, Sh. 3

DECK ELEVATIONS BEFORE PLACING CONCRETE				
*Location	Elev. T	Elev. U	Elev. V	Elev. W
℄ Bearings-Rear Abutment	830.89	831.48	831.48	831.00
¼ Span	831.00	831.58	831.58	831.10
½ Span	831.09	831.67	831.67	831.19
¾ Span	831.17	831.74	831.74	831.25
℄ Bearings-Rear Pier	831.24	831.81	831.81	831.32
℄ Splice	831.34	831.91	831.91	831.41
½ Span	831.46	832.02	832.02	831.52
¾ Span	831.51	832.07	832.07	831.56
℄ Bearings-Center Pier	831.54	832.08	832.08	831.57
℄ Splice	831.56	832.11	832.11	831.58
½ Span	831.59	832.13	832.13	831.61
¾ Span	831.60	832.14	832.14	831.60
℄ Bearings-Forward Pier	831.60	832.13	832.13	831.59
℄ Splice	831.60	832.13	832.13	831.59
½ Span	831.60	832.12	832.12	831.58
¾ Span	831.58	832.10	832.10	831.55
℄ Bearings-Forward Abutment	831.55	832.06	832.06	831.51

* For longitudinal locations, refer to Beam Camber Diagram on Sh. 7/9
* For transverse locations, refer to Roadway Section above.

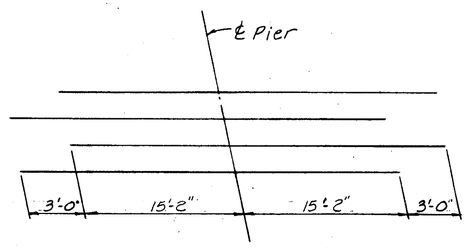


DIAGRAM SHOWING STAGGER OF S507 BARS OVER PIERS

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

8/9

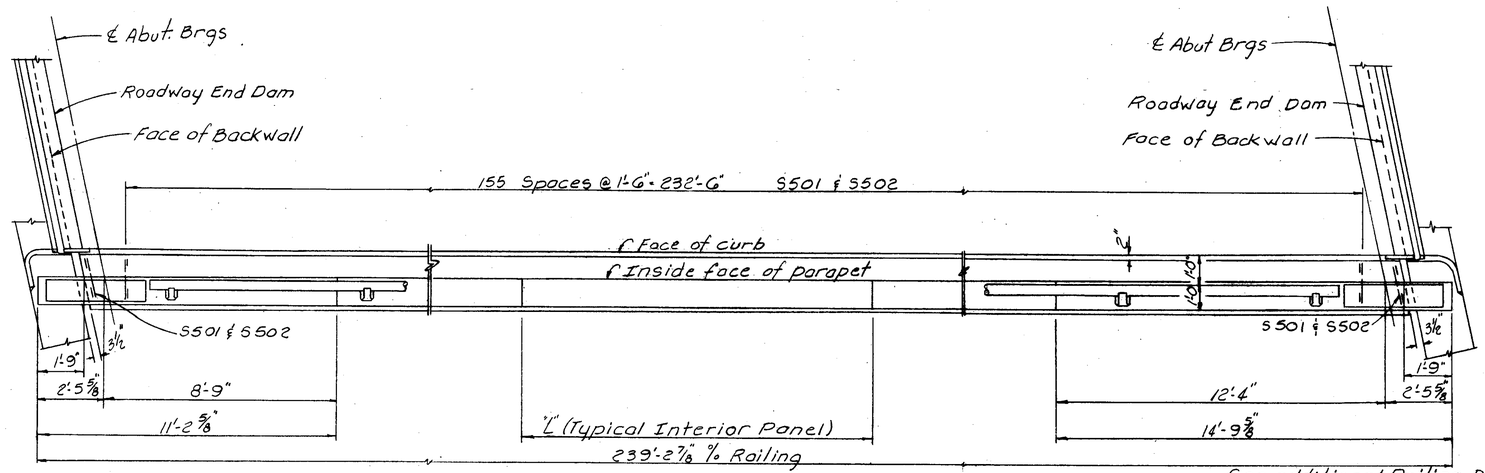
SUPERSTRUCTURE DETAILS
BRIDGE NO. HUR-18-1532 OVER USR 20

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED DATE	REVISED
WTF	WTF		MPB	BFG 10-31-67	

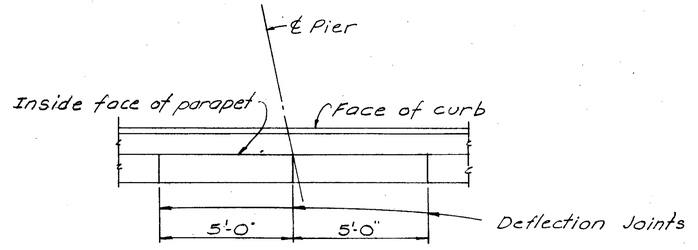
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

91/95

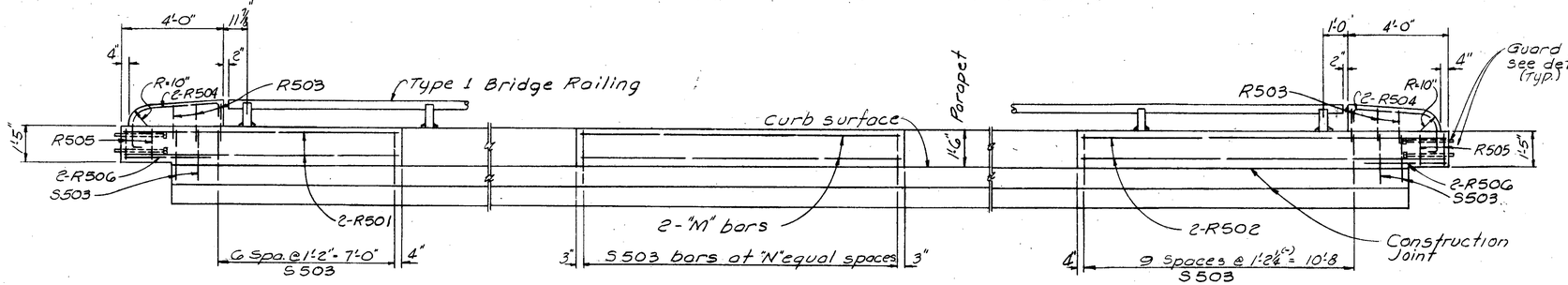
HUR-18-15.01



PART PLAN OF RIGHT PARAPET AND CURB
LEFT PARAPET AND CURB ~ SIMILAR



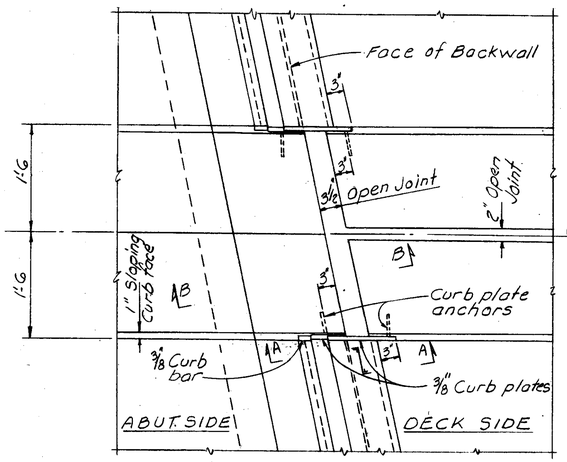
PART PLAN OF
PARAPET AND CURB AT PIER



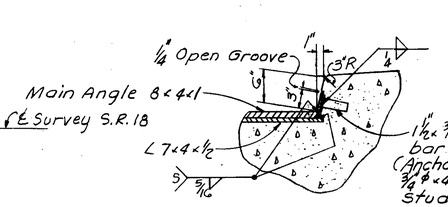
PART ELEVATION OF PARAPET

INTERIOR PANELS			
*PANEL LENGTH "L"	NO. OF PANELS	PANEL REINFORCING "M" bars	PANEL REINFORCING "N" Spaces
5'-0"	12	R507	4
13'-1"	14	R508	11
13'-3"	2	R508	11
12'-2"	6	R509	10
12'-2⅜"	2	R509	10
14'-10"	4	R510	12

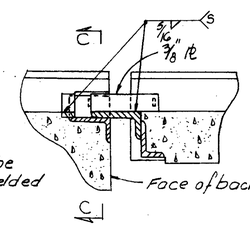
* See Sheet 2/9 for panel locations and Deflection Joint and Railing Post spacings.



