

**CONVENTIONAL SIGNS**

Center Line	→	Existing Sewer	---
Existing R/W	---	Proposed Sewer	---
Proposed R/W	---	Existing Manhole	○ M.H.
Limited Access Line	—LA—	Proposed Manhole	●
Temporary R/W	—T—	Existing Catch Basin	⊕ C.B.
Work Agreement Line	---	Proposed Catch Basin	■
Property Line	—PL—	Manhole Abandoned	⊗
Original Lot Line	—O.L.—	Catch Basin Abandoned	⊗
Water Line	—W—	Existing Guard Rail	—•••••
Water Valve	—(V)—	Proposed Guard Rail	—•••••
Water Hydrant	—(H)—	Fence	—x—x—x—
Gas Line	—G—	Existing Retaining Wall	— — — —
Gas Valve	—(G)—	Railroad	—+—+—+—
Telephone Underground	—T—	Existing Trees Removed	⊗
Electric Underground	—E—	Existing Trees	⊗
Power Pole	⊕		
Light Pole	⊕		
Telephone Pole	⊕		

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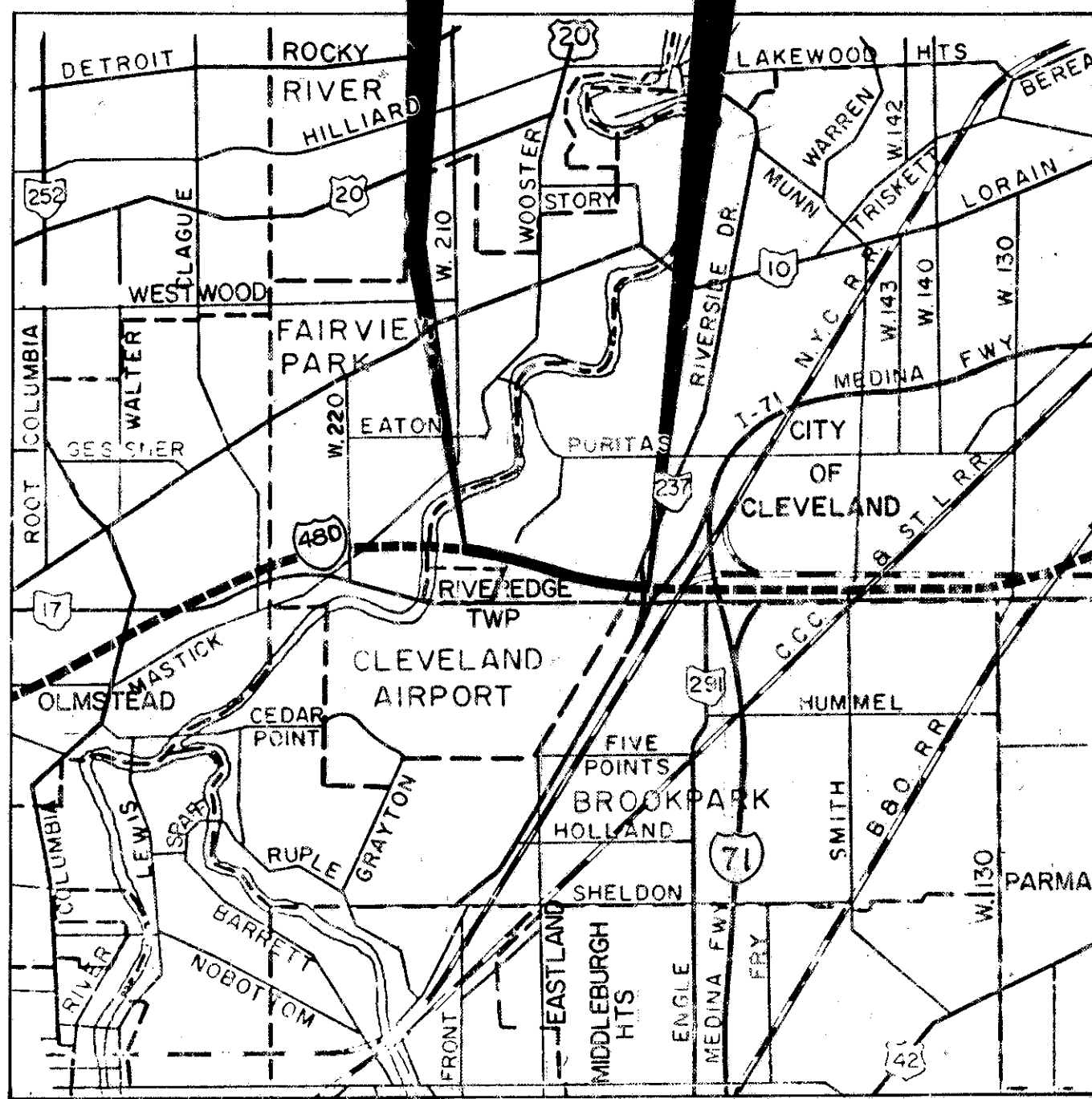
**LINE DATA**

BEGIN PROJECT	STA. 441+71.50
STA. EQUATION	STA. 405+01.76 (BACK) = STA. 420+30.02 (FWD.)
END PROJECT	STA. 447+98.81
TOTAL LENGTH OF PROJECT = 8099.05 L.F. OR 1.533 MILES	
<b>ADDITIONAL WORK</b>	
I-480	441+34 TO 441+71.50 37.50 L.F.
	STA. 447+98.81 TO STA. 461+00.00 1,301.19 L.F.
Add for Glare Screen	433+50 TO 433+75 25.00 L.F.
RELOCATED GRAYTON RD.	STA. 10+36.50 TO STA. 41+94.87 (BK) 3,158.37 L.F.
	= STA. 35+38.50 (FWD.) TO STA. 39+06.00 367.50 L.F.
BROOKPARK RD.	STA. 28+61.00 TO STA. 44+31.54 1,570.54 L.F.
RELOCATED ROCKY RIVER DR.	STA. 0+16.50 TO STA. 12+36.52 1,280.02 L.F.
TOTAL ADDITIONAL WORK =	7740.12 L.F.
TOTAL LENGTH OF WORK =	15,839.17 L.F. OR 2.999 MILES

NUMBER	DATE
608	1-1-71
837	12-7-72
5625 & 5713	1-11-74
847	4-3-76
953	6-27-77
836	3-12-75
838	1-13-77
845 & 850	6-27-77
839	11-25-70
848	11-2-77
842	8-29-74
843	10-23-75
844	11-8-74
954	6-3-78
846	4-25-77
1001	1-3-77
950 & 951	4-25-77

STATE OF OHIO  
DEPARTMENT OF TRANSPORTATION  
**CUY-480-6.78**  
CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CITY OF FAIRVIEW PARK

BEGIN PROJECT STA. 457+92.50 S.L.M. 6.78  
END PROJECT STA. 447+98.81 S.L.M. 8.00

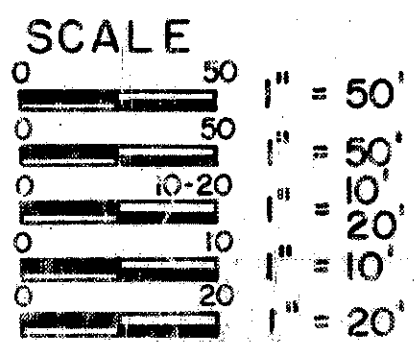


**LOCATION MAP**

SCALE OF MILES

Portion To Be Improved  
State Routes  
U.S. Routes  
Interstate Routes  
City Streets  
To Be Improved Under Separate Contract

PLAN  
PROFILE: HORIZ.  
VERT.  
CROSS SECTIONS  
PAVEMENT DETAILS



ISSUE I & I-480-4(42)-161

FHWA	STATE	PROJECT
5	OHIO	I-480-4(42)-161

1/317

STANDARD DRAWINGS NUMBER	DATE
TC-7.65	10-1-74
TC-12.30	10-1-74
TC-18.24	10-1-74
TC-21.10	10-1-74
TC-21.40	8-19-77
TC-21.31	10-1-74
TC-22.10	10-1-74
TC-31.21	8-27-76
TC-32.10	8-27-76
TC-32.11	8-27-76
TC-41.10	8-19-77
TC-41.20	4-1-77
TC-41.50	4-1-77
TC-42.10	8-19-77
TC-42.20	4-1-77
TC-51.10	6-2-75
TC-51.11	6-2-75
TC-52.10	4-1-77
TC-52.20	4-1-77
TC-61.10	8-19-77
TC-71.10	12-1-75
TC-72.40	8-29-77
TC-81.10	4-18-77
TC-18.26	10-1-74
TC-82.10	9-5-75
TC-83.10	9-5-75
TC-83.20	9-5-75
TC-85.20	9-5-75

Project designation CUY-480-6.78 appearing throughout this plan shall be considered to read CUY-480-6.48

CUYAHOGA COUNTY  
CUY-480-6.78

**"LIMITED ACCESS"**

This improvement is especially designed for thru traffic and has been declared a Limited Access Highway or Freeway by action of the Director of Transportation, in accordance with the provisions of Sec. 5511.02 of The Revised Code of Ohio.

1977 SPECIFICATIONS

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

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

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

Approved \_\_\_\_\_  
Date 8/1/77 Director of Public Service, City of Cleveland

Approved \_\_\_\_\_  
Date 12-13-77 District Deputy Director of Transportation

Approved \_\_\_\_\_  
Date 9-26-78 Engineer, Bureau of Bridges and Structural Design

WTF 9-26-78

Approved \_\_\_\_\_  
Date 11-17-78 Chief Engineer, Planning and Design

Approved \_\_\_\_\_  
Date 11-17-78 Director, Department of Transportation

DESIGN DESIGNATION	
1977 A.D.T.*	77,900
1997 A.D.T.*	95,000
D.H.V.	6,365
D. (directional distribution)	67%
T. (percent B&C trucks)	4%
V. (design speed)	60 M.P.H.

**DEPARTMENT OF TRANSPORTATION  
FEDERAL HIGHWAY ADMINISTRATION**

APPROVED:

DIVISION ADMINISTRATOR DATE:

PLANS PREPARED BY  
ALDEN E. STILSON & ASSOCIATES  
CONSULTING ENGINEERS  
75 PUBLIC SQUARE  
CLEVELAND, OHIO  
FOR  
STATE OF OHIO

FILE NUMBER	CUYAHOGA COUNTY	CUY-480-6.78	00388
DATE OF LETTING			
CONTRACT NUMBER			

# SCHEMATIC PLAN

FHWA	STATE	PROJECT	
5	OHIO		2 317

CUYAHOGA COUNTY  
CUY-480-678

MICROFILMED  
DEC 6 1982

I-480-4(42)-161  
S.L.M. 648  
BEGIN PROJECT  
STA. 441+71.50

BEGIN WORK  
STA. 441+34.00

END WORK  
STA. 39+06.0

END WORK  
STA. 455+75.00  
RAMP B-2

END WORK  
STA. 12+96.52

END WORK  
STA. 461+00.00  
I-480

END WORK  
STA. 44+31.54

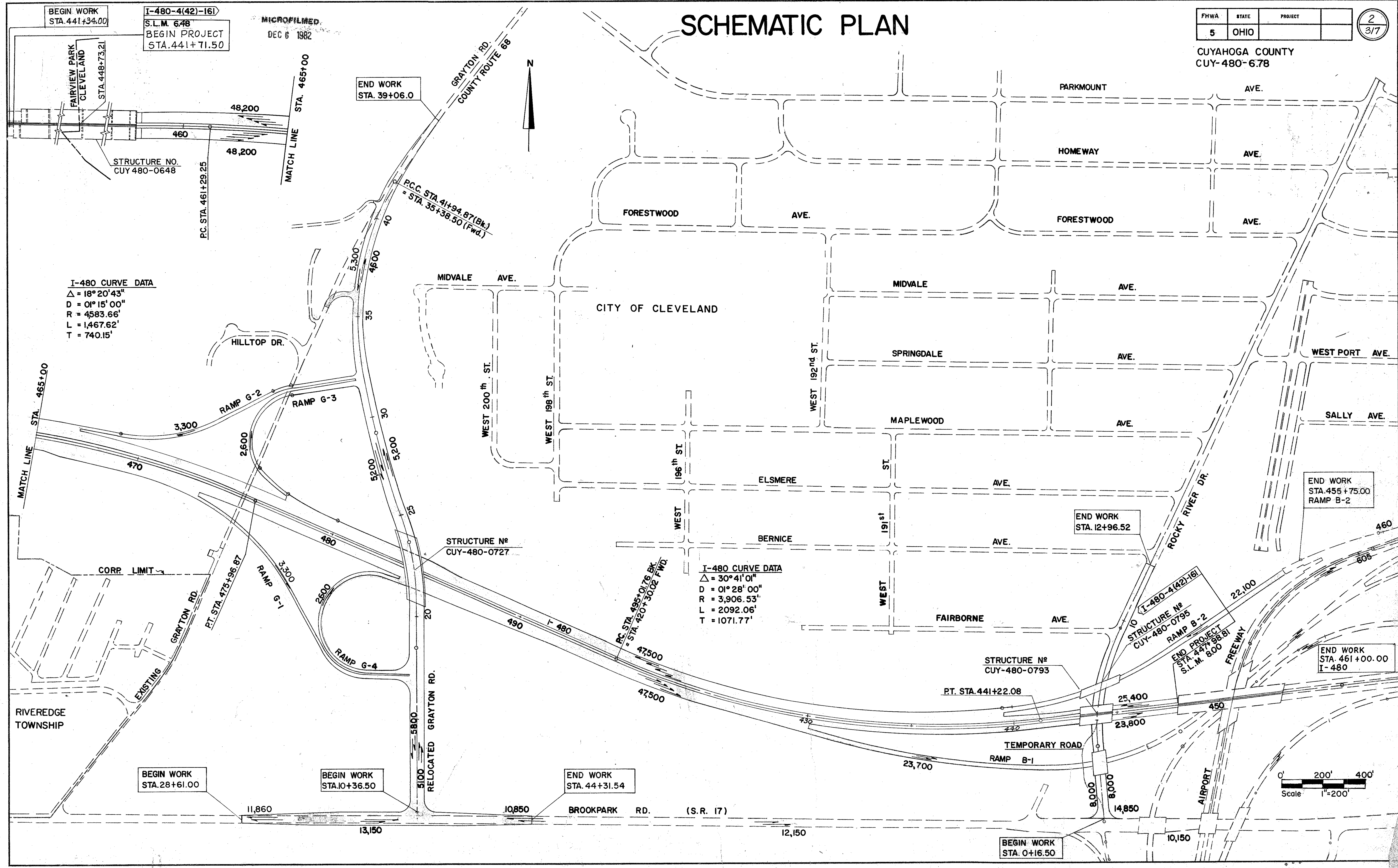
BEGIN WORK  
STA. 28+61.00

BEGIN WORK  
STA. 10+36.50

BEGIN WORK  
STA. 0+16.50

**I-480 CURVE DATA**  
 $\Delta = 18^\circ 20' 43''$   
 $D = 01^\circ 15' 00''$   
 $R = 4583.66'$   
 $L = 1,467.62'$   
 $T = 740.15'$

**I-480 CURVE DATA**  
 $\Delta = 30^\circ 41' 01''$   
 $D = 01^\circ 28' 00''$   
 $R = 3,906.53'$   
 $L = 2,092.06'$   
 $T = 1,071.77'$



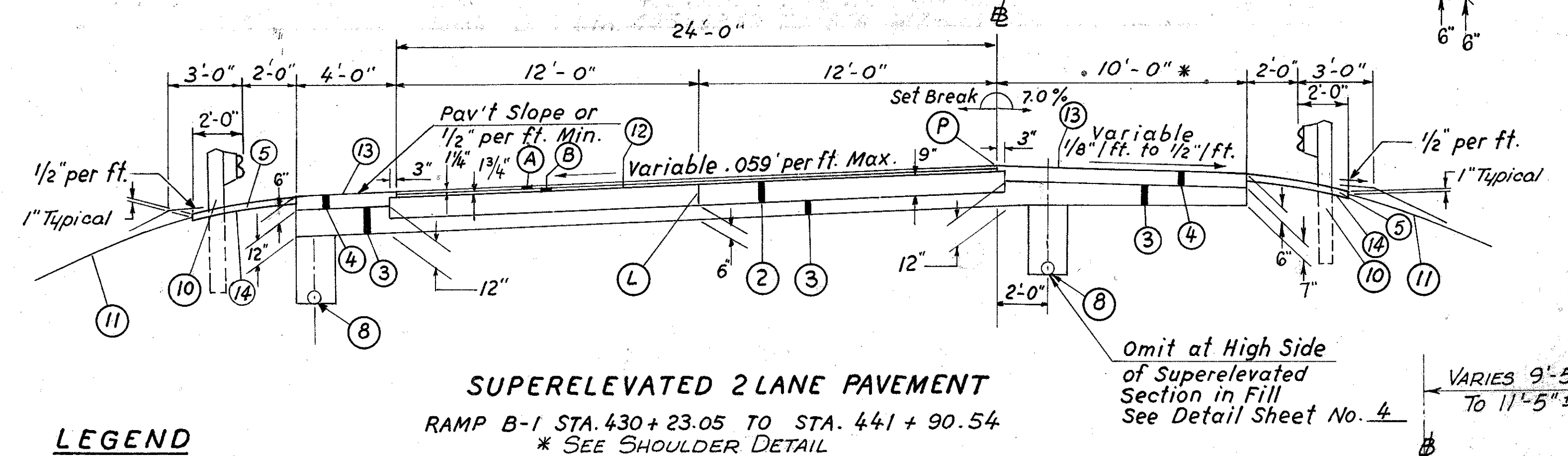
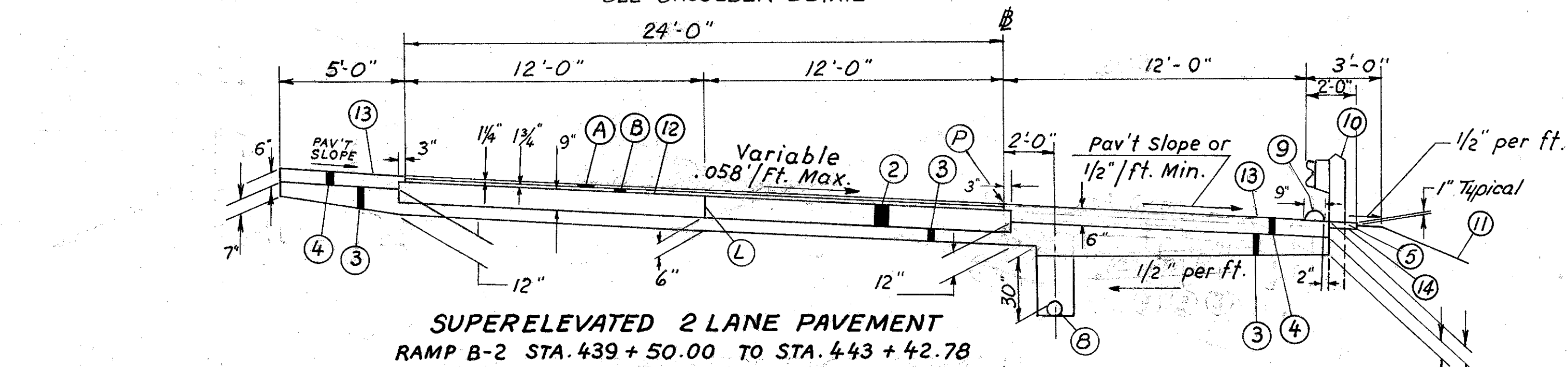
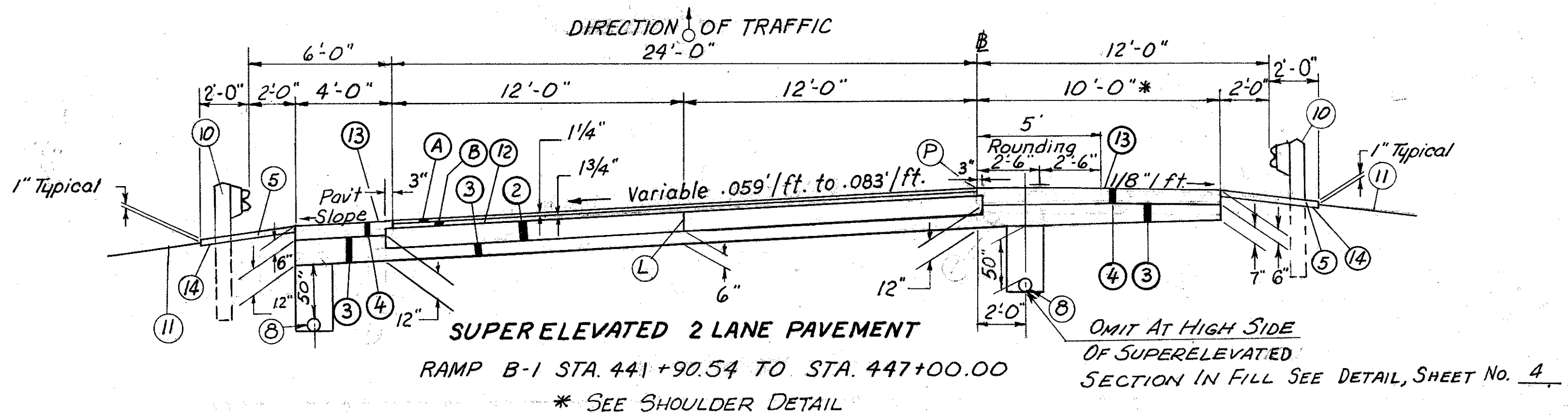
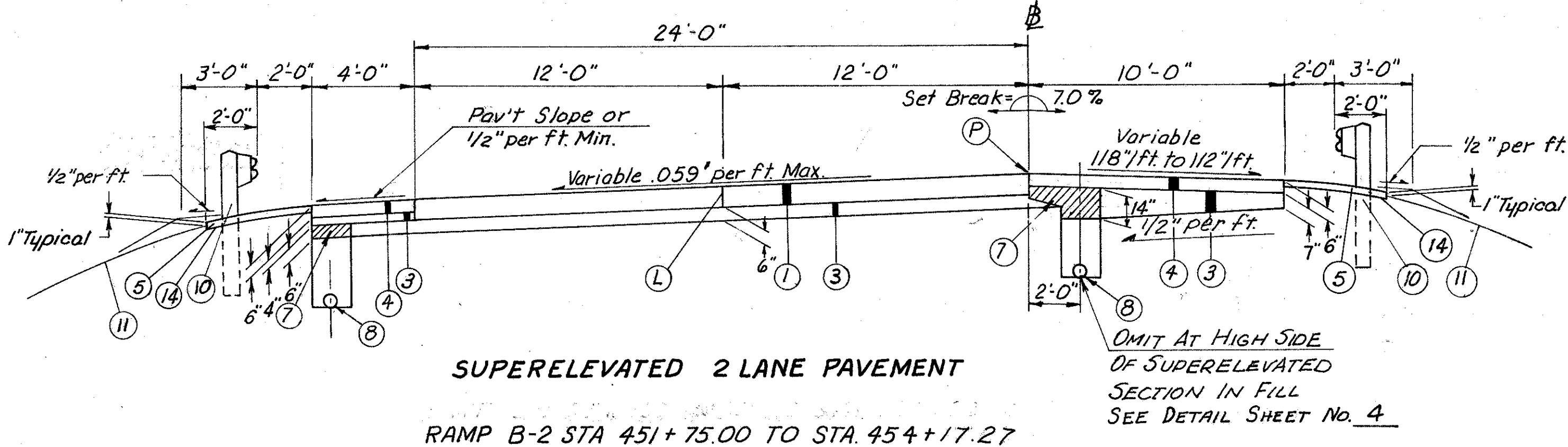
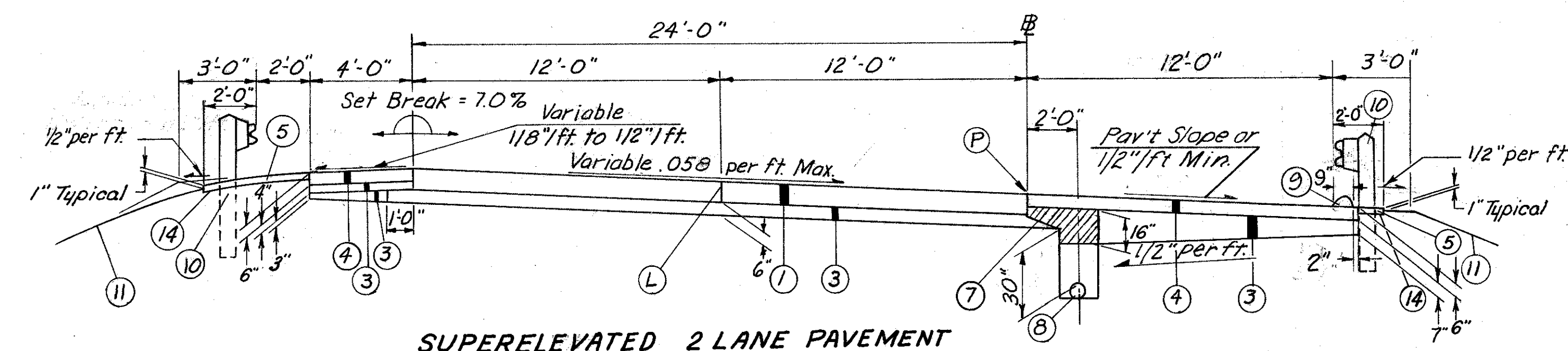
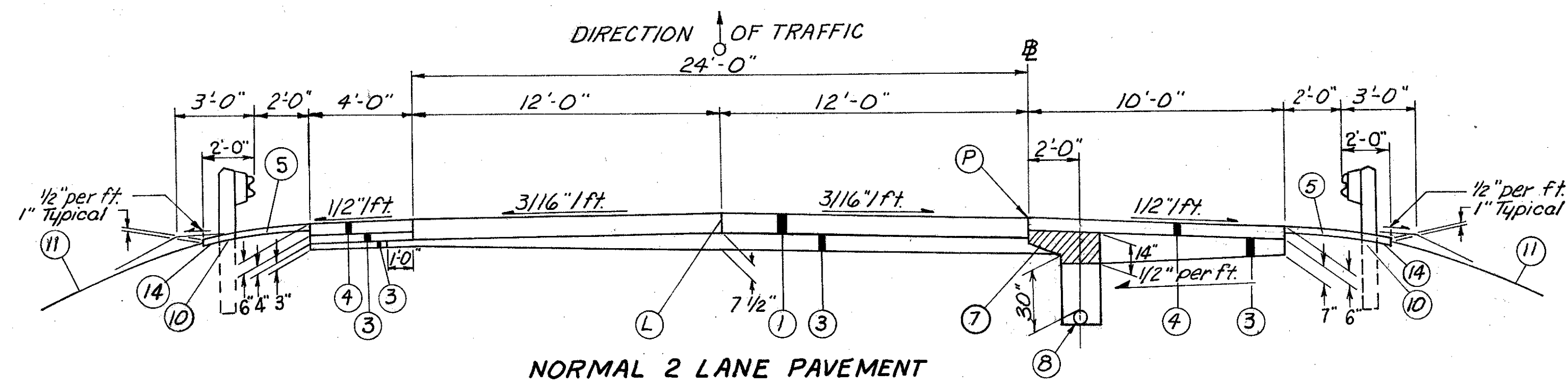
# TYPICAL SECTIONS

Rev. RJM Date 2-27-78

FED. RD. DIVISION	STATE	PROJECT	5
2	OHIO		3/7

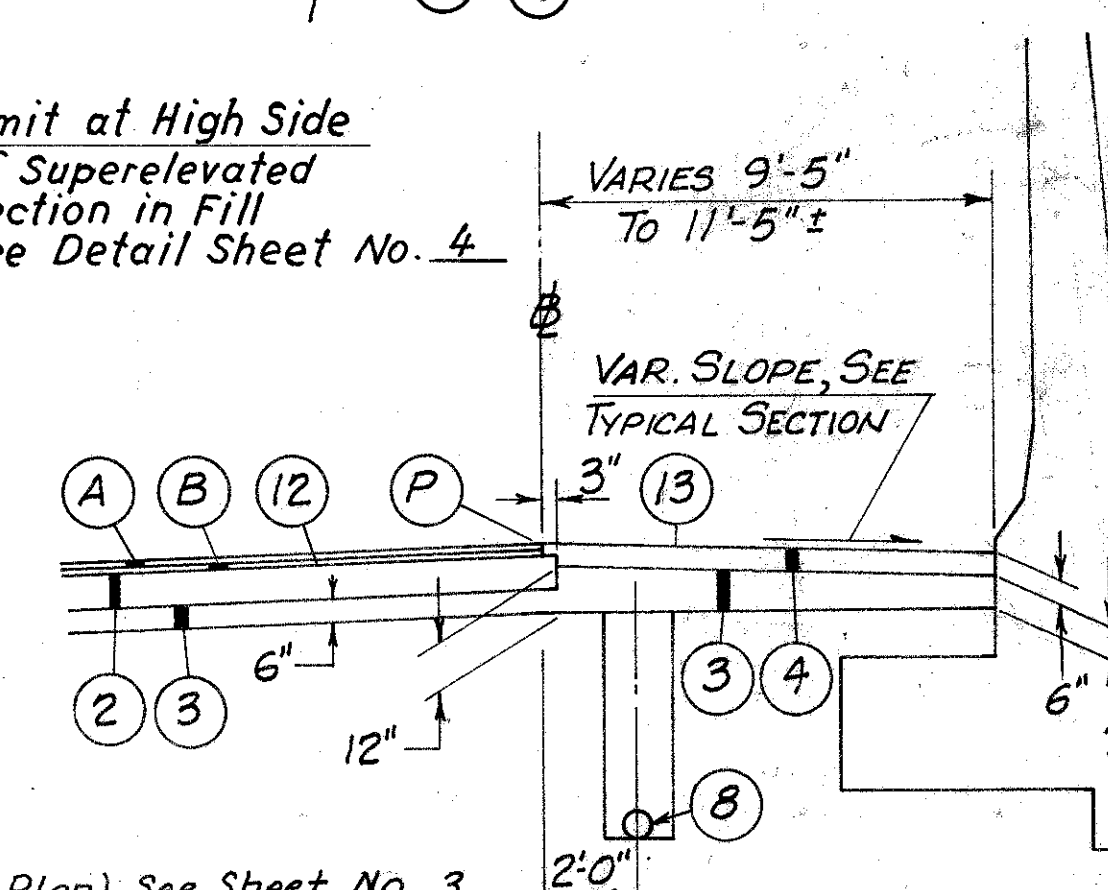
CUYAHOGA COUNTY  
CUY-480-6.78

## TYPE 45I AND TYPE 404 ON 80I

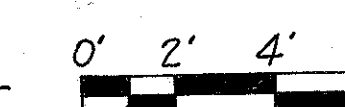


### LEGEND

- (A) Item 404 1 1/4" Asphalt Concrete AC-20
- (B) Item 402 1 3/4" Asphalt concrete AC-20
- (L) Item 451 10" Reinforced Portland Cement Concrete Pavement.
- (1) Item 801 9" Portland Cement Concrete Base
- (2) Item 310 Subbase (Thickness as Shown) Grading "A" as per plan
- (3) Item 301 6" Bituminous Aggregate Base, 702.01 AC-20 or 702.09 RT-11 or RT-12
- (4) Item 301 3" Bituminous Aggregate Base, 702.01 AC-20 or 702.09 RT-11 or RT-12
- (5) Item 606 Guard Rail Type 5
- (7) Item SPECIAL Drainage Connection, using No. 8 Aggregate (See Note in Proposal)
- (8) Item 605 6" Underdrain, Shallow 30" Cover - Deep 50" Cover, Subgrade to Top of Pipe (As Per Plan) See Sheet No. 3
- (9) Item 609 Asphalt Concrete Curb, (AC-20) Type 1
- (10) Item 606 Guard Rail, Type 5
- (11) Item 659 Seeding and Mulching (See General Notes)
- (L) Standard Longitudinal Joint.
- (P) Profile Grade
- (12) Item 407 Tack Coat (0.10 Gal./s.y.) 702.04, SS-1, SS-1H, MS-2 or RS-1 or 702.02 RC-250
- (13) Item 409 Seal Coat Bituminous Material, 702.09 RT-9 or RT-10; 702.02 MC-800 or MC-1000; 702.03, CBAE-800; or 702.04, RS-1, RS-2, CRS-1 or CRS-2
- (14) Item Special Herbicide for Weed Control

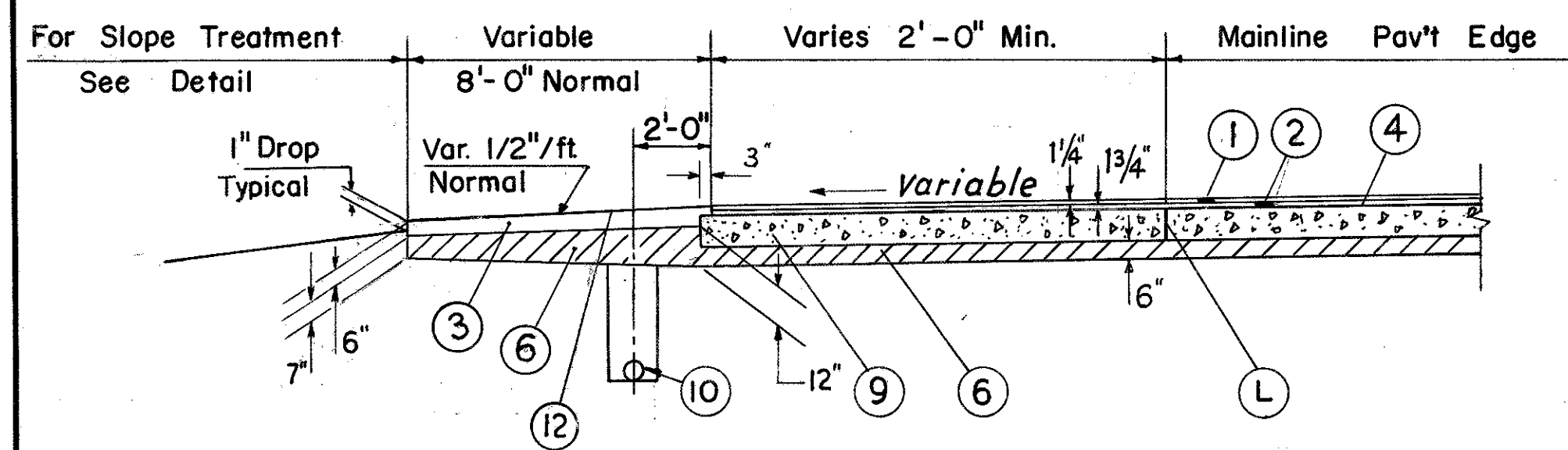


**NOTE:**  
For Excavation or Embankment Section and Sequence of Operation See Mainline Typical Section.

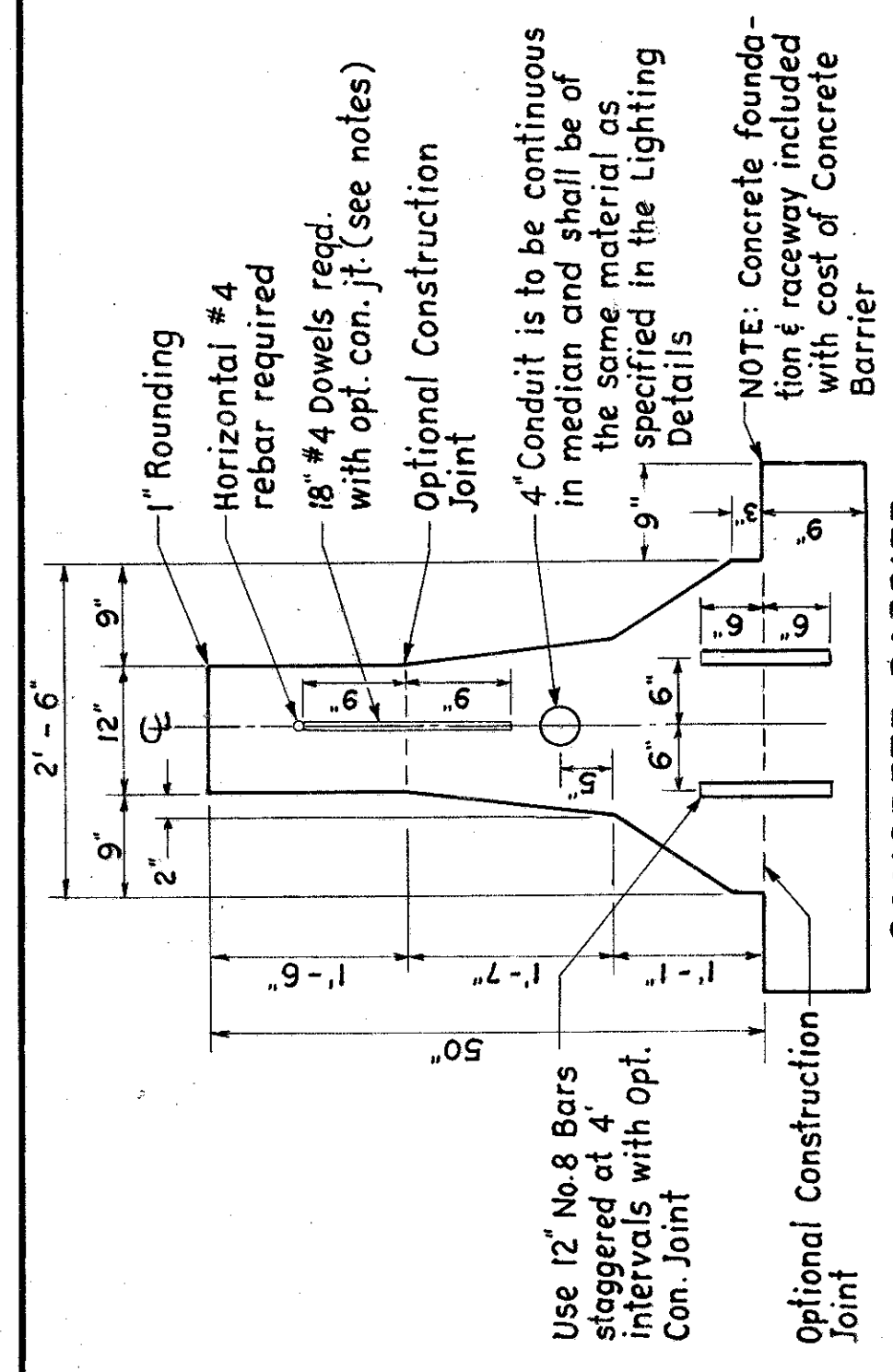


# TYPICAL SECTIONS

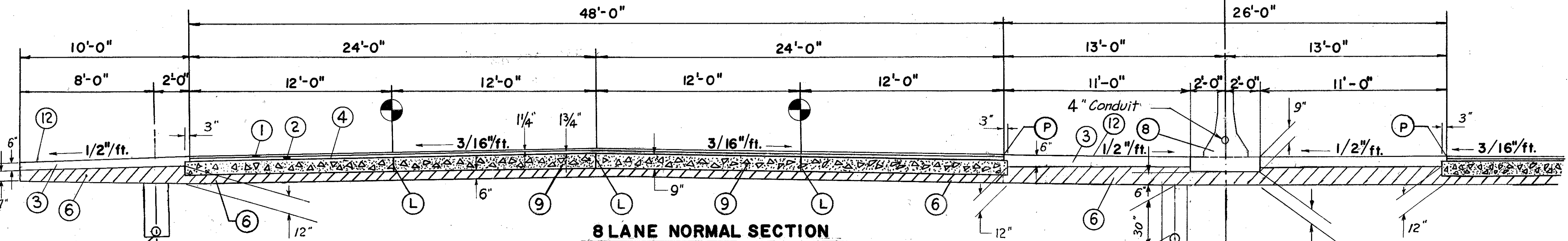
## TYPE 404 ON 801



**RAMP SPEED CHANGE DETAIL**

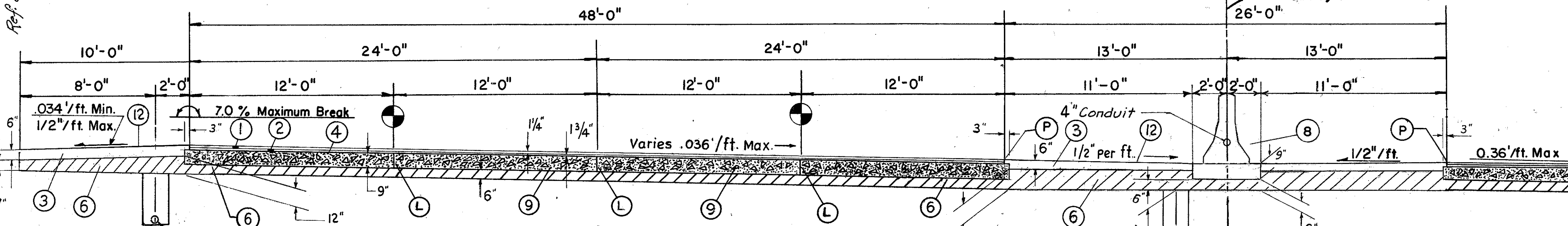


**CONCRETE BARRIER TYPE H**  
Ref. Sht. No. 93 B



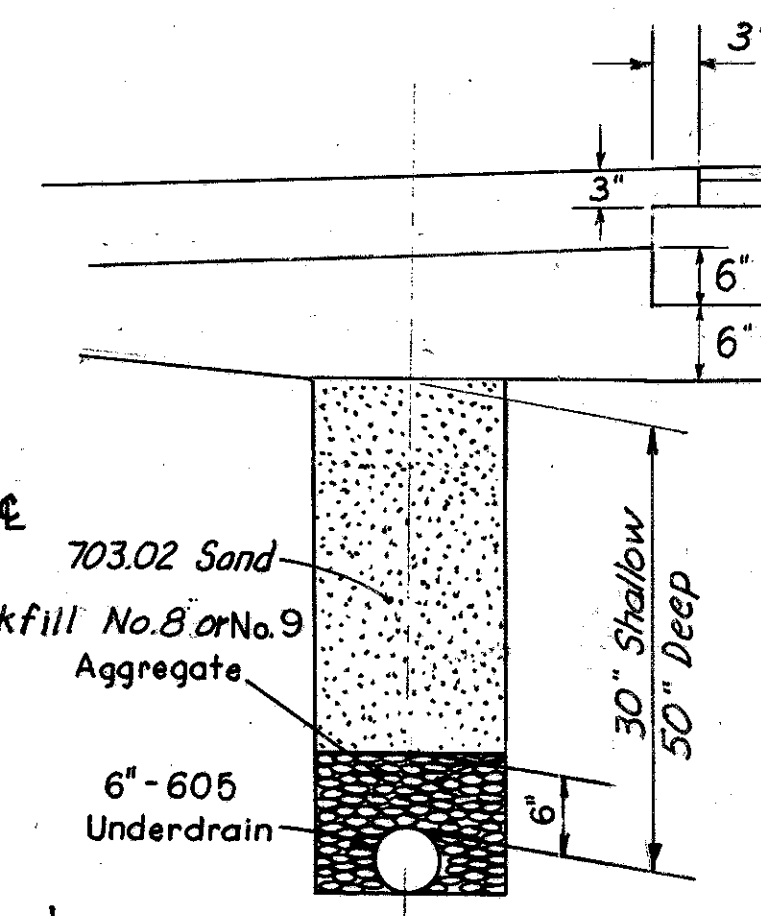
**8 LANE NORMAL SECTION**

Sta. 457+92.50 to Sta. 461+29.24  
Sta. 479+00.00 to Sta. 492+00.00



**8 LANE SUPERELEVATED SECTION**

Sta. 461+29.24 to Sta. 479+00.00 - Curve Right  
Sta. 492+00.00 to Sta. 495+01.76 (Back) - Curve Left  
Sta. 420+30.02 (Fwd) to Sta. 422+56.80 - Curve Left (Eastbound Lanes)  
Sta. 420+30.02 (Fwd) to Sta. 431+50.00 - Curve Left (Westbound Lanes)



**UNDERDRAIN DETAIL**

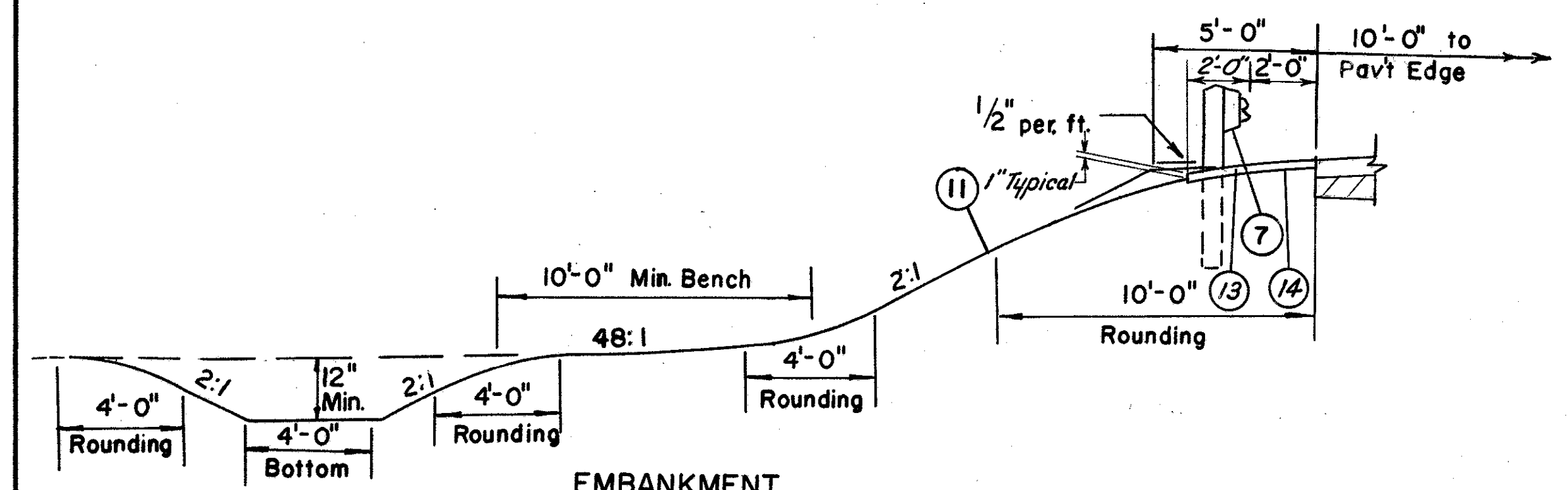
SCALE: 3/4" = 1 Ft.

**STATION MARKING**

The Contractor shall stencil station numbers onto the top of the concrete barrier before it takes its final set. The complete station number is to be marked each 100 ft. The numerals shall be 3 to 4 inches in height and 1/4-inch in depth. The station numbers shall be placed parallel with the pavement edge and centered on top of the concrete barrier. Payment shall be included in the contract price bid per Item 622- Concrete Barrier.

**LEGEND**

- ⑬ 301 3" Bituminous Base, 702.01 AC-20 or 702.09 RT-11 or RT-12
- ⑭ Special Herbicide for Weed Control
- ① 404 1 1/4" Asphalt Concrete AC-20
- ② 402 1 3/4" Asphalt Concrete AC-20
- ③ 301 Bituminous Aggregate Base, 702.01 AC-20 or 702.09 RT-11 or RT-12 (Thickness as Shown)
- ④ 407 Tack Coat (.10 Gal./S.Y.) 702.04, SS-1, SS-1H, MS-2 or RS-1 or 702.02 RC 250
- ④ 407 Cover Aggregate
- ⑥ 310 Subbase (Thickness as Shown). (Grading "A") As Per Plan (See General Notes)
- ⑦ 606 Guard Rail Type 5.
- ⑧ 622 Concrete Barrier Type "H"
- ⑨ 801 9" Portland Cement Concrete Base
- ⑩ 605 6" Underdrain, Shallow 30" Cover - Deep 50" Cover, Subgrade to top of pipe (As Per Plan) See Sheet No. 3
- ⑪ Seeding & Mulching (See General Notes)
- P Profile Grade
- L Standard Longitudinal Joint
- Hot Longitudinal Joint
- ⑫ 409 Seal Coat Bituminous Material (.02 Gal./S.Y.), 702.09 RT-9 or RT-10; 702.02 MC 800 or MC-3000; 702.03, CBAE-800; or 702.04, RS-1, RS-2, CR5-1 or CR5-2.
- ⑫ 409 Seal Coat Cover Aggregate No. 8

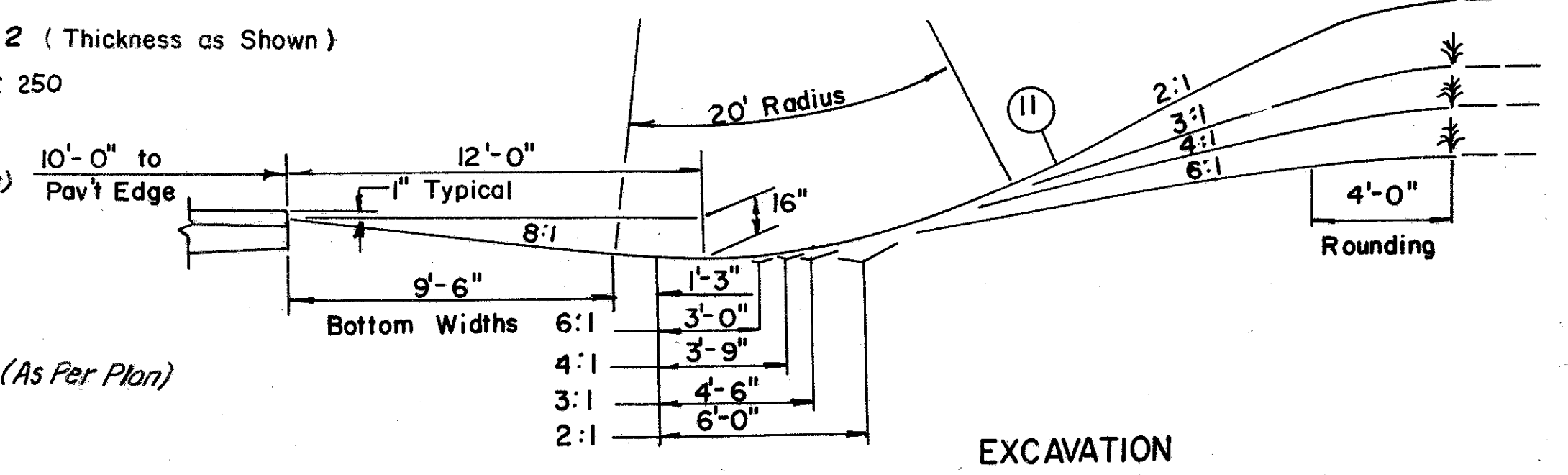


**EMBANKMENT**

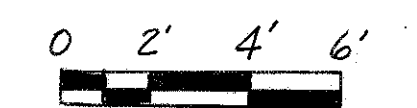
(Over 16 Feet)

**622 CONCRETE BARRIER, TYPE H**

The 50" high concrete barrier shall be built to the dimensions shown in the plan details. The upper 18" may be constructed integrally with the bottom, or separately with No. 4 rebar dowels at 4' maximum spacing. Start and end dowels 6" from barrier vertical joints. Barrier foundation shall be 9 inches deep and 18 inches wider than the base of the barrier. The top width shown on the details is minimum and varies with transitions around sign support foundations and bridge piers. At end terminals, taper the upper 18" to 0" in 6 feet. Concrete barrier if constructed on top of an approach slab shall omit the 9" deep foundation. Dowels shall be retained to tie barrier to the approach slab.



**EXCAVATION**



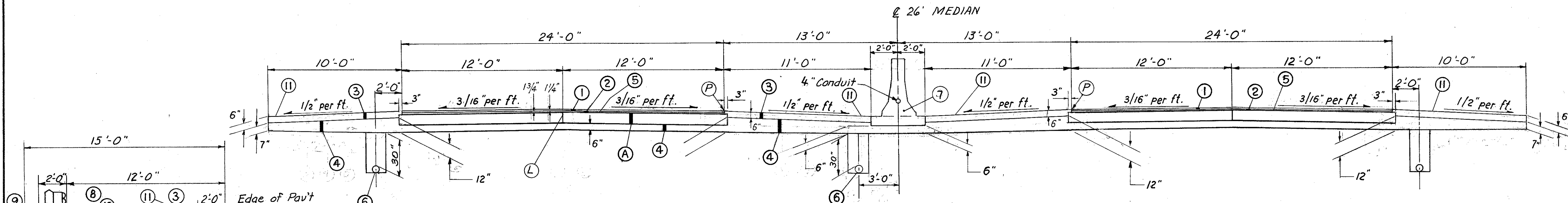
# TYPICAL SECTIONS

## TYPE 404 ON 801

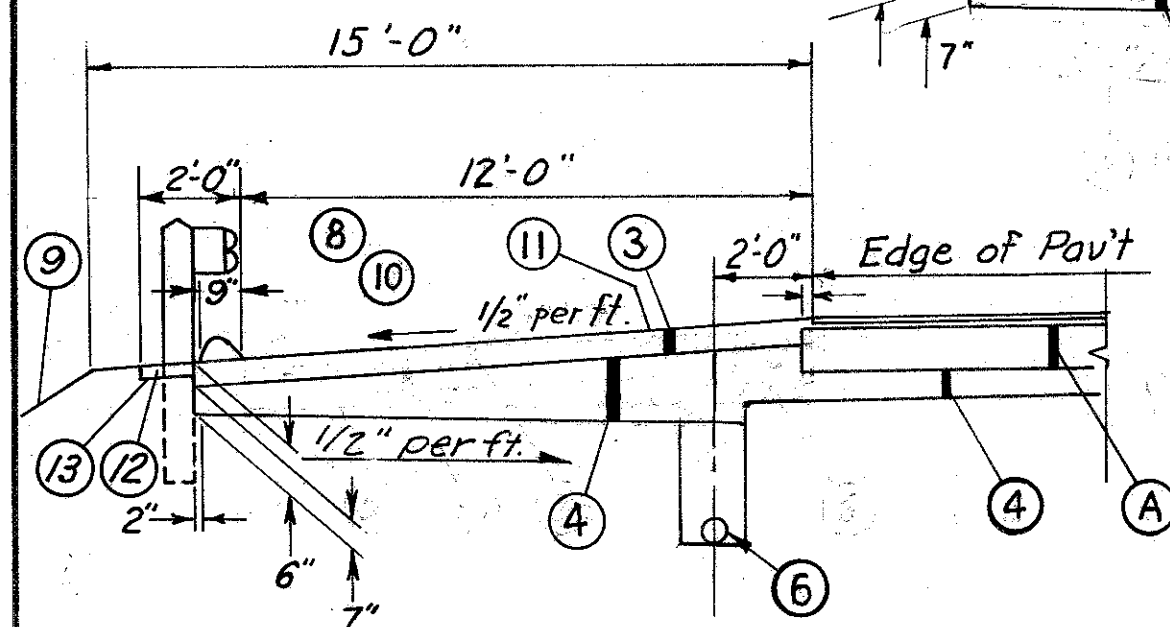
Rev. R.J.Mc. Date: 2-9-78

FED. RD. DIVISION	STATE	PROJECT	4
2	OHIO		3/7

CUYAHOGA COUNTY  
CUY-480-6.78

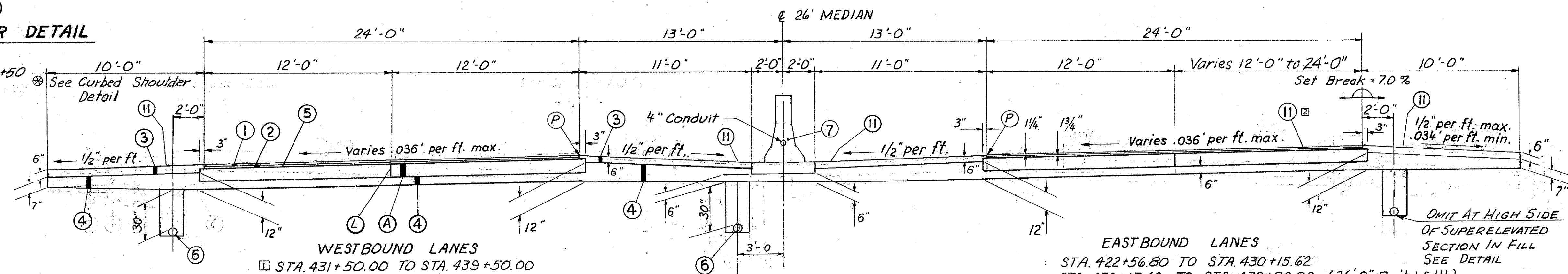


**NORMAL SECTION - 4 LANES**  
 STA. 442+75.00 TO STA. 443+18.00  
 STA. 444+86.58 TO STA. 447+98.81



**CURBED SHOULDER DETAIL**

I-480 Lt. STA. 439+00 TO STA. 439+50



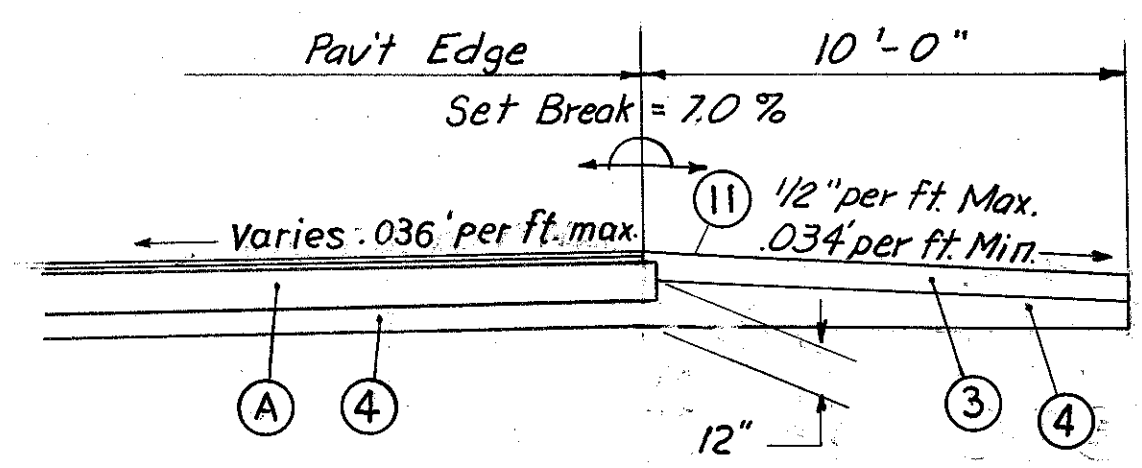
**SUPERELEVATED SECTION - 4 LANES**

**WESTBOUND LANES**  
 □ STA. 431+50.00 TO STA. 439+50.00  
 ⊗ STA. 439+50.00 TO STA. 442+75.00

**EASTBOUND LANES**  
 STA. 422+56.80 TO STA. 430+15.62  
 STA. 430+15.62 TO STA. 432+82.08 (36'-0" Pav't Width)  
 STA. 432+82.08 TO STA. 441+22.08 (Width Varies 36'-0" to 24'-0")  
 STA. 441+22.08 TO STA. 442+75.00

**LEGEND**

- (A) Item 801 9" Portland Cement Concrete Base
- (1) Item 404 1/4" Asphalt Concrete AC-20
- (2) Item 402 1 3/4" Asphalt Concrete AC-20
- (3) Item 301 Bituminous Aggregate Base, 702.01 AC-20 or 702.09 RT-11 or RT-12 (Thickness As Shown)
- (4) Item 310 Subbase (Thickness as Shown) Grading "A", as per Plan
- (5) Item 407 Tack Coat, (0.10 Gal./Sq.Yd.) 702.04, SS-1, SS-1H, MS-2 or RS-1 or 702.02 RC-250 Cover Aggregate
- (6) Item 605 6" Underdrain, Shallow 30" Cover - Deep 50" Cover, Subgrade to Top of Pipe (As Per Plan) See Sht. No. 3
- (7) Item 622 Concrete Barrier Type "H" (For Detail. See Sheet No. 3)
- (8) Item 606 Guard Rail Type 5
- (9) Item 659 Seeding & Mulching (See General Notes)
- (10) Item 609 Asphalt Concrete Curb, (AC-20) Type I
- (L) Standard Longitudinal Joint
- (P) Profile Grade
- (11) Item 409 Seal Coat Bituminous Material, (0.2 Gal./Sq.Yd.) 702.02, MC-800 or MC-3000; 702.03, Seal Coat Cover Aggregate No. 8 (CBAE-800; 702.04; RS-1, RS-2, CRS-1)
- (12) Item 301 3" Bituminous Base, 702.01 AC-20 or 702.09 RT-11 or RT-12 (CRS-1, CRS-2 or 702.02, RT-12, RT-13, RT-14)
- (13) Item Special Herbicide for Weed Control



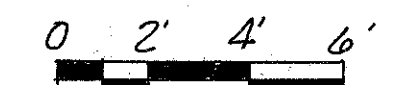
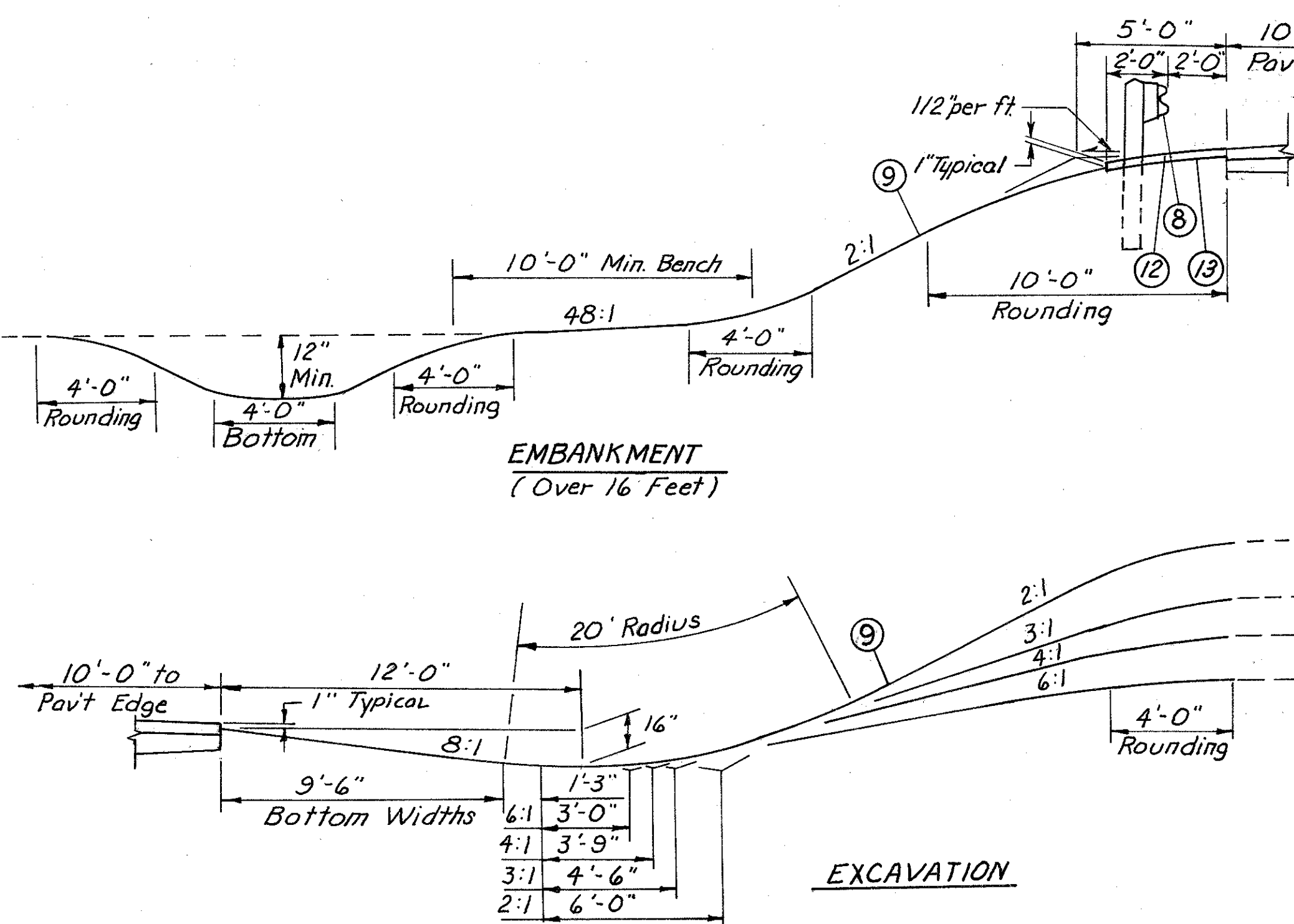
**SHOULDER DETAIL WITHOUT UNDERDRAIN**  
 STA. 430+15.62 TO STA. 442+00.00

**SEQUENCE OF OPERATIONS FOR PLACING PIPE UNDERDRAIN FOR TYPE 451 RAMPS ONLY**

- (1) Install pipe underdrain on outside shoulder.
- (2) Place subbase out to outside edge of underdrain or to one foot beyond edge of pavement where no underdrain is present.
- (3) Construct Item 451.
- (4) Remove subbase and any contaminated backfill over drain and replace with "Item Special-Drainage Connection" as shown.
- (5) Complete shoulder construction.
- (6) Payment shall be made for all subbase placed under this operation.

NOTE:  
 □ Pavement Width Varies, See Pavement Detail Sheet 72

□ Provide Seal Coat Bituminous material and cover aggregate on eastbound outside lane only (lane width varies from 12'-0" to 0'-0") from Sta. 430+15.62 to Sta. 441+22.08.



# TYPICAL SECTIONS

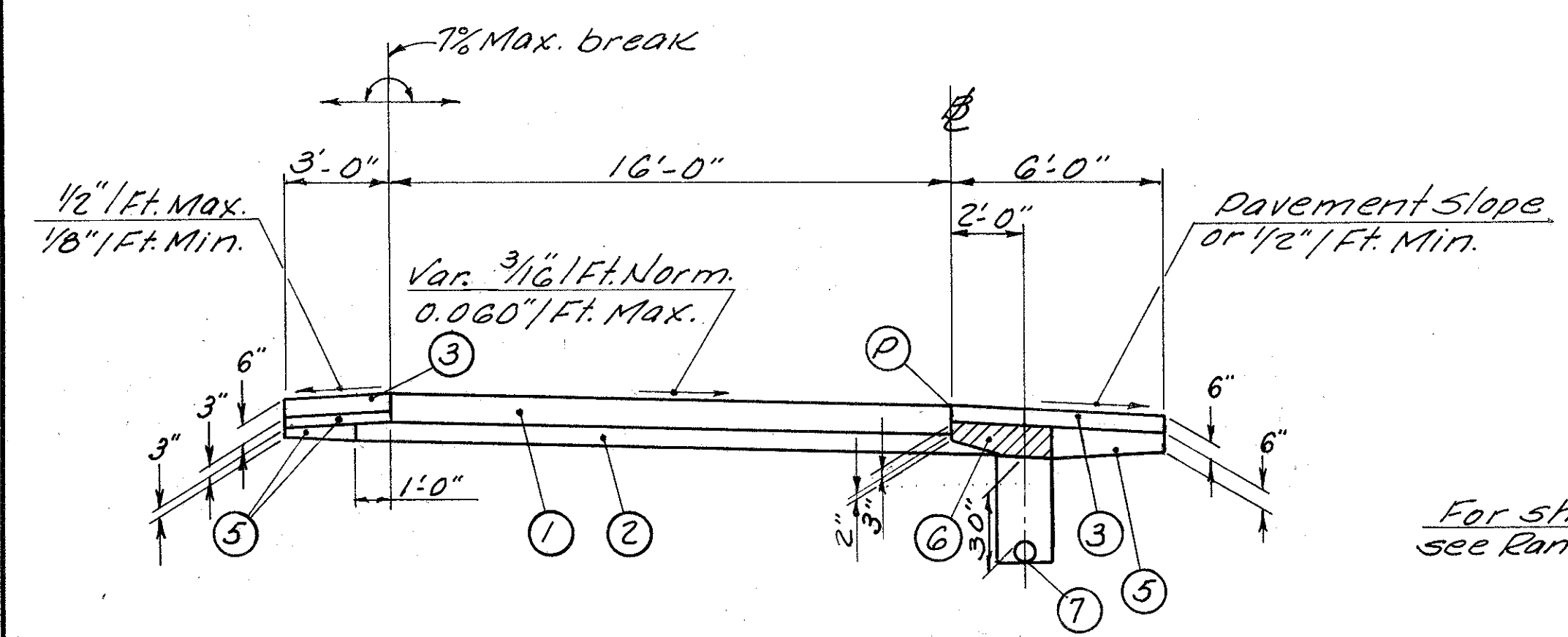
## TYPE 45I

Rev. RJM Date 2-28-78

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2	OHIO	

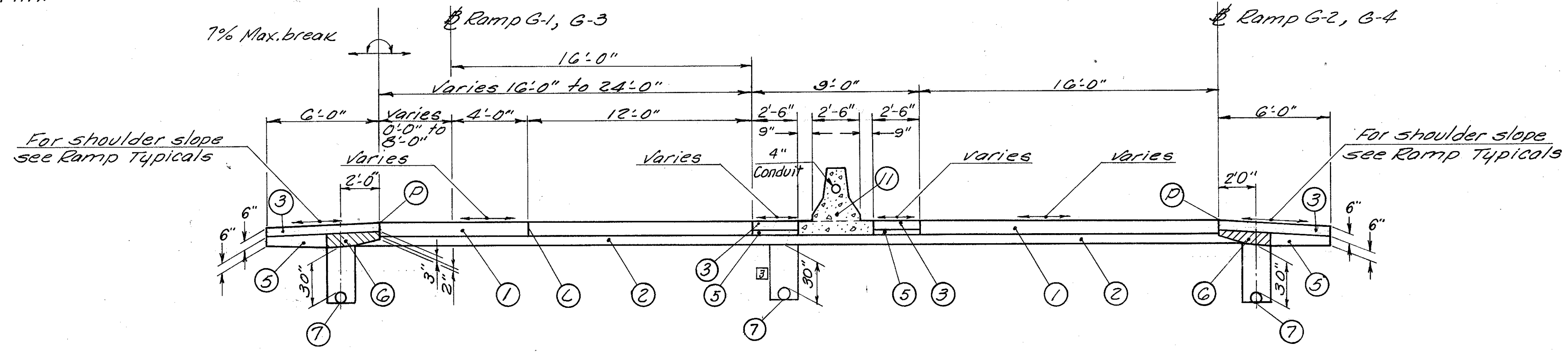
6  
3/7

CUYAHOGA COUNTY  
CUY-480-6.78



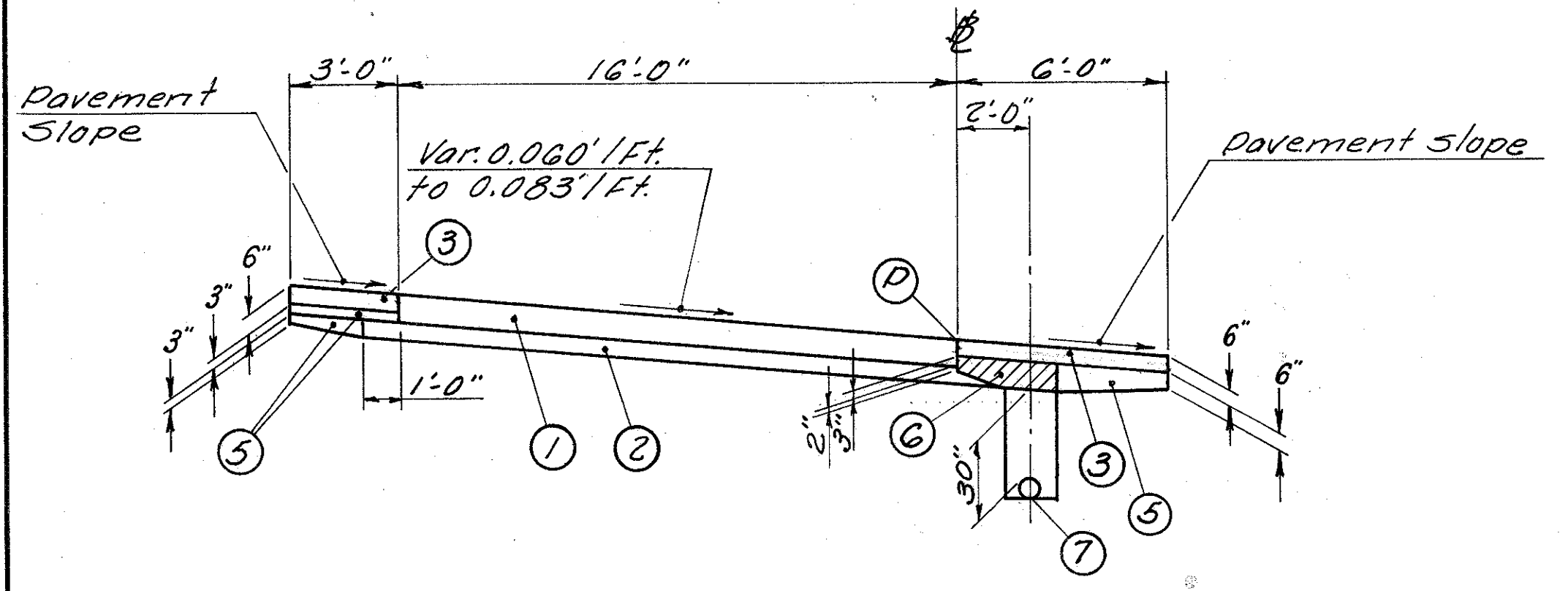
**RAMP TYPICAL**

- Sta. 473+36.85 to Sta. 474+36.85 Ramp G-1
- Sta. 474+36.85 to Sta. 481+64.21 Ramp G-1
- Sta. 467+79.27 to Sta. 469+25.00 Ramp G-2
- Sta. 469+25.00 to Sta. 469+78.12 Ramp G-2
- Sta. 473+98.61 to Sta. 475+57.79 Ramp G-2
- Sta. 476+34.38 to Sta. 477+22.99 Ramp G-3
- Sta. 482+93.59 to Sta. 484+25.00 Ramp G-4



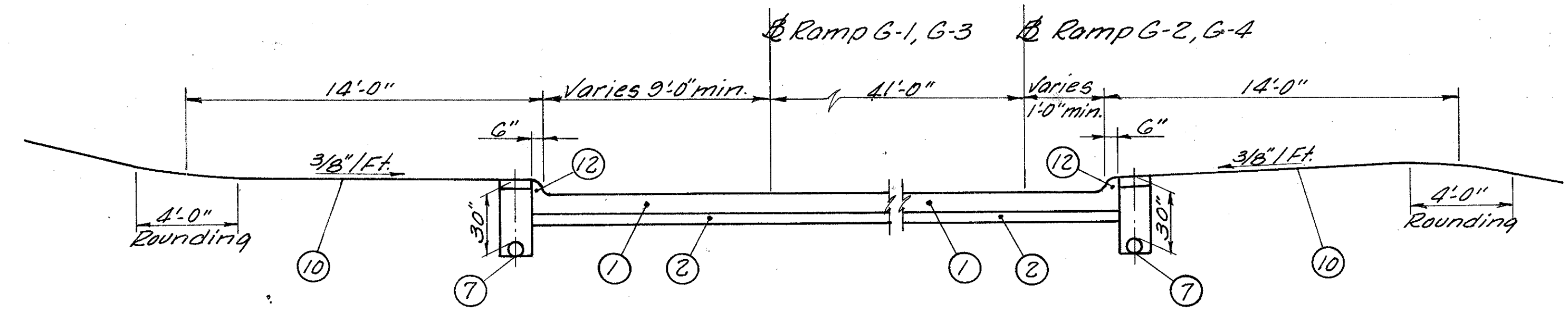
**TWO-WAY RAMP TYPICAL**

- Sta. 482+80.41 to Sta. 487+06.77 Ramp G-1
  - Sta. 487+06.77 to Sta. 488+09.50 Ramp G-1
  - Sta. 469+36.66 to Sta. 471+79.20 Ramp G-3
  - Sta. 468+34.96 to Sta. 469+36.66 Ramp G-3
  - Sta. 473+75.50 to Sta. 477+57.49 Ramp G-4
  - Sta. 472+71.77 to Sta. 473+75.50 Ramp G-4
  - Sta. 476+73.47 to Sta. 479+31.90 Ramp G-2
  - Sta. 479+31.90 to Sta. 480+33.42 Ramp G-2
- see Curbed Ramp Detail



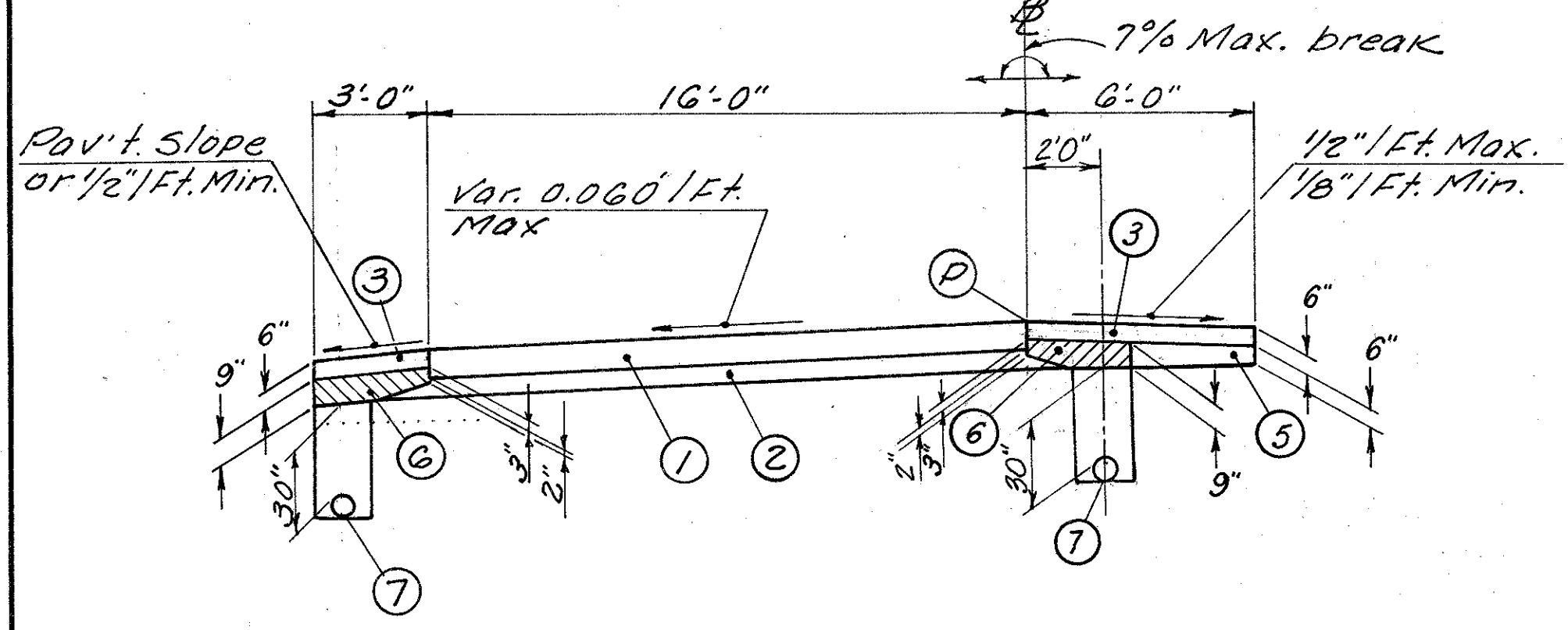
**RAMP TYPICAL - CURVE RIGHT**

- Sta. 469+78.12 to Sta. 473+98.61 Ramp G-2
- Sta. 471+79.20 to Sta. 472+44.35 Ramp G-3
- Sta. 472+44.35 to Sta. 476+22.99 Ramp G-3
- Sta. 476+22.99 to Sta. 476+34.38 Ramp G-3
- Sta. 477+57.49 to Sta. 482+25.00 Ramp G-4
- Sta. 482+25.00 to Sta. 482+93.59 Ramp G-4



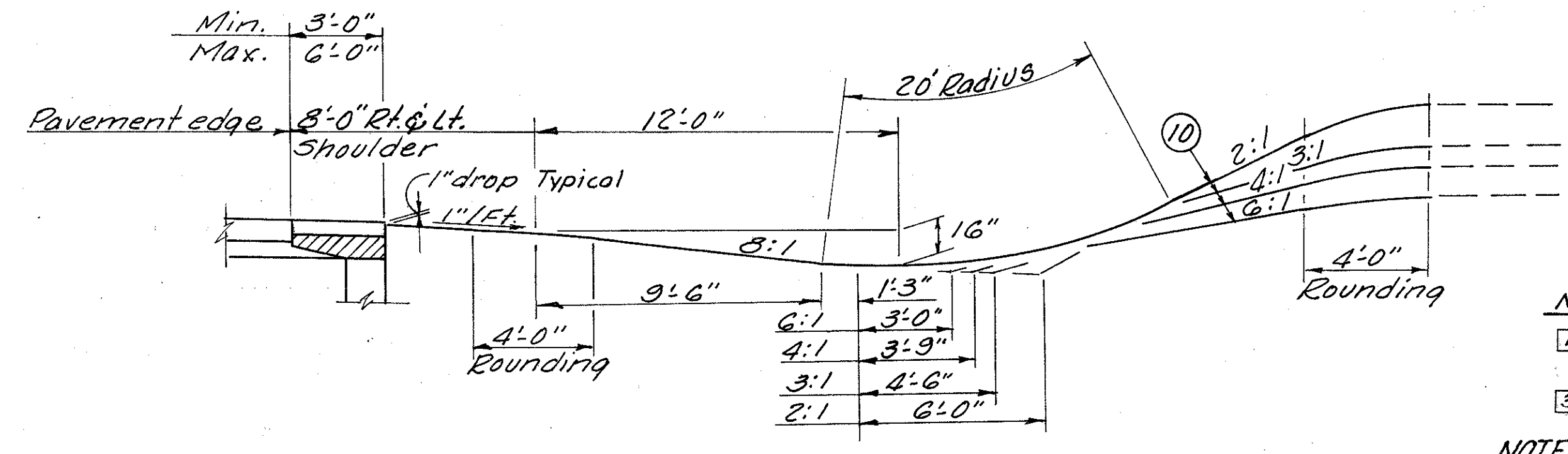
**CURBED RAMP DETAIL**

- | ITEM | DESCRIPTION   |
|------|---|
| 1    | 451 - 9" Reinforced Portland Cement Concrete Pavement   |
| 2    | 310 - 6" Subbase Grading "A", as per plan.  |
| 3    | 301 - 6" Bituminous Aggregate Base, 702.01, AC-20 or 702.09 RT-11 or RT-12 (Thickness as shown)                 |
| 5    | 310 - Subbase (Thickness as shown) Grading "A", as per plan.  |
| 6    | Special Drainage Connection, Using No. 8 Aggregate. (See Note in Proposal)                                      |
| 7    | G05 - 6" Underdrain, Shallow 30" Cover - Deep 50" Cover, Subgrade to top of pipe. (As Per Plan) See Sheet No. 3 |
| 9    | G06 - Guard Rail, Type 5.   |
| 10   | G59 - Seeding & Mulching. (See General Notes)   |
| 11   | G22 - Standard Concrete Barrier, Modified as per plan.  |
| 12   | G09 - Special 6"x7" Integral Concrete Curb, (as per plan) see Detail Sheet No. 7                                |
| P    | Profile Grade.  |
| L    | Standard Longitudinal Joint.  |



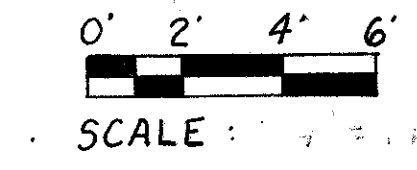
**RAMP TYPICAL - CURVE LEFT**

- Sta. 467+25.00 to Sta. 467+79.27 Ramp G-2
- Sta. 475+57.79 to Sta. 476+73.47 Ramp G-2
- Sta. 481+64.21 to Sta. 482+80.41 Ramp G-1



**EXCAVATION**

**NOTE:**  
 □ Pavement and Shoulder width vary, see Pavement Details.  
 □ For location of 6" underdrain see Ramp Plan and Profile Sheet.  
 NOTE: For Sequence of Operation for Placing Pipe Underdrains See Sheet No. 4.

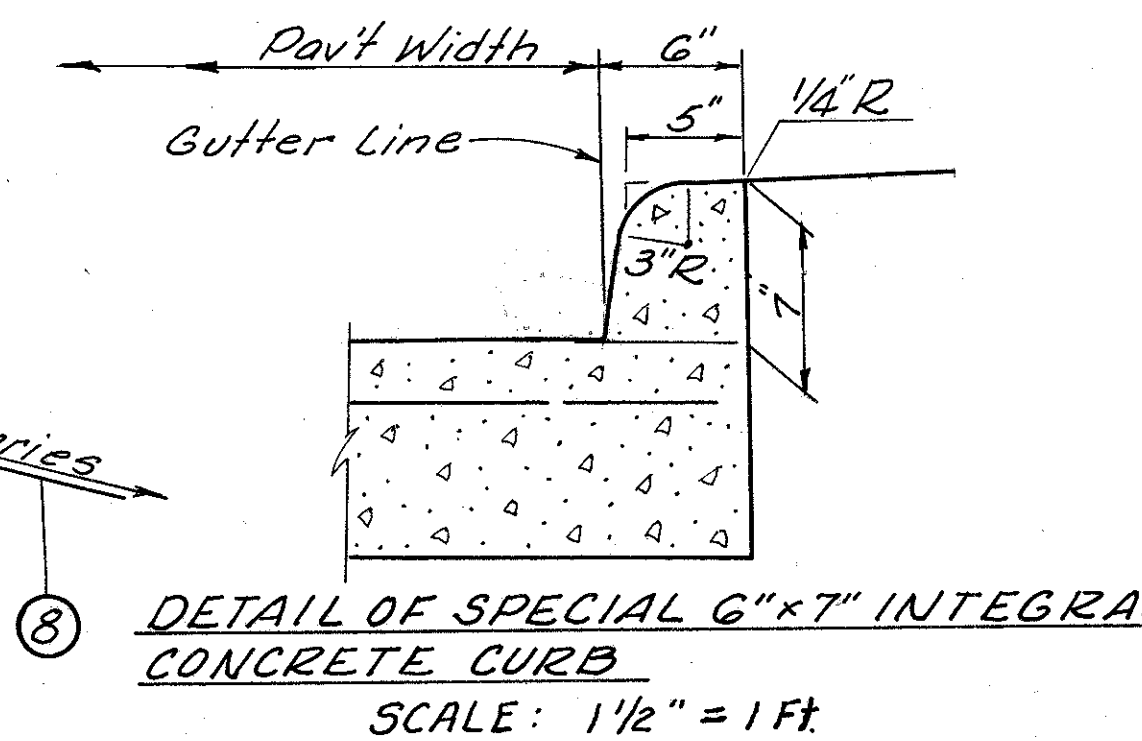
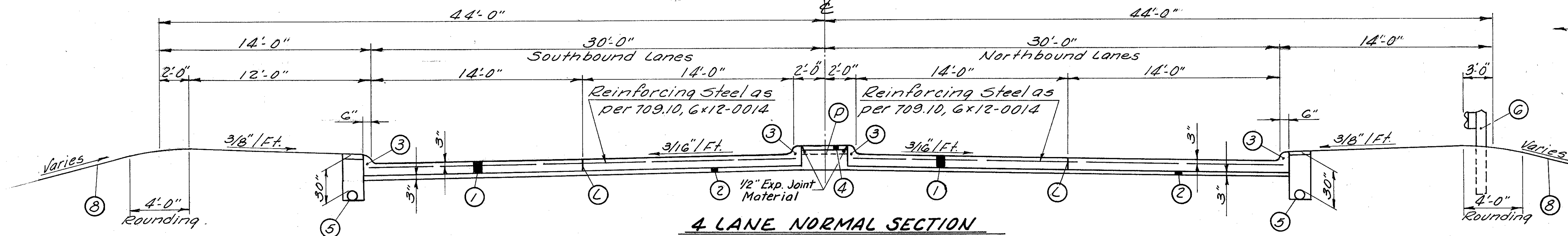


# TYPICAL SECTIONS

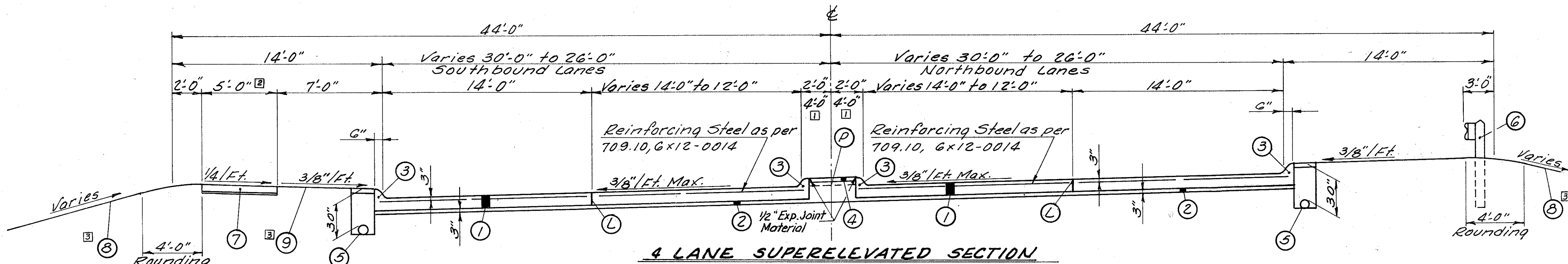
## TYPE 451

FED. RD. DIVISION	STATE	PROJECT	7
2	OHIO		317

CUYAHOGA COUNTY  
CUY-480-678



Begin Item GGO Sodding, Sta. 40+74± Lt. and Sta. 40+83± Rt.



- | ITEM | DESCRIPTION   |
|------|---|
| ①    | 451-9" Reinforced Portland Cement Concrete Pavement as per plan.                          |
| ②    | 310-3" Subbase (703.08 or 703.10).  |
| ③    | 609-Special 6"x7" Integral Concrete Curb, as per plan, see Detail.                        |
| ④    | 612-4" Concrete Median, as per plan.  |
| ⑤    | 605-6" Underdrain - 706.08 Perforated Bell & Spigot, as per plan, see Detail Sheet No. 8. |
| ⑥    | 606-Guard Rail, Type 5.   |
| ⑦    | 608-4 1/2" Concrete Walk 1/2" Granulated Slag or Screening bed.                           |
| ⑧    | 659-Seeding & Mulching. (See General Notes)   |
| ⑨    | 660-Sodding   |
| Ⓛ    | Standard Longitudinal Joint.  |
| Ⓚ    | Standard Key joints Tied.   |
| Ⓟ    | Profile Grade   |

### 4" CONCRETE MEDIAN JOINTS

Joints: 1/4" Expansion joints shall be constructed at 20' intervals. Metal separator plates or templates shall be used if necessary to hold the joint material in accurate position during the placing of the concrete.

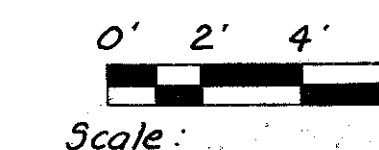
Separator plates or templates, if used, shall be removed as soon as the concrete is in place to insure the accurate retention of the joint material. Expansion joint material shall meet the requirements of 705.03. In addition to the 1/4" expansion joints, contraction joints consisting of 1/2" minimum depth, impressed joint, formed and sealed as per Standard Drawing B.P.-3 shall be placed in the concrete median at intervals not to exceed 10 feet.

NOTE: For slope treatment see Cross Sections.

Location of longitudinal joints vary in this section as shown on pavement details.

For guard rail location see Plan and Profile sheets.

For sodding locations, see plan and profile sheets.

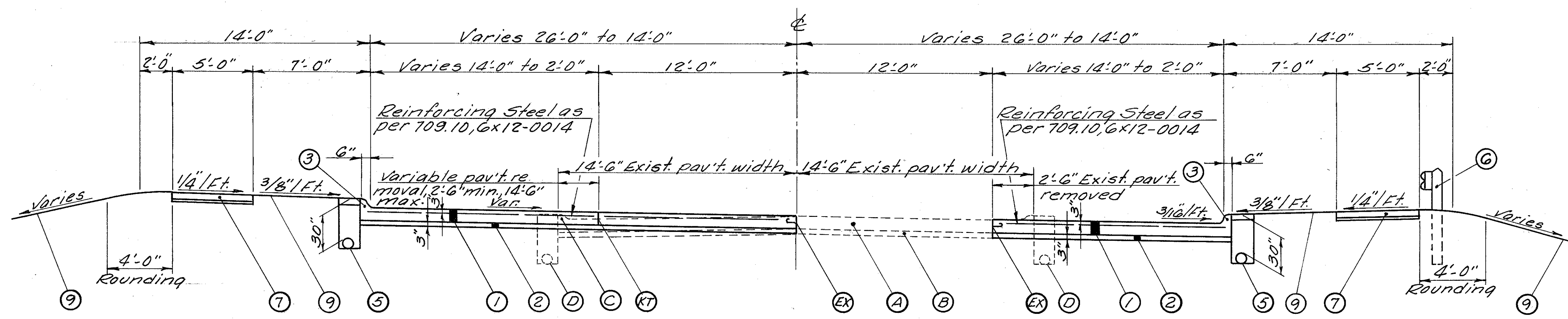


# TYPICAL SECTIONS

## TYPE 45I

FED. RD. DIVISION	STATE	PROJECT	8 317
2	OHIO		

CUYAHOGA COUNTY  
CUY-480-6.78



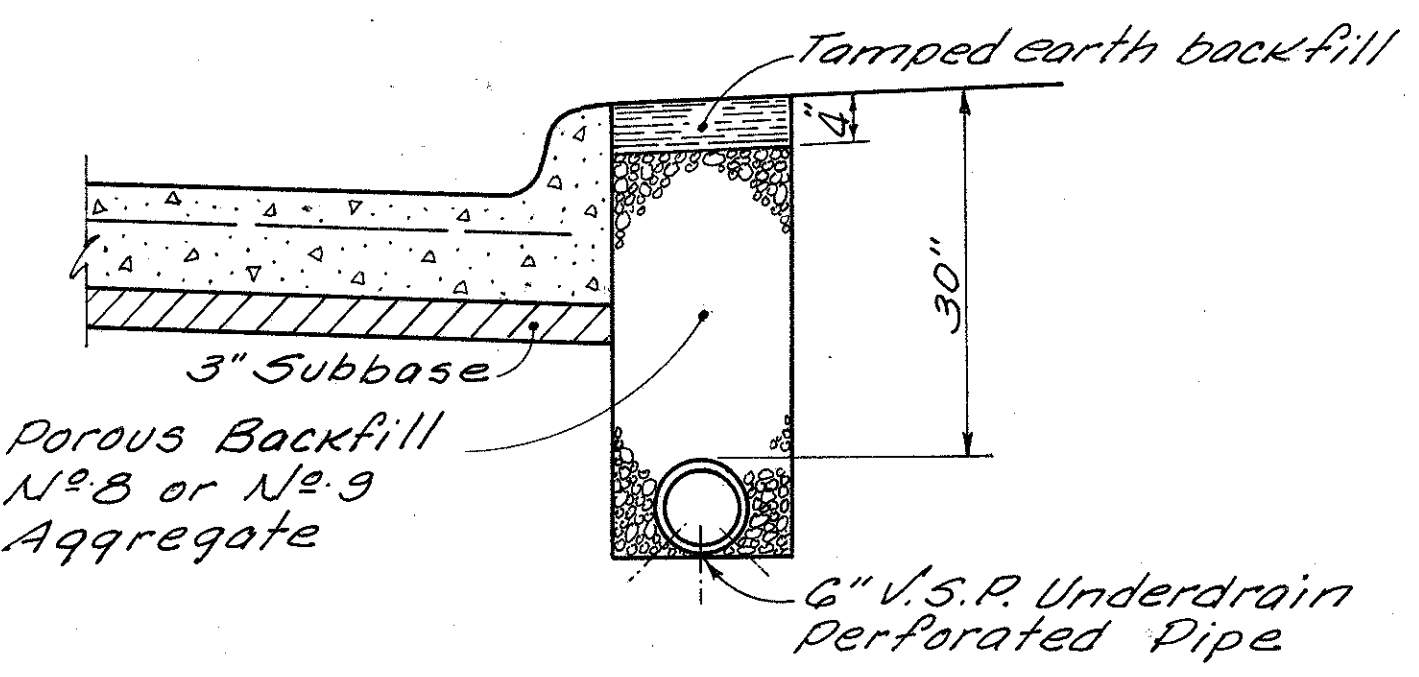
### EXISTING GRAYTON RD. WIDENING

Sta. 41+94.87 Back = Sta. 35+38.50 Forward to Sta. 39+06.00

**NOTE:** For slope treatment see Cross Sections.

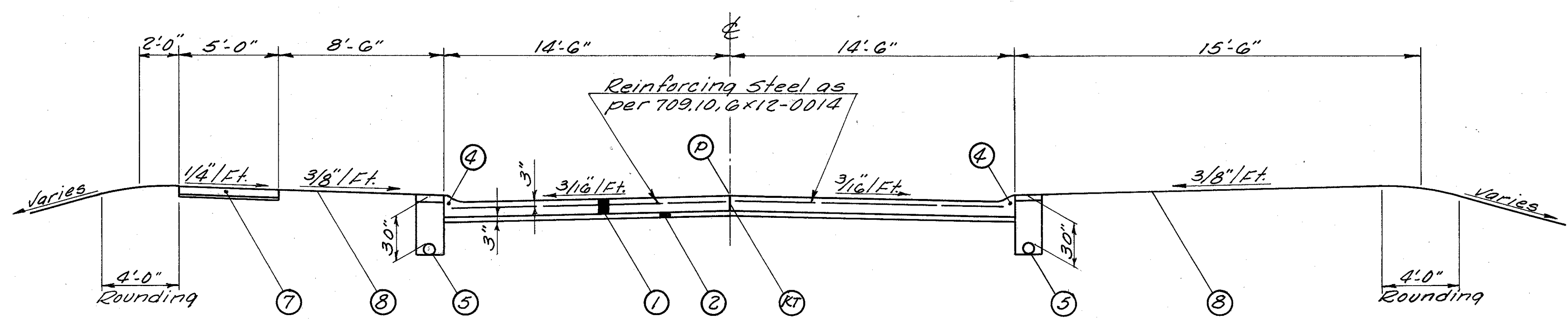
Location of longitudinal joints vary in this section as shown on pavement details

For sidewalk and guard rail location see plan and profile sheets.



**CURB & UNDERDRAIN DETAIL**  
6" x 7" Integral Concrete Curb (as per plan)  
SCALE: 3/4" = 1 Ft.

**Note:** Item G05 706.08 Perforated Bell & Spigot (as per plan) with perforations in accordance with AASHTO M65 shall be used for pipe underdrains. In addition three lugs designed to center and align the pipe and provide a 3/8" gap between pipe lengths shall be provided in the bell end of each pipe. Payment will be included in Item G05 6" Pipe Underdrain 706.08 Perforated Bell & Spigot, (as per plan).



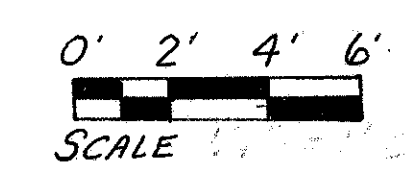
### EXISTING GRAYTON RD. CONNECTION

Sta. 28+58.00 to Sta. 29+86.53

- | ITEM | DESCRIPTION  |
|------|--|
| ①    | 451- 9" Reinforced Portland Cement Concrete Pavement, (as per plan).               |
| ②    | 310- 3" Subbase (703.08 or 703.10).  |
| ③    | G09- Special 6" x 7" Integral Concrete Curb, (as per plan) see Detail, Sheet No. 7 |
| ④    | G09- Curb, Type 3A   |
| ⑤    | G05- 6" Underdrain - 706.08 Perforated Bell & Spigot, (as per plan), see Detail    |
| ⑥    | G06- Guard Rail, Type 5  |
| ⑦    | G08- 4 1/2" Concrete walk w/ 1/2" Granulated Slag or screening bed.                |
| ⑧    | G59- Seeding & Mulching. (See General Note)  |
| ⑨    | G60- Sodding   |
| Ⓟ    | Profile Grade  |
| Ⓚ    | Standard Key Joints Tied   |
| Ⓧ    | Standard Expansion Bolt Joint  |

### EXISTING PAVEMENT LEGEND

- Ⓐ 9" Reinforced Concrete Pavement.
- Ⓑ 3" Subbase.
- Ⓒ 12" x 4" Integral Curb.
- Ⓓ 6" Underdrain (to be removed).







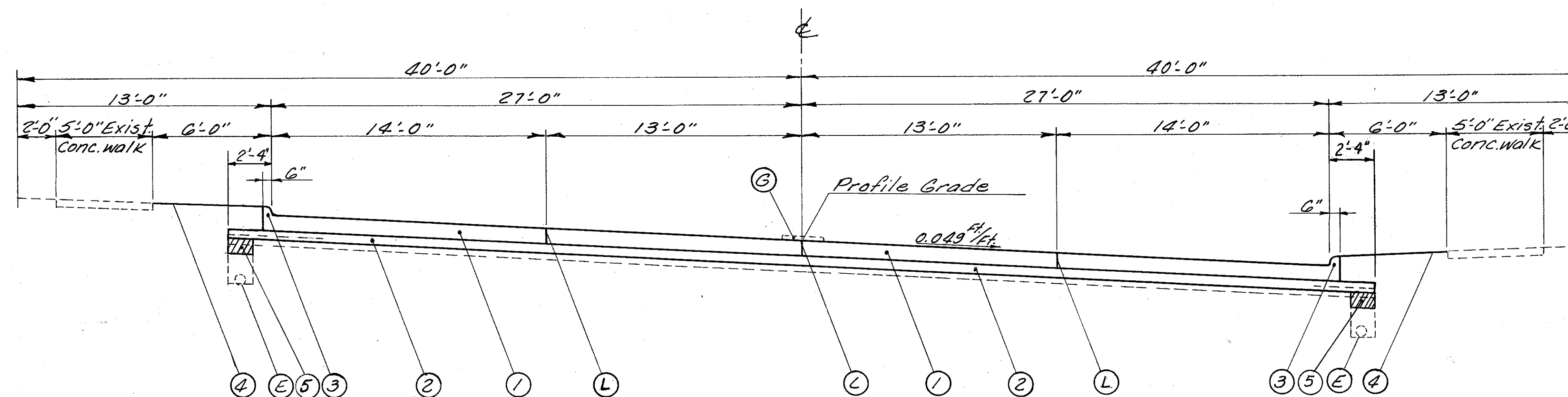
# TYPICAL SECTIONS

## TYPE 451

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

10  
3/7

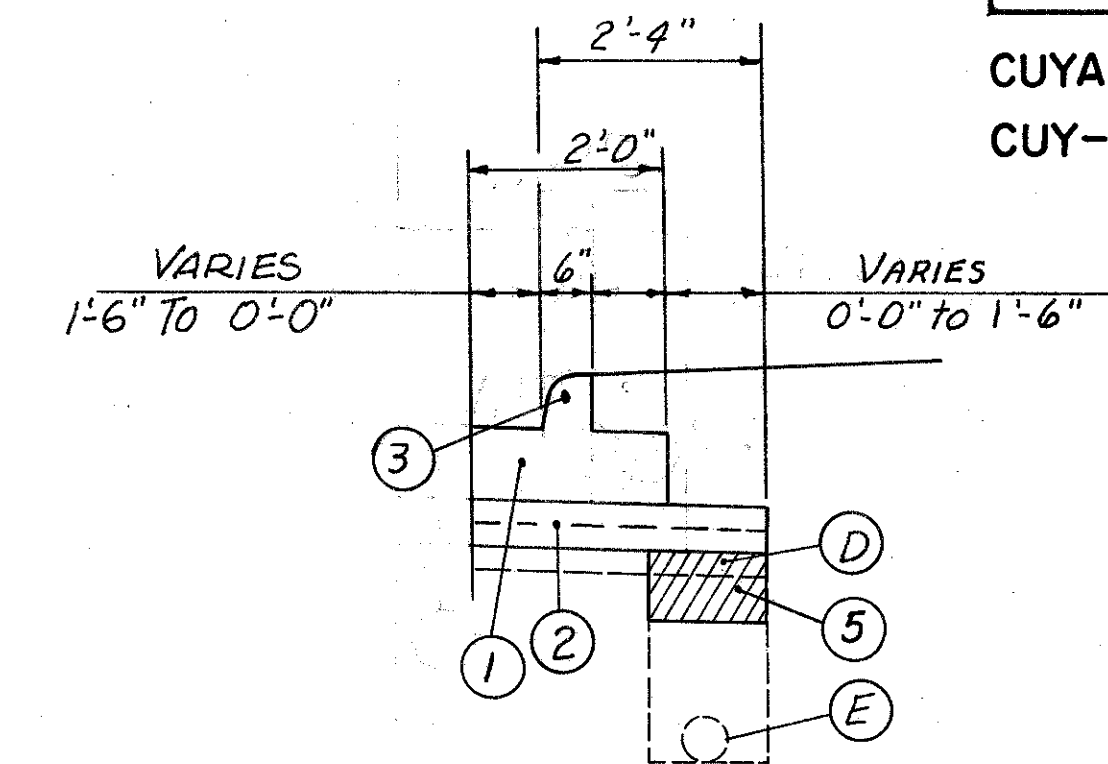
CUYAHOGA COUNTY  
CUY-480-6.78



### SUPERELEVATED SECTION

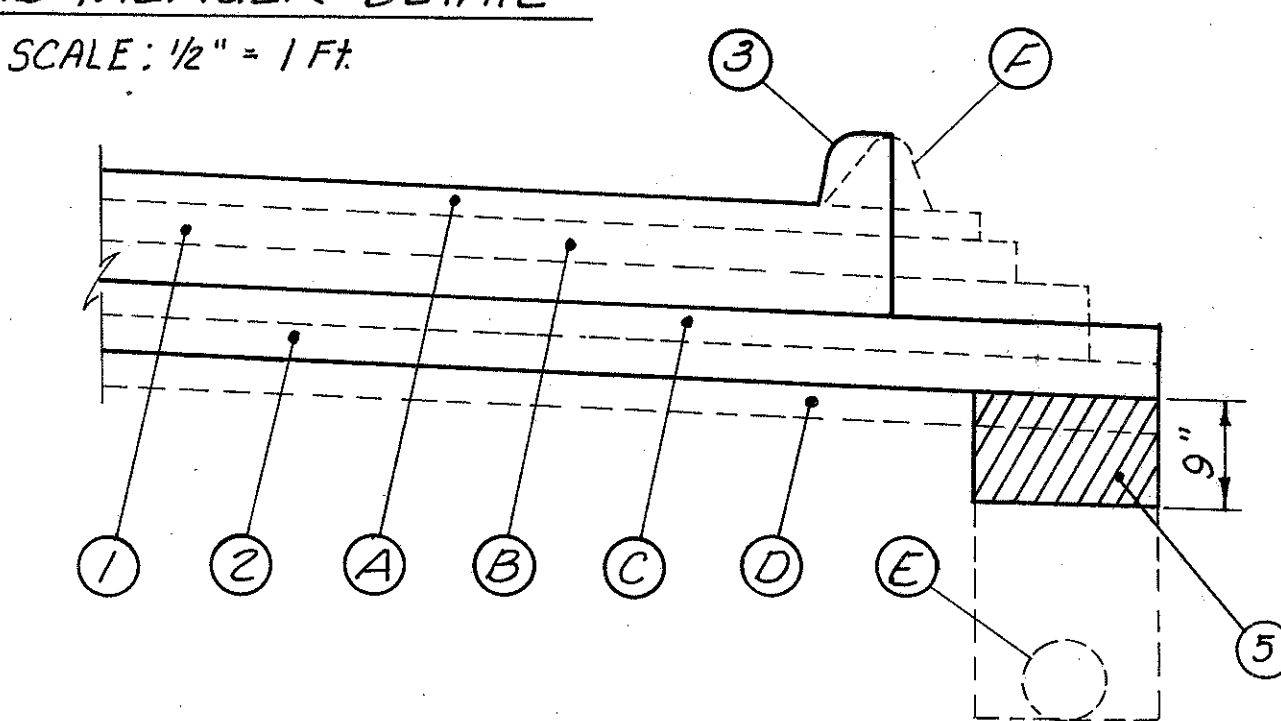
- ⊛ 0+16.50 to 0+73.72  
0+73.72 to 1+99.65  
1+99.65 to 3+64.18 (Str. & App. slab)  
3+64.18 to 12+96.52

⊛ Pavement width varies.



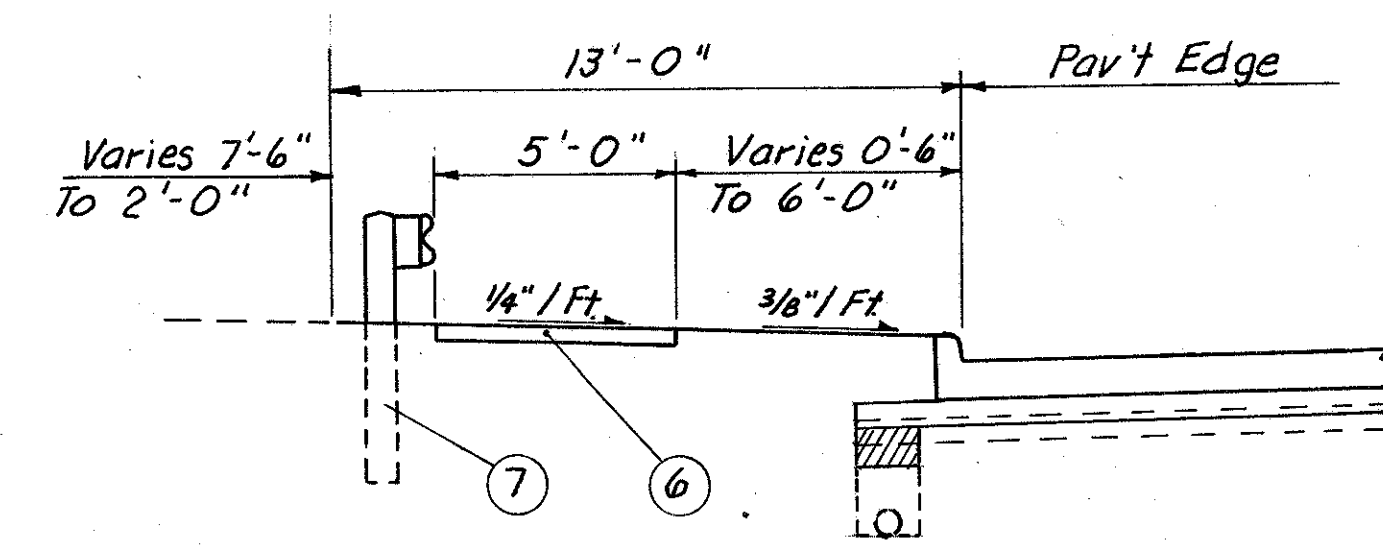
### CURB MERGER DETAIL

SCALE: 1/2" = 1 ft.



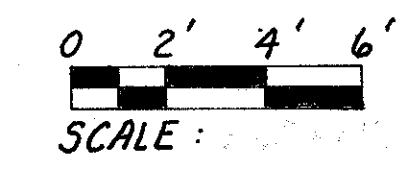
### PAVEMENT EDGE DETAIL

SCALE: 3/4" = 1 ft.



### WALK AND GUARD RAIL DETAIL

- | <u>ITEM</u>                     | <u>DESCRIPTION</u>   |
|---------------------------------|--|
| ①                               | 451 - 9" Reinforced Portland Cement Pavement.                              |
| ②                               | 310 - 6" Subbase, Grading A, as per plan.                                  |
| ③                               | 609 - Curb, Type 2-A.  |
| ④                               | 659 - Seeding and Mulching. (See General Notes)                            |
| <u>EXISTING PAVEMENT LEGEND</u> |  |
| A                               | 2 1/2" Asphalt Concrete Surface Course.                                    |
| B                               | 3" Asphalt Concrete Base.  |
| C                               | 6" Aggregate Base.   |
| D                               | 6" Subbase.  |
| E                               | 6" Underdrain (to remain).   |
| F                               | 6" x 9" Asphalt Concrete Curb.   |
| G                               | Precast Traffic Dividers - (to be removed) <i>not re-used.</i>             |
| L                               | Standard Longitudinal Joint.   |
| ⑤                               | SPECIAL Drainage Connection, Using No. 8 Aggregate (See Note in Proposal). |
| ⑥                               | 608 Concrete Walk 4 in.  |
| ⑦                               | 606 Guard Rail Type 5  |



*FIELD OFFICE: The Contractor shall provide a suitable field office having a minimum of 800 Sq. ft. of floor space and in addition to the requirements of Item 619, he shall provide and maintain sanitary provisions as per 107.06. All the above is included in the lump sum price for Item 619, Field Office.*

DATE OF TRB. MAP 7/76  
 CHD BY H.J.H. DATE 7/76

FHWA REGION	STATE	PROJECT
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 CUY 480-6.78

ROUNDING OF CORNERS SHOWN ON CROSS SECTIONS

THE ROUNDED CORNERS SHOWN ON THE TYPICAL SECTIONS, APPLY TO ALL CROSS SECTIONS EVEN THOUGH OTHERWISE SHOWN ON THESE PLANS.

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. ESTIMATED QUANTITIES OF MATERIALS SHALL NOT BE ORDERED FOR DELIVERY TO THE PROJECT UNLESS AUTHORIZED BY THE ENGINEER.

PROFILE-BROOKPARK RD. (S.R.17)

THE PROFILE OF THE PROPOSED ASPHALT CONCRETE COURSE SHALL BE APPROXIMATELY 1 INCH ABOVE THAT OF THE EXISTING PAVEMENT.

REMOVAL OF EXISTING PIPE

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

REMOVAL OF TREES OR STUMPS

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

THE FOLLOWING IS AN APPROXIMATE ESTIMATE OF THE NUMBER OF TREES AND STUMPS TO BE REMOVED-

SIZES	NO. TREES	NO. STUMPS
18"	286	21
30"	25	1
48"	3	

THE ABOVE ESTIMATE IS APPROXIMATE AND THE STATE OF OHIO RESERVES THE RIGHT TO ORDER THE REMOVAL OF ADDITIONAL TREES OR STUMPS OUTSIDE OF THE LIMITS OF CONSTRUCTION BUT WITHIN THE RIGHT-OF-WAY AND/OR EASEMENT LINES. PAYMENT FOR THE REMOVAL OF THESE ADDITIONAL TREES OR STUMPS SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR ITEM 201 CLEARING AND GRUBBING.

MONUMENTS

MONUMENTS SHALL BE CONSTRUCTED IN ACCORDANCE WITH DETAILS SHOWN ON STANDARD DRAWING MC-1. FOR LOCATIONS, SEE SHEET NO.308.

LOCATIONS OF GUARDRAIL

THE LOCATIONS OF GUARDRAIL RUNS AS SHOWN IN THESE PLANS ARE SUBJECT TO ADJUSTMENT TO ASSURE THAT THE PLANNED INSTALLATIONS WILL AFFORD MAXIMUM PROTECTION FOR TRAFFIC.

UNDERGROUND UTILITIES

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

UTILITIES

THE CONTRACTOR SHALL NOTIFY, AT LEAST TWO WORKING DAYS BEFORE BREAKING GROUND, ALL PUBLIC SERVICE CORPORATIONS HAVING WIRES, POLES, PIPE, CONDUITS, MANHOLES OR OTHER STRUCTURES WHICH MAY BE AFFECTED BY THIS OPERATION, INCLUDING ALL STRUCTURES WHICH ARE AFFECTED AND NOT SHOWN ON THESE PLANS. HE SHALL CONDUCT HIS OPERATIONS IN SUCH A MANNER AS TO AVOID DAMAGE TO ANY AND ALL UTILITIES, AND 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.

UTILITY OWNERSHIP

DEPARTMENT OF PUBLIC UTILITIES OHIO BELL TELEPHONE CO.  
 DIVISION OF UTILITIES ENGINEERING 820 SUPERIOR AVENUE  
 DIVISION OF WATER AND HEAT CLEVELAND, OHIO 44113  
 DIVISION OF WATER POLLUTION CONTROL  
 BUREAU OF SEWER MAINTENANCE EAST OHIO GAS CO.  
 1201 LAKESIDE AVENUE 1201 EAST 55TH STREET  
 CLEVELAND, OHIO 44114 CLEVELAND, OHIO 44103

MALSAR REGIONAL TRANSIT AUTHORITY  
 FEDERAL AVIATION ADMINISTRATION 1404 EAST 9TH STREET  
 AIRWAY FACILITIES DIVISION CLEVELAND, OHIO 44114  
 CLEVELAND HOPKINS INT. AIRPORT  
 MR. ROBERT WOLFORD CLEVELAND ELECTRIC  
 265-3770 265-3771 ILLUMINATING CO.  
 DEPARTMENT OF PUBLIC SAFETY 55 PUBLIC SQUARE  
 DIVISION OF TRAFFIC ENGINEERING AND PARKING CLEVELAND, OHIO 44113  
 1801 ST. CLAIR AVE. DEPARTMENT OF PUBLIC SERVICE  
 CLEVELAND, OHIO 44114 ROOM 112 CITY HALL  
 601 LAKESIDE AVENUE  
 CLEVELAND, OHIO 44114

DEPARTMENT OF PUBLIC SAFETY CLEVELAND POLICE DEPARTMENT  
 FIRE SIGNAL SYSTEM TRAFFIC DIVISION  
 FIRE PREVENTION BUREAU 1300 ONTARIO STREET  
 310 CARNEGIE AVENUE CLEVELAND, OHIO 44113  
 CLEVELAND, OHIO 44115  
 DIVISION OF AIRPORTS  
 CLEVELAND HOPKINS INT. AIRPORT  
 265-6000

PAVEMENT ELEVATIONS

PAVEMENT EDGE ELEVATIONS WHERE CURB IS USED ARE AT THE FACE OF THE CURB UNLESS OTHERWISE INDICATED.

ELEVATION DATUM

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

ITEM 616-DUST CONTROL

AN ESTIMATED QUANTITY OF 1000 M GALLONS OF WATER AND 50 TONS OF CALCIUM CHLORIDE FOR DUST CONTROL IS TO BE USED AT THE DIRECTION AND IN THE AMOUNTS REQUESTED BY THE ENGINEER WITHIN THE LIMITS OF THE PROJECT.

STATION MARKING

*The Contractor shall stencil station numbers into the top of the concrete barrier before it takes its final set. The complete station numbers are to be marked each hundred feet. The numerals shall be 3 to 4 inches in height and 1/4 inch in depth. The station numbers shall be placed parallel with the pavement edge and centered on the top of the concrete barrier. Payment shall be included in the contract price bid per Item 622-Concrete Barrier, Type H.*

SEEDING

QUANTITIES FOR SEEDING ARE CALCULATED FOR THE SOIL AREAS BETWEEN THE RIGHT-OF-WAY FENCE LINES, BETWEEN THE RIGHT-OF-WAY LINES IN UNFENCED AREAS, AND 2'-0" OUTSIDE THE CONSTRUCTION LIMITS AS SHOWN ON THE CROSS SECTIONS.

ITEM 203 PROOF ROLLING

AN ESTIMATED QUANTITY FOR THIS ITEM HAS BEEN PROVIDED IN THE GENERAL SUMMARY FOR USE IN PROOF ROLLING OF SUBGRADE FOR THE MAINLINE AND RAMP PAVEMENTS, AND FOR PAVED SHOULDERS.

AGRICULTURAL LIMING, AS PER PLAN

THE LOCATION AND NEED FOR AGRICULTURAL LIMING WILL BE DETERMINED BY LABORATORY TESTS, AFTER ROUGH GRADING OPERATIONS HAVE BEEN PERFORMED. QUANTITIES OF AGRICULTURAL LIMING, AS SHOWN ON THE PLANS, ARE SUFFICIENT FOR THE ENTIRE PROJECT, BUT WILL BE NON-PERFORMED FOR THE AREAS WHERE TESTS SHOW THAT THE LIMING IS NOT REQUIRED.

WATER POLLUTION, SOIL EROSION AND SILTATION CONTROL

THE FOLLOWING ESTIMATED QUANTITIES ARE TO BE USED AS DIRECTED BY THE ENGINEER FOR EROSION AND SILTATION CONTROL MEASURES.

207 TEMPORARY SEEDING AND MULCHING	32,000 SQ. YD.
659 WATER	70 M-GAL.
207 TEMPORARY SLOPE DRAINS	400 LIN. FT.
207 TEMPORARY BENCHES, DITCHES, DAMS AND SEDIMENT BASINS	200 CU. YD.
659 MOWING	400 M SQ. FT.
659 COMMERCIAL FERTILIZER (12-12-12)	3 TON
659 REPAIR SEEDING AND MULCHING	8,000 SQ. YD.
207 STRAW OR HAY BALES	150 EACH

CONTRACTION JOINTS

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

EXPANSION JOINTS

ALTHOUGH SPECIFIC LOCATIONS OF CERTAIN EXPANSION JOINTS HAVE BEEN DETAILED ON THIS PLAN, NO WAIVER OF THE SPECIFICATIONS IS INTENDED AND EXPANSION JOINTS SHALL BE PROVIDED AT ALL MAJOR STRUCTURES AS REQUIRED.

ITEM 310 SUBBASE, GRADING A, AS PER PLAN

*Material for this item shall meet the requirements of grading A of 310.02 after all operations of placing and compacting have been completed.*

MEDIAN PAVEMENT ON APPROACH SLABS

THE WIDTH AND TYPE OF MEDIAN PAVEMENT ON APPROACH SLABS SHALL BE TRANSITIONED FROM THE STANDARD SECTION USED ON THE APPROACH PAVEMENT TO THE SECTION USED ON THE BRIDGE WITHIN THE LIMITS OF THE APPROACH SLAB.

PAVEMENT SURFACE SMOOTHNESS RAMPS B-1 AND B-2

IN ADDITION TO THE REQUIREMENTS OF 451.12, PAVEMENT SURFACE VARIATIONS FOR DIRECTIONAL ROADWAYS SHALL NOT EXCEED 1/8 INCH IN A 10 FOOT LENGTH OF PAVEMENT.

REVISIONS  
COMPUTED BY: D.A.S.  
CHECKED BY: D.F.

CALC. BY: T.R.B. DATE: 7/76  
CHKD BY: H.J.H. DATE: 7/76

FHWA REGION	STATE	PROJECT
5	OHIO	

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#### REVIEW OF DRAINAGE FACILITIES

BEFORE ANY WORK IS STARTED ON THE PROJECT, AND AGAIN BEFORE FINAL ACCEPTANCE BY THE STATE, REPRESENTATIVES OF THE STATE, AND THE CONTRACTOR ALONG WITH LOCAL REPRESENTATIVES SHALL MAKE AN INSPECTION OF THE EXISTING SEWERS WITHIN THE WORK LIMITS WHICH ARE TO REMAIN IN SERVICE AND WHICH MAY BE AFFECTED BY THE WORK. THE CONDITION OF THE EXISTING CONDUITS AND THEIR APPURTENANCES SHALL BE DETERMINED FROM FIELD OBSERVATIONS. RECORDS OF THE INSPECTIONS SHALL BE KEPT IN WRITING BY THE STATE.

ALL NEW CONDUITS, INLETS, CATCH BASINS AND MANHOLES CONSTRUCTED AS A PART OF THE PROJECT SHALL BE FREE OF ALL FOREIGN MATTER AND IN A CLEAN CONDITION BEFORE THE PROJECT WILL BE ACCEPTED BY THE STATE.

ALL EXISTING SEWERS INSPECTED INITIALLY BY THE ABOVE MENTIONED PARTIES SHALL BE MAINTAINED AND LEFT IN A CONDITION REASONABLY COMPARABLE TO THAT DETERMINED BY THE ORIGINAL INSPECTION. ANY CHANGE IN THE CONDITION RESULTING FROM THE CONTRACTOR'S OPERATIONS SHALL BE CORRECTED BY THE CONTRACTOR TO THE SATISFACTION OF THE ENGINEER.

PAYMENT FOR ALL OPERATIONS DESCRIBED ABOVE SHALL BE INCLUDED IN THE UNIT PRICES BID FOR THE PERTINENT 603 CONDUIT ITEMS OF THE CONTRACT.

#### CONNECTIONS TO EXISTING PIPE

WHERE THE PLANS PROVIDE FOR PROPOSED CONDUIT TO BE CONNECTED TO, OR TO CROSS EITHER OVER OR UNDER AN EXISTING SEWER, 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 CONDUIT.

PAYMENT FOR ALL OPERATIONS DESCRIBED ABOVE SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE PERTINENT 603 CONDUIT ITEMS.

#### SPRING DRAINS

REFERENCE IS MADE TO THE DETAILED DRAWING ON STANDARD DRAWING MC-1 SHOWING THE METHOD OF DRAINING ANY SPRING THAT MAY BE SHOWN ON THE PLAN OR ENCOUNTERED DURING CONSTRUCTION AS DETERMINED BY THE ENGINEER. THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN INCLUDED IN THE GENERAL SUMMARY FOR THIS PURPOSE-

ITEM 605 - 6 IN. UNCLASSIFIED PIPE UNDERDRAIN, 707.01 TYPE III OR 707.12, AS PER PLAN 200 L.F.  
ITEM 605 - AGGREGATE DRAINS FOR SPRINGS, AS PER PLAN 9 L.F.

THE CONTRACTOR SHALL NOT ORDER MATERIALS FOR 'SPRING DRAINS' UNTIL AUTHORIZED BY THE ENGINEER AND IN THE EVENT NO SPRINGS ARE ENCOUNTERED, THE ITEM SHALL BE NON-PERFORMED.

#### EROSION CONTROL

ITEM 601 AND 660 ARE PROVIDED IN THESE PLANS FOR EROSION CONTROL. ROCK OR TURF OF A STABLE NATURE WILL NOT BE REMOVED IN ORDER TO PLACE ANY OF THESE ITEMS. THE ENGINEER SHALL CHECK AND NON-PERFORM QUANTITIES OR ADJUST LOCATIONS AND QUANTITIES FOR THESE ITEMS WHERE INDICATED BY FIELD CONDITIONS DURING CONSTRUCTION.

#### COOPERATION WITH UTILITIES

THE FOLLOWING WORK BY THE OHIO BELL TELEPHONE COMPANY IS NECESSARY TO RELOCATE EXISTING COMMUNICATION CABLES ALONG OLD ROCKY RIVER DRIVE:  
(1) PLACE 925 FEET OF 16-4" CONDUIT.  
(2) PLACE 3 MANHOLES.  
(3) PLACE AND SPLICE 7 CABLES HAVING AN AVERAGE SIZE OF 900 PAIRS OF WIRES

AND AN AVERAGE LENGTH OF 1500 FEET EACH.  
(4) TRANSFER AND TEST APPROXIMATELY 400 CRITICAL CIRCUITS SERVING SEVERAL GOVERNMENT AGENCIES.  
THIS WORK WILL REQUIRE APPROXIMATELY 4-1/2 MONTHS TO COMPLETE AND SHALL COMMENCE AS SOON AS THE BRIDGE OVER RAMP B-1 IS READY FOR OBT. CONDUIT. UNTIL THE NEW CONDUIT BECOMES OPERATIONAL, THE CONTRACTOR IS RESTRICTED FROM PERFORMING ANY ROAD WORK IN THE VICINITY OF THE EXISTING CONDUIT AND CABLE ON OLD ROCKY RIVER DRIVE THAT MAY INTERFERE WITH ITS OPERATION INCLUDING THE FOLLOWING:  
(1) PILINGS FOR WEST ABUTMENT OF BRIDGE NO. CUY-480-0793.  
(2) PILINGS FOR PIER NO.1 OF BRIDGE NO. CUY-480-0795.  
(3) 30" RELOCATED WATER MAIN, 10' LEFT OF STATION 444+27.  
THE CONTRACTOR SHALL ENDEAVOR TO SCHEDULE HIS WORK OPERATIONS ACCORDINGLY AND AS PROVIDED BY SECTION 105.06 OF THE SPECIFICATIONS.

#### 622 - CONCRETE BARRIER, TYPE H (See Sheet 3 for note)

#### STATION MARKING (See Sheet 3 for note)

#### MANHOLE FRAME AND COVER CASTING

WHERE MANHOLES ARE CALLED FOR ON THE PLAN WITH SPECIAL FRAME AND COVER, THE CASTINGS FOR THE MANHOLES SHALL BE THE SPECIAL FRAME AND COVER AS PER CITY OF CLEVELAND STANDARD AS DETAILED IN THE PLANS (SEE SHEETS NO 84 AND 85 ).

THE CONTRACTOR SHALL SET THE FRAMES FOR MANHOLE COVERS AT SUCH AN ELEVATION AND INCLINATION AS TO PLACE THE SURFACE OF THE COVER IN THE PLANE OF THE FINISHED SURFACE.

#### THE REPLACEMENT OF UNSATISFACTORY CASTINGS ON MANHOLES ADJUSTED OR RECONSTRUCTED TO GRADE

WHERE IT IS NECESSARY UNDER ITEMS 604 MANHOLES ADJUSTED OR RECONSTRUCTED TO GRADE TO REPLACE UNSATISFACTORY CASTINGS, PROVISION IN THE GENERAL SUMMARY TO USE NEW CASTINGS HAVE BEEN MADE AS LISTED BELOW.

ITEM 604 FURNISHING AND PLACING SPECIAL MANHOLE FRAME AND COVER 5 EACH

THE ABOVE SHALL NOT BE ORDERED BY THE CONTRACTOR UNTIL REQUESTED BY THE ENGINEER.

PAYMENT SHALL CONSTITUTE FULL COMPENSATION FOR FURNISHING, HAULING AND PLACING ALL CASTINGS AND INCIDENTALS NECESSARY TO COMPLETE THE ITEM TO THE SATISFACTION OF THE ENGINEER.

#### LOCATIONS OF CATCH BASINS AND MANHOLES

THE STATION LOCATION SHOWN IS NORMAL TO THE CENTERLINE OF CONSTRUCTION AND ON THE CENTERLINE OF THE CATCH BASIN OR MANHOLE COVER. THE OFFSET SHOWN IS TO THE CENTER OF THE MANHOLE COVER OR THE GRATE OR TO THE FACE OF CURB WHEN APPLICABLE.

#### EXISTING UNDERDRAINS

WHERE EXISTING UNDERDRAINS ARE ENCOUNTERED AND NO PROVISION HAS BEEN MADE FOR NEW UNDERDRAINS, THEY SHALL BE CONNECTED TO THE NEW INLET WITH 6" TYPE "B" OR TYPE "F" CONDUIT. A QUANTITY OF 100 L.F. OF 6" TYPE "B" CONDUIT & 100 L.F. OF 6" TYPE "F" CONDUIT HAS BEEN PROVIDED IN THE GENERAL SUMMARY TO BE USED AS DIRECTED BY THE ENGINEER FOR THAT PURPOSE. THE MATERIALS SHALL NOT BE ORDERED BY THE CONTRACTOR UNLESS PRIOR APPROVAL IS RECEIVED FROM THE PROJECT ENGINEER.

#### SANITARY MANHOLES

SANITARY MANHOLES SHALL BE PRECAST REINFORCED CONCRETE MANHOLES WITH JOINTS AS PER 706.11 AS DETAILED ON STANDARD DRAWING MANHOLE NO. 3 OR 5. OR THEY SHALL BE CAST IN PLACE BUILT ACCORDING TO THE DETAILS SHOWN ON STANDARD DRAWING MH-1.

#### PARCEL 438

THE BROWN DERBY SHALL BE GIVEN 30 DAYS NOTICE PRIOR TO PERFORMING ANY WORK ON THIS PARCEL.

ITEM 608, 4 1/2" CONCRETE WALK, AS PER PLAN (RELOCATED GRAYTON RD)  
THE AREAS INDICATED FOR REMOVAL AND REPLACEMENT OF EXISTING WALKS ARE APPROXIMATE ONLY. WHEREVER THE NEW CONCRETE WALK CROSSES ANY NEW DRIVES OF FLEXIBLE PAVEMENT CONSTRUCTION, THE SPECIFIED 4 1/2" WALK THICKNESS SHALL BE INCREASED TO 6". THE TRANSITION FROM THE NORMAL 4 1/2" TO 6" SHALL BE ACCOMPLISHED IN A DISTANCE OF ONE FOOT ON EITHER SIDE OF THE NEW DRIVE. THE COST OF THE ADDITIONAL THICKNESS AND THE COST OF ALL INCIDENTAL AND PERTINENT WORK NECESSARY TO OBTAIN THE INCREASED THICKNESS SHALL BE INCLUDED IN THE UNIT PRICE BID PER SQ. FT. FOR ITEM 608, 4 1/2" CONCRETE WALK, AS PER PLAN

#### UNRECORDED SANITARY CONNECTIONS

ANY UNRECORDED ACTIVE CONNECTION TO A SANITARY SEWER ENCOUNTERED DURING CONSTRUCTION SHALL BE RECONNECTED TO THE EXISTING SEWER AS DIRECTED BY THE ENGINEER.

THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN INCLUDED IN THE GENERAL SUMMARY FOR THE WORK NOTED ABOVE:

ITEM 603-50 L.F. 6" CONDUIT, TYPE C, 706.01, 706.02, 706.08 WITH JOINTS, AS PER 706.11 OR 706.12.

ITEM 603-50 L.F. 6" CONDUIT, TYPE B, 706.01, 706.02, 706.08 WITH JOINTS, AS PER 706.11 OR 706.12.

NONE OF THE ABOVE MATERIALS SHALL BE ORDERED BY THE CONTRACTOR UNTIL REQUESTED BY THE ENGINEER.

#### TRENCH FOR WIDENING

TRENCH EXCAVATION FOR BASE WIDENING SHALL BE PERFORMED ONLY ON ONE SIDE OF THE PAVEMENT AT A TIME. THE OPEN TRENCH SHALL BE ADEQUATELY MAINTAINED AND PROTECTED WITH DRUMS OR BARRICADES AT ALL TIMES. PLACEMENT OF PROPOSED SUBBASE AND BASE MATERIAL SHALL FOLLOW AS CLOSELY AS POSSIBLE BEHIND THE EXCAVATION OPERATIONS. THE LENGTH OF WIDENING TRENCH WHICH IS OPEN AT ANY ONE TIME SHALL BE HELD TO A MINIMUM AND SHALL AT ALL TIMES BE SUBJECT TO APPROVAL OF THE ENGINEER.

#### ITEM SPECIAL, CONCRETE GLARE SCREEN

AN 18" HIGH CONCRETE GLARE SCREEN SHALL BE CONSTRUCTED ON TOP OF EXISTING 32" HIGH CONCRETE BARRIER FROM STA. 441+96.50 TO STA. 457+67.50 WEST OF THE LIMITS OF THIS PROJECT, FROM STA. 433+56.6 TO STA. 433+70.6 WITHIN THIS PROJECT AND FROM STA. 447+98.81 TO STA. 461+00.00 EAST OF THE PROJECT LIMITS. THE GLARE SCREEN WIDTH SHALL BE THE SAME AS THE TOP WIDTH OF THE EXISTING CONCRETE BARRIER. DOWELS AND STEEL REINFORCING SHALL BE THE SAME AS REQUIRED FOR TYPE H, CONCRETE BARRIER OR AS SHOWN IN THE BRIDGE DETAILS. VERTICAL JOINTS, EITHER EXPANSION OR CONTRACTION, SHALL BE PROVIDED OPPOSITE THE EXISTING JOINTS.

AN ESTIMATED QUANTITY OF 810 L.F. ITEM SPECIAL, CONCRETE GLARE SCREEN HAS BEEN INCLUDED IN THE GENERAL SUMMARY FOR GLARE SCREEN ERRECTED ON ROADWAY BARRIER. SEE BRIDGE PLANS FOR QUANTITIES OF GLARE SCREEN WITHIN BRIDGE LIMITS. BID PRICE SHALL INCLUDE ALL MATERIAL, LABOR, TOOLS, EQUIPMENT AND INCIDENTALS NECESSARY TO COMPLETE THIS ITEM OF WORK.

#### FENCE ERECTION - SCHEDULE OF OPERATIONS

FOR THE PROTECTION OF PEDESTRIANS, CHILDREN AND ANIMALS, THE CONTRACTOR SHALL SO SCHEDULE AND PROSECUTE THE WORK THAT THE ERECTION OF THE RIGHT-OF-WAY FENCE SHALL BE PERFORMED PRIOR TO ANY OTHER OPERATION IN THE AREA.

IN HIS PROGRESS SCHEDULE, THE CONTRACTOR SHALL INCLUDE A COMPLETE SCHEDULE OF HOW HE PROPOSES TO ERECT THE RIGHT-OF-WAY FENCE.

#### CONTRACTION JOINTS IN 801 CONCRETE BASE

IN LIEU OF SPACING REQUIREMENTS OF STANDARD CONSTRUCTION DRAWING BP-4, CONTRACTION JOINTS WITHOUT DOWELS SHALL BE SPACED AT 20' INTERVALS AND SHALL BE SKEWED RIGHT EDGE FORWARD AT A RATE OF 1' IN 6' OF WIDTH EXCEPT FOR THE FIRST 25 JOINTS AWAY FROM THE PRESSURE RELIEF JOINTS. THESE JOINTS SHALL NOT BE SKEWED AND SHALL BE DOWELLED. DOWELS SHALL MEET THE REQUIREMENTS OF BP-4.

#### PAVING BENEATH GUARD RAIL

(See sheet 19 for note)

RELOCATED GRAYTON ROAD  
ITEM 451 9" REINFORCED PORTLAND CEMENT CONCRETE PAVEMENT AS PER PLAN

All applicable provisions of item 451 as set forth in the Construction and Materials Specifications shall apply unless modified herein and the following shall be considered as supplemental to the provisions set forth therein.

**Materials:** Curing material for exposed concrete shall meet the latest requirements of Federal Specification TT-C-00800 except that the unit moisture loss in (grams/sq. cm) at 72 hours shall not exceed 0.055. The contractor shall submit the manufacturers certified analysis for the lot or lots shipped. A fugitive dye is required.

**Hook Bolts:** Steel for hook bolts shall conform with 709 except that the ultimate tensile strength shall not be less than 55,000 pounds per square inch.

High Early Strength Portland Cement shall be used for base or pavement replacement unless otherwise directed by the engineer.

Bituminous Material  
(451.08) - - - - - 702.01, 702.02 or 702.04

**Placing Reinforcement** The placing of reinforcement by vibratory means will not be permitted.

**Joints:** Longitudinal key joints and vertical faces of existing rigid pavement shall be cleaned of foreign material and given an application of bituminous material meeting the requirements of 702.01, 702.02, 702.04 in a manner which results in a residual coating of 1/4 gallon per square yard before the adjoining slab is poured.

When not shown on the Plans, or provided for elsewhere, joints in the pavement within intersections shall be of the type, and at such locations, as designated by the Engineer.

In those areas where a pavement is being widened using a section consisting of a Portland Cement Concrete Pavement with or without an Asphalt Concrete Surface Course, traverse joints shall be placed in the base to match joints in the original concrete base, as shown on the Plans and/or as directed by the Engineer.

(d) **Contraction Joint.** The location of the joints should be clearly marked on the forms in such a manner that the center line can be readily determined for the sawing operation.

Unless otherwise approved by the Engineer the following method should be used. Immediately after the finishing machine has cleared the joint, and prior to any hand finishing, a transverse slot 2" in depth shall be cut into the plastic concrete with a steel plate 3/8" thick and of sufficient length to cut a slot the total width of the pavement in one operation. The plate shall have the cutting edge serrated and shall be moved longitudinally in such a manner as to provide a sawing action while it is being forced into the concrete. The plate shall be reinforced in such a manner as will keep it rigid and in straight alignment and it shall be suspended and guided from a movable bridge, of an approved design, so that the plate will be held rigidly perpendicular to the surface of the slab and at right angles to the center line of the pavement when it is inserted in the concrete.

Immediately following the removal of the steel cutting plate, a 1/4" x 2" premolded joint filler meeting the requirements of 705.03 shall be inserted in the slot so that the top edge of the filler is flush with the top of the concrete slab. The pavement shall then be finished as required elsewhere.

This joint shall be sawed within 3 days with a 5/16" thick blade cutting a kerf 2" deep. Any residual joint filler remaining in the slot shall be removed by a suitable means and the joint cleaned, protected and sealed as provided elsewhere.

\* Hinge joints are used at the 1/3 points

+ The 7/16 inch width neoprene compression seal shall meet the requirements of 705.11 except that the high temperature recovery (70 hours at 212°F under 50% deflection) shall not be less than 75%.

(f) **Hinge Joint.** When called for on the Plans or in the Proposal, two hinge joints shall be sawed into the pavement, at the 1/3 points, between successive contraction joints or between adjacent contraction and expansion joints. Hinge joints shall not be placed as an extension of either a contraction, expansion or construction joint in an adjacent slab, but may be used to extend a longitudinal tied joint of a more or less perpendicular intersecting roadway when approved by the Engineer. In order to insure the correct identification of the sawed joint for extension when adjacent or future lanes are placed, a 3" block letter, C, for contraction or construction and H. for hinge, shall be impressed 1/4" into the finished slab adjacent to and at each end of the joint. If it is not possible to place two successive hinge joints as herein specified, the sawed contraction joint described herein shall be used. When hinged joints are used the spacing between successive contraction and/or expansion joints shall not generally exceed 75 feet and the intermediate hinge joint spacing shall not exceed 25 feet except as approved by the Engineer.

Hinge joints shall be constructed in the same manner as the contraction joint described in (d) above except that no dowel assembly is required and the reinforcing mesh in the pavement or base shall be carried through the joint. Care shall be taken that the mesh reinforcement is not cut when the joint is being sawed.

**CONSOLIDATING AND FINISHING:** Vibratory finishing will not be permitted.

Unless otherwise specified the pavement shall be given a broom finish using a broom of an approved type, not less than 18 inches in width of bass or bassine fiber not more than 5 inches in length. The strokes shall be from edge to edge of the slab, one stroke per width of broom with adjacent strokes slightly overlapped and shall be drawn without "tearing" of the concrete and so as to produce regular corrugations approximately 1/16 inch depth.

Brooms shall be washed thoroughly at frequent intervals during each day. Any coarse or long bristles which cause irregularities shall be trimmed or removed.

**CURING:** The curing of concrete, which is to be covered with asphalt concrete, shall be accomplished thru the use of liquid membrane forming compounds meeting the requirements of AASHTO M 148 Type I resin base.

**PROTECTION AGAINST RAIN:** In order that the concrete may be properly protected against the effects of rain before the concrete is sufficiently hardened, the Contractor will be required to have available at all times materials for the protection of the surface of the unhardened concrete. Such protective materials shall consist of standard covering material such as burlap or cotton mats, curing paper, or plastic sheeting material for the protection of the surface of the pavement. When rain appears imminent, all paving operations shall stop and all available personnel shall begin covering the surface of unhardened concrete with the protective covering.

**SURFACE SMOOTHNESS:** All sections of pavement that have been ground, repaired or replaced by the contractor shall be given a protective application of the specified curing compound.

**SEALING JOINTS:** joints shall be sealed as per section 451.13. Unless otherwise specified the widths of saw cuts and joint sealers for transverse joints shall be as listed in the following table.

type of joint	spacing between jts.(ft)	width of saw cut (in)	neoprene (in) comp. seal width
*contraction	60-75	5/16	13/16
contraction	30	1/4	9/16
contraction	25 & less	1/4	7/16
hinge	---	1/4	+ 7/16

CALL BY <u>TRB</u>	DATE <u>7/76</u>	STATE	PROJECT	13 3/7
DRAWN BY <u>H.J.H.</u>	DATE <u>7/76</u>	OHIO		

CUYAHOGA COUNTY  
CUY-480-6.78

**MAINTENANCE OF TRAFFIC**

Where the work called for under this contract involves the closing of streets or the re-routing of traffic the Contractor shall prosecute to the fullest extent the work involved so as to reduce to a minimum the length of time the roadway will be closed to traffic. No street will be closed until necessary for construction as determined by the Engineer. The Contractor shall notify the City of Cleveland Traffic Engineering Division and the Project Engineer in writing fourteen (14) days in advance of closing of an existing street. All traffic control measures shall comply with the Ohio Manual of Uniform Traffic Control Devices (OMUTCD). No permanent or temporary road can be opened to traffic until all pavement marking in accordance with the OMUTCD are installed.  
**GRAYTON RD.**

Two way thru traffic shall be maintained at all times by the use of the existing pavement, the proposed pavement or temporary roads until Relocated Grayton Rd. is complete and can be open to traffic. Local access to abutting properties and Hilltop Drive shall be maintained at all times. Temporary pavement markings shall be provided in accordance with S 847 Type B using 12"x4" tape at 20 Ft. center to center spacing (See note in Proposal)  
**BROOKPARK RD. (S.R. 17)**

Two way traffic, two 10 foot lanes in each direction, shall be maintained at all times by the use of the existing pavement, the proposed pavement or temporary roads. Temporary pavement markings shall be provided in accordance with S 847 Type B using 12"x4" tape at 20 Ft. center to center spacing (See note in Proposal).

**RELOCATED ROCKY RIVER DR.**

Two way traffic, one lane in each direction, shall be maintained at all times by use of the existing pavement, the proposed pavement and the temporary road as shown on sheet No. 58.

**PAYMENT**

All of the above are included in the lump sum price bid for item 614 "Maintaining Traffic" except that the cost of the temporary road for Relocated Rocky River Dr. shall be paid for as item 615 "Temporary Pavement, Class A," and item 615 "Temporary Roads."

Estimated Quantities of the following items have been included in the General Summary for use as directed by the Engineer.

- Item: 404 Bitum. Concrete for Maintaining Traffic 50 Cubic Yards.
- Item 410 Traffic Compacted Surface Type A or B-100 C.Y.
- Item 410 Traffic Compacted Surface Type C 200 C.Y.
- Item 614 Maintaining Traffic- Lump Sum
- Item 616 Calcium Chloride- 5 Tons
- Item 616 Water - 500M. Gal.

**TEXTURING - ITEM 451 REINFORCED PORTLAND CEMENT CONCRETE PAVEMENT:** On Ramps G-1, G-2, G-3, G-4; B-1, B-2 and Relocated Grayton Rd. and Rocky River Drive, the pavement shall be textured by use of a burlap drag in the longitudinal direction followed by an approved device that will produce a relatively uniform pattern of grooves in the transverse direction. The grooves shall be spaced at approximately 1/2 inch between centers, and shall be 0.10 inch to 0.20 inch deep and 0.08 inch to 0.12 inch wide. The cost of Texturing shall be included in the unit price bid for Item 451 Reinforced Portland Cement Concrete Pavement.





# GENERAL SUMMARY

Rev. S.C. 2-22-78

CALC. BY	E.J.K.	DATE	6/76	FED. RD. DIVISION	STATE	PROJECT
CHWD BY	B.B.	DATE	7/76	2	OHIO	
REV.	T.R.B.	DATE	5-1-78	CUYAHOGA COUNTY		
				CUY-480-6.78		

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TYPE CODE 6707 UNLESS OTHERWISE SHOWN

ITEM	SHEET NUMBERS																												GRAND TOTAL	UNIT	ITEM	DESCRIPTION								
	11-12	13-20	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49					50	51	52	53	54	56	81	82
<b>DRAINAGE - (Continued)</b>																																								
604																																					1	Each	604	Junction Chamber A
604																																					1	Each	604	Junction Chamber B
604																																					12	Each	604	Manhole Adjusted To Grade.
604																																					5	Each	604	Manhole Reconstructed To Grade.
604																																					1	Each	604	Catch Basin Reconstructed To Grade.
604	5																																				5	Each	604	Furnishing And Placing Special Manhole Frame And Cover.
605			394	1,542	966	977	955	1,088	1,776	574		604	273	462			1,029	686	742										628	860	689	644					14,885	Lin. Ft.	605	6" Shallow Pipe Underdrain,
605			616	1,076	1,836	1,931	1,934	1,162			540	698	242	630	748	993	350	1,523																			14,279	Lin. Ft.	605	6" Deep Pipe Underdrain,
605			10	305	139			50			137	50			39	50	120																				900	Lin. Ft.	605	6" Unclassified Pipe Underdrain,
605	200																																				200	Lin. Ft.	605	6" Unclassified Pipe Underdrain, 707.01 Type III Or 707.12 as per plan
605																																					6,083	Lin. Ft.	605	6" Pipe Underdrain, 706.08 Perforated Bell And Spigot
605	9																																				9	Lin. Ft.	605	Aggregate Drains For Springs
<b>EROSION CONTROL - TYPE CODE Y005</b>																																								
601																																					75	Sq. Yd.	601	Riprap, Using 6 In. Reinforced Concrete Slab.
601				1																																	14	Cu. Yd.	601	Rock Channel Protection, Type "B" With Bedding.
601																																					214	Lin. Ft.	601	Paved Gutter, Type 1-2.
601																																					472	Lin. Ft.	601	Paved Gutter, Type 1-4.
601																																					220	Lin. Ft.	601	Paved Gutter, Type 2.
659	3	1408																																			17.08	Ton	659	Commercial Fertilizer (12-12-12)
659		7042																																			70.42	Ton	659	Agricultural Liming, As Per Plan.
659		15,890																																			15,890	Sq. Yd.	659	Seeding And Mulching.
659	8,000																																				8,000	Sq. Yd.	659	Repair Seeding And Mulching.
660			154	217	208		250	1,142		400	125		250	208	975	2725	897													702	755					5,683	Sq. Yd.	660	Sodding.	
660								153	148								108																				409	Sq. Yd.	660	Reinforced Sodding
207	32,000																																				32,000	Sq. Yd.	207	Temporary Seeding And Mulching.
659	70																																				70	M. Gal	659	Wafer.
207	400																																				400	Lin. Ft.	207	Temporary Slope Drains.
207	200																																				200	Cu. Yd.	207	Temporary Benches, Dikes, Dams, And Sediment Basins.
659	400																																				400	M.S.F.	659	Mowing.
207	150																																				150	Each	207	Straw Or Hay Bales
<b>SANITARY - TYPE CODE Y060</b>																																								
603	50																																				50	Lin. Ft.	603	6" Conduit, Type "B" 706.01, 706.02, 706.08 With Joints As Per 706.11 Or 706.12
603	50																																				50	Lin. Ft.	603	6" Conduit, Type "C" 706.01, 706.02, 706.08 With Joints, As Per 706.11 Or 706.12
603																																					536	Lin. Ft.	603	8" Conduit, Type C, 706.08 ES. With 706.12 Joints
603																																					752	Lin. Ft.	603	15" Conduit, Type "B" 706.08 With 706.12 Joints, With Class "A" Bedding.
603																																					98	Lin. Ft.	603	15" Conduit, Type "B" 706.08 With 706.12 Joints, Encased.
604																																					2	Each	604	Standard No. 3 Manhole With 706.11 Joints, Special Frame And Cover.
604																																					3	Each	604	Standard No. 5 Manhole With 706.11 Joints, Special Frame And Cover.
604																																					1	Each	604	Standard No. 5 Manhole With 706.11 Joints With Drop Pipe, Special Frame And Cover.
604																																					4	Each	604	Manhole Reconstructed To Grade.
604																																					4	Each	604	Manhole Adjusted To Grade





# PAVEMENT CALCULATIONS

REVISIONS  
 COMPUTED BY: D.A.S.  
 CHECKED BY: D.F.  
 Rev. S.C. 2-22-78

DATE: TRB 6/76  
 DATE: 6/76  
 REV. TRB. 5-1-78

FWA REGION	STATE	PROJECT
5	OHIO	
CUYAHOGA COUNTY CUY-480-15.23		

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## ITEM 402 - 1 3/4" ASPHALT CONCRETE ITEM 404 - 1 1/4" ASPHALT CONCRETE

### I-480

Sta. 457+92.50 To Sta. 495+01.76 Bk. 3709.26 L.F. x 48 x 2 ÷ 9	=	39,505.4 S.Y.
Sta. 420+30.02 FWD To Sta. 422+56.80 226.78 L.F. x 48 x 2 ÷ 9	=	2,419.0 S.Y.
Sta. 422+56.80 To Sta. 431+50.00 893.20 L.F. x (48+24) ÷ 9	=	7,145.6 S.Y.
Sta. 431+50.00 To Sta. 442+93.00 1143.00 L.F. x 24 x 2 ÷ 9	=	6,096.0 S.Y.
Sta. 445+11.58 To Sta. 447+73.81 202.23 L.F. x 24 x 2 ÷ 9	=	1,398.6 S.Y.

### RAMP B-1

Sta. 431+50.00 To Sta. 447+00.00 1550.00 L.F. x 24 ÷ 9	=	4,133.3 S.Y.
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TOTAL PAV'T AREA = 60,757.9 S.Y.

ITEM 402 = 60,757.9 x 1.75 ÷ 36 = 2,953.5 C.Y.

ITEM 404 = 60,757.9 x 1.25 ÷ 36 = 2,109.6 C.Y.

TOTAL 402 - ASPHALT CONCRETE TO GENERAL SUMMARY = 2,954. C.Y.

TOTAL 404 - ASPHALT CONCRETE TO GENERAL SUMMARY = 2,110 C.Y.

## ITEM 451-9" REINFORCED PORTLAND CEMENT CONCRETE PAVEMENT

### RAMP G-1

Sta. 474+36.85 To Sta. 481+00.00 663.15 L.F. x 16 ÷ 9	=	1,178.9 S.Y.
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### RAMP G-2

Sta. 470+50.00 To Sta. 475+00.00 450.00 L.F. x 16 ÷ 9	=	800.0 S.Y.
RAMP SUBTOTAL	=	1,978.9 S.Y.

### RELOCATED ROCKY RIVER DRIVE

Sta. 1+25.00 To Sta. 1+99.65 74.65 L.F. x 55 ÷ 9	=	456.2 S.Y.
Sta. 3+04.18 To Sta. 12+96.52 932.34 L.F. x 55 ÷ 9	=	5,697.6 S.Y.
RELOC. ROCKY RIVER DR. SUBTOTAL	=	6,153.8 S.Y.

DEDUCT PRESSURE RELIEF JOINTS 1 x 4 x 55 ÷ 9	=	- 24.4 S.Y.
451-9" TOTAL	=	8,108.3 S.Y.

TOTAL 451-9" REINFORCED PORTLAND CEMENT CONCRETE PAVEMENT TO GENERAL SUMMARY = 8,108 S.Y.

## ITEM 451-10" REINFORCED PORTLAND CEMENT CONCRETE PAVEMENT

### RAMP B-2

Sta. 445 + 63.49 To Sta. 454 + 17.27 (853.78 x 24 + 1/2 x 18.5 x 24) ÷ 9	=	2,301.4 S.Y.
DEDUCT PRESSURE RELIEF JOINTS (1 x 24.5) x 4 ÷ 9	=	- 10.9 S.Y.
TOTAL 451-10"	=	2,290.9 S.Y.

TOTAL 451-10" REINFORCED PORTLAND CEMENT CONCRETE PAVEMENT TO GENERAL SUMMARY = 2,291 S.Y.

## ITEM 310 SUBBASE, GRADING "A" I-480 & RAMP B-1 PAVEMENT

ITEM 801 AREA = 61,202.4 x 9/36 = 10,200.4 C.Y.

### I-480 MEDIAN

Sta. 457+67.50 To Sta. 495+01.76 Bk (3734.26 L.F.)	=	
Sta. 420+30.02 FWD To Sta. 442+93+00 (2262.98 L.F.)	=	
Sta. 445+11.58 To Sta. 447+73.81 (262.23 L.F.)	=	
6259.47 L.F. x 20.81 S.F. ÷ 27	=	4,824.4 C.Y.

### I-480 SHOULDERS

Sta. 457 + 67.50 To Sta. 465 + 43.40 775.90 L.F. x 7.86 S.F. ÷ 27	=	225.9 C.Y.
Sta. 469 + 73.00 To Sta. 473 + 43.40 370.40 L.F. x 7.86 S.F. ÷ 27	=	107.8 C.Y.
Sta. 473 + 43.40 To Sta. 477 + 21.64 378.24 L.F. x 7.86 S.F. x 2 ÷ 27	=	220.2 C.Y.
Sta. 477 + 21.64 To Sta. 482 + 85.00 563.36 L.F. x 7.86 S.F. ÷ 27	=	164.0 C.Y.
Sta. 485 + 21.64 To Sta. 494 + 25.00 903.36 L.F. x 7.86 S.F. ÷ 27	=	263.0 C.Y.
Sta. 494 + 25.00 To Sta. 495 + 01.76 Bk. (76.76 L.F.)	=	
Sta. 420 + 30.02 FWD. To Sta. 422 + 56.80 (226.78 L.F.)	=	
303.54 L.F. x 7.86 S.F. x 2 ÷ 27	=	176.7 C.Y.
Sta. 422 + 56.80 To Sta. 431 + 50.00 839.20 L.F. x 7.86 S.F. ÷ 27	=	244.3 C.Y.
Sta. 441 + 22.08 To Sta. 442 + 93.00 170.92 L.F. x 7.86 S.F. ÷ 27	=	49.8 C.Y.
Sta. 445 + 11.58 To Sta. 447 + 73.81 262.23 L.F. x 7.86 S.F. x 2 ÷ 27	=	152.7 C.Y.
310 SUB-TOTAL (SHOULDERS)	=	1604.4 C.Y.

### I-480 APPROACH SLABS

25 L.F. x (94.5 + 94.5 + 94.0) x 5 ÷ 27 = 131.0 C.Y.

### RAMP B-1 SHOULDERS

Sta. 431 + 50.00 To Sta. 438 + 51.00 701 L.F. (7.86 S.F. + 3.75 S.F.) ÷ 27	=	301.4 C.Y.
Sta. 438 + 51.00 To Sta. 440 + 40.10 189.1 L.F. (7.26 S.F. + 3.75 S.F.) ÷ 27	=	77.1 C.Y.
Sta. 440 + 40.10 To Sta. 442 + 34.0 193.9 L.F. [(7.26 S.F. + 8.84 S.F.) ÷ 2 + 3.75 S.F.] ÷ 27	=	84.7 C.Y.
Sta. 442 + 34.0 To Sta. 447 + 00.0 466.0 L.F. (7.86 S.F. + 3.75 S.F.) ÷ 27	=	200.4 C.Y.

### RAMP B-2

Sta. 445 + 38.49 To Sta. 449 + 75.00 (25 x 39.50 + 411.51 x 24 + 1/2 x 18.5 x 24) x 0.5 ÷ 27 =	205.3 C.Y.
411.51 x 9.83 S.F. / L.F. ÷ 27 =	149.8 C.Y.
(18.5 x 411.51) x 2.833 SF ÷ 27 =	45.1 C.Y.
411.51 x 0.222 SF / L.F. ÷ 27 =	3.4 C.Y.
Sta. 449 + 75.00 To Sta. 451 + 75.00 200.00 L.F. x 3.06 S.F. / L.F. ÷ 27 =	96.7 C.Y.
200.00 L.F. x 6.41 S.F. / L.F. ÷ 27 =	47.5 C.Y.
200.00 L.F. x 2.33 SF / L.F. ÷ 27 =	17.3 C.Y.

## ITEM 310 SUBBASE, GRADING "A" (CONT.) RAMP B-2

Sta. 451 + 75.00 To Sta. 453 + 00.00 125.00 L.F. x 14.89 SF ÷ 27 =	68.9 C.Y.
125.00 L.F. x 6.41 S.F. / L.F. ÷ 27 =	29.7 C.Y.

Sta. 453 + 00.00 To Sta. 454 + 17.27 117.27 L.F. x 27.67 x 0.5 ÷ 27 =	60.1 C.Y.
117.27 L.F. x 9.00 x 0.375 ÷ 27 =	14.7 C.Y.
117.27 L.F. x 4.00 x 0.333 ÷ 27 =	5.8 C.Y.

DEDUCT FOR PRESSURE RELIEF JOINTS  
24 x 8 x 0.5 ÷ 27 = 3.6 C.Y.

### RAMP G-1

Sta. 474 + 36.85 To Sta. 481 + 00.00 663.15 L.F. x 12.305 SF ÷ 27 =	302.2 C.Y.
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### RAMP G-2

Sta. 470 + 50.00 To Sta. 475 + 00.00 454.47 L.F. x 12.305 SF ÷ 27 =	207.1 C.Y.
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### RELOCATED ROCKY RIVER DRIVE

Sta. 1 + 25.00 To Sta. 2 + 19.65 94.65 L.F. x 58.67 x 0.5 ÷ 27 =	102.8 C.Y.
---	------------

Sta. 3 + 44.18 To Sta. 12 + 96.52 952.34 L.F. x 58.67 x 0.5 ÷ 27 =	1,034.7 C.Y.
---	--------------

DEDUCT FOR CURB OPENING  
102.12 L.F. x 183 x 0.5 ÷ 27 = 35 C.Y.

DEDUCT FOR PRESSURE RELIEF JOINTS  
8 x 58.67 x 0.5 ÷ 27 = 8.2 C.Y.

310 TOTAL = 19,799.1 C.Y.

TOTAL 310 SUBBASE GRADING "A" TO GENERAL SUMMARY = 19,799 C.Y.

## QUANTITIES FOR PAVING BENEATH GUARD RAIL

### I-480 Lt. Side

Sta. 457+67.50 to 459+67.50 200' x 4' ÷ 9 =	88.9 S.Y.
Sta. 466+00 to 475+75 475' x 4' ÷ 9 =	211.1 S.Y.
Sta. 478+00 to 479+75 175' x 4' ÷ 9 =	77.8 S.Y.
Sta. 482+75 to 485+75 300' x 4' ÷ 9 =	133.3 S.Y.
Sta. 445+09 to 447+94 285' x 4' ÷ 9 =	126.7 S.Y.

### I-480 Rt. Side

Sta. 457+67.50 to 460+42.5 275' x 4' ÷ 9 =	122.2 S.Y.
Sta. 470+75 to 472+50 175' x 4' ÷ 9 =	77.8 S.Y.
Sta. 483+50 to 486+00 250' x 4' ÷ 9 =	111.1 S.Y.
Sta. 491+75 to 493+50 175' x 4' ÷ 9 =	77.8 S.Y.

### I-480 Rt. Side (Cont.)

Sta. 425+85 to 427+60 175' x 4' ÷ 9 =	77.8 S.Y.
Sta. 440+96 to 442+96 200' x 4' ÷ 9 =	88.9 S.Y.
Sta. 444+92 to 447+63 271' x 4' ÷ 9 =	120.4 S.Y.
Ramp B-1 Lt. & Rt. Sta. 443+00 to 445+25 (287.5 + 225) x 4 ÷ 9 =	227.8 S.Y.
Ramp B-2 Lt. Sta. 438+87-439+00; 439+00-443+37 (13' x 4) + (437' x 1.08) ÷ 9 =	58.2 S.Y.
Sta. 445+62-449+25; 449+25-454+12 (413' x 1.08) + (497' x 4) ÷ 9 =	243.8 S.Y.
Ramp B-2 Rt. Sta. 445+31 to 452+93 762' x 4' ÷ 9 =	338.7 S.Y.
Sub-Total	2182.3 S.Y.

Total Item Special-Herbicides For Weed Control To General Summary = 2182 S.Y.

2182.3 S.Y. x 9 ÷ 36 = 181.9 C.Y.

Item 301- Bituminous Aggregate Base (Weed Control) to Sheet No. 19 = 182 C.Y.

# PAVEMENT CALCULATIONS

REVISIONS  
 COMPUTED BY: D.A.S.  
 CHECKED BY: D.F.  
 Rev. S.C. 2-22-78

CALC. BY: TRB DATE 6/76  
 CHKD. BY: E.J.K. DATE 6/76  
 Rev. TRB. 5-1-78

FHWA REGION	STATE	PROJECT	19 317
5	OHIO		

CUYAHOGA COUNTY  
 CUY-480-6.78

## ITEM 301 - BITUMINOUS AGGREGATE BASE

### I-480 MEDIAN

STA. 457 + 67.50 TO STA. 495 + 01.76 BK (3734.26 L.F.)  
 STA. 420 + 30.02 FWD TO STA. 442 + 93.00 (2262.98 L.F.)  
 STA. 445 + 11.58 TO STA. 447 + 73.81 (262.23 L.F.)  
 6259.47 L.F. x 10.88 S.F. ÷ 27 = 2,522.3 C.Y.

### I-480 SHOULDERS

STA. 457 + 67.50 TO STA. 447 + 73.81  
 ITEM 310 = 1604.4 C.Y.  
 1604.4 C.Y. ÷ 7.86 S.F. x 4.94 S.F. = 1,008.4 C.Y.

### RAMP B-1

STA. 431+50.00 To STA. 438+51.00: 701.0 L.F. x (4.94+1.94) ÷ 27 = 178.6 C.Y.  
 STA. 438+51.00 To STA. 440+40.10: 1891 L.F. x (4.65+1.94) ÷ 27 = 46.2 C.Y.  
 STA. 440+40.10 To STA. 442+34.00: 193.9 L.F. x (4.65+5.65) ÷ 27 = 50.9 C.Y.  
 STA. 442+34.00 To STA. 447+00.00: 466.0 L.F. x (4.94+1.94) ÷ 27 = 118.7 C.Y.  
 Paving beneath guardrail (From Sheet No. 18) = 182.0 C.Y.

### RAMP B-2

STA. 445+63.49 To STA. 449+75.00  
 411.51 x 12.92 ÷ 9 = 590.7 S.Y. x 6/36 = 98.5 C.Y.  
 (411.51 + 18.5) x 4 ÷ 9 = 191.1 S.Y. x 6/36 = 31.9 C.Y.

STA. 449+75.00 To STA. 454+17.27  
 442.27 L.F. x 4 ÷ 9 = 196.6 S.Y. x 6/36 = 32.8 C.Y.  
 442.27 L.F. x 10 ÷ 9 = 491.4 S.Y. x 6/36 = 81.9 C.Y.

### RAMP G-1

STA. 474+36.85 To STA. 481+00.00  
 663.15 L.F. x 6 ÷ 9 = 442.1 S.Y. x 6/36 = 73.7 C.Y.  
 663.15 L.F. x 3 ÷ 9 = 221.1 S.Y. x 6/36 = 36.8 C.Y.

### RAMP G-2

STA. 470+50.00 To STA. 475+00.00  
 448.32 L.F. x 6 ÷ 9 = 298.88 S.Y. x 6/36 = 49.8 C.Y.  
 448.32 L.F. x 3 ÷ 9 = 153.26 S.Y. x 6/36 = 25.5 C.Y.  
 301 TOTAL = 4,538.0 C.Y.

TOTAL 301 AGGREGATE BASE TO GENERAL SUMMARY = 4,538 C.Y.

### ADDITIONAL QUANTITIES FOR APPROACH SLABS

CUY-480-0727 Bare approach slabs

CUY-480-0795 East end, Bare slabs

West end  
 Area = 39 x 25.58 = 110.8 or 111 S.Y.

407 Tack Coat 0.10 gal./sq. x 111 = 11 gal.  
 407 Cover Aggregate .0035/sq. x 111 = 0.4 ton  
 1 1/4" 404 = 1.042 x 39 x 25.58 = 3.85 = 4 Cu.Yd.

1 3/4" 402 = 1.1458 x 39 x 25.58 = 5.39 = 5 Cu.Yd.

CUY-480-0793  
 Area = 4(25.58 x 47) = 534.33 = 535 Sq.Yd.

407 Tack Coat 0.10 gal./sq. x 535 = 53.5 = 54 gal.  
 407 Cover Aggregate .0035/sq. x 535 = 2 ton  
 1 1/4" 404 = 4(1.042 x 25.58 x 47) = 18.56 = 19 Cu.Yd.

1 3/4" 402 = 4(1.1458 x 25.58 x 47) = 25.97 = 26 Cu.Yd.

CUY-480-Ramp B-1 Bare Approach Slabs

CUY-480-0800 No roadway quantities this contract

Totals to General Summary

402 = 31 Cu.Yd.

404 = 70 Cu.Yd.

407 = 256 Gal tack Coat

407 = 9 ton Cover Aggregate

409 = 167 Gal Seal Coat

409 = 3 Cu.Yd. Seal Coat Cover Aggregate

CUY-480-0648, Westside in CUY-480-486  
 East side, Area = 4(48 x 25) = 534 Sq.Yd.  
 Westside surface

407 Cover Aggr. .0035/sq. x 534 = 1.87 = 2 Ton  
 407 Tack Coat 0.1 gal./sq. x 534 = 53.4 = 54 gal.  
 404 1 1/2" = 4(48 x 25 x .125) = 22.22 = 23 Cu.Yd.

Shoulder: Area 2(24.5 x 40.5) = 220.5 Sq.Yd.

407 Tack Coat - 0.1 gal./sq. x 220.5 = 22 gal.  
 404 1 1/2" 2(24.5 x 40.5 x .125) = 9.19 = 9 Cu.Yd.

407 Cover Aggr. .0035/sq. x 220.5 = .77 = 1 Cu.Yd.  
 409 Seal Coat .3 x 220.5 = 66.15 = 66 gal.  
 409 Cover Aggr. .008 x 220.5 = 1.76 = 2 Cu.Yd.

Feather, Shoulder & Slab  
 Width = 137.5' 37.5'

404 2(137.5 x 37.5 x .125 x 1/2) = 23.87 = 24 Cu.Yd.

407 Tack Coat 2 ends (0.1 x 137.5 x 37.5) x 1/2 = 115 gal.  
 407 Cover Aggr. 2 ends (.0035 x 137.5 x 37.5) x 1/2 = 4 ton  
 409 Seal Coat Shoulder 2(.3 x 40.5 x 37.5) x 1/2 = 101 gal.

409 Seal Coat Cover Aggr. 2(.008 x 40.5 x 37.5) x 1/2 = 3 Cu.Yd.

Fairview Port Cleveland

28 C.Y. 31 C.Y.

96 Gal. 160 Gal.

4 Ton 5 Ton

84 Gal. 83 Gal.

2 C.Y. 1 C.Y.

## PAVING BENEATH GUARD RAIL

Before erecting the guard rail, the Contractor shall prepare the subgrade and pave the area beneath the Guard Rail run as shown in the shoulder details on sheet Nos. 4 and 5.

Preparation of the subgrade shall include an application of SIMAZINE pre-emergence herbicide. The rate and method of application shall be in strict conformance with the manufacturer's instructions. The Contractor shall obtain a permit from the Ohio Department of Agriculture before applying.

After setting the guard rail posts but before attaching the rail element, any damage to the paving resulting from the post-setting operations shall be repaired and additional paving material shall be compacted around the posts sufficient to prevent water from collecting.

Cost of all materials, equipment and labor necessary to accomplish the above shall be included in the unit prices bid for.

ITEM 301 - Bituminous Aggregate Base  
 ITEM SPECIAL - Herbicides for Weed Control

## ITEM SPECIAL, DRAINAGE CONNECTION

### RAMP B-2

STA. 445+63.49 To STA. 449+75.00  
 411.51 L.F. x 2.66 S.F./L.F. ÷ 27 = 40.5 C.Y.

STA. 449+75.00 To STA. 451+75.00  
 200.00 L.F. x 2.45 S.F./L.F. ÷ 27 = 18.1 C.Y.

STA. 451+75.00 To STA. 453+00.00  
 125.00 L.F. x (2.45 + 0.67) ÷ 27 = 14.4 C.Y.

STA. 453+00.00 To STA. 454+17.27  
 117.27 L.F. x 0.67 S.F./L.F. ÷ 27 = 2.9 C.Y.

### RAMP G-1

STA. 474+36.85 To STA. 481+00.00  
 663.15 L.F. x 1.868 S.F./L.F. ÷ 27 = 45.9 C.Y.

### RAMP G-2

STA. 470+50.00 To STA. 475+00.00  
 448.32 L.F. x 1.868 S.F./L.F. ÷ 27 = 31.0 C.Y.

### RELOCATED ROCKY RIVER DRIVE

STA. 1+25.00 To STA. 12+96.52  
 [(94.65 + 952.34) x 2 - 102.12] x 1.00 S.F./L.F. ÷ 27 = 73.8 C.Y.

ITEM SPECIAL TOTAL = 227 C.Y.

TOTAL ITEM SPECIAL AGGREGATE DRAINAGE TO GENERAL SUMMARY = 227 C.Y.

## ITEM 622 CONCRETE BARRIER, TYPE "H"

### I-480

STA. 457 + 67.50 To STA. 495 + 01.76 Bk. = 6,022.24 L.F.  
 STA. 420 + 30.02 To STA. 443 + 18.00 =

STA. 444 + 86.58 To STA. 447 + 98.81 = 312.23 L.F.

DEDUCT FOR MALSR FOUNDATION = 1 x 14 L.F. = - 14.00 L.F.  
 STA. 433 + 63.6 G22 SUBTOTAL = 6,320.47 L.F.

DEDUCT I-3 MEDIAN INLETS = 11 x 20 L.F. = - 220.00 L.F.

## ITEM 622 CONCRETE BARRIER, TYPE "H" (CON'T.)

### I-480

DEDUCT OVERHEAD SIGN FOUNDATIONS = 4 x 10 L.F. = - 40.00 L.F.  
 DEDUCT LIGHT POLE FOUNDATIONS = 34 x 2.5 L.F. = - 85.00 L.F.  
 G22 TOTAL = 5,975.47 L.F.

TOTAL G22 CONCRETE BARRIER TYPE "H" TO GENERAL SUMMARY = 5,975 L.F.

## ITEM G11 REINFORCED CONCRETE APPROACH SLABS (T=14")

RELOCATED ROCKY RIVER DRIVE OVER RAMP B-1  
 20 x 55 x 2 ÷ 9 = 244.4 S.Y.

TOTAL G11 REINFORCED CONCRETE APPROACH SLABS (T=14") TO GENERAL SUMMARY = 244 S.Y.

## ITEM G11 REINFORCED CONCRETE APPROACH SLABS (T=15")

STRUCTURE No. CUY-480-0793  
 4 x 25 x 45.25 ÷ 9 = 502.8 S.Y.

STRUCTURE No. CUY-480-0795  
 1 x 25 x 39.50 ÷ 9 = 109.7 S.Y.

STRUCTURE No. CUY-480-0800  
 2 x 25 x 45.00 ÷ 9 = 250.0 S.Y.

G11 TOTAL = 862.5 S.Y.

TOTAL G11 REINFORCED CONCRETE APPROACH SLABS (T=15") TO GENERAL SUMMARY = 863 S.Y.

## ITEM 203 - SUBGRADE COMPACTION

ITEM 801 - 9" = 61,202.4 S.Y.  
 ADD BRIDGE PIER & SIGN SUPPORT PROTECTION = 75.0 S.Y.

ITEM 451 - 10" = 2,290.9 S.Y.

ITEM 451 - 9" RAMP SUBTOTAL = 1,978.9 S.Y.

ITEM G11 - (T=14") TOTAL = 244.4 S.Y.

ITEM G11 - (T=15") TOTAL = 862.5 S.Y.

BERM AREAS FROM BELOW \* = 25,831.1 S.Y.

ITEM G22 - SUBTOTAL = 6,320.47 x 4 ÷ 9 = 2,809.1 S.Y.

203 SUBTOTAL = 95,294.3 S.Y.

ITEM 451 - 9" RELOCATED ROCKY RIVER DRIVE SUBTOTAL = 6,153.8 S.Y.

203 TOTAL = 101,448.1 S.Y.

SHT. No.	203 SUBGRADE COMPACTION	203 PROOF ROLLING
19	101,448 S.Y.	95,295 S.Y.
59	2,316 S.Y.	2,316 S.Y.
60	3,495 S.Y.	3,495 S.Y.
61	2,645 S.Y.	2,645 S.Y.
62	3,045 S.Y.	3,045 S.Y.
63	3,372 S.Y.	3,372 S.Y.
64	3,949 S.Y.	3,949 S.Y.
65	8,012 S.Y.	1,036 S.Y.
66	9,051 S.Y.	927 S.Y.
67	5,113 S.Y.	0
69	1,955 S.Y.	0
70	4,832 S.Y.	4,832 S.Y.
71	1,849 S.Y.	1,849 S.Y.
72	6,039 S.Y.	6,039 S.Y.
TOTAL	157,121 S.Y.	128,800 S.Y.

TOTAL 203 SUBGRADE COMPACTION TO GENERAL SUMMARY = 157,121 S.Y.

SUB-TOTAL 203 = 25,831.1 S.Y.

# PAVEMENT CALCULATIONS

REVISIONS  
COMPUTED BY: D.A.S.  
CHECKED BY: D.F.

DATE: 6/76  
CHKD. BY: E.J.K.  
DATE: 6/76

Rev. S.C. 2-22-78

Rev. T.R.B. 5-1-78

FHWA REGION	STATE	PROJECT
5	OHIO	

20  
317

CUYAHOGA COUNTY  
CUY-480-6.78

## ITEM 203 PROOF ROLLING

TOTAL 203 PROOF ROLLING = 128,800 S.Y. ÷ 3,000 = 42.9 HRS.

TOTAL 203 PROOF ROLLING TO GENERAL SUMMARY = 43 HRS.

## ITEM SPECIAL-PRESSURE RELIEF JOINT, TYPE "A"

2 × 48 + 7 × 24 + 1 × 55 = 319.00 L.F.

TOTAL ITEM SPECIAL PRESSURE RELIEF JOINT TYPE "A" TO GENERAL SUMMARY = 319 L.F.

## ITEM 609 CONCRETE CURB, STANDARD TYPE 2A

### RELOCATED ROCKY RIVER DRIVE

STA. 1+25.00 To STA. 2+19.65 = 94.65 L.F. × 2 = 189.30 L.F.

STA. 3+44.18 To STA. 12+96.52 = 952.34 L.F. × 2 = 1,904.68 L.F.

DEDUCT PRESSURE RELIEF JOINT = 4 L.F. × 2 = - 8.00 L.F.

DEDUCT CURB OPENING = - 102.12 L.F.

ITEM SPECIAL TOTAL = 1,983.86 L.F.

TOTAL 609 CONCRETE CURB STANDARD TYPE 2A TO GENERAL SUMMARY = 1,984 L.F.

## ITEM 407 - TACK COAT (.10 GAL/S.Y.)

### I-480 & RAMP B-1

ITEM 801 AREA = 61,202.4 S.Y.  
61,202.4 S.Y. × 0.10 GAL/S.Y. = 6,120.2 GALS

TOTAL 407 - TACK COAT TO GENERAL SUMMARY = 6,120 GALS

## ITEM 407 - COVER AGGREGATE (7 lbs/S.Y.)

### I-480 & RAMP B-1

ITEM 801 AREA = 61,202.4 S.Y.  
61,202.4 S.Y. × 7 lbs/S.Y. ÷ 2000 = 214.2 TONS

TOTAL 407 - COVER AGGREGATE TO GENERAL SUMMARY = 214 TONS

## ITEM 409 - SEAL COAT BITUMINOUS MATERIAL (0.2 GAL/S.Y.)

### I-480

MEDIAN AREA FROM 310 : 6,259.47 L.F. × 22 ÷ 9 = 15,300.9 S.Y.  
SHOULDER AREA FROM 310 : [1604.04 C.Y. × 27 C.F./C.Y. ÷ 7.86 S.F.] × 10 ÷ 9 = 6,122.3 S.Y.

### RAMP B-1

[1550 L.F. × 4.0 + (701 L.F. + 466 L.F.) × 100 + 189.1 L.F. × 942 + 193.9 L.F. × 1042] ÷ 9 = 2,408.0 S.Y.  
TOTAL AREA = 23,831.2 S.Y.

TOTAL 409 = 23,831.2 × 0.2 = 4,766.2 GAL.

TOTAL 409 - SEAL COAT BITUMINOUS MATERIAL TO GENERAL SUMMARY = 4,766 GALS

## ITEM 409 - SEAL COAT COVER AGGREGATE (.005 C.Y./S.Y.)

### I-480 & RAMP B-1

ITEM 409 AREA = 23,831.2 S.Y.  
23,831.2 S.Y. × .005 = 119.2 C.Y.

TOTAL 409 SEAL COAT COVER AGGREGATE TO GENERAL SUMMARY = 119 C.Y.

## 203 - EARTHWORK & 659 SEEDING & MULCHING

SHT. No.	203		659
	EXCAVATION NOT INCLUDING EMBANKMENT	EMBANKMENT	SEEDING & MULCHING
	C.Y.	C.Y.	S.Y.
24	2,496	0	296
25	5,862	43	1,461
26	88,712	93	9,221
27	9,597	2,869	4,398
28	5,902	0	981
29	4,144	632	3,060
30	2,043	39,218	6,176
31	902	0	154
32	80,187	0	13,405
33	60,233	0	11,893
34	2,868	56	2,854
35	22,441	0	9,510
36	78,334	0	18,700
37	73,924	1,273	17,489
38	877	84	2,680
39	45,570	7	9,121
40	509	4,026	1,494
41	866	372	1,886
42	6,886	0	5,879
43	15,858	0	4,934
44	2,613	2,823	2,463
45	1,073	6,962	2,767
46	7,845	21,641	7,467
47	1,609	50,385	5,938
48	2,257	5,283	4,387
49	323	5,537	2,215
50	160	22	0
51	287	94	1,893
52	978	51	1,488
53	1,101	46	1,269
54	298	109	1,825
55	914	0	673
56	1,234	0	337
57	1,065	0	441
18	Deduct for Paving under G.R.		- 2,182
TOTAL	529,968	141,626	156,573

## ITEM 659 SEEDING & MULCHING

TOTAL 659 SEEDING & MULCHING = 156,573 S.Y.

DEDUCT FOR RIP RAP = - 75 S.Y.

DEDUCT FOR ROCK CHANNEL PROTECTION = - 14 S.Y.  
659 SUBTOTAL = 156,484 S.Y.

DEDUCT FOR SODDING 6,051 - 1,457 = - 4,594 S.Y.  
659 TOTAL = 151,890 S.Y.

TOTAL 659 SEEDING & MULCHING TO GENERAL SUMMARY = 151,890 S.Y.

## ITEM 659 COMMERCIAL FERTILIZER (12-12-12)

SUB TOTAL 659 SEEDING & MULCHING = 156,484 S.Y.

156,484 Sq. Yd. ×  $\frac{20 \text{ LB.}}{1,000 \text{ Sq. Ft.}} \times \frac{95 \text{ Sq. Ft.}}{3 \text{ Sq. Yd.}} \times \frac{1 \text{ TON}}{2,000 \text{ L.B.}} = 14.08 \text{ TON}$

TOTAL 659 COMMERCIAL FERTILIZER TO GENERAL SUMMARY = 14.08 TON

## ITEM 659 AGRICULTURAL LIMING

SUB TOTAL 659 SEEDING & MULCHING = 156,484 S.Y.

156,484 Sq. Yd. ×  $\frac{100 \text{ LB.}}{1,000 \text{ Sq. Ft.}} \times \frac{9 \text{ Sq. Ft.}}{3 \text{ Sq. Yd.}} \times \frac{1 \text{ TON}}{2,000 \text{ L.B.}} = 70.42 \text{ TON}$

TOTAL 659 AGRICULTURAL LIMING TO GENERAL SUMMARY = 70.42 TON

## ITEM 801 - 9" PORTLAND CEMENT CONCRETE BASE

### I-480

STA. 457 + 97.50 TO STA. 465 + 43.40  
745.90 L.F. × 96.75 ÷ 9 = 8,018.4 S.Y.

STA. 465 + 43.40 TO STA. 467 + 25.00  
181.60 L.F. × 96.5 ÷ 9 = 1,947.2 S.Y.

STA. 467 + 25.00 TO STA. 473 + 43.40  
618.40 L.F. × 96.75 ÷ 9 = 6,647.8 S.Y.

STA. 473 + 43.40 TO STA. 477 + 21.64  
378.24 L.F. × 97.0 ÷ 9 = 4,076.6 S.Y.

STA. 477 + 21.64 TO STA. 484 + 25.00  
703.36 L.F. × 96.75 ÷ 9 = 7,561.1 S.Y.

STA. 484 + 25.00 TO STA. 485 + 21.64  
96.64 L.F. × 96.5 ÷ 9 = 1,036.2 S.Y.

STA. 485 + 21.64 TO STA. 494 + 25.00  
903.36 L.F. × 96.75 ÷ 9 = 9,711.1 S.Y.

STA. 494 + 25.00 TO STA. 495 + 01.76 BK (76.76 L.F.)  
STA. 420 + 30.02 FWD TO STA. 422 + 56.80 (226.78 L.F.)  
303.54 L.F. × 97 ÷ 9 = 3,271.5 S.Y.

STA. 422 + 56.80 TO STA. 431 + 50.00  
893.20 L.F. × 72.75 ÷ 9 = 7,220.0 S.Y.

STA. 431 + 50.00 TO STA. 439 + 50.00  
800.00 L.F. × 48.5 ÷ 9 = 4,311.1 S.Y.

STA. 439 + 50.00 TO STA. 441 + 22.08  
172.08 L.F. × 48.75 ÷ 9 = 932.1 S.Y.

STA. 441 + 22.08 TO STA. 442 + 93.00  
170.92 L.F. × 49.0 ÷ 9 = 930.6 S.Y.

STA. 445 + 11.58 TO STA. 447 + 73.81  
262.23 L.F. × 49.0 ÷ 9 = 1,427.7 S.Y.

801 SUBTOTAL = 57,091.4 S.Y.

### RAMP B-1

STA. 431 + 50.00 TO STA. 447 + 00.00  
1,550.00 L.F. × 24.5 ÷ 9 = 4,219.4 S.Y.

DEDUCT PRESSURE RELIEF JOINTS  
(6 × 24.5 + 2 × 48.5) × 4 ÷ 9 = - 108.4 S.Y.

801 TOTAL = 61,202.4 S.Y.

Total 801 - 9" Portland Cement Concrete Base to General Summary = 61,202 S.Y.

# SUPERELEVATION TABLES

CUYAHOGA COUNTY  
CUY-480-6.78

I-480									
Dc=1° 15' 00"					Curve Rt. Max Super = 0.030%				
WEST BOUND I-80					EAST BOUND I-80				
STATION	61' Lt.	49' Lt.	37' Lt.	25' Lt.	Profile Grade 13' Lt. & Rt.	25' Rt.	37' Rt.	49' Rt.	61' Rt.
458+00.	743.80	743.99	744.18	743.99	743.80	743.99	744.18	743.99	743.80
458+25.	743.88	744.07	744.25	744.06	743.87	744.05	744.24	744.04	743.86
458+50.	744.00	744.16	744.32	744.13	743.93	744.10	744.26	744.07	743.88
458+75.	744.13	744.27	744.39	744.20	744.01	744.13	744.26	744.07	743.88
459+00.	744.27	744.37	744.46	744.27	744.08	744.17	744.27	744.07	743.89
459+25.	744.40	744.47	744.53	744.34	744.15	744.21	744.27	744.08	743.89
459+50.	744.53	744.57	744.59	744.41	744.22	744.25	744.28	744.09	743.90
459+75.	744.67	744.67	744.67	744.48	744.29	744.29	744.29	744.10	743.91
460+00.	744.79	744.77	744.73	744.54	744.36	744.33	744.29	744.10	743.91
460+25.	744.93	744.87	744.80	744.62	744.43	744.37	744.30	744.11	743.92
460+50.	745.06	744.97	744.87	744.69	744.50	744.41	744.30	744.12	743.93
460+75.	745.19	745.07	744.94	744.76	744.57	744.44	744.31	744.12	743.93
461+00.	745.33	745.17	745.01	744.83	744.64	744.48	744.32	744.13	743.94
461+25.	745.47	745.29	745.10	744.90	744.71	744.52	744.33	744.14	743.94
461+50.	745.65	745.43	745.22	744.99	744.78	744.56	744.34	744.12	743.91
461+75.	745.83	745.58	745.34	745.09	744.85	744.61	744.36	744.11	743.87
462+00.	746.01	745.74	745.47	745.19	744.92	744.65	744.37	744.09	743.82
462+25.	746.20	745.90	745.60	745.29	744.99	744.69	744.38	744.08	743.78
462+50.	746.38	746.05	745.72	745.39	745.06	744.73	744.40	744.07	743.74
462+75.	746.52	746.18	745.84	745.48	745.13	744.78	744.42	744.06	743.72
463+00.	746.63	746.28	745.92	745.56	745.20	744.84	744.48	744.12	743.76
463+25.	746.71	746.35	745.99	745.63	745.27	744.91	744.55	744.19	743.83
463+50.	746.78	746.42	746.06	745.70	745.34	744.98	744.62	744.26	743.90
463+75.	746.85	746.49	746.13	745.77	745.41	745.05	744.69	744.33	743.97
464+00.	746.92	746.56	746.20	745.84	745.48	745.12	744.76	744.40	744.04
464+25.	746.99	746.63	746.27	745.91	745.55	745.19	744.83	744.47	744.11
464+50.	747.06	746.70	746.34	745.98	745.62	745.26	744.90	744.54	744.18
464+75.	747.13	746.77	746.41	746.05	745.69	745.33	744.97	744.61	744.25
465+00.	747.20	746.84	746.48	746.12	745.76	745.40	745.04	744.68	744.32
465+25.	747.27	746.91	746.55	746.19	745.83	745.47	745.11	744.75	744.39
465+50.	747.34	746.98	746.62	746.26	745.90	745.54	745.18	744.82	744.46
465+75.	747.41	747.05	746.69	746.33	745.97	745.61	745.25	744.89	744.53
466+00.	747.48	747.12	746.76	746.40	746.04	745.68	745.32	744.96	744.60
466+25.	747.55	747.19	746.83	746.47	746.11	745.75	745.39	745.03	744.67
466+50.	747.62	747.26	746.90	746.54	746.18	745.82	745.46	745.10	744.74
466+75.	747.69	747.33	746.97	746.61	746.25	745.89	745.53	745.17	744.81
467+00.	747.76	747.40	747.04	746.68	746.32	745.96	745.60	745.24	744.88
467+25.	747.83	747.47	747.11	746.75	746.39	746.03	745.67	745.31	744.95
467+50.	747.90	747.54	747.18	746.82	746.46	746.10	745.74	745.38	745.02
467+75.	747.97	747.61	747.25	746.89	746.53	746.17	745.81	745.45	745.09
468+00.	748.04	747.68	747.32	746.96	746.60	746.24	745.88	745.52	745.16
468+25.	748.11	747.75	747.39	747.03	746.67	746.31	745.95	745.59	745.23
468+50.	748.18	747.82	747.46	747.10	746.74	746.38	746.02	745.66	745.30
468+75.	748.25	747.89	747.53	747.17	746.81	746.45	746.09	745.73	745.37
469+00.	748.32	747.96	747.60	747.24	746.88	746.52	746.16	745.80	745.44
469+25.	748.39	748.03	747.67	747.31	746.95	746.59	746.23	745.87	745.51
469+50.	748.46	748.10	747.74	747.38	747.02	746.66	746.30	745.94	745.58
469+75.	748.53	748.17	747.81	747.45	747.09	746.73	746.37	746.01	745.65
470+00.	748.60	748.24	747.88	747.52	747.16	746.80	746.44	746.08	745.72
470+25.	748.67	748.31	747.95	747.59	747.23	746.87	746.51	746.15	745.79
470+50.	748.74	748.38	748.02	747.66	747.30	746.94	746.58	746.22	745.86
470+75.	748.81	748.45	748.09	747.73	747.37	747.01	746.65	746.29	745.93
471+00.	748.88	748.52	748.16	747.80	747.44	747.08	746.72	746.36	746.00
471+25.	748.95	748.59	748.23	747.87	747.51	747.15	746.79	746.43	746.07
471+50.	749.02	748.66	748.30	747.94	747.58	747.22	746.86	746.50	746.14
471+75.	749.09	748.73	748.37	748.01	747.65	747.29	746.93	746.57	746.21
472+00.	749.16	748.80	748.44	748.08	747.72	747.36	747.00	746.64	746.28
472+25.	749.23	748.87	748.51	748.15	747.79	747.43	747.07	746.71	746.35
472+50.	749.30	748.94	748.58	748.22	747.86	747.50	747.14	746.78	746.42
472+75.	749.37	749.01	748.65	748.29	747.93	747.57	747.21	746.85	746.49
473+00.	749.44	749.08	748.72	748.36	748.00	747.64	747.28	746.92	746.56
473+25.	749.51	749.15	748.79	748.43	748.07	747.71	747.35	746.99	746.63
473+50.	749.58	749.22	748.86	748.50	748.14	747.78	747.42	747.06	746.70
473+75.	749.65	749.29	748.93	748.57	748.21	747.85	747.49	747.13	746.77
474+00.	749.72	749.36	749.00	748.64	748.28	747.92	747.56	747.20	746.84
474+25.	749.77	749.42	749.07	748.71	748.35	747.99	747.63	747.27	746.91
474+50.	749.81	749.46	749.12	748.77	748.42	748.01	747.72	747.37	747.02
474+75.	749.81	749.48	749.15	748.82	748.49	748.16	747.83	747.49	747.17

I-480									
Dc=1° 15' 00"					Curve Rt. Max Super = 0.030%				
WEST BOUND I-480					EAST BOUND I-480				
STATION	61' Lt.	49' Lt.	37' Lt.	25' Lt.	Profile Grade 13' Lt. & Rt.	25' Rt.	37' Rt.	49' Rt.	61' Rt.
475+00	749.77	749.47	749.16	748.86	748.56	748.26	747.96	747.65	747.35
475+25	749.72	749.45	749.17	748.90	748.63	748.36	748.08	747.80	747.52
475+50	749.68	749.44	749.19	748.95	748.70	748.46	748.21	747.96	747.71
475+75	749.64	749.43	749.21	748.99	748.77	748.55	748.33	748.11	747.89
476+00	749.62	749.43	749.23	749.04	748.84	748.65	748.46	748.27	748.07
476+25	749.61	749.46	749.29	749.11	748.91	748.76	748.59	748.40	748.21
476+50	749.61	749.48	749.36	749.17	748.98	748.86	748.73	748.53	748.35
476+75	749.62	749.53	749.43	749.24	749.05	748.96	748.86	748.67	748.49
477+00	749.62	749.56	749.50	749.31	749.12	749.06	748.99	748.80	748.62
477+25	749.63	749.60	749.57	749.38	749.19	749.16	749.12	748.93	748.75
477+50	749.64	749.64	749.64	749.46	749.26	749.26	749.26	749.06	748.88
477+75	749.65	749.67	749.71	749.52	749.33	749.36	749.39	749.19	749.01
478+00	749.65	749.72	749.78	749.59	749.40	749.46	749.52	749.33	749.14
478+25	749.66	749.75	749.86	749.66	749.47	749.56	749.66	749.46	749.28
478+50	749.67	749.79	749.92	749.73	749.54	749.66	749.79	749.60	749.41
478+75	749.67	749.83	749.99	749.80	749.61	749.77	749.93	749.73	749.55
479+00	749.68	749.87	750.06	749.87	749.68	749.86	750.04	749.85	749.67

# SUPERELEVATION TABLES

CUYAHOGA COUNTY  
CUY-480-6.78

I - 480				CURVE LT.		MAX. SUPER = 0.036 1/4				
WESTBOUND LANES				REMARKS	STATION	PROFILE GRADE	EASTBOUND LANES			
LT. EDGE	36' LT.	24' LT.	12' LT.				12' RT.	24' RT.	36' RT.	48' RT.
754.70	754.89	755.08	754.89		492+00	754.70	754.89	755.08	754.89	754.70
754.97	754.16	755.35	755.16		+25	754.97	755.16	755.35	755.16	754.97
755.23	755.42	755.61	755.43		+50	755.26	755.45	755.64	755.45	755.27
755.50	755.69	755.88	755.72		+75	755.56	755.75	755.94	755.78	755.62
755.76	755.95	756.14	756.01		493+00	755.88	756.07	756.26	756.13	756.00
756.03	756.22	756.41	756.31		+25	755.21	756.40	756.59	756.49	756.39
756.31	756.50	756.69	756.62		+50	756.55	756.74	756.93	756.87	756.80
756.60	756.79	756.98	756.94		+75	756.91	757.10	757.29	757.26	757.22
756.88	757.07	757.26	757.27		494+00	757.28	757.47	757.66	757.66	757.66
757.17	757.36	757.55	757.61		+25	757.67	757.86	758.05	758.10	758.16
757.46	757.65	757.84	757.96		+50	758.07	758.26	758.45	758.56	758.68
757.76	757.95	758.14	758.31		+75	758.48	758.67	758.87	759.04	759.22
758.06	758.28	758.49	758.70		495+00	758.91	759.12	759.34	759.55	759.77
758.08	758.30	758.51	758.73		P.C. 495+01.76(Back) -420+30.02(Fwd)	758.94	759.16	759.38	759.59	759.81
758.34	758.58	758.82	759.06		+50	759.30	759.54	759.78	760.02	760.26
758.67	758.94	759.21	759.48		+75	759.75	760.02	760.29	760.56	760.83
759.01	759.31	759.61	759.92		421+00	760.22	760.52	760.82	761.12	761.43
759.37	759.70	760.03	760.37		+25	760.70	761.03	761.37	761.70	762.04
759.74	760.11	760.47	760.84		+50	761.20	761.56	761.93	762.29	762.66
760.12	760.52	760.92	761.32		+75	761.71	762.10	762.50	762.89	763.29
760.56	760.98	761.39	761.81		422+00	762.23	762.64	763.06	763.47	763.89
761.02	761.45	761.89	762.32		+25	762.75	763.18	763.61	764.04	764.47
761.54	761.97	762.41	762.84		+50	763.27	763.70	764.13	764.57	765.00
762.06	762.49	762.93	763.36		+75	763.79	764.22	764.65		
762.58	763.01	763.45	763.88		423+00	764.31	764.74	765.17		
763.10	763.53	763.97	764.40		+25	764.83	765.26	765.69		
763.62	764.05	764.49	764.92		+50	765.35	765.78	766.21		
764.14	764.57	765.01	765.44		+75	765.87	766.30	766.73		
764.66	765.09	765.53	765.96		424+00	766.39	766.82	767.25		
765.18	765.91	766.05	766.48		+25	766.91	767.34	767.77		
765.70	766.13	766.57	767.00		+50	767.43	767.86	768.29		
766.22	766.65	767.09	767.52		+75	767.95	768.38	768.81		
766.74	767.17	767.61	768.04		425+00	768.47	768.90	769.33		
767.26	767.69	768.13	768.56		+25	768.99	769.42	769.85		
767.78	768.21	768.65	769.08		+50	769.51	769.94	770.37		
768.30	768.73	769.17	769.60		+75	770.03	770.46	770.89		
768.82	769.25	769.69	770.12		426+00	770.55	770.98	771.41		
769.34	769.77	770.21	770.64		+25	771.07	771.50	771.93		
769.86	770.29	770.73	771.16		+50	771.59	772.02	772.45		
770.38	770.81	771.25	771.68		+75	772.11	772.54	772.97		
770.90	771.33	771.77	772.20		427+00	772.63	773.06	773.49		
771.42	771.85	772.29	772.72		+25	773.15	773.58	774.01	See Pav't. Details Sheet N <sup>o</sup> 70	
771.94	772.37	772.81	773.24		+50	773.67	774.10	774.53		
772.46	772.89	773.33	773.76		+75	774.19	774.62	775.05		
772.98	773.41	773.85	774.28		428+00	774.71	775.14	775.57		
773.50	773.93	774.37	774.80		+25	775.23	775.66	776.09		
774.02	774.45	774.89	775.32		+50	775.75	776.18	776.61		
774.54	774.97	775.41	775.84		+75	776.27	776.70	777.13		
775.06	775.49	775.93	776.36		429+00	776.79	777.22	777.65		
775.58	776.01	776.45	776.88		+25	777.31	777.74	778.17		
776.10	776.53	776.97	777.40		+50	777.83	778.26	778.69		
776.62	777.05	777.49	777.92		+75	778.35	778.78	779.21		
777.14	777.57	778.01	778.44		430+00	778.87	779.30	779.73		
777.66	778.09	778.53	778.96		+25	779.39	779.82	780.25		
778.18	778.61	779.05	779.48		+50	779.91	780.34	780.77		
778.70	779.13	779.57	780.00		+75	780.43	780.86	781.29		
779.22	779.65	780.09	780.52		431+00	780.95	781.38	781.81		
779.74	780.17	780.61	781.04		+25	781.47	781.90	782.33		
780.26	780.69	781.13	781.56		+50	781.99	782.42	782.85		
See Pav't. Details Sheet N <sup>o</sup> 83	781.65	782.08			+75	782.51	782.94	783.37		

I - 480				CURVE LT.		MAX. SUPER = 0.036 1/4			
WESTBOUND LANES		REMARKS	STATION	PROFILE GRADE	EASTBOUND LANES				
24' LT.	12' LT.				12' RT.	24' RT.			
782.17	782.60		432+00	783.03	783.46	783.89			
782.69	783.12		+25	783.55	783.98	784.41			
783.21	783.64		+50	784.07	784.50	784.93			
783.73	784.16		+75	784.59	785.02	785.45			
784.25	784.68		433+00	785.11	785.54	785.97			
784.77	785.20		+25	785.63	786.06	786.49			
785.29	785.72		+50	786.15	786.58	787.01			
785.81	786.24		+75	786.67	787.10	787.53			
786.33	786.76		434+00	787.19	787.62	788.05			
786.85	787.28		+25	787.71	788.14	788.57			
787.37	787.80		+50	788.23	788.66	789.09			
787.89	788.32		+75	788.75	789.18	789.61			
788.41	788.84		435+00	789.27	789.70	790.13			
788.93	789.36		+25	789.79	790.22	790.65			
789.45	789.88		+50	790.31	790.74	791.17			
789.97	790.40		+75	790.83	791.26	791.69			
790.49	790.92		436+00	791.35	791.78	792.21			
791.01	791.44		+25	791.87	792.30	792.73			
791.53	791.96		+50	792.39	792.82	793.25			
792.05	792.48		+75	792.91	793.34	793.77			
792.57	793.00		437+00	793.43	793.86	794.29			
793.09	793.52		+25	793.95	794.38	794.81			
793.61	794.04		+50	794.47	794.90	795.33			
794.13	794.56		+75	794.99	795.42	795.85			
794.65	795.08		438+00	795.51	795.94	796.37			
795.17	795.60		+25	796.03	796.46	796.89			
795.69	796.12		+50	796.55	796.98	797.41			
796.21	796.64		+75	797.07	797.50	797.93			
796.73	797.16		439+00	797.59	798.02	798.45			
797.25	797.68		+25	798.11	798.54	798.97			
797.77	798.20		+50	798.63	799.06	799.49			
798.29	798.72		+75	799.15	799.58	800.01			
798.81	799.24		440+00	799.67	800.10	800.53			
799.33	799.76		+25	800.19	800.61	801.03			
799.92	800.31		+50	800.71	801.10	801.48			
800.56	800.89		+75	801.23	801.56	801.90			
801.21	801.48		441+00	801.75	802.02	802.29			
801.78	801.99	PT.	+22.08	802.21	802.43	802.64			
801.85	802.06		+25	802.27	802.48	802.68			
802.49	802.69		+50	802.79	802.98	803.08			
803.12	803.33		+75	803.31	803.50	803.50			
803.71	803.90		442+00	803.83	804.02	803.95			
804.29	804.48		+25	804.35	804.54	804.42			
804.86	805.05		+50	804.87	805.06	804.89			
805.39	805.58	Normal	+75	805.39	805.58	805.39			
805.91	806.10		443+00	805.91	806.10	805.91			

DRAWN BY *J.R.B.* DATE *1/10/66*  
CHECKED BY *C.B.D.* DATE *8/25/66*

# SUPERELEVATION TABLES

RAMP B-1				
Dc=0°45'00" Curve Left Max. Super = -0.020%				
Eastbound I-80 to Northbound Airport Freeway				
Lt. Edge	12'Lt.	Profile Grade	Station	Remarks
See Pav't. Details				
Sheet N <sup>o</sup>				
782.29	782.53	782.77	431+00	
782.62	782.86	783.10	+25	
782.93	783.17	783.41	+50	
783.21	783.45	783.69	+75	
783.46	783.70	783.94	432+00	
783.67	783.91	784.15	+25	
783.86	784.10	784.34	+50	
784.01	784.25	784.49	+75	
784.14	784.38	784.62	433+00	
784.23	784.47	784.71	+25	
784.29	784.53	784.77	+50	
784.32	784.56	784.80	+75	
784.32	784.56	784.80	434+00	
784.29	784.53	784.77	+25.00	
784.23	784.47	784.71	+50	
784.14	784.38	784.62	+75	

RAMP B-1				
Dc=1°28'00" Curve Left Max. Super = -0.036%				
Lt. Edge	12'Lt.	Profile Grade	Station	Remarks
784.06	784.31	784.55	434+90.59	PCC
783.97	784.24	784.50	435+00	
783.69	784.02	784.34	+25	
783.38	783.77	784.16	+50	
783.08	783.51	783.94	+75	
782.84	783.27	783.70	436+00	
782.56	782.99	783.42	+25	
782.25	782.68	783.11	+50	
781.91	782.34	782.77	+75	
781.55	781.98	782.41	437+00	
781.15	781.58	782.01	+25	
780.72	781.15	781.58	+50	
780.25	780.68	781.11	+75	
779.76	780.19	780.62	438+00	
779.24	779.67	780.10	+25	
778.68	779.11	779.54	+50.00	
778.10	778.53	778.96	+75	PVT
777.50	777.93	778.36	439+00	
776.90	777.33	777.76	+25	
776.30	776.73	777.16	+50	
775.70	776.13	776.56	+75	
775.10	775.53	775.96	440+00	
774.50	774.93	775.36	+25	

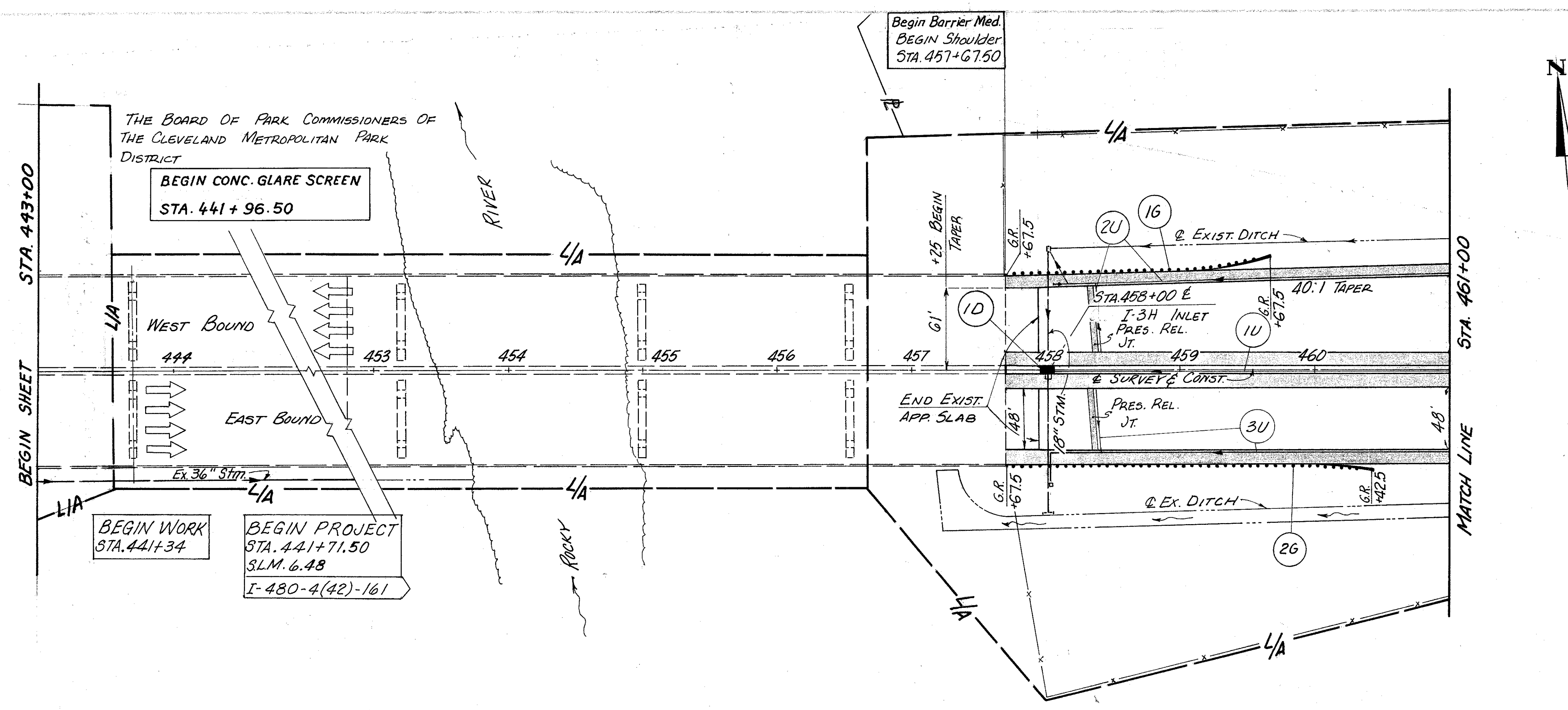
RAMP B-1				
Dc=5°00'00" Curve Left Max. Super = -0.082%				
Lt. Edge	12'Lt.	Profile Grade	Station	Remarks
774.13	774.56	775.00	440+40.10	C.S.
773.86	774.31	774.76	+50	
773.17	773.67	774.16	+75	
772.48	773.02	773.56	441+00	
771.78	772.37	772.96	+25	
771.09	771.72	772.36	+50	
770.40	771.08	771.76	+75	
769.71	770.44	771.16	442+00	
769.02	769.79	770.56	+25	
768.33	769.14	769.96	+50	PVC.
767.66	768.52	769.38	+75	
767.03	767.94	768.85	443+00	
766.45	767.40	768.36	+25	
766.13	767.10	768.08	+40.10	S.C.
765.94	766.93	767.91	+50	

RAMP B-1				
Dc=5°00'00" Curve Left Max. Super = -0.082%				
Lt. Edge	12'Lt.	Profile Grade	Station	Remarks
765.53	766.52	767.50	443+75	
765.17	766.16	767.14	444+00	
764.85	765.84	766.82	+25	
764.58	765.57	766.55	+50	
764.35	765.34	766.32	+75	
764.16	765.15	766.13	445+00	
764.02	765.01	765.99	+25	
763.92	764.91	765.89	+50	
763.86	764.85	765.83	+75.00	P.V.I.
763.85	764.84	765.82	446+00	
763.88	764.87	765.85	+25	
763.95	764.94	765.92	+50	
764.07	765.06	766.04	+75	
MEET EXISTING			447+00	

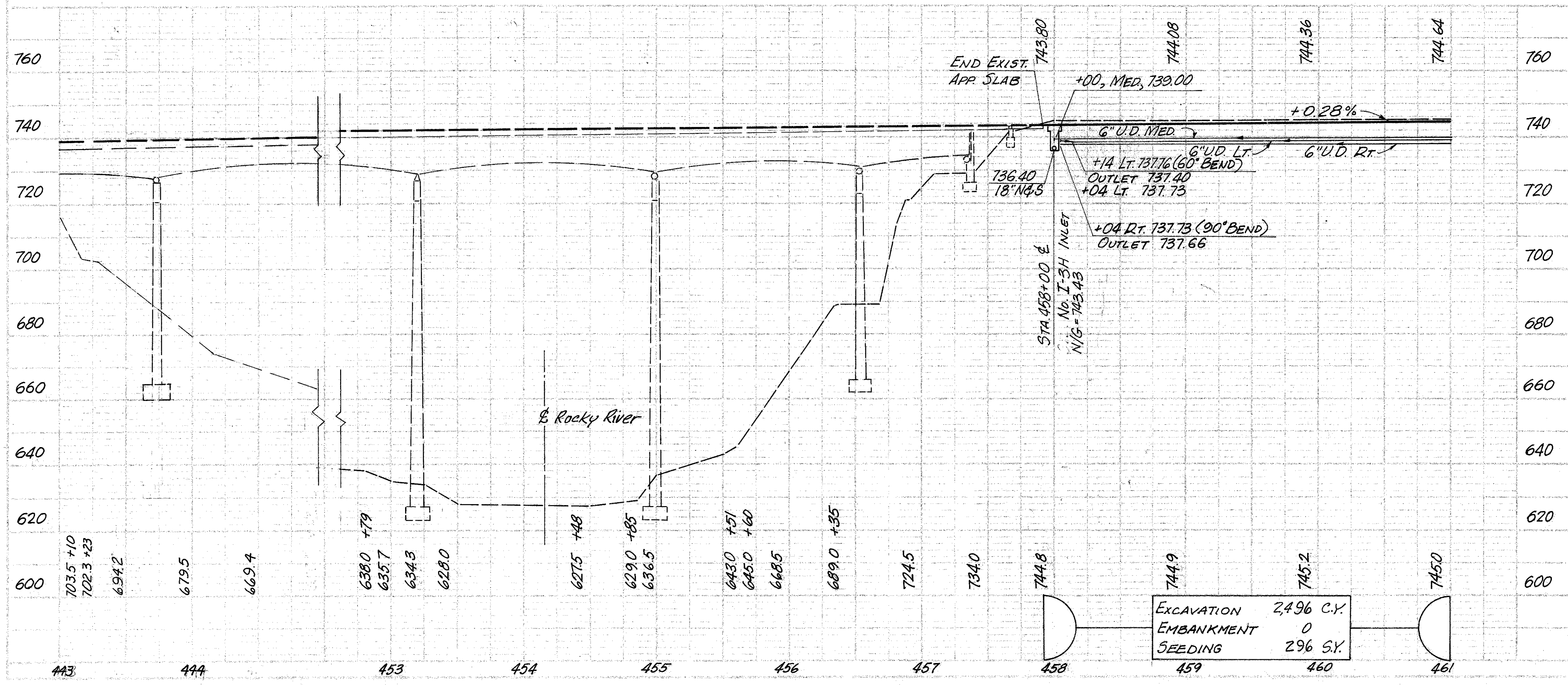
RAMP B-2				
Dc=3°30'00" Curve Left Max. Super = +0.058%				
Remarks	Station	Profile Grade	12'Rt.	Rt. Edge
PC.	439+50.00			
See Pav't. Details Sheet N <sup>o</sup>				
	443+42.78			
Bridge N <sup>o</sup> CUY. 480-0795				
	445+38.49			
	445+50	809.93	810.63	811.32
	+75	810.22	810.92	811.61
	446+00	810.47	811.17	811.86
	+25	810.68	811.38	812.07
	+50	810.89	811.59	812.28
C.S.	+74.95	811.10	811.78	812.45
	+75	811.10	811.78	812.45
	447+00	811.28	811.90	812.51
	+25	811.42	811.97	812.51
	+50	811.53	812.00	812.47
	+75	811.60	812.00	812.39
P.V.I.	448+00.00	811.64	811.96	812.28
	+25	811.65	811.90	812.14
	+50	811.63	811.83	811.97
S.T.	+74.95	811.57	811.76	811.78
	+75	811.57	811.76	811.78
	449+00	811.48	811.67	811.59
	+25	811.35	811.54	811.39
	+50	811.19	811.38	811.20
Normal	+75	811.00	811.19	811.00

RAMP B-2				
Dc=4°30'00" Curve Right Max. Super = -0.072%				
Remarks	Station	Profile Grade	12'Rt.	Rt. Edge
Normal	451+75	808.24	808.43	808.24
	452+00	807.74	807.92	807.73
	+25	807.21	807.33	807.14
P.V.T.	+50.00	806.65	806.71	806.52
T.S.	+73.05	806.12	806.11	805.93
	+75	806.07	806.08	805.87
	453+00	805.49	805.33	805.16
	+25	804.91	804.68	804.44
	+50	804.33	804.03	803.73
	+75	803.75	803.38	803.01
	454+00	803.17	802.74	802.30
	+17	MEET EXISTING		

ROCKY RIVER DR.						
Dc=5°00' CURVE RT. MAX SUPER = 0.049%						
SOUTHBOUND LANES		REMARKS	STATION	PROFILE GRADE	NORTHBOUND LANES	
27'LT.	13'LT.				13'RT.	27'RT.
785.33	785.49		0+73.72	785.65	785.52	785.39
785.31	785.49		+75	785.63	785.50	785.36
785.06	785.23		1+00	785.39	785.19	785.00
784.96	785.08		+25	785.20	785.00	784.78
784.91	785.00		+50	785.09	784.89	784.67
784.90	784.98		+75	785.06	784.86	784.64
784.99	785.06		2+00	785.12	784.92	784.70
785.19	785.21		+25	785.22	785.02	784.80
785.40	785.35		+50	785.32	785.12	784.90
785.61	785.51		+75	785.42	785.22	785.00
785.84	785.67		3+00	785.52	785.32	785.10
786.08	785.84		+25	785.62	785.40	785.16
786.31	786.00		+50	785.72	785.44	785.13
786.44	787.10		PC. 3+63.93	785.78	785.46	785.11
786.54	786.17		+75	785.82	785.47	785.10
786.76	786.32		4+00	785.92	785.52	785.08
786.99	786.49		+25	786.02	785.55	785.05
787.21	786.64		+50	786.12	785.60	785.03
787.41	786.79		+75	786.21	785.63	785.01
787.57	786.91		5+00	786.29	785.68	785.02
787.67	786.99		+25	786.36	785.73	785.05
787.73	787.05		+50	786.41	785.77	785.09
787.76	787.08		+75	786.44	785.80	785.12
787.78	787.10		6+00	786.46	785.82	785.14
787.79	787.11		+25	786.47	785.83	785.15
787.79	787.11		+50	786.47	785.83	785.15
787.77	787.09		+75	786.45	785.81	785.13
787.73	787.05		7+00	786.41	785.77	785.09
787.68	787.00		+25	786.36	785.72	785.04
787.62	786.94		+50	786.30	785.66	784.98
787.55	786.87		+75	786.23	785.59	784.91
787.48	786.80		8+00	786.16	785.52	784.84
787.39	786.72		+25	786.09	785.46	784.79
787.25	786.61		+50	786.02	785.43	784.79
	786.48		+75	785.95	785.42	784.85
	786.35		9+00	785.88	785.41	784.90
	786.22		+25	785.81	785.40	784.96
	786.09		+50	785.74	785.39	785.01
	786.02		PT. +63.37	785.70	785.38	785.04
	785.96		+75	785.67	785.38	785.07
786.07	785.83		10+00	785.60	785.36	785.10
785.88	785.70		+25	785.53	785.32	785.09
785.69	785.57		+50	785.46	785.26	785.04
785.49	785.44		+75	785.39	785.19	784.97
785.32	785.32		11+00	785.32	785.12	784.90
785.18	785.22		+25	785.25	785.05	784.83
785.04	785.11		+50	785.18	784.98	784.76
784.91	785.01		+75	785.11	784.91	784.69
784.78	784.92		12+00	785.04	784.84	784.62
784.65	784.82		+25	784.97	784.77	784.55
784.52	784.72		+50	784.90	784.70	784.48
784.42	784.63		+75	784.83	784.63	784.41
784.35	784.57		Normal 12+96.52	784.77	784.57	784.35



**EXISTING STRUCTURE No. CUY-480-0648**  
 TYPE: Continuous Haunched Steel Girder with transverse floorbeams, longitudinal stringers, concrete deck and concrete substructure  
 SPANS: E.B. Lanes 139'-8", 2@177'-4", 3@199'-6", 177'-4", 155'-2", 82'-8" % Brgs.  
 W.B. Lanes 103'-8", 2@177'-4", 3@199'-6", 177'-4", 155'-2", 82'-8" % Brgs.  
 ROADWAY: 142' F/F parapets, with Type 2 Railing including 26' Median and 10' Shoulders  
 LOADING: C.F. - 2000 (1957) Adequate for AASHTO Alternate Loading  
 WEARING SURFACE: 1" Monolithic Concrete  
 SKEW: None  
 ALIGNMENT: Tangent  
 APPROACH SLABS: 25' long



EXCAVATION 2496 C.Y.  
 EMBANKMENT 0  
 SEEDING 296 S.Y.

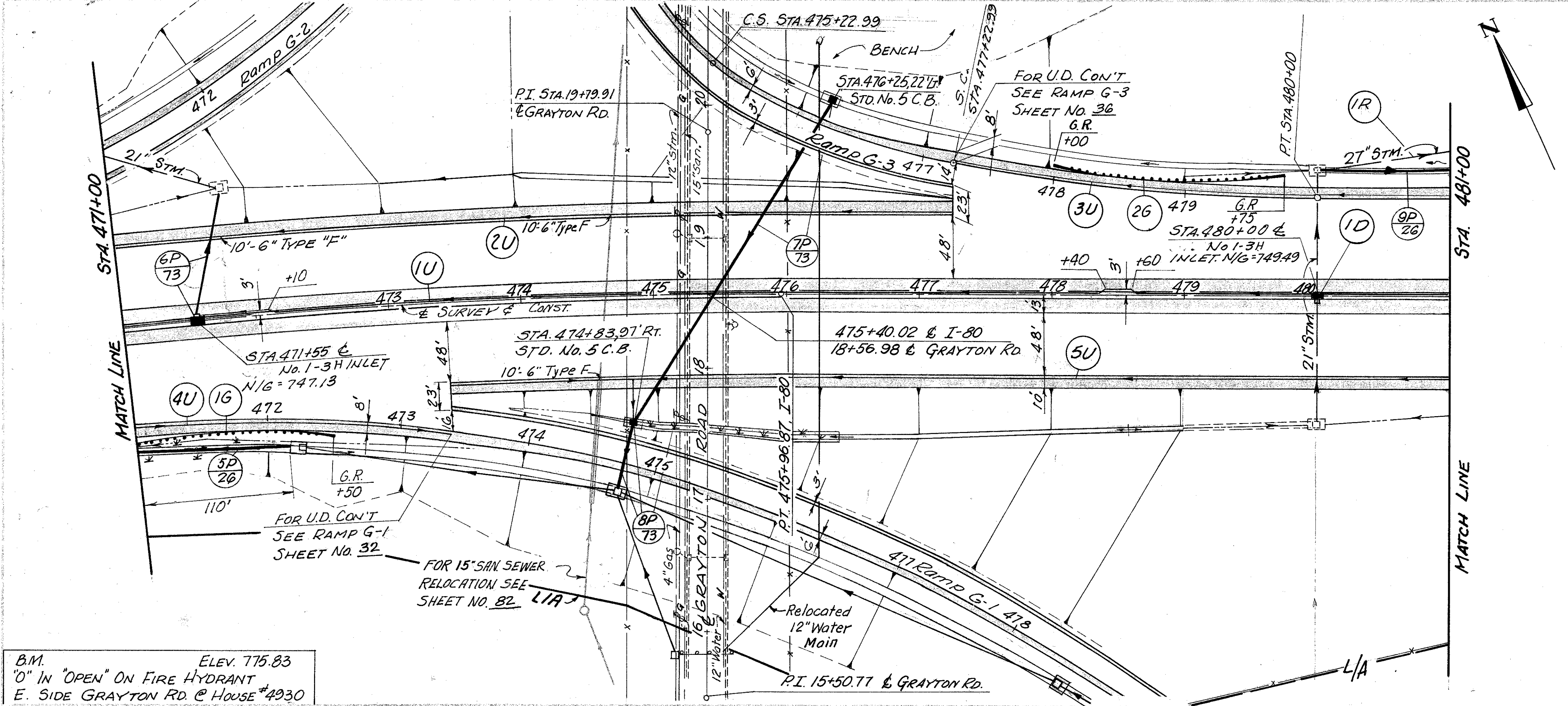
ITEM NO.	DESCRIPTION	UNIT	QTY	PRICE	TOTAL
606	Anchor Assembly Type T	Ea.	1		1
	Bridge Terminal Assembly, Type "A"	Ea.	1		1
	Anchor Assembly Type A	Ea.	1		1
	Guard Rail, Type 5	L.F.	175	262.5	437.5
	BENDS & BRANCHES UNCLASSIFIED	6" L.F.	10		10
	SHALLOW	6" L.F.	290		290
	DEEP	6" L.F.	305		305
	TYPE "F"	6" L.F.	10		10
	ESTIMATED QUANTITIES				
	REF. SIDE ID				
	LOCATION				
	16	LT	457+67.5 to 459+67.5		
	26	RT	457+67.5 to 460+42.5		
	10	MED.	458+00 to 461+00		
	20	LT	458+00 to 461+00		
	30	RT	458+00 to 461+00		
	TOTAL				



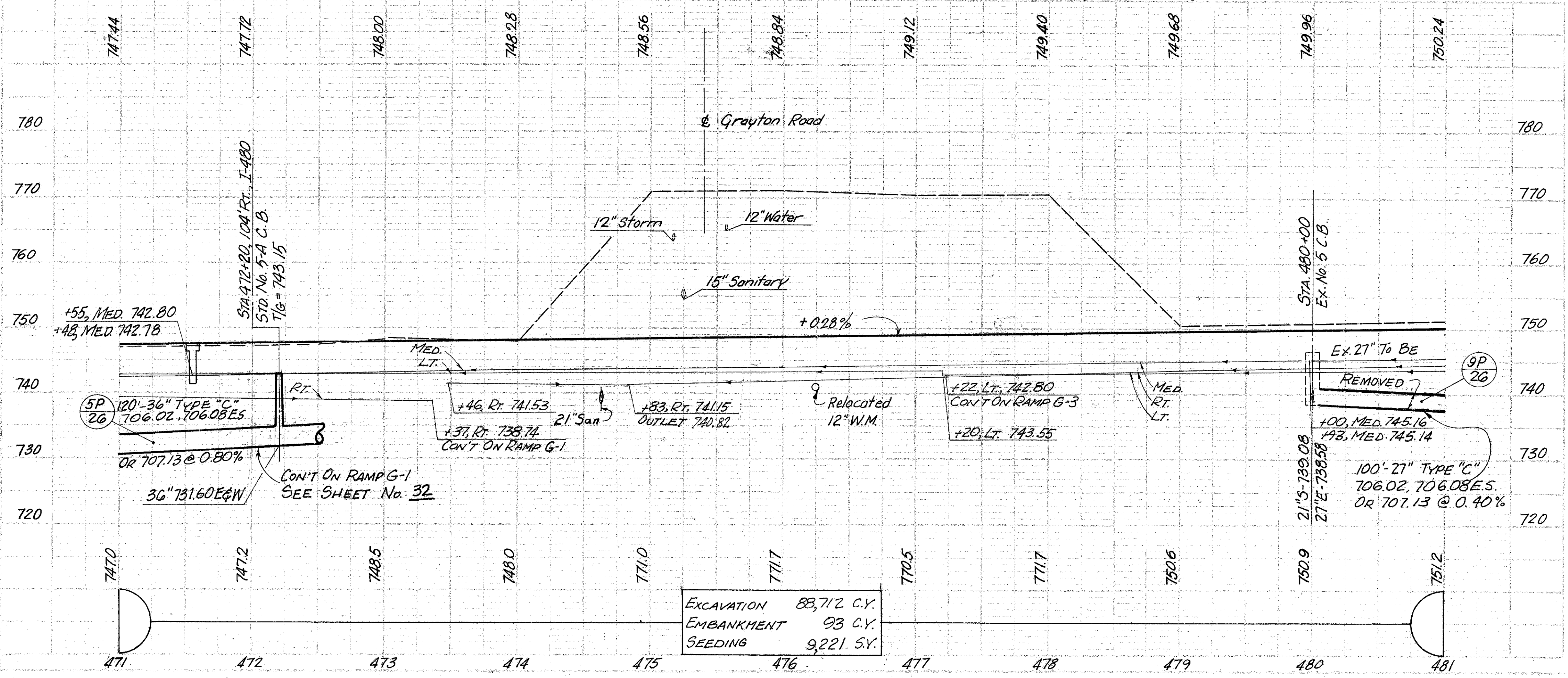


CROSS REFERENCE	
SH. NO.	ITEM
32	RAMP G-1 P&P
34	RAMP G-2 P&P
36	RAMP G-3 P&P
73	SEWER PROFILES
59, 61	PAVEMENT DETAILS
204	RELOCATED WATER MAIN

CUYAHOGA COUNTY  
 CUY-480-6.78

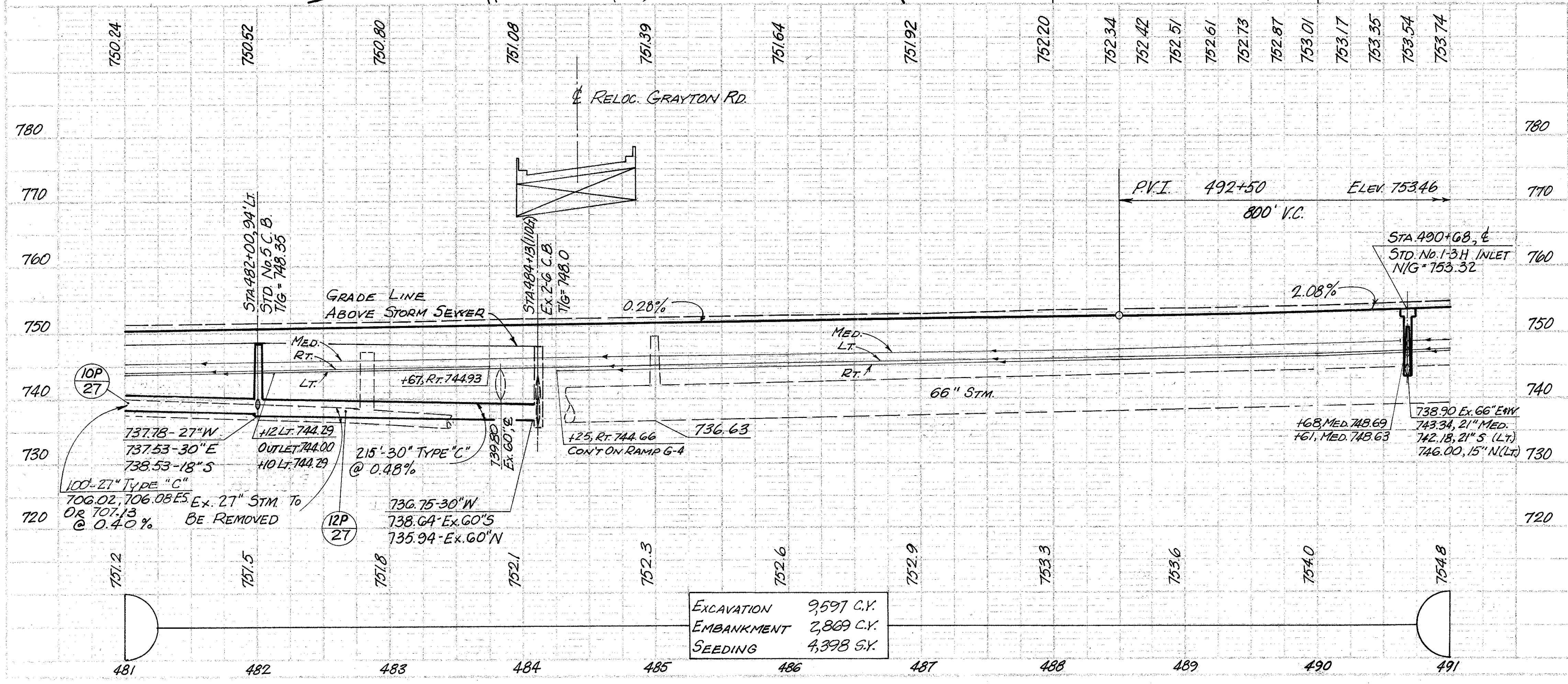
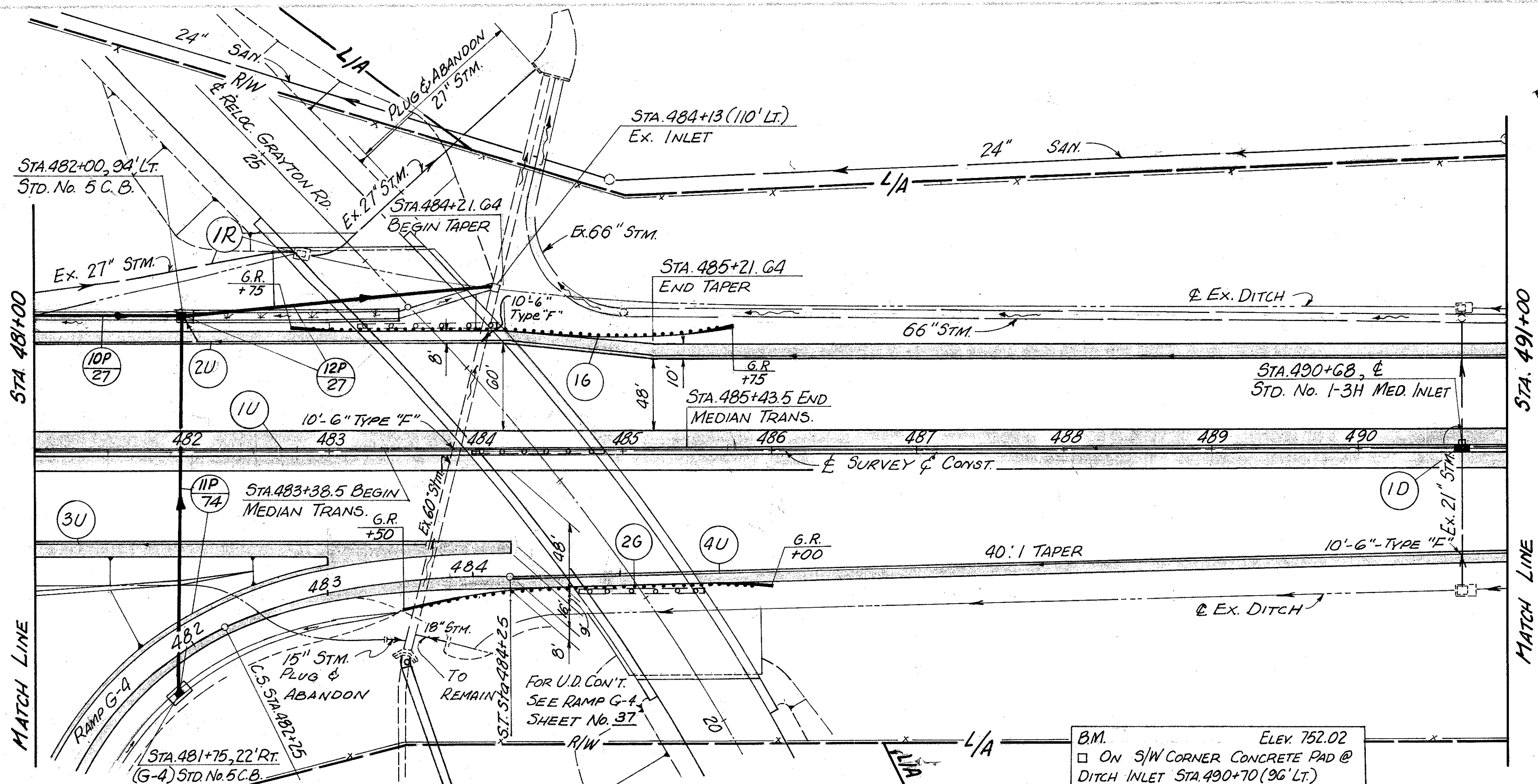


B.M. "O" IN "OPEN" ON FIRE HYDRANT  
 E. SIDE GRAYTON RD. @ HOUSE #4930  
 ELEV. 775.83



ITEM	UNIT	QTY	EST. QTY	REMARKS
606	Anchor Assembly Type A	Ea.		
606	Guard Rail, Type 5	L.F.		
606	Anchor Assembly Type T	Ea.		
680	SODDING	SQ. YD.	125	
680	BENDS & BRANCHES	EA.	6	
605	UNCLASSIFIED	G" G" L.F.		
605	SHALLOW	G" G" L.F.	966	
605	DEEP	G" G" L.F.	600	
604	STD. No. 5 C.B.	EA.		
604	I-3H MEDIAN INLET	EA.	1	
603	TYPE "C" 120	L.F.	120	
603	TYPE "C" 120	L.F.	120	
603	TYPE "B"	L.F.	287	
603	TYPE "B"	L.F.	58	
603	TYPE "F"	L.F.	98	
603	TYPE "F"	L.F.	20	
603	TYPE "F"	L.F.	20	
603	TYPE "F"	L.F.	20	
202	PIPE REMOVED OVER 24"	L.F.	100	
ESTIMATED QUANTITIES				
SEE SIDE	LOCATION			
5P RT.	471+00 TO 472+20			
6P LT.	471+55			
7P L/R	474+83.6 TO 476+25.63			
8P RT.	474+75 TO (G-1)			
9P LT.	480+00 TO 481+00			
1R LT.	480+00 TO 481+00			
1D MED.	480+00			
1U MED.	471+00 TO 481+00			
2U LT.	471+00 TO 471+20			
3U LT.	471+22 TO 481+00			
4U RT.	471+00 TO 473+37			
5U RT.	473+44 TO 481+00			
1G RT.	471+00 TO 472+50			
2G LT.	478+00 TO 479+75			
TOTAL				100

CROSS REFERENCE	
SH. No.	ITEM
37	RAMP G-4 P&P
44, 45	RELOCATED GRAYTON RD.
71, 74	SEWER PROFILES
63	PAVEMENT DETAILS
200	STRUCTURE - RELOC. GRAYTON

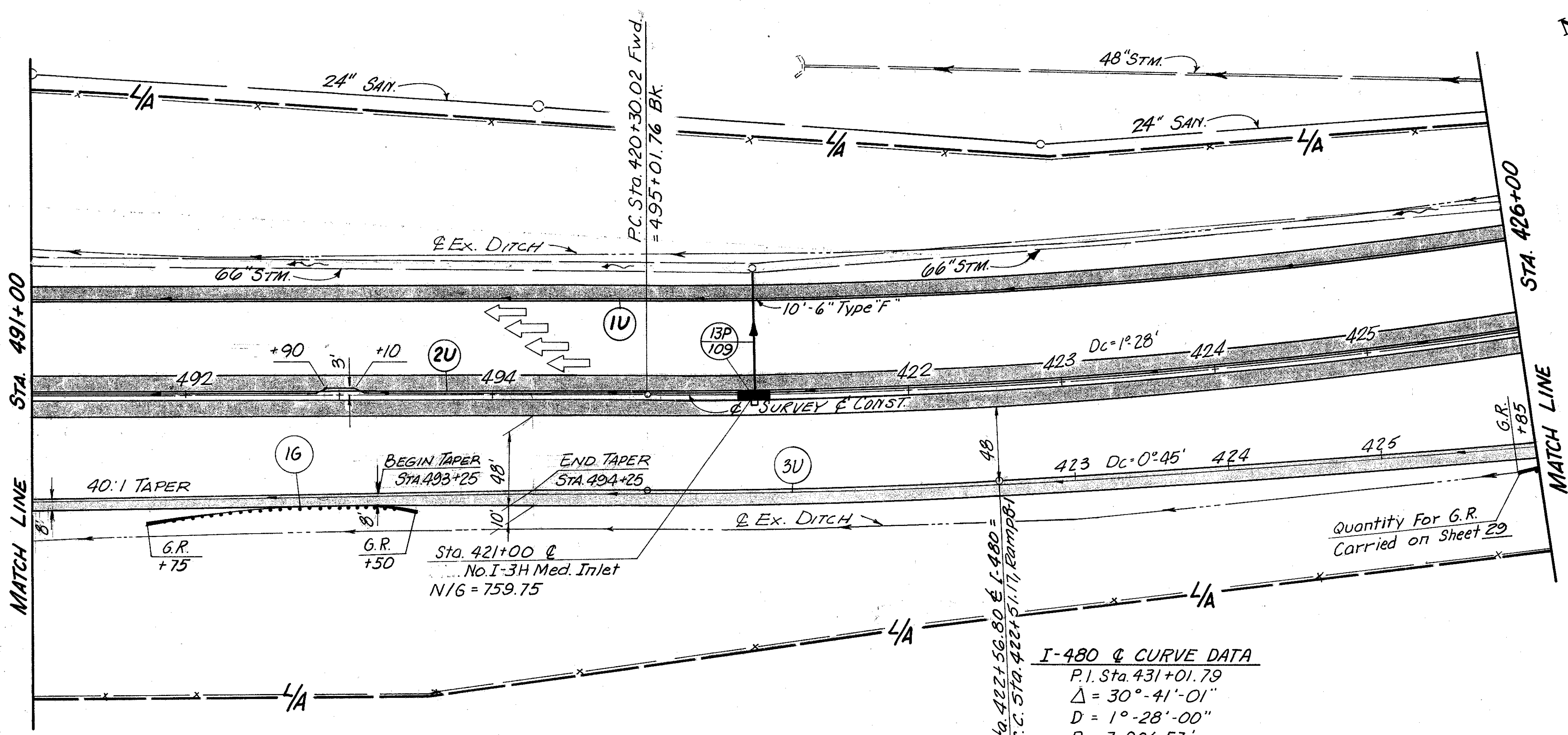


EXCAVATION	9,597 C.Y.
EMBANKMENT	2,869 C.Y.
SEEDING	4,398 S.Y.

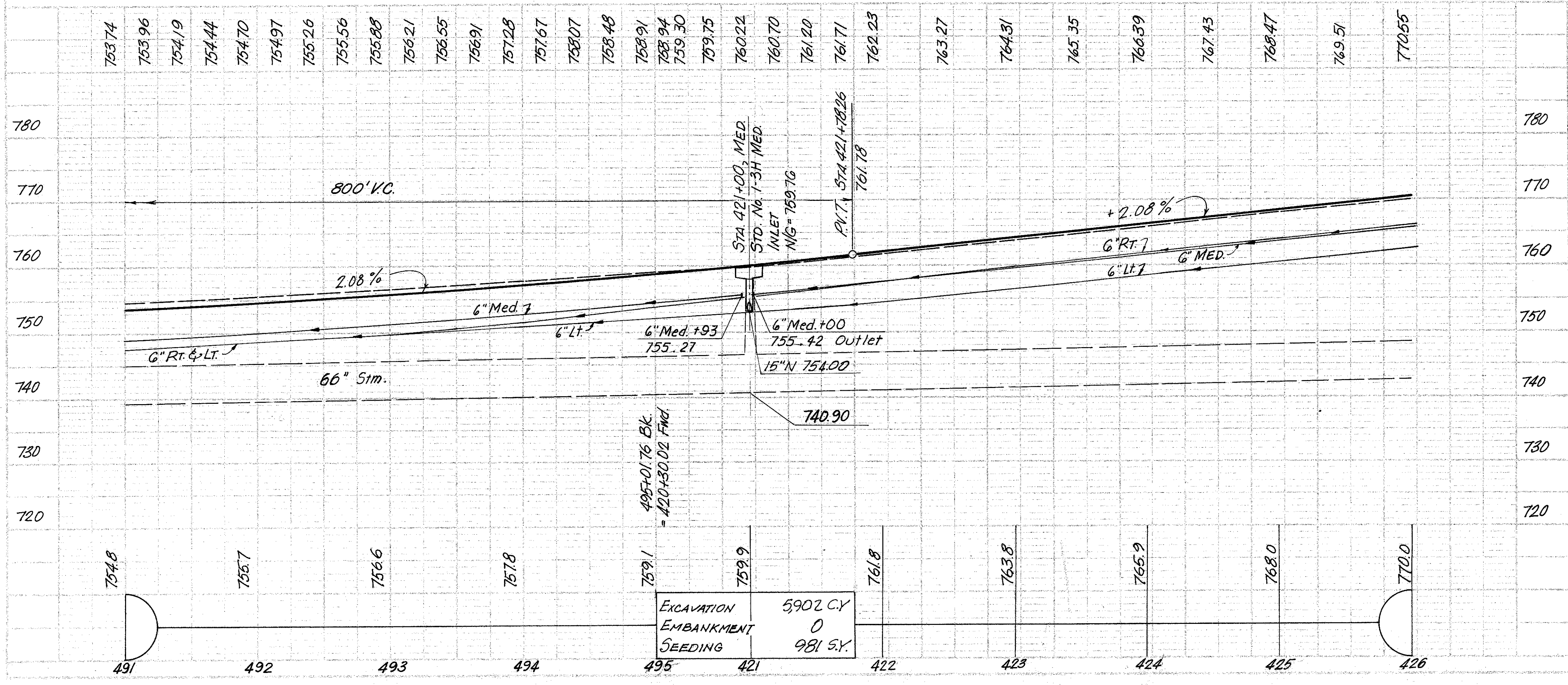
ITEM	DESCRIPTION	UNIT	QUANTITY	ESTIMATED QUANTITIES
606	Anchor Assembly Type A	EA.		
	Guard Rail Type 5	L.F.		
	Anchor Assembly Type T	EA.		
660	SEEDING	S.Y.	83	125
	BENDS & BRANCHES			
	SHALLOW	G" L.F.		977
	DEEP	G" L.F.		998
				267
				666
				1931
605	STD. No 5 C.B.	EA.	1	1
	No. 1-3H MEDIAN INLET	EA.	1	1
604	TYPE "C" 106.02	L.F.		215
	106.08 E.S. OR 107.15	L.F.		215
603	TYPE "C" 106.02	L.F.	100	100
	106.08 E.S., 107.13	L.F.		100
	TYPE "B"	L.F.	260	260
	TYPE "F"	L.F.	20	20
		L.F.	10	10
		L.F.	50	50
202	CATCH BASIN REMOVED	L.F.	1	1
	PIPE REMOVED OVER 24"	L.F.	1	1
			265	265
	LOCATION			
	10 P LT. 481+00 TO 482+00			
	11 P LT. 481+75 TO 482+00			
	12 P LT. 482+00 TO 484+13			
	ID MED. 490+68			
	IR LT. 481+00 TO 484+39			
	16 LT. 482+75 TO 485+75			
	26 RT. 483+50 TO 486+00			
	1U MED. 481+00 TO 491+00			
	2U LT. 481+00 TO 491+00			
	3U RT. 481+00 TO 483+75			
	4U RT. 484+25 TO 491+00			
	TOTAL			

CROSS REFERENCE	
SH. No.	ITEM
109	SEWER PROFILES
70	PAVEMENT DETAILS

CUYAHOGA COUNTY  
 CUY-480-6.78



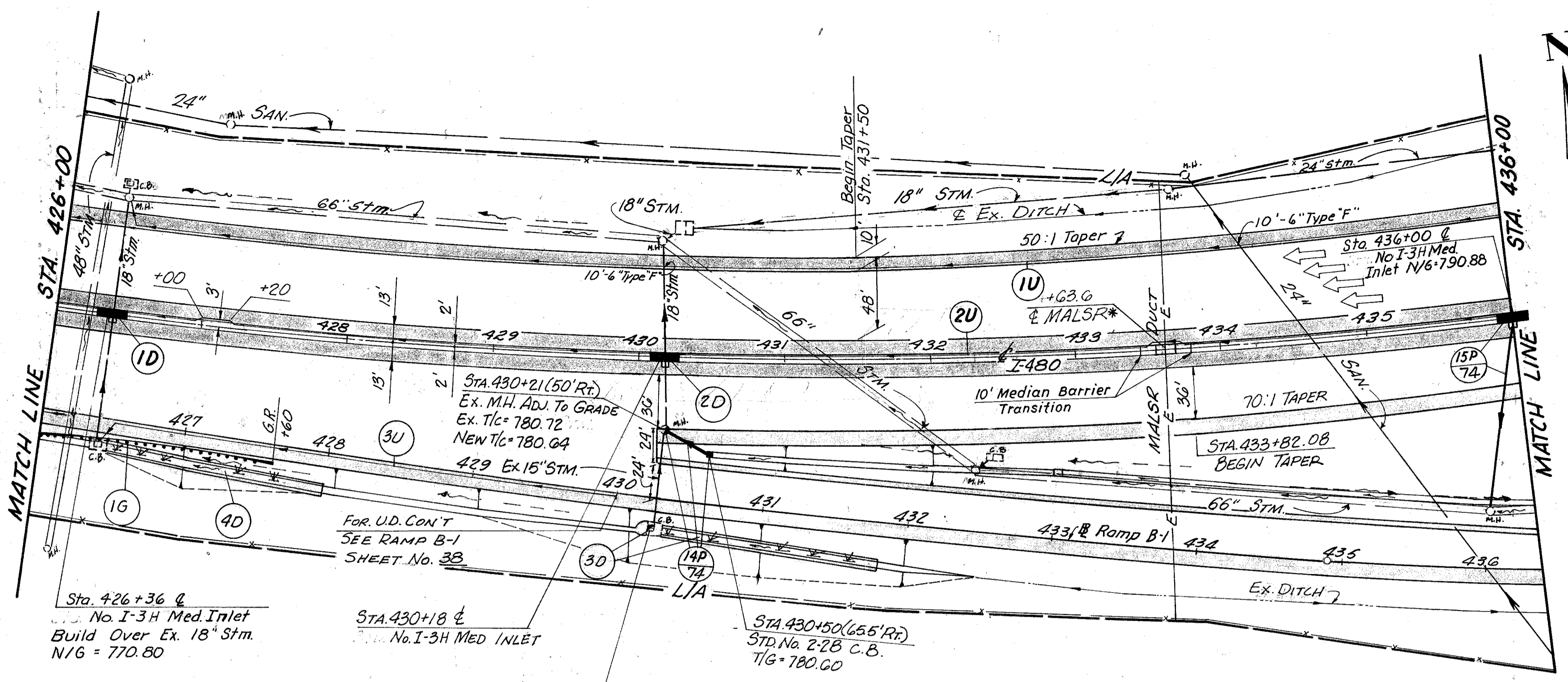
**I-480 CURVE DATA**  
 P.I. Sta 431+01.79  
 $\Delta = 30^\circ - 41' - 01''$   
 $D = 1^\circ - 28' - 00''$   
 $R = 3,906.53'$   
 $T = 1,071.77'$   
 $L = 2,092.06'$



ROADWAY	ITEM	UNIT	ESTIMATED QUANTITIES	
			Location	Total
606	Anchor Assembly Type A	Ea.	1	1
	Guard Rail Type 5	L.F.	137.5	137.5
	Anchor Assembly Type T	Ea.	1	1
605	BENDS & BRANCHES	L.F. EA.		
	Underdrain Deep	6" L.F.	962	962
	Underdrain Shallow	6" L.F.	955	955
604	No. I-3H Median Inlet	Ea.	1	1
603	Type B	15" L.F.	82	82
	Type F	6" L.F.	20	20
Estimated Quantities				
16	Location 491+75 to 493+50			
1U	Location 491+00 to 426+00			
2U	Location 491+00 to 426+00			
3U	Location 491+00 to 426+00			
Total				

CROSS REFERENCE	
SH. NO	ITEM
74	SEWER PROFILES
38	RAMP B-1 P&P
70, 71	PAVEMENT DETAILS
92	MALSR BARRIER DETAILS

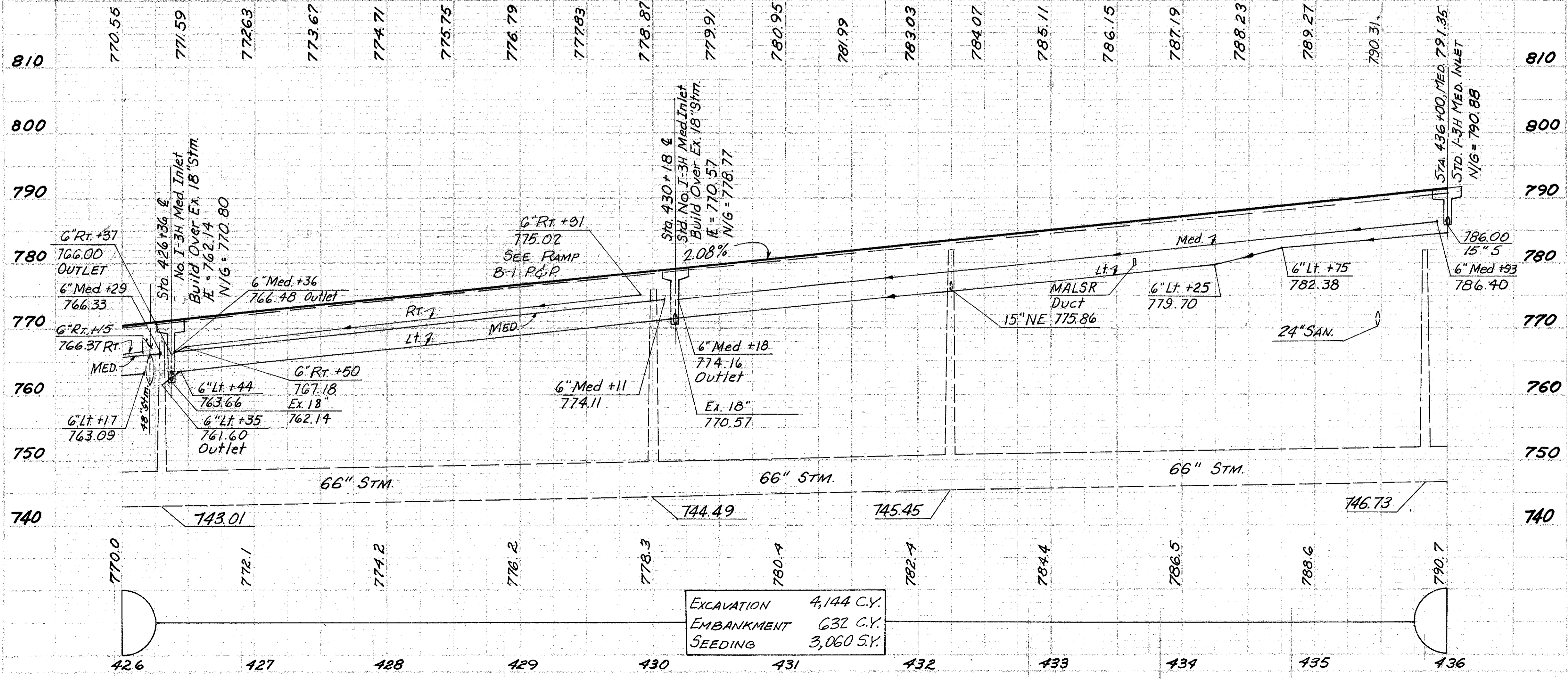
CUYAHOGA COUNTY  
CUY-480-678



B.M. ELEV. 767.79  
 ON S.W. CORNER OF CONCRETE PAD  
 DITCH INLET STA 426+35 (30' LT.)

