FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	F-U-457(11)	

1/250

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
COL-30-32.19
COLUMBIANA COUNTY
LIVERPOOL & ST. CLAIR TOWNSHIPS
& CITY OF EAST LIVERPOOL

F-U-457(11)

COLUMBIANA COUNTY
COL-30-32.19

JUN 14 1965
GROUND PHOTOLAB

LIMITED ACCESS

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

CONVENTIONAL SIGNS

TOWNSHIP LINE	
SECTION LINE	
CORPORATION LINE	
PROPERTY LINE	
CENTER LINE	
FENCE LINE	
POLE LINE	Telephone & Electric
RAILROAD	
GUARD RAIL	Old New
DRAIN PIPE	Old New
LIMITED ACCESS	LA
RIGHT-OF-WAY	R/W

INDEX OF SHEETS

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RIGHT-OF-WAY PLANS	232-250

SHEETS NO. 231, 199 TO 206 INCL. NOT USED

LINE DATA

PROJECT LIMITS

F-457(11) = 789+00 ~ 833+09.81 = 4409.81 Ft. or 0.835 Mi.
U-457(11) = 833+09.81 ~ 888+00 = 5490.19 Ft. or 1.039 Mi.

TOTAL LENGTH OF PROJECT

F-457(11) + U-457(11) = 9900 Ft. or 1.875 Mi.

WORK LIMITS

F-457(11) 788+50 ~ 833+09.81 = 4459.81 Lin. Ft.
Add For TWP. ROAD 928 AND RELOCATED S.R. 170
11+30 ~ 36+00 = 2470.00 Lin. Ft.
Add For Approach "B"
79+90 ~ 87+10.82 = 720.82 Lin. Ft.

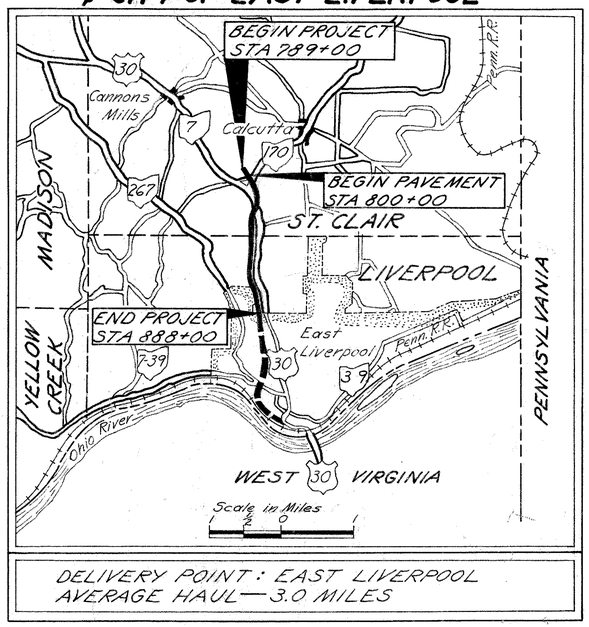
NET LENGTH OF WORK - F-457 (11) 7650.63 Lin. Ft. or 1.448 Mi.

U-457(11) = 833+09.81 ~ 891+75 = 5865.19 Lin. Ft.
899+70 ~ 907+20 = 750.00 Lin. Ft.

NET LENGTH WORK U-457(11) = 6615.19 Lin. Ft. or 1.252 Mi.

TOTAL NET LENGTH WORK = 14,265.82 Lin. Ft. or 2.701 Mi.

Revised Sheets Nos. 14 and 17
R.E.C. 11-16-62



DELIVERY POINT: EAST LIVERPOOL
AVERAGE HAUL — 3.0 MILES

LOCATION MAP
Scale: 1" = 1 Mile

Portion to be Improved
Federal Highways
State Highways
Other Highways

SCALES

PLAN 0 20 40 / 10 30 50
PROFILE, Horizontal
PROFILE, Vertical 0 4 8 / 2 6 10
CROSS SECTIONS

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 provisions for the maintenance and safety of traffic will be as set forth on these plans and estimates.

Approved Wm. P. McKenna
Date Feb. 23, 1962 Division Deputy Director

Approved B. H. Berryman
Date 4-26-62 Engineer of Bridges

Approved W. J. Lawson
Date 4-30-62 Engineer of Location & Design

Approved C. W. M. Cagley
Date 5-1-62 Deputy Director of Design & Construction

Approved W. J. Linn
Date 4-27-62 Deputy Director of Right of Way

Approved Guy E. Hooper
Date 5-4-62 Deputy Director of Planning & Programming

Approved G. A. Berry
Date 5-4-62 First Assistant Director

Approved E. L. Preston
Date 5-4-62 Director of Highways

JUN 14 1965
GROUND PHOTOLAB

STANDARD DRAWINGS

B-T-70-71	11-15-60	I-8 C.B. No. 2 MH	3-2-59	I-15 No. 1	11-15-60	T-J	9-12-60
B-T-71R	3-2-53	I-8 C.B. 2-5 & 2-4	1-26-59	I-15 No. 2A	8-17-60		
DR-1	1-3-55	I-8 C.B. 2-5 & 2-6	1-26-59			S.P.-53.	6-30-61
F-1	9-1-59	I-8 C.B. No. 3-A	1-26-59	I-21-23	8-1-56	A.S.-1-54	12-1-54
F-3	9-1-59	I-8 C.B. No. 6	1-26-59	L-1	4-1-50	A.R.-1-57	12-12-60
G-2.07	6-1-56	I-8 I No. 2	4-23-59	L-3	4-1-50		
H.W.-A & B	7-15-57	I-8 I No. 2A	4-23-59	L-3-A	4-1-50	C.S.B.-2-56 (Sht. #2 & 3)	2-2-59
H.W.-C	7-15-57	I-8 M.H. No. 1	1-26-59	L.J. No. 1	7-1-55		
H.W.-E	11-15-60	I-8 M.H. NO. 1-A	10-2-61			FAC.I-1	12-27-61
		I-12	7-1-54	RI-1	9-15-58	FAC.I-2	12-27-61
I-1	11-15-60	I-14G	1-22-52	T-35	1-2-56		

SUPPLEMENTAL SPECIFICATIONS

CE-101.04	5-22-56	I-212	Rev. 6-23-61
B-112	8-21-61	M-106.6 (d)	Rev. 9-1-58
I-129	Rev. 4-5-61		
18	Rev. 6-15-59		
I-128	7-31-59		
M-107.18	Rev. 4-3-61		
M-109.28	Rev. 8-12-59		
30	5-28-48		

DEPARTMENT OF COMMERCE
BUREAU OF PUBLIC ROADS

APPROVED:

DIVISION ENGINEER _____ DATE _____

File No. COL-30-32.19
Date of Letting _____ 196___
Contract No. _____

SCHEMATIC LAYOUT PLAN

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

COL-30-32.19

2 / 250

End Work Sta. 36+00

S.T.~34+01.24

C.S.~30+01.24

Relocated S.R.170

BEGIN PAVEMENT STA. 800+00

S.L.M 32.19 AHEAD = S.L.M 32.16 BACK

Appr "A"

Ramp "A"

Ramp "D"

P.I. 27+31.28
Δ = 50°53'Lt.
D_c = 5°
L_s = 400'
T_s = 747.71'
L_c = 617.67'
E_s = 129.50'
R_c = 1145.92'

S.C.~23+83.57

T.S.~19+83.57

S.T.~80+47.37

C.S.~798+47.37

RUN

BEGIN PROJECT STA 789+00

S.L.M 31.98

U.S.30 790+75.71 = 20+00 S.R.170

BEGIN WORK STA 788+50

End Work Appr. "B" Sta. 81+10.82

Ramp "B"

Ramp "C"

Appr "B"

CARPENTERS

Cemetery

Twp. Rd. 928

Sub-Station Road

S.R.170 - Sta 16+10.55

P.I. 791+60.35
Δ = 44°13' Rt.
D_c = 2°30'
L_s = 300'
T_s = 1081.65'
L_c = 1468.67'
E_s = 183.64'
R_c = 2291.83'

SEC 28
SEC 29
T6N-R1W
T6N-R1W

Future Alignment

Begin Work Appr. "B" Sta. 79+90

Existing U.S. 30 and S.R.1

To Lisbon

Begin Work Twp. Rd. 928 Sta. 11+30

End Twp. Road 928 - Begin Reloc. S.R.170

P.I. 860+38.82
Δ = 24°00'30" Lt.
D = 4°
L_s = 400'
T_s = 505.43'
L_c = 200.21'
E_s = 36.78'
R_c = 1432.40'

P.I. 871+70.31
Δ = 10°48' Rt.
D = 1°20'
T = 406.20'
L = 810.00'
E = 19.16'
R = 4297.18'

P.T.~841+35.83

STA. 840+00 MATCH LINE

S2°34'W

Chat & Chew Inn

Pearl Chino Co.

T_s~855+33.39

S.C.~859+33.39

S.T.~865+33.60

CARPENTERS RUN

S.10°38'30"E.

WESTFIELD AVE.

WESTFIELD AVE. (To be Vacated)

Old Y&O R.R. R/W

50' ST.

WESTFIELD

CARTER ST.

RIDGE AVE.

50' ST.

50' ST.

P.C.~867+64.11

CORP LINE

P.T.~875+74.11

EAST LIVERPOOL

S89°31'05"E 887+98.52 CORP LINE

CITY OF EAST LIVERPOOL

END PROJECT STA. 888+00

S.L.M 33.86

Sta. 891+75 Suspend Work (Sewer)

SEC. 33-T6N-R1W
SEC 24-T5N-R1W
EAST LIVERPOOL

See Sheet 33 for Work from Sta. 899+70 to Sta. 907+20 (Removal of Temporary Approach)

(1) Overhead Sign Support
Sta. 16+70 Relocated S.R.170
For Details See Sh. Nos. 23 & 198

F457(11) Code: 0010 — F457(11) Code: 7221

(3) Overhead Sign Support
Sta. 807+35 U.S.R. 30
For Details See Sh. Nos. 25 & 197

(2) Overhead Sign Support
Sta. 825+00 U.S.R. 30
For Details See Sh. Nos. 10, 26 & 198

Relocated Hill Ave

HILL AVE

PINE LANE

BLOOMFIELD AVE

BELMONT AVE

BLOOMFIELD SECOND ADD

P.I. 824+92.96
Δ = 76°06' Rt.
D_c = 4°
L_s = 400'
T_s = 532.96'
L_c = 252.50'
E_s = 42.75'
R_c = 1432.40'

S.T.~830+12.50

C.S.~823+60.00

C.S.~826+12.50

T.S.~819+60.00

S.10°06'W

SEC 28-T6N-R1W
ST CLAIR TOWNSHIP
LIVERPOOL TOWNSHIP
SEC.33-T6N-R1W

P.C.~833+82.50

S39°15'E 833+09.81

C&Y&O R.R. R/W

Relocated Westfield Ave

WESTFIELD

P.I. 837+59.71
Δ = 7°32' Lt.
D = 1°
T = 377.21'
L = 753.33'
E = 12.40'
R = 5729.58'

F457(11) — U457(11)

STA. 840+00 MATCH LINE

SCHEMATIC LAYOUT PLAN

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

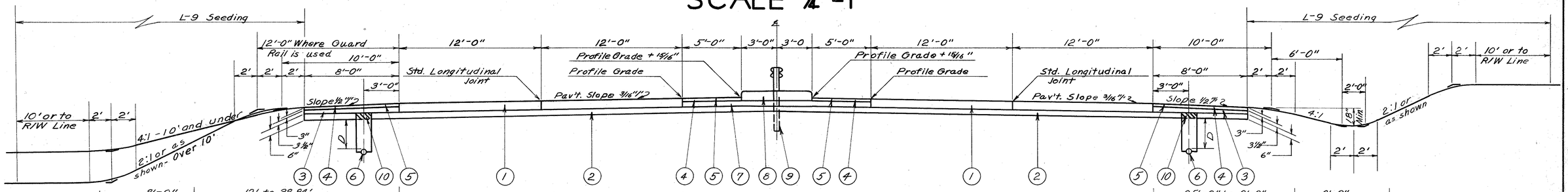
3/250

COL-30-32.19

TYPICAL SECTION

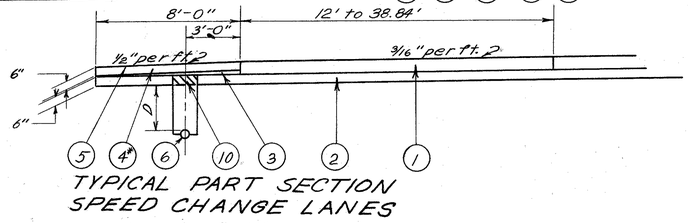
TYPE - T-71

SCALE 1/4"=1'

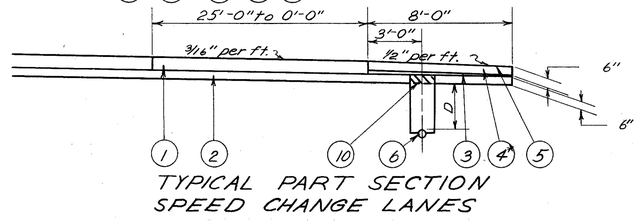


NORMAL SECTION

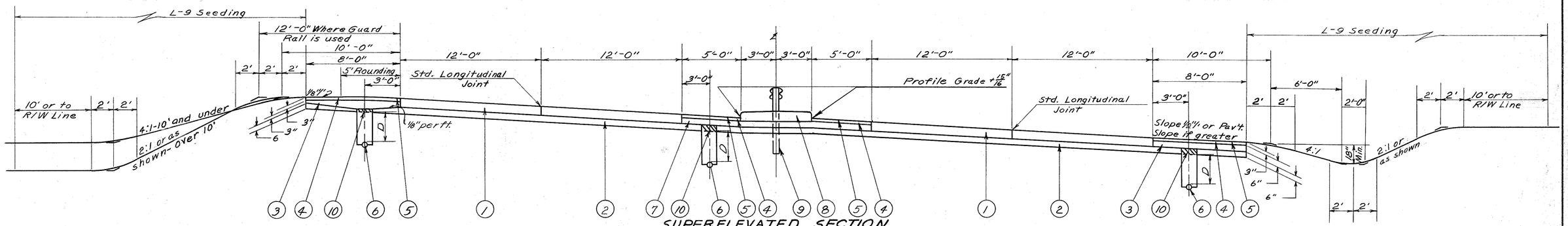
STA. 801+00	to	STA. 820+00
STA. 830+00	to	STA. 833+00
STA. 842+00	to	STA. 855+00
STA. 877+00	to	STA. 888+00



TYPICAL PART SECTION SPEED CHANGE LANES



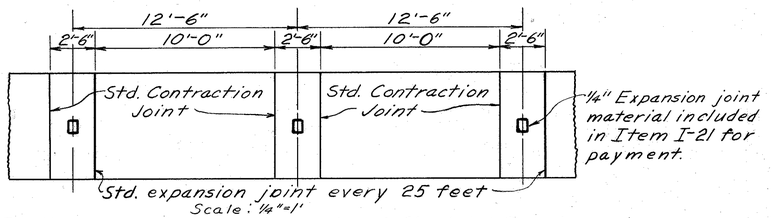
TYPICAL PART SECTION SPEED CHANGE LANES



SUPERELEVATED SECTION

STA. 800+00	to	STA. 801+00
STA. 820+00	to	STA. 826+04.25
STA. 827+88.75	to	STA. 830+00
STA. 833+00	to	STA. 842+00
STA. 855+00	to	STA. 877+00

JOINT DETAIL AT GUARD RAIL POSTS



Scale: 1/4"=1'

In lieu of spacing requirements of Standard Drawing I-21-23, expansion and contraction joints shall be provided in Item I-21 Median Pavement, as detailed hereon, whenever guard rail is called for.

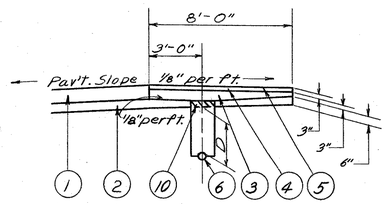
‡Thickness shown is "designed" thickness as described in Section B-21.01

*Note: B-21 6" Thick for Speed Change Lanes.

Note D: 30" or as shown on Plan & Profile Sheet.

KEY

1. Item T-71 9" Reinforced Portland Cement Concrete Pavement
2. Item I-22 6" Subbase, Grading "A or B", modified as per general note
3. Item B-112 Porous Base Course
4. ‡Item B-21 3" Waterproofed Aggregate Base Course (Type "A" T-35 material may be used in construction of this course - See note in Proposal)
5. Item T-31 Bituminous Surface Treatment using 0.00Bcu.yd. No. 6 aggregate per sq. yd. and 0.25 gal. bituminous material per sq. yd. (See note in Proposal)
6. Item I-1 6" Pipe, Class I-3
7. Item I-18 Stabilized Crushed Aggregate Shoulders and Approaches
8. Item I-21 Standard Type 2 Median Pavement, as per plan
9. Item I-15 Barrier Type Guard Rail Steel Beam (Deep)
10. Remove subbase for width of I-1 trench and replace with either Class 3 Backfill or with porous base material immediately prior to placing the Item B-112 Porous Base Course. Cost shall be included in price bid per lin. ft. for Item I-1, Class I-3.



SHOULDER DETAIL FOR 1°30' CURVES OR LESS

STA. 833+00 to STA. 842+00 1°00'

STA. 867+00 to STA. 877+00 1°20'

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

4
250

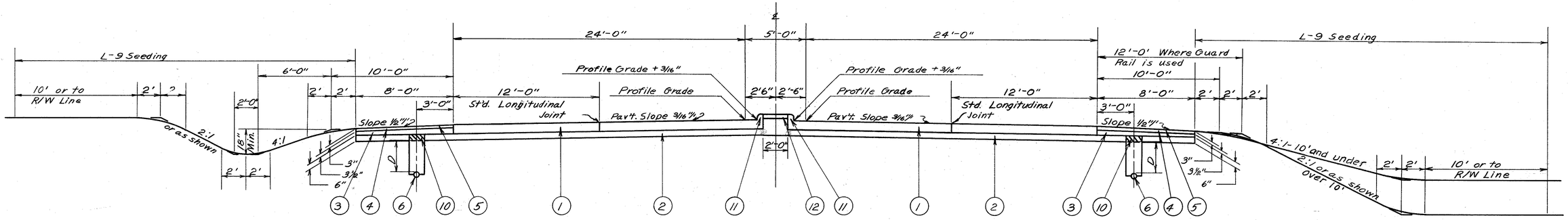
COL-30-32.19

TYPICAL SECTION

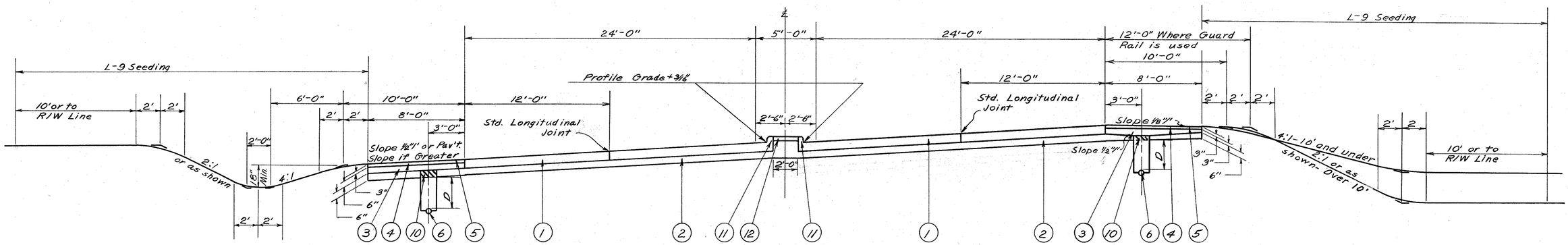
TYPE-T-71

SCALE 1/4"= 1'

RELOCATED SR170



NORMAL SECTION
*STA. 14+33.65 to STA. 16+04
STA. 16+04 to STA. 18+87.49
***STA. 0+27.7 to STA. 1+11 APPROACH "A"



SUPERELEVATED SECTION
* *STA. 21+12.49 to STA. 34+50

*Same Pavement type except width is 24'. See Detail Sheet No. 107

**For Pavement Transition Detail Sta. 30+00 to Sta. 34+50 see Detail Sheet No. 108

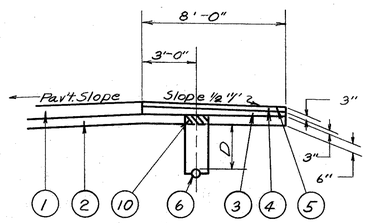
#Thickess shown is "designed" thickness as described in Section B-21.01

*** Same Pavement type except width is 36'. See Detail Sheet No. 107

Note D: 30" or as shown on Plan & Profile Sheet.

KEY

(1) Item T-71 9" Reinforced Portland Cement Concrete Pavement
(2) Item I-22 6" Subbase Grading "A or B" modified as per general note
(3) Item B-112 Porous Base Course
(4) # Item B-21 3" Waterproofed Aggregate Base Course (Type "A" T-35 material may be used in construction of this course - See note in Proposal)
(5) Item T-31 Bituminous Surface Treatment using 0.008 cu. yd. No. 6 aggregate per sq. yd. and 0.25 gal. bituminous material per sq. yd. (See note in Proposal)
(6) Item I-1 6" Pipe, Class I-3
(10) Replace I-22 with B-112 (See Description Sheet No. 3)
(11) Item I-12 Type 2-A Concrete Curb
(12) Item I-21 4" Std. Type I Portland Cement Concrete Median Pavement
See Sheet 13 for Location of Median Pavement



SHOULDER TRANSITION DETAIL
STA. 21+12.49 to STA. 23+83.57
STA. 30+01.54 to STA. 34+01.54

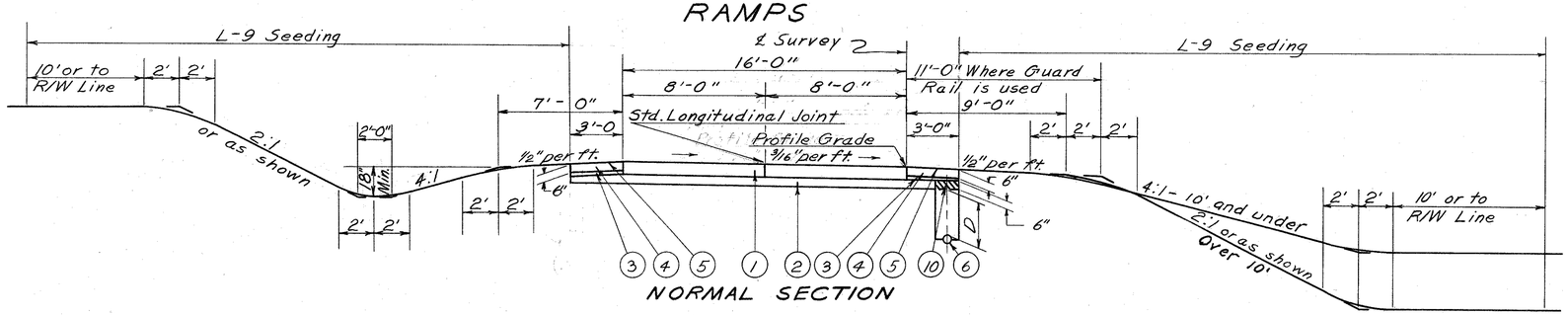
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

5
250

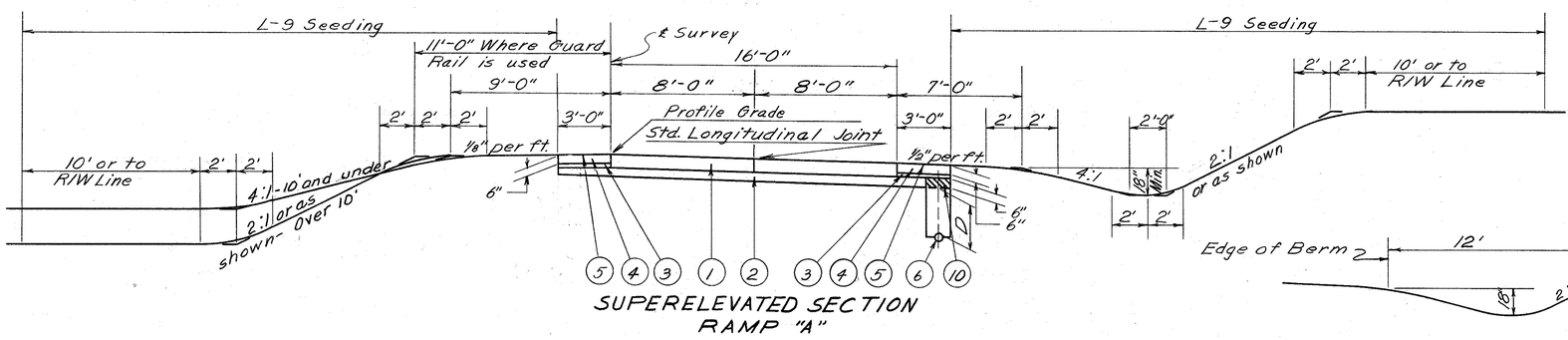
COL-30-32.19

TYPICAL SECTIONS
TYPE-T-71
SCALE: 1/4" = 1'

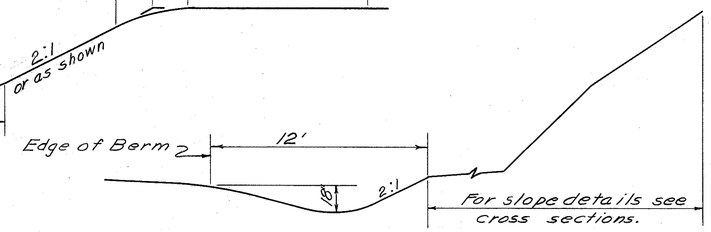
RAMPS



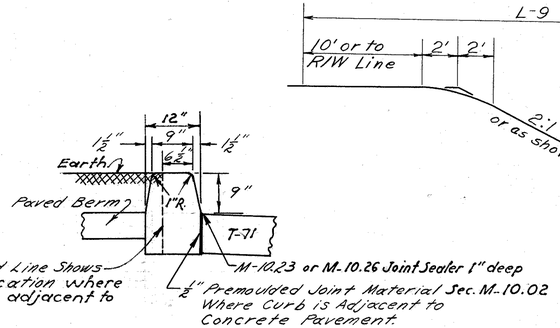
NORMAL SECTION



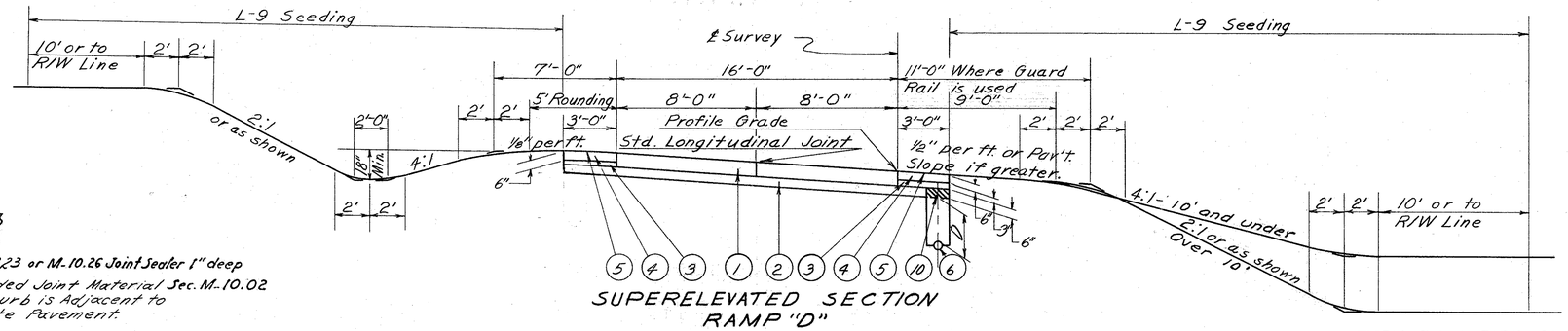
SUPERELEVATED SECTION
RAMP "A"



DITCH AND SLOPE DETAIL IN ROCK CUTS



SPECIAL CONCRETE CURB DETAIL (ENTRANCE RAMPS)
Scale 3/4" = 1'-0"



SUPERELEVATED SECTION
RAMP "D"

KEY

(1) Item T-71 9" Reinforced Portland Cement Concrete Pavement
(2) Item I-22 6" Subbase, Grading "A" or "B", modified as per general note
(3) Item B-112 Porous Base Course
(4) # Item B-21 6" Waterproofed Aggregate Base Course (Type "A" T-35 material may be used in construction of this course -See note in Proposal)
(5) Item T-31 Bituminous Surface Treatment using 0.008 cu.yd. No. 6 aggregate per sq.yd. and 0.25 gal. bituminous material per sq.yd. (See note in Proposal)
(6) Item I-1 6" Pipe Class I-3
(10) Replace I-22 with B-112 (See Description Sheet No. 3)

ITEM I-1, 6" PIPE, CLASS I-3.
Subsequent to the completion of these plans it was decided to remove the proposed I-3 Underdrains from the high side of Ramps "A" and "D". An estimated quantity of 3000 linear Feet of I-3 Underdrains was deducted from the plan quantities as shown on Sheet 18, however the corrections were not carried through the individual sheets.
Additional necessary adjustments will be made at the time of construction and payment will be based on final measurements for Item I-1, 6" pipe, Class I-3.

Thickness shown is "designed" thickness as described in Section B-21.01

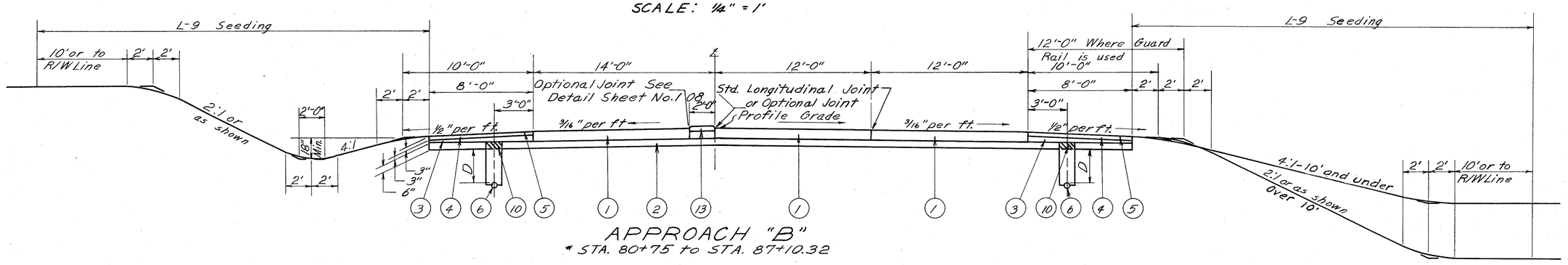
Note D: 30" or as shown on Plan & Profile Sheet.

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

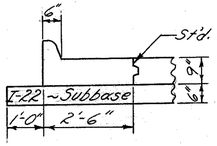
6
250

COL-30-32.19

TYPICAL SECTIONS
TYPE - T-71
SCALE: 1/4" = 1'



APPROACH "B"
* STA. 80+75 to STA. 87+10.32



TYPE 2 CURB & GUTTER DETAIL
Scale: 1/2" = 1'-0"

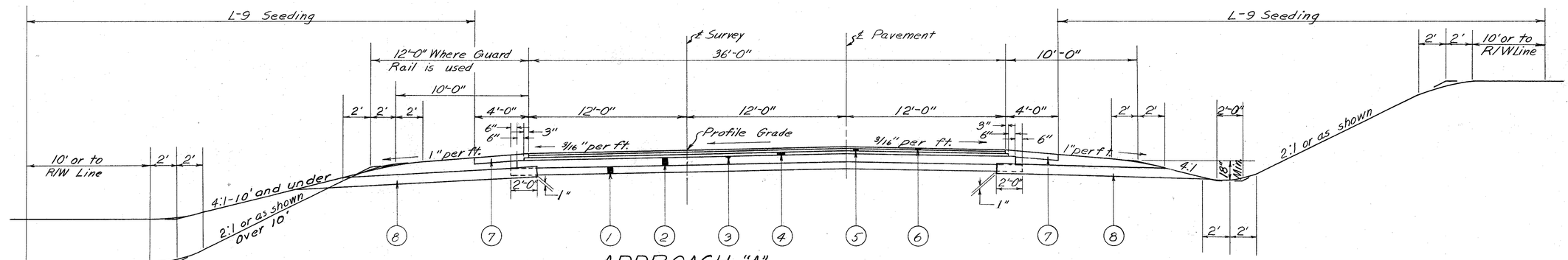
KEY

(1) Item T-71 9" Reinforced Portland Cement Concrete Pavement
(2) Item I-22 6" Subbase Grading "A" or "B", modified as per general note
(3) Item B-112 Porous Base Course
(4) ‡ Item B-21. 3" Waterproofed Aggregate Base Course (Type "A" T-35 material may be used in construction of this course ~ See note in Proposal)
(5) Item T-31 Bituminous Surface Treatment using 0.008 cu. yd. No. 6 aggregate per sq. yd. and 0.25 gal. bituminous material per sq. yd. (See note in Proposal.)
(6) Item I-1 6" Pipe, Class I-3
(10) Replace I-22 with B-112 (See Description Sheet No. 3)
(13) Item I-23 Precast Concrete Traffic Dividers

*Note: For Pavement Transition Detail STA. 80+75 to STA. 83+50 see Detail Sheet No. 108

Note D: 30" or as shown on Plan & Profile Sheet.

TYPE-T-350N B-19



APPROACH "A"
STA. 1+11 to STA. 16+00

KEY

(1) Item I-22 6" Subbase, Grading "A" or "B", modified as per general note
(2) Item B-19 8" Aggregate Base Course
(3) Item T-30 Prime Coat, Sec. M-5.1 RT-2 or RT-3, Applied at the rate of 0.4 gal. per sq. yd.
(4) ‡ Item B-35 3" Asphaltic Concrete Base Course (70-85)
(5) ‡ Item B-35 1 1/4" Asphaltic Concrete Leveling Course (70-85)
(6) ‡ Item T-35 1 1/4" Asphaltic Concrete Surface Course, Type "C" (70-85)
(7) Item I-18 6" Stabilized Crushed Aggregate Shoulders and Approoches #
(8) Item I-9 Stone Underdrains, No 2

‡ Thicknesses shown are "designed" thicknesses as described in Sections B-21.01, B-35.01 and T-35.01

See note in proposal for additional stabilization with calcium chloride in upper three (3) inches of this item.

TYPICAL SECTIONS
TYPE-T-350NB-19
SCALE : 3/8" = 1'

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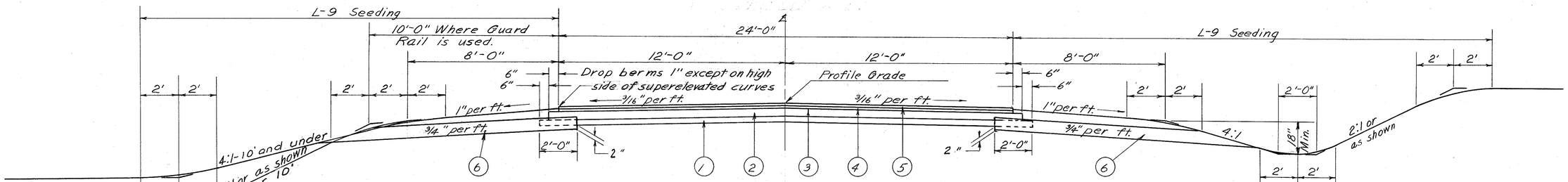
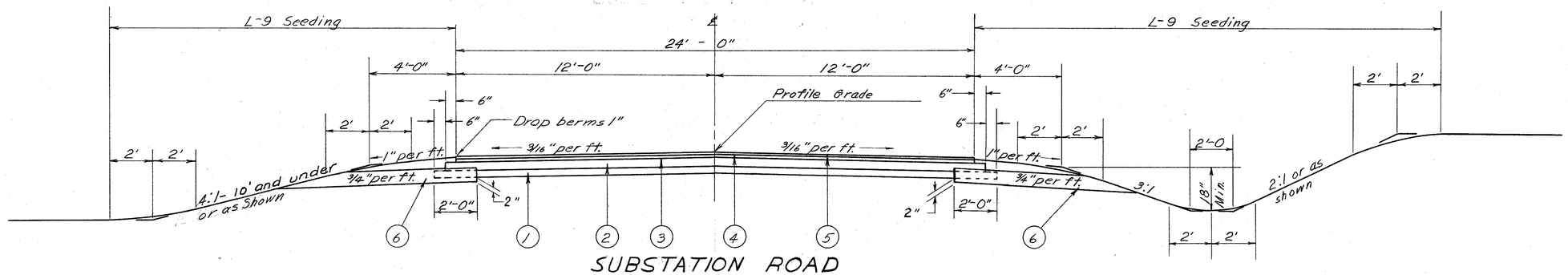
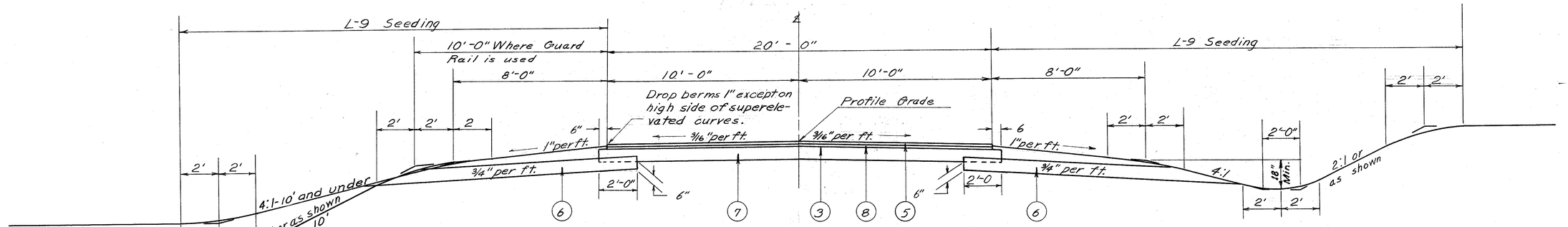


WESTFIELD AVE.
STA. 1+72 to STA. 19+50



SUBSTATION ROAD
STA. 11+50 to STA. 14+33.65



HILL AVE.
STA. 4+05.10 to STA. 13+00

KEY

1. Item I-22 4" Subbase, Grading "A" or "B", modified as per general note
2. Item B-19 5" Aggregate Base Course
3. Item T-30 Prime Coat, Sec. M-5.7 RT-2 or RT-3. Applied at the rate of 0.4 gal. per sq. yd.
4. ‡ Item B-35 1¾" Asphaltic Concrete Leveling Course (85-100)
5. ‡ Item T-35 1¼" Asphaltic Concrete Surface Course, Type "C" (85-100)
6. Item I-9 Stone Underdrains, No. 2
7. Item B-19 8" Aggregate Base Course
8. ‡ Item B-35 1¼" Asphaltic Concrete Leveling Course, (85-100)

‡ Thicknesses shown are "designed" thicknesses as described in Sections B-35.01 and T-35.01

Note : For superelevation details see Standard Drawing RI-1.

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DESIGN SPEED: The geometrics for this project have been planned for a design speed of 60 miles per hour; except for Relocated S.R. 170 which has a design speed of 35 miles per hour.

SUPERELEVATION: Superelevated curves shall be built without crown. The crown shall be worked out of the pavement in the portion between the beginning of the transition and the point where the superelevation equals twice the crown.

ROUNDING OF CORNERS: The rounded corners shown on Standard Drawing RI-1, as modified by the typical sections, apply to all cross sections, even though otherwise shown on these plans.

SPECIAL SEEDING PREPARATION AREAS: The references in the first paragraph of Sec. L-9.11 to preparation of the seed bed in front of residences, etc., shall, on this project, be considered to be particularly applicable in the following areas.

S.R.170 (Sub. Sta. Rd.)	Sta 11+30	To Sta 16+00 Lt. & Rt.
S.R.170	Sta 28+00	To Sta 36+00 Rt.
S.R.170	Sta 30+50	To Sta 36+00 Lt.
Ramp "D"	Sta 0+39	To Sta 3+50 Rt.
Approach "B"	Sta 80+20	To Sta 83+50 Lt.
Cemetery Approach		

BENCHING OF FOUNDATION SLOPES: Although cross sections on this plan indicate specific widths and depths of proposed benching of the embankment foundation in certain areas, no waiver of specifications is intended and all other sloped foundation areas shall be benched as set forth in Sec. E-1.04. No additional payment will be made for benching required by the provisions of Sec. E-1.04.

PUBLIC UTILITIES AFFECTED

Ohio Power Co. ~ Steubenville Ohio ; Ohio Valley Gas Co. ~ Steubenville Ohio
Ohio Bell Telephone Co. ~ Steubenville Ohio
City of East Liverpool, Sanitary Sewers

FIELD OFFICE: The contractor shall, in accordance with Sec. S-0.01(b), provide, for the exclusive use of the State's employees, a suitable field office having a minimum of 500 sq.ft. of floor space. The Contractor shall have a telephone installed and maintained in this field office during the construction of this project.

The Contractor shall also provide and install wiring and outlets suitable for connecting electric lights and office equipment in this field office and provide 110-volt alternating current to this office during the entire period of construction of this project. This office shall be provided within ten days after beginning of work.

UNDERGROUND UTILITIES: The locations of the underground utilities shown on the plans have been obtained by diligent field checks and searches of available records. It is believed that they are essentially correct, but the State of Ohio makes no guarantees as to their accuracy or completeness.

CONSTRUCTION LAYOUT STAKES: See note in proposal describing the work included in this lump sum pay item.

GUARD RAIL ADJUSTMENT: The stationing of individual runs of guard rail will be adjusted, if necessary, by the Engineer at the time of construction to accommodate the standard panel lengths furnished.

STONE UNDERDRAINS: No. 2 stone underdrains shall be constructed at intervals not to exceed 50 feet on each side of the pavement on tangents and at 25 foot intervals on the low side of the pavement on curves. Additional underdrains may be required and shall be constructed at locations determined by the Engineer. An estimated quantity of 3000 lin. feet has been included in the General Summary. In the final finishing of slopes and ditches care shall be exercised to assure that the exposed edge of the underdrains will be left free of earth cover, seeding, or mulch, that would impede free drainage of the Base Material.

REMOVAL OF TREES AND STUMPS: All trees and stumps lying within the construction limits of this project shall be removed under the lump sum price bid for Item E-9, Removal of Trees and Stumps, except that those trees and stumps 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
12"-18"	757	
18"-24"	118	
24"-30"	26	
30"-36"	14	
36"-42"	7	
42"-48"		
Over 48"		

The above estimate is approximate and the State of Ohio reserves the right to order the removal of additional trees or stumps outside of the limits of construction but within the right-of-way and/or easement lines. Payment for the removal of these additional trees or stumps shall be included in the lump sum price bid for Item E-9, Removal of Trees and Stumps.

ROCK SUBGRADE: The Contractor shall be paid for the thickness of I-22 material shown on the typical sections in rock excavation areas. Any pockets in the rock below the plan subgrade elevation shall drain either longitudinally or laterally and all irregularities in the rock below this elevation shall be filled with I-22 material at no additional cost to the State.

CONTRACTION AND EXPANSION JOINTS: Although specific locations of certain expansion and contraction joints have been detailed on this plan, no waiver of specifications is intended. Provision of expansion joints at all major structures, & Intersecting roads and the maximun spacing between contraction joints shall in all cases be in accordance with Standard Construction Drawing T.J.

PIPE CONNECTIONS TO CORRUGATED METAL AND CONCRETE STRUCTURES: Connections of proposed drainage structures enclosing carpenters run to the proposed longitudinal channel structures shall be by means of a shop fabricated stub and the hole cut at the plant. When the longitudinal structure is of corrugated metal the stub shall meet the requirements of Sec. M-6.4 and have a minimum length of two feet and gage the same as the carrying line. When the longitudinal structure is of concrete the stub shall be concrete pipe and shaped at the plant to fit the inside circumference of the carrying line. The stub shall meet the requirements of Sec. M-6.6 and have a minimum length of two feet and same strength designation as the carrying line. Location and elevation of the stub are to be considered approximate and may be adjusted by the Engineer. Payment for cutting into the structure, and providing and attaching the shop fabricated stubs described shall be included in the unit price bid for the pertinent pipe item.

STANDARD NO. 6 CATCH BASIN: In lieu of the provisions for depressing the pavement 1" as shown on Standard Drawing I-8 C.B. No. 6, the pavement shall be depressed 2" on this project.

PLUGGING PIPE:

The upstream end, or both ends, of all drainage pipe intercepted by earthwork operations or to be abandoned in place shall be effectively blocked and covered as directed by the Engineer. Broken pieces and portions of pipe or tile shall be removed until a whole length is encountered. The pipe shall then be blocked with concrete or flat stone or brick laid in mortar. Payment for above work shall be included in the unit price bid for Item E-1, Roadway Excavation.

CONNECTIONS TO EXISTING PIPE: At places where the plans provide for proposed drainage pipe to be connected to existing pipe, it shall be the responsibility of the contractor to locate the existing pipe both as to line and grade before he starts to lay the proposed pipe. The cost of the operation shall be included in the unit price bid for the pertinent pipe item.

REINFORCED CONCRETE CATCH BASIN: Catch basins over 12' in depth shall be built of Class "C" concrete reinforced by placing ⅜" diameter bars 12" center to center both vertically and horizontally with a 2" clearance from the inside face of the wall. Payment for furnishing and placing the reinforcing steel shall be included in the unit price bid for Item I-8, Reinforced Concrete Catch Basins.

EROSION CONTROL: Item I-10, I-14, and L-10 are provided in these plans for erosion control. Rock of a stable nature will not be removed in order to place any of these items. The Engineer will check and non perform quantities or adjust locations and quantities for these items where indicated by field conditions during construction.

STEPS IN DEEP CATCH BASINS: All catch basins (6) six feet deep or greater shall have steps. The steps shall be built in accordance with Standard Drawing I-8 Manhole No. 1. The price of all material and work for building these steps shall be included in the bid price per each of the catch basins.

SOD ADJACENT TO PAVED GUTTERS: Eighteen (18) inch width of sod shall be used on all slopes adjacent to paved gutter.

SPRING DRAINS: Reference is made to the detailed drawing on Sheet No. 11 showing the method of draining any spring that may be encountered during construction.

SEALING OF PIPE JOINTS: Where connections are made between rigid and flexible pipe sections or between pipe sections of different kind or type of end fabrication, whether required by the plans, arising from permissible use of optional materials, or encountered in connection to existing facilities, the joint shall be sealed, if sealing is required by the specifications, by means of a Class "E" Standard concrete collar as shown on detail Sheet No. 11. Payment for sealing as described above shall be included in the unit price bid for the pertinent pipe item.

MAINTENANCE OF SEWER FLOWS: The Contractor shall conduct his operations so as to maintain at all times sewer flows through existing facilities to remain in place and through existing facilities to be replaced until new facilities are completed and placed into use. Payment for any additional cost involved in maintaining these flows by pumping or by any other means approved by the Engineer shall be included in the unit prices bid for the respective pipe items.

GUARD RAIL REMOVAL: Existing guard rail on this project shall be removed where called for on the plans. The steel rail element will be removed by and become the property of the State Highway Department. The rails will be removed immediately after the Contractor notifies the Engineer that they will interfere with his operations. The remainder of the guard rail shall be removed by and become the property of the Contractor and shall be disposed of by him.

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SPECIAL DRAINAGE: Due to the presence of abandoned mine entries in the hillside along this project, water is seeping out at several locations. No attempt has been made to intercept this water, since the location of the source is not known. During construction these drainage situations shall be remedied as they develop. Additional items have been added to the General Summary for this purpose, to be used where directed by the Engineer.

ITEM SPECIAL, DRILLED WELL ABANDONED: The existing concrete or stone slab well cover shall be removed and disposed of. The pump and all other salvageable parts shall be carefully removed and stored on the abutting property. The casing shall be cut off at least two feet below the proposed finished grade outside proposed pavement areas or at least two feet below the proposed subgrade elevation inside proposed pavement areas and capped with Class "E" concrete or a standard threaded pipe cap. The unit price bid for each "Drilled Well Abandoned" shall include payment for all labor, tools, materials, and incidentals necessary to complete this item.

SMALL DRAINS: Where drains from downspouts, field drains, etc. are encountered and not shown on the plans, they shall be given an unobstructed outlet as directed by the Engineer. No drain carrying domestic waste shall be connected to any highway proposed drainage facility.

ESTIMATED QUANTITIES: Specific locations and usage of estimated quantities set up on this plan to be used "as directed by the Engineer" shall be made a matter of record by incorporation into the final change order governing completion of this project.

OVERHEAD SIGNS: The exact stationing of Bridge Type Overhead Sign Assemblies in guard rail sections may be adjusted at the time of construction, as directed by the Engineer, to avoid interference with guard rail posts.

SCARIFICATION OF EXISTING FLEXIBLE PAVEMENT: Within the limits of construction where the existing flexible pavement will have less than six(6) inches of fill placed upon it, the pavement shall be thoroughly scarified for its full depth, mixed with sufficient soil and properly recompacted to insure the elimination of any planes of separation between it and the embankment placed thereon. Payment for scarification as described above shall be included in the unit price bid for Item E-1, Roadway Excavation.

PAVEMENT REMOVAL OUTSIDE NORMAL CONSTRUCTION LIMITS: After the existing pavement has been removed, the old roadway shall be plowed, harrowed, and dragged to a smooth grade, the old ditches filled, and the entire area sloped to drain and left in a neat condition ready for seeding. Payment for this work shall be included in the unit price bid for pavement removal, Item E-8. Seeding shall be measured and paid for in accordance with Item L-9.

SEEDING: Quantities for seeding are calculated for the soil areas between lines ten(10) feet outside the work limits, as shown on the cross sections, or to the right-of-way line if such line is less than ten(10) feet from the work limits. Except for Westfield Ave., Hill Ave., and Approach "A" where quantities for seeding are calculated for the soil areas between the work limits, as shown on the cross sections. The following seed mixture shall, in lieu of the mixture listed in Section L-9.11, be used throughout the limits of this project:

30% Kentucky Bluegrass
45% Kentucky 31 Fescue
10% Red Top
10% Creeping Red Fescue
5% Alsike Clover

Seeding shall not be used on slopes exceeding a 1:1 inclination or where fill slopes are composed of rock.

REINFORCED END ON CORRUGATED METAL Pipe: Reinforced ends will be required on all corrugated metal, Class F-1, Sec. M-6.4(c) pipe for driveways and underdrain outlets, if the pipe ends are unprotected by headwalls, catch basins or manholes.

STABILIZED SHOULDERS: Aggregate surfaced shoulders on this project shall be stabilized by a mixture of calcium chloride. See note in proposal describing the work included in the Stabilized Shoulders.

MONUMENT ASSEMBLY I-8: See Standard Drawing RI-1 for details of Standard Monument Assembly.

UTILITY ADJUSTMENT: Any or all work required for Public or Private Utilities will be done by and at the expense of their respective owners, unless otherwise noted on these plans.

*SEQUENCE OF CONSTRUCTION OPERATIONS:

Underdrains shall be installed and backfilled to subgrade elevation, immediately prior to construction of the subbase, except that, where subsurface conditions are such that improvement of an unstable subgrade can be accomplished through the drying action of deep underdrains, the project engineer may authorize or require the contractor to delay the construction of the subbase as necessary.

The subbase shall then be constructed under the concrete pavement area and extended out to cover the porous backfill for the underdrain.

Pavement shall then be constructed.

After the surface of the subbase in the shoulder area is in place and compacted as specified, and immediately prior to placing the porous base course, the material located above and within the underdrain trench shall be removed to the depth necessary to expose clean Class 3 backfill. The trench so excavated shall be backfilled with new Class 3 backfill material, or if the contractor so elects, he may substitute material meeting the requirements of Item B-1.12, Porous Base Course.

Porous base course shall then be constructed and construction of the waterproofed aggregate course shall follow immediately.

* Continued on Sheet 10.

T-10 MODIFIED: This item shall consist of furnishing No.3 or No.34 aggregate as directed by the Engineer, in lieu of the grading specified under Item T-10. All other provisions of Item T-10 shall apply. The weights to be used in calculating the yardage to be paid for under this item shall be the same as those indicated in the Construction and Material Specifications for crusher run or bank run materials.

ROCK EMBANKMENT AREA: In the area between Stations 807+50 and 812+00, rock embankment shall be placed as indicated on the plans. Rock for this item shall be obtained from roadway excavation and meet the requirements of Section E-1.02 and shall be placed in accordance with Section E-1.08(d) of the Specifications. Under no conditions will shale be permitted as part of this embankment. Payment for this work shall be included in the price bid for Item E-1.

DUMPED ROCK CHANNEL PROTECTION, AS PER PLAN I-10: The size of stone furnished for this item as provided in Section I-10.07, is hereby modified to permit the use of stones, obtained from excavation, as large as may be conveniently placed to the lines and grades called for in the plans. Payment for the above shall be included in the unit price bid for Item I-10 Dumped Rock Channel Protection, as per plan.

I-22 SUBBASE, GRADING "A" or "B", AS PER PLAN: The material furnished for this item shall meet the requirements of Grading "A" or "B" of Section I-22.02 except that for either grading not more than 10% of the material shall pass a No.200 sieve after all operations of placement and compaction have been completed.

MAINTAINING TRAFFIC: The Contractor shall maintain traffic at all times in accordance with the requirements of Sec. G-7.07 & G-4.05. The length of one-way traffic zones shall be kept to a minimum consistent with the requirements of the work. Maximum use shall be made of the existing pavement for traffic maintenance, holding the length and duration of use of temporary traffic lanes to an absolute minimum.

Temporary traffic lanes shall be surfaced with T-10 material, treated with calcium chloride and the surface maintained daily in a manner satisfactory to the Engineer. Two-way traffic lanes shall be surfaced with aggregate at least 20 feet wide. One-way traffic lanes shall have the surfacing aggregate not less than 12 feet wide.

The work in the Interchange area shall be performed in the following sequence for the maintenance of two-way traffic at all times.

1. All work on Relocated S.R.170 and pertinent grading on Mainline shall be accomplished while maintaining traffic on the existing routes.
2. S.R.170 traffic shall be routed over the new grade, and Approach "A" and Ramp "A" shall be constructed, except that portion of Ramp "A" which would interfere with traffic on existing U.S.30.
3. When Approach "A" is completed, U.S. 30 traffic shall be routed over Approach "A" and S.R.170 and the remainder of the work completed.

Traffic shall be maintained at all times on Hill Ave. and the contractor shall safeguard the traveling public by providing platforms, nets, or other suitable protection above the traveled lanes. Payment for this protection shall be included in the lump sum bid for "Maintaining Traffic."

Relocated Westfield Ave. shall be constructed and traffic placed thereon before existing Westfield Ave shall be removed.

Payment for construction, maintaining and removing temporary traffic lanes and for all other items required for the maintenance of traffic, except furnishing and placing T-10, and M-10 items shall be included in the lump sum bid for "Maintaining Traffic."

CONTRACTOR'S MAINTENANCE RESPONSIBILITY
On this project, the Contractor's responsibility for maintenance of the existing pavement per Sec. G-7.07 shall be limited to those portions of the existing pavement lying within the proposed work limits.

FEDERAL AID CONSTRUCTION IDENTIFICATION SIGNS: The contractor shall furnish, erect, maintain, and subsequently remove Federal Aid Construction Identification Signs at each of the following locations:

1. At beginning of work- Approach "B".
2. At end of work- S.R. 170, Relocated.
3. At end of work- Main Line

Sign details shall be as specified on Standard Drawing F.A.C.I. 1, "Code N-44(3)102," and the signs shall be erected in accordance with Standard Drawing FACI-2. Additional requirements shall be in accordance with notes in the Proposal.

PLUGGING GAS WELLS: The gas well located within the limits of the right-of-way shall be plugged by the the contractor before any other construction is started in the vicinity of the well. The well shall be filled solid from bottom to top and all work shall be done in accordance with the requirements of the State of Ohio Division of Mines. All work connected with plugging of the well shall be performed under the supervision of a representative of the Division of Mines. The contractor shall notify the Project Engineer and the Division of Mines at least 14 days in advance of the date on which he intends to begin work. Payment for the work shall be made at the contract lump sum price bid for "Item Special, Plugging Gas Well", which price and payment shall constitute full compensation for furnishing all material, labor, tools and equipment, and all incidentals necessary to complete this item.

ITEM S.S. CE-101.04: An estimated quantity for this item has been included in the General Summary, for use as directed by the Engineer, in proof rolling of all subgrade, except for areas where rock or shale is encountered. The pneumatic tired roller shall be operated at 50 tons gross load for the final proof rolling.

GENERAL NOTES CONTINUED ON SHEET 10

Rev. 6-21-62 Rev. 5-10-62

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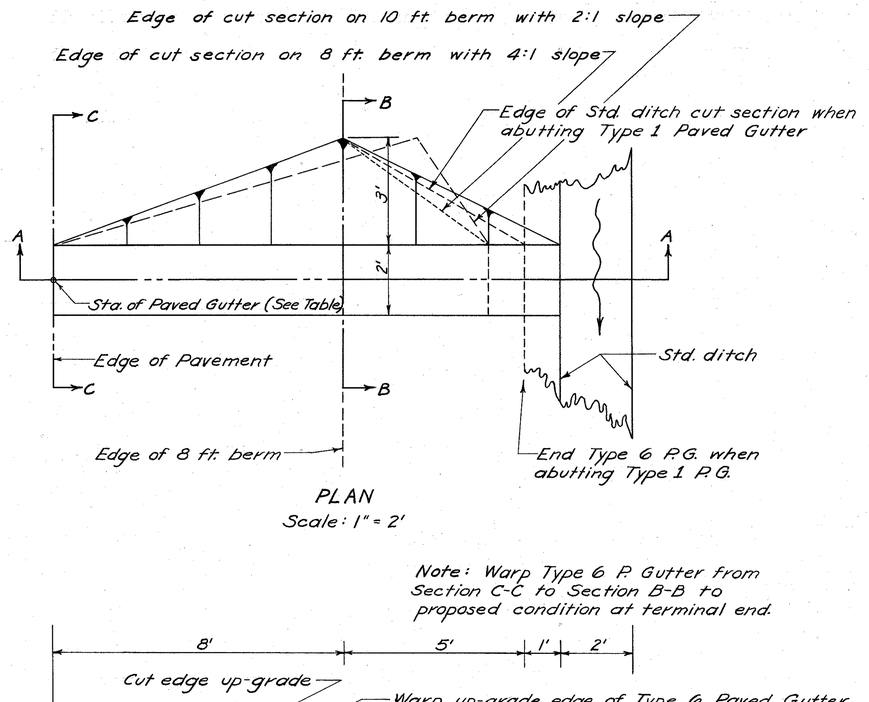
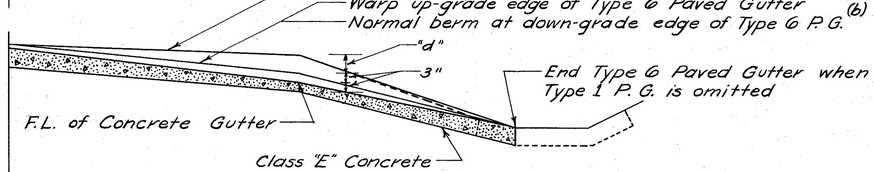
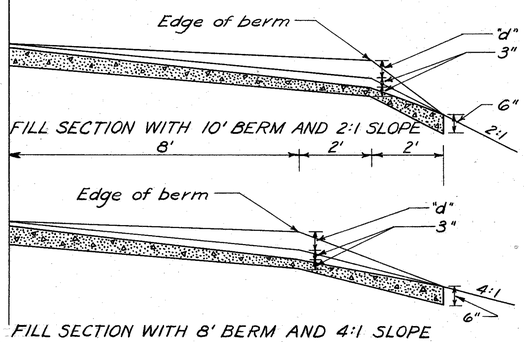


PLAN
Scale: 1" = 2'

Note: Warp Type 6 P. Gutter from Section C-C to Section B-B to proposed condition at terminal end.



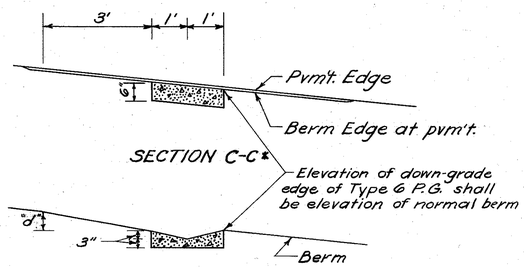
CUT SECTION WITH STD. DITCH



FILL SECTION WITH 10' BERM AND 2:1 SLOPE

FILL SECTION WITH 8' BERM AND 4:1 SLOPE

SECTIONS A-A
Scale: 1" = 2'



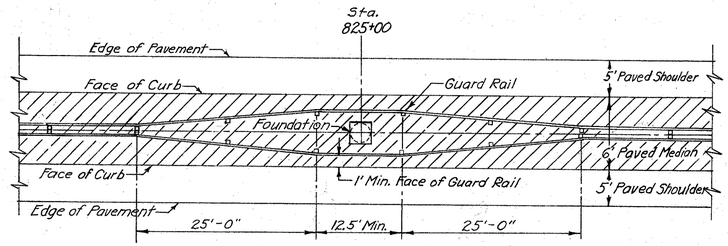
SECTION B-B*

* Same for 8 ft. and 10 ft. berm widths
"d" dimension varies as to pvm't edge grade

Note: This detail is for ascending grade. For descending grade detail will be reversed.

Type 6 Paved Gutter		
Sta.	Side &	Length
Hill Avenue		
4+50	Rt.	13
4+70	Rt.	13
6+00	Lt.	13
8+00	Lt.	13
10+00	Lt.	13
12+00	Lt.	14
Westfield Avenue		
3+60	Lt.	13
4+75	Lt.	13
6+00	Rt.	13
7+50	Rt.	13
9+00	Rt.	13
10+50	Rt.	13
10+50	Lt.	10
13+50	Rt.	14
13+50	Lt.	12
15+50	Rt.	13
17+50	Rt.	13
Approach "A"		
4+06	Rt & Lt.	28(a)
6+50	Rt & Lt.	32(b)
9+00	Rt & Lt.	32(b)
11+50	Rt & Lt.	32(b)
14+00	Rt.	16
14+00	Lt.	13
15+50	Lt.	13
16+50	Rt.	14
	Total	399ft.

(a) 14' on each side
(b) 16' on each side

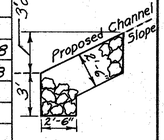


DETAIL OF GUARD RAIL BARRIER TYPE (DEEP), MODIFIED AS PER PLAN

Unit price bid per linear foot for Item I-15 Guard Rail Barrier Type (Deep), As Per Plan, shall include cost of all material and labor necessary to change typical median barrier type guard rail to two single guard rail by-passing over head sign support as shown in above detail. See General Summary sheet No. 17 for quantity.

DUMPED ROCK CHANNEL PROTECTION AS PER PLAN				
Station		Side Of Channel	Cu.Yds.	See Sheet
From	To			
815+00	815+95	Rt.	70	25
829+50	831+25	Lt.	167	27
839+50	841+00	Lt.	130	27&28
839+50	841+50	Rt.	185	27&28
862+00	863+50	Lt.	120	30
862+00	867+00	Rt.	454	30
869+00	869+90	Rt.	88	30
878+00	879+50	Rt.	141	31
885+00	888+00	Rt.	278	32
Total F-457(11)			237	
Total U-457(11)			1396	
Total			1633	

3 or 4 ft as shown



Scale: 1" = 5'

* See Cross Section Sheets

DETAIL OF DUMPED ROCK CHANNEL PROTECTION

GENERAL NOTES CONTINUED FROM SHEET 9.

*SEQUENCE OF CONSTRUCTION OPERATIONS - CONTINUED

If, after testing the subbase material for composition, it is found that removal of contaminated material from the surface is necessary, such material shall be replaced in the shoulder area with material meeting the requirements of Item B-112, Porous Base Course, at the expense of the Contractor.

Payment for all of the above shall be included in the pertinent items affected.

REMOVAL OF EXISTING RIGID PAVEMENT

Existing rigid type pavements shall be removed under Item E-8 when they are located less than 3 feet below the proposed pavement subgrade in proposed pavement areas or less than 3 feet below the proposed finished surface in areas outside the proposed pavement.

When existing rigid type pavements lie below the above limits they shall not be removed. In lieu thereof, they shall be broken up in place into portions not to exceed one square foot in area prior to placement of proposed embankment.

Payment for this operation shall be included in the unit price bid for Item E-1, Roadway Excavation.

NON-RIGID PAVEMENT REMOVAL

Removal and disposal of existing non-rigid pavement, unless otherwise indicated on these plans, shall be measured and paid for as Item E-1, Roadway Excavation.

CUT-OFF WALLS FOR RIPRAP, ITEM I-10

All costs for providing cut-off walls for Item I-10, Riprap, as indicated on these plans or as directed by the Engineer shall be included in the unit price bid for Item I-10, Riprap, as per plan.

T-35, 2" ASPHALTIC CONCRETE SURFACE COURSE, TYPE "C"

This item shall be placed in two 1 inch courses.

DETAIL OF TYPE 6 PAVED GUTTER
HILL AND WESTFIELD AVENUES AND APPROACH "A"

Rev. 6-21-62

TYPICAL DETAILS

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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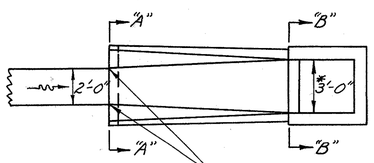
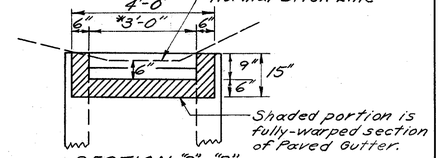
11/250

Note: All modification shown for 2-3 catch basin also applies to the 2-4 and 2-5 catch basins.

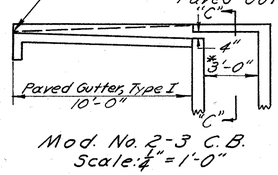




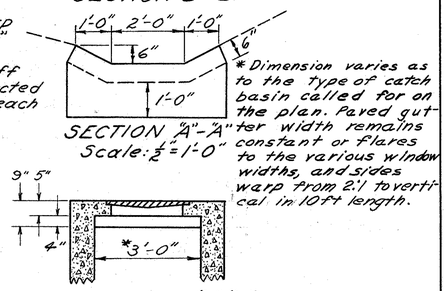
SECTION "B"-"B"

Begin Paved Gutter Warp See Secs. "A"-"A" & "B"-"B"

Note: Std. Concrete Cut-off Wall shall be constructed at the beginning of each Paved Gutter.



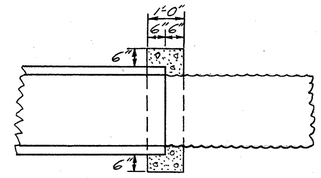
Mod. No. 2-3 C.B.
Scale: 1/4" = 1'-0"



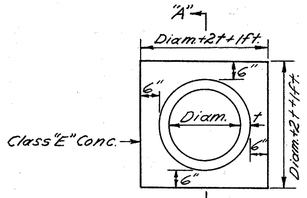
SECTION "A"-"A"
Scale: 1/2" = 1'-0"

SECTION "C"-"C"
Scale: 1/2" = 1'-0"

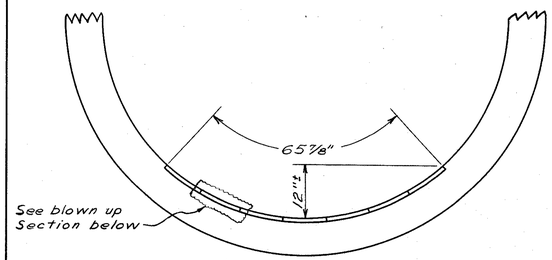
MODIFIED NO. 2-3 CATCH BASIN AND PAVED GUTTER



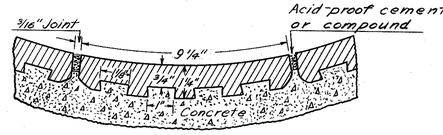
SECTION "A"-"A"



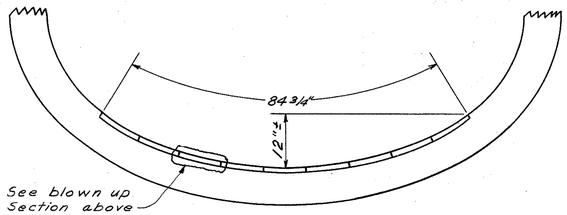
DETAIL OF CONNECTING COLLAR
Scale: None
See Note Sheet No. 8



DETAIL OF PLACEMENT OF VITRIFIED LINER PLATES IN CIRCULAR CULVERTS
Scale: 3/4" = 1'-0"

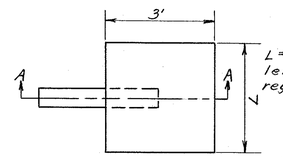


DETAIL OF LINERS ANCHORED IN CONCRETE PIPE
Scale: None

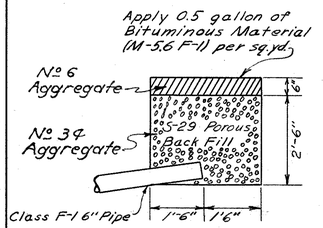


DETAIL OF PLACEMENT OF VITRIFIED LINER PLATES IN ELLIPTICAL CULVERT
Scale: 3/4" = 1'-0"

DETAIL OF SOD DITCH
(To be used where shown on plans)



PLAN



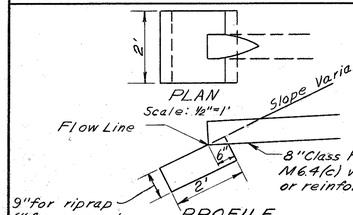
SECTION A-A

SPRING DRAIN DETAIL
Scale: 1/2" = 1'

Note: No. 34 Aggregate shall be used with a 6" layer of No. 6 Aggregate over the top and sealed with Bituminous Material.

Aggregates, Bituminous Material, and necessary Excavation for Spring Drains shall be paid for at the Unit Price bid per cubic yard of Item S-29 Porous Back Fill. Quantities for Class F-1 6" Pipe and S-29 Porous Back Fill are carried in the General Summary.

Spring drains are to be placed at locations designated by the Engineer. Springs are known to exist at Sta. 842+00± and others may be encountered at other locations. Payment shall be based on final measurement.



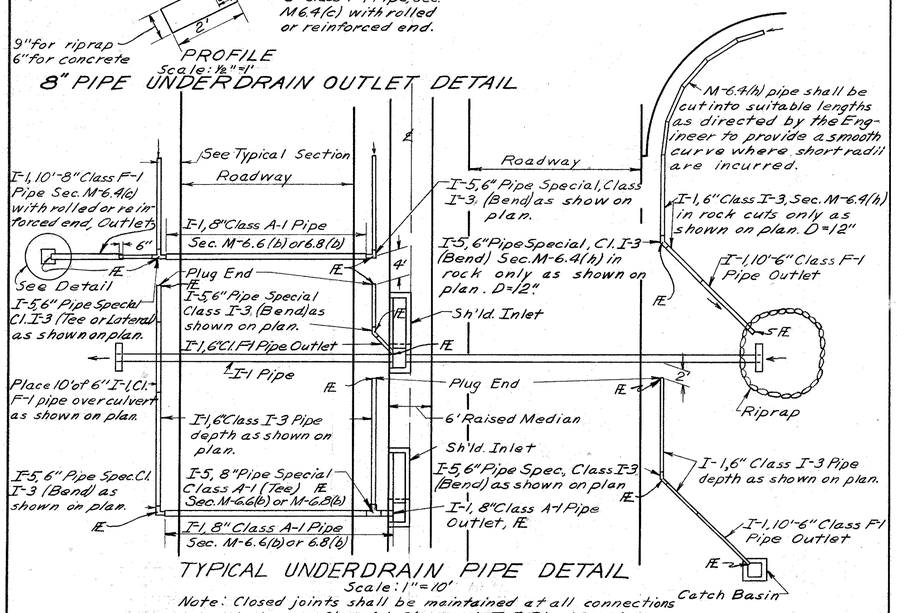
PLAN
Scale: 1/2" = 1'

PROFILE

Note: Place grouted riprap 9" thick or Class "E" plain concrete slab 6" thick at the outlet end of underdrain as shown. Cost of furnishing and placing riprap or concrete shall be included in price bid per lineal foot of 8" Class F-1 Pipe, Sec. M 6.4(C) with rolled or reinforced end.

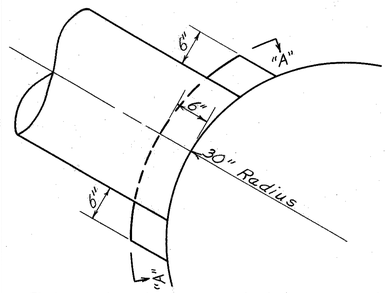
8" Class F-1 Pipe, Sec. M6.4(c) with rolled or reinforced end.

8" PIPE UNDERDRAIN OUTLET DETAIL

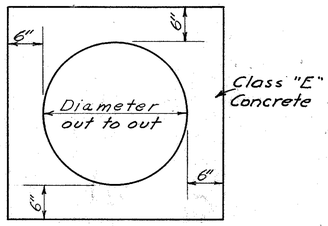


TYPICAL UNDERDRAIN PIPE DETAIL
Scale: 1" = 10'

Note: Closed joints shall be maintained at all connections between Class A-1 Pipe and I-5 Pipe Specials.



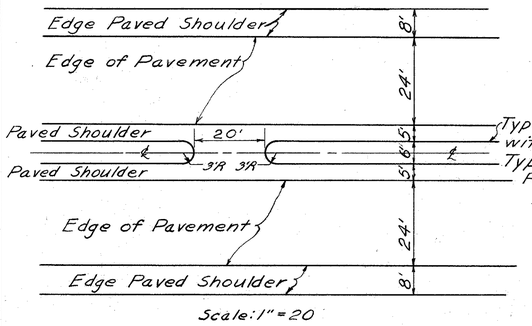
Field cuts shall be pointed on the inside and outside with two coats of Red Lead, Sec. M-9.9, and two coats of Graphite Paint, Sec. M-9.11, before the concrete collar is placed.
Payment for cutting into the structure and providing the connection described shall be included in the unit price bid for the pertinent pipe item.



SECTION "A"-"A"

DETAIL OF TAP AND CONCRETE COLLAR
Scale: 1" = 1'-0"

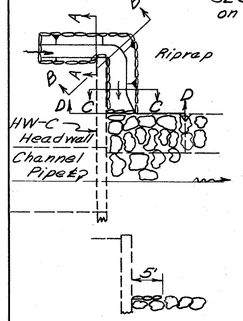
TYPICAL U-TURN MEDIAN OPENING



Scale: 1" = 20

Note: The Median Opening shall be paved with same material as used in the paved shoulders.

SECTION A-A as shown on culvert drawing.



SECTION "B-B"

SECTION "D-D"

SECTION "C-C"

Note: Place riprap in depressed ditch around end and in front of headwall as shown so that concentrated flow will be contained until in contact with dumped rock.

DETAIL OF RIPRAP DITCH AT CHANNEL PIPE HEADWALLS
Scale: None

SUMMARY OF QUANTITIES

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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T-71 PAVEMENT
Sta 800+00.00 to 826+04.25 2604.25x48÷9 =13,889 Sq.Yds.
827+88.75 to 833+09.81 521.06x48÷9 = 2,779 " "
Total = 16,668 Sq.Yds.

S.R.170
Sta 14+33.65 to 16+80 See Sheet No.107 = 1,015 Sq.Yds.
16+80 to 18+87.49 207.49x51÷9 = 1,176 " "
21+12.49 to 30+00 887.51x51÷9 = 5,029 " "
Add for Median Openings 175x2÷9 = 39 " "
30+00 to 34+50 See Sheet No.108 = 1,841 " "
Total = 9,100 Sq.Yds.

Ramp "A"
Sta 0+26.5 to 16+98.94 See Sheet No.119 = 3,251 Sq.Yds.
Decl.lane 16+98.94 to 28+97.29 See Sheet No.120 = 2,032 " "
Total = 5,283 Sq.Yds.

Ramp "D"
Sta 0+39.2 to 16+96.58 See Sheet No.126 = 2,974 Sq.Yds.
Accel.lane 16+96.58 to 28+96.84 See Sheet No.127 = 1,667 " "
Total = 4,641 Sq.Yds.

Appr."A"
Sta 0+27.7 to 1+11 See Sheet No.107 = 554 Sq.Yds.

Appr."B"
Sta 80+75 to 85+77.78 See Sheet No.108 = 1,868 Sq.Yds.
85+77.78 to 87+10.32 See Sheet No.107 = 692 " "
Total = 2,560 Sq.Yds.

Total T-71 F457(11) = 38,806 Sq.Yds.

Sta 833+09.81 to 888+00 5490.19x48÷9 = 29,281 Sq.Yds.

Total T-71 U457(11) = 29,281 Sq.Yds.

I-22 SUBBASE
Sta 800+00 to 801+47.2 147.2x39.9°÷27 = 218 Cu.Yds.
801+47.2 to 807+00 552.8x36.05°÷27 = 738 " "
807+00 to 818+15 1115x32°÷27 = 1,322 " "
818+15 to 820+00 185x36°÷27 = 247 " "
820+00 to 826+04.25 604.25x39.85°÷27 = 892 " "
Add for Appr. Slabs = 74 " "
827+88.75 to 830+00 211.25x39.85°÷27 = 312 " "
830+00 to 833+09.81 309.81x40°÷27 = 459 " "
Total = 4,262 Cu.Yds.

S.R.170
Sta 14+33.65 to 16+80 See Sheet No.107 = 194 Cu.Yds.
16+80 to 18+87.49 207.49x34.5°÷27 = 265 " "
Add for Appr. Slabs = 64 " "
21+12.49 to 22+62.5 150.01x34.35°÷27 = 191 " "
22+62.5 to 25+78.1 315.6x30.5°÷27 = 357 " "
25+78.1 to 30+00 421.9x34.35°÷27 = 537 " "
Add for Median = 63 " "
30+00 to 34+50 See Sheet No.108 = 475 " "
Total = 2,146 Cu.Yds.

Ramp "A"
Sta 0+26.5 to 16+98.94 See Sheet No.119 = 734 Cu.Yds.
Dec.lane 16+98.94 to 28+97.29 See Sheet No.120 = 499 " "
Total = 1,233 Cu.Yds.

Ramp "D"
Sta 0+39.2 to 16+96.58 See Sheet No.126 = 821 Cu.Yds.
Accel.lane 16+96.58 to 28+96.84 See Sheet No.127 = 456 " "
Total = 1,277 Cu.Yds.

Appr. A
Sta 0+27.7 to 1+11 See Sheet No.107 = 130 Cu.Yds
1+11 to 16+00 1489x19.25°÷27 = 1062 " "
Total = 1,192 Cu.Yds.

Appr. "B"
Sta 80+75 to 85+77.78 See Sheet No.108 = 961 Cu.Yds.
85+77.78 to 87+10.32 See Sheet No.107 = 161 " "
Total = 622 Cu.Yds.

Substation Rd.
Sta 11+50 to 12+00 50x233°'÷27 = 14 Cu.Yds.
12+00 to 14+33.65 233.65x867°÷27 = 75 " "
Total = 89 Cu.Yds.

Westfield Ave
Sta 1+7.2 to 2+15.5 83.5x19.86°÷27 = 24 Cu.Yds.
2+15.5 to 19+25 1709.5x8.67°÷27 = 549 " "
19+25 to 19+50 25x9.08÷27 = 9 " "
Total = 582 Cu.Yds.

Total I-22 F457(11) = 11,403 Cu.Yds.

Sta 833+09.81 to 842+00 890.19x39.85°÷27 = 1,314 Cu.Yds.
842+00 to 855+00 1300x90°÷27 = 1,926 " "
855+00 to 877+00 2200x39.85°÷27 = 3,247 " "
877+00 to 888+00 1100x90°÷27 = 1,630 " "

Total I-22 U457(11) = 8117 Cu.Yds.

B-112 BASE COURSE
Sta 800+00 to 801+47.2 147.2x(3/16"x3.73")÷27 = 38 Cu.Yds.
801+47.2 to 807+00 552.8x3.20"÷27 = 66 " "
818+15 to 820+00 185x3.17"kt.÷27 = 22 " "
820+00 to 826+04.25 604.25x(3.15"x4°)÷27 = 160 " "
Add for Appr. Slabs = 14 " "
827+88.75 to 830+00 211.25x(3.15"x4°)÷27 = 56 " "
830+00 to 833+09.81 309.81x(3.17"x3.17°)÷27 = 73 " "
Total = 429 Cu.Yds.

S.R.170
Sta 14+33.65 to 16+80 See Sheet No.107 = 13 Cu.Yds.
16+80 to 18+87.49 207.49x(3.17"x3.17°)÷27 = 49 " "
Add for Appr. Slabs = 13 " "
21+12.49 to 22+62.5 150.01x(4"x3.15°)÷27 = 40 " "
22+62.5 to 25+78.1 315.6x4"x.t÷27 = 47 " "
25+78.1 to 30+00 421.9x(4"x3.15°)÷27 = 112 " "
30+00 to 34+50 See Sheet No.108 = 119 " "
Total = 393 Cu.Yds.

Ramp "A"
Sta 0+26.5 to 16+98.94 See Sheet No.119 = 91 Cu.Yds.
Dec.lane 16+98.94 to 28+97.29 See Sheet No.120 = 99 " "
Total = 190 Cu.Yds.

Ramp "D"
Sta 0+39.2 to 16+96.58 See Sheet No.126 = 160 Cu.Yds.
Accel.lane 16+96.58 to 28+96.84 See Sheet No.127 = 37 " "
Total = 197 Cu.Yds.

Appr"A"
Sta 0+27.7 to 1+11 See Sheet No.107 = 30 Cu.Yds.

Appr "B"
Sta 80+75 to 85+77.78 See Sheet No.108 = 118 Cu.Yds.
85+77.78 to 87+10.32 See Sheet No.107 = 26
Total = 144 Cu.Yds.

Total B-112 F457(11) = 1,333 Cu.Yds.

Sta 833+09.81 to 842+00 890.19x(4"x3.15°)÷27 = 236 Cu.Yds.
842+00 to 855+00 1300x(3.17"x3.17°)÷27 = 305 " "
855+00 to 877+00 2200x(3.58"x.35%)÷27 = 583 " "
877+00 to 888+00 1100x(3.17"x3.17°)÷27 = 258 " "

Total B-112 U457(11) = 1,382 Cu.Yds.

B-21 BASE COURSE
Sta 800+00 to 801+47.2 147.2x6.5°'÷27 = 36 Cu.Yds.
801+47.2 to 807+00 552.8x4.52°av.÷27 = 93 " "
807+00 to 818+15 1115x2.5°÷27 = 103 " "
818+15 to 820+00 185x4.5°÷27 = 31 " "
Add for Appr. Slabs = 8 " "
827+88.75 to 833+09.81 521.06x6.5°÷27 = 126 " "
Add for Median Opening = 2
Total = 399 Cu.Yds.

S.R.170
Sta 14+33.65 to 16+80 See Sheet No.107 = 14 Cu.Yds.
16+80 to 18+87.49 207.49x(2°+2°)÷27 = 31 " "
Add for Appr. Slabs = 8 " "
21+12.49 to 22+62.5 150.01x(2°+2°)÷27 = 22 " "
22+62.5 to 25+78.1 315.6x2°÷27 = 24 " "
25+78.1 to 30+00 421.9x(2°+2°)÷27 = 63 " "
30+00 to 34+50 See Sheet No.108 = 67 " "
Total = 229 Cu.Yds.

Ramp "A"
Sta 0+26.5 to 16+98.94 See Sheet No.119 = 195 Cu.Yds.
Del.lane 16+98.94 to 28+97.29 See Sheet No.120 = 161 " "
Total = 356 Cu.Yds.

Ramp "D"
Sta 0+39.2 to 16+96.58 See Sheet No.126 = 319 Cu.Yds.
Accel.lane 16+96.58 to 28+96.84 See Sheet No.127 = 178 " "
Total = 497 Cu.Yds.

Appr."A"
Sta 0+27.7 to 1+11 See Sheet No.107 = 19 Cu.Yds

Appr. "B"
Sta 80+75 to 85+77.78 See Sheet No.108 = 75 Cu.Yds.
85+77.78 to 87+10.32 See Sheet No.107 = 25 " "
Total = 100 Cu.Yds.

Total B-21 F457(11) = 1591 Cu.Yds.

Sta 833+09.81 to 888+00 5490.19x6.5°÷27 = 1,322 Cu.Yds.
Add for Median Opening = 2 " "

Total B-21 U457(11) = 1,324 Cu.Yds.

T-31 BIT. SURF. TREATMENT
Sta 800+00 to 826+04.25
2240.7x8÷9 = 1992 Sq.Yds.
2609.25x5x2÷9 = 2894 " "
Add for Appr. Slabs = 89 " "
Sta 827+88.75 to 833+09.81
521.06x26÷9 = 1,505 " "
Add for Median Opening = 18 " "
Total = 6498 Sq.Yds.
No.6 Aggr. 6498x0.008 = 52 Cu.Yds.
Bit. Mat'l. 6498x0.25 = 1,625 Gals.

S.R.170
Sta 14+33.65 to 16+80 See Sheet No.107
No.6 Aggr. = 1 Cu.Yd.
Bit.Mat'l. 30 Gals.
Sta 16+80 to 18+87.49
207.49x16÷9 = 369 Sq.Yds.
Add for Appr. Slabs = 89 " "
Sta 21+12.49 to 30+00
1459.92x8÷9 = 1298 " "
Total = 1756 Sq.Yds.
No 6 Aggr. 1756x0.008 = 14 Cu.Yds.
Bit. Mat'l 1756x0.25 = 439 Gals.
Sta 30+00 to 34+50 See Sheet No.108
No.6 Aggr. = 7 Cu. Yds.
Bit. Mat'l. = 200 Gals.
Total = 22 Cu.Yds.
Total = 669 Gals.

SUMMARY OF QUANTITIES

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

13/250

COL-30-32.19

PAVEMENT QUANTITIES

T-31 BIT. SURF. TREATMENT (Con't.)
Ramp "A" & Dec. Lane
Sta 0+26.5 to 28+97.29 See Sh'ts. No. 119 & 120
No. 6 Aggr. 10+8 = 18 Cu. Yds.
Bit. Mat'l. 292+241 = 533 Gals.

Ramp "D" & Accel. Lane
Sta 0+39.2 to 28+96.84 See Sh'ts. No. 126 & 127
No. 6 Aggr. 15+9 = 24 Cu. Yds.
Bit. Mat'l. 477+267 = 744 Gals.

Appr. "A"
Sta 0+27.7 to 1+11 See Sheet No. 107
No. 6 Aggr. = 2 Cu. Yds.
Bit. Mat'l. = 57 Gals.

Appr. "B"
Sta 80+75 to 87+10.32 See Sh'ts. No. 107 & 108
No. 6 Aggr. 7+2 = 9 Cu. Yds.
Bit. Mat'l. 224+55 = 279 Gals.

Total T-31 (No. 6 Aggr.) F457(11) = 127 Cu. Yds.
Total T-31 (Bit. Mat'l.) F457(11) = 3907 Gals.

Sta 883+09.81 to 888+00
5490.19 x 26 ÷ 9 = 15,861 Sq. Yds.
Add for Median Opening = 18 " "
Total = 15,879 Sq. Yds.
No. 6 Aggr. 15,879 x 0.008 = 127 Cu. Yds.
Bit. Mat'l. 15,879 x 0.25 = 3970 Gals.

Total T-31 (No. 6 Aggr.) U457(11) = 127 Cu. Yds.
Total T-31 (Bit. Mat'l.) U457(11) = 3970 Gals.

I-18 STABILIZED SHOULDERS
Sta 800+00 to 826+04.25 2604.25 x .8 ÷ 27 = 77.2 Cu. Yds.
827+88.75 to 833+09.81 521.06 x 8 ÷ 27 = 155 " "
Total = 927 Cu. Yds.

Appr "A"
Sta 1+11 to 17+00 1589 x 4 ÷ 27 = 235 Cu. Yds.

Total I-18 F457(11) = 1162 Cu. Yds.

Sta 833+09.81 to 888+00 5490.19 x 8 ÷ 27 = 1627 Cu. Yds.

Total I-18 U457(11) = 1,627 Cu. Yds.

I-12 CONC. CURB, TYPE 2-A
S.R. 170
Sta 16+80 to 18+87.49 207.49 x 2 = 415 Lin. Ft.
21+12.49 to 22+25 112.51 x 2 = 225 " "
23+00 to 24+25 125 x 2 = 250 " "
25+25 to 30+00 475 x 2 = 950 " "
30+00 to 34+50 See Sheet No. 108 = 595 " "
Deduct for Median Inlets = -48 " "
Total = 2,387 Lin. Ft.

Total I-12 Curb, Type 2-A F457(11) = 2387 Lin. Ft.

I-23 TRAFFIC DIVIDERS
S.R. 170 - Sta 33+23 to 33+83 See Sheet No. 108 = 6 Each

Appr "B" - Sta 84+81 to 86+75 See Sheet No. 108 = 17 Each

Total I-23 Traffic Dividers F457(11) = 23 Each

I-12 CONC. CURB, TYPE 6
Ramp "A" See Sheet No. 119 = 204 Lin. Ft.

Total I-12 Curb, Typ 6 F457(11) = 204 Lin. Ft.

I-21 STANDARD TYPE 2 MEDIAN PAVEMENT
Sta 800+00 to 826+04.25 2604.25 x 6 ÷ 9 = 1,736 Sq. Yds.
827+88.75 to 833+09.81 521.06 x 6 ÷ 9 = 348 " "
Deduct for Median Opening = -18 " "
Deduct for Shld'rs. Inlets = -16 " "
Total I-21 St'd. Type 2 MEDIAN PAVEMENT F457(111) = 2,050 Sq. Yds.
Sta 833+09.81 to 887+24 5464.19 x 6 ÷ 9 = 3643 Sq. Yds.
Deduct for Shld'r. Inlets = -26 " "
Total I-21 Std Type 2 Med. Pav't. = 3,617 Sq. Yds.

I-21 STANDARD TYPE 1 MEDIAN PAVEMENT
S.R. 170 Sta 16+80 to 18+87.49 207.49 x 2 ÷ 9 = 46 Sq. Yds.
21+12.49 to 22+25 112.51 x 2 ÷ 9 = 25 " "
23+00 to 24+25 125 x 2 ÷ 9 = 28 " "
25+25 to 30+00 475 x 2 ÷ 9 = 106 " "
30+00 to 33+10.34 See Sheet No. 108 = 66 " "
Deduct for Median Inlets -5 " "
Total = 266 Sq. Yds.
Ramp "A" See Sheet No. 119 = 29 " "

Total I-21 Std. Type 1 Med. Pav't. F457(11) = 295 Sq. Yds.

I-12 COMB. CURB & GUTTER, Type 2
S.R. 170 See Sheet No. 107 = 67 Lin. Ft.
Appr. "B" See Sheet No. 107 = 103 Lin. Ft.

Total I-12 Comb. Curb & Gutter F457(11) = 170 Lin. Ft.

I-12 SPECIAL CURB
Ramp "D" See Sheet No. 126 = 622 Lin. Ft.

Total I-12 Special Curb F457(11) = 622 Lin. Ft.

B-19 BASE COURSE
Appr. "A"
Sta 1+11 to 16+00 1989 x 25 ÷ 27 = 1,379 Cu. Yds.
16+00 to 17+00 See Sheet No. 131 = 16 " "
Total = 1,395 Cu. Yds.
Substation Rd.
Sta 11+50 to 12+00 50 x 8.75 ÷ 27 = 17 Cu. Yds.
12+00 to 14+33.65 233.65 x 10.42 ÷ 27 = 90 " "
Total = 107 Cu. Yds.
Westfield Ave.
Sta 1+72 to 2+15.5 43.5 x 1293 ÷ 27 = 29 Cu. Yds.
2+15.5 to 19+25 1709.5 x 10.42 ÷ 27 = 660 " "
19+25 to 19+50 25 x 10.52 ÷ 27 = 10 " "
Total = 699 Cu. Yds.
Hill Ave.
Sta 4+05.10 to 4+70.66 65.56 x 2124 ÷ 27 = 52 Cu. Yds.
4+70.66 to 5+28.33 57.67 x 15.33 ÷ 27 = 33 " "
5+28.33 to 12+50 721.67 x 14 ÷ 27 = 374 " "
12+50 to 13+00 50 x 13.33 ÷ 27 = 25 " "
Total = 484 Cu. Yds.

Total B-19 F457(111) = 2,685 Cu. Yds.

T-30 PRIME COAT
Appr. "A"
Sta 1+11 to 16+00 1489 x 3.75 ÷ 9 x 0.4 = 2,482 Gals.
16+00 to 17+00 See Sheet No. 131 = 29 "
Total = 2,511 Gals.
Substation Rd.
Sta 11+50 to 12+00 50 x 21 ÷ 9 x 0.4 = 47 Gals.
12+00 to 14+33.65 233.65 x 25 ÷ 9 x 0.4 = 260 "
Total = 307 Gals.
Westfield Ave.
Sta 1+72 to 2+15.5 43.5 x 93.04 ÷ 9 x 0.4 = 84 Gals.
2+15.5 to 19+25 1709.5 x 25 ÷ 9 x 0.4 = 1900 "
19+25 to 19+50 25 x 26.25 ÷ 9 x 0.4 = 29 "
Total = 2,013 Gals.
Hill Ave.
Sta 4+05.10 to 4+70.66 65.56 x 31.24 ÷ 9 x 0.4 = 91 Gals.
4+70.66 to 5+28.33 57.67 x 23 ÷ 9 x 0.4 = 59 "
5+28.33 to 12+50 721.67 x 21 ÷ 9 x 0.4 = 674 "
12+50 to 13+00 50 x 20 ÷ 9 x 0.4 = 45 "
Total = 869 Gals.

Total T-30 F457(111) = 5,700 Gals.

B-35 BASE COURSE (70-85)
Appr. "A"
Sta 1+11 to 16+00 1489 x 9.125 ° ÷ 27 = 504 Cu. Yds.
16+00 to 17+00 See Sheet No. 131 = 11 " "

Total B-35 Base Course (70-85) F457(111) = 515 Cu. Yds.

B-35 LEVELING COURSE (70-85)
Appr. "A"
Sta 1+11 to 16+00 1489 x 3.75 ° ÷ 27 = 207 Cu. Yds.
16+00 to 17+00 See Sheet No. 131 = 7 " "

Total B-35 Leveling Course (70-85) F457(111) = 214 Cu. Yds.

B-35 LEVELING COURSE (85-100)
Substation Rd.
Sta 11+50 to 12+00 50 x 20 ÷ 9 = 111 Sq. Yds.
12+00 to 14+33.65 233.65 x 24 ÷ 9 = 623 " "
Total = 734 Sq. Yds.
734 x 0.0486 = 36 Cu. Yds.
Westfield Ave.
Sta 1+72 to 2+15.5 43.5 x 9.15 ÷ 9 = 201 Sq. Yds.
2+15.5 to 19+25 1709.5 x 24 ÷ 9 = 4559 " "
19+25 to 19+50 25 x 25.25 ÷ 9 = 70 " "
Total = 4830 Sq. Yds.
4830 x 0.0486 = 235 Cu. Yds.
Hill Ave
Sta 4+05.10 to 4+70.66 65.56 x 28.4 ÷ 9 = 214 Sq. Yds.
4+70.66 to 5+28.33 57.67 x 22 ÷ 9 = 141 " "
5+28.33 to 12+50 721.67 x 20 ÷ 9 = 1604 " "
12+50 to 13+00 50 x 19 ÷ 9 = 106 " "
Total = 2065 Sq. Yds.
2065 x 0.035 = 73 Cu. Yds.

Total B-35 Leveling Course (85-100) F457(11) = 344 Cu. Yds.

T-35 SURFACE COURSE (70-85)
Appr. "A"
Sta 1+11 to 16+00 1489 x 3.75 ° ÷ 27 = 207 Cu. Yds.
16+00 to 17+00 See Sheet No. 131 = 14 " "

Total T-35 Surface Course (70-85) F457(111) = 221 Cu. Yds.

T-35 SURFACE COURSE (85-100)
Substation Rd 734 x 0.035 = 26 Cu. Yds.
Westfield Ave. 4830 x 0.035 = 169 Cu. Yds.
Hill Ave 2065 x 0.035 = 73 Cu. Yds.

Total T-35 Surface Course (85-100) F457(111) = 268 Cu. Yds.

SUMMARY OF QUANTITIES

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

14/250

COL-30-32.19

E-1 COMPACTED SUBGRADE
Sta 800+00 to 833+09.81
Under T-71 = 16,662 Sq. Yds.
Berms = 6,498 " "
Add for Appr. Slabs = 356 " "
Total = 23,522 Sq. Yds.

S.R. 170
Sta 14+33.65 to 16+80 See Sheet No. 107 = 1,161 Sq. Yds.
16+80 to 30+00 = 6,244 " "
Berms = 1,756 " "
Add for Appr. Slabs = 295 " "
30+00 to 34+50 See Sheet No. 108 = 2,725 " "
Total = 12,181 Sq. Yds.

Ramp "A" & Dec. Lane
Sta 0+26.5 to 28+97.29 See Sh'ts. No. 119 & 120
4419 + 2994 Total = 7,413 Sq. Yds.

Ramp "D" & Accel. Lane
Sta 0+39.2 to 28+96.84 See Sh'ts. No. 126 & 127
9679 + 2733 Total = 12,412 Sq. Yds.

Appr. "A"
Sta 0+27.7 to 1+11 See Sheet No. 107 = 554 Sq. Yds.
1+11 to 16+00 = 5,956 " "
Total = 6,510 Sq. Yds.

Appr. "B"
Sta 80+75 to 87+10.32 See Sh'ts. No. 107 & 108
2762 + 963 Total = 3725 Sq. Yds.

Substation Rd.
Sta 11+50 to 14+33.65 Total = 234 Sq. Yds.

Westfield Ave.
Sta 1+72 to 19+50 Total = 4830 Sq. Yds.

Hill Ave
Sta 4+05.10 to 13+00 Total = 2065 Sq. Yds.
Deduct For Rock Cuts = -13,564 Sq. Yds.
Total E-1 Compacted Subgrade F457(11) = 55,004 Sq. Yds.

Sta 833+09.81 to 888+00
Under T-71 = 29,281 Sq. Yds.
Berms = 15,879 " "
Total = 45,160 Sq. Yds.
Deduct for Rock Cuts = -7,845 " "
Total E-1 Compacted Subgrade U457(11) = 37,315 Sq. Yds.

ITEM SPECIAL - Mixing Calcium Chloride & Aggr. (for Stabilized Shoulders)
Appr. "A" - Sta 1+11 to 17+00 1589 x 4 x 2 ÷ 9 = 1413 Sq. Yds.
Total Item Special F457(11) = 1,413 Sq. Yds.

M-10 Calcium Chloride for Stabilized Shoulders
1413 x 2.1 = 2967 lbs. or 1.49 Tons
M-10 F457(11) = 1.49 Tons
Use 2 Tons

T-10 for Maintaining Traffic
Sta 797+00 to 803+00 = 700 Lin. Ft.
S.R. 170
Sta 15+25 to 34+50 = 1,650 Lin. Ft.
Appr. "B"
Sta 80+25 to 87+10 = 650 Lin. Ft.
Ramp "D"
Sta 0+50 to 3+50 = 300 Lin. Ft.
Appr. "A"
Sta 14+00 to 17+00 = 300 Lin. Ft.
Total = 3600 Lin. Ft.
3600 x 200 ÷ 100 = 7200 Cu. Yds.

Westfield Ave.
Sta 1+72 to 4+22 = 250 Lin. Ft.
18+00 to 19+50 = 150 Lin. Ft.
Hill Ave.
Sta 4+00 to 13+00 = 900 Lin. Ft.
Substation Rd.
Sta 11+50 to 15+25 = 425 Lin. Ft.
Total = 1725 Lin. Ft.
1725 use 1800 x 100 ÷ 100 = 1800 Cu. Yds.
Total T-10 F457(11) = 9000 Cu. Yds. { 2250 Cu. Yds. T-10 / 6750 Cu. Yds. T-10, Modified as per plan
M-10 for Maintaining Traffic - 9000 ÷ 50 = 180 Tons
M-10 F457(11) = 180 Tons

SS-18 R/W FENCE, TYPE "C" (See R/W Sheet For Plan Location)
Sta 780+22 to 13+92.29
Appr. to S.R. 170, Rt. & Lt. 524 Lin. Ft.
780+28 to 782+72 T.L., Rt. 276 " "
799+00 T.L. to 805+00, Rt. 607 " "
Total = 1457 Lin. Ft.

S.R. 170
Sta 26+61.12 to 34+49.08, Rt. 890 Lin. Ft.
27+25 to 35+96.09, Lt. 866 " "
Total = 1756 Lin. Ft.

Total SS-18 F457(11) = 3213 Lin. Ft.

Sta 856+50 T.L. to 861+20, Lt. = 451 Lin. Ft.

Total SS-18 U457(11) = 451 Lin. Ft.

ITEM I-8 MONUMENT ASSEMBLY

F-457(11)

Main Line

Station	Location	Each
S.T. 801+47.37	℄	1
P.O.T. 805+00	℄	1
P.O.T. 810+00	℄	1
P.O.T. 815+00	℄	1
T.S. 819+60.00	℄	1
S.C. 823+60.00	℄	1
C.S. 826+12.50	℄	1
S.T. 830+12.50	℄	1
Main Line Total		8

S.R. 170

P.O.T. 15+00	℄	1
T.S. 19+83.57	℄	1
S.C. 23+83.57	℄	1
P.O.C. 27+00	℄	1
C.S. 30+01.24	℄	1
S.T. 34+01.24	℄	1
S.R. 170 Total		6
F-457(11) Total		14

U-457(11)

Main Line

Station	Location	Each
P.C. 833+82.50	℄	1
P.O.C. 837+00	℄	1
P.T. 841+35.83	℄	1
P.O.T. 846+00	℄	1
P.O.T. 851+00	℄	1
T.S. 855+33.39	℄	1
S.C. 859+33.39	℄	1
C.S. 861+33.60	℄	1
S.T. 865+33.60	℄	1
P.C. 867+64.11	℄	1
P.O.C. 873+00	℄	1
P.T. 875+74.11	℄	1
P.O.T. 882+00	℄	1
Main Line Total		13
U-457(11) Total		13

EARTHWORK AND SEEDING

Station From	Station To	Sheet No.	Exc. Cu. Yds.	Emb. Cu. Yds.	Chan. Exc. Cu. Yds.	Seeding Sq. Yds.	Fertilizer Tons	Lime Tons
F-457(11) Code Type 0010								
788+50	800+00		87,248	213		14,081	1.27	6.34
For Sodding							0.02	0.09
TOTALS			87,248	213		14,081	1.29	6.43
F-457(11) Code Type 7221								
Approach "B"			857	2,629	126	10,275	0.92	4.62
S.R. 170			45,193	15,781		25,929	2.33	11.67
Approach "A"			57,876	27,582		17,728	1.60	7.98
Ramp "A"			3,848	49,271		16,637	1.50	7.49
Ramp "D"			5,973	10,307		13,347	1.20	6.01
Hill Ave.			62,328	1,452		10,362	0.93	4.66
Westfield Ave.			129,954	20,434		20,967	1.89	9.44
800+00	833+09.81		156,705	281,435	937	43,842	3.95	19.73
For Sodding							0.46	2.32
TOTALS			462,734	408,891	1063	159,087	14.78	73.92
U-457(11) Code Type 7221								
833+09.81	888+00		303,048	296,970	11,075	97,697	8.79	43.96
*883+00	888+00		24,777					
For Sodding							0.19	0.97
Potential Slides		14	100,000					
TOTALS			~~403,048~~ 427,825	296,970	11,075	97,697	8.98	44.93

Item E-11, Water F-457(11) Code Type 0010
For Emb (2.13) = 2.13 X 5 ÷ 1000 = 1 M-Gals
Item E-11, Water F-457(11) Code Type 7221
For Emb + I-18 + I-21 + B-19 (408,891 + 1162 + 11,403 + 3348) = 424,804 X 5 ÷ 1000 = 2.124 M-Gals
Item E-11, Water U-457(11) Code Type 7221
For Emb + I-18 + I-22 (296,970 + 1627 + 8117) = 306,714 X 5 ÷ 1000 = 1534 M-Gals

ROADWAY EXCAVATION
In the event slides should occur on this project, due to no fault of the Contractor, the displaced material shall be removed at the direction of, and in amounts determined by, the Engineer in accordance with Item E-1, Roadway Excavation, at the unit price bid for this item.
An estimated quantity of 100,000 cubic yards of excavation has been included in the general summary to allow for such a contingency. Payment, however, will be based on final measurement and if no slides occur, this quantity will be non-performed in it's entirety.

*NOTE:
Quantity added as per Proposal Note on Sheet No. 5.

Revised R.E.C. 11-16-62

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

15
250

COL-30-32.19

SUB-SUMMARY FOR CULVERTS

PIPES ~ LIN. FT.

STATION	See Sheet	12" Class A-1 M6.6(a) M6.8(b)	12" Class B-1 M6.8(b)	12" Class D-1	12" Class F-1	15" Class E-1 M6.8(b)	15" Class F-1 M-6.4(c) Gage14	15" Class D-1	15" Class E-1 M6.6(c)	18" Class A-1 M6.4(d)	18" Class C-1	18" Class D-1 M-6.6(b) M-6.8(b)	18" Class E-1	18" Class F-1	18" Class A-1 M6.6(d)	24" Class A-1	24" Class A-1 M6.4(d)	24" Class A-1 M6.6(a) M6.8(b)	24" Class A-1 M6.6(b) M6.8(b)	24" Class B-1 M6.6(b) M6.8(b)	24" Class F-1	30" Class A-1	30" Class A-1 M6.6(a) M6.8(b)	30" Class A-1 M6.4(d)	30" Class A-1 M6.8(b)	30" Class A-1 M6.6(c)	30" Class B-1 M6.8(b) M6.6(b)	36" Class A-1 M6.4(d)	36" Class A-1 M6.4(d) Gage10	42" Class A-1	42" Class A-1 M6.6(a) M6.4(d)	42" Class A-1 M6.6(b) M6.4(d)	42" Class A-1 M6.6(c) M6.4(g)	42" Class A-1 M6.6(d) M6.4(d)	48" Class A-1 M6.6(a)	48" Class A-1 M6.4(d)	48" Class B-1	60" Class A-1 M6.4(d) Gage10	72" Class A-1 M6.6(a)	72" Class A-1 M6.6(g)	72" Class A-1 M6.6(d) M6.4(g) Gage10-8	72" Class A-1 M6.4(g) Gage10-8	72" Class A-1 M6.4(g) Gage8-7	90" Class A-1 with Vitrified LinerPlate	90" Radius Class A-1 with Vit. LinerPlate
F45?(11) Code 7221																																												
12+26.6(S.R.170)	154																																			119		132							
14+73.6(S.R.170)	155																																												
0+32.2(MemPark)	156										194																													120					
80+80(Appr.B)	157		60											74				66																											
83+66(Appr.B)	158																																					108							
85+90(Appr.B)	159															102																													
797+53.4	160;161							16																												154	120	250	212							
27+95(S.R.170)	162																					170																							
20+88(S.R.170)	111													57																														
0+43.5(Boyd St.)	163					36												108																											
*7+50(Ramp D)	129																			46								51																
800+00	43	49																																										
802+85.7	164;165																																		18								1300	232	
1+00(Ramp A)	123			32																																								
804+91	166																							82	64																			
806+50	47													52																														
15+50(Appr.A)	135						53																																				
812+71.5	167																196																											
819+65	168											50						103			52																							
820+00	169																																							292	60				
827+00	170		12										6																															
826+05	60											56																																
4+40(Hill Ave)	151											32																																
2+99.3(W.A.)	171																																									284			
3+50(W.A.)	142							■33																																				
14+75(W.A.)	172							70																												220	56		28						
19+06.5(W.A.)	123									48																																		
829+50	63	45			77																	69																					
796+50	41																																											
Total F45?(11)-7221		94	72	32	77	36	53	86		48	194	138	6	183		102	196	277	46	69	52	170	82	284	56		51	28	18	108	154	120	250	212	119		132	284	120	292	60		1300	232	

* See Sta 796+50 Sheet No. 41 For Quantities ■ M-6.6(b) M-6.8(b)

U45?(11) Code 7221																																												
836+50	174																					4																						
837+35	175																												136															
840+00	71																																												
841+25	176																					19				134																		
852+50	82								22																																			
853+00	177														16																												927	120
855+25	178																																								149			
862+00	86	45			54																																						
865+00	88	46			50																																						
866+10	179																												146														
870+50	91	65																																										
876+00	180												100											143																				
881+60	181																																				112								
887+50	182																	114																										
Total U45?(11)-7221		156			104				22				100		16			114				23		143			134		282							112					149			927	120

SUB-SUMMARY FOR CULVERTS

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

16
250

COL-30-32.19

STATION	See Sheet+	PIPES ~ LIN. FT.					PIPE SPECIALS ~ EACH											Excavation Cu. Yds.		Pipe Removed Lin. Ft.		Masonry Cu. Yds. as per plan		CATCH BASINS ~ EACH												St'd No. 1 Manhole Each	Shoulder Inlets Each		Riprap 6" Reinf. Slab Sq. Yds.	Riprap Grout Filled Sq. Yds.	Dump Rock Channel Prot. Cu. Yds.	Type I Paved Gutter Lin. Ft.		Conc. for Struct. "C" Cu. Yds.	Reinf. Steel Lbs.	Removal Portions Existing Struct. Cu. Yds.		Sodding Sq. Yds.
		106"x68" Elliptical Class G-1 M6.7(b)	106"x68" Elliptical Class G-1 M6.7(b) with V.T. Liner Plate	106"x68" Elliptical Radius Class G-1 M6.7(b)	106"x68" Elliptical Radius Class G-1 M6.7(b) with V.T. Liner Plate		12"x12" Tee Class A-1 M6.6(a) M6.8(b)	12"x30" Bend Class F-1	12"x45" Bend Class B-1 M6.8(b)	18"x18" Tee Class C-1	18"x22"30° Bend Class F-1	30"x12" Double Tee Class A-1 M6.6(c)	36"x12" Tee Class A-1 M6.4(d)	42"x15" Tee Class A-1 M6.6(a) M6.4(b)	60"x40" Bend Class A-1 M6.4(b) Gage 10	72"x30" Bend Class A-1 M6.6(b) M6.4(g) Gage 10 & 8		Structure	Channel	15" & Under	Over 15"	Class "C"	Class "E"	2-2A	2-2B	Mod. 2-3	2-3 Reinf. Conc.	Mod. 2-4	2-4 Reinf. Conc.	Mod. 2-5	3-A																								
F457(11) Code 7221																																																		
12+266(S.R.170)	154																	51v				0.9							1											24			10		15	2157			
14+736(S.R.170)	155																		215				6.1																	145									
0+322(Mem Park)	156									1														1							2									11									
80+80(Appr.B)	157																		4			0.4			1																12	7							
83+66(Appr.B)	158																		151	39	87	1.5																		44		47				4			
85+90(Appr.B)	159																					0.4		1																	17								
797+53.4	160,161																		876			23.3		1					2											48	15	280						127
27+95(S.R.170)	162																		251	22		1.0																		155								
20+88(S.R.170)	111										1														1																6	9	10						
0+43.5(Boyd St.)	163																			160		0.4		1																								
*7+50(Ramp D)	129																		2			0.5			2																11	5	20						
800+00	93						1																	1																			10						
802+85.7	164,165																		8			50.4						1												60	100	10				5		
1400(Ramp A)	123																					0.3		1																	3	2							
804+91	166																		10	14		7.5																1			25		85						
806+50	47																								1																5		10						
15+50(Appr.A)	135																								1																10		10						
812+71.5	167																			10						1																	20						
819+65	168																			18						3																31		45						
820+00	169																	25	17			24.2																			64		60			20	1847		
827+00	170	146	160	64					1									121	58	26		20.7		1																	62		98			55	6811	28	
826+05	60																							1																		7		10						
4+40(Hill Ave.)	151																							1																		6		10						
2+993(W.A.)	171															1			28				3.0																		20								
3+50(W.A.)	142																							1																		4		10						
14+75(W.A.)	172																		15			0.5		1				1									2			57								
19+065(W.A.)	173																					0.3			1																3								
829+50	63							2											1			0.3														1					5							
Total F457(11)-7221		146	160	64			1	2	1	1	1				1			197	636	289	87	132.6	9.1	11	1	9	1	2	2	1	2			3	1		427	403	348	540		90	10,815	37		127

*See Sta 796+50 Sheet No. 41 For Quantities

F457(11) Code 0010																																																		
797+53.4	160											1														1				1	1										14		20						
796+50	41																										1																							
800+00	43																																									10								
Total F457(11)-0010												1														1		1		1	1										14		30						

U457(11) Code 7221																																																		
836+50	174		264		80													35	9			20.7																	65		110			28	3095	23	
837+35	175												1																												18		10						
840+00	71																		4																						15	13						
841+25	176									1									49			12.6																		22		5				5		
852+50	82																							1																		7								
853+00	177																	71	7		11	33.7																		93		118			72	9098	131	
855+25	178																1		49			23.5																		120								
862+00	86							2														0.3																1											
865+00	88							2														0.3																1			5							
866+10	179																		24			17.6																		35		15	15					
870+50	91																					0.3																1											
876+00	180																		5			7.3				3												1		31	7	30						
881+60	181																		65			30.4																		36		29	50					
887+50	182																		40			3.6		1																	12	20	10						
Total U457(11)-7221			264		80			4				1	1			1	106	252		11	150.3		2		3		1	1							1		4	371	83	322	115		100	12,193	159	

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

12/250

COL-30-32.19

*Extra quantities to be placed where directed by the Engineer. Any of these items may be nonperformed and payment will be made on the basis of final measurement.

GENERAL SUMMARY

Revised R.E.C. 11-16-62

CARRIED FROM Sheet No.

| F457(III) Code 0010 | F-457(III) Code 7221 | | |

* Extra quantities to be placed where directed by the Engineer. Any of these items may be nonperformed and payment will be made on the basis of final measurement.

GENERAL SUMMARY

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

18/250

COL-30-32.19

CARRIED FROM SHEET NO.

| F-457(11) Code 0010 | | | F-457(11) Code 7221 | | |

*Extra quantities to be placed where directed by the Engineer. Any of these items may be nonperformed and payment will be made on the basis of final measurement.

GENERAL SUMMARY

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

19/250

COL-30-32.19

CARRIED FROM SHEET NO.

| F-45?(11)Code 0010 | | | | F-45?(11) Code 7221 | | | | | | | | | | | | | | | | | | | | | | | | | | | U-45?(11) Code 7221 | | | | | | | | | | | | | | | | | | |

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

20
250

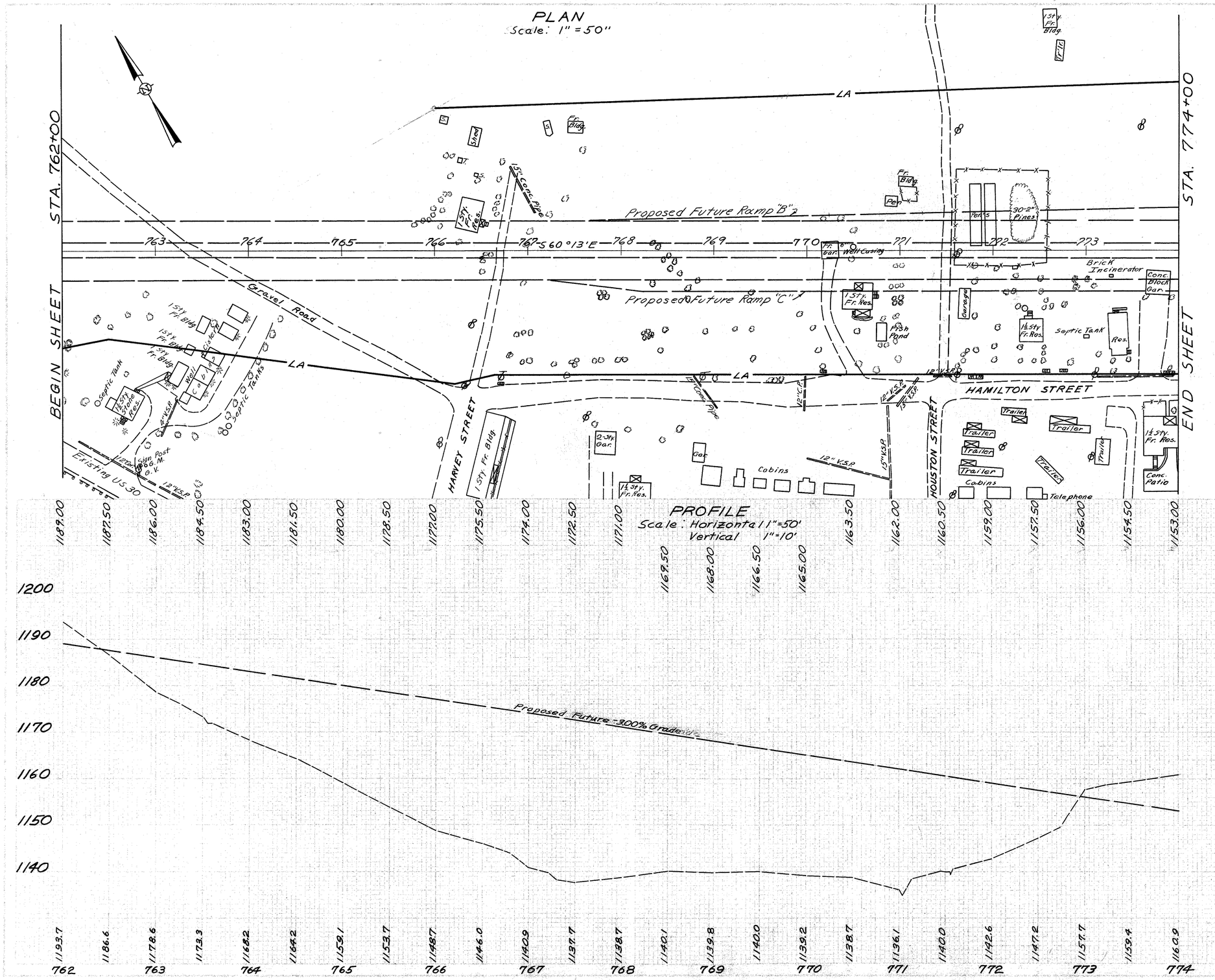
COL-30-32.19

* Extra quantities to be placed where directed by the Engineer. Any of these items may be nonperformed and payment will be made on the basis of final measurement.

GENERAL SUMMARY

| Carried from Sheet No. | | |

COL-30-32.19

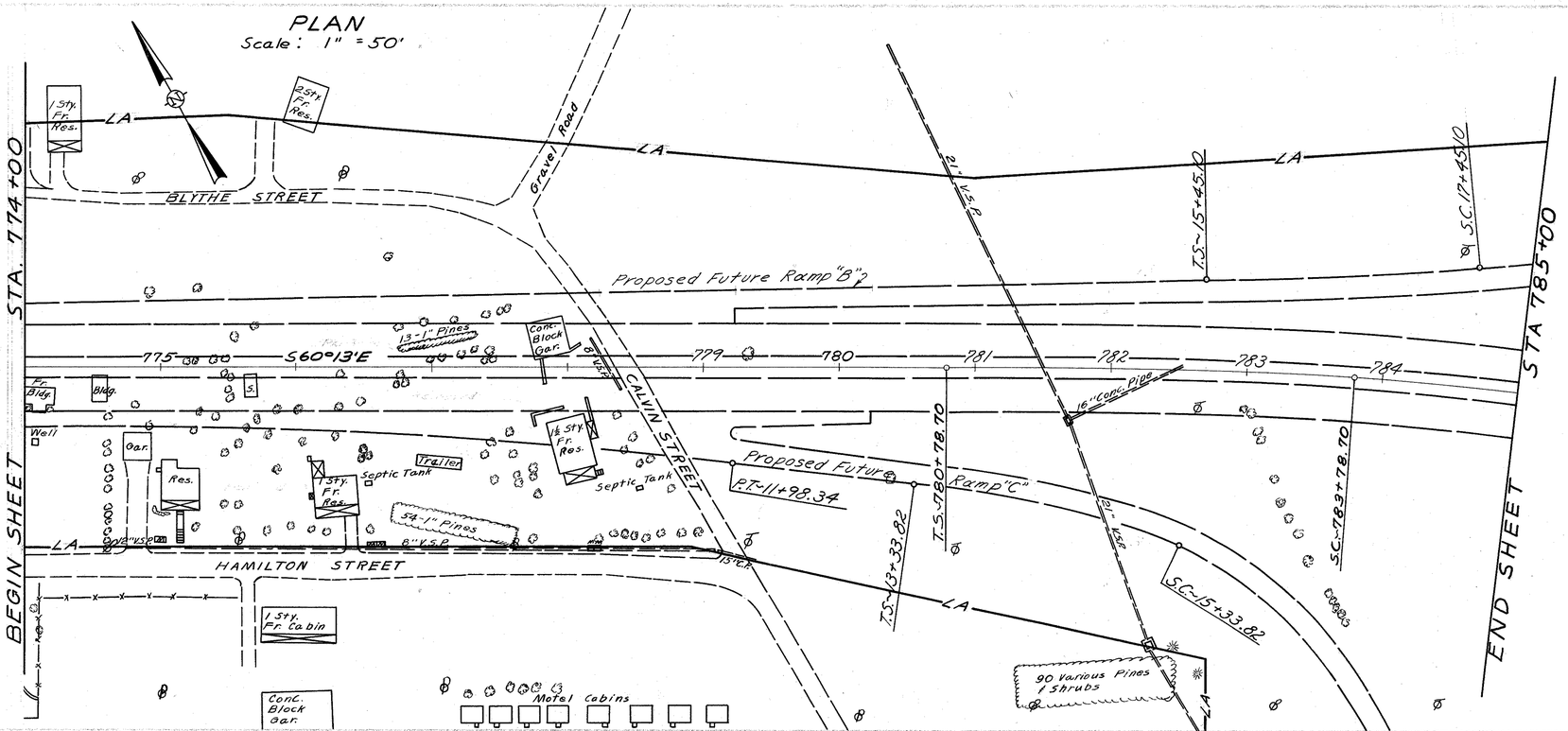

PLAN
Scale: 1" = 50"
STA. 762+00
STA. 774+00
BEGIN SHEET
END SHEET
LA
Proposed Future Ramp "B"
Proposed Future Ramp "C"
Gravel Road
HARVEY STREET
HOUSTON STREET
HAMILTON STREET
Existing US 30
Brick Incinerator
Septic Tank
Cabins
Telephone
Conc. Patio
Conc. Block Gar.
Fish Pond
Well Casing
30-2" Pines
PROFILE
Scale: Horizontal 1"=50'
Vertical 1"=10'
Proposed Future -3.00% Grade
1200
1190
1180
1170
1160
1150
1140
1193.7
1186.6
1178.6
1173.3
1168.2
1164.2
1159.1
1153.7
1148.7
1146.0
1140.9
1137.7
1138.7
1140.1
1139.8
1140.0
1139.2
1138.7
1136.1
1140.0
1142.6
1147.2
1157.7
1159.4
1160.9
762
763
764
765
766
767
768
769
770
771
772
773
774

			22
			250

COL-30-32.19

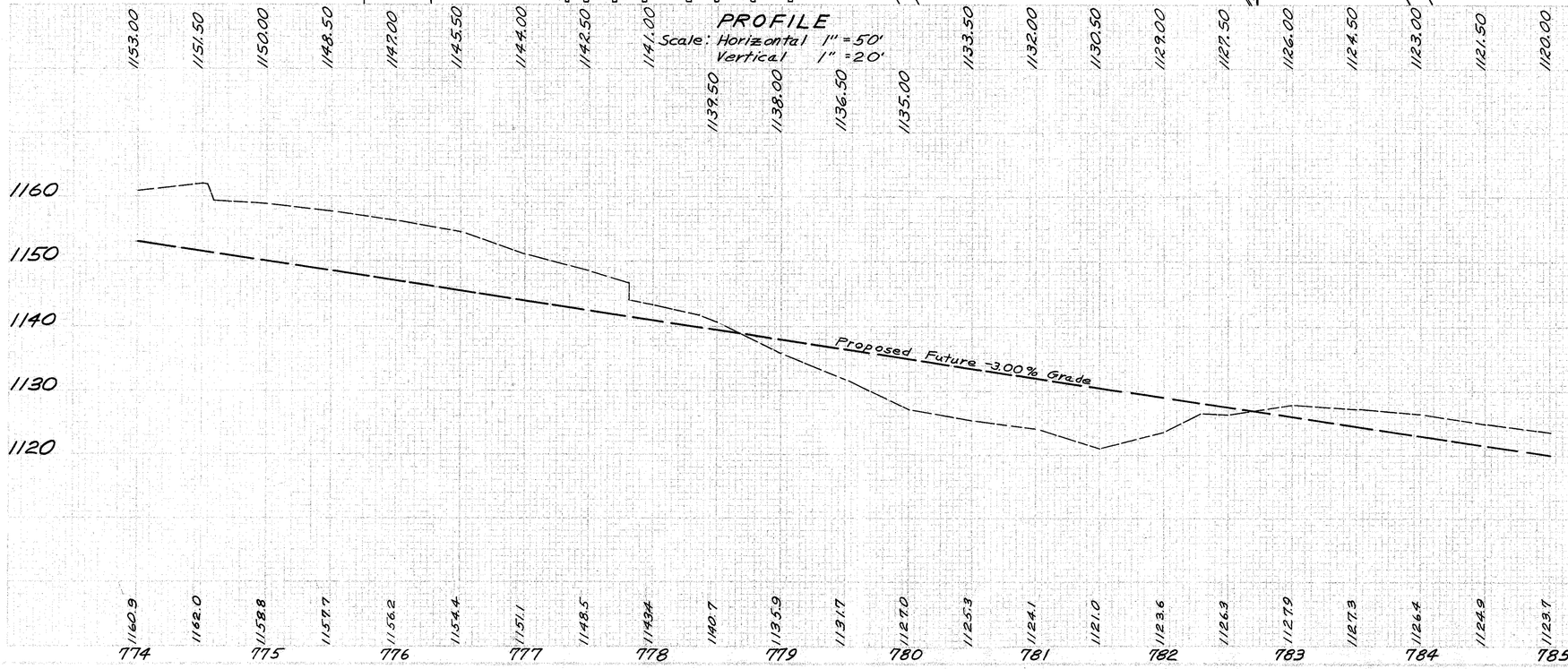
PLAN

Scale: 1" = 50'

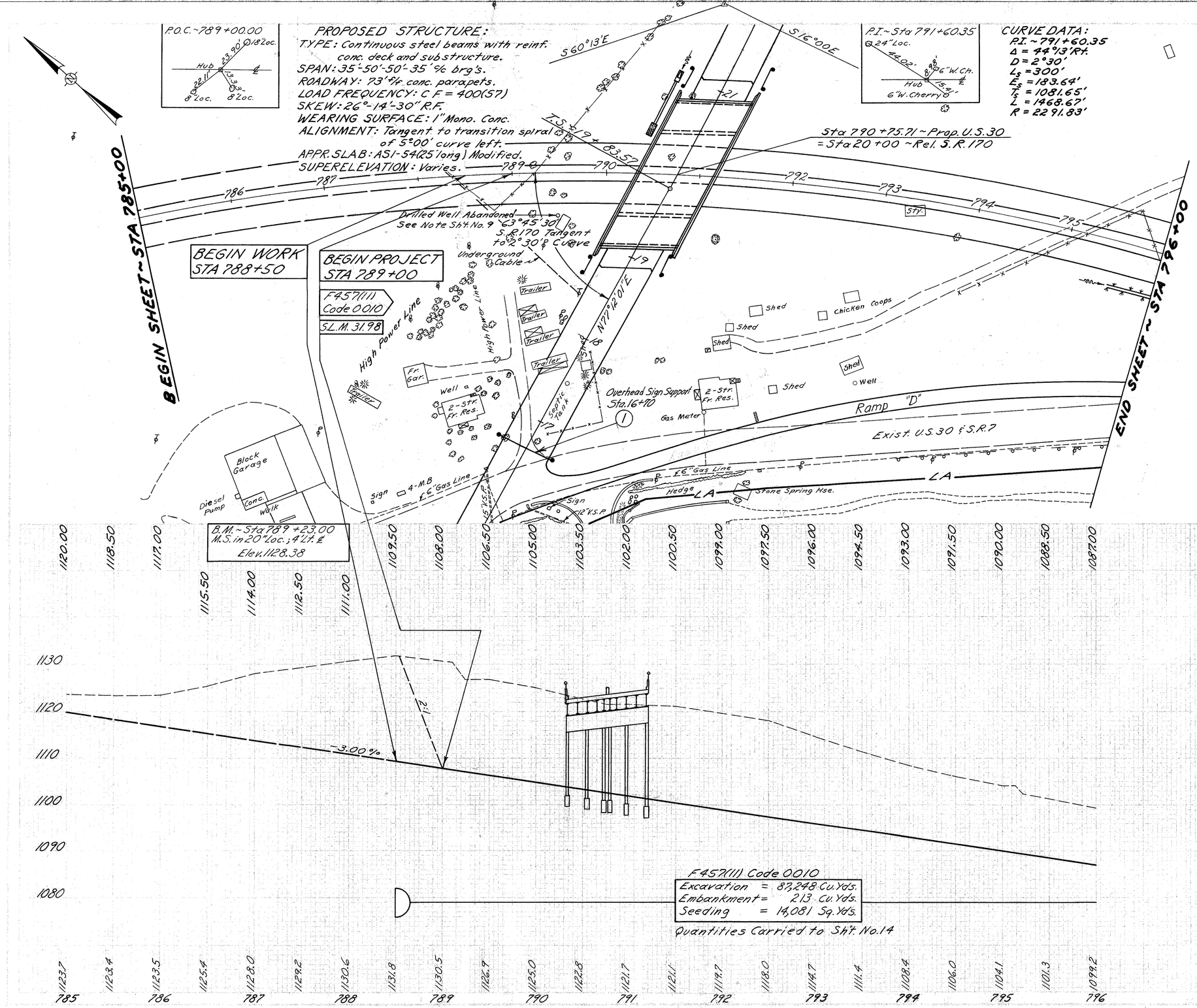


PROFILE

Scale: Horizontal 1" = 50'
Vertical 1" = 20'



COL-30-32.19

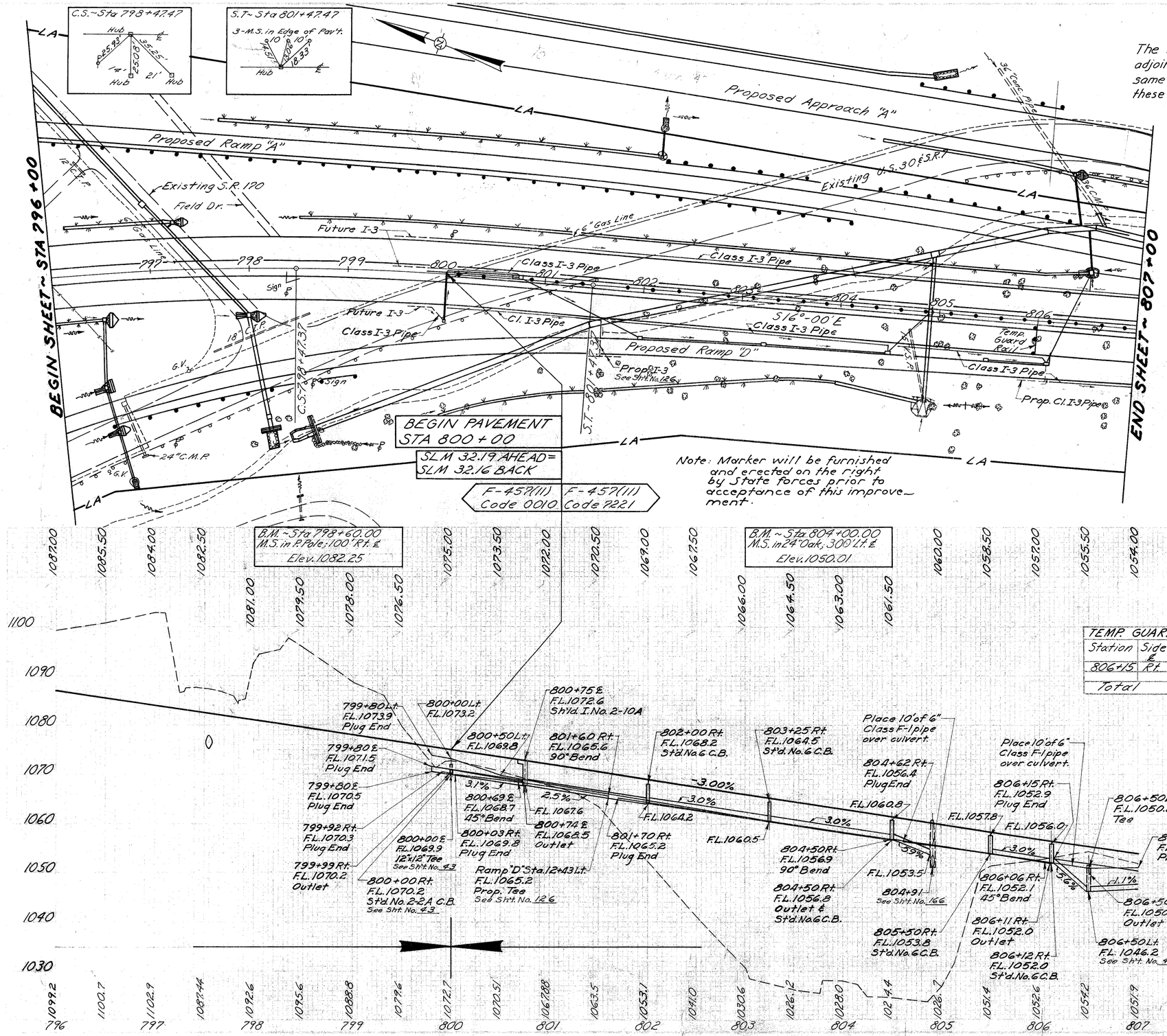


Main Line Pavement from Sta. 789+00 to Sta. 800+00 will be constructed on future contract.

(1) Overhead Sign Support ~ Sta. 16+70 Rel. S.R. 170
℄ of Structure = ℄ of Relocated S.R. 170
I-129 No. 13.2 Design 4
Span: 73'-0"
Bracket Assemblies (Clamp Sizes): 4-14", 2-13", 2-12" = 8 Total
Sign Height: 5'-0"
Concrete Quantity: 4.2 Cu. Yds., Class "C"
For additional details see sheet No. 198

COL-30-32.19

The typical section of the future adjoining pavement will be the same as shown on sheet No. 3 of these plans.



DRAINAGE

Station From	Station To	Side ℄	See Sheet	New Work Type	New Work Size	New Work Length	Sod Sq. Yds.	Pipe Removed 15" & over Lin. Ft.
796+50		Rt.	41	Pipe	24"	69'		
797+53.43		Lt. & Rt.	160 & 161	Pipe	42"	236'		
798+50	806+38	Lt.	24				500	
800+00		Rt.-℄	43	Pipe	12"	49'		
802+85.7		Lt. & Rt.	164 & 165	Ch. Pipe	72"	1532'		
804+91		Lt. & Rt.	166	Pipe	30"	146'		
806+50		Lt.	47	Pipe	18"	52'		
797+62	798+62	Rt.	24					105
795+48	796+48	Rt.	24				62	
796+13	797+13	Lt.	24				56	
806+38	807+00	Lt.	24				47	
Total - Code Type 0010							203	105
Total - Code Type 7221							462	
Grand Total							665	105

STORM SEWERS

Station From	Station To	Side ℄	See Sheet	12" Pipe * Lin. Ft.	15" Pipe Lin. Ft.	No. 6 Catch Basin-Each	No. 2-10A Sh'ld Inlet Each
799+80	800+25	℄	24	95			
800+25		℄	24				1
800+25	802+00	℄-Rt.	24		134		
802+00		Rt.	24			1	
802+00	804+50	Rt.	24		250		
803+25		Rt.	24			1	
804+50		Rt.	24			1	
804+50	804+91	℄-Rt.	24		58		
805+50	806+12	Rt.	24	62			
805+50		Rt.	24			1	
806+12		Rt.	24			1	
806+12	806+50	Rt.-Lt.	24	103			
Code Type 0010				20			
Code Type 7221				240	442	5	1
Total				260	442	5	1

* Class A-1 Sec. M-6.8(b) or Sec. M-6.6(a)

TEMP. GUARD RAIL

Station	Side ℄	Lin. Ft.
806+15	Rt.	25
Total		25

GUARD RAIL

Station From	Station To	Side ℄	Barrier Type Lin. Ft.	Remove Lin. Ft.
800+03	807+00	℄	697	
805+20	807+00	Lt.		183
Total			697	183

PAVEMENT REMOVAL

Station From	Station To	Side ℄	Sq. yds.
796+90	798+63	Rt. & Lt.	589
799+60	802+00	Rt. & Lt.	1040
Code Type 0010			769
Code Type 7221			868
Total			1637

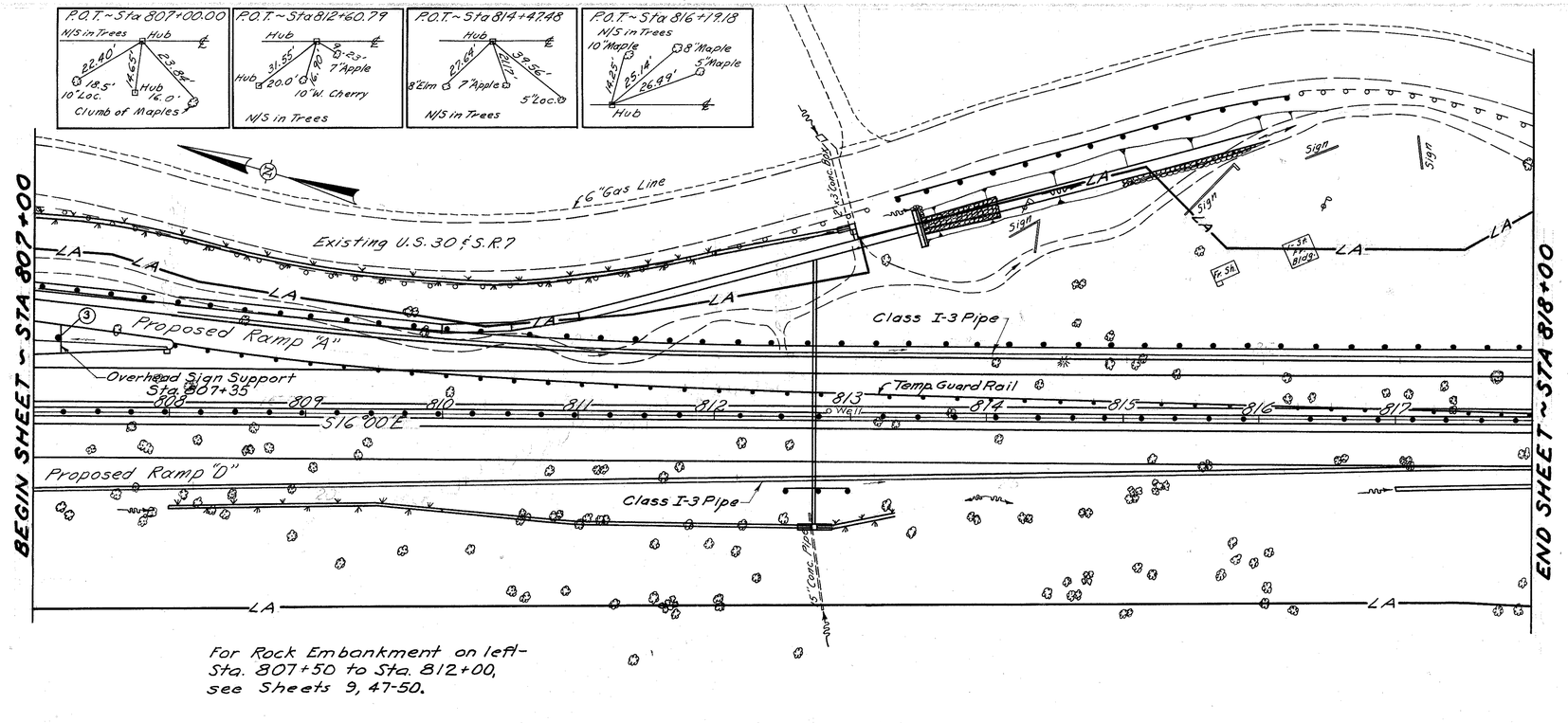
UNDERDRAIN

Station From	Station To	Side ℄	6" Class I-3 D=12% Lin. Ft.	6" Class I-3 D=30" Lin. Ft.	Class F-1 6" Lin. Ft.	6" Class I-3 Pipe Spec. 45° Each	90° Each	Tee Each
799+80	800+50	Lt.	70					
799+80	800+74	℄		93	3	1		
799+92	799+99	Rt.			10			
800+03	801+60	Rt.		172			1	
800+50	807+00	Lt.		648	20			1
801+70	804+50	Rt.		280	7		1	
804+62	806+11	Rt.		135	18	1		
Code Type 0010			20	20	10	0	0	0
Code Type 7221			50	1308	48	2	2	1
Total			70	1328	58	2	2	1

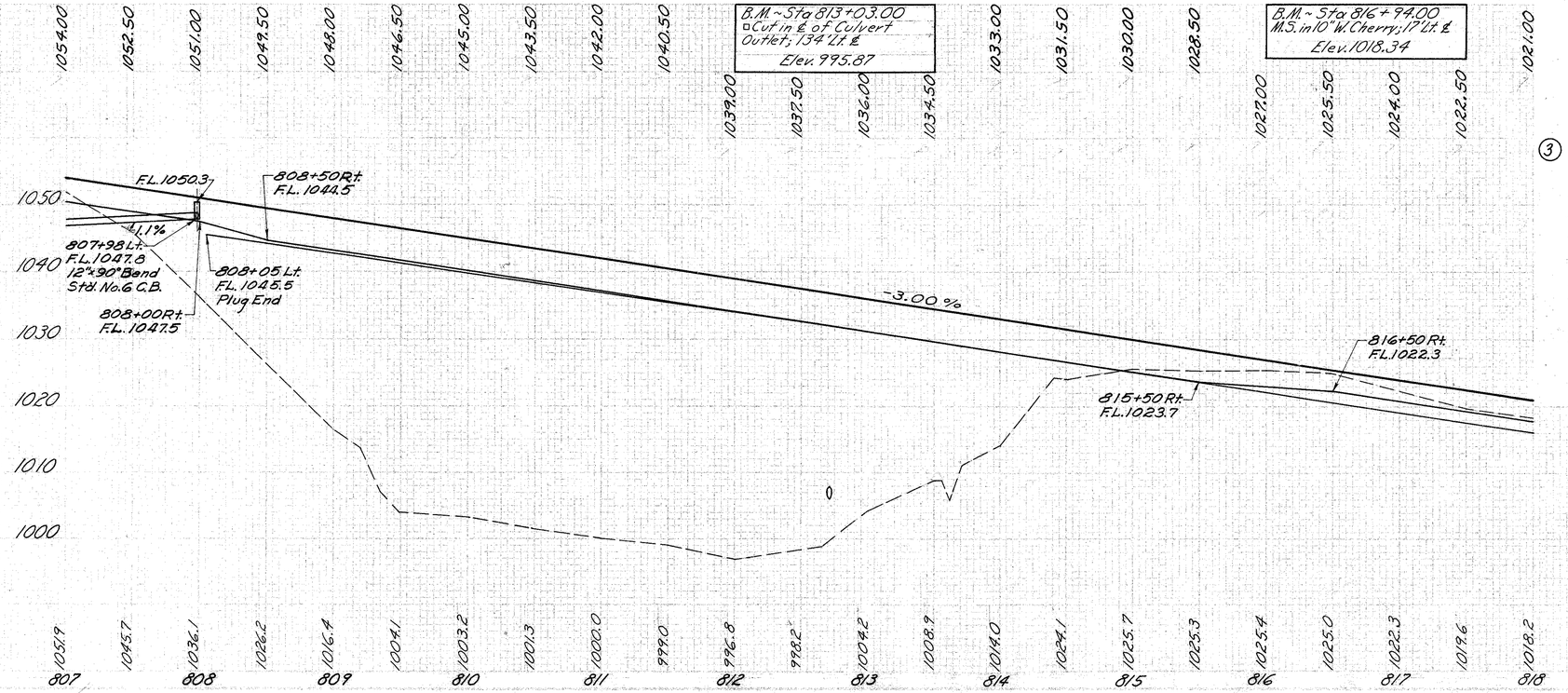
* Sec. M-6.4(h)

25
250

COL-30-32.19



For Rock Embankment on left- Sta. 807+50 to Sta. 812+00, see Sheets 9, 47-50.



DRAINAGE

Station From	Station To	Side ℄	See Sheet	New Work Type	New Work Size	New Work Length	Sod Sq. Yds.	Paved Gutter Lin. Ft.
808+00	810+00	Rt.	25				112	
810+00	812+60	Rt.	25				88	262
812+71.5		Lt.-Rt.	167	Pipe	24"	196'		
812+00	818+00	Rt.	25				33	100
812+84	813+34	Rt.	25				25	
812+00	812+88	Lt.	25				30	90
807+00	812+00	Lt.	25				236	
Total							524	452

STORM SEWER

Station From	Station To	Side ℄	See Sheet	*12" Pipe Lin. Ft.	No. 6 Catch Basin-Each	12" Pipe Special *90° Bend Each	
806+50	807+98	Lt.	25	148			
807+98		Lt.	25		1	1	
Total				148	1	1	

*Class E-1

GUARD RAIL

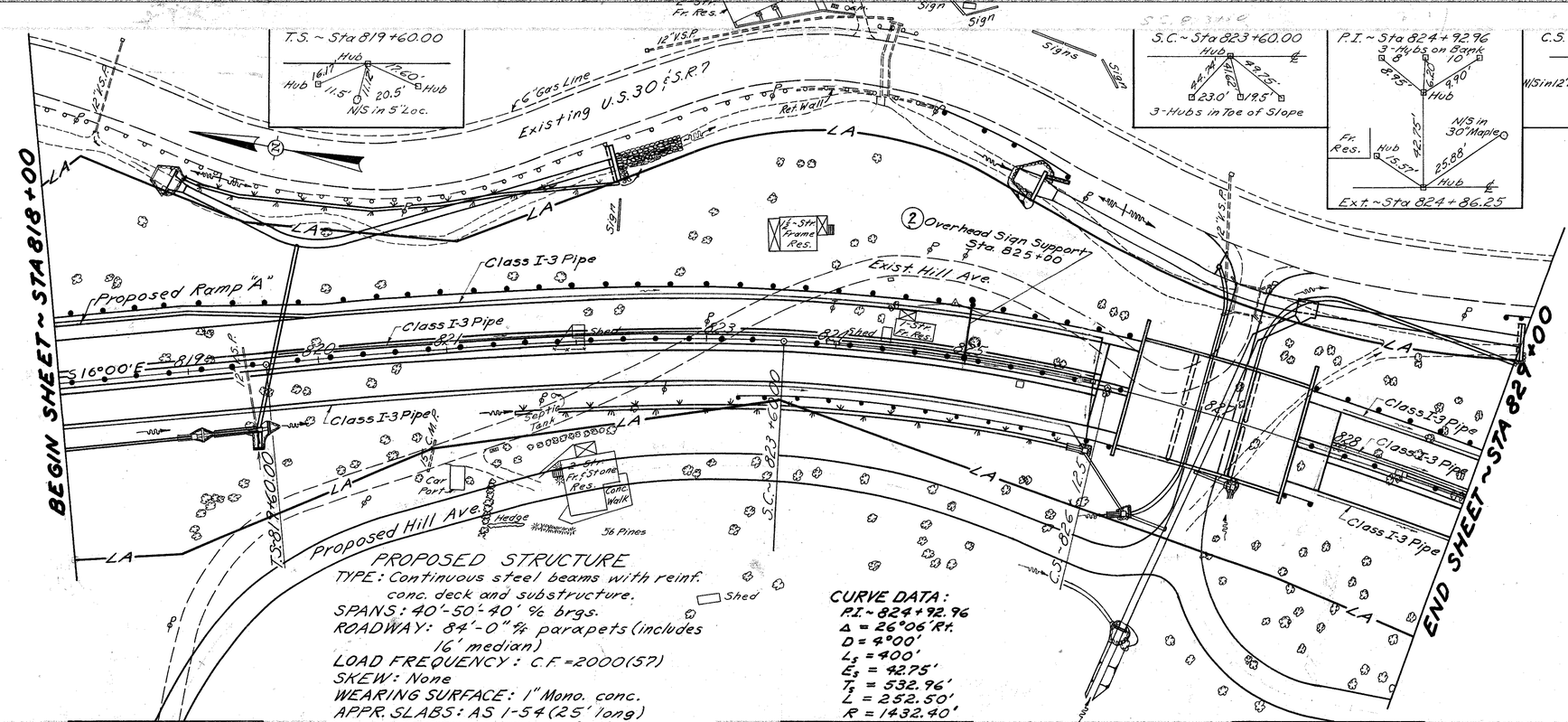
Station From	Station To	Side ℄	Barrier Type Lin. Ft.	New Lin. Ft.	Remove Lin. Ft.	Temp. Lin. Ft.
807+00	818+00	℄	1100			
807+00	813+12	Lt.			617	
808+02.72	818+00	Lt.		997		
812+50	813+00	Rt.		50		
813+30	816+20	Lt.		300		
808+00	818+00	Lt.				1000
Total			1100	1347	617	1000

UNDERDRAIN

Station From	Station To	Side ℄	6" Class I-3 D=12" Lin. Ft.	6" Class I-3 D=30" Lin. Ft.
806+15	808+50	Rt.	235	
808+05	818+00	Lt.		995
808+50	815+50	Rt.		700
815+50	818+00	Rt.	250	
Total			485	1695

③ Overhead Sign Support Sta. 807+35 U.S. 30 ℄ of Foundation is offset 5 ft. From Face of Curb on the Main Line
I-129 No. 9.12 Design 3
Arm: 20'-0"
Bracket Assemblies (Clamp Sizes):
4-6" = 4 Total
Sign Height: 8'-0"
Concrete Quantity: 2.0 Cu. Yds. Class C ** Sec. M-6.4(h)
For Additional Details See Sh. No. 197

COL-30-32.19



PROPOSED STRUCTURE

TYPE: Continuous steel beams with reinf. conc. deck and substructure.
SPANS: 40'-50'-40' % brgs.
ROADWAY: 84'-0" ft parapets (includes 16' median)
LOAD FREQUENCY: C.F. = 2000(57)
SKEW: None
WEARING SURFACE: 1" Mono. conc.
APPR. SLABS: AS 1-54 (25' long)
ALIGNMENT: Spiral
SUPERELEVATION: Varies

CURVE DATA:

P.I. ~ 824+92.96
Δ = 26°06' Rt.
D = 4°00'
L_s = 400'
E_s = 42.75'
T_s = 532.96'
L = 252.50'
R = 1432.40'

B.M. ~ Sta 818+50.00
M.S. in P. Pole ; 200' Lt. ℄
Elev. 984.60

B.M. ~ Sta 824+75.00
□ Cut in Retaining Wall
250' Lt. ℄
Elev. 965.59

B.M. ~ Sta 828+92.00
M.S. in 14" Locust ; 1' Lt. ℄
Elev. 999.53

-3.00 %
3.0%
8.3%
3.1%

826+00 ℄ F.L. 996.9 Sh'ld. I. No. 2-8A
824+00 ℄ F.L. 1002.9 Sh'ld. I. No. 2-8A
819+70 ℄ F.L. 1011.5 Plug End
822+00 ℄ F.L. 1001.9
823+00 ℄ F.L. 1003.5
F.L. 997.9
826+00 ℄ F.L. 994.5 Tee
826+00 Lt. F.L. 995.4 90° Bend
825+88 Rt. F.L. 992.0 45° Bend
F.L. 991.9
826+04 Rt. F.L. 990.0 Outlet
826+05 Rt. F.L. 987.5 See Sh't. No. 60
826+00 ℄ F.L. 994.3 Outlet
827+89 Lt. F.L. 988.5 Plug End
828+50 ℄ F.L. 989.4 Sh'ld. I. No. 2-8-A
828+50 ℄ F.L. 986.9
827+91 Rt. F.L. 987.2 Plug End
827+90 ℄ F.L. 987.4 Plug End
826+29.25
827+63.75
Place 10' of 6" Class F-1 pipe over culvert
Place 10' of 6" Class F-1 pipe over culvert

(2) Overhead Sign Support Sta. 825+00 U.S. 30
℄ of left support foundation = ℄ of U.S. 30
I-129 No. 13.2 Design 1
Span : 46'-0"
Bracket Assemblies (Clamp Sizes):
2-10", 3-9", 1-8" = 6 Total
Sign Height : 8'-0"
Concrete Quantity: 4.2 Cu. Yds. Class "C"
For Additional Details see sheet Nos. 10 & 198.