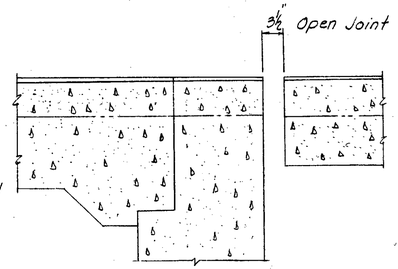
PLAN OF MEDIAN
AT ABUTMENT



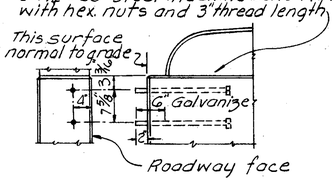
SECTION C-C



SECTION AA



SECTION B-B



END VIEW ELEVATION
GUARD RAIL ANCHOR

GUARD RAIL ANCHOR BOLTS included with Item 517 for payment.

For Roadway End Dam data, furnish sizes required for CF = 2000

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

9/9

SUPERSTRUCTURE DETAILS

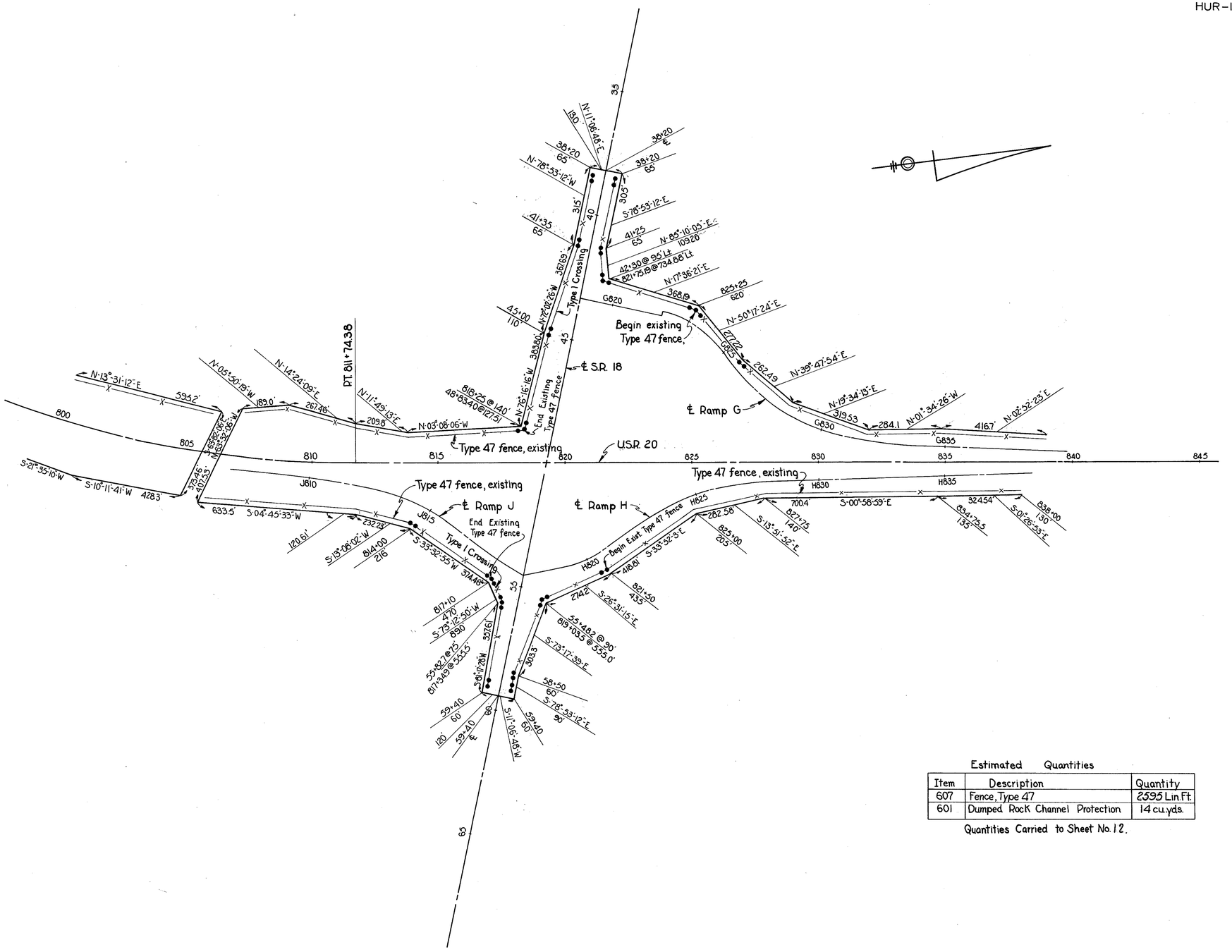
BRIDGE NO. HUR-18-1532
OVER USR 20

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
WTF	WTF		MPB	BFG	10-31-67	

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

92
95

HUR-18-15.01



Estimated Quantities

Item	Description	Quantity
607	Fence, Type 47	2595 Lin. Ft.
601	Dumped Rock Channel Protection	14 cu. yds.

Quantities Carried to Sheet No. 12.

Scale 1"=200'

FENCE PLAN

This Improvement has been declared a LIMITED ACCESS HIGHWAY by action of the DIRECTOR of HIGHWAYS and Recorded in Volume 46 Page 602 of the DIRECTOR'S JOURNAL PURSUANT TO LAW.

CENTER LINE SURVEY PLAT

HUR-20-10.05

HURON COUNTY, OHIO

NORWALK TWP., T4N · R22W · SEC. 1, 2

0 400 800 1200
SCALE IN FEET

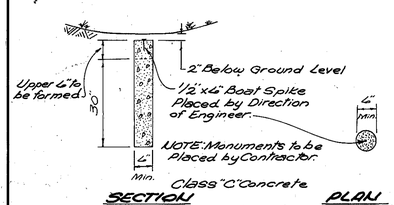
FED. RD.	STATE	PROJECT	
2	OHIO		

93/95

HUR-18-15.01
HURON COUNTY
NORWALK BY-PASS
HUR.-20-10.05
SOLD AS HUR-20-10.51
TO BE USED WITH HUR.-18-15.01

- REFERENCE MONUMENTS
- MONUMENT ASSEMBLIES

DETAIL OF SPECIAL ADJUSTABLE MON. ASSY.



DETAIL OF CENTERLINE REFERENCE MONUMENT

℄ Survey ℄
Monument

TYPICAL
See Stationing Rt

℄ Reference Monument Stationing	
Sta. 744+00	P.O.C. Sta. 803+00
Sta. 752+00	P.T. Sta. 811+74.38
P.C. Sta. 760+34.08	Sta. 821+00
P.O.C. Sta. 770+00	Sta. 830+00
P.O.C. Sta. 779+00	Sta. 840+00
P.O.C. Sta. 787+00	Sta. 850+00
P.O.C. Sta. 795+00	Sta. 857+00
	TOTAL 14 Each

~~SPECIAL~~ STANDARD
MONUMENT ASSEMBLY LOCATION

STATE ROUTE 18	STA. 41+50
" " "	STA. 47+00
" " "	STA. 52+00
" " "	STA. 53+00
U.S. ROUTE 20 ℄	STA. 39+00
" " "	STA. 47+00
" " "	STA. 52+00
" " "	STA. 53+00
TOTAL	8 Each

ÉSURVEY CURVE DATA
NORWALK BY-PASS
P.I. Sta. 790+52.91
Δ = 75°23'28" Lt.
D = 1°28'
R = 3,906.53'
T = 3,018.83'
L = 5,140.30'
E = 1,030.50
P.I. Sta. 790+52.91