STA 430+25 (22' RT.) RAMP B-1  
 EX. C.B. RECONSTR. TO GRADE  
 EX. T/C = 778.05  
 NEW T/C = 779.75

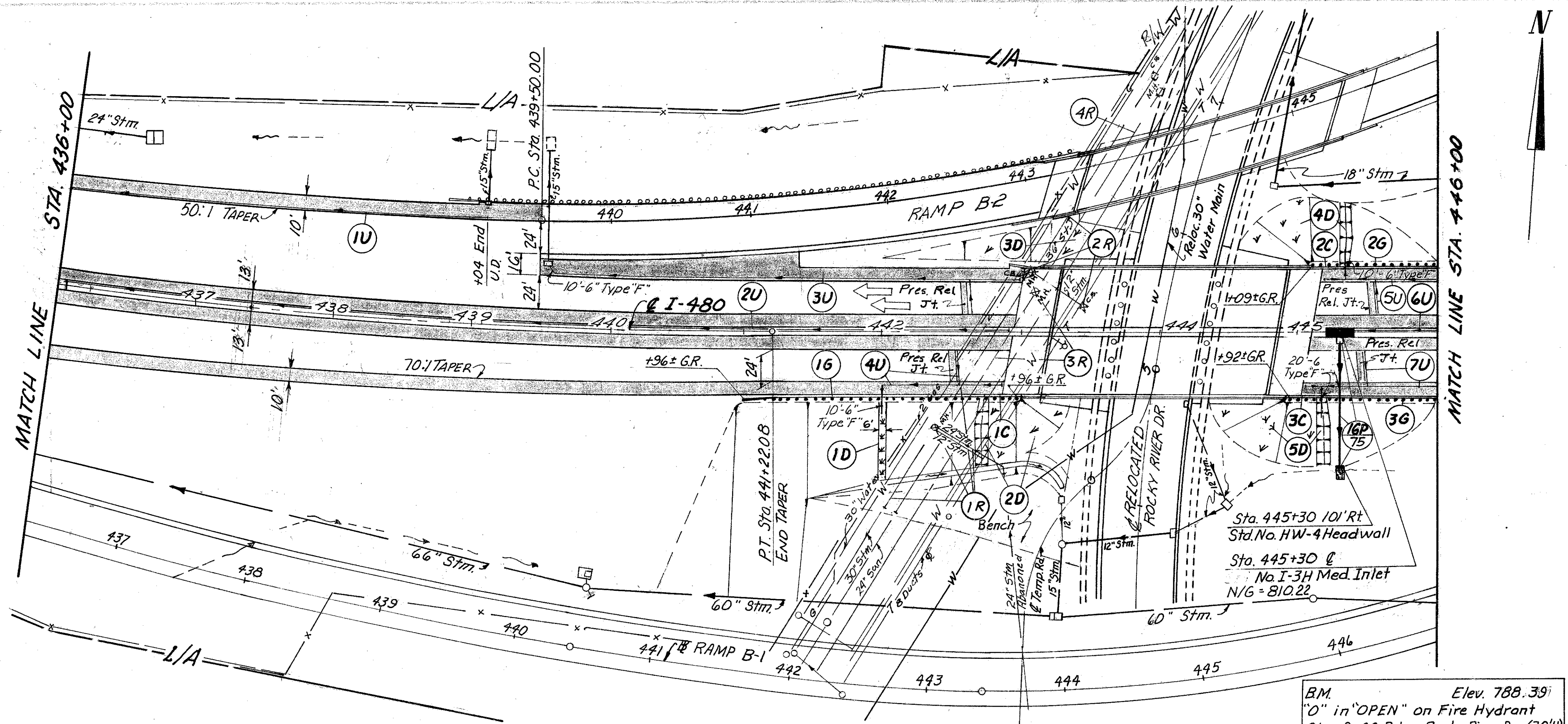
B.M. ELEV. 775.78  
 ON N.E. CORNER OF CONCRETE PAD @  
 DITCH INLET STA 430+25 (89' LT.)



EXCAVATION 4,144 C.Y.  
 EMBANKMENT 632 C.Y.  
 SEEDING 3,060 S.Y.

ROADWAY	ITEM	EA.	LF	EA.	LF	EA.	LF	EA.	LF
606	Anchor Assembly Type A								
	Guard Rail, Type 5								
	Anchor Assembly Type T								
600	SODDING								
605	BENDS & BRANCHES								
	Underdrain Unclassified								
	Underdrain Deep								
	Underdrain Shallow								
604	STD. 2-2-B CATCH BASIN								
	No. I-3H Median Inlet M.H. ADJUSTED TO GRADE								
603	C.B. RECONSTR. TO GRADE								
	Type B								
602	Type F								
Estimated Quantities	Location								
	14P RT 430+21 to 430+50								
	15P RT 435+61 to 436+00								
	1D Med 426+36								
	2D Med 430+18								
	3D RT 430+25 to 431+82								
4D RT 426+44 to 427+94									
1U LT 426+00 to 436+00									
2U Med 426+00 to 435+93									
3U RT 426+00 to 429+91									
76 RT 425+85 to 427+60									
Total									

\* Existing 14'-0" Concrete Barrier Section with 15'-0" Pole and Flasher Unit. The Contractor shall confirm the location and depth of the MALSR duct before beginning work in the area.

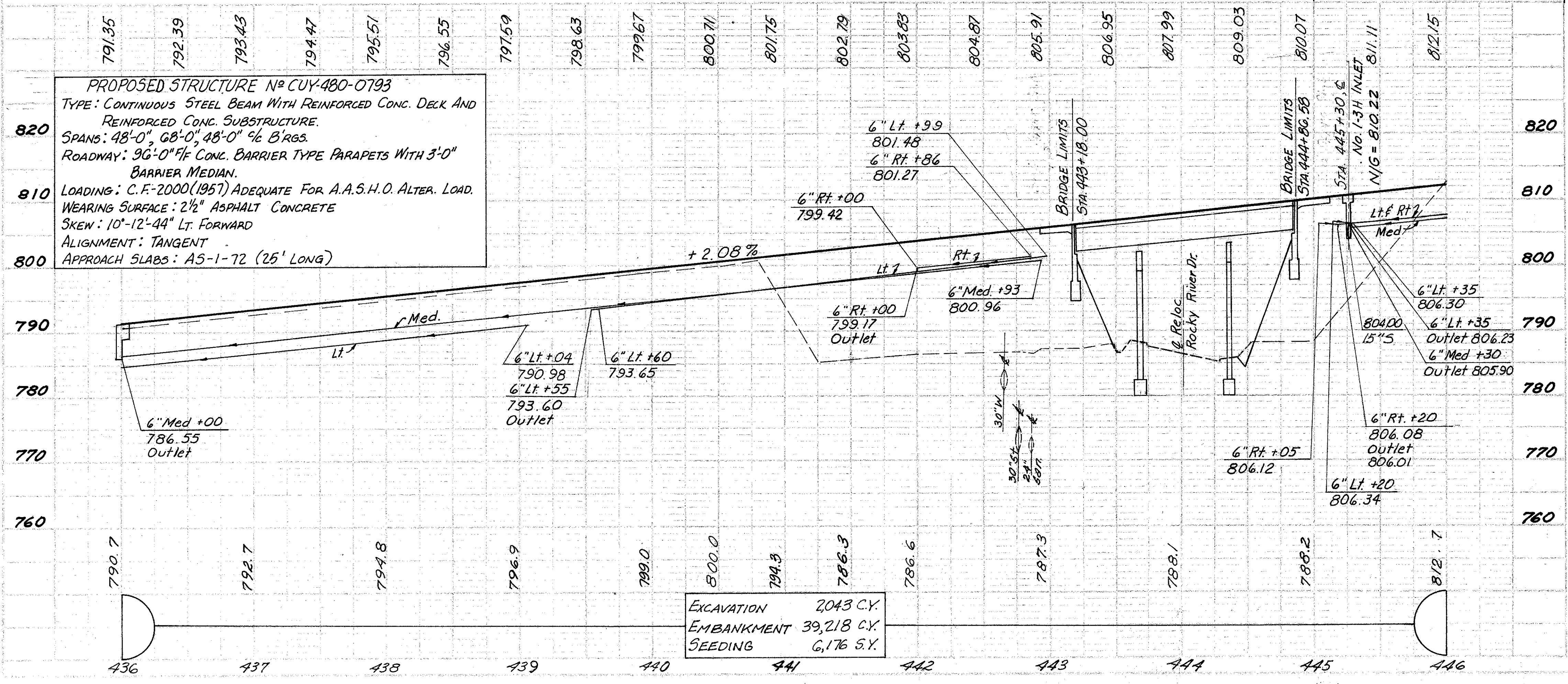


CROSS REFERENCE	
39	RAMP B-1 P&P
40	RAMP B-2 P&P
56	ROCKY RIVER DR. P&P
75	SEWER PROFILE
277	STRUCTURE
72	PAVEMENT DETAIL
209,210	Relocated Water Main

FED. DIVISION	STATE	PROJECT	TYPE FUNDS	30
2	OHIO			317
CUYAHOGA COUNTY				CALC. BY T.R.B. DATE 11-75
CUY-480-678				CHNG. BY E.J.K. DATE 1-76

ESTIMATED QUANTITIES			202			
REF. No.	SIDE	LOCATION	L.F.	L.F.	EA.	EA.
1R	Rt./Lt.	442+04 to 443+07	104	206		1
2R	Lt./Rt.	443+07 to 443+95	150	165	2	1
3R	Rt./Lt.	442+10 to 443+10	190			1
4R	Lt.	443+10 to 444+00	170			
TOTAL			614	371	2	3

ROADWAY	EROSION CONTROL	DRAINAGE	ESTIMATED QUANTITIES
609	Concrete Curb Type 6		L.F. 25 25 25
606	Anchor Assembly Type A		EA. 1
606	Bridge Terminal Assembly Type A		EA. 1 1 1
606	Guard Rail Type 5		L.F. 175 91 108
600	SODDING		S.Y. 40 246 353 352
600	Reinforced Sodding		S.Y. 53 171 47 53
601	Rock Channel Protection Type B		C.Y. 2.2
605	Bends & Branches		6" 304 683 360 1 125 1 60 125 1
605	Underdrain Shallow		L.F. 304 683 360 1 125 1 60 125 1
604	No. I-3H Median Inlet		EA. 1
604	BENDS & BRANCHES		15" 15" 15" 2 1
603	Type B		L.F. 55 42 2
603	Type F		L.F. 10 10 10 10 10 20
602	Concrete Masonry		C.Y. 27
Total			27

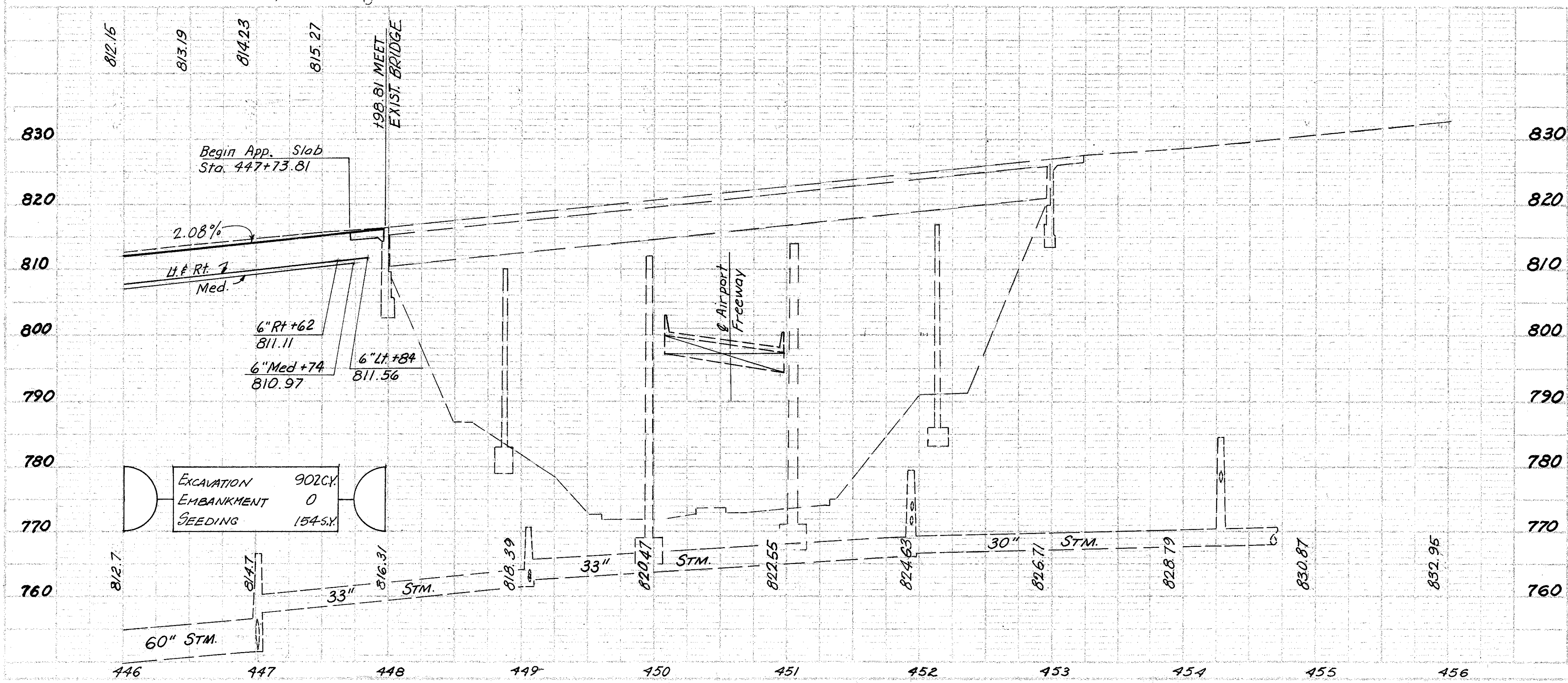
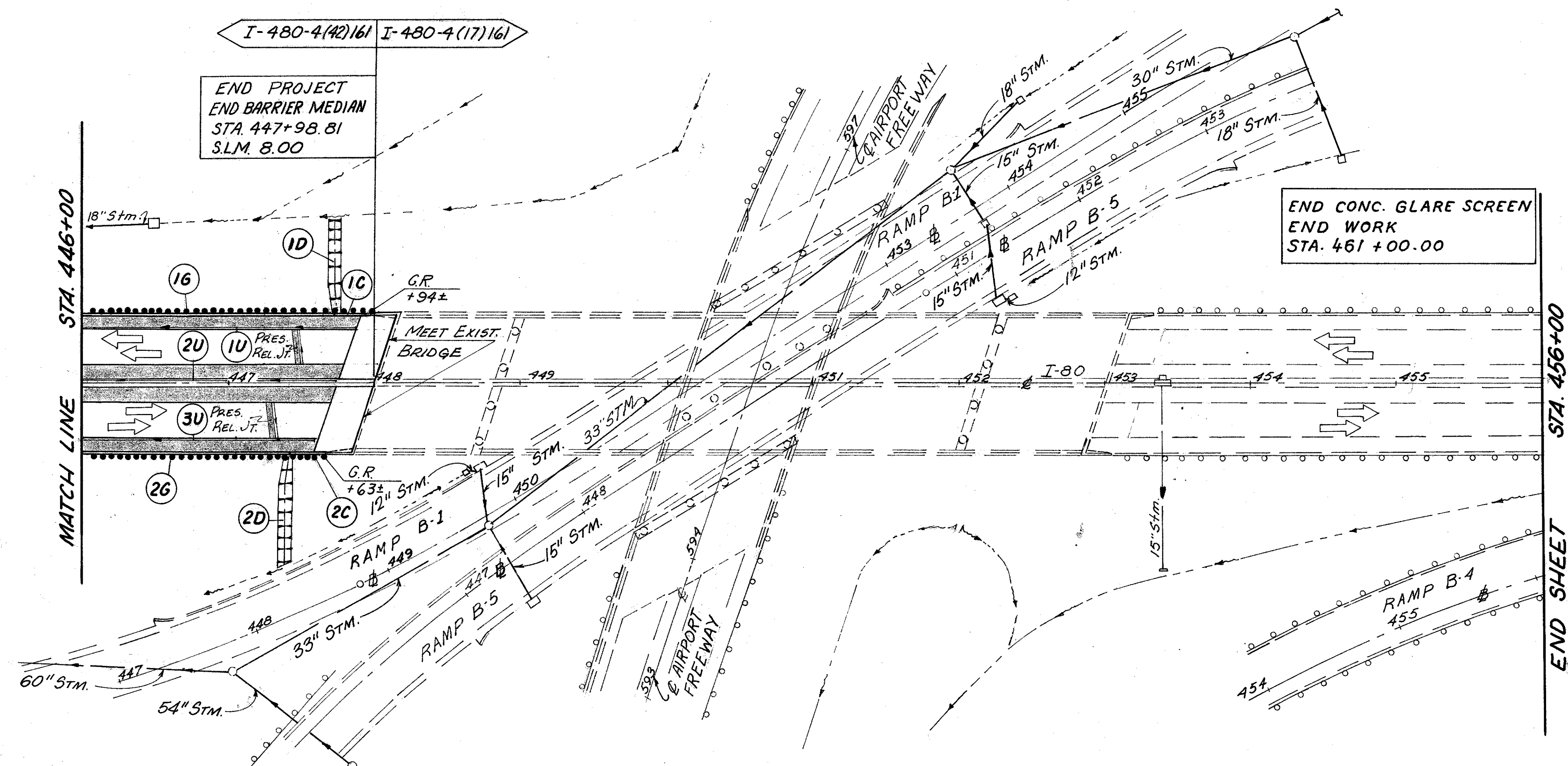


**PROPOSED STRUCTURE No. CUY-480-0793**  
 TYPE: CONTINUOUS STEEL BEAM WITH REINFORCED CONC. DECK AND REINFORCED CONC. SUBSTRUCTURE.  
 SPANS: 48'-0", 68'-0", 48'-0" @ 6 BRGS.  
 ROADWAY: 36'-0" F.F. CONC. BARRIER TYPE PARAPETS WITH 3'-0" BARRIER MEDIAN.  
 810 LOADING: C.F.-2000(1957) ADEQUATE FOR A.A.S.H.O. ALTER. LOAD.  
 WEARING SURFACE: 2 1/2" ASPHALT CONCRETE  
 SKEW: 10'-12'-24" Lt. FORWARD  
 ALIGNMENT: TANGENT  
 APPROACH SLABS: AS-1-72 (25' LONG)

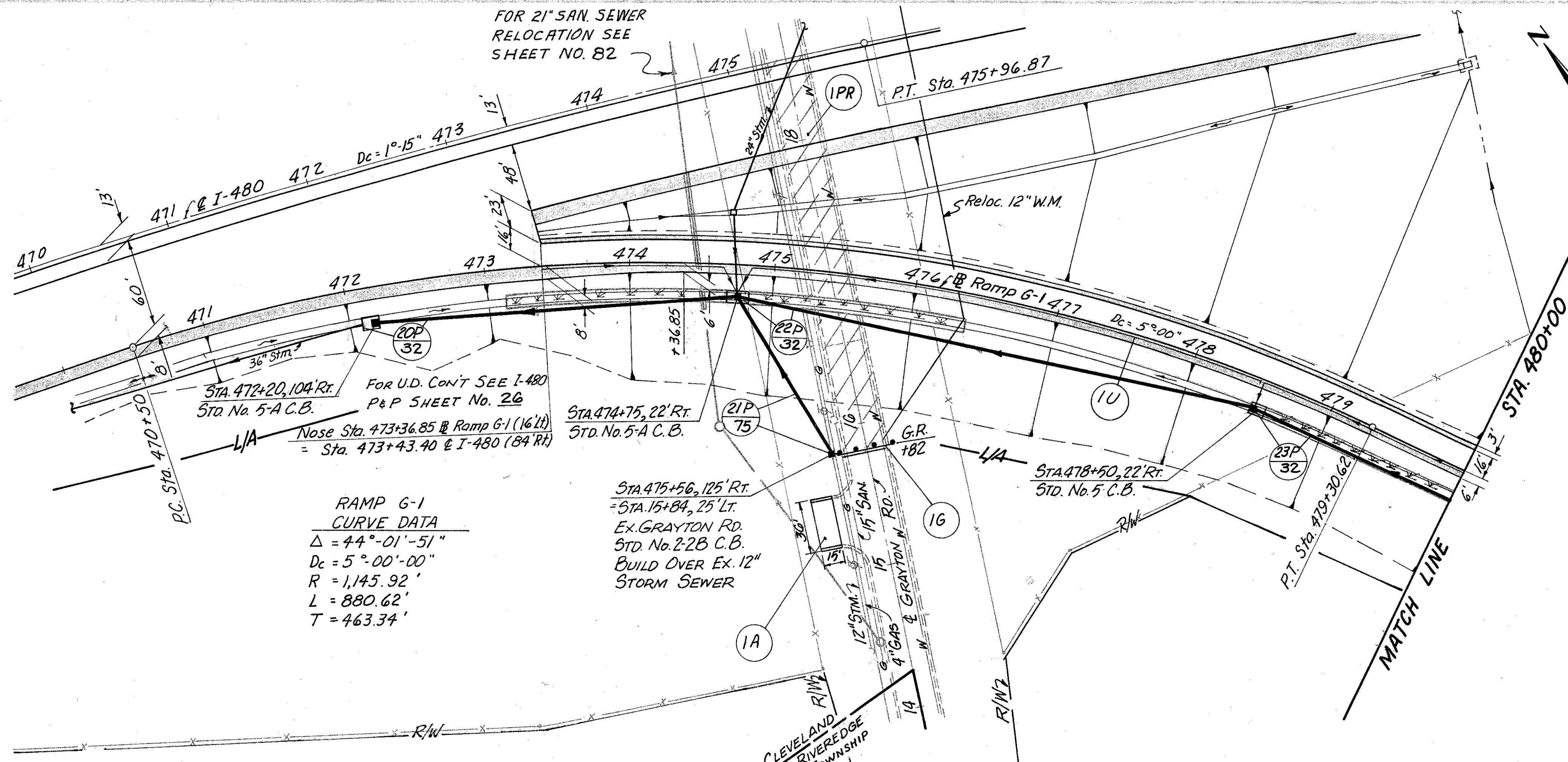
EXCAVATION 2043 C.Y.  
 EMBANKMENT 39,218 C.Y.  
 SEEDING 6,176 S.Y.

CUYAHOGA COUNTY  
 CUY-480-678

**EXISTING STRUCTURE No. CUY-480-0800**  
**TYPE:** Superstructure, continuous steel plate girder with reinforced concrete deck. Substructure, reinforced concrete of abutments and piers 1 & 4. Steel box girder cap on reinforced concrete at piers 2 & 3.  
**SPANS:** 87'-0", 109'-0", 109'-0", 87'-0" 9/16 Brg.  
**ROADWAY:** 96'-0" flt parapets with Type 1 Railing and 6'-0" raised median.  
**LOADING:** C.F.-2000 (1957) Adequate for A.A.S.H.O. alternate loading.  
**WEARING SURFACE:** 1" Monolithic concrete.  
**SKEW:** 17°-45' Lt. Fwd. with respect to Ref. Tan.  
**ALIGNMENT:** Tangent  
**APPROACH SLABS:** AS-1-72 (25' long)



Item	Description	Unit	Quantity	
			Est.	Actual
ROADWAY	Concrete Curb Type 6	L.F.		50
	Bridge Terminal Assembly (Type A)	Ea.		2
	Guard Rail Type 5	L.F.	194	163
EROSION CONTROL	Reinforced Sodding	S.Y.	68	80
	BENDS & BRANCHES Underdrain Shallow	6" L.F. EA.	211	174
DRAINAGE			189	1
			16	1
Excavation			902	0
	Embankment Seeding		154	51
Estimated Quantities				Total



**RAMP G-1  
CURVE DATA**  
 $\Delta = 44^\circ - 01' - 51''$   
 $D_c = 5^\circ - 00' - 00''$   
 $R = 1,145.92'$   
 $L = 880.62'$   
 $T = 463.34'$

FOR 21" SAN. SEWER  
RELOCATION SEE  
SHEET NO. 82

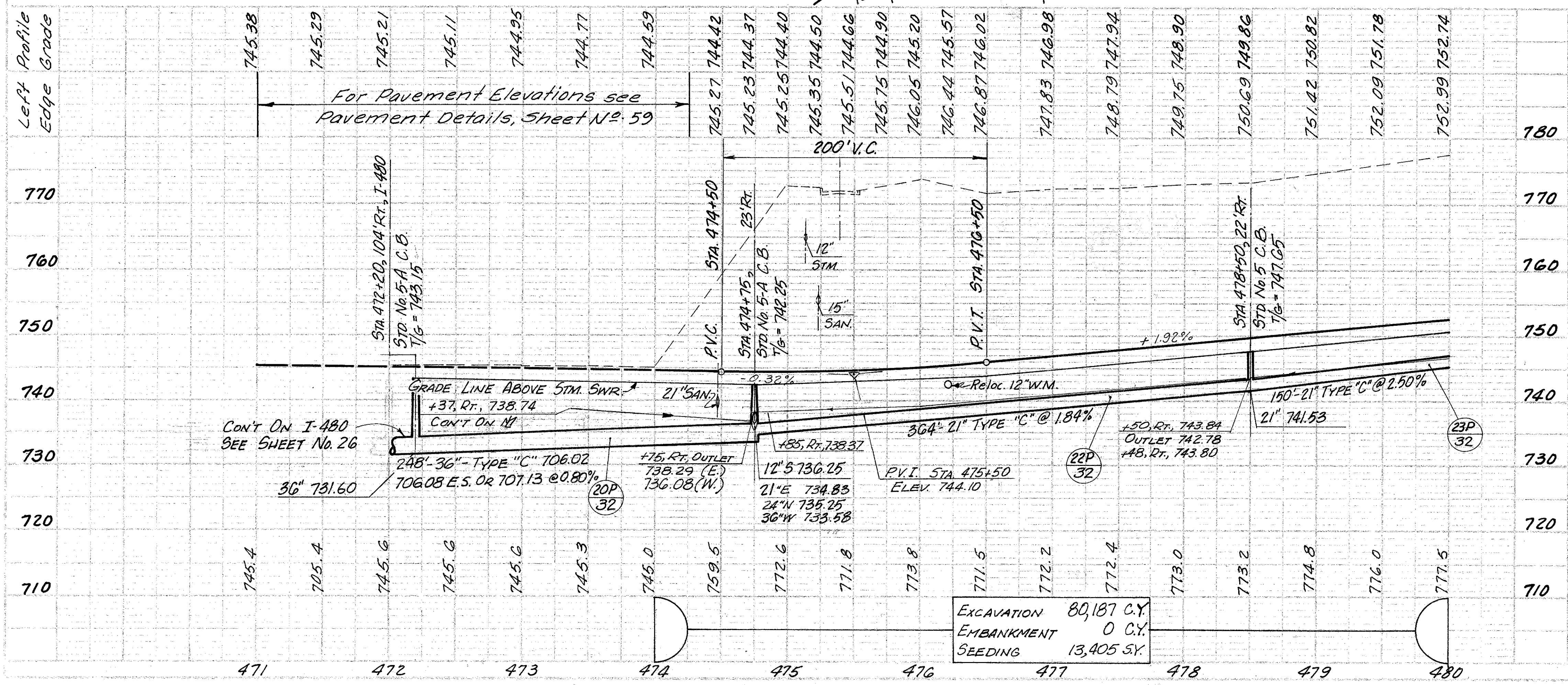
FOR U.D. CONT SEE I-480  
P&P SHEET No. 26  
 STA. 472+20, 104' Rt.  
STD. No. 5-A C.B.  
 Nose Sta. 473+36.85 Ramp G-1 (16' Lt)  
= Sta. 473+43.40 & I-480 (84' Rt)

STA. 474+75, 22' Rt.  
STD. No. 5-A C.B.

STA. 475+56, 125' Rt.  
= STA. 15+89, 25' Lt.  
EX. GRAYTON RD.  
STD. No. 2-2B C.B.  
BUILD OVER EX. 12"  
STORM SEWER

STA. 478+50, 22' Rt.  
STD. No. 5 C.B.

CLEVELAND  
RIVEREDGE  
TOWNSHIP



EXCAVATION 80,187 C.Y.  
EMBANKMENT 0 C.Y.  
SEEDING 13,405 S.Y.

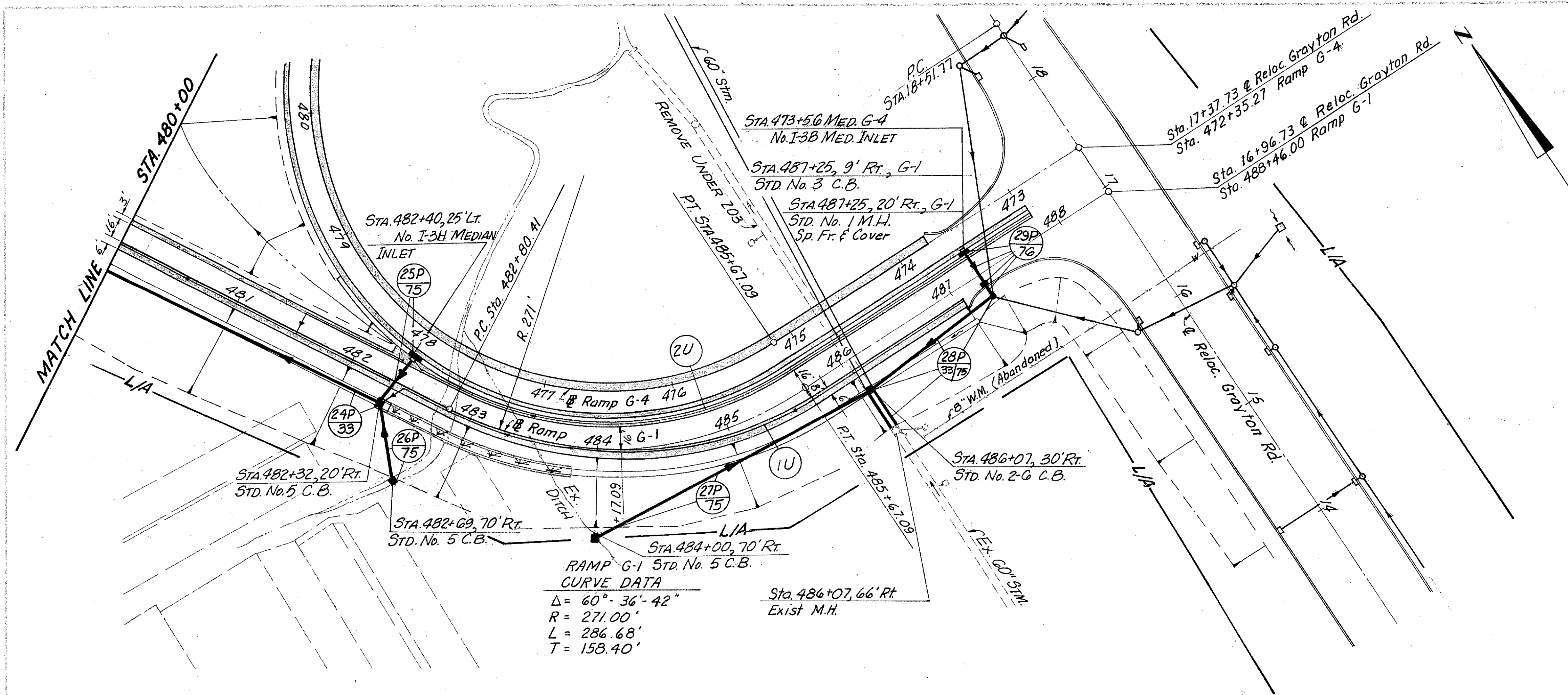
CROSS REFERENCE	
Sht. No.	Item
26	I-480 D&P
32, 75	STORM SEWER PROFILE
82	RELOCATED 21" SANITARY
59	PAVEMENT DETAIL
203	RELOCATED WATER MAIN

CUYAHOGA COUNTY  
 CUY-480-6.78  
 CALC. BY E.J.K. DATE 11-76  
 DWD BY B.B. DATE 12-76

ROADWAY	ITEM	UNIT	EST. QUANTITIES	
			EA.	LF.
ROADWAY	CURB TYPE 3-A	LF		30
	GUARD RAIL TYPE 5	LF		37.5
	9" REIN. PORTLAND CONC. PAV'T AS PER PLAN	S.Y.		60
	SUBBASE 703.08 OR 703.10	S.Y.		5
	PAVEMENT REMOVED	S.Y.		917
	SODDING	S.Y.	250	150
	BENDS & BRANCHES UNCLASSIFIED	G"		540
	DEEP	G"		157
	STD. No. 5-A C.B.	EA.	1	2
	STD. No. 5 C.B.	EA.	1	1
DRAINAGE	STD. No. 2-2B C.B.	EA.	1	1
	BENDS & BRANCHES TYPE "F"	EA.	1	1
	TYPE "C" 106.02, 106.08 E.S., 707.13	LF	248	150
	TYPE "C"	LF	46	364
	TYPE "F"	LF		30
	TYPE "C"	LF	46	364
	TYPE "F"	LF		30
	TYPE "C"	LF	93	15
	TYPE "F"	LF	93	15
	TYPE "C"	LF	248	150
ESTIMATED QUANTITIES				
REF. SIDE	LOCATION			
20P	RT. 472+20 TO 474+75			
21P	RT. 474+75 TO 475+56			
22P	RT. 475+56 TO 478+50			
23P	RT. 478+50 TO 480+00			
IA	LT. 15+50			
IG	RT. 15+82 TO 15+89			
IU	RT. 15+89 TO 18+58			
	RT. 473+37 TO 480+00			
TOTAL				

Note: For (A) Pavement Items See Existing Grayton Rd. Connection Typical Section, See Sheet No. 8

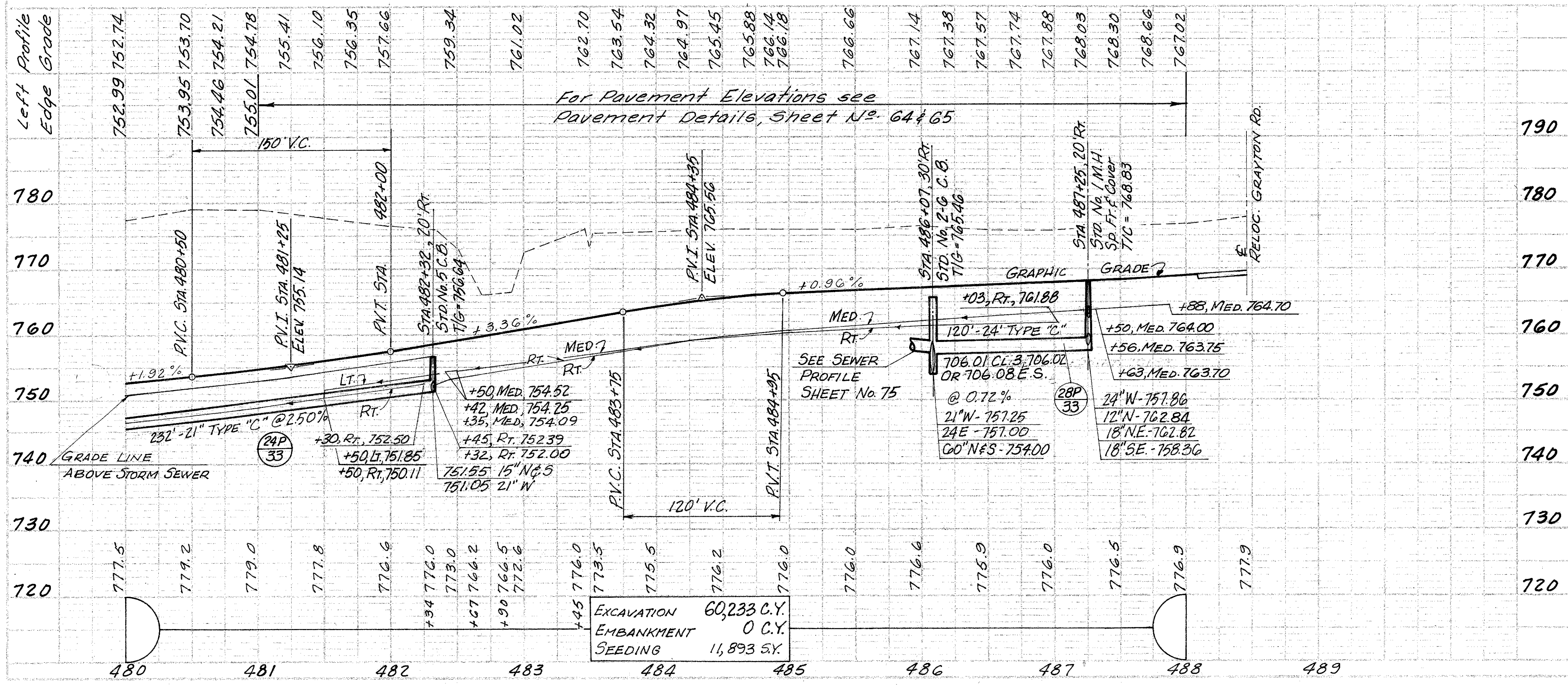




RAMP G-1 STD. No. 5 C.B.  
 CURVE DATA  
 Δ = 60°-36'-42"  
 R = 271.00'  
 L = 286.68'  
 T = 158.40'

CROSS REFERENCE		FED. RD. DIVISION	STATE	PROJ. NO.	TYPE
Sht. No.	Item	2	OHIO		
37	RAMP G-4 P&P				
43	RELOCATED GRAYTON RD.				
75, 76	STORM SEWER PROFILE				
64, 65	PAVEMENT DETAIL				

CUYAHOGA COUNTY  
 CUY-480-6.78 CALD BY E.J.K. DATE 11-75  
 CHD BY B.B. DATE 12-75



ESTIMATED QUANTITIES	REF. SIDE	LOCATION	EST. QTY.	UNIT
	24P	RT. 480+00 TO 481+32		
	25P	RT. 482+40 TO 482+32		
	26P	RT. 482+32 TO 483+81		
	27P	RT. 484+00 TO 486+07		
	28P	RT. 486+07 TO 487+25		
	29P	MED. 487+25		
	1U	RT. 480+00 TO 481+03	10	
	2U	MED. 481+50 TO 481+88	20	
	TOTAL		30	

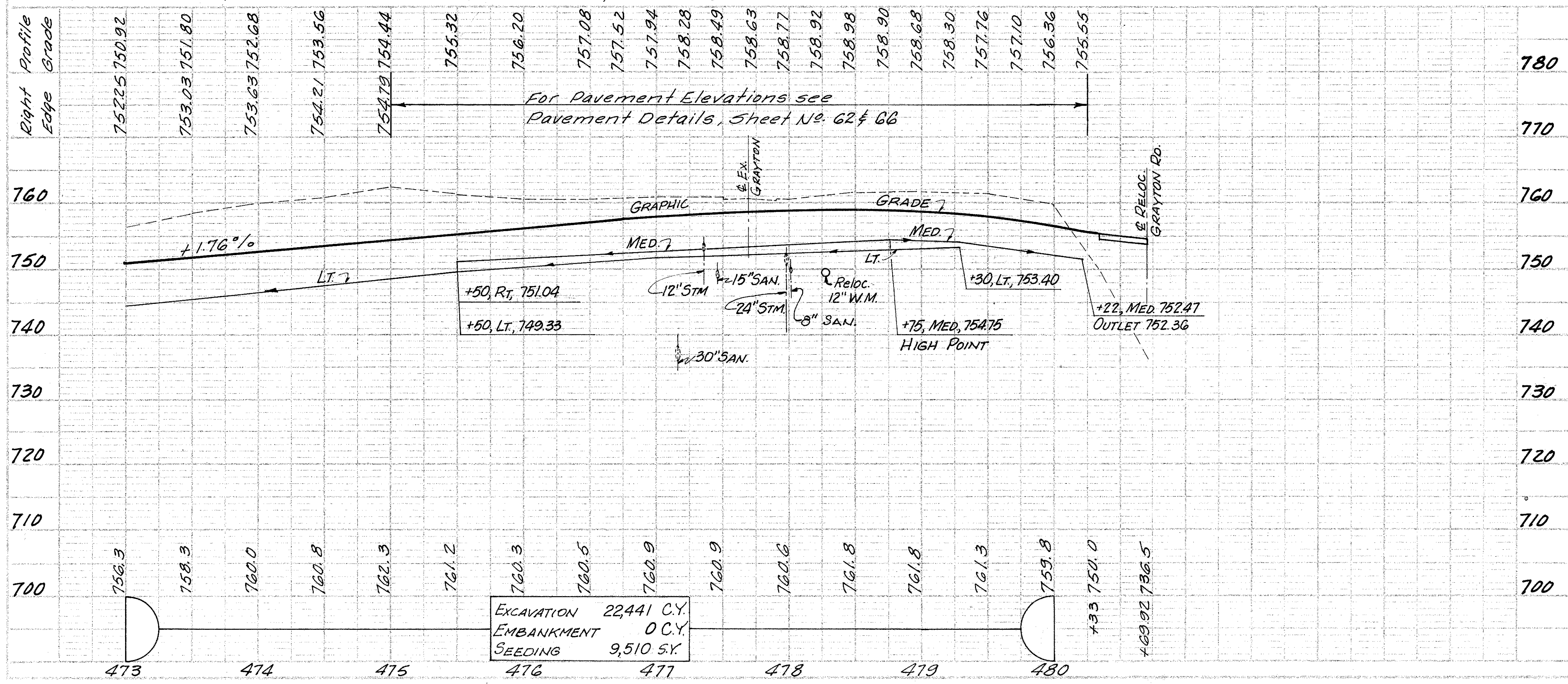
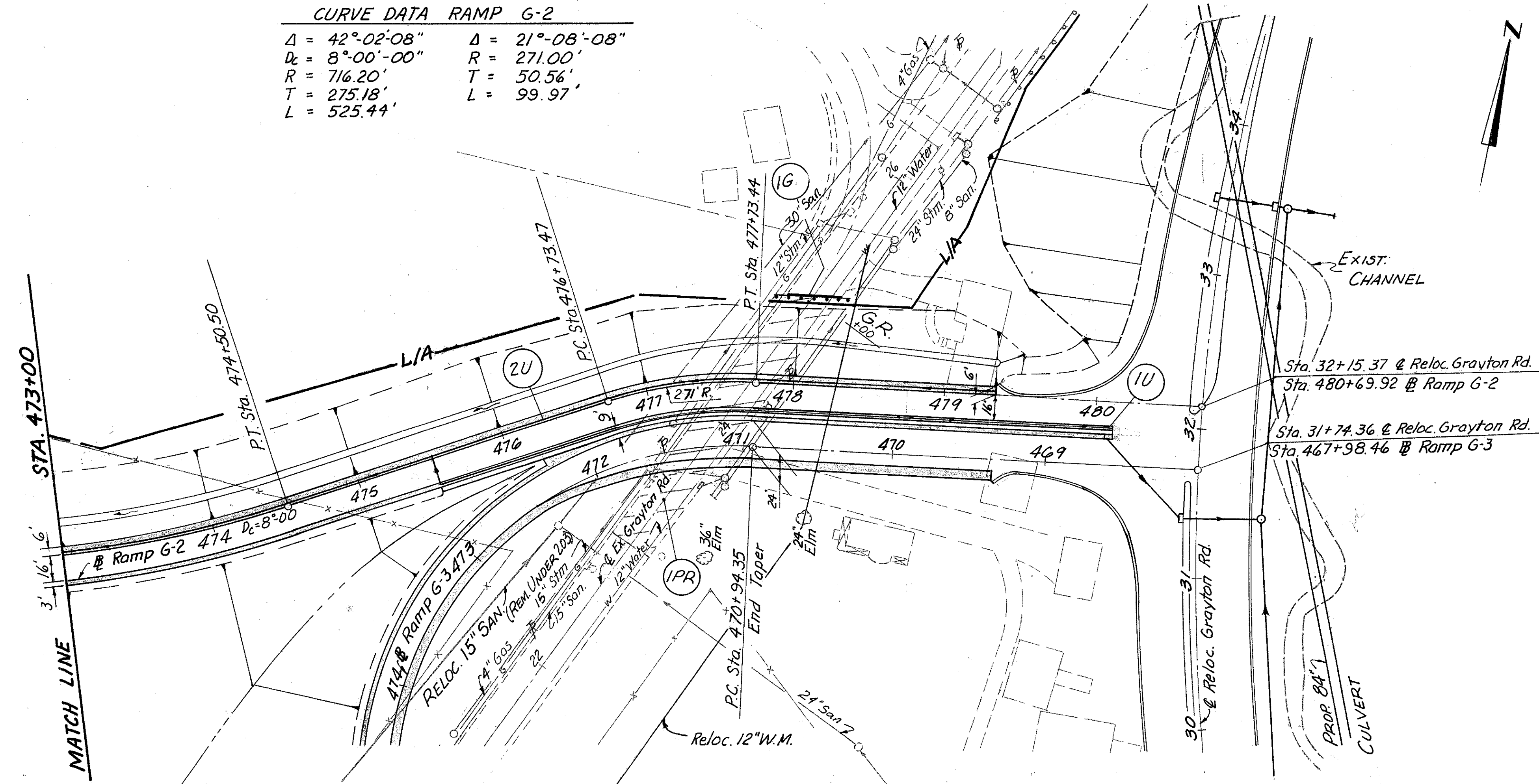


**CURVE DATA RAMP G-2**

$\Delta = 42^{\circ}-02'-08''$	$\Delta = 21^{\circ}-08'-08''$
$D_c = 8^{\circ}-00'-00''$	$R = 271.00'$
$R = 716.20'$	$T = 50.56'$
$T = 275.18'$	$L = 99.97'$
$L = 525.44'$	

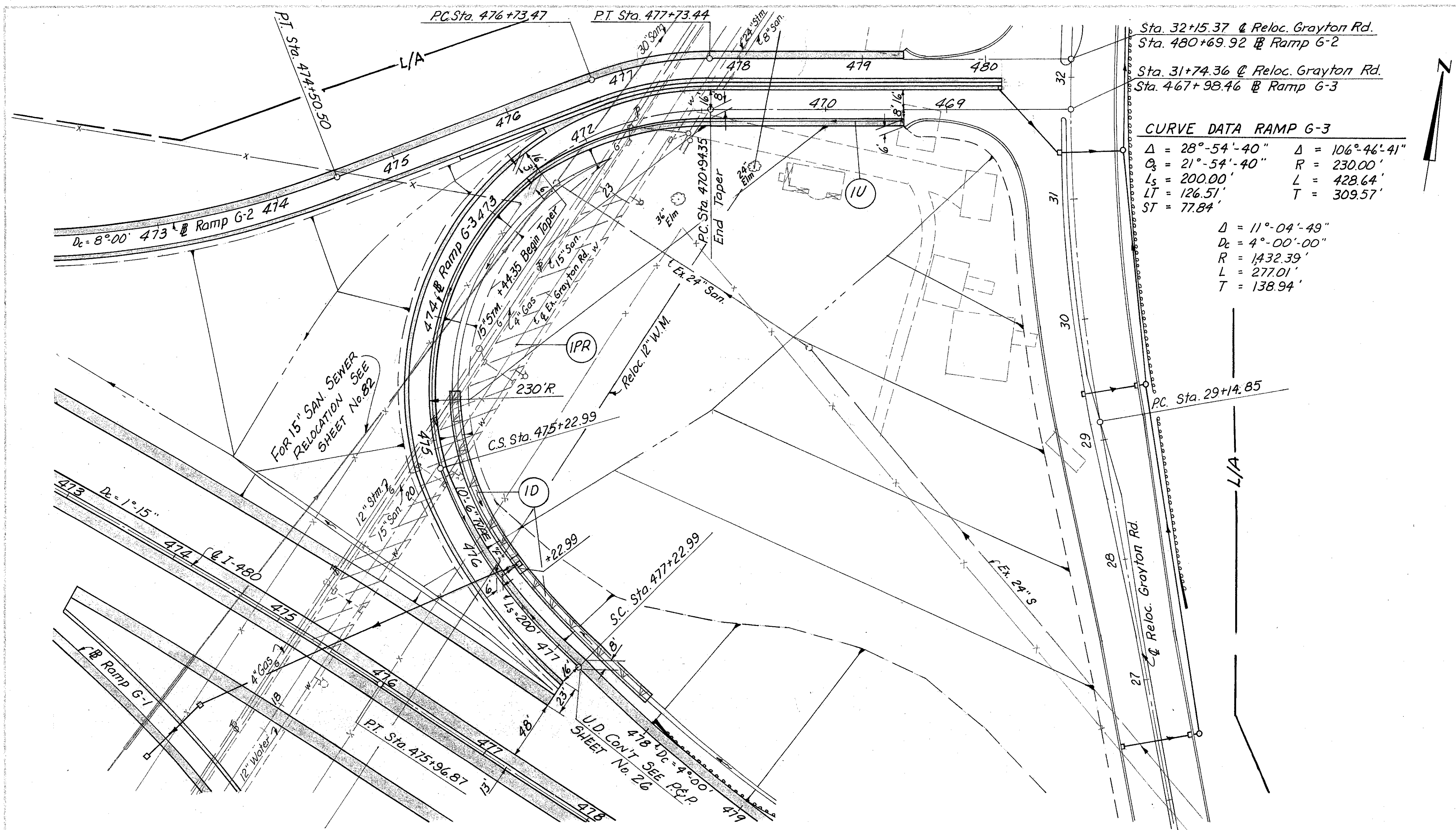
CROSS REFERENCE			
Sht. No.	Item	FED. RD. DIVISION	STATE PROJECT TYPE
82	RELOCATED 21" SANITARY	2	OHIO
36	RAMP G-3		
46, 47	RELOCATED GRAYTON RD.		
81	84" CULVERT		
204, 205	RELOCATED WATER MAIN		

CUYAHOGA COUNTY  
 CUY-480-678  
 CALC. BY T.R.B. DATE 11-75  
 CHG. BY E.J.K. DATE 12-75



ESTIMATED QUANTITIES	SEE SIDE	LOCATION	ROADWAY		DRAINAGE	
			SY	LF	SY	LF
	1U	MED. 480+72 TO 475+50				
	2U	LT. 479+50 TO 473+00				
	IPR	23+00 TO 25+220				
	IG	25+000				
TOTAL						

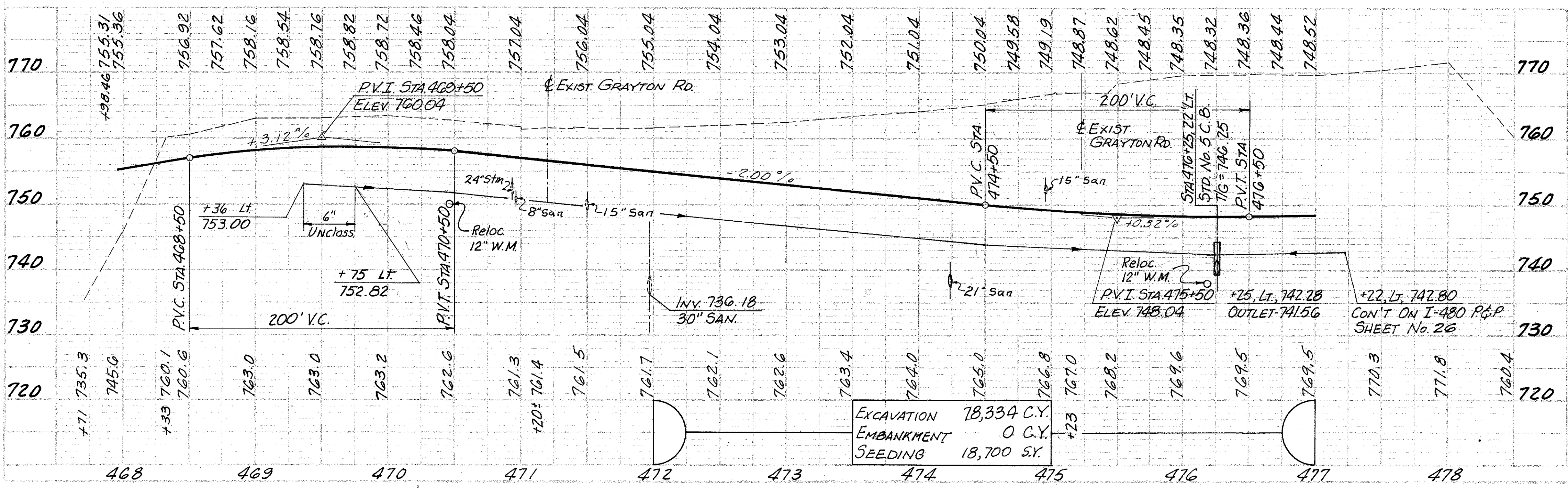
EXISTING GRAYTON RD.  
 FOR UTILITY REMOVAL ITEMS ON GRAYTON RD. SEE SHEET No 82



CROSS REFERENCE	
Sht. No.	Item
82	RELOCATED 21" SANITARY
26	I-480 P&P
32	RAMP G-1 P&P
35	RAMP G-2 P&P
62, 66	PAVEMENT DETAIL
204, 205	RELOCATED WATER MAIN

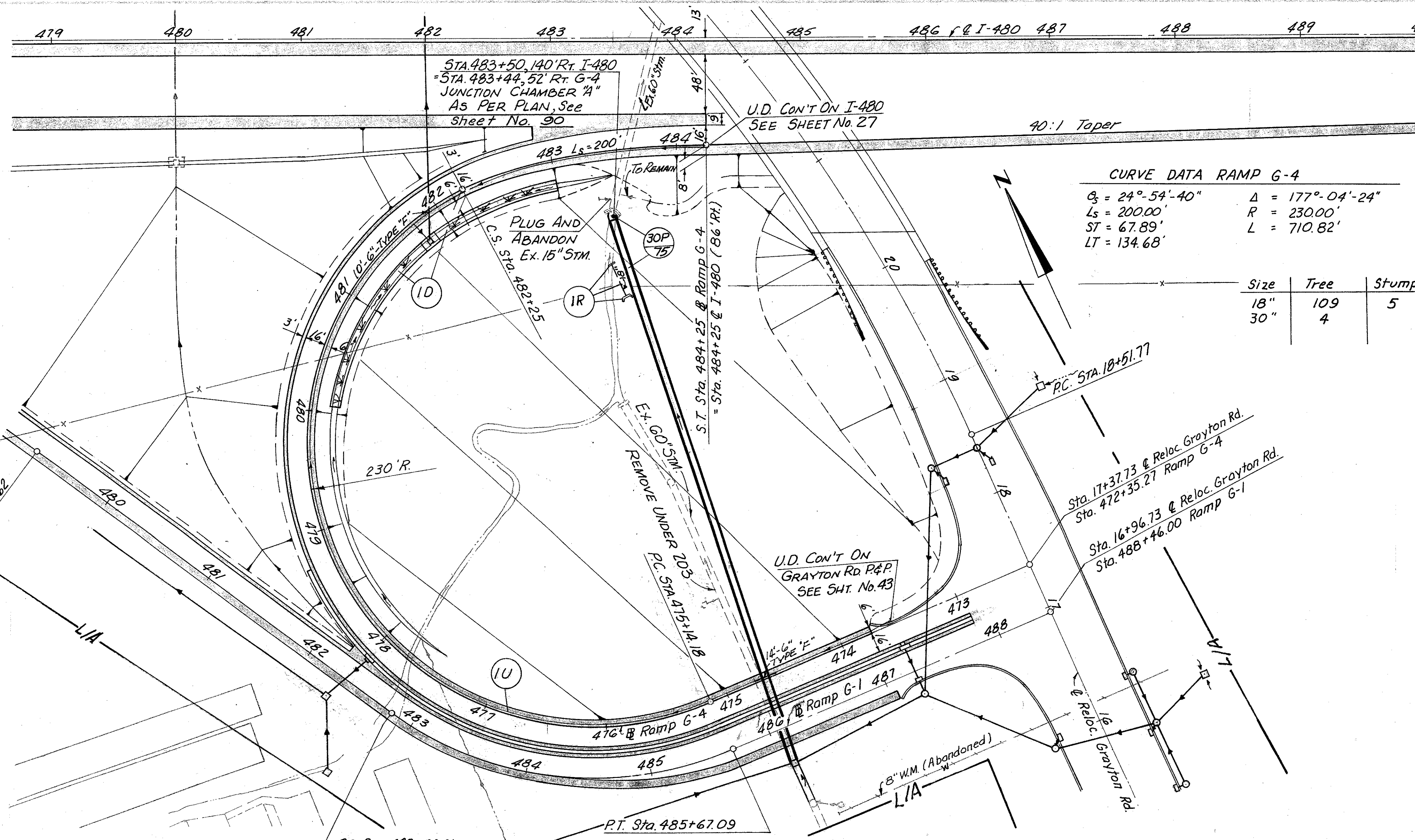
DIVISION: 2 OHIO  
 PROJECT: CUYAHOGA COUNTY  
 CUY-480-678  
 CALC. BY: T.R.B. DATE: 11-75  
 CHKD BY: E.J.K. DATE: 12-75

**CURVE DATA RAMP G-3**  
 $\Delta = 28^{\circ}-54'-40''$   $\Delta = 106^{\circ}-46'-41''$   
 $C_3 = 21^{\circ}-54'-40''$   $R = 230.00'$   
 $L_s = 200.00'$   $L = 428.64'$   
 $LT = 126.51'$   $T = 309.57'$   
 $ST = 77.84'$   
  
 $D = 11^{\circ}-04'-49''$   
 $D_c = 4^{\circ}-00'-00''$   
 $R = 1432.39'$   
 $L = 277.01'$   
 $T = 138.94'$



ROADWAY	ITEM	UNIT	QUANTITY	TOTAL
202	PAVEMENT REMOVED	S.Y.	336	336
	Sodding	S.Y.	250	250
	BENDS & BRANCHES UNCLASSIFIED	G" L.F. EA.	748.39	748.39
	DEEP	G" L.F. EA.	748.39	748.39
603	TYPE "F"	G" L.F.	20	20
	TOTAL			

EXISTING GRAYTON STATIONS. FOR UTILITY REMOVAL ITEMS ON GRAYTON RD. SEE SHEET No. 82



Sht. No.	Item
75	SEWER PROFILE
27	I-480 P&P
90	JUNCTION CHAMBER DETAIL
43, 44	RELOCATED GRAYTON RD. P&P
63, 65	PAVEMENT DETAIL

FHWA REGION	STATE	PROJECT
5	OHIO	

CUYAHOGA COUNTY  
 CUY-480-6.78  
 DATE 11-75  
 DRAWN BY E.J.K.  
 CHECKED BY B.B. DATE 12-75

37  
3/7

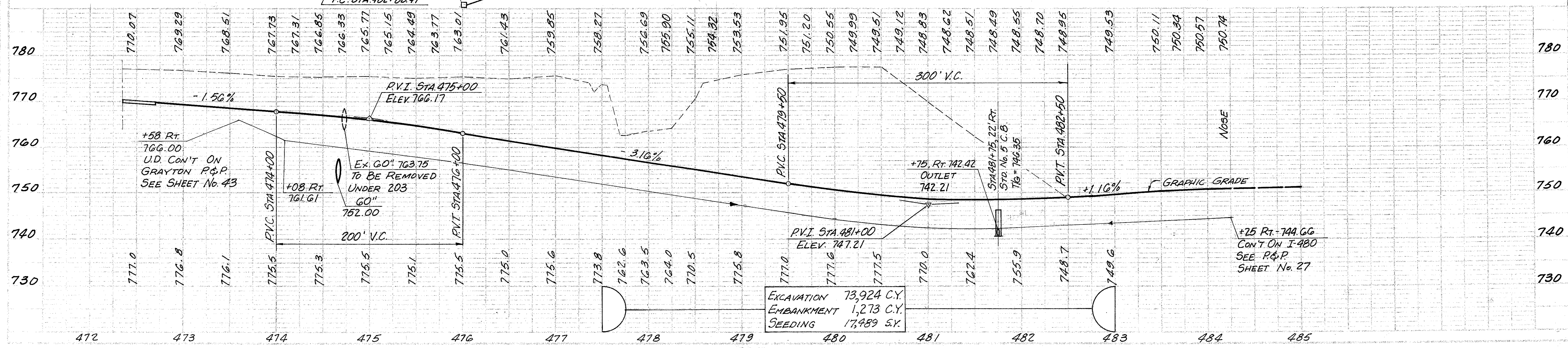
**CURVE DATA RAMP G-4**

$\Delta = 24^{\circ} 54' 40''$   $\Delta = 177^{\circ} 04' 24''$   
 $L_s = 200.00'$   $R = 230.00'$   
 $ST = 67.89'$   $L = 710.82'$   
 $LT = 134.68'$

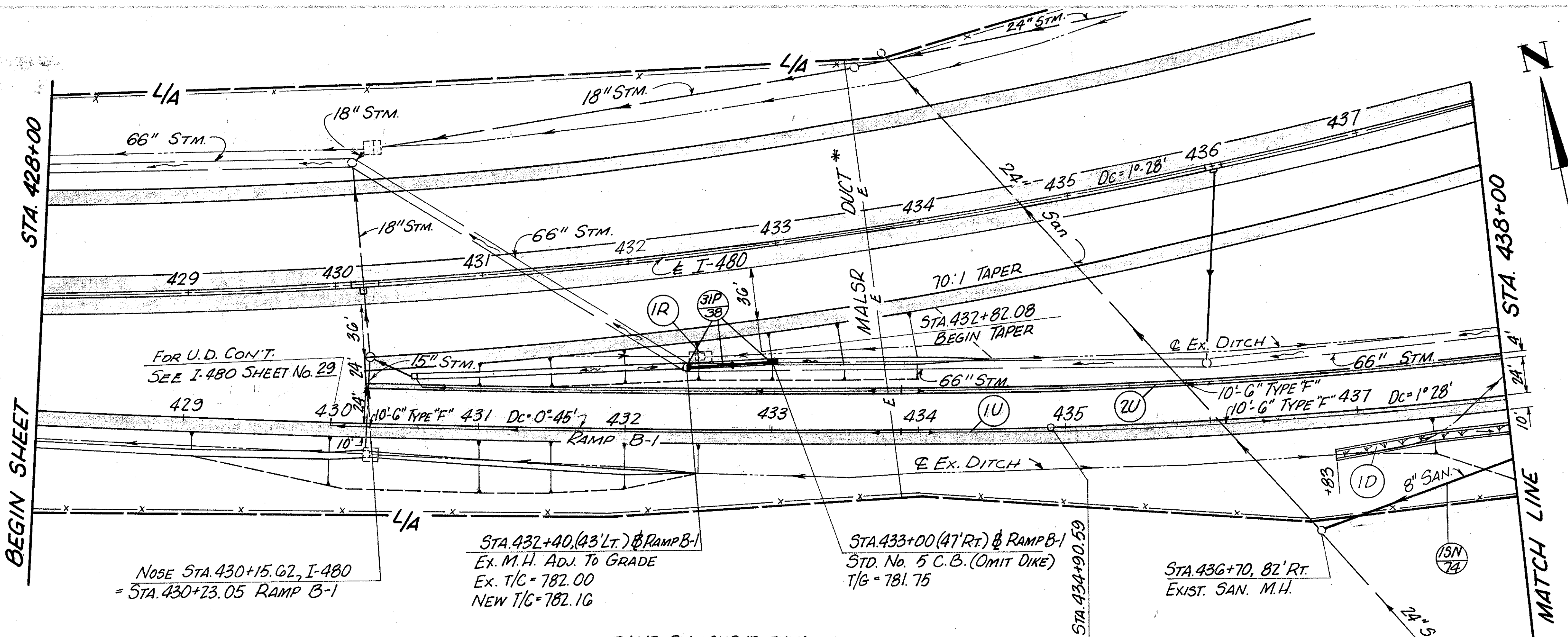
Size	Tree	Stump
18"	109	5
30"	4	

ITEM	QTY	UNIT	EST. QTY	UNIT	EST. QTY
SODDING		EA.	208		208
JUNCTION CHAMBER A, AS PER PLAN		EA.	1		1
BENDS & BRANCHES		EA.			
UNCLASSIFIED		L.F.	993	50	50
DEEP		L.F.			
Structures Removed		Lump			
Pipe Removed Under 24"		L.F.	31	Lump	31
TYPE "C"		L.F.			
TYPE "B"		L.F.	72		72
TYPE "F"		L.F.			
TOTAL					

ESTIMATED QUANTITIES	LOC. LOCATION	EST. QTY	UNIT	EST. QTY
30P L/R	486+07.61 to 483+44.64			
ID RT	480+18 to 483+00			
IR RT	483+35.2 to 483+45			
IU RT	473+55 to 484+25			
TOTAL				



RAMP G-4 PLAN & PPROFILE STA. 472+35.27 TO STA. 484+25



CROSS REFERENCE		FED. RD. DIVISION	STATE	PROJECT	FORM NO.
Sh. No.	ITEM	2	OHIO		38
29	I-480 P&P				317
70	PAVEMENT DETAILS				
7A	SANITARY SEWER PROFILE				

CUYAHOGA COUNTY  
 CUY-480-6.78  
 DATE 11-75  
 CALD BY T.R.B.  
 DATE 12-75  
 CHKD BY E.J.K.

NOSE STA. 430+15.02, I-480  
 = STA. 430+23.05 RAMP B-1

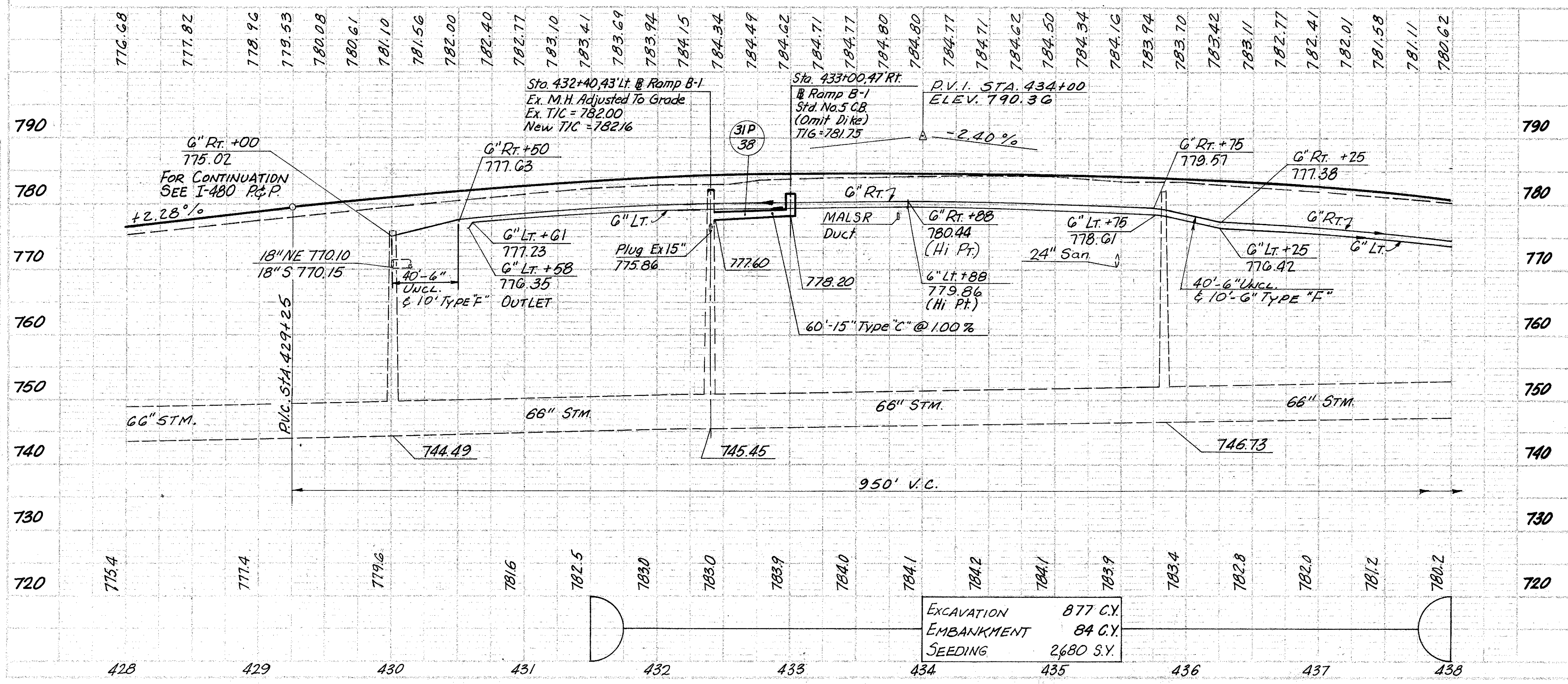
STA. 432+40.43 LT. @ RAMP B-1  
 Ex. M.H. Adj. To Grade  
 Ex. T/C = 782.00  
 NEW T/C = 782.16

STA. 433+00.47 RT. @ RAMP B-1  
 STD. No. 5 C.B. (OMIT DIKE)  
 T/G = 781.75

STA. 436+70.82 RT.  
 EXIST. SAN. M.H.

RAMP B-1 CURVE DATA

$\Delta = 9^{\circ}17'44''$	$\Delta = 8^{\circ}03'34''$
$D = 0^{\circ}45'00''$	$D = 1^{\circ}28'00''$
$R = 7639.44'$	$R = 3906.53'$
$L = 1239.42'$	$L = 549.51'$
$T = 621.07'$	$T = 275.21'$
$LC = 1238.06'$	$LC = 549.06'$

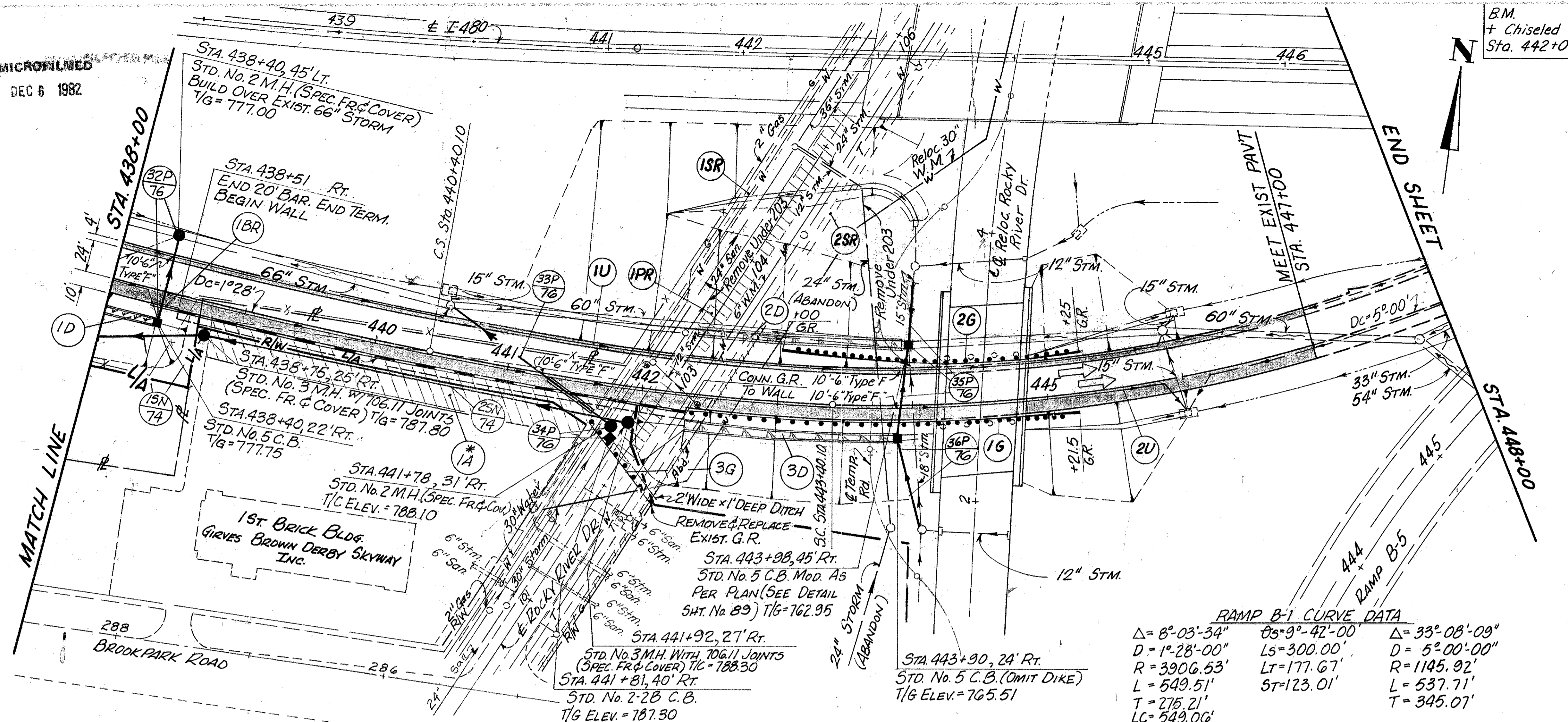


EXCAVATION	877 C.Y.
EMBANKMENT	84 C.Y.
SEEDING	2680 S.Y.

ESTIMATED QUANTITIES	REF. SIDE	LOCATION	SODDING		UNDERDRAIN DEEP		UNDERDRAIN SHALLOW		UNDERDRAIN UNCLASSIFIED		MANHOLE ADJUST TO GRADE STD. No. 5 CATCH BASIN		TYPE "C"		TYPE "F"		CATCH BASIN OR INLET REMOVED		
			31P LT.	15N RT.	G" L.F.	G" S.Y.	G" L.F.	G" S.Y.	G" L.F.	G" S.Y.	EA.	EA.	EA.	EA.	EA.	EA.	EA.	EA.	
		432+40 TO 433+00																	
		436+70 TO 438+00																	
		430+00 TO 438+00																	
		430+25 TO 438+00																	
		436+83 TO 438+00																	
		432+50																	
TOTAL																			

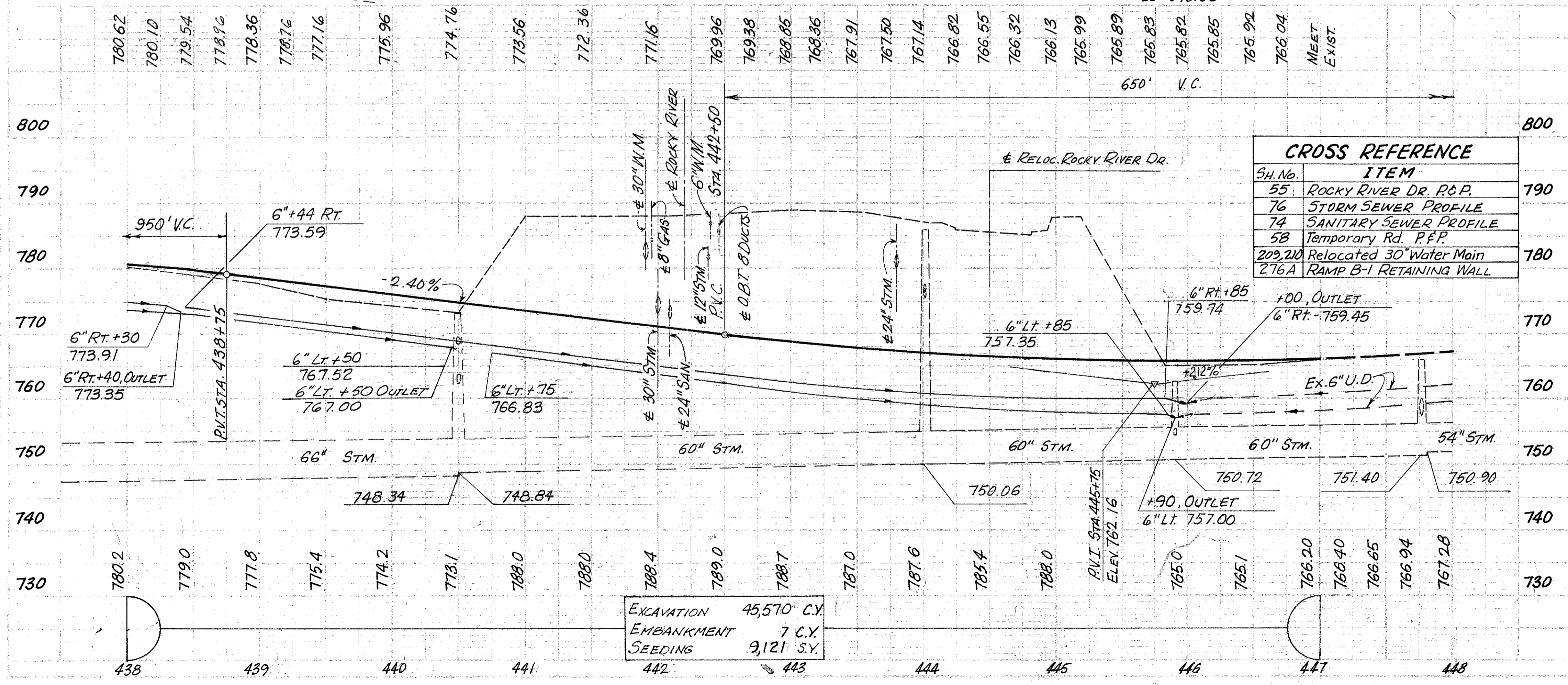
\* The Contractor shall confirm the location and depth of the MALSR duct before beginning work in the area.

MICROFILMED  
 DEC 6 1982



**RAMP B-1 CURVE DATA**

$\Delta = 8^{\circ}03'34''$	$85^{\circ}09'42'00''$	$\Delta = 33^{\circ}08'09''$
$D = 1^{\circ}28'00''$	$Ls = 300.00'$	$D = 5^{\circ}00'00''$
$R = 3906.53'$	$Lt = 177.67'$	$R = 1145.92'$
$L = 549.51'$	$St = 123.01'$	$L = 537.71'$
$T = 275.21'$		$T = 345.07'$
$Lc = 549.06'$		



**CROSS REFERENCE**

SH. No.	ITEM
55	Rocky River Dr. R.P.P.
76	STORM SEWER PROFILE
74	SANITARY SEWER PROFILE
58	Temporary Rd. P.P.P.
209, 210	Relocated 30" Water Main
276A	RAMP B-1 RETAINING WALL

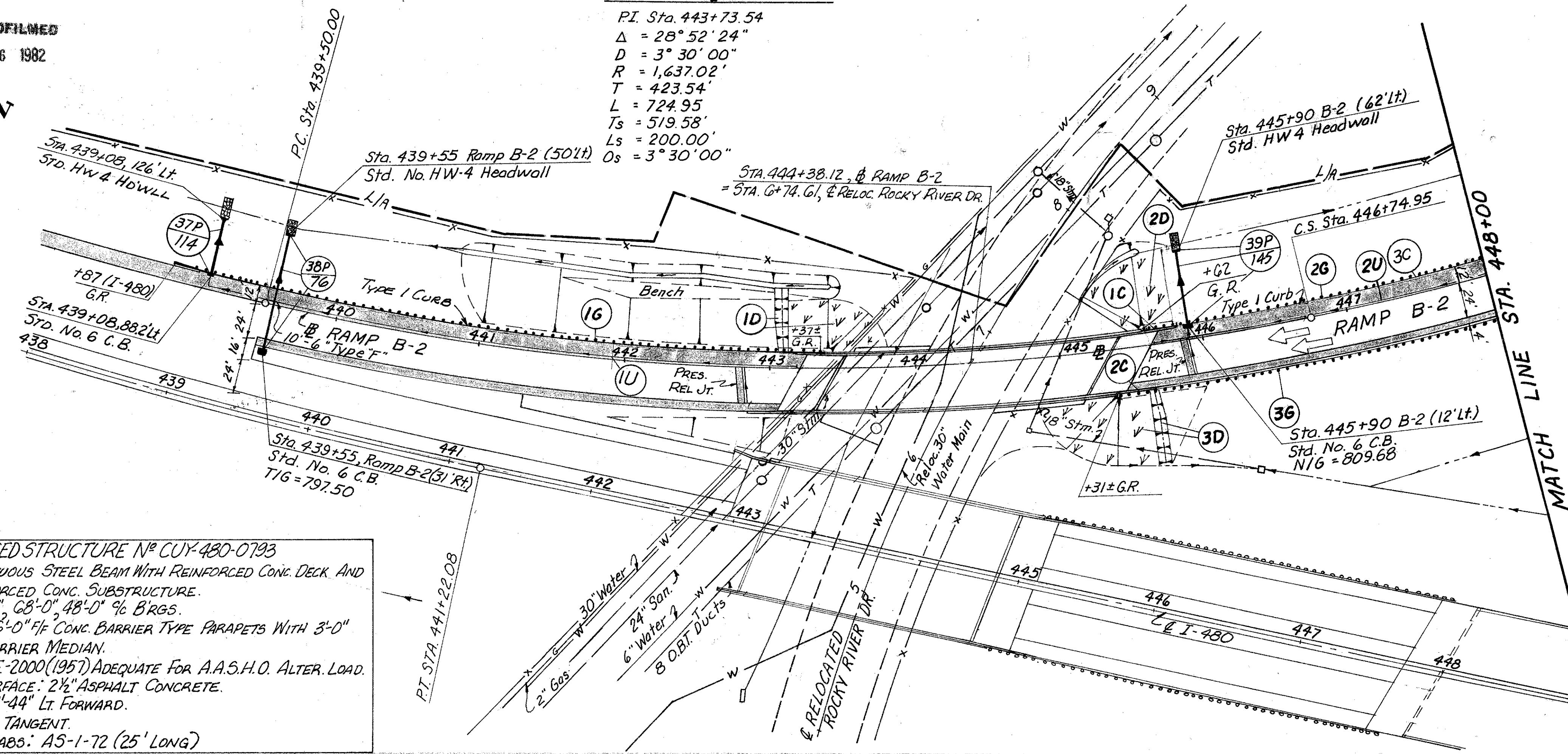
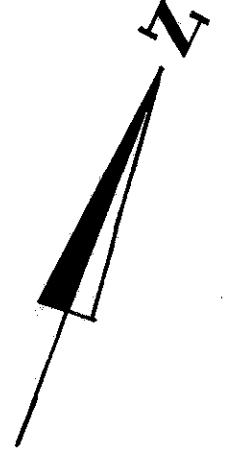
EXCAVATION	45,570 C.Y.
EMBANKMENT	7 C.Y.
SEEDING	9,121 S.Y.

ITEM	QTY.	UNIT	ESTIMATED QUANTITIES	SHEET	
				NO.	REV.
32P 76	1	EA.	1	1	1
33P 76	1	EA.	1	1	1
34P 76	1	EA.	1	1	1
35P 76	1	EA.	1	1	1
36P 76	1	EA.	1	1	1
25SN 75	1	EA.	1	1	1
ID 74	1	EA.	1	1	1
2D 75	1	EA.	1	1	1
3D 76	1	EA.	1	1	1
IBR 76	1	EA.	1	1	1
IG 76	1	EA.	1	1	1
2G 76	1	EA.	1	1	1
3G 76	1	EA.	1	1	1
IPR 76	1	EA.	1	1	1
ISR 76	1	EA.	1	1	1
2SR 76	1	EA.	1	1	1
3SR 76	1	EA.	1	1	1
26 76	1	EA.	1	1	1
27 76	1	EA.	1	1	1
28 76	1	EA.	1	1	1
29 76	1	EA.	1	1	1
30 76	1	EA.	1	1	1
31 76	1	EA.	1	1	1
32 76	1	EA.	1	1	1
33 76	1	EA.	1	1	1
34 76	1	EA.	1	1	1
35 76	1	EA.	1	1	1
36 76	1	EA.	1	1	1
37 76	1	EA.	1	1	1
38 76	1	EA.	1	1	1
39 76	1	EA.	1	1	1
40 76	1	EA.	1	1	1
41 76	1	EA.	1	1	1
42 76	1	EA.	1	1	1
43 76	1	EA.	1	1	1
44 76	1	EA.	1	1	1
45 76	1	EA.	1	1	1
46 76	1	EA.	1	1	1
47 76	1	EA.	1	1	1
48 76	1	EA.	1	1	1
49 76	1	EA.	1	1	1
50 76	1	EA.	1	1	1
51 76	1	EA.	1	1	1
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58 76	1	EA.	1	1	1
59 76	1	EA.	1	1	1
60 76	1	EA.	1	1	1
61 76	1	EA.	1	1	1
62 76	1	EA.	1	1	1
63 76	1	EA.	1	1	1
64 76	1	EA.	1	1	1
65 76	1	EA.	1	1	1
66 76	1	EA.	1	1	1
67 76	1	EA.	1	1	1
68 76	1	EA.	1	1	1
69 76	1	EA.	1	1	1
70 76	1	EA.	1	1	1
71 76	1	EA.	1	1	1
72 76	1	EA.	1	1	1
73 76	1	EA.	1	1	1
74 76	1	EA.	1	1	1
75 76	1	EA.	1	1	1
76 76	1	EA.	1	1	1
77 76	1	EA.	1	1	1
78 76	1	EA.	1	1	1
79 76	1	EA.	1	1	1
80 76	1	EA.	1	1	1
81 76	1	EA.	1	1	1
82 76	1	EA.	1	1	1
83 76	1	EA.	1	1	1
84 76	1	EA.	1	1	1
85 76	1	EA.	1	1	1
86 76	1	EA.	1	1	1
87 76	1	EA.	1	1	1
88 76	1	EA.	1	1	1
89 76	1	EA.	1	1	1
90 76	1	EA.	1	1	1
91 76	1	EA.	1	1	1
92 76	1	EA.	1	1	1
93 76	1	EA.	1	1	1
94 76	1	EA.	1	1	1
95 76	1	EA.	1	1	1
96 76	1	EA.	1	1	1
97 76	1	EA.	1	1	1
98 76	1	EA.	1	1	1
99 76	1	EA.	1	1	1
100 76	1	EA.	1	1	1
101 76	1	EA.	1	1	1
102 76	1	EA.	1	1	1
103 76	1	EA.	1	1	1
104 76	1	EA.	1	1	1
105 76	1	EA.	1	1	1
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115 76	1	EA.	1	1	1
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117 76	1	EA.	1	1	1
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212 76	1	EA.	1	1	1
213 76	1	EA.	1	1	1

MICROFILMED  
DEC 6 1982

**RAMP B-2 CURVE DATA**

PI. Sta. 443+73.54  
 $\Delta = 28^\circ 52' 24''$   
 $D = 3^\circ 30' 00''$   
 $R = 1,637.02'$   
 $T = 423.54'$   
 $L = 724.95'$   
 $T_s = 519.58'$   
 $L_s = 200.00'$   
 $D_s = 3^\circ 30' 00''$



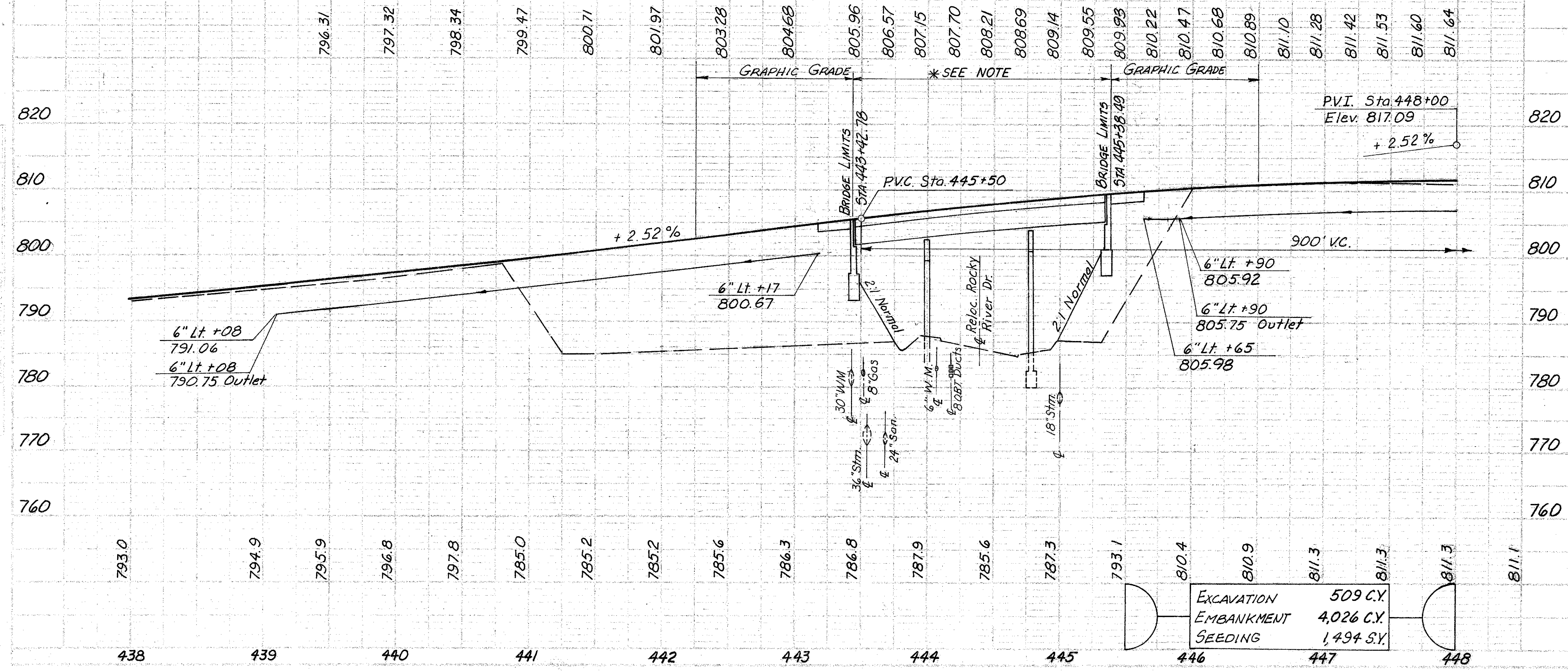
**PROPOSED STRUCTURE NO. CUY-480-0793**  
 TYPE: CONTINUOUS STEEL BEAM WITH REINFORCED CONC. DECK AND REINFORCED CONC. SUBSTRUCTURE.  
 SPANS: 48'-0" 68'-0" 48'-0" % BRGS.  
 ROADWAY: 96'-0" FF CONC. BARRIER TYPE PARAPETS WITH 3'-0" BARRIER MEDIAN.  
 LOADING: C.F.-2000 (1957) ADEQUATE FOR A.A.S.H.O. ALTER. LOAD.  
 WEARING SURFACE: 2" ASPHALT CONCRETE.  
 SKEW: 10° 12' 44" Lt. FORWARD.  
 ALIGNMENT: TANGENT.  
 APPROACH SLABS: AS-1-72 (25' LONG)

**CROSS REFERENCE**

SHT. No.	ITEM
76	SEWER PROFILE
30	I-480 P&P
144, 145, 146	X-SECTIONS
277	STRUCTURE
56	Rocky River Dr. P&P
72	PAVEMENT DETAIL
209, 210	Relocated Water Line

CUYAHOGA COUNTY  
 CUY-480-678  
 CALC. BY E.J.K. DATE 11-75  
 CHNG. BY B.B. DATE 12-75

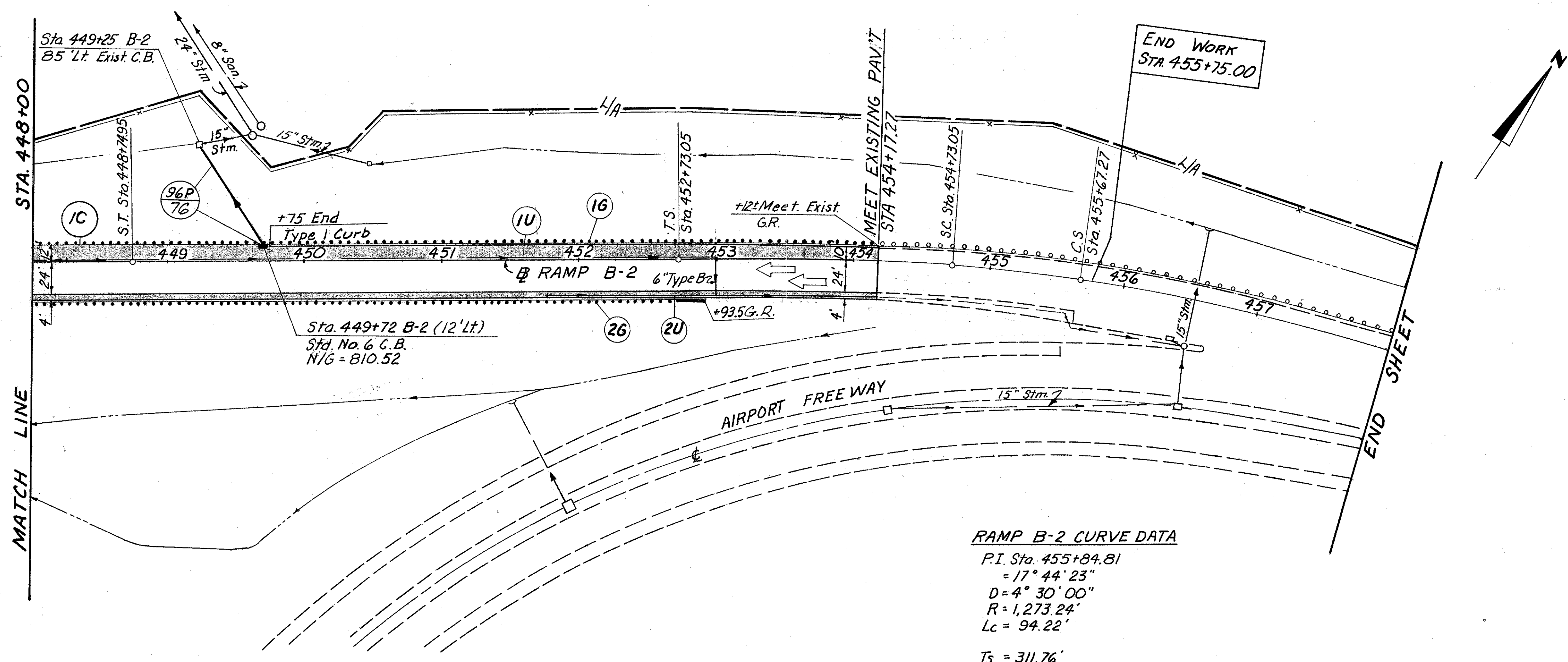
\*NOTE: THE VERTICAL CURVE DATA DOES NOT APPLY TO BRIDGE OR GRAPHIC GRADE ELEVATIONS. THE BRIDGE ELEVATIONS WERE OBTAINED BY ADDING 0.21 FT TO THE ELEVATIONS OBTAINED FROM VERTICAL CURVE DATA AND WORKED OUT WITHIN THE GRAPHIC GRADE LIMITS.



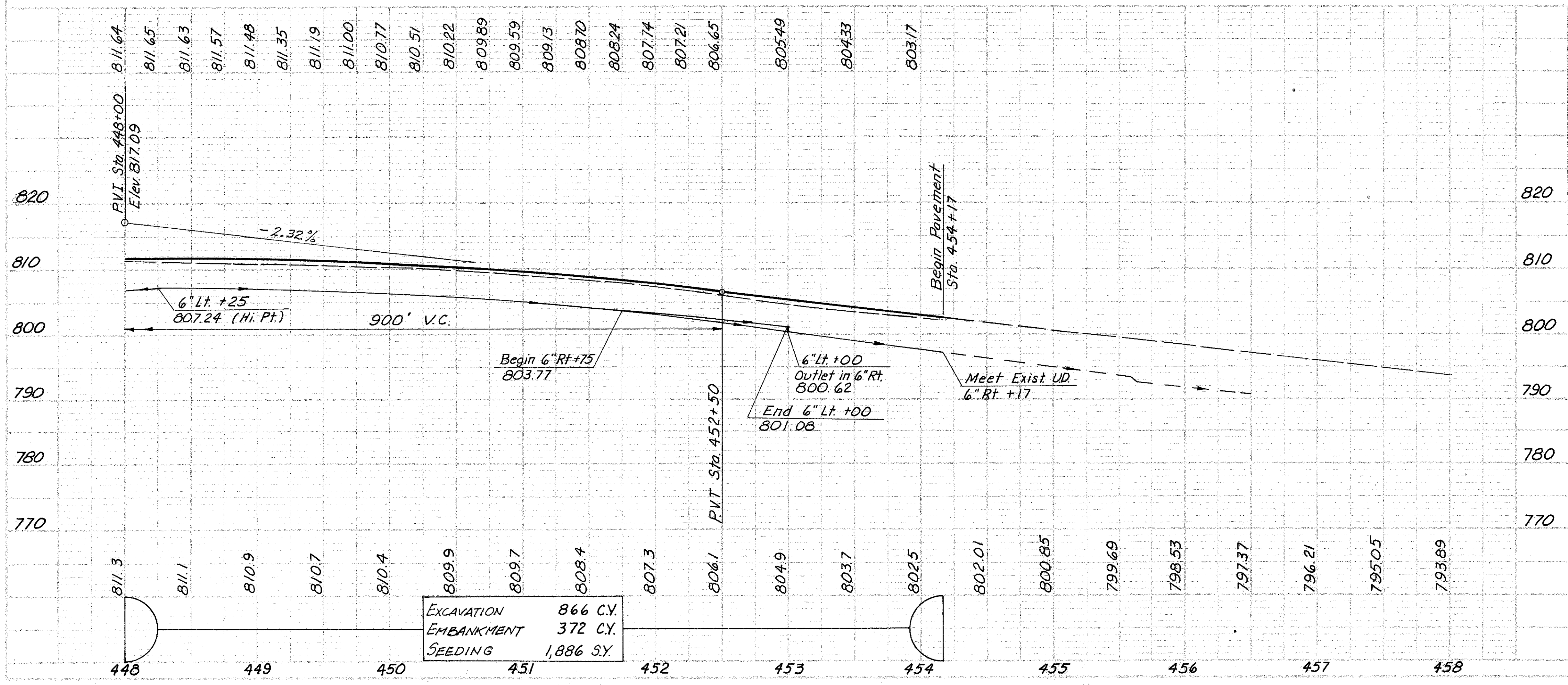
EXCAVATION 509 C.Y.  
 EMBANKMENT 4,026 C.Y.  
 SEEDING 1,494 S.Y.

ROADWAY	ITEM	UNIT	AMOUNT	EST. QUANTITIES
ROADWAY	Concrete Curb Type 6	L.F.	25	25
	Anchor Assembly Type T	Ea.	1	1
	Bridge Terminal Assembly Type A	Ea.	1	1
	Guard Rail Type 5	L.F.	47.5	238
EROSION CONTROL	ASPHALT CONC. CURB TYPE 1	L.F.	213	213
	Sodding	S.Y.	283	283
EROSION CONTROL	Reinforced Sodding	S.Y.	54	54
	Rock Channel Protection Type B	C.Y.	42	42
EROSION CONTROL	Bends & Branches	Ea.	1	1
	Under drain Shallow	L.F.	426	280
DRAINAGE	Std. No. 6 Catch Basin Type "F" 707.05	Ea.	1	1
	Type B	L.F.	63	25
	Type F	L.F.	39	55
	Type F	L.F.	20	70
DRAINAGE	Concrete Masonry	C.Y.	.27	.27
	Concrete Masonry	C.Y.	.27	.27
Estimated Quantities				
Side	Location			
37P Lt.	439+08			
38P Lt.	439+55			
1D Lt.	As Indicated			
2D Lt.	As Indicated			
3D Rt.	As Indicated			
39P Lt.	445+90			
1C Lt.	445+62 to 445+87			
2C Rt.	445+31 to 445+56			
3C Lt.	445+87 to 448+00			
1G Rt.	438+87 (I-480) to 443+37			
2G Rt.	445+62 to 448+00			
3G Lt.	445+31 to 448+00			
1U Lt.	439+08 (I-480) to 443+97			
2U Lt.	445+65 to 448+00			
Total				





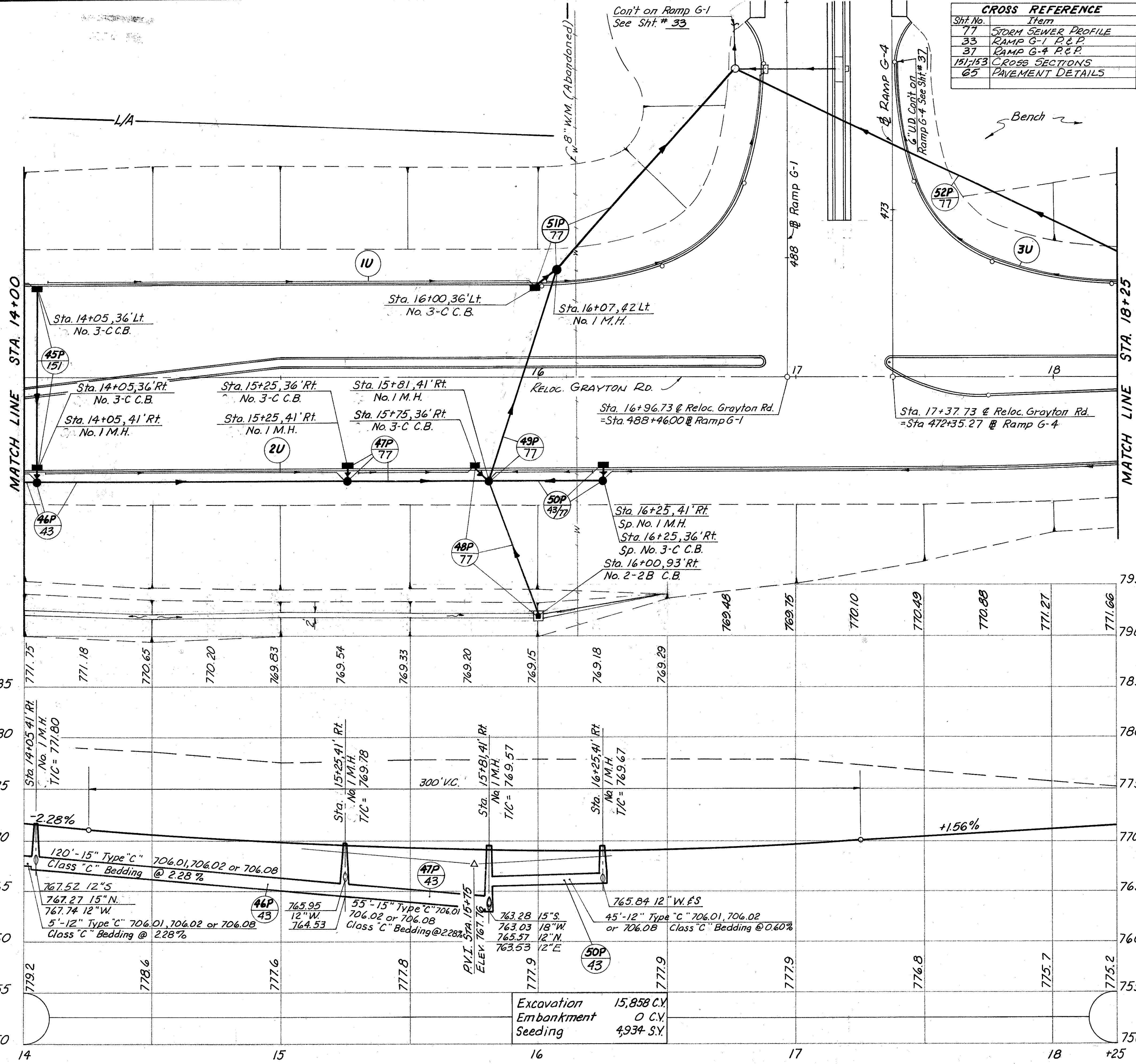
**RAMP B-2 CURVE DATA**  
 P.I. Sta. 455+84.81  
 $\Delta = 17^\circ 44' 23''$   
 $D = 4^\circ 30' 00''$   
 $R = 1,273.24'$   
 $L_c = 94.22'$   
 $T_s = 311.76'$   
 $L_s = 200'$   
 $O_s = 4^\circ 30'$



EXCAVATION	866 C.Y.
EMBANKMENT	372 C.Y.
SEEDING	1,886 S.Y.

ROADWAY	ITEM	UNIT	QUANTITY	EST. QUANTITY
ROADWAY	ASPHALT CONCRETE CURB TYPE 1	L.F.	175	175
	Anchor Assembly Type A	Ea.	1	1
	Guard Rail Type 5	L.F.	612	468.5
DRAINAGE	Standard No. 6 Catch Basin	Ea.	1	1
	Bends & Branches Underdrain Shallow			
	Type "F"	L.F.	94	500
	Type "B"	L.F.	28	242
<b>Total</b>				<b>1080.5</b>





Sht. No.	Item
77	STORM SEWER PROFILE
33	RAMP G-1 R.E.P.
37	RAMP G-4 R.E.P.
151:153	CROSS SECTIONS
65	PAVEMENT DETAILS

CALC. BY B.B. DATE 11-75  
 HDY BY E.J.K. DATE 1-76

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

43  
 3/7

CUYAHOGA COUNTY  
 CUY-480-6.78

Size 18"  
 Tree 7

DRAINAGE	Description	Quantity				
		603	604	605	606	607
605	Bends & Branches			3		5
	6" Underdrain 706.08 Perforated (As Per Plan)			304	363	127
	No. 2-2B C.B.					1
604	No. 1 M.H.			1	1	1
	No. 3C C.B.			2	1	1
	No. 1 M.H.					5
603	Type "C" 706.01 (3)					105
	Type "C" 706.02					105
	Type "C" 706.01, 706.02 or 706.08					105
602	Type "C" 706.01, 706.02 or 706.08					105
	Type "C" 706.02					105
	Type "C" 706.01, 706.02 or 706.08					105
601	Type "F"					105
	Type "F"					105
	Type "F"					105
600	Type "F"					105
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599	Type "F"					105
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598	Type "F"					105
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528	Type "F"					105
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	Type "F"					105
527	Type "F"					105
	Type "F"					105
	Type "F"					

Sta. 18+30, 36' Lt.  
Sp. No. 3C C.B.  
MICROFILMED  
DEC 6 1982

Reloc. Grayton  
& Curve Data  
 $\Delta = 20^{\circ}-11'-39''$   
 $D = 4^{\circ}-00'-00''$   
 $R = 1432.39'$   
 $L = 504.85'$   
 $T = 255.07'$

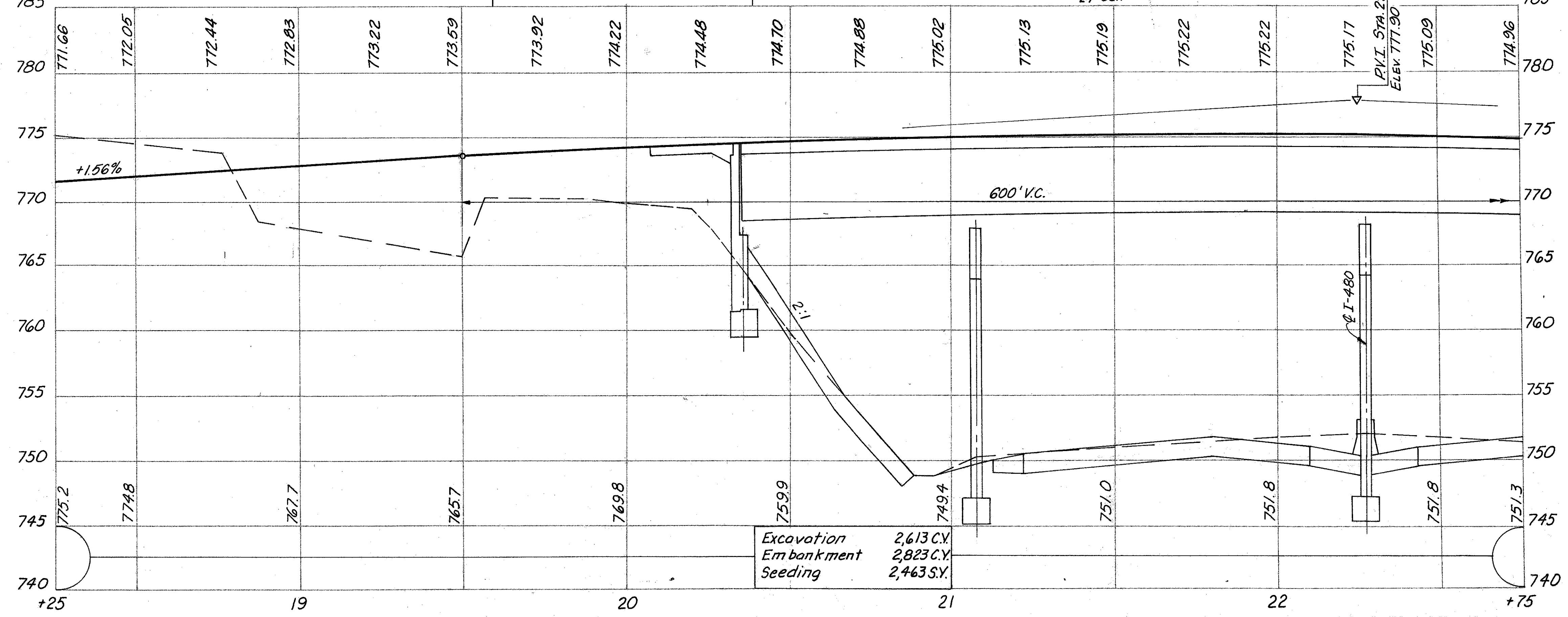
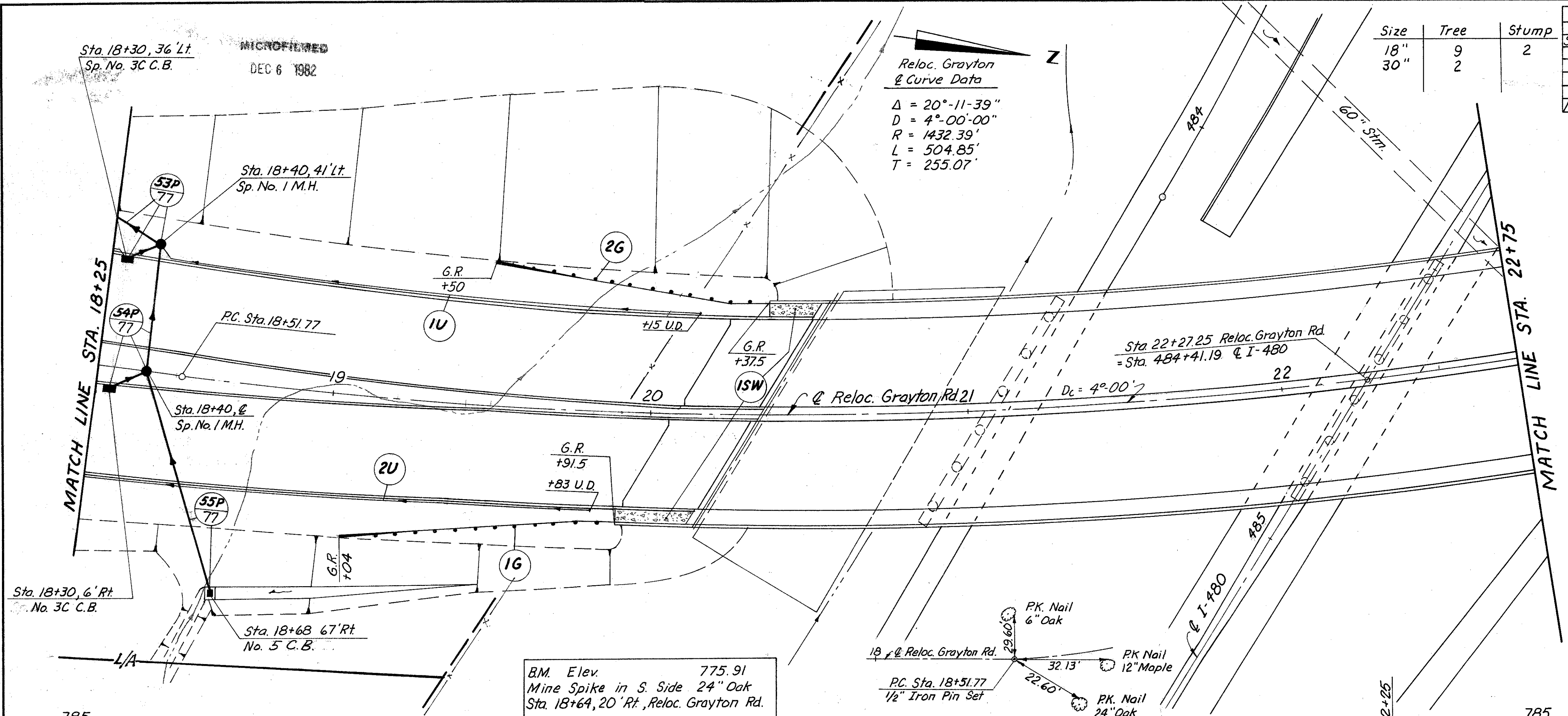
Size	Tree	Stump
18"	9	2
30"	2	

CROSS REFERENCE	
Sht. No.	Item
77	STORM SEWER PROFILES
27	I-480 P&P
260	STRUCTURE
25	PAVEMENT DETAIL
154, 155	CROSS SECTIONS

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

CUYAHOGA COUNTY  
CUY-480-678  
DATE 11-75  
DATE 1-76

**PROPOSED STRUCTURE CUY 480-0727**  
TYPE: Continuous steel girders with reinforced concrete deck and substructure.  
SPANS: 72'-0", 119'-3", 111'-6", 70'-0" c/c Brgs. along & Reloc. Grayton Rd.  
ROADWAY: 60'-0" f/f curbs, 5'-0" sidewalk, BR2-67 railing and 4'-0" raised median.  
LOADING: HS 20-44  
WEARING SURFACE: 2 1/2" Asphalt Concrete  
SKEW: 38'-05'-44 with reference chord  
ALIGNMENT: 4'-00'-00" curve left and tangent.  
APPROACH SLABS AS-1-72 (25' long)  
SUPERELEVATION: 3/8" per foot



Excavation 2,613 C.Y.  
Embankment 2,823 C.Y.  
Seeding 2,463 S.Y.

ROADWAY	Item	Unit	Quantity	Notes
606	Bridge Terminal Assembly, Type A	Ea	1	
	Anchor Assembly Type A	Ea	1	
	Guard Rail, Type 5	L.F.	62.5	
608	4 1/2" Concrete Walk As Per Plan	S.F.	176	
			176	
605	Bends & Branches	Ea	2	
	6" Under drain 706.08 Perforated (As Per Plan)	L.F.	150	
604	No. 5 C.B.	Ea	1	
	No. 1 M.H.	Ea	1	
	No. 3-C C.B.	Ea	1	
603	Type "C" Bedding	L.F.	17	
	Type "C" 706.01, 706.02 or 706.08	L.F.	41	
	Type "C" 706.02	L.F.	73	
	Type "F"	L.F.	13	
602	Type "F"	L.F.	20	
		L.F.	10	
Estimated Quantities	Ref. Side Location			
	55P Lt. Sta. 18+25 to Sta. 18+40			
	54P Lt/Rt. Sta. 18+30 to Sta. 18+40			
	55P Rt. Sta. 18+40 to Sta. 18+68			
	I.U. Lt. Sta. 18+25 to Sta. 20+15			
	2.U. Rt. Sta. 18+25 to Sta. 19+83			
	1.G. Rt. Sta. 19+04 to Sta. 19+15			
	2.G. Lt. Sta. 19+50 to Sta. 20+37.5			
	1.S.W. Rt/Lt. Sta. 19+91.5 to Sta. 20+54			
	Total			

RELOCATED GRAYTON RD. PLAN & PROFILE STA. 18+25 TO STA. 22+75

MICROFILMED  
DEC 6 1982

Sht. No.	Item
155, 157	CROSS SECTIONS
27	I-480 P.E.P.
66	PAVEMENT DETAILS
260	Structure

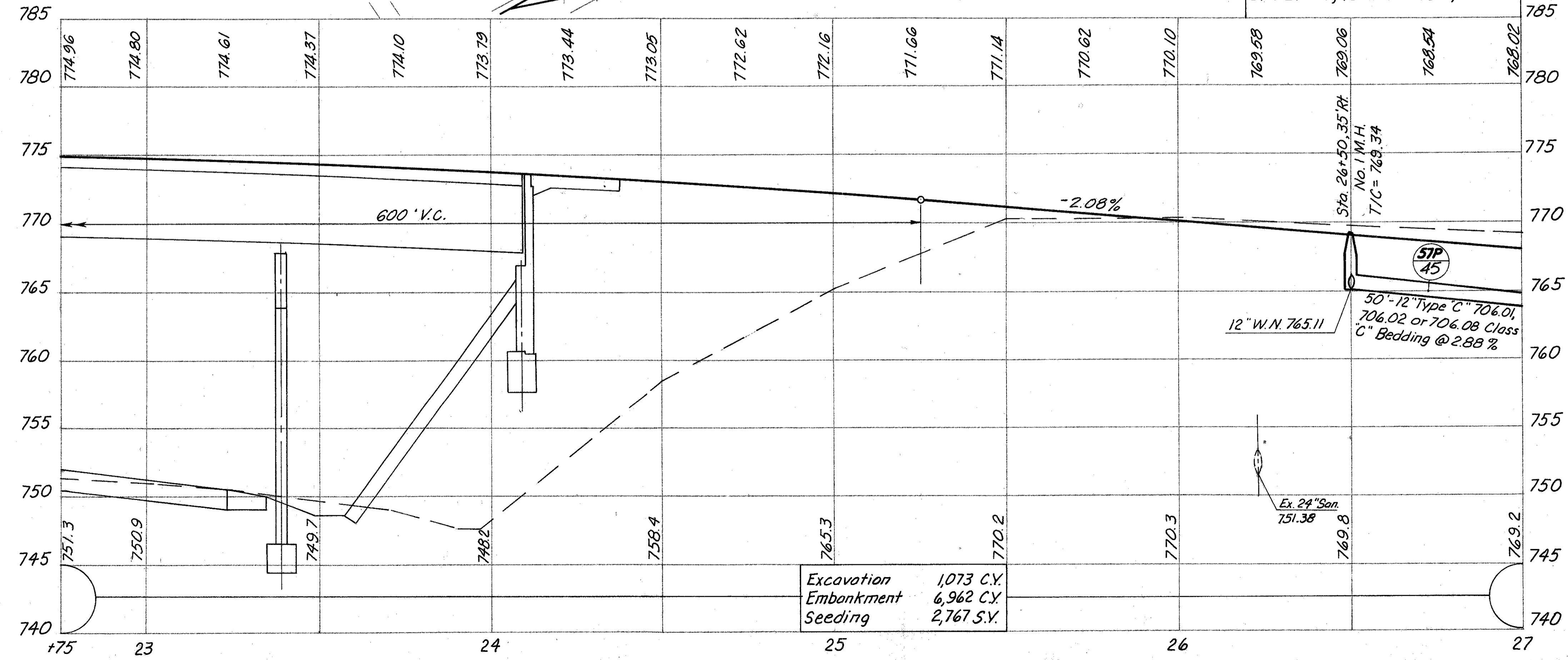
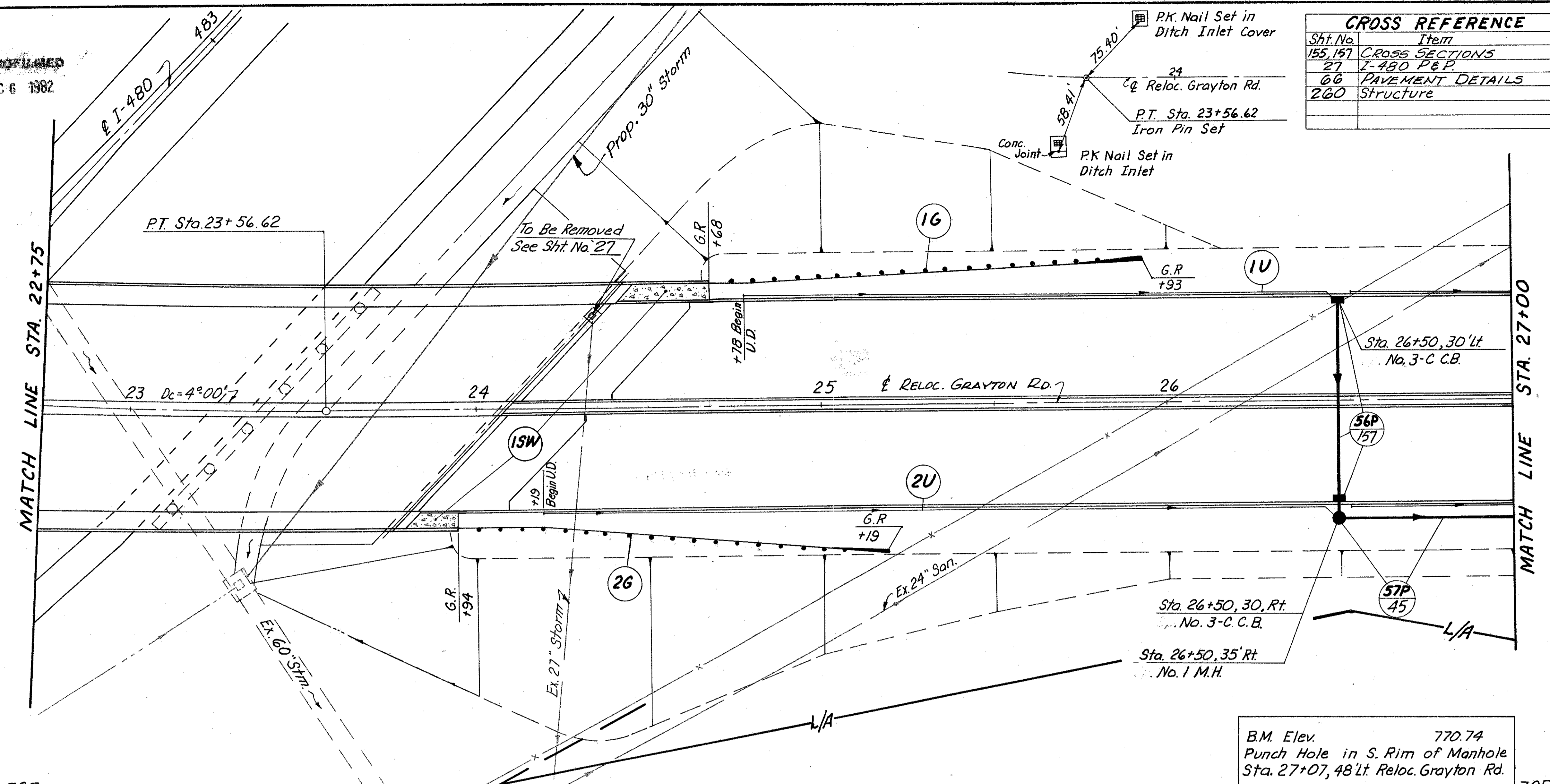
CALD BY B.B. DATE 11-75  
 CHD BY E.J.K. DATE 1-76

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

CUYAHOGA COUNTY  
 CUY-480-678

45  
3/7

Size	Tree
18"	9



Excavation	1,073 C.Y.
Embankment	6,962 C.Y.
Seeding	2,767 S.Y.

ROADWAY	Item	Unit	Quantity	Notes
608	4 1/2" Concrete Walk As Per Plan	S.F.		
	Bridge Terminal Assembly, Type A	Ea.	1	
	Anchor Assembly Type A	Ea.	1	
	Guard Rail, Type 5	L.F.	100	
605	6" Underdrain 706.08 Perforated (As Per Plan)	L.F.	210	
	Bends & Branches	Ea.	1	
604	No. 1 M.H.	Ea.	1	
	No. 3-C C.B.	Ea.	2	
603	Class "C" Bedding			
	Type "C" 706.01, 706.02 or 706.08	L.F.	50	
	Type "C" 706.02 2,000 D Lead or 706.08 Etc.	L.F.	59	
	Type "F"	L.F.	10	
56P	56P L/R Rt. Sta. 26+50			
	56P Rt. Sta. 26+50 to Sta. 27+00			
1U	1U Lt. Sta. 24+78 to Sta. 27+00			
	1U Rt. Sta. 24+19 to Sta. 27+00			
1G	1G Lt. Sta. 24+68 to Sta. 25+93			
	1G Rt. Sta. 23+94 to Sta. 25+19			
1SW	1SW R/L/H Sta. 23+80 to Sta. 24+68			
	1SW Lt. Sta. 23+80 to Sta. 24+68			
Estimated Quantities				
Total				

Sta. 27+09 (49' Lt.)  
 Exist. M.H. Reconstructed  
 to Grade  
 Exist. T/C = 771.50  
 New T/C = 768.25

f Ex. 24" San.  
 To Remain

P.K. Nail Set  
 3' Above Ground  
 8" Maple

PC Sta. 29+14.85  
 1/2" Iron Pipe Set

Reloc. Grayton 30

P.K. Nail Set  
 3' Above Ground  
 4" Maple

P.K. Nail Set  
 6' Above Ground  
 15" Maple

Reloc. Grayton Rd.  
 & Curve Data  
 $\Delta = 51^{\circ}-12'-03''$   
 $D_c = 4^{\circ}-00'-00''$   
 $R = 1,432.39'$   
 $L = 1,280.02'$   
 $T = 686.30'$

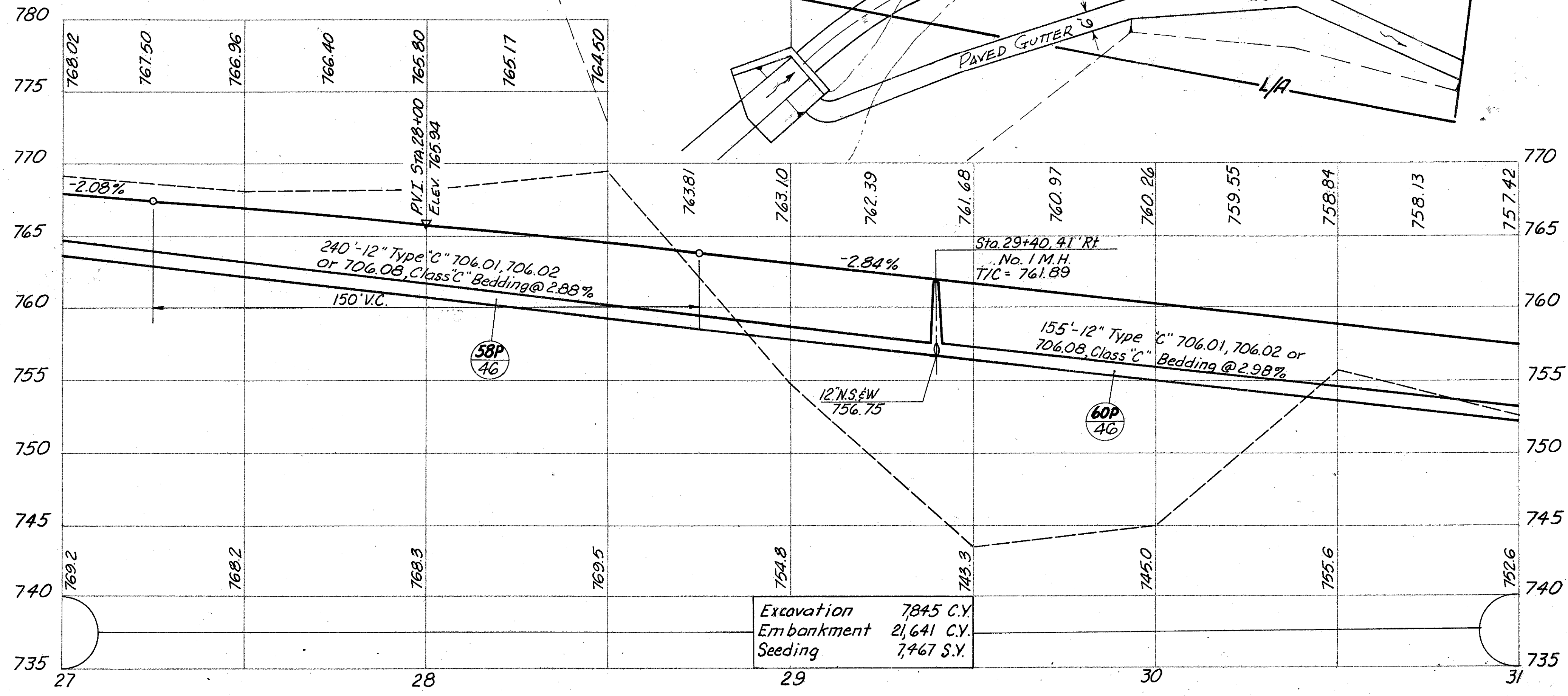
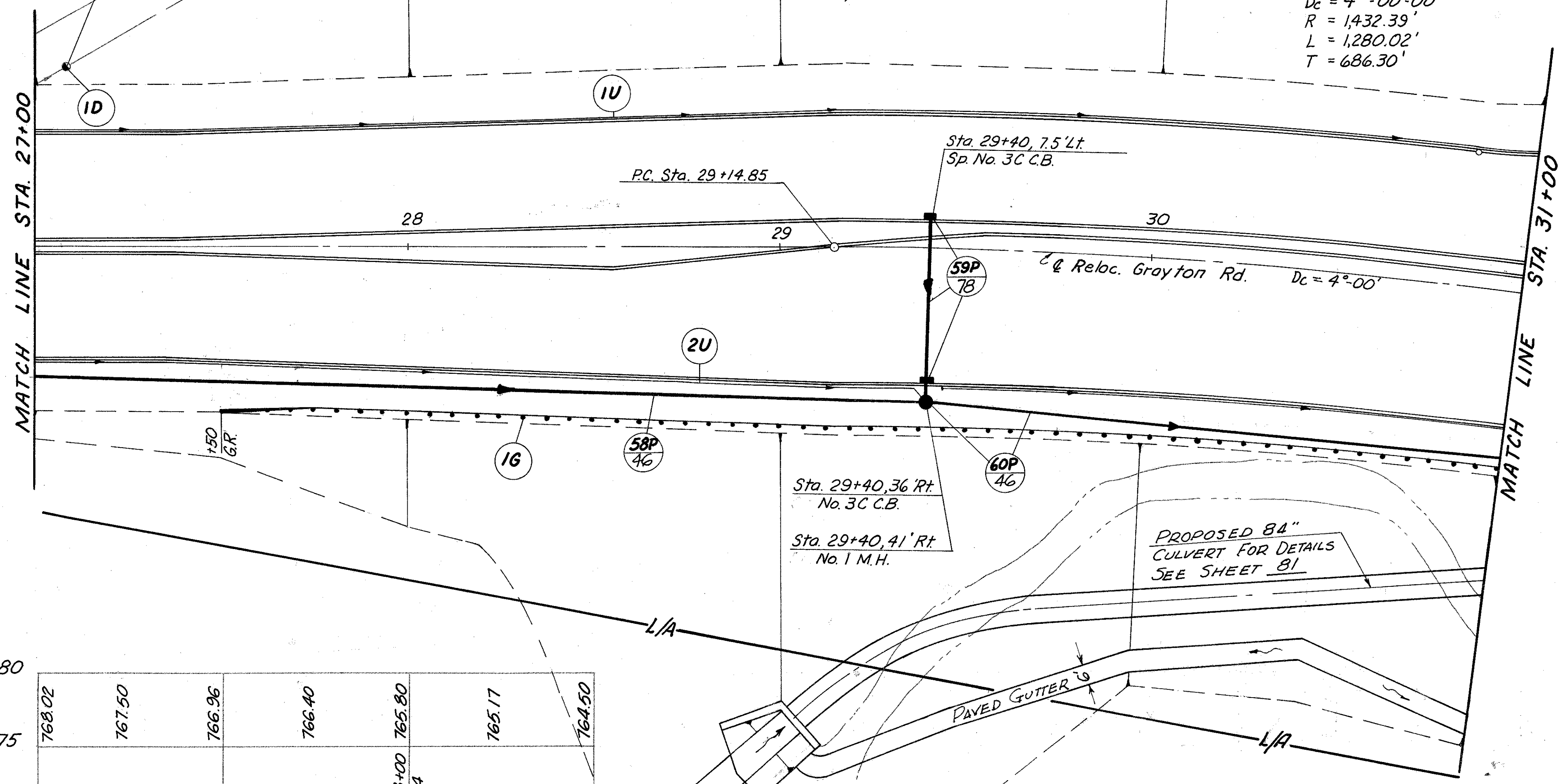
CROSS REFERENCE	
Sht. No.	Item
7B	STORM SEWER PROFILES
81	CULVERT DETAIL
157-159	CROSS SECTIONS
60	PAVEMENT DETAILS

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

CUYAHOGA COUNTY  
 CUY-480-678

ALC. BY B.B. DATE 11-75  
 HD. BY E.J.K. DATE 1-76

Size	Tree
18"	51
30"	13
48"	3



Excavation 7845 C.Y.  
 Embankment 21,641 C.Y.  
 Seeding 7,467 S.Y.

ROADWAY	Item	Quantity	Unit
606	Anchor Assembly Type A		
606	Guard Rail, Type 5	325	1
604	M.H. RECONSTRUCTED TO GRADE	1	1
605	Bends & Branches		
605	6" Underdrain 706.08 Perforated (As Per Plan)	400	383
604	No. 1 M.H.	1	1
604	No. 3C C.B.	2	2
603	Drainage		
603	Type 'C' Bedding		
603	2,000 D Load or 706.08 Enc.		
603	Type 'C' 706.01, 706.02 or 706.08		
603	Type 'F'	10	10
	Estimated Quantities		
	Total		

End. U.D. Sta. 469+34

End. U.D. Sta. 479+34

CROSS REFERENCE	
Sht. No.	Item
78	STORM SEWER PROFILE
35	RAMP G-2 P&P
36	RAMP G-3 P&P
81	CULVERT DETAIL
159, 162	CROSS SECTIONS
66	PAVEMENT DETAILS
91	JUNCTION CHAMBER DETAIL

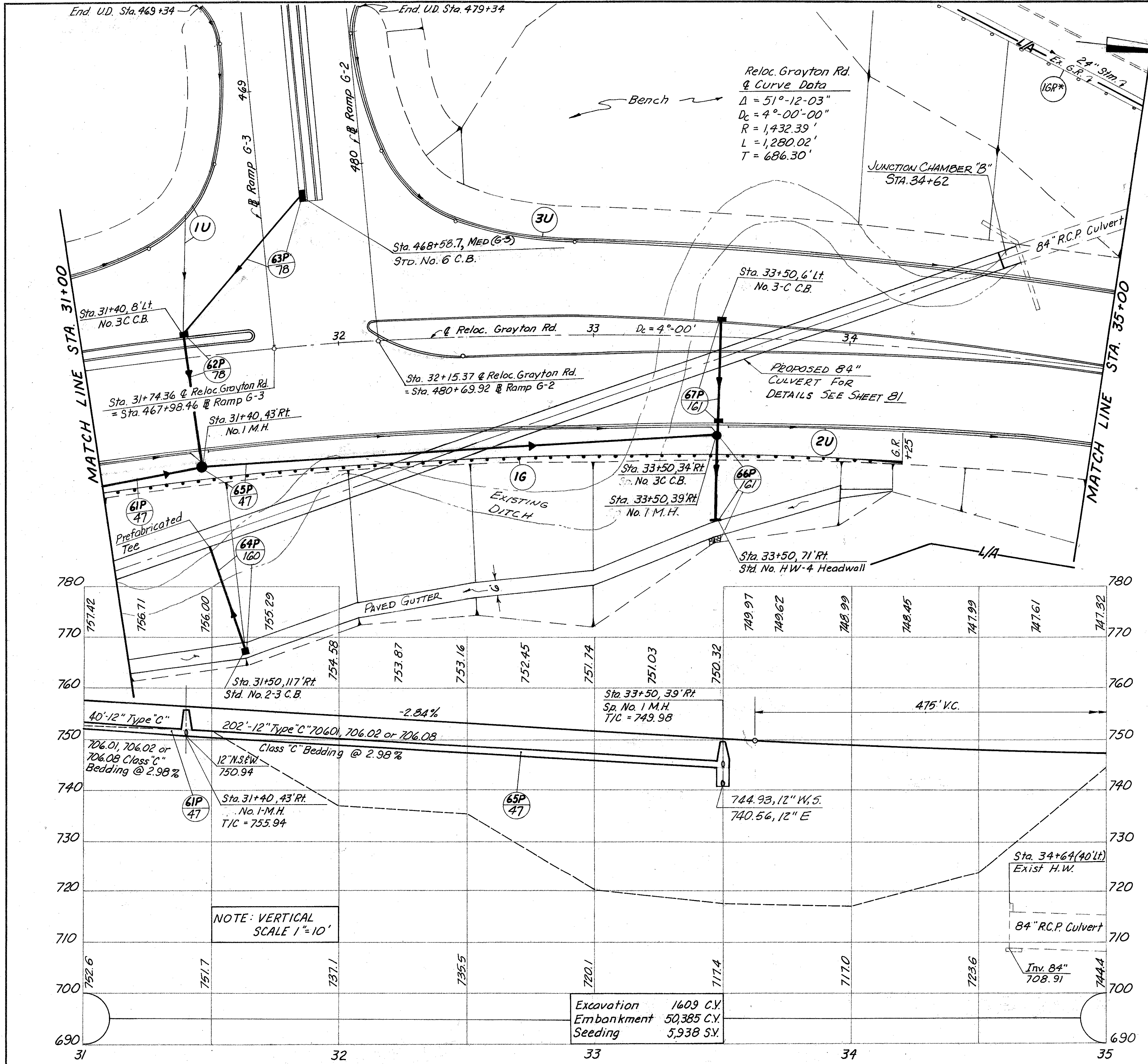
FED. RD. DIVISION	STATE	PROJECT	DATE
2	OHIO		11-75

CUYAHOGA COUNTY  
CUY-480-678

ALC. BY B.B. DATE 11-75  
DRD. BY E.J.K. DATE 1-76

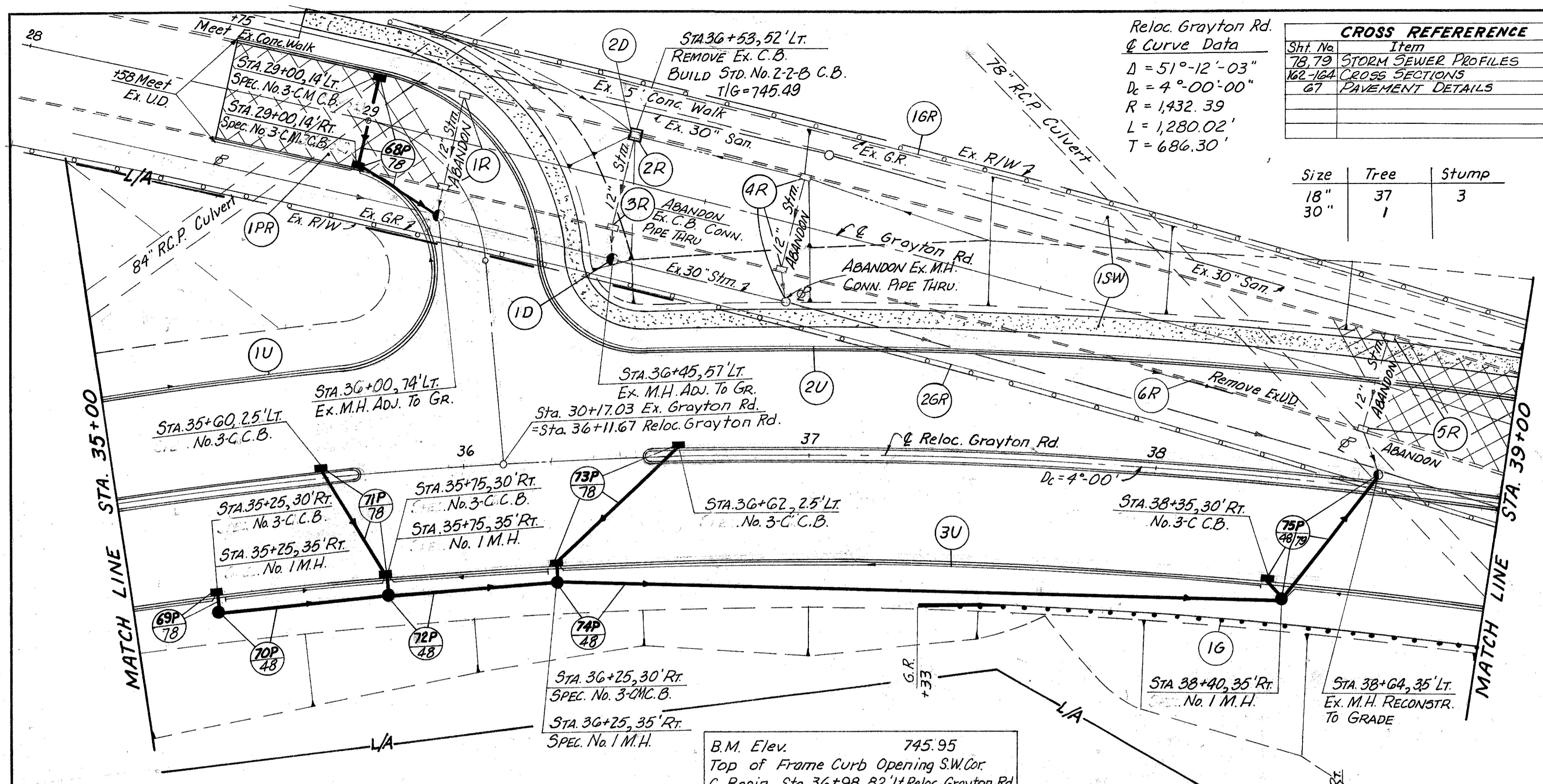
Size	Tree
18"	50
30"	5

Reloc. Grayton Rd.  
& Curve Data  
 $\Delta = 51^{\circ}-12'-03''$   
 $D_c = 4^{\circ}-00'-00''$   
 $R = 1,432.39'$   
 $L = 1,280.02'$   
 $T = 686.30'$



ROADWAY	Item	Unit	Quantity	Notes
606	Anchor Assembly Type A	Ea.		
	Guard Rail Type 5	L.F.	300	
	Guard Rail Removed	L.F.	132	
605	Bends & Branches	Ea.	1	
	6" Underdrain 706.08 Perforated (As Per Plan)	L.F.	362	
			362	
604	No. 6 C.B.	Ea.	1	
	No. 2-3 C.B.	Ea.	1	
	No. 3 C.C.B.	Ea.	2	
	No. 1 M.H.	Ea.	2	
603	Bends & Branches	Ea.	1	
	Type C 706.01 (3), 706.02, 706.08 E.S.	L.F.	32	
	Type C 706.02 2,500 D Load	L.F.	43	
	Type C 706.01 706.02 or 706.08	L.F.	202	
	Type C 706.02 2,000 D Load or 706.08 Enc.	L.F.	52	
	Type C 706.02 3,000 D Load or 706.08 Enc.	L.F.	72	
602	Class "C" Bedding	L.F.	41	
	Type "F"	L.F.	20	
601	Concrete Masonry	C.Y.	1.19	
602	ROCK CHANNEL PROTECTION TYPE B	C.Y.	1.19	
Estimated Quantities				Total

\* Remove Exist Guard Rail From Sta. 26+68 to Sta. 28+00 Ex. Grayton Rd.



Reloc. Grayton Rd.  
Curve Data

$\Delta = 51^\circ - 12' - 03''$   
 $D_c = 4^\circ - 00' - 00''$   
 $R = 1,432.39$   
 $L = 1,280.02'$   
 $T = 686.30'$

Sht. No.	Item
78, 79	STORM SEWER PROFILES
162-164	CROSS SECTIONS
67	PAVEMENT DETAILS

Size	Tree	Stump
18"	37	3
30"	1	

PK. Nail in  
CEI Pole #628-732  
P.O.C. Sta. 37+00.00  
Tacked Hub

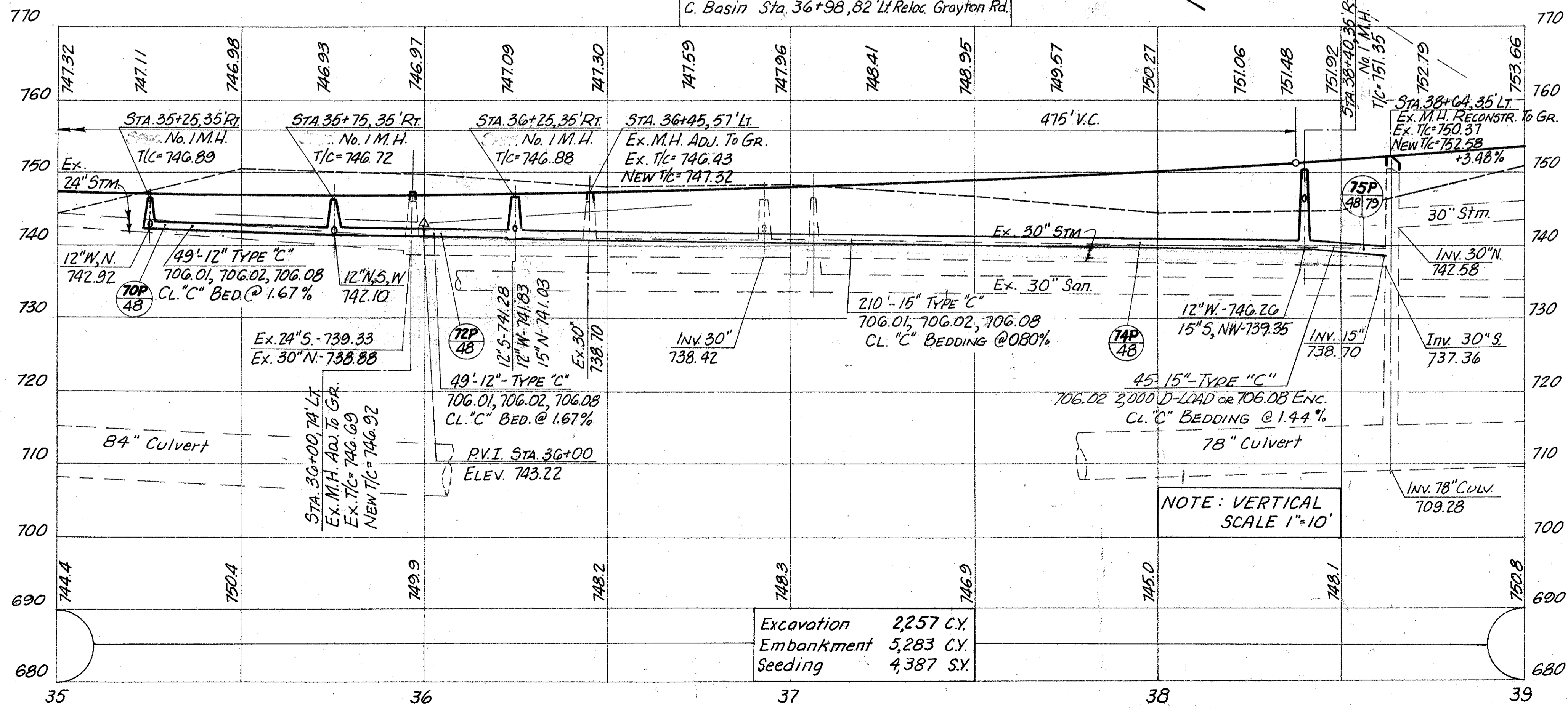
FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

CUYAHOGA COUNTY  
CUY-480-678

PK. Nail in 18" Oak  
PK. Nail in 24" Oak

CALL BY B.B. DATE 11-75  
CHD BY E.J.K. DATE 1-76

48  
317



Excavation	2,257 C.Y.
Embankment	5,283 C.Y.
Seeding	4,387 S.Y.

ROADWAY	STATION	DESCRIPTION	UNIT	QUANTITY
ROADWAY 202	606	Sidewalk Removed	S.F.	1820
	606	Guard Rail Removed	L.F.	338
	606	Pavement Removed	S.Y.	440
	606	Anchor Assembly Type A	Ea.	142
	606	Guard Rail Type 5	L.F.	1945
ROADWAY 604	608	4 1/2" Concrete Walk As Per Plan	S.F.	1945
	605	Bends & Branches	Ea.	2
	605	6" Underdrain 706.08 Per Forated (As Per Plan) No. 3-C.C.B.	L.F.	174
	605	Std. No. 2-2B C.B.	Ea.	304
	605	M.H. Reconstructed To Grade	Ea.	328
ROADWAY 603	604	M.H. Adjusted To Grade No. 1 M.H.	Ea.	2
	604	No. 3-C.C.B.	Ea.	4
	603	Type C 706.01, 706.02 or 706.08	L.F.	210
	603	2,000 D Load or 706.08 Enc.	L.F.	7
	603	Type F	L.F.	45
DRAINAGE 202	603	Manhole Abandoned	Ea.	2
	603	Catch Basin Abandoned	Ea.	1
	603	Catch Basin Removed	Ea.	2
	603	Pipe Removed 24" & Under	L.F.	304
	603	Estimated Quantities	L.F.	384

RELOCATED GRAYTON RD. PLAN & PROFILE STA. 35+00 TO STA. 39+00



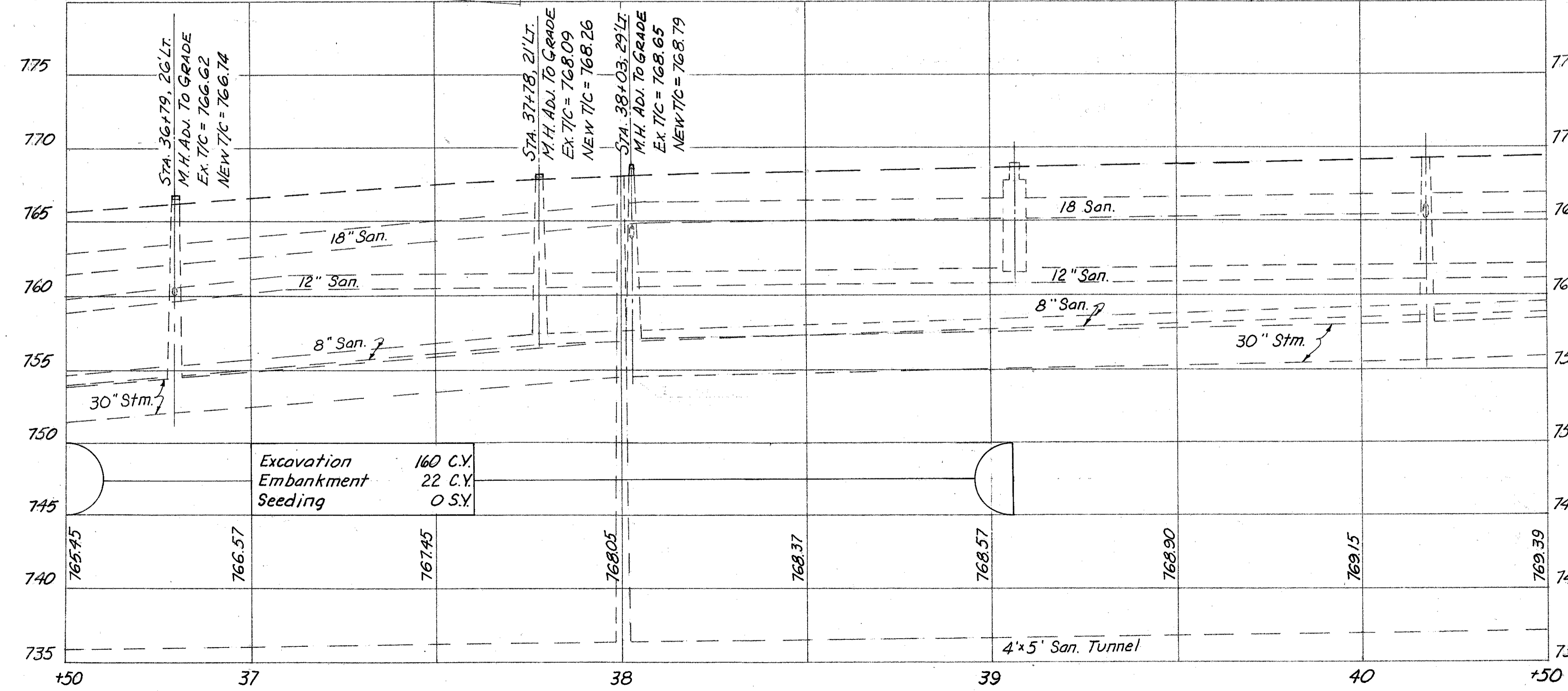
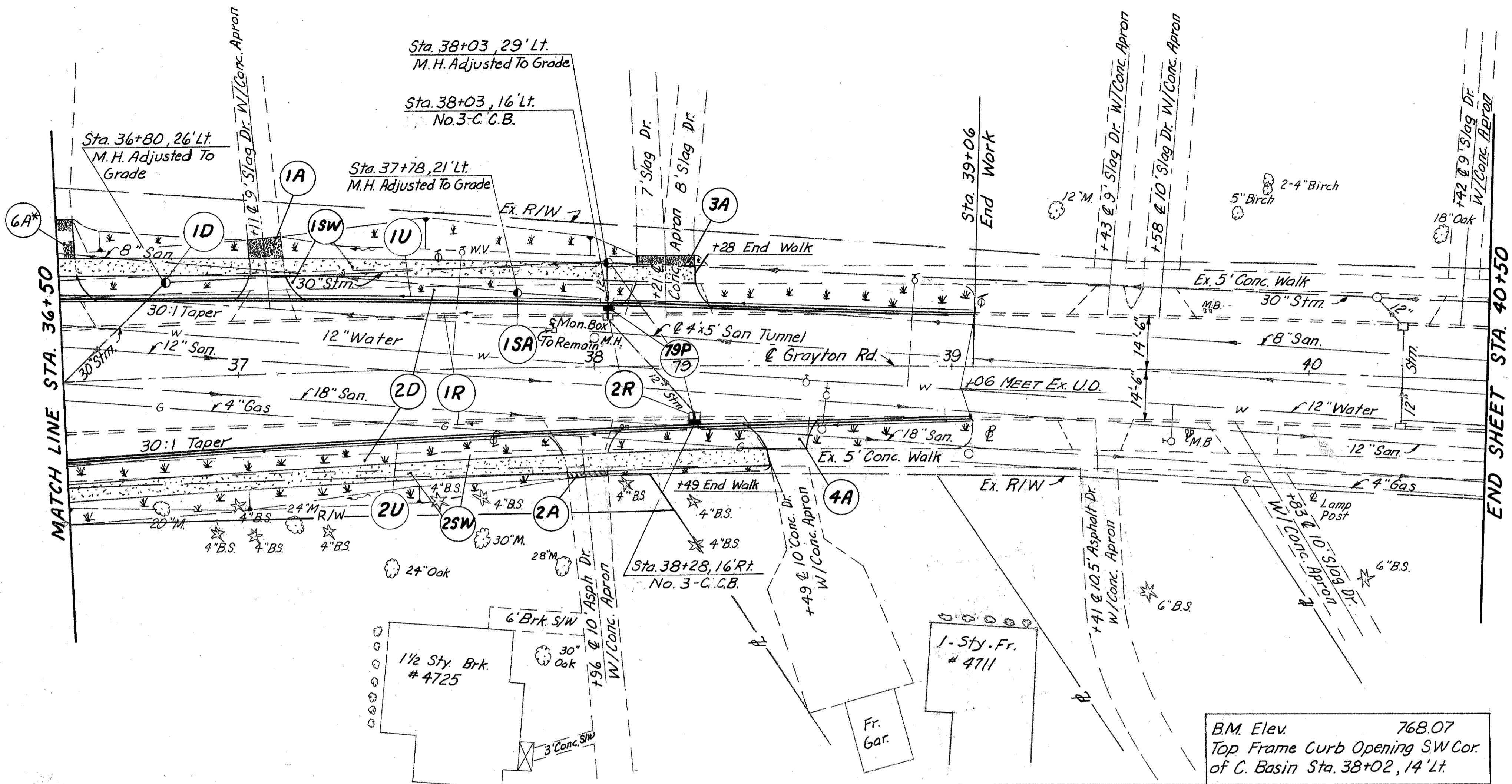


CROSS REFERENCE	
Sht. No.	Item
79	STORM SEWER PROFILES
163-166	CROSS SECTIONS
67	PAVEMENT DETAILS

FED. RD. DIVISION	STATE	PROJECT	DATE
2	OHIO		11-75

CUYAHOGA COUNTY  
 CUY-480-678 CALD. BY B.B. DATE 11-75  
 CADD BY E.J.K. DATE 1-76

50  
3/17



Item	Location	Quantity	Unit	Remarks
4 1/2" Concrete Walk	As Per Plan	452	S.F.	
6" Plain Portland Cement Pavt		452	S.Y.	
Asphaltic Concrete		304	C.Y.	
Aggregate Base		304	C.Y.	
Bends & Branches		605	Ea.	
6" Underdrain 706.08 Perforated (As Per Plan)		236	L.F.	
SODDING		236	S.Y.	
M.H. Adjusted To Grade No. 3C.C.B.		1	Ea.	
Type "C" 706.02 2,000 D-Load or 706.08 Enc. CL.C. BEDDING		10	L.F.	
Type "F"		10	L.F.	
Sidewalk Removed		890	S.F.	
Catch Basin Removed		995	Ea.	
Pipe Removed 24" & Under		500	L.F.	
<b>Total</b>		<b>1885</b>		

\* For Quantity See Sheet No. 49

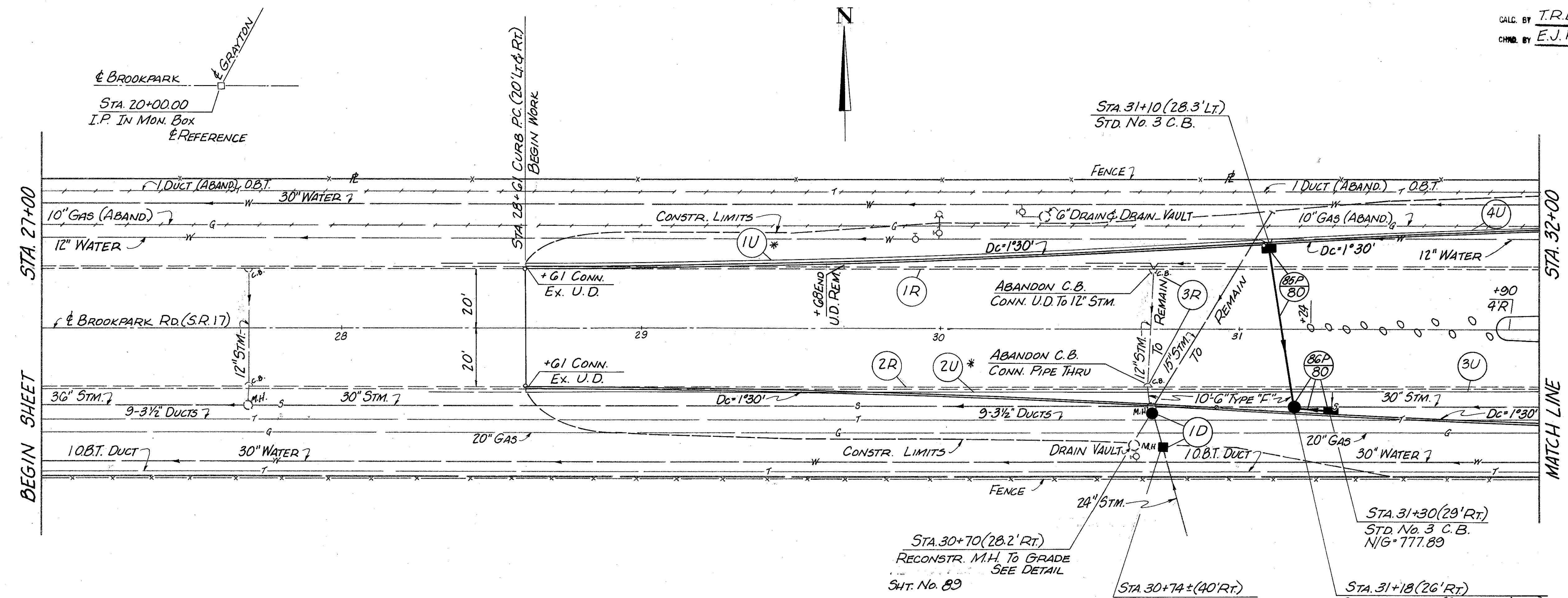
CALC. BY T.R.B. DATE 12/75  
 CHNG. BY E.J.K. DATE 6/76

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

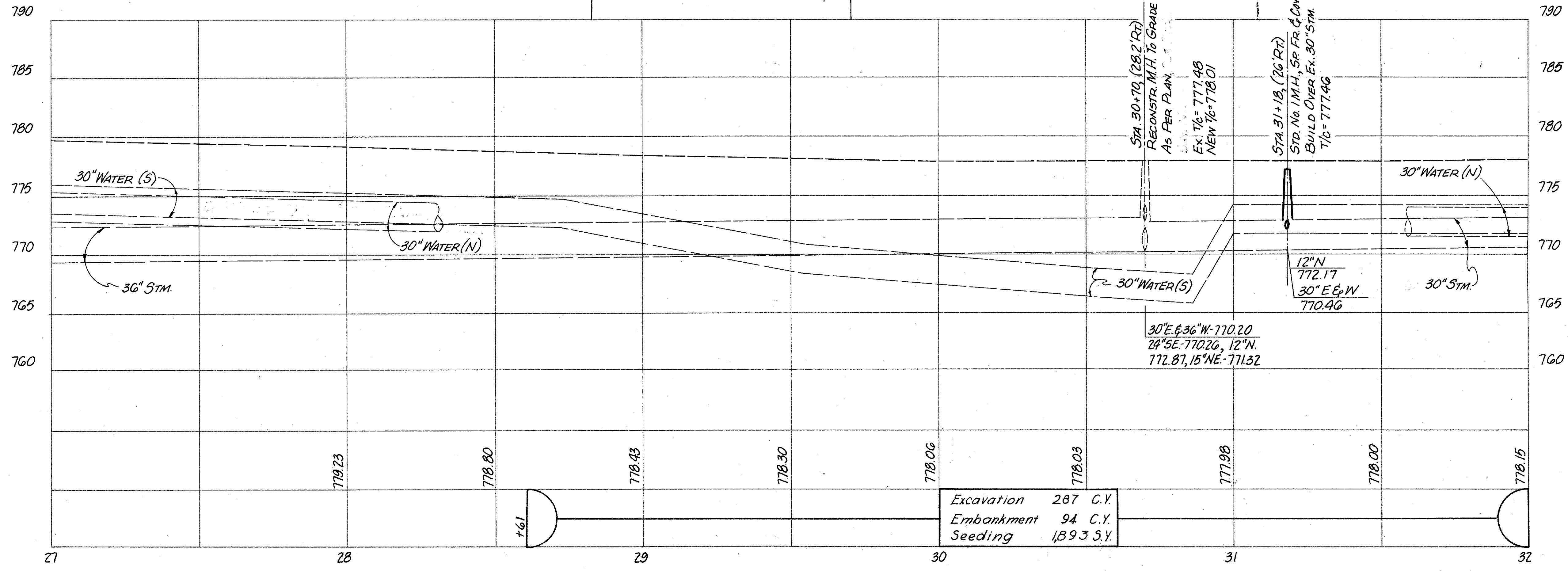
51  
3/7

CUYAHOGA COUNTY  
 CUY-480-678

SHT. No.	ITEM
80	SEWER PROFILES
88	PAVEMENT DETAILS
170, 171	CROSS SECTIONS



B.M. ELEV. 779.23  
 WEST EDGE OF INLET, STA 21+75±  
 (20' LT.) & BROOKPARK RD.



ESTIMATED QUANTITIES	LOC. NO.	LOCATION	EST. QUANTITIES	TOTAL	
605	G05	6" UNDERDRAIN SHALLOW UNCLASSIFIED			
		6" UNDERDRAIN UNCLASSIFIED			
604	G04	STD. No 2-2B INLET			
		STD. No 3 C.B.			
603	G03	STD. No 1 M.H. W/ SPEC. FR. & COV.			
		M.H. RECONSTR. TO GR.			
202	G02	CATCH BASIN ABANDONED			
		PIPE REMOVED 24" & UNDER			
ESTIMATED QUANTITIES	%	1R LT. 28+G1 TO 29+G8	107		
		2R RT. 28+G1 TO 31+30	339		
		3R LT/RT. 30+G8 TO 30+70	10		
		1D RT. 30+70 TO 30+74	10		
		1U LT. 28+G1 TO 31+10	20		
		2U RT. 28+G1 TO 31+30	10		
		3U RT. 31+30 TO 32+00	10		
		4U LT. 31+10 TO 32+00	50		
		TOTAL	446	2	
					140
					60
					80

\* UNDERDRAIN DEPTH VARIES TO PROVIDE FLOW FROM CONNECTION OF EXISTING UNDERDRAIN TO OUTLET.







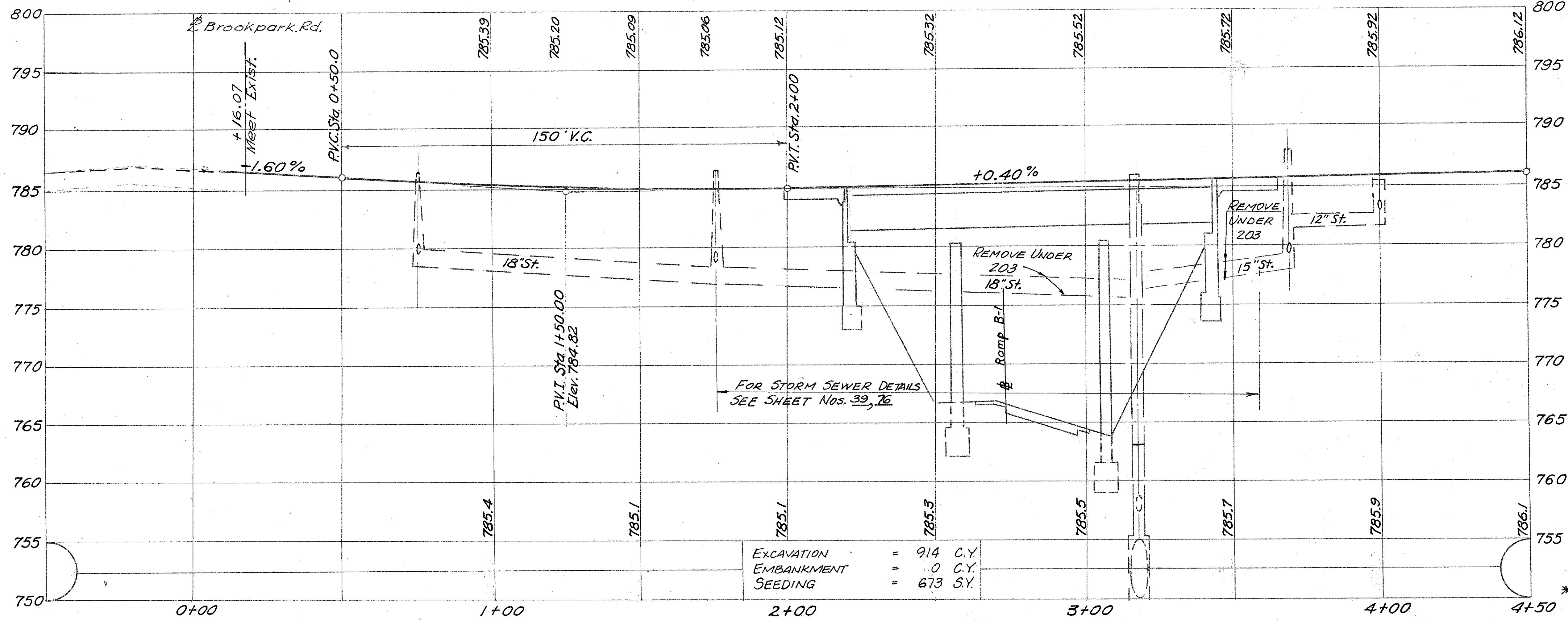
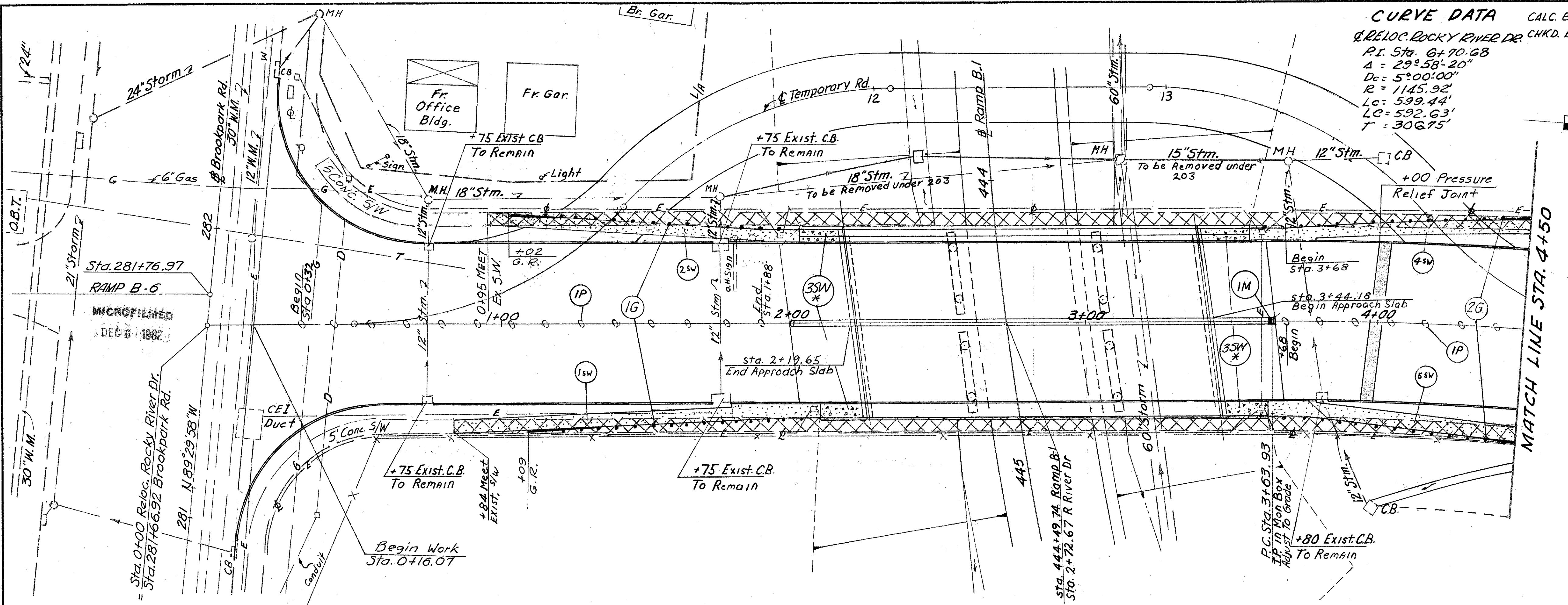
**CURVE DATA** CALC. BY T.R.B. DATE 12-75  
 & RELOC. ROCKY RIVER DR. CHKD. BY E.J.K. DATE 1-76  
 P.I. Sta. 6+70.68  
 $\Delta = 29^{\circ}58'20''$   
 $D_c = 5^{\circ}00'00''$   
 $R = 1145.92'$   
 $LC = 599.44'$   
 $LO = 592.63'$   
 $T = 306.75'$

FED. RD. DIVISION	STATE	PROJECT	55
2	OHIO		317

CUYAHOGA COUNTY  
 CUY-480-678

SHT. NO.	ITEM
39	Ramp B-1
58	Temporary Rd.
29B	STRUCTURE
177, 178	Cross-sections
69	Intersection Detail
76	STORM SEWER PROFILES

**PROPOSED STRUCTURE**  
 TYPE: Continuous steel beam with reinforced concrete deck and reinforced concrete substructure  
 SPANS: 35'-0", 50'-0", 35'-0" % Bearings  
 ROADWAY: 54'-0" ft curbs, with 5'-0" sidewalks, bridge sidewalk railing and 2'-0" raised median  
 LOADING: CF-2000 (1957)  
 WEARING SURFACE: 2 1/2" Asphaltic Concrete  
 SKEW: 7° 03' 41" Rt. forward  
 ALIGNMENT: Tangent  
 APPROACH SLABS: AS-1-72 (20'-0" long)  
 SUPERELEVATION: Variable



Ref. Side	Location	Quantity
15V	RT 0+84 to 2+09	625
25M	LT 0+95 to 2+02	535
35W	LT 2+02 to 3+62	480
45M	LT 3+56 to 4+50	425
55W	RT 3+62 to 4+50	425
IP	± 0+32 to 4+50	35
IM	± 3+63.93	1
IG	LT 1+02 ± 2+09	2
2G	LT 3+56 ± 4+62.5	2
<b>Total</b>		<b>3600.35</b>

EXCAVATION = 914 C.Y.  
 EMBANKMENT = 0 C.Y.  
 SEEDING = 673 S.Y.

\* See Detail Sheet No. 301  
 For Concrete Median Detail, See Sheet No. 300  
 For Fence Removal See Sheet No. 317

**CURVE DATA**

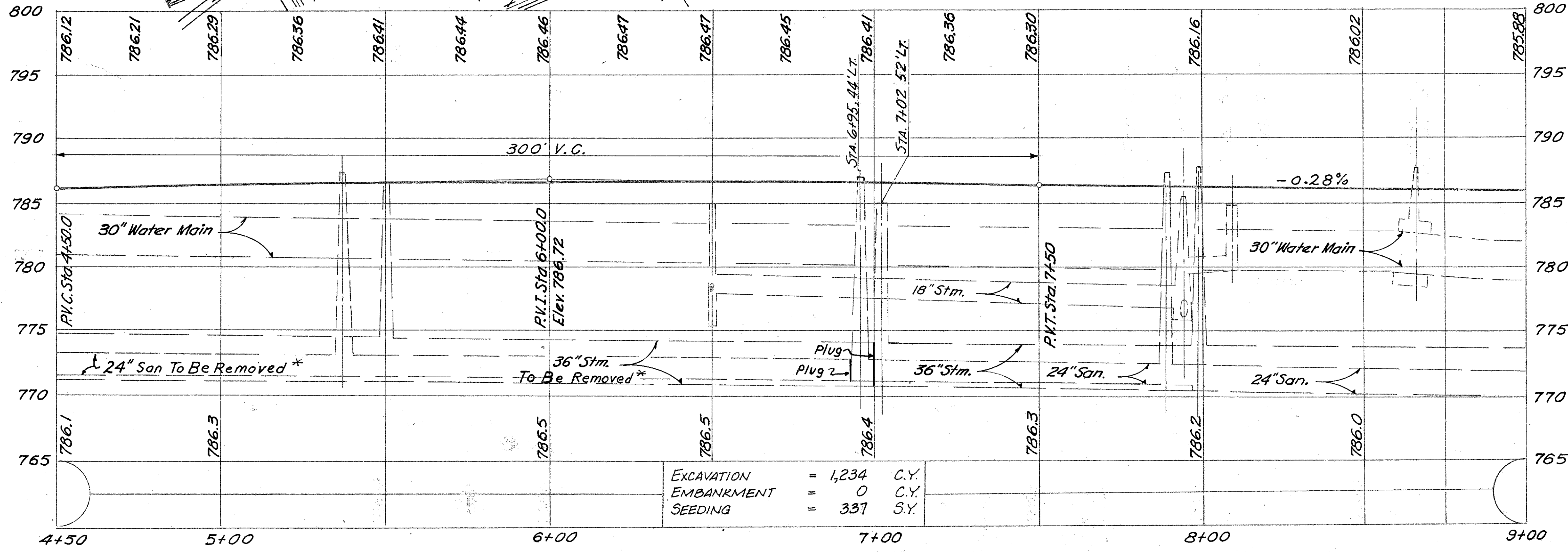
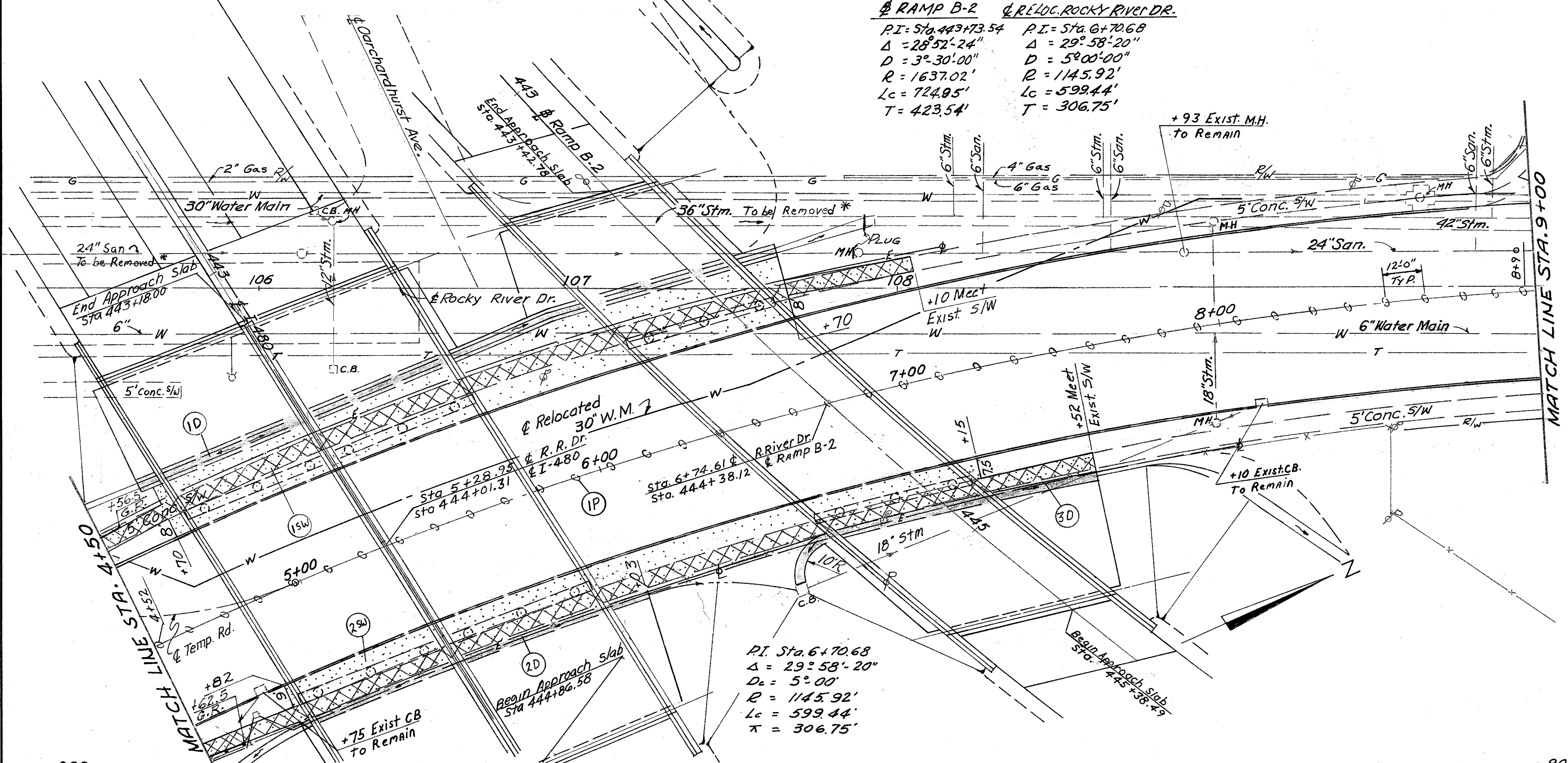
**RAMP B-2 @ RELOC. ROCKY RIVER DR.**  
 P.I. = Sta. 443+73.54 P.I. = Sta. 6+70.68  
 $\Delta = 28^{\circ}52'24''$   $\Delta = 29^{\circ}58'20''$   
 $D = 3^{\circ}30'00''$   $D = 5^{\circ}00'00''$   
 $R = 1637.02'$   $R = 1145.92'$   
 $L_c = 724.95'$   $L_c = 599.44'$   
 $T = 423.54'$   $T = 306.75'$

CROSS REFERENCE	
SHT NO	ITEM
30	L-480 P&P
40	RAMP B-2 P&P
209.210	Relocated 30" Water Main
58	Temporary Rd. P&P

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

**CUYAHOGA COUNTY**  
**CUY-480-678**

CALC. BY T.R.B. DATE 12-75  
 CHWD BY E.J.K. DATE 1-76



EXCAVATION = 1,234 C.Y.  
 EMBANKMENT = 0 C.Y.  
 SEEDING = 337 S.Y.

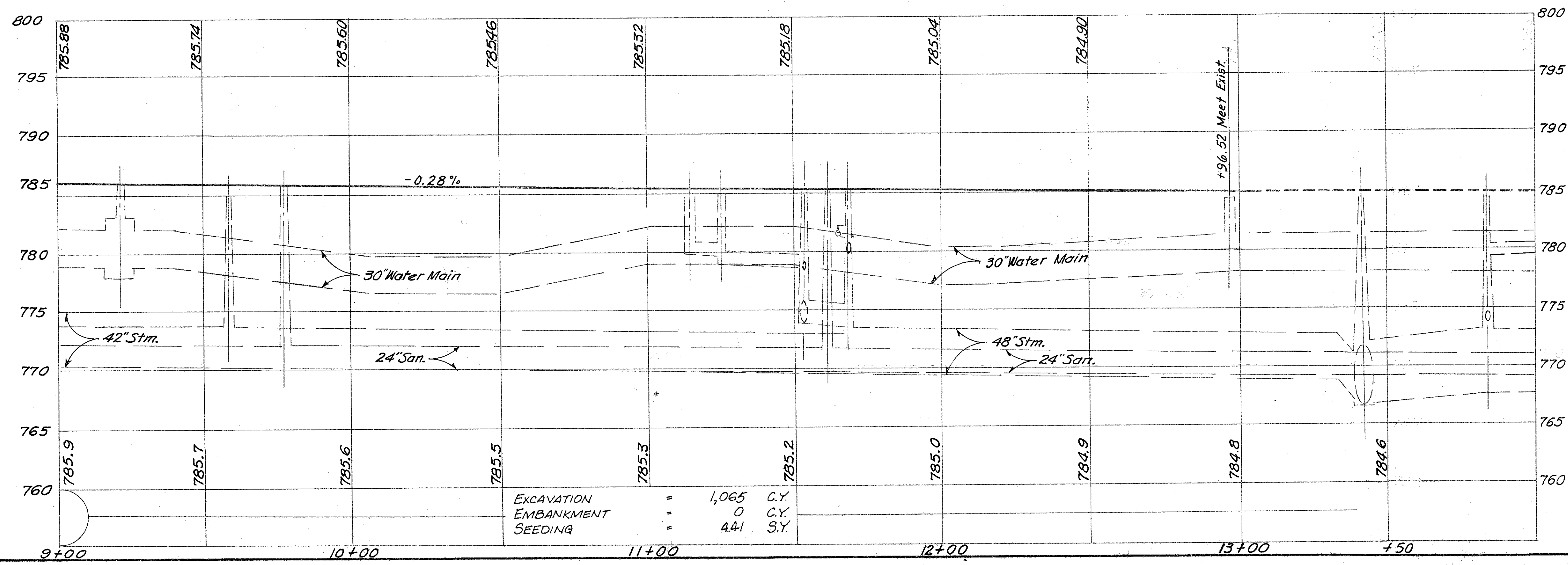
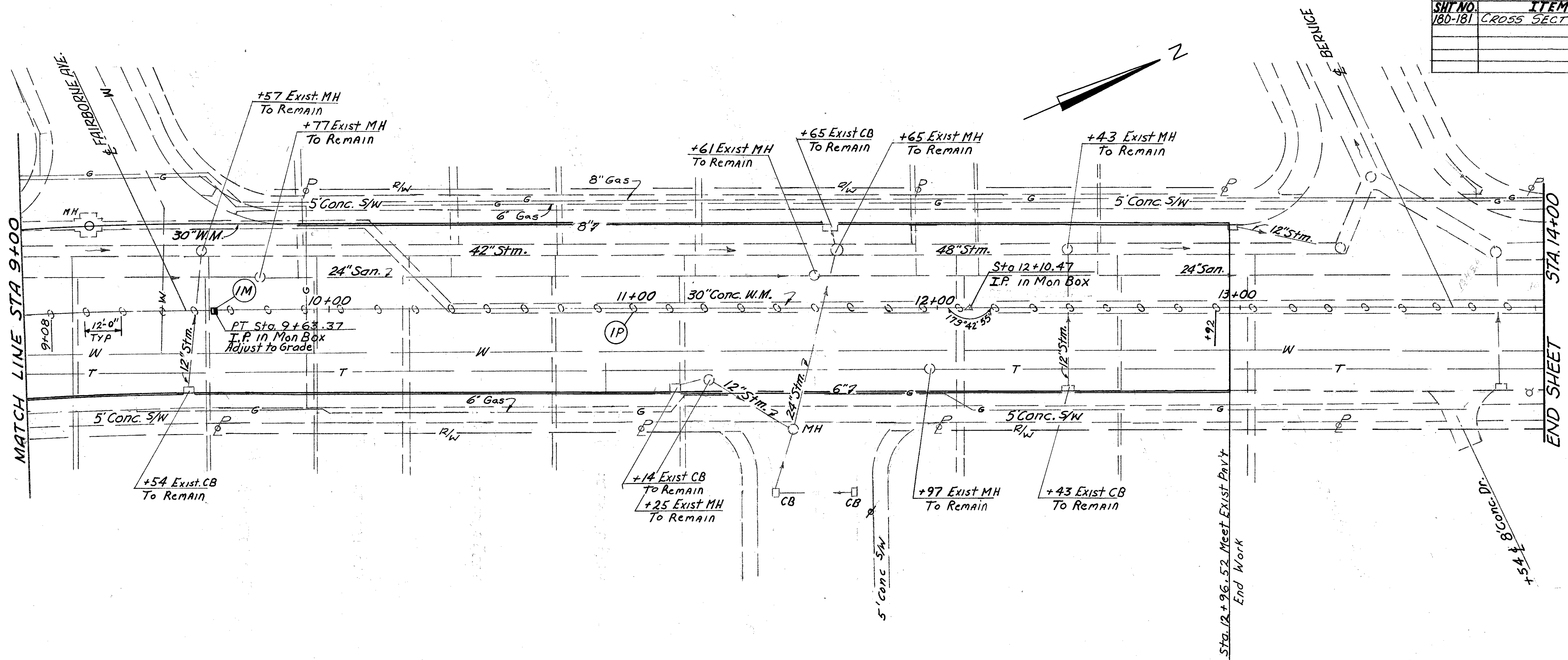
ESTIMATED QUANTITIES	QTY	UNIT	EST. QTY	UNIT	EST. QTY	UNIT	TOTAL	UNIT
Traffic Dividers	613	Eq.					39	Eq.
4" Concrete Walk	608	SF	4285		3397		12201214	SF
Paved Gutter Type I-2	601	LF				214		LF
Paved Gutter Type 2	202	LF			116		104	LF
Precast Traffic Dividers Removed	202	Eq.					39	Eq.
Sidewalk Removed	202	SF	1300		1510		2810	SF
<b>Total</b>								

\* FOR REMOVAL ITEMS SEE I-480 PLAN & PROFILE SHEET No. 30



CROSS REFERENCE	
SHT NO.	ITEM
180-181	CROSS SECTIONS

FED. RD. DIVISION	STATE	PROJECT	57 317
2	OHIO		
CUYAHOGA COUNTY			
CUY-480-678			
DATE	BY	DATE	
12-75	T.R.B.	1-76	
DATE	BY	DATE	
1-76	E.J.K.		



EXCAVATION	"	1,065	C.Y.
EMBANKMENT	"	0	C.Y.
SEEDING	"	441	S.Y.

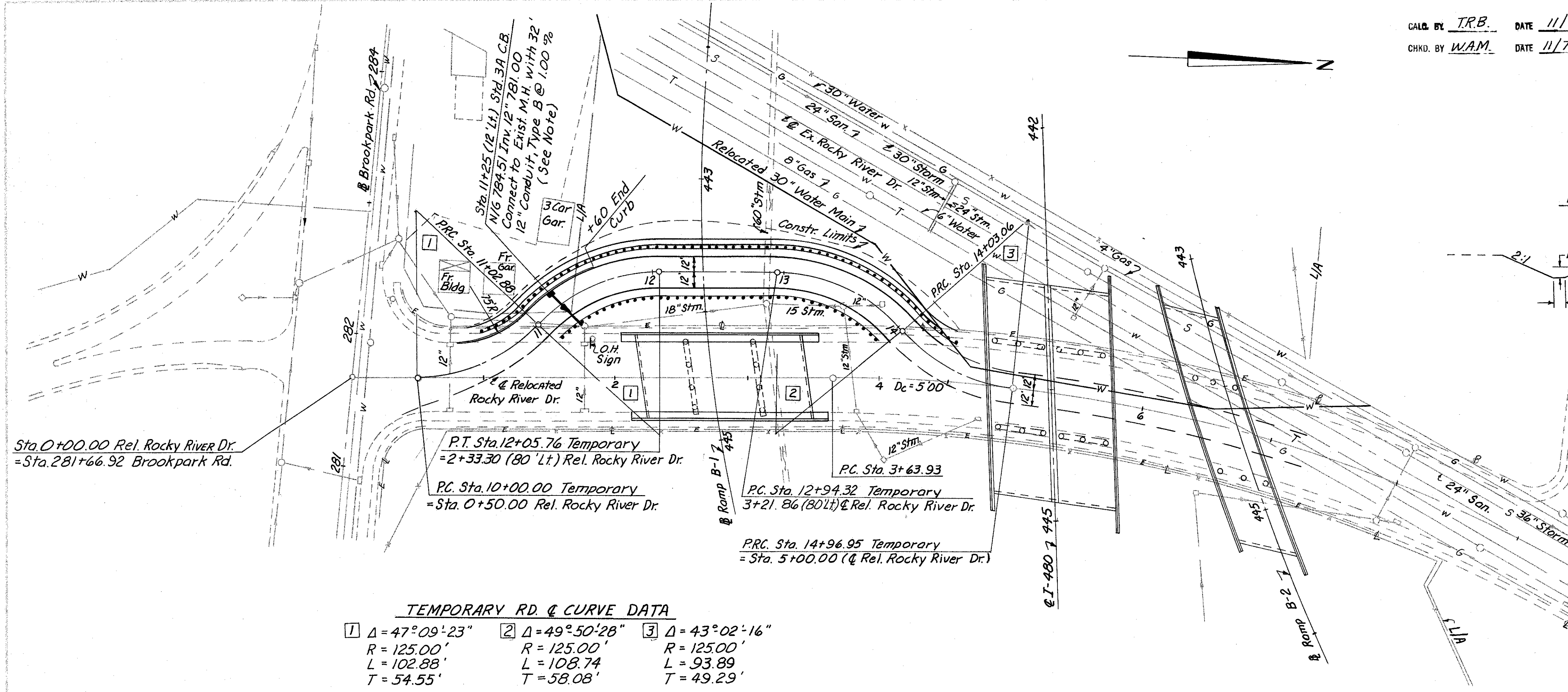
604	Traffic Dividers	Ea.	33		
	Monument Box Adjusted to Grade	Ea.	1		
202	Precast Traffic Dividers Removed	Ea.	33		
ESTIMATED QUANTITIES					
	Location				
	9+00 TO 12+92				
	12+92 TO 14+00				
	9+63.37				
TOTAL					33

CALC. BY TR.B. DATE 11/75  
 CHKD. BY W.A.M. DATE 11/75

CROSS REFERENCE	
Sht. No.	Item
211-225	Lighting Plans
236-259	Signing Plans
209-210	Relocated Water Main (30")

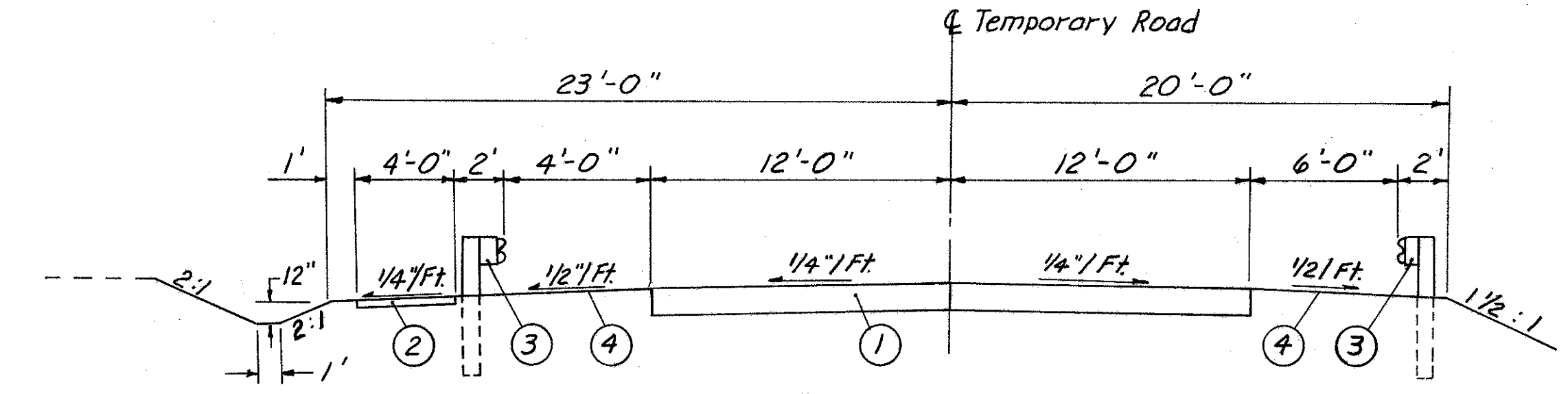
FED. NO.	STATE	PROJECT	TYPE
2	OHIO		

CUYAHOGA COUNTY  
 CUY-480-678



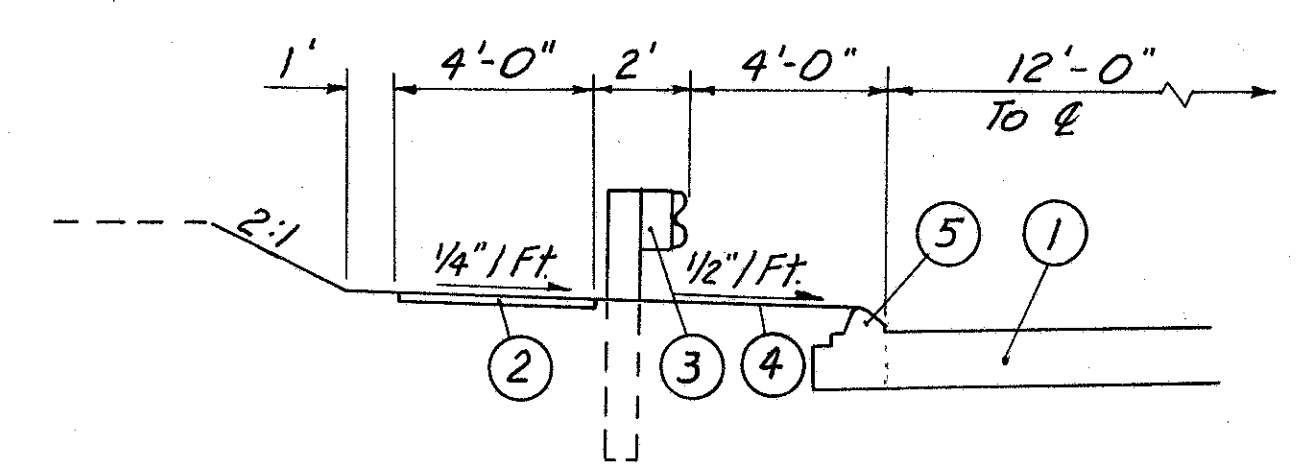
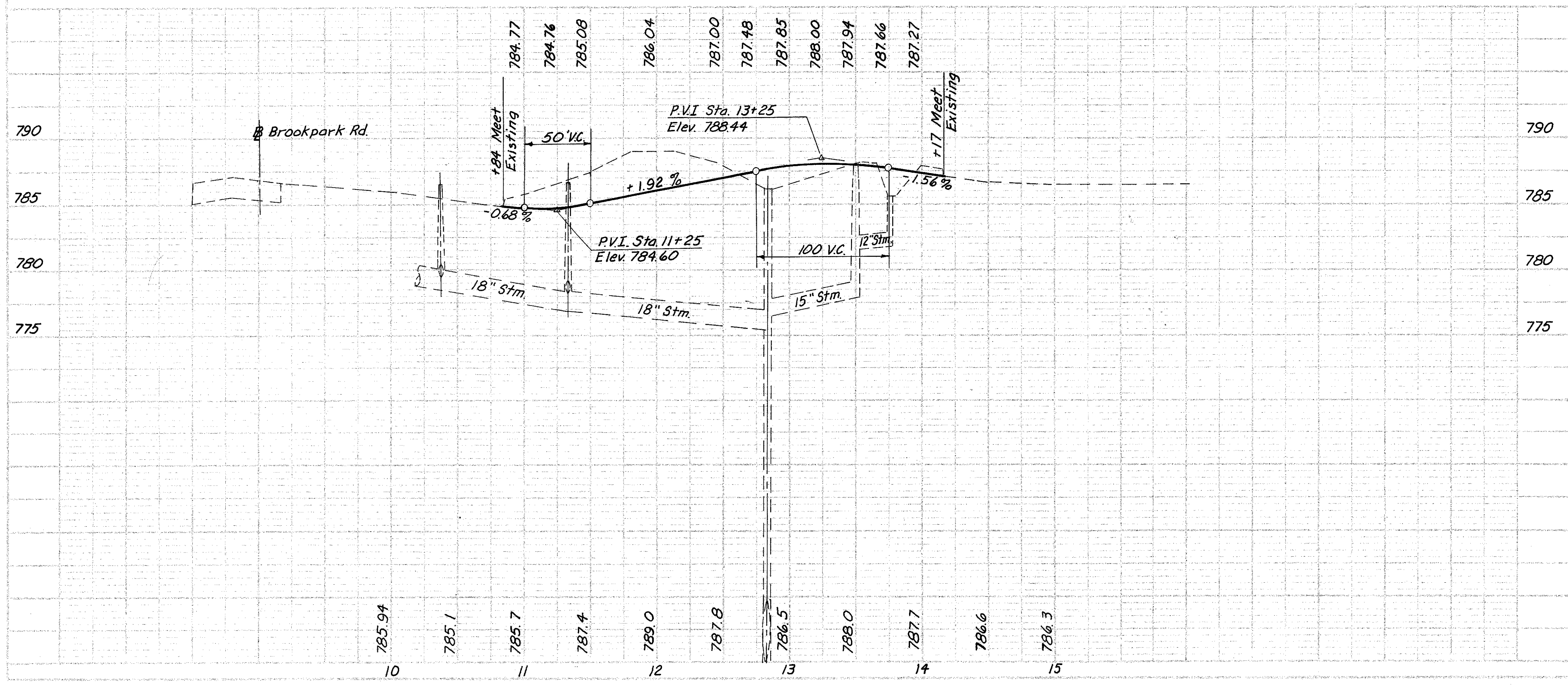
**TEMPORARY RD. & CURVE DATA**

Curve No.	Δ	R	L	T
1	47°09'23"	125.00'	102.88'	54.55'
2	49°50'28"	125.00'	108.74'	58.08'
3	43°02'16"	125.00'	93.89'	49.29'



- TYPICAL SECTION**  
 Temporary Road
- LEGEND**
- ① Item 615 Temporary Pavement, Class "A"
  - ② Item 608 Bituminous Walk (2")
  - ③ Item 606 Guard Rail, Type 5
  - ④ Item 207 Temporary Seeding & Mulching
  - ⑤ Item 609 Asphalt Concrete Curb

Note: Items ② ③ ④ ⑤ and temporary drainage items to be included in the unit price bid for Item 615 Temporary Road.



**CURBED PAVEMENT DETAIL**  
 Sta. 0+75 ± @ Relocated Rocky River Dr. (Lt.)  
 To Sta. 11+60 Temporary (Lt.)

**ESTIMATED QUANTITIES**

Item	Description	Quantity
615	Temporary Pavement, Class A	888 S.Y.
615	Temporary Roads	Lump Sum

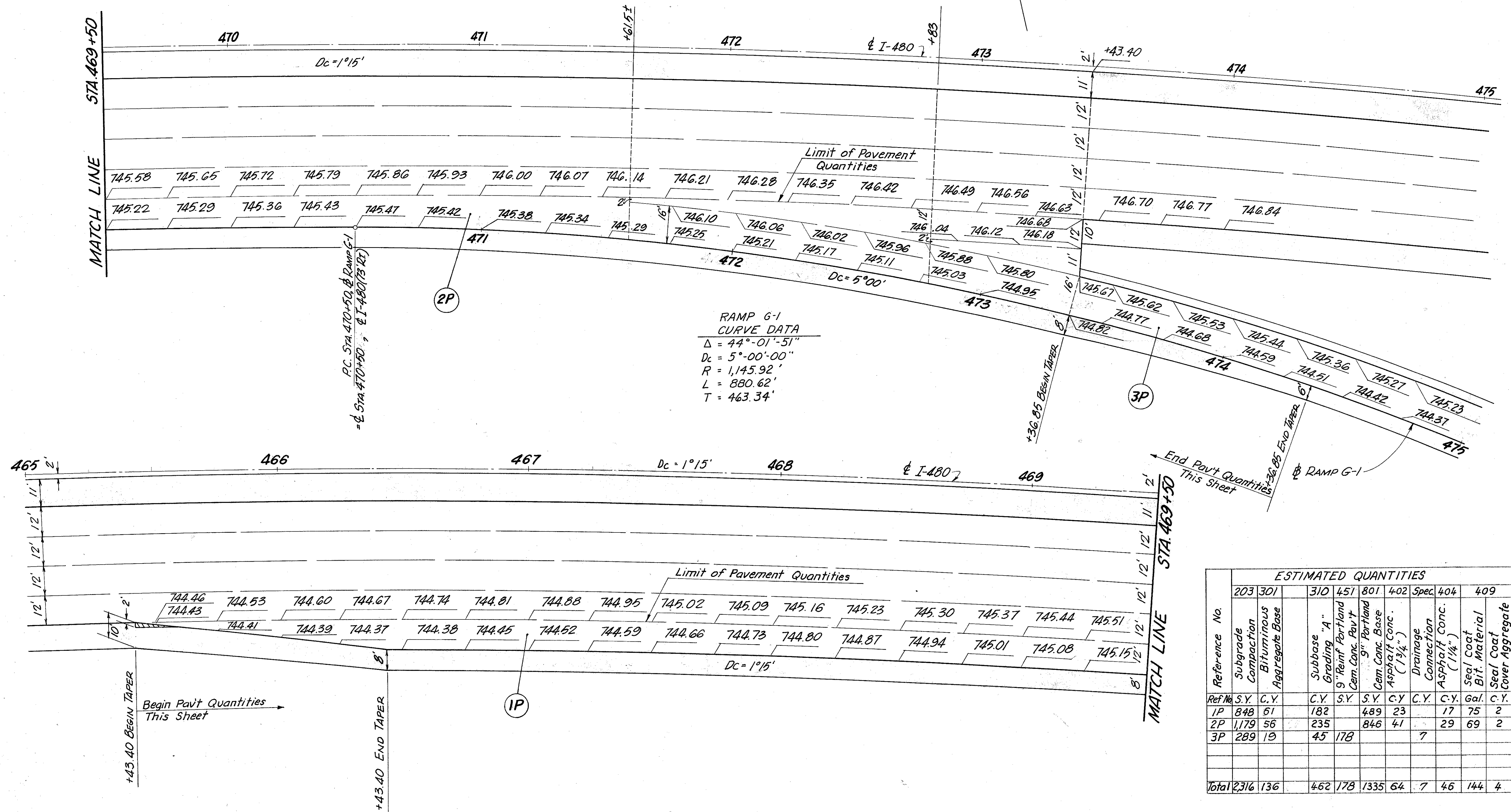
REVISIONS  
 COMPUTED BY: D.A.S.  
 CHECKED BY: D.F.  
 Rev. S.C. 2-22-78

CALC. BY: WAM DATE: 6/76  
 CHKD. BY: TRB DATE: 6/76

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

59  
317

CUYAHOGA COUNTY  
 CUY-480-6.78



CURVE DATA  
 RAMP G-2  
 $\Delta = 42^{\circ}02'08''$   
 $D_c = 8^{\circ}00'00''$   
 $R = 716.20$   
 $T = 275.18'$   
 $L = 525.44'$

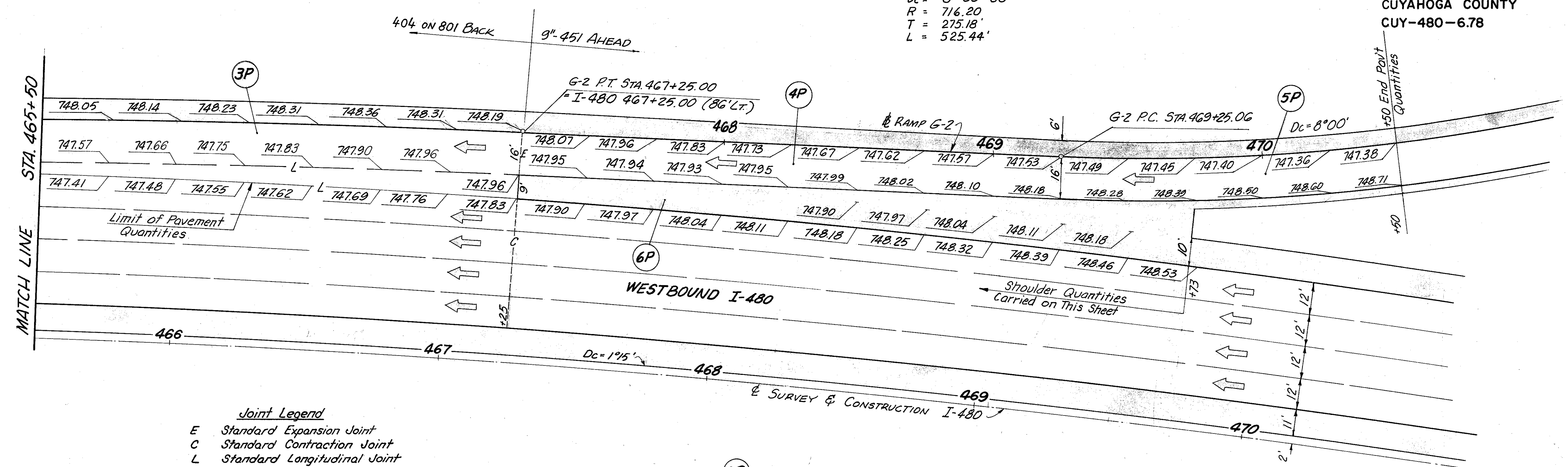
REVISIONS  
 COMPUTED BY: D.A.S.  
 CHECKED BY: D.F.  
 Rev. No. 2-22-78

CALC. BY: WAM DATE: 6/76  
 DRW. BY: TRB DATE: 6/76

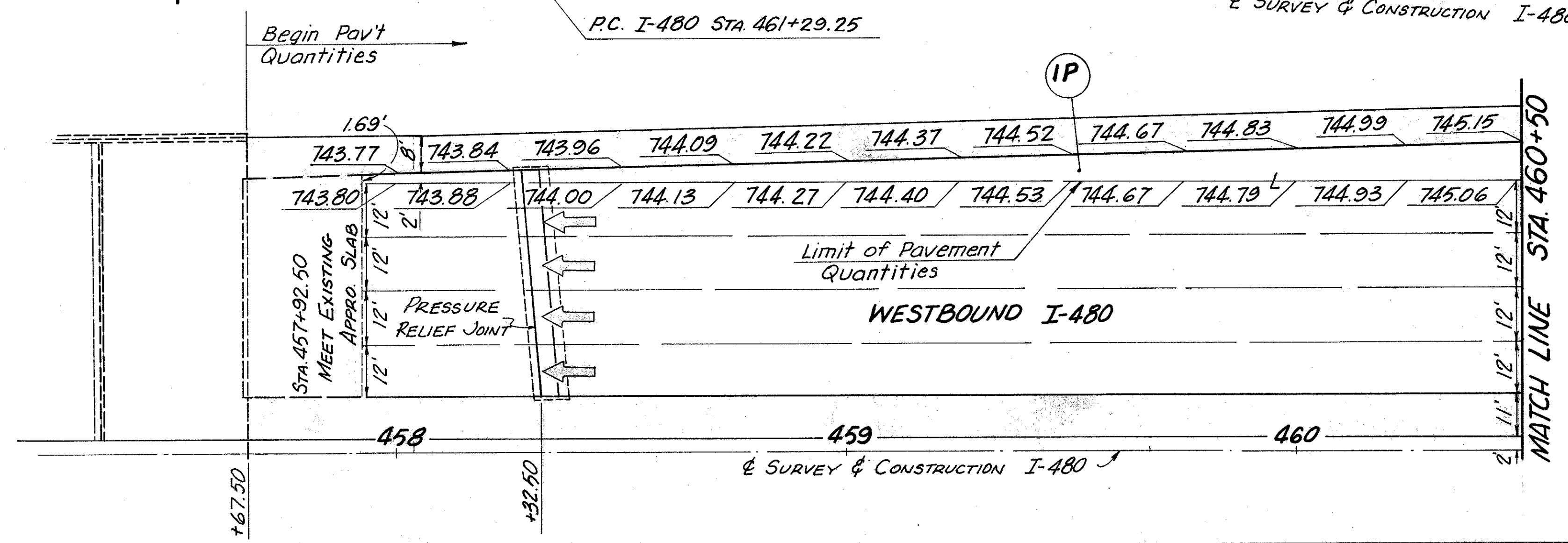
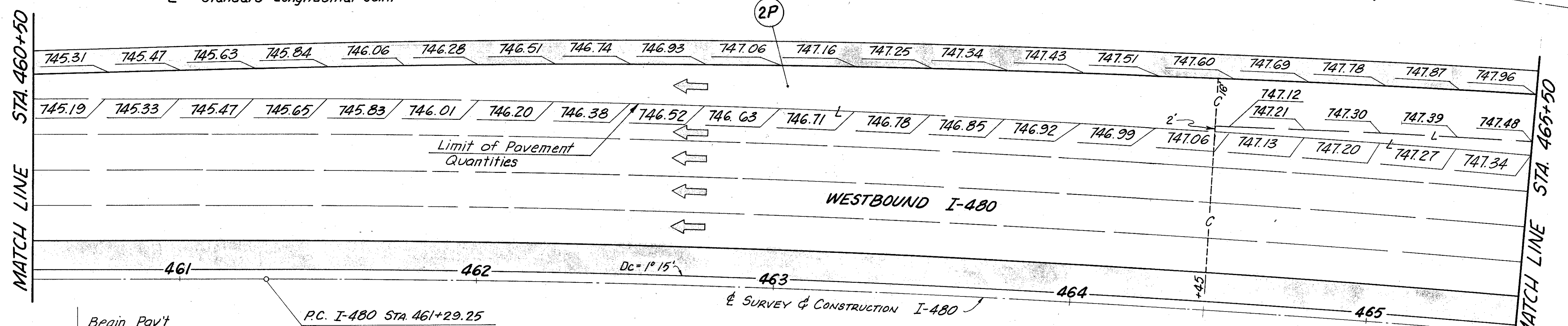
FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

60  
3/7

CUYAHOGA COUNTY  
 CUY-480-6.78



**Joint Legend**  
 E Standard Expansion Joint  
 C Standard Contraction Joint  
 L Standard Longitudinal Joint



Reference No.	203	301	310	451	Spec. Spec.	404	402	801	409	407						
	Subgrade	Compaction	Bituminous	Aggregate Base	Subbase	Grading 'A'	9" Reinf. Portland Cem. Conc. Pav't	Pressure Relief Joint Type 'A'	Drainage Connection	Asphalt Conc. (1 1/4")	Asphalt Conc. (3/4")	9" Portland Cem. Concrete Base	Seal Coat Bituminous Mat.	Seal Coat Cover Aggregate	Tack Coat	Cover Aggregate
Ref. No.	S.Y.	C.Y.	C.Y.	S.Y.	L.F.	C.Y.	C.Y.	S.Y.	Gal.	C.Y.	S.Y.	Gal.	C.Y.	Gal.	Ton	
1P	392	41	93		3	5	7	147					50	1	15	1
2P	1,243	73	257			28	39	813					89	2	81	3
3P	599	26	117			15	22	448					31	1	45	2
4P	539	22	77	333		14										
5P	358	18	53	222		9										
6P	364	69	121													
<b>Total</b>	<b>3,495</b>	<b>249</b>	<b>718</b>	<b>555</b>	<b>3</b>	<b>23</b>	<b>48</b>	<b>68</b>	<b>1,408</b>				<b>243</b>	<b>6</b>	<b>141</b>	<b>6</b>

**RAMP G-3 CURVE DATA**

$L_s = 200.00$        $\Delta = 11^\circ-04'-49''$   
 $\theta_s = 28^\circ-54'-40''$        $D_c = 4^\circ-00'-00''$   
 $L_T = 126.51'$        $R = 1432.39'$   
 $S.T. = 77.84'$        $L = 277.01'$   
                                   $T = 138.94'$

**ESTIMATED QUANTITIES**

Reference No.	203	301	310	451	801	Spec.	404	402	409	407					
	Subgrade	Compaction	Bituminous	Aggregate Base	Subbase	Grading "A"	9" Reinf. Portland Cem. Conc. Pavt.	9" Portland Cem. Conc. Base	Drainage Connection	Asphalt Conc. (1 1/4")	Asphalt Conc. (1 3/4")	Seal Coat Bit. Material	Seal Coat Cover Aggregate	Tack Coat	Cover Aggregate
Ref. No.	S.Y.	C.Y.	C.Y.	S.Y.	S.Y.	C.Y.	C.Y.	C.Y.	Gal.	C.Y.	Gal.	Ton	Gal.	Ton	
1P	631	40	105	396		15									
2P	1,133	55	226		809		28	39	67	2	81	3			
3P	881	63	189		509		17	24	77	2	51	2			
<b>Total</b>	<b>2,645</b>	<b>158</b>	<b>520</b>	<b>396</b>	<b>1318</b>	<b>15</b>	<b>45</b>	<b>63</b>	<b>144</b>	<b>4</b>	<b>132</b>	<b>5</b>			

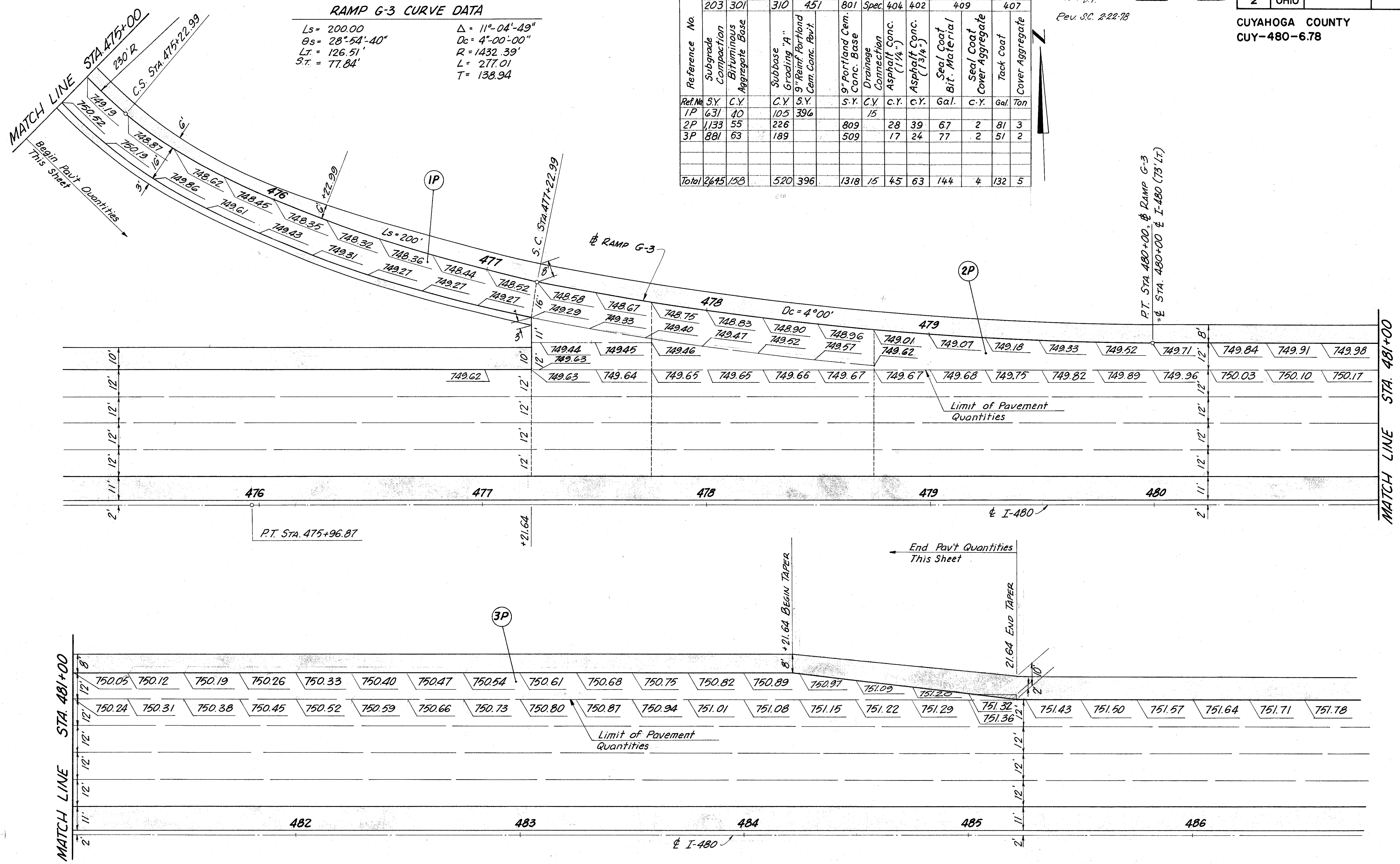
REVISIONS  
 CALC. BY **W.A.M.**      DATE **6/76**  
 COMPUTED BY: **P.A.S.**      CHKD. BY **T.R.B.**      DATE **6/76**  
 CHECKED BY: **D.F.**

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

CUYAHOGA COUNTY  
 CUY-480-6.78

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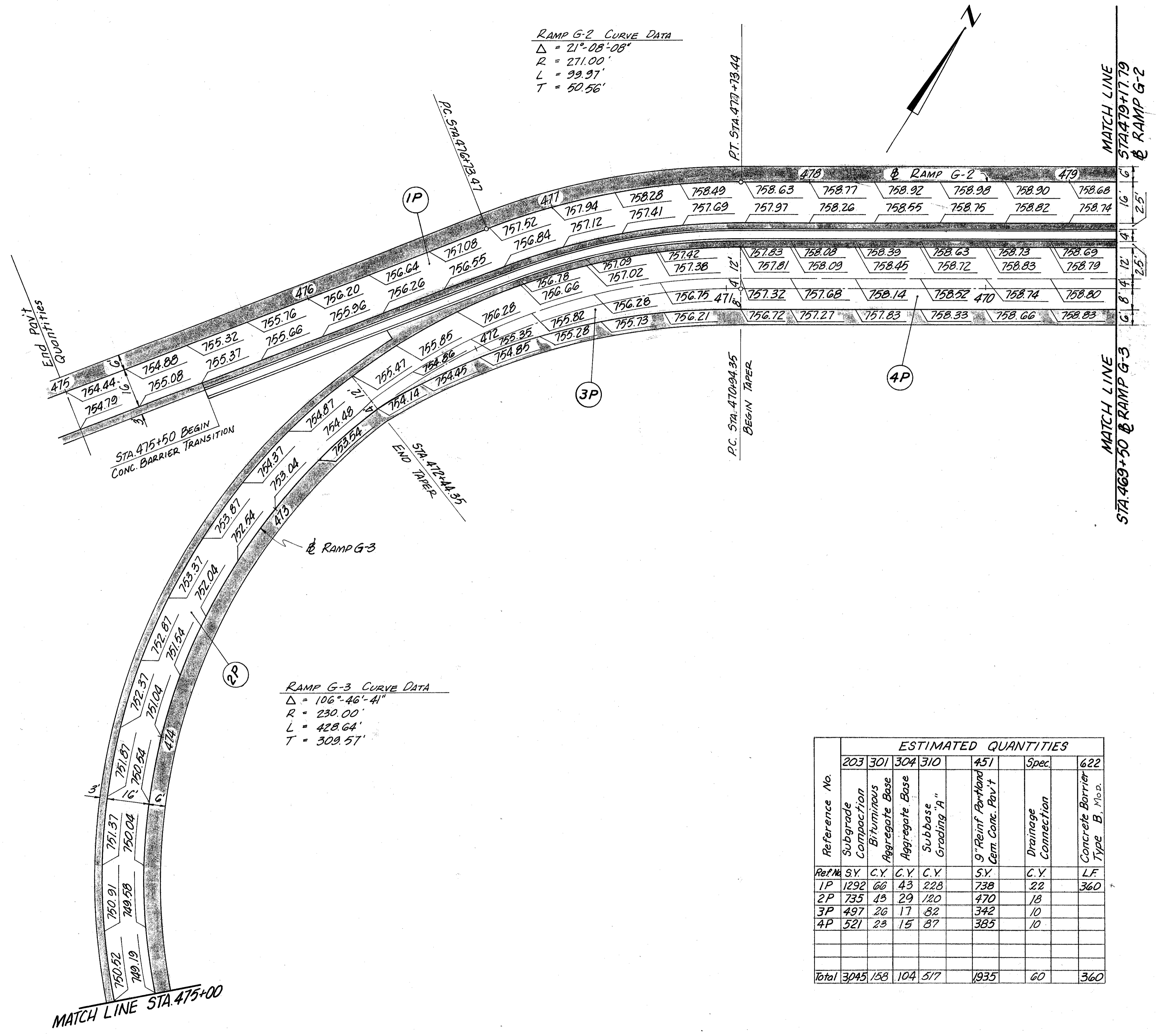
Rev. S.C. 2-22-78



CUYAHOGA COUNTY  
CUY-480-6.78

CALL. BY TRB DATE 6/76  
CHKD. BY EJK DATE 6/76

Rev. S.C. 2-22-78



Reference No.	ESTIMATED QUANTITIES						
	203	301	304	310	451	Spec.	622
	Subgrade	Compaction	Bituminous	Aggregate Base	Aggregate Base	Subbase	Grading "A"
	9" Reinf Portland Cem. Conc. Pav't	Drainage Connection	Concrete Barrier Type B, Min.				
Ref. No.	S.Y.	C.Y.	C.Y.	C.Y.	S.Y.	C.Y.	LF
1P	1292	66	43	228	738	22	360
2P	735	43	29	120	470	18	
3P	497	26	17	82	342	10	
4P	521	23	15	87	385	10	
Total	3045	158	104	517	1935	60	360

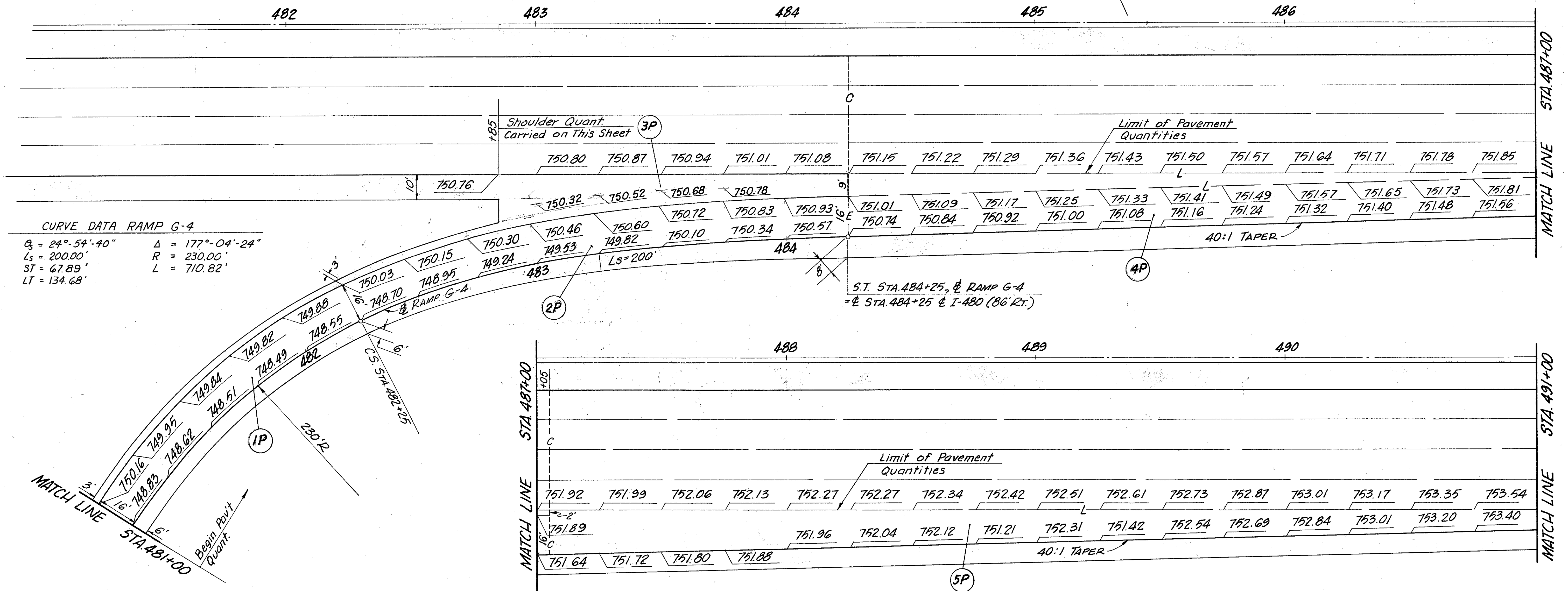
REVISIONS  
 COMPUTED BY: D.A.S.  
 CHECKED BY: D.F.  
 Rev. SC. 2-22-78

CALL: W.A.M. DATE 6/76  
 CHKD. BY: E.J.K. DATE 6/76

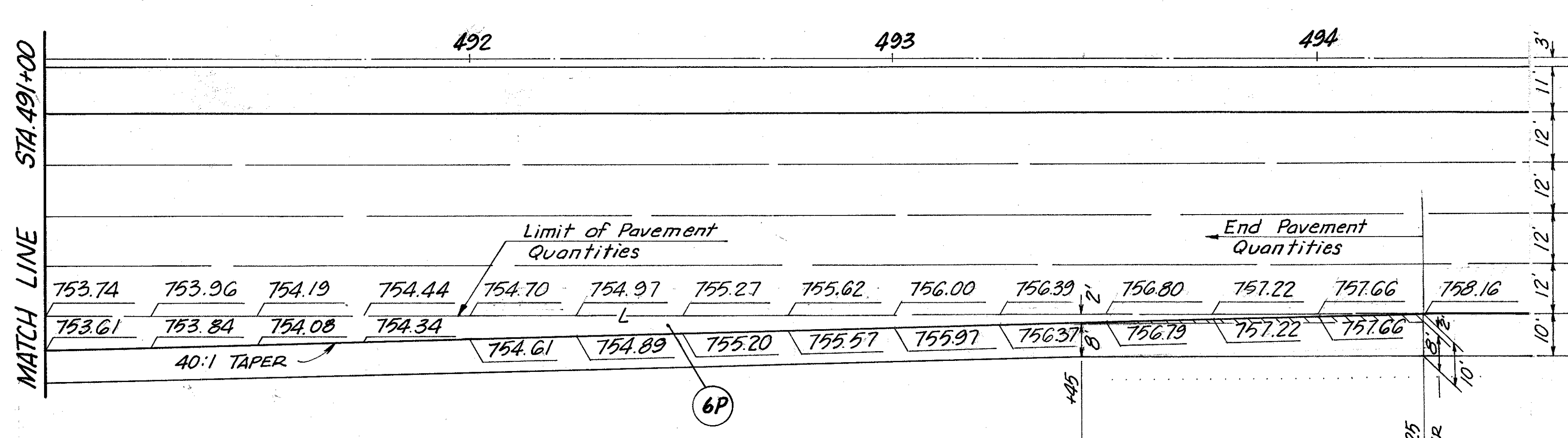
FED. NO. DIVISION	STATE	PROJECT
2	OHIO	

CUYAHOGA COUNTY  
 CUY-480-6.78

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Reference No.	ESTIMATED QUANTITIES										407		
	203	301	310	451	801	404	Spec.	402	409			Gal.	Ton
IP	359	21	59	230			9						
2P	537	26	82	333			14						
3P	189	34	60							38	1		
4P	903	40	178		667	23		32	49	1		67	2
5P	939	58	196		595	20		28	71	2		59	2
6P	445	47	107		165	5		8	60	1		16	1
<b>Total</b>	<b>3,372</b>	<b>226</b>	<b>682</b>	<b>563</b>	<b>1,427</b>	<b>48</b>	<b>23</b>	<b>68</b>	<b>218</b>	<b>5</b>		<b>142</b>	<b>5</b>



**Joint Legend**  
 E Standard Expansion Joint  
 C Standard Contraction Joint  
 L Standard Longitudinal Joint

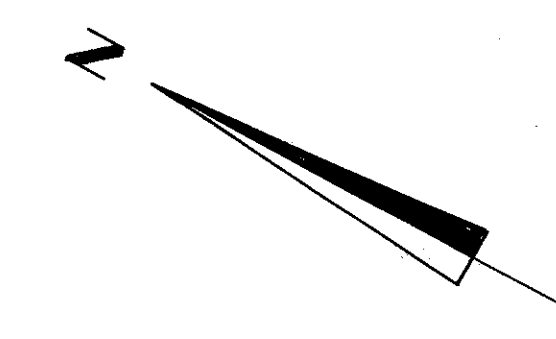
ALC. BY T.R.B. DATE 6/76  
 HD. BY E.J.K. DATE 6/76  
 Rev. 2-22-78

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

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CUYAHOGA COUNTY  
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Reference No.	ESTIMATED QUANTITIES					
	203	301	310	451	Spec. 622	
	Subgrade Compaction	Bituminous Aggregate Base	Subbase Grading "A"	9" Reinf. Portland Cem. Conc. Pav't	Drainage Connection	Concrete Barrier Type "B", Mod.
Ref No.	S.Y.	C.Y.	C.Y.	S.Y.	C.Y.	L.F.
1P	2199	114	363	1281	48	507
2P	873	53	205	557	22	
3P	465	24	91	326	10	
4P	412	18	73	305	8	
Total	3949	209	732	2469	88	507

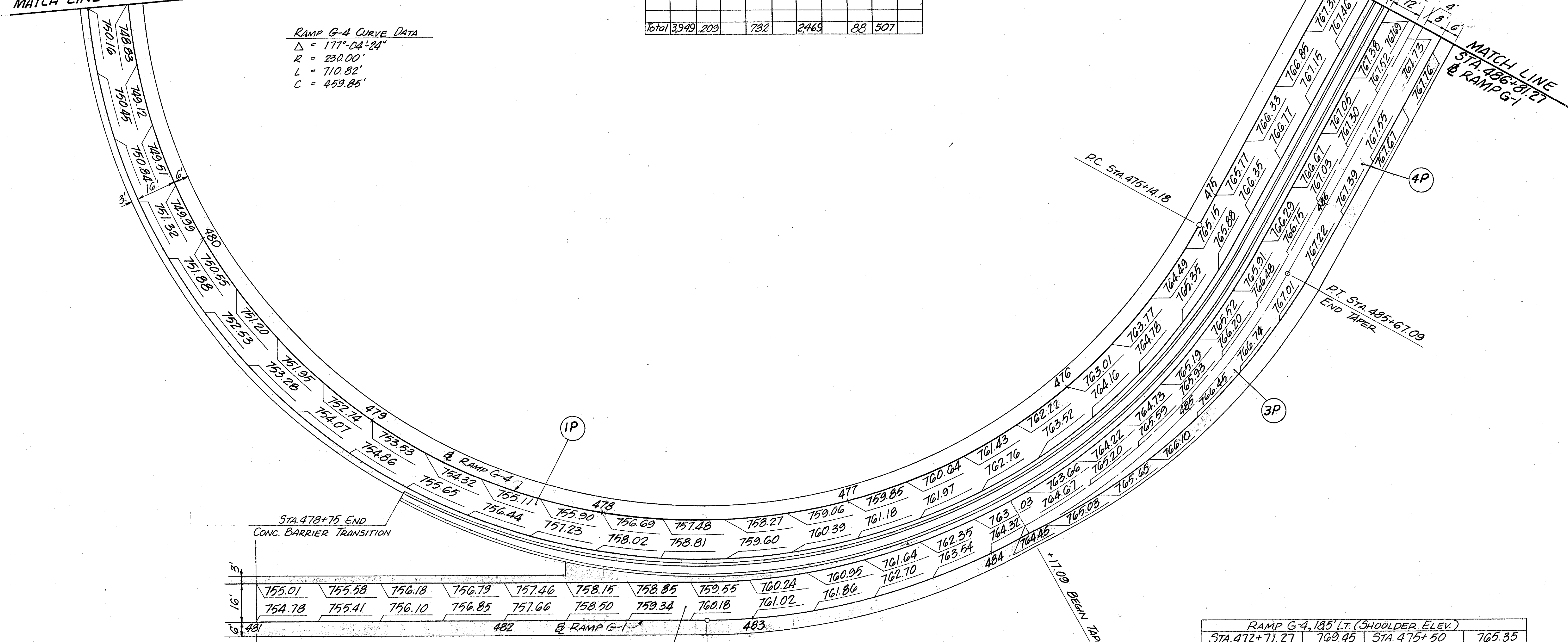


MATCH LINE STA. 481+00

RAMP G-4 CURVE DATA  
 $\Delta = 171^{\circ}04'24''$   
 $R = 230.00'$   
 $L = 710.82'$   
 $C = 459.85'$

MATCH LINE STA. 474+00 @ RAMP G-4

MATCH LINE STA. 486+81.27 @ RAMP G-1



End Pavement Quantities

RAMP G-1 CURVE DATA  
 $\Delta = 60^{\circ}36'42''$   
 $R = 271.00'$   
 $L = 286.68'$   
 $T = 158.40'$

RAMP G-4, 185' LT. (SHOULDER ELEV.)			
STA. 472+71.27	769.45	STA. 475+50	765.35
+75	769.38	+75	764.87
473+00	768.94	476+00	764.34
+25	768.55	+25	763.72
+50	768.17	+50	762.97
+75	767.90	+75	762.18
474+00	767.64	477+00	761.39
+25	767.36	+25	760.60
+50	767.05	+50	759.81
+75	766.67	+75	759.02
475+00	766.26	478+00	758.23
+25	765.82		

RAMP G-1 & RAMP G-4 PAVEMENT DETAILS



FED. RD. DIVISION	STATE	PROJECT
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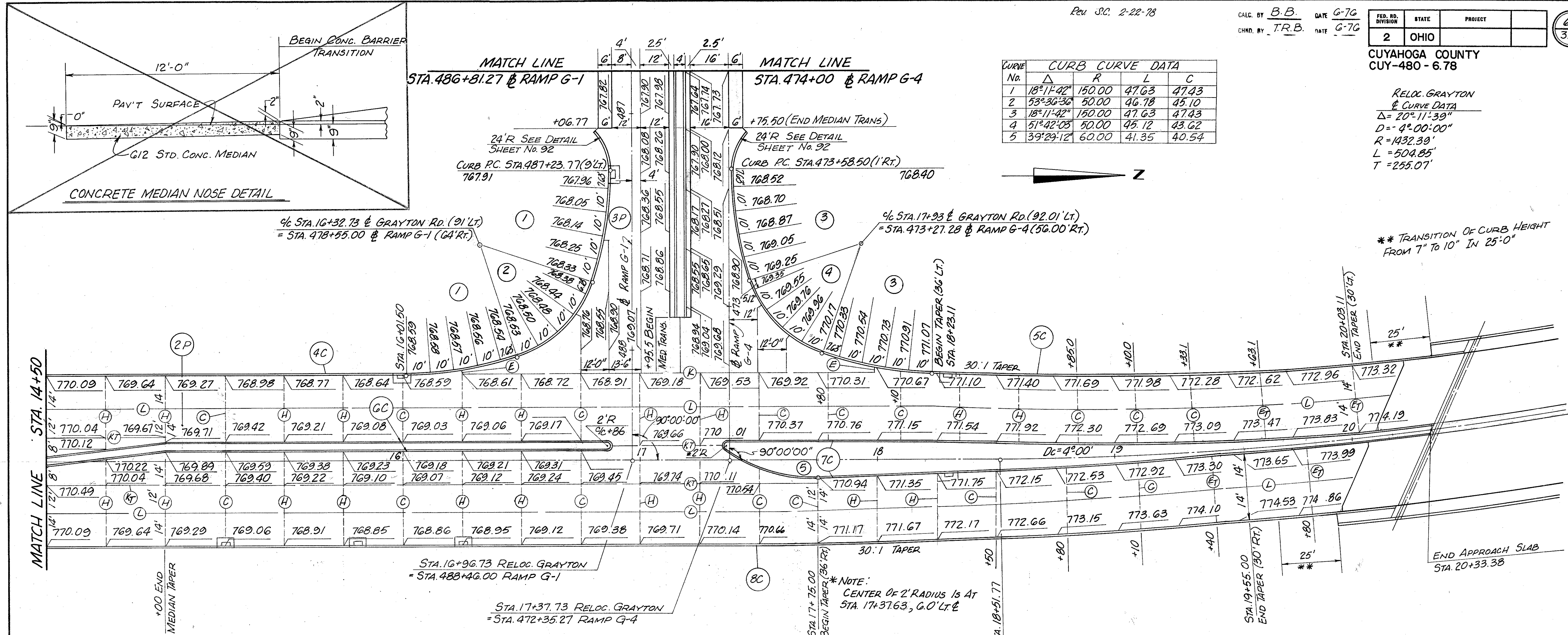
CUYAHOGA COUNTY  
 CUY-480 - 6.78

RELOC. GRAYTON  
 & CURVE DATA  
 $\Delta = 20^{\circ}11'39''$   
 $D = 4^{\circ}00'00''$   
 $R = 1432.39'$   
 $L = 504.85'$   
 $T = 255.07'$

CURVE No.	$\Delta$	R	L	C
1	18°11'42"	150.00	47.63	47.43
2	53°36'36"	50.00	46.78	45.10
3	18°11'42"	150.00	47.63	47.43
4	51°42'05"	50.00	45.12	43.62
5	39°29'12"	60.00	41.35	40.54



\*\* TRANSITION OF CURB HEIGHT FROM 7" TO 10" IN 25'-0"



770.09	769.64	769.27	768.98	768.77	768.64	768.59	768.61	768.72	768.91	769.18	769.53	769.92	770.31	770.67	771.10	771.40	771.69	771.98	772.28	772.62	772.96	773.32	
770.04	769.67	769.71	769.42	769.21	769.08	769.03	769.06	769.17	769.66	770.01	770.37	770.76	771.15	771.54	771.92	772.30	772.69	773.09	773.47	773.83	774.19		
770.12																							
770.22	769.89	769.59	769.38	769.23	769.18	769.21	769.31	769.45	769.74	770.11	770.94	771.35	771.75	772.15	772.53	772.92	773.30	773.65	773.99				
770.49	770.04	769.68	769.40	769.22	769.10	769.07	769.12	769.24	769.45	769.74	770.54	771.04	771.44	771.84	772.24	772.64	773.04	773.44	773.84	774.24			
770.09	769.64	769.29	769.06	768.91	768.85	768.86	768.95	769.12	769.38	769.71	770.14	770.64	771.17	771.67	772.17	772.66	773.15	773.63	774.10				

776.89	776.32	775.75	775.18	774.61	774.04	773.47	772.90	772.33	771.76	771.19	770.62
776.72	776.15	775.58	775.01	774.44	773.87	773.30	772.73	772.16	771.59	771.02	770.45
776.94	777.51	776.37	776.80	775.23	774.66	774.09	773.52	772.95	772.38	771.81	771.20
777.33	776.76	776.19	775.62	775.05	774.48	773.91	773.34	772.77	772.20	771.63	771.02
776.89	776.32	775.75	775.18	774.61	774.04	773.47	772.90	772.33	771.76	771.19	770.62

**JOINT LEGEND**  
 L LONGITUDINAL JOINTS  
 K KEY JOINT WITHOUT TIE BAR  
 E EXPANSION JOINT WITHOUT TIE BAR  
 ET EXPANSION JOINT  
 C CONTRACTION JOINT  
 H HINGE JOINT, SEE GENERAL NOTE, SHEET N°13  
 KT Standard Key Joint. (Tied)

REFERENCE NO.	203	301	310	451	SPEC.	G11	G12	G22		
SUBBASE COMPACTION										
BITUMINOUS AGGREGATE BASE										
SUBBASE GRADING "A"										
SUBBASE GRADING "B"										
9" REINF. PORTLAND CEM. CONC. PAVT.										
9" REINF. PORT. CEM. CONC. PAVT., AS PER PLAN										
DRAINAGE CONNECTION										
REINF. CONC. APPROACH SLAB (F15)										
4" CONC. MEDIAN AS PLAN										
CONCRETE (Misc.) BARRIER, TYPE "B"										
TOTAL	8012	18	177	731	899	6358	2	161	449	105

REFERENCE NO.	609
CONC. CURB, SPECIAL G-T INTER., AS PER PLAN	
TOTAL	3547

ESTIMATED QUANTITIES

REFERENCE No.	203	301	310	451	SPEC.	G11	G12	G22		
	SUBBASE COMPACTION	BITUMINOUS AGGREGATE BASE	SUBBASE GRADING "A"	SUBBASE 703.08 OR 705.10	9" REINF. PORTLAND CEM. CONC. PAVT. 4" CONC. MEDIAN, AS PER PLAN	DRAINAGE CONNECTION	REINF. CONCRETE APPR. SLAB (F15)	CONCRETE (Med.) BARRIER, TYPE "B"		
REF. No.	S.Y.	C.Y.	C.Y.	S.Y.	C.Y.	S.Y.	S.Y.	L.F.		
1P	4021		428	3581		161	279			
2P	4103		465	3734			369			
3P	927	12	158	814	2			94		
TOTAL	9051	12	158	893	814	7315	2	161	648	94

Rev. S.C. 2-22-78

CALC. BY B.B. DATE 6-76  
CHKD. BY T.R.B. DATE 6-76

FED. RD. DIVISION	STATE	PROJECT
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CUYAHOGA COUNTY  
CUY-480-6.78

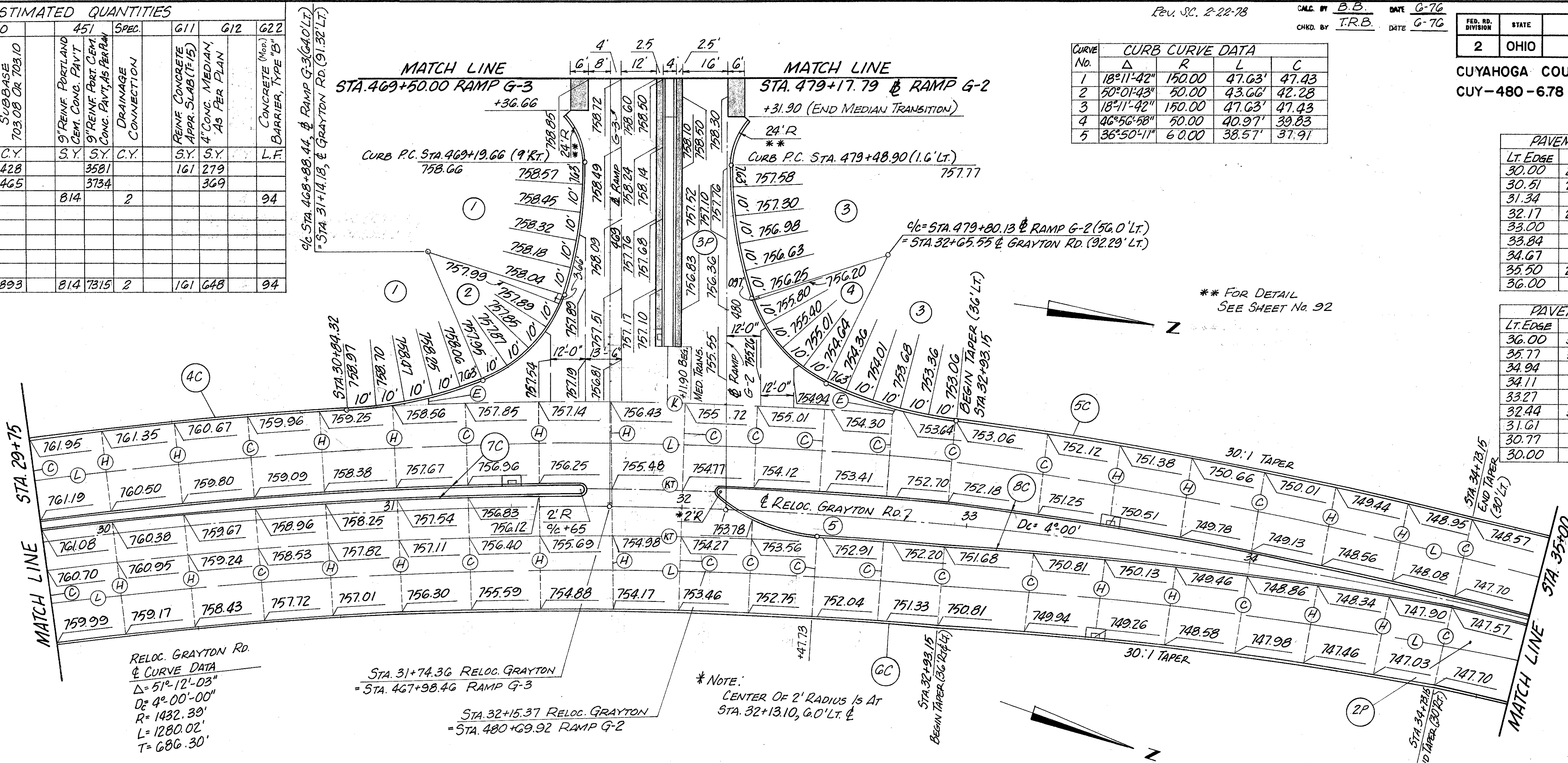
CURVE No.	Δ	R	L	C
1	18°11'-42"	150.00	47.63'	47.43
2	50°01'-43"	50.00	43.66'	42.28
3	18°11'-42"	150.00	47.63'	47.43
4	46°56'-58"	50.00	40.97'	39.83
5	36°50'-11"	60.00	38.57'	37.91

PAVEMENT WIDTH		
Lt. Edge	STATION	Rt. Edge
30.00	27+34.85	30.00
30.51	27+50.00	30.51
31.34	+75.00	31.34
32.17	28+00.00	32.17
33.00	+25.00	33.00
33.84	+50.00	33.84
34.67	+75.00	34.67
35.50	29+00.00	35.50
36.00	+14.85	36.00

PAVEMENT WIDTH		
Lt. Edge	STATION	Rt. Edge
36.00	32+93.15	36.00
35.77	33+00.00	35.77
34.94	+25.00	34.94
34.11	+50.00	34.11
33.27	+75.00	33.27
32.44	34+00.00	32.44
31.61	+25.00	31.61
30.77	+50.00	30.77
30.00	+73.15	30.00

\*\* FOR DETAIL SEE SHEET No. 92

ESTIMATED QUANTITIES	609
CONC. CURBS, SPECIFY INTER. AS PER PLAN	
REF. No.	L.F.
1C	535
2C	592
3C	1126
4C	270
5C	368
6C	512
7C	386
8C	589
TOTAL	4378

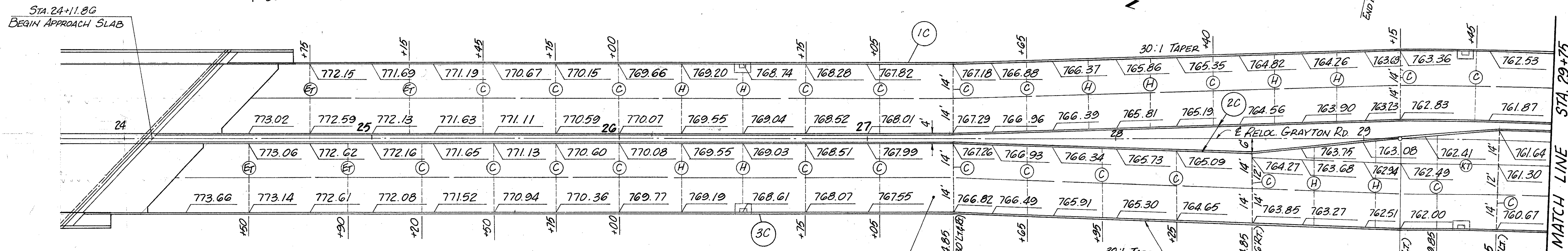


RELOC. GRAYTON RD  
Δ = 51°12'-03"  
Dc = 4°00'-00"  
R = 1432.39'  
L = 1280.02'  
T = 686.30'

STA. 31+74.36 RELOC. GRAYTON  
= STA. 467+98.46 RAMP G-3

STA. 32+15.37 RELOC. GRAYTON  
= STA. 480+09.92 RAMP G-2

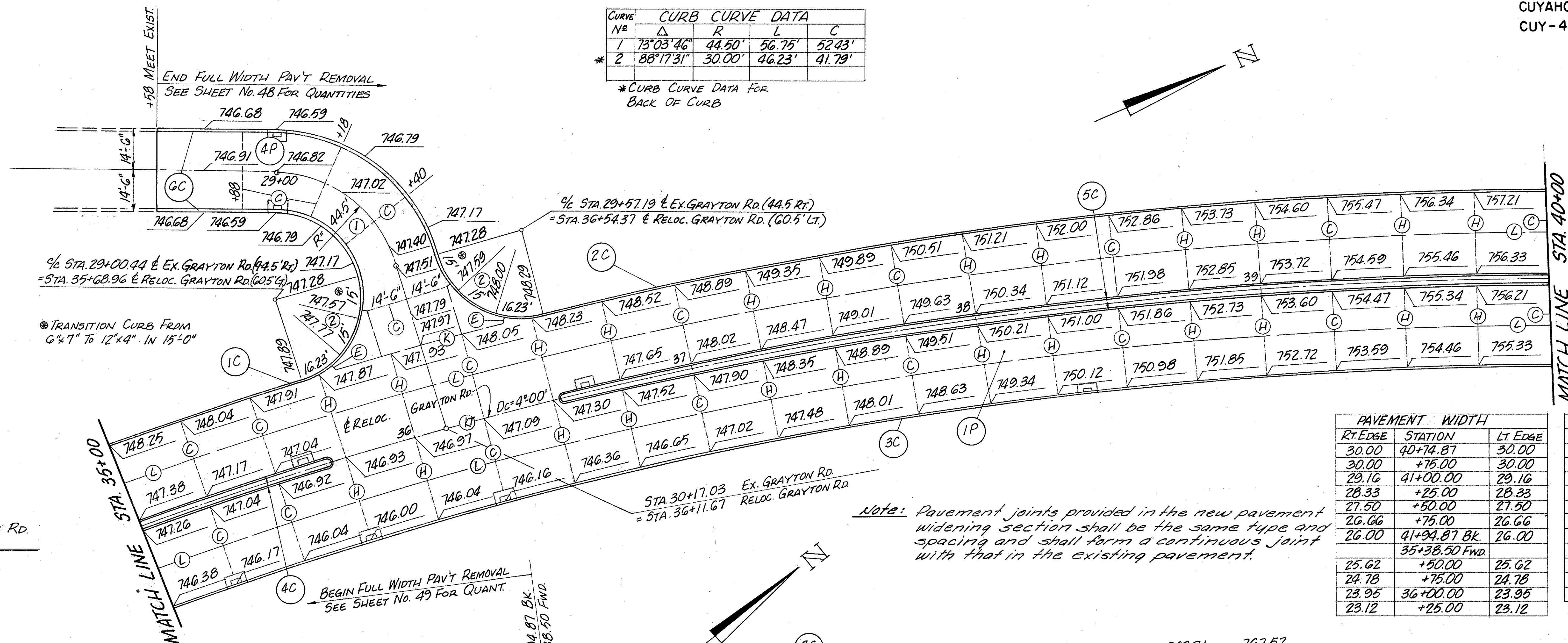
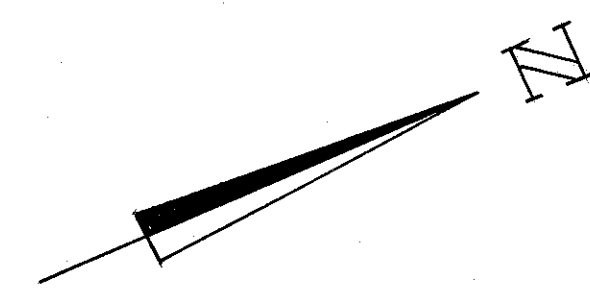
\* NOTE:  
CENTER OF 2' RADIUS IS AT  
STA. 32+13.10, 6.0' LT. Δ



- JOINT LEGEND**
- L LONGITUDINAL JOINTS
  - K KEY JOINT WITHOUT TIE BAR
  - E EXPANSION JOINT WITHOUT TIE BAR
  - ET EXPANSION JOINT
  - C CONTRACTION JOINT
  - H HINGE JOINT, SEE GENERAL NOTE, SHEET No. 13
  - KT Standard Key Joint. (Tied)

CURVE NO.	Δ	R	L	C
1	73°03'46"	44.50'	56.75'	52.43'
* 2	88°17'31"	30.00'	46.23'	41.79'

\* CURB CURVE DATA FOR BACK OF CURB

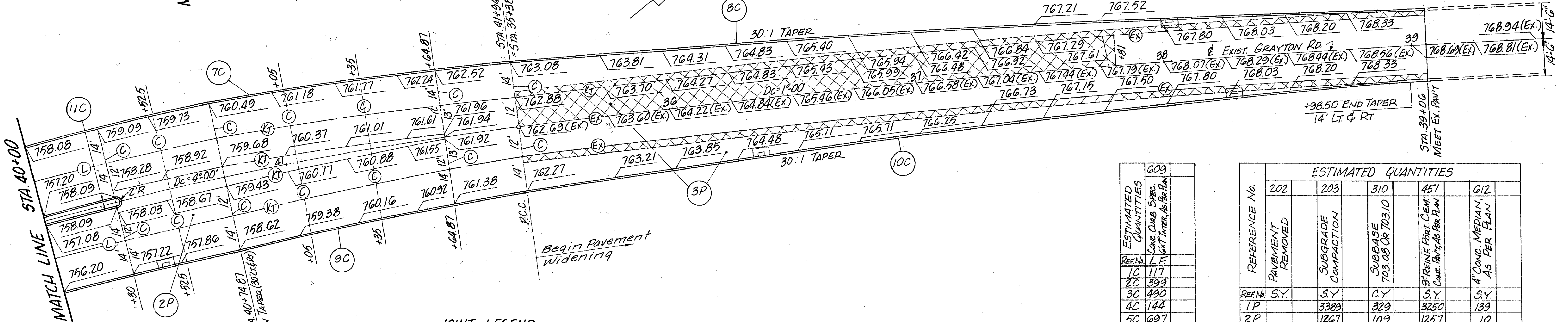


RELOC. GRAYTON RD. CURVE DATA  
 Δ = 51°12'03"  
 Dc = 4°00'00"  
 R = 1432.39'  
 L = 1280.02'  
 T = 686.30'

Note: Pavement joints provided in the new pavement widening section shall be the same type and spacing and shall form a continuous joint with that in the existing pavement.