F.A.S. 7(11) Code 7221

Excavation	= 156,705 Cu. Yds.
Embankment	= 281,435 Cu. Yds.
Seeding	= 43,317 Sq. Yds.
Channel Excavation	= 937 Cu. Yds.

Quantities Carried to Sh't. No. 14

DRAINAGE

Station From	Station To	Side ℄	See Sheet	New Work Type	New Work Size	New Work Length	Paved Gutter Lin. Ft.	Sod Sq. Yds.
818+00	818+88	Rt.	26				88	29
819+65		Lt. & Rt.	168	Pipe	24"	155'		
820+00		Lt.	169	Ch. Pipe	72"	352'		
819+12	822+36	Lt.	26					150
821+50	825+93	Rt.	26					241
826+05		Rt.	60	Pipe	18"	56'		
827+00		Lt.	170	Ch. Pipe	106"x68"	320'		
2+99.3 (West. AVE)		Lt. & Rt.	171	Pipe	60"	284'		
2+20 (W.A.)	829+00	Lt.	26				197	66
Total							285	486

STORM SEWER

Station From	Station To	Side ℄	See Sheet	12" Pipe Lin. Ft.	No. 2-8A Std. Inlets. Each	
826+00		℄	26		1	
826+00	826+05	℄-Rt.	26	53		
828+50		℄	26		1	
828+50	829+50	℄	26	100		
824+00	826+00	℄	26	200		
824+00		℄	26		1	
Total				353	3	

* Class A-1 Sec. M-6.8(b) or Sec. M-6.6(a)

GUARD RAIL

Station From	Station To	Side ℄	I-15 Barrier Lin. Ft.	I-15 New Lin. Ft.	I-15 Remove Lin. Ft.	I-15 Barrier, as per plan Lin. Ft.	S-14 Appr. Slabs Lin. Ft.
818+00	824+68.75	℄	668.75				
826+04	25 826+29.98	℄					* 25.73
818+00	826+29	Lt.		844			
819+28	822+11	Lt.			300		
824+60	825+55	Lt.		112.5			
823+25	826+25	Rt.		300			
827+63.02	827+88.75	℄					* 25.73
827+88.75	827+96.25	℄	207.5				
827+64	829+00	Lt.		137.5			
827+68	827+93	Rt.		25			
825+31.25	826+04.25	℄	73.0				
824+68.75	825+31.25	℄				** 62.5	
Totals			949.25	1419.0	300	62.5	51.46

* Includes 1.27' for end finish
** For details see sheet No. 10

APPROACH SLABS

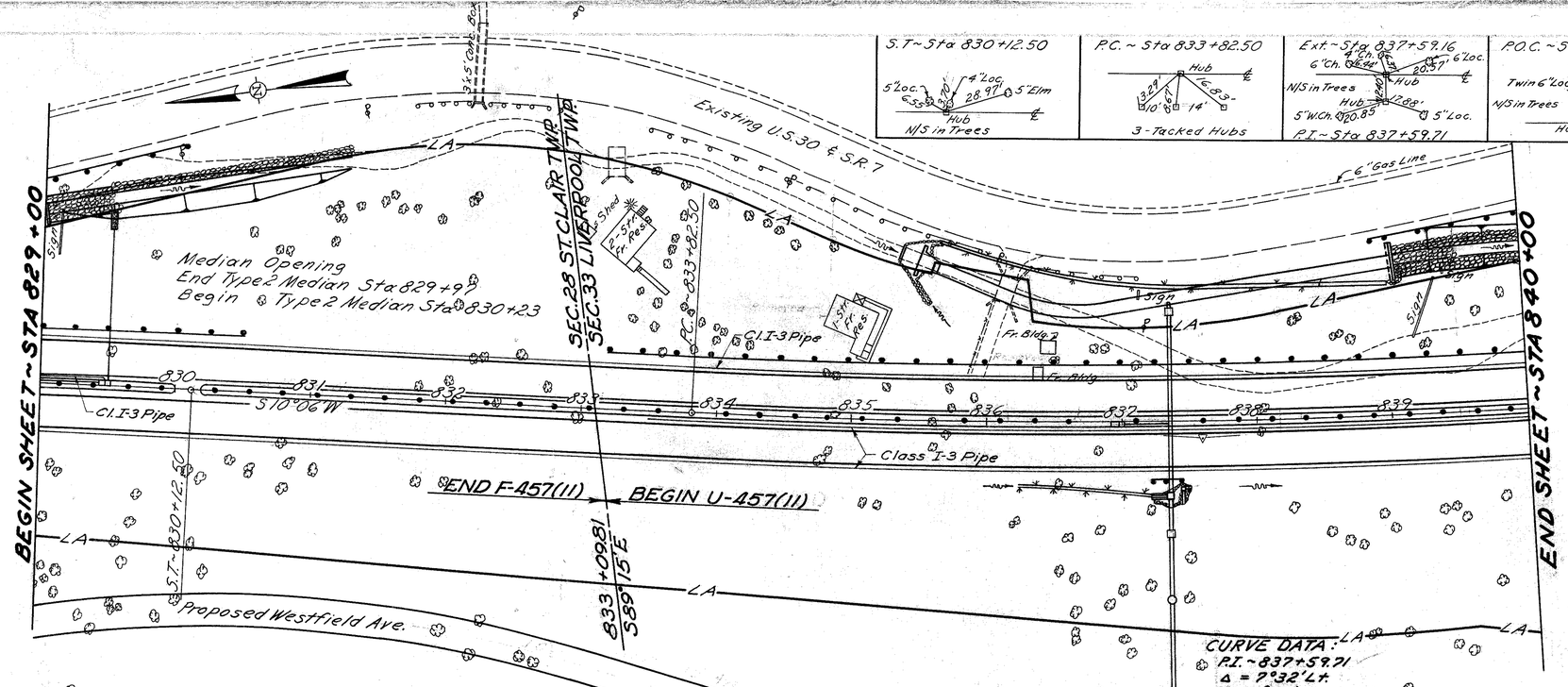
Station From	Station To	Sq. Yds.
826+04.25	826+29.25	177.7
827+63.75	827+88.75	177.7
Total		356

UNDERDRAIN

Station From	Station To	Side ℄	6" Class I-3 D=12" D=30" Lin. Ft.	Class F-1 6" Lin. Ft.	Class A-1 8"★★ Lin. Ft.	Pipe Special: Class I-3 6"-45° Bend Each	Pipe Special: Class I-3 6"-90° Bend Each	Pipe Special: Class A-1 8" Tee ★★ Each
818+00	826+00	Lt.		795	10		1	
818+00	826+04	Rt.	800		20	1		
819+70	822+00	℄		230				
822+00	826+00	℄	400					
826+00		Lt.			34			1
Total			1200	1025	30	34	1	1	1

★ Sec. M-6.4(h) ★★ Sec. M-6.6(b) or Sec. M-6.8(b)

COL-30-32.19



DRAINAGE

Station From	Station To	Side ℄	See Sheet	New Work Type	Size	Length	Paved Gutter Lin. Ft.	Sod Sq. Yds.
829+50		℄ Lt.	63	Pipe	12"	122		
836+50		Lt.	174	Ch. Pipe	106"x68"	344'		
835+72	838+50	Lt.	27					123
838+50	839+00	Lt.	27				50	17
837+35		Lt & Rt.	175	Pipe	36"	136'		
836+23	837+23	Rt.	27					56
Total							50	196

STORM SEWER

Station From	Station To	Side ℄	See Sheet	No. 2-10A Sh'ld. Inlets Each	12" Pipe Lin. Ft.
837+00		℄	27	1	
837+00	837+35	℄	27		36
Total				1	36

* Class A-1 Sec. M-6.8(b) or Sec. M-6.6(b)

GUARD RAIL

Station From	Station To	Side ℄	Barrier Type Lin. Ft.	New Lin. Ft.	Remove Lin. Ft.	
828+83	830+00	Lt.		125		
829+00	830+49	Lt.		150		
830+24	840+00	℄	976			
833+17	840+00	Lt.		678.5		
835+72	835+95	Lt.			25	
836+36	837+11	Lt.			75	
837+20	837+45	Rt.		25		
838+85	840+00	Lt.		112.5		
Total F-457(11)			285.81	275		
Total U-457(11)			690.19	816	100	
Total			976	1091	100	

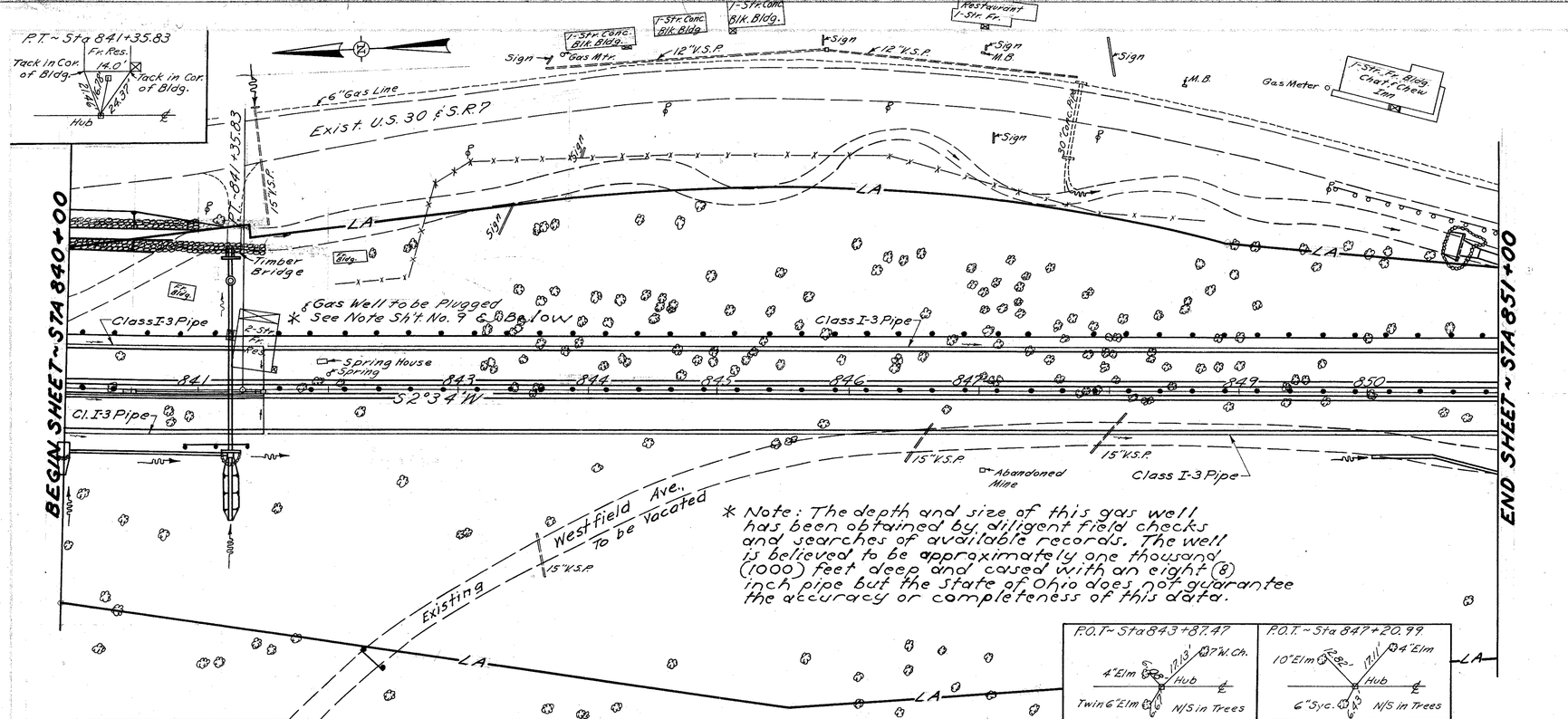
UNDERDRAIN

Station From	Station To	Side ℄	6" Class I-3 D=12"* Lin. Ft.	Class I-3 D=30" Lin. Ft.	Class A-1 6" Lin. Ft.	Class A-1 8"** Lin. Ft.	Pipe Special Class I-3 6"-45° Bend Each	Class I-3 6"-90° Bend Each	Class A-1 8"** Tee Each
827+89	830+00	Lt.		201	10			*	
827+90	829+49	℄	154		3		1		
827+91	836+00	Rt.	810						
830+00	833+50	Lt.	350						
833+50	834+50	℄	100						
833+50	841+50	Lt.		800				1	
834+50	841+50	℄		700					
836+00	838+00	Rt.		190	10				
838+00	841+50	Rt.	340		10			1	
841+50		Lt & Rt.				68			1
Total F-457(11)			984	201	13	0	1	0	0
Total U-457(11)			770	1690	20	68	0	1	1
Total			1754	1891	33	68	1	1	1

* Sec. M-6.4(h)
** Sec. M-6.6(b) or Sec. M-6.8(b)

28
250

COL-30-32.19



DRAINAGE

Station From	Station To	Side ℄	See Sheet	New Work Type	Size	Length	Paved Gutter Lin. Ft.	Sod Sq. Yds
840+00		Rt.	71	Slope Protection				
840+05	841+18	Rt.	28				115	38
841+25		Lt & Rt.	176	Pipe	30"	134'		
850+00	851+00	Rt.	28				103	34
Total							218	72

STORM SEWER

Station From	Station To	Side ℄	See Sheet	*12" Pipe Lin. Ft.	No. 2-8A Shld. Inlets Each	No. 2-10A Shld. Inlets Each
840+50		℄	28			1
840+50	841+25	℄	28	76		
841+25	841+50	℄	28	26		
841+50		℄	28		1	
Total				102	1	1

*Class A-1 Sec. M-6.8(b) or Sec. M-6.6(b)

GUARD RAIL

Station From	Station To	Side ℄	Barrier Type Lin. Ft.	New Lin. Ft.
840+00	851+00	℄	1100	
840+00	851+00	Lt.		1099
840+90	841+40	Rt.		50
842+21	842+40	Rt.		25
Total			1100	1174

UNDERDRAIN

Station From	Station To	Side ℄	6" Class I-3 Pipe D=12%* Lin. Ft.	D=30" Lin. Ft.
841+54	850+50	Rt.	896	
841+54	844+00	Lt.		246
844+00	847+50	Lt.	350	
847+50	851+00	Lt.		350
Total			1246	596

* Sec. M-6.4(h)

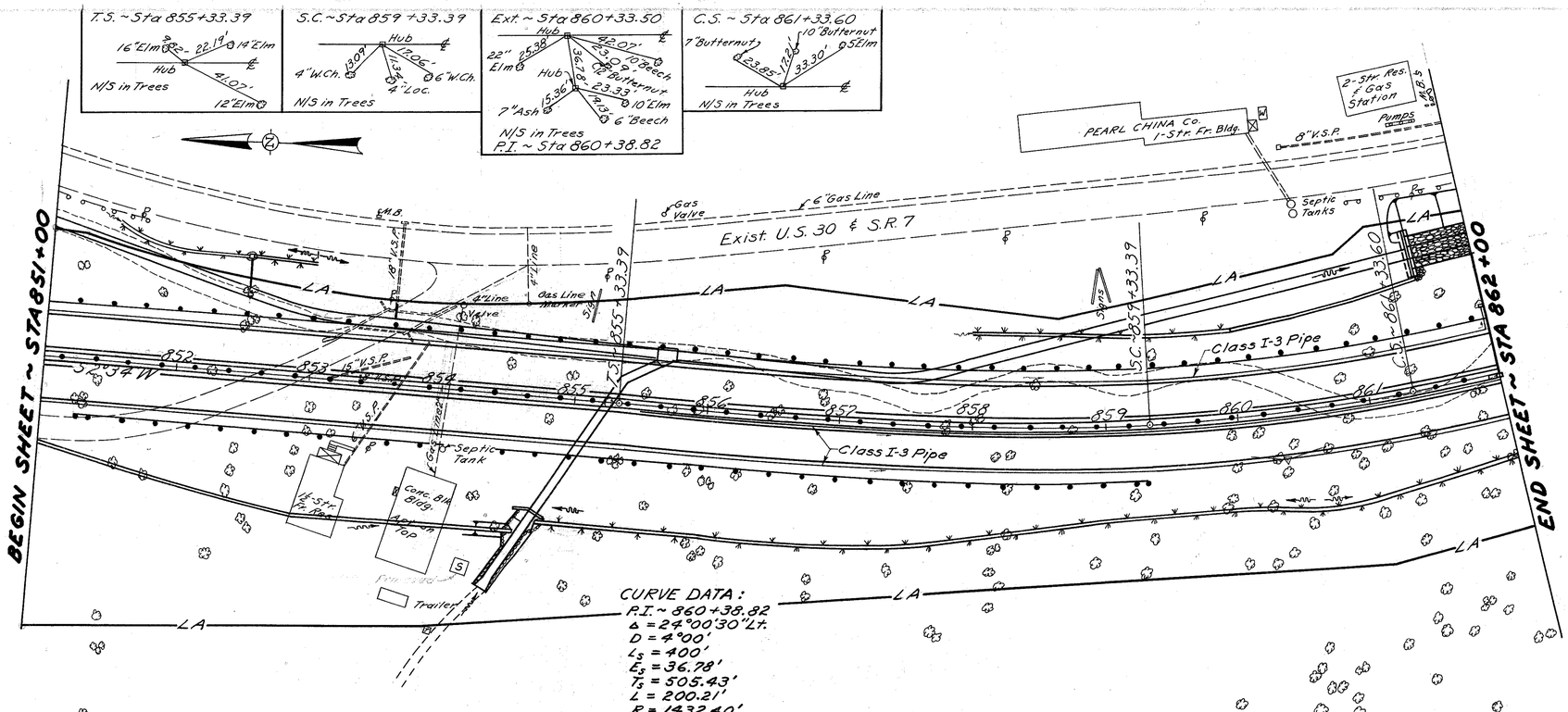
U457(11) Code 7221

Excavation	= 303,048 Cu. Yds.
Embankment	= 296,970 Cu. Yds.
Seeding	= 97,697 Sq. Yds.
Channel Excavation	= 11,075 Cu. Yds.

Quantities Carried to Sh't. No. 14

REV. 5-9-62

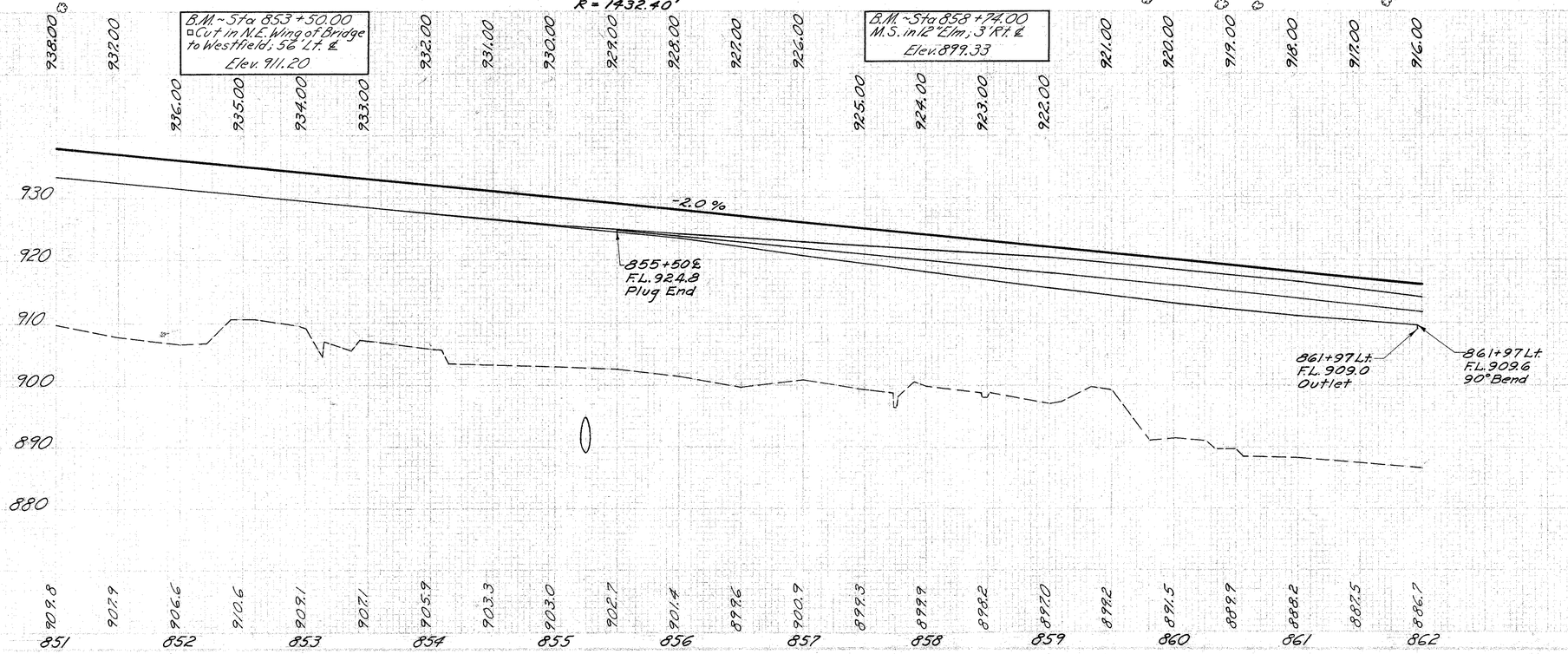
COL-30-32.19



CURVE DATA :
P.I. ~ 860+38.82
Δ = 24°00'30" Lt.
D = 4°00'
L_s = 400'
E_s = 36.78'
T_s = 505.43'
L = 200.21'
R = 1432.40'

B.M. ~ Sta 853+50.00
□ Cut in N.E. Wing of Bridge to Westfield; 56' Lt. ℄
Elev. 911.20

B.M. ~ Sta 858+74.00
M.S. in 12" Elm; 3' Rt. ℄
Elev. 899.33



DRAINAGE

Station From	Station To	Side ℄	See Sheet	New Work Type	New Work Size	New Work Length	Paved Gutter Lin. Ft.	Sod Sq. Yds.
851+00	854+50	Rt.	29				355	118
851+50	852+45	Lt.	29					45
852+50		Lt.	82	Pipe	15"	22'		
853+00		Lt.	177	Ch. Pipe	90°	10.72'		
854+84	862+00	Rt.	29					331
855+25		Lt. & Rt.	178	Pipe	72"	149'		
858+00	860+00	Lt.	29					85
860+00	861+50	Lt.	29				145	48
852+45	853+00	Lt.	29					25
Total							500	652

GUARD RAIL

Station From	Station To	Side ℄	Barrier Type Lin. Ft.	New Lin. Ft.	Remove Lin. Ft.	
851+00	862+00	Rt.	1100			
851+00	862+00	Lt.		1087		
851+09	851+70	Lt.			62	
851+25	859+30	Rt.		812.5		
Total			1100	1899.5	62	

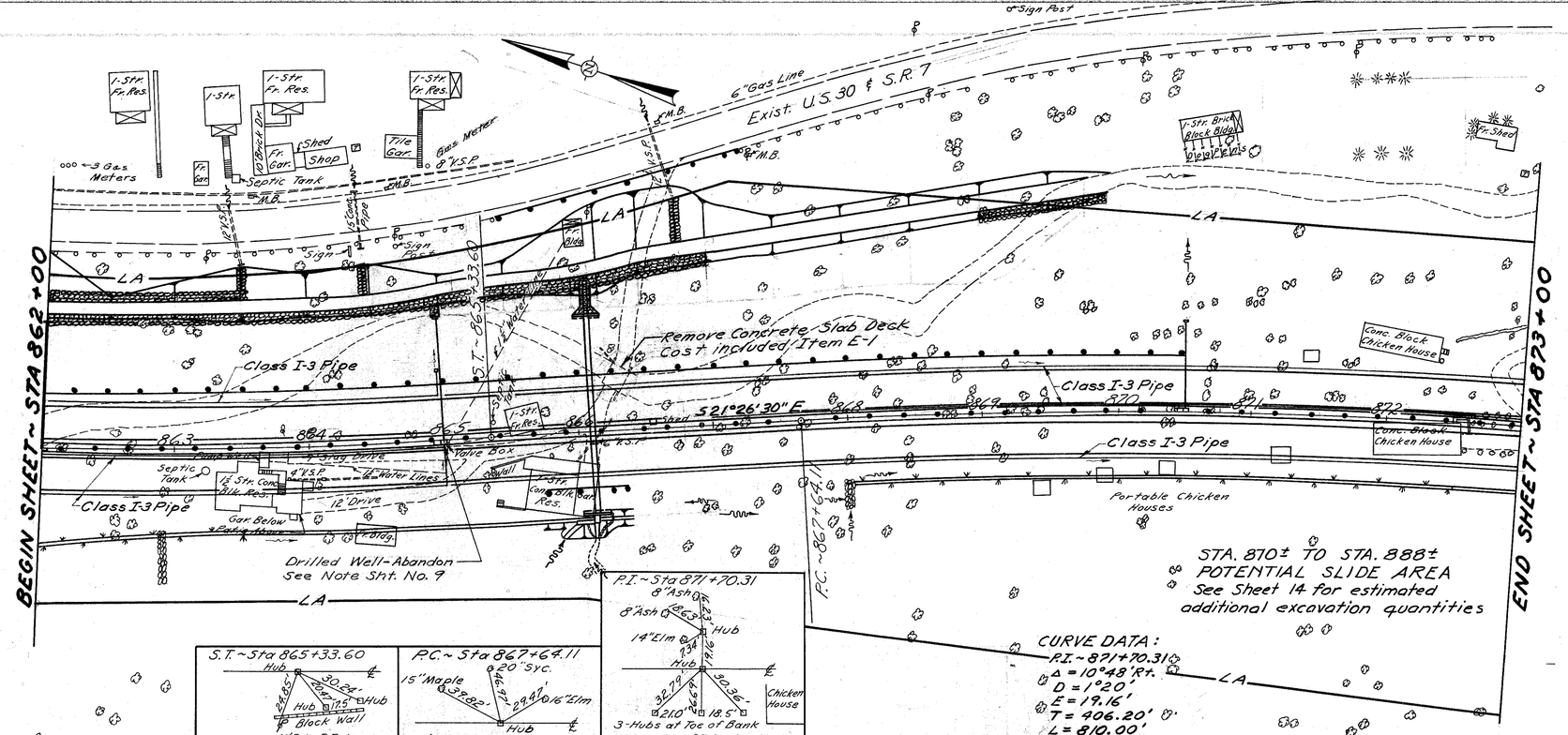
UNDERDRAIN

Station From	Station To	Side ℄	6" Cl. I-3 Class F-1 D=30^ Lin. Ft.	8" * Lin. Ft.	Class I-3 Pipe Spec. ℄ 90° Bend Each
850+50	862+00	Rt.	1150		
851+00	861+97	Lt.	1105	10	1
855+50	862+00	℄	650		
Total			2905	10	1

* Sec. M-6.4(c)

DESIGN	STATE	PROJECT		30
2	OHIO			250

COL-30-32.19



DRAINAGE

Station From	Station To	Side &	See Sheet	New Work Type	Size	Length	Paved Gutter Lin. Ft.	Sod Sq. Yds.	Pipe Removed 15" Under Lin. Ft.
862+00		℄-Lt.	86	Pipe	12"	99'			
862+00	863+50	Rt.	30					69	
863+50	865+95	Rt.	30				248	83	
865+00		℄-Lt.	88	Pipe	12"	96'			
866+10		Lt. & Rt.	179	Pipe	36"	146'			
866+78		Lt.	30						14
870+50		℄-Lt.	91	Pipe	12"	65'			
868+04	872+50	Rt.	30					247	
872+50	873+00	Rt.	30				50	17	
Total							298	416	14

GUARD RAIL

Station From	Station To	Side ℄	Barrier Type Lin. Ft.	New Lin. Ft.	Remove Lin. Ft.
862+00	873+00	℄	1100		
862+00	870+50	Lt.		848	
865+46	867+30	Lt.		187.5	
865+72	866+35	Rt.		62.5	
Total			1100	1098.0	

UNDERDRAIN

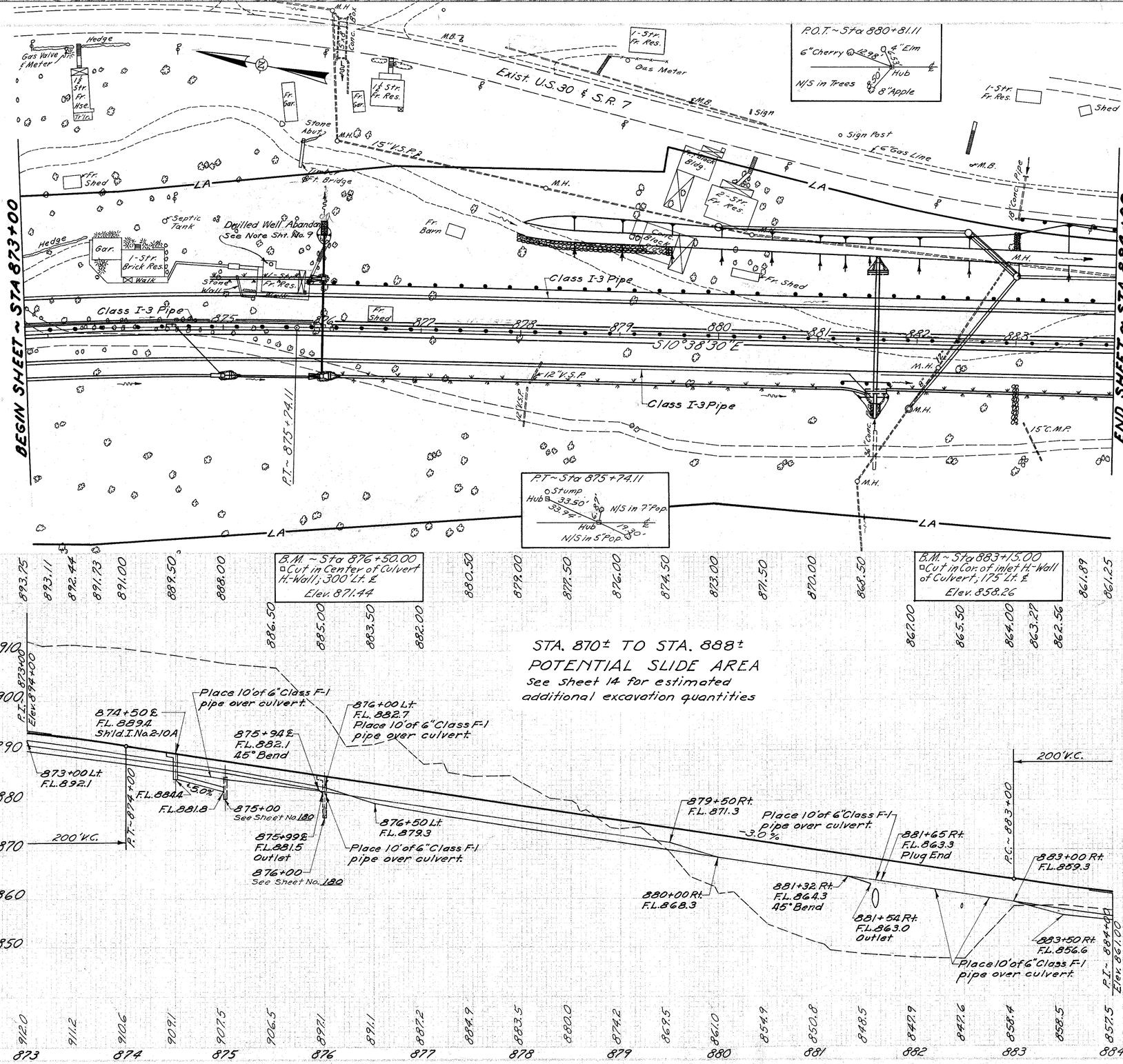
Station From	Station To	Side ℄	6" Cl. F-3 Class F-1 D=12"*	D=30"*	Class A-1 6"	8"**	8"**	Pipe Special 6" Cl. F-3 8" Cl. A-1 90° Bend***	Tee***
			Lin. Ft.	Lin. Ft.	Lin. Ft.	Lin. Ft.	Lin. Ft.	Each	Each
862+00	865+00	Rt.		300				1	
862+00	865+00	℄		300					
862+03	864+97	Lt.		301		10		1	
865+00		Rt.					34		1
865+03	872+00	Lt.		688	10				
865+04	868+50	Rt.		346					
867+00	869+50	℄		250					
868+50	873+00	Rt.	450						
869+50	873+00	℄	340		10				
Total			790	2185	20	10	34	2	1

* Sec. M-6.4(h)
** Sec. M-6.4(c)
*** Sec. M-6.6(b) or Sec. M-6.8(b)

Dumped Rock Channel Protection

Station From	Station To	Side ℄	I-10 Cu Yds.	See Sheet
862+90		Rt.	25	87
863+50		Lt.	11	87
864+50		Lt.	14	88
866+78		Lt.	30	89
868+00		Rt.	10	89
Total			90	

COL-30-32.19



DRAINAGE

Station From	Station To	Side &	See Sheet	New Work Type	New Work Size	New Work Length	Paved Gutter Lin. Ft.	Sod Sq. Yds.	Pipe Removed 15" & Under Lin. Ft.	I-10 Dump. Rock Ch. Prot. Cu. Yds.
873+00	874+88	Rt.	31				186	62		
875+18	875+88	Rt.	31				70	23		
876+00		Lt. & Rt.	180	Pipe	30"	143'				
				Pipe	18"	100'				
876+18	881+00	Rt.	31					268		
881+60		Lt. & Rt.	181	Pipe	48"	112'				
881+70	884+00	Rt.	31					128		
883+00		Lt. & Rt.	100							37
874+88	875+88	Lt.	31					56		
880+00	884+00	Lt. & Rt.	196	Sanitary Sewer						
Total							256	537		37

GUARD RAIL

Station From	Station To	Side &	Barrier Type Lin. Ft.	New Lin. Ft.
873+00	884+00	℄	1100	
875+25	884+00	Lt.		825
881+25	881+75	Rt.		50
883+00	884+00	Lt.		100
Total			1100	975

STORM SEWER

Station From	Station To	Side &	See Sheet	*12" Pipe Lin. Ft.	No. 2-10A Shld. Inlet Each
874+50		℄	31		1
874+50	875+00	℄ Rt.	31	56	
Total				56	1

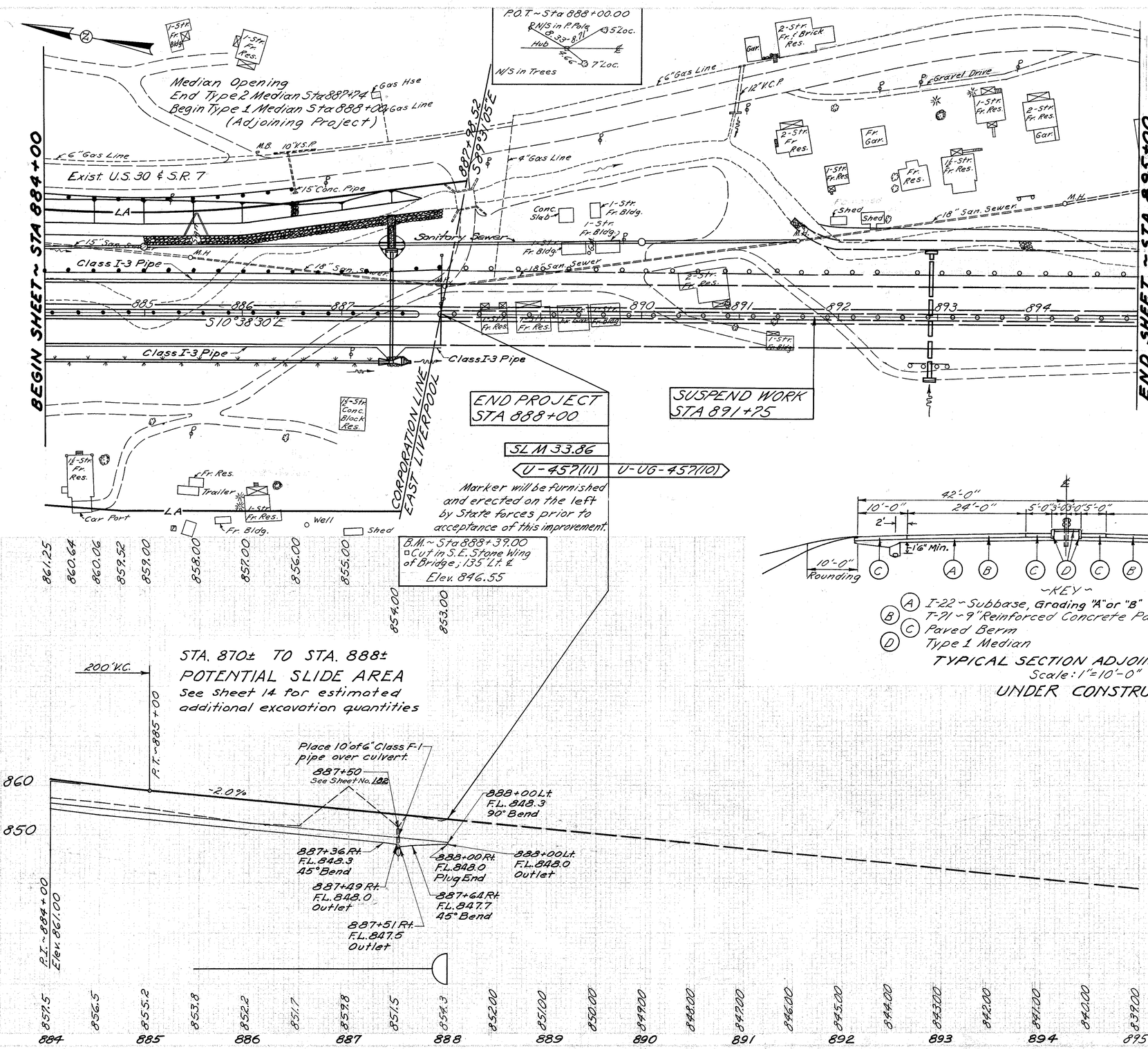
* Class A-1 Sec. M-6.8(b) or Sec. M-6.6(a)

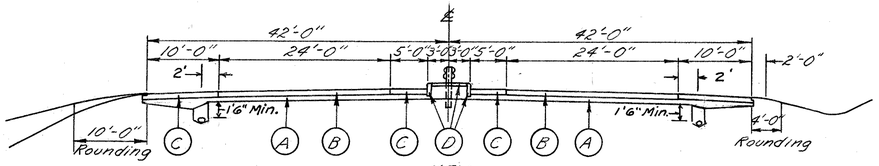
UNDERDRAIN

Station From	Station To	Side ℄	6" Cl. I-3 D=12"-D=30" ** L.F.	Class F-1 6" L.F.	Pipe Spec. 6" Cl. I-3 45° Bend Lin. Ft.	Pipe Spec. 6" Cl. I-3 45° Bend Each	
872+00	876+50	Lt.	440		10	**	
873+00	875+99	℄	295		7	1	
873+00	880+00	Rt.	680		20		
876+50	884+00	Lt.		730	20		
880+00	881+54	Rt.		154	10		1
881+65	883+00	Rt.		135			
Total			1415	1019	67	1	1

** Sec. M-6.4(h)

COL-30-32.19





~KEY~

(A) I-22 ~ Subbase, Grading "A" or "B"
(B) T-71 ~ 9" Reinforced Concrete Pavement
(C) Paved Berm
(D) Type 1 Median

TYPICAL SECTION ADJOINING PAVEMENT
Scale: 1" = 10'-0"

UNDER CONSTRUCTION

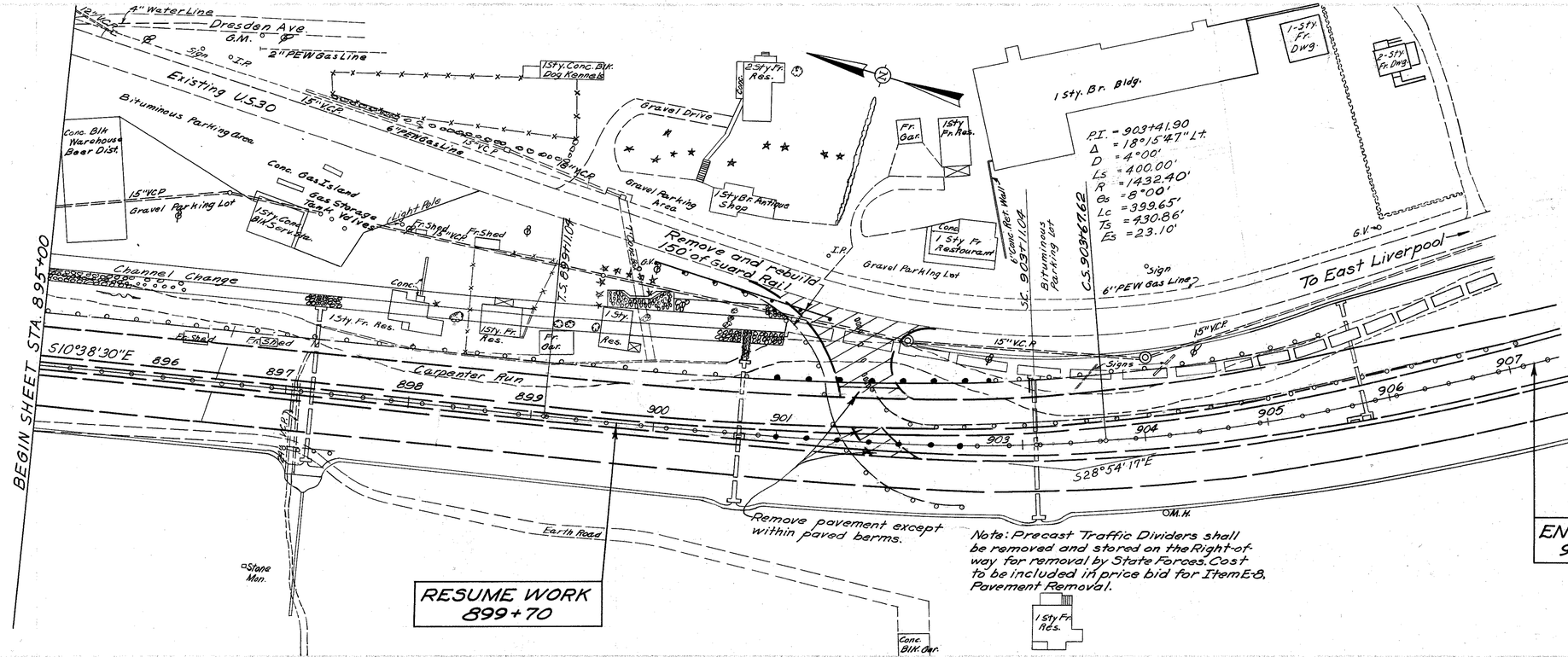
DRAINAGE								
Station		Side	See	New Work			Sod	I-10 Dump Rock Channel Prot. Cu. Yds.
From	To	℄	Sheet	Type	Size	Length	Sq. Yds.	
884+00	887+38	Rt.	32				188	
887+50			182	Pipe	24"	113'		
884+00	891+60	Lt.	196	Sanitary Sewer				
886+50		Lt.	101					9
Total							188	9

GUARD RAIL						
Station		Side	Barrier Type	New		
From	To	℄	Lin. Ft.	Lin. Ft.		
884+00	887+74	℄	374			
884+00	888+00	Lt.		400		
Total			374	400		

UNDERDRAIN								
Station		Side	6" Cl. I-3		Class F-1		6" Pipe Special Class I-3	
		℄	D=30"	D=50"	6"	8※	45° Bend	90° Bend
From	To		Lin. Ft.	Lin. Ft.	Lin. Ft.	Lin. Ft.	Each	Each
883+00	887+49	Rt.		445	10		1	
884+00	888+00	Lt.	405		10	10		1
887+51	888+00	Rt.		45	10		1	
Total			405	490	30	10	2	1

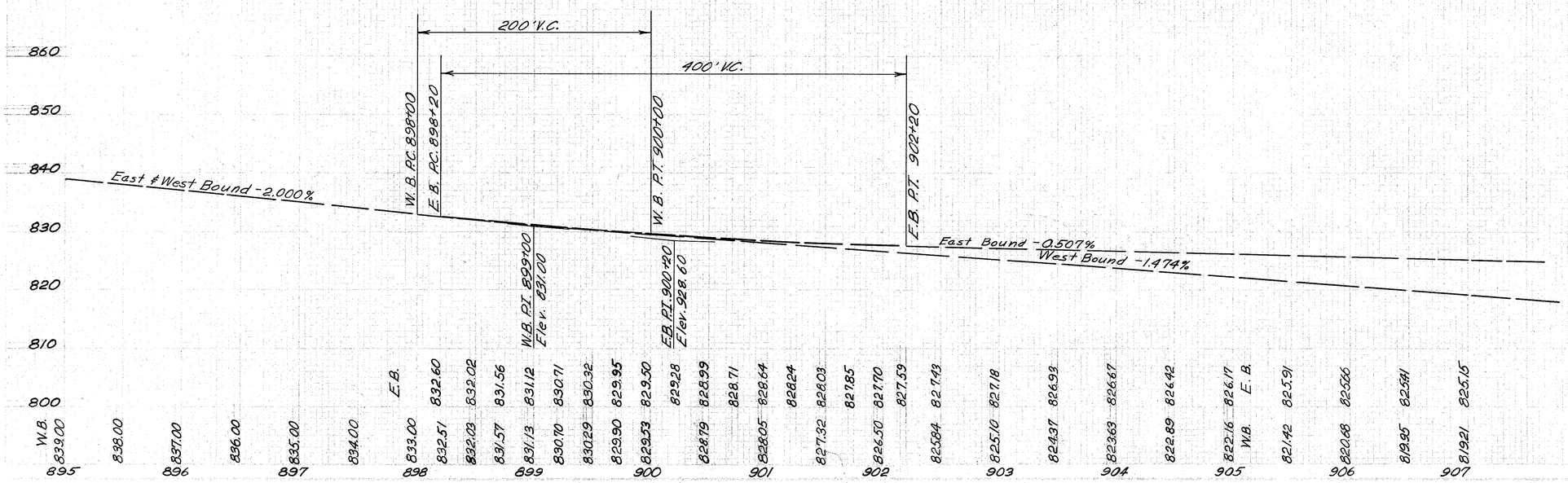
※ Sec. M-6.4(c)

COL-30-32.19



ESTIMATED QUANTITIES
Temporary Connection Removal

ITEM	Station From	Station To	Side &	Quantity
I-15 Guard Rail Remove & Rebuild	899+90	901+40	Lt.	150 Lin. Ft.
I-15 Guard Rail Standard Deep Beam	901+25	902+75	Lt.	150 Lin. Ft.
I-15 Guard Rail Barrier Type	901+00	902+50	&	150 Lin. Ft.
I-15 Temporary Guard Rail, Remove & Dispose of	901+36	902+44	Lt. & Rt.	175 Lin. Ft.
I-15 Temporary Guard Rail, Remove & Dispose of	901+75	907+08	Lt.	532.5 Lin. Ft.
I-12 Type 6 Conc. Curb	901+40	902+40	Lt. & Rt.	200 Lin. Ft.
E-8 Pavement Removal	900+70	902+25	Lt. & Rt.	331 Sq. Yds.
Below Quantities Carried To Sheet No. 102				
E-1 Embankment	900+70	902+40	Lt. & Rt.	140 Cu. Yds.
L-9 Seeding	900+70	902+40	Lt. & Rt.	525 Sq. Yds.



SUPERELEVATION TABLES

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

34
250

COL-30-32.19

T.S. =780+78.70
S.C.=783+78.70

D=2°30'Rt.

C.S.=798+47.37
S.T.=801+47.37

Left Lanes			STATION	Profile Grade +0.08	Super Elevation	Right Lanes		
Outside Edge	℄	Inside Edge				Inside Edge	℄	Outside Edge
Elevation						Elevation		
			779+00	1138.08				
1036.87	1037.06	1037.25	+25	1137.33		1037.25	1037.06	1036.87
1136.17	1136.34	1136.51	+50	1136.58		1136.50	1136.31	1136.12
1135.48	1135.63	1135.78	+75	1135.83		1135.75	1135.56	1135.37
1134.80	1134.92	1135.04	780+00	1135.08		1135.00	1134.81	1134.62
1134.10	1134.21	1134.31	+25	1134.33		1134.25	1134.06	1133.87
1133.43	1133.51	1133.58	+50	1133.58		1133.50	1133.31	1133.12
1132.78	1132.81	1132.84	+75	1132.83		1132.75	1132.56	1132.37
1132.69	1132.71	1132.72	T.S.~780+78.70	1132.72		1132.64	1132.46	1132.26
1132.14	1132.12	1132.10	781+00	1132.08		1132.00	1131.81	1131.62
1131.53	1131.46	1131.38	+25	1131.33		1131.25	1031.05	1130.85
1130.93	1130.79	1130.65	+50	1130.58		1130.50	1130.27	1130.03
1130.33	1130.13	1129.92	+75	1129.83		1129.73	1129.48	1129.23
1129.73	1129.46	1129.19	782+00	1129.08		1128.94	1128.65	1128.35
1129.13	1128.80	1128.47	+25	1128.33		1128.17	1127.82	1127.46
1128.53	1128.14	1127.74	+50	1127.58		1127.40	1126.99	1126.58
1127.93	1127.47	1127.01	+75	1126.83		1126.64	1126.17	1125.69
1127.33	1126.81	1126.28	783+00	1126.08		1125.86	1125.33	1124.80
1126.73	1126.14	1125.55	+25	1125.33		1125.07	1124.49	1123.91
1126.13	1125.49	1124.84	+50	1124.58		1124.30	1123.66	1123.02
1125.49	1124.80	1124.11	+75	1123.83		1123.54	1122.87	1122.19
1125.34	1124.67	1123.99	SC~783+78.70	1123.72		1123.42	1122.76	1122.09
1124.75	1124.04	1123.33	784+00	1123.08		1122.82	1122.11	1121.40
1124.04	1123.33	1122.62	+25	1122.33	0.171	1122.04	1121.33	1120.62
1123.29	1122.58	1121.87	+50	1121.58		1121.29	1120.58	1119.87
1122.54	1121.83	1121.12	+75	1120.83		1120.54	1119.83	1119.12
1121.79	1121.08	1120.37	785+00	1120.08		1119.79	1119.08	1118.37
1121.04	1120.33	1119.62	+25	1119.33		1119.04	1118.33	1117.62
1120.29	1119.58	1118.87	+50	1118.58		1118.29	1117.58	1116.87
1119.54	1118.83	1118.12	+75	1117.83		1117.54	1116.83	1116.12
1118.79	1118.08	1117.37	786+00	1117.08		1116.79	1116.08	1115.37
1118.04	1117.33	1116.62	+25	1116.33		1116.04	1115.33	1114.62
1117.29	1116.58	1115.87	+50	1115.58		1115.29	1114.58	1113.87
1116.54	1115.83	1115.12	+75	1114.83		1114.54	1113.83	1113.12
1115.79	1115.08	1114.37	787+00	1114.08		1113.79	1113.08	1112.37
1115.04	1114.33	1113.62	+25	1113.33		1113.04	1112.33	1111.62
1114.29	1113.58	1112.87	+50	1112.58		1112.29	1111.58	1110.87
1113.54	1112.83	1112.12	+75	1111.83		1111.54	1110.83	1110.12
1112.79	1112.08	1111.37	788+00	1111.08		1110.79	1110.08	1109.37
1112.04	1111.33	1110.62	+25	1110.33		1110.04	1109.33	1108.62
1111.29	1110.58	1109.87	+50	1109.58		1109.29	1108.58	1107.87
1110.54	1109.83	1109.12	+75	1108.83		1108.54	1107.83	1107.12
1109.79	1109.08	1108.37	789+00	1108.08		1107.79	1107.08	1106.37
1109.04	1108.33	1107.62	+25	1107.33		1107.04	1106.33	1105.62
1108.29	1107.58	1106.87	+50	1106.58		1106.29	1105.58	1104.87
1107.54	1106.83	1106.12	+75	1105.83		1105.54	1104.83	1104.12
1106.79	1106.08	1105.37	790+00	1105.08		1104.79	1104.08	1103.37
1106.04	1105.33	1104.62	+25	1104.33		1104.04	1103.33	1102.62
1105.29	1104.58	1103.87	+50	1103.58		1103.29	1102.58	1101.87
1104.54	1103.83	1103.12	+75	1102.83		1102.54	1101.83	1101.12
1103.79	1103.08	1102.37	791+00	1102.08		1101.79	1101.08	1100.37
1103.04	1102.33	1101.62	+25	1101.33		1101.04	1100.33	1099.62
1102.29	1101.58	1100.87	+50	1100.58		1100.29	1099.58	1098.87
1101.54	1100.83	1100.12	+75	1099.83		1099.54	1098.83	1098.12
1100.79	1100.08	1099.37	792+00	1099.08		1098.79	1098.08	1097.37
1100.04	1099.33	1098.62	+25	1098.33		1098.04	1097.33	1096.62
1099.29	1098.58	1097.87	+50	1097.58		1097.29	1096.58	1095.87
1098.54	1097.83	1097.12	+75	1096.83		1096.54	1095.83	1095.12
1097.79	1097.08	1096.37	793+00	1096.08		1095.79	1095.08	1094.37
1097.04	1096.33	1095.62	+25	1095.33		1095.04	1094.33	1093.62
1096.29	1095.58	1094.87	+50	1094.58		1094.29	1093.58	1092.87
1095.54	1094.83	1094.12	+75	1093.83		1093.54	1092.83	1092.12
1094.79	1094.08	1093.37	794+00	1093.08		1092.79	1092.08	1091.37
1094.04	1093.33	1092.62	+25	1092.33	0.171	1092.04	1091.33	1090.62

Obtained Graphically

T.S. =780+78.70
S.C. =783+78.70

D=2°30'Rt.

C.S.=798+47.37
S.T.=801+47.37

Left Lanes			STATION	Profile Grade +0.08	Super Elevation	Right Lanes		
Outside Edge	℄	Inside Edge				Inside Edge	℄	Outside Edge
Elevation						Elevation		
1093.29	1092.58	1091.87	794+50	1091.58	0.171	1091.29	1090.58	1089.87
1092.54	1091.83	1091.12	+75	1090.83		1090.54	1089.83	1089.12
1091.79	1091.08	1090.37	795+00	1090.08		1089.79	1089.08	1088.37
1091.04	1090.33	1089.62	+25	1089.33		1089.04	1088.33	1087.62
1090.29	1089.58	1088.87	+50	1088.58		1088.29	1087.58	1086.87
1089.54	1088.83	1088.12	+75	1087.83		1087.54	1086.83	1086.12
1088.79	1088.08	1087.37	796+00	1087.08		1086.79	1086.08	1085.37
1088.04	1087.33	1086.62	+25	1086.33		1086.04	1085.33	1084.62
1087.29	1086.58	1085.87	+50	1085.58		1085.29	1084.58	1083.87
1086.54	1085.83	1085.12	+75	1084.83		1084.54	1083.83	1083.12
1085.79	1085.08	1084.37	797+00	1084.08		1083.79	1083.08	1082.37
1085.04	1084.33	1083.62	+25	1083.33		1083.04	1082.33	1081.62
1084.29	1083.58	1082.87	+50	1082.58		1082.29	1081.58	1080.87
1083.54	1082.83	1082.12	+75	1081.83		1081.54	1080.83	1080.12
1082.79	1082.08	1081.37	798+00	1081.08		1080.79	1080.08	1079.37
1082.04	1081.33	1080.62	+25	1080.33	0.171	1080.04	1079.33	1078.62
1081.32	1080.64	1079.95	C.S.~798+47.37	1079.66		1079.37	1078.69	1078.00
1081.23	1080.55	1079.87	+50	1079.58		1079.30	1078.62	1077.93
1080.38	1079.74	1079.10	+75	1078.83		1078.57	1077.92	1077.27
1079.48	1078.90	1078.32	799+00	1078.08		1077.85	1077.26	1076.66
1078.58	1078.07	1077.55	+25	1077.33		1077.12	1076.59	1076.05
1077.68	1077.23	1076.77	+50	1076.58		1076.40	1075.92	1075.44
1076.78	1076.39	1076.00	+75	1075.83		1075.67	1075.25	1074.82
1075.88	1075.56	1075.23	800+00	1075.08		1074.95	1074.58	1074.21
1074.98	1074.72	1074.45	+25	1074.33		1074.23	1073.92	1073.60
1074.08	1073.88	1073.68	+50	1073.58		1073.50	1073.24	1072.97
1073.19	1073.05	1072.90	+75	1072.83		1072.75	1072.53	1072.31
1072.29	1072.21	1072.13	801+00	1072.08		1072.00	1071.81	1071.62
1071.39	1071.37	1071.35	+25	1071.33		1071.25	1071.06	1070.87
1070.60	1070.63	1070.66	S.T.~801+47.37	1070.66		1070.58	1070.39	1070.20
1070.52	1070.55	1070.58	+50	1070.58		1070.50	1070.31	1070.12
1069.68	1069.75	1069.82	+75	1069.83		1069.75	1069.56	1069.37
1068.87	1068.96	1069.05	802+00	1069.08		1069.00	1068.81	1068.62
1068.05	1068.17	1068.29	+25	1068.33		1068.25	1068.06	1067.87
1067.24	1067.39	1067.53	+50	1067.58		1067.50	1067.31	1067.12
1066.42	1066.59	1066.76	+75	1066.83		1066.75	1066.56	1066.37
1065.62	1065.81	1066.00	803+00	1066.08		1066.00	1065.81	1065.62

Obtained Graphically

T.S. =819+60.00
S.C. =823+60.00

D=4°00'Rt.

C.S.=826+12.50
S.T. =830+12.50

Left Lanes			STATION	Profile Grade +0.08	Super Elevation	Right Lanes		
Outside Edge	℄	Inside Edge				Inside Edge	℄	Outside Edge
Elevation						Elevation		
1020.62	1020.81	1021.00	818+00	1021.08		1021.00	1020.81	1020.62
1019.92	1020.09	1020.25	+25	1020.33		1020.25	1020.06	1019.87
1019.23	1019.38	1019.52	+50	1019.58		1019.50	1019.31	1019.12
1018.54	1018.67	1018.79	+75	1018.83		1018.75	1018.56	1018.37
1017.85	1017.94	1018.03	819+00	1018.08		1018.00	1017.86	1017.72
1017.16	1017.23	1017.30	+25	1017.33		1017.25	1017.05	1016.84
1016.51	1016.55	1016.58	+50	1016.58		1016.50	1016.28	1016.06
1016.28	1016.28	1016.28	T.S.~819+60.00	1016.28		1016.20	1015.97	1015.73
1015.86	1015.86	1015.85	+75	1015.83		1015.72	1015.49	1015.25
1015.24	1015.18	1015.12	820+00	1015.08		1014.97	1014.70	1014.42
1014.65	1014.53	1014.40	+25	1014.33		1014.19	1013.87	1013.55
1014.05	1013.86	1013.67	+50	1013.58		1013.42	1013.05	1012.68
1013.46	1013.21	1012.95	+75	1012.83		1012.65	1012.23	1011.80
1012.86	1012.55	1012.23	821+00	1012.08		1011.88	1011.41	1010.93
1012.27	1011.89	1011.50	+25	1011.33		1011.11	1010.59	1010.06
1011.67	1011.23	1010.78	+50	1010.58		1010.34	1009.77	1009.19

Obtained Graphically

T.S. 819+60.00
S.C. 823+60.00

D=4°00'Rt.

C.S.=826+12.50
S.T.=830+12.50

Left Lanes			STATION	Profile Grade +0.08	Super Elevation	Right Lanes		
Outside Edge	℄	Inside Edge				Inside Edge	℄	Outside Edge
Elevation						Elevation		
1011.08	1010.57	1010.06	821+75	1009.83		1009.57	1008.95	1008.32
1010.48	1009.91	1009.33	822+00	1009.08		1008.80	1008.12	1007.44
1009.89	1009.25	1008.61	+25	1008.33		1008.02	1007.30	1006.57
1009.29	1008.59	1007.88	+50	1007.58		1007.25	1006.48	1005.70
1008.70	1007.93	1007.16	+75	1006.83		1006.48	1005.66	1004.83
1008.10	1007.27	1006.44	823+00	1006.08		1005.71	1004.84	1003.96
1007.51	1006.61	1005.71	+25	1005.33		1004.94	1004.01	1003.08
1006.90	1005.95	1004.99	+50	1004.58		1004.17	1003.20	1002.22
1006.63	1005.66	1004.69	S.C~823+60.00	1004.28		1003.85	1002.88	1001.90
1006.25	1005.25	1004.25	+75	1003.83	2.42	1003.41	1002.41	1001.41
1005.50	1004.50	1003.50	824+00	1003.08		1002.66	1001.66	1000.66
1004.75	1003.75	1002.75	+25	1002.33		1001.91	1000.91	999.91
1004.00	1003.00	1002.00	+50	1001.58		1001.16	1000.16	999.16
1003.25	1002.25	1001.25	+75	1000.83		1000.41	999.42	998.42
1002.50	1001.50	1000.50	825+00	1000.08		999.66	998.66	997.66
1001.75	1000.75	999.75	+25	999.33		998.91	997.91	996.91
1001.00	1000.00	999.00	+50	998.58		998.16	997.16	996.16
1000.25	999.25	998.25	+75	997.83	2.42	997.41	996.41	995.41
999.49	998.50	997.50	826+00	997.08		996.68	995.70	994.72
999.04	998.06	997.08	C.S~826+12.50	996.70		996.32	995.34	994.35
998.63	997.68	996.73	+25	996.33		995.93	994.99	994.04
997.73	996.84	995.95	+50	995.58		995.20	994.32	993.43
996.83	996.01	995.18	+75	994.83		994.47	993.64	992.81
995.93	995.17	994.40	827+00	994.08		993.75	992.98	992.20
995.02	994.32	993.62	+25	993.33		993.02	992.30	991.58
994.12	993.49	992.85	+50	992.58		992.30	991.64	990.97
993.22	992.65	992.07	+75	991.83		991.57	990.96	990.35
992.31	991.81	991.30	828+00	991.08		990.85	990.30	989.74
991.41	990.96	990.51	+25	990.33		990.12	989.63	989.13
990.50	990.13	989.75	+50	989.58		989.40	988.97	988.53
989.60	989.28	988.96	+75	988.83		988.67	988.30	987.92
988.69	988.44	988.18	829+00	988.08		987.95	987.64	987.32
987.79	987.60	987.41	+25	987.33		987.22	986.96	986.70
986.88	986.76	986.63	+50	986.58		986.50	986.28	986.05
985.98	985.92	985.86	+75	985.83		985.75	985.56	985.36
985.09	985.09	985.08	830+00	985.08		985.00	984.81	984.62
984.67	984.69	984.70	S.T~830+12.50	984.70		984.62	984.43	984.24
984.25	984.29	984.32	+25	984.33		984.25	984.06	983.87
983.40	983.48	983.56	+50	983.58		983.50	983.31	983.12
982.59	982.70	982.80	+75	982.83		982.75	982.56	982.37
981.77	981.90	982.03	831+00	982.08		982.00	981.81	981.62
980.96	981.12	981.27	+25	981.33		981.25	981.06	980.87
980.15	980.33	980.51	+50	980.58		980.50	980.31	980.12
979.37	979.56	979.75	+75	979.83		979.75	979.57	979.38
978.62	978.81	979.00	832+00	979.08		979.01	978.85	978.69
977.87	978.06	978.25	+25	978.33		978.28	978.15	978.02
977.12	977.31	977.50	+50	977.58		977.54	977.45	977.35
976.35	976.55	976.75	+75	976.83		976.80	976.74	976.68

Obtained Graphically

SUPERELEVATION TABLES

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

(35 / 250)

COL-30-32.19

P.C. ~ 833+82.50 — **D = 1°00'Lt.** — P.T. ~ 841+35.83

Left Lanes: Outside Edge (℄)	Left Lanes: Inside Edge (℄)	STATION	Profile Grade +0.08	Super Elevation	Right Lanes: Inside Edge (℄)	Right Lanes: Outside Edge (℄)
Elevation					Elevation	
975.62	976.00	833+00	976.08		976.07	976.04	976.00
974.87	975.25	+25	975.33		975.33	975.34	975.35
974.12	974.50	+50	974.58		974.61	974.67	974.73
973.36	973.75	+75	973.83		973.88	974.01	974.13
973.15	973.52	PC~833+82.50	973.60		973.66	973.81	973.95
972.57	973.00	834+00	973.08		973.16	973.35	973.54
971.74	972.25	+25	972.35		972.45	972.71	972.96
970.94	971.52	+50	971.64		971.76	972.05	972.33
970.27	970.85	+75	970.97	0.70	971.09	971.38	971.67
969.63	970.21	835+00	970.33		970.45	970.74	971.03
969.02	969.60	+25	969.72		969.84	970.13	970.42
968.44	969.02	+50	969.14		969.26	969.55	969.84
967.90	968.48	+75	968.60		968.72	969.01	969.30
967.38	967.96	836+00	968.08		968.20	968.49	968.78
966.88	967.46	+25	967.58		967.70	967.99	968.28
966.38	966.96	+50	967.08		967.20	967.49	967.78
965.88	966.46	+75	966.58		966.70	966.99	967.28
965.38	965.96	837+00	966.08		966.20	966.49	966.78
964.88	965.46	+25	965.58		965.70	965.99	966.28
964.38	964.96	+50	965.08		965.20	965.49	965.78
963.88	964.46	+75	964.58		964.70	964.99	965.28
963.38	963.96	838+00	964.08		964.20	964.49	964.78
962.88	963.46	+25	963.58		963.70	963.99	964.28
962.38	962.96	+50	963.08		963.20	963.49	963.78
961.88	962.46	+75	962.58		962.70	962.99	963.28
961.38	961.96	839+00	962.08		962.20	962.49	962.78
960.88	961.46	+25	961.58		961.70	961.99	962.28
960.38	960.96	+50	961.08		961.20	961.49	961.78
959.88	960.46	+75	960.58		960.70	960.99	961.28
959.38	959.96	840+00	960.08		960.20	960.49	960.78
958.88	959.46	+25	959.58		959.70	959.99	960.28
958.38	958.96	+50	959.08	0.70	959.20	959.49	959.78
957.90	958.46	+75	958.58		958.70	958.98	959.26
957.51	957.98	841+00	958.08		958.18	958.42	958.65
957.10	957.50	+25	957.58		957.65	957.83	958.00
956.90	957.28	P.T~841+35.83	957.36		957.42	957.57	957.71
956.62	957.00	+50	957.08		957.13	957.24	957.34
956.12	956.50	+75	956.58		956.60	956.65	956.70
955.62	956.00	842+00	956.08		956.08	956.08	956.08
955.12	955.50	+25	955.58		955.56	955.52	955.48
954.62	955.00	+50	955.08		955.05	954.98	954.91
954.12	954.50	+75	954.58		954.54	954.44	954.33
953.62	954.00	843+00	954.08		954.02	953.89	953.75
953.12	953.50	+25	953.58		953.51	953.35	953.19
952.62	953.00	+50	953.08		953.00	952.82	952.63

Super Elevation: Obtained Graphically

T.S. ~ 855+33.39 — S.C. ~ 859+33.39 — **D = 4°00'Lt.** — C.S. ~ 861+33.60 — S.T. ~ 865+33.60

Left Lanes: Outside Edge (℄)	Left Lanes: Inside Edge (℄)	STATION	Profile Grade +0.08	Super Elevation	Right Lanes: Inside Edge (℄)	Right Lanes: Outside Edge (℄)
Elevation					Elevation	
932.12	932.31	932.50	853+75	932.58		932.50	932.31	932.12
931.62	931.81	932.00	854+00	932.08		932.01	931.84	931.67
931.12	931.31	931.50	+25	931.58		931.52	931.38	931.24
930.62	930.81	931.00	+50	931.08		931.04	930.93	930.82
930.12	930.31	930.50	+75	930.58		930.55	930.48	930.40
929.62	929.81	930.00	855+00	930.08		930.06	930.02	929.98
929.12	929.31	929.50	+25	929.58		929.58	929.57	929.55
928.95	929.14	929.33	T.S~855+33.39	929.41		929.41	929.42	929.42
928.62	928.81	929.00	+50	929.08		929.10	929.14	929.18
928.12	928.31	928.50	+75	928.58		928.62	928.73	928.83
927.60	927.80	928.00	856+00	928.08		928.15	928.32	928.48
927.01	927.25	927.48	+25	927.58		927.68	927.91	928.13
926.38	926.67	926.95	+50	927.08		927.20	927.49	927.78
925.73	926.08	926.42	+75	926.58		926.72	927.08	927.43
925.07	925.49	925.90	857+00	926.08		926.25	926.67	927.08
924.42	924.90	925.38	+25	925.58		925.78	926.26	926.73

Super Elevation: Obtained Graphically

T.S. ~ 855+33.39 — S.C. ~ 859+33.39. — **D = 4°00'Lt.** — C.S. ~ 861+33.60 — S.T. ~ 865+33.60

Left Lanes: Outside Edge (℄)	Left Lanes: Inside Edge (℄)	STATION	Profile Grade +0.08	Super Elevation	Right Lanes: Inside Edge (℄)	Right Lanes: Outside Edge (℄)
Elevation					Elevation	
923.77	924.31	924.85	857+50	925.08		925.31	925.85	926.39
923.12	923.72	924.32	+75	924.58		924.83	925.44	926.04
922.47	923.13	923.79	858+00	924.08		924.36	925.03	925.69
921.82	922.55	923.27	+25	923.58		923.89	924.62	925.34
921.17	921.96	922.74	+50	923.08		923.41	924.21	925.00
920.51	921.36	922.21	+75	922.58		922.94	923.80	924.65
919.86	920.78	921.69	859+00	922.08		922.46	923.38	924.30
919.23	920.20	921.17	+25	921.58		921.99	922.96	923.92
919.03	920.02	921.00	S.C~859+33.39	921.41		921.82	922.81	923.79
918.66	919.66	920.66	+50	921.08	2.42	921.50	922.50	923.50
918.16	919.16	920.16	+75	920.58		921.00	922.00	923.00
917.66	918.66	919.66	860+00	920.08		920.50	921.50	922.50
917.16	918.16	919.16	+25	919.58		920.00	921.00	922.00
916.66	917.66	918.66	+50	919.08		919.50	920.50	921.50
916.16	917.16	918.16	+75	918.58		919.00	920.00	921.00
915.66	916.66	917.66	861+00	918.08	2.42	918.50	919.50	920.50
915.19	916.18	917.16	+25	917.58		918.00	918.99	919.97
915.05	916.03	917.00	C.S~861+33.60	917.41		917.82	918.80	919.77
914.77	915.73	916.68	+50	917.08		917.48	918.44	919.39
914.41	915.31	916.20	+75	916.58		916.95	917.85	918.75
914.06	914.90	915.73	862+00	916.08		916.42	917.26	918.10
913.71	914.49	915.26	+25	915.58		915.90	916.67	917.44
913.37	914.08	914.78	+50	915.08		915.38	916.09	916.79
913.02	913.67	914.31	+75	914.58		914.85	915.50	916.14
912.67	913.25	913.83	863+00	914.08		914.32	914.91	915.49
912.32	912.84	913.36	+25	913.58		913.80	914.32	914.84
911.97	912.43	912.89	+50	913.08		913.27	913.73	914.19
911.62	912.02	912.41	+75	912.58		912.75	913.14	913.53
911.27	911.61	911.94	864+00	912.08		912.22	912.55	912.88
910.91	911.19	911.47	+25	911.58		911.69	911.96	912.23
910.54	910.77	910.99	+50	911.08		911.17	911.38	911.58
910.11	910.31	910.50	+75	910.58		910.64	910.79	910.93
909.62	909.81	910.00	865+00	910.08		910.12	910.20	910.28
909.12	909.31	909.50	+25	909.58		909.60	909.62	909.63
908.95	909.14	909.33	S.T~865+33.60	909.41		909.41	909.42	909.42
908.64	908.82	909.00	+50	909.08		909.07	909.05	909.02
908.22	908.37	908.51	+75	908.58		908.56	908.51	908.45
907.80	907.91	908.02	866+00	908.08		908.04	907.96	907.87
907.38	907.46	907.54	+25	907.58		907.53	907.42	907.30
906.96	907.01	907.06	+50	907.08		907.02	906.87	906.72
906.54	906.56	906.57	+75	906.58		906.50	906.33	906.15
906.16	906.13	906.09	867+00	906.08		906.00	905.56	905.12

Super Elevation: Obtained Graphically

P.C. ~ 867+64.11 — **D = 1°20'Rt.** — P.T. ~ 875+74.11

Left Lanes: Outside Edge (℄)	Left Lanes: Inside Edge (℄)	STATION	Profile Grade +0.08	Super Elevation	Right Lanes: Inside Edge (℄)	Right Lanes: Outside Edge (℄)
Elevation					Elevation	
906.16	906.13	906.09	867+00	906.08		906.00	905.81	905.62
905.81	905.71	905.61	+25	905.58		905.50	905.31	905.12
905.47	905.31	905.15	+50	905.08		905.00	904.80	904.60
905.28	905.09	904.89	P.C~867+64.11	904.81		904.73	904.51	904.29
905.12	904.90	904.67	+75	904.58		904.49	904.26	904.02
904.77	904.49	904.20	868+00	904.08		903.96	903.68	903.39
904.40	904.05	903.70	+25	903.58		903.44	903.10	902.75
903.98	903.61	903.24	+50	903.08		902.92	902.55	902.17
903.51	903.13	902.74	+75	902.58	0.93	902.42	902.04	901.65
903.01	902.63	902.24	869+00	902.08		901.92	901.54	901.15
902.51	902.13	901.74	+25	901.58		901.42	901.04	900.65
902.01	901.63	901.24	+50	901.08		900.92	900.54	900.15
901.51	901.13	900.74	+75	900.58		900.42	900.04	899.65
901.01	900.63	900.24	870+00	900.08	0.93	899.92	899.54	899.15

Super Elevation: Obtained Graphically

P.C. ~ 867+64.11 — **D = 1°20'Rt.** — P.T. ~ 875+74.11

Left Lanes: Outside Edge (℄)	Left Lanes: Inside Edge (℄)	STATION	Profile Grade +0.08	Super Elevation	Right Lanes: Inside Edge (℄)	Right Lanes: Outside Edge (℄)
Elevation					Elevation	
900.51	900.13	899.74	870+25	899.58	0.93	899.42	899.04	898.65
900.01	899.63	899.24	+50	899.08		898.92	898.54	898.15
899.51	899.13	898.74	+75	898.58		898.42	898.04	897.65
899.01	898.63	898.24	871+00	898.08		897.92	897.54	897.15
898.51	898.13	897.74	+25	897.58		897.42	897.04	896.65
898.01	897.63	897.24	+50	897.08		896.92	896.54	896.15
897.51	897.13	896.74	+75	896.58		896.42	896.04	895.65
897.01	896.63	896.24	872+00	896.08		895.92	895.54	895.15
896.49	896.11	895.72	+25	895.56		895.40	895.02	894.63
895.95	895.57	895.18	+50	895.02		894.86	894.48	894.09
895.37	894.99	894.60	+75	894.44		894.28	893.90	893.51
894.76	894.38	893.99	873+00	893.83		893.67	893.29	892.90
894.12	893.74	893.35	+25	893.19		893.03	892.65	892.26
893.45	893.07	892.68	+50	892.52		892.36	891.98	891.59
892.74	892.36	891.97	+75	891.81		891.65	891.27	890.88
892.01	891.63	891.24	874+00	891.08		890.92	890.54	890.15
891.26	890.88	890.49	+25	890.33		890.17	889.79	889.40
890.51	890.13	889.74	+50	889.58	0.93	889.42	889.04	888.65
889.75	889.37	888.99	+75	888.83		888.67	888.29	887.90
888.95	888.60	888.24	875+00	888.08		887.92	887.56	887.20
888.10	887.78	887.46	+25	887.33		887.20	886.88	886.56
887.20	886.95	886.69	+50	886.58		886.47	886.22	885.96
886.33	886.14	885.94	P.T~875+74.11	885.86		885.78	885.56	885.34
886.30	886.11	885.91	+75	885.83		885.75	885.53	885.31
885.39	885.26	885.13	876+00	885.08		885.00	884.81	884.61
884.49	884.43	884.36	+25	884.33		884.25	884.06	883.87
883.59	883.59	883.58	+50	883.58		883.50	883.31	883.12
882.75	882.79	882.82	+75	882.83		882.75	882.56	882.37
881.92	881.99	882.05	877+00	882.08		882.00	881.81	881.62
881.09	881.19	881.29	+25	881.33		881.25	881.06	880.87
880.26	880.39	880.52	+50	880.58		880.50	880.31	880.12
879.43	879.60	879.76	+75	879.83		879.75	879.56	879.37
878.62	878.81	879.00	878+00	879.08		879.00	878.81	878.62

Super Elevation: Obtained Graphically

SUPERELEVATION TABLES

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

36 / 250

COL-30-32.19

S.R. 170

T.S.=19+83.57
S.C.=23+83.57

D=5°00'Lt.

C.S.=30+01.24
S.T.=34+01.24

Left Lanes: Outside Edge Elevation	Left Lanes: ℄ Elevation	Left Lanes: Inside Edge Elevation	STATION	Profile Grade +0.02	Super Elevation	Right Lanes: Inside Edge Elevation	Right Lanes: ℄ Elevation	Right Lanes: Outside Edge Elevation
			18+00	1116.54				
1117.04	1117.23	1117.42	+25	1117.44		1117.42	1117.23	1117.04
1117.94	1118.13	1118.32	+50	1118.34		1118.32	1118.15	1117.98
1118.84	1119.03	1119.22	+75	1119.24		1119.23	1119.09	1118.95
1119.74	1119.93	1120.12	19+00	1120.14		1120.13	1120.02	1119.91
1120.64	1120.83	1121.02	+25	1121.04		1121.03	1120.96	1120.88
1121.54	1121.73	1121.92	+50	1121.94		1121.94	1121.90	1121.85
1122.44	1122.63	1122.82	+75	1122.84		1122.84	1122.83	1122.82
1122.75	1122.94	1123.13	T.S.~19+83.57	1123.15		1123.15	1123.15	1123.15
1123.34	1123.53	1123.72	20+00	1123.74		1123.74	1123.76	1123.78
1124.24	1124.43	1124.62	+25	1124.64		1124.64	1124.69	1124.74
1125.14	1125.33	1125.52	+50	1125.54		1125.55	1125.63	1125.71
1126.04	1126.23	1126.42	+75	1126.44		1126.45	1126.56	1126.67
1126.94	1127.13	1127.32	21+00	1127.34		1127.35	1127.49	1127.63
1127.84	1128.03	1128.22	+25	1128.24		1128.25	1128.42	1128.59
1128.72	1128.92	1129.12	+50	1129.14		1129.16	1129.36	1129.56
1129.56	1129.79	1130.02	+75	1130.04		1130.06	1130.29	1130.52
1130.40	1130.66	1130.92	22+00	1130.94		1130.96	1131.22	1131.48
1131.20	1131.49	1131.78	+25	1131.81		1131.83	1132.12	1132.41
1131.95	1132.27	1132.59	+50	1132.62		1132.65	1132.97	1133.29
1132.65	1133.00	1133.35	+75	1133.38		1133.40	1133.75	1134.10
1133.29	1133.67	1134.05	23+00	1134.08		1134.11	1134.49	1134.87
1133.87	1134.28	1134.69	+25	1134.72		1134.75	1135.16	1135.57
1134.38	1134.82	1135.26	+50	1135.30		1135.34	1135.78	1136.22
1134.85	1135.32	1135.79	+75	1135.83		1135.87	1136.34	1136.81
1135.00	1135.48	1135.96	S.C.~23+83.57	1136.00	1.00	1136.04	1136.52	1137.00
1135.30	1135.78	1136.26	24+00	1136.30		1136.34	1136.82	1137.30
1135.74	1136.22	1136.70	+25	1136.74		1136.78	1137.26	1137.74
1136.18	1136.66	1137.14	+50	1137.18		1137.22	1137.70	1138.18
1136.62	1137.10	1137.58	+75	1137.62		1137.66	1138.14	1138.62
1137.06	1137.54	1138.02	25+00	1138.06		1138.10	1138.58	1139.06
1137.50	1137.98	1138.46	+25	1138.50		1138.54	1139.02	1139.50
1137.94	1138.42	1138.90	+50	1138.94		1138.98	1139.46	1139.94
1138.38	1138.86	1139.34	+75	1139.38		1139.42	1139.90	1140.38
1138.82	1139.30	1139.78	26+00	1139.82		1139.86	1140.34	1140.82
1139.26	1139.74	1140.22	+25	1140.26		1140.30	1140.78	1141.26
1139.70	1140.18	1140.66	+50	1140.70		1140.74	1141.22	1141.70
1140.14	1140.62	1141.10	+75	1141.14		1141.18	1141.66	1142.14
1140.58	1141.06	1141.54	27+00	1141.58		1141.62	1142.10	1142.58
1141.02	1141.50	1141.98	+25	1142.02		1142.06	1142.54	1143.02
1141.46	1141.94	1142.42	+50	1142.46		1142.50	1142.98	1143.46
1141.88	1142.36	1142.84	+75	1142.88		1142.92	1143.40	1143.88
1142.26	1142.74	1143.22	28+00	1143.26		1143.30	1143.78	1144.26
1142.60	1143.08	1143.56	+25	1143.60		1143.64	1144.12	1144.60
1142.90	1143.38	1143.86	+50	1143.90		1143.94	1144.42	1144.90
1143.16	1143.64	1144.12	+75	1144.16		1144.20	1144.68	1145.16
1143.39	1143.87	1144.35	29+00	1144.39		1144.43	1144.91	1145.39
1143.57	1144.05	1144.53	+25	1144.57		1144.61	1145.09	1145.57
1143.71	1144.19	1144.67	+50	1144.71		1144.75	1145.23	1145.71
1143.81	1144.29	1144.77	+75	1144.81		1144.85	1145.33	1145.81
1143.88	1144.36	1144.84	30+00	1144.88		1144.92	1145.40	1145.88
1143.88		1144.84	C.S.~30+01.24	1144.88	1.00	1144.92		1145.88
1143.99		1144.86	+25	1144.90		1144.94		1145.81
1144.07		1144.85	+50	1144.89		1144.93		1145.71
1144.09		1144.79	+75	1144.83		1144.87		1145.57
1144.08		1144.70	31+00	1144.73		1144.76		1145.38
1144.02		1144.57	+25	1144.60		1144.63		1145.18
1143.92		1144.40	+50	1144.43		1144.46		1144.94
1143.77		1144.18	+75	1144.21		1144.24		1144.65
1143.59		1143.94	32+00	1143.96		1143.98		1144.33
1143.35		1143.64	+25	1143.66		1143.68		1143.97
1143.06		1143.31	+50	1143.33		1143.35		1143.59
1142.70		1142.94	+75	1142.96		1142.98		1143.17
1142.30		1142.53	33+00	1142.55		1142.56		1142.70

Obtained Graphically

For Pavement Transition Elevations See Sheet No. 108

S.R. 170 (Con't.)

1141.86	1142.07	33+25		1142.10		1142.20
1141.38	1141.58	+50		1141.60		1141.66
1140.85	1141.05	+75		1141.06		1141.09
1140.28	1140.48	34+00		1140.48		1140.48
1140.25	1140.45	S.T.~34+01.24		1140.45		1140.45
1139.75	1139.87	+25		1139.87		1139.80
1139.22	1139.22	+50		1139.22		1139.08

Obtained Graphically

WESTFIELD AVE

P.C.=3+70.00 — P.T.=5+68.97

Edge Pav't. Grade Lt.	Deduct Crown	STATION	Profile Grade	Add Super.	Edge Pav't. Grade Rt.
962.80	-0.19	2+25	962.94		962.83
964.39		+50	964.58		964.50
966.65		+75	966.84		966.84
969.15		3+00	969.34		969.42
971.65		+25	971.84		972.00
974.15		+50	974.34		974.61
976.19		P.C.~3+70.00	976.38		976.79
976.73		+75	976.65		977.29
979.40		4+00	979.59		980.20
982.21		+25	982.40		983.14
985.15		+50	985.34		986.15
988.21		+75	988.40		989.21
991.40		5+00	991.59		992.40
994.71		+25	994.90		995.62
998.15		+50	998.34		998.84
1000.85		P.T.~5+68.97	1001.04		1001.35
1001.75		+75	1001.90		1002.15
1005.59	-0.19	6+00	1005.59		1005.59

Obtained Graphically

P.C.=6+38.93 — **D=6°00'Rt.** — P.T.=10+32.26

1009.49	Add	6+25	1009.34	Deduct	1009.22
1011.67	Super	P.C.~6+38.93	1011.43	Crown	1011.24
1013.40	Datum	+50	1013.09	-0.19	1012.90
1017.32	Graphic.	+75	1016.84		1016.65
1021.15		7+00	1020.50		1020.31
1024.66	+0.86	+25	1023.99		1023.80
1027.97		+50	1027.30		1027.11
1031.11		+75	1030.44		1030.25
1034.06		8+00	1033.39		1033.20
1036.85		+25	1036.18		1035.99
1039.46		+50	1038.79		1038.60
1041.89		+75	1041.22		1041.03
1044.15		9+00	1043.48		1043.29
1046.23		+25	1045.56		1045.37
1048.13	+0.86	+50	1047.46		1047.27
1049.82		+75	1049.20		1049.01
1051.23		10+00	1050.75		1050.56
1052.41		+25	1052.13		1051.94
1052.73		P.T.~10+32.26	1052.49		1052.30
1053.46		+50	1053.34		1053.15
1054.34		+75	1054.36		1054.17
1055.11		11+00	1055.22		1055.03
1055.70		+25	1055.89	-0.19	1055.70

Obtained Graphically

P.C.=15+38.15 — **D=14°00'Rt.** — P.T.=19+28.69

1055.52		13+50	1055.71	-0.19	1055.52
1055.76		+75	1055.90		1055.71
1056.23		14+00	1056.29		1056.10
1056.94		+25	1056.86		1056.67
1057.83		+50	1057.61		1057.42
1058.95		+75	1058.56		1058.37
1060.26		15+00	1059.70		1059.51
1061.74		+25	1061.02		1060.83
1062.57		P.C.~15+38.15	1061.80	-0.19	1061.61

Obtained Graphically

WESTFIELD AVE (Con't.)

1063.42		15+50	1062.53	0.19	1062.34
1065.28		+75	1064.22		1064.03
1067.33		16+00	1066.11		1065.92
1069.52		+25	1068.18		1067.99
1071.85		+50	1070.45		1070.26
1074.30		+75	1072.90		1072.71
1076.84		17+00	1075.53		1075.34
1079.45		+25	1078.36		1078.17
1082.13		+50	1081.28		1081.09
1084.82		+75	1084.20		1084.01
1087.56		18+00	1087.12		1086.93
1090.30		+25	1090.04	0.19	1089.85
1093.08		+50	1092.96		1092.84
1095.84		+75	1095.84		1095.84
1098.50		19+00	1098.63		1098.76
1100.96		+25	1101.34		1101.58
		P.T.~19+28.69	1101.73		
		+50	1103.96		

Obtained Graphically — Obtained Graphically

HILL AVE

P.C.=5+28.33 — **D=10°00'Lt.** — P.T.=9+17.41

Edge Pav't. Grade Lt.	Deduct Crown	STATION	Profile Grade	Add Super.	Edge Pav't. Grade Rt.
985.45	+0.22	4+75	985.23		985.23
987.29	-0.16	5+00	987.45		987.45
989.81		+25	989.97		990.15
990.15		P.C.~5+28.33	990.31		990.52
992.34		+50	992.50		992.85
994.87		+75	995.03		995.56
997.40		6+00	997.56		998.27
999.93		+25	1000.09		1000.98
1002.46		+50	1002.62		1003.69
1004.99		+75	1005.15		1006.34
1007.52		7+00	1007.68		1008.91
1010.05		+25	1010.21		1011.44
1012.58		+50	1012.74		1013.97
1015.11		+75	1015.27		1016.50
1017.64		8+00	1017.80		1019.03
1020.17		+25	1020.33		1021.49
1022.70		+50	1022.86		1023.90
1025.23		+75	1025.39		1026.25
1027.76		9+00	1027.92		1028.60
1029.52		P.T.~9+17.41	1029.68		1030.24
1030.29		+25	1030.45		1030.97
1032.82	-0.16	+50	1032.98		1033.32

Obtained Graphically — Obtained Graphically

P.C.=10+24.60 — **D=23°00'Lt.** — P.T.=12+99.31

1035.35	-0.16	9+75	1035.51		1035.78
1037.88		10+00	1038.04		1038.42
1040.37		P.C.~10+24.60	1040.53		1041.07
1040.41		+25	1040.57		1041.12
1042.94		+50	1043.10		1043.81
1045.47		+75	1045.63		1046.44
1048.00		11+00	1048.16		1049.01
1050.53		+25	1050.69		1051.54
1053.06		+50	1053.22		1054.07
1055.59		+75	1055.75		1056.54
1058.12		12+00	1058.28		1058.93
1060.65		+25	1060.81		1061.30
1063.18		+50	1063.34		1063.66
1065.71		+75	1065.87		1066.02
1068.18		P.T.~12+99.31	1068.		1068.31
	-0.16	13+00	1068.40		

Obtained Graphically — Obtained Graphically

COL-30-32.19

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

1120

Future Construction

1109.50
788+50
1131.8

1111.00
788+00
1130.6

1112.50
787+50
1129.2

1114.00
787+00
1128.0

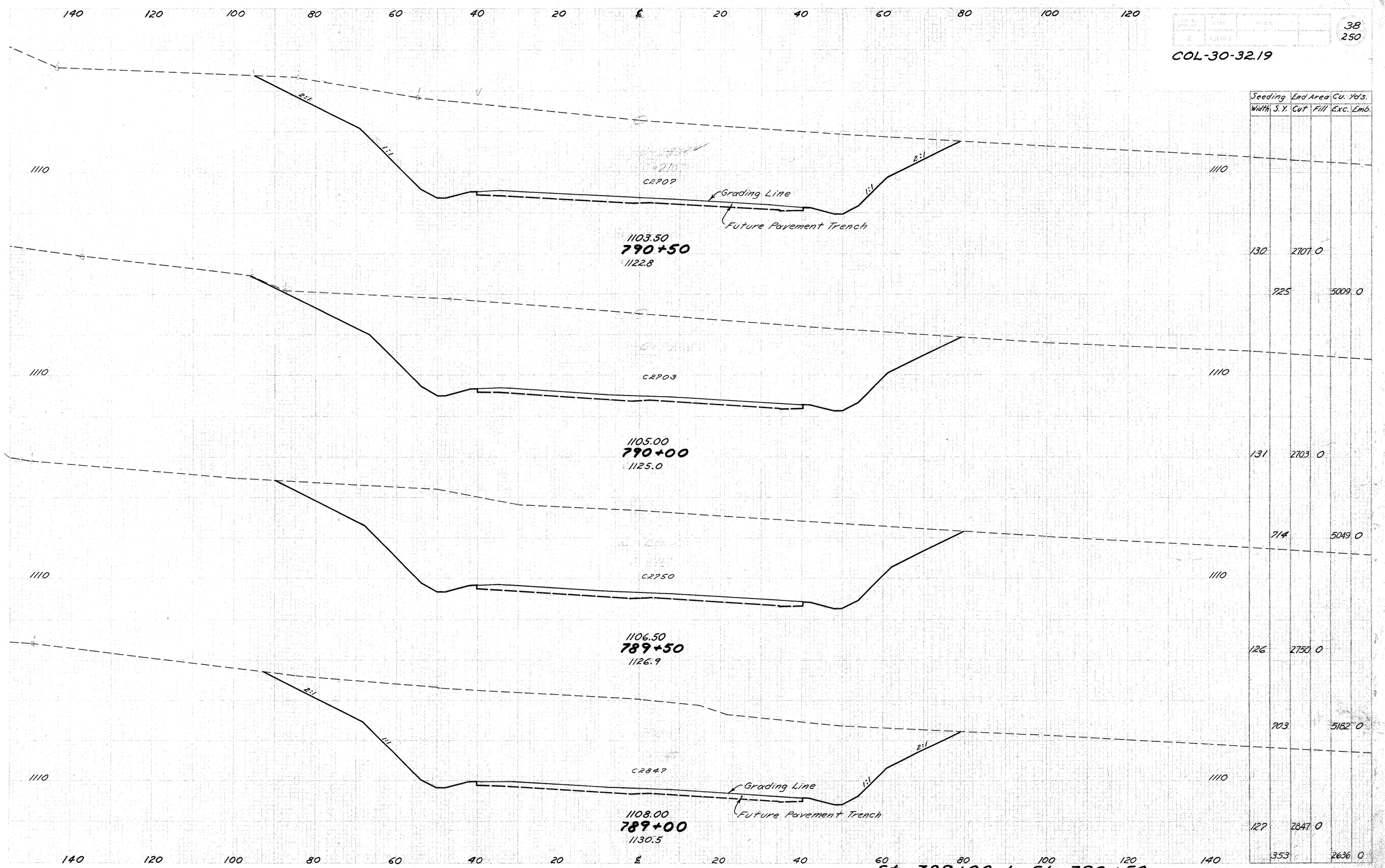
1115.50
786+50
1125.4

Future Construction

	Seeding	End Area		Cu. Yds.	
	Width	Sq. Yds.	Cut	Fill	Exc.	Emb.
BEGIN EARTHWORK						
	0		0	0		

Sta. 786+50 to Sta. 788+50

COL-30-32.19



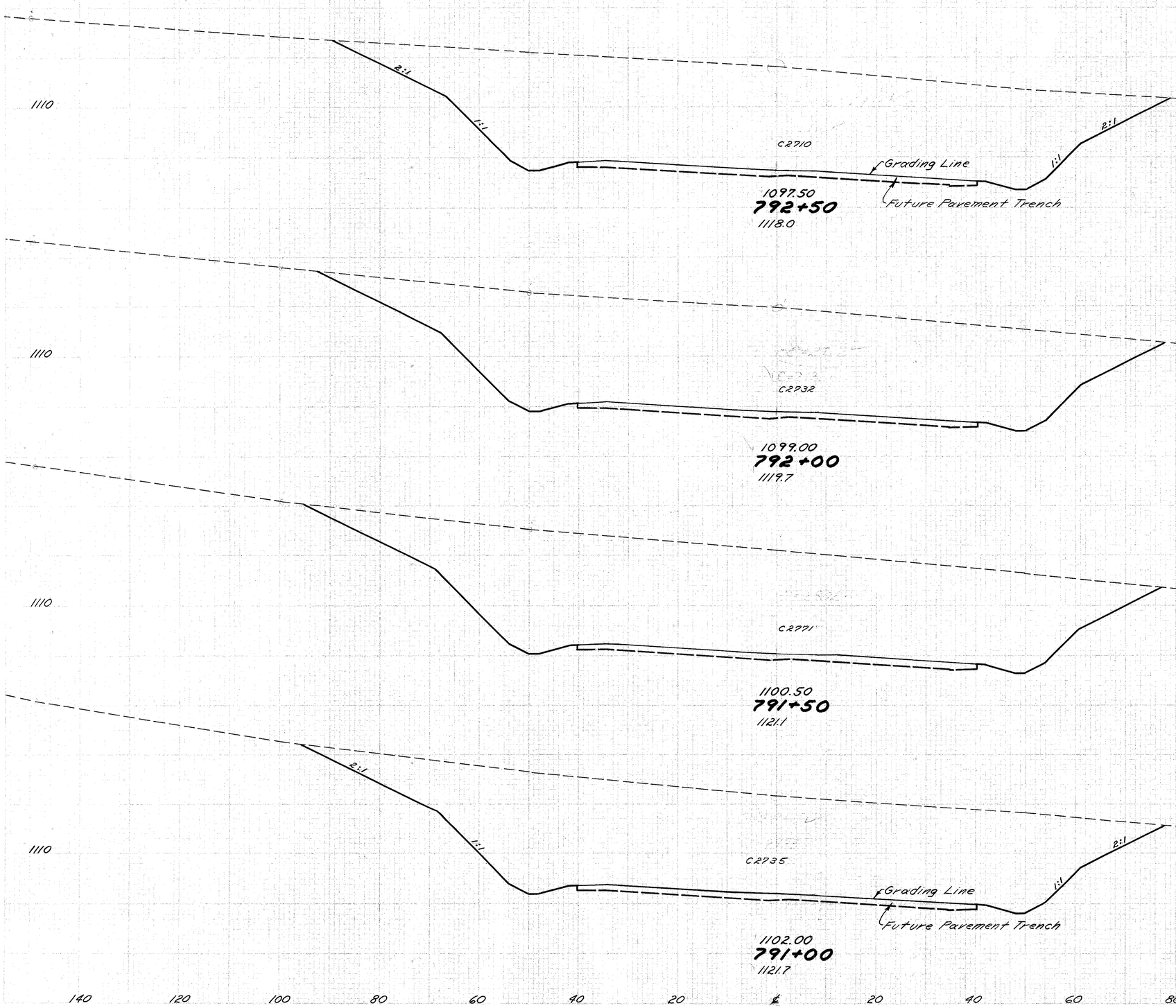
Seeding		End Area		Cu. Yds.	
Width	S.Y.	Cut	Fill	Exc.	Emb.
130		2707	0		
	725			5009	0
131		2703	0		
	714			5049	0
126		2750	0		
	703			5182	0
127		2847	0		
	353			2636	0

Sta 789+00 to Sta 790+50

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

39
250

COL-30-32.19



Seeding Width	S.Y.	End Area Cut	Fill	Cu. Yds. Exc.	Emb.
	669			4822	0
122		2710	0		
	686			5039	0
125		2732	0		
	706			5095	0
129		2771	0		
	714			5099	0
128		2735	0		
	717			5039	0

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

Sta 791+00 to Sta 792+50

COL-30-32.19

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

Ramp "A" Embankment

1100

2:1 1:1

C1857

Grading Line

1090.00
795+00
1104.1

Future Pavement Trench

1:1 2:1

1100

Ramp "D" Excav.

1100

C1933

1091.50
794+50
1106.0

Ramp "A" Embankment

1100

C2066

1093.00
794+00
1108.4

1100

Ramp "D" Excav.

1100

C2259

1094.50
793+50
1111.4

1100

1110

2:1 1:1

C2498

Grading Line

1096.00
793+00
1114.7

Future Pavement Trench

1:1 2:1

1110

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

Seeding Width	S.Y.	End Area Cut	Fill	Cu. Yds. Exc.	Emb.
109		1857	0		
	603			3509	0
108		1933	0		
	619			3703	0
115		2066	0		
	644			4005	0
117		2259	0		
	656			4405	0
119		2498	0		

Sta 793+00 to Sta 795+00

41
250

COL-30-32.19

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

1100

Ramp "A" Embankment

2:1

C1103

Grading Line

Variable

Future Pavement Trench

Ramp "D" Excavation

1082.50
797+50
1087.44

C1380

1082.75
797+35
1087.4

C2144

"A"

Variable

1084.00
797+00
1102.9

Note: Face dike with rock from excavation as directed by Engineer. Cost to be included in price bid per lin. ft. of pipe.

Section "A"-"A"

4:1

4'

2'

Mod. No. 2-3 C.B.; See Sheet No. 11

"A"

69'

See Ramp "D" X-Sec. 7+50

1 per ft.

C2304

Sta 7+50 Ramp "D"

Dike Elev. 1083.0

6:1

FL. 1085.0

1085.50
796+50
1100.7

FL. 1081.25

24" Class B-1

2.3 %

FL. 1076.75

See EST. QUAN. Bottom Rt. this Sheet

FL. 1075.3

C10

1 per ft.

F11

C1950

4:1

EST. QUAN. (Sta 796+50 to 7+50 Ramp "D")

24" Pipe Class B-1, Sec. M-6.8(b) or Sec. M-6.6(b)	69 L.F.
30" Pipe Class B-1, Sec. M-6.8(b) or Sec. M-6.6(b)	51 L.F.
Mod. No. 2-3 Catch Basin	3 Each
Riprap, Grout Filled	11 S.Y.
Dumped Rock Channel Protection	5 C.Y.

Ramp "A" Embankment

1087.00
796+00
1099.2

C1840

Ramp "D" Excavation

Grading Line

Future Pavement Trench

Paved Gutter, Type I	20 L.F.
Channel Excavation	2 C.Y.
Masonry	0.5 C.Y.
24" Pipe Class A-1, Sec. M-6.8(b) or Sec. M-6.6(b)	46 L.F.

1088.50
795+50
1101.3

	Seeding	End Areas		Cu. Yds.	
	Width	S.Y.	Cut	Fill	Exc.	Emb.
	118		1103	0		
	176				690	0
	93		1380	0		
	385				2284	0
	105		2144	0		
	625				4119	0
	120		2304	0		
	719				3948	10
	139		1960	11		
	694				3519	10
	111		1840	0		
	611				3423	0

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

Sta 795+50 to Sta 797+50

COL-30-32.19

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

Ramp "A" Embankment

2:1

1:1

C741

Grading Line

Future Pavement Trench

F21 F-11 Variable C10

1076.50
799+50
1079.6

1070 1070

For Earthwork See Ramp "D" Cross Sections

C1015

F3 C54

1078.00
799+00
1088.8

1080 1080

C1681

1079.50
798+50
1095.6

1090 1090

C1712

1080.25
798+25
1095.1

1090 1090

C1431

Ramp "A" Embankment

1081.00
798+00
1092.6

2:1

1:1

C1005

Grading Line

Variable

Ramp "D" Excavation

Future Pavement Trench

1081.90
797+70
1086.6

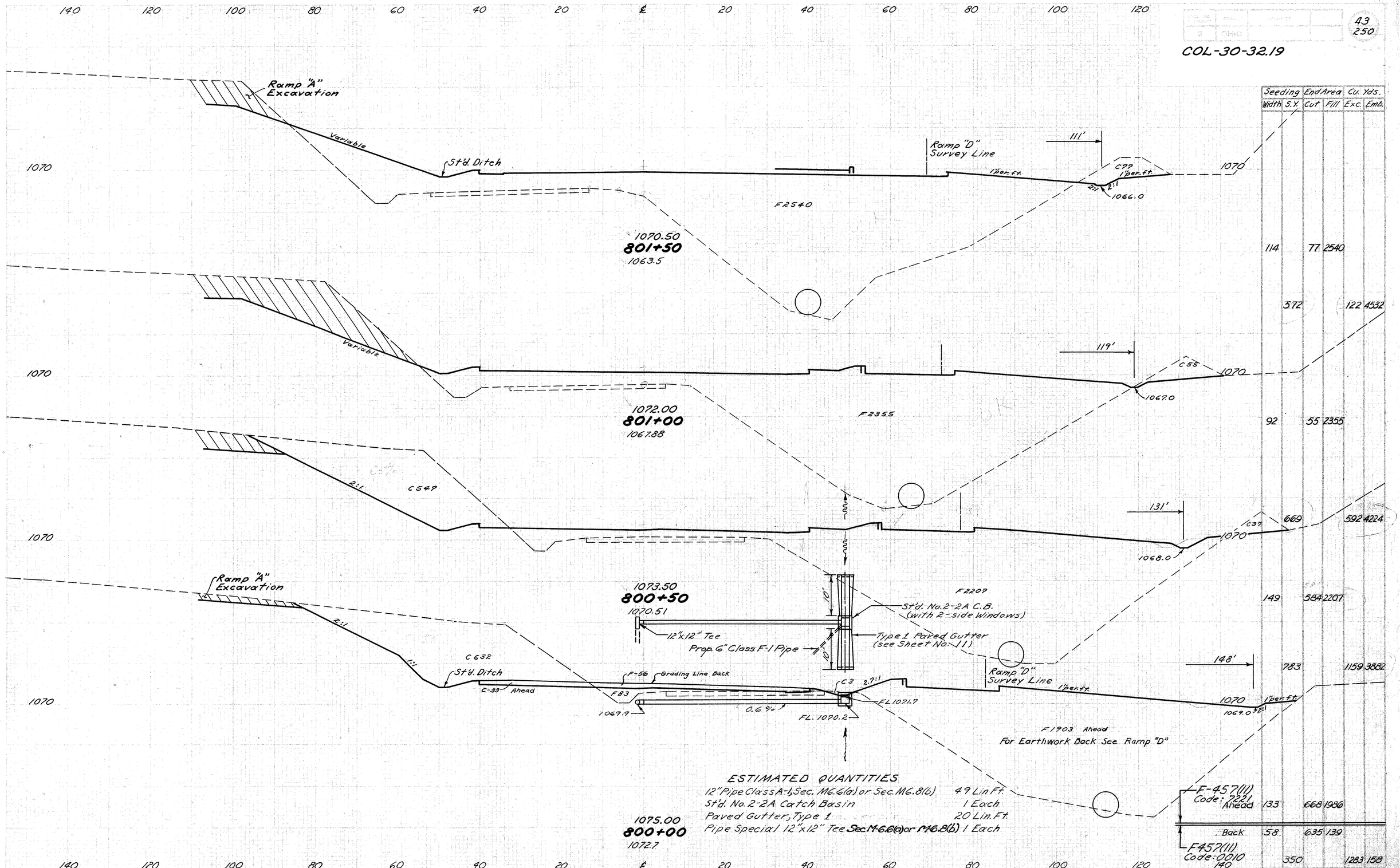
1080 1080

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

Seeding Width	End Area S.Y.	Cu. Yds. Cut	Fill	Exc.	Emb.
			165'		
68			10 70.0		
			751	32	
400				1685	32
76			1069	3	
464				2546	3
91			1681	0	
260				1571	0
96			1712	0	
275				1455	0
102			1431	0	
357				1353	0
112			1005	0	
256			781	0	

Sta 797+70 to Sta 799+50

COL-30-32.19



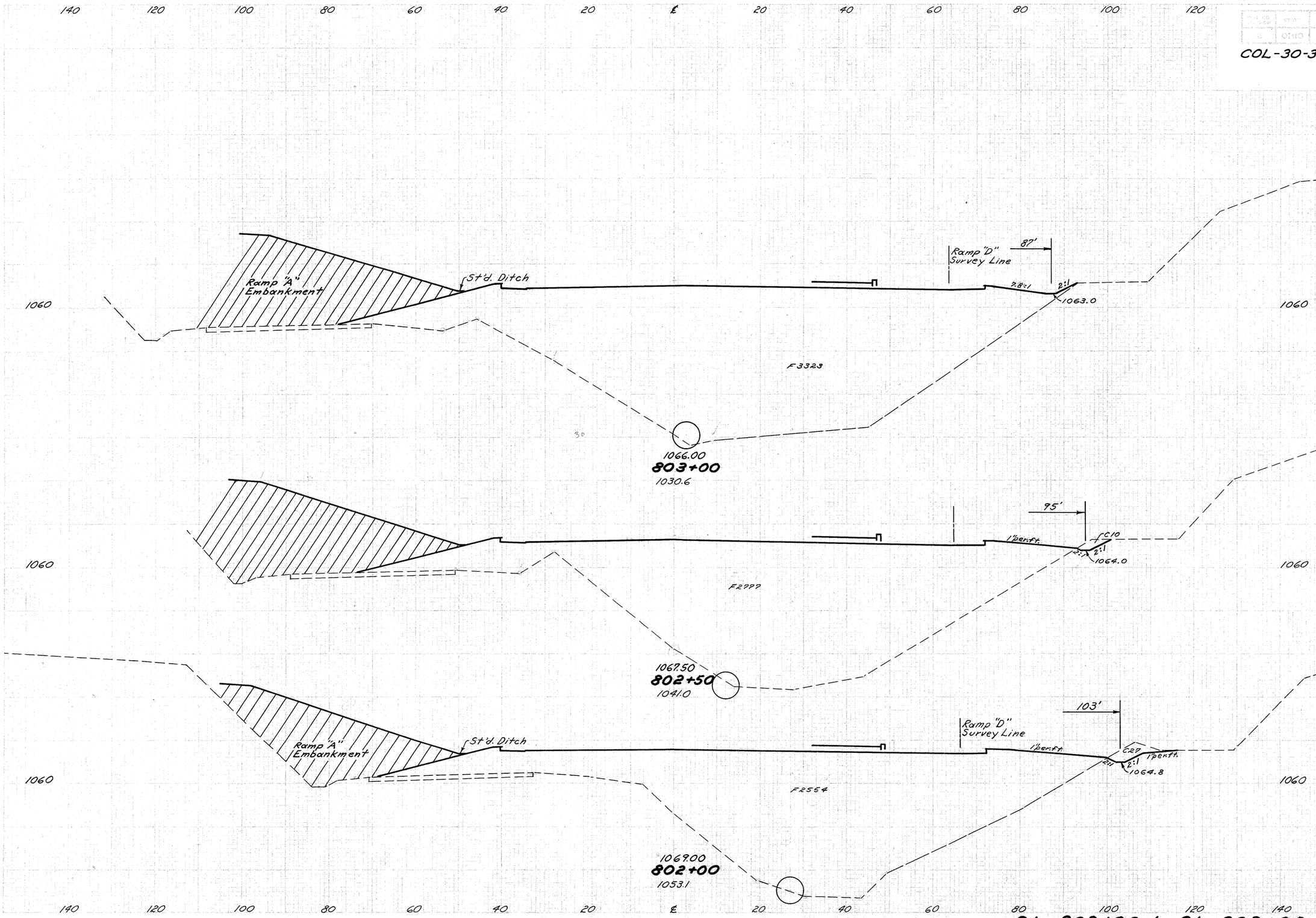
Seeding Width	Seeding S.Y.	End Area Cut	End Area Fill	Cu. Yds. Exc.	Cu. Yds. Emb.
114		77	2540		
	572			122	4532
92		55	2355		
	669			592	4224
149		584	2207		
	783			1159	3882
Ahead 133		668	1986		
Back 58		635	139		
	350			1283	158

ESTIMATED QUANTITIES

12" Pipe Class A-1, Sec. M6.6(a) or Sec. M6.8(b)	49 Lin Ft.
St'd. No. 2-2A Catch Basin	1 Each
Paved Gutter, Type 1	20 Lin. Ft.
Pipe Special 12"x12" Tee Sec M-6.6(a) or M-6.8(b)	1 Each

Sta 800+00 to Sta 801+50

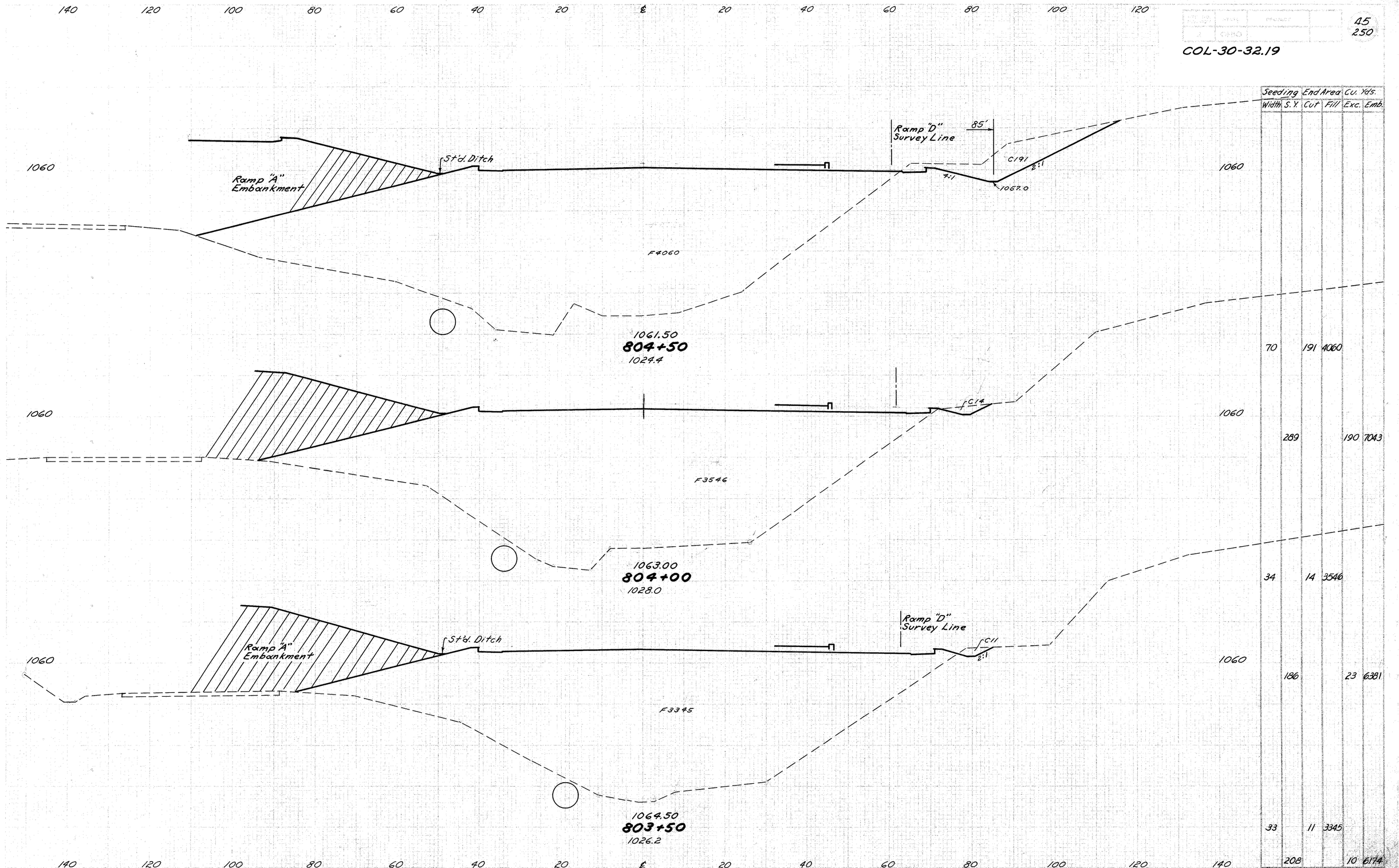
COL-30-32.19



Seeding		End Area		Cu. Yds.	
Width	S.Y.	Cut	Fill	Exc.	Emb.
42		0	3323		
	253			9	5648
49		10	2777		
	314			34	4936
64		27	2554		
	494			96	4717

Sta 802+00 to Sta 803+00

COL-30-32.19



Seeding Width	Seeding S.Y.	End Area Cut	End Area Fill	Cu. Yds. Exc.	Cu. Yds. Emb.
70		191	4060		
	289			190	7043
34		14	3546		
	186			23	6381
33		11	3345		
	208			10	6174

Sta 803+50 to Sta 804+50

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

46
250

COL-30-32.19

Seeding	End Area		Cu. Yds.	
Width	S.Y.	Cut	Fill	Exc.	Emb.
124	1001	2903			
647		1388	6519		
109		498	4138		
481		5078	8504		
Ahead 64		50	5040		
Back 29		50	3625		
275		223	7116		

1060

Ramp "A" Survey Line

2:1

Std. Ditch

C1001

Ramp "D" Survey Line

1:1

1060

F2903

1057.00
806+00
1052.6

1060

C498

1060

F4138

1058.50
805+50
1051.4

Ramp "A" Survey Line

Ramp "D" Survey Line

1060

2:1

Std. Ditch

C50

4:1

1060

F1421 Ahead
For Earthwork Back See Ramp "A"

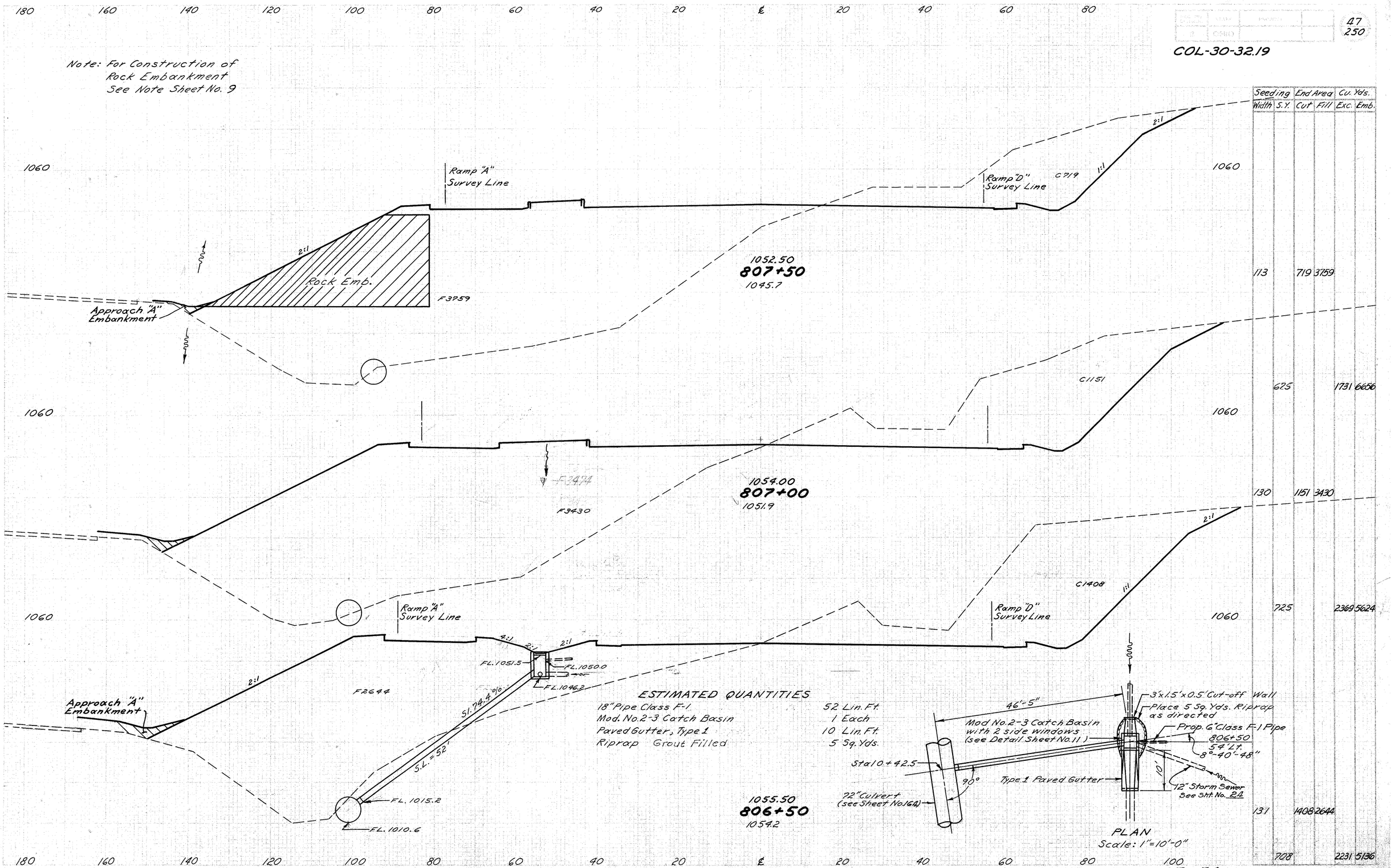
F3625

1060.00
805+00
1026.7

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

Sta 805+00 to Sta 806+00

COL-30-32.19



Seeding Width	Seeding S.Y.	End Area Cut	End Area Fill	Cu. Yds. Exc.	Cu. Yds. Emb.
113		719	3759		
	625			1731	6656
130		1151	3430		
	725			2369	5624
131		1408	2644		
	708			2231	5136

Sta 806+50 to Sta 807+50

COL-30-32.19

Note: For Construction of Rock Embankment See Note Sheet No. 9

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

1060

Ramp "A" Survey Line

Ramp "D" Survey Line

C248

2:1

1½:1

Rock Emb.

F4244

1021.0

1048.00
809+00
1016.4

1060

C346

1:1

1½:1

F4193

1022.5

1049.50
808+50
1026.2

1060

Ramp "A" Survey Line

Ramp "D" Survey Line

C500

1:1

2:1

1¾:1

Rock Emb.

F4005

1024.0

1051.00
808+00
1036.1

1060

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

Seeding Width	S.Y.	End Area Cut	Fill	Cu. Yds. Exc.	Emb.
100	248	4244			
550				550	7812
98	346	4193			
525				783	7591
91	500	4005			
567				1129	7189

Sta 808+00 to Sta 809+00

COL-30-32.19

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

Note: For Construction of Rock Embankment See Note Sheet No. 9

1050

Ramp "A" Survey Line

Ramp "D" Survey Line

76'

1" per ft.

2:1

1040.0

1½:1

Rock Emb.

C3

2:1

1014.0

F5402

1043.50

810+50

1001.3

1050

71.5'

1" per ft.

2:1

8:1

1" per ft.

1042.0

C2

1016.5

F5541

1045.00

810+00

1003.2

1060

Ramp "A" Survey Line

Ramp "D" Survey Line

C60

2:1

1044.0

1½:1

Rock Emb.

C3

2:1

1018.5

F4820

1046.50

809+50

1004.1

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

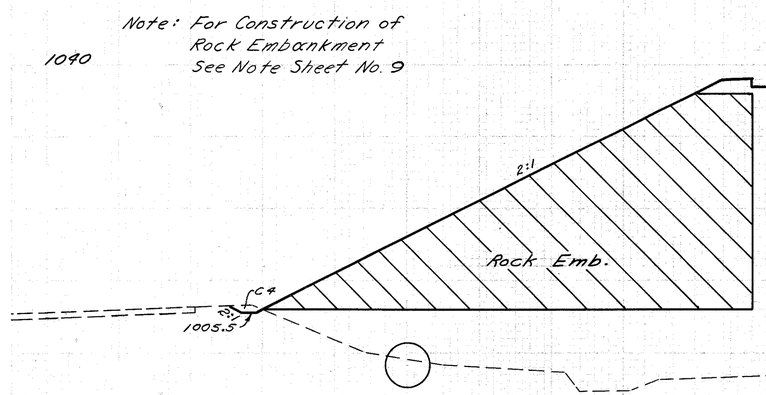
Seeding Width	S.Y.	End Area Cut	Fill	Cu. Yds. Exc.	Emb.
50	3	5402			
278				5	10,132
50	2	5541			
283				60	9594
52	63	4820			
422				288	8393

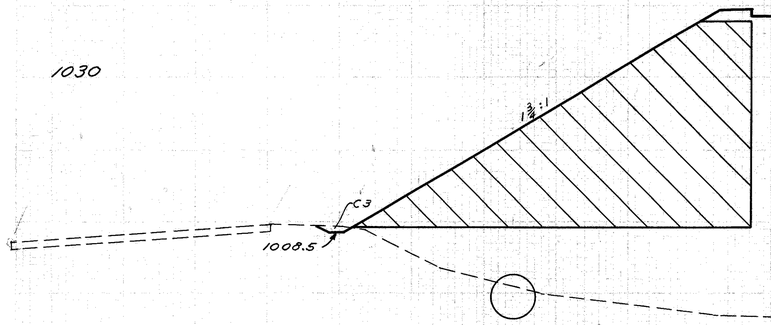
Sta 809+50 to Sta 810+50

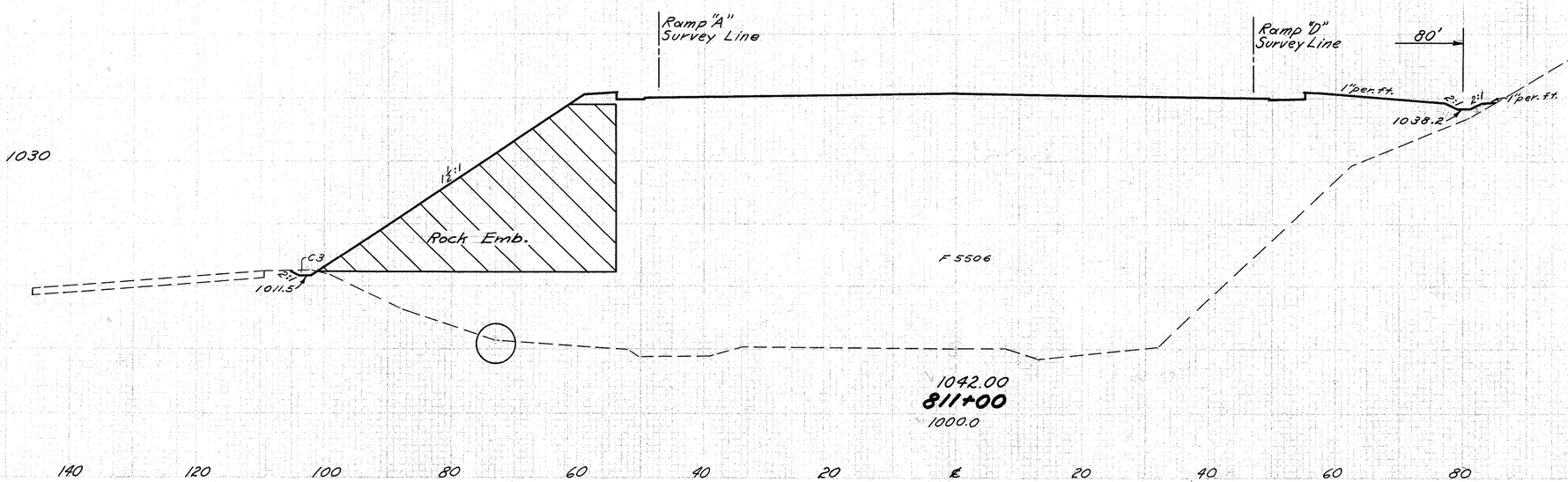
COL-30-32.19

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

Note: For Construction of Rock Embankment See Note Sheet No. 9







Seeding Width	S.Y.	End Area Cut	Fill	Cu. Yds. Exc.	Emb.
134	4	5774			
553			6	10,814	
65	3	5905			
342			6	10,566	
58	3	5506			
300			6	10,100	

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

Sta 811+00 to Sta 812+00

COL-30-32.19

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

Ramp "A" Survey Line

Ramp "D" Survey Line

80'

4:1

2:1

2:1

1028.3

1020

2:1

F5569

2:1 1"per.ft.

999.6

1036.75

812+75

1001.1

1020

6:1

1"per.ft.

1031.5

F6053

F6053

1020

1001.1

1037.50

812+50

998.2

Ramp "A" Survey Line

Ramp "D" Survey Line

80'

8:1

2:1

2:1 1"per.ft.

1033.5

F5602

2:1

1010

1010

1004.0

1038.25

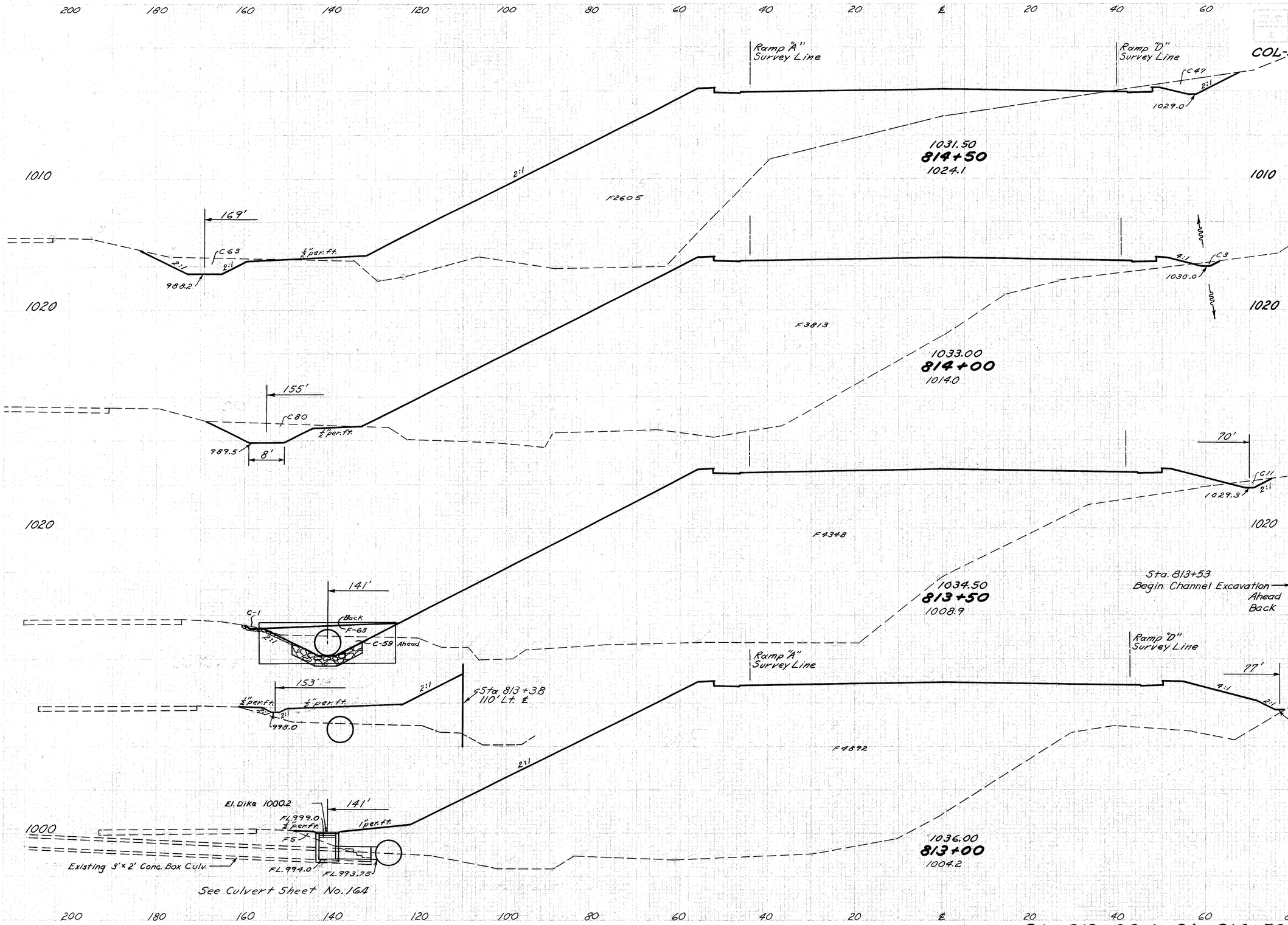
812+25

998.4

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

Seeding Width	Seeding S.Y.	End Area Cut	End Area Fill	Cu. Yds. Exc.	Cu. Yds. Emb.
153		0	5569		
429			0	5381	
156		0	6053		
414			0	5396	
142		0	5602		
383			2	5267	

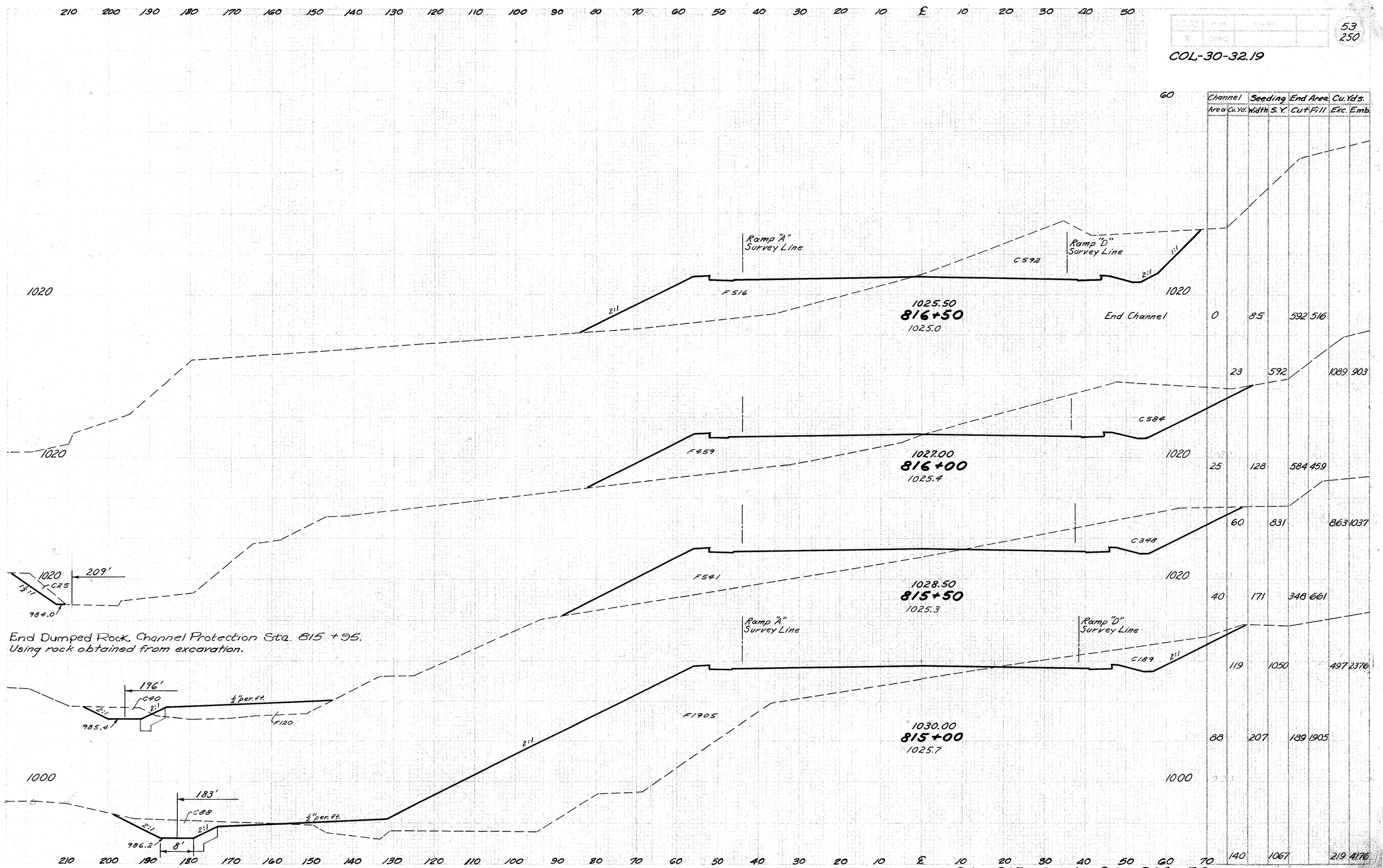
Sta 812+25 to Sta 812+75



Channel Area	Channel Cu. Yd.	Seeding Width	Seeding S.Y.	End Area Cut	End Area Fill	Cu. Yds. Exc.	Cu. Yds. Emb.
63		177		47	2605		
	132		919			46	5943
80		154		3	3813		
	121		850			14	7556
59							
		152		12	4348		
		161		12	4411		
			869			11	8619
		152		0	4897		
			424			0	4845

Sta 813+00 to Sta 814+50

COL-30-32.19


210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 ℄ 10 20 30 40 50
60
1020
1000
Ramp "A" Survey Line
Ramp "D" Survey Line
C592
F516
2:1
1:1
1025.50
816+50
1025.0
End Channel
C584
F459
1027.00
816+00
1025.4
C348
F541
1028.50
815+50
1025.3
C189
F1905
1030.00
815+00
1025.7
209'
C25
984.0
196'
C40
985.4
F120
183'
C88
986.2
8'
½" per. ft.
End Dumped Rock Channel Protection Sta. 815 +95.
Using rock obtained from excavation.
Channel Area
Cu. Yd.
Seeding Width
S. Y.
End Area Cut
Fill
Cu. Yds. Exc.
Emb.
0 85 592 516
23 592 1089 903
25 128 584 459
60 831 863 1037
40 171 348 661
119 1050 497 2376
88 207 189 1905
140 1067 219 4176
Sta 815+00 to Sta 816+50

COL-30-32.19

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

1040

Ramp "A" Survey Line

C631

2:1

1:1

F1795

1019.50
818+50
1015.2

1040

2:1

Ramp "D" Survey Line

C712

F780

1021.00
818+00
1018.2

1040

C654

F674

1022.50
817+50
1019.6

Ramp "A" Survey Line

Ramp "D" Survey Line

C702

1020

2:1

F536

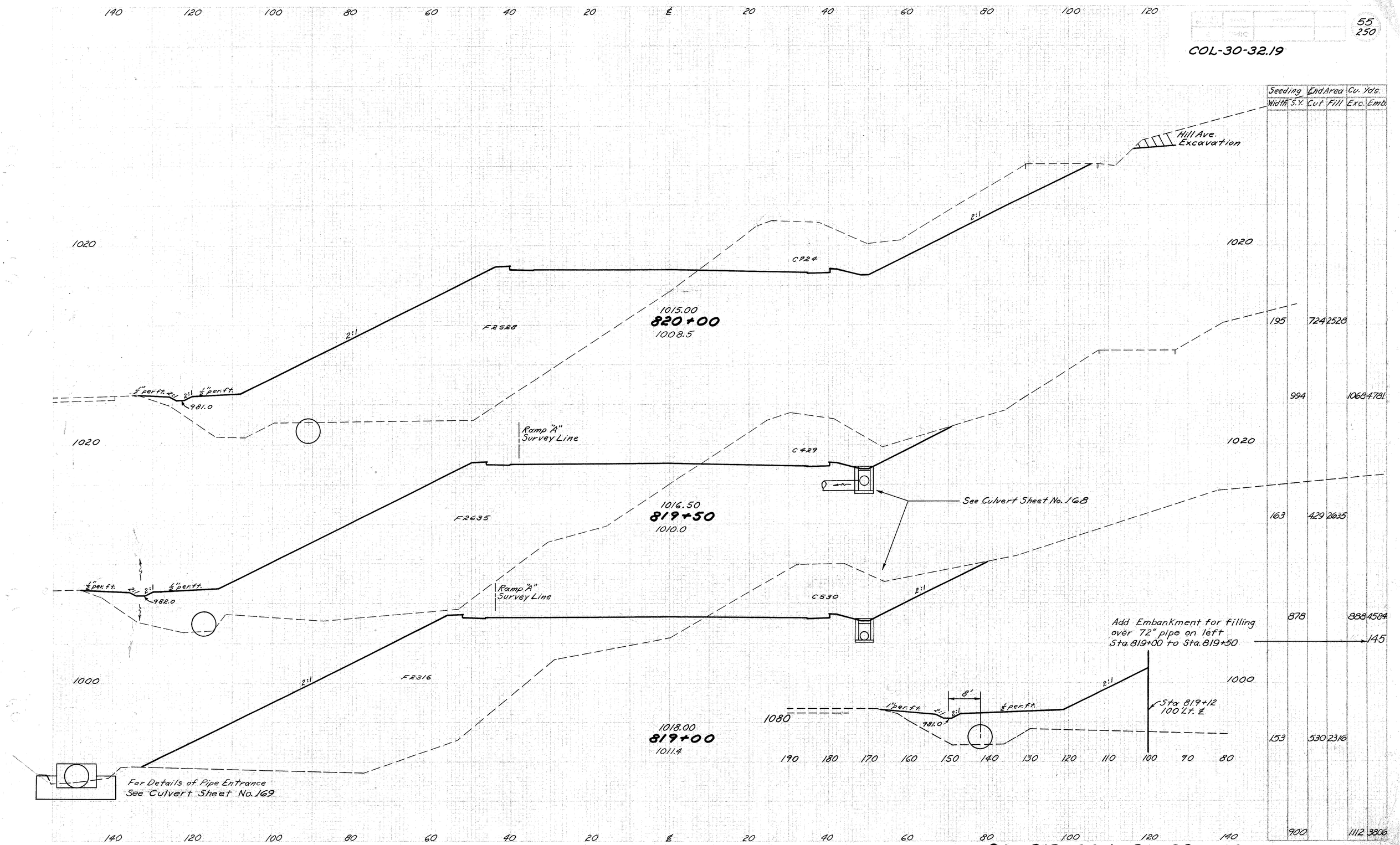
1024.00
817+00
1022.3

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

Seeding Width S.Y.	End Area Cut	End Area Fill	Cu. Yds. Exc. Emb.
121	671	1795	
928		1281	2384
163	712	780	
842		1265	1346
140	654	674	
769		1256	1120
137	702	536	
617		1198	974

Sta 817+00 to Sta 818+50

COL-30-32.19

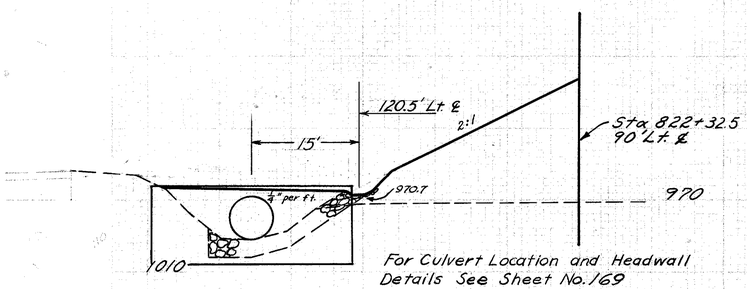


Seeding Width	Seeding S.Y.	End Area Cut	End Area Fill	Cu. Yds. Exc.	Cu. Yds. Emb.
195		724	2528		
	994			1068	4781
163		429	2635		
	878			888	4584
153		530	2316		
	900			1112	3806

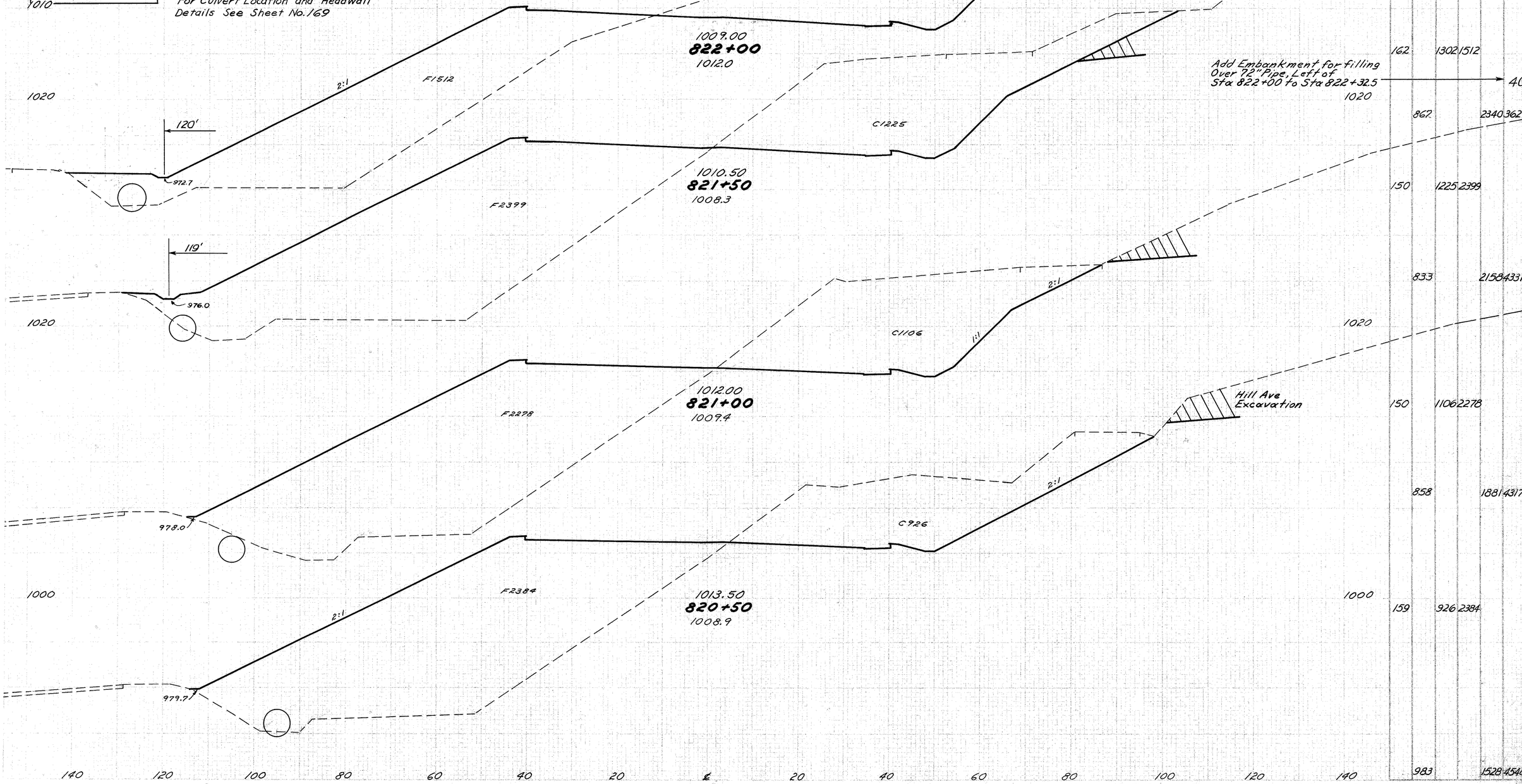
Sta 819+00 to Sta 820+00

COL-30-32.19

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



For Culvert Location and Headwall Details See Sheet No. 169

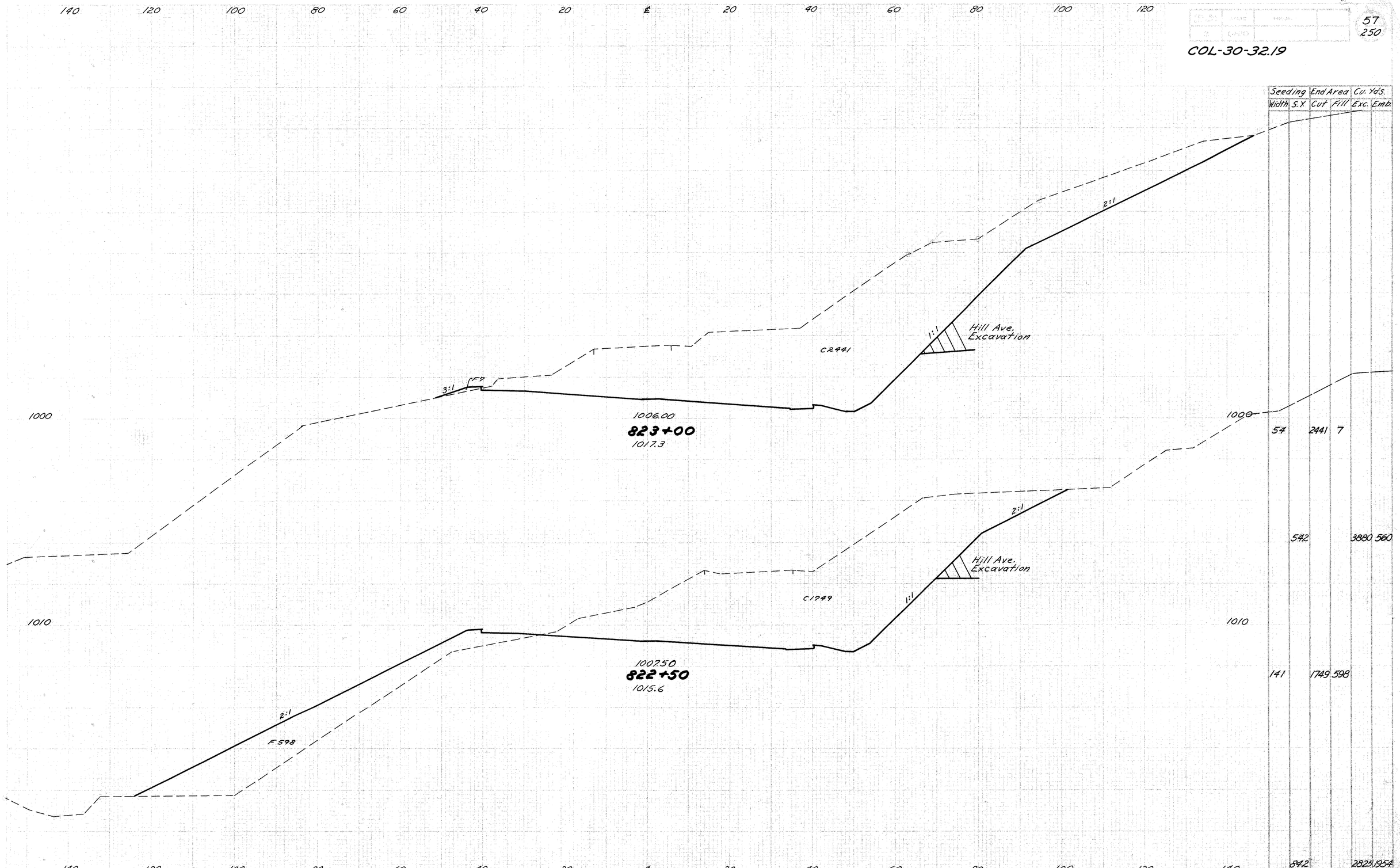


Seeding Width	S.Y.	End Area Cut	Fill	Cu. Yds. Exc.	Emb.
162		1302	1512		
Add Embankment for filling Over 72" Pipe, Left of Sta 822+00 to Sta 822+32.5 →					40
	862			2340	3621
150		1225	2399		
	833			2158	4331
150		1106	2278		
	858			1881	4317
159		926	2384		
	983			1528	4548

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

Sta 820+50 to Sta 822+00

COL-30-32.19



Seeding Width	Seeding S.Y.	End Area Cut	End Area Fill	Cu. Yds. Exc.	Cu. Yds. Emb.
54		2441	7		
	542			3880	560
141		1749	598		
	842			2825	1954

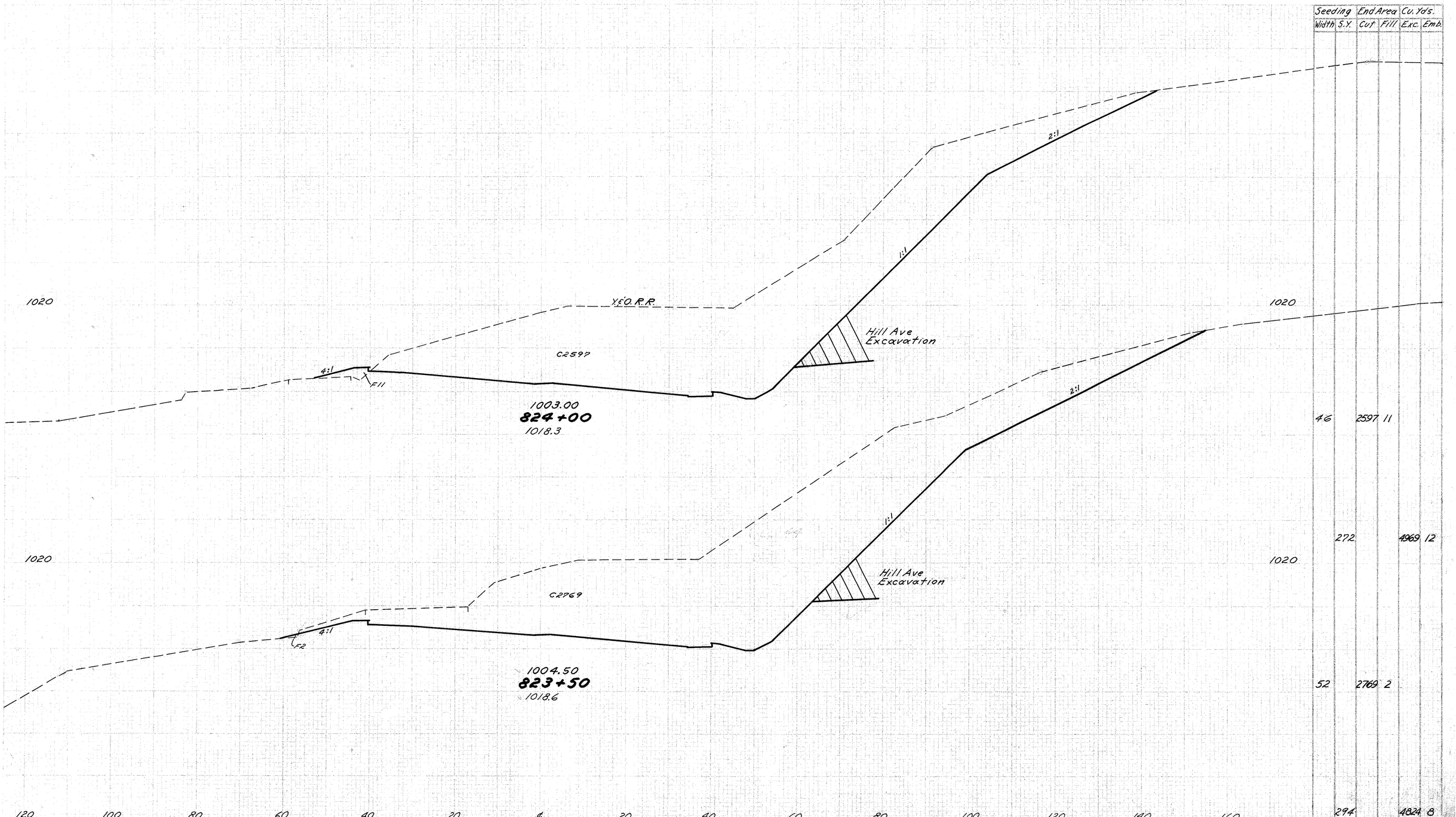
Sta 822+50 to Sta 823+00

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

58
250

COL-30-32.19

Seeding		End Area		Cu. Yds.	
Width	S.Y.	Cut	Fill	Exc.	Emb.
46		2597	11		
272				4969	12
52		2769	2		
294				4824	8



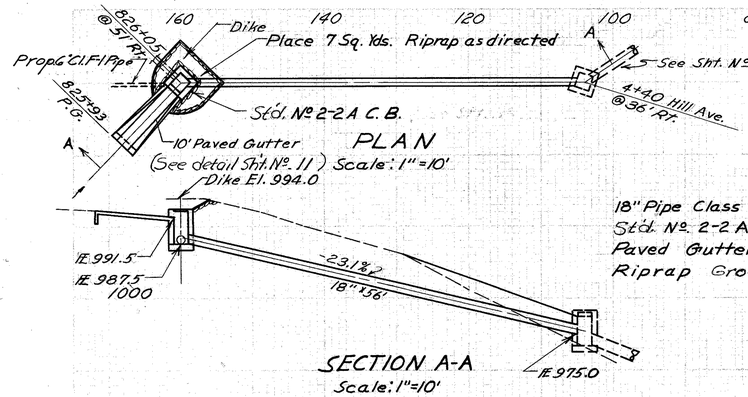
Sta 823+50 to Sta 824+00

COL-30-32.19

Seeding		End Area		Cu. Yds.	
Width	S.Y.	Cut	Fill	Exc.	Emb.
61		2086	132		
	339			4125	181
61		2369	63		
	297			4598	69

Sta 824+50 to Sta 825+00

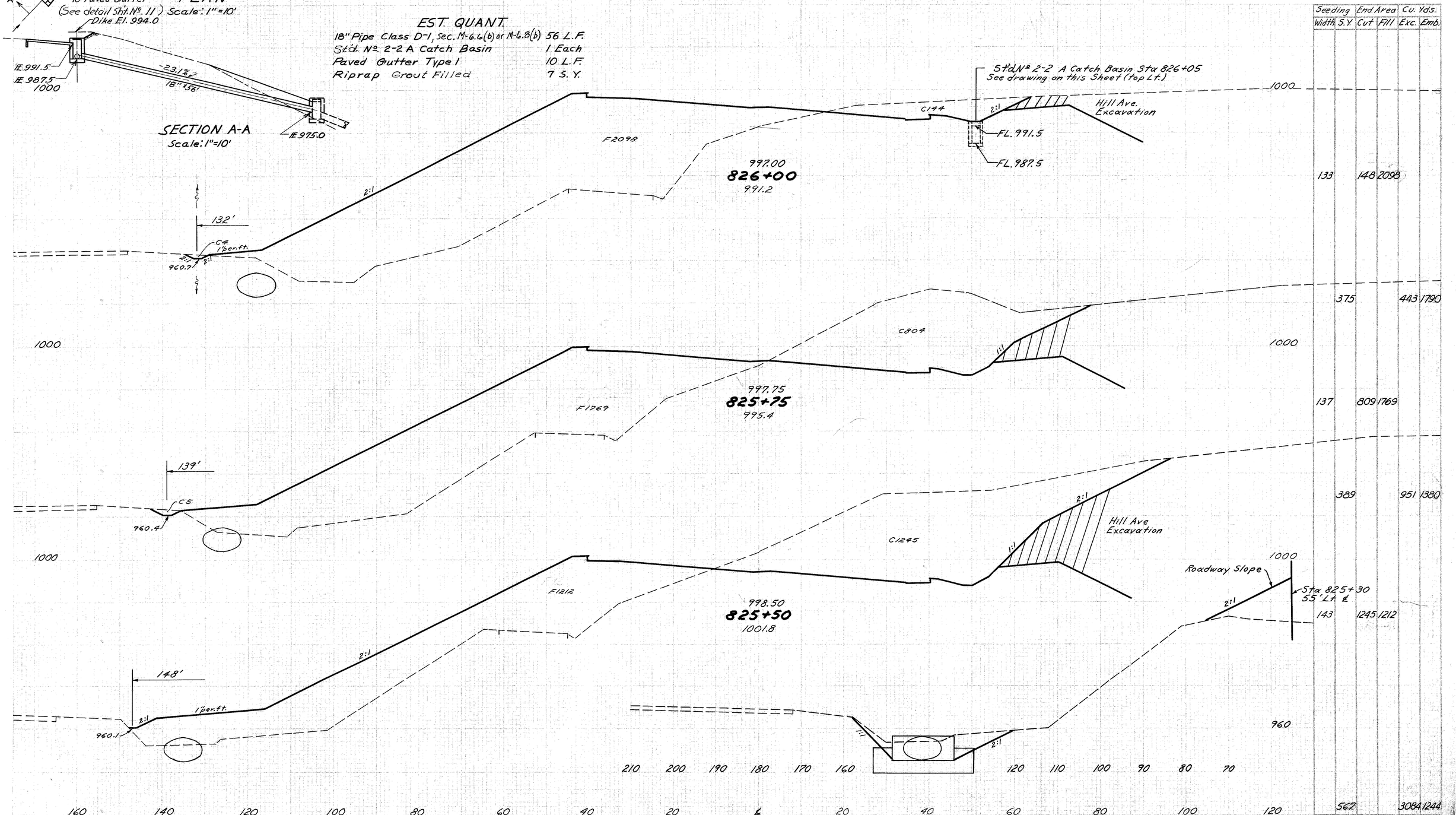
COL-30-32.19



SECTION A-A
Scale: 1"=10'

EST. QUANT.