Received July 16 1965 at 11:02 A.M.
Recorded July 1965
Book 10 Page 36
Jay Thomas
County Recorder
Marilyn Zapple Dep.
Feb. 1, 92

Signed Donald H. Timmer
DONALD H. TIMMER
Date 6-3-'65 Division Deputy Director

I here by certify that this plat is a true delineation of a survey made for the OHIO DEPARTMENT OF HIGHWAYS by BEISWENGER, HOCH, & ARNOLD

Bryan E. McCoy Date 9-28-64
BRYAN E. McCOY
Reg. Surveyor No. 4936
Sheet 3 of 3

HUR.-20-10.05

NOTE SUPERSEDED BY

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

94/95

HUR.-18-15.01
HURON COUNTY

1/2

NORWALK BY-PASS

HUR-20-10.05
SOLD AS HUR-20-10.51
SCALE: 1"=50'
TO BE USED WITH HUR.-18-15.01

DATE OF PREPARATION FEB 23, 1965		
REV.	DATE	DESCRIPTION
J.R.Y.	8/30/65	Rev. Parcel #41 WL
R.A.S.	8/4/66	Rev. Location on Temp. Run-around
A.E.L.	10/2/66	Add Par. 46-46T1-41-41T
A.E.L.	10/2/66	This Sheet Replaces Original
E.L.H.	2/2/67	REV. PAR. 41-WD — ADDED PAR. 41-WL-1 ELIMIATED PAR. 41-T
E.L.H.	2/2/67	REV. PAR. 46-WD & 46-T-1 & 46-WL

HUR-20-10.05 SHEET 42 OF 47

HURON CO. NORWALK TOWNSHIP T-4N R-22W SEC. 1 LOT 19

RIGHT OF WAY - SR.#18 - STA. 34+00 TO STA. 50+00

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

94/95 — 1/2

HUR-18-15.01
HURON COUNTY

NORWALK BY-PASS

HUR-20-10.05
SOLD AS HUR-20-10.51
SCALE: 1"=50'
TO BE USED WITH HUR-18-15.01

See R/W Sheet 28 of 47
SEE SHEET 27 OF 47
℄ Survey Norwalk By-Pass
FREDERICK C. LINDER & PAUL F. LINDER
46 WL Cont. 14.66 Ac. PRO 0.83 Ac. Total 15.49 Ac.
46 T Cont. 0.14 Ac.
46 WD Cont 0.17 Ac. PRO 0.15 Ac. Total 0.32 Ac.
46 T-1 Cont 0.11 AC.
45 WL
CONCRETE BLK. & COR. METAL GAR.
CONCRETE BLK. & FRAME BARN
BARN
SILO
FR. SHED
FEEDING TROUGH
GATE
CATTLE RAMP
2 STORY BRICK
Septic Tank
PASTURE CLOVER & GRASS
℄ Temporary Runaround
Future Const. Limits
N 39°47'54" E
262.49'
N 50°17'24" E
277.22'
N 11°36'21" E
368.19'
S 83°04'18" E 411.10'
305' S 78°53'12" E
221.72' R/W
L/A
N 85°10'05" E 109.20'
N 00°33'57" W
S 00°33'57" E
78°19'15"
℄ Exist. S.R. #18 (60')
S 78°53'12" E
886.5'
208.5'
1201.5'
Exist. R/W
N 78°53'12" W
195.28' R/W
315' L/A
N 11°05'48" E
N 0°23'12" W
NORWALK CORP. LINE
Norwalk Corp. Line
Lot 20
Lot 19
P.I. Sta. 36+90 25.32' Lt.
P.I. Sta. 36+30 0' Lt.
P.I. Sta. 42+00 60' Lt.
P.I. Sta. 45+00 100' Lt.
42+30 @ 95' Lt.
821+75.19 @ 734.88' Lt.
38+20 LA
41 WD Cont 0.16 Ac. PRO 0.14 Ac. Total 0.30 Ac.
41 WL-1 CONT. 0.25 AC. P.R.O. 0.22 AC. TOTAL 0.47 AC.
41 WL PAULINE B. THORN
41 X
Res.
1 STORY FRAME
CISTERN
TYPE 2 CROSSING
TYPE 47 Fence
Sta 819+26.27 Norwalk By Pass
Sta 50+00 S.R. 18
N 72°02'26" W 100.72'
N 76°16'16" W 383.80'
N 76°58'38" W 300.17'
N 60°32'49" W 232.15'
N 11°06'48" E 92'
818+25 @ 140'
48+83.40 @ 127.51'

REV.	DATE	DESCRIPTION
		DATE OF PREPARATION FEB 23, 1965
J.R.Y.	8/30/65	Rev. Parcel #41 WL
R.A.S.	8/4/66	Rev. Location on Temp. Run-around
A.E.L.	10/2/66	Add Par. 46-46T1-41-41T
A.E.L.	10/2/66	This Sheet Replaces Original
E.L.H.	2/2/67	REV. PAR. 41-WD — ADDED PAR. 41-WL-1 ELIMIATED PAR. 41-T
E.L.H.	2/2/67	REV. PAR. 46-WD & 46-T-1 & 46-WL

HUR-20-10.05 SHEET 42 OF 47

HURON CO. NORWALK TOWNSHIP T-4N R-22W SEC. 1 LOT 19

RIGHT OF WAY - SR. #18 - STA. 34+00 TO STA. 50+00

NOTE SUPERSEDED BY

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

95/95

HUR.-18-15.01
HURON COUNTY

2/2

NORWALK BY-PASS

HUR.-20-10.05
SOLD AS HUR-20-10.51
SCALE: 1" = 50'
TO BE USED WITH HUR.-18-15.01

See R/W Sheet 27 of 47
S 33°52'35" E
418.81'
Future Const. Limits
L/A
435'
821+50
(L.L. 11.36 AC.)
LOT 19
LOT 18
FRED W. CARVEY
45 WL
Cont. 7.92 Ac.
PRO. 0.38 Ac.
Total 8.30 Ac.
45 T
Cont. 115 S.F.
S 26°31'15" E
274.2'
110'
55+32.78
S 78°53'-12" E
11.17'
110'
55+43.95
LOUISE C. LINDER
44 WL
Cont. 0.37 Ac.
PRO. 0.26 Ac.
Total 0.63 Ac.
44 T
Cont. 0.28 Ac (12,115 SF)
40'
S 78°53'-12" E
Sta. 50+00 S.R. 18:
Sta. 819+26.27 Norwalk By Pass
100' Lt.
P.I. Sta. 53+00
55+48.2 @ 90'
819+03.5 @ 555.0'
44 T
S 76°39'01" E
256.25'
303.3'
S 73°17'39" E
S 59°35'48" E 105.9'
60'
58+50
27.82' Lt.
P.I. Sta. 59+80
S 66°32'51" E
163.78'
12" C.M.P.
30'
61+00
Sta. 50+00
59+21.5 @ ℄
819+39.6 @ 21.0'
GRAVEL DR.
SEPTIC TANK
CISTERN
MAIL BOX
R/W MON.
78°10'
Side Inlet
CONC. CULV.
60+20
30' S 11°06'48" W
12" PIPE
50
51
52
53
54
55
56
57
58
59
60
61
62
63
68
69
70
18.57'
171.7'
S 78°53'12" E
545.5'
1311.5'
373'
℄ Exist. S.R. #18 (60')
80'
10" V.P. TILE
18" V.S.P.
12" B.C.P.
C.B.
DRIVE
Gas Station
GREASE RACK
78°19'15"
DUG WELL
SIGN
43 WL
51+81.5 @ ℄
818+93.6 @ 165.1'
55+67.0 @ ℄
818+11.5 @ 555.3'
357.61'
S 81°17'28" E
43
30'
60+20
85.2'
59+94.45
0' Lt.
P.I. Sta. 60+40
60'
59+40
68+73
Conc. Mon. Fd.
CULTIVATED FIELD
42.55'
S 73°12'50" W
89.0'
67.4'
N 78°53'12" W
39-A X
39-A T
R/W
310.27
N 81°17'28" W
Chord bearing
S 68°31'54" W 64.62'
120'
59+40
FRAME BARN
GAR.
TOWNSHIP RD. 152
WARREN HARRIS
MELVIN HARRIS &
LLOYD HARRIS
42 WL
Cont. 0.90 Ac.
PRO. 0.10 Ac.
Total 1.00 Ac.
DONALD J. HETTEL &
MARY M. HETTEL
39-A WL
Cont. 9.81 Ac.
PRO. 0.28 Ac.
Total 10.09 Ac.
TYPE 2 Crossing
S 33°32'55" W
374.43'
470'
817+10
55+91.4
116.6'
195'
55+76
133.01
56+30
190'
56+06.8
55+82.7 @ 75'
817+34.9 @ 555.5'
VIOLET T. SUHR
43 WL
Cont. 0.43 Ac.
PRO. 0.26 Ac.
Total 0.69 Ac.
43
Cont. 0.59 Ac.
PRO. 0.06 Ac.
Total 0.65 Ac.
Match Line
Structure No. HUR-20-1540
Stream
N 85°00'35" W
137.8'
816+06.9
20.0'
815+93.6
157.2'
39-A X
Cont. 0.04 Ac.
39-A T
Cont. 0.11 Ac.
Future Const. Limits
TYPE 47 Fence
814+00
260'
S 13°08'02" W
232.23'
41 WL
℄ Survey Norwalk By Pass
See R/W Sheet 27 of 47
* Entire sheet superseded by
HUR-20-859 (1987)