PAVEMENT WIDTH		
Rt. Edge	STATION	Lt. Edge
30.00	40+74.87	30.00
30.00	+75.00	30.00
29.16	41+00.00	29.16
28.33	+25.00	28.33
27.50	+50.00	27.50
26.66	+75.00	26.66
26.00	41+94.87 Bk.	26.00
	35+38.50 FWD.	
25.62	+50.00	25.62
24.78	+75.00	24.78
23.95	36+00.00	23.95
23.12	+25.00	23.12

PAVEMENT WIDTH		
Rt. Edge	STATION	Lt. Edge
22.28	+50.00	22.28
21.45	+75.00	21.45
20.62	37+00.00	20.62
19.78	+25.00	19.78
18.95	+50.00	18.95
18.12	37+75.00	18.12
17.28	38+00.00	17.28
16.45	+25.00	16.45
15.62	+50.00	15.62
14.78	+75.00	14.78
14.00	+98.50	14.00



**JOINT LEGEND**  
 L LONGITUDINAL JOINT  
 K KEY JOINT WITHOUT TIE BAR  
 E EXPANSION JOINT WITHOUT TIE BAR  
 C CONTRACTION JOINT  
 H HINGE JOINT, SEE GENERAL NOTE, SHEET No. 13  
 EX EXPANSION BOLT JOINT  
 KT KEY JOINT

XXXXX PAVEMENT REMOVED

ESTIMATED QUANTITIES	609
REF. No.	L.F.
1C	117
2C	399
3C	490
4C	144
5C	697
6C	198
7C	199
8C	369
9C	191
10C	365
11C	66
TOTAL	3235

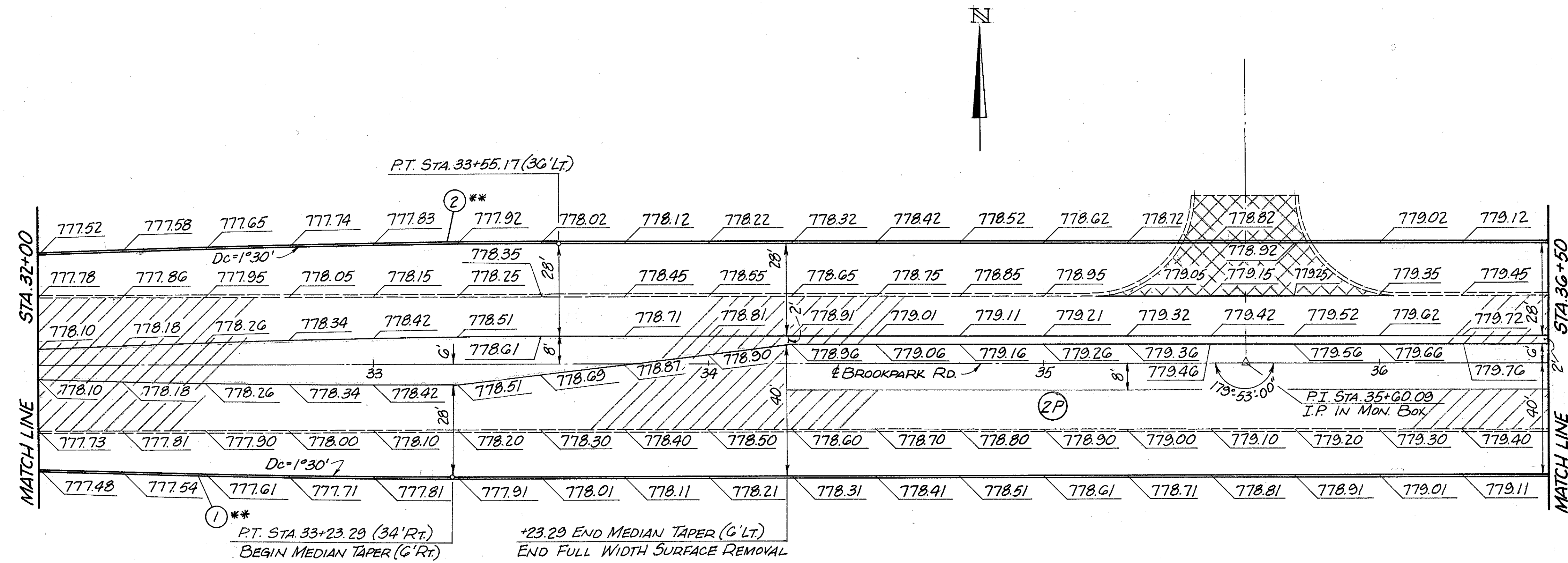
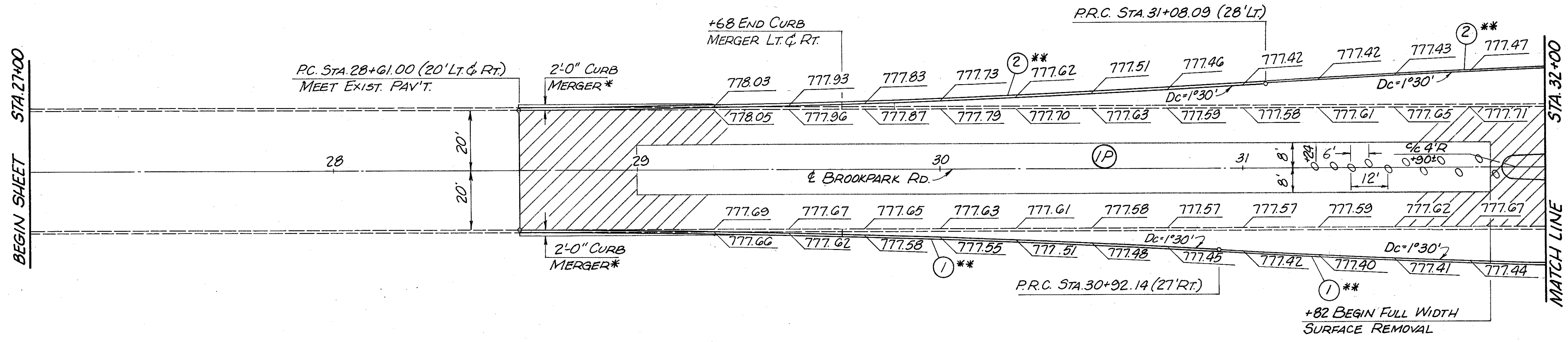
REFERENCE No.	ESTIMATED QUANTITIES				
	202	203	310	451	612
PAVEMENT REMOVED					
SUBGRADE COMPACTION					
SUBBASE 703.08 Or 703.10					
9" REINF. PORT. CEM. CONC. 4" AS PER PLAN					
4" CONC. MEDIAN, AS PER PLAN					
REF. No.	S.Y.	S.Y.	C.Y.	S.Y.	S.Y.
1P		3389	329	3250	139
2P		1267	109	1257	10
3P	527		84	1008	
4P		457	38	457	
TOTAL	527	5113	560	5972	149

CALC. BY T.R.B. DATE 5/76  
 CHKD. BY A.C. DATE 6/76

FHWA REGION	STATE	PROJECT
5	OHIO	

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CUYAHOGA COUNTY  
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Reference No.	202											305											310											402											403											404											407											609											612											613										
	Curb Removed	Wearing Course Removed	Pavement Removed	9\"/>																																																																																																										
1-P	678	1005			452	95			58	22	53	190	7	678			13	11	903	1647	142	1522	333			117	36	88	316	11	900			314																																																																												
Total	1581	2652	142	1974	428			175	58	141	506	18	1578			327	11																																																																																													

LEGEND

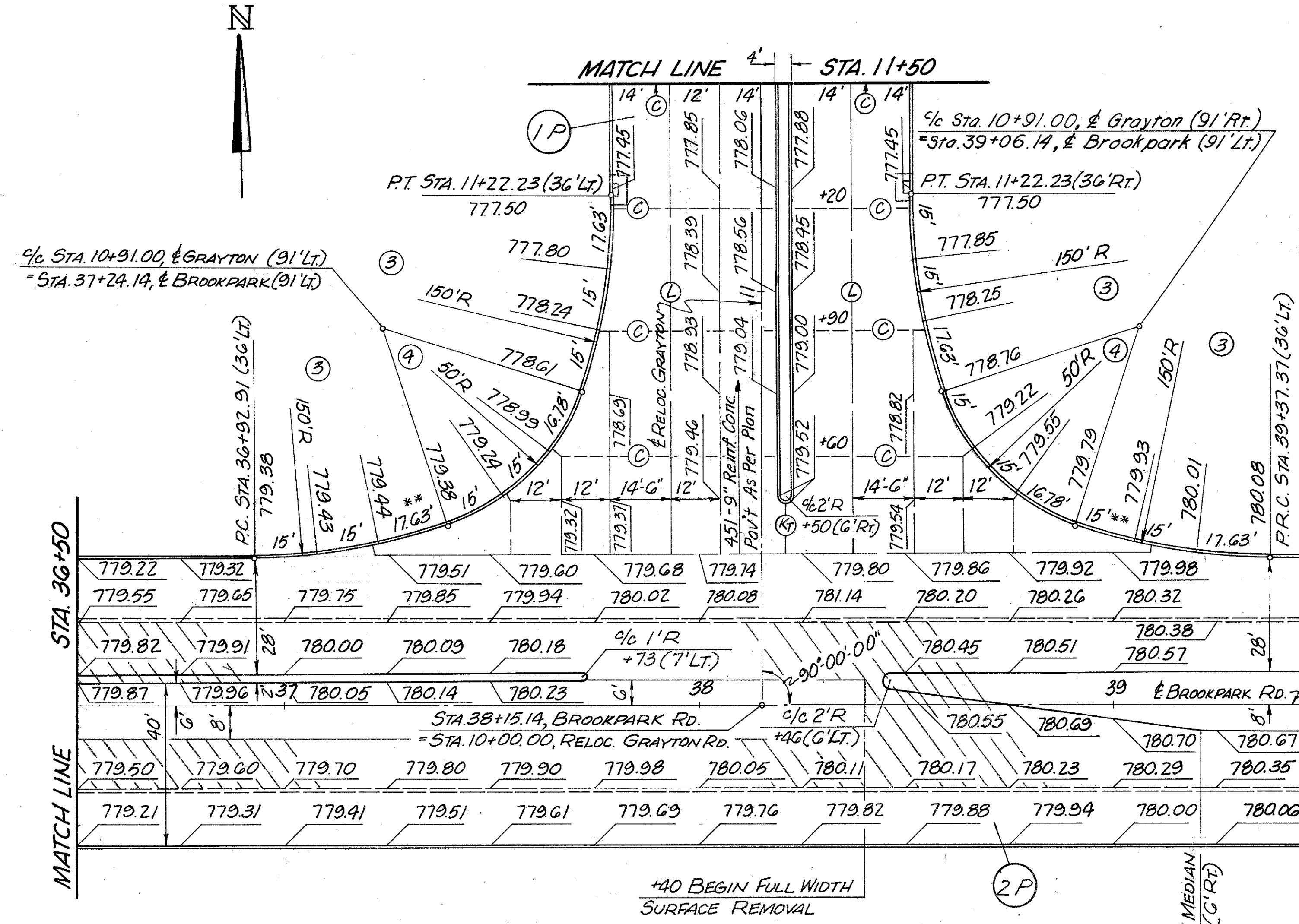
	1 1/2\"/>
	RIGID PAVEMENT REMOVAL

\* SEE DETAIL, SHEET No. 9  
 \*\* FOR CURB CURVE DATA SEE SHEET No. 69

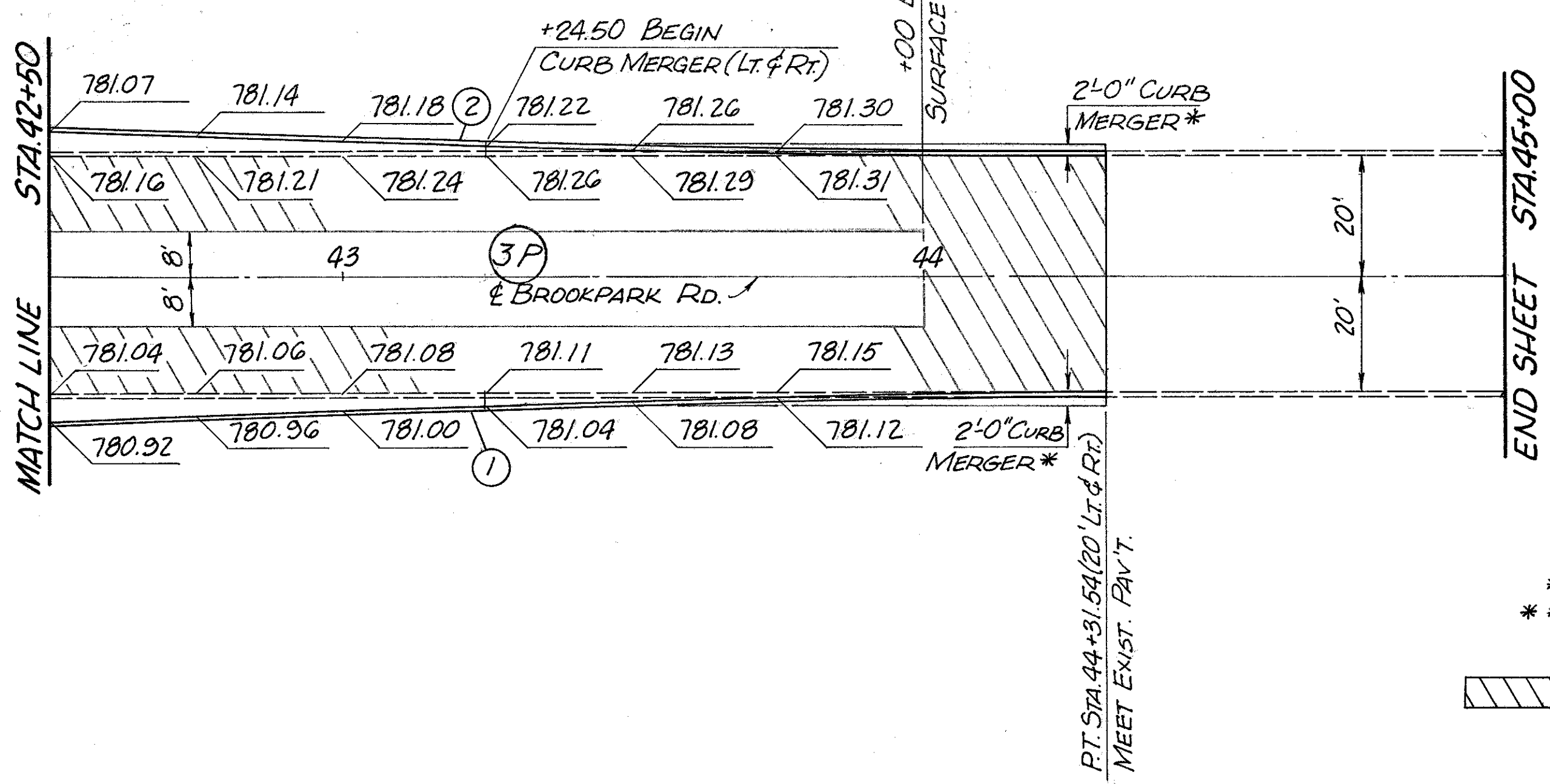
CUYAHOGA COUNTY  
CUY-480-678

CALC. BY T.R.B. DATE 5/76  
CHKD. BY A.C. DATE 6/76

Reference No	Estimated Quantities																			
	202	203	305	310	402	403	404	407	451	609	612	613	407	SPEC.						
Curb Removed																				
Wearing Course Removed																				
Subgrade Compaction																				
9" Portland Cement Concrete Base																				
Subbase, Grading A, As Per Plan																				
Subbase (703.08 OR 703.10)																				
Asphalt Concrete (AC-20)																				
Asphalt Concrete (AC-20)																				
Asphalt Concrete (AC-20)																				
Track Coat																				
9" Reinf. Port. Cem. Conc. Pav't																				
9" Reinf. Port. Cem. Conc. Pav't As Per Plan																				
Conc. Curb Spec																				
6"x7" Ints. As Per Plan																				
Concrete Curb																				
Std. Type 2A																				
Concrete Curb																				
Std. Type 2B																				
Concrete Traffic Island																				
4" Concrete Median As Per Plan																				
Traffic Dividers																				
AGGREGATE COVER																				
AGGREGATE DRAIN																				
Total	11563	2671	1955	1931	559	108	173	54	138	495	796	1125	489	274	1375	370	34	12	17	10

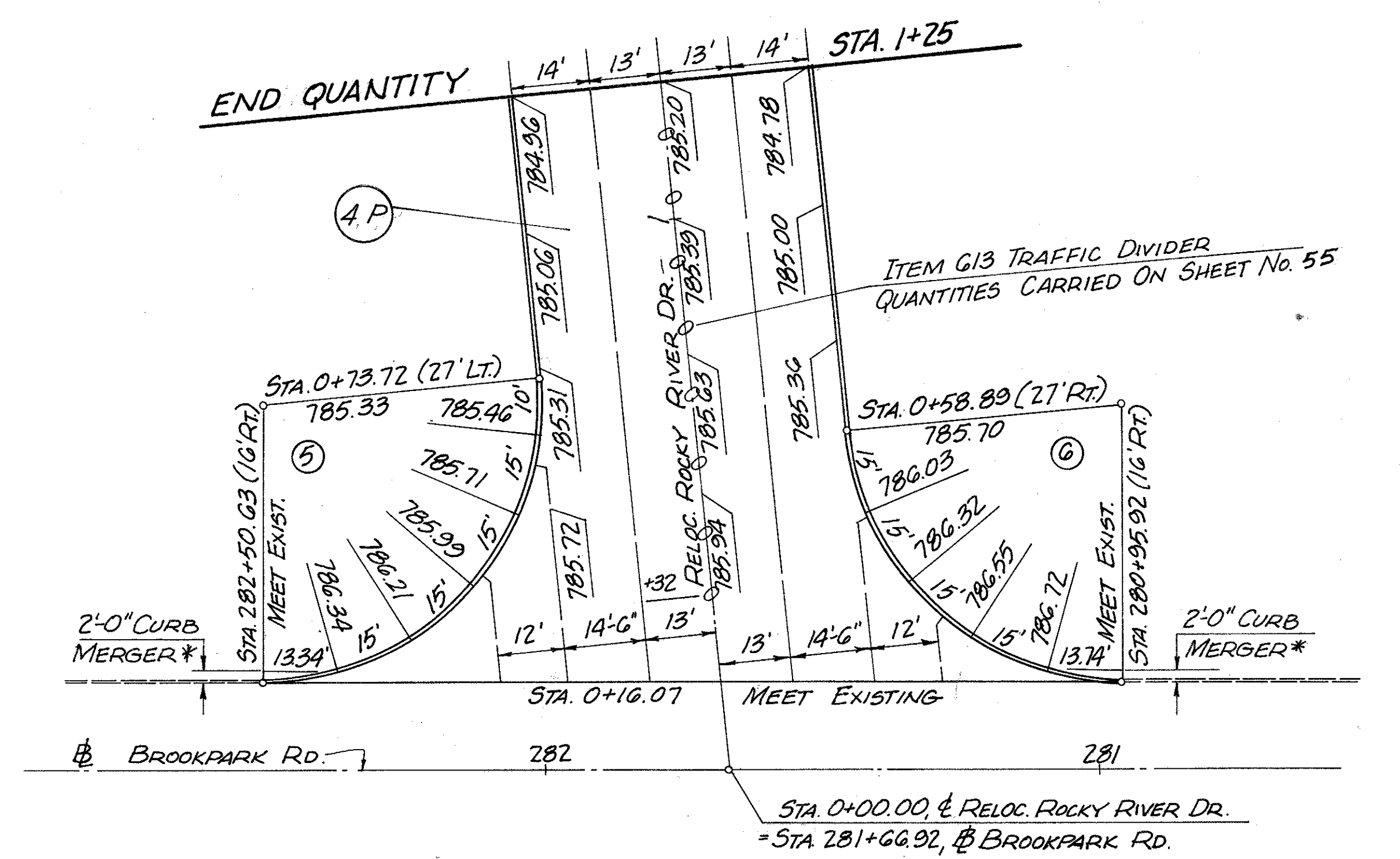


CURVE No	Δ	R	L	C	T
1	3°28'09"	3181.972	231.28'	231.24'	115.67'
2	3°42'32"	3181.972	247.26'	247.22'	123.67'
3	18°11'42"	150.00'	47.63'	47.43'	-
4	53°36'36"	50.00'	46.78'	45.10'	-
5	95°30'00"	50.00'	83.34'	74.02'	-
6	84°30'00"	50.00'	73.74'	67.24'	-



\* SEE DETAIL, SHEETS No. 9 & 10  
\*\* TRANSITION CURB HEIGHT FROM 6" TO 7"

1 1/2" ASPHALT WEARING COURSE REMOVAL



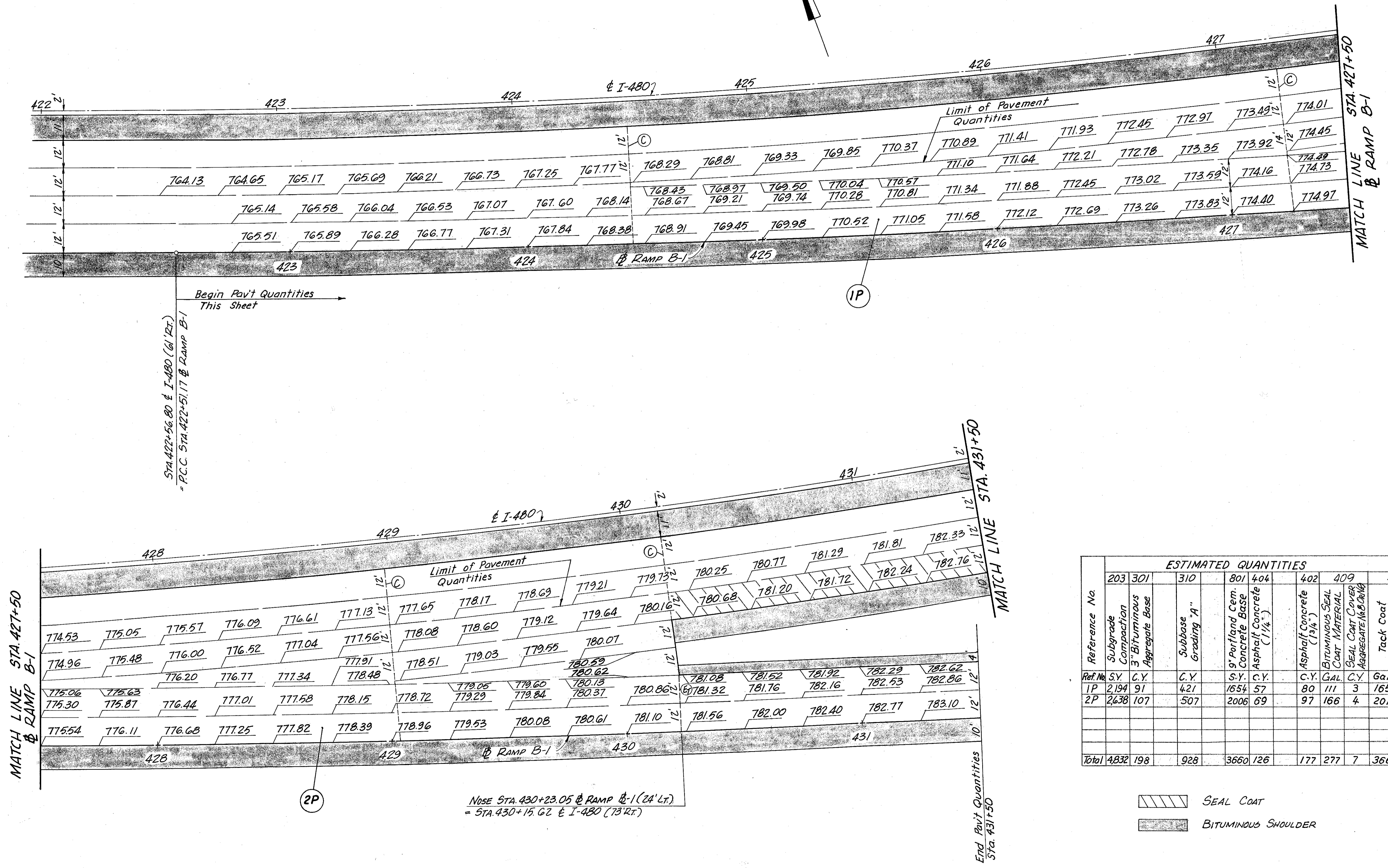
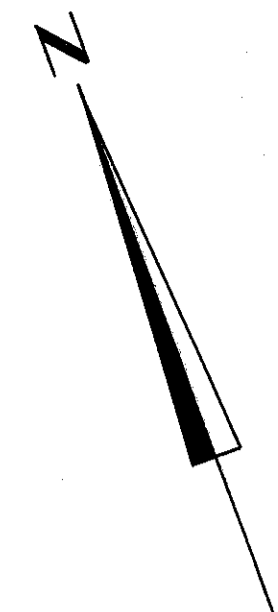
REVISIONS  
 COMPUTED BY: D.A.S.  
 CHECKED BY: D.F.

CALC. BY: B.B. DATE: 6/76  
 CHKD. BY: E.J.K. DATE: 6/76

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

CUYAHOGA COUNTY  
 CUY-480-6.78

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Reference No.	ESTIMATED QUANTITIES											
	203	301	310	801	404	402	409	407				
	Subgrade	Compaction	3" Bituminous Aggregate Base	Subbase	Grading "A"	9" Portland Cem. Concrete Base	Asphalt Concrete (1 1/4")	Asphalt Concrete (1 1/4")	BITUMINOUS SEAL COAT MATERIAL	SEAL COAT COVER AGGREGATE (1/2" @ 1/4")	Tack Coat	Cover Aggregate
Ref. No.	S.Y.	C.Y.	C.Y.	S.Y.	C.Y.	C.Y.	GAL.	C.Y.	Gal.	Ton		
1P	2194	91	421	1654	57	80	111	3	165	6		
2P	2638	107	507	2006	69	97	166	4	201	7		
Total	4832	198	928	3660	126	177	277	7	366	13		

SEAL COAT  
 BITUMINOUS SHOULDER

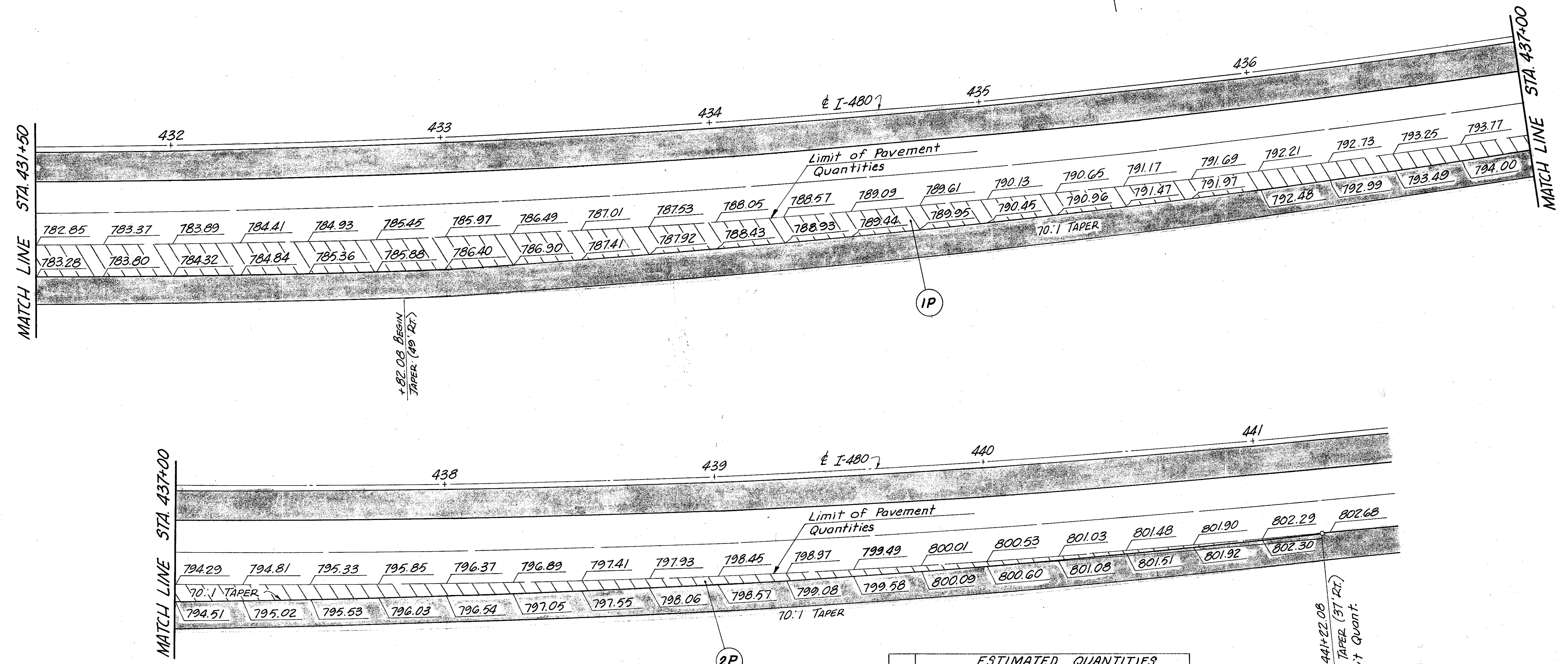
REVISIONS  
 COMPUTED BY: D.A.S.  
 CHECKED BY: D.F.

ALC. BY: T.R.B. DATE: 6/76  
 DWD. BY: E.J.K. DATE: 6/76

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

71  
317

CUYAHOGA COUNTY  
 CUY - 480 - 678



STATION	PVT. WIDTH
432+82.00	36.00'
433+00.00	35.74'
+25.00	35.39'
+50.00	35.03'
+75.00	34.67'
434+00.00	34.31'
+25.00	33.96'
+50.00	33.60'
+75.00	33.24'
435+00.00	32.89'
+25.00	32.53'
+50.00	32.17'
+75.00	31.82'
436+00.00	31.46'
+25.00	31.10'
+50.00	30.74'
+75.00	30.39'

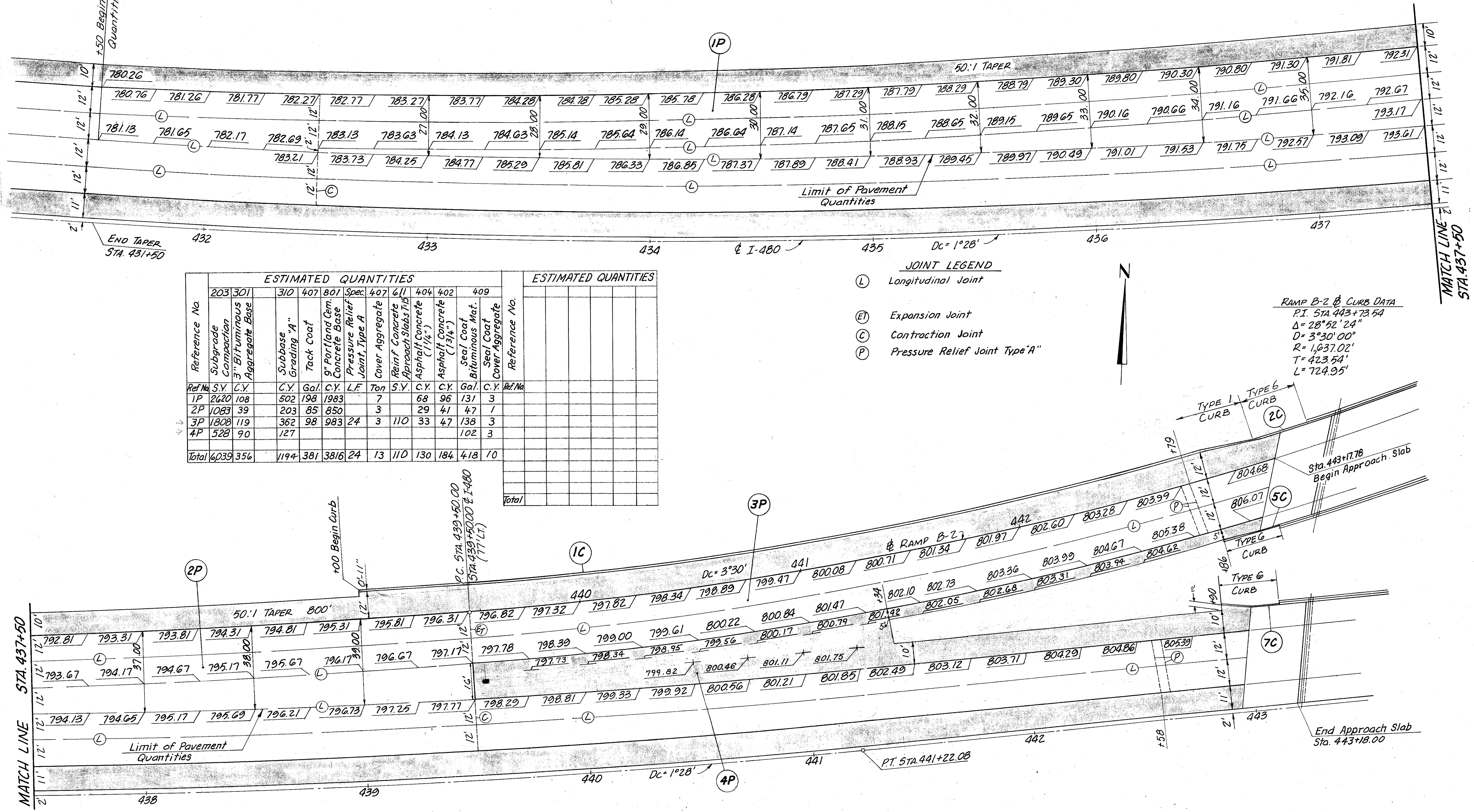
STATION	PVT. WIDTH
437+00.00	30.03'
+25.00	29.67'
+50.00	29.32'
+75.00	28.96'
438+00.00	28.60'
+25.00	28.24'
+50.00	27.89'
+75.00	27.53'
439+00.00	27.17'
+25.00	26.82'
+50.00	26.46'
+75.00	26.10'
440+00.00	25.74'
+25.00	25.39'
+50.00	25.03'
+75.00	24.67'
441+00.00	24.32'
441+22.08	24.00'

Reference No.	ESTIMATED QUANTITIES										
	203	301	407	310	407	409	404	402	801		
	Subgrade	Compaction	3" Bituminous Aggregate Base	Tack Coat	Subbase "A" Grading	Cover Aggregate	BITUMINOUS SEAL COAT MATERIAL	SEAL COAT COVER Aggregate No. 8 (1 1/4")	Asphalt Concrete (1 1/4")	Asphalt Concrete (1 1/4")	9" Portland Cement Concrete Base
Ref No.	S.Y.	C.Y.	Gal.	C.Y.	Ton	GAL.	C.Y.	C.Y.	S.Y.		
1P	1217	102	62	264	2	243	6	21	29	616	
2P	632	78	17	152	1	127	3	6	8	170	
Total	1849	180	79	416	3	370	9	27	37	786	

SEAL COAT  
 BITUMINOUS SHOULDER

PT. STA. 441+22.08  
 END TAPER (37' RT.)  
 End Pavt Quant.

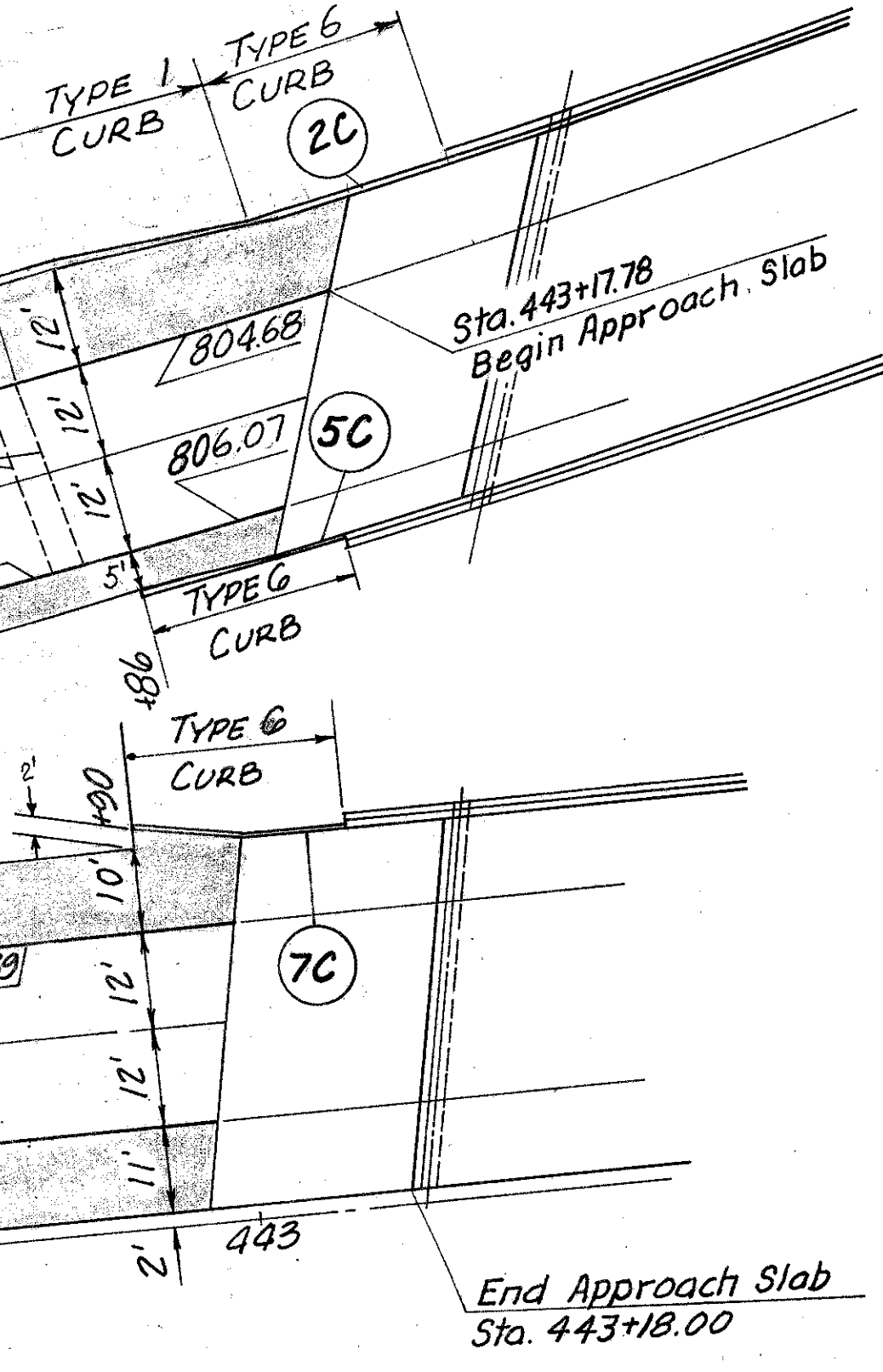
CUYAHOGA COUNTY  
 CUY-480-6.78



Reference No.	ESTIMATED QUANTITIES										Reference No.	
	203	301	310	407	801	Spec.	407	611	404	402		409
	Subgrade	3" Bituminous	Subbase	Tack Coat	9" Portland Cem. Concrete Base	Pressure Relief Joint, Type A	Cover Aggregate	Reinf Concrete Approach Slabs (1/4")	Asphalt Concrete (1 1/4")	Asphalt Concrete (1 3/4")	Seal Coat Bituminous Mat.	Seal Coat Cover Aggregate
Ref No.	S.Y.	C.Y.	C.Y.	Gal.	C.Y.	L.F.	Ton	S.Y.	C.Y.	C.Y.	Gal.	C.Y.
1P	2620	108	502	198	1983		7	68	96	131	3	3
2P	1083	39	203	85	850		3	29	41	47	1	1
3P	1808	119	362	98	983	24	3	110	33	47	138	3
4P	528	90	127								102	3
<b>Total</b>	<b>6039</b>	<b>356</b>	<b>1194</b>	<b>381</b>	<b>3816</b>	<b>24</b>	<b>13</b>	<b>110</b>	<b>130</b>	<b>184</b>	<b>418</b>	<b>10</b>

- JOINT LEGEND**
- (L) Longitudinal Joint
  - (E) Expansion Joint
  - (C) Contraction Joint
  - (P) Pressure Relief Joint Type "A"

RAMP B-2 CURB DATA  
 P.I. STA 443+73.54  
 $\Delta = 28^{\circ}52'24''$   
 $D = 3^{\circ}30'00''$   
 $R = 1,037.02'$   
 $T = 423.54'$   
 $L = 724.95'$



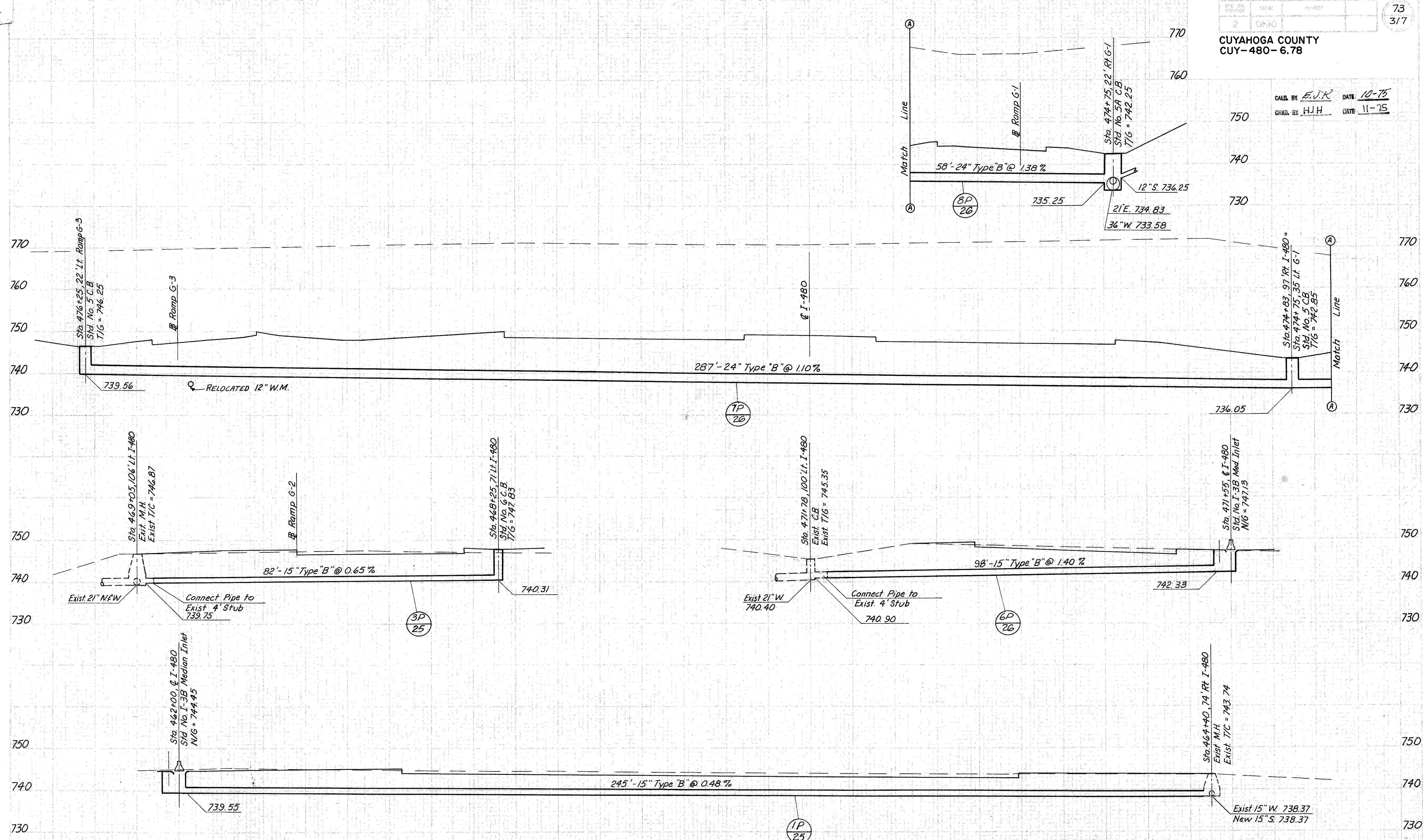
RAMP B-2 PAVEMENT DETAIL



T-5

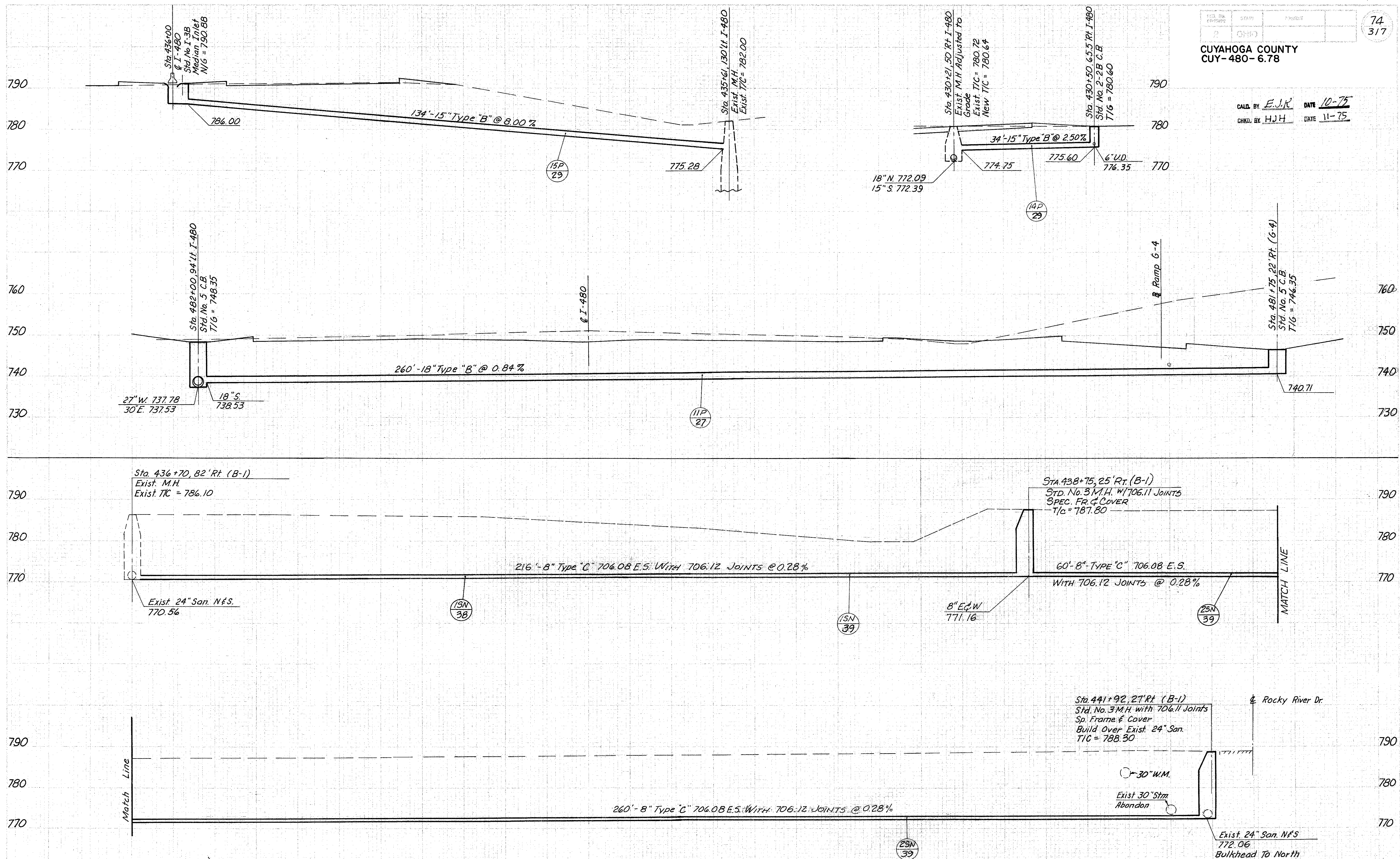
CUYAHOGA COUNTY  
CUY-480-6.78

CALC. BY E.J.R. DATE 10-75  
CHKD. BY H.J.H. DATE 11-75



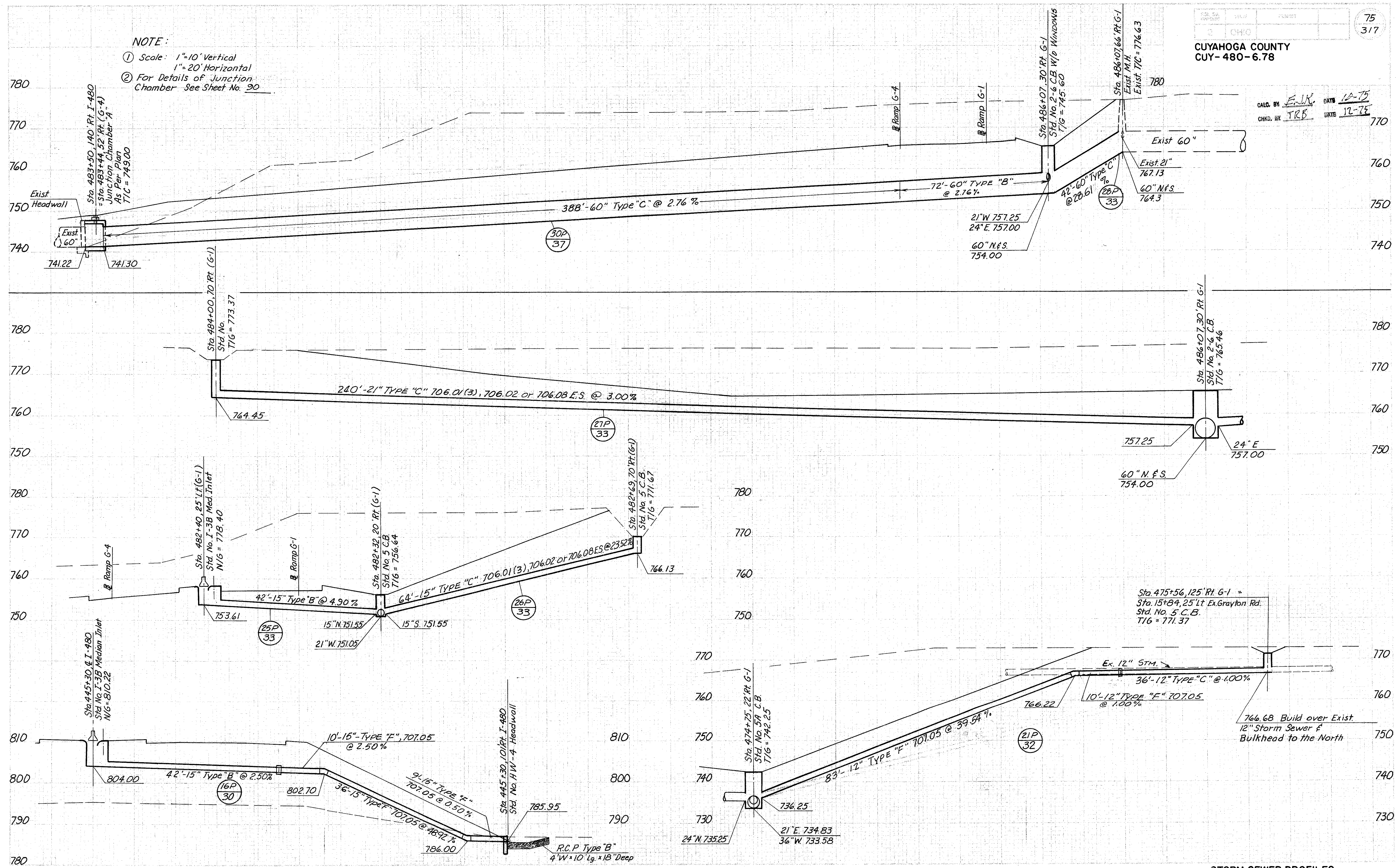
STORM SEWER PROFILES

CALC. BY E.J.R. DATE 10-75  
CHKD. BY H.J.H. DATE 11-75



NOTE:  
 ① Scale: 1"=10' Vertical  
 1"=20' Horizontal  
 ② For Details of Junction Chamber See Sheet No. 90

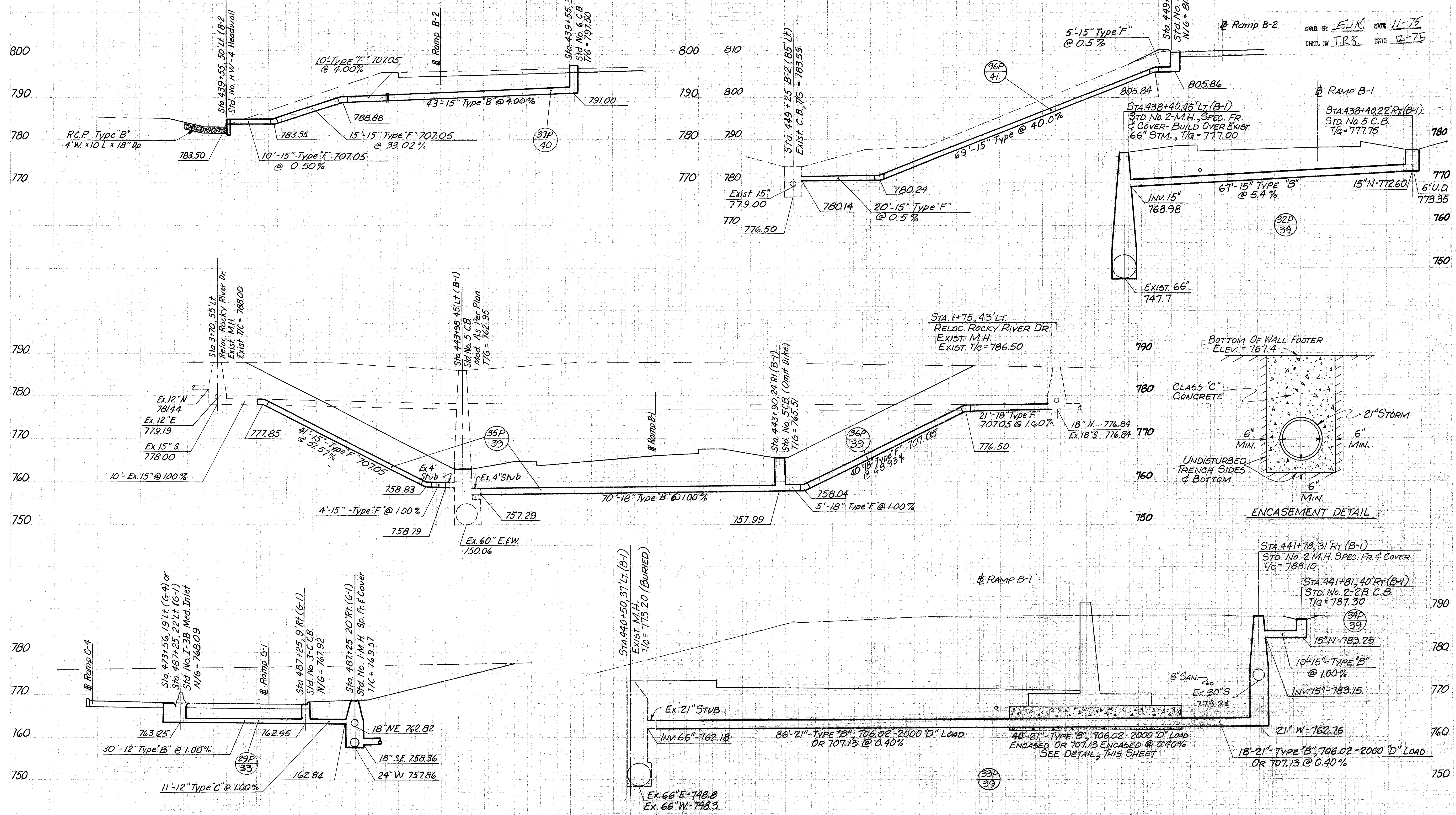
CALC. BY E.N.R. DATE 12-75  
 CHKD. BY T.R.B. DATE 12-75



STORM SEWER PROFILES

CUYAHOGA COUNTY  
CUI-480-6.78

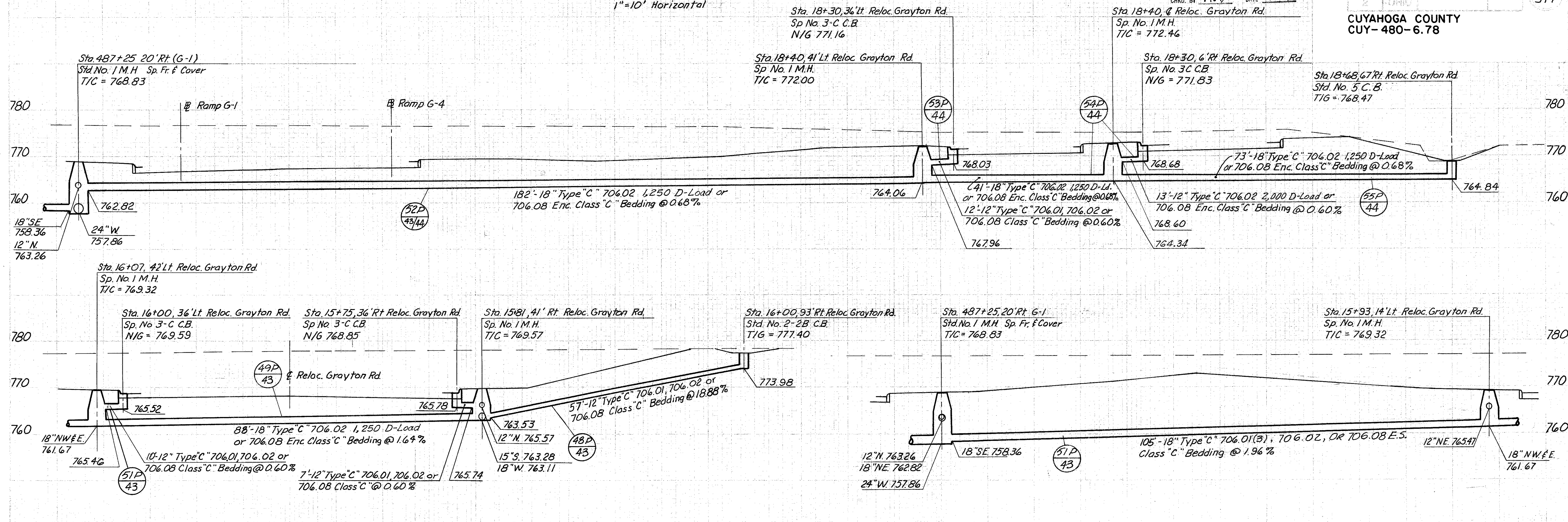
CALC. BY EJK DATE 11-75  
CHKD. BY T.R.B. DATE 12-75



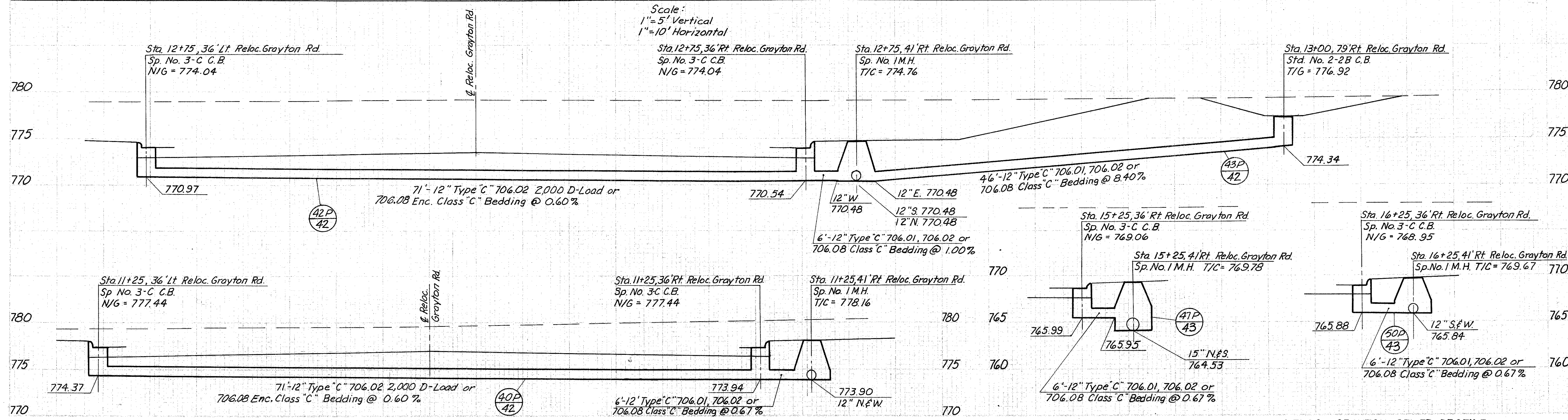
STORM SEWER PROFILES

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

CALC. BY B.B. DATE 12-79  
CHKD. BY T.R.B. DATE 1-76

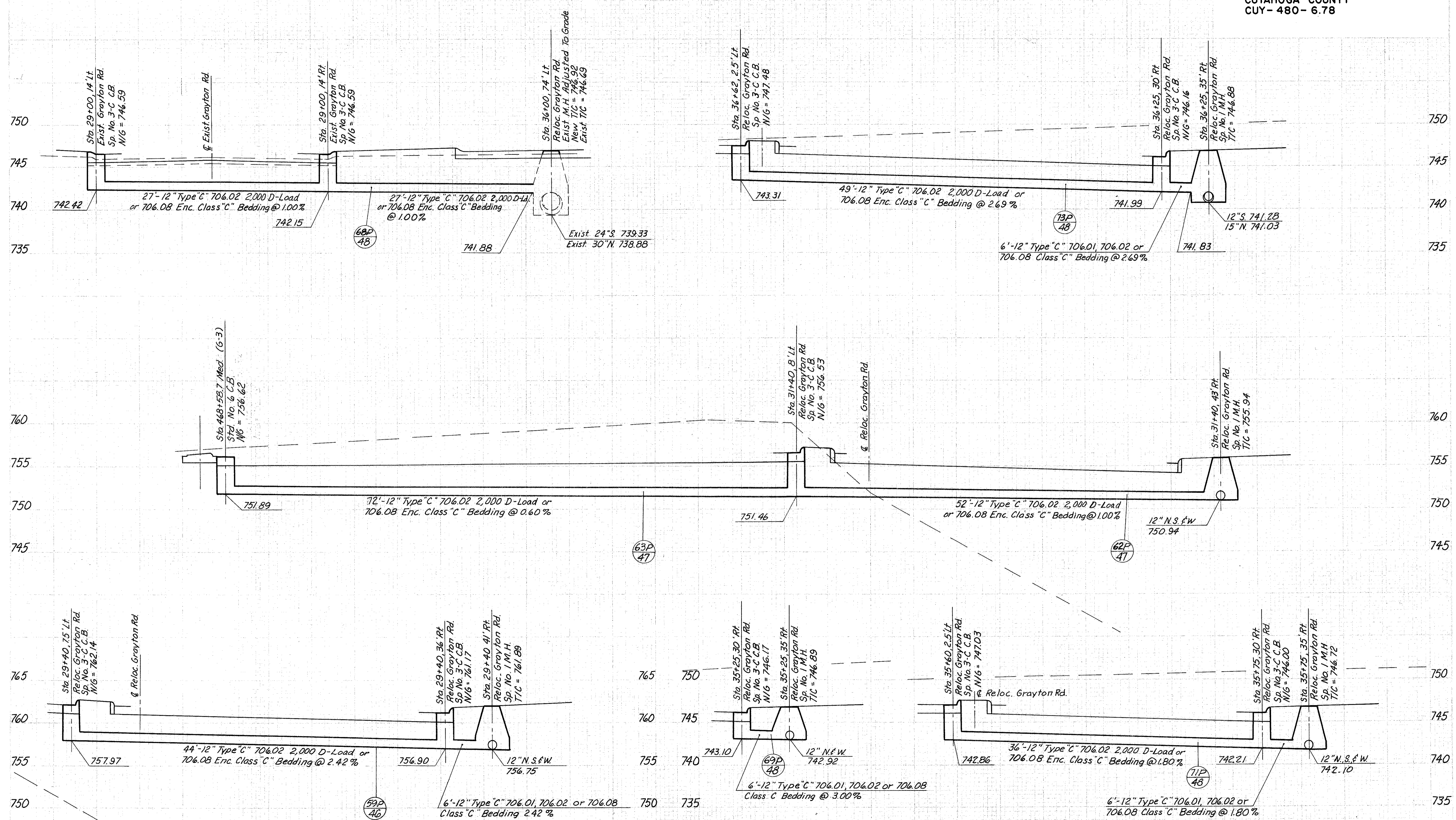


Scale:  
1"=5' Vertical  
1"=10' Horizontal



RELOC GRAYTON SEWER PROFILE

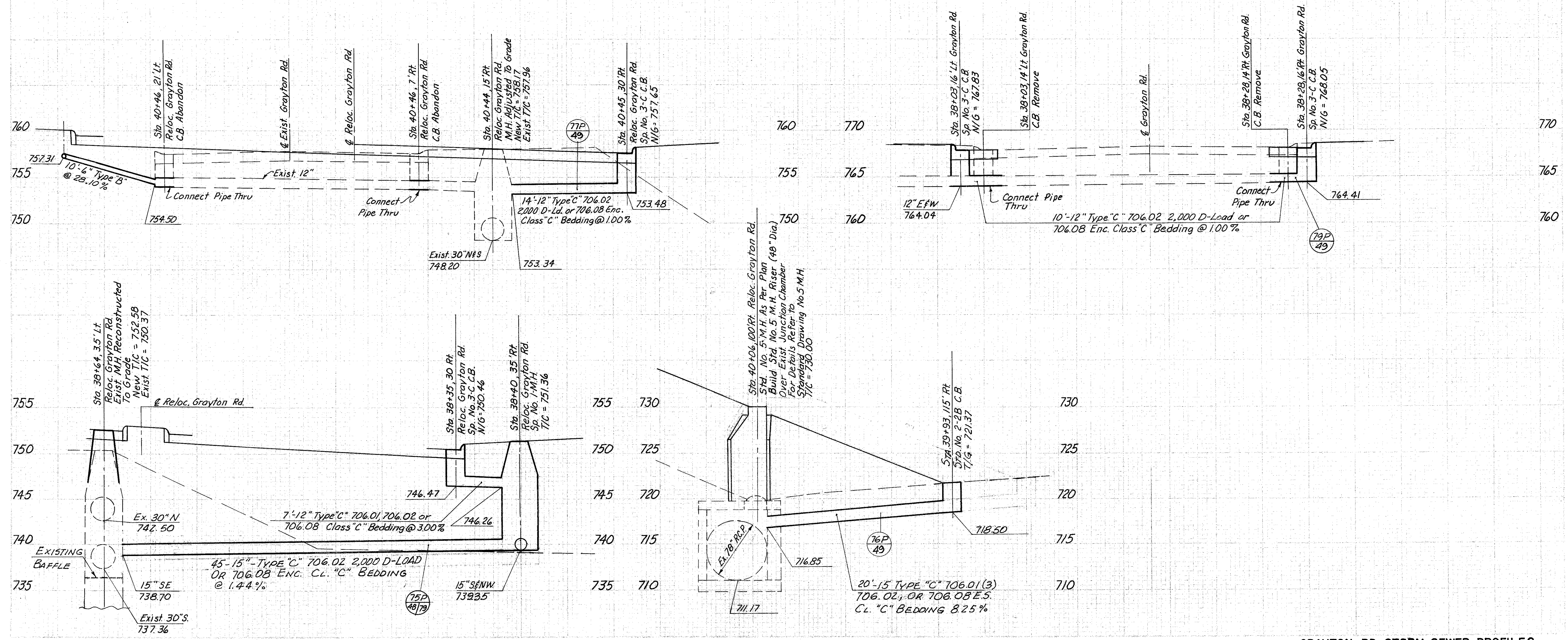
CUYAHOGA COUNTY  
 CUY-480-6.78



For Exist Ground  
 See Cross Sections

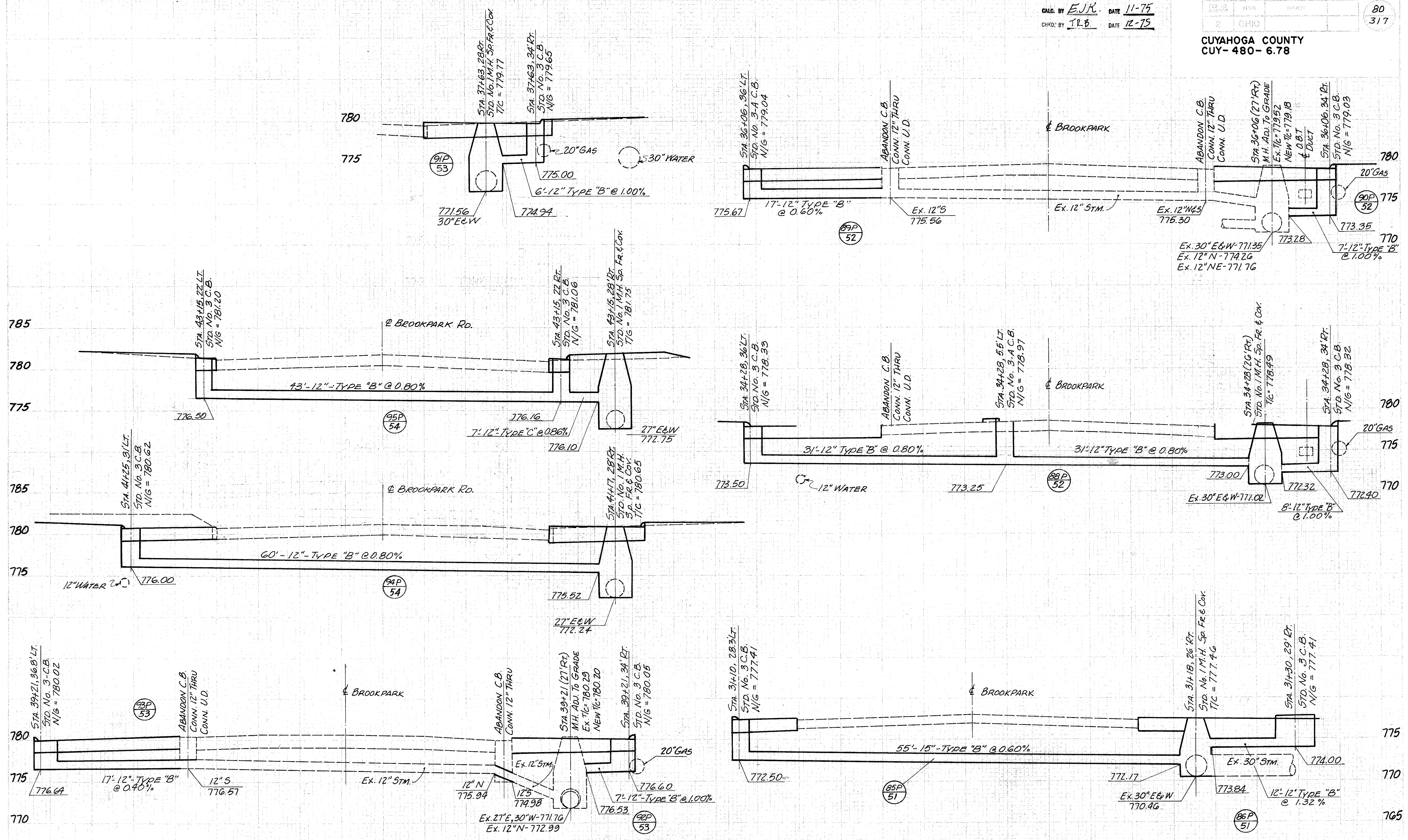
GRAYTON RD STORM SEWER PROFILES

DATE 11-75  
CHKD. BY HJH



GRAYTON RD STORM SEWER PROFILES

CUYAHOGA COUNTY  
 CUY-480-6.78



BROOKPARK STORM SEWER PROFILES

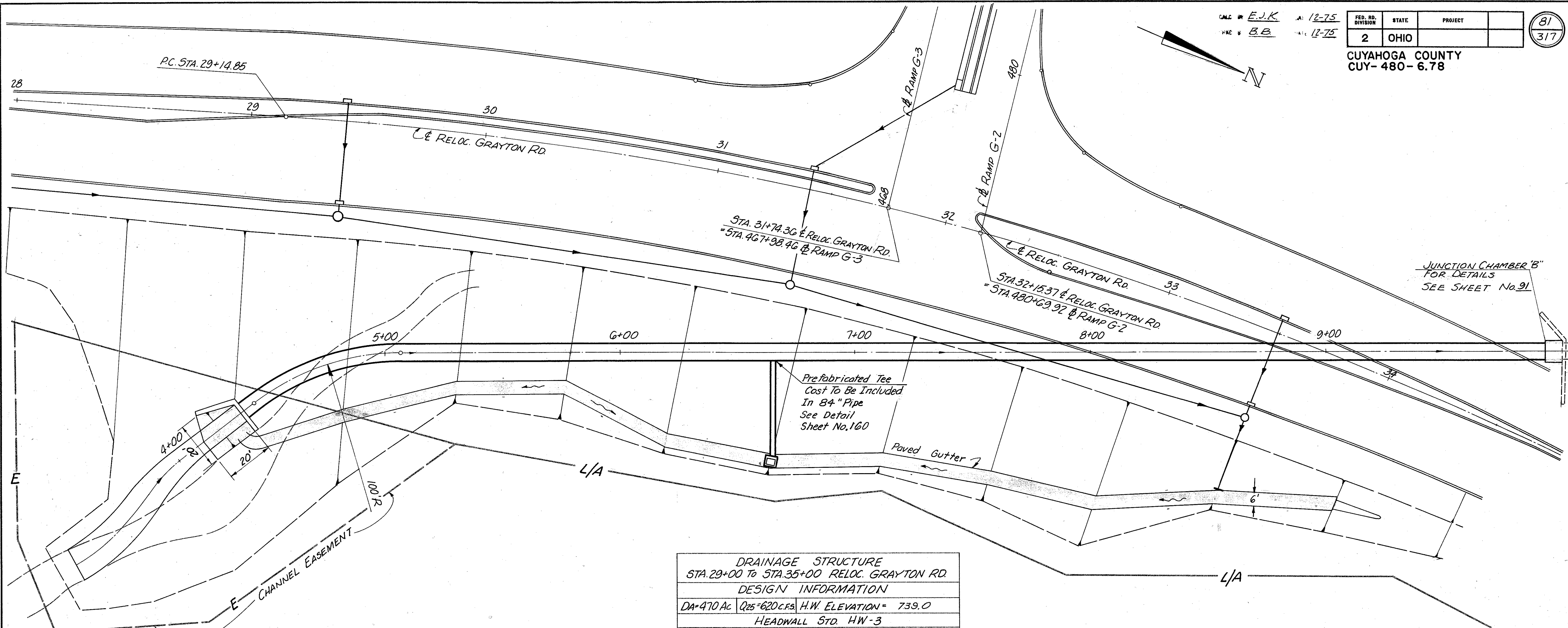


CALC BY E.J.K. DATE 12-75  
 PNC BY B.B. DATE 12-75

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

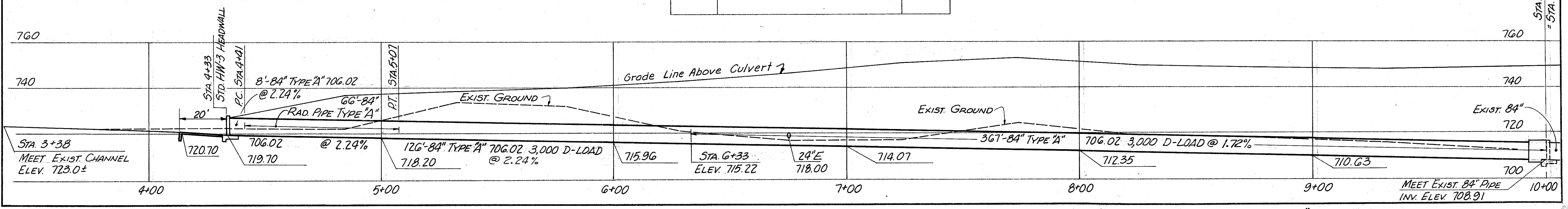
CUYAHOGA COUNTY  
 CUY-480-6.78

81  
 317



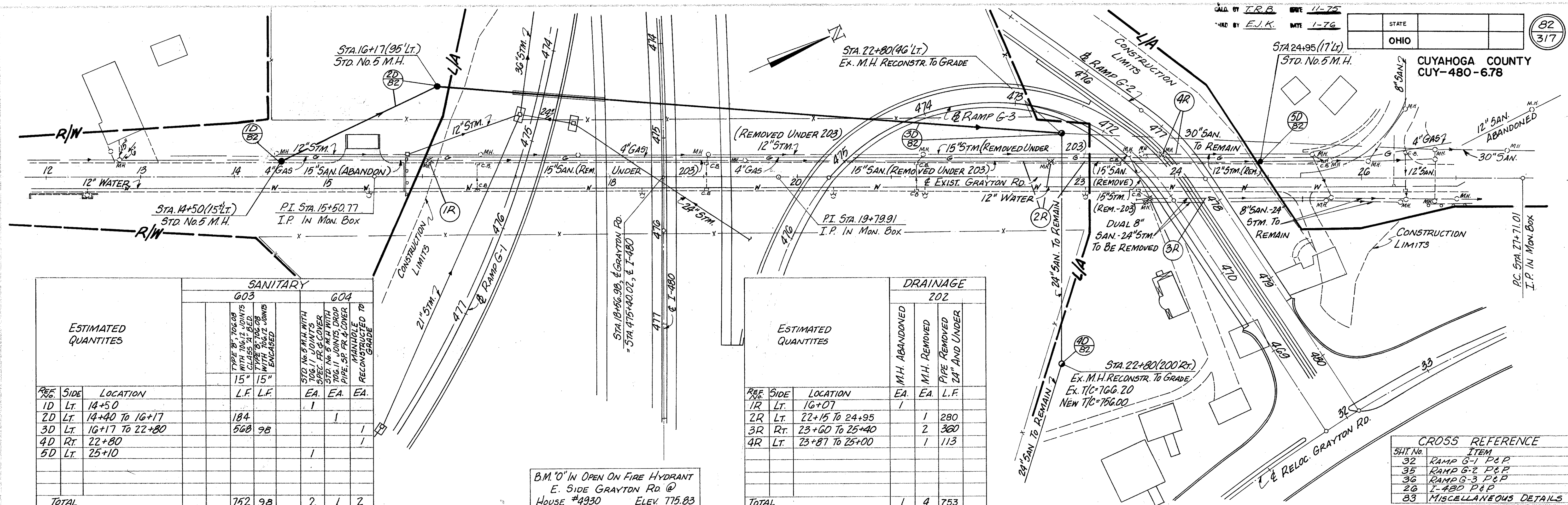
DRAINAGE STRUCTURE STA. 29+00 TO STA. 35+00 RELOC. GRAYTON RD. DESIGN INFORMATION		
DA=470 AC Q25-620 CFS H.W. ELEVATION= 739.0		
HEADWALL STD. HW-3		
ESTIMATED QUANTITIES		
ITEM	DESCRIPTION	QUAN.
G01	6" REINFORCED CONC. RIPRAP	74.5 S.Y.
G02	CONCRETE MASONRY	27 C.Y.
G03	84" TYPE "A" 706.02	8 FT.
G03	84" RADIUS PIPE TYPE "A" 706.02 ▲	66 FT.
G03	84" TYPE "A" 706.02 3000 D-LOAD	493 FT.
601	PAVED GUTTER, TYPE 1-4	472 L.F.
604	JUNCTION CHAMBER B, AS PER PLAN	1 EA.

▲ NOTE: 84" Type A Radius Conduit 706.02  
 The contractor may elect to substitute two (2) or more prefabricated concrete pipe bends to accomplish the proposed curvature in conduit alignment. The bend sections shall be separated by at least one Standard length tangent pipe section. This option must be submitted to the Engineer for his approval.



84" CULVERT DETAIL

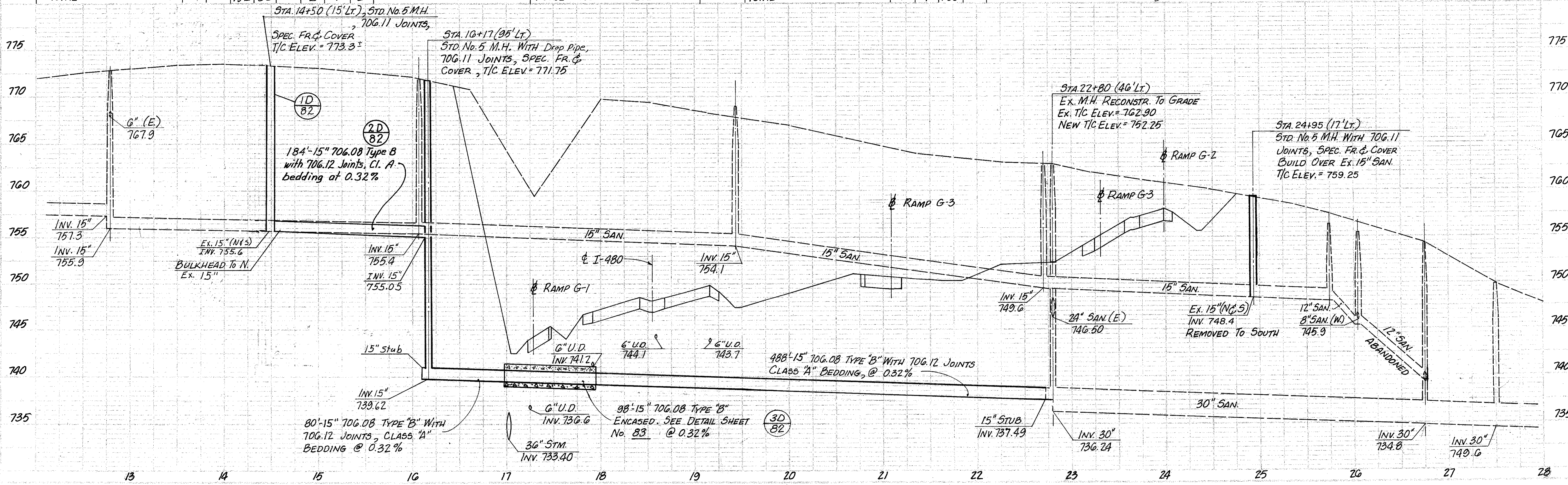
STA. 10+00 & EXIST. CULVERT H.W.  
 = STA. 34+62 ±, 41' LT.



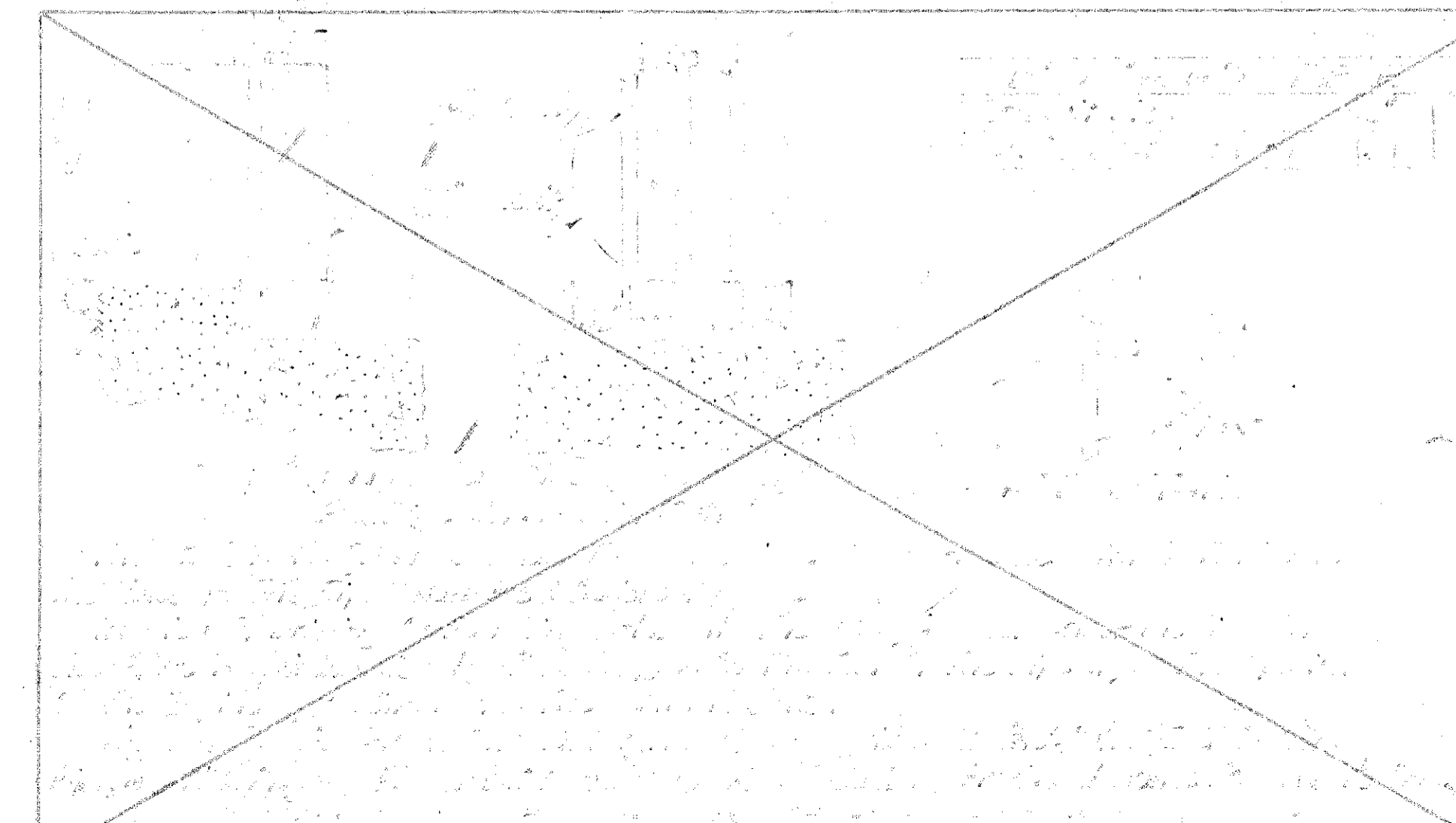
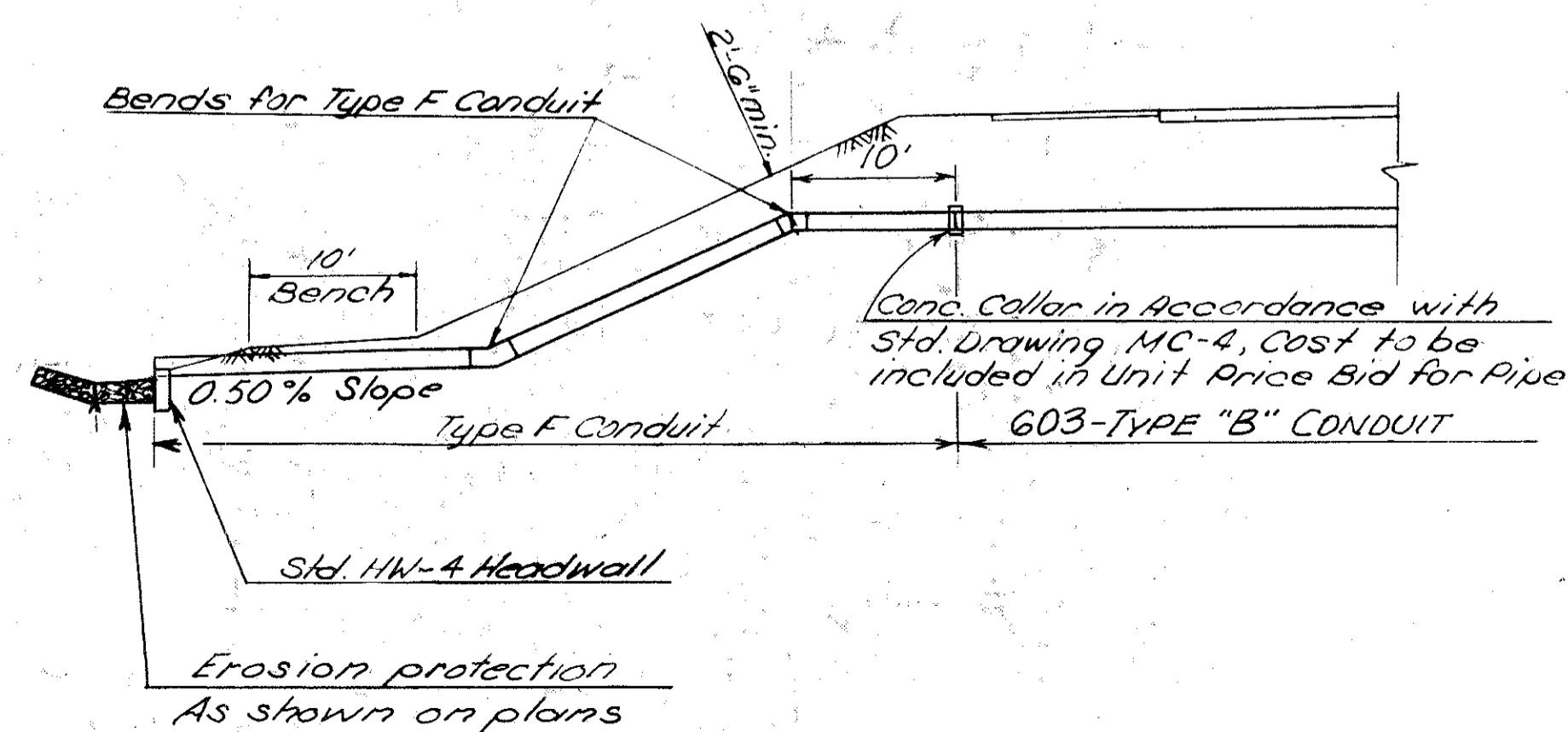
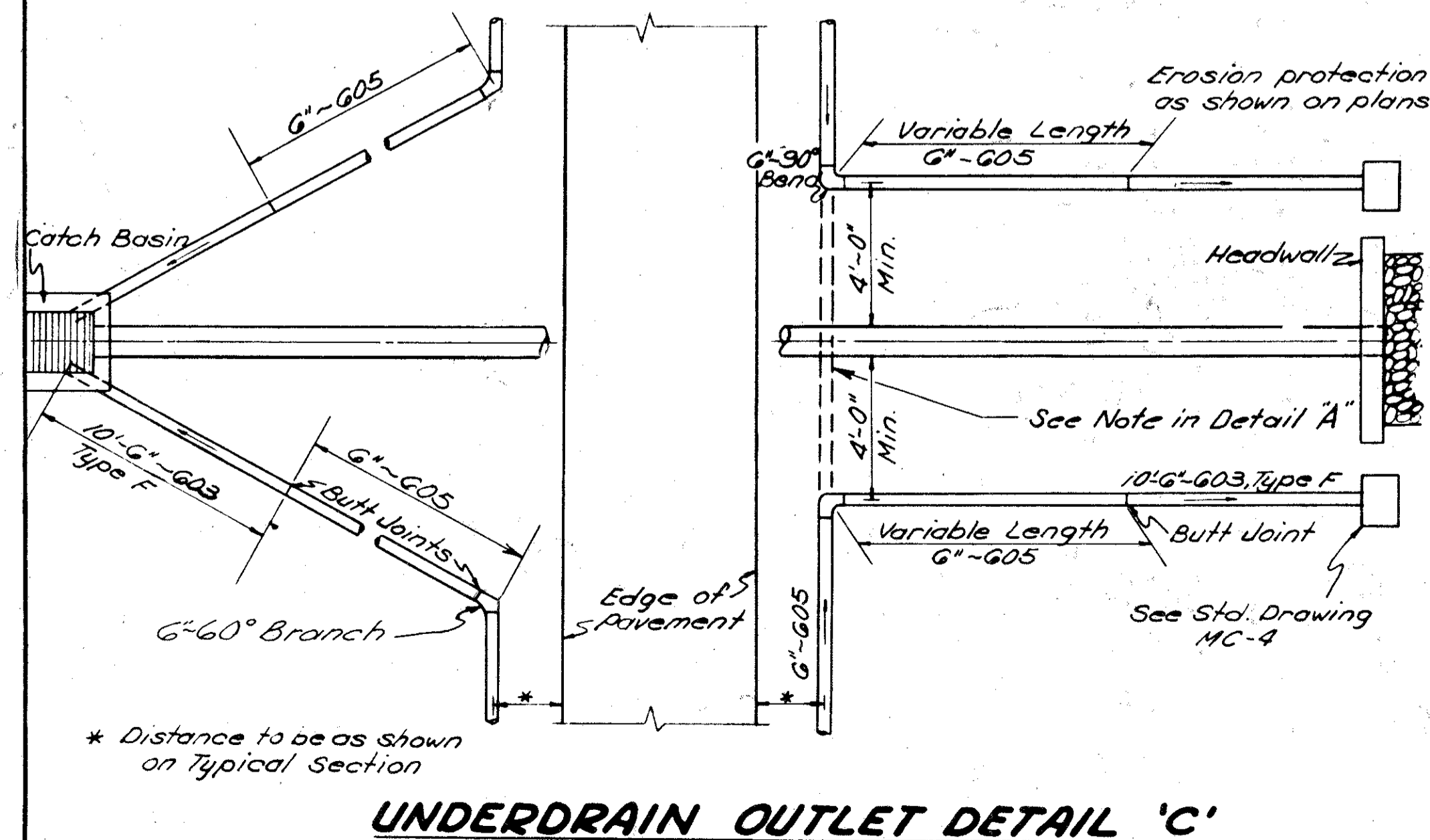
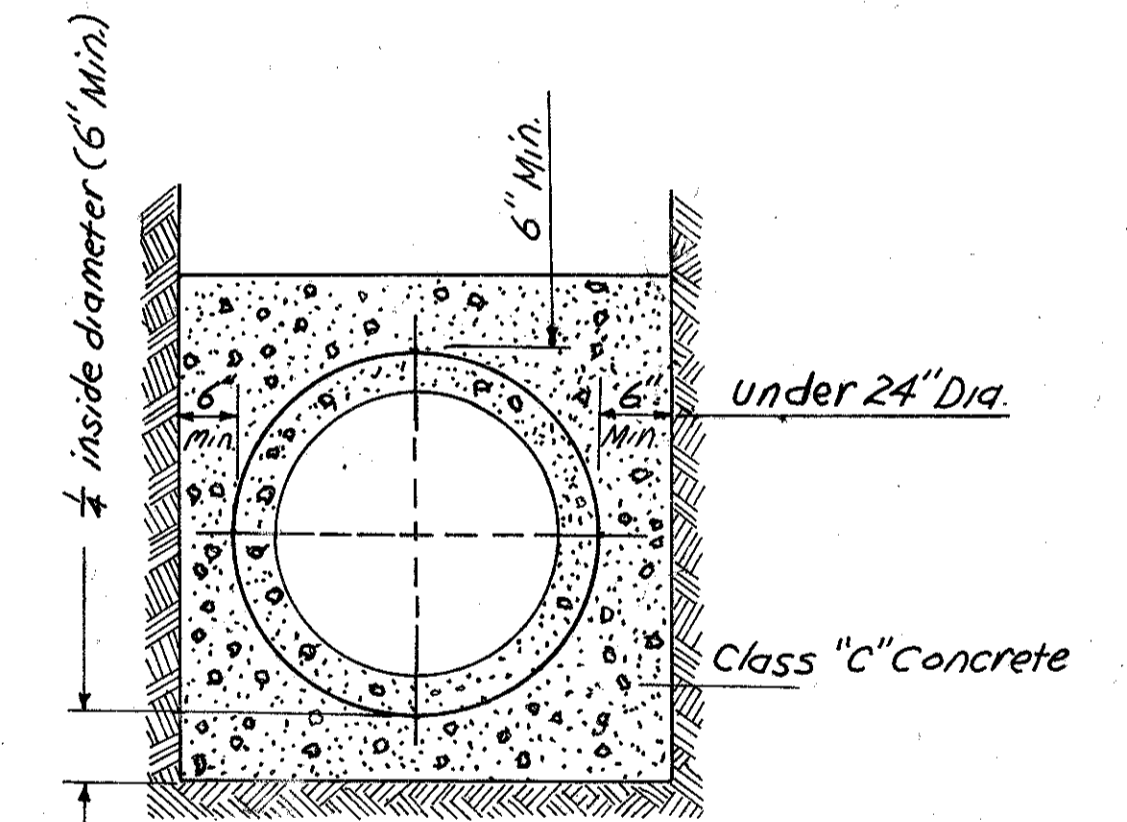
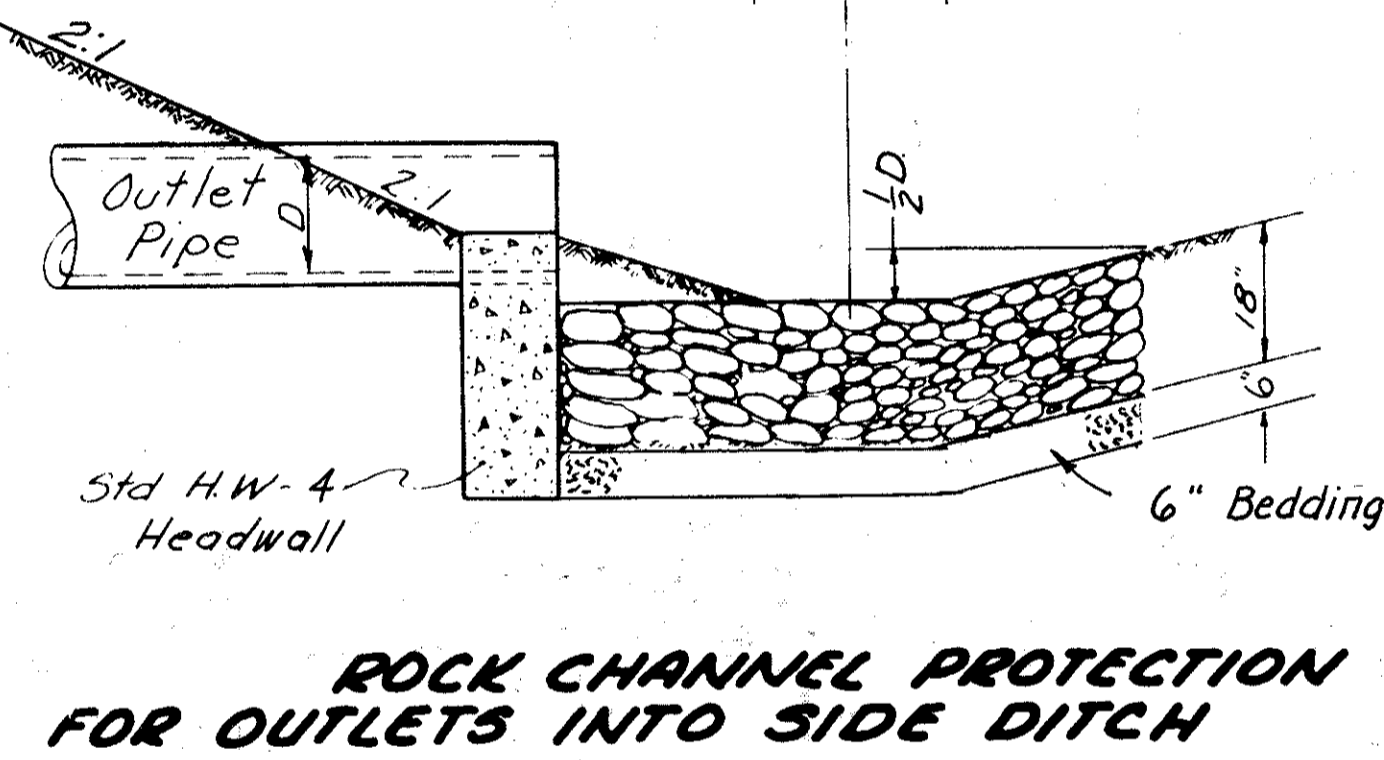
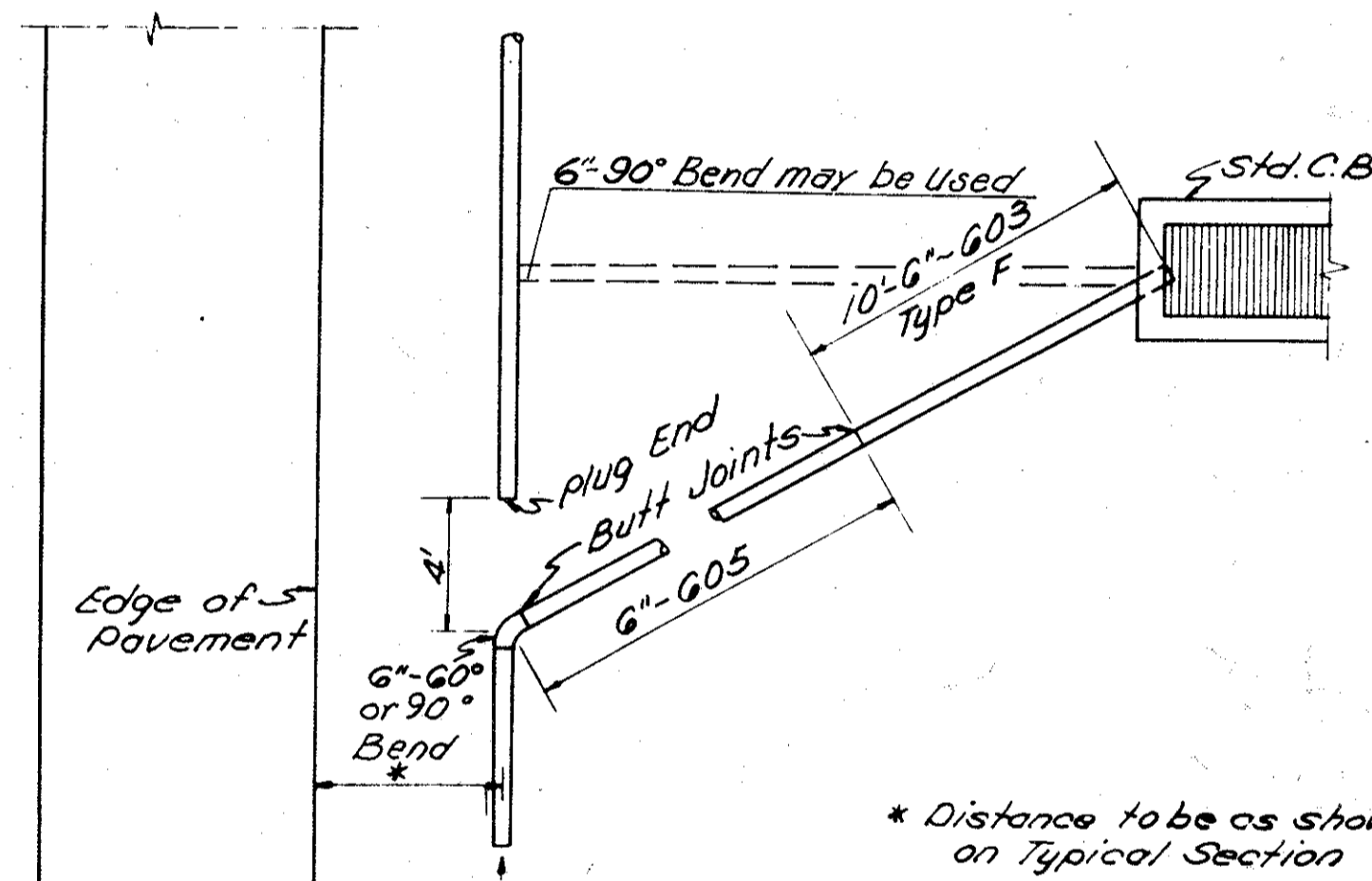
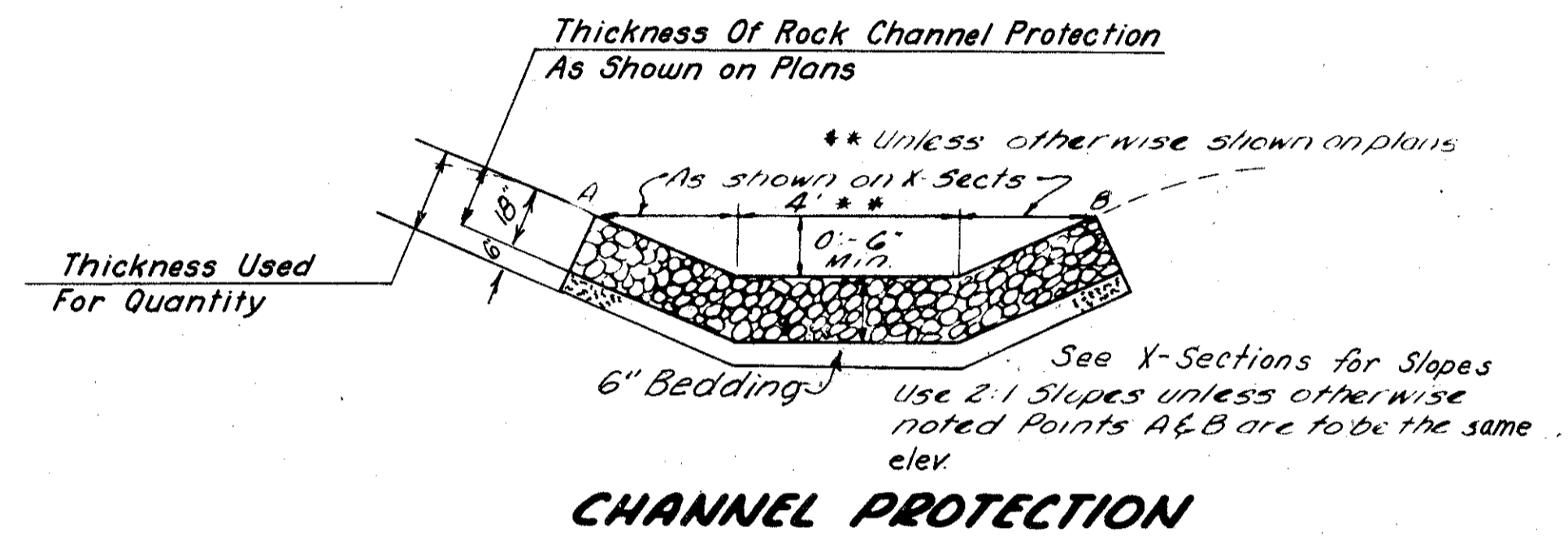
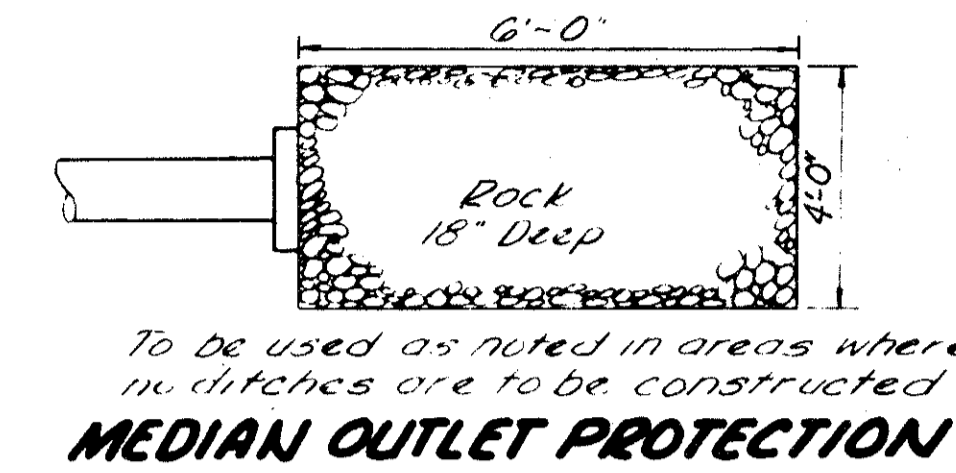
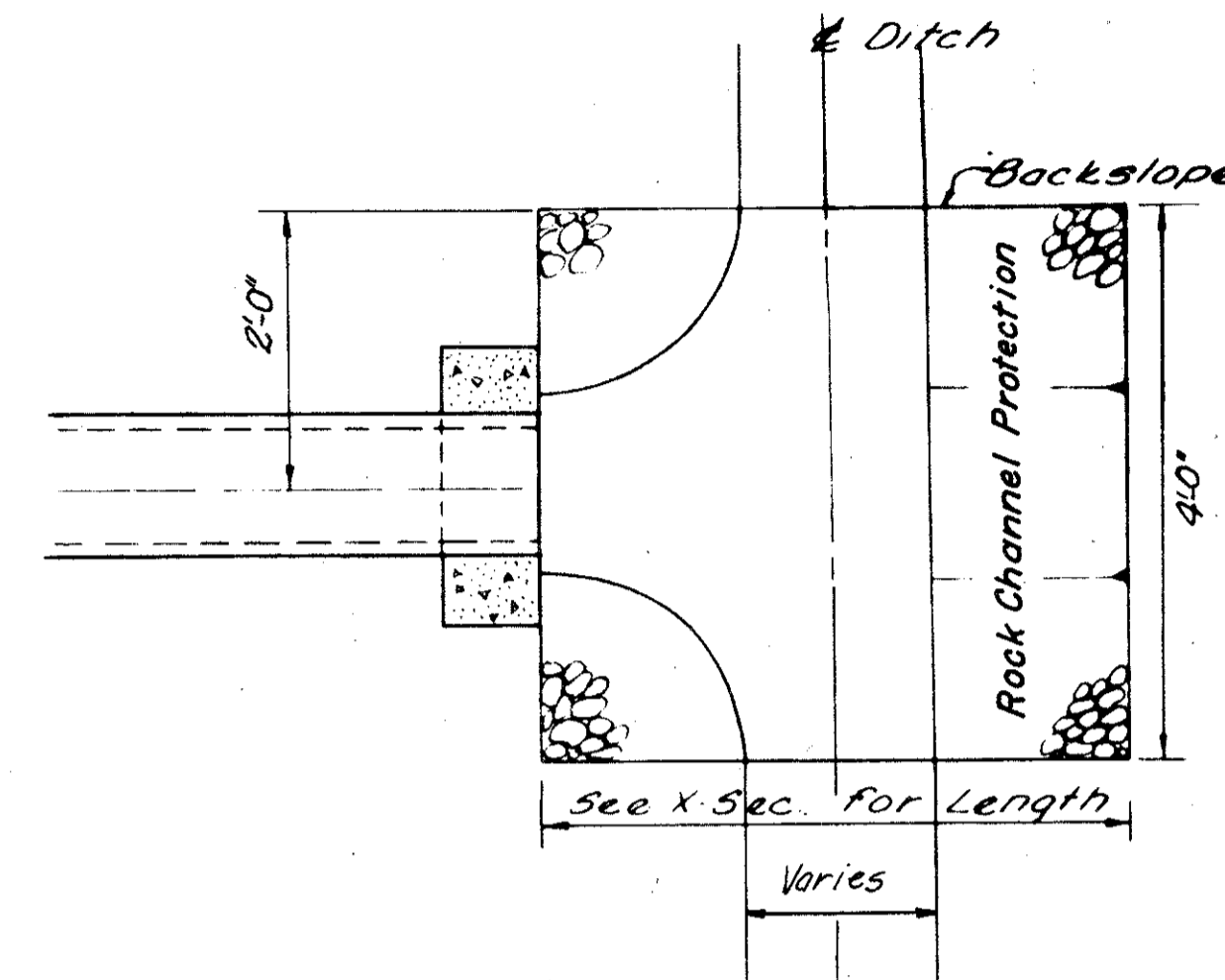
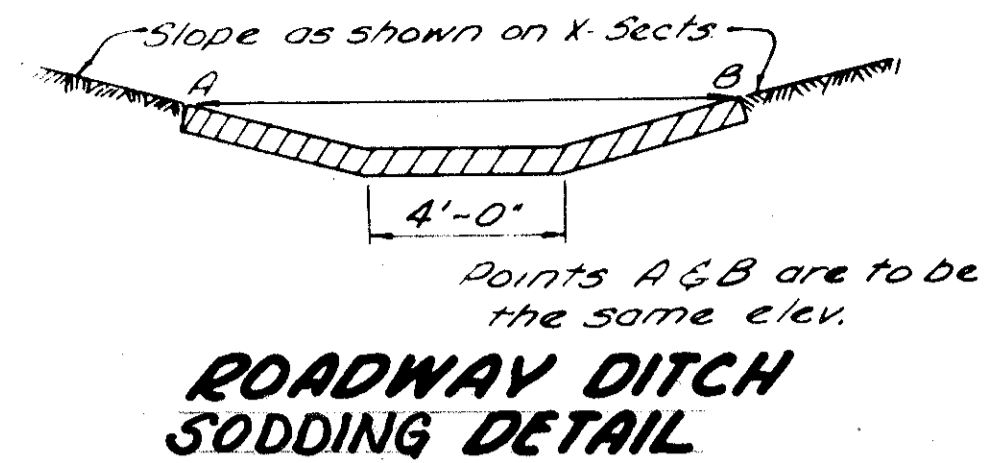
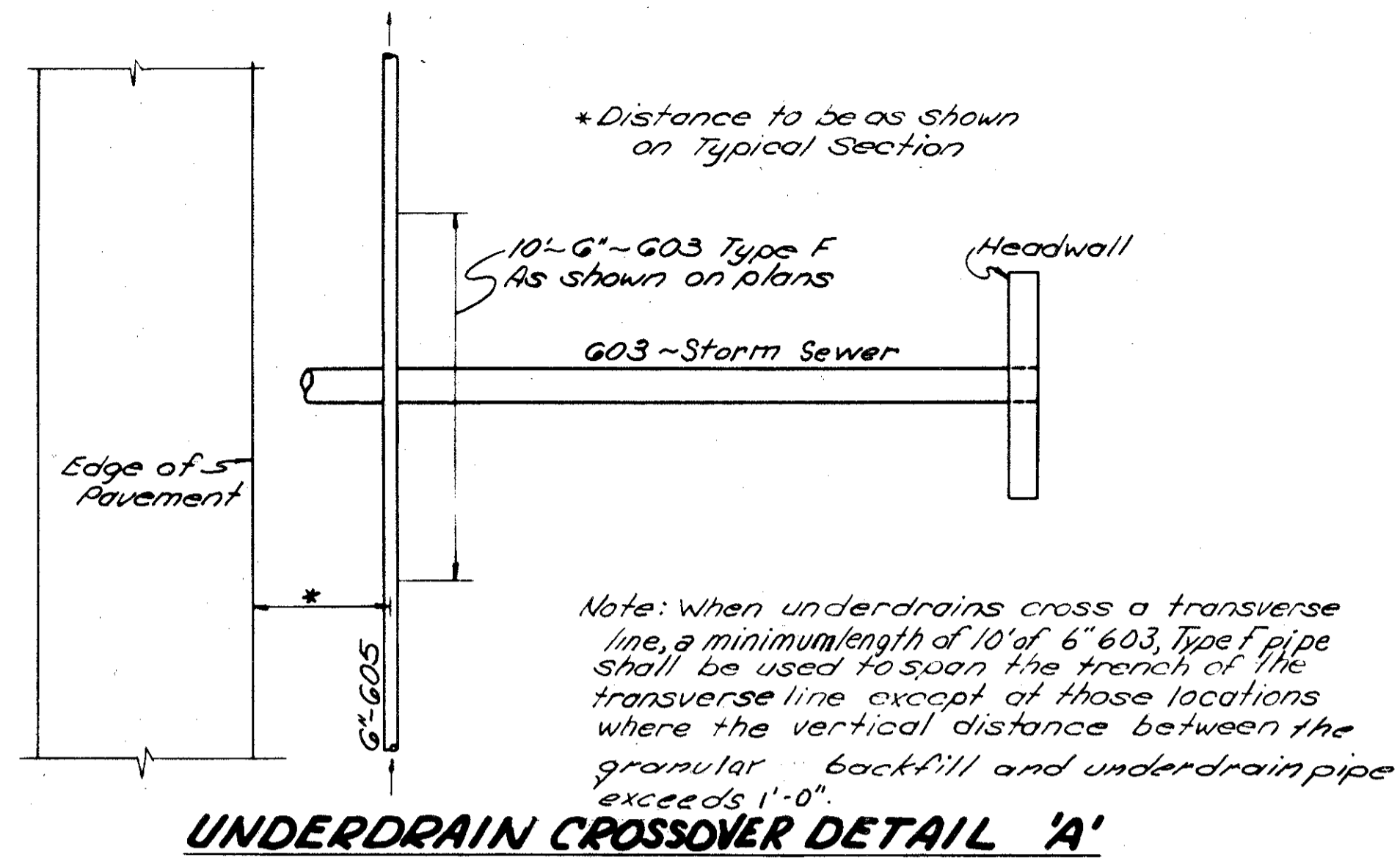
ESTIMATED QUANTITIES			SANITARY			
REF.	SIDE	LOCATION	G03		G04	
			L.F.	L.F.	EA.	EA.
1D	LT.	14+50				
2D	LT.	14+40 To 16+17	184		1	
3D	LT.	16+17 To 22+80	568	98		1
4D	RT.	22+80				1
5D	LT.	25+10				1
TOTAL			752	98	2	2

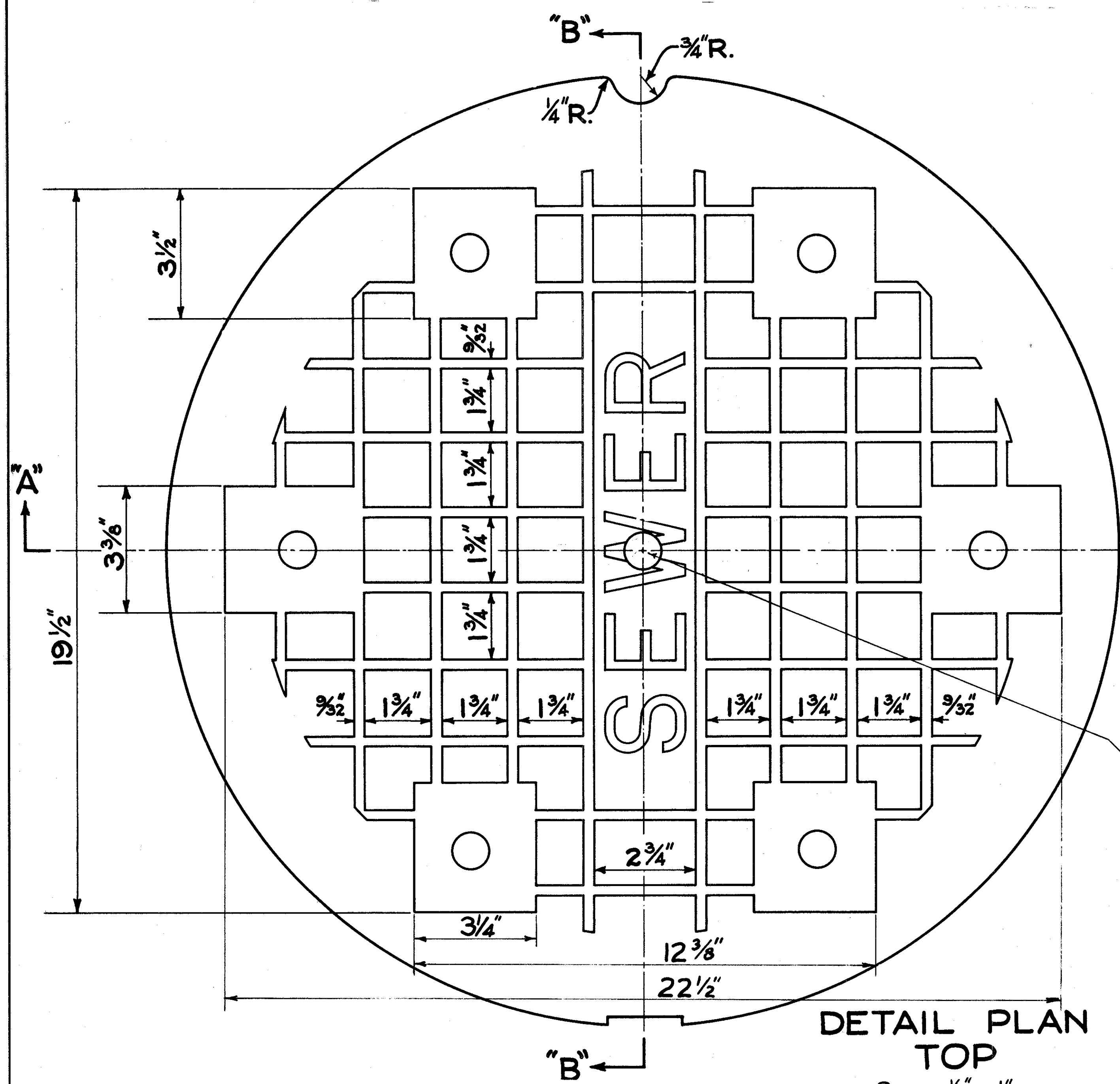
ESTIMATED QUANTITIES			DRAINAGE		
REF.	SIDE	LOCATION	202		
			M.H. ABANDONED	M.H. REMOVED	PIPE REMOVED UNDER 24" AND UNDER
1R	LT.	16+07	1		
2R	LT.	22+15 To 24+95		1	280
3R	RT.	23+60 To 25+40		2	360
4R	LT.	23+87 To 25+00		1	113
TOTAL			1	4	753

CROSS REFERENCE	
SHI No.	ITEM
32	RAMP G-1 P&P
35	RAMP G-2 P&P
36	RAMP G-3 P&P
26	I-480 P&P
83	MISCELLANEOUS DETAILS

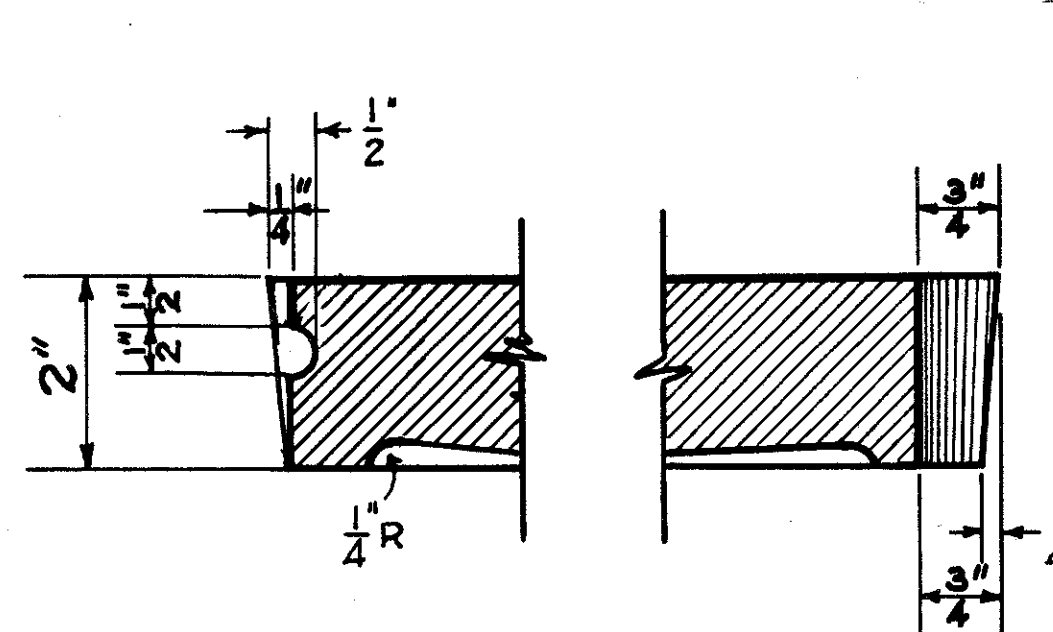


RELOCATED GRAYTON RD. 21" SANITARY SEWER PLAN & PROFILE STA. 12+00 TO STA. 28+00

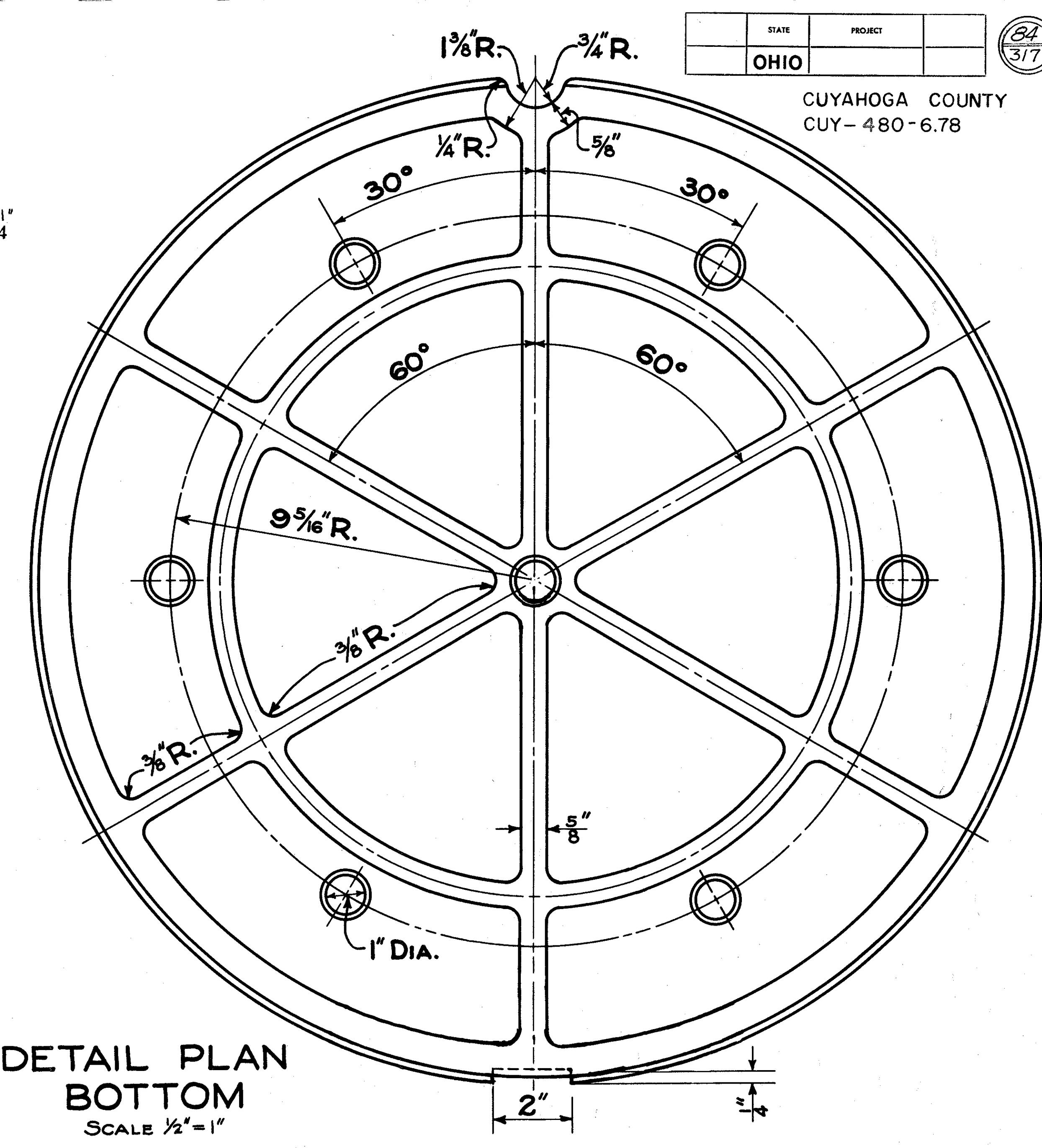




DETAIL PLAN TOP  
 SCALE 1/2" = 1"

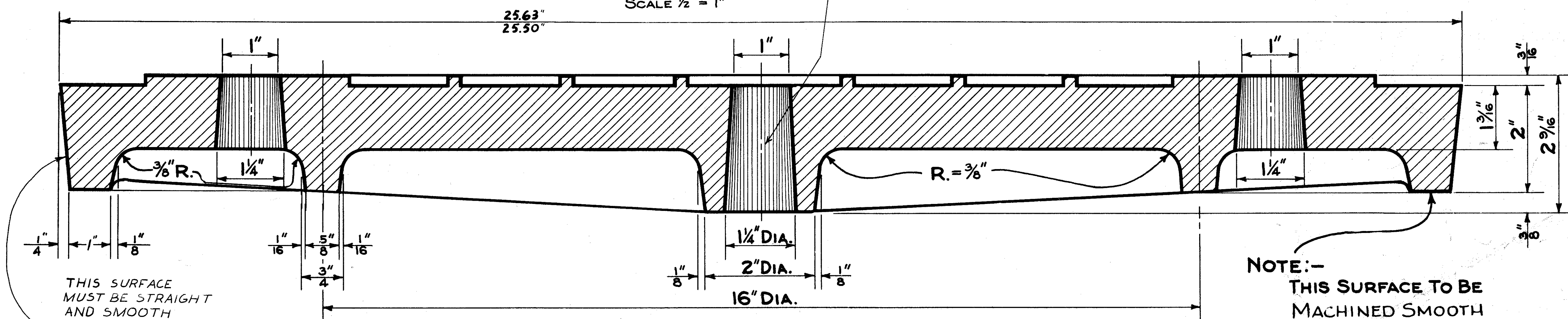


SECTION "B-B"  
 SCALE 1/2" = 1"



DETAIL PLAN BOTTOM  
 SCALE 1/2" = 1"

OPTION -  
 CENTER HOLE  
 MAY BE OMITTED



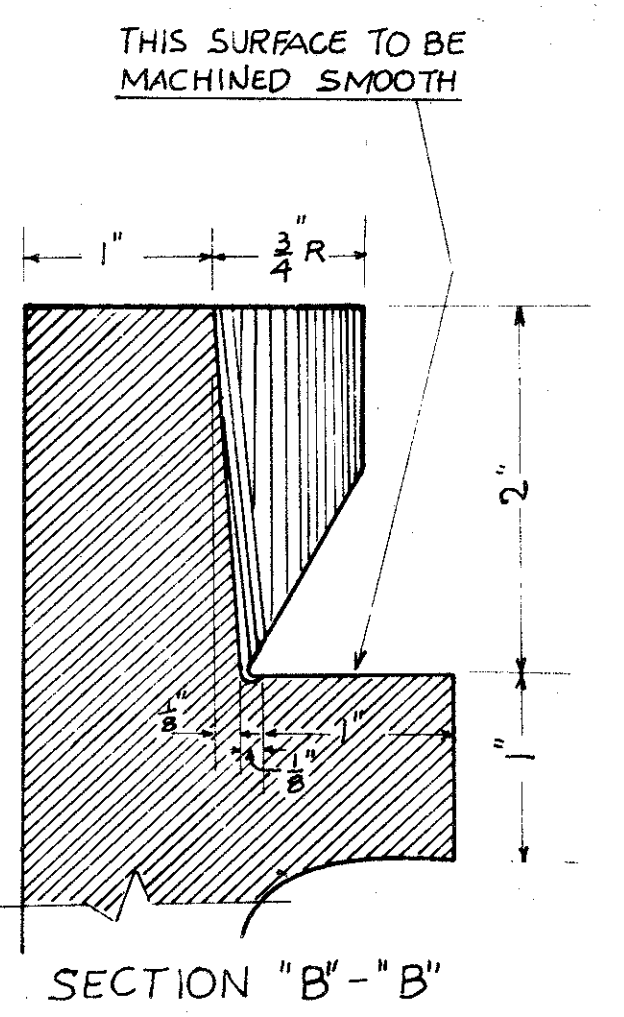
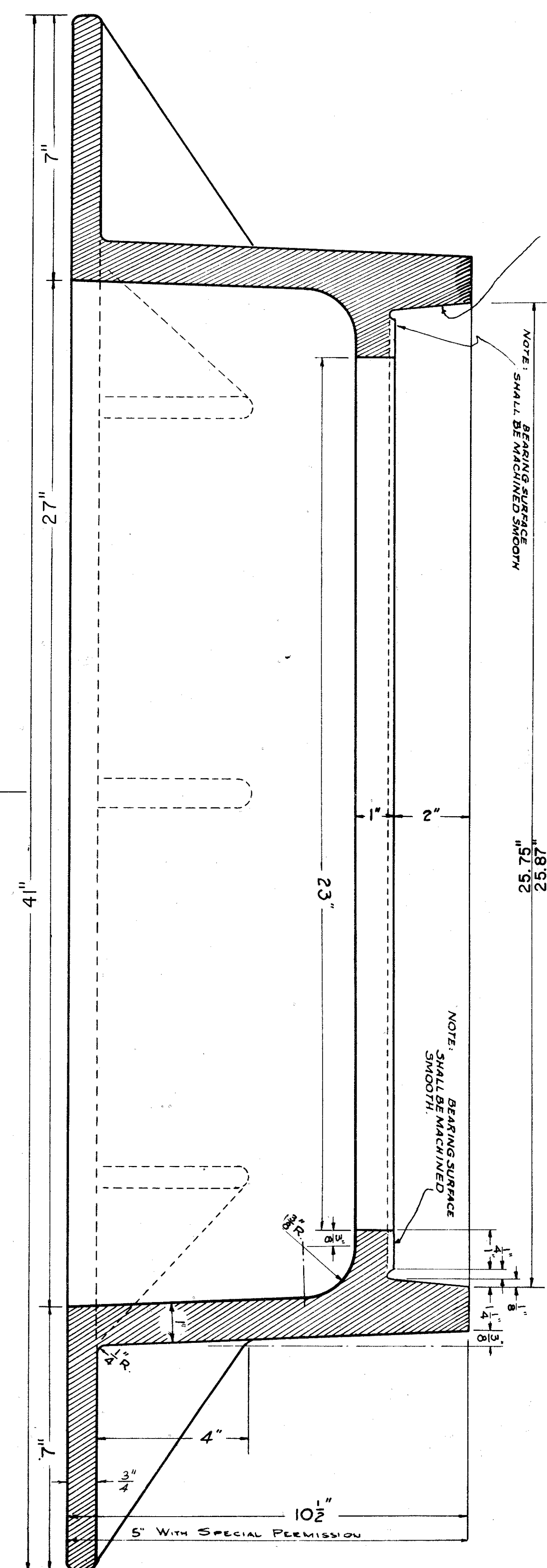
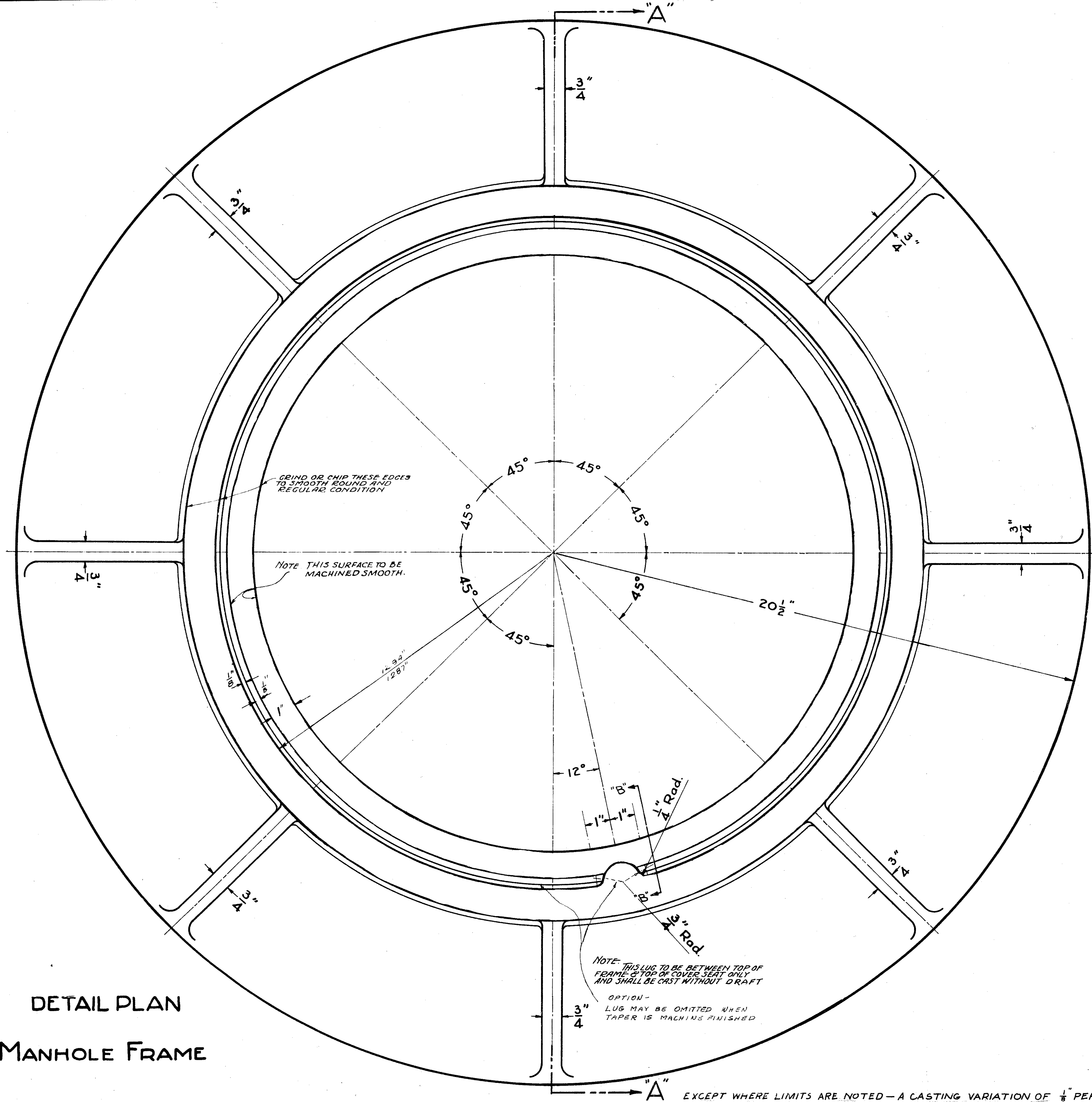
SECTION "A-A"  
 SCALE 1" = 1"

NOTE:-  
 THIS SURFACE TO BE  
 MACHINED SMOOTH

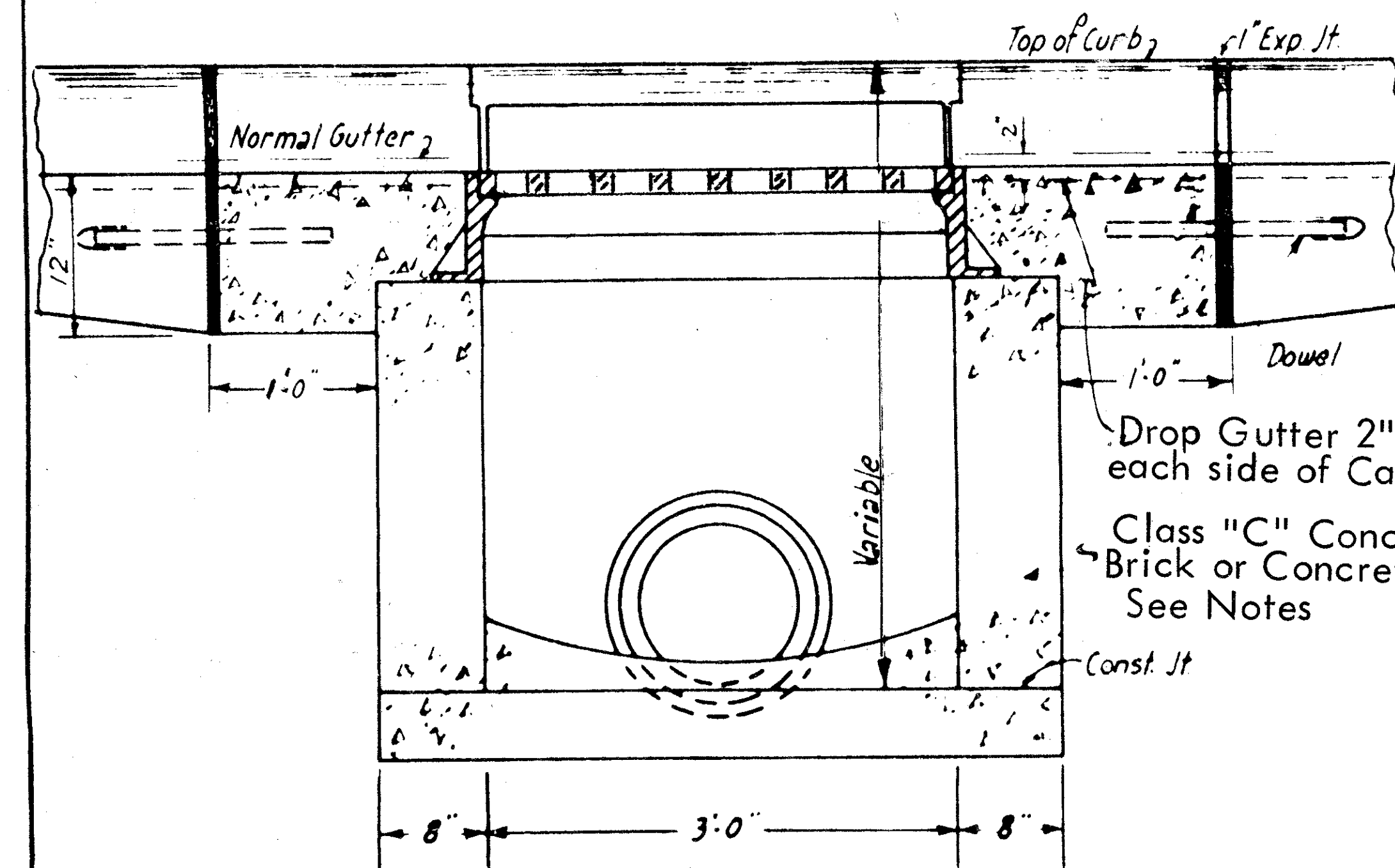
NOTE MATERIAL SHALL BE  
 IN ACCORDANCE WITH STATE  
 OF OHIO 1977 SPECIFICATIONS  
 MINIMUM WEIGHT 195 lbs.

CUYAHOGA COUNTY  
CUY-480-6.78

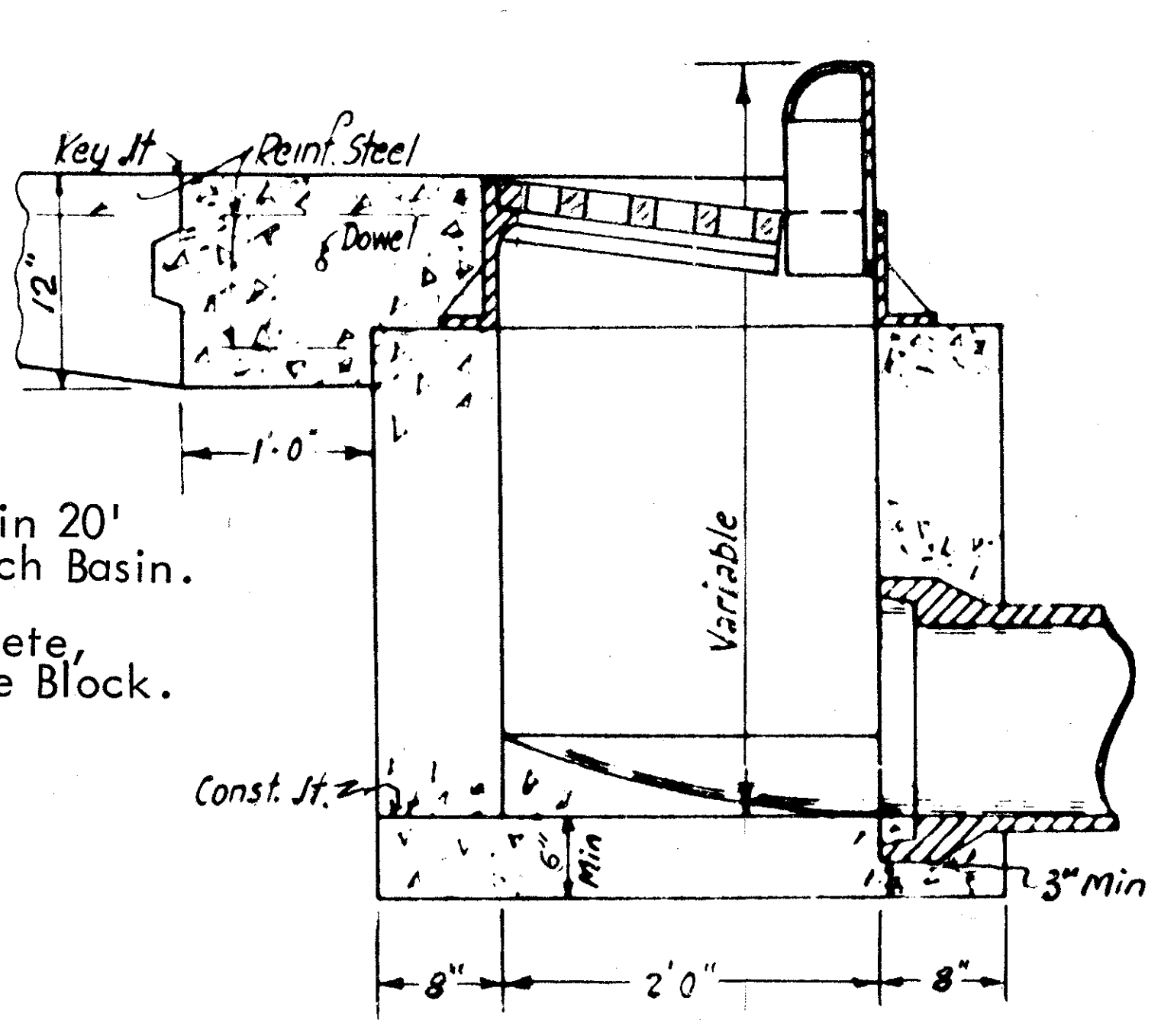
TAPERED SURFACE MUST BE STRAIGHT SMOOTH AND FREE FROM IRREGULARITIES.  
OPTION - TAPER MAY BE MACHINE FINISHED TO OR BELOW MACHINED SEAT.



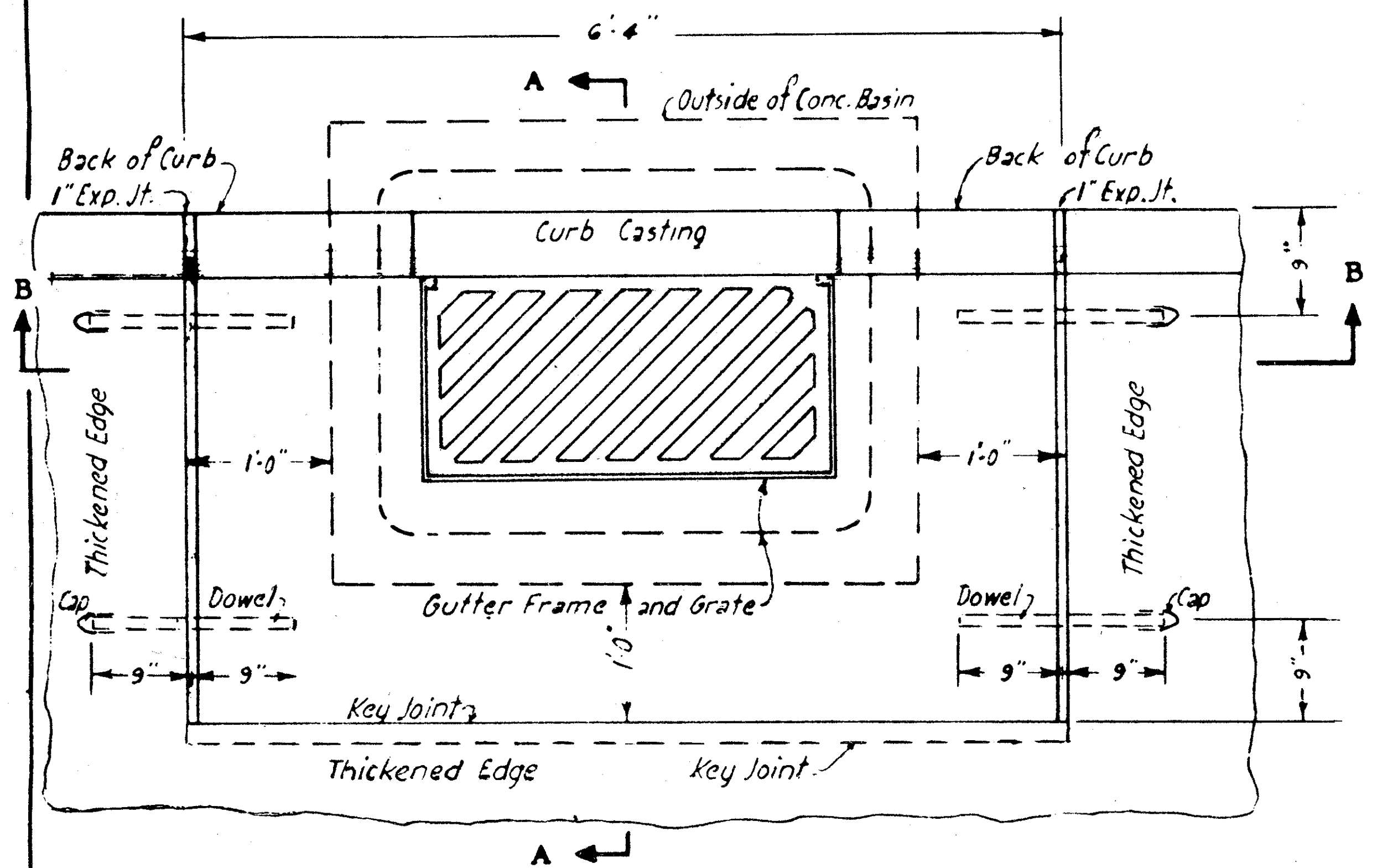
NOTE: MATERIAL SHALL BE IN ACCORDANCE WITH STATE OF OHIO 1977 SPECIFICATIONS MINIMUM WEIGHT 400 LBS.



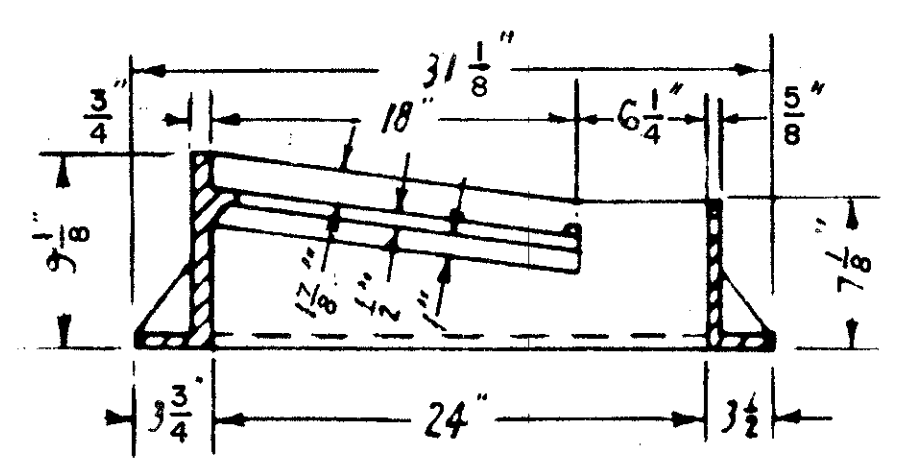
SECTION B-B



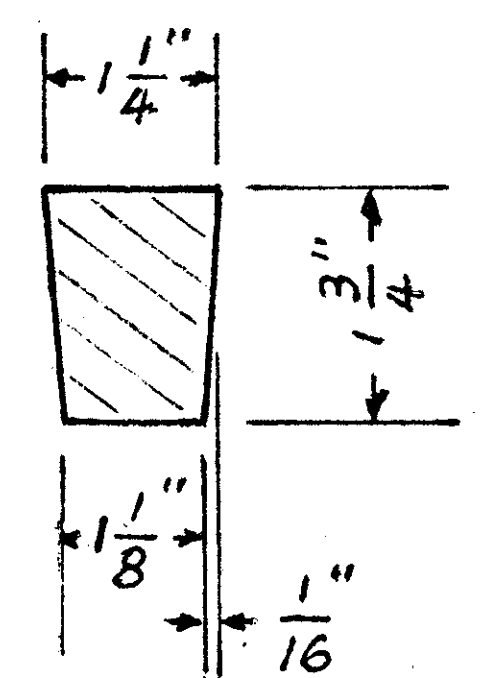
SECTION A-A



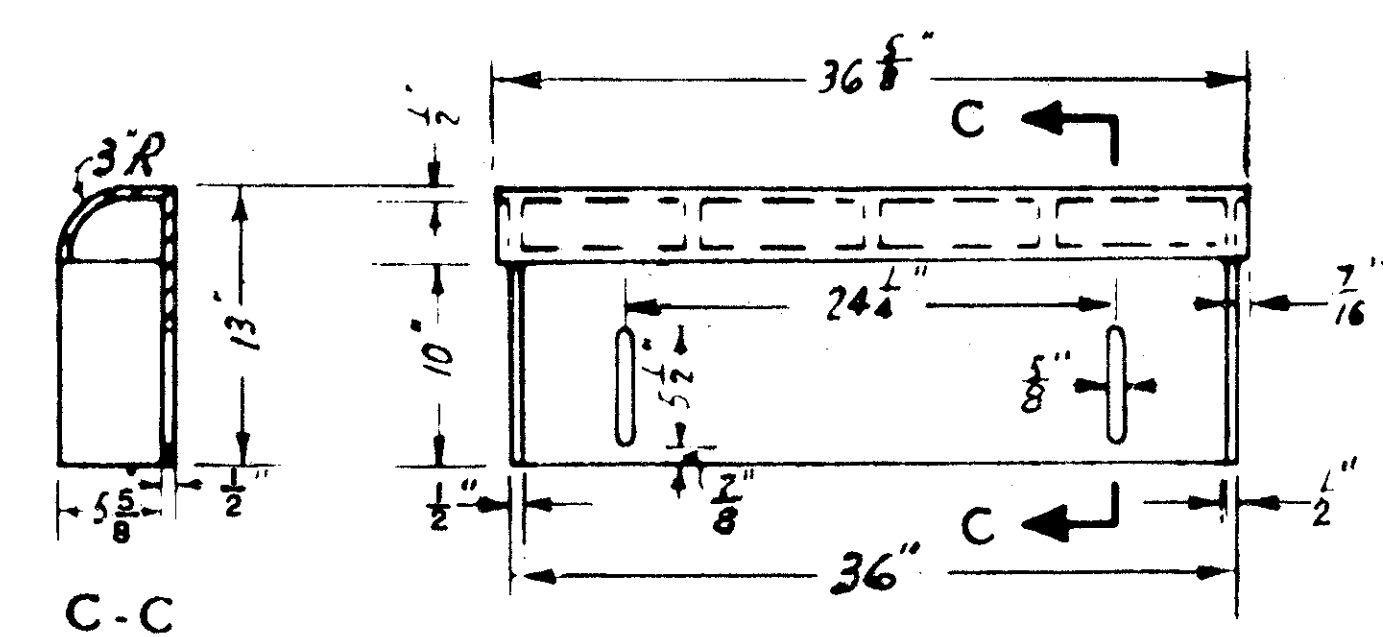
PLAN OF CATCH BASIN & PAVEMENT JOINTS



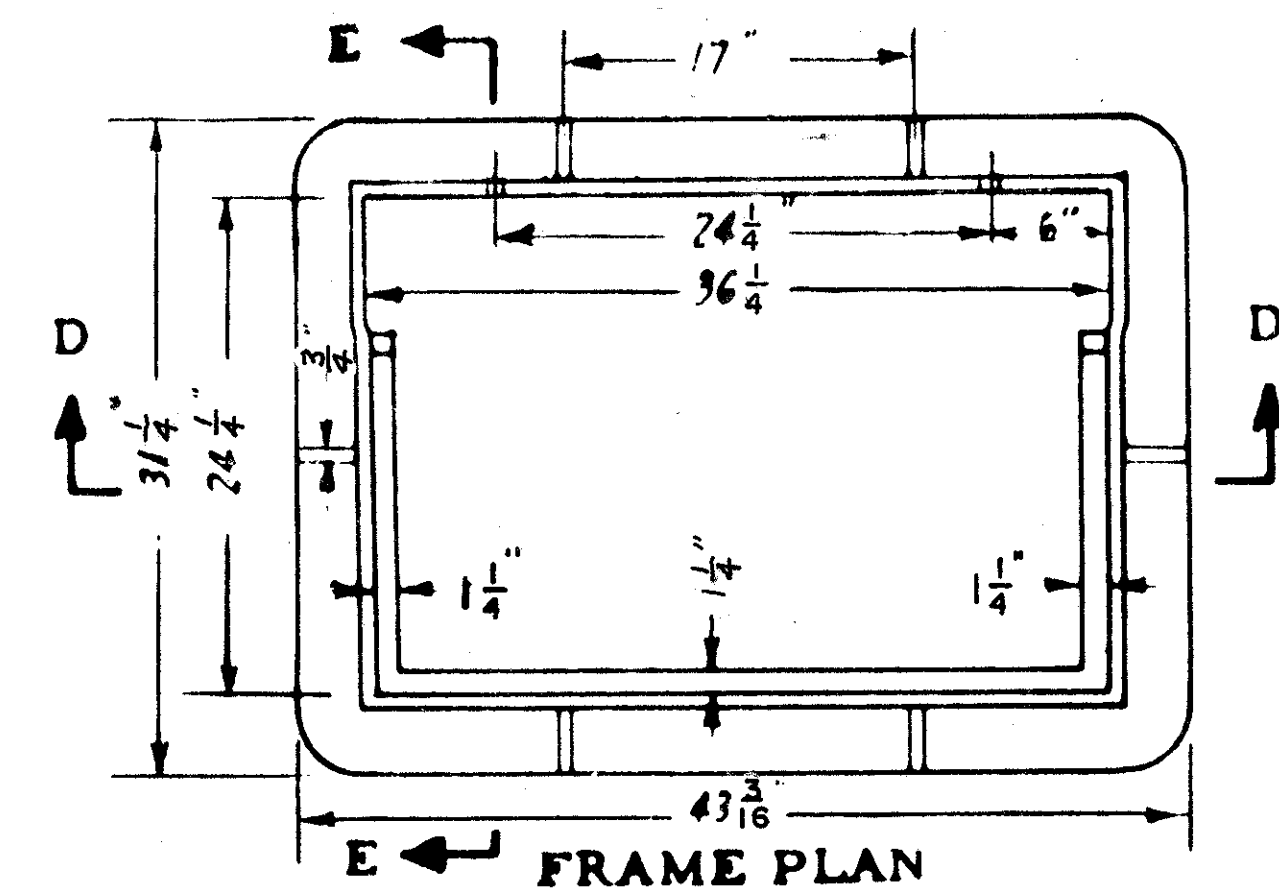
SECTION E-E



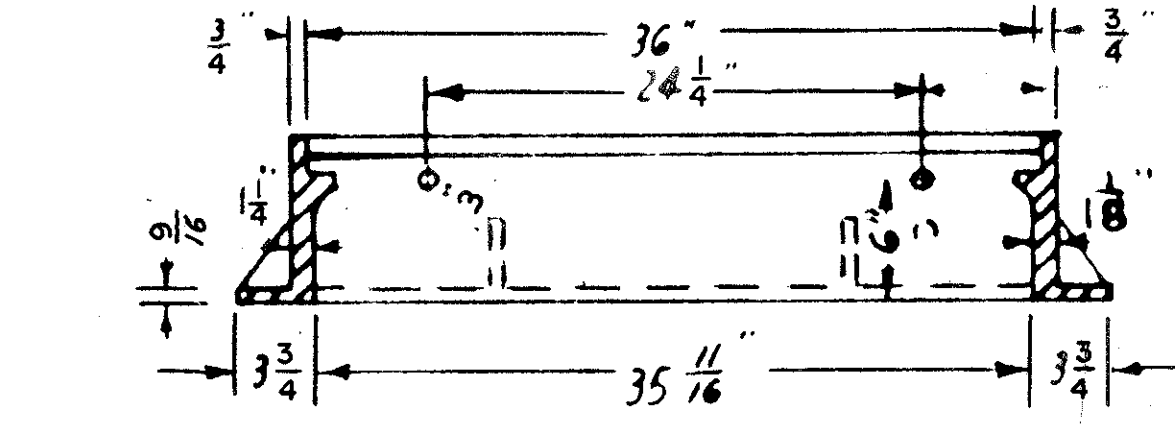
SECTION F-F



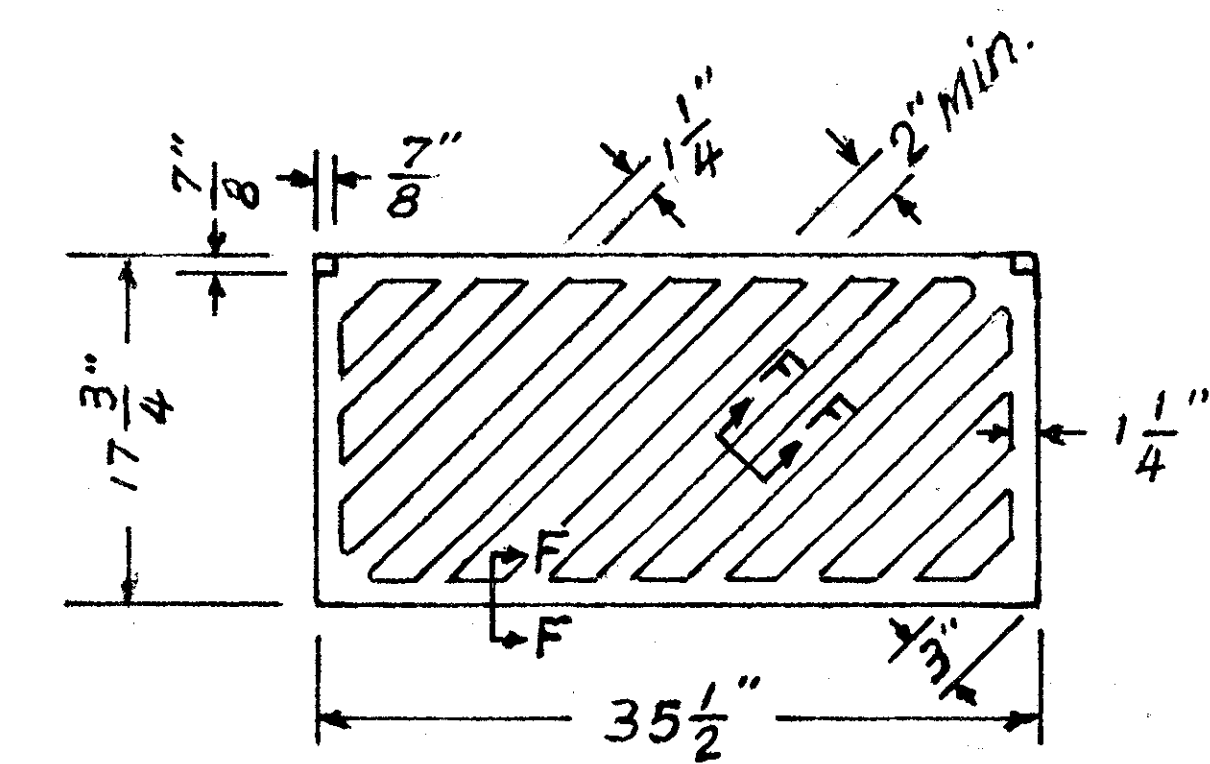
ELEVATION RADIUS CURB BOX



FRAME PLAN



SECTION D-D



GRATE PLAN

NOTES

Castings shall meet the requirements of 604, except that the grate material shall be restricted to 711.13 ASTM A536 Grade 65-45-12. Exposed part of curb casting to be thoroughly cleaned and given one coat of asphalt varnish or coal tar pitch paint.

WEIGHTS minimum -

- Curb casting 100 pounds
- Gutter grate 130 pounds
- Gutter frame 300 pounds

BEARING AREAS or frame and grate shall be so fitted and finished as to provide a firm and even seat for the portions of the grate in the frame. No projections shall exist on bearing areas of either casting and the grate shall seat in its frame without rocking. The frame and grate shall be fitted, matched and marked before delivery to the project.

DOWELS shall be 1 1/8 inch round, smooth bars 18 inches long spaced as shown hereon and greased.

CONCRETE cast in place shall be Class "C". BRICK OR SOLID CONCRETE BLOCK sidewalls when used in place of concrete shall be 8 inches minimum in thickness.

PAVEMENT: The portion blocked out of the pavement shall be placed after the casting has been set but shall be paid for as part of the pavement.

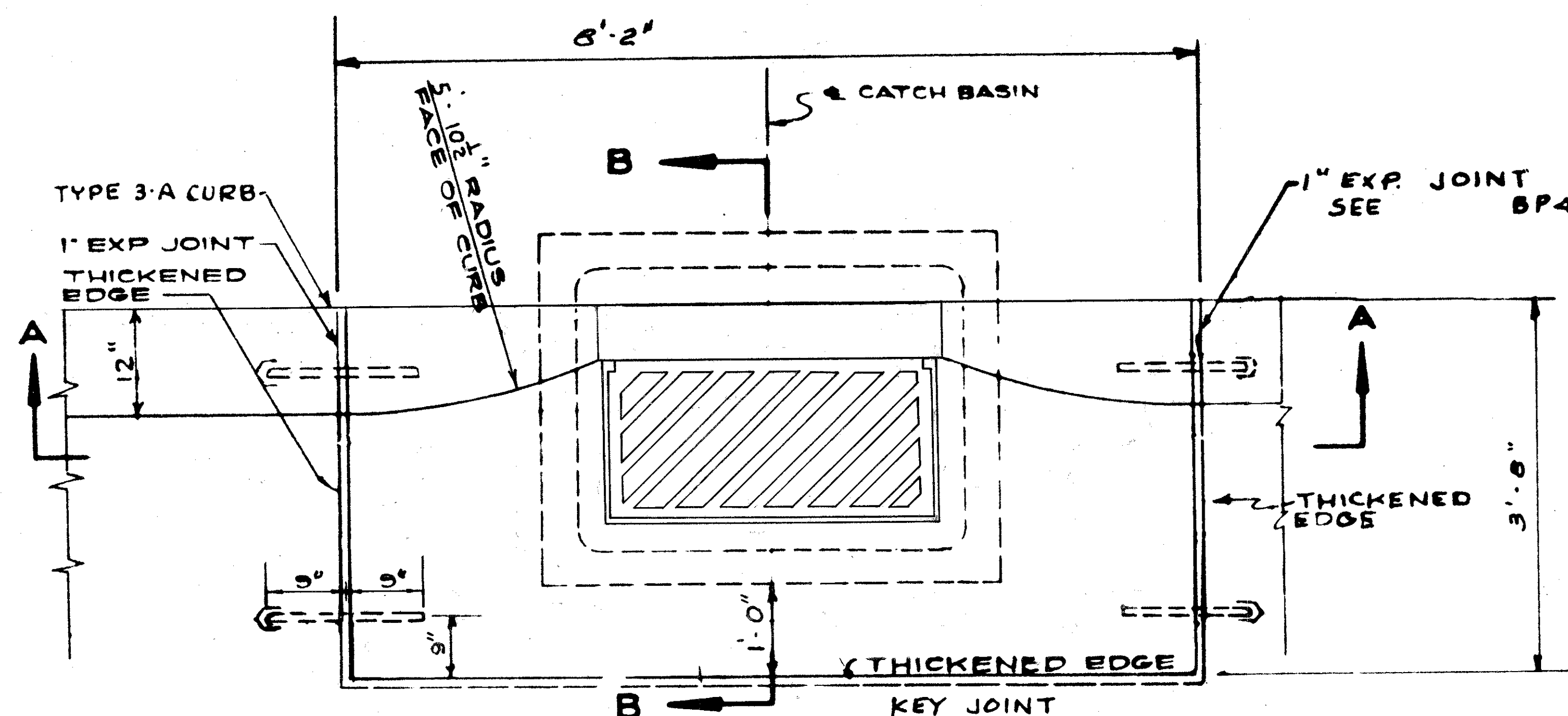
EXPANSION JOINT - The 1" Expansion Material shall be omitted when Asphaltic Concrete Surface is part of the Pavement. This catch basin is identical with the Cuyahoga County standard No. 3-C Catch basin.

STATE	PROJECT
OHIO	

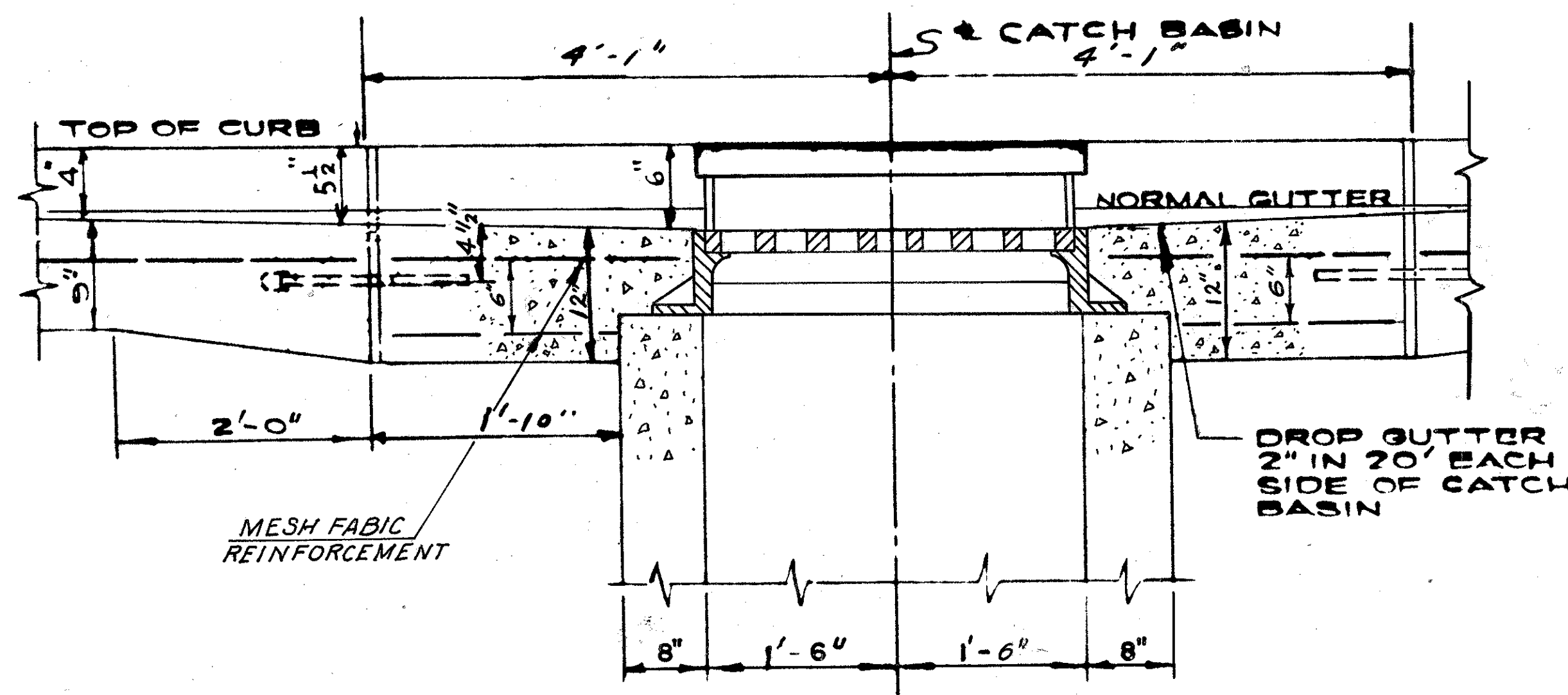
87  
317

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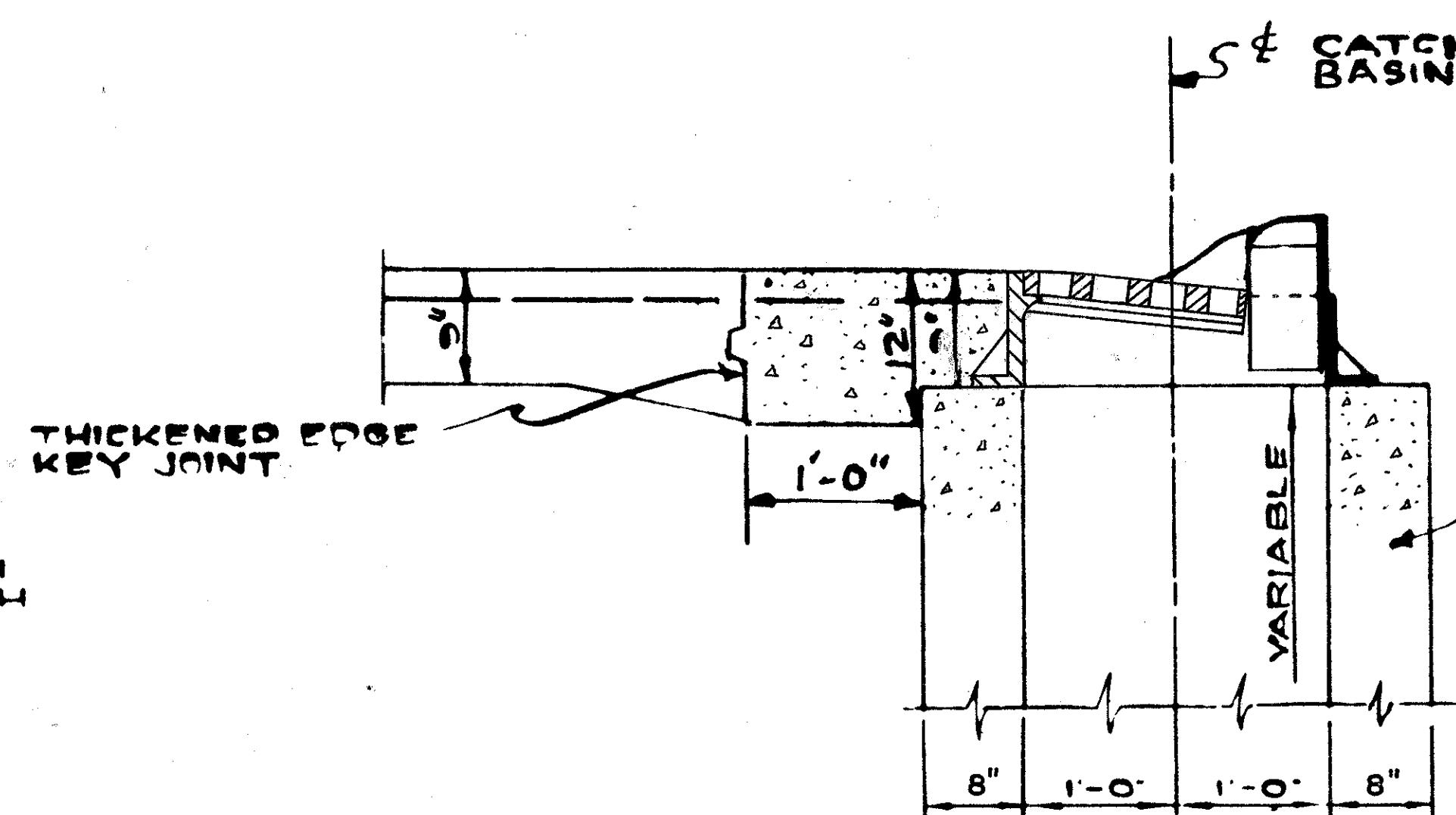
NOTE:  
FOR FRAME, GRATE, NOTES AND OTHER DETAILS  
SEE MISCELLANEOUS DETAIL FOR SPECIAL NO. 3-C  
CATCH BASIN.



PLAN  
WITH CURB TRANSITION & PAVEMENT JOINTS

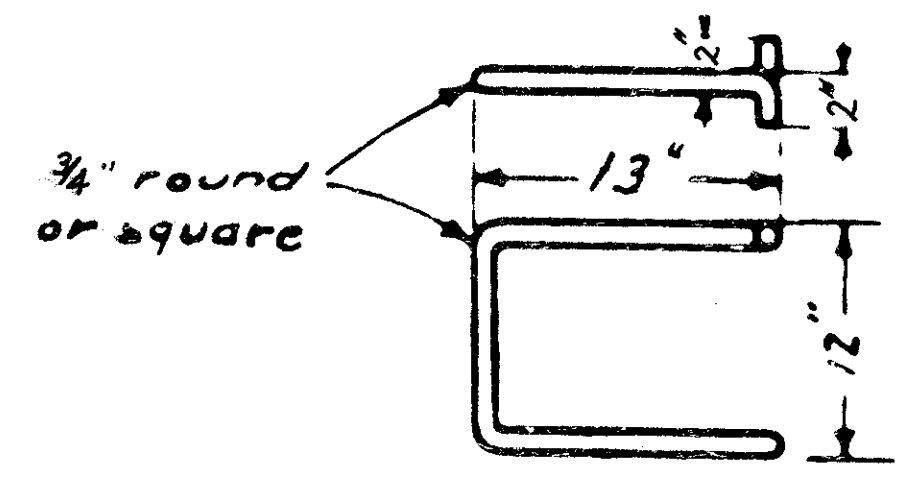
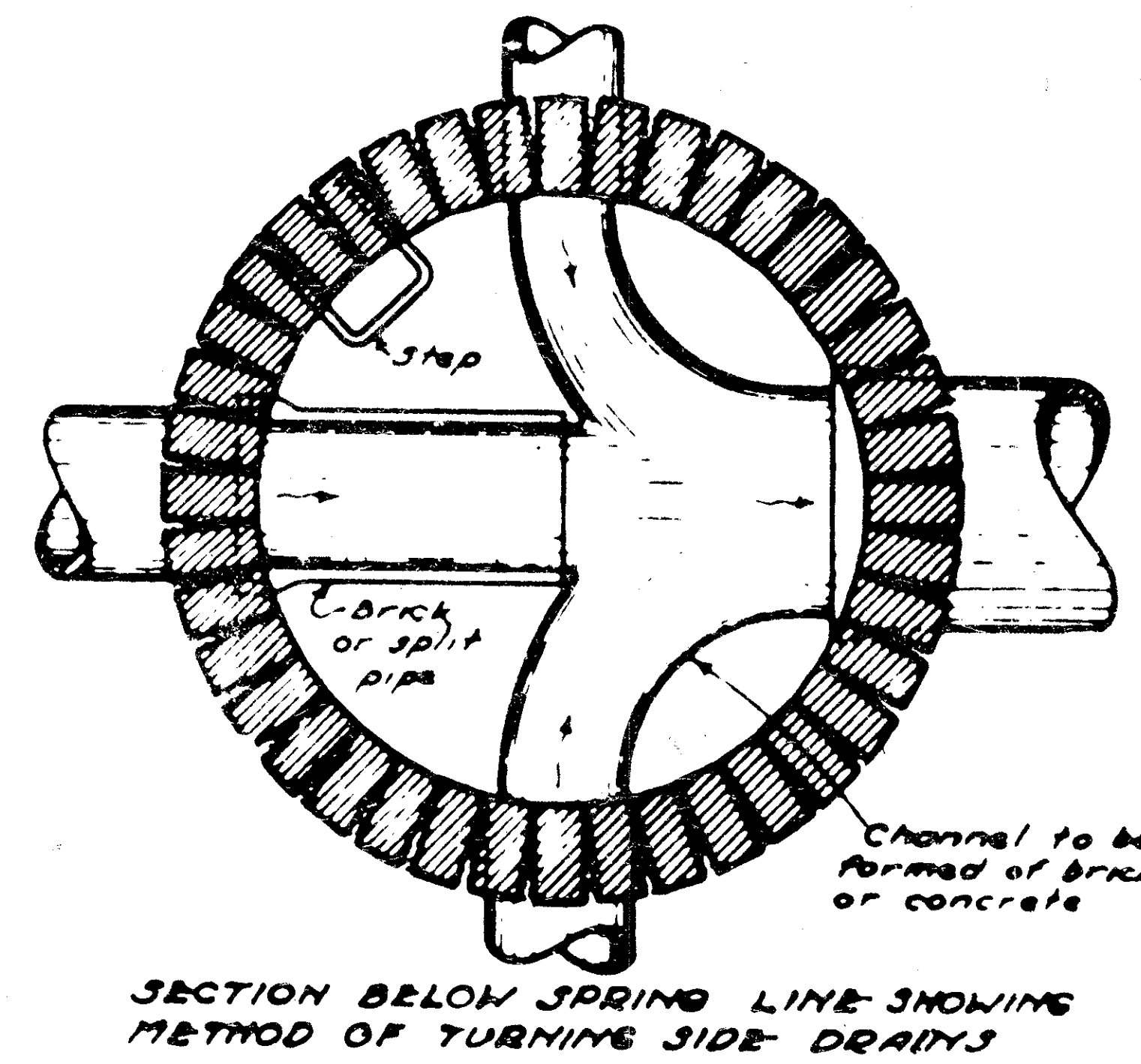
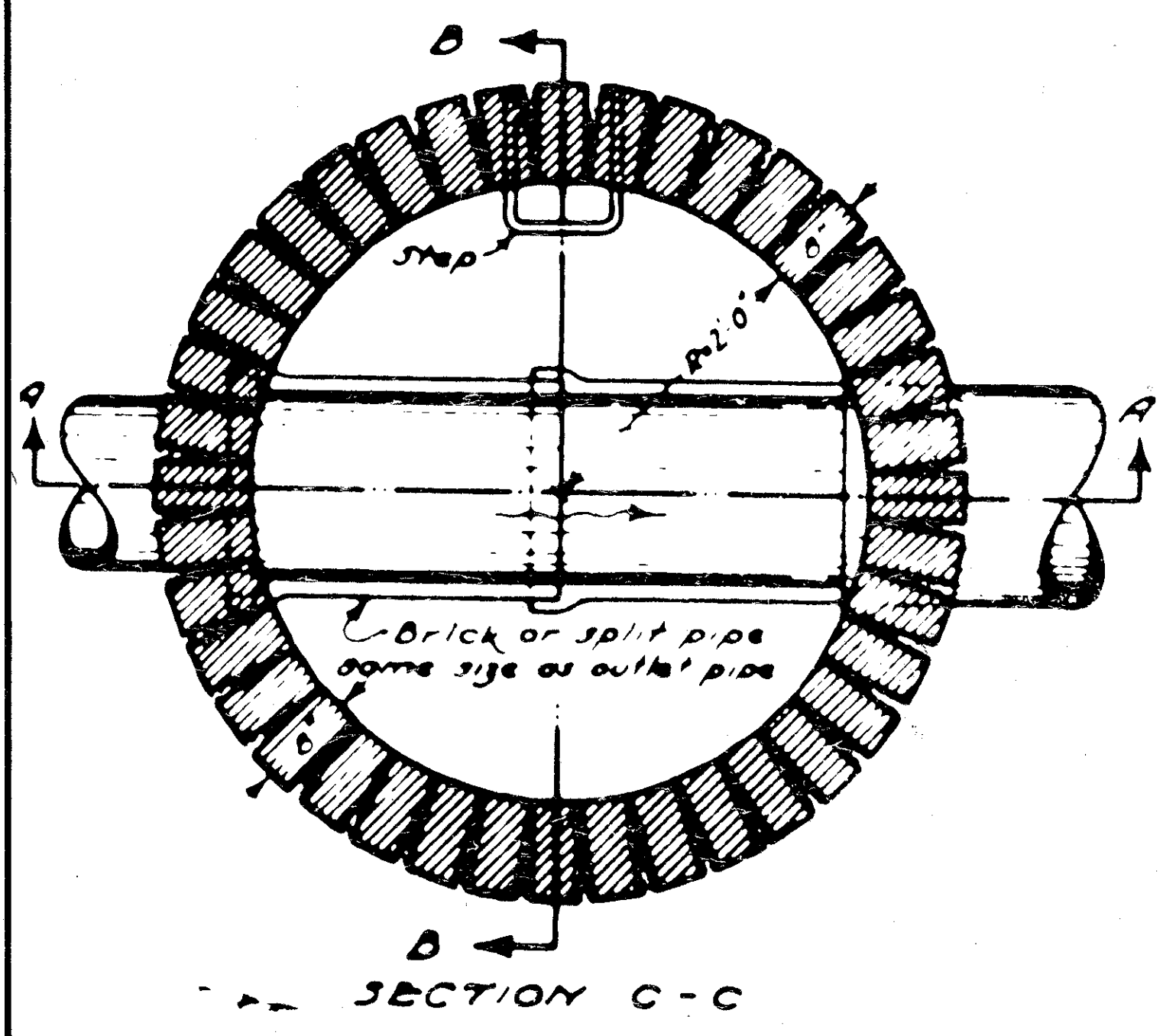
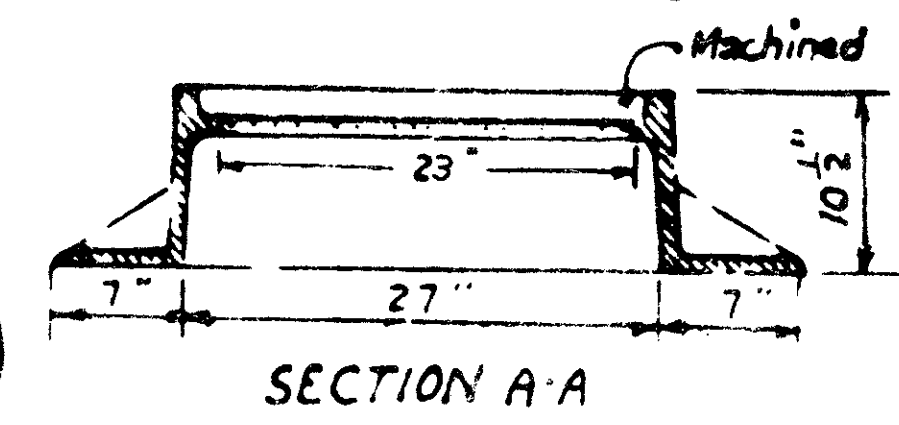
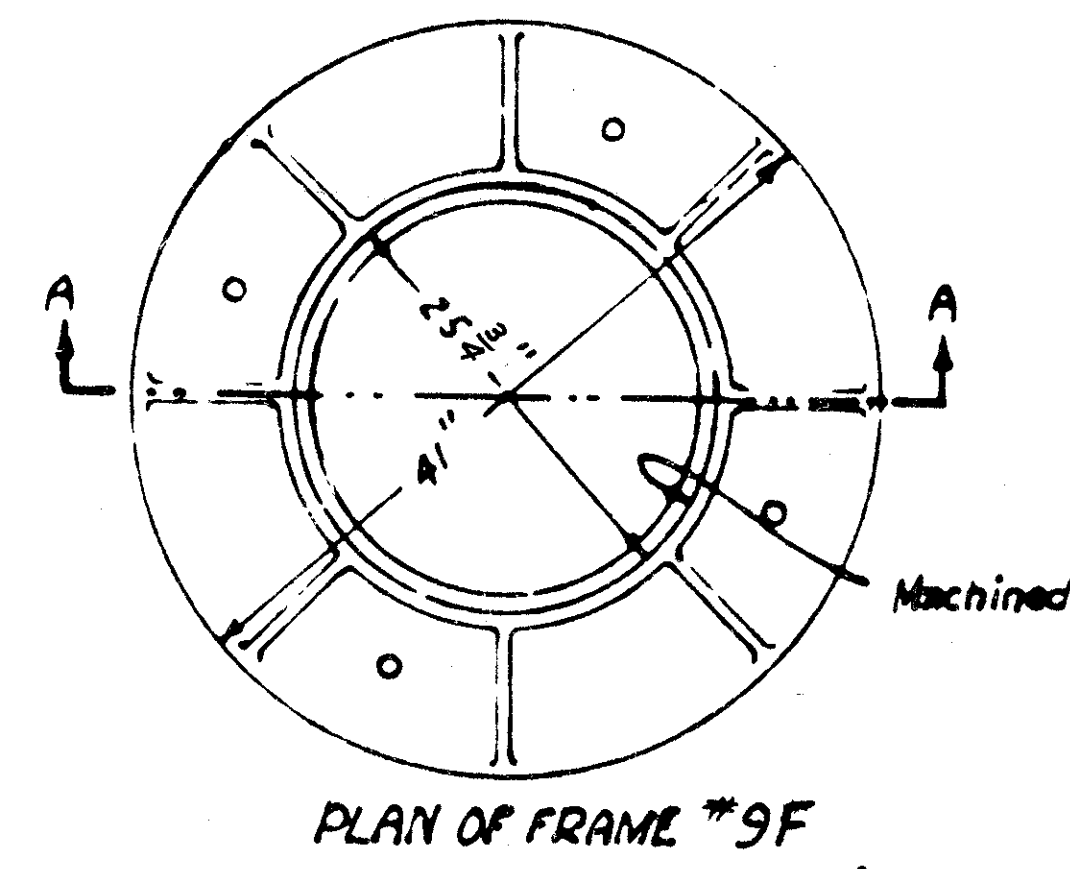
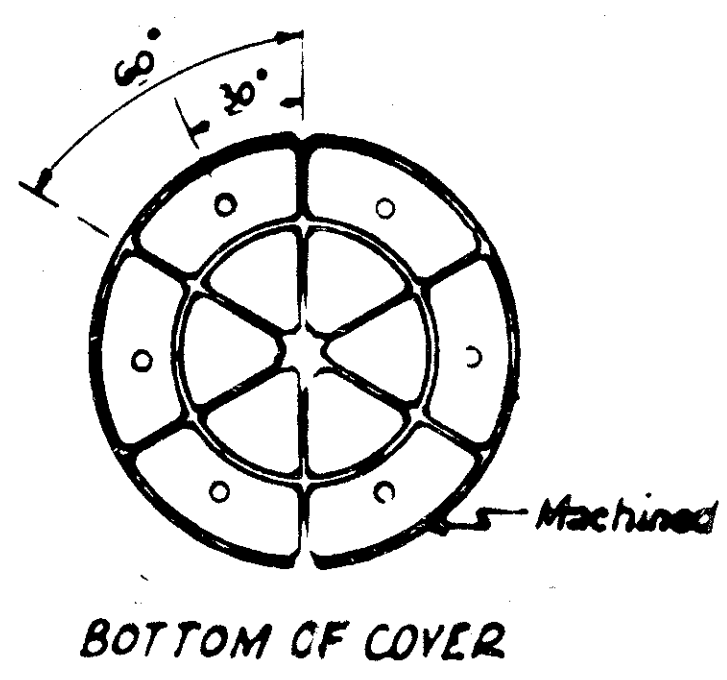
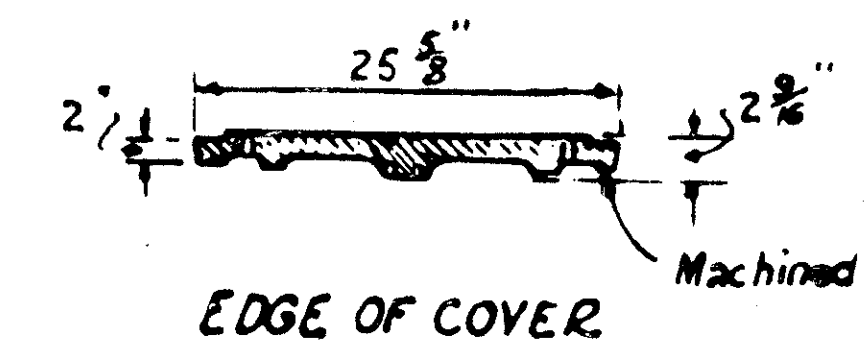
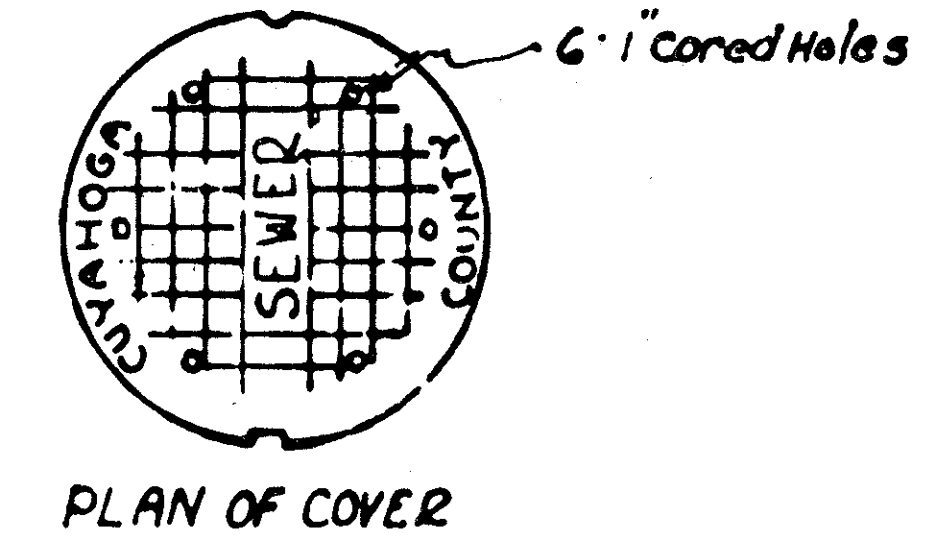
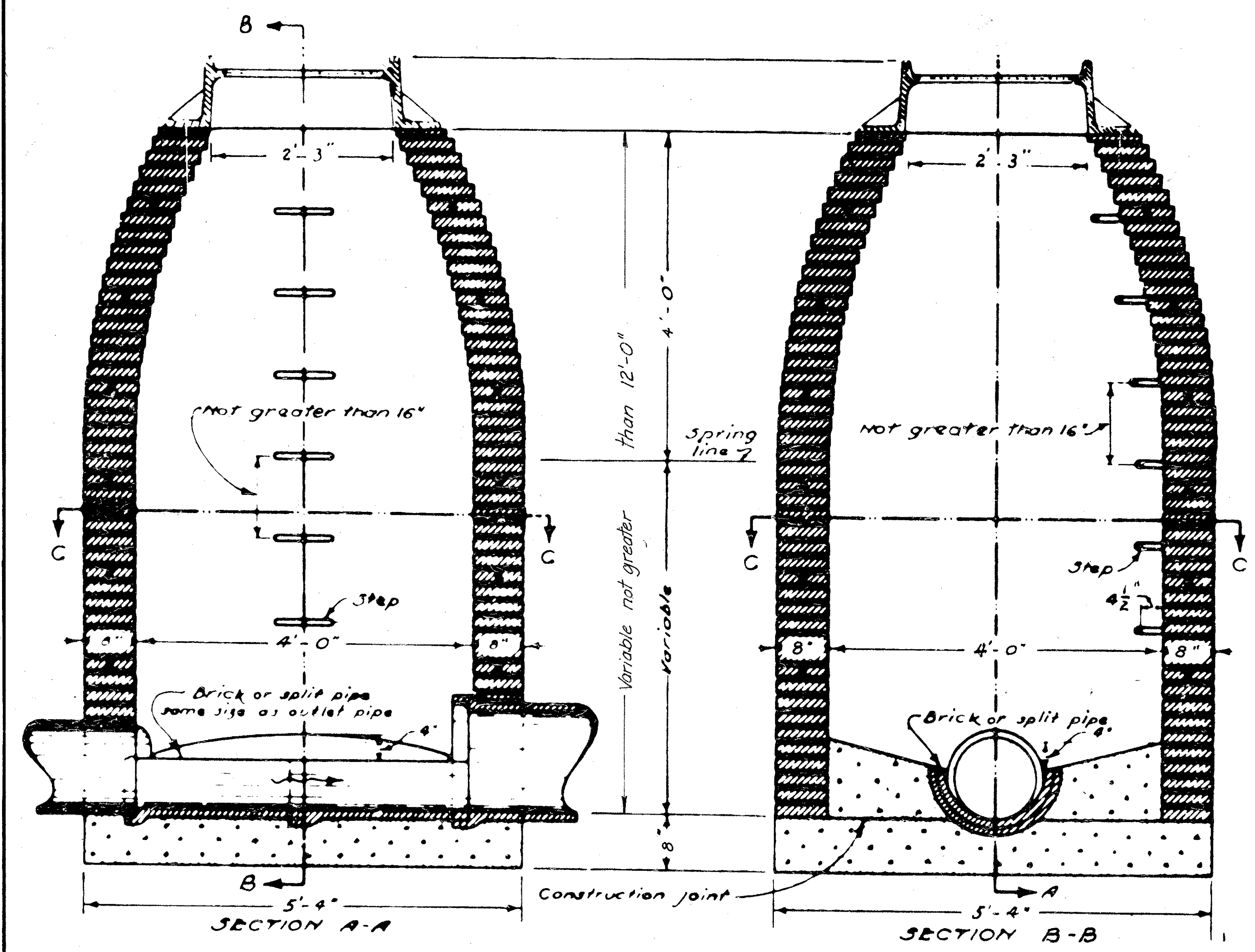


SECTION A-A



SECTION B-B

CLASS "C" CONCRETE  
BRICK OR CONCRETE BLOCK WALLS  
SEE NOTES ON MISC DETAIL, SPEC.  
NO. 3-C CATCH BASIN



**GENERAL** - The design shown hereon is for brick construction if precast solid concrete blocks, precast concrete rings, or cast in place concrete is used. The design shall be modified to fit the dimensions of the material used except that the thickness of the wall shall not be less than 6 inches for precast solid concrete blocks or cast in place concrete construction.

**BEARING AREAS** of frame and cover shall be so fitted and finished as to provide a firm and even seat for all portions of the cover in the frame. No projections shall exist on bearing areas of either casting, and each cover shall seat in its frame without rocking. Frames and covers shall be fitted, matched and marked before delivery to the project.

**SETTING OF CASTING**: - The base of the frame shall be set in full bed of Portland cement mortar and so adjusted to conform to the finished pavement grade.

**CASTINGS**: Minimum weight of frame and cover 615 pounds.

Castings shall meet the requirements of Item 604. The design shall be essentially the same and equally as strong as those shown hereon,

**STEPS** shall meet the requirements of Item 604.

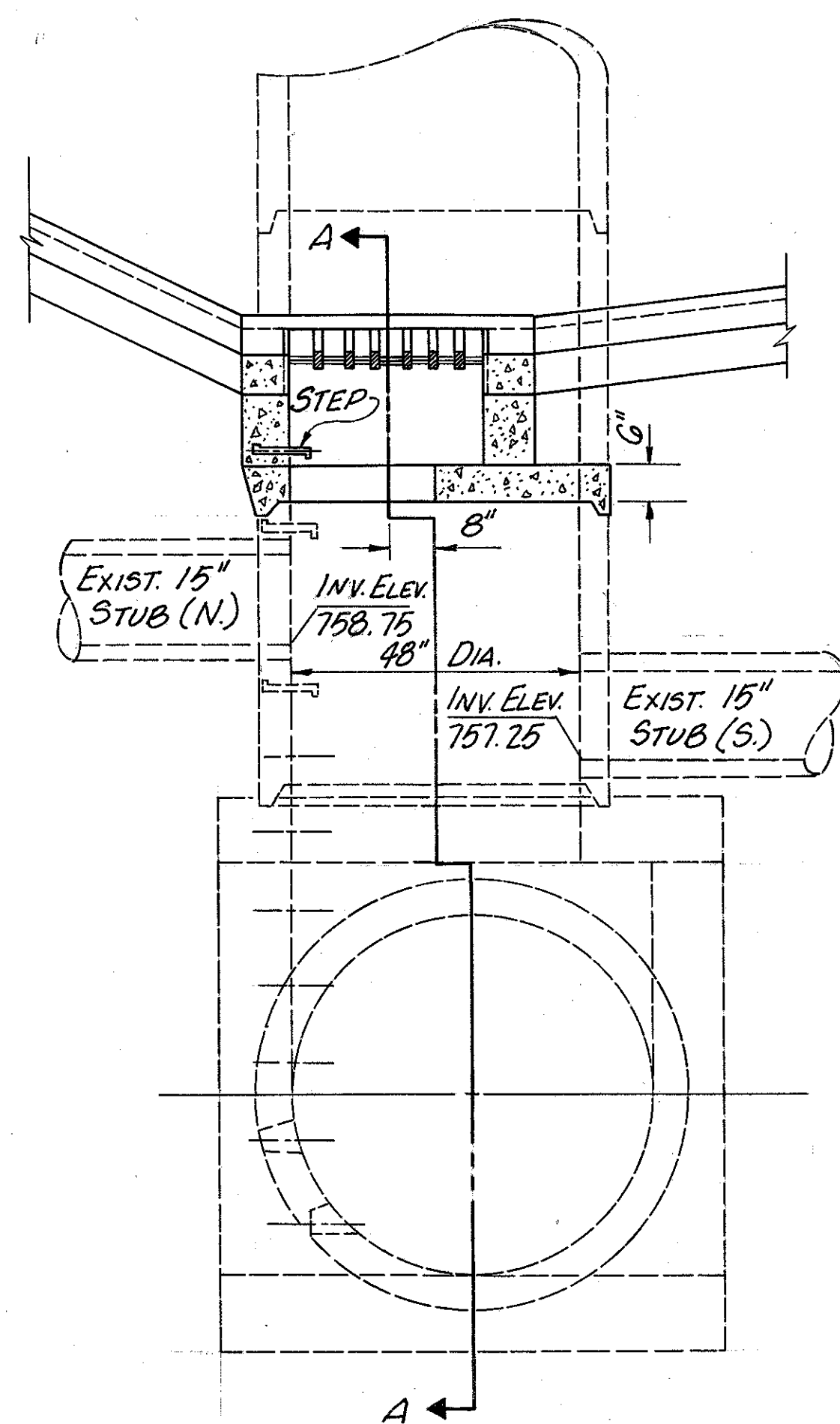
**CONSTRUCTION**: - Manholes shall be built of brick, precast solid concrete blocks, precast concrete rings, or cast in place concrete. When manholes are constructed of brick, every sixth course shall be a stretcher course.

Bottom of manhole shall be class "C" concrete.

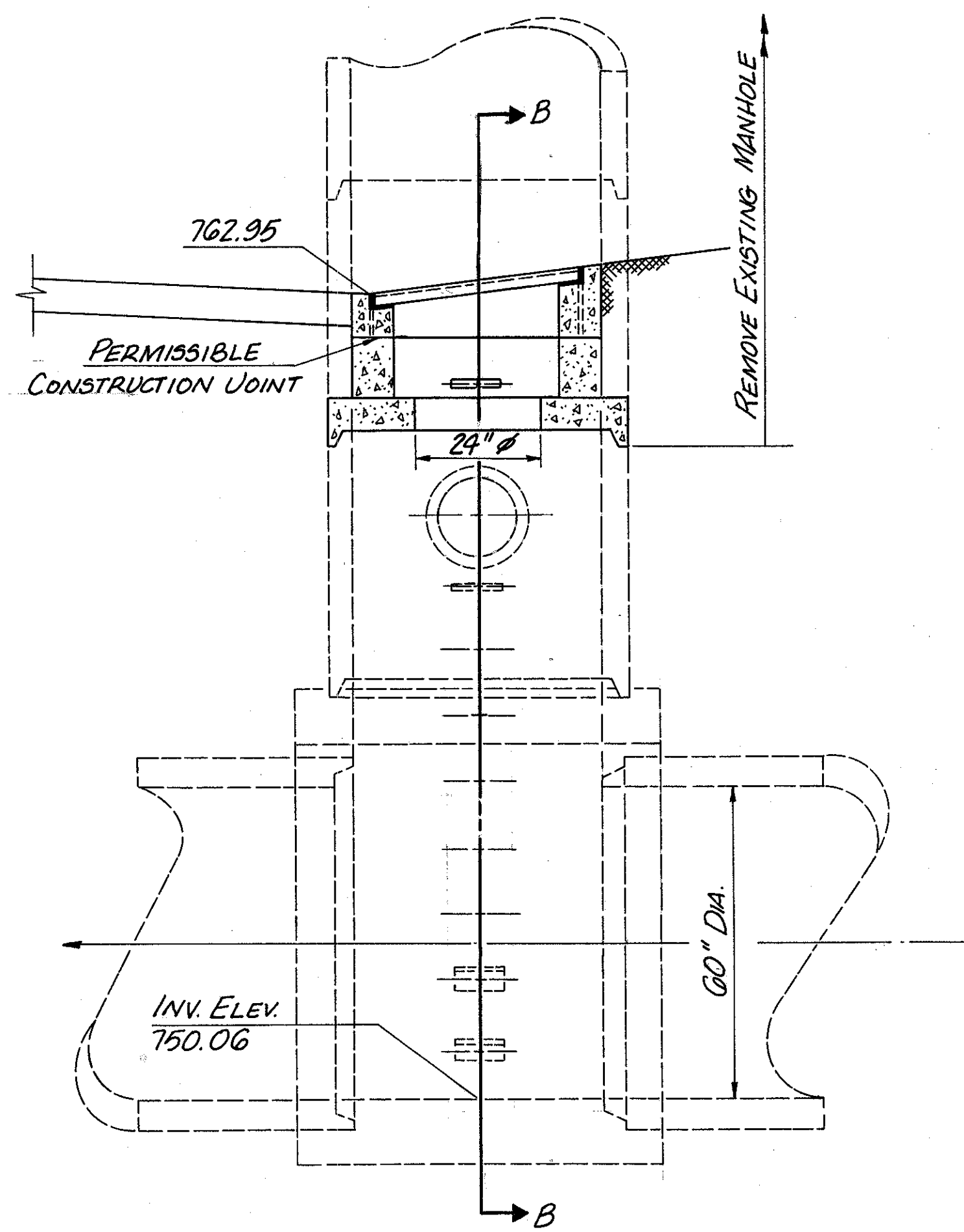
Channel sections in the manhole shall be constructed of split pipe or brick except curved sections which may be built by forming a channel in the concrete. This Manhole is identical with cuyahoga county standard No.1 manhole.



CUYAHOGA COUNTY  
CUY-480-678

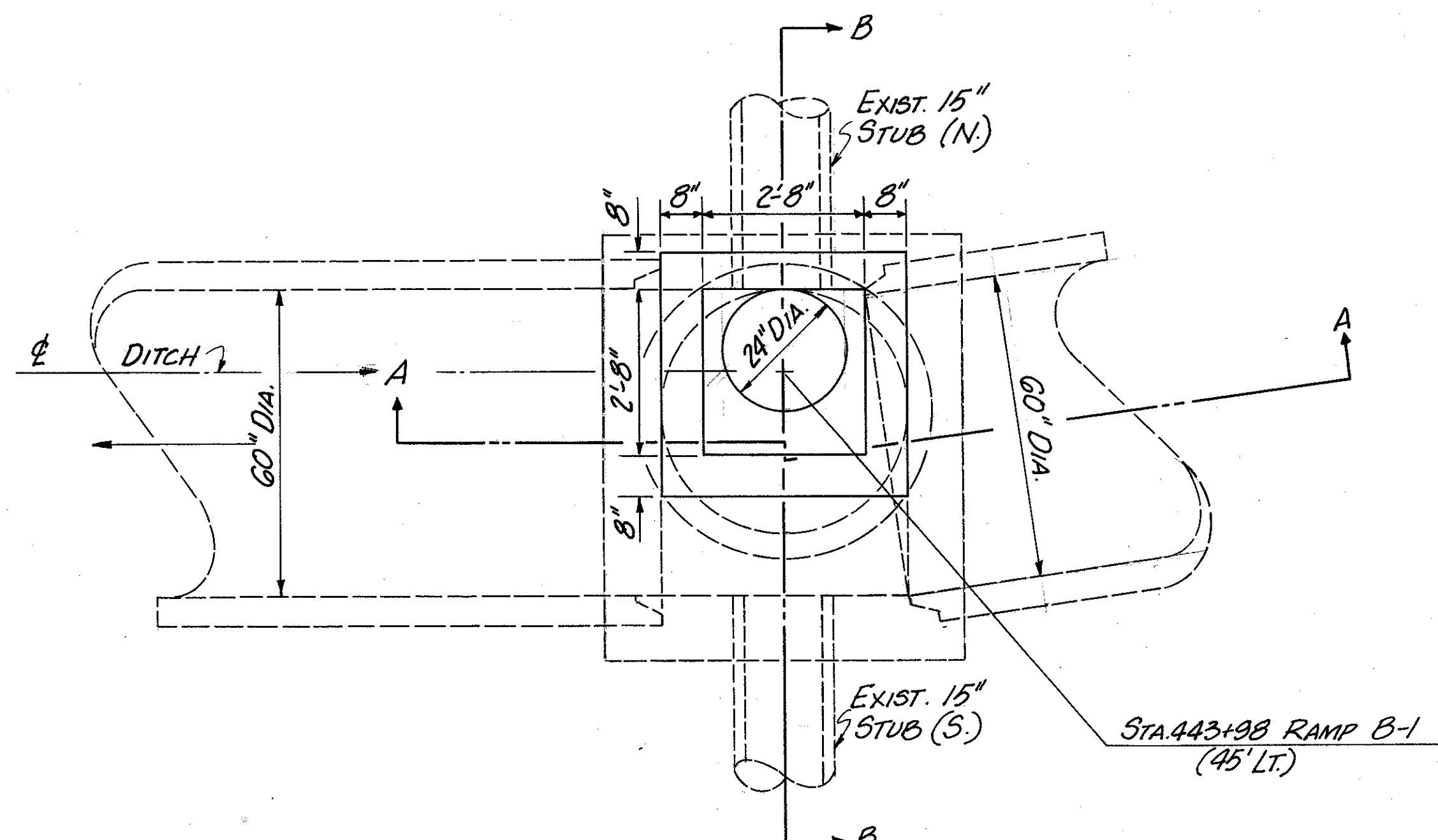


SECTION B-B

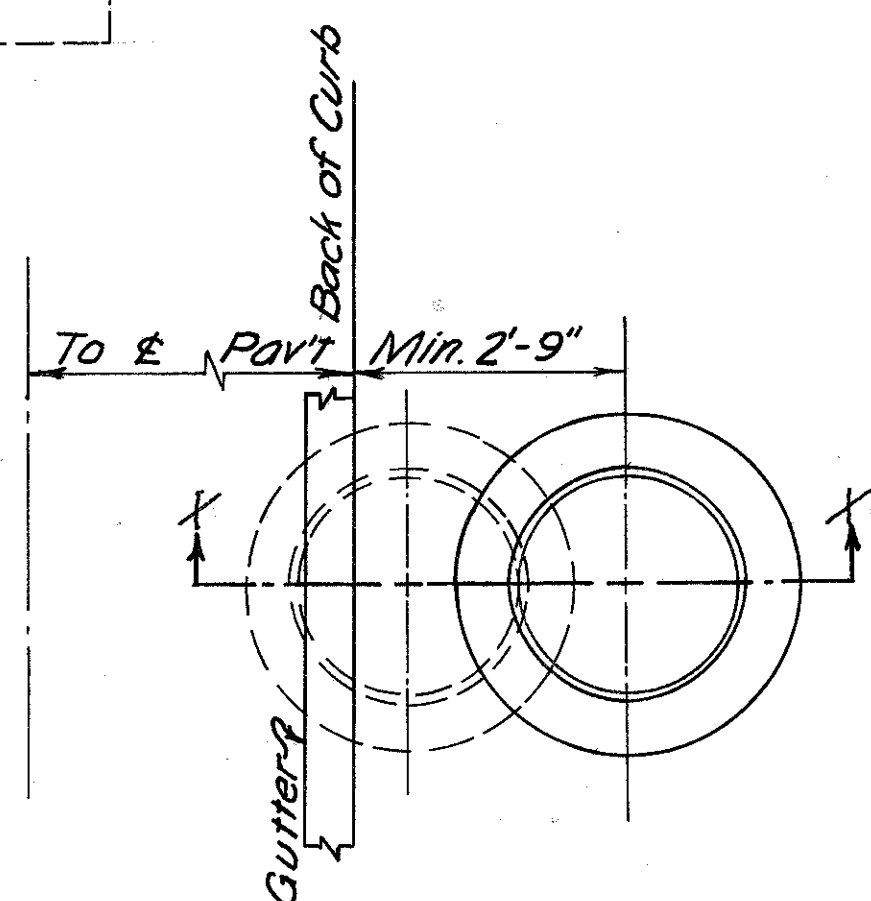


SECTION A-A

NOTE: FOR DETAILS SEE STANDARD DRAWING No. CB-5



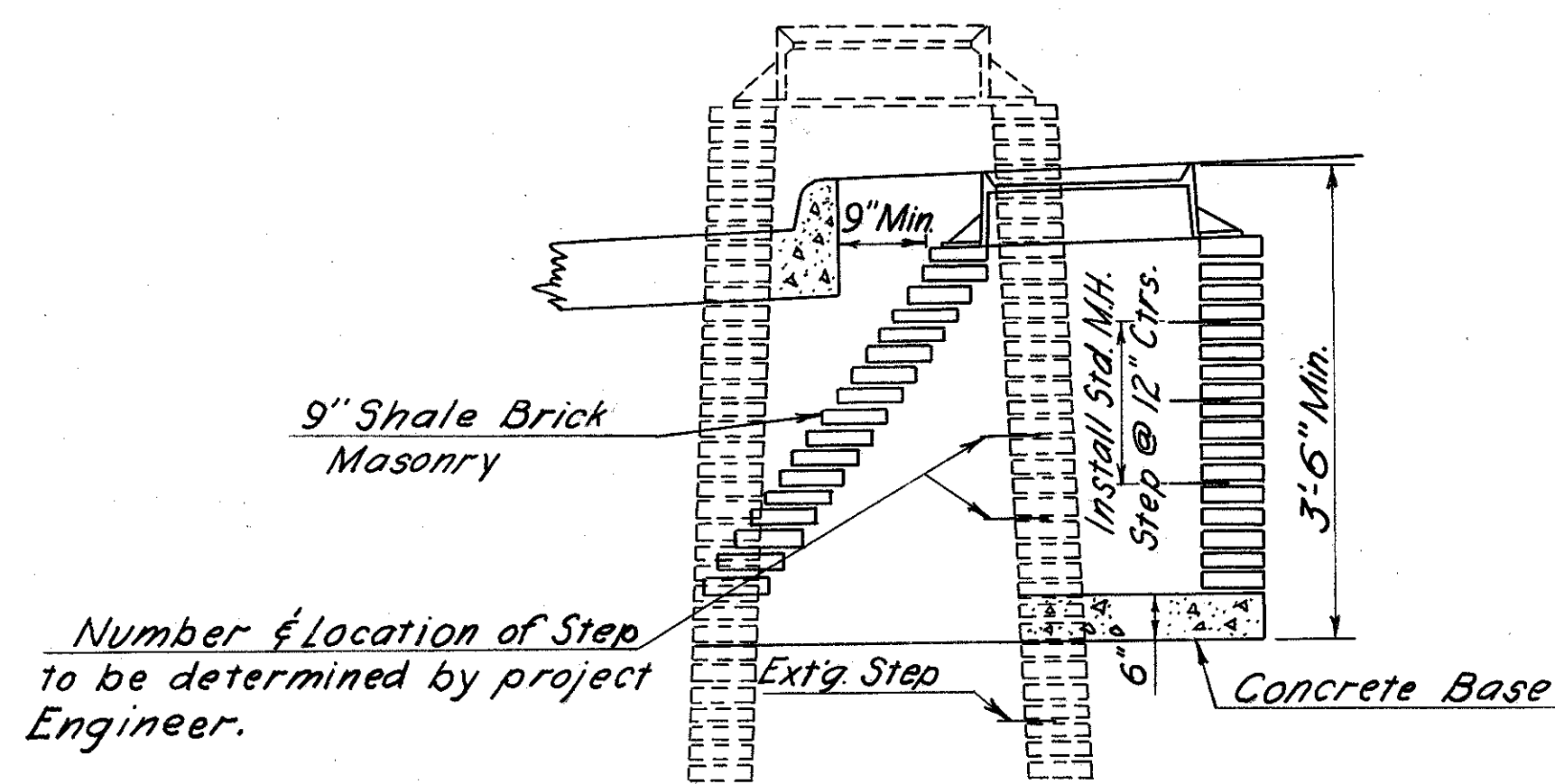
PLAN VIEW  
Scale: 1/2" = 1'-0"



STANDARD No. 5 C.B.  
MODIFIED AS PER PLAN  
STA. 443+98, RAMP B-1 (45' LT.)

- NOTES:
- (1) The Engineer Shall Investigate The Field Conditions Governing The Existing Manhole With Respect To The New Line And Elevation Of Pavement At Curb.
  - (2) Field Conditions Will Govern The Amount of Structure To Be Demolished And Rebuilt. Corbelling Of The Brick Shall Not Exceed 1 1/2 Inches For Each Course.
  - (3) Materials Shall Be As Specified In Standard Drawing MH-1

- Location To Be Used
1. Brookpark Rd. Sta. 30+70 - 26' Rt.
  2. Brookpark Rd. Sta. 42+20 - 30' Rt.

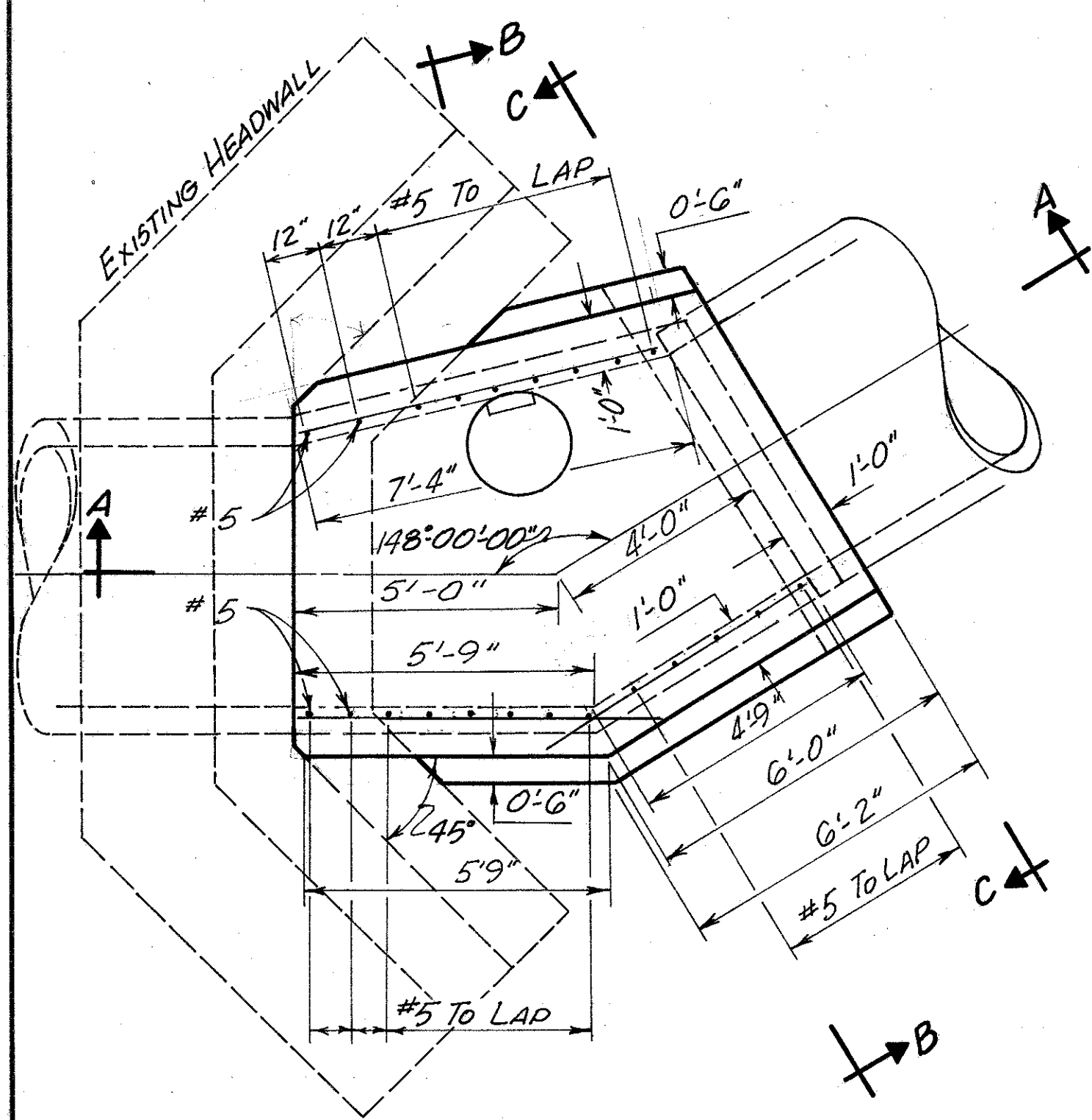
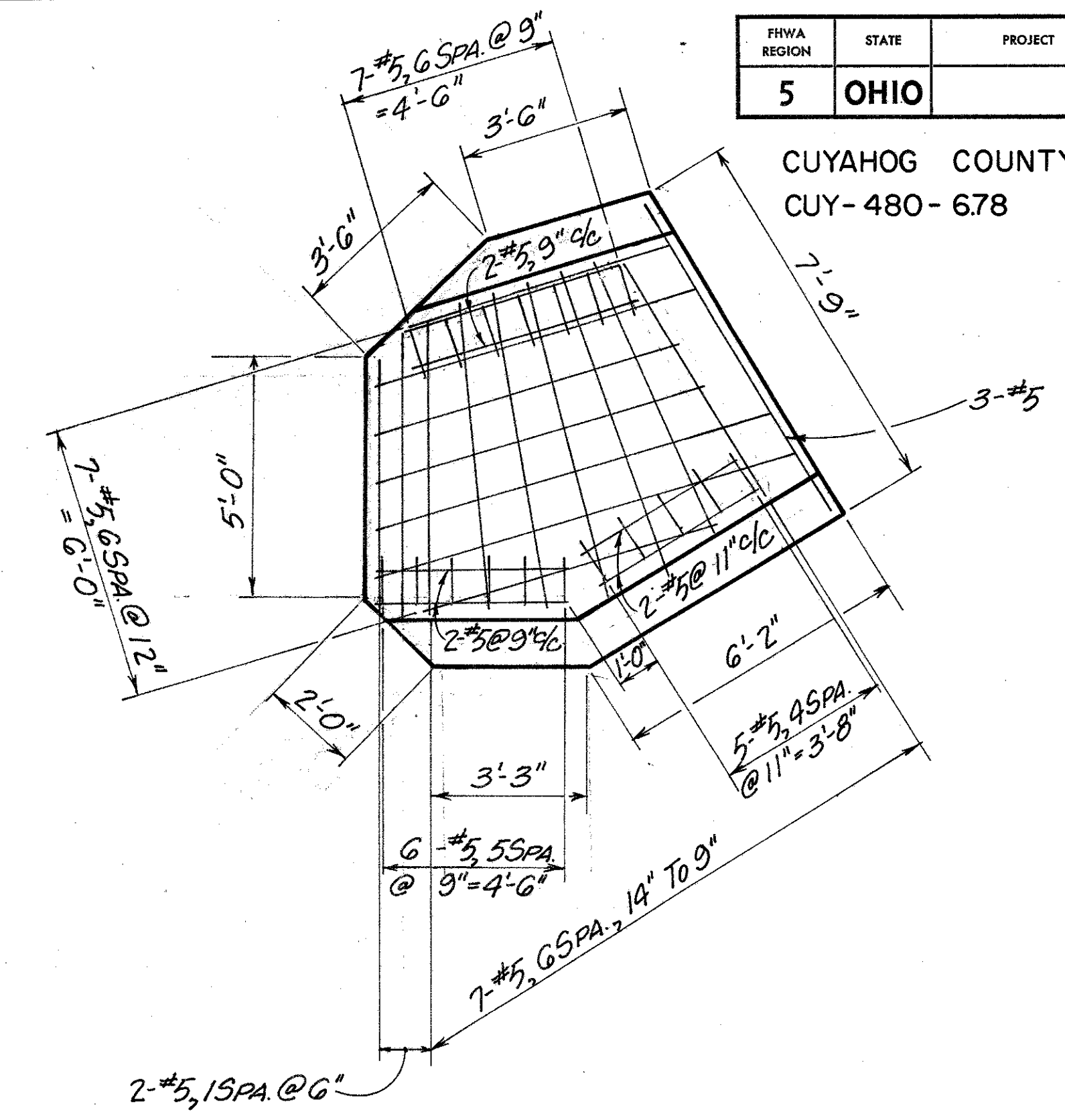
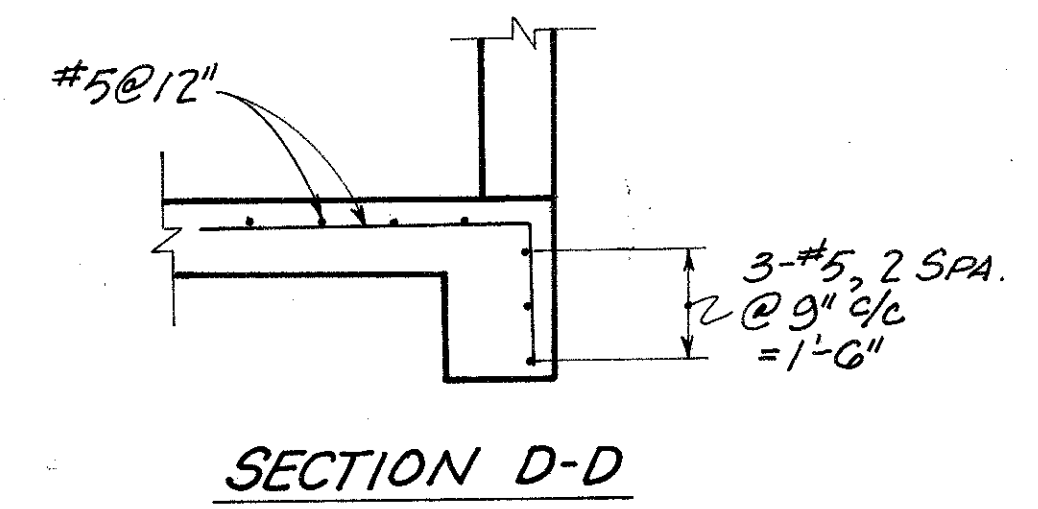
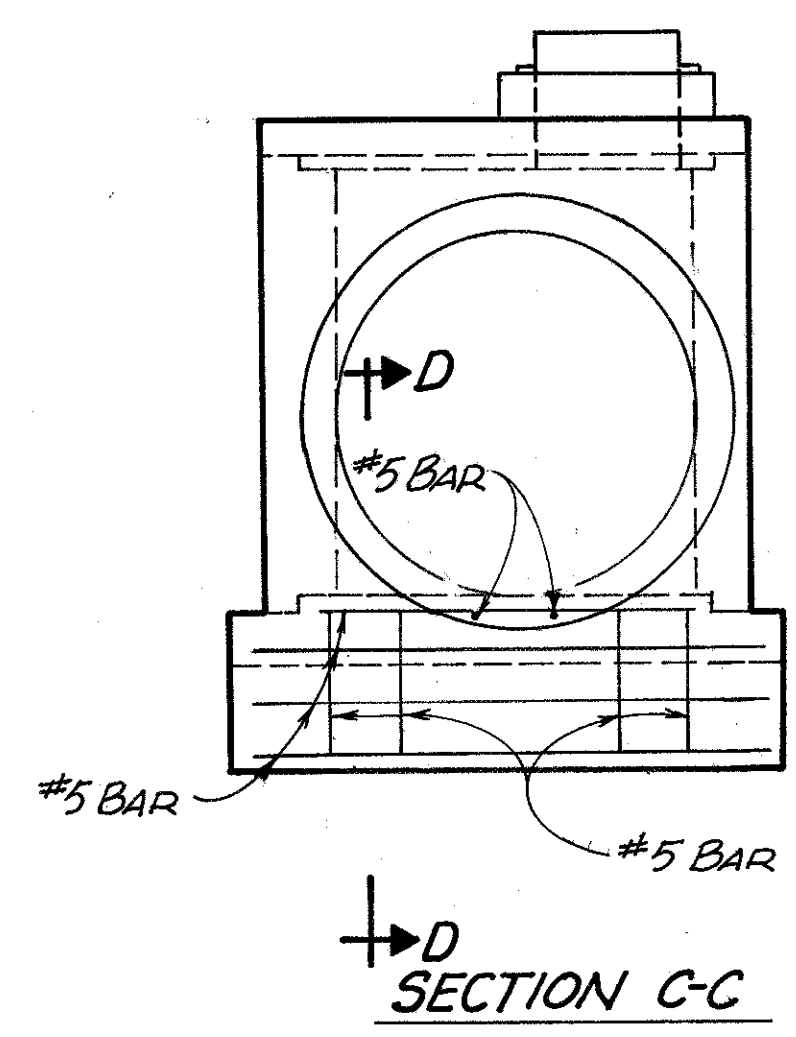
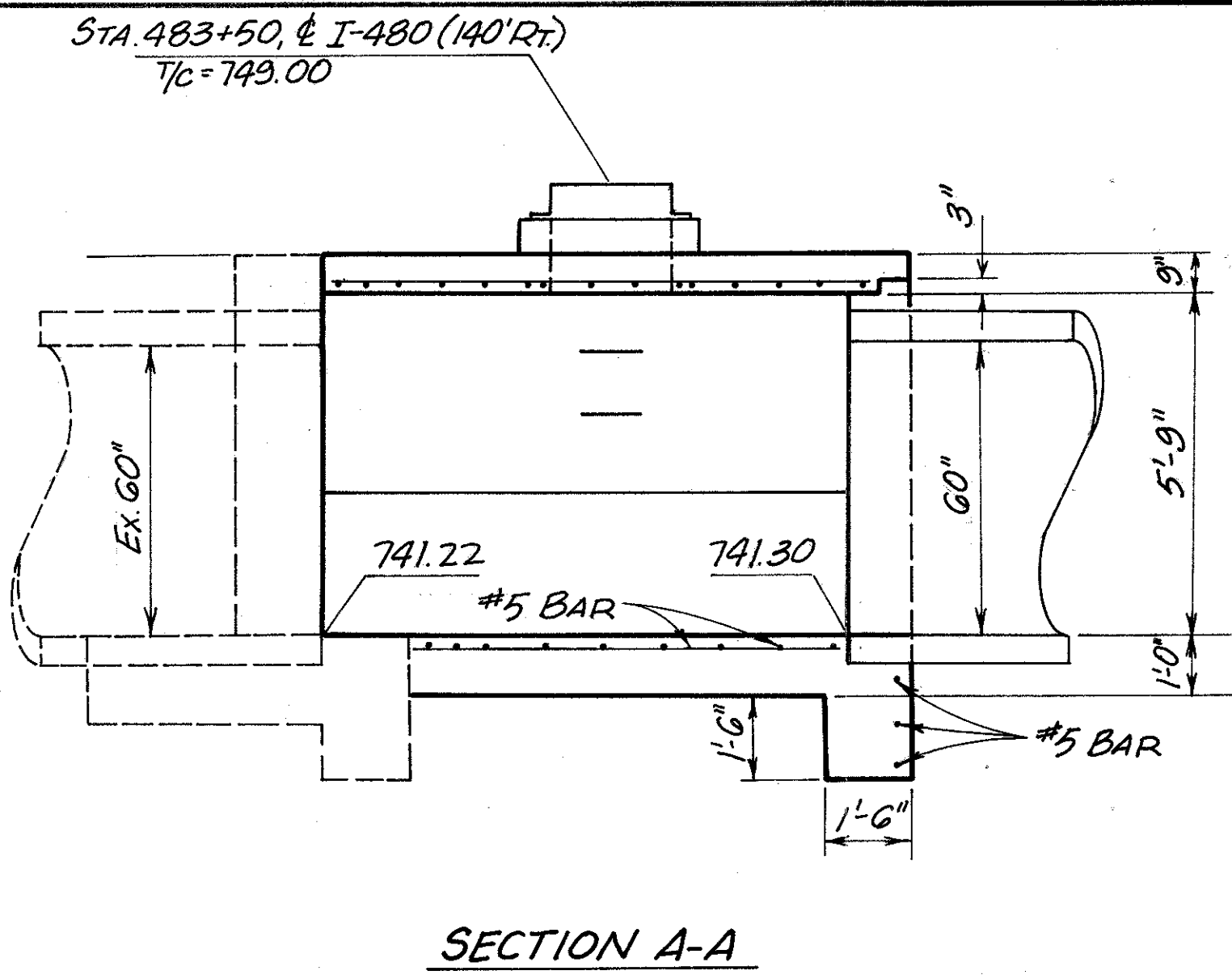
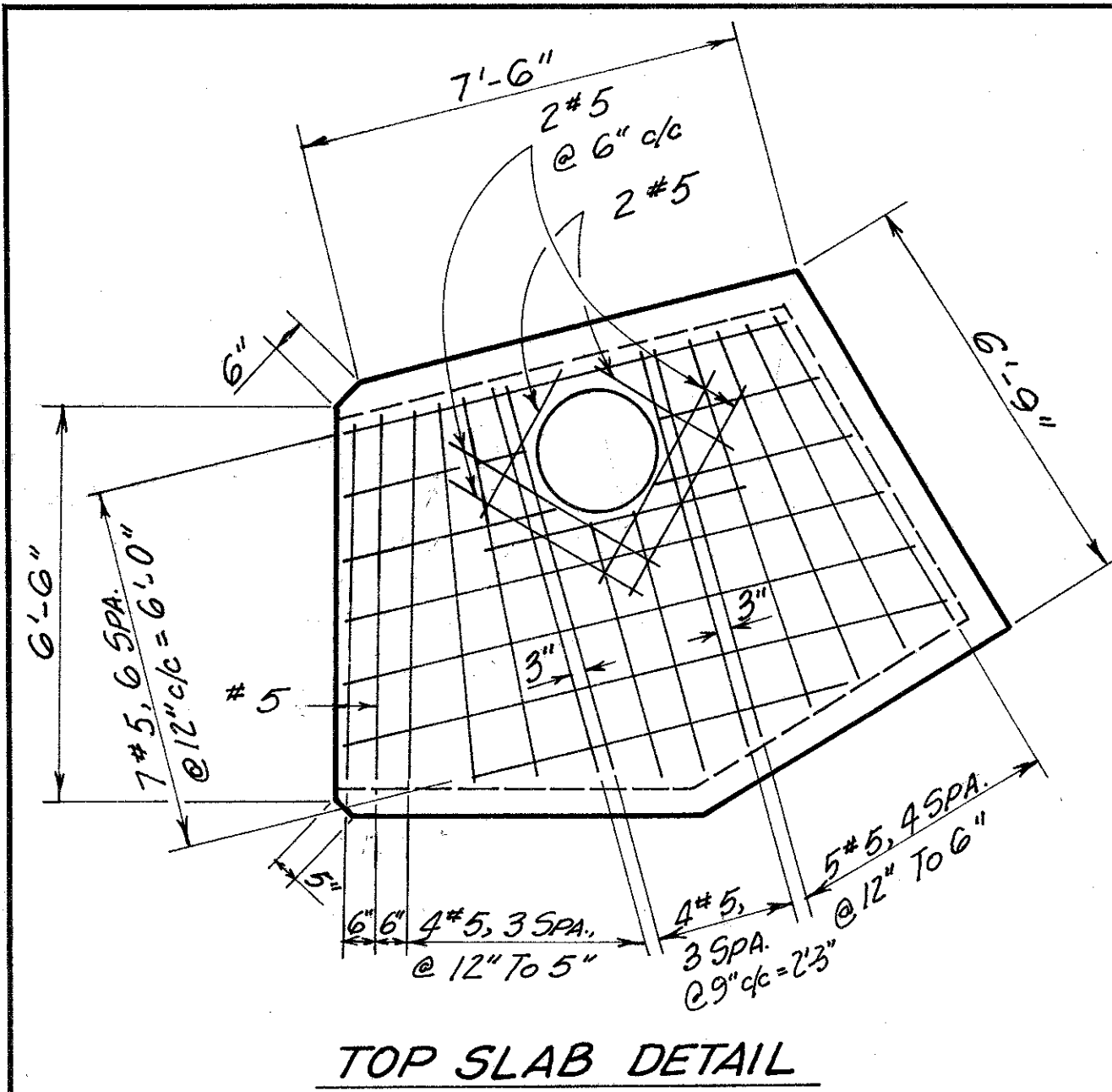


SECTION X-X  
Manhole Reconstructed To Grade, as Per Plan  
Scale: None

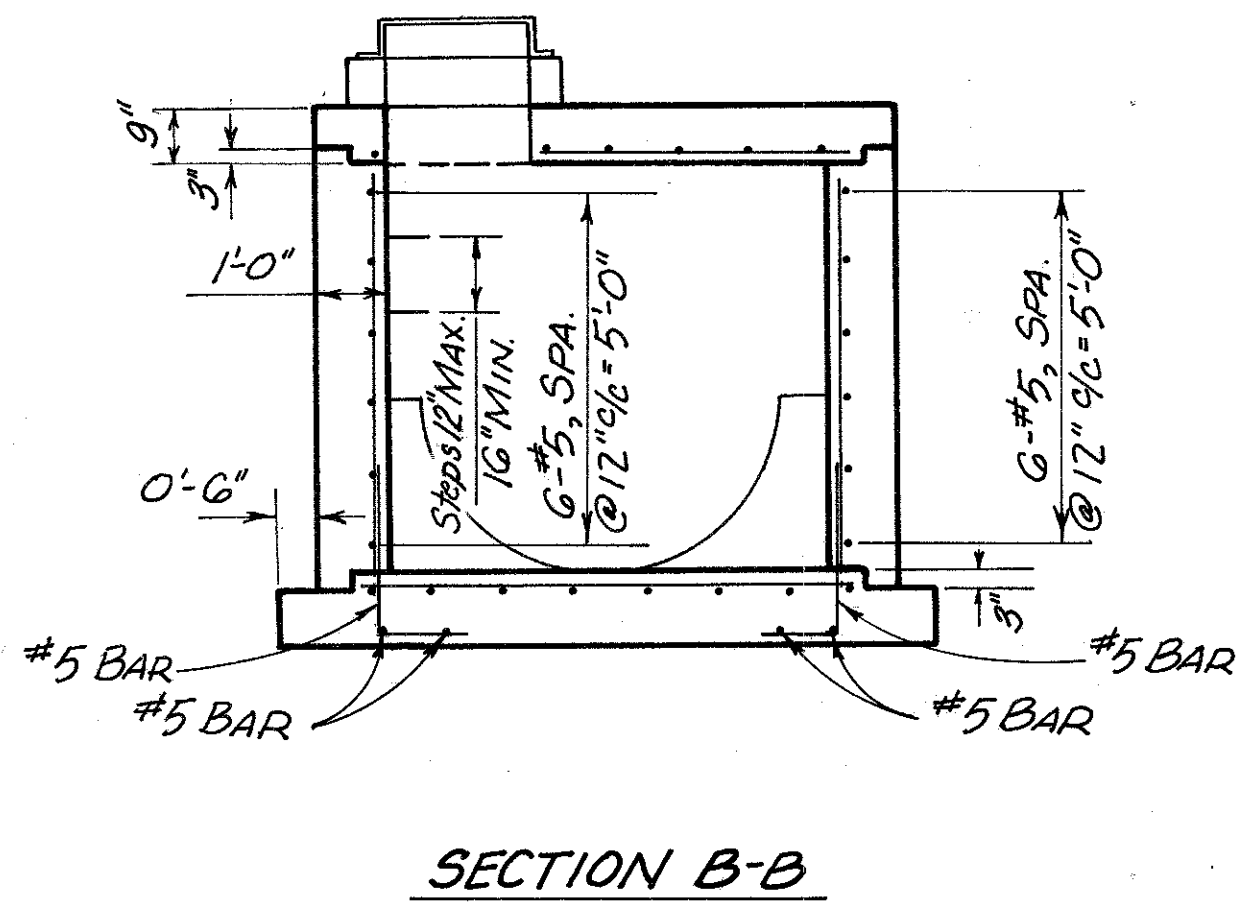
PHWA REGION	STATE	PROJECT
5	OHIO	

30  
317

CUYAHOG COUNTY  
CUY-480-678



Scale:  $\frac{3}{8}'' = 1'-0''$



JUNCTION CHAMBER "A"  
STA. 483+50 & I-480

NOTE:  
FOR PLAN DETAIL SEE RAMP G-4 PLAN & PROFILE



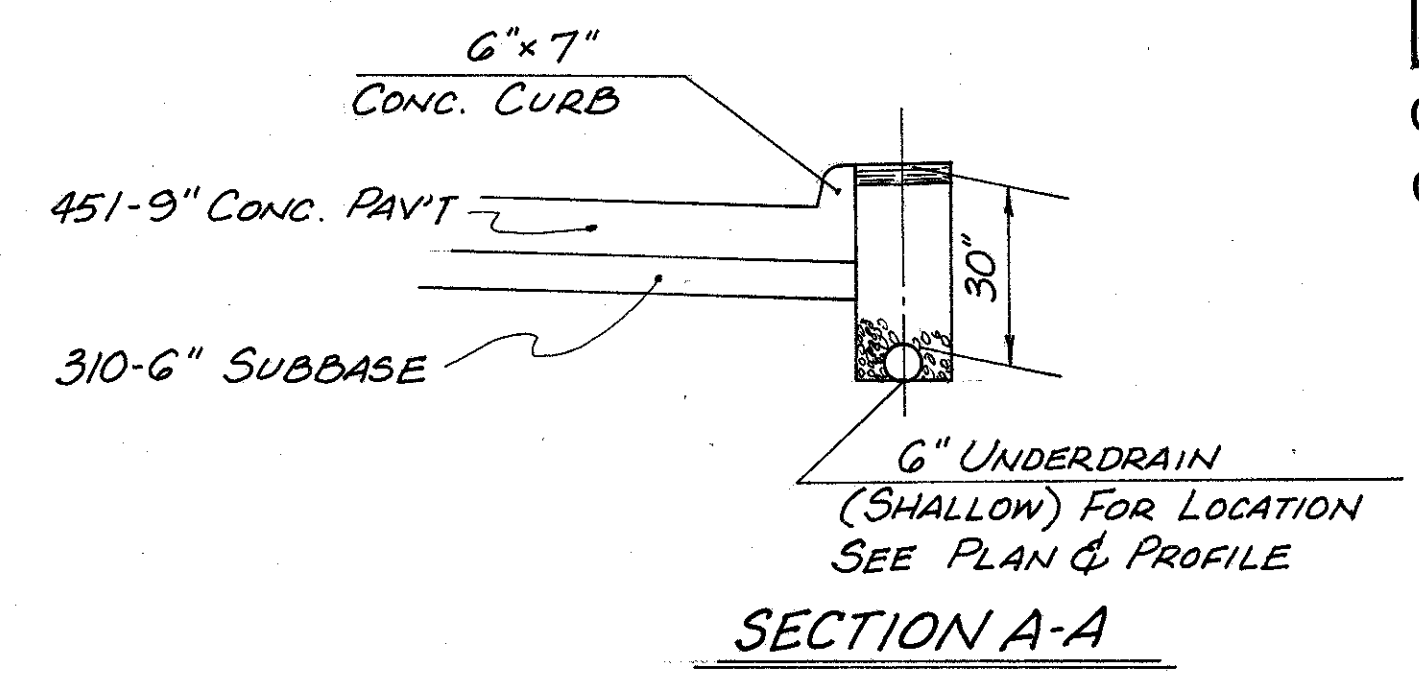
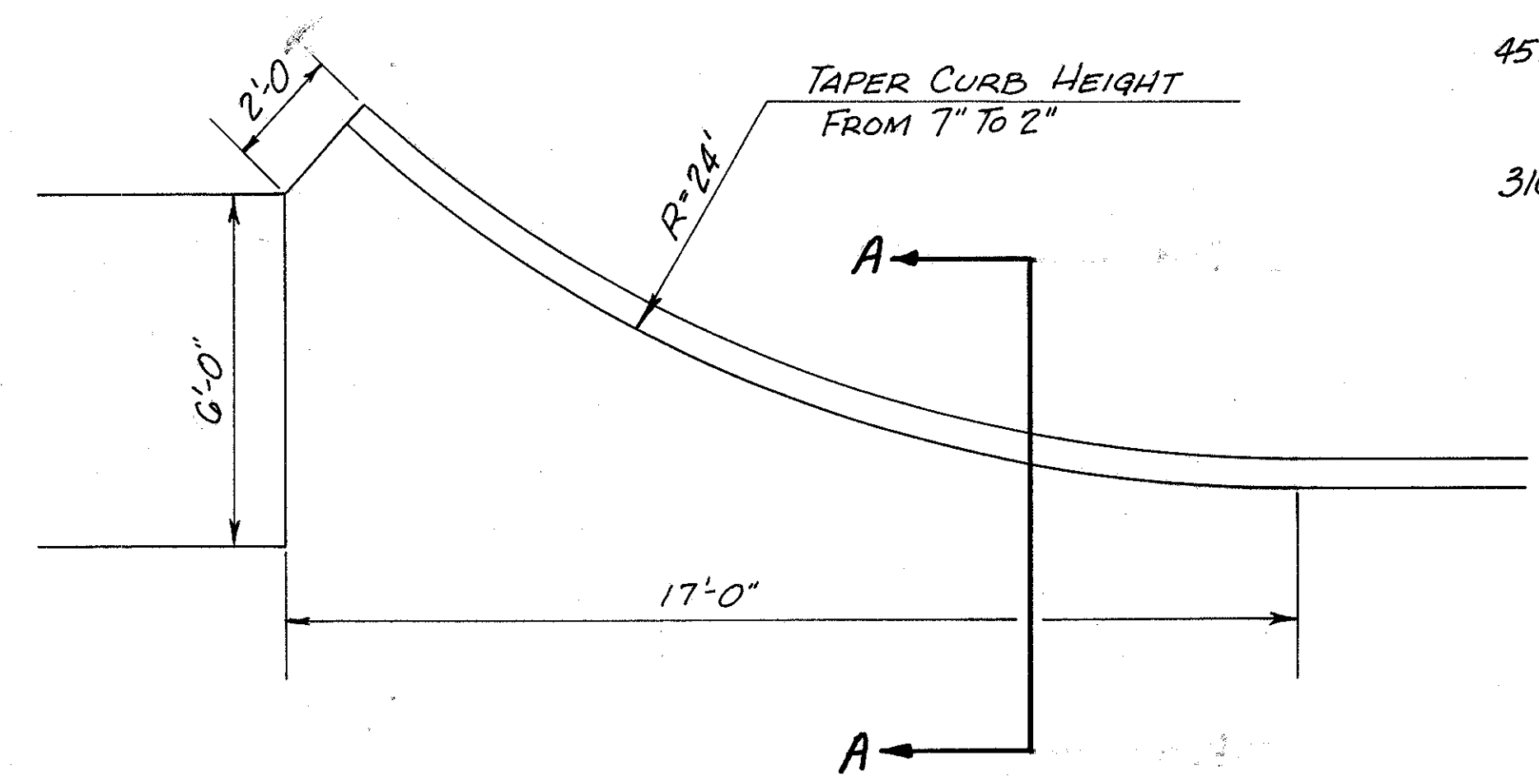
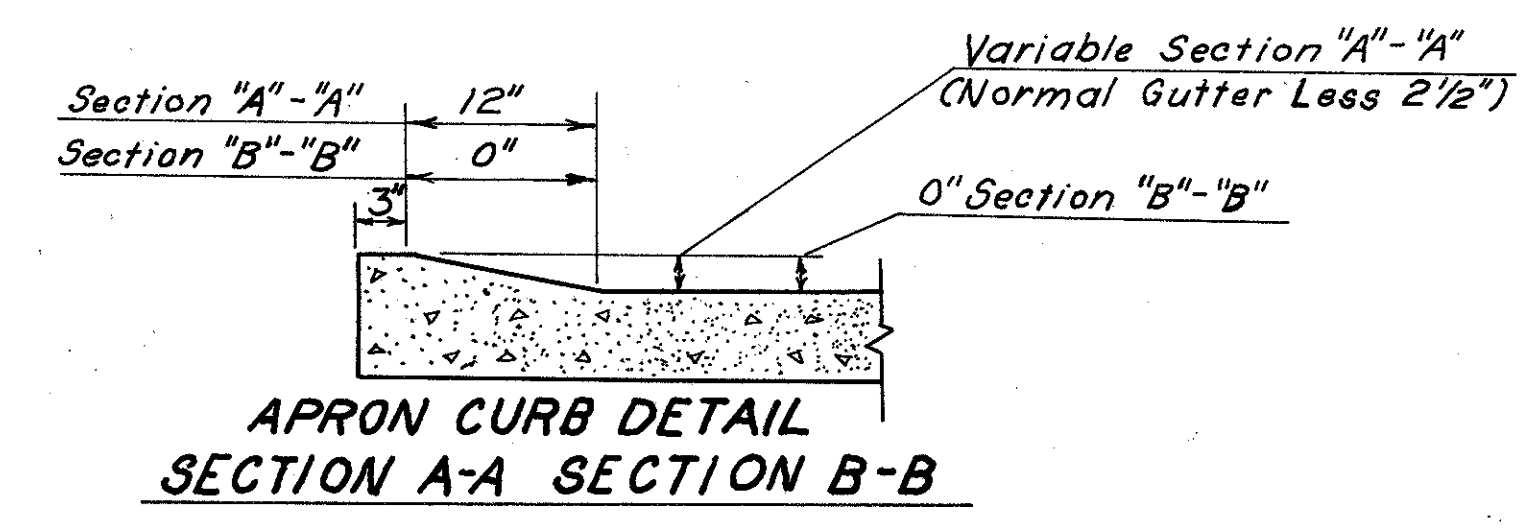
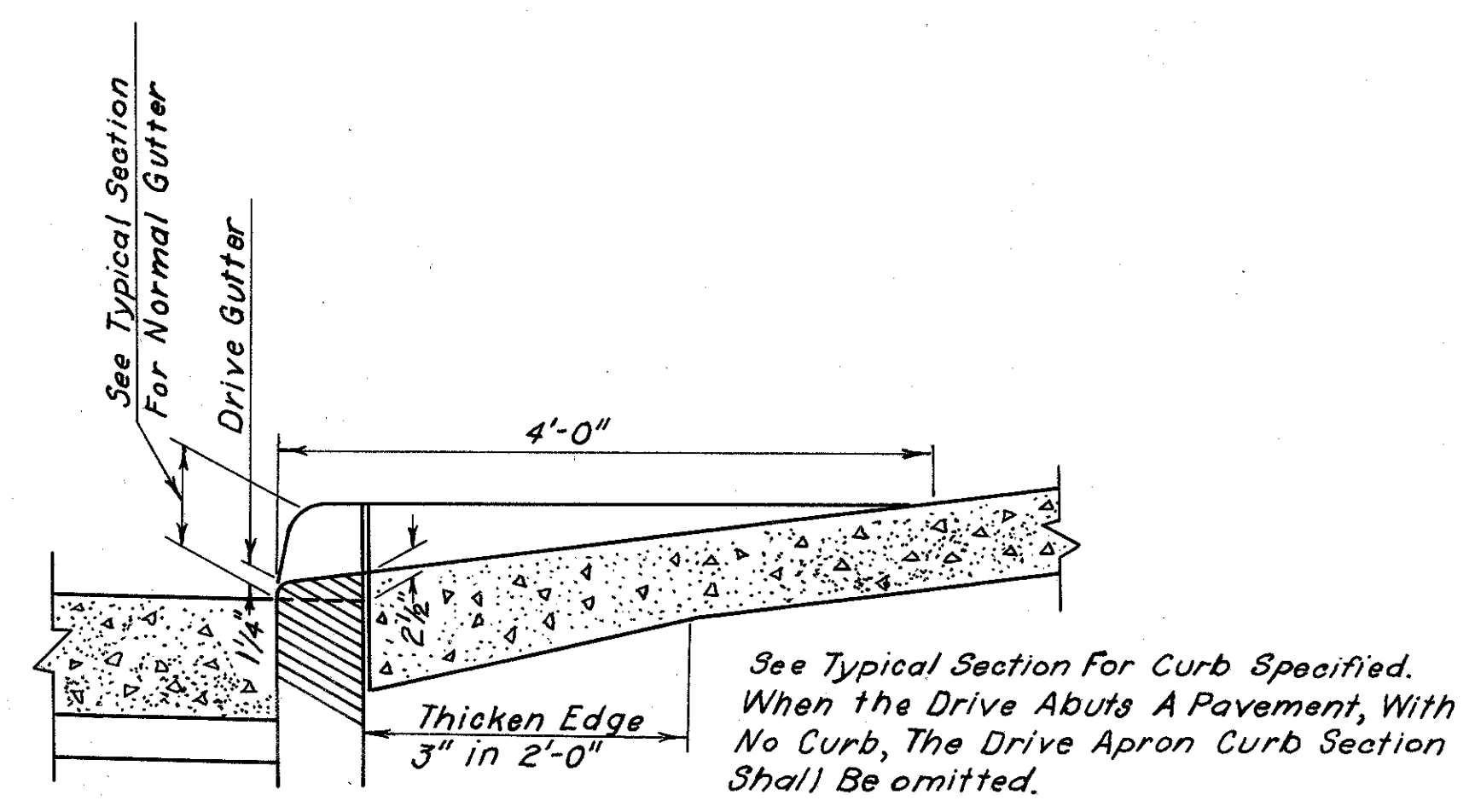
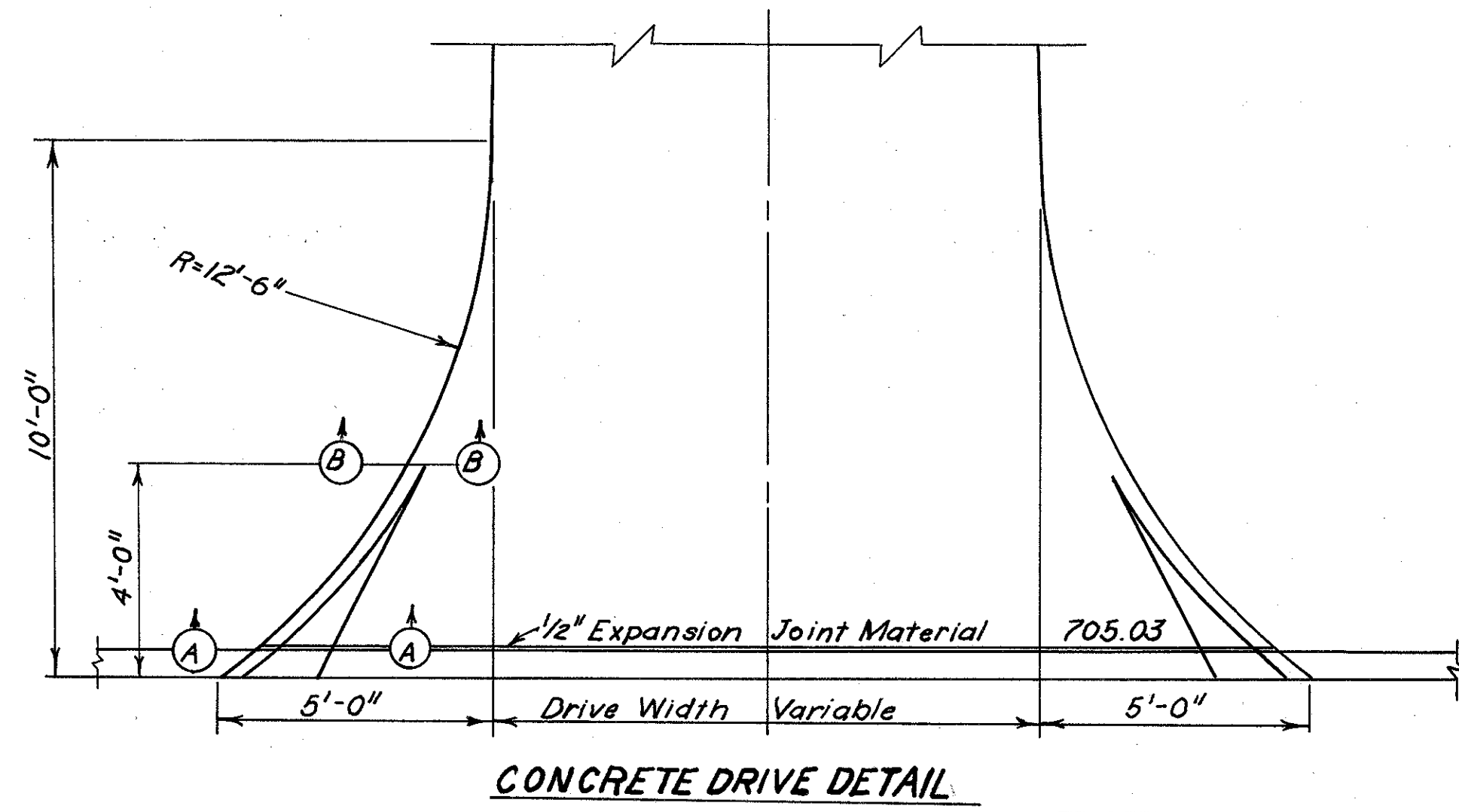
CUYAHOGA COUNTY  
CUY-480-6.78

**NOTES:**

Residence Drives Having An Existing Hard Surface Or Existing Aggregate Surface Shall Be Replaced With A Pavement Of Similar Type In So Far As Practicable, Using One Of The Following Design For The Portion Beyond The Flared Apron.