18" Pipe Class D-1, Sec. M-6.6(b) or M-6.8(b)	56 L.F.
Std. No. 2-2A Catch Basin	1 Each
Paved Gutter Type I	10 L.F.
Riprap Grout Filled	7 S.Y.

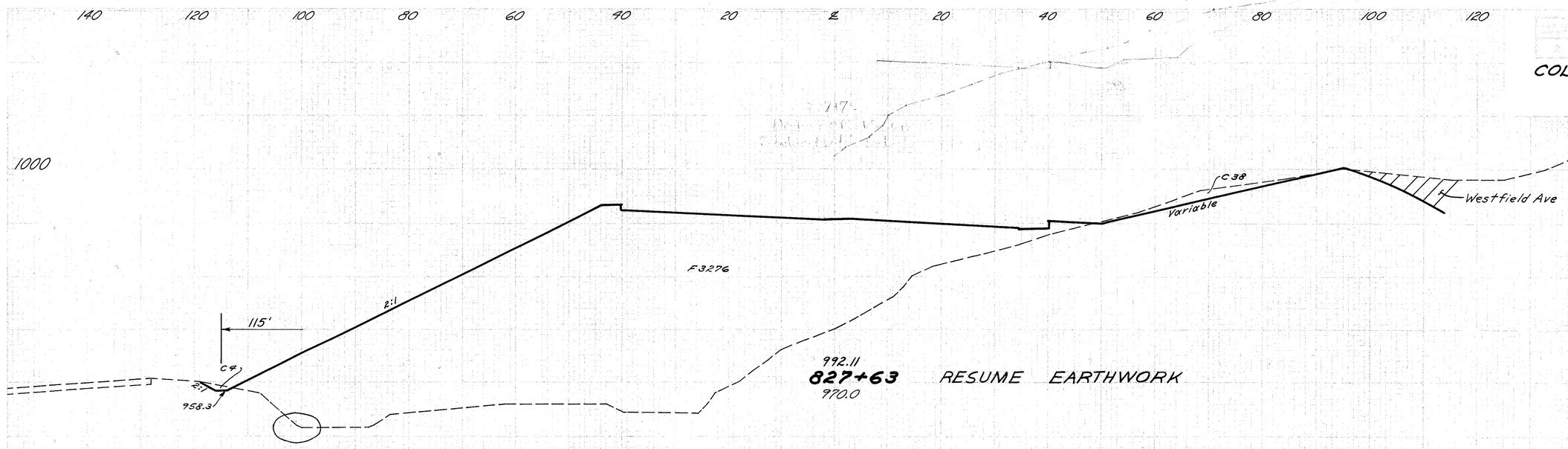


Width	Seeding S.Y.	End Area Cut	End Area Fill	Cu. Yds. Exc.	Cu. Yds. Emb.
133		148	2098		
375				443	1790
137		809	1769		
389				951	1380
143		1245	1212		
562		3084	1244		

Sta 825+50 to Sta 826+00

61
250

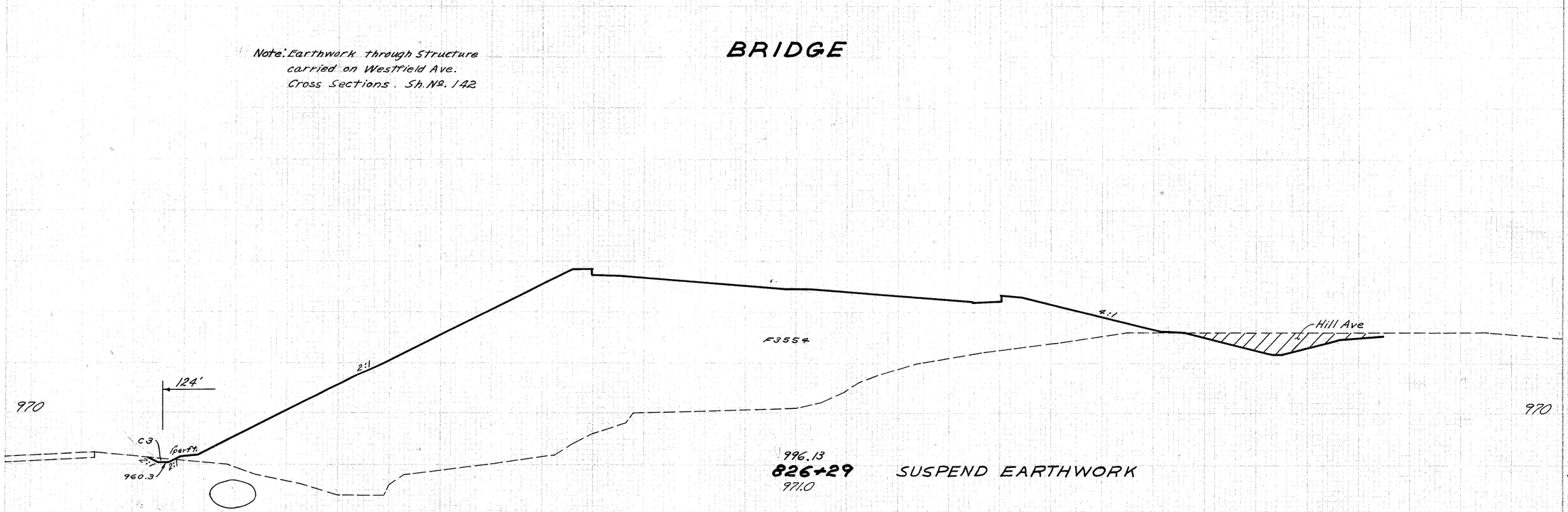
COL-30-32.19



Seeding Width	S.Y.	End Area Cut	Fill	Cu. Yds. Exc.	Emb.
154		42	3276		

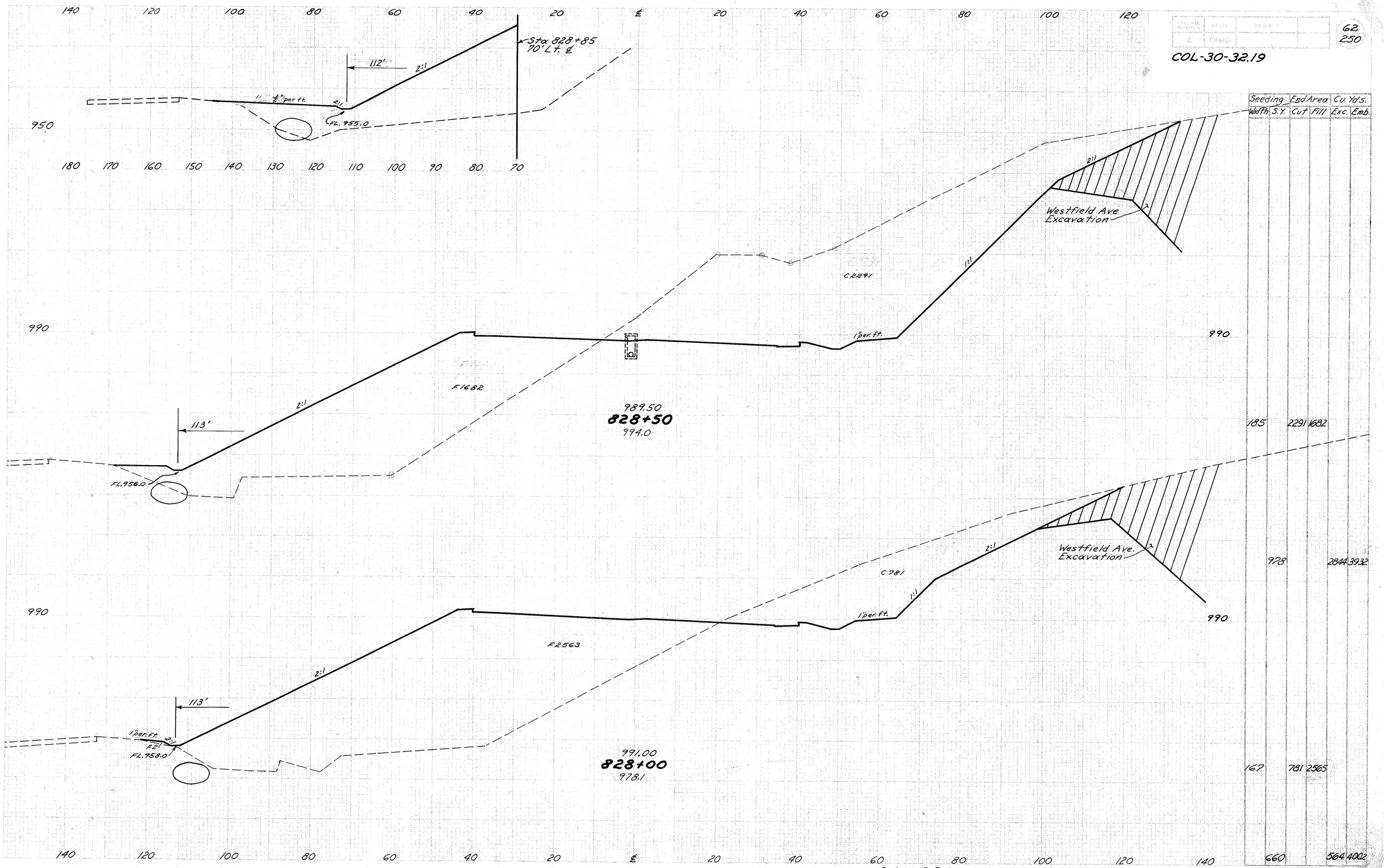
Note: Earthwork through Structure carried on Westfield Ave. Cross Sections, Sh. No. 142

BRIDGE



144	3	3554			
446			81	3035	

Sta 826+29 to Sta 827+63



Seeding		End Area		Cu. Yds.	
Width	S.Y.	Cut	Fill	Exc.	Emb.
185		2291	1682		
	978			2844	3932
167		781	2565		
	660			564	4002

Sta 828+00 to Sta 828+50

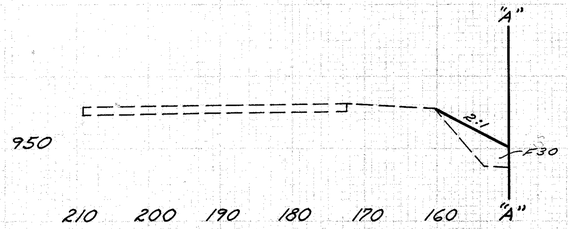
62
250

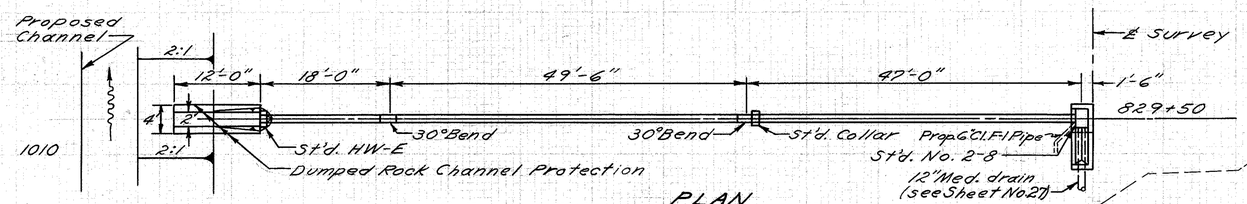
COL-30-32.19

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

63
250

COL-30-32.19

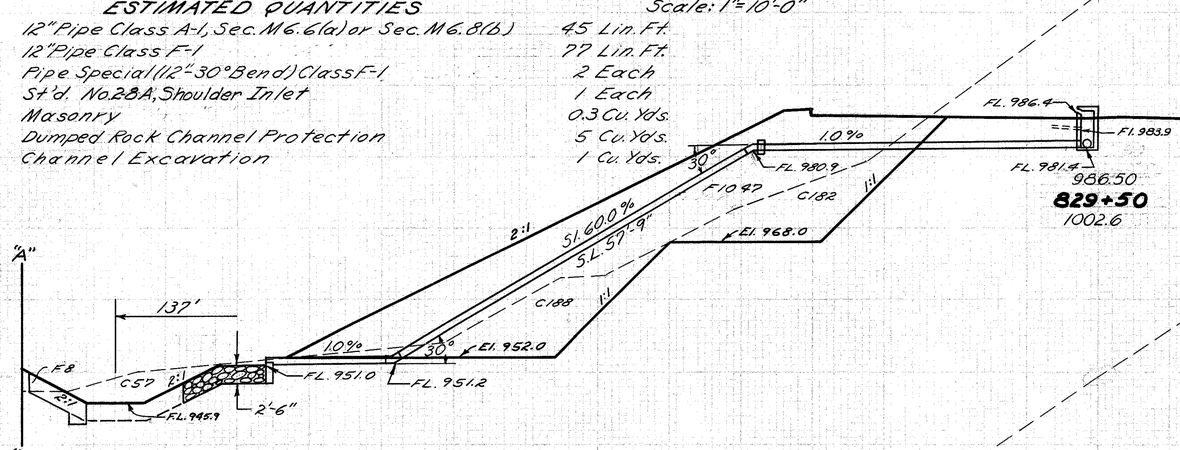


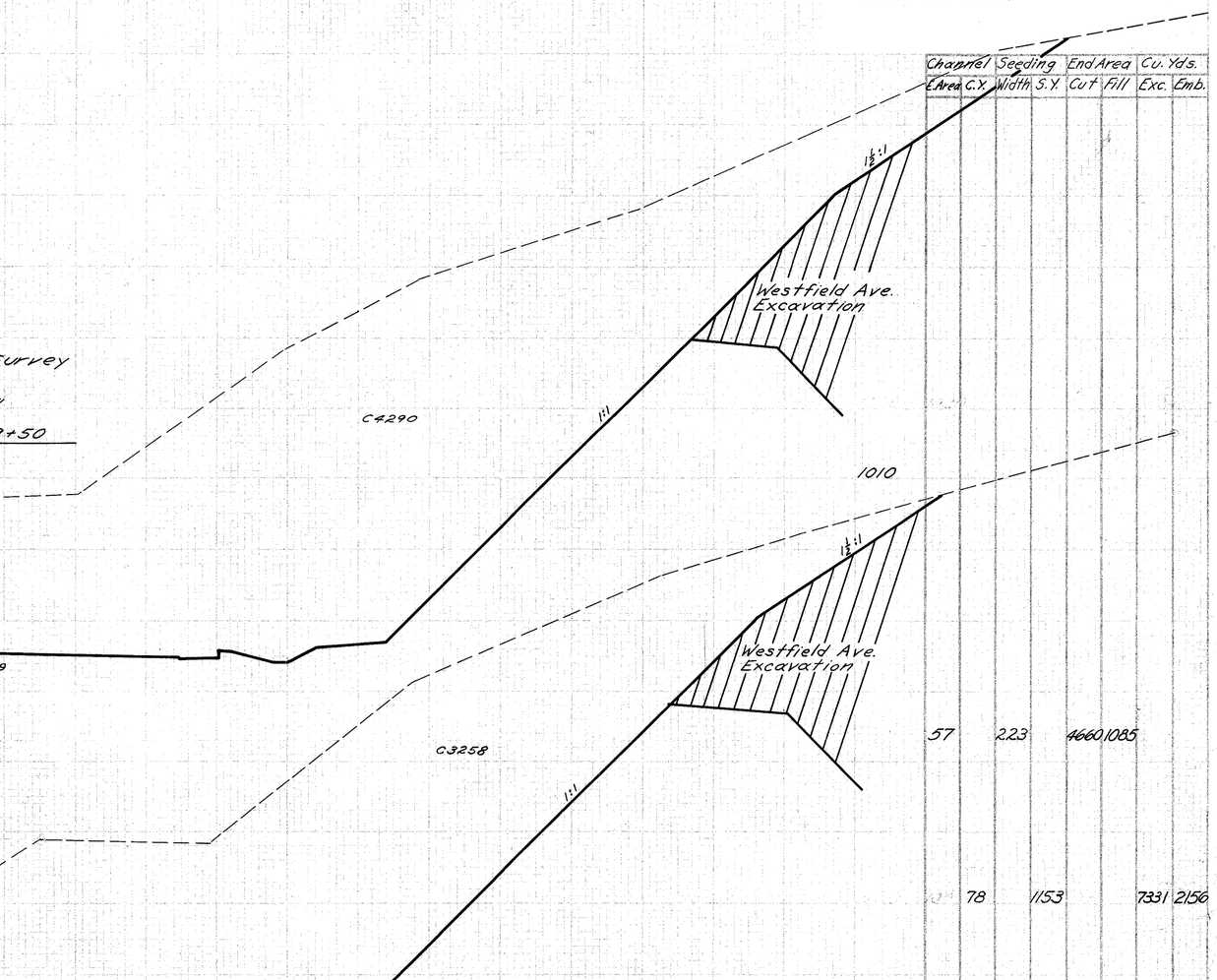


PLAN
Scale: 1"=10'-0"

ESTIMATED QUANTITIES

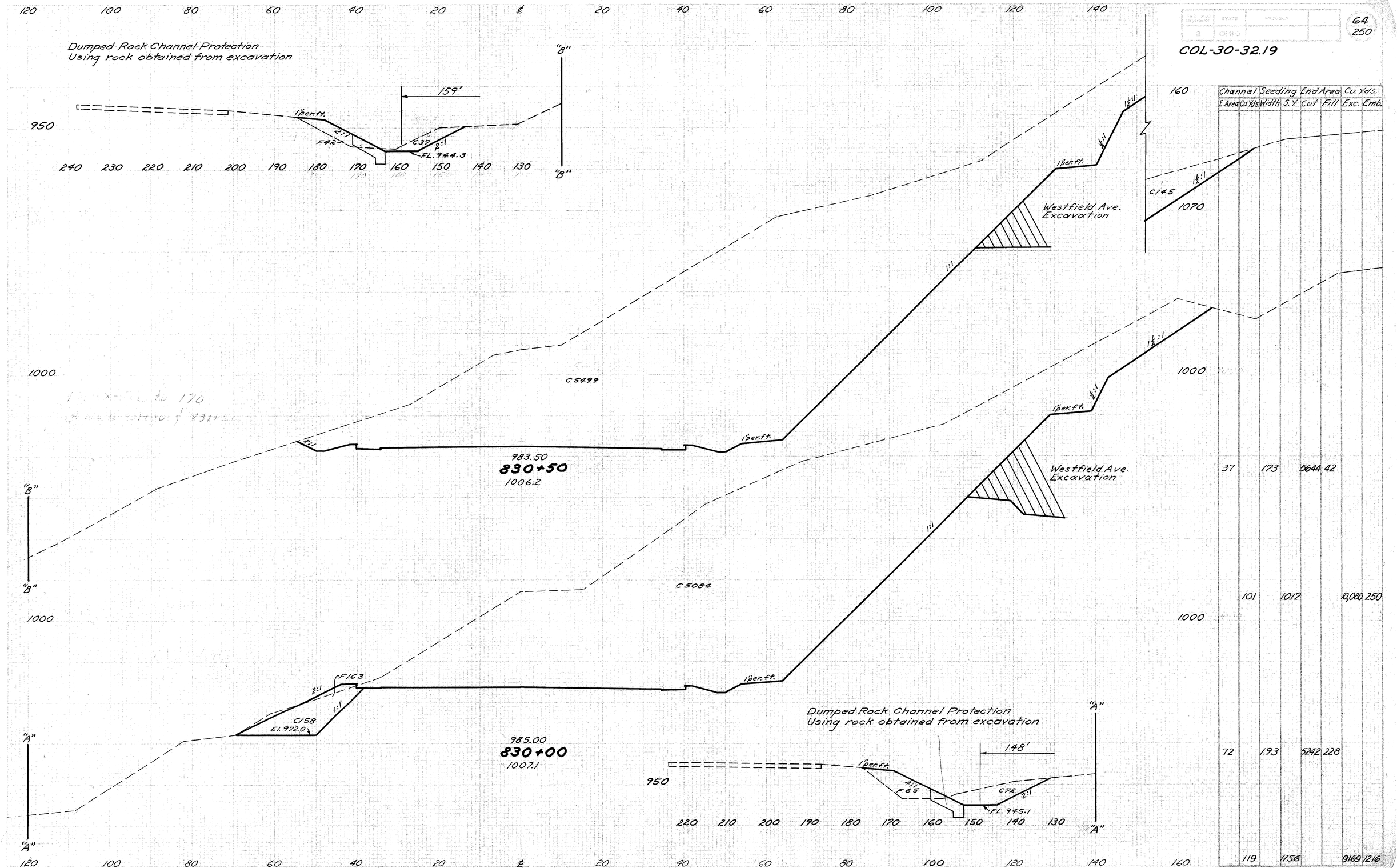
12" Pipe Class A-1, Sec. M6.6(a) or Sec. M6.8(b)	45 Lin. Ft.
12" Pipe Class F-1	77 Lin. Ft.
Pipe Special (12'-30° Bend) Class F-1	2 Each
St'd. No. 28A, Shoulder Inlet	1 Each
Masonry	0.3 Cu. Yds.
Dumped Rock Channel Protection	5 Cu. Yds.
Channel Excavation	1 Cu. Yds.





Channel L.Area	Channel C.Y.	Seeding Width	Seeding S.Y.	End Area Cut	End Area Fill	Cu. Yds. Exc.	Cu. Yds. Emb.
57		2.23		4660	1085		
	78		1153			7331	2156
Begin Channel Exc. Sta. 829+00 "Ahead		27		192		3258	1243
Back		0		199		3258	1341
				1067		5138	2799

Sta 829+00 to Sta 829+50



COL-30-32.19

64
250

Channel		Seeding		End Area		Cu. Yds.	
E. Area	Cu. Yds.	Width	S.Y.	Cut	Fill	Exc.	Emb.
37		173		5644	42		
	101		1017			10,080	250
72		193		5242	228		
	119		1156			9169	1216

Sta 830+00 to Sta 830+50

65
250

COL-30-32.19

Channel		Seeding	End Area		Cu. Yds.	
E. Area	Cu. Yds.	Width	S.Y.	Cut	Fill	Exc.	Emb.
				146	6713	0	

STATE	PROJECT
OHIO	

66
250

COL-30-32.19

Seeding	End Area		Cu. Yds.	
Width	S.Y.	Cut	Fill	Exc.	Emb.
160	6192	0			
155	6651	0			
836		12,374	0		

100 80 60 40 20 ℄ 20 40 60 80 100 120 140 160

1000

CG192

2:1

977.50

832+50

1001.2

2:1 1per.ft.

1:1

1½:1

1per.ft.

Westfield Ave
Excavation

1000

CG651

2:1

979.00

832+00

1002.8

2:1 1per.ft.

1:1

1½:1

1per.ft.

Westfield Ave.
Excavation

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

Sta 832+00 to Sta 832+50

COL-30-32.19

Seeding		End Area		Cu. Yds.	
Width	S.Y.	Cut	Fill	Exc.	Emb.
221		2579	803		
	1203			5643	849
212		3515	114		
	793			6142	85
	193			1499	21
143		4737	0		
	842			10,119	0

Sta 833+00 to Sta 834+00

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

68
250

COL-30-32.19

Seeding		End Area		Cu. Yds.	
Width	S.Y.	Cut	Fill	Exc.	Emb.
Add Embankment for filling over pipe on Lt. Sta 835+72 to Sta 836+00 →					225
186		653	2184		
972		1348	3741		
164		803	1856		
967		1684	3341		
184		1016	1752		
1094		2609	2774		
210		1802	1244		
1197		4056	1895		

960
970
960
970
960
970

2:1
1"per.ft.
943.5
944.1
Sta 835+72
70' Lt ℄
940
F2184
968.00
836+00
954.7
C653
1:1
C803
1½:1
F1856
969.06
835+50
958.4
C1016
F1752
970.25
835+00
960.0
C1802
F1244
971.56
834+50
971.7

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

Sta 834+50 to Sta 836+00

COL-30-32.19

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

960

98'

2:1

941.0

F2618

2:1

Std. Ditch

965.00
837+50
943.3

54'

1 per. ft.

2:1

FL. 962.8

FL. 956.8

960

For Culvert Details
See Sheet No. 175

98'

941.5

FL. 950.8

F2973

FL. 939.0

FL. 932.7

965.30
837+35
941.5

52'

2:1

1 per. ft.

964.2

960

F2613

942.0

966.00
837+00
945.7

C258

2:1

950

2:1

1 per. ft.

942.5

F2391

2:1

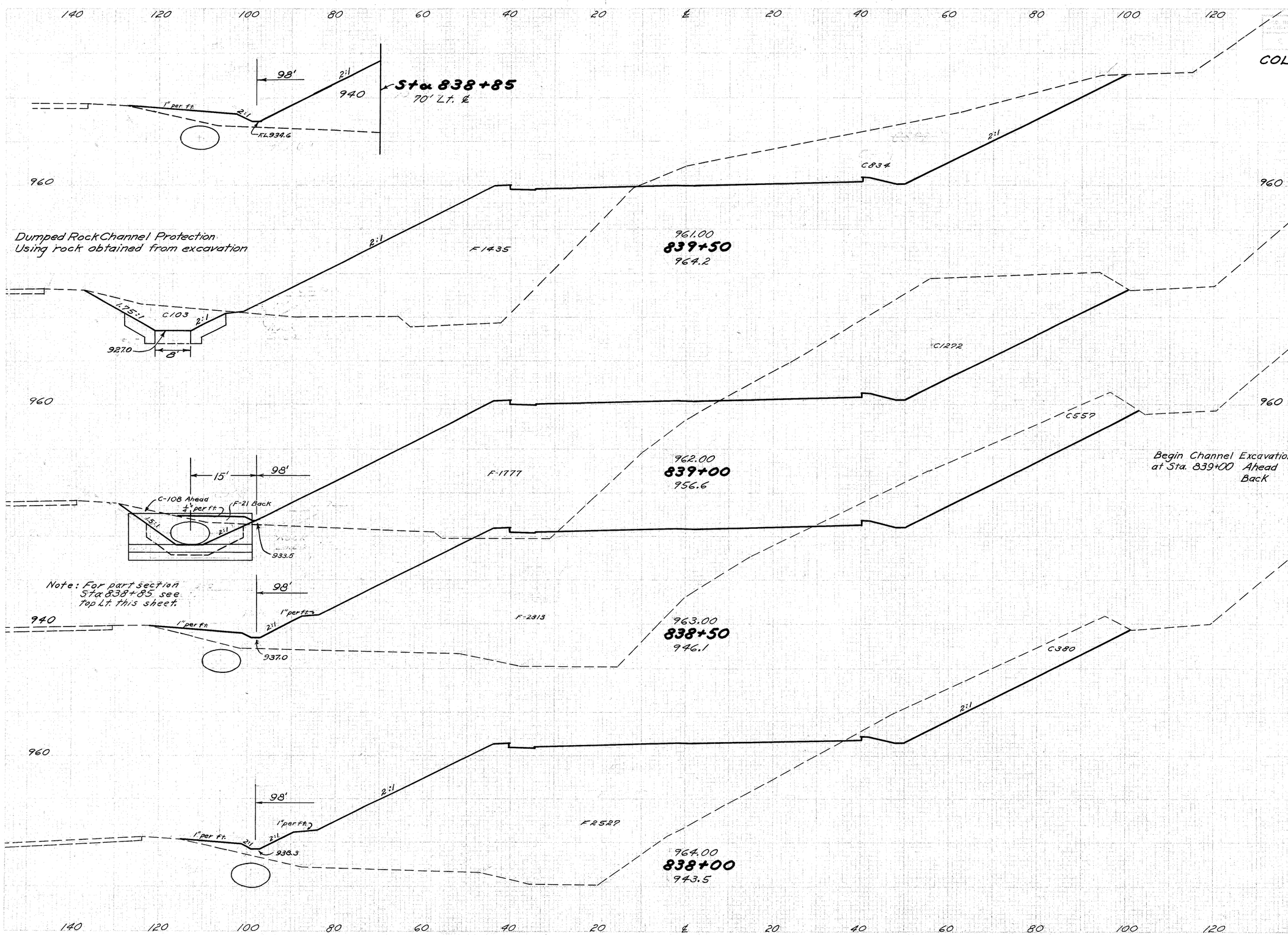
967.00
836+50
948.9

950

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

Seeding Width	S.Y.	End Area Cut	Fill	Cu. Yds. Exc.	Emb.
97		0	2618		
186				0	1553
126		0	2973		
457				0	3621
109		0	2613		
758				239	4633
164		258	2391		
972				844	4236

Sta. 836+50 to Sta 837+50



COL-30-32.19

70
250

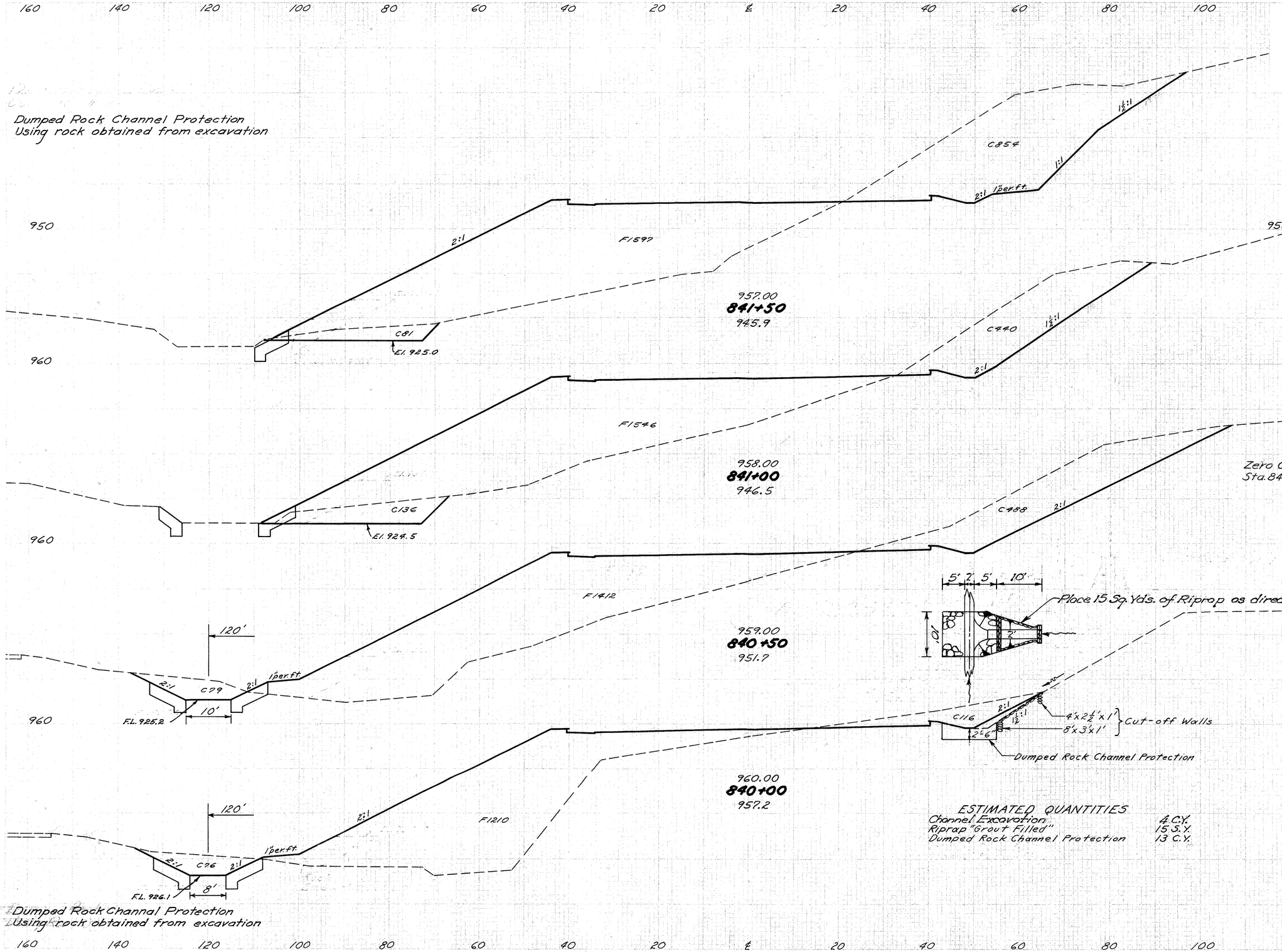
Channel		Seeding		End Area		Cu. Yds.	
E. Area	Cu. Yds.	Width	S.Y.	Cut	Fill	Exc.	Emb
103		176		834	1435		
	195		961			1950	2974
108		170		1272	1777		
0		170		1272	1798		
			958			1694	3806
		175		557	2313		
			950			868	4481
		167		380	2527		
			733			352	4764

Begin Channel Excavation at Sta. 839+00 Ahead
Back

Sta 838+00 to 839+50

COL-30-32.19

Dumped Rock Channel Protection
Using rock obtained from excavation



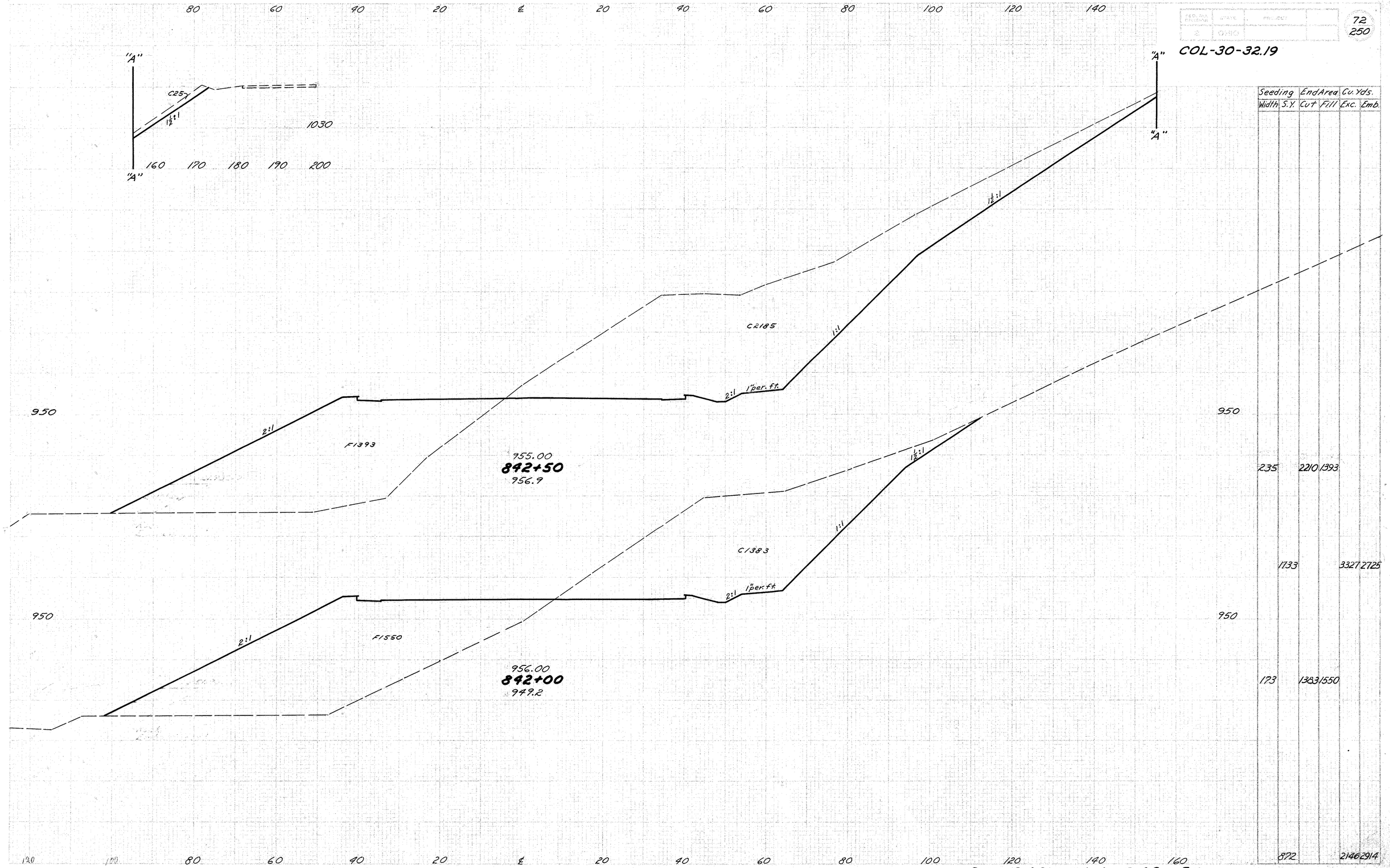
Channel		Seeding	End Area		Cu. Yds.	
E.Area	Cu.Yds.	Width	S.Y.	Cut	Fill	Exc.	Emb
		141		935	1597		
		753				1399	2910
Zero Channel Sta. 841+00 →	0	130		576	1540		
		73		825		985	2739
		79		167		488	1412
		144		814		559	2428
		76		126		116	1210
		166		839		880	2449

ESTIMATED QUANTITIES

Channel Excavation	4 C.Y.
Riprap "Grout Filled"	15 S.Y.
Dumped Rock Channel Protection	13 C.Y.

Sta 840+00 to Sta 841+50

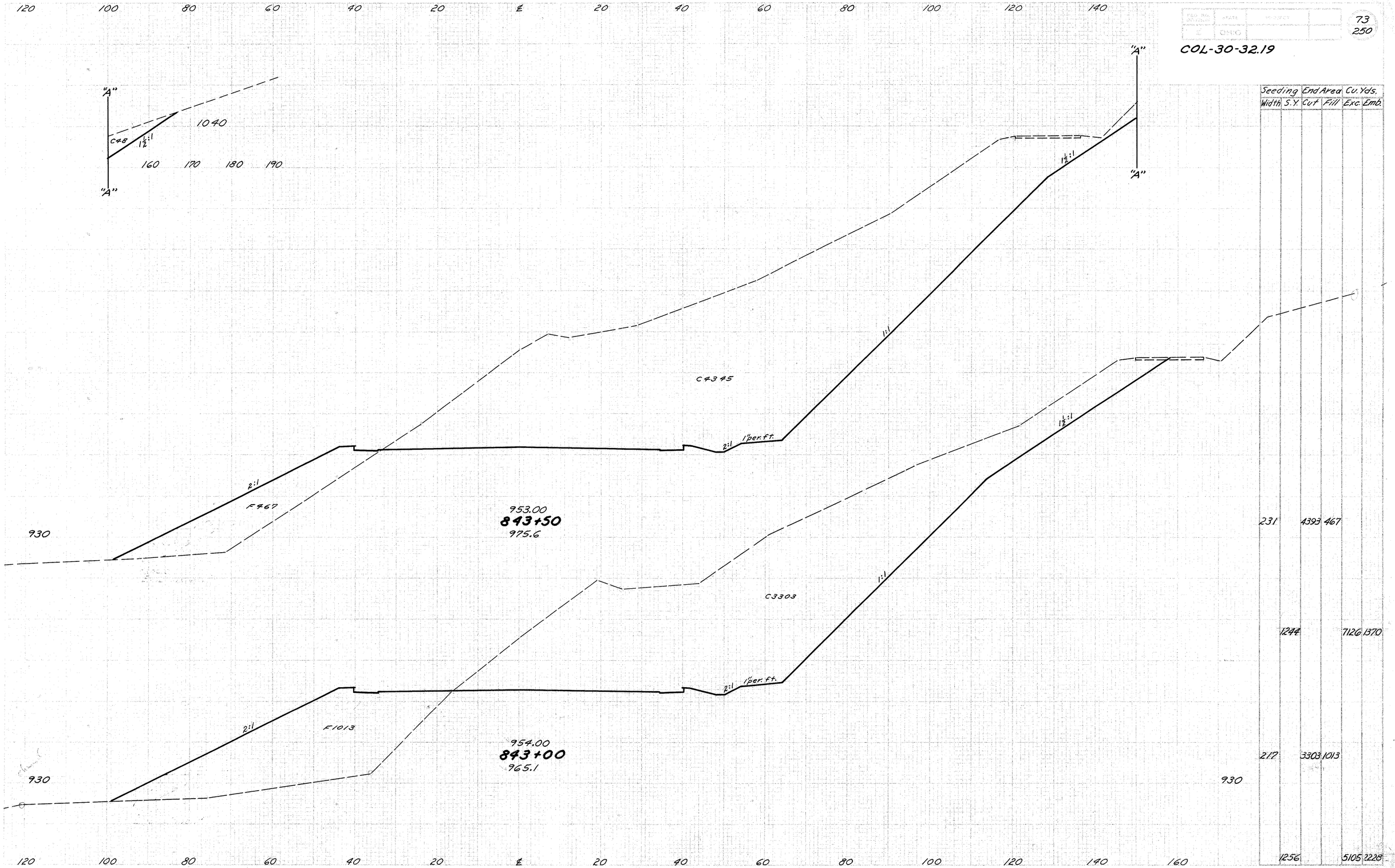
COL-30-32.19



Seeding		End Area		Cu. Yds.	
Width	S.Y.	Cut	Fill	Exc.	Emb.
235		2210	1393		
	1733			3327	2725
173		1383	1550		
	872			2146	2914

Sta 842+00 to 842+50

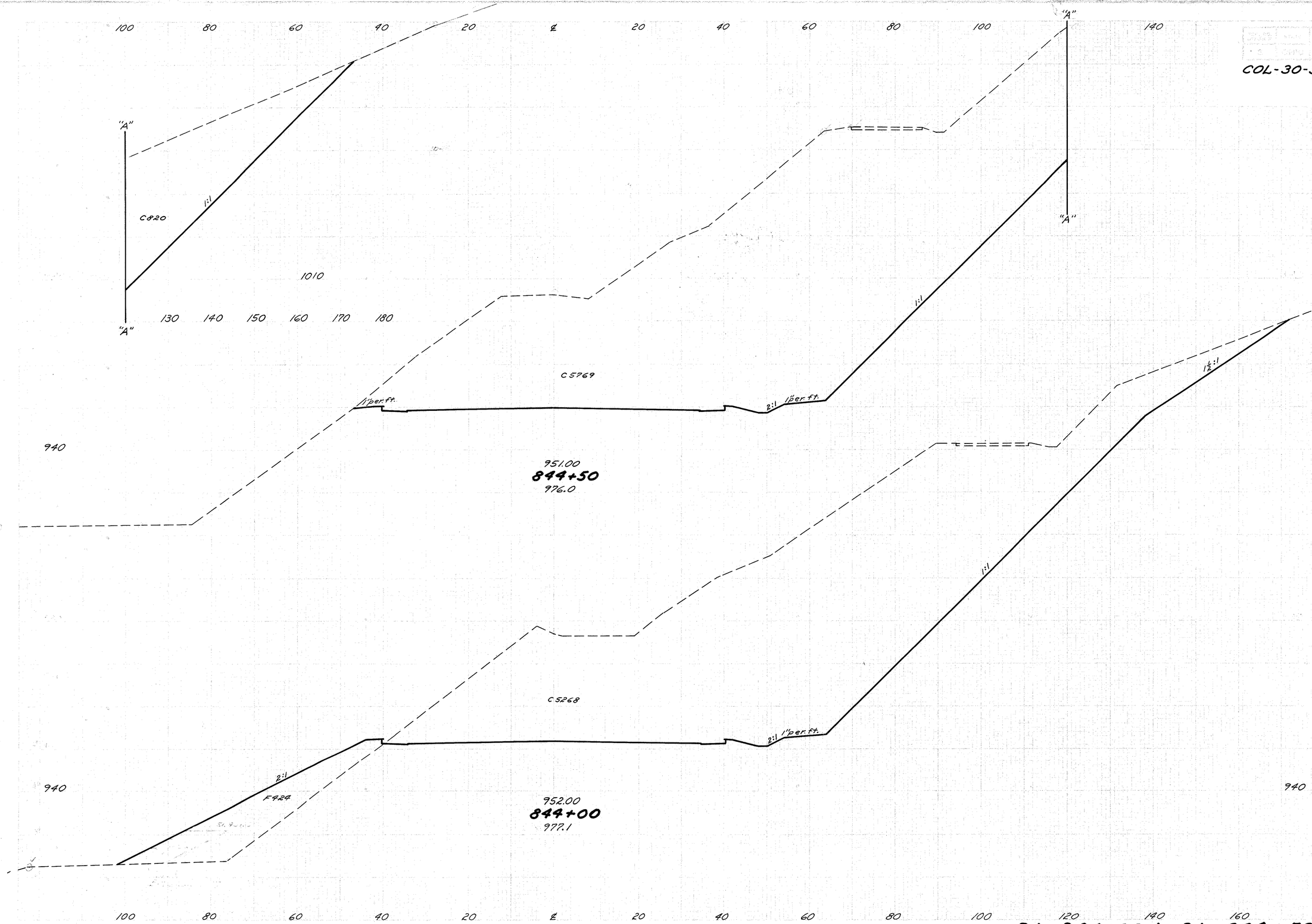
COL-30-32.19



Seeding		End Area		Cu. Yds.	
Width	S.Y.	Cut	Fill	Exc.	Emb.
231		4393	467		
	1244			7126	1370
217		3303	1013		
	1256			5105	2228

Sta 843+00 to Sta 843+50

COL-30-32.19



Seeding		End Area		Cu. Yds.	
Width	S.Y.	Cut	Fill	Exc.	Emb.
217		6589	0		
	1275			10,979	393
242		5268	424		
	1314			8945	825

Sta 844+00 to Sta 844+50

80 60 40 20 ℄ 20 40 60 80 100 120 140

75
250

COL-30-32.19

Seeding		End Area		Cu. Yds.	
Width	S.Y.	Cut	Fill	Exc.	Emb.

80 60 40 20 ℄ 20 40 60 80 100 120 140

76
250

COL-30-32.19

Seeding		End Area		Cu. Yds.	
Width	S.Y.	Cut	Fill	Exc.	Emb.

77
250

COL-30-32.19

80 60 40 20 ℄ 20 40 60 80 100 120 "A"

"A"

"A"

C182

1:1

1030

150 160 170

"A"

C6257

1:1

1per.ft. 2:1 1per.ft.

940

947.00
846+50
974.0

C7633

1:1

1per.ft. 2:1 1per.ft.

940

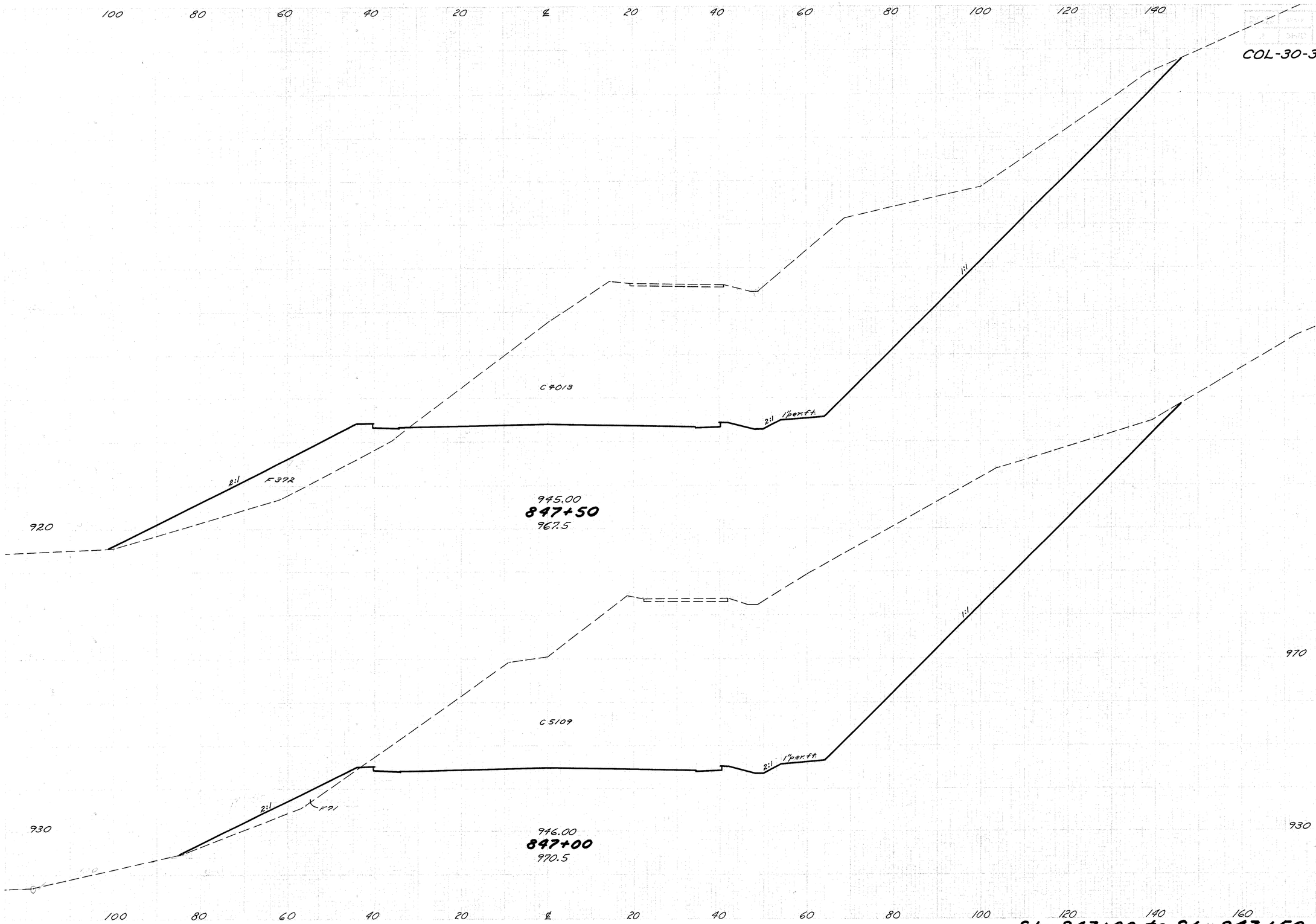
948.00
846+00
974.7

940

80 60 40 20 ℄ 20 40 60 80 100 120 140 160

Seeding		End Areed		Cu. Yds.	
Width	S.Y.	Cut	Fill	Exc.	Emb.
200	6439	0			
1158	13030	0			
1242	14558	0			

Sta 846+00 to Sta 846+50



Seeding		End Area		Cu. Yds.	
Width	S.Y.	Cut	Fill	Exc.	Emb.
230		4013	372		
	1225			8446	410
211		5109	71		
	1142			10,693	66

Sta 847+00 to Sta 847+50

80 60 40 20 ℄ 20 40 60 80 100 120 140

79
250

COL-30-32.19

950

C2290

2:1 1"per.ft.

1:1

F340

2:1

943.00
848+50
948.5

960

C3183

2:1 1"per.ft.

1:1

F638

2:1

944.00
848+00
960.7

80 60 40 20 ℄ 20 40 60 80 100 120 140 160

Seeding Width S.Y.	End Area Cut	End Area Fill	Cu. Yds. Exc.	Cu. Yds. Emb.
181	2290	340		
1061			5068	906
201	3183	638		
1197			6663	935

Sta 848+00 to Sta 848+50

100 80 60 40 20 ℄ 20 40 60 80 100 120

80
250

COL-30-32.19

940

2:1

F769

C424

1½:1

2:1

940

940.00
850+00
933.0

940

3:1

F391

C821

2:1 1"per ft.

1:1

940

941.00
849+50
938.4

940

3:1

F209

C1651

2:1 1"per ft.

1:1

940

942.00
849+00
943.0

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

Seeding Width	S.Y.	End Area Cut	Fill	Cu. Yds. Exc.	Emb.
125		474	769		
647		1199	1074		
108		821	391		
711				2289	556
148		1651	209		
914				3649	508

Sta 849+00 to Sta 850+00

81
250

COL-30-32.19

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

930

2:1

F-3637

83'

2:1

2:1

2:1

FL. 913.0

FL. 916.3

936.00
852+00
906.6

72'

930

3:1

1"per.ft.

F-3524

FL. 930.0

1"per.ft.

FL. 913.5

937.00
851+50
907.9

61'

EL. 1 ft. above FL.

4:1

1"per.ft.

1"per.ft.

930

FL.

2:1

FL. 933.4

F-3390

½"per.ft.

2:1

2:1

FL. 915.4

Note: For part section Sta 850+88 see bottom Right this sheet.

938.00
851+00
909.8

4:1

112.5'

STA 850+70
80' Lt. ℄

2:1

910

F-1825

½"per.ft.

½"per.ft.

2:1

STA 850+88
70' Lt. ℄

920

910

FL. 915.0

939.00
850+50
922.3

160 150 140 130 120 110 100 90 80 70

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

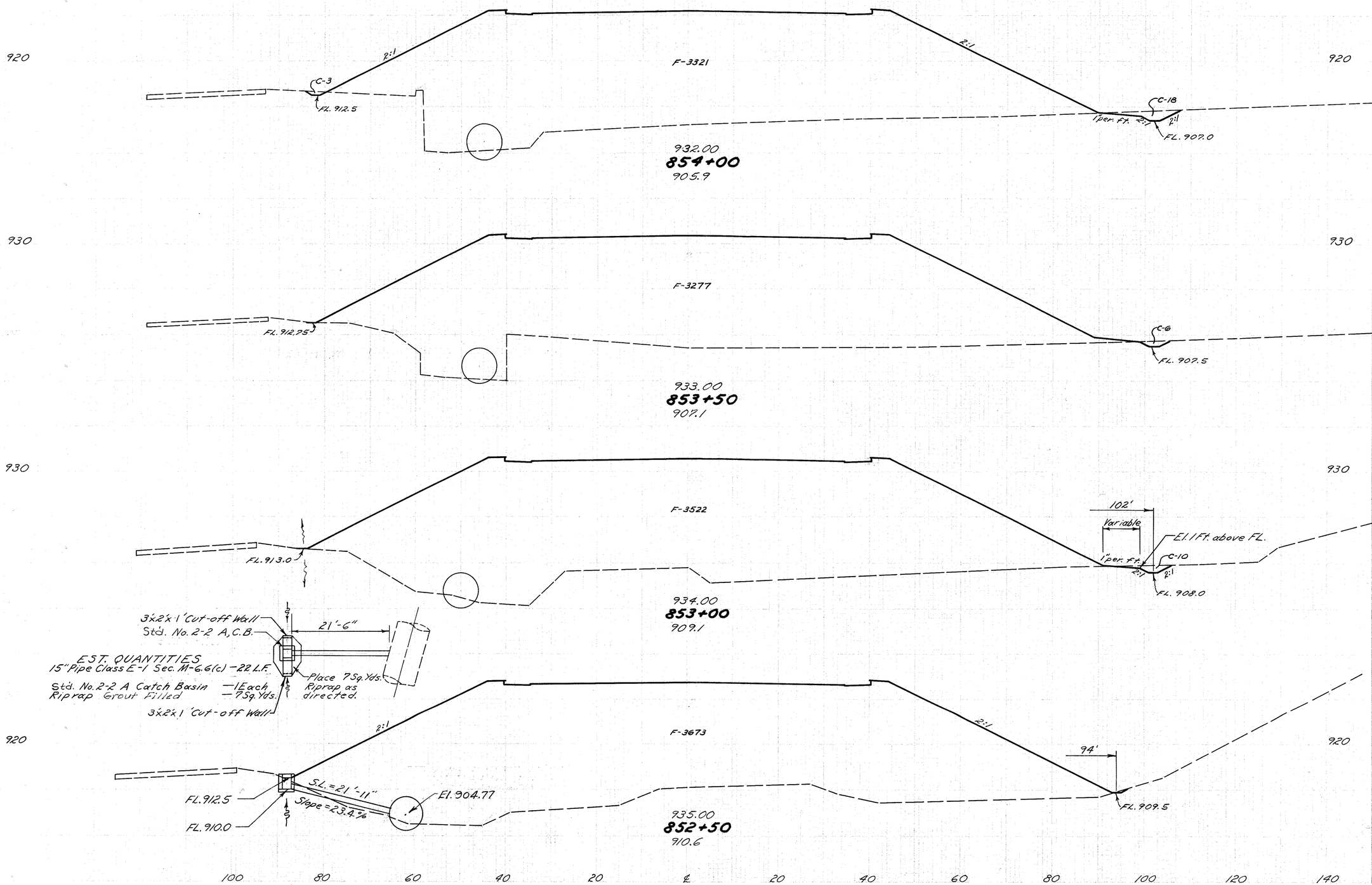
Add Embankment for filling over 90" pipe on Lt Sta. 850+70 to 851+00 → 70

Seeding Width	S.Y.	End Area Cut	Fill	Cu. Yds. Exc.	Emb.
126		0	3637		
125		0	3524		
733		0	6402		
139		0	3390		
692		0	4829		
110		0	1825		
653		439	2402		

Sta 850+50 to Sta 852+00

COL-30-32.19

100 80 60 40 20 ℄ 20 40 60 80 100 120

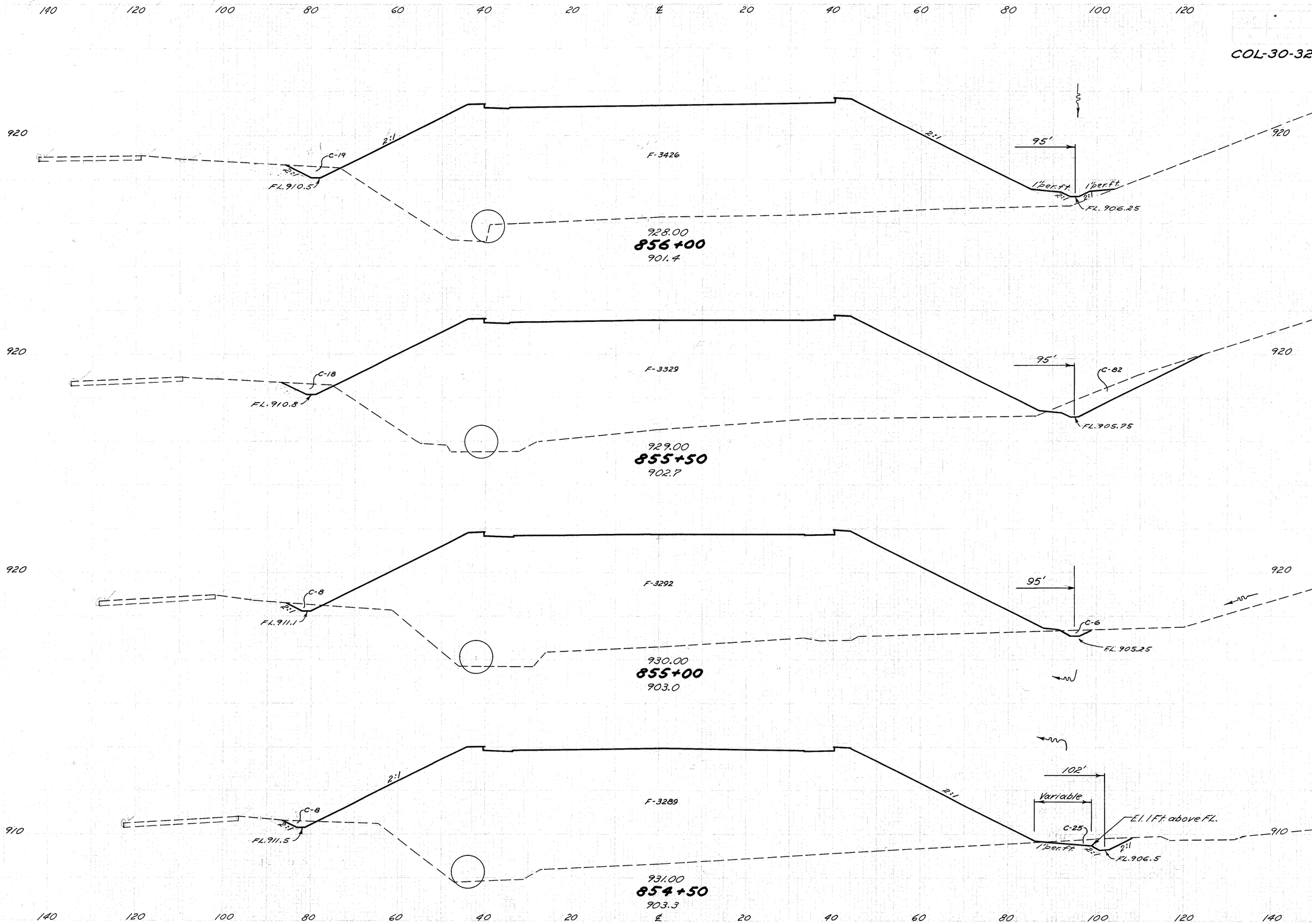


Seeding Width	S.Y.	End Area Cut	Fill	Cu. Yds. Exc.	Emb.
138		21	3321		
	756			25	6109
134		6	3277		
	753			15	6295
137		10	3522		
	744			9	6662
131		0	3673		
	714			0	6769

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

Sta 852+50 to 854+00

COL-30-32.19

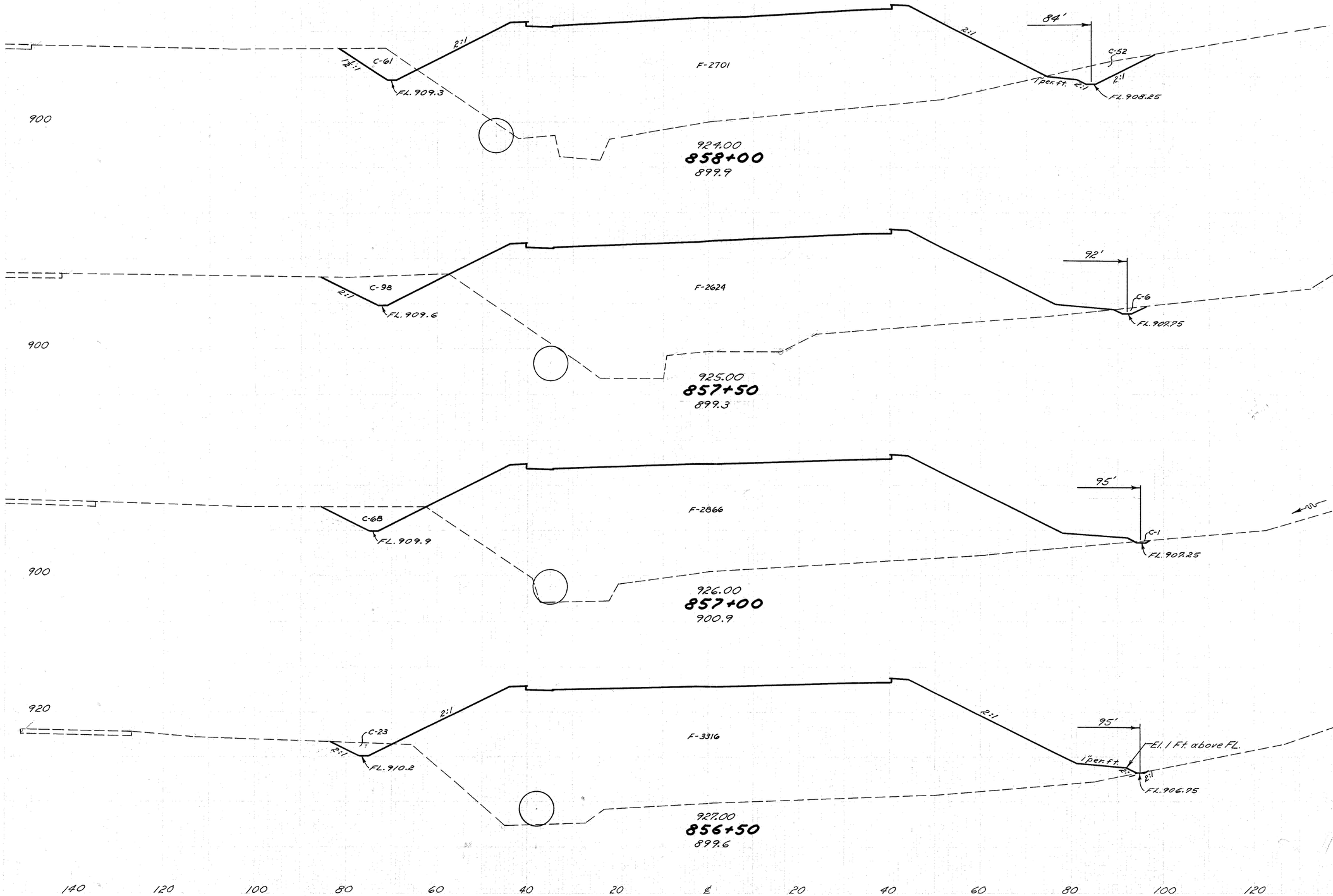


Seeding Width	S.X	End Area Cut	Fill	Cu. Yds. Exc.	Emb
141		19	3426		
850				110	6255
165		100	3329		
844				106	6131
139		14	3292		
778				44	6094
141		33	3289		
775				50	6120

Sta 854+50 to Sta 856+00

COL-30-32.19

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



Seeding Width	S.Y.	End Area Cut	Fill	Cu. Yds. Exc.	Emb.
131		113	2701		
	728			201	4931
131		104	2624		
	733			160	5083
133		69	2866		
	731			85	5724
130		23	3316		
	753			39	6243

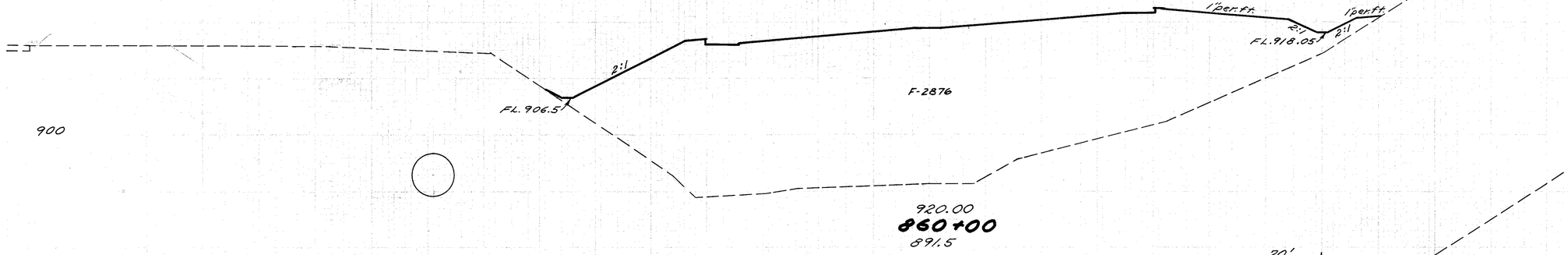
140 120 100 80 60 40 20 ℄ 20 40 60 80 100 120 140

Sta 856+50 to Sta 858+00

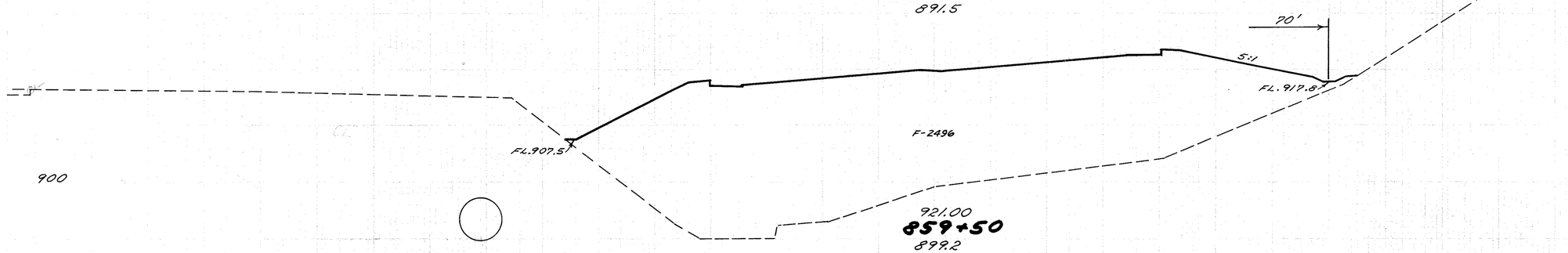
160 140 120 100 80 60 40 20 ℄ 20 40 60 80 100

85
250

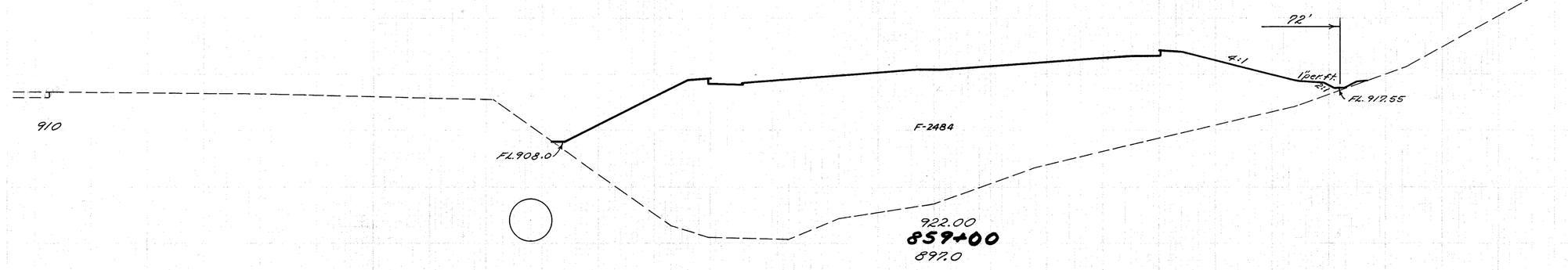
COL-30-32.19



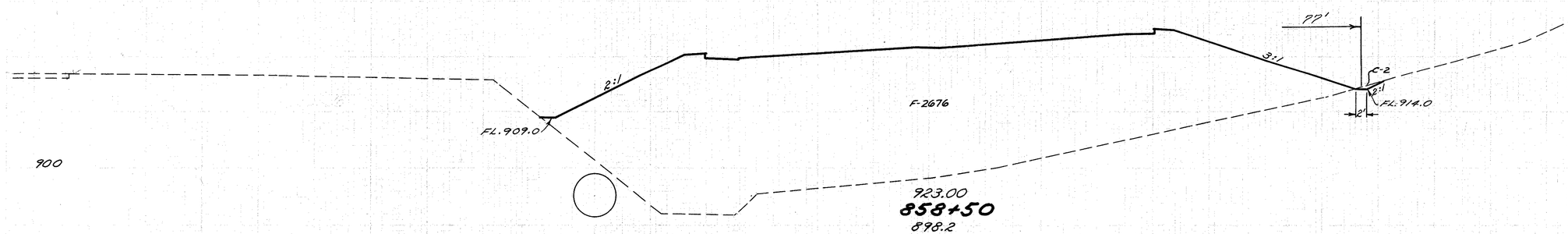
920.00
860+00
891.5



921.00
859+50
899.2



922.00
859+00
897.0



923.00
858+50
898.2

160 140 120 100 80 60 40 20 ℄ 20 40 60 80 100 120

Seeding Width	S.Y.	End Area Cut	Fill	Cu. Yds. Exc.	Emb.
94		0	2876		
	494			0	4974
84		0	2496		
	483			0	4011
90		0	2484		
	517			2	4778
96		2	2676		
	631			10	64979

Sta 858+50 to Sta 860+00

86
250

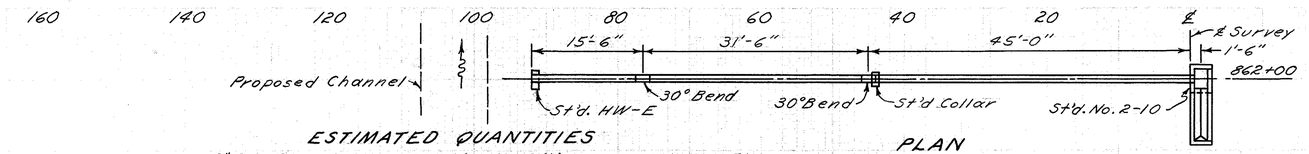
COL-30-32.19

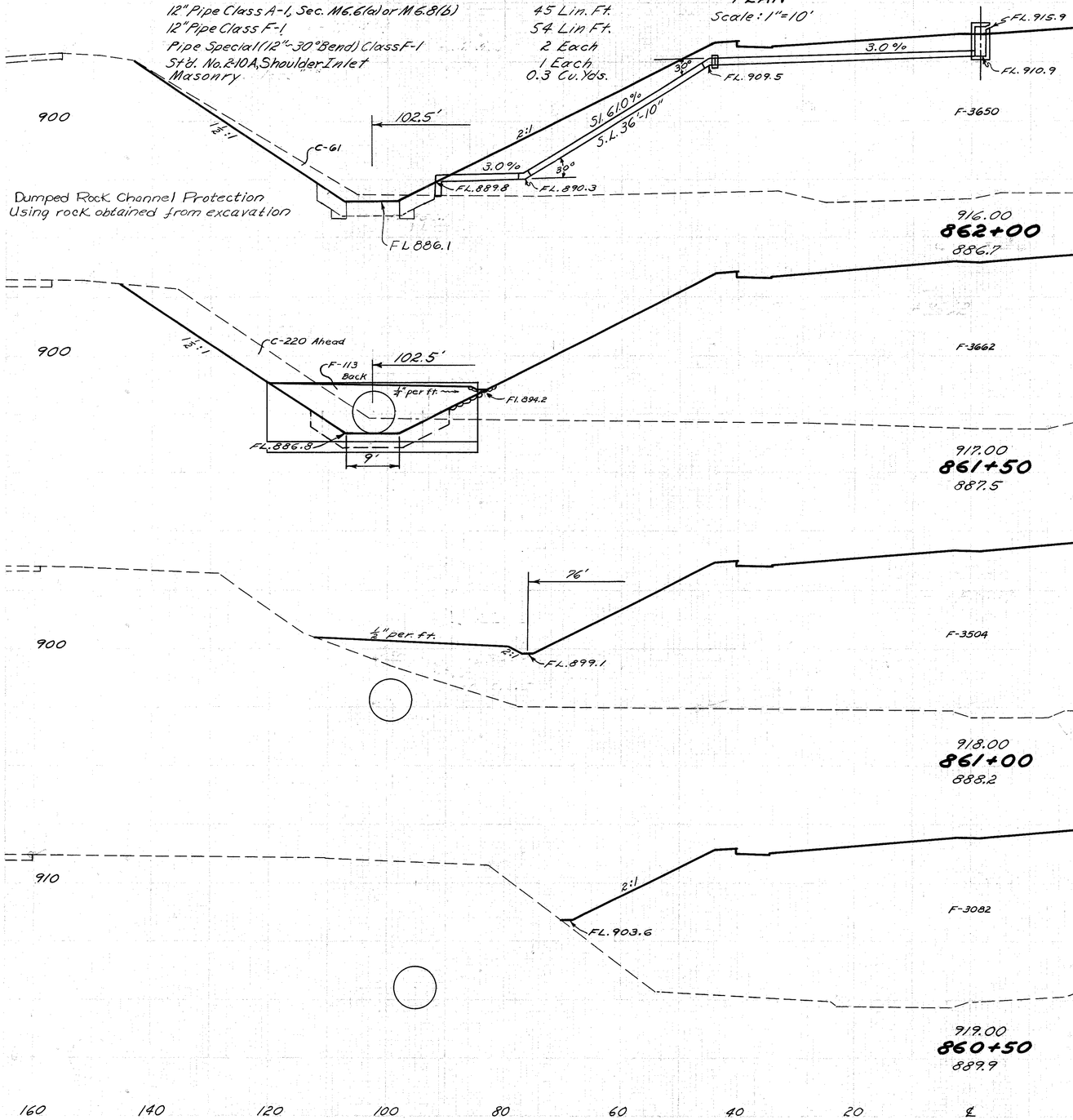
ESTIMATED QUANTITIES

12" Pipe Class A-1, Sec. M6.6(a) or M6.8(b)	45 Lin. Ft.
12" Pipe Class F-1	54 Lin. Ft.
Pipe Special (12"-30° Bend) Class F-1	2 Each
St'd. No. 2-10A, Shoulder Inlet Masonry	1 Each
	0.3 Cu. Yds.

PLAN

Scale: 1"=10'





Channel Area	Cu. Yds.	Seeding Width	S.Y.	End Area Cut	Fill	Cu. Yds. Exc.	Emb.
61		162		0	3650		
260		911				0	6770
Sta. 861+50 Begin Channel Exc. → 220							
Ahead		166		0	3662		
Back		144		0	3775		
783				0	6740		
138				0	3504		
642				0	6098		
93				0	3082		
519				0	5517		

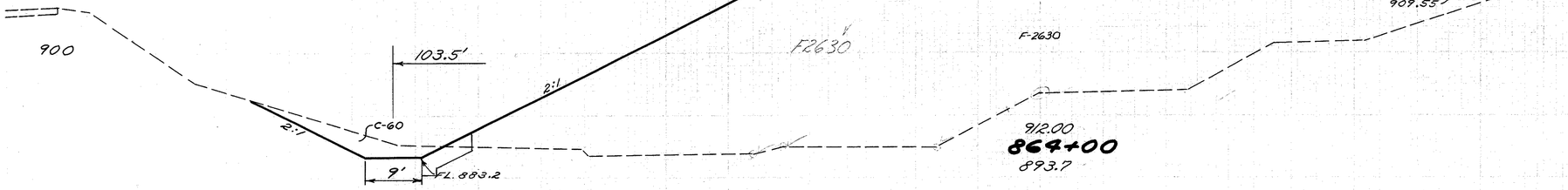
Sta 860+50 to 862+00

160 140 120 100 80 60 40 20 ℄ 20 40 60 80 100

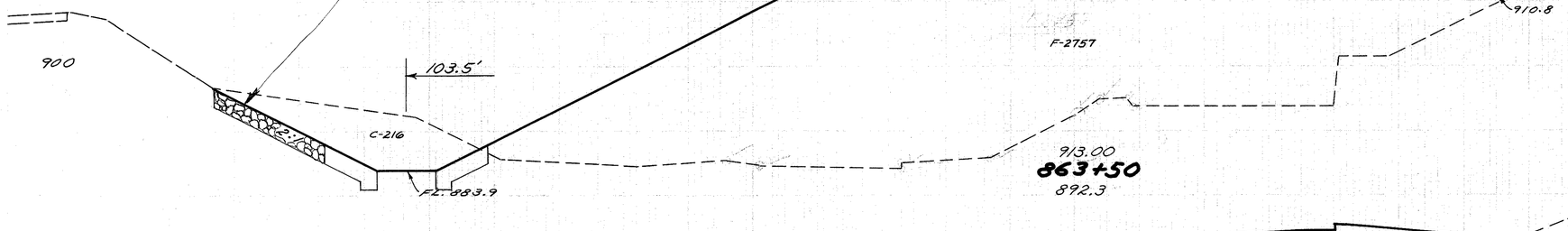
87
250

COL-30-32.19

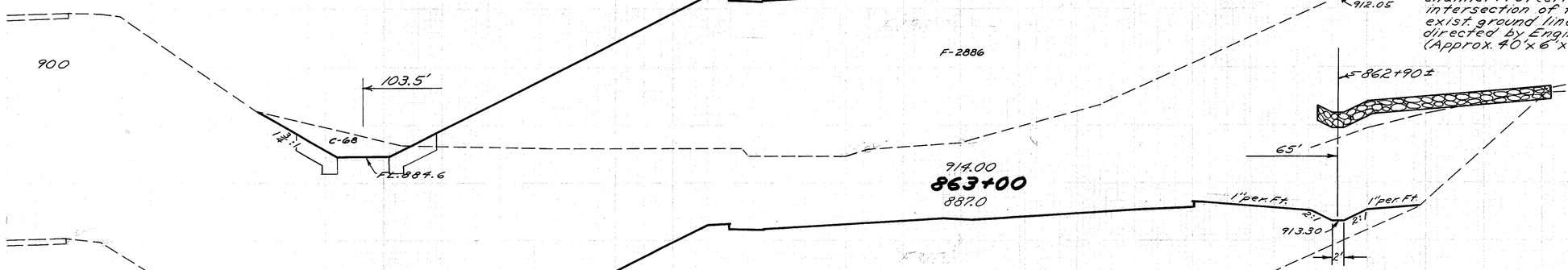
Dumped Rock Channel Protection
Using rock obtained from excavation.



Outlet of exist. 12" VSP in vicinity of 863+50. Place 11 Cu Yds. of Dumped Rock Channel Protection at intersection of exist. ditch and cut channel slope as directed. (Approx. 19'x 6' x 2½').



Gully at approx. Sta 862+90
Place 25 Cu Yds. Dumped Rock Channel Protection from intersection of fill slope with exist. ground line to ditch as directed by Engineer.
(Approx. 40'x 6' x 2½')



Dumped Rock Channel Protection.
Using rock obtained from excavation.

Channel Area	Cu. Yds.	Seeding Width	S.Y.	End Area Cut	Fill	Cu. Yds. Exc.	Emb.
60		140		0	2630		
	256		769			0	4988
216		137		0	2757		
	263		722			0	5225
68		123		0	2886		
	86		678			0	5589
25		121		0	3150		
	80		786			0	6296

160 140 120 100 80 60 40 20 ℄ 20 40 60 80 100 120

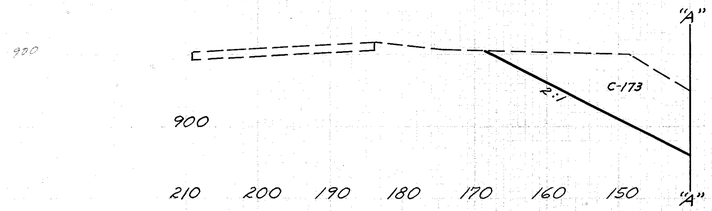
Sta 862+50 to Sta 864+00

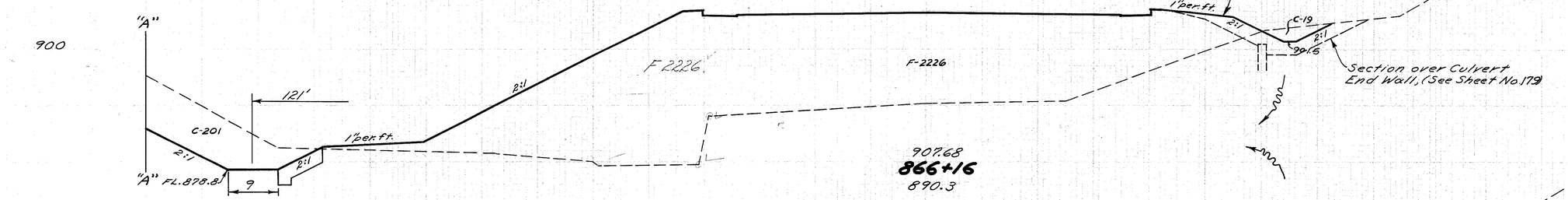
160 140 120 100 80 60 40 20 E 20 40 60 80 100

88
250

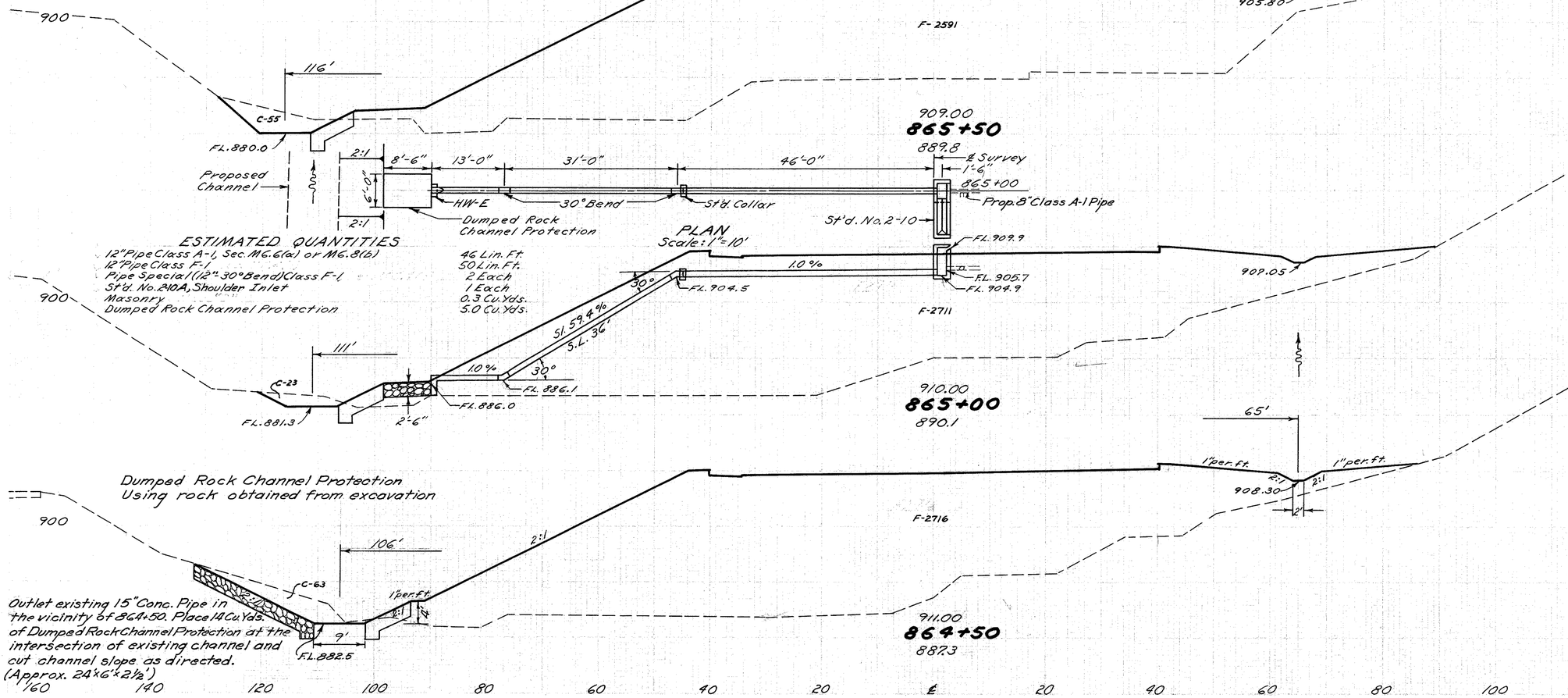
COL-30-32.19

Dumped Rock Channel Protection
Using rock obtained from excavation





Channel Area	Seeding Cu. Yds.	End Area Width	S.Y.	Cu. Yds. Cut	Fill	Exc.	Emb.
374	175			19	2226		



55	166		0	2591			
72	850		0	4909			
23	140		0	2711			
80	808		0	5025			
63	151		0	2716			
114	808		0	4950			

ESTIMATED QUANTITIES

12" Pipe Class A-1, Sec. M6.6(a) or M6.8(b)	46 Lin. Ft.
12" Pipe Class F-1	50 Lin. Ft.
Pipe Special (12" 30° Bend) Class F-1	2 Each
St'd. No. 210A, Shoulder Inlet	1 Each
Masonry	0.3 Cu. Yds.
Dumped Rock Channel Protection	5.0 Cu. Yds.

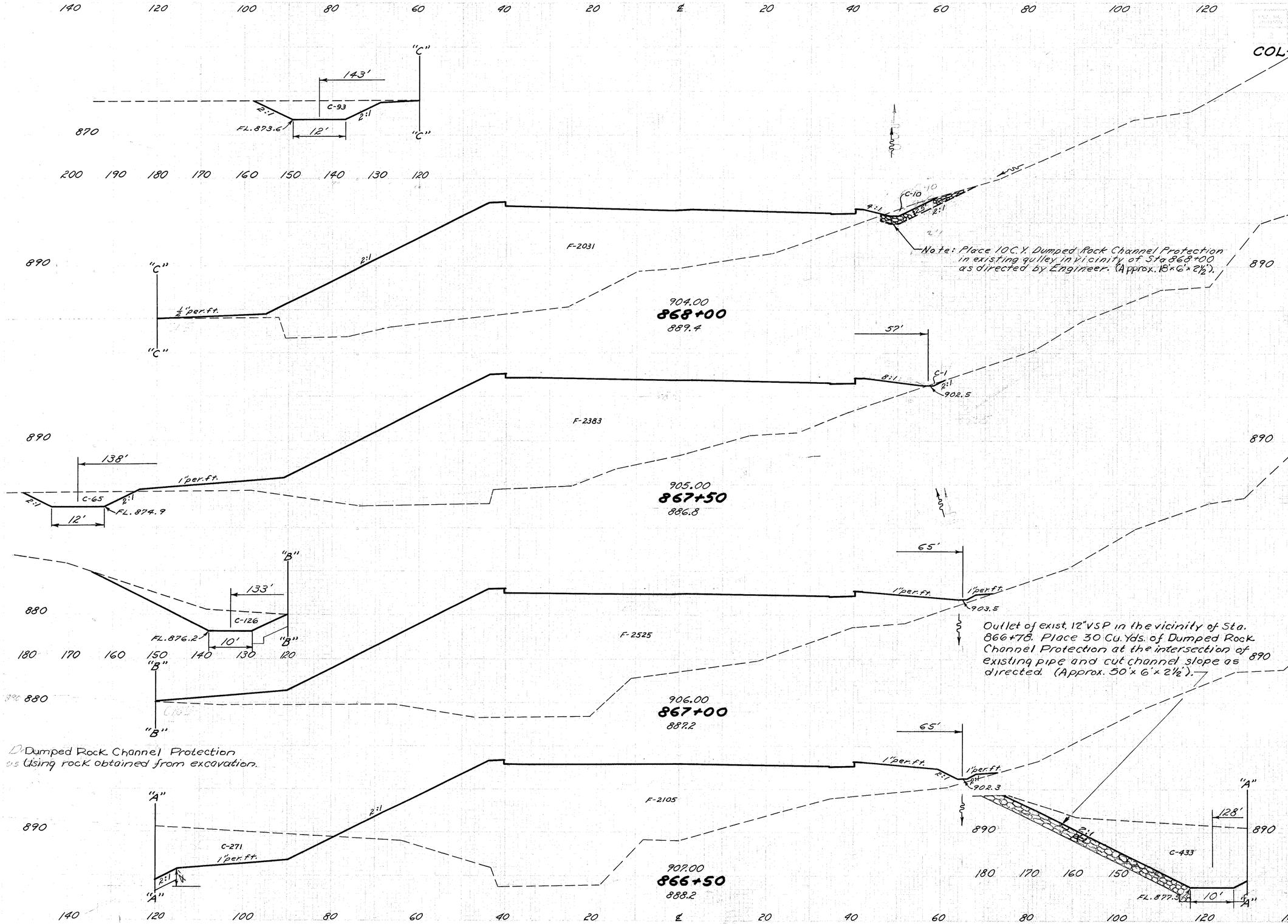
PLAN
Scale: 1"=10'

Outlet existing 15" Conc. Pipe in the vicinity of 864+50. Place 14 Cu. Yds. of Dumped Rock Channel Protection at the intersection of existing channel and cut channel slope as directed. (Approx. 24'x6'x2½')

160 140 120 100 80 60 40 20 E 20 40 60 80 100 120

Sta 864+50 to Sta 866+16

COL-30-32.19



Channel Area	Channel Cu. Yd.	Seeding Width	Seeding S.Y.	End Area Cut	End Area Fill	Cu. Yds. Exc.	Cu. Yds. Emb.
93		146		10	2031		
	146		792			10	4087
65		139		1	2383		
	177		856			1	4544
126		169		0	2525		
	769		981			0	4287
704		184		0	2105		
	679		678			12	2727

Sta 866+50 to Sta 868+00

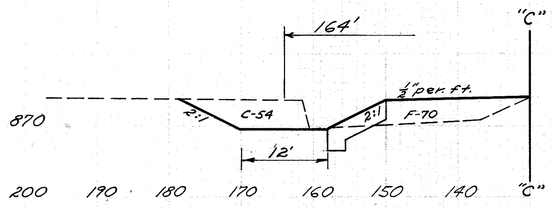
140 120 100 80 60 40 20 ℄ 20 40 60 80 100 120

90
250

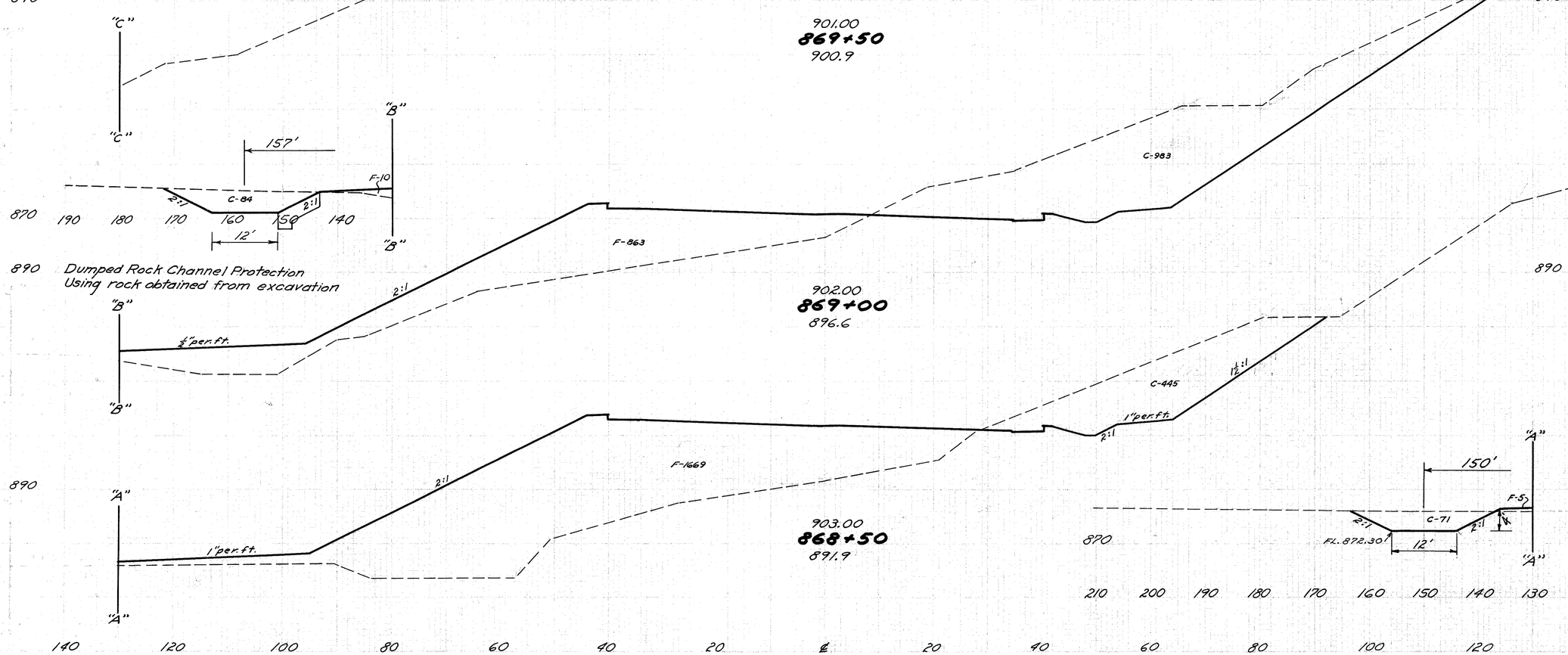
COL-30-32.19

End Dumped Rock Channel Protection 869+90

Dumped Rock Channel Protection
Using rock obtained from excavation



Channel Area	Cu. Yd.	Seeding Width	S.Y.	End Area Cut	Fill	Cu. Yds. Exc.	Emb.
54		209		1445	375		
128		1247		2248	1156		
84		240		983	873		
144		1194		1322	2358		
71		190		445	1674		
152		933		421	3431		

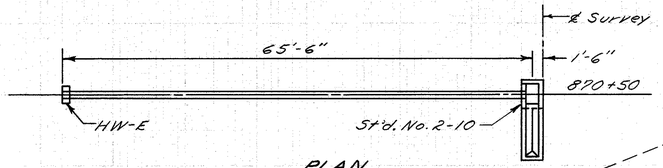


Sta 868+50 to Sta 869+50

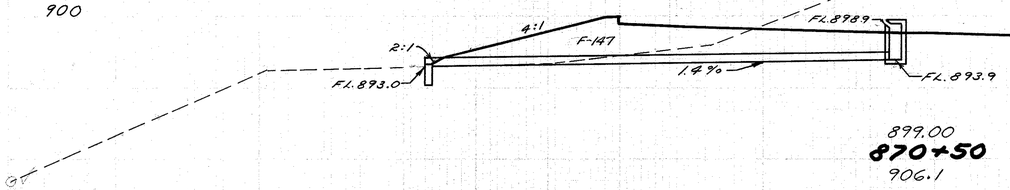
COL-30-32.19

ESTIMATED QUANTITIES

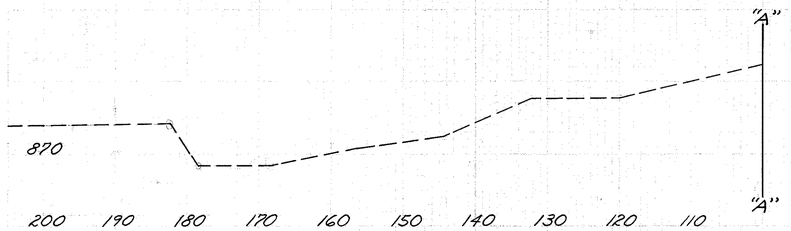
12" Pipe Class A-1, Sec. M6.6(a) or M6.8(b)	65 Lin. Ft.
St'd. No. 2-10A, Shoulder Inlet Masonry	1 Each
	0.3 Cu. Yds.



PLAN
Scale: 1"=10'-0"



899.00
870+50
906.1



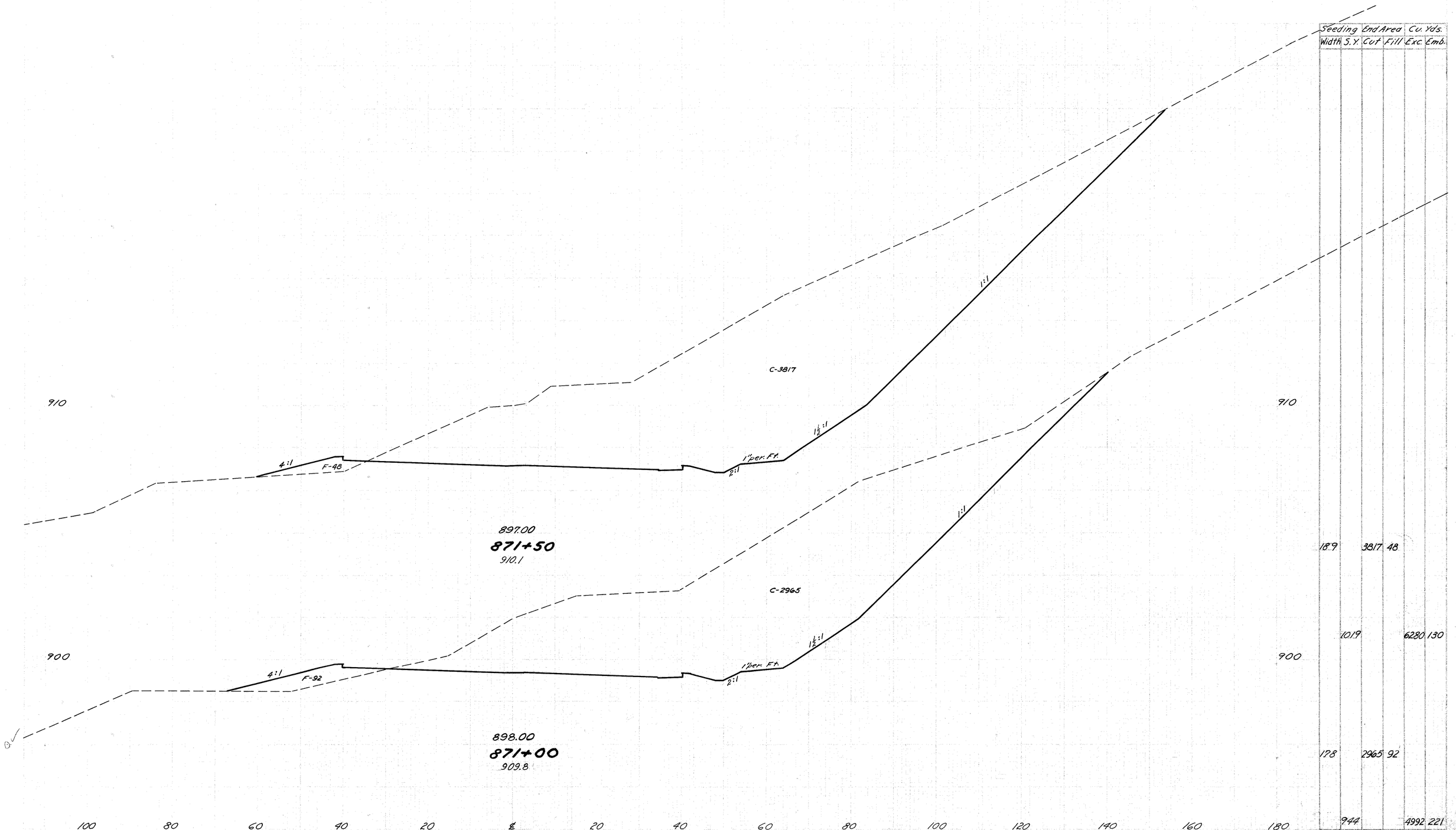
900.00
870+00
904.5

Sta.	Channel Area	Channel Cu. Yd.	Seeding Width	Seeding S.Y.	End Area Cut	End Area Fill	Cu. Yds. Exc.	Cu. Yds. Emb.

92
250

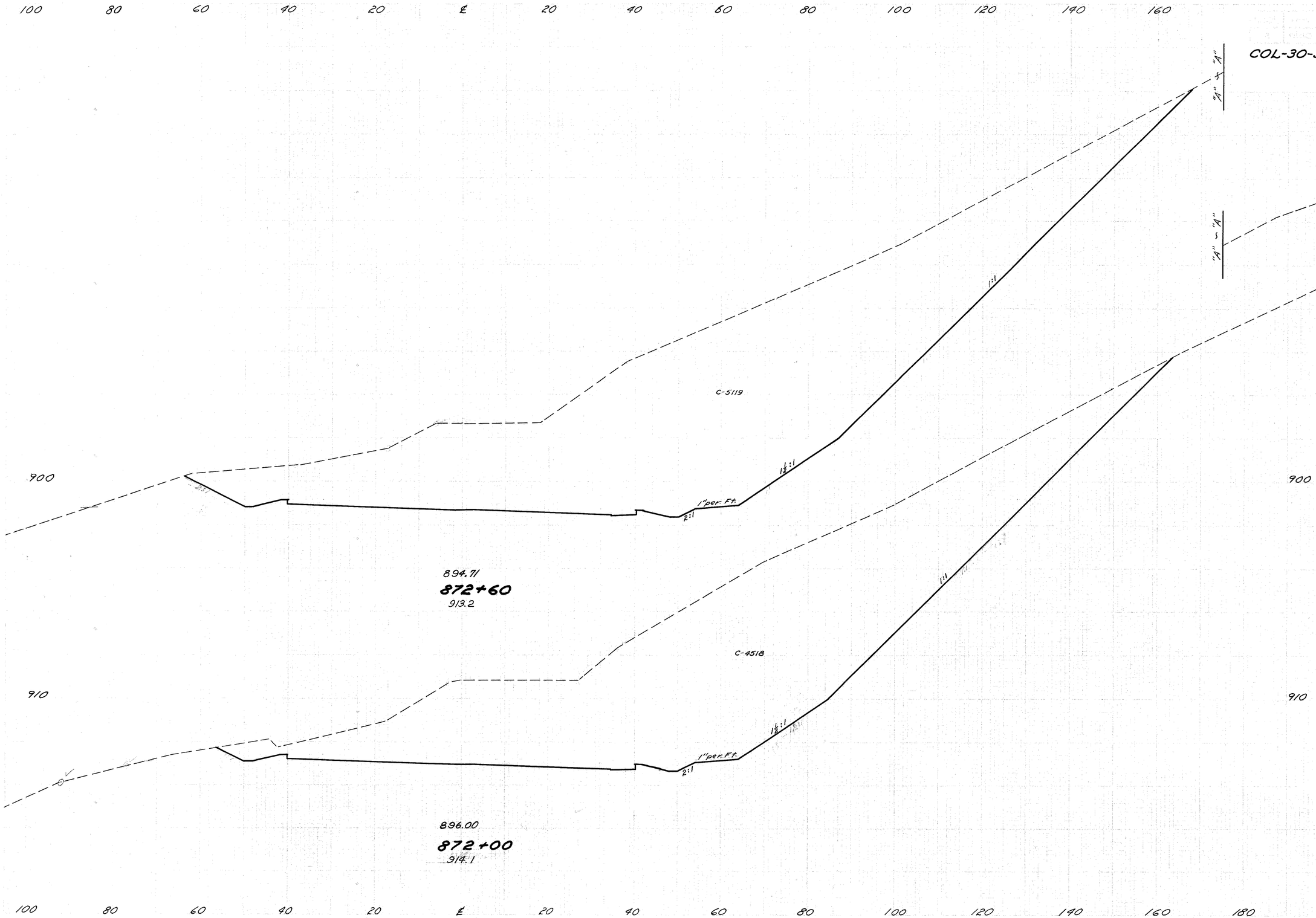
COL-30-32.19

Seeding	End Area		Cu. Yds.	
Width	S.Y.	Cut	Fill	Exc.	Emb.
189	3817	48			
1019			6280	130
178	2965	92			
944			4992	221



Sta 871+00 to Sta 871+50

COL-30-32.19

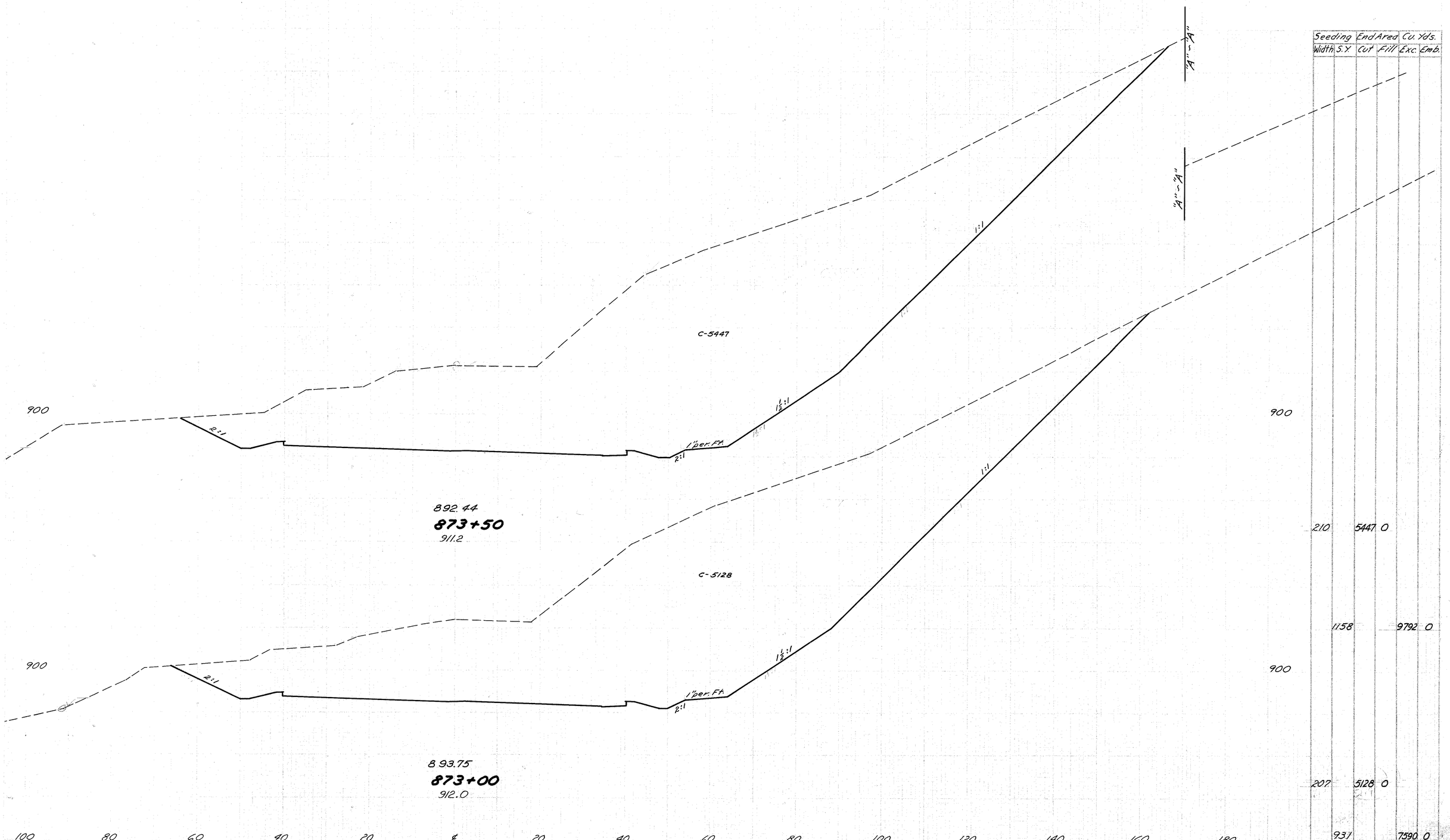


Seeding Width	Seeding S.Y.	End Area Cut	End Area Fill	Cu. Yds. Exc.	Cu. Yds. Emb.
212		5119	0		
	1367			10,708	0
198		4518	0		
	1075			7718	44

Sta 872+00 to Sta 872+60

94
250

COL-30-32.19



Seeding	End Areas		Cu. Yds.	
Width	S.Y.	Cut	Fill	Exc.	Emb.
210	5447.0				
1158	9792.0				
207	5128.0				
931	7590.0				

Sta 873+00 to Sta 873+50

100 80 60 40 20 ℄ 20 40 60 80 100 120 140 160

95
250

COL-30-32.19

C-5239

900

2:1

1½:1

1 per ft.

2:1

889.50
874+50
909.1

910

C-5502

2:1

1½:1

1 per ft.

2:1

891.00
874+00
910.6

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

Seeding		End Area		Cu. Yds.	
Width	S.Y.	Cut	Fill	Exc.	Emb.
201		5239	0		
1147				9945	0
212		5502	0		
1172				10,138	0

Sta 874+00 to 874+50

COL-30-32.19

100 80 60 40 20 ℄ 20 40 60 80 100 120 140 160

C-4452

900

8:1 2:1 1 per Ft. 2:1 1½:1 1:1

886.50
875+50
906.5

C-5064

900

4:1 2:1 1 per Ft. 2:1 1½:1 1:1

888.00
875+00
907.5

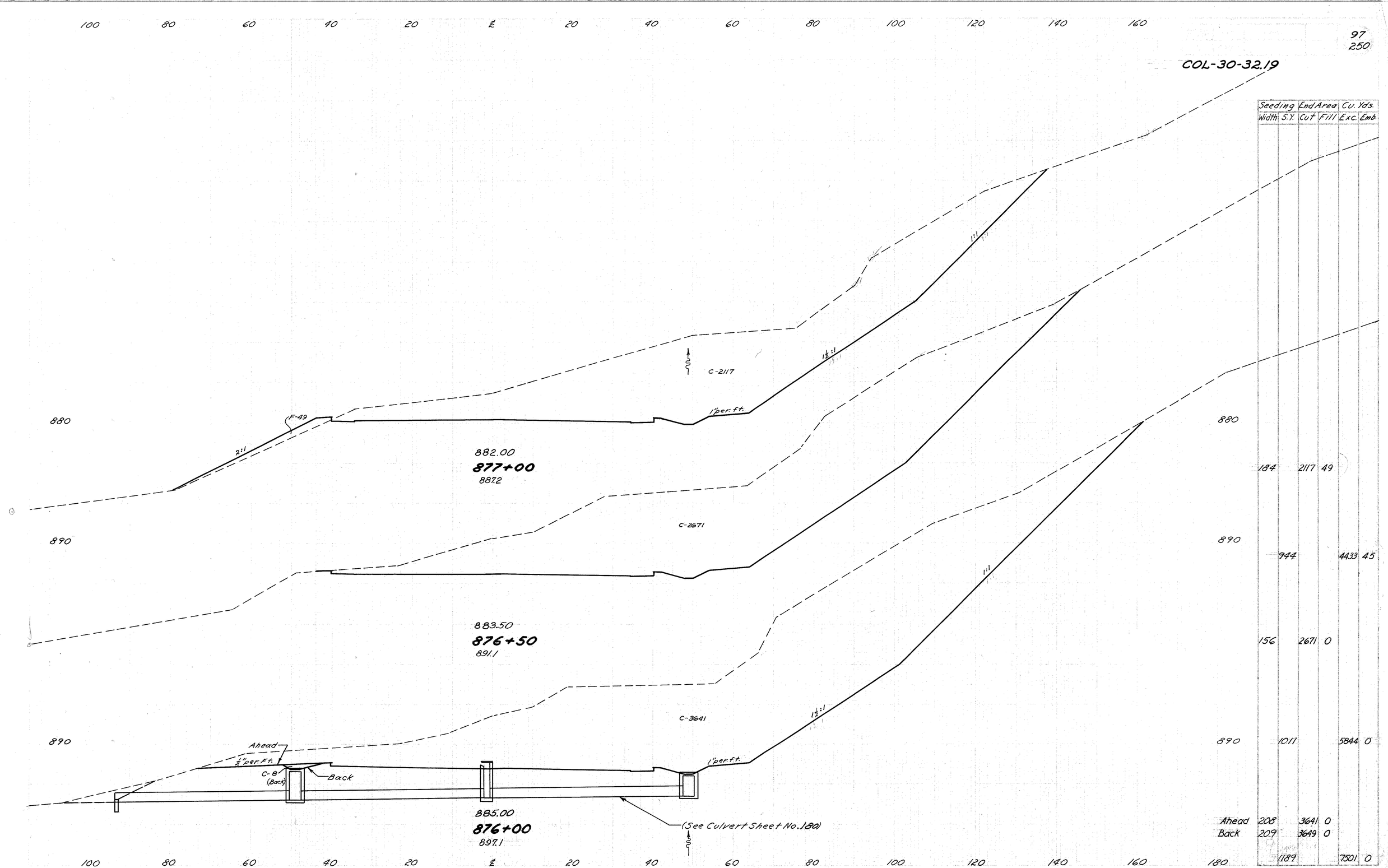
100 80 60 40 20 ℄ 20 40 60 80 100 120 140 160 180

Seeding Width S. Y.	End Area Cut	End Area Fill	Cu. Yds Exc.	Cu. Yds Emb.
219	4452	0		
1203	8811	0		
214	5064	0		
1153	9540	0		

Sta 875+00 to Sta 875+50

COL-30-32.19

100 80 60 40 20 ℄ 20 40 60 80 100 120 140 160



	Seeding Width	S.Y.	End Area Cut	Fill	Cu. Yds. Exc.	Emb.
		184	2117	49		
		944			4433	45
		156	2671	0		
		1011			5844	0
Ahead		208	3641	0		
Back		209	3649	0		
		1189			7501	0

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

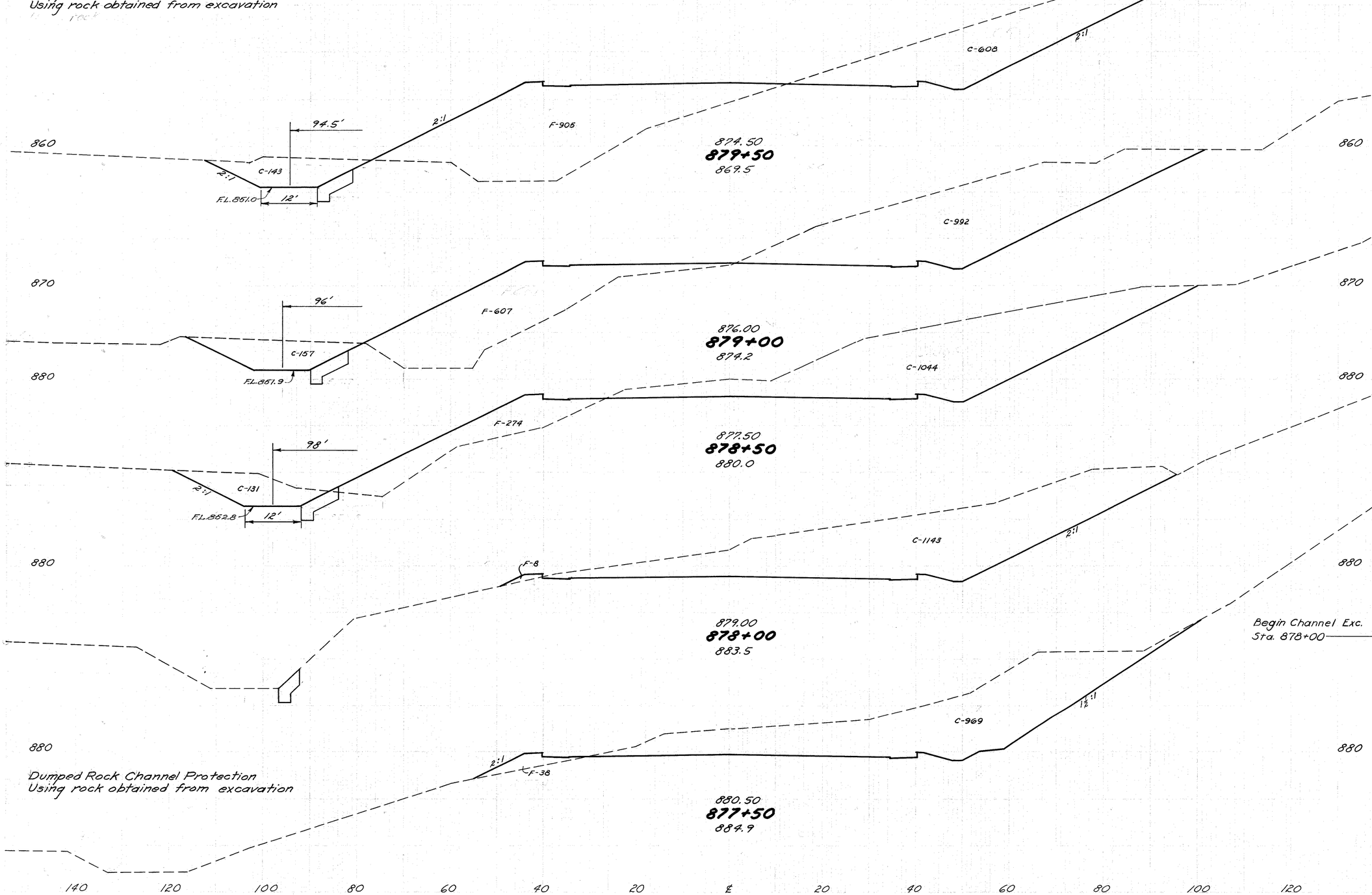
Sta 876+00 to Sta 877+00

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

98
250

COL-30-32.19

Dumped Rock Channel Protection
Using rock obtained from excavation



Station	Channel E. Area	Channel C.Y.	Seeding Width	Seeding S.Y.	End Area Cut	End Area Fill	Cu. Yds. Exc.	Cu. Yds. Emb.
860								
	143		146		608	905		
		278		828			1481	1400
870								
	157		152		992	607		
880								
		267		847			1685	816
	131		153		1044	274		
		121		678			2025	261
880								
Begin Channel Exc. Sta. 878+00 →	0		91		1143	8		
				547			1956	43
880								
			106		969	38		
				806			2857	81

Sta 877+50 to 879+50

COL-30-32.19

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

860

90' 2:1 C-75 2:1 12' FL. 847.3

F-1268

54' C-31 6:1 2:1 FL. 865.2

868.50
881+50
848.5

860

90.5' C-74 FL. 847.8

F-1775

50' 4:1 1'per ft. FL. 867.0

869.25
881+25
849.6

860

91' C-64 F-1 FL. 848.2

F-1201

C-327 2:1

870.00
881+00
850.8

860

92' C-103 FL. 849.2

F-1241

C-188

871.50
880+50
854.9

860

93' C-139 2:1 12' FL. 850.1

M.H. for San. Sewer El. 856.5

For Plan & Profile of Sanitary Sewer see Sht. No. 196

Fl. 847.0 Fl. 849.5 (Ex. San. Sewer)

F-1189

C-302 2:1

873.00
880+00
861.00

860

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

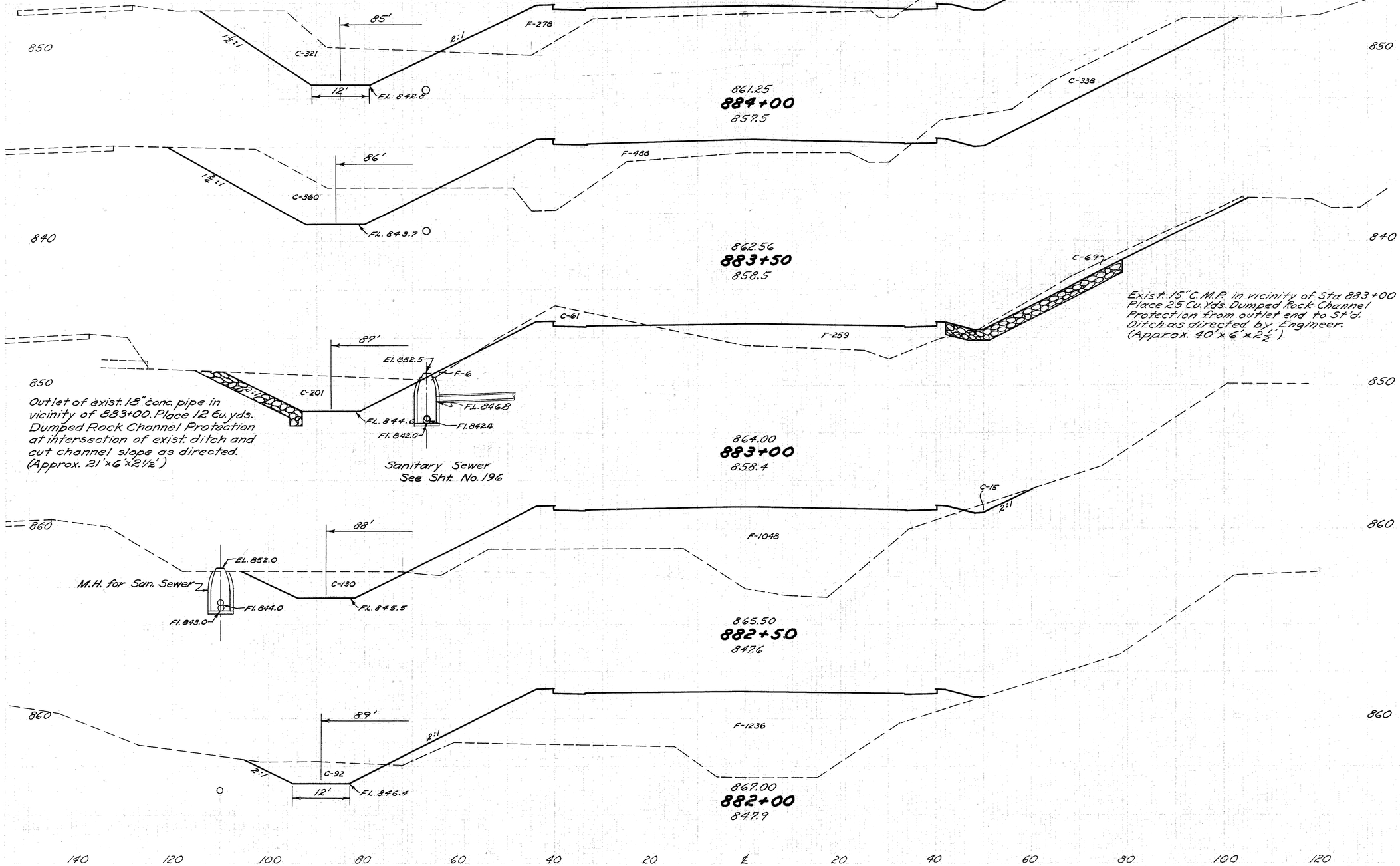
Channel		Seeding		End Area		Cu. Yds.	
E Area	C.Y.	Width	S.Y.	Cut	Fill	Exc.	Emb.
75		97		31	1268		
	69		279			74	1409
74		104		0	1775		
	64		333			151	1378
64		136		327	1201		
	155		706			477	2261
103		118		188	1241		
	224		697			454	2250
139		133		302	1189		
	261		775			843	1939

Sta 880+00 to 881+50

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

100
250

COL-30-32.19



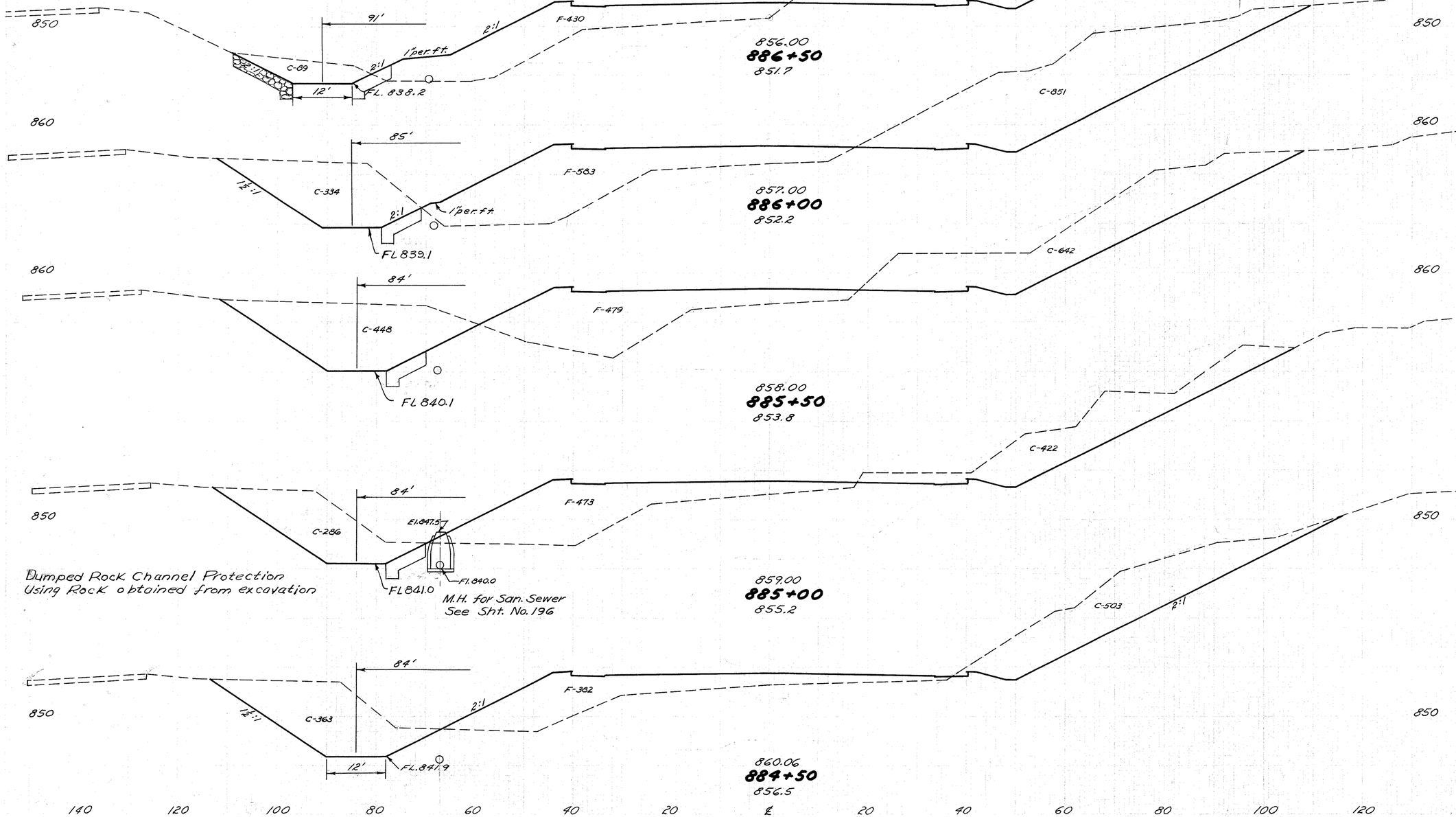
Channel L.Area C.Y.	Seeding Width S.Y.	End Area Cut	End Area Fill	Cu. Yds. Exc.	Cu. Yds. Emb.
321	163	470	278		
631	883			748	709
360	155	338	488		
519	842			433	697
201	148	130	265		
306	669			134	1216
130	93	15	1048		
206	483			14	2115
92	81	0	1236		
155	494			29	2319

Sta 882+00 to Sta 884+00

COL-30-32.19

Dumped Rock Channel Protection
Using rock obtained from excavation

Outlet of existing 15" conc. pipe in vicinity of Sta. 886+50. Place 9 Cu. Yds. of Dumped Rock Channel Protection at intersection of existing ditch and cut channel slope as directed. (Approx. 14' x 6' x 2½')



Dumped Rock Channel Protection
Using Rock obtained from excavation

M.H. for San. Sewer
See Sht. No. 196

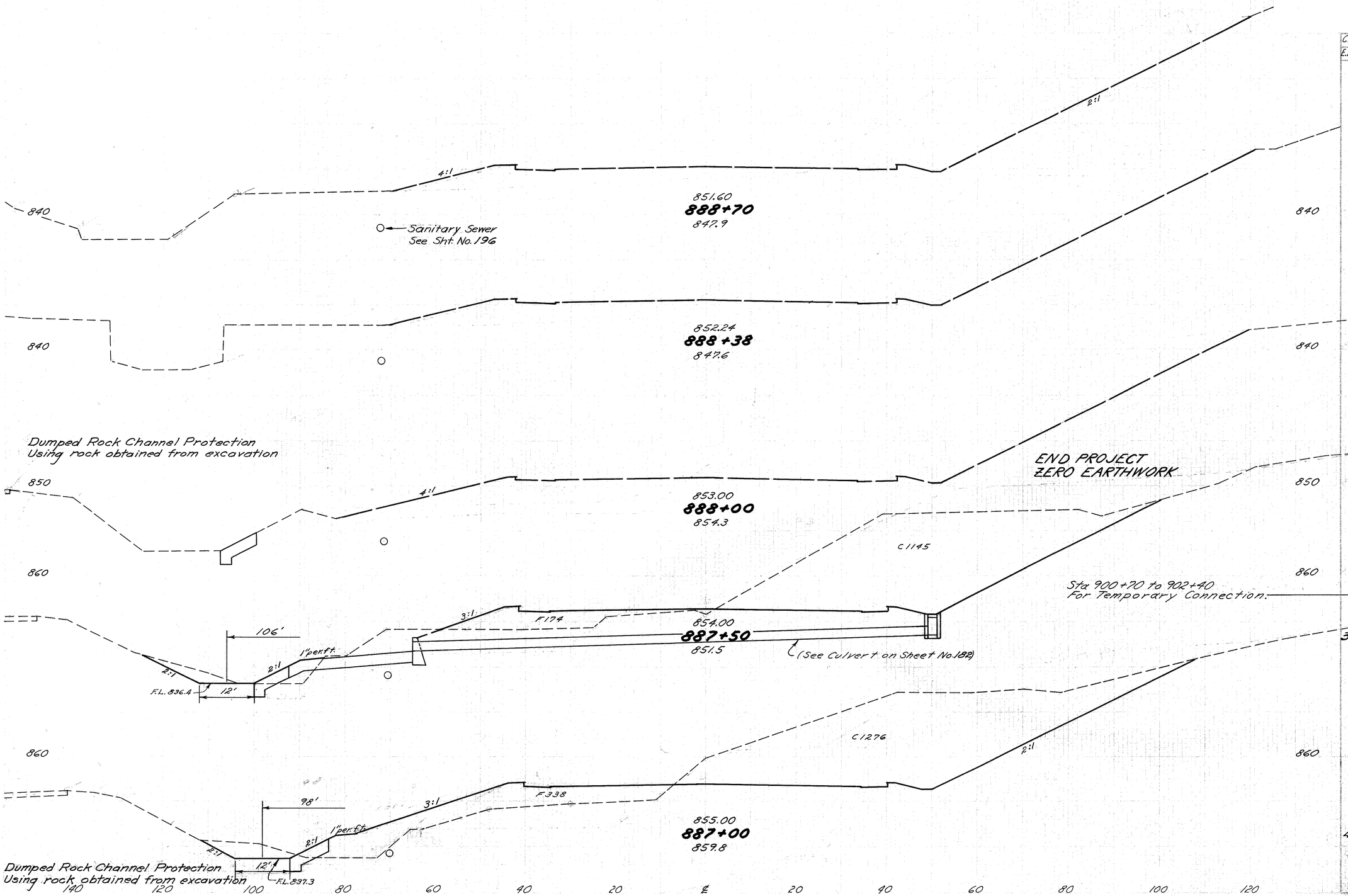
Sta	Channel E. Area	Channel C.Y.	Seeding Width	Seeding S.Y.	End Area Cut	End Area Fill	Cu. Yds. Exc.	Cu. Yds. Emb.
886+50								
	89		155		1255	430		
		392		867			1950	938
886+00								
	334		157		851	583		
		724		861			1382	983
885+50								
	448		153		642	479		
		680		844			985	881
885+00								
	286		151		422	473		
		601		872			856	792
884+50								
	363		163		503	382		
		633		906			901	611

Sta 884+50 to Sta 886+50

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

102
250

COL-30-32.19



Channel		Seeding		End Area		Cu. Yds.	
E.Area	C.Y.	Width	S.Y.	Cut	Fill	Exc.	Emb.
				0	147	0	0
				29	847		1060 161
					525		140
				31	158	1145	174
				74	858	2242	474
				49	151	1278	338
				128	850	2344	711

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

Sta 887+00 to Sta 888+70

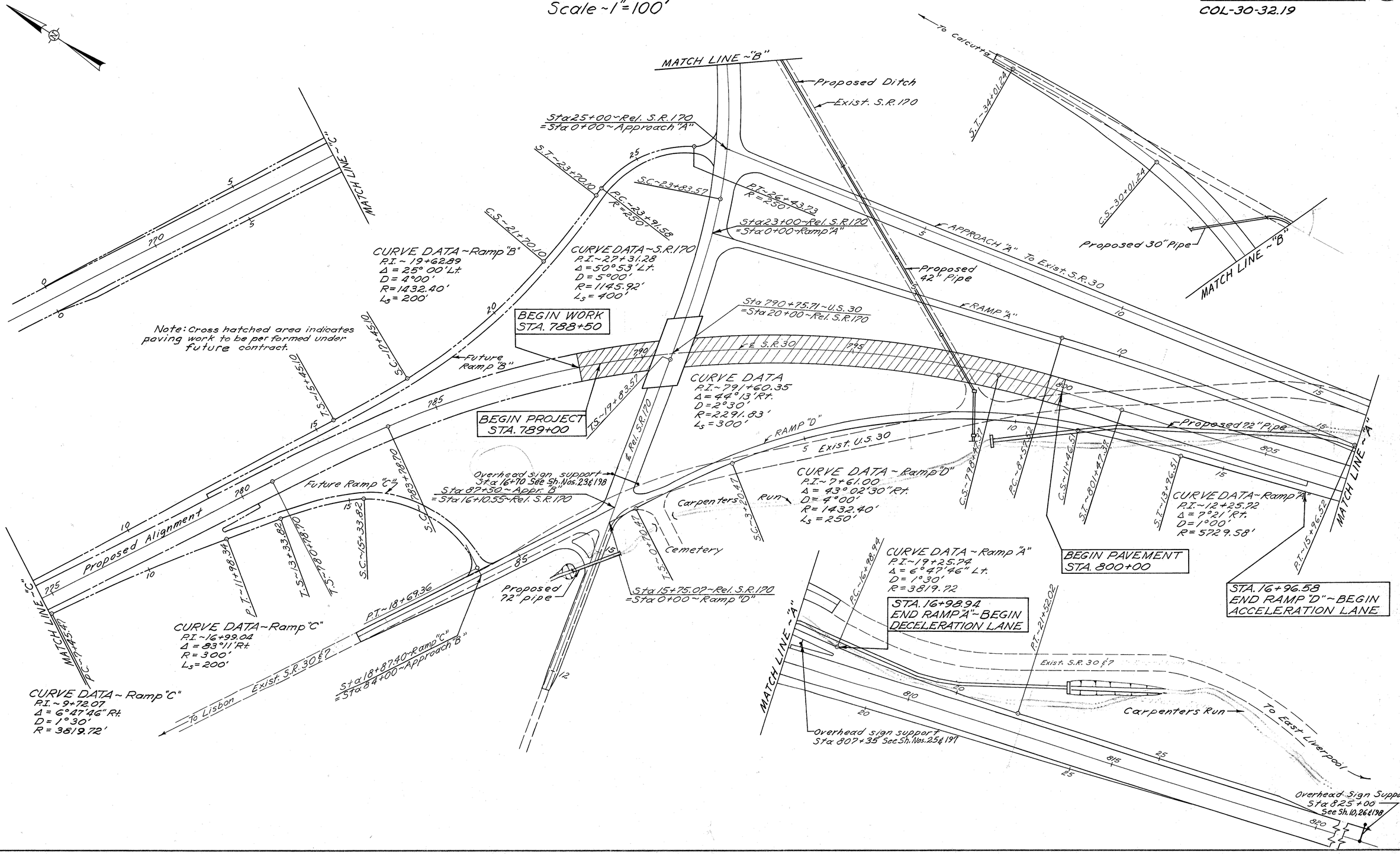
S.R.-170 INTERCHANGE PLAN

Scale ~ 1" = 100'

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

103
250

COL-30-32.19



COL-30-32.19

P.O.T. ~ Sta 11+14.41
N15° 36'E
41.44'
14" Elm
27'
24'
Hub
Hub

P.O.T. ~ Sta 16+92.90
12" Maple
8" Pine
63.02'
55.92'
61.30'
8" Maple
Hub

Note: For Pavement Transition Sta 11+50 to Sta 12+00 see Cross Sections Sheet No. 109

BEGIN WORK Sta 11+30

BEGIN APPR. SUB-STA. RD. Sta. 11+50

END APPR. SUB-STA. RD. Sta. 16+10.55

BEGIN S.R.170 Sta 16+10.55

END SHEET ~ STA 17+00

B.M. ~ Sta 10+10.00
M.S. in P. Pole; 25' Rt. S.R.170
Elev. 1112.62

B.M. ~ Sta 15+81.00
□ Curb Culvert Ft. Wall
14' Rt. of S.R.170
Elev. 1102.03

Sub Station Road
N 77° 12' 01" E
10" V.S.P.
12" V.S.P.
4" Gas Line
M.B.
Existing 16' Bituminous Macadam Pavt.
High Power Line
Gas Meter
1-Str. Fr. Res.
1-Str. Fr. Gar.
1½ Str. Frame Res. & Garage
Conc. Blk. Gar.
Conc. Blk. Bldg.
Fr. Bldg. Gar.
1-Str. Fr. Bldg.
24" C.M.P.
36" C.M.P.
24" C.I.P.
15" V.S.P.
Prop. I-3 See Sh't No. 125
Class I-3 Pipe
Overhead Sign Support Sta 16+70 See Sh. Nos. 23 & 198
Prop. Ramp "D"
Existing Structure to Remain in Place
Block Garage
Conc. Walk
Gas Pipe 3503 Conc.
Sign
2-M.B.
Removed
Fr. Gar.
2-Str. Fr. Res.
Shed
Septic Tank
Sewage Disposal Bed
Sewage Disposal Office
Proposed Approach "B"
Sta 15+85 Rt. F.L. 1104.2
Appr. "B" Sta. 87+30 Lt. F.L. 1105.0
16+63 Rt. F.L. 1106.8
14+42 Rt. F.L. 1099.2 45° Bend
14+18 See Sheet No. 156
14+19 Rt. F.L. 1098.5 Outlet
Place 10' of 6" class F-1 pipe over culvert
300' V.C.
P.C. ~ 11+75
P.T. ~ 14+75
+3.60 %
-3.00 %
P.I. ~ 13+25 Elev. 1099.42

1104.67 1103.92 1103.24 1102.70 1102.29 1102.02 1101.89 1101.90 1102.04 1102.32 1102.74 1103.30 1103.99 1104.82 1105.72 1107.52 1109.32 1111.12 1112.92

1140 1130 1120 1110 1100 1090

6 1146.53 7 1134.85 8 1123.38 9 1116.16 10 1111.00 11 1106.39 12 1103.07 13 1100.07 14 1099.19 15 1099.69 16 1101.06 17 1111.1

APPROACHES

Station	Side &	See Sheet	T-35 Surface Cu. Yds.	B-19 Aggr. Cu. Yds.	Pipe Removed ~ Lin. Ft. 15" & Under	Over 15"	Remarks
13+13	Lt.	104	4.8	12.0	55'		
14+28	Rt.	104				16	
13+83	Lt. & Rt.	104				25	
14+91	Lt. & Rt.	104				30	
15+25.0?	Rt.	125					Ramp "D"
16+10.55	Lt.	136					Appr. "B"
Total			4.8	12.0	55	71	

DRAINAGE

Station From	Station To	Side &	See Sheet	New Work Type	Size	Length		Sod Sq. Yds.
12+26.6		Lt. & Rt.	154	Pipe	48"	251'		
0+32.2 (Mem. Park)		Rt.	156	Pipe	18"	194'		
14+73.6		Lt. & Rt.	155	Pipe	72"	120'		
11+73	12+23	Lt.	104					56
12+18	13+18	Rt.	104					61
Total								117

GUARD RAIL

Station From	Station To	Side &	See Sheet	New Lin. Ft.
11+32.5	11+75	Rt.	104	32.5
14+74	0+37.22	Rt.	104	125
Total				162.5

UNDERDRAIN

Station From	Station To	Side &	6" C.I.-I-3 Class F-1 D=30" Lin. Ft.	6" Class F-1 Lin. Ft.	6" Pipe Spec. Class I-3 45° Bend Each
14+19	15+85	Rt.	155	20	1
Appr. "B" 87+30	18+75	Lt.	263		
16+63	19+00	Rt.	237		
Total			655	20	1

APPR. SUB-STATION Rd. & S.R.170 Sta. 11+50 to Sta. 17+00

COL-30-32.19

T.S. ~ Sta 19+83.57 Hub 99.74' 22° 35.87' Hub 33.45' 20° 24" Apple ℄

S.C. ~ Sta 23+83.57 10'±oc. 18.22' 21.12' 8'±oc. 15.56' 10'±oc. Hub ℄

P.I. ~ Sta 27+31.28 M.S. 3100' 36.08' 35.67' 12'±oc. 18' Hub 13' Hub

PROPOSED STRUCTURE:
TYPE: Continuous steel beams with reinf. conc. deck and substructure.
SPAN: 35'-50'-50'-35' % brg's.
ROADWAY: 73' ℄ conc. parapets.
LOAD FREQUENCY: C.F.= 400(57)
SKEW: 26° 14'-30" R.F.
WEARING SURFACE: 1" Mono. Conc.
ALIGNMENT: Tangent to transition spiral of 5°00' curve left.
APPR. SLAB: AS 1-54(25' long) Modified.
SUPERELEVATION: Varies.