DATE OF PREPARATION FEB 23, 1965

REV	DATE	DESCRIPTION
JEC.	5-26-65	Added Par. 43 & 39A-T-1
RAS.	8-5-66	Rev. Location of ℄ Temp Run-Around
RAS.	8-5-66	Added Par. 44 T & 45 T
AEL.	8-3-66	Added Par 44 T. This Sheet Replaces Original.

HURON CO. NORWALK TOWNSHIP T-4N-R-22W-SECTION 1 LOT 18 & 19

RIGHT OF WAY - S.R.#18 - STA. 50+00 TO STA. 63+00

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

95/95

2/2

HUR.-18-15.01
HURON COUNTY

NORWALK BY-PASS

HUR.-20-10.05
SOLD AS HUR-20-10.51
SCALE: 1" = 50'
TO BE USED WITH HUR.-18-15.01

DATE OF PREPARATION FEB 23, 1965		
REV.	DATE	DESCRIPTION
J.E.C.	5-26-65	Added Par. 43 & 39A-T-1
R.A.S.	8-5-66	Rev. Location of £ Temp Run-Around
R.A.S.	8-5-66	Added Par. 44 T & 45 T
A.E.L.	8-3-66	Added Par 44 T. This Sheet Replaces Original.

HUR.-20-10.05 SHEET 43 OF 47

HURON CO. NORWALK TOWNSHIP T-4N-R-22W-SECTION 1 LOT 18 & 19

RIGHT OF WAY - S.R. #18 - STA. 50+00 TO STA. 63+00

TE-95
400-8-64

GENERAL INFORMATION

INTRODUCTION

THE PROJECT CONSISTS OF THE CONSTRUCTION OF RAMPS AND THE GRADE SEPARATION FOR THE SR 18-USR 20 INTERCHANGE, EAST OF NORWALK.

PROPOSED GRADES INDICATE THE FOLLOWING MAXIMUM PROPOSED CUTS AND FILLS:

	CUTS (MAX.)	FILL EMBANKMENTS (MAX.)
SR 18	-	20'
RAMP F	6'	24'
RAMP G	7'	12'
RAMP H	6'	11'
RAMP J	-	38'

GEOLOGY OF THE PROJECT

THE PROJECT IS LOCATED ON A FAIRLY FLAT PORTION OF THE GLACIATED LAKE PLAIN, IN AN AREA WHERE MODERATELY DEEP DRIFT OVERLIES SHALE BEDROCK, OF MISSISSIPPIAN AGE.

EXPLORATION

BORINGS WERE MADE BY MEANS OF TRUCK-MOUNTED MECHANICAL SOIL AUGER ON MAY 4, 1967. INCLUDED IN THIS REPORT ARE SEVERAL LOGS OF BORINGS MADE PREVIOUSLY FOR PROJECT HUR-20-10.57.

INVESTIGATIONAL FINDINGS

MATERIALS OCCURRING IMMEDIATELY BELOW PROPOSED GRADES AND IN THE EMBANKMENT FOUNDATIONS CONSIST PREDOMINANTLY OF SANDY SILTS (A-4a) WITH SOME SILT CLAYS (A-6a), HAVING MOISTURE CONTENTS GENERALLY IN THE LOWER PORTIONS OF, OR BELOW THE PLASTIC RANGE.

FROST SUSCEPTIBLE SILT (A-4b) WAS ENCOUNTERED WITHIN THREE FEET BELOW PROPOSED GRADE AT RAMP F STATION 8+10, 43 FEET LEFT, AND AT RAMP H STATION 5+50.

WET MATERIALS WERE ENCOUNTERED AT SR 18 STATIONS 41+00 AND 46+00, RAMP G STATION 10+00, RAMP H STATION 2+00, AND AT RAMP J STATION 8+50.

LEGEND FOR PROJECT AVERAGE RESULTS OF TESTS— 38 SAMPLES TESTED

DESCRIPTION	H.R.B. CLASS.	OHIO CLASS	% AGG.	% C. SAND	% F. SAND	% SILT	% CLAY	LIQUID LIMIT	PLASTICITY INDEX	WATER CONTENT	SAMPLES TESTED
GRAVEL WITH SAND	A-1-b(0)	A-1-b	36	43	4	-	17 -	NP	NP	14	1
STONE FRAGMENTS WITH SAND AND SILT	A-2-4(0)	A-2-4	36	11	22	16	15	25	8	17	2
SANDY SILT	A-4(3)	A-4a	27	7	18	28	20	23	5	15	24
SILT	A-4(8)	A-4b	1	1	6	60	32	27	4	23	5
SILT AND CLAY	A-6(6)	A-6a	15	6	14	33	32	29	11	19	4
SILTY CLAY	A-6(7)	A-6b	20	10	14	25	31	36	17	18	2
BOULDERY ZONE											-

VISUAL CLASSIFICATION

TOPSOIL=X'=APPROXIMATE DEPTH.

AUGER BORING-PLAN VIEW.

AUGER BORING PLOTTED TO VERTICAL SCALE ONLY.

WATER CONTENT NEARLY EQUAL TO OR GREATER THAN LIQUID LIMIT.

INDICATES A NON-PLASTIC MATERIAL WITH A HIGH WATER CONTENT.

FREE WATER.

NOTE: FIGURES BESIDE BORINGS INDICATE WATER CONTENT IN PERCENT.E.G. 15

SOIL PROFILE

1/7

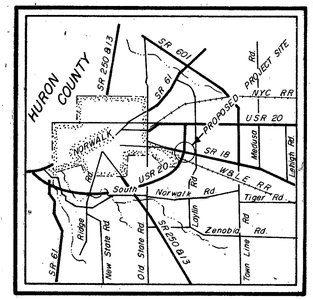
HURON COUNTY

HUR-18-15.01

OHIO STATE HIGHWAY TESTING LABORATORY
1620 W. BROAD ST. COLUMBUS 23, OHIO

1/4

NOTE: INFORMATION SHOWN BY THIS SUBGRADE PROFILE WAS OBTAINED SOLELY FOR USE IN ESTABLISHING DESIGN CONTROLS FOR THE PROJECT. THE STATE OF OHIO DOES NOT GUARANTEE THE ACCURACY OF THIS DATA AND IT IS NOT TO BE CONSTRUED AS A PART OF THE PLANS GOVERNING CONSTRUCTION OF THE PROJECT.



LOCATION MAP

Drilling - Auger F.J.R, T.R.S. 5/4/67
Drafting - A.F. 5/ /67

SUMMARY OF SOIL TEST DATA

NOTE: NP SHOWN IN LIQUID LIMIT AND PLASTICITY INDEX COLUMNS INDICATES THAT THE MATERIAL IS NON-PLASTIC.
*DENOTES SAMPLE TAKEN AT OR NEAR GRADE.