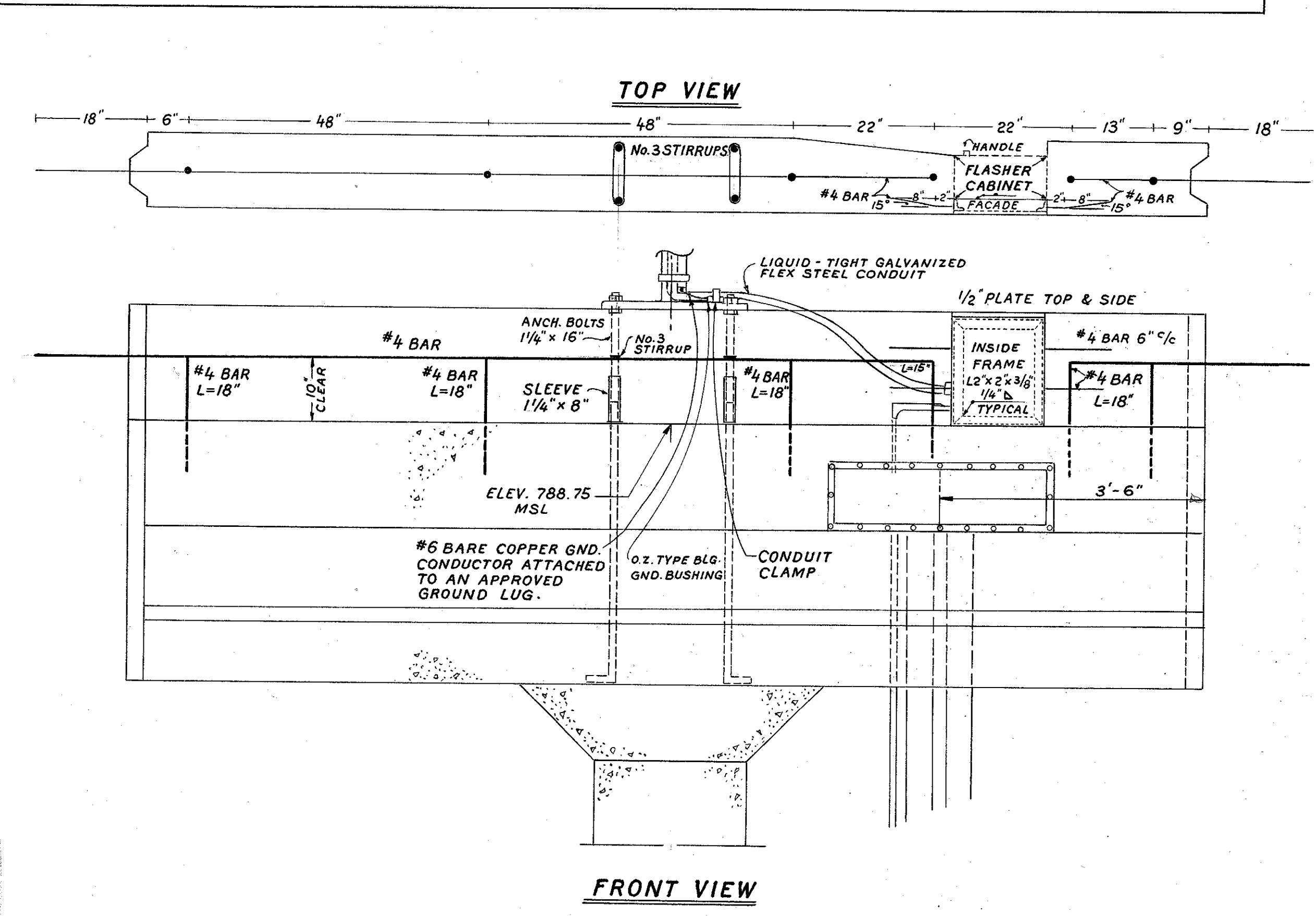
- (a) 6" Plain Portland Cement, Item 452.
- (b) 6" Item 304 Aggregate Base Surfaced With a 2" Course of Asphaltic Concrete, Item 404.

(c) 8" Item 304 Aggregate Base, For Asphaltic Concrete And Slag Drives, The Plan View Shown, Shall Be Used. Shape Drive Section To Provide For Proper Drainage, As Directed By The Engineer.



**SEQUENCE OF OPERATIONS**

1. Remove conduit clamps on barrier and pole.
2. Remove pole and anchor nuts, chip out grout around anchor bolts to provide a 4" protrusion.
3. Install an 8" threaded sleeve on ex. bolts, install a 1 3/4" x 16" headless bolt onto sleeves.
4. Replace pole and 8 anchor nuts on foundation so base plate bottom is 18" above exist. barrier.
5. Drill dowel holes and place reinforcing steel.
6. Place blackout for cabinet door opening.
7. Locate falsework, vibrate all concrete in place; one pour.



**NOTES:**

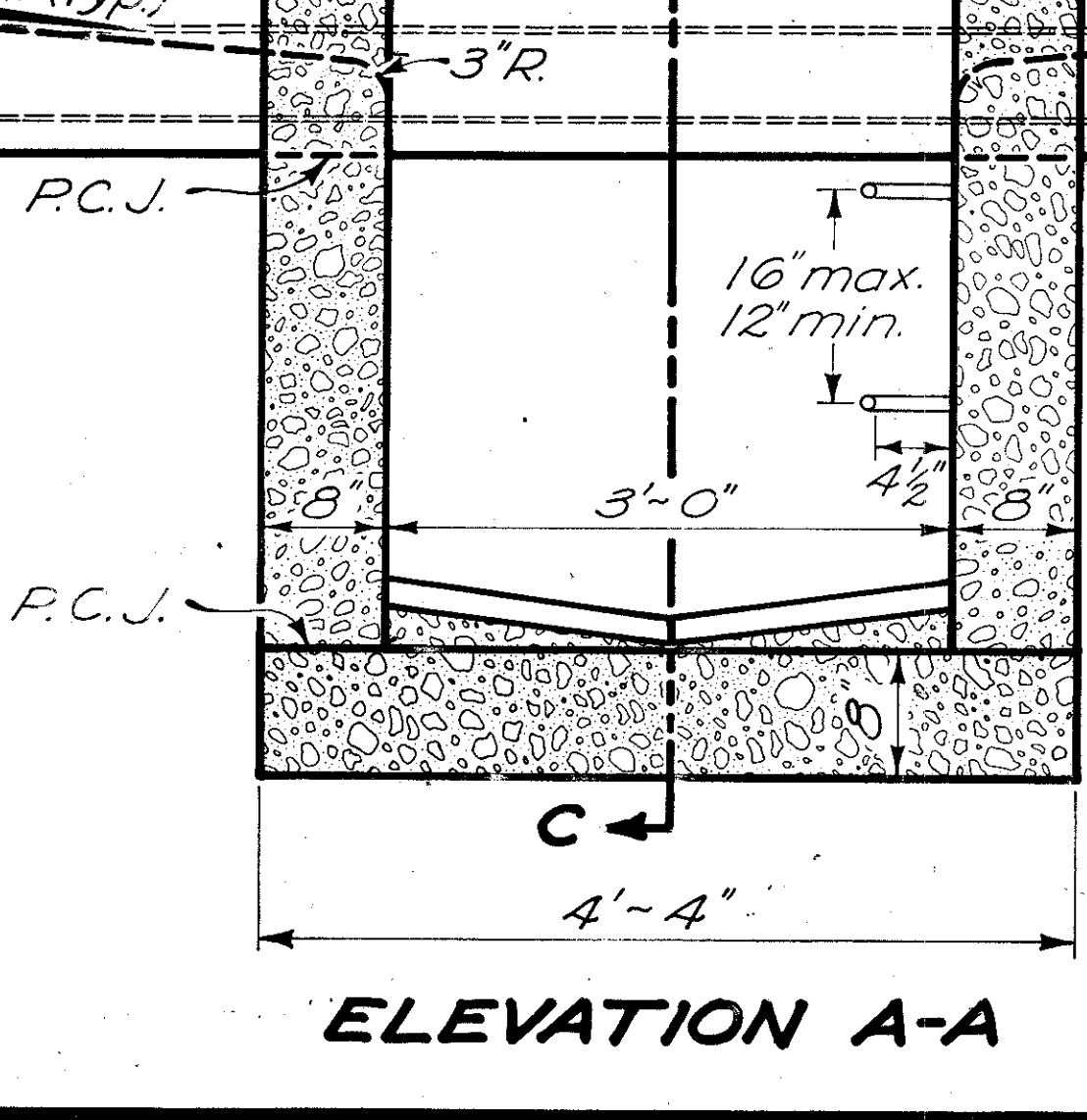
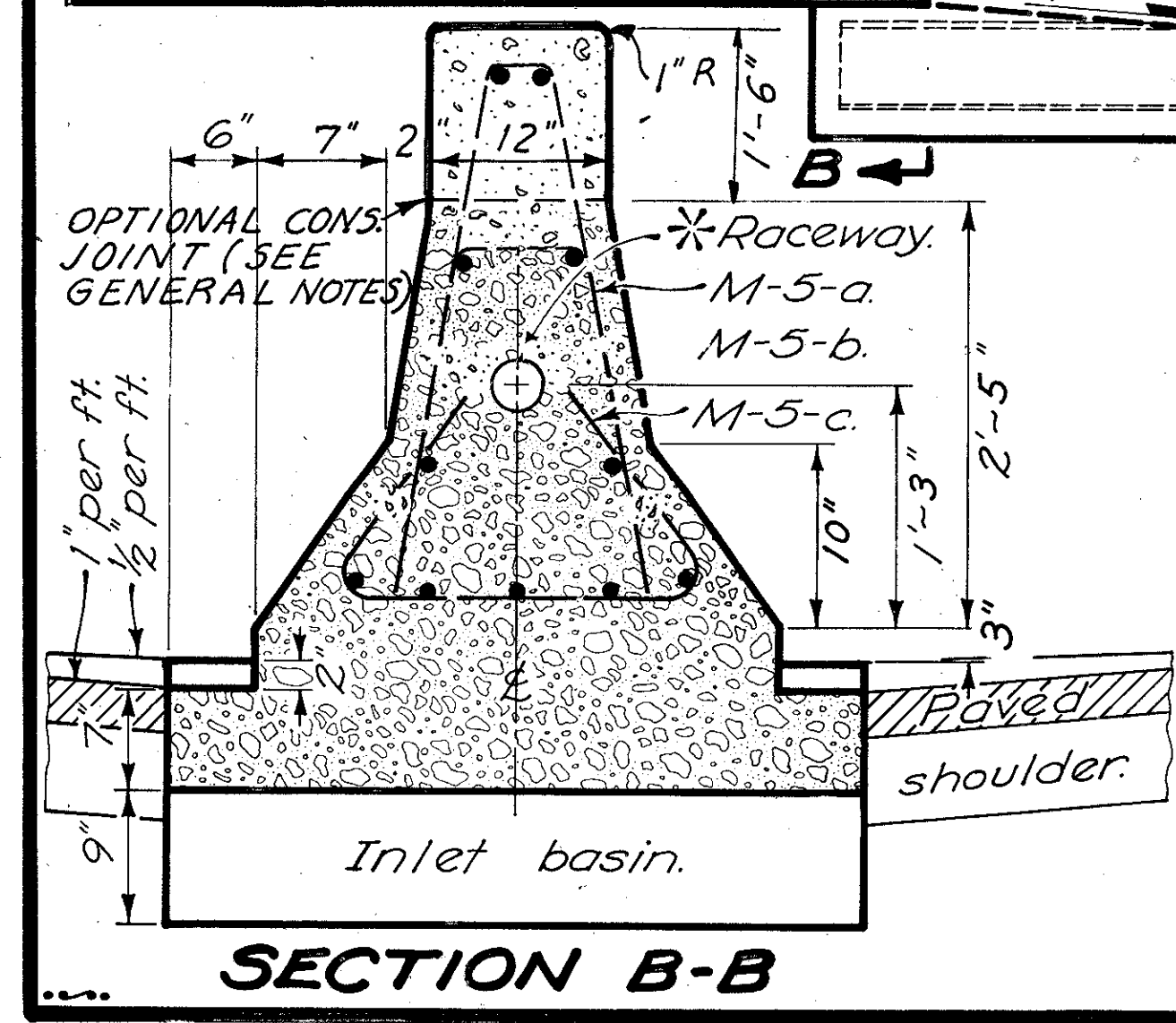
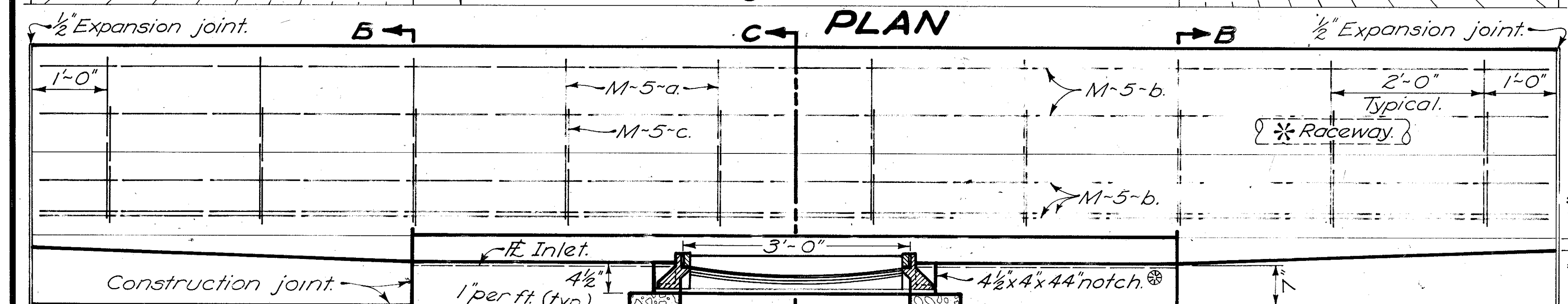
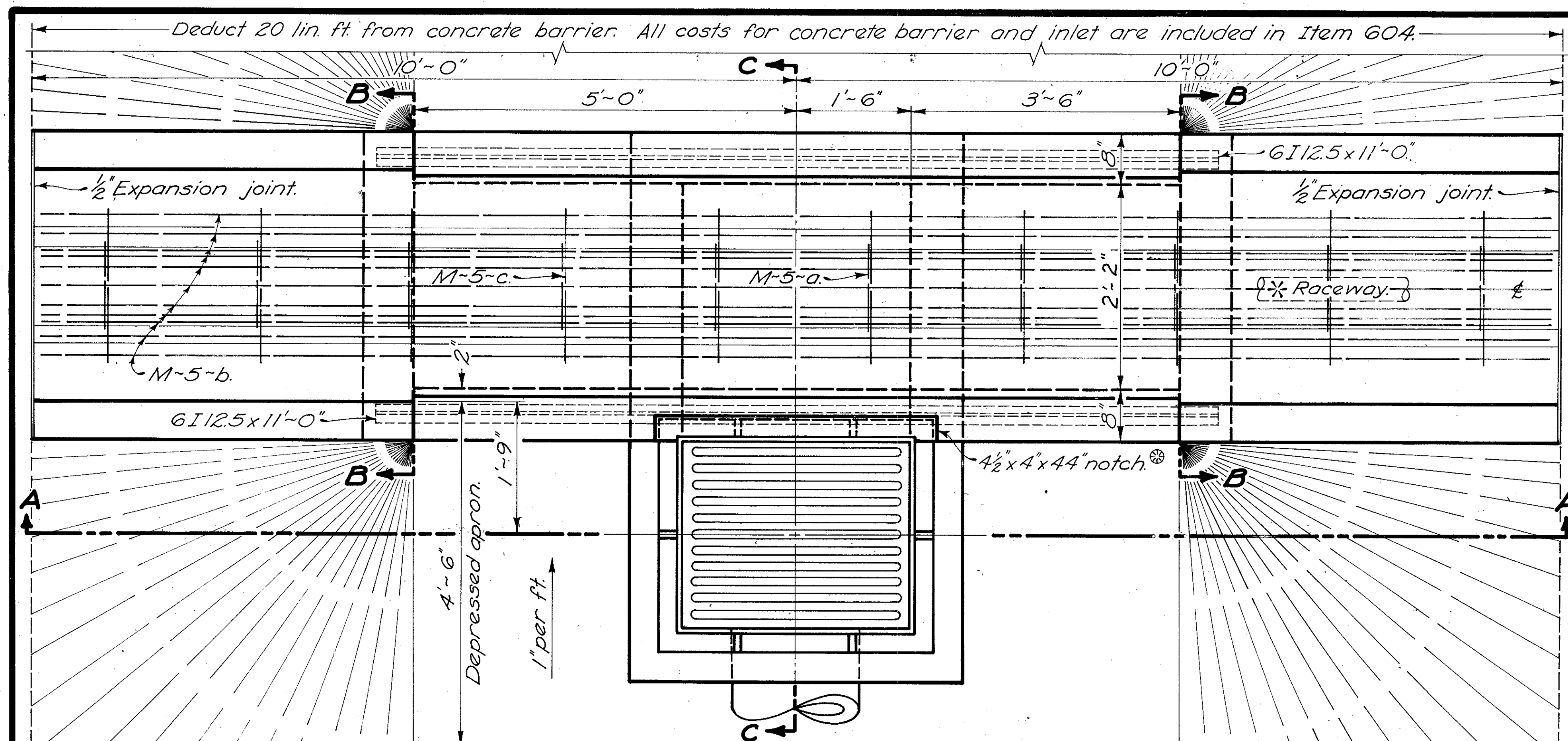
The Contractor is cautioned that if there is insufficient slack in the flex conduit to allow the hinged pole to be raised 18" and still tilt over smoothly, installation of additional flex conduit and a new length of 6-1/2" #14, 3500 V stranded power and control cable will be required as part of this work.

The Contractor shall contact The Ohio Airway Facilities Sector Manager @ 265-3770 two weeks prior to commencement of operations on the MALSR facility.

All work on this structure shall be done in a manner suitable to the Federal Aviation Administration Representative.

Payment for the above shall be included in the Unit Price Bid for Item Special, concrete glare screen as detailed above and as supplemented on sheet No. 12.

**MALSR GLARE SCREEN DETAILS**



**STEEL LIST**

INLET No.	W	M-5-a	M-5-b	M-5-c	6 I 12.5
		No. Lin. Ft.	No. Lin. Ft.	No. Lin. Ft.	No. Lin. Ft.
OPT. C. Jt.		4'-6"			
I-3H	12"	10 7'-4"	11 19'-8"	10 4'-1"	2 11'-0"

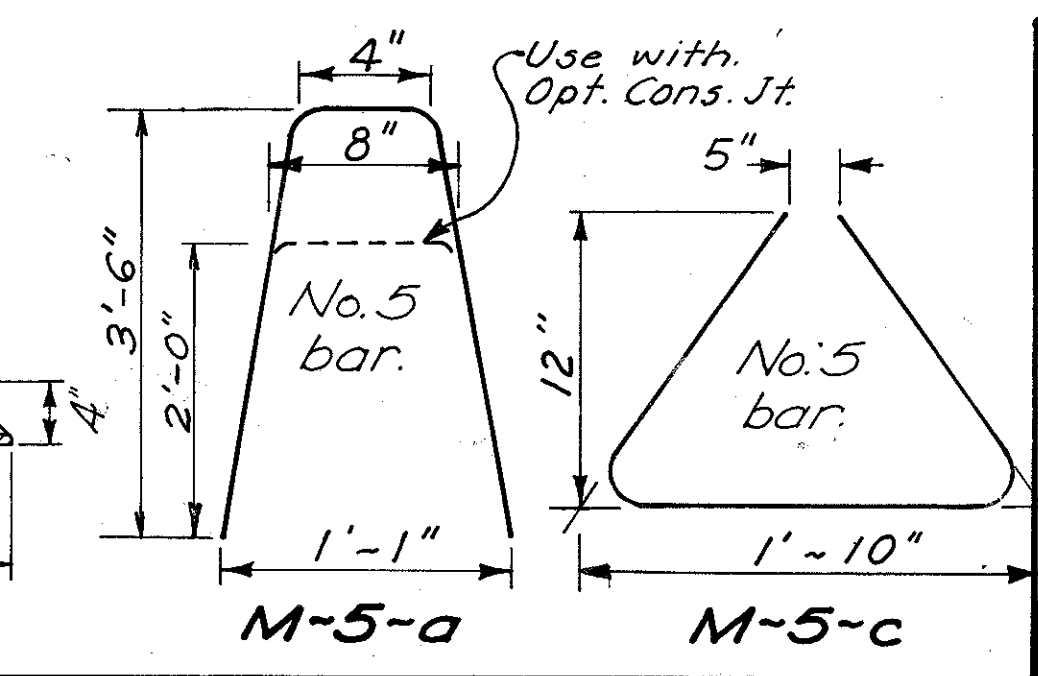
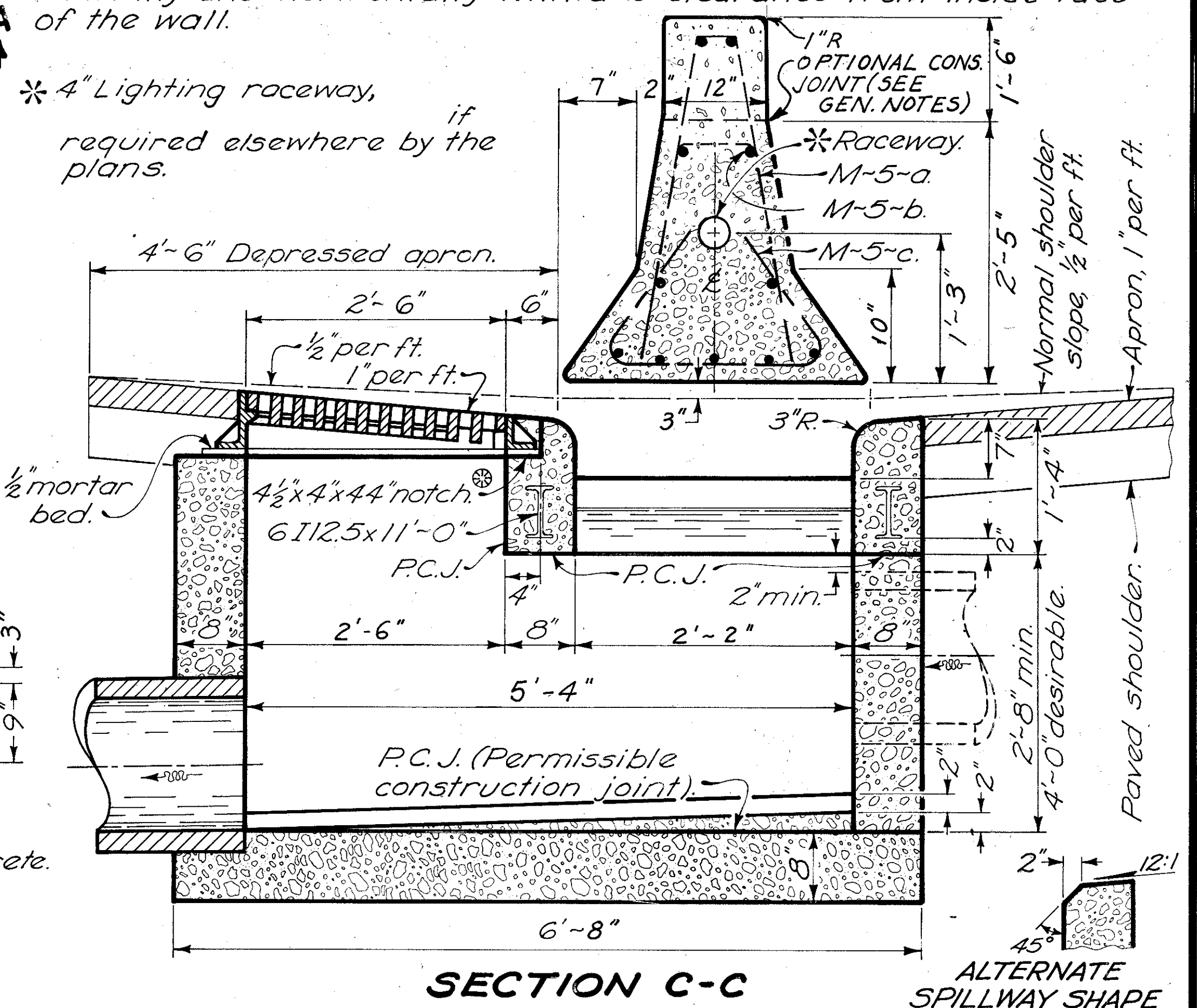
**NOTES**

**WALLS:** The sections between the base and the upper permissible construction joint may be built of brick, concrete block, or cast-in-place concrete, 8" nominal thickness, for depths of 12' or less. The unit above the upper permissible construction joint may be precast or cast-in-place. Concrete for precast or cast-in-place construction shall meet the requirements of 511 Class C. If a skewed pipe protrudes more than 2" inside a wall, the pipe shall be trimmed flush and finished to produce a neat appearance.

**STEPS** shall be in accordance with Standard Drawing MH-1. Minimum weight of frame and cover shall be 540 pounds.

**GRATE LOCATION:** In super-elevated curves or at other locations where there is unequal discharge from the directional roadways, the inlet grating shall be located in the roadway which discharges the major flow.

**INLETS OVER 12 FEET IN DEPTH** shall be built of Class C concrete reinforced by placing 1/2" bars 12" center-to-center both vertically and horizontally with a 2" clearance from inside face of the wall.

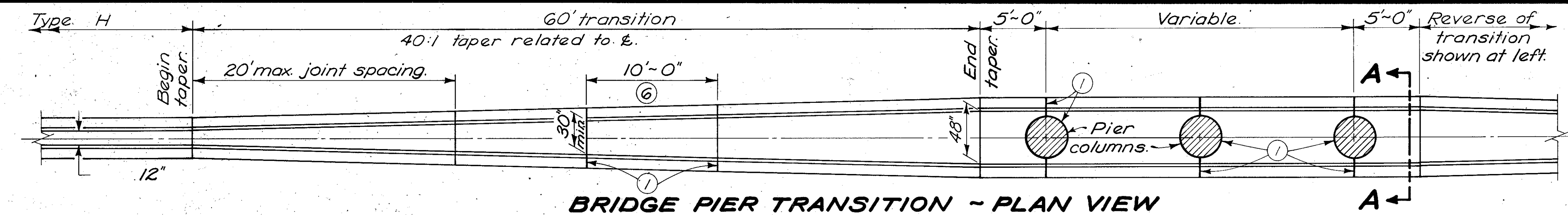


**I-3H**

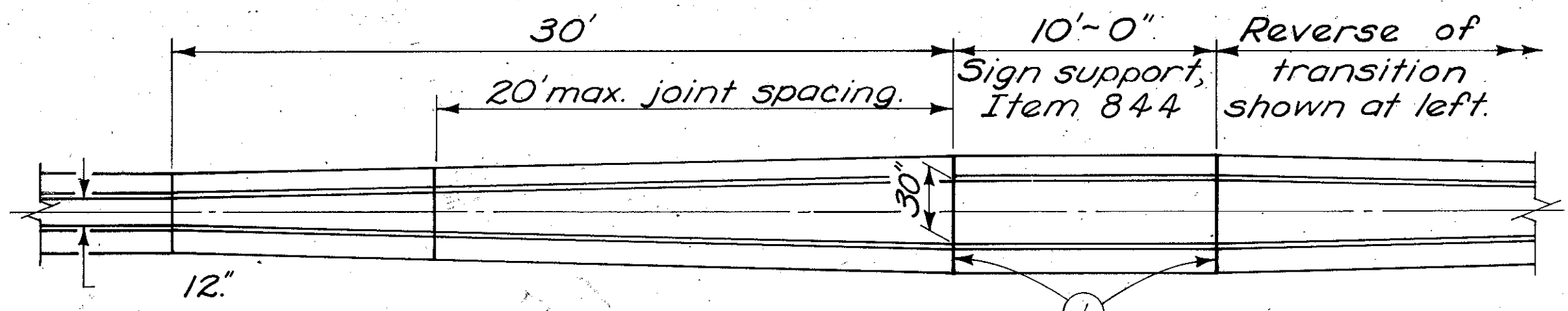
**MEDIAN INLETS**

NOTE: Drawing not to scale, dimensions govern. See General Notes for optional top construction.

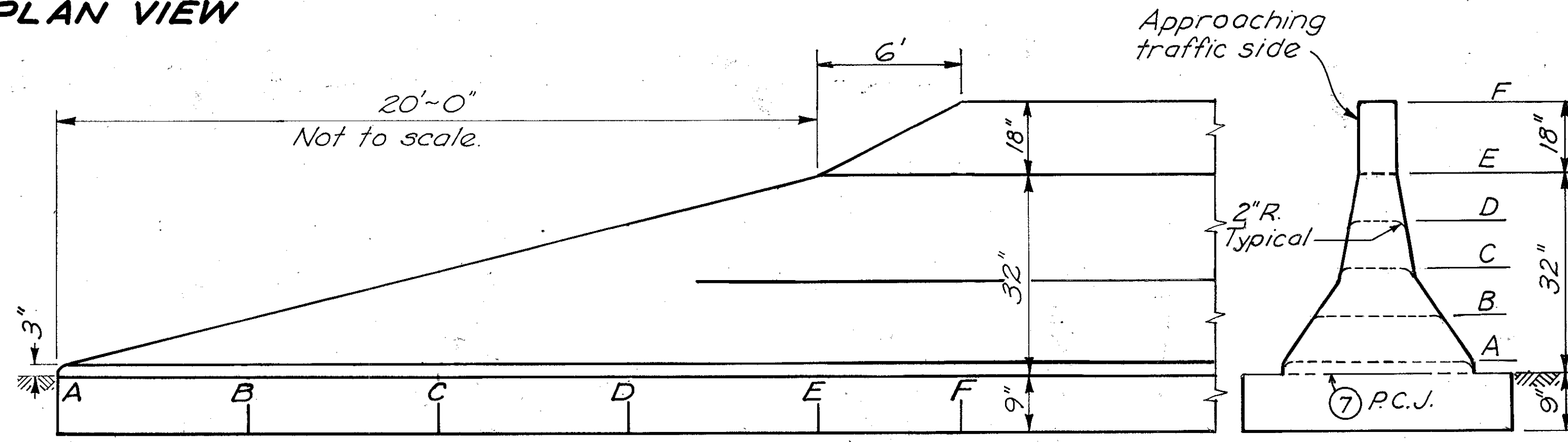
**MEDIAN INLET DETAILS**



**BRIDGE PIER TRANSITION - PLAN VIEW**



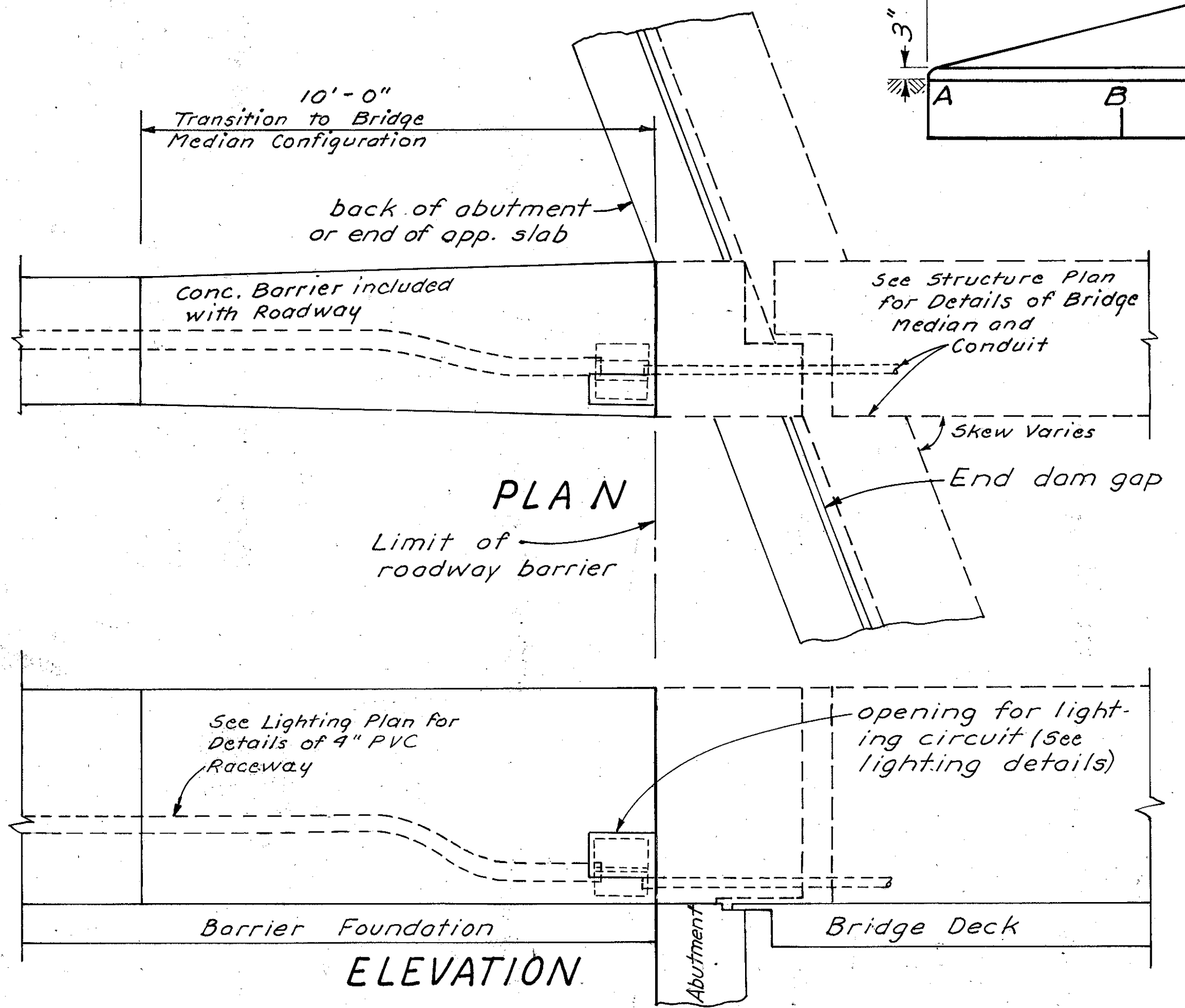
**SIGN SUPPORT TRANSITION - PLAN VIEW**



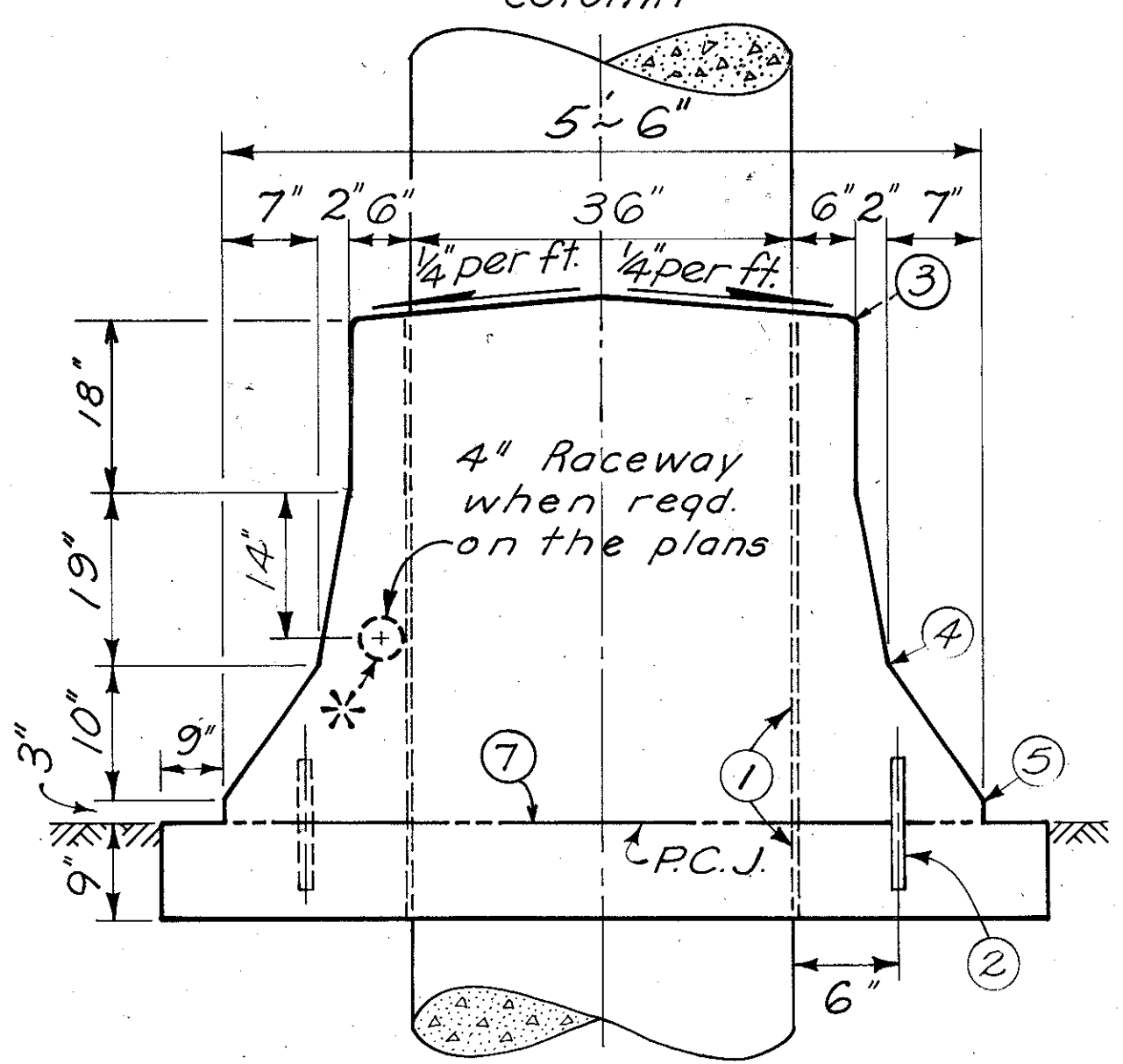
**PROFILE VIEW**

**END TERMINAL DETAIL**

**END VIEW**



**BRIDGE MEDIAN TRANSITION DETAIL**



**BRIDGE PIER TRANSITION SECTION A-A**

**NOTES**

**JOINTS:** Unsealed contraction joints spaced at 20' max. shall be constructed throughout the run of Concrete Barrier except that expansion joints shall be used at the center line of and around each bridge pier column and on either side of overhead sign supports. See 625 Light pole foundation drawing for other joint details.

Contraction joints may be constructed with metal inserts inside the forms, preformed full width joint filler, a grooving tool, or by sawing. Inserts or tooled or sawed joints shall have a 1 1/2" min. depth. All joints shall be constructed for the full height of the barrier including the base.

**LIGHTING:** The 4" polyvinyl chloride raceway shall be included in the unit price bid for 622.

**MEASUREMENT:** 622 Concrete Barrier, including transitions and end terminals and pier sections, is paid for in linear feet with the following deductions for structures covered under other items.

- 604 I-3 Median inlets..... 20 Lin. Ft.
- 625 Light pole foundation..... 2.5 Lin. Ft.
- 844 Overhead sign support foundation..... 10 Lin. Ft.

The following table gives information to compute the volume of the various type barriers:

CUBIC YARDS PER LINEAR FOOT			
Barrier	Top	Base	
TYPE H	0.206	0.111	
SECTION A-A†	0.672	0.194	

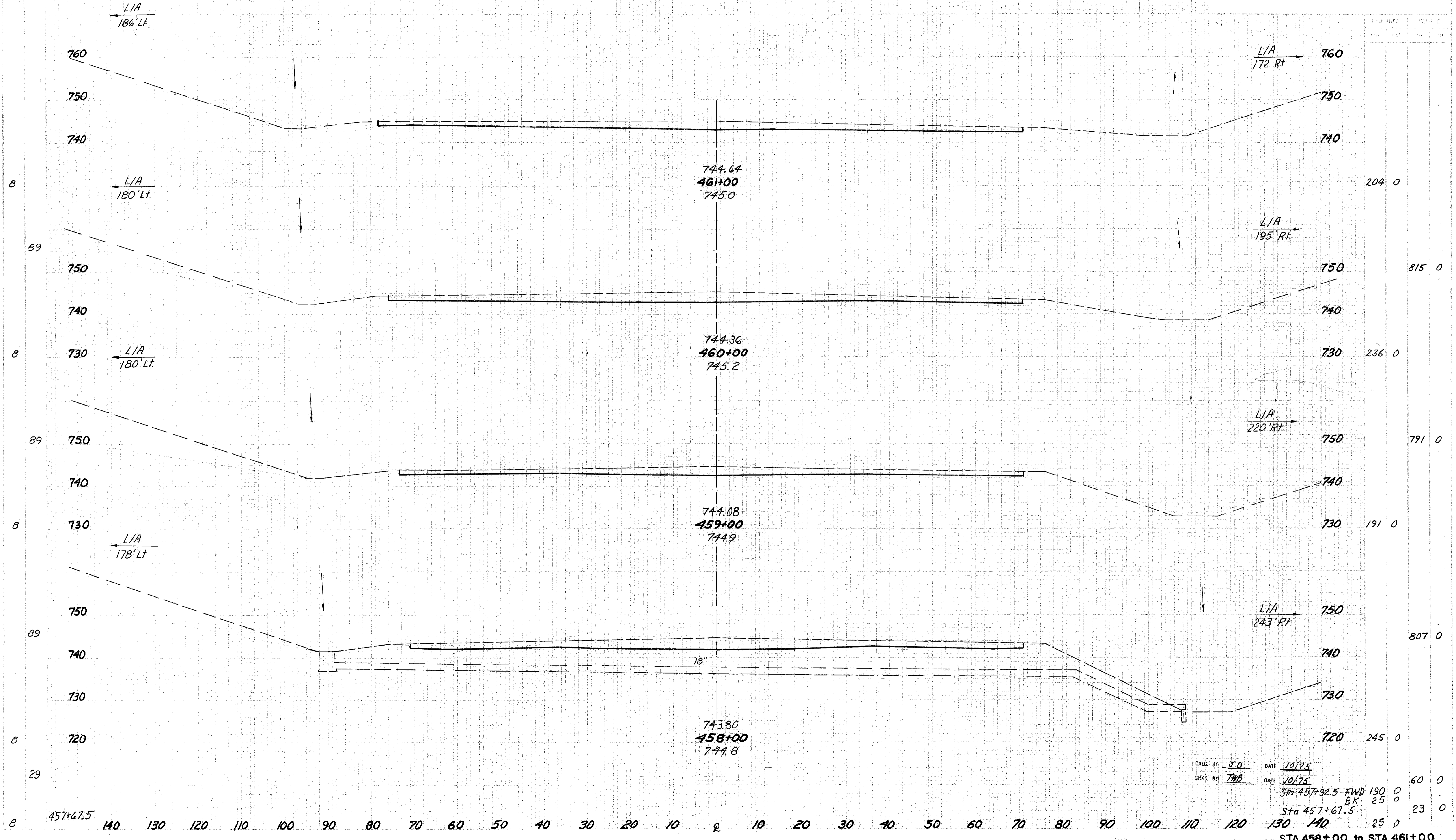
† Deduct 1.3 Cu. Yd. for each 36" dia. pier column.

- ① Expansion joint, 3/4" min. Preformed Filler 705.03.
- ② No. 8 deformed steel bars, 12" long, spaced on staggered 4' centers. The End Terminal will require shorter dowels between points A & C. Omit dowels when top is constructed integral with the base.
- ③ 1" Radius or 3/4" chamfer.
- ④ Permissible 10" radius.
- ⑤ Permissible 1" radius.
- ⑥ 844 Overhead Sign Support Foundation, if specified in the plan.
- ⑦ Permissible construction joint.

NOTE: Drawing not to scale, dimensions govern. See General Notes for optional top construction.

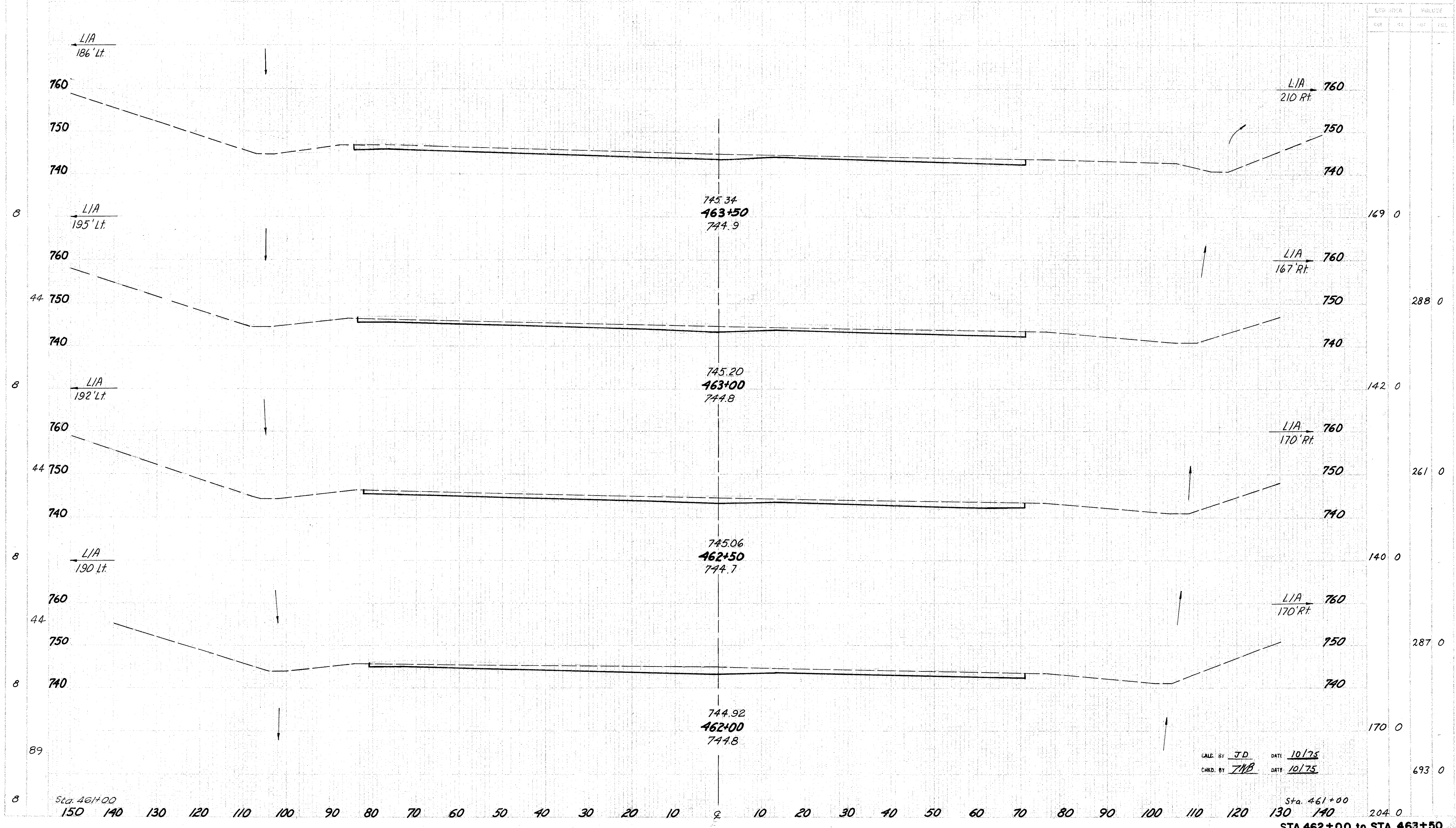
**CONCRETE BARRIER DETAILS**

CUYAHOGA COUNTY  
CUY-480-6.78



CALC. BY J.D. DATE 10/75  
 CHKD. BY TWB DATE 10/75  
 Sta. 457+92.5 FWD 190 0  
 BK 25 0  
 Sta. 457+67.5 23 0  
 25 0  
 STA. 458+00 to STA. 461+00

CUYAHOGA COUNTY  
CUY-480-678

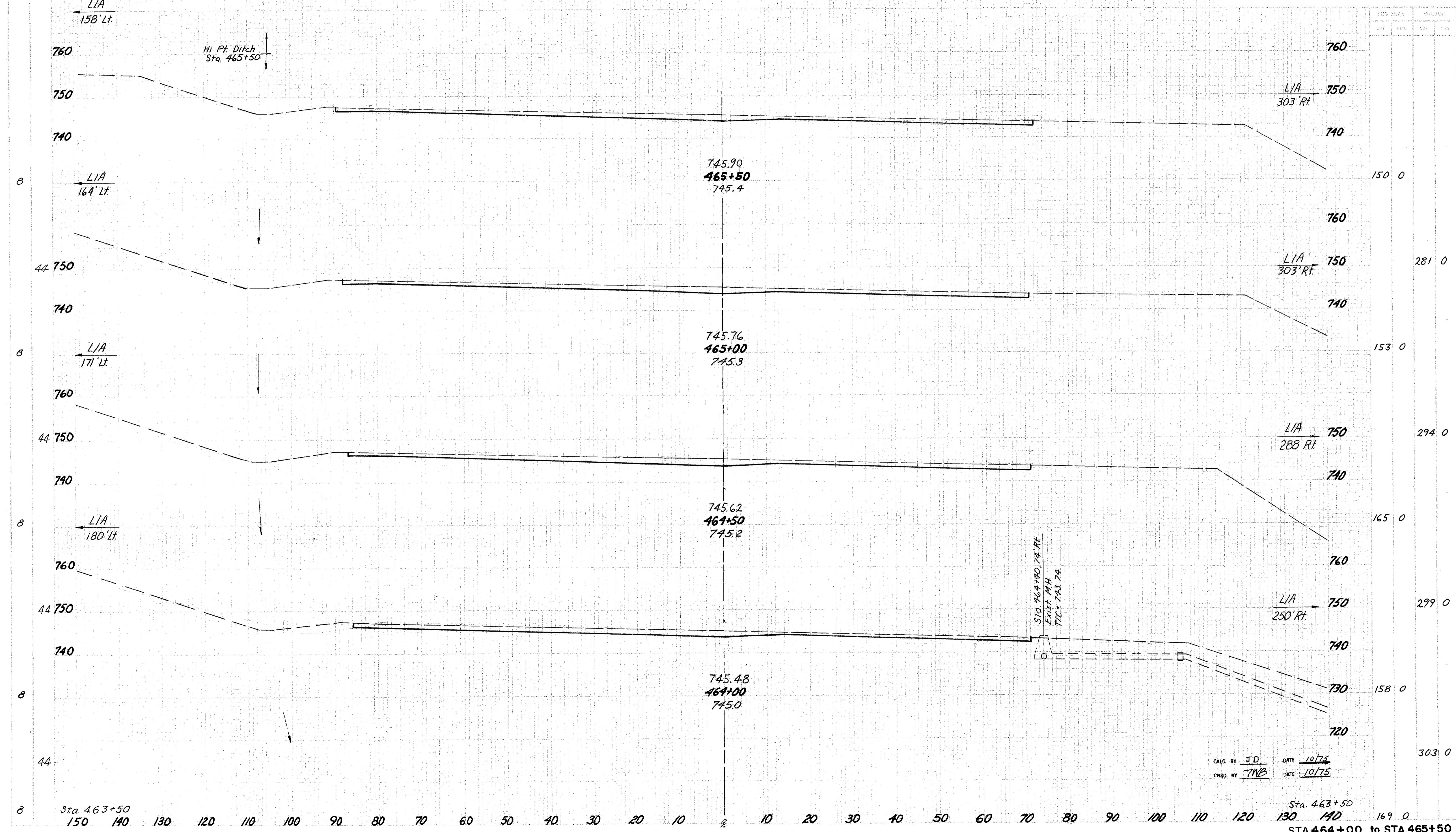


CALC. BY J.D. DATE 10/75  
CHKD. BY TMB DATE 10/75

Sta. 461+00  
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Sta. 461+00  
STA. 462+00 to STA. 463+50



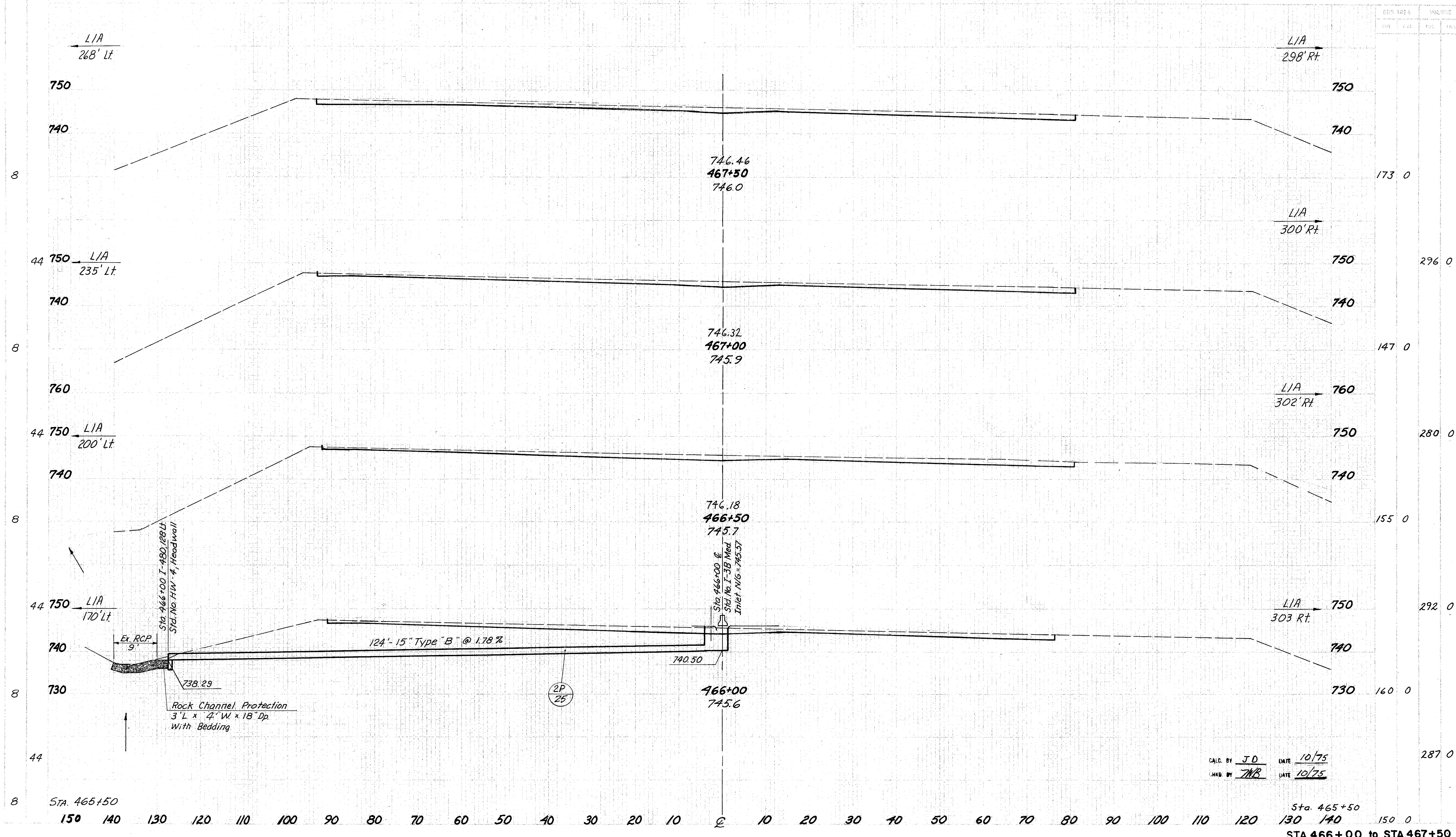
**CUYAHOGA COUNTY**  
**CUY-480-6.78**

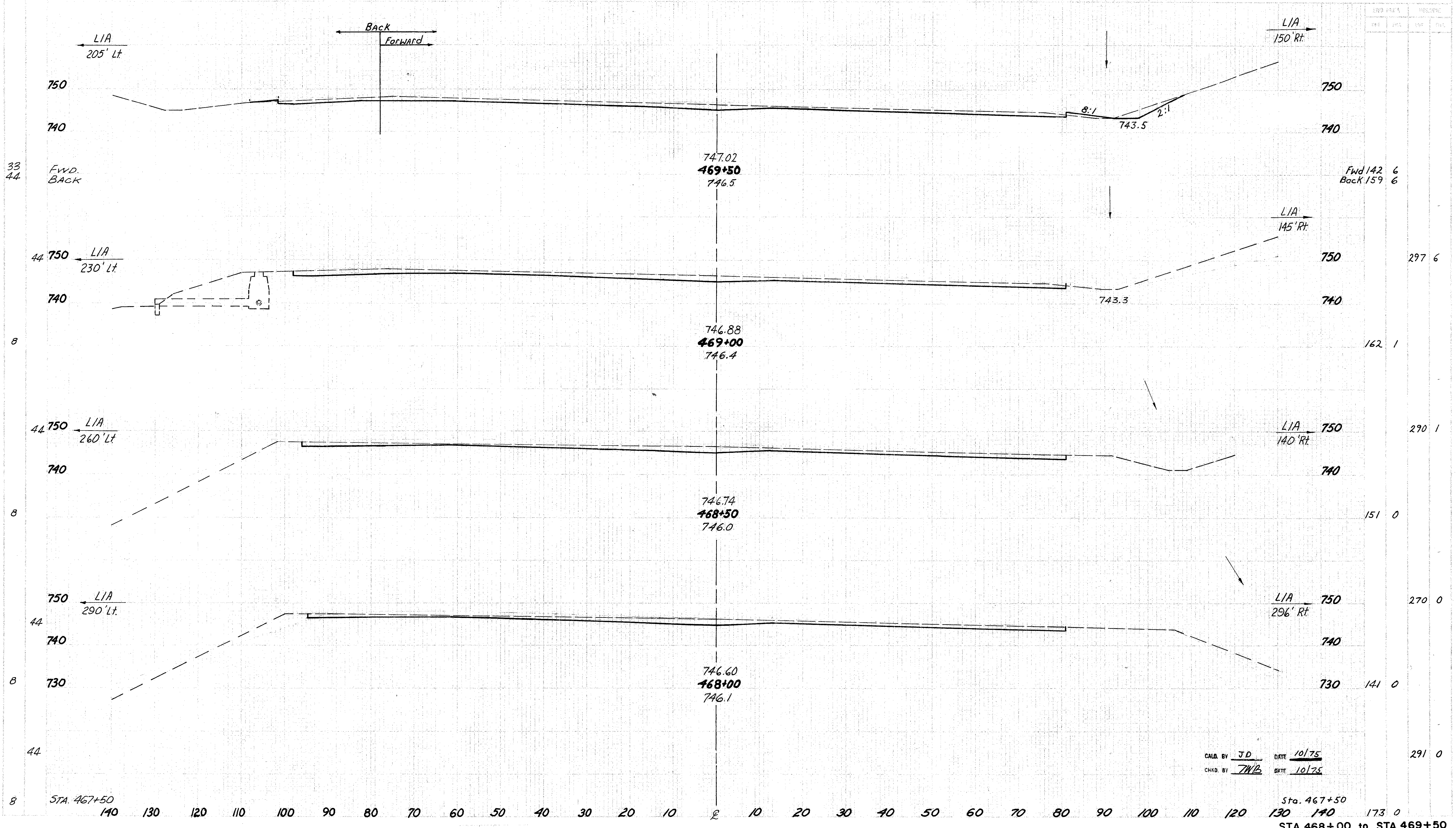


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 CHKD. BY TWB DATE 10/75

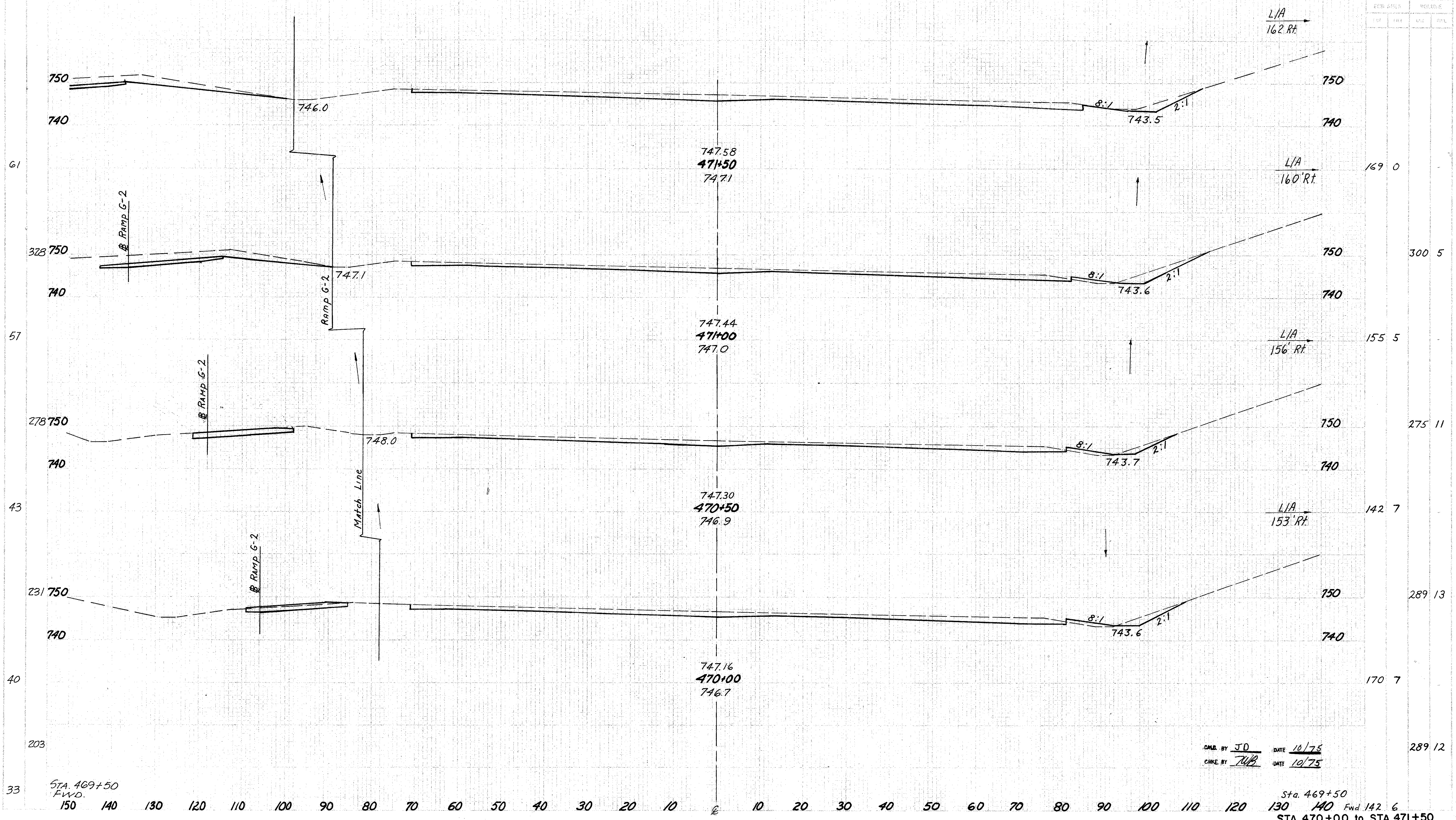
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 STA. 464+00 to STA. 465+50

CUYAHOGA COUNTY  
CUY-480-678





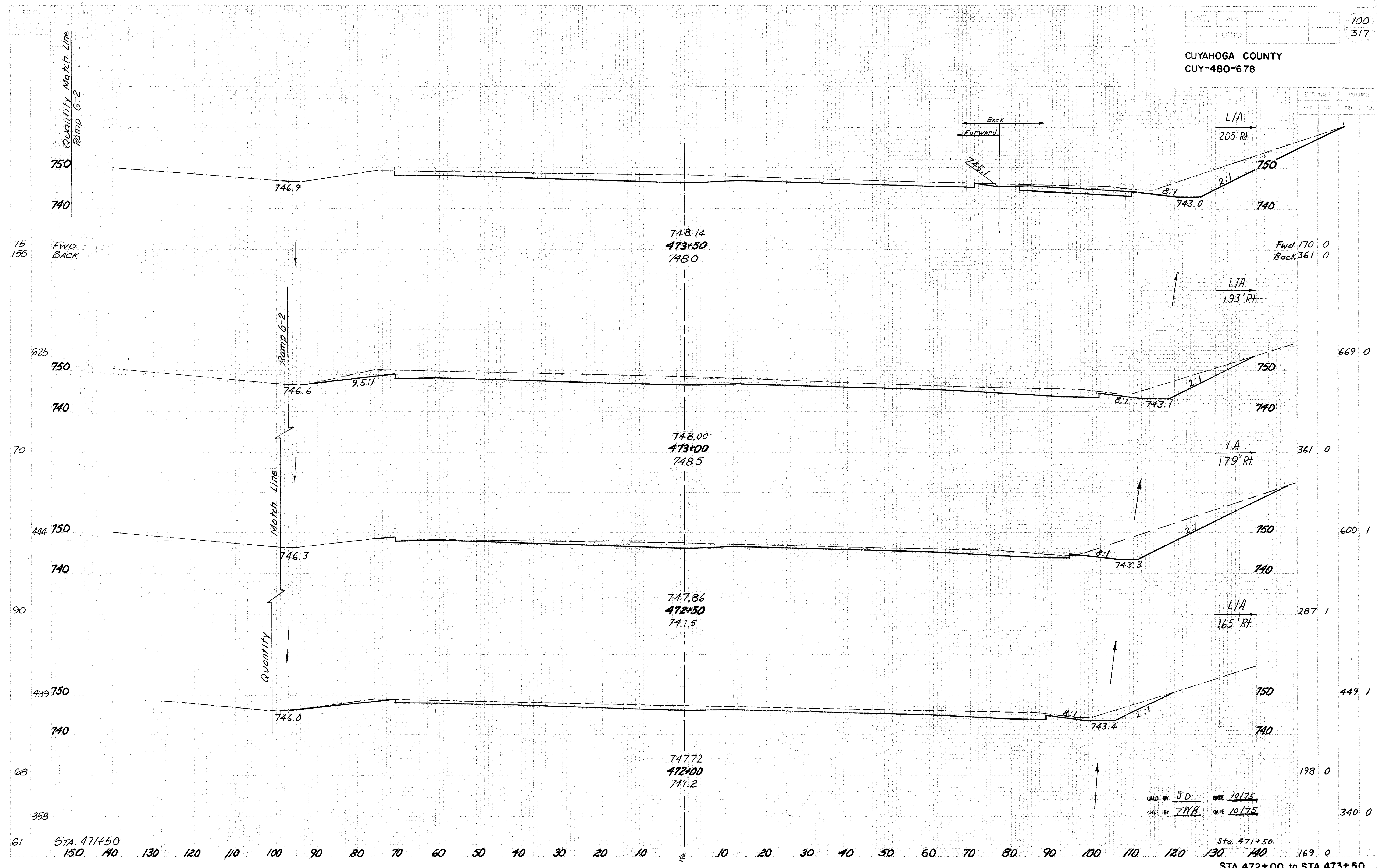
CUYAHOGA COUNTY  
CUY-480-678



SCALE BY JD DATE 10/75  
CHECK BY TWB DATE 10/75

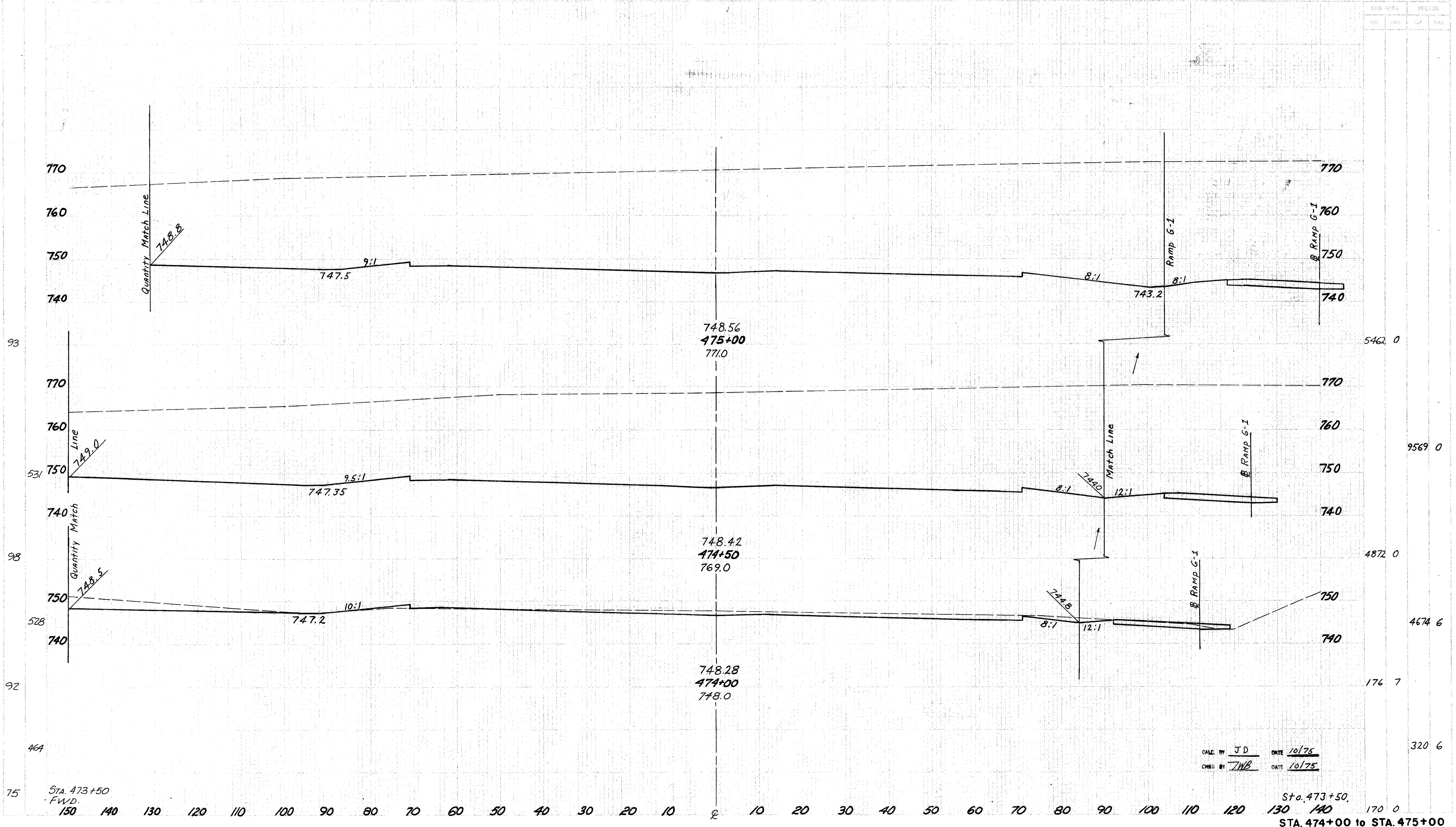
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STA. 470+00 to STA. 471+50

CUYAHOGA COUNTY  
CUY-480-6.78



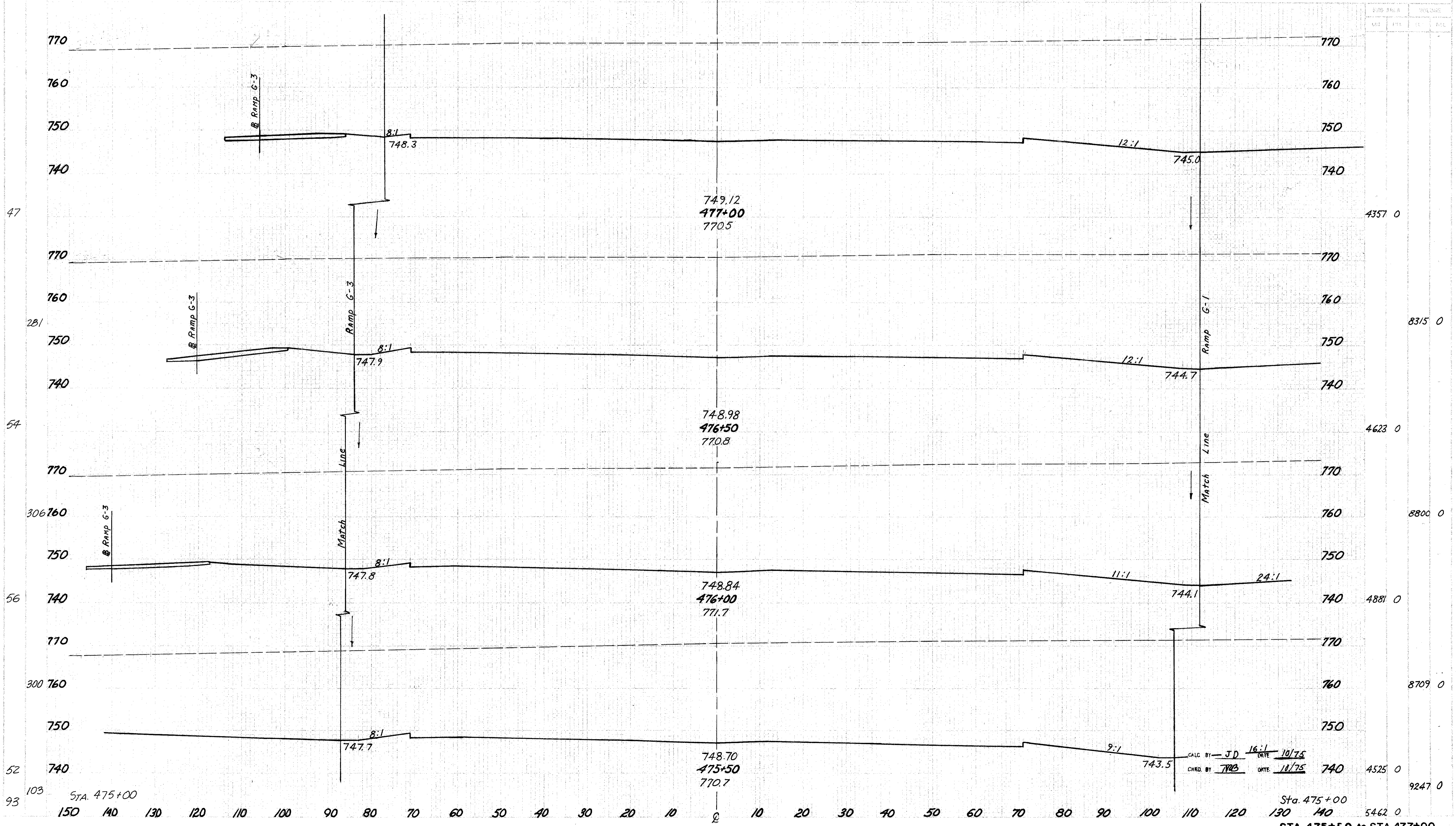
CALC. BY JD DATE 10/75  
 CHECK BY TNB DATE 10/75

CUYAHOGA COUNTY  
CUY-480-6.78



END AREA		VOLUME	
CUY	CUY	CUB	CUY
		5462	0
		9569	0
		4872	0
		4674	6
		176	7
		320	6

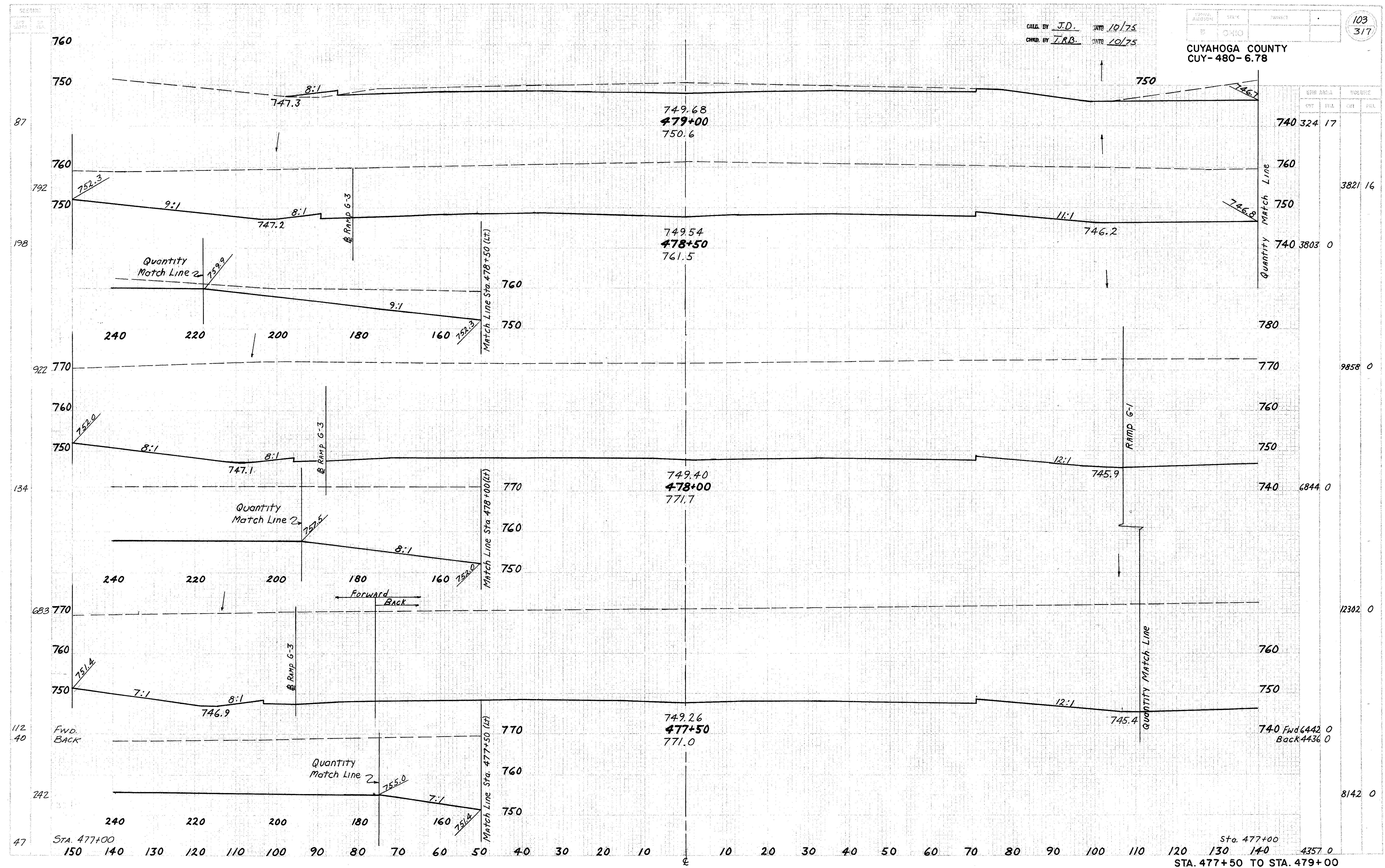
CALC. BY JD DATE 10/75  
 CHKD BY TWB DATE 10/75



CALC BY	JD	DATE	10/75
CHKD BY	TWB	DATE	11/75

Sta. 475+00  
Sta. 475+00 to Sta. 477+00

CALC. BY J.D. DATE 10/75  
 CHKD. BY J.R.B. DATE 10/75

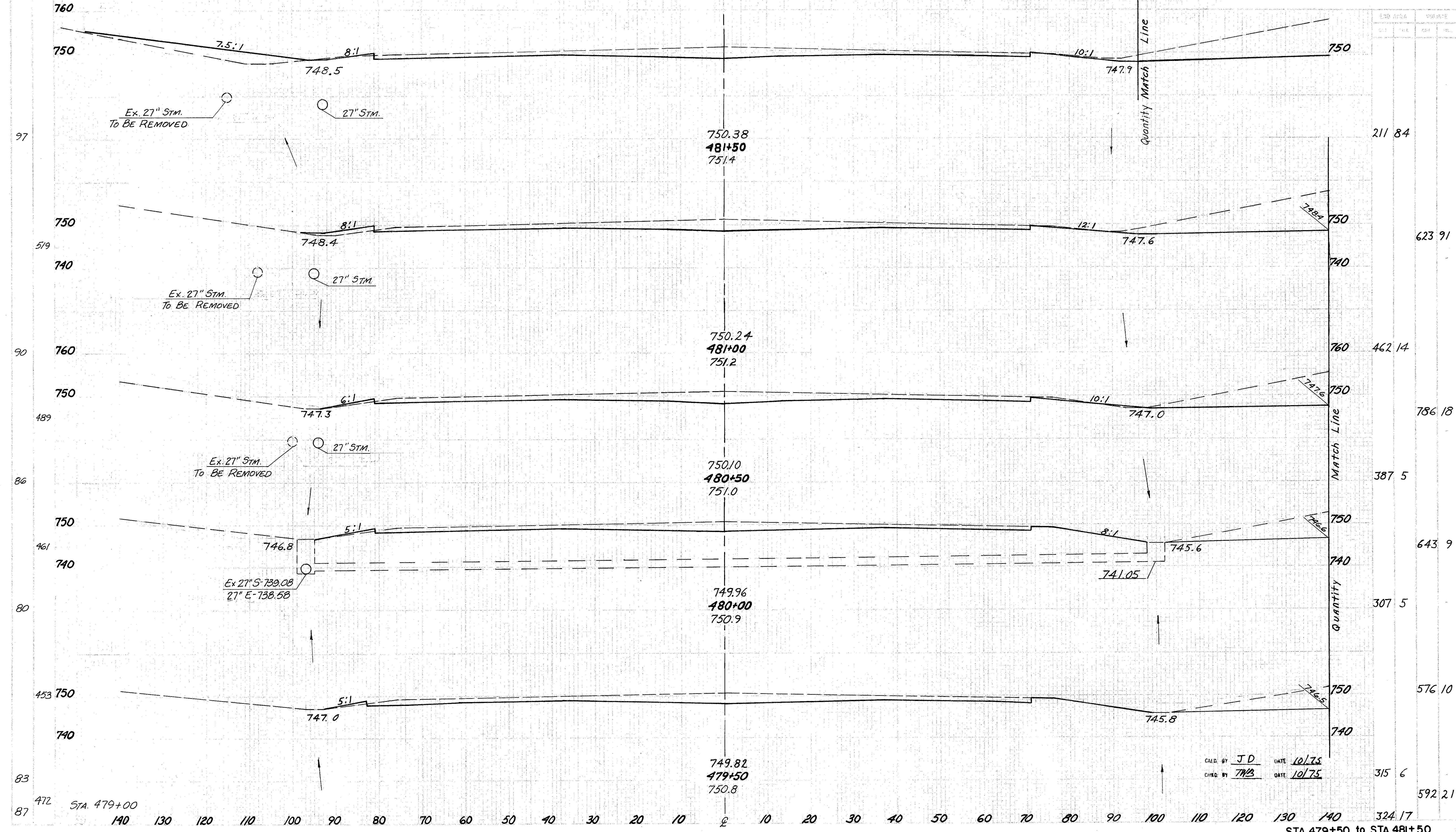


SECTION	CUT AREA		FILL AREA	
	CUY	ILL.	CUY	ILL.
87	740	324	17	
198	740	3803	0	3821 16
922	740	6844	0	9858 0
134	740	6442	0	12302 0
683	740	6442	0	8142 0
112	740	4357	0	

STA. 477+00      Sta. 477+50      Sta. 477+50 TO STA. 479+00  
 150   140   130   120   110   100   90   80   70   60   50   40   30   20   10   0   10   20   30   40   50   60   70   80   90   100   110   120   130   140   4357.0



CUYAHOGA COUNTY  
CUY-480-6.78



Ex. 27" STM.  
To BE REMOVED

Ex. 27" STM.  
To BE REMOVED

Ex. 27" STM.  
To BE REMOVED

Ex 27" S-139.08  
27" E-138.58

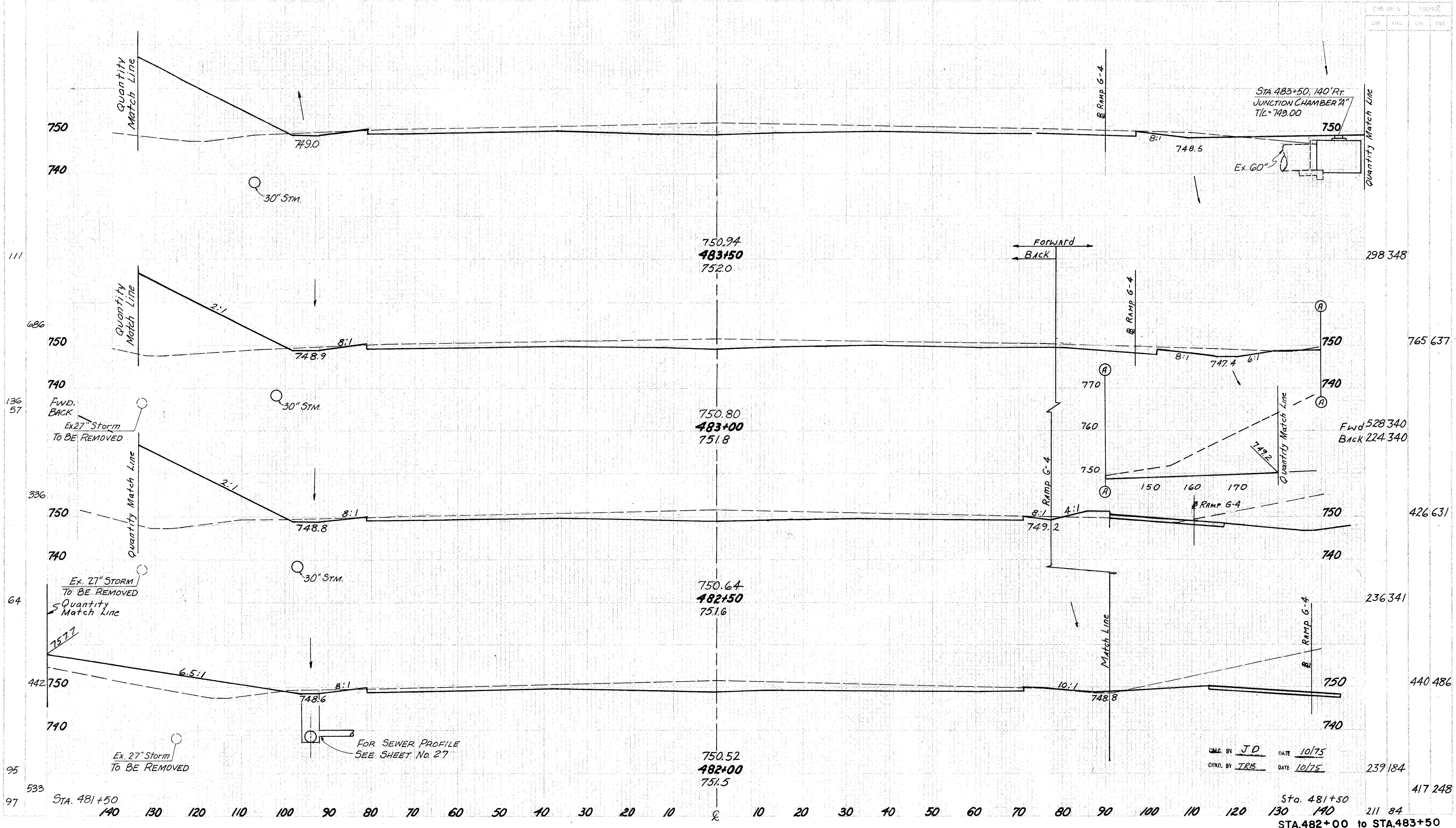
Quantity Match  
Line

Match Line

Quantity

CALC. BY JD DATE 10/75  
CHG. BY TMB DATE 10/75

472 STA. 479+00  
140 130 120 110 100 90 80 70 60 50 40 30 20 10 £ 10 20 30 40 50 60 70 80 90 100 110 120 130 140 324.17  
83 87  
211.84  
623.91  
462.14  
786.18  
387.5  
643.9  
307.5  
576.10  
315.6  
592.21  
STA. 479+50 to STA. 481+50



CALC. BY J.D. DATE 10/75  
CHKD. BY TRB DATE 10/75

Sta. 481+50  
211 84  
STA. 482+00 to STA. 483+50

111  
686  
136  
57  
336  
64  
95  
533  
97

298 348  
765 637  
426 631  
236 341  
440 486  
239 184  
417 248

STA. 481+50  
140 130 120 110 100 90 80 70 60 50 40 30 20 10

750.94  
483+50  
752.0

750.80  
483+00  
751.8

750.64  
482+50  
751.6

750.52  
482+00  
751.5

FORWARD  
BACK

750

740

750

740

750

740

750

740

750

750

740

750

740

750

740

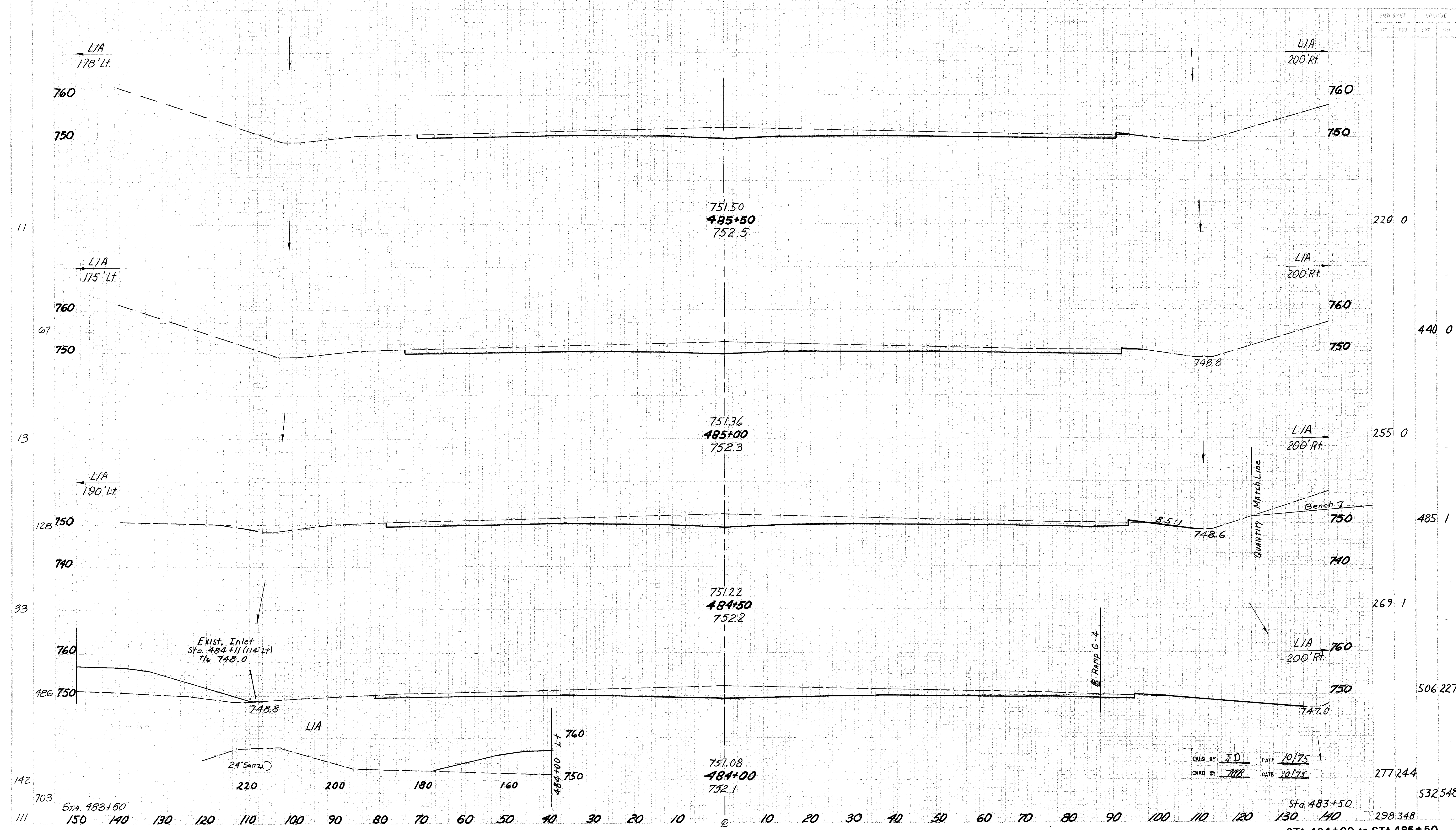
STA. 483+50, 140' RT.  
JUNCTION CHAMBER 21"  
T/C = 749.00

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Sta. 481+50  
130 140

STA. 482+00 to STA. 483+50

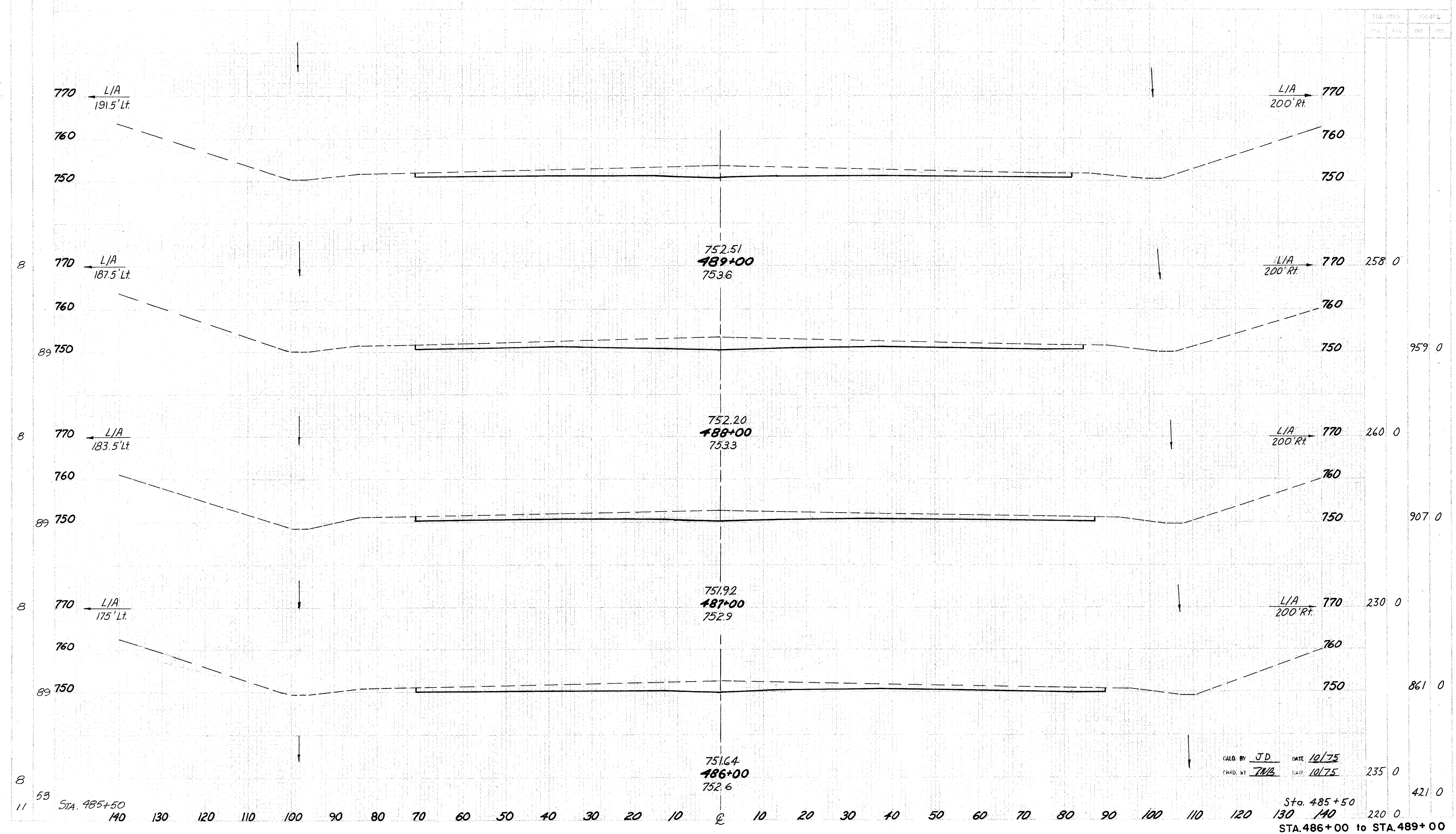
CUYAHOGA COUNTY  
CUY-480-6.78



CALC. BY JD DATE 10/75  
CHKD. BY TIB DATE 10/75

Sta 483+50  
130 140 298 348  
STA. 484+00 to STA. 485+50

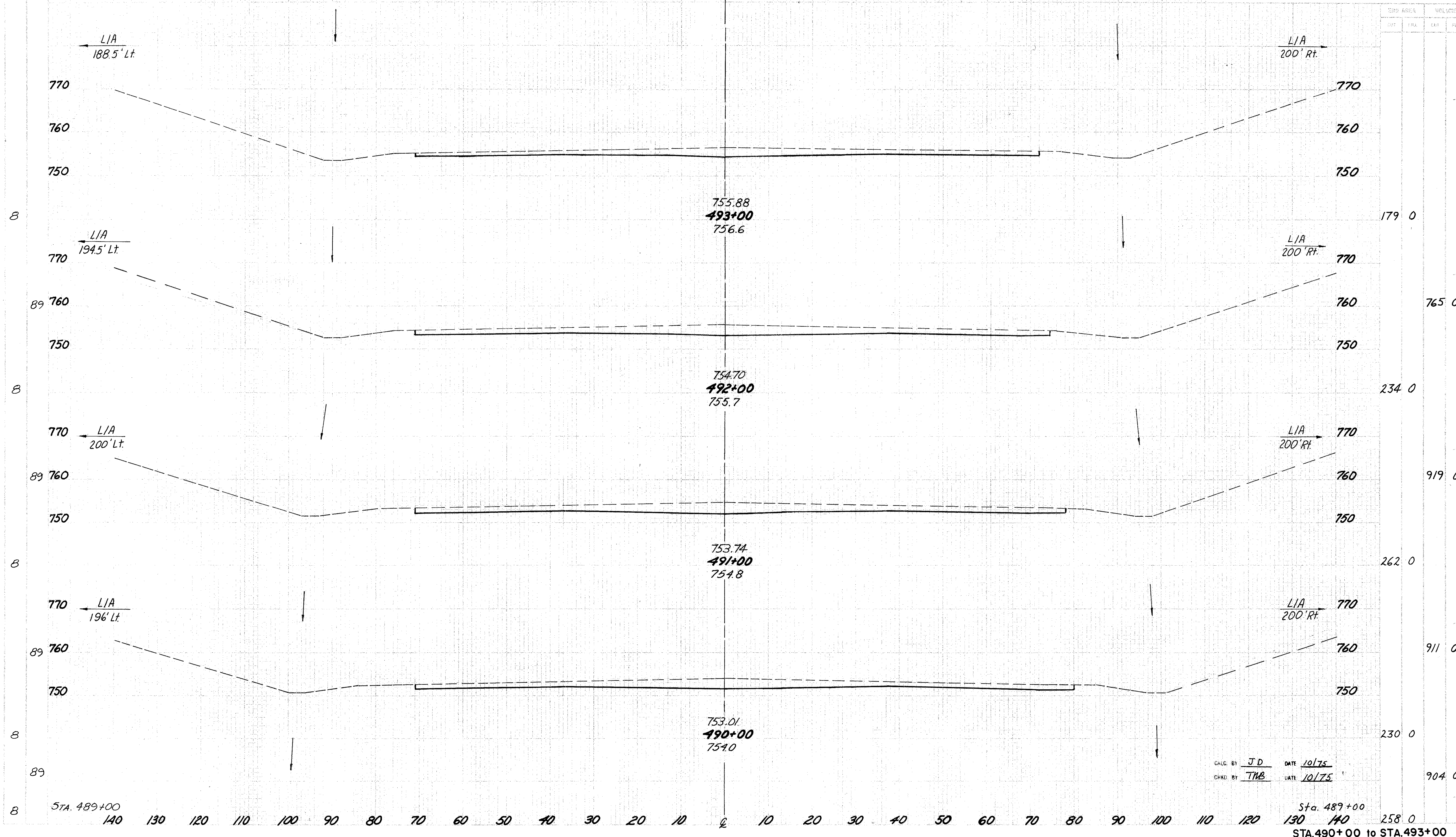
CUYAHOGA COUNTY  
CUY-480-6.78



CALC. BY: JD DATE: 10/75  
CHKD. BY: TMB DATE: 10/75

STA. 485+50 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 220 0  
Sta. 485+50  
STA. 486+00 to STA. 489+00

CUYAHOGA COUNTY  
CUY-480-6.78

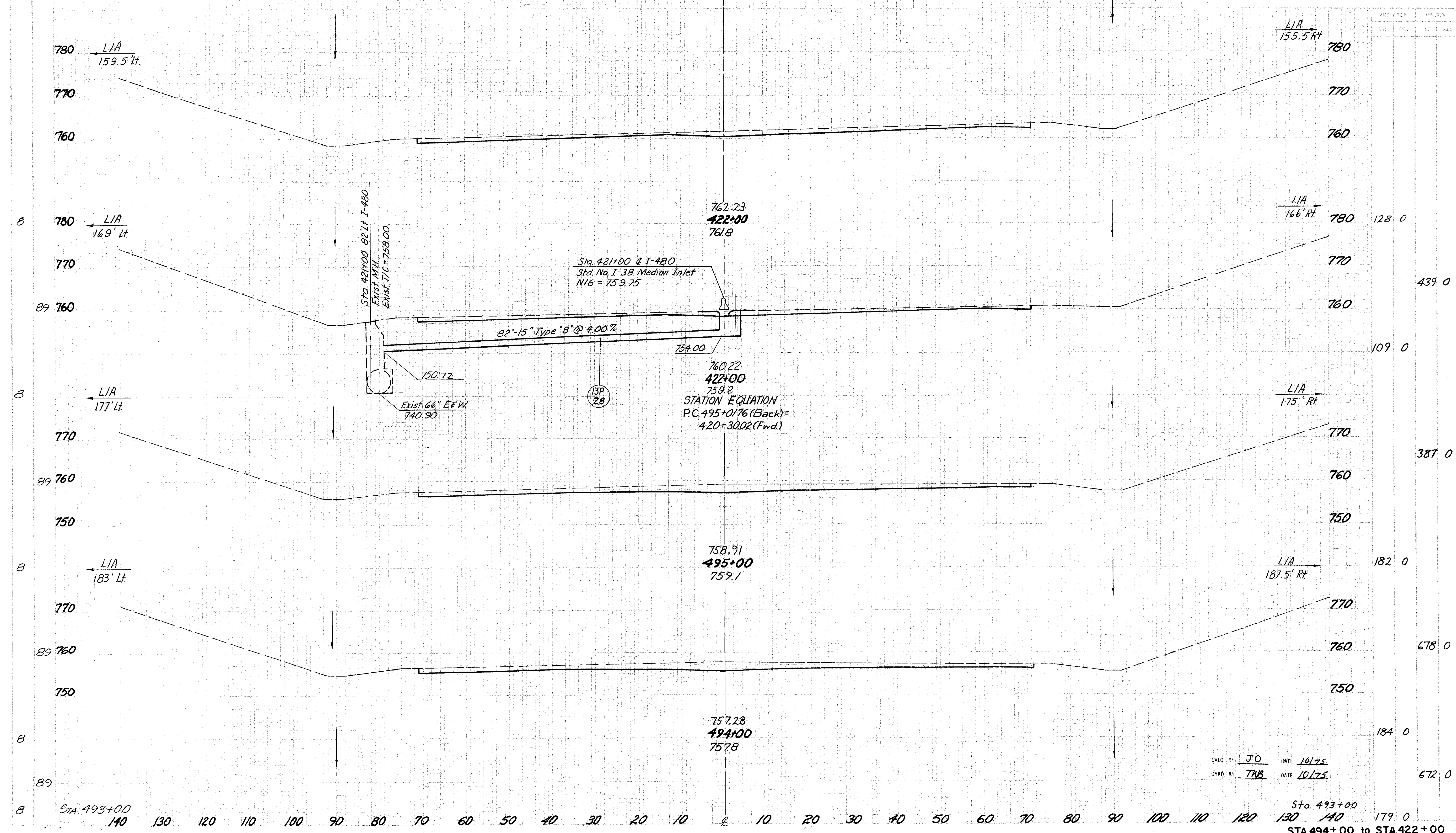


CROSS AREA		VOLUME	
LEFT	RIGHT	CUT	FILL
		179	0
		765	0
		234	0
		919	0
		262	0
		911	0
		230	0
		904	0
		258	0

CALC. BY JD DATE 10/75  
CHKD. BY TMB DATE 10/75

Sta. 489+00  
130 140 258 0  
STA. 490+00 to STA. 493+00

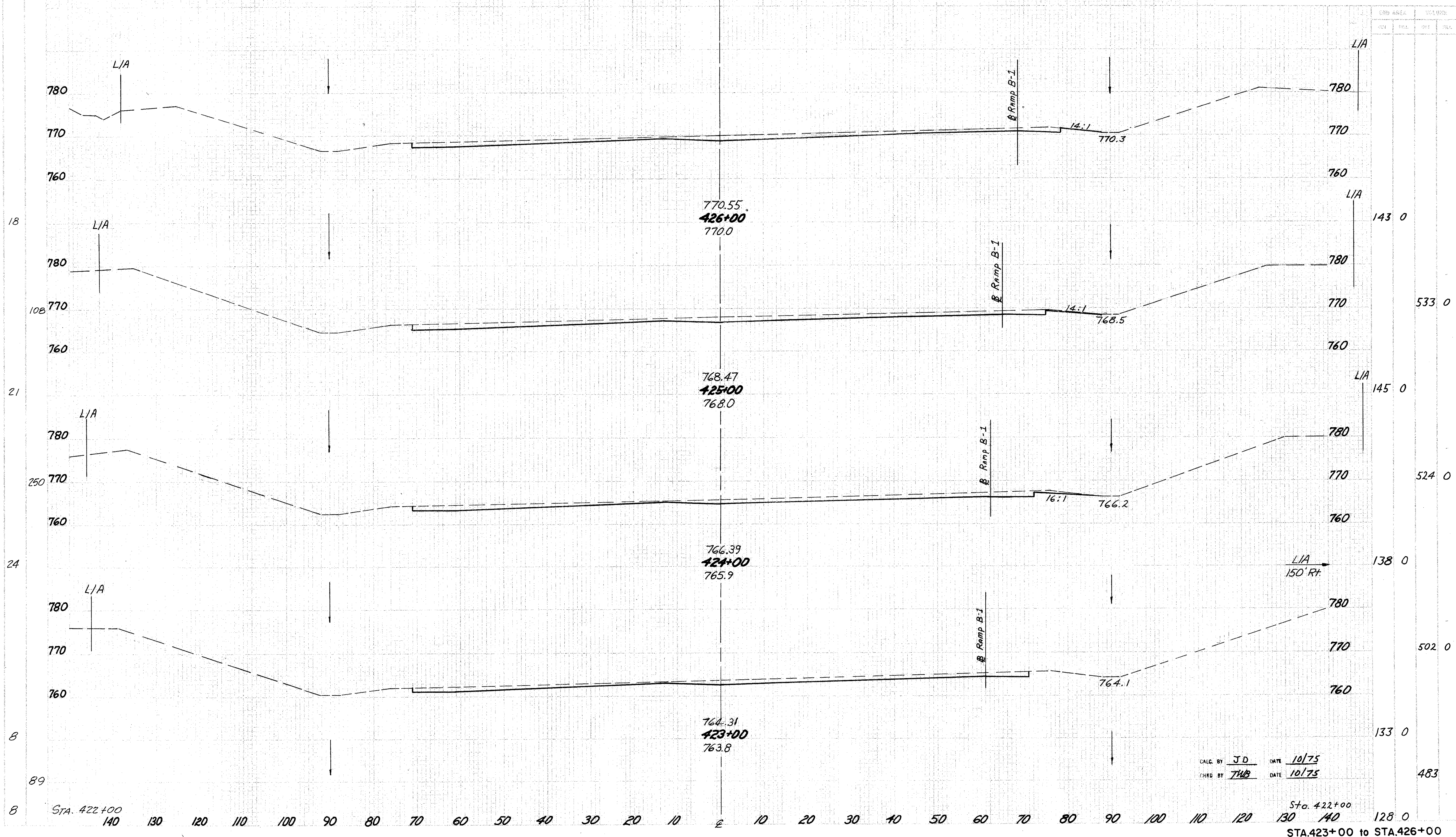
CUYAHOGA COUNTY  
CUY-480-6.78



CALC. BY: JD DATE: 10/75  
CHKD. BY: TWB DATE: 10/75

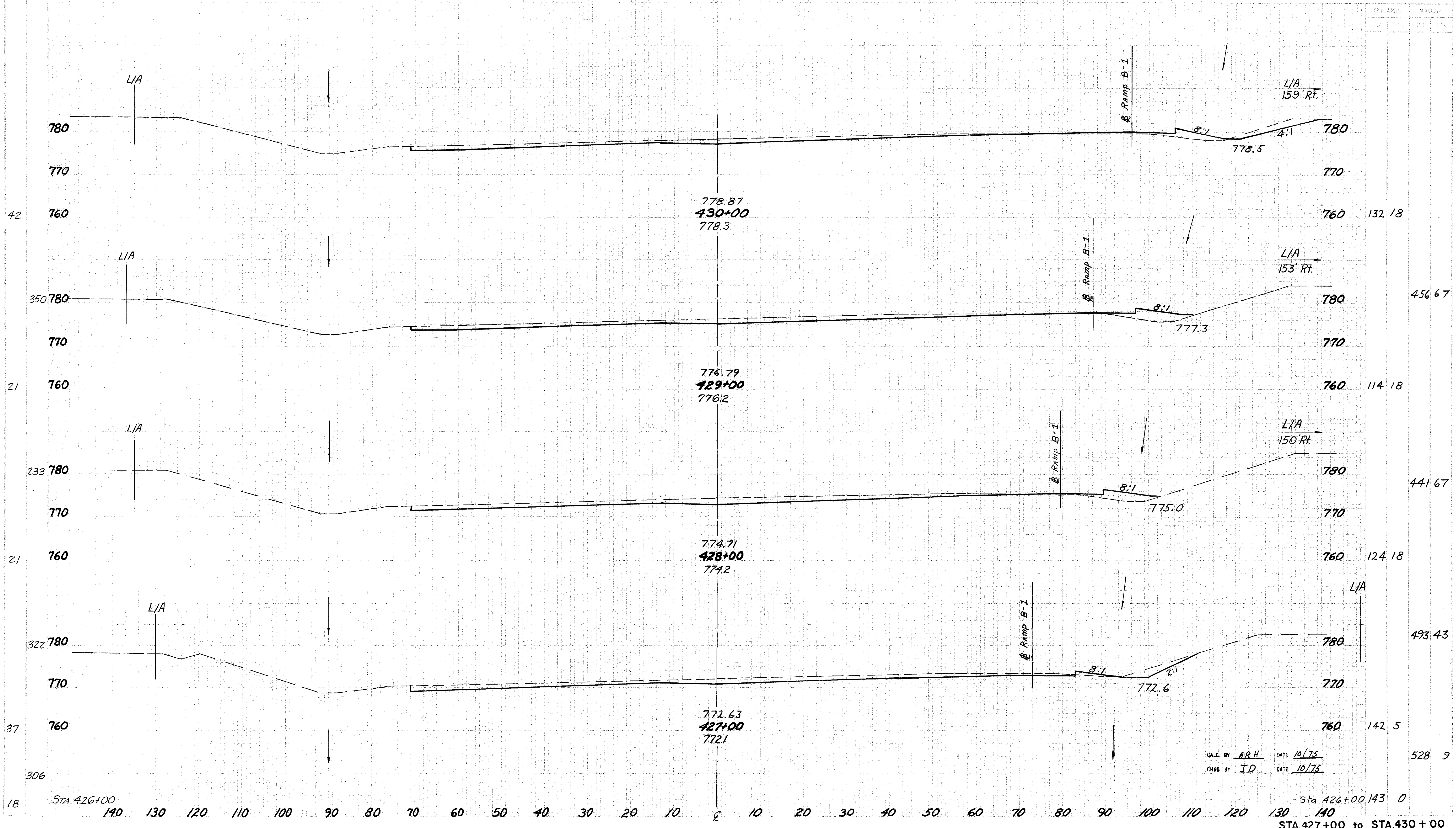
Sta. 493+00  
140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 179 0  
STA. 494+00 to STA. 422+00

CUYAHOGA COUNTY  
CUY-480-6.78



CALC. BY JD DATE 10/75  
CHKD BY THB DATE 10/75

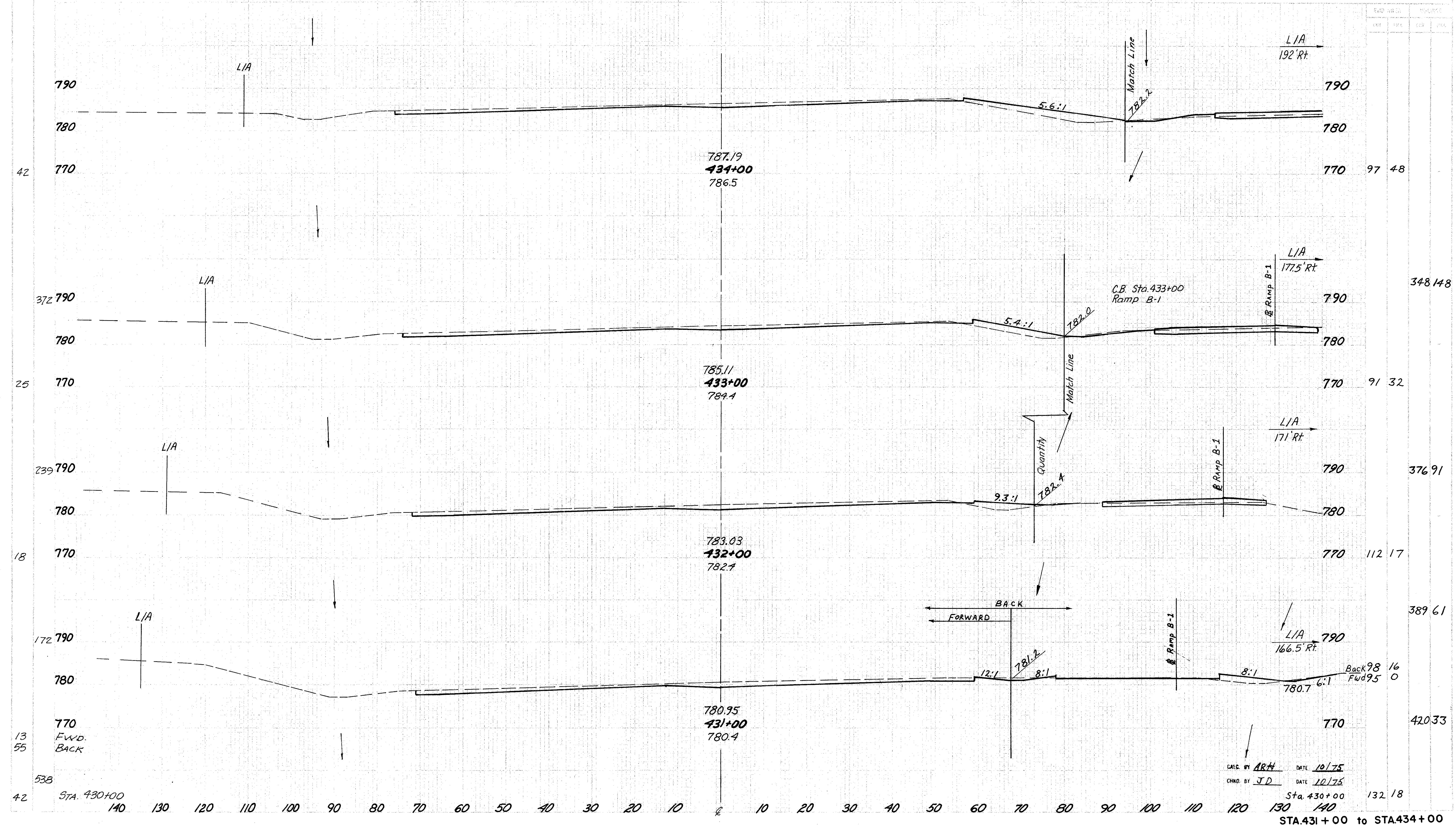
Sta. 422+00  
140 130 120 110 100 90 80 70 60 50 40 30 20 10 E 10 20 30 40 50 60 70 80 90 100 110 120 130 140  
STA. 423+00 to STA. 426+00



CALC. BY ARH DATE 10/75  
CHKD BY ID DATE 10/75



CUYAHOGA COUNTY  
CUY-480-678



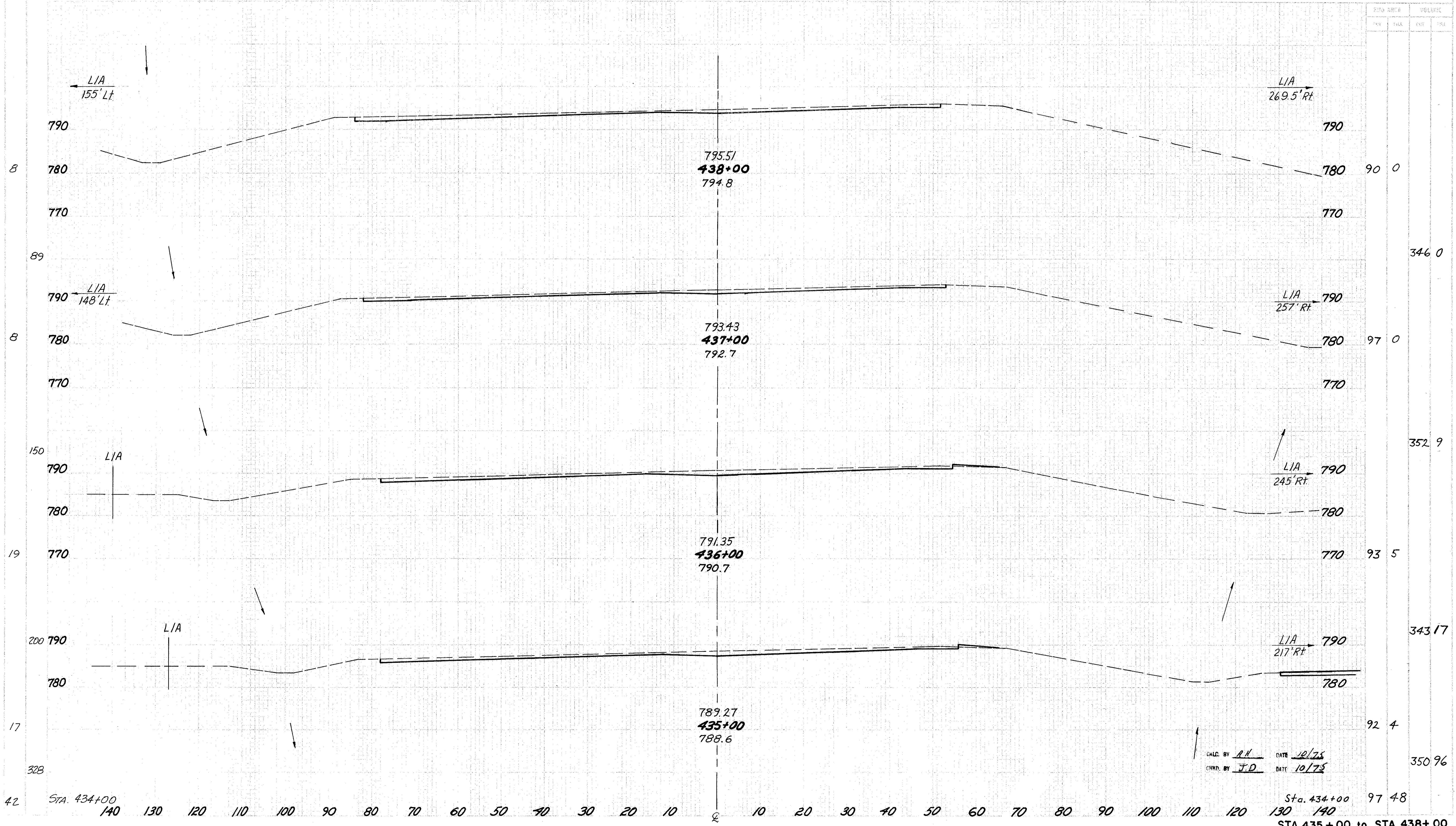
42  
25  
18  
13  
55  
53B  
42

ELEVATION		DISTANCE	
EXIST	PROJ	EXIST	PROJ
790	790	97	48
780	780		
770	770		
790	790	91	32
780	780		
770	770	112	17
790	790	389	61
780	780		
770	770	420	33
790	790		
780	780		
770	770		
790	790	132	18
780	780		
770	770		

CALC. BY ARH DATE 10/75  
CHKD. BY JD DATE 10/75

Sta. 430+00  
Sta. 431+00 to STA. 434+00

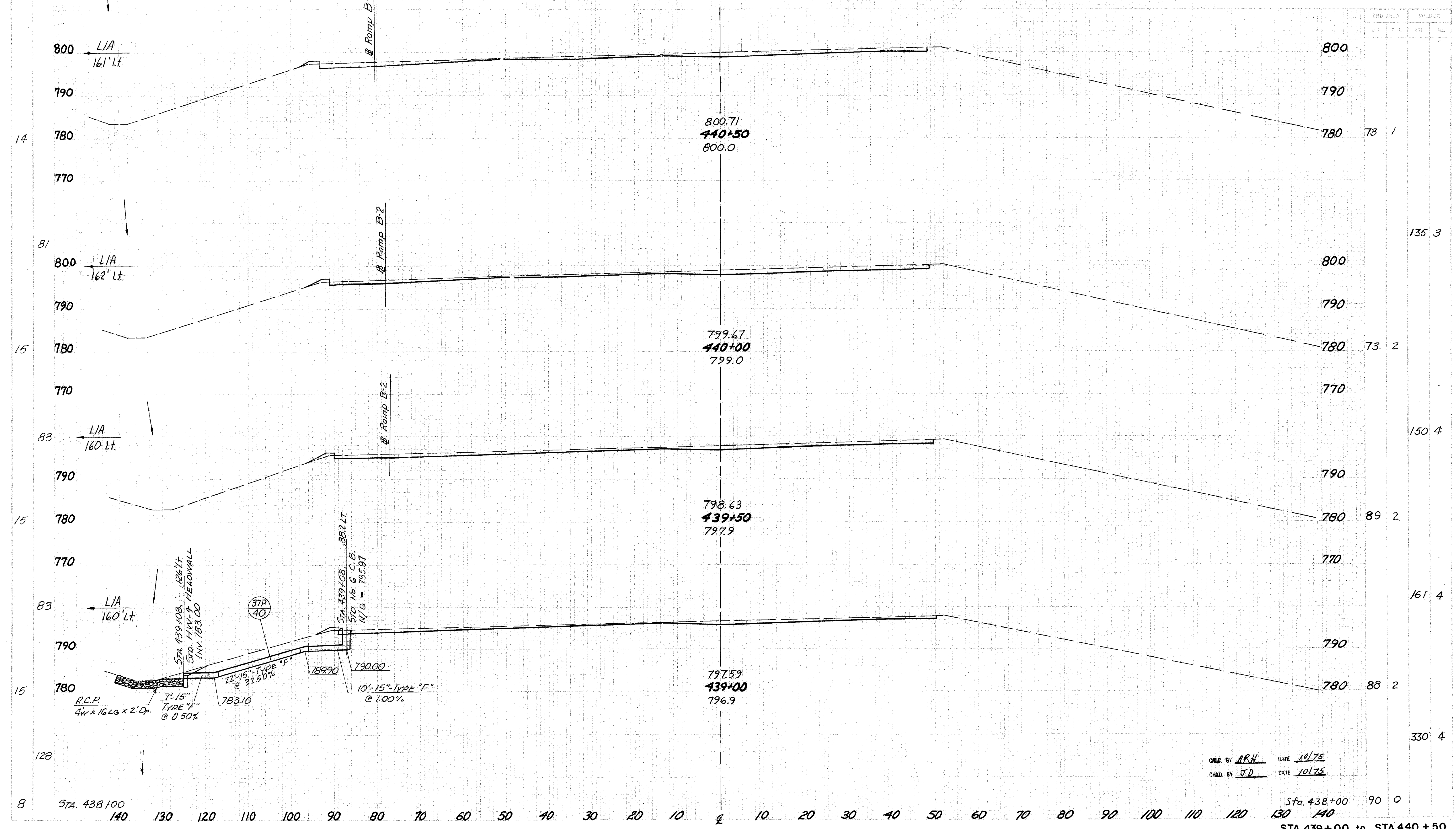
**CUYAHOGA COUNTY**  
**CUY-480-678**



CALC. BY R.H. DATE 10/75  
 CHKD. BY J.D. DATE 10/75

Sta. 434+00 97 48  
 STA. 435+00 to STA. 438+00

CUYAHOGA COUNTY  
CUY-480-678

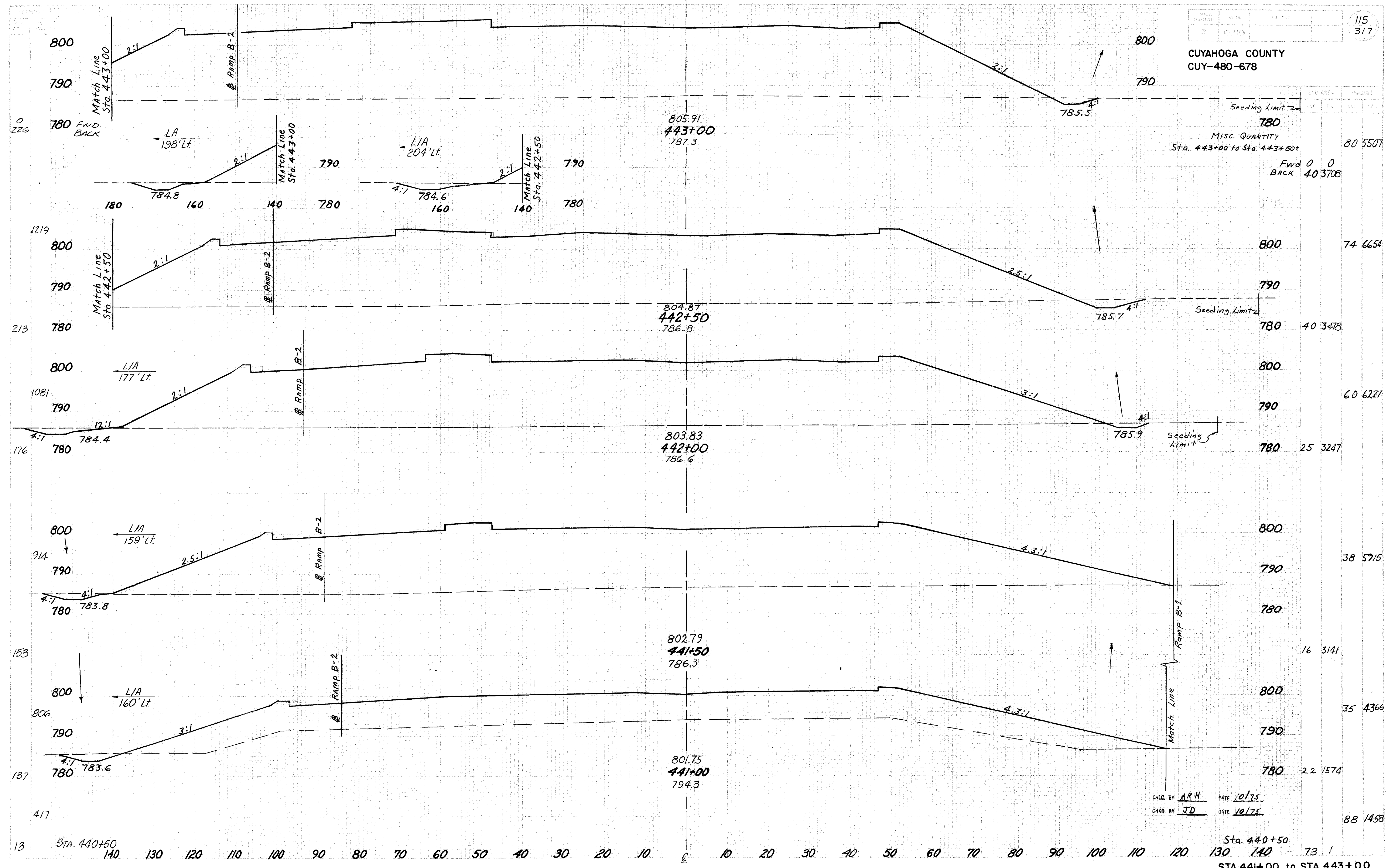


STATION	CUT		FILL	
	FEET	PERCENT	FEET	PERCENT
73 1				
73 2				
73 4				
89 2				
88 2				
90 0				
90 3				
90 4				
90 4				

CHKD. BY ARH DATE 10/75  
CHKD. BY JD DATE 10/75

Sta. 438+00 90 0  
Sta. 439+00 to STA. 440+50

CUYAHOGA COUNTY  
CUY-480-678

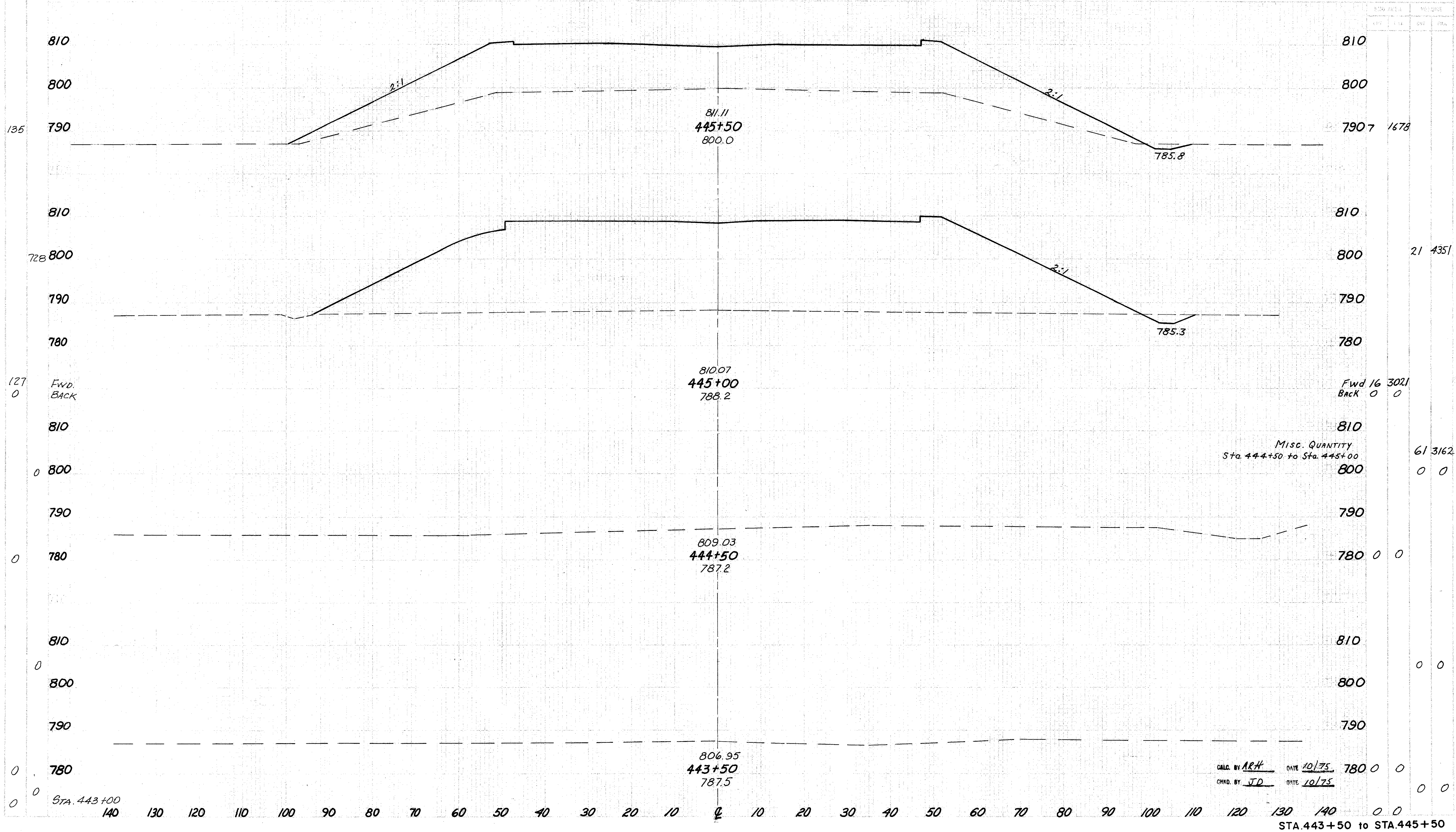


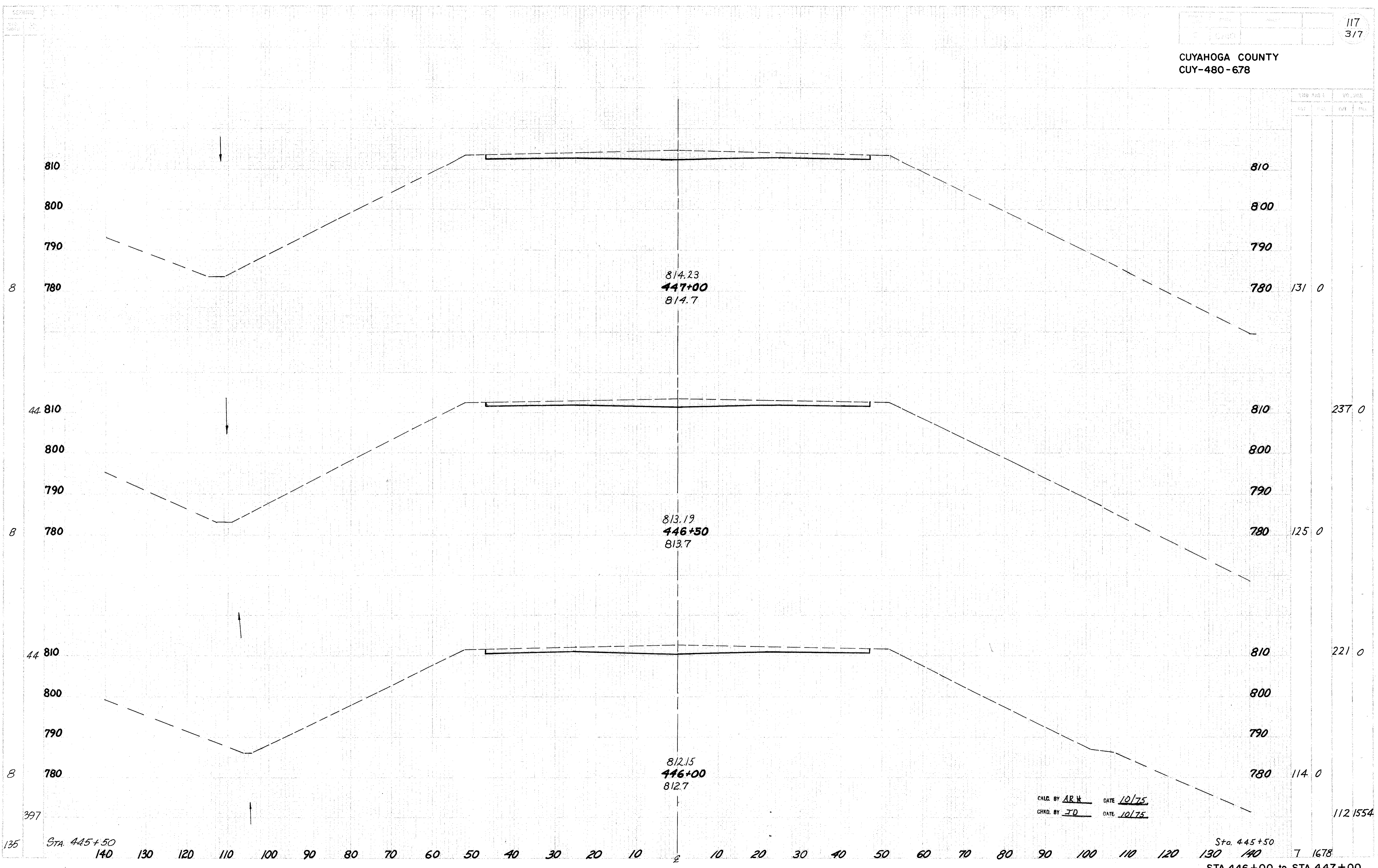
EXP. AREA	RELEASE
Seeding Limit 2'	
MISC. QUANTITY	
Sta. 443+00 to Sta. 443+50:	80 5507
Fwd 0 0	
BACK 40 3708	

Seeding Limit 2'	
Seeding Limit 2'	
Seeding Limit 2'	
Seeding Limit 2'	

CALE. BY ARH DATE 10/75  
CHRD. BY JD DATE 10/75

CUYAHOGA COUNTY  
CUY-480-678





814.23  
**447+00**  
 814.7

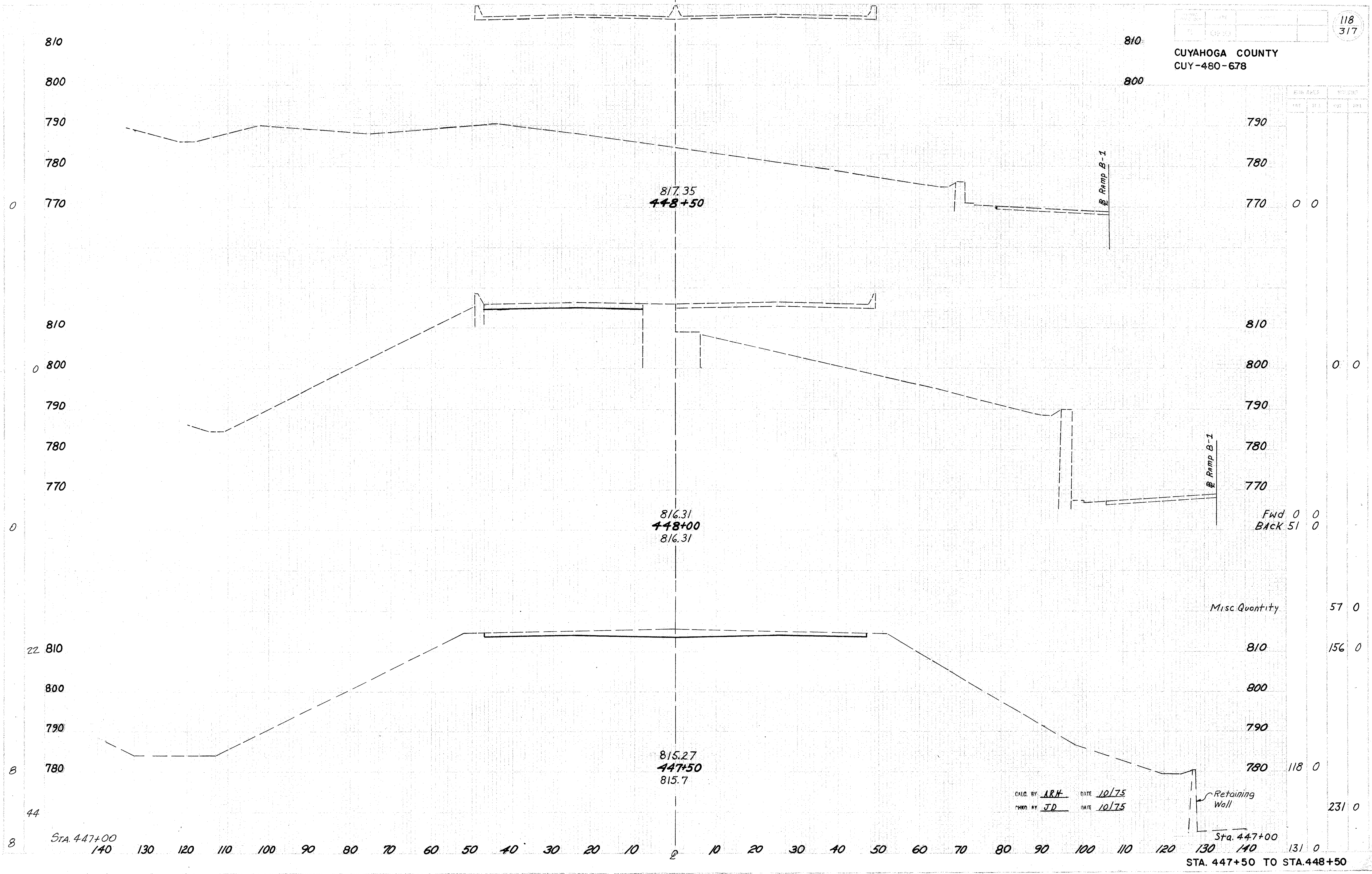
813.19  
**446+50**  
 813.7

812.15  
**446+00**  
 812.7

SCALE BY ARW DATE 10/75  
 CHKD. BY JD DATE 10/75

Station	Prop. Elev.	Grd. Elev.	Dist. (ft)
131+0	780	775	0
237+0	810	785	0
125+0	780	770	0
221+0	810	780	0
114+0	780	765	0
112+55.4	780	760	0

CUYAHOGA COUNTY  
CUY-480-678



CALC. BY ARH DATE 10/75  
CHKD BY JD DATE 10/75

Sta. 447+00  
140 130 120 110 100 90 80 70 60 50 40 30 20 10 0

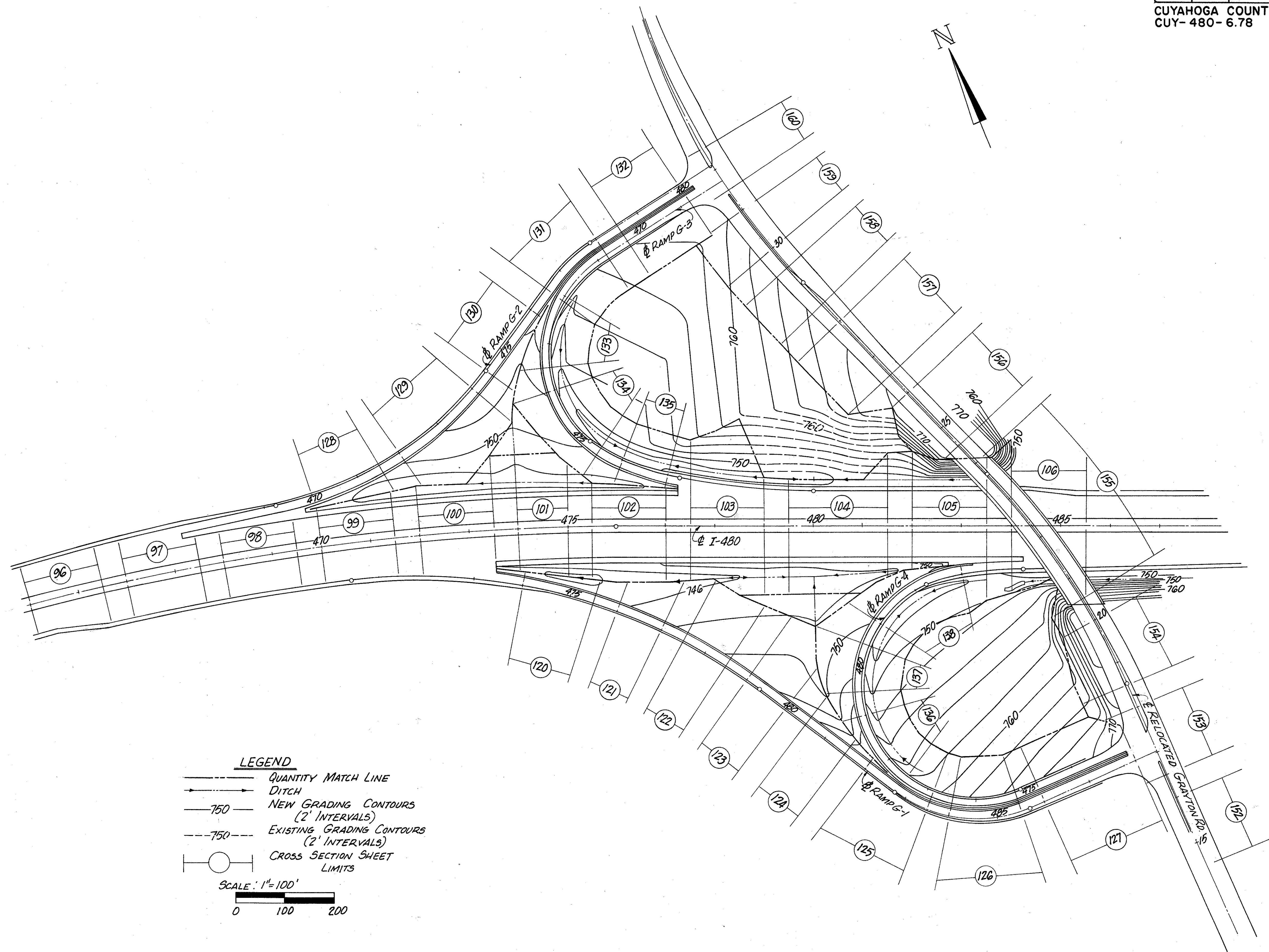
Sta. 447+00  
130 140 131 0

STA. 447+50 TO STA. 448+50

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

119  
377

CUYAHOGA COUNTY  
CUY-480-6.78



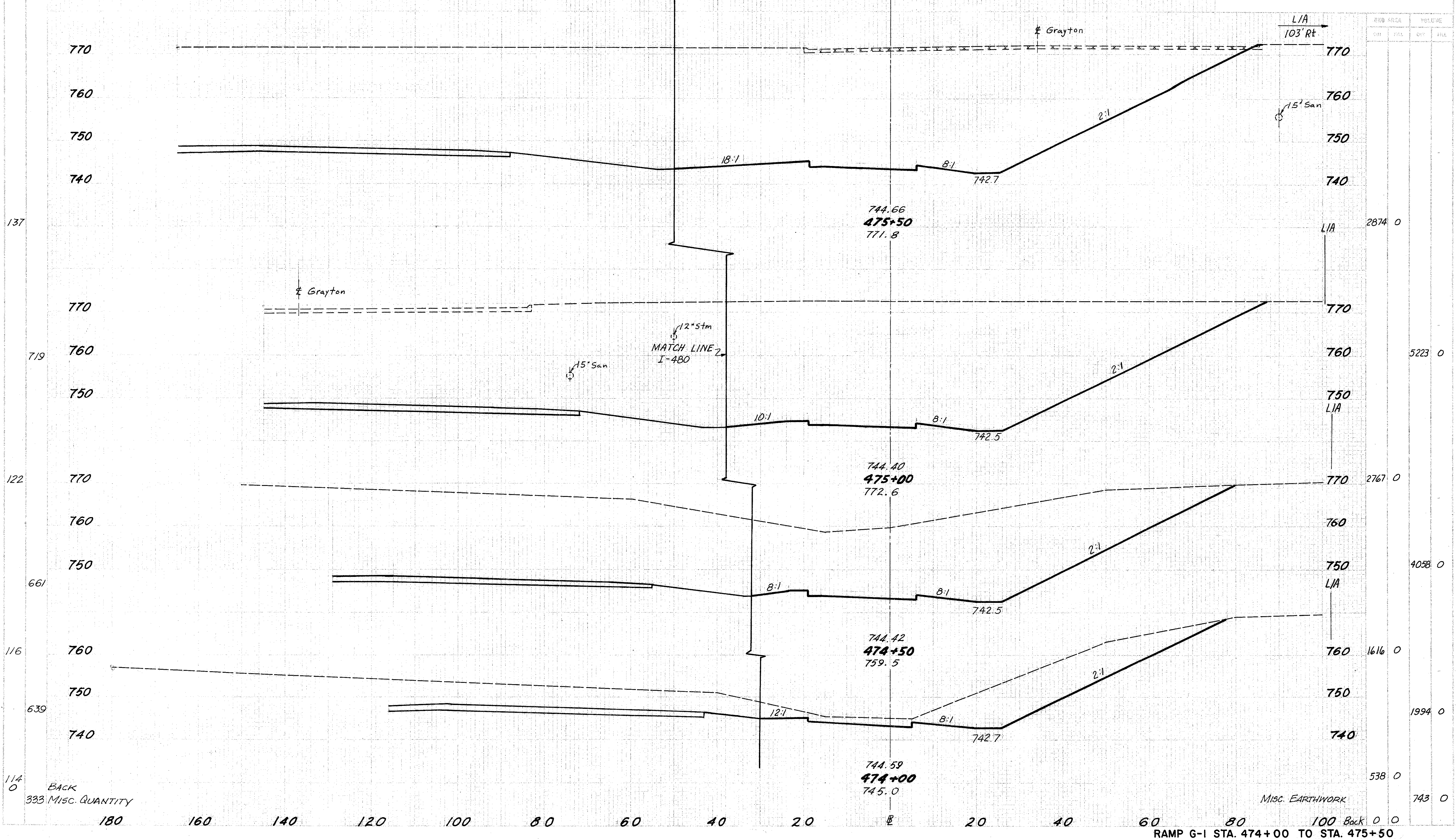
RELOCATED GRAYTON RD INTERCHANGE GRADING PLAN



CALC. BY T.R.B. DATE 12-75  
 CHKD BY A.L.C. DATE 1-76

120  
3/7

CUYAHOGA COUNTY  
 CUY-480-6.78



137

719

122

661

116

639

114

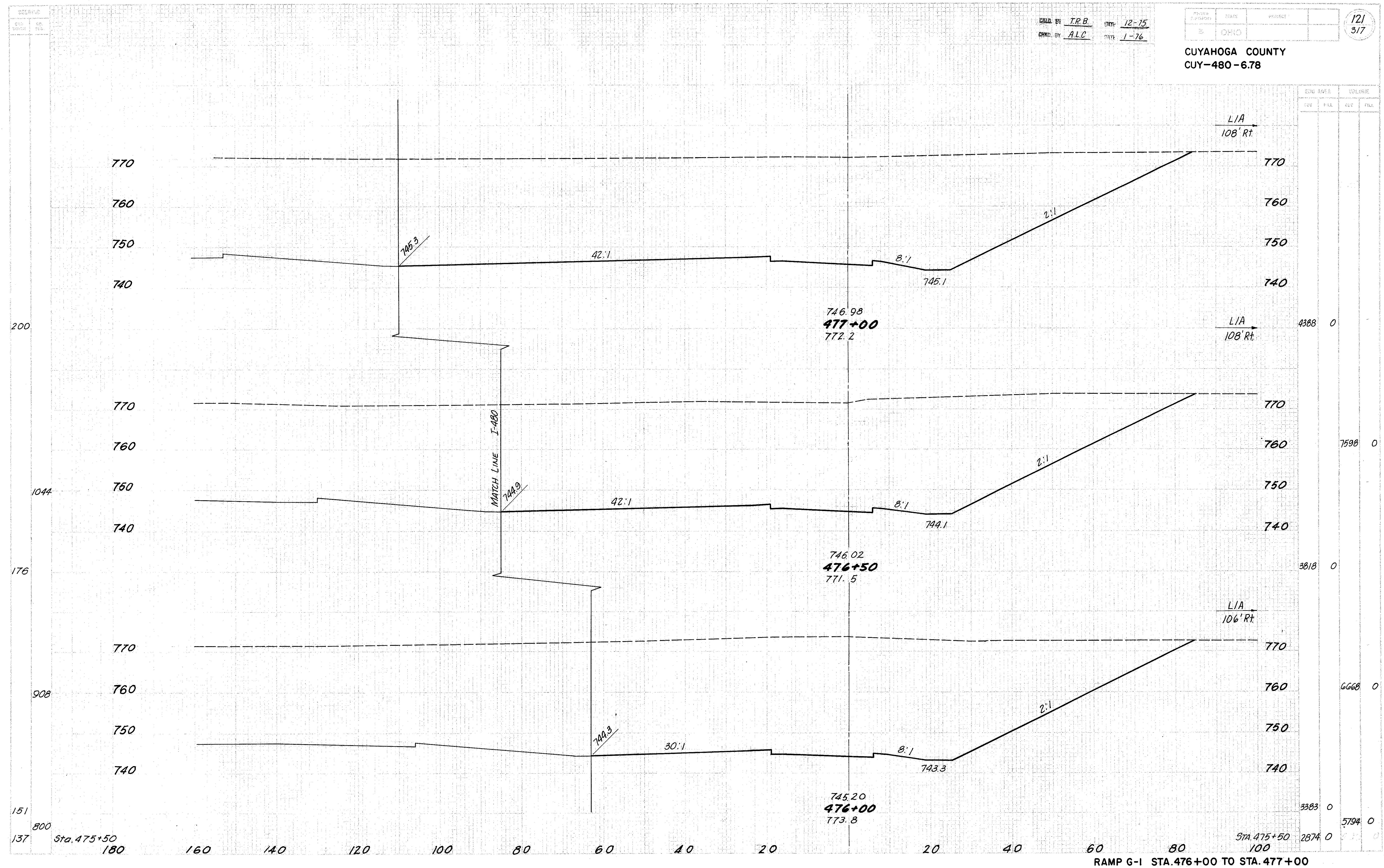
BACK  
333 MISC. QUANTITY

MISC. EARTHWORK

RAMP G-1 STA. 474+00 TO STA. 475+50

CALD. BY T.R.B. DATE 12-75  
 CHKD. BY A.L.C. DATE 1-76

CUYAHOGA COUNTY  
 CUY-480-6.78



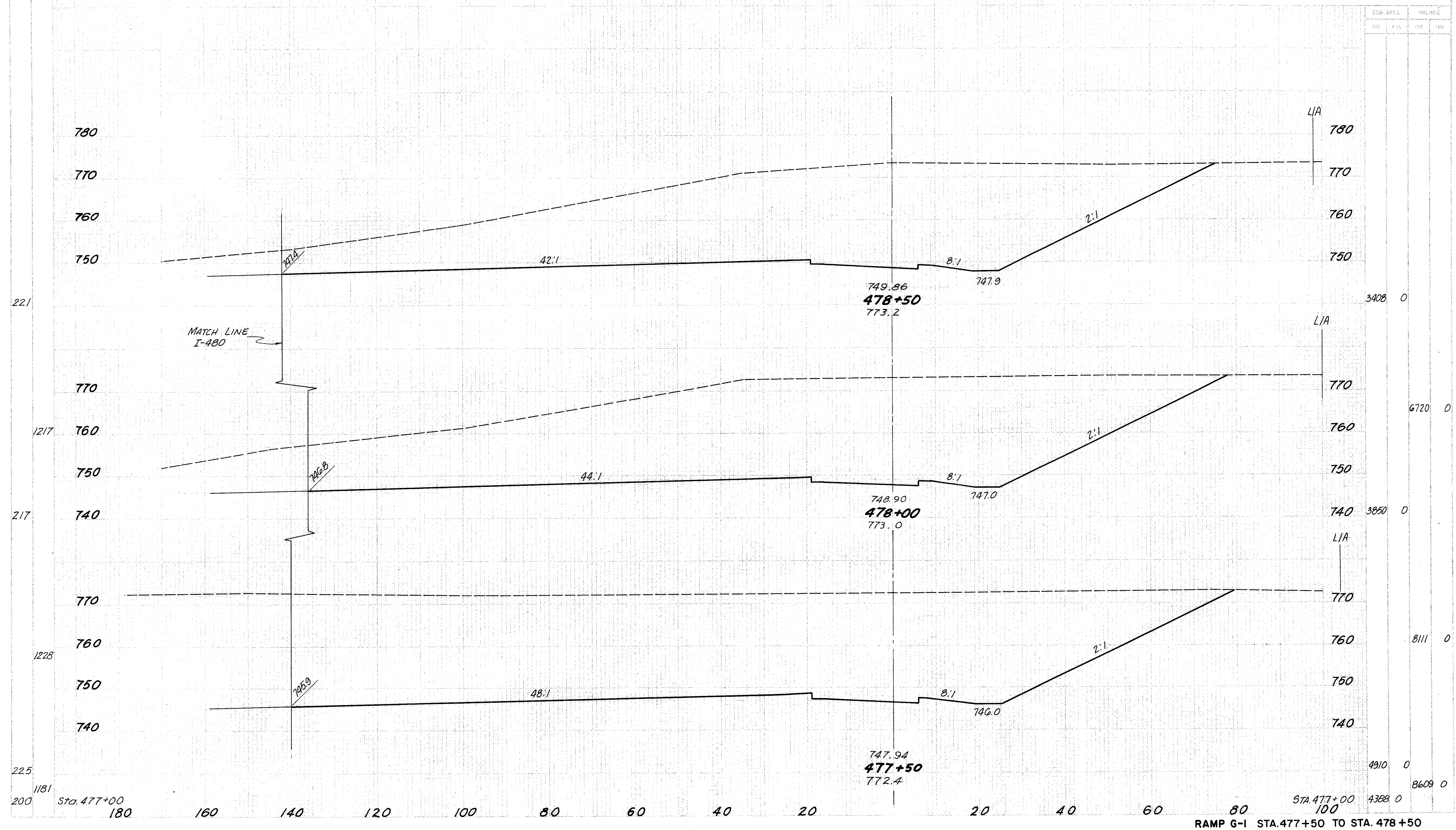
REAR RAMP		OVERLAP	
CUT	FILL	CUT	FILL
4388	0	7598	0
3818	0	6668	0
3383	0	5794	0
2874	0		

RAMP G-1 STA. 476+00 TO STA. 477+00

CALC. BY TRB DATE 12-75  
 CORR. BY ALC DATE 1-76

CUYAHOGA COUNTY  
 CUY-480-6.78

122  
 3/7

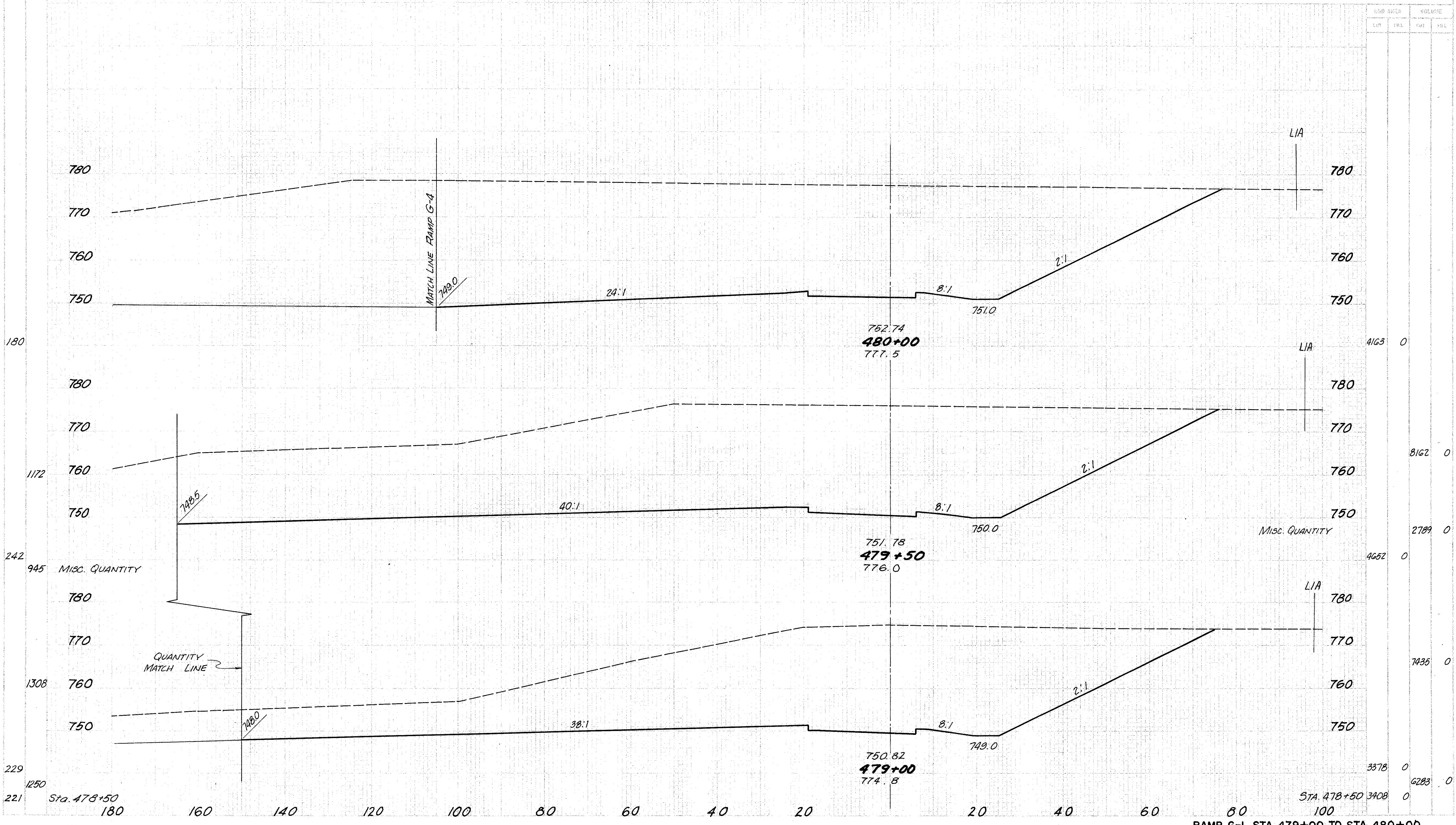


RAMP G-1 STA. 477+50 TO STA. 478+50

DESIGNED BY TRB DATE 12-75  
 CHECKED BY A.L.C. DATE 1-76

PROJECT NO. \_\_\_\_\_ STATE \_\_\_\_\_ COUNTY \_\_\_\_\_  
 SHEET NO. 123 OF 317

**CUYAHOGA COUNTY**  
**CUY-480-678**



CROSS SECTION		VOLUME	
LOT	AREA	CUT	FILL
		4163	0
		8162	0
	MISC. QUANTITY	2789	0
		4652	0
		7435	0
		3378	0
		6283	0
	Sta. 478+50	3408	0

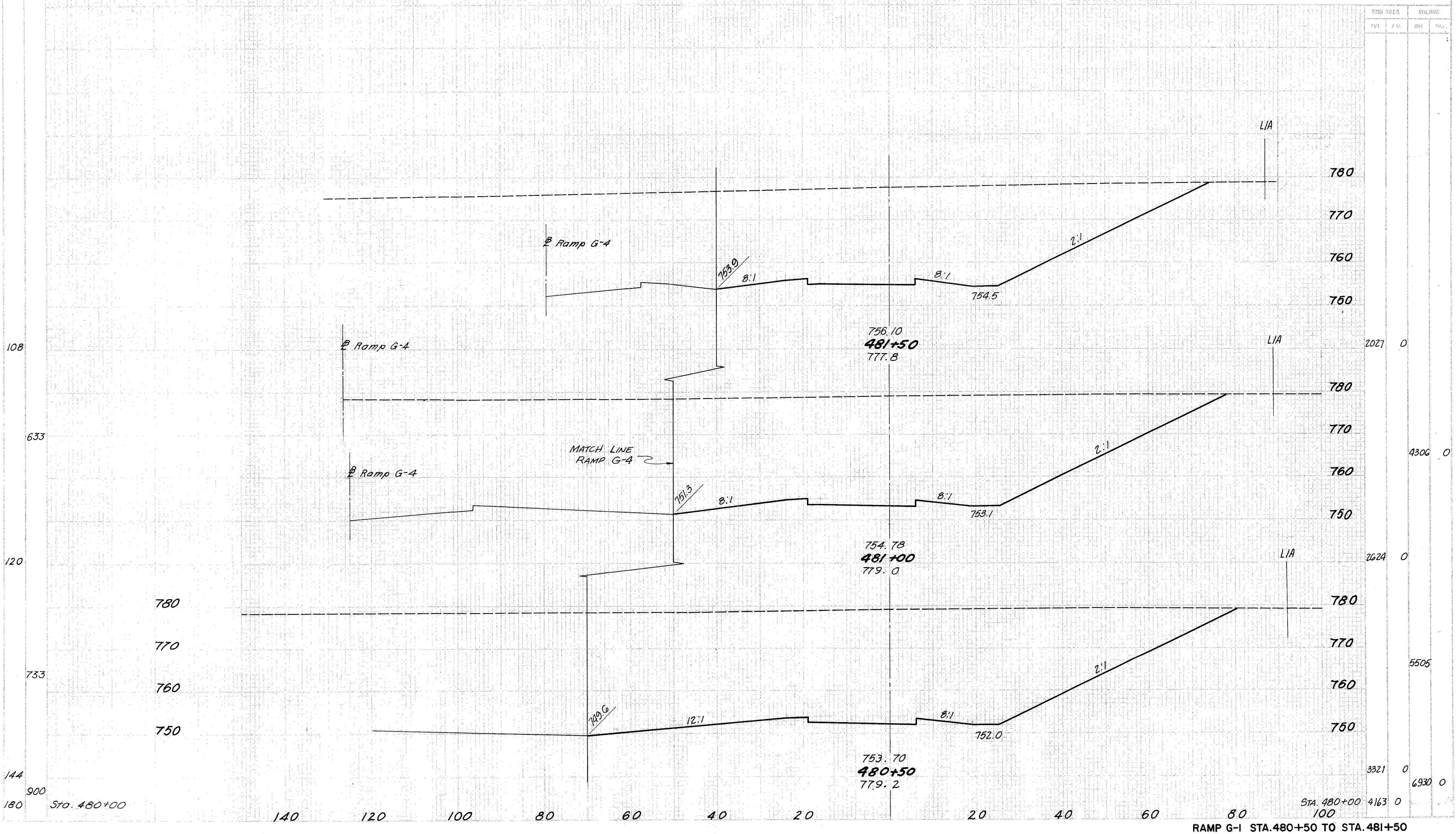
RAMP G-1 STA. 479+00 TO STA. 480+00

CALD. BY TRB DATE 12-75  
 CHED. BY ALC DATE 1-76

PROJECT REGION	STATE	PROJECT
3	OHIO	

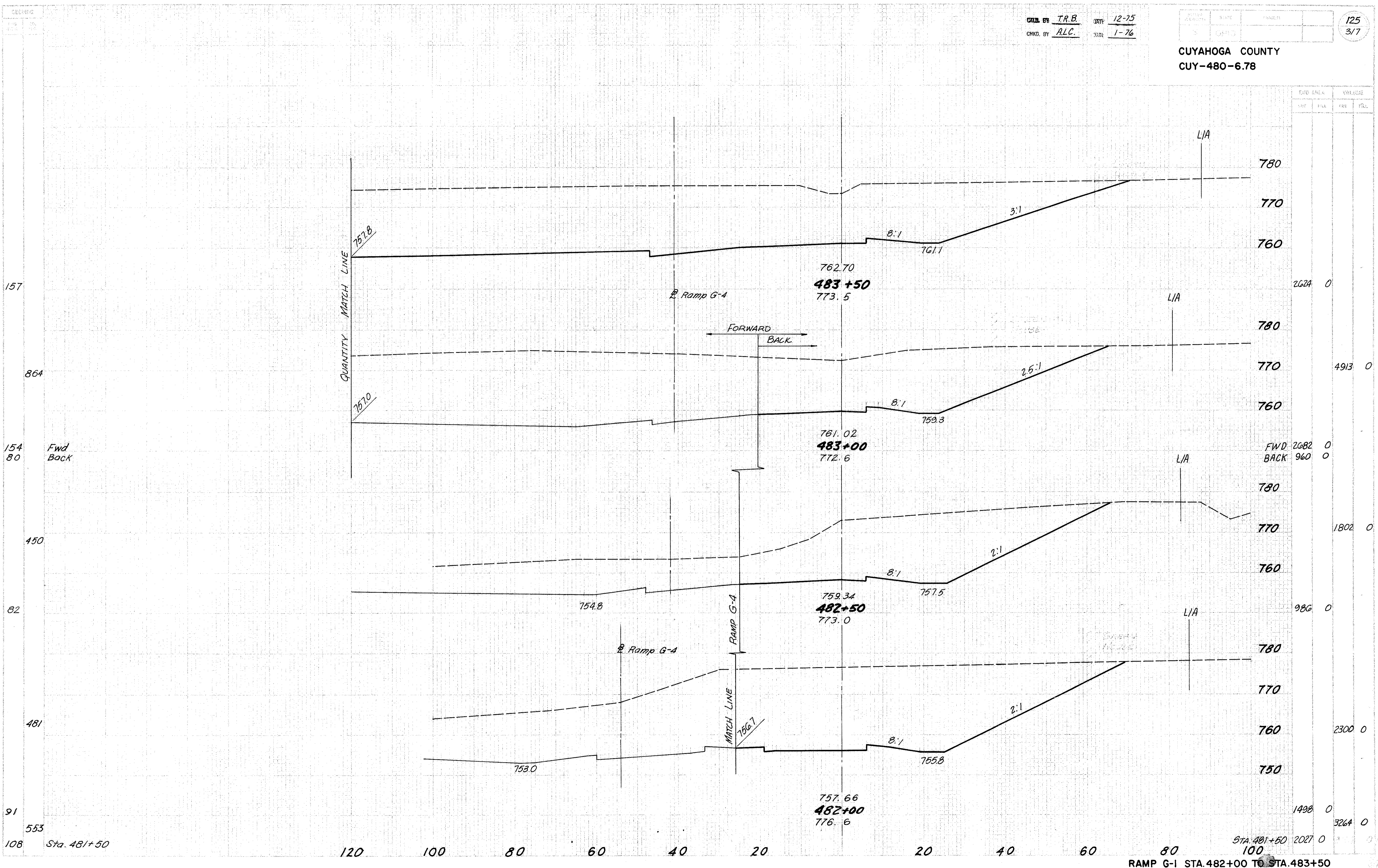
124  
 3/7

CUYAHOGA COUNTY  
 CUY-480-6.78



ELEVATION		VOLUME	
FEET	FEET	CU YD	CU YD
780	2027	0	
770			
760			
750			
780	4306	0	
770			
760			
750			
780	2624	0	
770			
760			
750			
780	5505		
770			
760			
750			
144	3321	0	
180	6930	0	
900			
180	4163	0	
100			

RAMP G-1 STA. 480+50 TO STA. 481+50



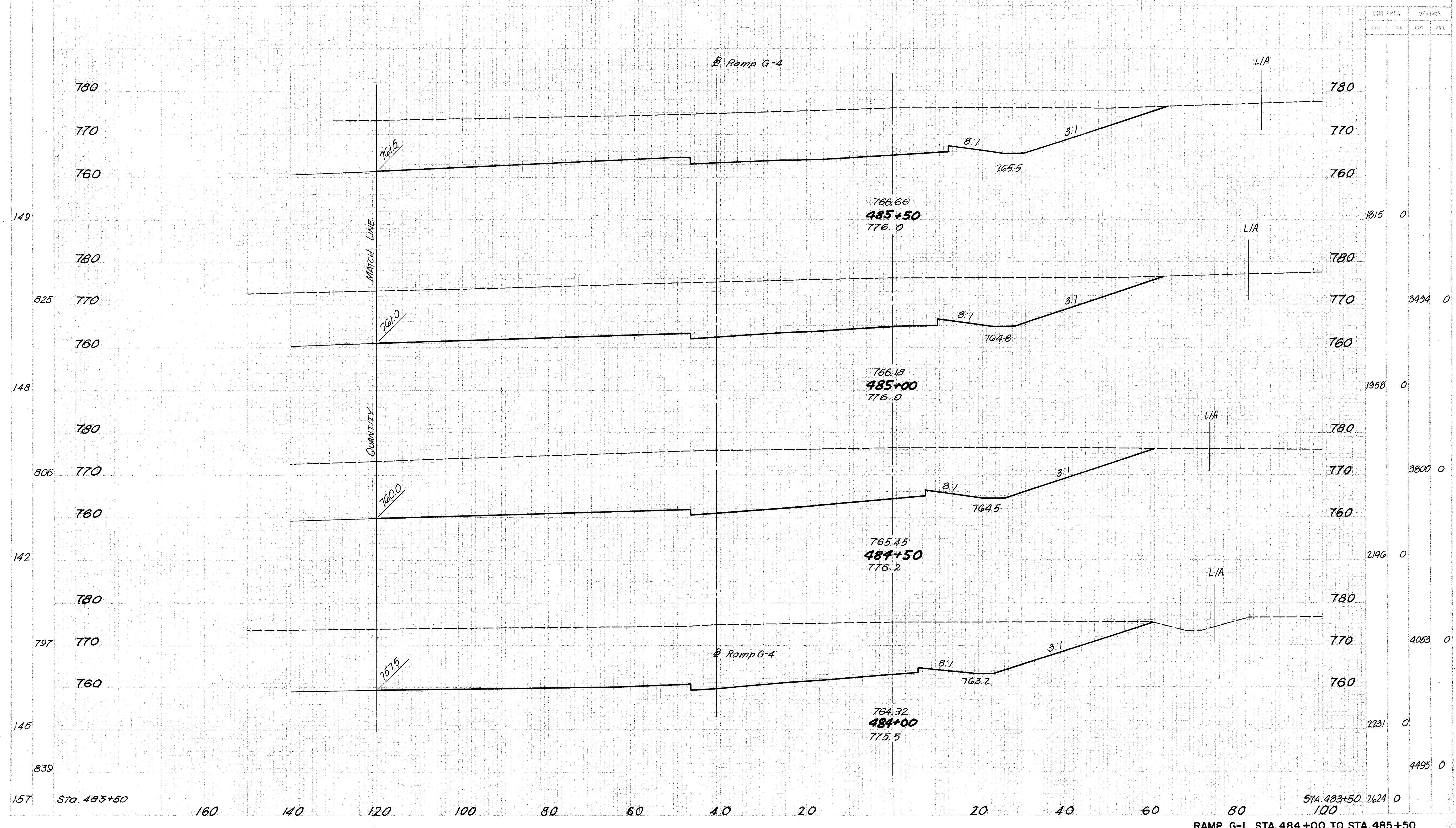
RAMP G-1 STA. 482+00 TO STA. 483+50

CALC. BY T.R.B. DATE 12-25  
 CHKO. BY ALC. DATE 1-76

NO.	DATE	BY
3	12-25	T.R.B.
4	1-76	ALC.

126  
 3/7

CUYAHOGA COUNTY  
 CUY-480-6.78

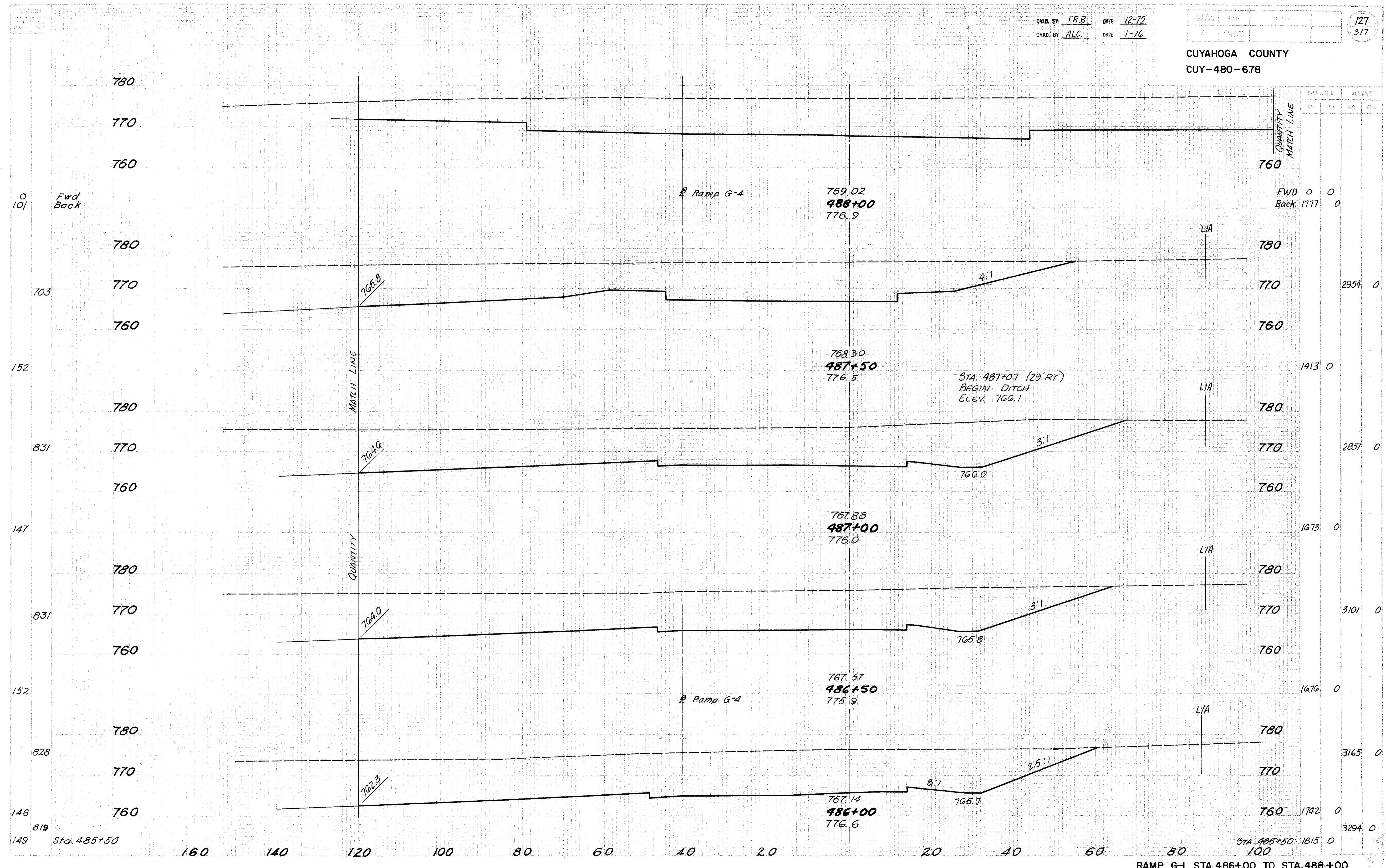


RAMP G-1 STA. 484+00 TO STA. 485+50

CALC. BY T.R.B. DATE 12-15  
 CHKD. BY ALC. DATE 1-76


127  
317

CUYAHOGA COUNTY  
 CUY-480-678



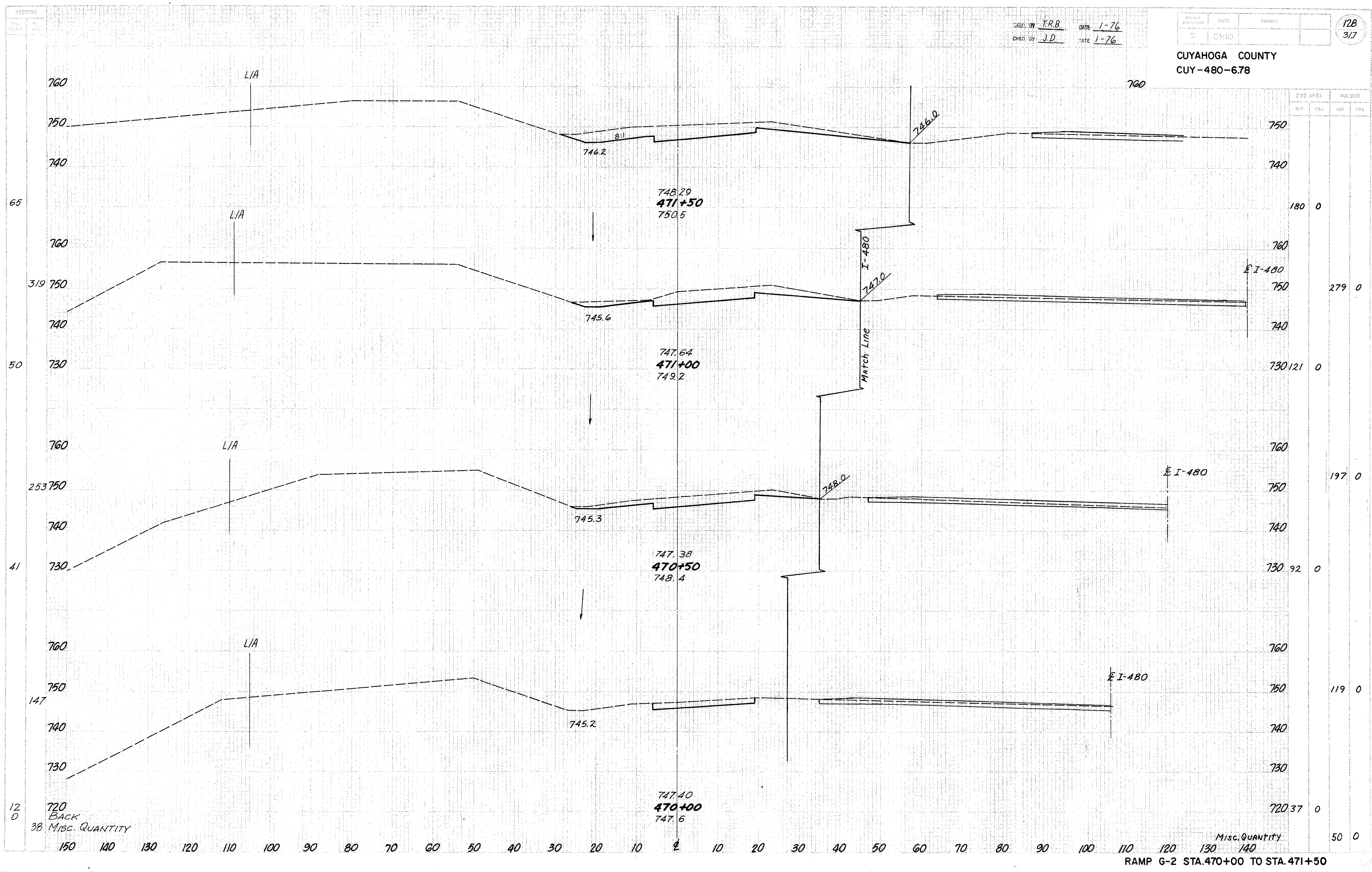
QUANTITY MATCH LINE	FWD		Back	
	QTY	FEET	QTY	FEET
760	0	0	1777	0
770	2954	0	0	0
760	1413	0	0	0
770	2857	0	0	0
760	1673	0	0	0
770	3101	0	0	0
760	1676	0	0	0
770	3165	0	0	0
760	1742	0	0	0
770	3294	0	0	0

RAMP G-I STA. 486+00 TO STA. 488+00



DRAWN BY J.R.B. DATE 1-76  
 CHECKED BY J.D. DATE 1-76

CUYAHOGA COUNTY  
 CUY-480-6.78



RAMP G-2 STA. 470+00 TO STA. 471+50

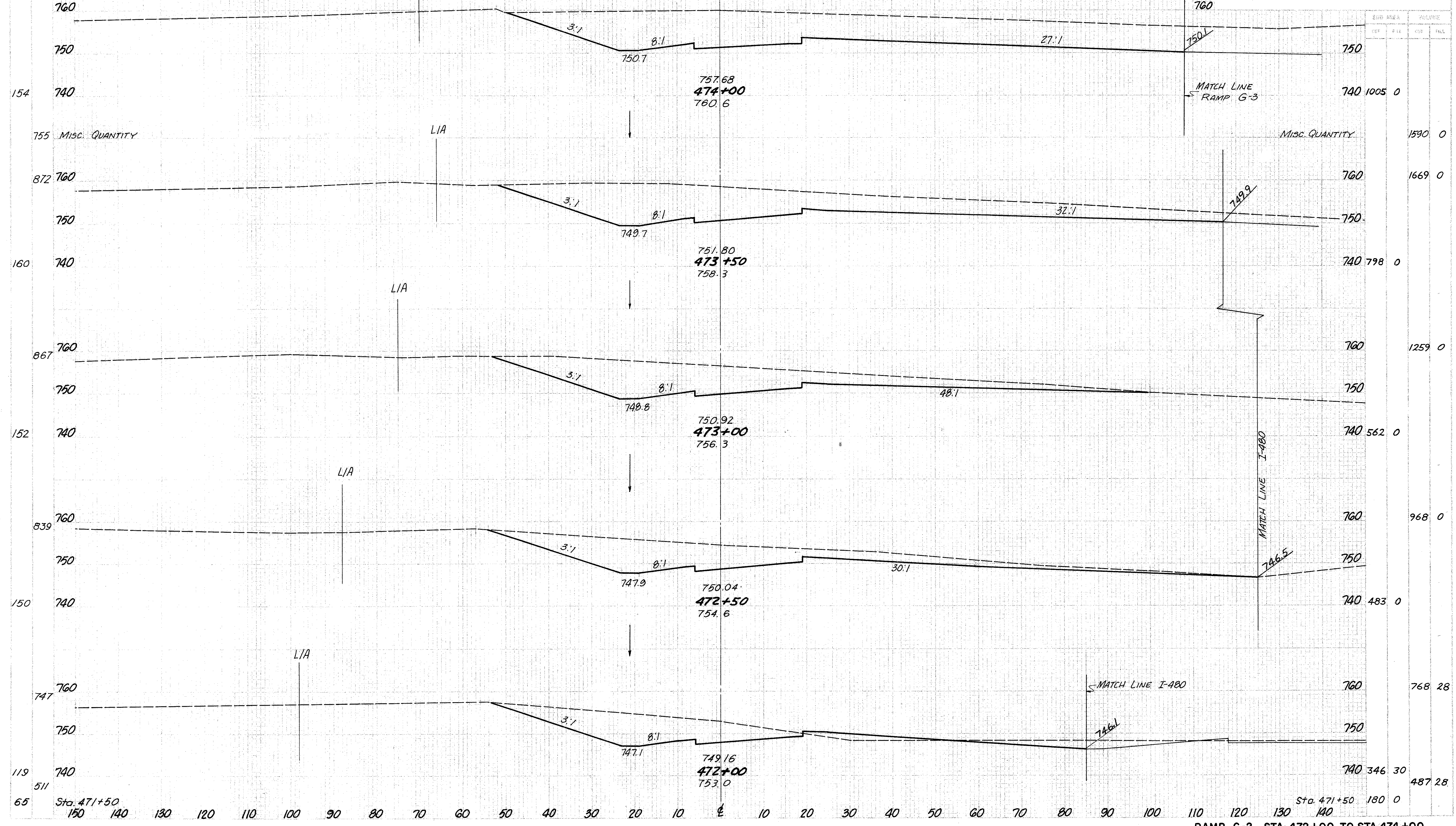
12  
 0  
 720  
 BACK  
 38 Misc. QUANTITY

747.40  
 470+00  
 747.6

Misc. QUANTITY  
 50 0

CALL BY TRB DATE 1-76  
 CHKD BY J.D. DATE 1-76

CUYAHOGA COUNTY  
 CUY-480-678



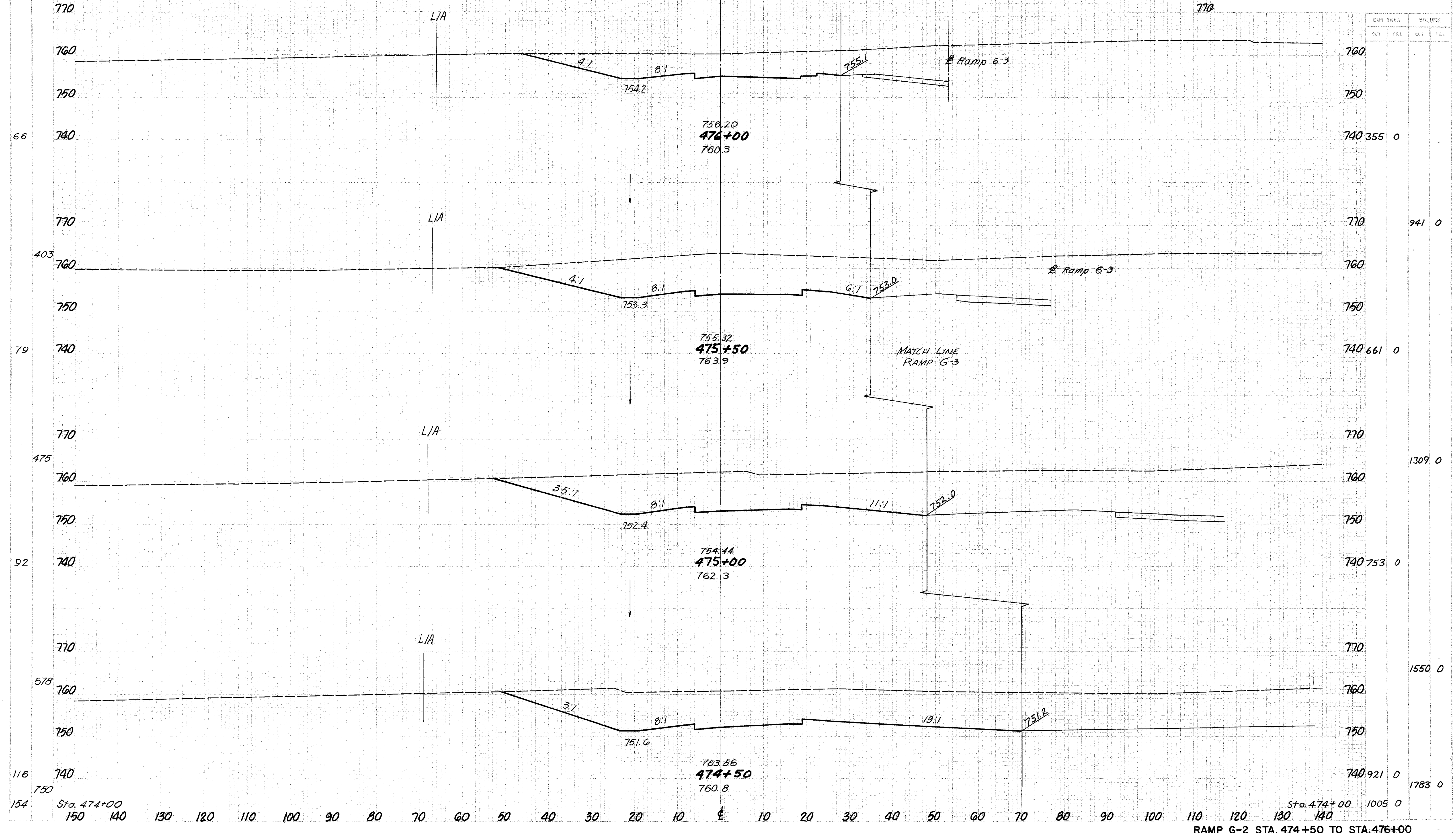
RAMP G-2 STA. 472+00 TO STA. 474+00

CALC. BY J.R.B. DATE 1-76  
 CHKD. BY J.D. DATE 1-76

PROJECT	STATE	PROJECT	NO.
3	OHIO		

130  
317

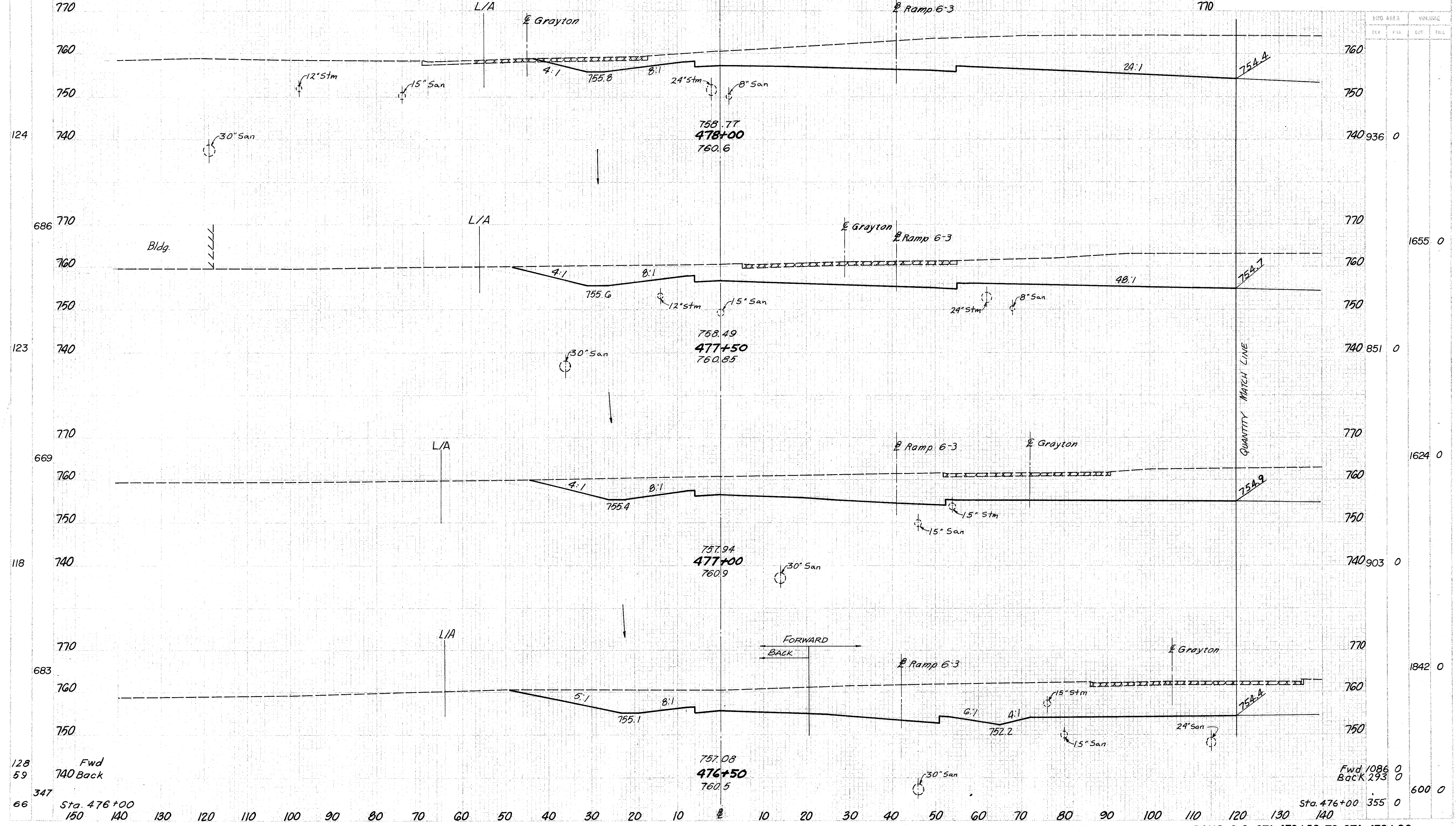
CUYAHOGA COUNTY  
 CUY-480-6.78



RAMP G-2 STA. 474+50 TO STA. 476+00

CALC. BY TRB DATE 1-76  
 CHRD. BY J.D. DATE 1-76

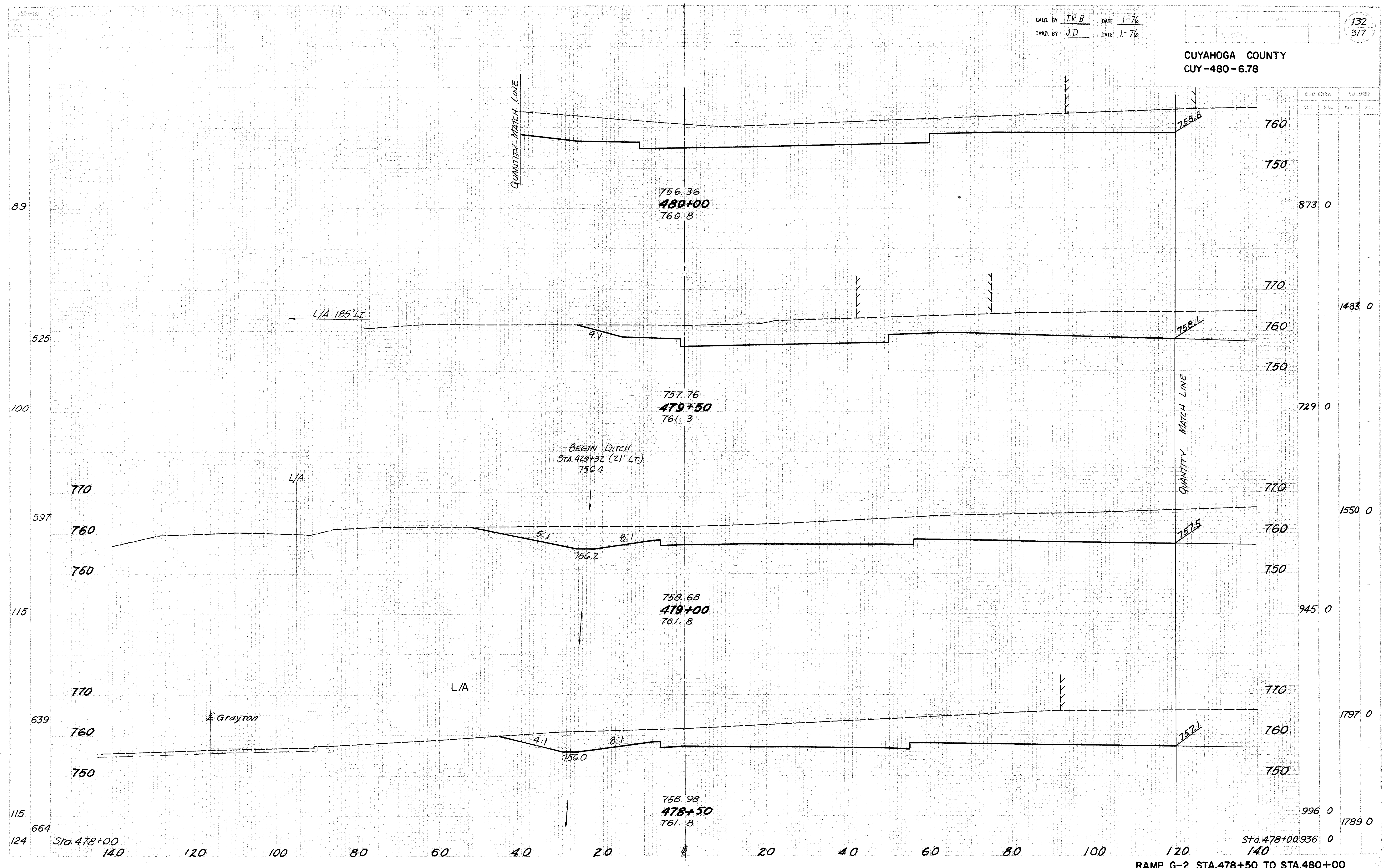
CUYAHOGA COUNTY  
 CUY-480-6.78



STATION	CUT		FILL		TOTAL
	AREA	VOLUME	AREA	VOLUME	
476+00	936	0	0	0	936
477+50	851	0	0	0	851
477+00	903	0	0	0	903
476+50	293	0	0	0	293
476+00	355	0	0	0	355

RAMP G-2 STA. 476+50 TO STA. 478+00

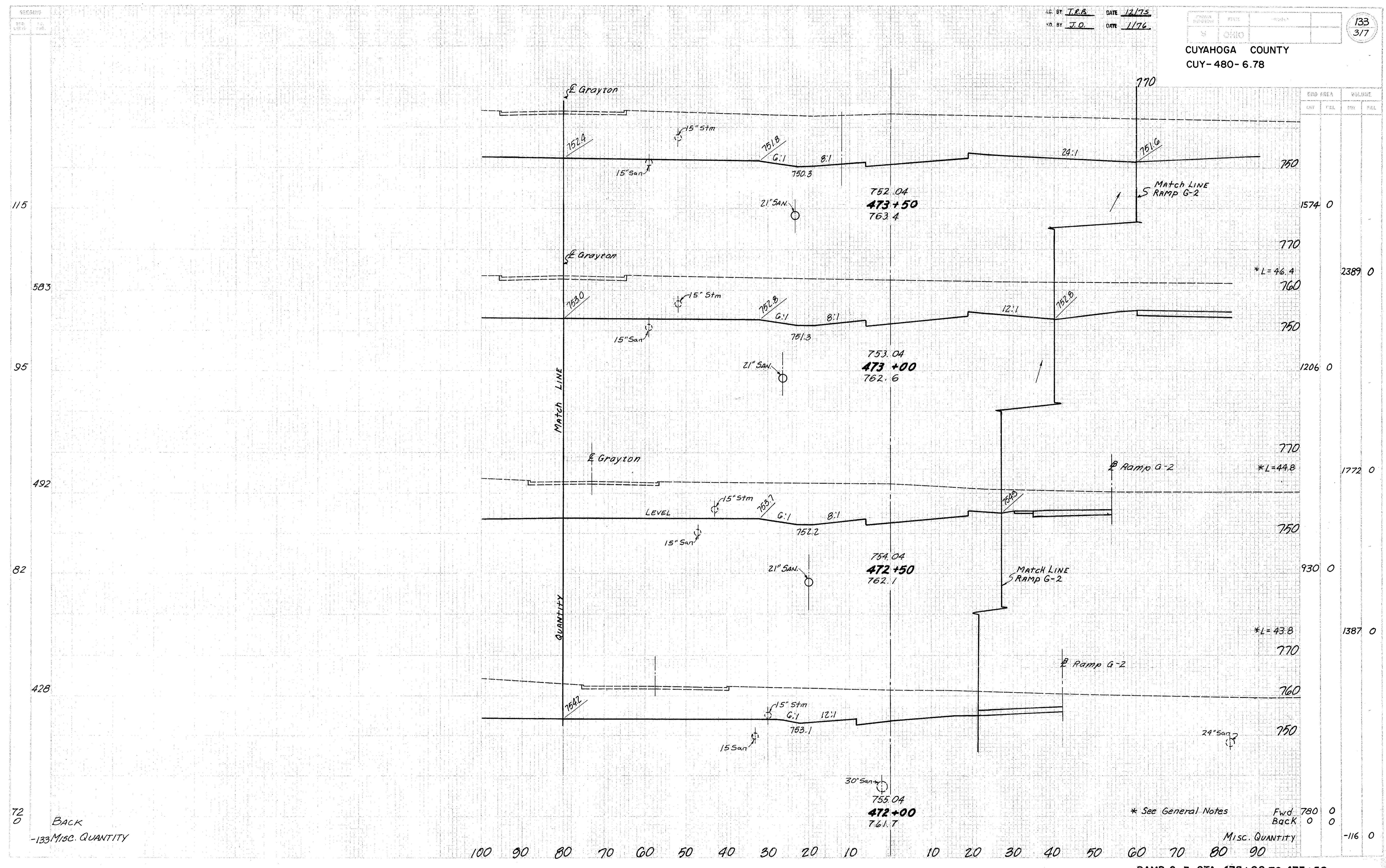
CUYAHOGA COUNTY  
 CUY-480-6.78



RAMP G-2 STA. 478+50 TO STA. 480+00

LG. BY: T.R.A. DATE 12/75  
 KD. BY: J.D. DATE 1/76

CUYAHOGA COUNTY  
 CUY-480-6.78



STATION	END AREA		VOLUME	
	CHG	FILL	CHG	FILL
750				
1574 0				
770				
*L=46.4				
2389 0				
760				
750				
1206 0				
770				
*L=44.8				
1772 0				
750				
930 0				
*L=43.8				
1387 0				
770				
760				
750				
750				
755.04				
472+00				
761.7				
* See General Notes				
Fwd 780 0				
Back 0 0				
Misc. QUANTITY				
-116 0				

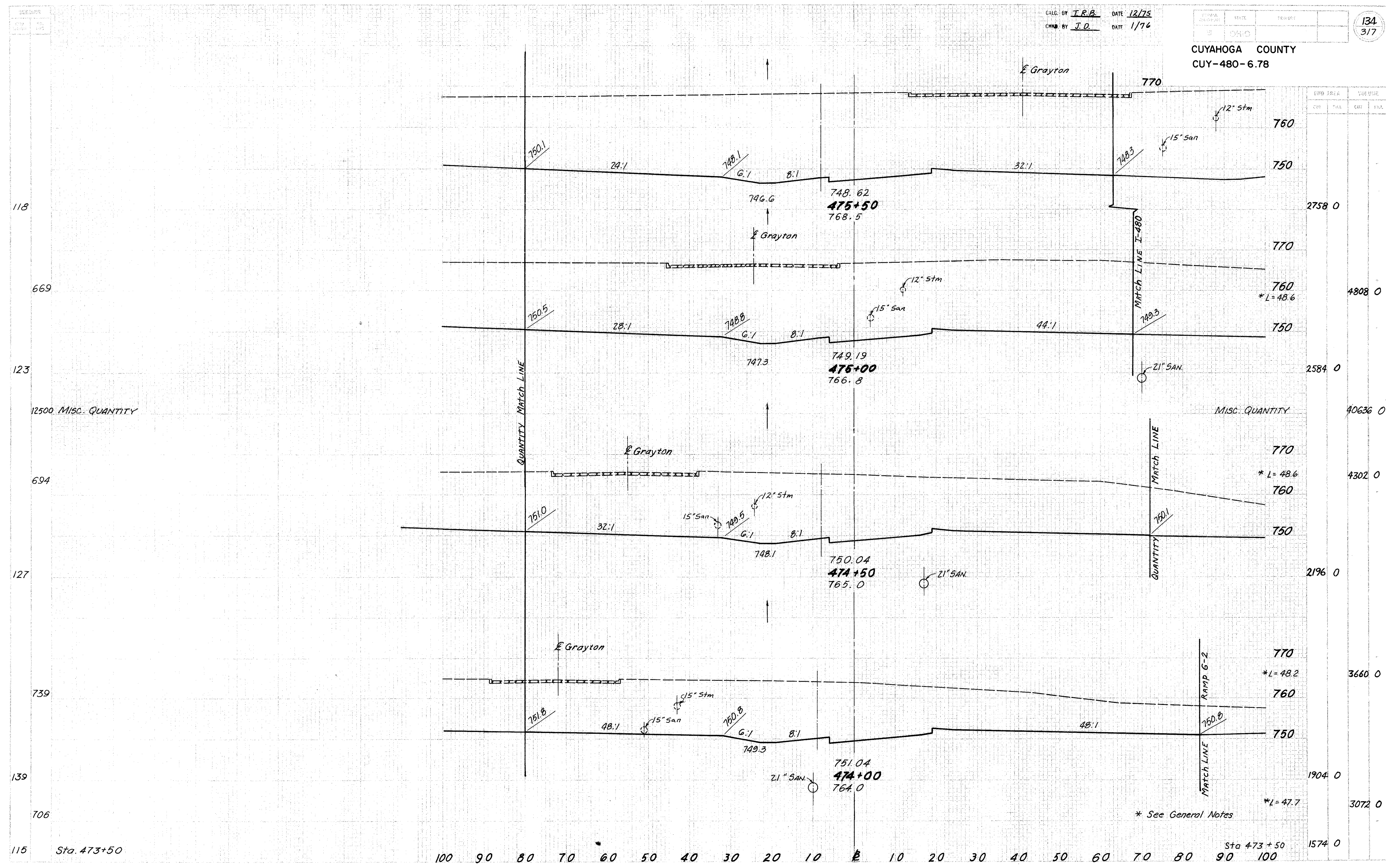
720 BACK  
 -133 Misc. QUANTITY

\* See General Notes  
 Fwd 780 0  
 Back 0 0  
 Misc. QUANTITY  
 -116 0

RAMP G-3 STA. 472+00 TO 473+50

CALC. BY J.R.B. DATE 12/75  
 CHKD. BY J.D. DATE 1/76

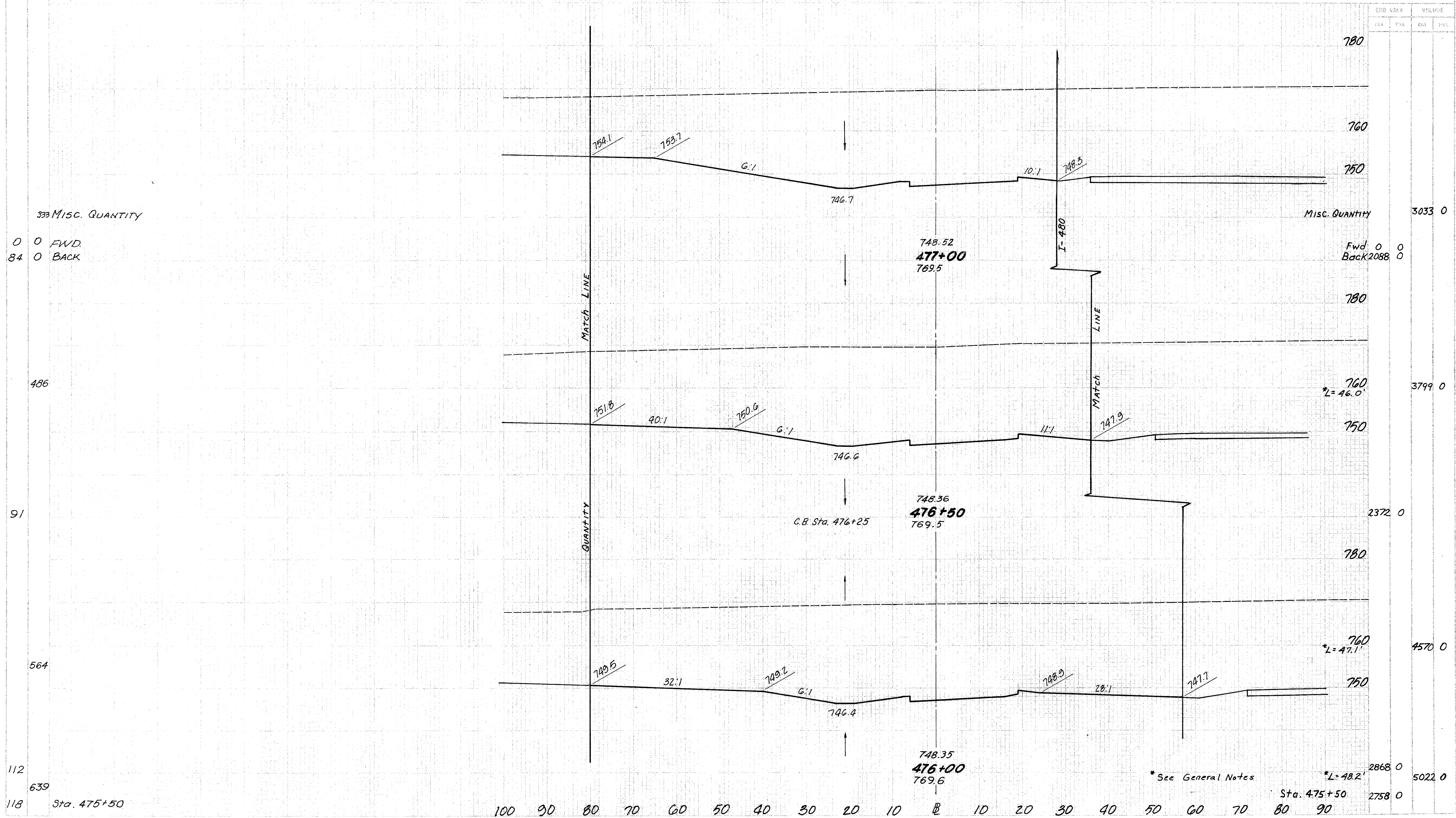
CUYAHOGA COUNTY  
 CUY-480-6.78



\* See General Notes

Sta. 473+50 1574 0

RAMP G-3 STA. 474+00 TO 475+50



333 MISC. QUANTITY

0 0 FWD  
 84 0 BACK

MISC. QUANTITY

Fwd 0 0  
 Back 2088 0

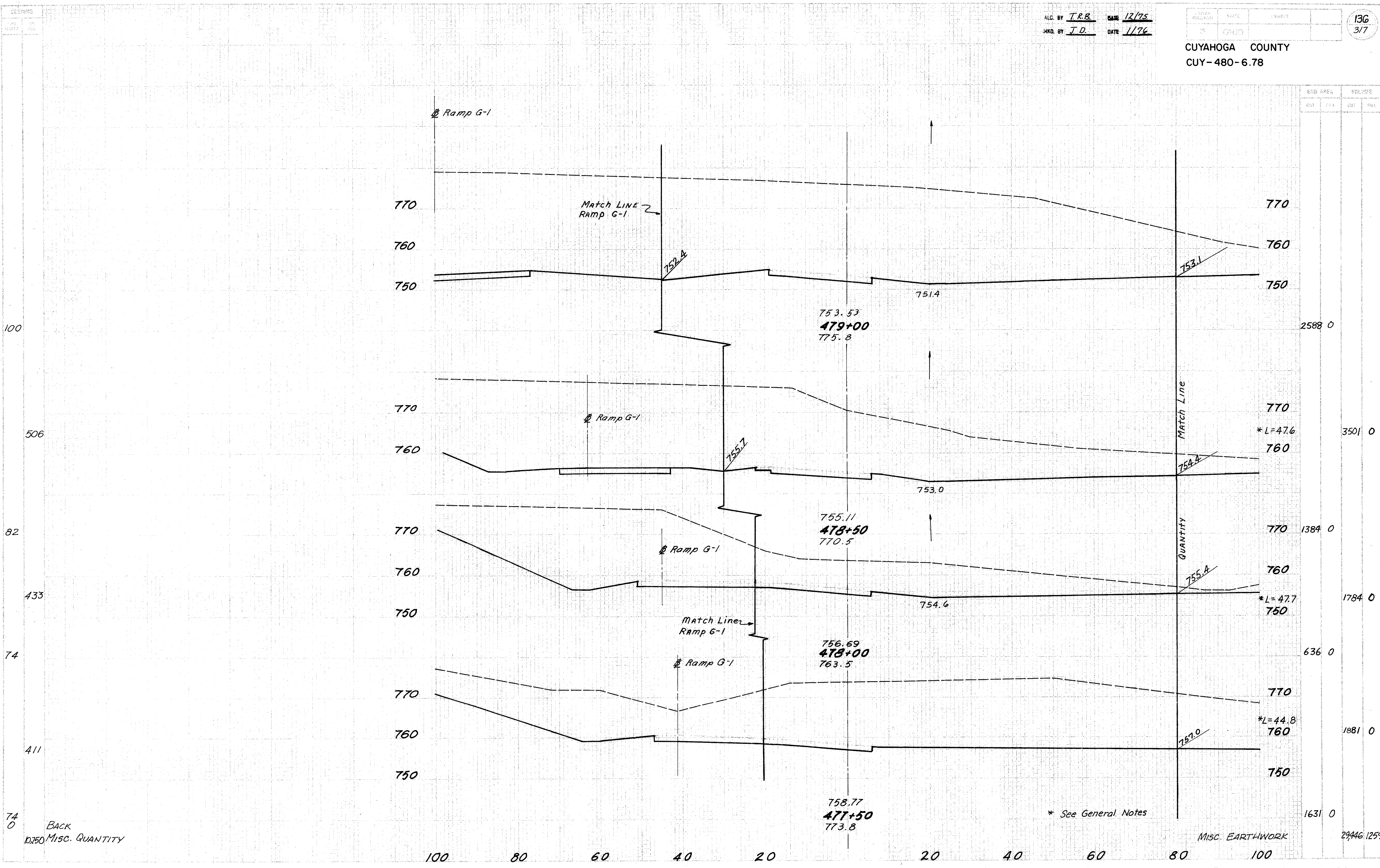
\* See General Notes

\*L=48.2'

RAMP G-3 STA. 476+00 TO STA. 477+00



ALC. BY T.R.B. DATE 12/75  
 HKD. BY J.D. DATE 1/76



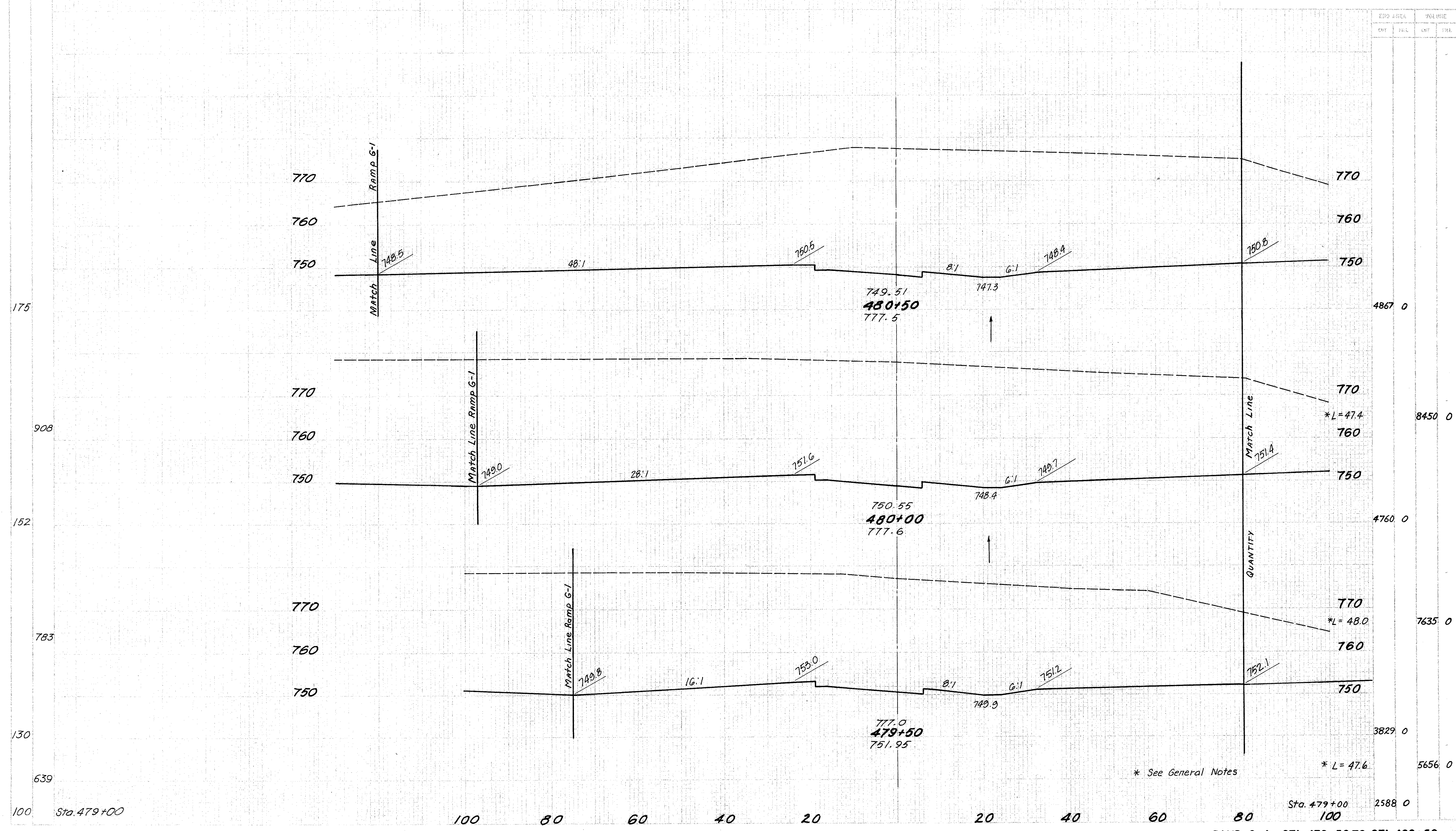
74 0 BACK  
 10,750 MISC. QUANTITY

RAMP G-4 STA. 477+50 TO STA. 479+00

CALC. BY T.R.B. DATE 12/75  
 DRAWN BY J.D. DATE 1/76

137  
3/7

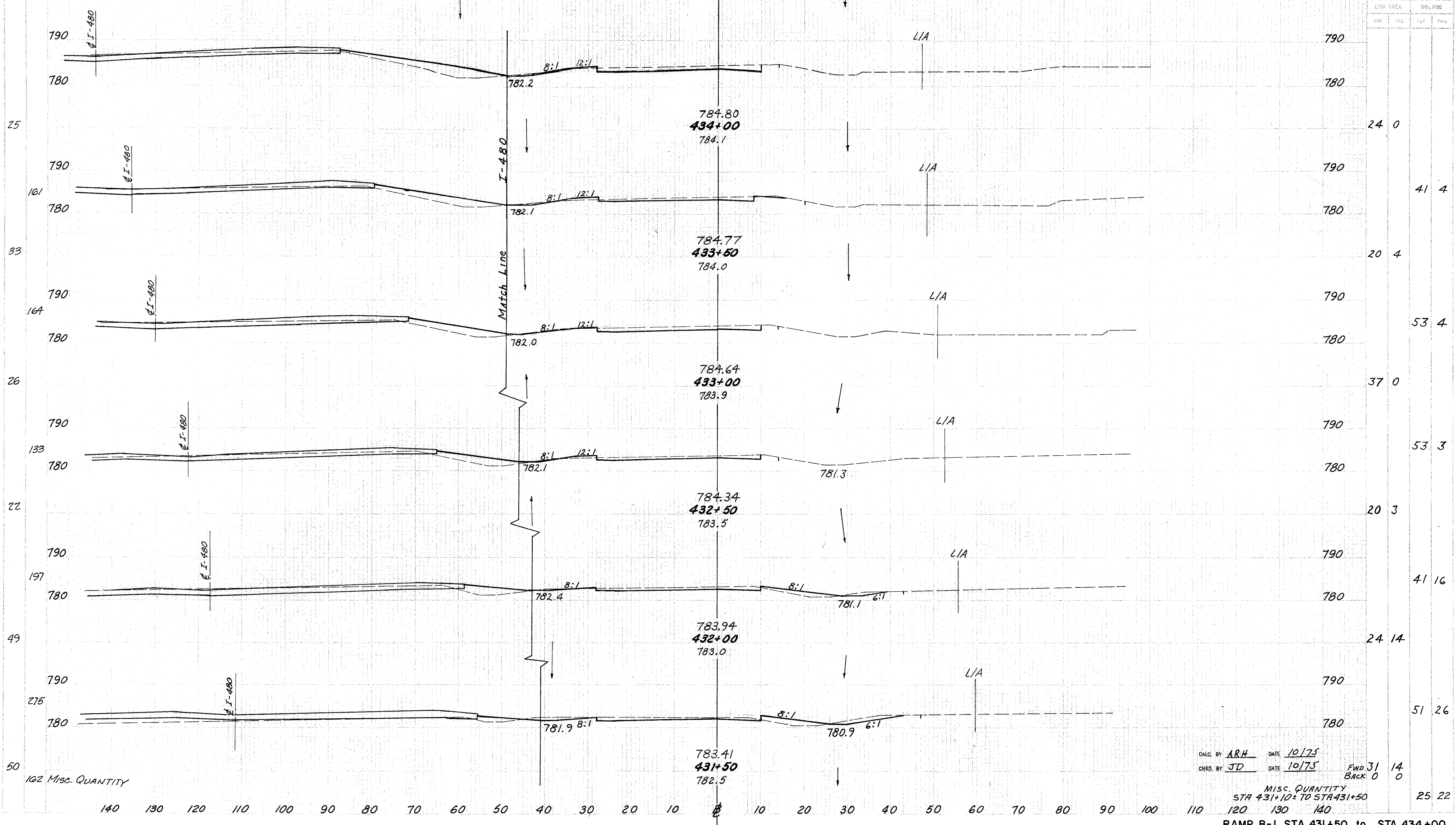
CUYAHOGA COUNTY  
 CUY-480-6.78



EXISTING AREA		PROPOSED	
ENT	EXC.	ENT	EXC.
			4867.0
			8450.0
			4760.0
			7635.0
			3829.0
			5656.0
			2588.0

RAMP G-4 STA. 479+50 TO STA. 480+50

CUYAHOGA COUNTY  
CUY-480-6.78

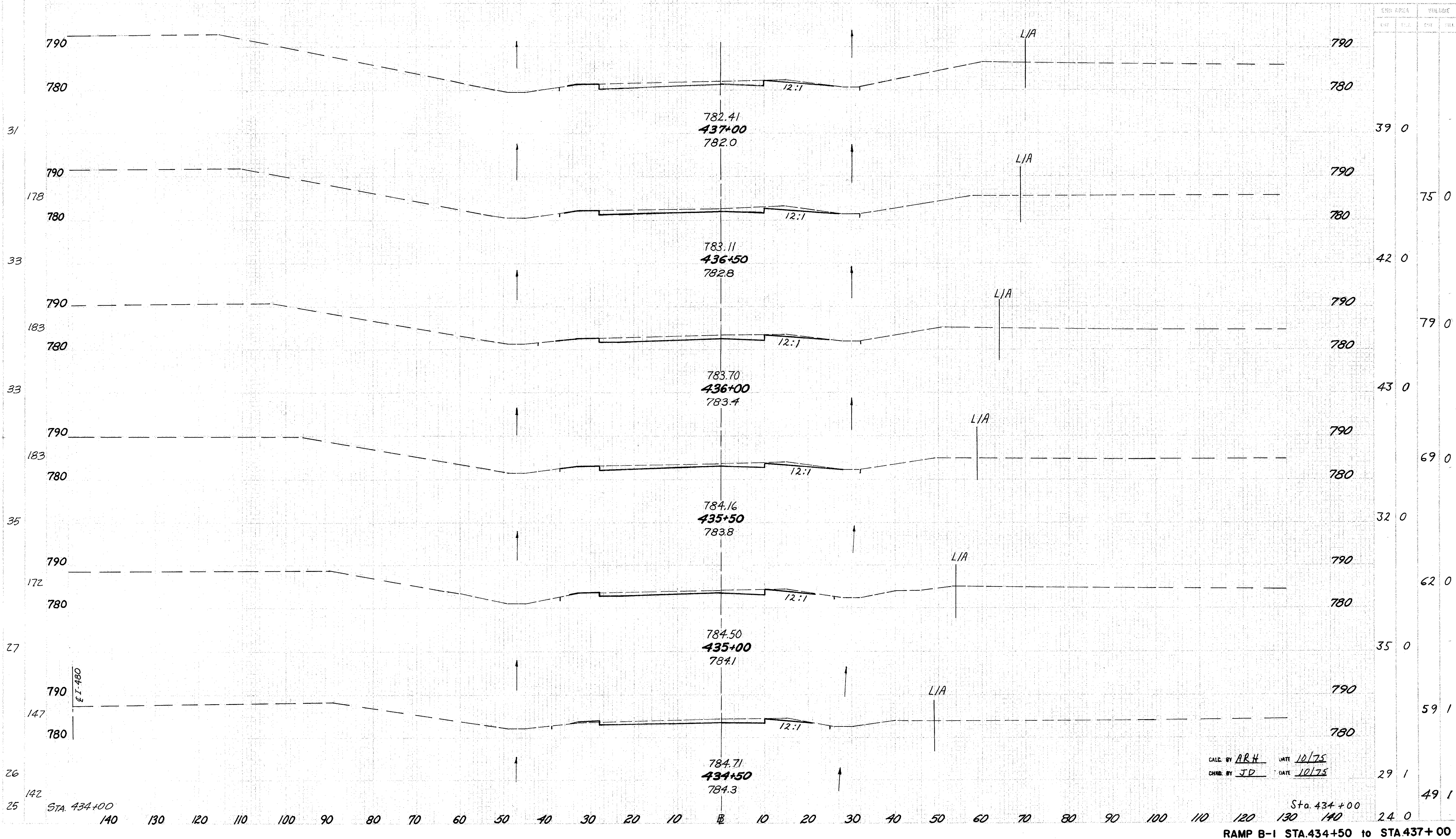


CALC. BY ARH DATE 10/75  
CHKD. BY JD DATE 10/75  
FWD 31  
BACK 0

MISC. QUANTITY  
STA 431+10 TO STA 431+50  
RAMP B-1 STA. 431+50 to STA. 434+00

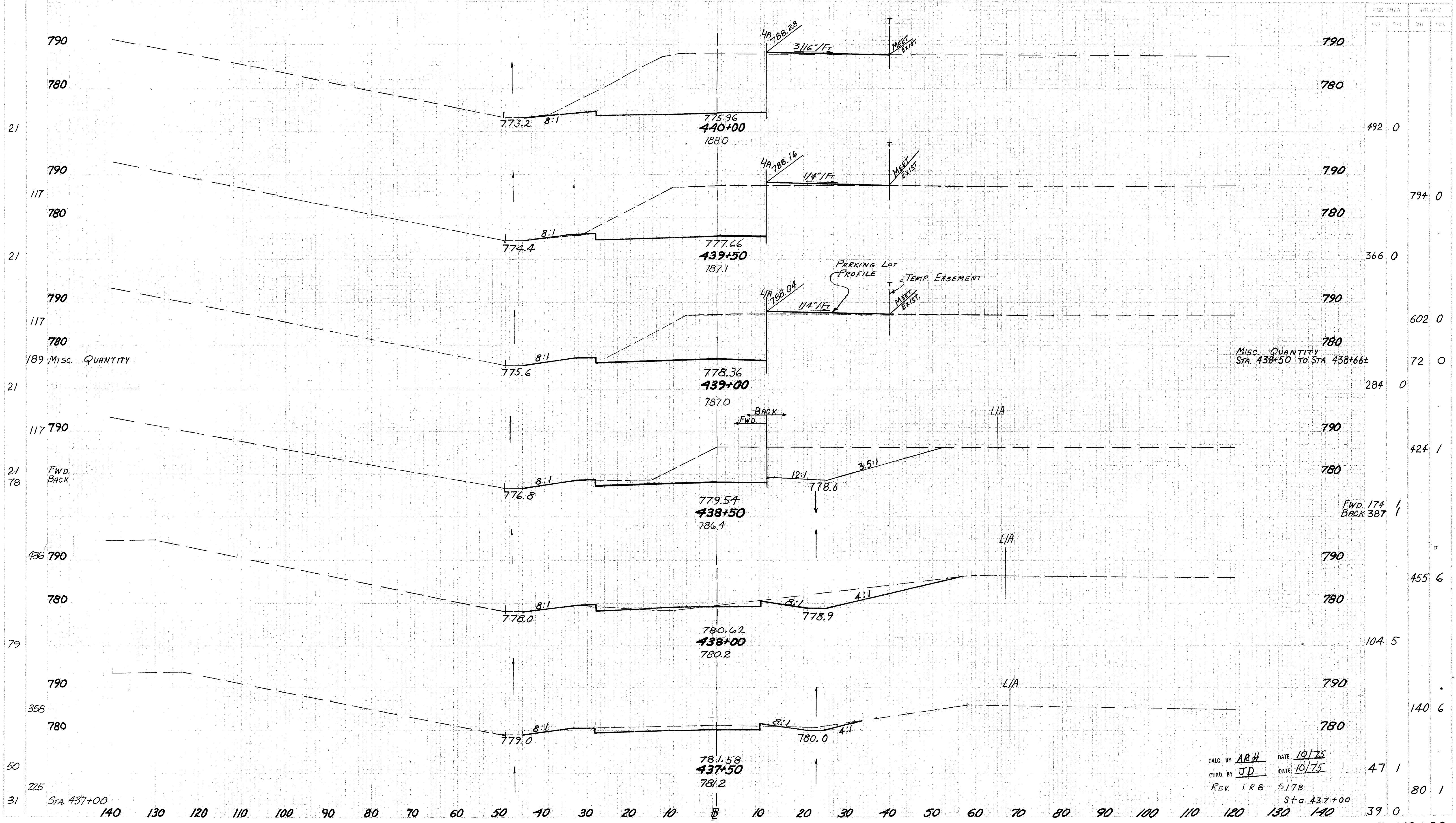
162 Misc. QUANTITY

CUYAHOGA COUNTY  
CUY-480-678

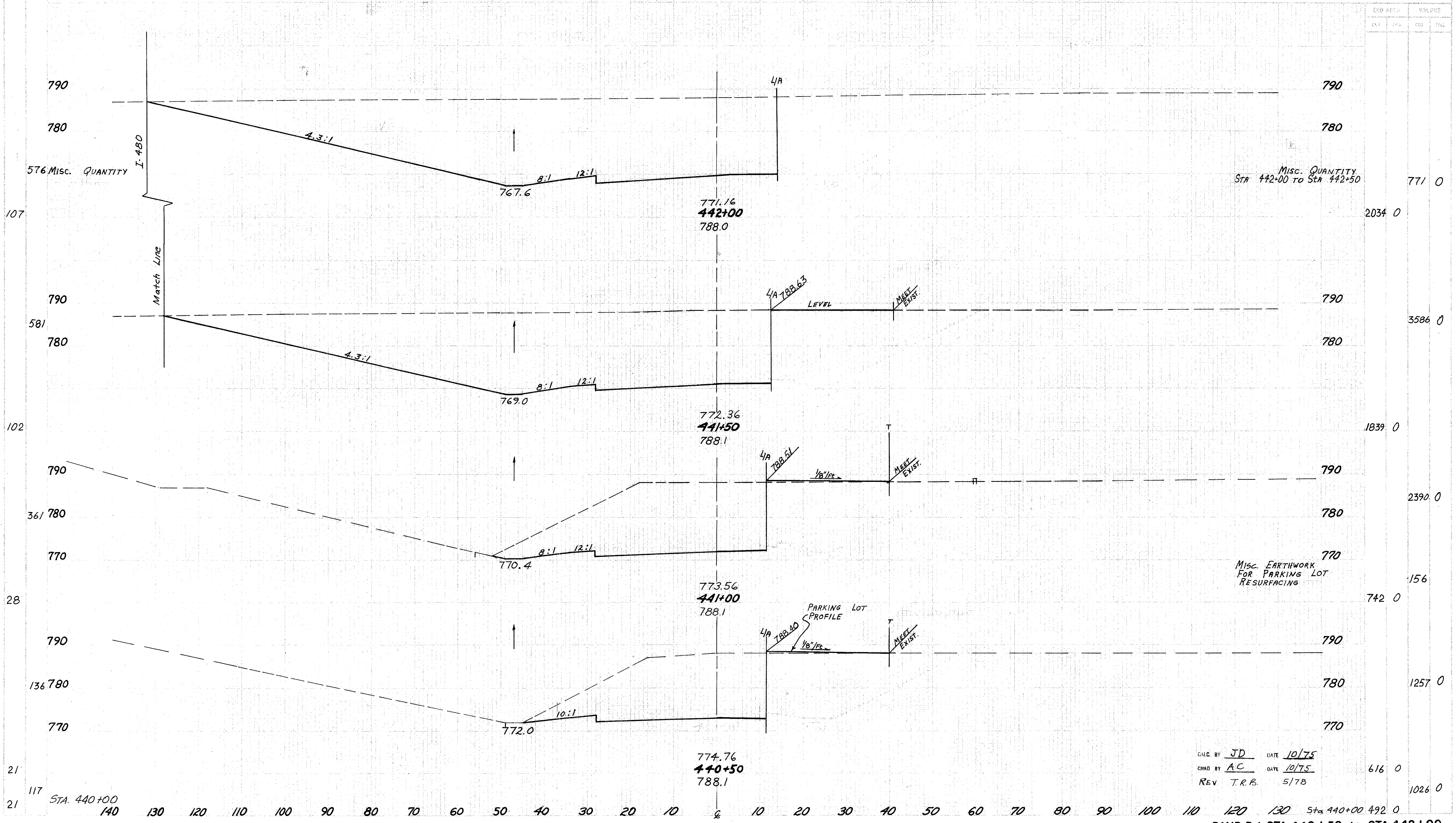


CALL: BY ARH DATE 10/75  
 CHNG: BY JD DATE 10/75

CUYAHOGA COUNTY  
CUY-480-678

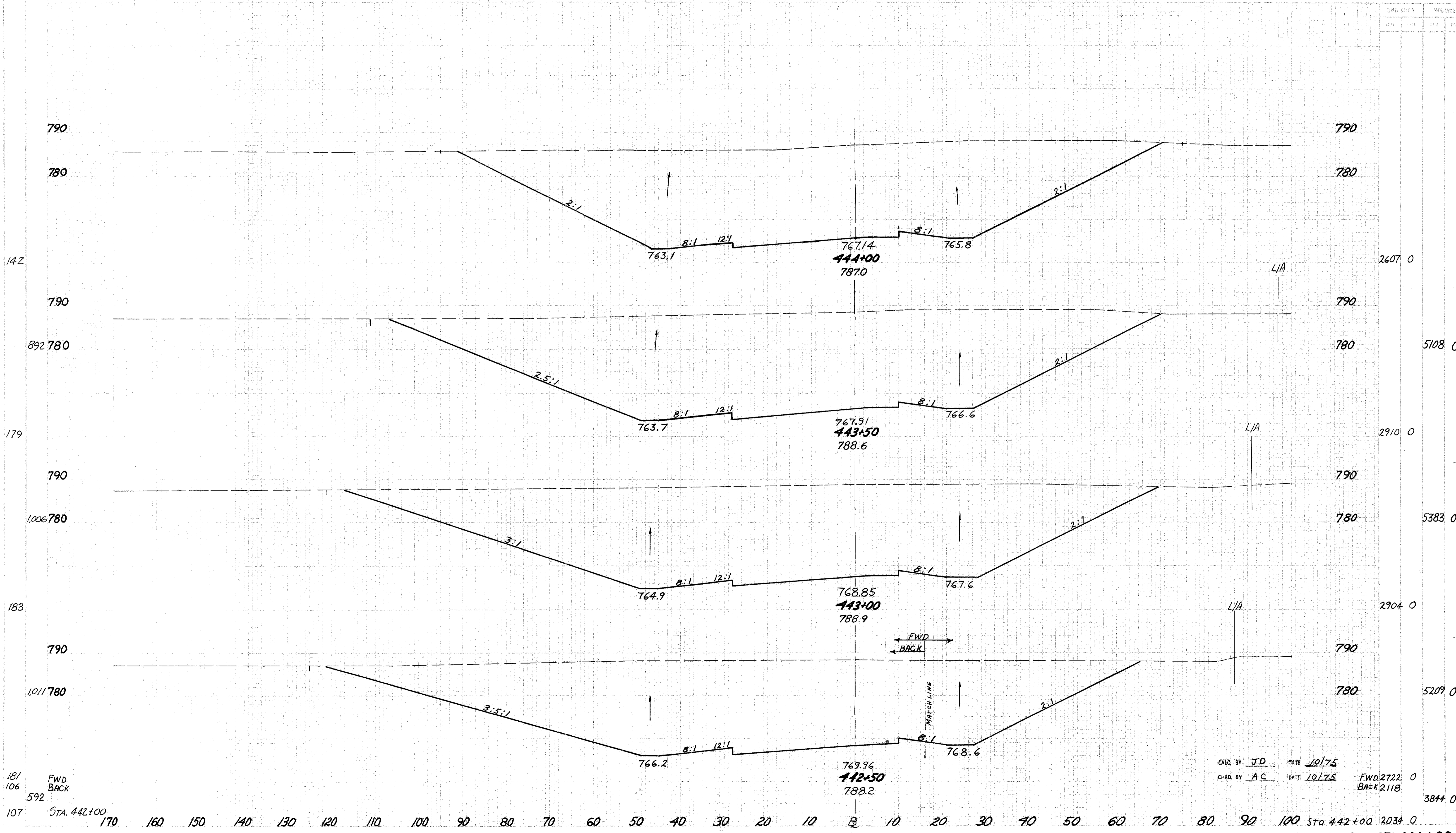


CALC. BY ARH DATE 10/75  
 CHKD. BY JD DATE 10/75  
 REV. T.R.B 5178  
 Sta. 437+00  
 RAMP B-1 STA. 437+50 to STA. 440+00



CALC. BY JD DATE 10/75  
 CHKD BY AC DATE 10/75  
 REV T.R.B. 5/78

CUYAHOGA COUNTY  
CUY-480-678



181  
106  
592  
107

FWD.  
BACK

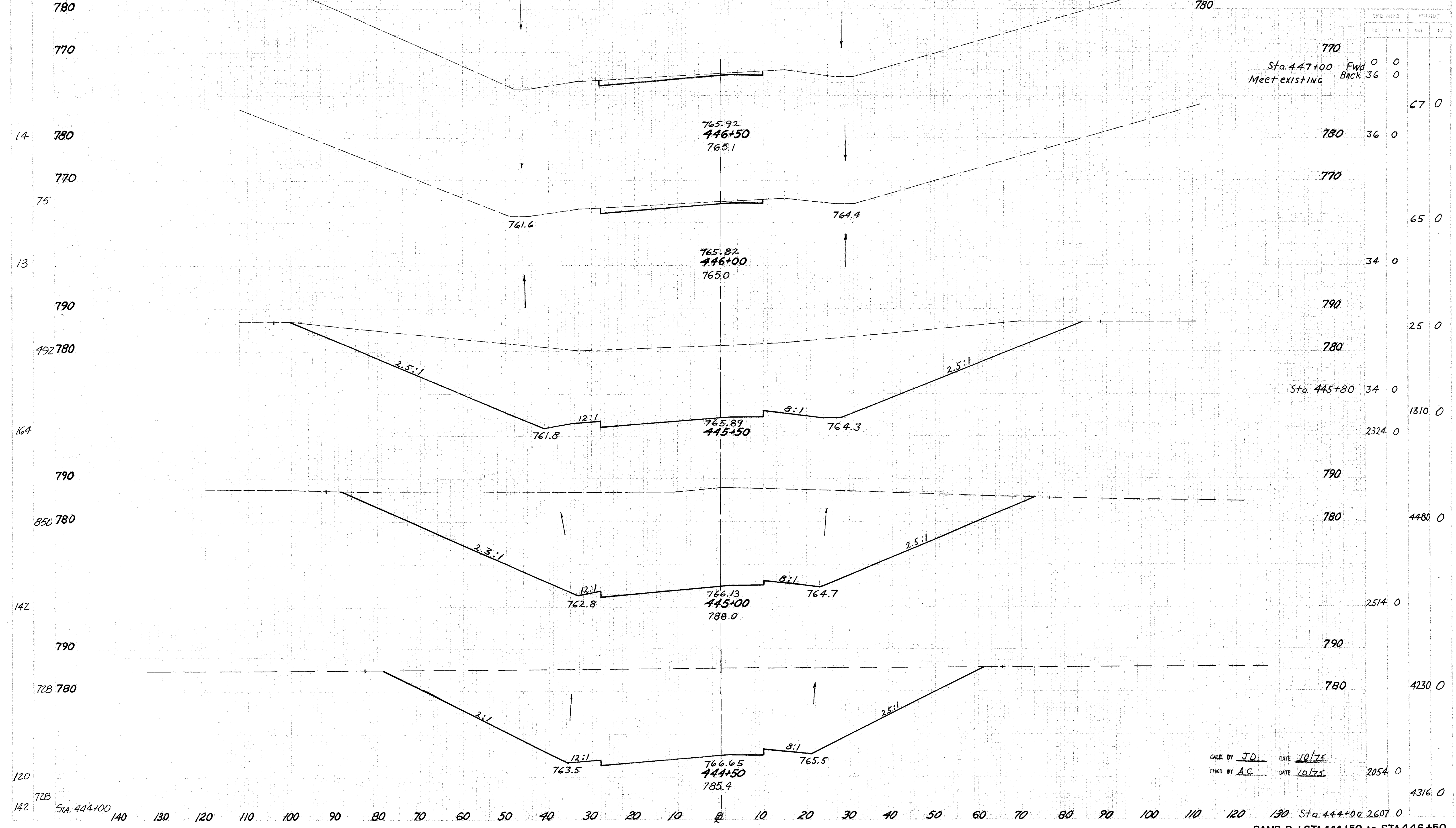
STA. 442+00

CALC. BY JD DATE 10/75  
CHKD. BY AC DATE 10/75

FWD 2722.0  
BACK 2118.0

RAMP-B I STA. 442+50 to STA. 444+00

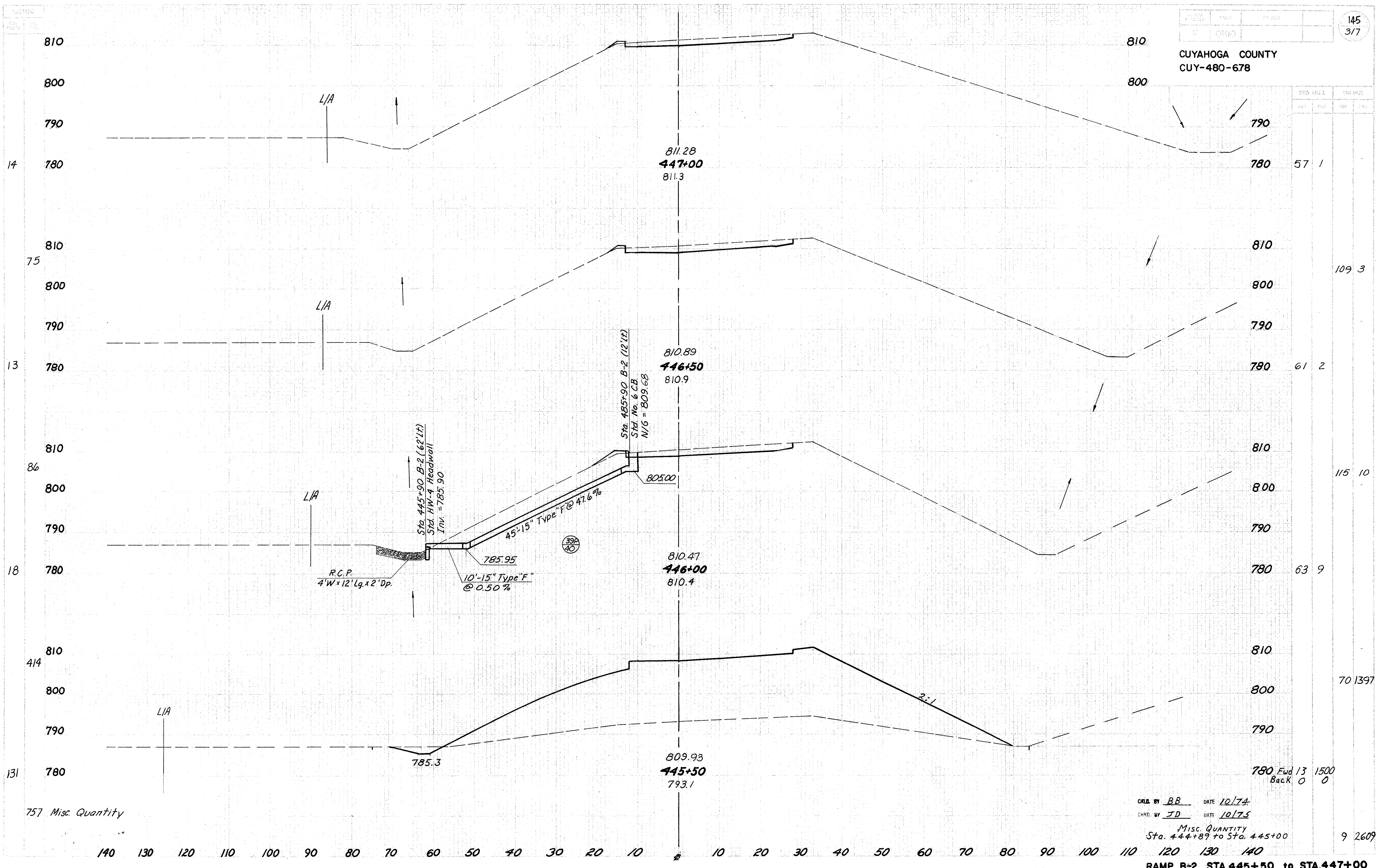
CUYAHOGA COUNTY  
CUY-480-678



SCALE BY JD DATE 10/75  
CHKD BY AC DATE 10/75



CUYAHOGA COUNTY  
CUY-480-678



757 Misc. Quantity

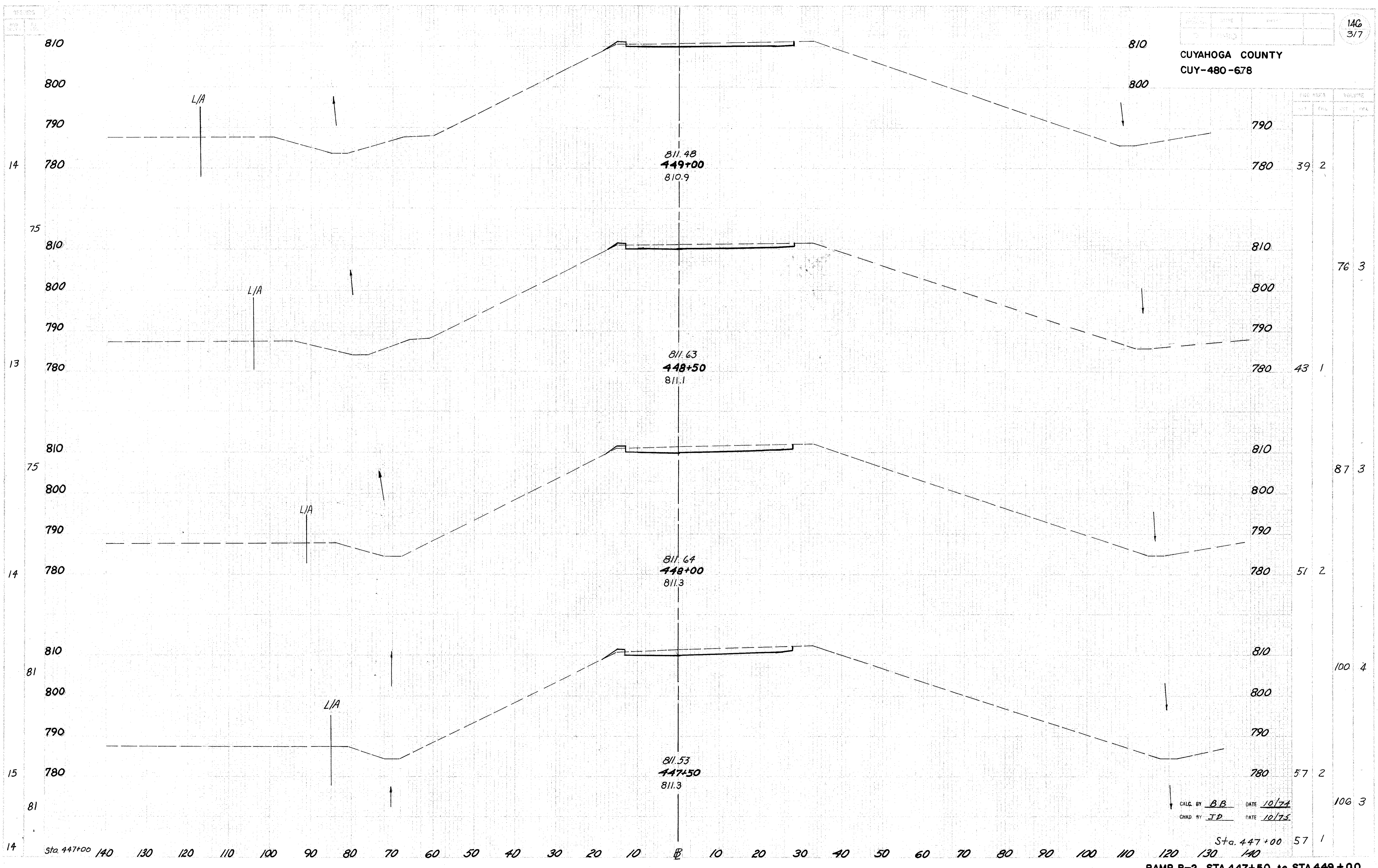
CALC. BY BB DATE 10/74  
CHKD. BY JD DATE 10/75