BEGIN SHEET ~ STA 17+00

END SHEET ~ STA 28+00

Future Construction

Future Construction Ramp "B"

Drilled Well Abandoned See Note Sht. No. 9

Cl. I-3 Pipe

S 3°25'-30" E

N 77°12'01" E

S.R. 170 Tan. To 20°30' Ct.

Septic Tank

Overhead Sign Support Sta. 17+00

Class I-3 Pipe

Cistern

Class I-3 Pipe

℄ Sta 20+00 S.R. 170 = ℄ Sta 790+75.71 U.S. 30

Class I-3 Pipe

Prop. Class I-3 Pipe See Sheet No. 118

Prop. Ramp "D"

Prop. L.P. Gas Line

Gas Meter

Hedge

Stone Spring House

2-5 rm. fr. Res.

Shed

Chicken Coops

Proposed S.R. 30

2930' Curve

293

Sty.

Proposed Ramp "A"

Proposed Approach "A"

Existing S.R. 170

6" Gas Line

48'-2" Pines

Class I-3 Pipe

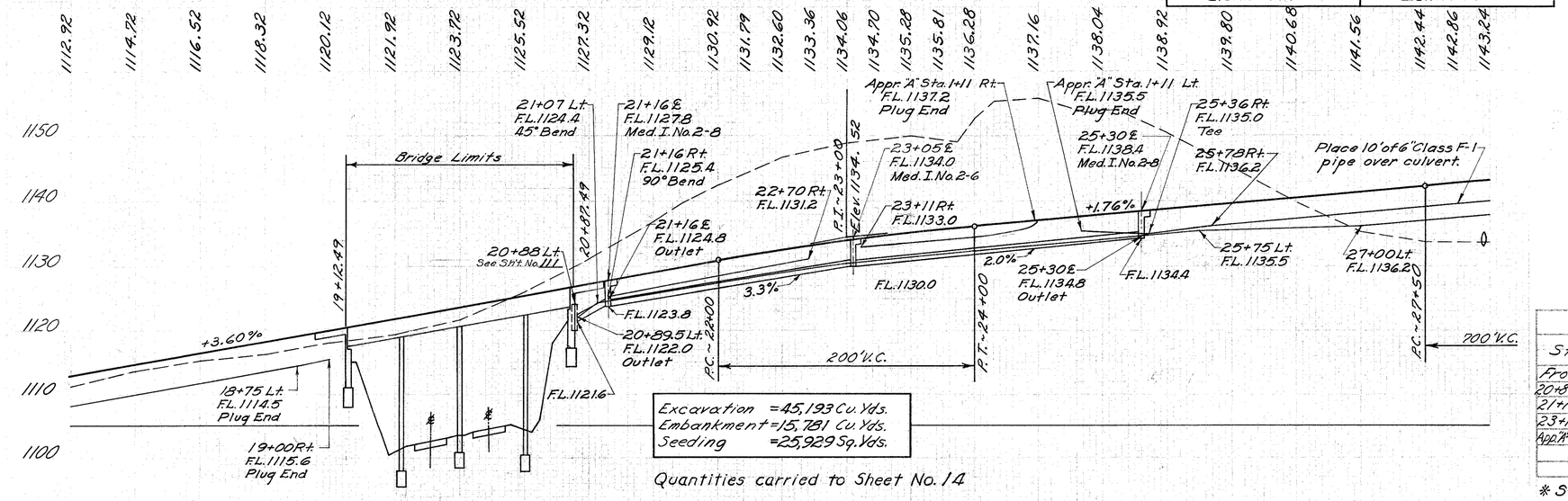
Note: For complete Plan of ditch see Sh't. No. 160

CURVE DATA:
P.I. ~ 27+31.28
Δ = 50°53' Lt.
D = 5°00'
L_s = 400'
E_s = 129.50'
T_s = 747.71'
L = 617.67'
R = 1145.92'

B.M. ~ Sta 18+40.00
M.S. in Tele. Pole; 27' Lt. S.R. 170
Elev. 1118.66

B.M. ~ Sta 23+67.00
M.S. in 6" W. Cherry; 1' Rt. of S.R. 170
Elev. 1149.92

B.M. ~ Sta 28+00.00
M.S. in Guy Pole; 43' Rt. of S.R. 170
Elev. 1132.11



Excavation = 45,193 Cu. Yds.
Embankment = 15,781 Cu. Yds.
Seeding = 25,929 Sq. Yds.

Quantities carried to Sheet No. 14

APPROACHES

Station	Side ℄	See Sheet	T-35 Surface Cu. Yds.	B-19 Aggr. Cu. Yds.		Remarks
23+00	Rt.	118				Ramp "A"
25+00	Rt.	130				Appr. "A"
Total						

DRAINAGE

Station From	Station To	Side ℄	See Sheet	New Work Type	Size	Length	Pipe Removed 15" ℄ under Lin. Ft.
20+32	20+88	Lt.	111	Pipe	18"	57'	
27+66	27+85	Rt.	105				21
27+95		Lt. & Rt.	162	Pipe	30"	170"	
Total							21

STORM SEWER

Station From	Station To	Side ℄	See Sheet	*12" Pipe Lin. Ft.	*15" Pipe Lin. Ft.	No. 2-8 Med. Inlet Each	No. 2-6 Med. Inlet Each
20+88	21+16	Lt.-℄	105		54		
21+16		℄	105			1	
21+16	25+30	℄	105	415			
23+05		℄	105				1
25+30		℄	105			1	
Total				415	54	2	1

* Class A-1 Sec. M-6.8(b) or Sec. M-6.6(a)

PAVEMENT REMOVAL

Station From	Station To	Side ℄	Sq. Yds.
25+00	28+00	Rt.	865
Total			865

GUARD RAIL

Station From	Station To	Side ℄	New Lin. Ft.
18+60	18+85	Lt.	25
17+71	19+21	Rt.	150
20+82	23+82	Lt.	300
21+20	21+45	Rt.	25
Total			500

SOD

Station From	Station To	Sq. Yds.
21+00	22+00	56
27+50	28+00	24
Total		80

APPROACH SLABS

Station From	Station To	Sq. Yds.
18+82.49	19+12.49	147.2
20+87.49	21+12.49	147.2
Total		295

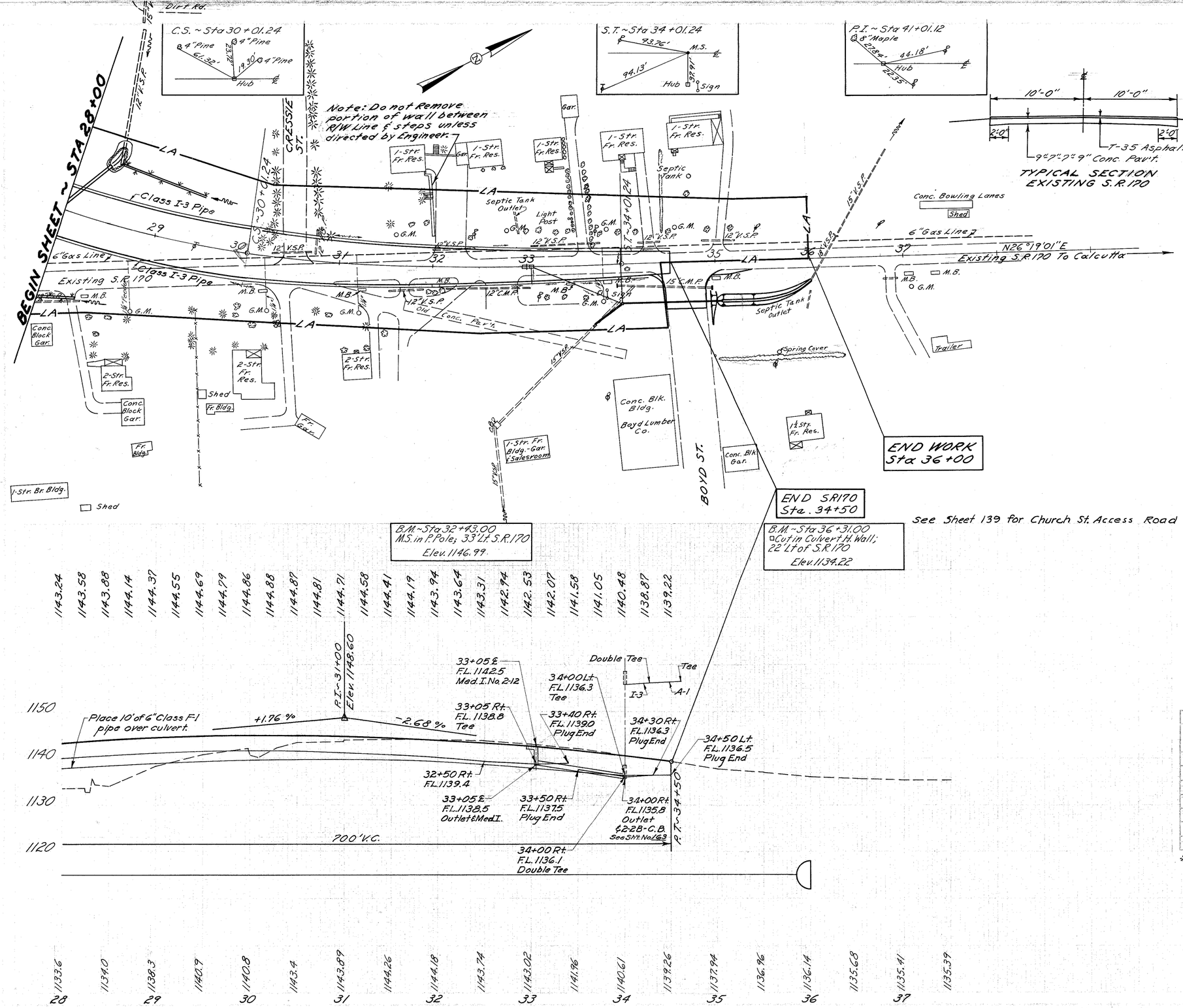
UNDERDRAIN

Station From	Station To	Side ℄	6" Class F-3 Class F-1 D=12" D=30" Lin. Ft.	Class A-1 6" Lin. Ft.	6" Pipe Specials 8"** Cl. I-3 45° Each	Cl. I-3 90° Each	Cl. I-3 Tee Each
20+88	27+00	Lt.	606	10	1		
21+16	22+70	Rt.	157	29		1	
23+11	App. "A" 1+11	Rt.	196				
App. "A" 1+11	28+00	Rt.	360	10	36		1
Total			959 360	20	65	1	1	1

* Sec. M-6.4(h)
** Sec. M-6.6(b) or Sec. M-6.8(b)

S.R. 170 Sta. 17+00 to Sta. 28+00

COL-30-32.19



See Sheet 139 for Church St. Access Road

APPROACHES

Station From	Station To	Side ℄	See Sheet	T-35 Surface Cu. Yds	B-19 Aggr. Cu. Yds.	Pipe Removed 15" ℄ Under Lin. Ft.	S-22 Wall & Steps Cu. Yds.
27+83	28+42	Rt.	105&106			66	
30+29	30+71	Lt.	106			43	
30+74	30+96	Lt.	106			27	
31+54	31+86	Rt.	106			37	
31+89	32+02	Lt.	106				6.2
32+00	32+46	Lt.	106			46	
32+14	33+04	Rt.	106			90	
33+05	33+28	Lt.	106			73	
34+20	34+42	Lt.	106			22	
34+66		Rt.	106	11	38		
34+89	35+22	Lt.	106			33	
35+04		Rt.	106	1	3		
32+50		Rt.	139		368		
Total				12	409	437	6.2

DRAINAGE

Station From	Station To	Side ℄	See Sheet	New Work Type	New Work Size	New Work Length	Removal Type	Removal Size	Removal Lgth.
33+70	35+09	Rt.	163	Pipe	15"	36'			
				Pipe	18"	108'			
Total									

STORM SEWER

Station From	Station To	Side ℄	See Sheet	*12" Pipe Lin. Ft.	No. 2-12 Med. Inlet Each
33+05	34+00	℄-Rt.	106	105	
33+05		℄	106		1
Total				105	1

*Class A-1 Sec. M-6.8(b) or Sec. M-6.6(a)

PAVEMENT REMOVAL

Station From	Station To	Side ℄	Sq. Yds.
28+00	34+50	Lt. & Rt.	1496
31+70	33+00	Rt.	135
Total			1631

UNDERDRAIN

Station From	Station To	Side ℄	6" Cl. F-3 D=30" Lin. Ft.	Class F-1 6" Lin. Ft.	Class A-1 8"** Lin. Ft.	6" Pipe Dou. Tee Each	Spec Cl. F-3 Tee Each
27+00	34+50	Lt.	740	10			1
28+00	33+40	Rt.	540		19		1
33+50	34+30	Rt.	80			1	
34+00		Lt. & Rt.	16	10	33		
Total			1376	20	52	1	2

** Sec. M-6.6(b) or Sec. M-6.8(b)

SOD

Station From	Station To	Sq. Yds.
28+00	28+35	18
28+39	29+47	45
Total		63

S.R. 170 Sta. 28+00 to Sta. 34+50

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

107/250

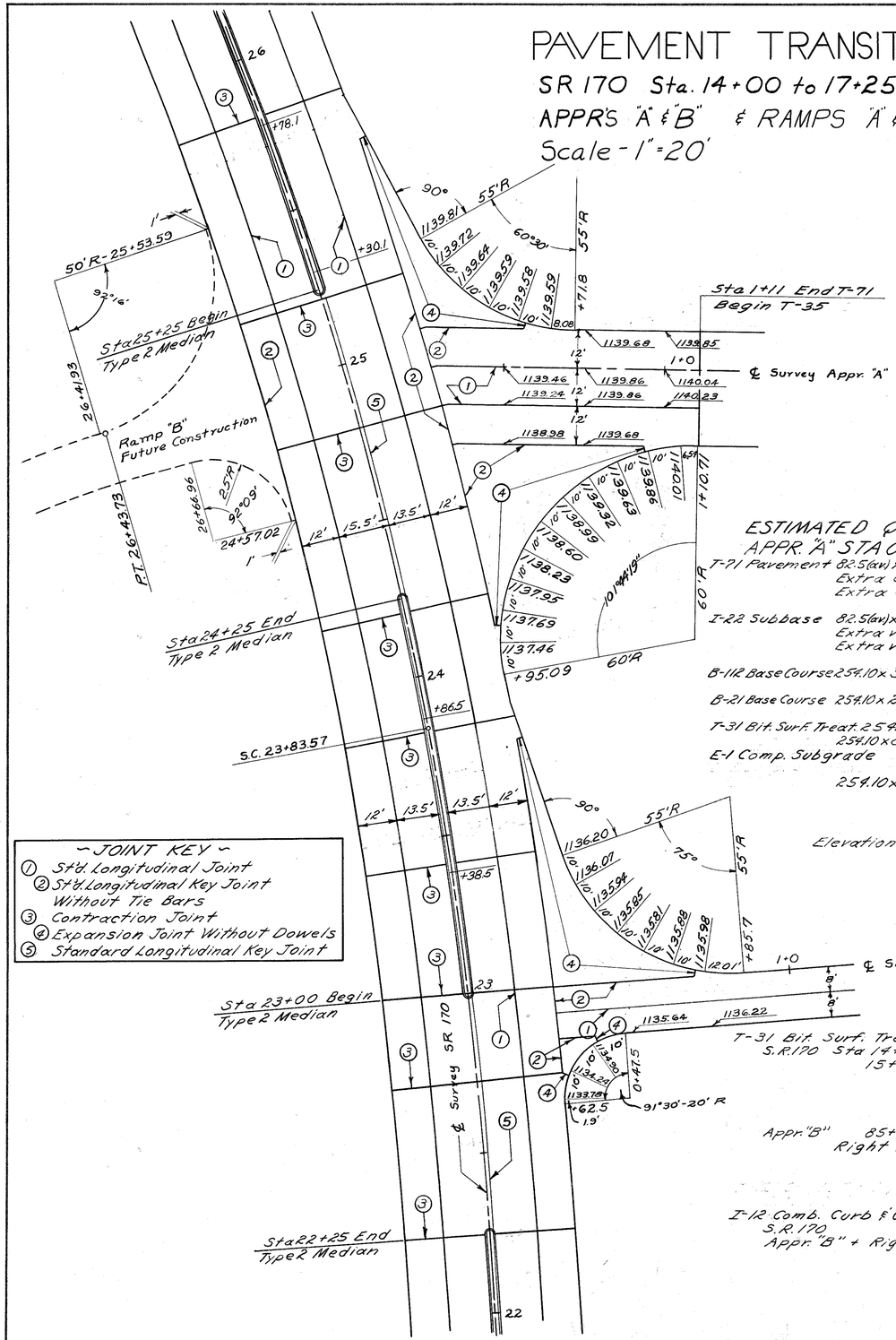
COL-30-32.19

PAVEMENT TRANSITION DETAILS

SR 170 Sta. 14+00 to 17+25 Sta. 22+00 to 26+00

APPR'S "A" & "B" & RAMPS "A" & "D"

Scale - 1" = 20'



ESTIMATED QUANTITIES

APPR. "A" STA 0+27.7 to STA 1+11

T-71 Pavement 82.5(av) x 36 ÷ 9 = 330 Sq. Yds.
Extra area left = 76 " "
Extra area right = 148 " "
Total T-71 = 554 Sq. Yds.

I-22 Subbase 82.5(av) x 36 x 0.5 ÷ 27 = 55 Cu. Yds.
Extra volume left = 35 " "
Extra volume right = 40 " "
Total I-22 = 130 Cu. Yds.

B-11.2 Base Course 254.10 x 3.17° ÷ 27 = 30 Cu. Yds.

B-21 Base Course 254.10 x 2° ÷ 27 = 19 Cu. Yds.

T-31 Bit. Surf. Treat. 254.10 x 8 ÷ 9 x 0.008 = 2 Cu. Yds.
254.10 x 8 ÷ 9 x 0.25 = 57 Gals.

E-1 Comp. Subgrade
554 Sq. Yds.
254.10 x 8 ÷ 9 = 226 " "
Total T-31 = 780 Sq. Yds.

Elevations at 25' intervals unless noted

ESTIMATED QUANTITIES (Con't.)

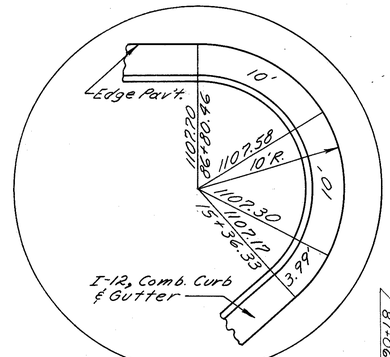
T-31 Bit. Surf. Treatment
S.R.170 Sta 14+33.65 to Sta 15+75.07 163.31 x 3 ÷ 9 = 55 Sq. Yds.
15+75.07 to 16+80 72 x 8 ÷ 9 = 64 " "
Total T-31 = 119 Sq. Yds.
No. 6 Aggr. = 119 x 0.008 = 1 Cu. Yd.
Bit. Mat'l. = 119 x 0.25 = 30 Gals.

Appr. "B" 85+77.78 to 87+10.32 ? 165.95 x 8 ÷ 9 = 148 Sq. Yds.
Right turn lane = 73 " "
Total T-31 = 221 Sq. Yds.
No. 6 Aggr. = 221 x 0.008 = 2 Cu. Yds.
Bit. Mat'l. = 221 x 0.25 = 55 Gals.

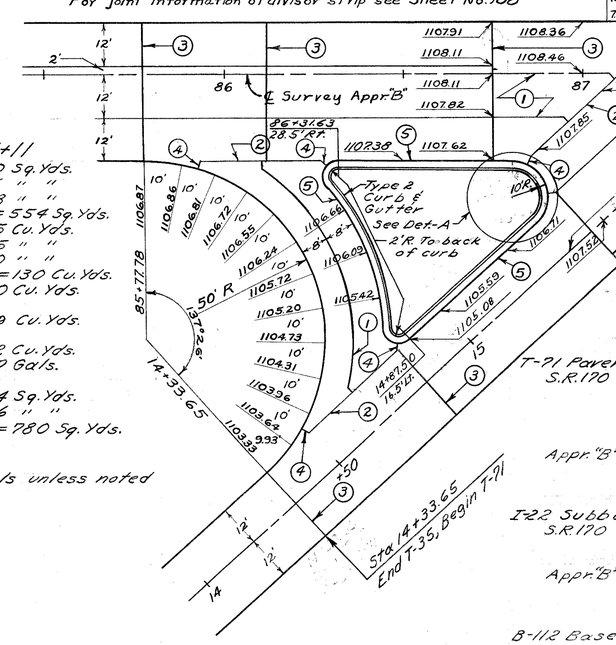
I-12 Comb. Curb & Gutter, Type 2
S.R.170 = 67 Lin. Ft.
Appr. "B" + Right turn lane = 103 Lin. Ft.

JOINT KEY

1. Std. Longitudinal Joint
2. Std. Longitudinal Key Joint Without Tie Bars
3. Contraction Joint
4. Expansion Joint Without Dowels
5. Standard Longitudinal Key Joint



DETAIL-A
Scale: 1" = 5'-0"



Note: For Ramp "D" Pavement Quantities See Sheets No. 12, 13, 14

ESTIMATED PAVEMENT QUANTITIES

T-71 Pavement

S.R.170	Sta 14+33.65 to	Sta 15+75.07	141.42 x 24 ÷ 9	= 377 Sq. Yds.
	15+75.07 to	16+80	104.93 x 53 ÷ 9	= 618 " "
	15+36.33 to	15+62	Extra area left	= 15 " "
	15+68.66 to	16+03	Extra area right	= 5 " "
			Total T-71	= 1015 Sq. Yds.
Appr. "B"	85+77.78 to	87+10.32	127.68(av) x 38 ÷ 9	= 539 Sq. Yds.
Right turn lane			147.7 + Extra area right 5.1	= 152 " "
			Total T-71	= 692 Sq. Yds.

I-22 Subbase

S.R.170	Sta 14+33.65 to	Sta 15+75.07	141.42 x 30.45(av) x 0.5 ÷ 27	= 80 Cu. Yds.
	15+75.07 to	16+80	104.93 x 58.50(av) x 0.5 ÷ 27	= 114 " "
			Total I-22	= 194 Cu. Yds.
Appr. "B"	85+77.78 to	87+10.32	127.68(av) x 50.09(av) x 0.5 ÷ 27	= 119 Cu. Yds.
Right turn lane				= 42 " "
			Total I-22	= 161 Cu. Yds.

B-11.2 Base Course

S.R.170	Sta 14+33.65 to	Sta 15+75.07	163.31 x 0.61° ÷ 27	= 4 Cu. Yds.
	15+75.07 to	16+80	72 x 3.17° ÷ 27	= 9 " "
			Total B-11.2	= 13 Cu. Yds.
Appr. "B"	85+77.78 to	87+10.32	165.95 x 3.17° ÷ 27	= 20 Cu. Yds.
Right turn lane				= 6 " "
			Total B-11.2	= 26 Cu. Yds.

B-21 Base Course

S.R.170	Sta 14+33.65 to	Sta 15+75.07	163.31 x 1.5° ÷ 27	= 9 Cu. Yds.
	15+75.07 to	16+80	72 x 2° ÷ 27	= 5 " "
			Total B-21	= 14 Cu. Yds.
Appr. "B"	85+77.78 to	87+10.32	165.95 x 2° ÷ 27	= 13 Cu. Yds.
Right turn lane				12 " "
			Total B-21	= 25 Cu. Yds.

E-1 Comp. Subgrade

S.R.170	Sta 14+33.65 to	Sta 15+75.07	141.42 x 30.45(av) ÷ 9	= 479 Sq. Yds.
	15+75.07 to	16+80	104.93 x 58.5(av) ÷ 9	= 682 " "
			Total E-1	= 1161 Sq. Yds.
Appr. "B"	85+77.78 to	87+10.32	127.68 x 50.09(av) ÷ 9	= 711 Sq. Yds.
Right turn lane				= 252 " "
			Total E-1	= 963 Sq. Yds.

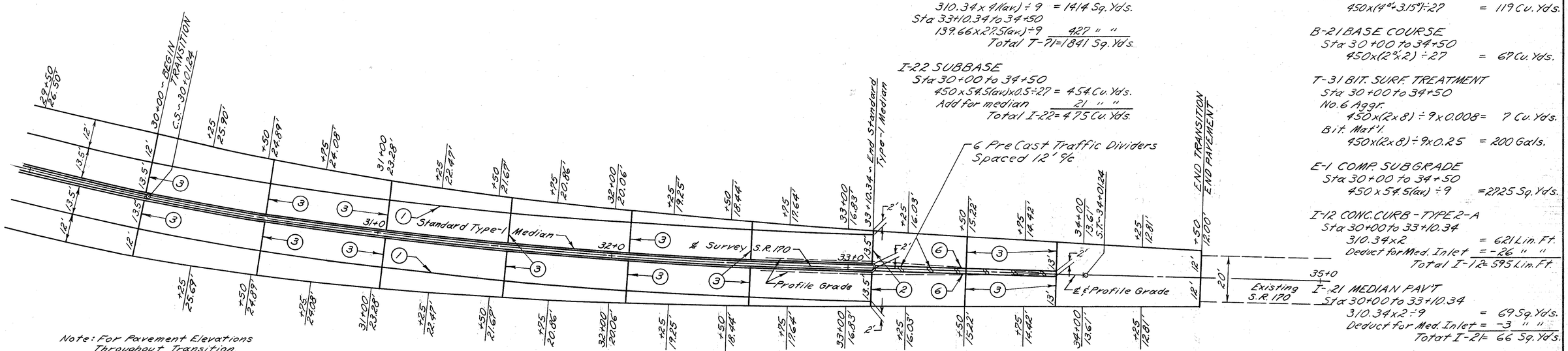
PAVEMENT TRANSITION DETAILS

Scale: 1"=20'

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

108/250

COL-30-32.19



Note: For Pavement Elevations Throughout Transition See Superelevation Tables Sheet No. 36

ESTIMATED QUANTITIES

T-71 PAVEMENT
Sta 30+00 to 33+10.34
310.34 x 4'(av.) ÷ 9 = 1414 Sq. Yds.
Sta 33+10.34 to 34+50
139.66 x 27.5'(av.) ÷ 9 = 427 " "
Total T-71 = 1841 Sq. Yds.

I-22 SUBBASE
Sta 30+00 to 34+50
450 x 54.5'(av.) x 0.5 ÷ 27 = 454 Cu. Yds.
Add for median = 21 " "
Total I-22 = 475 Cu. Yds.

B-112 BASE COURSE
Sta 30+00 to 34+50
450 x (4° + 3.15°) ÷ 27 = 119 Cu. Yds.

B-21 BASE COURSE
Sta 30+00 to 34+50
450 x (2°% x 2) ÷ 27 = 67 Cu. Yds.

T-31 BIT. SURF. TREATMENT
Sta 30+00 to 34+50
No. 6 Aggr.
450 x (2 x 8) ÷ 9 x 0.008 = 7 Cu. Yds.
Bit. Mat'l.
450 x (2 x 8) ÷ 9 x 0.25 = 200 Gals.

E-1 COMP. SUBGRADE
Sta 30+00 to 34+50
450 x 54.5'(av.) ÷ 9 = 2725 Sq. Yds.

I-12 CONC. CURB - TYPE 2-A
Sta 30+00 to 33+10.34
310.34 x 2 = 621 Lin. Ft.
Deduct for Med. Inlet = -26 " "
Total I-12 = 595 Lin. Ft.

I-21 MEDIAN PAV'T
Sta 30+00 to 33+10.34
310.34 x 2 ÷ 9 = 69 Sq. Yds.
Deduct for Med. Inlet = -3 " "
Total I-21 = 66 Sq. Yds.

I-23 PRECAST DIVIDERS
Sta 33+23 to 33+83 = 6 Each

S.R. 170 ~ Sta 30+00 To Sta 34+50

~JOINT KEY~

1. Standard Longitudinal Joint
2. Standard Expansion Joint
3. Contraction Joint
4. Standard Longitudinal Key Joint Without Tie Bars
5. Expansion Joint Without Dowels
6. Standard Longitudinal Joint With Hook Bolts; One or Both of these Joints must be built.

ESTIMATED QUANTITIES

T-71 PAVEMENT
Sta 80+75 to 83+50
275' x 30'(av.) ÷ 9 = 917 Sq. Yds.
Sta 83+50 to 84+44.95
94.95' x 37'(av.) ÷ 9 = 390 " "
Sta 84+44.95 to 85+77.78
132.83 x 38 ÷ 9 = 561 " "
Total T-71 = 1868 Sq. Yds.

I-22 SUBBASE
1868 x 6 ÷ 36 = 311 Cu. Yds.
502.78' x 8 x 0.5 ÷ 27 x 2 = 150 " "
Total I-22 = 461 Cu. Yds.

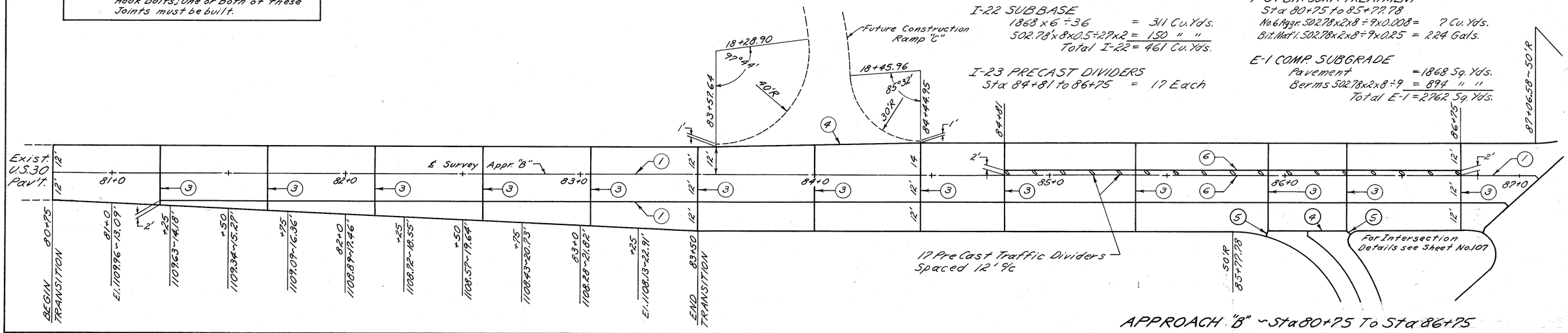
I-23 PRECAST DIVIDERS
Sta 84+81 to 86+75 = 12 Each

B-112 BASE COURSE
Sta 80+75 to 85+77.78
502.78 x 2 x 31'% ÷ 27 = 118 Cu. Yds.

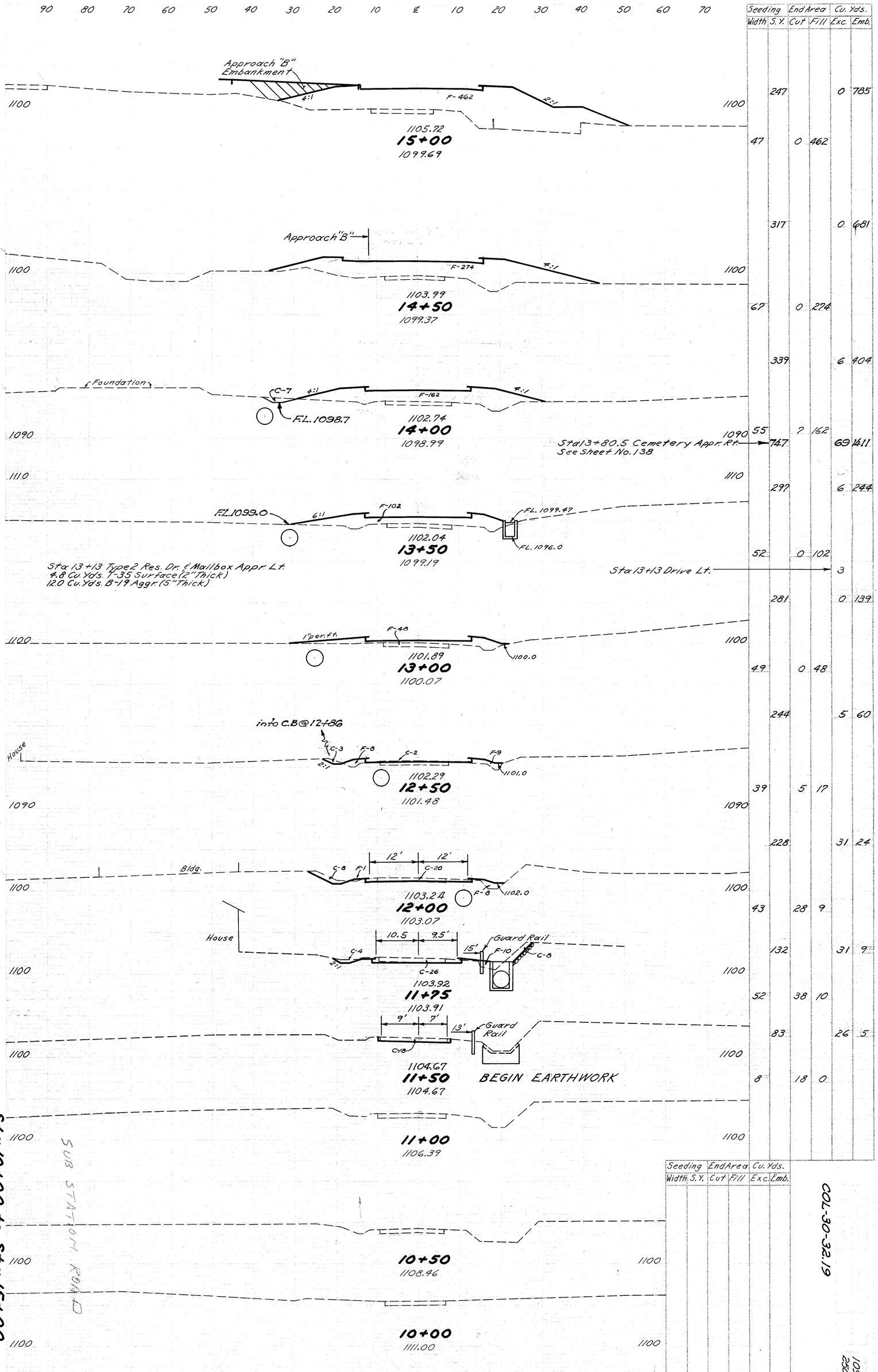
B-21 BASE COURSE
Sta 80+75 to 85+77.78
502.78 x 2 x 2° ÷ 27 = 75 Cu. Yds.

T-31 BIT. SURF. TREATMENT
Sta 80+75 to 85+77.78
No. 6 Aggr. 502.78 x 2 x 8 ÷ 9 x 0.008 = 7 Cu. Yds.
Bit. Mat'l. 502.78 x 2 x 8 ÷ 9 x 0.25 = 224 Gals.

E-1 COMP. SUBGRADE
Pavement = 1868 Sq. Yds.
Berms 502.78 x 2 x 8 ÷ 9 = 894 " "
Total E-1 = 2762 Sq. Yds.



APPROACH "B" ~ Sta 80+75 To Sta 86+75



Seeding Width	S.Y.	End Area Cut	Fill	Cu. Yds. Exc.	Emb.
	247			0	785
47		0	462		
	317			0	681
67		0	274		
	339			6	404
55		7	162		
	747			69	1611
	297			6	244
52		0	102		
				3	
	281			0	139
49		0	48		
	244			5	60
39		5	17		
	228			31	24
43		28	9		
	132			31	9
52		38	10		
	83			26	5
8		18	0		

Seeding Width	S.Y.	End Area Cut	Fill	Cu. Yds. Exc.	Emb.

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109
280

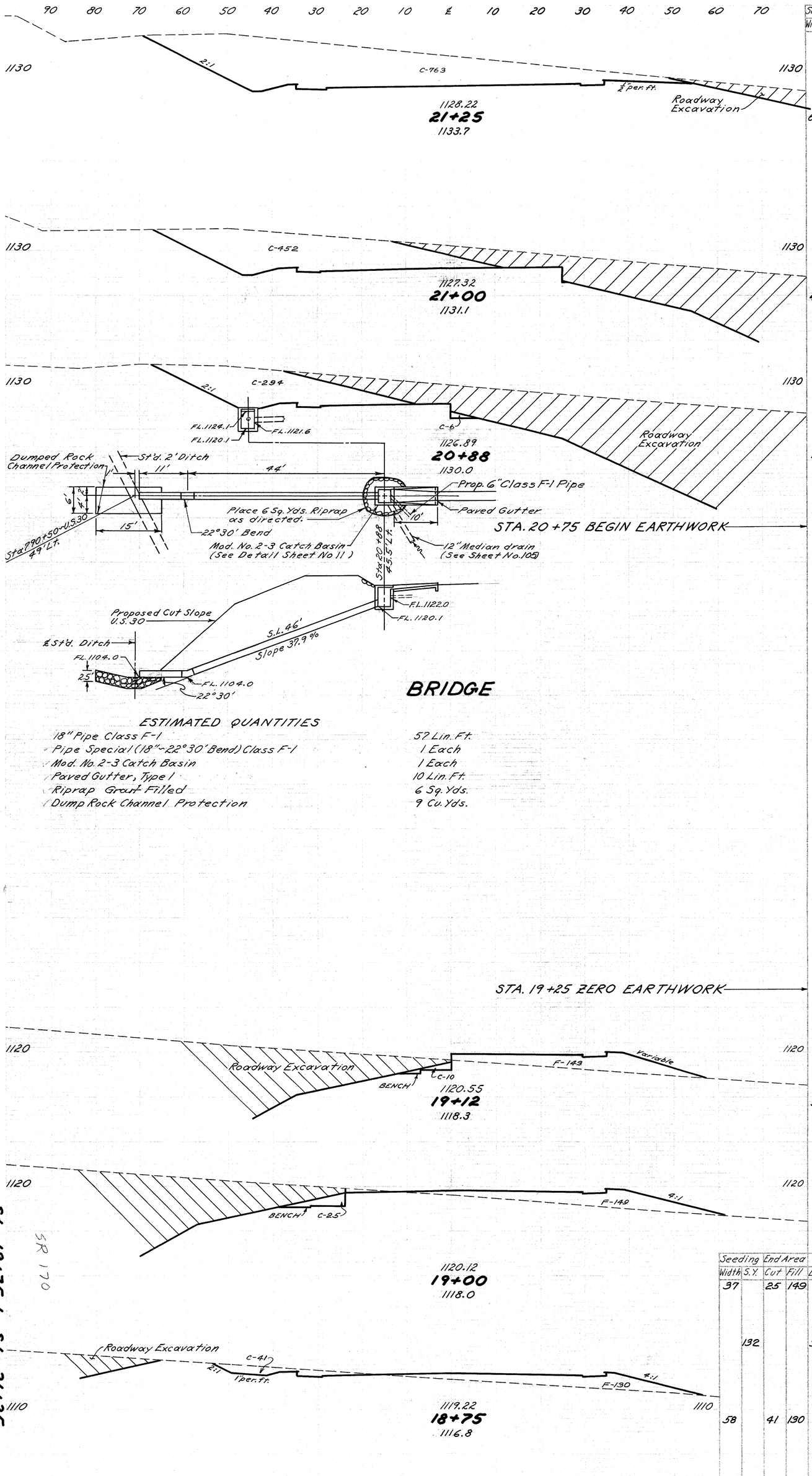
	Seeding Width S.Y.	End Area Cut	End Area Fill	Cu. Yds. Exc.	Cu. Yds. Emb.
Ahead	37	0	332	0	223
Back	37	0	449		
		219			
	42	0	386		

	Seeding Width S.Y.	End Area Cut	End Area Fill	Cu. Yds. Exc.	Cu. Yds. Emb.
	59	59	93	71	75
	165	95	70	84	69
	59	87	79	85	53
	167	96	36	74	32
	60	64	34	61	23
	157	68	16	41	136
	53	33	228	69	496
	143	42	258	39	546
	50				
	133				
	46				
	139				
	54				
	231				
	29				
	183				

110
250

COL-30-32.19

Sta 15+50 to Sta 18+50



Seeding Width	S.Y.	End Area Cut	Fill	Cu. Yds. Exc.	Emb.
68		763	0		
	157			563	0
45		452	0		
	61			167	0
46		300	0		
	33			72	0
0		0	0		
0		0	0		
	24			2	34
33		10	143		
	47			8	65
37		25	149		
	132			31	129
58		41	190		
	163			46	103

ESTIMATED QUANTITIES

18" Pipe Class F-1	57 Lin. Ft.
Pipe Special (18"-22°30' Bend) Class F-1	1 Each
Mod. No. 2-3 Catch Basin	1 Each
Paved Gutter, Type 1	10 Lin. Ft.
Riprap Grout Filled	6 Sq. Yds.
Dump Rock Channel Protection	9 Cu. Yds.

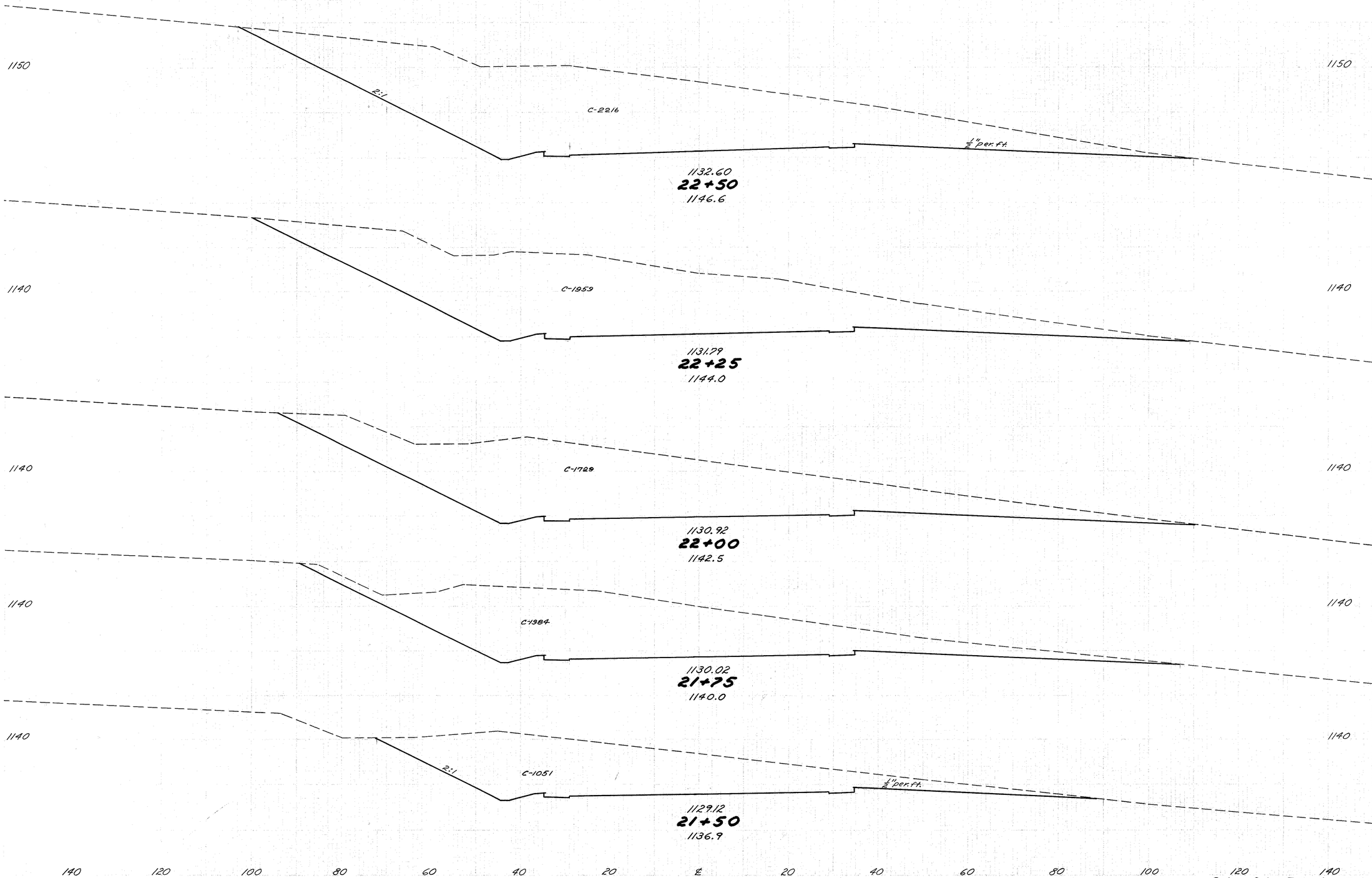
COL-30-32.19

111
250

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

112
250

COL-30-32.19



Station	Seeding Width	Seeding S.Y.	End Area Cut	End Area Fill	Cu. Yds. Exc.	Cu. Yds. Emb.
22+50	171		2216	0		
		469			1933	0
22+25	167		1959	0		
		457			1707	0
22+00	162		1729	0		
		438			1441	0
21+75	153		1984	0		
		372			1127	0
21+50	115		1051	0		
		254			840	0

Sta 21+50 to Sta 22+50

COL-30-32.19

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

1150

2:1

C2755

½ per. ft.

1136.28
24+00
1152.8

1150

C2577

1135.28
23+50
1149.9

1150

C2496

Profile Ramp "A" See Sheet No. 118

1134.06
23+00
1148.9

1140

2:1

C2339

½ per. ft.

1133.36
22+75
1147.6

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

Seeding Width	Seeding S.Y.	End Area Cut	End Area Fill	Cu. Yds. Exc.	Cu. Yds. Emb.
169		2755	0		
	958			4937	0
176		2577	0		
	989			4697	0
180		2496	0		
	493			2238	0
175		2339	0		
	481			2109	0

Sta 22+75 to Sta 24+00

COL-30-32.19

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

1140

2:1

C 1200

1139.80
26+00
1145.2

F-103

4:1

1140

1150

C 1942

1138.92
25+50
1150.3

1" per. ft.

1150

1150

C 2558

1138.04
25+00
1153.9

℄ Profile Appr. "A"; See Sheet No. 130

1" per. ft.

1150

1150

2:1

C 2726

1137.16
24+50
1155.6

½" per. ft.

1150

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

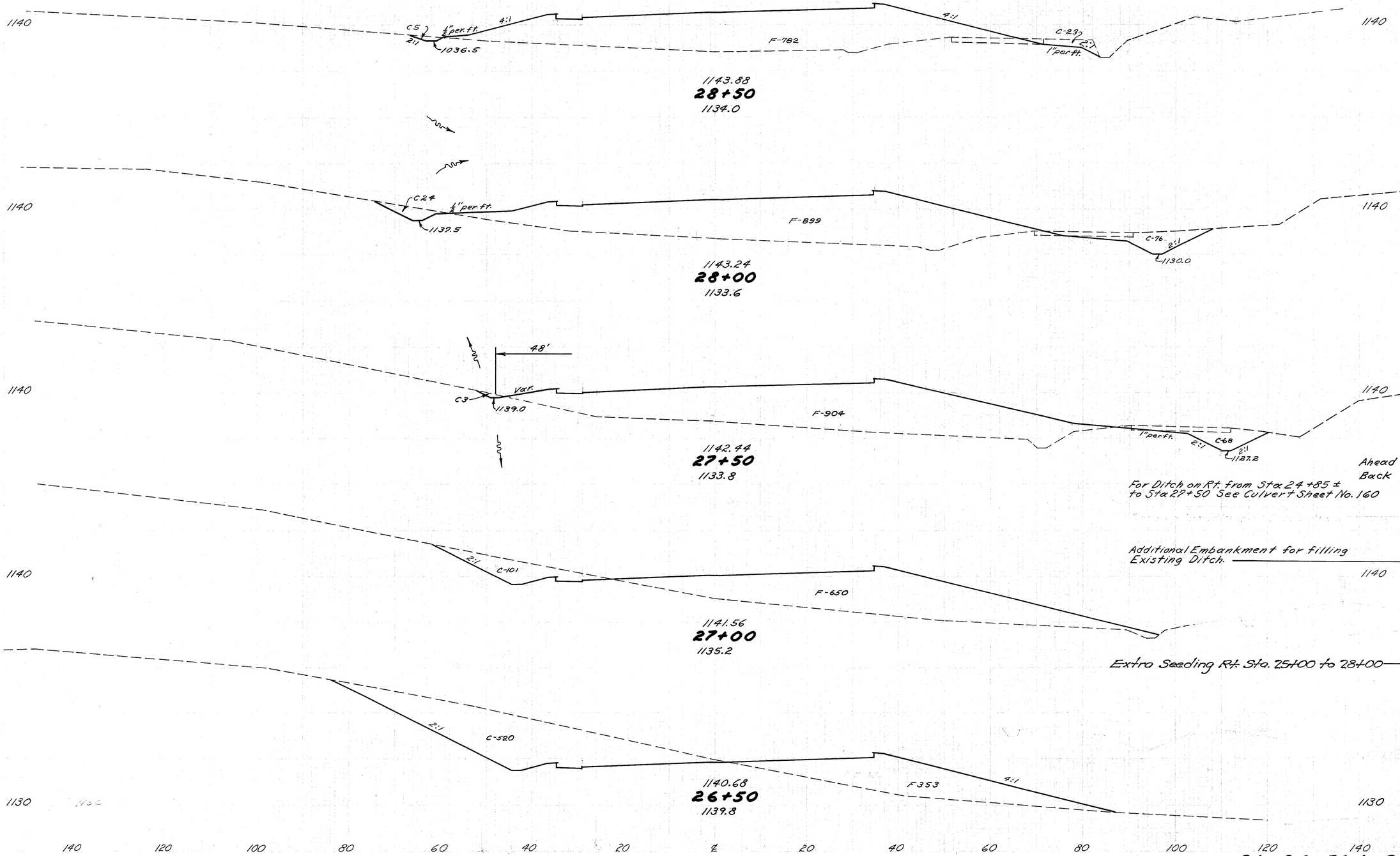
Station	Seeding Width	S.Y.	End Areed Cut	Fill	Cu. Yds. Exc.	Emb.
26+00	135		1200	103		
		703			2909	95
25+50	118		1942	0		
		597			4167	0
25+00	97		2558	0		
		717			4893	0
24+50	161		2726	0		
		917			5075	0

Sta 24+50 to Sta 26+00

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

115
250

COL-30-32.19



	Seeding Width	S.Y.	End Area Cut	Fill	Cu. Yds. Exc.	Emb.
	104		28	782		
		669			119	1556
	137		100	899		
		731			158	1667
Ahead	126		71	904		
Back	126		3	904		
		664			96	1439
						261
	113		101	650		
						282
		669			575	929
	128		520	353		
		731			1593	422

For Ditch on Rt. from Sta 24+85 ± to Sta 27+50 See Culvert Sheet No. 160

Additional Embankment for filling Existing Ditch. → 261

Extra Seeding Rt. Sta. 25+00 to 28+00 → 282

Sta 26+50 to Sta 28+50

Seeding Width S.Y.	End Area Cut	End Area Fill	Cu. Yds. Exc.	Cu. Yds. Emb.
6.9	127	10	252	10
369				
64	145	1	306	2
361				
66	186	1	379	3
378				
1185	223	2	272	272
70				
156	226	5	416	6
386				
69	361	32	385	32
361				
61	190	30	240	73
306				
49	69	49	93	156
269				
48	31	120	30	407
308				
6.3	1	320	5	757
325				
22	4	498	4	889
1185				30

COL-30-32.19

116
250

Sta. 32+50 Access Rd. Rt.

Extra Seeding Pt. Sta. 31+66 to 33+25

Future Construction

Future Construction

Future Construction

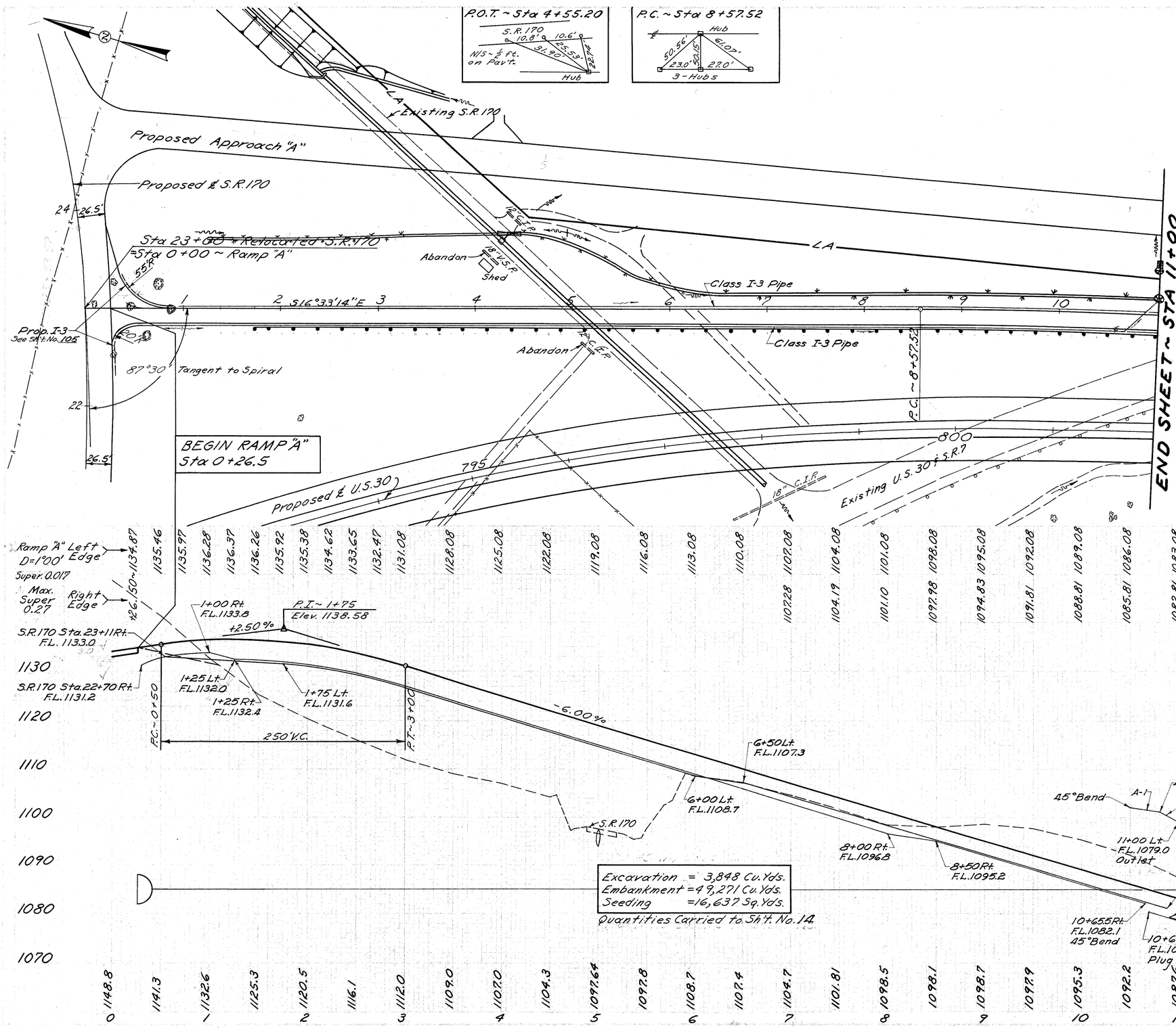
COL-30-32.19

Seeding	End Area	Cu. Yds.
Width S.Y.	Cut Fill	Exc. Emb.
75	117 3	
400		226 12

Seeding	End Area	Cu. Yds.
Width S.Y.	Cut Fill	Exc. Emb.
8	0 0	
258	34 51	31 47
439		49 95
342	19 52	4
347	25 3	41 51
	72 3	175 6
50	50	

Sta 34+00 to Sta 36+50

COL-30-32.19



DRAINAGE

Station From	Station To	Side ℄	See Sheet	New Work Type	New Work Size	New Work Length	Sod Sq. Yds.	Paved Gutter Lin. Ft.
5+01.5		Lt.&Rt.	160	Pipe	42"	736		
4+48	10+95	Lt.	118				380	
11+00		Lt.	123	Pipe	12"	32'		
1+25	3+25	Lt.	118				117	
3+25	4+25	Lt.	118				33	100
Total							530	100

GUARD RAIL

Station From	Station To	Side ℄	New Lin. Ft.
1+73	11+00	Rt.	926
Total			926

PAVEMENT REMOVAL

Station From	Station To	Side ℄	Sq. Yds.
4+18	5+25	Lt.&Rt.	476
Total			476

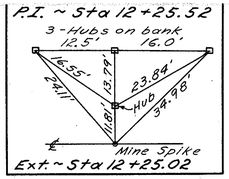
UNDERDRAIN

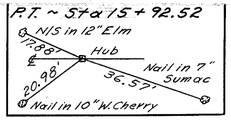
Station From	Station To	Side ℄	6" Class I-3 D=12"*	Class F-1 D=30"	Class A-1 6"	Pipe Spec. Cl. I-3 8"**	45° Bend*	45° Lateral*
			Lin. Ft.	Lin. Ft.	Lin. Ft.	Lin. Ft.	Each	Each
S.R.170-22+40	1+25	Rt.	98					
S.R.170-23+11	1+25	Lt.	75					
1+25	6+00	Lt.		475				
1+25	8+00	Rt.		675				
6+00	10+86.5	Lt.	487					1
8+00	10+65.5	Rt.	266				1	
10+65.5	11+00	Lt.&Rt.	8		10	30		
Total			934	1150	10	30	1	1

* Sec. M-6.4(h)
** Sec. M-6.6(b) or Sec. M-6.8(b)

RAMP "A" ~ Sta 0+00 To Sta 11+00

COL-30-32.19



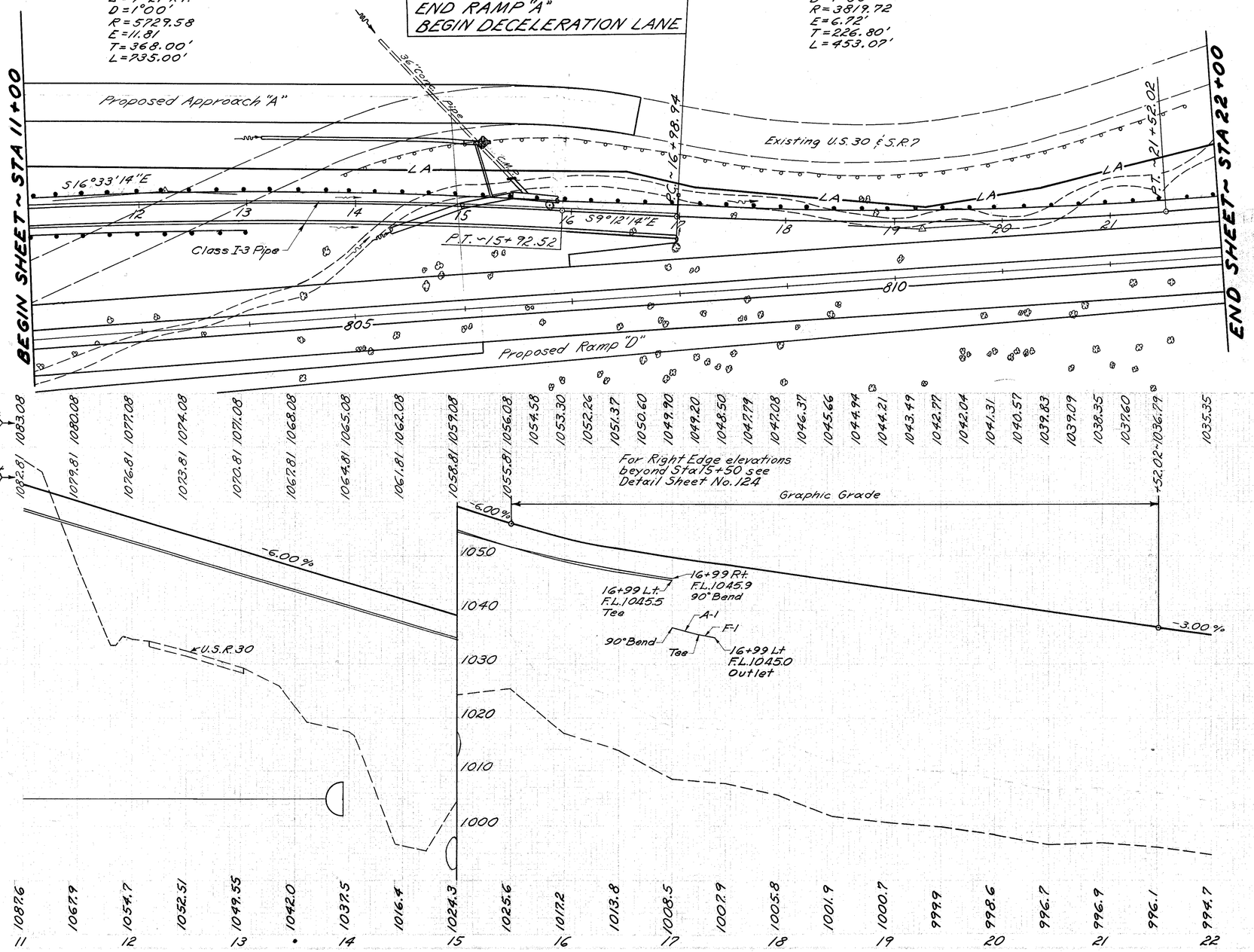


Note: Quantities throughout Deceleration Lane shown on Mainline Sheets No. 24 & 25

CURVE DATA:
P.I. ~ 12+25.72
Δ = 7°21' Rt.
D = 1°00'
R = 5729.58
E = 11.81
T = 368.00'
L = 735.00'

Sta 16+98.94
END RAMP "A"
BEGIN DECELERATION LANE

CURVE DATA:
P.I. ~ 19+25.74
Δ = 6°47'46" Lt.
D = 1°30'
R = 3819.72
E = 6.72'
T = 226.80'
L = 453.07'



GUARD RAIL				
Station		Side	New	
From	To	℄	Lin. Ft.	
11+00	13+00	Rt.	199	
11+03	16+98.94	Lt.	596.5	
Total			795.5	

PAVEMENT REMOVAL			
Station		Side	Sq.
From	To	℄	Yds.
11+00	13+12	Lt. & Rt.	924
Total			924

UNDERDRAIN							
Station		Side	6" Cl. I-3 D = 30"	Class F-1 8"*	Class A-1 8"**	6" Pipe Spec. I-3 90° Bend	Tee
From	To	℄	Lin. Ft.	Lin. Ft.	Lin. Ft.	Each	Each
10+69	16+99	Rt.	630			1	
10+90	16+99	Lt.	609				1
16+99		Lt. & Rt.		16	24		
Total			1239	16	24	1	1

* Sec. M-6.4(c)
** Sec. M-6.6(b) or Sec. M-6.8(b)

Carried To Sheet No's 12, 13 & 14

ESTIMATED QUANTITIES ~ RAMP "A"

T-71 PAVEMENT
Sta 0+26.5 to Sta 15+98.94
1572.94 x 16 ÷ 9 = 2796 Sq. Yds.
Extra Area Lt. & Rt. = 123+10 = 133 " "
Sta 15+98.94 to Sta 16+98.94
100 x 17 (av.) ÷ 9 = 189 " "
Sta 15+98.94 to Sta 16+98.94
100 x 12 (av.) ÷ 9 = 133 " "
Total T-71 = 3251 Sq. Yds.

I-21 MEDIAN PAVEMENT
Sta 16+58 to Sta 16+98 Rt.
40 x 6.5 (av.) ÷ 9 = 29 Sq. Yds.

I-22 SUBBASE
Sta 0+26.5 to Sta 9+00
873.5 x 10.75° ÷ 27 = 348 Cu. Yds.
Extra Volume Lt. & Rt. = 29+6 = 35 " "
Sta 9+00 to Sta 15+98.94
698.94 x 10.87° ÷ 27 = 281 " "
Sta 15+98.94 to Sta 16+98.94
100 x 1.90° ÷ 27 = 43 " "
Sta 15+98.94 to Sta 16+98.94 Rt.
100 x 6.00° ÷ 27 = 22 " "
Under Median Pavement = 5 " "
Total I-22 = 734 Cu. Yds.

B-112 BASE COURSE
Sta 0+26.5 to Sta 9+00
952.9 (av.) x (0.61° + 0.75°) ÷ 27 = 48 Cu. Yds.
Sta 9+00 to Sta 16+98.94
798.94 x (0.84° + 0.61°) ÷ 27 = 43 " "
Total B-112 = 91 Cu. Yds.

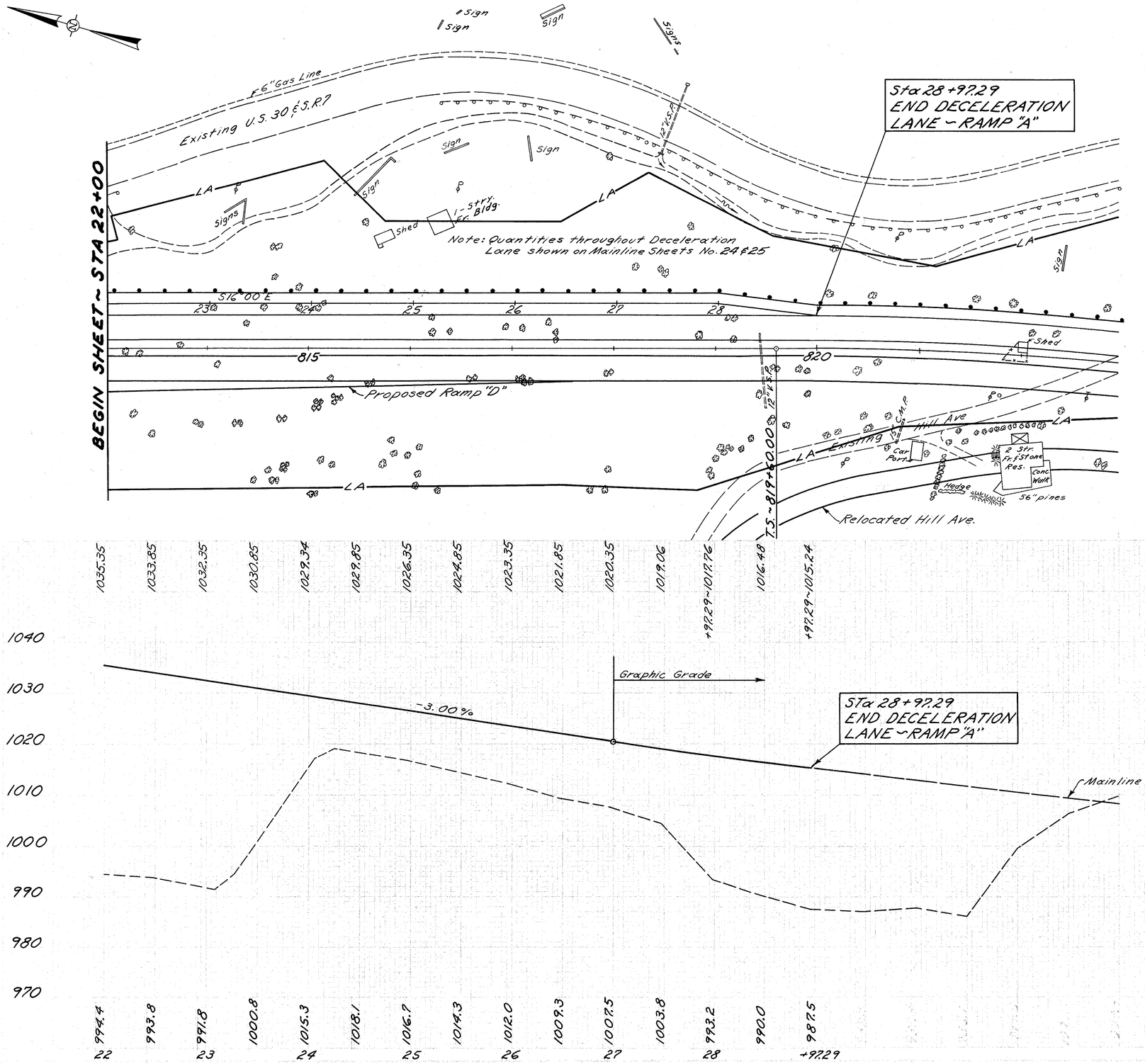
B-21 BASE COURSE
Sta 0+26.5 to Sta 16+98.94
1751.84 (av.) x (15° + 15°) ÷ 27 = 195 Cu. Yds.

T-31 BIT. SURF. TREATMENT
Sta 0+26.5 to Sta 16+98.94
1751.84 (av.) x 6 ÷ 9 = 1168 Sq. Yds.
No. 6 Aggr. 1168 x 0.008 = 10 Cu. Yds.
Bit. Mat'l. 1168 x 0.25 = 292 Gals.

I-12 ST'D. TYPE 6 CURB = 204 Lin. Ft.

E-1 COMP. SUBGRADE
Pavt't + Berms = 3251 + 1168 = 4419 Sq. Yds.

RAMP "A" ~ Sta 11+00 To Sta 22+00



COL-30-32.19

Carried To Sheet No.'s 12, 13 & 14

ESTIMATED QUANTITIES
DECELERATION LANE
Sta 16+98.94 to Sta 28+97.29

T-71 PAVEMENT

Sta 16+98.94 to 21+52.02
453.08 x 21.95 (av) ÷ 9 = 1105 Sq. Yds.
Sta 21+52.02 to 27+97.29
645.27 x 12 ÷ 9 = 860 " "
Sta 27+97.29 to 28+97.29 Ft.
100 x 6 (av.) ÷ 9 = 67 " "

Total T-71 = 2032 Sq. Yds.

I-22 SUBBASE

Sta 16+98.94 to 21+52.02
453.08 x 27.9 (av) x 0.5 ÷ 27 = 234 Cu. Yds.
Sta 21+52.02 to 27+97.29
645.27 x 20 x 0.5 ÷ 27 = 239 " "
Sta 27+97.29 to 28+97.29
100 x 14 (av.) x 0.5 ÷ 27 = 26 " "

Total I-22 = 499 Cu. Yds.

B-21 BASE COURSE

Sta 16+98.94 to 21+52.02
453.08 x 3 (av) ÷ 27 = 50 Cu. Yds.
Sta 21+52.02 to 27+97.29
645.27 x 4 ÷ 27 = 96 " "
Sta 27+97.29 to 28+97.29
100 x 4 ÷ 27 = 15 " "

Total B-21 = 161 Cu. Yds.

B-112 BASE COURSE

Sta 16+98.94 to 21+52.02
453.08 x 1.03 (av) ÷ 27 = 17 Cu. Yds.
Sta 21+52.02 to 27+97.29
645.27 x 1.16 ÷ 27 = 28 " "
Sta 27+97.29 to 28+97.29
100 x 1.16 ÷ 27 = 4 " "

Total B-112 = 49 Cu. Yds.

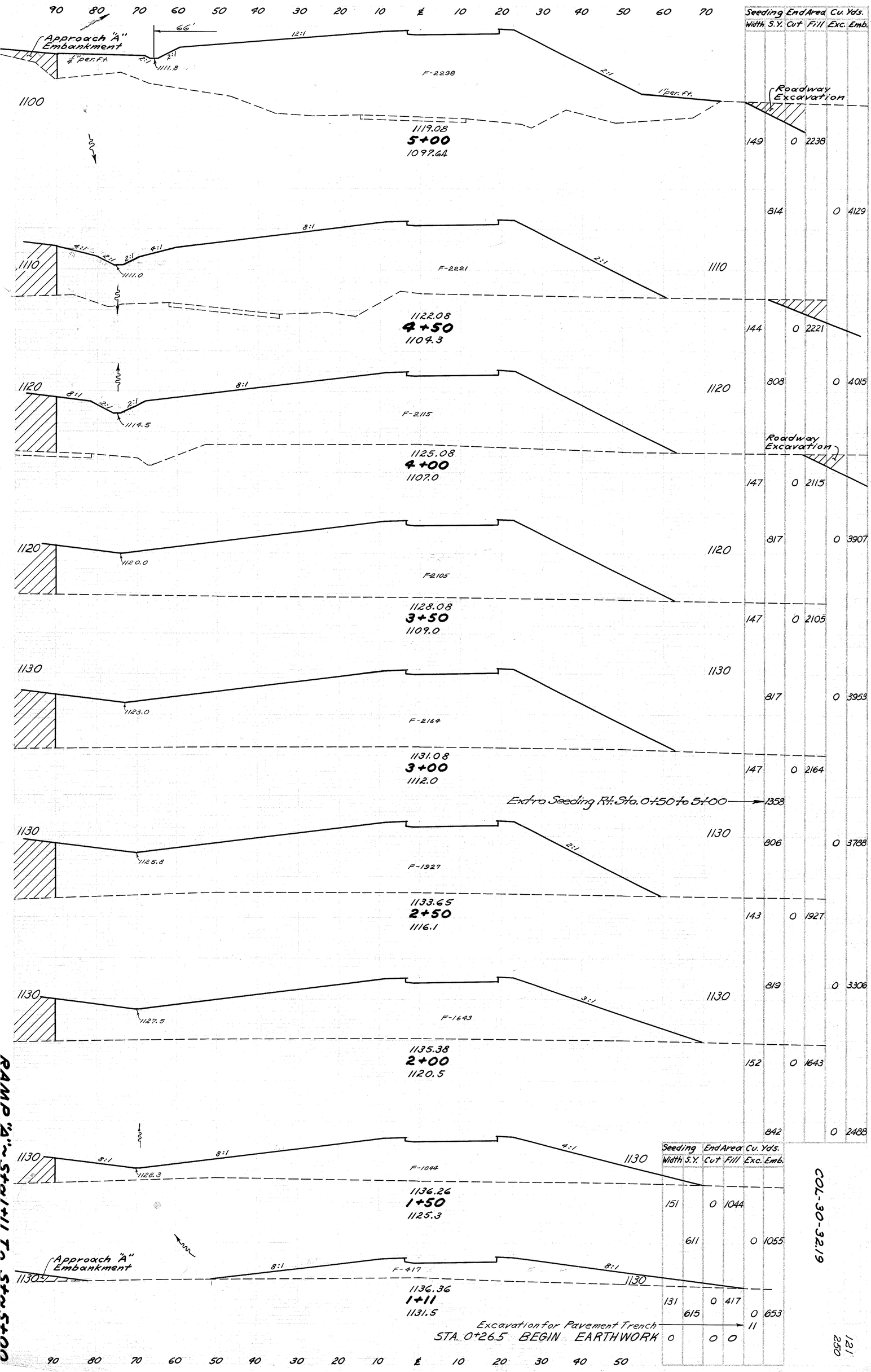
T-31 BIT. SURF. TREATMENT

Sta 16+98.94 to 28+97.29
1198.35 x 7.22 (av) ÷ 9 = 962 Sq. Yds.
962 x 0.008 = 8 Cu. Yds.
962 x 0.25 = 241 Gals.

E-1 COMP. SUBGRADE

Sta 16+98.94 to 28+97.29
2032 + 962 = 2994 Sq. Yds.

RAMP "A" ~ Sta 22+00 To Sta 28+97.29



Seeding Width S.Y.	End Area Cut	Fill	Cu. Yds. Exc.	Emb.
149	0	2238		
	814		0	4129
144	0	2221		
	808		0	4015
147	0	2115		
	817		0	3907
147	0	2105		
	817		0	3953
147	0	2164		
Extra Seeding Rt. Sta. 0+50 to 5+00 →				1358
	806		0	3788
143	0	1927		
	819		0	3306
152	0	1643		
	842		0	2488
151	0	1044		
	611		0	1055
131	0	417		
	615		0	653
Excavation for Pavement Trench →				11
STA. 0+26.5 BEGIN EARTHWORK	0	0	0	

RAMP "A" - Sta 1+11 To Sta 5+00

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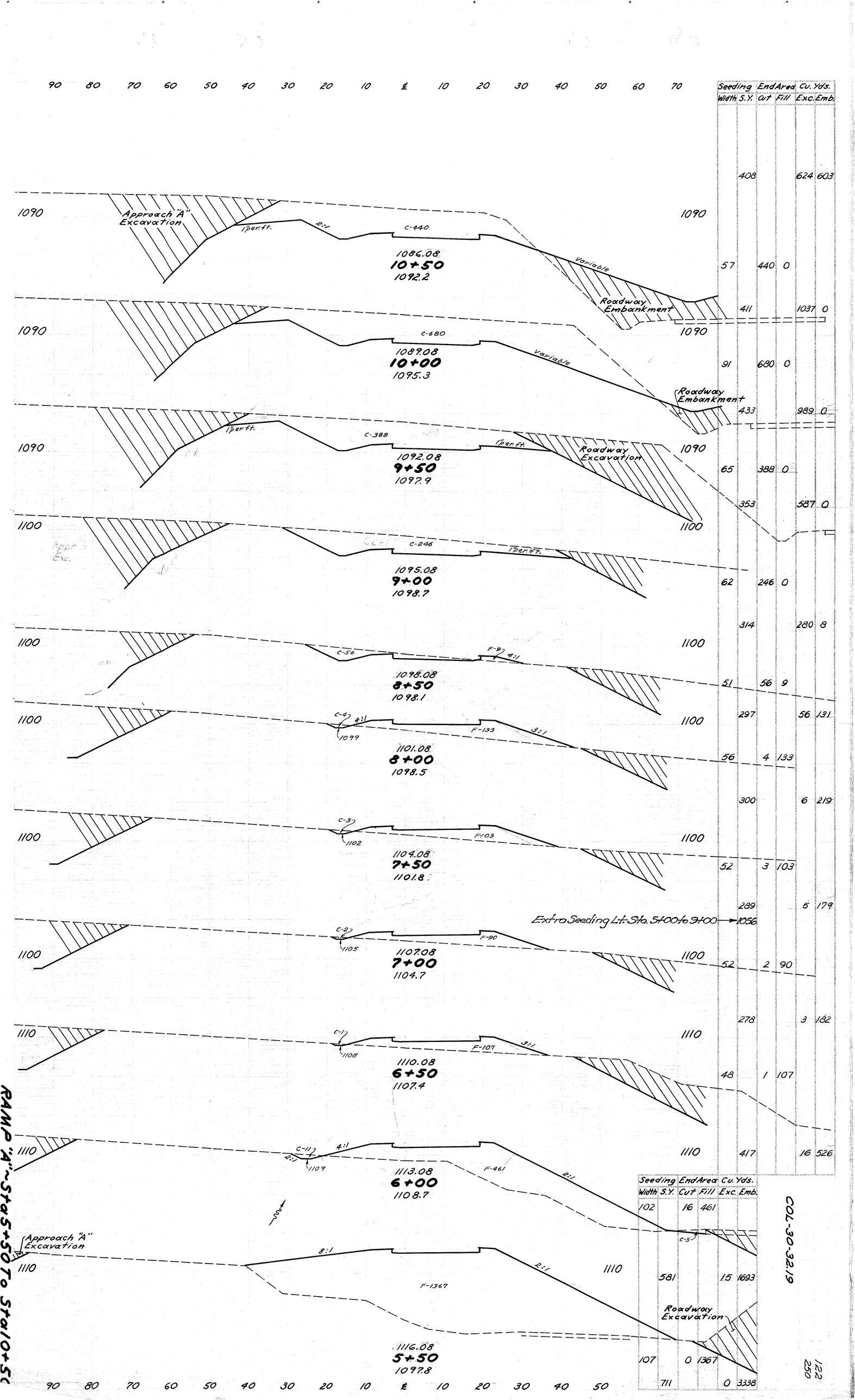
121
250


90 80 70 60 50 40 30 20 10 ℄ 10 20 30 40 50 60 70
Seeding Width S.Y. End Area Cut Fill Cu. Yds. Exc. Emb.
1090
Approach "A" Excavation
1 per. ft.
2:1
C-440
1086.08
10+50
1092.2
Variable
Roadway Embankment
408 624 603
57 440 0
411 1037 0
C-680
1089.08
10+00
1095.3
91 680 0
433 989 0
C-388
1092.08
9+50
1097.9
Roadway Excavation
65 388 0
353 587 0
1100
C-246
1095.08
9+00
1098.7
62 246 0
314 280 8
C-56
F-9
4:1
1098.08
8+50
1098.1
51 56 9
297 56 131
C-4
1099
F-133
3:1
1101.08
8+00
1098.5
56 4 133
300 6 219
C-3
1102
F-103
1104.08
7+50
1101.8
52 3 103
289 5 179
Extra Seeding Lt. Sta. 5+00 to 9+00
1056
C-2
1105
F-90
1107.08
7+00
1104.7
52 2 90
278 3 182
1110
C-1
1108
F-107
1110.08
6+50
1107.4
48 1 107
417 16 526
C-11
1109
1113.08
6+00
1108.7
F-461
Seeding Width S.Y. End Area Cut Fill Cu. Yds. Exc. Emb.
102 16 461
C-5
581 15 1693
F-1367
Roadway Excavation
1116.08
5+50
1097.8
107 0 1367
711 0 3338
RAMP "A" - Sta 5+50 To Sta 10+50
COL-30-32.19
122
250

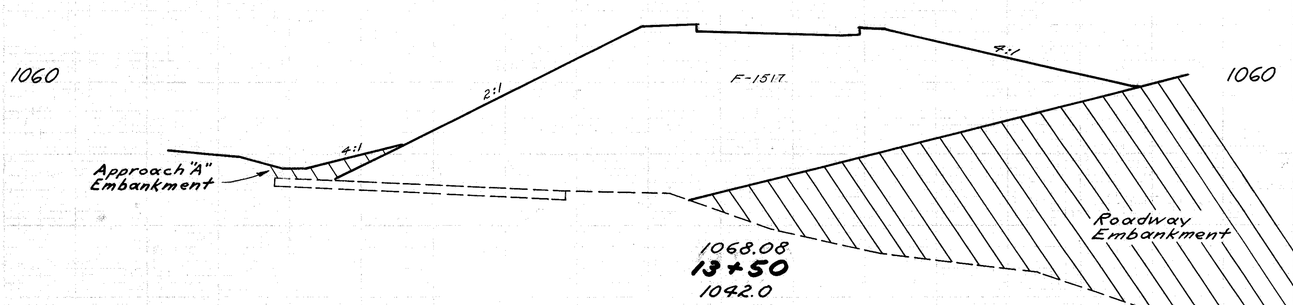
90 80 70 60 50 40 30 20 10 ℄ 10 20 30 40 50 60 70

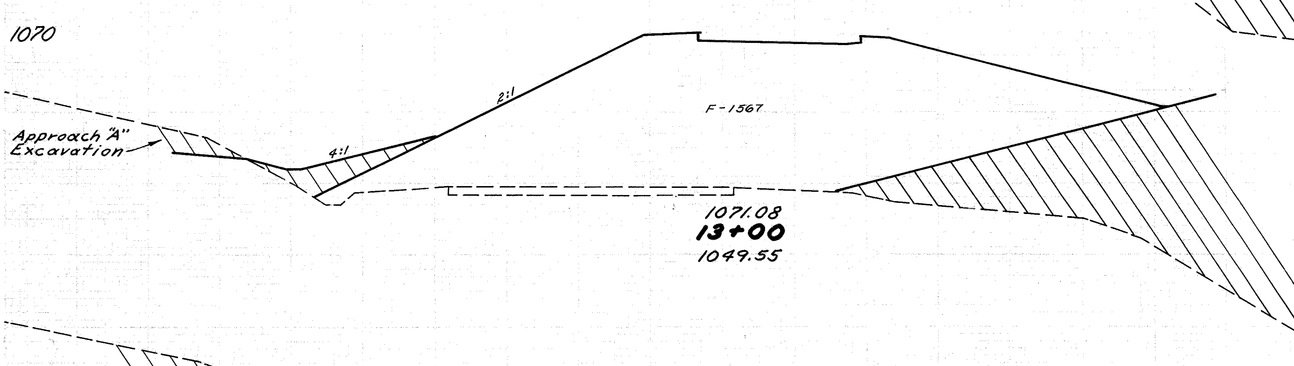
Ramp "A" Sta 13+94 = Mainline Sta 805+00 (For Earthwork Only)

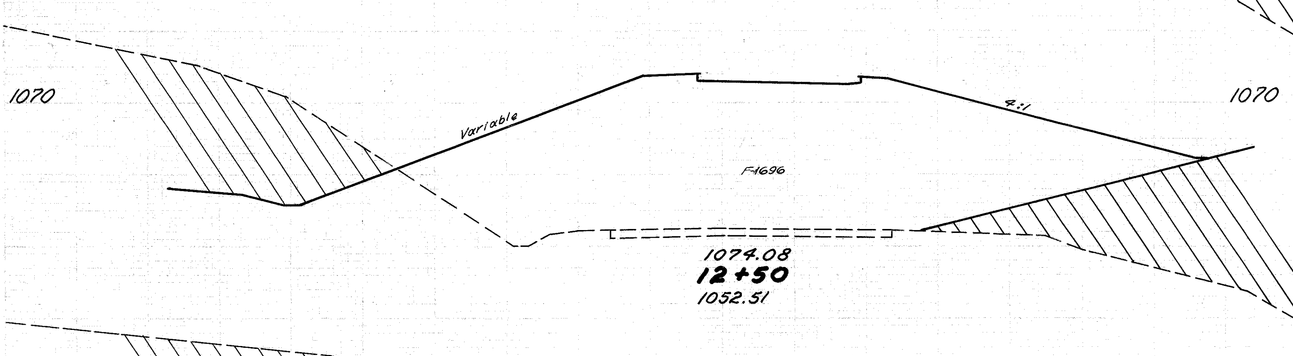
Note: Balance of Ramp "A" Earthwork shown on Mainline Cross Section. Quantity shown for Sta 13+94 taken from Mainline Cross Section.

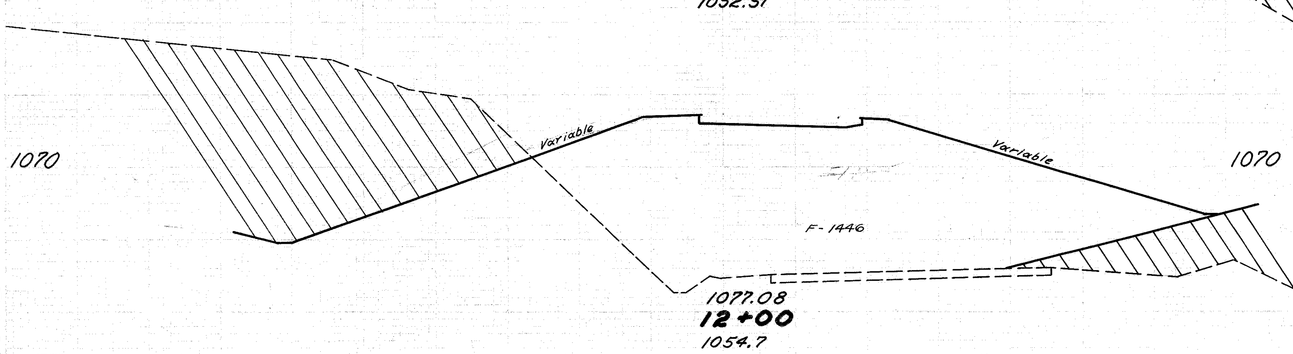
ESTIMATED QUANTITIES (Sta 11+00)

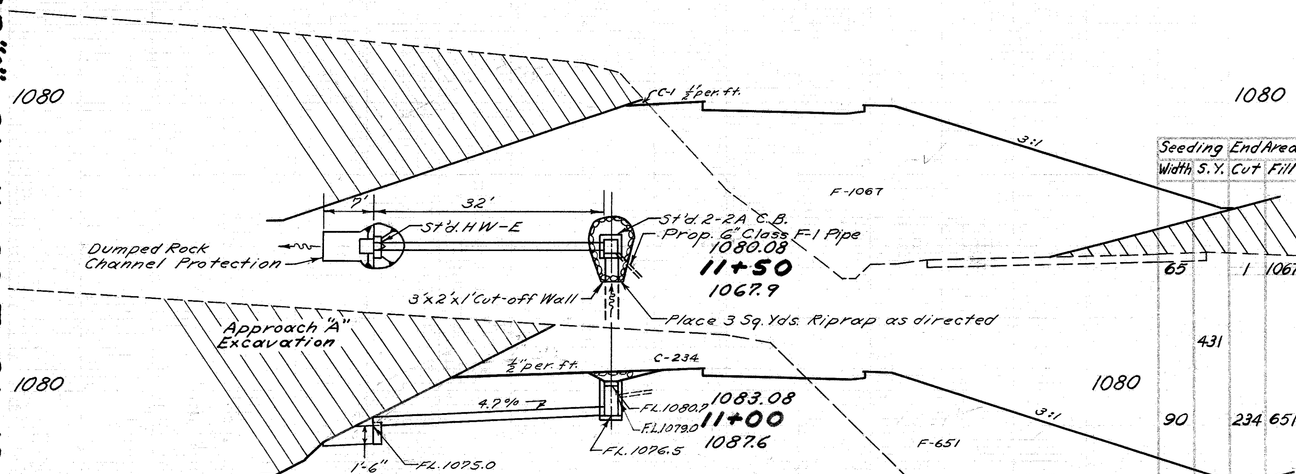
12" Pipe Class D-1	32 Lin. Ft.
St'd. No. 2-2A Catch Basin	1 Each
Masonry "	0.3 Cu. Yds.
Riprap Grout Filled	3.0 Sq. Yds.
Dumped Rock Channel Protection	2.0 Cu. Yds.











Note: EST. QUAN. above, left this sheet

90 80 70 60 50 40 30 20 10 ℄ 10 20

Seeding Width S.Y.	End Area Cut	End Area Fill	Cu. Yds. Exc.	Cu. Yds. Emb.
	Sta. 13+94	0	0	1421
		210	0	2394
		86	0	1517
		472	0	2856
		84	0	1567
		497	0	3021
		95	0	1696
		478	0	2909
		77	0	1446
		394	1	2327

Seeding Width S.Y.	End Area Cut	End Area Fill	Cu. Yds. Exc.	Cu. Yds. Emb.
		65	1	1067
		431	218	1591
		90	234	651

RAMP "A" ~Sta 11+00 To Sta 13+50

COL-30-32.19

123
250

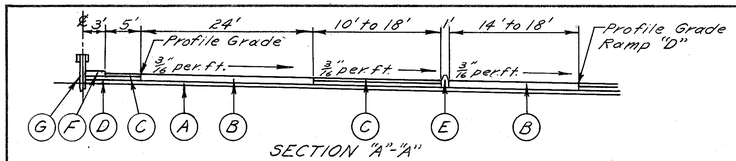
RAMP DETAILS

Scale: 1"=20' Unless Noted

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

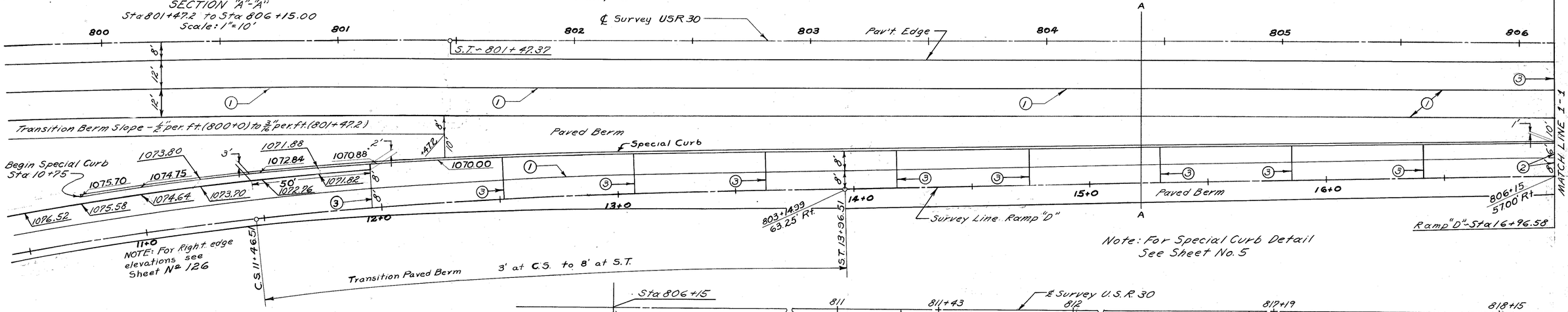
124
250

COL-30-32.19



SECTION "A"-"A"
Sta 801+47.2 to Sta 806+15.00
Scale: 1"=10'

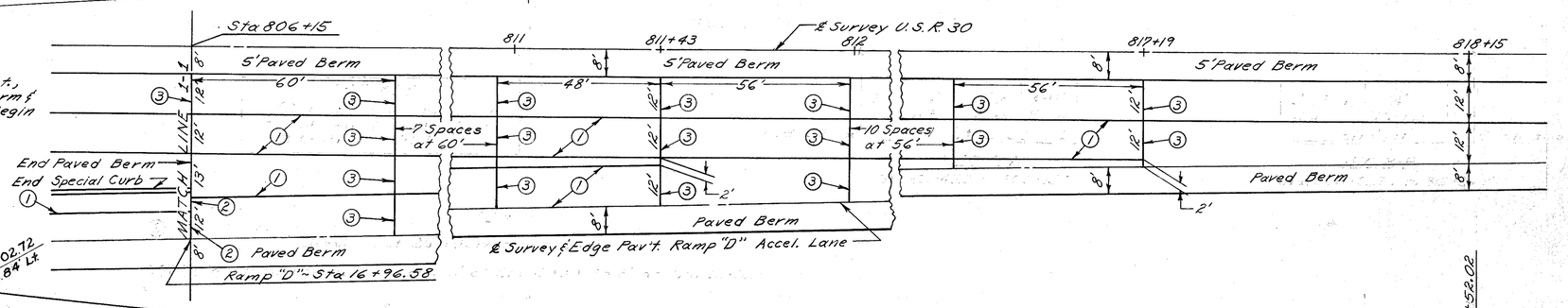
Entrance Terminal
Ramp "D"

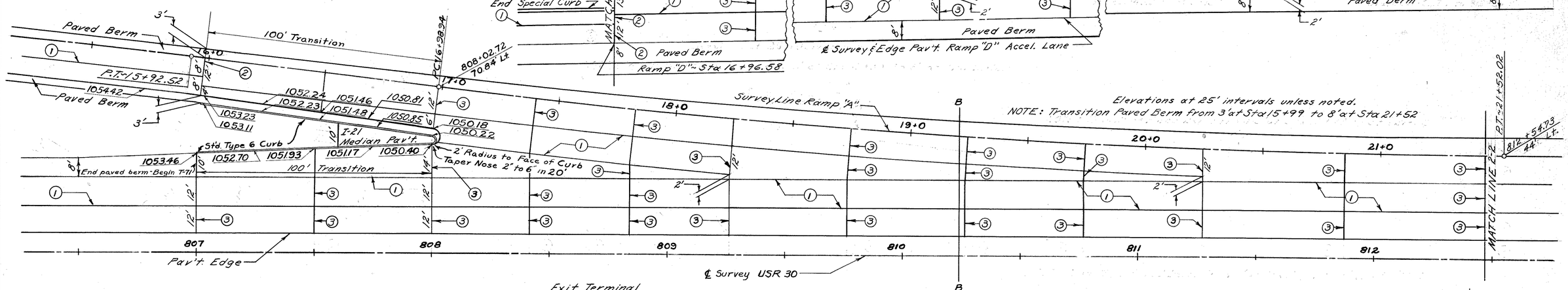


Note: For Special Curb Detail
See Sheet No. 5

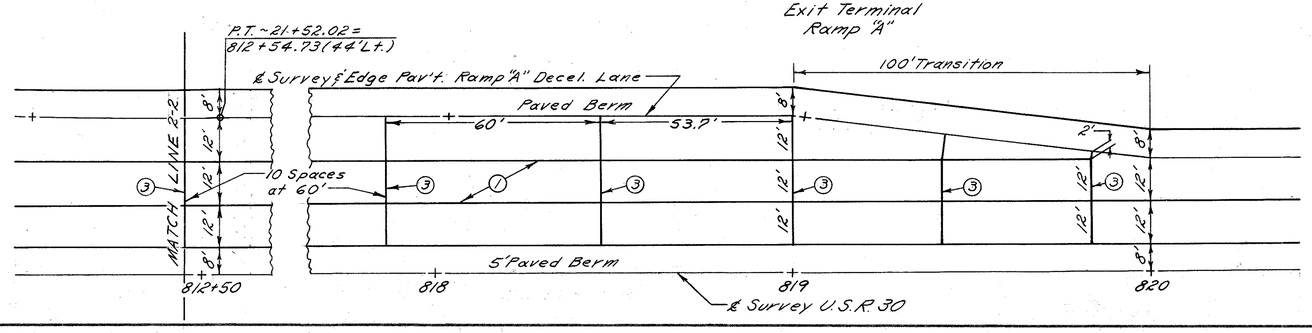
JOINT KEY
① Standard Longitudinal Joint
② Standard Expansion Joint
③ Contraction Joint

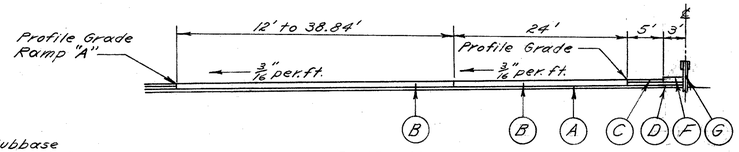
Note: Sta 806+15 Lt., End Paved Berm & Special Curb, Begin T-71 Pav't.





Exit Terminal
Ramp "A"





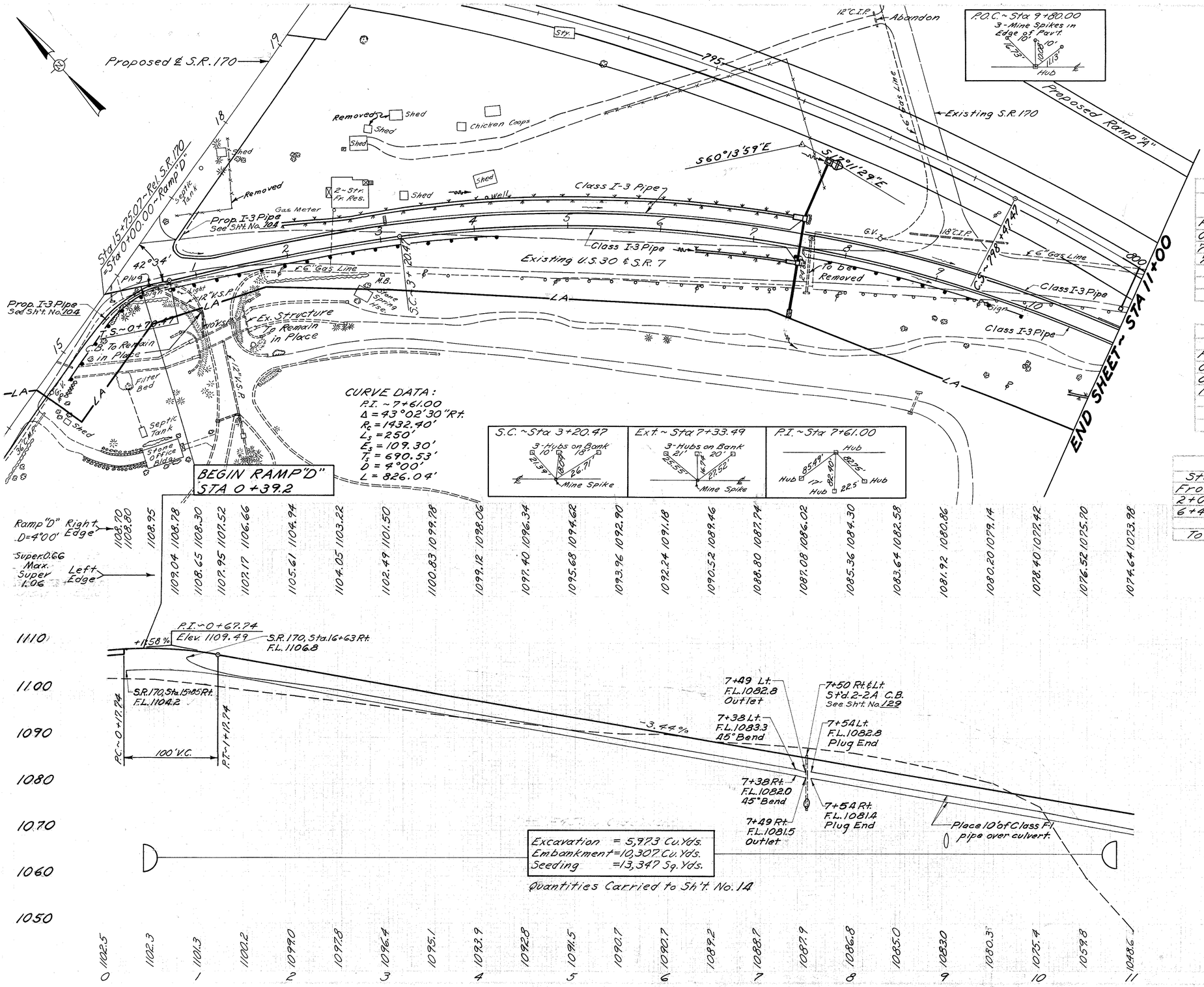
SECTION B-B
Sta 808+02.72 to Sta 812+54.73
Scale: 1"=10'

~KEY~
(A) I-22, 6" Subbase
(B) T-71, Pavement
(C) Paved Berms
(D) I-18, Cr. Aggr.
(E) Special Curb
(F) I-21, Std Type 2 Conc. Med. Pav't.
(G) Barrier Type Guard Rail

INTERCHANGE
USR 30 & SR 170

RAMPS "A" & "D"

COL-30-32.19



Excavation = 5,973 Cu. Yds.
Embankment = 10,307 Cu. Yds.
Seeding = 13,347 Sq. Yds.

Quantities Carried to Sh't. No. 14

DRAINAGE

Station From	Station To	Side ℄	See Sheet	New Work Type	Size	Length	Pipe Removed 15" Diam. Lin. Ft.		Catch Basin Abandon Each
0+48		Rt.	125						1
7+50		Lt. & Rt.	129	Pipe	24"	30" & 51'			
7+62		Lt. & Rt.	125				69		1
Total							69		2

REMOVALS

Station From	Station To	Side ℄	See Sheet	Pavement Sq. Yds.	Curb & Gutter Lin. Ft.
0+26	10+50	Lt. & Rt.	125	4140	
0+52	0+98	Rt.	125		60
1+35	1+86	Rt.	125		60
Total				4140	120

SOD

Station From	Station To	Sq. Yds.
2+00	7+40	308
6+40	7+40	56
Total		364

GUARD RAIL

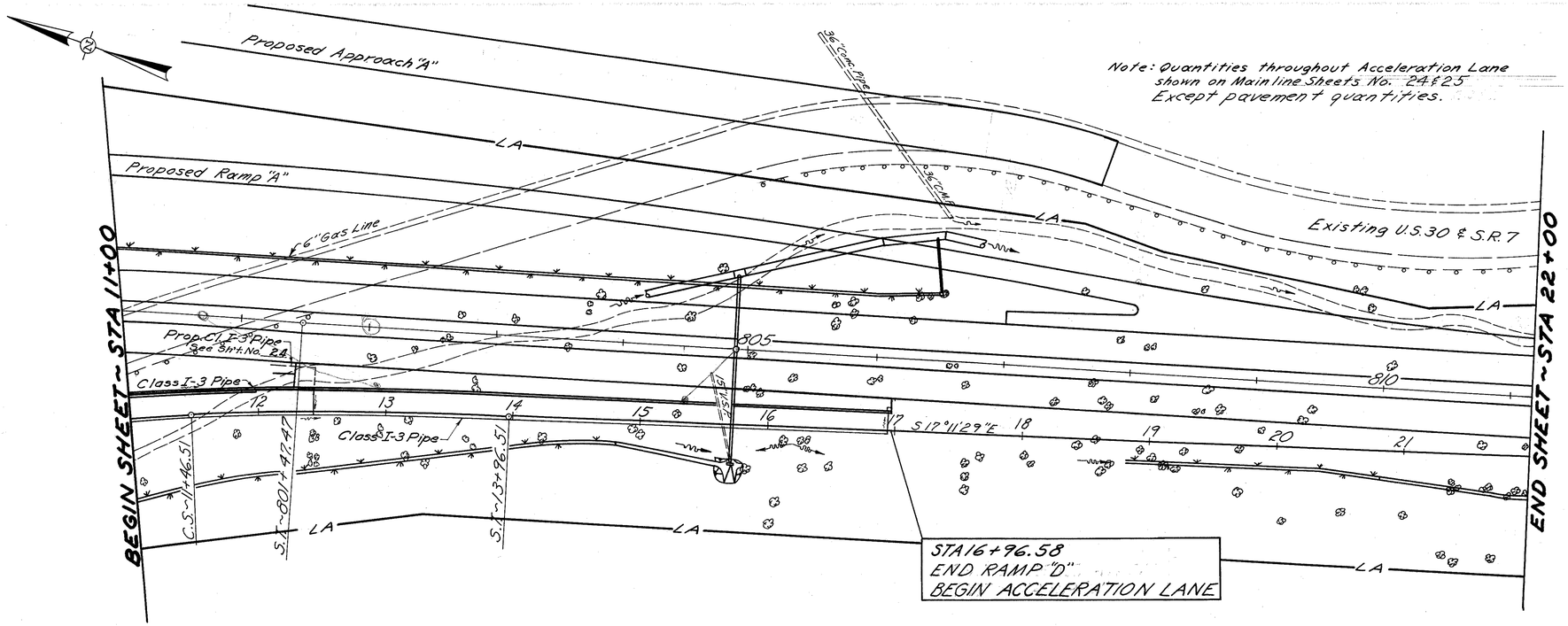
Station From	Station To	Side ℄	See Sheet	New Lin. Ft.	Remove Lin. Ft.
0+37.22	4+26	Rt.	125	387.5	
3+68	11+00	Lt. & Rt.	125		728
7+48	10+00	Rt.	125	250	
Total				637.5	728

UNDERDRAIN

Station From	Station To	Side ℄	6" Cl. I-3 Pipe D=30" Lin. Ft.	Class F-1 Pipe Spec. C.I.P. 3, 6"-45° 6" Lin. Ft.	Each
S.R. 170-15+85	7+49	Rt.	725	10	1
S.R. 170-16+63	7+49	Lt.	670	10	1
7+54	11+00	Rt.	336	10	
7+54	11+00	Lt.	336	10	
Total			2067	40	2

Ramp "D" ~ Sta 0+00 to Sta 11+00

COL-30-32.19



Note: Quantities throughout Acceleration Lane shown on Mainline Sheets No. 24 & 25 Except pavement quantities.

DRAINAGE

Station From	Station To	Side &	See Sheet	New Work Type	Size	Length	Sod Sq. Yds.	
10+76	14+85	Rt.	125 & 126				226	
804+91 (U.S.30)		Lt. & Rt.	166	Pipe	30"	146'		
Total							226	

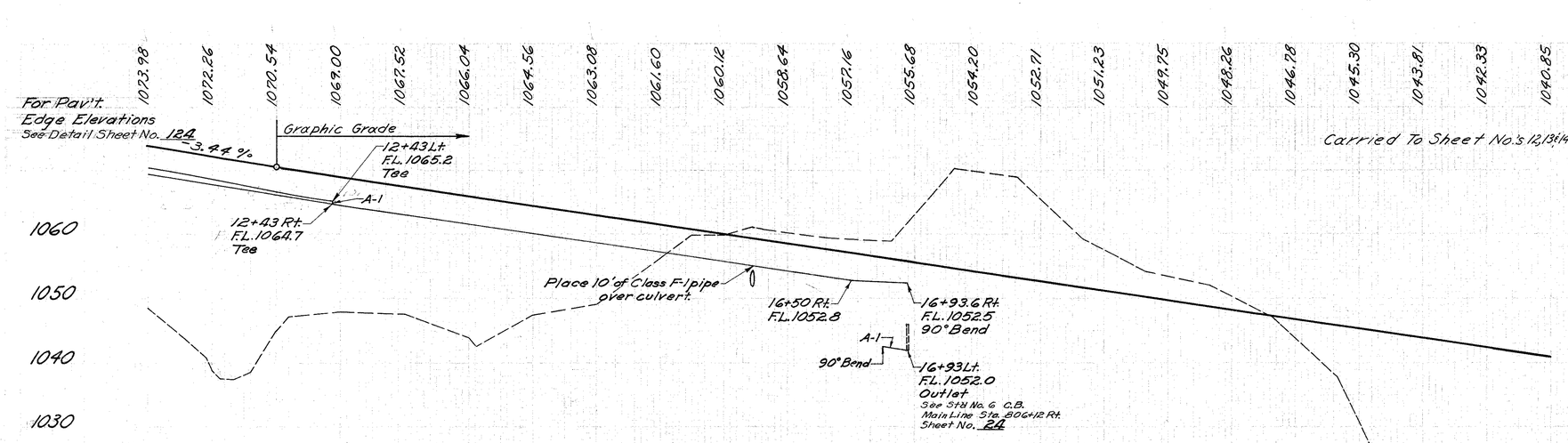
GUARD RAIL

Station From	Station To	Side &	See Sheet	New Lin. Ft.	Remove Lin. Ft.
11+00	12+38	Lt.	126		147
Total					147

* Sec. M-6.6(b) or Sec. M-6.8(b)

UNDERDRAIN

Station From	Station To	Side &	6" Cl. I-3 D=30" Lin. Ft.	Class F-1 6" Lin. Ft.	Class A-1 Pipe Spec. 8"* Lin. Ft.	6" 90° Each	6" Cl. I-3 Tee Each
11+00	12+43	Lt.	143				1
11+00	16+93.6	Rt.	584	10		1	1
12+43		Lt. & Rt.			21		
16+93.6		Lt. & Rt.			19		
Total			727	10	40	1	2



Carried To Sheet No.'s 12, 13, 14

ESTIMATED QUANTITIES ~ RAMP "D"

T-71 PAVEMENT
- Sta 0+39.2 to Sta 11+96
  - 1148.1 (av.) x 16 ÷ 9 = 2041 Sq. Yds.
  - Extra Area Lt. (Intersection = 54 " "
- Sta 11+96 to Sta 16+96.58
  - 500.58 x 15.80 (av.) ÷ 9 = 879 " "
  - Total T-71 = 2974 Sq. Yds.

I-22 SUBBASE
- Sta 0+39.2 to Sta 11+46.51
  - 1098.62 (av.) x 10.81' ÷ 27 = 440 Cu. Yds.
  - Extra Volume Lt. = 12 " "
- Sta 11+46.51 to Sta 16+96.58
  - 550.07 x 12' (av.) ÷ 27 = 245 " "
  - Extra Volume Lt. = 124 " "
  - Total I-22 = 821 Cu. Yds.

B-21 BASE COURSE
- Sta 0+39.2 to Sta 11+96.51
  - 1111 (av.) x (1.5' + 1.5') ÷ 27 = 124 Cu. Yds.
  - Extra Volume Lt. = 124 " "
- Sta 11+46.91 to Sta 13+96.51
  - 250 x 2.75' ÷ 27 = 26 " "
- Sta 13+96.51 to Sta 16+96.58
  - 300.07 x 4' ÷ 27 = 45 " "
  - Total B-21 = 319 Cu. Yds.

B-112 BASE COURSE
- Sta 0+39.2 to Sta 11+96.51
  - 1111 (av.) x (1' + 0.75') ÷ 27 = 92 Cu. Yds.
  - Extra Volume Lt. = 62 " "
- Sta 11+96.51 to Sta 13+96.51
  - 250 x 1.375' ÷ 27 = 13 " "
- Sta 13+96.51 to Sta 16+96.58
  - 300.07 x 1.16' ÷ 27 = 13 " "
  - Total B-112 = 160 Cu. Yds.

T-31 BIT. SURF. TREATMENT
- Sta 0+39.2 to Sta 11+96.51
  - 1111 (av.) x 6 ÷ 9 = 741 Sq. Yds.
  - Extra Area Lt. = 745 " "
- Sta 11+96.51 to Sta 13+96.51
  - 250 x 5.5 (av.) ÷ 9 = 153 " "
- Sta 13+96.51 to Sta 16+96.58
  - 300.07 x 8 ÷ 9 = 267 " "
  - Total T-31 = 1906 Sq. Yds.
- No. 6 Aggr. 1906 x 0.008 = 15 Cu. Yds.
- Bit. Matl. 1906 x 0.25 = 477 Gals.

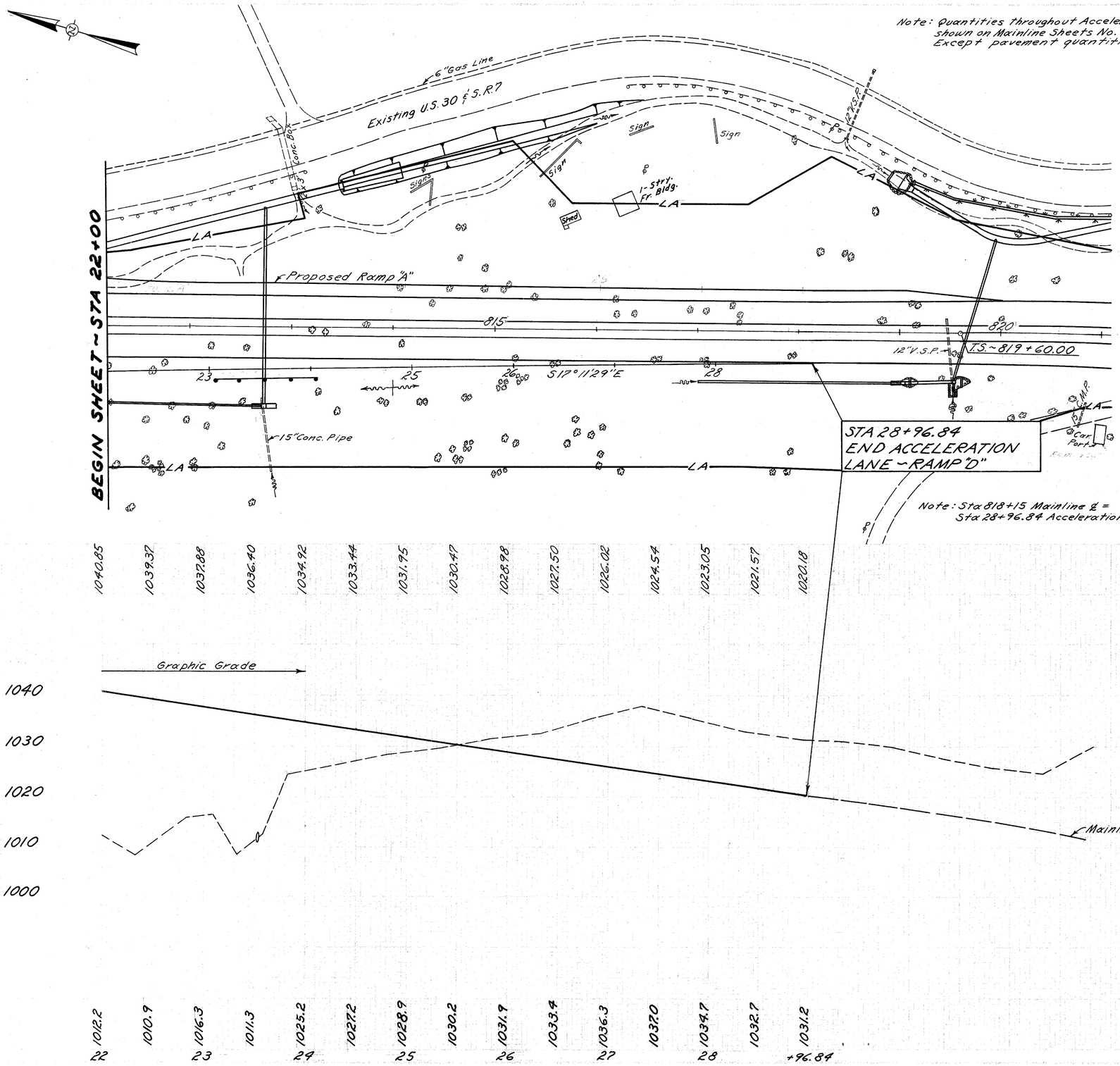
SPECIAL CURB ~ 10+75 to 16+96.58 = 622 Lin. Ft.

E-1 COMP. SUBGRADE
- Pav't. + Berms + Curb = 2974 + 1906 + 69 = 4949 Sq. Yds.
- Deduct for Rock Cuts = -270 " "
- Total E-1 = 4679 Sq. Yds.

Ramp "D" ~ Sta 11+00 to Sta 22+00

COL-30-32.19

Note: Quantities throughout Acceleration Lane shown on Mainline Sheets No. 24&25 Except pavement quantities.



Note: Sta 818+15 Mainline ℄ = Sta 28+96.84 Acceleration Lane ~ Ramp "D" ~ 32' Rt.

Carried To Sheet No. 12, 13 & 14

ESTIMATED QUANTITIES

Acceleration Lane ~ Ramp "D"

Sta 16+96.58 to Sta 28+96.84

T-91 PAVEMENT
1200 x 12.5 (av) ÷ 9 = 1667 Sq. Yds.

I-22 SUBBASE
1200 x 20.5 (av) x .05 ÷ 27 = 456 Cu. Yds.

B-21 BASE COURSE
1200 x 4 sq. ft. ÷ 27 = 178 Cu. Yds.

B-112 BASE COURSE
1200 x 0.833 sq. ft. ÷ 27 = 37 Cu. Yds.

T-31 BIT. SURF. TREATMENT
No. 6 Aggr. 1200 x 8 ÷ 9 x 0.008 = 9 Cu. Yds.
Bit. Mat'l. 1200 x 8 ÷ 9 x 0.25 = 267 Gals.

E-1 COMPACTED SUBGRADE
1200 x 20.5 (av) ÷ 9 = 2733 Sq. Yds.

RAMP "D" ~ Sta 22+00 To Sta 28+96.84

	Seeding Width S.Y.	End Area Cut	End Area Fill	Cu. Yds. Exc.	Cu. Yds. Emb.
	101	372	18	659	53
	98	340	39	560	97
Extra Seeding Lt. Sta. 1+50 to 7+00	451				
	92	265	66	371	205
	84	136	55	158	317
	77	35	187	45	393
	68	14	237	23	460
	68	11	260	10	544
	75	0	328	0	685
	79	0	412	0	164
	57	0	326	0	474

128
250

COL-30-32.19

	Seeding Width S.Y.	End Area Cut	End Area Fill	Cu. Yds. Exc.	Cu. Yds. Emb.
	43	0	348	0	333
	119				
	36	0	357	0	230
	91				
	35	0	182	0	40
	23	0	0	0	0
	0				

1090 1100 1100 1100

90 80 70 60 50 40 30 20 10 ℄ 10 20 30 40 50 60 70 80 90

C-11 C-361 C-332 C-258 C-136 C-35 C-14 C-11 C-260 C-329 C-412 C-326 C-348 C-357 C-182

F-18 F-39 F-66 F-155 F-189 F-237 F-260 F-329 F-412 F-326 F-348 F-357 F-182

2:1 4:1 6:1 8:1

Walls Walls Wing Walls 5:0 Pitch

Variable Variable Variable

1089.0 1090.0 1091.0 1093.9 1095.10 1096.45 1097.82 1104.1 1105.6

S.R. 170 Embankment S.R. 170 Embankment

1092.90 **5+50** 1090.7

1094.62 **5+00** 1091.5

1096.34 **4+50** 1092.8

1098.06 **4+00** 1093.9

1099.78 **3+50** 1095.10

1101.50 **3+00** 1096.45

1103.22 **2+50** 1097.82

1104.94 **2+00** 1099.01

1106.86 **1+50** 1100.22

1107.31 **1+38** 1100.4

1108.67 **1+00** 1101.30

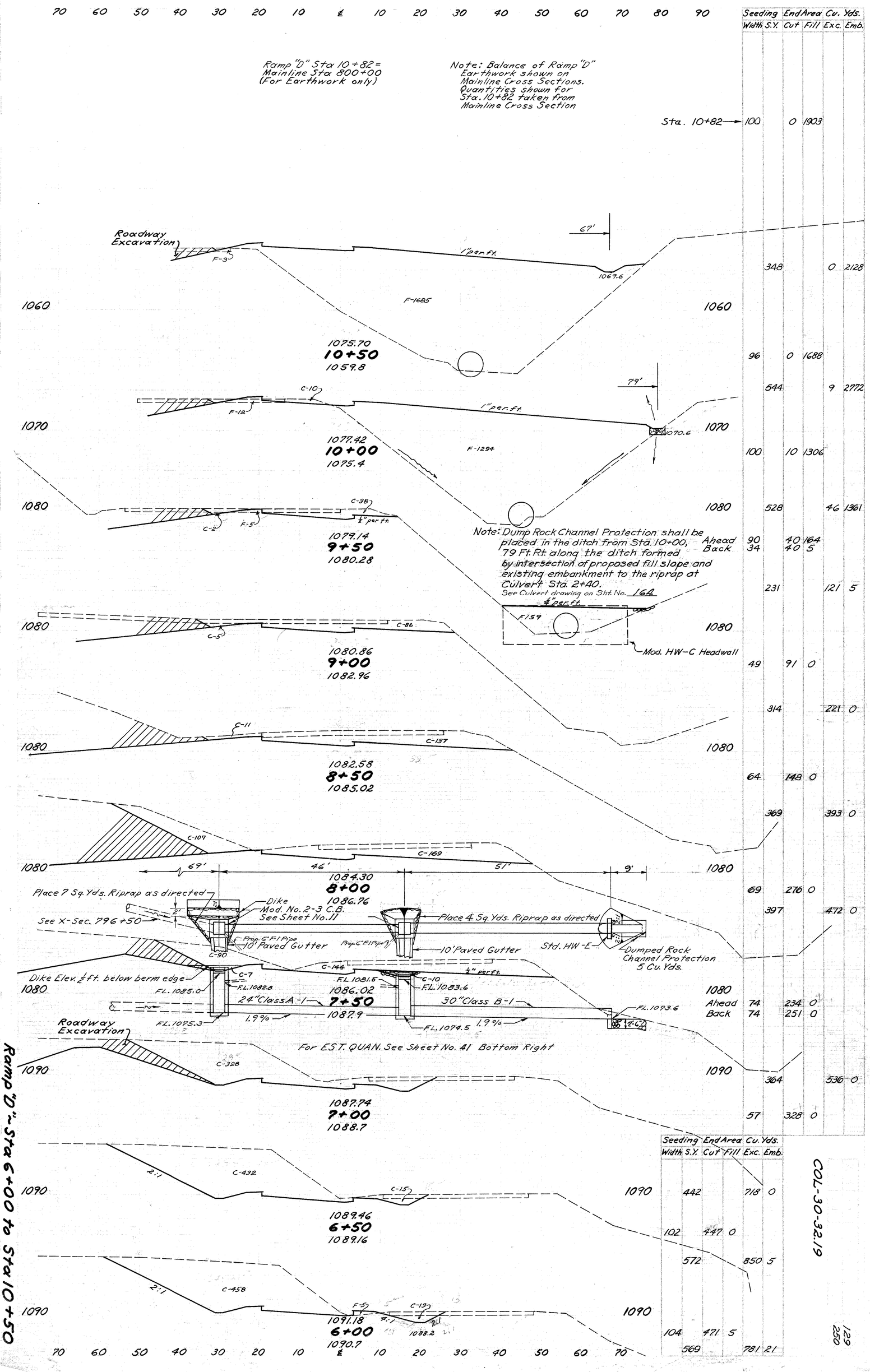
1109.17 **0+73** 1101.8

1109.18 **0+50** 1102.3

STA. 0+38 BEG/W EARTHWORK

℄

Ramp "D" ~ Sta 0+50 to Sta 5+50



	Seeding Width	Seeding S.Y.	End Area Cut	End Area Fill	Cu. Yds. Exc.	Cu. Yds. Emb.
Sta. 10+82 →	100		0	1903		
		348			0	2128
	96		0	1688		
		544			9	2772
	100		10	1306		
		528			46	1361
Ahead	90		40	164		
Back	34		40	5		
		231			121	5
	49		91	0		
		314			221	0
	64		148	0		
		369			393	0
	69		276	0		
		397			472	0
Ahead	74		234	0		
Back	74		251	0		
		364			536	0
	57		328	0		

Seeding Width	Seeding S.Y.	End Area Cut	End Area Fill	Cu. Yds. Exc.	Cu. Yds. Emb.
	442			718	0
102		447	0		
	572			850	5
104		471	5		
	569			781	21

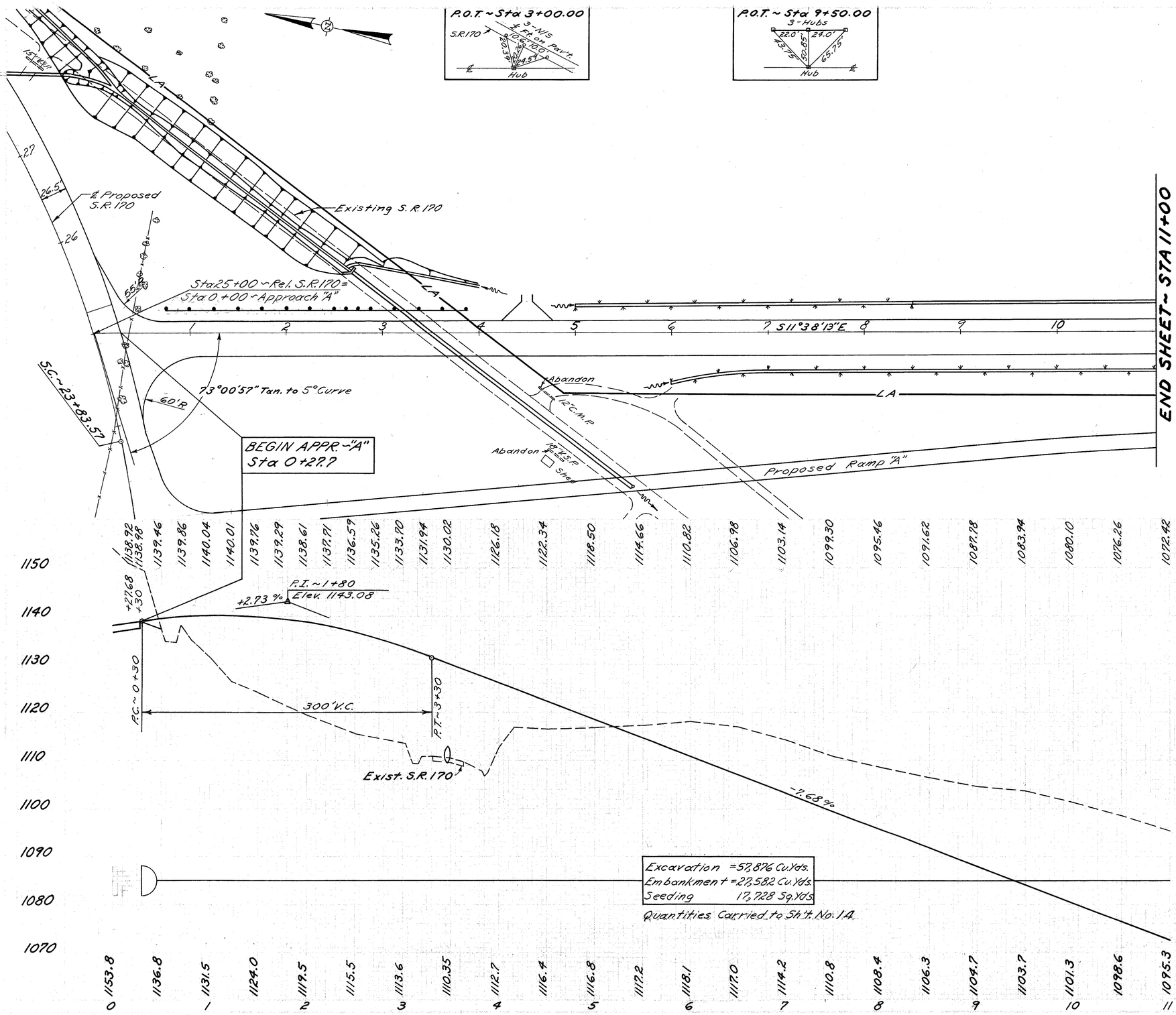
Ramp "D" ~ Sta 6+00 to Sta 10+50

COL-30-32.19

129
250

130
250

COL-30-32.19



Excavation = 52,876 Cu.Yds.
Embankment = 27,582 Cu.Yds.
Seeding 17,728 Sq.Yds.

Quantities Carried to Sht. No. 14

APPROACHES

Station	Side ℄	See Sheet	T-35 Surface Cu.Yds.	B-19 Aggr. Cu.Yds.	
4+50	Lt.	130		13.0	
Total				13.0	

DRAINAGE

Station From	Station To	Side ℄	See Sheet	New Work Type	New Work Size	New Work Length	Paved Gutter Lin. Ft.	Sod Sq. Yds.
3+47.2		Lt.&Rt.	160	Pipe	42"	736		
8+50	11+00	Lt.	130				250	84
5+00	8+50	Lt.	130					194
6+00	11+00	Rt.	130					284
Total							250	562

GUARD RAIL

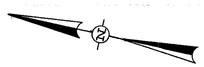
Station From	Station To	Side ℄	New Lin.Ft.	
0+75	3+87.5	Lt.	312.5	
Total			312.5	

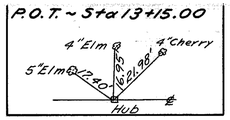
PAVEMENT REMOVAL

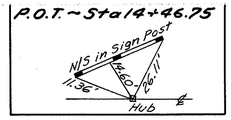
Station From	Station To	Side ℄	Sq. Yds.
2+50	4+50	Lt.&Rt.	567
Total			567

APPROACH "A" ~ Sta 0.00 To Sta 11+00

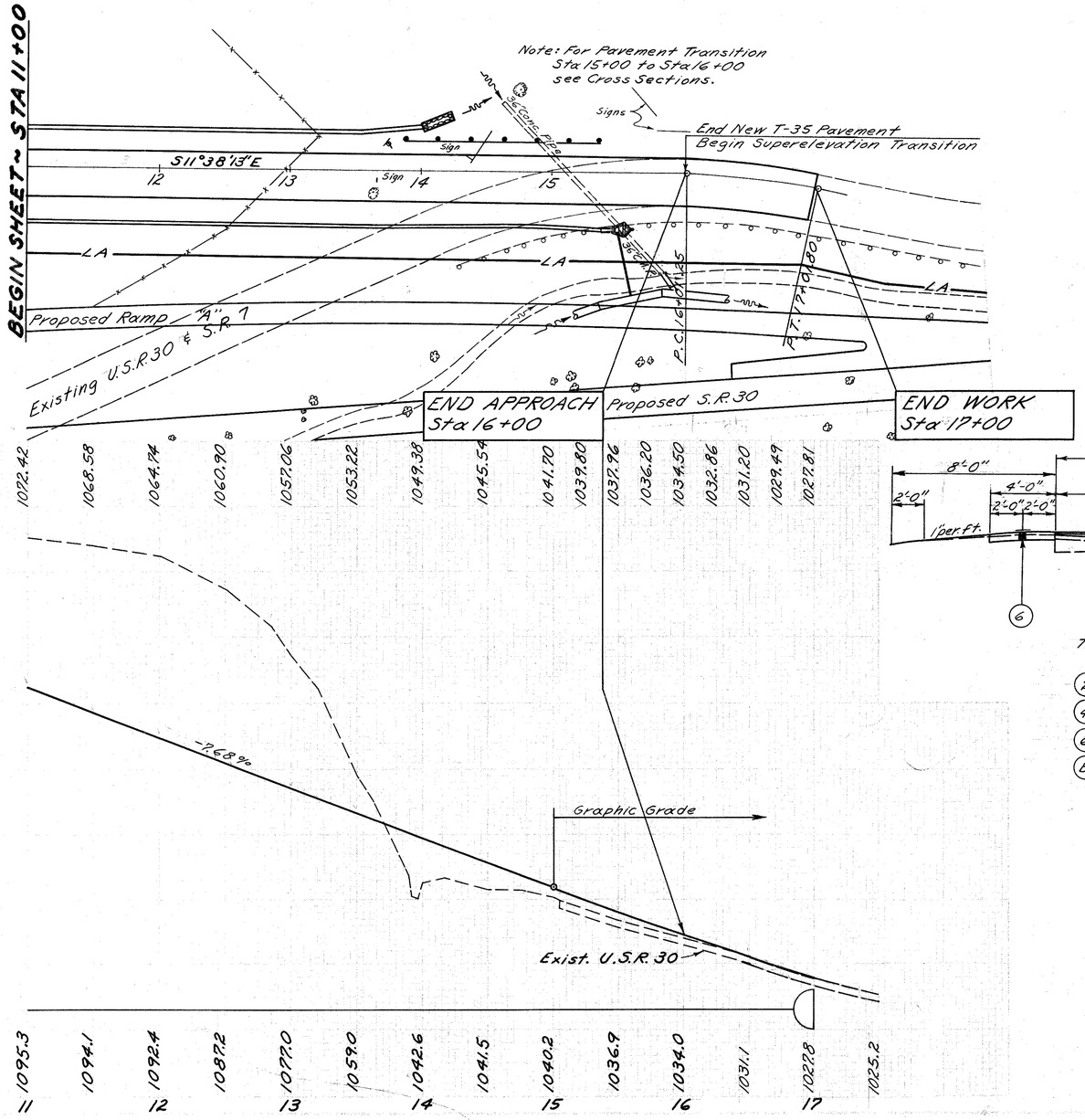
COL-30-32.19

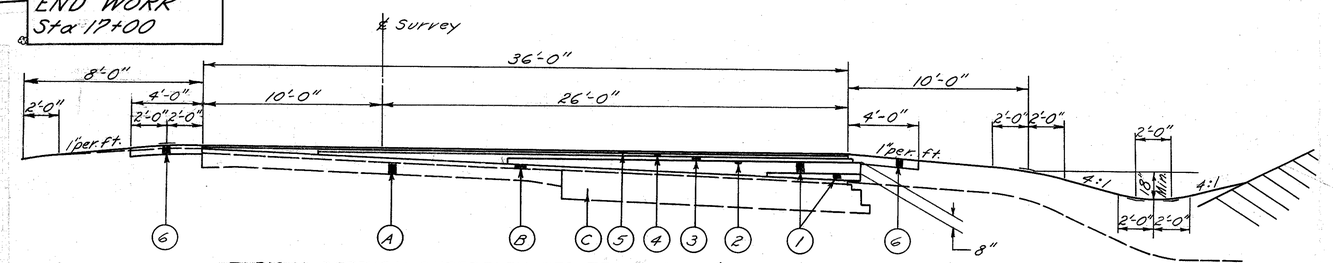






APPR "A" - CURVE DATA:
P.I. ~ 16+51.71
Δ = 12°04' Rt.
D = 12°00'
T = 50.46'
L = 100.55'
E = 2.66'
R = 477.46'





TYPICAL SECTION SUPERELEVATED TRANSITION & ADJOINING PAVEMENT
STA 16+00 TO STA 17+00

(1) Item B-19 Aggregate Base Course
(2) (3) Item B-35 3" Asphaltic Concrete Base Course (70-85)
(4) Item B-35 1½" Asphaltic Concrete Leveling Course (70-85)
(5) Item T-35 1½" Asphaltic Concrete Surface Course, Type "C" (70-85)
(6) Item I-18 6" Stabilized Crushed Aggregate Shoulders
(A) Existing 9"-9"-9"-9" Concrete Base
(B) Existing Asphaltic Concrete Surface Course
(C) Existing Macadam Base Widening Course

DRAINAGE

Station From	Station To	Side ℄	See Sheet	New Work Type	New Work Size	New Work Length	Paved Gutter Lin. Ft.	Sod Sq. Yds.	Dump Rock Chan. Prot. Cu. Yds.
11+00	14+00	Lt.	131				300	100	
11+00	15+38	Rt.	131				438	146	
14+00	14+23	Lt.	135						8
15+50		Rt.	135	Pipe	15"	53'			
Total							738	246	8

GUARD RAIL

Station From	Station To	Side ℄	New Lin. Ft.	
13+87	15+37	Lt.	150	
Total			150	

PAVEMENT REMOVAL

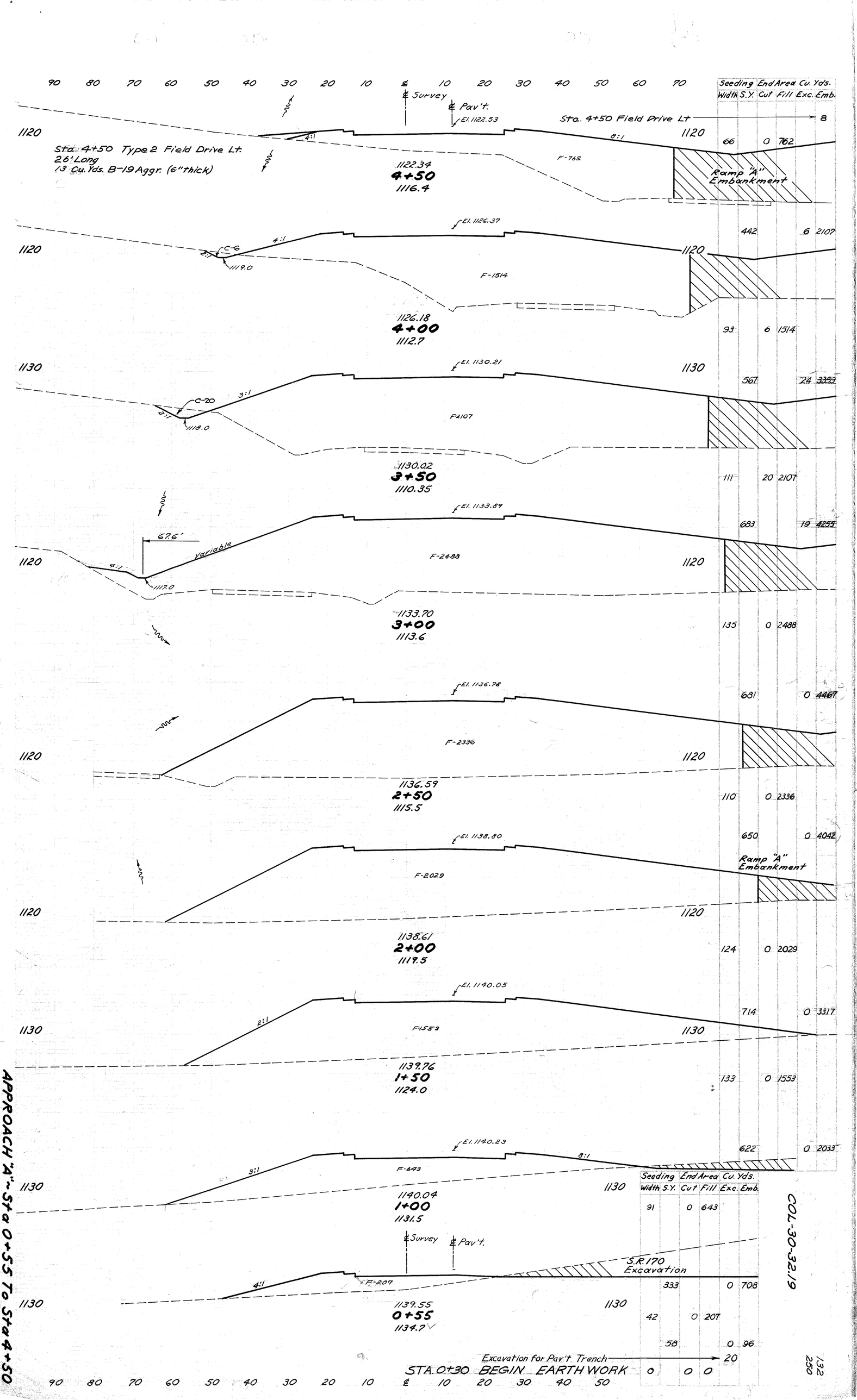
Station From	Station To	Side ℄	Sq. Yds.
13+50	16+00	Lt & Rt.	1060
Total			1060

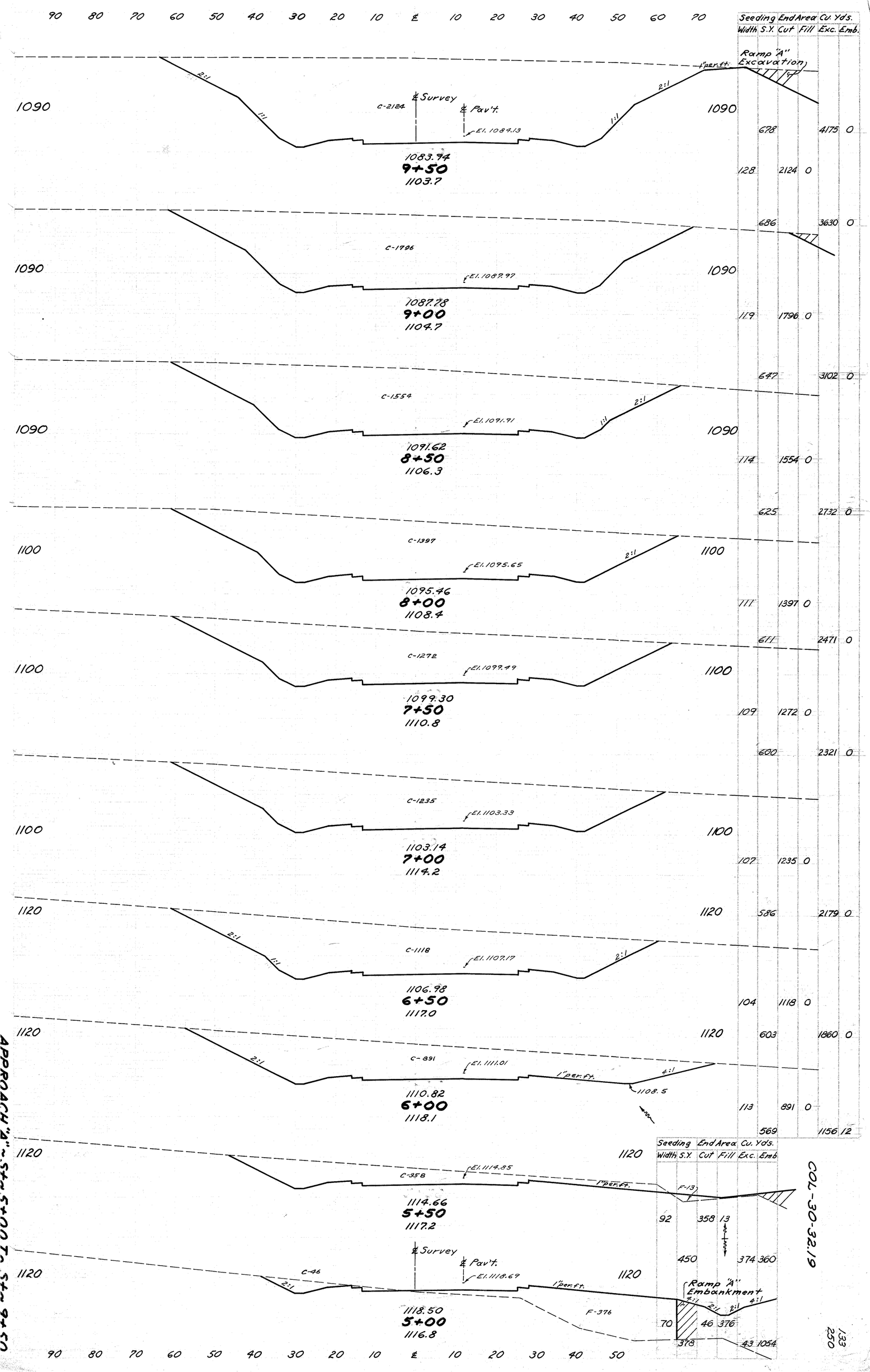
Carried To Sheet No. 13

ESTIMATED QUANTITIES

T-35 Surface Course Sta 16+00 to Sta 17+00
100 X 36 ÷ 9 X .0347 = 14.0 Cu. Yds.
B-35 Leveling Course Sta 16+00 to Sta 16+75
75 X 22.6 Av. ÷ 9 X .0347 = 7.0 Cu. Yds.
B-35 Base Course Sta 16+00 to Sta 16+69
69 X 17.2 Av. ÷ 9 X .0833 = 11.0 Cu. Yds.
B-19 Base Course Sta 16+00 to Sta 16+50
50 X 13 Av. ÷ 9 X .222 = 16.0 Cu. Yds.
T-30 Prime Coat
50 X 13 ÷ 9 X .40 = 29.0 Gal.