STATION & OFFSET		DEPTH FROM	TO	% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	% W.C.	SHTL CLASS.
SR 18 INTERCHANGE												
SR 18												
41+00	15'Lt	0.0	5.0	32	5	16	26	21	28	11	22	A-6a
		5.0	10.0	26	10	16	25	23	23	7	24	A-4a
46+00	15'Rt	0.0	5.0	28	7	17	26	22	26	7	14	A-4a
		5.0	10.0	38	4	16	20	22	26	9	21	A-4a
		10.0	15.0	32	12	24	14	18	24	8	23	A-2-4
50+00	12'Lt	0.0	4.0	42	4	11	24	19	23	3	15	A-4a
		4.0	9.8	17	6	21	30	26	21	4	13	A-4a
54+00	15'Rt	0.0	5.0	36	8	13	23	20	26	6	15	A-4a
		5.0	9.0	35	8	15	23	19	24	6	17	A-4a
		9.0	12.5	37	7	12	25	19	20	5	11	A-4a
59+00	15'Rt	0.0	4.0	25	5	17	28	25	24	7	16	A-4a*
		4.0	10.0	50	5	9	16	20	NP	NP	18	A-4a
		10.0	14.5	22	5	13	32	28	19	4	11	A-4a
RAMP F												
5+00	BL	0.0	6.0	33	5	24	22	16	20	3	15	A-4a
		6.0	12.0	24	5	21	37	13	NP	NP	15	A-4a
RAMP G												
4+00	BL	0.6	5.0	6	17	39	20	18	20	1	17	A-4a*
		5.0	8.0	15	8	19	30	28	33	16	15	A-6b*
		8.0	14.0	27	6	12	40	15	22	6	12	A-4a
7+00	BL	0.0	6.0	6	5	15	36	38	27	11	16	A-6a*
		6.0	12.0	39	10	19	19	13	26	8	11	A-2-4*
		12.0	16.0	20	4	16	45	15	21	1	15	A-4a
10+00	BL	0.0	6.0	33	4	21	25	17	NP	NP	19	A-4a*
		6.0	8.5	7	2	6	71	14	NP	NP	25	A-4b
		8.5	12.0	32	12	16	24	16	19	2	9	A-4a
RAMP H												
2+00	BL	0.5	5.0	0	1	7	50	42	25	7	23	A-4b
		5.0	10.0	13	7	23	35	22	25	5	16	A-4a
5+50	BL	0.0	5.0	0	2	11	54	33	29	6	20	A-4b*
		5.0	7.0	0	1	5	64	30	30	6	23	A-4b
		7.0	10.0	28	4	21	32	15	NP	NP-	14	A-4a
8+00	BL	0.5	5.0	0	6	35	31	28	26	9	17	A-4a*
		5.0	10.0	16	5	18	34	27	27	9	17	A-4a*
		10.0	12.0	44	6	12	23	18	22	7	10	A-4a
RAMP J												
4+30	BL	0.0	6.0	23	4	20	29	24	24	7	15	A-4a
		6.0	9.0	24	11	10	21	34	39	18	21	A-6b
		9.0	11.0	22	10	11	25	32	28	11	13	A-6a
8+50	BL	0.5	4.0	0	2	16	46	36	32	11	24	A-6a
		4.0	9.0	0	0	0	62	38	25	3	25	A-4b
		9.0	13.5	36	43	4	-	17 -	NP	NP	14	A-1-b

SOIL PROFILE

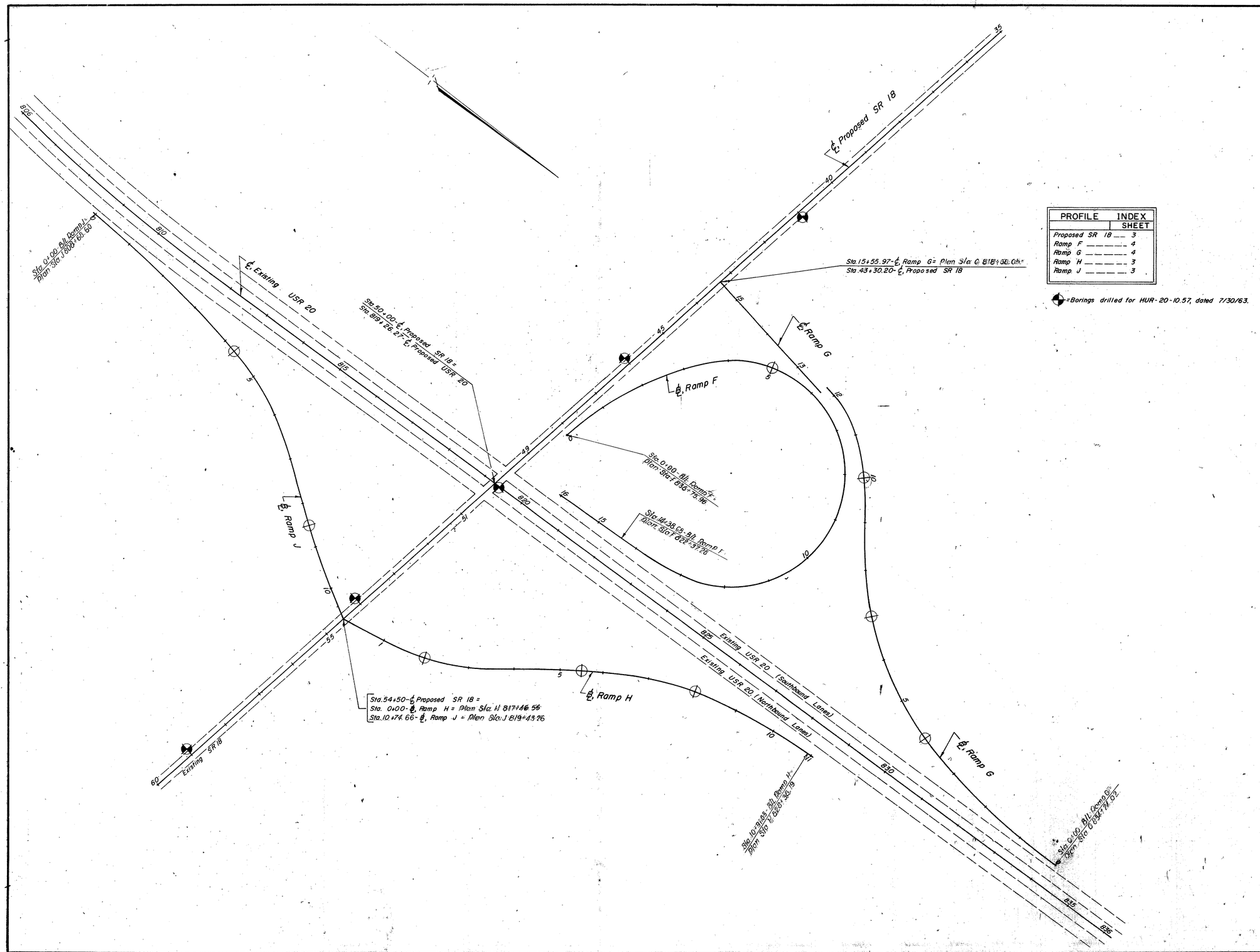
HURON COUNTY

HUR-18-15.01

OHIO STATE HIGHWAY TESTING LABORATORY
1620 W. BROAD ST. COLUMBUS 23, OHIO

2/7

2/4



PROFILE INDEX	SHEET
Proposed SR 18	3
Ramp F	4
Ramp G	4
Ramp H	3
Ramp J	3

⊕ = Borings drilled for HUR-20-10.57, dated 7/30/63.