Misc. QUANTITY  
Sta. 444+89 to Sta. 445+00

9 2609

RAMP B-2 STA. 445+50 to STA. 447+00

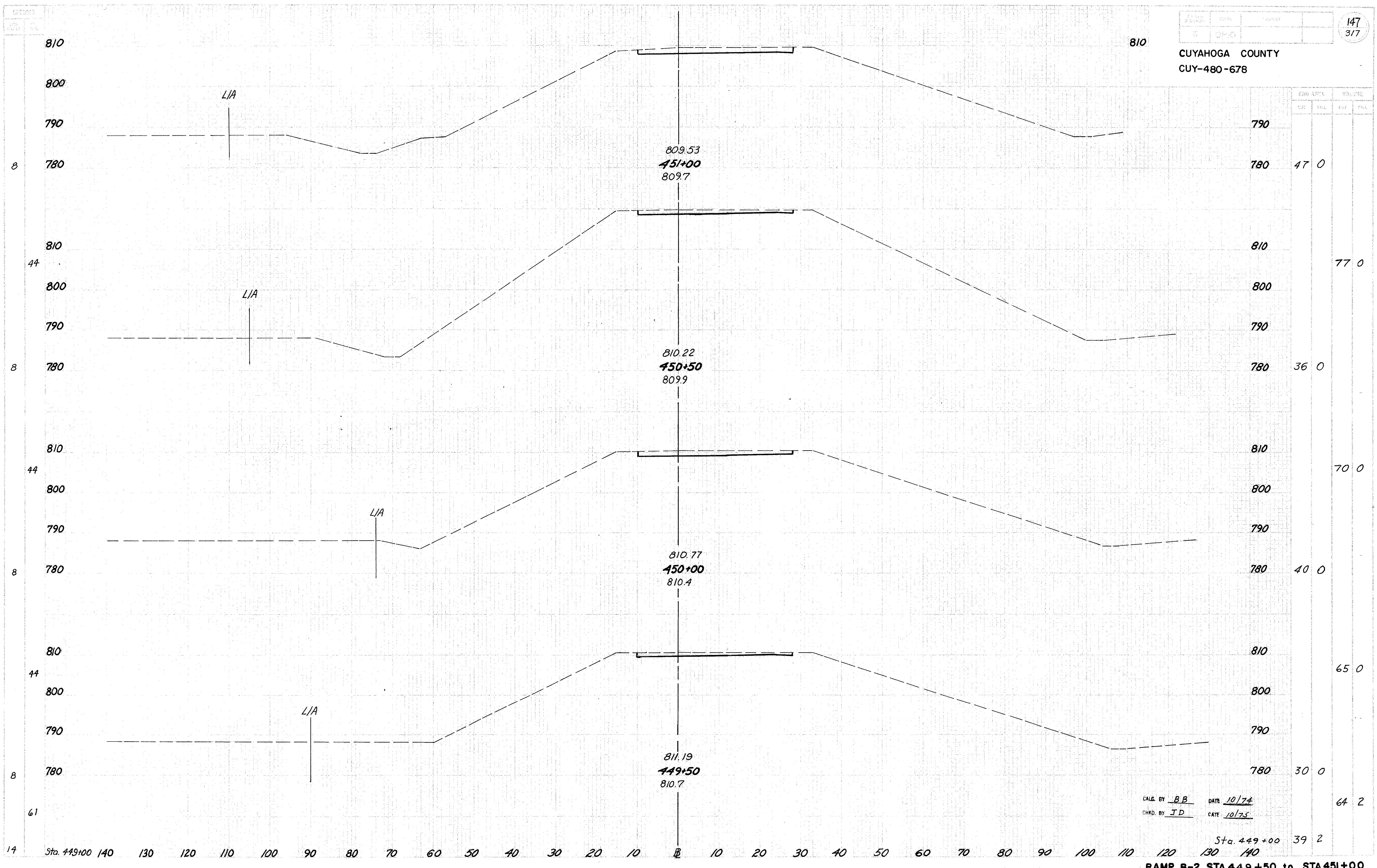
CUYAHOGA COUNTY  
CUY-480-678



CALC. BY BB DATE 10/74  
CHKD BY JD DATE 10/75

RAMP B-2 STA.447+50 to STA.449+00

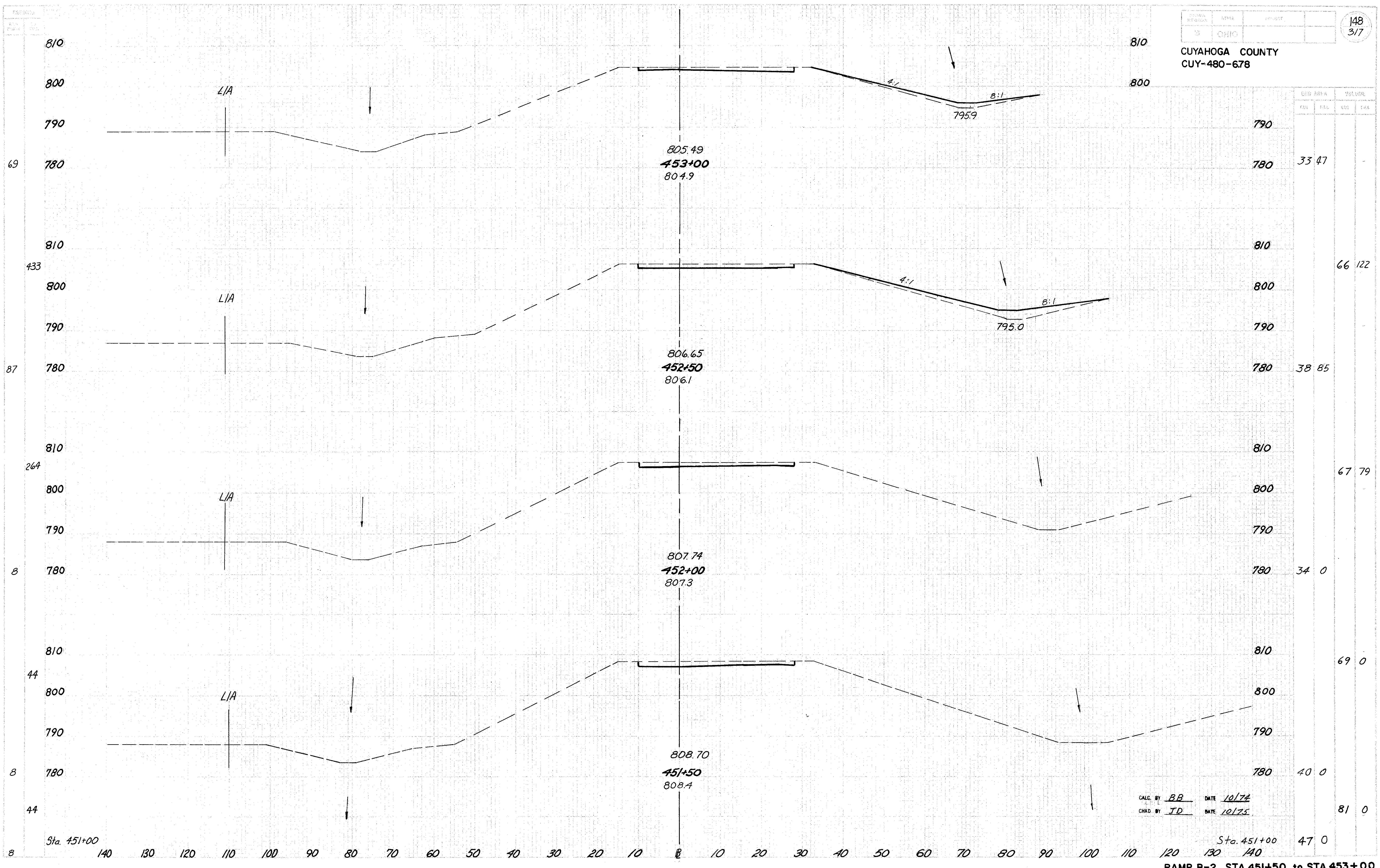
CUYAHOGA COUNTY  
CUY-480-678



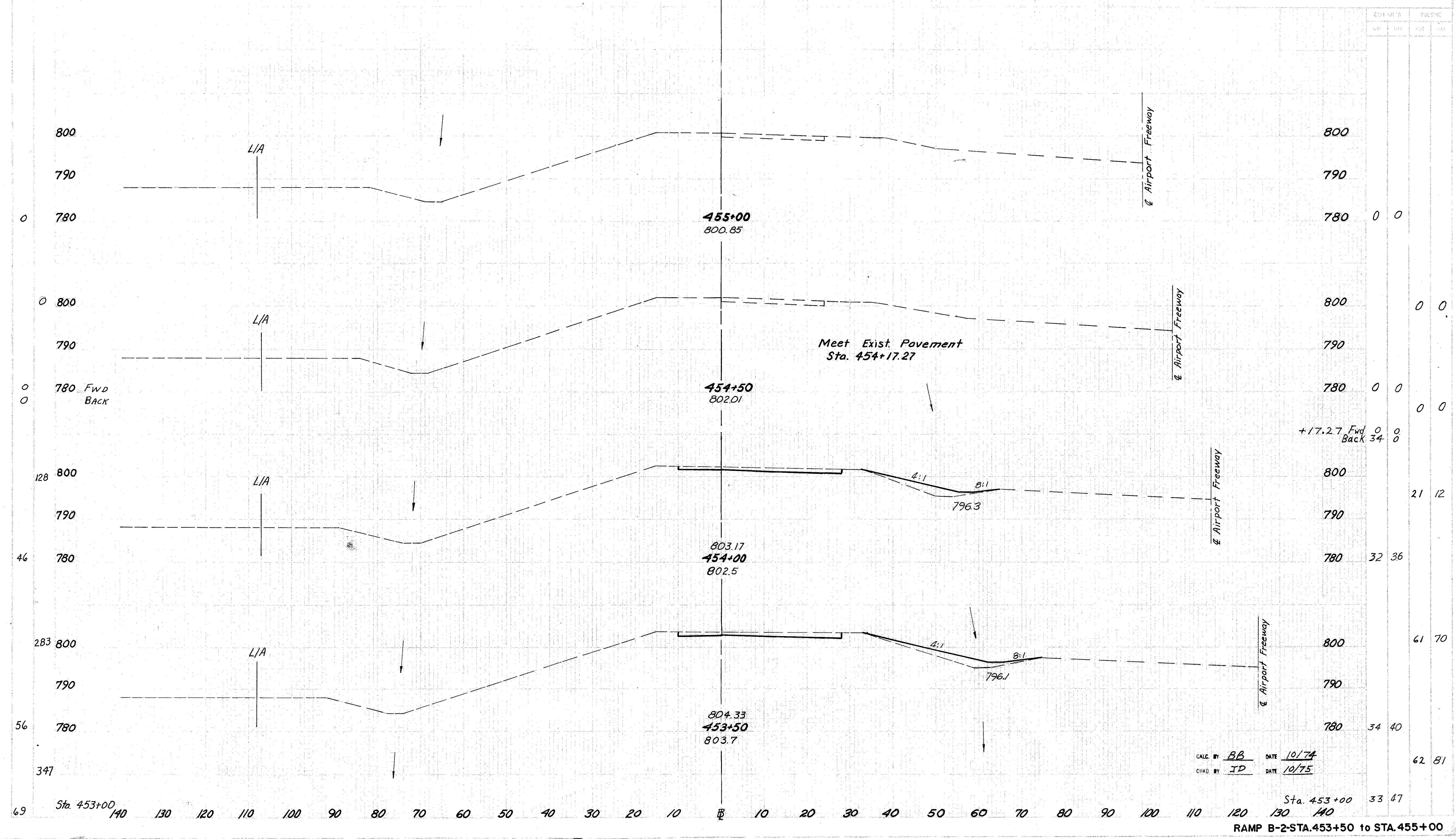
CALC. BY BB DATE 10/74  
CHKD. BY JD DATE 10/75

Sta. 449+00 39 2

RAMP B-2 STA. 449+50 to STA. 451+00



CALC. BY BB DATE 10/74  
CHKD BY JD DATE 10/75



CALC. BY BB DATE 10/74  
CHKD BY ID DATE 10/75

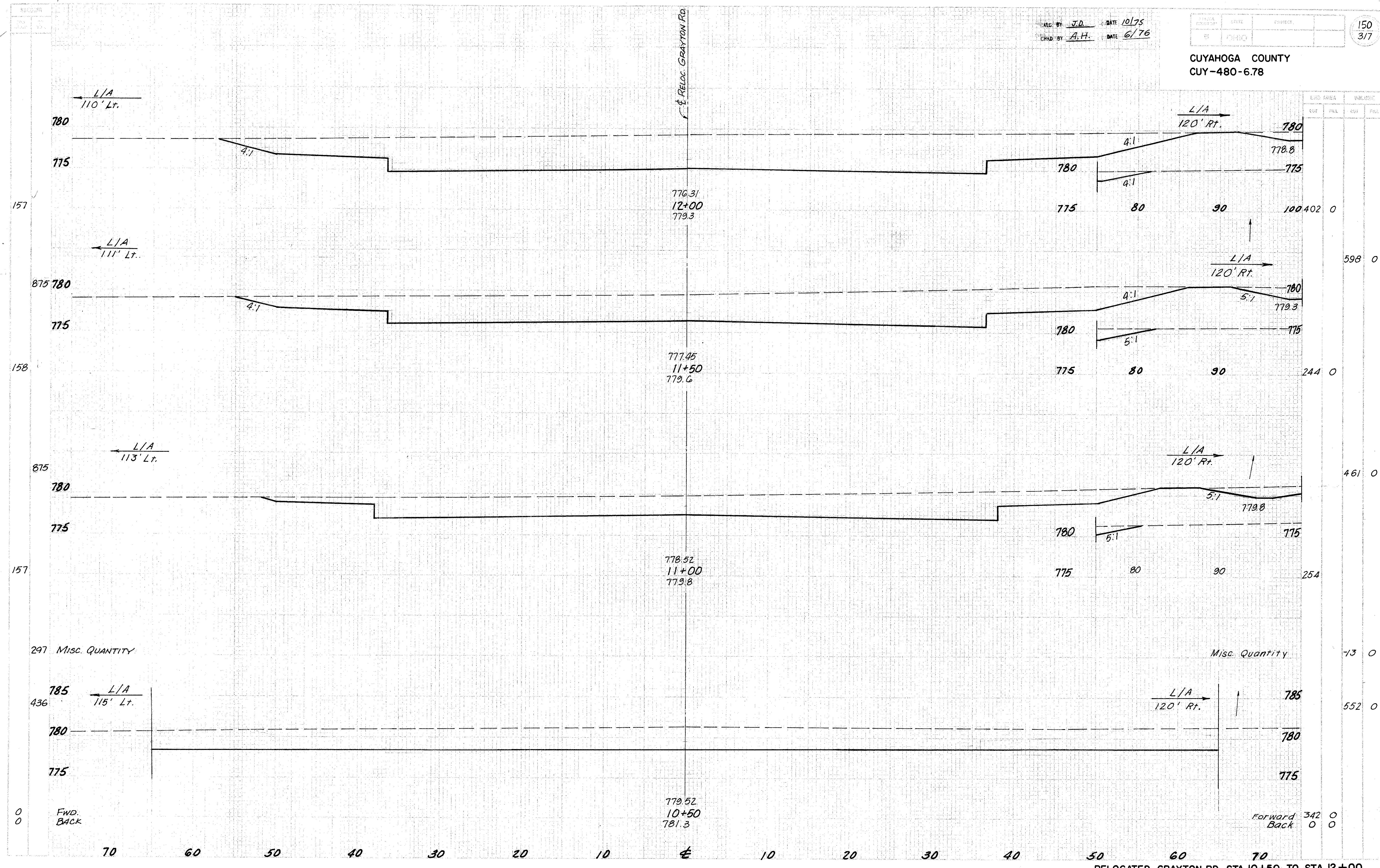
Sta. 453+00 33 47  
RAMP B-2-STA.453+50 to STA.455+00

5-L

DATE BY J.D. DATE 10/75  
CHKD BY A.H. DATE 6/76

NO.	DATE	PROJECT	
150	3/7		

CUYAHOGA COUNTY  
CUY-480-6.78

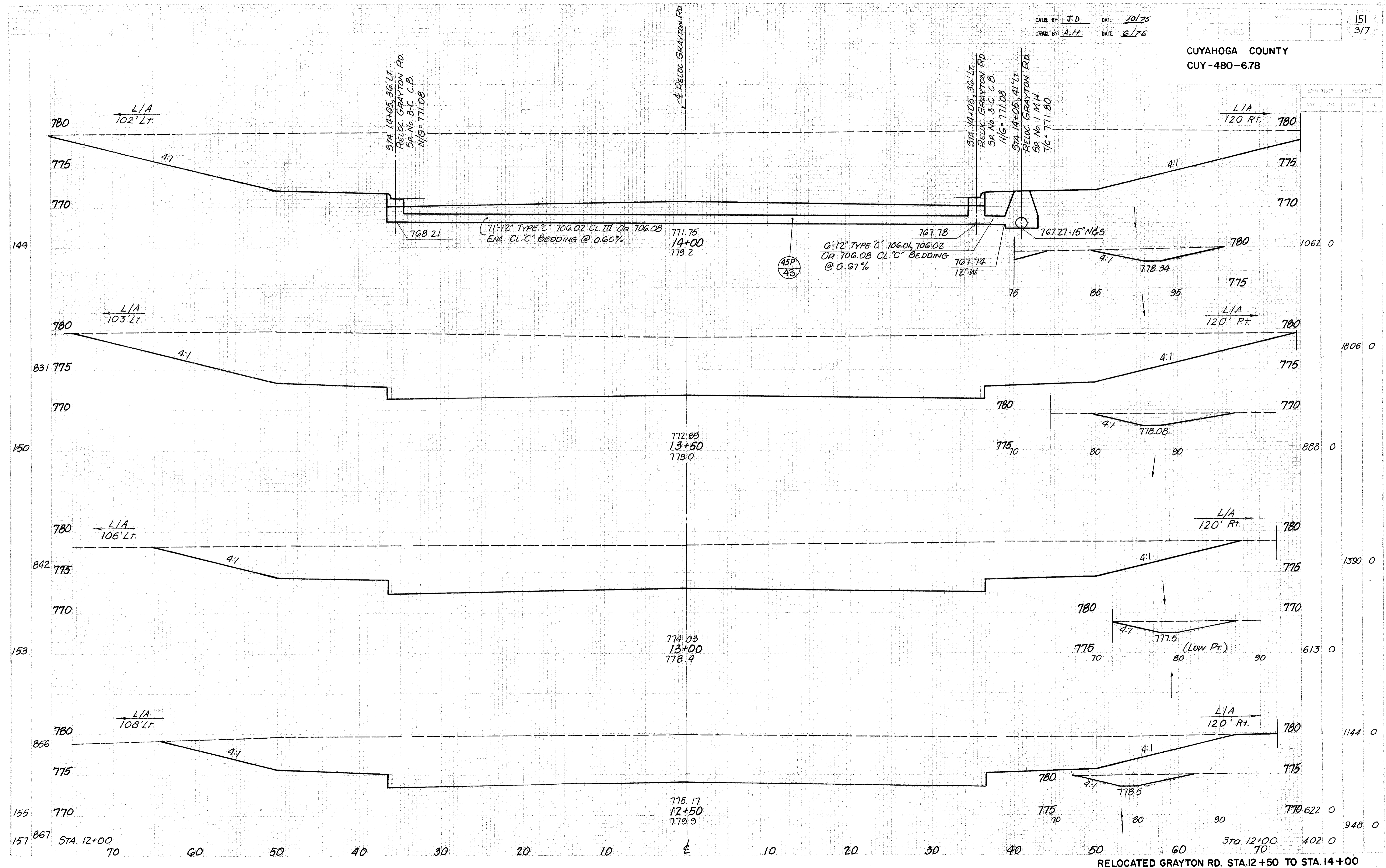


RELOCATED GRAYTON RD. STA. 10+50 TO STA. 12+00

CALC. BY J.D. DATE 10/75  
 CHKD. BY A.H. DATE 6/76

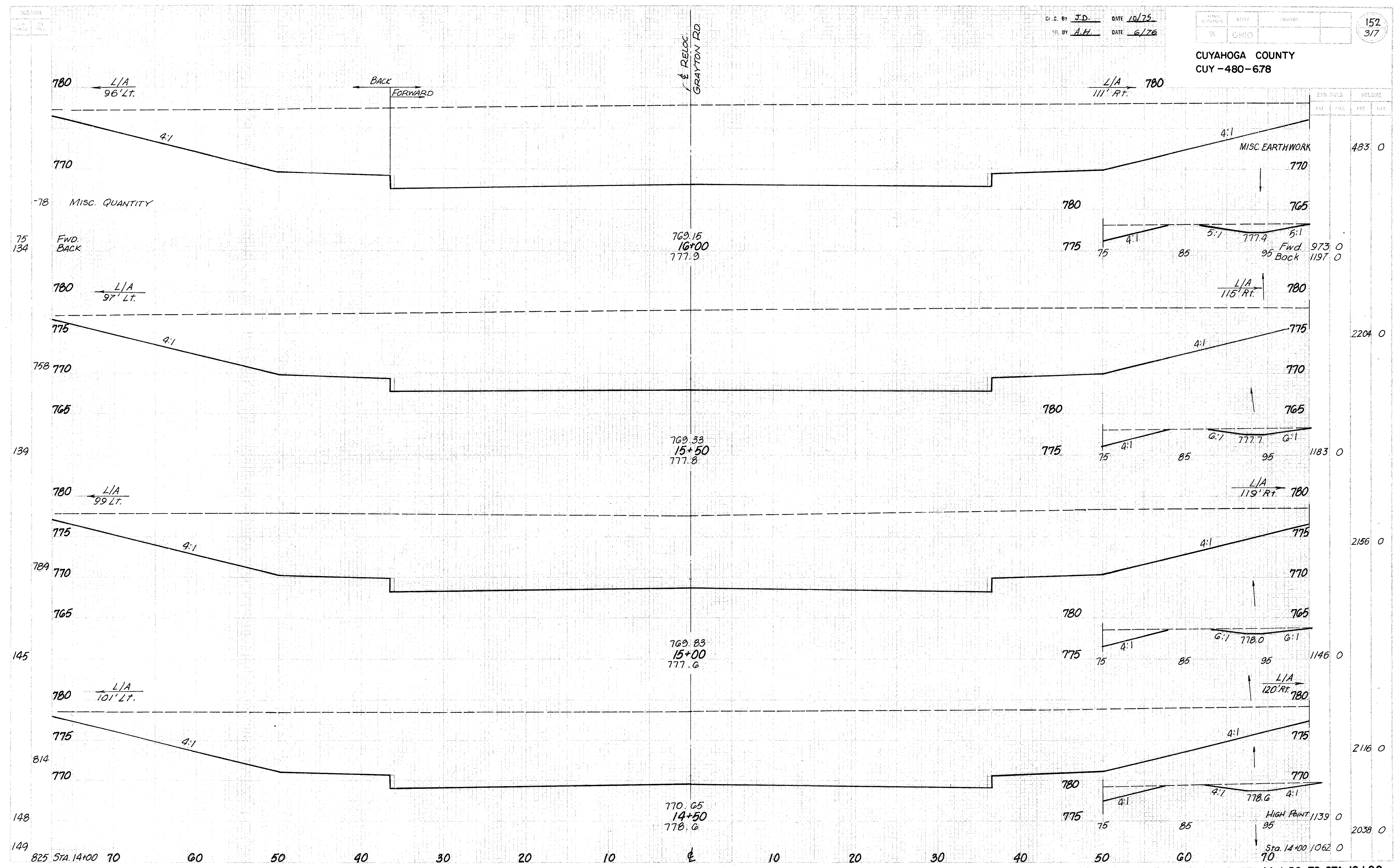
151  
 3/7

CUYAHOGA COUNTY  
 CUY-480-678



RELOCATED GRAYTON RD. STA. 12+50 TO STA. 14+00

CUYAHOGA COUNTY  
 CUY-480-678

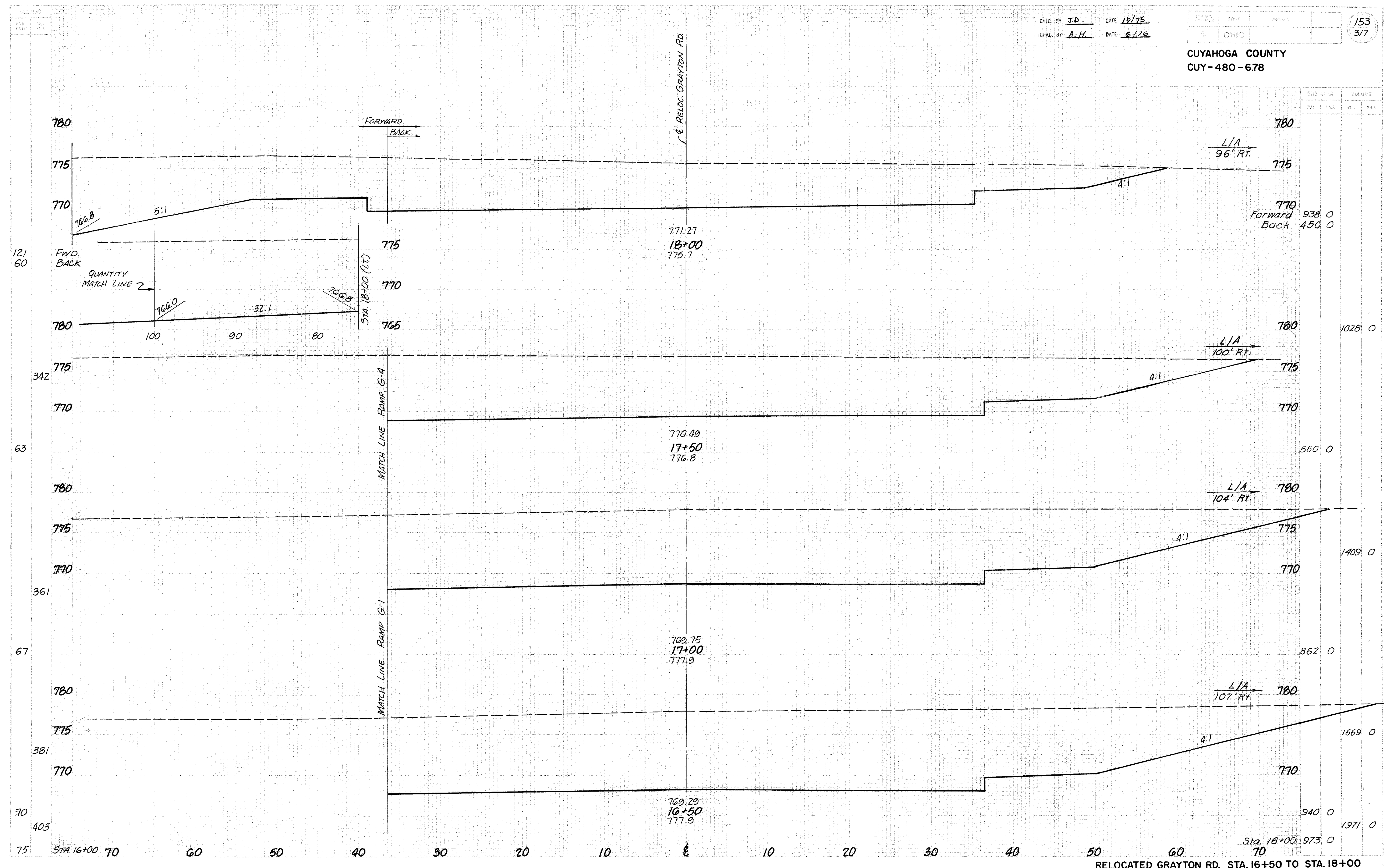


RELOCATED GRAYTON RD. STA. 14 + 50 TO STA. 16 + 00



CALC. BY J.D. DATE 10/75  
 CHAD. BY A.H. DATE 6/76

CUYAHOGA COUNTY  
 CUY-480-678

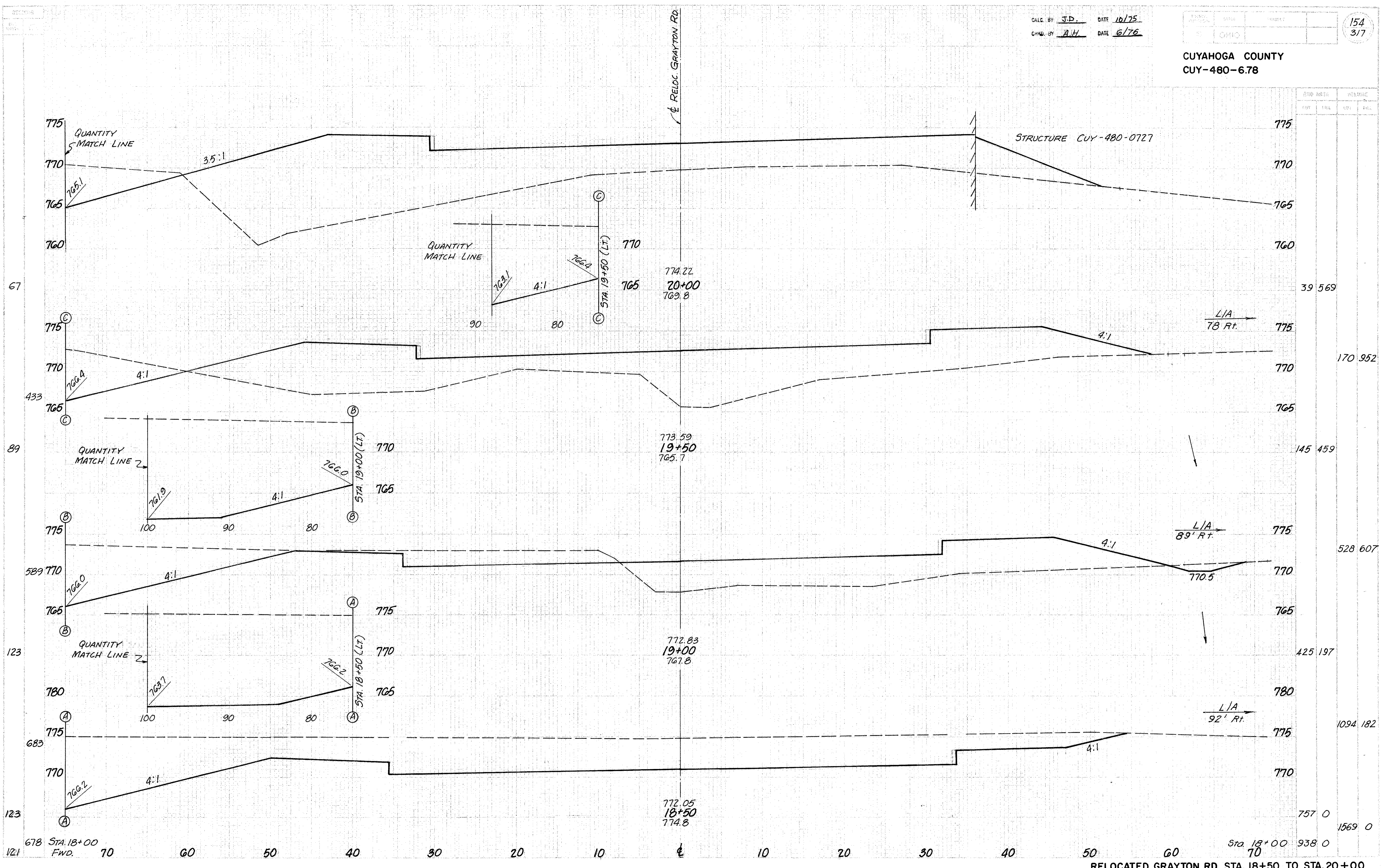


STATION	ELEVATION		VOLUME
	GROUND	PROPOSED	
121	770	775	938 0
60	770	775	450 0
342	770	775	1028 0
63	770	775	660 0
361	770	775	1409 0
67	770	775	862 0
381	770	775	1669 0
70	770	775	940 0
403	770	775	1971 0

RELOCATED GRAYTON RD. STA. 16+50 TO STA. 18+00

CALC. BY J.D. DATE 10/75  
 CHKD. BY A.H. DATE 6/76

CUYAHOGA COUNTY  
 CUY-480-6.78



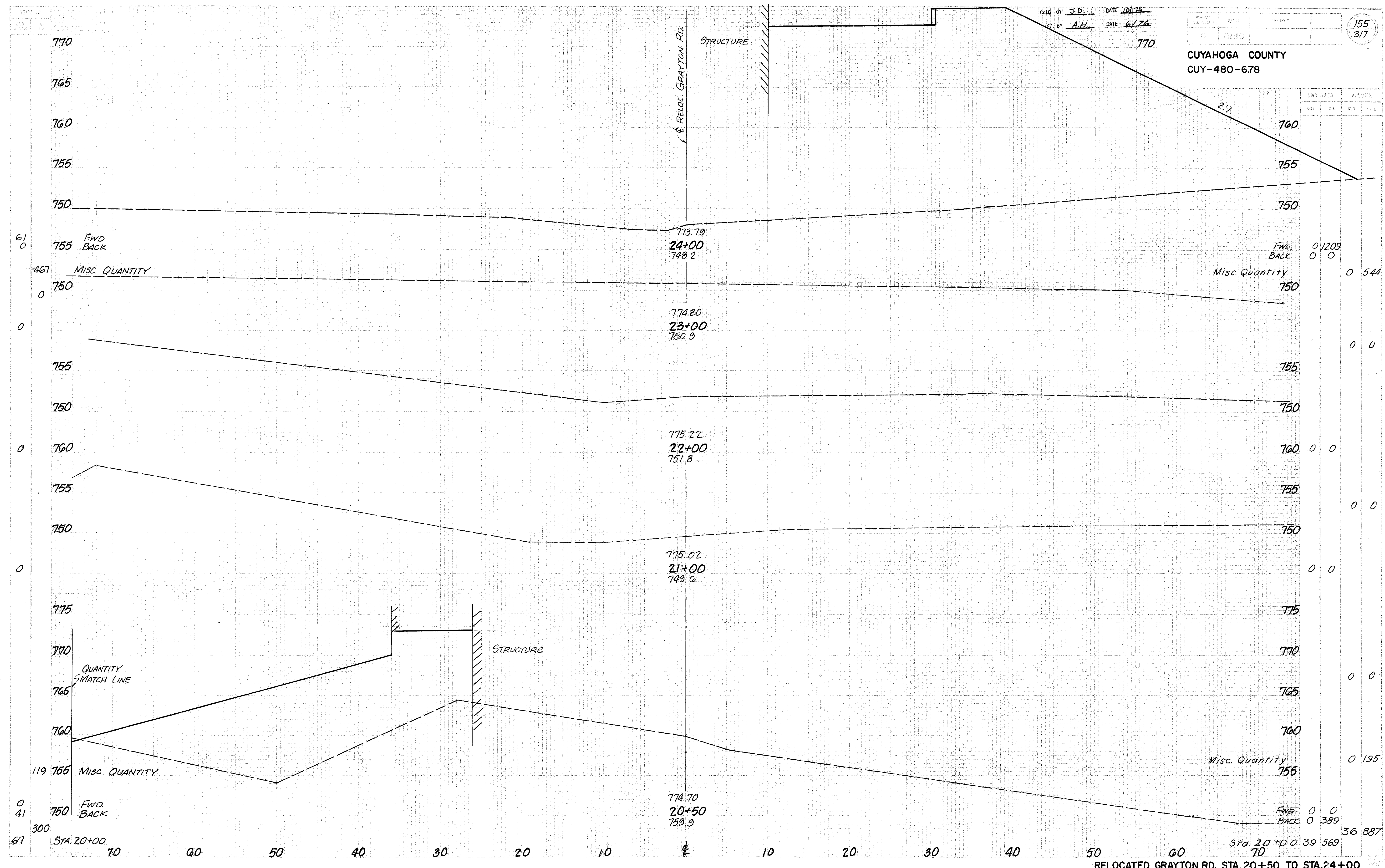
SUB AREA		VOL. CONC.	
ST. 1	ST. 2	CU	YD.
67	67	39	569
89	89	170	952
123	123	145	459
123	123	528	607
123	123	425	197
121	121	1094	182
121	121	757	0
121	121	1569	0
121	121	938	0

RELOCATED GRAYTON RD. STA. 18+50 TO STA. 20+00

CALC BY J.D. DATE 10/75  
 D.D. BY A.H. DATE 6/76

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 3/7

CUYAHOGA COUNTY  
 CUY-480-678



CUT AREA		VOLUME	
STA.	END STA.	CY	CU
20+00	24+00	0	0

Fwd. 0 1209  
 BACK 0 0

Misc. Quantity 0 544

0 0

0 0

0 0

0 0

0 0

0 195

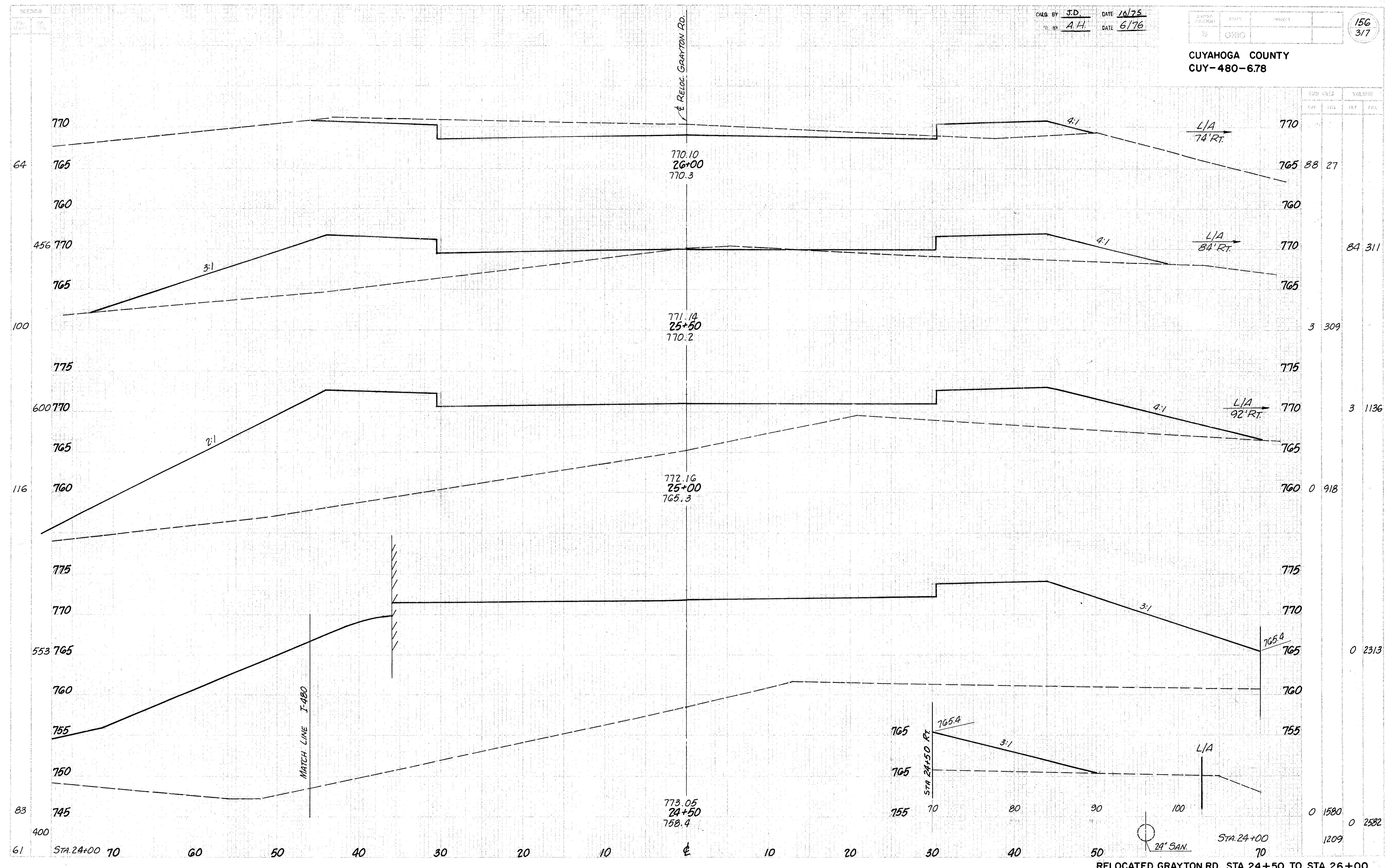
Fwd. 0 0  
 BACK 0 389

36 887

CALC. BY J.D. DATE 10/75  
 D. BY A.H. DATE 6/76

NO.	DATE	PROJECT
156	3/7	

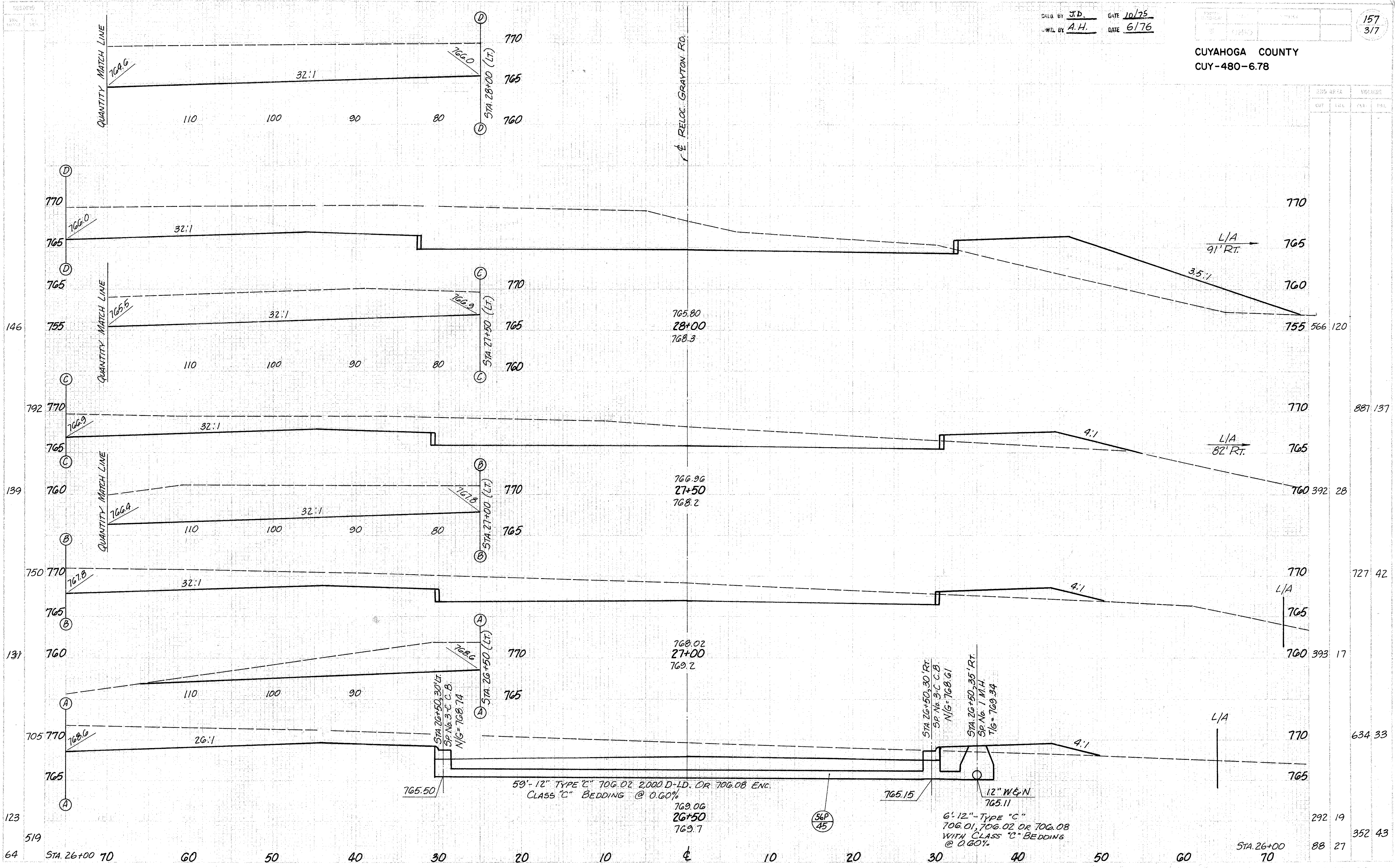
CUYAHOGA COUNTY  
 CUY-480-6.78



DATE 10/75  
DATE 6/76

CUYAHOGA COUNTY  
CUY-480-6.78

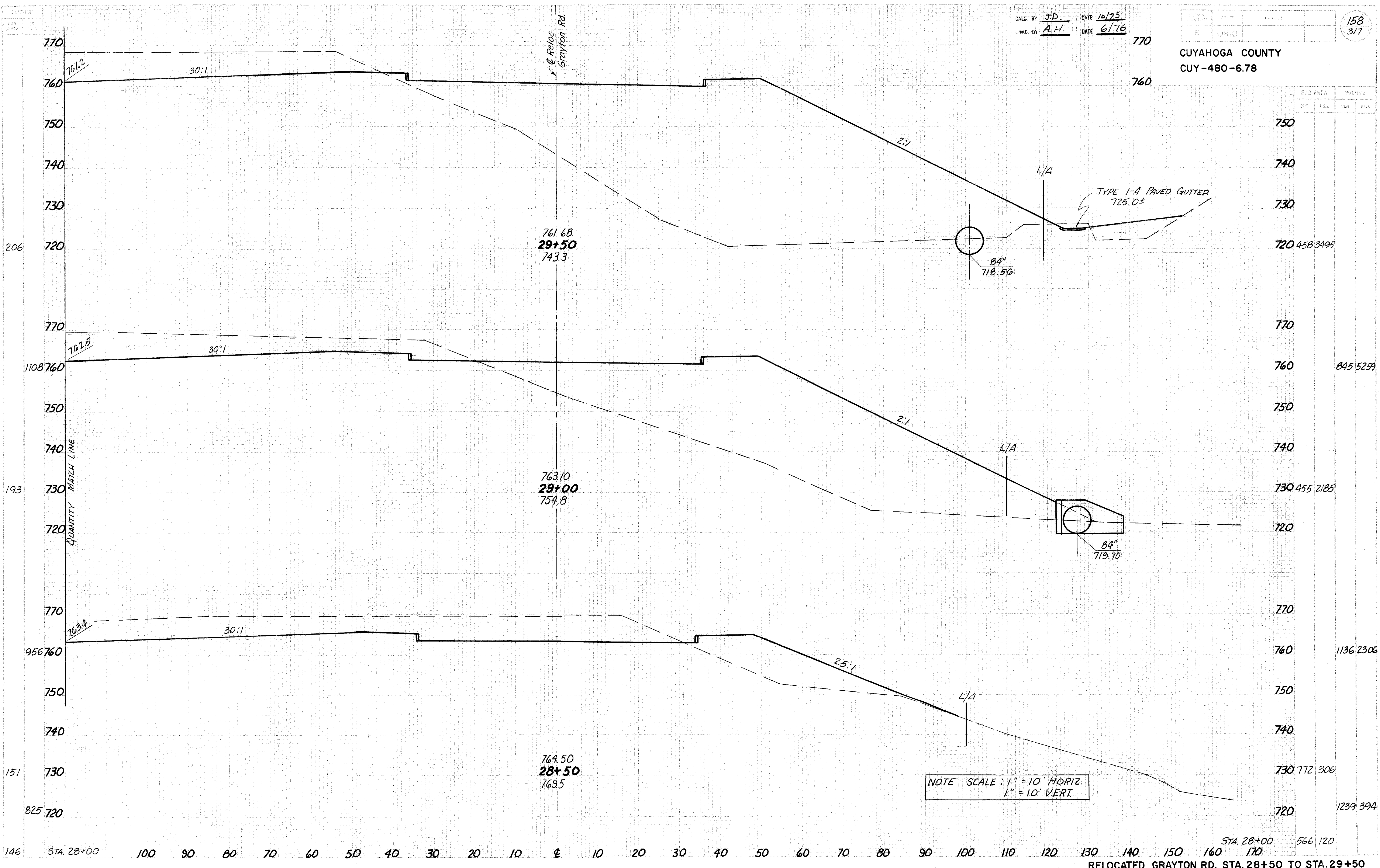
157  
3/7



CALC. BY J.D. DATE 10/75  
 CHK. BY A.H. DATE 6/76

158  
3/7

CUYAHOGA COUNTY  
 CUY-480-6.78



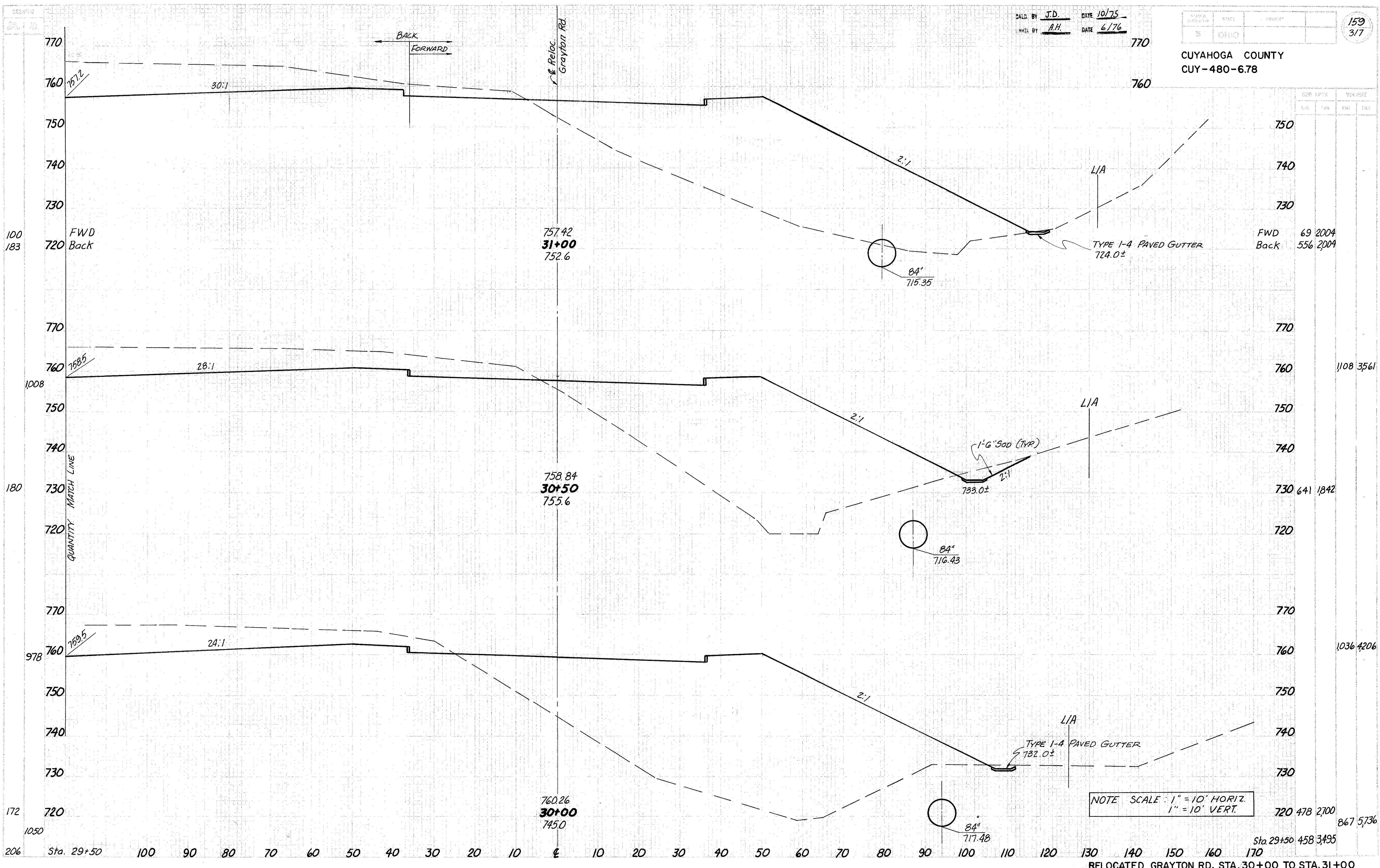
END AREA		CUT		FILL	
STA.	AREA	STA.	AREA	STA.	AREA
28+00	566	120		120	
28+50	120				
29+00	120				
29+50	120				

NOTE SCALE: 1" = 10' HORIZ.  
 1" = 10' VERT.

RELOCATED GRAYTON RD. STA. 28+50 TO STA. 29+50

CALC. BY J.D. DATE 10/75  
 CHECK BY A.H. DATE 6/76

CUYAHOGA COUNTY  
 CUY-480-6.78



100  
 183  
 FWD  
 Back

FWD 69 2004  
 Back 556 2004

1008

1108 3561

180

641 1842

978

1036 4206

172

720 478 2700

867 5736

NOTE SCALE: 1" = 10' HORIZ.  
 1" = 10' VERT.

RELOCATED GRAYTON RD. STA. 30+00 TO STA. 31+00

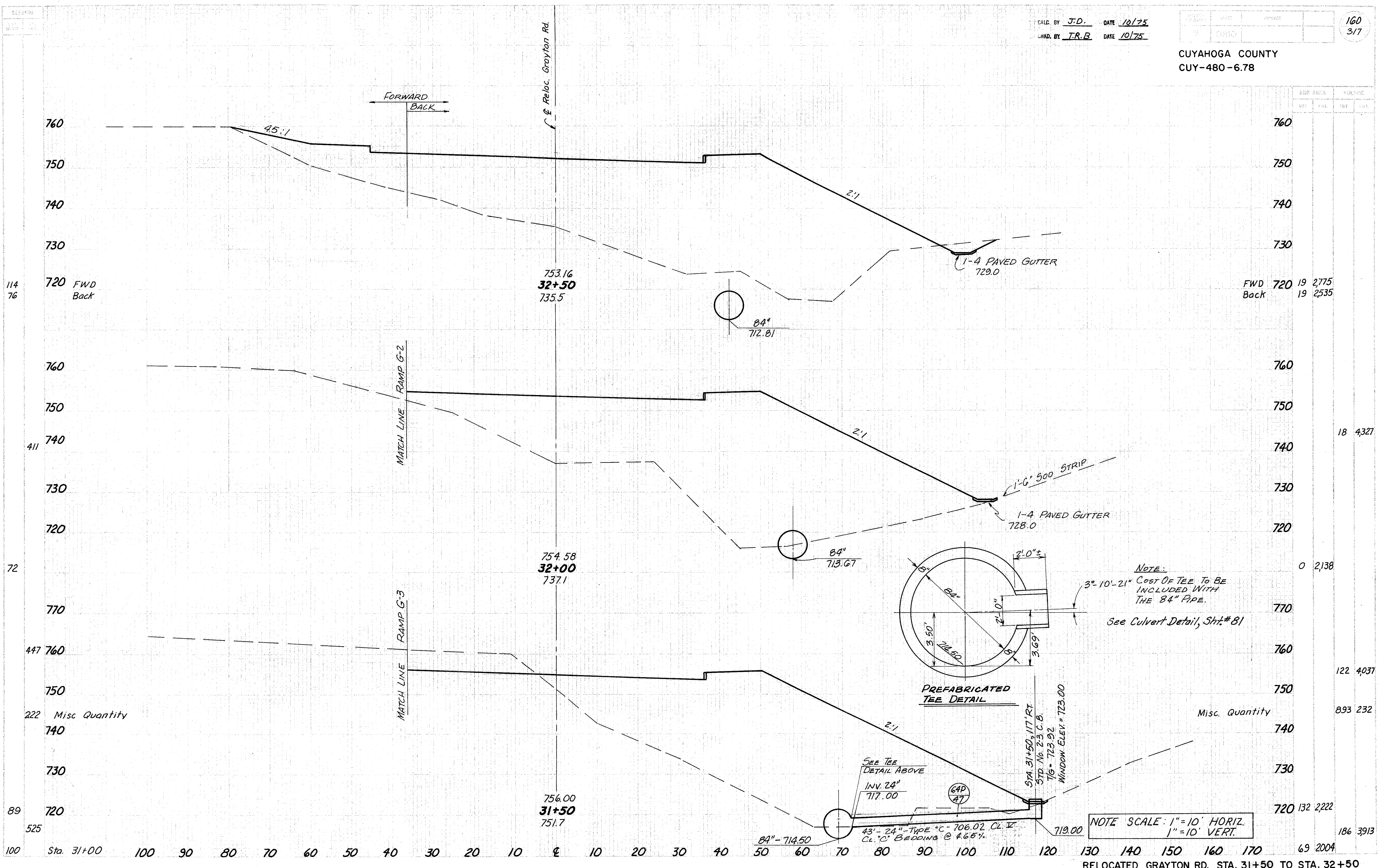
QUANTITY MATCH LINE

Sta. 29+50 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170  
 206 1050 745.0 755.6 733.0± 732.0± 720 478 2700

CALC. BY J.D. DATE 10/75  
 CHKD. BY J.R.B. DATE 10/75

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3/7

CUYAHOGA COUNTY  
 CUY-480-6.78



114  
76  
FWD  
Back

FWD  
Back

411

18 4,327

72

0 2,138

447  
760

122 4,037

222 Misc Quantity

Misc. Quantity

893 232

89  
525

132 2,222

186 3,913

NOTE SCALE: 1" = 10' HORIZ.  
 1" = 10' VERT.

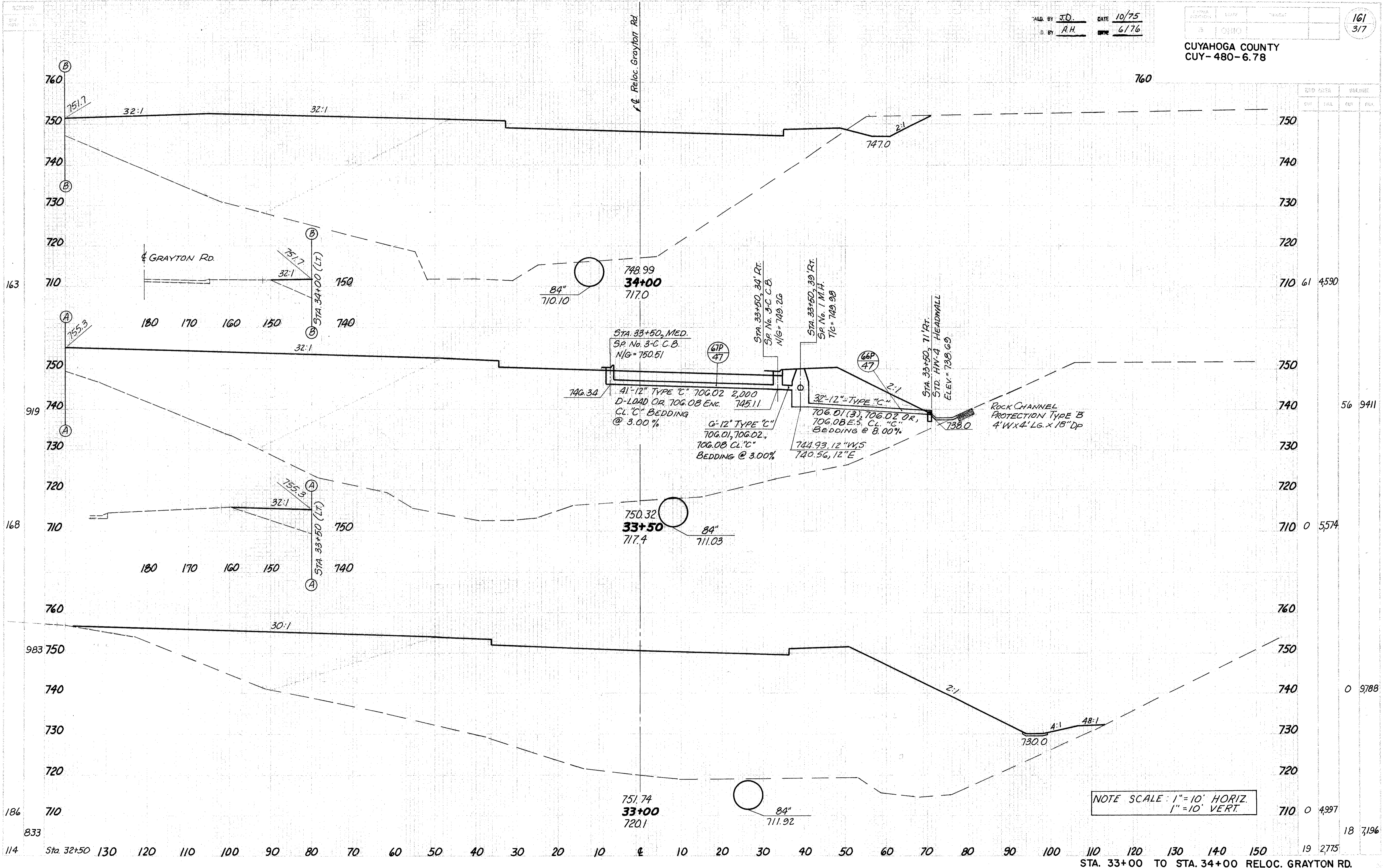
RELOCATED GRAYTON RD. STA. 31+50 TO STA. 32+50



DESIGNED BY J.D. DATE 10/75  
 DRAWN BY A.H. DATE 6/76

CUYAHOGA COUNTY  
 CUY-480-6.78

161  
 3/7

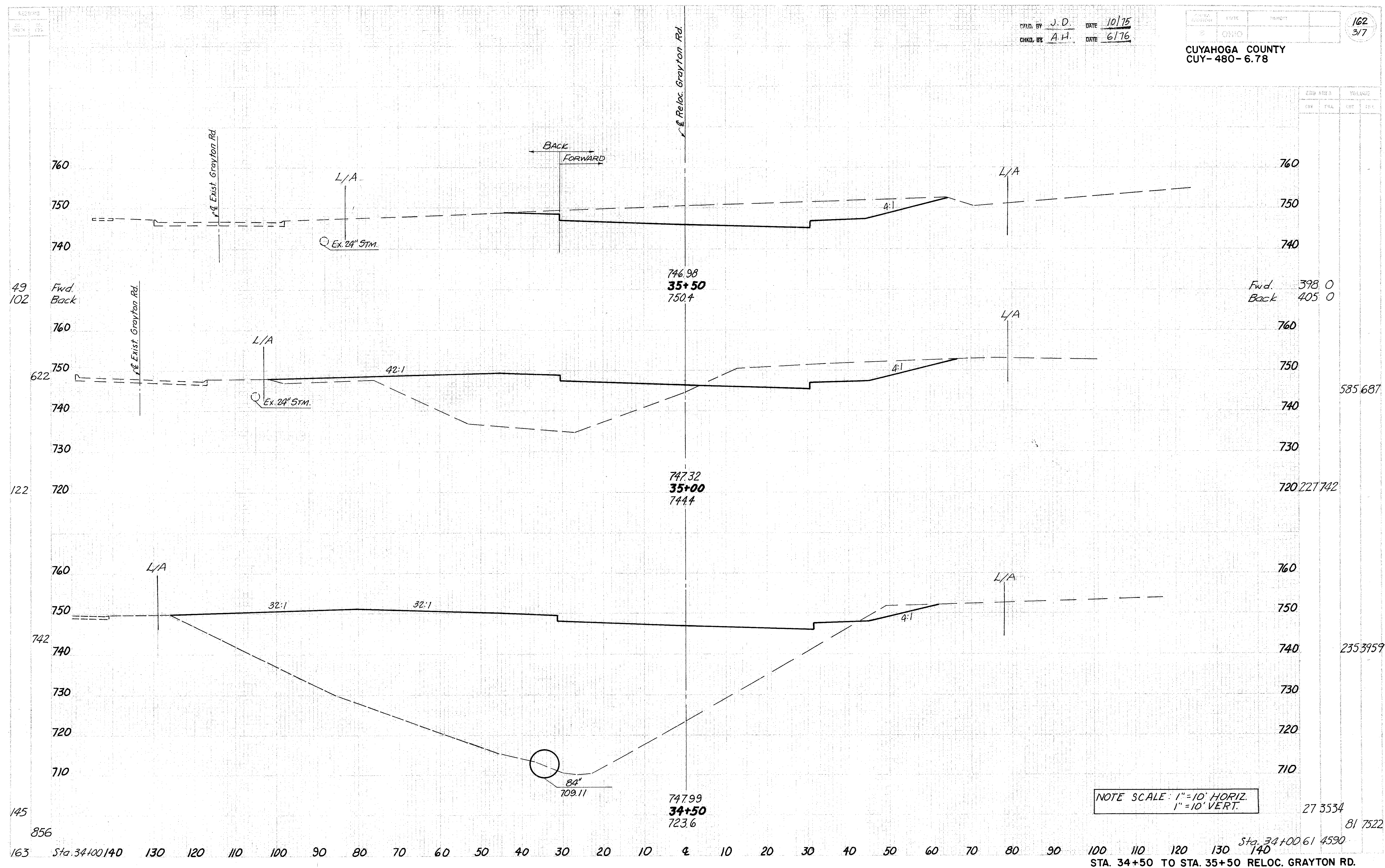


NOTE SCALE: 1" = 10' HORIZ.  
 1" = 10' VERT.

STA. 33+00 TO STA. 34+00 RELOC. GRAYTON RD.

CALD. BY J.D. DATE 10/75  
 CHD. BY A.H. DATE 6/76

CUYAHOGA COUNTY  
 CUY-480-6.78



49  
 102  
 Fwd.  
 Back

Fwd. 398 0  
 Back 405 0

122

585 687

720 227 742

145

235 3959

27 3534

81 7522

NOTE SCALE: 1" = 10' HORIZ.  
 1" = 10' VERT.

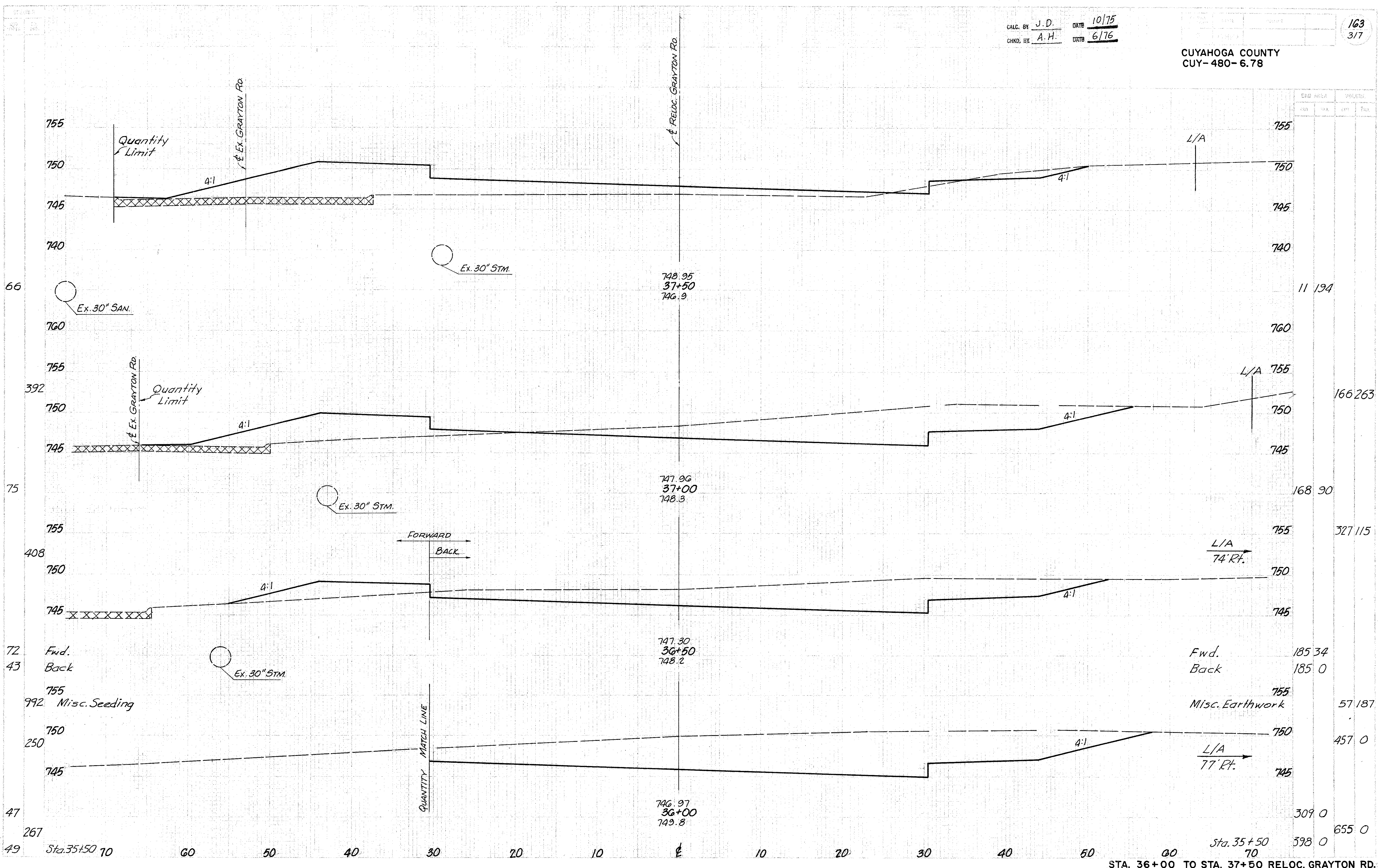
Sta. 34+00.61 4590

STA. 34+50 TO STA. 35+50 RELOC. GRAYTON RD.

CALC. BY J.D. DATE 10/75  
 CHKD. BY A.H. DATE 6/76

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3/7

CUYAHOGA COUNTY  
 CUY-480-6.78



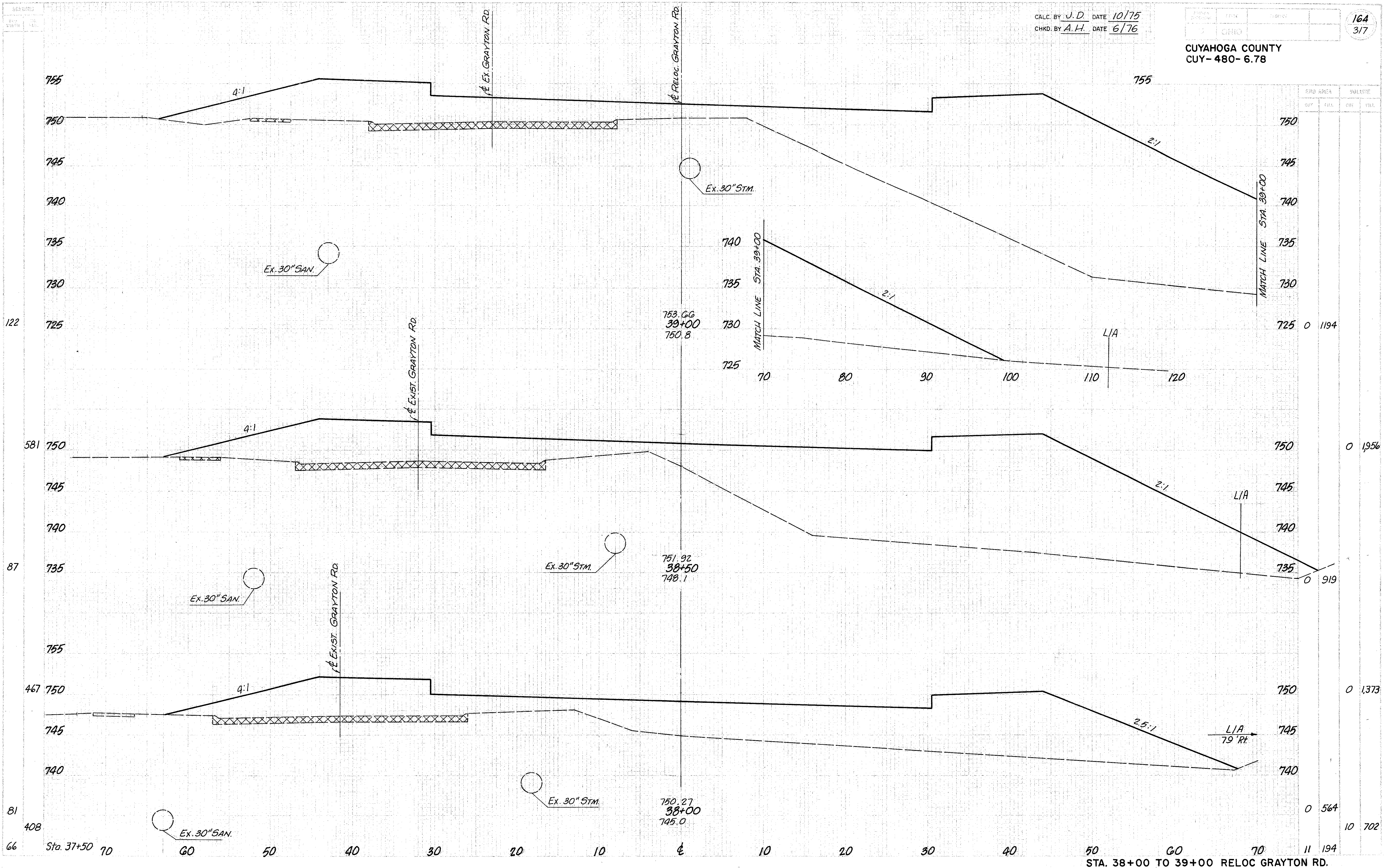
END AREA		VOLUMES	
SUB	TOTAL	CUT	FILL
66	11 194		
392	166 263		
75	168 30		
408	327 115		
72	185 34		
43	185 0		
992	57 187		
250	457 0		
47	309 0		
267	655 0		
49	598 0		

STA. 36+00 TO STA. 37+50 RELOC. GRAYTON RD.

CALC. BY J.D. DATE 10/75  
 CHKD. BY A.H. DATE 6/76

CUYAHOGA COUNTY  
 CUY-480-6.78

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 3/7



STATION	AREA		VOLUME	
	SUP.	TOT.	CUB.	YD.
1194				
1956				
919				
1373				
564				
702				
1194				

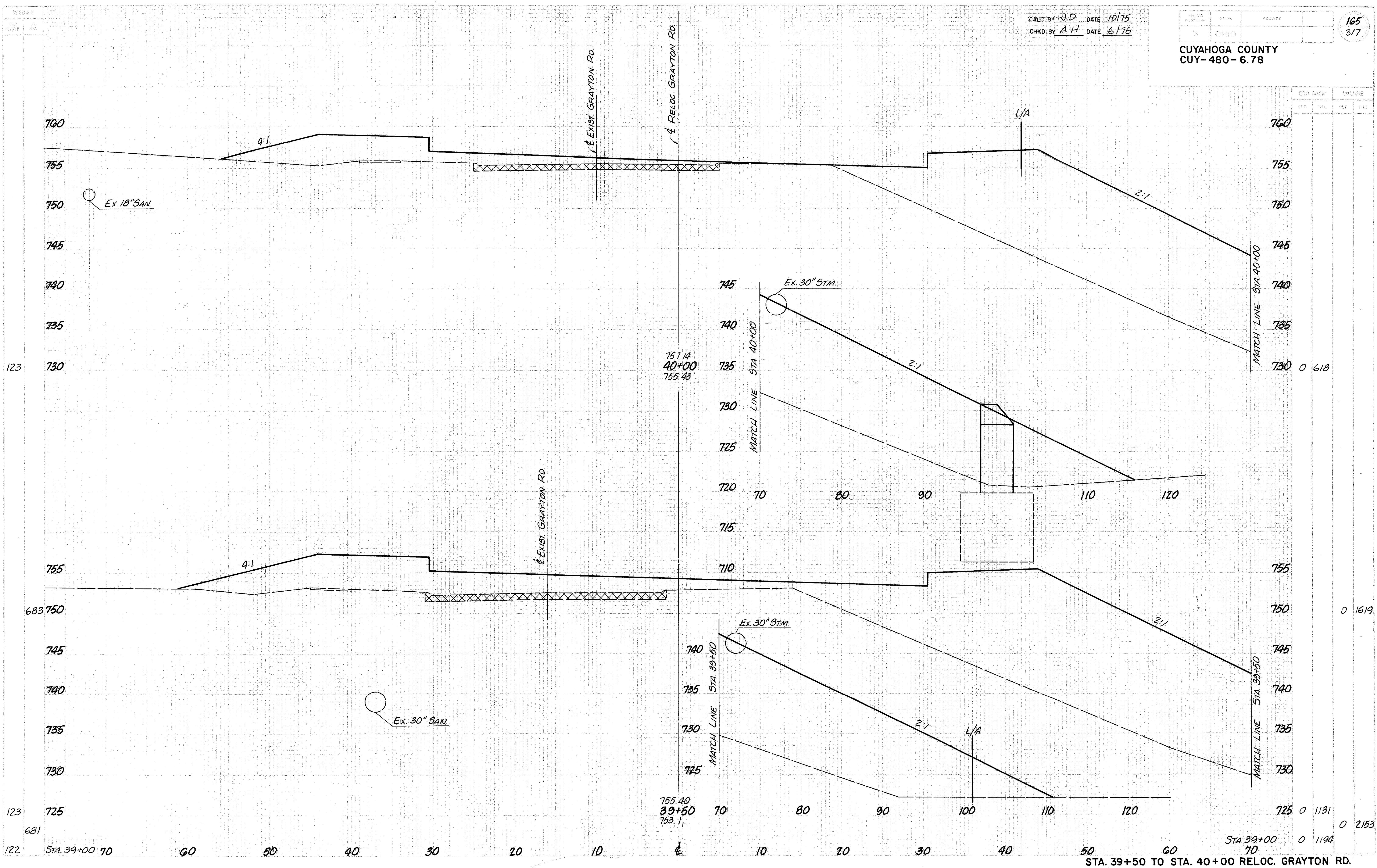
STA. 38+00 TO 39+00 RELOC GRAYTON RD.

CALC. BY J.D. DATE 10/75  
 CHKD. BY A.H. DATE 6/76

NO.	DATE	BY	REVISION

165  
3/7

CUYAHOGA COUNTY  
 CUY-480-6.78



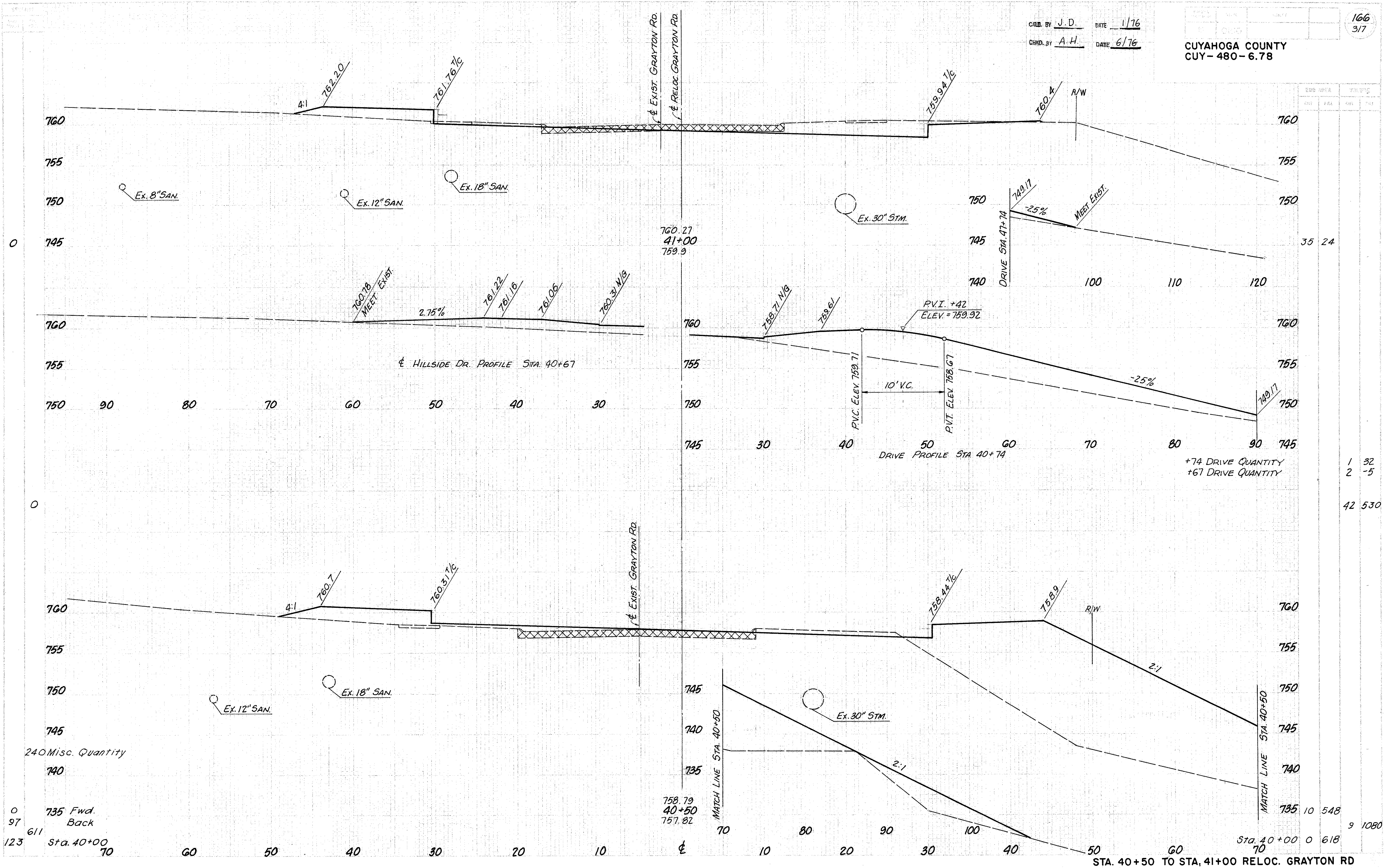
EXIST. QUANT.		VOL. MOVED	
CUB. YDS.	FEET	CUB. YDS.	FEET
0	618	0	1619
0	1131	0	2153
0	1194	0	

STA. 39+50 TO STA. 40+00 RELOC. GRAYTON RD.

CALL. BY J.D. DATE 1/76  
 CHND. BY A.H. DATE 6/76

CUYAHOGA COUNTY  
 CUY-480-6.78

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 3/7



240 Misc. Quantity  
 735 Fwd. Back  
 611  
 123 Sta. 40+00

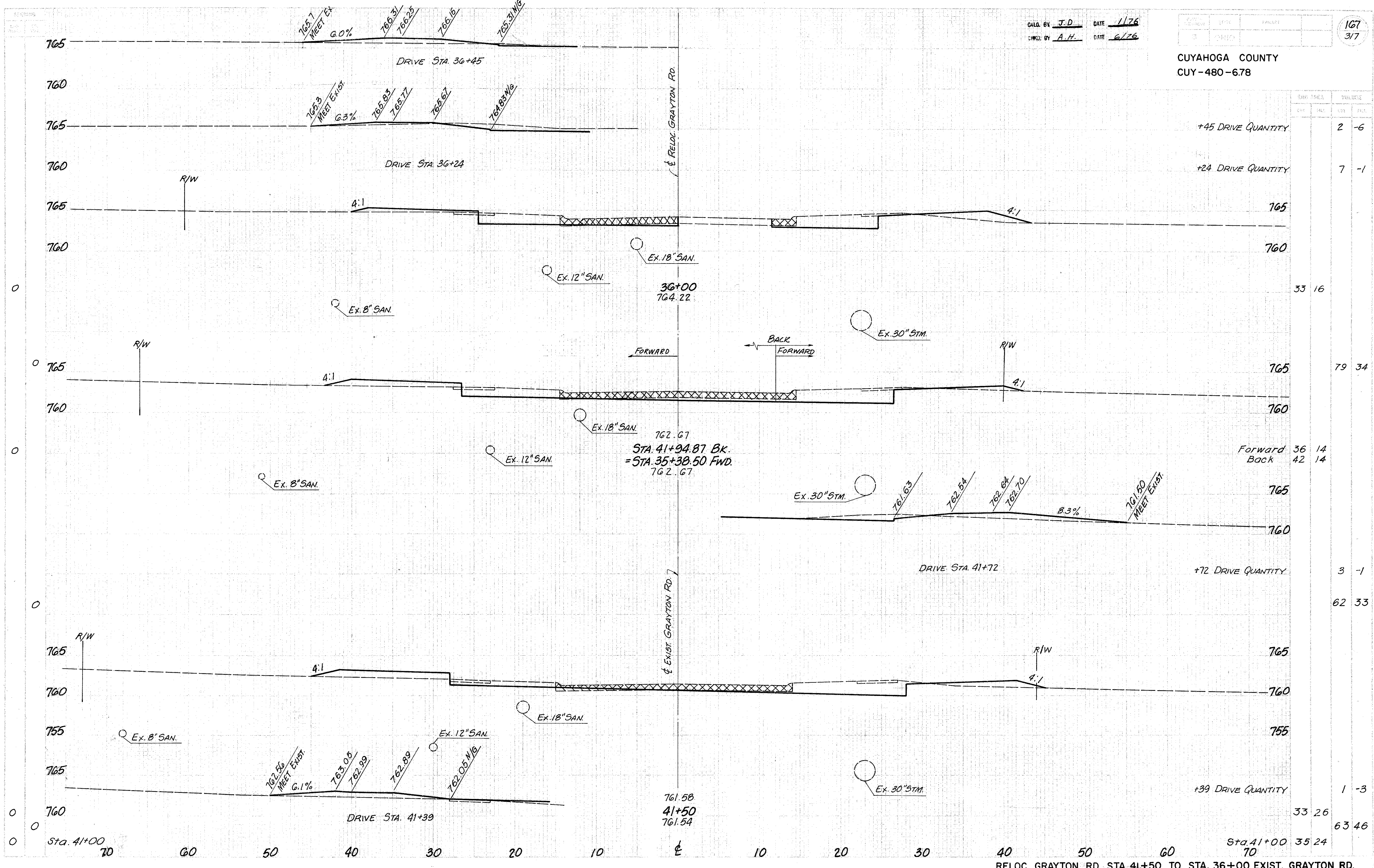
+74 DRIVE QUANTITY  
 +67 DRIVE QUANTITY

1 32  
 2 -5  
 42 530

STA. 40+50 TO STA. 41+00 RELOC. GRAYTON RD

CALC. BY J.D. DATE 1/76  
 CHKD. BY A.H. DATE 6/76

CUYAHOGA COUNTY  
 CUY-480-6.78



+45 DRIVE QUANTITY

+24 DRIVE QUANTITY

+72 DRIVE QUANTITY

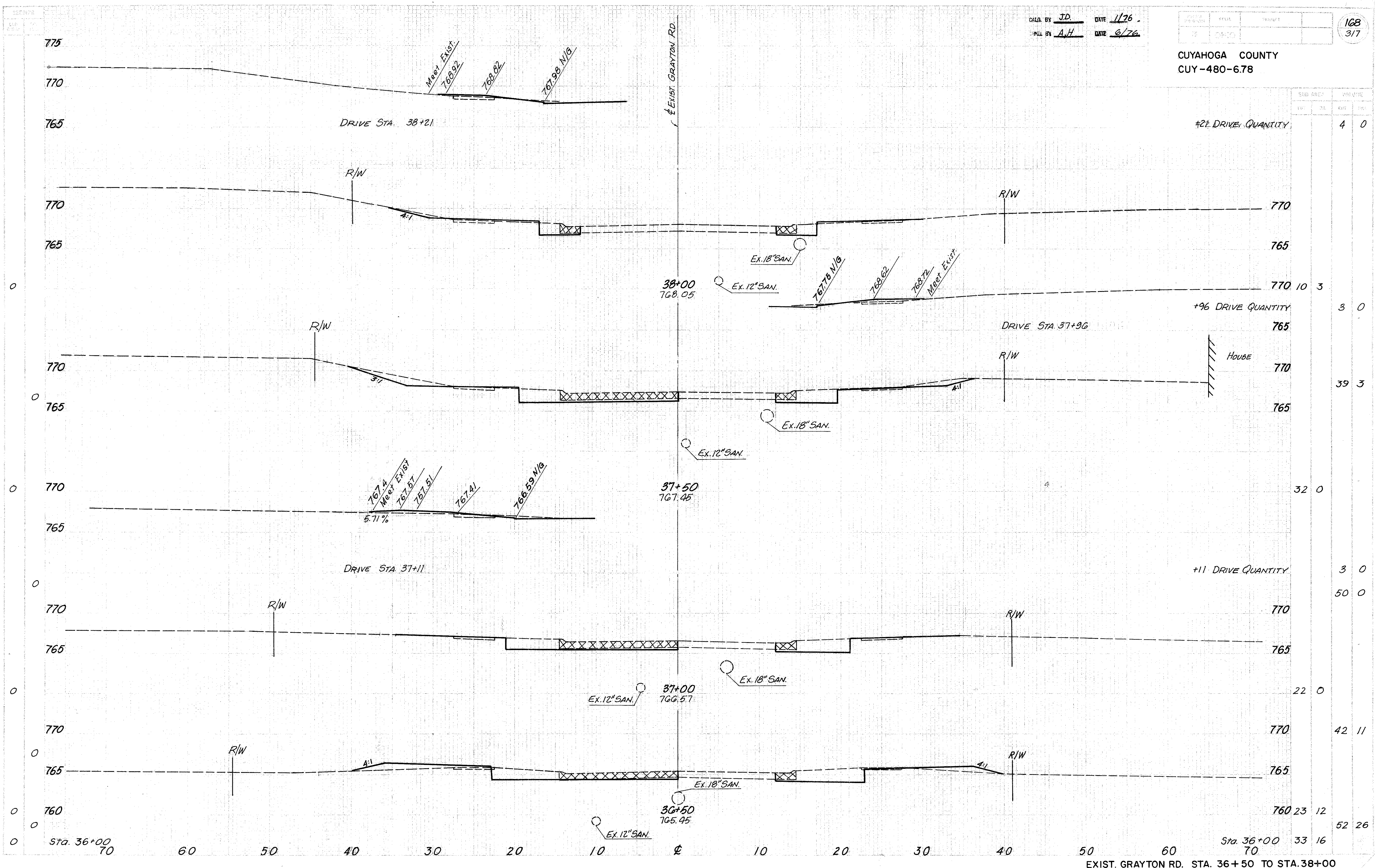
+39 DRIVE QUANTITY

SBR	TREN	MATERIALS	
		CUY	FTS
		2	-6
		7	-1
		33	16
		79	34
		36	14
		42	14
		62	33
		33	26
		63	46
		35	24

RELOC. GRAYTON RD. STA. 41+50 TO STA. 36+00 EXIST. GRAYTON RD.

CALLD BY J.D. DATE 11/76  
 INVD BY A.H. DATE 6/76

CUYAHOGA COUNTY  
 CUY-480-6.78



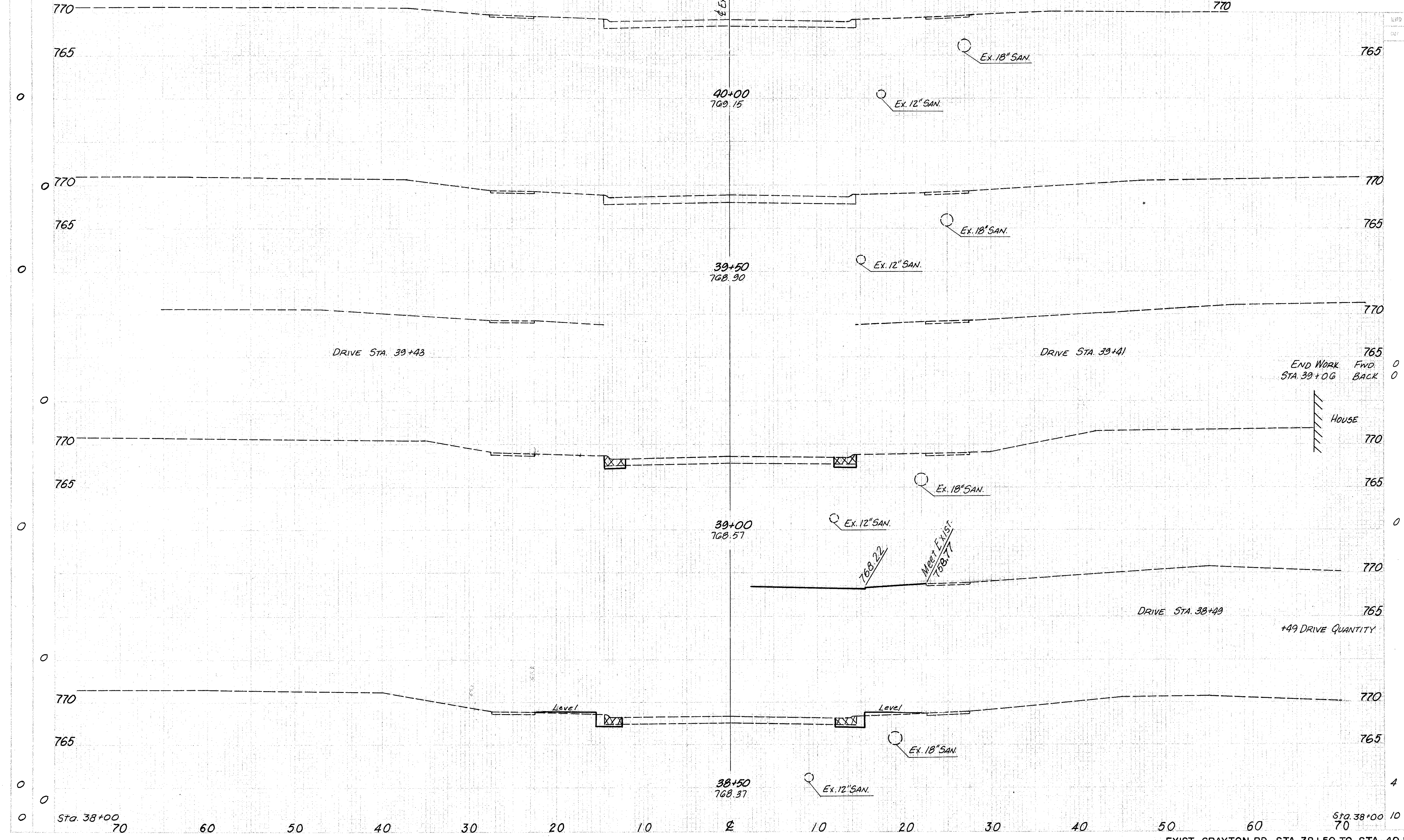
SUB AREA		VOLUME	
EST.	REL.	EST.	REL.
		4	0
		3	0
		39	3
		32	0
		3	0
		50	0
		22	0
		42	11
		760	23 12
		52	26
		33	16



DRAWN BY J.D. DATE 1/76  
 CHECKED BY A.H. DATE 6/76

NO.	DATE	BY	REVISION
169	3/7		

CUYAHOGA COUNTY  
 CUY-480-6.78



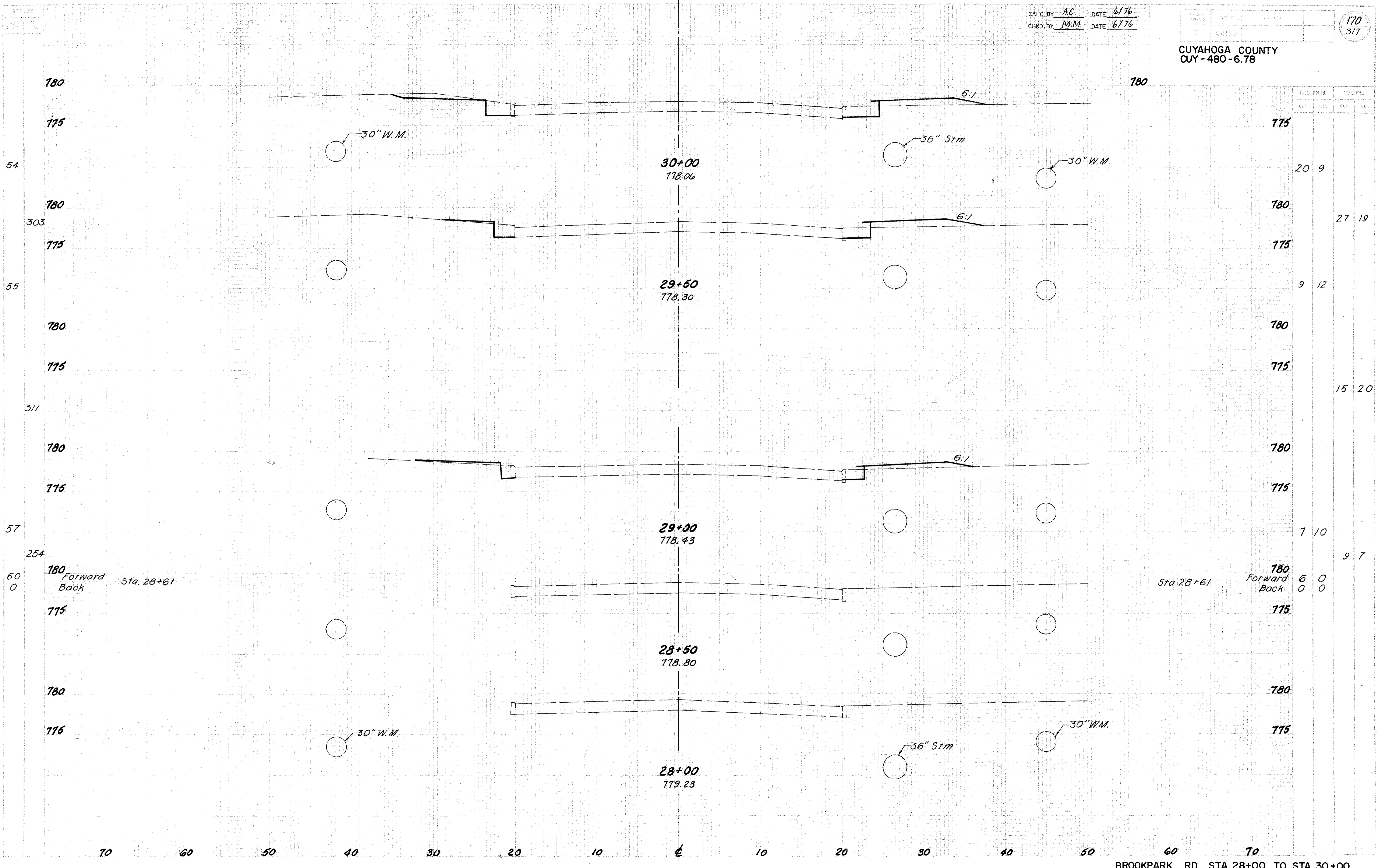
END WORK	FWD.	0	0
STA. 39+06	BACK	0	1

+49 DRIVE QUANTITY  
 4 3  
 2 0

L.P.D. AREA		VOLUME	
CUY.	TR.L.	CUY.	TR.L.
0	0	0	0
0	1	0	1
4	3	4	3
2	0	2	0
10	3	13	5

EXIST. GRAYTON RD. STA. 38+50 TO STA. 40+00

CALC. BY A.C. DATE 6/76  
 CHKD. BY M.M. DATE 6/76

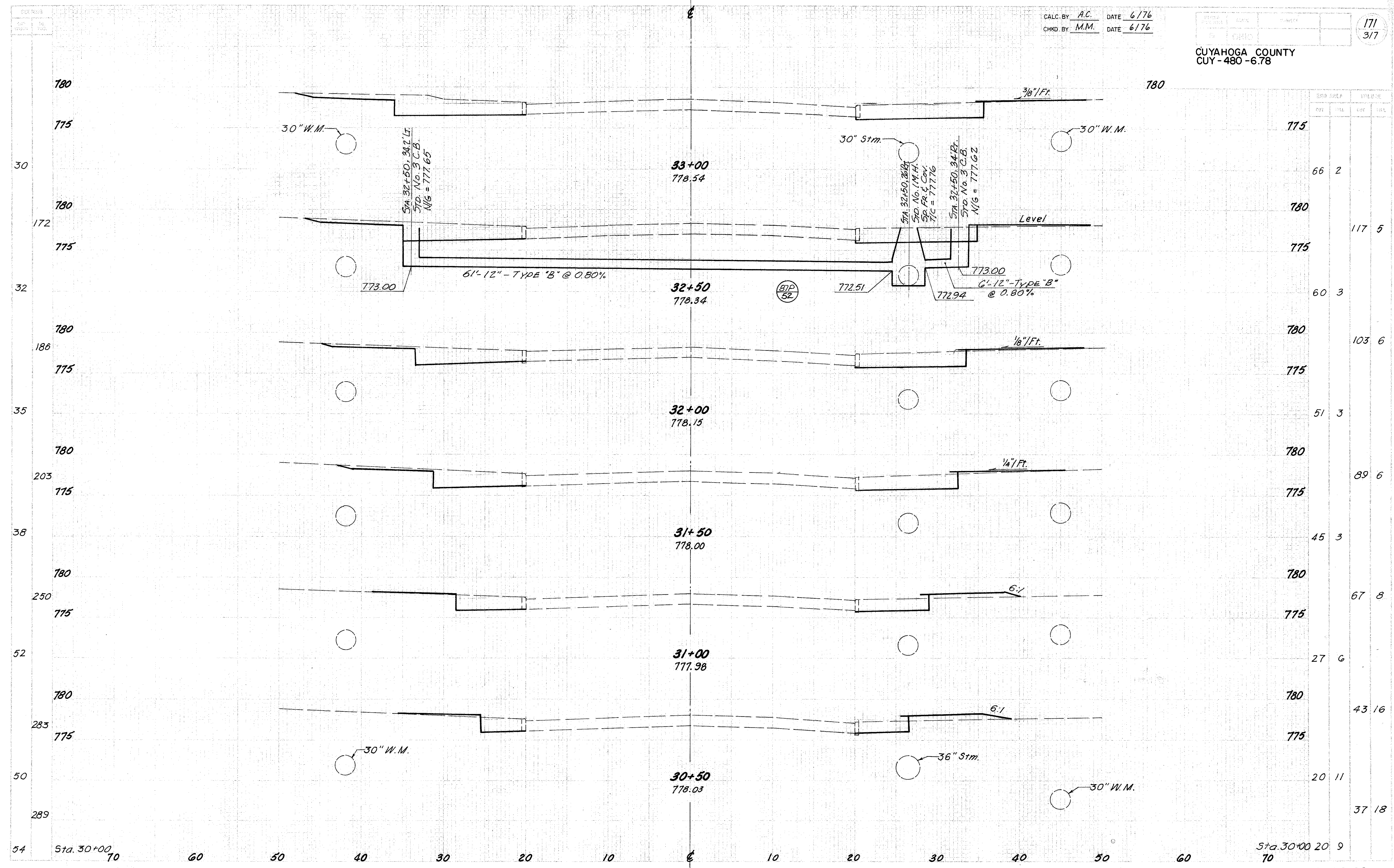


ROAD AREA		VOLUME	
CUT	FILL	CY	FEET
20	9		
27	19		
9	12		
15	20		
7	10		
6	0	9	7
0	0		

CALC. BY A.C. DATE 6/76  
 CHKO. BY M.M. DATE 6/76

CUYAHOGA COUNTY  
 CUY-480-6.78

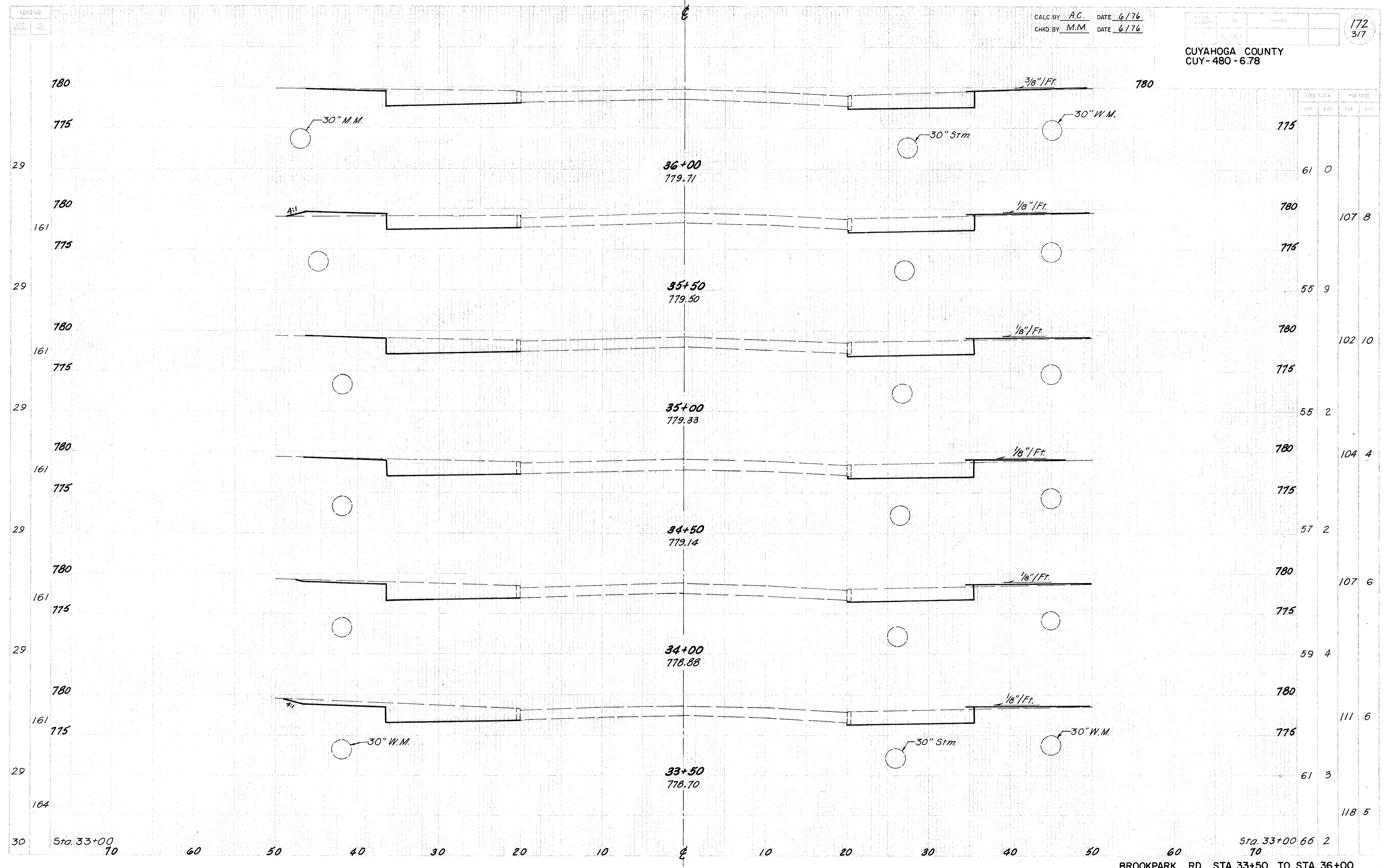
171  
 3/7



CALC. BY A.C. DATE 6/76  
 CHKD. BY M.M. DATE 6/76

CUYAHOGA COUNTY  
 CUY-480-6.78

172  
 3/7

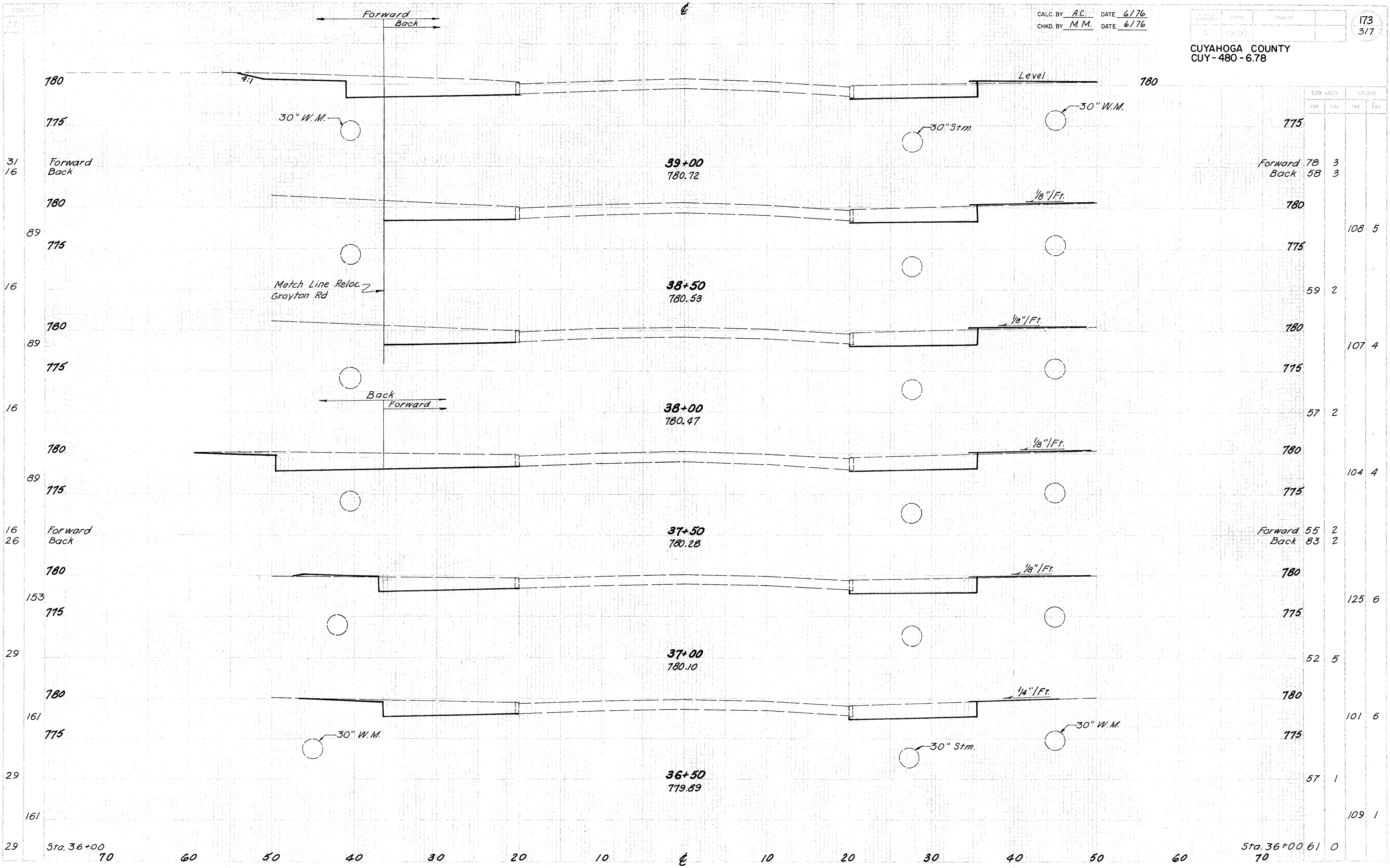


AREA		PERCENT	
AREA	PERCENT	AREA	PERCENT
61	0		
107	8		
55	9		
102	10		
55	2		
104	4		
57	2		
107	6		
59	4		
111	6		
61	3		
118	5		
66	2		

CALC. BY A.C. DATE 6/76  
 CHKD. BY M.M. DATE 6/76

CUYAHOGA COUNTY  
 CUY-480-6.78

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 3/7

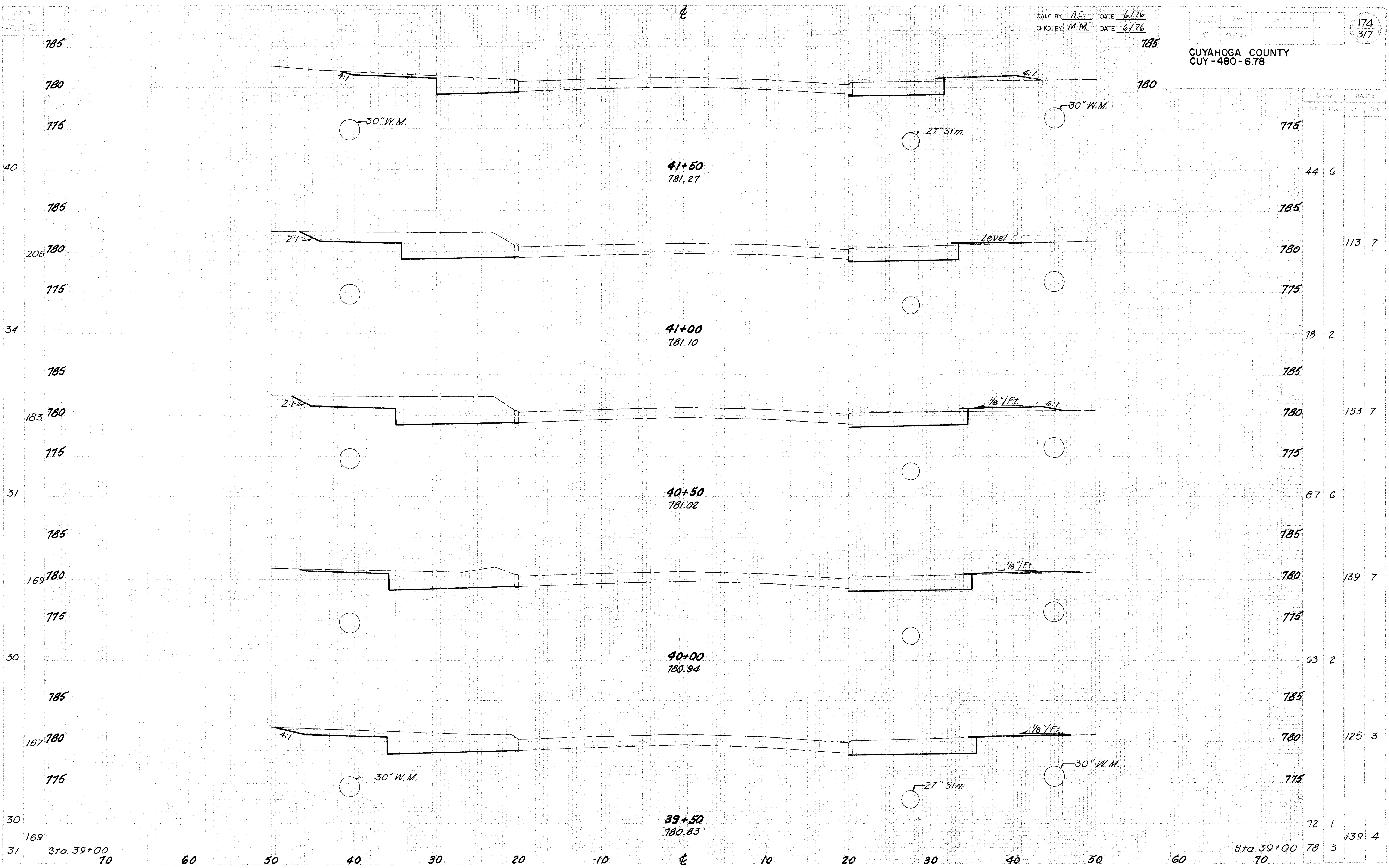


STATION	CROSS AREA		VOLUME	
	CUT	FILL	CUM.	TOT.
39+00	78	3		
38+50	58	3		
38+00	108	5		
37+50	59	2		
37+00	107	4		
36+50	57	2		
36+00	104	4		
35+50	55	2		
35+00	83	2		
34+50	125	6		
34+00	52	5		
33+50	101	6		
33+00	57	1		
32+50	109	1		

CALC. BY AC. DATE 6/76  
 CHKD. BY M.M. DATE 6/76


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3/7

CUYAHOGA COUNTY  
 CUY-480-6.78



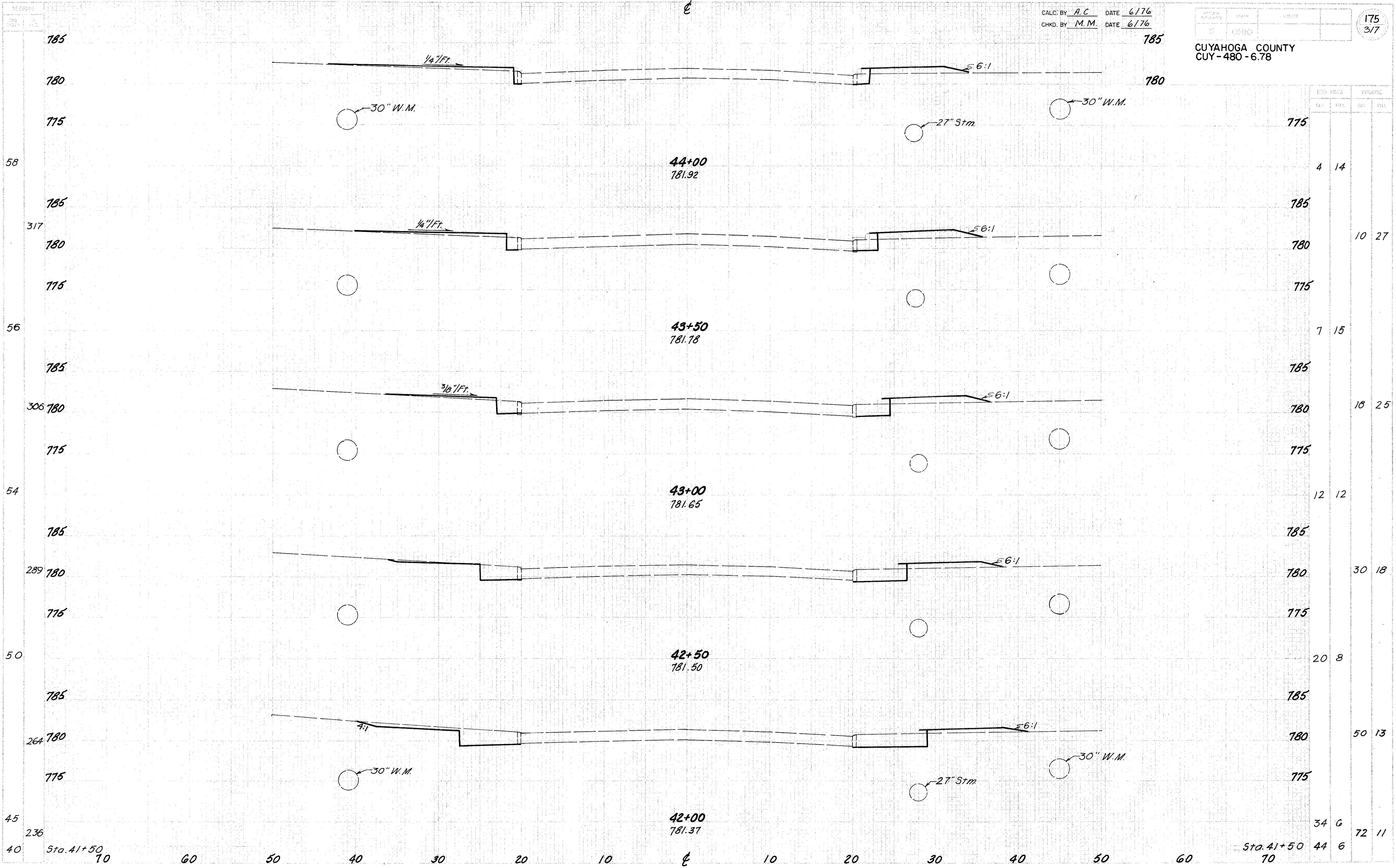
STATION	END AREA		VOLUME	
	CUT	FILL	CUT	FILL
775				
41+50			44	6
785				
206 780			113	7
775				
34 775			18	2
785				
183 780			153	7
775				
31 775			87	6
785				
169 780			139	7
775				
30 775			63	2
785				
167 780			125	3
775				
30 775			72	1
169 780			139	4
31 780			78	3

BROOKPARK RD. STA. 39+50 TO STA. 41+50

CALC. BY A.C. DATE 6/76  
 CHKD. BY M.M. DATE 6/76

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3/7

CUYAHOGA COUNTY  
 CUY-480-6.78



EMBANK		DITCH	
FEET	PERCENT	FEET	PERCENT
4	14		
10	27		
7	15		
18	25		
12	12		
30	18		
20	8		
50	13		
34	6		
44	6		
72	11		

BROOKPARK RD. STA. 42+00 TO STA. 44+00



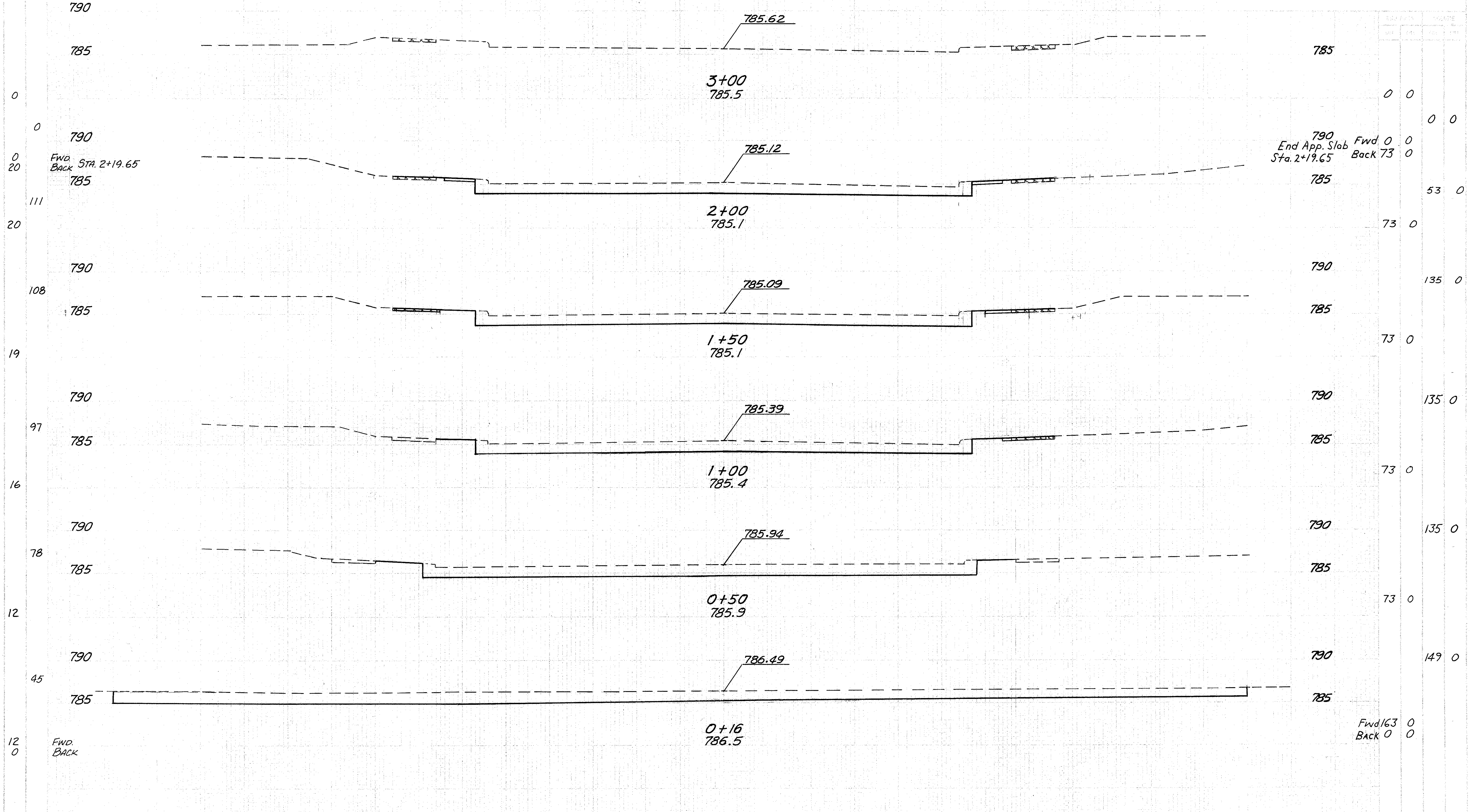


60 50 40 30 20 10 £ 10 20 30 40 50

CALC. BY J.D. DATE 10/75  
CHKD. BY T.R.B. DATE 10/75

CUYAHOGA COUNTY  
CUY-480-6.78

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3/7



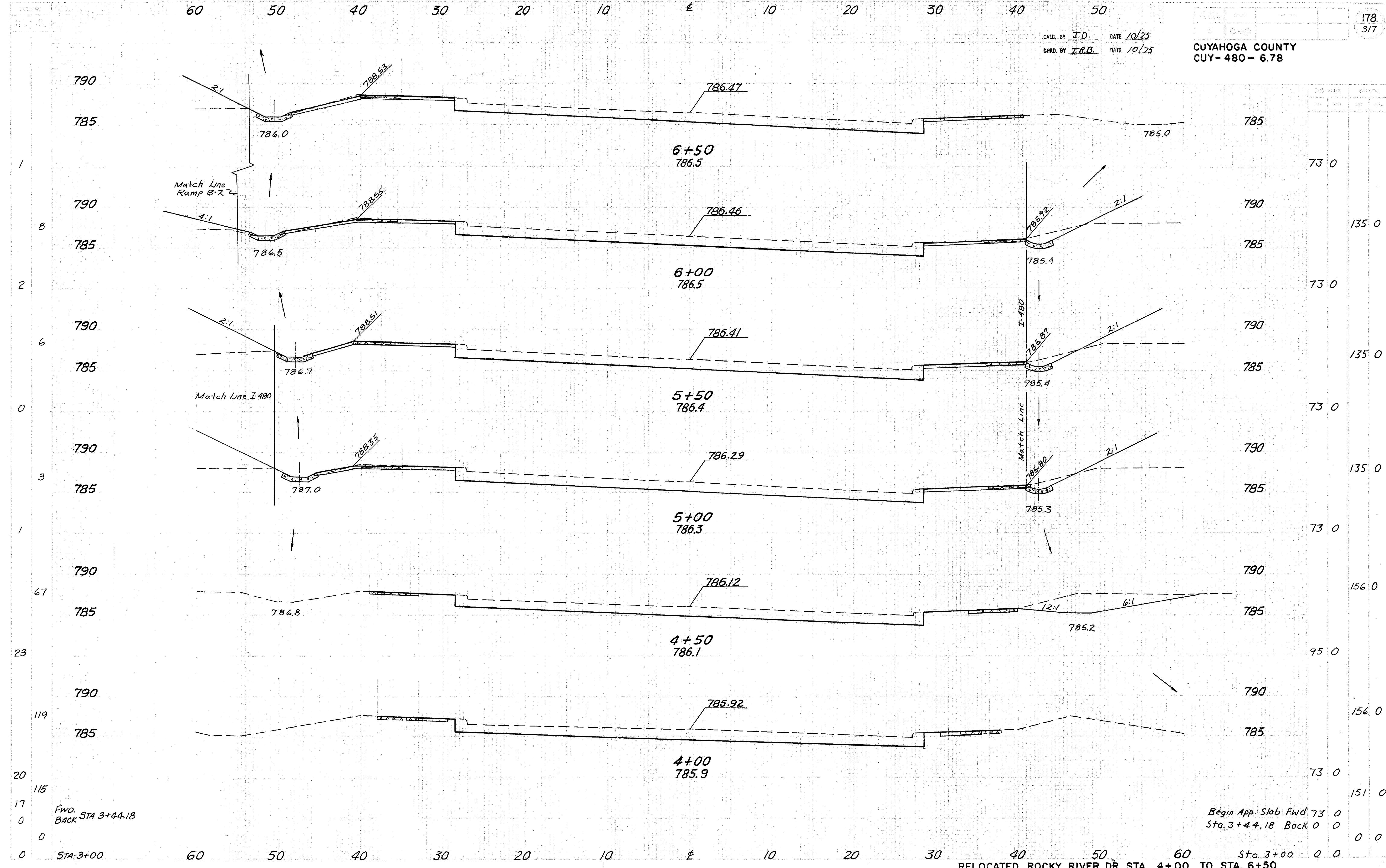
FWD. STA. 2+19.65  
BACK

790  
End App. Slob Fwd 0  
Sta. 2+19.65 Back 73

STATION	790	785
0+16	149	0
0+50	73	0
1+00	73	0
1+50	73	0
2+00	73	0
3+00	0	0

CALC. BY J.D. DATE 10/75  
CHKD. BY T.R.B. DATE 10/75

CUYAHOGA COUNTY  
CUY-480-6.78



FWD. STA. 3+44.18  
BACK STA. 3+44.18

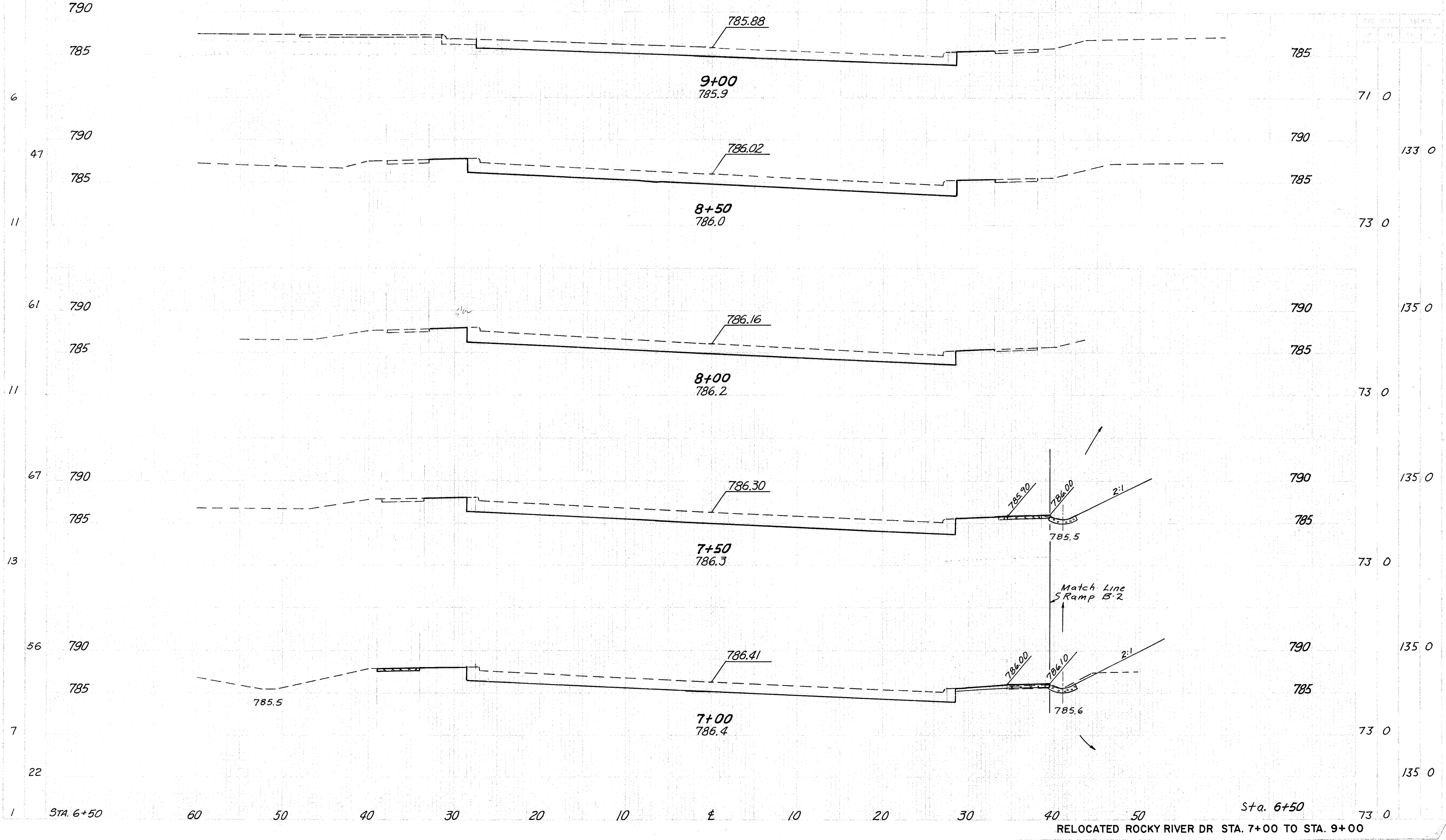
Begin App. Slob. Fwd 73 0  
Sta. 3+44.18 Back 0 0

RELOCATED ROCKY RIVER DR STA. 4+00 TO STA. 6+50

60 50 40 30 20 10 0 10 20 30 40 50

CALC. BY J.D. DATE 10/75  
CHKD. BY JRB DATE 10/75

CUYAHOGA COUNTY  
CUY-480-6.78

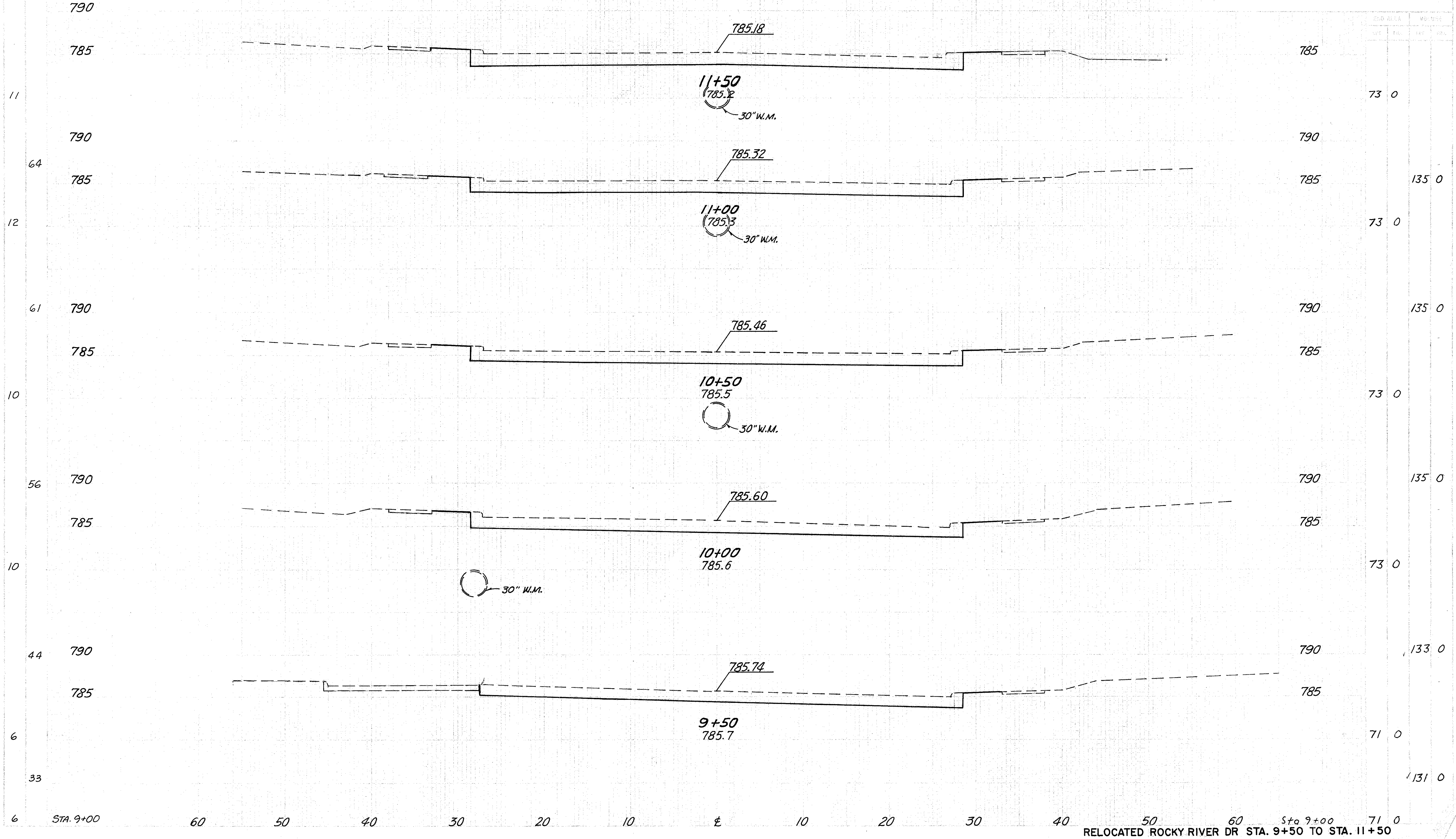


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CALC. BY J.D. DATE 10/75  
CHKD. BY T.R.B. DATE 10/75

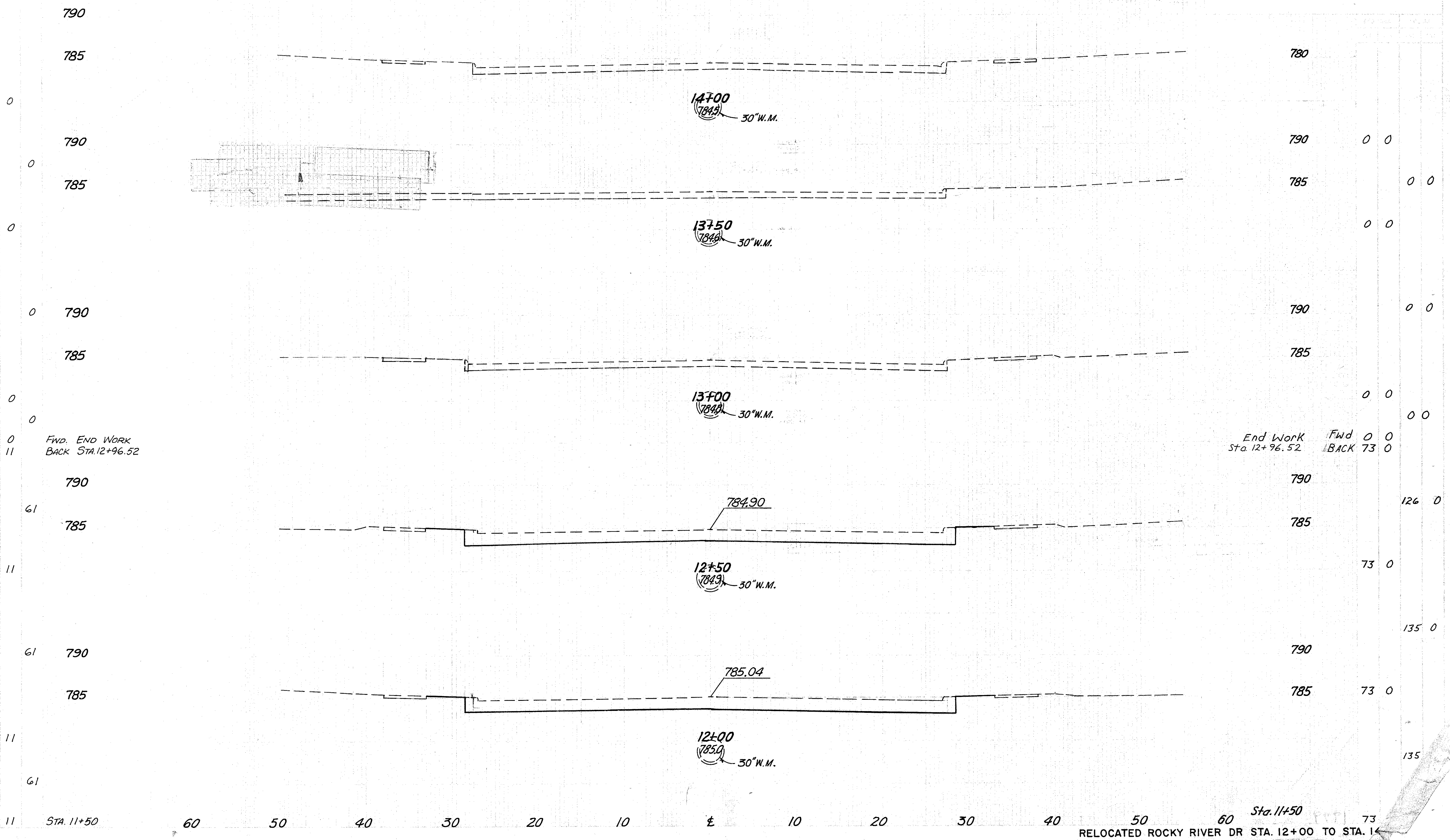
CUYAHOGA COUNTY  
CUY-480-6.78

180  
3/7



CALC. BY J.D. DATE 10/75  
CHKD. BY TRB DATE 10/75

CUYAHOGA COUNTY  
CUY-480-6.78



0 Fwd. END WORK  
11 BACK STA. 12+96.52

End Work Fwd 0 0  
Sta. 12+96.52 BACK 73 0

790	0	0
785	0	0
790	0	0
785	0	0
790	0	0
785	0	0
790	0	0
785	0	0
790	0	0
785	0	0
790	126	0
785	73	0
790	135	0
785	73	0
790	135	0

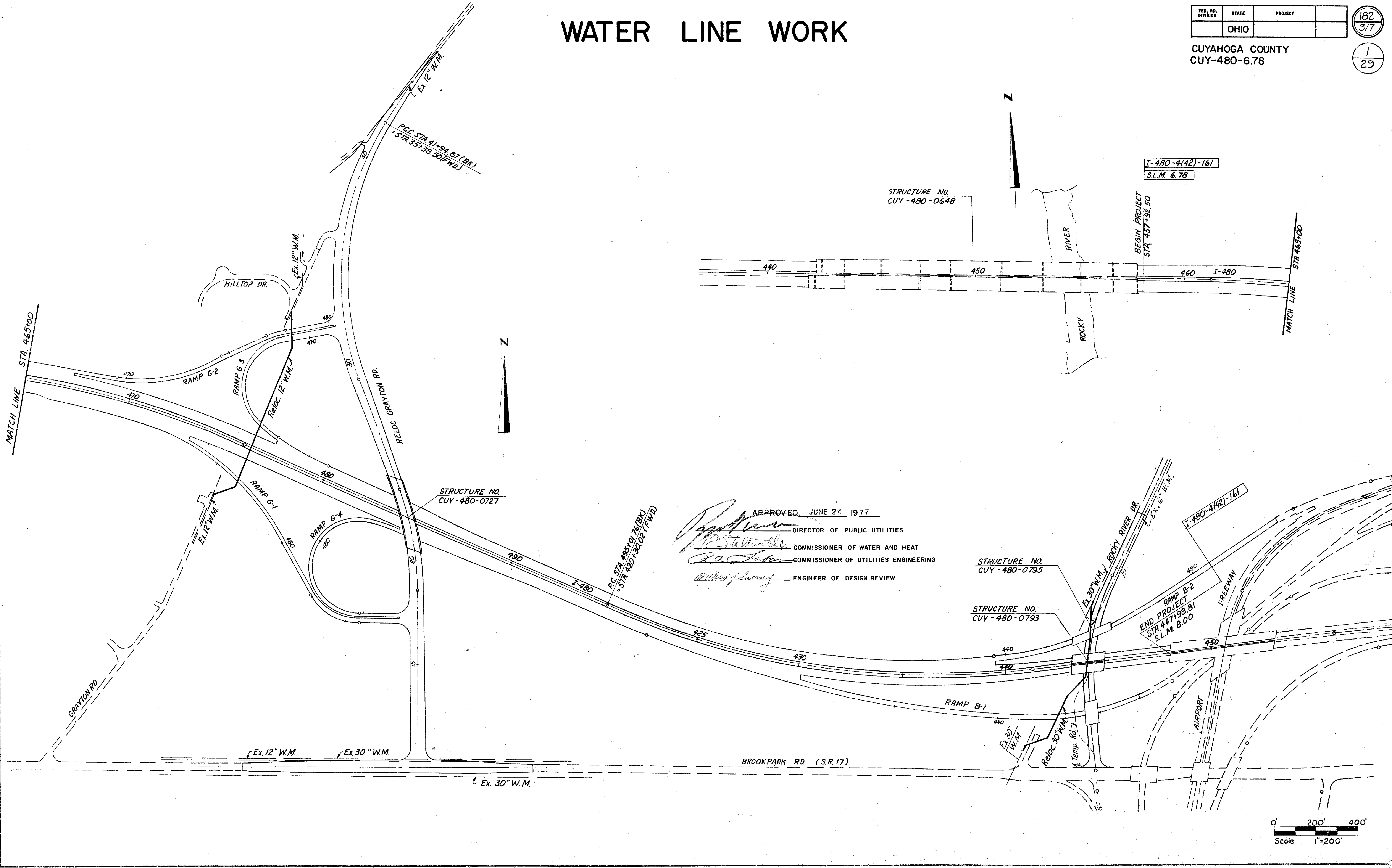
# WATER LINE WORK

FED. RD. DIVISION	STATE	PROJECT	
	OHIO		

182  
317

CUYAHOGA COUNTY  
CUY-480-6.78

1  
29



APPROVED JUNE 24, 1977

*[Signature]* DIRECTOR OF PUBLIC UTILITIES  
*[Signature]* COMMISSIONER OF WATER AND HEAT  
*[Signature]* COMMISSIONER OF UTILITIES ENGINEERING  
*[Signature]* ENGINEER OF DESIGN REVIEW

WATER MAIN WORK - SCHEMATIC PLAN

# WATERWORK SUMMARY

CALD. BY W.A.M. DATE 6/76  
 CHKD. BY B.B. DATE 7/76

FED. NO. DIVISION	STATE	PROJECT
2	OHIO	

CUYAHOGA COUNTY  
 CUY- 480 - 6.78

183  
3/7

2  
29

ITEM	SHEET NUMBERS												GRAND TOTAL	UNIT	ITEM	DESCRIPTION	
	186	203	204	205	206	207	208	209	210	428	425						
Special														853	Lin. Ft.	Special	<b>WATERWORK - TYPE CODE Y060</b> 30" Prestressed Concrete Cylinder Pipe And Fittings A.W.W.A. C-301-64
Special					200	450	368							4,018	Lin. Ft.	Special	12" Water Main A.S.A. Class 6 Ductile Iron Pipe With Ductile Iron Fittings Class "D", Cement Lined With Push-On Boltless Restrained Joints (SEE NOTE BELOW)
Special													5	5	Lin. Ft.	Special	8" Water Main A.S.A. Class 25 Cast Iron Pipe With Cast Iron Fittings Class "D", Cement Lined (SEE NOTE BELOW)
Special													10	10	Lin. Ft.	Special	6" Water Main A.S.A. Class 25 Cast Iron Pipe With Cast Iron Fittings Class "D", Cement Lined, All Lead Joints
Special														2	Each	Special	12" Cutting-In Valve And No. 4 Valve Box, Complete
Special														1	Each	Special	8" Hub Valve And No. 3 Valve Box, Complete
Special														4	Each	Special	2" Air Cock and No. 7 Valve Box, Complete
Special														1	Each	Special	3/4" To 1" Water Meter Relocated
Special														1	Each	Special	3/4" To 1" Meter Vault
Special														4	Each	Special	Service Connection Extended
Special														2	Each	Special	4" Drain Complete
Special														2	Each	Special	4" Drain Vault
Special														9	Each	Special	Adjust Waterworks Structure To Grade
Special														11	Each	Special	Adjust Valve Box To Grade
Special														2	Each	Special	Fire Hydrant Relocated
Special														2	Each	Special	Fire Hydrant Relocated, As Per Plan
Special														3	Each	Special	Adjust Fire Hydrant and Valve Box To Grade
Special														1	M.B.M.	Special	Sheeting Left In Place

NOTE: SEE "PUSH ON AND BOLTLESS RESTRAINED JOINT"  
 NOTE SHEET No. 189

**SCOPE OF WORK**

The work contemplated under this contract comprises the furnishing and installing complete with valves, fire hydrants and other appurtenances, the following water main relocations and performing other incidental work necessary to abandon existing water facilities.

- 1. Grayton Road - 12" ductile iron pipe - permanent relocation on the east side crossing I-480.
- 2. Rocky River Drive - 30" prestressed concrete cylinder pipe - permanent relocation on the east side crossing I-480.

The Contractor shall do all the work and furnish all the labor and material necessary for the final completion of this contract in the manner and under the conditions herein specified and provided and in accordance with the contract drawings.

**DEFINITIONS**

Whenever in these specifications or in any documents or instructions in construction where these specifications govern, the following terms are used, (or pronouns in place of them), the intent and meaning shall be interpreted as follows:

**THE STATE**

The State is the State of Ohio acting through its authorized representative.

**ENGINEER**

The Engineer is the Division Deputy Director or Division Engineer, The Division Construction Engineer or the Division Maintenance Engineer, or the Project Engineer assigned to administer the contract.

**THE CITY, OR THE CITY OF CLEVELAND**

The City, or the City of Cleveland, is the Director, Department of Public Utilities, of the City of Cleveland.

**STATUS OF CITY INSPECTOR**

Inspectors as designated by the Director of Public Utilities shall be authorized to inspect all work done and materials furnished. Such inspection may extend to all or any part of the waterworks, and to the preparation or manufacture of the materials to be used in the waterworks. The city inspector as designated by the Director of Public Utilities shall make work instructions through the Project Engineer.

**ACCESS TO WORK AND PLACE OF MANUFACTURE**

The Contractor shall notify the Engineer and Director of Public Utilities, at least seven (7) days previous to

# WATERWORK NOTES

the commencement of the manufacture of any materials, of the time and place where the manufacture is to commence, in order that a representative of the Engineer and Director may be present to inspect the manufacture. The Contractor shall provide, without charge or expense to the State and City, all necessary assistance to the Engineer and Director when required for inspection or verification of work done.

**DIMENSIONS, DETAILED DRAWINGS AND ELEVATIONS**

Figured dimensions on drawings shall take precedence over measurements by scale, and detailed drawings are to take precedence over general drawings and shall be considered as explanatory of them and not as indicating extra work. If, however, any of the detailed drawings show more elaborate or expensive work than is specified and indicated by the contract drawings, notice thereof must be given to the Engineer by the Contractor within ten (10) days after the receipt of such detailed drawings in order that the drawings may be amended or the additional expense on account of such work may be adjusted and authorized. If the Engineer does not receive such notice from the Contractor within ten (10) days after detailed drawings have been received by him, it is hereby agreed that the Contractor accepts the drawings and will execute them without claim for extra compensation.

**FLOODS AND FREEZING WEATHER**

Proper facilities shall be provided for protecting the work from damage by flood, rain or frost, and work done in freezing weather shall be done in such manner as the Engineer may approve. Valves shall be protected from freezing until backfilled in the completed work.

**ADDITIONAL WORK**

(A) - Attention is called to the fact that the work of this contract includes certain performances as incidental to the itemized requirements hereof, though not exclusive as follows: To perform all excavation, backfilling, sheeting, shoring, temporary and final repaving and to test the installation. Sand backfill shall be placed under existing and proposed pavement. For the performances herein described and for other incidental performances of like nature, the State will make no specific or separate payment or allowance, but the cost thereof shall be included in the prices stipulated to be paid for the various items of the work to be done under this contract.

(B) - Preliminary flushing: Before being placed in service all dirt and foreign matter shall be removed from the new water main or extensions to existing mains by a thorough flushing through the hydrants or by other approved means. Each valved section of newly laid pipe shall be flushed independently. This shall be done after the pressure test and may be done before or after the trench shall have been backfilled.

(C) - Chlorination: Following the preliminary flushing, the newly laid water pipe shall be chlorinated. The process of chlorinating, the method of procedure, the chlorinating agent and the rate of application shall be determined by the Engineer. The City of Cleveland will furnish the necessary labor and material required for such chlorination and install the necessary taps at the ends of the water main sections to be chlorinated. No charge will be assessed the Contractor for any material, labor, tools, equipment and incidentals furnished by the City of Cleveland, Division of Water. The Contractor shall furnish the necessary labor for excavating and backfilling which will be required for the installation of taps for injecting the chlorine solution, operating pumps and flushing mains.

(D) - Final flushing and test: Following chlorination, all treated water shall be thoroughly flushed from the newly laid pipe at its extremities until the replacement

water throughout its length shall, upon test, both chemically and bacteriologically, be proven equal to the water quality served the public from the existing water supply system.

(E) - For the performances described in paragraphs B, C and D, the State will make no specific or separate payment or allowances, but the cost thereof shall be included in the prices stipulated to be paid for each linear foot of pipe furnished and installed.

**MAINTENANCE OF SERVICE AND CONNECTING RELOCATED MAINS**

The Contractor shall follow strictly the sequence of construction shown on the plans. All existing fire hydrant leads and house services shall be hand tunneled using special care to avoid any damage which might require shutting down the existing main until the new main is ready to be placed in service.

When the new mains have been tested and chlorinated and are ready to be connected to the old main, the Contractor shall make such connections at a time designated by the City. Prior to shutting down the existing mains, the Contractor shall take suitable precautions to assure a minimum interruption to service, including the following:

1. Perform all necessary excavation, including bell holes exposing the existing main sufficiently for the operation of the pipe saw by the City.
2. Remove the cap or plug from the end of the new main.
3. Swab the inside of all pipes, bends and sleeves to be used in connection thoroughly with a chlorine solution of at least 100 p.p.m.
4. Make-up as much of the connection as possible outside the ditch to eliminate the need for caulking most of the necessary joints during the shutdown. By careful measurement all pipe cuts can be made by the Contractor prior to shutting down.
5. Have sufficient manpower and equipment on the site to perform the operation in a minimum of time.

**PAINTING**

(A) - It is the intention of these specifications to provide that all metal work subject to corrosion shall be satisfactorily protected by a durable coating of paint or other approved material and that all metal surfaces not buried in earth, or in concrete, shall be left clean and well painted at the completion of the contract. Unless otherwise specified, the protection shall be at least that given by three (3) coats of approved paint. The first coat is to be applied at the shop before the metal has rusted and after all grease, dirt and scale has been removed. Bolts and nuts shall not be shop coated, but shall receive three (3) coats of approved paint after installation.

APPROVED JUNE 24, 1977

*William J. ...* ENGINEER OF DESIGN REVIEW

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<b>ST HIGH SERVICE DISTRICT</b>
DEPARTMENT OF PUBLIC UTILITIES DIVISION OF WATER AND HEAT CLEVELAND, OHIO
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# WATERWORK NOTES

(B) - All metal work which has not been coated before the arrival on the job shall be given a temporary protective coating of such a nature as to permit the ready adherence of future coatings. The temporary coating shall be a good grade asphaltic paint or other approved material. This temporary protection shall apply particularly to the valve boxes and covers, manhole rings and covers, ladders and ladder rungs and elsewhere when in the opinion of the Engineer, such protection is necessary.

(C) - All surfaces of metal which will be in contact after assembling shall be painted, at least one coat, before assembling. The final coat of paint on all exposed work shall be given shortly before the completion of the contract.

(D) - Where painting clauses appear hereinafter, they shall take precedence over this section, except that temporary protection herein described may be required.

(E) - All of this work shall be included in the price bid for the particular item requiring the painting.

## TESTS, INSPECTION AND REPORTS

Notwithstanding the requirements of any other provisions of these specifications, the Contractor shall arrange for and pay all costs involved for shop inspection of all materials furnished, manufacture of all pipe, valves, fittings, etc., field and shop welds and welding, and furnish to the State and the City of Cleveland copies of all shop, fabrication, manufacture and other related inspection reports of materials furnished. This inspection shall be done by a recognized inspection laboratory approved by the City of Cleveland. In the case of any item not specifically mentioned in the "Waterwork Notes", the State of Ohio Department of Highways "Construction and Material Specifications - Jan. 1, 1977" shall govern.

## HANDLING PIPE AND ACCESSORIES

(A) - Unloading: Pipe, fittings, valves, hydrants, and other accessories shall, unless otherwise directed, be unloaded at the point of delivery, hauled to and distributed at the site of the project by the Contractor. They shall at all times be handled with care to avoid damage. In loading and unloading they shall be lifted by hoists or slid, or rolled on skidways in such manner as to avoid shock. Under no circumstances shall they be dropped. Pipe handled on skidways must not be skidded or rolled against pipe already on the ground.

(B) - At site of work: In distributing the material at the site of the work, each piece shall be unloaded opposite or near the place where it is to be laid in the trench.

(C) - Protection of pipe coating: Pipe shall be handled in such manner that a minimum amount of damage to the coating will result. Any cast iron pipe or fitting, the coat of which has been damaged in shipping or handling, shall have the damaged portion well cleaned and covered with an asphalt paint, approved by the Engineer, before being placed in the work. The Contractor shall thoroughly coat all exposed parts of bolts and nuts with an approved asphalt paint, after all pipe has been laid and before backfilling has been placed. All field coating shall be furnished by the Contractor.

(D) - Pipe kept clean: The interior of the pipe, fittings, and other accessories shall be kept free from dirt and foreign matter at all times.

(E) - Frost protection: Valves and hydrants before installation shall be drained and stored in a manner that will protect them from damage by freezing.

## CHANGES IN WATER PIPES

(A) - Wherever it becomes necessary in the opinion of

the Engineer to change the location of house connections, such changes will be made as work to be done by the City. The Contractor shall notify the City in ample time to permit the City to make such changes and avoid unnecessary delay in the completion of the work. The Contractor shall also cooperate with the City in making these changes and shall supply all materials, do all excavating, backfilling and repaving as may be required. The City will furnish the labor and equipment only for making the changes required, including tapping, in the location of existing house service connections and meters.

(B) - Wherever it becomes necessary, in the opinion of the Engineer, to change the location or elevation of water mains and hydrants, and where connections are to be made between existing distribution mains and water mains under this contract, the Contractor shall remove and dispose of all existing water line materials required to make the connection, and shall furnish and install complete, all the cast iron or ductile iron pipe, fittings and valves to make the connections indicated, except branch sleeves and valves which will be installed by the City. The Contractor shall also furnish all necessary labor, materials, tools and equipment and make the excavation, backfill and repaving for such connections. Payment for this will be included in price bid under appropriate item for size of water main or connection to be installed. All pipes, valves, hydrants and appurtenances removed shall become the property of the Contractor.

## WORK TO BE DONE BY THE CITY OF CLEVELAND, DIVISION OF WATER

(A) The Contractor will furnish the piping material for and the City make all changes required, including tapping, in the location of existing house service connections and meters. The Contractor shall do all the necessary excavation, backfilling and repaving required therefore. No charge will be assessed the Contractor for any of the labor furnished by the City.

(B) The City will install all tapping sleeves and valves, but the Contractor shall supply the tapping sleeves and valves, lead, and do all the necessary excavation, backfilling and repaving required therefore. In addition to the above requirements, the Contractor shall furnish all air compressors required for the work under the specified item.

(C) In locations shown on the plans the Contractor will be required to sleeve-in to the existing mains. To speed up this operation, it is called to the Contractor's attention that the water department has on hand at Harvard Yards motor operated pipe cutters which are available for cutting pipe by city forces. The Charges include cost of labor, use of pipe cutting machine, and truck. The Contractor shall do all necessary excavation, backfilling and repaving and all air compressor equipment shall be furnished by the Contractor. Charges may be obtained from the Permit-Sales Section of the Division of Water and Heat.

## EXCAVATION

(A) - The Contractor shall remove all existing structures, roadways, driveways and other similar materials and make to the lines and grades given, all excavation necessary for the proper construction of the water main, pipe connections and appurtenant structures, including tunnel and shaft excavation. The excavation shall include the removal, handling, rehandling and disposal of materials encountered in the work and shall include all pumping, bailing, draining, sheeting and bracing. Moreover, the Contractor

must assume all responsibility for any added expense or other liability which may arise by means of quicksand, obstacles or conditions foreseen or unforeseen and encountered in the work of this contract.

(B) - Trenches shall in every case be of sufficient width to permit solid packing of backfill under and around pipes, and satisfactory construction of all appurtenances and for such sheeting and shoring, pumping and draining as may be necessary.

(C) - The trench shall be dug to the alignment and depth required and only so far in advance of pipe laying as the Engineer shall permit. The trench shall be so braced and drained that workmen may work therein safely and efficiently. It is essential that the discharge from pumps be led to natural drainage channels, to drains, or to sewers.

(D) - The trench width may vary with and depend upon the depth of trench and the nature of the excavated material encountered; but in any case shall be of ample width to permit the pipe to be laid and jointed properly and the backfill to be placed and compacted properly. The minimum width of unsheeted trench shall be eighteen (18) inches and for pipe ten (10) inches or larger, at least twelve (12) inches larger than the outside diameter of the pipe for concrete pipe and eighteen (18) inches larger than the outside diameter of the pipe for cast iron and steel pipe, except by consent of the Engineer; the maximum clear width of trench shall be not more than two (2) feet greater than the outside pipe diameter. When sheeting and bracing is used, the trench width shall be increased accordingly.

(E) - The trench, unless otherwise specified, shall have a flat bottom conforming to the grade to which the pipe is to be laid. The pipe shall be laid upon sound soil cut true and even, so that the barrel of the pipe will have a bearing for its full length.

(F) - Any part of the trench excavated below grade shall be corrected with approved material, thoroughly compacted.

(G) - When the uncovered trench bottom at subgrade is soft and in the opinion of the Engineer cannot support the pipe, a further depth and/or width shall be excavated and refilled to pipe foundation grade as required under (F), or other approved means shall be adopted to assure a firm foundation for the pipe.

(H) - Ledge rock, boulders, large stones, and shale shall be removed to provide a clearance of at least six (6) inches below all parts of the pipe, valves, or fittings and to a clear width of six (6) inches on each side of all concrete pipe and nine (9) inches on each side of all cast iron and steel pipe shall be provided.

(I) - Excavation below subgrade in rock, shale or in boulders shall be refilled to subgrade with approved material, thoroughly compacted.

(J) - Bell holes of ample dimensions shall be dug in earth trenches at each joint to permit the jointing to be made properly. Adequate clearance for properly jointing pipe laid in rock shall be provided at bell holes.

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1<sup>st</sup> HIGH SERVICE DISTRICT

DEPARTMENT OF PUBLIC UTILITIES  
DIVISION OF WATER AND HEAT  
CLEVELAND, OHIO

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*William J. Sweeney* ENGINEER OF DESIGN REVIEW

# WATERWORK NOTES

CALC. BY W.A.M. DATE 6-76  
CHKA. BY T.P.B. DATE 7-76

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(K) - The use of excavating machinery will be permitted except in places where operation of same will cause damage to trees, buildings, or existing structures above or below ground; in which case hand methods shall be employed.

(L) - Trees, fences, poles and all other property shall be protected unless their removal is authorized; Any property damaged shall be satisfactorily restored by the Contractor.

(M) - Hydrants under pressure, valve pit covers, valve boxes, curb stop boxes, fire or police call boxes, or other utility controls shall be left unobstructed and accessible during the construction period.

(N) - The Contractor shall maintain all excavations in good order during the construction, so as not to hinder or injure the pipe laying, masonry or other work. He shall take all reasonable precautions to prevent movement of the sides of such excavation, and shall remove at his own expense any material sliding into the excavation.

## SHEETING AND BRACING

(A) - The Contractor shall furnish and put in place such sheeting and bracing as may be required to support the sides of trenches or other excavation and shall remove such sheetings and bracings, as the trench or excavation is filled up, unless the Engineer shall order it left in place, in which case the Contractor shall cut the plank off at a height as ordered by the Engineer, or as called for on the contract drawings.

A quantity of 1 M.B.M. has been provided in the general summary for "Item special-sheeting left in place."

(B) - Whenever the excavations for the work herein to be done are immediately adjacent to other subsurface structures, the Contractor shall furnish and place sheeting and bracing where noted on contract drawings and as may be necessary so as to reduce to a minimum the possibility of injuring or damaging the same.

(C) - If the Engineer is of the opinion that at any point sufficient or proper supports, sheeting, or bracings have not been provided, he may order additional supports, sheeting or bracing, at the expense of the Contractor, and the compliance with such orders by the Contractor shall not relieve or release him from his responsibility for sufficiency of such supports.

## REMOVAL OF EXCAVATED MATERIAL

(A) - All surplus material and such other material as the Engineer may deem unfit for use as backfill shall be disposed of by the Contractor so as to give a minimum of inconvenience to the public. In case of settlement after backfill, the Contractor shall supply sufficient material satisfactory to the Engineer to make up for the deficiency.

(B) - In the storing of excavated material, which is to be used as a backfill, the Contractor shall exercise care so as to avoid inconveniencing the public. If, in the opinion of the Engineer, it is necessary to remove this excavated material from the streets or lots, the Contractor shall be required to do so.

(C) - Any material which may spill or drip from vehicles by hauling in the streets, shall be removed and the streets cleaned by the Contractor, to the satisfaction of the Director of Public Service of the City of Cleveland or the proper officials of the municipality or township in which the work is being done.

(D) - When so directed by the Engineer, the Contractor shall immediately remove all excavated materials from the

site and dispose of the same.

## LAYING PIPE

(A) - Proper implements, tools, and facilities, satisfactory to the Engineer shall be provided and used by the Contractor for the safe and convenient prosecution of the work. All pipe, fittings, and valves shall be carefully lowered into the trench piece by piece by means of derrick, proper slings, and other suitable tools or equipment, in such manner as to prevent damage to pipe or coating, under no circumstances shall pipe or accessories be dropped or dumped into the trench. If any defective piece be discovered while pipe is suspended or after being laid, a new piece shall be furnished and installed by the Contractor at the site of the work.

(B) - All foreign matter or dirt shall be removed from the inside of the pipe before it is lowered into its position in the trench, and it shall be kept clean by approved means during and after laying.

(C) - At times when pipe laying is not in progress, the open ends of pipe shall be closed by approved means, and no trench water shall be permitted to enter the pipe. No pipe shall be laid in water, or when the trench conditions or the weather is unsuitable for such work, except by permission of the Engineer.

(D) - Wherever necessary to deflect pipe from a straight line, either in the vertical or horizontal plane to avoid obstructions, to plumb stems, or for other reasons, the degree of deflection shall be approved by the Engineer.

(E) - Before laying cast iron or ductile iron pipe, all lumps, blisters and excess coal tar coating shall be removed from the bell and spigot ends of each pipe, the pipe ends shall then be kept clean until joints are made.

## FLOATING

The Contractor shall take every precaution against the floating of the pipe due to water coming into the trench, or through caving in, flushing or puddling. In case of such floating the Contractor shall replace the pipe at his own expense, and make wholly good any injury or damage which may have resulted.

## TESTING MAINS

(A) - All pipes, valves, fittings, etc., shall be laid in such a manner as to leave all joints watertight. After the pipe is laid, and before backfilling is placed around the joints, such lengths of the water main as the Engineer may determine, shall be tested under a hydrostatic pressure of seventy-five (75) pounds per square inch above the static pressure, but nowhere less than 100 pounds per square inch.

(B) - The test shall be under the direction of the Engineer and Director of Public Utilities or his designate. The Contractor may obtain water for testing by observing the rules and regulations enforced in the municipalities or Townships in which the work is being done. The City will furnish a pressure gage for measuring the pressure on the water main, but the Contractor shall furnish a suitable pump, pipes, test heads and all appliances, labor, fuel and other appurtenances necessary to make these tests.

(C) - The test pressure shall be maintained for a sufficient length of time to allow for a thorough examination of joints and elimination of leakage where necessary. The pipe lines shall be made absolutely tight under the test pressure.

(D) - After a section of the water main has been tested, the Contractor shall drain same. In case the drains are

connected to valve or drain vaults, then the Contractor shall within reasonable time after the test has been completed pump all water out of the vaults.

(E) - In cold weather immediately after testing a section of the water main, the Contractor is to open all valves, air cocks, by-passes and drains and properly drain bonnets of all valves in the section of the water main, and take all other precautions necessary to prevent injury to water main and appurtenances due to freezing.

(F) - As an alternate for testing concrete and steel mains other than by the preceding method, the Contractor may choose the following procedure.

The water main shall be tested under the same hydrostatic pressure as previously noted. The test pressure shall be maintained for a period of two (2) hours by pumping additional water into the main, if necessary. The quantity of water thus pumped into the main multiplied by twelve (12) shall be taken as the leakage per twenty-four (24) hours.

(G) - The permitted leakage shall not exceed a rate of seventy-five (75) gallons per twenty-four (24) hours per mile of pipe per inch of nominal diameter.

(H) - In calculating leakage, the Engineer will make allowance for any leakage at the valves, the removeable bulkheads, etc.

(I) - In using this method of testing, the Contractor may backfill the pipe except at lead joints, flanged joints, victaulic couplings, and drain connections immediately following the laying and before the actual test has been made. In case the leakage exceeds the permissible amount mentioned above, the Contractor shall find the leak and make the joints tight. The Contractor shall furnish suitable means for determining the quantity of water lost by leakage during the test.

(J) - In order to be able to make proper allowances for leakage at valves, etc., previously noted, only such sections of water main may be selected for test as will have such valves, removable bulkheads, etc., accessible.

(K) - The evaluation of actual leakage to standard pressure (150 lbs.) leakage is calculated by the application of the ratio determined from the square root of respective pressures, other factors being equal.

## CLOSING VALVES

The closing of all gate valves on water mains for making connections, tests, or for any other cause, shall be done by the City of Cleveland. The Contractor shall notify the Cleveland Water Department three (3) weeks in advance of the shutdown and they will specify the time and/or special conditions, hours, etc.

## PLUGGING DEAD ENDS

Standard plugs with clamps shall be inserted into the bells of all dead ends of pipes, tees, or crosses, and spigot ends capped and clamped by the Contractor, on all mains constructed by him and on existing water mains where indicated in the contract drawings. Concrete piers shall be

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placed when called for on the contract drawings, or ordered by the Engineer. The cost of furnishing and installing the plugs shall be included in the per linear foot price bid for the various sizes of new water mains.

ITEM SPECIAL - PLUGGING EXISTING WATER MAINS AND BRANCHES AND PLUGGING SERVICE CONNECTIONS

WORK INCLUDED

The work included under these items shall consist of the plugging of existing water mains and branches, and the plugging of service connections at the locations shown on the drawings or as ordered, including cast iron plugs or caps with clamps and concrete piers, all excavation, sheeting and bracing, concrete, sand backfill, backfill, temporary repaving and permanent repaving, all as required for the proper completion of the work included under this contract.

(A) - Plugging Mains and Branches:

When indicated on the plans or as ordered, the Contractor shall make pipe cuts, remove pipe and fittings and shall plug or cap mains, tees or crosses, plug connections at main or branches, shall do all the excavating, backfilling and repaving, all as required.

(B) - Plugging Service Connections:

The Contractor shall do all necessary excavation, sheeting and bracing, sand backfilling, backfilling and repaving required for this item, but the Cleveland Water Department will plug the service connection.

The Contractor shall arrange with the Cleveland Water Department for the necessary work under this item.

MEASUREMENT

The existing water mains and branches plugged or service connections plugged to be paid for shall be the actual number of each listed and estimated separately, completed and accepted.

BASIS OF PAYMENT

The unit price stipulated for (A) "Item Special-Plugging Existing Water Mains and Branches" shall constitute full compensation for performing all the requirements of this item including furnishing all necessary materials, labor, tools, equipment and incidentals to make this a complete item of work. The item shall be paid for on per "Each" basis.

The unit price stipulated for (B) "Item Special- Plugging Service Connections" shall constitute full compensation for performing all the requirements of this item including furnishing all necessary materials, labor, tools, equipment and incidentals to make this a complete item of work. The item shall be paid for on per "Each" basis.

The materials, labor, tools, equipment and incidentals furnished by the City of Cleveland, Division of Water, will be at no expense to the Contractor. The work performed by the City of Cleveland applies to (B) Plugging Service Connections.

BACKFILLING

(A) - This work includes all backfilling, together with ramming, puddling, and rolling, as required; the grading of grounds; the replacing of surface and subsurface structures; the placing and maintaining of temporary sidewalks, and driveways; the furnishing of suitable material for backfill, reseeding lawns and replacing trees and shrubbery damaged by the Contractor; and all appurtenant work incidental thereto. Pavements, curbs, sidewalk and driveways within the limits of the work shall be temporarily surfaced, maintained and finally replaced or repaved as set forth under roads, surfaces, sidewalks, driveways and curbing.

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(B) - Backfill, unless otherwise specified, may be made with material excavated from the trenches, providing same is satisfactory to the Engineer. If, in the opinion of the Engineer, the material excavated is unsatisfactory, then the Contractor shall furnish at his own expense other material suitable for backfill. All backfill shall be free from slag, cinders, rubbish and other objectionable material.

(C) - Before laying the pipe, the bottom of the trench shall be brought to the grade of the bottom of the pipe, except at field joints. Wherever the bottom of the trench has been excavated below the bottom of the pipe, the Contractor shall place sand, or other material satisfactory to the Engineer to bring the bottom of the trench to the grade of the bottom of the pipe. This bed shall be thoroughly tamped before the pipe is laid.

(D) - Unless otherwise specified, the backfill under, around and to a depth of one (1) foot above the top of all pipe, shall be made with material satisfactory to the Engineer, which material shall be free from stone and other objectionable material noted above. The Contractor must use special care in placing this portion of the backfill, so as to avoid injuring, distorting or moving the pipe when compacting same. Above this level the backfill shall be made with material satisfactory to the Engineer. However, where specified, sand shall be used for the entire portion of the backfill. See below.

(E) - Backfilling as noted in paragraph (D) shall be tamped in thin layers, simultaneously on each side of the pipe, and thoroughly compacted so as to provide a solid backing against the external surface of the pipe.

(F) - Only after the backfill previously mentioned has been satisfactorily compacted, may work proceed in placing the remaining backfill which must be carefully placed and compacted by tamping, puddling, or rolling. All precautions must be taken to eliminate future settlement. The number of men tamping shall be not less than the number backfilling and additional men shall be kept in the trench to spread the material.

(G) - Backfilling shall not be done in freezing weather, except by permission of the Engineer, and it shall not be made with frozen material, nor shall any fill be made where the material already in the ditch is frozen.

(H) - The entire backfill shall be made with sand where permanent pavements, curbs, driveways, or sidewalks, have been opened for or undercut by the excavation.

(I) - All sand to be used for backfill shall be as specified in Section 703.02 of The State of Ohio Construction and Material Specifications.

(J) - Special treatment of the trench will be required where cinder excavation exceeding one foot measured from the top surface is encountered. Before laying the pipe, the bottom of the trench shall be dug below grade and then brought to the grade of the pipe in the following manner, a four (4) inch layer of crushed limestone shall be placed on the entire width of the bottom of the trench followed by a filler of hydrated lime and a layer of three (3) inches of sand. The crushed limestone shall be well graded from fine to coarse and free from slag, cinders, ashes, rubbish or other objectionable material. All limestone must be capable of being passed through a 3/4 inch

sieve. On top of this layer of crushed stone, hydrated lime shall be supplied in the amount of 3/8 of a pound per square foot of trench. This bed of crushed limestone shall be thoroughly tamped before the 3 inch layer of sand is placed. The backfill around and to the depth of three (3) inches above the top of the pipe shall be made with sand. The Contractor must use special care in placing this portion of the backfill so as to avoid injuring or moving the pipe when compacting same. On top of the sand the Contractor shall place another layer of crushed limestone five (5) inches thick on the entire width of the trench. On top of the compacted layer of limestone hydrated lime shall be then applied in the amount of 3/4 of a pound per square foot of trench. The remaining backfill shall be made with sand, carefully placed and compacted by tamping, puddling, or rolling. All precautions shall be taken to eliminate future settlement. The treatment of the trench bottom, previously described, may be omitted where the cinder depth, measured from the top surface does not exceed 2'-6".

ROAD SURFACES, SIDEWALKS, DRIVEWAYS AND CURBING

(A) - The Contractor shall remove all pavements and road surfaces within the lines of excavation. After the pipe has been laid, all appurtenant work constructed and backfill completed, he shall furnish, place and maintain, wherever the pavement of road surface has been removed or damaged by him, a temporary pavement in the paved portion of streets, or a temporary road surface in the unpaved portion of streets so as to provide a safe and passable roadway until such time as the final pavement or road surface is completed.

(B) - When only a portion of the street is paved and the lines of excavation are in the unpaved portion of same, the Contractor shall use the utmost care in preventing injury to the pavement. If, in making the excavation or for any other cause the pavement is removed or injured by the Contractor, he shall furnish, place and maintain a temporary pavement wherever the pavement has been removed or damaged, so as to provide a safe and passable roadway until such time as the final pavement is completed.

(C) - All final paving of road surfaces, if so noted on the contract drawings, shall be done by the Contractor to the satisfaction of the Engineer and in conformity to the City of Cleveland "Standards and Specifications for Construction of Pavements, Sidewalks and Sewers" of the most recent issues.

The Contractor shall bear the entire cost of the work. The base of concrete pavement, Item 305, shall be installed on a carefully prepared bed level with the bottom of the abutting base over disturbed areas and shall be of the thickness specified, but in no case less than 7 inches thick. Where pavement or base of pavement has been damaged by cave-in, or by trench cut leaving a portion or portions of pavement 18 inches or less in width between such cut or damage to curb or other substructure, that remaining portion of pavement shall be removed and restored monolithic with the type and kind of pavement specified for the adjacent trench area. The wearing course over trench or other disturbed areas shall be restored to match existing pavement unless otherwise specified. Asphaltic concrete wearing course over such areas shall be neatly and squarely cut, before the installation of a carefully toothed-in-to

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adjacent pavement, unless otherwise specified. Expansion joints shall be installed between brick wearing course (if grouted) and curb or other substructure, where such restoration is required by these specifications.

(D) - All damaged or displaced curb shall be renewed or reset to the satisfaction of the Engineer. No faulty curb or curb less than 30 inches long will be permitted for re-use.

(E) - At locations not specifically mentioned, the Contractor shall restore the same type of pavement as encountered.

(F) - If prior to the expiration of this contract, any of the pavements or road surfaces within the lines of excavation or adjacent thereto, shall have been damaged or injured, due to undermining, or for any other cause which may be attributed to the work which is being done by the Contractor, then the Contractor shall remove such damaged or injured pavements or road surfaces, foundations of same and all loose final pavement or road surface, he shall then backfill with sand properly rammed and replace the final pavement or road surface.

(G) - If any sidewalks, driveways or curbs, are removed or injured by the Contractor in the course of making excavation or handling materials, or for any other reason which may be attributed to work which has been done by the Contractor, then he shall relay same after all work, including backfilling, has been completed. If any stone sidewalks, driveways, or curbs which have been removed or injured, are unfit to be relaid, then the Contractor shall furnish new material and relay same. All concrete or cement sidewalks, driveways or curbs, which are removed or injured by the Contractor shall be broken up by him and he shall furnish all labor and materials and construct new sidewalks, driveways or curbs, to replace those removed or injured. At intersecting walks, drives, etc., additional concrete slabs beyond the excavation limits shall be removed and replaced with new material, in order to avoid having more joints than in the original work. All slabs replaced shall be of full width. The Contractor shall furnish, place and maintain, wherever the sidewalk has been removed or damaged by him, a temporary sidewalk so as to provide a safe and passable sidewalk until such time as the final sidewalk is completed.

(H) - All pavements, road surfaces, sidewalks, driveways, or curbs, which the Contractor is required to replace or to have replaced, shall, at the expiration of this contract, be in at least as good condition as at the time of awarding the contract.

(I) - All work which the Contractor may do in connection with the opening up or replacing of pavements, road surfaces, sidewalks, driveways, or curbs, as well as the final repaving, shall be done at his expense, in accordance with the rules and requirements of the Street or Sidewalk Departments of the City of Cleveland, and in accordance with the additional requirements of these specifications. And the Contractor shall furnish evidence to the Engineer that the work has been completed to their satisfaction.

(J) - Tunneling will not be permitted without permission of the Engineer. In backfilling tunnels, sand shall be used as far as possible and balance of backfilling made with Class C concrete, rammed in place.

(K) - The Contractor shall make all pavement cuts by channeling machine, hand-operated pneumatic tools or by such other methods as will furnish a clean cut in the pavement and pavement base without undue shattering. The use of ball or weight to break the pavement will not be permitted.

# WATERWORK NOTES

(L) - No specific or separate payment will be made for all of this work, but the cost thereof shall be included in the prices bid for the various items of the work to be done under this contract. Restoration as noted above will only be required in areas where the plans do not otherwise propose new construction of pavement sidewalks and curbs, except that temporary restoration in such areas may be required by the Engineer in order to maintain traffic or local access per Sec. 104.04 and 107.10 of the State of Ohio Department of Highways "Construction and Material Specifications."

## LIST AND INVOICES

(A) - The Contractor shall furnish the Engineer and City with the list in duplicate of pieces in each shipment of pipe and specials, giving the serial number and designation of each pipe and special sent at that time.

(B) - The material shall be shipped in such sections as the Engineer may order.

## CAST IRON AND DUCTILE IRON PIPE AND FITTINGS

### WORK INCLUDED

The Contractor shall furnish all the materials for and shall properly construct and connect in place, at the locations shown on the drawings or as directed, all cast iron or ductile iron pipe and fittings, including all excavation work, the cutting into and removal of existing pipe, backfilling, sand backfill, and repaving, all as required for the proper completion of the work included under this contract.

### CAST IRON PIPE AND FITTINGS

(A) - All pit cast pipe shall be manufactured in all respects in accordance with, and shall meet the requirements of the latest "Standard Specifications for Cast Iron Pipe and Special Fittings" as adopted by the American Water Works Association which specifications except as herein modified are made a part of these specifications.

(B) - All pit cast pipe and fittings shall be cement lined and of the size and classes noted on the respective contract drawings.

(C) - In lieu of pit cast pipe above the Contractor will be permitted to furnish either centrifugal or high strength cement lined pipe. The metal shall have a modulus of rupture of not less than 40,000 pounds and a tensile strength of not less than 18,000 pounds and shall be for class noted on the contract drawings. Pipe may be furnished in 12, 16, or 18 foot lengths. The centrifugally cast pipe shall conform to the American Standard Specification A21.6-1952 and all subsequent amendments thereto.

When noted on the contract drawings ductile iron pipe shall be supplied. All ductile iron pipe shall be manufactured in accordance with A.S.A. A21.51-1965

All ductile iron fittings shall be manufactured in accordance with A.S.A. A21.10 or AWWA C 100-55. Ductile iron shall have a minimum of 60,000 psi ultimate tensile strength; 42,000 psi yield point and 10% elongation. The chemical analysis shall be as follows: Carbon 3% minimum, Phosphorus .08% maximum and Silicon 2.75% maximum.

(1) - The thickness of the centrifugally cast iron and ductile iron pipe shall conform to the following table:

### STANDARD THICKNESS OF CENTRIFUGALLY CAST IRON PIPE AND DUCTILE IRON PIPE

#### DUCTILE IRON PIPE

Size	Working Pressure	Thickness	Class
6"	350 p.s.i.	0.43 in.	6
8"	350 p.s.i.	0.45 in.	6
12"	350 p.s.i.	0.49 in.	6

#### CAST IRON PIPE

Size	Working Pressure	Standard Thickness	Class
6"	250 p.s.i.	0.48 in.	25
8"	250 p.s.i.	0.52 in.	25
12"	250 p.s.i.	0.60 in.	25

(2) - All fittings, such as bends, tees, crosses, offsets, hydrant branches, etc., shall have bell and bell or bell and spigot ends with cast lead joints, pipe between offsets or bends and on hydrant branches, shall also be of bell and spigot type with lead joints. Joints for fittings may be of the boltless-restrained push-on type if approved by the Engineer. Drawings and assembly instructions along with pipe and fittings layout and schedule must be furnished. A minimum length of 18 feet of boltless restrained push on pipe shall be used on both sides of boltless restrained push on fittings.

(D) - All pipe shall have bell and spigot ends for cast lead joints or a slip-on type joint with compressed rubber ring inserts. All pipe and fittings shall be cement lined.

(E) - Gaskets shall be of rubber or other equally effective protection against uneven distortion of the gasket.

(F) - Where fittings are shown which are not covered by the above specifications, they in such particulars as are lacking thereon, shall conform to the dimensions and otherwise meet the specifications for the respective type which are carried in the latest revisions to the current edition of the "Handbook of Cast Iron Pipe" by the Cast Iron Pipe Research Association or which are otherwise shown on the contract drawings.

(G) - Wherever changes in line and grades of the main as shown on the drawings are not standard fitting deflections, the Contractor will be permitted to submit details using combinations of standard fittings and small deflections (not to exceed a maximum of one half (1/2) inch joint opening) in the adjoining lengths of pipe. Pipe to be installed with air cocks or drains shall be cast with bosses thereon, and drilled and tapped for two (2) inch connections, and plugged in the shop with cast iron threaded plugs, before shipment.

(H) - Plugs for bell and spigot pipe and caps for lugged pipe shall be furnished with two (2) plugged two (2") inch taps for drain and air cock connections.

(I) - Closure pieces shall be accurately measured and cut in the field and installed using solid type pattern sleeves as shown or as required.

APPROVED JUNE 24, 1977

*William J.weeney* ENGINEER OF DESIGN REVIEW

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**SI** HIGH SERVICE DISTRICT

DEPARTMENT OF PUBLIC UTILITIES  
DIVISION OF WATER AND HEAT  
CLEVELAND, OHIO

SUBJECT WATER WORK NOTES FOR INTERSTATE

ROUTE-480

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(J) - Tests, inspection, reports and analyses of tests of samples for all materials shall be furnished as set forth elsewhere in these notes.

(K)-Bitumastic coating shall be applied on the exterior of all cast iron pipe and fittings in accordance with AWWA specifications. All ductile water main pipe and fittings shall be given, in addition to that specified, a coating of four (4) mils additional thickness; or protection with polyethylene encasement in accordance with ANSI A21.5-1972 (AWWA C105-72), Class "C" installation method "B". All fittings shall have ANSI A21.5-1972 protection.

#### CEMENT LINING

All cast iron or ductile iron pipe and fittings shall be given a cement mortar lining at the point of manufacture. The lining shall conform to the American Standard Specification A 21.4-1964 and all subsequent amendments thereto.

#### MARKING

All cast iron or ductile iron pipe and fittings shall be suitably marked to denote the manufacturer, class, date, weight and other elements of identification.

#### LAYING

(A) - Proper and suitable tools and appliances for the safe and convenient handling and laying of the pipes and fittings shall be used. Great care shall be taken to prevent the pipe coating from being damaged, particularly on the inside of pipes and fittings and any such damage shall be remedied as directed. All pipes and fittings shall be carefully examined by the Contractor for defects just before laying and no pipe or fitting shall be laid which is known to be defective.

(B) - If any defective pipe is discovered after having been laid, it shall be removed and replaced with a sound pipe or fitting in a satisfactory manner by the Contractor at his own expense. All pipes and fittings shall be thoroughly cleaned before they are laid, shall be kept clean until they are used in the completed work, and when laid, shall conform to the lines and grades given by the Engineer. Open ends of pipes shall be kept plugged with a bulkhead during construction. In no event shall any portion of the damaged pipe be permitted to remain in the line. Any approval stamps found on the pipe shall be removed or the pipe broken up for scrap.

(C) - Pipe laid in trench shall be laid to a firm and even bearing for its full length. Precautions shall be taken against floating.

(D) - It is the intention of these specifications to secure first class workmanship in the placing of pipe and accessories. In such details as are not specifically mentioned herein or called for on the drawings, the Contractor will be required to conform with the applicable sections of the latest "Standard Specifications for Laying Cast Iron Pipe" as adopted by the American Water Works Association.

#### CUTTING PIPE

Whenever the pipes require cutting to fit into the lines, the work shall be done in a satisfactory manner so as to leave a smooth end at right angles to the axis of the pipe. In no event shall flame cutting be used. When a piece of pipe is cut to fit into the line, no payment will be made for the portion cut off and not used in the line.

#### JOINTS

(A) - Lead joints: In jointing all bell and spigot pipe and fittings having lead joints, the spigot of each pipe shall be properly seated in the bell of the next adjacent piece and adjusted so as to give a uniform annular space. The joint shall be made with twisted hard jute and soft pig lead. Before placing the jute, it shall be sterilized either by boiling or by dipping in a concentrated solution of "HTH". The jute shall be twisted and thoroughly driven into the bell, so that the lead, after having been caulked, shall have a depth of 2½ inches.

The furnace and melting pot shall be kept near the joint to be poured and each joint shall be made with one pouring. Dross shall not be allowed to accumulate in the melting pot. The joints shall be thoroughly caulked by competent pipe joiners and in such manner as will secure a tight joint without overstraining the iron of the bell.

#### PAINTING

After erection, all exposed or damaged coatings and all bolts for lugged joints shall be cleaned and painted with three (3) field coats of Inertol 50 or Bitumastic 50 or approved equal.

#### DRAWINGS

(A) - The Contractor shall submit to the Engineer for approval duplicate prints of all shop drawings for pit cast iron pipe and fittings and miscellaneous details which are not standard construction, and are not mentioned in the regular catalogue of the company furnishing the pipe. No work shall be done in the shop until after the drawings have been approved.

(B) - The approval of the drawings by the Engineer shall not relieve the Contractor of any of his obligations in connection with this contract.

#### MEASUREMENT

The number of linear feet of cast iron pipe and ductile iron pipe line and connections to be paid for shall be the actual number of linear feet furnished and placed in accordance with these specifications as measured along the axis of the piping including fittings and valves connected up in place. For connections between new and existing mains, measurement shall be the distance from centerline to centerline of mains and the actual length of existing main ordered to be removed to make the connection.

#### BASIS OF PAYMENT

The footage measured as provided above shall be paid for at the contract price bid per linear foot for "Item Special Water Main" classified as to size and type, which price and payment shall constitute full compensation for excavating and for furnishing, hauling, placing, cutting into and connecting the pipe, pipe bends, C.I. plug and clamps at dead ends, concrete piers, sheeting and bracing, sand back-fill, water used for compaction, incidental concrete, the removal of all surplus excavation and discarded material, repaving, and for the furnishing of all labor, materials, equipment, tools and incidentals necessary to complete this item, except for the items specifically listed as separate pay items.

The chlorination of the newly laid water mains by the City of Cleveland, Division of Water, will be at no expense to the Contractor.

#### PUSH-ON & BOLTLESS RESTRAINED JOINTS

(A) - Where lugged or restrained joints are used in place of bell & bell or bell and spigot joints for cast lead joints as indicated or shown on the drawings. The Contractor shall supply pipe and fittings having lugged joints or positive restrained compression locked joint in push-on or slip-on joint. Lugged joints shall in all respects, comply to the Standard A.W.W.A. Specifications and dimensions for the class of pipe and fittings specified. Positive restrained compression locked joint push-on or slip-on joint shall have ends with positive compression locked joint in push-on or slip-on joint providing a restrained flexible joint using corrosion resistant locking so as to provide a minimum of stress in the joint, but providing a minimum of 400 lbs. per inch of pipe circumference resistance to separation of joint.

All bolt dimensions and other features shall strictly comply with those which have been established under the American Water Works Association Standards. Drawings shall be furnished in accordance with section C-2, sheet N<sup>o</sup> 188 drawings, fully and distinctly illustrating and describing and giving complete layout and assembly direction for the

joint to be furnished. Approval of The City of Cleveland, Division of Water will be required. Coating and protection shall be required in accordance with Section K, Cast Iron Pipe and Fittings.

Where locking grooves or slots are furnished, pipe thickness shall be full ASA A21.51 (AWWA C151) Class 7 for Ductile Iron Pipe and ASA A 21.6 (AWWA C106) full Class 27 for Cast Iron Pipe.

APPROVED JUNE 24, 1977

*William J. Lucey* ENGINEER OF DESIGN REVIEW

**ST** HIGH SERVICE DISTRICT

DEPARTMENT OF PUBLIC UTILITIES  
DIVISION OF WATER AND HEAT  
CLEVELAND, OHIO

SUBJECT WATER WORK NOTES FOR INTERSTATE  
ROUTE -480

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## PRESTRESSED CONCRETE CYLINDER PIPE

### WORK INCLUDED

The Contractor shall furnish all the materials, labor, tools and equipment for and shall properly construct and connect in place the water main at locations shown on the drawings, or as directed, using prestressed concrete cylinder pipe and fittings and including all excavation work, backfilling, sand backfill, repaving, concrete cylinder fittings, cast iron pipe and fittings, victaulic and dresser couplings, etc., all as required for the proper completion of the work included under this contract.

### DEFINITIONS

Whenever the words "concrete pipe" or "prestressed concrete cylinder pipe" are used, they shall refer to and mean "prestressed steel cylinder reinforced concrete pressure pipe".

### PRESTRESSED CONCRETE CYLINDER PIPE

(A) All prestressed concrete pipe to be furnished shall conform to these specifications and shall conform to the latest AWWA C 301-64 "Standard Specifications for Reinforced Concrete Water Pipe-Steel Cylinder Type, Prestressed" and to specific requirements called for in Plan and Profile General Notes.

(B) The prestressed concrete cylinder pipe shall be furnished in uniform length of not less than sixteen feet for the pipe except that shorter lengths may be used to meet special conditions. The nominal thickness of the core and the nominal thickness of the mortar coating shall not be less than that given in the following table:

NOMINAL INSIDE DIAMETER	CORE THICKNESS	MINIMUM MORTAR COATING
30"	1-7/8"	1-1/4"

The interior diameter of the pipe shall not be less than the nominal diameter by more than one per cent (1%). The thickness of the wall of the pipe shall not be less than the nominal thickness by more than eight (8) per cent. The ends of pipe shall be at right angles to the pipe axis. Pipes may be beveled to form curves. The concrete used to line the steel cylinders shall be made from suitable aggregates composed of hard, durable particles, clean and free from loam or organic material. Cement shall fulfill the requirements of ASTM designation: C 150-52, "Standard Specifications for Portland Cement". It is the intent of this specification to produce a concrete having a 28-day strength of 4500 or a 7-day strength of 3000 pounds per square inch for standard 6" x 12" test cylinders which shall be cured in the same manner as the pipe. Concrete for which 28-day strength tests shall show strengths of less than 4500 pounds per square inch may be used providing that the maximum design compressive stresses in the concrete shall not exceed forty (40) per cent of the strength of the concrete at the time of wrapping.

(C) The concrete lining of the steel cylinder may be placed vertically by the use of interior forms or may be placed by the centrifugal process. When the centrifugal process is used, the cylinder shall be held securely in spinning frames and the frames placed horizontally in a machine which will cause them to rotate rapidly about their longitudinal axis at a rim speed sufficient to insure good compaction of the concrete. The concrete shall be placed in the steel cylinders while they are revolving in such manner that the rotation shall evenly distribute the concrete along the entire length of the pipe. After the concrete has been deposited, the frames shall con-

tinue to revolve until the excess water has come to the surface and the concrete has become thoroughly compacted. The interior surface of the pipe may be finished either while it is still in the centrifugal machine or by means of a honing operation after the concrete has set. When the spinning of the concrete is completed, the lined cylinders shall be removed from the machine and placed in a vertical position for curing. After the concrete has taken its final set, the pipes shall be kept in a warm atmosphere for curing.

(D) When the concrete lining is placed by a vertical casting, the steel cylinder shall be placed vertically about an interior mold and the mold and cylinder shall be held in circular and concentric position by top and bottom rings of steel or cast iron. While the concrete is being placed, vibrations shall be employed so as to produce a concrete of maximum density. After completion of the pouring operation and when concrete has taken its final set, the lined cylinders shall be kept in a warm atmosphere until the following day, when the molds may be removed.

(E) After the interior molds have been removed, or in the case of centrifugal casting, after the concrete has hardened sufficiently, the concrete lining shall be kept moist by water or steam until at least 36 hours after the placing of the concrete. The temperature of the atmosphere to which the new concrete is exposed during this curing period shall be maintained above 50° F. but not exceeding 150° F. on the second day after placing the concrete, the pipe may be tipped into horizontal position and placed in storage. Where steam has not been used during this initial curing period, the concrete shall be kept moist for a further period of 5 days by intermittent sprinkling.

(F) In lieu of the moist curing method previously described, the manufacturer may use curing compounds of the emulsified asphalt or synthetic resin type, but such compounds must be applied to the concrete at such time as to assure the retention of adequate moisture for the proper hydration of the cement.

(G) Whatever method is used, however, the curing shall proceed in such manner and for such a period as to assure the concrete lining attaining the required strength.

(H) The cement mortar coating shall be applied to the cores after they have been wrapped under tension with high tensile wire. The mortar used for this coating shall consist of one part of cement to not more than three parts of fine aggregate, measured by volume. The mortar shall be placed on the pipe by a machine in which the mortar, previously mixed, is driven against the exterior surface of the core so as to produce a dense coating around the pipe and covering the steel reinforcing. Upon completion of the coating operation, the pipes shall be placed where they are protected from sun, wind and rain and after the mortar has hardened sufficiently, it shall be kept moist with water or steam until the following day or for a period of not less than twelve hours, at which time the pipes may be placed in the storage yard. If water is used for curing, the pipes shall be kept moist by periodic sprinkling for an additional 3 days after being placed in storage. In lieu of the moist curing method, the manufacturer may use concrete curing compounds of the emulsified asphalt or synthetic resin type, provided that such compounds must be applied to the mortar at such time as to assure the retention of adequate moisture for the proper hydration of the cement.

\* (H-1) SEE CONTINUATION, RIGHT.

(I) The pipe shall be reinforced with a continuous welded steel cylinder of hot rolled steel sheets not lighter than #16 U.S. gage and shall conform to the requirements of ASTM designation A 254-52T, Grade B, specifications for "Heavy Gage Structural Quality Flat Hot Rolled Carbon Steel

Open Hearth" or any subsequent amendments thereto, and ASTM designation: A242-52T, specifications for "Low-Alloy Structural Steel" or any subsequent amendments thereto, either open hearth or bessemer sheets having physical and chemical qualities equivalent to those mentioned may be used. Where the pipes are designed for special conditions or for high operating pressures, the cylinders may be made from hot-rolled sheets of special alloy steel having higher elastic limit and ultimate strength than those specified. In such case, the sheets shall be of good welding quality and shall conform to the steel manufacturer's published specifications for the special grade of steel being supplied. Each completed cylinder with joint rings welded to it shall be subjected to a hydrostatic test by closing the ends at the joint rings, filling with water in contact at all points with welds, and raising the water pressure to stress the cylinder to a fibre stress of 25,000 pounds per square inch. While under pressure test, all welds shall be thoroughly inspected. If any leaks are found, they shall be repaired and the cylinder shall be retested. The finished cylinder with joint rings attached shall be water tight under the required test pressure. Arc welding shall be an approved process and test welds shall be furnished from the work as required.

(J) The high tensile wire used for circumferential reinforcement shall be of high tensile properties either cold drawn of high carbon MB basic, untempered according to the diameter of the pipe and the pressure for which it is designed. The type of wire to be used shall be determined by the manufacturer and shall conform to the appropriate ASTM Specifications as follows:

<u>ASTM DESIGNATION</u>	<u>A 82-34</u>	<u>A 227-47T</u>
Title	Cold-drawn steel wire for concrete reinforcement	Hard-drawn steel spring wire
Min. Ultimate Strength:	6 GA. U.S.S. 80,000 PSI	192,000 PSI
Min. Elastic Limit:	6 GA. U.S.S. 64,000 PSI	100,000 PSI
The elastic limit shall be determined by the Johnson Method.		

(K) The thickness of sheets for the steel cylinder and the diameter of wire used, as well as the centerline spacing at which it is placed and the tension under which it is wound around the lined cylinder shall be such that the zero compression pressure be at least 50 pounds plus 1 1/4 times the static pressure. The maximum centerline spacing of the wire shall not exceed one inch and the wire shall not be lighter than #6 gauge U.S.S. The lined cylinder shall not be wrapped with wire until at least 6 days after placing of the concrete.

\* (H-1) In addition an epoxy resin surface sealer, moisture insensitive per ASTM-D-638, ASTM-E-84, Class "A" fire resistant with 100% solid tensile strength cured of 3,000 PSI, of 6 mills minimum thickness, FDA and USDA approved of high build-concrete gray, all shop applied.

APPROVED JUNE 24, 1977

*William J. ...* ENGINEER OF DESIGN REVIEW

**HS** HIGH SERVICE DISTRICT

DEPARTMENT OF PUBLIC UTILITIES  
DIVISION OF WATER AND HEAT  
CLEVELAND, OHIO

SUBJECT WATER WORK NOTES FOR INTERSTATE  
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(L) Steel of special section of spigot joint rings shall conform to ASTM designation: A 31-52T, Grade A, specifications for "Boiler Rivet Steel and Rivets".

(M) Steel of flat section for bell rings shall conform to ASTM designation: A 245-44T, Grade B, specification for "Light Gage Structural Quality Flat Hot-Rolled Carbon Steel" or A 283-46T, Grade A, specification for "Structural Quality Low and Intermediate Tensile Strength Carbon Steel Plates", or any subsequent amendments thereto.

(N) Fittings or specials shall be furnished and installed as shown on the drawings for concrete cylinder pipe or as required and all include specials with bell end, spigot end, flanged end, and victaulic end outlets, with access manholes, air cocks, pitometer, and drain connections, anchor rings, bends, test heads, closure pieces, bevel and pipe, joint harness, etc. The Contractor shall submit to the Engineer detailed designs and shall receive his approval before the construction of any such specials. The zinc coated joint rings shall meet the requirements of one of the following ASTM Specifications: 3/16 bell rings A 303-52T, Grade A: 1/4" and 5/16" bell rings less than 6" in width: A 31-52T, Grade A: all spigot rings A 31-52T, Grade A.

(O) Special pieces, such as tees, wyes, or branch openings, shall also be of cylinder construction. In all cases, the reinforcement shall adequately compensate for the openings in the pipe wall. If the special piece is prestressed, then the area of the steel in the cylinder and cage, in addition to the compensating reinforcement previously mentioned, shall be not less than that for the adjoining prestressed straight pipe. If the special piece is not prestressed, then the additional area of the steel in such cylinder and cage shall be not less than that for the adjoining straight pipe if such straight pipe were designed as concrete cylinder pipe.

(P) The openings in the special may be formed by steel rings or castings of suitable design securely welded to the cylinder and reinforcing cage. All bends and special pieces shall be provided with joint rings corresponding to those in the straight pipe.

(Q) All vertical bends, where the deflections is 15° or greater, flanged pipe between the vertical bends, and all concrete cylinder pipe reducers shall be constructed of steel cylinders of 3/16" thickness plate and shall have the same longitudinal and circumferential steel in the cage as the adjoining straight pipe would have, if such straight pipe were designed as concrete cylinder pipe.

(R) Cast steel saddles and forgings or the equivalent in fabricated steel plates shall be welded to the steel cylinder for manhole and pipe connections and for drain, pitometer, and air cock connections, and shall be drilled and tapped and provided with malleable iron plugs.

(S) Unless otherwise shown or required, the ends of each pipe for typical field joints shall be formed by zinc coated steel joint rings securely welded to the steel cylinders, with the ring forming the bell end covered on the exterior surface with reinforced concrete and the ring forming the spigot end lined on its inner surface with concrete. The spigot ring shall have a substantial groove on its outer surface for the purpose of receiving, holding and protecting the gasket. The joints shall be self-centering and the rings forming the joints shall be of such shape and dimensions that the pipe shall center themselves without the aid of the rubber gasket. The welding of the joint rings to the cylinder pipe shall consist of at least one full continuous weld for pipe sections that are properly tested

hydraulically for strength and water tightness. For pipe sections that have to be cut to be fitted up to make bends, such construction shall have double continuous welds. Likewise, any special construction, such as for outlets or for pipes having special ends, shall have double continuous welds.

(T) The gasket sealing the joint shall be of special composition rubber having a texture to secure a permanently watertight seal. The type of gasket shall have been in satisfactory use in comparable installations for not less than five (5) years.

(U) Access construction manholes in addition to those shown on the drawings shall be located as required to provide easy access for field welding and placing of mortar as required for field joints.

(V) Testing bulkheads shall be furnished and installed for testing any completed sections of the prestressed concrete cylinder pipe mains as may be required.

(W) All steel for castings shall conform to the specifications for grade 70-36 steel castings, as given in the "Standard Specifications for Mild-to-Medium Strength Carbon-Steel Castings for General Industrial Use, ASTM designation: A 27-52T".

(X) All steel forgings shall conform to "Standard Specifications for Carbon-Steel Forgings, ASTM designation: A 235-52T".

(Y) All forged or rolled steel pipe flanges shall conform to the "Standard Specifications for Forged or Rolled Steel Pipe Flanges for General Service, ASTM designation: A 181-49, Grade 1".

(Z) All structural steel including angles for anchor rings shall conform to "Tentative Specifications for Steel for Bridges and Buildings, ASTM designation: A 7-52T".

(AA) - All cast iron pipe and fittings shall conform to these specifications.

(CC) - Iron castings must be smooth and free from blow-holes and other defects and the material shall conform to "Standard Specifications for Gray Iron Castings, ASTM Designation: A 48-48, Class No. 30". and all subsequent amendments thereto.

(DD) - Closure pieces with Dresser or Smith-Blair coupling joints with stops removed, shall be provided as are necessary for the proper construction of the water mains. Measurements for length of closure pieces will be made in the field by the Contractor after adjacent pipe sections are in place in the trench.

(EE) - Tests, inspection, reports and analyses of tests of samples for all materials shall be furnished in accordance with previous instructions in these notes.

## MARKING

Each pipe and special shall have conspicuously painted in black on the inside, a serial number for the purpose of identification. Serial numbers shall agree with lists to be furnished to the Engineer. The top center line of all special fittings and each pipe that has a beveled end shall have a white ring painted in the shop around the mark both on the inside and outside of the pipe.

## TYPICAL FIELD JOINTS FOR CONCRETE PIPE

The Contractor shall make all typical field joints and welded tied joints marked "X", "Y", and "Z" as shown on the contract drawings or as required and as specified in the section of these notes titled laying pipe and shall properly make all field welds for the above tied joints. The annular recesses at the joint, both inside and outside of the pipe, shall be filled with cement mortar mixed in a proportion of not less than one part of cement and two parts of sand, and coated in accordance with section (H-1) "Prestressed Concrete Cylinder Pipe" of these water work notes.

ALL JOINTS SHALL BE ELECTRICALLY BONDED THAT ARE NOT WELDED TIED.

ELECTROLYSIS TEST STATIONS SHALL BE PROVIDED AS SHOWN ON CONTRACT DRAWINGS.

APPROVED JUNE 24, 1977

1<sup>st</sup> HIGH SERVICE DISTRICT

DEPARTMENT OF PUBLIC UTILITIES  
DIVISION OF WATER AND HEAT  
CLEVELAND, OHIO

SUBJECT WATER WORK NOTES FOR INTERSTATE

ROUTE - 480

*William J. Sweneff*  
ENGINEER OF DESIGN REVIEW

# WATERWORK NOTES

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**BASIS OF PAYMENT**

The work included in this item shall be paid for at the contract unit price bid for each "Item Special-Fire Hydrants Relocated", which price and payment shall constitute removing and reconnection according to the provisions of these specifications for the particular type of construction called for on the plans, and for all excavation, backfilling, seeding and sodding and repaving, and the furnishing of all material, labor, equipment, tools and appliances necessary to complete the work as specified or as shown.

**FIRE HYDRANTS ABANDONED**

Where fire hydrants are indicated to be abandoned (not indicated for removal), no work is required, the hydrant becomes the property of the Contractor and shall be disposed of as he sees fit. The cost of such disposal shall be included in the price for Item 203 Excavation including Embankment Construction as per plan.

**2-INCH GALVANIZED BLACK IRON AND BRASS  
PIPE FOR FLUSHING CONNECTIONS, AIR COCKS AND DRAINS**

**PAYMENT**

No separate payment shall be made for 2-inch pipe. Payment shall be made at the contract unit price bid for the item with which the pipe is used.

**WORK INCLUDED**

The Contractor shall furnish all the materials for and shall properly connect in place at the locations shown on the drawings or as ordered, all 2-inch extra strong brass pipe and fittings, and all 2-inch extra strong galvanized black iron pipe and fittings respectively, which are necessary for the proper completion of the work included under this contract.

**BRASS PIPE AND FITTINGS**

All brass pipe and fittings shall be extra strong, 2-inch pipe size and the pipe shall conform to A.S.T.M. Specifications B 43-42. Fittings shall be extra strong weight and shall have sound, well fitting threads.

**GALVANIZED BLACK IRON PIPE AND FITTINGS**

All galvanized black iron pipe, nipples and couplings shall be extra strong black iron pipe A.S.T.M. Designation A-120. The fittings shall be beaded, of malleable iron, extra heavy weight. All pipe and fittings shall be hot dipped zinc coated inside and outside, and shall have sound, well-fitting threads.

**ERECTION**

All pipe shall be carefully placed to the proper lines and grades, and shall be connected up, unless otherwise shown, with screw fittings. Screw joints shall be made tight with a graphite paste and screwed home. A liberal number of unions shall be used to permit the ready removal of any section.

**VALVES**

**WORK INCLUDED**

The Contractor shall furnish all the materials for, and shall properly set in place and connect, at the locations shown on the drawings or as directed, all air cocks, drain valves, gate valves and valve boxes and covers, of the various sizes and types specified or ordered as required for the proper completion of the work included under this contract.

**AIR COCKS**

All air cocks or air vent valves shall be 2-inch brass angle type globe valves. 2-inch air cocks shall be equal in all respects to the Farnan "Cleveland Standard" Brass Air Vent Valve No. W-4695, as manufactured by the Farnan Brass Works.

**GATE VALVES**

(A) - Type of Valves: The gate valves shall be manufactured in full compliance with the Standard Specifications for Gate Valves for Ordinary Water Works Service of the American Water Works Association AWWA C-500-61 or latest revision thereof and in addition shall comply with the following supplementary requirements. All gate valves shall be of the non-revolving double disc parallel seat bottom wedge or side wedge type. All gate valves 20 inches and over in size shall include by-pass valves attached thereto. In opening or closing the valve, the gates shall be forced to ascend or descend by reason of the thrust exerted upon them by the valve stem nut; this thrust being generated by the rotation of the valve stem. In closing the valve, the discs when opposite the ports, shall be pressed firmly against the body seats by wedges or some other device equally suitable to the Engineer.

(B) - Valves with Stationary Stems: All gate valves, unless otherwise ordered, shall be made with single, non-rising stems.

(C) - Hub Ends: The dimensions of the bells on valves up to and including 24 in. in diameter shall conform to those for Class D pressure fittings, as required by AWWA C 100. On valves 30 in. and larger in size, the bell dimensions shall be for the classes ordered.

(E) - Flange Ends: The end flanges of flanged end gate valves shall conform in dimensions and drilling to the "American 125 pound Cast Iron Flanges Standard", unless otherwise ordered.

(F) - Screw Ends: All 2-inch gate valves and under shall be made with screw ends, unless otherwise specified.

(G) - Vertical and Horizontal Valves: All gate valves 16 inches and under, shall be constructed to work vertically. Valves over 16 inch waterway shall be constructed to work horizontally.

(H) - By-Passes: By passes with gate valves shall be provided on valves 20 inches and larger. The by-passes shall be located on or below the horizontal centerline of the valves. By-pass valves shall be of the same size as the by-pass and shall conform to the requirement of these specifications for the specific valve used. The size requirements of by-passes shall be as follows: 20-inch valves shall be provided with 3-in. by-passes; valves 24-in. to 30 in., inclusive, shall be provided with 4-in. by-passes; valves 36-in. to 42-in., inclusive, shall be provided with 6-in. by-passes; 48 in. valves shall be provided with 8-in. by-passes.

(I) - Flanges: When flanged valves are required, the flanges shall be faced and drilled. Bolt holes shall be spot faced on the back when necessary to secure an even bearing. All bolt holes shall be of the size shown on the drawings to be submitted and approved, shall be accurately drilled from templates, spaced equal distances apart and shall straddle horizontal and vertical axis, all as shown on the drawings. The dimensions and drilling of all end flanges shall conform to the spacing indicated on the drawings which shall be the American 125 pounds Cast Iron Flange Standard. Flanges shall be plain face with a smooth finish.

(J) - Marking: All gate valves 3 inches and over shall have the identity of maker, size and the year when made and also the letters "C.W.D." cast upon its body or dome in raised letters.

(K) - Stuffing Boxes: The stuffing box on each gate valve 3 inches or over, must be separate from the dome and fastened to it by bolts. For 2 inch valves and under, the stuffing boxes may be formed in the dome of the valve. When required by the Director, valves 16 inches and smaller shall be furnished with "O" ring type seal plate. The seal plate shall be fitted with at least two "O" rings, the lower "O" ring serving as the pressure seal and the upper "O" ring as a combined dirt and moisture seal. The "O" rings shall be Precision Rubber Corporation Quality Compound No. 122-70, Garlock No. 8990, or National No. 622731.

(L) - Seat and Gate Rings: Dimensions of the bronze seat and gate rings shall be proportioned to fit the test pressure required, and shall meet the approval of the Engineer. The rings shall be firmly secured in place by an approved device, which will prevent them from working loose, particularly when the valve is left partly open. Dimensions of the bronze seat and gate rings for gate valves shall be not less than that specified in the following tables. Body seat rings shall be made of Grade One Bronze. Gate seat rings shall be made of Grade Five Bronze.

VALVE SIZE	BODY RINGS		BODY AND GATE RINGS			GATE RINGS	
	FACE	DEPTH	THICKNESS AT BASE OF THREADS	BOTTOM WEDGE		FACE	
				FACE THICKNESS	FACE	THICKNESS	DEPTH
3"	9/16	9/16	3/16	3/16	5/8	5/32	1/4
4"	9/16	9/16	3/16	3/16	5/8	5/32	5/16
6"	1 1/16	9/16	3/16	5/32	11/16	5/32	5/16
8"	3/4	5/8	3/16	7/32	13/16	5/32	5/16
10"	3/4	5/8	3/16	7/32	13/16	5/32	11/32
12"	7/8	5/8	7/32	7/32	1	5/32	11/32
16"	1-1/8	3/4	1/4	9/32	1-1/4	13/16	1/2
20"	1-3/8	1-1/8	5/16	3/8	1-3/8	3/8	5/8
24"	1-3/8	1-1/8	5/16	3/8	1-3/8	3/8	5/8
30"	1-1/2	1-1/4	3/8	7/16	1-1/2	7/16	3/4

VALVE SIZE	SIDE WEDGE		FACE THICKNESS	FACE	ALL BRONZE DISC	DEPTH
	FACE	DEPTH				
3"	13/32	1/2	3/16	3/16		
4"	7/16	9/16	3/16	3/16	1/2	5/32
6"	1/2	11/16	9/32	1/4	5/8	5/32
8"	17/32	11/16	9/32	1/4	11/16	5/32
10"	5/8	13/16	3/8	5/16	13/16	5/32
12"	5/8	13/16	3/8	5/16	13/16	5/32
16"	3/4	1	15/32	3/8	7/8	3/16
20"	7/8	1-5/16	17/32	7/16	1	1/4
24"	1-1/16	1-3/8	21/32	1/2	1-3/16	5/16
30"	1-5/16	1-1/2	25/32	1/2	1-7/16	5/16

**DIMENSIONS IN INCHES**

(M) - Valve Stem: All gate valves shall be of the single screw type. The stems shall be of Grade Three Bronze. The threads of stems and stem nuts shall be of Acme, modified Acme or one-half V type. If requested, a manufacturer's certificate of test shall be furnished with all bronze stems. All stem collars shall be cast integral with stems. The diameters of

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*William J. ...* ENGINEER OF DESIGN REVIEW

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## TRANSPORTATION AND DELIVERY

(A) - The Contractor shall transport, deliver and distribute along the line of the work, the pipe, specials and appurtenances.

(B) - Pipe shall be loaded for shipment upon suitable cars or trucks which shall be provided with wooden skids. In loading and unloading the pipe, more than ordinary care must be taken to prevent any injury to the concrete cylinder pipe, steel and pipe ends and protuberant steel connections. Such work must be done slowly with the pipe at all times under perfect control, and under no condition shall the pipe be dropped.

(C) - In distributing the pipe in the field, each pipe must be placed as nearly as possible to the point where it is to be laid, and facing in the proper direction. Suitable skids or blocks must also be left under each pipe, and the pipe securely wedged in place to prevent its being moved until required. A steel cable sling shall be used for rolling or lifting pipe. No iron chains shall be used. Pipe which has been improperly distributed and which must be moved longitudinally along the trench shall be reloaded on a wagon, or lifted and swung by a derrick or moved by such means as may be satisfactory to the Director.

(D) - If, in the process of manufacture, transportation, or handling, any concrete pipe or special receives any indentation or deformation to the concrete, steel ends or connections, the removal of which will in any degree injure it, such pipe or special shall be rejected and replaced at the Contractor's expense.

(E) - Pipe which is placed in storage, streets or drives must be so arranged so as not to cause undue inconvenience to traffic and must be protected sufficiently to prevent injury to the concrete cylinder pipe, and the coating of the steel ends and connections.

## DRAWINGS

(A) - The Contractor shall submit to the Director for approval, duplicate prints of all shop drawings as developed by the fabricator, for concrete pipe, fittings and specials, and miscellaneous details, such as air cock and drain forgings, castings, etc. Drawings shall include details, layouts and laying schedule for all pieces furnished requiring drawing submittal.

(B) - One print of each of the drawings submitted will be returned with the criticisms or approval of the Director. In case the drawings are not approved, the Contractor shall again send for approval duplicate revised prints of the drawings to take care of the criticisms noted, and after the drawings have been finally approved, the Contractor shall furnish to the Director three (3) reproduceable tracings

on cloth or mylar, of each drawing. No work shall be done in the shop until after the drawings have been finally approved. Drawings shall be on a composite sheets 24"x 36". No smaller sheets will be accepted.

(C) - The approval of the drawings by the Director shall not relieve the Contractor of any of his obligations in connection with this contract.

(D) - The Contractor shall submit to the Director a copy of the manufacturer's design calculations.

## EXPERIENCE QUALIFICATIONS

All bidders will be required to show to the satisfaction of the Director that the type and size of pipe and fittings he proposes to furnish, will be made by a manufacturer whose pipe has been successfully used for like work outside of the builder's works for a period of not less than three (3) years.

## FURNISHING AND SETTING 6" FIRE HYDRANTS

### WORK INCLUDED

The Contractor shall furnish all hydrants, caulking material, labor, tools and equipment for and shall properly connect at the location shown on the contract drawings, 6" hydrants, complete, as required for the proper completion of the work included under this contract.

### HYDRANTS

The 6" fire hydrants shall be City of Cleveland Standard and shall conform to the City's specifications on file at 1201 Lakeside Avenue Cleveland, Ohio 44114 and the Fire Hydrant Detail shown on sheet No. 202.

### SETTING

(A) - General Location: Hydrant shall be located in a manner to provide complete accessibility, and in such manner that the possibility of damage from vehicles or injury to pedestrians will be minimized. Unless otherwise directed, the setting of any hydrant shall conform to the following:

(B) - Location Regarding Curb Lines: When placed behind curb the hydrant barrel shall be set so that center of barrel will be no less than 3 feet from the gutter face of the curb, or deviate from location indicated on contract drawings, except by consent of the Engineer.

(C) - Location Regarding Sidewalk: When set in the lawn space between the curb and the sidewalk, or between the sidewalk and the property line, no portion of the hydrant or nozzle cap shall be within 6 inches of the sidewalk.

(D) - Position of Nozzles: The hydrant shall stand plumb, with the nozzles pointing toward the road and at an angle of forty-five degrees therefrom. Where hydrant branch piping is parallel with, or not at right-angles to the curb, the Contractor shall release swivel head bolts and adjust the hydrant nozzles to face the road at the proper angle. A hydrant without swivel heads will be adjusted by the City where necessary to correct the angle on nozzles. The elevation shall conform to the established grade with tops of frost casing at least four (4) inches above grade.

(E) - Connection to Main: The hydrant shall be connected to the main pipe with a cast iron branch controlled by the independent gate valve of the same size as hydrant, except as otherwise directed.

(F) - Drainage at Hydrant: Drainage shall be provided at the base of the hydrant by filling around the elbow with coarse gravel or crushed stone to at least six (6) inches above the waste opening. Wherever a hydrant is set in rock, clay or other impervious soil, the trench shall be widened and deepened on each side of the hydrant base, which space shall be filled compactly with coarse gravel or broken stone mixed with coarse sand of sufficient quantity to absorb all water to be drained from the hydrant when the valve is closed.

(G) - Anchorage for Hydrant: The hydrant shall be set on a stone slab or similar foundation and base of hydrant and hydrant tee well braced against unexcavated earth at the end of the trench with concrete backing, or it shall be tied to the pipe with suitable rods or clamps as directed by the Engineer.

(H) - Cleaning: The hydrant shall be thoroughly cleaned of dirt or foreign matter before setting.

### BASIS OF PAYMENT

(A) - The unit price for each "Item Special, Furnishing and Setting 6" Fire Hydrant" shall include furnishing the 6" fire hydrant, in accordance with respective specification set forth elsewhere in these notes, setting, testing, painting, the excavation, sheeting and shoring, backfilling, and the furnishing of all labor, materials, equipment, tools and appliances necessary to complete the work as specified or as shown.

(B) - The cast iron pipe will be paid for under cast iron pipe and fittings.

(C) - The valves and valve boxes will be paid for under valves.

### FIRE HYDRANTS RELOCATED

### WORK INCLUDED

The Contractor shall remove the hydrants and properly set in place and connect at the locations shown on the drawings or as directed by the Engineer. This shall include all excavation, backfilling, seeding and sodding, and repaving required for the proper completion of the work included under this contract.

### MATERIALS

All hydrants to be relocated must be in good condition. All other materials and appurtenances necessary for the proper completion of this item shall be of the kind and grade called for in these notes for the particular kind of construction in which the materials are to be used.

### CONSTRUCTION METHODS

The construction methods shall conform to the requirements of Item Special "Furnishing and Setting 6" Fire Hydrants" as set forth elsewhere in these notes.

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*William J. Swaney* ENGINEER OF DESIGN REVIEW

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stems at the base of the thread shall not be less than those shown below. The stem opening and thrust-bearing recess shall be Grade One, bronze bushed. The number of threads per inch shall be as given below.

SIZE OF VALVE INCHES	DIAMETER OF STEM AT BASE OF THREAD - INCHES	NO. OF THREADS PER INCH
2	0.469	4
3	0.859	4
4	0.859	3
6	1.000	3
8	1.000	3
10	1.125	3
12	1.188	3
16	1.438	3
20	1.896	3
24	1.980	2
30	2.480	2

(N) - Wrench Caps: The wrench caps and retaining nuts on heads of valve stems and pinion shafts shall be of Grade Three Bronze. On valves 24 inches and over, wrench caps shall be 2 inches square and 2 inches deep. On valves 4 inches to 20 inches, inclusive, they shall be 1-3/4 inches square on top, 1-7/8 inches square at base and 1-3/4 inches deep. On 3 inch valves and under, they shall be 1-1/4 inches square on top, 1-3/8 inches square at base and 1-1/2 inches deep. Machined wrench caps for valves 3 inches to 48 inches inclusive shall be fitted to a machined square stem or pinion shaft and held in place by a retaining nut. Wrench caps shall have a cut-away skirt to permit easy access to gland bolts.

(O) - Valves to open clockwise except 2 inches and under. All gate valves 3 inches and over including bypass valves, shall be made to open by turning in a clockwise direction. All valves to be so made that they can be easily operated.

(P) - Facing of Gates: All discs or gates and threads for seat rings in the body shall be machined true and a groove or grooves shall be machined in each disc or gate for the reception of the face ring. The disc and seat rings shall be securely and rigidly attached to the discs or body seats in a manner approved by the Engineer, and the rings are to be finished to a true surface.

(Q) - Rollers and Scrapers: In all valves 20 inches in diameter and larger designed to lie horizontally, each gate or disc shall be provided with two bronze rollers travelling on bronze-faced tracks and provided with suitable bronze scrapers or two stainless steel rollers travelling on stainless steel-faced tracks and provided with suitable stainless steel scrapers. The thickness of the facing of the tracks shall be not less than 1/4 inch. The bronze shall be Class 1 and the stainless steel shall be ASTM A 276-55, Type 302.

(R) - Valve Guides: All valves 20 inches in diameter and larger shall be provided with guides or tracks which shall be made straight and true, and all irregularities must be machined off. The guides or tracks of horizontal valves shall be substantially faced with a minimum of 1/4 inches of Grade One Bronze, or stainless steel ASTM A 276-55, Type 302, satisfactory to the Engineer, securely fastened and planed off smooth and true.

(S) - Gearing: All valves 20 inches in diameter and larger shall be equipped with enclosed cut tooth steel gears. Gears, shafts and bearings shall be such as to provide easy operation without bending or twisting.

(T) - Dowel Pins: All gear valves shall have two dowel pins set in the flanges connecting the dome and body. Size of the pins to be shown in plans.

(V) - Grease Cases: All valves 20 inches in diameter and larger shall have water tight grease cases installed.

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The grease cases shall be of the extended type and shall be made of cast iron conforming to ASTM specifications, serial designation A 126, Class B, or any subsequent amendment thereto. Bearing surfaces for valve stem and pinion shaft shall be bronze bushed with Grade One Bronze. The grease cases shall be securely bolted to the valve bonnet through a heavy cast iron yoke. The yoke shall be of sufficient length to provide space for repacking valve and grease case stuffing boxes. All grease cases shall be provided with a removable cover securely bolted in place to allow easy access to the gears. There shall also be provided convenient filling and draining plugs and sufficient oil to fully submerge the pinion gear. The valves shall be delivered with the grease cases filled with the proper oil as recommended by the manufacturer.

(W) - Indicators: All valves 20 inches in diameter and over, shall be equipped with indicators denoting the positions of the gate. The moving part and bearings to be of bronze or bronze-lined.

(AA) - Bronze Parts: The stems, stem nuts, operating nuts, retaining nuts, disc and seat rings, shall be of solid bronze. Other parts such as wedges, glands, thrust bearings, gear spindles, rollers, scrapers and tracks, and all other parts coming together in operation, shall be of bronze, or substantially lined with bronze or stainless steel or a thickness not less than 1/4 of an inch and as shown on drawings submitted and approved. All 2 inch valves and under shall be made entirely of bronze, except handwheels which shall be of malleable iron.

(BB) - Cast Iron Parts: The bodies, covers, discs, frames, etc., of all gate valves 3 inches and over, shall be of cast iron.

(CC) - Waterway Opening: With the valve open, an unobstructed waterway shall be afforded, the diameter of which is not to be less than the full nominal diameter of the valve.

## MATERIAL SPECIFICATIONS

(A) - Strength of Valves: The gate valve shall be designed for 150 lb. working pressure and shall withstand an internally applied hydrostatic pressure at all points of at least 300 lbs. per square inch. A factor of safety of not less than 10 shall be used on the design. Should tests develop any weakness, the valves from that design shall be rejected and a new design made.

(B) - Reinforcement at Flanges: All valve flanges shall be reinforced by fillets in accordance with the manufacturer's practice proven satisfactory in actual service.

(C) - Joints: All joints of the valves shall be faced true in a lathe or planer, and put together with a gasket of some material acceptable to the Engineer.

(D) - Bolt Holes: All bolt holes shall be accurately drilled from templates and spaced equal distances apart.

(E) - Bolts and Nuts: All bolts and nuts shall be made of silicone bronze (ASTM B 98-55, Alloy A) or stainless steel (ASTM A 276-55, Type 302).

(F) - Parts to be Interchangeable: All parts of valves of the same size and make must be perfectly interchangeable and all work done in a thorough and workman-like manner.

(G) - Castings: All castings, whether of bronze, iron or steel, shall be sound and smooth without cold shuts, swells, lumps, scabs, blisters, sand holes or

other imperfections, and shall be made in accordance with the best modern foundry practice to obtain castings of the best quality and of uniform thickness. No welding, plugging, or filling of holes or other defects will be permitted. For parts whose thickness is less than one (1) inch, casting being thinner than the specified thickness by .06 of an inch or more shall be rejected, and for parts whose thickness is one (1) inch or more, castings being thinner than specified by .08 of an inch or more shall be rejected.

(H) - Bronze Parts: (1) Bronze for parts, other than those listed below, shall be Grade One. (2) Valve stems, pinion shafts, stem nuts, wrench caps and retaining nuts shall be made of Grade Three Bronze. (3) Disc rings shall be made of Grade Five Bronze.

(I) - Tests of Bronze: (1) If demanded, a manufacturer's certificate of test shall be furnished with all bronze stems. (2) The certificate shall describe the method of test.

(J) - Cast Iron: (1) Quality: Cast iron shall conform to ASTM Specifications A 126, Class B, or latest revision thereof. All iron castings shall be tough and without brittleness, such as may be cut drilled and chipped by hand with due ease. A blow from a hammer shall produce an indentation on the edge of the casting without flaking the metal.

(2) - Tests: Bars from the molten metal from which the valves are being made shall be tested at such time and in such manner as the Engineer may require. The requirements of ASTM Specifications A 126 shall govern testing procedures to determine the physical and chemical characteristics of the iron castings. Should the result obtained from the bar tested fail to show that the cast iron meets the requirements herein specified, the entire melt will be rejected. Test bars, however, whose failure is due to inherent defects shall not be considered. All valves made from iron showing less strength than called for in the ASTM Specifications shall be rejected.

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(L) - Quality of Materials: Grade One cast bronze shall conform to the properties of ASTM B 62.

Grade Two cast bronze shall conform to the properties of ASTM B 132, Alloy A.

Grade Three cast bronze shall conform to the properties of ASTM B 132, Alloy B.

Grade Four rolled bronze shall conform to the properties of ASTM B 21, Alloy A (one-half hard).

Grade Five bronze shall be sufficiently malleable to conform to dovetailed grooves when peened or rolled, and shall have a minimum compressive strength, without deformation, of 4,000 PSI, and shall have the following chemical composition:

Copper, per cent	91.0
Tin, per cent	0.0
Zinc, per cent	5.0
Lead, per cent	4.0

Silicon Bronze - This bronze shall conform to ASTM Specification B 98, Alloy A.

Stainless Steel - The stainless steel shall conform to ASTM Specifications A 276, Type 302.

Cast Iron - The cast iron shall conform to ASTM Specification A 126, Class B.

(M) - Other Materials: All other materials used in the manufacture of these valves and not specified in the specifications shall be of the best quality of their respective kinds, and subject to inspection, tests, and approval by the Engineer.

(N) - Chemical Analysis: Chemical analysis of the material used shall be furnished by the Contractor whenever required by the Engineer.

(O) - Cleaning of Castings: All iron castings shall be thoroughly cleaned on the outside and inside surfaces, and protected from rain or moisture until they are painted.

(P) - Hydrostatic Tests at Shop: All gate valves shall be tested in the shop by hydrostatic pressure, by closing the valve and applying the required test pressure in the body and dome of the valve as specified below.

3" and under	300 PSI - No time requirement
4" through 12"	400 PSI - No time requirement
14" through 20"	300 PSI - for 15 minutes, drop pressure to 150 PSI, then elevate again to 300 PSI for 15 minutes - a total of 1/2 hour
24" through 48"	300 PSI - for 1/2 hour, drop pressure to 150 PSI, then elevate again to 300 PSI for 30 minutes - a total of 1 hour

This is a modification of Section 29 of the "Standard Specifications AWWA Designation C 500-61". All leaks, flaws or other defects developed in making these tests shall be corrected to the satisfaction of the Engineer or the entire piece shall be rejected. After testing, all valves shall be thoroughly drained. All equipment for testing and all tests shall be made at the Contractor's expense.

(Q) - Performance Tests: Each valve shall be operated in the position that it will assume in service and for the full length of gate travel in both directions, to demonstrate the free and perfect functioning of all parts in the intended manner. Any defects of workmanship shall be cor-

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rected and the test repeated until satisfactory performance is demonstrated.

## PLACING AND TESTING

(A) - All valves shall be set accurately and carefully to the lines and grades given. All connections to pipe shall have the necessary flanged lead or screwed ends as required under the following items: Cast iron pipe and fittings, furnishing and setting 6" (six inch) hydrants, and 2-inch galvanized black iron pipe and brass pipe and as shown on the valve schedule.

(B) - After the valves are set in place and ready to operate, the Contractor shall test them under working pressure and conditions herein specified under the Specification "Testing Mains", and any valve found to leak shall be made water-tight and, if found to be of faulty design, shall be satisfactorily repaired or replaced by the Contractor.

## PAINTING

(A) - Iron body valves shall either be dipped in asphalt paint and all bronze parts cleaned, or all iron castings shall be painted inside before assembling with two (2) coats of an approved paint and, after passing the hydraulic test, shall be given at least two (2) coats of approved paint outside.

(B) - After erection, all exposed metal surfaces of valves except brass or bronze shall be painted with two (2) field coats of coal tar pitch paint equal to Inertol 66 or Koppers Bitumastic 50 or approved equal.

## INSPECTION

The Engineer or his authorized designate will inspect the material and work done, as the interests of the City or State may require. Such officer shall have unrestricted access to the Contractor's plant, and to all parts of the work, and other places at which the preparation of the material and the construction of the different parts of the work to be done under these specifications are carried on, and he shall receive all facilities and assistance to carry out his work of inspection and testing in a manner satisfactory to the Engineer. Such inspection shall not relieve the Contractor from any obligation to perform said work strictly in accordance with the specifications, or any modifications thereof as herein provided, and work not so constructed shall be removed and made good by the Contractor at his own expense.

## DRAWINGS

(A) - Prior to the manufacture of any valves, the Contractor shall submit for the approval of the Engineer and Director of Public Utilities of the City of Cleveland, complete working, detail, and dimension drawings showing thicknesses and kinds of material, and similar information.

(B) - One print of each of the drawings submitted will be returned with the criticisms or approval of the Engineer. In case the drawings are not approved, the Contractor shall again send for approval duplicate revised prints of the drawings to take care of the criticisms noted, and after the drawings have been finally approved, the Contractor shall again furnish to the Engineer fourteen additional prints, six of which shall be furnished to the Director of Public Utilities of the City of Cleveland, of each drawing. No work shall be done in the shop until after the drawings have been finally approved.

## BASIS OF PAYMENT

The unit price stipulated for each "Item Special-Valves," classified as to size and type shall include the furnishing, placing, testing and painting of the air cock, drain valves, check and gate valves, including by-pass valves, operating nuts, valve boxes and other accessories and appurtenances and the furnishing of all labor, tools, materials and appliances necessary to complete the work as specified or as shown.

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Note:

- (a) - Air Cock is included for payment in Item Special-2" Air Cock and Valve Box Complete.  
(b) - Drain Valve is included for payment in Item Special-2" Drain Complete and 4" Drain Complete.

## ITEM SPECIAL TAPPING SLEEVE AND VALVE AND VALVE BOX

## WORK INCLUDED

(A) The Contractor shall furnish the tapping sleeve, valve and valve boxes for the locations shown on the drawings or as directed by the Engineer, of the sizes shown or required for the proper completion of the work included under this contract.

(B) In general, the work of this item contemplates the furnishing and delivery of the material to the proper location on the job. The City of Cleveland, Division of Water, will install the tapping sleeves and valves, but the Contractor shall do all the necessary excavation and backfilling required therefor and repaving if so noted on the contract drawings.

## QUALITY OF VALVES

The tapping sleeve and valves shall be A.P. Smith Manufacturing Company or approved equal. All sleeves shall be of the class and size as shown or as directed and shall conform for materials, tests, painting, drawings, etc., to the requirements of the item cast iron pipes and fittings, of these specifications, insofar as they apply. The valves furnished and used under this item shall comply with the requirements of the item valves of this contract, whenever the same may be pertinent. The provisions of the sections (U), (V) and (W) of the item on valves pertaining to grease cases shall apply to the tapping sleeves and valves.

## BASIS OF PAYMENT

The unit price stipulated for each "Item Special-Tapping Sleeve and Valve and Valve Box" furnished under this item shall include the furnishing and delivery to the proper location and shall include all excavation, sheeting and shoring, backfilling, sand backfilling, seeding and sodding and repaving, if so noted on the contract drawings and the furnishing of all labor, equipment, materials, tools and appliances necessary to complete the work as specified or as shown. The installation of the tapping sleeves and valves by the City of Cleveland, Division of Water, will be at no expense to the Contractor.

## ITEM -SPECIAL CUTTING IN VALVE AND VALVE BOX COMPLETE

## WORK INCLUDED

Due to operating pressures, class of cast iron pipe and use demand, it is necessary that a hub valve be cut-in by the Contractor.

The time of installation will be set by the Division of Water and Heat.

The Contractor will do all pipe cutting and installing.

The Contractor shall furnish the hub valve, and valve box complete, Standard 38 Dresser or Smith-Blair Couplings, or approved equal, cast iron pipe and lead for the instal-

APPROVED JUNE 24, 1977

*William J. Lucey* ENGINEER OF DESIGN REVIEW

1<sup>st</sup> HIGH SERVICE DISTRICT

DEPARTMENT OF PUBLIC UTILITIES  
DIVISION OF WATER AND HEAT  
CLEVELAND, OHIO

SUBJECT WATER WORK NOTES FOR INTERSTATE  
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lation. The Contractor shall excavate, tight sheet and shore as necessary the work, pit, backfill and repave as necessary. The work shall be performed under the supervision of the Division of Water and Heat.

# WATERWORK NOTES

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## BASIS OF PAYMENT

The work included in this item shall be paid for at the unit price bid for each "Item Special-Cutting-In-Valves and Valve Box, Complete" and classified as to size. The price and payment shall constitute full compensation for performing all excavation, sheeting, shoring, backfilling and repaving as necessary and the furnishing of all materials, labor, tools, equipment and incidentals necessary to complete this item.

## BRICK AND PLAIN CONCRETE MASONRY

### WORK INCLUDED

Under these items the Contractor shall furnish all necessary labor, materials, tools and equipment for the construction, complete, of all miscellaneous masonry structures and including all water main drain and pitometer vaults, access and anchorage manholes, valve chambers, anchors, piers at pipe bends and under line valves, floors for drain and valve vaults, and other appurtenant work together with the hauling, mixing, placing, forms, scaffolding, sheeting and bracing, grouting, plastering, curing, etc., all as specified, required or shown on the contract drawings.

### BRICK AND MASONRY MATERIAL

(A) The material furnished by the Contractor for the various kinds of masonry construction to be constructed shall conform to the following specifications:

(B) All brick furnished and used shall be as specified in Section 704.01 of The State of Ohio Standard Construction and Material Specifications.

(C) Section M-13 Portland Cement (ASTM C-150, Type I). Portland cement shall conform to the requirements for "Type I" of the specifications for portland cement, ASTM designation C 150.

The compressive strength requirements shall govern.

### (PACKAGING AND MARKING)

When the cement is delivered in packages, the name and brand of the manufacturer shall be plainly indicated thereon. Similar information shall be provided in the shipping invoices accompanying the shipment of packaged or bulk cement. A bag shall contain 94 pounds net. A barrel shall consist of 376 pounds net. All packages shall be in good condition at the time of inspection.

(D) Sand shall be as specified in Section 703.03 of The State of Ohio Standard Construction and Material Specifications.

(E) Course aggregate shall be as specified in Section 703.02 of The State of Ohio Standard Construction and Material Specifications.

(F) All water shall be clean and accurately measured for each batch of concrete.

(G) All plain concrete shall be mixed in the proportion of one (1) part of cement, two (2) parts of sand and four (4) parts of coarse aggregate.

(H) All cement mortar shall be mixed in the proportion of one (1) part of cement to three (3) parts of sand, except the mortar for brick catch basins and sewer manholes which shall be 1:2 mix.

### MANHOLE CONSTRUCTION

(A) All brick manholes, brick necks and extensions shall be built in accordance with the contract drawings.

(B) The walls of manholes shall be built of No. 2 shale brick laid in 1:3 portland cement mortar, with brick arranged radially as headers, forming a wall nine (9) inches thick. In deep manholes, the wall shall be 13 inches thick below a point 12 feet from the surface. All of the brick composing said manholes shall be laid in full mortar beds and joints, with no mortar joints appearing on the inner surface of the manhole exceeding three-eighths inches (3/8") thick.

(C) The top of the walls of manholes shall be properly leveled off with mortar so as to form a flat surface upon which the cast iron manhole ring is to rest, and said manhole shall be carried to a proper height as indicated by the contract drawings.

(D) The entire outer surface of all brick manholes shall be plastered with a smooth coating of 1:3 portland cement mortar, at least one-half (1/2) inch thick.

### BASIS OF PAYMENT

Payment for brick or plain concrete masonry shall be included in the unit price bid for the item in which it is used. Payment for concrete piers and anchors shall be included in the unit price bid for Item Special - Water Mains.

### MISCELLANEOUS METAL WORK

#### WORK INCLUDED

(A) The Contractor shall furnish and install all miscellaneous metal work which is required for the proper completion of the work included under this contract and is not specifically included under the other items of these specifications.

(B) In general, the work shall include the furnishing and installing of manhole frames and covers, manhole steps, valve boxes, extension stems and brace, structural

members, bronze bolts, and other similar items required for the proper completion of the work.

### MATERIALS

All castings shall conform to the requirements of Item 604 of the State of Ohio Department of Highways Construction and Materials Specifications except that the cast iron shall conform to ASTM A-48 class 30B. Ductile iron shall meet the requirements of the ASTM Specifications A536. All structural steel shall meet the requirements of the ASTM Specifications A 7-46. All bronze bolts and nuts shall conform to U.S. Standard sizes, and shall be clean cut and have well fitted threads. All bronze bolts and nuts shall be of Tobin or Manganese Bronze, or of similar approved materials.

### CLEANING AND TESTING

All castings shall be thoroughly cleaned and subjected to a careful hammer test. No castings shall be coated unless clean and free from rust, and approved in these respects by the Engineer or his authorized inspector immediately before being dipped.

### COATING

Each casting shall be sprayed or brushed inside and out with one coat of asphaltic compound varnish. The varnish shall be made of high grade asphalt fluxed and blended with properly treated drying oils and thinned to a proper consistency with a volatile solvent. The varnish shall be as specified in Federal Specification TT-V-51a or Joint Army-Navy Specification JAN-P-450.

Other methods of coating and types of coating materials shall be subject to the approval of the Engineer, in addition to the shop coat the castings shall receive two (2) coats of approved paint.

### INSPECTION

The Engineer or his authorized assistant shall have the right to inspect the material and work done, as the interests of the City or State may require. Such inspection shall not relieve the Contractor from any obligation to perform said work strictly in accordance with the specifications, or any modification thereof, as herein provided, and work not so constructed shall be removed and made good by the Contractor, at his own expense. All manhole rings and covers must be sound and shall conform to these specifications, and any defective castings which may have passed the inspector at the works, or elsewhere, shall be at all times liable to rejection when discovered, until the date of final payment under this contract.

### VALVE BOXES AND COVERS

The Contractor shall furnish and install, over each vertically set valve at the locations shown on the drawings, or as required, valve boxes and covers of the types and sizes indicated on the contract plans. These shall be carefully located over the valve nuts, and shall be set plumb and true to elevation as required. Materials and specifications for cast iron shall conform to the State of Ohio Specification 604, except that the cast iron shall conform to A.S.T.M. A-48.

APPROVED JUNE 24, 1917

*William J. Lacey*  
ENGINEER OF DESIGN REVIEW

<b>1<sup>st</sup></b> HIGH SERVICE DISTRICT
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DETAILED DRAWINGS

Complete detailed drawings of miscellaneous metal work shall be submitted to the Engineer for approval, prior to the manufacture of any work to be furnished under this item, in accordance with these specifications unless shown in details on the contract drawings.

PAINTING

All miscellaneous metal work not galvanized shall be thoroughly cleaned and given three (3) field coats of coal tar pitch equal to Inertol 50 or Bitumastic 50 or approved equal.

STEPS AND LADDERS

Ductile iron steps and ladders of the size and shape shown on the contract drawings shall be built into the brick and concrete masonry of the manholes as indicated on the drawings and be in accordance with the requirements of Section 711.13 of The State of Ohio Standard Construction and Materials Specifications.

RIMS AND COVERS

(A) All cast iron manhole rims and covers of the forms, dimensions and details shown on the contract drawings shall be furnished and installed as directed.

(B) The rims shall be properly set in place in a full bed of mortar or poured monolithic in the masonry, at such elevation as to make the top of the rim conform to the finished surfaces of the structures or the finished grade as estimated by the Engineer.

BASIS OF PAYMENT

No separate payment will be made for Miscellaneous Metal Work. The furnishing, erecting, machining, fitting, adjusting, bolting, cleaning and painting of all Miscellaneous Metal Work and the furnishing of all labor, materials, tools and equipment shall be included in the contract unit prices bid for the pertinent "Item Special - Masonry Structures" and "Item Special - Valves."

ITEM SPECIAL-ADJUST FIRE HYDRANT AND VALVE BOX TO GRADE

WORK INCLUDED

The Contractor shall perform all operations necessary to the adjusting of the existing Hydrant and Valve Box to the new grade at the locations shown on Sheet Nos. 207 through 208. The work shall include excavating, tamping earth under the valve box, backfilling, inserting extension sections on the hydrants, seeding and sodding required for the proper completion of the work under this contract.

The adjusted height of the hydrant hose connection above the ground or pavement grade shall be in accordance with the requirements of the City of Cleveland Fire Department.

BASIS OF PAYMENT

The work included in this item shall be paid for at the contract unit price bid for each "Item Special - Adjust 6" Hydrant and Valve Box to Grade". This price and payment shall constitute full compensation for performing all of the requirements of this item, furnishing all necessary materials, labor, tools, equipment, supplies and incidentals.

ITEM -SPECIAL- ADJUST WATERWORKS STRUCTURES TO GRADE

WORK INCLUDED

The Contractor shall raise or lower the existing waterworks structures to fit the revised grade.

# WATERWORK NOTES

BASIS OF PAYMENT

The work included in this item shall be paid for at the contract unit price bid for each "Item Special- Adjust Existing Waterworks Structures to Grade", which price and payment shall constitute full compensation for adjusting valve boxes, vaults, access manholes and any required excavation, backfilling, tamping, seeding and sodding, pavement restoration and for the furnishing of all labor, equipment, materials, tools and incidentals necessary to complete this item.

ITEM SPECIAL-REMOVE ABANDONED CURB COCK AND VALVE BOX

WORK INCLUDED

The Contractor shall either remove or leave in place the abandoned curb cock. The valve box shall either be removed or broken off at least 1' below the ground surface and backfilled. If the valve box is in a paved area, the area shall be restored to match the existing pavement.

BASIS OF PAYMENT

The work included in this item shall be paid for at the contract unit price bid for each "Item Special- Remove Abandoned Curb Cock and Valve Box", which price and payment shall constitute full compensation for abandoning the valve and removing the valve box, backfilling, seeding, repaving, and for the furnishing of all materials, labor, equipment, tools and incidentals necessary to complete this item. All removed materials shall become the property of the Contractor.

ITEM SPECIAL- "SERVICE CONNECTION EXTENDED" AND "WATER METER RELOCATED"

The Contractor will furnish the piping material for and the City shall make all changes required in the relocation of existing house connections and meters from the corporation cock to the curb cock. The Contractor shall do all the necessary excavation, backfilling and repaving required. Materials to be furnished by the Contractor are listed on Sheet No. 201.

Water meter vaults shall be constructed by the contractor and payment will be made at the unit price bid for each "Item Special - Meter Vault."

BASIS OF PAYMENT

The actual number of "Item Special- Service Connection Extended and "Item Special- Water Meter Relocated" shall be paid for at the contract unit price. The price and payment shall constitute full compensation for performing all of the requirements of the item including the furnishing of all materials, labor, tools, equipment and incidentals.

The labor, tools, equipment and incidentals furnished by the City of Cleveland, Division of Water, will be at no expense to the Contractor.

ITEM SPECIAL-RELOCATE, RETAP AND RECONNECT SERVICE CONNECTION

The Contractor shall furnish the piping materials and the City shall make all changes necessary to reconnect. The Contractor shall do all excavation, backfilling and repaving. The Contractor shall do all work from Curb Cock Box to the dwelling where necessary.

BASIS OF PAYMENT

The actual number of "Item Special-Relocate, Retap and Reconnect Service Connections", shall be paid for at the contract unit price. This price and payment shall constitute full compensation for performing all of the requirements of this item, including furnishing all necessary materials, labor, tools, equipment, supplies and incidentals. The labor, tools, equipment and incidentals furnished by the City of Cleveland, Division of Water, will be at no expense to the Contractor.

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GENERAL NOTES

The exact location of existing underground structures, utilities, etc. is not known and the information shown on the plans is to be used at the contractors risk.

The water line stationing is along horizontal centerlines of the pipe. The elevations are based on sea level datum.

The static head used for both design and testing shall be measured from elevation 927.00. The field testing head shall be 75 p.s.i. plus that due to the static head, but in no case less than 100 p.s.i..

The Contractor shall notify R.J. METTLER INSPECTION & ENFORCEMENT Three (3) working days prior to starting any water works construction. Call 694-3065

ITEM SPECIAL-ADJUST VALVE BOX TO GRADE

WORK INCLUDED

The Contractor shall raise or lower the existing valve box to fix the new grade by using appropriate extension stem sections, if needed, or by excavating under or tamping backfill under the valve box to insure that the box has a firm footing.

PAYMENT

The work included in this item will be paid for at the contract unit price bid for each "Item Special-Adjust Valve Box to Grade" which price and payment shall constitute full compensation for adjusting the valve box, excavation, tamping earth under valve box, backfilling, seeding and sodding and repaving and for the furnishing of all labor, materials, small tools, equipments and incidentals necessary to complete this item.

ITEM SPECIAL-2" AIR COCK AND VALVE BOX COMPLETE

WORK INCLUDED

The Contractor shall furnish pipe with 2" air cock connection and furnish and install the 2" Air Cock and Valve Box as shown in the "Water Work Details," at the locations shown in the plans.

PAYMENT

The work include in this item shall be paid for at the contract unit price bid for each "Item Special-2" Air Cock and Valve Box Complete," which price and payment shall constitute full payment for the furnishing and installing of all materials, labor, equipment, tools and appliances necessary to complete this item of work in place.

ITEM SPECIAL "4" DRAINS COMPLETE

WORK INCLUDED :

The contractor shall provide water mains with tangential outlets of the sizes indicated at the location shown on the plans in accordance with the waterwork details on sheet no. 201

The unit price stipulated for each "Item Special - Drains Complete" of the sizes specified shall include the excavation, back filling, furnishing and installing pipe and fittings, furnish and install valve and box and the furnishing of all labor, materials, small tools and equipment required to complete this item of work in place.