APPROACH "A" ~ Sta 11+00 To Sta 17+00

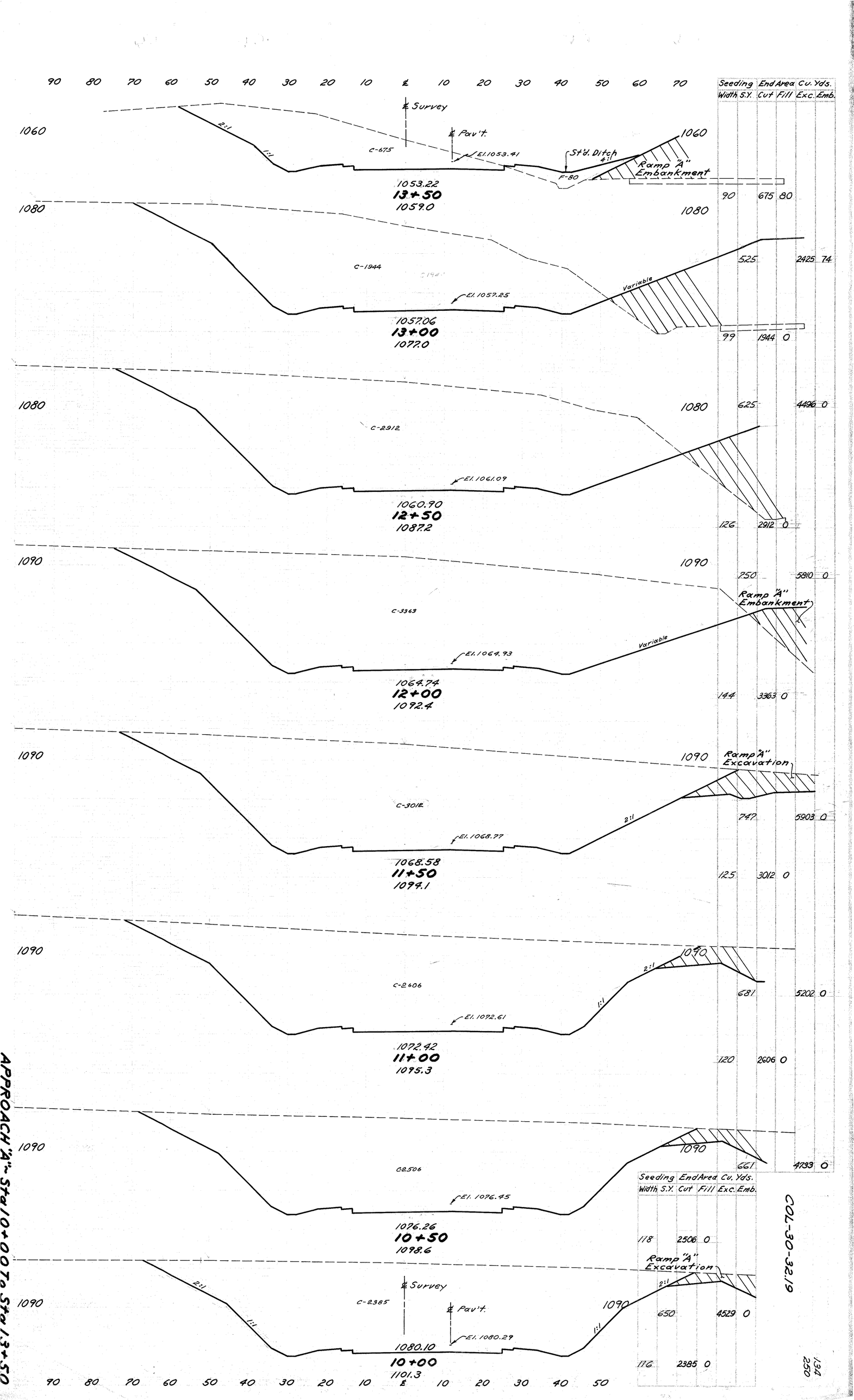

90 80 70 60 50 40 30 20 10 ℄ 10 20 30 40 50 60 70
℄ Survey
℄ Pav't.
El. 1122.53
Sta. 4+50 Field Drive Lt
Seeding End Area Cu. Yds.
Width S.Y. Cut Fill Exc. Emb.
Sta. 4+50 Type 2 Field Drive Lt.
26' Long
13 Cu. Yds. B-19 Aggr. (6" thick)
4:1
8:1
1120
F-762
1122.34
4+50
1116.4
66 0 762
Ramp "A" Embankment
El. 1126.37
C-6
2:1
1119.0
F-1514
1126.18
4+00
1112.7
442 6 2107
93 6 1514
1130
El. 1130.21
C-20
3:1
2:1
1118.0
F2107
1130.02
3+50
1110.35
567 24 3353
111 20 2107
El. 1133.89
67.6'
variable
F-2488
1133.70
3+00
1113.6
683 19 4255
135 0 2488
El. 1136.78
F-2336
1136.59
2+50
1115.5
681 0 4467
110 0 2336
El. 1138.80
F-2029
1138.61
2+00
1119.5
650 0 4042
124 0 2029
El. 1140.05
2:1
F-1553
1139.76
1+50
1124.0
714 0 3317
133 0 1553
El. 1140.23
3:1
F-643
1140.04
1+00
1131.5
622 0 2033
91 0 643
S.R.170 Excavation
F-207
4:1
1139.55
0+55
1134.7
333 0 708
42 0 207
58 0 96
Excavation for Pav't Trench
20
STA. 0+30 BEGIN EARTH WORK 0 0 0
APPROACH "A" - Sta 0+55 To Sta 4+50
COL-30-32.19
132
250



APPROACH "A" ~ Sta 5+00 To Sta 9+50

COL-30-32.19

133
250

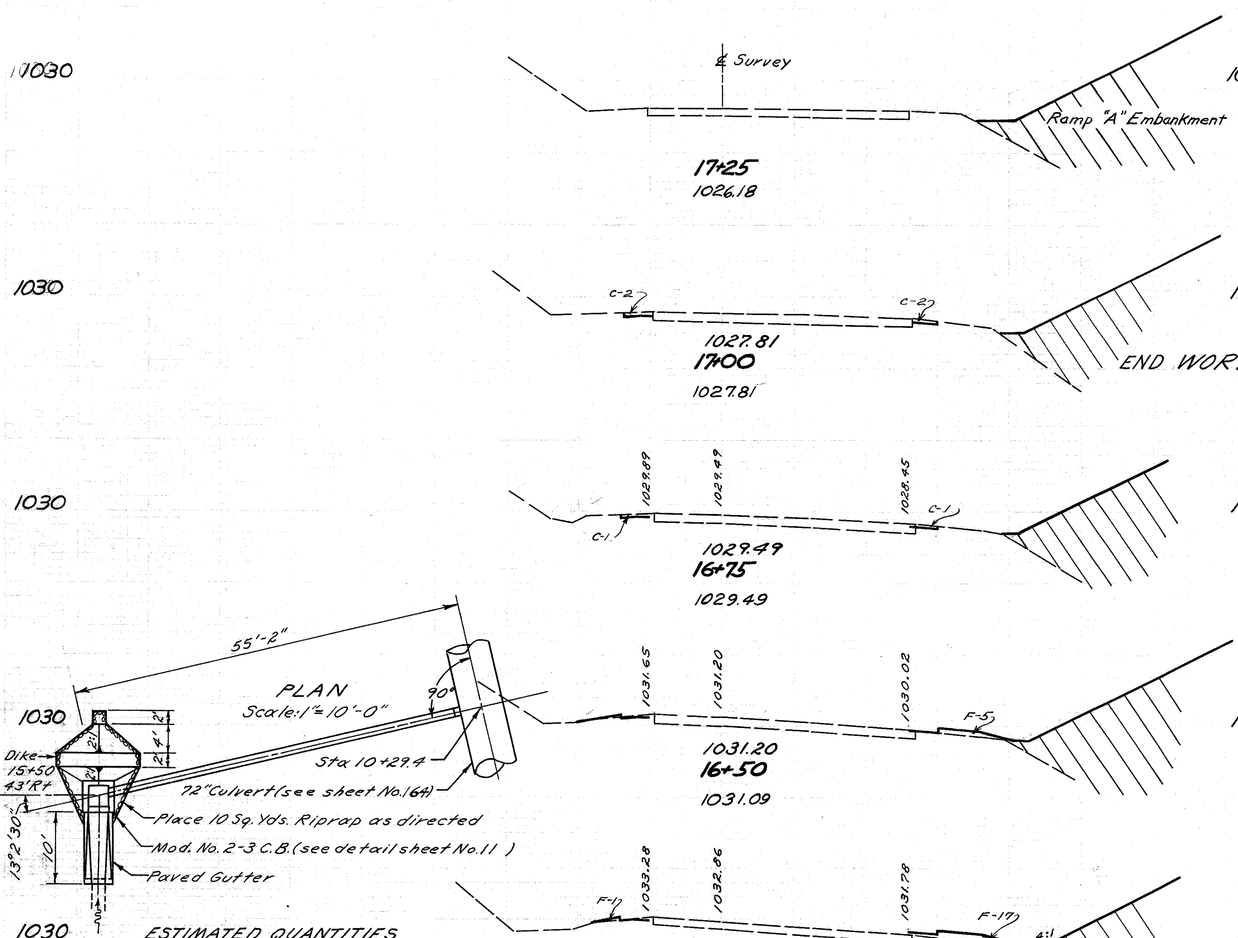


APPROACH "A" - Sta 10+00 To Sta 13+50

COL-30-32.19

134
250

90 80 70 60 50 40 30 20 10 ℄ 10 20 30 40 50 60 70



Seeding Width S.Y.	End Area Cut	End Area Fill	Cu. Yds. Exc.	Cu. Yds. Emb.
14	4	0		
	40		3	0
15	2	0		
	58		1	2
27	0	5		
	81		0	11
31	0	18		
	104		1	22
44	3	30		
44	3	52		
	242		10	133
43	8	92		
	308		14	230
68	7	156		
	353		6	349
59	0	221		
	317		3	540
55	3	362		
903	628	409		

1030 Ahead / Back

ESTIMATED QUANTITIES

15" Pipe Class F-1, Sec. M6.4(c) Gage 14	53 Lin. Ft.
Mod. No. 2-3 Catch Basin	1 Each
Paved Gutter Type I	10 Lin. Ft.
Riprap Grout Filled	10 Sq. Yds.

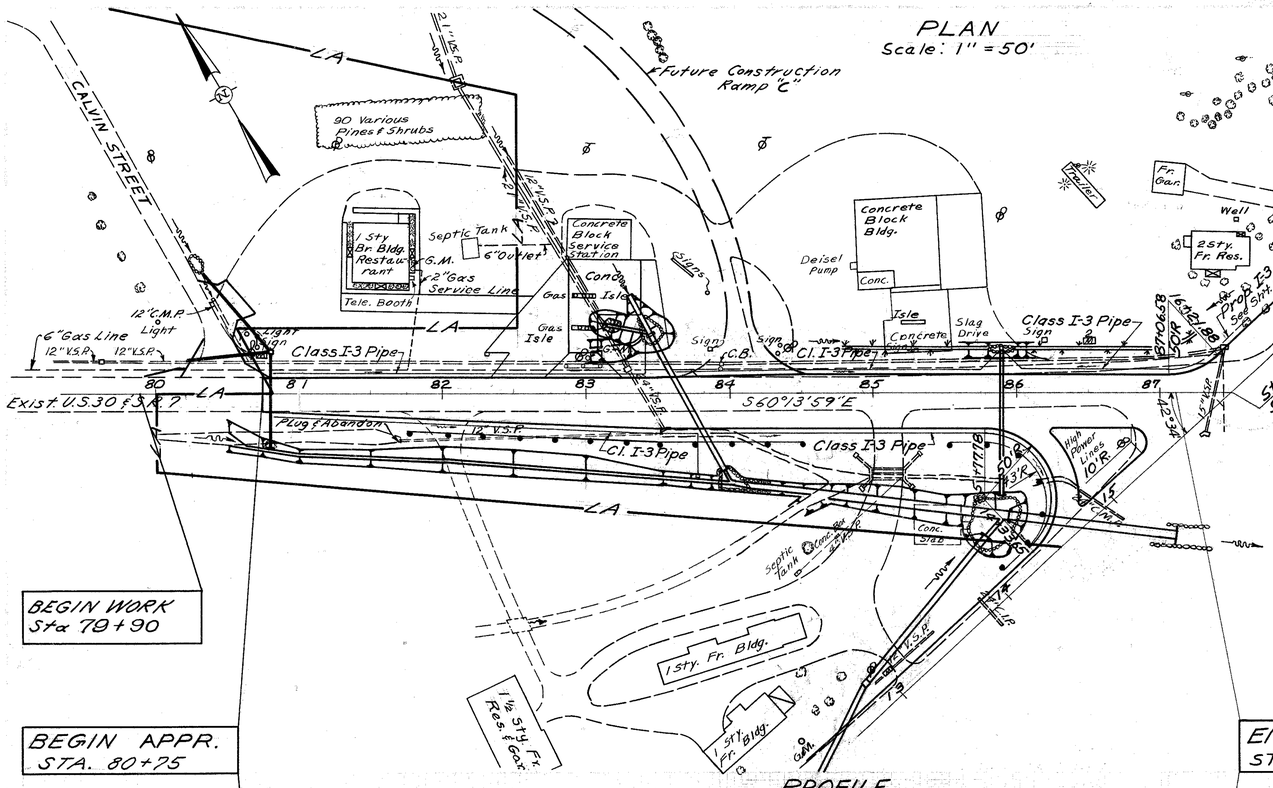
APPROACH "A" Sta 14+00 to Sta 17+25

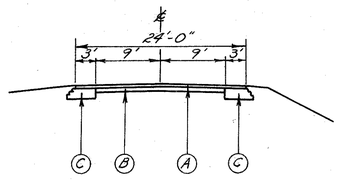
COL-30-32.19

135
230

COL-30-32.19

PLAN
Scale: 1" = 50'





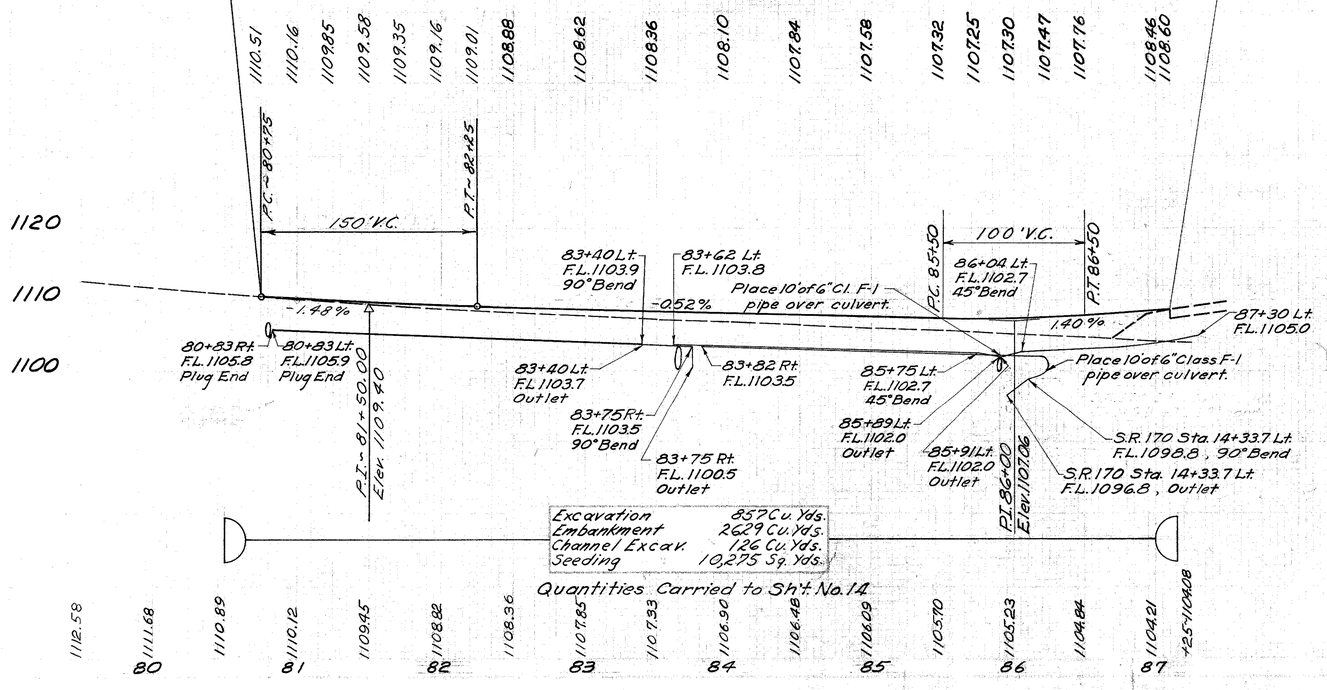
KEY

(A) Existing ~ 4½" Asphaltic Concrete Surface Course
(B) Existing ~ 9"-7"-7"-9" Concrete Pavement
(C) Existing ~ 14" Bit. Mac. Base Widening

TYPICAL SECTION ADJOINING PAVEMENT

Note: For Pavement Transition Details see Sheet No. 108
For Intersection Detail see Sheet No. 107

PROFILE
Scale: Horizontal 1"=50'
Vertical 1"=10'



Excavation 857 Cu. Yds.
Embankment 2629 Cu. Yds.
Channel Excav. 126 Cu. Yds.
Seeding 10,275 Sq. Yds.

Quantities Carried to Sht. No. 14

APPROACHES

Station	Side &	See Sheet	F-3.5 Surface Cu. Yds.	B-1.9 Aggr. Cu. Yds.			Remarks
80+50	Lt.	137		12.0			off Calvin St. to Restaurant
80+67	Lt.	137	6.0	21.0			Calvin St.
80+17	Lt.	137	0.7	2.0			Mail Box Appr.
Total			6.7	40			

DRAINAGE

Station From	Station To	Side &	See Sheet	New Work Type	Size	Length	Pipe Removed 15" & Under Lin. Ft.	Catch Basins Abandoned Each
80+18	80+80	Lt. & Rt.	157	Pipe	12"	60'		
				Pipe	18"	76'		
				Pipe	24"	66'		
80+18	87+44	Lt.	136				777	
83+66		Lt. & Rt.	158	Pipe	42"	108		
83+95		Lt.	136					1
85+90		Lt. & Rt.	159	Pipe	24"	102		
87+31	87+46	Lt. & Rt.	136				62	1
Total							839	2

REMOVALS

Station From	Station To	Side &	See Sheet	Pavement Removal-Sq. Yds.	S-22-Removal Portions Exist. Structures-Cu. Yd.	
80+25	87+50	Lt. & Rt.	136	1967		
82+89	83+40	Lt.	136	278		
85+09	85+56	Lt.	136	216		
85+10		Rt.	136		19.0	
85+29	85+62	Rt.	136	92		
Total				2553	19.0	

SOD

Station From	Station To	Sq. Yds.
86+00	16+25	73
84+80	85+80	56
Total		129

GUARD RAIL

Station From	Station To	Side &	New Lin. Ft.	Remove Lin. Ft.
81+75	84+50	Rt.	275	
82+80	83+05	Lt.		25
85+53	14+10	Rt.	150	
Total			425	25

UNDERDRAIN

Station From	Station To	Side &	6" Cl. I-3 Class D=30"	6" F-1	8"* F-1	6" Pipe Spec. Cl. I-3 45° Each	6" Pipe Spec. Cl. I-3 90° Each
			Lin. Ft.	Lin. Ft.	Lin. Ft.		
80+83	83+40	Lt.	267	10			1
80+83	83+75	Rt.	313		10		1
83+62	85+89	Lt.	236	10		1	
83+82	S.R.170-14+33.7	Rt.	300	30			1
85+91	87+30	Lt.	136	10		1	
Total			1252	60	10	2	3

* Sec. M-6.4(c)

APPROACH "B" ~ Sta 80+75 To Sta 87+10.82

	Channel Ex.	Seeding	End Area		Cu. Yd.	
	E.A.	Cu.Yd.	Width	Sq.Ft.	Cut	Fill	Exc.	Emb.
					0	0	0	26
			0		0	89		
			0	148	0	285	0	346
			65					
				169	1	318	1	279
			57					
				158	3	193	2	237
			57					
				425	5	140	7	308
			96					
				320	9	129	8	154
			90					
				243	7	114	7	113
			85					
				386	11	100	15	174
			73					
				400	22	154	35	235
			71					
				383	25	153	48	284
			67					
				372	65	30	83	169
			67					
				5519	375		136	33
			68					
				375	82	6	142	20
			67					
				375	71	16	125	69
			67					
				372	64	58	118	109
			67					
				364				

COL-30-32.19

137
250

	Chan. Ex.	Seeding	End Area		Cu. Yd.	
	E.A.	Cu.Yd.	Width	Sq.Ft.	Cut	Fill	Exc.	Emb.
			64		63	60		
				172			54	50
			60		54	49		
				94				
			8		0	0		
							25	23
							3	
							31	

End Earthwork Sta. 87+16

End Seeding Sta. 86+91

Remainder of Channel carried on Culvert Sheet No 155

Begin Channel Sta. 84+65

Extra Seeding Lt. Sta 82+50 to 87+50

Appr. Lt. Sta. 80+67

Appr. Lt. Sta 80+12

Begin Approach Sta 80+75

Approach Lt. Sta 80+67 (Δ=60°)
6.0 Cu.Yds. 7"-35(2" Thick)
21.0 Cu.Yds. B-19(3" Thick)

M.B. Appr. Lt. Sta. 80+17
2.7 Cu.Yds. F-35(5" Thick)
2 Cu.Yds. B-19(5" Thick)

Business Dr. Lt. Sta 80+50 (off Calvin St.)
30 Wide x 20 Long (Modified)
1.7 Cu.Yds. B-19 Agg.(8" Thick)

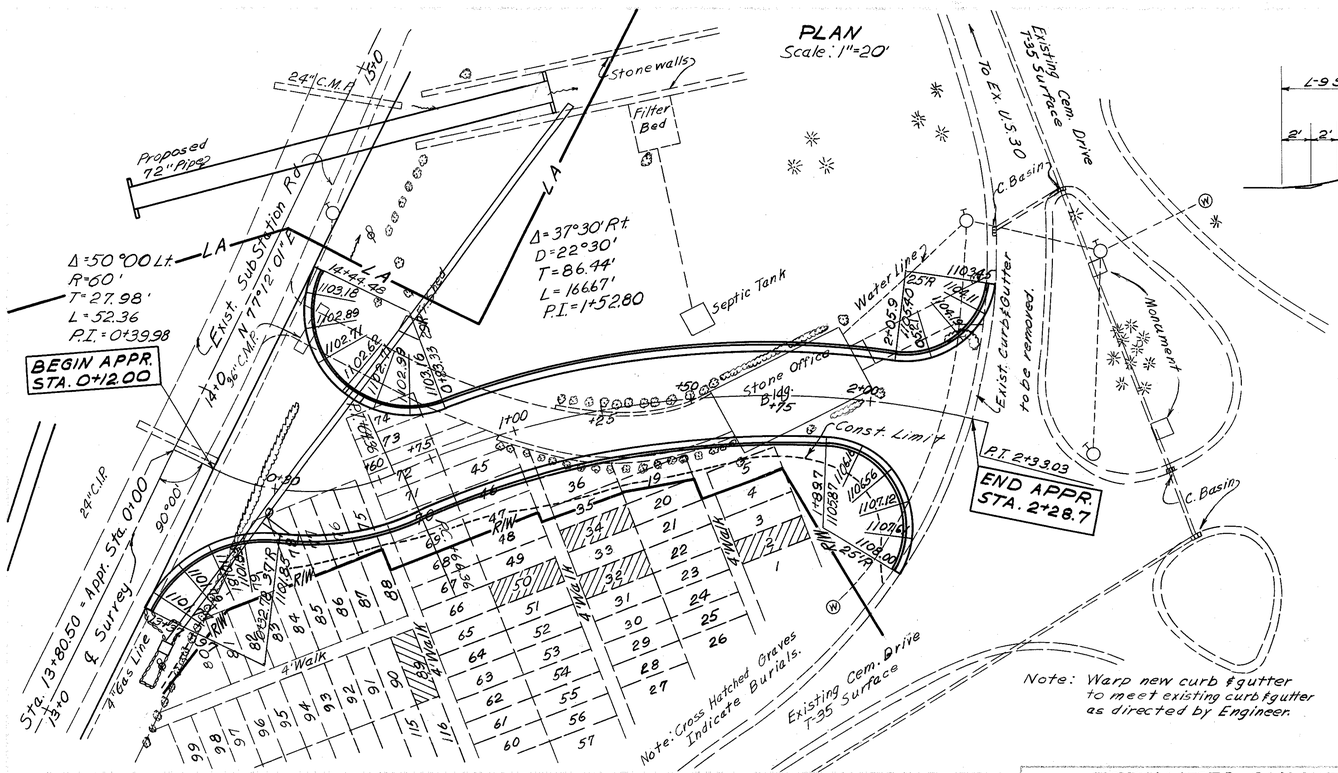
Approach Lt. Sta 80+50 (off Calvin St.)
Begin Work Sta 80+20

Business Dr. Lt. Sta 80+50 (off Calvin St.)
Begin Approach Sta 80+25

Approach "B" ~ Sta. 80+00 to Sta. 87+00

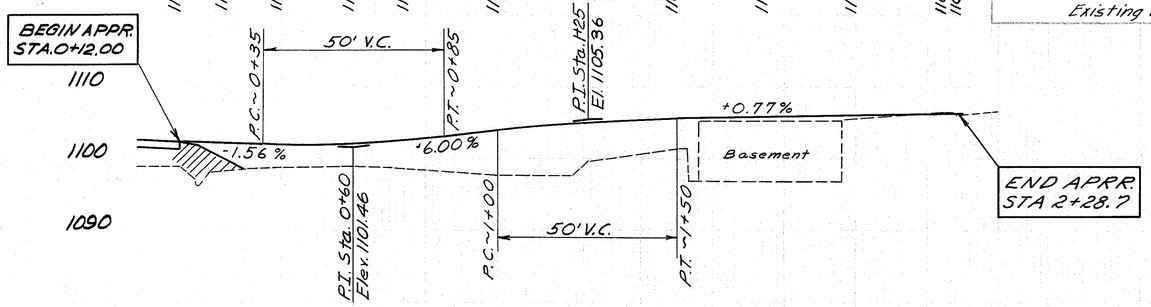
COL-30-32.19

PLAN
Scale: 1"=20'



Note: Warp new curb & gutter to meet existing curb & gutter as directed by Engineer.

PROFILE
Scale: Horizontal 1"=20'
Vertical 1"=10'

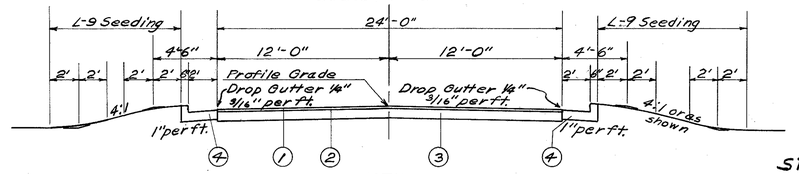


ESTIMATED QUANITIES			
T-35	Surface Course	42	Cu. Yds
T-30	Prime Coat	300	Gals.
B-19	Base Course	168	Cu. Yds.
E-1	Compacted Subgrade	880	Sq. Yds.
I-12	Curb & Gutter, Type 2	474	Lin. Ft.
E-8	Removal & Disposal of Existing Curb & Gutter	88	Lin. Ft.

Excavation = 69 Cu. Yds.
Embankment = 1,411 Cu. Yds.
Seeding = 747 Sq. Yds.

Quantities Carried to Sh't. No. 109

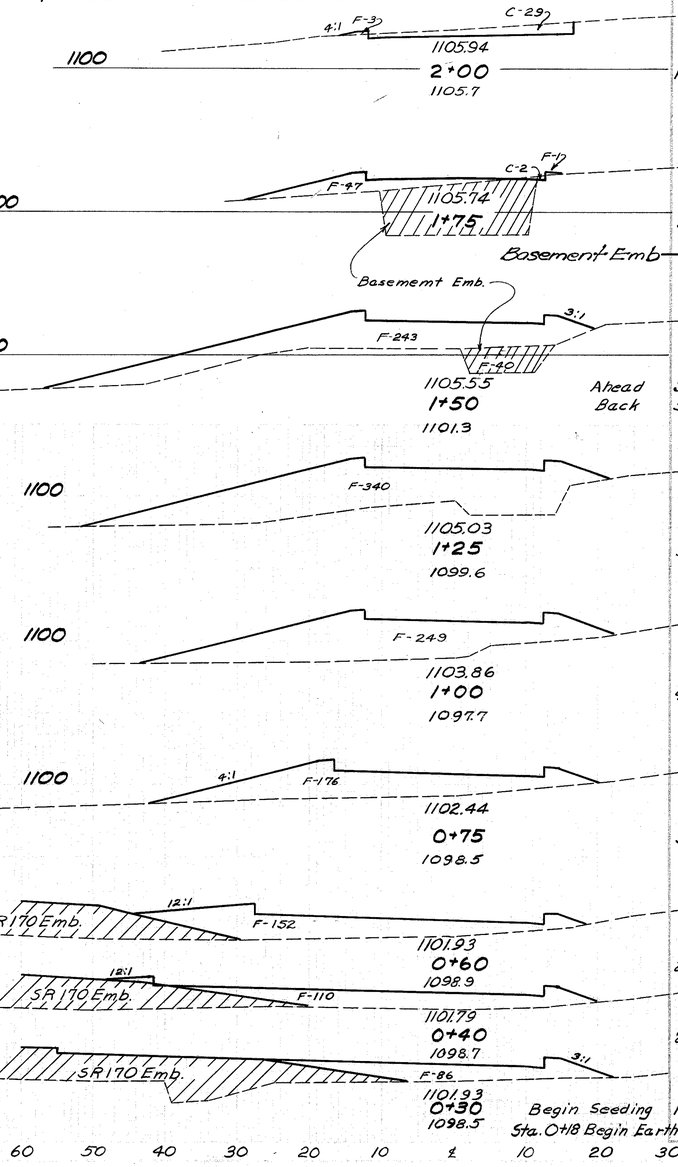
TYPICAL SECTION
Scale: 1"=5'



KEY
(1) Item T-35 2" Asphaltic Concrete Surface Course Type "C" (85-100)
(2) Item T-30 Bituminous Prime Coat, Applied at the rate of 0.4 gal. per Sq. Yd.
(3) Item B-19 8" Crushed Aggregate Base Course
(4) Item I-12 Combined Curb & Gutter, Std. Type 2

2" T-35, Type "C", (85-100) shall be placed in two 1 inch courses

STA. 2+28.7
END WORK



	Seeding Width	Sq Yd	End Area Cut	Fill	Cu. Yds. Exc.	Emb.
	8		72	0		
		29			54	2
	10		29	3		
		50			14	24
	26		2	48		
Basement Emb →						249
		117			1	135
Ahead	58		0	243		
Back	58		0	283		
		158			0	288
	56		0	340		
		144			0	273
	48		0	249		
		121			0	197
	39		0	176		
		55			0	91
	27		0	152		
		54			0	97
	22		0	110		
		19			0	36
Begin Seeding	13		0	86	0	19
Sta. 0+18 Begin Earthwork	0		0			

60 50 40 30 20 10 ℄ 10 20 30

CEMETERY APPROACH

COL-30-32.19

PLAN
Scale: 1" = 50'

HOMESTEAD AVE. 40'

CHURCH ST. 40'

BOYD ST. 40'

P.I. = 2+00.88
Δ = 104°36'20" Rt.
R = 28'

Proposed Access Rd ℄

+07.97

69°32'

S 52°44' E

Pond

P.T. 1+15.77

12" V.S.P.

5" V.S.P.

15" V.S.P.

Ditch

P.C. 1+91.21

P.T. 2+29.48

P.I. = 5+14.17
Δ = 78°42'42" Lt.
R = 28'

Shed

1 Sty. Brick Bldg.

END APPROACH
STA. 8+25

BEGIN APPROACH
STA. -1+05

Conc. Blk. Bldg.
Boyd Lumber Co.

1-Sty. Fr. Gar. & Showroom

Septic Tank

15" V.S.P.

15" C.M.P.

G.M. Sign

S 69°14' E
324.68 ft.

12" V.S.P.

12" V.S.P.

Gar.

Bldg.

2 Sty. Fr. Res.

Posts

Conc. Blk. Gar.

2 Sty. Fr. Res.

Septic Tank

Conc. Blk. Gar.

12" V.S.P.

G.M.

S 26°19'01" W

S.T. 34+01.24

C.S. 30+01.24

Tangent Line
5° Curve

Mine Spike in Power Pole 33' Lt.
SR 170 Sta. 32+43
Elev. 1146.99

PROFILE
Scales: Hor. 1" = 50'
Ver. 1" = 10'

	-1	0	1	2	3	4	5	6	7	8										
Ground	1158.0	1157.1	1157.0	1158.1	1158.6	1157.0	1155.2	1153.0	1151.7	1150.0	1149.3	1150.8	1154.5	1158.0	1160.8	1161.5	1162.0			
Grade	1158.00	1158.00	1158.00	1158.00	1158.00	1157.90	1157.62	1157.15	1156.50	1155.75	1154.25	1152.75	1151.25	1150.50	1150.12	1150.46	1151.54	1153.33	1155.50	1157.67	1159.57	1160.92	1161.73	1162.00	1162.00

P.I. 2+25
Elev. 1158.00

P.C. 1+75

P.T. 2+75

P.I. 5+75
Elev. 1149.00

P.C. 4+75

P.T. 5+75

P.I. 6+75
Elev. 1162.00

P.C. 6+25

P.T. 7+25

0.00%

-3.00%

100' V.C.

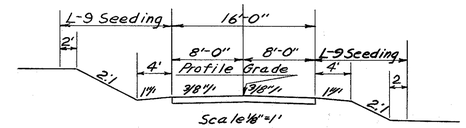
+8.67%

100' V.C.

0.00%

100' V.C.

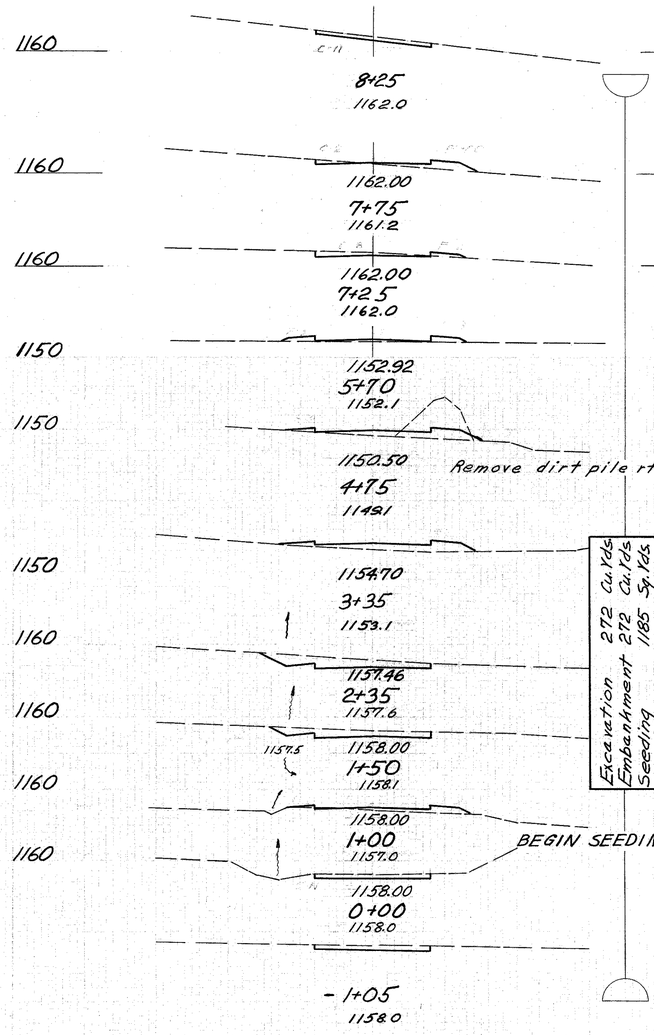
TYPICAL SECTION



Scale 1/8" = 1'

Item B-19 8" Aggregate Base Course

ESTIMATED QUANTITIES
B-19 Base Course 368 Cu. Yds.
Est. Quant. carried to Sheet No 106



Seeding Width	Seeding S.Y.	End Area Cut	End Area Fill	Cu. Yds. Exc.	Cu. Yds. Emb.
12		11	0		
	75			12	9
15		2	10		
	78			9	11
13		8	2		
	232			23	29
14		0	8		
	153			0	48
				26	
15		0	19		
	249			0	106
17		0	22		
	183			48	41
16		26	0		
	146			72	0
15		20	0		
	69			19	9
14		0	10		
				20	19
		11	0		
				43	0
		11	0		

CHURCH STREET ACCESS ROAD

COL-30-32.19

P.O.S. ~ Sta 827+00
N/S in 6"Elm
28.15'
21.37'
N/S in 8"Cherry
15.15'
Hub.
N/S in 10"W. Cherry
P.O.T. ~ Sta 3+00

P.C. ~ Sta 3+70.00
N/S in 6"Elm
27.2'
25.35'
N/S in 8"W. Cherry
N/S in 8" Stump
Hub

Ext. ~ Sta 4+69.49
Hub
12.60'
52.66'
N/S in 24"Beech
Hub
N/S in 15"Maple
N/S in 10"Cherry

P.I. ~ Sta 5+00.96

P.T. ~ Sta 5+68.97
Hub
N/S in 5"Beech
N/S in 8"Beech

P.C. ~ Sta 6+38.93
N/S in 20"Maple
Hub
N/S in 8" Cherry
N/S in 6"Elm

PLAN
Scale 1"=50'

Sign
6"Gas Line
Existing U.S.30 & S.R.7
Proposed ℄ U.S.30
90° Tangent to Spiral
Sta 827+00 ~ Prop. U.S.30
=Sta 3+00 ~ Westfield Ave.
Type 4 Paved Gutter
P.C. ~ 3+70.00
L=269.5'
S.T. ~ 830+12.50
S23°49'02"W
P.T. ~ 10+32.26
P.C. ~ 6+38.93
S50°13'02"W
S.T. ~ 825+68.43
S.-R. 12.50
1-St. Fr. Res. Shed
BEGIN APPR STA. 1+72
LA
Hill Ave. Appr. See sheet #150
N39°46'58"W

CURVE DATA
P.I. = 5+00.96
Δ = 95°00' Lt.
R = 120'
E = 57.62'
T = 130.96'
L = 198.97'

P.I. ~ Sta 8+38.43
5"Maple
5"Cherry
6"Cherry
N/S in Trees
Hub
3"Cherry
6"Cherry
Ext. ~ Sta 8+35.59

CURVE DATA:
P.I. ~ 8+38.43
Δ = 23°36' Rt.
D = 6°00'
E = 20.62'
T = 199.50'
L = 393.33'
R = 954.93

P.T. ~ Sta 10+32.26
N/S in Trees
3"Maple
3"Cherry
3"Cherry
5"Cherry
Hub

PROFILE
Scale: Horizontal 1"=50'
Vertical 1"=20'

END SHEET ~ STA 12+00
Existing U.S. 30 to East Liverpool

40'R Δ = 90°
96.01
96.19
96.42
96.74
962.19
2+13.0

1+72
2+00
Proposed ℄ Westfield Ave.
50'R Δ = 81°13'
960.21
960.75
960.40
960.26
962.30
2+15.5

INTERSECTION DETAIL
PLAN
Scale : 1" = 20'

APPROACHES

Station	Side &	See Sheet				Remarks
4+09.75	Rt.	150				Hill Ave.
Total						

DRAINAGE

Station From	Station To	Side &	See Sheet	New Work Type	Size	Length	Paved Gutter-L.F. Type 1	Type 4	Sod Sq. Yds.
1+89		Rt.	170	Pipe	18"	6'			
1+89	3+82	Rt.	140					196	
2+04.39		Lt. & Rt.	170	ch. Pipe	106x68"	370'			
2+20	3+44	Lt	140					125	
2+98.3		Lt. & Rt.	171	Pipe	60"	284'			
3+50		Lt.	142	Pipe	15"	33'			
3+61	5+75	Lt.	140				170		57
5+75	7+75	Lt.	140						117
4+51	10+50	Rt.	140				625		209
Total							795	321	383

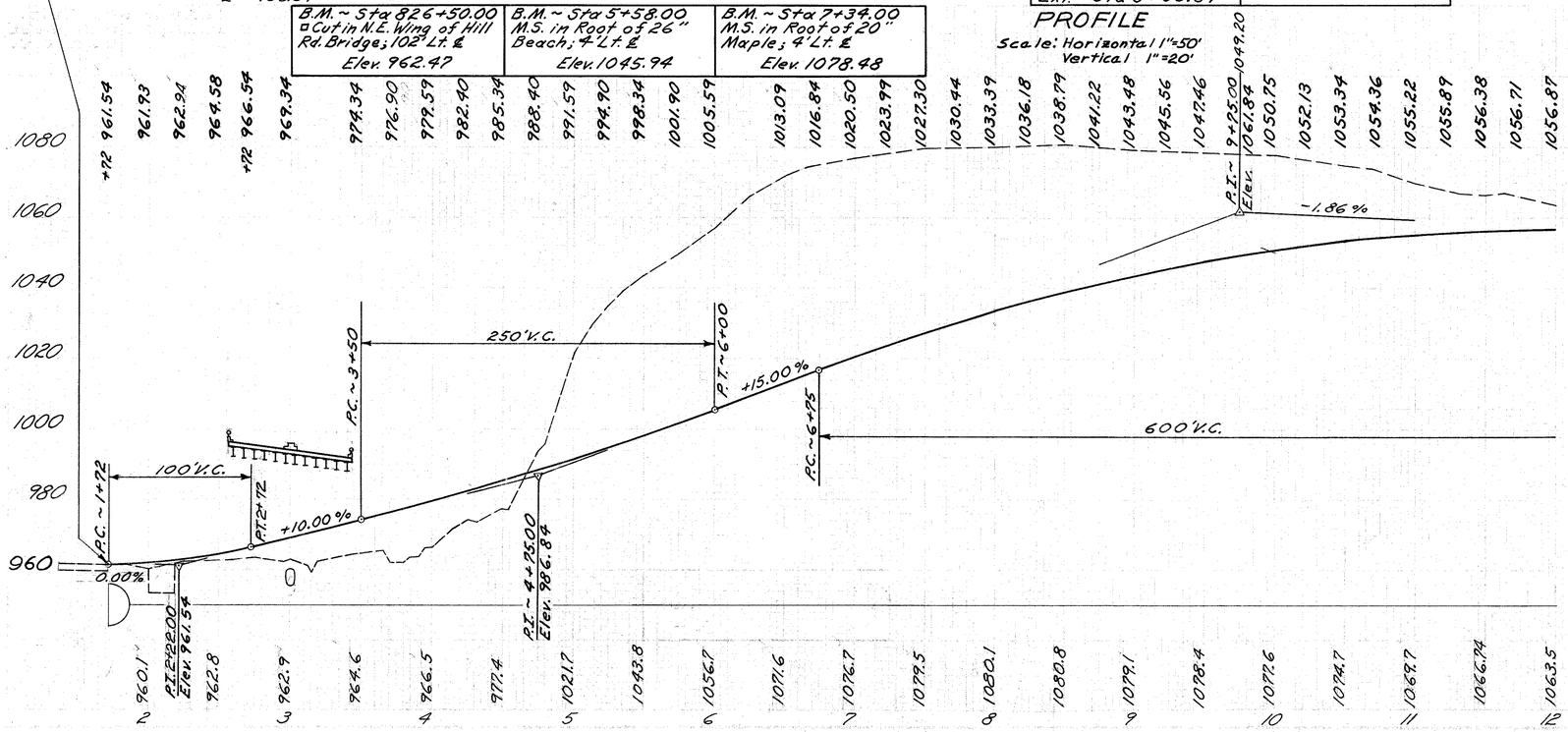
GUARD RAIL

Station From	Station To	Side &	New Lin. Ft.
7+65	12+00	Lt.	440
Total			440

B.M. ~ Sta 826+50.00
□ Cut in N.E. Wing of Hill Rd. Bridge; 102' Lt. ℄
Elev. 962.47

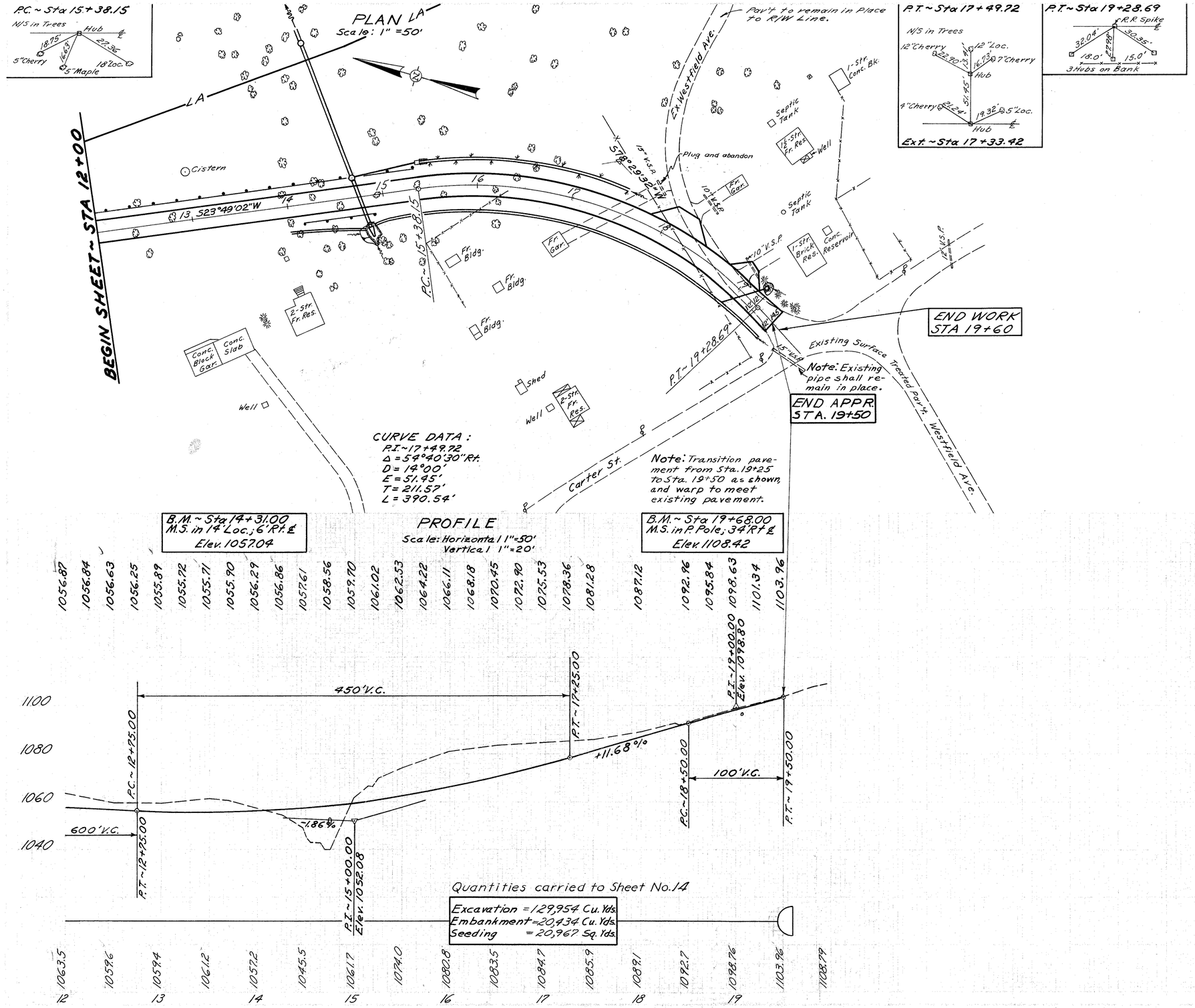
B.M. ~ Sta 5+58.00
M.S. in Root of 26" Beach; 4' Lt. ℄
Elev. 1045.94

B.M. ~ Sta 7+34.00
M.S. in Root of 20" Maple; 4' Lt. ℄
Elev. 1078.48



WESTFIELD AVE ~ Sta 1+22 to 12+00

COL-30-32.19

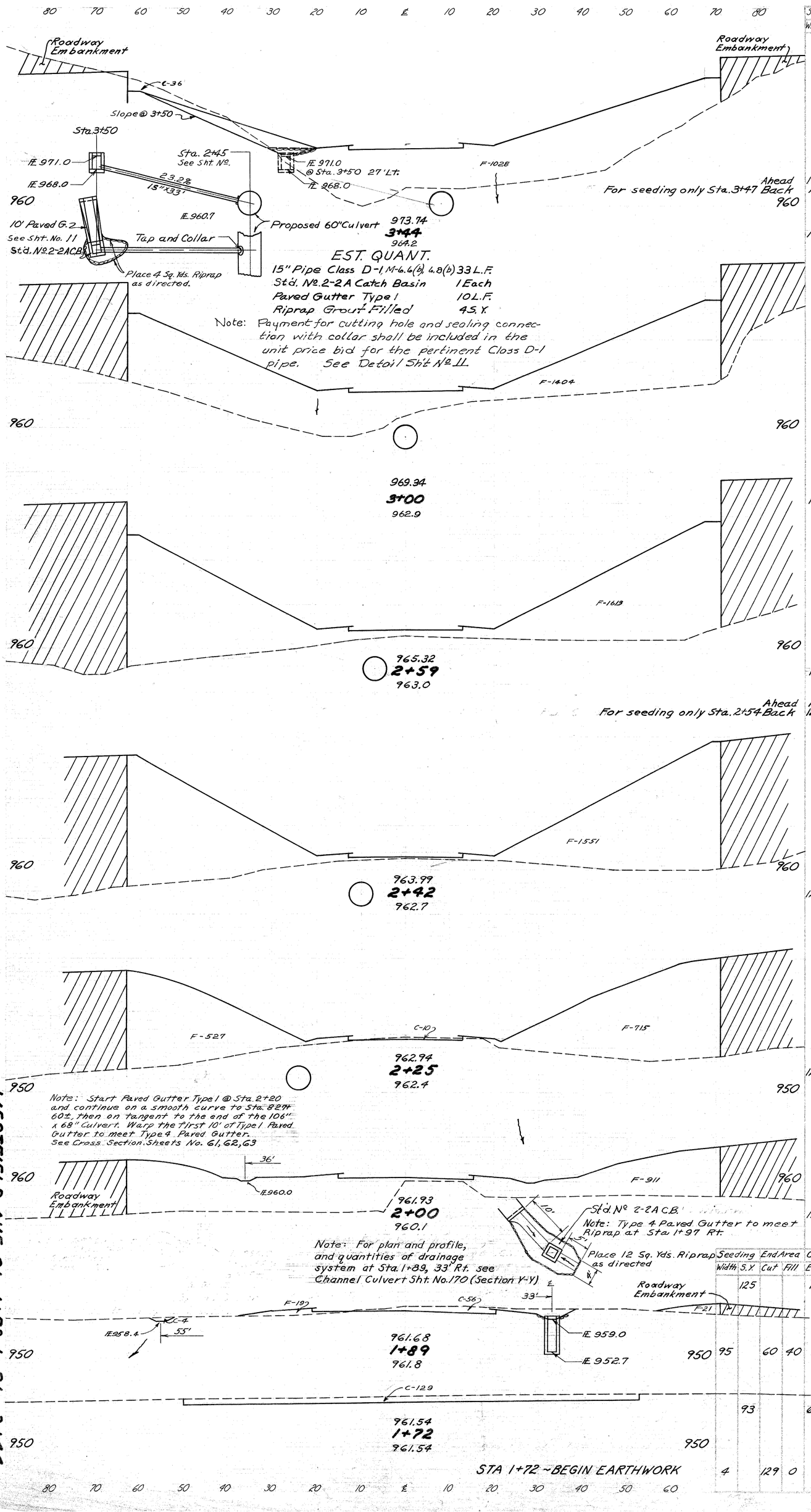


APPROACHES					
Station	Side ℄	See Sheet	T-35 Surface Cu. Yds.	B-19 Aggr. Cu. Yds.	Pipe Removed 15" & Under Lin. Ft.
18+13	Lt.	149	5.4	14	
18+85	Lt.	149	2.6	7.0	26
Total			8.0	21	26

DRAINAGE								
Station From	Station To	Side ℄	See Sheet	New Work Type	New Work Size	New Work Length	Paved Gutter Lin. Ft.	Sod Sq. Yds.
13+94	14+77	Rt.	141				83	28
14+75		Lt. & Rt.	172	Pipe Pipe	3" 15"	70		
14+92	19+50	Rt.	141				432	145
15+50	17+50	Lt.	141					120
19+06.5			173	Pipe	15"	48		
Total							515	293

GUARD RAIL				
Station From	Station To	Side ℄	See Sheet	New Lin. Ft.
12+00	15+35	Lt.	141	335
14+15	14+90	Rt.	141	75
Total				410

WESTFIELD AVE ~ Sta 12+00 to Sta 19+96



Seeding Width	Seeding S.Y.	End Area Cut	End Area Fill	Cu. Yds. Exc.	Cu. Yds. Emb.
	375			67	1084
Ahead 115					
Back 16					
960	5				
16		36	1028		
	78			29	1982
960					
16		0	1404		
	73			0	2291
960					
16		0	1613		
	9				
Ahead 16					
Back 122					
	163			0	996
960					
123		0	1551		
	229			3	879
120		10	1242		
950					
	319			5	997
960					
110		0	911		
	125			12	194
950					
95		60	40		
	93			60	13
950					
4		129	0		

WESTFIELD AVE. Sta 1+72 to Sta 3+44

COL-30-32.19

142
250

Seeding Width S.Y.	End Area Cut	End Area Fill	Cu. Yds. Exc.	Cu. Yds. Emb.
106	1329	0		
189	5653	0		
146	3272	0		
149	3226	505		
122	212	545		
326	86	607	138	533
311	79	690	76	600
111	329	0	74	718
126	81	860		

COL-30-32.19

143
250

WESTFIELD AVE. Sta 3+75 to Sta 5+50

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

144
250

COL-30-32.19

Seeding	End Area		Cu. Yds.	
Width	S.Y.	Cut	Fill	Exc.	Emb.
171		7814	0		
1011		14330	0		
193		7662	0		

1050

Roadway Excavation

C-7814

1" per. ft.

1:1

1" per. ft.

2:1

2:1

1" per. ft.

1:1

1" per. ft.

½:1

½:1

1" per. ft.

1013.09
6+50
1071.6

1030

Roadway Excavation

C-7662

1" per. ft.

1:1

1" per. ft.

2:1

2:1

1" per. ft.

1:1

1" per. ft.

½:1

½:1

1" per. ft.

1005.59
6+00
1056.7

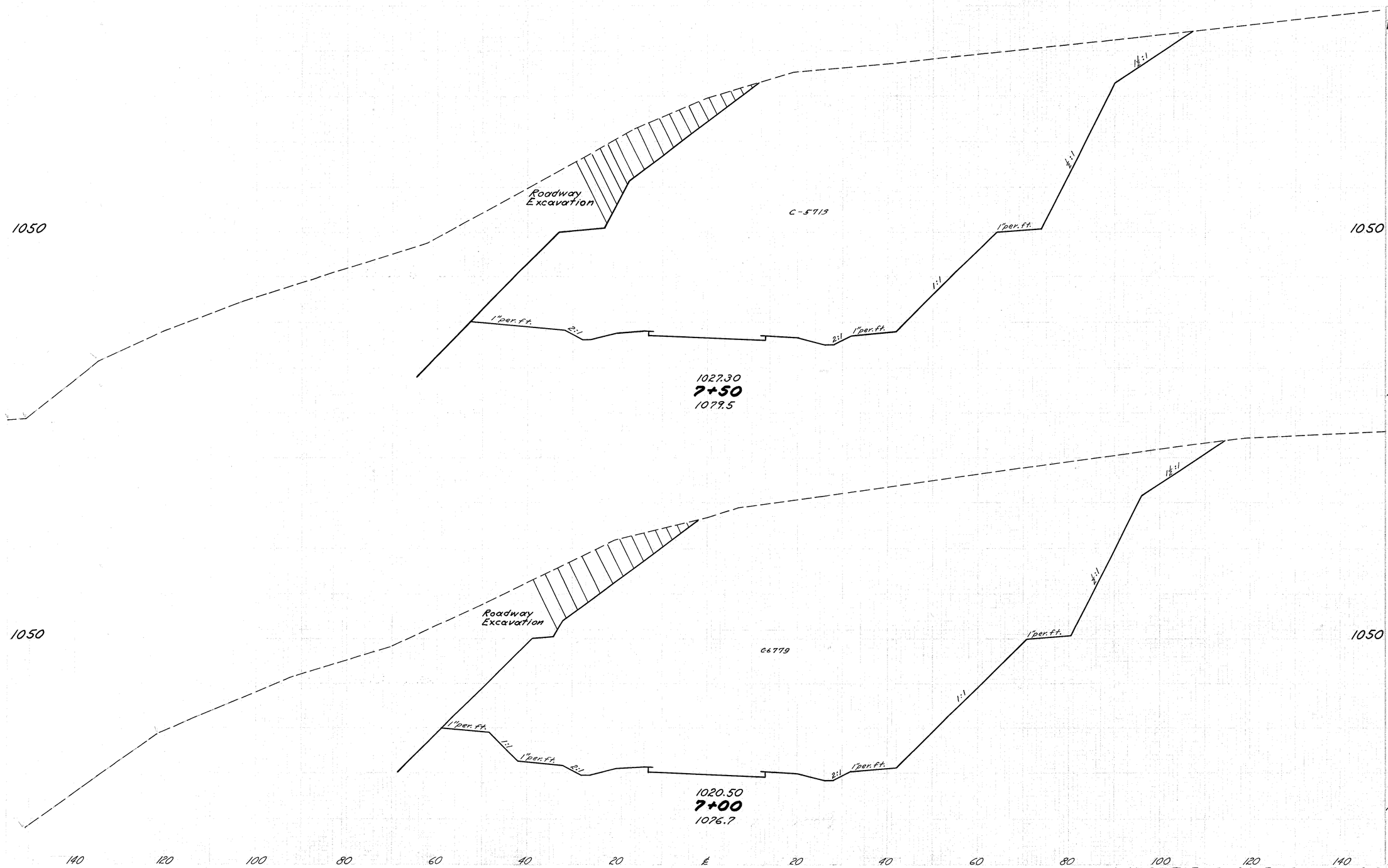
140 120 100 80 60 40 20 ℄ 20 40 60 80 100 120 140

WESTFIELD AVE. Sta 6+00 to Sta 6+50

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

145
250

COL-30-32.19



Seeding Width	S. Y.	End Area Cut	End Area Fill	Cu. Yds. Exc.	Cu. Yds. Emb.
127		5713	0		
	761			11,567	0
147		6779	0		
	883			13,512	0

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

WESTFIELD AVE. Sta 7+00 to Sta 7+50

146
250

COL-30-32.19

Seeding	End Area	Cu. Yds.
Width	S.Y.	Cut	Fill	Exc.	Emb.
90	464	2443	0		
77	444	2607	0		
83	500	3030	0		
92	589	3950	0		
115	672	4815	0		9748	0

1060

1 Per. Ft.

2:1

1:1

C-2443

1050.25
10+00
1072.6

Roadway Excavation

1060

1 Per. Ft.

2:1

1:1

C-2607

1047.46
9+50
1078.4

Roadway Excavation

1060

1 Per. Ft.

2:1

1:1

C-3030

1043.48
9+00
1079.1

Roadway Excavation

1060

1 Per. Ft.

2:1

1:1

C-3950

1038.79
8+50
1080.8

Roadway Excavation

1060

1 Per. Ft.

2:1

1:1

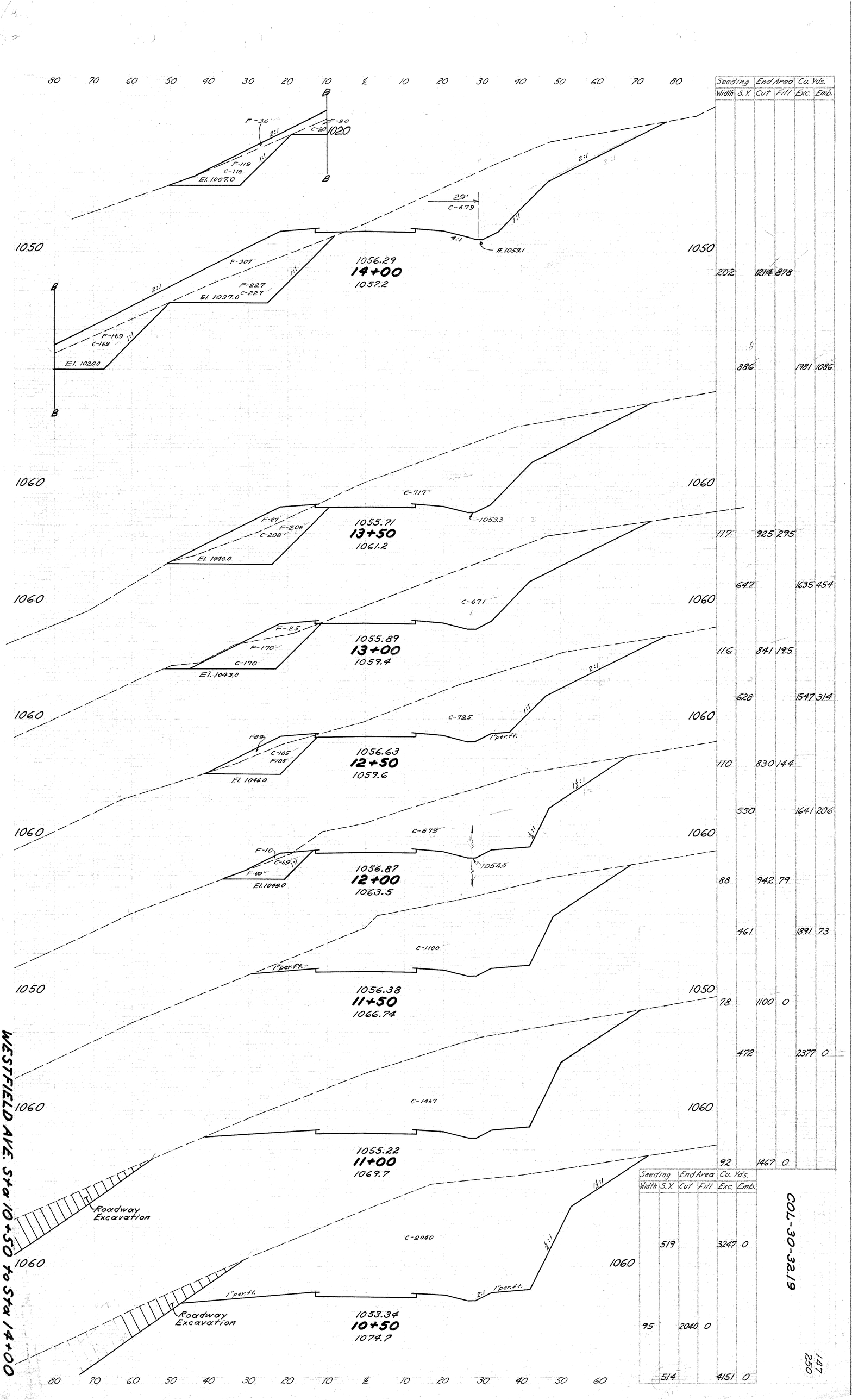
C-4815

1033.39
8+00
1080.1

Roadway Excavation

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

WESTFIELD AVE. Sta 8+00 to Sta 10+00


80 70 60 50 40 30 20 10 ℄ 10 20 30 40 50 60 70 80
B
F-36
2:1
F-20
C-20
1020
F-119
C-119
1:1
El. 1007.0
29'
C-679
2:1
1:1
4:1
IE. 1052.1
1050
1056.29
14+00
1057.2
F-307
2:1
1:1
F-227
C-227
El. 1037.0
F-169
C-169
El. 1020.0
1060
C-717
1053.3
F-81
F-208
C-208
1055.71
13+50
1061.2
El. 1040.0
C-671
F-25
F-170
C-170
1055.89
13+00
1059.4
El. 1043.0
C-725
1 per. ft.
F-39
C-105
F105
1056.63
12+50
1059.6
El. 1046.0
1½:1
½:1
C-879
1054.5
F-10
C-69
F-49
1056.87
12+00
1063.5
El. 1049.0
C-1100
1 per. ft.
1056.38
11+50
1066.74
C-1467
1055.22
11+00
1069.7
Roadway Excavation
C-2040
1 per. ft.
1053.34
10+50
1074.7
WESTFIELD AVE. Sta 10+50 to Sta 14+00
Seeding Width
S.Y.
End Area Cut
Fill
Cu. Yds. Exc.
Emb.
202 1214 878
886 1981 1086
117 925 295
647 1635 454
116 841 195
628 1547 314
110 830 144
550 1641 206
88 942 79
461 1891 73
78 1100 0
472 2377 0
92 1467 0
519 3247 0
95 2040 0
514 4151 0
COL-30-32.19
147
250

COL-30-32.19

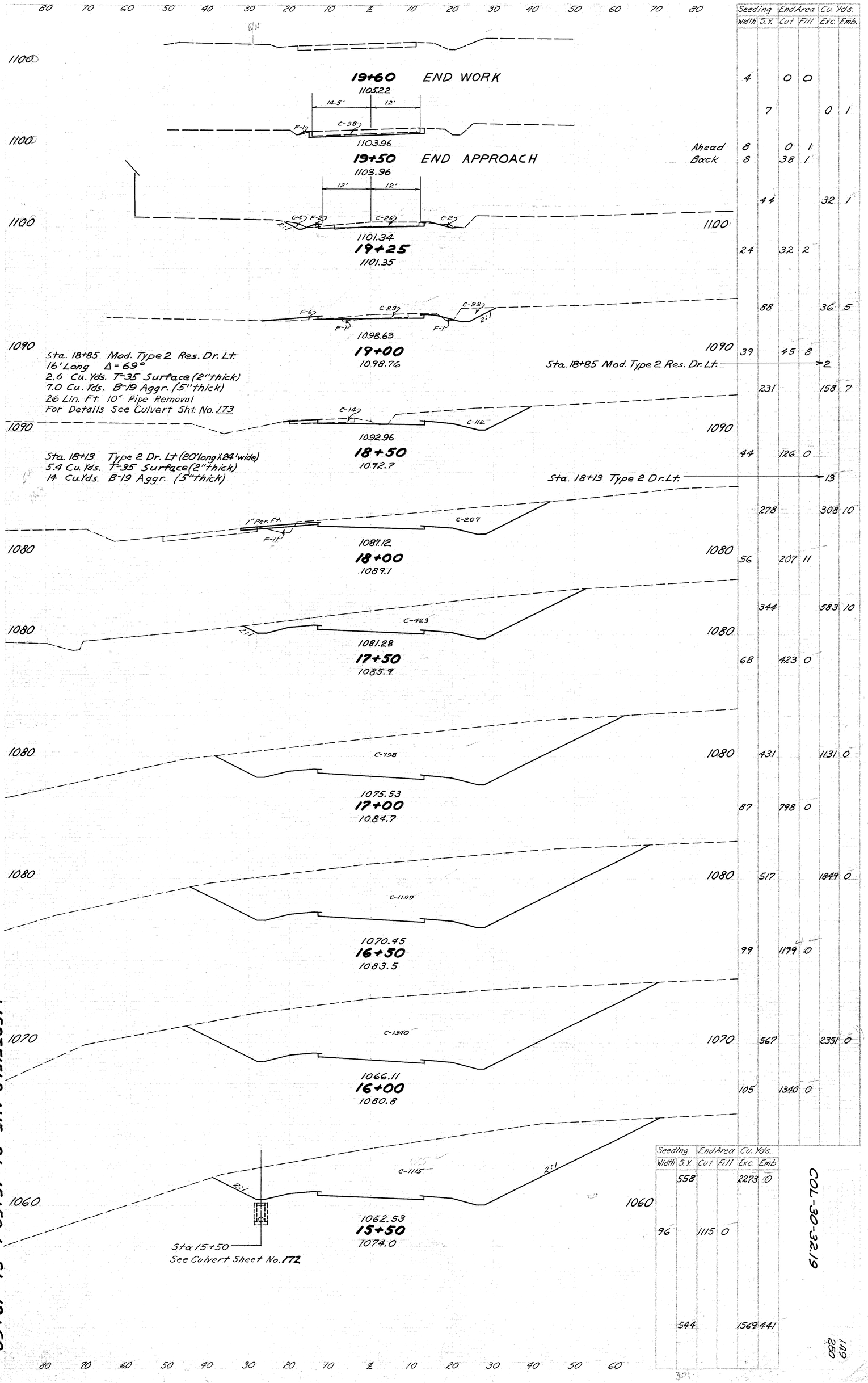
180 160 140 120 100 80 60 40 20 ℄ 20 40 60 80

1060
1040
1050
1040

29'
C321
2:1
1059.70
15+00
1061.7
FL. 1056.3
F-219
C-79
F-79
El. 1050.5
2:1
F-180
C-180
El. 1036.0
35'
Variable
C-29
IE 1052.5
F-2682
1058.44
14+72
1039.7
31.5'
C-470
IE 1052.9
F-131
C-131
El. 1004.0
F-2194
1057.61
14+50
F-266
C-266
El. 1034.0
C-588
30'
1045.5
2:1
Variable
IE 1053.0
F-186
C-186
El. 1020.0
F-611
F-197
C-197
El. 1036.5
1056.86
14+25
1054.5
F-254
C-254
El. 1000.0
2:1
F-119
El. 989.0 C-119
F-237
C-237
El. 1017.0
F-195
C-195
El. 1000.0

Seeding	End Area	Cu. Yds.	
Width	S.Y.	Cut	Fill / Exc. Emb.
100	580	476	
428		384	1705
175	160	2813	
519		593	2376
250	1295	3019	
653		1163	1972
220	1217	1240	
586		1125	981

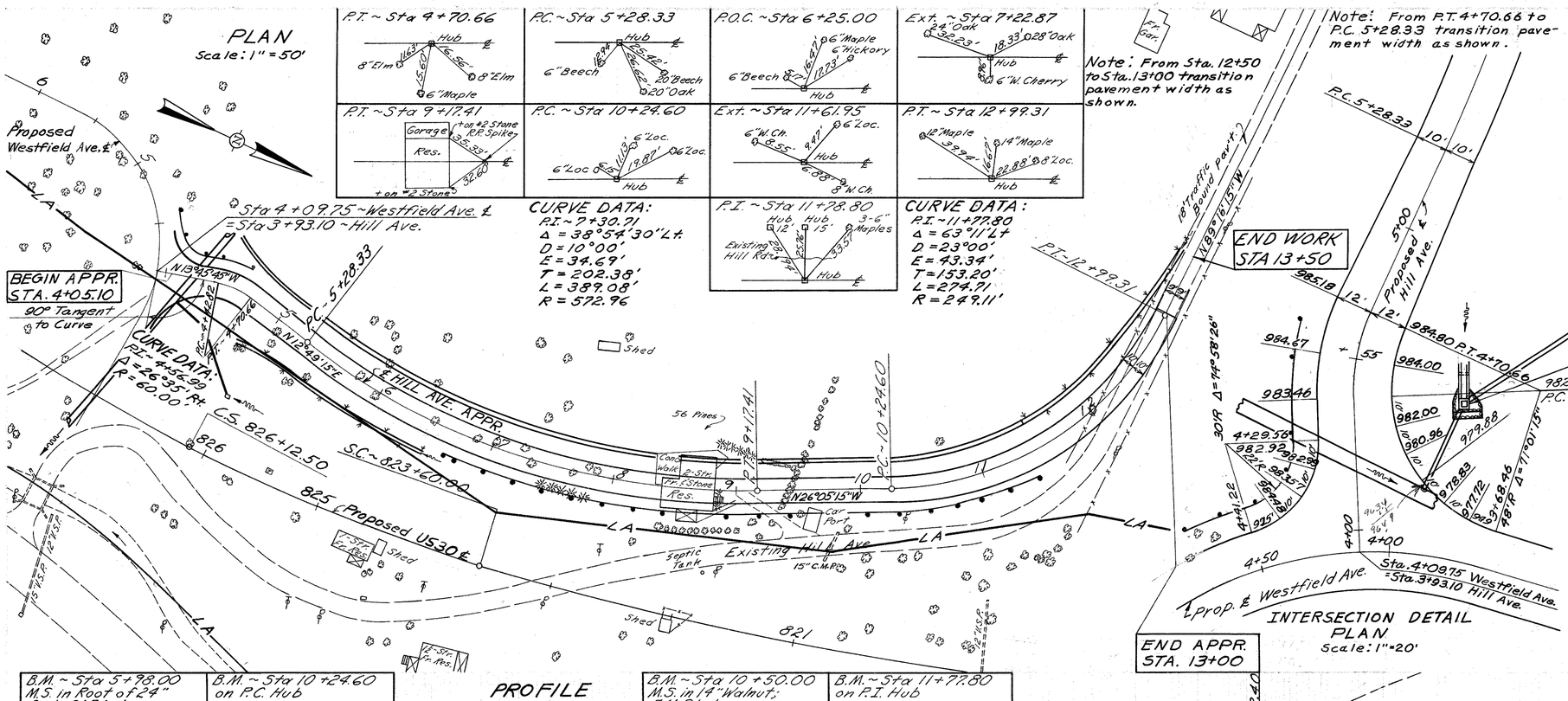
WESTFIELD AVE. Sta 14+25 to Sta 15+00



Seeding Width	Seeding S.Y.	End Area Cut	End Area Fill	Cu. Yds. Exc.	Cu. Yds. Emb.
4		0	0		
	7			0	1
Ahead 8		0	1		
Back 8		38	1		
	44			32	1
24		32	2		
	88			36	5
39		45	8		
	231			158	7
44		126	0		
	278			308	10
56		207	11		
	344			583	10
68		423	0		
	431			1131	0
87		798	0		
	517			1849	0
99		1199	0		
	567			2351	0
105		1340	0		
	558			2273	0
96		1115	0		
	544			1569	441

COL-30-32.19

PLAN
Scale: 1" = 50'



INTERSECTION DETAIL PLAN
Scale: 1" = 20'

P.T. ~ Sta 4+70.66	P.C. ~ Sta 5+28.33	P.O.C. ~ Sta 6+25.00	Ext. ~ Sta 7+22.87
8" Elm, 6" Maple, 8" Elm, 6" Maple	6" Beech, 20" Beech, 20" Oak	6" Beech, 6" Maple, 6" Hickory	24" Oak, 28" Oak, 6" W. Cherry

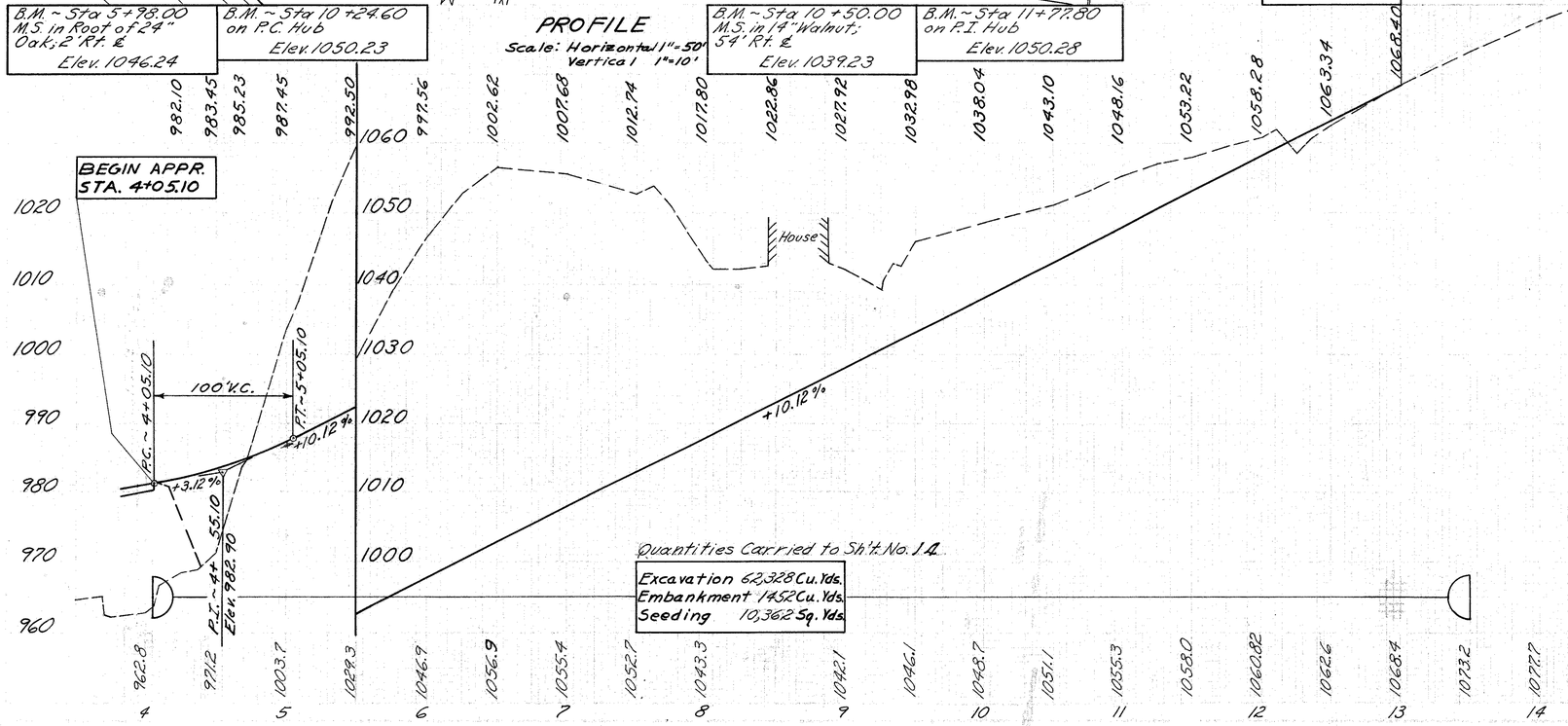
P.T. ~ Sta 9+17.41	P.C. ~ Sta 10+24.60	Ext. ~ Sta 11+61.95	P.T. ~ Sta 12+99.31
Garage, Res., 1 Star #2 Stone, 1 Pr. Spikes, 1 on #2 Stone	6" Loc., 6" Loc., 6" Loc.	6" W. Ch., 6" Loc., 8" W. Ch.	12" Maple, 14" Maple, 8" Loc.

P.I. ~ Sta 11+28.80	P.I. ~ Sta 11+77.80
Existing Hill Rate, 3-6" Maples	Hub, Hub, Hub

CURVE DATA:
P.I. ~ 7+30.71
Δ = 38°54'30" Lt.
D = 10°00'
E = 34.69'
T = 202.38'
L = 389.08'
R = 572.96

CURVE DATA:
P.I. ~ 11+77.80
Δ = 63°11' Lt.
D = 23°00'
E = 43.34'
T = 153.20'
L = 274.71'
R = 249.11'

PROFILE
Scale: Horizontal 1" = 50'
Vertical 1" = 10'



Quantities Carried to Sh't. No. 14

Excavation	62,328 Cu. Yds.
Embankment	1452 Cu. Yds.
Seeding	10,362 Sq. Yds.

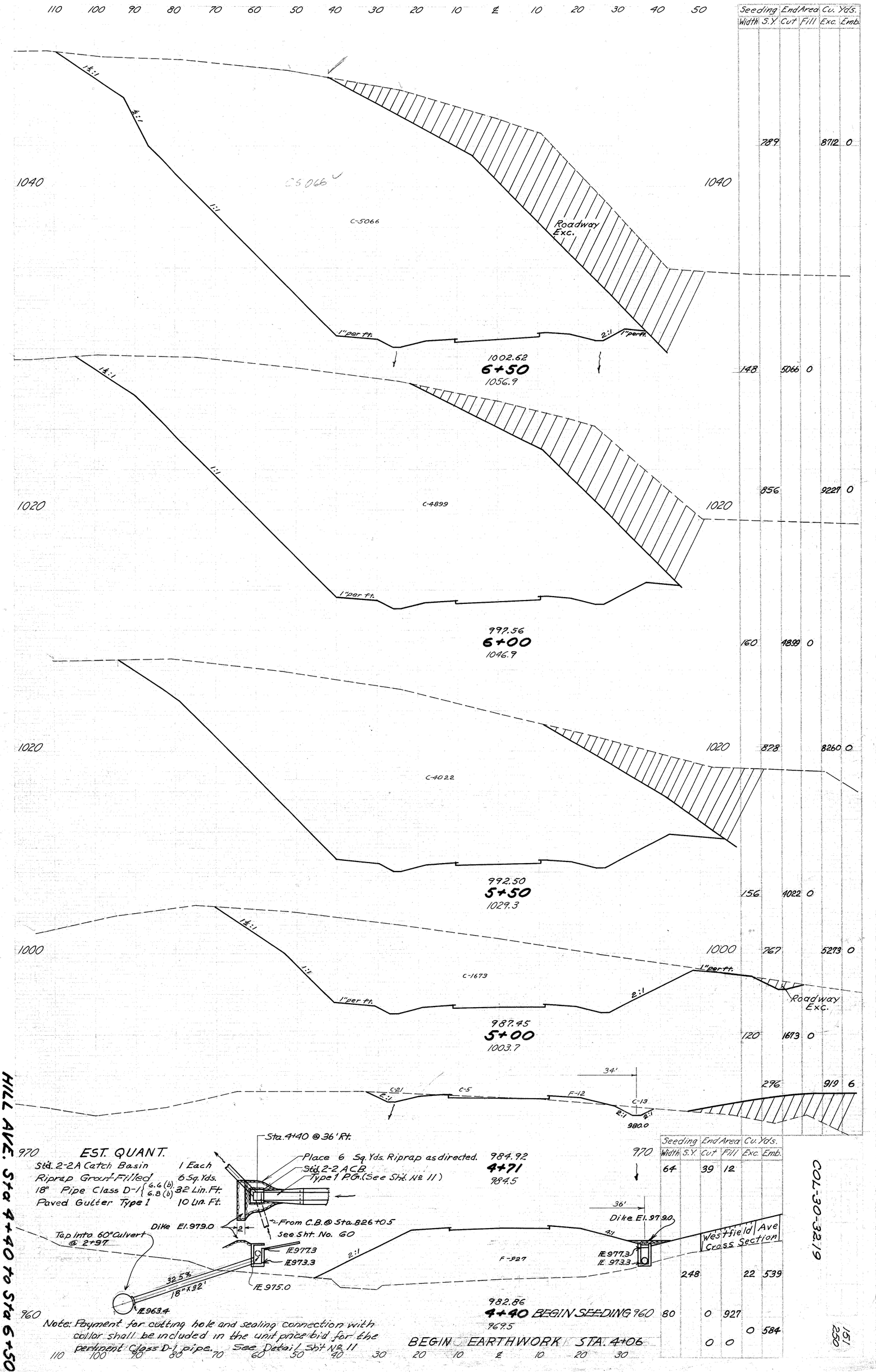
DRAINAGE

Station From	Station To	Side ℄	See Sheet	New Work Type	New Work Size	New Work Length	Paved Gutter Lin. Ft.	Sod Sq. Yds
4+40		Rt.	151	Pipe	18"	32		
4+47	11+50	Lt.	150				693	231
4+63	6+50	Rt.	150					111
11+50	13+50	Lt.	150					106
Total							693	448

GUARD RAIL

Station From	Station To	Side ℄	See Sheet	New Lin. Ft.
4+02	4+62	Lt.	150	87.5
6+65	11+37	Rt.	150	487.5
Total				575

HILL AVE. ~ Sta 3+50 to Sta 14+00



Seeding Width	Seeding S.Y.	End Area Cut	End Area Fill	Cu. Yds. Exc.	Cu. Yds. Emb.
	789			8712	0
148		5066	0		
	856			9227	0
160		4899	0		
	828			8260	0
156		4022	0		
	767			5273	0
120		1673	0		
	296			919	6
64		39	12		
	248			22	539
80		0	927		
				0	584
		0	0		

Note: Payment for cutting hole and sealing connection with collar shall be included in the unit price bid for the pertinent Class D-1 pipe. See Detail Sht No 11

HILL AVE. Sta 4+40 to Sta 6+50

COL-30-32.19

151
250

Seeding Width S.Y.	End Area Cut	End Area Fill	Cu. Yds. Exc.	Cu. Yds. Emb.
102	1378	0		
289	1171	0		
106	1151	0	1000	0
282	1010	0		
72				
1206	7165	0		
120	2839	0	5982	0
681				
125	3612	0		
1225			7366	0

COL-30-32.19

152
250

Seeding Width S.Y.	End Area Cut	End Area Fill	Cu. Yds. Exc.	Cu. Yds. Emb.
136	4343	0		

1040 1040 1040 1040 1040 1050 1050

Roadway Excavation

1" per ft.

1:1 1:1

C-1378 C-1151 C-1010 C-2839 C-3612 C-4343

1032.98 9+50 1046.1

1030.45 9+25 1039.3

1027.92 9+00 1042.1

1017.80 8+00 1043.3

1012.74 7+50 1052.7

1007.68 7+00 1055.4

HILL AVE. Sta 7+00 to Sta 9+50

Seeding	End Area	Cu Yds.
Width S.Y.	Cut Fill	Exc. Emb.
0	0 0	0 0
119	56 5	
43	60 5	
289	161 20	
61	114 17	
372	328 77	
73	240 66	
514	680 113	
112	494 56	
586	999 80	
99	585 30	
481	1198 28	

COL-30-32.19

153
250

Seeding	End Area	Cu Yds.
Width S.Y.	Cut Fill	Exc. Emb.
74	709 0	
453		590 0
89	1008 0	
537		2209 0

END WORK
13+50
1073.2

END APPROACH
13+00
1068.4

12+50
1062.6

12+00
1060.8

11+50
1058.0

11+00
1055.3

10+50
1051.1

10+00
1048.7

Roadway Excavation

Roadway Excavation

F-2 C-10 F-3 St. Ramp 1:1 2:1 C-23

F-3 C-23 2:1 C-91

F-14 C-3 2:1 C-237

F-46 5:1 2:1 C-482

F-56 C-12 1per. Ft. 2:1 C-709

F-30 5:1 C-6 1per. Ft. 2:1 C-579

1per. Ft. 1½:1 2:1 C-1008

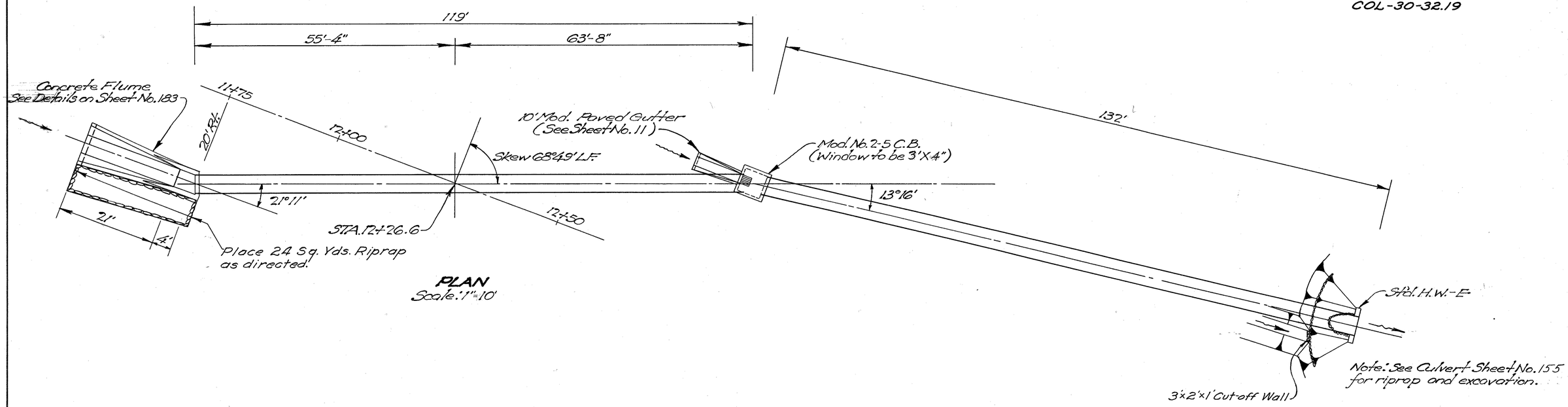
1per. Ft. 1½:1 2:1

HILL AVE. Sta 10+00 to Sta 13+50

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

154
250

COL-30-32.19

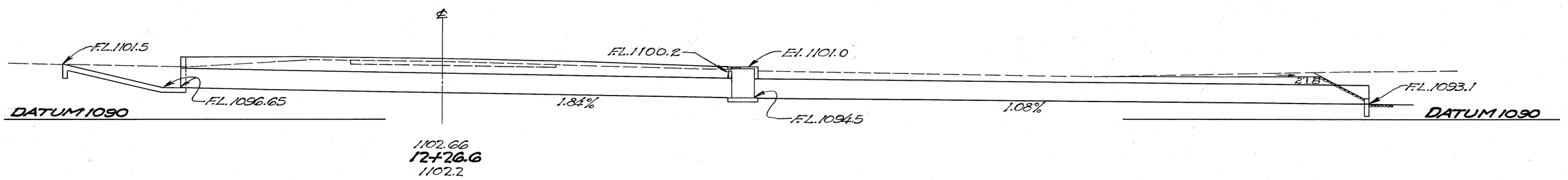


PLAN
Scale: 1"=10'

ESTIMATED QUANTITIES

48" Pipe Class A-1 Sec M-6.6(a)	119 Lin. Ft.
Masonry	0.9 Cu. Yds.
Excavation for Structure	51 Cu. Yds.
Mod. No. 2-5 Catch Basin	1 Each
Paved Gutter Type I	10 Lin. Ft.
Reinforcing Steel	2157 Lbs.
Concrete for Structures Class "C"	15 Cu. Yds.
48" Pipe Class B-1	132 Lin. Ft.
Riprap 6" Reinforced Concrete Slab	24 Sq. Yds.

Area: 58 acres
Q_{25}: 85 cfs



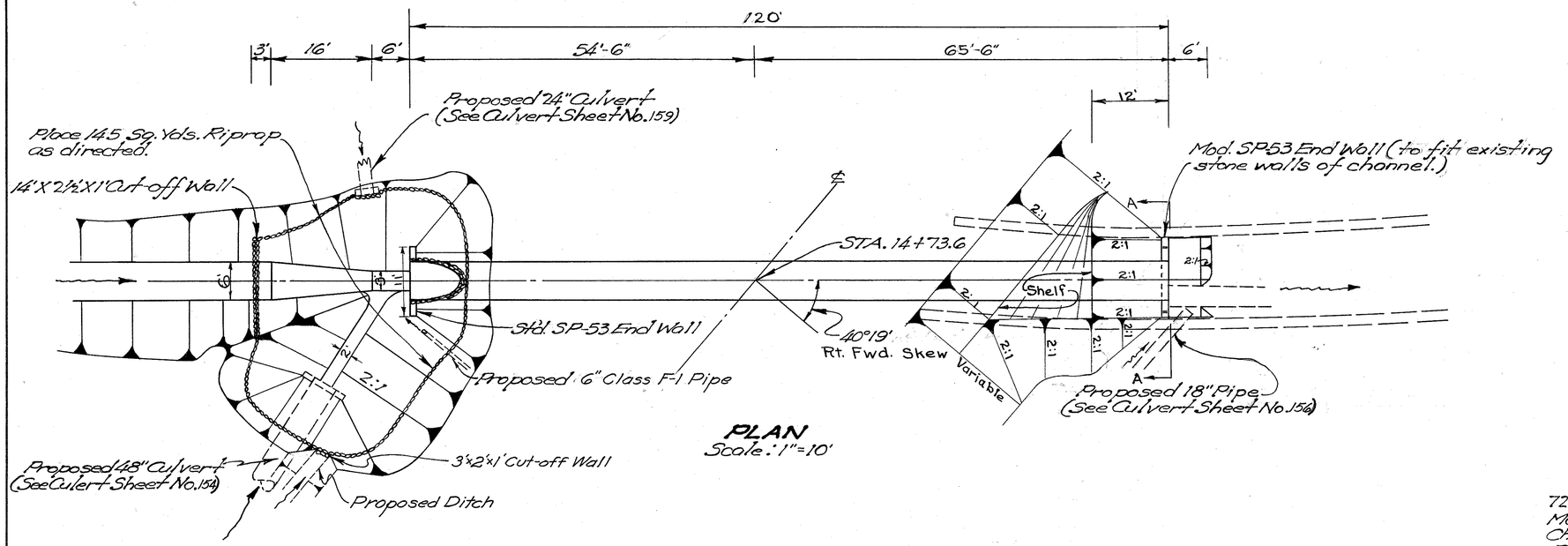
CROSS SECTION
Scale: 1"=10'

SUB-STATION RD. 12+26.6
48" X 251' PIPE CULVERT

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

155
250

COL-30-32.19

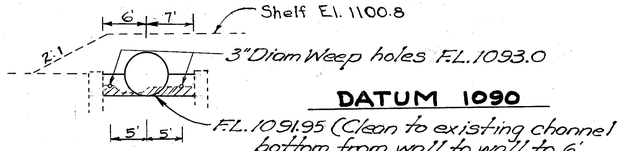


PLAN
Scale: 1"=10'

ESTIMATED QUANTITIES

72" Pipe Class A-1 Sec M-6.6(a)	120	Lin. Ft.
Masonry Class "E"	6.1	Cu. Yds.
Channel Excavation	215	Cu. Yds.
Riprop 6" Reinforced concrete slab	14.5	Sq. Yds.

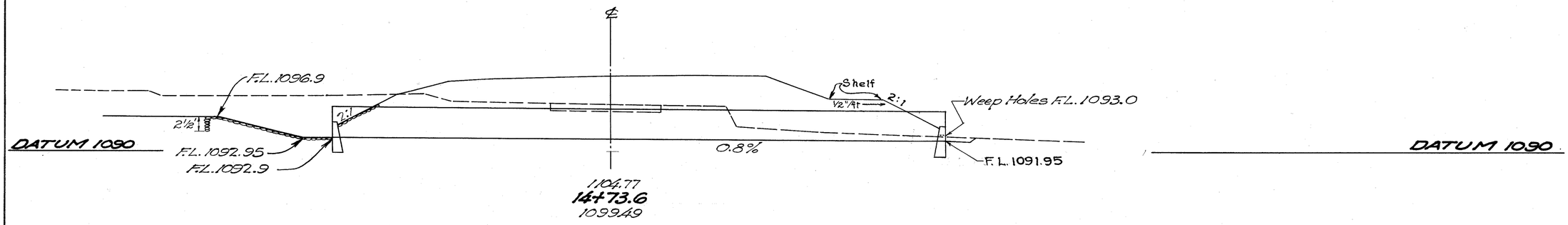
Area: 280 acres
Q25: 250 c/s



DATUM 1090

DATUM 1090

SECTION A-A
Scale: 1"=10'



CROSS SECTION
Scale: 1"=10'

SUB-STATION RD. 14+73.6
72"X 120' PIPE CULVERT

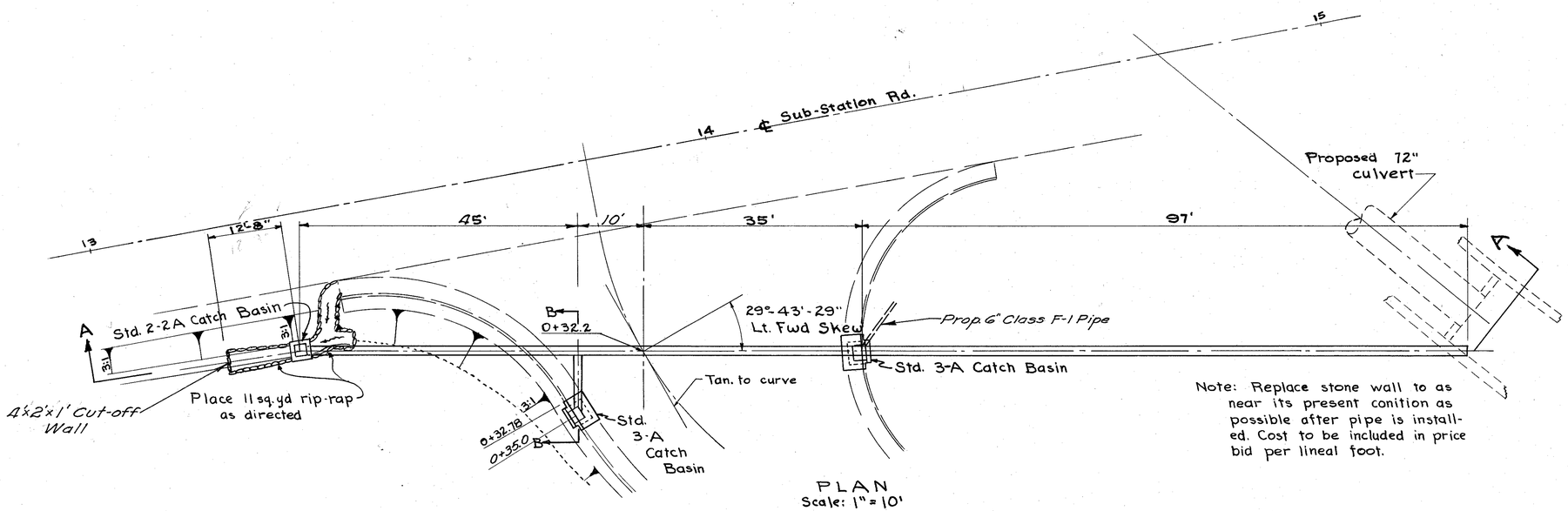
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

156/250

COL-30-32.19

ESTIMATED QUANTITIES

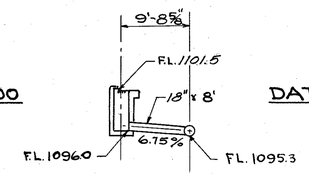
18" Pipe, Class C-1	194 Lin. Ft.
Std. 2-2A Catch Basin	1 Each
Std. 3-A Catch Basin	2 Each
Rip-rap 6" Reinforced Concrete Slab	11 S.Y.
Pipe Special 18"x18" Tee Class C-1	1 Each



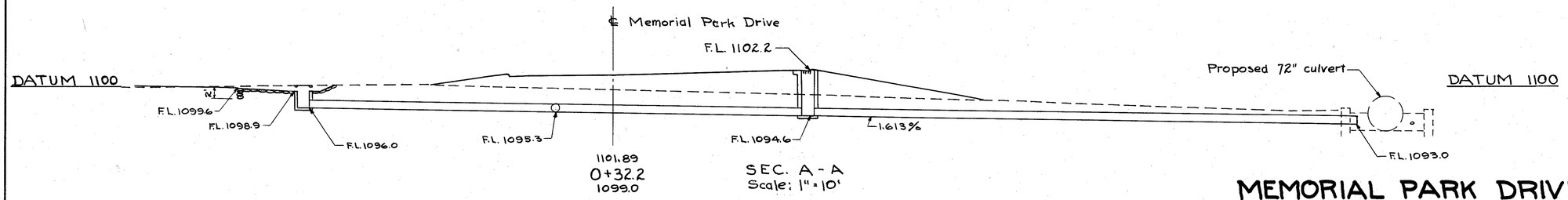
PLAN
Scale: 1" = 10'

Area: 2 acres
Q_{10}: 6 c.f.s.

Note: Replace stone wall to as near its present conition as possible after pipe is installed. Cost to be included in price bid per lineal foot.



SEC. B-B
Scale: 1" = 10'



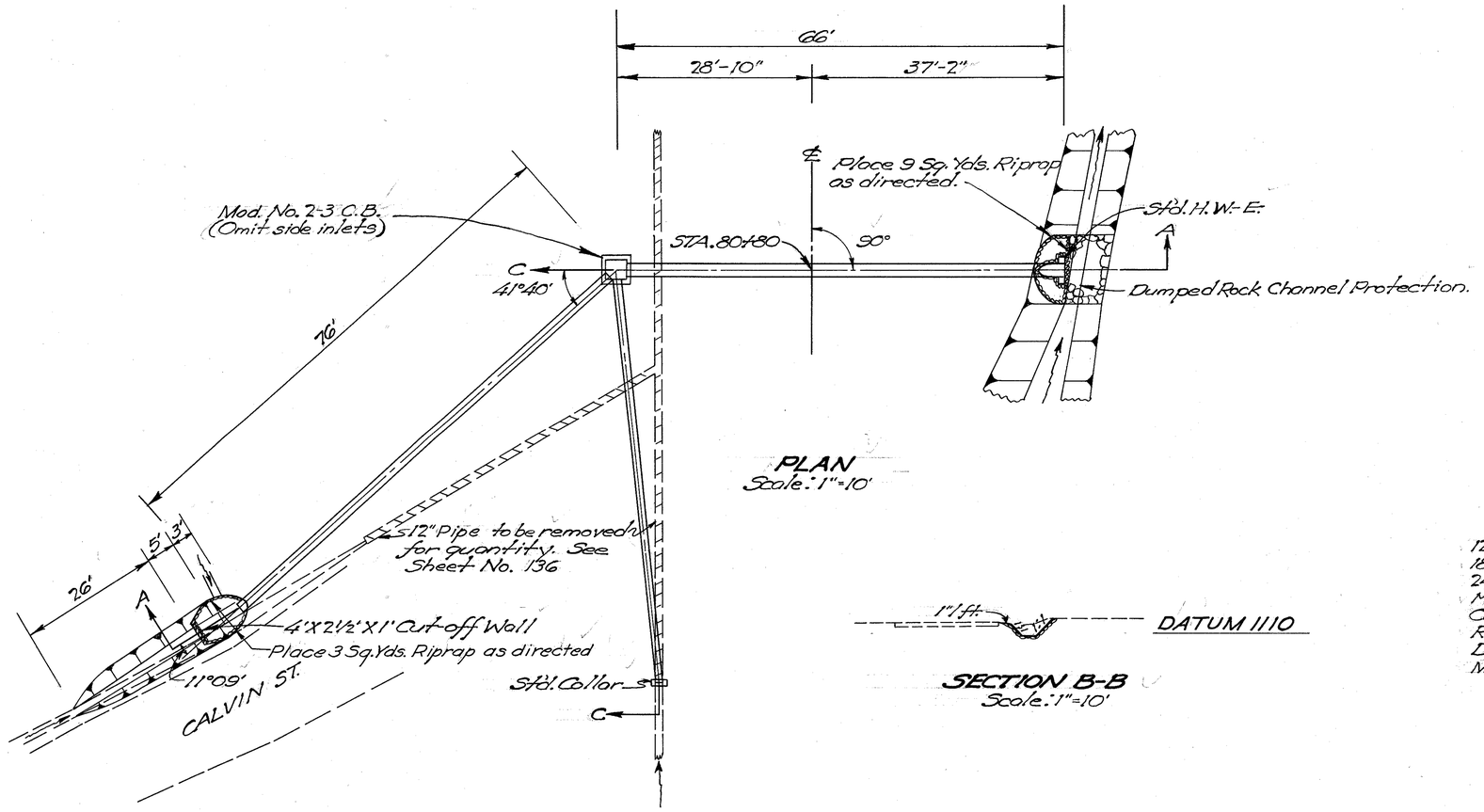
SEC. A-A
Scale: 1" = 10'

MEMORIAL PARK DRIVE STATION 0+32.2
18" x 194' CULVERT

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

157
250

COL-30-32.19



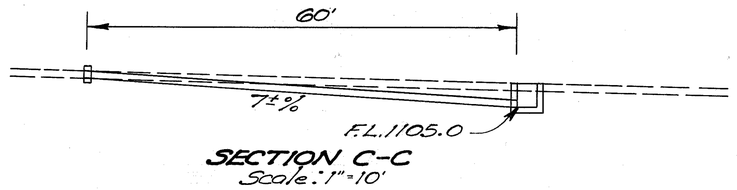
PLAN
Scale: 1"=10'

SECTION B-B
Scale: 1"=10'

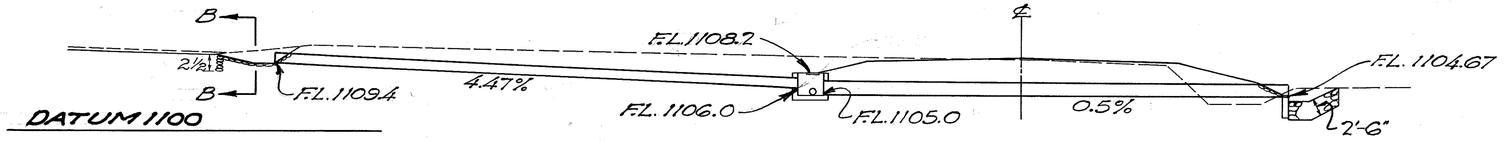
ESTIMATED QUANTITIES

12" Pipe Class B-1 Sec M-6.8(b)	60 Lin. Ft.
18" Pipe Class F-1	74 Lin. Ft.
24" Pipe Class A-1 Sec. M-6.6(a) or Sec. M-6.8(b)	66 Lin. Ft.
Masonry	0.4 Cu. Yd.
Channel Excavation	4 Cu. Yds.
Riprap Grout Filled	12 Sq. Yds.
Dumped Rock Channel Protection	7 Cu. Yds.
Mod. No. 2-3 Catch Basin	1 Each

Area: 16 acres
Q_{25}: 18 cfs



SECTION C-C
Scale: 1"=10'



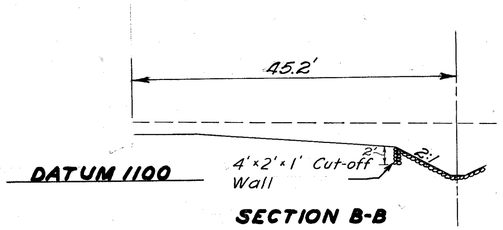
CROSS SECTION A-A
Scale: 1"=10'

STA. 80+80 APPR "B" 24" X 66' PIPE CULVERT

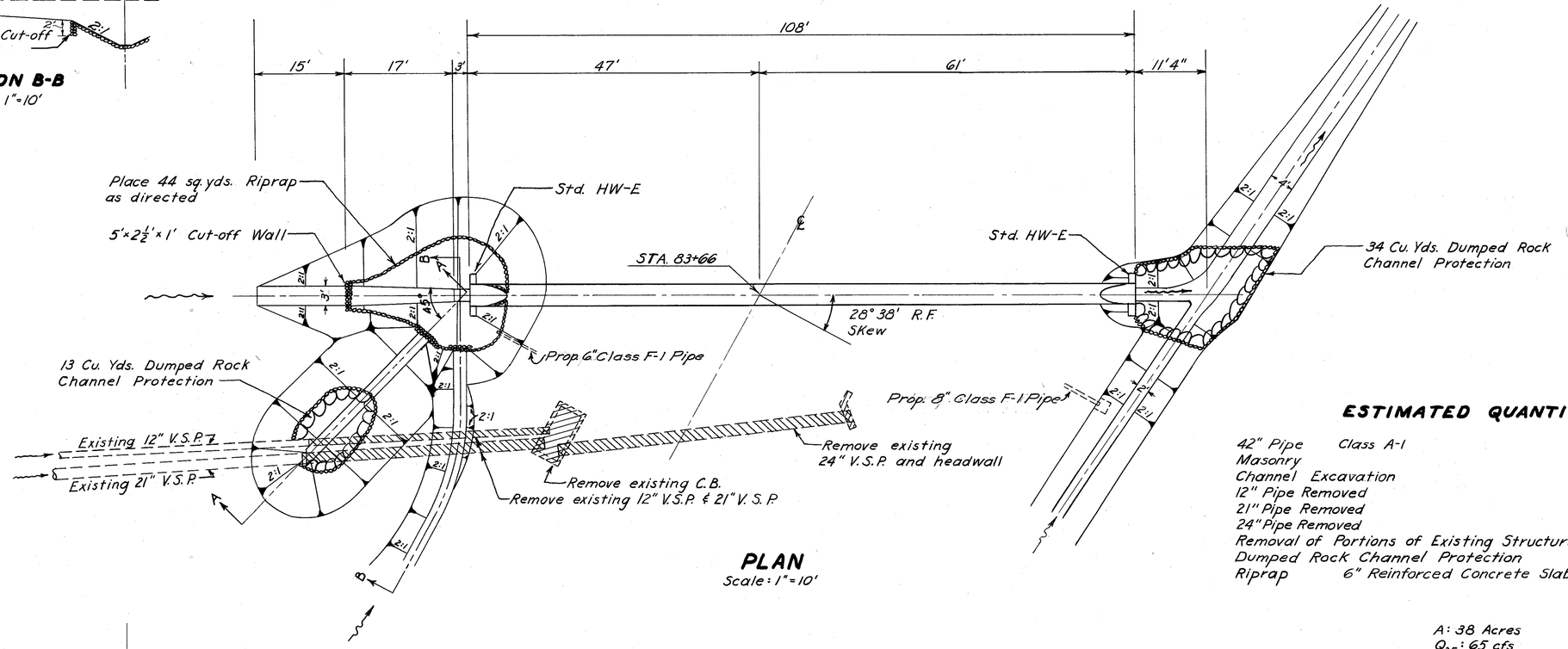
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

158
250

COL-30-32.19



SECTION B-B
Scale: 1"=10'

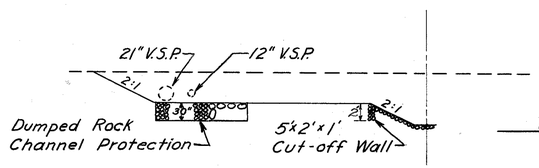


PLAN
Scale: 1"=10'

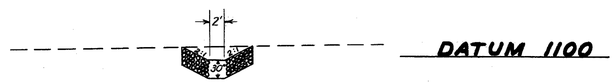
ESTIMATED QUANTITIES

42" Pipe Class A-1	108 Lin.Ft
Masonry	1.5 Cu.Yds.
Channel Excavation	151 Cu.Yds.
12" Pipe Removed	39 Lin.Ft.
21" Pipe Removed	39 Lin.Ft.
24" Pipe Removed	48 Lin.Ft.
Removal of Portions of Existing Structures	4 Cu.Yds.
Dumped Rock Channel Protection	47 Cu.Yds.
Riprap 6" Reinforced Concrete Slab	44 Sq.Yds.

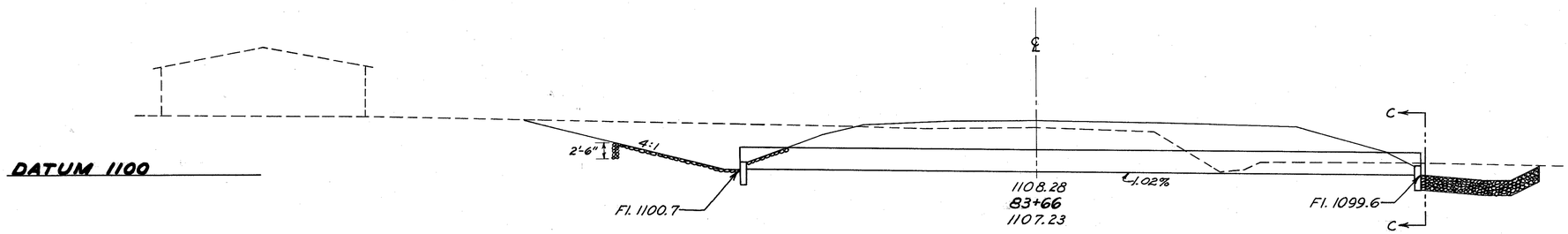
A: 38 Acres
Q_{25}: 65 cfs



SECTION A-A
Scale: 1"=10'



SECTION C-C
Scale: 1"=10'



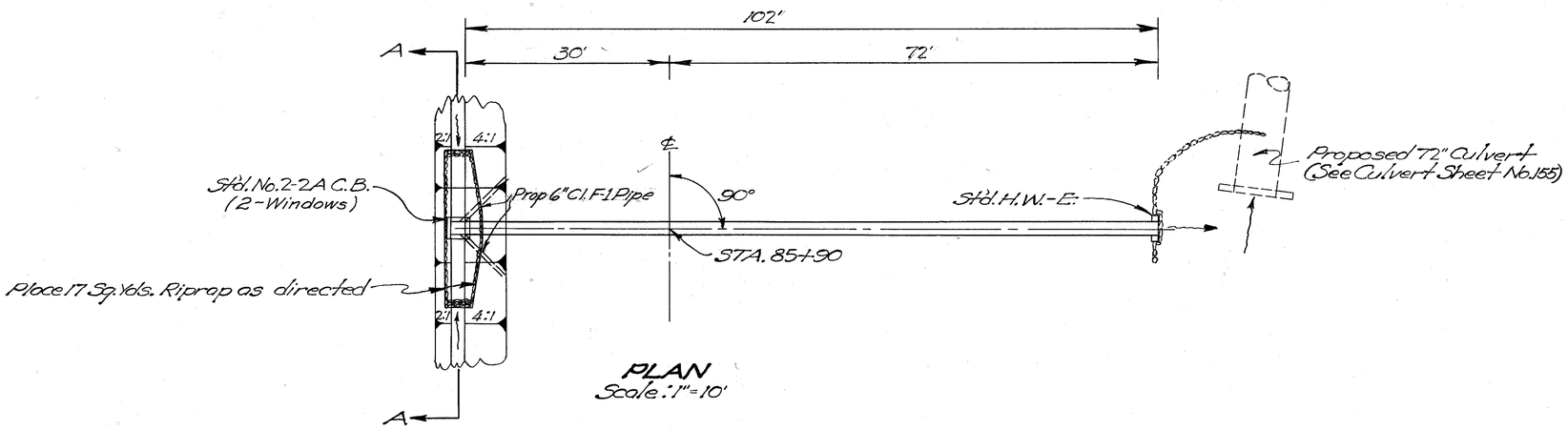
CROSS SECTION
Scale: 1"=10'

APPR. "B" STA. 83+66
42"x108' PIPE CULVERT

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

159
250

COL-30-32.19

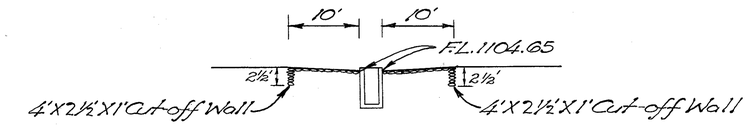


PLAN
Scale: 1" = 10'

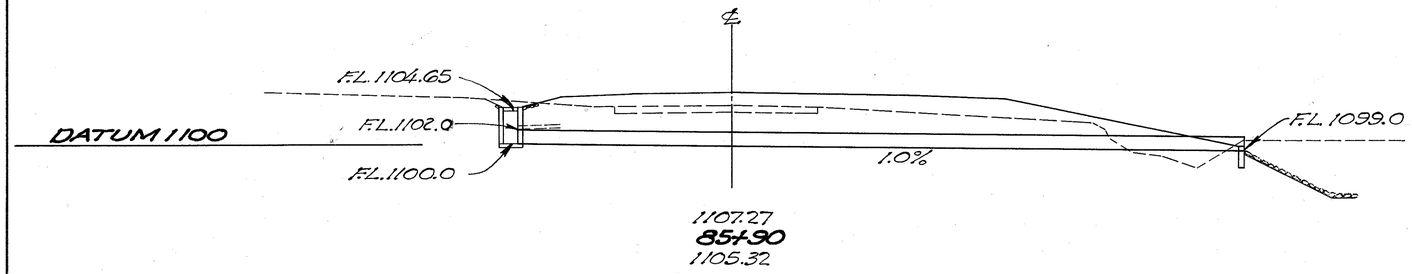
ESTIMATED QUANTITIES

24" Pipe Class A-1	102 Lin. Ft.
Masonry	0.4 Cu. Yd.
Std. 2-2A Catch Basin	1 Each
Riprap Grout Filled	17 Sq. Yds.

Area: 6 acres
Q25: 18 cfs



SECTION A-A
Scale: 1" = 10'



CROSS SECTION
Scale: 1" = 10'

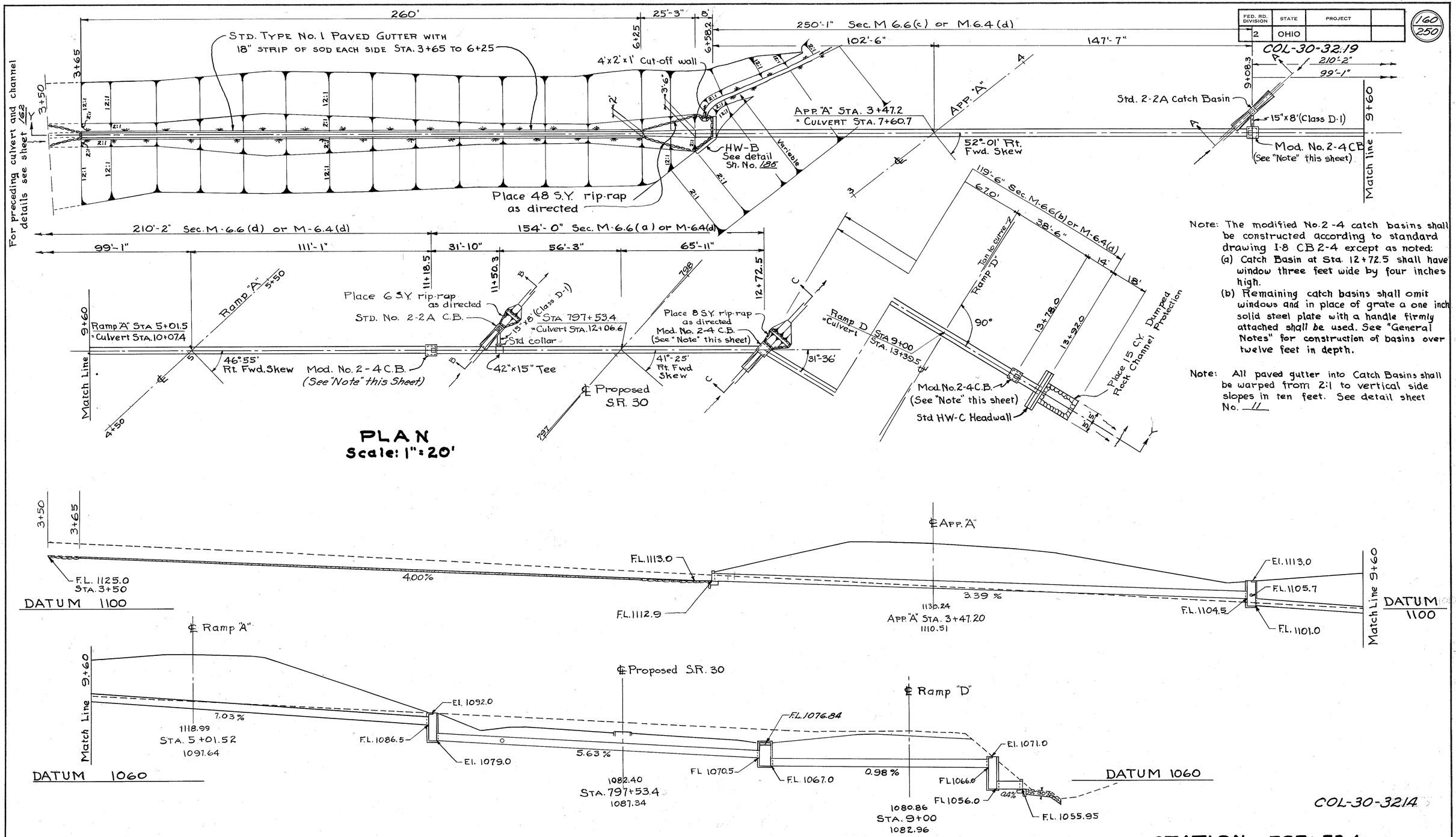
DATUM 1100

APPR. "B" STA. 85+90
24" X 102' PIPE CULVERT

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

160/250

COL-30-32.19



PLAN
Scale: 1" = 20'

Note: The modified No. 2-4 catch basins shall be constructed according to standard drawing I-8 CB 2-4 except as noted:
(a) Catch Basin at Sta. 12+72.5 shall have window three feet wide by four inches high.
(b) Remaining catch basins shall omit windows and in place of grate a one inch solid steel plate with a handle firmly attached shall be used. See "General Notes" for construction of basins over twelve feet in depth.

Note: All paved gutter into Catch Basins shall be warped from 2:1 to vertical side slopes in ten feet. See detail sheet No. 11

CROSS SECTION Y-Y
Scale: 1" = 20'

COL-30-32.14

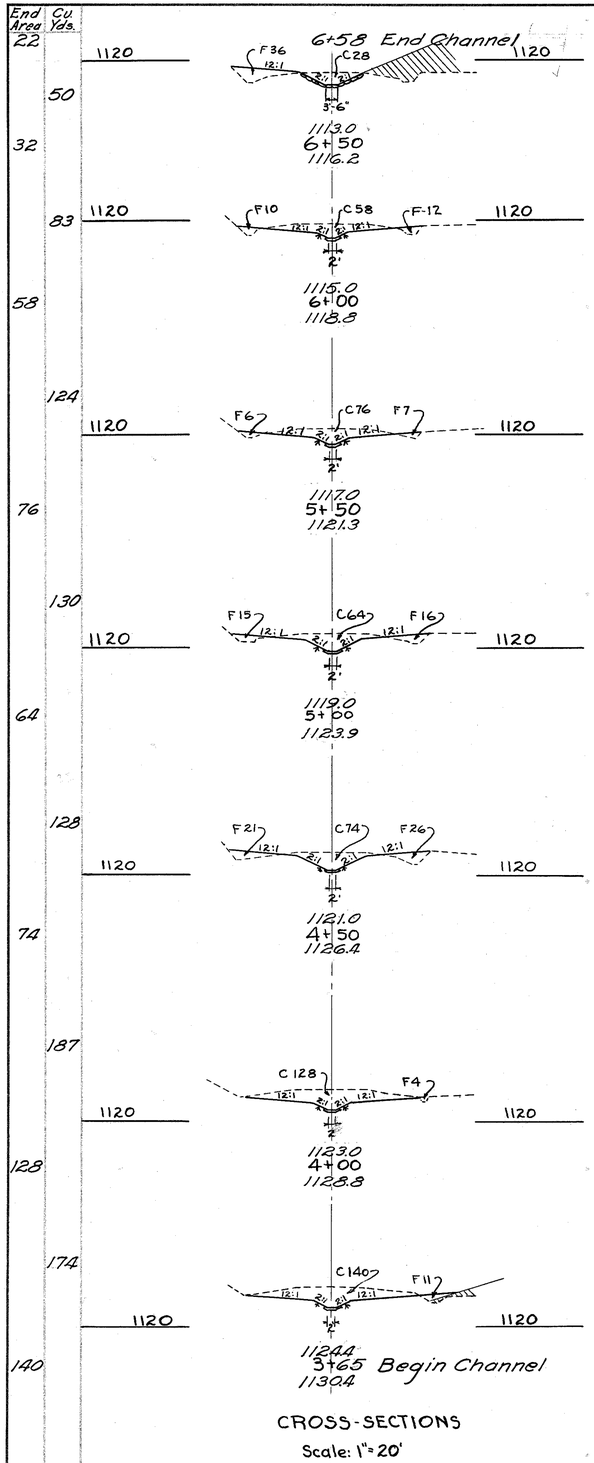
STATION 797+53.4
42"x736' PIPE CULVERT

SHEET 1 OF 2

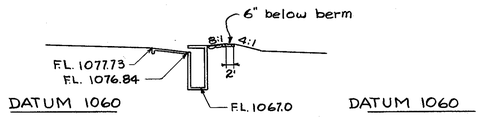
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

161
250

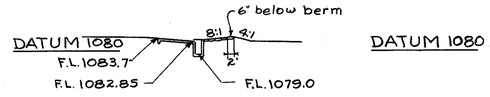
COL-30-32.19



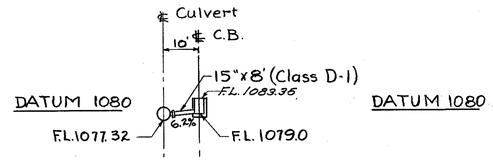
CROSS-SECTIONS
Scale: 1"=20'



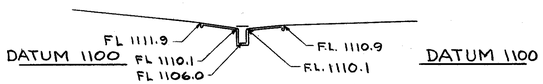
SEC. C-C



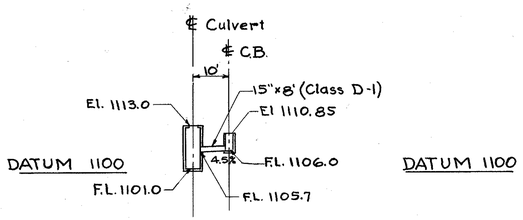
SEC. B-B



SEC. 11+50.3



SEC A-A



SEC. 9+08.3

ESTIMATED QUANTITIES

42" Pipe Class A-1 Sec. M-6.6(c) or Sec. M-6.4(d)	250 L.F.
42" Pipe Class A-1 Sec. M-6.6(d) or Sec. M-6.4(d)	212 L.F.
42" Pipe Class A-1 Sec. M-6.6(a) or Sec. M-6.4(d)	154 L.F.
42" Pipe Class A-1 Sec. M-6.6(b) or Sec. M-6.4(d)	120 L.F.
Pipe special 42"x15" Tee Class A-1 Sec. M-6.6(a) or Sec. M-6.4(d)	1 Each
Mod. No. 2-4 Reinforced Concrete Catch Basin	3 Each
Mod. No. 2-4 Catch Basin	1 Each
Std. No. 2-2A Catch Basin	2 Each
15" Pipe Class D-1	16 L.F.
Masonry	23.3 C.Y.
Paved gutter Type I	300 L.F.
Rip-rap "Grout Filled"	62 S.Y.
Dumped Rock Channel Protection	15 C.Y.
Sodding	127 S.Y.
Channel excavation	876 C.Y.

Area: 30 acres
Q_{50}: 66 c.f.s.

Reinforcing Steel List HW-C			
Symbol	No	Length	Weight
a	11	19'-1"	219
c	12	7'-4"	92
d	6	6'-8"	42
f	6	4'-1"	25
g	10	8'-6"	89
			467 lbs
Masonry			11.0 C.Y.

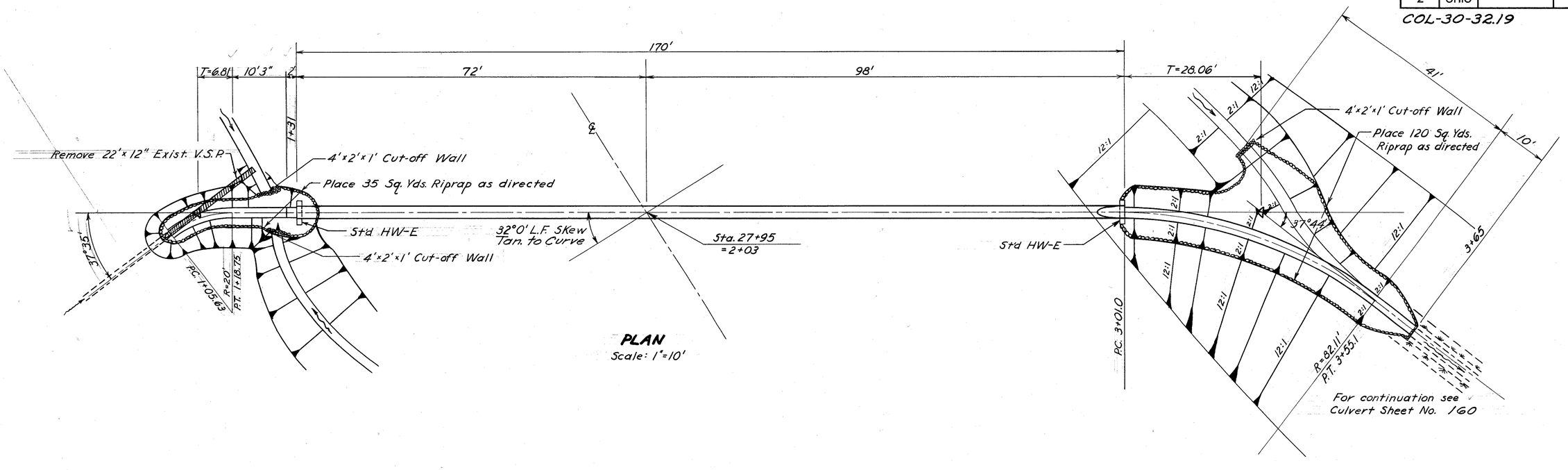
STATION 797+53.4
42"x736' PIPE CULVERT

SHEET 2 OF 2

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

162
250

COL-30-32.19



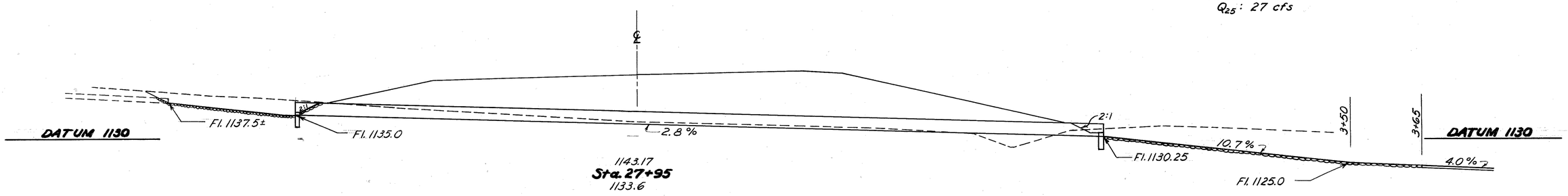
PLAN
Scale: 1"=10'

For continuation see
Culvert Sheet No. 160

ESTIMATED QUANTITIES

30" Pipe Class A-1	170 Lin.Ft.
Channel Excavation	251 Cu.Yds.
Riprap Grout Filled	155 Sq.Yds.
Masonry	1.0 Cu.Yd.
12" Pipe Removed	22 Lin.Ft.

Area: 10 Acres
Q_{25}: 27 cfs



CROSS-SECTION
Scale: 1"=10'

COL-170-0015

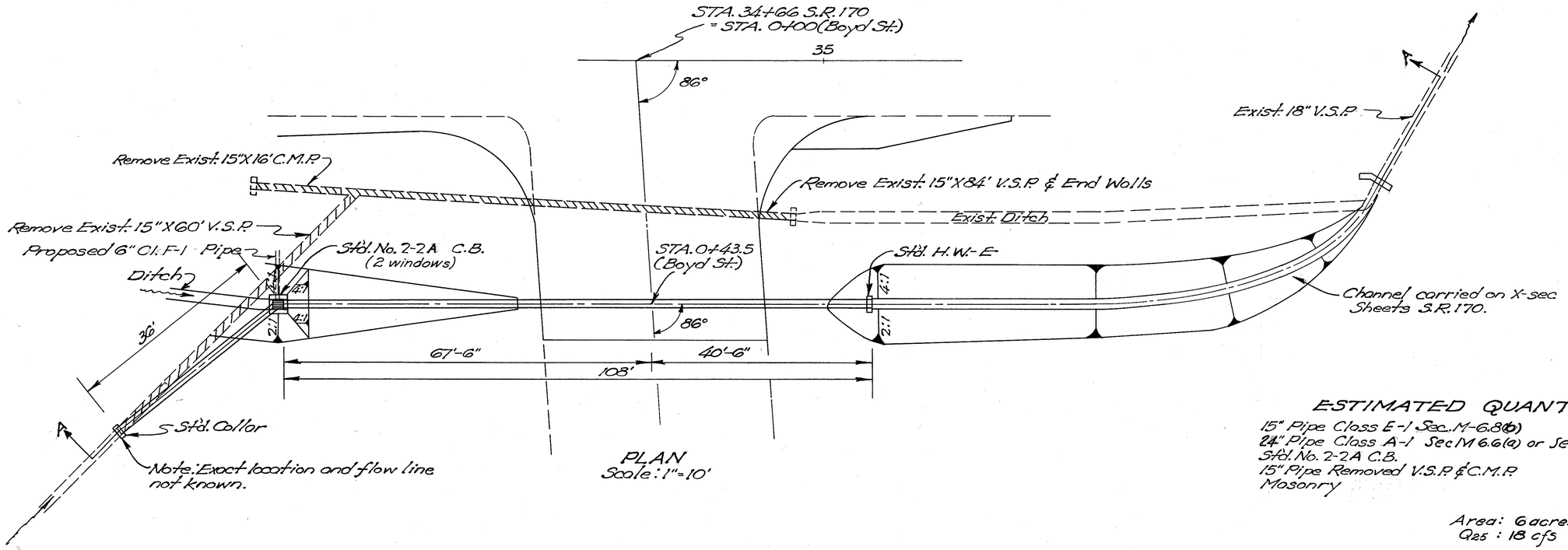
S.R. 170 STA. 27+95
30"x170' PIPE CULVERT

7

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

163
250

COL-30-32.19

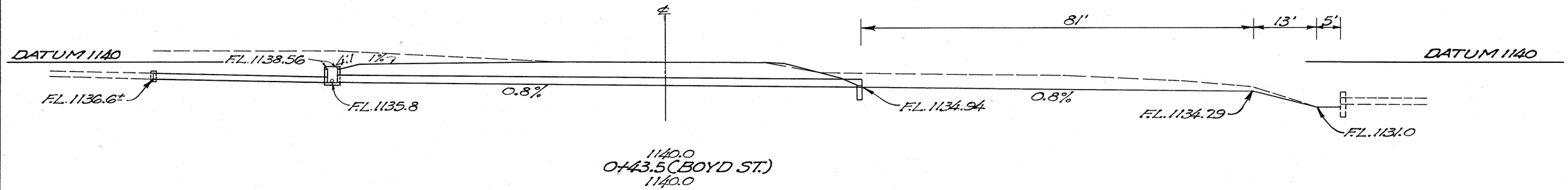


PLAN
Scale: 1"=10'

ESTIMATED QUANTITIES

15" Pipe Class E-1 Sec. M-6.8(b)	36 Lin. Ft.
24" Pipe Class A-1 Sec M 6.6(a) or Sec. M 6.8(b)	108 Lin. Ft.
Std. No. 2-2A C.B.	1 Each
15" Pipe Removed V.S.P. & C.M.P.	160 Lin. Ft.
Masonry	0.4 Cu. Yd.

Area: 6 acres
Qes: 18 cfs



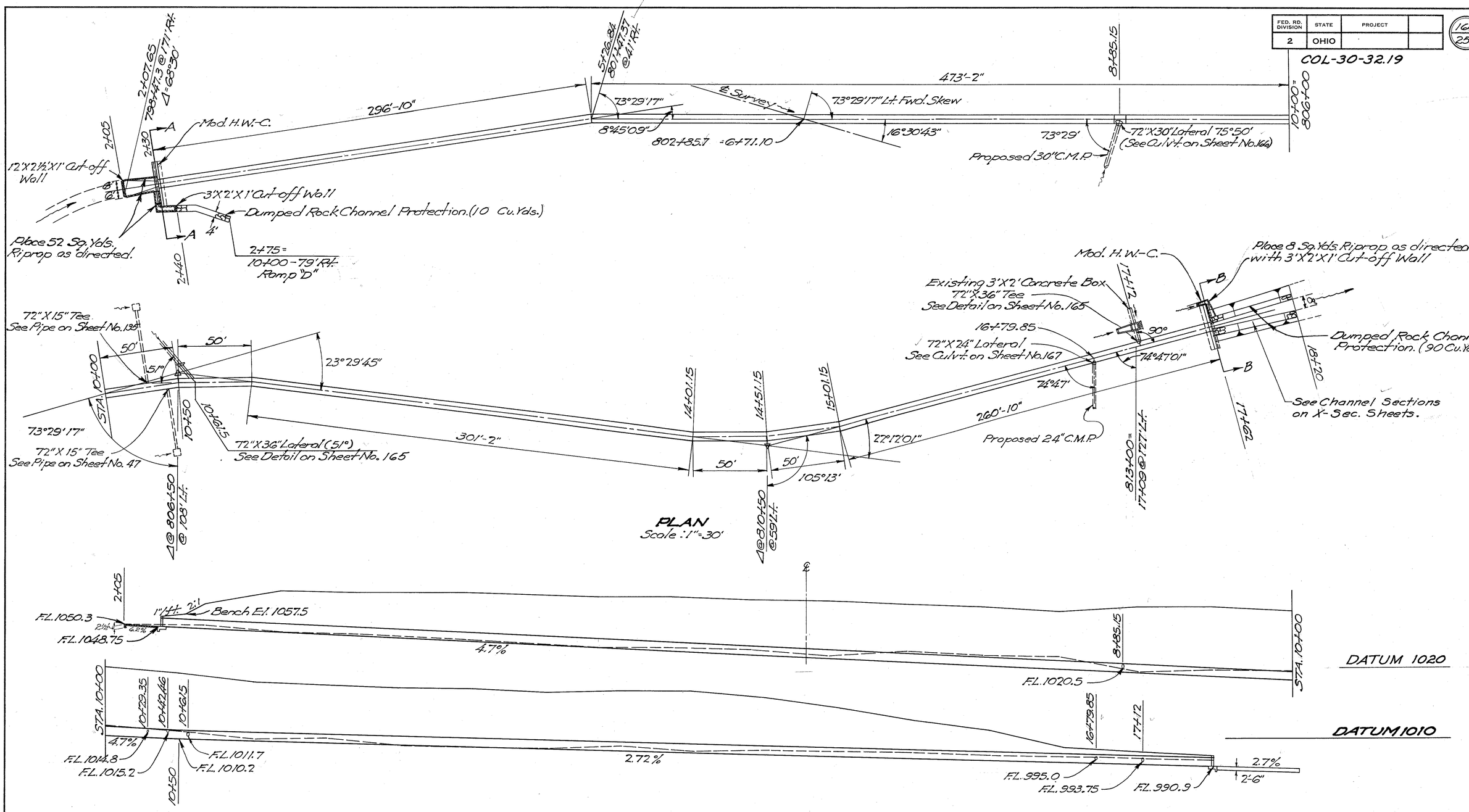
CROSS SECTION A-A
Scale: 1"=10'

STA. 0+43.5 (BOYD ST.) OFF S.R. 170
24"X108' PIPE CULVERT

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

164
250

COL-30-32.19



PLAN
Scale: 1"=30'

CROSS SECTION
Scale: 1"=30'

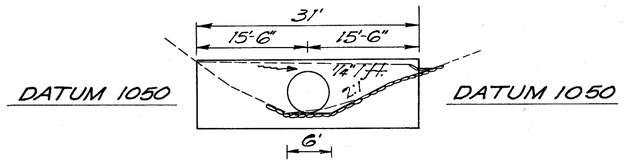
COL-30-3224

STA. 802+85.7
72"X 1532' PIPE CULVERT
SHEET 1 OF 2 SHEETS

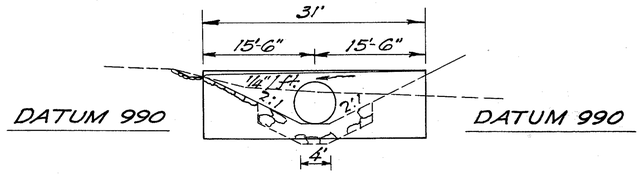
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

165
250

COL-30-32.19



SECTION A-A
Scale: 1"=10'



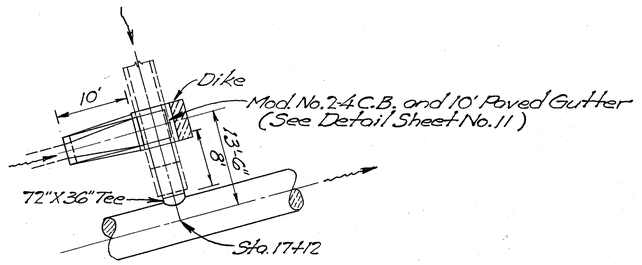
SECTION B-B
Scale: 1"=10'

DETAILS OF H.W.-C.

* Reinforcing Steel List H.W.-C.

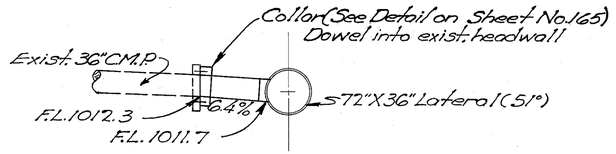
Symbol	No.	Length	Weight
a	11	30'-8"	352
b	8	12'-9"	106
c	12	11'-7"	145
d	8	9'-7"	80
f	8	4'-1"	34
g	18	12'-3"	331
			1048 Lbs.
Masonry			25 Cu. Yds.

* Quantities per HW-C

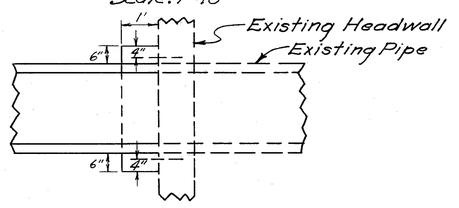


Note: Profile of this connection is shown on X-sec. Sheet No. 52.

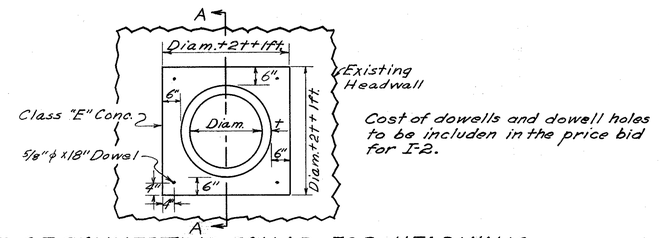
DETAIL OF STRUCTURE STA. 17+12
Scale: 1"=10'



DETAIL OF LATERAL STA. 10+61.5
Scale: 1"=10'



SECTION A-A



Cost of dowells and dowell holes to be includen in the price bid for I-2.

DETAIL OF CONNECTING COLLAR FOR HEAD WALLS
Scale: None

Note: From Sta. 16+50 to Sta. 17+62
This portion of Sec. Corr. Metal Structure shall be shop coated and field paved in accordance with Sec. M-6.4(d) of the Construction and Material Specifications. After installation of the structure, the damaged or worn spots in the bituminous coating on the inside of the structure shall be recoated using materials and methods recommended by the manufacturer and as directed by the Engineer.
Results obtained from the field paving shall meet with the satisfaction of the Engineer.
The bituminous paving may consist of an acceptable mixture of hot sand and Sec. M-5.1 asphalt cement spread and compacted, to the satisfaction of the Engineer, to form a smooth durable pavement and having a minimum thickness of approximately one inch over the inside crest of the corrugations.
Payment for these operations shall be included in the unit price bid for Item I-1.

Note: The bends in the 72" sectional plate corrugated metal pipe shall be obtained by mitered joints. This shall be done so that the galvanizing will meet the requirements of galvanizing after corrugating and forming", as described under Sec. M-6.4(a), "Galvanizing". The joint fabricating cost shall be included in the unit price bid per lineal foot for the pipe.

ESTIMATED QUANTITIES

Removal of Portions of Existing Structures	5 Cu Yds
Mod. No. 2-4 Catch Basin	1 Each
36" Pipe Class A-1 Sec M-6.4(d) Gage 10	18 Lin. Ft.
72" Pipe Sec M-6.4(g) Class A-1 Gage 10-8 as per plan	1300 Lin. Ft.
* 72" Pipe Sec M-6.4(g) Class A-1 Gage 8-7 as per plan	232 Lin. Ft.
Channel Excavation	8 Cu. Yds.
Paved Gutter Type 1	10 Lin. Ft.
Masonry	50.4 Cu. Yds.
Riprap Grout Filled	60 Sq. Yds.
Dumped Rock Channel Protection	100 Cu. Yds.

* The higher gage plates (8-7) will be used from Sta. 8+95 to 11+25

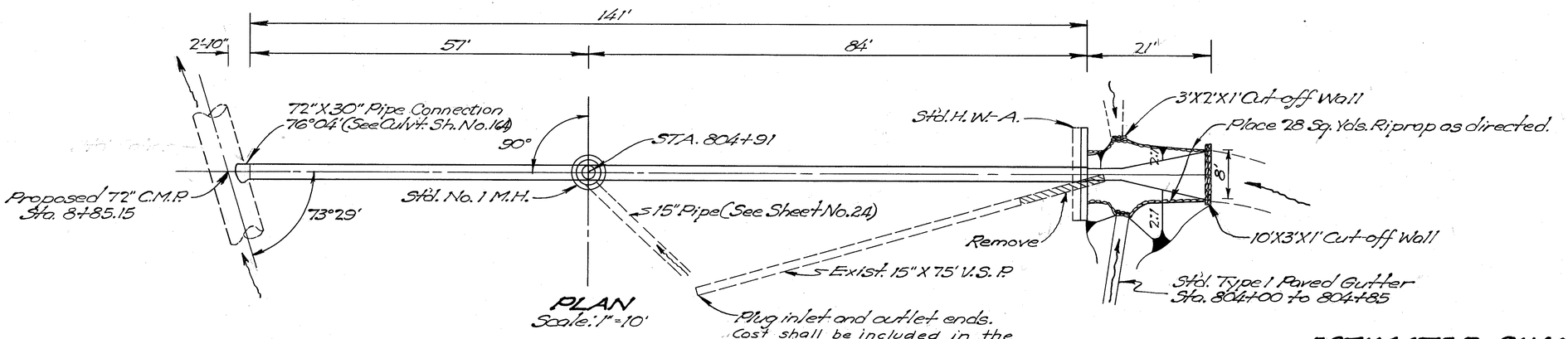
Area.: 3.75 acres
Q50.: 350 c/s

STA. 802+85.7
72" X 1532' PIPE CULVERT
SHEET 2 OF 2 SHEETS

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

166
250

COL-30-32.19

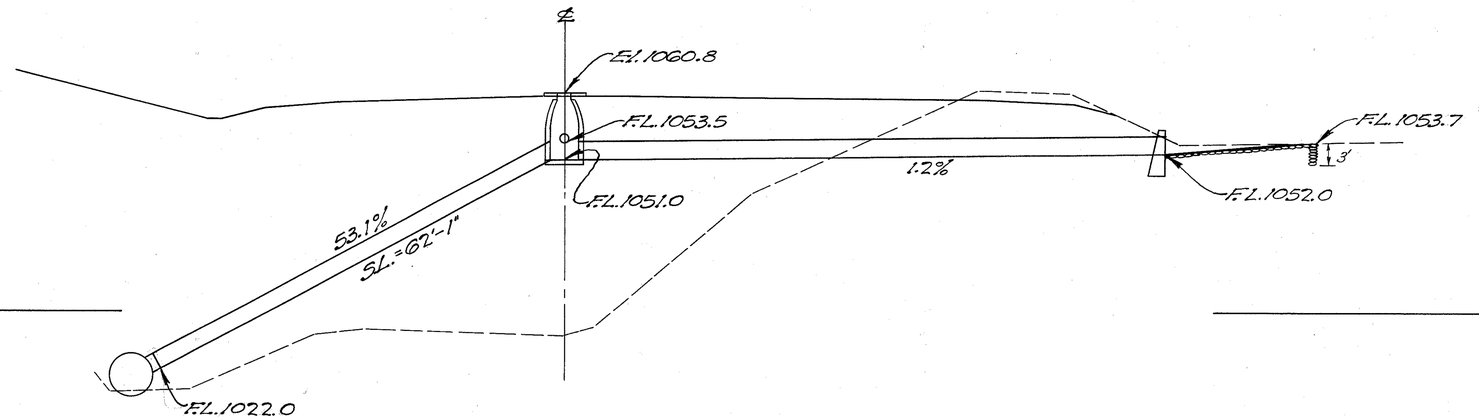


Note: For connection of the 30" pipe lateral to the 72" carrying line see Note on Sht. No. 8

ESTIMATED QUANTITIES

30" Pipe Class A-1 Sec M-6.2(a) or Sec M-6.8(b)	82 Lin. Ft.
30" Pipe Class A-1 Sec M-6.4(d)	64 Lin. Ft.
Std. No. 1 Manhole	1 Each
Pipe Removed 15" V.S.P.	14 Lin. Ft.
Riprop Grout Filled	25 Sq. Yds.
Channel Excavation	10 Cu. Yds.
Masonry	7.5 Cu. Yds.
Std. Paved Gutter Type 1	85 Lin. Ft.

Area: 130 acres
Q50: 38 cfs



CROSS SECTION
Scale: 1"=10'

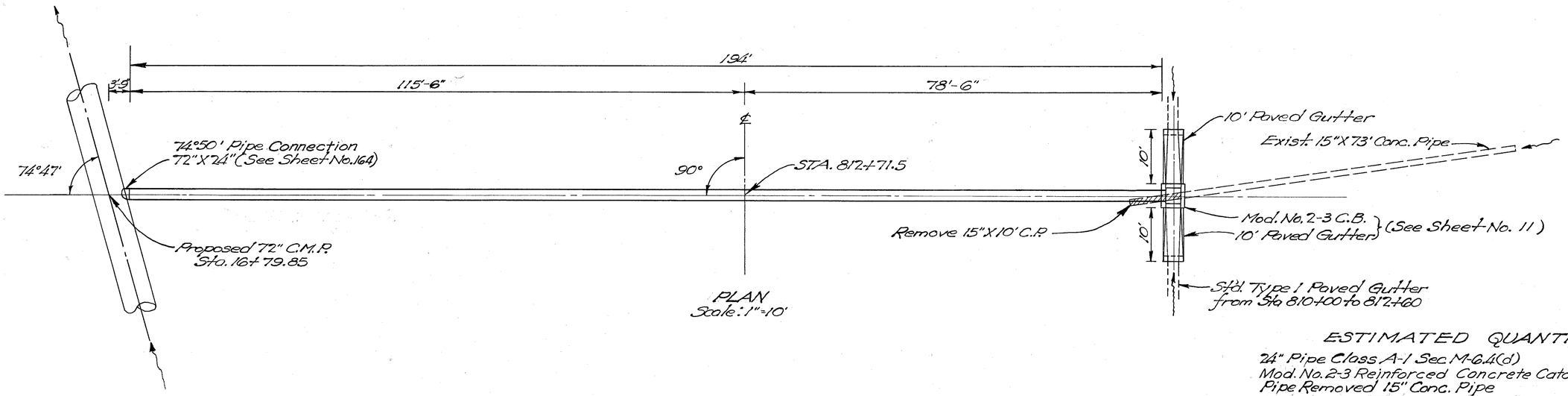
COL-30-3228

STA. 804+91
30" X 146' PIPE CULVERT

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

167
250

COL-30-32.19



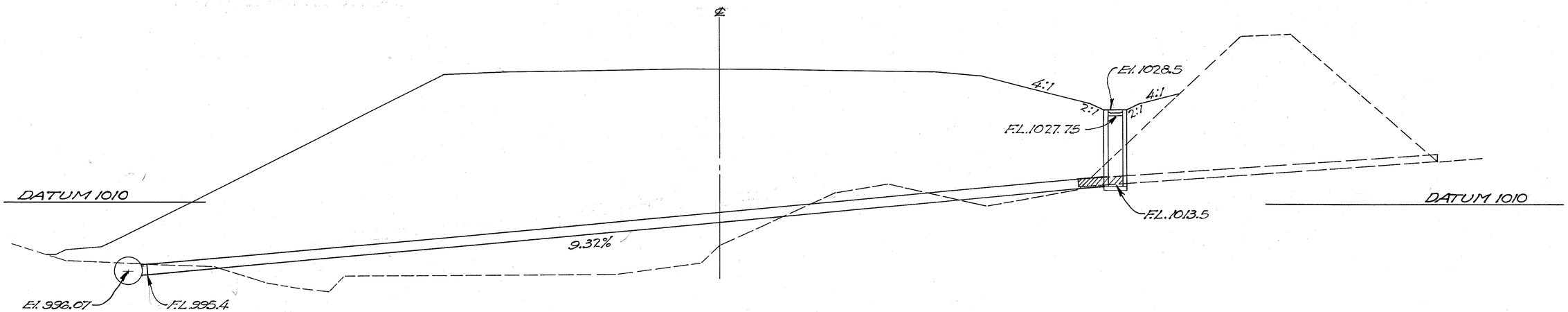
PLAN
Scale: 1"=10'

ESTIMATED QUANTITIES

24" Pipe Class A-1 Sec. M-6.4(d)	196 Lin. Ft.
Mod. No. 2-3 Reinforced Concrete Catch Basin	1 Each
Pipe Removed 15" Conc. Pipe	10 Lin. Ft.
Paved Gutter Type 1	20 Lin. Ft.