FE-96
2500-8-64

SOIL PROFILE

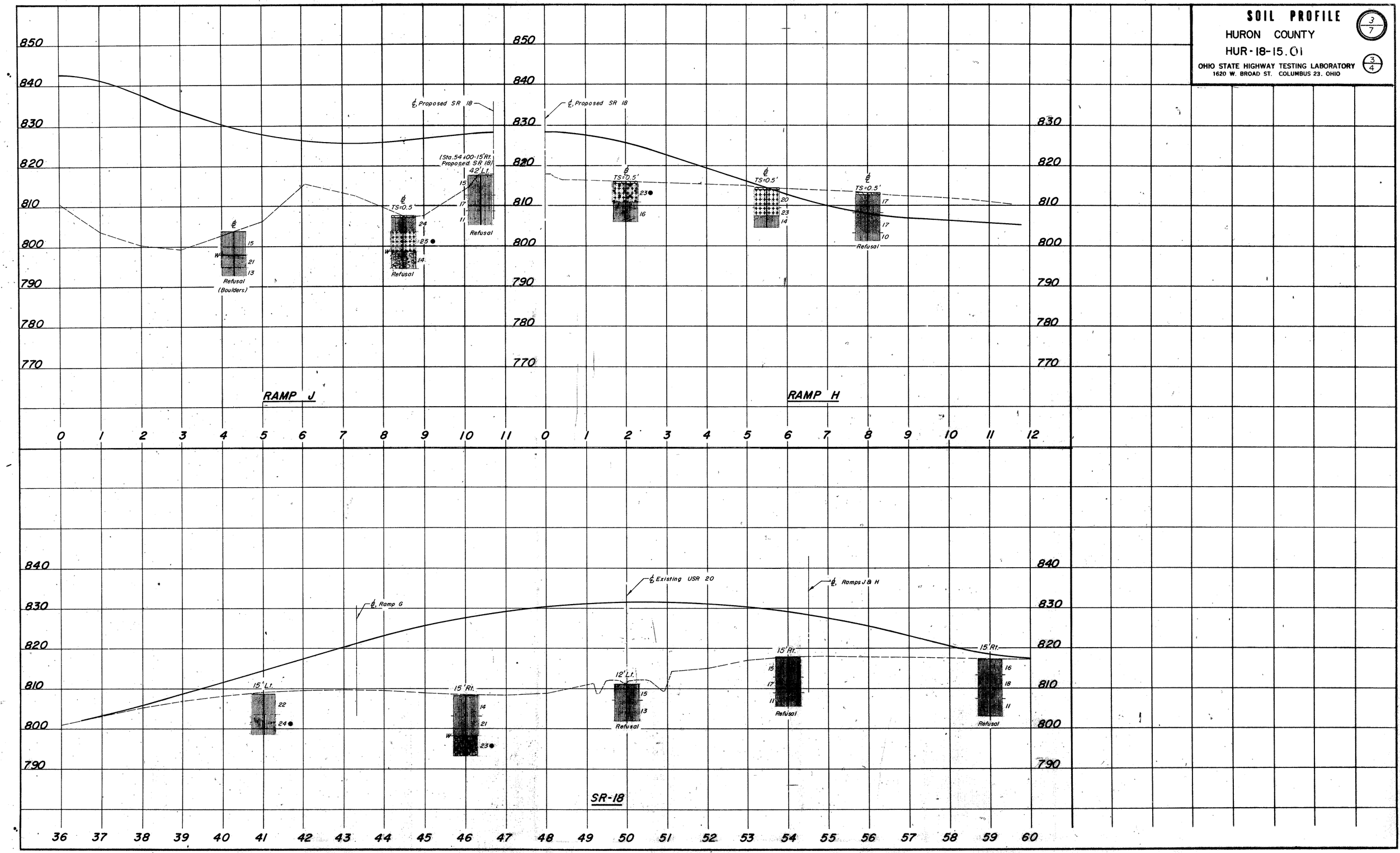
HURON COUNTY

HUR-18-15.01

OHIO STATE HIGHWAY TESTING LABORATORY
1620 W. BROAD ST. COLUMBUS 23, OHIO

3/7

3/4



TE-96
2200-8-64

SOIL PROFILE

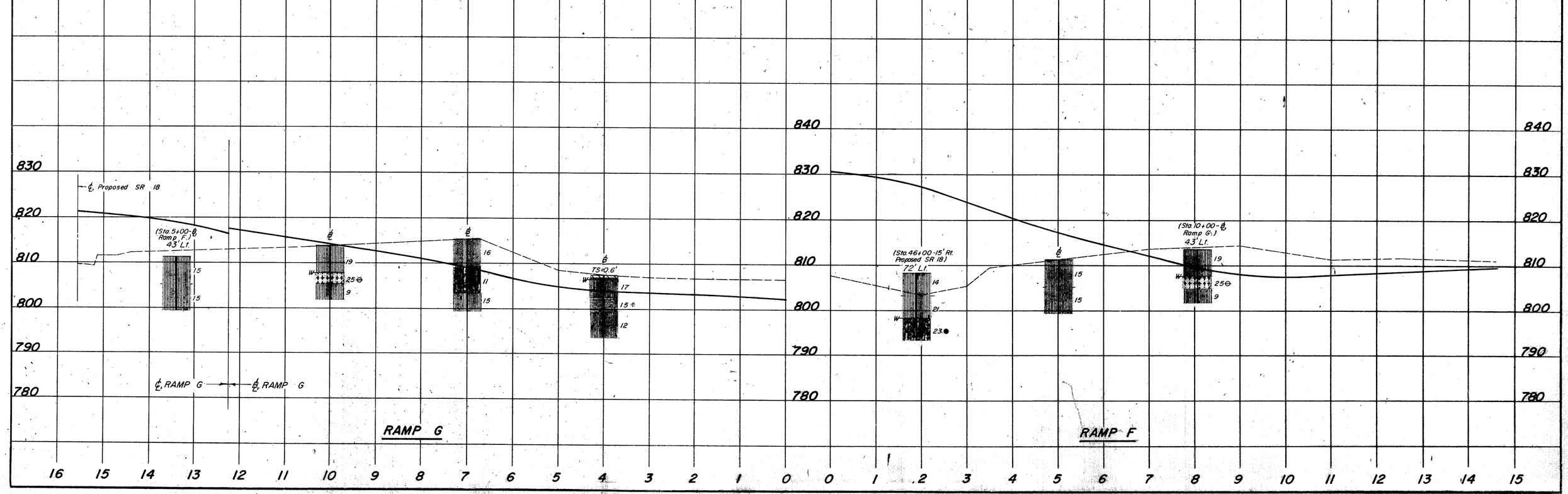
HURON COUNTY

HUR-18-15.01

OHIO STATE HIGHWAY TESTING LABORATORY
1620 W. BROAD ST. COLUMBUS 23, OHIO

4/7

4/4



HURON COUNTY
HUR-18-15.01

GEOLOGY OF THE SITE
THE STRUCTURE SITE IS LOCATED ON THE GLACIATED RELATIVELY FLAT-LYING LAKE PLAIN REGION, IN AN AREA WHERE MODERATELY DEEP GLACIAL-DERIVED SOILS OVERLIE SHALE BEDROCK, OF MISSISSIPPIAN AGE.

EXPLORATION
THE EXPLORATION CONSISTED OF TWO DRIVE SAMPLE-CORE BORINGS, MADE BETWEEN MAY 18 AND 24, 1967, AND FIVE DRIVE ROD PENETRATION TESTS, MADE ON MAY 17, 1967.

INVESTIGATIONAL FINDINGS
BORINGS DISCLOSED THAT RELATIVELY FLAT-LYING BEDROCK SURFACE, ENCOUNTERED AT 25-FOOT DEPTH, ELEVATIONS 788 AND 786 FEET, IS OVERLAIN BY UNSTRATIFIED, LOOSE AND VERY DENSE GRAVELS, SANDS, AND SILTS AND SOME BOULDERS. THE BORINGS WERE TERMINATED AT 40-FOOT DEPTH, ELEVATIONS 773 AND 771 FEET, 14 AND 15 FEET BELOW BEDROCK SURFACE.