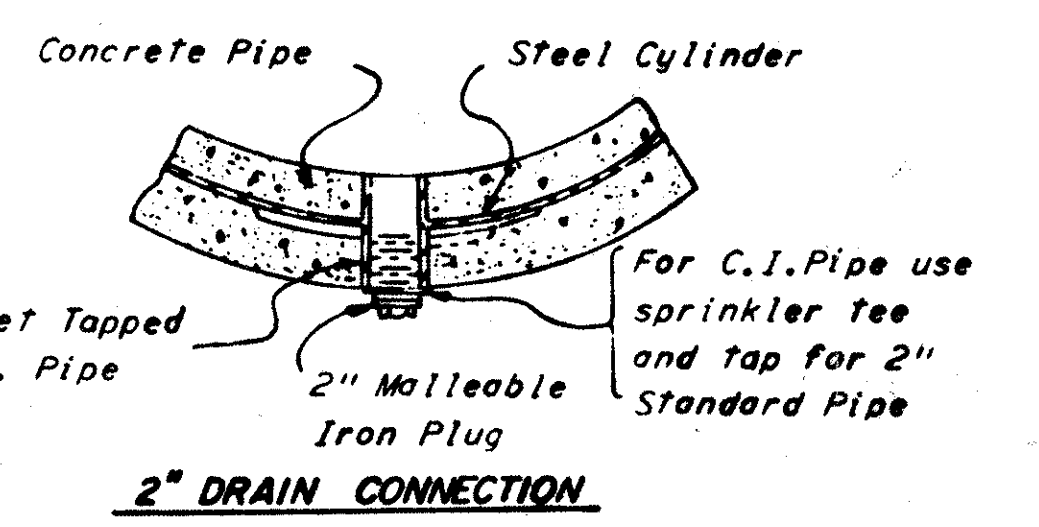
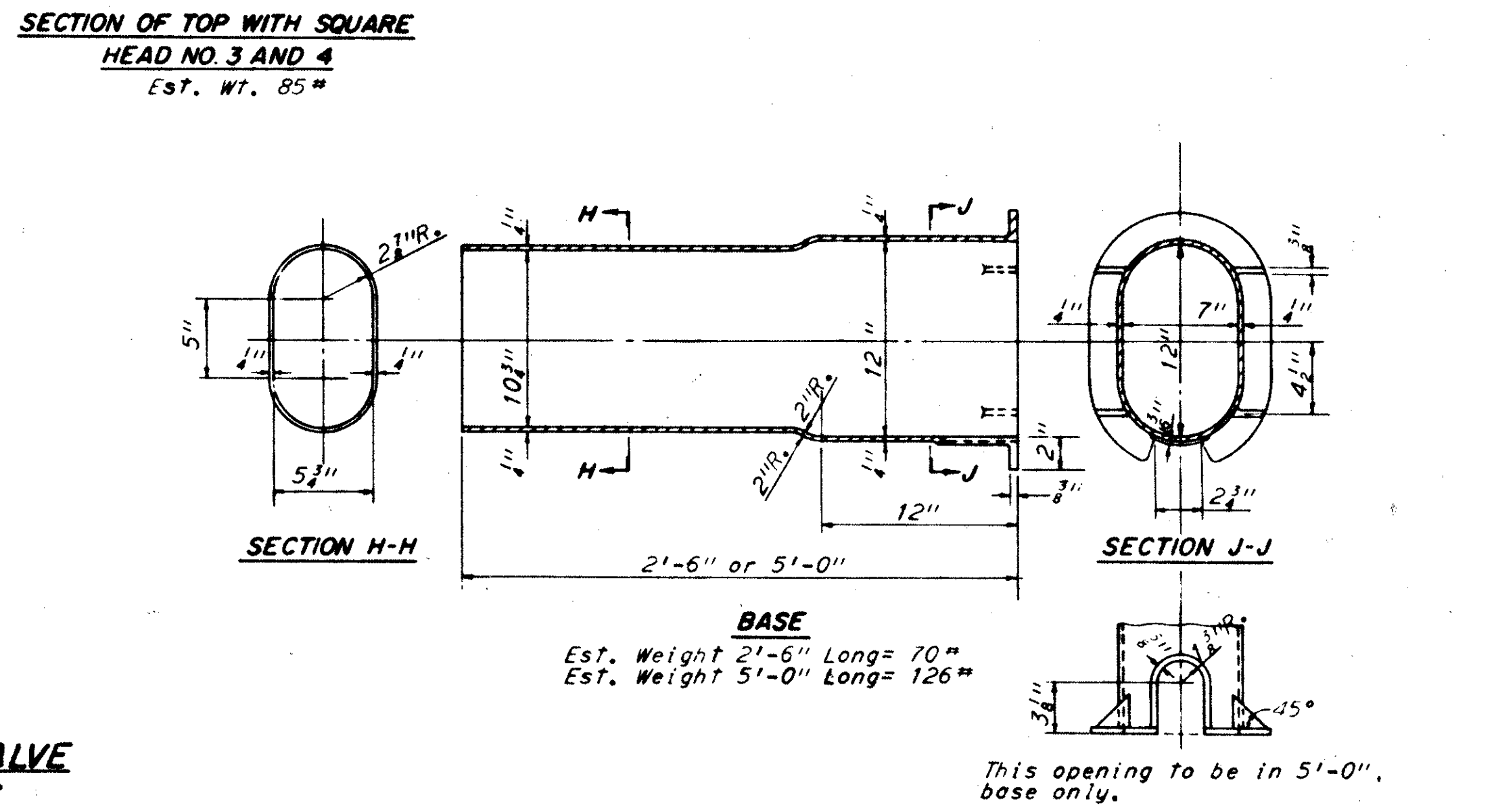
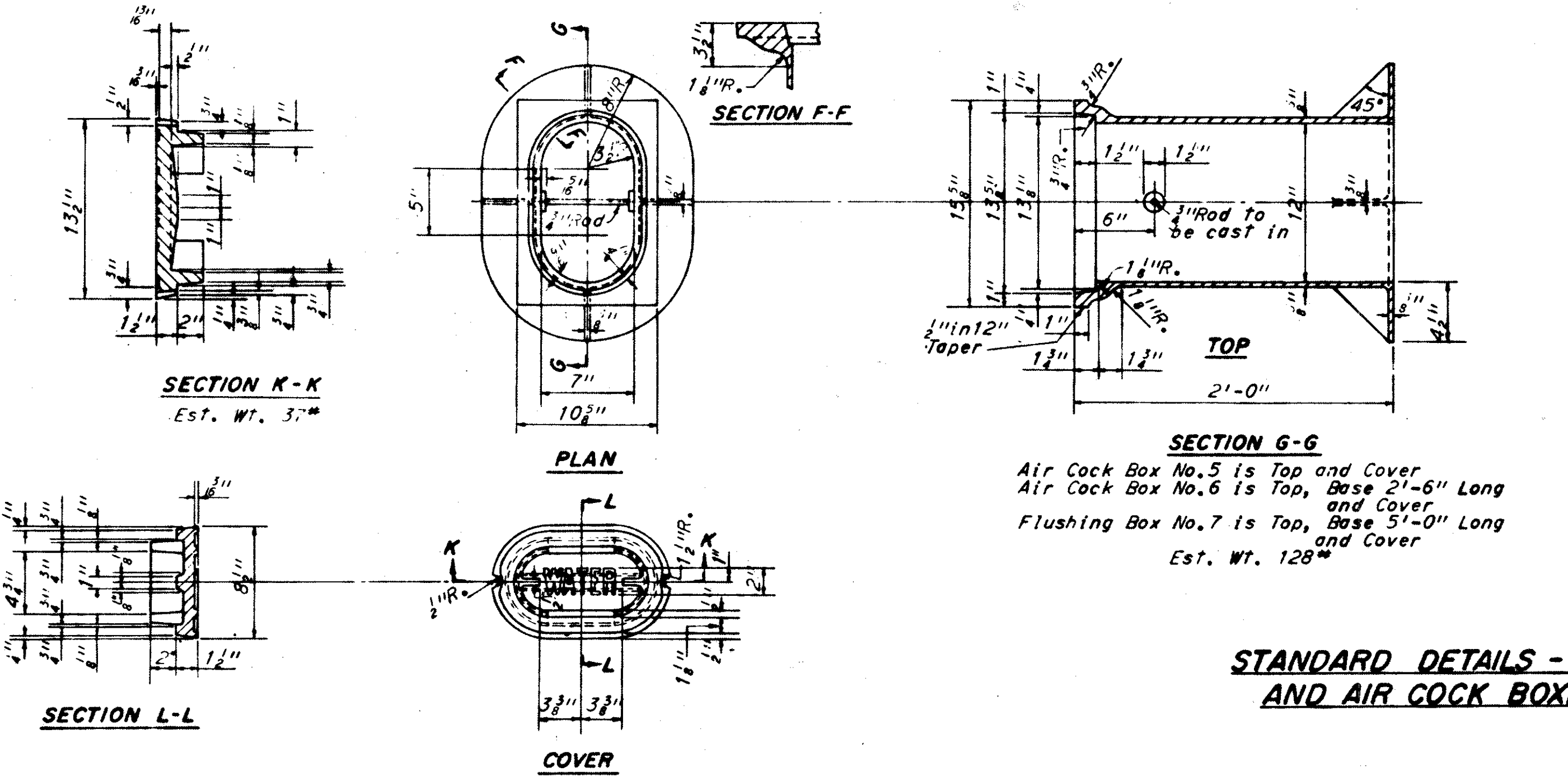
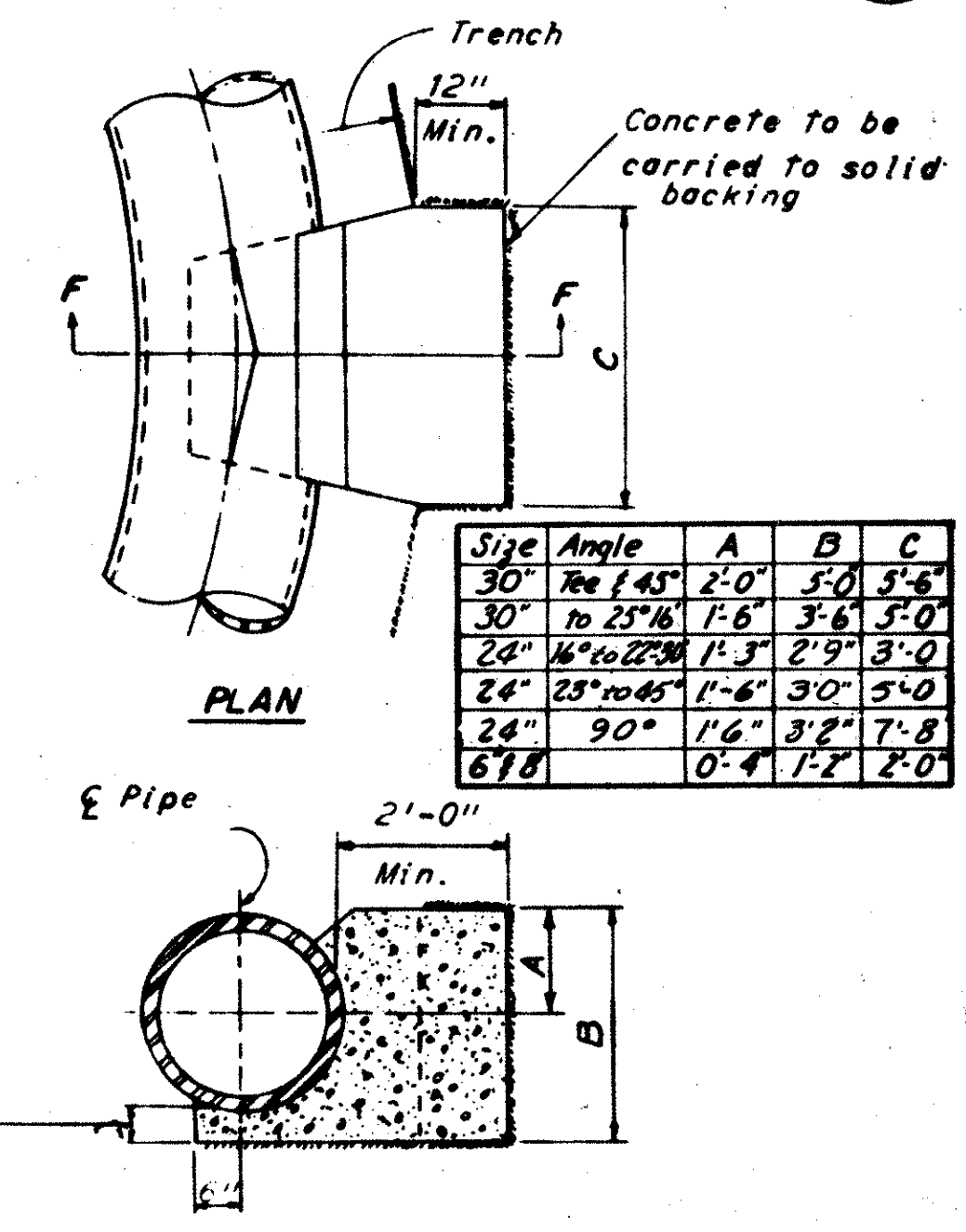
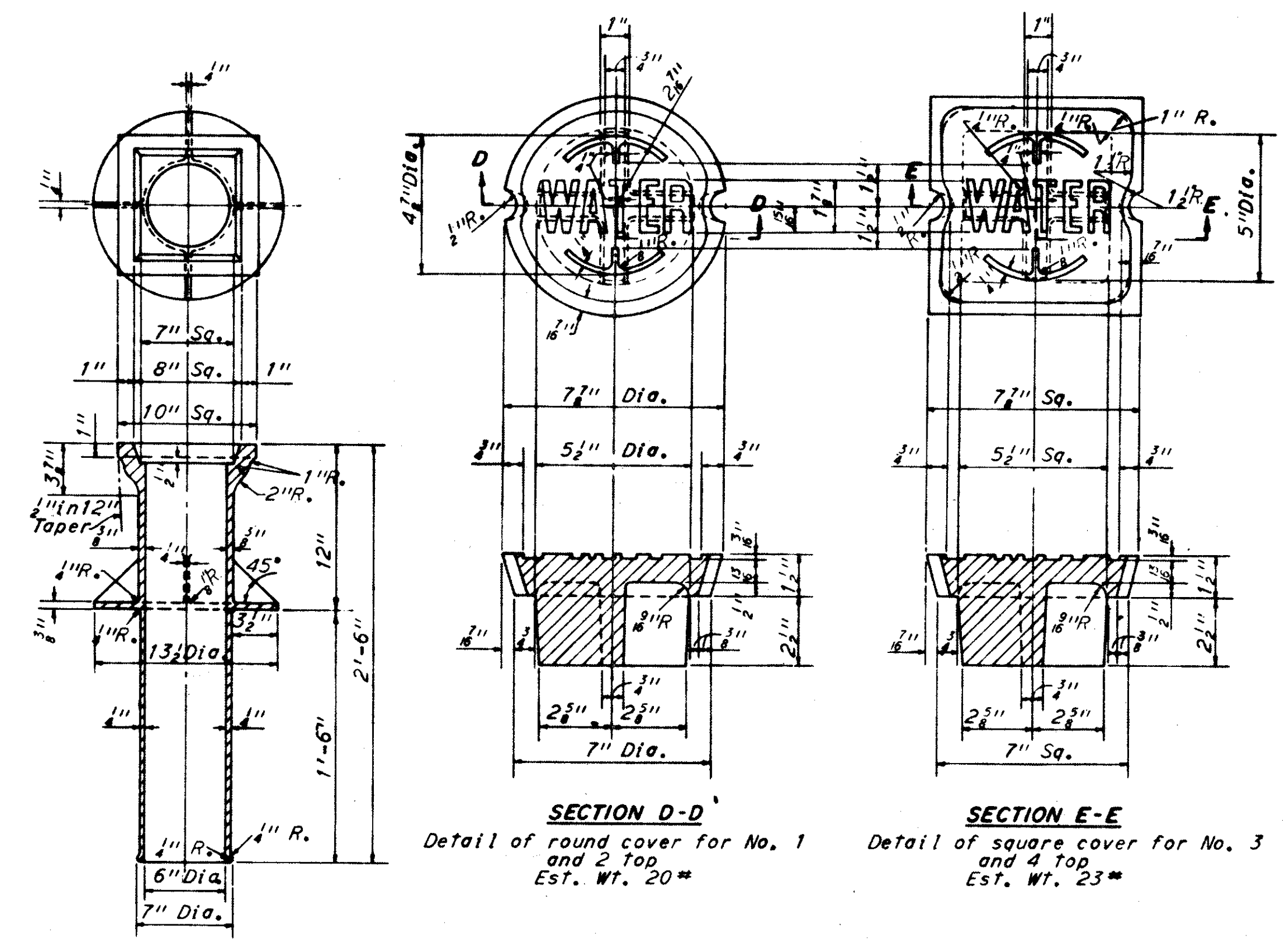
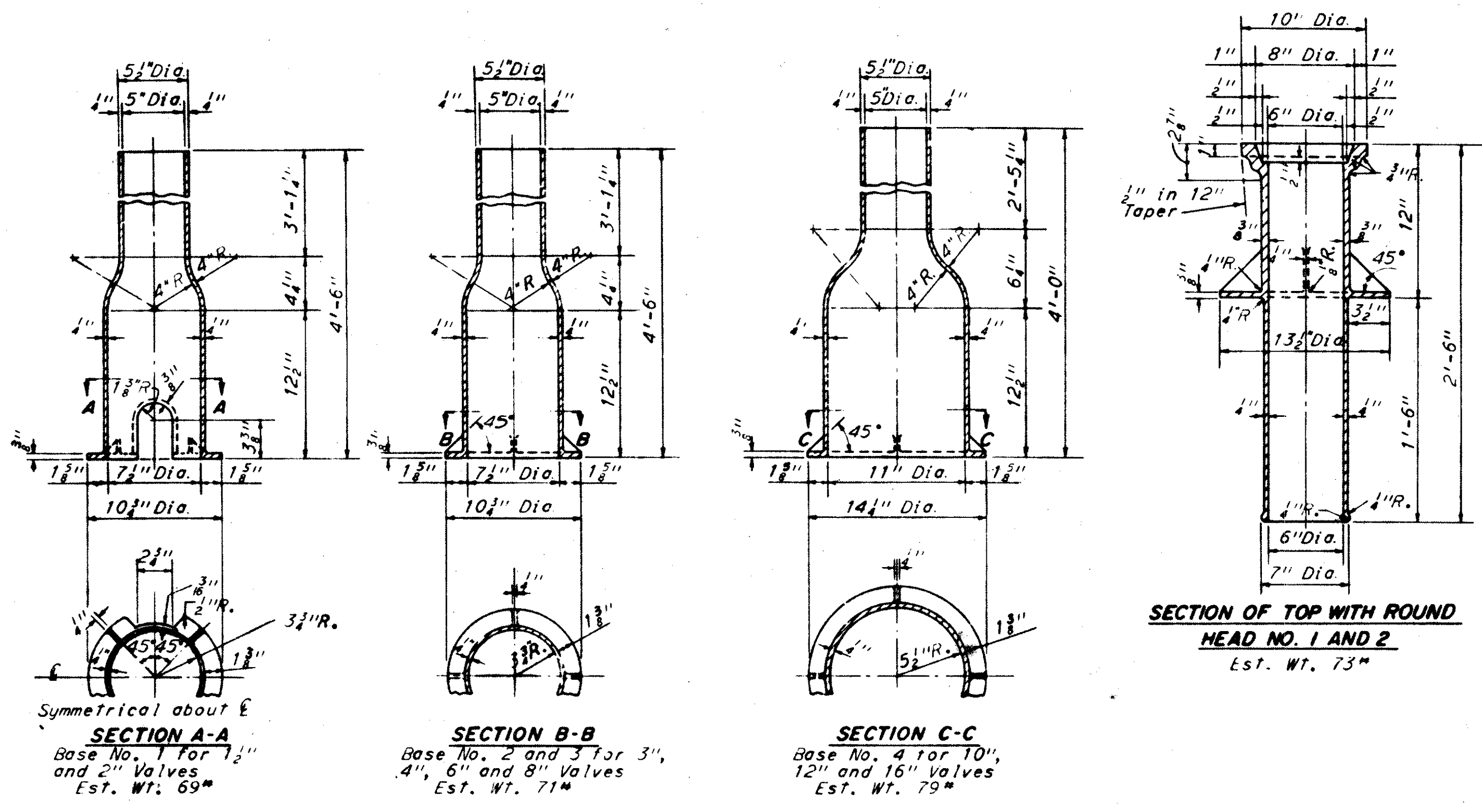
Drain vault shall be constructed by the contractor as detailed on sheet no. 201 and paid for at the unit price bid for each, "Item Special-Drain Vault."

APPROVED JUNE 24, 1977

*William J. Lucey* ENGINEER OF DESIGN REVIEW

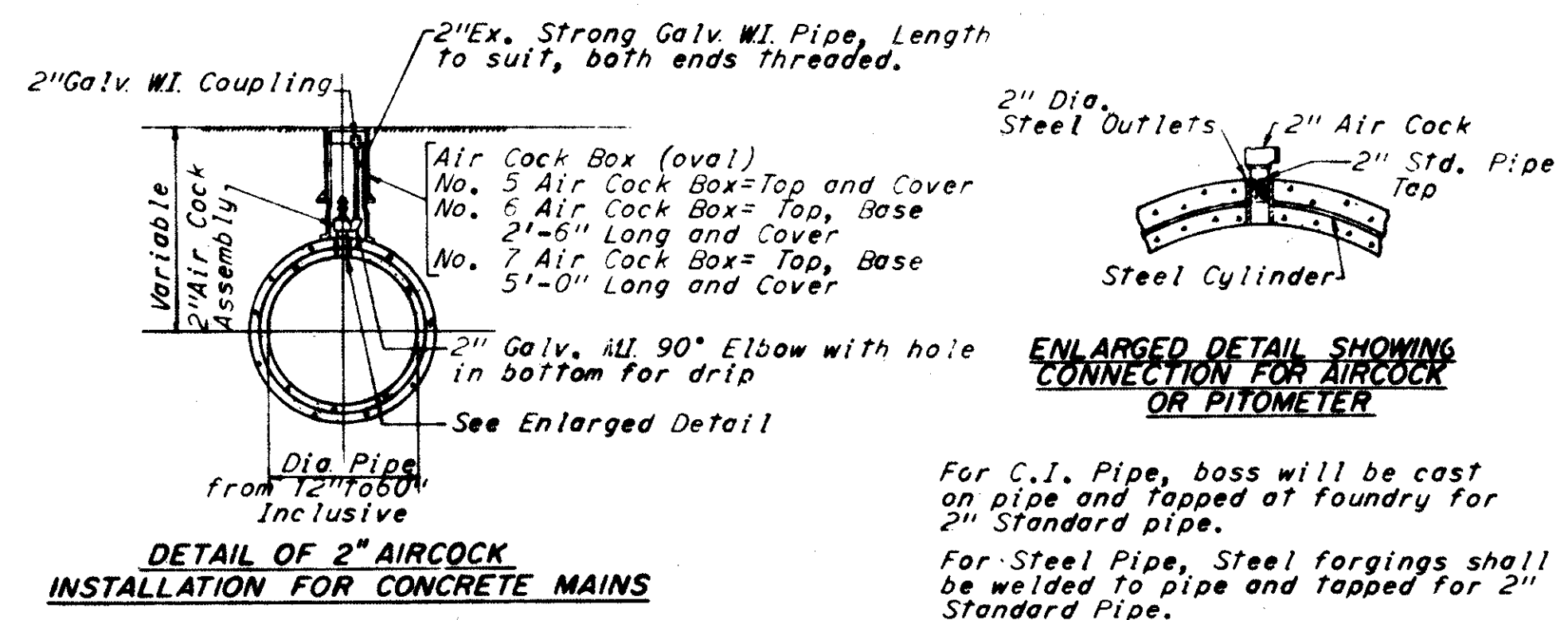
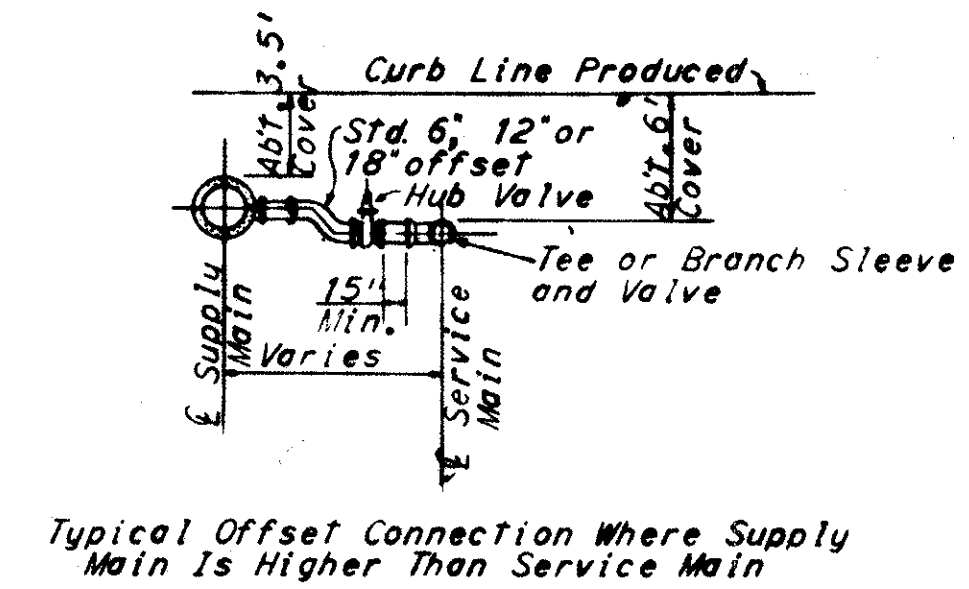
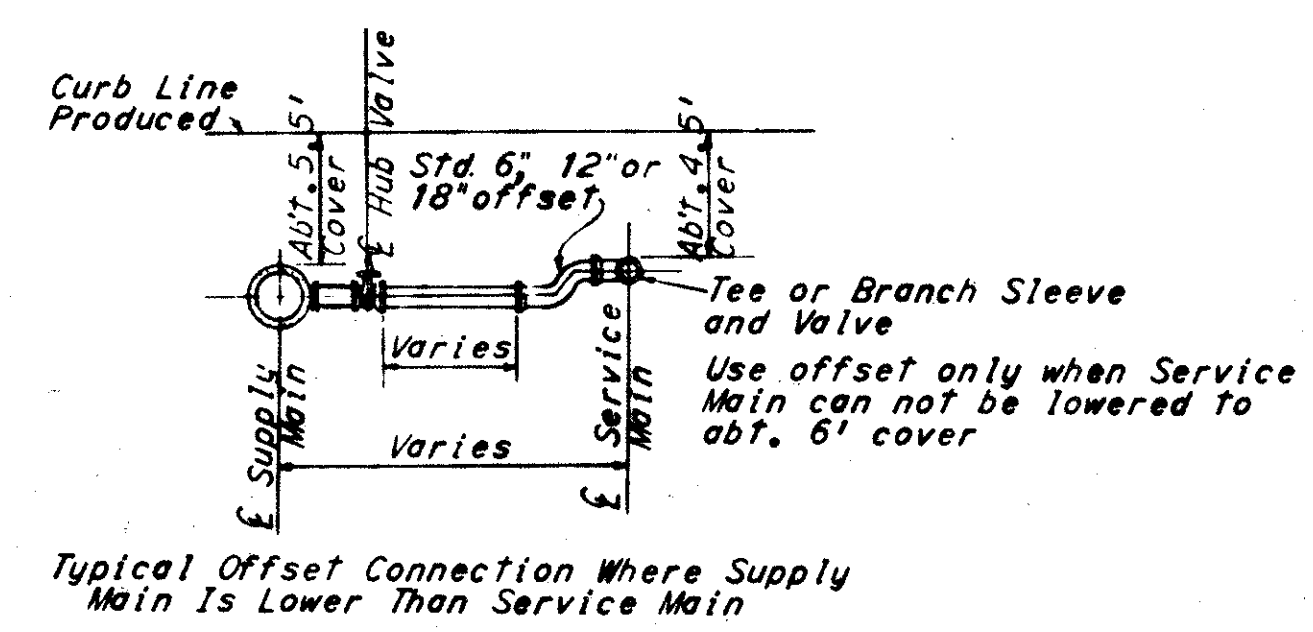
<b>1<sup>st</sup> HIGH SERVICE DISTRICT</b>
DEPARTMENT OF PUBLIC UTILITIES DIVISION OF WATER AND HEAT CLEVELAND, OHIO
SUBJECT WATER WORK NOTES FOR INTERSTATE ROUTE - 480

CUYAHOGA COUNTY  
CUY-480-6.78



**STANDARD DETAILS - VALVE AND AIR COCK BOXES**

APPROVED JUNE 24, 1977



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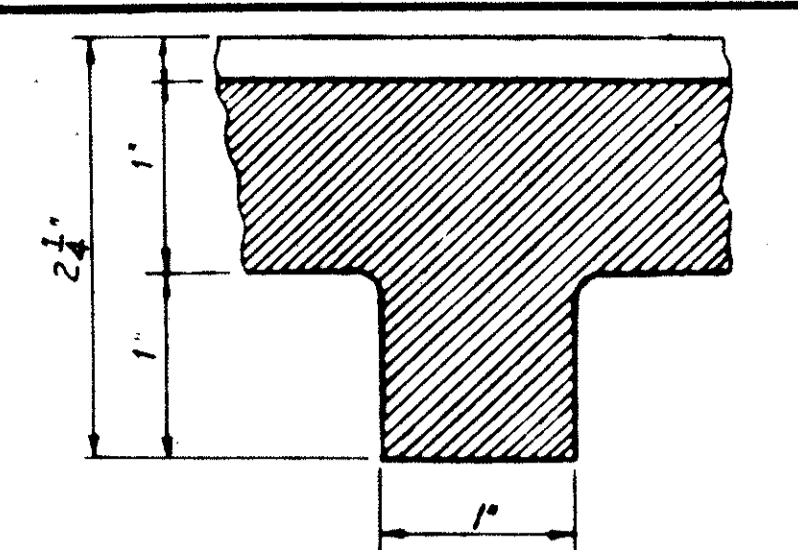
**1st HIGH SERVICE DISTRICT**

DEPARTMENT OF PUBLIC UTILITIES  
DIVISION OF WATER AND HEAT  
CLEVELAND, OHIO

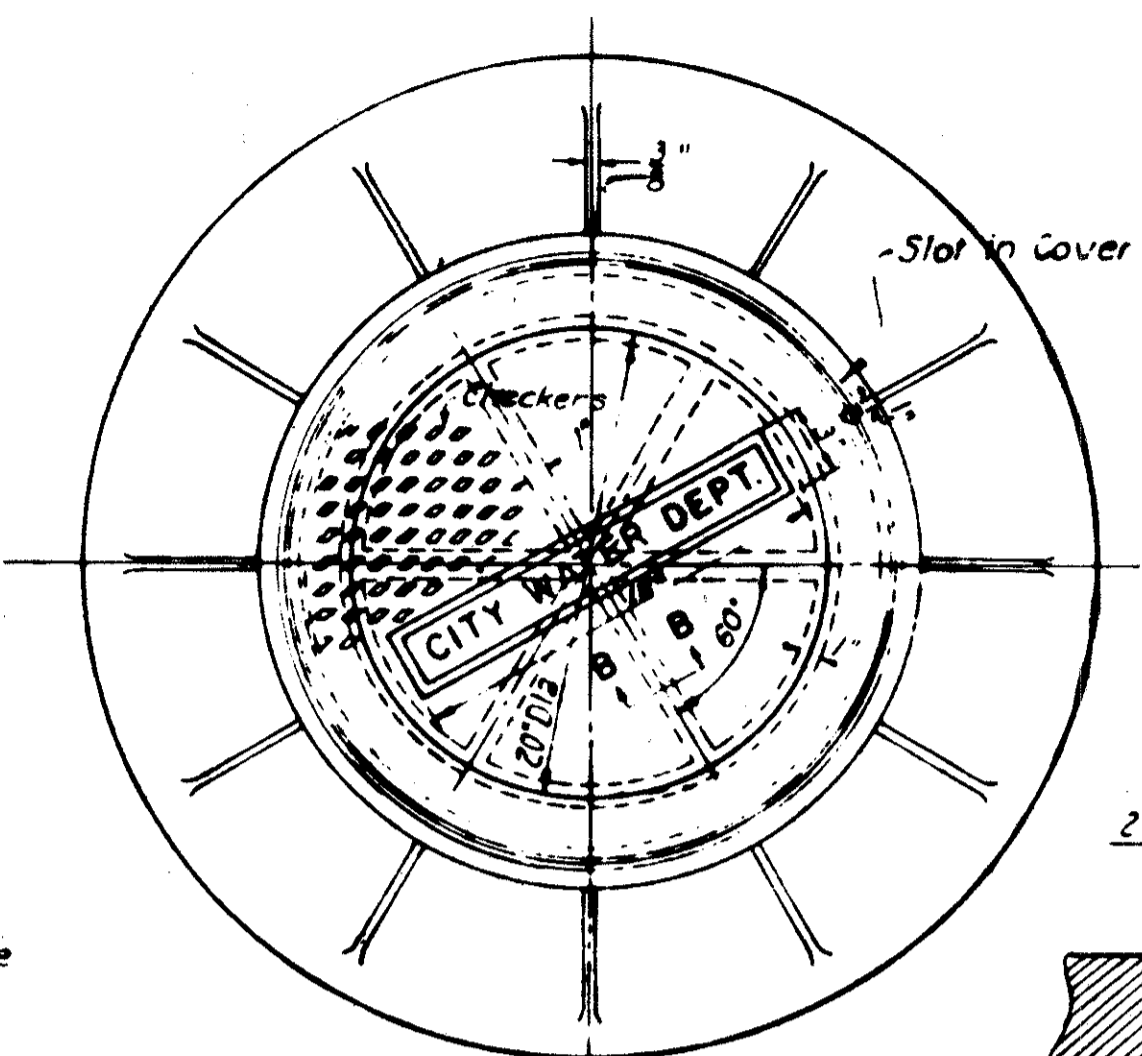
SUBJECT: WATER WORK DETAILS FOR INTERSTATE ROUTE -480  
CLEVELAND, OHIO

SCALE AS SHOWN NO.

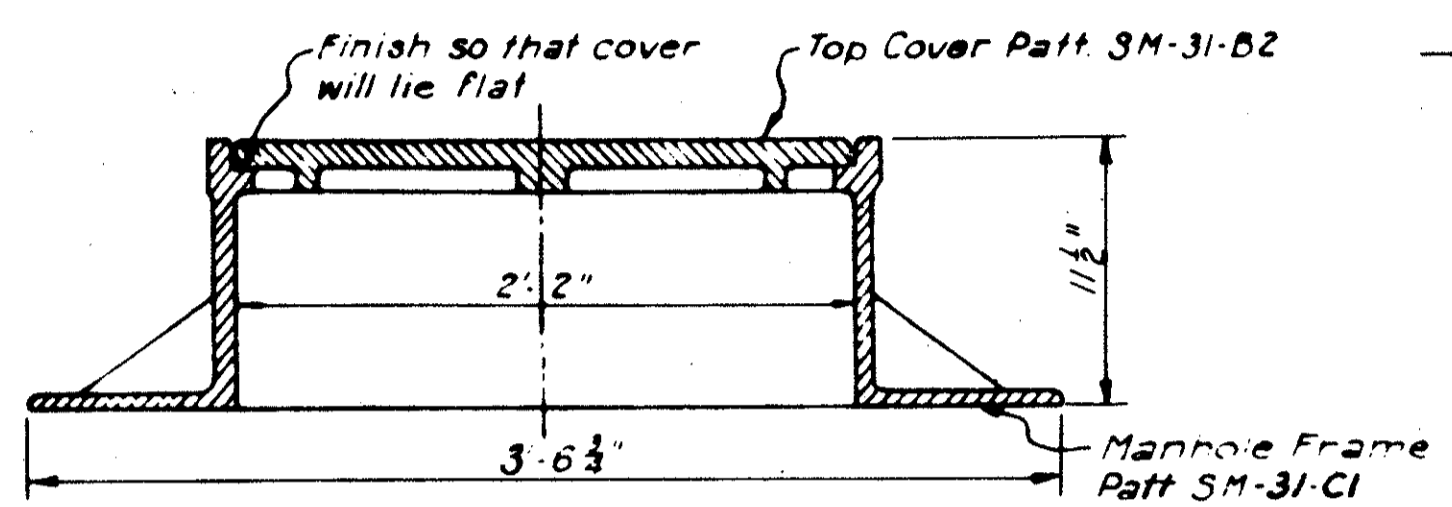
**STANDARD DETAILS - AIR COCK AND CONNECTIONS FOR VARIOUS PIPE**



FULL SIZE SECTION B-B

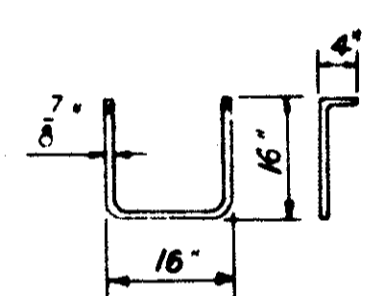


FULL SIZE SECTION AT SLOT



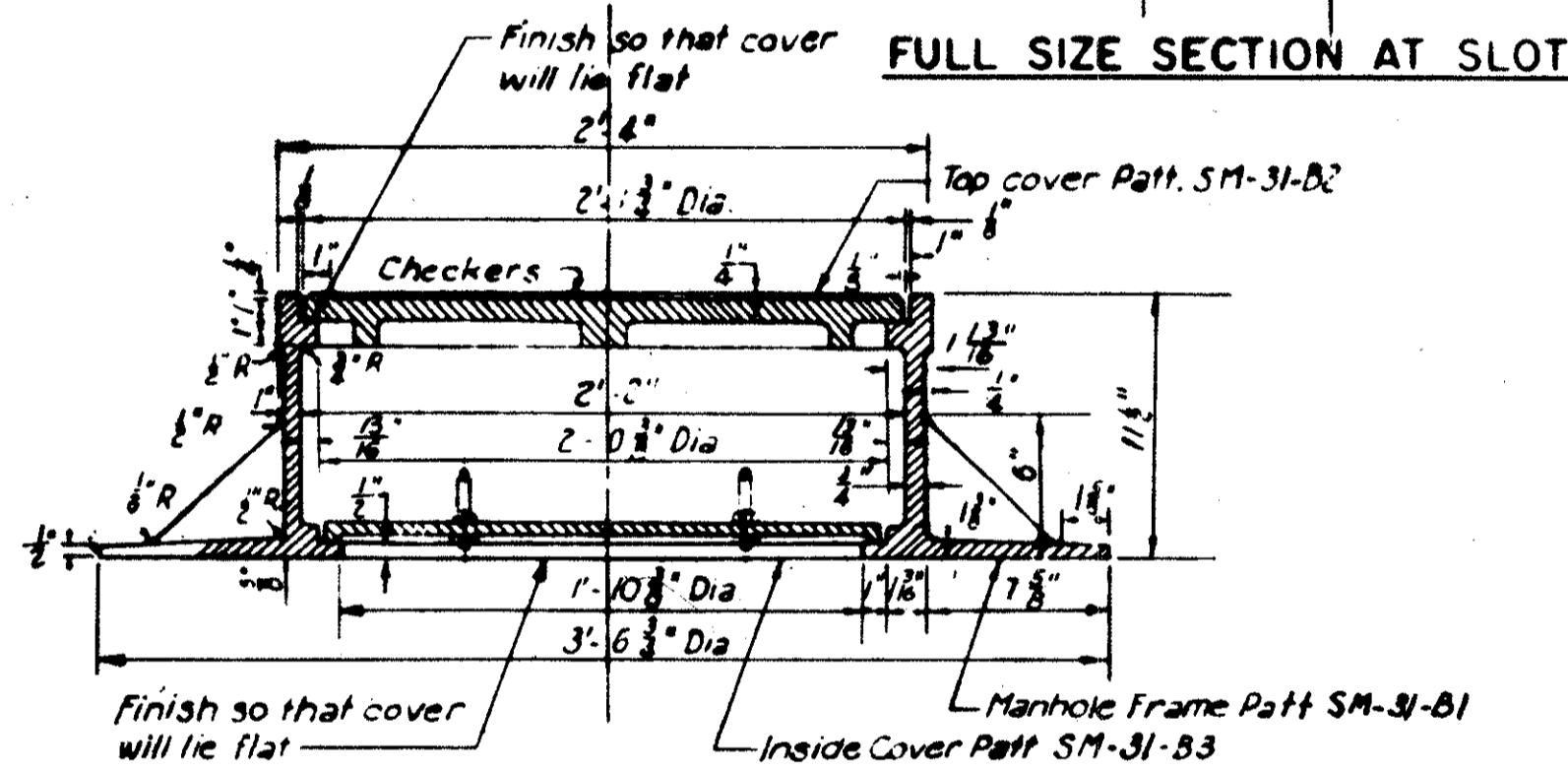
**MANHOLE FRAME AND COVER MARK NO. 3**

Consisting of { C.I. Manhole Frame Patt. SM-31-C1  
C.I. Top Cover Patt. SM-31-B2  
(Dimensions not given are the same as those shown for Manhole Frame Patt. SM-31-B1)  
Approximate Weight = 602#  
Scale: 1/2" = 1'-0"



**DETAIL OF MANHOLE STEP (W 1)**

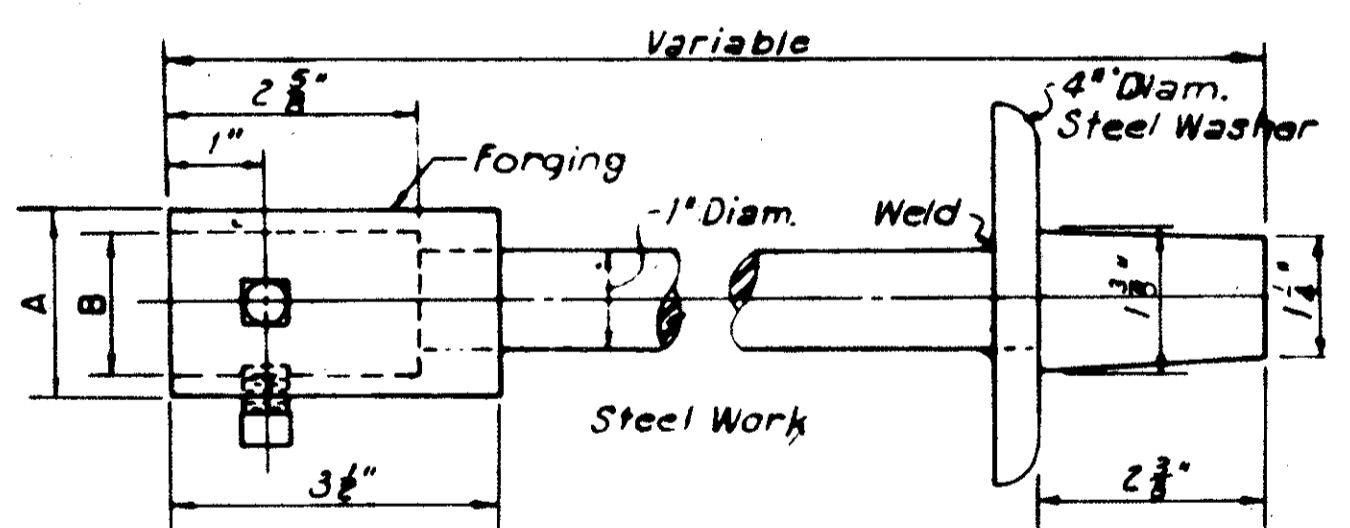
Number required depends on the depth of vault



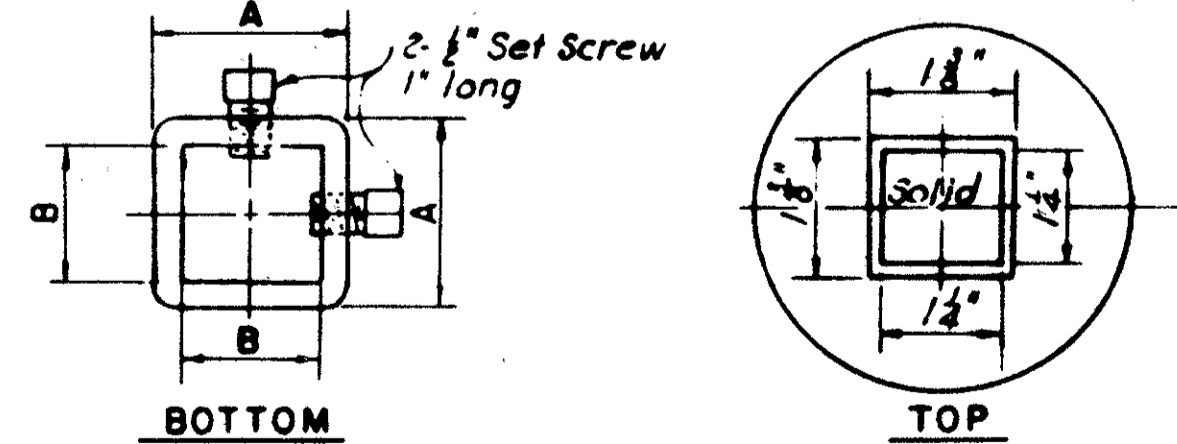
INSIDE COVER (C.I.) PATT. SM-31-B3

**MANHOLE FRAME AND COVERS MARK SM-31B**

Consisting of { C.I. Manhole Frame Patt. SM-31-B1  
C.I. Top Cover Patt. SM-31-B2  
C.I. Inside Cover Patt. SM-31-B3  
Approximate Weight = 766#  
Scale: 1/2" = 1'-0"



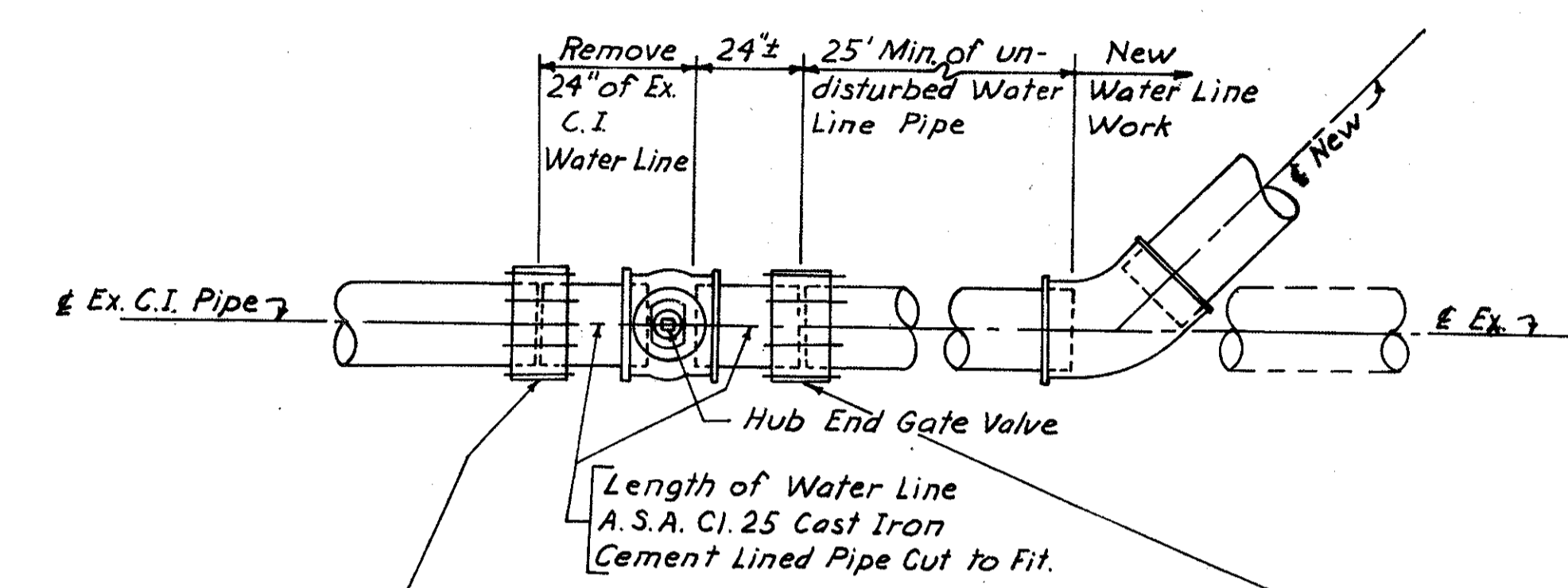
**DETAIL OF VALVE EXTENSION STEM**



Note: Valve Nuts to be Countersunk 1/8" to receive Set Screws.

Scale: 6" = 1'-0"

VALVE SIZE	A	B
2" and smaller	2"	1 1/2"
4" to 20"	2 1/2"	2"



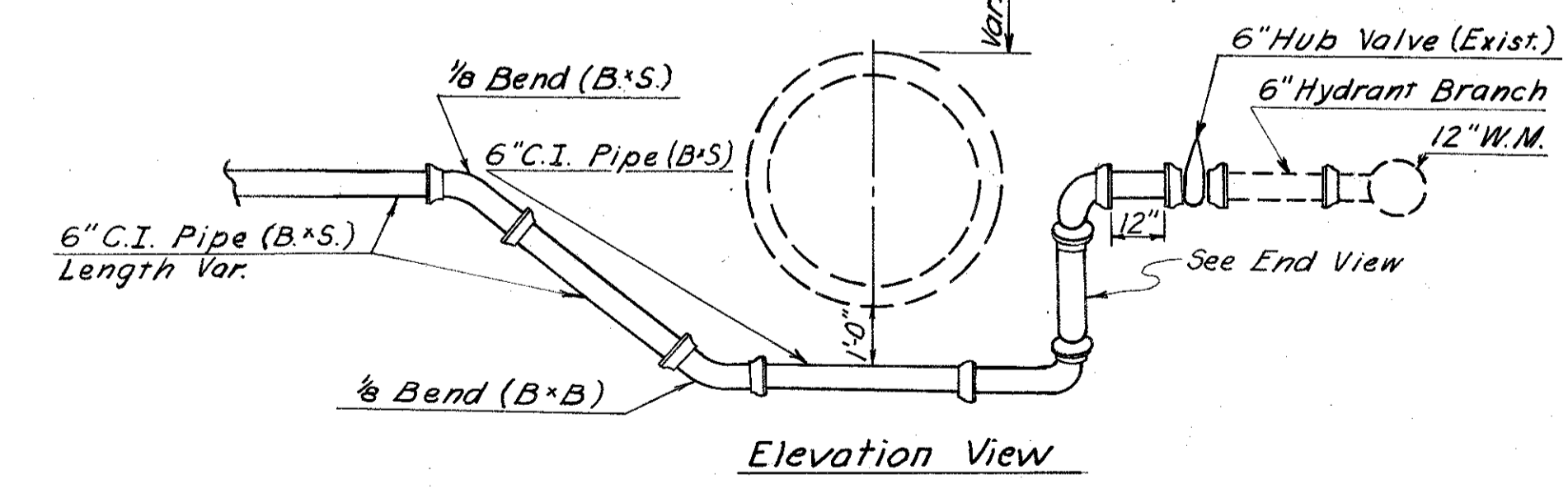
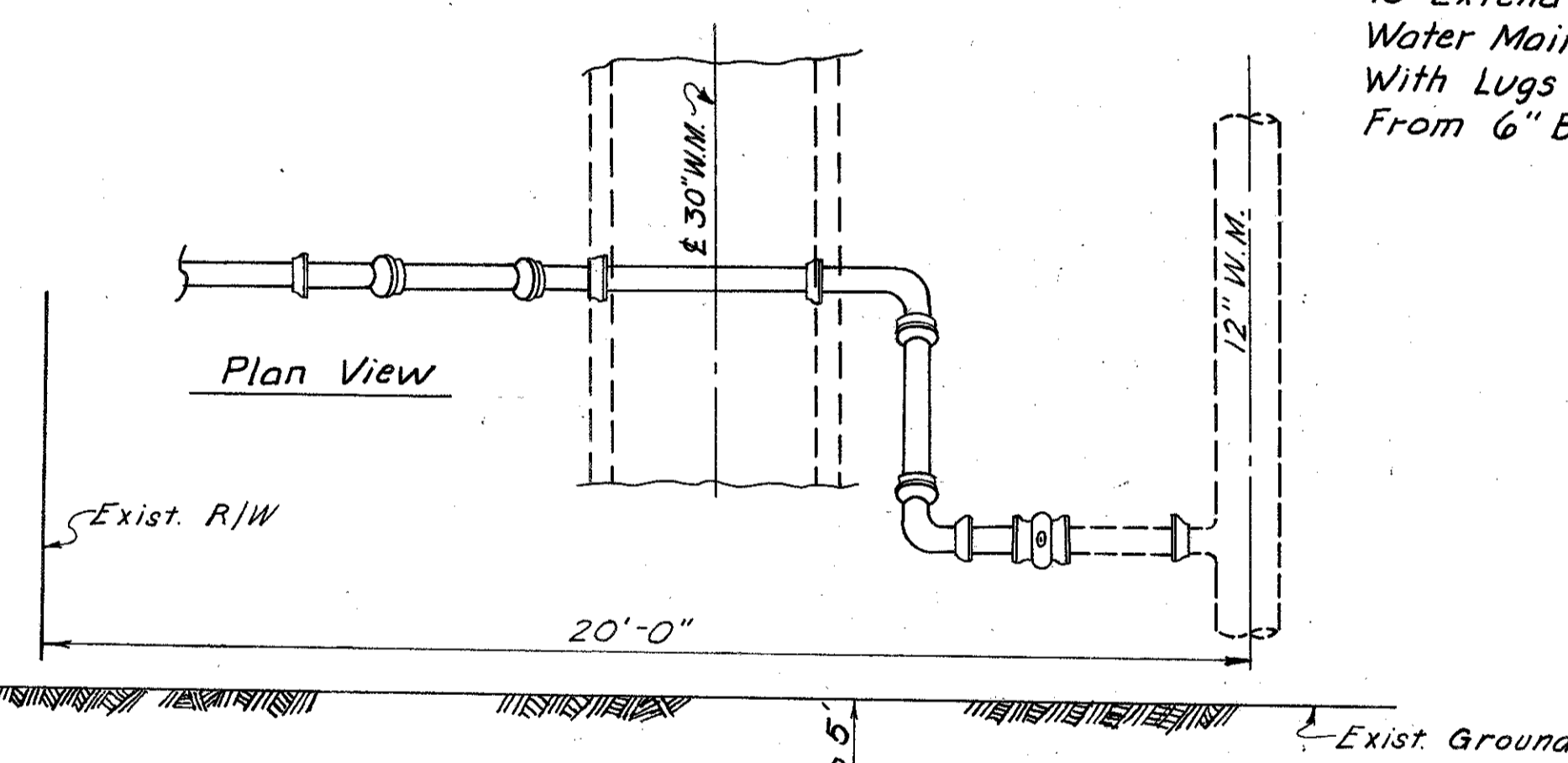
Length of Water Line A.S.A. C.I. 25 Cast Iron Cement Lined Pipe Cut to Fit.  
Standard Style 38 Dresser or Smith-Blair coupling or Approved Equal. Paint as Require in Detailed Specifications. Field Measure Existing C.I. Pipe O.D. Before cutting Pipe. Furnish Valve Box Complete.

**CUTTING-IN VALVE & BOX DETAIL**

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

**HYDRANT NOTE :**

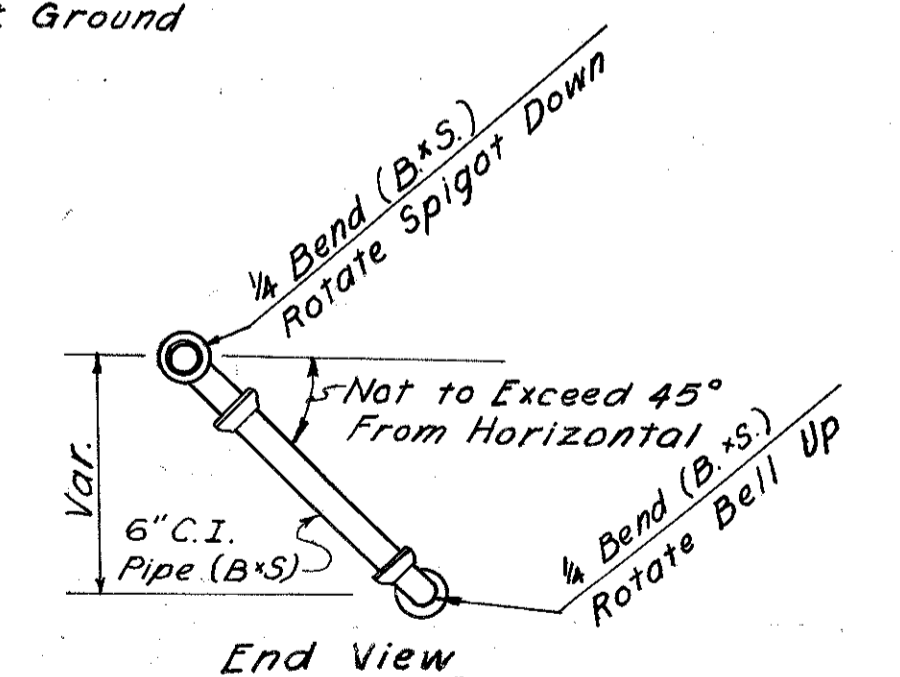
To Extend Hydrant Branch Beyond Existing 30" Water Main It Will Be Necessary To Use Bends With Lugs Or Clamps And Tie Rods With Clamps From 6" Bell Of Tee To Hydrant Bell.



**HYDRANT EXTENSION DETAIL**

No Scale

APPROVED JUNE 24, 1917



End View

**1st HIGH SERVICE DISTRICT**

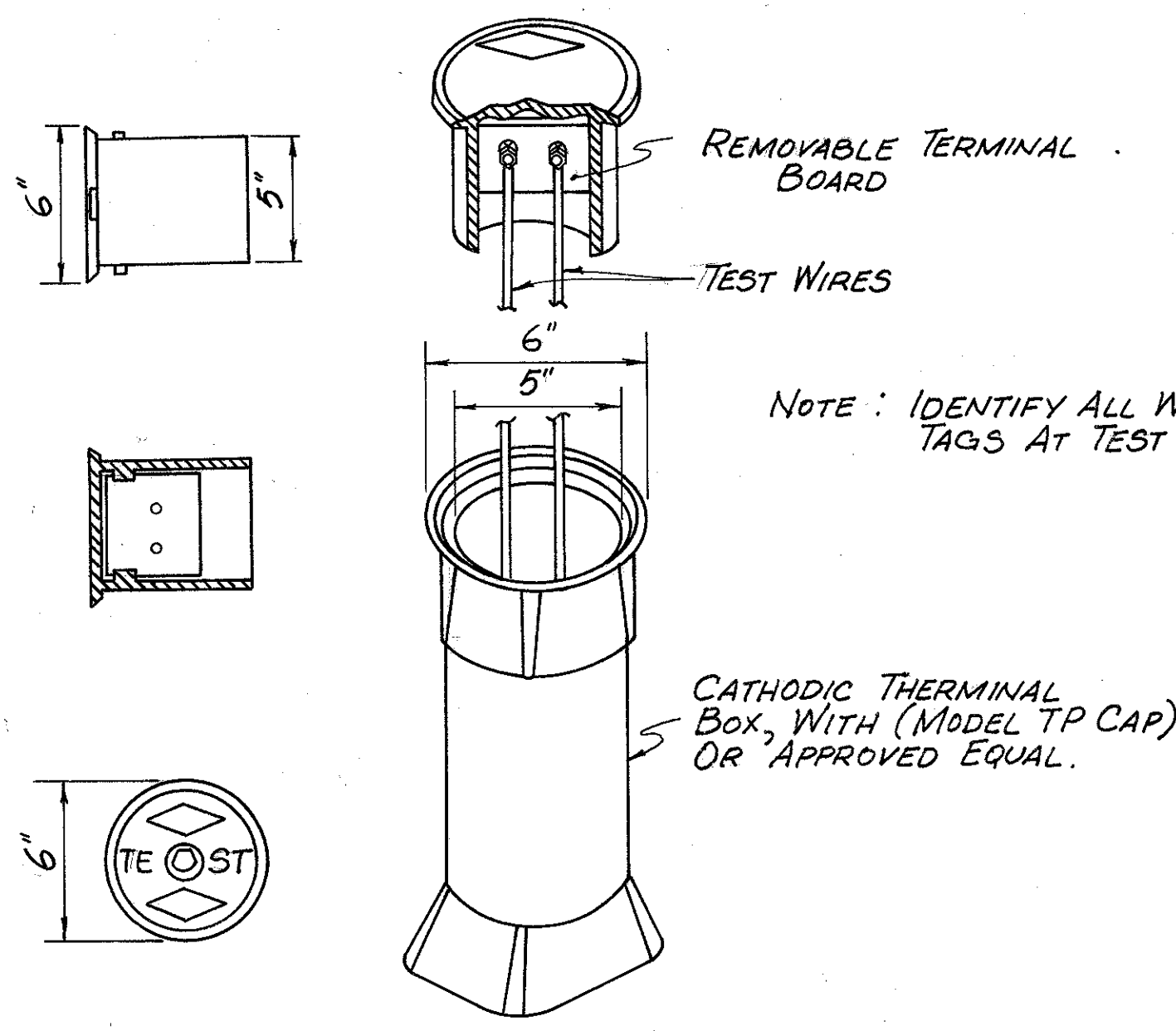
DEPARTMENT OF PUBLIC UTILITIES  
DIVISION OF WATER AND HEAT  
CLEVELAND, OHIO

SUBJECT WATER WORK DETAILS FOR INTERSTATE ROUTE - 480

SCALE AS SHOWN NO.

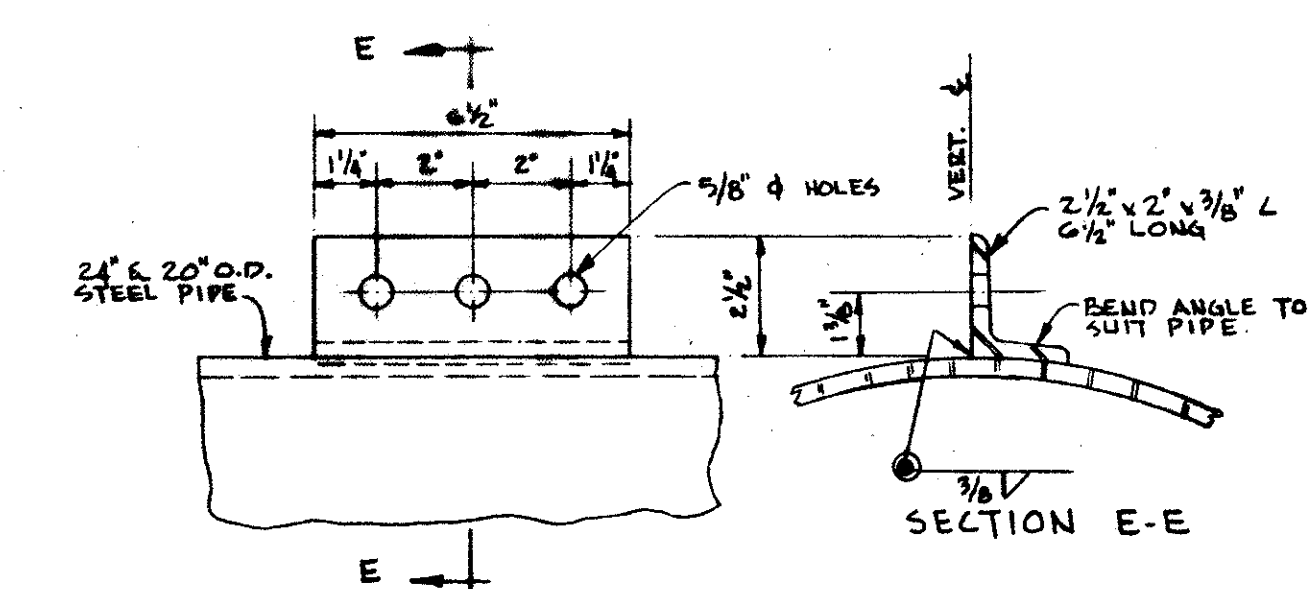
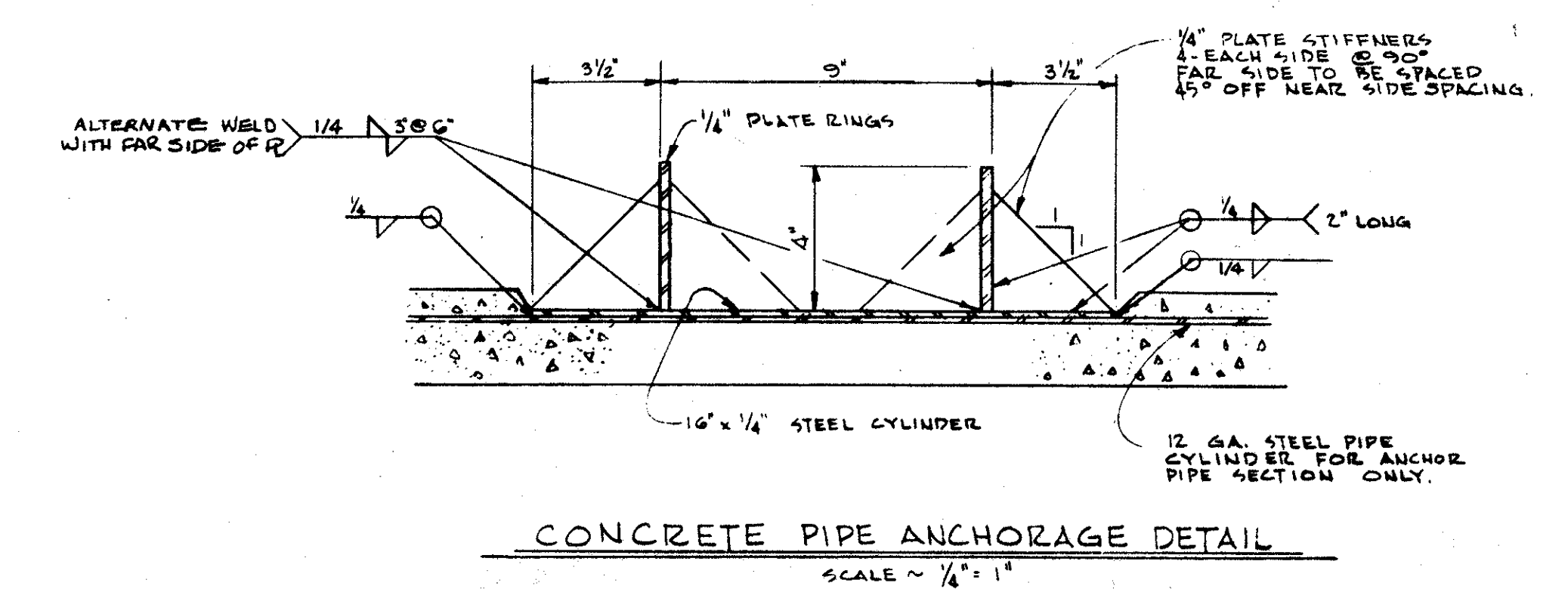
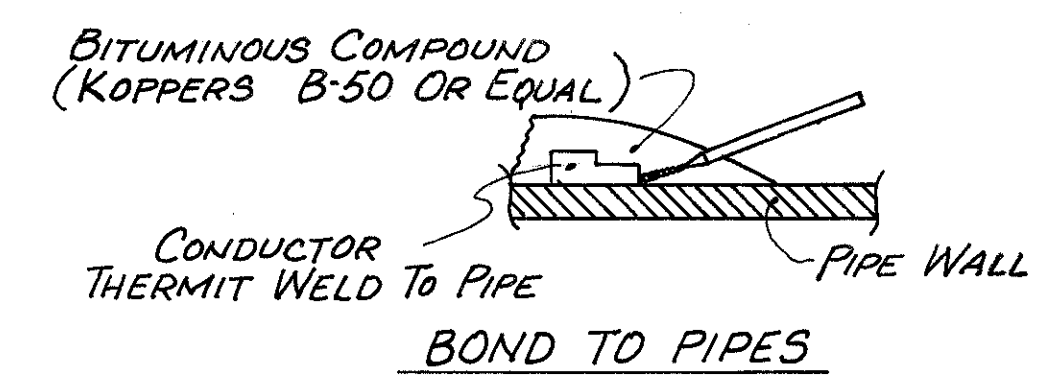
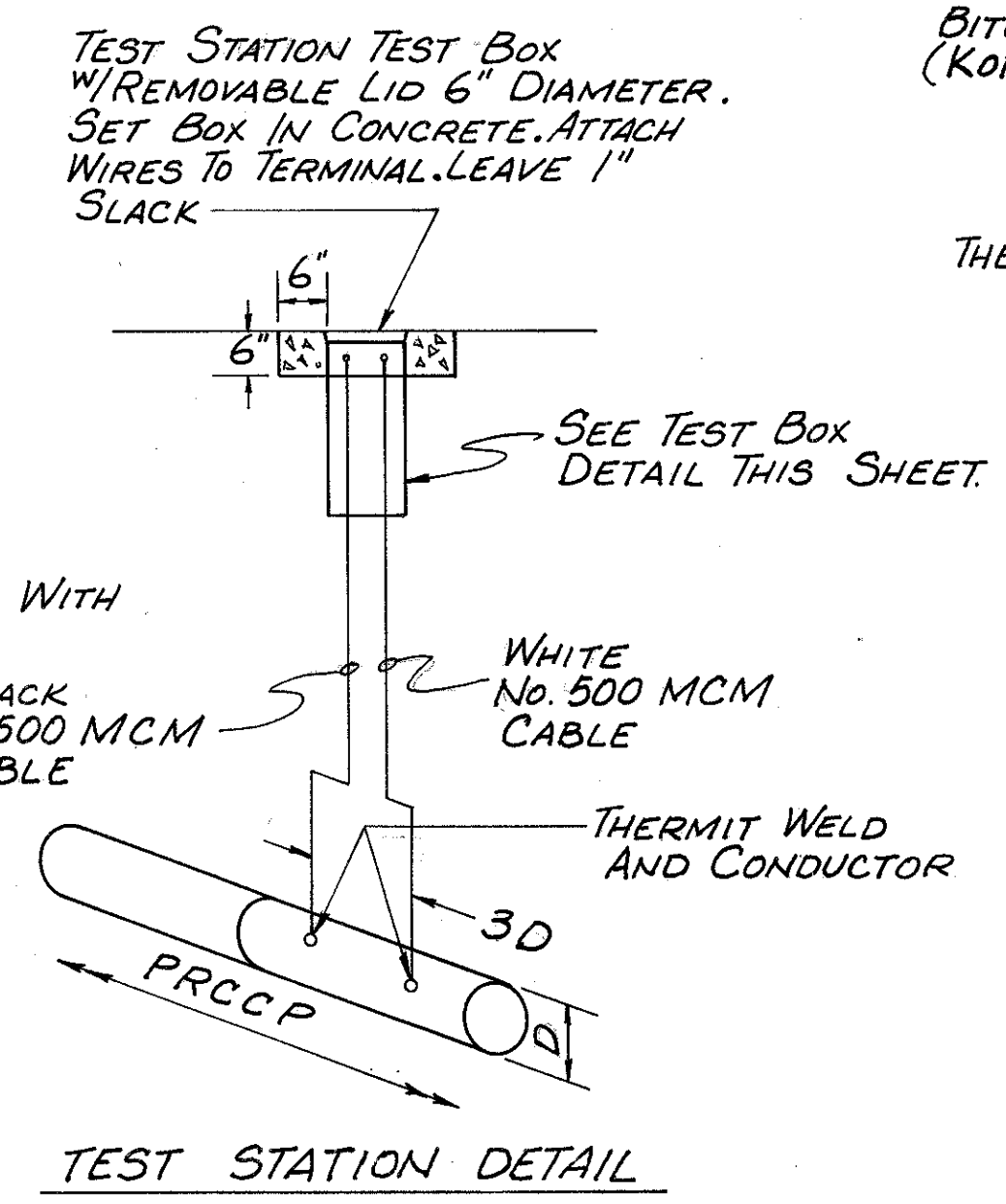
ENGINEER OF DESIGN REVIEW

GUYAHOGA COUNTY  
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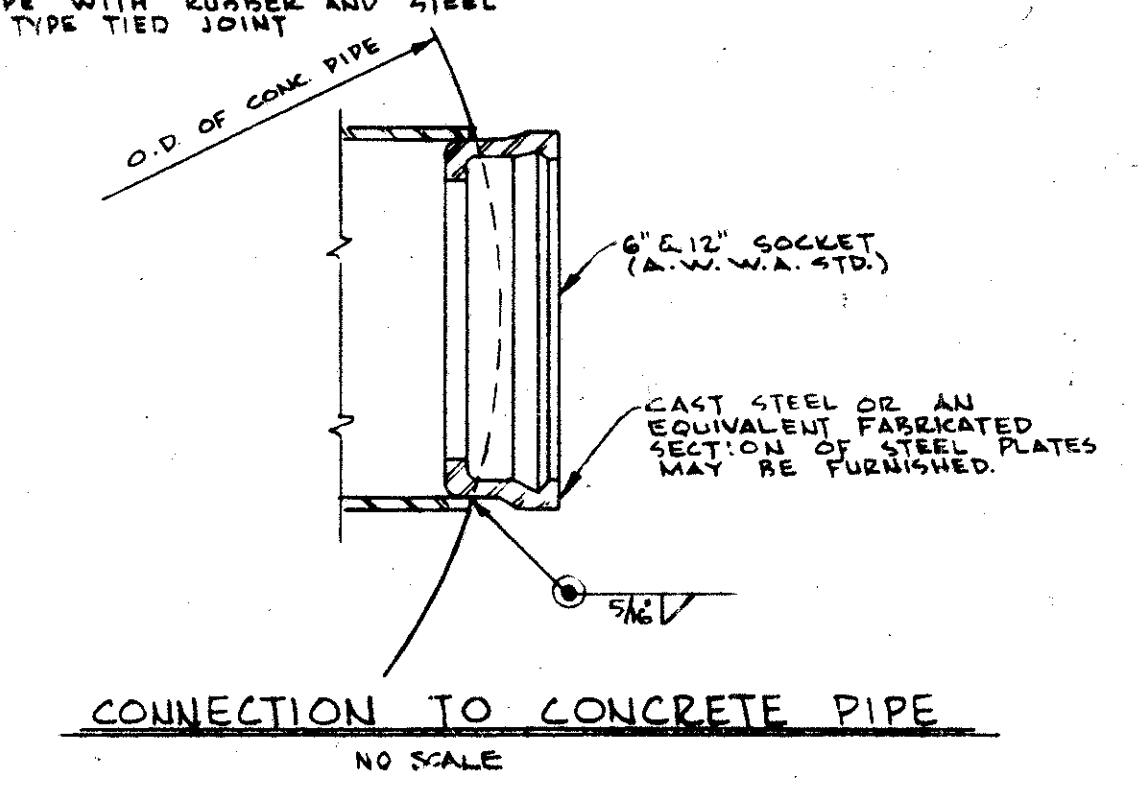
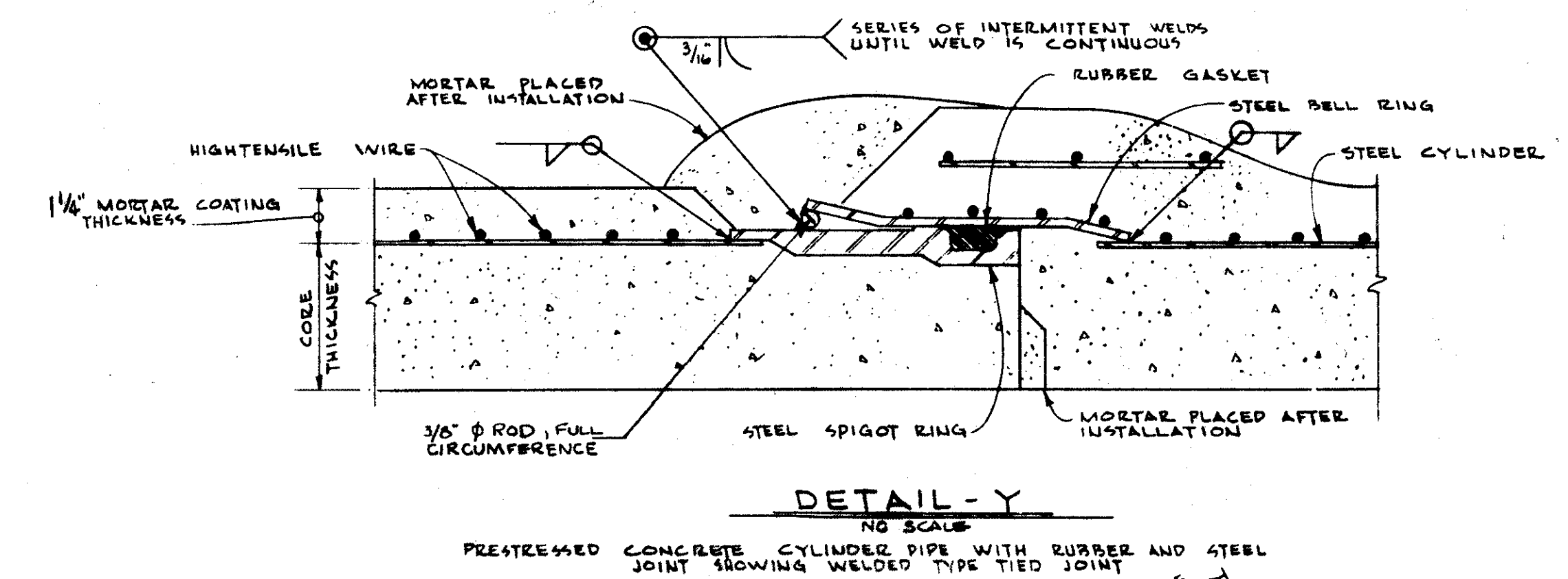
TEST STATION TEST BOX

NOTE: PAYMENT FOR ELECTROLYSIS BONDS AND ELECTROLYSIS TEST TAPS SHALL BE INCLUDED IN PAYMENT FOR RESPECTIVE WATER MAIN PIPE.

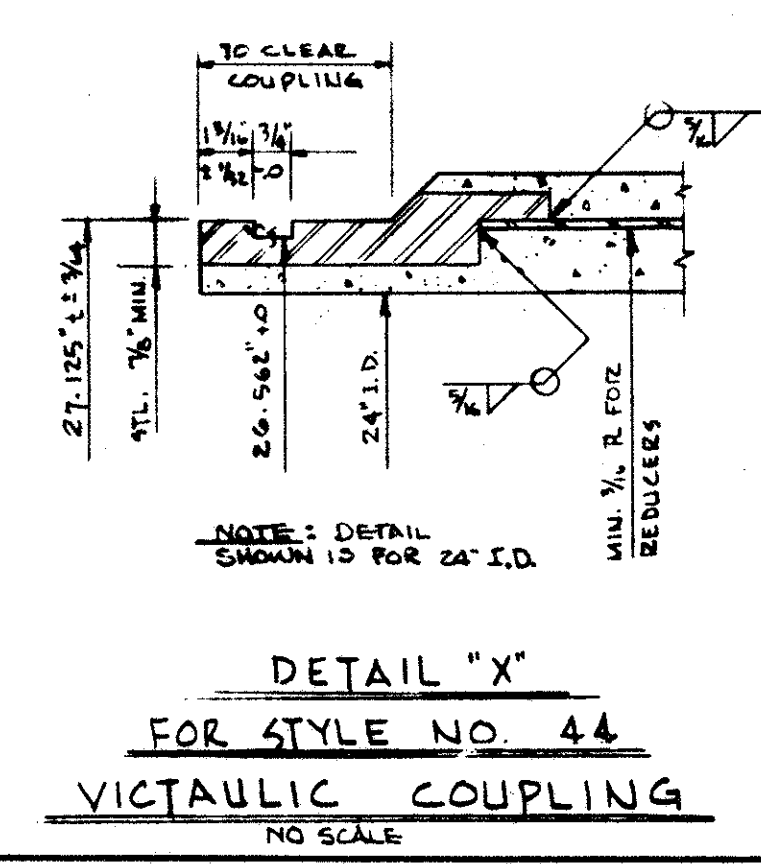
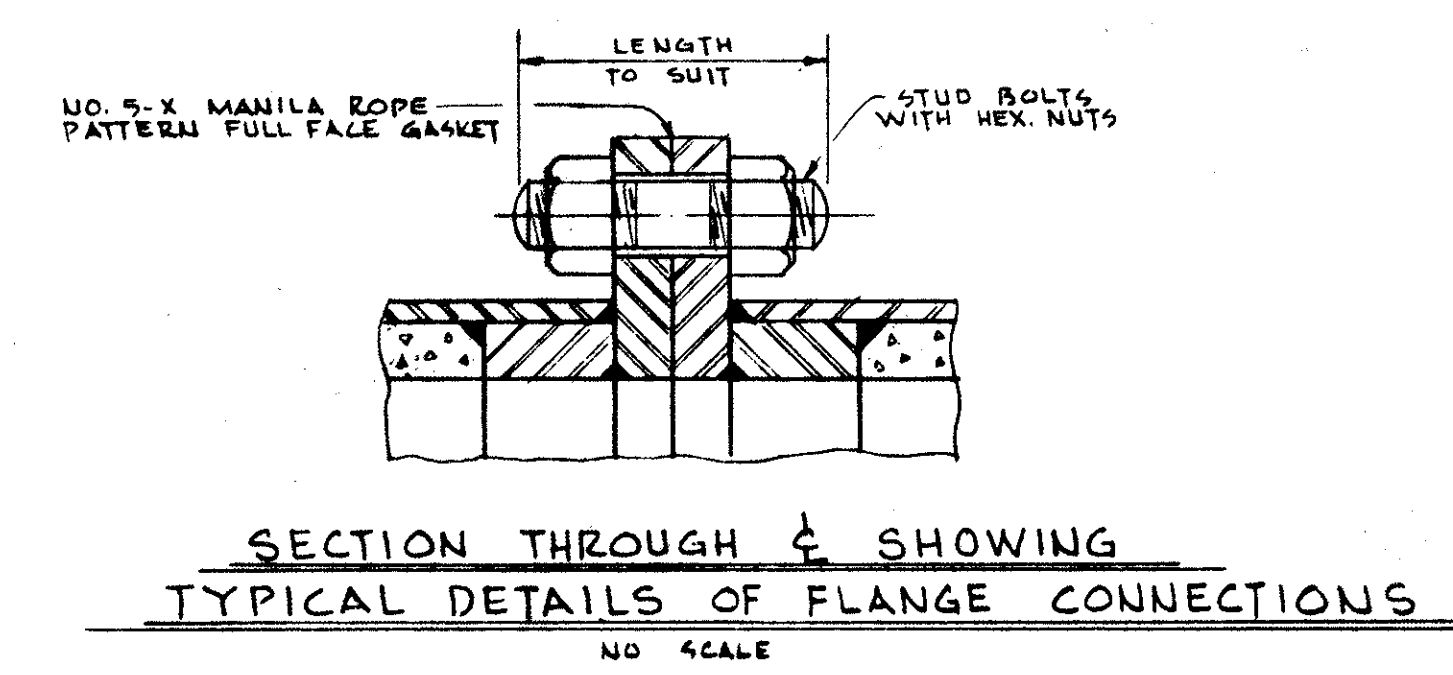
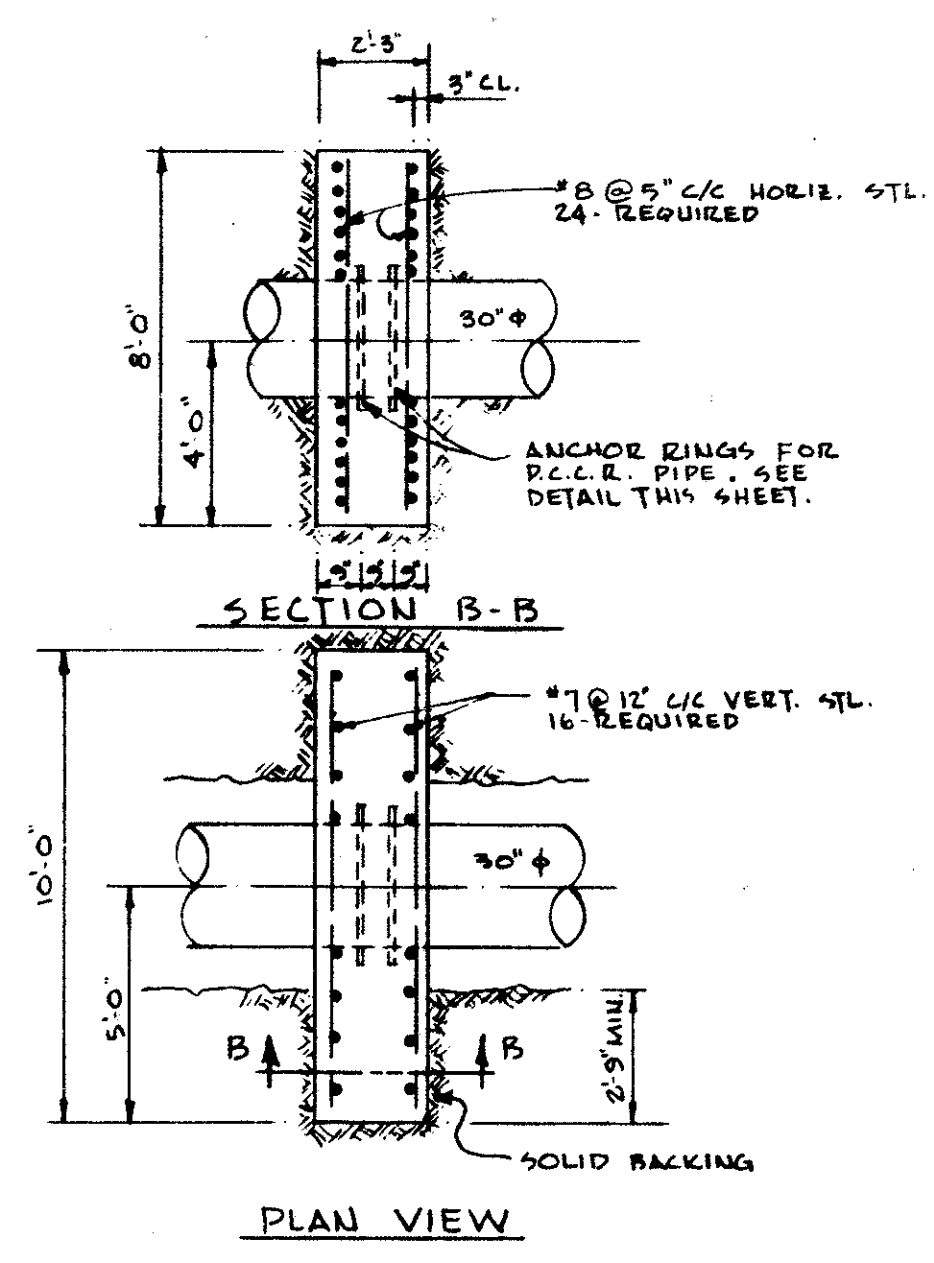


ELECTROLYSIS DRAIN CONNECTION  
SCALE ~ 3/4" = 1'-0"

THE 2 1/2" x 2" x 3/8" ANGLE TO BE WELDED ON TOP OF STEEL PIPE EVERY 100', EXCEPT AS OTHERWISE LOCATED, ON CONTRACT DRAWINGS.



APPROVED JUNE 24, 1977

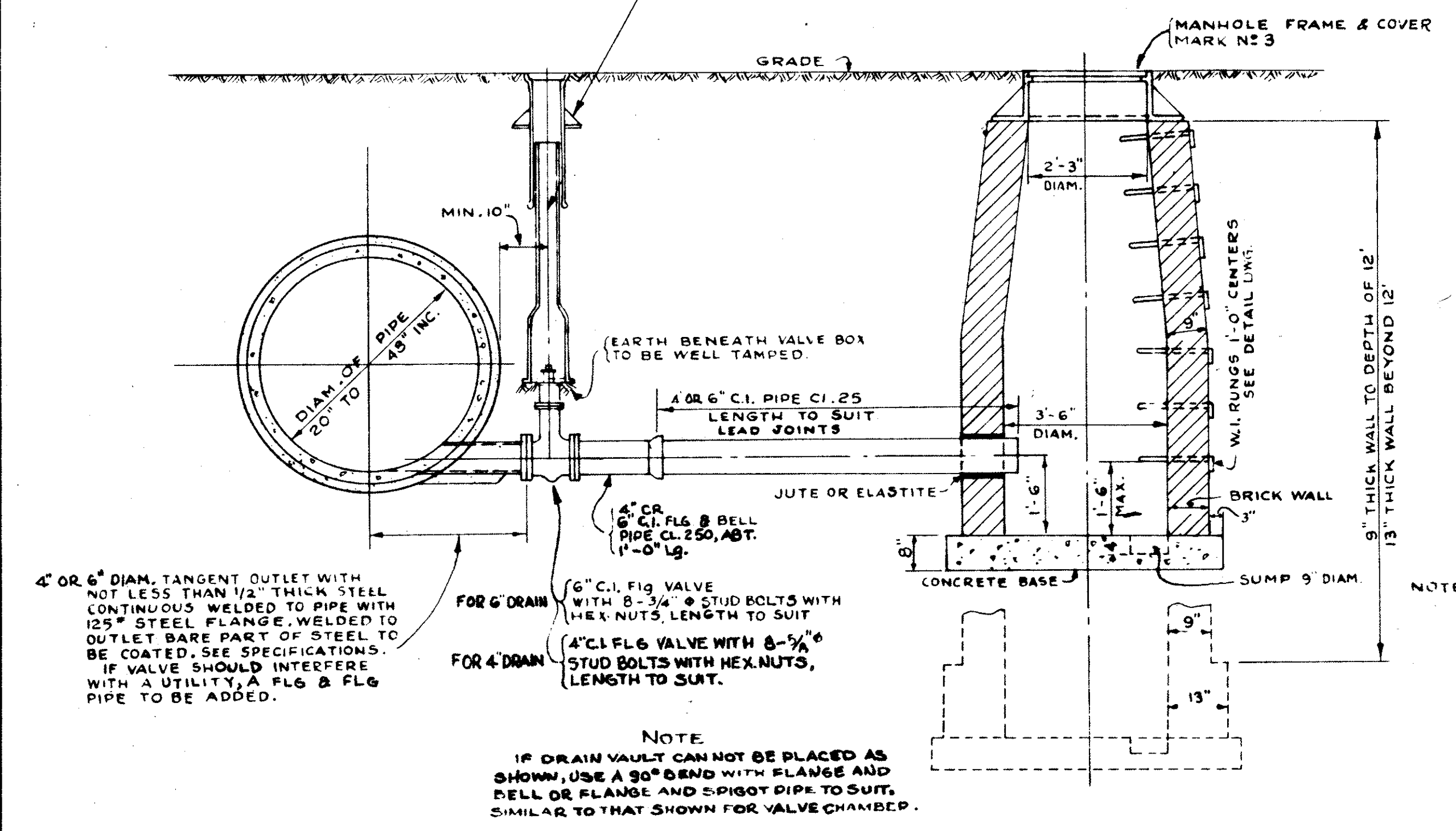


William J. Sweeney ENGINEER OF DESIGN REVIEW

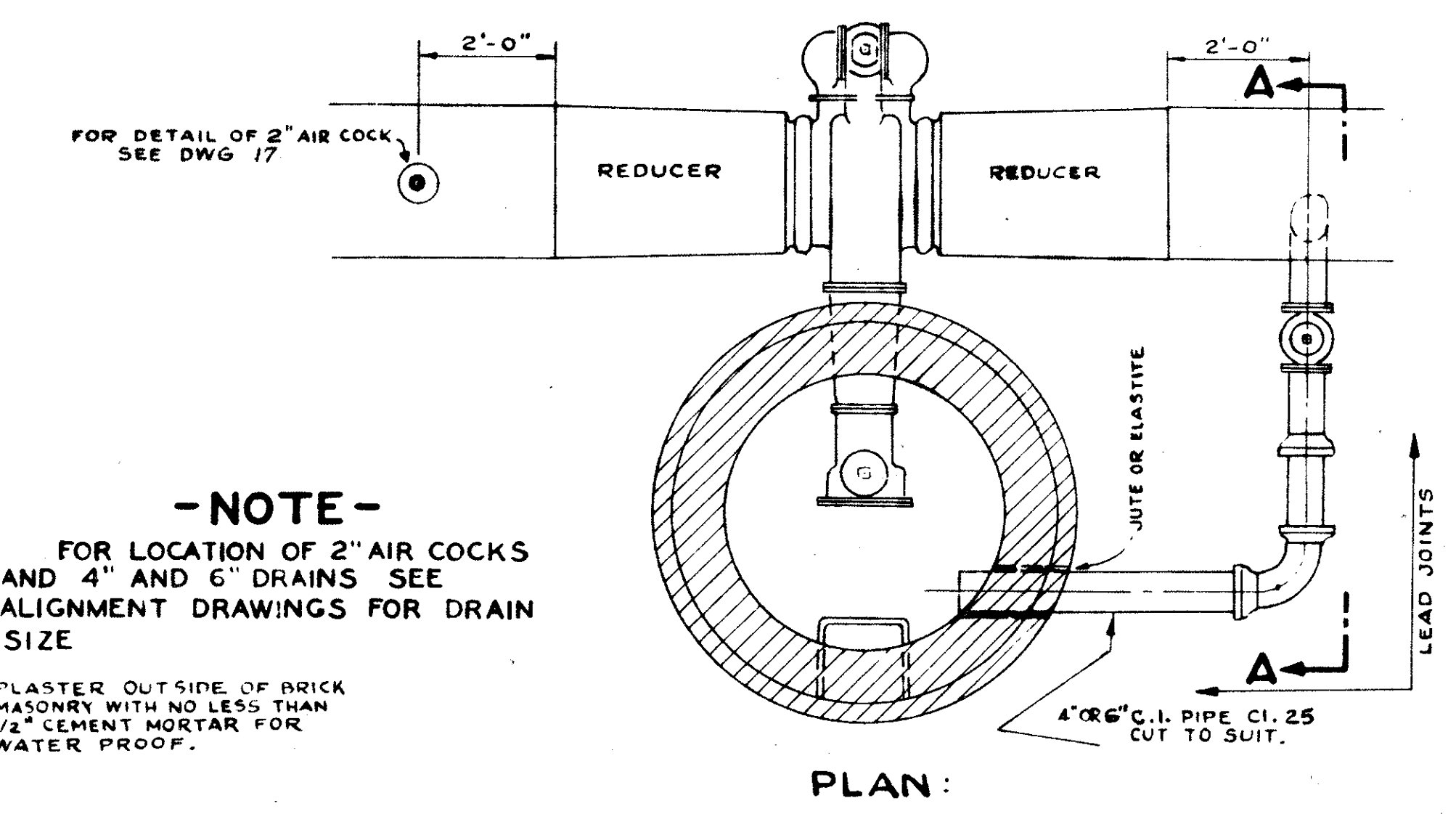
<b>st HIGH SERVICE DISTRICT</b>	
DEPARTMENT OF PUBLIC UTILITIES DIVISION OF WATER AND HEAT CLEVELAND, OHIO	
SUBJECT: WATER WORK DETAILS FOR INTERSTATE ROUTE-480 CLEVELAND, OHIO	
SCALE AS SHOWN	NO.



NO. 2 VALVE BOX COMPLETE SET PLUMB. IF THE VALVE IS 8' OR MORE TO  $\epsilon$  OF SAME BELOW GRADE AN EXTRA PIECE OF NO. 2 BOTTOM BOX MAYBE REQ'D. CUT TO SUIT. ALSO AN EXTENSION STEM WILL BE REQ'D. TO OPERATE VALVE AND MUST BE SUPPORTED BY A SPLIT CENTER PLATE.



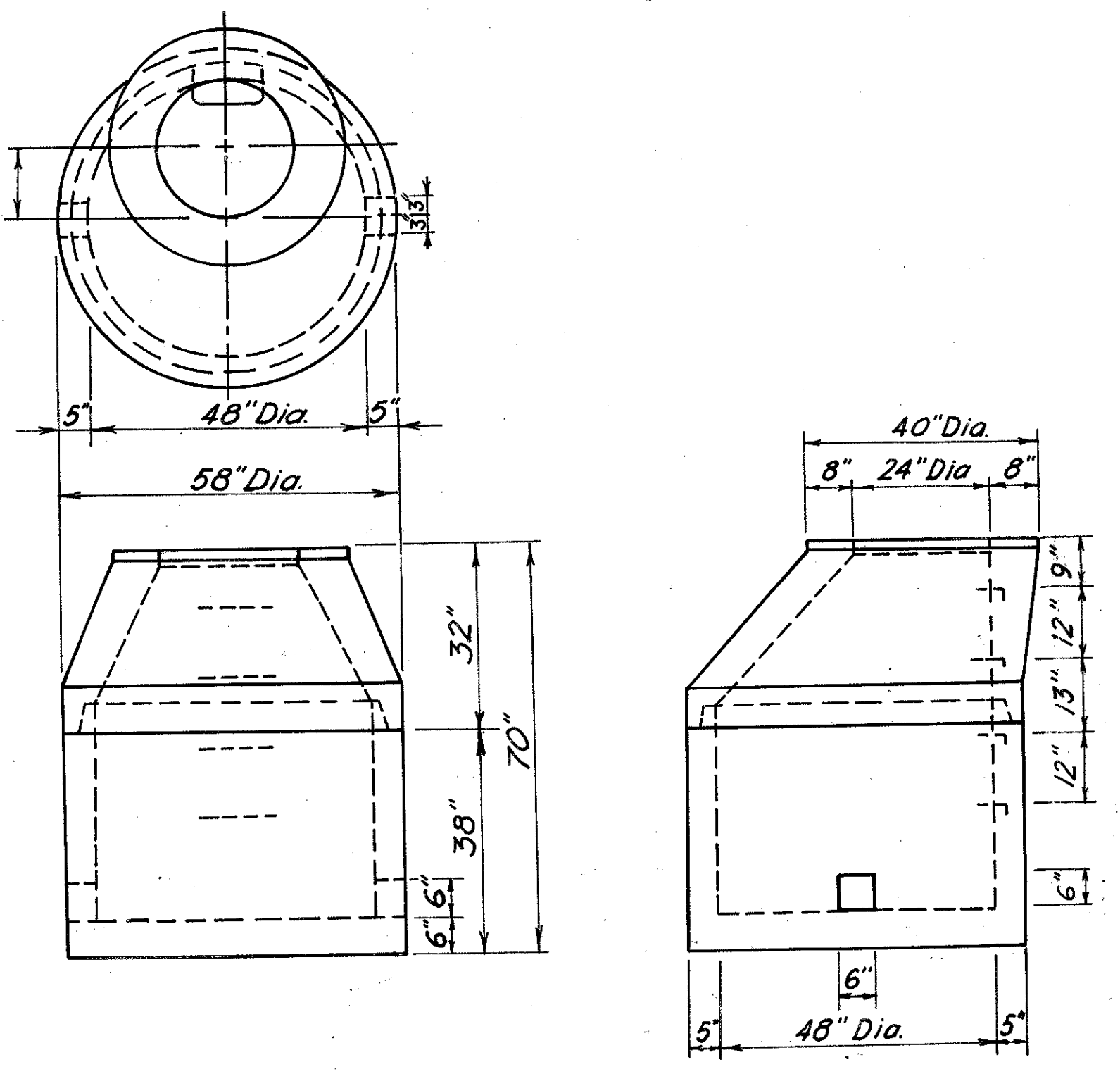
**TYPICAL DETAIL OF 4" OR 6" DRAIN AND VAULT**  
DETAIL SHOWN FOR 48" PIPE  
SCALE: 1/2" = 1 FT.



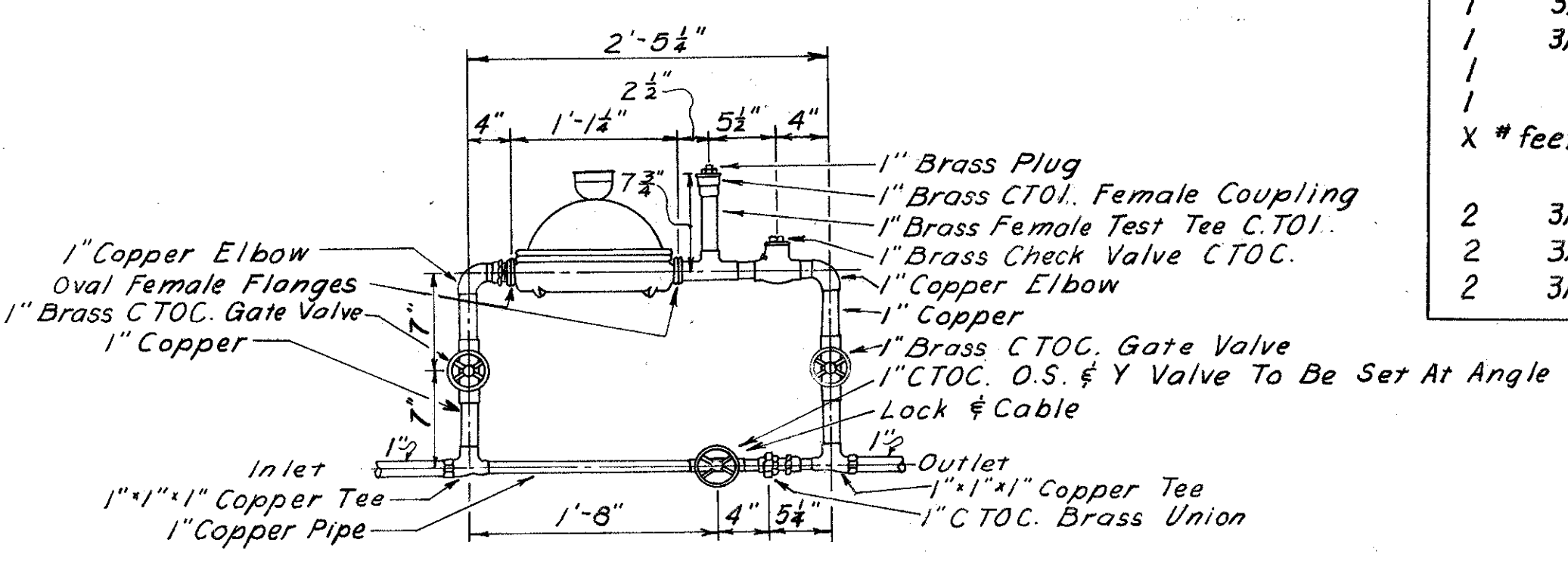
**-NOTE-**  
FOR LOCATION OF 2" AIR COCKS AND 4" AND 6" DRAINS SEE ALIGNMENT DRAWINGS FOR DRAIN SIZE  
NOTE: PLASTER OUTSIDE OF BRICK MASONRY WITH NO LESS THAN 1/2" CEMENT MORTAR FOR WATER PROOF.

**TYPICAL DETAIL SHOWING 4" OR 6" DRAIN FROM WATER MAIN TO VALVE CHAMBER**  
DETAIL SHOWN FOR 24" PIPE & 20" VALVE.  
SCALE: 1/2" = 1 FT.

MATERIALS REQUIRED FOR ITEM SPECIAL, SERVICE CONNECTION EXTENDED 3/4" or 1" GENERAL SUPPLY WATER CONNECTION		
<b>ON CAST IRON PIPE</b>		
1	3/4" or 1"	Curb Cock - Copper to Iron
1		Curb Cock Box Bottom
1		Curb Cock Box Top
X	feet 3/4" or 1"	Copper Tubing
		OR
1	3/4" or 1"	Compression Corporation Stop
1	3/4" or 1"	Draseal Compression Valve
1		Draseal Box
1		Draseal Box Footpiece
X	feet 3/4" or 1"	Copper Tubing
2	3/4" or 1"	Flare Couplings Copper to Iron Female
2	3/4" or 1"	Flare Couplings Copper to Iron Male
2	3/4" or 1"	Flare Couplings Copper to Copper



**METER VAULT**  
SCALE: 1/2" = 1'-0"



**1" METER SETTING**  
SIDE ELEVATION  
SCALE: 1/2" = 1'-0"

APPROVED JUNE 24, 1977

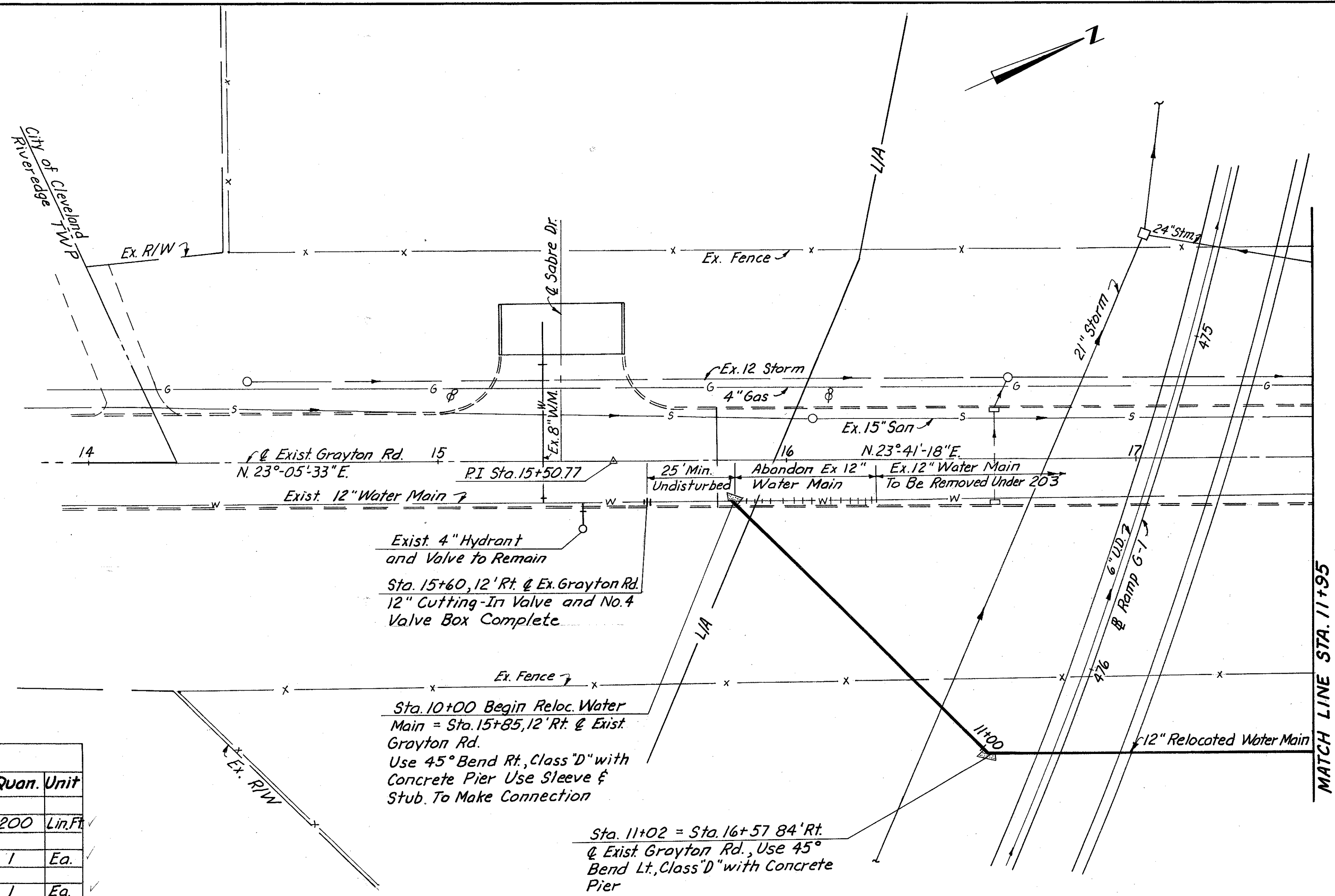
*William J. Swartz* ENGINEER OF DESIGN REVIEW

**1st HIGH SERVICE DISTRICT**  
DEPARTMENT OF PUBLIC UTILITIES  
DIVISION OF WATER AND HEAT  
CLEVELAND, OHIO

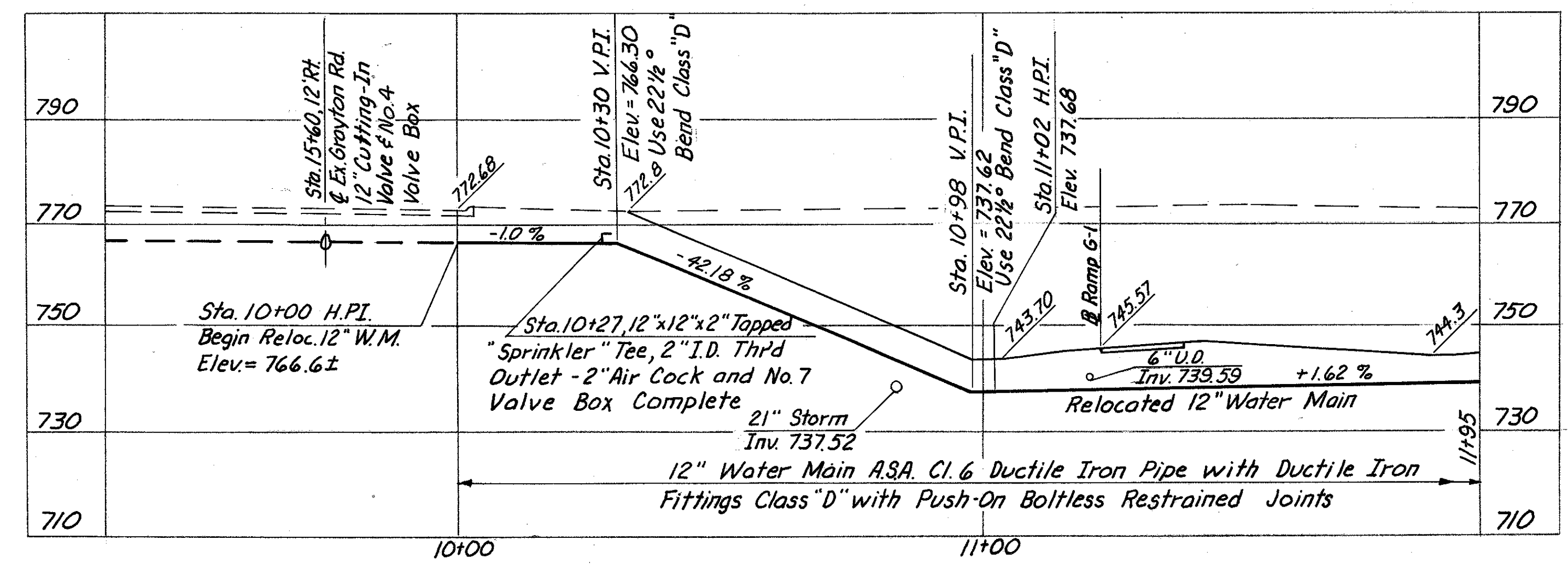
SUBJECT: WATER WORK DETAILS FOR INTERSTATE ROUTE-480  
CLEVELAND, OHIO

SCALE AS SHOWN NO.





ESTIMATED QUANTITIES			
Item	Description	Quan.	Unit
Special	12" Water Main A.S.A. C.I. & Ductile Iron Pipe with Ductile Iron Fittings Class "D" with Push-On Boltless Restrained Joints	200	Lin. Ft.
Special	12" Cutting-In Valve and No. 4 Valve Box Complete	1	Ea.
Special	2" Air Cock and No. 7 Valve Box Complete	1	Ea.



RELOCATED 12" WATER MAIN PROFILE

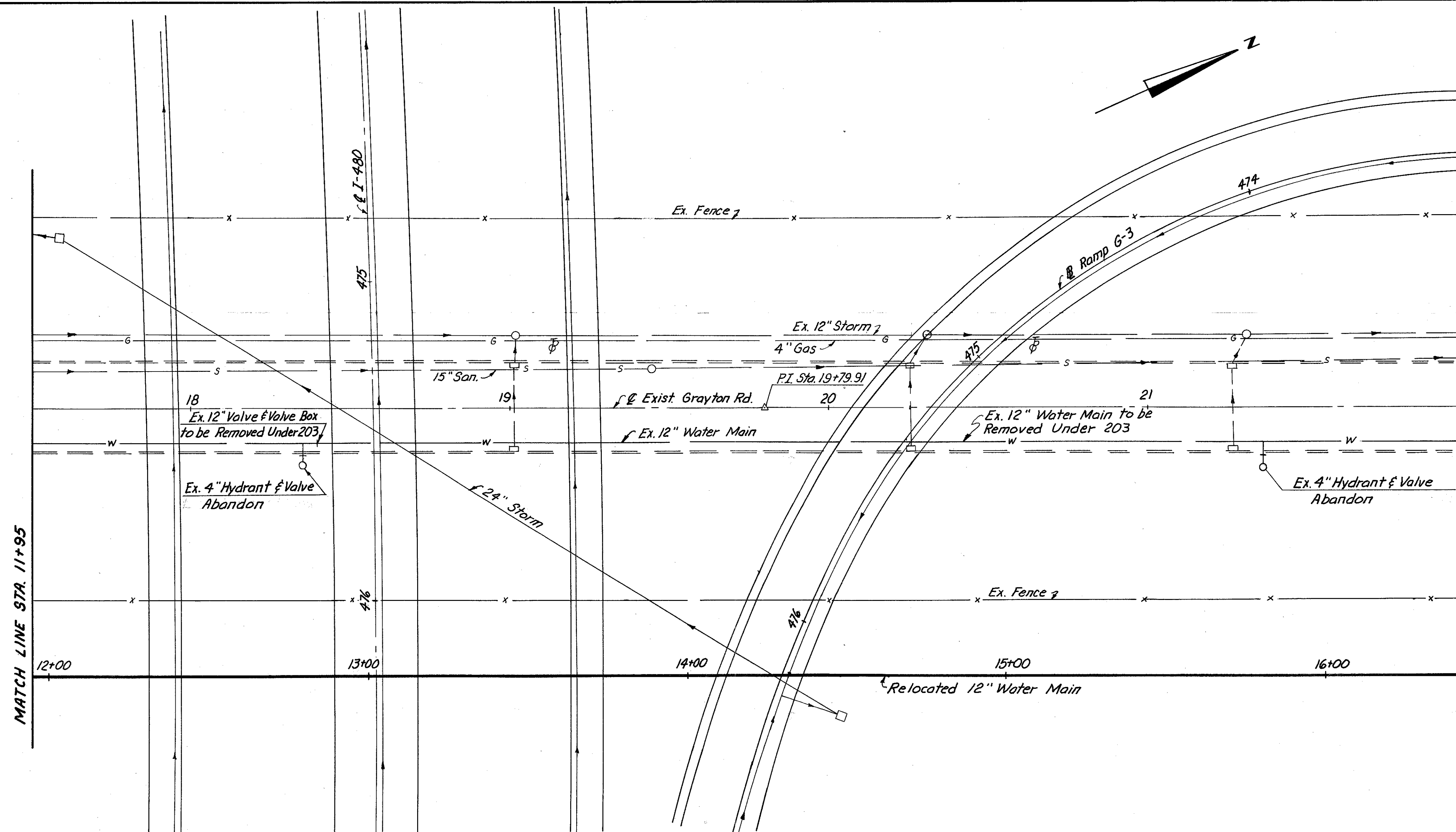
APPROVED JUNE 24, 1977

*William J. Lawrence* ENGINEER OF DESIGN REVIEW

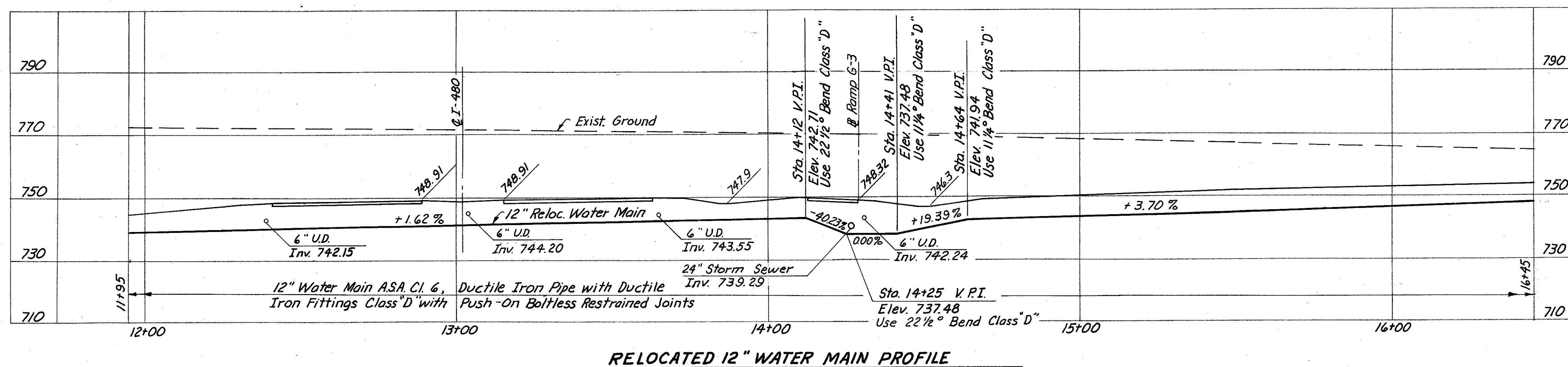
**1<sup>st</sup> HIGH SERVICE DISTRICT**  
DEPARTMENT OF PUBLIC UTILITIES  
DIVISION OF WATER AND HEAT  
CLEVELAND, OHIO

SUBJECT 12" DUCTILE IRON RELOCATED WATER MAIN ALONG EXISTING GRAYTON ROAD

SCALE 1" = 20'  
NO.



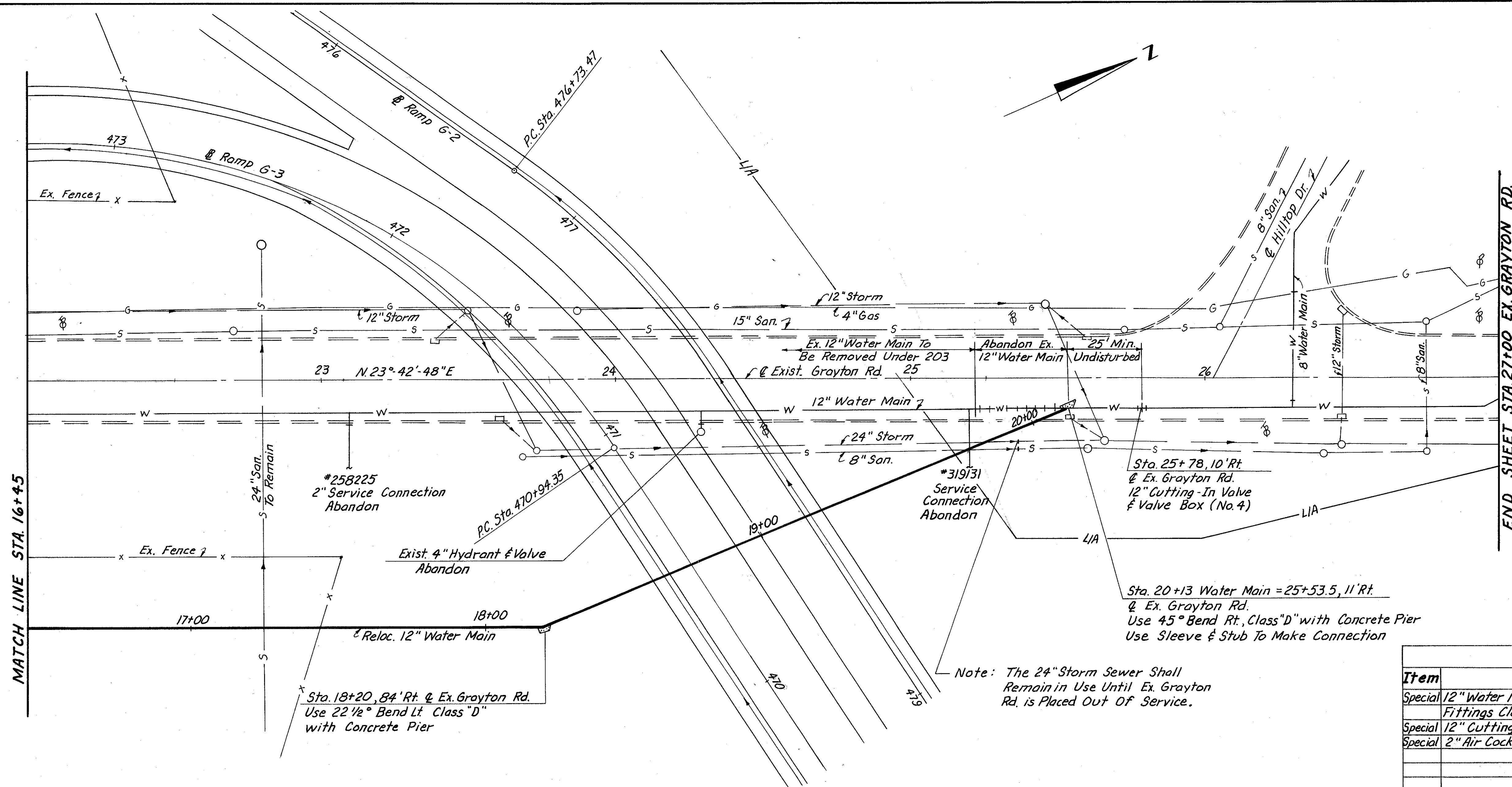
ESTIMATED QUANTITIES		
Item	Description	Quan. Unit
Special	12" Water Main A.S.A. Cl. 6 Ductile Iron Pipe with Ductile Iron Fittings Class 'D' with Push-On Boltless Restrained Joints	450 Lin. Ft.



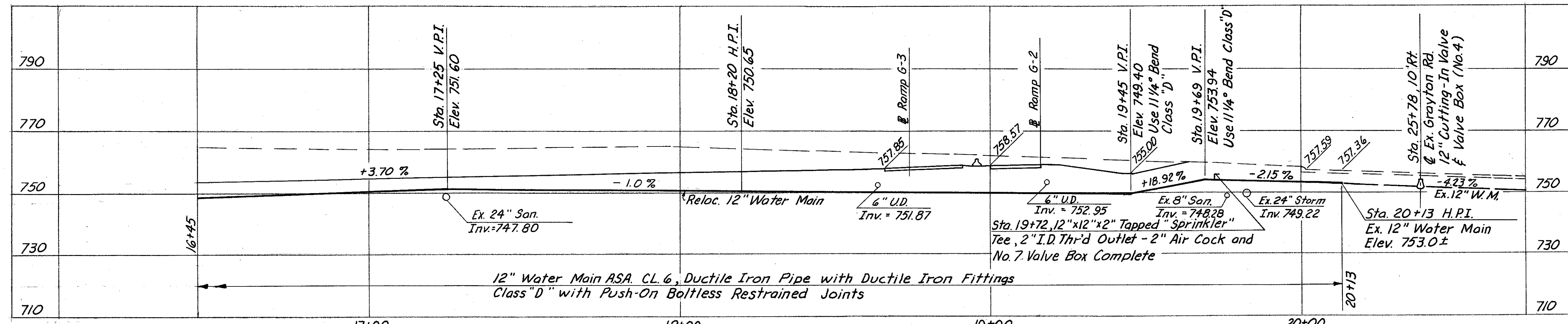
APPROVED JUNE 24, 1977

*William J. Swartz* ENGINEER OF DESIGN REVIEW

<b>1<sup>st</sup> HIGH SERVICE DISTRICT</b>	
DEPARTMENT OF PUBLIC UTILITIES DIVISION OF WATER AND HEAT CLEVELAND, OHIO	
SUBJECT 12" DUCTILE IRON RELOCATED WATER MAIN ALONG EXISTING GRAYTON ROAD	
SCALE 1" = 20'	NO.



ESTIMATED QUANTITIES		
Item	Description	Quan. Unit
Special	12" Water Main ASA C16 Ductile Iron Pipe with Ductile Iron Fittings Class "D" with Push-On Boltless Restrained Joints	368 Lin. Ft.
Special	12" Cutting-In Valve and No. 4 Valve Box Complete	1 Ea.
Special	2" Air Cock and No. 7 Valve Box Complete	1 Ea.



RELOCATED 12" WATER MAIN PROFILE

APPROVED JUNE 24, 1977

*William J. Lucent* ENGINEER OF DESIGN REVIEW

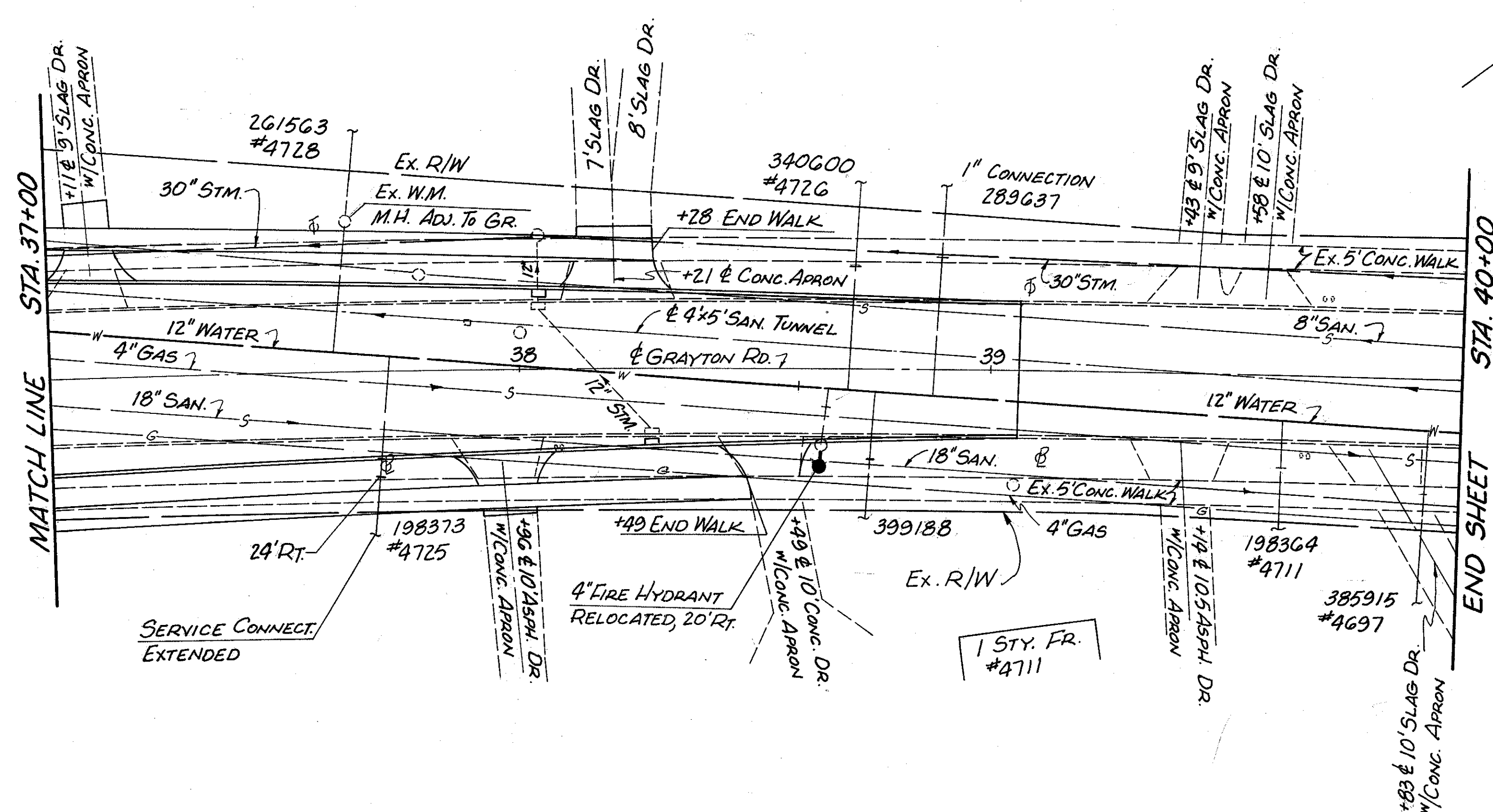
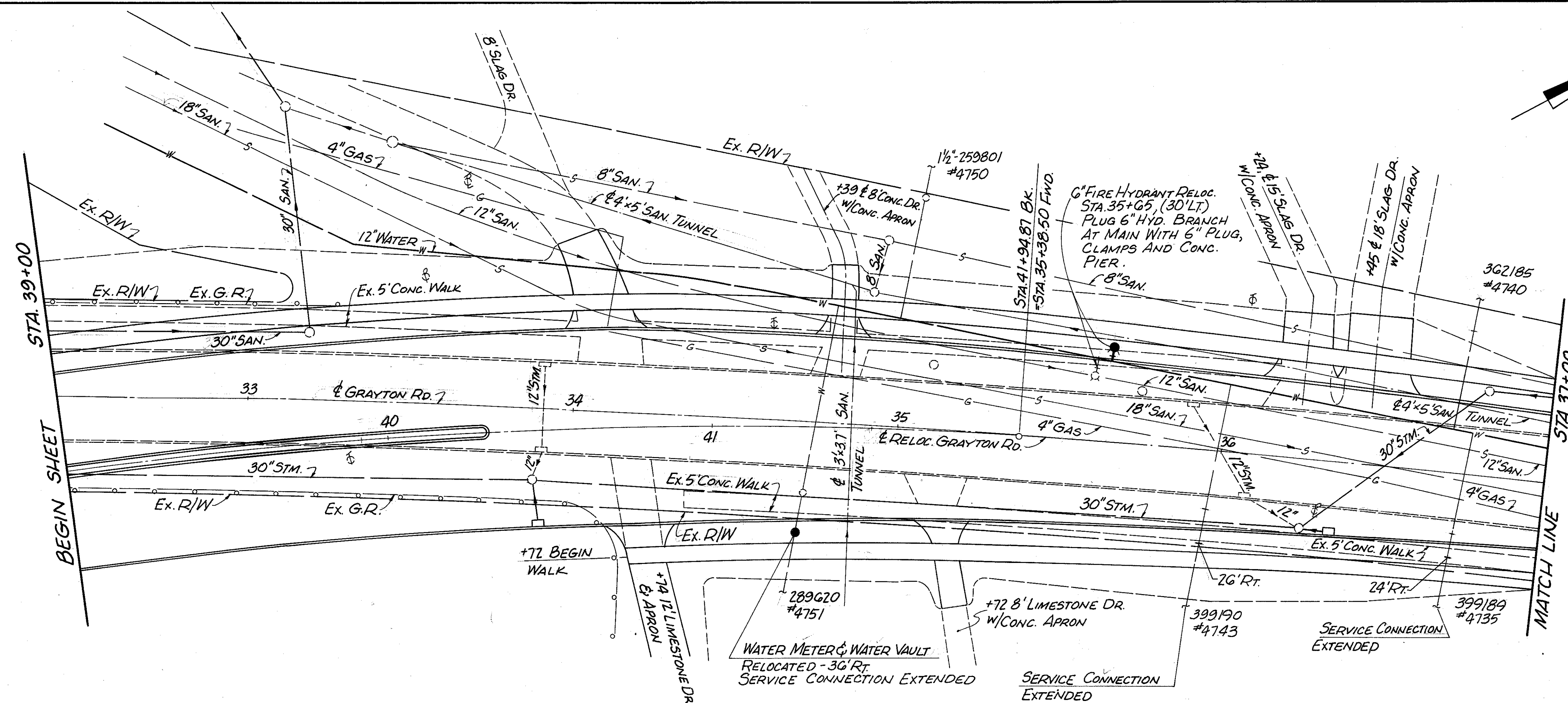
**1st HIGH SERVICE DISTRICT**

DEPARTMENT OF PUBLIC UTILITIES  
DIVISION OF WATER AND HEAT  
CLEVELAND, OHIO

SUBJECT 12" DUCTILE IRON RELOCATED WATER MAIN ALONG EXISTING GRAYTON ROAD

SCALE 1" = 20'  
NO.

NOTE:  
MAINTAIN EXISTING 6'-0" MINIMUM COVER FOR ALL SERVICE CONNECTIONS.



ESTIMATED QUANTITIES			
ITEM	DESCRIPTION	QUAN.	UNIT
Special	Fire Hydrant Relocated	2	Ea.
Special	3/4" To 1" Water Meter Relocated	1	Ea.
Special	3/4" To 1" Meter Vault	1	Ea.
Special	Adjust Waterworks Structure To Grade	1	Ea.
Special	Service Connection Extended (SEE NOTE)	4	Ea.

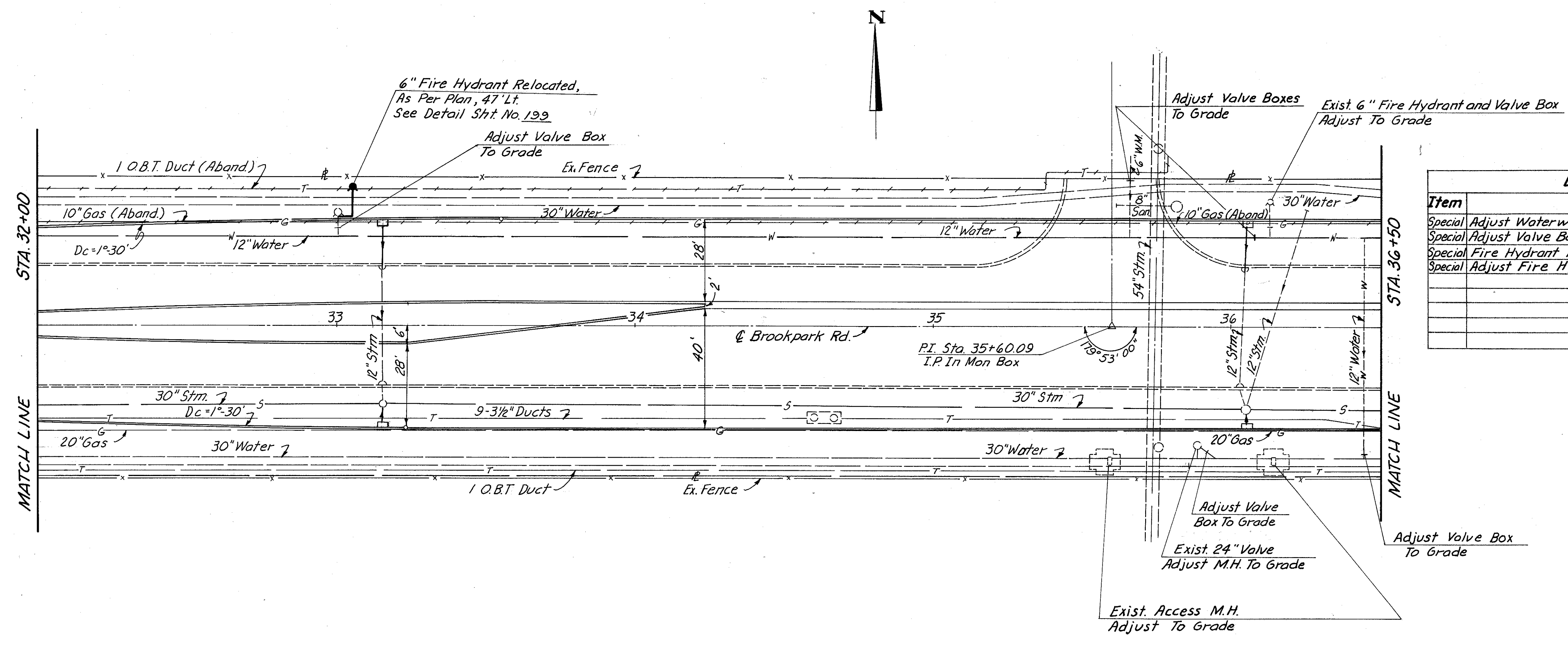
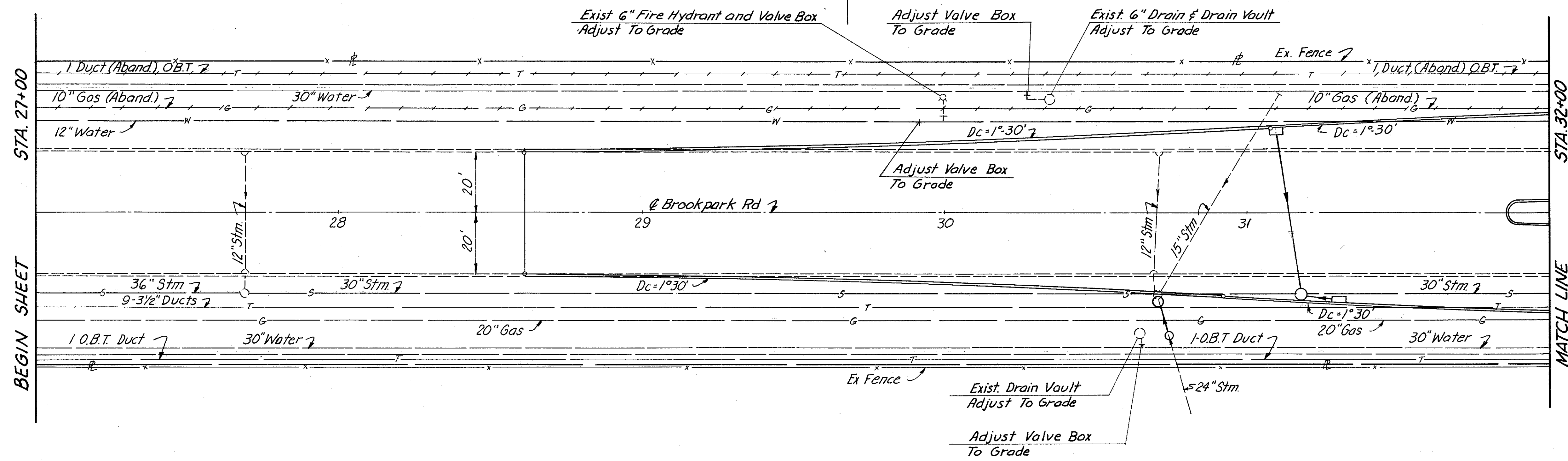
APPROVED JUNE 24, 1977

**1<sup>st</sup> HIGH SERVICE DISTRICT**  
DEPARTMENT OF PUBLIC UTILITIES  
DIVISION OF WATER AND HEAT  
CLEVELAND, OHIO

SUBJECT MISCELLANEOUS WATERWORKS ALONG  
RELOCATED GRAYTON ROAD

SCALE 1" = 20'  
NO.

*William J. ...* ENGINEER OF DESIGN REVIEW



ESTIMATED QUANTITIES			
Item	Description	Quan.	Unit
Special	Adjust Waterworks Structure To Grade	5	Ea.
Special	Adjust Valve Box To Grade	8	Ea.
Special	Fire Hydrant Relocated, As Per Plan	1	Ea.
Special	Adjust Fire Hydrant and Valve Box To Grade	2	Ea.

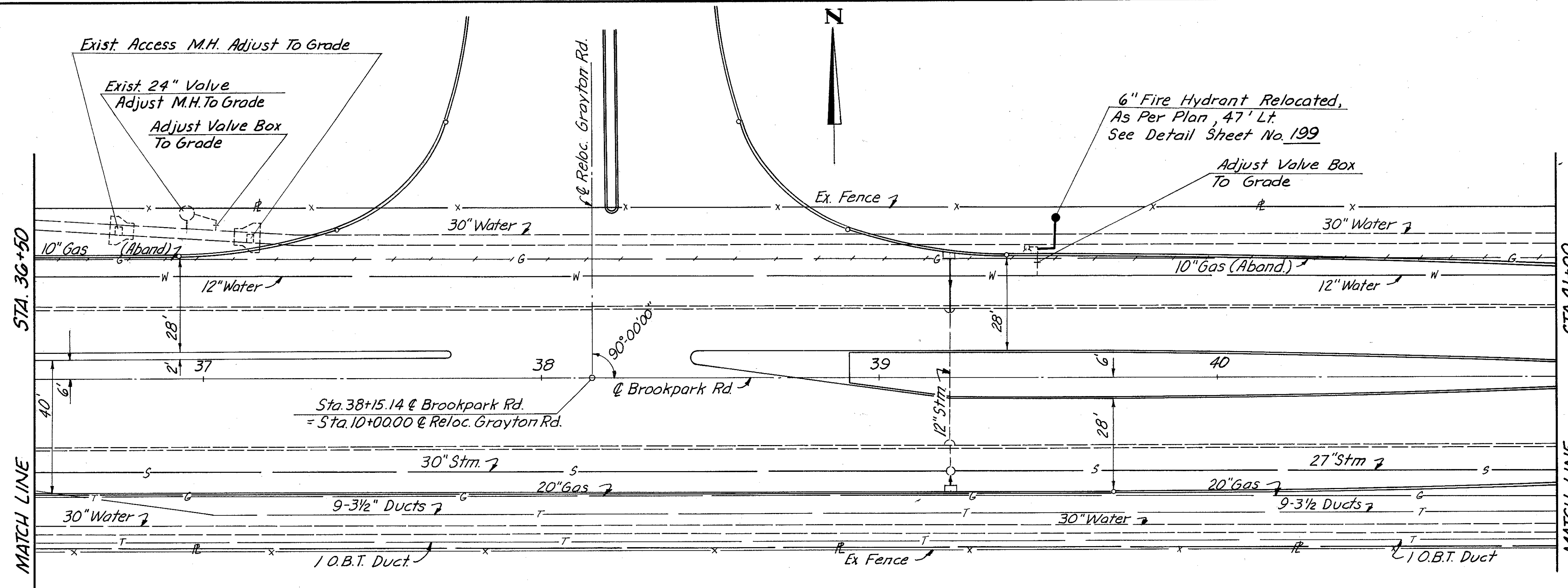
APPROVED JUNE 24, 1977

*William J. Sweney* ENGINEER OF DESIGN REVIEW

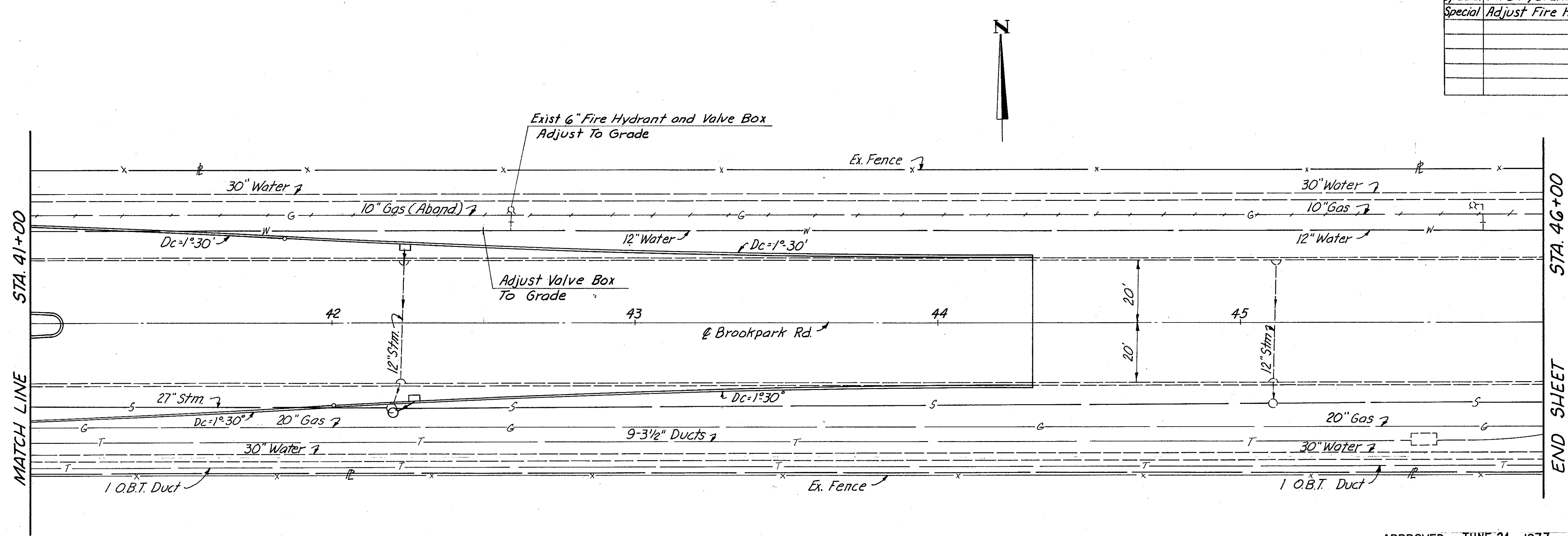
**1<sup>st</sup> HIGH SERVICE DISTRICT**  
DEPARTMENT OF PUBLIC UTILITIES  
DIVISION OF WATER AND HEAT  
CLEVELAND, OHIO

SUBJECT MISCELLANEOUS WATERWORKS ALONG  
BROOKPARK ROAD

SCALE 1"=20'  
NO.



ESTIMATED QUANTITIES			
Item	Description	Quan.	Unit
Special	Adjust Water works Structure To Grade	3	Ea.
Special	Adjust Valve Box To Grade	3	Ea.
Special	Fire Hydrant Relocated, As Per Plan	1	Ea.
Special	Adjust Fire Hydrant And Valve Box To Grade	1	Ea.



APPROVED JUNE 24, 1977

*William Fluener* ENGINEER OF DESIGN REVIEW

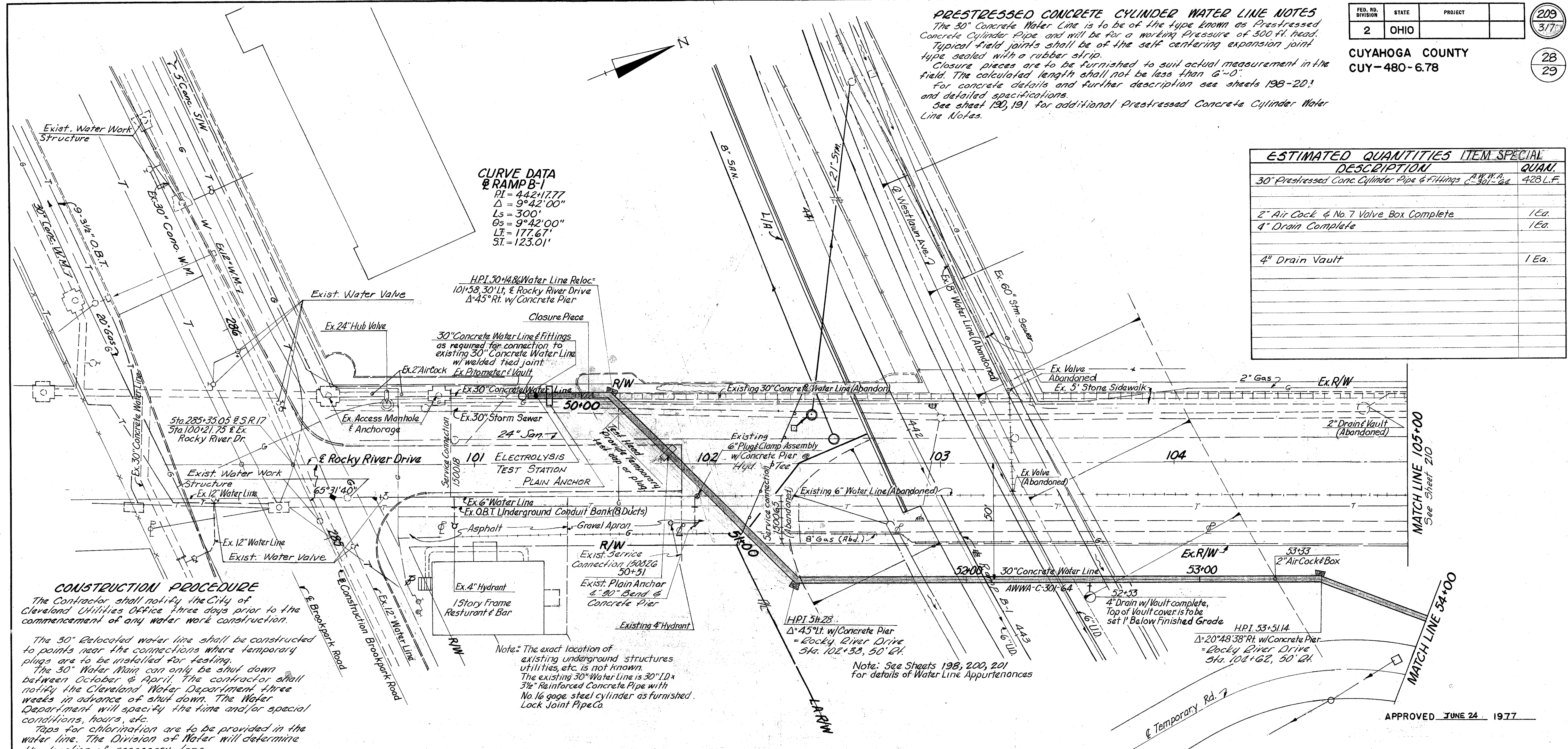
<b>1<sup>st</sup> HIGH SERVICE DISTRICT</b>	
DEPARTMENT OF PUBLIC UTILITIES DIVISION OF WATER AND HEAT CLEVELAND, OHIO	
SUBJECT MISCELLANEOUS WATERWORKS ALONG BROOKPARK ROAD	
SCALE 1" = 20'	NO.



**PRESTRESSED CONCRETE CYLINDER WATER LINE NOTES**  
 The 30" Concrete Water Line is to be of the type known as Prestressed Concrete Cylinder Pipe and will be for a working pressure of 300 ft. head. Typical field joints shall be of the self centering expansion joint type sealed with a rubber strip. Closure pieces are to be furnished to suit actual measurement in the field. The calculated length shall not be less than 6'-0". For concrete details and further description see sheets 198-201 and detailed specifications. See sheet 190, 191 for additional Prestressed Concrete Cylinder Water Line Notes.

**CURVE DATA**  
**RAMP B-1**  
 PI = 44.2+17.77  
 Δ = 9°42'00"  
 Ls = 300'  
 Os = 9°42'00"  
 LT = 177.67'  
 ST = 123.01'

ESTIMATED QUANTITIES	ITEM	SPECIAL	QUAN.
30" Prestressed Conc. Cylinder Pipe & Fittings	AWWA C-301-64		428 L.F.
2" Air Cock & No. 7 Valve, Box Complete			1 Ea.
4" Drain Complete			1 Ea.
4" Drain Vault			1 Ea.

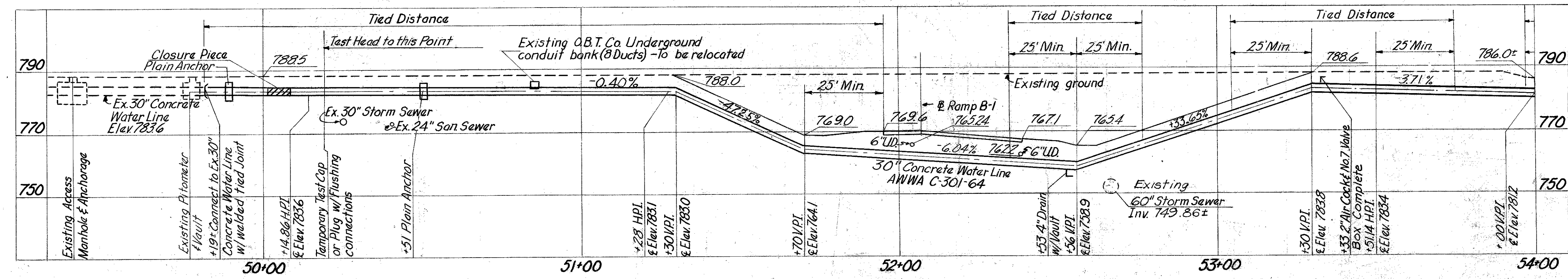


**CONSTRUCTION PROCEDURE**  
 The Contractor shall notify the City of Cleveland Utilities Office three days prior to the commencement of any water work construction.  
 The 30" Relocated water line shall be constructed to points near the connections where temporary plugs are to be installed for testing.  
 The 30" Water Main can only be shut down between October & April. The contractor shall notify the Cleveland Water Department three weeks in advance of shut down. The Water Department will specify the time and/or special conditions, hours, etc.  
 Taps for chlorination are to be provided in the water line. The Division of Water will determine the location of necessary taps.

Note: The exact location of existing underground structures, utilities, etc. is not known. The existing 30" Water Line is 30" I.D. x 3/4" Reinforced Concrete Pipe with No. 16 gage steel cylinder as furnished Lock Joint Pipe Co.

Note: See Sheets 198, 200, 201 for details of Water Line Appurtenances

**PROFILE RELOCATED 30" WATER LINE**

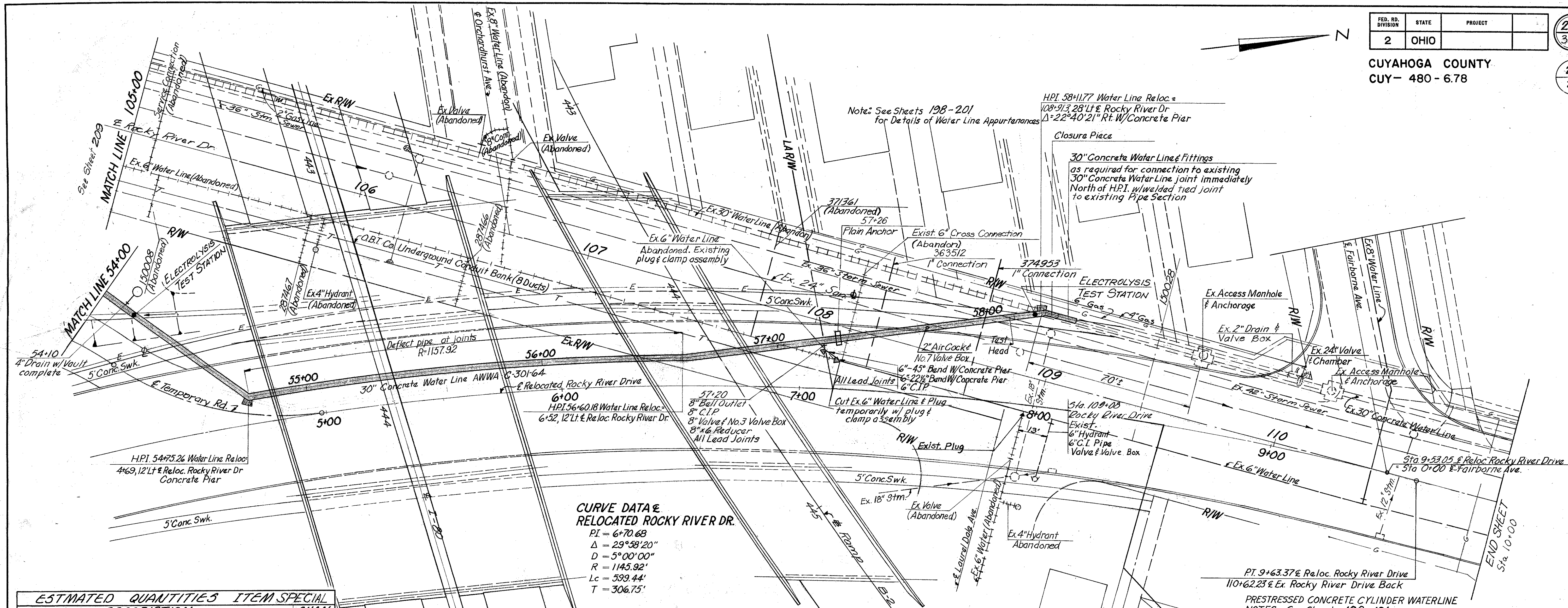


W. J. Sweeney ENGINEER OF DESIGN REVIEW

**1st HIGH SERVICE DISTRICT**  
 DEPARTMENT OF PUBLIC UTILITIES  
 DIVISION OF WATER AND HEAT  
 CLEVELAND, OHIO

SUBJECT: 30" CONCRETE WATER MAIN RELOCATION, ROCKY RIVER DR. ACROSS RAMP B-1, INTERSTATE ROUTE 80 STATE ROUTE 237 INTERCHANGE

SCALE: 1" = 20'  
 NO.:



**CURVE DATA & RELOCATED ROCKY RIVER DR.**

PI = 6+70.68  
 Δ = 29°58'20"  
 D = 5°00'00"  
 R = 1145.92'  
 Lc = 539.44'  
 T = 306.75'

ESTIMATED QUANTITIES	ITEM	SPECIAL DESCRIPTION	QUAN.
		30" Prestressed Conc. Cylinder Pipe & Fittings A.W.W.A. C-301-64	425 L.F.
		6" Cast Iron Water Main A.S.A. Class 25 With Cast Iron Fittings Class D, Cement Lined, All Lead Joints	10 L.F.
		8" Cast Iron Water Main A.S.A. Class 25 With Cast Iron Fittings Class D, Cement Lined	5 L.F.
		2" Air Cock & No. 7 Valve Box Complete	1 Ea.
		4" Drain Complete	1 Ea.
		8" Hub Valve and No. 3 Valve Box Complete	1 Ea.
		4" Drain Vault	1 Ea.

**GENERAL NOTES**

The water line stationing is along horizontal centerlines of the pipe. The elevations are based on sea level datum. The pipe fabricator shall follow as closely as possible the points of changes of grade as given on these contract drawings.

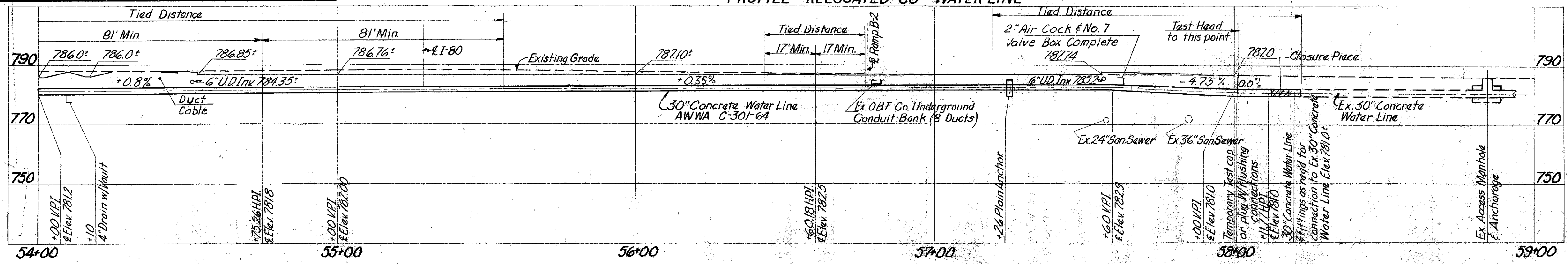
The static head for both design and testing shall be measured from elevation 927.00. The field testing head shall be 75 p.s.i. plus that due to the static head, but in no case less than 100 p.s.i.

Additional closures may be furnished by the contractor to expedite the work and to provide for satisfactory installation of the water line.

The location of joints in the existing 30" concrete water line is unknown. It shall be the responsibility of the contractor to locate exactly the joints nearest the ends of the 30" Relocated concrete water line and supply the Engineer and Pipe fabricator with the measurements.

The backfill under proposed sidewalks shall be compacted sand.

**PROFILE RELOCATED 30" WATER LINE**



APPROVED JUNE 24 1977

William J. [Signature] ENGINEER OF DESIGN REVIEW

**ST HIGH SERVICE DISTRICT**

DEPARTMENT OF PUBLIC UTILITIES  
DIVISION OF WATER AND HEAT  
CLEVELAND, OHIO

SUBJECT 30" CONCRETE WATER MAIN RELOCATION ALONG RELOCATED ROCKY RIVER DRIVE, INTERSTATE ROUTE 80 - STATE ROUTE 237 INTERCHANGE

SCALE 1"=20' NO. 3M-1573

9.1

CUYAHOGA COUNTY  
CUY-480-6.78

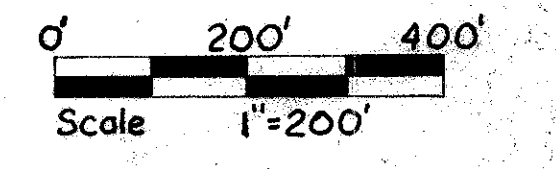
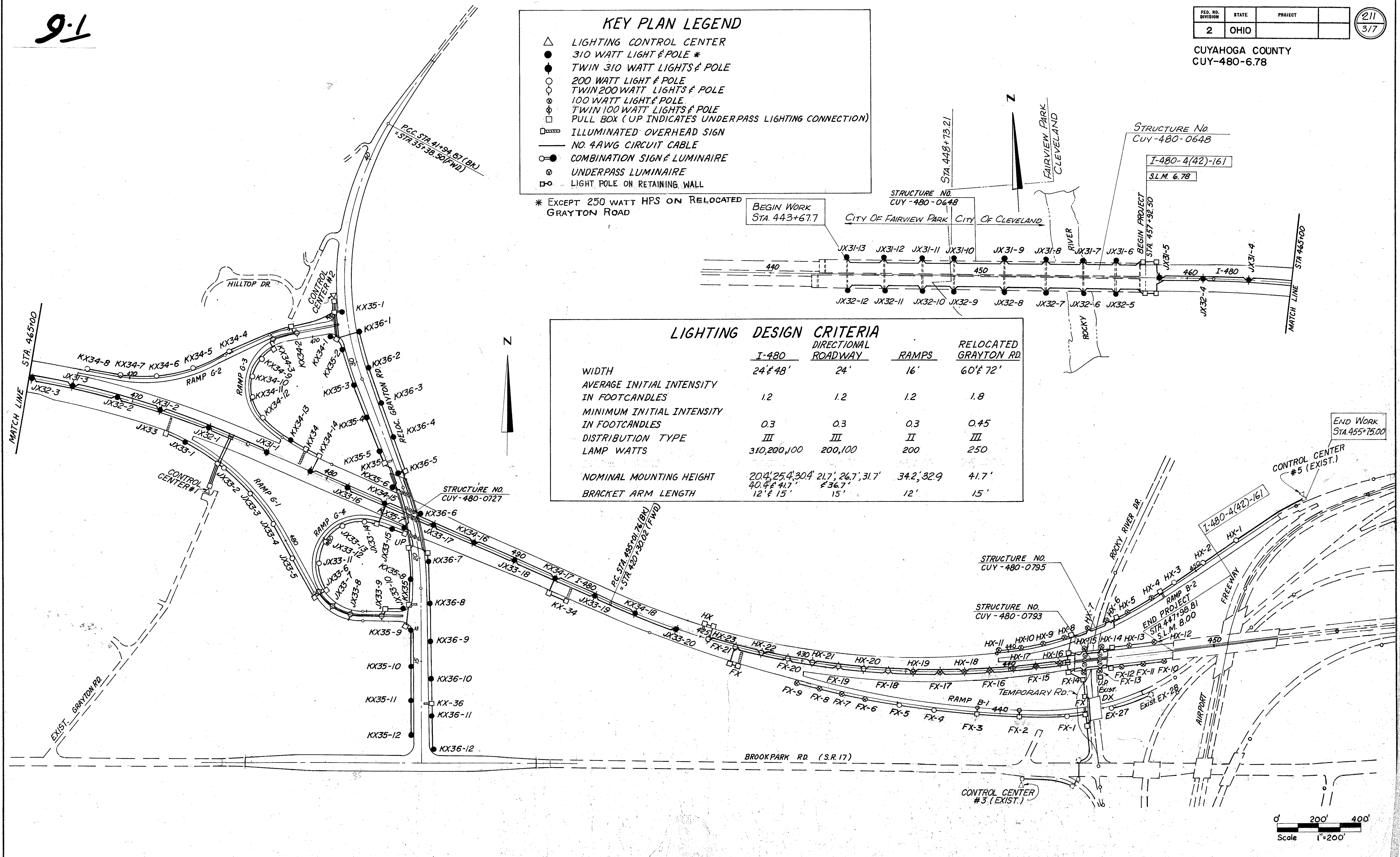
### KEY PLAN LEGEND

- △ LIGHTING CONTROL CENTER
- 310 WATT LIGHT & POLE \*
- 200 WATT LIGHT & POLE
- 200 WATT LIGHTS & POLE
- 100 WATT LIGHT & POLE
- 100 WATT LIGHTS & POLE
- PULL BOX (UP INDICATES UNDERPASS LIGHTING CONNECTION)
- ILLUMINATED OVERHEAD SIGN
- NO. 4AWG CIRCUIT CABLE
- COMBINATION SIGN & LUMINAIRE
- UNDERPASS LUMINAIRE
- LIGHT POLE ON RETAINING WALL

\* EXCEPT 250 WATT HPS ON RELOCATED GRAYTON ROAD

### LIGHTING DESIGN CRITERIA

	I-480	DIRECTIONAL ROADWAY	RAMPS	RELOCATED GRAYTON RD
WIDTH	24' & 48'	24'	16'	60' & 72'
AVERAGE INITIAL INTENSITY IN FOOTCANDLES	1.2	1.2	1.2	1.8
MINIMUM INITIAL INTENSITY IN FOOTCANDLES	0.3	0.3	0.3	0.45
DISTRIBUTION TYPE	III	III	II	III
LAMP WATTS	310, 200, 100	200, 100	200	250
NOMINAL MOUNTING HEIGHT	20.4', 25.4', 30.4'	21.7', 26.7', 31.7'	34.2', 32.9'	41.7'
BRACKET ARM LENGTH	40.4' & 41.7'	36.7'	15'	15'



#### SPECIFICATIONS

THESE NOTES ARE SUPPLEMENTAL TO ITEMS 625 AND 713 OF THE STATE OF OHIO DEPARTMENT OF TRANSPORTATION CONSTRUCTION AND MATERIAL SPECIFICATIONS.  
REFER TO STANDARD CONSTRUCTION DRAWINGS LISTED ON THE TITLE SHEET.

#### PLAN SPECIFICATION REFERENCES

ALL REFERENCES TO ITEM 625 AND 713 IN THESE PLANS SHALL BE CONSIDERED TO READ AS RESPECTIVE REFERENCES TO ITEMS S625 AND S713.

#### 625.03 - GENERAL

THE POWER SUPPLYING AGENCY FOR THIS PROJECT IS THE CLEVELAND ELECTRIC ILLUMINATING CO. ILLUMINATING BUILDING CLEVELAND, OHIO 44113

THE PROJECT HAS BEEN DESIGNED ON THE BASIS OF 5% VOLTAGE DROP PERMISSIBLE ON BRANCH CIRCUITS. THE PROJECT WILL RECEIVE 480 VOLT TWO WIRE SECONDARY SERVICE ONE SIDE GROUNDED, CONTROLLED, FROM THE CLEVELAND ELECTRIC ILLUMINATING CO.

THE PROJECT HAS BEEN DESIGNED ON THE BASIS OF FULL LIGHTING WITH 1.2 FOOT CANDLE AVERAGE INITIAL ILLUMINATION WITH A MAXIMUM UNIFORMITY RATIO OF 4.0 TO 1.0.

#### 625.07 - 713.11 LUMINAIRES.

12,500 LUMEN HORIZONTAL STYLE A LUMINAIRES, DESIGNED FOR USE WITH 100 WATT HIGH PRESSURE SODIUM LAMPS, SHALL HAVE SINGLE RATED 480 VOLT, 100 WATT INTEGRAL REGULATOR BALLASTS, STYLE A LUMINAIRES SHALL BE GENERAL ELECTRIC M-250, WESTINGHOUSE OV-15, MCGRAW EDISON "UNISTYLE-250," OR EQUAL APPROVED BY THE ENGINEER.

25,000 LUMEN HORIZONTAL STYLE B LUMINAIRES, DESIGNED FOR USE WITH 200 WATT HIGH PRESSURE SODIUM LAMPS, SHALL HAVE SINGLE RATED 480 VOLT, 200 WATT INTEGRAL REGULATOR BALLASTS, STYLE B LUMINAIRES SHALL BE GENERAL ELECTRIC M-400, WESTINGHOUSE OV-25, MCGRAW EDISON "UNISTYLE-400," OR EQUAL APPROVED BY THE ENGINEER.

25,000 LUMEN HORIZONTAL STYLE B LUMINAIRES, DESIGNED FOR USE WITH 250 WATT HIGH PRESSURE SODIUM LAMPS, SHALL HAVE SINGLE RATED 480 VOLT, 250 WATT INTEGRAL REGULATOR BALLASTS, STYLE B LUMINAIRES SHALL BE GENERAL ELECTRIC M-400, WESTINGHOUSE OV-25, MCGRAW EDISON "UNISTYLE-400," OR EQUAL APPROVED BY THE ENGINEER.

#### 625.07 - 713.13 UNDERPASS LUMINAIRES BRIDGE No. CUY 480-0727

UNDERPASS LUMINAIRES SHALL BE HOLOPHANE "UNDERPASS WALLPACK" OR EQUAL WESTINGHOUSE, MCGRAW EDISON, OR GENERAL ELECTRIC UNDERPASS UNIT APPROVED BY THE ENGINEER, AND SHALL BE FURNISHED WITH AN INTEGRAL FUSE HOLDER AND 10-AMPERE FUSE. THE INTEGRAL BALLAST SHALL BE OF A REGULATOR TYPE, SINGLE RATED 480 VOLTS, AND DESIGNED FOR USE WITH A 100 WATT HIGH PRESSURE SODIUM LAMP.

#### LIGHT POLE ANCHOR BOLTS FOR BRIDGES AND RETAINING WALLS

ANCHOR BOLTS FOR MOUNTING LIGHT POLES ON BRIDGES AND RETAINING WALLS SHALL CONFORM TO THE REQUIREMENTS OF 713.01 AND DETAILS SHOWN ON THE PLANS AND STANDARD DRAWINGS, OR THE APPROVED SHOP DRAWINGS FOR THE RESPECTIVE POLES TO BE PLACED THEREON. PAYMENT SHALL BE MADE AT THE UNIT PRICE BID FOR EACH SET OF THE SIZE REQUIRED AND NECESSARY TO INSTALL ONE POLE, AND THIS PAYMENT SHALL CONSTITUTE FULL COMPENSATION FOR FURNISHING AND PLACING THE BOLTS.

#### CONDUIT ON STRUCTURES

EXPANSION FITTINGS FOR CONDUIT ON STRUCTURES SHALL BE OZ TYPE AX, CROUSE-HINDS TYPE XJ-4, APPLETON TYPE XJ-4, OR EQUAL APPROVED BY THE ENGINEER.  
EACH EXPANSION FITTING SHALL HAVE A COPPER EXTERNAL BONDING JUMPER.

#### ELECTRICAL SERVICE FOR ILLUMINATED SIGNS

THE PAY ITEMS IN THE LIGHTING GENERAL SUMMARY INCLUDE THE PULL BOX OR JUNCTION BOX ADJACENT TO EACH LIGHTED SIGN AND THE ELECTRICAL SERVICE CONNECTIONS LEADING INTO THE BOX, INCLUDING CONNECTOR KITS IN THE PULL BOX OR JUNCTION BOX. QUANTITIES FOR ELECTRICAL SERVICE FROM THE CONNECTOR KITS IN THE PULL BOX OR JUNCTION BOX TO THE SIGN ARE INCLUDED IN THE TRAFFIC CONTROL GENERAL SUMMARY.

#### ITEM 625 - SERVICE TO UNDERPASS LIGHTING, AS PER PLAN

THIS ITEM SHALL CONSIST OF PROVIDING COMPLETE ELECTRICAL SERVICE, EXCEPT FOR LUMINAIRES, LAMPS, AND STRUCTURE GROUNDING SYSTEMS, FOR AN UNDERPASS LIGHTING SYSTEM ON BRIDGE No. CUY 480-0727 AND CUY 480-0793 THE INSTALLATION WORK SHALL INCLUDE CONDUITS, MOUNTINGS, FITTINGS, JUNCTION BOXES, CABLES, AND ALL INCIDENTALS NECESSARY TO COMPLETE, READY FOR USE, THE SERVICE AS DETAILED ON SHEETS 234 & 235.

THE LUMP SUM PRICE BID FOR 'ITEM 625 - SERVICE TO UNDERPASS LIGHTING, AS PER PLAN' SHALL INCLUDE PAYMENT FOR ALL EQUIPMENT, LABOR, AND MATERIALS NECESSARY TO COMPLETE THE WORK AS SPECIFIED. COMPONENT PARTS NOT SPECIFICALLY MENTIONED BUT REQUIRED FOR SATISFACTORY OPERATION OF THIS ITEM SHALL BE FURNISHED AND CONSIDERED PAID FOR AS PART OF THE ITEM.

#### HIGH VOLTAGE DIRECT CURRENT TESTS

A HIGH VOLTAGE TEST, AS DESCRIBED IN SUPPLEMENTAL SPECIFICATION 839 SHALL BE PERFORMED ON ALL DISTRIBUTION CABLE AND DUCT-CABLE SYSTEMS TO BE INSTALLED ON THIS PROJECT. THE TEST SHALL NOT BE PERFORMED UNTIL AFTER ALL NEW CONSTRUCTION, SUCH AS GUARD RAIL, FENCES, DELINEATOR POSTS, SIGNS ET CETERA, IN THE IMMEDIATE VICINITY OF THE LOCATION OF THE CABLE RUN BEING TESTED HAS BEEN COMPLETED. THE TESTING REQUIREMENTS OF 625.22(b) ARE HEREBY WAIVED FOR THOSE CIRCUITS ON WHICH THE HIGH VOLTAGE TEST IS TO BE PERFORMED.

#### ITEM 625 RELOCATION OF EXISTING LIGHT POLE, AS PER PLAN.

THE EXISTING LIGHT POLE AT STA. 2+80 ROCKY RIVER IS TO BE RELOCATED TO THE RELOCATED ROCKY RIVER DR. STRUCTURE OVER RAMP B-1.

SALVAGED POLES SHALL BE PREPARED IN ACCORDANCE WITH SEC. 514.06. EXCEPT FIELD PAINT SHALL BE AS SPECIFIED HEREIN.

TWO FIELD COATS OF ALUMINUM PAINT PER SEC. 708.12. FIRST COAT TYPE I, SECOND COAT TYPE II.

UNIT PRICE BID FOR RELOCATION OF EXISTING LIGHT POLE, AS PER PLAN, SHALL INCLUDE ALL LABOR AND MATERIALS REQUIRED TO RELOCATE, REWIRE, AND PAINT, AND SHALL BE PAID FOR ON A PER EACH BASIS.

#### 713.07 POLYVINYL CHLORIDE PLASTIC CONDUIT.

THIS SPECIFICATION COVERS POLYVINYL CHLORIDE CONDUIT FOR EITHER DIRECT BURIAL IN EARTH OR FOR ENCASUREMENT IN CONCRETE AND SHALL BE OF THE SIZE AND TYPE SPECIFIED.

CONDUIT FURNISHED UNDER THIS SPECIFICATION SHALL CONFORM TO NEMA STANDARDS PUBLICATION NO. TC6-74 WITH THE EXCEPTION THAT CONDUIT AND CONDUIT FITTINGS COMPOSED OF ACRYLONITRILE-BUTADIENE-STYRENE (ABS) SHALL NOT BE ACCEPTABLE, AS AN ALTERNATE TO POLYVINYL CHLORIDE, CORRUGATED COILABLE POLYPROPYLENE CONFORMING TO NEMA STANDARDS PUBLICATION NO. TC5 MAY BE USED.

#### HIGH PRESSURE SODIUM LAMPS

HIGH PRESSURE SODIUM LAMPS SHALL BE GENERAL ELECTRIC "LUCALOX," SYLVANIA "LUMALUX," WESTINGHOUSE "CERAMALUX," OR EQUAL APPROVED BY THE ENGINEER.

MERCURY LAMPS FOR BRIDGE No. CUY 480-0793 UNDERPASS LIGHTING SHALL BE GENERAL ELECTRIC "BONUS LINE, WESTINGHOUSE "LIFEGUARD"; SYLVANIA "ROUGH SERVICE", OR EQUAL APPROVED BY THE ENGINEER.

#### CONTROL CENTER

A 20 AMP BY-PASS SWITCH RATED 240 VOLTS, COMPLETE WITH WIRE AND CONDUIT SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR.

THE CLEVELAND ELECTRIC ILLUMINATING CO. WILL MAKE FINAL CONNECTION TO THE SWITCH FOR MANUAL BY-PASS CONTROL OF THE LIGHTING CONTROLLER.

COST OF SWITCH TO BE INCLUDED IN THE UNIT PRICE BID FOR CONTROL CENTER, AS PER PLAN. FOR DETAILS, SEE SHEET NO. 232.

#### ESTIMATED QUANTITIES

AN ESTIMATED QUANTITY OF 560 LIN- FT. OF 605, 4-INCH SHALLOW PIPE UNDERDRAINS IS PROVIDED IN THE LIGHTING GENERAL SUMMARY FOR USE AS DIRECTED BY THE ENGINEER IN PROVIDING POSITIVE DRAINAGE FOR PULL BOXES. IT IS INTENDED THAT ALL PULL BOXES BE PROVIDED WITH SUCH DRAINAGE, PROVIDED THE LENGTH OF UNDERDRAIN NECESSARY TO OBTAIN A SATISFACTORY OUTFALL DOES NOT EXCEED 20 FEET APPROXIMATELY. A PERFORATED PVC PIPE OR CONDUIT MATERIAL APPROVED BY THE ENGINEER MAY BE USED IN THE CONSTRUCTION OF THIS ITEM.

#### STANDARD CONSTRUCTION DRAWING HL-3

POLE BASE DETAILS SHOWN ON THIS DRAWING ARE ESSENTIALLY FOR GALVANIZED STEEL POLES. FOR ALUMINUM DESIGNS, OR OTHER PERMITTED STEEL MATERIAL DESIGNS, VARIATIONS FROM THESE DETAILS WILL BE ACCEPTABLE, AS APPROVED BY THE ENGINEER.

#### 625.07 - 713.13 UNDERPASS LUMINAIRES, BRIDGE No. CUY 480-0793

250-WATT UNDERPASS LUMINAIRES SHALL BE HOLOPHANE "UNDERPASS WALLPACK", OR EQUAL WESTINGHOUSE, MCGRAW-EDISON, OR GENERAL ELECTRIC UNDERPASS UNIT APPROVED BY THE ENGINEER, AND SHALL BE FURNISHED WITH AN INTEGRAL FUSE HOLDER AND 10-AMPERE FUSE. THE INTEGRAL BALLAST SHALL BE OF A REGULATOR TYPE RATED FOR 480 VOLTS.

**CONNECTOR KITS**

AT THE OPTION OF THE CONTRACTOR, TYPE IX CABLE CONNECTIONS MAY BE SUBSTITUTED WHERE TYPE II OR TYPE III CABLE CONNECTIONS ARE SPECIFIED IN HAND HOLES OR TRANSFORMER BASES OF LIGHT POLES.

TYPE I THRU TYPE VII CABLE CONNECTIONS IN PULL BOXES, JUNCTION BOXES AND OTHER ENCLOSURES BELOW GROUND MAY BE ACCOMPLISHED BY THE USE OF EITHER OF THE FOLLOWING:

- (1) A SLEEVE OR TEE CABLE CONNECTOR CONFORMING TO THE GENERAL REQUIREMENTS OF STYLE 'S' OR 'H' OR OTHER CONNECTING DEVICE APPROVED BY THE ENGINEER. THE CONNECTOR SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S DIRECTIONS AND THE CONNECTION SHALL BE SEALED AND WATERPROOFED WITH A HI-DIELECTRIC COMPOUND SUCH AS "AQUA SEAL" AS MANUFACTURED BY KEARNEY, THE SCOTCH No. 2200 COMPOUND MANUFACTURED BY 3-M COMPANY, OR KIT AS MANUFACTURED BY BLACKBURN OR EQUAL APPROVED BY THE ENGINEER. THE SEALING MATERIAL SHALL BE APPLIED IN ACCORDANCE WITH THE MANUFACTURER'S DIRECTIONS TO MAKE WATER-TIGHT CONNECTION. CONNECTIONS NOT ACCOMPLISHED IN-LINE OR IN-TEE FORM SHALL BE ADDITIONALLY PROTECTED BY USE OF A HI-DIELECTRIC PVC OR OTHER APPROVED MATERIAL. BOOT WITH AN APPROVED FASTENING DEVICE.
- (2) A PREASSEMBLED KIT, AS MANUFACTURED BY JOY OR BUSSMAN OR APPROVED EQUAL, WITH A WATERPROOF OR WATER-TIGHT RATING ACCEPTABLE TO THE ENGINEER.

**ITEM S625 - TEMPORARY LIGHTING, AS PER PLAN (CONTINUED)**

THE CITY OF CLEVELAND WILL PAY FOR ELECTRICAL ENERGY AND MAINTENANCE FOR UNDISTURBED LIGHTING ON EXISTING ROADWAYS AND FOR PERMANENT LIGHTING PLACED IN OPERATION. THE CONTRACTOR WILL PAY FOR ELECTRICAL ENERGY, INSTALLATION, REMOVAL, AND MAINTENANCE OF ANY TEMPORARY LIGHTING REQUIRED.

THE LUMP SUM BID PRICE FOR 'ITEM S625 - TEMPORARY LIGHTING, AS PER PLAN' SHALL INCLUDE PAYMENT FOR ALL LABOR, EQUIPMENT, MATERIALS, AND INCIDENTALS NECESSARY TO PROVIDE THE TEMPORARY LIGHTING AS SPECIFIED.

**TRANSITION JUNCTION BOX**

THE UNIT PRICE BID FOR EACH "ITEM S625, TRANSITION JUNCTION BOX" SHALL BE FULL COMPENSATION FOR FURNISHING AND PLACING THE JUNCTION BOX AS SHOWN IN THE DETAIL ON SHEET 232A, AND ALL LABOR, MATERIAL, EQUIPMENT, AND INCIDENTALS NECESSARY TO COMPLETE THE WORK AS SPECIFIED.

**844 PADLOCKS AND KEYS**

PADLOCKS FURNISHED SHALL BE EITHER BRASS OR BRONZE PADLOCKS EQUAL TO MASTER No. 4 BKA OR WILSON BOHANNAN 660A AND SHALL BE KEYED IN ACCORDANCE WITH SUPPLEMENTAL SPECIFICATION 844-10(4), PARAGRAPH 3. PAYMENT WILL BE INCLUDED IN THE BID FOR THE ITEM(S) BEING LOCKED.

**ITEM 625 - TEMPORARY LIGHTING, AS PER PLAN**

THIS ITEM SHALL CONSIST OF MAINTAINING EXISTING LIGHTING OR PROVIDING LIGHTING FOR TEMPORARY ROADWAYS AS FURTHER DESCRIBED BELOW-

EXISTING LIGHTING ON ALL EXISTING ROADWAYS REMAINING OPEN TO TRAFFIC THROUGH THE PROJECT AREA SHALL BE MAINTAINED. SHOULD THE CONTRACTOR REQUIRE THE REMOVAL OF LIGHTING FROM AN EXISTING ROADWAY, THE CONTRACTOR SHALL THEN BE RESPONSIBLE FOR ADEQUATE TEMPORARY LIGHTING OF THAT PORTION OF THE EXISTING ROADWAY AFFECTED BY THE REMOVAL OF THE EXISTING LIGHTING.

ON TEMPORARY ROADWAYS BETWEEN STATIONS 10+00.00 AND 14+96.95, AROUND RELOC. ROCKY RIVER DR. BRIDGE TEMPORARY LIGHTING PROVIDING AN AVERAGE INITIAL INTENSITY OF 1.2 FOOTCANDLES SHALL BE INSTALLED BEFORE OPENING OF THE TEMPORARY PAVEMENTS TO TRAFFIC.

ON PERMANENT NEW ROADWAYS OPENED TO TRAFFIC, EITHER THE PERMANENT NEW LIGHTING SHALL BE INSTALLED BEFORE OPENING, OR TEMPORARY LIGHTING PROVIDING AN AVERAGE INITIAL INTENSITY OF 1.2 FOOTCANDLES SHALL BE INSTALLED BEFORE OPENING.

WHERE TEMPORARY LIGHTING IS TO BE INSTALLED, AND A DETAILED LAYOUT IS NOT SHOWN IN THE PLANS, THE CONTRACTOR SHALL SUBMIT FOUR (4) SETS OF THE PROPOSED DETAILED PLANS TO THE ENGINEER FOR REVIEW AND APPROVAL. THESE PLANS SHALL SHOW LOCATION OF POLES, LENGTH OF BRACKET ARMS, TYPE AND SIZE OF LUMINAIRES AND LAMPS, MOUNTING HEIGHT, AND OTHER PERTINENT INFORMATION.

WOOD POLES WITH OVERHEAD WIRING MAY BE USED. ALL MATERIALS NECESSARY TO COMPLETE THE TEMPORARY LIGHTING SHALL BE FURNISHED BY THE CONTRACTOR AND THE TEMPORARY LIGHTING INSTALLATIONS SHALL BE REMOVED AND DISPOSED OF BY THE CONTRACTOR WHEN NO LONGER NEEDED.

RECONDITIONED OR APPROVED USED MATERIALS MAY BE FURNISHED FOR TEMPORARY LIGHTING. TEMPORARY OVERHEAD CONSTRUCTION SHALL NOT BE LESS THAN GRADE A FOR STRENGTH REQUIREMENT AS DEFINED BY THE NATIONAL ELECTRIC SAFETY CODE. MOUNTING HEIGHT FOR TEMPORARY LUMINAIRES SHALL NOT BE LESS THAN 27 FEET AND MINIMUM OVERHEAD CONDUCTOR CLEARANCE SHALL BE 20 FEET.

**ELECTRICAL CABLES**

IN LIEU OF THE REQUIREMENTS LISTED UNDER 5713.02, PARAGRAPHS 2(a) AND 2(b), ALL CABLE TO BE USED FOR 300 AND 600 VOLT SERVICE SHALL BE UL TYPE RHH, OR RHW, OR RHH/RHW AND FURTHER MEET THE REQUIREMENTS OF UL TYPE USE.

ALL SINGLE CONDUCTOR CABLES TO BE USED FOR 300 AND 600 VOLT SERVICE SHALL NOT HAVE A SEPARATE OUTER COVERING.

ALTERNATE BIDS FOR 5KV CABLE SHALL BE FOR AN XLP TYPE UL MV-90, DRY.

**625.07 - 713-11 LUMINAIRES (CONTINUED)**

53,000 LUMEN HORIZONTAL STYLE C LUMINAIRES, DESIGNED FOR USE WITH 310 WATT HIGH PRESSURE SODIUM LAMPS, SHALL HAVE SINGLE RATED 480 VOLT, 310 WATT INTEGRAL REGULATOR BALLASTS. STYLE C LUMINAIRES SHALL BE GENERAL ELECTRIC M-1000, WESTINGHOUSE OV-50, MCGRAW-EDISON "UNISTYLE-1000," OR EQUAL APPROVED BY THE ENGINEER.

**PULL BOX COVERS**

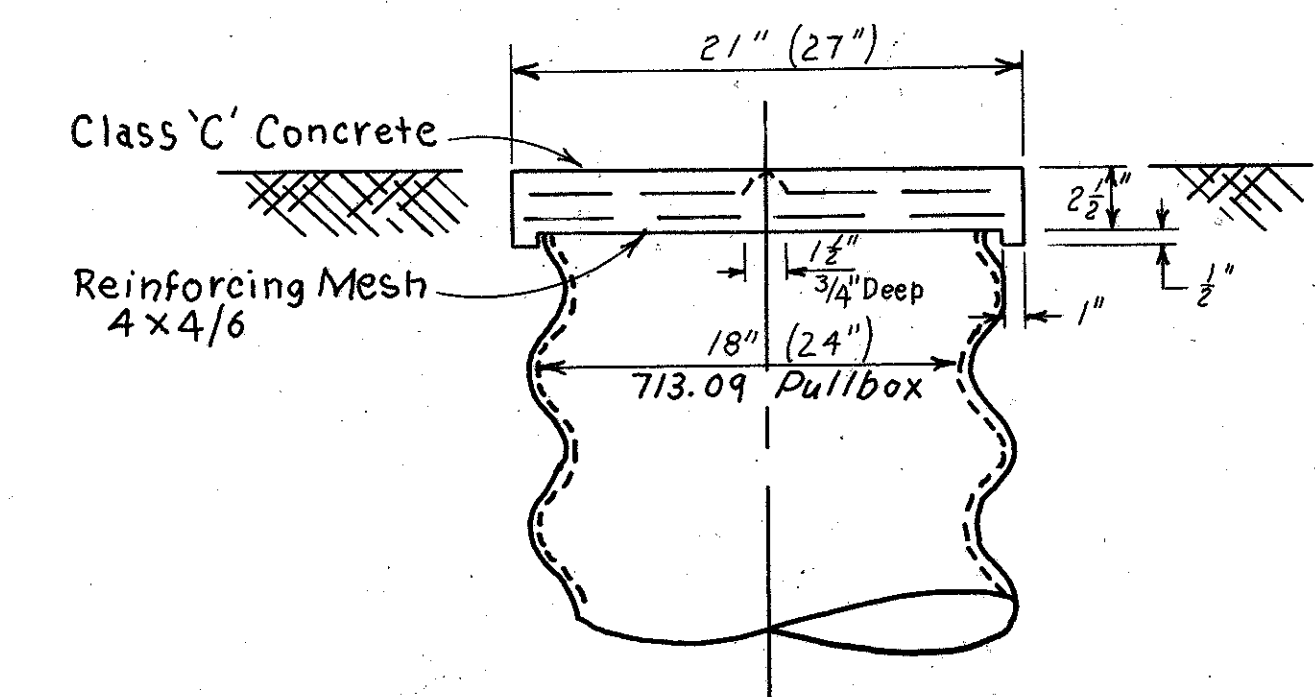
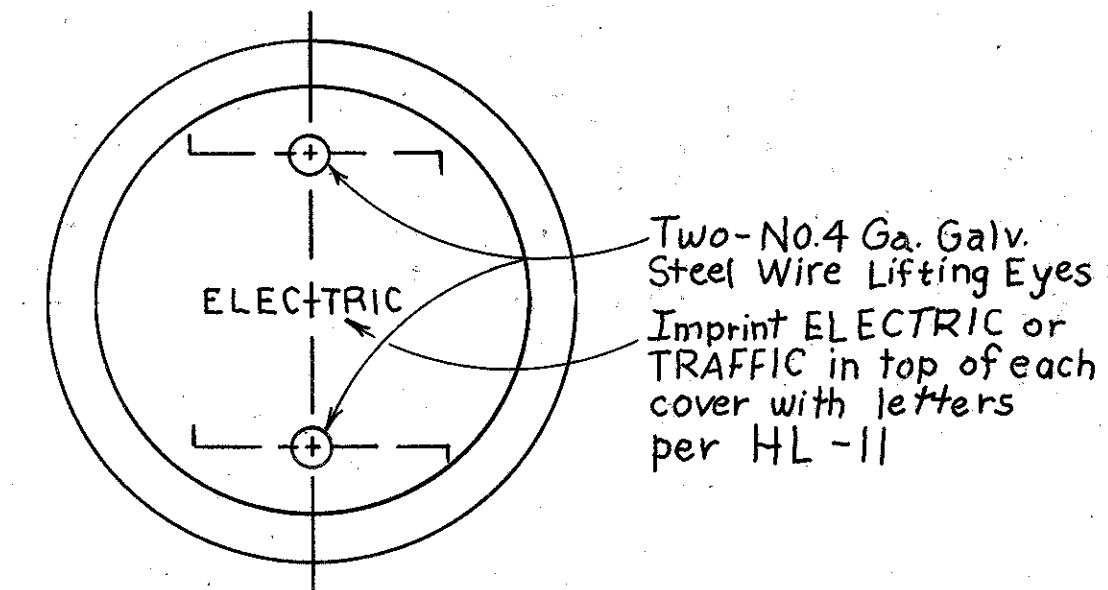
SUPPLEMENTING 5713.09(3), COVERS FOR CIRCULAR PULL BOXES SHALL BE PRECAST, STEEL REINFORCED CONCRETE OF THE SIZE AND DIMENSIONS DETAILED IN THE PLANS. WITH TWO (2) No. 4 GA. GALVANIZED STEEL LIFTING EYES RECESSED FLUSH WITH THE TOP OF THE COVER. THE COVER SHALL BE CONSTRUCTED WITH 4 x 4/6 REINFORCING MESH AND CLASS C CONCRETE WITH No. 4 AGGREGATE CONFORMING TO ITEM 499 OF THE SPECIFICATIONS.

PAYMENT FOR PULL BOX COVERS, FOR CIRCULAR PULL BOXES, SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 625 - "PULL BOX, BY SIZE, CIRCULAR, 5713.09 WITH CONCRETE COVER, AS PER PLAN."

**ALUMINUM TRANSFORMER BASES**

WHERE INDICATED IN THE PLANS LIGHT POLES SHALL BE EQUIPPED WITH CAST ALUMINUM TRANSFORMER BASES CONFORMING TO THE AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS AS INSTRUCTED BY FHWA NOTICE N5040-20. THE CONTRACTOR SHALL SUBMIT A CERTIFICATION FROM THE MANUFACTURER THAT THE BASE MEETS THE AASHTO CRITERIA. THE CERTIFICATION SHALL BE ACCOMPANIED BY REPORTS OF TESTS PERFORMED BY THE MANUFACTURER OR OTHER AGENCIES. IF TEST RESULTS HAVE BEEN EVALUATED AND FOUND ACCEPTABLE BY FHWA, A COPY OF THE APPROVAL LETTER FROM FHWA SHALL ACCOMPANY THE CERTIFICATION.

TRANSFORMER BASES SHALL BE PERMANENTLY MARKED OR LABELED TO IDENTIFY THAT THEY MEET THE REQUIREMENTS OF FHWA NOTICE N5040-20.



PULL BOX COVER DETAIL

18" (24") DIA. PULL BOX WITH CONC. COVER



# GENERAL SUMMARY

DATE	BY	DATE	FED. RD. DIVISION	STATE	PROJECT
12/76	W.A.M.	12/76	2	OHIO	
12/76	T.R.B.	5/78	CUYAHOGA COUNTY		
REV. T.R.B. 5/78					

CUY-480-6.78

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3/7

REF. No.	STRUCTURE												ROADWAY SHEET NUMBERS												NORMAL PARTICIPATION		GRAND TOTAL	UNIT	ITEM	DESCRIPTION	REF. No.							
	*			222	223	226	228	213	214	223	224	225	226	227	228	229	CITY OF FAIRVIEW PARK *	CITY OF CLEVELAND																				
73																											2111	2111	Lin.Ft.	S625	CONDUIT, 2" S713.04	73						
74																											1965	1965	Lin.Ft.	S625	CONDUIT 3" S713.04	74						
75																											247	247	Lin.Ft.	S625	CONDUIT 3" S713.06 TYPE I ENCASED	75						
76																																						
77																											13,086	13,086	Lin.Ft.	S625	TRENCH 24" DEEP	77						
78																																						
79																																						
80																																						
81	2124	2426	1420			1844	2618													5500	5996	1460	6949	4795	5056	368	2,124	38,432	40,556	Lin.Ft.	S625	No. 4 AWG, 600 VOLT DISTRIBUTION CABLE	81					
82																									325	2717	2533	2347	766	1734	1265		11,687	11,687	Lin.Ft.	S625	1 1/2" DUCT-CABLE WITH TWO No.4 AWG 600 VOLT CABLE	82
83	624	624	416			282	378													958	2752	1608	3037	1630	1882	279	624	13,906	14,530	Lin.Ft.	S625	No.10 AWG, POLE AND BRACKET CABLE	83					
84																																						
85																																						
86																																						
87																									12	20	20	14	8	16	10		100	100	EACH	S625	CONNECTOR KIT TYPE VIII - CU AS PER PLAN	87
88	6	6	4			3	7													1	15	13	14	5	16	3	6	87	93	EACH	S625	CONNECTOR KIT TYPE II AS PER PLAN	88					
89	6	6	4			3	7													1	15	13	14	5	16	3	6	87	93	EACH	S625	CONNECTOR KIT TYPE III AS PER PLAN	89					
90																																						
91																										8	4	16		26			54	54	EACH	S625	CONNECTOR KIT TYPE IX - CU AS PER PLAN	91
92																									10	16	4	18	20	12			80	80	EACH	S625	CONNECTOR KIT TYPE VI AS PER PLAN	92
93																									10	16	4	18	20	12			80	80	EACH	S625	CONNECTOR KIT TYPE VII - C AS PER PLAN	93
94																																						
95																																						
96																									LUMP							LUMP	LUMP	S625	TEMPORARY LIGHTING, AS PER PLAN	95		
97																																						
98																																						
99																																						
100																																						
101																																						
102																																						
103																																						
104																									LUMP							LUMP	LUMP	S625	839	HIGH VOLTAGE TEST	104	
105																																						
106																									560							560	560	Lin.Ft.	605	4" SHALLOW PIPE UNDERDRAIN	106	
107																																						
108																																						
81a	2124	2426	1420			1844	2618													5500	5996	1460	6949	4795	5056	368	2,124	38,432	40,556	Lin.Ft.	S625	ALTERNATE BID ITEMS	81a					
82a																									325	2717	2533	2347	766	1734	1265		11,687	11,687	Lin.Ft.	S625	1 1/2" DUCT-CABLE WITH TWO No.4 AWG 5,000 VOLT CABLE	82a
																									12	20	20	14	8	16	10		100	100	EACH	S625	CONNECTOR KIT TYPE VIII-CU FOR 5000 VOLT CABLE AS PER PLAN	87a
	6	6	4			3	7													1	15	13	14	5	16	3	6	87	93	EACH	S625	CONNECTOR KIT TYPE II FOR 5000 VOLT CABLE AS PER PLAN	88a					
	6	6	4			3	7													1	15	13	14	5	16	3	6	87	93	EACH	S625	CONNECTOR KIT TYPE III FOR 5000 VOLT CABLE AS PER PLAN	89a					
																										8	4	16		26			54	54	EACH	S625	CONNECTOR KIT TYPE IX-CU FOR 5000 VOLT CABLE AS PER PLAN	91a
																									10	16	4	18	20	12			80	80	EACH	S625	CONNECTOR KIT TYPE VI FOR 5000 VOLT CABLE AS PER PLAN	92a
																									10	16	4	18	20	12			80	80	EACH	S625	CONNECTOR KIT TYPE VII-C FOR 5000 VOLT CABLE AS PER PLAN	93a

\* CITY OF FAIRVIEW PARK

REFERENCE NO.	SIDE	STATION	STATION	LIGHT POLE DESIGN		CONC. BARRIER MEDIAN	STYLE 'C' LIM. TYPE III	PULL BOX 18" S 713.09	GROUND ROD	CONNECTOR KITS					1/2" DUCT-CABLE W/4 AWG 600 VOLT CABLE	TRENCH 24" DEEP	CONDUIT 3" S 713.04												
				EA	EA					EA	EA	EA	EA	EA							EA	EA	EA						
1	Lt	443+67.7																											
2	Lt	443+67.7	445+45																										
3	Lt	445+45																											
4	Lt	445+45	447+22.3																										
5	Lt	447+22.3																											
6	Lt	447+22.3	448+73.21																										
7	Rt	443+67.7																											
8	Rt	443+67.7	445+45																										
9	Rt	445+45																											
10	Rt	445+45	447+22.3																										
11	Rt	447+22.3																											
12	Rt	447+22.3	448+73.21																										
13	SHT 222 TOTAL STR. FAIRVIEW PARK			6			6	6	624	6	6	2124																	
14	Lt	448+73.21	449+21.8																										
15	Lt	449+21.8																											
16	Lt	449+21.8	451+21.3																										
17	Lt	451+21.3																											
18	Lt	451+21.3	453+20.8																										
19	Lt	453+20.8																											
20	Lt	453+20.8	454+50																										
21	Rt	448+73.21	449+21.8																										
22	Rt	449+21.8																											
23	Rt	449+21.8	451+21.3																										
24	Rt	451+21.3																											
25	Rt	451+21.3	453+20.8																										
26	Rt	453+20.8																											
27	Rt	453+20.8	454+50																										
28																													
29	SHT 222 TOTAL STR. CLEVELAND			6			6	6	624	6	6	2426																	
30	Lt	454+50	455+00																										
31	Lt	455+00																											
32	Lt	455+00	456+53.3																										
33	Lt	456+53.3																											
34	Lt	456+53.3	457+80																										
35	Lt	457+80																											
36	Lt	457+80	458+60																										
37	Lt	458+60																											
38	Lt	458+60	458+60																										
39	Lt	458+65																											
40	Lt	458+60	460+77																										
41	Lt	460+77																											
42	Lt	460+77	462+89																										
43	Lt	462+89																											
44	Lt	462+89	465+01																										
45	Lt	465+01																											
46	Lt	465+01	467+13																										
47	Lt	467+13																											
48	Lt	467+13	469+00																										
49	Lt	458+60																											
49	Rt	454+50	455+00																										
50	Rt	455+00																											
51	Rt	455+00	456+53.3																										
52	Rt	456+53.3																											
53	Rt	456+53.3	457+80																										
54	Rt	457+80																											
55	Rt	457+80	458+60																										
56	Rt	458+60																											
57	Rt	458+60	458+60																										
58	Lt	467+70	RAMP G-2																										
59	Lt	467+70	469+00																										
60																													
		SHT No. 223 TOTAL RD.			5	1			5	1	11	11				358	6	12	1	1	10	10	2	1	5500	325	156	456	
		SHT No. 223 TOTAL STR.											4	4		416		4	4						1420	4			
61	Lt	469+00	RAMP G-2																							55		50	
62	Lt	469+50	RAMP G-2																										
63	Lt	469+50	471+30																							190		180	
64	Lt	471+30																											
65	Lt	471+30	473+10																							190		180	
66	Lt	473+10																											
67	Lt	473+10	473+50																							45		40	
68																													
69	Lt	469+00	469+25																							110			
70	Lt	469+25																											
71	Lt	469+25	471+38																							872			
72	Lt	471+38																											
73	Lt	471+38	473+96																							1052			
74	Lt	473+96																											
75	Lt	473+96	475+00																							446			
76	Lt	475+00																											
77	Lt	475+00	RAMP G-1																							632		148 148	
78	Lt	475+00	476+45																							310			
79	Lt	476+45																											
80																													
81	Lt	479+12																											
82	Lt	479+12	481+05																								396		
83	Lt	481+05																											
84	Lt	481+05	482+98																								802		
85	Lt	482+98																											
86	Lt	482+98	483+00																								28		
87																													
88																													
89																													
90	Rt	472+10	RAMP G-1																										
91	Rt	472+10	472+97																										
92	Rt	472+97																											
93	Rt	472+97	474+95																								208		198

⊗ STRUCTURE QUANTITIES

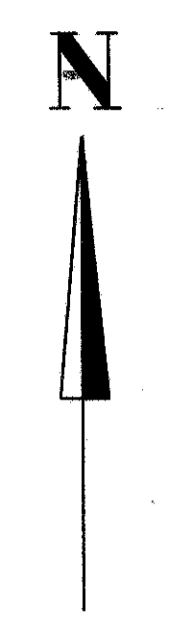
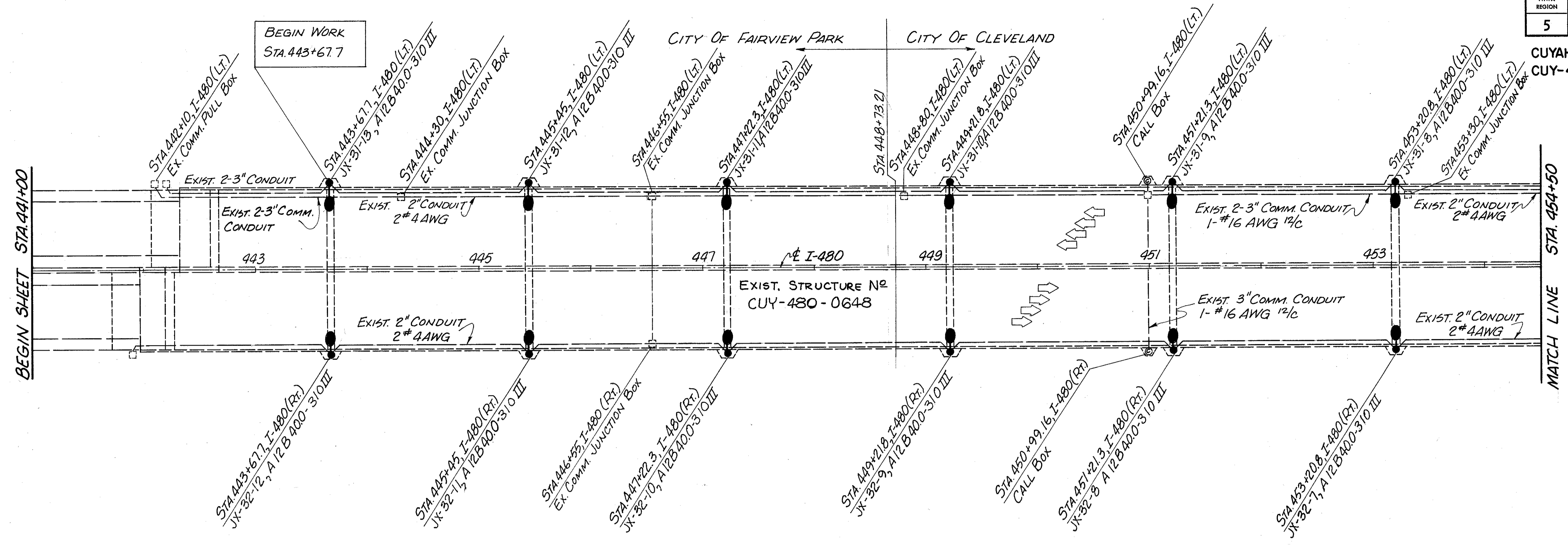












**LEGEND**

	BARRIER MEDIAN TRANSITION SECTION		EXISTING LIGHT POLE
	BARRIER MEDIAN INLET		LIGHT POLE & LUMINAIRE - 100 WATTS
	STRUCTURE GROUND *		LIGHT POLE & LUMINAIRE - 200 WATTS
	MEDIAN BARRIER PULL BOX		LIGHT POLE & LUMINAIRE - 310 WATTS **
	UNDERPASS LUMINAIRE		LX-36-10, AT15B 41.7-250 III POLE & LUMINAIRE DESCRIPTION
	CONTROL CENTER		I.E.S. DISTRIBUTION TYPE
	PULL BOX		LAMP WATTS
	OVER HEAD SIGN		LUMINAIRE MOUNTING HEIGHT
	AVERAGE DAILY TRAFFIC		BRACKET (B-SINGLE, BB-DOUBLE)
	DUCT OR DISTRIBUTION CABLE, #4AWG		BRACKET ARM LENGTH
	FERROUS METAL CONDUIT		BASE SA-ANCHOR, ST-STEEL TRANSFORMER
			AT-ALUMINUM TRANSFORMER
			POLE NUMBER
			CIRCUIT NUMBER

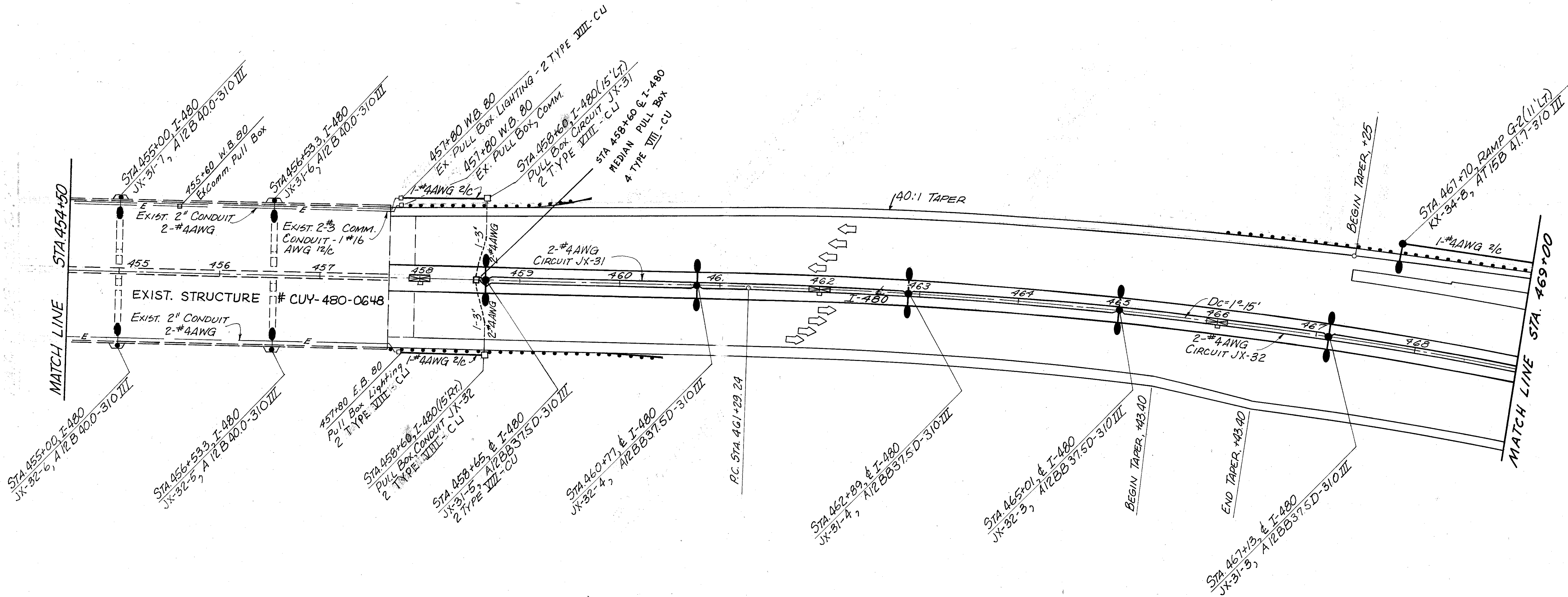
\*\* Except 250 Watt on Relocated Grayton Road.

\* NOTE:  
THE GROUNDS INDICATED ARE NOT TO BE CONSIDERED COMPLETE IN NUMBER OR MORE THAN APPROXIMATE IN LOCATION.

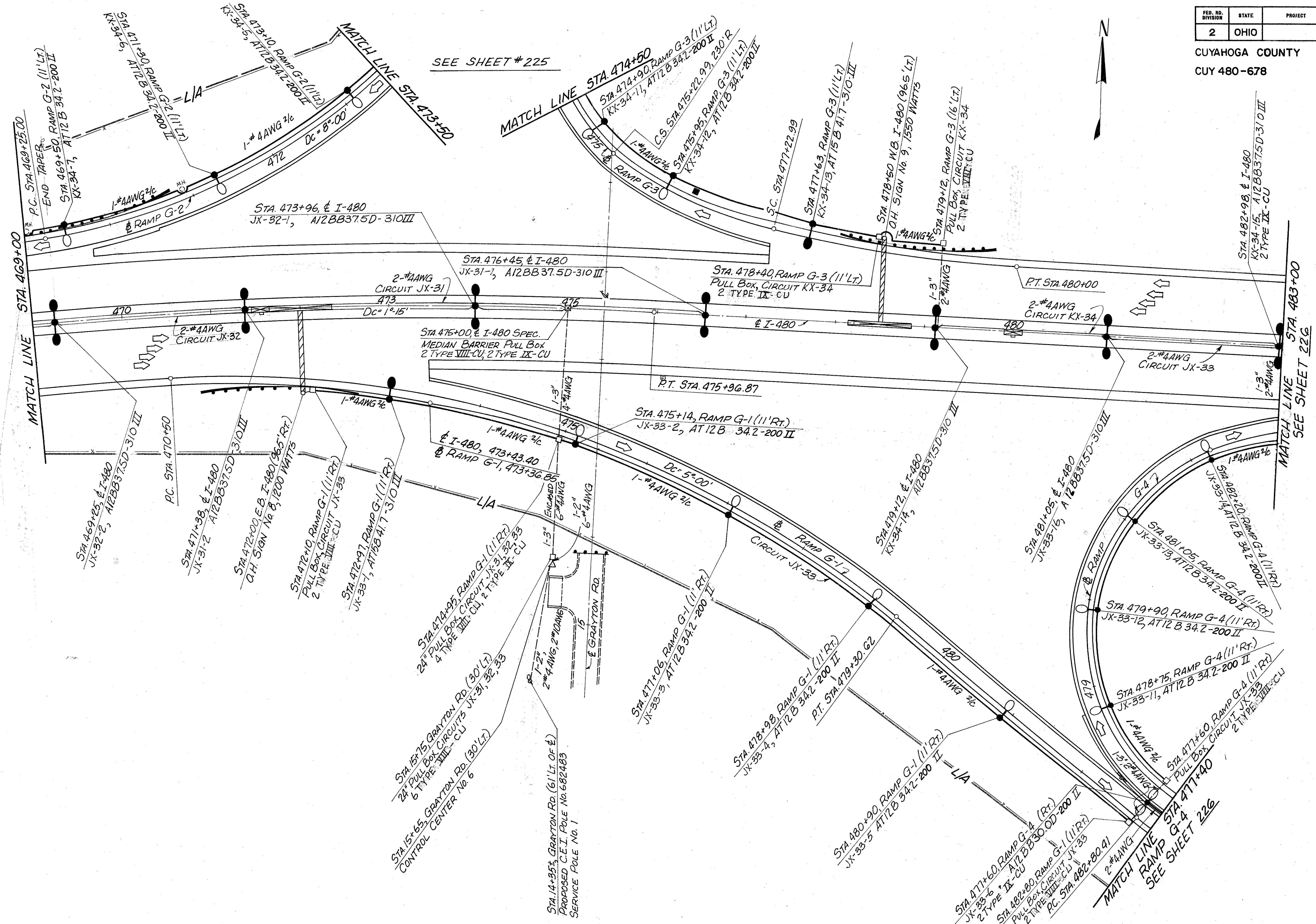
FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

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3/7

CUYAHOGA COUNTY  
CUY 480-678



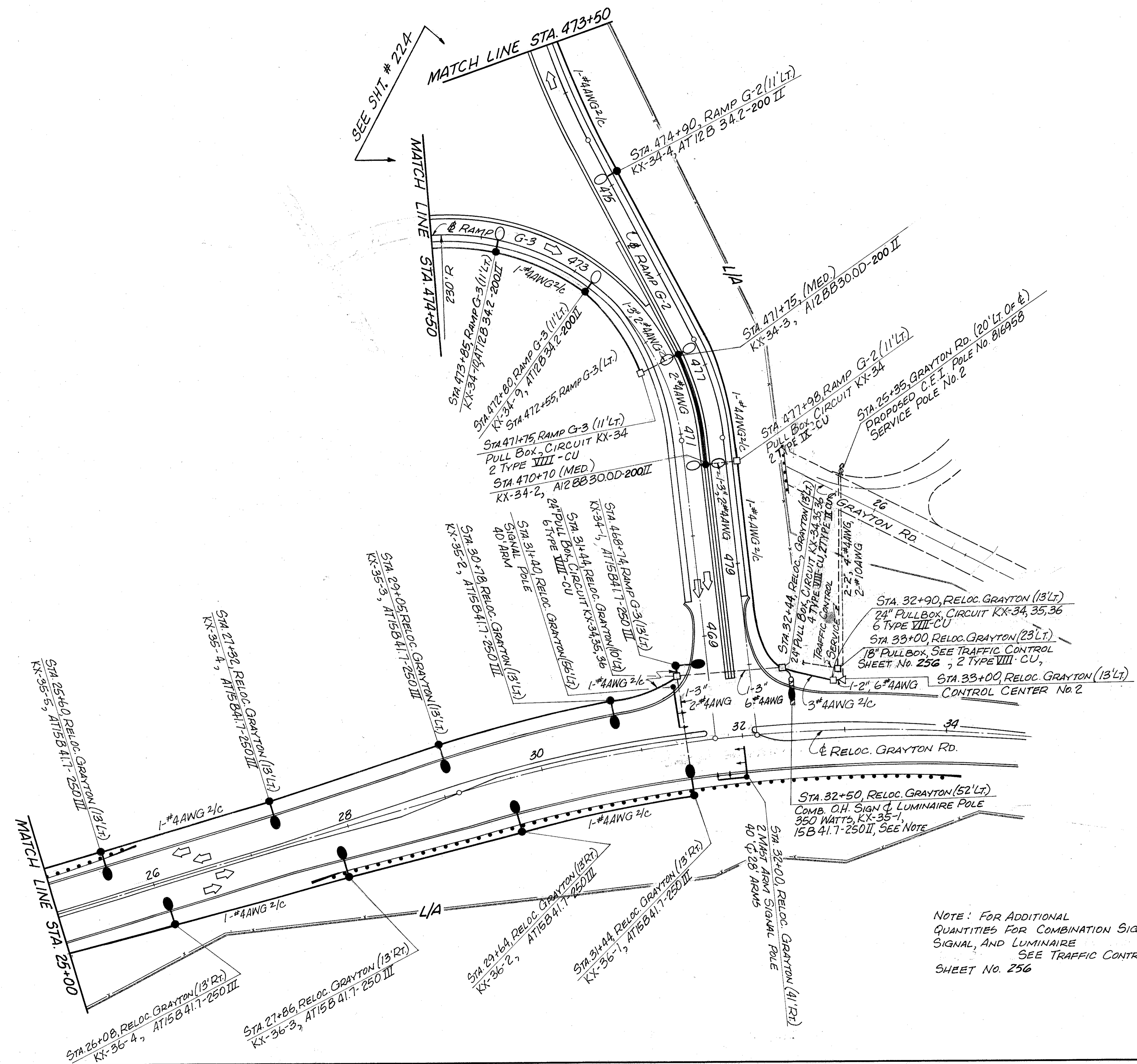
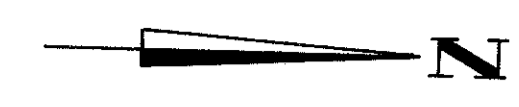
CUYAHOGA COUNTY  
CUY 480-678



FHWA REGION	STATE	PROJECT
5	OHIO	

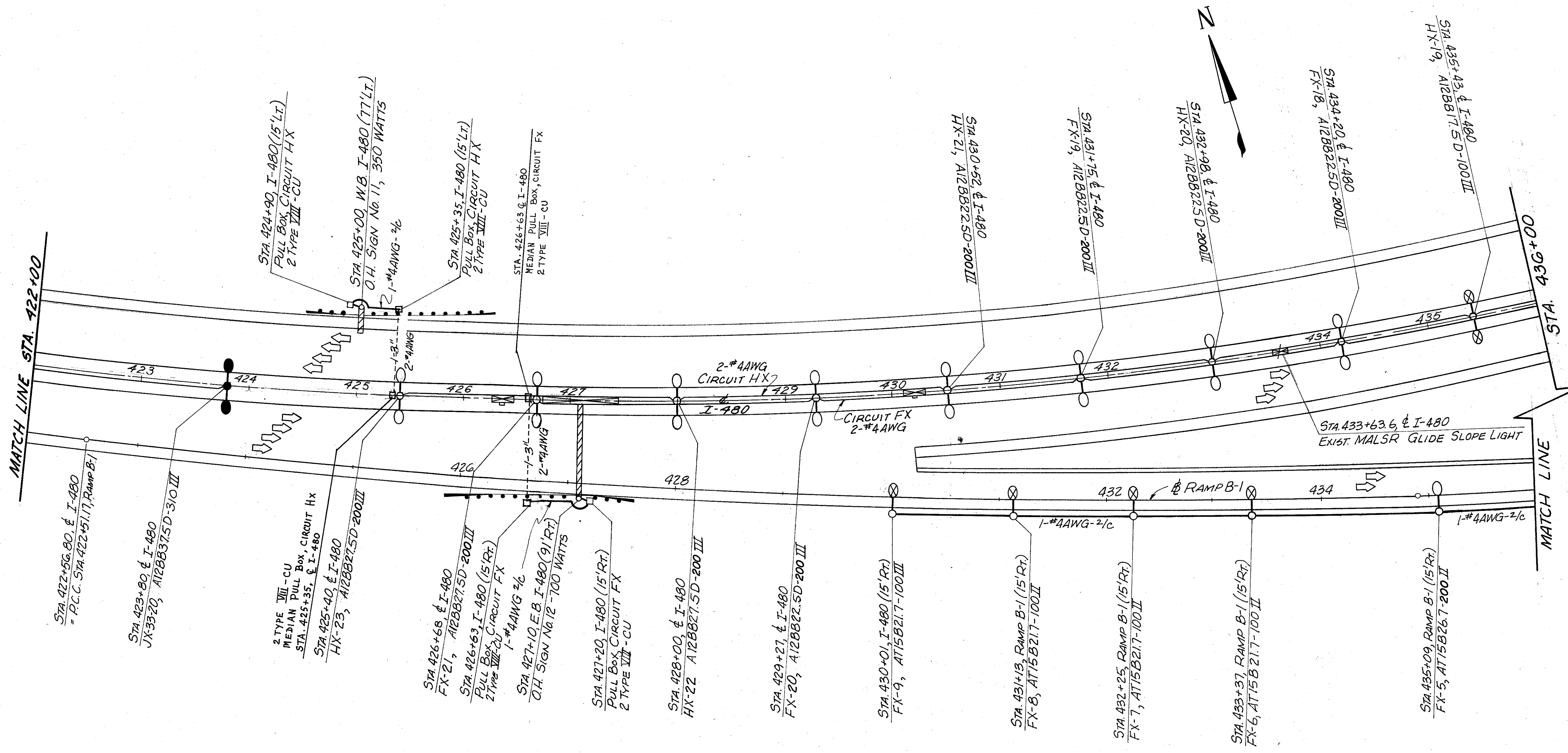
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CUYAHOGA COUNTY  
CUY-480-6.78





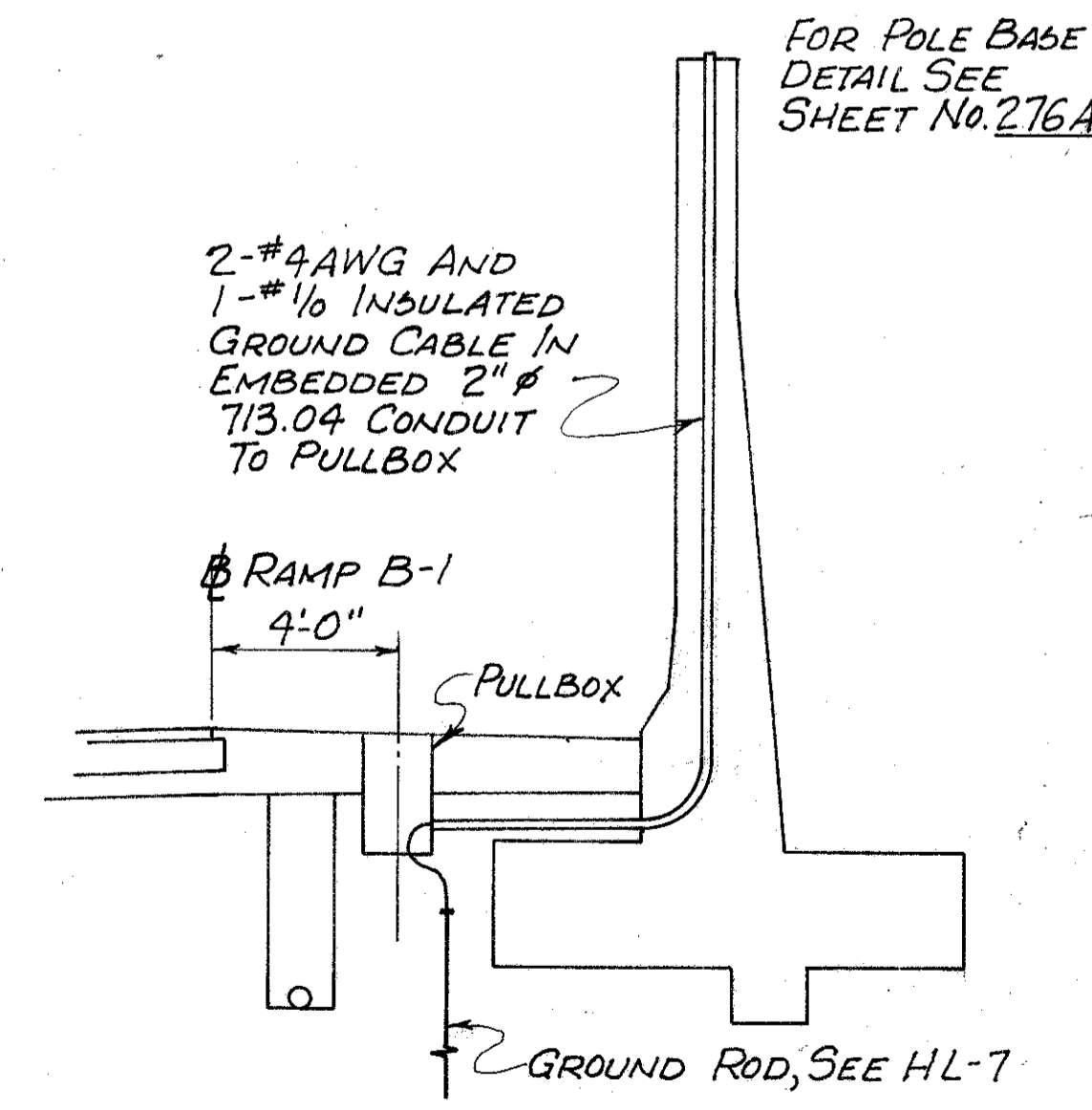
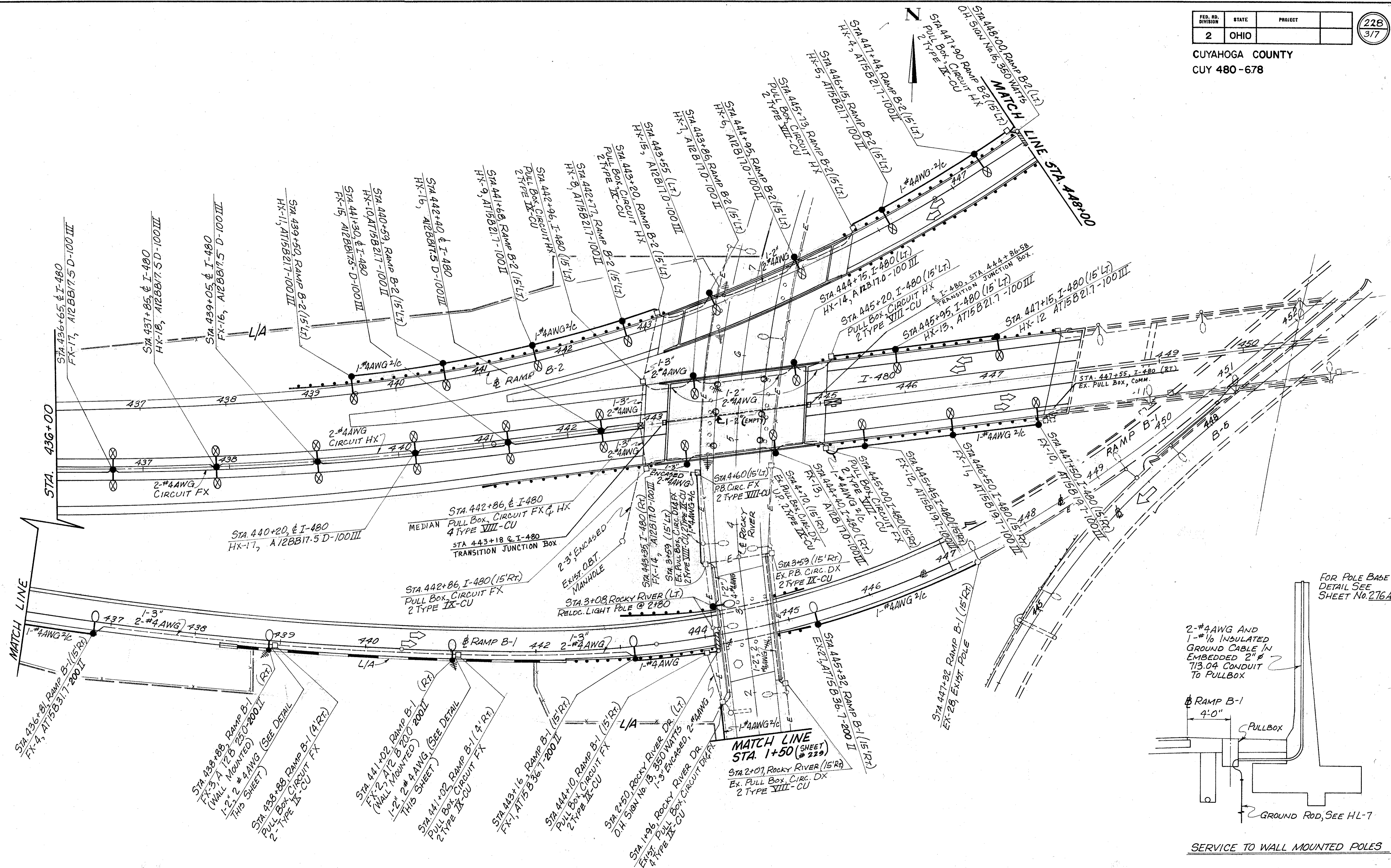




FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

228  
3/7

CUYAHOGA COUNTY  
CUY 480-678

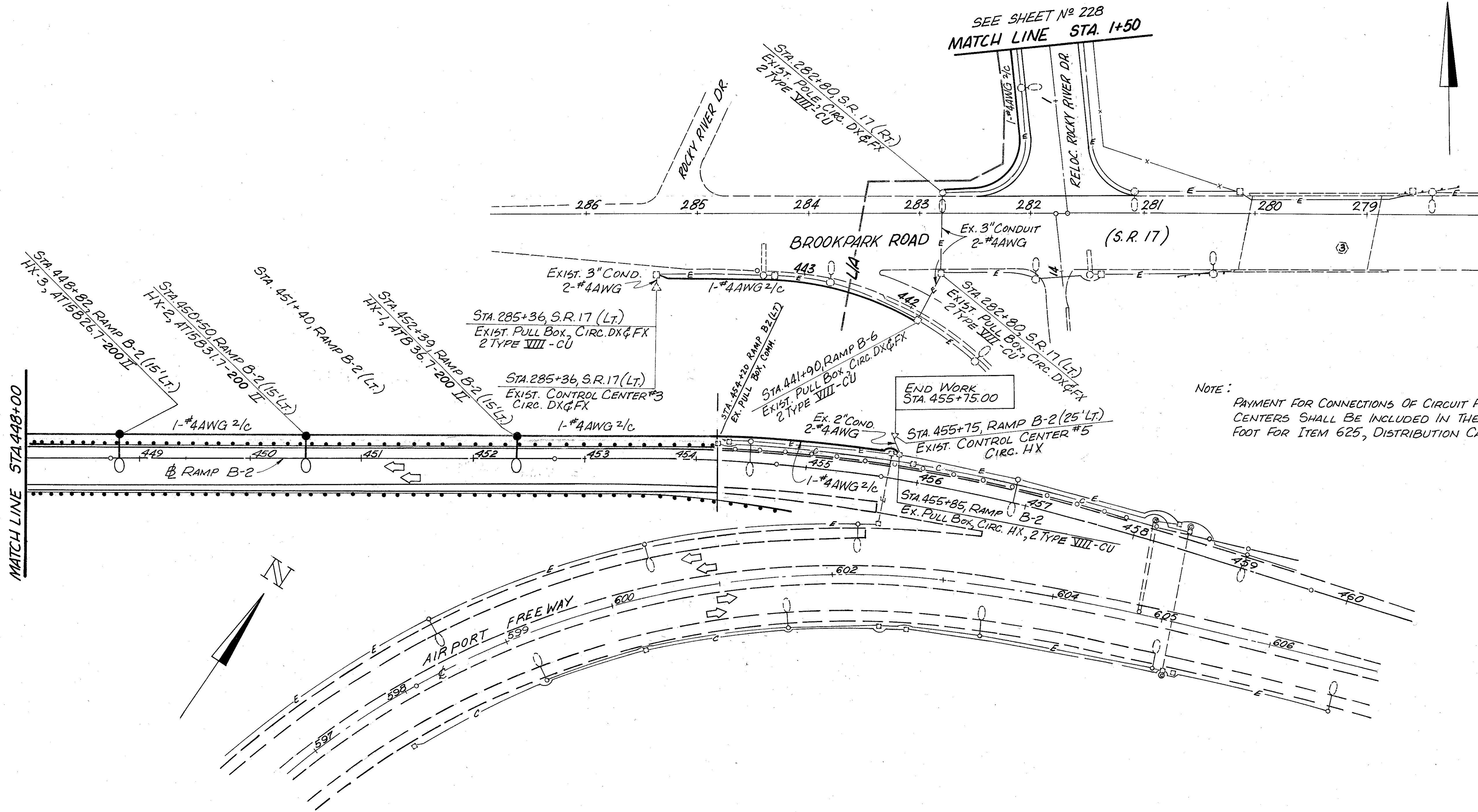


SERVICE TO WALL MOUNTED POLES

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

229  
3/7

CUYAHOGA COUNTY  
CUY 480-678



SEE SHEET No 228  
MATCH LINE STA. 1+50

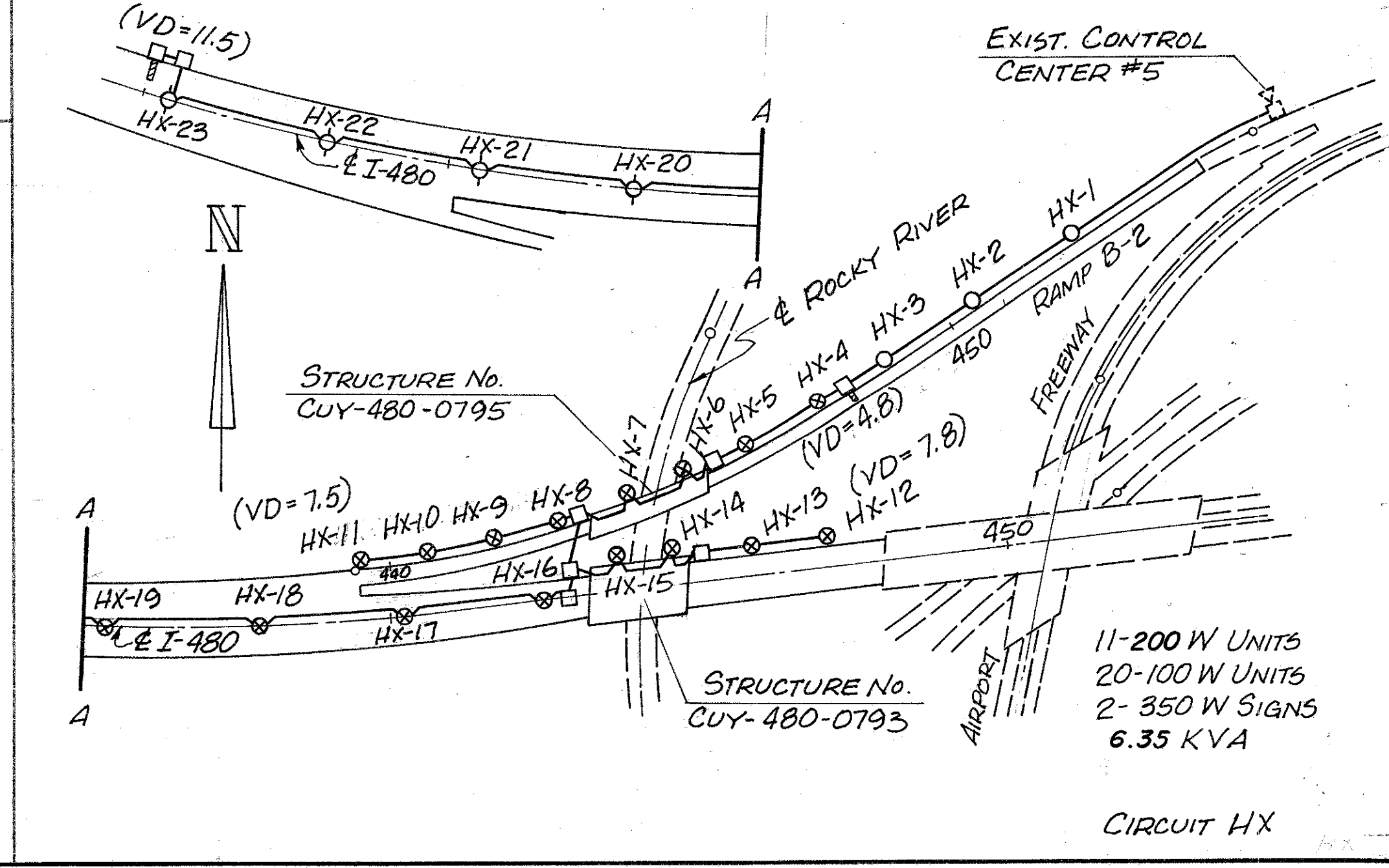
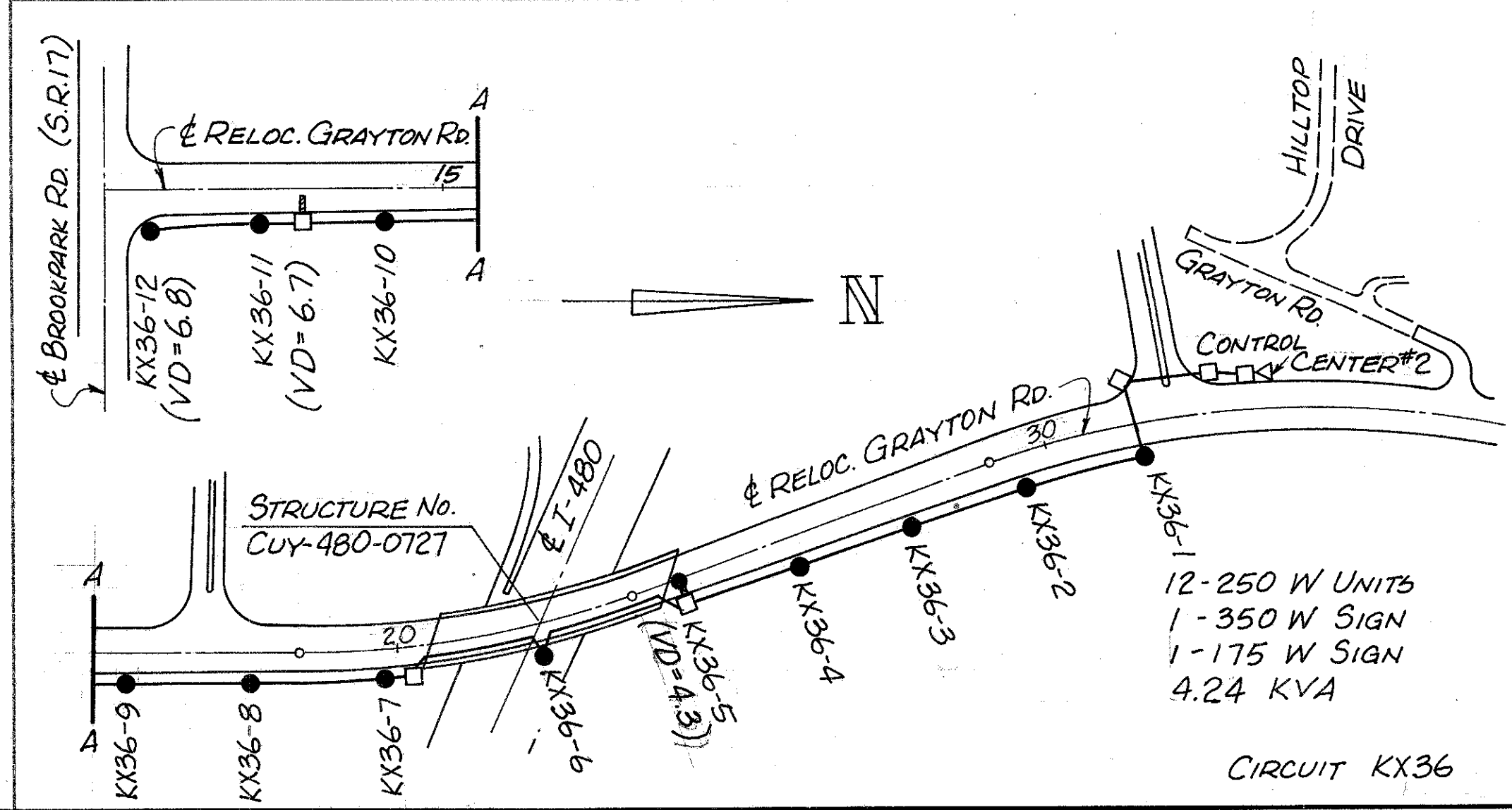
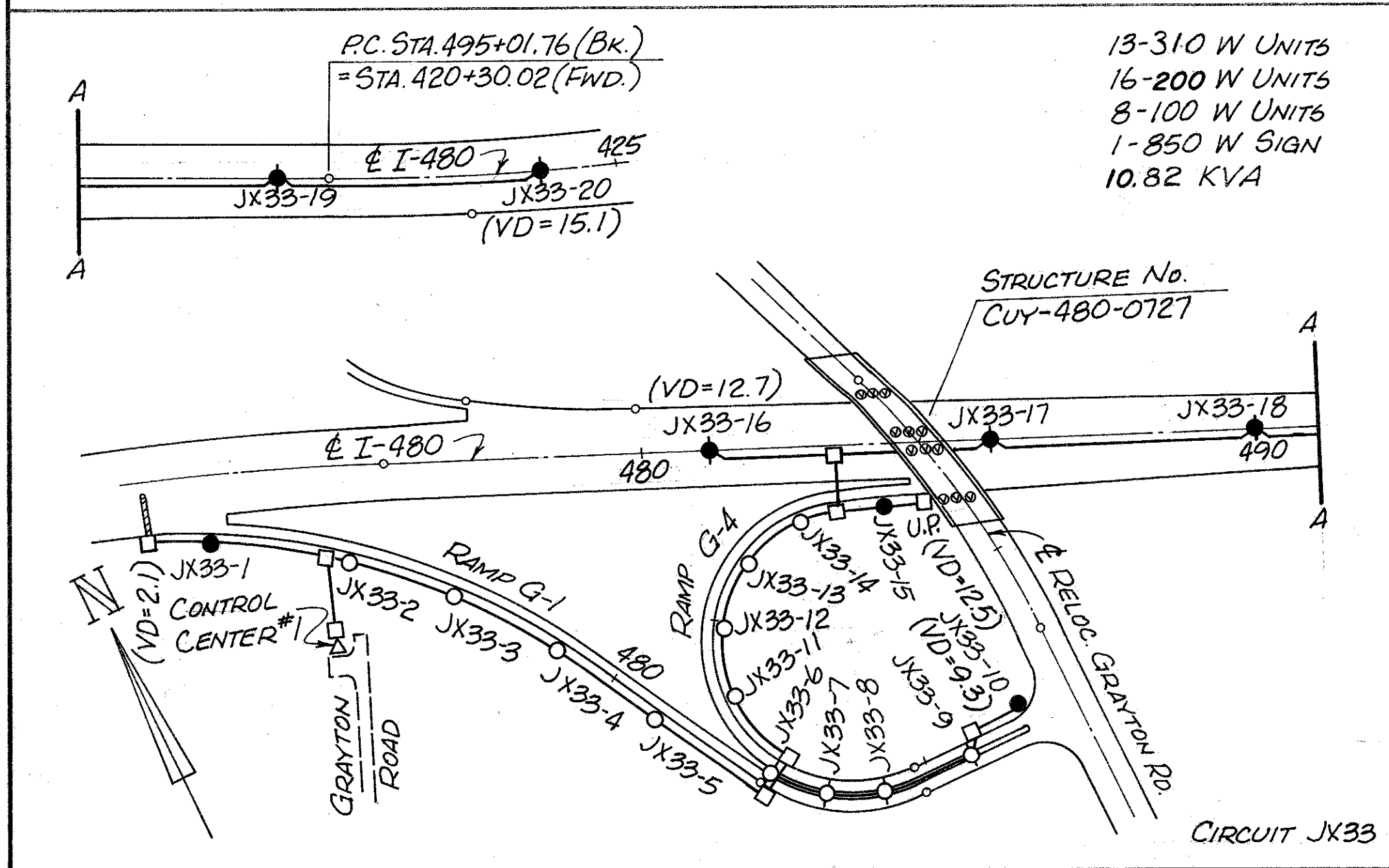
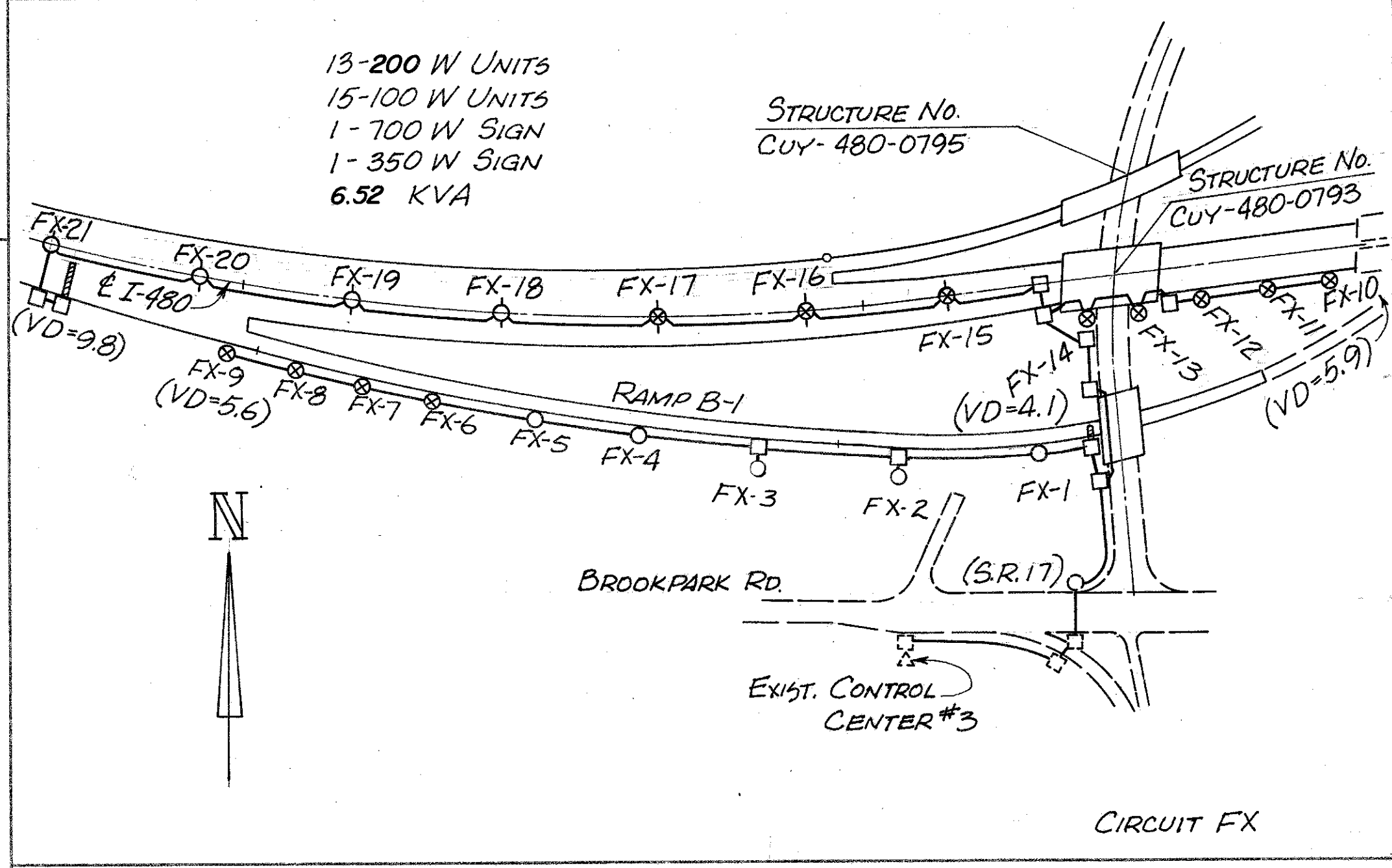
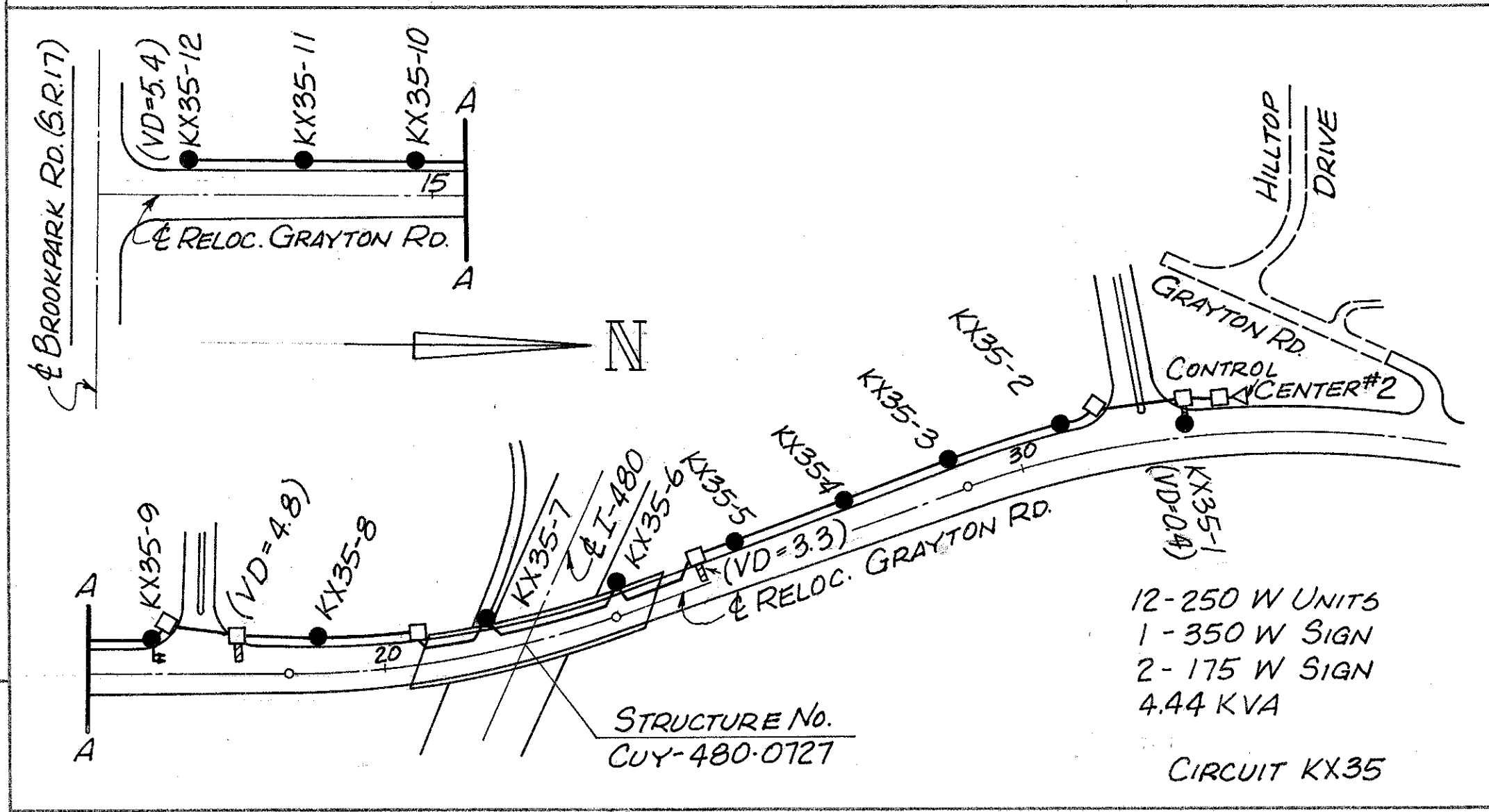
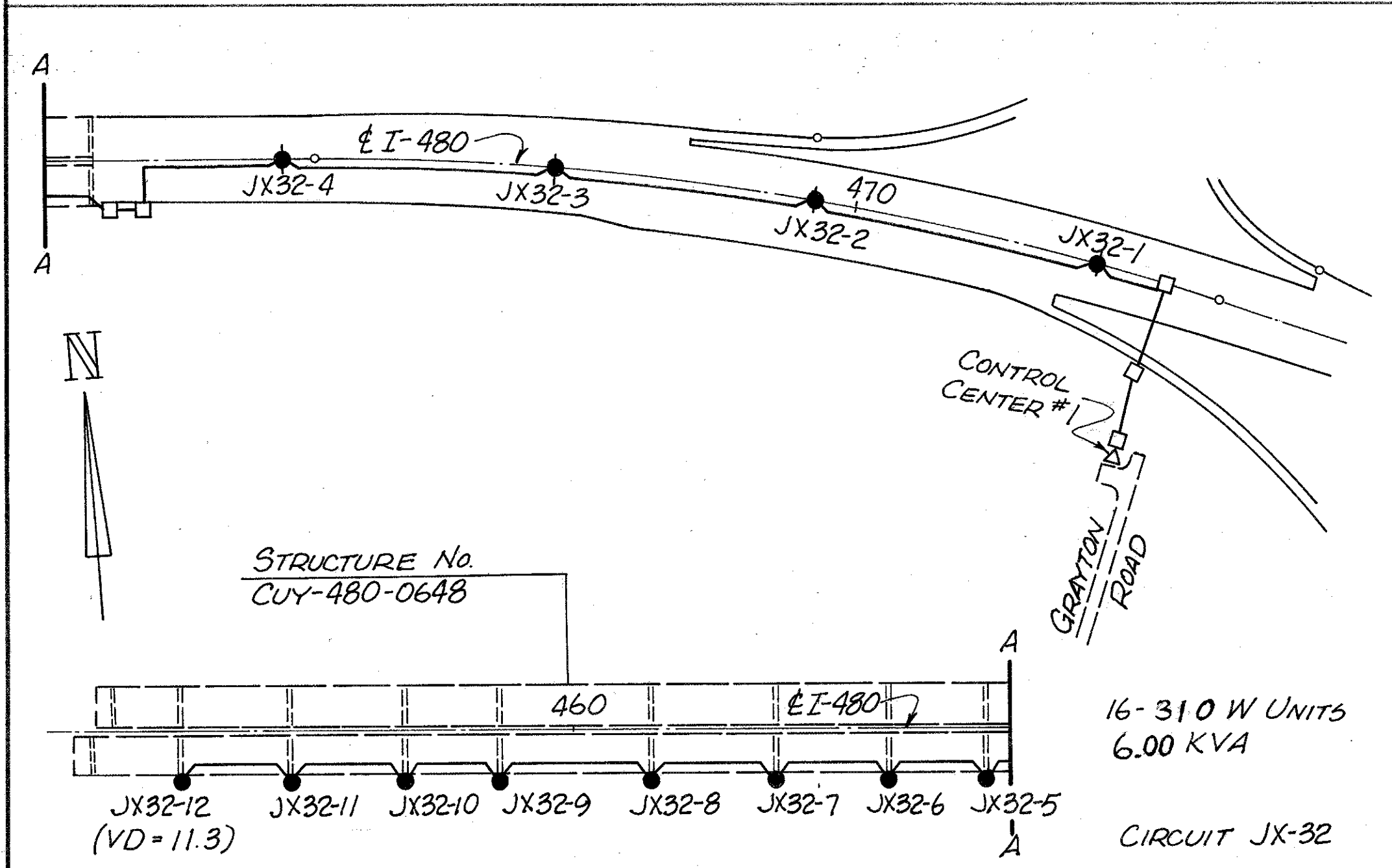
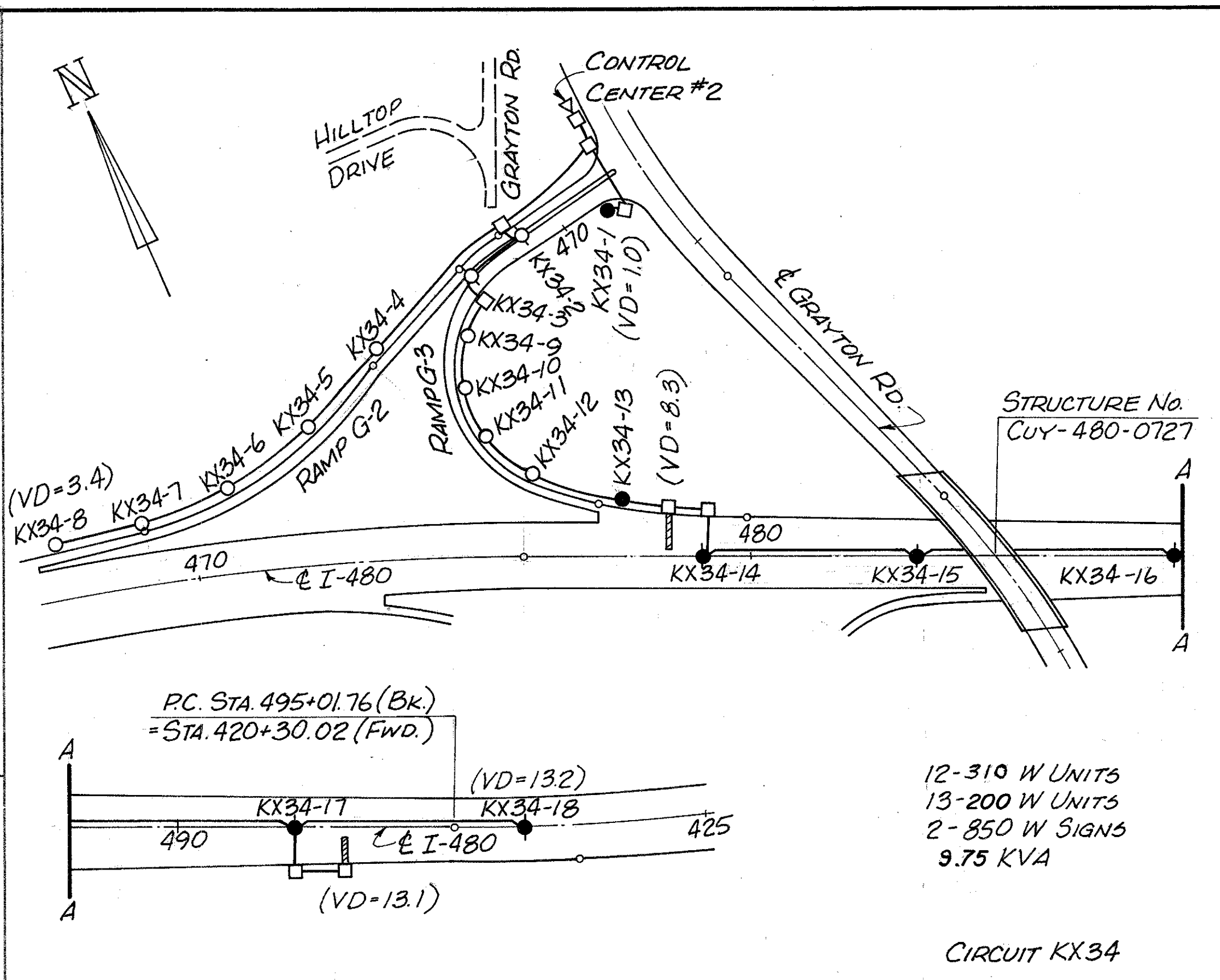
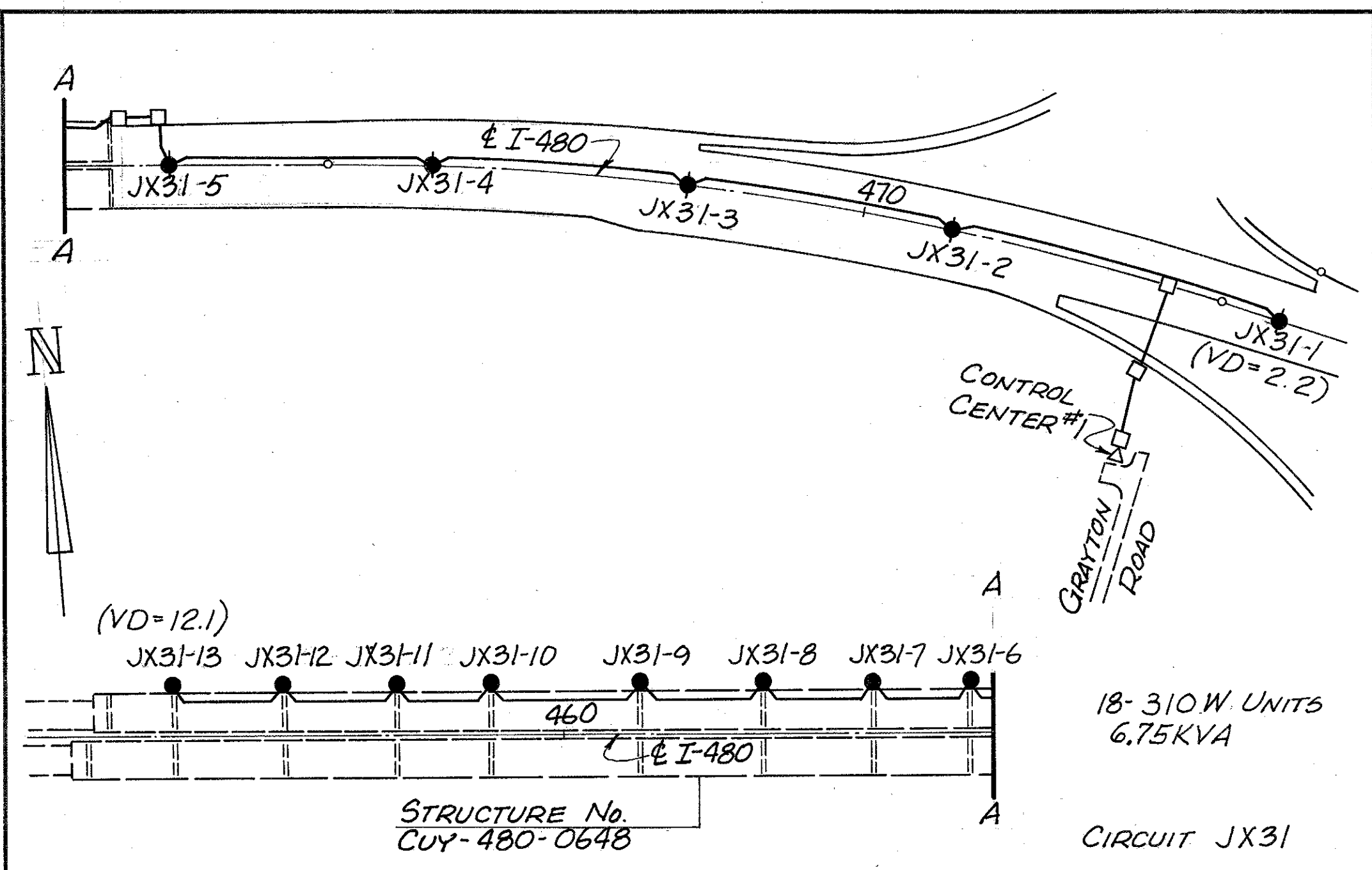
NOTE:  
PAYMENT FOR CONNECTIONS OF CIRCUIT FX & HX TO EXISTING CONTROL CENTERS SHALL BE INCLUDED IN THE UNIT PRICES BID PER LINEAL FOOT FOR ITEM 625, DISTRIBUTION CABLE.