Note: For connection of the 24" pipe lateral to the 72" carrying line see "Note" on Sht. No. 8

Area: 11 acres
Qso: 35 cfs



CROSS SECTION
Scale: 1"=10'

COL-30-32.43

STA. 812+71.5
24" X 196' PIPE CULVERT

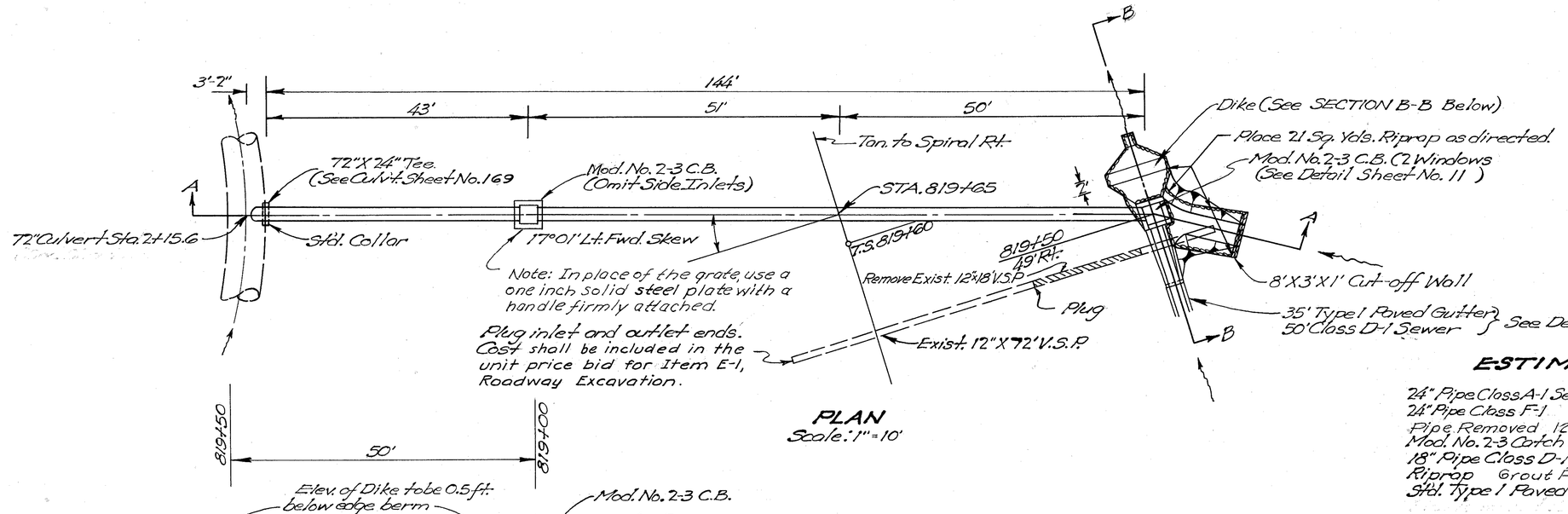
15

Note: For connection of 24" pipe lateral to 72" carrying line see "Note" on sheet No. 8 .

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

168 / 250

COL-30-32.19

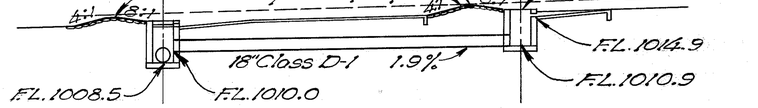


PLAN
Scale: 1" = 10'

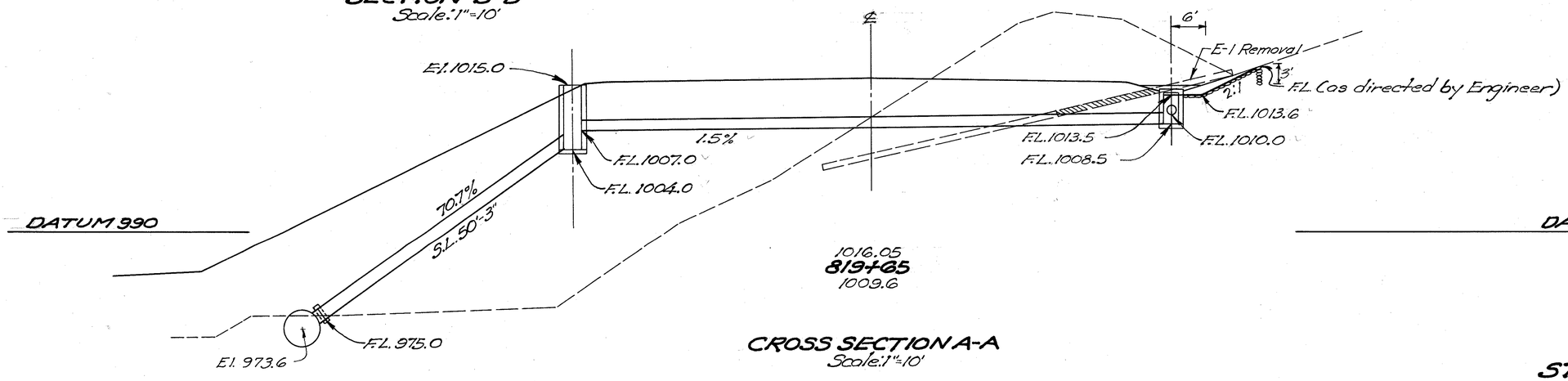
ESTIMATED QUANTITIES

24" Pipe Class A-1 Sec M-6.6(a) or Sec M-6.8(b)	103 Lin. Ft.
24" Pipe Class F-1	52 Lin. Ft.
Pipe Removed 12" V.S.P.	18 Lin. Ft.
Mod. No. 2-3 Catch Basin	3 Each
18" Pipe Class D-1, Sec. M-6.6(b) or Sec. M-6.8(b)	50 Lin. Ft.
Riprop Grout Filled	31 Sq. Yds.
Std. Type 1 Paved Gutter	45 Lin. Ft.

Area: 90 acres
Q50: 29 cfs



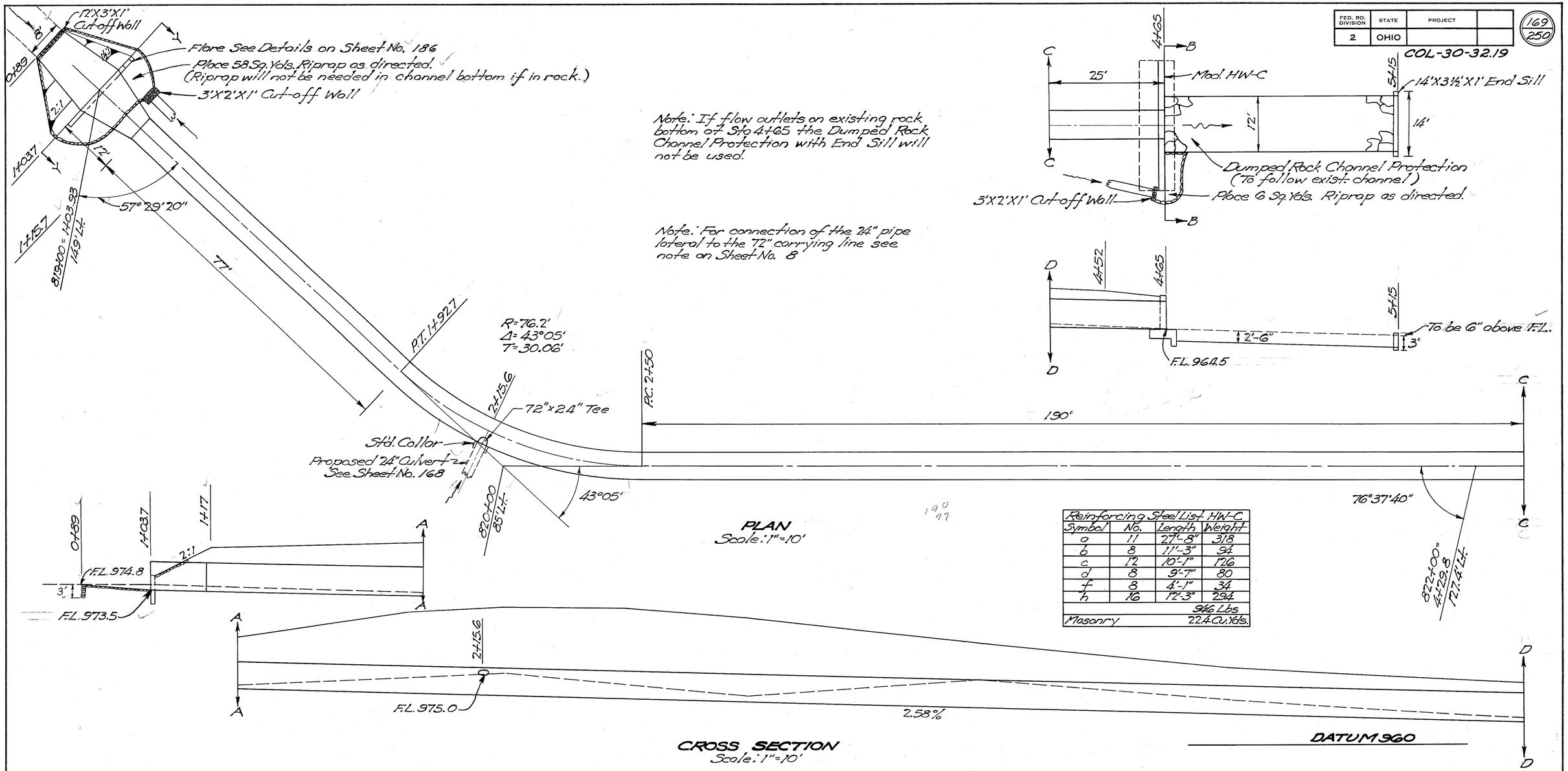
SECTION B-B
Scale: 1" = 10'



CROSS SECTION A-A
Scale: 1" = 10'

COL-30-3256

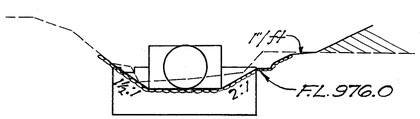
STA. 819+65
24" X 155' PIPE CULVERT



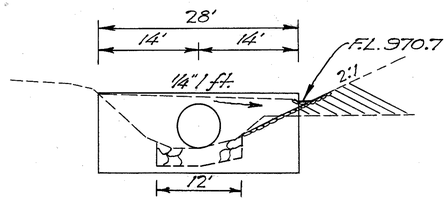
PLAN
Scale: 1"=10'

CROSS SECTION
Scale: 1"=10'

Reinforcing Steel List HW-C			
Symbol	No.	Length	Weight
a	11	27'-8"	318
b	8	11'-3"	94
c	12	10'-1"	126
d	8	9'-7"	80
f	8	4'-1"	34
h	16	12'-3"	294
			946 Lbs
Masonry			22.4 Cu. Yds.



SECTION Y-Y
Scale: 1"=10'



SECTION B-B
Scale: 1"=10'

ESTIMATED QUANTITIES

72" Pipe Sec M-6.6(b) Class A-1	292 Lin. Ft.
Masonry	24.2 Cu. Yds.
Concrete for Structures Class "C"	20 Cu. Yds.
Channel Excavation	17 Cu. Yds.
Riprap (6" reinforced concrete slab)	64 Sq. Yds.
Dumped Rock Channel Protection	60 Cu. Yds.
72" Radius Pipe Sec M-6.6(b) Class A-1	60 Lin. Ft.
Reinforcing Steel	1847 Lbs.
Excavation for Structures	25 Cu. Yds.

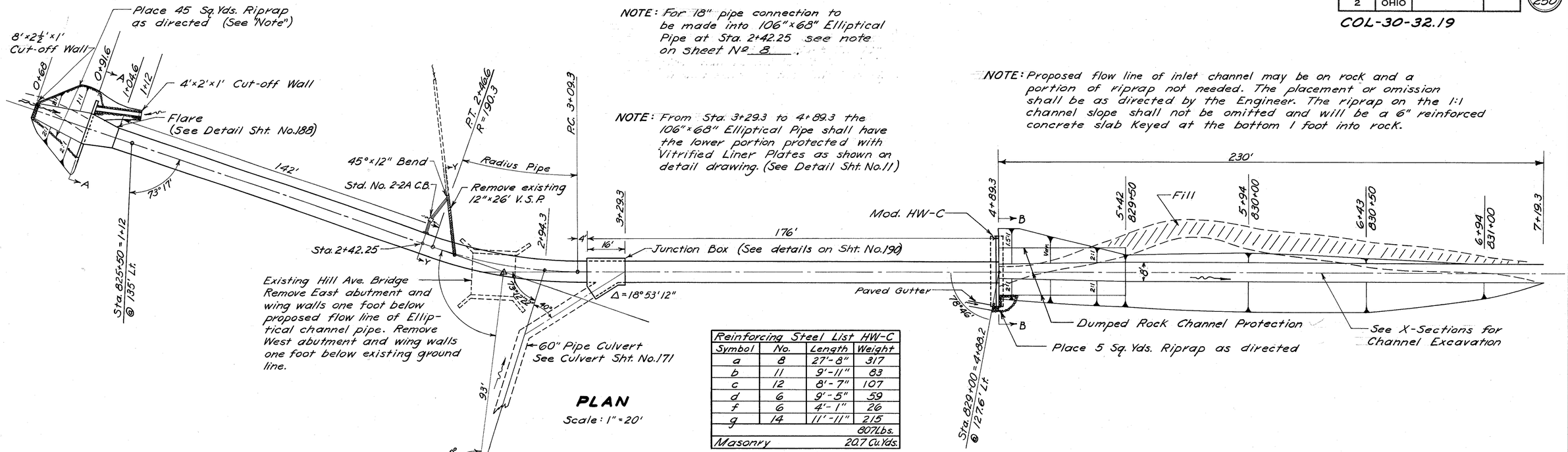
Area: 556 acres
Q_{50}: 465 cfs

STA. 820+00 – 85' LT.
72" X 352' CHANNEL PIPE CULVERT

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

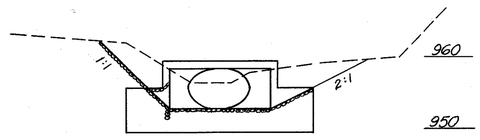
170
250

COL-30-32.19

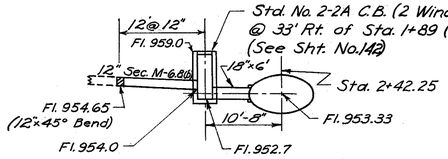


PLAN
Scale: 1" = 20'

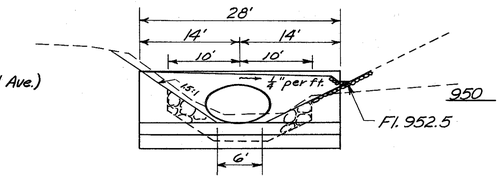
Reinforcing Steel List HW-C			
Symbol	No.	Length	Weight
a	8	27'-8"	317
b	11	9'-11"	83
c	12	8'-7"	107
d	6	9'-5"	59
f	6	4'-1"	26
g	14	11'-11"	215
			807 Lbs.
Masonry			20.7 Cu. Yds.



SECTION A-A
Scale: 1" = 10'



SECTION Y-Y
Scale: 1" = 10'

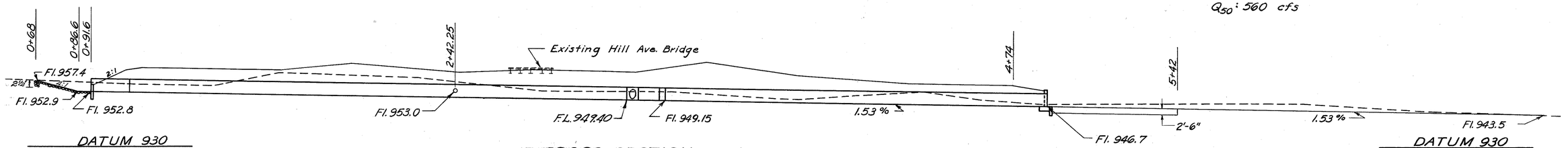


SECTION B-B
Scale: 1" = 10'

ESTIMATED QUANTITIES

106" × 68" Elliptical Pipe Class G-1 Sec. M-6.7(b)	146 Lin. Ft.
106" × 68" Elliptical Pipe Class G-1 Sec. M-6.7(b) with Vitrified Liner Plates as per Plan	160 Lin. Ft.
106"×68" Elliptical Radius Pipe Class G-1 Sec. M-6.7(b)	64 Lin. Ft.
Riprap 6" Reinforced Concrete Slab	62 Sq. Yds.
Dumped Rock Channel Protection	98 Cu. Yds.
Concrete for Structures Class "C"	55 Cu. Yds.
Reinforcing Steel	6811 Lbs.
Pipe Removed (12" V.S.P.)	26 Lin. Ft.
Masonry	20.7 Cu. Yds.
Removal of Portions of Existing Structures	28 Cu. Yds.
Channel Excavation	58 Cu. Yds.
18" Pipe Class E-1	6 Lin. Ft.
12" Pipe Class B-1 Sec. M-6.8(b)	12 Lin. Ft.
12" Pipe Special 45° Bend Class B-1 Sec. M-6.8(b)	1 Each
Std. No. 2-2A Catch Basin	1 Each
Excavation for Structures	121 Cu. Yds.

Area: 770 Acres
Q_{50}: 560 cfs



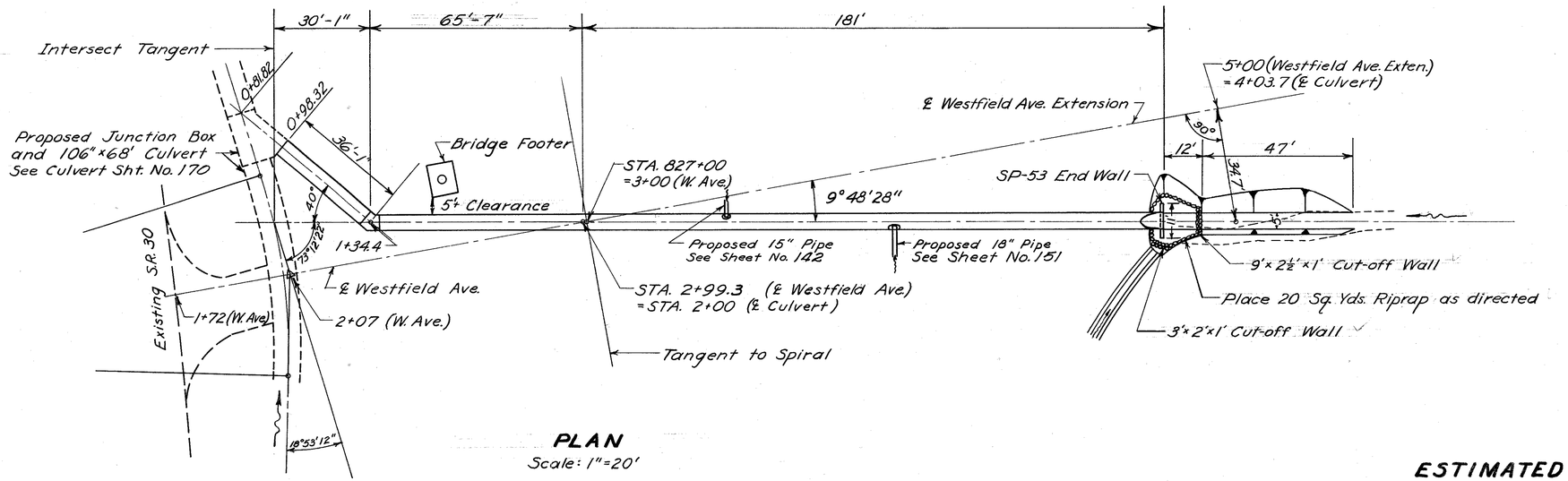
CROSS SECTION
Scale: 1" = 20'

STA. 827+00
106" × 68" × 370' CHANNEL PIPE CULVERT

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

171/250

COL-30-32.19



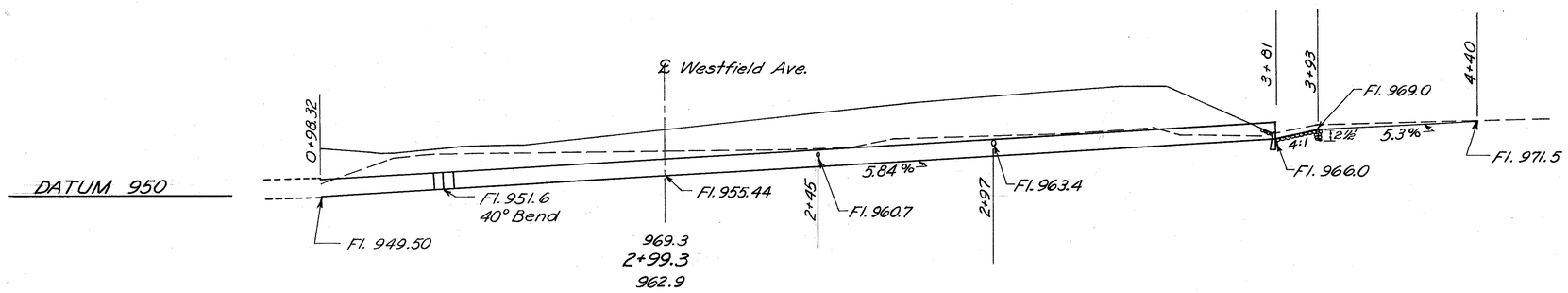
PLAN
Scale: 1"=20'

ESTIMATED QUANTITIES

60" Pipe	Sec. M-6.4(d)	Class A-1	Gage 10	284 Lin.Ft.
Channel Excavation				28 Cu.Yds.
Riprap	6" Reinforced Concrete Slab			20 Sq.Yds.
Masonry	"Class E"			3 Cu.Yds.
Pipe Special 60"×40° Bend Class A-1 Sec. M6.4(d) Gage 10				1 Each

Note: This structure requires anchor bolts as shown on St'd. Drawing SP-53 Cost is to be included in price bid per lineal foot of pipe.

Area: 131 Acres
Q_{50}: 175 cfs



CROSS SECTION
Scale: 1"=20'

COL-30-3270

STA. 2+99.3 (WESTFIELD AVE.)-827+00
60"×284' PIPE CULVERT

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

172
250

COL-30-32.19

3'x2'x1' Cut-off Wall
A
15+50
Place 6 Sq.Yds. Riprap as directed
15+40
27' Lt.
St'd. No. 2-2 A C.B.
282'-7"
25'-7"
51'
150'
21'
Sec. M 6.8(b)
35'
3'
18'
Proposed C.B. at Sta 837+35
See Sheet No. 175
Place 13 Sq.Yds. Riprap as directed
Δ 4°-08'
St'd. No. 1 M.H.
5'x2½'x1' Cut-off Wall
Mod. No. 2-4 C.B.
See Sheet No. 11
St'd. No. 1 M.H
A
Prop. Paved Gutter
℄
8'x2½'x1' Cut-off Wall
STA. 14+75
=2+50
St'd. HW-E
13°07' Rt. F. Skew
Prop. Paved Gutter
5'x2'x1' Cut-off Wall
Place 38 Sq. Yds. Riprap as directed.

PLAN
Scale : 1"=10'

F.L. 1060.0
70'
2:1
F.L. 1056.0
4.5%
F.L. 1053.0
DATUM 1050
F.L. 1050.0

SECTION A-A
Scale 1"=10'

1'/ft
DATUM 1060
2:1
2:1
2'
1056.0
2+95
1058.4

F.L. 1053.0
2:1
3'
F.L. 1052.0
DATUM 1050
1051.1
2+85
1052.5

℄
El. 1057.75
F.L. 1053.0
2+85
1.5:1
2.0%
F.L. 1050.0
F.L. 1051.1
1058.56
14+75
1040.00

CROSS SECTION
Scale : 1"=10'

DATUM 1030

DATUM 1030

El. 986.0
F.L. 978.26
F.L. 966.0
2'-6"
S.L. 162'-8"
S.L. 49.1 %
S.L. 48'-10"
S.L. 27.7 %
F.L. 974.0
F.L. 961.0
3.0%
F.L. 956.8
F.L. 957.50

ESTIMATED QUANTITIES

30" Pipe Class A-1 Sec. M 6.8(b)	56 Lin. Ft.
30" Pipe Class A-1 Sec. M 6.4(d)	220 Lin. Ft.
36" Pipe Class A-1 Sec. M 6.4(d)	28 Lin. Ft.
15" Pipe Class D-1	70 Lin. Ft.
St'd. No. 2-2 A Catch Basin	1 Each
Mod. No. 2-4 Catch Basin	1 Each
St'd. No. 1 Manhole	2 Each
Channel Excavation	15 Cu. Yds.
Masonry	0.5 Cu. Yds.
Riprap 6" Reinforced Concrete Slab.	57 Sq. Yds.

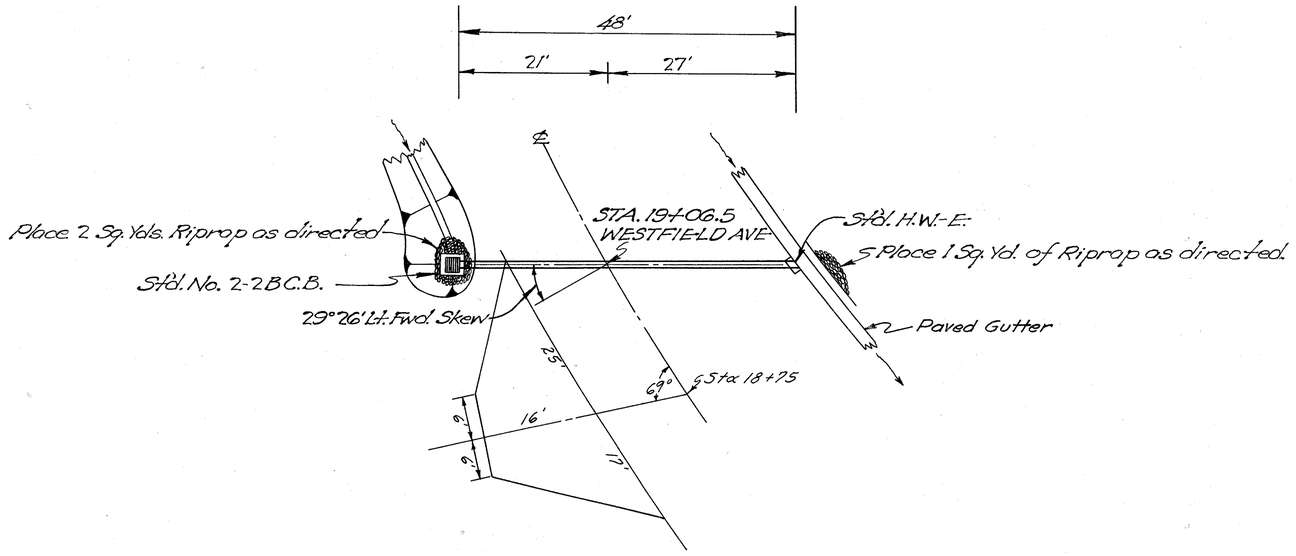
Area : 20 acres
Q_{25} : 42 cfs

STA. 14+75 WESTFIELD AVE. 30"x 276' PIPE CULVERT

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

173
250

COL-30-32.19

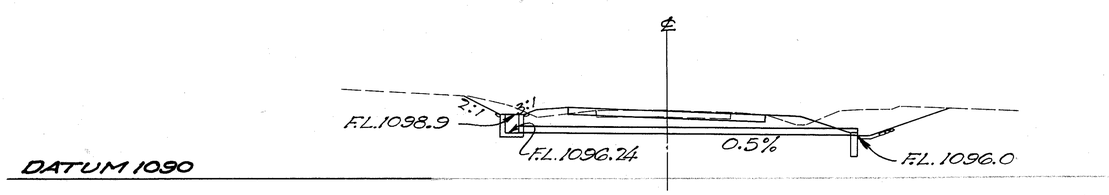


PLAN
Scale: 1"=10'

ESTIMATED QUANTITIES

18" Pipe Class A-1, Sec M-6.4(d)	48 Lin. Ft.
Std. No. 2-2B Catch Basin	1 Each
Riprop Grout Filled	3 Sq. Yds.
Masonry	0.3 Cu. Yds.

Area: 2 acres
Q_{25}: 8 cfs



1099.43
19+06.5
1099.41

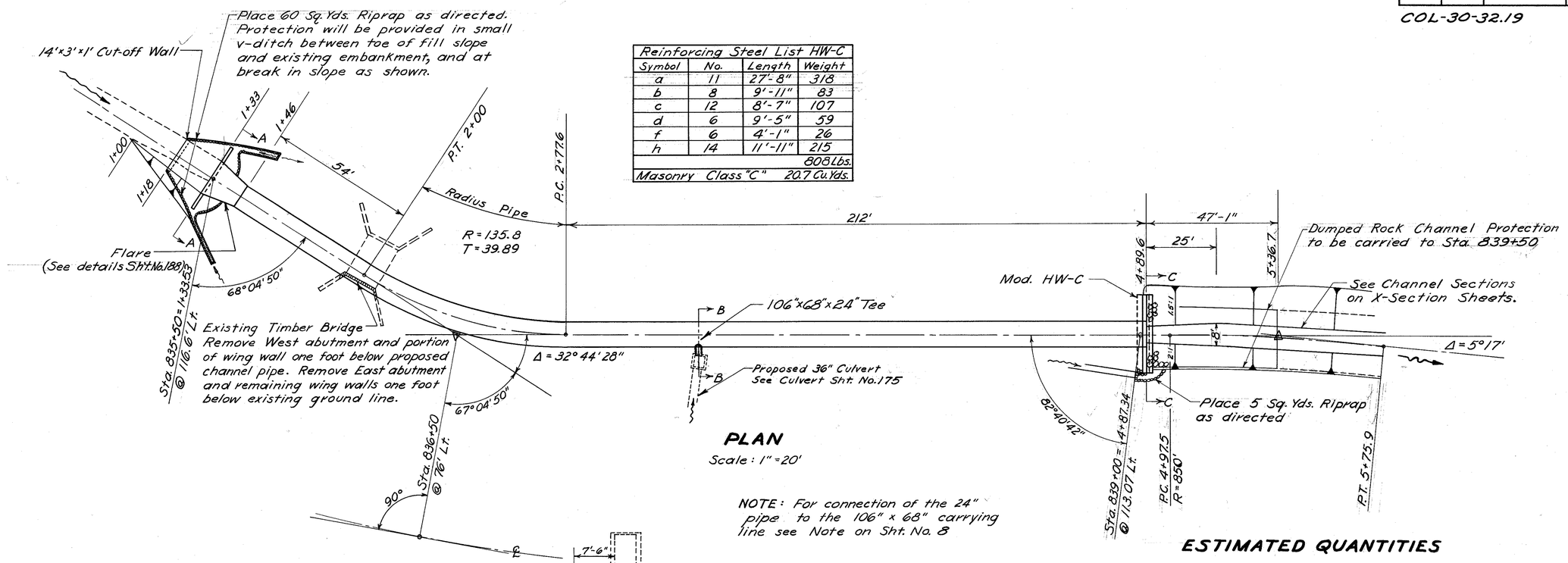
CROSS SECTION
Scale: 1"=10'

STA. 19+06.5 WESTFIELD AVE.
18"X48' PIPE CULVERT

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

174/250

COL-30-32.19



Reinforcing Steel List HW-C			
Symbol	No.	Length	Weight
a	11	27'-8"	318
b	8	9'-11"	83
c	12	8'-7"	107
d	6	9'-5"	59
f	6	4'-1"	26
h	14	11'-11"	215
			808 Lbs.
Masonry Class "C"			20.7 Cu. Yds.

ESTIMATED QUANTITIES

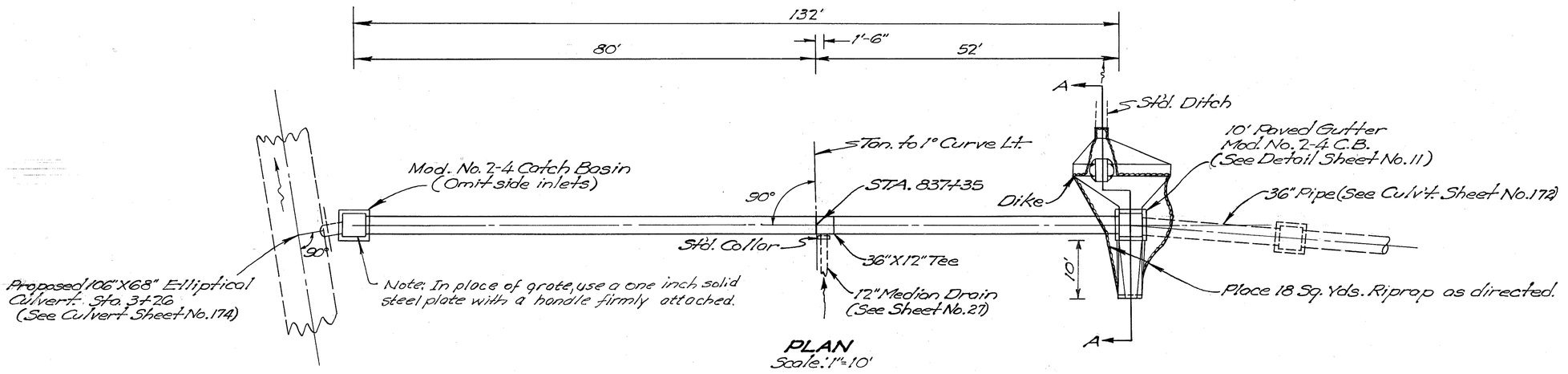
106" x 68" Elliptical Pipe Class G-1 Sec. M-6.7(b) with Vitrified Liner Plates as per plan	264 Lin. Ft.
106" x 68" Elliptical Radius Pipe Class G-1 Sec. M-6.7(b) with Vitrified Liner Plates as per plan	80 Lin. Ft.
Channel Excavation	9 Cu. Yds.
Riprap 6" Reinforced Concrete Slab	65 Cu. Yds.
Dumped Rock Channel Protection	110 Cu. Yds.
Concrete for Structures Class "C"	28 Cu. Yds.
Reinforcing Steel	3095 Lbs.
Masonry	20.7 Cu. Yds.
Removal of Portions of Existing Structure	23 Cu. Yds.
24" Pipe Class B-1 Sec. M6.8(b) or Sec. M6.6(b)	4 Lin. Ft.
Excavation for Structures	35 Cu. Yds.

STA. 836+50
106" x 68" x 344' CHANNEL PIPE CULVERT

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

175
250

COL-30-32.19



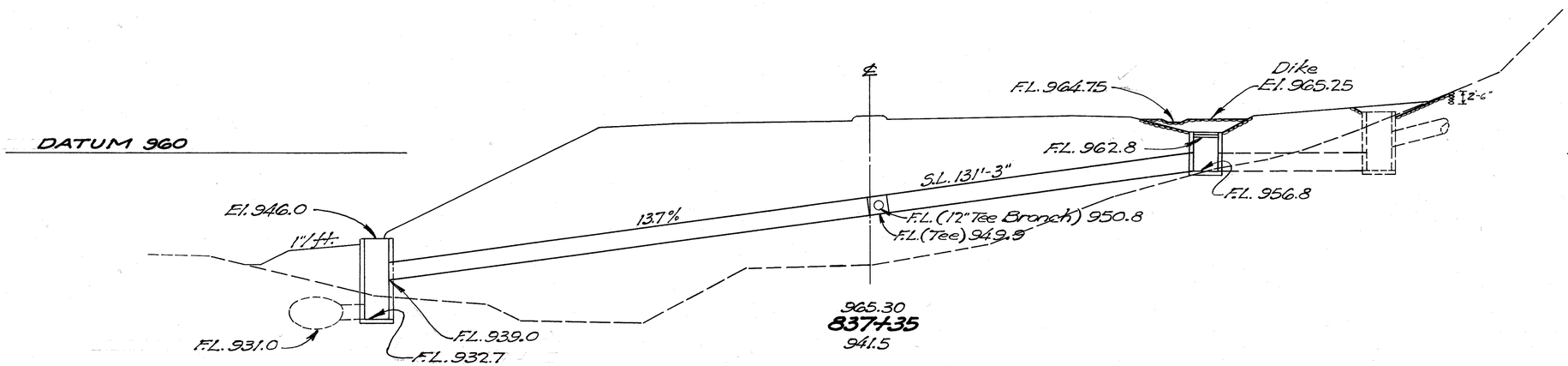
PLAN
Scale: 1"=10'

ESTIMATED QUANTITIES

36" Pipe Class A-1 Sec M-6.4(d)	136 Lin. Ft.
Mod. No. 2-4 Catch Basin	1 Each.
Paved Gutter Type 1	10 Lin. Ft.
Riprap Grout Filled	18 Sq. Yds.
Pipe Special 36"X12" Tee Class A-1 Sec M-6.4(d)	1 Each
Mod. No. 2-4 Reinforced Concrete Catch Basin	1 Each

Area: 25 acres
Q50: 59 cfs

SECTION A-A
Scale: 1"=10'



CROSS SECTION
Scale: 1"=10'

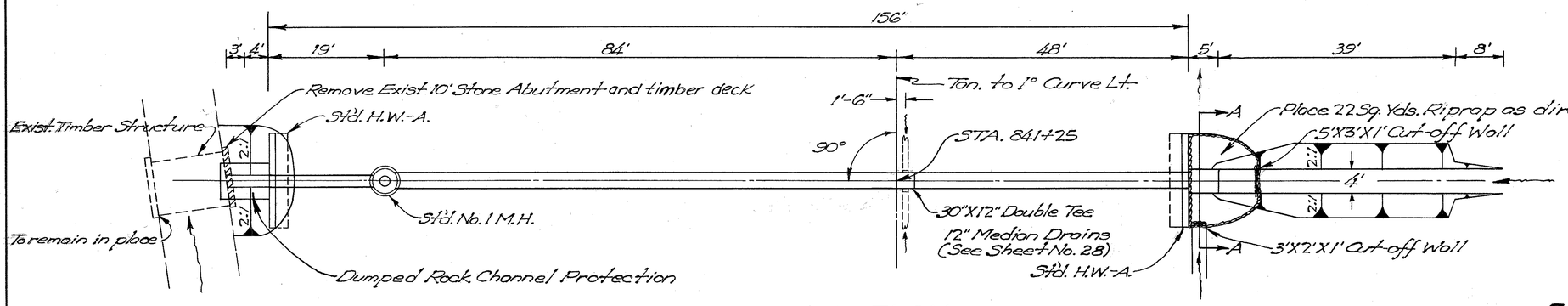
COL-30-3290

STA. 837+35
36"X136' PIPE CULVERT

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

176
250

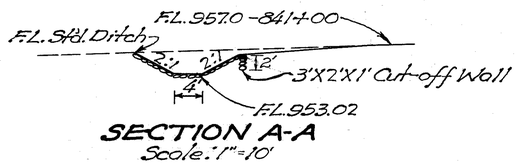
COL-30-32.19



PLAN
Scale: 1"=10'

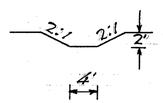
ESTIMATED QUANTITIES

30" Pipe Class A-1 Sec. M-6.6(c)	134 Lin. Ft.
Dumped Rock Channel Protection	5 Cu. Yds.
24" Pipe Class B-1 Sec. M 6.6(b) or Sec. M 6.8(b)	19 Lin. Ft.
Removal of Portions of Existing Structures	5 Cu. Yds.
Masonry	12.6 Cu. Yds.
Std. No. 1 Manhole	1 Each
Channel Excavation	49 Cu. Yds.
Riprap 6" Reinforced Concrete Slab	22 Sq. Yds.
Pipe Special 30"X12" Double Tee Class A-1 Sec. M-6.6(c)	1 Each.

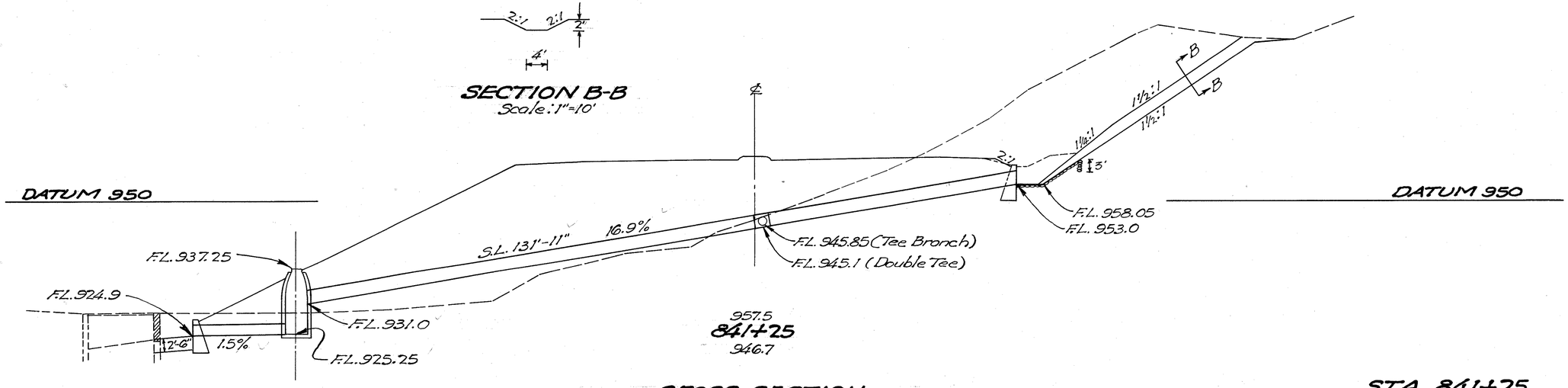


SECTION A-A
Scale: 1"=10'

Area: 10 acres
Q50: 33 c.f.s



SECTION B-B
Scale: 1"=10'



CROSS SECTION
Scale: 1"=10'

COL-30-3297

STA. 841+25
30"X 134' PIPE CULVERT

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

177
250

COL-30-32.19

ESTIMATED QUANTITIES

90" Pipe Class A-1 Sec.M-106.6(d) with vitrified liners as per plan	927 LF
90" Radius Pipe Class A-1 Sec.M-106.6(d) with vitrified liners as per plan	120 LF
Masonry	337 CY
Concrete for structures Class "C"	72 CY
Reinforcing steel	9098 lbs.
Riprap 6" reinforced concrete slab	93 SY
Dumped rock channel protection	118 CY
Removal of portions of existing structures	131 CY
Channel excavation	7 CY
18" Pipe Class A-1 Sec. M 6.6(d)	16 LF
Pipe removed 18" VSP	11 LF
Excavation for structures	71 CY

Area: 1200 acres
Q_{50}: 780 cfs

16'x3'x1' Cut-off wall
Place 84 Sq. Yd. Rip-rap as directed
Flare (See detail sheet No. 192)
3'x2'x1' Cut-off wall
0+32
0+52
74°-21'-28"
12'
15'
1+00
194'-1"
90"x15" lateral (74°)
Proposed 15" Pipe (See X-Sec. Sh. No. 83)
2+18 = 852+50
2+00
PT 2+41.1
R = 239.33
T = 29.60
Radius Pipe
PC 3+00
B
Remove 18"x11' existing V.S.P.
3+31
Remove Existing Conc. Structure 1 ft. below ground line.
Δ = 14°-06'-07"
74°-21'-28"
850+70 = 0+32 @ 112.4' Lt.
853+00 - 48' Lt.
6+60
29'-8"
PT 6+89.7
R = 161.72'
T = 29.49'
Radius Pipe
PC 7+48.1
4+00
5+00
6+00
5+19.25
5+29.75
5+45
Junction Box (See details on Sh't. No. 194)
6+60
229'-9"
358'-0"
115'
15'-3"
61°-25'-36"
A
47'
Proposed 72" Culvert See sheet No. 178
Mod. HW-C Headwall
Channel See X-sec. Sheets.
8+00
9+00
10+00
11+00
Δ = 20°-41'-05"
86°-06'-49"
61°-30'-02"
12'x4'x1' End Sill
Dumped Rock Channel Protection
Paved Gutter
Place 9 sq. yds. rip-rap as directed
857+50 @ 33' Lt.
861+50 @ 102.5' Lt. = 11+06.1

PLAN
Scale: 1" = 20'

Reinforcing steel list HW-C			
Symbol	No.	Length	Weight
a	11	35'-8"	409
b	8	14'-5"	120
c	16	13'-2"	220
d	10	10'-10"	113
f	10	4'-2"	44
h	20	13'-8"	730
			1636 lbs
Masonry Class "C"			31.9CY

NOTE: For connection of the 15" and 18" pipes to the 90" concrete carrying line see Note on sheet No. 8

36'
18'
18'
11'
14'
1.5:1
2:1
1/4"/ft.
90°
F.L. 894.2
890
12'-6"
9'

SEC A-A
Scale: 1" = 10'
Mod. HW-C Headwall

Std. Collar
16'
90"x18" Tee
15.1%
FL 905.2±
Sta. 3+31
El. 903.0
910

SEC. B-B
Scale: 1" = 10'

910
2:1
910

SEC. C-C
Scale: 1" = 10'

920
900
0+20
0+32
0+47
0+50
1+00
2+00
2+18
3+00
3+31
4+00
5+00
6+00
6+60
2:1
FL 906.0
FL 904.0
FL 904.8
FL 902.8
1.6%
FL 896.04
FL 895.80

910
890
7+00
8+00
9+00
10+00
11+00
11+06.1
11+53 = 862+00
F.L. 886.0
2'-6"
3'
FL 886.8
1.6%

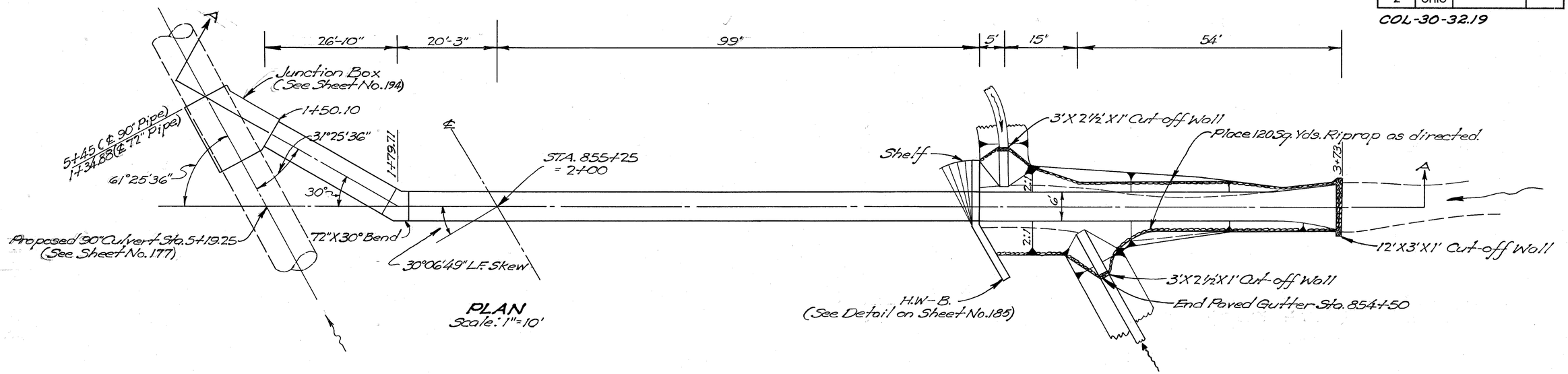
CROSS-SECTION
Scale: 1" = 20'

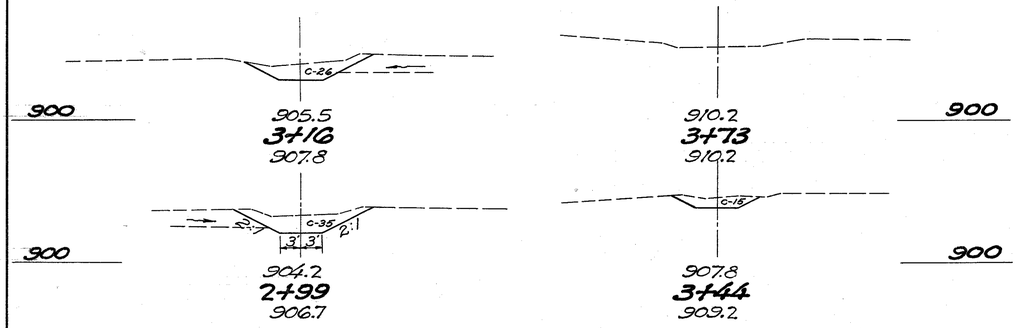
STA. 853+00 - 48' LT.
90"x1047' CHANNEL CULVERT

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

178
250

COL-30-32.19



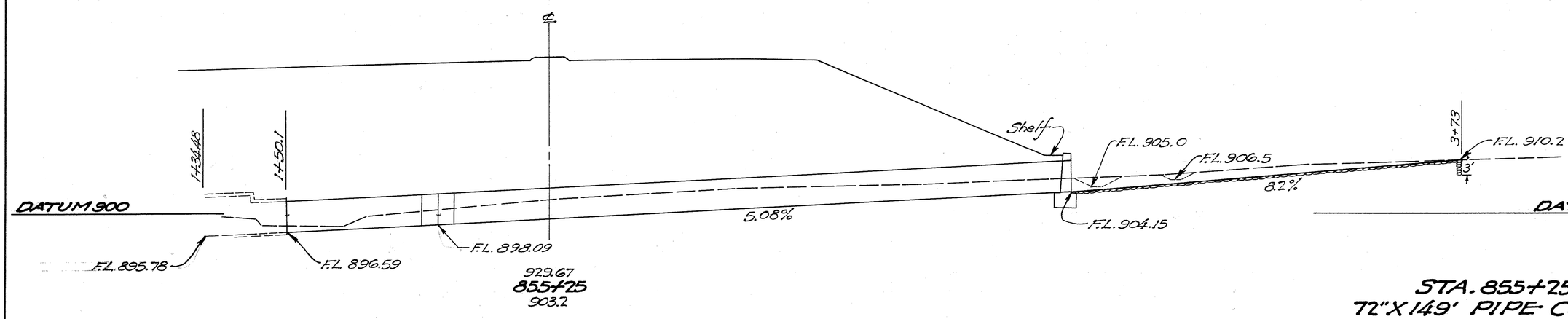


Note: If Sectional Corrugated Metal Structure is used, it shall be shop coated and field paved in accordance with Sec. M-6.4(d) of the Construction and Material Specifications. See note on culvert sheet number 165.

ESTIMATED QUANTITIES

72" Pipe Class A-1 Sec M-6.6(c) or Sec M-6.4(g) Gage 10-8		149 Lin Ft.
Pipe Special 72"X30° Bend Class A-1 Sec M-6.6(d) or Sec M-6.4(g) Gage 10-8		1 Each
Masonry		23.5 Cu. Yds.
Channel Excavation		4.9 Cu. Yds.
Riprap	6" Reinforced Concrete Slab	120 Sq. Yds.

Area: 2.40 acres
Q50: 260 cfs



CROSS SECTION A-A
Scale: 1"=10'

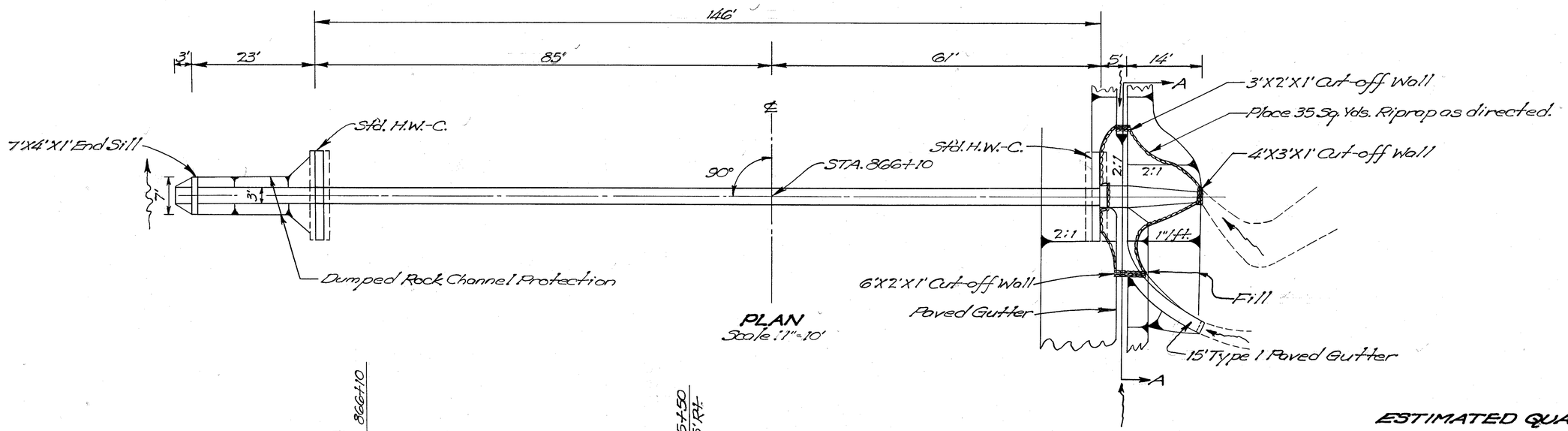
COL-30-3324

STA. 855+25
72"X149' PIPE CULVERT

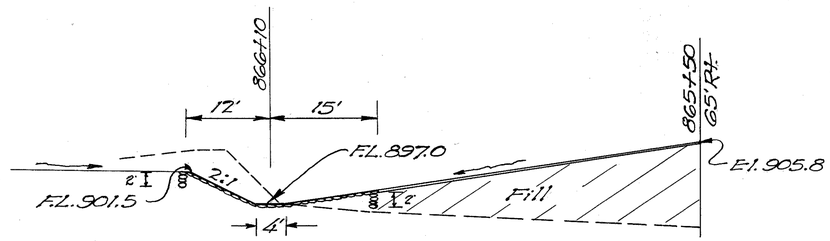
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

179
250

COL-30-32.19



PLAN
Scale: 1"=10'



SECTION A-A
Scale: 1"=10'

ESTIMATED QUANTITIES

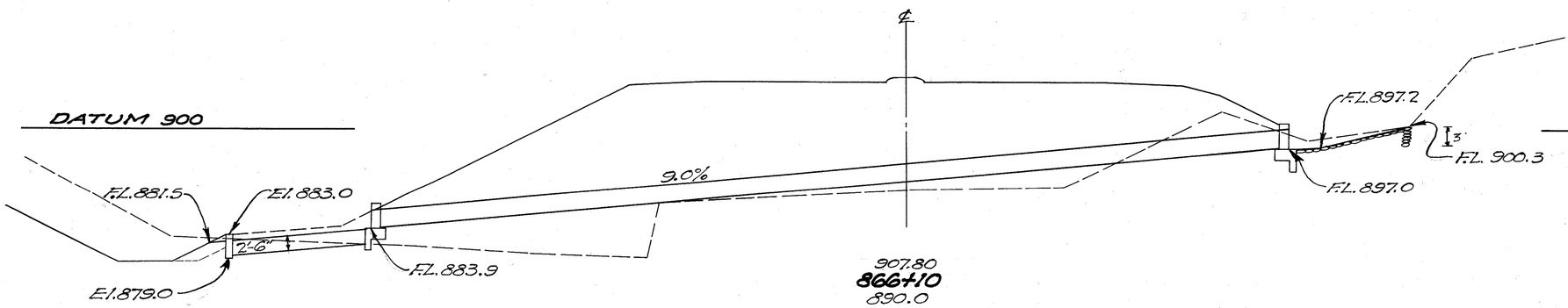
36" Pipe Class A-1 Sec M-6.4(d)	146 Lin. Ft.
Masonry	17.6 Cu. Yds.
Riprap 6" Reinforced Concrete Slab	35 Sq. Yds.
Channel Excavation	24 Cu. Yds.
Dumped Rock Channel Protection	15 Cu. Yds.
Paved Gutter Type 1	15 Lin. Ft.

Area: 31 acres
Qso: 52 cfs

* Reinforcing Steel List HW-C

Symbol	No.	Length	Weight
a	11	16'-2"	186
c	12	7'-1"	89
d	6	6'-1"	38
f	6	4'-1"	26
h	10	7'-8"	80
			419 lbs.
Masonry			8.3 C.Y.

* Quantities per HW-C



CROSS SECTION
Scale: 1"=10'

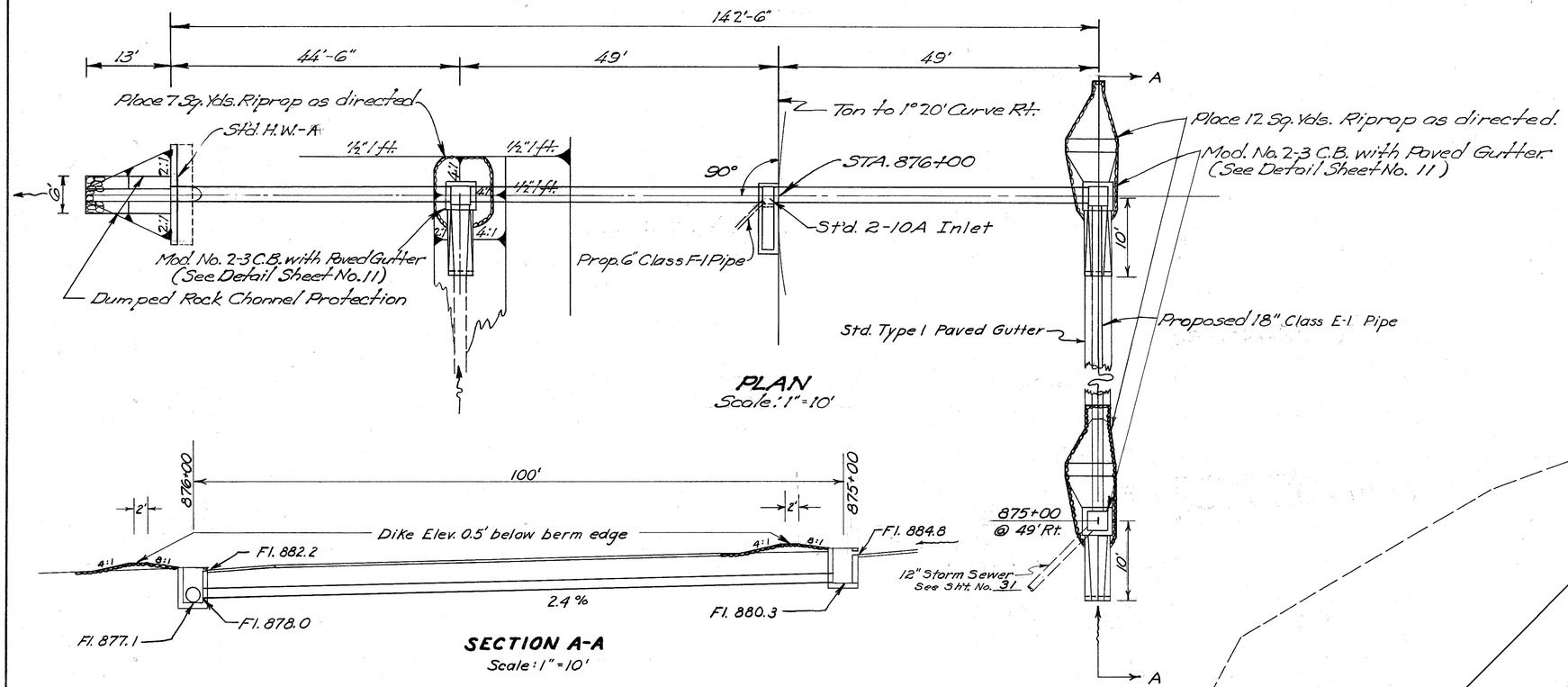
COL-30-33.44

STA. 866+10
36" X 146' PIPE CULVERT

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

180
250

COL-30-32.19



ESTIMATED QUANTITIES

30" Pipe Class A-1 Sec M-6.8(b) or Sec M-6.6(a)	143 Lin. Ft.
Mod. No. 2-3 Catch Basin	3 Each
Std. No. 2-10 A Shoulder Inlet	1 Each
Masonry	7.3 Cu. Yds.
Riprap Grout Filled	31 Sq. Yds.
Dumped Rock Channel Protection	7 Cu. Yds.
Paved Gutter Type 1	30 Lin. Ft.
18" Pipe Class E-1	100 Lin. Ft.
Channel Excavation	5 Cu. Yds.

Area: 14 acres
Q50: 39 cfs

DATUM 890

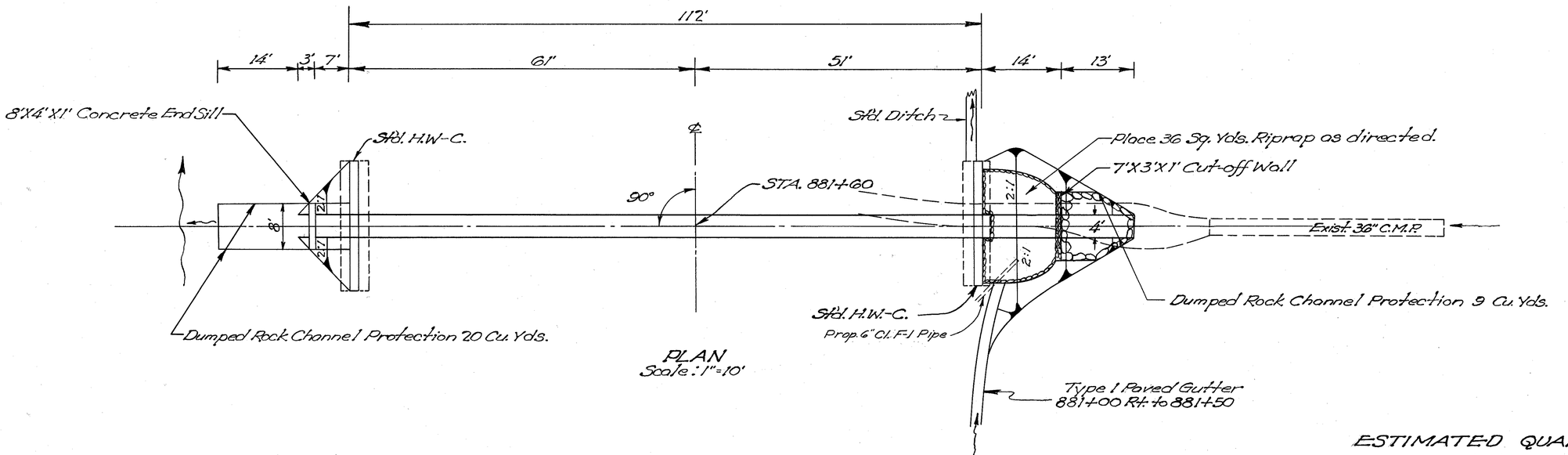
COL-30-3363

STA. 876+00
30" X 143' PIPE CULVERT

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

181
250

COL-30-32.19



PLAN
Scale: 1"=10'

ESTIMATED QUANTITIES

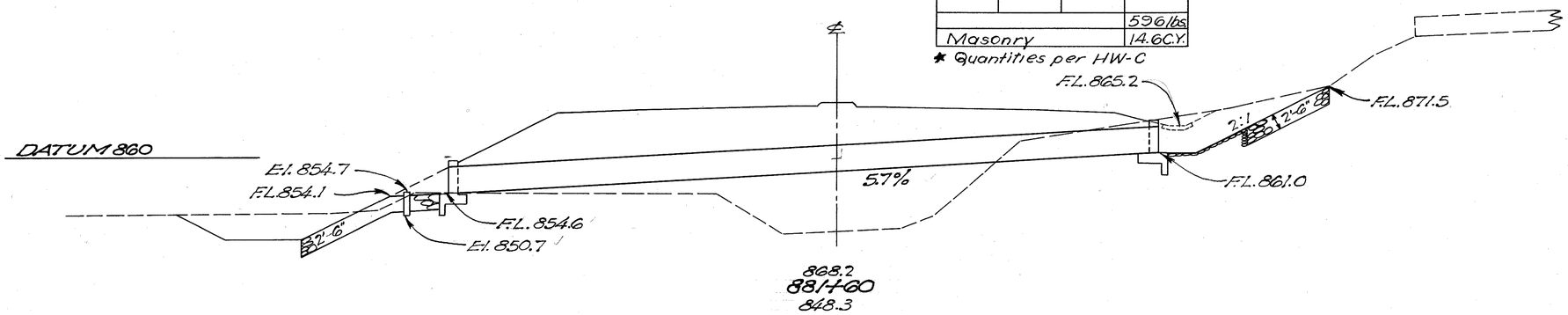
48" Pipe Class A-1 Sec M-6.4(d)	112 Lin. Ft.
Std. Paved Gutter Type 1	50 Lin. Ft.
Masonry	30.4 Cu. Yds.
Riprap 6" Reinforced Concrete Slab	36 Sq. Yds.
Dumped Rock Channel Protection	29 Cu. Yds.
Channel Excavation	65 Cu. Yds.

Area: 42 acres
Qso: 86 cfs

★ Reinforcing Steel List HW-C

Symbol	No.	Length	Weight
a	11	22'-8"	260
c	12	8'-5"	106
d	8	7'-4"	61
f	8	4'-1"	34
h	14	9'-3"	135
			596 lbs.
Masonry			14.6 C.Y.

★ Quantities per HW-C



CROSS SECTION
Scale: 1"=10'

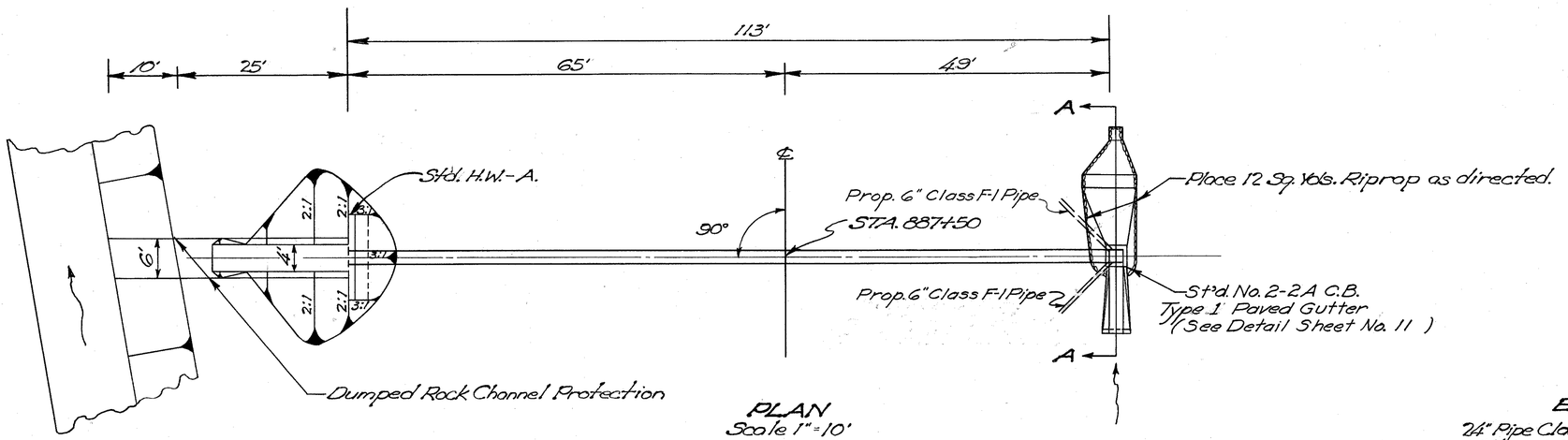
COL-30-3374

STA. 881+60
48"X112' PIPE CULVERT

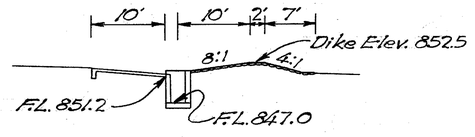
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

182
250

COL-30-32.19



PLAN
Scale 1"=10'

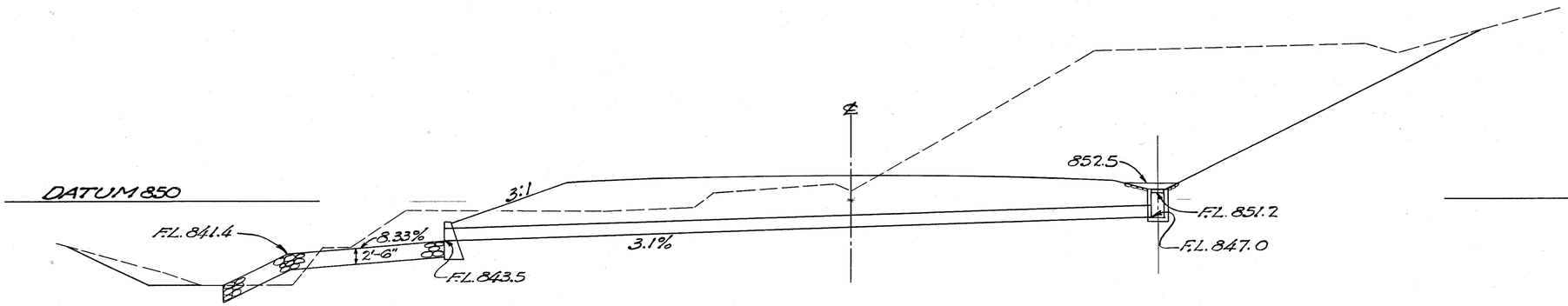


SECTION A-A
Scale 1"=10'

ESTIMATED QUANTITIES

24" Pipe Class A-1 Sec M-6.8(b) or Sec M-6.6(6)	114 Lin. Ft.
Std. No. 2-2A Catch Basin	1 Each
Paved Gutter Type 1	10 Lin. Ft.
Riprap Grout Filled	12 Sq. Yds.
Dumped Rock Channel Protection	20 Cu. Yds.
Channel Excavation	40 Cu. Yds.
Masonry	3.6 Cu. Yds.

Area 5 acres
Qso.: 20 cfs



854.0
887+50
851.5

CROSS SECTION
Scale 1"=10'

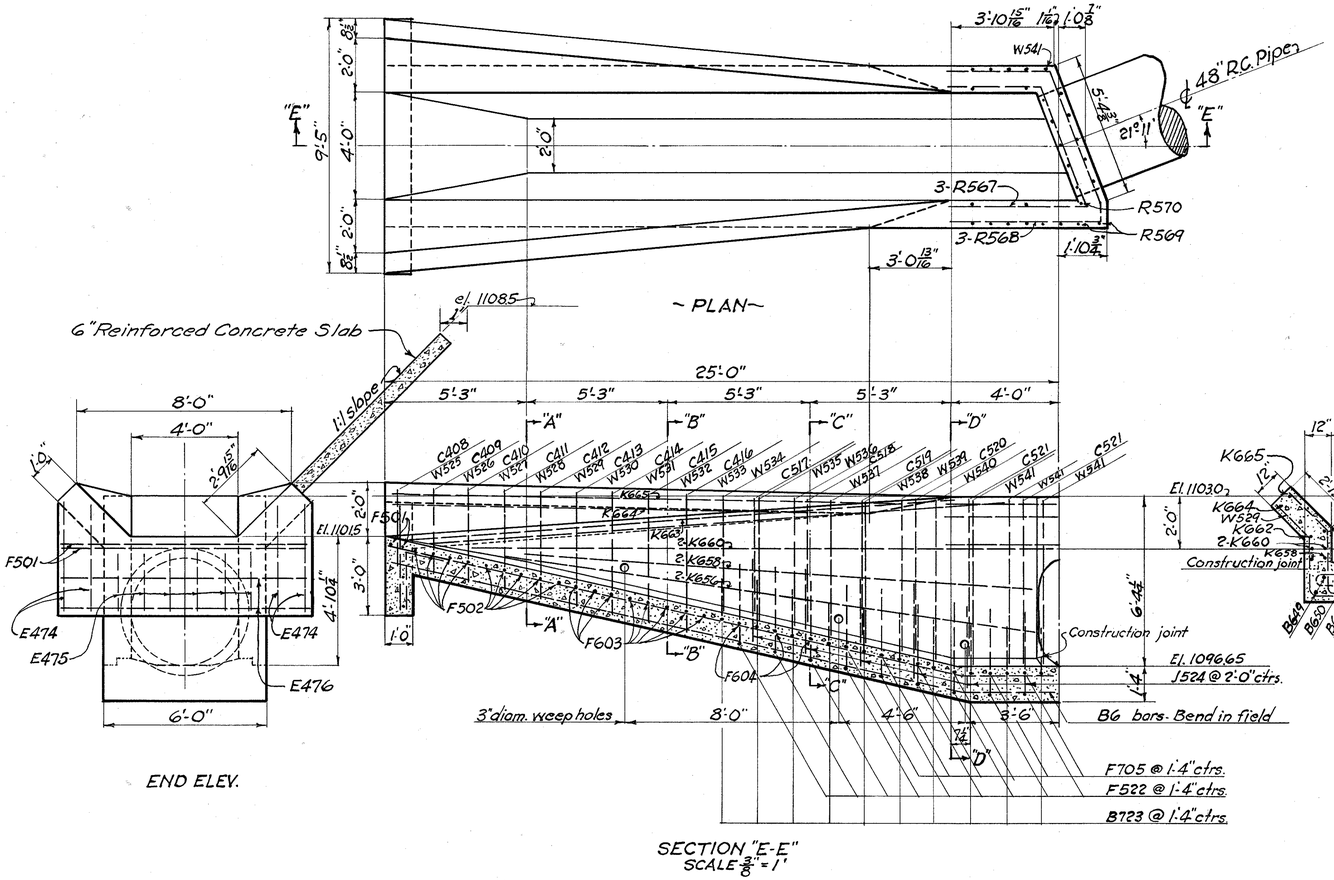
COL-30-3385

STA. 887+50
24" X 114' PIPE CULVERT

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

183
250

COL-30-32.19



Quanities Carried to Sheet No. 154

Concrete, Class "C" 15 cu. yd.
Reinforcing Steel 2157 lb.
Exc. for Struct. 51 cu. yd.

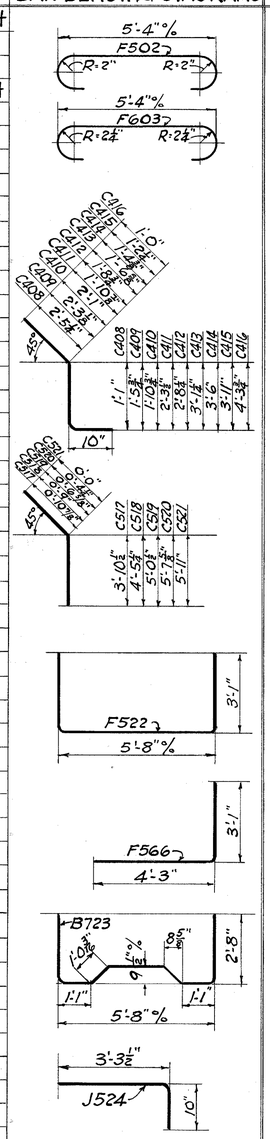
SUB-STATION ROAD ~ STA. 12+26.6
INLET FLUME TO 48" R.C. PIPE

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

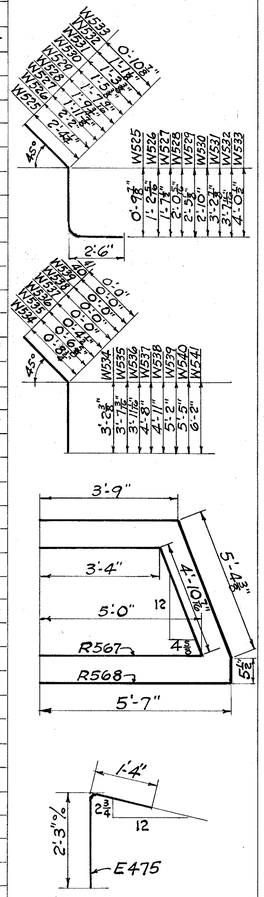
184
250

COL-30-32.19

BAR	No.	LENGTH	WEIGHT	SHAPE
F501	2	9'-1	19	Straight
F502	9	6'-6	61	Bent
F603	8	6'-8	80	"
F604	3	5'-6	25	Straight
F705	6	5'-6	67	"
F706	1	4'-3	9	"
F707	1	2'-9	13	"
C408	2	4'-3½	6	Bent
C409	2	4'-6	6	"
C410	2	4'-9	6	"
C411	2	4'-11½	6	"
C412	2	5'-2	7	"
C413	2	5'-5	7	"
C414	2	5'-7½	8	"
C415	2	5'-10¼	8	"
C416	2	6'-1	8	"
C517	2	4'-9½	10	Bent
C518	2	5'-2¼	11	"
C519	2	5'-7	12	"
C520	2	6'-0	13	"
C521	4	5'-11	25	"
F522	9	11'-7	109	Bent
F566	1	7'-2½	8	"
B723	10	11'-2	228	Bent
J524	12	4'-0	50	Bent
W525	2	5'-6½	12	Bent
W526	2	5'-8¾	12	"
W527	2	5'-11¼	12	"
W528	2	6'-2½	13	"
W529	2	6'-5	13	"
W530	2	6'-7¾	14	"
W531	2	6'-10¾	14	"
W532	2	7'-1¼	15	"
W533	2	7'-3¾	15	"
W534	2	3'-11	8	"
W535	2	4'-1¾	9	"
W536	2	4'-3½	9	"
W537	2	4'-8	10	"
W538	2	4'-11	10	"
W539	2	5'-2	11	"
W540	2	5'-5	11	"
W541	6	6'-2	39	"



BAR	No.	LENGTH	WEIGHT	SHAPE
B649	2	24'-3	73	Straight
B650	1	24'-5	37	"
B651	1	24'-8	37	"
B652	1	25'-0	38	"
B653	1	25'-4	38	"
B654	1	25'-7	38	"
B655	2	25'-9	77	"
K656	2	21'-0	63	Straight
K657	2	22'-0	66	"
K658	2	20'-0	60	"
K659	2	21'-0	63	"
K660	2	22'-0	66	"
K661	2	23'-0	69	"
K662	2	22'-6	68	"
K663	2	22'-0	66	"
K664	2	17'-0	51	"
K665	2	18'-0	54	"
R567	3	13'-1	41	Bent
R568	3	14'-7	46	"
R569	2	6'-2	13	Straight
R570	1	5'-11	6	"
R571	4	2'-3	9	"
R572	6	1'-9	11	"
E474	4	4'-0	11	Straight
E475	6	3'-6	14	Bent
E476	2	9'-1	13	Straight
		TOTAL	2157	POUNDS

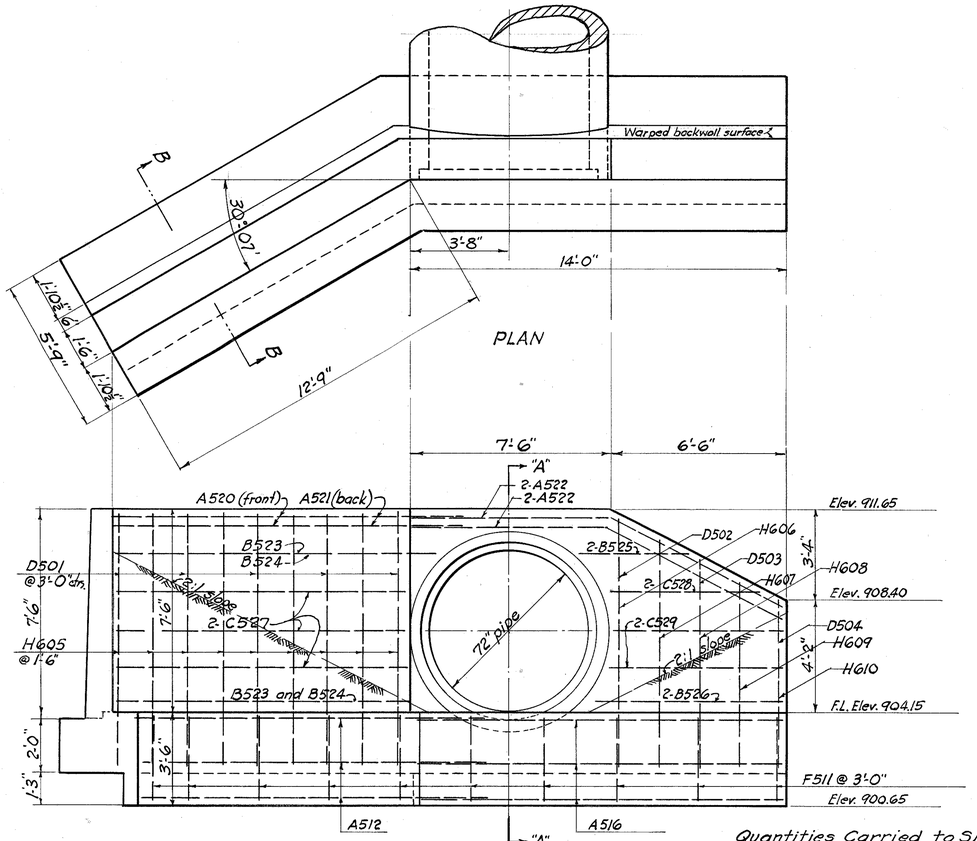


SUB-STATION ROAD ~ STA. 12+266
INLET FLUME TO 48" R.C. PIPE

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

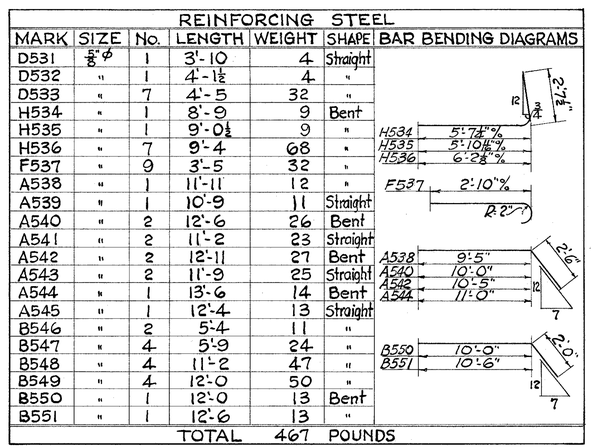
185
250

COL-30-32.19

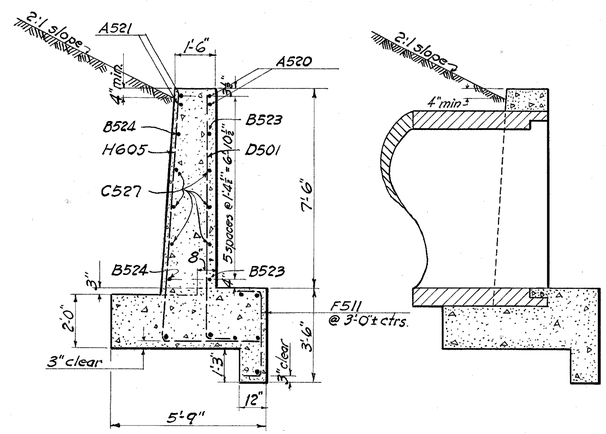


ELEVATION
SCALE ⅜"=1'

REINFORCING STEEL						
MARK	SIZE	No.	LENGTH	WEIGHT	SHAPE	BAR BENDING DIAGRAMS
D531	⅝" ϕ	1	3'-10	4	Straight	
D532	"	1	4'-1½	4	"	
D533	"	7	4'-5	32	"	
H534	"	1	8'-9	9	Bent	
H535	"	1	9'-0½	9	"	
H536	"	7	9'-4	68	"	
F537	"	9	3'-5	32	"	
A538	"	1	11'-11	12	"	
A539	"	1	10'-9	11	Straight	
A540	"	2	12'-6	26	Bent	
A541	"	2	11'-2	23	Straight	
A542	"	2	12'-11	27	Bent	
A543	"	2	11'-9	25	Straight	
A544	"	1	13'-6	14	Bent	
A545	"	1	12'-4	13	Straight	
B546	"	2	5'-4	11	"	
B547	"	4	5'-9	24	"	
B548	"	4	11'-2	47	"	
B549	"	4	12'-0	50	"	
B550	"	1	12'-0	13	Bent	
B551	"	1	12'-6	13	"	
TOTAL				467	POUNDS	



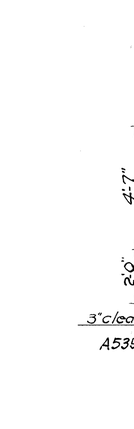
Quantities Carried to Sheet No. 178
Masonry 23.5 cu.yd.
Reinforcing Steel 906 lb.



SECTION "B-B"

SECTION "A-A"

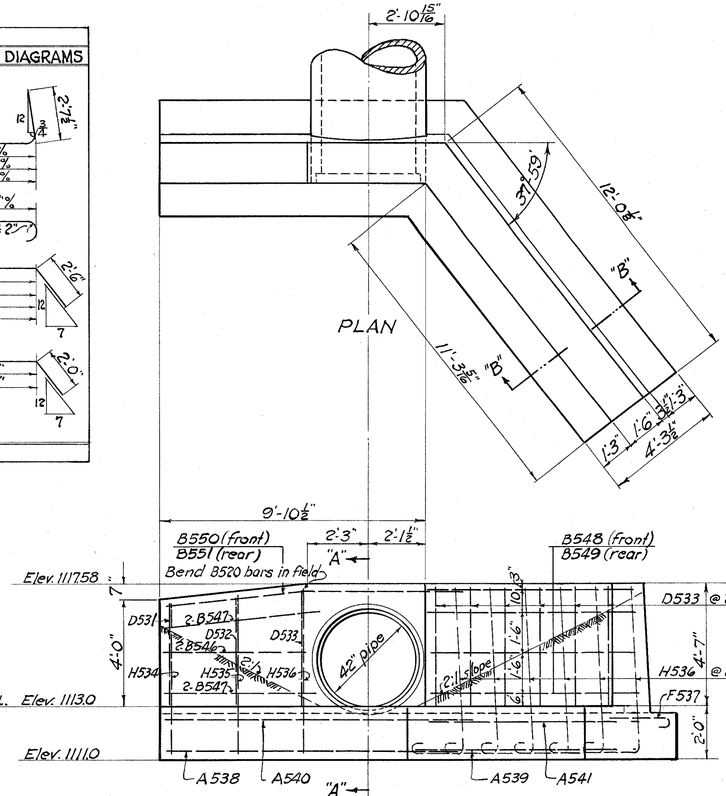
REINFORCING STEEL						
MARK	SIZE	No.	LENGTH	WEIGHT	SHAPE	BAR BENDING DIAGRAMS
D501	⅝" ϕ	5	9'-11	93	Bent	
D502	"	1	9'-10	10	"	
D503	"	1	8'-2	9	"	
D504	"	1	6'-8	7	"	
H605	¾" ϕ	9	13'-0	176	"	
H606	"	1	12'-10	19	"	
H607	"	1	12'-1	18	"	
H608	"	1	11'-3	17	"	
H609	"	1	10'-6	16	"	
H610	"	1	9'-9	15	"	
F511	⅝" ϕ	10	4'-2	43	"	
A512	"	3	4'-7	46	"	
A513	"	2	14'-10	31	"	
A514	"	1	15'-1	16	"	
A515	"	1	15'-6	16	"	
A516	"	3	13'-6	42	Straight	
A517	"	2	13'-8	28	"	
A518	"	1	14'-0	15	"	
A519	"	1	14'-4	15	"	
A520	"	2	14'-7	30	Bent	
A521	"	2	14'-11	31	"	
A522	"	4	14'-7	61	"	
B523	"	2	13'-9	29	Straight	
B524	"	2	14'-6	30	"	
B525	"	2	4'-0	8	"	
B526	"	2	7'-3	15	"	
C527	"	4	10'-9	45	"	
C528	"	2	5'-6	11	"	
C529	"	2	6'-6	14	"	
TOTAL				906	POUNDS	



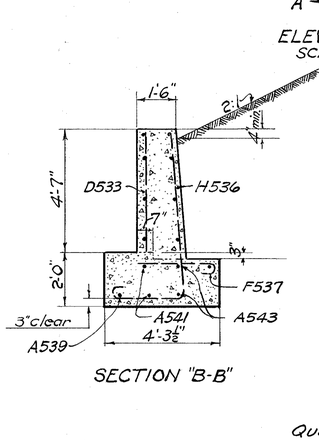
Quantities Carried to Sheet No. 178
Masonry 23.5 cu.yd.
Reinforcing Steel 906 lb.

STA. 855+25

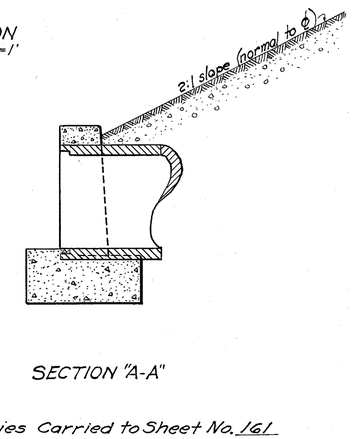
HW-B HEADWALL FOR 72" PIPE



ELEVATION
SCALE ⅜"=1'



SECTION "B-B"



SECTION "A-A"

Quantities Carried to Sheet No. 161
Masonry 12.3 cu.yd.
Reinforcing Steel 467 lb.

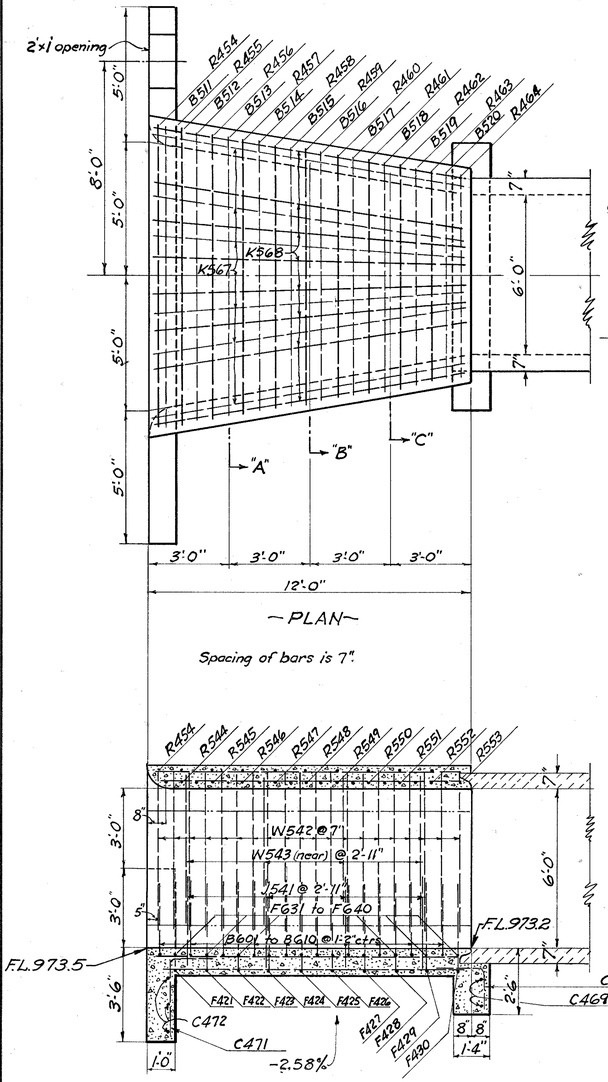
STA. 797+53.4

HW-B HEADWALL FOR 42" PIPE

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

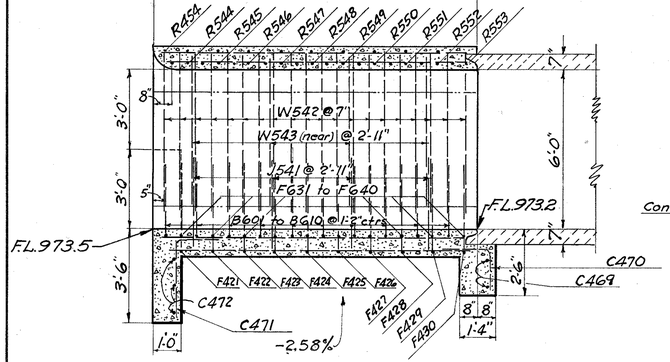
186
250

COL-30-32.19

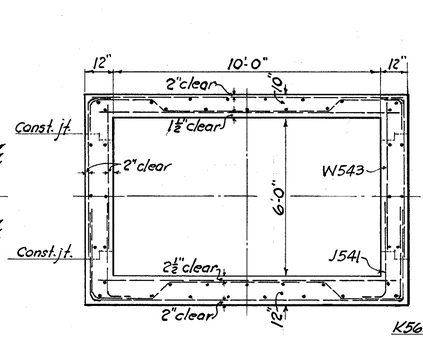


— PLAN —

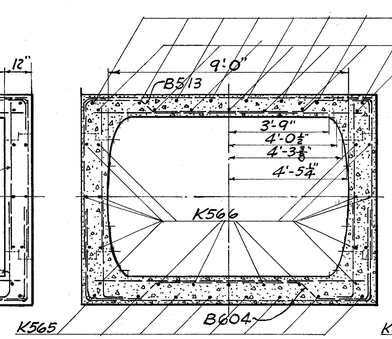
Spacing of bars is 7".



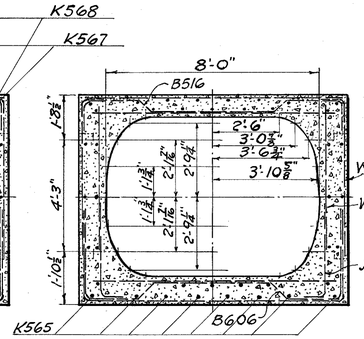
SECTION ON CENTER LINE



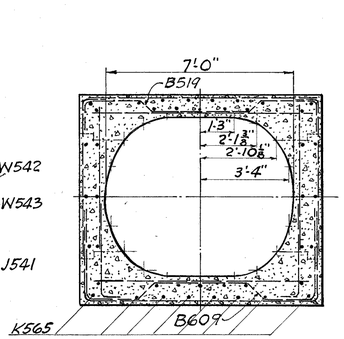
INLET END



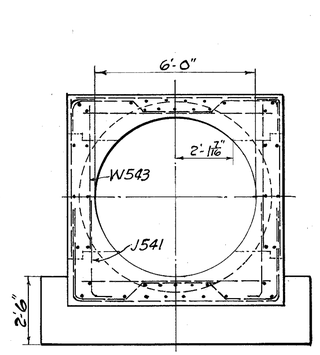
SEC. "A-A"



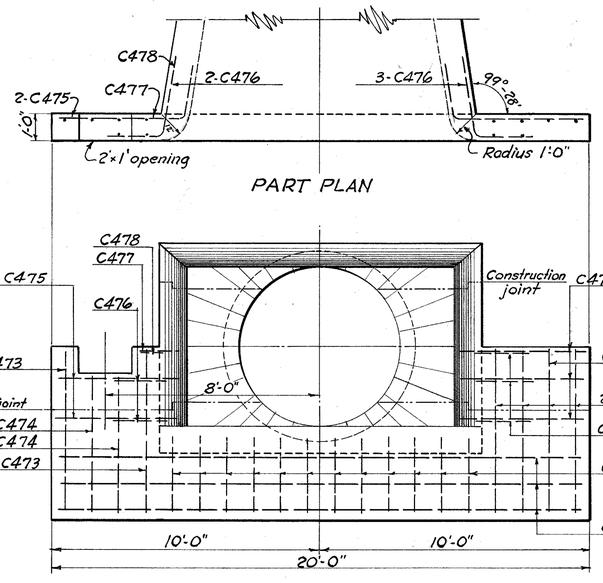
SEC. "B-B"



SEC. "C-C"

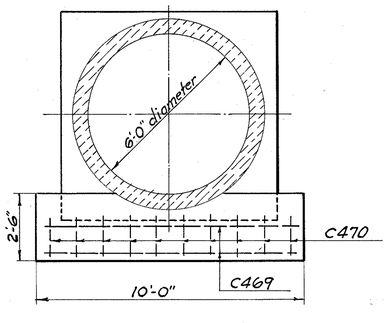


OUTLET END



PART PLAN

INLET ELEVATION
SCALE 3/8" = 1'



ELEVATION AT JUNCTION TO 6' DIAMETER PIPE

Exc. for Struct.	25	cu. yd.
Concrete, Class "C"	20	cu. yd.
Reinforcing Steel	1847	lb.

Quantities Carried to Sheet No. 169

STA. 820+00

FLARED ENTRANCE FOR 72" PIPE

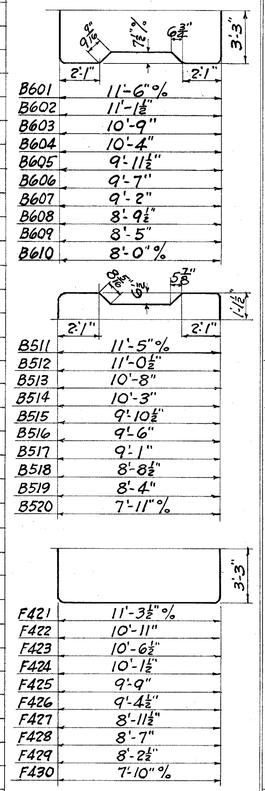
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

187
250

COL-30-32.19

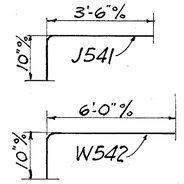
	BAR	No.	LENGTH	WEIGHT	SHAPE
FLOOR	B601	1	18'-2	27	Bent
	B602	1	17'-10	27	"
	B603	1	17'-5	26	"
	B604	1	17'-0	26	"
	B605	1	16'-8	25	"
	B606	1	16'-3	24	"
	B607	1	15'-10	24	"
	B608	1	15'-6	23	"
	B609	1	15'-1	23	"
	B610	1	14'-8	22	"
ROOF	B511	1	13'-10	14	Bent
	B512	1	13'-5	14	"
	B513	1	13'-1	14	"
	B514	1	12'-8	13	"
	B515	1	12'-3	13	"
	B516	1	11'-11	12	"
	B517	1	11'-6	12	"
	B518	1	11'-1	12	"
	B519	1	10'-9	11	"
	B520	1	10'-4	11	"
FLOOR	F421	1	17'-8	12	Bent
	F422	1	17'-3	12	"
	F423	1	16'-11	11	"
	F424	1	16'-6	11	"
	F425	1	16'-1	11	"
	F426	1	15'-9	11	"
	F427	1	15'-4	10	"
	F428	1	14'-11	10	"
	F429	1	14'-7	10	"
	F430	1	14'-2	9	"

BAR BENDING DIAGRAMS



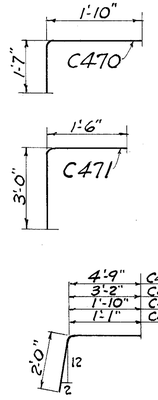
	BAR	No.	LENGTH	WEIGHT	SHAPE
FLOOR	F631	1	11'-1	17	Straight
	F632	1	10'-9	16	"
	F633	1	10'-4	16	"
	F634	1	9'-11	15	"
	F635	1	9'-7	14	"
	F636	1	9'-2	14	"
	F637	1	8'-9	13	"
	F638	1	8'-5	13	"
	F639	1	8'-0	12	"
	F640	1	7'-8	12	"
WALLS	J541	8	4'-3	23	Bent
	W542	40	6'-9	282	Bent
	W543	8	5'-9	48	Straight
ROOF	R544	1	11'-2	12	Straight
	R545	1	10'-10	11	"
	R546	1	10'-5	11	"
	R547	1	10'-0	10	"
	R548	1	9'-8	10	"
	R549	1	9'-3	10	"
	R550	1	8'-10	9	"
	R551	1	8'-6	9	"
	R552	1	8'-1	8	"
	R553	1	7'-9	8	"
	R454	1	11'-5	8	Straight
	R455	1	11'-2	7	"
	R456	1	10'-10	7	"
	R457	1	10'-5	7	"

BAR BENDING DIAGRAMS



	BAR	No.	LENGTH	WEIGHT	SHAPE
ROOF	R458	1	10'-0	7	Straight
	R459	1	9'-8	6	"
	R460	1	9'-3	6	"
	R461	1	8'-10	6	"
	R462	1	8'-6	6	"
	R463	1	8'-1	5	"
	R464	1	7'-9	5	"
	K565	8	11'-9	98	Straight
	K566	19	11'-5	226	"
	K567	7	11'-4	83	"
	K568	8	11'-8	97	"
PIPE WALL	C469	2	9'-8	13	Straight
	C470	10	3'-4	22	Bent
WALL END	C471	12	4'-5	35	Bent
	C472	3	19'-6	39	Straight
	C473	9	6'-2	37	"
	C474	3	5'-2	10	"
	C475	5	6'-9	23	Bent
	C476	5	5'-2	17	"
	C477	1	3'-10	2	"
	C478	1	3'-1	2	"
			TOTAL	1847	POUNDS

Floor bottom
Floor and walls
Roof
"



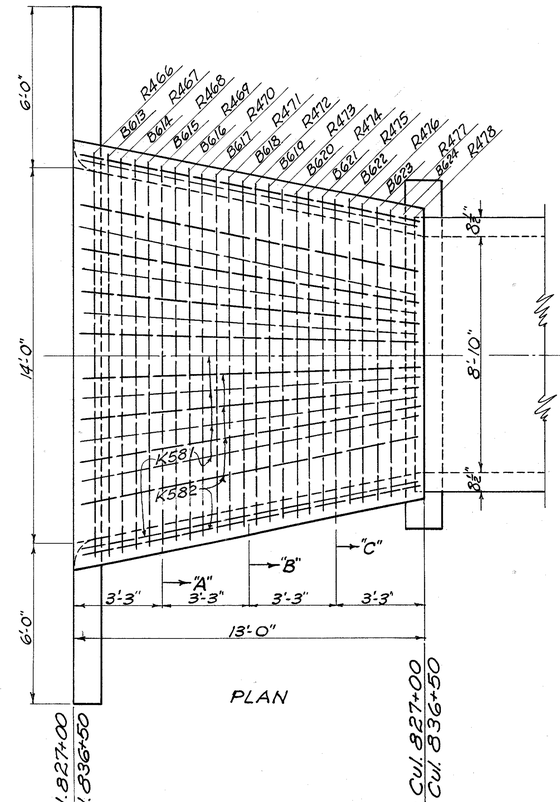
STA. 820+00

FLARED ENTRANCE FOR 72" PIPE

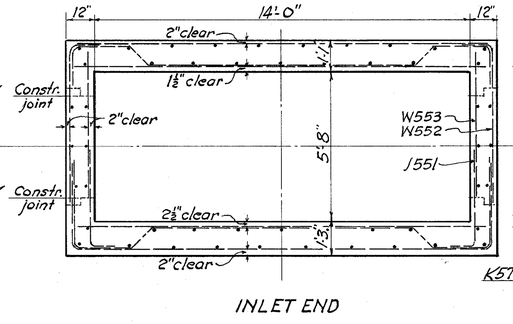
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

188
250

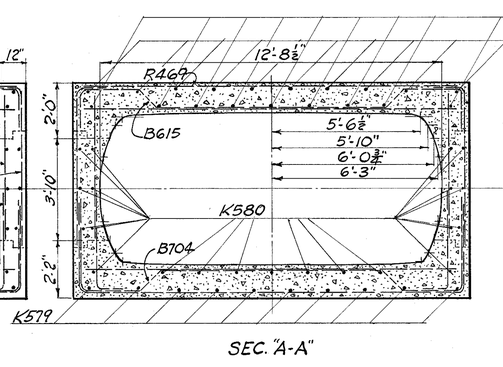
COL-30-32.19



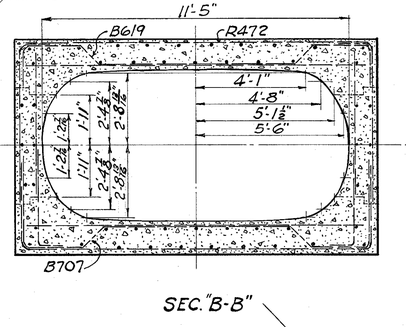
PLAN



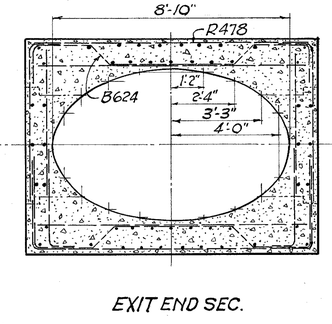
INLET END



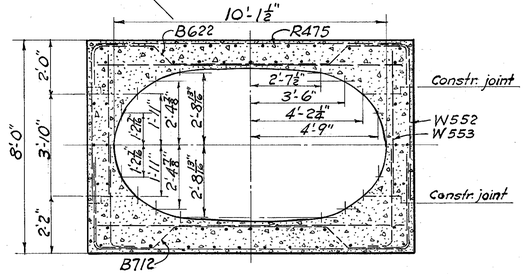
SEC. "A-A"



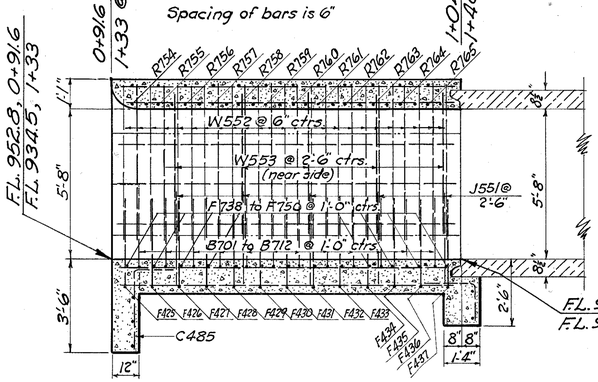
SEC. "B-B"



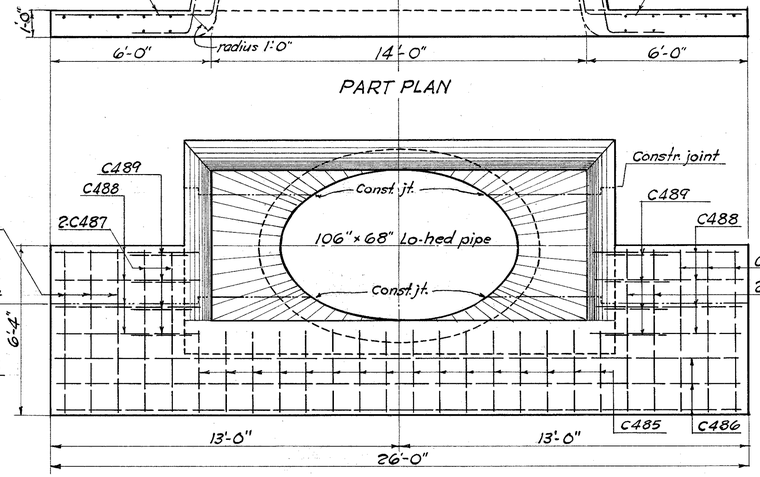
EXIT END SEC.



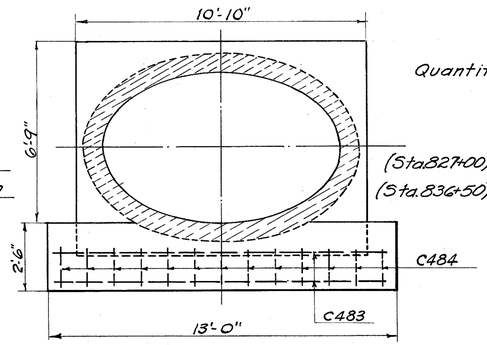
SEC. "C-C"



SECTION ON CENTER LINE



INLET ELEVATION
SCALE: ⅜" = 1'



ELEVATION AT JUNCTION
TO 106"×68" LO-HED CONCRETE PIPE

Quantities Carried to Sheet No. 170 & 174
Concrete, Class "C" 28 cu. yd.
Reinforcing Steel 3095 lb.
(Sta. 827+00) Exc. for Struct. 69 cu. yd.
(Sta. 836+50) Exc. for Struct. 35 cu. yd.

STA. 827+00 and STA. 836+50
FLARED ENTRANCE FOR 106"×68"
ELLIPTICAL PIPE

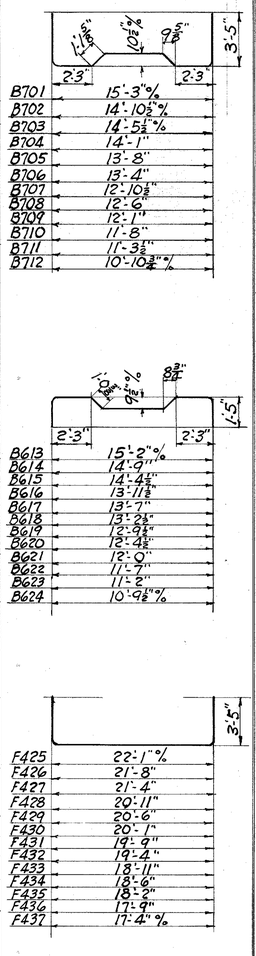
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

189 / 250

COL-30-32.19

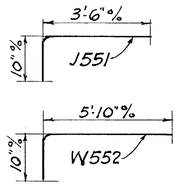
	BAR	No.	LENGTH	WEIGHT	SHAPE
FLOOR	B701	1	22'-5	46	Bent
	B702	1	22'-1	45	"
	B703	1	21'-8	44	"
	B704	1	21'-3	43	"
	B705	1	20'-10	43	"
	B706	1	20'-6	42	"
	B707	1	20'-1	42	"
	B708	1	19'-8	40	"
	B709	1	19'-3	39	"
	B710	1	18'-10	39	"
	B711	1	18'-6	38	"
	B712	1	18'-1	37	"
ROOF	B613	1	18'-4	28	Bent
	B614	1	17'-11	27	"
	B615	1	17'-6	26	"
	B616	1	17'-1	26	"
	B617	1	16'-9	25	"
	B618	1	16'-4	25	"
	B619	1	15'-11	24	"
	B620	1	15'-6	23	"
	B621	1	15'-2	23	"
	B622	1	14'-9	22	"
	B623	1	14'-4	22	"
	B624	1	13'-11	21	"
FLOOR	F425	1	22'-1	15	Bent
	F426	1	21'-8	14	"
	F427	1	21'-4	14	"
	F428	1	20'-11	14	"
	F429	1	20'-6	14	"
	F430	1	20'-1	13	"
	F431	1	19'-9	13	"
	F432	1	19'-4	13	"
	F433	1	18'-11	13	"
	F434	1	18'-6	12	"
	F435	1	18'-2	12	"
	F436	1	17'-9	12	"
	F437	1	17'-4	12	"

BAR BENDING DIAGRAMS



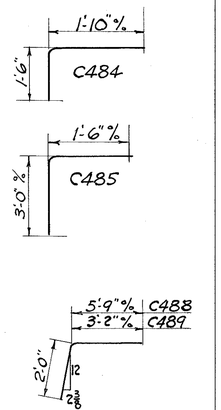
	BAR	No.	LENGTH	WEIGHT	SHAPE
FLOOR	F738	1	15'-3	31	Straight
	F739	1	14'-10	31	"
	F740	1	14'-6	30	"
	F741	1	14'-1	29	"
	F742	1	13'-8	28	"
	F743	1	13'-4	27	"
	F744	1	12'-11	26	"
	F745	1	12'-6	26	"
	F746	1	12'-2	25	"
	F747	1	11'-8	24	"
	F748	1	11'-4	23	"
	F749	1	10'-11	22	"
	F750	1	10'-6	21	"
WALLS	J551	10	4'-3	40	Bent
	W552	50	6'-7	344	Bent
	W553	10	5'-4	56	Straight
ROOF	R754	1	15'-2	31	Straight
	R755	1	14'-9	30	"
	R756	1	14'-5	30	"
	R757	1	14'-0	29	"
	R758	1	13'-7	28	"
	R759	1	13'-2	27	"
	R760	1	12'-10	26	"
	R761	1	12'-5	25	"
	R762	1	12'-0	25	"
	R763	1	11'-7	24	"
	R764	1	11'-3	23	"
	R765	1	10'-10	22	"

BAR BENDING DIAGRAMS



	BAR	No.	LENGTH	WEIGHT	SHAPE
ROOF	R466	1	15'-2	10	Straight
	R467	1	14'-9	10	"
	R468	1	14'-5	10	"
	R469	1	14'-0	9	"
	R470	1	13'-7	9	"
	R471	1	13'-2	9	"
	R472	1	12'-10	9	"
	R473	1	12'-5	8	"
	R474	1	12'-0	8	"
	R475	1	11'-7	8	"
	R476	1	11'-3	8	"
	R477	1	10'-10	7	"
	R478	1	10'-5	7	"
BARREL	K579	10	12'-9	133	Straight
	K580	21	12'-6	274	"
	K581	9	12'-0	113	"
	K582	10	12'-8	132	"
PIPE WALL	C483	2	12'-8	17	Straight
	C484	13	3'-3	28	Bent
END WALL	C485	16	4'-5	47	Bent
	C486	3	25'-6	51	Straight
	C487	14	6'-0	56	"
	C488	8	7'-9	41	Bent
	C489	8	5'-2	28	"
			TOTAL	3095	POUNDS

BAR BENDING DIAGRAMS

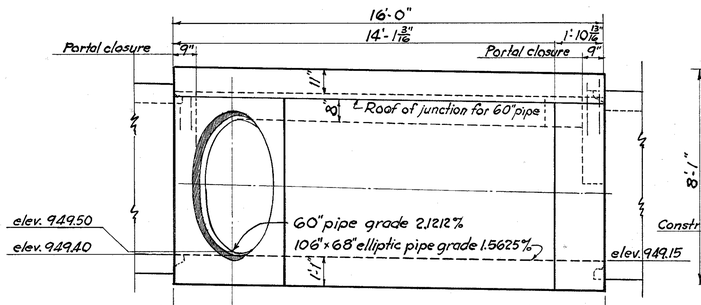


STA. 827+00 and STA. 836+50
FLARED ENTRANCE FOR 106"×68"
ELLIPTICAL PIPE

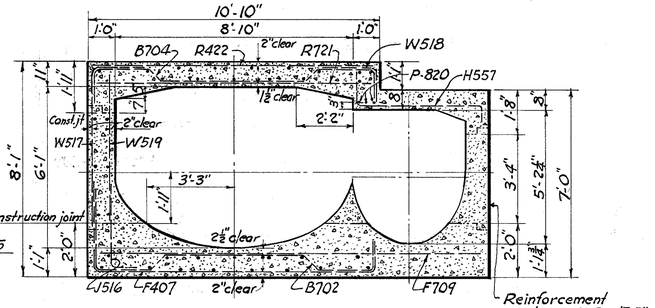
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

190
250

COL-30-32.19

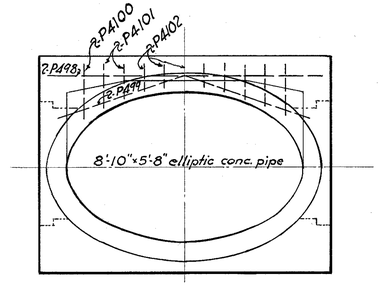


ELEVATION

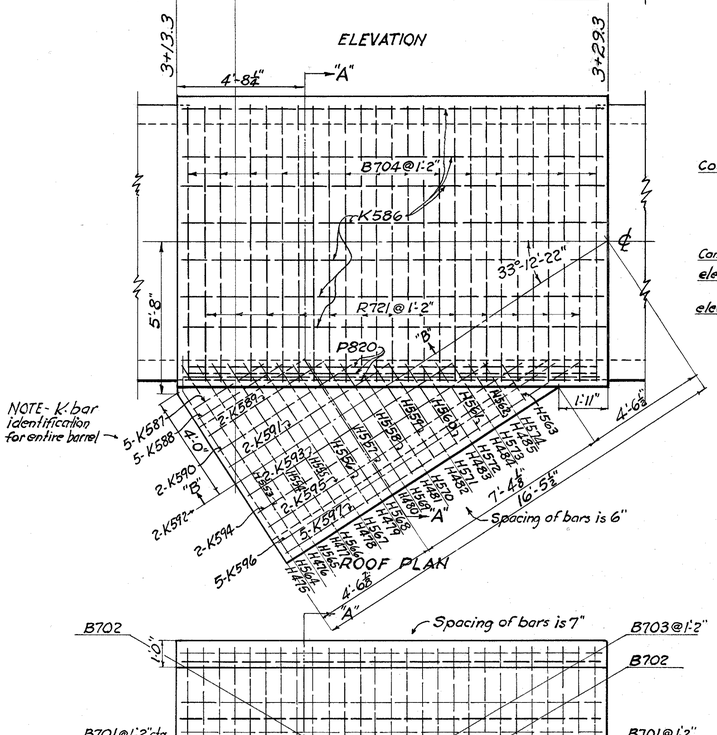


SECTION "A-A"

Reinforcement as shown in Sec. 'B-B'

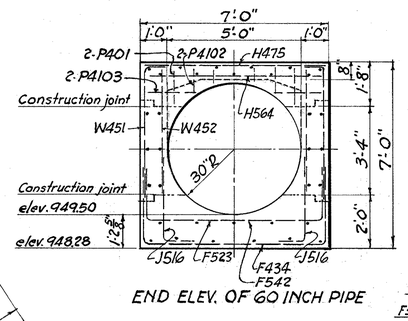


EXIT END ELEV. — PORTAL CLOSURE REINF.

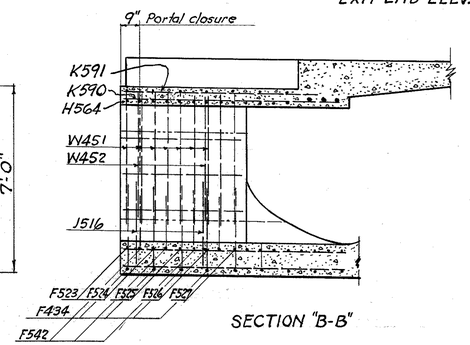


NOTE- K-bar identification for entire barrel

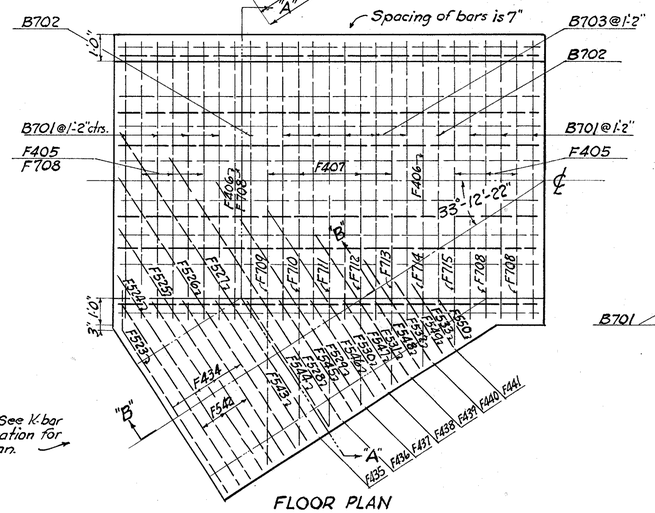
ROOF PLAN



END ELEV. OF 60 INCH PIPE

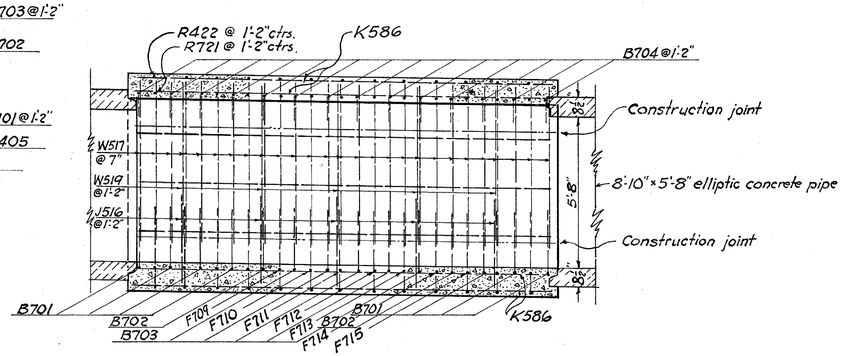


SECTION "B-B"



NOTE- See K-bar identification for roof plan.

FLOOR PLAN



SECTION THROUGH ELLIPTIC BARREL
SCALE ⅜" = 1'

Quantities Carried to Sheet No. 170

Concrete, Class "C"	27	cu. yd.
Reinforcing Steel	3716	lb.
Exc. for Struct.	52	cu. yd.

STA. 827+00

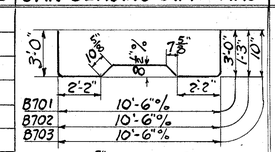
JUNCTION BOX FOR 106"×68" ELLIPTICAL PIPE AND 60" R.C. PIPE

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

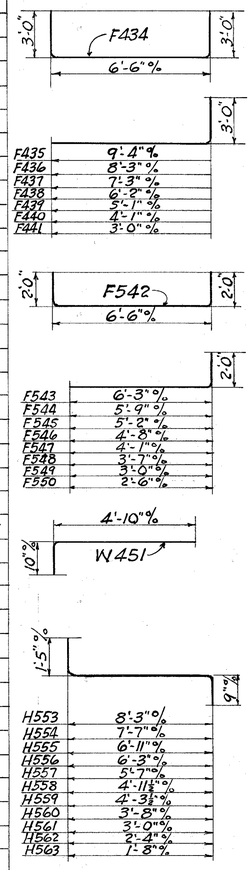
191/250

COL-30-32.19

	BAR	No.	LENGTH	WEIGHT	SHAPE	BAR BENDING DIAGRAMS
FLOOR	B701	7	6'-8"	238	Bent	
	B702	2	14'-11	61	"	
Roof	B703	5	14'-6	148	"	
	B704	14	13'-4	382	"	
FLOOR	F405	6	16'-3	65	Bent	
	F406	2	14'-6	19	"	
	F407	5	14'-2	47	"	
	F708	6	10'-4	127	Straight	
	F709	1	16'-0	33	"	
	F710	1	15'-3	31	"	
	F711	1	14'-6	30	"	
	F712	1	13'-9	28	"	
	F713	1	13'-0	27	"	
	F714	1	12'-3	25	"	
	F715	1	11'-6	24	"	
WALL	J516	14	4'-0	58	Bent	
	W517	39	6'-11	248	Bent	
	W518	15	2'-2	33	"	
	W519	7	5'-10	43	Straight	
ROOF	P820	3	15'-3	122	Straight	
	R721	13	10'-4	275	Straight	
	R422	13	10'-4	90	"	
FLOOR	F523	1	8'-6	9	Straight	
	F524	1	9'-0	9	"	
	F525	1	10'-8	11	"	
	F526	1	12'-2	13	"	
	F527	1	13'-8	14	"	
	F528	1	11'-10	12	"	
	F529	1	10'-2	12	"	
	F530	1	8'-3	9	"	
	F531	1	6'-6	7	"	
	F532	1	4'-8	5	"	
	F533	1	3'-0	3	"	



	BAR	No.	LENGTH	WEIGHT	SHAPE	BAR BENDING DIAGRAMS
FLOOR	F434	4	12'-3	33	Bent	
	F435	1	12'-3	8	"	
	F436	1	11'-2	7	"	
	F437	1	10'-2	7	"	
	F438	1	9'-1	6	"	
	F439	1	8'-0	5	"	
	F440	1	7'-0	5	"	
	F441	1	5'-11	4	"	
	F542	3	10'-3	32	Bent	
	F543	1	8'-2	9	"	
	F544	1	7'-8	8	"	
	F545	1	7'-1	7	"	
	F546	1	6'-7	7	"	
	F547	1	6'-0	6	"	
	F548	1	5'-6	6	"	
	F549	1	4'-11	5	"	
	F550	1	4'-5	5	"	
WALL	W451	29	5'-7	108	Bent	
	W452	7	4'-8	22	Straight	
ROOF	H553	1	10'-2	11	Bent	
	H554	1	9'-6	10	"	
	H555	1	8'-10	9	"	
	H556	1	8'-2	9	"	
	H557	1	7'-6	8	"	
	H558	1	6'-10½	7	"	
	H559	1	6'-2½	6	"	
	H560	1	5'-7	6	"	
	H561	1	4'-11	5	"	
	H562	1	4'-3	4	"	
	H563	1	3'-7	4	"	
	H564	1	8'-6	9	Straight	
	H565	1	7'-10	8	"	
	H566	1	7'-2½	8	"	
	H567	1	6'-7	6	"	
	H568	1	5'-11½	6	"	
	H569	1	5'-4	6	"	
	H570	1	4'-8	5		
	H571	1	4'-0½	4		
	H572	1	3'-5	4		
	H573	1	2'-9½	3		
	H574	1	2'-2	2		



	BAR	No.	LENGTH	WEIGHT	SHAPE	BAR BENDING DIAGRAMS
ROOF	H475	1	8'-6	6	Straight	
	H476	1	7'-10	5	"	
	H477	1	7'-2½	5	"	
	H478	1	6'-7	4	"	
	H479	1	5'-11½	4	"	
	H480	1	5'-4	4	"	
	H481	1	4'-8	3	"	
	H482	1	4'-0½	3	"	
	H483	1	3'-5	2	"	
	H484	1	2'-9½	2	"	
	H485	1	2'-2	1	"	
BARREL	— LONGITUDINAL STEEL —					
	K586	37	15'-3	588	Straight	
	K587	5	3'-3	17	"	
	K588	5	4'-0	21	"	
	K589	2	5'-0	10	"	
	K590	2	6'-0	13	"	
	K591	2	7'-0	15	"	
	K592	2	8'-0	17	"	
	K593	2	9'-2	19	"	
	K594	2	10'-6	22	"	
	K595	2	11'-3	23	"	
	K596	5	12'-3	64	"	
	K597	5	13'-0	68	"	
	— PORTAL STEEL —					
	P498	4	10'-4	28	Straight	
	P499	8	6'-0	32	"	
	P4100	8	2'-0	11	"	
	P4101	20	1'-6	20	"	
	P4102	24	1'-0	16	"	
	P4103	4	1'-9	5	"	
			TOTAL	3716	POUNDS	

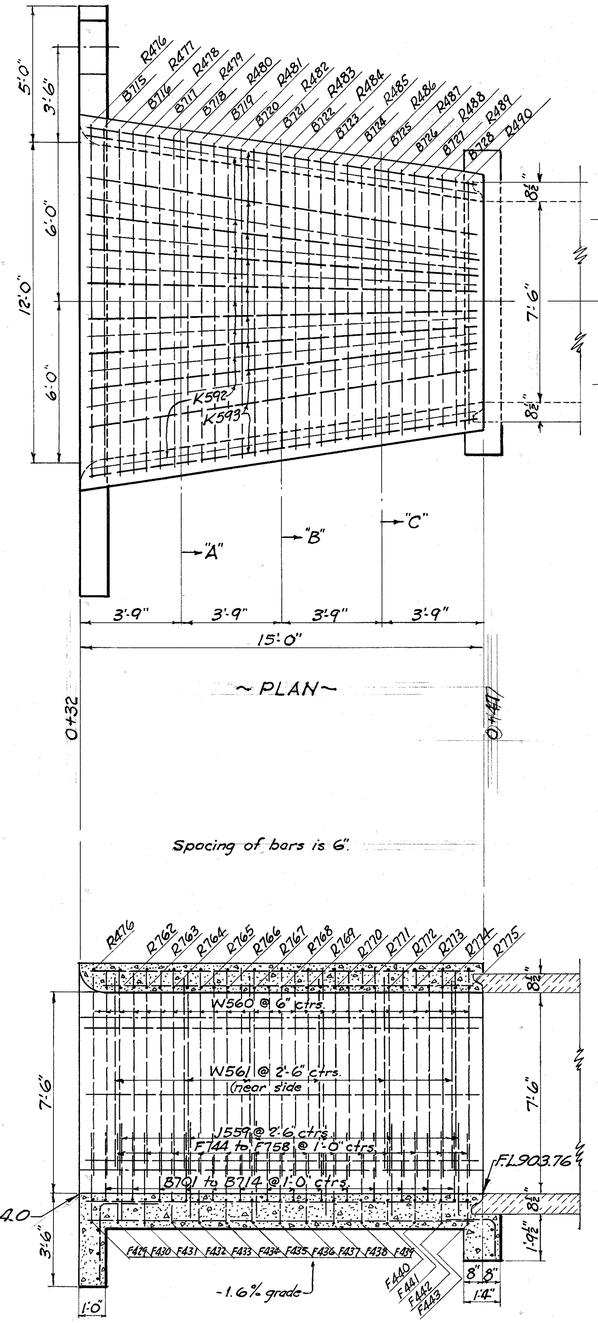
STA. 827+00

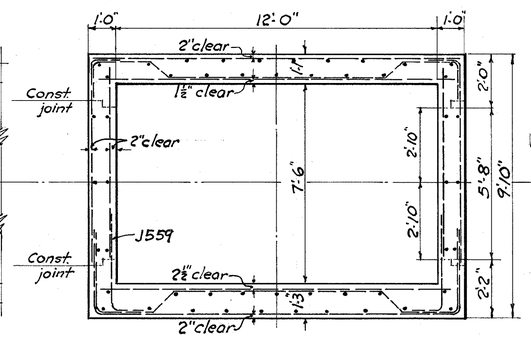
JUNCTION BOX FOR 106"×68" ELLIPTICAL PIPE AND 60" R.C. PIPE

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

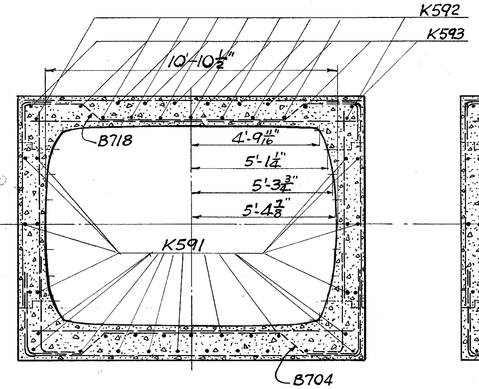
192
250

COL-30-32.19

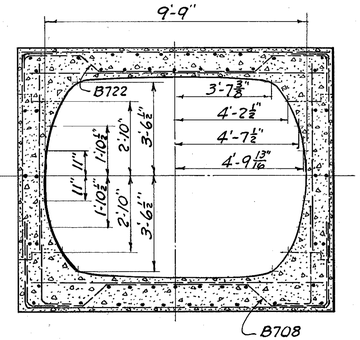




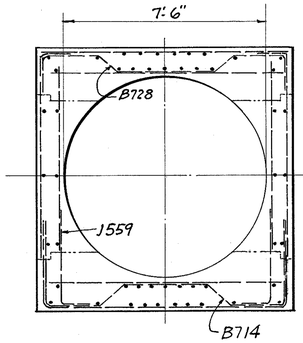
INLET END



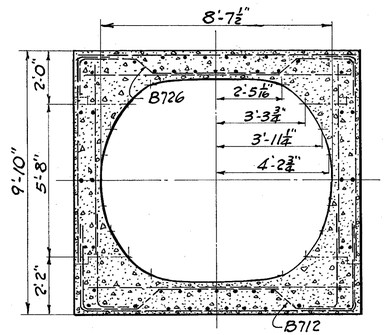
SEC. "A-A"



SEC. "B-B"

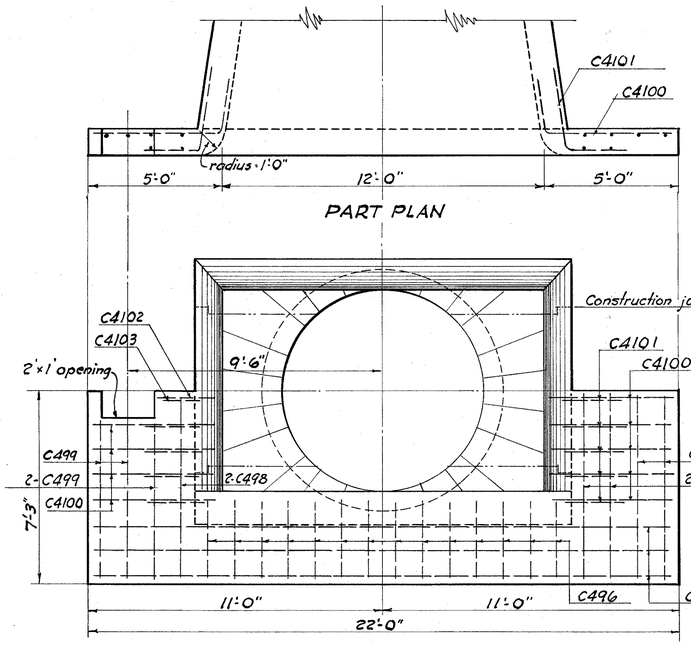


EXIT END



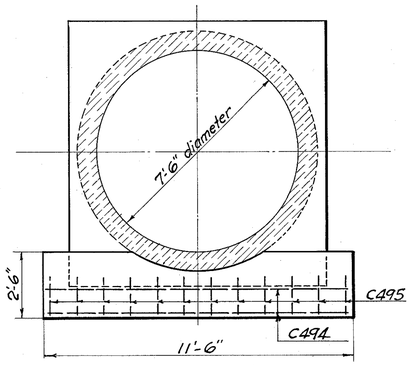
SEC. "C-C"

SECTION ON CENTER LINE



PART PLAN

INLET ELEVATION
SCALE ⅜" = 1'



ELEVATION AT JUNCTION TO 90" DIAMETER PIPE

Quantities Carried to Sheet No. 177

Concrete, Class "C"	32	cu. yd.
Reinforcing Steel	3562	lb.
Exc. for Struct.	35	cu. yd.

STA. 853+00

FLARED ENTRANCE FOR 90" PIPE

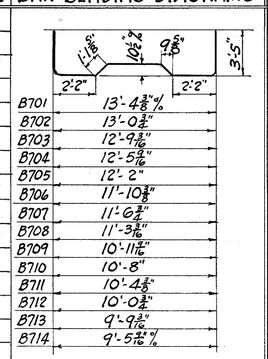
SHEET 1 OF 2 SHEETS

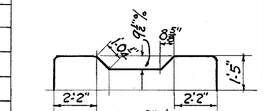
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

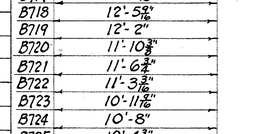
193
250

COL-30-32.19

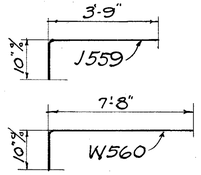
	BAR	No.	LENGTH	WEIGHT	SHAPE	BAR BENDING DIAGRAMS
FLOOR	B701	1	20'-6	42	Bent	
	B702	1	20'-3	41	"	
	B703	1	19'-11	41	"	
	B704	1	19'-8	40	"	
	B705	1	19'-4	40	"	
	B706	1	19'-0	39	"	
	B707	1	18'-9	38	"	
	B708	1	18'-5	38	"	
	B709	1	18'-1½	37	"	
	B710	1	17'-10	36	"	
	B711	1	17'-6	36	"	
	B712	1	17'-3	35	"	
	B713	1	16'-11	35	"	
	B714	1	16'-7½	34	"	
ROOF	B715	1	16'-5	34	"	
	B716	1	16'-2	33	"	
	B717	1	15'-10	32	"	
	B718	1	15'-7	32	"	
	B719	1	15'-3	31	"	
	B720	1	14'-11	31	"	
	B721	1	14'-8	30	"	
	B722	1	14'-4	29	"	
	B723	1	14'-1	29	"	
	B724	1	13'-9	28	"	
	B725	1	13'-5	27	"	
	B726	1	13'-2	27	"	
	B727	1	12'-10	26	"	
	B728	1	12'-7	26	"	
FLOOR	F429	1	20'-2	13	Bent	
	F430	1	19'-10	13	"	
	F431	1	19'-7	13	"	
	F432	1	19'-3	13	"	
	F433	1	18'-11	13	"	
	F434	1	18'-8	12	"	
	F435	1	18'-4	12	"	
	F436	1	18'-0½	12	"	
	F437	1	17'-9	12	"	
	F438	1	17'-5	12	"	
	F439	1	17'-2	11	"	
	F440	1	16'-10	11	"	
	F441	1	16'-6½	11	"	
	F442	1	16'-3	11	"	
	F443	1	15'-11	11	"	



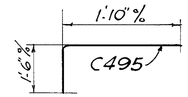


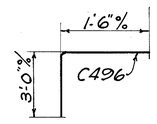


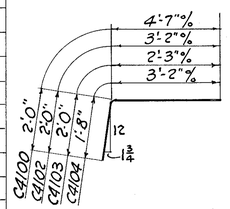
	BAR	No.	LENGTH	WEIGHT	SHAPE	BAR BENDING DIAGRAMS
FLOOR	F744	1	13'-4	27	Straight	
	F745	1	13'-1	27	"	
	F746	1	12'-9	26	"	
	F747	1	12'-5	26	"	
	F748	1	12'-2	25	"	
	F749	1	11'-10	24	"	
	F750	1	11'-7	24	"	
	F751	1	11'-3	23	"	
	F752	1	11'-0	23	"	
	F753	1	10'-8	22	"	
	F754	1	10'-4	21	"	
	F755	1	10'-1	21	"	
	F756	1	9'-9	20	"	
	F757	1	9'-5	19	"	
	F758	1	9'-2	19	"	
	J559	12	4'-6	55	Bent	
WALLS	W560	58	8'-5	509	Bent	
	W561	12	7'-2	89	Straight	
ROOF	R762	1	13'-0	27	Straight	
	R763	1	12'-9	26	"	
	R764	1	12'-5	25	"	
	R765	1	12'-2	25	"	
	R766	1	11'-10	24	"	
	R767	1	11'-7	24	"	
	R768	1	11'-3	23	"	
	R769	1	11'-0	23	"	
	R770	1	10'-8	22	"	
	R771	1	10'-4	21	"	
	R772	1	10'-0	20	"	
	R773	1	9'-9	20	"	
	R774	1	9'-5	19	"	
	R775	1	9'-2	19	"	
	R476	1	13'-4	9	Straight	
	R477	1	13'-0	9	"	
	R478	1	12'-9	9	"	
	R479	1	12'-5	8	"	
	R480	1	12'-2	8	"	
	R481	1	11'-10	8	"	
	R482	1	11'-7	8	"	
	R483	1	11'-3	8	"	
	R484	1	11'-0	7	"	



	BAR	No.	LENGTH	WEIGHT	SHAPE	BAR BENDING DIAGRAMS
ROOF	R485	1	10'-8	7	Straight	
	R486	1	10'-4	7	"	
	R487	1	10'-0	7	"	
	R488	1	9'-9	7	"	
	R489	1	9'-5	6	"	
	R490	1	9'-2	6	"	
BARREL	K591	31	14'-6	469	Straight	
	K592	9	14'-0	131	"	
	K593	10	14'-4	149	"	
PIPE WALL	C494	2	11'-2	15	Straight	
	C495	12	3'-3	26	Bent	
END WALL	C496	14	4'-5	41	Bent	
	C497	13	21'-6	43	Straight	
	C498	8	7'-0	37	"	
	C499	4	6'-0	16	"	
	C4100	9	6'-7	39	Bent	
	C4101	9	5'-2	31	"	
	C4102	1	4'-3	3	"	
	C4103	1	4'-8	3	"	
			TOTAL	3562	POUNDS	







STA. 853+00

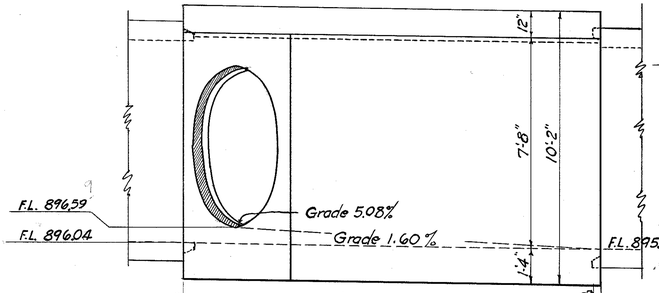
FLARED ENTRANCE FOR 90" PIPE

SHEET 2 OF 2 SHEETS

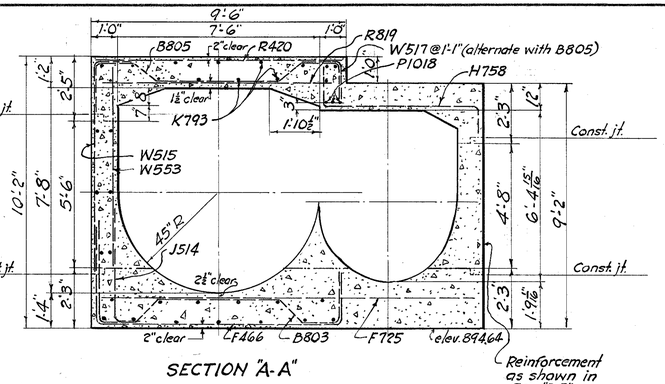
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

194
250

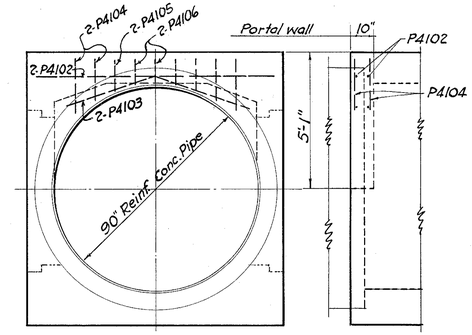
COL-30-32.19



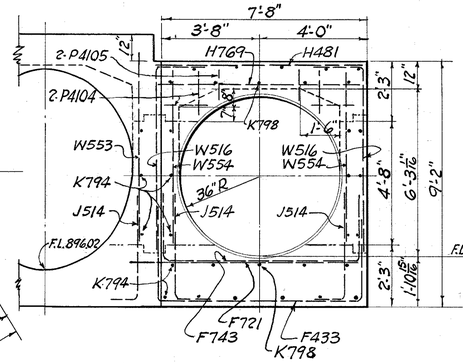
ELEVATION



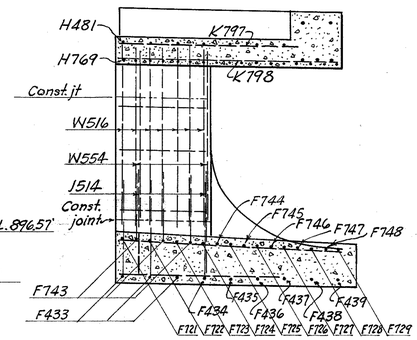
SECTION "A-A"



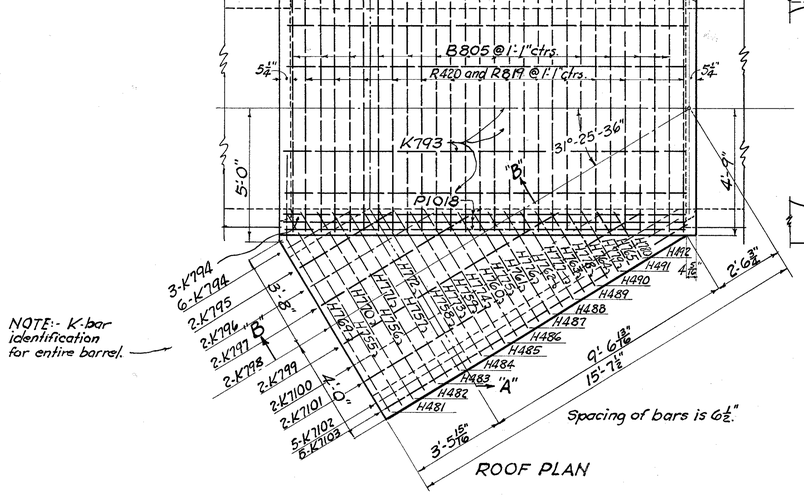
INLET AND OUTLET END ELEV.
PORTAL CLOSURE REINFORCING



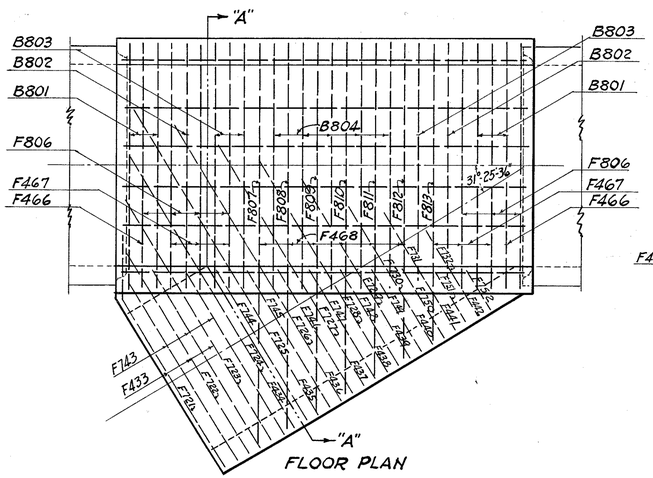
INLET END ELEVATION OF 72" PIPE



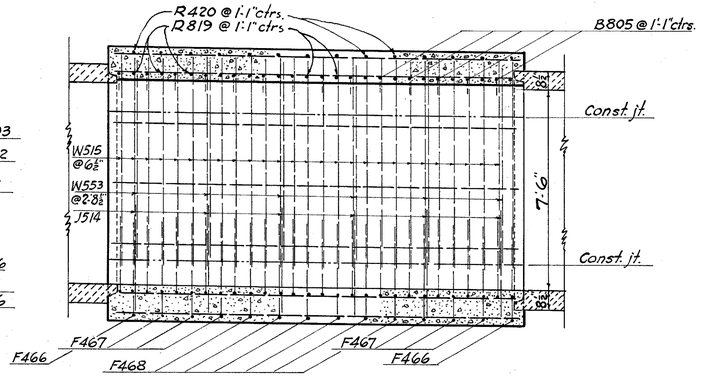
SECTION "B-B"



ROOF PLAN



FLOOR PLAN



SECTION THROUGH MAIN BARREL
SCALE: ⅜" = 1'

Quantities Carried to Sheet No. 177

Concrete, Class "C"	40 cu.yd.
Reinforcing Steel	5536 lb.
Exc. for Struct.	36 cu.yd.