ROD SOUNDINGS MET GRADUAL INCREASE IN PENETRATION RESISTANCE WITH INCREASE IN DEPTH AND WERE TERMINATED UPON ENCOUNTER WITH REFUSAL TO PENETRATION AT 11 TO 19-FOOT DEPTHS, ELEVATIONS 801 AND 791 FEET, CONSIDERED TO BE IN VERY DENSE GRAVELS, SILTS, AND BOULDERS, AS REVEALED BY THE BORINGS.

NO FREE WATER WAS OBSERVED IN ANY OF THE ROD SOUNDING HOLES.

LEGEND

- Auger Boring Location - Plan View.
- Press and / or Drive Sample and / or Core Boring Location - Plan View.
- Drive Rod Penetration Resistance Sounding Location - Plan View.
- Capped Pile
- Footing
- Footing on Pile
- TR — Top of Rock
- Horizontal Bar on Boring Log Indicates the Depth the Sample Was Taken.
- X/Y — Figures Beside the Boring Log in Profile Indicate the Number of Blows for Standard Penetration Test. X = Number of Blows for First 6 inches. Y = Number of Blows for Second 6 inches.
- Drive Rod Penetration Resistance Sounding Log - Profile
- Casing
- Resistance "R" < 10,000 lbs.
- Resistance "R" > 10,000 lbs.
- Z — Indicates Final Measurement of Penetration, in Inches.
- W — Indicates Free Water Elevation.
- Indicates Static Water Elevation.

SYMBOLS OF ROCK TYPES

- Coal
- Weathered Indurated Clay
- Indurated Clay
- Weathered Shale
- Shale
- Boulders
- Weathered Sandstone
- Sandstone
- Leached Dolomite
- Dolomite
- Leached Limestone
- Limestone

GENERAL INFORMATION

Drive Rod Penetration Sounding Tests

Drive rod penetration resistance tests constitute driving a 1.315-inch diameter steel rod, with a 45° cone point, into the ground, using a 122-pound drop-hammer with a free fall of five feet. At one or two-foot depth intervals, a measurement is taken to determine the amount of penetration achieved in three hammer drops. This reading is converted to an empirical value for capacity "R", in thousands of pounds (which is a measure of both the point resistance and frictional resistance on the rod), by using charts prepared by the Ohio Department of Highways, Bureau of Bridges, on the basis of correlation study of rod penetration with past performance of pile driving. For interpretation, a graph is prepared by plotting the value "R" against the depth at which the reading was taken, and connecting the plotted points. The curve so obtained reflects the density of subsurface materials in a manner that can be readily compared with data from similar tests at other locations on the structure site. From this comparison, the overall uniformity of subsurface condition may be evaluated.

Drive Sample Borings - Drive-Press Sample Borings

Drive sample borings are made by means of a rotary-type drill rig, employing a 2" O.D., 1-3/8" I.D. sampler, at 2-1/2 and / or 5-foot depth intervals, driven by means of a 140 - pound drop-hammer with a free fall of 30 inches. The number of blows required to drive the sampler 12 inches is considered the standard penetration test.

Drive-press sample borings are made by means of a rotary-type drill rig, employing a 2" O.D., 1-3/8" I.D. drive sampler, and 3" O.D. thin-wall press sampler. The press sampler is advanced by continuous uniform pressure, applied by the drill rig.

The boring log sheets show a graphic plot of the information obtained, including depth and elevation of the sample, number of blows for the standard penetration tests in two 6-inch increments, depth of press samples, field sample number, sample description - based on laboratory tests and the Casagrande AC classification system - and gradation, plasticity, and moisture content determinations. Results of strength and consolidation testing, if performed, appear on separate enclosures.

At depths where materials are bouldery or gravelly to the extent that the sampler can not be driven, a wash sample is procured for visual classification, in order to determine the general character of the material. These samples are not considered sufficiently representative to warrant laboratory testing.

Particle Size Definitions

Boulders	Cobbles	Gravel	Coarse Sand	Fine Sand	Silt	Clay
	8"	3"	2.0mm (No. 10 sieve)	0.42mm (No. 40 sieve)	0.074mm (No. 200 sieve)	0.005mm

LOG OF BORING

Date Started 5-23-67 — Sampler Type SS — Dia. 1 3/8" — Water Elev. —
Date Completed 5-24-67 — Casing: Length 24' — Dia. 3 1/2"
Boring No. B-3 — Station & Offset 49+14, 26' Lt. (Rear Pier) — Surface Elev. 811.0'

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	% Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class.
811.0	0														
	2														
	4														
806.0	6	2/2			Brown Silty Gravelly Sand	1	20	32	15	21	12	28	6	18	A-2-4
803.5	8	8/9			Brown Silty Gravelly Sand	2	22	23	21	26	-	NP	NP	17	A-2-4
801.0	10	10/11			Brown Silty Sandy Gravel	3	54	12	10	14	10	-	-	14	-
	12														
	14														
796.0	16	19/22			Gray Sandy Gravelly Silt	4	38	11	10	28	13	23	2	13	A-4a
	18														
791.0	20														
	22	50/*			Gray Silty Sandy Gravel	5	41	14	14	19	12	21	2	9	A-2-4
787.6	24				TOP OF WEATHERED ROCK										
786.6		50* (0.4)			Gray Weathered Shale	6	25	3	4	42	26	29	8	7	Visual
	26				TOP OF ROCK										
	28		2.5	2.5											
	30														
	32		2.5	2.5	Shale, gray, and mottled reddish-brown and gray, with thick clay seams, fissile in part, extremely jointed and very badly broken. Core Loss 36%.										
	34														
	36														
	38		4.4	0.6											
771.0	40				BOTTOM OF BORING										

*Refusal

LOG OF BORING

Date Started 5-18-67 — Sampler Type SS — Dia. 1 3/8" — Water Elev. —
Date Completed 5-18-67 — Casing: Length 23' — Dia. 3 1/2"
Boring No. B-8 — Station & Offset 50+65, 28' Rt. (Forward Pier) — Surface Elev. 812.6'

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	% Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class.
812.6	0														
	2														
	4														
807.6	6	9/9			Brown Sandy Silt	1	9	6	27	30	28	23	6	15	A-4a
805.1	8	15/18			Brown Sandy Gravelly Silt	2	38	5	17	25	15	22	5	18	A-4a
802.6	10	24/26			Brown Sandy Silt	3	14	19	23	25	19	22	4	14	A-4a
800.1	12				No Sample Recovered - Boulders(Driller's Des.)		V		I		S		U	A	L
797.6	14	50/*			Gray Silty Sandy Gravel	4	49	14	10	19	8	NP	NP	13	-
795.1	16				No Sample Recovered - Boulders(Driller's Des.)		V		I		S		U	A	L
792.6	18	21/29			Gray Silty Sand and Stone Fragments	5	52	10	12	18	8	NP	NP	11	A-2-4
787.6	20														
	22														
	24	50* (0.7)			TOP OF ROCK										
	26		2.9	2.1											
	28														
	30														
	32		3.1	1.9	Shale, mottled red and gray, soft and crumbly and very badly broken in top 8.0', firm and broken in remainder, fissile, carbonaceous in part, with clay seams. Core Loss 23%.										
	34														
	36														
	38		5.0	0.0											
772.6	40				BOTTOM OF BORING										

*Refusal

NOTE: Information shown by this subsurface investigation was obtained solely for the use in establishing design controls for the project. The State of Ohio does not guarantee the accuracy of this data and it is not to be construed as a part of the plans governing construction of the project.