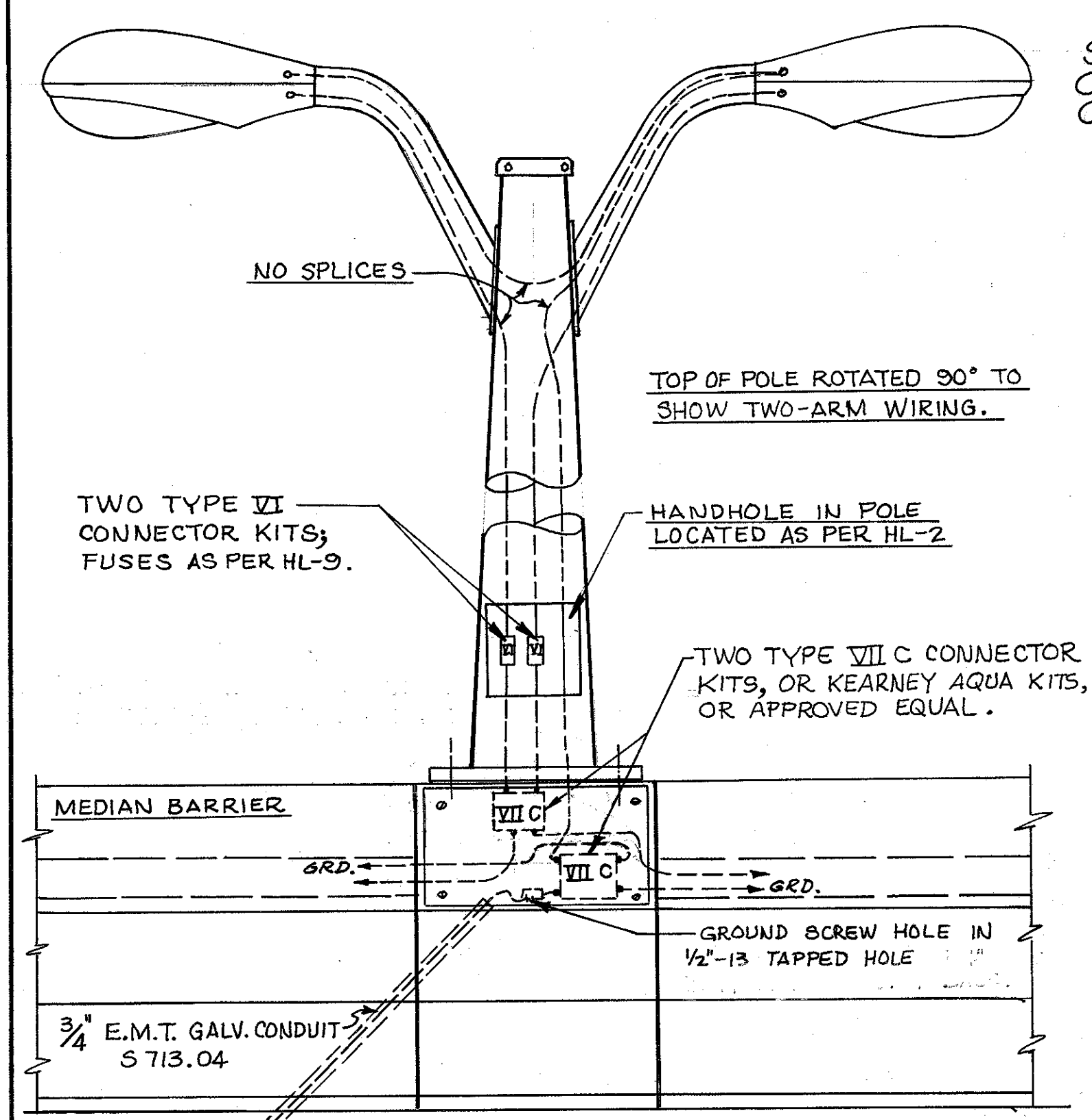
**KEY PLAN LEGEND**

- △ LIGHTING CONTROL CENTER
- 310 WATT LIGHT & POLE
- TWIN 310 WATT LIGHTS & POLE \*
- 200 WATT LIGHT & POLE
- TWIN 200 WATT LIGHTS & POLE
- 100 WATT LIGHT & POLE
- TWIN 100 WATT LIGHTS & POLE
- PULL BOX (UP INDICATES UNDERPASS LIGHTING CONNECTION)
- ▬ ILLUMINATED OVERHEAD SIGN
- NO. 4 AWG CIRCUIT CABLE
- ⊙ COMBINATION SIGN & LUMINAIRE
- UNDERPASS LUMINAIRE

\* EXCEPT 250 WATT ON RELOCATED GRAYTON ROAD

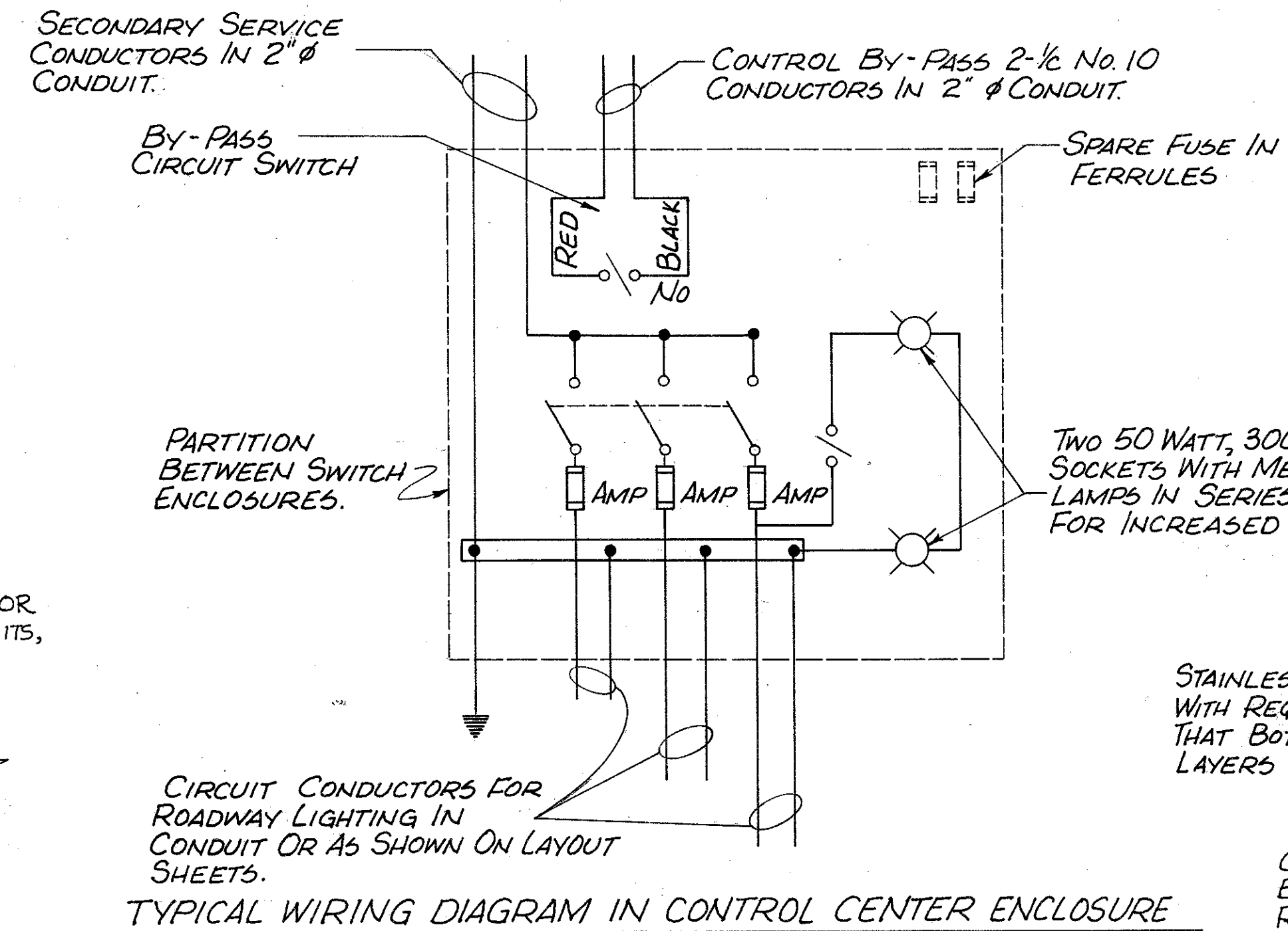


CUYAHOGA COUNTY  
CUY-480-6.78



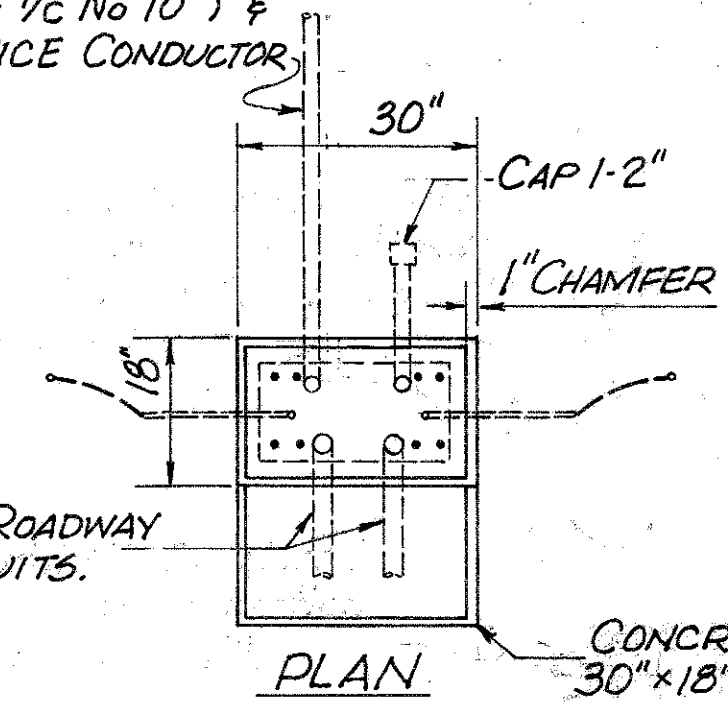
**POLE WIRING**

NOTE: MEDIAN BARRIER MEASUREMENTS AND JUNCTION BOX LOCATION AND SIZE ARE NOT TO BE CONSIDERED ACCURATE. THE DETAIL PURPOSE IS ONLY TO SHOW POLE WIRING.

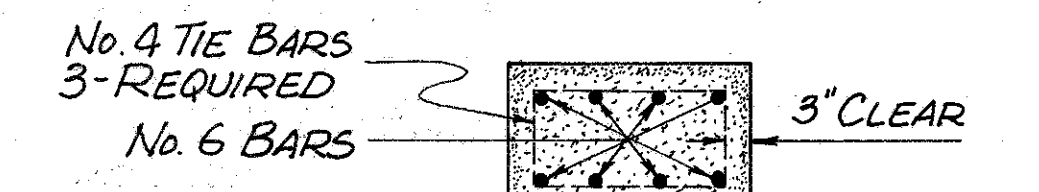


TYPICAL WIRING DIAGRAM IN CONTROL CENTER ENCLOSURE

CONTROL BY-PASS CIRCUIT CONDUCTORS (2-1/2 No 10) & SECONDARY SERVICE CONDUCTOR IN 2" CONDUIT.



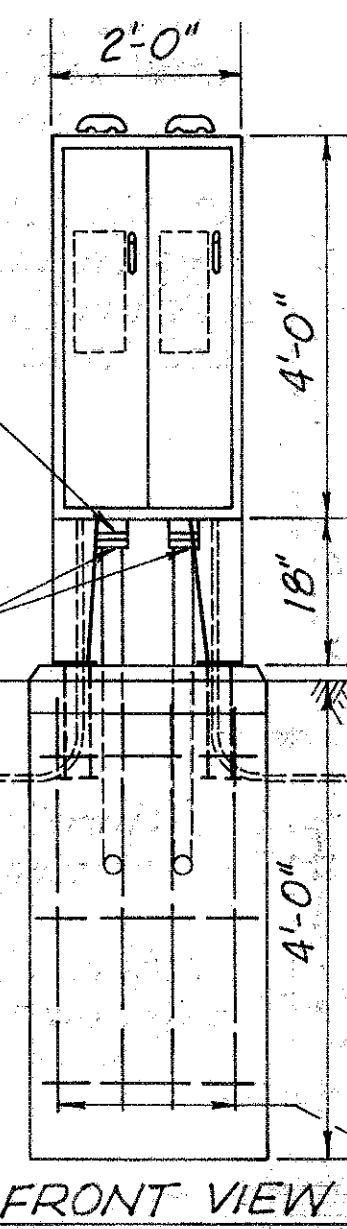
PLAN



SECTION THRU FOUNDATION

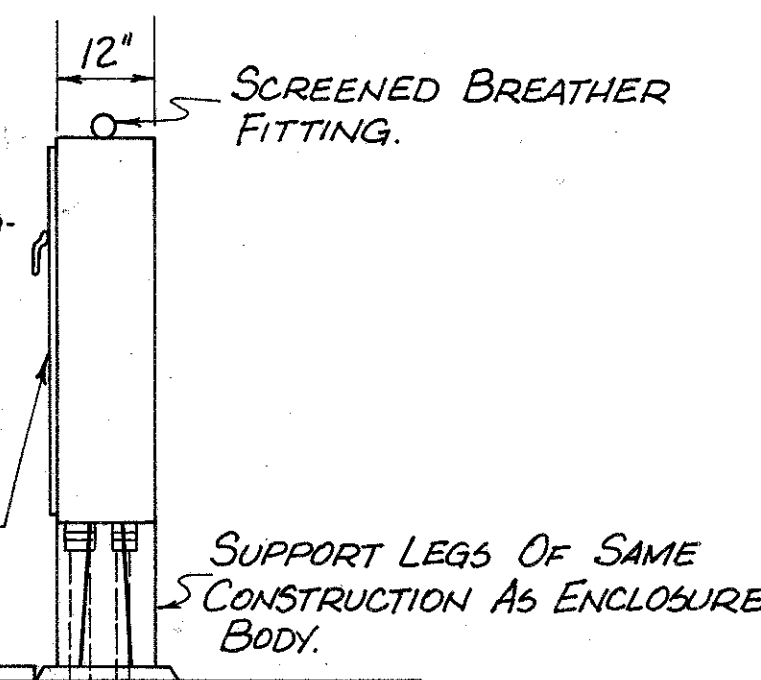
STAINLESS STEEL ENCLOSURE SHALL CONFORM WITH REQUIREMENTS OF 71320 WITH EXCEPTION THAT BOTTOM SHALL BE REINFORCED WITH TWO LAYERS OF 14 GA. MATERIAL.

CONDUITS SHALL ENTER THE ENCLOSURE BODY BY MEANS OF WATER TIGHT, RIGID, CONDUIT HUBS.



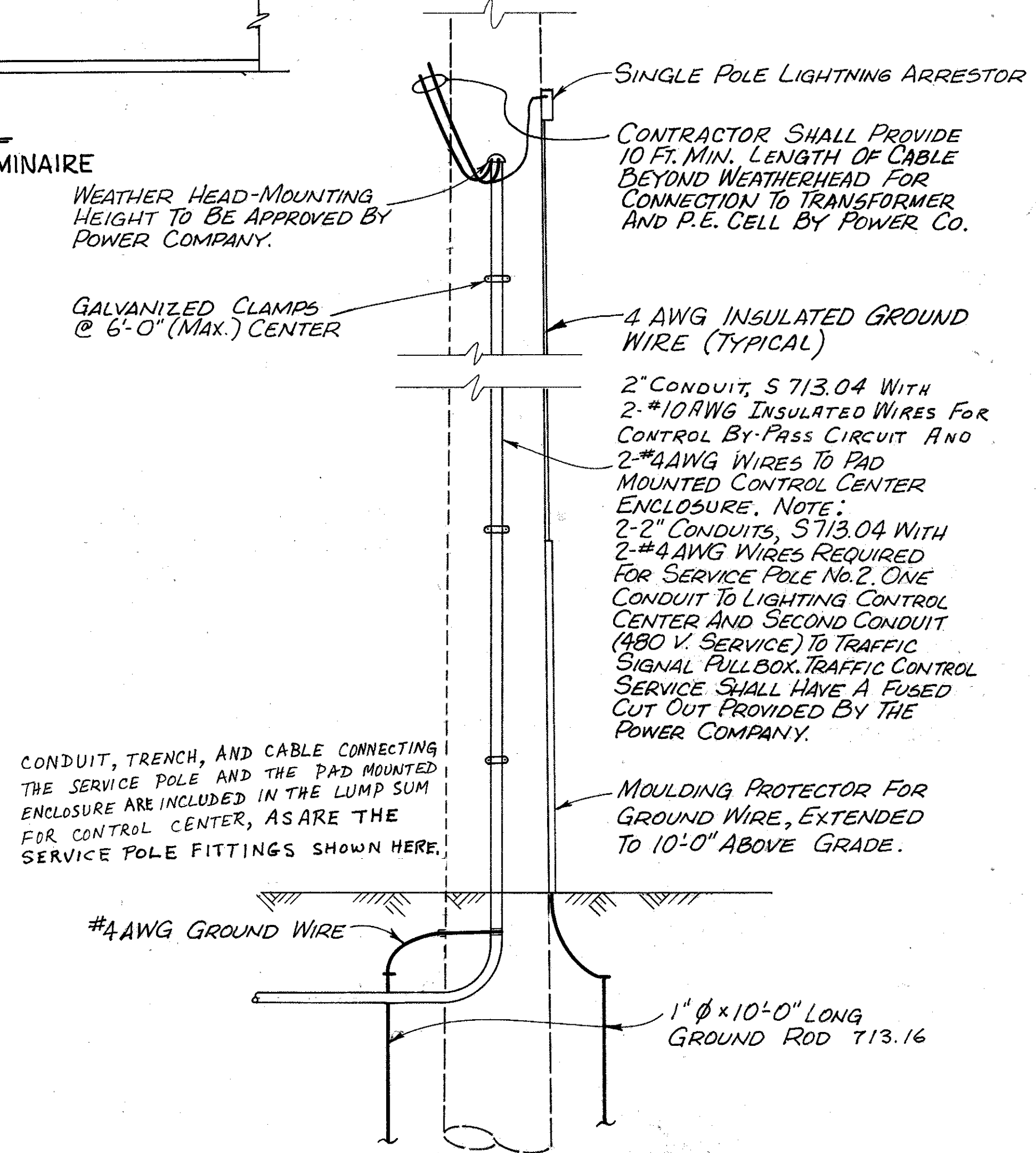
FRONT VIEW

DOUBLE DOOR ENCLOSURE OF NEMA TYPE 4 WATER TIGHT CONSTRUCTION WITH NEMA 3 RAINSHIELD, OF 0018(14) GAGE, ASTA 302-304, STAINLESS STEEL. ALL SEAMS SHALL BE CONTINUOUSLY WELDED AND GROUND SMOOTH AND POLISHED. BODY AND DOOR STIFFENERS SHALL BE PROVIDED. THE DOOR SHALL HAVE A CONTINUOUS HINGE ON ONE SIDE AND BE GASKETED, 3-POINT LATCHING SHALL BE PROVIDED AND THE HANDLE SHALL BE ARRANGED FOR PAD LOCKING.



SIDE VIEW

CONTROL CENTER DETAILS  
SCALE: 1/2" = 1'-0"



**SERVICE POLE DETAIL**

(NO SCALE)  
SERVICE POLE No. 1 - PROPOSED C.E.I. POLE No. 682483  
STA. 14+35± EXISTING GRAYTON RD. (61' LT. OF E)  
SERVICE POLE No. 2 - PROPOSED C.E.I. POLE No. 816958  
STA. 25+35± EXISTING GRAYTON RD. (20' LT. OF E)

3/4" EMT CONDUIT FOR GROUND WIRE ENTRANCE INTO ENCLOSURE.

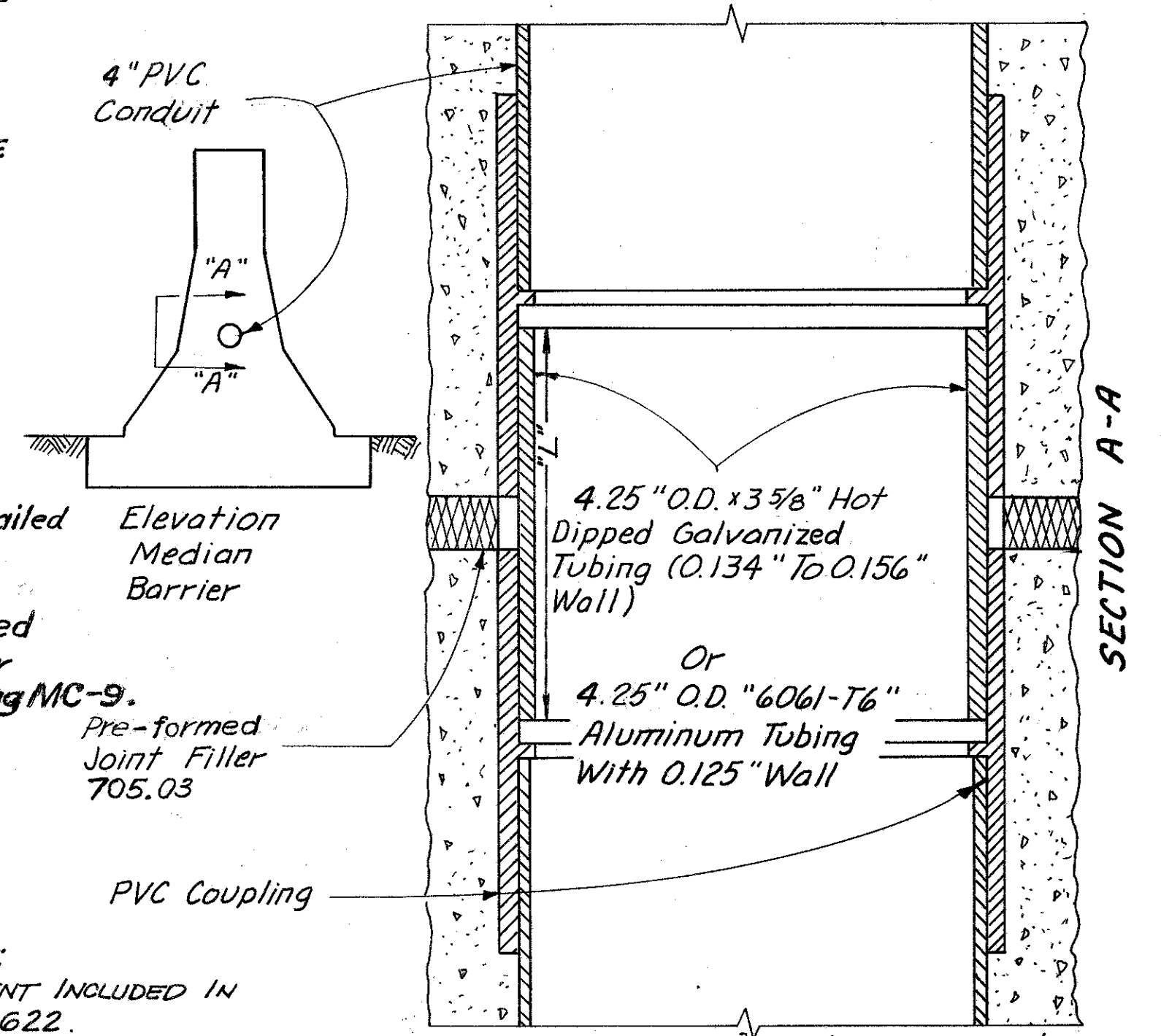
ROADWAY LIGHTING CIRCUIT CONDUITS SHALL BE PAID FOR AS A PART OF CONTROL CENTER ONLY TO A POINT 12" OUT FROM THE FOUNDATION.

1" x 10'-0" LONG GROUND ROD, 713.16

LIGHT POLE DATA				
REFERENCE LETTER	DESIGN NUMBER	FOUNDATION ANCHOR BOLTS SIZE DIAM X LENGTH	BOLT CIRCLE DIAMETER	TRANSFORMER BASE STYLE
* A	A12BB 37.5D			
* B	A12BB 27.5D			
* C	A12BB 30.0D	1 1/4" x 80"	18" x 8"	SPECIAL
* D	A12BB 22.5D			
* E	A12BB 17.5D			
F	AT15B 41.7			
G	AT15B 36.7			
H	AT12B 34.2	1" x 40"	15"	AT-A
I	AT15B 31.7			
J	AT15B 26.7			
K	AT15B 21.7			
L	AT15B 19.7			
	AT15B 34.2			
	AT15B 28.7			
M	ABB40.0	1 1/2" x 78"	12 1/2"	NONE
N	A12B 17.0	1 1/2" x 85"	12 1/2"	NONE
** O	A12B 40.0	1 1/4" x 48"	12 1/2"	NONE
	RELOCATED POLE †	1 1/4" x 78"	12 1/2"	NONE
P	A12B 20.0	1" x 40"	10 1/2"	NONE
Q	A12B 25.0	1" x 40"	10 1/2"	NONE

NOTES:  
SEE "LIGHTING LAYOUT" SHEETS FOR DIRECTION AND PLACEMENT OF CONDUITS OUT OF FOUNDATION. SPACING AND PLACEMENT OF ANCHOR BOLTS IN FOUNDATION IS DEPENDENT UPON THE ENCLOSURE MANUFACTURERS DIMENSIONS. ENCLOSURE DIMENSIONS ARE INSIDE MEASUREMENTS.

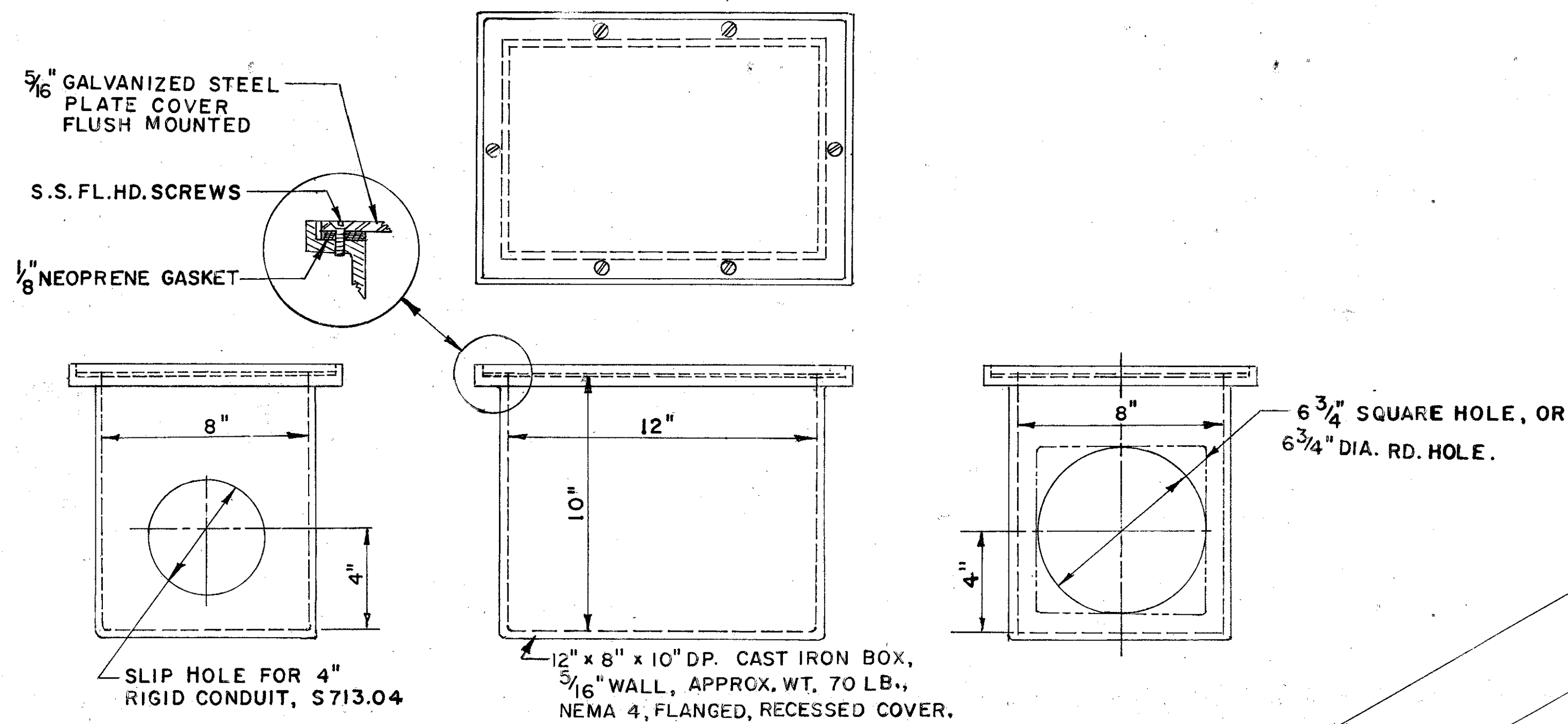
Note: Conduit Couplings as detailed herein shall be provided at all median barrier joints where a joint filler is used, as required or permitted by Item 622 or Standard Construction Drawing MC-9.



NOTE: PAYMENT INCLUDED IN ITEM 622.

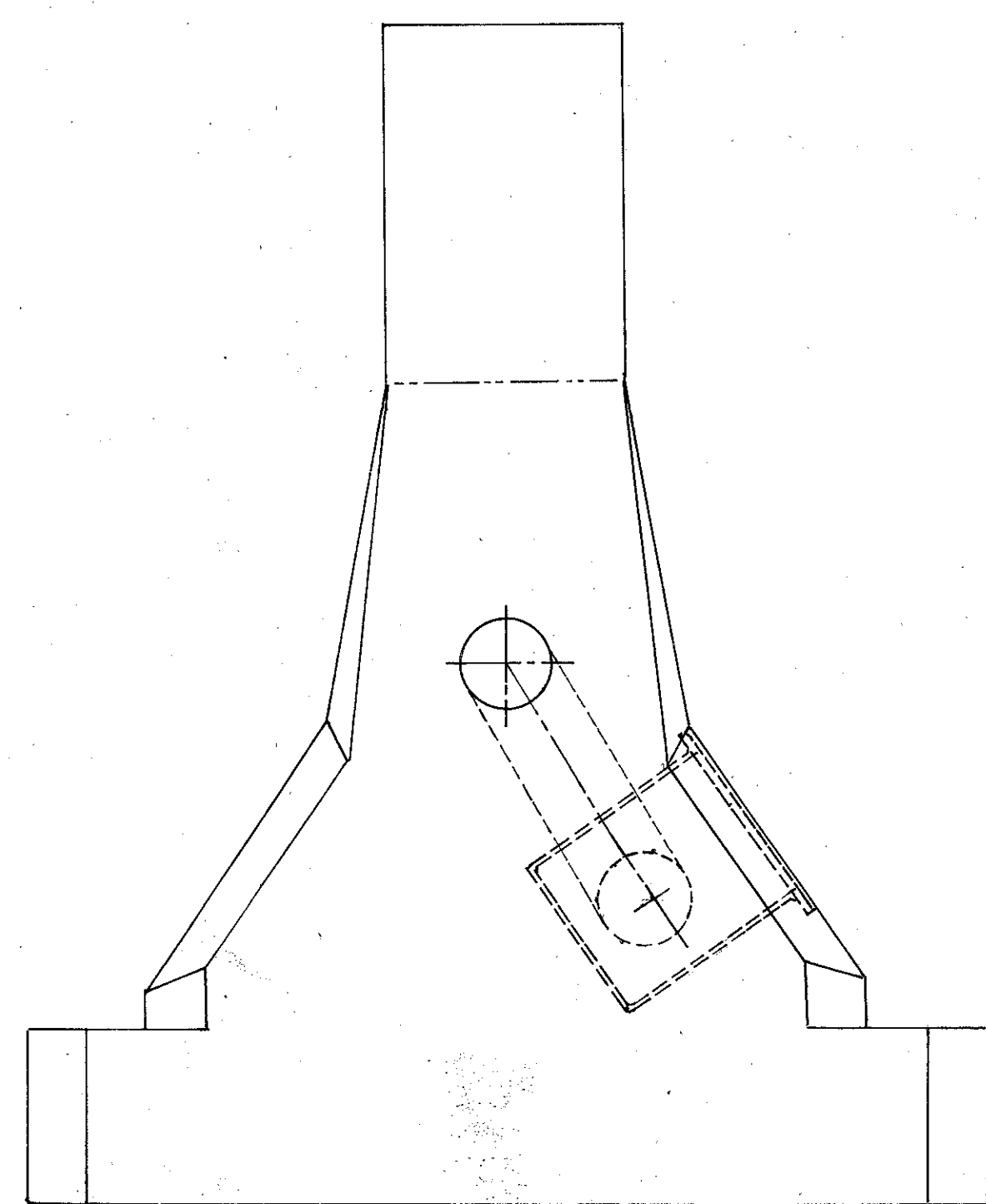
"L" is approx. 3 3/4" when joint is 1/2"  
**DETAILS OF CONSTRUCTION JOINT**  
4" PVC COUPLING IN MEDIAN CONCRETE BARRIER

\* D - With Special Steel Base Plate, 12" x 22", 1 1/4" thick, with 1/2" holes spaced to match the anchor bolts as shown in HL-22.  
\*\* Existing Anchor Bolts  
† Rocky River Bridge over Ramp B-1

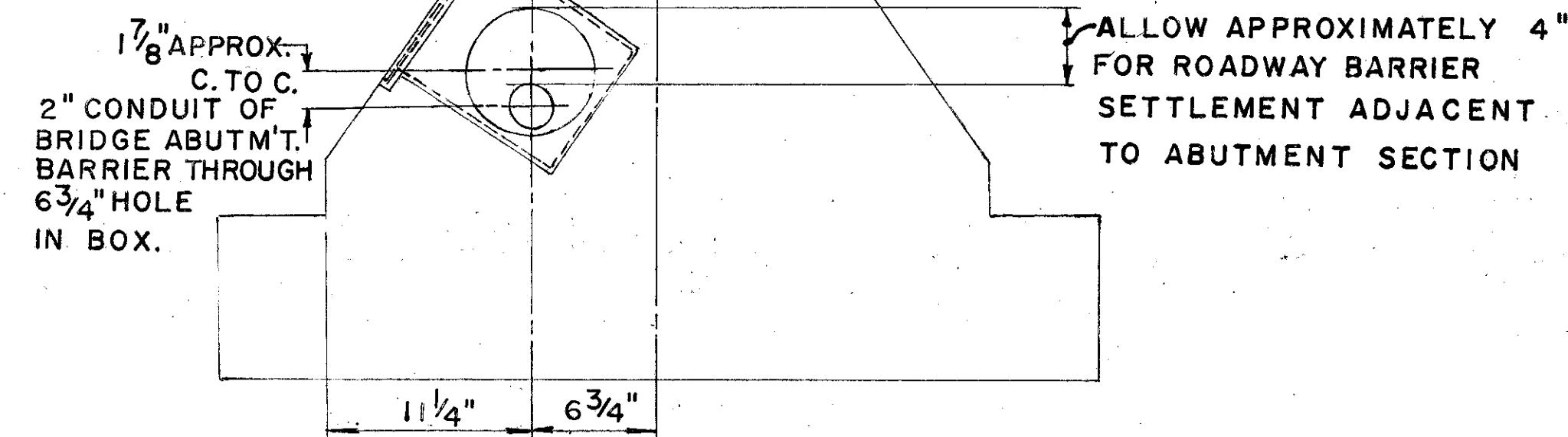
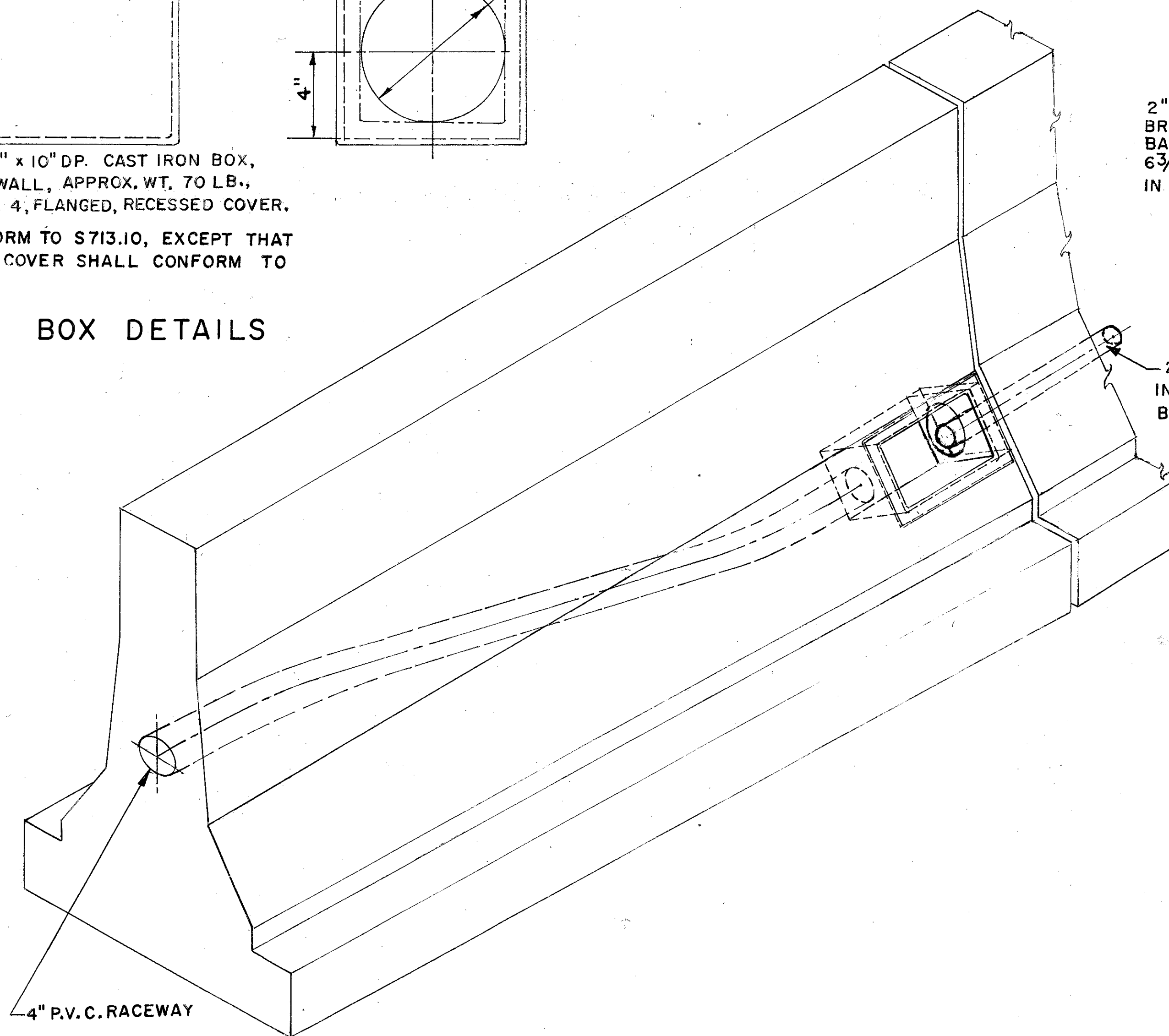


JUNCTION BOX SHALL CONFORM TO S713.10, EXCEPT THAT THE GALVANIZED STEEL PLATE COVER SHALL CONFORM TO ASTM A-242 OR A-36.

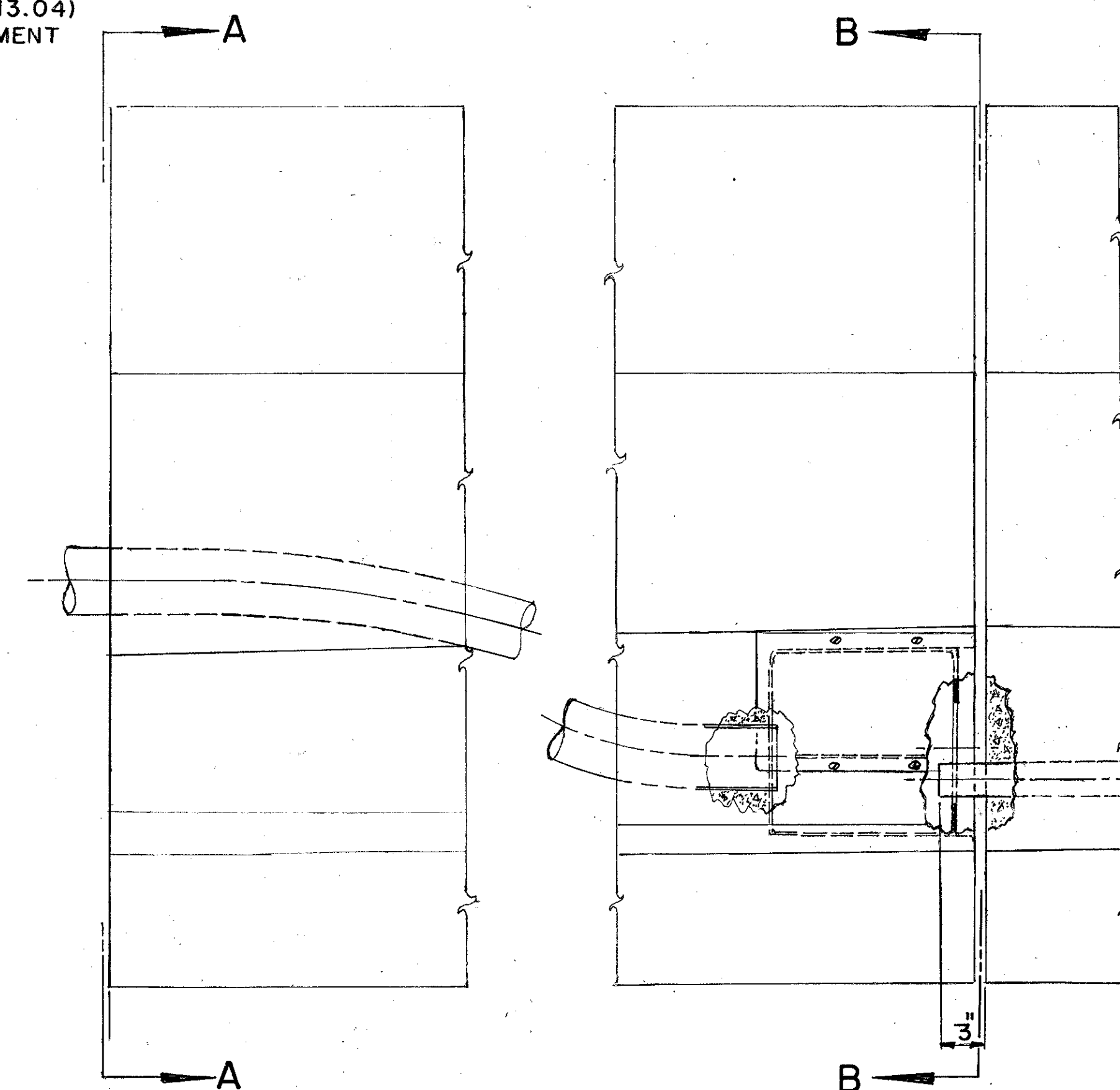
TRANSITION JUNCTION BOX DETAILS



END ELEV. A-A



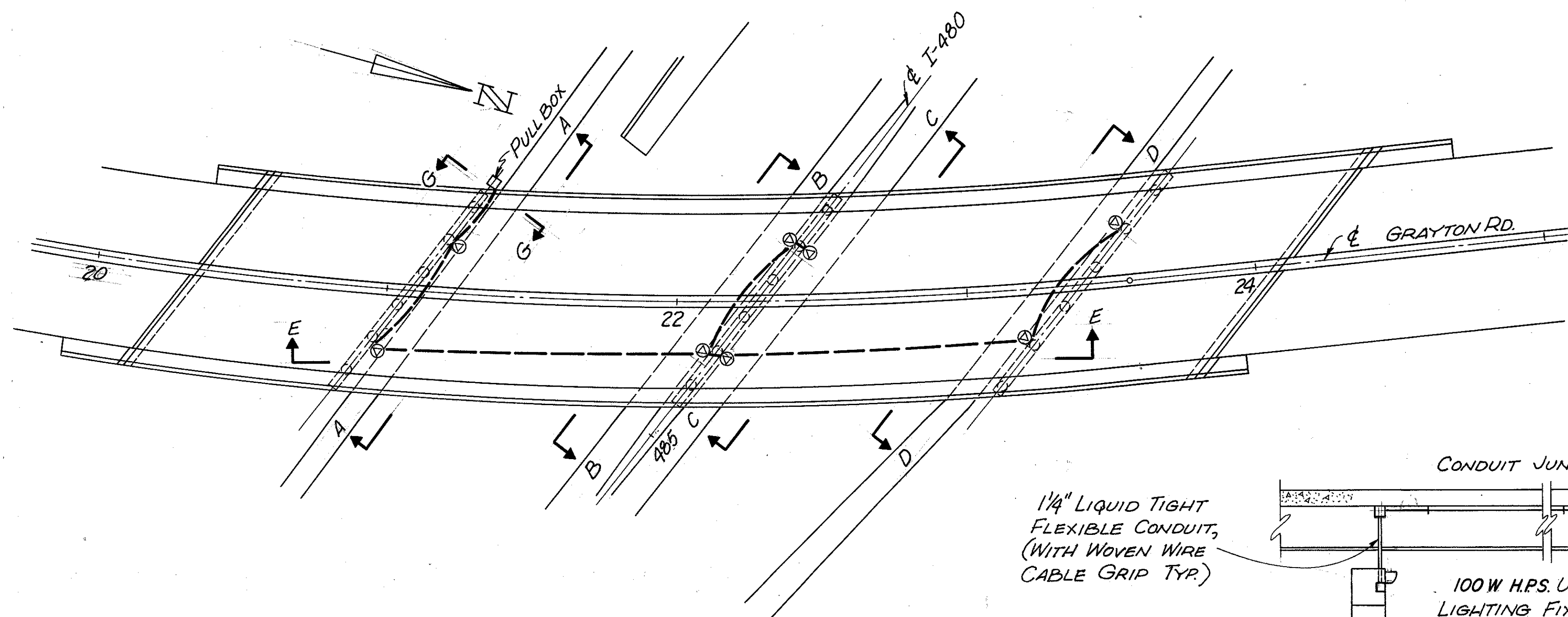
END ELEV. B-B



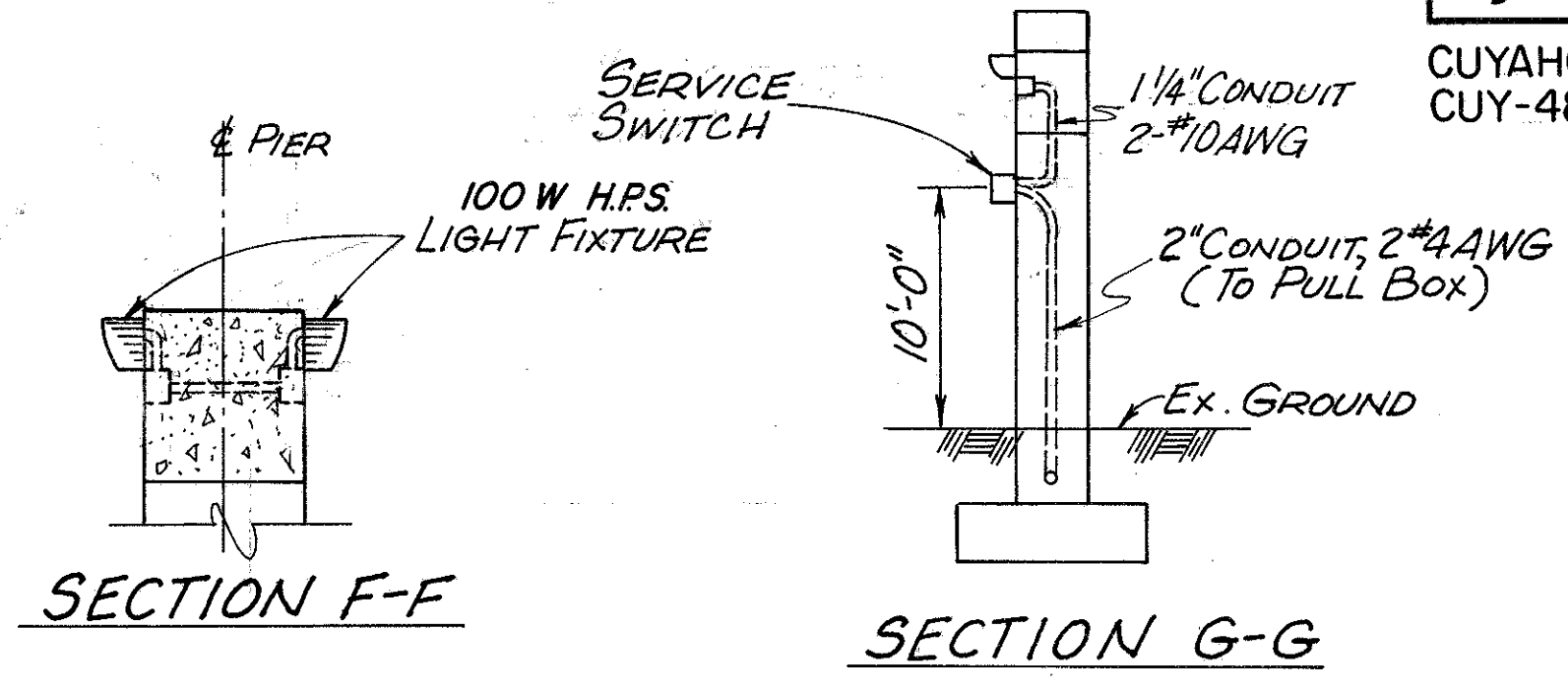
SIDE ELEVATION, TRANSITION BARRIER FROM ROADWAY TO BRIDGE CONFIGURATIONS



CUYAHOGA COUNTY  
CUY-480-6.78

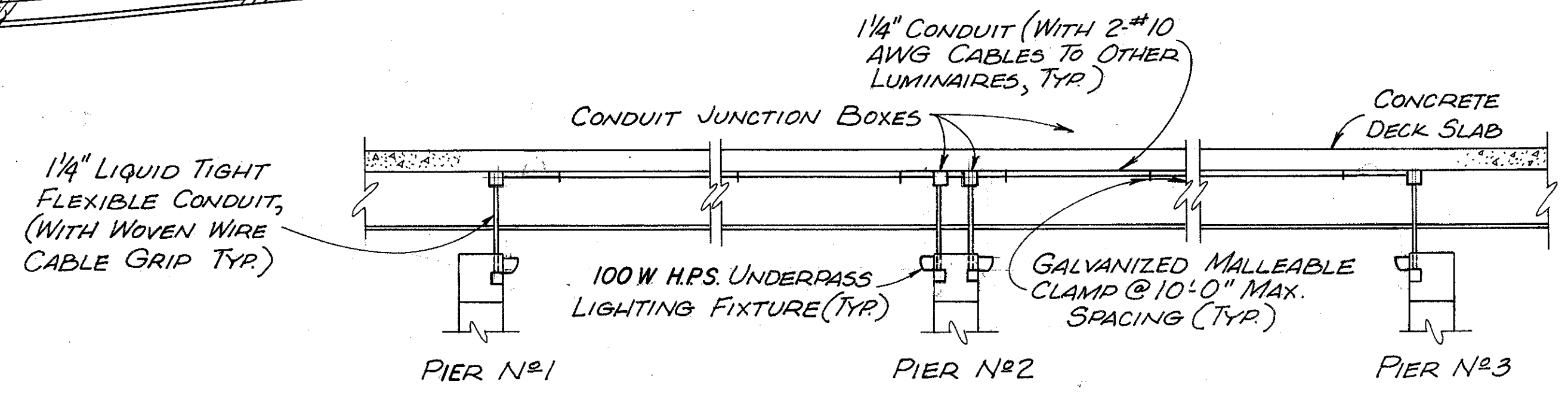


SCHEMATIC PLAN

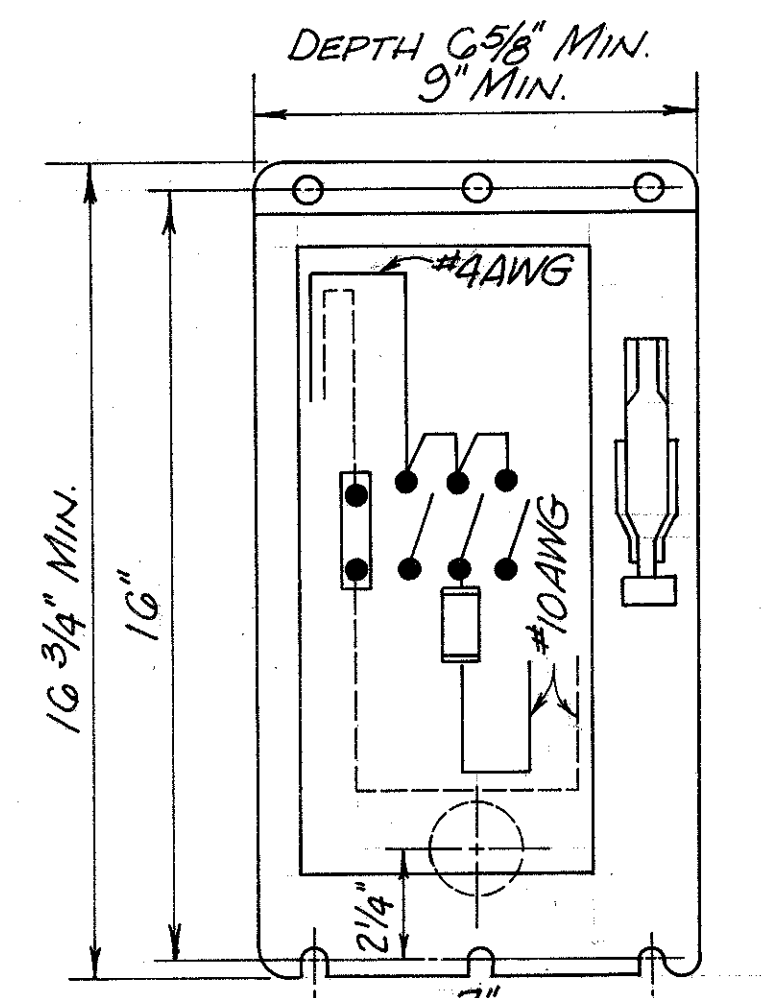


SECTION F-F

SECTION G-G

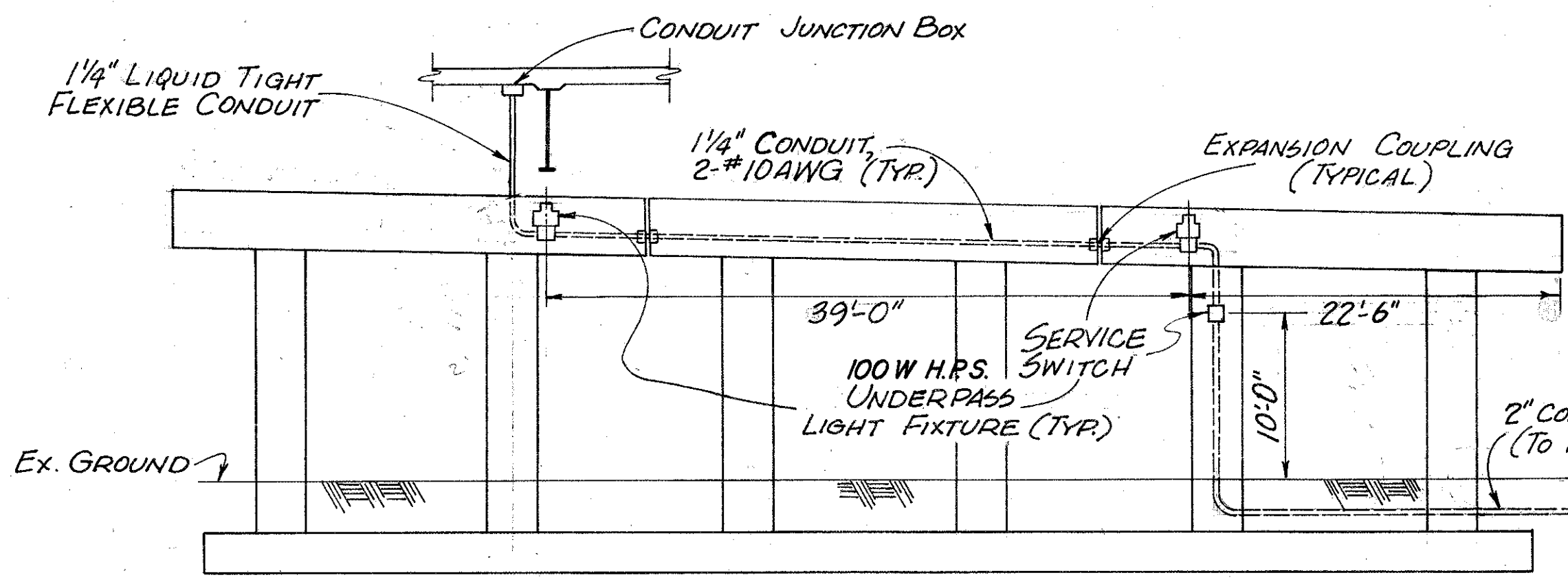


SECTION E-E

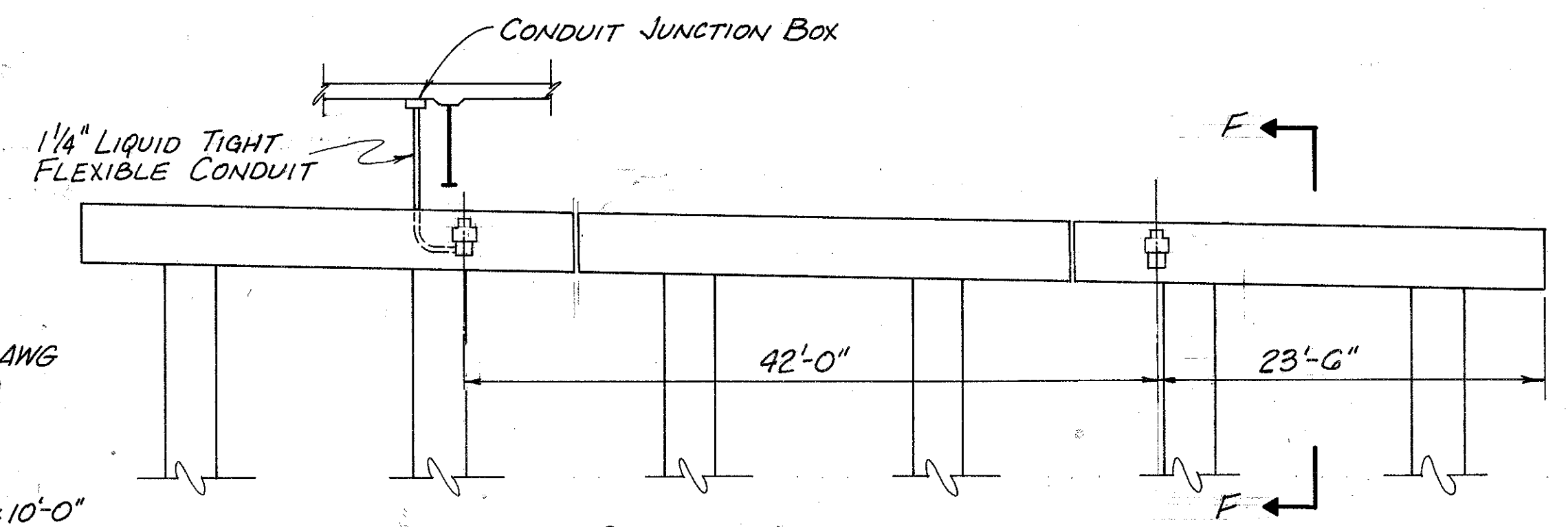


SERVICE SWITCH

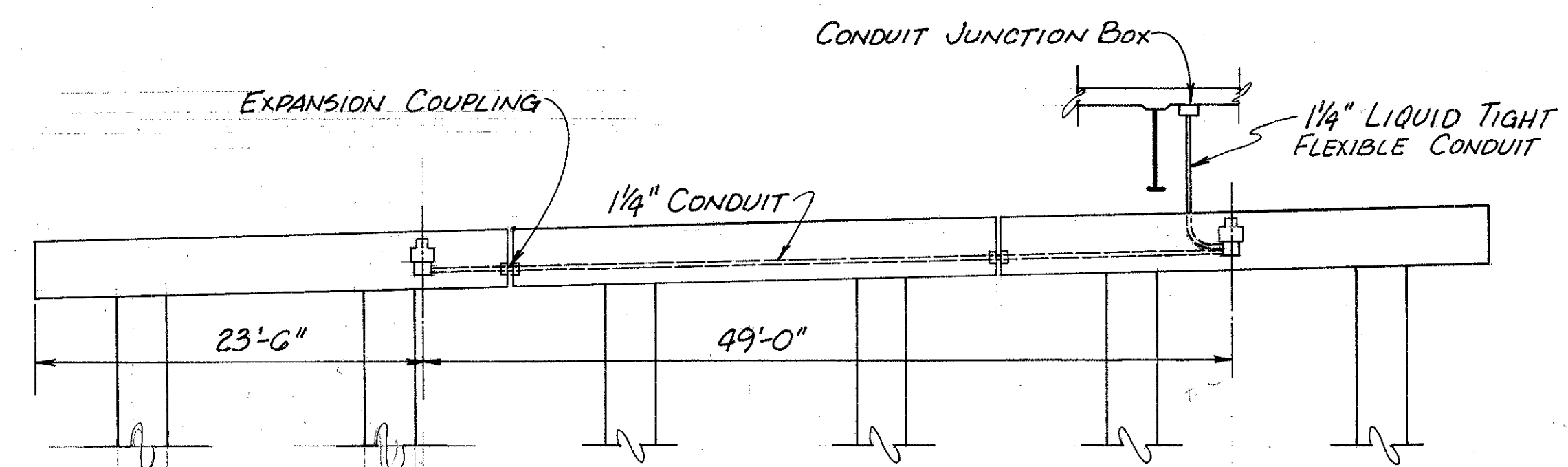
ENCLOSURE NEMA 4 WATER-TIGHT AISI 302 OR 303 STAINLESS STEEL WITH FLANGE MOUNTED SWITCH HANDLE. SPACE PROVIDED FOR KNOCKOUT FOR WIRING DIRECT INTO STRUCTURE 480 VOLT. 30 AMP SWITCH 20 AMP FUSE



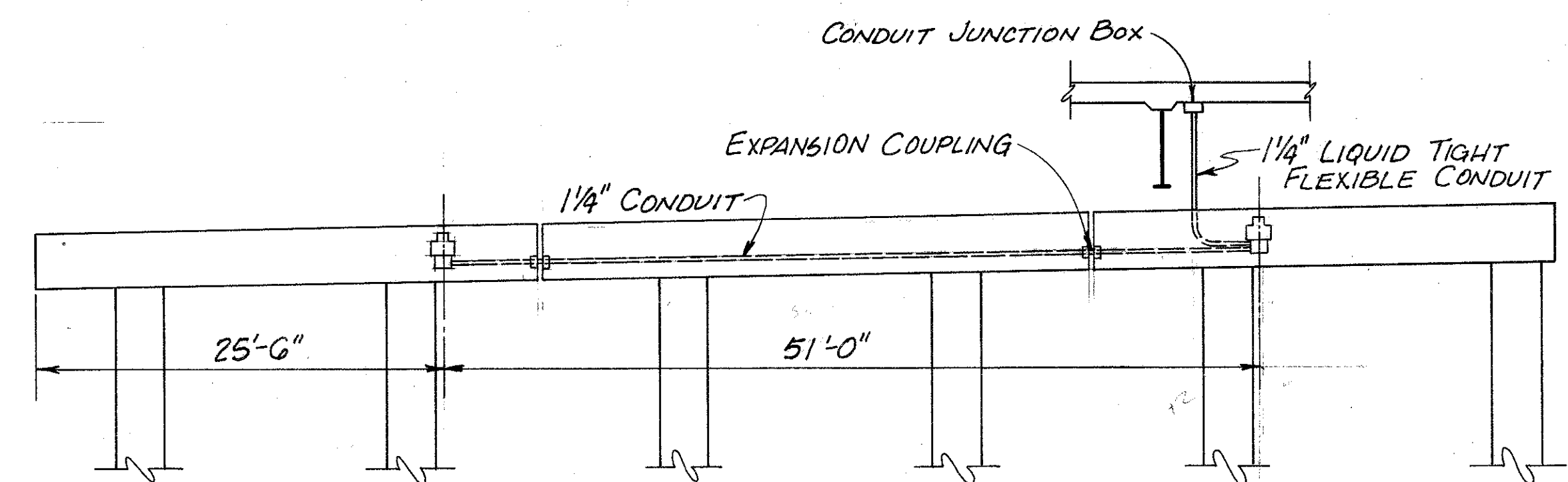
SECTION A-A



SECTION C-C

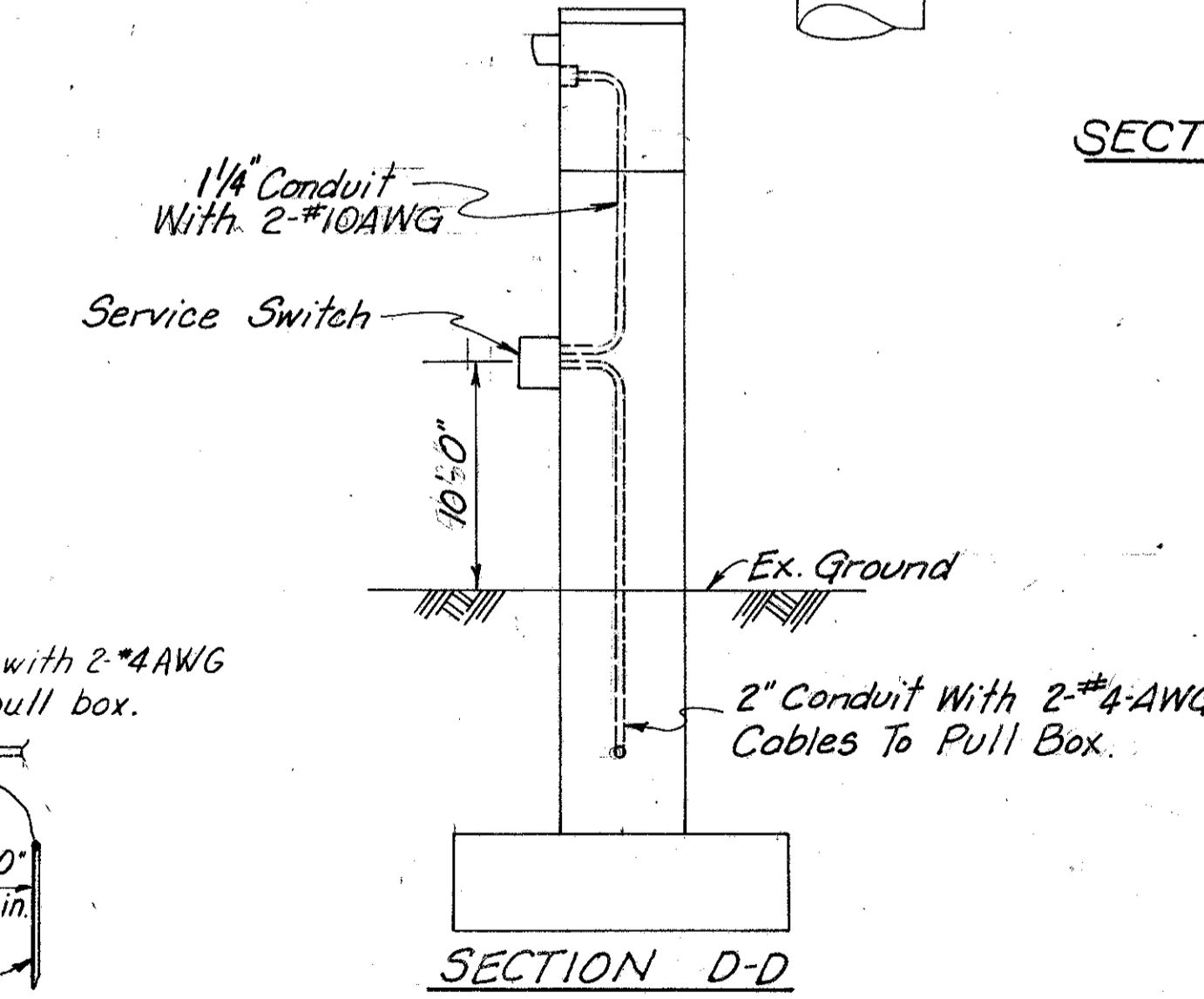
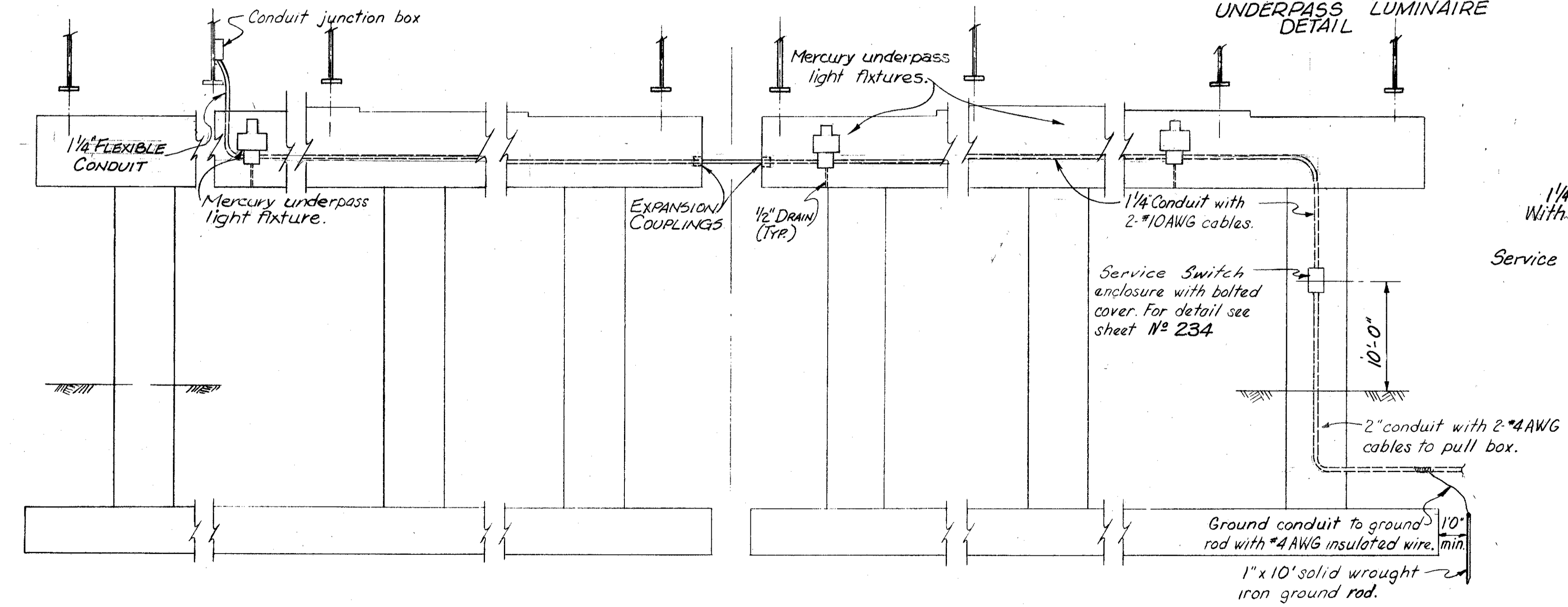
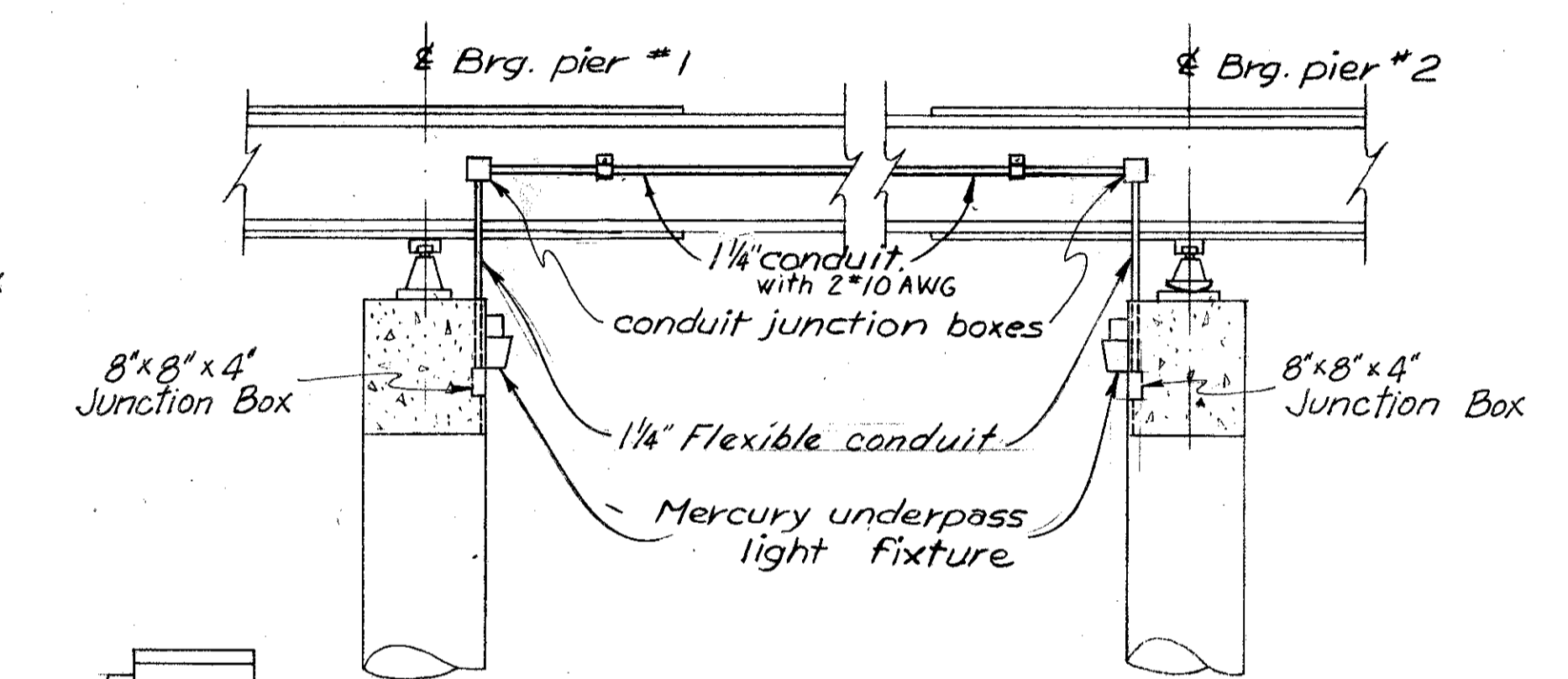
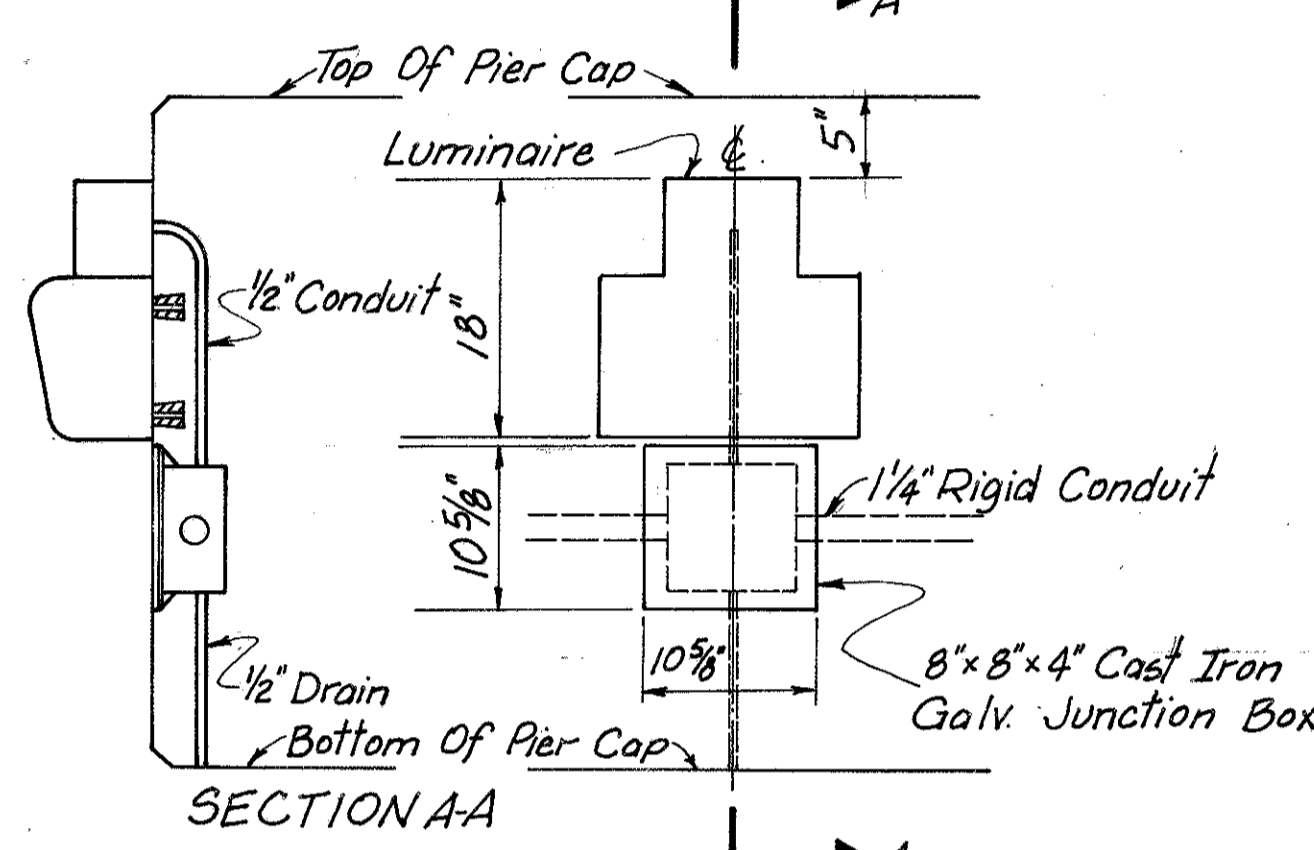
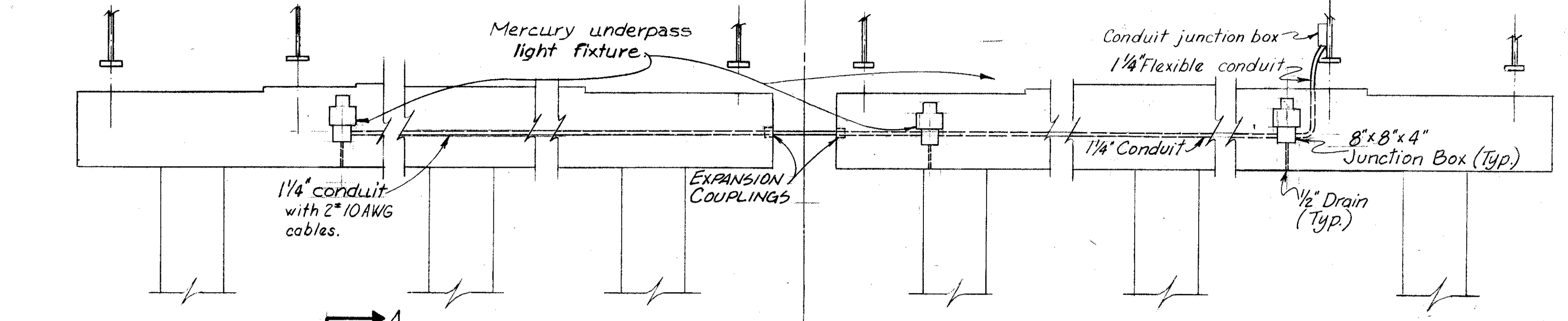
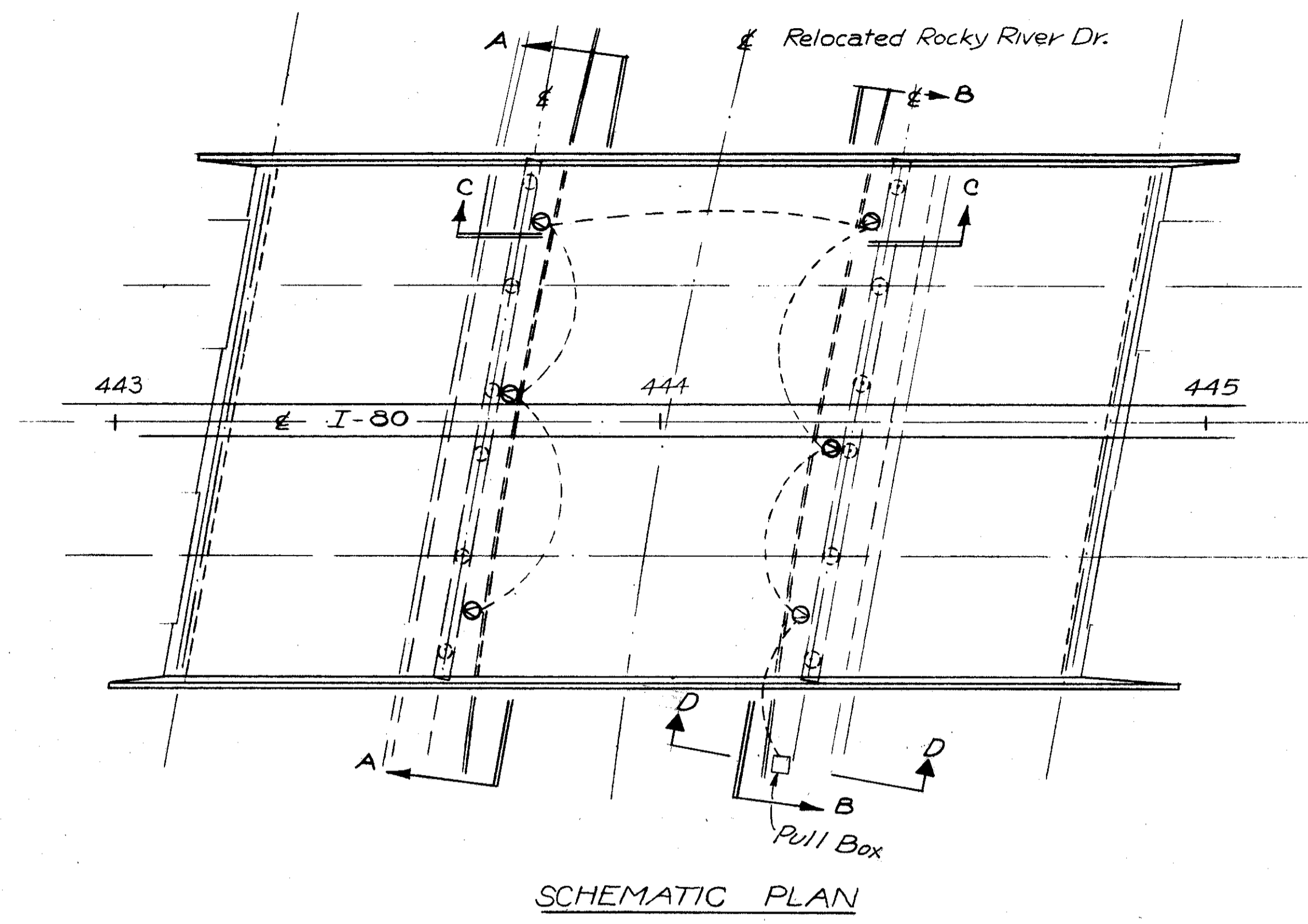


SECTION B-B



SECTION D-D

**UNDERPASS LIGHTING NOTES**  
 UNDERPASS LIGHTING - ITEM G25 INCLUDING INSTALLATION OF ALL ELECTRICAL EQUIPMENT ON THE BRIDGE TO THE ADJACENT ROADWAY PULLBOX (SEE LIGHTING GENERAL NOTES FOR PAY ITEM DESCRIPTION.)  
 QUANTITIES - FOR DETAIL LISTING OF QUANTITIES SEE GENERAL LIGHTING SUMMARY, SHEET No. 215 & 216  
 CONDUIT - ALL CONDUIT SHALL BE RIGID FERROUS METAL 713.04, AS PER PLAN.  
 JUNCTION BOXES - ALL JUNCTION BOXES SHALL BE, AS PER 713.10.  
 LIGHT FIXTURE - SEE STANDARD CONSTRUCTION SPECIFICATIONS. SEE UNDERPASS LUMINAIRE DETAIL, SEE SHT. NO. 235  
 ANCHORAGE - THE JUNCTION BOXES SHALL BE ATTACHED TO THE CONCRETE WITH 1/4" FLAT HEAD DRIVE PINS.  
 FOR ADDITIONAL DETAILS AND NOTES, SEE HIGHWAY LIGHTING, STD. DWG. HL-G



**UNDERPASS LIGHTING NOTES**

**Underpass Lighting** - Item 625 includes the installation of all electrical equipment on the bridge to the adjacent Roadway Pull Box. For additional details and notes see Highway Lighting Details and Notes.

**Quantities** - For detail listing of quantities see General Lighting Summary, Sheet Nos. 215 & 216

**Conduit** - All Conduit Shall Be Rigid Ferrous Metal, 713.04 As Per Plan.

**Light Fixture** - For light fixture specification see Standard Constructions

For Additional Details And Notes, See Highway Lighting, Std. Dwg. HL-G.

**Anchorage** - Fixtures shall be attached to the concrete with 1/4" flat head "Ramm Set" drive pins or approved equal.

**Conduit Junction Box** - All Junction Boxes Shall Be, As Per 713.10.

**Service Switch** - For Service Switch Detail See Sht. No. 234

ALDEN E. STILSON & ASSOCIATES, LIMITED						
CONSULTING ENGINEERS			COLUMBUS, OHIO		WHEELING, W. VA.	
UNDERPASS LIGHTING DETAILS						
BRIDGE NO. CUY-480-0793						
I-80 OVER RELOCATED ROCKY RIVER DRIVE						
CUYAHOGA COUNTY					STA. 443+18.00	
					STA. 444+86.58	
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISION
	R.C.K.			G.W.M.	1/19/70	



# GENERAL SUMMARY

## TRAFFIC CONTROL

CALC. BY M.C.M. DATE 3-12-76  
 CHD. BY 29F DATE 3-29-76

FED. RD. DIVISION	STATE	PROJECT	(237)
2	OHIO		317

CUYAHOGA COUNTY  
 CUY-480-6.78

ITEM	SHEET NUMBERS				COST PARTICIPATION		GRAND TOTAL	UNIT	ITEM	DESCRIPTION
					INTER-STATE	STATE				
									<i>Traffic Signals</i>	
			254	255	256	257				
			1	1	1			3	3	Each 843 Controller, Pretimed, 3 Phase, Electromechanical, with Cabinet, As Per Plan
			1	1	1			3	3	Each 843 Coordinator, Electromechanical, As per Plan
			1					1	1	Each 842 Vehicular Signal Head, 4 Section, 12" Lens, One Way
			5	6	6			17	17	Each 842 Vehicular Signal Head, 3 Section, 12" Lens, One Way
			556	560	550			1666	1666	L.F. 842 Signal Cable, 7-Conductor No. 14 A.W.G., Stranded
			70	85	82			237	237	L.F. 842 Signal Cable, 5-Conductor No. 14 A.W.G., Stranded
			1890		1300			3,190	3,190	L.F. 842 Interconnect Cable, 7-Conductor No. 14 A.W.G.
			1080	186	1665	6		2,937	2,937	L.F. 5625 Trench
			2		1			3	3	Each 5625 Pullbox, 24" 5713.09 With Concrete Cover, As Per Plan
			6	2	7	1		16	16	Each 5625 Pullbox, 18" 5713.09 With Concrete Cover, As Per Plan
			4	3	3			10	10	Each 5625 Ground Rod, 5713.16
			84					84	84	L.F. 5625 Conduit, 3" 5713.04, Jacked Under Pavement
			1085	196	1665			2,946	2,946	L.F. 5625 Conduit, 3" 5713.04
						6		6	6	L.F. 5625 Conduit, 1" 5713.04
			2		1	1		1	1	Each 5625 Pullbox Removed
			14		14			3	3	Each 5625 Transformer, 500 VA Direct Burial Type
			1874		14			28	28	Each 5625 Connector Kit, Type VIII-CU
			140	15	3068			4,942	4,942	L.F. 5625 Distribution Cable, No. 4 A.W.G. 600 Volt
			2	2	2			170	170	L.F. 5625 Distribution Cable, No. 10 A.W.G. 600 Volt
								6	6	Ea. 842 Cable Support Assembly
						59		59	59	L.F. 842 Loop Detector Pavement Cutting
						138		138	138	L.F. 842 Loop Detector Wire
			1					1	1	Each 842 Mast Arm Signal Support - .3125" x 12.0" Dia. x 22' With Mast Arm .250" x 9.0" Dia. x 40'-0" Lg.
			1					1	1	Each 842 2 Mast Arm Signal Support - .3125" x 12.0" Dia. x 22' With Mast Arms .250" x 9.0" Dia. x 33'-0" And .250" x 9.0" Dia. x 32' Lg.
				1				1	1	Each 842 Combination Luminaire & Mast Arm Signal Support - .3125" x 15.0" x 35"-6" Pole With .250" x 9.0" x 40'-0" Lg. Mast Arm
				1				1	1	Each 842 2 Mast Arm Signal Support - .3125" x 12.0" dia x 22' Pole With .250" x 9.0" dia. x 32'-0" Lg. & .1793" x 8.0" dia. x 28'-0" Lg. Arms
					1			1	1	Each 842 2 Mast Arm Signal Support - .3125" x 12.0" dia. x 22' With Mast Arms .250" x 9.0" dia. x 33'-0" And .1793" x 8.0" dia. x 30'-0" Lg.
					1			1	1	Each 842 Mast Arm Signal Support - .3125" x 12.0" dia. x 21' With Mast Arm .250" x 9.0" dia. x 40'-0" Lg.
			390	523	472			13.85	13.85	C.Y. 842 Concrete For Anchor Base Foundation
				1.08				1.08	1.08	C.Y. 843 Concrete For Controller Cabinet Foundation - Type 1, As Per Plan

CALC. BY M.C.M. DATE 2-18-76  
 CNTRL. BY AGF DATE 3-10-76

PHWA REGION	STATE	PROJECT
5	OHIO	

238  
317

# OVERHEAD SIGNS SUB-SUMMARY

CUYAHOGA COUNTY  
 CUY-480-6.78

Support No.	Station	844										5625		844		Support No.	Remarks				
		No 765 Des. B Mod 79'-0" Span (10)	No 765 Des. B Mod 91'-0" Span (12)	No 765 Des. B Mod 96'-6" Span (4) (9)	No 12.30 Des. 2 Mod. Comb Sign & Luminaire 35'-6" Pole (5) (5)	No 12.30 Des. 4 Mod 23'-0" Pole (6) (8)	No 12.30 Des. 4 Mod 25'-0" Pole (17)	No 12.30 Des. 5 Mod 26'-0" Pole (7) (11) (16)	No 1824 Mod. Structure Mounted Support As Per Plan (13)	Concrete For Anchor Base Foundation	Signs Erected Extrusheet	Mercury Vapor Luminaire With 175 Watt Lamp	Mercury Vapor Luminaire With 250 Watt Lamp	Ballasts Type CMRI-175-480 Volt	Ballasts Type CMRI-250-480 Volt			Disconnect Switch Type "X" Enclosure	Disconnect Switch Enclosure Mounting Brackets	Ground Rod	Signs Wired
		Ea.	Ea.	Ea.	Ea.	Ea.	Ea.	Ea.	Ea.	Cu. Yd.	Sq. Ft.	Ea.	Ea.	Ea.	Ea.	Ea.	Ea.	Ea.	Ea.	Ea.	
4	472+00 I-480 E.B.			1						12.50	590.5	4	2	4	2	1		1	3	1	4
9	478+50 I-480 W.B.			1						12.68	555.0	6	2	6	2	1		1	3	1	9
10	493+00 I-480 E.B.	1								12.50	396.5	2	2	2	2	1		1	2	1	10
11	425+00 I-480 W.B.							1		2.95	111.5	2		2		1		1	1	1	11
12	427+10 I-480 E.B.		1							12.50	362.5	4		4		1		1	2	1	12
13	2448 Reloc. Rocky River Dr.								1		140.0	2		2		1	2		1	1	13 Structure Mounted
16	448+00 Ramp B-2							1		3.14	111.5	2		2		1		1	1	1	16
8	13+00 Reloc. Grayton Rd. N.B.						1			3.01	72.0	2		2		1		1	1	1	8
7	17+75 Reloc. Grayton Rd. S.B.							1		3.01	181.5	2		2		1		1	2	1	7 Back to Back
15	24+30 Reloc. Grayton Rd. N.B.				1					3.01	56.0	1		1		1		1	1	1	15
17	25+00 Reloc. Grayton Rd. S.B.							1		3.01	88.5	1		1		1		1	1	1	17
5	32+50 Reloc. Grayton Rd. S.B.					1				3.01	112.0	2		2		1		1	2	1	5 Back to Back
6	39+90 Reloc. Grayton Rd. S.B.						1			3.01	72.0	2		2		1		1	1	1	6
<b>Totals</b>		1	1	2	2	2	1	3	1	74.33	2849.0	32	6	32	6	13	2	12	21	13	

# GROUND MOUNTED SIGNS SUB-SUMMARY

CALC. BY M.C.M. DATE 2-25-76  
 CHKD. BY DGF DATE 3-12-76

FHWA REGION	STATE	PROJECT
5	OHIO	

239  
317

CUYAHOGA COUNTY  
 CUY-480-6.78

Stations	Distance Rt. or Lt. of $\frac{1}{2}$ or $\frac{3}{4}$ of Survey to $\frac{1}{2}$ Post or $\frac{1}{4}$ Nearest Post of the Sign	Type of Signs	Number of Supports	844						Structural Support 54x7 Beam Lin. Ft.	Structure Support Beam Type W10x21 Lin. Ft.	Concrete For Fin. bedded Foundations Cu. Yd.	Breakaway Beam Connection Ea.	Remarks
				Signs Erected Flat sheet	Signs Erected Extrusheet	Ground Mounted Support #3 Post Steel	Ground Mounted Support #4 Post Steel	Ground Mounted Support #6 Post Steel						
				Ea.	Sq. Ft.	Sq. Ft.	Lin. Ft.	Lin. Ft.	Lin. Ft.					
470+50 I-480 W.B.	78.58' Lt.	W-49R-48	2	16.0			28							
481+25 " E.B.	78.58' Rt.	W-49R-48	2	16.0			29							
481+50 Ramp G-1	25.5' Lt.	R-41A-36	2	6.0		26								
481+50 Ramp G-1	11.58' Rt.	W-47-48, R-41A-36 (Back to Back Signs)	2	22.0			29							
478+50 Ramp G-3	See Remarks	W-97-48	2	20.0										Affix to Rt. End Frame of O.H. Sign (3)
470+75 Ramp G-3	18.0' Lt.	R-41A-36	2	6.0		28								
485+90 Ramp G-1	18.0' Rt.	R-41A-36	2	6.0		26								
487+85 Ramp G-1	29.0' Rt.	R-41B-30	2	6.25		28								
478+00 Ramp G-1	12.42' Rt.	D-4-3(11'x4'), M-8-24, M-2-24-3, M-24-21	2	9.49	44.0				35	0.66	2			
471+00 Ramp G-3	19.98' Lt.	D-4-8(9'x3')	2		27.0			29		0.54	2			
473+06 Ramp G-4	20.5' Lt.	R-37R-24	1	5.0		13								
468+66 Ramp G-3	24.0' Lt.	R-41B-30	2	6.25		28								
494+00 I-480 W.B.	75.75' Lt.	R-7B-48	2		32.0			34		0.54	2			
438+10 Ramp B-1	15.58' Rt.	W-2-48, W-143-36	2	25.0			34							
441+80 I-480 W.B.	53.0' Lt.	W-49R-48	2	16.0			28							
473+50 Ramp G-3	11.5' Lt./27.5' Rt.	R-41A-36, R-41A-36	4	12.0		52								
480+00 Ramp G-2	20.5' Rt.	R-37R-24	1	5.0		13								
10+75 Rocky River Drive	31.25' Lt.	1M-8-24, M-5-24-3, 1M-19-21	1	9.18			14							
282+80 Brookpark Road	21.00' Rt. (E)	1M-8-24, M-5-24-3, 1M-26-21	1	9.18			14							
17+01 Reloc. Grayton Rd. (E Sign)	50.0' Rt.	W-30-48	2	8.0			26							
31+78 " " " " (E Sign)	50.0' Rt.	W-30-48	2	8.0			26							
21+00 Brookpark Road	24.00' Rt.	1M-8-24, M-5-24-3, 1M-26-21	1	9.18			14							
30+00 " " " "	29.00' Rt.	M-45-42 (3'-6" x 5')	2		17.5		32							
32+00 " " " "	E	R-38R-24	1	5.0		13								
38+07 " " " " (E SIGN)	43.00' Rt.	M-8-24, M-2-24-3, M-24-21, M-2-24-2, M-25-21, D-4-2 (7'x4')	2	15.36	28.0			26		0.54	2			
38+72 " " " "	4.00' Lt.	R-37R-24	1	5.0		13								
38+80 " " " "	54.00' Lt.	M-45-42, M-45-42 (3'-6" x 5') (Back to Back Signs)	1	35.0			32							
54+50 " " " "	27.00' Lt.	M-45-42 (3'-6" x 5')	2		17.5		32							
40+90 " " " "	E	R-38R-24	1	5.0		13								
10+60 Reloc. Grayton Road	6.00' Rt.	R-37R-24	1	5.0		13								
14+50 " " " "	42.00' Lt.	M-8-24, M-2-24-3, M-21-21, M-17-24, M-2-24-2	2	15.36			28							
35+66 " " " "	E	R-37R-24	1	5.0		13								
35+90 " " " "	56.00' Lt.	R-1-30	1	6.25		13								
36+57 " " " "	E	R-37R-24	1	5.0		13								
37+00 " " " "	35.00' Rt.	W-60-36	1	9.0			15							
40+25 " " " "	E	R-38R-24	1	5.0		13								
40+00 Exist. Grayton Road	18.50' Lt.	1M-17-21, M-5-24-3	1	7.18		14								
43+50 " " " "	19.00' Lt.	W-85-36	1	9.0			15							
1+05 " " " "	14.00' Rt.	W-48-30	1	6.25			14							
38+20 Brookpark Road	See Remarks	Special (24"x36")	SEE REMARKS	6.0										Attach to Signal Mast Arm (Shi.#252)
17+20 Reloc. Grayton Rd.	See Remarks	Special (24"x36")	SEE REMARKS	6.0										Attach to Signal Mast Arm (Shi.#252)
<b>Totals</b>				390.93	166	330	410		89	35	2.28	8		

# TRAFFIC CONTROL SUB-SUMMARY

621-PAVEMENT MARKING			★ Side	4" Yellow Edge Line	4" White Edge Line	4" Lane Line	6" Lane Line	6" Double Yellow Lines	4" White Dotted Line	8" Chan'g. Line	24" Stop Line	Curb Mark'g.	Island Mark'g.	24" Broad Transverse Striping	Word ONLY on Pav'm't	Lane Arrows
Roadway	Station to Station			L.F.	L.F.	L.F.	L.F.	L.F.	L.F.	L.F.	L.F.					
I-480 E.B.	441+34	457+92	Rt.	1658	1658		4974									
I-480 E.B.	457+92	473+44	Rt.	1552	1552		4656									
" "	468+94	471+44	"			250										
" "	471+44	473+44	"							400				220		
" "	473+44	484+25	"	1081	1081		3243									
" "	484+25	486+65	"		240					240						
" "	486+65	488+65	"		200	200										
" "	484+25	495+02 *	"	1077	1077		3231									
" "	*420+30	422+57	"	227	227		681									
" "	422+57	430+16	"	759	759		1518			1518						
" "	430+16	441+22	"	1106	1106		1106									
" "	441+22	447+91	"	669	669		669									
I-480 W.B.	441+34	457+92	Lt.	1658	1658		4974									
I-480 W.B.	457+92	467+25	Lt.	933	933		2799									
" "	463+25	465+50	"		225	225										
" "	465+50	467+25	"		175					175						
" "	467+25	477+22	"	997	997		2991									
" "	477+22	478+96	"							350				212		
" "	478+96	481+60	"			264										
" "	477+22	495+02 *	"	1780	1780		5340									
" "	*420+30	431+50	"	1120	1120		3360									
" "	431+50	435+00	"	350	700	350	700									
" "	435+00	439+50	"	450	900		900			450						
" "	439+50	448+07	"	857	857		857									
Ramp G-1	487+40	Rt. Turn							144							
" "	487+86	Lt. Turn							124							
" "	473+37	485+65	Rt/Lt.	1228	1228											
" "	485+65	487+95	"/n	230	142	120				225	42					2
" G-2	467+25	470+50	"/n	225	325							325				
" "	470+50	480+16	"/n	966	882											
" G-3	468+56	470+94	"/n	238	167	88				195	42		36			2
" "	470+94	477+25	"/n	631	631											
" G-4	472+90	473+75	Lt.	85									36			
" "	473+75	484+25	Rt/Lt.	950	1050							200				
" G-3	469+00	Rt. Turn							135							
" "	468+58	Lt. Turn							125							
Ramp B-1	430+23	477+00	Rt/Lt.	4677	4677		4677									
" B-2	439+50	454+17	"/n	1467	1467		1467									
" "	439+50	442+68	Rt.									318				
Relocated Grayton Rd.	10+58	Rt. Turn							90							
" "	10+58	Lt. Turn							112							
" "	10+58	16+80	Rt/Lt.				1244									
" "	10+58	12+38	"/n							200	54		60		4	9
" "	15+30	16+80	"/n							150	40		60		1	2
" "	17+50	31+60	"/n				2820						160			
" "	29+60	31+60	"/n							200	40		60		2	3
" "	32+25	41+95	"/n				1940				50		340			
" "	40+31	41+95	£					328								
Ex'ist. Grayton Rd.	35+38	39+06	£					736								
Grayton Rd.	29+67		Rt.								16					
Brookpark Rd.	28+61	37+70	Rt/Lt.				1818						14940			
" "	28+61	31+85	£					648								
" "	34+20	37+70	Rt.				150			200	40				2	3
" "	38+60	44+31	Lt/Rt.				1142						315/120			
" "	41+78	44+31	£					506								
Reloc. Rocky River Dr.	0+32	12+96	£					2,528								
" "	0+32	12+96	Lt.				1124			140	44				2	4
" "	0+32	12+96	Rt.				1264									
Totals				26,971	24,483	1,497	59,645	4,746	730	4,443	420	843	1,367	432	11	25

★ All upstation regardless of traffic flow  
 \* Station equation

620-DELINEATORS						
Location	Station to Station	★ Side	Interval	TYPE C Post	TYPE D Bracket	TYPE D Post
I-480	465+50	470+50	Rt.	100'	6	
Ramp G-1	471+50	473+60	"	70'	4	
" "	473+60	479+90	Lt.	70'		10
" "	479+90	482+90	Rt.	100'	4	
" "	483+50	485+60	"	30'	8	
" "	486+20	486+80	"	60'	2	
I-480	467+25	468+25	Lt.	100'	2	
Ramp G-2	469+25	470+05	"	80'	2	
" "	470+05	474+55	Rt.	50'		10
" "	474+55	475+35	Lt.	80'	2	
" "	476+35	476+95	"	60'	2	
" "	476+95	477+55	"	30'	2	
" "	478+15	479+15	"	100'	2	
Ramp G-3	469+55	470+55	Lt.	100'	2	
" "	471+15	472+35	"	30'	5	
" "	472+35	475+05	Rt.	30'		10
" "	475+55	477+05	"	50'		4
" "	477+05	480+25	Lt.	80'	5	
" "	481+25	485+25	"	100'	5	
Ramp G-4	474+45	478+45	Rt.	100'	5	
" "	478+45	479+05	"	60'	1	
" "	479+05	482+65	Lt.	30'		13
" "	482+65	483+25	Rt.	60'	2	
" "	483+25	484+25	"	100'	1	
Ramp B-1	430+00	440+00	Rt.	100'	11	
" "	440+80	443+20	"	80'	4	
" "	443+90	446+70	"	70'	5	
Ramp B-2	439+80	441+40	Lt.	80'	3	
" "	441+40	447+00	Rt.	80'		2
" "	447+00	453+00	Lt.	100'	7	
" "	453+00	453+80	"	80'	1	
Totals					93	2

ITEM 621 Pavement Marking  
 4" Edge Line (Yellow)  $26,971 \div 5,280 = 5.10$  Miles  
 4" Edge Line (White)  $24,483 \div 5,280 = 4.64$  Miles  
 4" Lane Line  $1,497 \div 5,280 = 0.28$  Miles  
 6" Lane Line  $49,697 \div 5,280 = 9.40$  Miles  
 6" Double Yellow Lines  $4,746 \div 5,280 = 0.90$  Miles

# TRAFFIC CONTROL NOTES

CALC. BY AGF DATE 4/5/76  
 CHKD. BY M.C.M. DATE 4-7-76

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

241  
317

CUYAHOGA COUNTY  
 CUY-480-678

## 844 SIGNS FURNISHED BY THE STATE

THE CONTRACTOR SHALL SUBMIT, IN TRIPLICATE, A SCHEDULE FOR SIGN ERECTION TO THE ENGINEER AT LEAST 120 CALENDAR DAYS PRIOR TO THE START OF ANY SCHEDULED ERECTION WORK. THE SCHEDULE SHALL INCLUDE PROPOSED DATES, SIGN NUMBERS AND DELIVERY POINT. THE ENGINEER WILL FURNISH COPIES OF THE SCHEDULE TO THE DISTRICT TRAFFIC ENGINEER AND TO THE ENGINEER OF DESIGN SERVICES, 25 SOUTH FRONT STREET, COLUMBUS, OHIO 43215.

## 844 PADLOCKS AND KEYS

PADLOCKS FURNISHED SHALL BE EITHER BRASS OR BRONZE PADLOCKS EQUAL TO MASTER NO. 4 BKA OR WILSON BOHANNAN 660 AND SHALL BE KEYED IN ACCORDANCE WITH 844.10.

PAYMENT WILL BE INCLUDED IN THE BID FOR THE ITEM(S) BEING LOCKED.

## 844 MILE MARKER LOCATIONS

THE PLAN LOCATIONS OF MILE MARKERS ARE APPROXIMATE. THE CONTRACTOR SHALL NOTIFY THE ENGINEER 30 DAYS IN ADVANCE OF THE PLANNED DATE OF INSTALLATION. THE ENGINEER SHALL NOTIFY THE BUREAU OF TECHNICAL SERVICES WHICH WILL LOCATE THE MILE MARKER POSITIONS BY PAINT MARKS ON THE EDGE OF PAVEMENT. MARKS WILL BE PROVIDED ON BOTH SIDES OF DIVIDED HIGHWAYS. DELINEATORS WITHIN 50 FT. OF MILE MARKER SHALL BE OMITTED.

## 844 COMBINATION OVERHEAD SIGN SUPPORT AND LIGHT POLE, BY TYPE

THIS WORK SHALL CONSIST OF THE FURNISHING AND INSTALLATION OF THE COMBINATION OVERHEAD SIGN SUPPORT AND LIGHT POLE AS DETAILED ON SHEET(S) 250 AND TC-22.10.

THE SUPPORT SHALL ALSO CONFORM TO ALL APPLICABLE REQUIREMENTS OF 844

PAYMENT FOR SIGN(S), SIGN SUPPORT FOUNDATION, ROADWAY LIGHTING ITEMS AND BRACKET ARM IS COVERED UNDER SEPARATE PAY ITEM.

PAYMENT FOR THIS WORK WILL BE MADE AT THE CONTRACT PRICE BID PER EACH, 844 COMBINATION OVERHEAD SIGN SUPPORT AND LIGHT POLE, BY TYPE, INSTALLED IN PLACE AND ACCEPTED, WHICH PRICE WILL BE FULL COMPENSATION FOR FURNISHING ALL ANCHOR BOLTS, 2" AND 3/4" EMT CONDUIT ELLS AND FOR FURNISHING AND INSTALLING ALL SIGN BRACKET, SIGN LIGHTING SUPPORT ARMS, SWITCH ENCLOSURE MOUNTING BRACKET(S), AND ALL COMPONENT PARTS NECESSARY TO MAKE A COMPLETE WORKABLE INSTALLATION.

## 844 ALTERNATE DESIGNS FOR SIGN SUPPORTS

IF THE CONTRACTOR DESIRES TO FURNISH ALTERNATE DESIGNS OR MATERIALS FOR SIGN SUPPORTS, THE ALTERNATE DESIGNS SHALL BE SUBMITTED TO THE STATE AT LEAST 21 DAYS PRIOR TO OPENING OF BIDS. THE BIDDER WILL BE NOTIFIED AS TO ACCEPTANCE OR REJECTION OF ALTERNATE DESIGN AT LEAST 7 DAYS BEFORE BIDS ARE TO BE OPENED.

SUBMISSIONS SHALL BE MADE TO OHIO DEPARTMENT OF TRANSPORTATION, BUREAU OF DESIGN SERVICES, 25 SOUTH FRONT STREET, COLUMBUS, OHIO 43215.

## 844 INTERIM COVERING FOR SIGNS

THIS ITEM SHALL CONSIST OF FURNISHING AND INSTALLING AN INTERIM COVER AND ATTACHMENT MATERIALS FOR SIGNS SO INDICATED IN THE PLANS OR AS DIRECTED BY THE ENGINEER. THIS ITEM SHALL ALSO INCLUDE THE SUBSEQUENT REMOVAL OF COVERS WHEN DIRECTED BY THE ENGINEER.

MATERIAL FOR COVERING SHALL BE PLASTIC COATED BURLAP BLANKETS IN CONFORMANCE WITH 705.09.

THE ENGINEER SHALL APPROVE THE METHOD PROPOSED FOR ATTACHING INTERIM COVERS TO SIGNS PRIOR TO INSTALLATION OF COVERS.

WORK SHALL INCLUDE ALL NECESSARY MATERIAL, HARDWARE, LABOR, AND EQUIPMENT REQUIRED TO PERFORM THE REQUIRED ITEM OF WORK.

BASIS OF PAYMENT SHALL BE INTERIM COVERING FOR SIGNS, PER SQUARE FOOT.

IN ADDITION TO THE -0- SQ. FT. REFERRED TO IN THE PLANS, AN ADDITIONAL QUANTITY OF 300 SQ. FT. FOR ITEM 844 INTERIM COVERING FOR SIGNS, HAS BEEN INCLUDED TO COVER SIGNS AS DIRECTED BY THE ENGINEER.

## 844 DISCONNECT SWITCH ENCLOSURE MOUNTING BRACKETS

THIS WORK SHALL INCLUDE THE FABRICATING, FURNISHING AND INSTALLATION OF DISCONNECT SWITCH ENCLOSURE MOUNTING BRACKETS WHEN ENCLOSURES ARE MOUNTED ON EXISTING OVERHEAD SIGN SUPPORTS (NOT PART OF THIS PROJECT) OR ATTACHED TO CONCRETE BRIDGE COLUMNS OR ABUTMENTS.

WORK SHALL CONSIST OF FIELD DRILLING, ATTACHMENT AND HARDWARE

BASIS OF PAYMENT WILL BE AT THE CONTRACT BID PRICE PER EACH, 844 DISCONNECT SWITCH ENCLOSURE MOUNTING BRACKET WHICH PRICE WILL BE FULL COMPENSATION FOR FURNISHING, FABRICATION AND INSTALLATION INCLUDING ALL LABOR, MATERIAL AND INCIDENTALS NECESSARY TO COMPLETE THIS WORK.

## 614 TEMPORARY SIGNS AND SUPPORTS FOR MAINTAINING TRAFFIC

THE FOLLOWING REQUIREMENTS SHALL BE ADHERED TO REGARDING MATERIALS AND PLACEMENT OF SIGNS TO BE FURNISHED, INSTALLED MAINTAINED, AND SUBSEQUENTLY REMOVED BY THE CONTRACTOR IN ACCORDANCE WITH THE PLANS.

SIGNS SHALL BE ALUMINUM SHEET OR PLYWOOD TYPE WITH REFLECTIVE SHEETING IN ACCORDANCE WITH SUPPLEMENTAL SPECIFICATION

SIGN MATERIAL SHALL CONFORM WITH THE FOLLOWING SCHEDULE:

INDIVIDUAL SIGN AREA	MATERIAL
LESS THAN 10 SQ. FT.	0.060 ALUM. SHEET
10-16 SQ. FT.	0.080 ALUM. SHEET
16-20 SQ. FT.	0.100 ALUM. SHEET
OVER 20 SQ. FT.	3/4 INCH PLYWOOD

THE CONTRACTOR SHALL HAVE THE OPTION OF FURNISHING EXTRUSION SHEET ALUMINUM PANELS AS A SUBSTITUTE FOR PLYWOOD.

ALL SUPPORTS FOR GROUND MOUNTED SIGNS NOT ERECTED ON DRUMS OR OVERPASS MOUNTED SHALL BE STEEL CHANNEL TYPE, DRIVEN TO A MINIMUM DEPTH OF 5 FEET. SIGNS SHALL HAVE 1, 2, OR 3 SEPARATE SUPPORTS IN ACCORDANCE WITH THE FOLLOWING SCHEDULE:

TOTAL SIGN ASSEMBLY AREA (SQ. FT.)	SUPPORT TYPE		
	SIGN LENGTH (HORIZ.)		
	4 FT. OR LESS	4-10 FT.	11 FT. OR MORE
10 OR LESS	1-3 LB. POST	2-3 LB. POST	-
10-20	1-4 LB. BEAM	2-4 LB. POST	-

SUPPORTS FOR GROUND MOUNTED SIGNS GREATER THAN 20 SQ. FT. IN AREA SHALL BE AS DIRECTED BY THE ENGINEER.

MOUNTING HEIGHT AND LATERAL PLACEMENT OF TEMPORARY SIGNS SHALL BE IN ACCORDANCE WITH FIGURES S-2 AND S-3 (PAGES 2-9 AND 2-10) OF THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.

STANDARDS AND SIGN LAYOUTS FOR TEMPORARY SIGNS ARE AVAILABLE FROM THE BUREAU OF DESIGN SERVICES, 25 SOUTH FRONT STREET, COLUMBUS, OHIO 43215.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVAL OF ALL TEMPORARY SIGNS AND SUPPORTS WHEN NO LONGER NEEDED, AND HE SHALL RESTORE EACH SIGN SITE TO ITS ORIGINAL CONDITION.

ALL SIGNS AND SUPPORTS FURNISHED, ERECTED, MAINTAINED, AND REMOVED BY THE CONTRACTOR SHALL BECOME THE PROPERTY OF THE CONTRACTOR.

BASIS OF PAYMENT FOR THE ABOVE DESCRIBED WORK SHALL BE INCLUDED IN THE LUMP SUM ITEM OF WORK FOR ITEM 614, MAINTAINING TRAFFIC.

## 844 GLARE SHIELDS

SIGNS SHALL HAVE SIX INCH HIGH GLARE SHIELDS WHEN SIGN LIGHTING IS INSTALLED AS PER TC-31.21



# TRAFFIC SIGNAL NOTES

PRWA REGION	STATE	PROJECT	
5	OHIO		

242  
317

CUYAHOGA COUNTY  
CUY-480-6.78

## 843 CONTROLLER, AS PER PLAN

PRETIMED, ELECTROMECHANICAL CONTROLLERS FOR USE WITHIN THE CITY OF CLEVELAND SHALL MEET THE REQUIREMENTS OF SUPPLEMENTAL SPECIFICATION 843 AND BE ONE OF THE FOLLOWING TYPES:  
CROUSE-HINDS CO. TYPE PCE-3  
EAGLE SIGNAL CORP. TYPE EF-20  
OR EQUAL

## 843 COORDINATOR, AS PER PLAN

ELECTROMECHANICAL COORDINATOR FOR USE WITHIN THE CITY OF CLEVELAND SHALL MEET THE REQUIREMENTS OF SUPPLEMENTAL SPECIFICATION 843 AND BE ONE OF THE FOLLOWING TYPES:  
CROUSE-HINDS CO. TYPE PCD-57M  
EAGLE SIGNAL CORP. TYPE ET-225  
OR EQUAL

## 625 PULL BOX, WITH CONCRETE COVER, AS PER PLAN

18 INCH OR 24 INCH DIAMETER PULL BOX, S 713.09 WITH CONCRETE COVER, SHALL BE PROVIDED WHERE SHOWN ON THE PLANS. FOR DETAILS, SEE SHEET NO. 233.

## 843 FOUNDATIONS

GROUND MOUNTED CONTROLLER FOUNDATION AS SHOWN ON STANDARD CONSTRUCTION DRAWING TC-83.20 SHALL BE MODIFIED TO INCLUDE AN ADDITIONAL 6" OF BASE HEIGHT. THE 12" DIMENSION FROM FINISH GRADE TO THE TOP OF FOUNDATION SHALL NOW READ 18".

## 843 CABINETS

IN ADDITION TO THE REQUIREMENTS LISTED IN 843.09-CABINETS, NO EQUIPMENT OR TERMINATIONS SHALL BE PLACED WITHIN THE BOTTOM 18" OF THE CABINET.

## 625 PLAN SPECIFICATION REFERENCES (S-625 & S-713)

REFERENCES TO ITEM 625 AND 713 IN THESE PLANS SHALL BE CONSIDERED TO READ AS RESPECTIVE REFERENCES TO ITEMS S625 AND S713.

## 842 SIGNAL POLES AND SIGNAL STRAIN POLES

WALL THICKNESS IN THIS PLAN ARE REFERRED TO BY GAUGE NUMBERS IN LIEU OF WALL THICKNESS IN INCHES. THE GAUGE NUMBERS SHOWN IN THIS PLAN SHALL BE INTERPRETED AS FOLLOWS.

GAUGE NO.	NOMINAL THICKNESS INCHES
11	.1196
7	.1793
3	.2391
0	.299

## 625 POWER SUPPLY FOR TRAFFIC SIGNALS

ELECTRIC POWER SHALL BE OBTAINED FROM THE CLEVELAND ELECTRIC ILLUMINATING COMPANY, CLEVELAND, OHIO AT THE LOCATION SHOWN ON THE PLANS. THE VOLTAGE SUPPLIED SHALL BE 480 VOLTS AND BE APPROPRIATELY REDUCED TO 120 VOLTS TO EACH CONTROLLER. DISTRIBUTION CABLE SHALL BE TAGGED 480 VOLTS AS PER 625.14. ALL NECESSARY WORK TO INSTALL A COMPLETE OPERATIVE SYSTEM WILL BE INCLUDED IN THE VARIOUS ELECTRICAL BID ITEMS IN THIS CONTRACT.

## 625 CONDUIT JACKED UNDER PAVEMENT, BY SIZE

THIS WORK SHALL CONSIST OF FURNISHING AND INSTALLING CONDUIT OF THE SIZE (S) INDICATED UNDER EXISTING PAVEMENT AND CONTIGUOUS SHOULDERS BY AN APPROVED METHOD SUCH AS DRILLING OR JACKING.

THE CONTRACTOR SHALL INSTALL THE CONDUIT WITH THE LEAST AMOUNT OF DISTURBANCE TO THE EXISTING PAVEMENT, SUBBASE, BERM PAVEMENT, OR SHOULDERS OF THE ROADWAY. ALL PUSH PITS OR ANY NECESSARY EXCAVATIONS SHALL BE BACKFILLED AND RESTORED IN ACCORDANCE WITH 603.09.

MEASUREMENT OF THE CONDUIT WILL BE THE ACTUAL LINEAR FEET INSTALLED UNDER PAVEMENT AND SHOULDERS, MEASURED IN PLACE, AS ACCEPTED BY THE ENGINEER.

THE CONTRACT UNIT PRICE BID PER LINEAR FOOT FOR 625 CONDUIT JACKED UNDER PAVEMENT, BY SIZE, WILL BE FULL COMPENSATION FOR CONDUIT, EXCAVATION, DRILLING OR JACKING, BACKFILLING, COMPACTION, RESTORATION, AND ALL LABOR, MATERIAL, EQUIPMENT AND INCIDENTALS NECESSARY TO COMPLETE THE WORK AS SPECIFIED.

## S625 PULL BOX, SINGLE, CONCRETE, AS PER PLAN

24 INCH X 12 INCH REINFORCED CONCRETE PULL BOXES SHALL BE PROVIDED WHERE SHOWN ON THE PLANS. THE CONSTRUCTION OF BOXES, DRAINS, REINFORCING, DUCT SLOTS, HANDLES, COVERS AND OPENINGS SHALL BE AS SHOWN IN THE PLANS. BOXES MAY BE PRECAST OR CAST-IN-PLACE. THE WALLS SHALL BE COMPOSED OF MONOLITHIC CONCRETE AS SHOWN. SEE PULL BOX DETAILS, SHEET NO. 233.

THE TOP OF THE BOX SHALL HAVE PROVISION FOR A FLUSH COVER AND THE INTERIOR SURFACES SHALL BE SMOOTH AND FREE FROM OBSTRUCTIONS AND ROUGH OR FLAKY AREAS. ALL ENTERING CONDUIT SLEEVES SHALL BE CAST OR GROUTED IN PLACE. CABLE DUCT HOLES NOT USED SHALL BE SEALED WITH GROUT OR MORTAR AS DIRECTED BY THE ENGINEER. THE BOTTOM OF THE BOX SHALL BE OPEN AND PLACED ON AN AGGREGATE DRAIN, IN ACCORDANCE WITH SECTION 605 FROM THE PULL BOX TO THE PIPE UNDERDRAIN OR SHOULDER.

REINFORCING STEEL SHALL BE NO. 4 BARS AS PER PLAN. BOXES SHALL BE CLASS "C" CONCRETE CONFORMING WITH SECTION 511.03 OF THE STANDARD SPECIFICATIONS, AND SHALL BE SEATED WITH LESS THAN 0.5 INCH TOTAL CLEARANCE EACH WAY.

PAYMENT FOR ITEM S625 PULL BOX, SINGLE, CONCRETE, AS PER PLAN, WILL BE MADE AT THE CONTRACT UNIT PRICE PER BOX, FURNISHED IN PLACE, WHICH PRICE SHALL BE FULL COMPENSATION FOR FURNISHING ALL REQUIRED MATERIALS, INCLUDING EXCAVATION, FORM, CONCRETE, REINFORCING STEEL, COVER, IMPRESSED "SIGNAL" ON COVER OF PULL BOXES, HANDLE, GROUTING CONDUITS, AGGREGATE DRAIN TO UNDERDRAIN OR SHOULDER, REMOVAL OF WASTE, AND ALL OTHER INCIDENTALS.

FED. RD. DIVISION	STATE	PROJECT
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MAINTENANCE OF NEW OR TEMPORARY TRAFFIC SIGNAL INSTALLATIONS

THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE MAINTENANCE OF EACH TRAFFIC SIGNAL HE HAS IN PART OR FULLY CONSTRUCTED UNTIL SUCH TIME AS THE TESTING REQUIREMENTS ARE SATISFIED, AND THE SIGNAL INSTALLATION IS COMPLETE AND ACCEPTED BY THE ENGINEER.

THE CONTRACTOR SHALL CORRECT AS QUICKLY AS POSSIBLE ALL OUTAGES OR MALFUNCTIONS. HE SHALL PROVIDE THE CITY AND THE ENGINEER SUCH ADDRESSES AND PHONE NUMBERS WHERE HIS MAINTENANCE FORCES ARE LOCATED. THE CONTRACTOR SHALL PROVIDE ONE OR MORE PERSONS TO RECEIVE ALL CALLS AND DISPATCH THE NECESSARY MAINTENANCE FORCES TO CORRECT OUTAGES. SUCH A PERSON OR PERSONS MAY BE USED TO PERFORM OTHER DUTIES AS LONG AS PROMPT ATTENTION IS GIVEN TO TROUBLE CALLS. ALL LAMP OUTAGES, CABLE OUTAGES, ELECTRICAL FAULTS, EQUIPMENT MALFUNCTIONS, AND MIS-ALIGNED SIGNAL HEADS SHALL BE CORRECTED TO THE SATISFACTION OF THE ENGINEER WITH THE SIGNAL BACK IN SERVICE WITHIN FOUR HOURS AFTER THE CONTRACTORS NOTIFICATION OF THE OUTAGE.

IN THE EVENT NEW SIGNALS ARE DAMAGED PRIOR TO ACCEPTANCE, ALL DAMAGED EQUIPMENT, EXCEPT POLES AND CONTROL EQUIPMENT, SHALL BE REPLACED BY THE CONTRACTOR TO THE SATISFACTION OF THE ENGINEER WITH THE SIGNAL BACK IN SERVICE WITHIN 8 HOURS AFTER THE CONTRACTORS NOTIFICATION OF THE OUTAGE.

ALL POLES AND CONTROL EQUIPMENT WHICH ARE DAMAGED AND WHICH MUST BE REPLACED SHALL BE REPLACED BY THE CONTRACTOR TO THE SATISFACTION OF THE ENGINEER WITH THE SIGNAL BACK IN SERVICE WITHIN 8 HOURS AFTER THE CONTRACTORS NOTIFICATION OF THE OUTAGE.

NONE OF THE ABOVE SHALL BE CONSTRUED AS COLLECTIVE OR CONSECUTIVE OUTAGE TIME PERIODS AT ANY ONE LOCATION. THAT IS WHERE MORE THAN ONE OUTAGE OCCURS AT ANY ONE LOCATION THEN THE ALLOTTED TIME LIMIT SHALL BE FOR THE WORST SINGLE OUTAGE.

WHERE OUTAGES ARE THE DIRECT RESULT OF A VEHICULAR ACCIDENT, THE RESPONSE OF THE CONTRACTOR SHALL BE AS OUTLINED ABOVE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COLLECTION OF COMPENSATION FOR THIS WORK FROM THOSE PARTIES RESPONSIBLE FOR THE OUTAGE.

WHERE THE CONTRACTOR HAS FAILED TO OR CANNOT RESPOND TO AN OUTAGE OR SIGNAL EQUIPMENT AT THOSE LOCATIONS WITHIN HIS RESPONSIBILITY, WITHIN PERIODS AS SPECIFIED ABOVE, THE ENGINEER MAY INVOLVE THE PROVISIONS OF SECTION 105.15 AND ANY SUBSEQUENT BILLINGS TO THE STATE FROM THE CITY OF CLEVELAND FOR POLICE SERVICES AND MAINTENANCE BY CITY OFRCES SHALL BE DEDUCTED FROM MONIES DUE OR TO BECOME DUE THE CONTRACTOR IN ACCORDANCE WITH PROVISIONS OF SECTION 105.15.

THE CONTRACTOR SHALL PROVIDE MAINTENANCE SERVICE IN ONE OR MORE OF THE FOLLOWING MANNERS:

1. 7:00 AM - 7:00 PM WITH THE CITY PROVIDING COVERAGE FROM 7:00 PM - 7:00 AM AT THE CONTRACTORS EXPENSE, AS PREVIOUSLY PROVIDED HEREIN.
2. 24-HOUR SERVICE BY THE CONTRACTOR.
3. COMPLETE CITY MAINTENANCE AT THE CONTRACTORS EXPESNE, AS PREVIOUSLY PROVIDED HEREIN.

THE CONTRACTOR SHALL INDICATE THE MANNER IN WHICH HE PROPOSES TO PROVIDE THE ABOVE SERVICE.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY OUTAGE TO ANY TRAFFIC SIGNAL COMPONENTS REQUIRED TO BE HANDLED DURING THE RELOCATION TO POLES AND REVISIONS TO THE SIGNAL SYSTEMS.

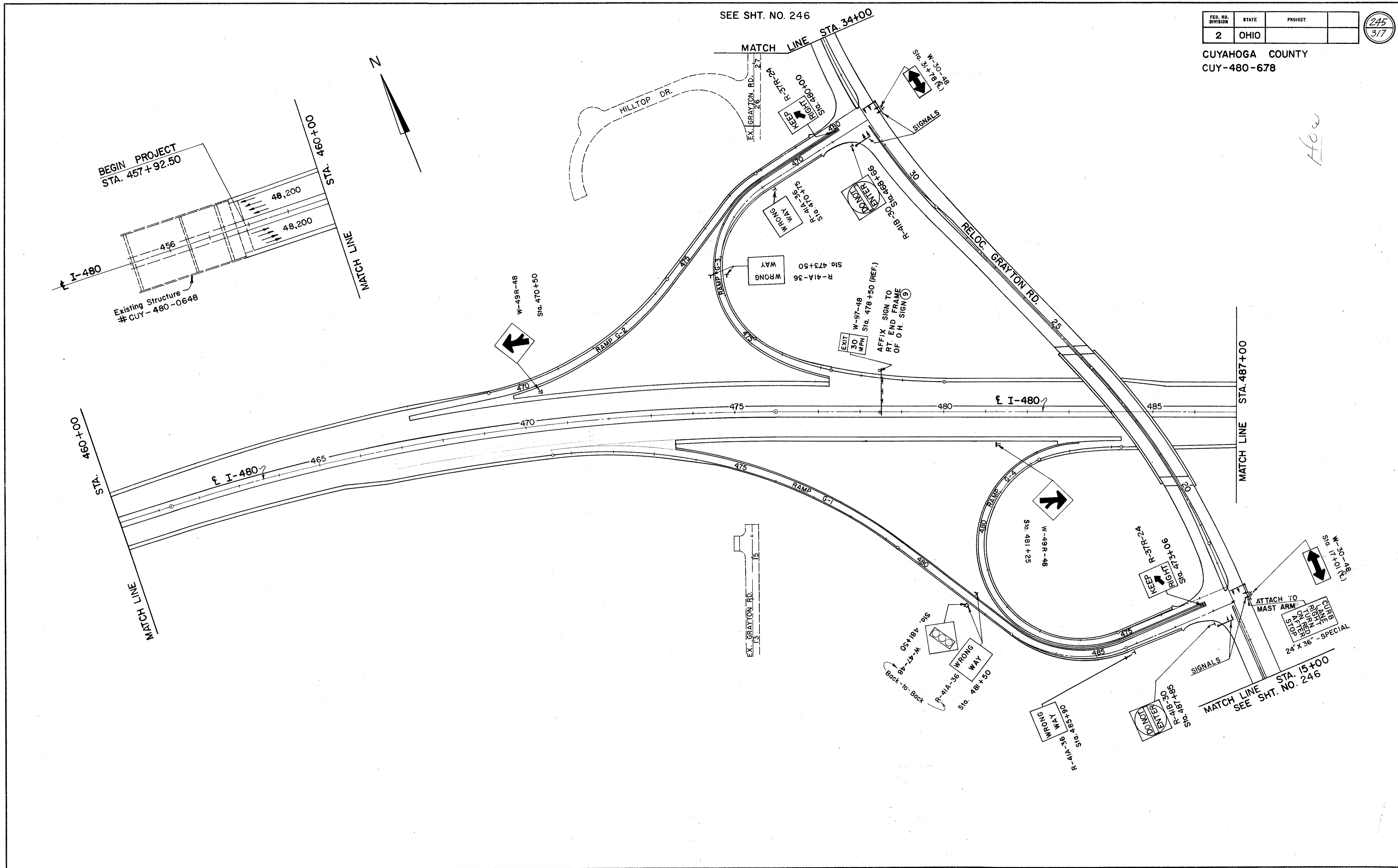
THIS ITEM SHALL BE CONSIDERED A SUBSIDIARY WORK ITEM AND THE COST THEREOF INCLUDED IN THE PRICE BID FOR THE RESPECTIVE TRAFFIC SIGNAL BID ITEMS.



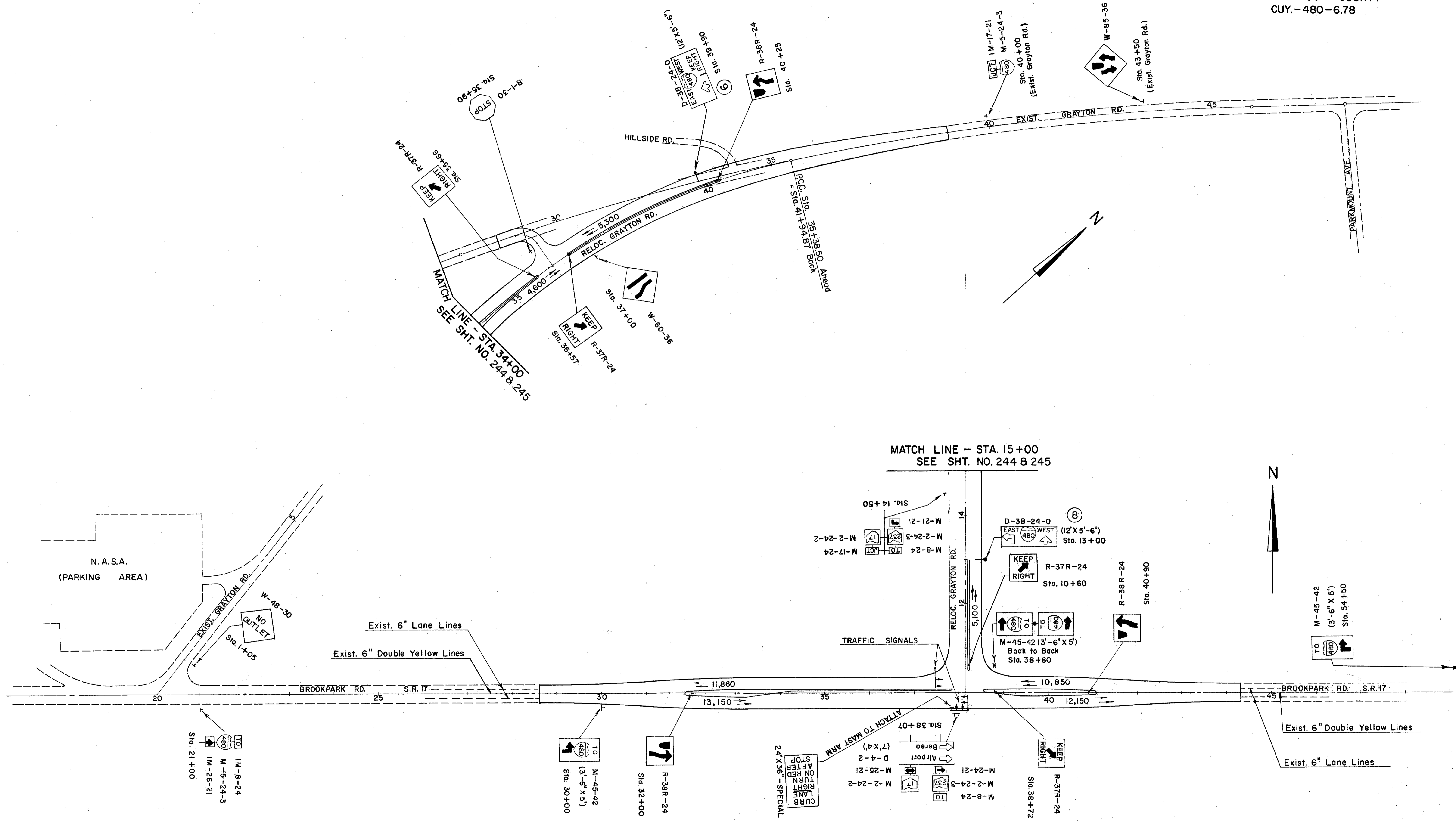
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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317

CUYAHOGA COUNTY  
CUY-480-678



CUYAHOGA COUNTY  
CUY.-480-6.78

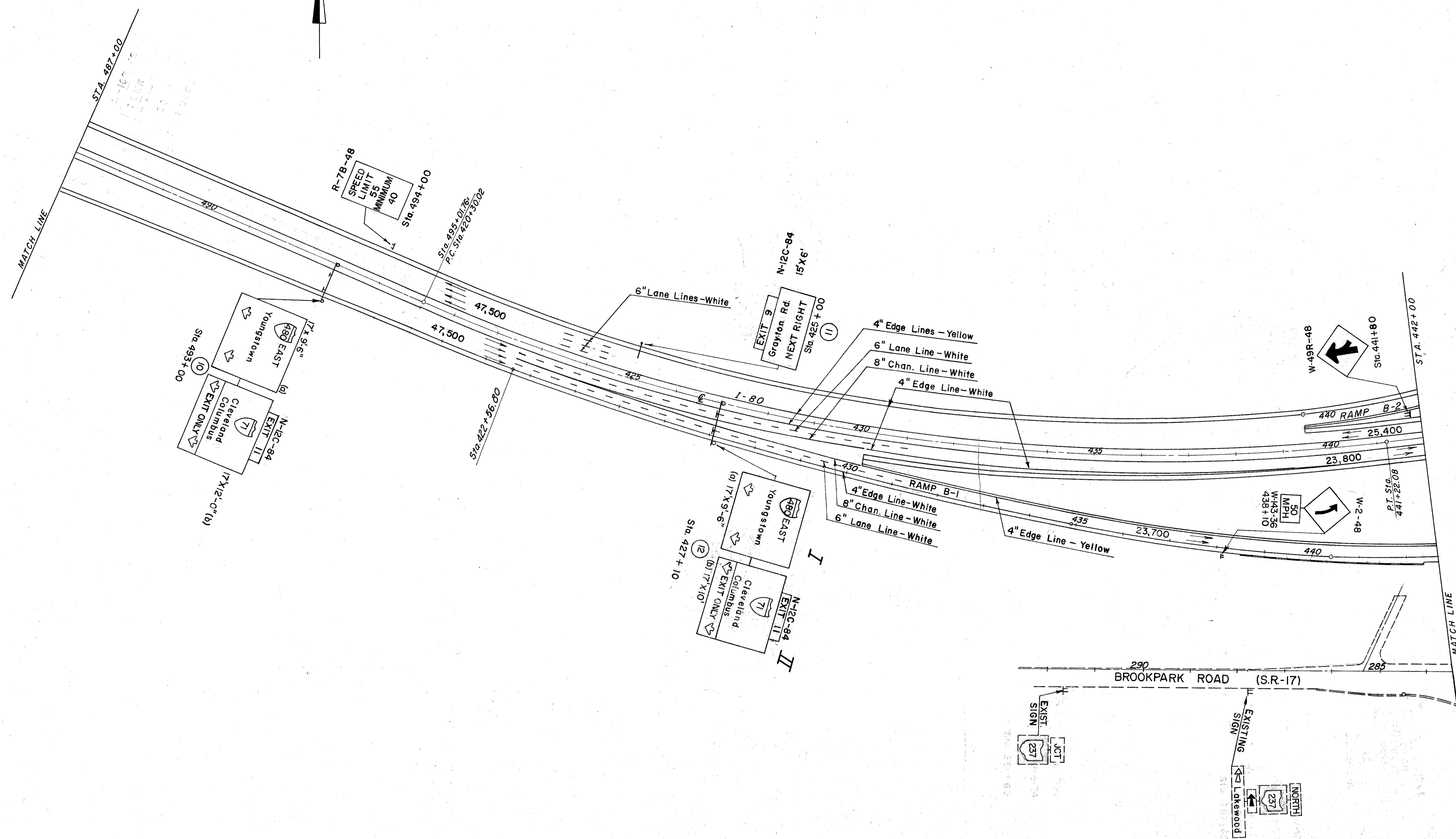


SIGNING PLAN

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

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3/7

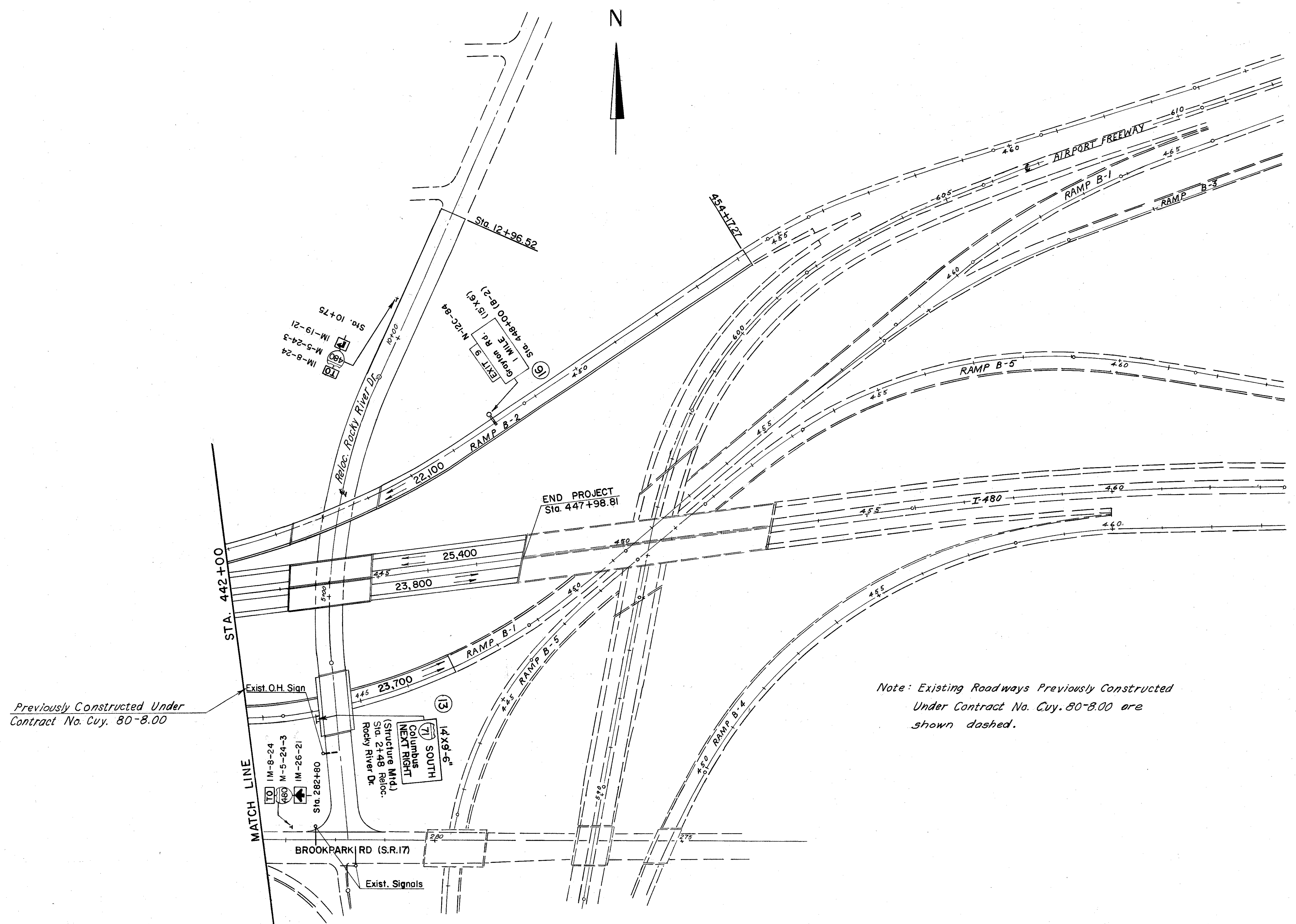
CUYAHOGA COUNTY  
CUY-80-6.78



FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

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317

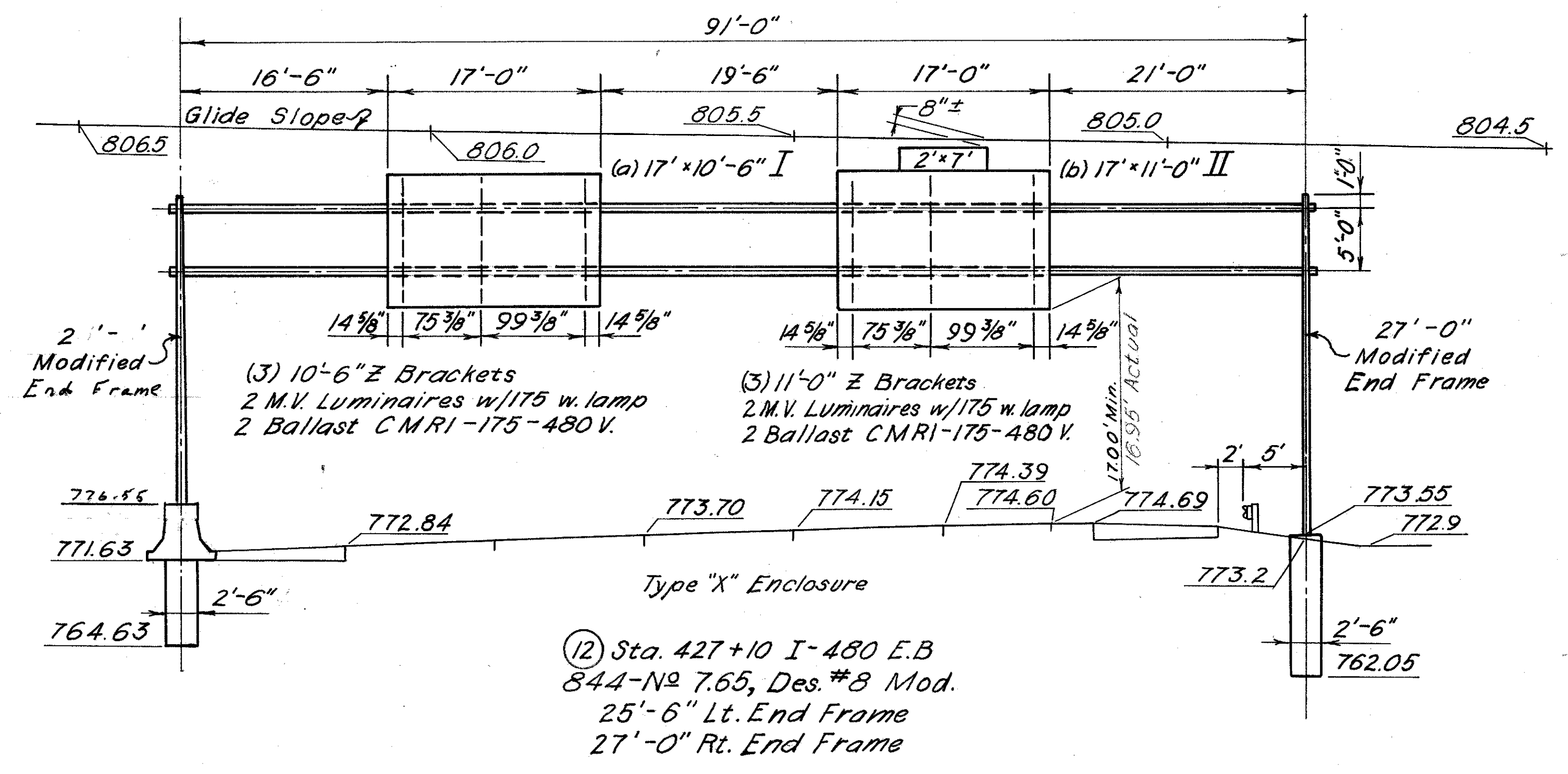
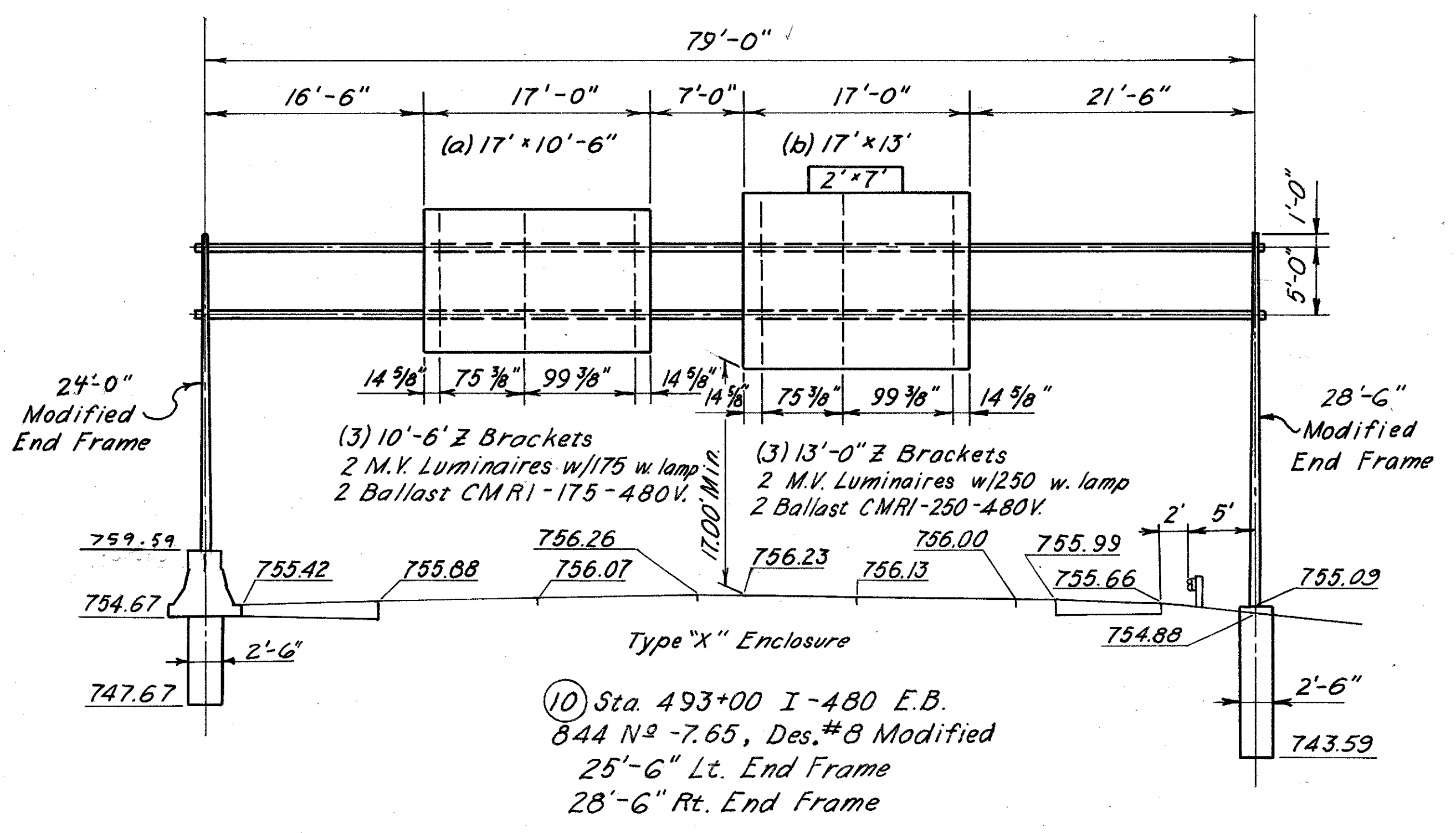
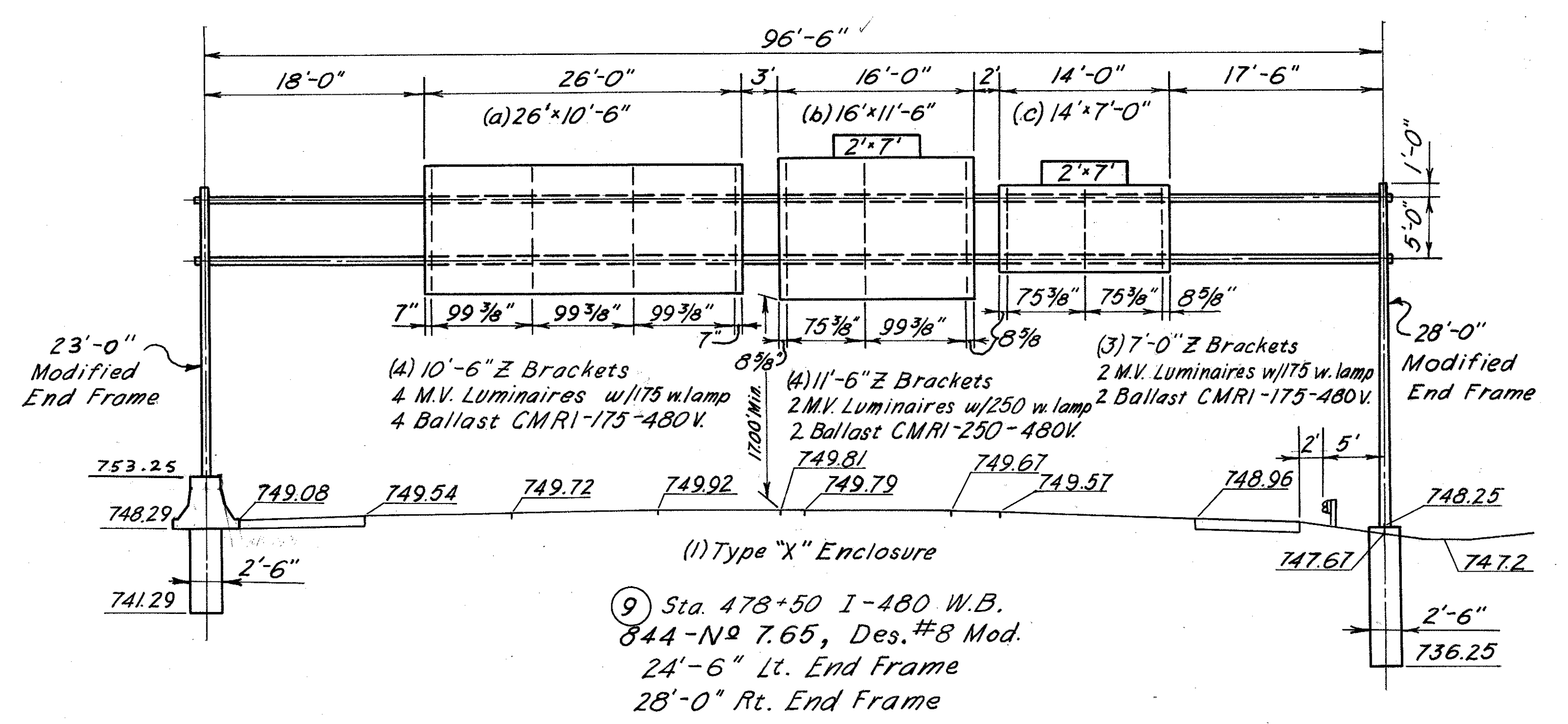
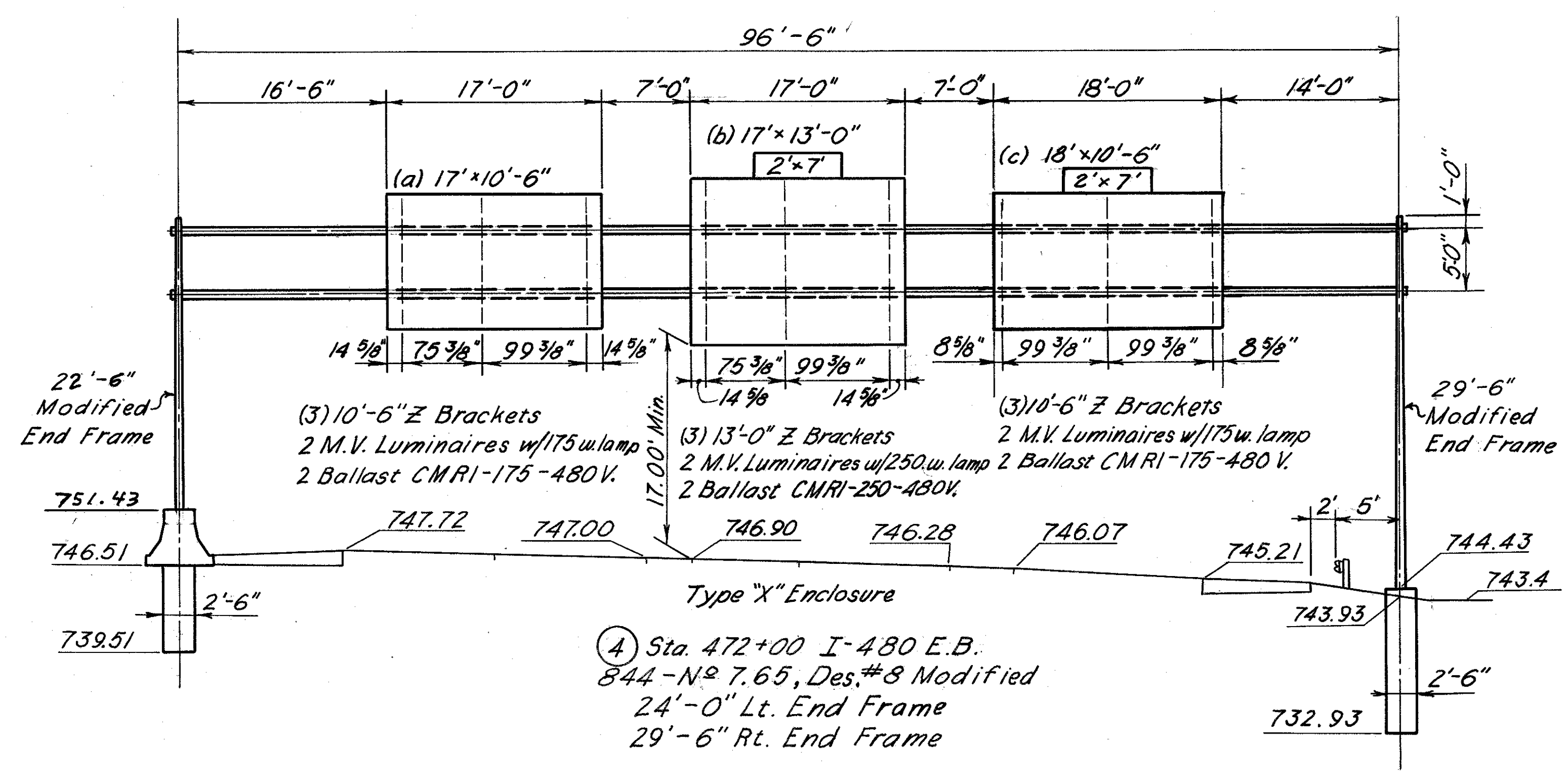
CUYAHOGA COUNTY  
CUY-480-6.78



Previously Constructed Under  
Contract No. Cuy. 80-8.00

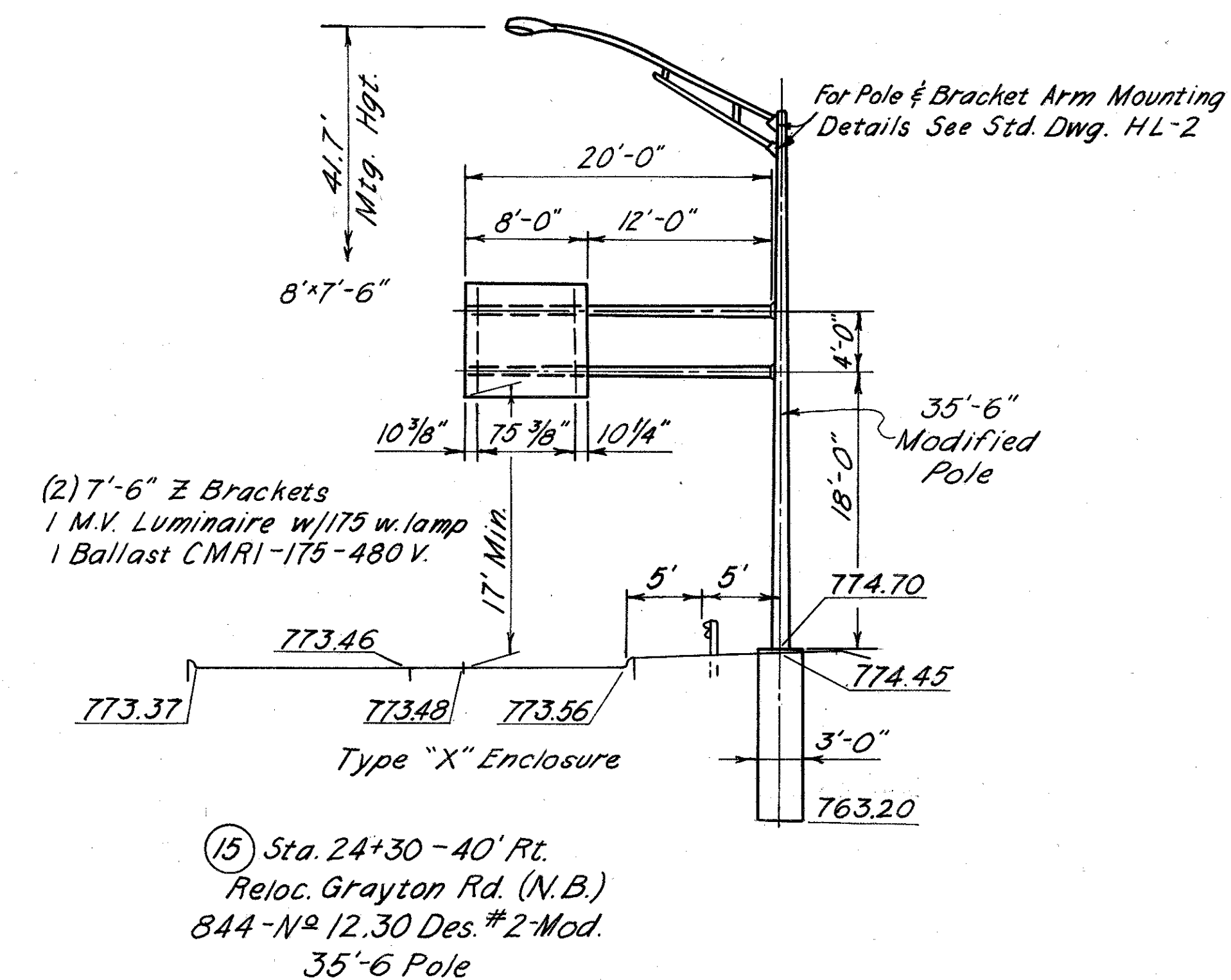
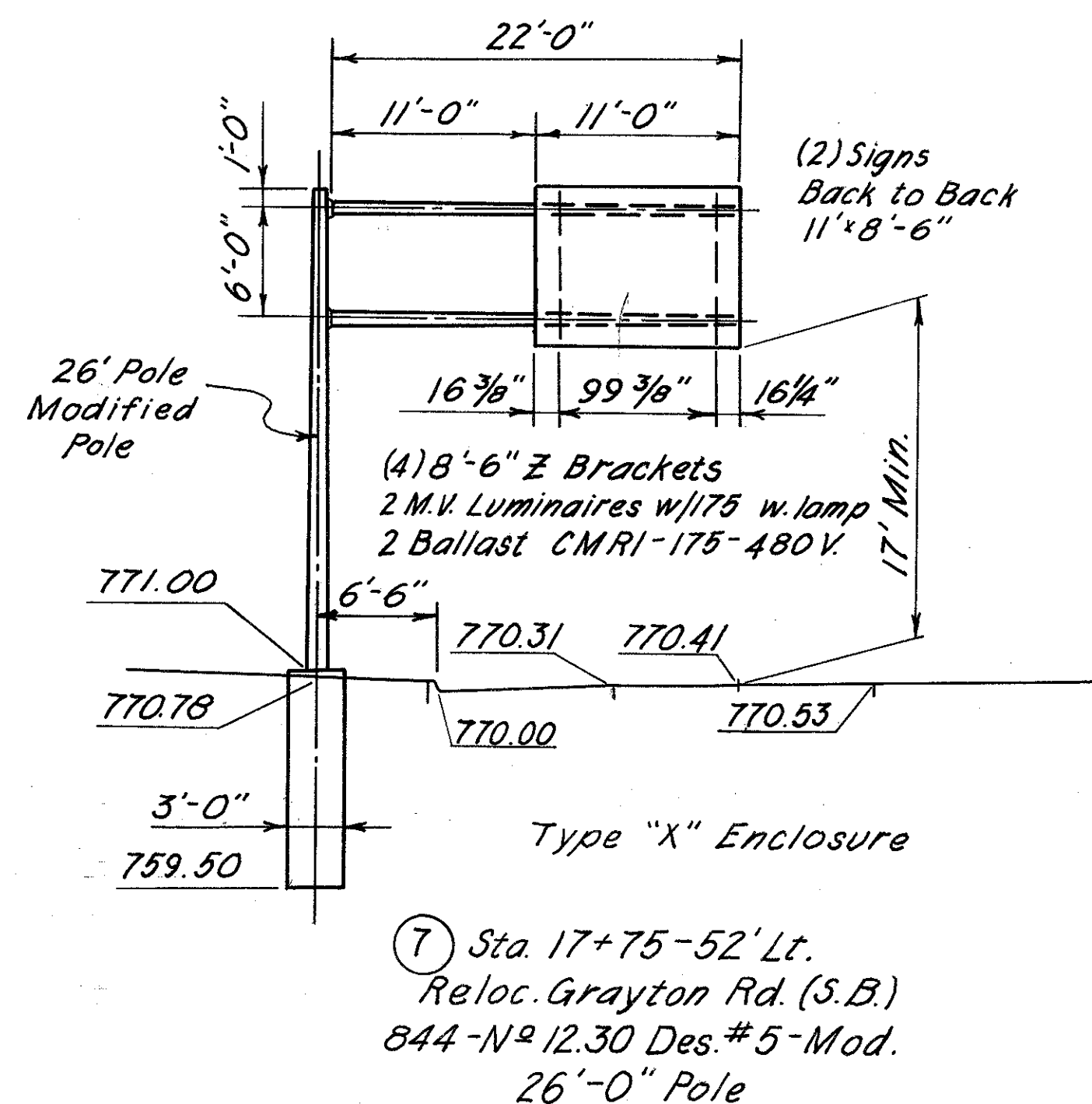
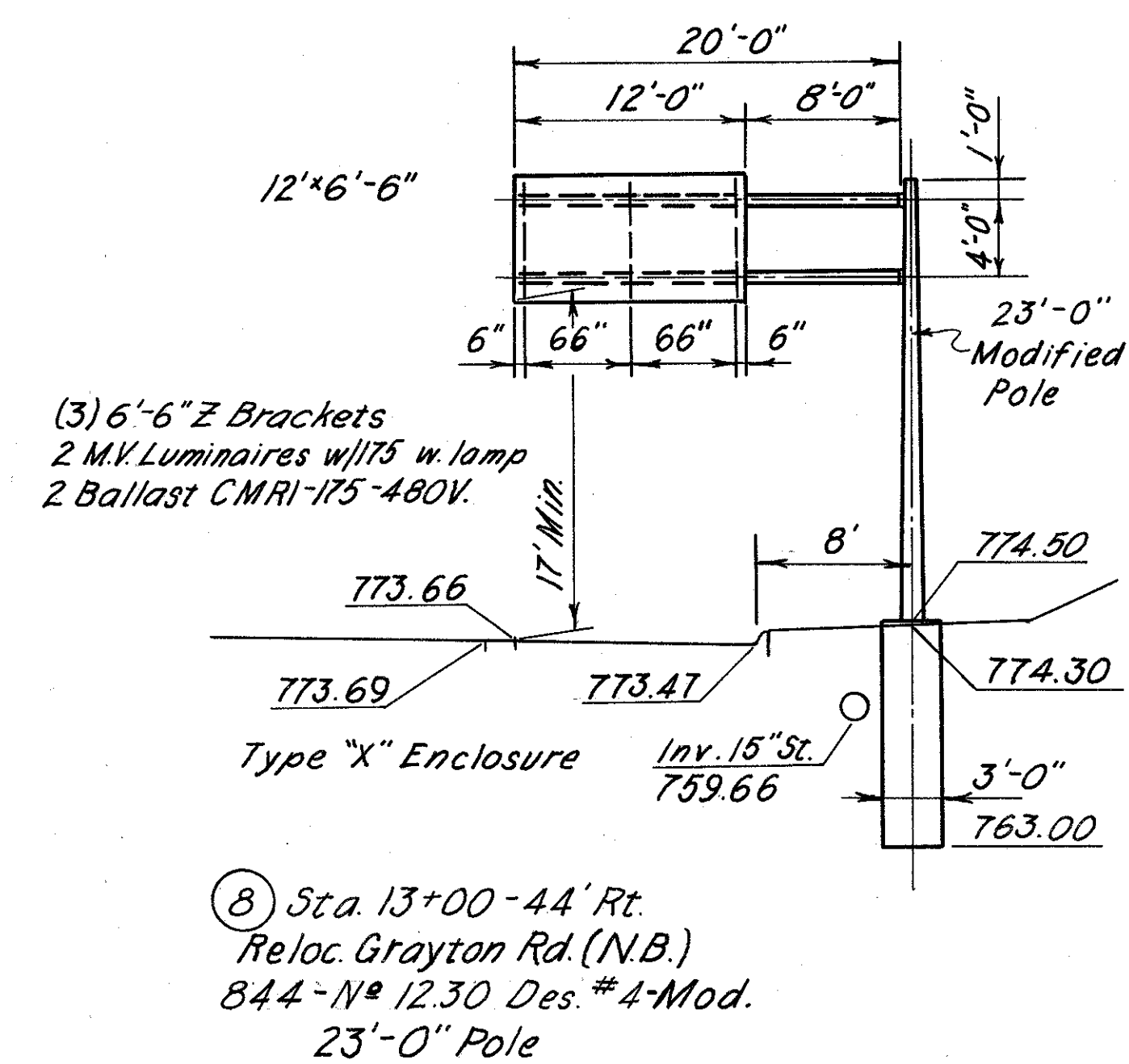
Note: Existing Roadways Previously Constructed  
Under Contract No. Cuy. 80-8.00 are  
shown dashed.

CUYAHOGA COUNTY  
CUY-480-678

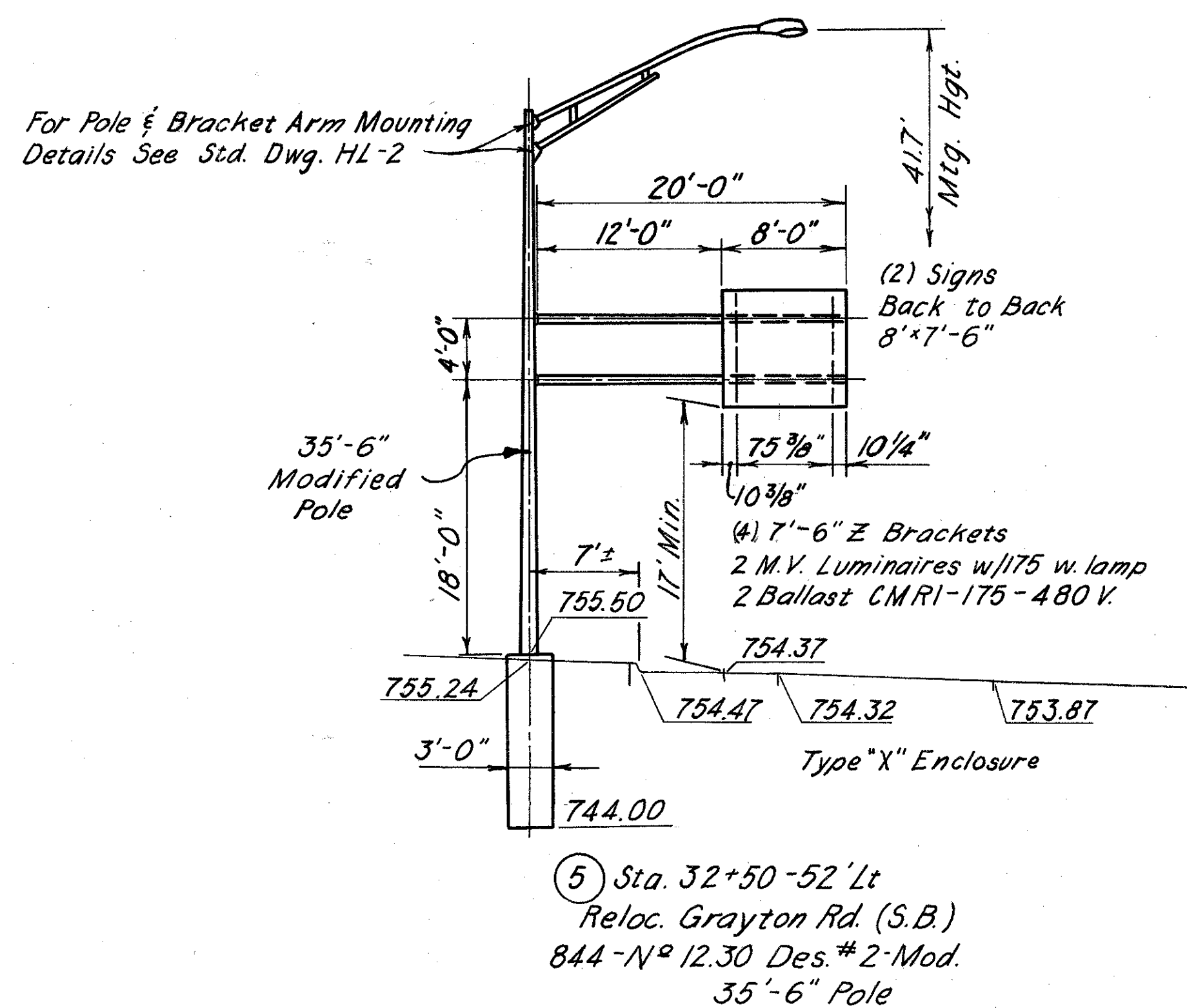
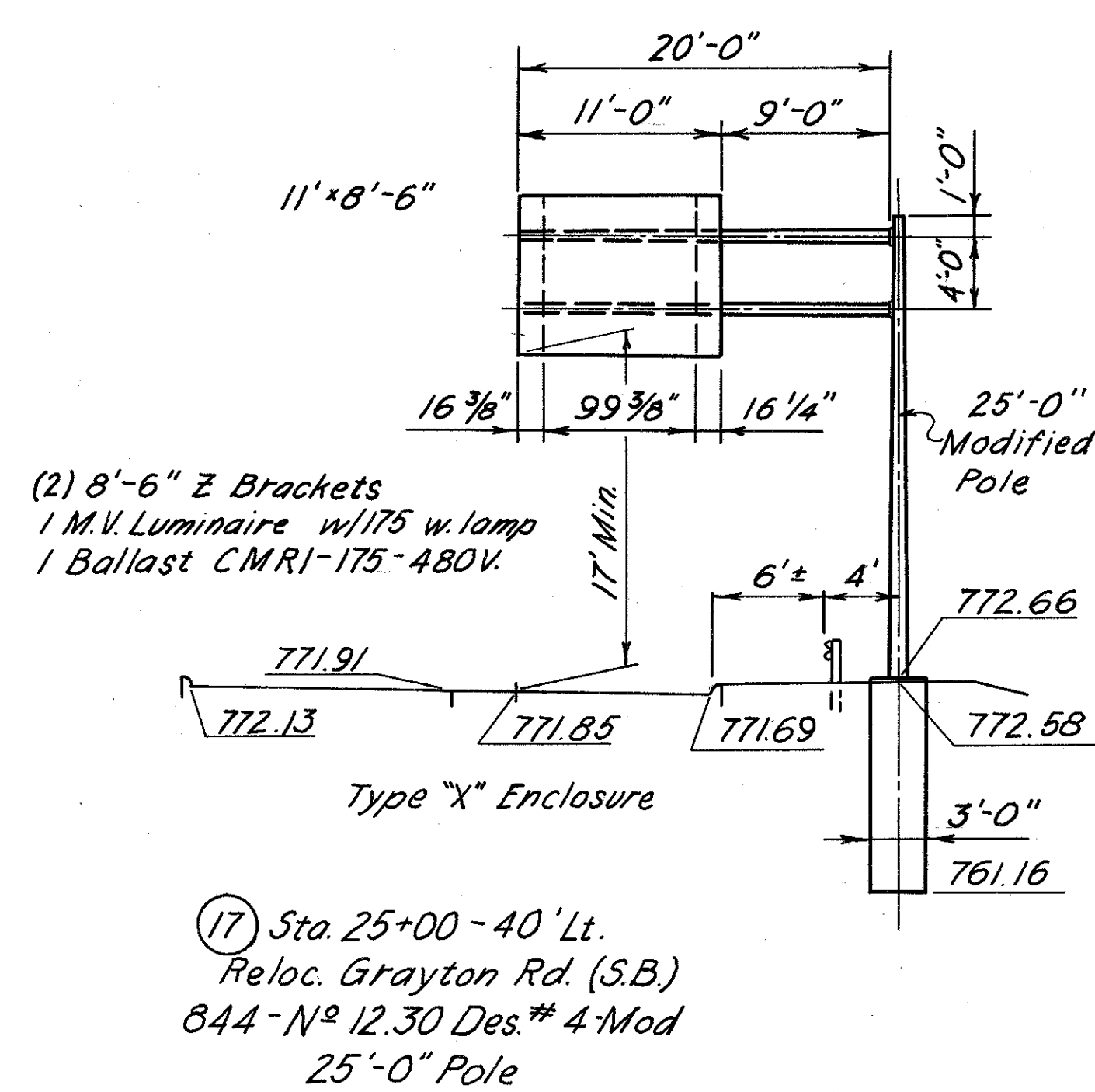




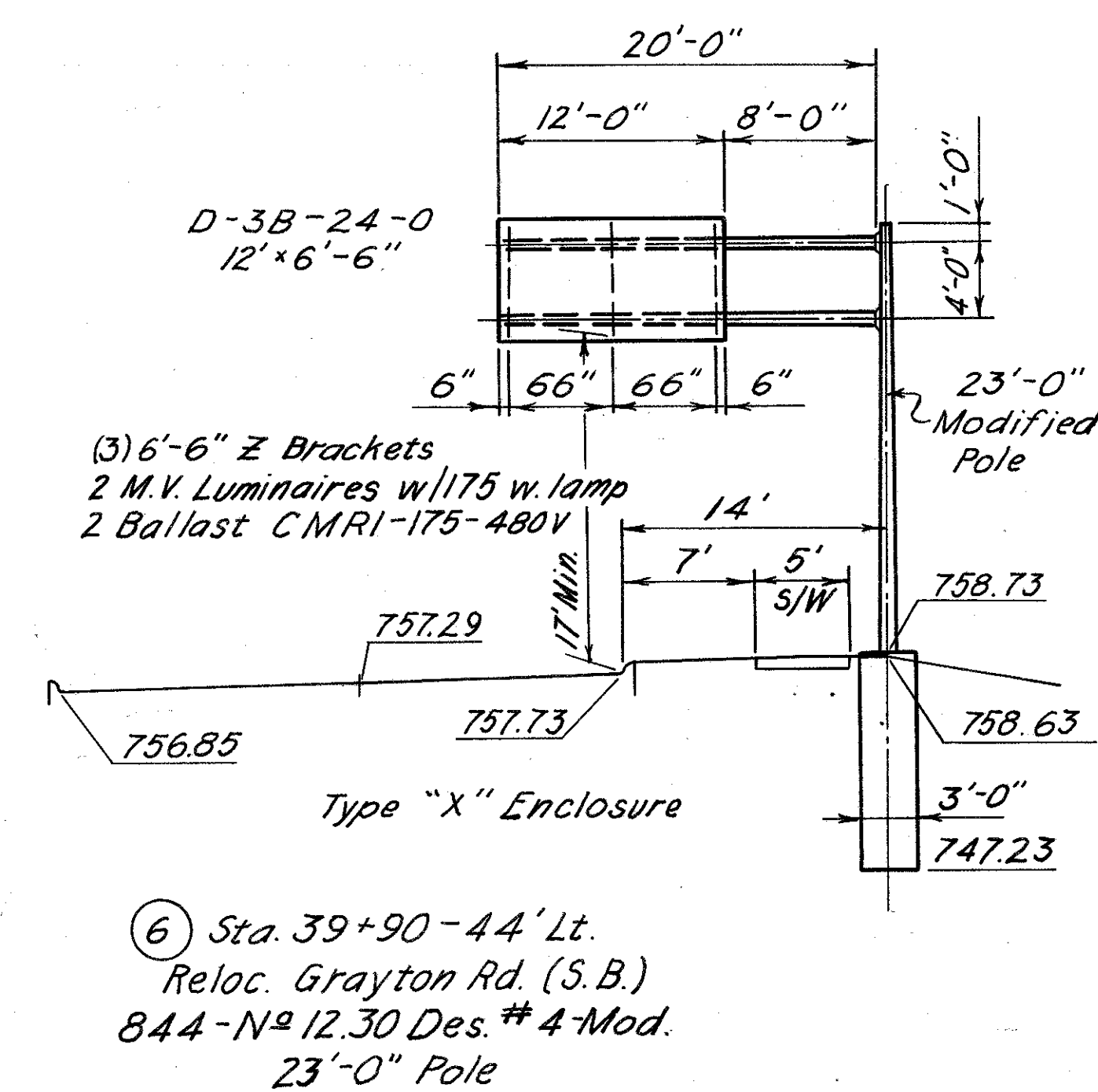
CUYAHOGA COUNTY  
CUY-480-6.78



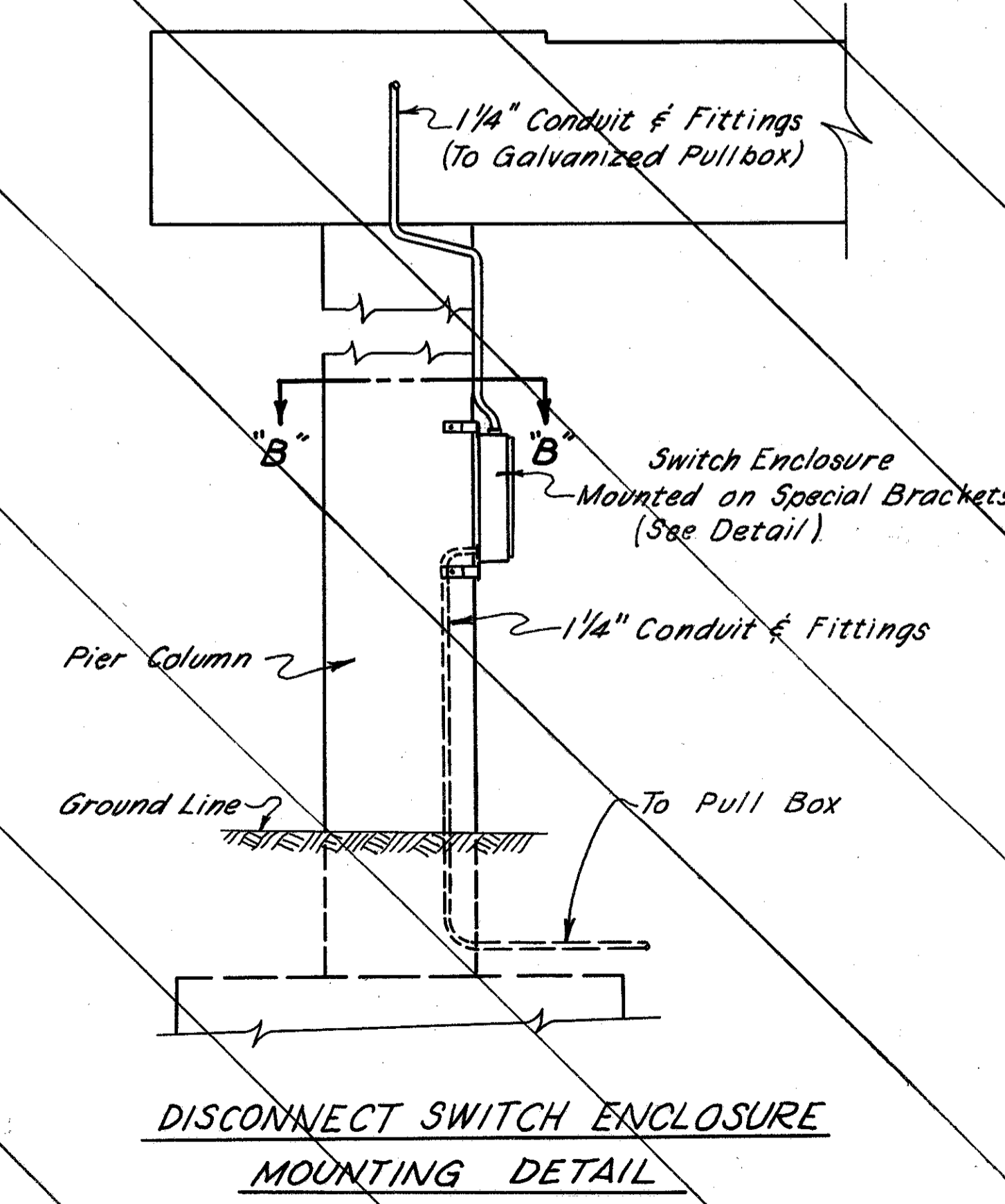
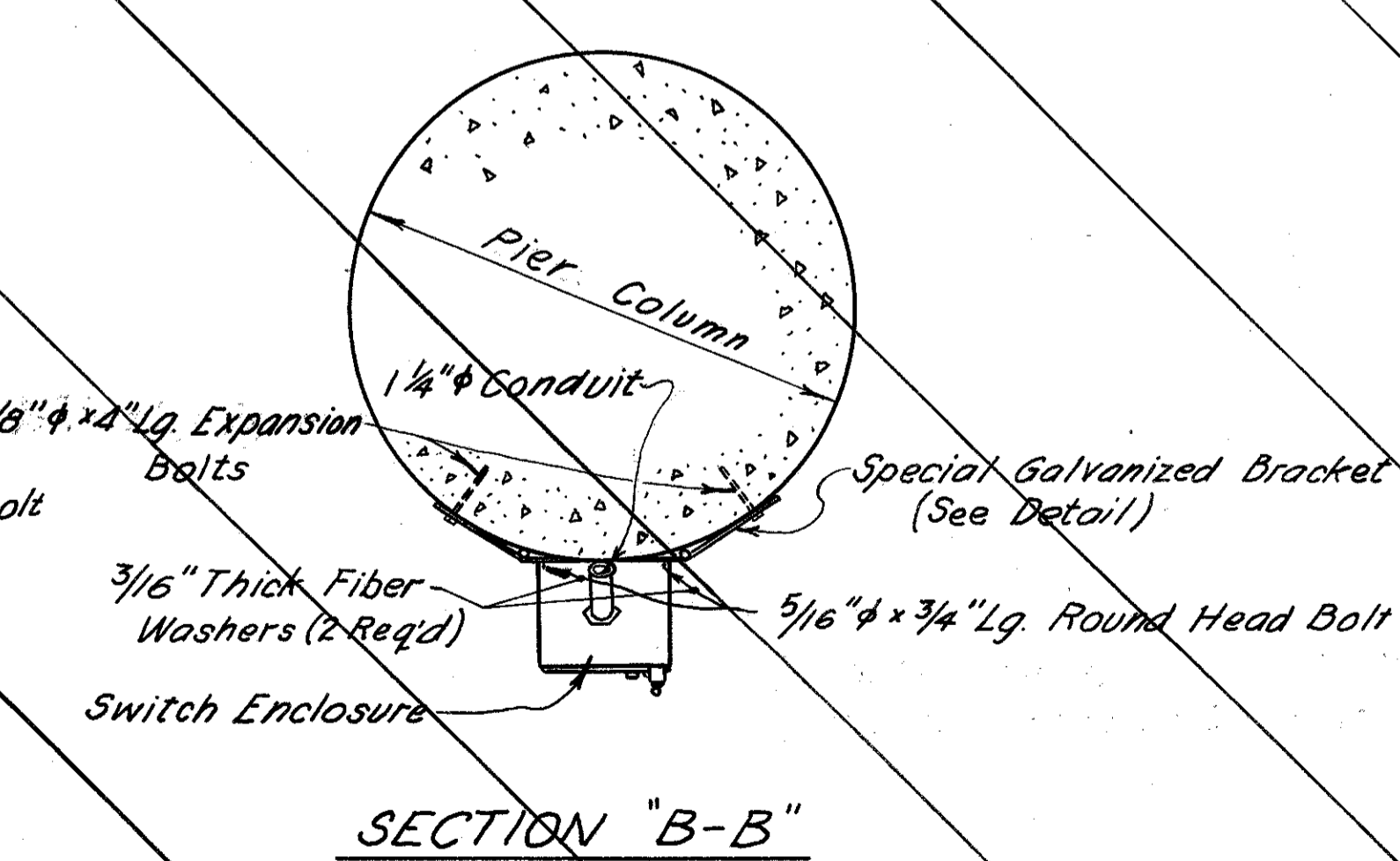
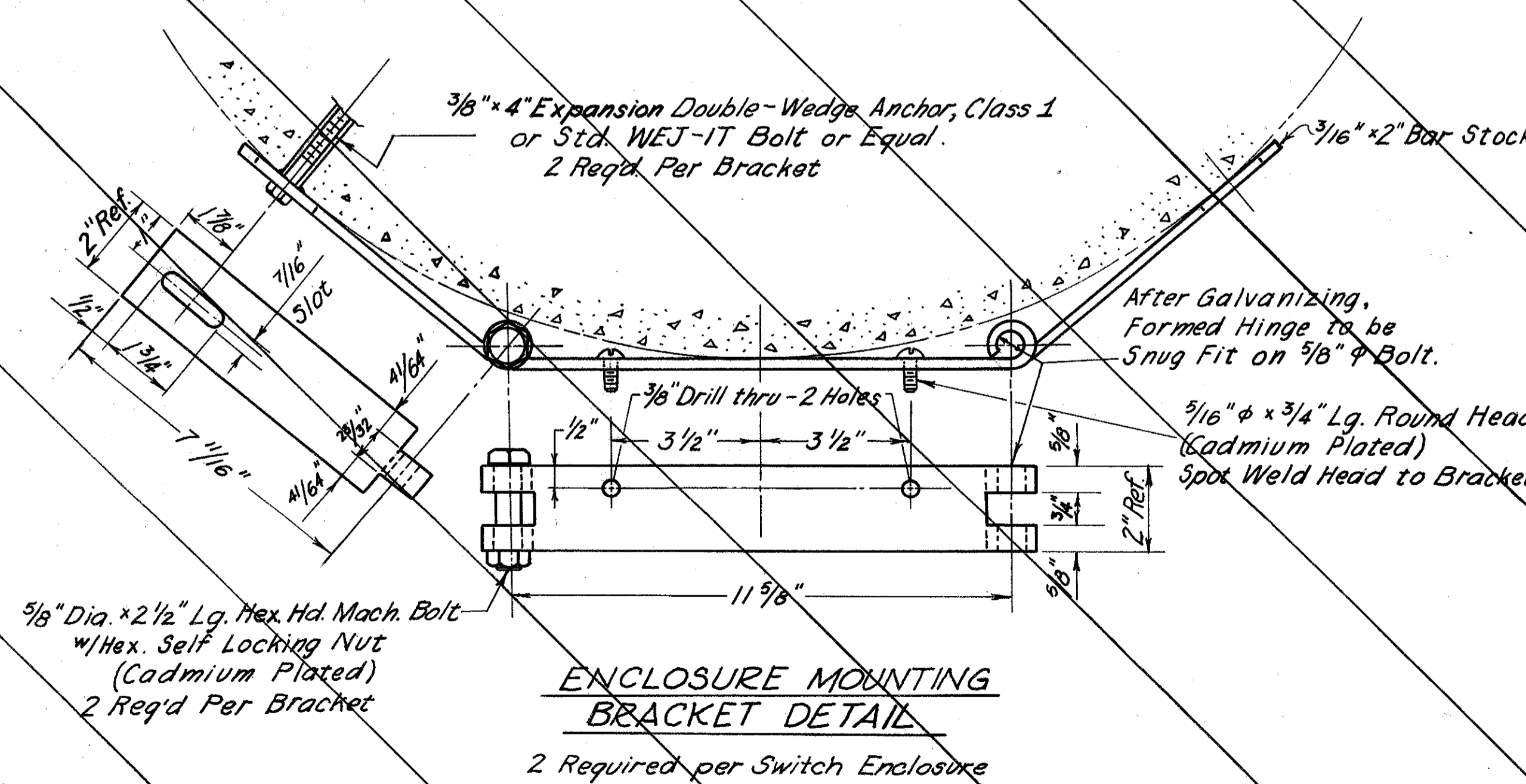
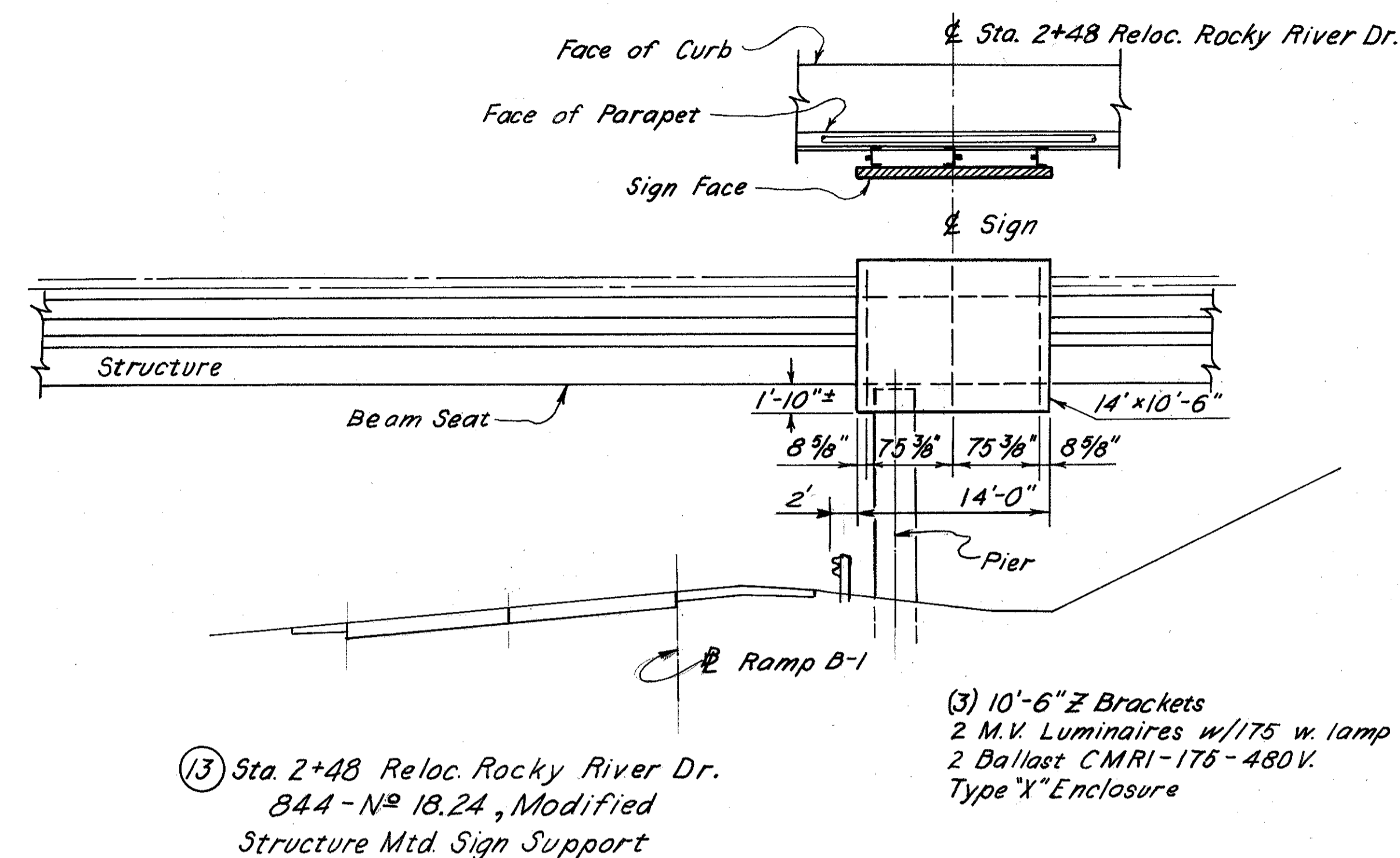
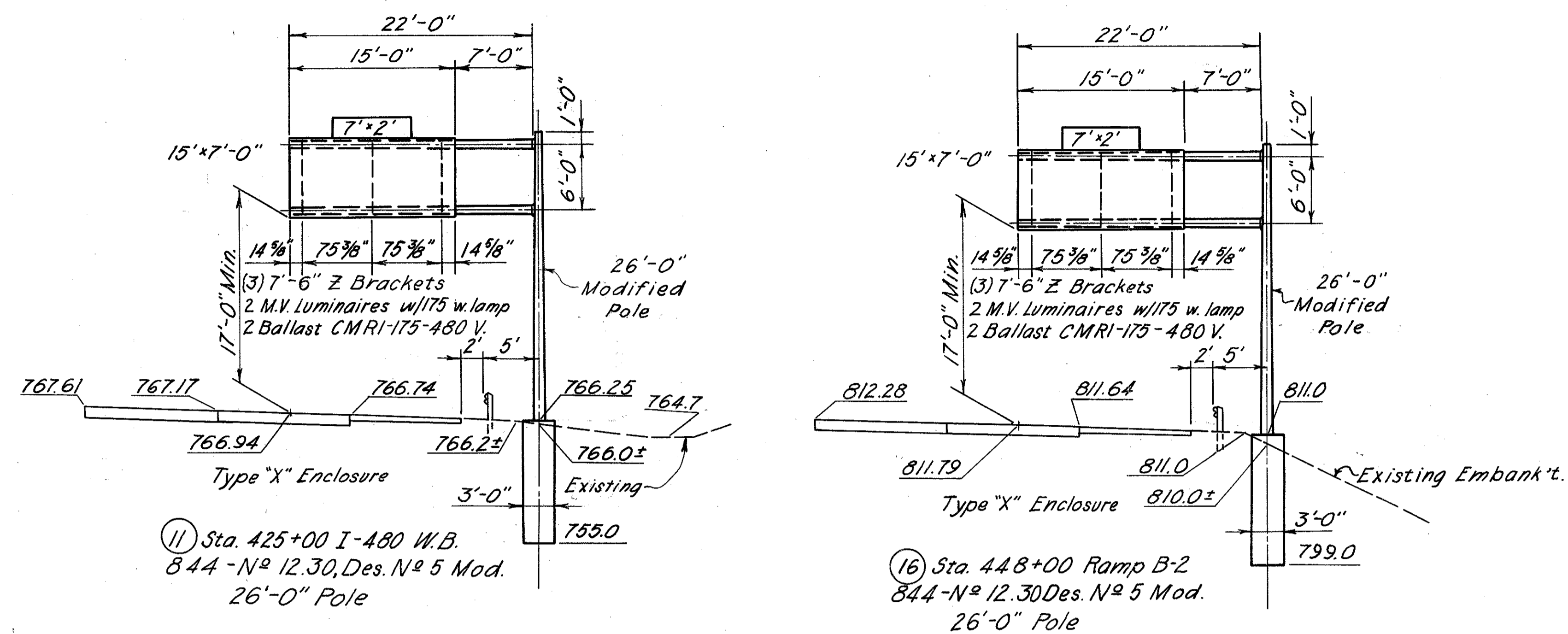
Combination O.H. Sign & Luminaire Support



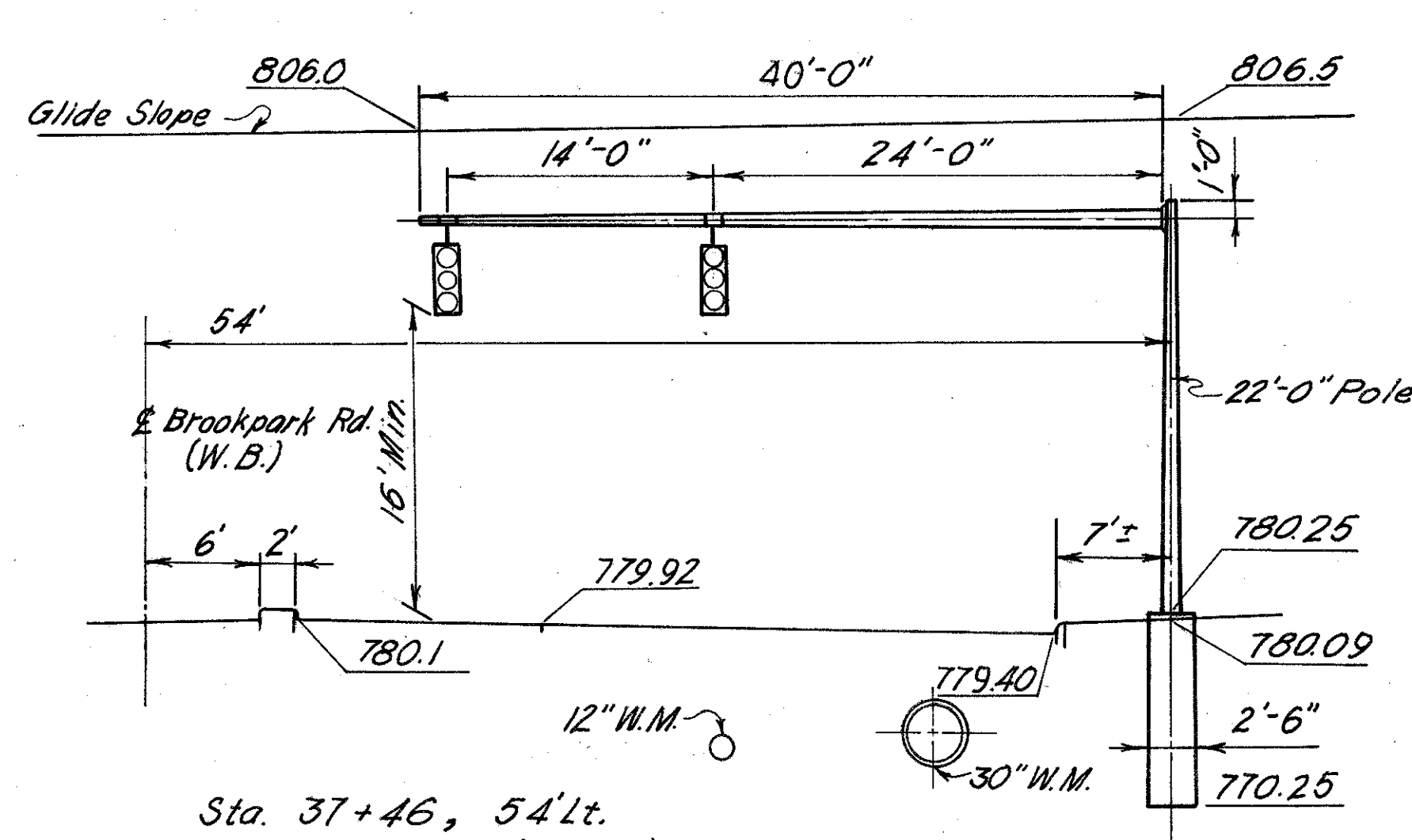
Combination O.H. Sign & Luminaire Support



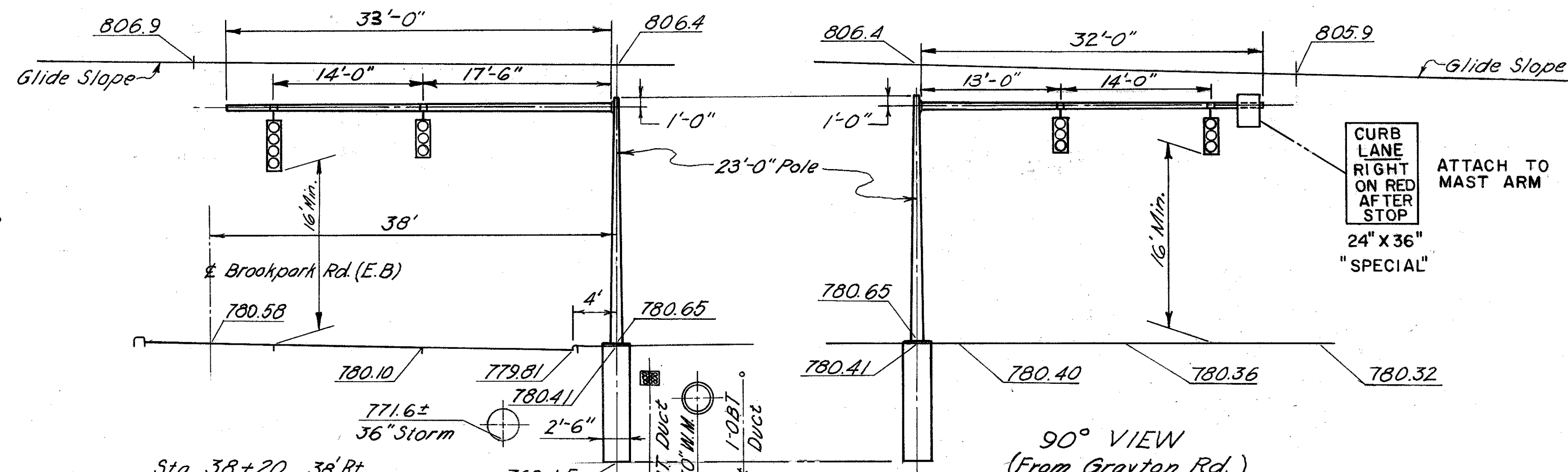
CUYAHOGA COUNTY  
CUY-480-6.78



CUYAHOGA COUNTY  
CUY-480-678



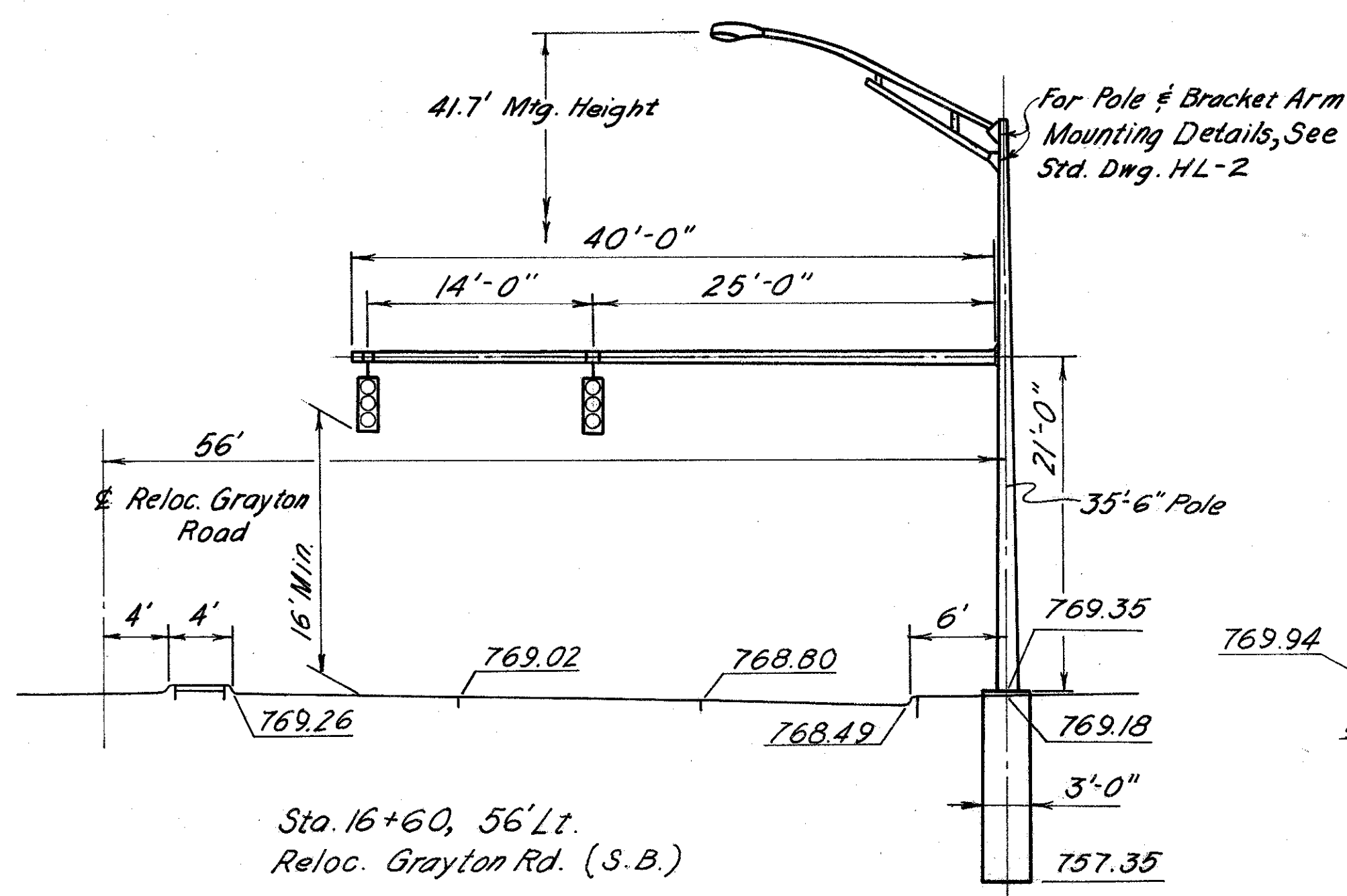
Sta. 37+46, 54' Lt.  
Brookpark Rd. (S.R. 17) W.B.  
Signal Pole - .3125" x 12.00" dia. x 22'-0" Lg.  
Mast Arm - .250" x 9.00" dia. x 40'-0" Lg.  
Base Data: (4) 1 3/4" x 90" Lg. A. Bolts on 16" B.C.



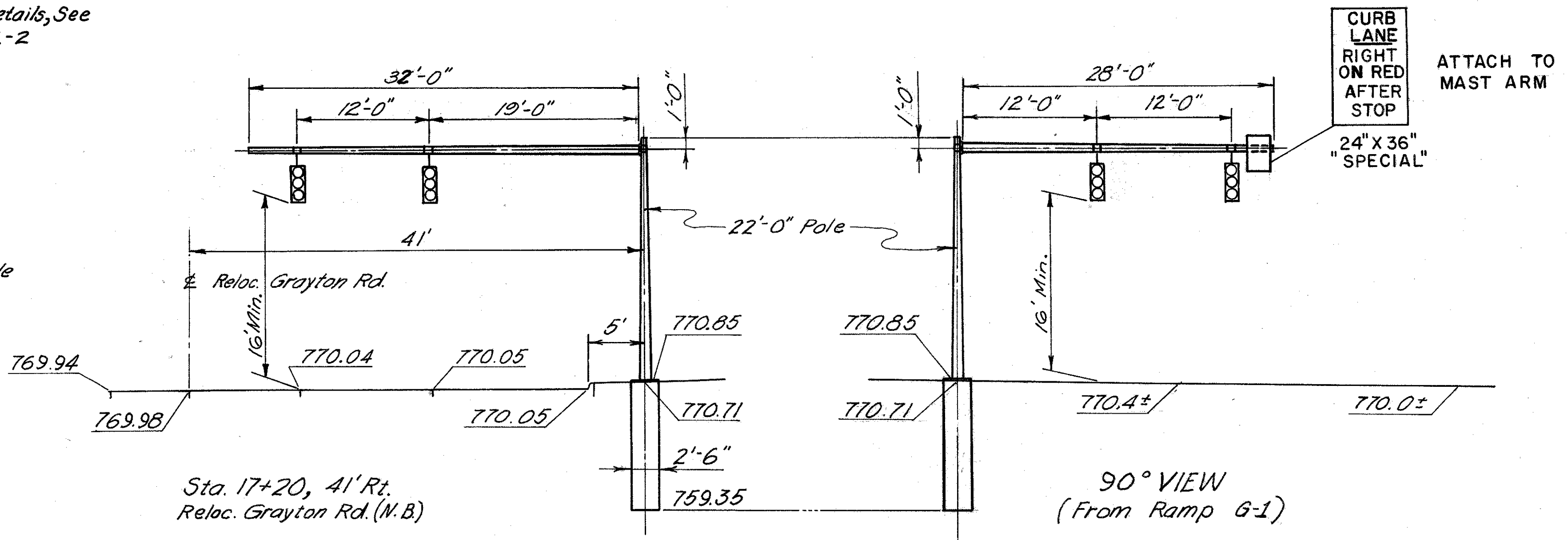
Sta. 38+20, 38' Rt.  
Brookpark Rd. (S.R. 17) E.B.  
Signal Pole - .3125" x 12.00" dia. x 23'-0" Lg.  
Mast Arm - .250" x 9.00" dia. x 33'-0" Lg.  
Mast Arm - .250" x 9.00" dia. x 32'-0" Lg.  
Base Data: (4) 1 3/4" x 90" Lg. A. Bolts on 16" B.C.

90° VIEW  
(From Grayton Rd.)

CURB LANE RIGHT ON RED AFTER STOP  
24" X 36" "SPECIAL"  
ATTACH TO MAST ARM



Sta. 16+60, 56' Lt.  
Reloc. Grayton Rd. (S.B.)  
Signal Pole - .3125" x 15.00" dia. x 35'-6" Lg.  
Mast Arm - .250" x 9.00" dia. x 40'-0" Lg.  
Base Data: (4) 2" x 90" Lg. A. Bolts on 22" B.C.

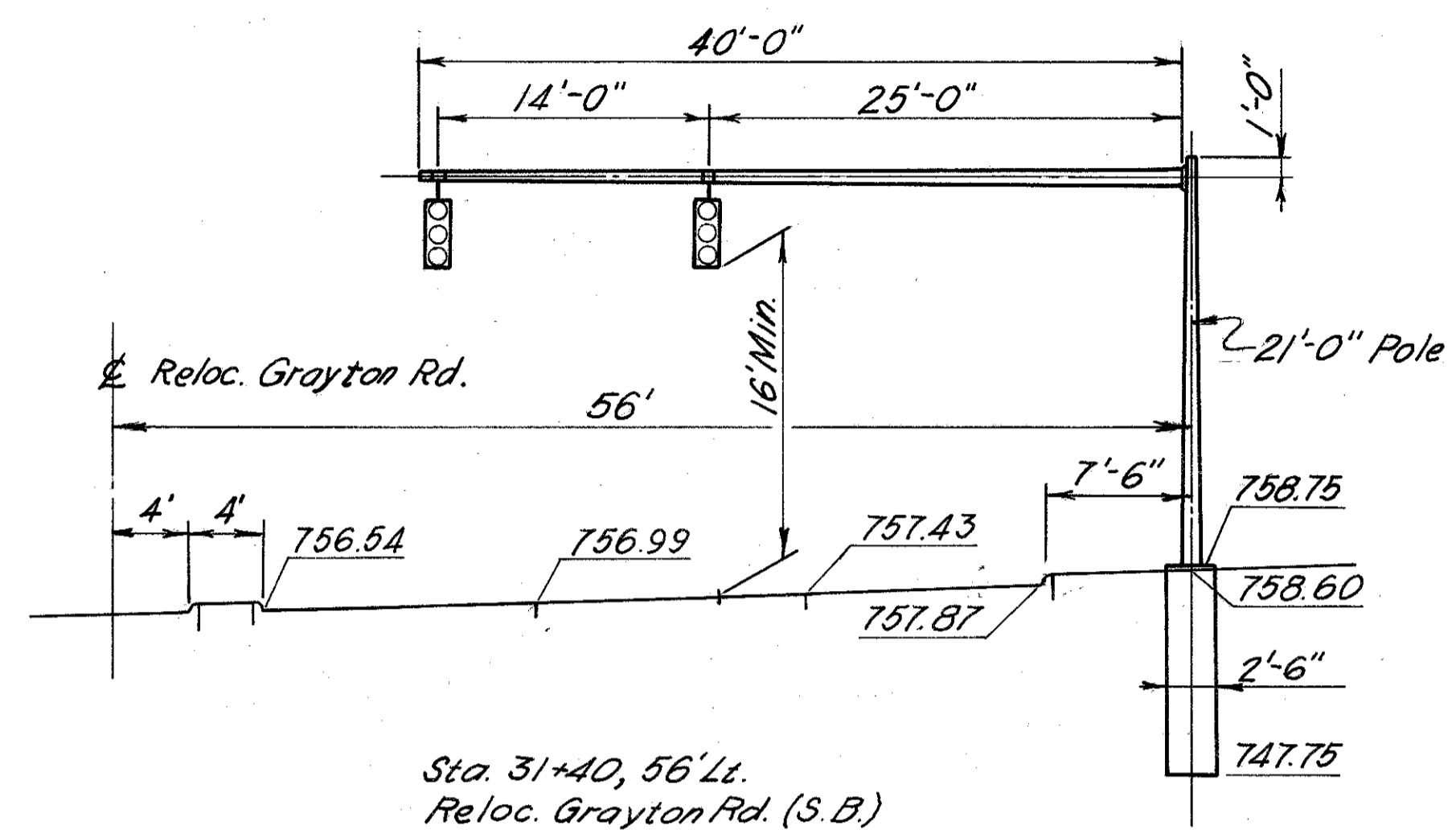


Sta. 17+20, 41' Rt.  
Reloc. Grayton Rd. (N.B.)  
Signal Pole - .3125" x 12.00" dia. x 22'-0" Lg.  
Mast Arm - .250" x 9.00" dia. x 32'-0" Lg.  
Mast Arm - .1793" x 8.00" dia. x 28'-0" Lg.  
Base Data: (4) 1 3/4" x 90" Lg. A. Bolts on 16" B.C.

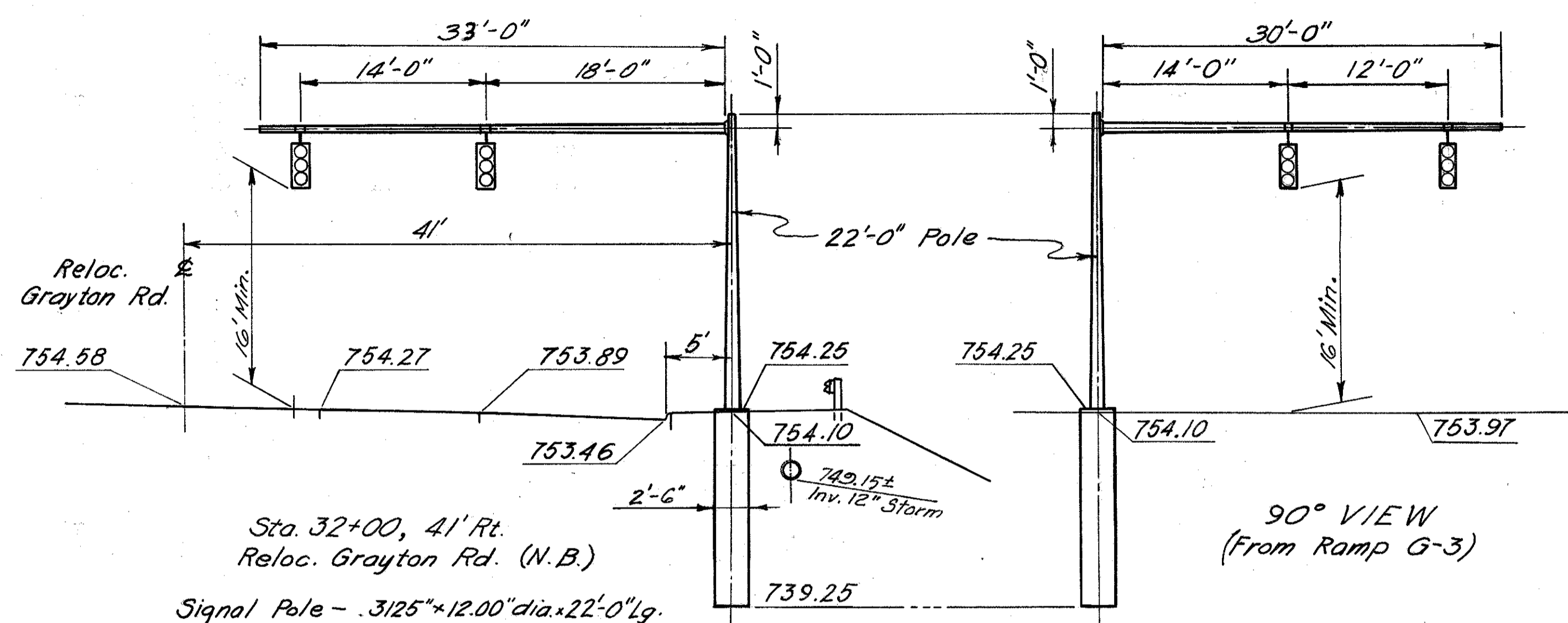
90° VIEW  
(From Ramp G-1)

CURB LANE RIGHT ON RED AFTER STOP  
24" X 36" "SPECIAL"  
ATTACH TO MAST ARM

Combination Luminaire & Signal Support

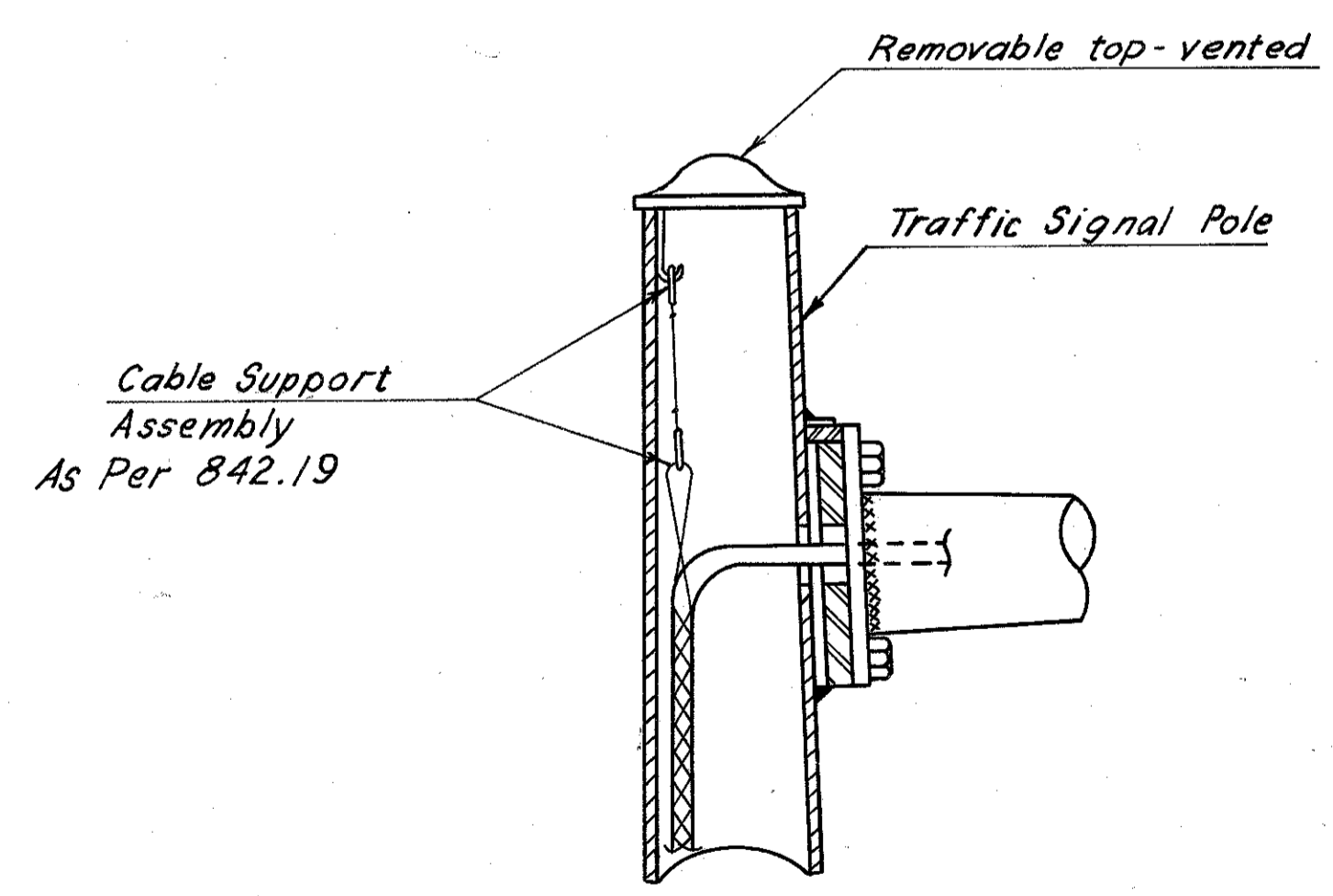


Sta. 31+40, 56' Lt.  
Reloc. Grayton Rd. (S.B.)  
Signal Pole - .3125" x 12.00" dia. x 21'-0" lg.  
Mast Arm - .250" x 9.00" dia. x 40'-0" lg.  
Base Data: (4) 1 3/4" x 90" lg. A Bolts on 16" B.C.

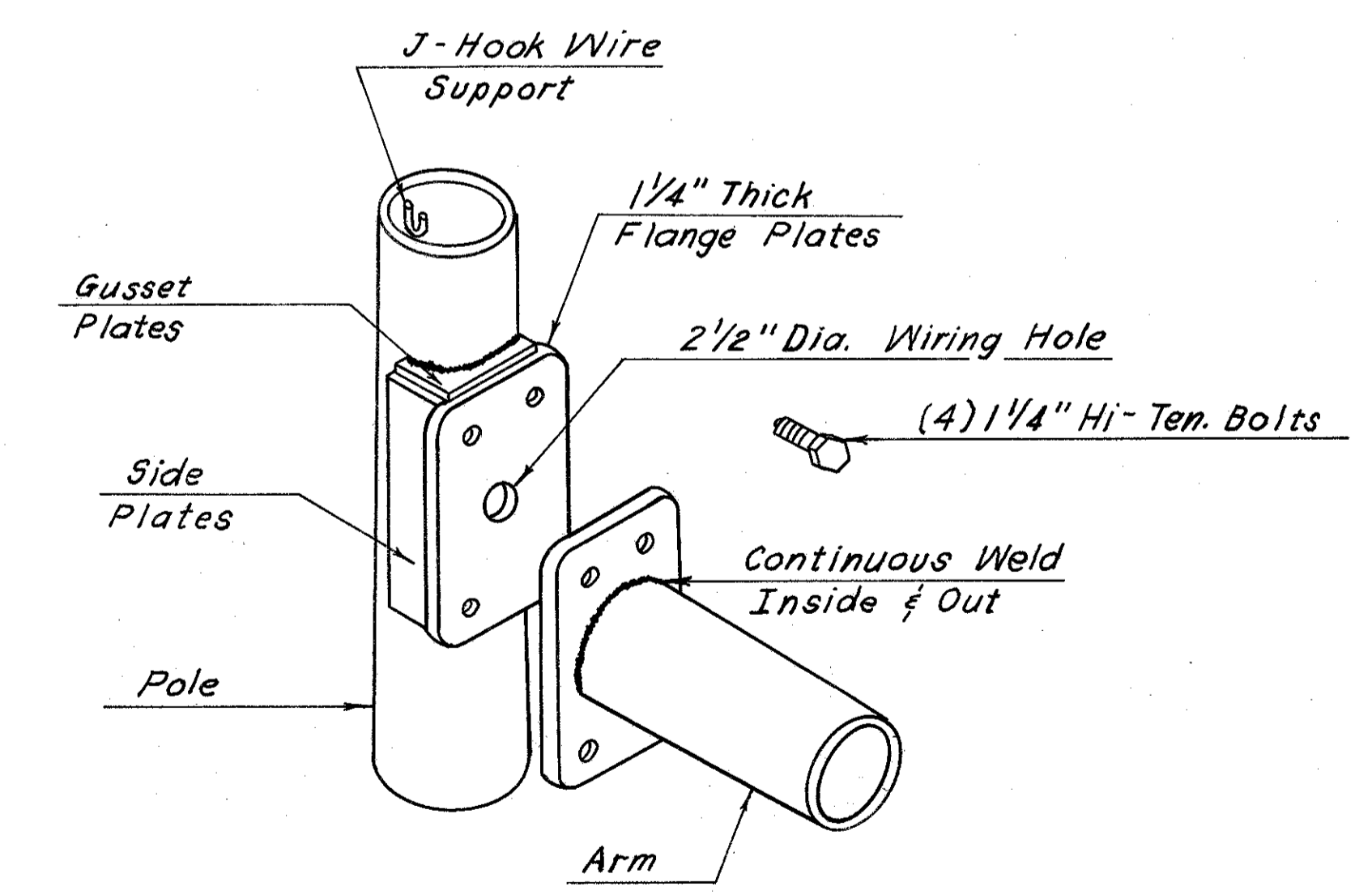


Sta. 32+00, 41' Rt.  
Reloc. Grayton Rd. (N.B.)  
Signal Pole - .3125" x 12.00" dia. x 22'-0" lg.  
Mast Arm - .250" x 9.00" dia. x 33'-0" lg.  
Mast Arm - .1793" x 8.00" dia. x 30'-0" lg.  
Base Data: (4) 1 3/4" x 90" lg. A Bolts on 16" B.C.