STA. 853+00
JUNCTION BOX FOR 90" R.C. PIPE
AND 72" PIPE
SHEET 1 OF 2 SHEETS

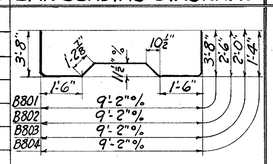
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

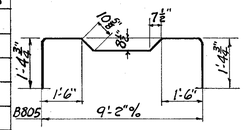
195
250

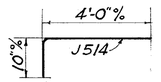
COL-30-32.19

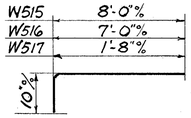
	BAR	No.	LENGTH	WEIGHT	SHAPE
FLOOR	B801	4	16'-10"	180	Bent
FLOOR	B802	2	15'-8	84	"
FLOOR	B803	3	15'-2	121	"
FLOOR	B804	5	14'-6	194	"
ROOF	B805	14	12'-0	449	"
FLOOR	F806	7	9'-0	168	Straight
FLOOR	F807	1	15'-0	40	"
FLOOR	F808	1	14'-6	39	"
FLOOR	F809	1	13'-9	37	"
FLOOR	F810	1	13'-0	35	"
FLOOR	F811	1	12'-6	33	"
FLOOR	F812	1	11'-9	31	"
FLOOR	F813	1	11'-3	30	"
WALL	J514	16	4'-9	79	Bent
WALL	W515	34	8'-9	310	Bent
WALL	W516	31	7'-9	251	"
WALL	W517	10	2'-5	25	"
ROOF	P1018	3	17'-8	228	Bent
ROOF	R819	14	9'-0	336	Straight
ROOF	R420	14	9'-0	84	Straight
FLOOR	F721	1	10'-0	20	Straight
FLOOR	F722	1	9'-0	18	"
FLOOR	F723	1	10'-6	21	"
FLOOR	F724	1	12'-3	25	"
FLOOR	F725	1	13'-9	28	"
FLOOR	F726	1	12'-0	25	"
FLOOR	F727	1	10'-6	21	"
FLOOR	F728	1	9'-3	19	"
FLOOR	F729	1	8'-0	16	"
FLOOR	F730	1	6'-6	13	"
FLOOR	F731	1	5'-3	11	"
FLOOR	F732	1	4'-0	8	"
FLOOR	F433	3	14'-1"	9	Bent
FLOOR	F434	1	13'-11	9	"
FLOOR	F435	1	12'-11	9	"
FLOOR	F436	1	11'-11	8	"
FLOOR	F437	1	10'-11	7	"
FLOOR	F438	1	9'-11	7	"
FLOOR	F439	1	8'-11	6	"
FLOOR	F440	1	8'-2	5	"

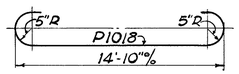
BAR BENDING DIAGRAMS

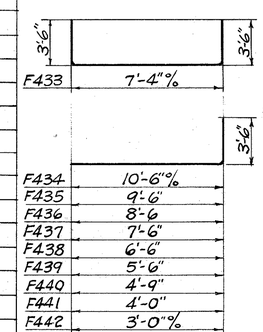






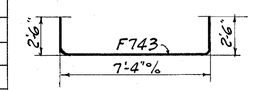


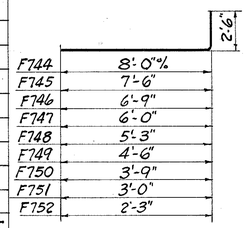


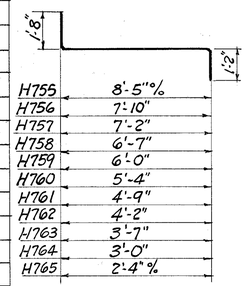


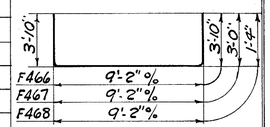
	BAR	No.	LENGTH	WEIGHT	SHAPE
FLOOR	F441	1	7'-5	5	Bent
FLOOR	F442	1	6'-5	4	"
FLOOR	F743	3	11'-10	73	Bent
FLOOR	F744	1	10'-3	21	"
FLOOR	F745	1	9'-9	20	"
FLOOR	F746	1	9'-0	18	"
FLOOR	F747	1	8'-3	17	"
FLOOR	F748	1	7'-6	15	"
FLOOR	F749	1	6'-9	14	"
FLOOR	F750	1	6'-0	12	"
FLOOR	F751	1	5'-3	11	"
FLOOR	F752	1	4'-6	9	"
WALL	W553	9	7'-8	72	Straight
WALL	W554	7	6'-8	49	"
ROOF	H755	1	10'-11"	22	Bent
ROOF	H756	1	10'-4	21	"
ROOF	H757	1	9'-8	20	"
ROOF	H758	1	9'-1	19	"
ROOF	H759	1	8'-6	17	"
ROOF	H760	1	7'-10	16	"
ROOF	H761	1	7'-3	15	"
ROOF	H762	1	6'-8	14	"
ROOF	H763	1	6'-1	12	"
ROOF	H764	1	5'-6	11	"
ROOF	H765	1	4'-10	10	"
FLOOR	F466	2	16'-9	22	Bent
FLOOR	F467	6	15'-10	63	"
FLOOR	F468	6	14'-2	57	"
ROOF	H769	1	8'-9	18	Straight
ROOF	H770	1	8'-3	17	"
ROOF	H771	1	7'-6	15	"
ROOF	H772	1	6'-10	14	"
ROOF	H773	1	6'-3	13	"
ROOF	H774	1	5'-8	12	"
ROOF	H775	1	5'-0	10	"
ROOF	H776	1	4'-6	9	"
ROOF	H777	1	3'-10	8	"
ROOF	H778	1	3'-3	7	"
ROOF	H779	1	2'-7	6	"
ROOF	H780	1	2'-0	4	"

BAR BENDING DIAGRAMS









	BAR	No.	LENGTH	WEIGHT	SHAPE
ROOF	H481	1	8'-9	6	Straight
ROOF	H482	1	8'-3	5	"
ROOF	H483	1	7'-6	5	"
ROOF	H484	1	6'-10	5	"
ROOF	H485	1	6'-3	4	"
ROOF	H486	1	5'-8	4	"
ROOF	H487	1	5'-0	3	"
ROOF	H488	1	4'-6	3	"
ROOF	H489	1	3'-10	3	"
ROOF	H490	1	3'-3	2	"
ROOF	H491	1	2'-7	2	"
ROOF	H492	1	2'-0	1	"
	LONGITUDINAL STEEL				
	K793	33	15'-0	1012	Straight
	K794	9	2'-9	51	"
	K795	2	4'-6	18	"
	K796	2	5'-6	22	"
	K797	2	6'-9	28	"
	K798	2	8'-3	34	"
	K799	2	9'-9	40	"
	K7100	2	11'-0	45	"
	K7101	2	12'-0	49	"
	K7102	5	13'-3	135	"
	K7103	5	13'-6	138	"
	PORTAL STEEL				
	P4102	4	9'-0	24	Straight
	P4103	8	4'-6	24	"
	P4104	24	1'-6	24	"
	P4105	12	1'-3	10	"
	P4106	12	1'-0	8	"
	TOTAL			5536	POUNDS

☆ REPLACEMENT BARS			
BAR	No.	LENGTH	WEIGHT
RE-10	1	9'-0	—
RE-8	1	6'-6	—
RE-7	1	6'-3	—
RE-6	1	5'-11	—
RE-5	1	5'-7	—
RE-4	1	5'-3	—
			—

☆ Steel to replace cut test samples for all structural steel in drainage structures on the project.

STA. 853+00
JUNCTION BOX FOR 90" R.C. PIPE AND 72" PIPE
SHEET 2 OF 2 SHEETS

COL-30-32.19

Existing S.R.30

Ex. M.H.

Ex. 15" San. Sewer

Std. No. 1 M.H. 880+00 @ 110' Lt.

Remove 34' Ex. 15" V.S.P. (San.)

Remove Ex. M.H.

Remove 258' Ex. 15" V.S.P. (San.)

Std. No. 1 M.H. 882+50 @ 110' Lt.

Plug

Conc. Encasement See Detail below

Remove 10' Ex. 12" V.S.P.

Remove Ex. M.H.

Remove 250' Ex. 15" V.S.P. (San.)

Carpenters Run

Std. No. 1 M.H. 883+00 @ 67' Lt.

Std. No. 1 M.H. 885+00 @ 67' Lt.

Plug

Ex. 18" V.S.P. (San.)

Abandon Ex. M.H.

Abandon

Exist. M.H. (Abandoned with Previous Construction)

687+98.52 S 89° 31' 05" E

1-Str. Fr. Bldg.

Ex. M.H. 891+60 @ 79' Lt.

Plug

Std. No. 1 M.H. 890+00 @ 75' Lt.

Remove 50' Ex. 18" V.S.P. (San.)

878 879 880 881 882 883 884 885 886 887 888 889 890 891 892 893

Abandon Ex. M.H.

Plug

Std. No. 1 M.H. 881+94 @ 67.5' Rt.

Remove Ex. M.H. 881+94 @ 67.5 Rt.

Remove 20' Ex. 8" V.S.P. (San.)

Ex. 36" Conc. Pipe

Ex. M.H.

CORPORATION LINE EAST LIVERPOOL

Class "E" Concrete

Diam. %

SECTION A-A

DETAIL OF CONCRETE ENCASEMENT

Scale: 1"=1'

ESTIMATED QUANTITIES

12" Pipe	Class A-1	Sec. M-6.8(b)	Encased as per Plan	172 Lin. Ft.
15" Pipe	Class C-1	Sec. M-6.8(b)		250 Lin. Ft.
15" Pipe	Class C-1	Sec. M-6.8(b)	Encased as per Plan	66 Lin. Ft.
18" Pipe	Class C-1	Sec. M-6.8(b)		862 Lin. Ft.
Std. No. 1 Manhole				6 Each
Pipe Removed (Over 15")				50 Lin. Ft.
Manholes Abandoned				2 Each
Removal of Portions of Existing Structures				8 Cu. Yds.
Pipe Removed (15" and under)				572 Lin. Ft.

Remove Exist. M.H. 881+94 @ 67.5' Rt.

Ex. El. 872.33

Std. No. 1 M.H El. 871.5

Class A-1 Sec. M-6.8(b) 12" x 172' with 5" Class "E" Concrete Encasement

Ex. El. 864.73

El. 859.5

870 860 850 840 830 820

Std. No. 1 M.H. El. 856.5

Exist. 15" San. Sewer

Fl. 849.5±

Class C-1 Sec. M-6.8(b) 15" x 250' 1.2 %

Fl. 847.0

Std. No. 1 M.H. El. 852.0

Fl. 844.0

Fl. 843.0

7.6 %

1.0 %

Std. No. 1 M.H. El. 852.5

Fl. 846.8

Fl. 842.4

Fl. 842.0

Class C-1 Sec. M-6.8(b) 18" x 200' 1.0 %

Std. No. 1 M.H. El. 847.5

Fl. 840.0

Class C-1 Sec. M-6.8(b) 18" x 500' 1.0 %

Std. No. 1 M.H. El. 844.0

Fl. 835.0

5.45 %

Exist. M.H. El. 832.7 891+60 @ 79' Lt.

18" x 162' Class C-1 Sec. M-6.8(b)

Fl. 826.5

Fl. 825.7

Class C-1 Sec. M-6.8(b) 15" x 66' with 5" Class "E" Concrete Encasement

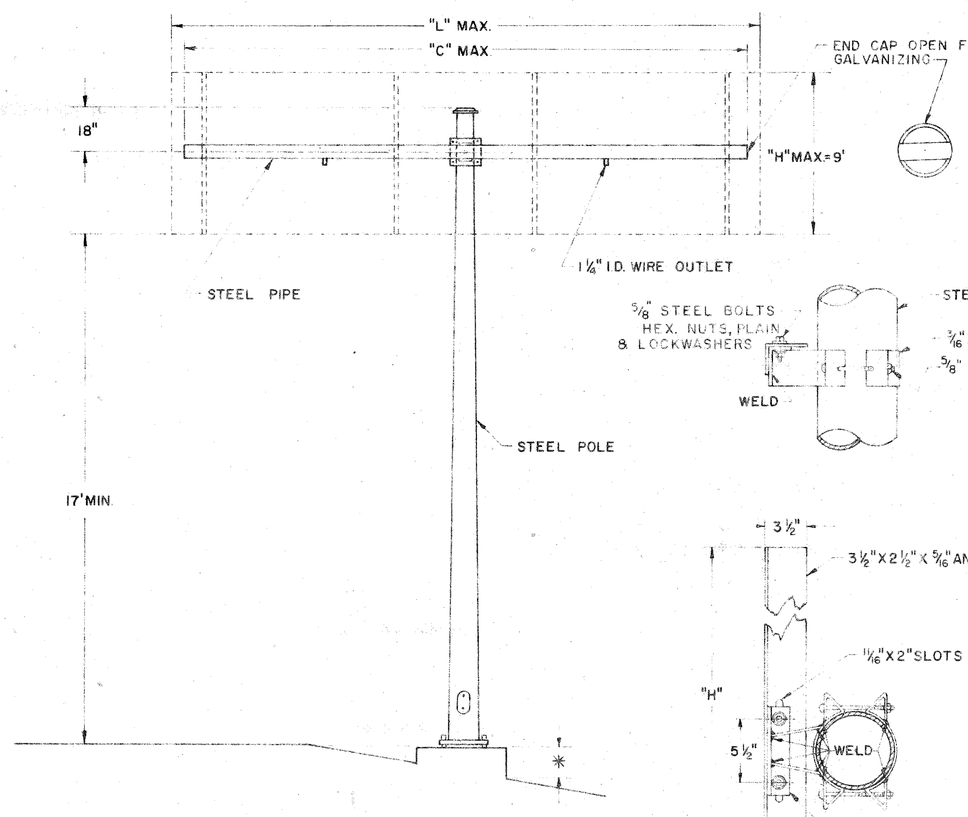
879 880 881 882 883 884 885 886 887 888 889 890 891 892 893

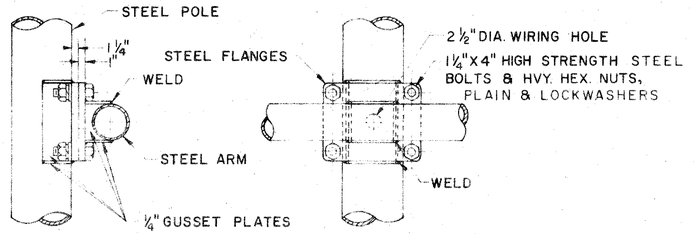
STA. 880+00 TO 891+60 SANITARY SEWER

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

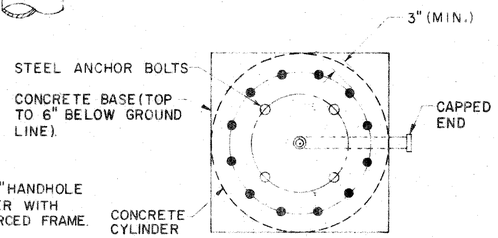
197/250

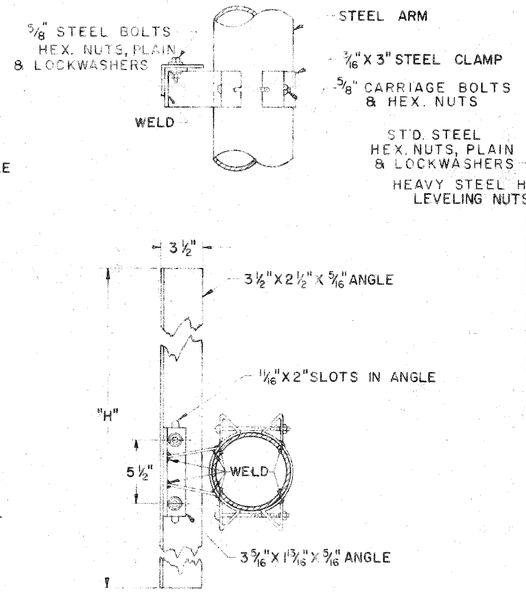
COL - 30 - 32.19



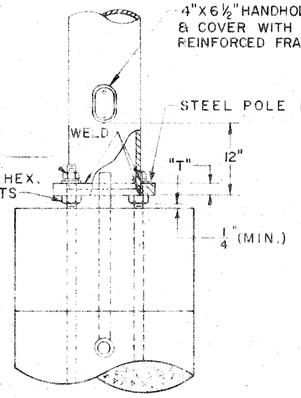


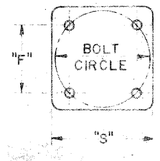
ARM ATTACHMENT



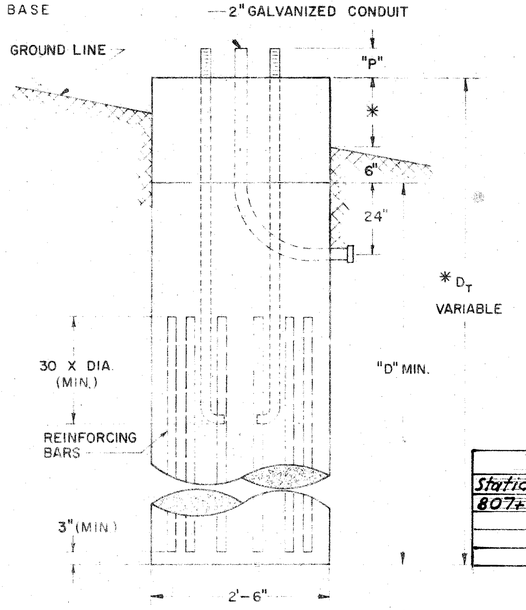


SIGN ATTACHMENT DETAIL





POLE DETAIL



FOUNDATION DETAIL

DESIGN NO.	POLE SIZE	PIPE SIZE	DIM C	DIM F	DIM P	DIM S	DIM T	BOLT CIRCLE	ANCHOR BOLT SIZE	MAX SIGN AREA	MAX. "L" WITH MAX. SIGN AREA	"D" MIN.	REINF. BARS TYPE	REINF. BARS NO.
1	7ga,11"X7.99X21'-6"	4"SCH.40 GRADE A	18'	10⅝"	6½"	15⅝"	1½"	15"	1½"X60"	60	24'-9"	7'-0"	#6	8
2	3ga,13"X9.99X21'-6"	4"SCH.80 GRADE A	14'	12¾"	7¾"	18½"	2"	18"	1¾"X90"	120	16'-9"	8'-6"	#7	12
3	3ga,13"X9.99X21'-6"	6"SCH.40 GRADE A	20'	12¾"	7¾"	18½"	2"	18"	1¾"X90"	120	24'-0"	9'-0"	#7	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. S-25.08 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.

MATERIAL – STEEL POLE BASES, FLANGES, AND END 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 B 7. AFTER FABRICATION TAPERED POLES SHALL HAVE A MINIMUM YIELD STRENGTH OF 48,000 PSI.

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 – REINFORCING STEEL AS SHOWN IN TABLE SHALL BE INSTALLED WHEN "D_T" EXCEEDS THE ANCHOR BOLT LENGTH BY MORE THAN 3 FT. THE COST AND PLACEMENT OF REINFORCING STEEL SHALL BE INCLUDED IN THE UNIT PRICE FOR I-129 CONCRETE FOR SIGN SUPPORT FOUNDATION.

ESTIMATED QUANTITIES

Station	See Sheet	Structures, Each	Concrete, Cu.Yd.
807+35	25	Design No 3, 20' Arm	2.0

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.

BUREAU OF TRAFFIC
OHIO DEPARTMENT OF HIGHWAYS

OVERHEAD SIGN SUPPORT	I-129 No. 9.12	DATE 1-19-62 3-30-62

APPROVED Robert E. Comer
ENGINEER OF TRAFFIC

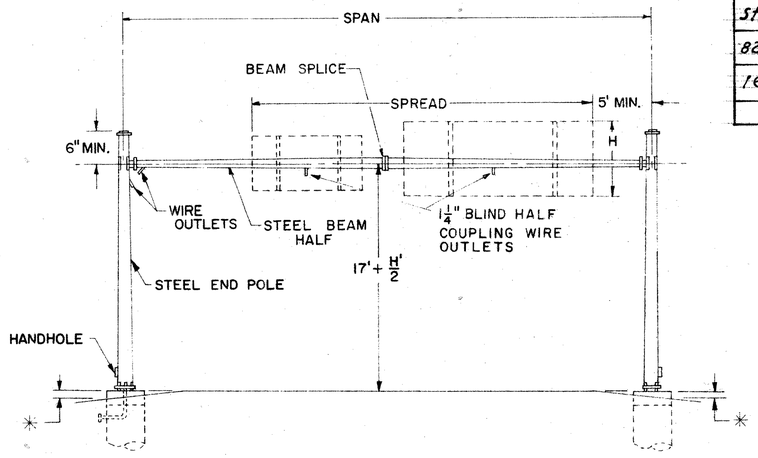
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

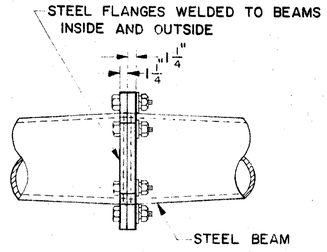
COL - 30-32.19

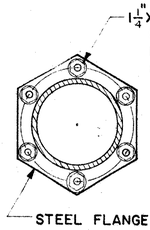
198
250

ESTIMATED QUANTITIES

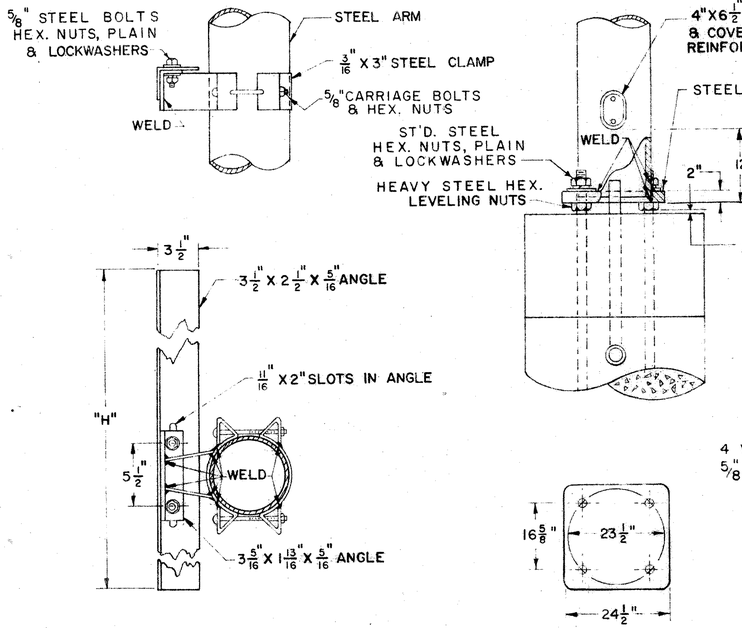
Station	See Sheet	Structures Each	Concrete Cu. Yd.
825+00	26	Design No. 1 46' Span	9.2
16+70	23	Design No. 9 73' Span	9.2
		Total	8.9



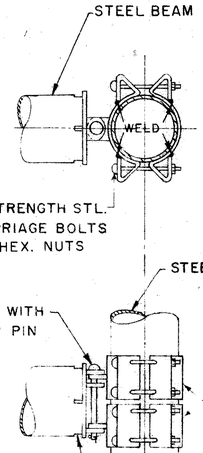




BEAM SPLICE DETAIL

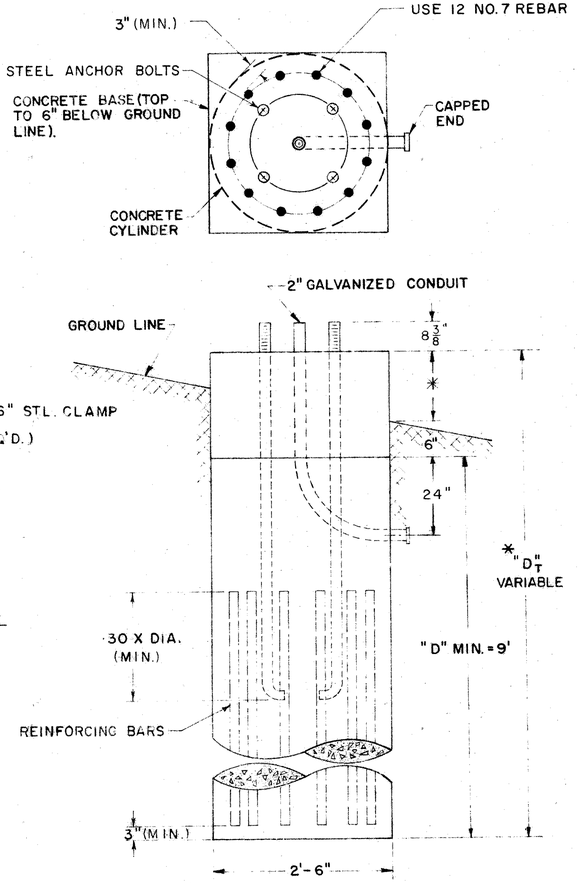


SIGN ATTACHMENT DETAIL



BEAM CLAMP DETAIL

POLE DETAIL



FOUNDATION DETAIL

DESIGN NO.	SPAN	BEAM HALVES FOR MAX. SPAN **	END POLE SIZE
1	41'-6" THRU 51'-3"	3ga., 10.5"X 7"X 25'-0"	7ga., 16"X12.92"X 22'-0"
2	51'-6" THRU 61'-3"	7ga., 14"X 9.8"X 30'-0"	7ga., 16"X12.92"X 22'-0"
3	61'-6" THRU 71'-3"	7ga., 14"X 9.1"X 35'-0"	7ga., 16"X12.92"X 22'-0"
4	71'-6" THRU 81'-3"	7ga., 16"X10.4"X 40'-0"	7ga., 16"X12.92"X 22'-0"

SPAN FT.	MAX. SIGN AREA, SQ. FT. SPREAD, FT.					
	20'	30'	40'	50'	60'	70'
50	130	155	185			
60	125	150	175	200		
70	90	110	130	150	175	
80	100	120	140	160	185	210

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. S-25.08 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 - FOR SPANS LESS THAN MAX. LENGTH, THE LARGER DIA. OF BEAM HALVES IS HELD AND THE BEAM IS SHORTENED ON THE SMALLER DIA. END.

MATERIAL - STEEL POLE BASES AND FLANGES SHALL CONFORM TO THE REQUIREMENTS OF ASTM SPECIFICATION A 30 GRADE B.
HIGH STRENGTH STEEL BOLTS SHALL CONFORM TO ASTM SPECIFICATION A193 GRADE B 7.
AFTER FABRICATION, TAPERED POLES AND BEAM HALVES SHALL HAVE A MINIMUM YIELD STRENGTH OF 48,000 PSI.

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 - REINFORCING STEEL AS SHOWN IN DETAIL SHALL BE INSTALLED WHEN "D_T" EXCEEDS THE ANCHOR BOLT LENGTH BY MORE THAN 3'.
THE COST AND PLACEMENT OF REINFORCING STEEL SHALL BE INCLUDED IN THE UNIT PRICE FOR I-129 CONCRETE FOR SIGN SUPPORT FOUNDATIONS.

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.

BUREAU OF TRAFFIC
OHIO DEPARTMENT OF HIGHWAYS

OVERHEAD SIGN SUPPORT

I-129 No. 13.2

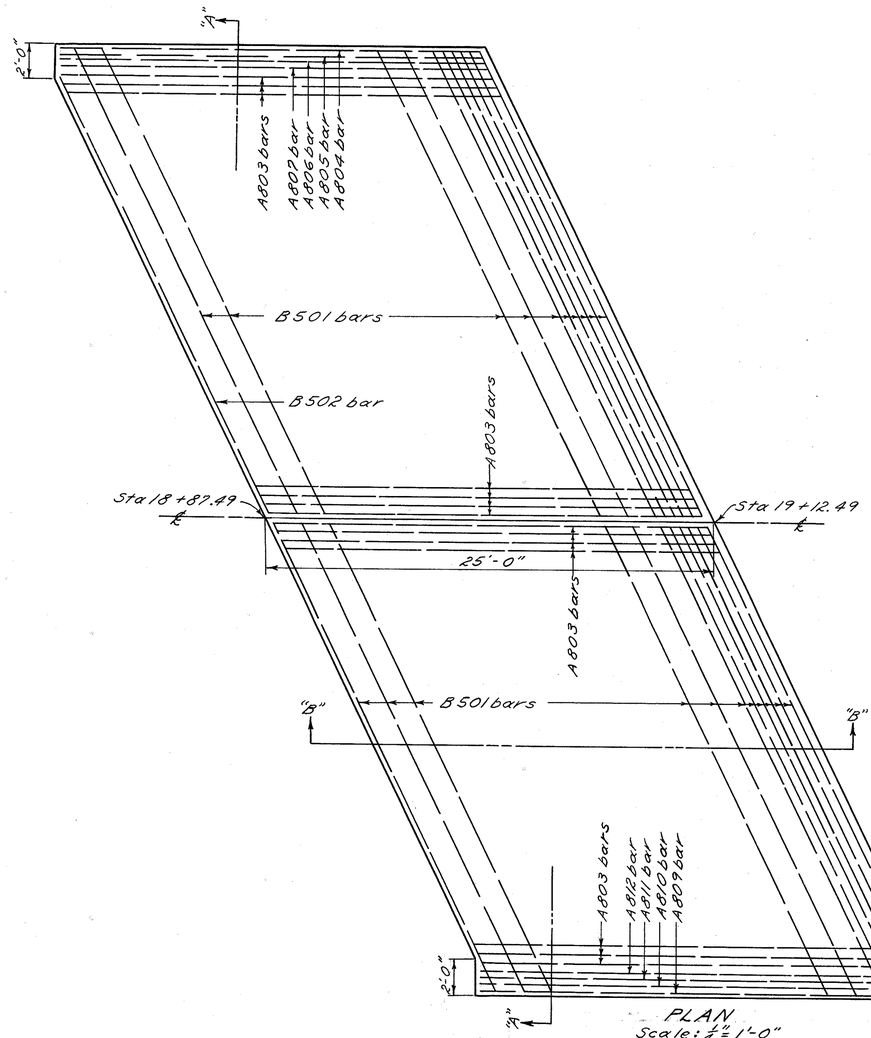
DATE
8-18-61
11-16-61
1-27-62
3-30-62
4-18-62

APPROVED Robert E. Cowen
ENGINEER OF TRAFFIC

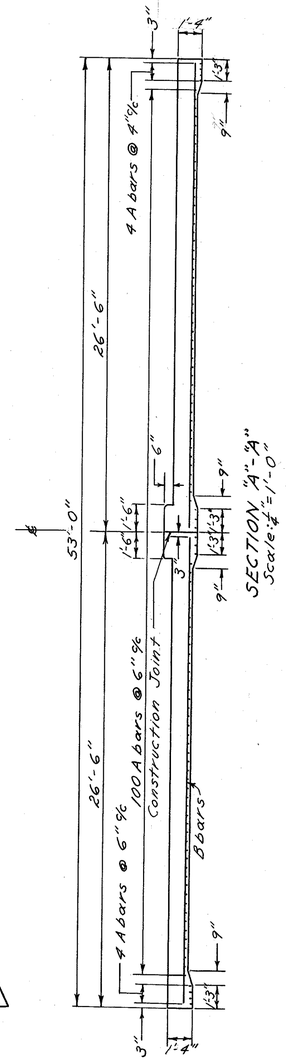
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

207
250

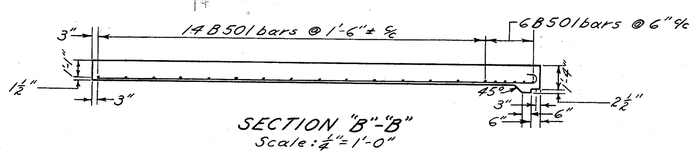
COL-30-32.19



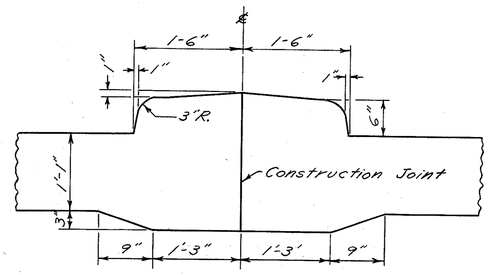
PLAN
Scale: 1/4"=1'-0"



SECTION "A"-"A"
Scale: 1/4"=1'-0"



SECTION "B"-"B"
Scale: 1/4"=1'-0"



DETAIL OF RAISED MEDIAN
Scale: 1"=1'-0"

STEEL LIST				
Mark	Bar Size	Length	Dim. A	No.
A803	1"ϕ	25'-7"	24'-6"	100
A804	1"	24'-9"	23'-8"	1
A805	1"	24'-11"	23'-10"	1
A806	1"	25'-1"	24'-0"	1
A807	1"	25'-3"	24'-2"	1
A809	1"	26'-5"	25'-4"	1
A810	1"	26'-3"	25'-2"	1
A811	1"	26'-1"	25'-0"	1
A812	1"	25'-11"	24'-10"	1
B501	5/8"ϕ	29'-0"	~~~	39
B502	5/8"ϕ	27'-1"	~~~	1

NOTES

1. Details shown are for Approach Slab Sta 18+87.49 to Sta 19+12.49. Approach Slab Sta 20+87.49 to Sta 21+12.49 is opposite and details are similar.
2. For other typical details not shown see Standard Drawing No. AS-1-54.
3. Payment for thickened part of Median shall be included in price bid per Sq. Yd. of Approach Slab.

QUANTITY

Sta 18+87.49 to Sta 19+12.49	147.2 Sq. Yds.
Sta 20+87.49 to Sta 21+12.49	147.2 Sq. Yds.

Bridge No. Col.-30-3201

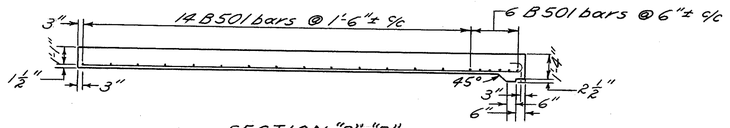
APPROACH SLAB DETAILS

Sta 18+87.49 to Sta 19+12.49
Sta 20+87.49 to Sta 21+12.49

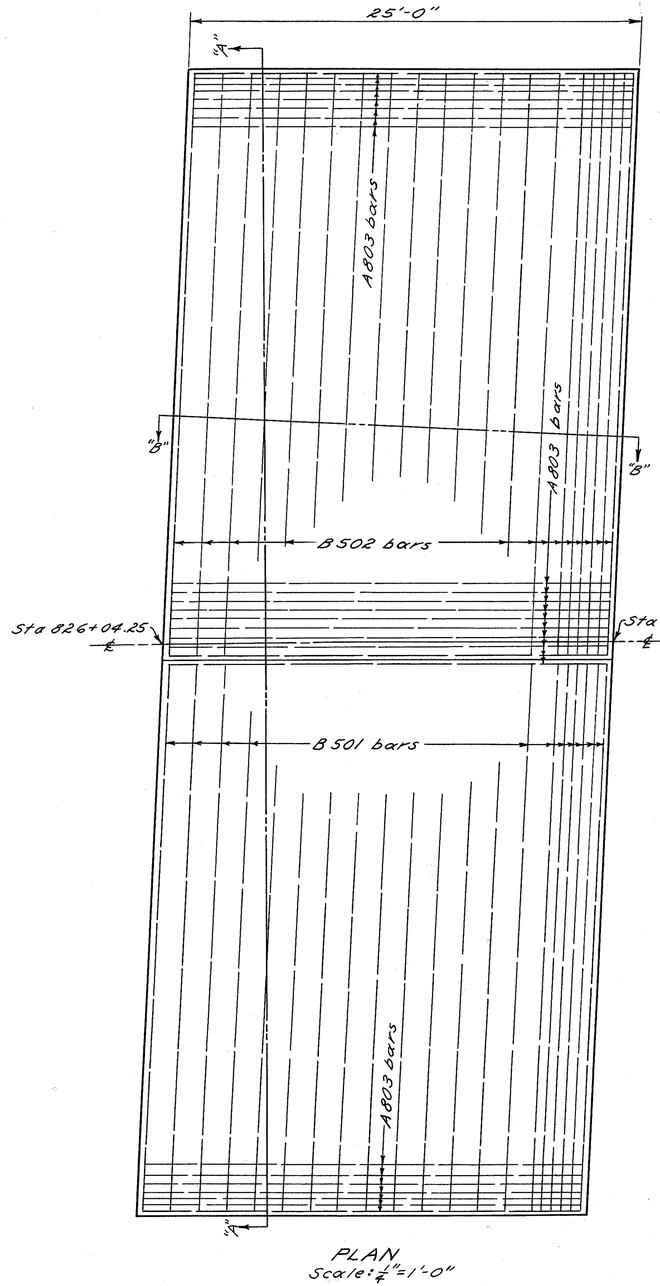
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

208/250

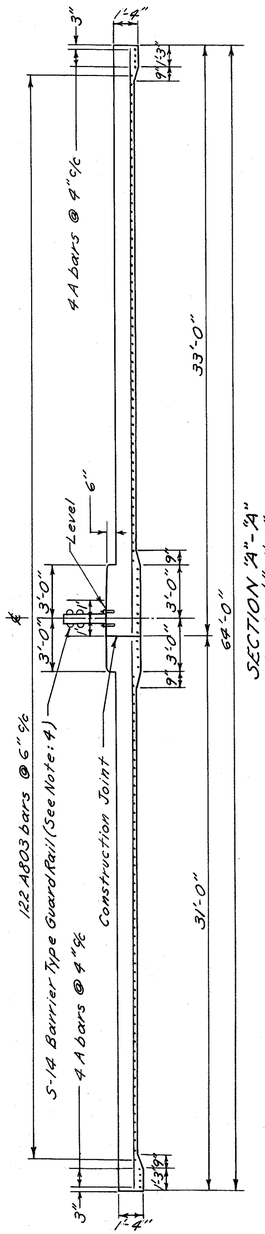
COL-30-32.19



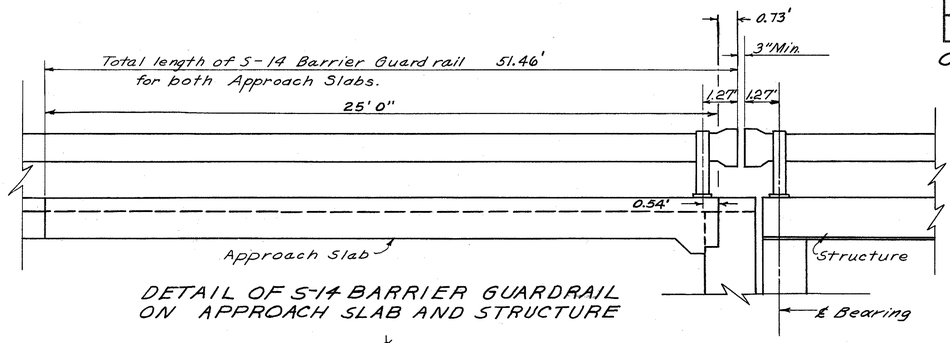
SECTION "B"-"B"
Scale ¼"=1'-0"



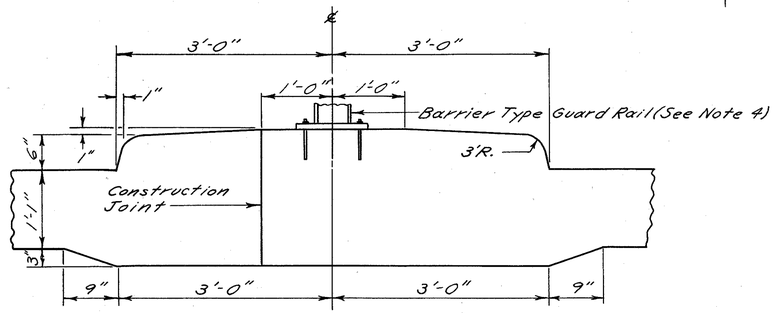
PLAN
Scale: ¼"=1'-0"



SECTION "A"-"A"
Scale: ¼"=1'-0"



DETAIL OF S-14 BARRIER GUARDRAIL
ON APPROACH SLAB AND STRUCTURE



DETAIL OF RAISED MEDIAN
Scale: 1"=1'-0"

STEEL LIST				
Mark	Bar Size	Length	Dim. A	No.
A803	1"ø	25'-7"	24'-6"	130
B501	⅝"ø	32'-6"	——	20
B502	⅝"ø	30'-6"	——	20

NOTES

1. Details shown are for Approach Slab Sta 826+04.25 to Sta 826+29.25. Approach Slab Sta 827+63.75 to Sta 827+88.75 is opposite and details are similar.
2. For other typical details not shown see Standard Drawing No. AS-1-54.
3. Payment for thickened part of Median shall be included in price bid per. Sq. Yd. of Approach Slab.
4. S-14 Barrier Type Guard Rail on Approach Slabs shall be the same as that on structure. For detail see sheet No. 9 of Bridge Plan COL.-30-32.71 Detail D & Section "E"-"E" and Sheet No. 11.

QUANTITY

Sta 826+04.25 to Sta 826+29.25	177.7 Sq. Yds.
Sta 827+63.75 to Sta 827+88.75	177.7 Sq. Yds.

Bridge No. Col.-30-32.71

APPROACH SLAB DETAILS

Sta 826+04.25 to Sta 826+29.25
Sta 827+63.75 to Sta 827+88.75

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

209
250

COL. 30 - 32.19
1.84 Miles North
East Liverpool N.C.L.

BENCH MARK
Elev. 1128.38
9'Lt. Sta. 789+23
20" Locust

U.S. 30 Curve Data
P.I. 791+60.35
Δ = 44°13' Rt.
D_c = 2°30'
R_c = 2291.83'
E_s = 183.64'
T_s = 1081.65
L_s = 300'
θ_s = 3°45'

S.R. 170 Curve Data
P.I. 27+31.28
Δ = 50°53' Lt.
D_c = 5°00'
L_s = 400'
T_s = 747.71'
θ_s = 10°
R_c = 1145.92'
E_s = 129.50'

To Lisbon
B.M.
Frame Garage
Well
2 Sty Fr. Res.
Drive
Slag
Trailer Home
Trailer Home
Trailer Home
Trailer Home
Weld Bldg.
Bench width varies
Underground Cable
Oak
Frame Garage
2 Sty Frame Res.
Existing Routes 30 & 7
17 Proposed & S.R. 170
N 77° 12' 01" E
Steel Bldg.
Slope
End Appr. Slab
Sta 19+12.49
Transition 2:1 to 4:1 slope
26°14'30"
(10' min) 10.47' (actual)
Critical Clearance Pt "A"
63°45'30" S.R. 170 Tang. To Tang. 2°30' Cr.
T_s 747.71'
10' (min) 11.38' (actual)
Sta. 790+75.71 L.S. 30 = Sta. 20100 S.R. 170
Median Drain
To Calcutta
C.B.
790
792
24'
16'
24'
℄ South Bound Lanes
℄ North Bound Lanes
15" per Ft.
Begin Appr. Slab
Sta 20+87.49
Bridge Limits
Sta 19+12.49
Sta 20+87.49
Proposed & U.S. 30 To East Liverpool

FOUNDATION SOUNDINGS: Foundation design and foundation quantities are based on a study of rod soundings and soil-sampling soundings made at the site. This sounding information may be inspected in the office of the Bureau of Bridges in Columbus or in the division office, but the State does not guarantee the accuracy thereof.

PROPOSED STRUCTURE
TYPE: Continuous steel beams with reinf. conc. deck and substructure.
SPAN: 35'-50'-50'-35' c/c brg's.
ROADWAY: 73' f-f conc. parapets.
LOAD FREQUENCY: CF=400(57)
SKEW: 26°-14'-30" E.F.
WEARING SURFACE: 1" Mono. Conc.
APPR. SLABS: AS-1-54(25' long) Modified
ALIGNMENT: Tangent to transition spiral of 5°00 Curve left.
SUPERELEVATION: Varies.

Top of slope Elev. 1115.2 ±
15' (min) 15.12' (actual)
Critical Clearance (Pt. "A")
Top of slope Elev. 1121.4 ±
Proposed Grade +3.6%
Existing ground line
Ftg. Elev. 1108.00
2:1 (Normal)
1:1 (Norm.)
Ftg Elevs {1096.90 left / 1094.30 right}
{1099.60 left / 1097.20 right}
Ftg's Elevs {1099.20 left / 1096.60 right}
Ftg. Elev. 1114.20
200' V.C.
1112.92
1116.52
1120.12
1123.72
1127.32
1130.92
17
18
19
20+00
21
22

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
BUREAU OF BRIDGES

SITE PLAN

BRIDGE NO. COL-30-3201
under S.R. 170

Columbiana Co. Sta. 19+12.49
SCALE: 1"=20' 20+87.49

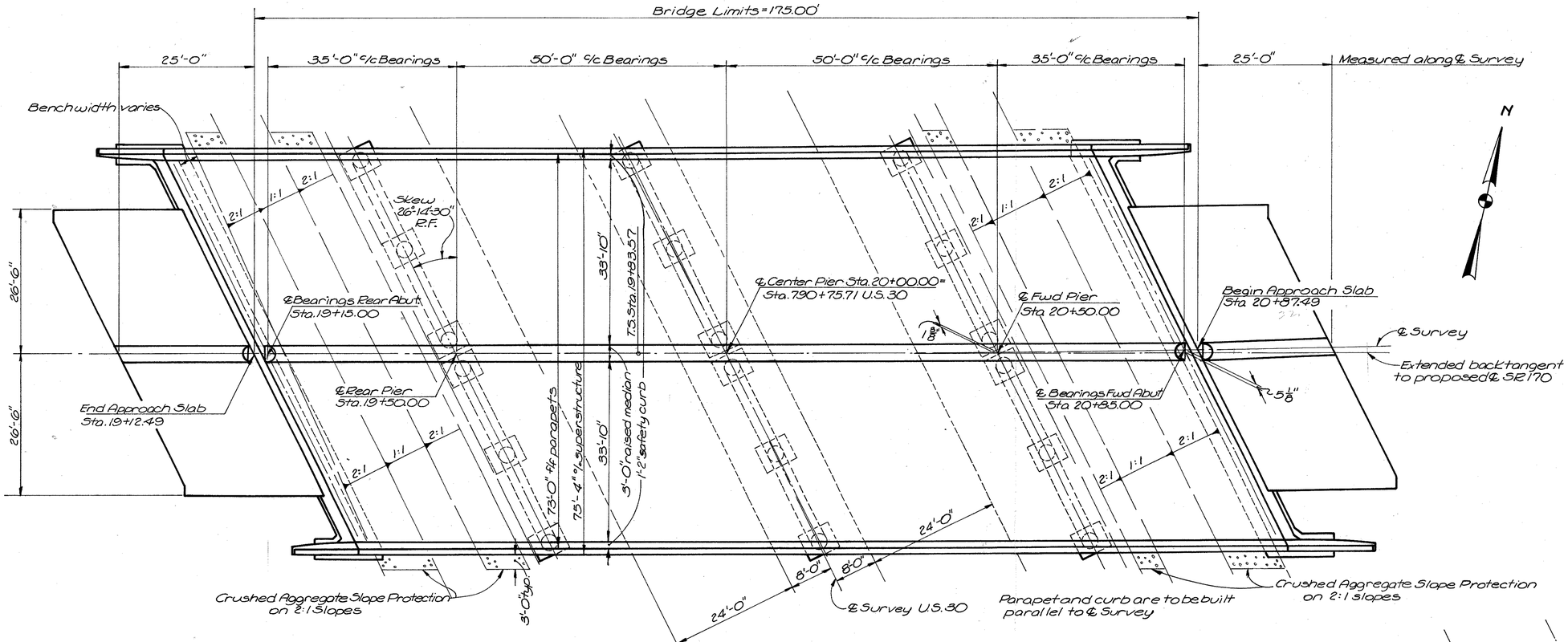
EXISTING TOPO		PROPOSED WORK			
SURVEY	DRAWN	DESIGN	DRAWN	CHECK	REVIEW
Div. Office	Div. Office	B.D.H.	B.D.H.	D.H.S.	R.E.S.

BFG 7-5-61

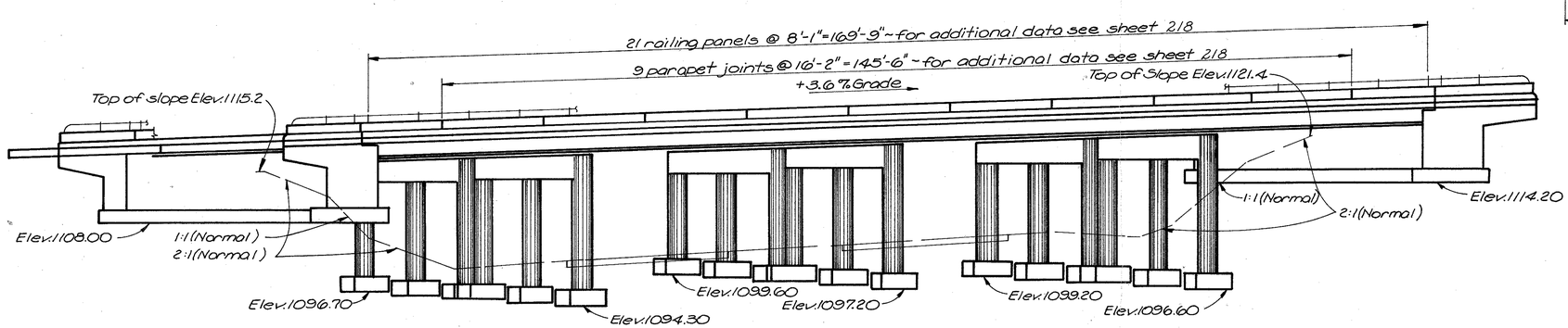
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

210/250

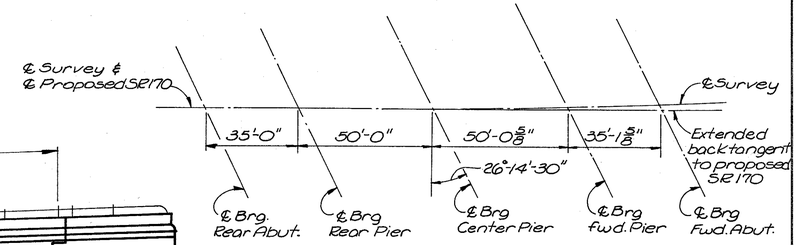
COL-30-32.19



GENERAL PLAN



ELEVATION



LAYOUT DIAGRAM

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

GENERAL PLAN, ELEVATION & LAYOUT DIAGRAM

BRIDGE No. COL-30-3201
UNDER S.R. 170
COLUMBIANA COUNTY Sta. 19+12.49
Sta. 20+87.49

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JGB	JGB	MKH	NJB	BFG AJF	7-5-61	

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

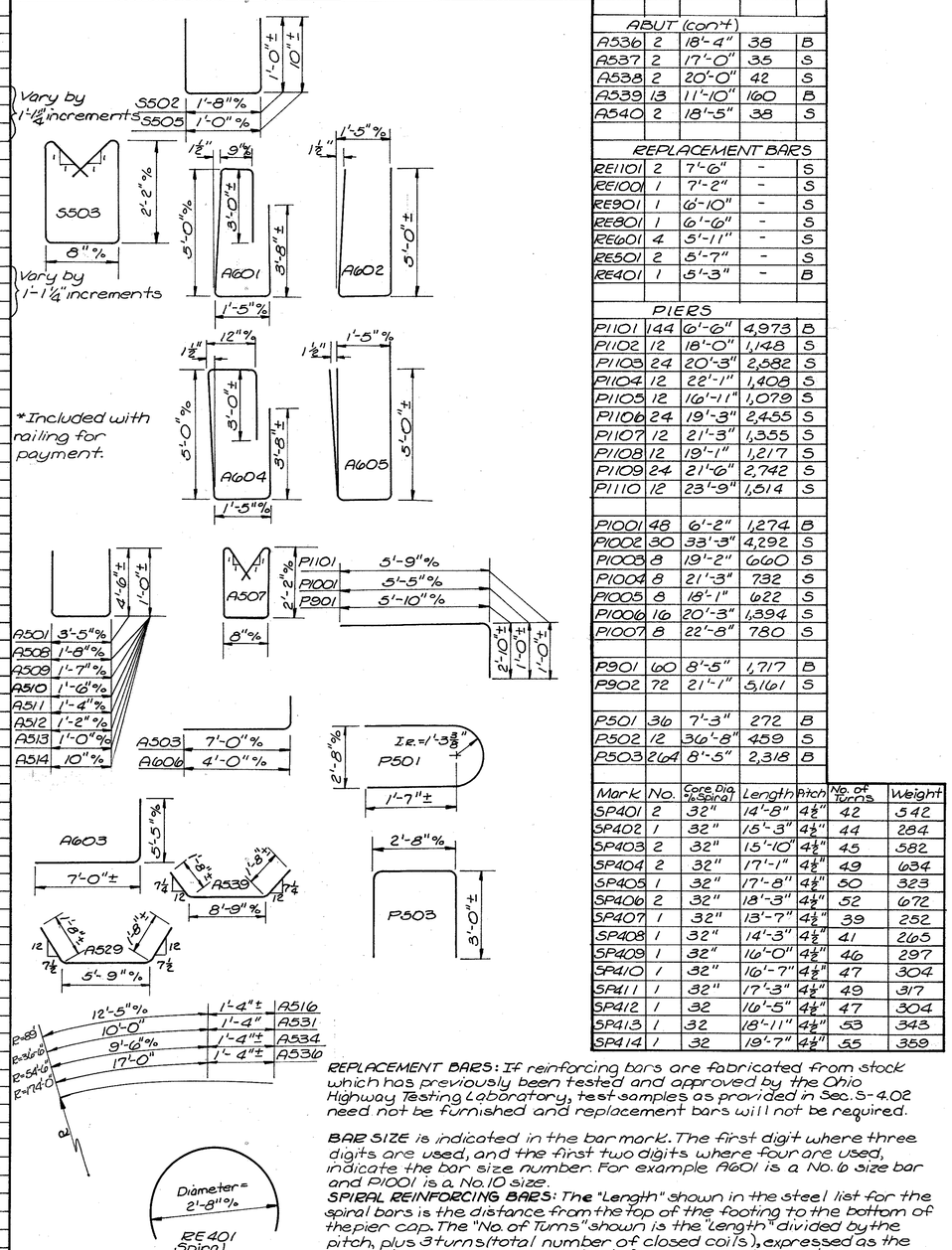
2.11 / 2.50

COL-30-32.19

REINFORCING STEEL LIST

MARK	No.	LENGTH	WEIGHT	SHP
SUPERSTRUCTURE				
S601	566	36'-11"	31,384	S
S602	660	35'-10"	35,522	S
S603	162	25'-0"	6,083	S
S604	Four Series of 29	5'-1" to 36'-0"	89.5	S
S605	12	4'-0"	72	S
S501	566	37'-0"	21,843	S
S502	460	3'-5"	1,639	B
S503	238	5'-7"	1,386	B
S504	Four Series of 29	5'-1" to 36'-0"	621	S
S505	444	2'-5"	1,119	B
S506	12	4'-0"	50	S
RAILING				
R501	72	15'-10"	*	S
R502	16	12'-7"	*	S
R503	4	13'-7"	*	S
R504	4	10'-11"	*	S
R505	4	11'-11"	*	S
R506	4	18'-0"	*	S
ABUTMENTS				
A801	32	23'-0"	1,965	S
A601	59	13'-2"	1,167	B
A602	19	11'-1"	316	B
A603	108	12'-3"	1,987	B
A604	59	13'-5"	1,189	B
A605	19	11'-1"	316	B
A606	65	4'-8"	456	B
A501	108	12'-2"	1,371	B
A502	8	11'-3"	94	S
A503	108	7'-6"	845	B
A504	88	21'-3"	1,950	S
A505	12	26'-9"	335	S
A506	4	32'-2"	134	S
A507	40	5'-7"	233	B
A508	28	3'-5"	100	B
A509	8	3'-4"	28	B
A510	10	3'-3"	34	B
A511	10	3'-1"	32	B
A512	8	2'-11"	24	B
A513	8	2'-9"	23	B
A514	8	2'-7"	22	B
A515	9	10'-4"	97	S
A516	2	13'-9"	29	B
A517	5	13'-8"	71	S
A518	10	2'-8"	28	S
A519	12	3'-0"	38	S
A520	4	3'-3"	14	S
A521	14	3'-7"	52	S
A522	2	3'-11"	8	S
A523	2	4'-3"	9	S
A524	16	7'-3"	121	S
A525	3	16'-3"	51	S
A526	18	9'-9"	183	S
A527	22	10'-8"	245	S
A528	26	9'-3"	251	S
A529	13	8'-11"	121	B
A530	4	13'-2"	55	S
A531	2	11'-4"	24	B
A532	10	8'-1"	84	S
A533	2	14'-3"	30	S
A534	2	10'-10"	23	B
A535	37	12'-0"	463	S

BENDING DIAGRAMS



MARK	No.	LENGTH	WEIGHT	SHP
ABUT (con't)				
A536	2	18'-4"	38	B
A537	2	17'-0"	35	S
A538	2	20'-0"	42	S
A539	13	11'-10"	160	B
A540	2	18'-5"	38	S
REPLACEMENT BARS				
RE1101	2	7'-6"	-	S
RE1001	1	7'-2"	-	S
RE901	1	6'-10"	-	S
RE801	1	6'-6"	-	S
RE601	4	5'-11"	-	S
RE501	2	5'-7"	-	S
RE401	1	5'-3"	-	B
PIERS				
P1101	144	6'-6"	4,973	B
P1102	12	18'-0"	1,148	S
P1103	24	20'-3"	2,582	S
P1104	12	22'-1"	1,408	S
P1105	12	16'-11"	1,079	S
P1106	24	19'-3"	2,455	S
P1107	12	21'-3"	1,355	S
P1108	12	19'-1"	1,217	S
P1109	24	21'-6"	2,742	S
P1110	12	23'-9"	1,514	S
P1001	48	6'-2"	1,274	B
P1002	30	33'-3"	4,292	S
P1003	8	19'-2"	660	S
P1004	8	21'-3"	732	S
P1005	8	18'-1"	622	S
P1006	16	20'-3"	1,394	S
P1007	8	22'-8"	780	S
P901	60	8'-5"	1,717	B
P902	72	21'-1"	5,161	S
P501	36	7'-3"	272	B
P502	12	36'-8"	459	S
P503	264	8'-5"	2,318	B

Mark	No.	Core Dia. & Spiral	Length	Pitch	No. of Turns	Weight
SP401	2	32"	14'-8"	4½"	42	542
SP402	1	32"	15'-3"	4½"	44	284
SP403	2	32"	15'-10"	4½"	45	582
SP404	2	32"	17'-1"	4½"	49	634
SP405	1	32"	17'-8"	4½"	50	323
SP406	2	32"	18'-3"	4½"	52	672
SP407	1	32"	13'-7"	4½"	39	252
SP408	1	32"	14'-3"	4½"	41	265
SP409	1	32"	16'-0"	4½"	46	297
SP410	1	32"	16'-7"	4½"	47	304
SP411	1	32"	17'-3"	4½"	49	317
SP412	1	32	16'-5"	4½"	47	304
SP413	1	32	18'-11"	4½"	53	343
SP414	1	32	19'-7"	4½"	55	359

REPLACEMENT BARS: If reinforcing bars are fabricated from stock which has previously been tested and approved by the Ohio Highway Testing Laboratory, test samples as provided in Sec. 5-4.02 need not be furnished and replacement bars will not be required.

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 A601 is a No. 6 size bar and P1001 is a No. 10 size.

SPIRAL REINFORCING BARS: The "Length" shown in the steel list for the spiral bars is the distance from the top of the footing to the bottom of the pier cap. The "No. of Turns" shown is the "Length" divided by the pitch, plus 3 turns (total number of closed coils), expressed as the nearest whole number. Spiral reinforcing bars shall not have deformations but shall in other respects conform to Item 5-4. 1½ closed coils shall be provided at the ends of each spiral unit.

Four steel channel, tee or angle spacers, weighing approximately 0.68 lb. per lin. ft. of spacer, shall be provided for each spiral unit. They shall be equally spaced along the periphery of the coil. The number of pounds of these spacers, based on 0.68 lb. per lin. ft., will be paid for as reinforcing steel and is included in the tabulated quantity of spiral bars.

ESTIMATED QUANTITIES

Item	Total	Unit	Description	Superst	Abut	Piers	Gen'l		
E-2	359	cu. yds.	Unclassified excavation		359				
E-2	184	cu. yds.	Rock excavation		75	109			
S-1	354	cu. yds.	Class "C" concrete, superstructure	354					
S-1	183	cu. yds.	Class "C" concrete, piers above footings			183			
S-1	226	cu. yds.	Class "E" concrete, abutments above footings		226				
S-1	142	cu. yds.	Class "E" concrete, footings		92	50			
S-3	22	lin. ft.	Waterproofing, premolded sealing strip		22				
S-4	161,177	lbs.	Reinforcing Steel	100,614	14,931	45,632			
S-7	265,700	lbs.	Structural Steel	265,700					
S-8	265,700	lbs.	Field painting of structural steel	265,700					
S-14	399.27	lin. ft.	Railing (aluminum rail & supports & conc. parapet)	343.36	55.91				
S-29	57	cu. yds.	Porous backfill		57				
S-29	15	each	Scuppers	15					
* Special	354	Each	Water-reducing, set-retarding admixture	354					
I-10	337	sq. yds.	Crushed aggregate slope protection				337		

* See Proposal Note

GENERAL NOTES

REFERENCE shall be made to Standard Drawings CSB-2-56 revised 2-2-59, Sheet No. 2 and 3, and AR-1-57, revised 12-12-60.

DESIGN SPECIFICATIONS: This structure conforms to the requirements of "Design Specifications for Highway Structures" of the State of Ohio, Department of Highways, dated 9-1-57 together with current revisions thereof.

FOOTINGS shall extend a minimum of 3" into underlying layers of shale and/or sandstone or to the elevation shown, whichever is lower.

FOUNDATION BEARING PRESSURE: Abutment footings are designed for a maximum bearing pressure of 2.0 tons per sq. ft. and pier footings for 10 tons per sq. ft.

CONCRETE DECK PLACING: In order to facilitate water curing of the concrete of the deck slab, the placing of concrete shall progress upgrade. The slab may be placed in sections, between transverse construction joints which are parallel to transverse reinforcing steel and are located near the center of any span.

WELDING of structural steel shall be Class "A" except as otherwise shown. Welds shown as field welds may, at the option of the Contractor, be made in shop.

DECK SLAB HAUNCH: The haunch in the deck slab adjacent to the top of the steel beams, which is shown as 9" wide, may vary from this dimension with a minimum of 6" and a maximum of 12". Maximum slope of haunch shall be one vertical to four horizontal. Payment for deck slab concrete shall be based on the 9" width.

MACHINE FINISH: The concrete bridge deck shall be finished by the use of a finishing machine.

SHOP PAINTING STEEL: The surface preparation of all steel, requiring shop painting as per the Plans and Specifications, shall be accomplished by blast cleaning or power tool cleaning, except as noted in the Specifications regarding the use of Chromate Primers.

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

GENERAL NOTES, ESTIMATED QUANTITIES AND REINFORCING STEEL LIST

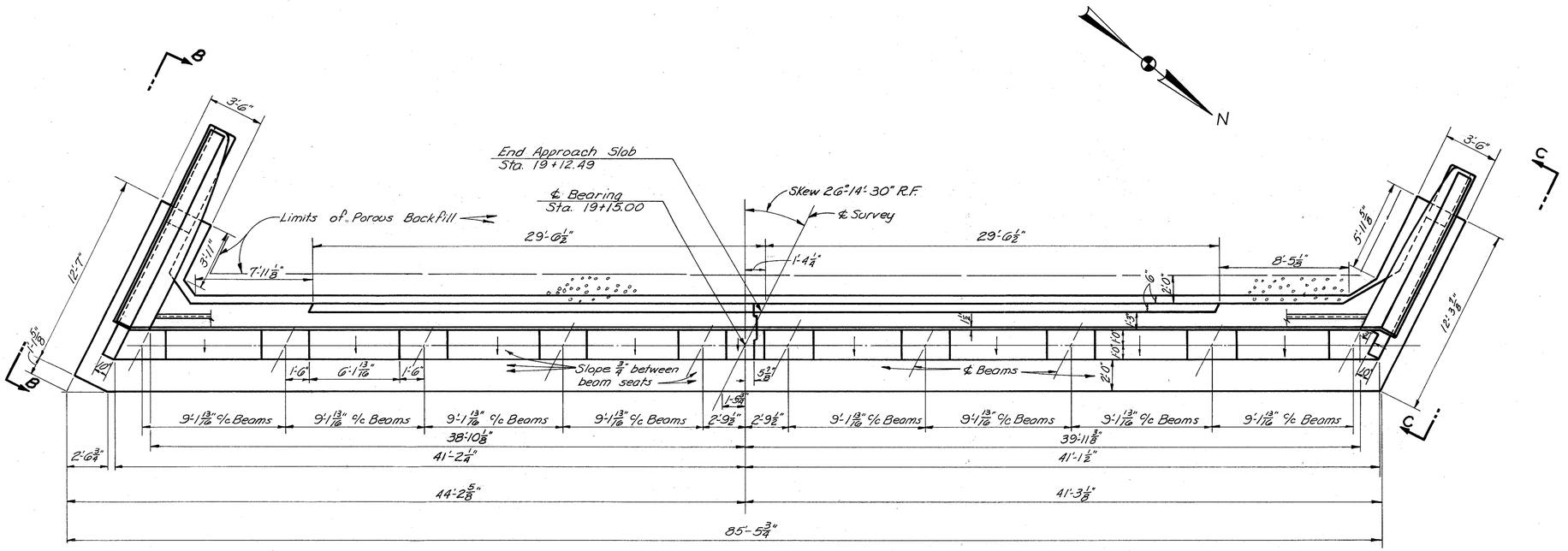
BRIDGE No. COL-30-3201
UNDER S.R. 170
COLUMBIANA COUNTY STA 19+12.49
STA 20+87.49

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JGB	JGB	MKH	NJB	BFG	7-5-61	

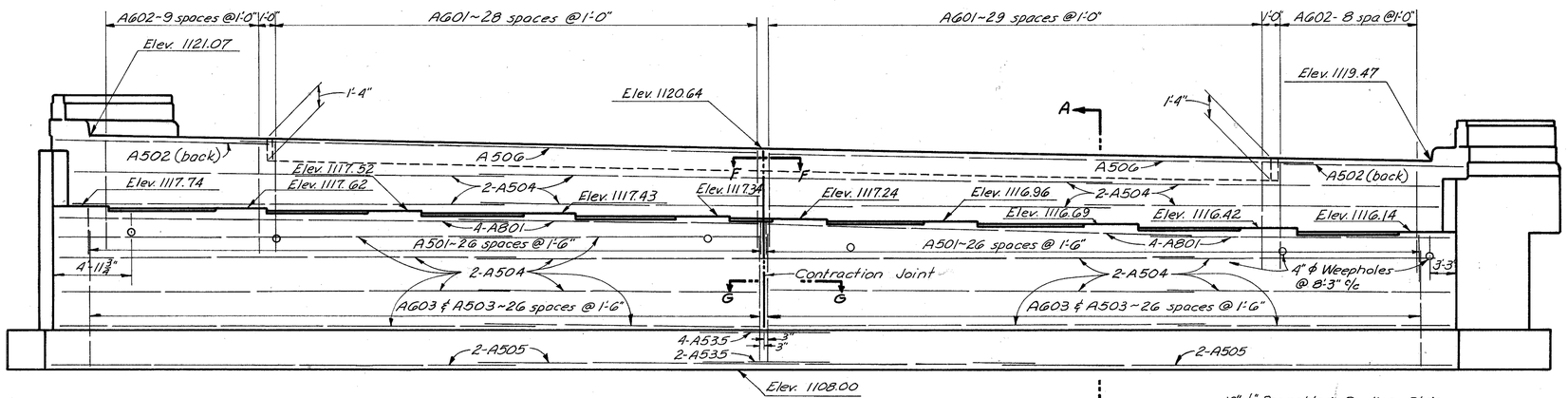
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

COL-30-32.19

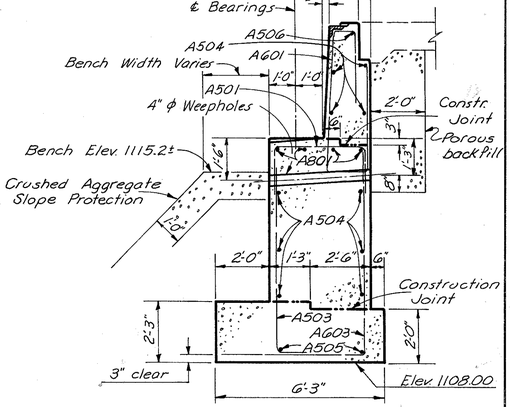
212/250



PLAN



ELEVATION
(End Dam not shown)



SECTION A-A

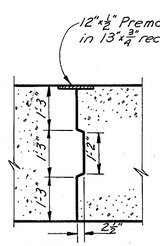
NOTES

POROUS BACKFILL, 2 ft. thick, full length of abutment and wings, shall extend up to the underside of the approach slab or to the finished ground surface. Excavation therefor, in excess of that required for construction of the abutment, shall be considered as paid for in the bid price per cu.yd. paid for porous backfill.

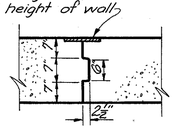
CONCRETE shall be Class "E" and payment will be made on this basis, but Class "C" concrete may be used for any or all parts of the abutments.

FOR ADDITIONAL DETAILS see Sheet No. 2/3

SPECIAL CARE shall be taken in placing the reinforcing steel in the bridge seat so that it will not interfere with the drilling of anchor bolt holes.



SECTION G-G



SECTION F-F

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

REAR ABUTMENT DETAILS

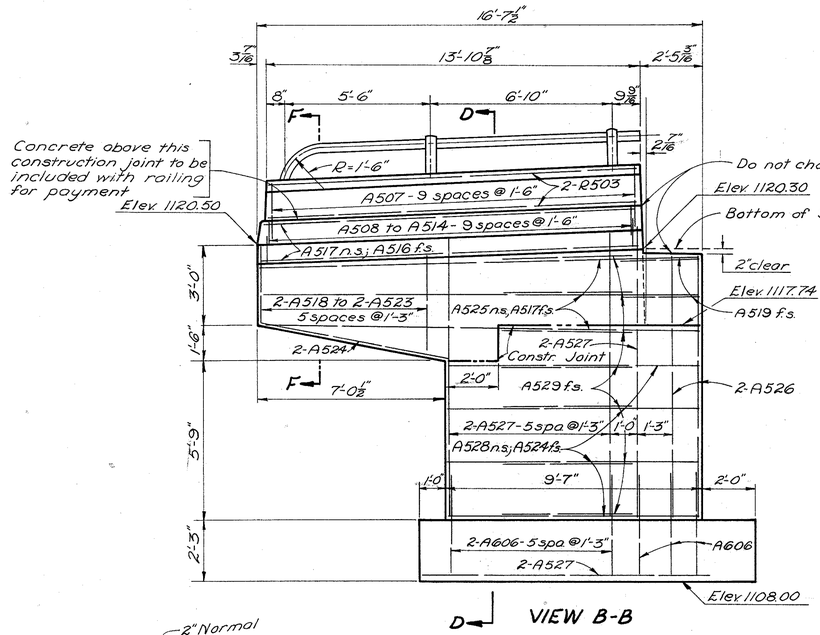
BRIDGE No. COL-30-3201
UNDER S.R. 170
COLUMBIANA COUNTY STA. 19+12.49
STA. 20+87.49

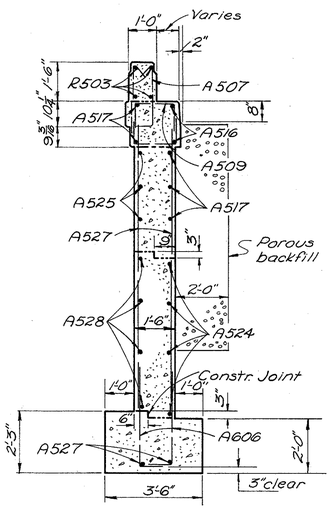
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JGB	JGB	pcl	NJB	BFG	7-5-61	

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

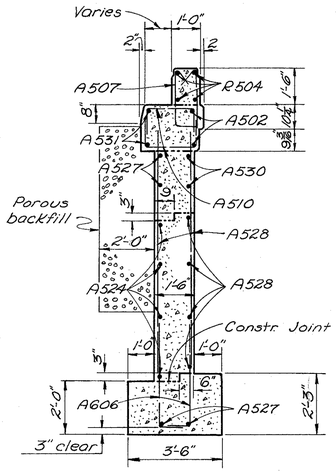
213
250

COL-30-32.19

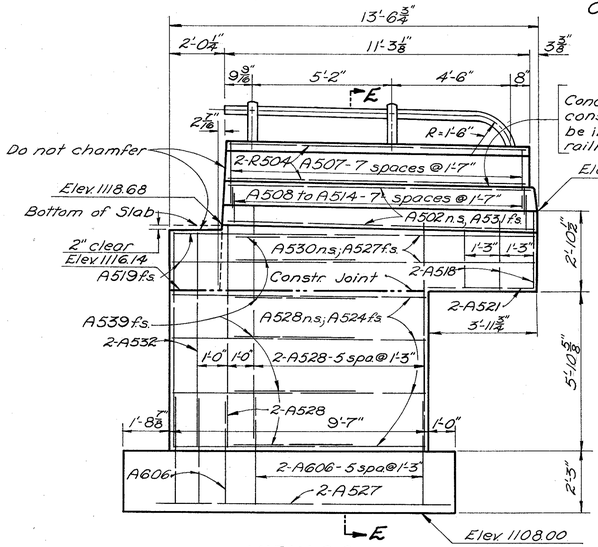




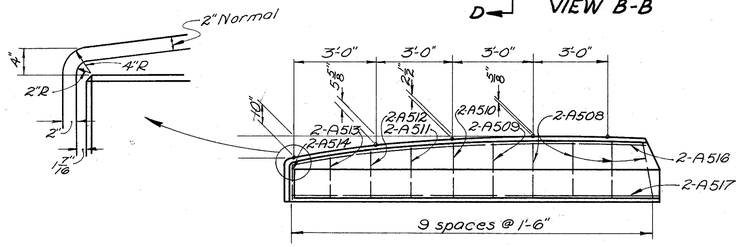
SECTION D-D



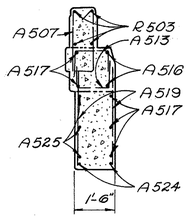
SECTION E-E



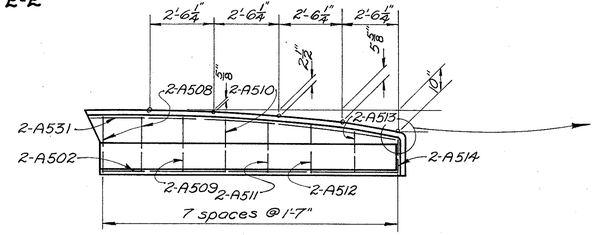
VIEW C-C



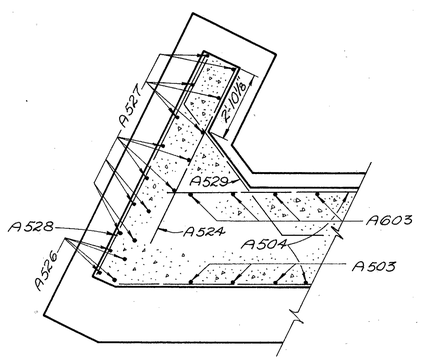
PLAN CURB
(from View B-B)



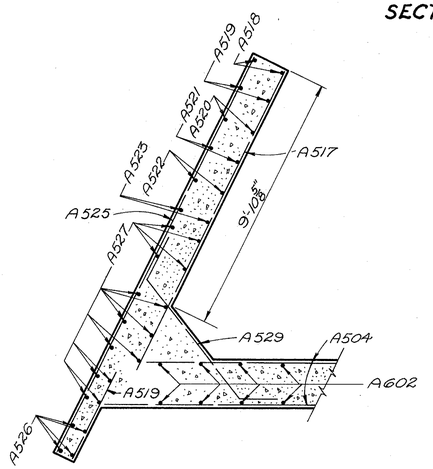
SECTION F-F



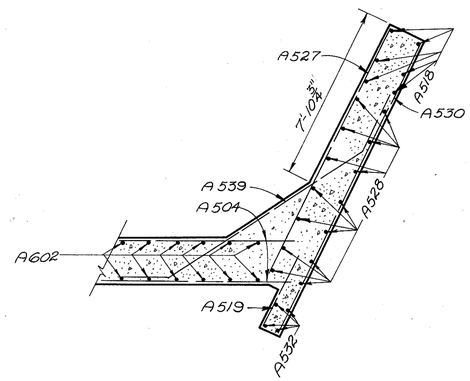
PLAN CURB
(from View C-C)



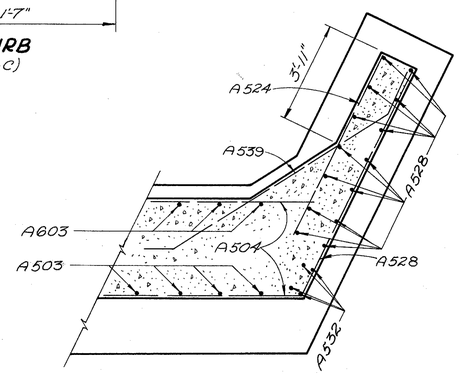
PART SECTION
ABOVE FOOTING



PART SECTION ABOVE
BRIDGE SEAT



PART SECTION ABOVE
BRIDGE SEAT



PART SECTION
ABOVE FOOTING

For additional details see Sheet No. 212

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

REAR ABUTMENT DETAILS

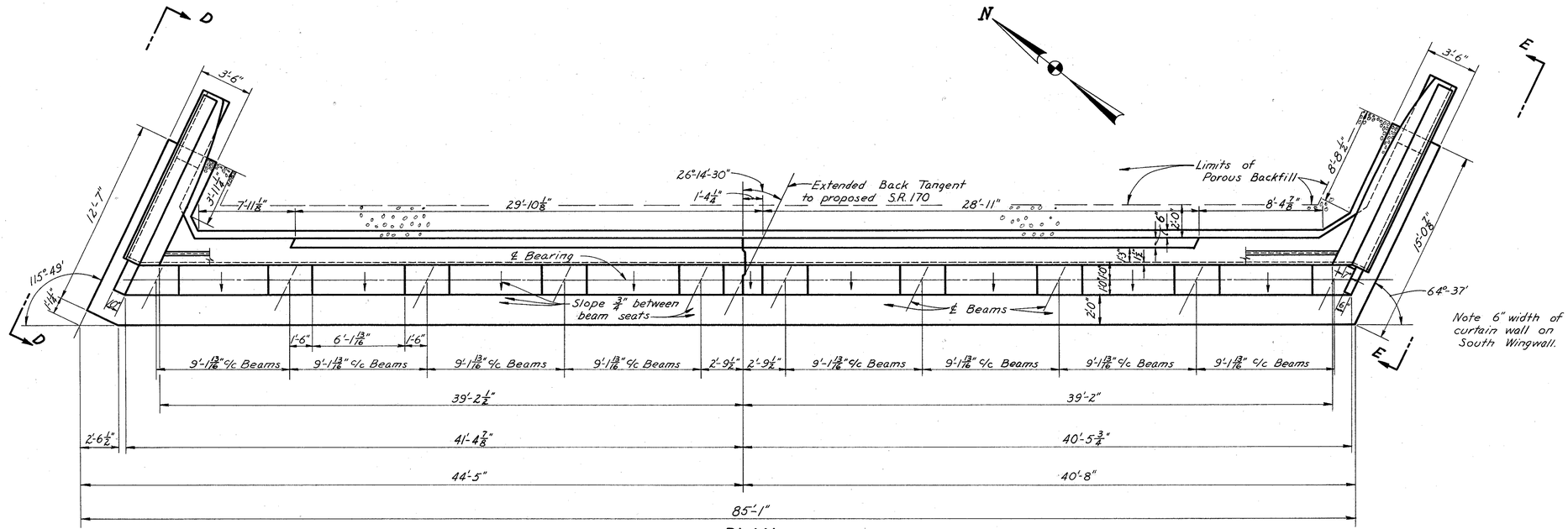
BRIDGE No. COL-30-3201
UNDER S.R. 170
COLUMBIANA COUNTY STA. 19+12.49
STA. 20+87.49

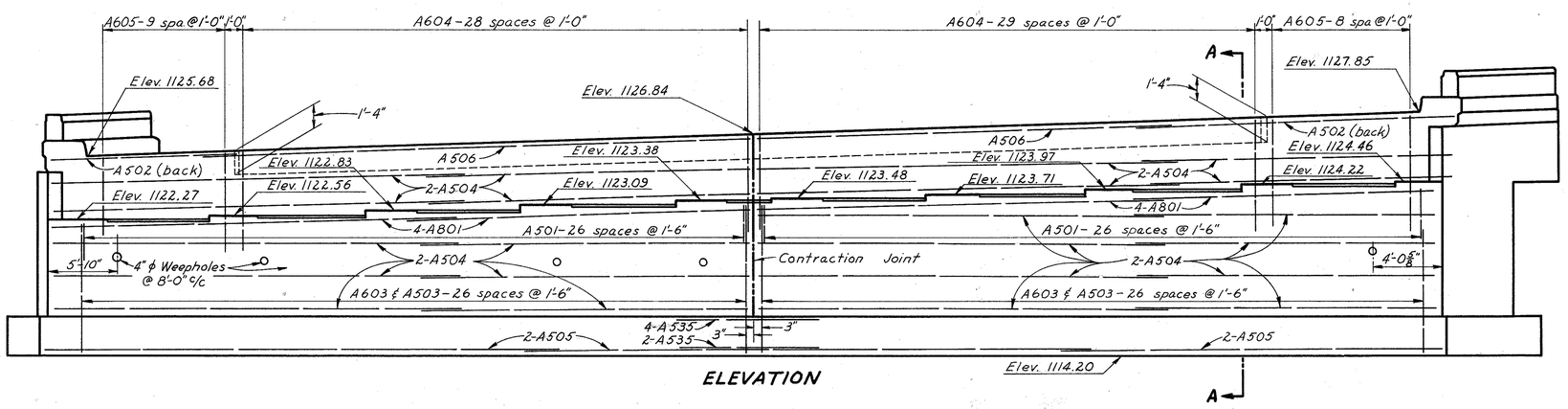
DESIGNED	DRAWN	CHECKED	CHECKED	REVIEWED	DATE	REVISED
JGB	JGB	[illegible]	NJB	EFG	7-5-61	

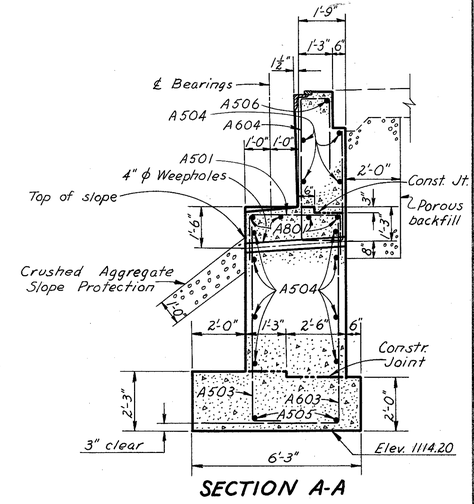
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

214/250

COL-30-32.19







For notes and additional details, see Sheet Nos. 212 & 215

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

FORWARD ABUTMENT DETAILS

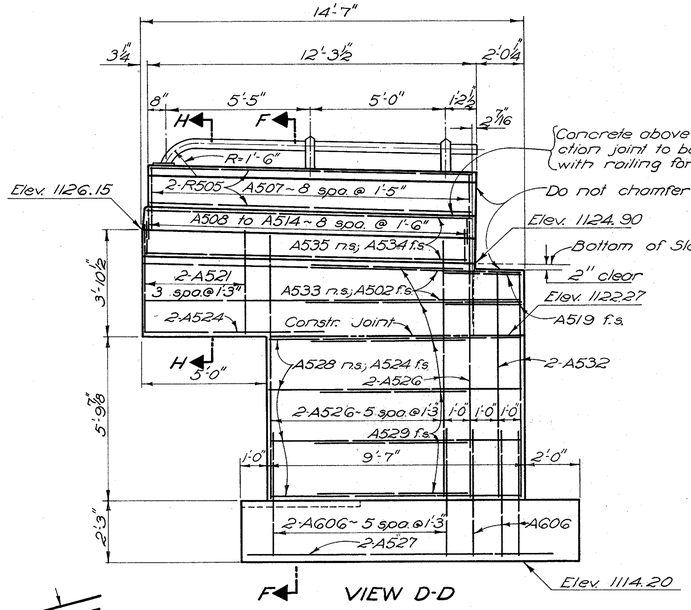
BRIDGE No. COL-30-3201
UNDER S.R. 170
COLUMBIANA COUNTY STA. 19+12.49
STA. 20+87.49

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JGB	JGB	A.A.K.	NJB	BFG	7-5-61	

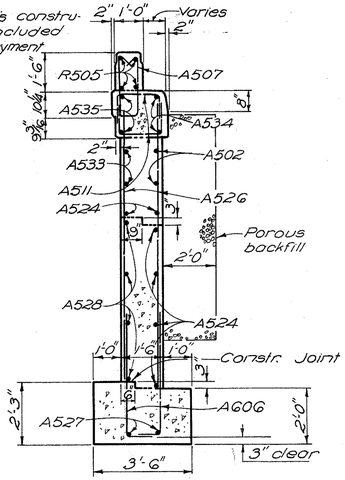
COL-30-32.19

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

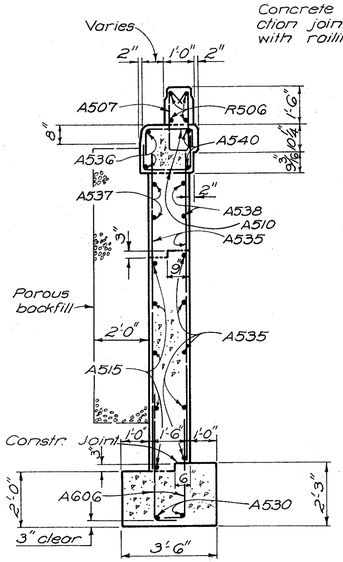
215
250



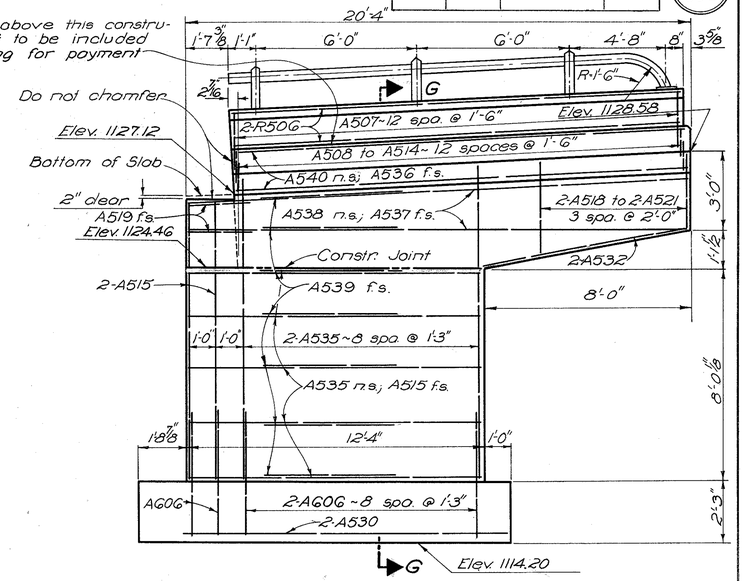
F VIEW D-D



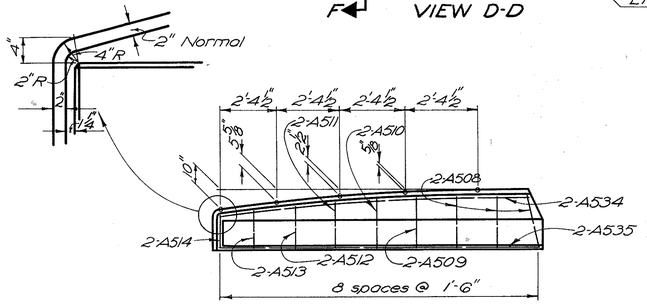
SECTION F-F



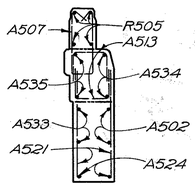
SECTION G-G



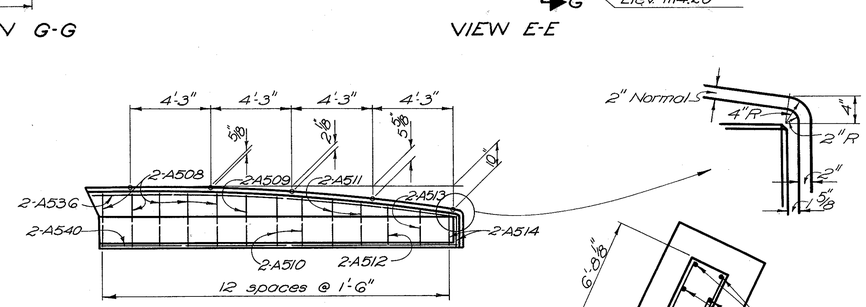
G VIEW E-E



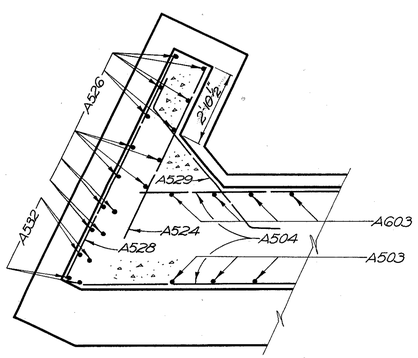
PLAN CURB
(From View D-D)



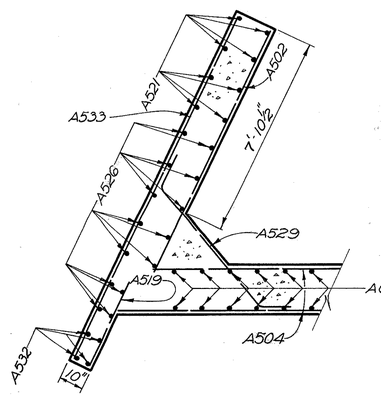
SECTION H-H



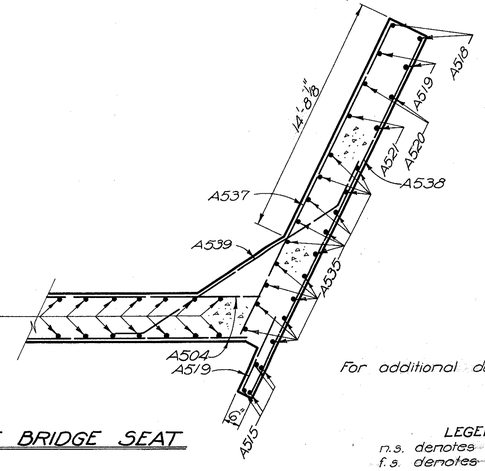
PLAN CURB
(From View E-E)

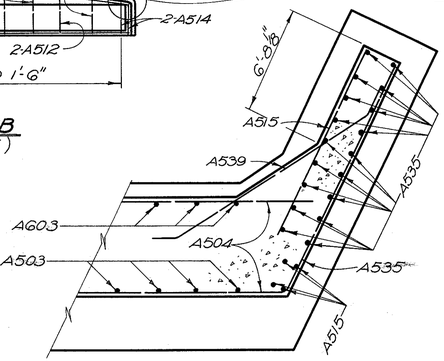


PART SECTION
ABOVE FOOTING



PART SECTION ABOVE BRIDGE SEAT





PART SECTION
ABOVE FOOTING

For additional details, see sheet no. 214

LEGEND
n.s. denotes Near Side
f.s. denotes Far Side

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

FORWARD ABUTMENT DETAILS

BRIDGE No. COL-30-3201
UNDER S.R. 170

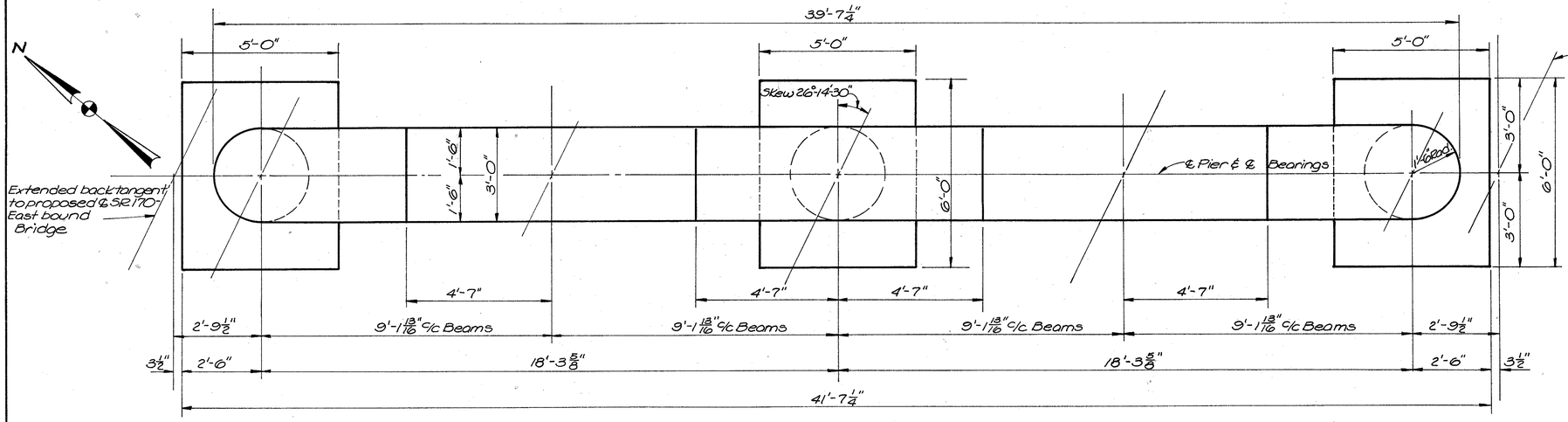
COLUMBIANA Co. Sta. 19+12.49
Sta. 20+87.49

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JGB	JGB	G.P.G.	NJB	BFG	7-5-61	

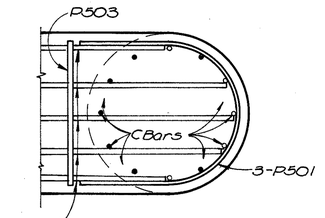
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

2.16
2.50

COL-30-32.19

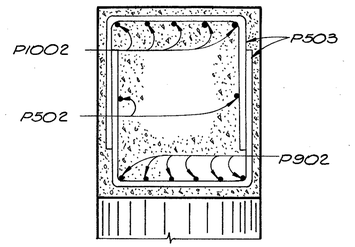


PLAN



Lap the downward leg of the P901 bars to those C bars shown thus: o

VIEW A-A



SECTION B-B

VIEW C-C

ELEVATION

	Westbound Lanes			Eastbound Lanes		
	Rear Pier	Ctr. Pier	Fwd. Pier	Rear Pier	Ctr. Pier	Fwd. Pier
Elev. A	1117.38	1119.22	1120.97	1118.58	1120.45	1122.20
Elev. B	1117.65	1119.50	1121.25	1118.71	1120.61	1122.40
Elev. C	1117.93	1119.79	1121.53	1118.83	1120.78	1122.61
Elev. D	1118.20	1120.07	1121.81	1118.96	1120.96	1122.83
Elev. E	1118.48	1120.34	1122.08	1119.11	1121.15	1123.07
Elev. F	1096.70	1099.60	1099.20	1095.50	1098.40	1097.90
Elev. G	1096.10	1099.00	1098.55	1094.90	1097.80	1097.25
Elev. H	1095.50	1098.40	1097.90	1094.30	1097.20	1096.60
A Bars	P1102	P1105	P1108	P1103	P1106	P1109
B Bars	P1003	P1005	P1006	P1004	P1006	P1007
C Bars	P1103	P1106	P1109	P1104	P1107	P1110
D Bars	SP401	SP407	SP403	SP404	SP409	SP406
E Bars	SP402	SP408	SP412	SP405	SP410	SP413
F Bars	SP403	SP401	SP404	SP406	SP411	SP414
Dim "J"	20'-8 5/8"	19'-7 1/2"	21'-9 1/4"	23'-1"	22'-0 3/8"	24'-3 3/8"
Dim "K"	14'-8 5/8"	13'-7 1/2"	15'-9 1/4"	17'-1"	16'-0 3/8"	18'-3 3/8"
Dim "M"	15'-10 3/8"	14'-9 3/8"	17'-0 1/8"	18'-3 3/8"	17'-3"	19'-7"
Dim "N"	22'-11 3/4"	21'-11 3/4"	24'-2 5/8"	24'-9 3/16"	23'-11 3/8"	26'-5 9/16"

SPECIAL CARE shall be taken in placing the reinforcing steel in the pier cap so as to avoid interference with the drilling of anchor bar holes.

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

PIER DETAILS

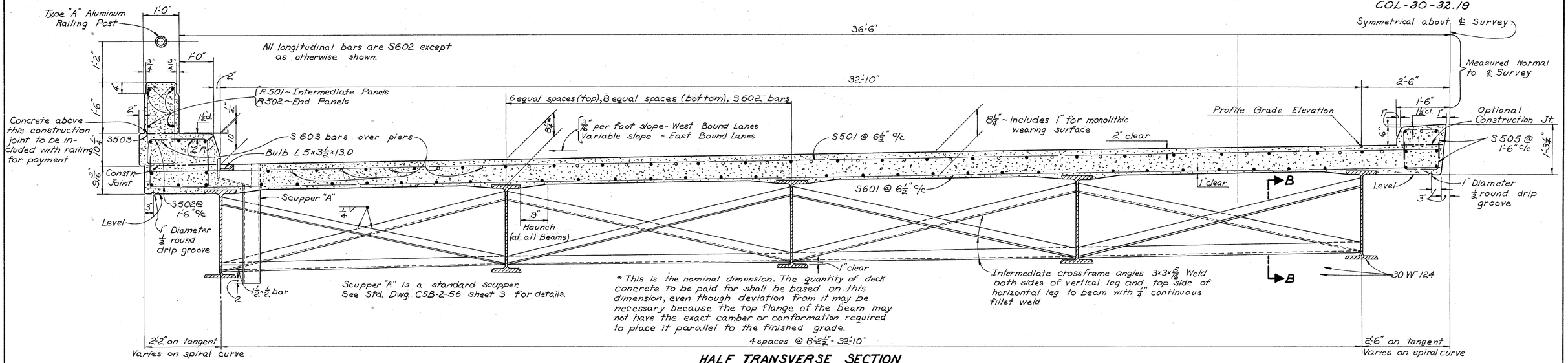
BRIDGE No. COL-30-3201
UNDER S.R. 170
COLUMBIANA COUNTY STA. 19+12.49
STA. 20+87.48

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JGB	JGB	M.K.H.	NJB	BFG	7-5-61	

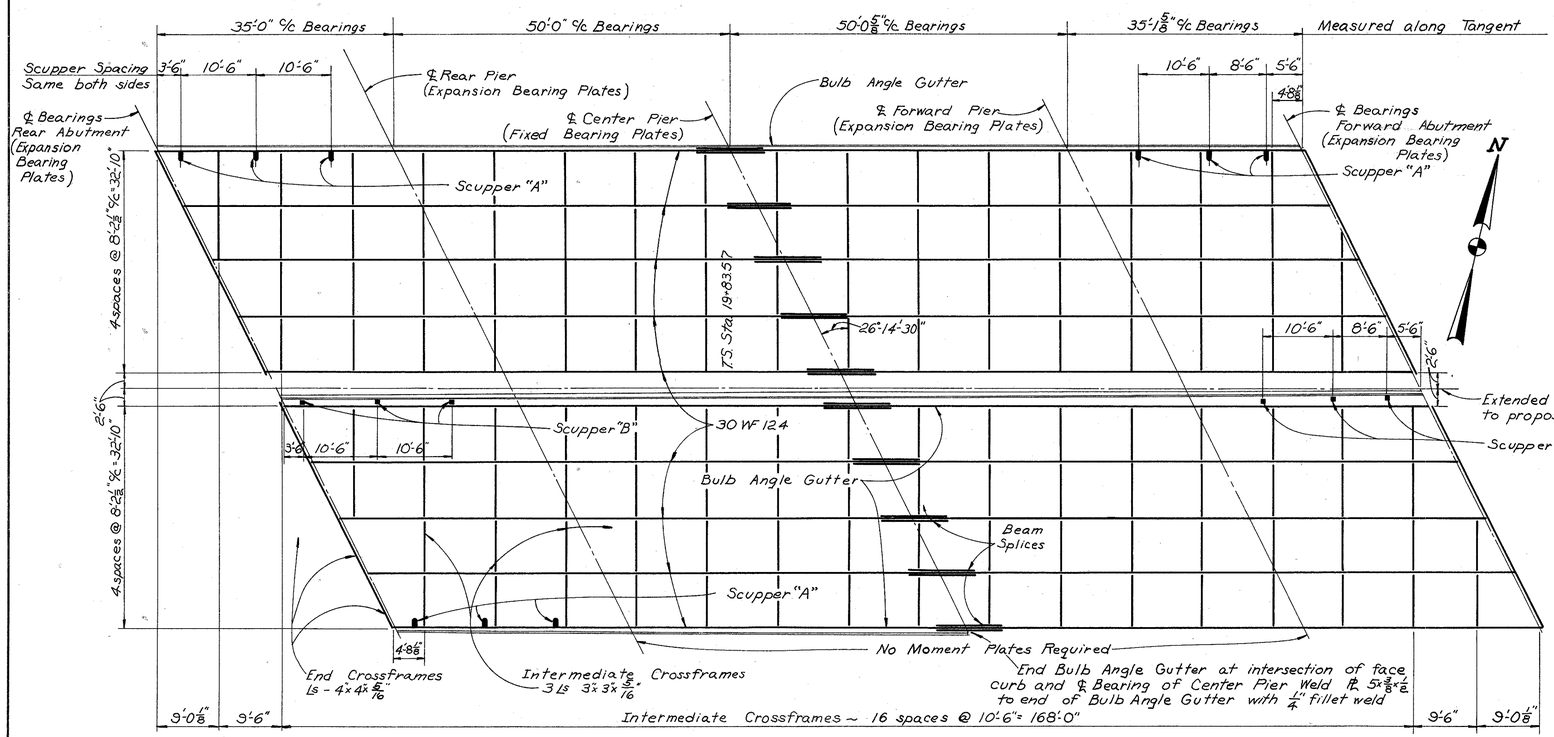
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

217/250

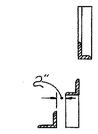
COL-30-32.19



HALF TRANSVERSE SECTION
(Westbound Lanes shown)



STEEL FRAMING PLAN



SECTION B-B

Steel beams are placed parallel to extended back tangent of proposed ℄ SR 170.

BEAM SPLICE WELDING PROCEDURE
(Use if two beams are to be spliced)

1. Raise the Rear Abutment end of the beam 3¼"
2. Butt-weld the beam flanges and web, using the following sequence: make two passes on each flange, then two on the web; repeat, using one pass at each location, until welds are completed.
3. Weld the bottom and top moment plates.
4. Lower the beam end to final position.

OPTIONAL BEAM SPLICE WELDING PROCEDURE
(Use if four beams are to be spliced)

1. Raising the end of beams at the center pier is not required.
2. Butt-weld the beam flanges and web, at the rear pier, using the following sequence : make two passes on each flange then two on the web ; repeat, using one pass at each location, until welds are completed.
3. Weld the bottom and top moment plates, if such are necessary.
4. Lowering of beam ends to final position is necessary at the forward piers only.
5. Make splices at center and forward piers in the same manner raising the end of the beams 5/16" at the forward pier. No raise is required at the forward abutment.

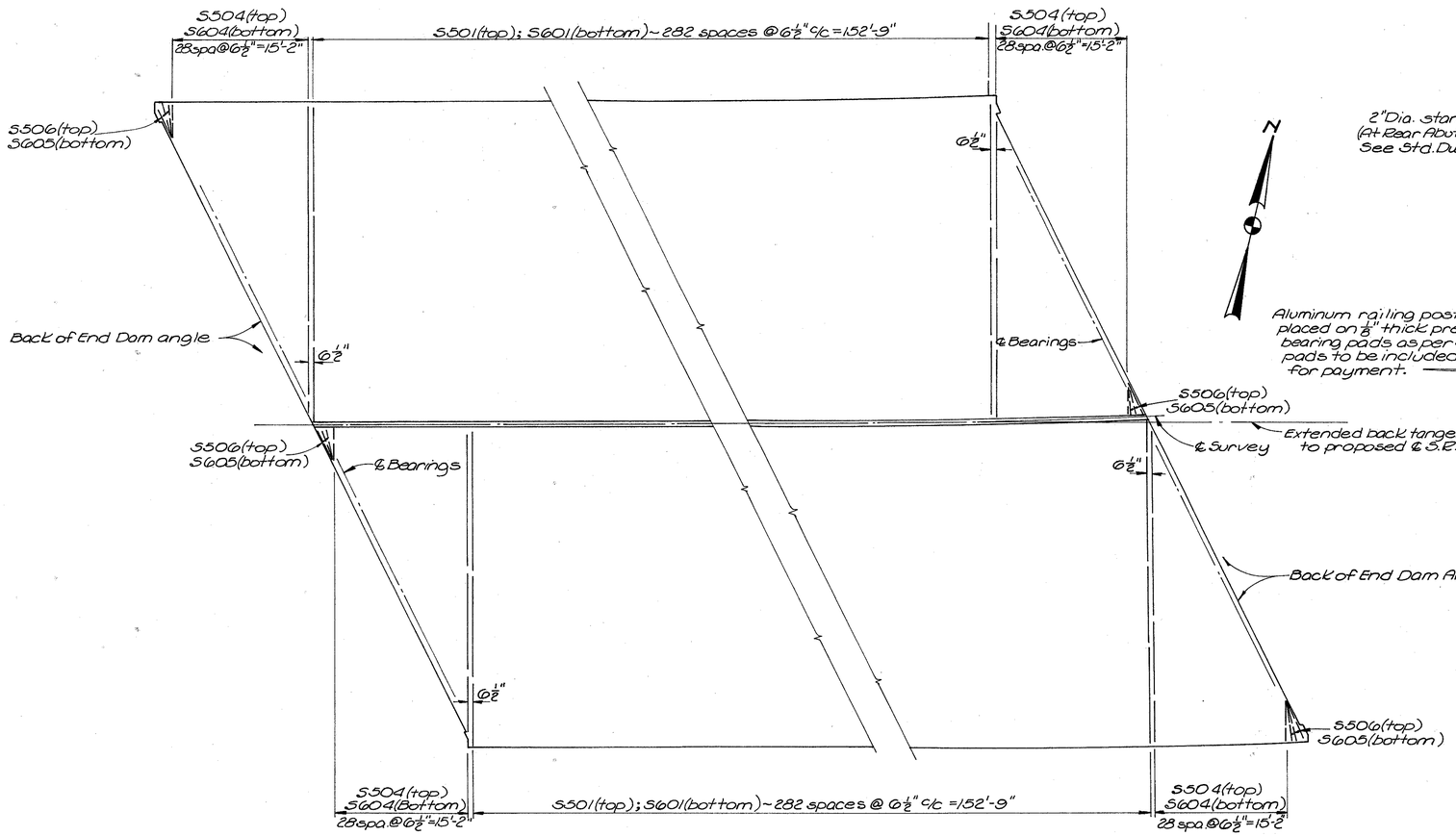
STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

SUPERSTRUCTURE DETAILS
BRIDGE No. COL-30-3201
UNDER SR 170
COLUMBIANA COUNTY STA. 19+12.49
STA. 20+87.49

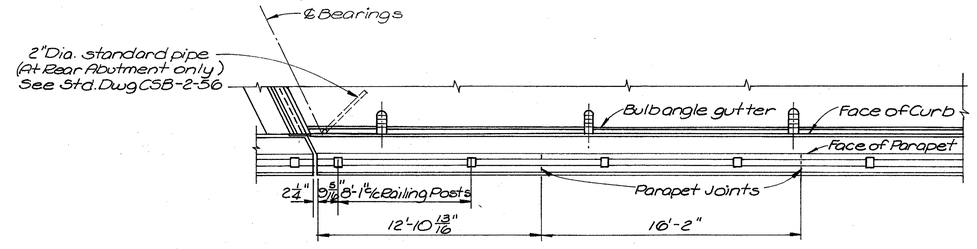
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JGB	JGB	W.W.N.	NJB	BFG	7-5-61	

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

COL-30-32.19

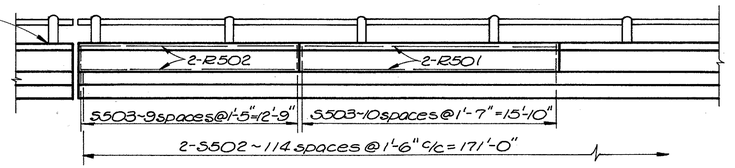


TRANSVERSE DECK REINFORCING STEEL LAYOUT

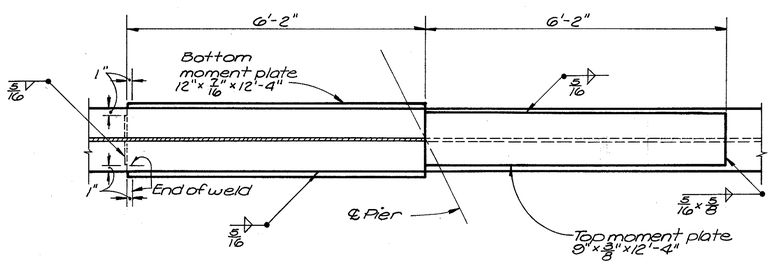


PART PLAN AT ABUTMENT

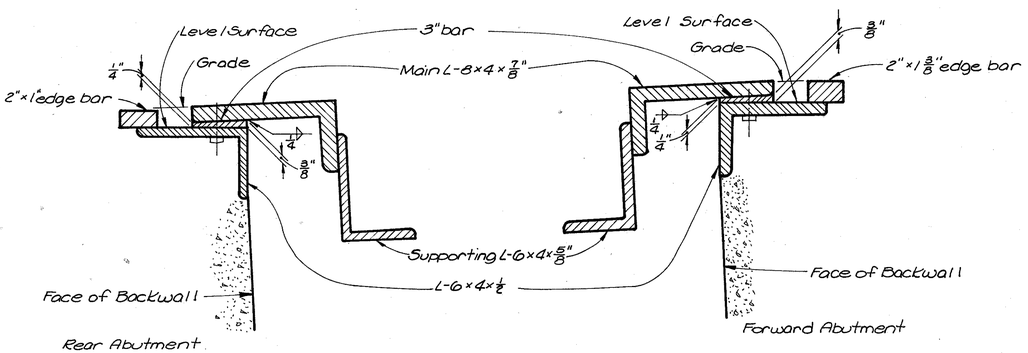
Aluminum railing posts shall be placed on ⅜" thick preformed bearing pads as per Sec. M-10.11; pads to be included with railing for payment.



ELEVATION OF PARAPET

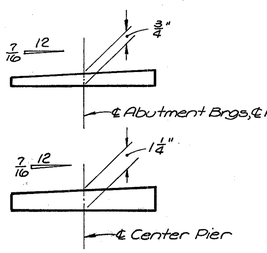


SECTION A-A



MODIFICATION OF END DAM

(See Std. Dwg CSB-2-56, Sheet No 2. for remaining details.)



DETAILS OF BEVELED SOLE PLATES

(See Std. Dwg. CSB-2-56, sheet no. 3 for additional details)

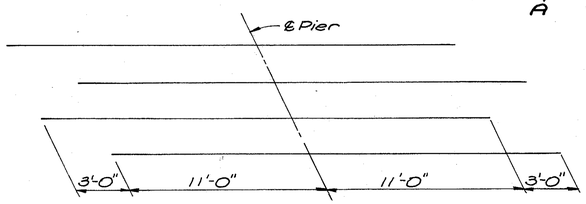
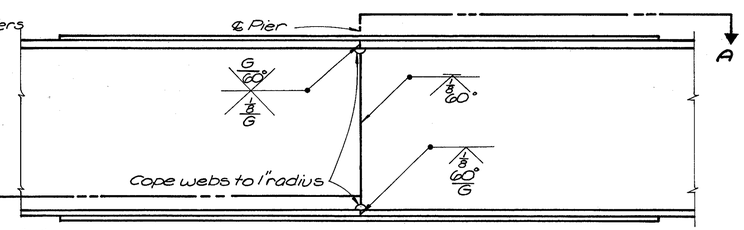


DIAGRAM SHOWING STAGGER OF S603 BARS OVER PIERS



BEAM SPLICE DETAILS FOR CENTER PIER ONLY

REFERENCE shall be made to Std. Dwg CSB-2-56 sheet no. 3 for Beam Splice Details without moment plates for the Rear and Forward Piers if the "Optional Beam Splice Procedure" is to be used. Butt welds in webs may have convex reinforcement in accordance with Sect. S-7.22. Finishing flush by grinding is not required.

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

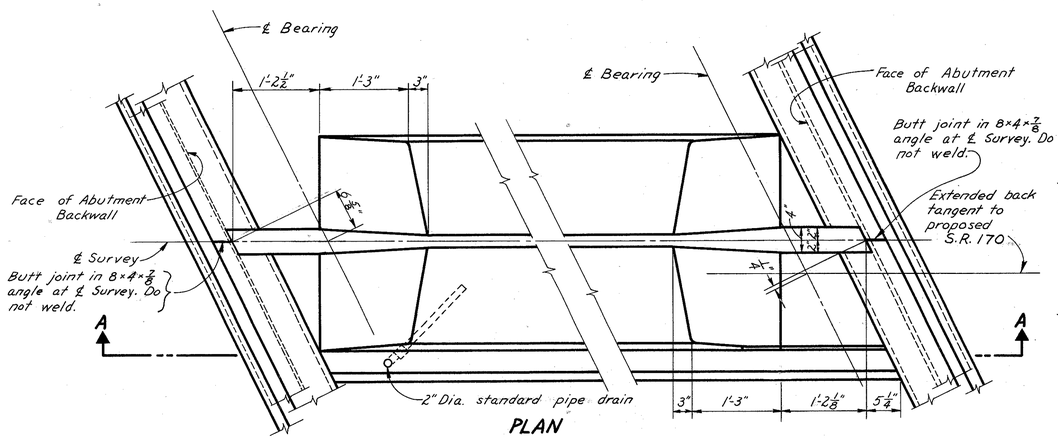
SUPERSTRUCTURE DETAILS

BRIDGE No. COL-30-3201
UNDER S.R. 170
COLUMBIANA COUNTY STA. 19+12.49
STA. 20+87.49

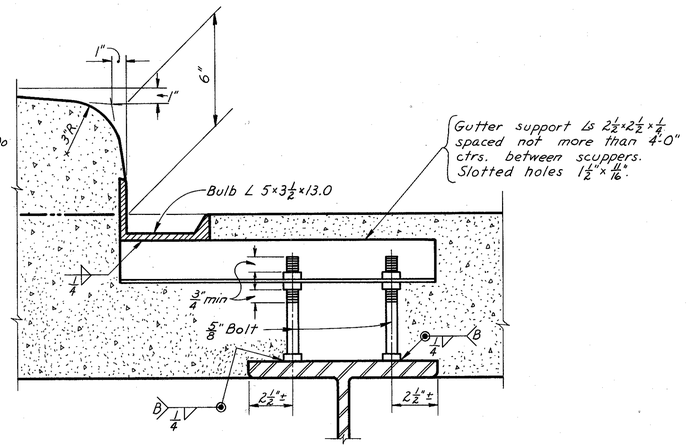
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JGB	JGB	MKH	NJB	BFG	7-5-61	

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

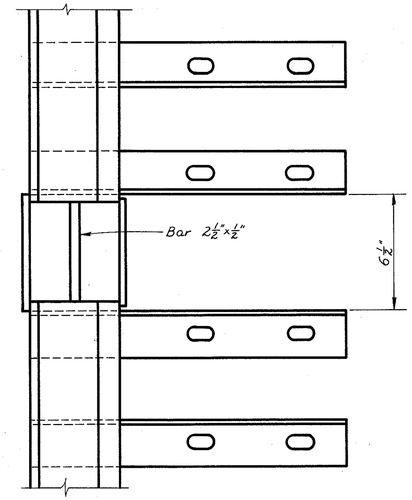
COL-30-32.19



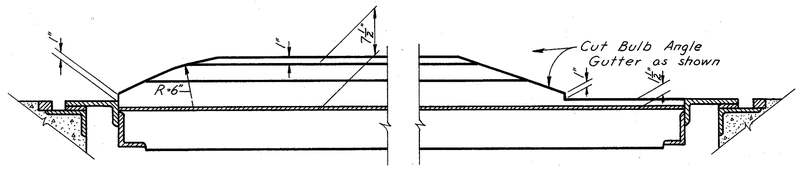
PLAN



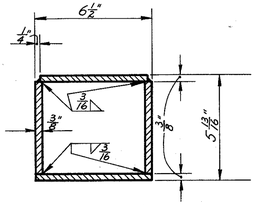
GUTTER SUPPORT FOR SCUPPER "B"



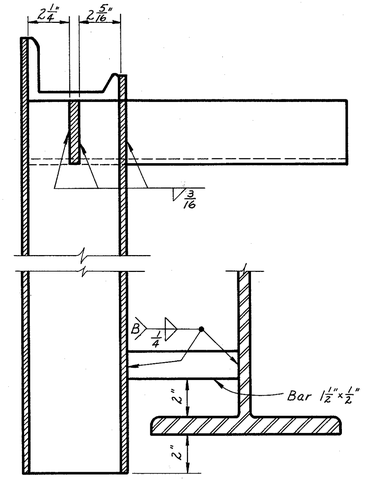
PART PLAN



SECTION A-A



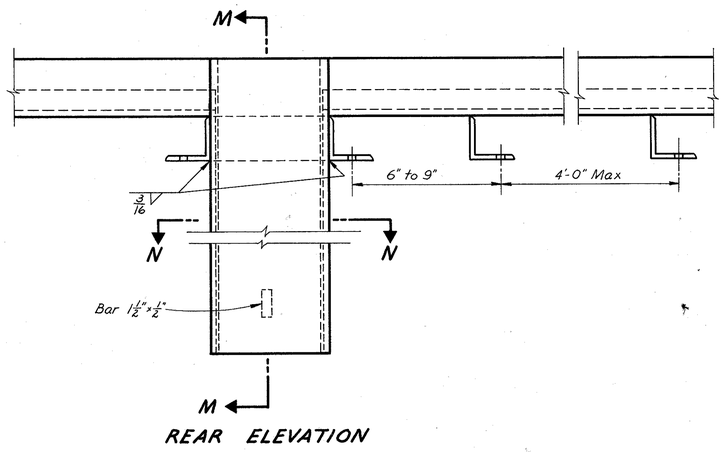
SECTION N-N



SECTION M-M

MEDIAN DETAILS NEAR END DAM

DEFLECTION AND CAMBER				
LOCATION	OUTSIDE BEAMS		INSIDE BEAMS	
	END SPANS	MIDDLE SPANS	END SPANS	MIDDLE SPANS
Deflection due to weight of steel	0	0	0	0
Deflection due to remaining dead load	1/16"	3/16"	1/16"	3/16"
Total Deflection	1/16"	3/16"	1/16"	3/16"
Required Camber	0	0	0	0



REAR ELEVATION

SCUPPER "B" DETAILS

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

SUPERSTRUCTURE DETAILS

BRIDGE No. COL-30-3201
UNDER S.R. 170
COLUMBIANA COUNTY
STA. 19+12.49
STA. 20+87.49

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JGB	JGB	A.A.K.	NJB	BFG	7-5-61	

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

220
200

BENCH MARK
Elev. 962.47
□ Cut in NE Wing Wall
Hill Road Bridge
102' Lt. Sta. 824+85

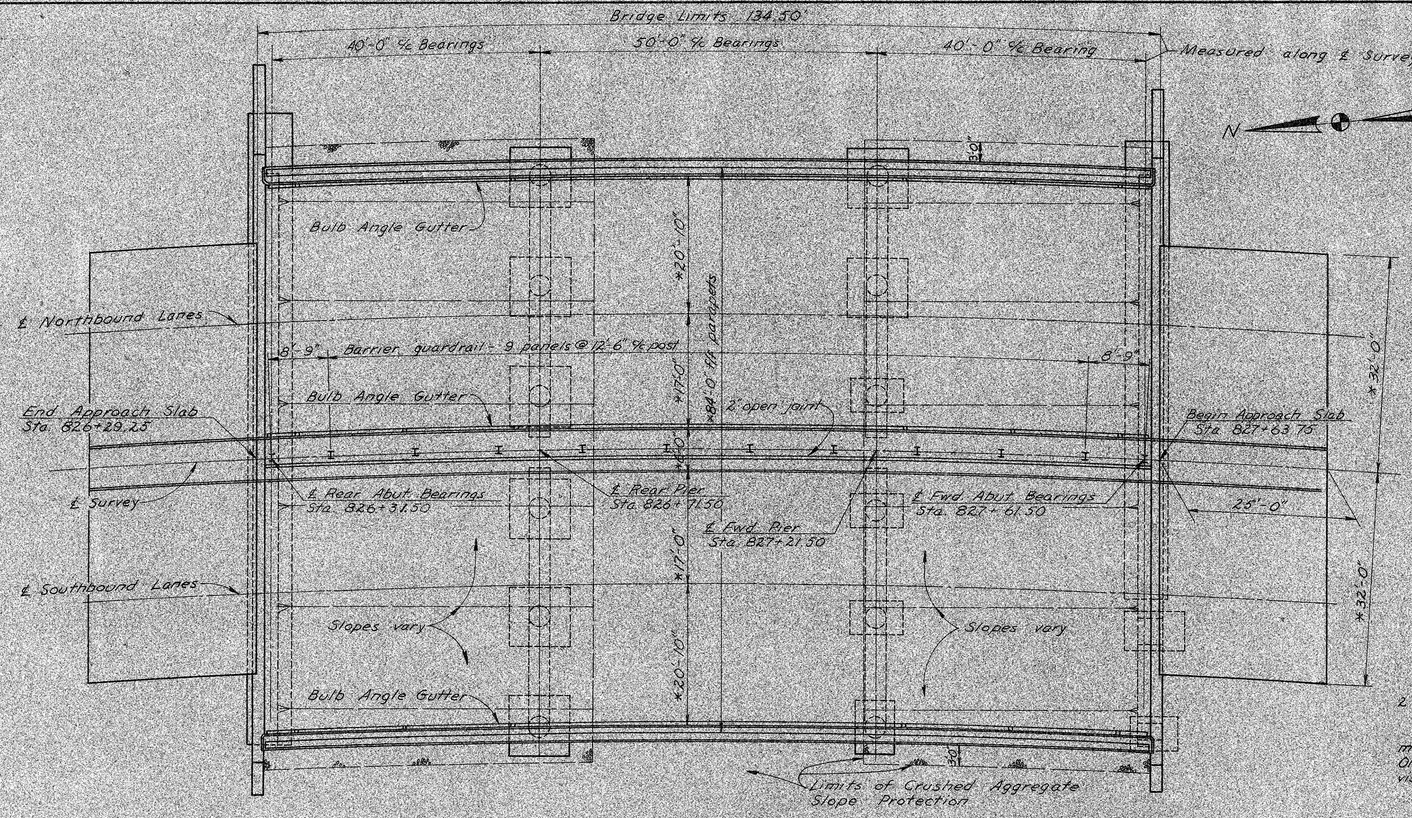
COL.-30 - 32.19
1.15 Miles North
East Liverpool N.C.L.

U.S. 30 Curve Data
P.I. = 824+92.96
Δ = 26°06' Rt
D = 4°00'
R = 1432.40'
Ls = 400'
θs = 8°00'
Lc = 252.50'
Es = 42.75'
Ts = 532.96'

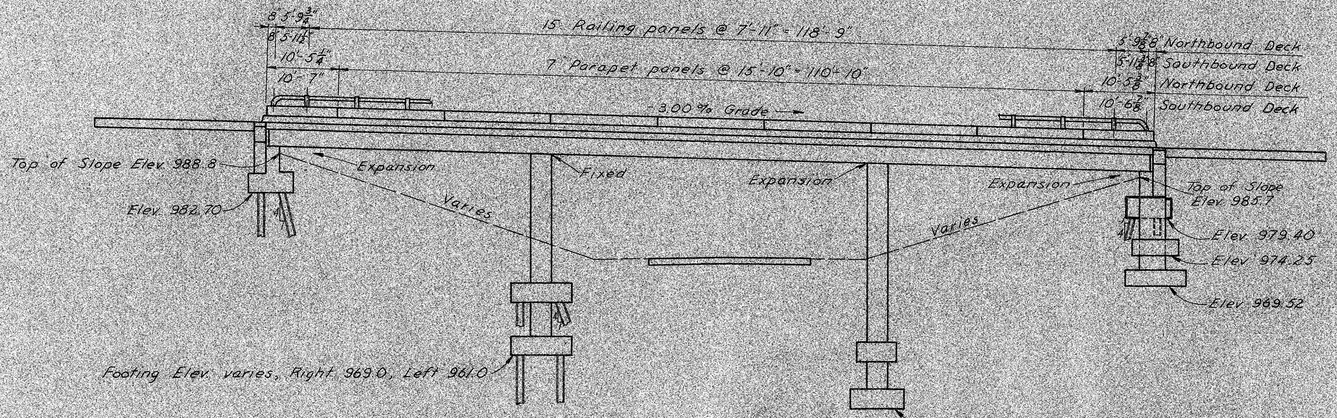
Existing U.S. 30
Flare
Carpenter's R/W
Junction Box
Sign
Existing Hill Ave
End Appr. Slab Sta. 828+29.20
Northbound
1 Stk. Frame Res.
Septic Tank
Fr. Shed
To Lisbon
℄ Southbound
Proposed ℄ Hill Ave.
90° Tan. to Spiral
Sta. 827+00.63 Scatted Rt.
Begin Appr. Slab Sta. 827+63.75
℄ Proposed New ℄
S 10°08' W
To East Liverpool
Critical Point A
Sta. 827+77.66
Elev. 938.00
Proposed 30" R.C.P.

RED. FED. DIVISION	STATE	PROJECT	
2	OHIO		

COL-30-32.19



GENERAL PLAN



ELEVATION

ESTIMATED QUANTITIES

Item	Total	Unit	Description	Super.	Piers	Abut.	Gen'l		
E-2	737	Cu. Yds.	Unclassified excavation including rock		320	417			
S-1	332	Cu. Yds.	Class "C" concrete, superstructure	332					
S-1	137	Cu. Yds.	Class "C" concrete, piers above footings		137				
S-1	105	Cu. Yds.	Class "E" concrete, forward abutment above footings			105			
S-1	108	Cu. Yds.	Class "E" concrete, rear abutment above footings			108			
S-1	223	Cu. Yds.	Class "E" concrete, footings		91	132			
S-3	18	Lin. Ft.	Waterproofing, premolded sealing strip			18			
S-4	154,475	Lbs.	Reinforcing steel	94,099	39,295	21,081			
S-7	248,000	Lbs.	Structural steel	248,000					
S-8	248,000	Lbs.	Field painting of structural steel	248,000					
S-9	67	Sq. Ft.	½" Preformed expansion joint filler (Type I)			67			
S-14	132.54	Lin. Ft.	Railing (Barrier type I-1511 with galvanized steel posts, base plates and bolts.)	132.54					
S-14	263.71	Lin. Ft.	Railing (aluminum rail & supports & concrete parapets	263.71					
S-16	Lump	Sum	First test pile				Lump		
S-18	1660	Lin. Ft.	Steel piles, 12BP53		560	1100			
S-29	61	Cu. Yds.	Porous backfill			61			
S-29	18	Each	Scuppers	18					
I-10	1000	Sq. Yds.	Crushed aggregate slope protection				1000		
* Special	352	Each	Water-reducing, set-retarding admixture	352					

* See Proposal Note

GENERAL NOTES

REFERENCE shall be made to Standard Drawings CSB-2-56, sheets 2 and 3, and AR-1-57 revised 2-2-59 and 12-12-60 respectively.

DESIGN SPECIFICATIONS: This structure conforms to the requirements of "Design Specifications for Highway Structures" of the State of Ohio, Department of Highways, dated 9-1-57, together with current revisions thereof.

PILES shall be driven using a hammer of not less than 11,000 ft lb. per blow to firm contact with rock. If the length of penetration is approximately equal to the depth to rock according to the bridge foundation investigation report, the firm contact shall be considered as attained when the capacity according to the formula in Sec. S-18.05 is not less than the following value for a pile hammer of the indicated energy rating:

For the Rear abutment piles:

41 tons per pile using an 11000 ft lb. hammer.
37 tons per pile using a 15000 ft lb. or greater hammer

For the forward abutment piles:

48 tons per pile using an 11000 ft lb hammer
42 tons per pile using a 15000 ft lb. or greater hammer

For the pier piles:

43 tons per pile using an 11000 ft lb hammer
38 tons per pile using a 15000 ft lb. or greater hammer

If the energy rating of the hammer is between the ratings as shown above, the required formula capacity shall be determined by interpolation. The design load is 30 tons per pile.

FOUNDATION BEARING PRESSURE: Pedestal and pier footings are designed for a maximum bearing pressure of 6 tons per sq. ft.

PROCEDURE:

Rear Abutment and Rear Pier

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 70 feet back of the rear abutment after which excavation shall be made for the abutment and rear pier and piles driven.

Forward Abutment and Forward Pier

The spread footings and columns of the forward pier and the forward abutment pedestals shall be constructed, and then the embankment shall be placed and compacted up to the spill-thru slope and to the level of the subgrade for a distance of 70 feet back of the forward abutment. Excavation shall then be made for the abutment and pier footings on piles, and that portion of the cross beam supported by pedestals.

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

WELDING of structural steel shall be Class A except as otherwise shown. Welds shown as field welds may, at the option of the Contractor, be made in the shop. Class B welds are shown thus: B

BEAM WEB WELDS: Butt welds in webs of beams may have convex reinforcement in accordance with Sec. S-7.22. Finishing flush by grinding is not required.

CONCRETE DECK PLACING: In order to facilitate water curing of the concrete of the deck slab, the placing of concrete shall progress upgrade. The slab may be placed in sections, between transverse construction joints which are parallel to transverse reinforcing steel and are located near the center of any span.

MACHINE FINISH: The concrete bridge deck shall be finished by the use of a finishing machine.

SHOP PAINTING STEEL. The surface preparation of all steel, requiring shop painting as per the Plans and Specifications, shall be accomplished by blast cleaning or power tool cleaning, except as noted in the Specifications regarding the use of Chromate Primers.

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

GENERAL PLAN & ELEVATION NOTES & ESTIMATED QUANTITIES

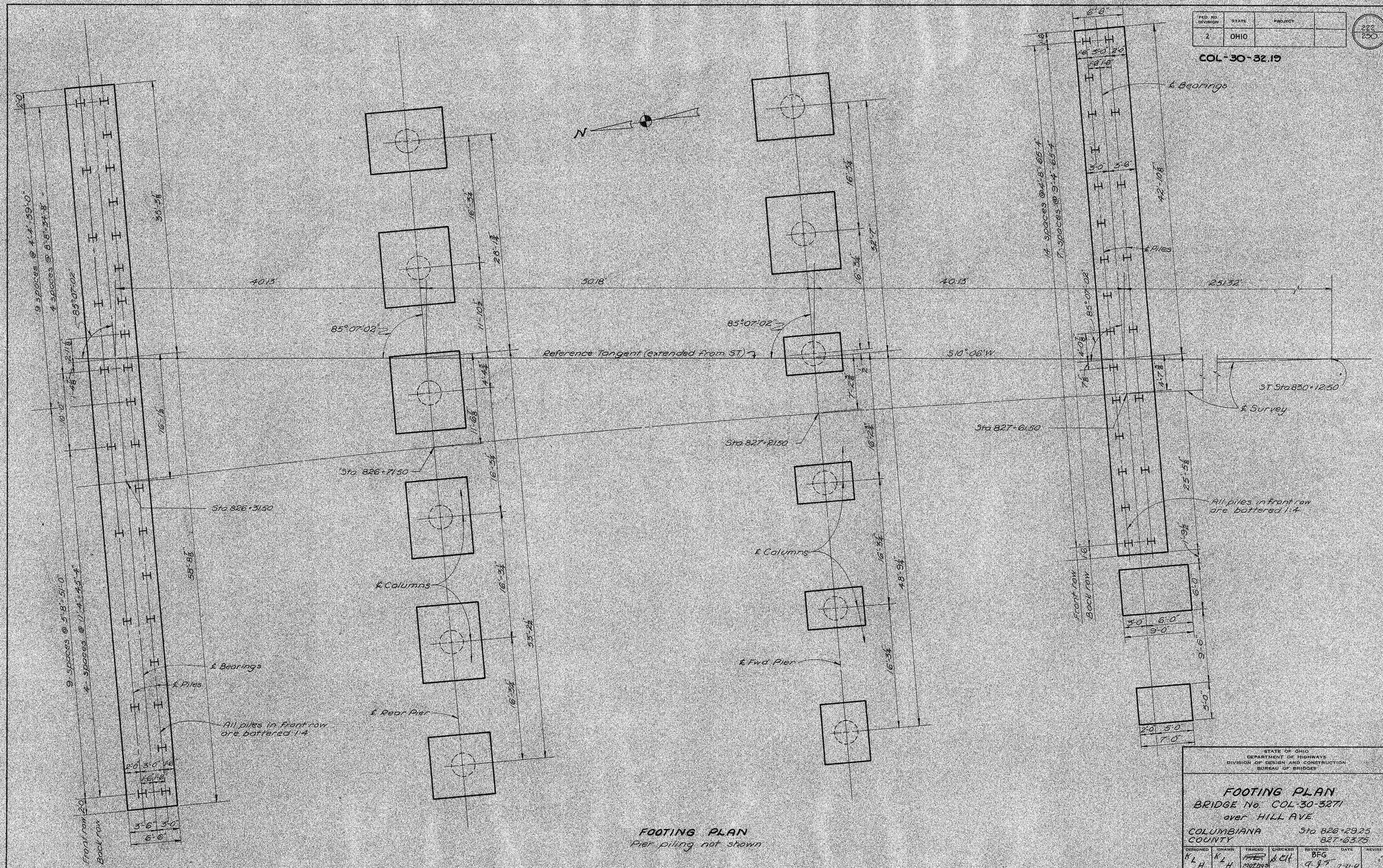
BRIDGE NO. COL-30-3271
over HILL AVE.
COLUMBIANA COUNTY
Sta. 826+29.25
827+63.75

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
E.B.L.	E.B.L.	A.A.K.	ACK	BFG AJF	7-21-61	

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

222
250

COL-30-32.19



FOOTING PLAN
Pier piling not shown

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

FOOTING PLAN

BRIDGE No. COL-30-3271
over HILL AVE.

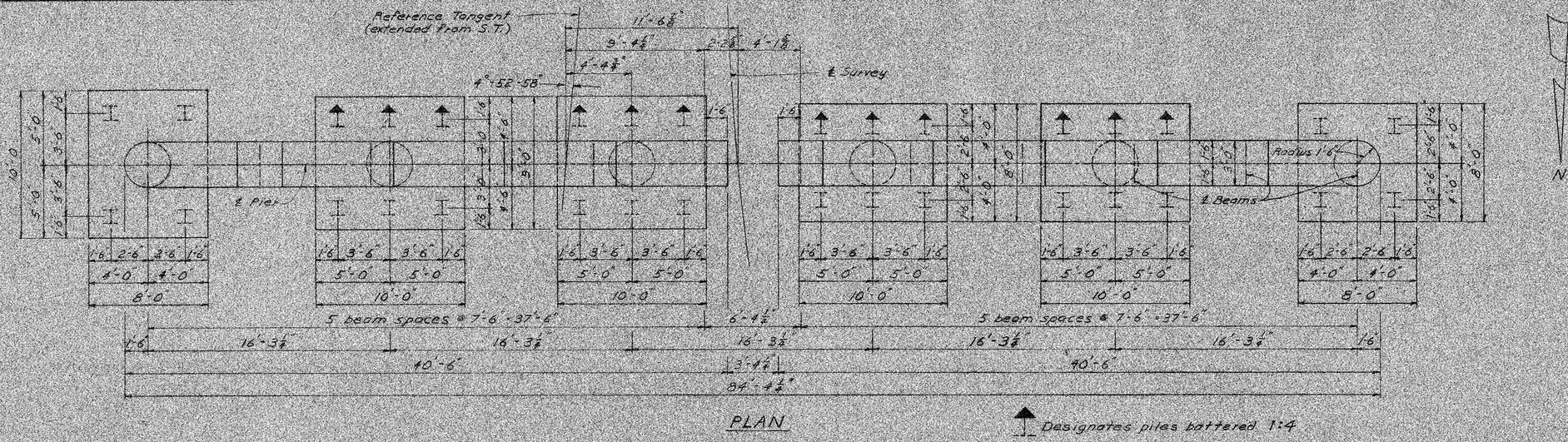
COLUMBIANA COUNTY
Sta 826+29.25
827+63.75

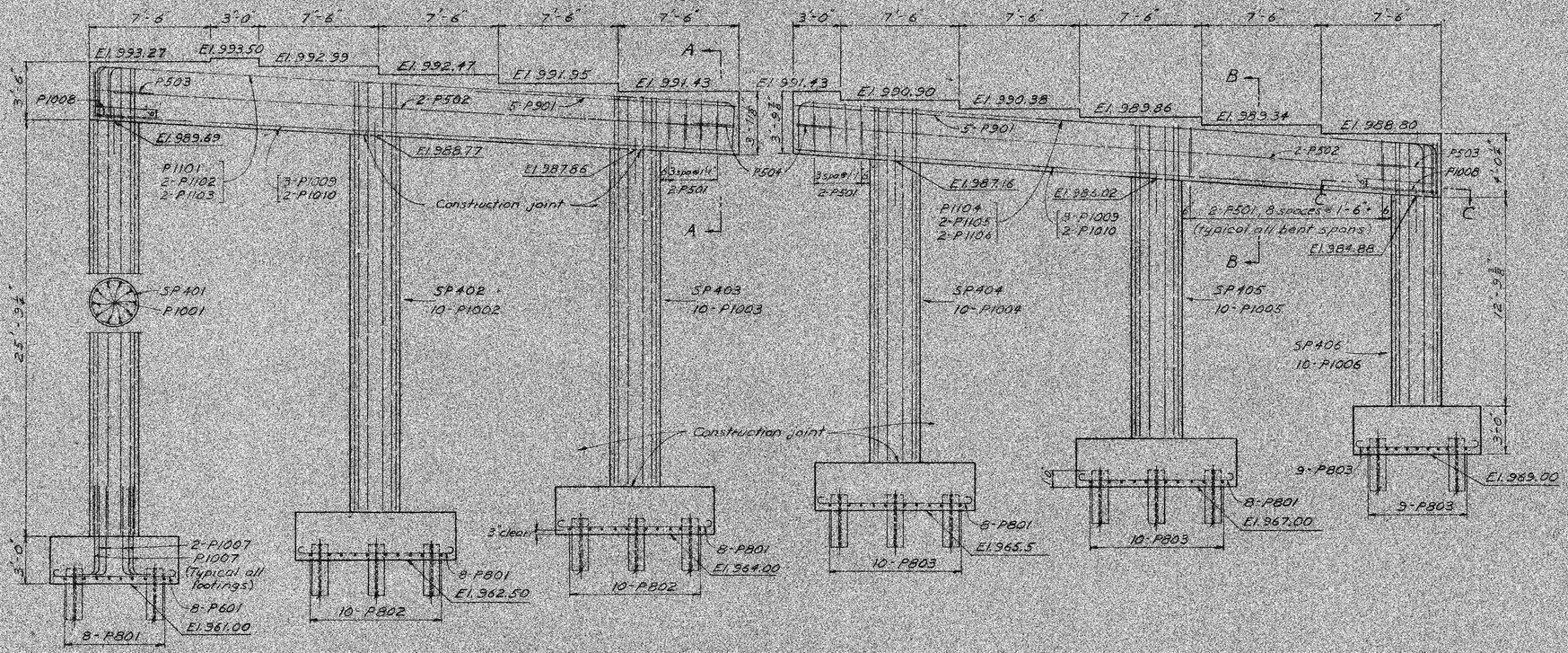
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
KLH	KLH	Mathys	[illegible]	BFG	7-21-61	

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

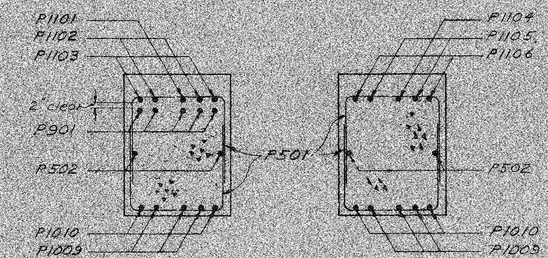
225 / 250

COL-30-32.19



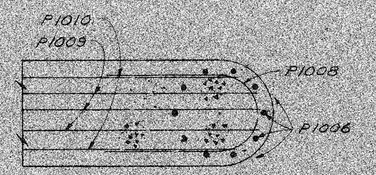


ELEVATION



SECTION A-A

SECTION B-B



SECTION C-C

The downward leg of the cap reinforcing bars shall be placed in the periphery of the column reinforcing bars and wired thereto.

Special care shall be taken in placing the cap reinforcing so as to avoid interference with the bearing plate anchor bars.

Footing steel shall be placed as follows unless otherwise shown: One bar on each side of piles, other bars to be equally spaced between piles.

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

REAR PIER DETAILS

BRIDGE NO. COL-30-3271
over HILL AVE

COLUMBIANA COUNTY

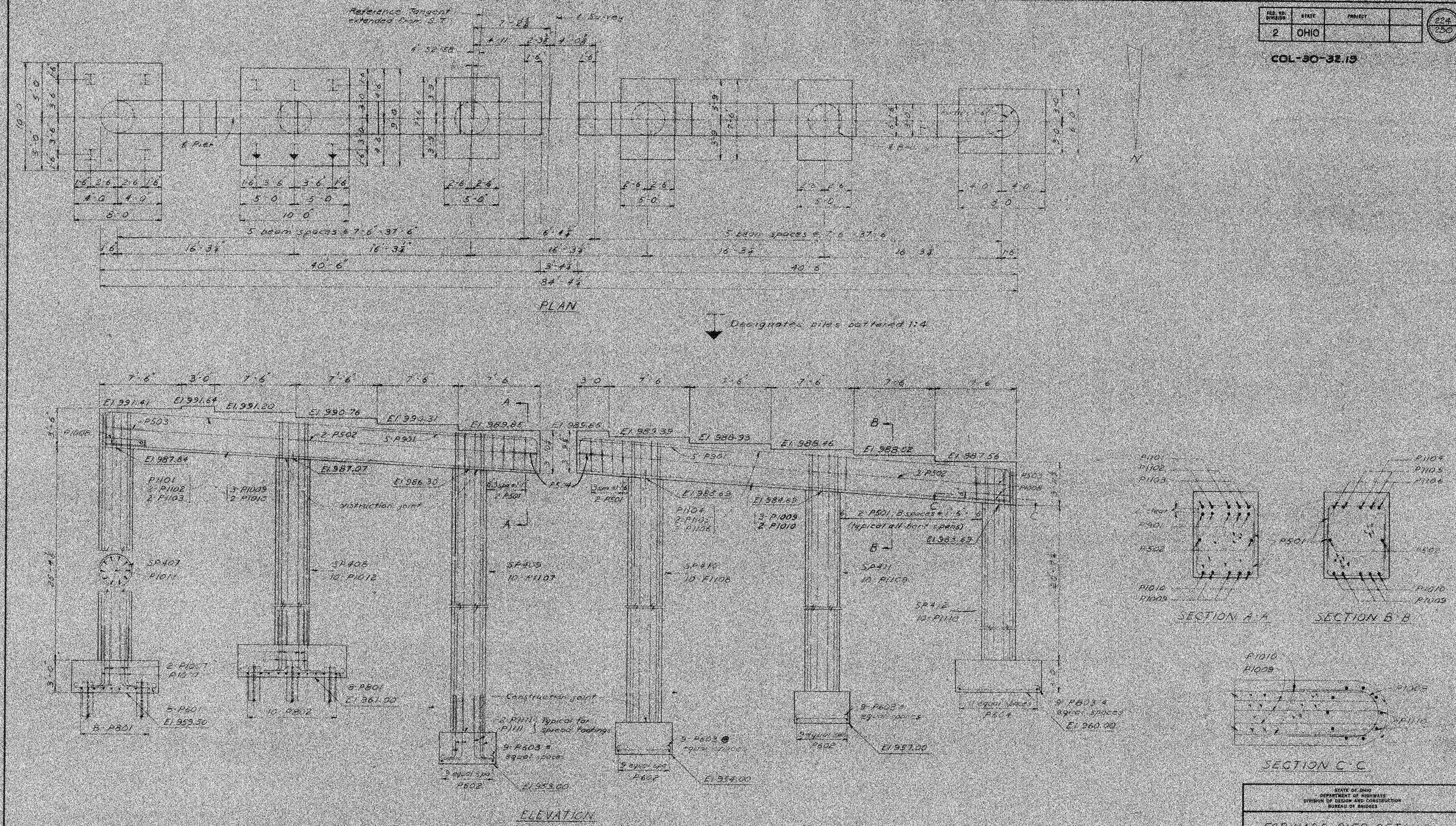
Sta. 826+29.25
827+63.75

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
EBL	EBL			BFG	7-21-61	

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

224/250

COL-30-32.19



The downward leg of the cap reinforcing bars shall be placed in the periphery of the column reinforcing bars and wired thereto.

Special care shall be taken in placing the cap reinforcing so as to avoid interference with the bearing plate anchor bars.

Footing steel shall be placed as follows unless otherwise shown. One bar on each side of piles, other bars to be equally spaced between piles.

Spread footings of pier shall be placed 3" into rock.

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

FORWARD PIER DETAILS
BRIDGE NO. COL 30-3271
over HILL AVE.

COLUMBIANA COUNTY — Sta. 826+29.25 — 327+63.75

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
GL	LBL		LLW	BFG	7-21-61	

FED. RD. DISTRICT	STATE	PROJECT	
2	OHIO		

225
250

COL-30-32.19

PLAN

ELEVATION

SECTION A-A

SECTION B-B

SECTION C-C

SECTION THRU BRIDGE-SEAT

SECTION THRU BACKWALL

EXPANSION JOINT DETAILS

TABLE OF ELEVATIONS

Point	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
Elevation	988.79	990.36	990.95	991.54	992.12	992.69	993.27	993.25	993.82	994.39	994.96	994.64	998.39	998.41	997.89	991.30	982.70	990.48	992.94	996.16

POROUS BACKFILL shall extend upward to the approach slab and to the surface of the earth shoulders, and outward to the surface of the embankment slopes. Excavation therefor, in excess of that required for construction of the abutment shall be considered as paid for in the bid price per cu. yd. paid for porous backfill.

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

REAR ABUTMENT DETAILS

BRIDGE No. COL-30-3271
over HILL AVE
Sta. 826+29.25
COLUMBIANA COUNTY 827+63.75

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
K.H.	K.H.		H.C.H.	DFG	7-21-61	

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

226
250

COL-30-32.19

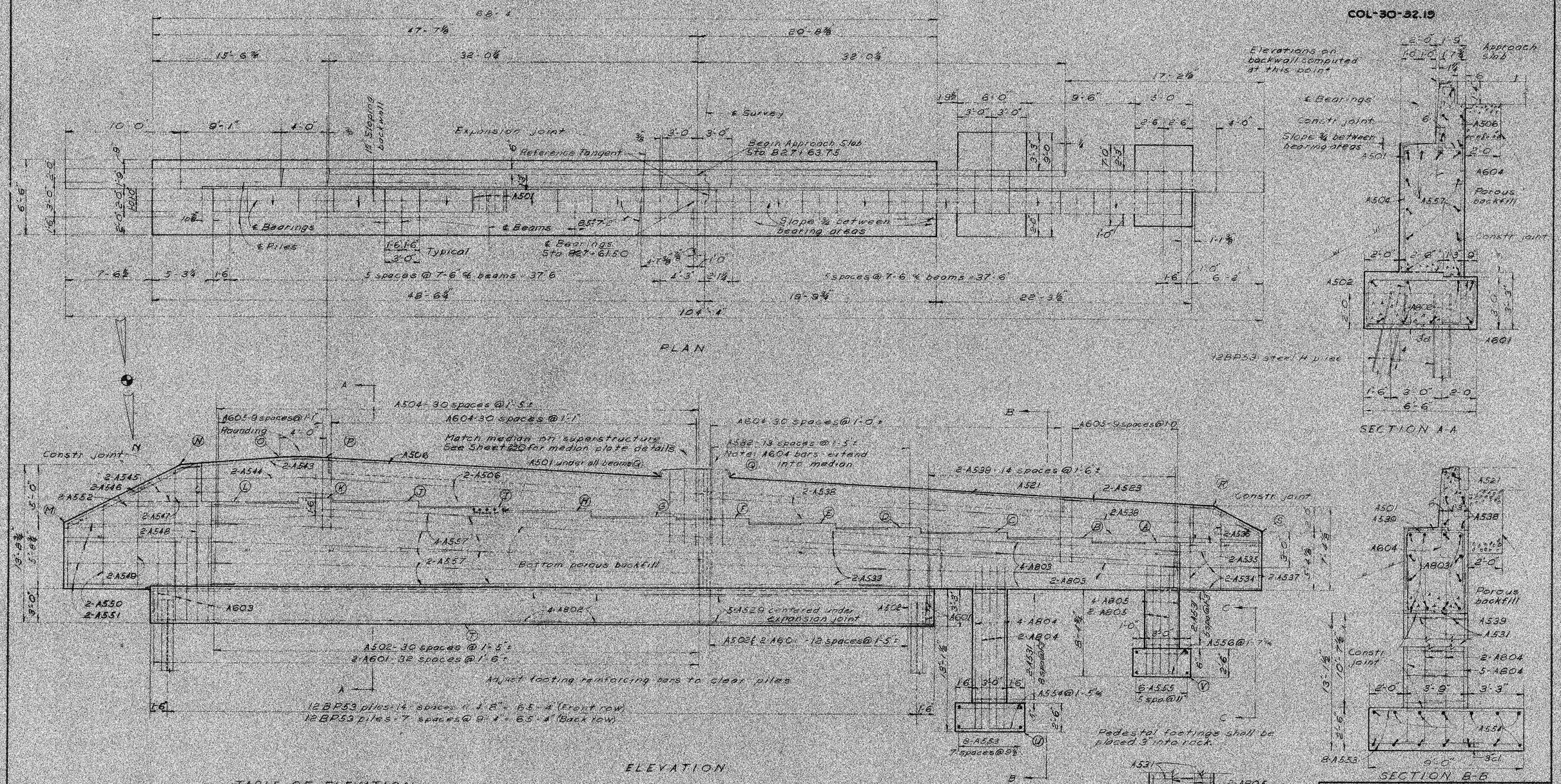


TABLE OF ELEVATION

POINT	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V
ELEVATION	986.76	987.15	987.56	987.96	988.36	988.75	988.81	989.19	989.57	989.96	990.35	989.99	988.13	993.13	993.70	993.71	992.21	989.99	987.99	979.40	969.52	974.25

POROUS BACKFILL - See note on REAR ABUTMENT DETAILS.