OHIO DEPARTMENT OF HIGHWAYS
TESTING LABORATORY
1620 WEST BROAD STREET, COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. HUR-18-1532
OVER USR 20
SEC. HUR-18-15.01

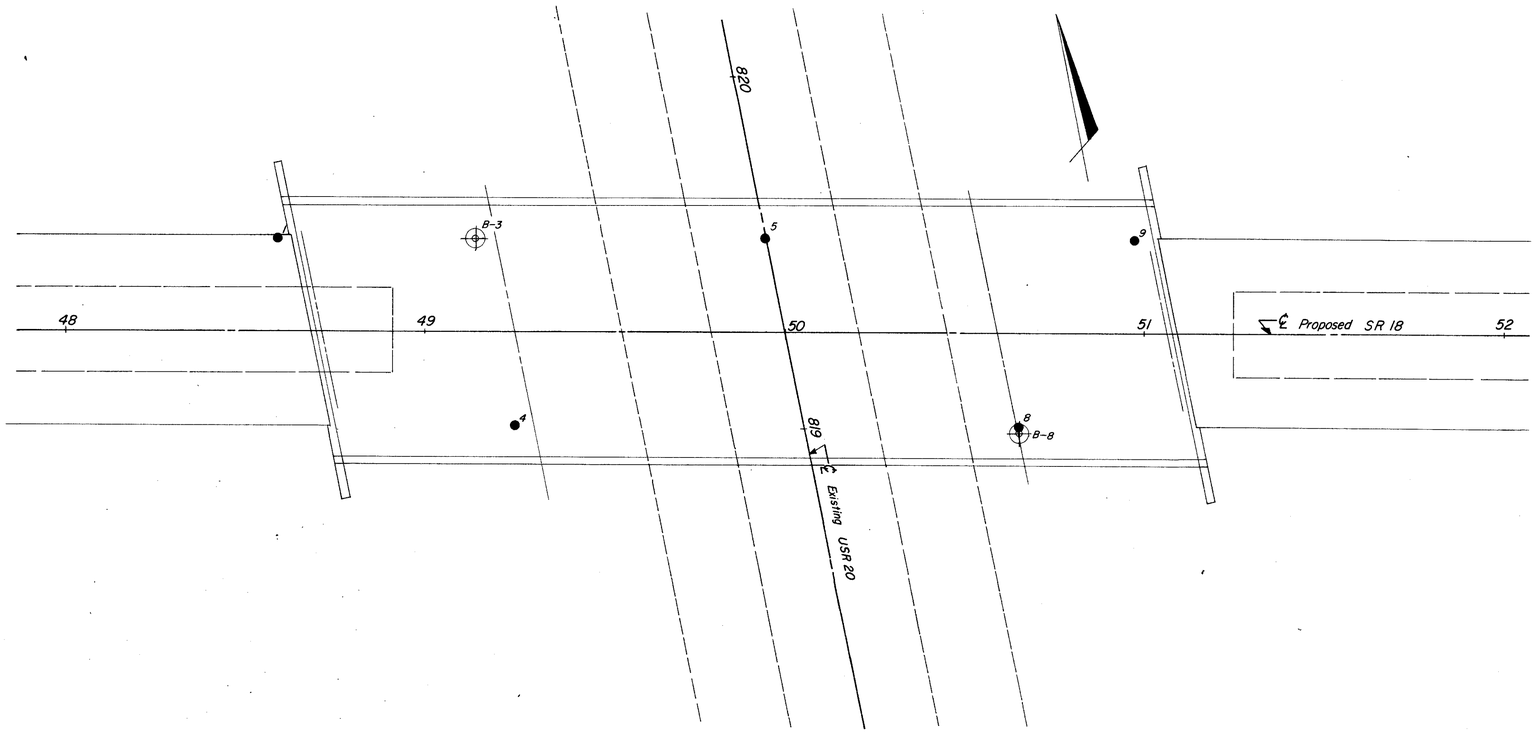
CHECKED BY	REVIEWED BY	DATE
L.N.L.	R.D.R.	6/21/67

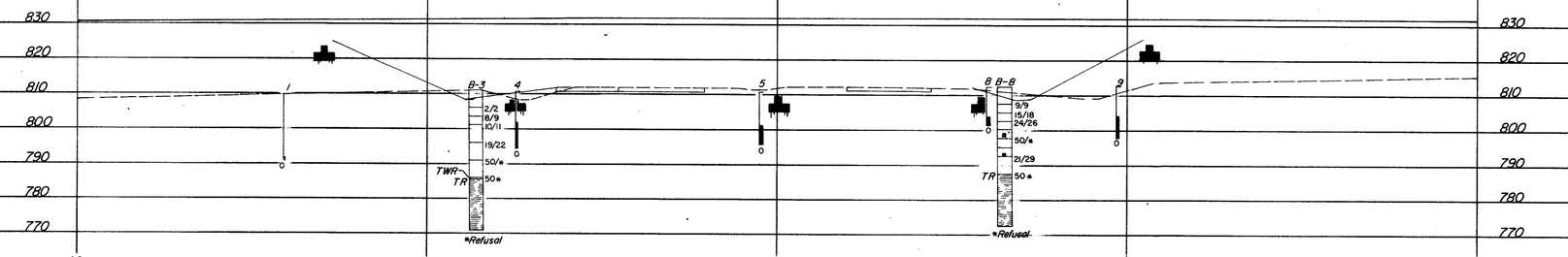
TE - 119
00 - 4 - 66

HUR-18-15.01

6/7

2/3





SCALE: 1" = 20'

OHIO DEPARTMENT OF HIGHWAYS
TESTING LABORATORY
1620 WEST BROAD STREET, COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. HUR-18-1532
OVER USR 20
SEC. HUR-18-15.01

PLAN AND PROFILE

DRAWN BY	CHECKED BY	REVIEWED BY	DATE
J.E.C.	L.N.L.	R.D.R	6/21/67

Test Location No. _____
Station & Offset _____
Surface Elev. _____ Water Elev. _____
Piling _____
Hammer _____
Formula _____
Reference _____
Rod Condition _____

817 813 809 805 801 797 793 789

10 20 30 40 50 60 70 80 90 100
Capacity "R" in Thousands of Pounds

Test Location No. _____
Station & Offset _____
Surface Elev. _____ Water Elev. _____
Piling _____
Hammer _____
Formula _____
Reference _____
Rod Condition _____

10 20 30 40 50 60 70 80 90 100
Capacity "R" in Thousands of Pounds

Test Location No. _____
Station & Offset _____
Surface Elev. _____ Water Elev. _____
Piling _____
Hammer _____
Formula _____
Reference _____
Rod Condition _____

10 20 30 40 50 60 70 80 90 100
Capacity "R" in Thousands of Pounds

Test Location No. 1
Station & Offset 48+59.26' LT REAR ABUTMENT
Surface Elev. 809.6 Water Elev. _____
Piling _____
Hammer _____
Formula _____
Reference _____
Rod Condition _____

TEST ROD

10 20 30 40 50 60 70 80 90 100
Capacity "R" in Thousands of Pounds

Test Location No. 4
Station & Offset 49+25.26' RT REAR PIER
Surface Elev. 810.8 Water Elev. _____
Piling _____
Hammer _____
Formula _____
Reference _____
Rod Condition _____

805 801 797 793 789

TEST ROD

10 20 30 40 50 60 70 80 90 100
Capacity "R" in Thousands of Pounds

Test Location No. 5
Station & Offset 49+95.26' LT CENTER PIER
Surface Elev. 810.8 Water Elev. _____
Piling _____
Hammer _____
Formula _____
Reference _____
Rod Condition GOOD

TEST ROD

10 20 30 40 50 60 70 80 90 100
Capacity "R" in Thousands of Pounds

Test Location No. 8
Station & Offset 50+65.26' RT FORWARD PIER
Surface Elev. 812.5 Water Elev. _____
Piling _____
Hammer _____
Formula _____
Reference _____
Rod Condition GOOD

TEST ROD

10 20 30 40 50 60 70 80 90 100
Capacity "R" in Thousands of Pounds

Test Location No. 9
Station & Offset 50+97.26' LT FORWARD ABUTMENT
Surface Elev. 812.8 Water Elev. _____
HUR-18-15.01
Piling _____
Hammer _____
Formula _____
Reference _____
Rod Condition GOOD

805 801 797 793 789

TEST ROD

10 20 30 40 50 60 70 80 90 100
Capacity "R" in Thousands of Pounds

7
7

OHIO STATE HIGHWAY TESTING LABORATORY
1620 WEST BROAD ST. COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. HUR-18-1532
OVER USR 20
SEC. HUR-18-15.01

DRIVE ROD PENETRATION RESISTANCE DATA

PLOTTED BY	CHECKED BY	REVIEWED BY	DATE
R. C.	L. N. L.	R. D. R.	6/21/67