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

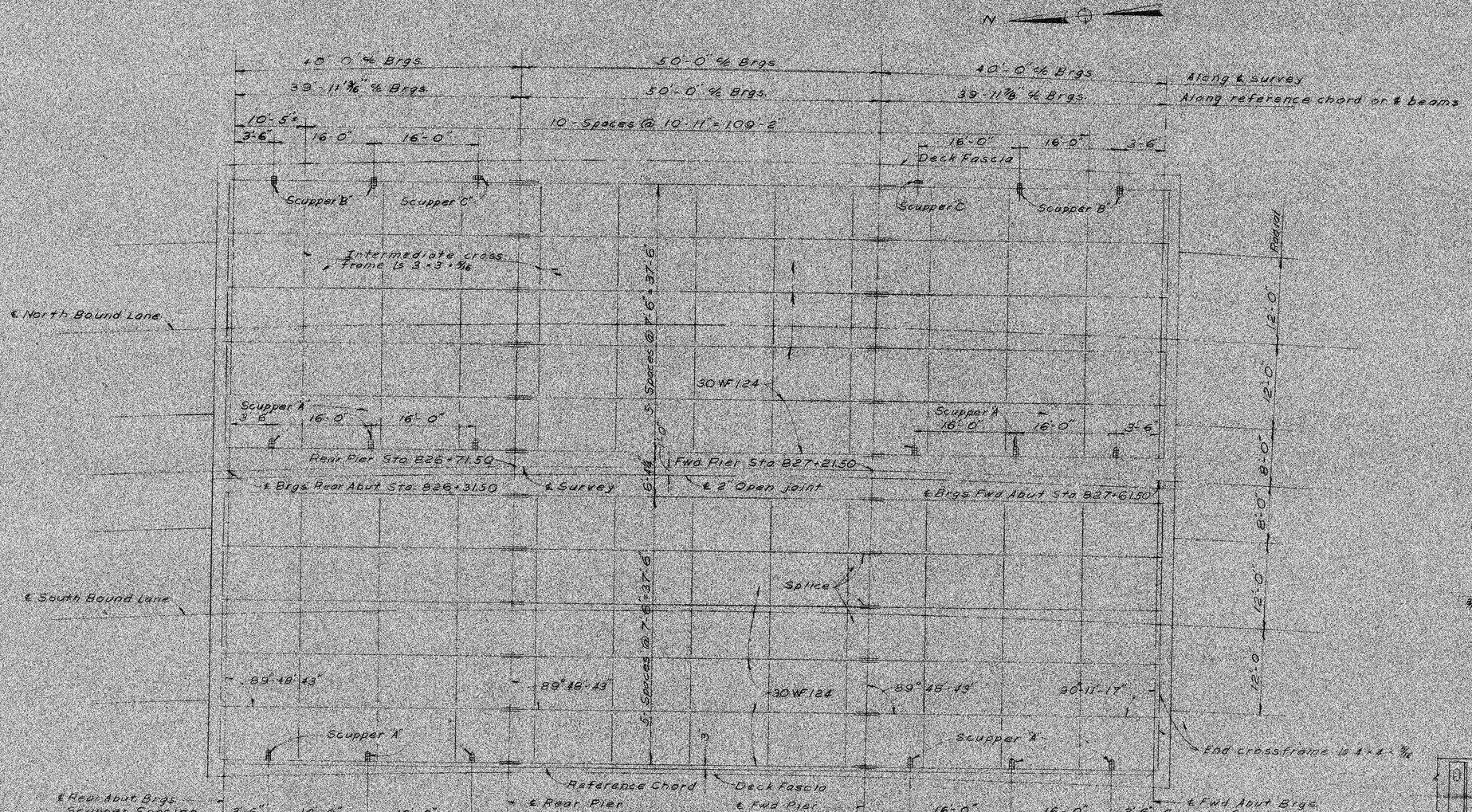
FORWARD ABUTMENT DETAILS
BRIDGE No. COL-30-3271
over HILL AVE.
COLUMBIANA COUNTY Sta. 826+29.25 827+63.75

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
K-H	K-H		DCA	BFG 9 J 4	7-21-61	

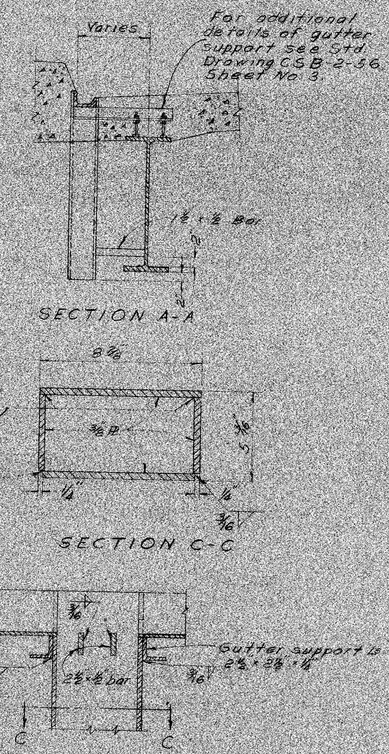
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

227/250

COL-30-32.19



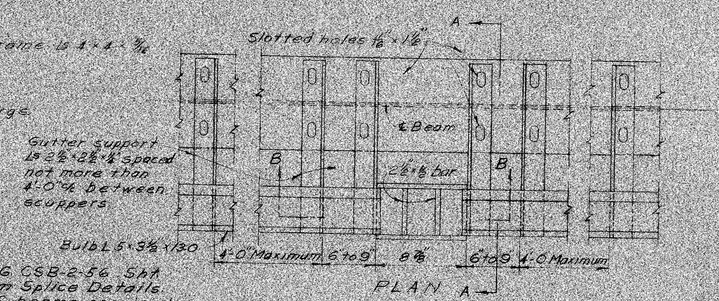
STEEL FRAMING PLAN



SECTION A-A

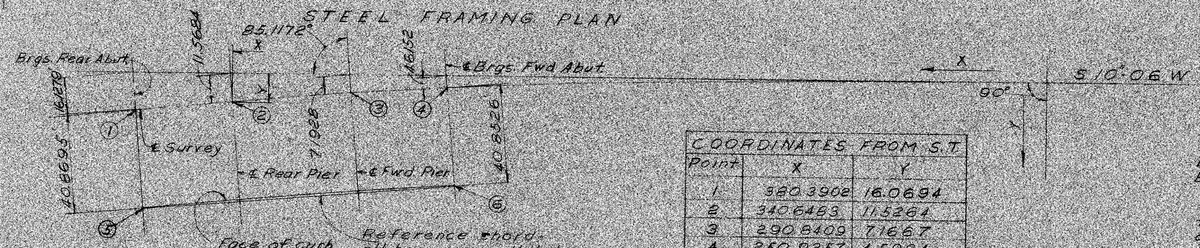
SECTION C-C

SECTION B-B (Beam not shown)



PLAN

DETAILS OF SCUPPER "C"



COORDINATES FROM S.T.		
Point	X	Y
1	380.3902	16.0694
2	340.6483	11.5264
3	290.8409	7.1667
4	250.9257	4.5984
5	376.9109	56.7905
6	247.4485	45.3027

LOCATION OF REFERENCE CHORD

SEE STD. DWG. CSB-2-56 Sht. No. 3 for Beam Splice Details.
No camber of beams required.
DEAD LOAD DEFLECTION equals 1/8"
BEAM SPLICE WELDING PROCEDURE
1. Raise the abutment ends of the beams 3/8"
2. Butt-weld the flanges and web, using the following sequence make two passes on each flange, then two on the web, repeat, using one pass at each location, until welds are completed.
3. Weld the bottom and top moment plates.
4. Lower the beam ends to final position.

Bottom moment plate 12 × 7/16 × 9'-6"
Top moment plate 9 × 3/8 × 9'-6"

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

SUPERSTRUCTURE DETAILS

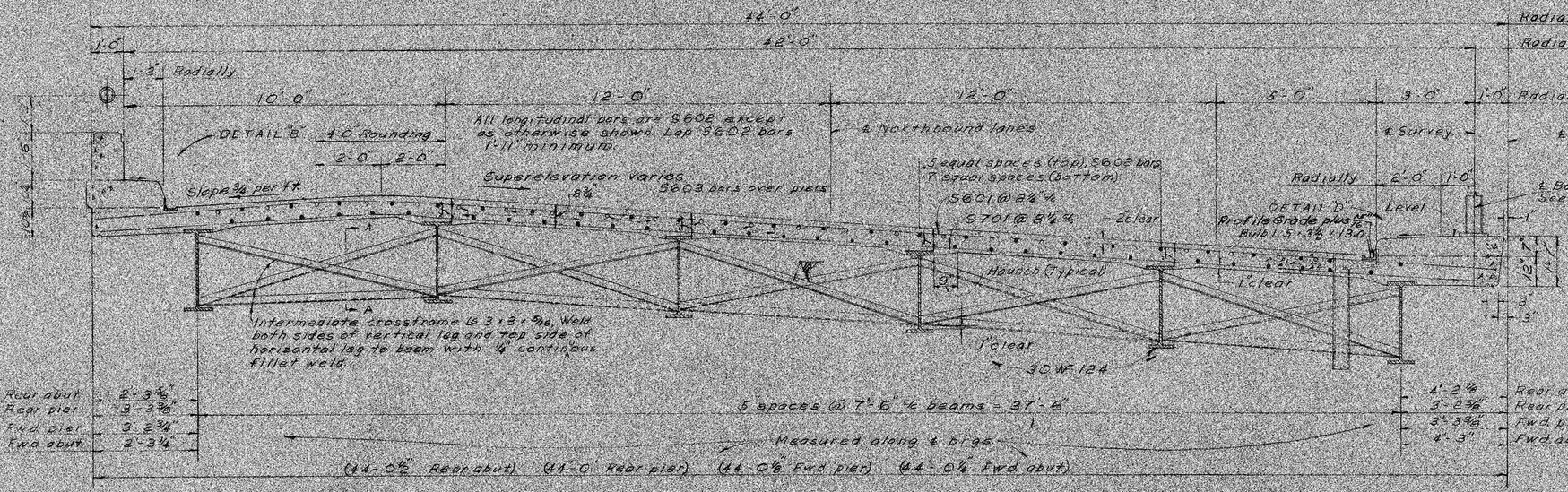
BRIDGE NO. COL-30-3271
OVER HILL AVE.
COLUMBIANA COUNTY
Sta. 826+29.25
827+63.75

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
KLH	KLH		RGH	BFG AJF	7-21-61	

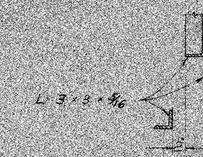
FED. RO. DIVISION	STATE	PROJECT	
2	OHIO		

226
850

COL-30-32.19



TRANSVERSE SECTION
(Northbound Bridge)

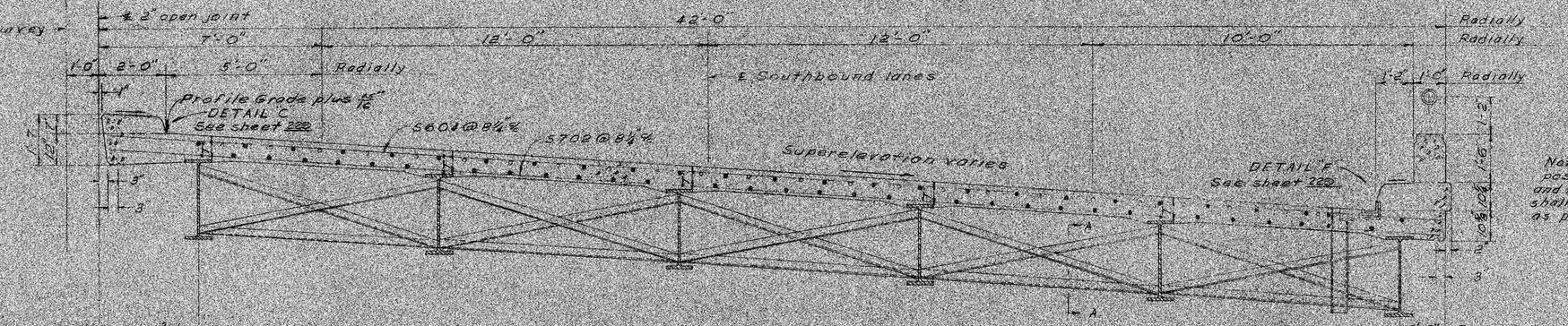


SECTION A-A

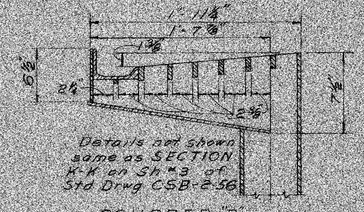
Slab thickness shown includes 1" for monolithic wearing surface

SLAB THICKNESS OVER BEAMS		
LOCATION	℄ Brgs. Piers	℄ Brgs Abuts.
T*	9	8 3/4

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



TRANSVERSE SECTION (For details not shown see TRANSVERSE SECTION Northbound Bridge)



SCUPPER "B"

Details not shown same as SECTION K-K on Sh No 3 of Std Drwg CSB-2-56

See FRAMING PLAN Sh No 229 for spacing and location of Scuppers "A" "B" and "C"

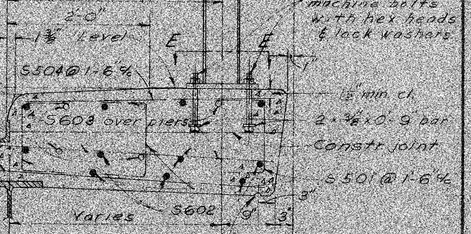
SCUPPER "A" is the same as SECTION K-K on Sh No 3 of Std Drwg CSB-2-56

SCUPPER "C" shown on sheet No. 227

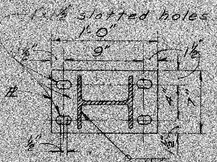
SCUPPER DETAILS

DECK SLAB HAUNCH. The haunch in the deck slab adjacent to the top of the steel beams which is shown as 9" wide, may vary from this dimension with a minimum of 6" and a maximum of 12". Maximum slope of haunch shall be one vertical to four horizontal. Payment for deck slab concrete shall be based on the 9" width.

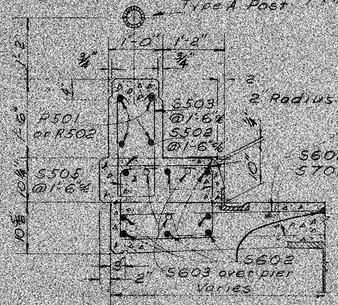
CONCRETE shall be class "C"



DETAIL 'D'



SECTION E-E



DETAIL 'B'

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

SUPERSTRUCTURE DETAILS

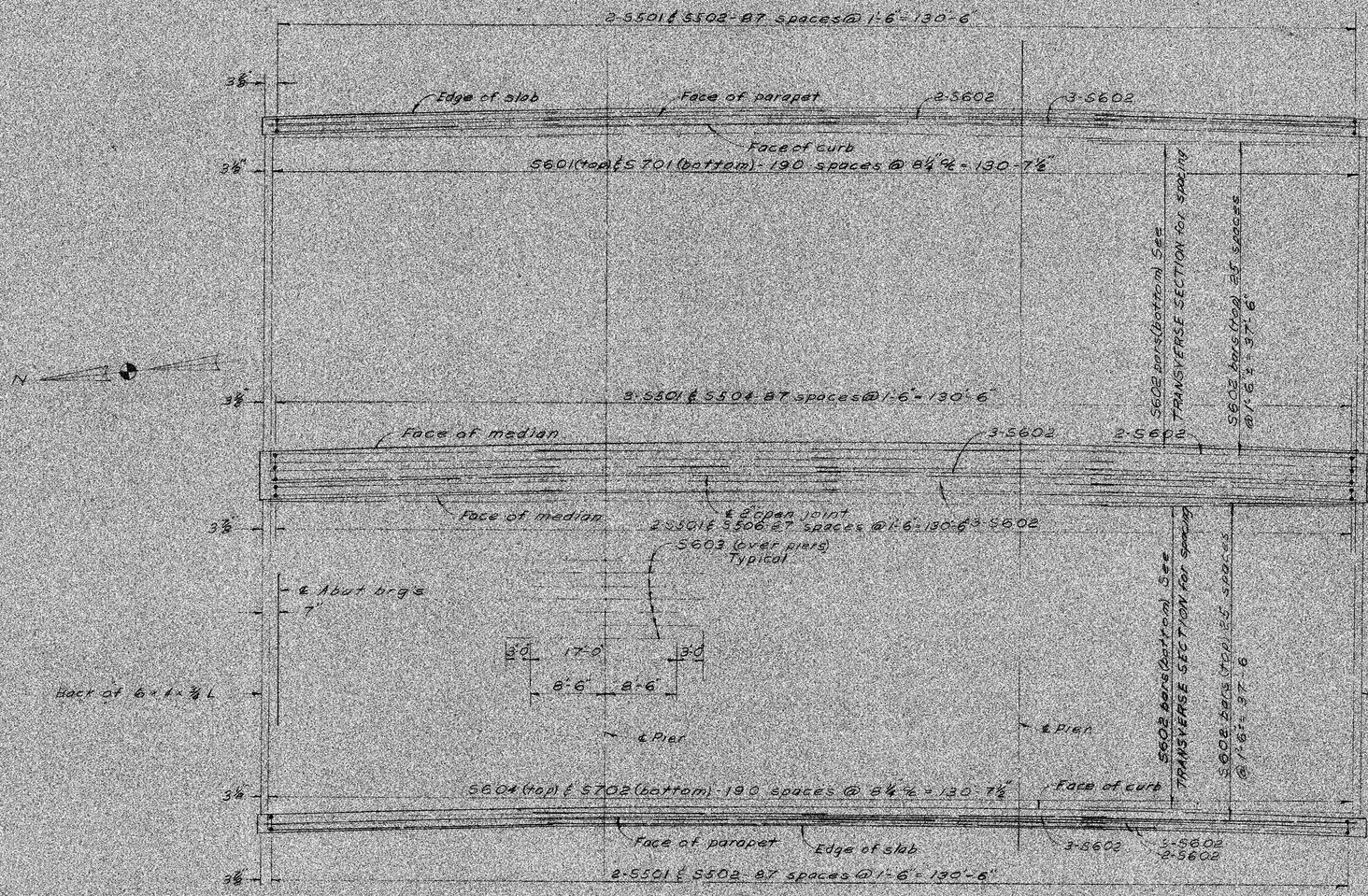
BRIDGE No. COL-30-32.19
over HILL AVE.
COLUMBIANA Sta 2+6+29.25
COUNTY 827+63.75

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
F. W. K.	F. W. H.		J.H.	BFG	7-21-61	

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

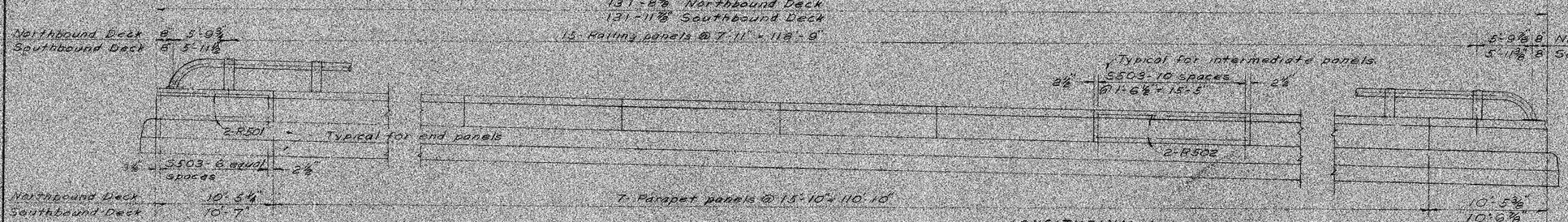
220
220

COL-30-32.19



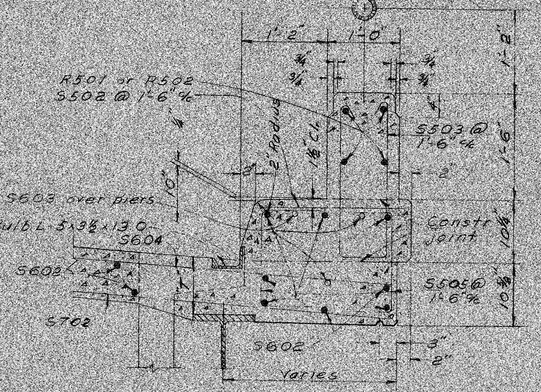
DECK REINFORCING STEEL

131'-8⅝" Northbound Deck
131'-11⅝" Southbound Deck
15 Railing panels @ 7'-11" = 118'-9"



ELEVATION - RAILING & PARAPET
See PART PLAN AT ABUTMENT for additional details Sheet 230

LONGITUDINAL dimensions are given on the ℄ of the parapet



DETAIL F

DETAIL C

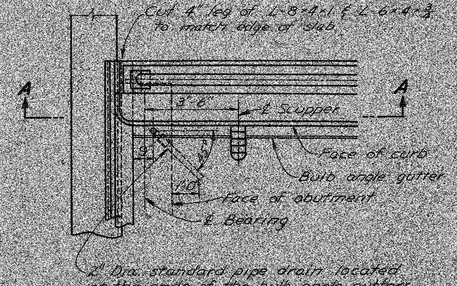
REFERENCE shall be to sheet 228 for additional details and also to Standard Drawing AR-1-57, Type 1 Post. ⅝" Preformed bearing pad as per Sec. M141 under posts shall be included with railing for payment

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

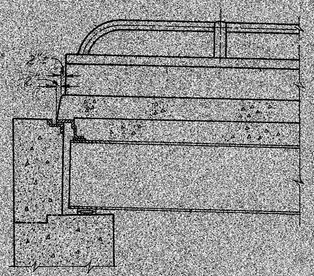
SUPERSTRUCTURE DETAILS

BRIDGE No. COL 30-3271
over HILL AVE
COLUMBIANA COUNTY
Sta. 826+29.25
827+63.75

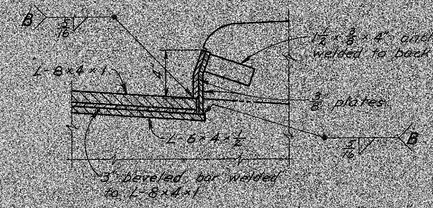
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
K L H	K L H		JH	BFG	7-21-61	



PART PLAN AT ABUTMENT



SECTION A-A

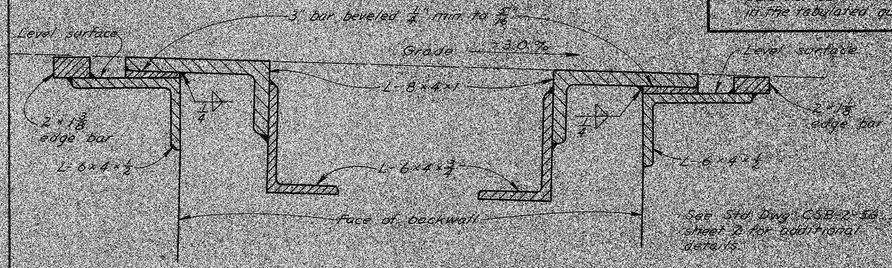


SECTION THRU CURB AT MEDIAN

(For other details refer to Curb Plate Details on CSB-2-58 sheet 3.)

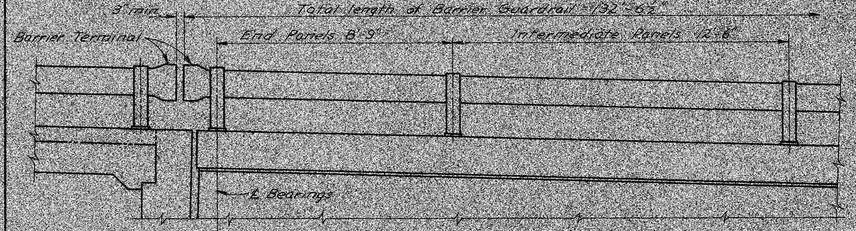
BEVELED BEARING PLATES

See Std Dwg CSB-2-58 sheet 3 for additional details.



REAR ABUTMENT FORWARD ABUTMENT

END DAM DETAILS



TYPICAL BARRIER GUARDRAIL DETAILS

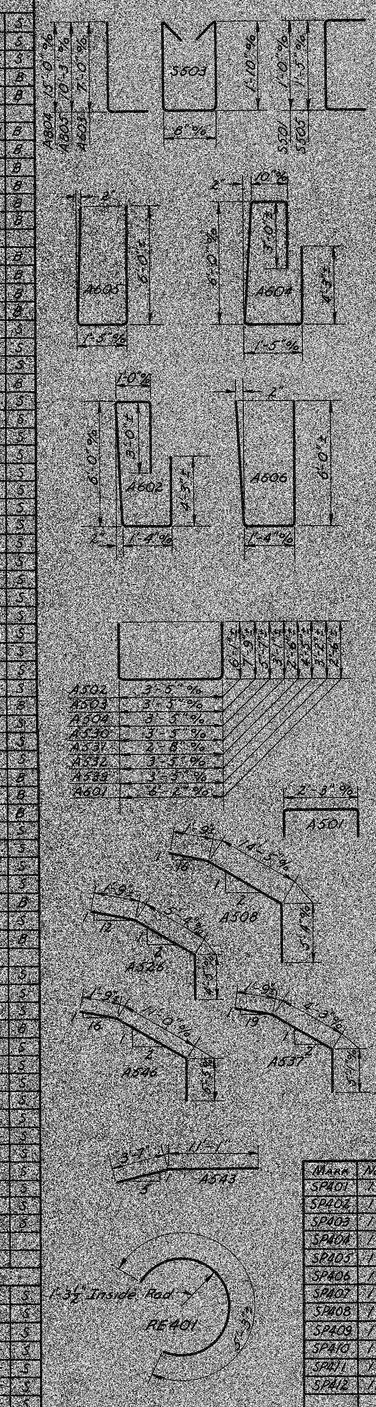
SPIRAL REINFORCING BARS: The "Length" shown in the steel list for the spiral bars is the distance from the top of the footing to the bottom of the pier cap. The "No. of Turns" is the "Length" divided by the pitch, plus 3 turns. (total number of closed coils), expressed as the nearest whole number. Spiral reinforcing bars shall not have deformations, but shall in other respects conform to Item 544. 1½ closed coils shall be provided at the ends of each spiral unit.

Four steel channel, tee or angle spacers weighing approximately 0.68 lb per lin ft, will be used for all reinforcing steel and is included in the tabulated quantity of spiral bars.

REINFORCING STEEL LIST

Mark	No.	Rein.	Fwd.	Length	Weight	Shape
Abutments						
A801	24	24		32'-0"	2,115	S
A802	16		16	35'-3"	1,506	S
A803	12		12	27'-0"	865	S
A804	14		14	15'-11"	595	B
A805	14		14	11'-2"	417	B
A601	220	126	94	10'-10"	3,580	B
A602	64	64		14'-11"	1,434	B
A603	18	9	9	7'-8"	181	B
A604	62		62	14'-10"	1,381	B
A605	20		20	19'-1"	993	B
A606	21	21		13'-0"	710	B
A501	120	60	60	3'-3"	401	B
A502	73	28	45	15'-4"	1,167	B
A503	29	29		18'-8"	565	B
A504	60	29	31	14'-4"	897	B
A005	24	24		22'-10"	578	S
A506	10	5	5	34'-4"	338	S
A507	2	2		12'-9"	27	S
A508	2	2		21'-5"	45	B
A509	2	2		7'-9"	16	S
A510	2	2		6'-7"	14	S
A511	2	2		8'-3"	18	S
A512	2	2		9'-9"	20	S
A513	10	2		10'-10"	23	S
A514	2	2		11'-10"	25	S
A515	2	2		12'-0"	25	S
A516	6	6		17'-7"	110	S
A517	2	2		15'-7"	33	S
A518	2	2		19'-9"	41	S
A519	2	2		17'-0"	35	S
A520	20	20		21'-3"	442	S
A521	2	1	1	32'-9"	68	S
A522	8	8		25'-3"	211	S
A523	4	2	2	12'-9"	53	S
A524	2	2		7'-0"	15	S
A525	2	2		6'-5"	13	S
A526	2	2		11'-3"	24	B
A527	2	2		5'-3"	11	S
A528	6	6		9'-7"	60	S
A529	20	10	10	10'-0"	209	S
A530	15	15		3'-4"	146	B
A531	30		30	7'-3"	232	B
A532	27	13	14	12'-0"	338	B
A533	8		8	16'-1"	136	S
A534	6		6	8'-9"	56	S
A535	2		2	7'-1"	15	S
A536	2		2	6'-8"	14	S
A537	2		2	11'-0"	23	B
A538	8		8	24'-1"	208	S
A539	30		30	9'-6"	297	B
A543	2		2	13'-1"	27	S
A548	2		2	16'-0"	33	S
A545	2		2	16'-3"	34	S
A546	2		2	18'-7"	38	B
A547	2		2	10'-1"	21	S
A549	2		2	10'-4"	22	S
A549	2		2	8'-9"	18	S
A550	8		8	4'-10"	18	S
A551	8		8	19'-6"	120	S
A552	2		2	10'-11"	23	S
A553	16		16	8'-6"	142	S
A554	14		14	5'-3"	79	S
A555	12		12	6'-6"	80	S
A556	10		10	9'-5"	96	S
A557	24		24	22'-3"	557	S
Replacement Bars						
RE1001	1	—	—	7'-6"	—	S
RE1001	1	—	—	7'12"	—	S
RE901	1	—	—	6'-10"	—	S
RE801	1	—	—	6'-6"	—	S
RE701	2	—	—	6'-2"	—	S
RE601	8	—	—	5'-11"	—	S
RE501	1	—	—	5'-7"	—	S
RE401	1	—	—	5'-3"	—	B

BENDING DIAGRAMS



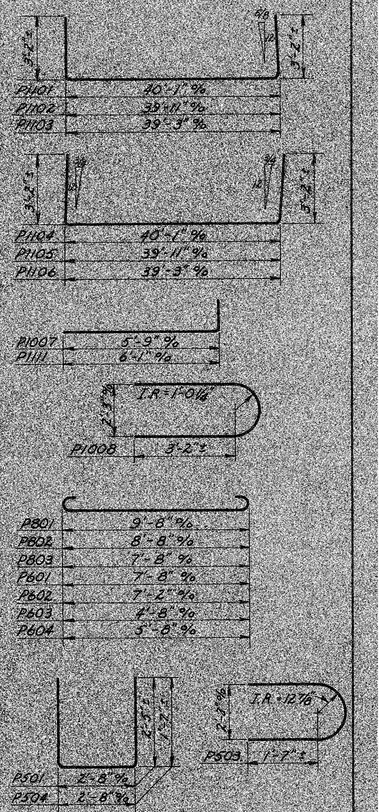
Mark	No.	Length	Weight	Shape
Superstructure				
S701	191	43'-4"	15,917	S
S702	191	41'-1"	16,137	S
S601	191	43'-7"	12,503	S
S602	572	34'-2"	23,354	S
S603	124	29'-0"	3,725	S
S604	191	21'-7"	11,929	S
S501	440	2'-0"	918	B
S502	176	1'-10"	337	S
S503	282	4'-11"	933	B
S504	88	3'-8"	321	S
S505	352	2'-5"	887	B
S506	88	1'-6"	138	S
Piers				
P1101	2	46'-10"	467	B
P1102	4	43'-8"	971	B
P1103	4	45'-0"	956	B
P1104	2	46'-10"	467	B
P1105	4	43'-8"	971	B
P1106	4	45'-0"	956	B
P1107	10	39'-6"	4780	S
P1108	10	34'-9"	4687	S
P1109	10	27'-9"	1474	S
P1110	10	23'-3"	1,062	S
P1111	40	1'-3"	1,581	B
P1601	10	28'-11"	1,244	S
P1002	10	26'-6"	1,140	S
P1003	10	24'-0"	1,036	S
P1004	10	21'-8"	932	S
P1005	10	19'-1"	821	S
P1006	10	15'-11"	685	S
P1007	80	6'-10"	2,352	B
P1008	8	3'-3"	396	B
P1009	12	40'-0"	2,065	S
P1010	8	38'-9"	1,331	S
P1011	10	28'-7"	1,230	S
P1012	10	26'-4"	1,139	S
P901	20	14'-6"	2,271	S
P801	36	11'-10"	1,769	B
P802	30	10'-10"	868	B
P803	47	9'-10"	1,232	B
P601	16	5'-0"	216	B
P602	30	8'-6"	383	B
P603	27	6'-0"	243	B
P604	12	7'-10"	126	B
P501	176	7'-3"	1,331	B
P502	4	38'-10"	762	S
P503	4	6'-6"	87	B
P504	4	5'-7"	23	B
Railing				
R501	16	10'-0"	*	S
R502	56	15'-6"	*	S

Mark	No.	Size & Spacing	Length	Piece Mark	Mark No.	Weight
SP401	1	32"	25'-9"	4½"	72	467
SP402	1	32"	23'-4"	4½"	65	421
SP403	1	32"	20'-11"	4½"	59	382
SP404	1	32"	18'-8"	4½"	53	343
SP405	1	32"	16'-0"	4½"	46	297
SP406	1	32"	12'-11"	4½"	37	239
SP407	1	32"	25'-3"	4½"	70	454
SP408	1	32"	23'-1"	4½"	65	421
SP409	1	32"	20'-4"	4½"	84	548
SP410	1	32"	28'-8"	4½"	79	513
SP411	1	30"	24'-3"	4½"	69	447
SP412	1	32"	20'-8"	4½"	58	376

Fed.-Aid Division	State	Project	
2	OHIO		

COL-30-32.19

BENDING DIAGRAMS



See additional notes on this sheet.

BAR SIZE is indicated in the bar mark. The first digit where three digits are used, and the first two digits where four are used, indicate the bar size number. For example, A801 is a No 8 size bar and P1101 is a No 11 size.

*Included with railing for payment.

REPLACEMENT BARS: If reinforcing bars are fabricated from stock which has previously been tested and approved by the Ohio Highway Testing Laboratory, test samples as directed in Sec. 511.02 need not be furnished and replacement bars will not be required.

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

SUPERSTRUCTURE DETAILS & REINFORCING STEEL LIST

BRIDGE NO. COL-30-3271
over HILL AVE.
COLUMBIANA COUNTY
Sta. 826+29.25
827+63.75

Designed	Drawn	Traced	Checked	Recommended	Date	Revised
E.B.L.	E.B.L.	A.A.K.	W.D.H.	B.F.G.	7-21-61	

TE-54-A
200-1-58

GENERAL INFORMATION

Exploratory borings were made by means of truck mounted mechanical earth auger, on November 12, and rotary drill rig, between October 29 and November 3, 1959.

The project consists of the realignment of 0.8 mile of USR 30, beginning approximately 4 miles north of East Liverpool and continuing generally southward in a line approximately parallel to, and 400 feet east of, existing USR 30. The terminus of this section is 600 feet south of the junction of USR 30 and SR 170.

The alignment crosses the unglaciated portion of the somewhat rugged Allegheny Plateau in a region where shallow residual soil (ranging from 0 to 20 feet in thickness) overlies argillaceous shales and thin to medium bedded sandstones, of Pennsylvanian age. Alluvial material was observed along a small stream at the southern end of the project; scant in some areas and totally absent in others.

The proposed grade indicates fill embankments a maximum of 25 feet in height; cuts as deep as 23 feet.

Borings disclose that shale and sandstone bedrock comprise the predominant material occurring immediately below the proposed grade. Silty clay, in the A-6a classification, is the predominant soil type beneath grade. Bedrock will be encountered in the excavation at the following approximate locations:

Station 774+00 to 777+75 - Shale, extremely weathered, at grade and left ditchline.
Station 785+00 to 793+00 - Shale, broken and very badly broken, at grade, ditches, and in the lower backslopes.
Station 793+00 to 797+50 - Sandstone at grade, in ditches, and in the lower backslopes.

In the remaining cut area, from station 797+50 to 805+00, sandstone will be encountered at grade and left ditchline, with very little, if any, rock right of centerline.

Embankment foundation material consists predominantly of silty clay, in the A-6a classification.

LEGEND FOR PROJECT-AVERAGE RESULTS OF TESTS- 49 SAMPLES TESTED

DESCRIPTION	H. R. B. CLASS	OHIO CLASS	% AGG.	% C. SAND	% F. SAND	% SILT	% CLAY	LIQUID LIMIT	PLASTICITY INDEX	WATER CONTENT	SAMPLES TESTED
Stone fragments	A-1-a(0)	A-1-a	74	14	8	8	6	NP	NP	19	1
Stone fragments with sand	A-1-b(0)	A-1-b	60	14	14	12	8	NP	NP	8	2
Stone fragments with sand and silt	A-2-4(0)	A-2-4	23	7	38	12	19	NP	NP	10	1
Sandy silt	A-4(7)	A-4a	16	8	6	41	29	28	6	18	1
Silt	A-4(8)	A-4b	7	4	4	54	31	31	6	21	4
Silt and clay	A-6(9)	A-6a	11	3	3	40	43	35	12	20	20
Elastic clay with organic material	A-7-5(16)	A-7-5	0	1	6	39	54	61	21	42	1
Clay	A-7-6(8)	A-7-6	23	6	5	23	43	42	13	25	1
Weathered shale	VISUAL CLASSIFICATION										1
Shale	VISUAL CLASSIFICATION										17
Sandstone	VISUAL CLASSIFICATION										

Auger boring-plan view.
Drive sample-core boring-plan view.
Auger boring plotted to vertical scale only.
Number of blows for "Standard Penetration" test. X=number of blows for the first 6 inches. Y=number of blows for the second 6 inches.
Small vertical figures beside boring indicate loss on ignition. e.g. 15%

Sod and/or Topsoil-X'=Approximate depth.
Berm material.
W Free water
NOTE: Figures beside borings indicate water content in percent. e.g. 15

Samples Tested Lat. Nos. So.
36264
37476
38760-38806 incl.

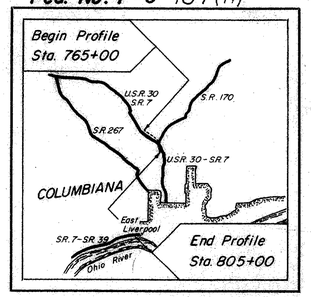
SOIL PROFILE
COLUMBIANA COUNTY
COL-30-32.19

1/19

OHIO STATE HIGHWAY TESTING LABORATORY
O.S.U. CAMPUS, COLUMBUS, OHIO

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.

Fed. No. F-U-457(11)



LOCATION MAP

Recon - I.M., P.L.H. - 10/22/59
Drilling Auger - C.E.G., B.E.B. - 11/12/59
Core - J.H.S. - 10/29/59 to 11/3/59
Drafting - D.M. - 12/29/59

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.
765+00	CL	0.5-3.0	6	6	6	39	43	35	11	24	A-6a
		3.0-8.0	Brown Soft Shale							10	Visual
		8.0-10.0	Dark Brown Broken Shale							11	Visual
767+50	CL	1.0-6.0	0	1	1	48	50	39	13	24	A-6a
		6.0-9.0	0	0	1	41	58	33	11	19	A-6a
		9.0-15.0	0	0	2	49	49	35	11	19	A-6a
		15.0-19.0	1	0	1	43	55	29	11	24	A-6a
771+40	CL	0.5-3.0	0	2	1	49	48	36	13	24	A-6a
		3.0-6.0	5	3	5	47	40	35	12	9	A-6a
		6.0-9.0	16	8	6	41	29	28	6	18	A-4a
		9.0-11.0	0	4	4	59	33	32	9	23	A-4b
		11.0-13.0	18	6	5	34	36	33	11	18	A-6a
		13.0-15.0	Dark Brown Broken Shale							20	Visual
		15.0-17.0	Black Broken Carbonaceous Shale							12	Visual
773+25	CL	0.0-6.0	0	5	7	40	48	30	11	11	A-6a*
		6.0-7.0	0	1	5	42	52	39	12	20	A-6a*
		7.0-13.0	Dark Brown Broken Shale							10	Visual
775+75	70'Lt.	0.3-5.0	Light Brown Broken Shale							9	Visual
		5.0-9.5	Brown Broken Shale							13	Visual
775+75	CL	0.3-2.0	27	2	3	36	32	36	11	18	A-6a
		2.0-7.0	Brown Broken Shale							10	Visual
779+50	CL	1.0-5.0	3	3	4	48	42	35	12	21	A-6a*
		5.0-7.0	23	7	4	37	29	32	11	16	A-6a
		7.0-10.0	Brown & Gray Broken Shale							11	Visual
		10.0-15.0	Dark Gray Broken Carbonaceous Shale							11	Visual

STATION & OFFSET		DEPTH FROM-TO	% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	% W.C.	SHTL CLASS.
781+00	CL	0.5-4.0	7	1	0	45	47	38	15	23	A-6a
		4.0-8.0	22	6	5	30	28	31	11	21	A-6a
		8.0-12.0	Black Broken Carbonaceous Shale							10	Visual
784+00	CL	0.5-2.0	6	5	5	50	34	31	6	24	A-4b
		2.0-7.0	55	4	4	18	19	38	11	24	A-6a*
		7.0-11.0	Black Broken Carbonaceous Shale							11	Visual
		11.0-13.0	Black Broken Carbonaceous Shale							11	Visual
788+30	100'Lt.	0.5-2.0	3	3	3	56	35	29	4	24	A-4b
		2.0-7.0	20	3	5	50	22	30	4	12	A-4b
		7.0-12.0	Gray Broken Shale							8	Visual
		12.0-14.0	Black Broken Carbonaceous Shale							18	Visual
789+30	CL	0.5-3.0	14	7	7	21	51	39	13	19	A-6a
		3.0-7.0	23	6	5	23	43	42	13	25	A-7-6
		7.0-10.0	Black Broken Carbonaceous Shale							18	Visual
792+00	CL	0.5-3.0	0	1	2	55	42	36	15	24	A-6a
		3.0-4.0	0	1	6	39	54	61	21	42	A-7-5
		4.0-9.0	24	1	5	31	39	40	12	27	A-6a
		9.0-12.5	Black Broken Shale							15	Visual
795+00	CL	0.5-3.0	23	7	38	14	18	NP	NP	10	A-2-4
		3.0-4.5	60	3	16	11	10	NP	NP	7	A-1-b
800+00	CL	0.5-3.0	60	5	12	16	7	NP	NP	9	A-1-b
801+00	CL	0.5-3.5	74	4	8	9	6	NP	NP	19	A-1-a

DRIVE SAMPLE BORING SOIL TEST DATA

STATION & OFFSET		DEPTH FROM-TO	% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	% W.C.	SHTL CLASS.
775+50	50'Lt.	5.0-5.5	Light Brown Extremely Weathered Shale							15	Visual
788+30	50'Lt.	5.0-6.0	0	19	10	32	39	37	14	23	A-6a

TE.54-B
900.5-59

SOIL PROFILE
COLUMBIANA COUNTY
COL-30-32.19

2/19

OHIO STATE HIGHWAY
TESTING LABORATORY
O. S. U. CAMPUS, COLUMBUS, OHIO

Existing 12' excavation in extremely weathered shale bedrock.

Wooded — Weeds and trees — Residential (back yards)

Note: For cross section of Sta. 775+50, see sheet 3.

℄ Proposed U.S.R. 30

765 770 775 780 785 790 795

Note: For cross section of Sta. 774+00, see lower half, this sheet.

Note: For cross section of Sta. 788+30, see sheet 3.

Wooded — Weeds and trees — Residential (back yards)

Weeds — Corn field — Weeds

S.R. 170

Mar. 15' cut

40' Natural slope

Existing U.S.R. 30 - S.R. 7

1180 1170 1160 1150 1140 1130 1120 1110 1100 1090 1080 1070

℄ Sod & TS =0.5'
24
10 Soft
11 Broken
Refusal

℄ Sod & TS =10'
24
24
19
18 W
24
Refusal

℄ TS =0.5'
24
9 Trace of organic
18
23 Trace of organic
19
20 Broken
12 Broken
Refusal

℄
11
20
10 Broken
Refusal

Drive Sample - Core Boring 50' Lt.

℄ Sod =0.3'
18
10 Broken
Refusal

For description of Drive Sample-Core Boring, see cross section of Sta. 775+50, sheet 3.

℄
21
16
11 Broken
11 Broken

℄ TS =0.5'
23
W 21
10 Broken
Refusal

℄ TS =0.5'
24
24 W
11 Broken
11 Broken
Refusal

Drive Sample - Core Boring 50' Lt.

℄ Sod =0.5'
19
25
18 Broken
Refusal

For description of Drive Sample-Core Boring, see cross section of Sta. 788+30, sheet 3.

℄ TS =0.5'
24
10% 42 Organic
27
15 Broken
W
Refusal

℄ Sod =0.5'
10
7
Refusal

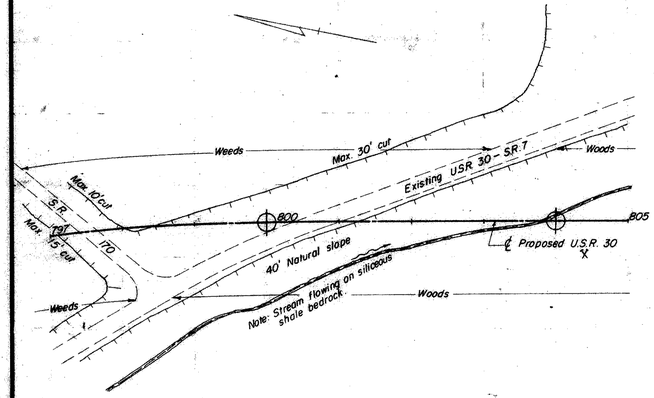
Cross Section
Sta. 774+00

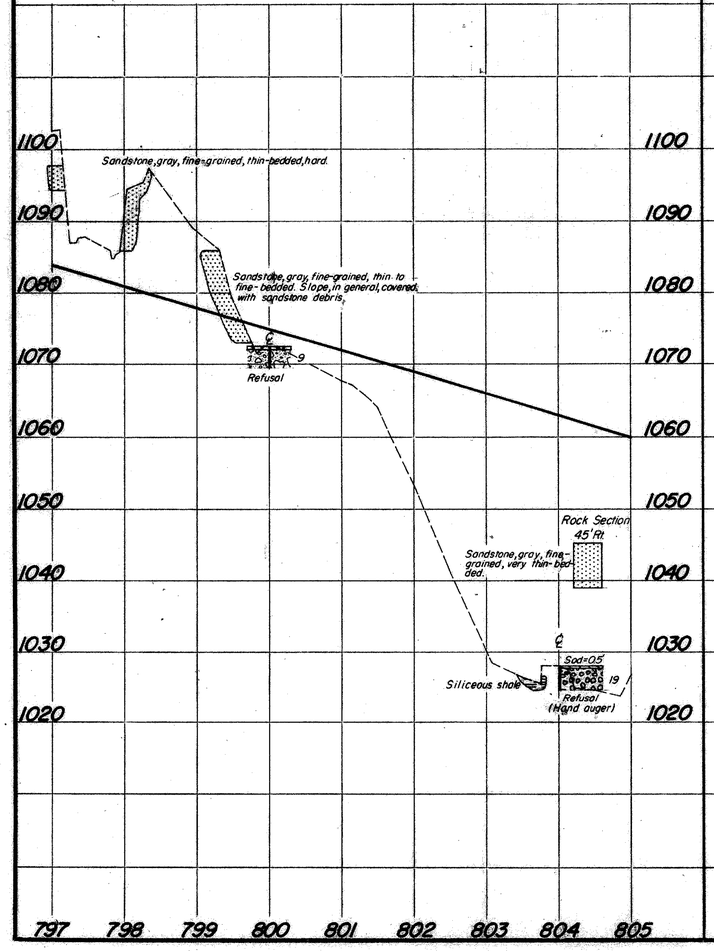
Extremely weathered shale bedrock
Proposed section
Sta. 773+25
11
20
10 Broken
Refusal
Ground line

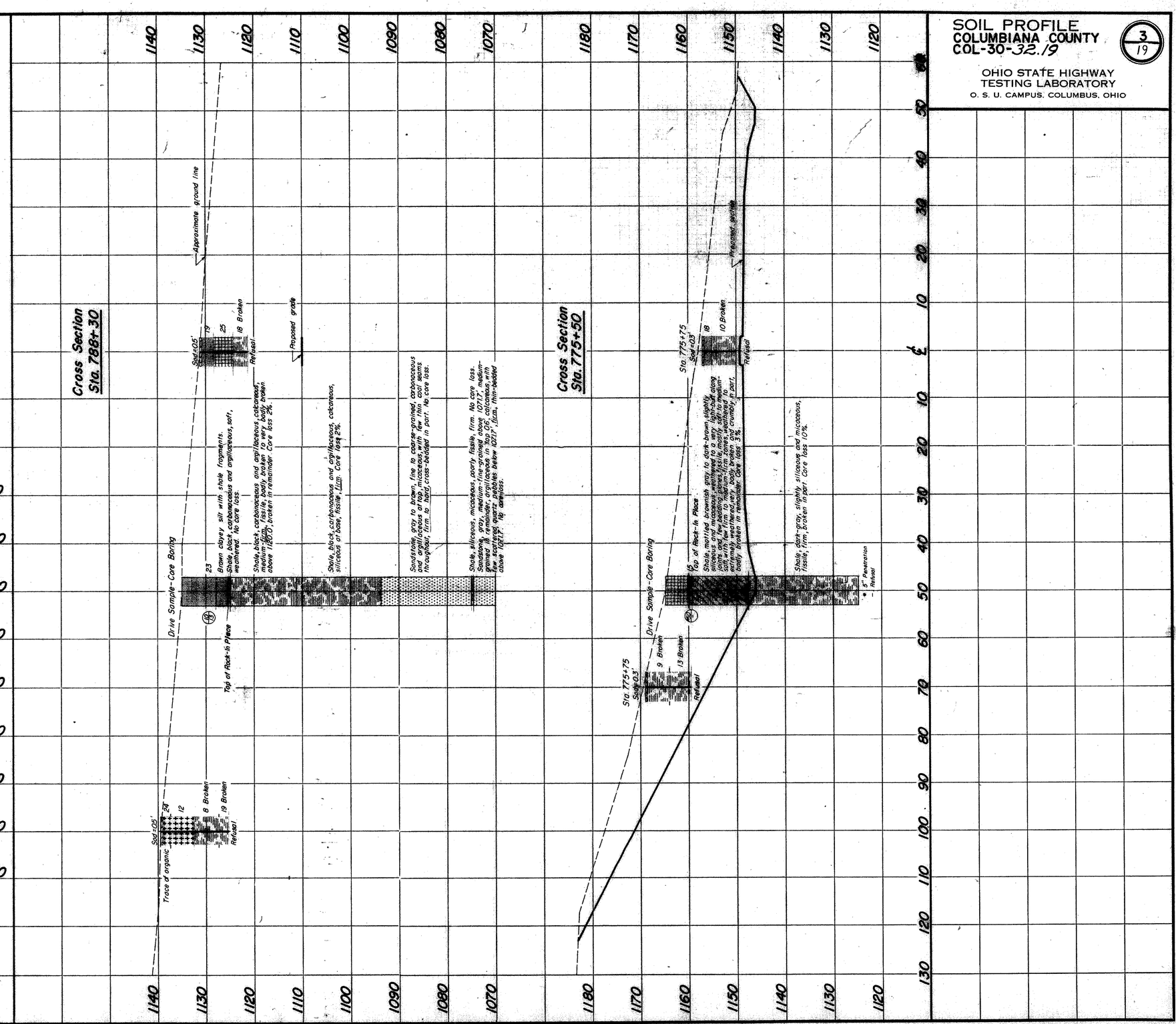
120 110 100 90 80 70 60 50 40 30 20 10 ℄ 10 20 30 40 50 60 70 80 90 100

765 766 767 768 769 770 771 772 773 774 775 776 777 778 779 780 781 782 783 784 785 786 787 788 789 790 791 792 793 794 795 796 797

TE-54-B
900-5-59







SOIL PROFILE
COLUMBIANA COUNTY
COL-30-32.19

3
19

OHIO STATE HIGHWAY
TESTING LABORATORY
O. S. U. CAMPUS, COLUMBUS, OHIO

Signature	Date
D. Hess	1/9/57
R. Hyman	1/9/57
DRAWN BY	1/9/57

TE-54-A
200-1-68

GENERAL INFORMATION

Exploratory borings were made by means of truck mounted mechanical earth auger, between August 18 and 27, 1959, and rotary-type drill rig, between August 6 and 25, 1959.

This project consists of the realignment of USR 30, beginning approximately 600 feet south of the USR 30 - SR 170 junction (approximately 1.7 miles north of East Liverpool), and proceeding southward, roughly paralleling existing USR 30, 100 to 300 feet to the west, terminating at the north corporation limit of East Liverpool. The proposed grade indicates fill embankments approaching 142 feet in height, and cut as deep as 62 feet along ditchline (a maximum of 38 feet along centerline).

The alignment crosses an unglaciated portion of the dissected Allegheny Plateau generally at the toe or slightly above the toe of the west valley wall of California Run. In this region the soil cover is of residual and alluvial origin and is rather shallow - generally ranging from 0 to 16 feet in depth, but as much as 45 feet. At scattered locations along the floodplain of California Run, the alluvial cover amounts to 114 feet, cut as a general rule, bedrock is at, or very near, ground surface. Local bedrock (Pennsylvanian in age) consists primarily of shales, sandstones, and indurated clay with minor amounts of coal and underclay.

Borings disclose the predominant materials below the grade to consist of shale, sandstone, and indurated clay bedrock, as well as sandy silt, silty clay, and sands, in the A-4a, A-6a and A-3a classifications. The majority of the cuts will be to the right of centerline and, predominantly in bedrock. Further specific information regarding each cut area follows:

Station 805+50 to 806+25 - coal in right ditchline, and below grade in right lane.

Station 806+25 to 807+25 - shale bedrock in the right ditchline and right backslope.

Station 819+20 to 820+25 - shale will probably be encountered only at grade (right lanes)

Station 822+30 to 825+30 - some sandstone is expected in the upper right backslope.

Station 828+35 to 830+75 - shale bedrock at grade (right lane), right ditch and backslope.

Station 830+75 to 833+25 - shale bedrock at grade (both lanes), both ditches, and right backslope.

Station 833+25 to 834+75 - shale bedrock at grade (right lane), right ditch and backslope.

Station 834+75 to 835+75; 839+00 to 839+75; 840+50 to 843+25 - shale bedrock in right ditch and backslope.

Station 843+25 to 849+50 - shale bedrock at grade (both lanes), right ditch and backslope.

Station 844+00 to 850+00 - sandstone is expected in the backslope between elevations 940 and 950 feet.

Station 868+40 to 870+00 - shale bedrock at grade in the right ditchline and right backslope.

Station 870+00 to 879+25 - shale bedrock at grade, ditches, and right backslope.

Station 871+25 to 877+30 - coal, occasional beds of clay, and isolated layers of sandstone, are expected throughout portions of the cut section.

Station 879+25 to 881+25 and 883+50 to 889+00 - shale bedrock in right ditch and backslope.

Attention is directed to borings which encountered void intervals believed to be abandoned mine drifts. At station 817+33, 88 feet left of centerline the void was encountered between elevations 996 and 991 feet. An abandoned entry was observed at station 817+60, 89 feet left of centerline, elevation at the floor of entry being approximately elevation 1000 feet. At station 891+00, centerline the void was encountered between elevations 978 and 973 feet. An abandoned entry was observed, partially obscured by an abandoned traction line embankment, at station 830+20, 20 feet left of centerline, elevation at the floor of the entry being approximately 985 feet.

Embankment foundation materials consist predominantly of gravel, sandy silt, and silty clay in the A-2-4, A-4a and A-6a classifications. It is noted that wet sandy silt was encountered from 0 to 2 feet below ground surface at station 815+00, 55 feet left and also at station 854+00, centerline, 4 to 11 feet below ground surface, and wet gravel in the A-1-a classification, at station 883+25, 40 feet left, from 2 to 5 feet beneath the ground surface .

It is noted that there is indication of earth movement on the natural slope in the area right of centerline from station 885+00 to 889+00 and in a road cut right of centerline between stations 885+00 and 888+00. Further indication of earth movement is the settlement of a porch on a residence at approximately station 891+00, 150 feet right of centerline and cracking of walls at a home 100 feet right of centerline at station 897+00.

LEGEND FOR PROJECT-AVERAGE RESULTS OF TESTS- 252 SAMPLES TESTED

DESCRIPTION	H. R. B. CLASS	OHIO CLASS	% AGG.	% C. SAND	% F. SAND	% SILT	% CLAY	LIQUID LIMIT	PLASTICITY INDEX	WATER CONTENT	SAMPLES TESTED
Stone fragments	A-1-a(0)	A-1-a	62	15	11	8	4	NP	NP	15	2
Gravel or stone fragments with sand	A-1-b(0)	A-1-b	59	10	11	11	9	25	2	13	10
Coarse and fine sand	-----	A-3a	30	15	43	2	10	NP	NP	10	1
Gravel and/or stone fragments with sand and silt	A-2-4(0)	A-2-4	53	11	10	14	12	28	6	13	22
Stone fragments with sand, silt, and clay	A-2-6(0)	A-2-6	52	12	10	14	12	30	11	16	5
Sandy silt	A-4(3)	A-4a	25	12	12	29	22	26	6	16	54
Silt and clay	A-6(6)	A-6a	23	8	8	31	30	31	12	15	38
Silty clay	A-6(7)	A-6b	20	10	13	26	31	33	17	19	3
Clay	A-7-6(12)	A-7-6	8	7	5	30	50	44	18	21	6
Underclay	VISUAL CLASSIFICATION										3
Indurated clay	VISUAL CLASSIFICATION										1
Coal	VISUAL CLASSIFICATION										6
Rock-soil mixture	VISUAL CLASSIFICATION										
Overburden	VISUAL CLASSIFICATION										
Weathered shale	VISUAL CLASSIFICATION										23
Shale	VISUAL CLASSIFICATION										75
Weathered sandstone	VISUAL CLASSIFICATION										1
Sandstone	VISUAL CLASSIFICATION										2

Berm material — Sod or Topsoil =X'= Approximate depth.

Drive sample and/or core boring plotted to vertical scale only.

Auger boring plotted to vertical scale only.

Auger boring-plan view.

Drive sample-bore-boring-plan view.

Number of blows for "Standard Penetration" test.
X=number of blows for the first 6 inches.
Y=number of blows for the second 6 inches.

Indicates a non-plastic material with high water content.

Free water

NOTE: Figures beside borings indicate water content in percent. e.g. 15

● Water content nearly equal to or greater than liquid limit.

S Indicates soft rock intervals.

B Indicates broken rock intervals

Samples Tested
Lab. Nos. Sp.
30807-30818 incl.
31374-31388 incl.
29770-29776 incl.
29822-29839 incl.
30654-30670 incl.
31201-31203 incl.
29870
29897

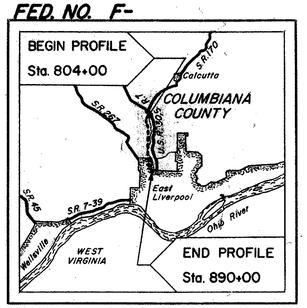
SOIL PROFILE
COLUMBIANA COUNTY
COL-30-32.19

4/19

OHIO STATE HIGHWAY TESTING LABORATORY
O.S.U. CAMPUS, COLUMBUS, OHIO

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.

FED. NO. F-



LOCATION MAP

Recon - I.M. - 7-11-59
Drilling - Auger - B.E.B - 8-18-59 to 8-27-59
Core - K.D.E., J.H.G., E.F.M., J.H.S. - 8-6-59 to 8-25-59
Drafting - R.E.W. - 2-15-60

TE-54.8
900-5-59

SOIL PROFILE
COLUMBIANA COUNTY
COL-30-32.19
OHIO STATE HIGHWAY
TESTING LABORATORY
O. S. U. CAMPUS, COLUMBUS, OHIO

5/19

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.
804+50	50'Lt	9.5-13.0	Gray Broken Shale							14	Visual
		13.0-17.0	Brown Broken Shale							8	Visual
806+00	45'Lt	0.5-5.0	14	14	5	14	33	31	11	13	A-6a
806+00	45'Rt	0.5-2.0	35	19	17	13	16	29	11	10	A-2-6
		2.0-5.0	Coal & Coal Blossom							13	Visual*
		5.0-10.0	Light Brown to Light Gray Under Clay							19	Visual*
		10.0-13.0	Gray Broken Shale							5	Visual
810+50	CL	0.5-4.0	62	10	8	8	12	29	9	10	A-2-4
		4.0-5.0	Gray Weathered Shale							9	Visual
812+00	CL	0.5-2.5	43	17	13	15	12	NP	NP	14	A-2-4
814+00	55'Lt	0.5-2.0	30	16	12	22	20	NP	NP	34	A-4a
		2.0-3.0	Black Coal & Coal Blossom							15	Visual
		3.0-4.5	Gray Broken Shale							5	Visual
814+30	CL	0.5-4.0	0	12	9	42	37	29	11	13	A-6a
		4.0-6.0	62	5	10	11	12	NP	NP	10	A-1-b
		8.0-12.0	25	10	15	25	25	30	16	13	A-6b
		12.0-16.0	Dark Gray & Brown Carbonaceous Shale							11	Visual
		16.0-17.5	Dark Gray & Brown Broken Carbonaceous Shale							7	Visual
817+30	88'Lt	0.5-4.0	22	6	5	28	29	30	11	18	A-6a
		4.0-7.0	64	6	5	12	13	27	9	9	A-2-4
		7.0-10.0	Gray Weathered Carbonaceous Shale							16	Visual
		15.0-15.5	Gray Broken Shale							5	Visual
817+50	CL	0.5-5.0	22	11	7	34	26	27	7	9	A-4a*
		5.0-9.0	Dark Brown Broken Shale							9	Visual
		9.0-14.0	Gray Broken Carbonaceous Shale							7	Visual
817+50	50'Rt	0.5-3.0	Gray Broken Shale							3	Visual
819+25	15'Lt	0.5-4.0	25	13	8	26	28	29	7	14	A-4a
		4.0-5.0	Dark Gray Broken Carbonaceous Shale							20	Visual
		5.0-9.0	Brown & Gray Soft & Firm Broken Shale							12	Visual
		9.0-11.0	Gray Broken Shale							25	Visual
820+00	120'Lt	0.5-3.5	Gray Broken Shale							8	Visual
820+00	31'Rt	0.5-2.0	Slag Material								Visual
		2.0-7.0	Brown Broken Shale,							10	Visual
		7.0-11.0	Brown Broken Shale,							8	Visual
		11.0-15.0	Dark Gray Broken Shale							8	Visual*
		15.0-16.0	Gray Broken Shale,							14	Visual
820+12	50'Rt	0.5-3.0	20	17	15	25	23	NP	NP	17	A-4a
		3.0-5.0	62	13	8	9	8	20	14	7	A-1-b
		5.0-6.0	30	12	7	26	25	29	14	12	A-4a
		6.0-14.0	Gray & Brown Broken Shale							10	Visual*
		14.0-15.5	Gray Carbonaceous Shale							10	Visual
822+00	65'Lt	0.5-4.0	14	8	10	47	31	28	14	14	A-6a
		4.0-8.0	50	7	12	14	17	22	6	14	A-2-4
		8.0-13.0	36	9	14	24	15	NP	NP	12	A-4a
		13.0-17.0	Brown Sandy Broken Shale							12	Visual
		17.0-19.5	Brown Broken Shale							13	Visual
822+33	35'Lt	0.5-4.0	47	9	9	21	15	26	10	13	A-4a
		4.0-5.5	Gray & Brown Broken Sandstone							10	Visual
823+60	20'Lt	0.5-5.0	21	13	25	27	14	NP	NP	11	A-4a*
		5.0-10.0	30	15	43	2	10	NP	NP	10	A-3a*
		10.0-15.0	Brown Weathered Shale							19	Visual
		15.0-19.0	Brown Sandy Weathered Shale							9	Visual
		19.0-21.0	Gray Weathered Shale							10	Visual
824+00	CL	0.5-6.0	53	7	14	15	11	23	7	9	A-2-4
		6.0-10.0	Dark Gray Carbonaceous Broken Shale							10	Visual
		10.0-15.5	Dark Gray Broken Shale							7	Visual*
824+00	35'Rt	0.5-6.0	Dark Gray Broken Shale							6	Visual
824+00	165'Rt	0.5-3.5	Gray Soft Sandstone							14	Visual
825+40	46'Rt	0.5-5.0	60	6	8	13	13	NP	NP	8	A-2-4
		5.0-10.0	Brown Broken Carbonaceous Shale							10	Visual
		10.0-14.0	Dark Gray Broken Carbonaceous Shale							10	Visual
		14.0-16.0	Dark Gray Broken Carbonaceous Shale							9	Visual
826+70	CL	0.5-5.0	46	12	8	18	16	26	6	12	A-2-4
		5.0-9.0	46	15	8	14	17	33	9	14	A-2-4
		9.0-14.0	21	9	10	34	26	28	7	22	A-4a
		14.0-16.0	Gray Soft Carbonaceous Shale							9	Visual

STATION & OFFSET		DEPTH FROM-TO	% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	% W.C.	SHTL CLASS.
828+00	150'Lt	0.5-2.0	49	11	7	17	16	27	8	11	A-2-4
		2.0-3.5	Gray Broken Carbonaceous Shale							9	Visual
829+00	25'Rt	0.5-5.0	65	7	9	8	11	27	9	10	A-2-4
		5.0-10.0	63	8	9	11	9	NP	NP	9	A-1-b
		10.0-14.0	Brown to Dark Brown Broken Carbonaceous Shale							10	Visual
		14.0-17.0	Dark Gray Carbonaceous Broken Shale							7	Visual
830+50	6'Rt	0.5-4.0	39	17	6	20	18	27	4	12	A-4a
		4.0-10.0	Gray Broken Carbonaceous Shale							11	Visual
		10.0-14.0	Gray Broken Carbonaceous Shale							9	Visual
		14.0-19.0	Gray Broken Carbonaceous Shale							7	Visual
834+50	116'Lt	0.5-4.0	64	9	7	10	10	28	1	13	A-1-b
		4.0-8.0	59	13	7	12	9	30	11	24	A-2-6
		8.0-13.5	53	13	10	14	10	29	7	20	A-2-4
836+00	100'Rt	0.5-4.0	34	14	11	22	19	28	6	21	A-4a
		4.0-9.0	44	10	9	18	19	29	10	19	A-4a
		9.0-12.0	Brown Broken Shale							6	Visual
838+40	30'Lt	0.5-3.0	33	12	13	23	19	22	1	14	A-4a
		3.0-8.5	70	5	7	10	8	25	7	10	A-2-4
839+50	CL	0.5-4.0	21	10	8	29	32	30	11	12	A-6a
		4.0-8.0	Brown Sandy Weathered Shale							10	Visual*
		8.0-10.5	Brown Sandy Weathered Shale							9	Visual*
841+00	75'Lt	0.5-4.0	60	12	12	9	6	NP	NP	10	A-1-a
		4.0-8.0	38	12	12	22	15	24	7	14	A-4a
		8.0-11.0	38	6	8	28	20	27	7	18	A-4a
		11.0-14.0	Gray Weathered Shale							10	Visual
		14.0-15.0	Gray Broken Shale							6	Visual
843+00	40'Rt	0.5-2.0	Light Brown to Gray Broken Shale,							14	Visual
843+25	150'Rt	0.5-4.0	50	8	17	12	12	NP	NP	8	A-1-b
		4.0-7.0	Brown Broken Shale							6	Visual
		7.0-10.0	Dark Gray Broken Carbonaceous Shale							10	Visual
		10.0-12.0	Dark Gray Broken Carbonaceous Shale							13	Visual
		12.0-16.0	Dark Gray Broken Carbonaceous Shale							10	Visual
		16.0-20.0	Dark Gray Broken Carbonaceous Shale							9	Visual
		20.0-21.0	Dark Gray Broken Carbonaceous Shale							9	Visual
846+00	14'Lt	0.5-4.5	Light Brown to Gray, Broken Shale							14	Visual
847+50	CL	0.5-5.0	30	10	11	19	21	29	8	17	A-4a
		5.0-6.0	Gray Broken Shale							12	Visual
		6.0-14.0	Brown Broken Shale							10	Visual
		14.0-19.0	Gray Carbonaceous Shale							8	Visual
850+00	35'Lt	0.5-3.0	23	18	20	20	19	25	14	10	A-4a
		3.0-8.0	22	13	15	23	27	30	11	13	A-6a
		8.0-14.0	Brown Weathered Shale							10	Visual
		14.0-15.0	Black Soft Coal							12	Visual
		15.0-16.0	Gray Under Clay							6	Visual
850+00	20'Rt	0.5-2.0	11	16	18	26	26	26	8	17	A-4a
		2.0-5.0	35	14	16	18	17	21	5	10	A-2-4
		5.0-10.0	16	9	6	26	38	33	11	14	A-6a
		10.0-15.0	Gray Extremely Weathered Shale							8	Visual*
850+00	85'Rt	0.5-1.0	25	21	12	23	19	27	5	10	A-4a
		1.0-4.5	Gray Broken Shale							6	Visual
852+00	50'Lt	0.5-5.0	43	9	10	19	19	35	11	15	A-6a
		5.0-6.0	Dark Gray Broken Shale,							6	Visual
852+50	CL	0.5-5.0	49	11	7	18	15	27	11	11	A-2-6
		5.0-8.0	3	6	10	49	32	31	8	27	A-4a
		8.0-12.0	45	12	10	17	16	37	12	24	A-2-6
		12.0-14.0	Dark Gray Broken Carbonaceous Shale							5	Visual
854+00	CL	0.5-4.0	55	11	11	13	10	NP	NP	22	A-1-b
		4.0-8.0	23	17	18	24	18	NP	NP	36	A-4a
		8.0-11.0	38	13	13	22	14	26	6	30	A-4a
856+50	CL	0.5-4.0	75	8	5	6	6	28	8	7	A-2-4
		4.0-8.0	67	10	5	10	8	28	9	20	A-2-4
		8.0-11.0	17	13	14	31	25	28	7	18	A-4a
859+00	CL	0.5-4.0	33	9	9	22	27	41	13	15	A-7-6
		4.0-8.0	23	11	12	28	26	34	6	18	A-4a
		8.0-10.0	76	14	3	11	6	32	7	17	A-2-4
		10.0-11.5	Gray Soft Shale							9	Visual

STATION & OFFSET		DEPTH FROM-TO	% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	% W.C.	SHTL CLASS.
862+00	CL	0.5-4.0	56	16	10	9	9	33	7	27	A-2-4
864+00	CL	0.5-5.0	9	12	10	36	33	42	13	17	A-7-6
		5.0-10.0	22	11	8	30	29	31	5	15	A-4a
		10.0-15.0	14	10	15	29	32	35	11	19	A-6a
		15.0-17.0	Gray Weathered Shale							8	Visual
868+25	10'Lt	0.5-5.0	55	6	9	15	16	33	9	12	A-2-4
		5.0-10.0	38	13	13	20	16	NP	NP	12	A-4a
		10.0-14.0	50	14	9	13	14	33	5	20	A-2-4
		14.0-16.0	Gray Broken & Hard Shale							7	Visual
868+10	CL	0.5-4.0	12	12	18	32	26	30	9	10	A-4a
		4.0-8.0	41	6	5	28	19	36	11	10	A-6a*
		8.0-11.0	11	18	19	15	37	34	11	16	A-6a*
		11.0-15.0	0	0	1	46	53	35	11	13	A-6a
		15.0-19.0	Gray Weathered Shale							10	Visual
		19.0-24.0	Gray Weathered Shale							9	Visual
869+75	45'Rt	0.5-6.0	65	17	10	7	1	NP	NP	19	A-1-a
		6.0-9.0	24	12	8	23	33	35	16	19	A-6b
		9.0-14.0	Brown Broken Shale							8	Visual
		14.0-18.0	Black Carbonaceous Shale							11	Visual
870+00	50'Lt	0.5-4.0	12	8	16	29	35	34	18	25	A-6b
		4.0-8.0	10	8	8	46	28	28	11	20	A-6a*
		8.0-10.0	Brown Soft Shale							15	Visual
		10.0-15.0	Brown & Gray Soft Shale							17	Visual
		15.0-19.5	Red & Gray Soft Shale							7	Visual
870+00	10'Lt	0.5-5.0	27	11	12	25	25	31	11	10	A-6a
		5.0-8.0	30	9	9	20	32	33	14	22	A-6a
		8.0-13.0	0	0	2	48	50	31	12	17	A-6a*
871+25	CL	0.5-5.0	56	11	10	19	1	NP	NP	17	A-1-b
		5.0-8.0	0	13	14	42	41	42	15	18	A-7-6
		8.0-10.0	0	1	2	30	67	53	24	20	A-7-6
		10.0-14.0	Soft Coal							17	Visual
		14.0-16.0	Brown Under Clay							29	Visual
		16.0-23.0	Gray Broken Shale							8	Visual*
871+75	75'Lt	0.5-5.0	10	12	14	35	29	27	11	21	A-6a
		5.0-10.0	0	10	7	39	44	36	12	26	A-6a
		10.0-15.0	Gray Weathered Shale							14	Visual
		15.0-20.0	Gray Weathered Shale							29	Visual
872+75	25'Rt	0.5-1.0	27	21	8	24	20	36	13	14	A-6a
		1.0-4.0	Coal							15	Visual
		4.0-7.0	Gray Broken Carbonaceous Shale							11	Visual
		7.0-11.0	Dark Gray Broken Shale							9	Visual
873+50	20'Rt	0.5-1.0	Brown & Gray Broken Shale & Coal Fragments							15	Visual
		1.0-5.0	Brown & Gray Soft Shale							8	Visual
		5.0-9.0	Gray Broken Shale							6	Visual
876+00	50'Rt	0.5-3.0	8	8	8	27	49	41	17	23	A-7-6
		3.0-8.0	Brown & Gray Broken Shale							8	Visual
		8.0-12.0	Black Broken Carbonaceous Shale							8	Visual
877+25	CL	0.5-5.0	23	12	11	36	18	27	10	15	A-4a
		5.0-10.0	39	16	9	25	11	22	3	13	A-4a
		10.0-14.0	18	17	11	37	17	24	8	15	A-4a*
		14.0-17.0	17	15	9	29	30	25	11	17	A-6a
		17.0-18.5	Brown Broken Shale							5	Visual
877+50	50'Lt	0.5-5.0	33	10	7	29	21	28	10	19	A-4a*
		5.0-10.0	13	20	13	34	20	23	7	17	A-4a*
		10.0-15.0	Brown Weathered Shale							15	Visual
		15.0-19.0	Brown Weathered Shale							15	Visual
877+50	75'Rt	0.5-4.0	13	9	14	29	45	43	19	28	A-7-6
		4.0-5.0	Black Broken Carbonaceous Shale							17	Visual
		5.0-7.0	Black Broken Carbonaceous Shale							11	Visual
		7.0-10.5	Coal and Shale Fragments							30	Visual
879+50	100'Rt	0.5-5.0	23	12	13	28	24	28	12	15	A-6a
		5.0-10.0	22	12	11	36	19	27	11	15	A-6a
		10.0-14.0	Gray Weathered Shale & Coal Fragments							21	Visual
		14.0-19.0	Gray Weathered Carbonaceous Shale							22	Visual
		19.0-23.0	Gray Weathered Shale							10	Visual
881+50	35'Lt	0.5-3.0	29	21	18	21	11	NP	NP	12	A-2-4
		3.0-5.0	23	9	15	41	12	30	10	25	A-4a

STATION & OFFSET		DEPTH FROM-TO	% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	% W.C.	SHTL CLASS.
882+50	100'Rt	0.5-5.0	57	10	8	14	11	34	9	11	A-2-4
		5.0-9.0	46	7	6	20	21	33	12	12	A-6a
		9.0-12.0	Brown, Broken Sandy Shale							6	Visual
		12.0-15.0	Brown, Broken Sandy Shale							6	Visual
883+25	40'Lt	0.5-2.0	52	16	14	10	8	NP	NP	7	A-1-b
		2.0-5.0	54	9	13	12	12	25	6	24	A-1-b
884+00	20'Lt	0.5-3.0	2	10	28	30	28	27	7	14	A-4a
		3.0-5.0	52	20	10	6	12	25	6	17	A-1-b
886+00	70'Rt	0.5-5.0	40	7	6	27	20	28	11	17	A-6a
		5.0-10.0	27	9	9	30	25	27	11	16	A-6a
		10.0-14.0	36	11	10	21	20	31	9	16	A-6a*
		14.0-16.5	37	10	11	21	21	25	7	17	A-4a
886+75	130'Rt	0.5-5.0	13	10	10	35	32	31	13	23	A-6a
		5.0-10.0	14	17	9	39	21	23	7	20	A-4a
		10.0-15.0	25	13	13	20	21	23	8	13	A-4a
		15.0-16.5	75	5	7	9	4	26	11	11	A-2-6
887+23	363'Rt	0.5-4.0	29	5	11	30	25	28	8	10	A-4a
		4.0-5.0	Gray Weathered Shale							9	Visual
		5.0-7.0	Brown Broken Sandy Shale							7	Visual
887+40	CL	0.5-5.0	23	11	10	31	25	24	9	10	A-4a*
		5.0-10.0	16	10	11	30	33	29	11	11	A-6a
		10.0-15.0	32	9	9	24	26	29	11	12	A-6a
887+53	233'Rt	0.5-5.0	16	9	13	30	32	30	12	14	A-6a
		5.0-10.0	25	9	9	30	27	30	13	19	A-6a
		10.0-14.0	16	5	10	38	30	32	14	22	A-6a
		14.0-18.0	15	11	10	37	27	28	10	19	A-4a
		18.0-21.0	Gray Broken Shale							8	Visual
		21.0-23.0	Gray Soft Shale							5	Visual

DRIVE SAMPLE BORING SOIL TEST DATA

NOTE: NP shown in Liquid Limit and Plasticity Index columns indicates that the material is non-plastic

STATION & OFFSET		DEPTH FROM-TO	% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	% W.C.	SHTL CLASS.
831+00	CL	5.0-6.0	27	14	6	29	24	35	11	17	A-6a
		10.0-11.0	Black & Gray Extremely Weathered Shale							15	Visual
831+00	169' Rt.	5.0-6.0	Brown Weathered Sandstone							7	Visual
831+50	46' Lt.	5.0-6.0	20	8	12	33	27	32	11	19	A-6a
831+50	52' Rt.	5.0-6.0	47	8	10	21	14	28	4	13	A-2-4
		11.5-12.5	20	9	9	29	34	37	11	30	A-6a
		15.0-16.0	36	4	4	24	32	35	11	21	A-6a
836+00	30' Rt.	10.0-11.0	20	18	15	18	29	37	14	18	A-6a
		15.0-16.0	11	19	9	35	26	33	9	13	A-4a
874+00	20' Rt.	5.0-5.5	Gray Extremely Weathered Shale							12	Visual
		10.0-11.0	Dark Gray Carbonaceous Shale							13	Visual
		20.0-20.2	Gray Indurated Clay							10	Visual
897+50	146' Rt.	5.0-6.0	11	10	11	43	25	NP	NP	18	A-4a
		10.0-11.0	12	12	10	39	27	24	7	16	A-4a
		15.0-16.0	15	11	15	34	25	24	6	16	A-4a
		20.0-21.0	17	11	15	31	26	25	7	16	A-4a
		25.0-26.0	14	8	10	35	33	26	6	18	A-4a
		30.0-31.0	25	6	13	28	28	27	11	13	A-6a
		35.0-36.0	15	6	13	31	35	27	7	19	A-4a
		40.0-41.0	38	6	14	23	19	25	5	18	A-4a
897+50	191' Rt.	5.0-6.0	23	13	13	30	21	26	6	13	A-4a
		10.0-11.0	30	11	10	22	27	26	9	16	A-4a
		15.0-16.0	15	12	12	26	35	26	7	16	A-4a
		20.0-21.0	8	13	8	30	41	30	11	17	A-6a
		25.0-25.9	10	16	20	34	20	26	5	17	A-4a
897+56	CL	10.0-11.0	5	9	19	38	29	26	7	13	A-4a

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SOIL PROFILE
COLUMBIANA COUNTY
COL-30-32.19

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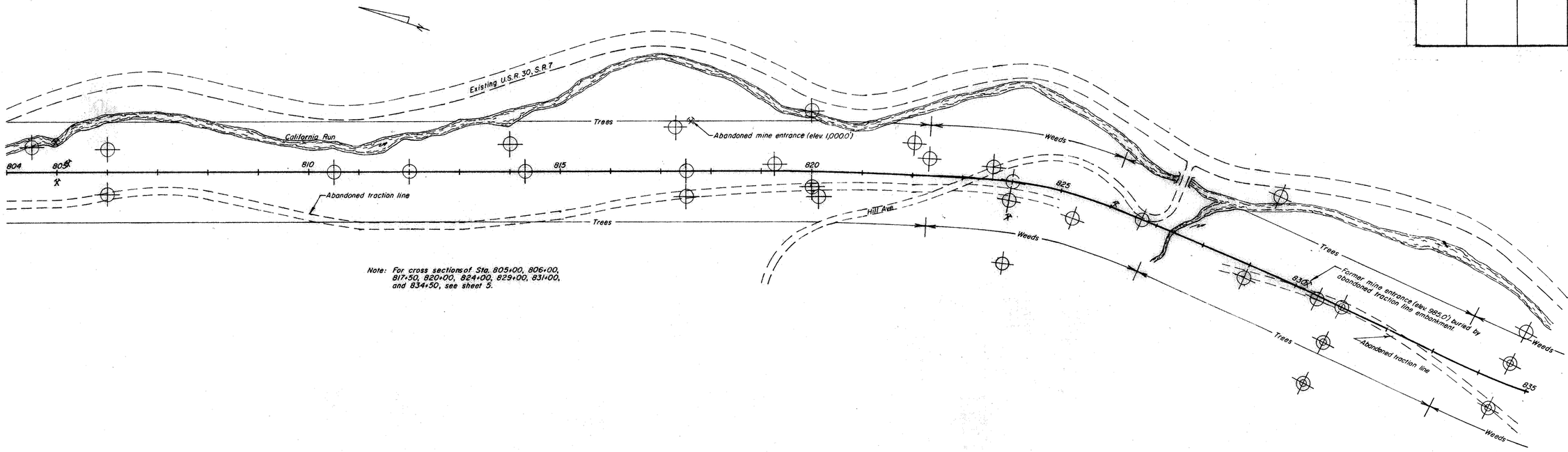

Note: For cross sections of Sta. 805+00, 806+00, 817+50, 820+00, 824+00, 829+00, 831+00, and 834+50, see sheet 5.

TE 54-B
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SOIL PROFILE

COLUMBIANA COUNTY

COL-30-32.19

OHIO STATE HIGHWAY TESTING LABORATORY

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7/19

1090 1080 1070 1060 1050 1040 1030 1020 1010 1000 990 980 970 960 950 940

804 805 806 807 808 809 810 811 812 813 814 815 816 817 818 819 820 821 822 823 824 825 826 827 828 829 830 831 832 833 834 835

45' Rt. TS=0.5' — 10, 13, 9, 5, Refusal

45' Lt. TS=0.5' — 13, Refusal

Rock Section 20' Rt. — For description of rock section see cross section, sheet 5.

50' Lt. TS=0.5' — 8, 4, 8, 8, Refusal

℄ TS=0.5' — 10, 9, Refusal

℄ TS=0.5' — 14, Refusal

℄ TS=0.5' — 13, 10, 13, 11, 7, Refusal

55' Lt. TS=0.5' — 15, 5, Refusal

℄ TS=0.5' — 9, 9, 7, Refusal

31' Rt. Sod=0.5' — Slag material — 10, 8, 8, 4, Refusal

15' Lt. TS=0.5' — 14, 20, 12, 25, Refusal

35' Lt. TS=0.5' — 13, 10, Refusal

℄ Sod=0.5' — 9, 10, 7, Refusal

20' Lt. — 11, 10, 19, 9, 10, Refusal

65' Lt. Sod=0.5' — 14, 14, 12, 12, 13, Refusal

Rock Section 70' Rt. — For description of rock section see cross section, sheet 5.

46' Rt. Sod=0.5' — 6, 10, 10, 9, Refusal

Rock Section 30' Lt.-25' Rt. — Shale, greenish-gray, siliceous, with some mica; less resistant and crumbly from elev. 976.0 to 980.5.

℄ — 12, 14, 22, 9, Refusal

25' Rt. Sod=0.5' — 9, 10, 10, 9, 7, Refusal

For description of drive sample-core boring see cross section, sheet 5.

Drive Sample-Core Boring — 5/5

A, B, C, D, E, F, G, H, I, J

For description of drive sample-core boring see cross section, sheet 5

Core Boring 79' Rt. — A, B, C, D, E, F, G, H, I

For description of core boring see cross section, sheet 5.

Drive Sample-Core Boring — 17, 11/20, 15, 28/50

A, B, C, D, E, F, G

Mined interval

For description of drive sample-core boring see cross section, sheet 5.

For description of drive sample core-boring see cross section, sheet 5.

Drive Sample-Core Boring 52' Rt. — 14/14, 10/10, 5/10 — 13, 30, 21

A, B, C, D, E, F, G, H

Drive Sample-Core Boring 46' Lt. — 5/6 — 19

For complete boring log and description of drive sample-core boring see cross section, sheet 5.

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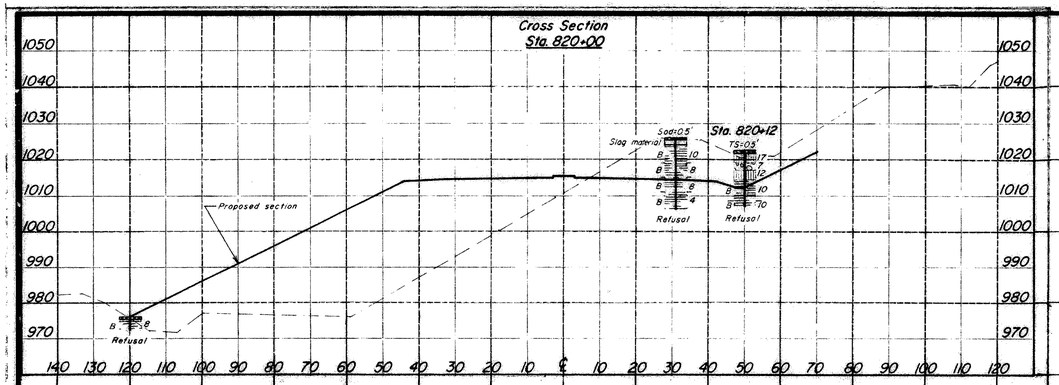
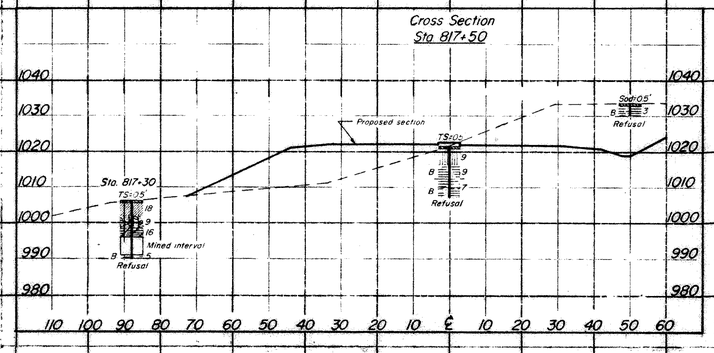
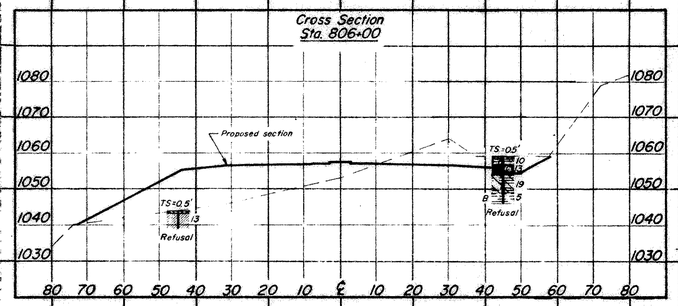
Cross Section Sta. 820+00



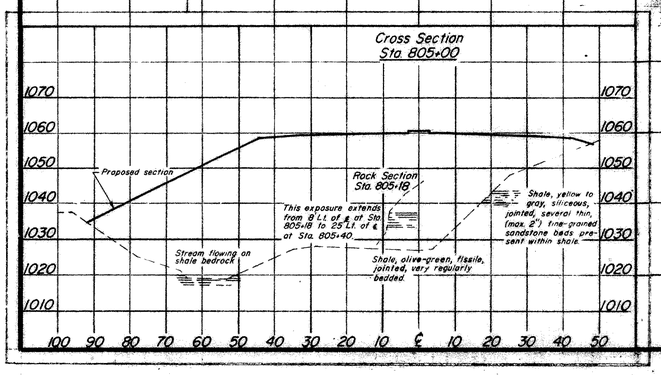
Cross Section Sta. 817+50



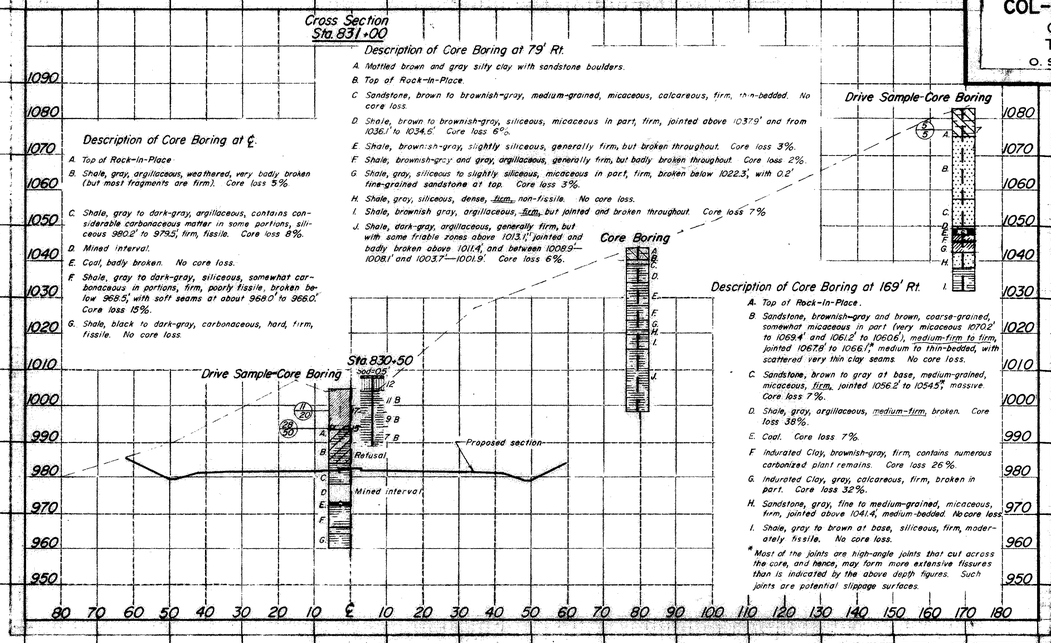
Cross Section Sta. 806+00



Cross Section Sta. 805+00



Cross Section Sta. 831+00



Description of Core Boring at 79' Rt.

A. Mottled brown and gray silty clay with sandstone boulders.
B. Top of Rock-In-Place.
C. Sandstone, brown to brownish-gray, medium-grained, micaceous, calcareous, firm, thin-bedded. No core loss.
D. Shale, brown to brownish-gray, siliceous, micaceous in part, firm, jointed above 1037.9' and from 1036.1' to 1034.6'. Core loss 6%.
E. Shale, brownish-gray, slightly siliceous, generally firm, but broken throughout. Core loss 3%.
F. Shale, brownish-gray and gray, argillaceous, generally firm, but badly broken throughout. Core loss 2%.
G. Shale, gray, siliceous to slightly siliceous, micaceous in part, firm, broken below 1022.3', with 0.2' fine-grained sandstone at top. Core loss 3%.
H. Shale, gray, siliceous, dense, tight, non-fissile. No core loss.
I. Shale, brownish gray, argillaceous, firm, but jointed and broken throughout. Core loss 7%
J. Shale, dark-gray, argillaceous, generally firm, but with some friable zones above 1013.1' jointed and badly broken above 1011.4', and between 1008.9'—1008.1' and 1003.7'—1001.9'. Core loss 6%.

Description of Core Boring at ℄.

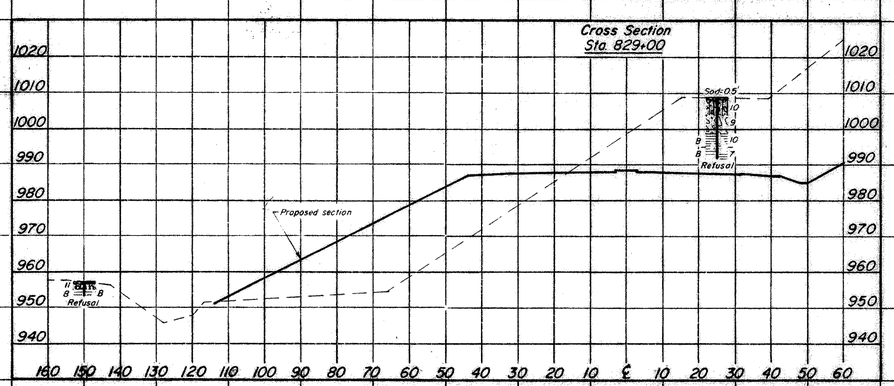
A. Top of Rock-In-Place
B. Shale, gray, argillaceous, weathered, very badly broken (but most fragments are firm). Core loss 5%.
C. Shale, gray to dark-gray, argillaceous, contains considerable carbonaceous matter in some portions, siliceous 980.2' to 979.5', firm, fissile. Core loss 8%.
D. Mined interval.
E. Coal, badly broken. No core loss.
F. Shale, gray to dark-gray, siliceous, somewhat carbonaceous in portions, firm, poorly fissile, broken below 968.5', with soft seams at about 968.0' to 966.0'. Core loss 15%.
G. Shale, black to dark-gray, carbonaceous, hard, firm, fissile. No core loss

Description of Core Boring at 169' Rt.

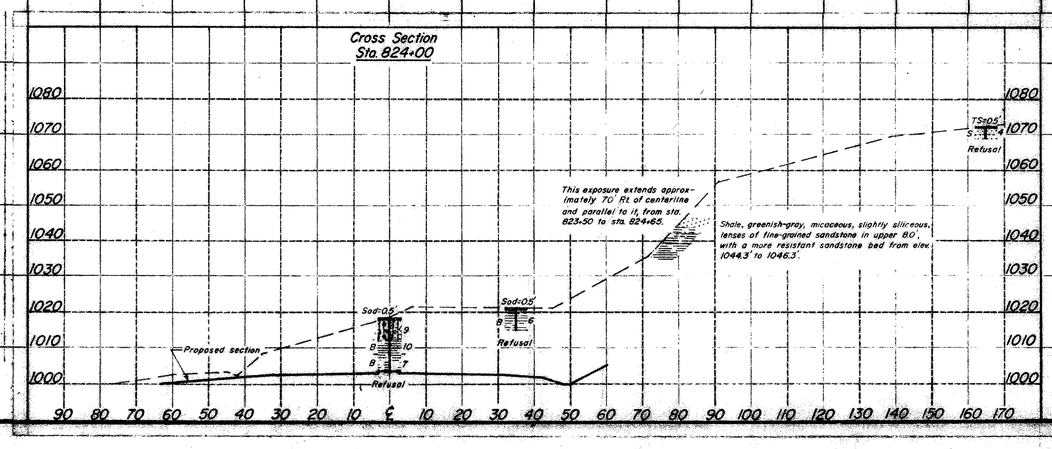
A. Top of Rock-In-Place.
B. Sandstone, brownish-gray and brown, coarse-grained, somewhat micaceous in part (very micaceous 1070.2' to 1069.4' and 1061.2' to 1060.6'), medium-firm to firm, jointed 1067.8' to 1066.1', medium to thin-bedded, with scattered very thin clay seams. No core loss.
C. Sandstone, brown to gray at base, medium-grained, micaceous, firm, jointed 1056.2' to 1054.5', massive. Core loss 7%.
D. Shale, gray, argillaceous, medium-firm, broken. Core loss 38%.
E. Coal. Core loss 7%.
F. Indurated Clay, brownish-gray, firm, contains numerous carbonized plant remains. Core loss 26%.
G. Indurated Clay, gray, calcareous, firm, broken in part. Core loss 32%.
H. Sandstone, gray, fine to medium-grained, micaceous, firm, jointed above 1041.4', medium-bedded. No core loss.
I. Shale, gray to brown at base, siliceous, firm, moderately fissile. No core loss.

* Most of the joints are high-angle joints that cut across the core, and hence, may form more extensive fissures than is indicated by the above depth figures. Such joints are potential slippage surfaces.

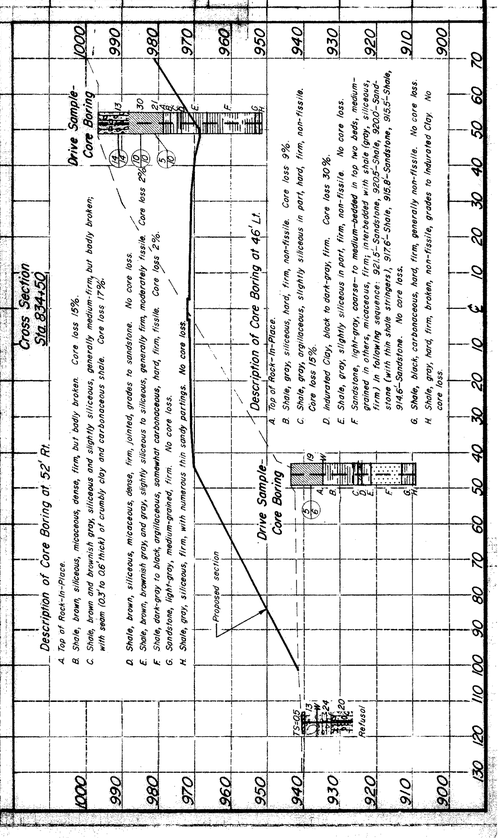
Cross Section Sta. 829+00



Cross Section Sta. 824+00



Cross Section Sta. 834+50



Description of Core Boring at 52' Rt.

A. Top of Rock-In-Place.
B. Shale, brown, siliceous, micaceous, dense, firm, but badly broken. Core loss 15%.
C. Shale, brown and brownish gray, siliceous and slightly siliceous, generally medium-firm, but badly broken, with seam (0.3' to 0.6' inches) of crumbly clay and carbonaceous shale. Core loss 17%.
D. Shale, brown, siliceous, micaceous, dense, firm, jointed, grades to sandstone. No core loss.
E. Shale, brown, brownish gray, and gray, slightly siliceous to siliceous, generally firm, moderately fissile. Core loss 2%.
F. Shale, dark-gray to black, argillaceous, somewhat carbonaceous, hard, firm, fissile. Core loss 2%.
G. Sandstone, light-gray, medium-grained, firm. No core loss.
H. Shale, gray, siliceous, firm, with numerous thin sandy partings. No core loss.

Description of Core Boring at 46' Lt.

A. Top of Rock-In-Place.
B. Shale, gray, siliceous, hard, firm, non-fissile. Core loss 9%.
C. Shale, gray, argillaceous, slightly siliceous in part, hard, firm, non-fissile. Core loss 15%.
D. Indurated Clay, black to dark-gray, firm. Core loss 30%.
E. Shale, gray, slightly siliceous in part, firm, non-fissile. No core loss.
F. Sandstone, light-gray, coarse- to medium-bedded in top two beds, medium-grained in others, micaceous, firm; interbedded with shale (gray, siliceous, firm) in following sequence: 921.5'—Sandstone, 920.5'—Shale, 920.0'—Sandstone (with thin shale stringers), 917.6'—Shale, 916.8'—Sandstone, 915.5'—Shale, 914.6'—Sandstone. No core 922.1.
G. Shale, black, carbonaceous, hard, firm, generally non-fissile. No core loss.
H. Shale, gray, hard, firm, broken, non-fissile, grades to indurated clay. No core loss.

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SOIL PROFILE
COLUMBIANA COUNTY
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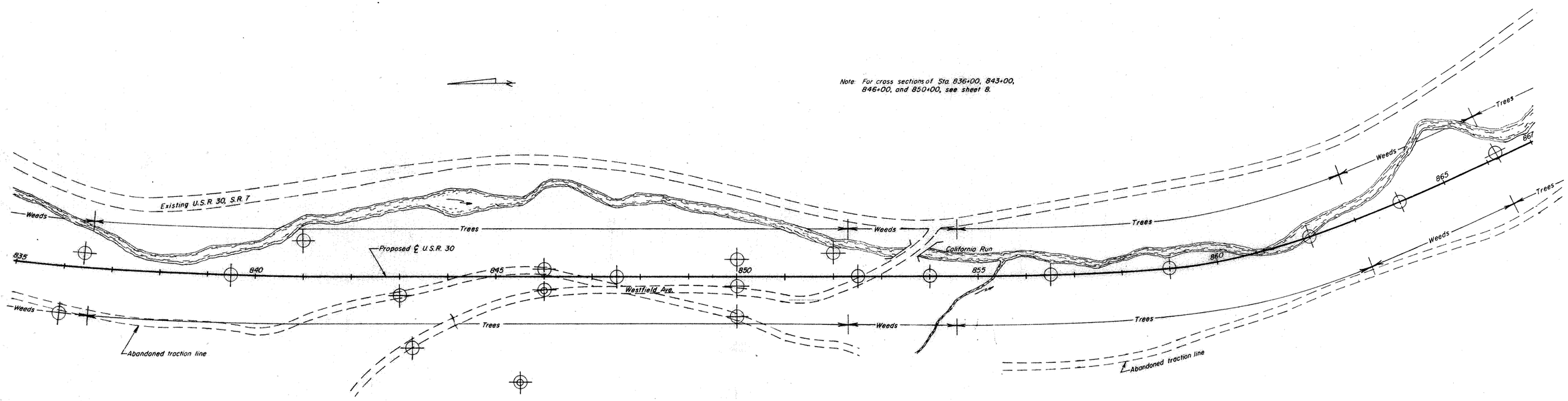
Note: For cross sections of Sta. 836+00, 843+00, 846+00, and 850+00, see sheet 8.



TE 54 B
900-5-59

SOIL PROFILE
COLUMBIANA COUNTY
COL-30-32.19

OHIO STATE HIGHWAY
TESTING LABORATORY
O. S. U. CAMPUS, COLUMBUS, OHIO

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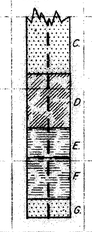
Core Boring
220' Rt.

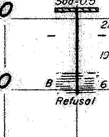


For description of core boring see cross section, sheet 8.

Drive Sample-Core Boring
30' Rt.

For description of drive sample-core boring see cross section, sheet 8.

100' Rt.
Sod=0.5'

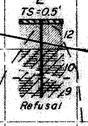


Refusal

40' Rt.
Sod=0.5'

Refusal

℄
TS=0.5'



Refusal

14' Lt.
Sod=0.5'

Refusal

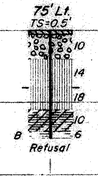
℄
TS=0.5'

Refusal

30' Lt.
TS=0.5

Refusal

75' Lt.
TS=0.5

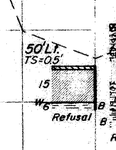


Refusal

20' Rt.

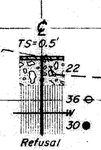
Refusal

℄
50' Lt.
TS=0.5



Refusal

℄
TS=0.5'

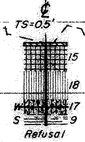


Refusal

℄
TS=0.5'

Refusal

℄
TS=0.5'



Refusal

℄
Water=0.5'

Refusal

℄
Sod=0.5'

Refusal

10' Lt.
TS=0.5'

Refusal

1060 1050 1040 1030 1020 1010 1000 990 980 970 960 950 940 930 920 910 900 890 880 870

835 836 837 838 839 840 841 842 843 844 845 846 847 848 849 850 851 852 853 854 855 856 857 858 859 860 861 862 863 864 865 866 867

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SOIL PROFILE
COLUMBIANA COUNTY
COL-30-32.19
OHIO STATE HIGHWAY
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O. S. U. CAMPUS, COLUMBUS, OHIO

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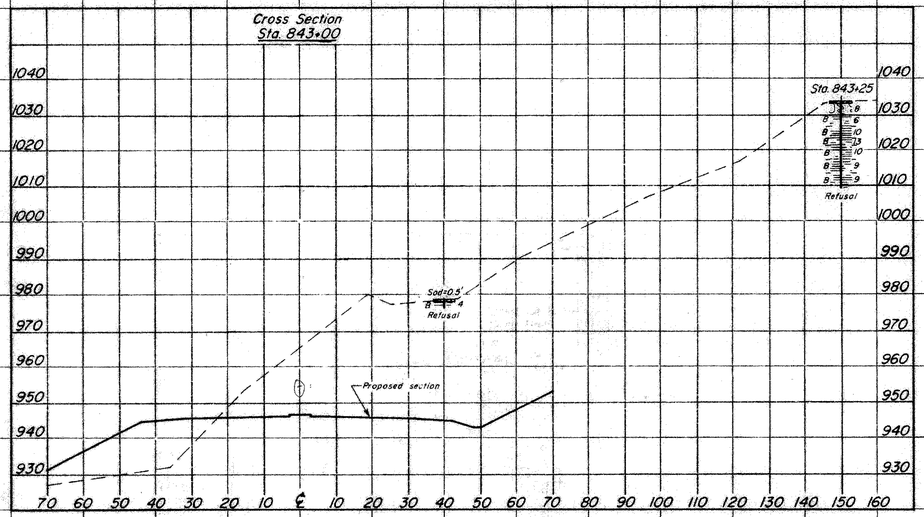
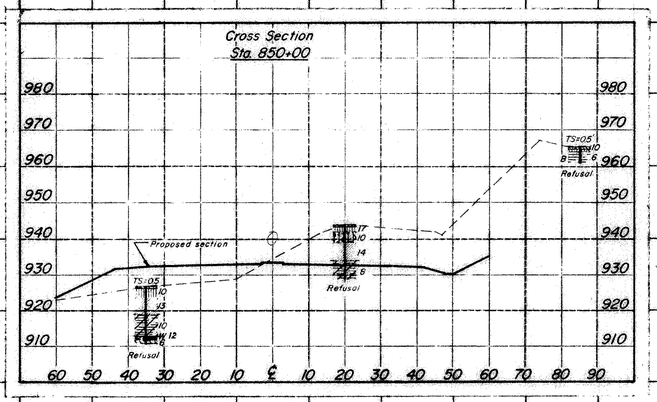
Cross Section
Sta. 843+00



Cross Section
Sta. 850+00

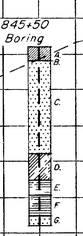


Cross Section
Sta. 846+00

Description of Core Boring at 30' Rt.

A. Top of Rock-In-Place.
B. Shale, brownish-gray and gray, siliceous, generally firm, broken in top 0.5' and 976.4' to 975.3', jointed above 979.0' and intermittently in remainder. Core loss 7%.
C. Shale, brownish-gray and gray, slightly siliceous, firm, broken in part. No core loss.
D. Shale, dark-gray, argillaceous, somewhat carbonaceous, hard, firm, fissile, jointed from 957.8' to 955.9'. No core loss.
E. Shale, gray to dark-gray at top, siliceous, firm; interbedded with sandstone (gray, fine to medium-grained, firm, shaley); 952.3'-shale, 950.8'-sandstone, 950.0'-shale, 949.0'-sandstone, 948.6'-shale. No core loss.
F. Sandstone, gray and brownish-gray, medium-grained, calcareous above 946.4', generally micaceous, contains scattered carbonized plant remains, firm, medium-bedded, jointed above 946.4', with 0.4' fine-grained sandstone at top and base, and 0.3' thick shale seam at 946.2'. No core loss.
G. Shale, gray, siliceous, firm, non-fissile to fissile. No core loss.
H. Sandstone, gray, medium-grained, micaceous, firm, medium-bedded. No core loss.
I. Shale, gray, slightly siliceous to siliceous, firm, fissile. No core loss.
J. Shale, gray, argillaceous, hard, firm, fissile, jointed near base. No core loss.
K. Shale, dark-gray to black, argillaceous, carbonaceous, coaly at base, hard, firm, fissile. No core loss.
L. Coal. No core loss.
M. Indurated Clay, black to dark-gray, firm. No core loss.

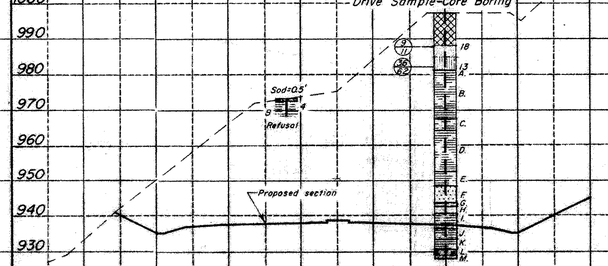
Sta. 845+50
Core Boring



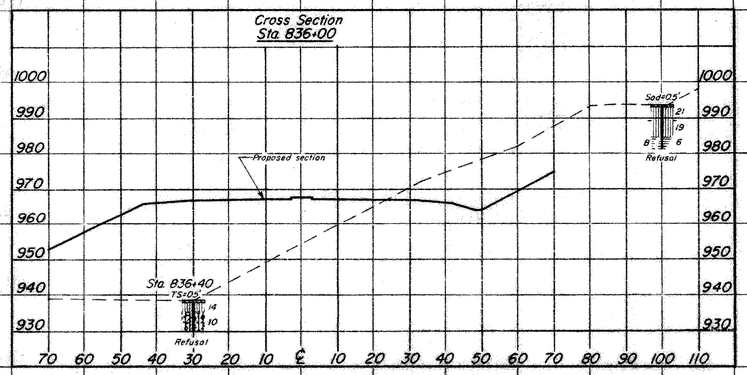
Description of Core Boring at 220' Rt.

A. Brown, sandy, silty clay.
B. Top of Rock-In-Place.
C. Sandstone, brown to brownish-gray, coarse-grained, calcareous 1055.6' to 1053.9', medium-firm above 1062.7', firm in remainder, somewhat broken above 1076.1', jointed 1070.0' to 1068.0', medium-bedded. Core loss 8%.
D. Indurated Clay, dark-gray, soft to firm, badly broken throughout, with thin (probably less than 0.3') coal stringer. Core loss 39%.
E. Shale, gray and brown, slightly siliceous, generally soft and friable, badly broken throughout, with thick clay seams. Core loss 50%.
F. Shale, brown, slightly siliceous, firm, generally broken, non-fissile. Core loss 17%.
G. Sandstone, brown, fine-grained, somewhat micaceous, dense, hard, firm, jointed in part, medium to thin-bedded, with 0.3' brown shale at base. Core loss 12%.

Drive Sample-Core Boring



Cross Section
Sta. 836+00



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SOIL PROFILE
COLUMBIANA COUNTY
COL-30-32.19

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TESTING LABORATORY
O. S. U. CAMPUS, COLUMBUS, OHIO

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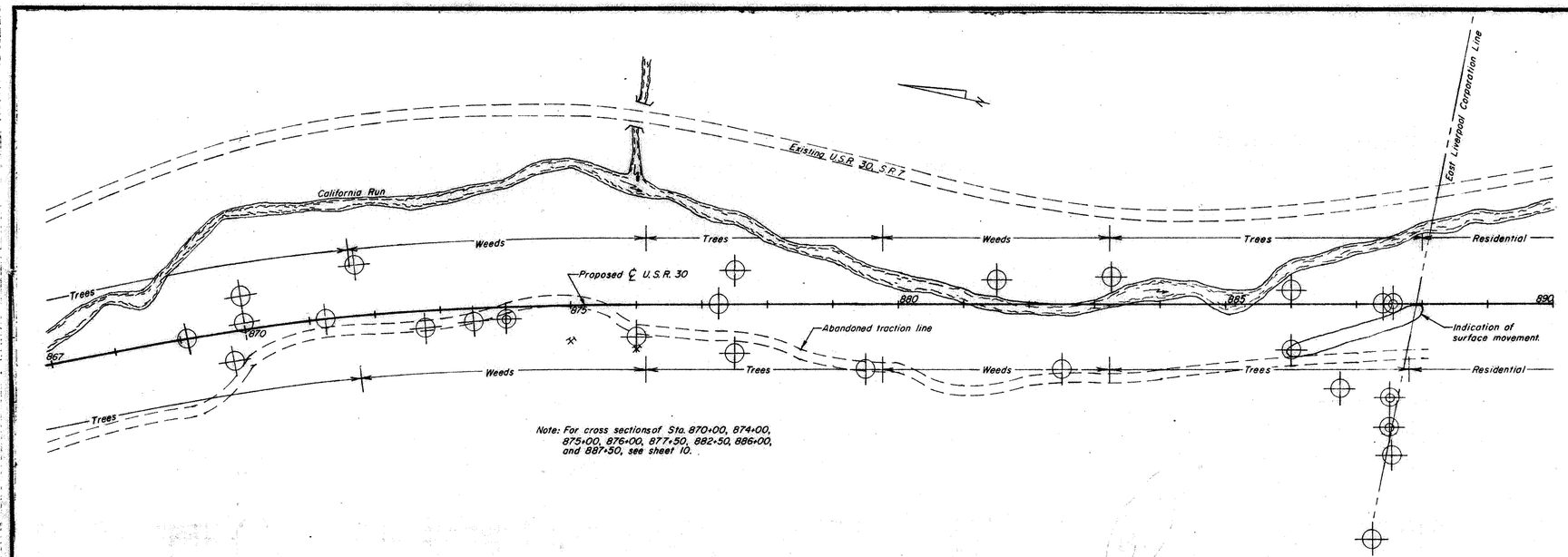
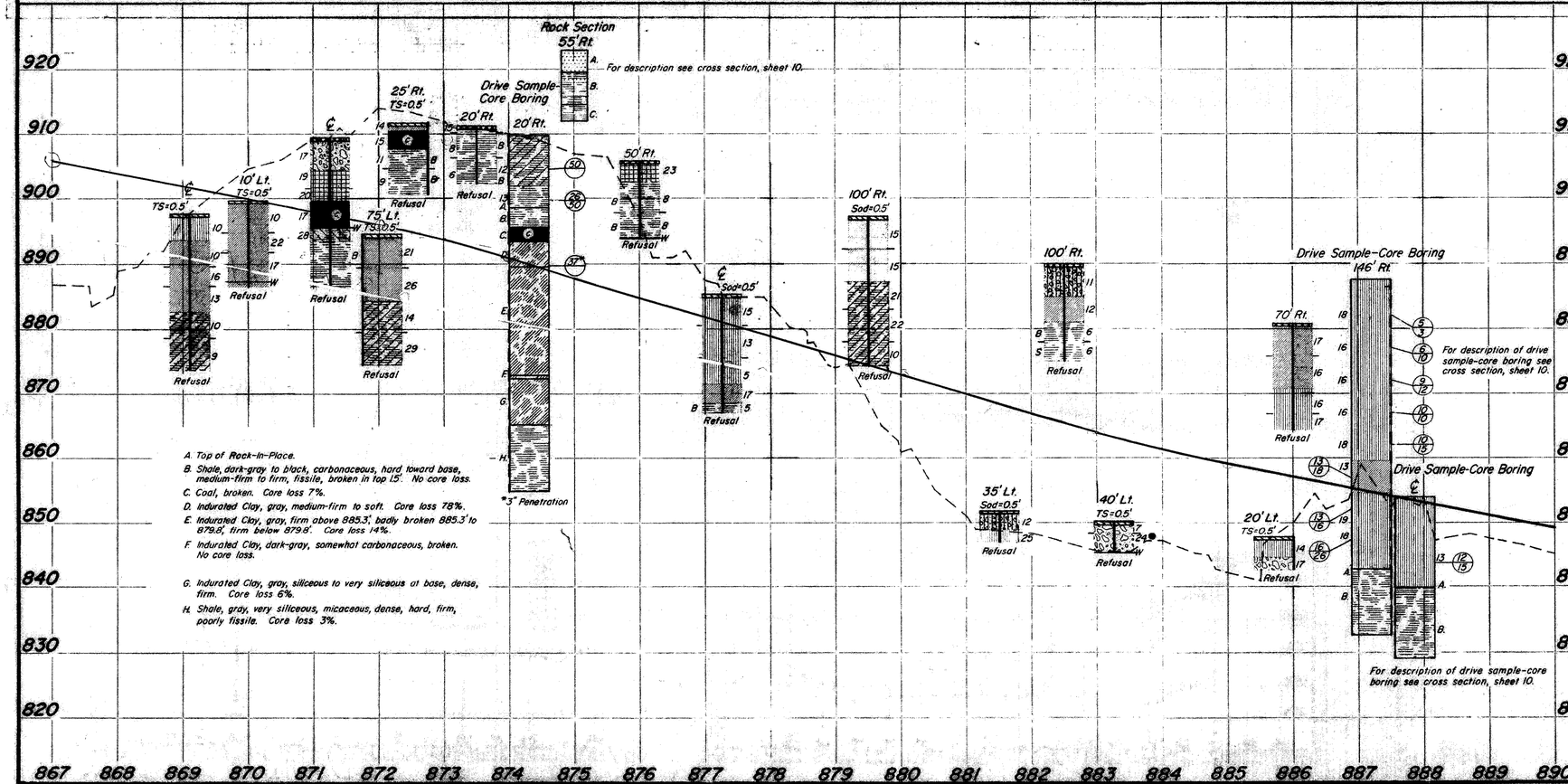


Note: For cross sections of Sta. 870+00, 874+00, 875+00, 876+00, 877+50, 882+50, 886+00, and 887+50, see sheet 10.



A. Top of Rock-In-Place.

B. Shale, dark-gray to black, carbonaceous, hard toward base, medium-firm to firm, fissile, broken in top 15'. No core loss.

C. Coal, broken. Core loss 7%.

D. Indurated Clay, gray, medium-firm to soft. Core loss 78%.

E. Indurated Clay, gray, firm above 885.3', badly broken 885.3' to 879.8', firm below 879.8'. Core loss 14%.

F. Indurated Clay, dark-gray, somewhat carbonaceous, broken. No core loss.

G. Indurated Clay, gray, siliceous to very siliceous at base, dense, firm. Core loss 6%.

H. Shale, gray, very siliceous, micaceous, dense, hard, firm, poorly fissile. Core loss 3%.

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SOIL PROFILE
COLUMBIANA COUNTY
COL-30-32.19
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Cross Section Sta. 875+00

A. Sandstone, fine-to medium-grained.
B. Shale with sandstone lenses (50% shale, 50% sandstone); sandstone is olive-gray, fine-grained, hard, jointed; shale is gray, blocky, irregular bedded.
C. Shale, iron-stained, micaceous, nodular, crumbly.

This exposure extends on average of 55' Rt of ℄, and parallel to it, from approx. Sta. 873+00 to Sta. 877+00.

Proposed section

Cross Section Sta. 874+00

Drive Sample-Core Boring

Proposed section

For description, see profile, sheet 9.

*3" Penetration

Cross Section Sta. 870+00

Sta. 869+75
Sod=0.5'
TS=0.5'
Refusal
Proposed section

Cross Section Sta. 887+50

Surface indication of movement
Proposed section
Drive Sample-Core Boring
Sta. 887+56
Sta. 887+40
Refusal

A. Top of Rock-In-Place.
B. Shale, gray, siliceous, micaceous, dense, hard, firm, poorly fissile. Core loss 4%.

Drive Sample-Core Boring
Drive Sample-Core Boring

A. Top of Rock-In-Place.
B. Shale, dark-gray, siliceous, micaceous, carbonaceous, hard, firm, fissile, broken in top 0.5'. Core loss 5%.

*3" Penetration

Sta. 887+23
TS=0.5'
Refusal

Sta. 887+53
TS=0.5'
Refusal

A. Top of Rock-In-Place.
B. Shale, gray, generally siliceous, firm (but with soft brown seam 862.5' to 862.0'), broken near base. Core loss 3%.
C. Sandstone, gray to brown at top, medium-grained, weathered, very friable, broken, with 0.2' shale at top. No core loss.
D. Shale, gray, siliceous, micaceous, firm, moderately fissile, with clay seams above 858.5'. No core loss.
E. Sandstone, light-gray, medium-grained, micaceous, firm, massive. No core loss.
F. Shale, gray to dark-gray, siliceous, micaceous, dense, firm, grades to argillaceous sandstone in part. No core loss.

Sta. 877+50

Sta. 877+25
Sod=0.5'
TS=0.5'
Refusal
Proposed section
Refusal

Cross Section Sta. 876+00

A. Sandstone, light brown, fine-to medium-grained, very hard, massive, weathers rust brown.
B. Shale, gray to brown, siliceous, hard.
C. Sandstone, brown, fine-grained, hard.
D. Shale, gray to brown, siliceous, very hard.
E. Sandstone, brown, fine-grained, thin-bedded.
F. Shale, light-brown, siliceous, very hard.
G. Sandstone, brown, fine-grained, thin-bedded, weathers rust brown.
H. Shale, siliceous at top, grading into a hard, light-brown shale.
I. Shale, gray, intermittently soft and hard, brown weathered spots throughout.
J. Coal, black
K. Clay, gray, soft, grading upward into fire clay.

Refusal
Proposed section

Cross Section Sta. 886+00

Surface indication of movement
Proposed section
Sta. 886+75
Sod=0.5'
Refusal
TS=0.5'
Refusal

Cross Section Sta. 882+50

Proposed section
Sta. 883+25
TS=0.5'
Refusal
Sta. 881+50
Sod=0.5'
Refusal

TE-54-A
100-5-59

GENERAL INFORMATION

INTRODUCTION

Following are brief comments concerning the proposed grades on the project:

SR 170 - cuts, ranging between 0 and 36 feet in depth, and fill embankment, between 0 and 10 feet in height.

Hill Avenue - cut, as deep as 65 feet, at ditchline, and fill embankment 0 to 12 feet high.

Westfield Avenue - cuts, up to 65 feet deep, and fill embankment, as high as 30 feet.

EXPLORATION

Exploratory borings were made by means of truck mounted mechanical earth auger and rotary-type drill rig, between November 14 and 30, 1960. Included with this report is the log of a drive sample-core boring made in conjunction with the proposed HSF 30 structures over Westfield Avenue and over SR 170.

INVESTIGATIONAL DISCLOSURES

SR 170

Borings disclose shale to occur immediately below grade in the cut area between approximately stations 22+00 and 26+00, while in the remaining slight cut and embankment foundation areas, thin to absent (maximum - 10 feet) soil cover, predominantly silt and silt clay, in the A-4b and A-6a classifications, overlies shale and sandstone bedrock.

Hill Avenue

Materials occuring below grade and in the backslopes are comprised of shale, and sandstone. It is noted that at station 6+30, 60 feet left of centerline, between elevations 980.5 and 980.5 feet, an abandoned coal mine was encountered; at this station, approximately 13 feet below proposed grade.

Westfield Avenue

Borings disclose that materials immediately below proposed grade and materials occuring in the backslopes are comprised of shale and sandstone. Embankment foundation materials are comprised of dense sands and gravels, in the A-1-b classification.

LEGEND FOR PROJECT-AVERAGE RESULTS OF TESTS- 46 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	A-1-b	60	10	8	11	11	NP	NP	15	1
Gravel and stone fragments with sand, and silt	A-2-4	A-2-4	60	3	7	14	16	31	8	16	2
Gravel and stone fragments with sand, silt, and clay	A-2-6(1)	A-2-6	77	3	3	7	10	39	13	20	2
Sandy silt	A-4(7)	A-4a	21	5	5	43	26	NP	NP	25	1
Silt	A-4(8)	A-4b	0	3	3	56	38	30	6	20	3
Silt and clay	A-6(9)	A-6a	18	4	6	41	31	33	13	18	6
Silty clay	A-6(10)	A-6b	11	3	5	38	43	38	16	33	4
Clay	A-7-6(9)	A-7-6	30	3	7	31	29	41	13	39	1
Random fill consisting of - gray clayey silt with ashes and stone fragments			VISUAL CLASSIFICATION								
Coal			VISUAL CLASSIFICATION								
Coal blossom			VISUAL CLASSIFICATION								
Weathered shale			VISUAL CLASSIFICATION								5
Weathered sandstone			VISUAL CLASSIFICATION								
Indurated clay			VISUAL CLASSIFICATION								
Shale			VISUAL CLASSIFICATION								11
Sandstone			VISUAL CLASSIFICATION								10
Limestone			VISUAL CLASSIFICATION								
Various other materials											

Sod and/or Topsoil - X' - Approximate depth.

Berm material.

Auger boring - plan view.

Core boring - plan view.
Drive sample-core boring - plan view.

Auger boring plotted to vertical scale only.

Drive sample and/or core boring plotted to vertical scale only.

Number of blows for "Standard Penetration" test.
X=number of blows for the first 6 inches.
Y=number of blows for the second 6 inches.

● Water content nearly equal to or greater than liquid limit.

⊖ Indicates a non plastic material with high water content.

——— // Free water.

B Indicates broken rock interval.

NOTE: Figures beside borings indicate water content in percent. e.g. 15

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.
				S.R. 170							
5+00	10'Lt	0.4-5.0	Black Weathered Shale							9	Visual *
9+00	10'Lt	0.4-2.0	0	4	3	57	36	NP	NP	22	A-4b *
		2.0-7.0	30	3	7	31	29	41	13	39	A-7-6 *
		7.0-10.0	Black Weathered Shale							19	Visual
12+75	10'Lt	0.4-3.0	Gray Broken Sandstone								Visual*
15+00	10'Lt	0.4-2.0	0	4	7	39	50	38	16	37	A-6b
		2.0-5.0	Black Weathered Shale								Visual
18+000	CL	0.5-2.0	0	3	3	53	41	29	9	17	A-4b *
		2.0-4.0	57	1	1	15	26	30	16	23	A-6b
		4.0-6.0	69	2	3	9	17	32	6	20	A-2-4
		6.0-9.0	Black Broken Shale							13	Visual
21+00	CL.	0.5-4.0	0	7	6	47	40	35	15	21	A-6a *
		4.0-9.0	Brown & Black Extremely Weathered Shale								Visual*
		9.0-12.0	Black Broken Shale							13	Visual
23+00	CL	0.5-5.0	Black Broken Shale							10	Visual
		5.0-10.0	Black Broken Shale							8	Visual
25+00	CL	0.0-5.0	Gray Broken Shale							9	Visual
		5.0-7.0	Gray Broken Shale							7	Visual

STATION & OFFSET		DEPTH FROM-TO	% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	% W.C.	SHTL CLASS.
				S.R. 170 (CONT')							
27+00	CL	1.0-6.0	22	3	4	43	28	31	12	13	A-6a
		6.0-10.0	Black Weathered Shale								Visual
		10.0-12.0	Black Weathered Shale								Visual
29+00	CL	1.0-6.0	0	2	3	57	38	31	10	21	A-4b
		6.0-8.0	Brown Broken Shale							19	Visual
		8.0-12.0	Brown Broken Shale							12	Visual
32+00	15'Rt	0.4-4.0	46	4	3	28	19	36	14	16	A-6a *
		4.0-8.0	Brown Broken Shale							12	Visual
35+07	16'Rt	0.5-1.5	0	4	3	67	26	32	11	25	A-6a *
		1.5-5.0	21	5	5	53	26	NP	NP	25	A-4a *
		5.0-6.0	0	4	3	54	43	38	16	35	A-6b
		6.0-10.0	21	3	6	26	44	40	15	25	A-6a
				WESTFIELD AVENUE							
3+00	CL	1.0-2.0	Gray Clayey Silt W/Ashes & Stone Fragments								Visual
		2.0-4.0	Gray Clayey Silt W/Ashes & Stone Fragments								Visual
		4.0-8.0	61	4	3	5	7	31	11	21	A-2-6
		8.0-10.0	0	4	9	45	42	38	16	34	A-6b
6+38	CL	0.3-4.5	Light Brown Broken Sandstone							5	Visual

STATION & OFFSET		DEPTH FROM-TO	% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	% W.C.	SHTL CLASS.
				WESTFIELD AVENUE (CONT'D)							
8+50	CL	0.5-4.0	Light Brown Broken Sandstone							7	Visual
		4.0-6.5	Light Brown Broken Sandstone							6	Visual
11+50	21'Rt	0.5-3.5	Light Brown Broken Sandstone							6	Visual
15+25	6'Rt	0.5-5.0	Light Brown Broken Sandstone							7	Visual
		5.0-6.5	Light Brown Broken Sandstone							5	Visual
18+50	CL	0.5-5.0	Light Brown Broken Sandstone							10	Visual *
		5.0-9.5	Light Brown Broken Sandstone							7	Visual *
				HILL AVENUE							
5+89	CL	0.3-5.0	Gray Broken Shale							5	Visual
10+98	15'Lt	0.5-4.0	Gray Broken Sandstone							4	Visual
		4.0-6.5	Gray Broken Shale							9	A-6a
12+25	CL	0.0-2.5	52	5	11	18	14	29	10	12	A-2-4 *
				DRIVE SAMPLE SOIL TEST DATA							
				S.R. 170							
20+90	CL	5.0-6.0	0	5	6	71	18	31	9	20	A-4b *
25+00	60'Lt	5.0-6.0	Shale Extremely Weathered							11	Visual
				WESTFIELD AVENUE							
3+32	22'Rt.	5.0-6.0	62	12	3	17	6	NP	NP	36	A-1-b
8+50	80'Rt	5.0-6.0	43	3	29	14	11	NP	NP	12	A-2-4

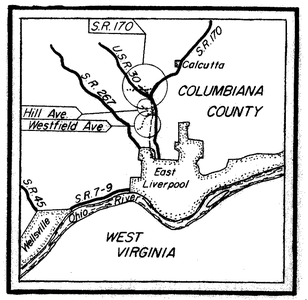
SOIL PROFILE
COLUMBIANA COUNTY
COL-30-32.19

14/19

OHIO STATE HIGHWAY
TESTING LABORATORY
O. S. U. CAMPUS, COLUMBUS, OHIO

INTERSECTING ROADS

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

Recon - N.P.L. - 11/14/60

Drilling - Auger - J.R.F. - 11/17/60-11/18/60
Core - C.S.C., W.A.H. - 11/14/60-11/30/60

Drafting - R.C.B. - 12/15/60

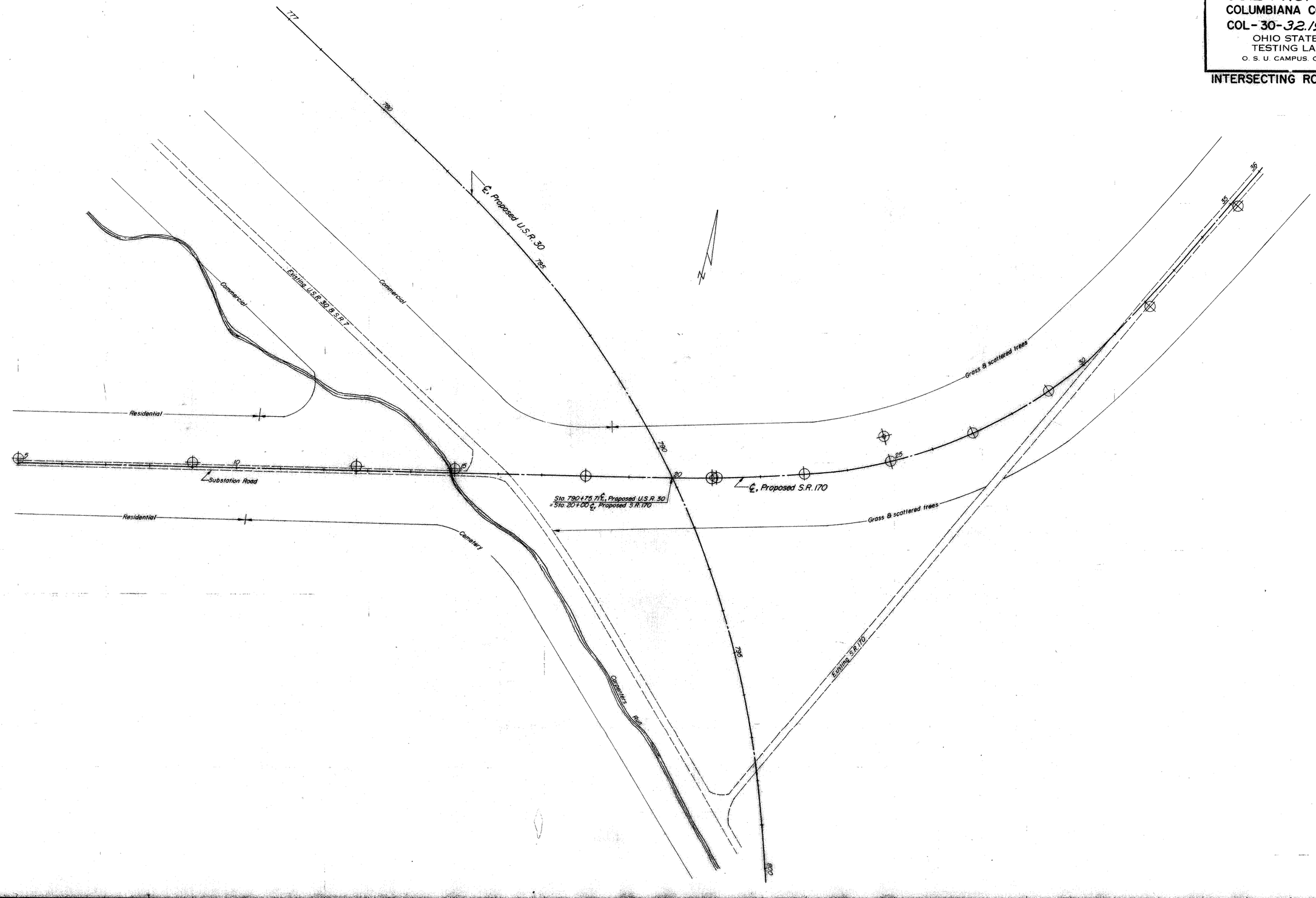
TE.54 B
800.4.60

SOIL PROFILE
COLUMBIANA COUNTY
COL-30-32.19

OHIO STATE HIGHWAY
TESTING LABORATORY
O. S. U. CAMPUS. COLUMBUS. OHIO

15
19

INTERSECTING ROADS



TE.54-B
800.4-60

SOIL PROFILE
COLUMBIANA COUNTY
COL-30-32.19

OHIO STATE HIGHWAY
TESTING LABORATORY
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16/19

INTERSECTING ROADS

A. Shale, extremely weathered.

B. Shale, olive-brown, fissile, firm, weathered, badly broken.- Core Loss 2½%

C. Shale, gray, fissile, firm, broken. Core Loss ½%

D. Limestone, dark gray, massive-bedded, hard, broken. No Core Loss.

E. Shale, black, carbonaceous, calcareous, fissile, firm, broken, with trace of pyrite. No Core Loss.

1170 1160 1150 1140 1130 1120 1110 1100 1090

10' Lt. 9 Refusal

10' Lt. 22 39● 19

10' Lt. B Refusal

10' Lt. W 37● Refusal

℄ TS=0.5' 17 23 20 B 13 Refusal

Proposed grade of U.S.R. 30.

℄ TS=0.5' 21 19 B 13 Refusal

℄ TS=0.5' B 10 B 8 Refusal

60' Lt. Top of Rock-In-Place A. B. C. D. E.

℄ B 9 7 B Refusal

℄ TS=1.0' 13 W Refusal

℄ Sod & TS=1.0' 21 B 19 B 12 Refusal

15' Rt. 18 B 12 Refusal

16' Rt. 25 25⊖ 35● Slightly organic 25 W

5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36

S.R. 170

Cross Section Sta. 21+09

Sod & TS=05 (Sta 20+90)

Proposed section

Top of Rock-In-Place

A. Shale, black, carbonaceous, extremely weathered

B. Shale, black, carbonaceous, calcareous, fissile, medium firm, badly broken. Core Loss 5%

C. Limestone, dark-gray, massive-bedded, hard, broken. Core loss 7%

D. Shale, black, carbonaceous, calcareous, fissile firm, broken Core Loss 5%

E. Sandstone, brown, coarse-grained, thin-bedded, broken, with heavy iron staining, and streaks of carbonaceous shale No Core Loss.

F. Sandstone, gray, coarse grained, calcareous, micaceous, massive bedded, firm, broken. No Core Loss

G. Sandstone, gray, coarse-grained, slightly calcareous, micaceous, thin-bedded, firm, broken, with some streaks of carbonaceous shale. No Core Loss.

60 50 40 30 20 10 ℄ 10 20 30 40 50 60

Cross Section Sta. 25+00

Top of Rock-In-Place

Approximate ground line

Proposed section

For description of cored intervals, see profile this sheet

60 50 40 30 20 10 ℄ 10 20 30 40 50 60

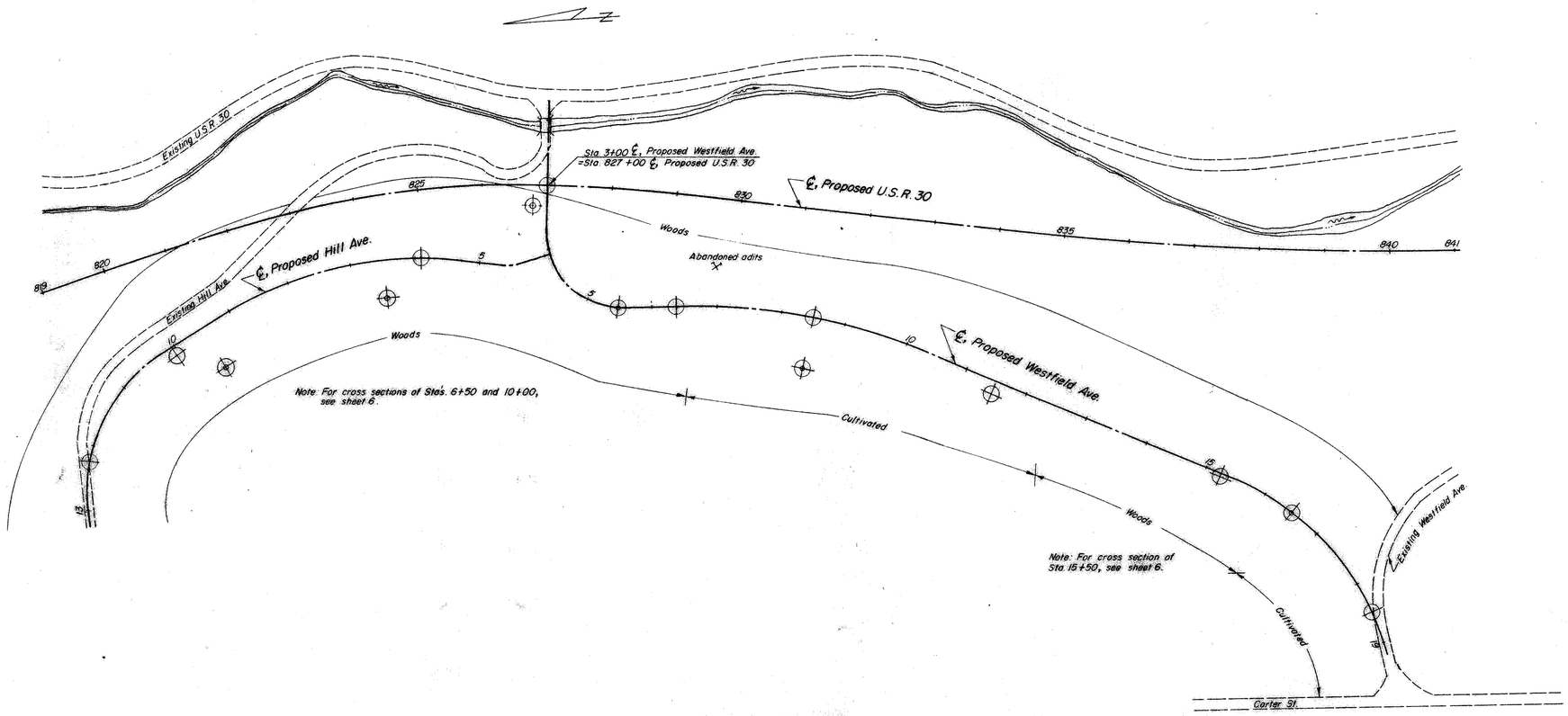
TE.54.8
800-4-60

SOIL PROFILE
COLUMBIANA COUNTY
COL-30-32.19

OHIO STATE HIGHWAY
TESTING LABORATORY
O. S. U. CAMPUS, COLUMBUS, OHIO

17/19

INTERSECTING ROADS



TE-54-B
800-4-60

SOIL PROFILE
COLUMBIANA COUNTY
COL-30-32.19

OHIO STATE HIGHWAY
TESTING LABORATORY
O. S. U. CAMPUS. COLUMBUS. OHIO

18/19

INTERSECTING ROADS

60' Lt.

Gray and brown sandstone fragments. Top of Rock-In-Place

℄ TS=0.3' B 5 Refusal

70' Lt. TS=0.8'

Gray shale fragments. Top of Rock-In-Place

15' Lt. TS=0.3' B 4 9 Refusal

℄ 12 Refusal

STATION 9+50 70'LT

A. Shale, olive-brown fissile, medium-soft, crumbly. Core Loss 53.

B. Sandstone, brown, coarse grained, micaceous, firm, broken with iron stains. Core Loss 37%.

C. Indurated Clay, gray, soft, crumbly, with trace of coal blossom. Core Loss 11%.

D. Shale, gray, slightly siliceous, massive-bedded, medium-firm, badly broken. Core Loss 11%.

E. Sandstone, gray, fine-grained, micaceous, thin-bedded, firm, broken, calcareous in places. No Core Loss.

F. Shale, gray, slightly siliceous, fissile, firm, broken. Core Loss 4%.

G. Shale, dark gray, slightly siliceous, fissile, firm, broken. No Core Loss.

H. Shale, dark gray, fissile, firm, broken, with badly broken zone from elev. 1011.5'-1010.0'. Core Loss 2%.

STATION 6+50 60'LT

A. Sandstone, light brown, micaceous, medium-grained, thin-bedded, firm, broken. Core Loss 44%.

B. Sandstone, brown, coarse-grained, micaceous, massive-bedded, firm, broken. Core Loss 4%.

C. Shale, gray, massive-bedded, medium-soft, very badly broken, with heavy iron stains and vugs. Core Loss 26%.

D. Sandstone, gray, micaceous, thin-bedded, firm, badly broken, with heavy irons, vugs, and concretions with fractures. No Core Loss.

E. Sandstone, gray, fine-grained, thin-bedded, firm, broken. No Core Loss.

F. Shale, olive-green, fissile, firm, broken. No Core Loss.

G. Shale, gray, fissile, firm, broken, with 1.0' gray fine-grained sandstone from 1025.1' to 1024.1'. No Core Loss.

H. Shale, dark gray, fissile, firm, broken. Core Loss 8%.

I. Void - Old Mine workings. No recovery. Core Loss 100%.

J. Clay, gray, with coal fragments. No Core Loss.

K. Shale, gray, slightly siliceous, massive-bedded, medium-firm, broken. Core Loss 9%.

L. Shale, gray, siliceous, fissile, firm, broken. No Core Loss.

M. Shale, gray, fissile, firm, broken. Core Loss 2%.

Hill Ave.

STATION 5+50 - ℄

A. Sandstone, olive-brown, medium-grained, micaceous, thin-bedded, firm, broken, with iron stains. Core Loss 2?

B. Shale, olive-green, fissile, firm, badly broken, with iron stains. No Core Loss.

C. Shale, olive-brown, fissile, slickensided, firm, very badly broken, crumbly in places, with extremely heavy iron staining. No Core Loss.

D. Shale, black, carbonaceous, slickensided, firm, broken. No Core Loss.

E. Shale, gray, siliceous, fissile, firm, broken. No Core Loss.

F. Shale, gray, fissile, firm, broken. No Core Loss.

G. Shale, black, carbonaceous, fissile, firm, very badly broken, with crumbly zone from 1017.8' to 1016.3. No Core Loss.

H. Shale, black, carbonaceous, fissile, firm, broken. Core loss 2?

I. Shale, dark gray, micaceous, siliceous, massive-bedded, firm, broken. No Loss.

J. Shale, black, carbonaceous, fissile, firm, broken. No Core Loss.

K. Clay, dark gray. No Core Loss.

L. Shale, black, carbonaceous, fissile, firm, broken. No Loss.

M. Sandstone, gray, micaceous, thin-bedded, firm, broken, with 0.1' coal at top and 0.1' crumbly gray shale at 1001.0'. Core Loss 15%.

℄ TS=0.3' B 5 Refusal

80' Rt. 16/13 12 Top of Rock In-Place.

℄ TS=0.5' B 7 6 Refusal

21' Rt. TS=0.5' B 6 Refusal

℄ Brown sandy clayey silt, with small shale fragments. Top of Rock-In-Place

Proposed grade U.S.R.30

22' Rt. TS=1.0' 21 34 Refusal

36 Top of Rock-In-Place

STATION 8+50-80'RT.

A. Sandstone, brown, coarse-grained, micaceous, thin-bedded firm, broken, calcareous from elev. 1073.1' to 1071.1', with trace of shale. Core Loss 1½.

B. Sandstone, gray, coarse-grained, micaceous, thin-bedded, firm, broken, with trace of fractured, gray shale. Core Loss 15%.

C. Shale, black, carbonaceous, fissile, firm, broken. No Core Loss.

D. Indurated clay, gray , slickensided, medium-soft, crumbly. No Core Loss.

E. Shale, gray, massive-bedded, medium-firm, broken. Core Loss 3%.

F. Sandstone, gray, fine-grained, micaceous, slightly calcareous, thin-bedded, firm, broken. No Core Loss.

G. Shale, gray, fissile, firm, broken, with iron stains. No Core Loss.

STATION 3+32 - 22'RT

A. Shale, gray, siliceous, fissile, firm, broken. No Core Loss.

B. Sandstone, gray, medium-grained, thin-bedded, firm, broken, with few streaks of carbonaceous shale. No Core Loss.

C. Shale, dark gray, fissile, firm, broken, siliceous in top 0.6'. No Core Loss.

D. Shale, black, carbonaceous, fissile, firm, broken. No Core Loss.

E. Coal, pure, blocky, medium-firm, broken. No Core Loss.

F. Shale, gray, fossiliferous, slightly siliceous, massive, medium-firm, broken. No Core Loss.

G. Sandstone, gray, coarse-grained, micaceous, massive, firm, broken. No Core Loss.

Westfield Ave.

℄ Top of Rock-In-Place 10 B 7 Refusal

6' Rt. TS=0.5' B 7 B 5 Refusal

STATION 16+50-℄

A. Sandstone, brown, weathered.

B. Sandstone, brown, coarse-grained, slightly micaceous, thin-bedded, firm, broken. Core Loss 9%.

C. Shale, olive-green, fissile, medium-firm, badly broken, with heavy slickensides. Core Loss 11%.

D. Sandstone, brown, coarse-grained, slightly micaceous, thin-bedded, firm, broken. No Core Loss.

E. Sandstone, gray, coarse-grained, slightly micaceous, thin-bedded, firm, broken. No Core Loss.

F. Sandstone, gray, medium-grained, thin bedded, firm, broken. No Core Loss.

G. Shale, gray, fissile, firm, very badly broken. Core Loss 13%.

H. Coal, impure, blocky, medium-firm, broken, with heavy amounts of pyrite. Core Loss 17%.

I. Shale, gray, fissile, medium-soft, very badly broken. Core Loss 23%.

J. Shale, gray, fissile, firm, badly broken. Core Loss 7%.

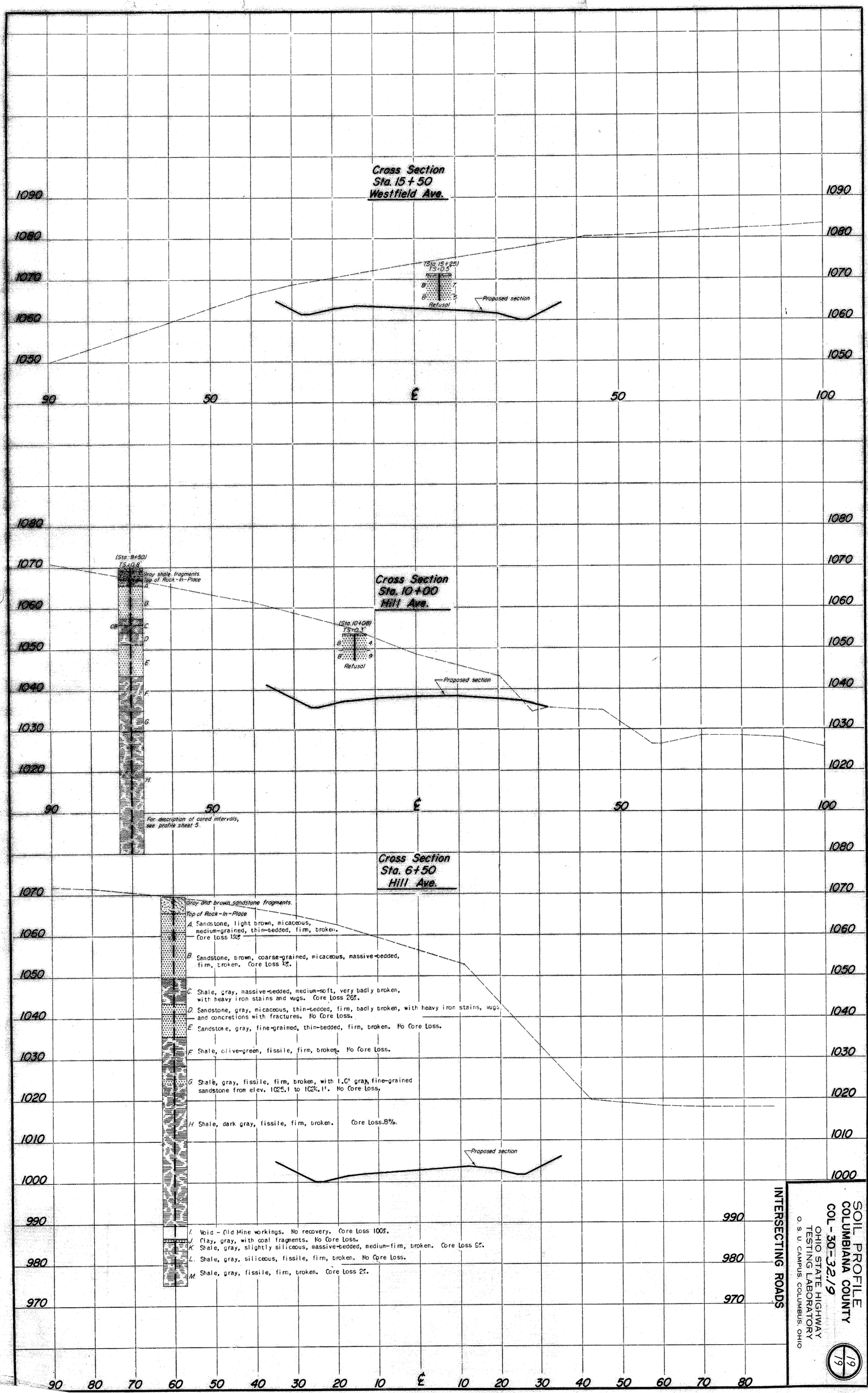
K. Sandstone, gray, fine-grained, firm, broken, with some iron staining. No Core Loss.

1080 1070 1060 1050 1040 1030 1020 1010 1000 990 980 970 960

1110 1100 1090 1080 1070 1060 1050 1040 1030 1020 1010 1000 990 980 970 960 950 940

1110 1100 1090 1080 1070 1060 1050 1040 1030 1020 1010 1000 990 980 970 960 950 940

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20



SOIL PROFILE
COLUMBIANA COUNTY
COL-30-32.19
OHIO STATE HIGHWAY
TESTING LABORATORY
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INTERSECTING ROADS

19/19