90° VIEW  
(From Ramp G-3)



CABLE SUPPORT ASSEMBLY

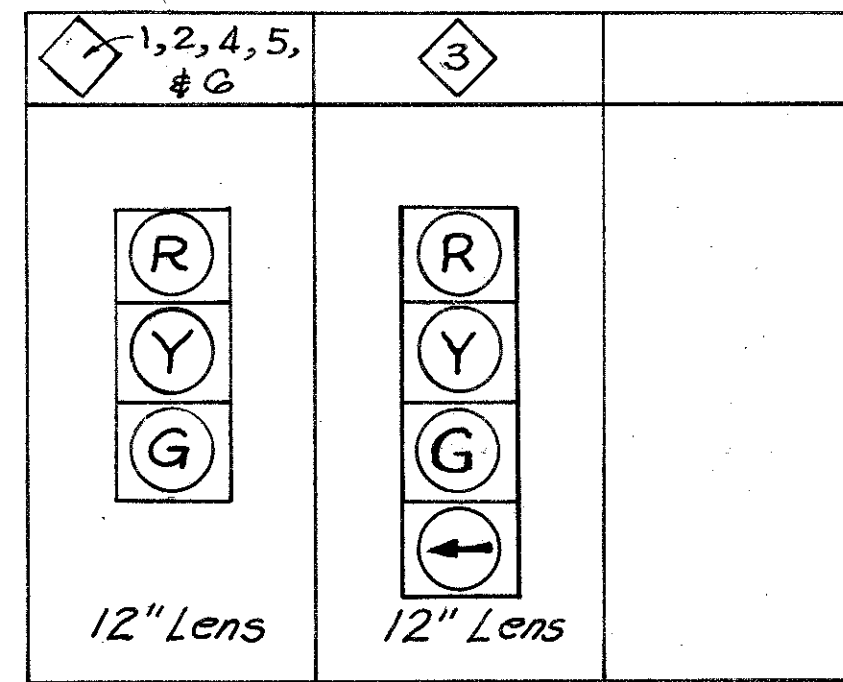


SIGNAL ARM ATTACHMENT TO SIGNAL POLE

CALC. BY *agf* DATE 4/21/76  
CHKD. BY *M.C.M.* DATE 3/18/76

CUYAHOGA COUNTY  
CUY-480-6.78

**SIGNAL FACES**



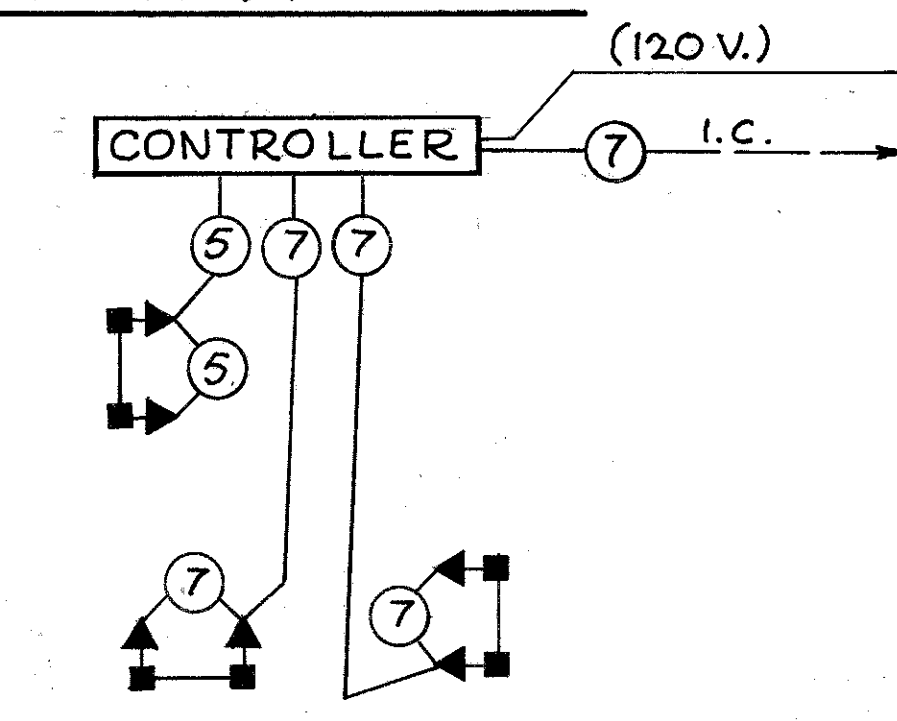
**PHASE DIAGRAM**

SIGNAL PHASES	TIMING
	RW: 19 Sec. CL: 6 Sec.
	RW: 22 Sec. CL: 4 Sec.
	RW: 35 Sec. CL: 4 Sec.
<b>Total</b>	<b>90 Sec.</b>

**SIGNAL DISPLAY CHART**

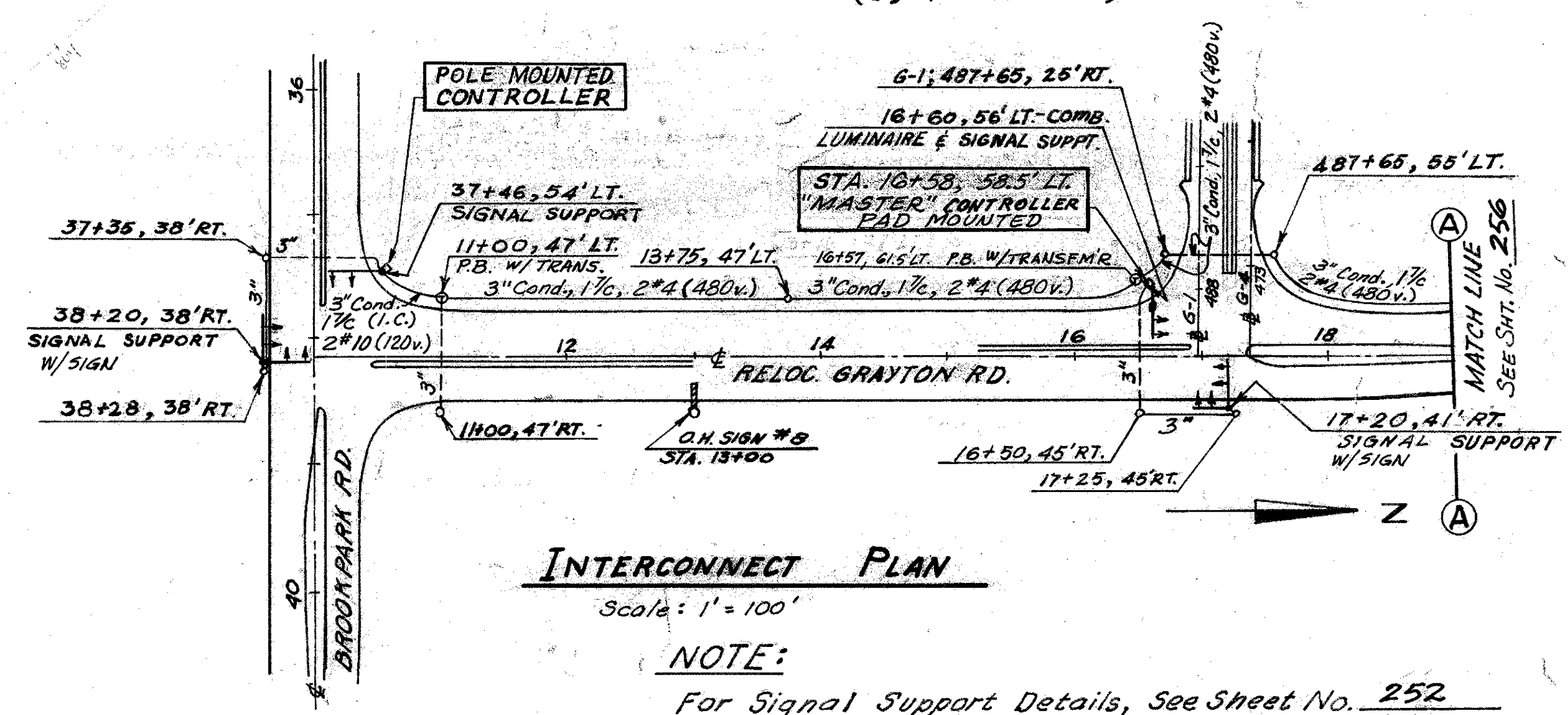
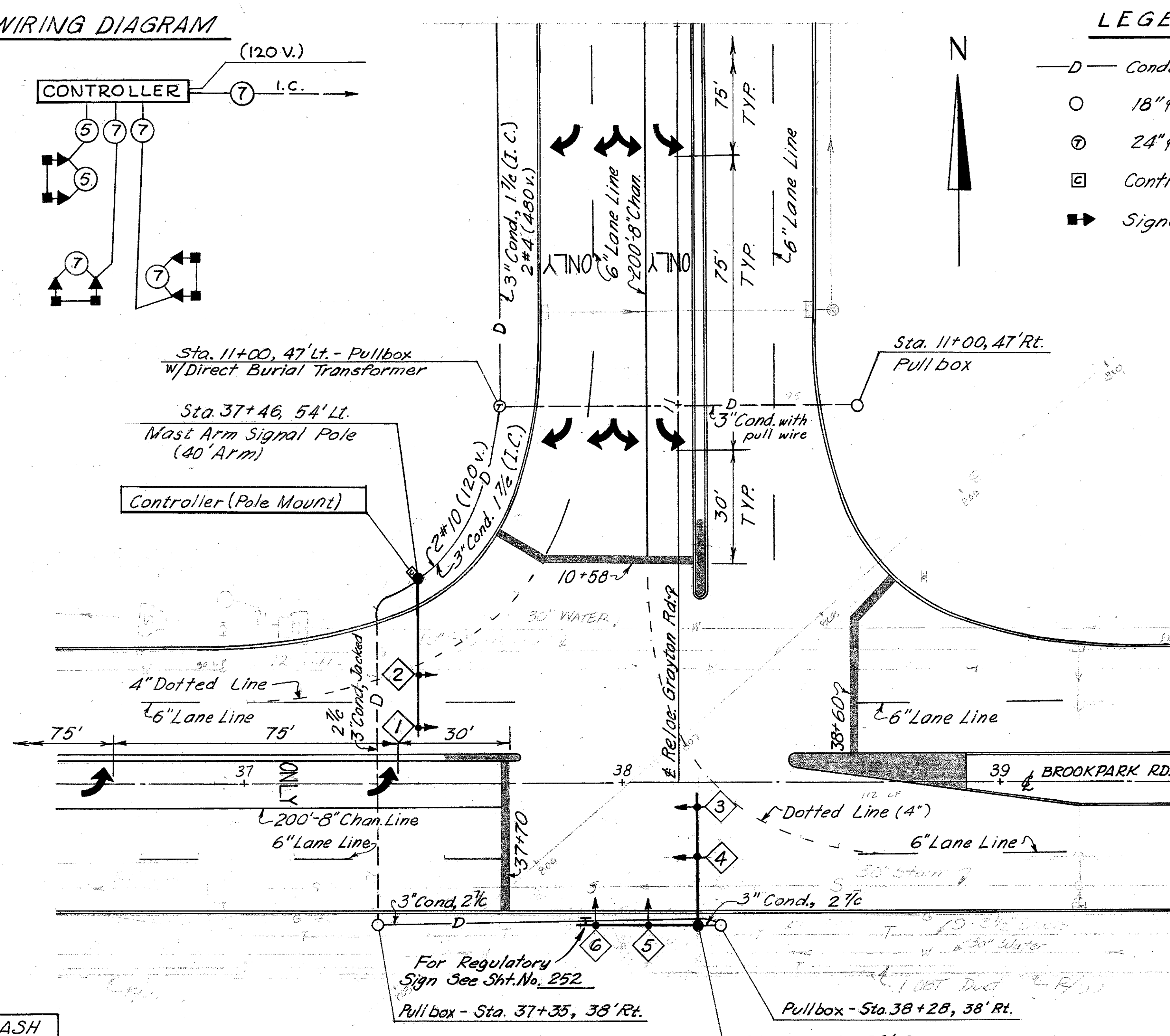
PHASE	φA	φB	φC	FLASH
MOVEMENT	R/W C <sub>y</sub> C <sub>r</sub>	R/W C	R/W C	
SIGNAL 1 2	R R R	G Y	R R Y	
3	R R R	G G	G Y Y	
4	R R R	G G	G Y Y	
5 6	G Y R	R R	R R R	

**WIRING DIAGRAM**



**LEGEND**

- D— Conduit (Size As Shown)
- 18" φ Pullbox, Traffic Cont. (See Sht. No. 233)
- ⊙ 24" φ Pullbox, For Direct Burial Transformer (Sht. #233)
- ⊞ Controller, By Type as shown.
- ➡ Signal Head



**INTERCONNECT PLAN**

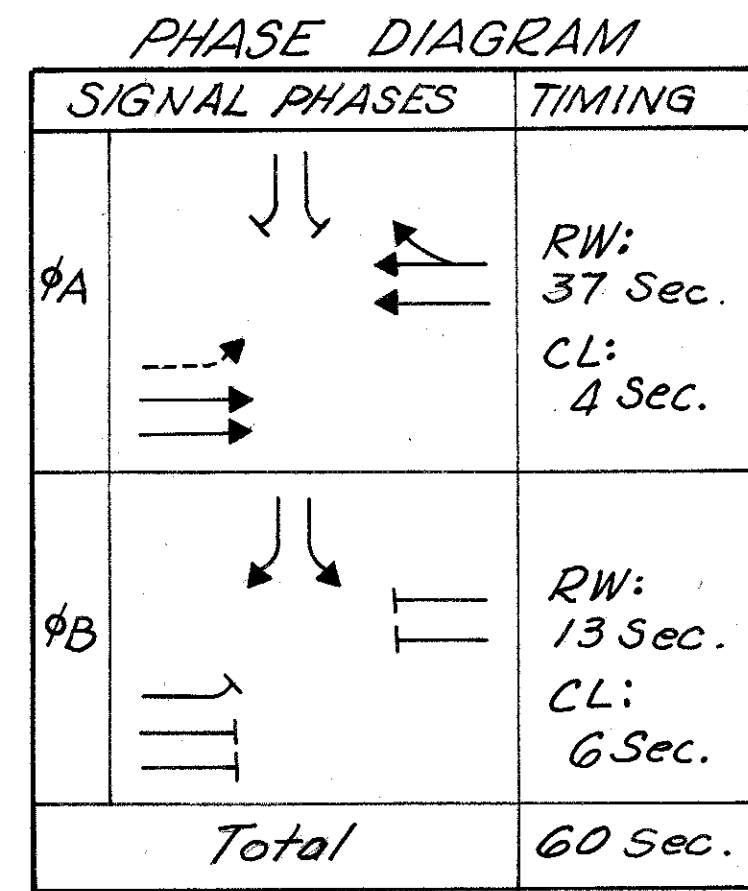
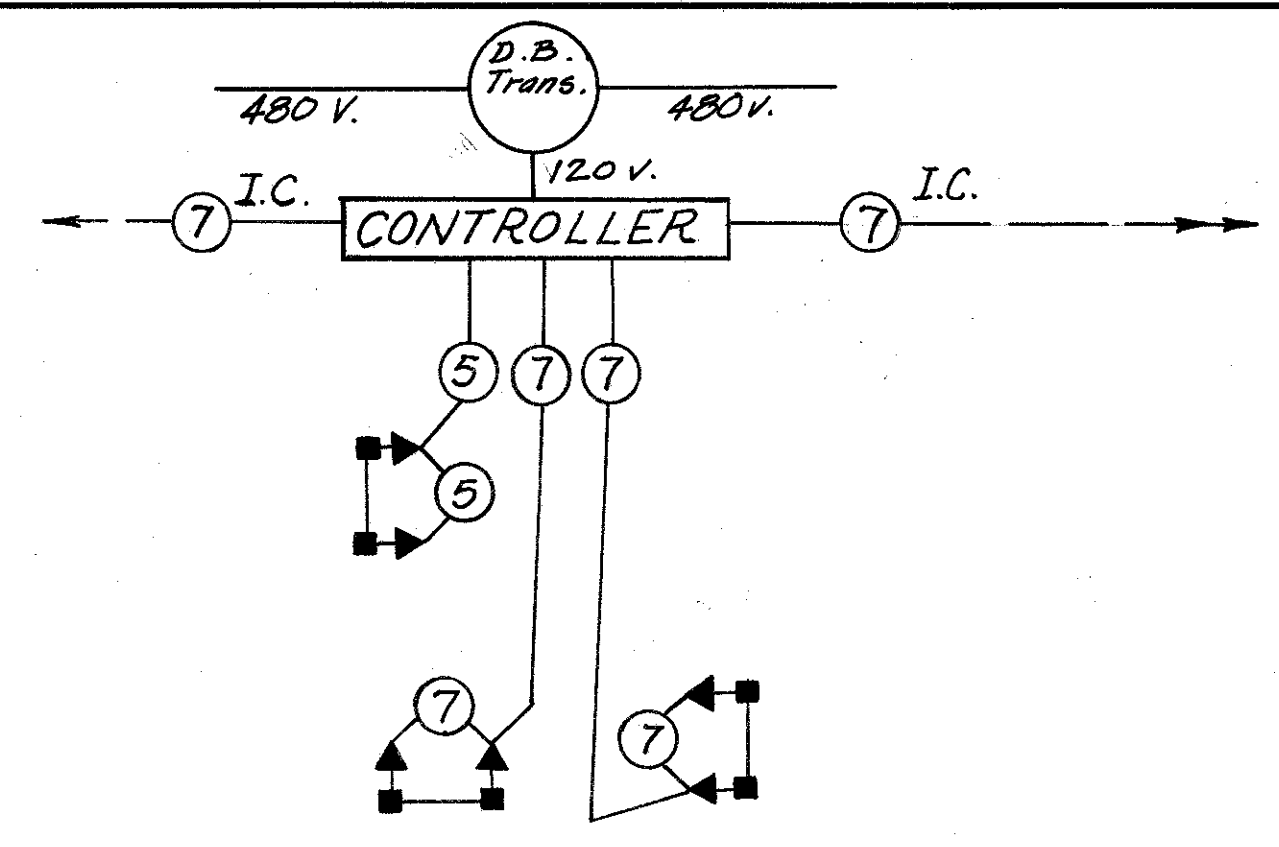
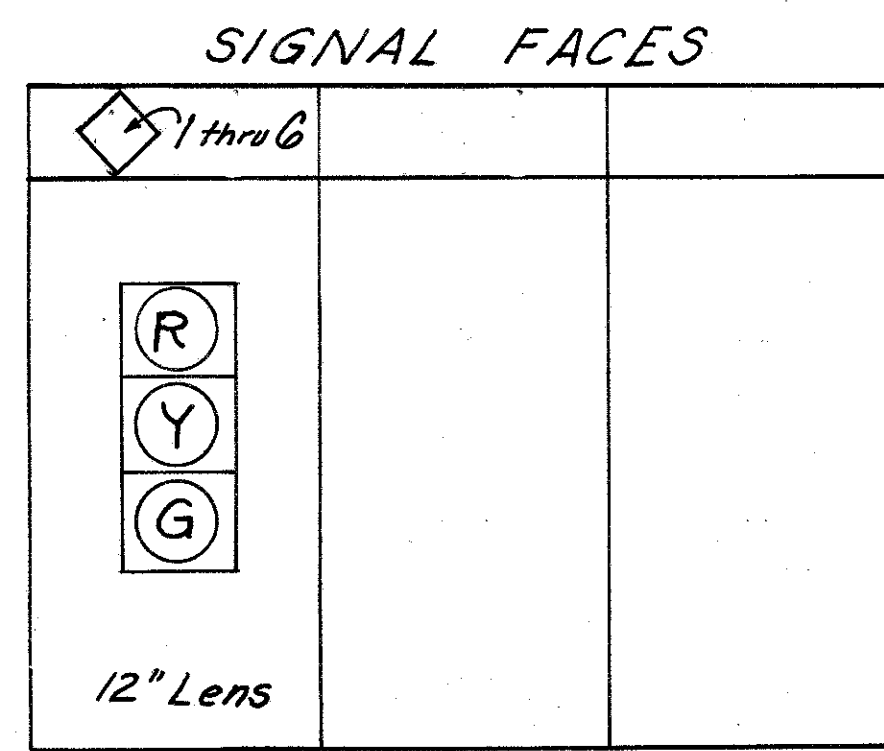
Scale: 1" = 100'

**NOTE:**  
For Signal Support Details, See Sheet No. 252

**QUANTITIES**

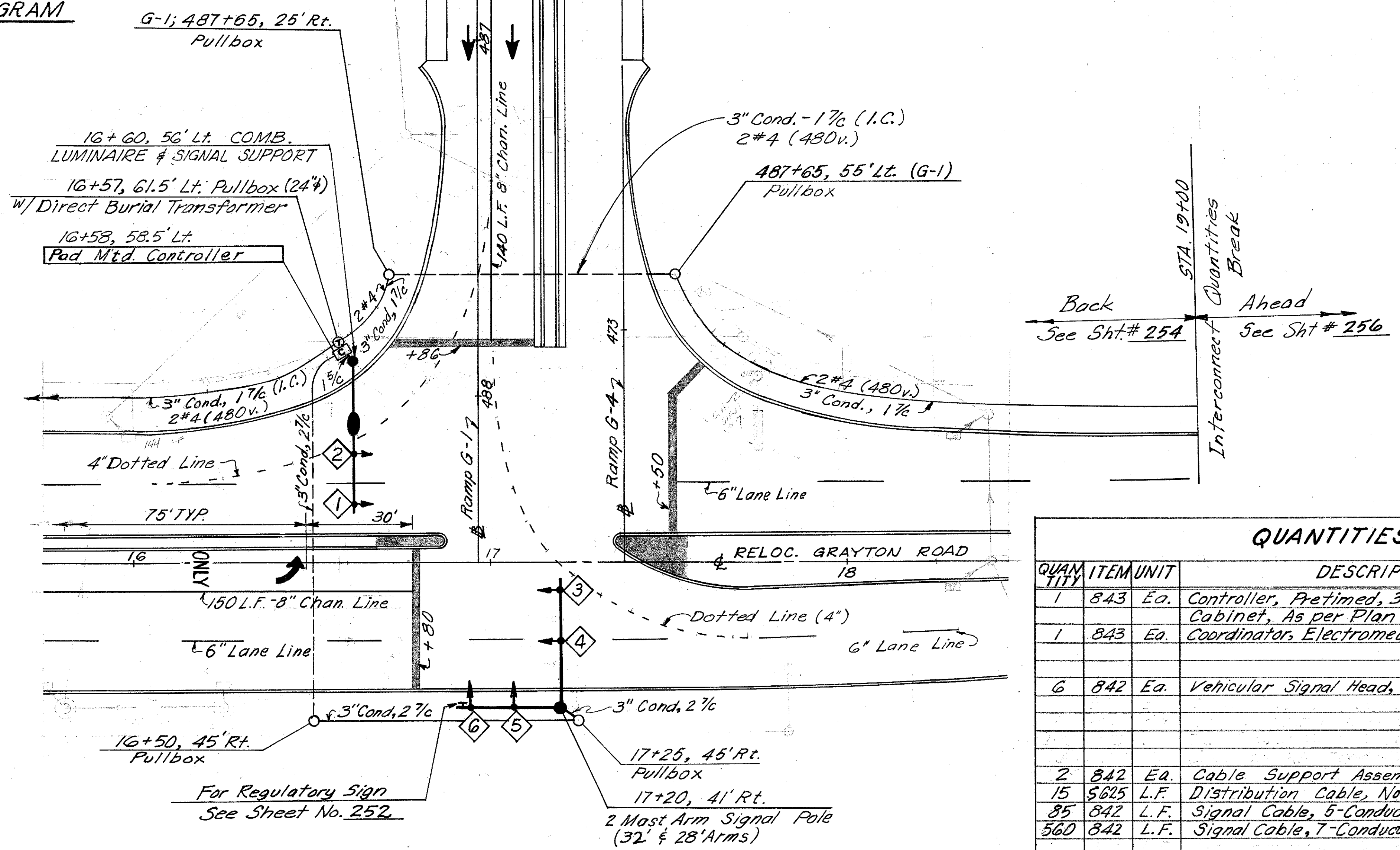
QUAN. TITY	ITEM	UNIT	DESCRIPTION
1	843	Ea.	Controller, Pretimed, 3 Phase, Electromechanical, with Cabinet, As per Plan
1	843	Ea.	Coordinator, Electromechanical, As per Plan
1	842	Ea.	Vehicular Signal Head 4 Section, 12" Lens, One Way
5	842	Ea.	Vehicular Signal Head, 3 Section, 12" Lens, One Way
2	842	Ea.	Cable Support Assembly
2	5625	Ea.	Transformer, 500 VA Direct Burial Type
14	5625	Ea.	Connector Kit, Type VIII-CU
1874	5625	L.F.	Distribution Cable, No. 4 A.W.G. 600 Volt
140	5625	L.F.	Distribution Cable, No. 10 A.W.G. 600 Volt
70	842	L.F.	Signal Cable, 5-Conductor No. 14 A.W.G., Stranded
556	842	L.F.	Signal Cable, 7-Conductor No. 14 A.W.G., Stranded
1890	842	L.F.	Interconnect Cable 7-Conductor No. 14 A.W.G.
2	5625	Ea.	Pullbox, 24" 5713.09 with Conc. Cover, As per Plan
6	5625	Ea.	Pullbox, 18" 5713.09 with Conc. Cover, As per Plan
4	5625	Ea.	Ground Rods, 5713.16
84	5625	L.F.	Conduit, 3" 5713.04, Jacked Under Pavement
1085	5625	L.F.	Conduit, 3" 5713.04
1080	5625	L.F.	Trench
1	842	Ea.	2 Mast Arm Signal Support - .3125" x 12.0" dia. x 22' With Mast Arms .250" x 9.0" dia. x 33'-0" And .250" x 9.0" dia. x 32' Lg.
1	842	Ea.	Mast Arm Signal Support - .3125" x 12.0" dia. x 22' With Mast Arm .250" x 9.0" dia. x 40'-0" Lg.
3.90	842	C.Y.	Concrete For Anchor Base Foundations

CALL BY CAF DATE 3/2/76  
CHKD BY M.C.M. DATE 3/18/76



### SIGNAL DISPLAY CHART

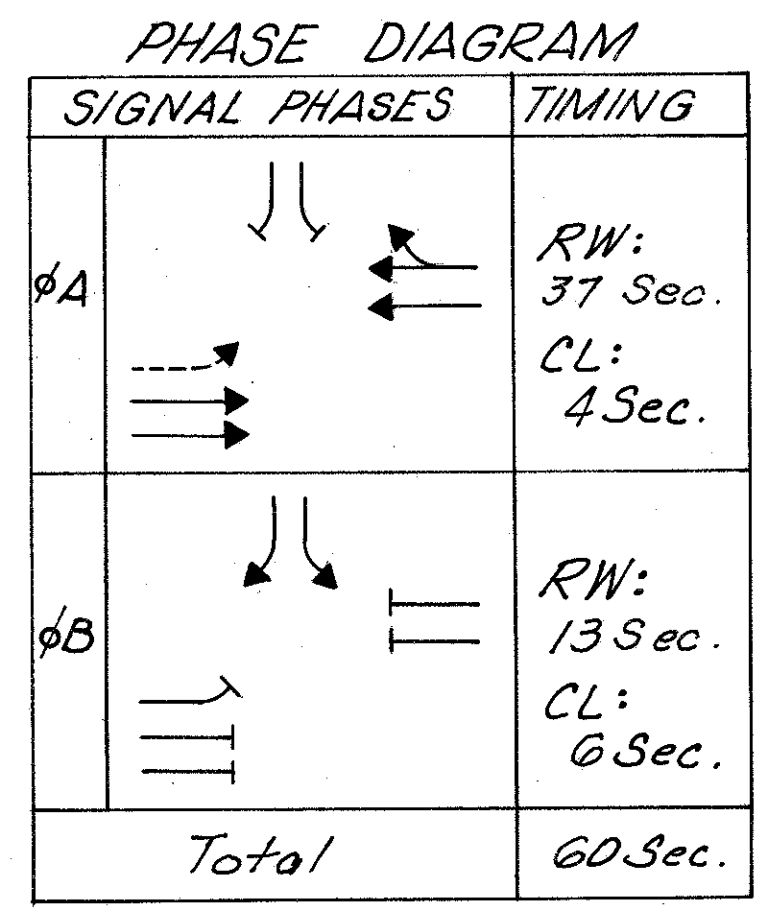
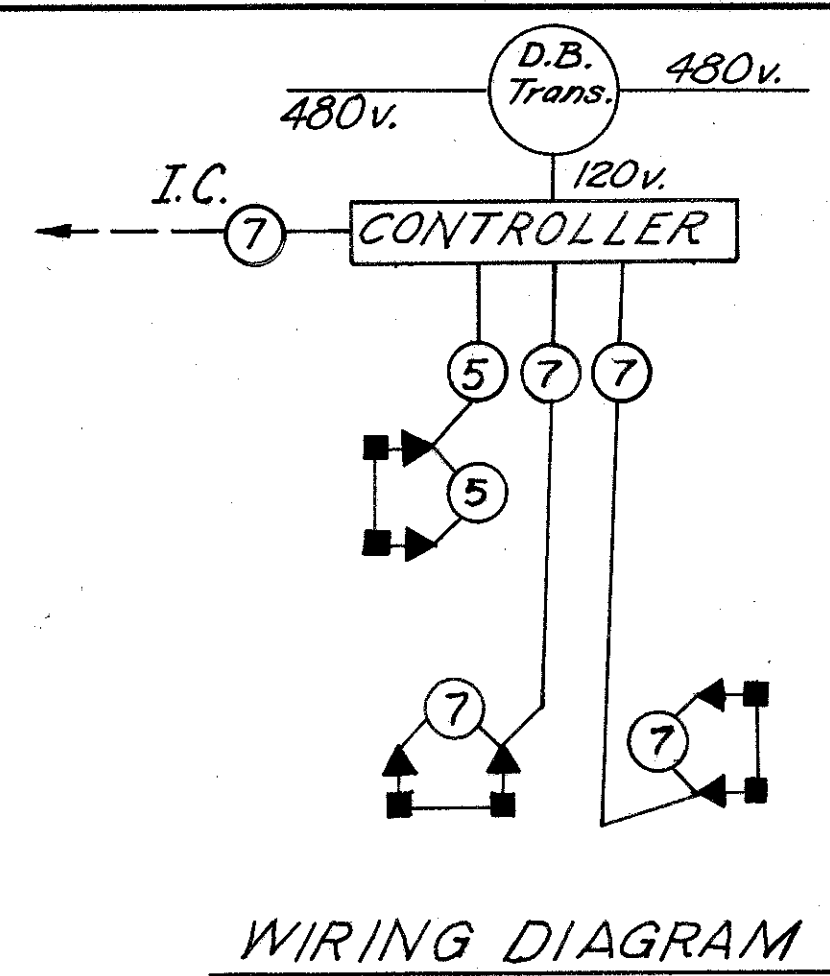
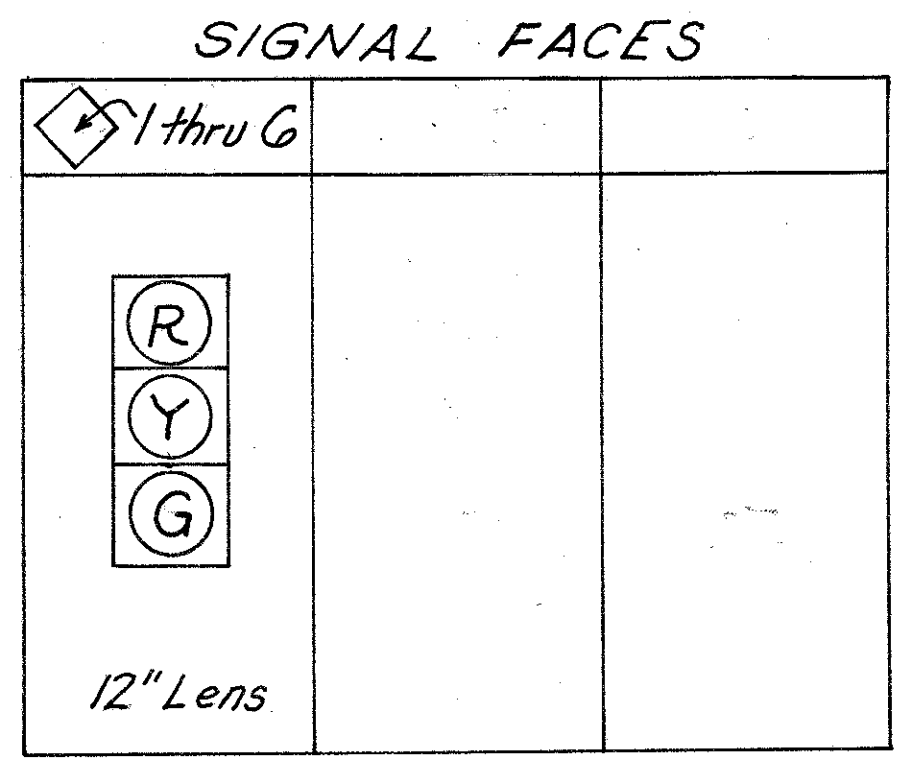
PHASE	phi A	phi B				FLASH
MOVEMENT	R/W	C	R/W	Cy	Cr	
SIGNAL						
1 thru 4	G	Y	R	R	R	Y
5 6	R	R	G	Y	R	R



### QUANTITIES

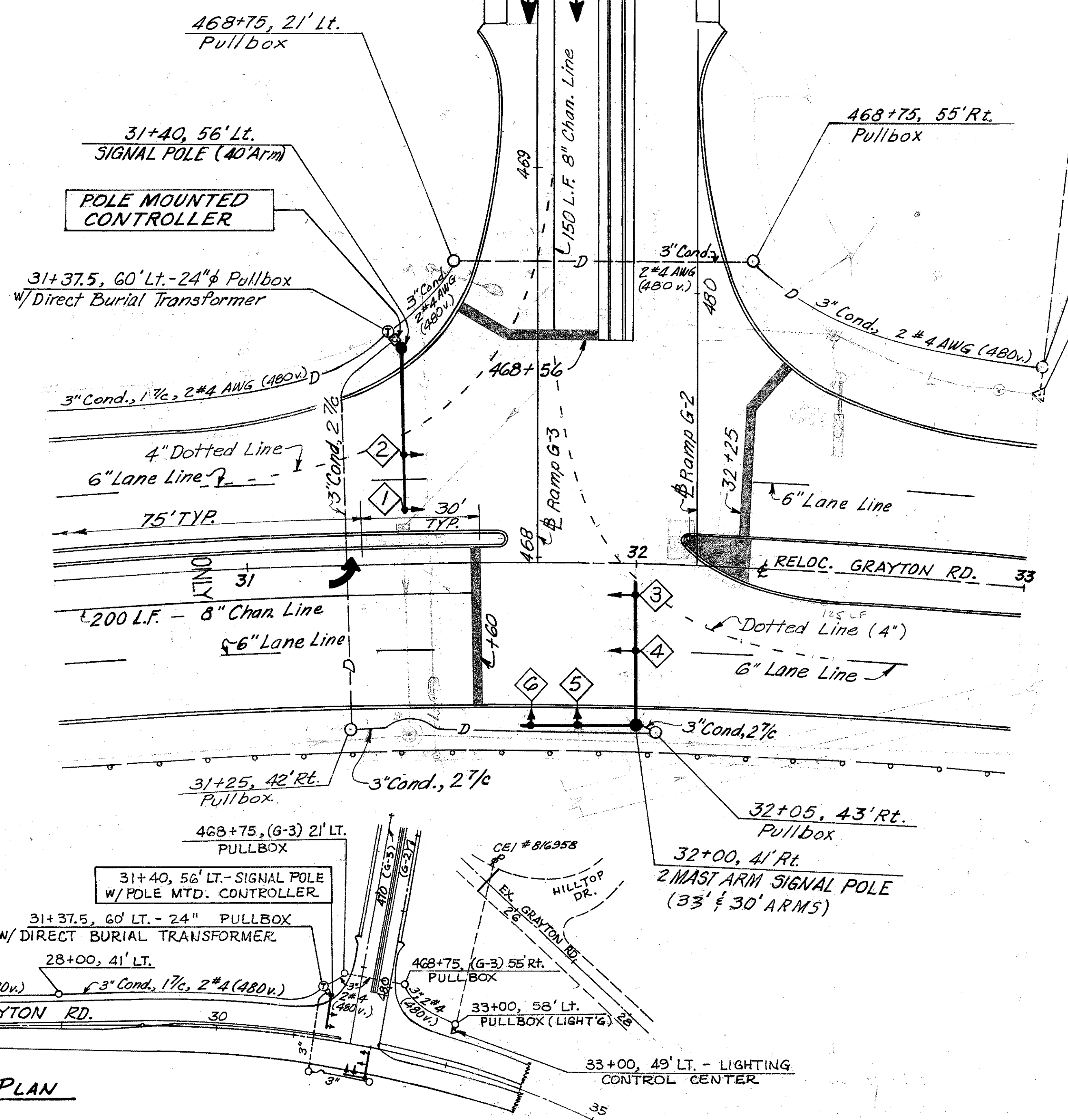
QUANTITY	ITEM	UNIT	DESCRIPTION
1	843	Ea.	Controller, Pretimed, 3 Phase, Electromechanical, with Cabinet, As per Plan
1	843	Ea.	Coordinator, Electromechanical, As per Plan
6	842	Ea.	Vehicular Signal Head, 3 Section, 12" Lens, One Way
2	842	Ea.	Cable Support Assembly
15	5625	L.F.	Distribution Cable, No. 10 A.W.G., 600 Volt
85	842	L.F.	Signal Cable, 5-Conductor No. 14 A.W.G., Stranded
560	842	L.F.	Signal Cable, 7-Conductor No. 14 A.W.G., Stranded
2	5625	Ea.	Pullbox, 18" S713.09 with Conc. Cover, As per Plan
3	5625	Ea.	Ground Rods, S713.16
196	5625	L.F.	Conduit, 3" S713.04
186	5625	L.F.	Trench
1	842	Ea.	Combination Luminaire & Mast Arm Signal Support, 3125" x 15.0" x 35.6" Pole With 250" x 9.0" x 40.0" Lg. Mast Arm
1	842	Ea.	2 Mast Arm Signal Support - 3125" x 12.0" dia. x 22' Pole With 250" x 9.0" dia. x 32.0" Lg. & 1793" x 8.0" dia. x 28.0" Lg. Arms
5.23	842	C.Y.	Concrete For Anchor Base Foundations
1.08	843	C.Y.	Concrete For Cabinet Foundation - Type 1, As Per Plan

**NOTES:**  
 For Signal Support Details, See Sheet No. 252  
 For Interconnect Plan & Quantities, See Sheets No. 254 & 256  
 For Legend, See Sheet No. 254  
 For Controller Foundation Modification, See Sht. No. 243 & TC-83.20



### SIGNAL DISPLAY CHART

PHASE	φA	φB				FLASH
MOVEMENT	R/W	G	R/W	C <sub>y</sub>	C <sub>r</sub>	
SIGNAL						
1 thru 4	G	Y	R	R	R	Y
5 6	R	R	G	Y	R	R

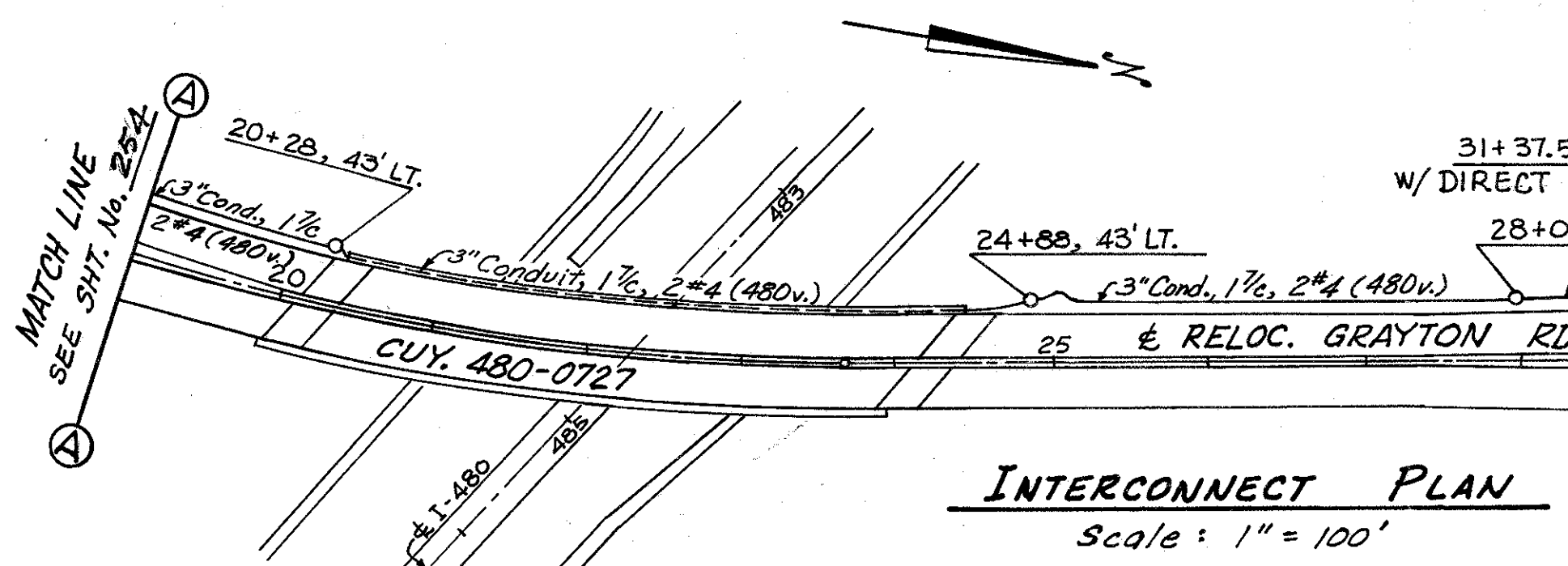


### NOTES:

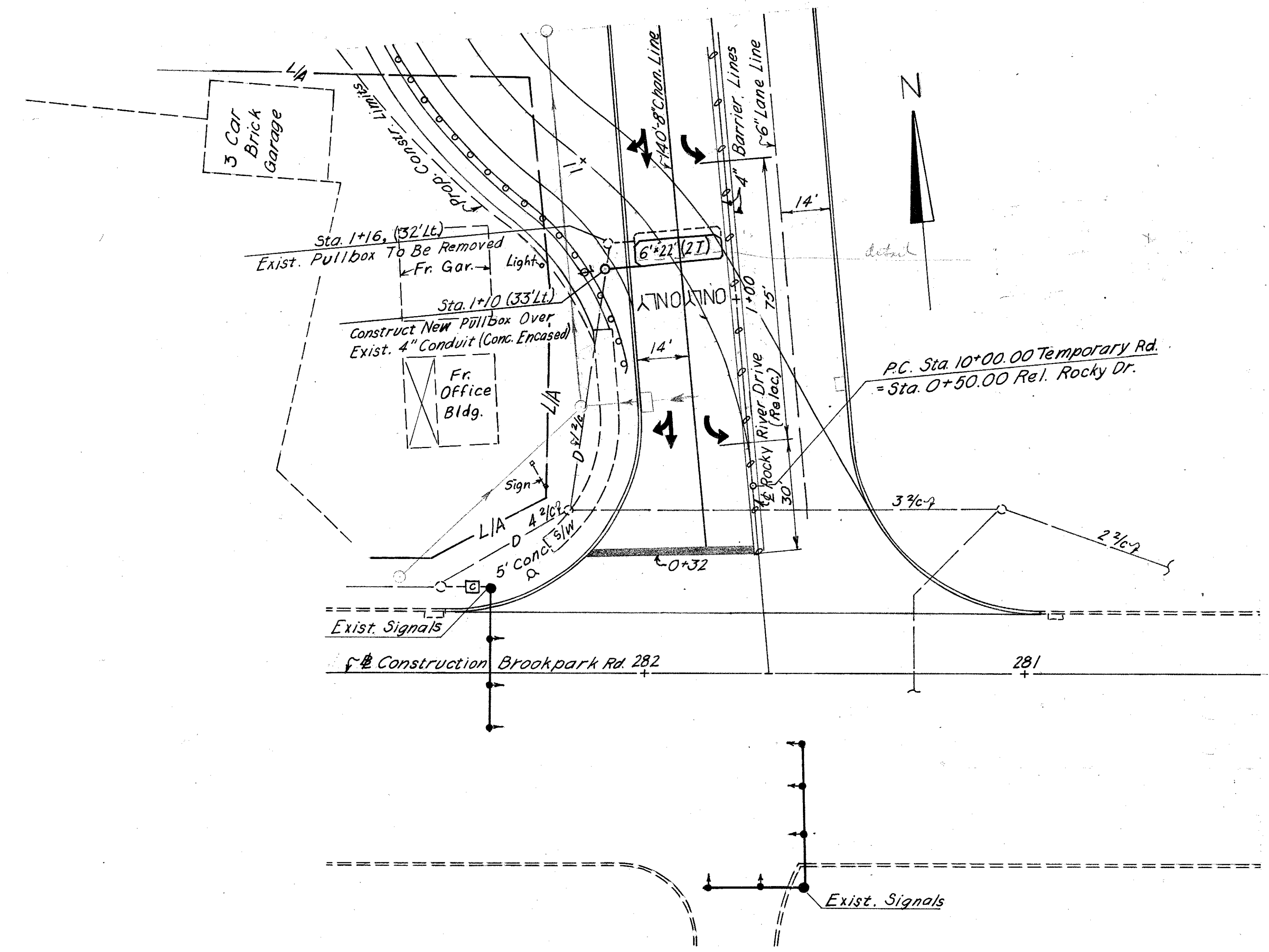
For Signal Support Details, See Sheet No. 253  
 For Additional Interconnect Quantities, See Sheet No. 254  
 For Legend, See Sheet No. 254

### QUANTITIES

QUANTITY	ITEM	UNIT	DESCRIPTION
1	843	Ea.	Controller, Pretimed, 3 Phase, Electromechanical, with Cabinet, As per Plan
1	843	Ea.	Coordinator, Electromechanical, As per Plan
6	842	Ea.	Vehicular Signal Head, 3 Section, 12" Lens, One Way
2	842	Ea.	Cable Support Assembly
1	5625	Ea.	Transformer, 500 VA Direct Burial Type
14	5625	Ea.	Connector Kit, Type VIII-CU
3068	5625	L.F.	Distribution Cable, No. 4 A.W.G., 600 Volt
15	5625	L.F.	Distribution Cable, No. 10 A.W.G., 600 Volt
82	842	L.F.	Signal Cable, 5-Conductor No. 14 A.W.G., Stranded
550	842	L.F.	Signal Cable, 7-Conductor No. 14 A.W.G., Stranded
1300	842	L.F.	Interconnect Cable 7-Conductor, No. 14 A.W.G.
1	5625	Ea.	Pullbox, 24" S713.09 with Conc. Cover, As per Plan
7	5625	Ea.	Pullbox, 18" S713.09 with Conc. Cover, As per Plan
3	5625	Ea.	Ground Rods, S713.16
1665	5625	L.F.	Conduit, 3" S713.04
1665	5625	L.F.	Trench
1	842	Ea.	2 Mast Arm Signal Support - 3/25" x 12.0" dia x 22' With Mast Arms, 250" x 9.0" dia x 33'-0" And 1793" x 8.0" dia x 30'-0" Lg.
1	842	Ea.	Mast Arm Signal Support - 3/25" x 12.0" dia x 21' With Mast Arm, 250" x 9.0" dia x 40'-0" Lg.
4.72	842	C.Y.	Concrete For Anchor Base Foundations



CUYAHOGA COUNTY  
 CUY-480-6.78

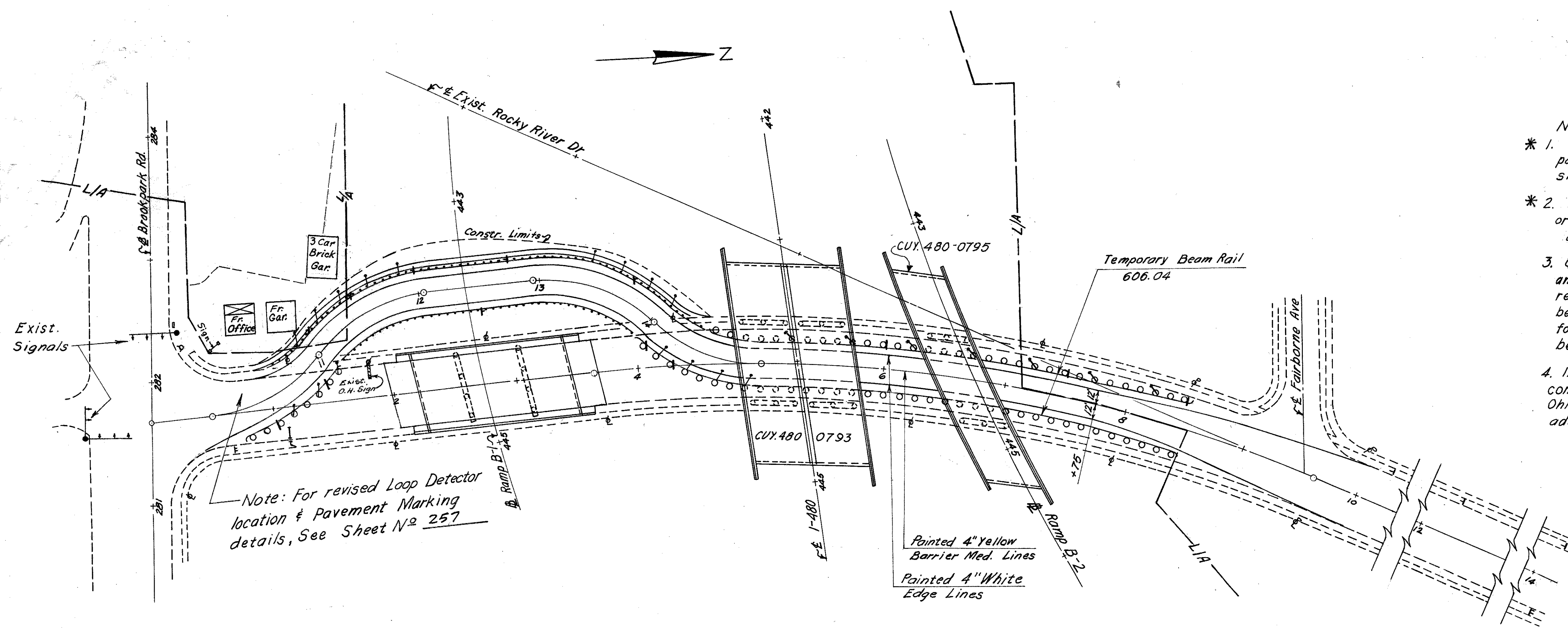


QUANTITIES			
QUANTITY	ITEM	UNIT	DESCRIPTION
59	842	L.F.	Loop Detector Pavement Cutting
138	842	L.F.	Loop Detector Wire
6	5625	L.F.	Conduit, 1" S713.04
6	5625	L.F.	Trench
1	5625	L.F.	Pullbox, 18" S713.09 With Conc. Cover, As Per Plan
1	5625	L.F.	Pullbox To be Removed

Note:  
 For Temporary Rd. Traffic Control  
 See Sheet No. 258  
 For Legend, See Sht. No. 254



CUYAHOGA COUNTY  
CUY-480-6.78



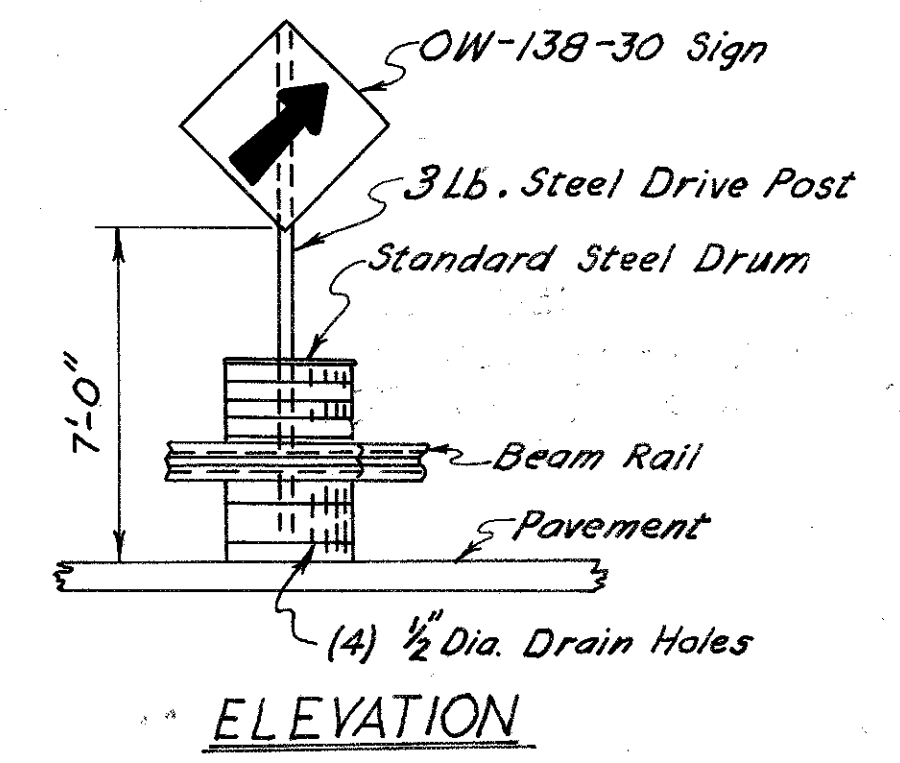
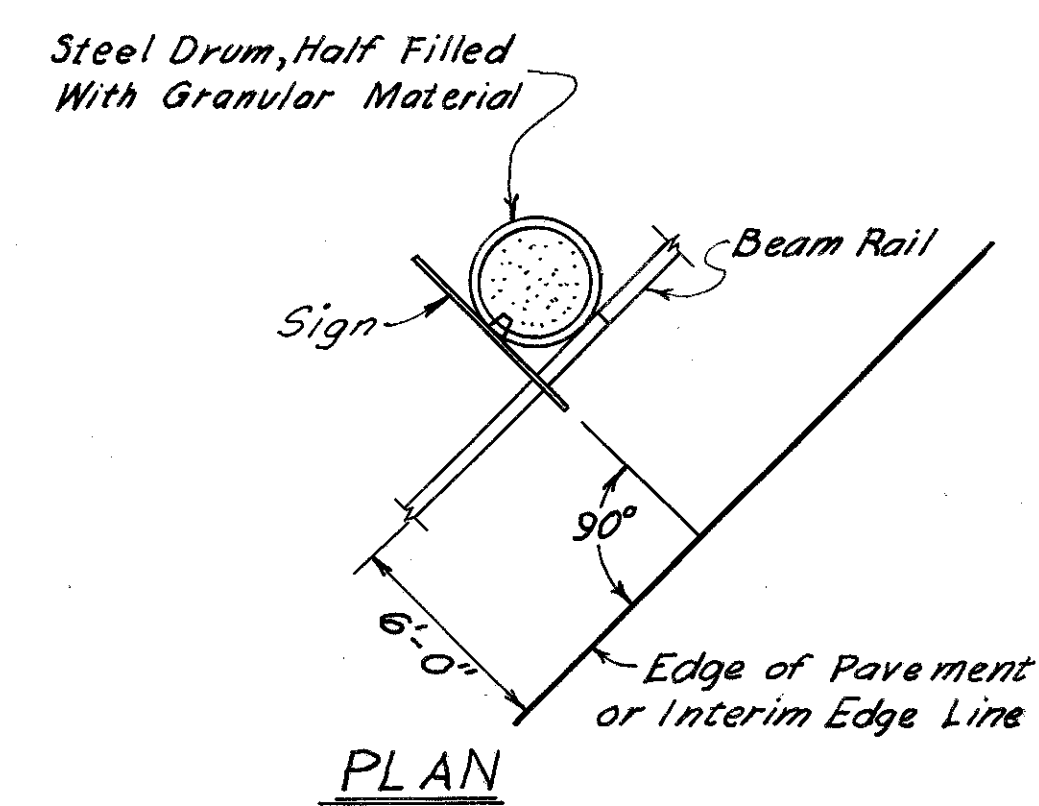
- Notes:
- \* 1. Painted pavement marking shall be used on all temporary pavement or pavement to be removed or resurfaced. Locations shown are approximate only.
  - \* 2. Temporary pavement marking shall be used when existing or new pavements are used. The marking shall be in accordance with S.S. 84.7, Type "B".
  - \* 3. Quantities shown on this sheet are for information only and the cost to furnish, erect, maintain and subsequently remove all necessary traffic control items or devices shall be included under 614-Maintaining Traffic. Station limits for items on this sheet are approximate only and may be revised as required by the Engineer.
  - \* 4. In addition to the signs tabled below, additional construction zone signing as outlined in Fig. C-19 of the Ohio Manual of Uniform Traffic Control Devices may be added where directed by the Engineer.

**LEGEND**

- d INTERIM SIGN (ON BARREL)
- o INTERIM DELINEATOR (TYPE "D")
- o-o TEMPORARY BEAM RAIL
- STANDARD BARRICADE
- INTERIM SIGN (ON "DRIVEN" POST(S))

Note: For revised Loop Detector location & Pavement Marking details, See Sheet N<sup>o</sup> 257

Note: For Placement details of OW-138-30 Signs See Tables, This Sheet.



**SIGN ATTACHMENT TO TEMPORARY BEAM RAIL**

STATIONS	SIDE	INTERVAL	PAINTED 4" WHITE EDGE LINE *		STANDARD BARRICADE	TEMPORARY BEAM RAIL 606.04	INTERIM DELINEATORS	INTERIM STEEL DRIVE POSTS, 2#
			L.F.	L.F.				
10+00 to 11+02 Temporary Road	E			102				
10+00 to 11+02 "	Rt.	25'	102		1	87.5	3	12.0
10+60 to 11+02 "	Lt.		42				1	7.5
11+02 to 14+03 "	E			301				
11+02 to 14+03 "	Lt.	25'	301				7	52.5
11+02 to 14+03 "	Rt.		301					
14+03 to 14+97 "	E			94				
14+03 to 14+97 "	Lt.		94		37.5		1	7.5
14+03 to 14+97 "	Rt.		94		100		4	16.0
5+00 to 8+50 Reloc. Rocky River Drive	E			350				
5+00 to 8+50 "	Lt.	50'	350		350		7	28.0
5+00 to 8+50 "	Rt.		350		350			
8+50 to 12+96 "	E			446				
8+50 to 10+00 "	Lt.		150					
8+50 to 10+00 "	Rt.		150					
<b>TOTALS</b>			1934	1293	1	925	23	123.5

SIGN & SUPPORT SUMMARY	STATIONS	SIDE	SIGNS										SUPPORTS (STEEL)				
			OC-4-48	OC-8-60	OW-5-30	OW-6-30	W-47-36	OW-60-36	R-31A-36	OW-122-36	OW-128-36	OW-138-30	OW-143-34	TOTAL SIGN AREA	#3 Post (BARREL)	#3 Post (G.M.S.S.)	#6 Post (G.M.S.S.)
	10+37.5 Temporary Rd.	Rt.				1							1	10.25	11.0		
	10+87.5 "	Rt.											1	6.25	11.0		
	11+50 "	Lt.											1	6.25		15.5	
	12+00 "	Lt.				1								9.0			16.0
	12+50 "	Rt.										1	10.25			15.5	
	12+75 "	Lt.										1	10.25			15.5	
	13+70 "	Lt.										1	6.25			15.5	
	14+10± "	Rt.										1	6.25	11.0			
	14+33± "	Rt.										1	6.25	11.0			
	11+12.5± "	Lt.									1		7.5			15.5	
	0+6.5 Reloc. Rocky River Dr.	Rt.	1										10.00			14.0	
	6+00 "	Lt.				1						1	10.25	11.0			
	7+50 "	Lt.										1	6.25	11.0			
	8+50 "	Lt.										1	10.25	11.0			
	10+20 "	Lt.									1		9.0			16.0	
	12+25 "	Lt.										1	9.0			16.0	
	14+10 "	Rt.	1										10.0			14.0	
	14+15 "	Lt.										1	9.0			16.0	
<b>TOTALS</b>			1	1	2	2	1	1	1	1	1	7	152.28	77.0	102.5	95.0	

9-1

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**GRAYTON RD. CURVE DATA**

P.I. Sta. 21+06.84  
 $\Delta = 20^{\circ}11'39''$   
 $D_c = 4^{\circ}00'00''$   
 $R = 1432.39'$   
 $L = 504.85'$   
 $T = 255.07'$   
 $C = 502.24'$

FED. RD. DIVISION	STATE	PROJECT	TYPE FUNDS
2	OHIO		260 317

CUYAHOGA COUNTY  
 CUY - 480-6.78

**NOTES:**

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

The 24" sanitary sewer and the culverts shall remain as shown.

For detail of Relocated Storm sewer see Sht. 27

\* Top of slope elevation at face of Abutment.

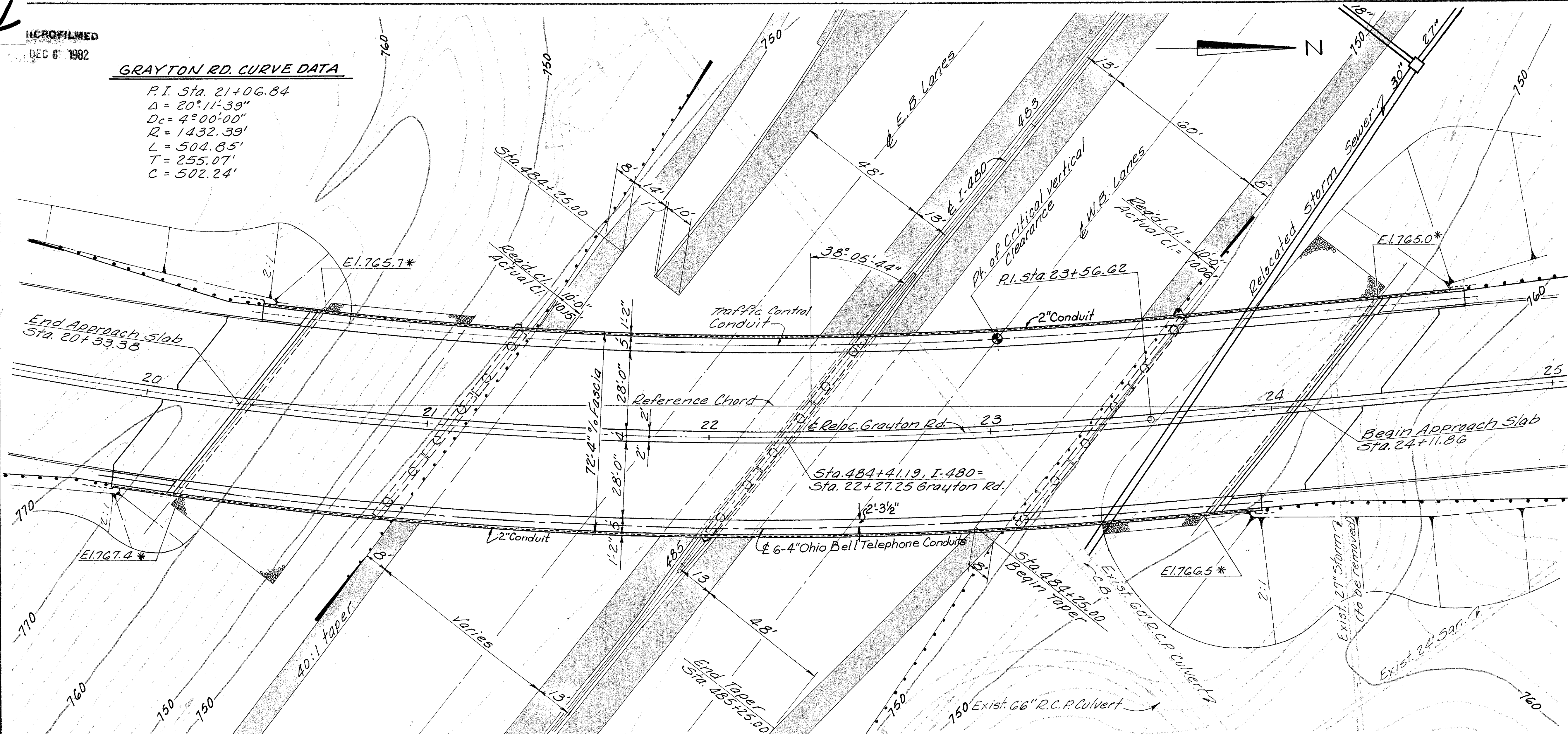
For definition of Reference Chord see Sht. 3/17

**PROPOSED STRUCTURE**

TYPE: Continuous steel girders with reinforced concrete deck and substructure.  
 SPANS: 72'-0", 119'-3", 111'-6", 70'-0" 9/16 Brgs. along & Reloc. Grayton Rd.  
 ROADWAY: 60'-0" f/r curbs, 5'-0" sidewalks with Concrete Parapets & 4'-0" Chain-link fence and 4'-0" raised median.  
 LOADING: HS 20-44 and The Alternate Military Loading - Fatigue Case II.  
 WEARING SURFACE: 2 1/2" Asphalt concrete.  
 SKEW: 38°-05'-44" Left forward with Reference Chord  
 ALIGNMENT: 4°-00'-00" curve left and tangent.  
 APPROACH SLABS: AS-1-12 Mod. (25' long)  
 SUPERELEVATION: Varies

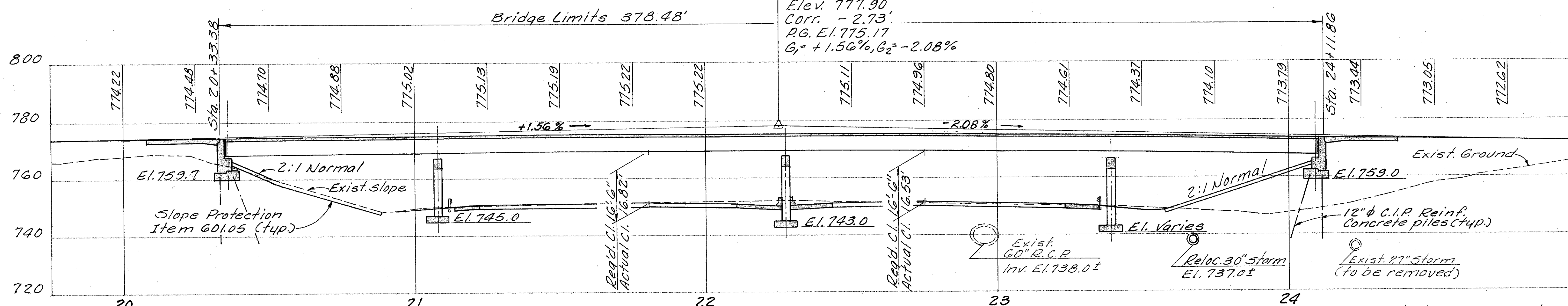
**TRAFFIC ESTIMATE**

Design Year: 1990  
 Total ADT: 10,400  
 A.D.T.T.: 520



**PLAN**

P.V.I. Sta. 22+25.00  
 600' V.C.  
 Elev. 777.90  
 Corr. - 2.73'  
 P.G. El. 775.17  
 $G_1 = +1.56\%$ ,  $G_2 = -2.08\%$



**PROFILE ALONG & RELOCATED GRAYTON ROAD**

Estimated average pay length for piles 15:  
 S. Abut. - 20'  
 N. Abut. - 25'

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 CONSULTING ENGINEERS  
 CLEVELAND, OHIO COLUMBUS, OHIO WHEELING, W. VA.

**SITE PLAN**

BRIDGE NO CUY - 480-0727  
 I-480 UNDER RELOCATED GRAYTON ROAD  
 CUYAHOGA COUNTY STA. 20 + 33.38  
 STA. 24 + 11.86

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
G.W.M.	R.T.		MEM	G.W.M.	7/16/90	

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DEC 6 1982

FED. RD. DIVISION	STATE	PROJECT	TYPE FUNDS
2	OHIO		

261  
317

CUYAHOGA COUNTY  
CUY-480-6.78

STANDARD DRAWING REFERENCES

DESCRIPTION	DWG. NO.	SHT.	DATE
END DAM AND END CROSSFRAME SCUPPERS	SD-1-69*	1-2	6-12-69
	SD-1-69	3	6-12-69

ROCKERS AND BOLSTERS	RB-1-55		2- 2-59 R
APPROACH SLABS	AS-1-72 (MOD)	*	6-30-72
STRUCTURE LIGHTING I	HL-4		1-21-76 R
STRUCTURE LIGHTING II	HL-5		9-06-73 R
UNDERPASS LIGHTING	HL-6		3-22-77 R
STRUCTURE GROUNDING	HL-7		1-21-76 R
(R INDICATES REVISED DATE)			
POLE BASE DETAILS	HL-3		7-27-73

SUPPLEMENTAL SPECIFICATION REFERENCES

DESCRIPTION	NO.	DATE
CHEMICAL ADMIXTURE FOR CONCRETE, TYPE A, B OR D	808	1- 1-71
CONCRETE CURING AND PROTECTIVE MEMBRANE	836	3-12-75
SPECIAL PILE TESTS	838	1-13-77

COMMON DETAIL REFERENCES

DECK DRAINAGE DETAILS SHEET 307

DESIGN SPECIFICATIONS

THIS STRUCTURE CONFORMS TO THE 'STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES' ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY OFFICIALS, 1973, INCLUDING THE OHIO 'SUPPLEMENT' TO THESE SPECIFICATIONS.

DESIGN DATA

DESIGN LOADING - HS20-44 AND THE ALTERNATE MILITARY LOADING, FATIGUE CASE II  
CONCRETE CLASS C - UNIT STRESS 1200 PSI FOR SUPERSTRUCTURE  
UNIT STRESS 1333 PSI FOR SUBSTRUCTURE  
STRUCTURAL STEEL - ASTM A36 - UNIT STRESS 20000 PSI  
REINFORCING STEEL - ASTM A615, A616 OR A617 - UNIT STRESS 20000 PSI.

SPIRAL REINFORCEMENT MAY BE PLAIN BARS ASTM A82, OR A615.

EMBANKMENT CONSTRUCTION

THE EMBANKMENTS SHALL BE CONSTRUCTED TO THE LEVEL OF THE SUBGRADE FOR A MINIMUM DISTANCE OF 200 FEET BACK OF THE ABUTMENTS. EXCAVATION SHALL THEN BE MADE FOR THE ABUTMENTS.

- \* STANDARD DRAWING AS-1-72 SHALL BE MODIFIED TO PROVIDE 3 INCH CLEARANCE TO THE TOP REBARS INSTEAD OF THE 2 INCH SHOWN AND JACKING HOLES SHALL BE OMITTED.
- \* END DAM DETAILS, STANDARD DRAWING SD-1-69, SHEET-1 ARE MODIFIED TO REQUIRE USE OF THE 3"x1/4" BAR, SHOWN FOR "BRIDGE ON GRADE", FOR ALL APPLICATIONS.

MINIMUM BAR LAP SHALL BE 30 DIAMETERS.

PILES

PILES SHALL BE DRIVEN TO A MINIMUM BEARING CAPACITY OF-  
35 TONS PER PILE FOR THE ABUTMENTS

FOUNDATION BEARING PRESSURE

PIER FOOTINGS ARE DESIGNED FOR A MAXIMUM BEARING PRESSURE OF 3.0 TONS PER SQ. FT.

UTILITY LINES

ALL EXPENSE INVOLVED IN INSTALLING THE AFFECTED UTILITY LINES SHALL BE BORNE BY THE OWNERS. THE CONTRACTOR AND OWNERS ARE REQUESTED TO COOPERATE BY ARRANGING THEIR WORK IN SUCH A MANNER THAT INCONVENIENCE TO EITHER WOULD BE HELD TO A MINIMUM.

REINFORCING BAR LAPPED SPLICES

ALL SPLICES SHALL BE LAPPED 30 BAR DIAMETERS, EXCEPT THAT BARS NEAR THE TOP OF MEMBERS HAVING MORE THAN 12 INCHES OF CONCRETE UNDER THE BARS SHALL BE LAPPED 35 BAR DIAMETERS.

SUPPLEMENTAL SPECIFICATION REFERENCES-CONTINUED

DESCRIPTION	NO.	DATE
PAINTING FOR NEW STRUCTURAL STEEL	846	4-25-77
INORGANIC ZINC SILICATE PAINT	950	4-25-77
BLUE GREEN VINYL PAINT	951	4-25-77

MONOLITHIC WEARING SURFACE THICKNESS IS ASSUMED TO BE 1"

DECK PROTECTION METHOD: EPOXY COATED REINFORCING STEEL, TOP MAT ONLY, AND MEMBRANE WATERPROOFING WITH ASPHALT CONCRETE OVERLAY.  
PREFORMED BEARING PADS: IN LIEU OF THE HARDNESS REQUIREMENT OF 711.21, PREFORMED BEARING PADS SHALL HAVE SHORE A DUROMETER OF 80±10.

PREMOLDED SEALING STRIP AS PER PLAN: IN LIEU OF PREMOLDED SEALING STRIP, TYPE B WATERPROOFING (36" WIDE) MAY BE USED. TYPE B WATERPROOFING (36" WIDE) SHALL BE PAID FOR BY THE LINEAR FOOT AT THE SAME UNIT PRICE BID FOR ITEM 512, PREMOLDED SEALING STRIP AS PER PLAN.

BRIDGE TERMINAL ASSEMBLIES AT ALL FOUR CORNERS SHALL BE TYPE A AS PER STD. DWG. GR-3 WITHOUT WHEELGUARD. CONCRETE INSERT ANCHOR ASSEMBLIES PER STANDARD CONSTRUCTION DRAWINGS GR-3 AND GR-1 SHALL BE PLACED DURING PARAPET CONSTRUCTION FOR ATTACHMENT OF GUARDRAIL TO THE CONCRETE PARAPETS.

ITEM	TOTAL	UNIT	DESCRIPTION	ABUTS	PIERS	SUPER	GENERAL		
404	162	C.Y.	ASPHALT CONCRETE, AC-20 AS PER PLAN			162			
503	LUMP	SUM	COFFERDAMS, CRIBS AND SHEETING				LUMP		
503	1277	C.Y.	UNCLASSIFIED EXCAVATION	562	715				
507	1200	L.F.	12 INCH CAST-IN-PLACE REINFORCED CONCRETE PILES	1200					
509	231506	LB	REINFORCING STEEL	30717	86765	114024			
SPECIAL	108163	LB	EPOXY COATED REINFORCING STEEL (SEE PROPOSAL NOTE)	34		108129			
511	974	C.Y.	CLASS C CONCRETE, SUPERSTRUCTURE (SEE PROPOSAL NOTE)			974			
511	247	C.Y.	CLASS C CONCRETE, ABUTMENTS ABOVE FOOTINGS	247					
511	205	C.Y.	CLASS C CONCRETE, PIER CAPS AND COLUMNS		205				
511	348	C.Y.	CLASS C CONCRETE, FOOTINGS	155	193				
512	21	L.F.	PREMOLDED SEALING STRIP AS PER PLAN	21					
513	920,750	LB	STRUCTURAL STEEL, PRIMER AS PER 846 (SEE PROPOSAL NOTE)			920,750			
846	920,750	LB	FIELD PAINTING OF STRUCTURAL STEEL			920,750			
517	835.07	L.F.	BRIDGE RAILING (CONCRETE PARAPET WITH 4'-0" CHAIN LINK FENCE, AS PER PLAN)	85.83		749.24			
518	163	C.Y.	POROUS BACKFILL	163					
518	752	L.F.	SUBDRAINAGE FOR WEARING SURFACE COURSE, AS PER PLAN			752			
518	12	EA	SCUPPERS INCLUDING SUPPORTS			12			
518	168	L.F.	6 INCH PERFORATED, HELICAL CSP, 707.01	168					
518	98	L.F.	6 INCH NON-PERFORATED, HELICAL CSP, INCLUDING SPECIALS, 707.01	98					
601	1110	S.Y.	CRUSHED AGGREGATE SLOPE PROTECTION				1110		
5625			SEE SHEET 215 FOR LIGHTING SUMMARY						
808	974	UNIT	CHEMICAL ADMIXTURE FOR CONCRETE, TYPE A, B OR D			974			
838	3	HR	SPECIAL PILE TESTS				3		
SPEC	2332	S.Y.	MEMBRANE WATERPROOFING (SEE PROPOSAL NOTE)			2332			

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CLEVELAND, OHIO COLUMBUS, OHIO WHEELING, W. VA.

GENERAL NOTES AND  
ESTIMATED QUANTITIES  
BRIDGE NO. CUY-480-0727  
1-480 UNDER RELOCATED  
GRAYTON ROAD  
STA. 20+33.38  
STA. 24+11.86  
CUYAHOGA COUNTY

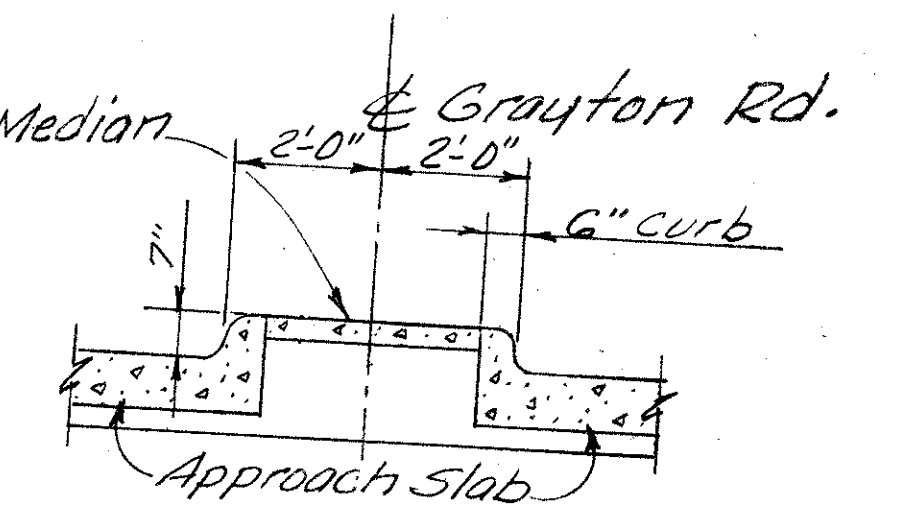
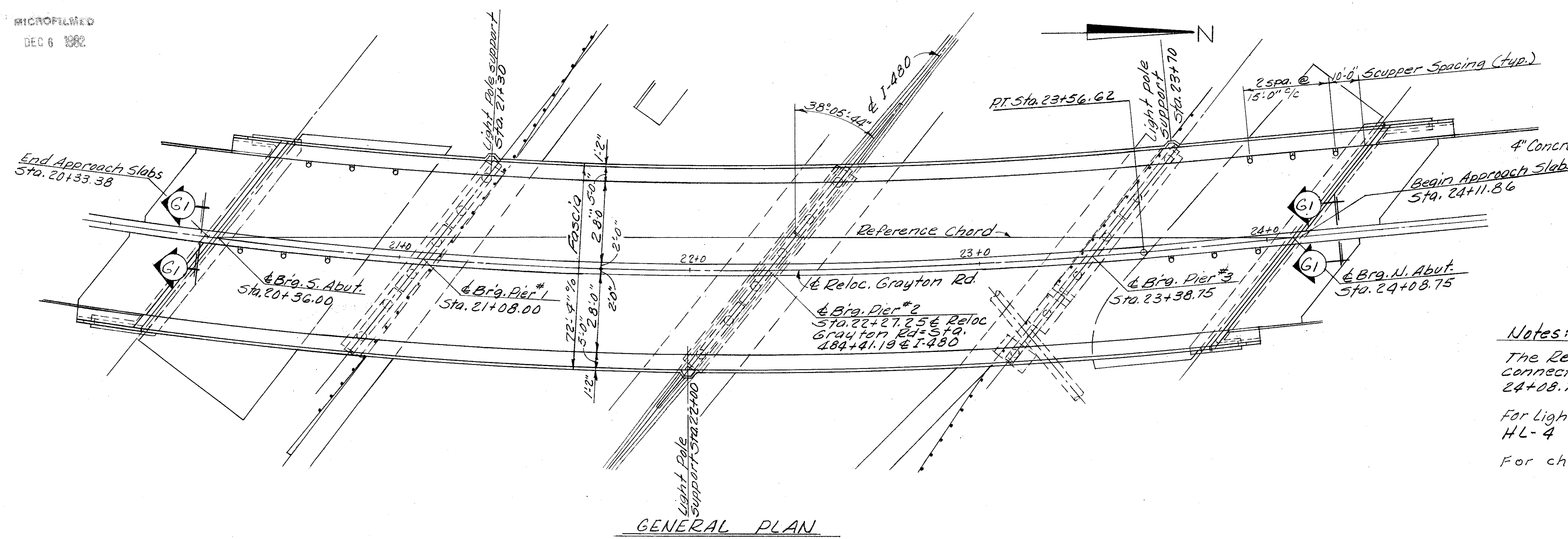
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
R.T.				MEM	G.W.M. 11/6/76	

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DEC 6 1982

FED. RD. DIVISION	STATE	PROJECT	TYPE FUNDS
2	OHIO		

262  
3/7

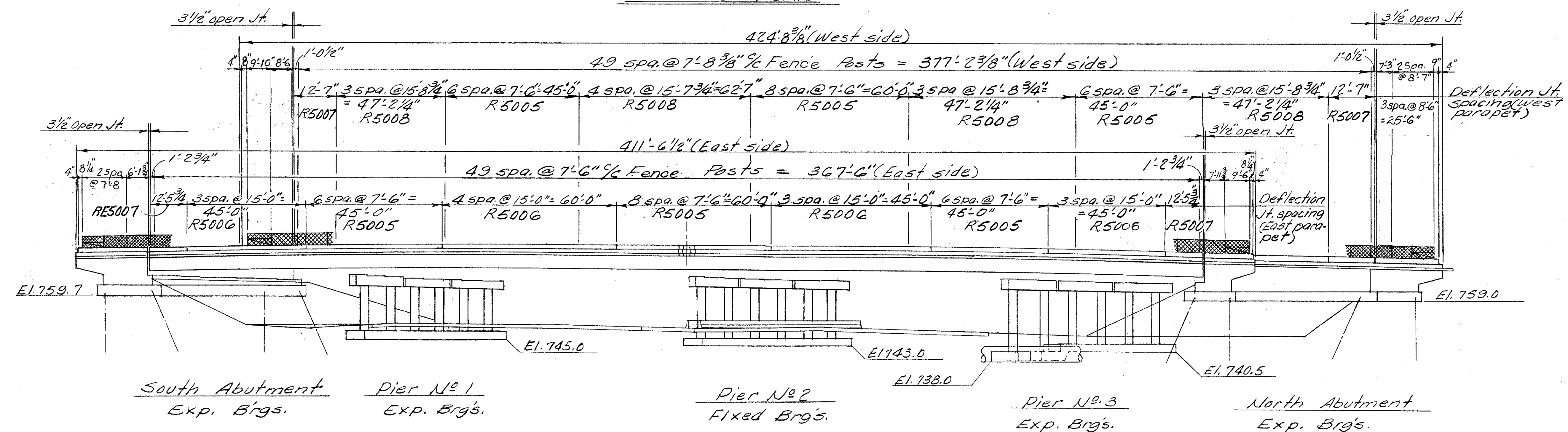
CUYAHOGA COUNTY  
CUY-480-6.78



SECTION G1-G1  
(Showing concrete median)

Notes:  
The Reference Chord is a straight line connecting station points 20+36.00 and 24+08.75 on the E of Relocated Grayton Rd.  
For Light Pole support details see Std. Dwg. HL-4  
For chain-link fence details, see Sh. No. 307A

GENERAL PLAN



ELEVATION

ALDEN E. STILSON & ASSOCIATES, LIMITED CONSULTING ENGINEERS CLEVELAND, OHIO COLUMBUS, OHIO WHEELING, W. VA.						
<b>GENERAL PLAN</b>						
BRIDGE No CUY-480-0727						
I-480 UNDER RELOCATED GRAYTON ROAD						
CUYAHOGA COUNTY STA. 20 + 33.38						
STA. 24 + 11.86						
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
WM	R.T.		MEM	G.W.M.	11/6/78	

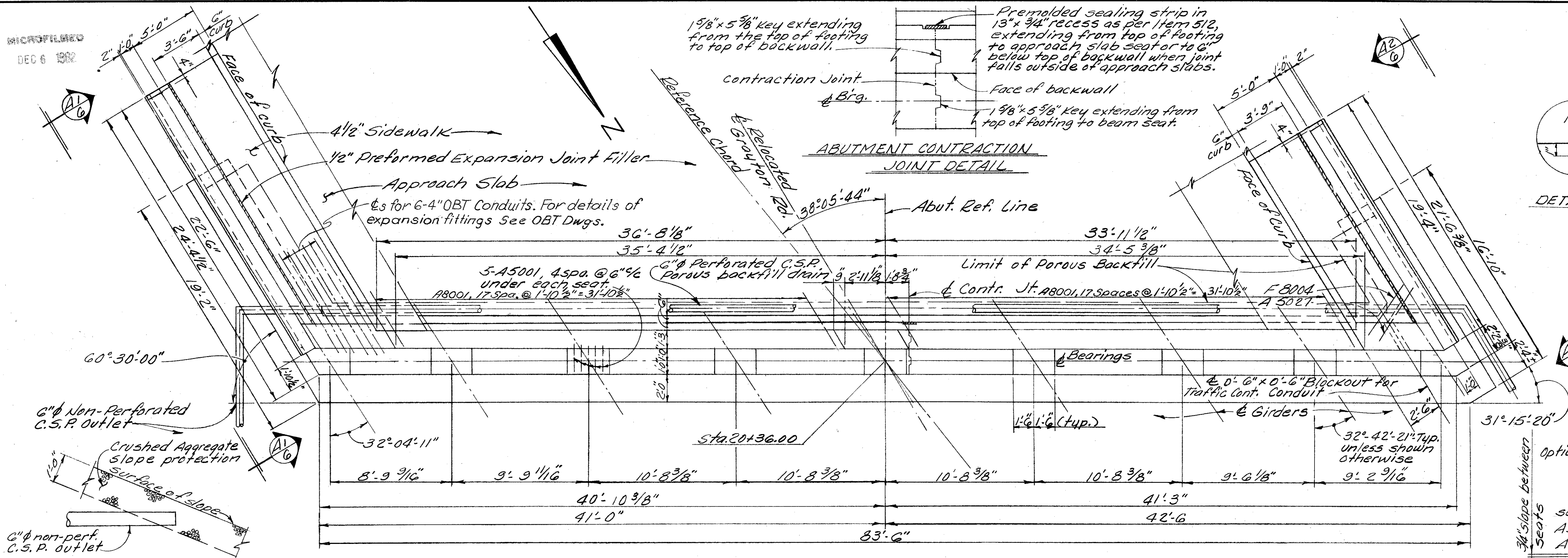
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DEC 6 1982

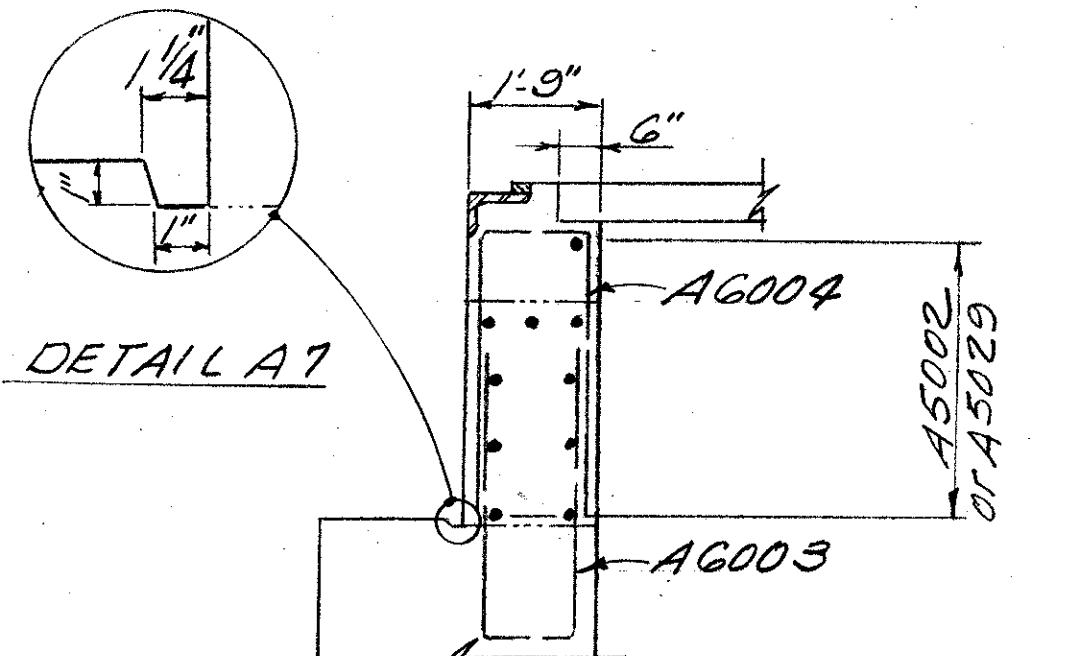
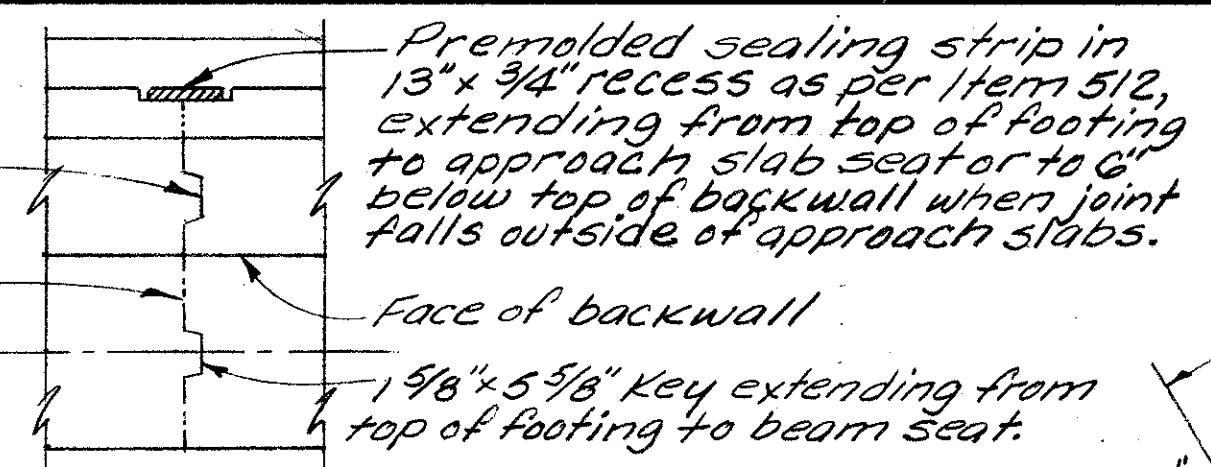
FED. RD. DIVISION	STATE	PROJECT	TYPE FUNDS
2	OHIO		

CUYAHOGA COUNTY  
CUY-480-6.78

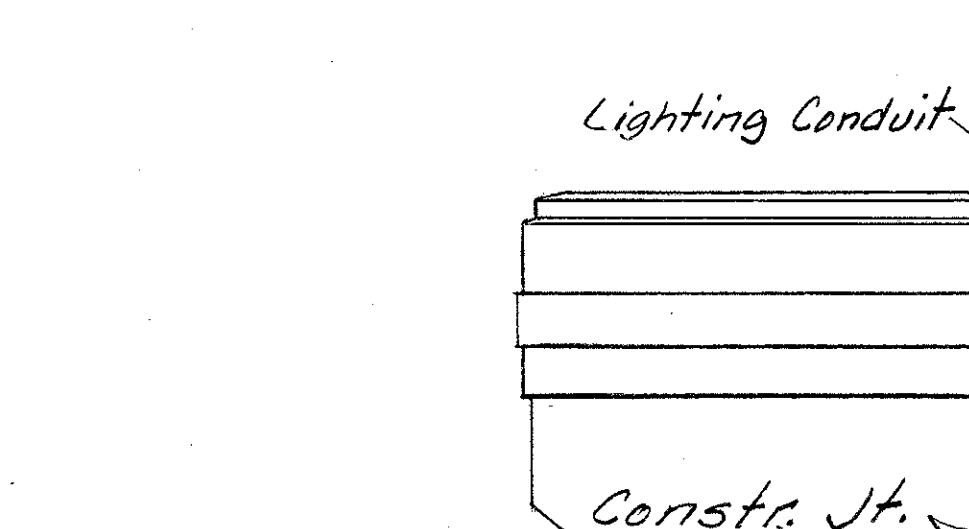
263  
317



**ABUTMENT CONTRACTION JOINT DETAIL**

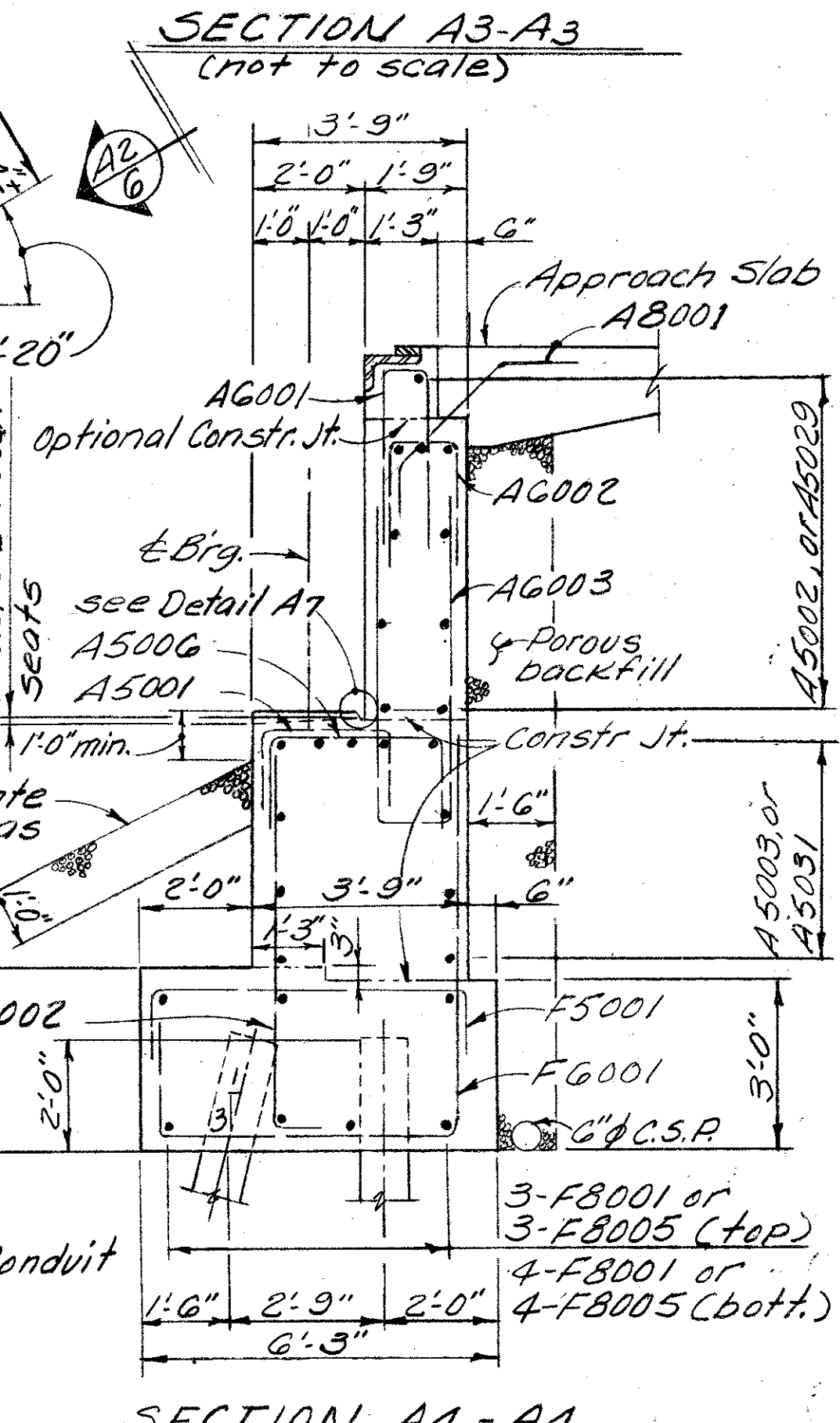
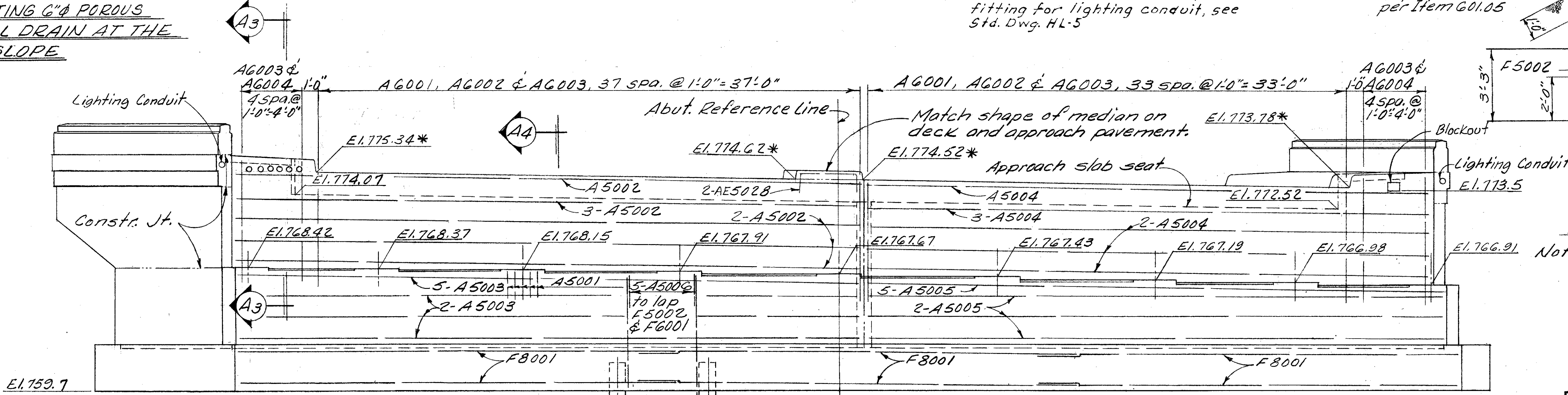


**DETAIL SHOWING METHOD OF TERMINATING 6" PERFORATED BACKFILL DRAIN AT THE FRONT SLOPE**



Note: For details of electrical expansion fitting for lighting conduit, see Std. Dwg. HL-5

Crushed Aggregate slope protection as per Item 601.05



Backwall Concrete: In addition to the provisions of 511.08, backwall concrete above the optional construction joint at the approach slab seat shall not be placed until after the deck concrete in the span adjacent to the backwall has been placed.

\*or backwall concrete above the bridge seat

Only that portion of the C.S.P. located within the porous backfill shall be perforated. The 6" C.S.P. shall be extended out into the front slopes & terminated near the surface as shown by detail this sheet.

\* Pavement elevations at face of backwall.

For pile locations, footing reinforcing and dimensions not shown, see Abutment Foundation plan, Sht. 7117

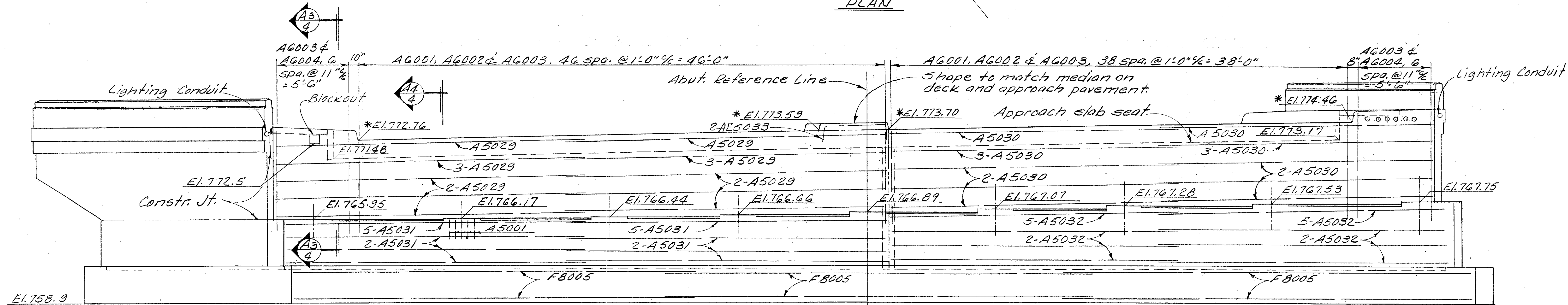
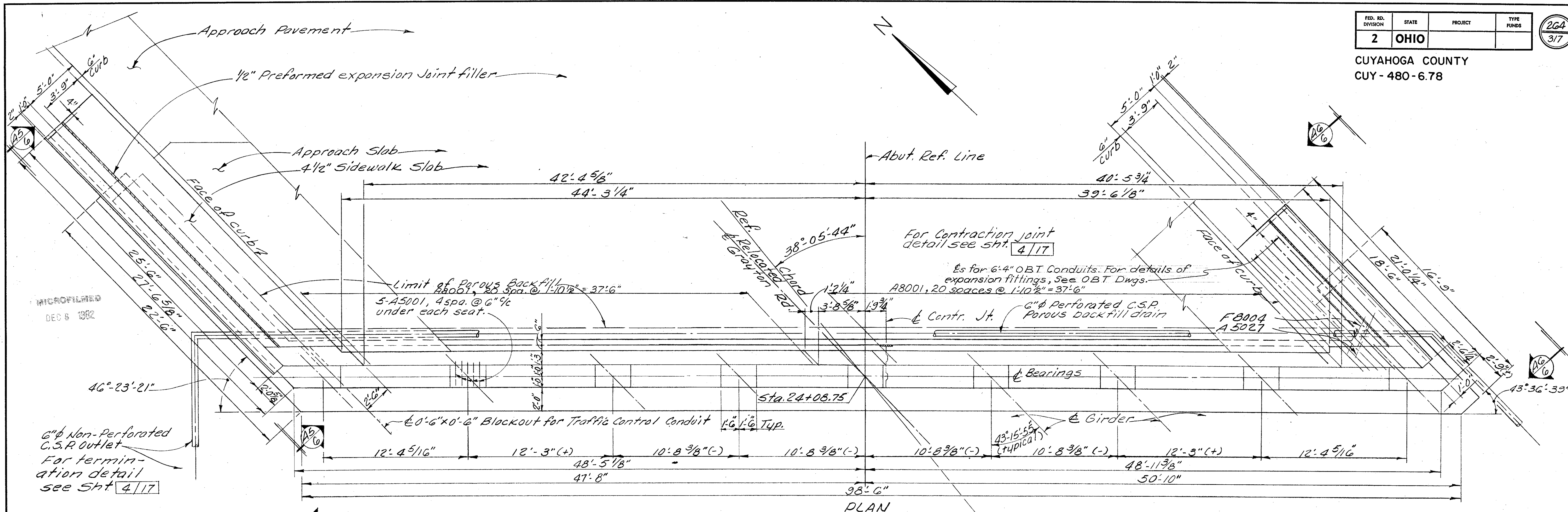
Porous backfill, 1.5 feet thick shall extend up to the plane of the subgrade and laterally to the ends of the wing walls.

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 CLEVELAND, OHIO COLUMBUS, OHIO WHEELING, W. VA.

**SOUTH ABUTMENT DETAILS**  
 BRIDGE No CUY-480-0727  
 I-480 UNDER RELOCATED GRAYTON ROAD  
 CUYAHOGA COUNTY STA. 24 + 33.38  
 STA. 20 + 11.86

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
WM	R.T.		MEM	G.W.M.	1/14	1/16

4/17



Note: Footing reinforcement shall have a mini. cover of 3" at all surfaces.

For pile locations, footing reinforcing and dimensions not shown, see Abutment Foundation Plan, Sht. 7/17

\* Pavement elevations at face of Abutment.

For additional notes see Sht. 4/17

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 CONSULTING ENGINEERS  
 CLEVELAND, OHIO COLUMBUS, OHIO WHEELING, W. VA.

**NORTH ABUTMENT DETAILS**  
 BRIDGE NO CUY - 480 - 0727  
 I-480 UNDER RELOCATED GRAYTON ROAD  
 CUYAHOGA COUNTY STA. 20 + 33.38  
 STA. 24 + 11.86

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
WM	RT		MEM	G.W.M.	7/16	

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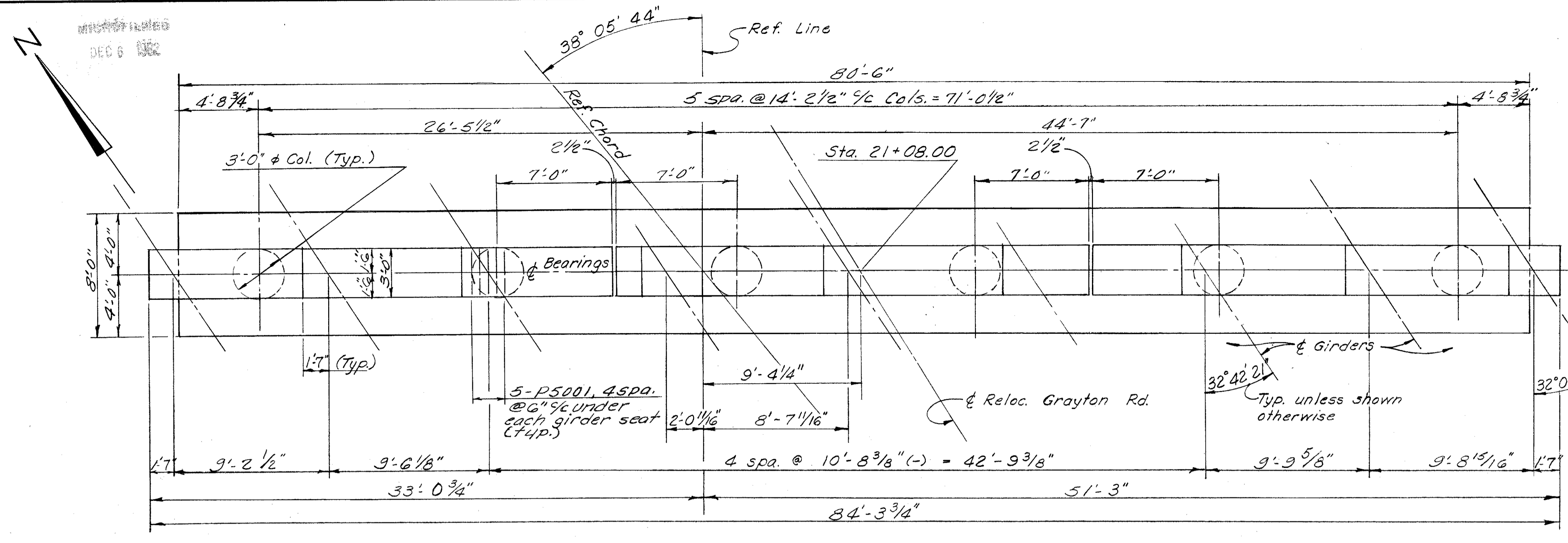




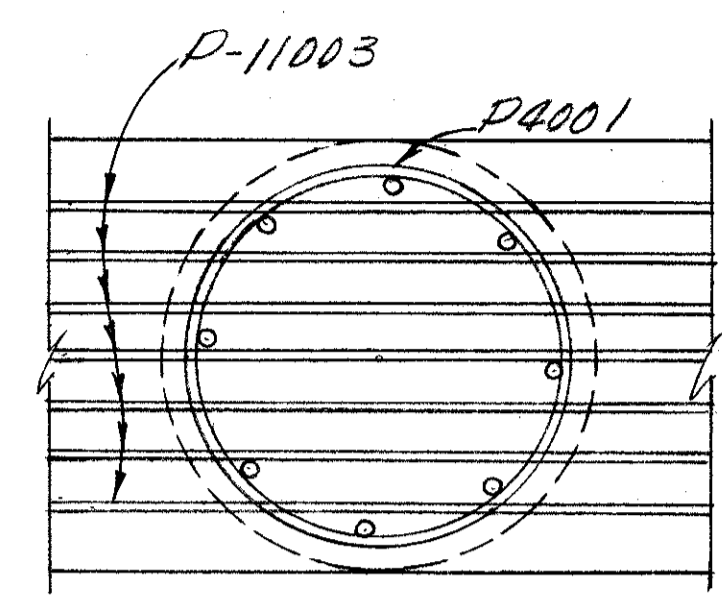
FED. RD. DIVISION	STATE	PROJECT	TYPE FUNDS
2	OHIO		

267  
317

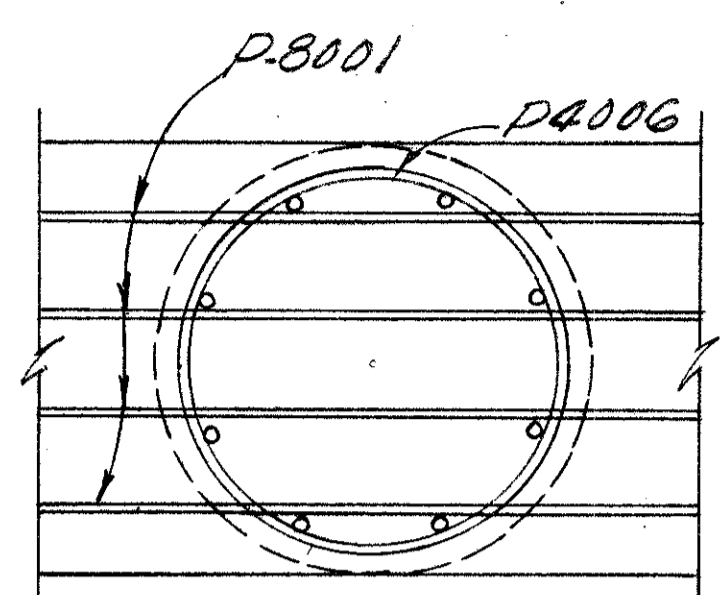
CUYAHOGA COUNTY  
CUY - 480 - 6.78



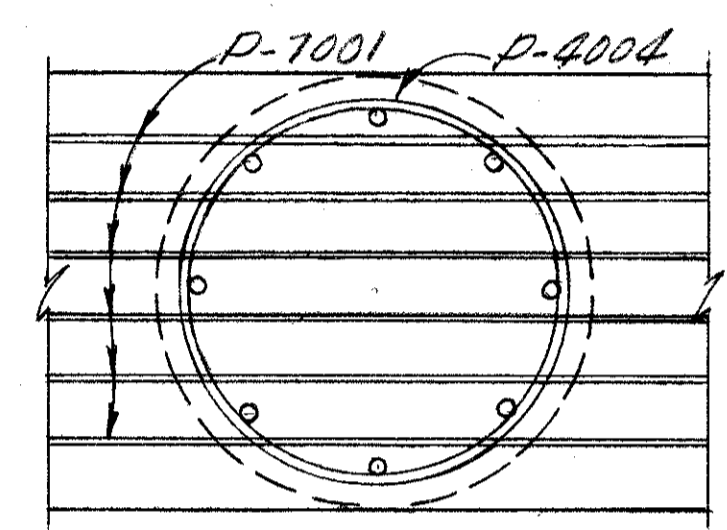
PLAN



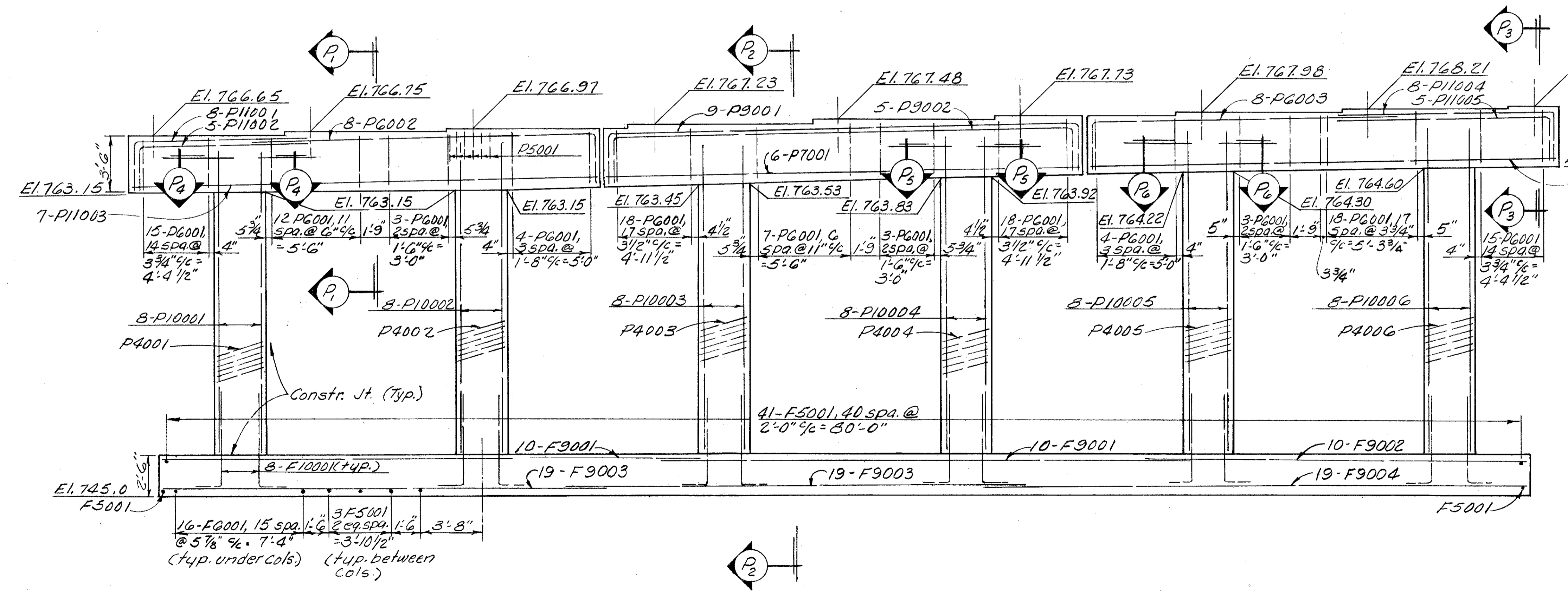
SECTION P<sub>2</sub>-P<sub>4</sub>  
Typical for West Bent



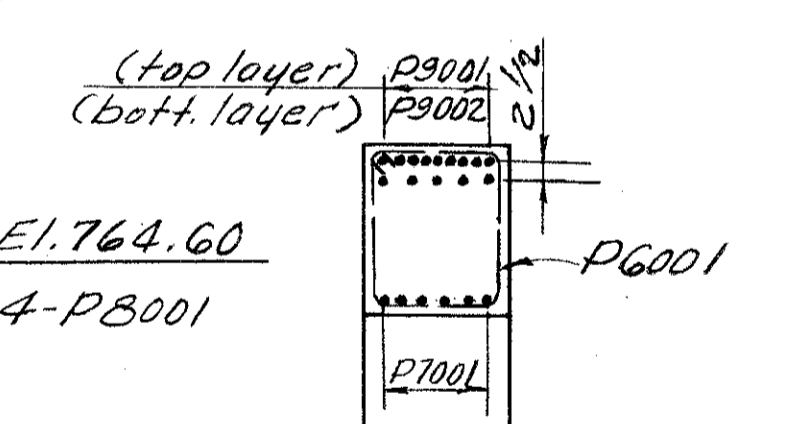
SECTION P<sub>2</sub>-P<sub>6</sub>  
Typical for East Bent



SECTION P<sub>5</sub>-P<sub>6</sub>  
Typical for Center Bent

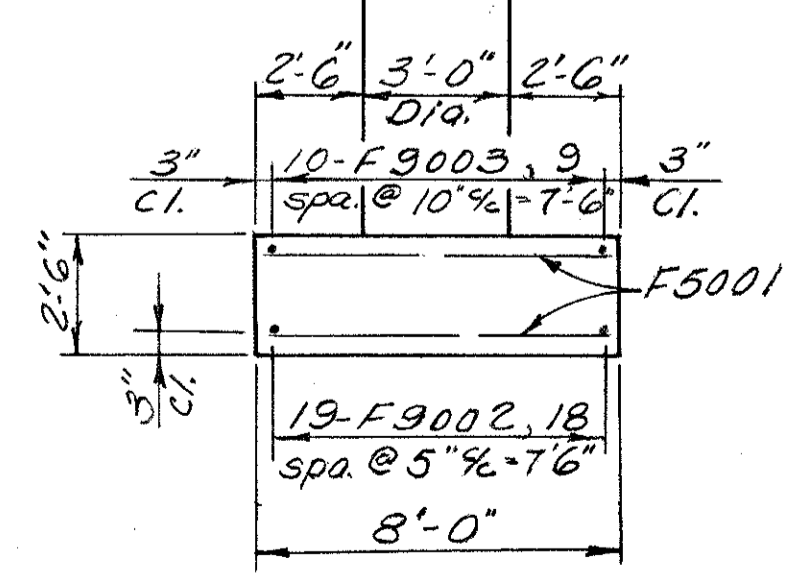


ELEVATION



SECTION P-P SECTION P<sub>3</sub>-P<sub>3</sub>

NOTE:  
The hooked corner of the P6001 stirrups shall be placed in the compression area of the pier cap.



SECTION P<sub>2</sub>-P<sub>3</sub>

ALDEN E. STILSON & ASSOCIATES, LIMITED CONSULTING ENGINEERS CLEVELAND, OHIO COLUMBUS, OHIO WHEELING, W. VA.						
<b>PIER NO 1 DETAILS</b>						
BRIDGE NO CUY - 480 - 0727						
I-480 UNDER RELOCATED GRAYTON ROAD						
CUYAHOGA COUNTY STA. 20 + 33.38						
STA. 24 + 11.86						
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
W.W.	R.T.		MEM	G.W.M.	7/16/10	

MICROFILMED  
DEC 6 1982

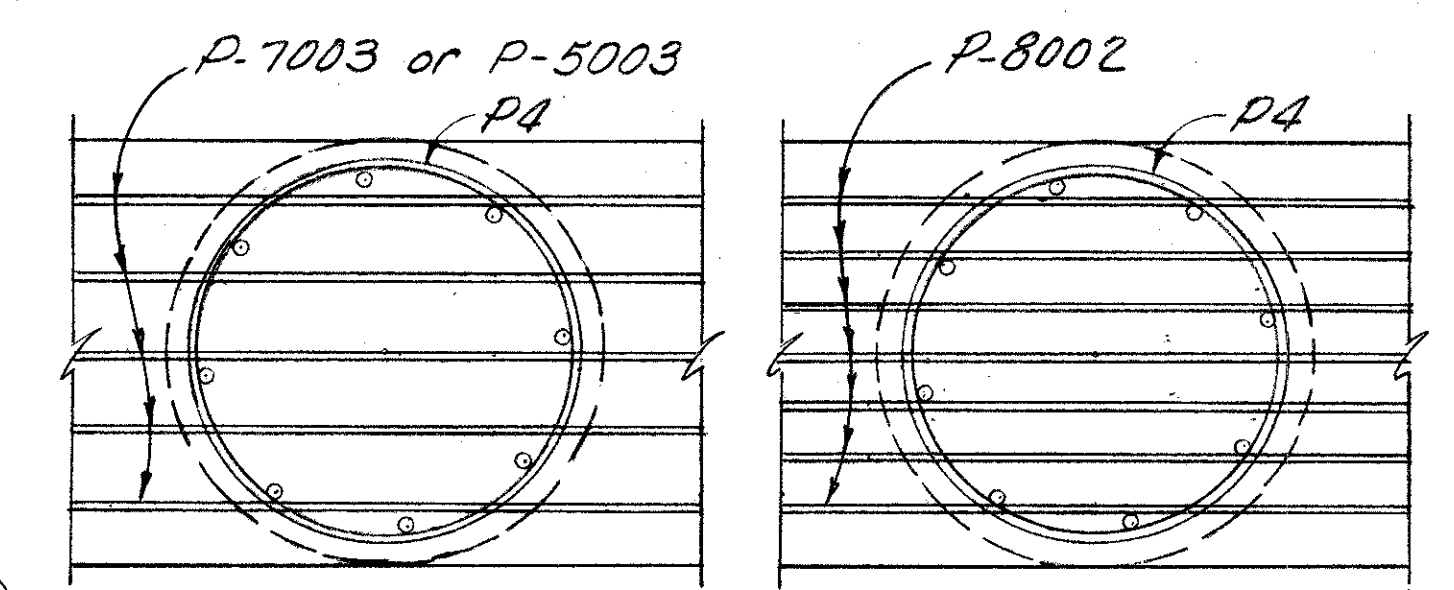
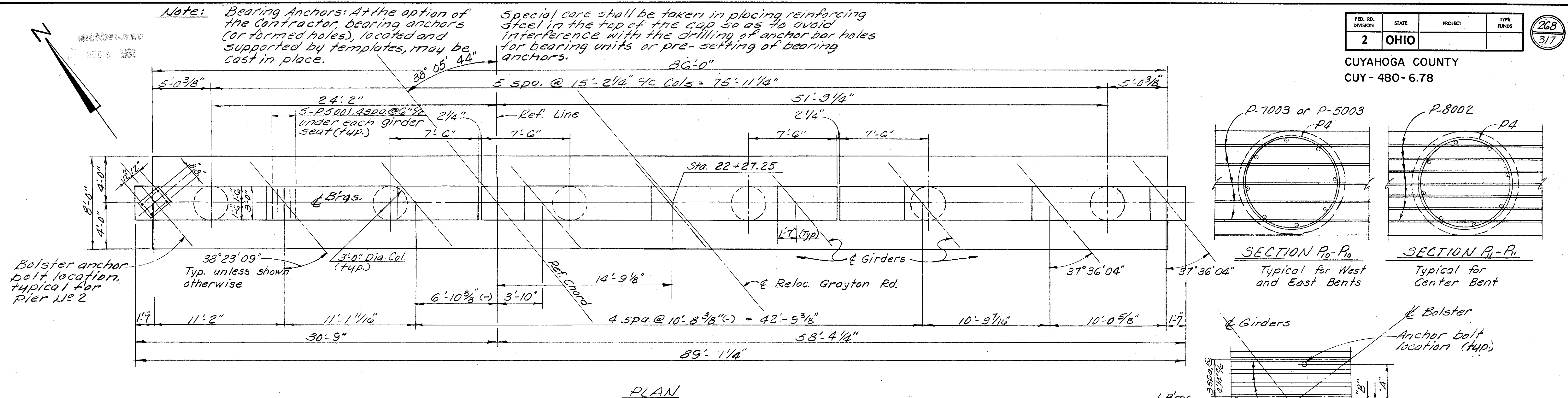
Note: Bearing Anchors: At the option of the Contractor, bearing anchors (or formed holes), located and supported by templates, may be cast in place.

Special care shall be taken in placing reinforcing steel in the top of the cap so as to avoid interference with the drilling of anchor bar holes for bearing units or pre-setting of bearing anchors.

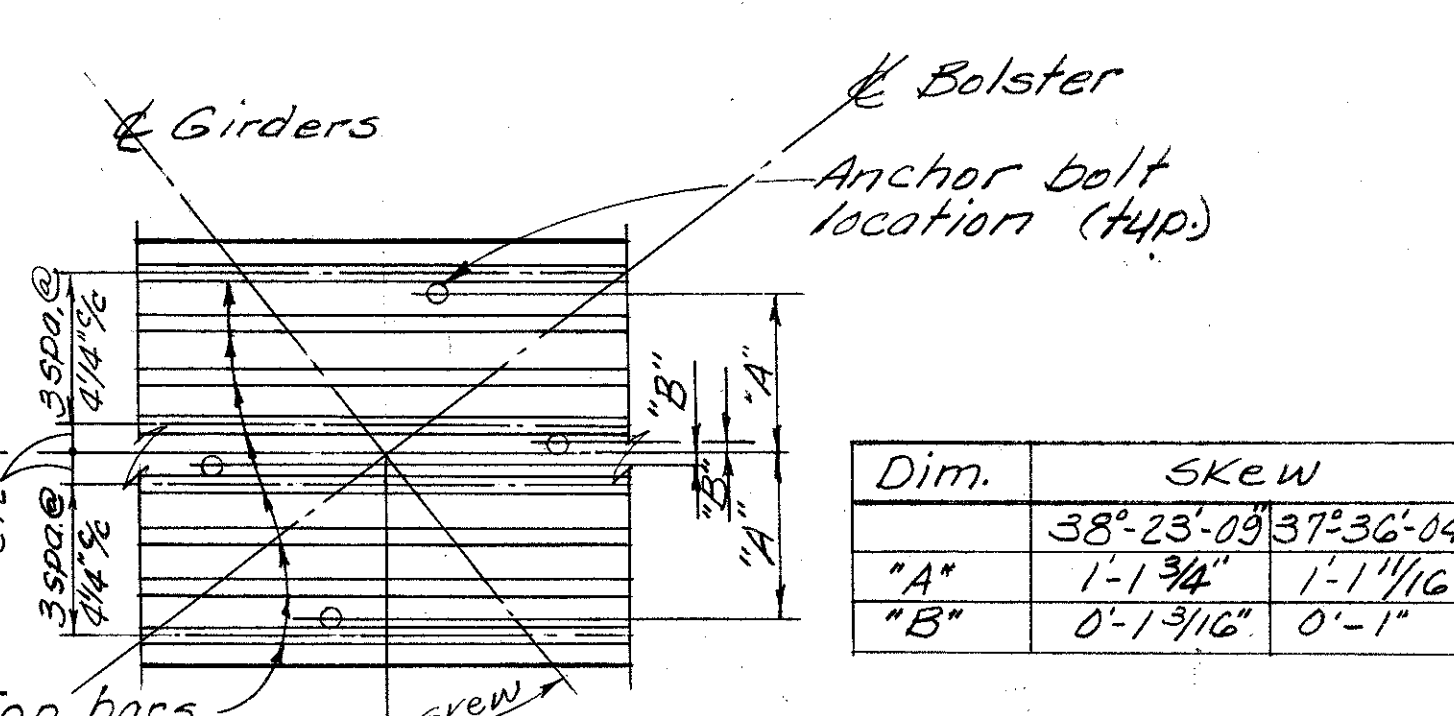
FED. RD. DIVISION	STATE	PROJECT	TYPE FUNDS
2	OHIO		

268  
3/7

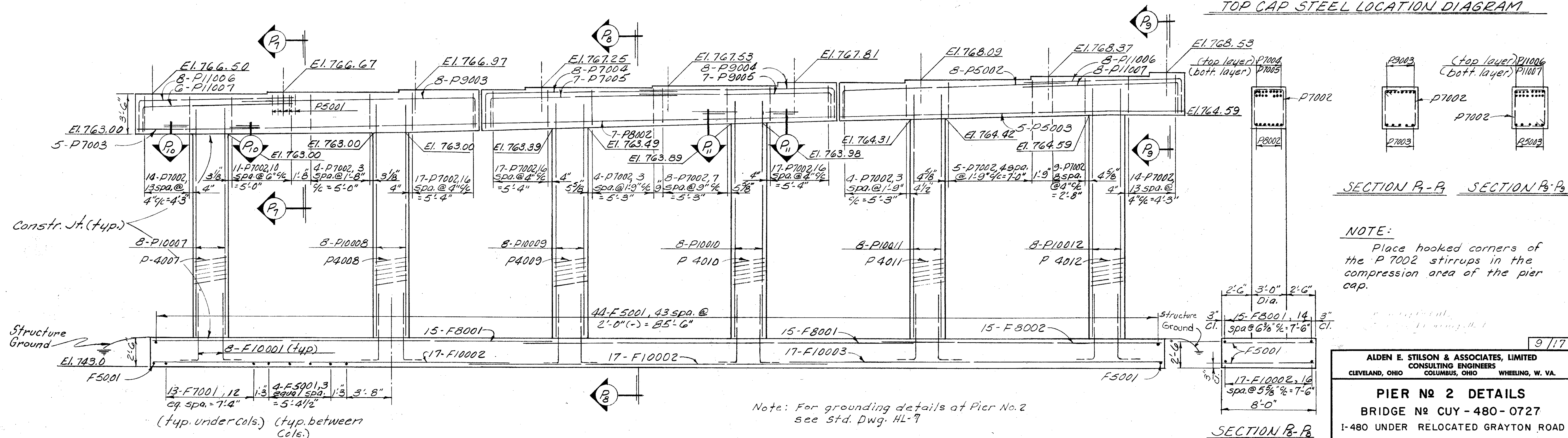
CUYAHOGA COUNTY  
CUY - 480 - 6.78



SECTION P<sub>0</sub>-P<sub>0</sub> Typical for West and East Bents  
SECTION P<sub>1</sub>-P<sub>1</sub> Typical for Center Bent



TOP CAP STEEL LOCATION DIAGRAM



SECTION P<sub>1</sub>-P<sub>1</sub> SECTION P<sub>2</sub>-P<sub>2</sub>

NOTE:  
Place hooked corners of the P 7002 stirrups in the compression area of the pier cap.

Note: For grounding details at Pier No. 2 see Std. Dwg. HL-7

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CONSULTING ENGINEERS  
CLEVELAND, OHIO COLUMBUS, OHIO WHEELING, W. VA.

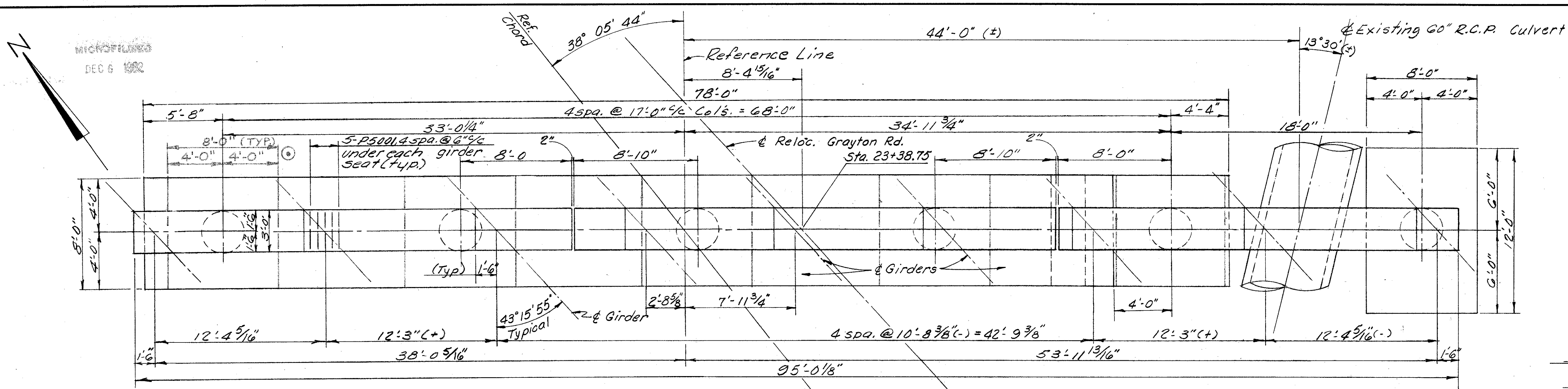
**PIER No 2 DETAILS**  
BRIDGE No CUY - 480 - 0727  
I-480 UNDER RELOCATED GRAYTON ROAD  
CUYAHOGA COUNTY STA. 20 + 33.38  
STA. 24 + 11.86

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
W.W.	R.T.		MEM	G.W.M.	1/16/76	

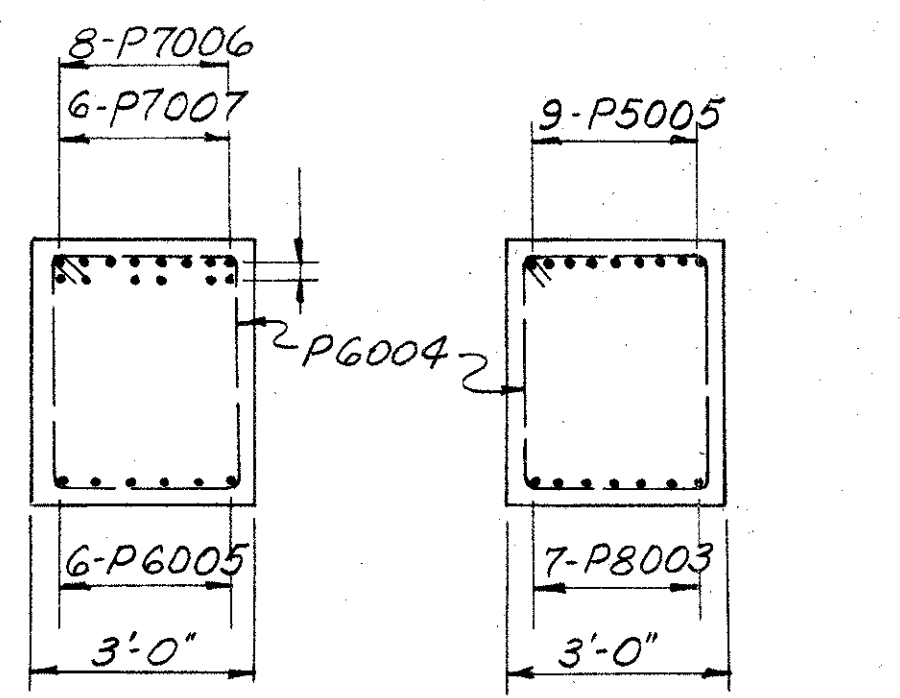
ELEVATION

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DEC 6 1982

CUYAHOGA COUNTY  
CUY-480-6.78

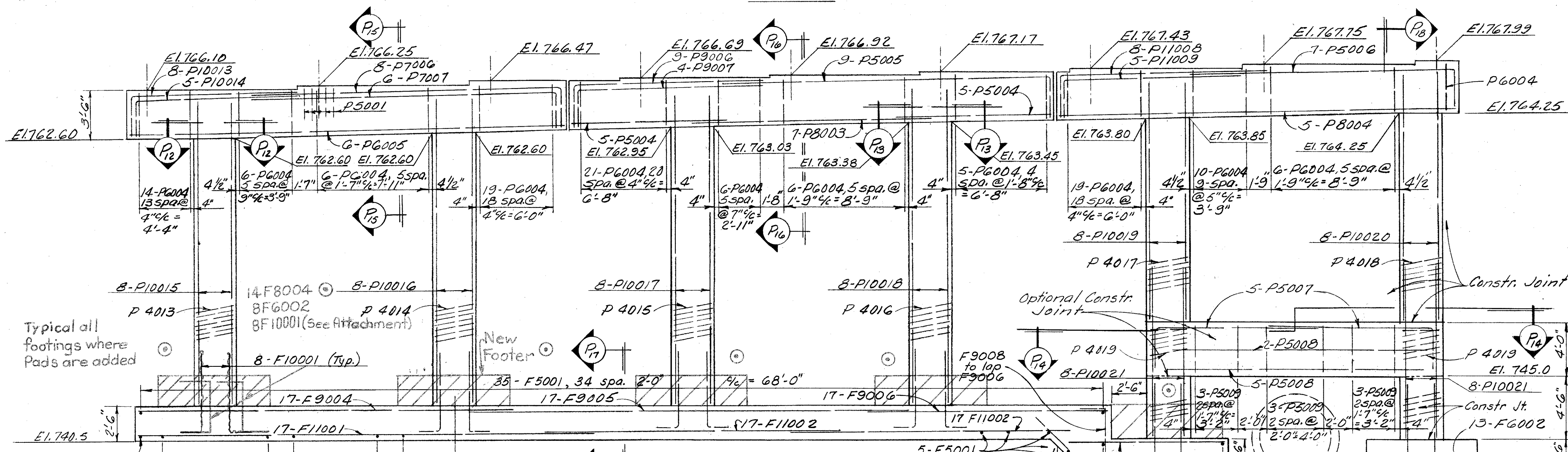


PLAN

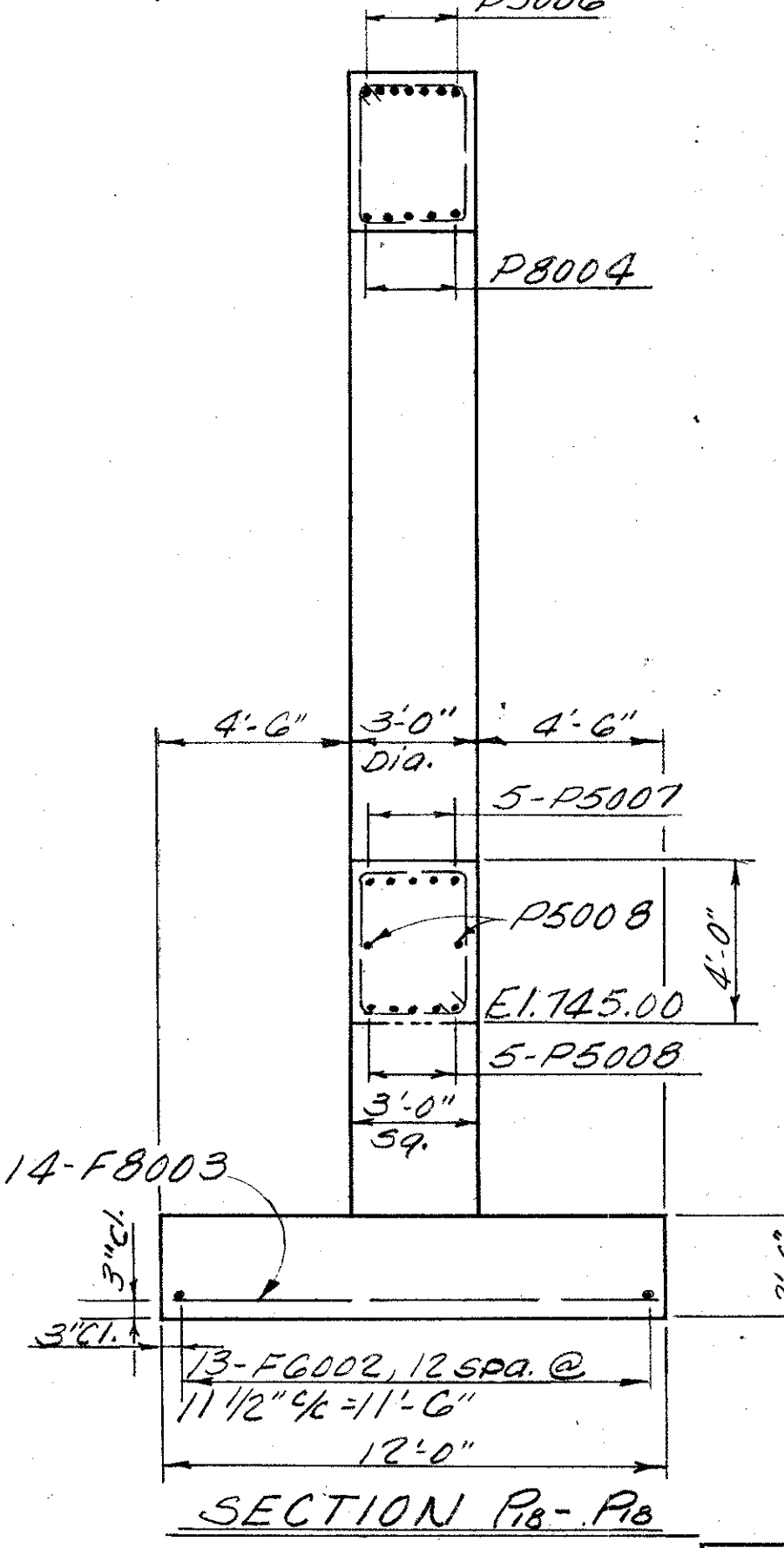


SECTION P6-P6 SECTION P16-P16

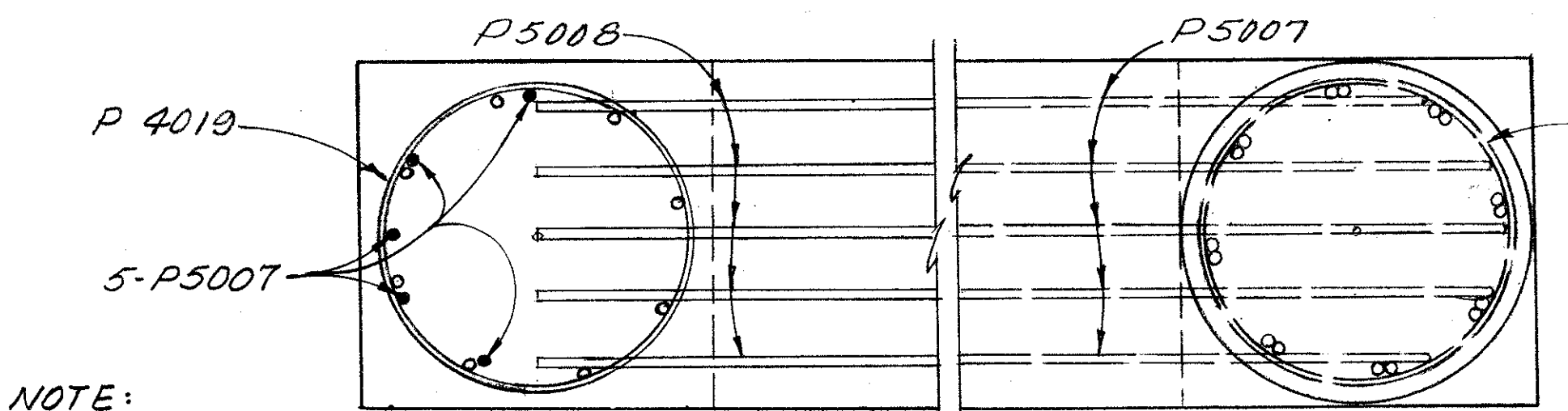
NOTE:  
The hooked corner of the P6004 stirrups shall be placed in the compression area of the pier cap.



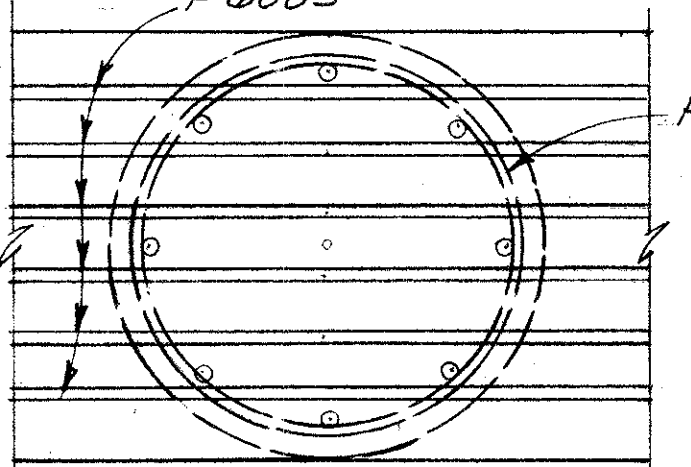
ELEVATION



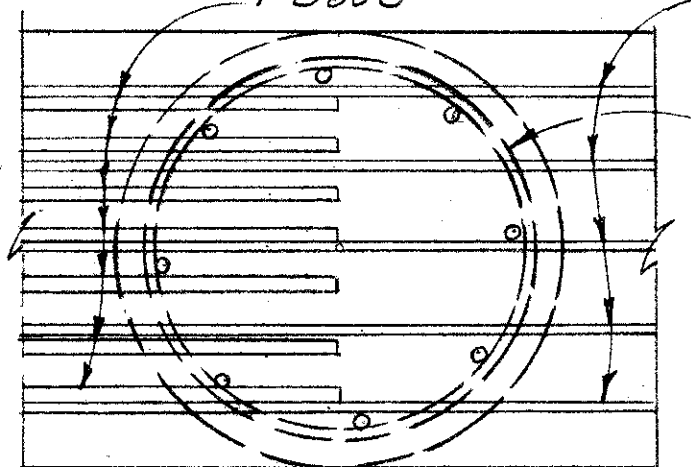
SECTION P8-P8



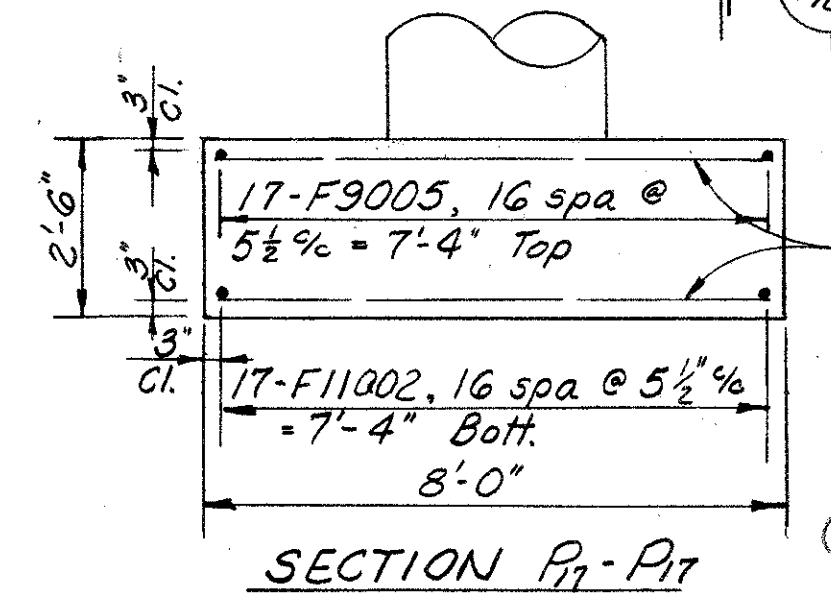
SECTION P4-P4



SECTION P12-P12



SECTION P6-P6



SECTION P7-P7

NOTE:  
P8004 spaced same as P5008.

Vertical Column steel P10021

Vertical Column steel P10020 to lap P10021

Typical for West Bent

Typical for Center Bent

Rev. 5-16-79

ALDEN E. STILSON & ASSOCIATES CONSULTING ENGINEERS CLEVELAND, OHIO COLUMBUS, OHIO WHEELING, W. VA.					
<b>PIER NO 3 DETAILS</b>					
BRIDGE NO CUY-480-0727					
I-480 UNDER RELOCATED GRAYTON ROAD					
CUYAHOGA COUNTY			STA. 20 + 33.38		
STA. 24 + 11.86					
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE
WM	R.T.		MEM	G.W.M.	11/10

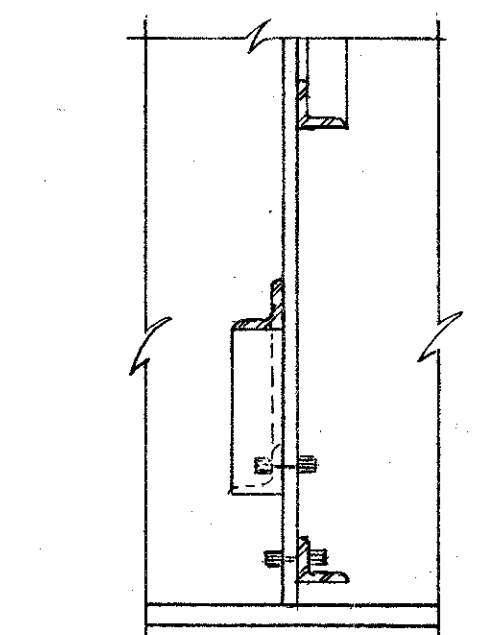
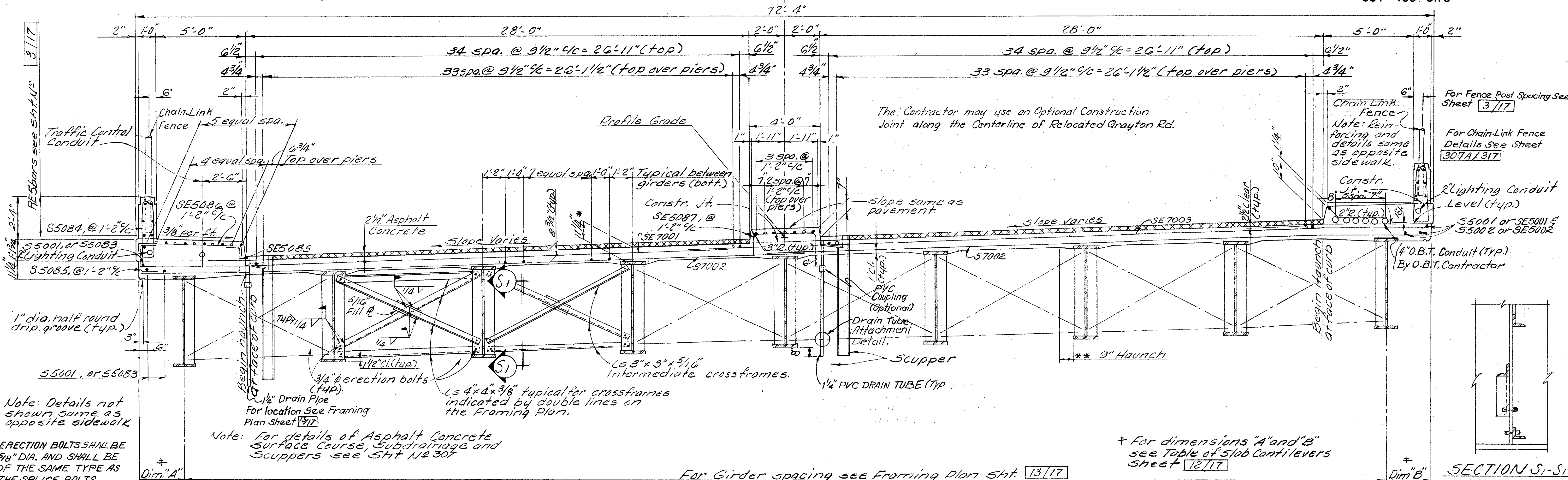
Note: Each run of longitudinal deck reinforcing, excluding top over pier bars shall be comprised of the following:  
 Top Bars: 12-SE4001 & 1 bar of the series SE4002 thru SE4088, and 12-SE4001 & 1-SE4002 thru 1-SE4088  
 Bottom Bars: 12-55001 & 1 bar of the series 5-5003 thru 55082, lapped a min. of 1'-7"

& Relocated  
 Grayton Rd.

FED. RD. DIVISION	STATE	PROJECT	TYPE FUNDS
2	OHIO		

270  
 317

CUYAHOGA COUNTY  
 CUY-480-6.78



TRANSVERSE SECTION

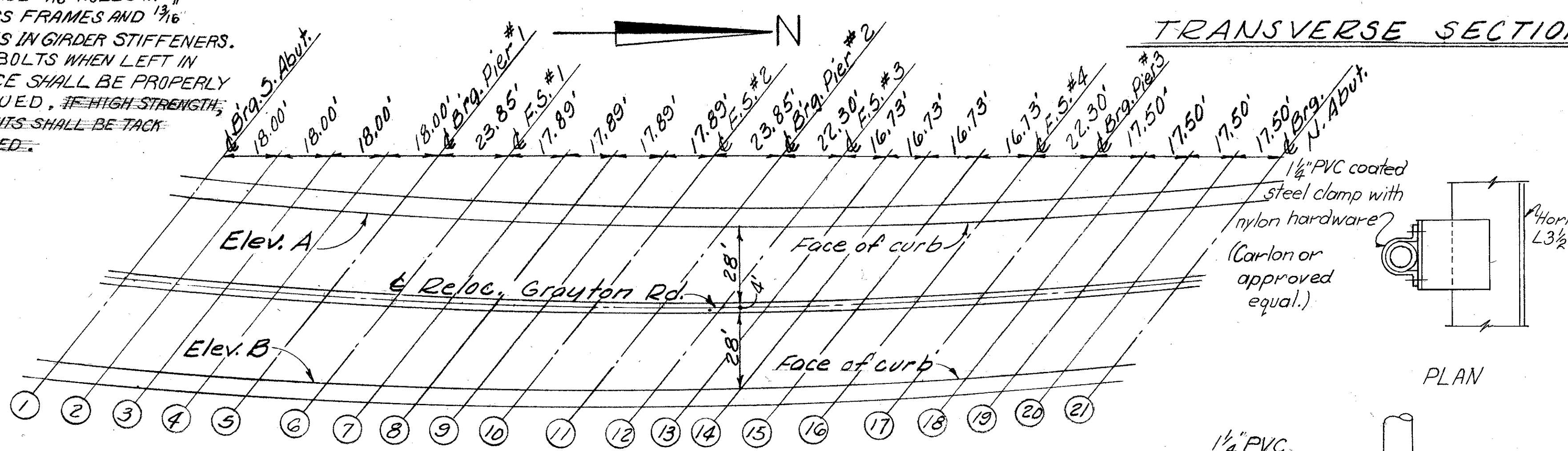
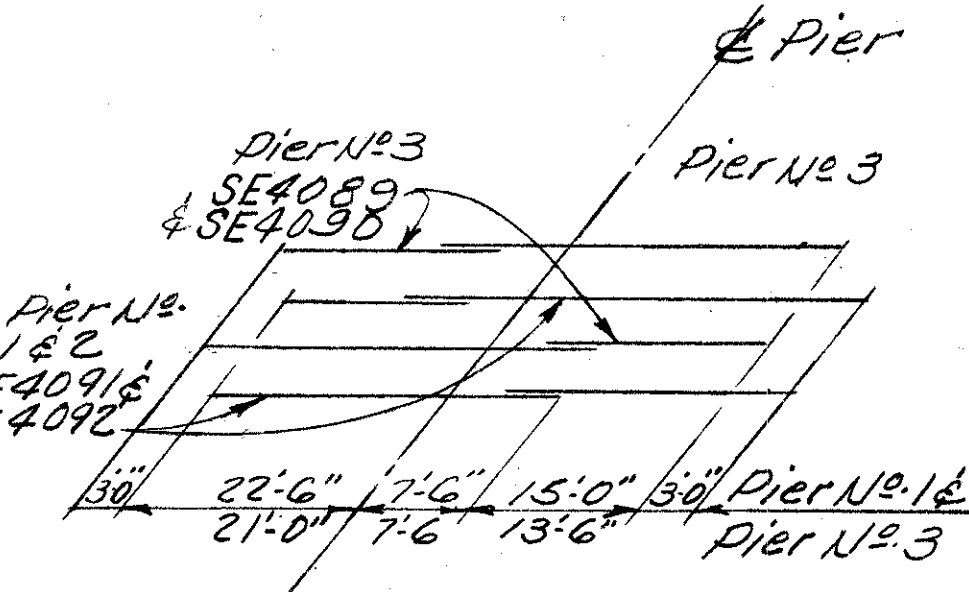
NOTES:

\* This is the design dimension. The quantity of deck concrete to be paid for shall be based upon this dimension even though deviation from it may be necessary because the top flange of the girder may not have the exact camber or conformation required to place it parallel to the finished grade. Deduction shall be made for volume of encased steel plates as per 511.18.

\*\* A haunch width of 9" shall be used for all interior girders in computing quantity of concrete. However the haunch width may vary between 6" and 12" provided that the slope shall be not more than 1:4 for a haunch less than 9" in width.

Longitudinal reinforcing steel shall be field cut as necessary to avoid interference with scuppers.

Refer to sheet 3/77 for fence post spacing. For location of 1"Ø deck drainage hole in scupper, see Sheet 307.



Note: The deck elevations listed are those which are required prior to placing of the concrete deck. Proper allowance has been made for the dead load deflection caused by the weight of the concrete. These elevations are to the top of the portland cement concrete deck.

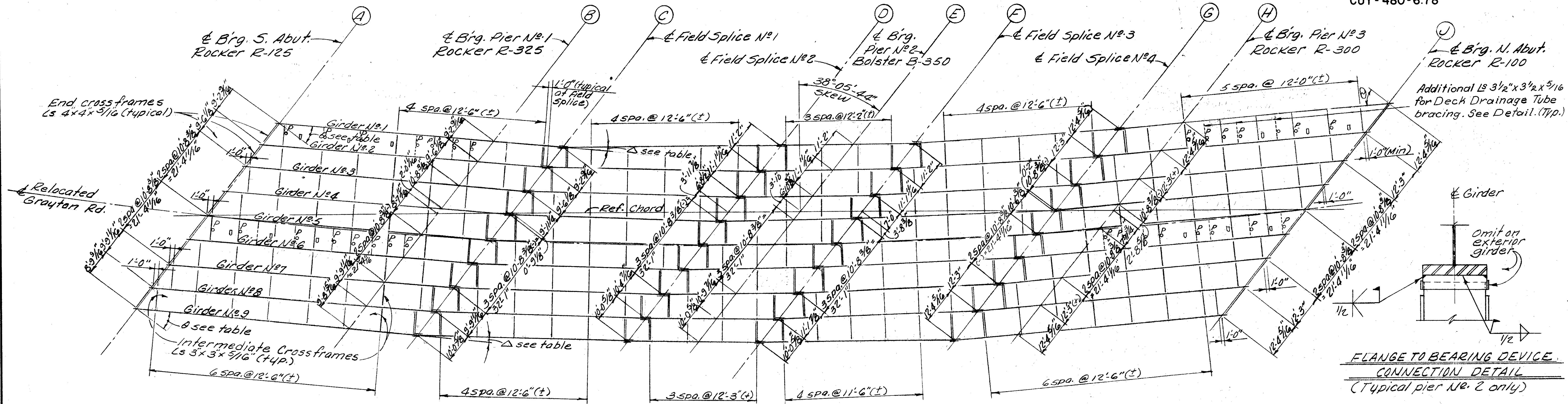
Line	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
Elev. A	773.81	773.95	774.06	774.14	774.21	774.30	774.34	774.35	774.31	774.24	774.13	774.02	774.00	773.97	773.91	773.81	773.66	773.47	773.25	773.01	772.73
Elev. B	775.33	775.50	775.65	775.78	775.88	776.04	776.13	776.18	776.20	776.19	776.15	776.13	776.10	776.05	775.96	775.82	775.55	775.32	775.09	774.83	774.53

ALDEN E. STILSON & ASSOCIATES, LIMITED  
 CONSULTING ENGINEERS  
 CLEVELAND, OHIO COLUMBUS, OHIO WHEELING, W. VA.

**SUPERSTRUCTURE DETAILS**  
 BRIDGE No CUY-480-0727  
 I-480 UNDER RELOCATED GRAYTON ROAD  
 CUYAHOGA COUNTY STA. 20 + 33.38  
 STA. 24 + 11.86

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
WM	R.T.		MEM	G.W.M.	11/14/78	11-20-78



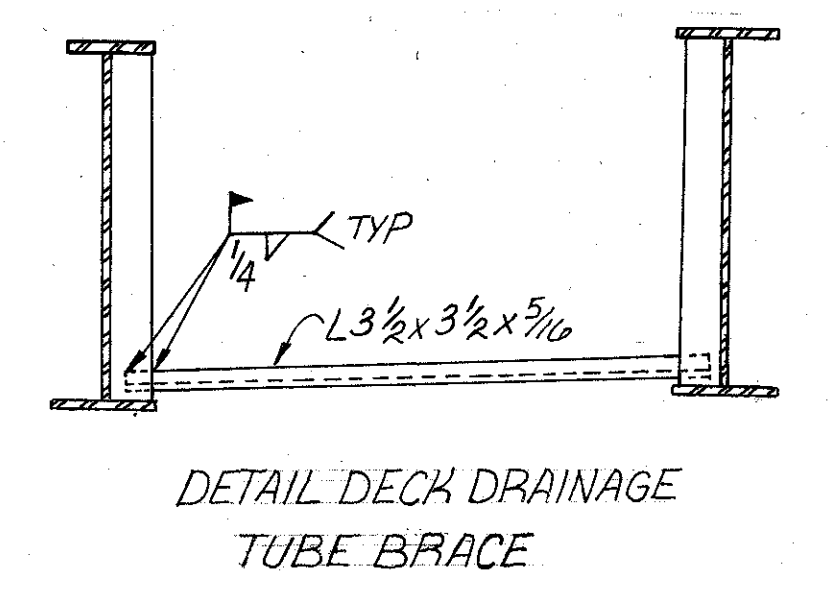


Note: The dimensions and details for bearing devices, R-325 and B-350 shall be the same as for R-300 and B-300 as shown on Std. DWG. RB-1-55 with the following exceptions.

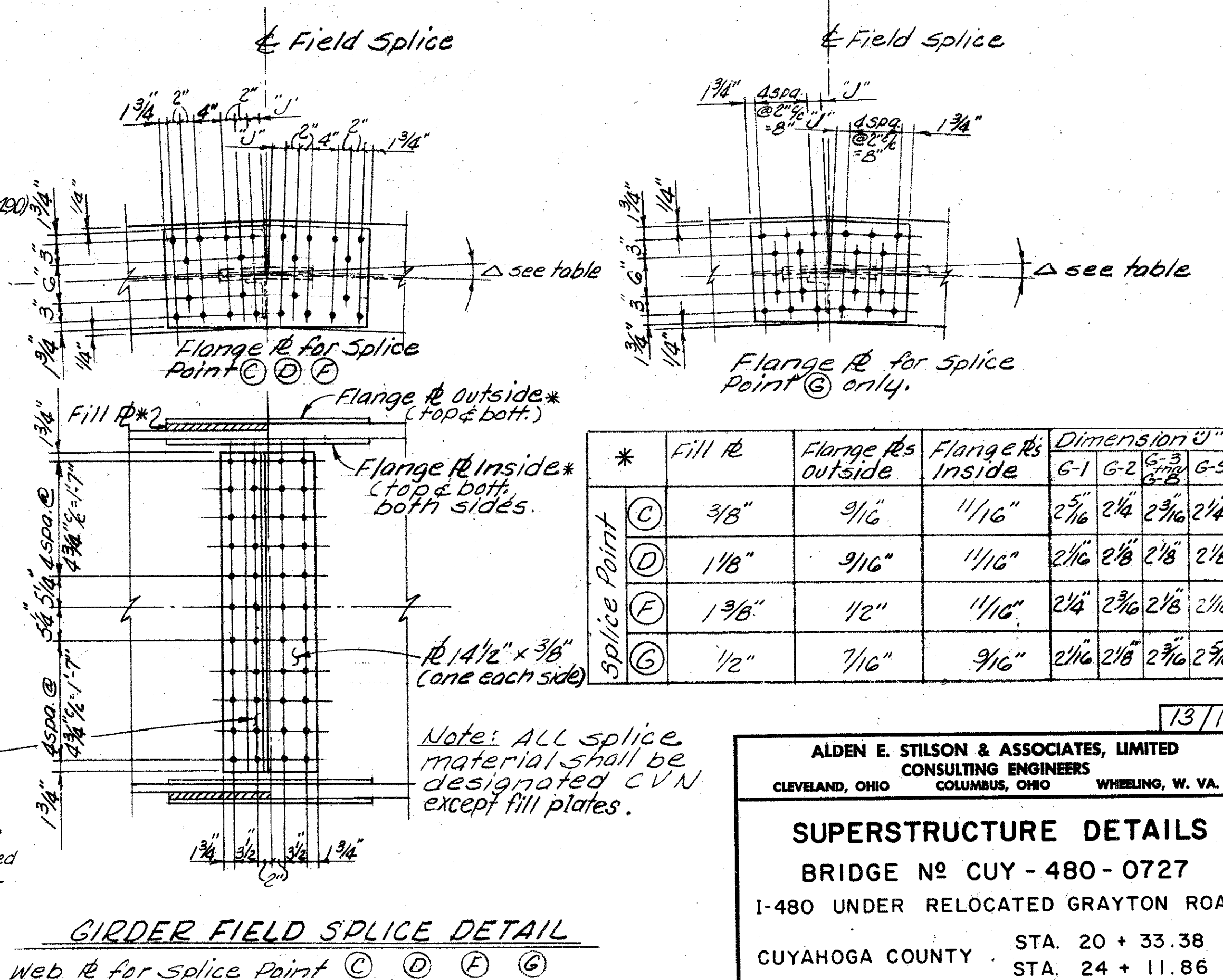
Bolster No.	Rocker No.	DIMENSIONS (inches)													Weight each (lb)		
		A	B	C	D	F	G	H	K	L	M	R	T	Y	Bolster	Rocker	
	R-325	4															1090
B-350		4							16								970

Notes:  
High strength bolts shall be 1" diameter A325 (OR A490) unless otherwise noted.  
The 1/2" Keeper plates attached to sole plates of the bearing devices shall be omitted on the exterior girders.

Bearing Point or Splice Point	Girder No. 1	Girder No. 2	Girder No. 3	Girder Nos. 4 thru 7	Girder No. 8	Girder No. 9	Angle
A	32°-42'-21"	32°-42'-21"	32°-42'-21"	32°-42'-21"	32°-42'-21"	32°-04'-11"	
Length A-B	72'-4 9/16"	72'-4 9/16"	72'-4 9/16"	72'-4 9/16"	72'-4 9/16"	71'-10 7/16"	
B	23'-7 1/4"	23'-7 1/4"	23'-7 1/4"	23'-7 1/4"	23'-7 1/4"	23'-5 5/16"	
Length B-C	5'-36'-30"	4'-23'-33"	3'-20'-42"	3'-20'-42"	2'-58'-35"	3'-36'-45"	
C	73'-4 15/16"	72'-2 5/8"	71'-2 15/16"	71'-2 15/16"	70'-10 15/16"	70'-10 15/16"	
Length C-D	0°-04'-18"	1°-17'-15"	2°-20'-06"	2°-20'-06"	1°-55'-07"	1°-55'-07"	
D	24'-1 1/16"	24'-1 1/16"	24'-1 1/16"	24'-1 1/16"	23'-10 5/8"	23'-10 5/8"	
Length D-E	0	0	0	0	0	0	
E	21'-4 5/16"	21'-4 5/16"	21'-4 5/16"	21'-4 5/16"	21'-1 9/16"	21'-1 9/16"	
Length E-F	3°-42'-51"	2°-58'-27"	2°-16'-12"	2°-16'-12"	2°-20'-43"	0°-48'-25"	
F	69'-6 1/4"	68'-8 1/16"	67'-11 5/16"	67'-11 5/16"	67'-3 7/16"	65'-9 15/16"	
Length F-G	1°-09'-54"	1°-54'-19"	2°-36'-33"	2°-36'-33"	3°-19'-07"	4°-51'-26"	
G	22'-3 1/2"	22'-3 1/2"	22'-3 1/2"	22'-3 1/2"	22'-3 1/2"	22'-3 1/2"	
Length G-H	0	0	0	0	0	0	
H	69'-8 1/2"	69'-8 1/2"	69'-8 1/2"	69'-8 1/2"	69'-8 1/2"	69'-8 1/2"	
Length H-I	0	0	0	0	0	0	
J	43°-15'-55"	43°-15'-55"	43°-15'-55"	43°-15'-55"	43°-15'-55"	43°-15'-55"	



Stiffener angle 6"x3 1/2"x3/8"  
Reverse outstanding leg or move stiffener a distance equal to bolt spacing to adjust to interm. stiff. or crossframe spacing. Use only where required as intermediate stiffeners, or for attaching cross-frame angles.  
SUBDRAINAGE PIPE locations are indicated by P. Additional location restrictions shall be as shown on sheet 307 except pipes need not clear crossframes by 6" but shall be located beside the outstanding legs of the horizontal Ls 3 1/2" x 3 1/2" x 3/8" of the crossframes.



Splice Point	Fill Pl.	Flange Pls. outside	Flange Pls. Inside	Dimension J			
				6-1	6-2	6-3	6-9
C	3/8"	3/16"	1 1/16"	2 5/16"	2 1/4"	2 3/16"	2 1/4"
D	1/8"	3/16"	1 1/16"	2 1/16"	2 1/8"	2 1/8"	2 1/8"
E	1 9/8"	1/2"	1 1/16"	2 1/4"	2 3/8"	2 1/8"	2 1/16"
G	1/2"	7/16"	9/16"	2 1/16"	2 1/8"	2 3/16"	2 3/16"

ALDEN E. STILSON & ASSOCIATES, LIMITED  
CONSULTING ENGINEERS  
CLEVELAND, OHIO COLUMBUS, OHIO WHEELING, W. VA.

**SUPERSTRUCTURE DETAILS**  
BRIDGE NO CUY-480-0727  
I-480 UNDER RELOCATED GRAYTON ROAD  
CUYAHOGA COUNTY STA. 20 + 33.38  
STA. 24 + 11.86

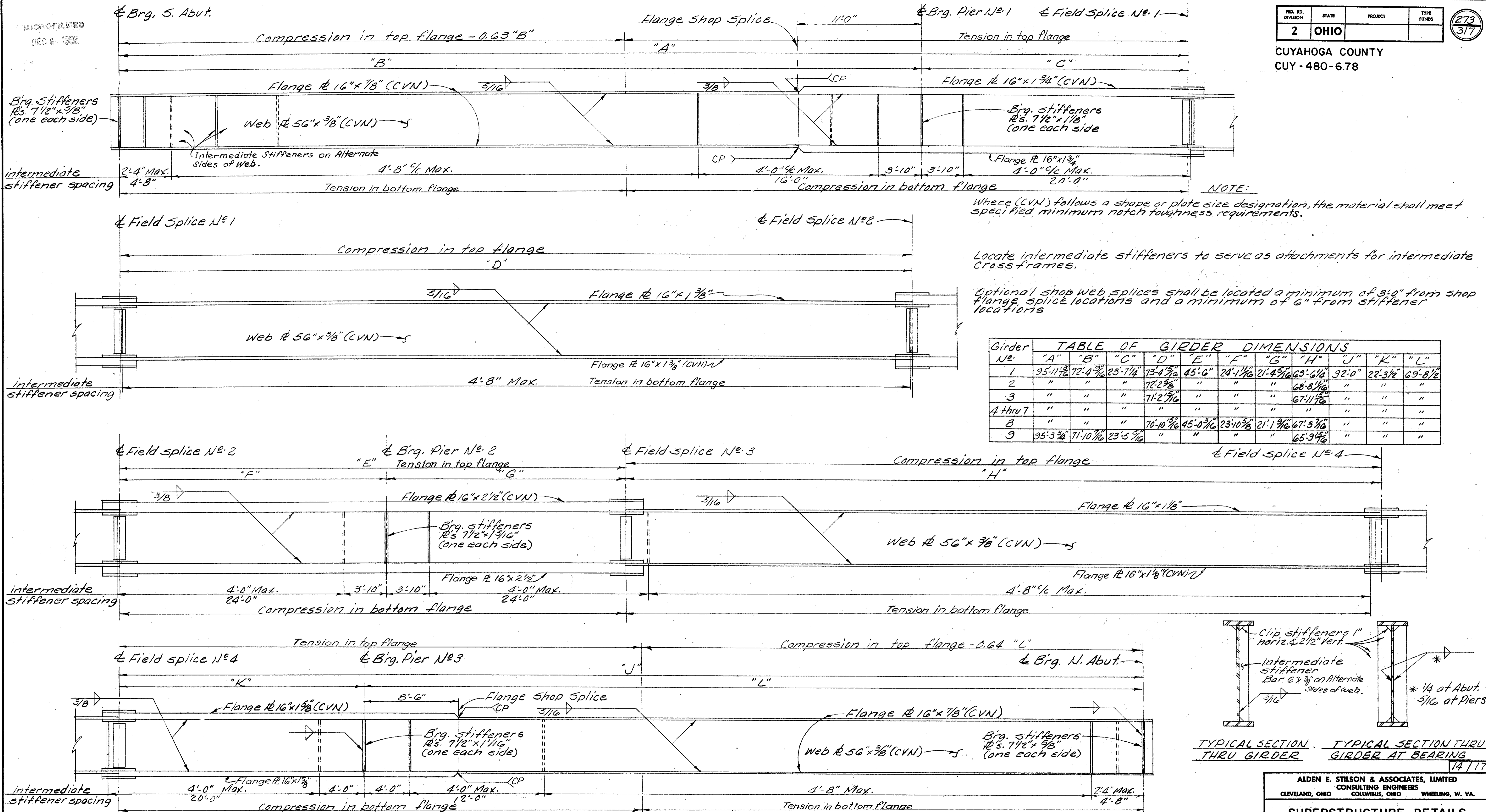
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
WM	R.T.		MEM	G.W.M.	11/20/78	

MICROFILMED  
DEC 6 1982

FED. RD. DIVISION	STATE	PROJECT	TYPE FUNDS
2	OHIO		

273  
317

CUYAHOGA COUNTY  
CUY - 480 - 6.78

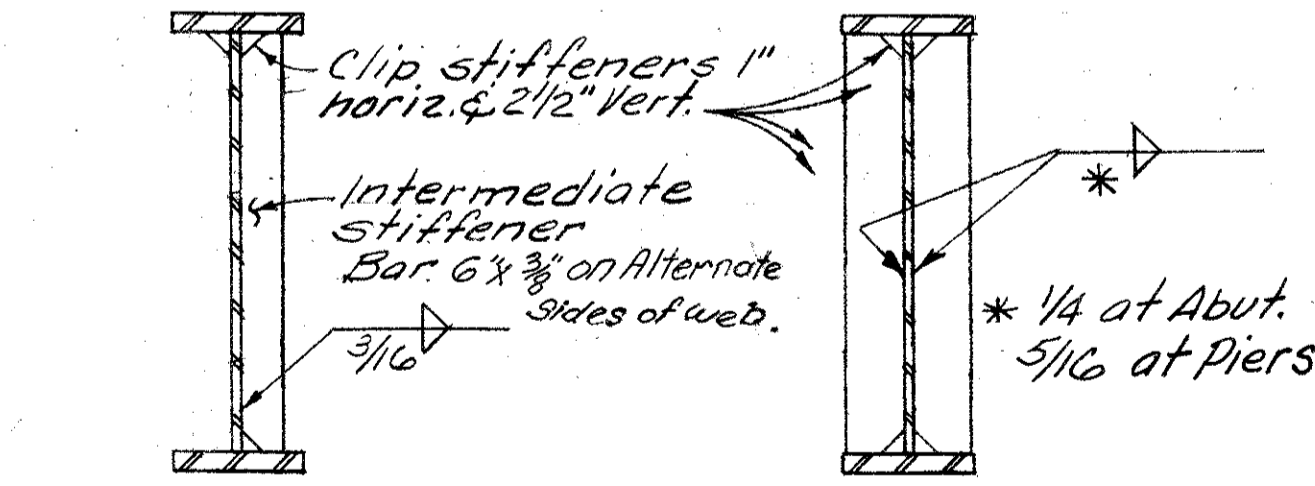


NOTE:  
Where (CVN) follows a shape or plate size designation, the material shall meet specified minimum notch toughness requirements.

Locate intermediate stiffeners to serve as attachments for intermediate cross frames.

Optional shop web splices shall be located a minimum of 3'-0" from shop flange splice locations and a minimum of 6" from stiffener locations.

Girder No.	"A"	"B"	"C"	"D"	"E"	"F"	"G"	"H"	"J"	"K"	"L"
1	95'-11 3/8"	72'-4 3/8"	23'-7 1/4"	73'-4 3/8"	45'-6"	24'-1 1/8"	21'-4 3/8"	69'-6 1/4"	92'-0"	22'-3 1/2"	69'-8 1/2"
2	"	"	"	72'-2 3/8"	"	"	"	68'-8 1/8"	"	"	"
3	"	"	"	71'-2 3/8"	"	"	"	67'-11 1/8"	"	"	"
4 thru 7	"	"	"	"	"	"	"	"	"	"	"
8	"	"	"	70'-10 3/8"	45'-0 3/8"	23'-10 5/8"	21'-1 3/8"	67'-3 7/8"	"	"	"
9	95'-3 3/4"	71'-10 1/8"	23'-5 3/8"	"	"	"	"	65'-9 3/8"	"	"	"



**TYPICAL GIRDER ELEVATION**

GRINDING OF SHOP WELDS: Flange butt welds shall be ground flush in tension areas only. Except for webs of fascia girders web welds shall be ground flush from the neutral axis of the web to the flange which is in tension. Webs of fascia girders shall be ground flush for their full depth. Grinding shall be done in the direction of stress.

INTERMEDIATE WEB STIFFENERS INSTEAD OF PAIRS OF TRANSVERSE INTERMEDIATE WEB STIFFENERS: SINGLE 6 x 3/8" TRANSVERSE INTERMEDIATE WEB STIFFENERS SHALL BE USED ON ALTERNATE SIDES OF THE WEB OF INTERIOR GIRDERS AND ON THE INSIDE OF THE WEB OF

FASCIA GIRDERS AT THE SPACING SHOWN. TRANSVERSE WEB STIFFENERS SHALL BE PROVIDED FOR THE ATTACHMENT OF DECK CROSSFRAMES AND DECK DRAINAGE TUBE BRACES.

NOTE:  
For intermediate stiffener spacing and field splice details see sht. 13/17  
CP ~ Indicates Complete penetration butt weld. All web welds shall be full penetration welds.

ALDEN E. STILSON & ASSOCIATES, LIMITED  
CONSULTING ENGINEERS  
CLEVELAND, OHIO COLUMBUS, OHIO WHEELING, W. VA.

**SUPERSTRUCTURE DETAILS**  
BRIDGE # CUY - 480 - 0727  
I-480 UNDER RELOCATED GRAYTON ROAD  
CUYAHOGA COUNTY STA. 20 + 33.38  
STA. 24 + 11.86

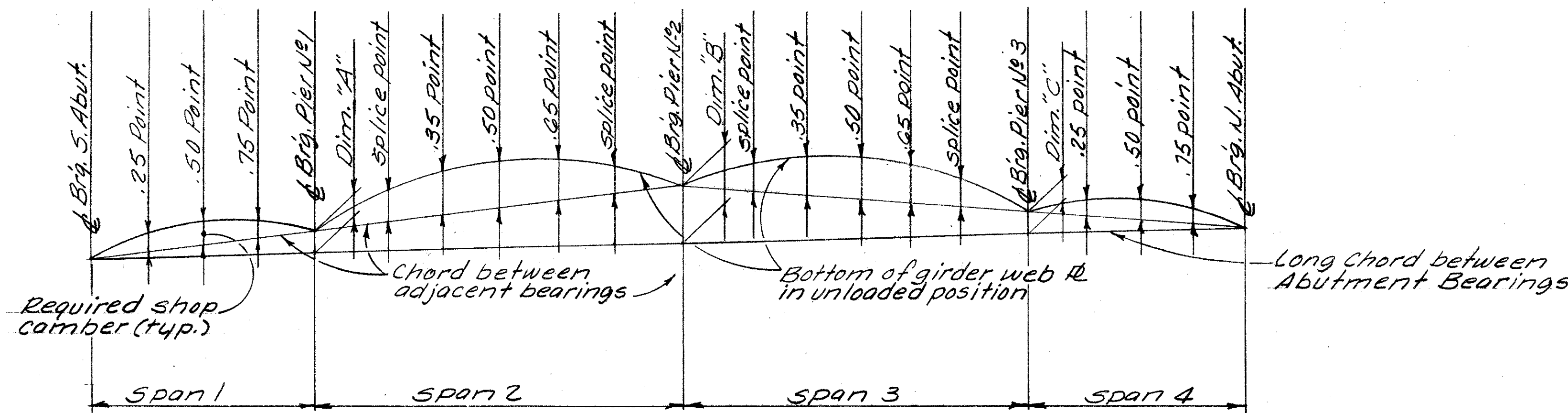
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
WM	R.T.		MEM	G.W.M.	7/16/76	

Girder	No. 1																No. 2																No. 3									
	Span 1				Span 2				Span 3				Span 4				Span 1				Span 2				Span 3				Span 4				Span 1		Span 2							
Location	.25	.50	.75	spl.	.35	.50	.65	spl.	spl.	.35	.50	.65	spl.	.25	.50	.75	spl.	.25	.50	.75	spl.	.35	.50	.65	spl.	spl.	.35	.50	.65	spl.	.25	.50	.75	spl.	.25	.50	.75	spl.	.35	.50	.65	spl.
Deflection due to weight of steel	1/32	1/32	0	1/8	3/16	7/32	3/16	3/32	1/32	3/32	5/32	1/8	1/16	0	1/32	1/32	1/32	1/32	1/32	0	1/8	3/16	7/32	3/16	3/32	1/32	3/32	5/32	1/8	1/16	0	1/32	1/32	1/32	1/32	1/32	0	1/8	3/16	7/32	3/16	3/32
Deflection due to remaining dead load	3/32	1/16	0	3/8	5/8	5/8	1/2	1/4	1/8	1/32	7/16	7/16	1/4	0	3/32	3/32	1/8	3/32	-1/32	13/32	1/16	25/32	5/8	5/16	5/32	13/32	17/32	1/2	9/32	0	1/8	1/8	1/8	3/32	-1/32	13/32	1/16	25/32	5/8	5/16	5/32	
Adjustment req'd. for horiz. & vert. curve	3/8	1/2	3/8	7/8	1/32	1/32	1/32	29/32	29/32	29/32	1/16	13/32	17/32	17/32	13/32	1/4	5/16	1/4	1/8	1/16	1/16	1/16	1/16	1/32	0	3/8	0	5/16	15/32	13/32	13/16	25/32	1/2	1/4	5/16	1/4	1/32	1/4	1/32	13/16	15/16	
Required shop camber	1/2	5/8	3/8	13/8	2/8	2/4	2	1/4	-1/8	1/2	1	1/8	3/4	9/16	3/4	9/16	7/16	7/16	1/4	1 1/16	2 3/16	2 5/16	2	1 9/16	5/16	1/2	1	1 1/8	13/16	13/16	1 5/16	1 1/16	7/16	7/16	1/4	1 9/16	2 1/8	2 5/16	2	1 7/8		

Girder	No. 3								No. 4								No. 5																										
	Span 3				Span 4				Span 1				Span 2				Span 3				Span 4				Span 1				Span 2				Span 3				Span 4						
Location	spl.	.35	.50	.65	spl.	.25	.50	.75	.25	.50	.75	spl.	spl.	.35	.50	.65	spl.	spl.	.35	.50	.65	spl.	.25	.50	.75	.25	.50	.75	spl.	spl.	.35	.50	.65	spl.	spl.	.35	.50	.65	spl.	spl.	.35	.50	.75
Deflection due to weight of steel	1/32	3/32	5/32	1/8	1/16	0	1/32	1/32	1/32	1/32	0	1/8	3/16	7/32	3/16	3/32	1/32	3/32	5/32	1/8	1/16	0	1/32	1/32	1/32	1/32	0	1/8	3/16	7/32	3/16	3/32	1/32	1/32	0	1/8	3/16	7/32	3/16	3/32			
Deflection due to remaining dead load	5/32	13/32	17/32	1/2	9/32	0	1/8	1/8	1/8	3/32	-1/32	13/32	1/16	25/32	5/8	5/16	5/32	13/32	17/32	1/2	9/32	0	1/8	1/8	1/8	3/32	-1/32	13/32	1/16	25/32	5/8	5/16	5/32	13/32	17/32	1/2	9/32	0	1/8	1/8			
Adjustment req'd. for horiz. & vert. curve	11/32	7/32	15/32	19/32	19/32	23/32	25/32	1/2	7/32	5/16	7/32	1/32	1/32	1/32	1 9/32	13/16	15/16	19/32	21/32	23/32	25/32	21/32	1/2	1 1/16	7/16	7/32	5/16	7/32	1	1 1/32	1 9/32	1 7/32	1 9/16	25/32	1	1 1/16	1	1 1/16	1	1 3/16	5/16	7/16	11/32
Required shop camber	9/16	3/4	13/16	1 1/4	1 5/16	3/4	1 5/16	1 1/16	3/8	7/16	3/16	1 9/16	2 1/8	2 5/16	2	1 3/8	1 3/16	1 9/16	1 7/16	1 7/16	1	1/2	7/8	5/8	3/8	7/16	3/16	1 9/16	2 1/8	2 5/16	2	1 3/8	1	1 1/2	1 9/4	1 5/8	1 3/16	5/16	5/8	1/2			

Girder	No. 6																No. 7																No. 8														
	Span 1				Span 2				Span 3				Span 4				Span 1				Span 2				Span 3				Span 4				Span 1		Span 2												
Location	.25	.50	.75	spl.	.35	.50	.65	spl.	spl.	.35	.50	.65	spl.	.25	.50	.75	spl.	.25	.50	.75	spl.	.35	.50	.65	spl.	spl.	.35	.50	.65	spl.	spl.	.35	.50	.65	spl.	spl.	.35	.50	.75	.25	.50	.75	spl.	.35	.50	.65	spl.
Deflection due to weight of steel	1/32	1/32	0	1/8	3/16	7/32	3/16	3/32	1/32	3/32	5/32	1/8	1/16	0	1/32	1/32	1/32	1/32	0	1/8	3/16	7/32	3/16	3/32	1/32	3/32	5/32	1/8	1/16	0	1/32	1/32	1/32	1/32	0	1/8	3/16	7/32	3/16	3/32							
Deflection due to remaining dead load	1/8	3/32	-1/32	13/32	1/16	25/32	5/8	5/16	5/32	13/32	17/32	1/2	9/32	0	1/8	1/8	1/8	3/32	-1/32	13/32	1/16	25/32	5/8	5/16	5/32	13/32	17/32	1/2	9/32	0	1/8	1/8	1/8	3/32	-1/32	13/32	1/16	25/32	5/8	5/16							
Adjustment req'd. for horiz. & vert. curve	7/32	5/16	7/32	1	1 7/32	1 1/4	1 9/32	1 5/16	2 3/32	1 1/4	1 7/16	1 9/16	1	5/16	7/16	1 1/32	7/32	3/32	7/32	1	1 3/16	1 1/4	1 9/32	2 9/32	1 1/32	1 7/16	1 23/32	1 23/32	1 7/32	9/32	7/16	5/16	7/32	9/32	7/32	1 5/16	1 1/8	1 9/32	1 1/16	1 9/32	1 1/4	2 9/32					
Required shop camber	3/8	7/16	3/16	1 9/16	2 1/8	2 1/4	2	1 7/8	1 1/8	1 3/4	2 1/8	1 9/16	1 3/8	5/16	9/16	1 1/2	3/8	7/16	3/16	1 9/16	2 1/16	2 1/4	2	1 9/16	1 1/4	1 5/16	2 1/16	2 3/8	1 9/16	5/16	5/8	1/2	3/8	7/16	3/16	1 1/2	2	2 3/16	1 7/8	1 1/4							

Girder	No. 8								No. 9																															
	Span 3				Span 4				Span 1				Span 2				Span 3				Span 4																			
Location	spl.	.35	.50	.65	spl.	.25	.50	.75	.25	.50	.75	spl.	spl.	.35	.50	.65	spl.	spl.	.35	.50	.65	spl.	.25	.50	.75	.25	.50	.75	spl.	spl.	.35	.50	.65	spl.	spl.	.35	.50	.75		
Deflection due to weight of steel	1/32	3/32	5/32	1/8	1/16	0	1/32	1/32	1/32	1/32	0	1/8	3/16	7/32	3/16	3/32	1/32	3/32	5/32	1/8	1/16	0	1/32	1/32	1/32	1/32	0	1/8	3/16	7/32	3/16	3/32	1/32	1/32	0	1/8	3/16	7/32	3/16	3/32
Deflection due to remaining dead load	5/32	13/32	17/32	1/2	9/32	0	1/8	1/8	3/32	1/16	-1/32	11/32	9/16	5/8	1/2	1/4	1/8	11/32	7/16	13/32	1/4	0	3/32	3/32	3/32	13/32	17/32	1/2	9/32	0	1/8	1/8	3/32	1/16	-1/32	11/32	9/16	5/8	1/2	1/4
Adjustment req'd. for horiz. & vert. curve	1 9/32	1 19/32	1 15/16	2 5/32	1 19/32	2 9/32	1 13/32	5/16	1 1/32	7/16	1 1/32	2 5/32	1 7/32	1 7/32	1 7/32	2 5/32	3 1/32	1 1/2	1 23/32	2	1 23/32	1 1/32	1 1/32	1 5/32	3/8	1 1/2	1 1/32	1 5/32	3/8	1 1/2	1 1/32	1 5/32	3/8	1 1/2	1 1/32	1 5/32	3/8	1 1/2	1 1/32	1 5/32
Required shop camber	1 5/16	2 1/8	2 5/8	2 3/16	1 5/16	5/16	9/16	1/2	1/2	1/2	5/16	1 1/4	1 7/8	2 1/16	1 3/16	1 1/8	1 1/8	1 1/8	1 1/8	1 1/8	1 1/8	1 1/8	1 1/8	1 1/8	1 1/8	1 1/8	1 1/8	1 1/8	1 1/8	1 1/8	1 1/8	1 1/8	1 1/8	1 1/8	1 1/8	1 1/8	1 1/8	1 1/8	1 1/8	1 1/8



CAMBER AND BLOCKING DIAGRAM

Girder No.	Dim. "A"	Dim. "B"	Dim. "C"
1	7 1/4"	10 7/16"	10 9/16"
2	7 1/4"	10 1/16"	8 1/16"
3	7 9/16"	11 3/8"	8 3/8"
4	7 1/2"	11 9/16"	7 3/16"
5	7 1/16"	12 3/16"	7 3/8"
6	7 5/16"	13 3/8"	8 3/16"
7	8 3/16"	14 1/16"	8 7/8"
8	8 1/4"	14 9/16"	9 3/4"
9	8 3/16"	14 3/16"	10 5/16"

ALDEN E. STILSON & ASSOCIATES, LIMITED  
CONSULTING ENGINEERS  
CLEVELAND, OHIO COLUMBUS, OHIO WHEELING, W. VA.

**SUPERSTRUCTURE DETAILS**  
BRIDGE No. CUY - 480 - 0727  
I-480 UNDER RELOCATED GRAYTON ROAD  
CUYAHOGA COUNTY STA. 20 + 33.38  
STA. 24 + 11.86

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISION
WM	R.T.		MEM	G.W.M.	11/16	10-24-79



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DEC 6 1982

CUYAHOGA COUNTY  
CUY-480-6.78

NOTES

- INDICATES SERIES BAR. EACH BAR VARIES FROM ADJACENT BAR(S) BY TABULATED AMOUNT(S), CALCULATED TO NEAREST 1/8 INCH. WEIGHT SHOWN IS FOR ENTIRE SERIES UTILIZING AVERAGE LENGTH.
- COST OF FIELD BENDING SHALL BE INCLUDED WITH ITEM 509.
- 'LENGTH' SHOWN FOR SPIRAL BARS IS DISTANCE FROM TOP OF FOOTING TO BOTTOM OF PIER CAP. 'NO. TURNS' SHOWN IS 'LENGTH' DIVIDED BY PITCH, PLUS 3 TURNS (NUMBER OF CLOSED COILS), EXPRESSED AS NEAREST WHOLE NUMBER. 1 1/2 CLOSED COILS SHALL BE PROVIDED AT ENDS OF EACH SPIRAL UNIT. FOUR STEEL CHANNEL, TEE OR ANGLE SPACERS, WEIGHING APPROXIMATELY 0.80 LB. PER LIN. FT. OF SPACER SHALL BE PROVIDED FOR EACH SPIRAL UNIT. THEY SHALL BE EQUALLY SPACED ALONG PERIPHERY OF COIL. WEIGHT OF SPACERS, AT 0.80 LB. PER LIN. FT. WILL BE PAID FOR AS REINFORCING STEEL AND IS INCLUDED IN TABULATED WEIGHT.

REFER TO CMS SECTIONS 106.03, 700, 709.01 THROUGH 709.05 AND 709.08. SUFFICIENT ADDITIONAL REINFORCING STEEL SHALL BE PROVIDED FOR SAMPLING. RANDOM SAMPLES SHALL BE REPLACED IN THE STRUCTURES BY THE ADDITIONAL STEEL, SPLICED IN ACCORDANCE WITH 509.08.

BAR DIMENSIONS ARE OUT TO OUT.

BAR SIZE DESIGNATION

BAR SIZE IS INDICATED IN THE BAR MARK. THE FIRST DIGIT WHERE FOUR DIGITS ARE USED, AND FIRST TWO DIGITS WHERE FIVE DIGITS ARE USED, INDICATE THE BAR SIZE NUMBER. FOR EXAMPLE, A7001 IS A NO. 7 SIZE BAR AND A10140 IS A NO. 10 SIZE.

MARK	NUM.	LENGTH	WEIGHT	TYPE	A	B	C	D	E	NOTE
SOUTH ABUTMENT										
A 5001	45	4-11	231	1		1-6	2-2	1-6		
A 5002	20	22-0	459	ST						
A 5003	22	22-0	505	ST						
A 5004	20	20-0	417	ST						
A 5005	22	21-0	482	ST						
A 5006	65	9-2	621	1		3-0	3-5	3-0		
A 5007	36	7-9	291	8	0-0 3/4	3-2	0-0 3/4	3-2		
A 5008	30	6-11	216	3	1-9	1-5	1-9	1-5		
A 5009	9	22-2	208	ST						
A 5010	2	20-2	42	ST						
A 5011	2	17-2	36	ST						
A 5012	2	14-2	30	ST						
A 5013	8	16-0	134	ST						
A 5014	4	10-8	45	12	8-6	2-0		0-11		
A 5015	2	3-6		ST						1
THRU			66		VARY	LENGTH	BY	0-8	3/8	
A 5020	2	7-0		ST						1
A 5021	18	7-3	136	ST						
A 5022	9	19-0	178	ST						
A 5023	2	17-0	35	ST						
A 5024	2	14-0	29	ST						
A 5025	2	11-0	23	ST						
A 5026	8	13-0	108	ST						
A 5027	8	4-0	33	ST						
A 5028	2	8-1	17	1		2-0	4-4	2-0		
A 6001	72	7-1	766	1		3-3	0-11	3-3		
A 6002	72	7-1	766	1		3-0	1-5	3-0		
A 6003	82	13-9	1694	1		6-4	1-5	6-4		
A 6004	10	9-7	144	1		4-3	1-5	4-3		
A 6005	2	3-6		ST						1
THRU			95		VARY	LENGTH	BY	0-8	3/8	
A 6010	2	7-0		ST						1
A 6011	18	7-3	196	ST						
A 8001	36	6-1	585	20	4-0					
F 5001	65	8-6	576	1		1-7	5-7	1-7		
F 5002	65	6-11	469	1	0-6	6-7				
F 5003	27	11-7	326	3	2-6	3-0	2-6	3-0		
F 5004	1	9-7	10	3	2-6	2-0	2-6	2-0		
F 6001	65	14-3	1391	2	2-7	5-5	6-7			
F 6002	10	21-4	320	1		10-3	1-2	10-3		
F 6003	2	17-4	52	1		8-3	1-2	8-3		
F 6004	8	18-8	224	1		8-11	1-2	8-11		
F 6005	2	14-4	43	1		6-9	1-2	6-9		
F 8001	21	29-6	1654	ST						
F 8002	6	18-7	298	ST						
F 8003	6	16-4	262	ST						
F 8004	2	5-6	29	ST						
NORTH ABUTMENT										
A 5001	45	4-11	231	1		1-6	2-2	1-6		
A 5006	75	9-2	717	1		3-0	3-5	3-0		
A 5007	38	7-9	307	8	0-0 3/4	3-2	0-0 3/4	3-2	0-8	
A 5008	30	5-2	162	3	1-9	1-5	1-9			
A 5014	4	10-8	45	12	8-6	2-0		0-11		
A 5027	9	4-0	38	ST						
A 5029	20	27-6	574	ST						
A 5030	20	23-6	490	ST						
A 5031	22	27-6	631	ST						
A 5032	22	24-4	558	ST						

MARK	NUM.	LENGTH	WEIGHT	TYPE	A	B	C	D	E	NOTE
NORTH ABUTMENT (CONTINUED)										
A 5034	9	25-2	236	ST						
A 5035	2	23-3	48	ST						
A 5036	2	20-3	42	ST						
A 5037	2	17-3	36	ST						
A 5038	8	19-3	161	ST						
A 5039	2	3-7		ST						1
THRU			66		VARY	LENGTH	BY	0-8	1/4	
A 5044	2	7-0		ST						1
A 5045	19	7-4	145	ST						
A 5046	9	18-2	171	ST						
A 5047	2	16-3	34	ST						
A 5048	2	13-4	28	ST						
A 5049	2	10-6	22	ST						
A 5050	8	12-6	104	ST						
A 6001	86	7-1	915	1		3-3	0-11	3-3		
A 6002	86	7-1	915	1		3-0	1-5	3-0		
A 6003	100	13-9	2065	1		6-4	1-5	6-4		
A 6004	14	9-7	202	1		4-3	1-5	4-3		
A 6012	2	3-7		ST						1
THRU			95		VARY	LENGTH	BY	0-8	1/4	
A 6017	2	7-0		ST						1
A 6018	19	7-4	209	ST						
A 8001	42	6-1	682	20	4-0					
F 5001	75	8-6	665	1		1-7	5-7	1-7		
F 5002	75	6-11	541	1	0-6	6-7				
F 5003	34	11-7	411	3	2-6	3-0	2-6	3-0		
F 5004	1	9-7	10	3	2-6	2-0	2-6	2-0		
F 6001	75	14-3	1605	2	2-7	5-5	6-7			
F 6004	14	18-0	379	1		8-7	1-2	8-7		
F 6005	2	14-0	42	1		6-7	1-2	6-7		
F 6006	7	21-10	230	1		10-6	1-2	10-6		
F 6007	2	17-6	53	1		8-4	1-2	8-4		
F 8004	2	5-6	29	ST						
F 8005	21	35-5	1986	ST						
F 8006	6	22-0	352	ST						
F 8007	6	16-3	260	ST						
PIER NO. 1										
P 4001	1	15-8	298	17	NO. TURNS= 45				NO. SPACERS= 4	6
P 4002	1	15-8	298	17	NO. TURNS= 45				NO. SPACERS= 4	6
P 4003	1	16-0	305	17	NO. TURNS= 46				NO. SPACERS= 4	6
P 4004	1	16-4	311	17	NO. TURNS= 47				NO. SPACERS= 4	6
P 4005	1	16-9	318	17	NO. TURNS= 48				NO. SPACERS= 4	6
P 4006	1	17-1	325	17	NO. TURNS= 49				NO. SPACERS= 4	6
P 5001	45	5-5	254	1		1-6	2-8	1-6		
P 6001	120	12-5	2238	3	3-2	2-8	3-2	2-8		
P 6002	8	21-11	263	1	3-2	18-11				
P 6003	8	19-5	233	1	3-2	16-5				
P 7001	6	27-10	341	ST						
P 8001	4	27-4	292	ST						
P 9001	9	33-7	1028	1		3-2	27-10	3-2		
P 9002	5	32-7	554	1		2-11	27-4	2-11		
P10001	8	18-4	631	ST						
P10002	8	18-8	643	ST						

MARK	NUM.	LENGTH	WEIGHT	TYPE	A	B	C	D	E	NOTE
PIER NO. 1 (CONTINUED)										
P10003	8	19-0	654	ST						
P10004	8	19-4	666	ST						
P10005	8	19-8	677	ST						
P10006	8	20-0	688	ST						
P11001	8	13-2	560	1	3-2	10-4				
P11002	5	12-8	336	1	2-11	10-1				
P11003	7	27-4	1017	ST						
P11004	8	15-8	666	1	3-2	12-10				
P11005	5	15-2	403	1	2-11	12-7				
F 5001	58	7-6	454	ST						
F 6001	96	7-6	1081	ST						
F 9001	20	31-6	2142	ST						
F 9002	10	23-0	782	ST						
F 9003	38	27-0	3488	ST						
F 9004	19	32-0	2067	ST						
F10001	48	6-7	1360	1	1-5	5-6				
PI										

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MARK	NUM.	LENGTH	WEIGHT	TYPE	A	B	C	D	E	NOTE
PIER NO. 3										
P 4013	1	19- 7	366	17	NO.TURNS= 55		NO.SPACERS= 4	6		
P 4014	1	19- 7	366	17	NO.TURNS= 55		NO.SPACERS= 4	6		
P 4015	1	19-11	373	17	NO.TURNS= 56		NO.SPACERS= 4	6		
P 4016	1	20- 4	379	17	NO.TURNS= 57		NO.SPACERS= 4	6		
P 4017	1	14-10	285	17	NO.TURNS= 43		NO.SPACERS= 4	6		
P 4018	1	15- 3	291	17	NO.TURNS= 44		NO.SPACERS= 4	6		
P 4019	2	8- 6	341	17	NO.TURNS= 26		NO.SPACERS= 8	6		
P 5001	45	5- 5	254	1		1- 6	2- 8	1- 6		
P 5004	10	10- 3	107	ST						
P 5005	9	25- 3	237	1	3- 2	22- 3				
P 5006	7	18- 1	132	1	3- 2	15- 1				
P 5007	10	14- 8	153	1	3- 8	11- 2				
P 5008	7	18- 0	131	ST						
P 5009	9	13- 3	124	3	3- 8	2- 8	3- 8	2- 8		
P 6004	118	12- 5	2201	3	3- 2	2- 8	3- 2	2- 8		
P 6005	6	31- 2	281	ST						
P 7006	8	23- 9	388	1	3- 2	20- 9				
P 7007	6	23- 3	285	1	2-11	20- 6				
EPOXY COATED REINFORCING STEEL - NORTH ABUTMENT										
AE5033	2	7-11	17	1		2-0	4-2	2-0		
EPOXY COATED REINFORCING STEEL - SOUTH ABUTMENT										
AE5028	2	8-1	17	1		2-0	4-4	2-0		
EPOXY COATED REINFORCING STEEL - SUPERSTRUCTURE										
SE4001	1032	30-0	20681	ST.						
SE4002	1	25-0		ST.						
THRU			1743			VARY LENGTH BY 0-1 3/8				
SE4088	1	35-0		ST.						
SE4089	81	17-9	960	ST.						
SE4090	81	28-6	1542	ST.						
SE4091	81	30-0	1623	ST.						
SE4092	81	19-3	1042	ST.						
SE5085	651	2-4	1584	2	0-8	1-3	0-8			
SE5086	651	6-9	4583	2	0-8	5-8	0-8			
SE5087	322	6-5	2155	1		1-6	3-8	1-6		
SE7001	437	32-9	29253	ST.						
SE7003	441	41-3	37183	ST.						
SE7004	1	2-2		ST.						
THRU			803			VARY LENGTH BY 1-4 1/4				
SE7026	1	32-0		ST.						
SE7050	1	6-6		ST.						
THRU			1501			VARY LENGTH BY 0-11 7/8				
SE7082	1	38-0		ST.						
SE7083	16	5-10	191	ST.						
SE7084	10	6-6	133	ST.						
SE7085	1	8-0		ST.						
THRU			1057			VARY LENGTH BY 1-5 3/4				
SE7106	1	39-0		ST.						
SE7107	1	10-0		ST.						
THRU			2095			VARY LENGTH BY 0-9				
SE7147	1	40-0		ST.						

MARK	NUM.	LENGTH	WEIGHT	TYPE	A	B	C	D	E	NOTE
SUPERSTRUCTURE										
S 5001	1032	30- 0	32291	ST						
S 5002	3	27- 4	86	ST						
S 5003	1	27- 4		ST						1
THRU			2684		VARY	LENGTH	BY	0- 1	1/ 2	
S 5082	1	37- 0		ST						1
S 5083	3	37- 0	116	ST						
S 5084	651	7-5	5036	8	0-0 3/4	3-0	0-0 3/4	3-0	0-8	
S 5085	651	2-4	1584	2	0-8	1-3	0-8			
S 7002	878	37- 1	66551	ST						
S 7027	1	6- 2		ST						1
THRU			997		VARY	LENGTH	BY	1- 4	3/ 8	
S 7049	1	36- 3		ST						1
S 7050	1	6- 6		ST						1
THRU			1501		VARY	LENGTH	BY	0-11	7/ 8	
S 7082	1	38- 0		ST						1
S 7085	1	8- 0		ST						1
THRU			1057		VARY	LENGTH	BY	1- 5	3/ 4	
S 7106	1	39- 0		ST						1
S 7148	1	5- 0		ST						1
THRU			1718		VARY	LENGTH	BY	0- 9	1/ 4	
S 7188	1	36- 0		ST						1
RAILING										
RE5001	6	22- 2		ST						2
RE5002	6	19- 0		ST						2
RE5003	6	25- 2		ST						2
RE5004	6	18- 2		ST						2
RE5005	240	7- 2		ST						2
RE5006	78	14- 8		ST						2
RE5007	24	12- 1		ST						2
RE5008	78	15- 4		ST						2
LIGHTING										
L 501	12	3-1	39	1		0-7 1/2	2-1	0-7 1/2		
L 502	12	9-4	117	1		3-9	2-1	3-9		
L 503	18	8-0	200	16		0-6	2-1	1-4	2-1	
L 504	12	3-9	47	ST						

FED. RD. DIVISION	STATE	PROJECT	TYPE FUNDS
2	OHIO		276 317

CUYAHOGA COUNTY  
CUY-480-6.78

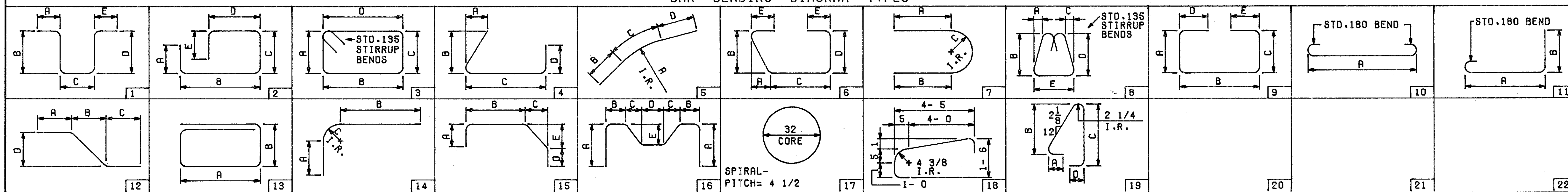
NOTES

- INDICATES SERIES BAR. EACH BAR VARIES FROM ADJACENT BAR(S) BY TABULATED AMOUNT(S), CALCULATED TO NEAREST 1/8 INCH. WEIGHT SHOWN IS FOR ENTIRE SERIES UTILIZING AVERAGE LENGTH.
- COST OF FIELD BENDING SHALL BE INCLUDED WITH ITEM 509.
- 'LENGTH' SHOWN FOR SPIRAL BARS IS DISTANCE FROM TOP OF FOOTING TO BOTTOM OF PIER CAP. 'NO. TURNS' SHOWN IS 'LENGTH' DIVIDED BY PITCH, PLUS 3 TURNS (NUMBER OF CLOSED COILS), EXPRESSED AS NEAREST WHOLE NUMBER. 1 1/2 CLOSED COILS SHALL BE PROVIDED AT ENDS OF EACH SPIRAL UNIT. FOUR STEEL CHANNEL, TEE OR ANGLE SPACERS, WEIGHING APPROXIMATELY 0.80 LB. PER LIN. FT. OF SPACER SHALL BE PROVIDED FOR EACH SPIRAL UNIT. THEY SHALL BE EQUALLY SPACED ALONG PERIPHERY OF COIL. WEIGHT OF SPACERS, AT 0.80 LB. PER LIN. FT. WILL BE PAID FOR AS REINFORCING STEEL AND IS INCLUDED IN TABULATED WEIGHT.

- BARS INCLUDED WITH ITEM 517, RAILING, FOR PAYMENT.

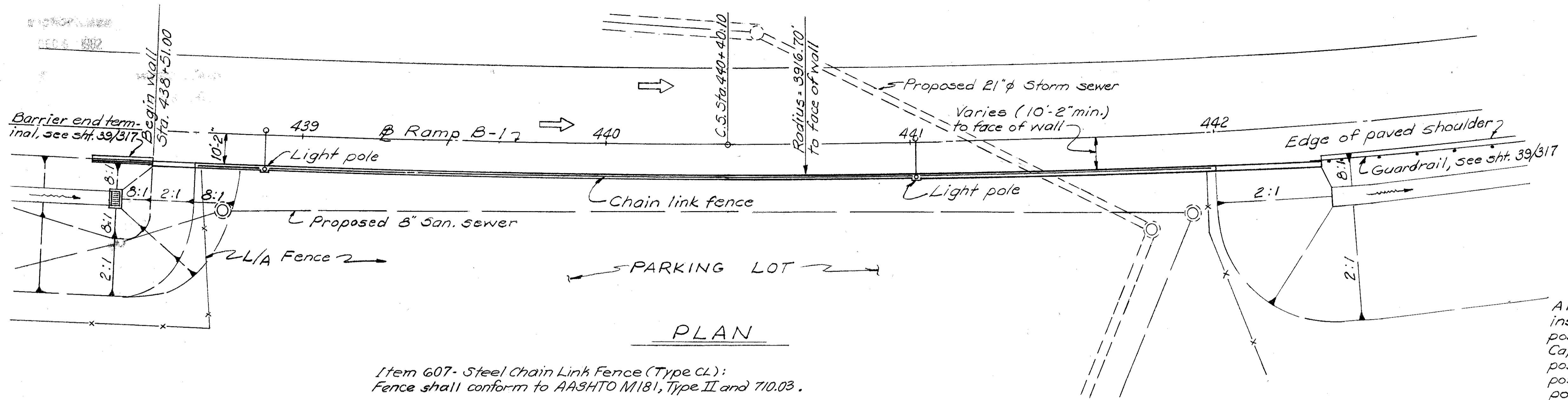
FOR ADDITIONAL NOTES SEE SHT. 16/17

BAR BENDING DIAGRAM TYPES

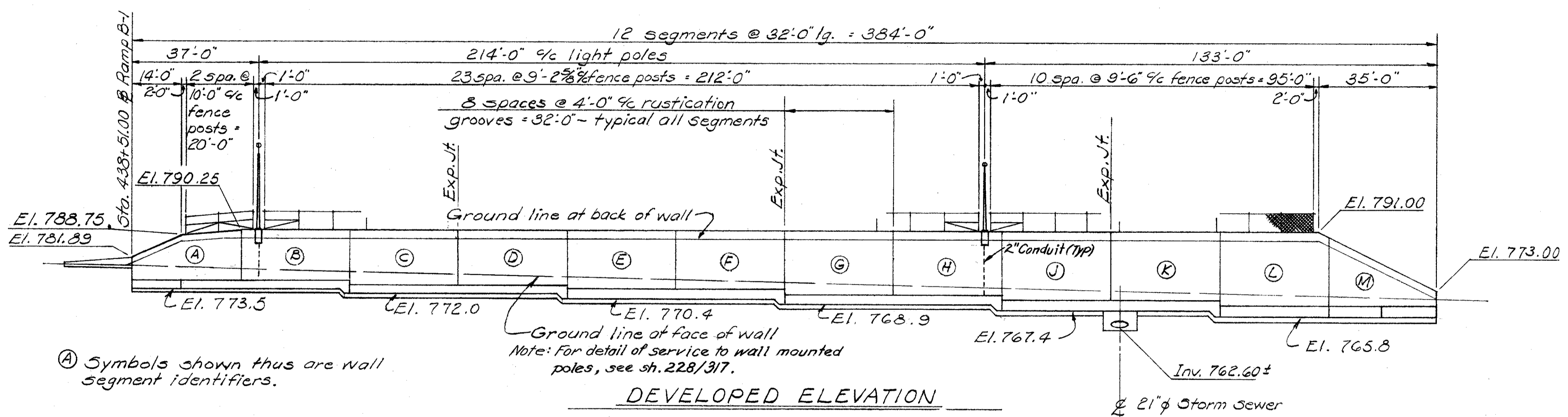
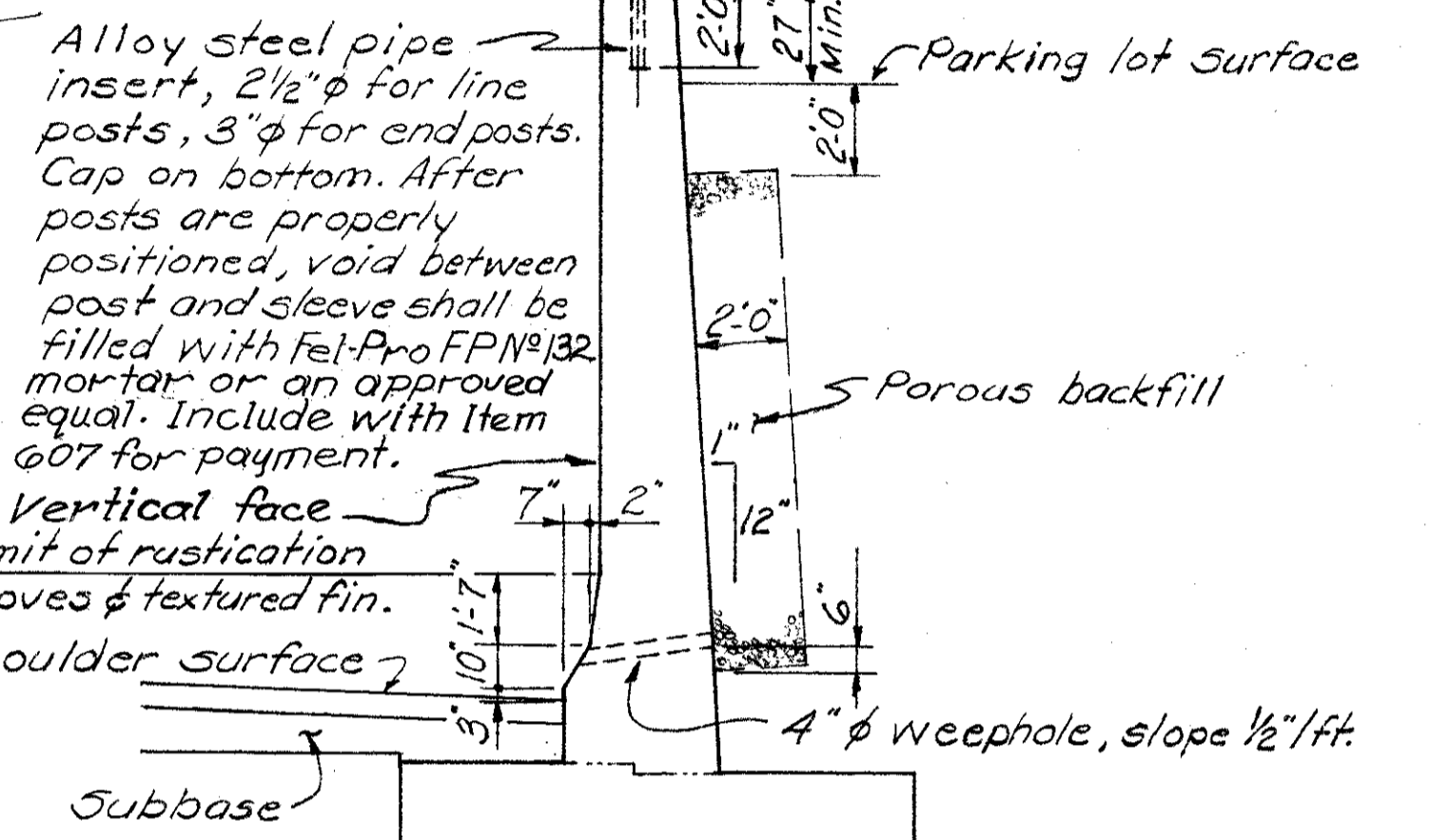


ALDEN E. STILSON & ASSOCIATES, LIMITED CONSULTING ENGINEERS CLEVELAND, OHIO COLUMBUS, OHIO WHEELING, W. VA.						
REINFORCING STEEL LIST						
BRIDGE NO. CUY-480-0727 1-480 UNDER RELOCATED GRAYTON ROAD STA. 20+33.38 CUYAHOGA COUNTY STA. 24+11.86						
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
R.T.				M.E.M. G.W.M.	7/16/76	

CUYAHOGA COUNTY  
CUY-480-6.78

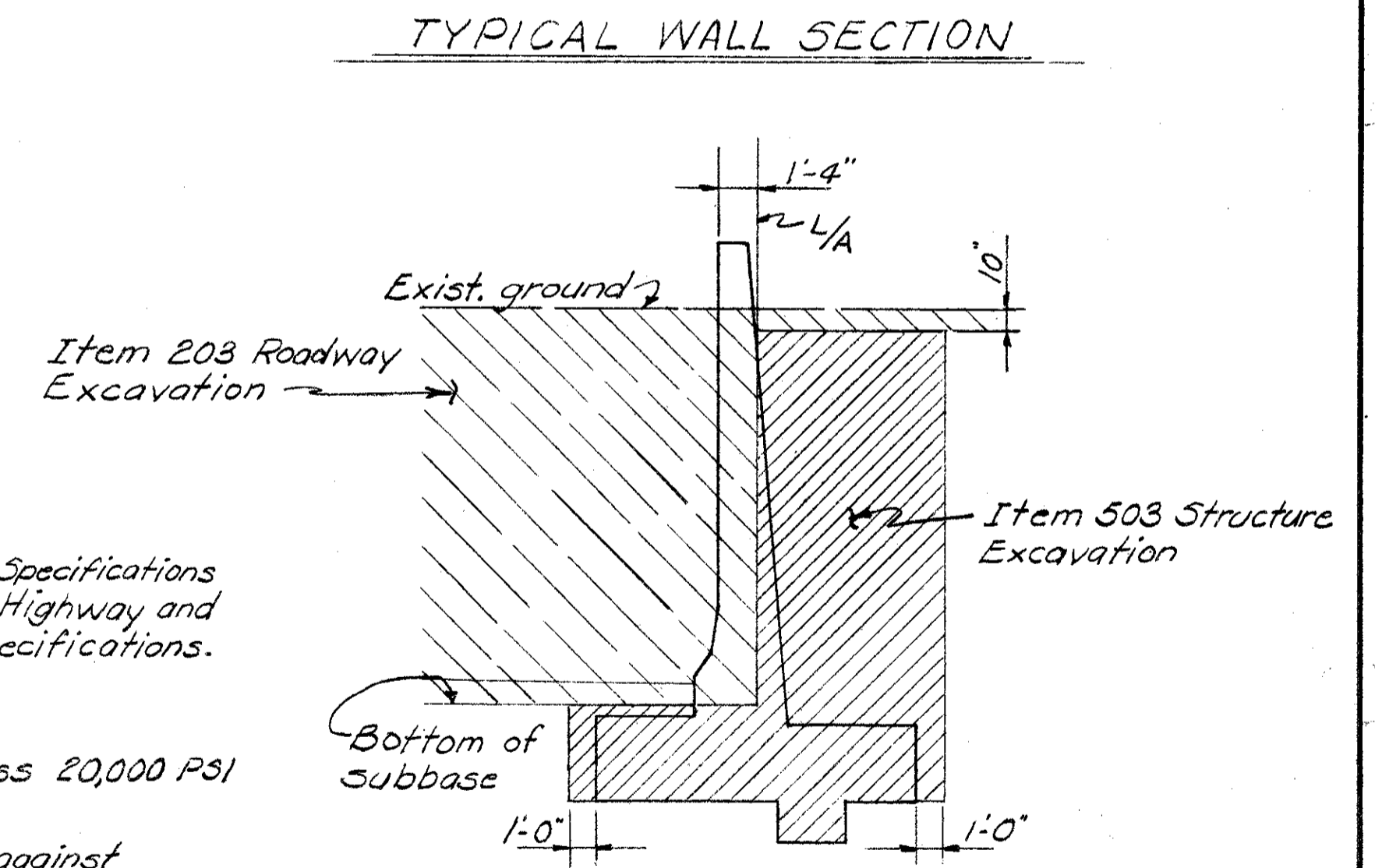


Item 607 - Steel Chain Link Fence (Type CL):  
Fence shall conform to AASHTO M181, Type II and 710.03.



(A) Symbols shown thus are wall segment identifiers.

Note: For detail of service to wall mounted poles, see sh. 228/317.



**NOTES**

DESIGN SPECIFICATIONS: This structure conforms to "Standard Specifications for Highway Bridges" adopted by the American Association of State Highway and Transportation Officials, 1977 and the Ohio "Supplement" to these specifications.

DESIGN DATA:  
Concrete, Class "C": Unit stress 1333 PSI  
Reinforcing steel: ASTM A 615, 616, or 617 unit stress 20,000 PSI  
Maximum foundation pressure: 5,000 PSF

The footing key shall be placed in a carefully made trench, against undisturbed earth.

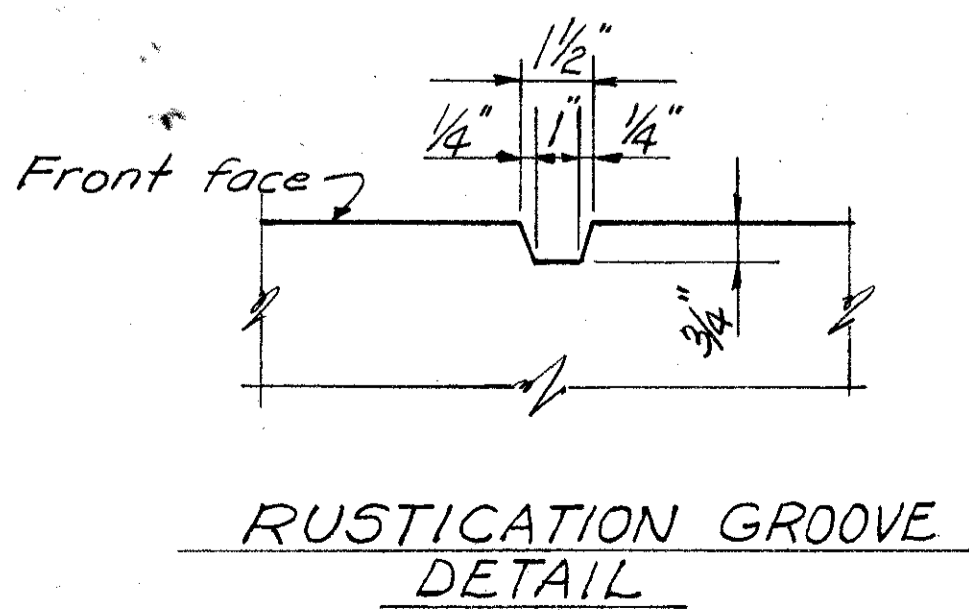
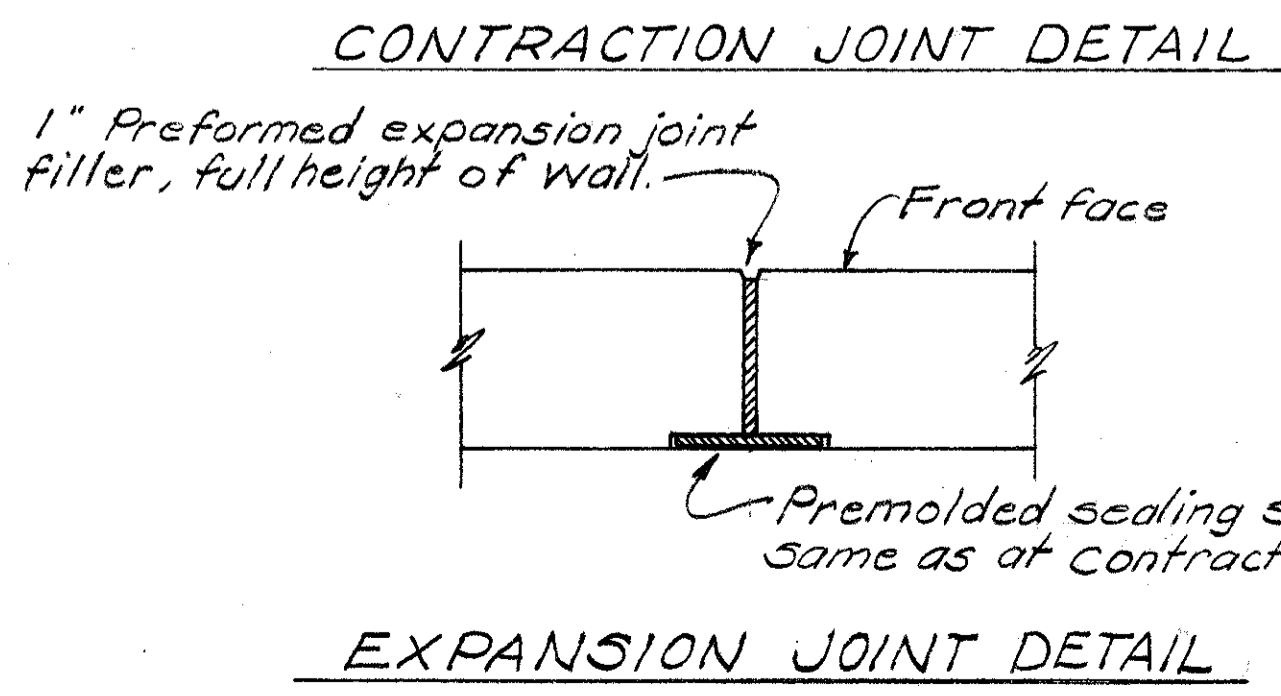
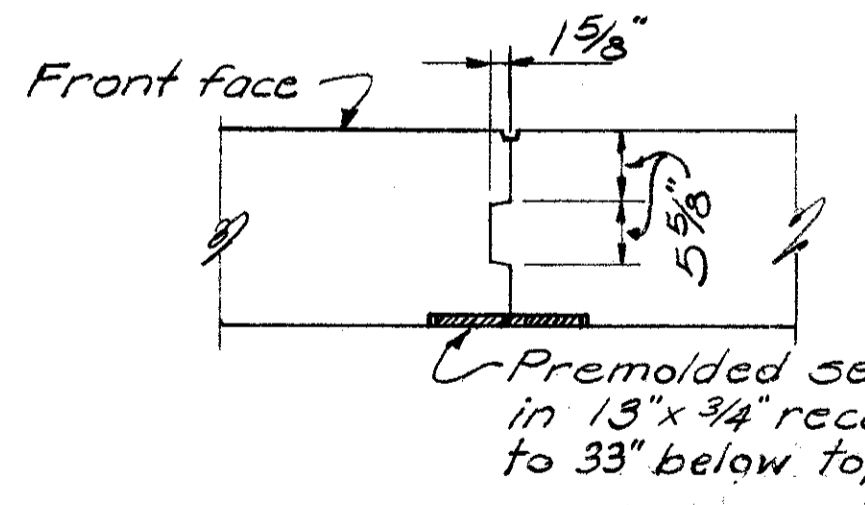
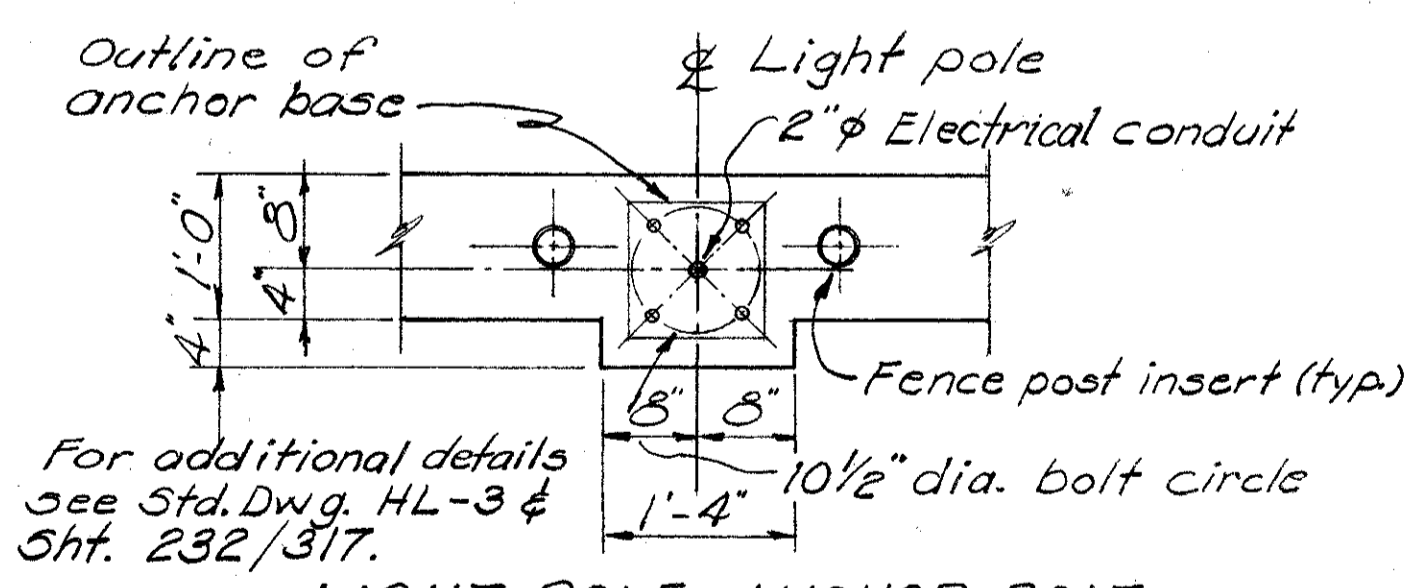
TEXTURED FINISH OF CONCRETE: The exposed face of the retaining wall shall have a textured finish produced by striated forms. The finish shall be uniform and shall extend from the top of the wall to the top of the safety shape. Four foot by four foot panels shall be used where possible. The panels shall be placed, with the striations alternating horizontally and vertically, between the rustication grooves.

Plan and elevation views of the wall segments are drawn as developed elements and all dimensions are measured to the front face of the wall.

For Estimated Quantity tabulation see sh. 9/9.

PREMOLDED SEALING STRIP AS PER PLAN: In lieu of Premolded sealing strip, Type B Waterproofing (36" wide) may be used. Type B Waterproofing (36" wide) shall be paid for by the linear foot at the same unit price bid for Item 512 Premolded sealing strip as per plan.

REFERENCE shall be made to Standard Drawings HL-3 (revised 7-27-73), HL-7 (revised 1-21-76) and F-1 (revised 6-1-72).



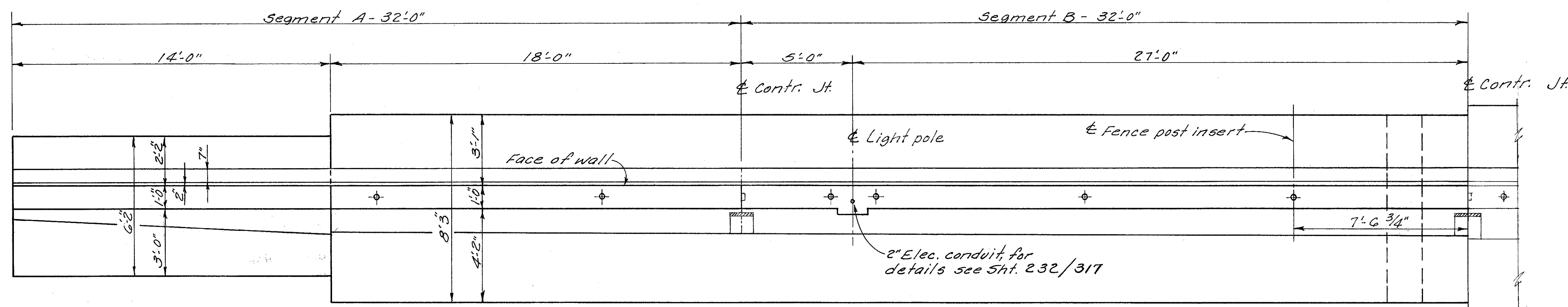
ALDEN E. STILSON & ASSOCIATES CONSULTING ENGINEERS CLEVELAND, OHIO COLUMBUS, OHIO WHEELING, W. VA.						
<b>GENERAL PLAN &amp; ELEVATION NOTES &amp; COMMON DETAILS</b>						
RETAINING WALL ALONG RAMP B-1 CUYAHOGA COUNTY						
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
G.W.M.	G.W.M.		D.E.M.	G.W.M.	5/12/78	

MICROFILMED  
DEC 6 1982

FED. RD. DIVISION	STATE	PROJECT	TYPE FUNDS
2	OHIO		

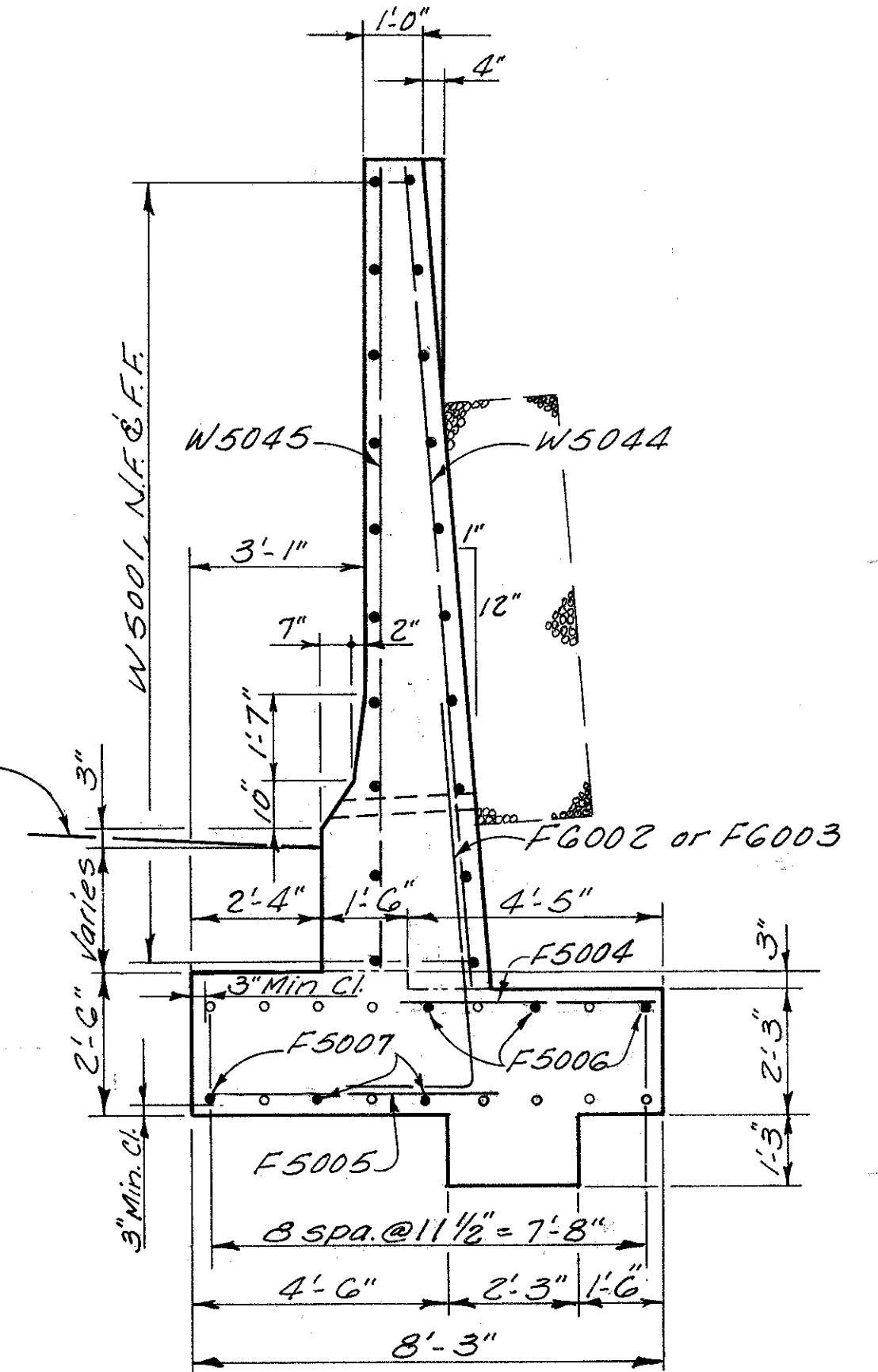
276B  
317

CUYAHOGA COUNTY  
CUY-480-678



**PLAN**

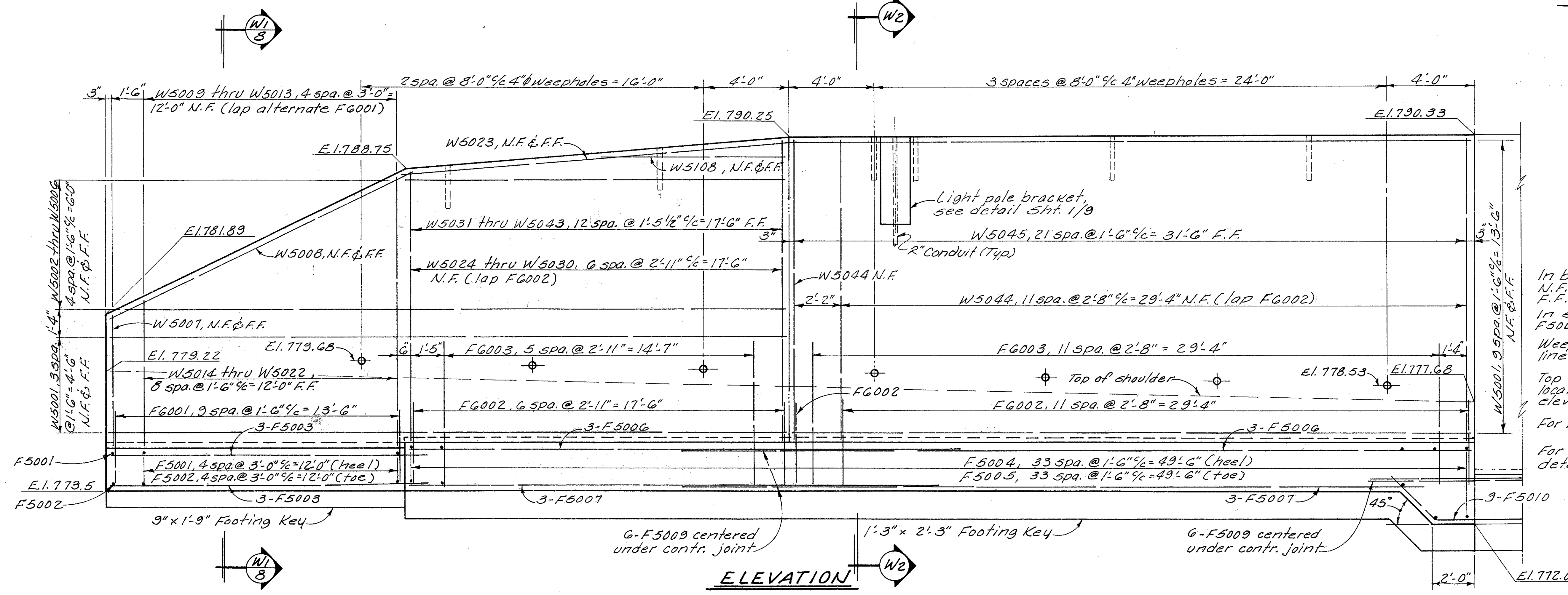
Note: Fence not shown



**SECTION W2-W2**

Note:

In bar callouts:  
N.F. indicates near face.  
F.F. indicates far face.  
In sections the symbol  $\circ$  indicates F5009 & F5010 bars centered under joints.  
Weepholes shall be placed on a straight line between the elevations shown.  
Top of shoulder at face of wall shall be located by a straight line between the elevations shown.  
For fence post insert spacing see sht. 1/9  
For additional notes and common details see sht. 1/9



**ELEVATION**

Expansion and/or contraction joint seal strips not shown for clarity. Typical all elevations.

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COLUMBUS, OHIO

**SEGMENTS A & B**  
RETAINING WALL ALONG RAMP B-1  
CUYAHOGA COUNTY

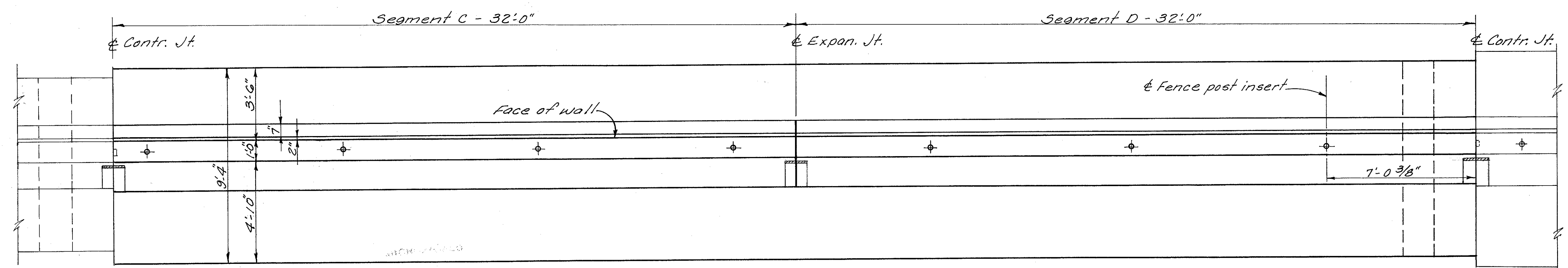
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
D.E.M.	R.T.		W.M.	G.W.M.	5/12/78	

MICROFILMED  
DEC 6 1982

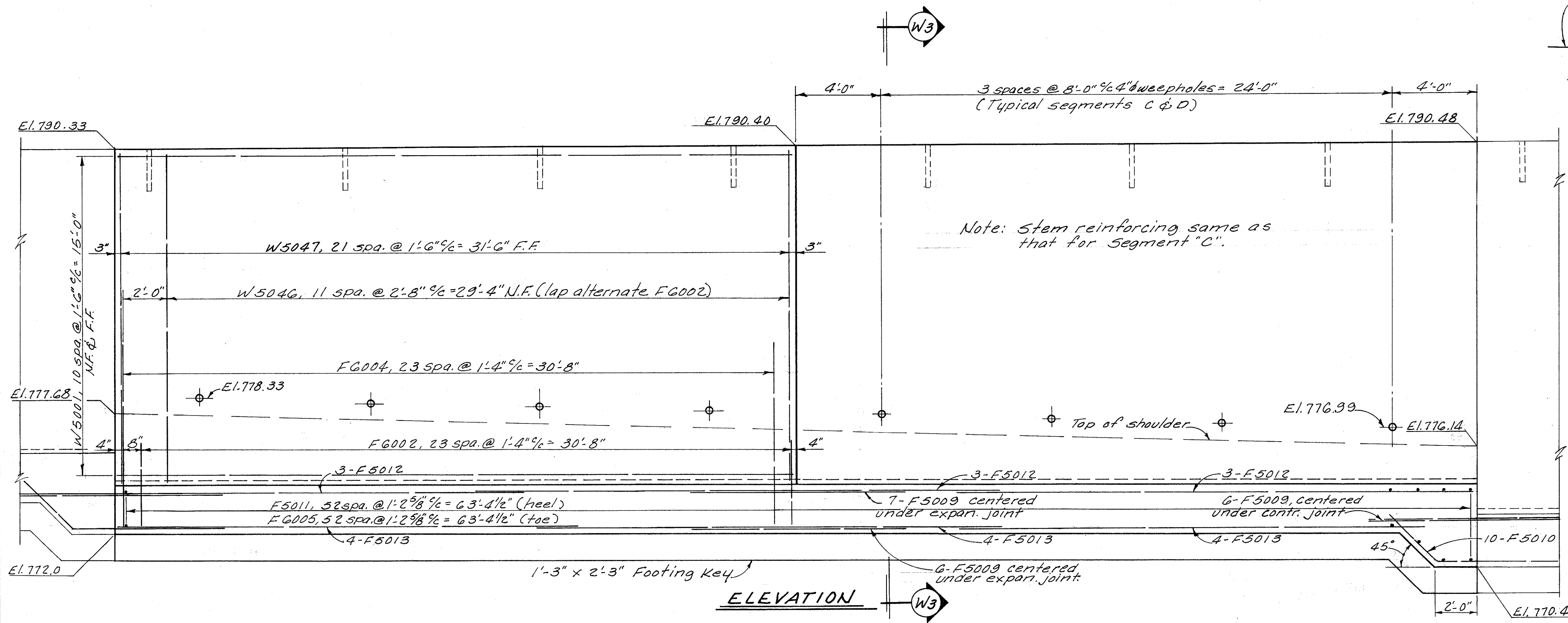
FED. RD. DIVISION	STATE	PROJECT	TYPE FUNDS
2	OHIO		

276C  
317

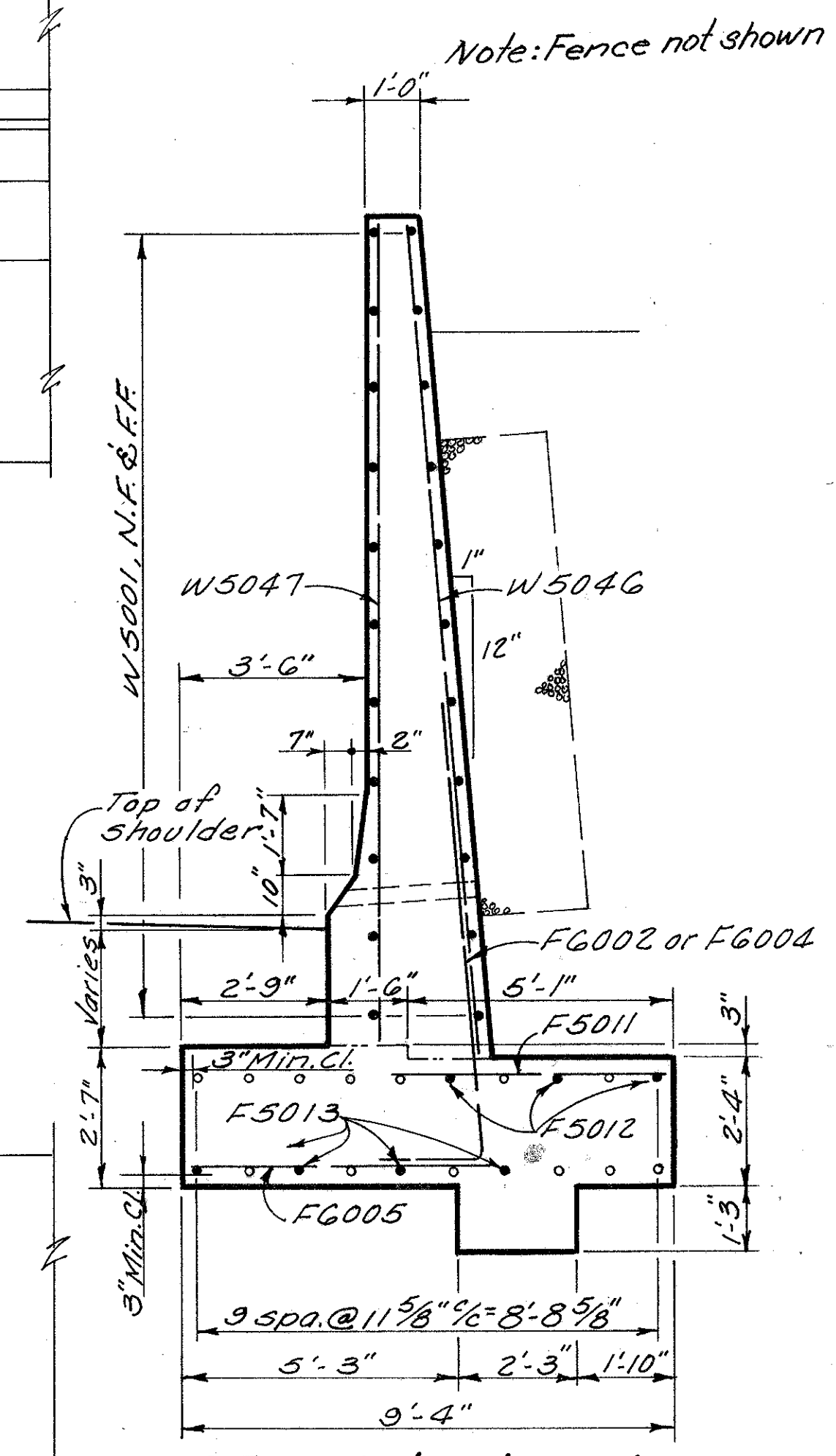
CUYAHOGA COUNTY  
CUY-480-6.78



PLAN



ELEVATION



SECTION W3-W3

For notes see sht. 2/9

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**SEGMENTS C & D**  
RETAINING WALL ALONG RAMP B-I  
CUYAHOGA COUNTY

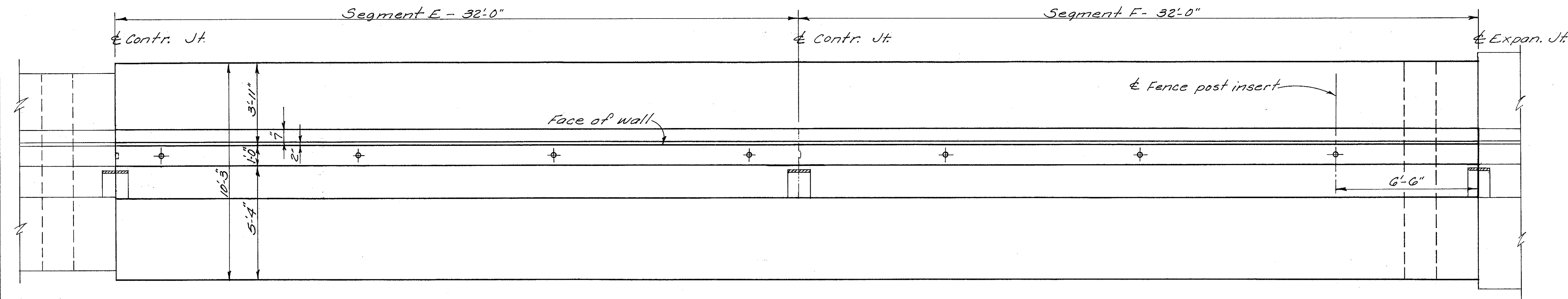
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D.E.M.	R.T.		W.M.	G.W.M.	5/21/78	

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DEC 6 1982

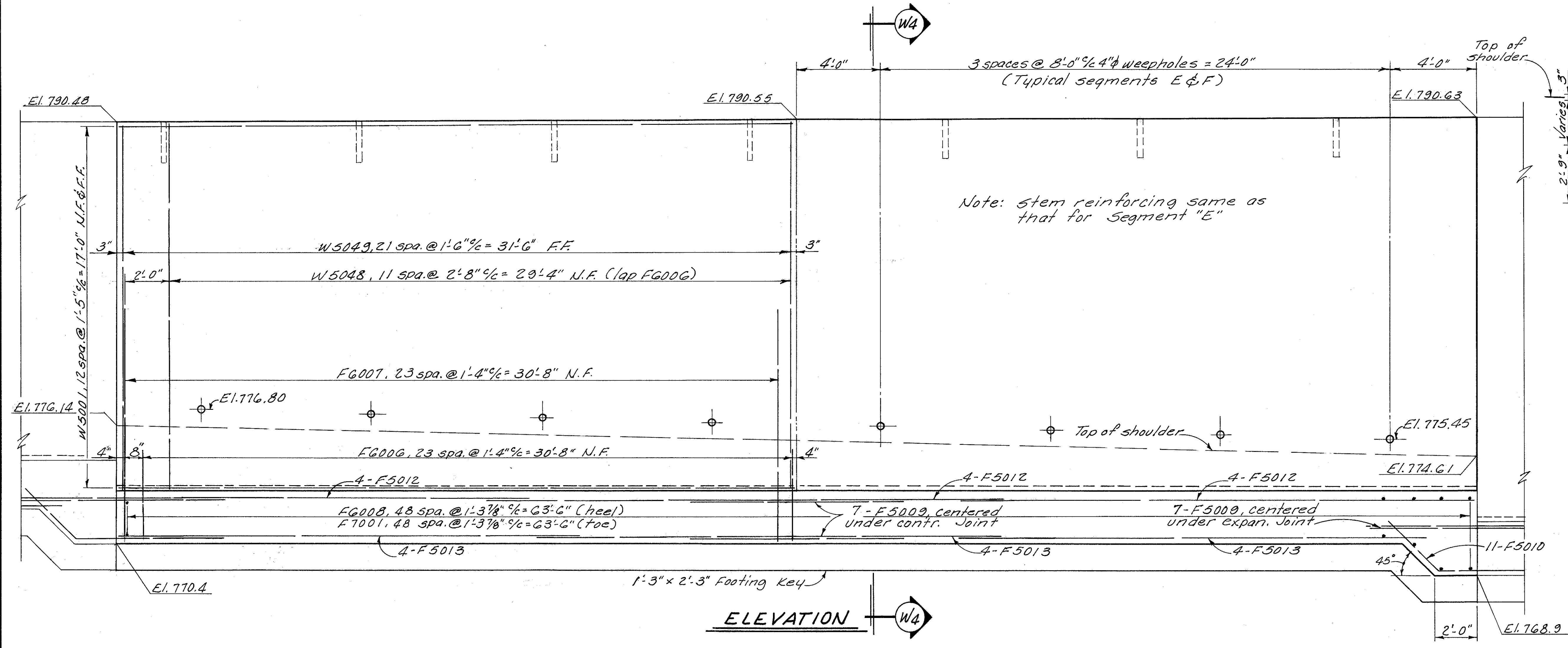
FED. RD. DIVISION	STATE	PROJECT	TYPE FUNDS
2	OHIO		

276D  
317

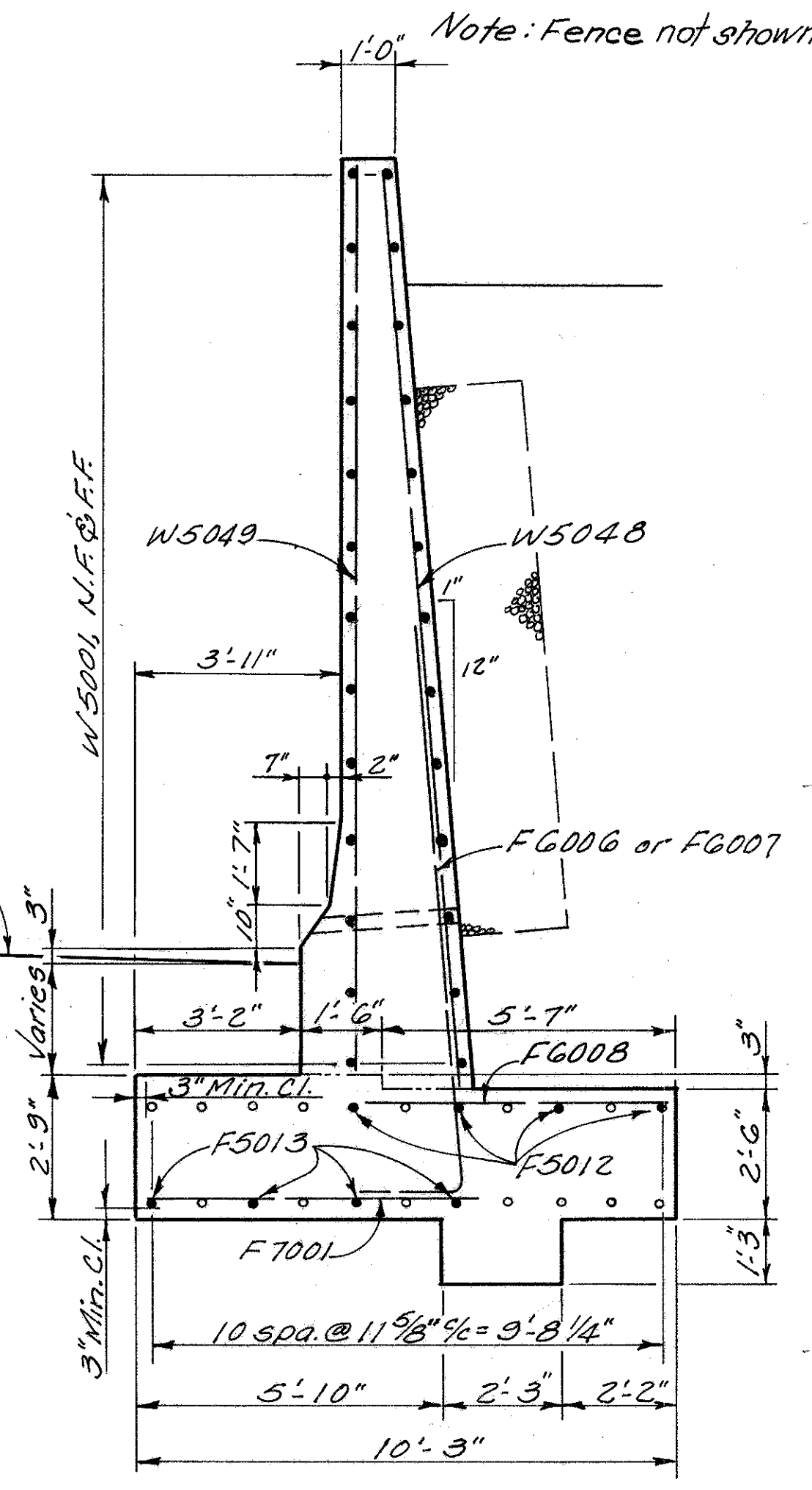
CUYAHOGA COUNTY  
CUY-480-6.78



PLAN



ELEVATION



SECTION W4-W4

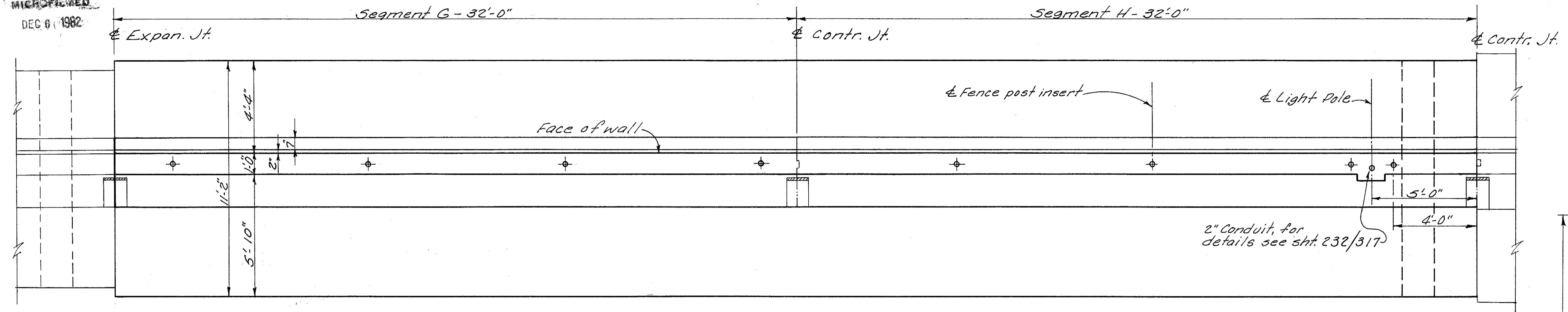
For notes see sheet 2/9

ALDEN E. STILSON & ASSOCIATES, LIMITED CONSULTING ENGINEERS COLUMBUS, OHIO						
<b>SEGMENTS E &amp; F</b>						
RETAINING WALL ALONG RAMP B-I CUYAHOGA COUNTY						
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISION
D.E.M.	R.T.		W.M.	G.W.M.	5/12/78	

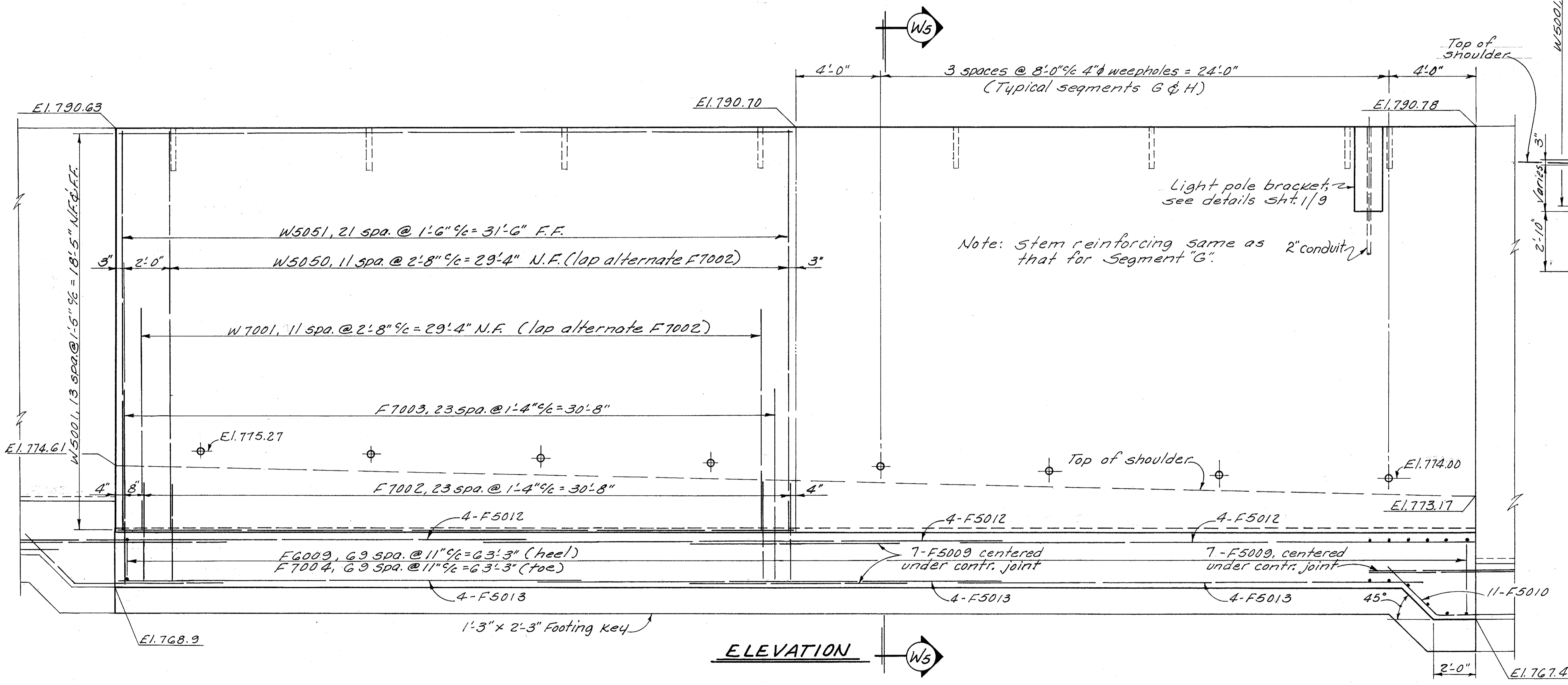
MICROFILMED  
DEC 6 1982

FED. RD. DIVISION	STATE	PROJECT	TYPE FUNDS	276C 317
2	OHIO			

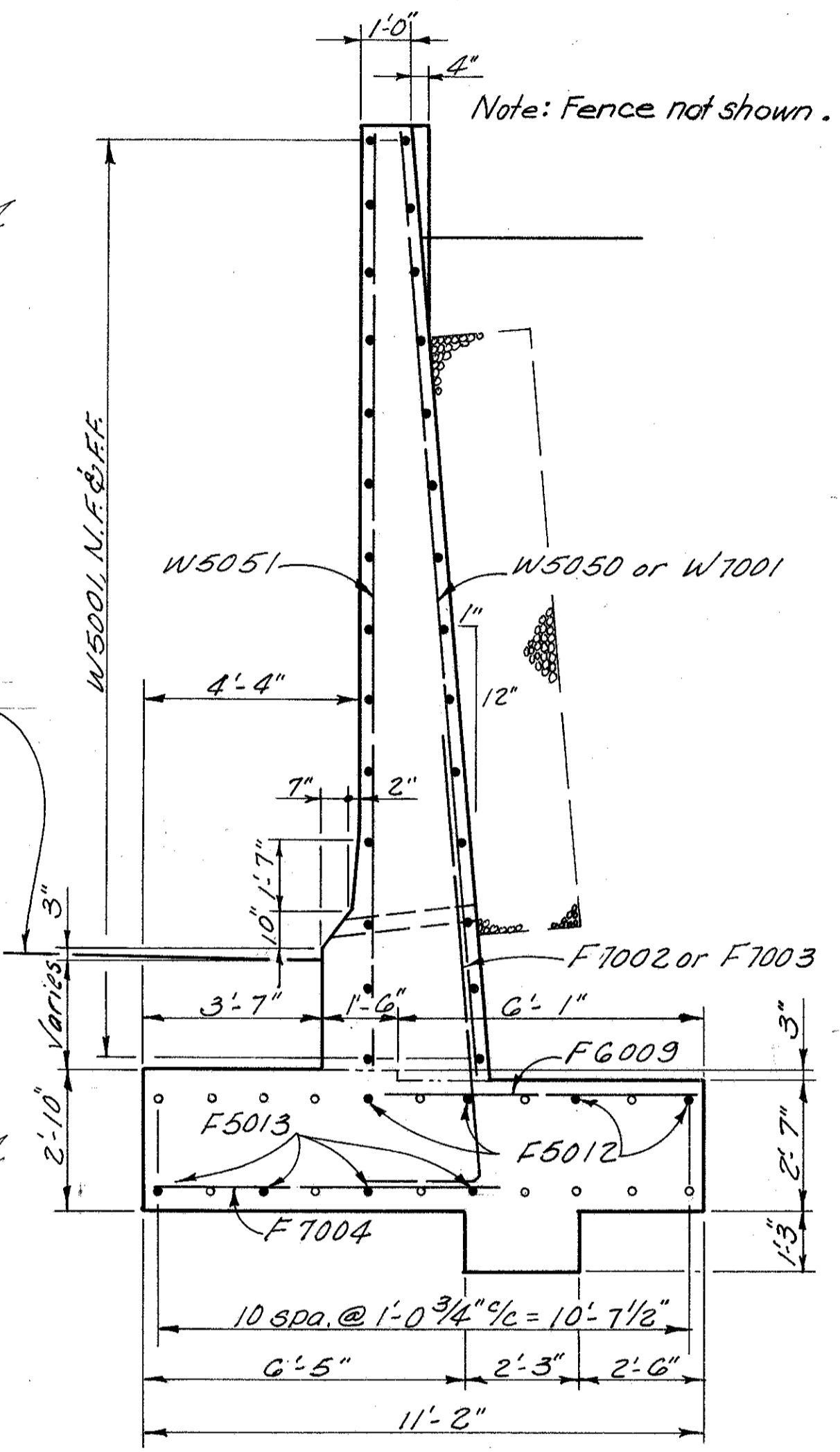
CUYAHOGA COUNTY  
CUY-480-6.78



PLAN



ELEVATION



SECTION W5-W5

For notes see sht. 2/9

5/9

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CONSULTING ENGINEERS  
COLUMBUS, OHIO

**SEGMENTS G & H**  
RETAINING WALL ALONG RAMP B-I  
CUYAHOGA COUNTY

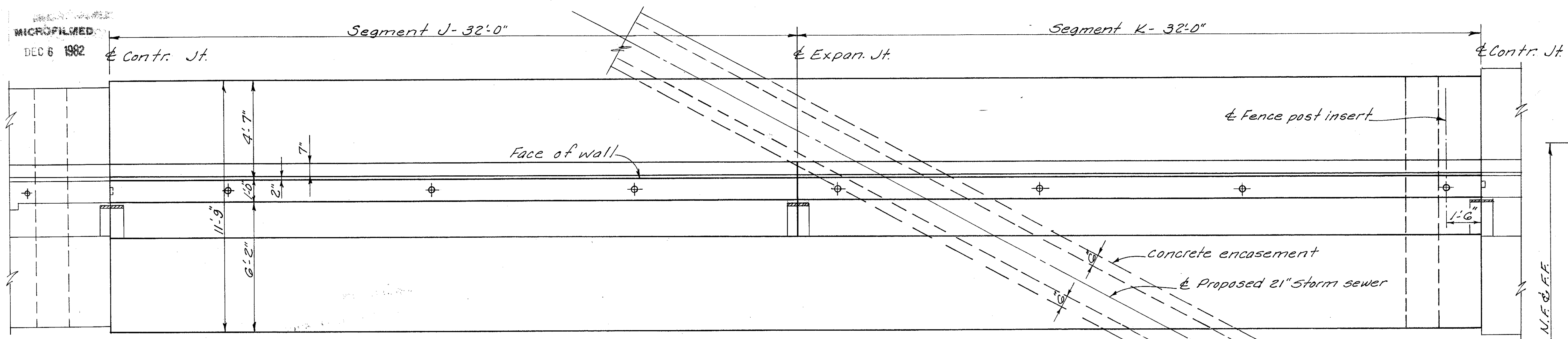
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISION
D.E.M.	R.T.		W.M.	G.W.M.	5/12/78	

MICROFILMED  
DEC 6 1982

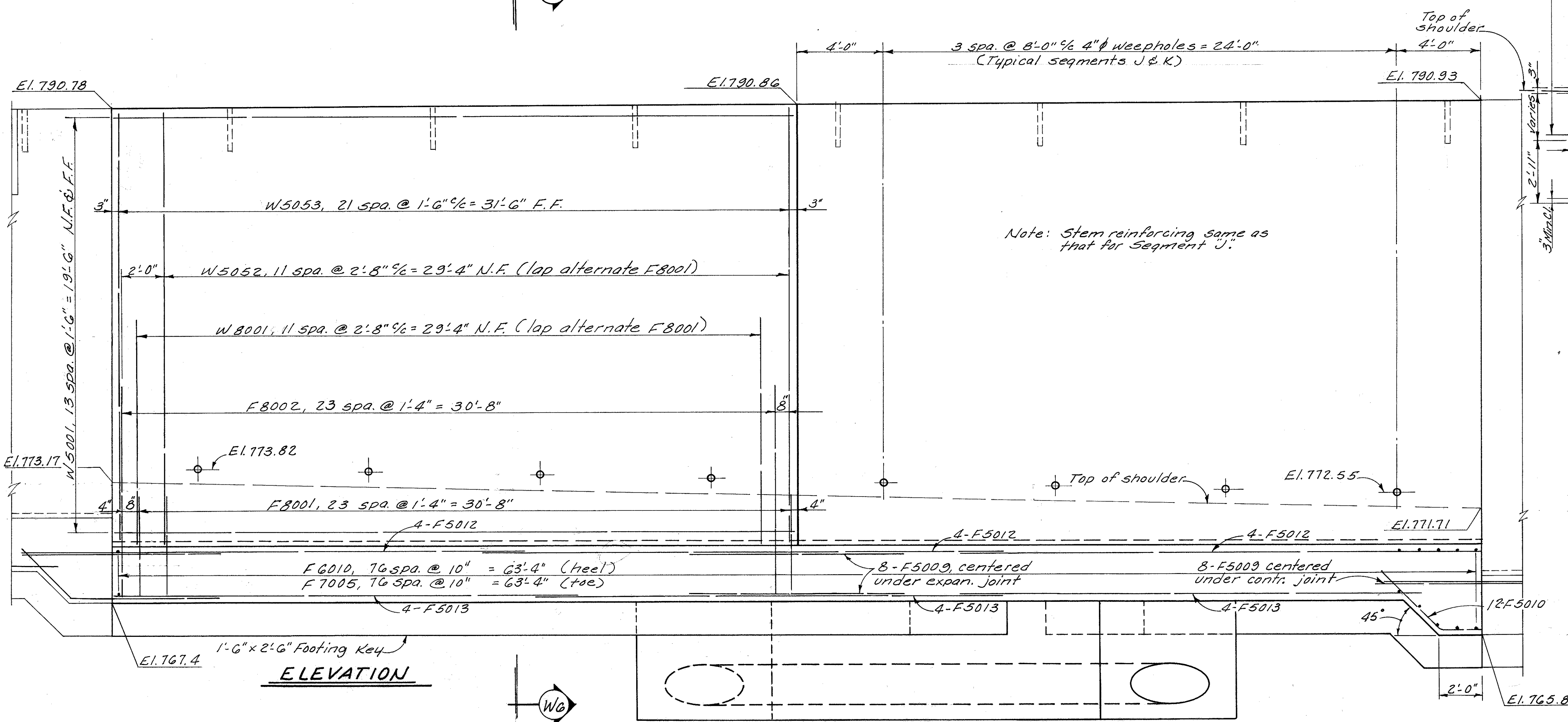
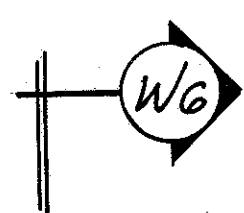
FED. RD. DIVISION	STATE	PROJECT	TYPE FUNDS
2	OHIO		

CUYAHOGA COUNTY  
CUY-480-6.78

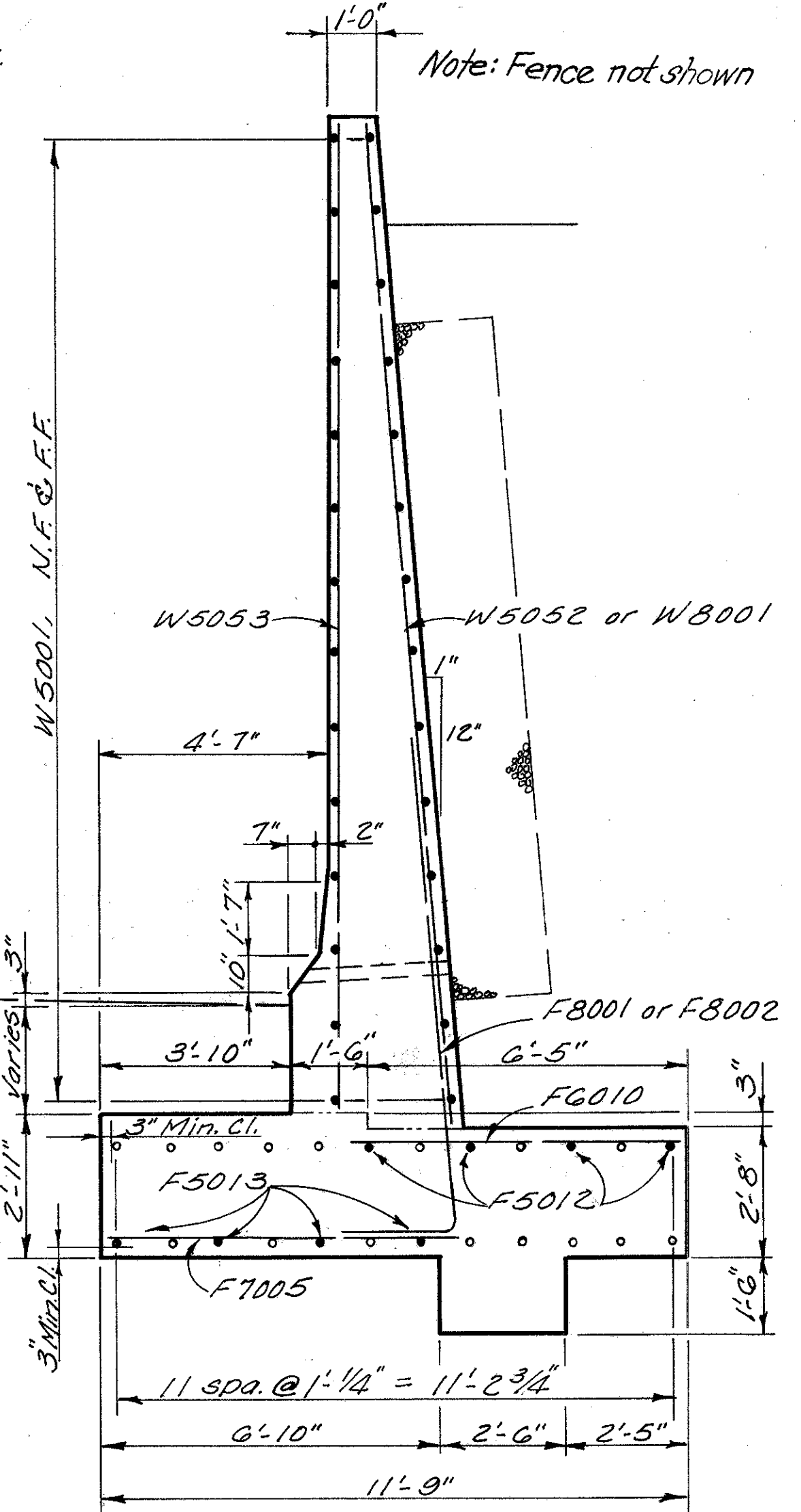
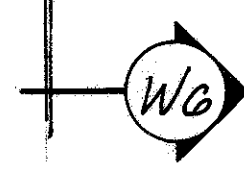
276F  
317



**PLAN**



**ELEVATION**



**SECTION W6-W6**

For notes see Sht. 2/9

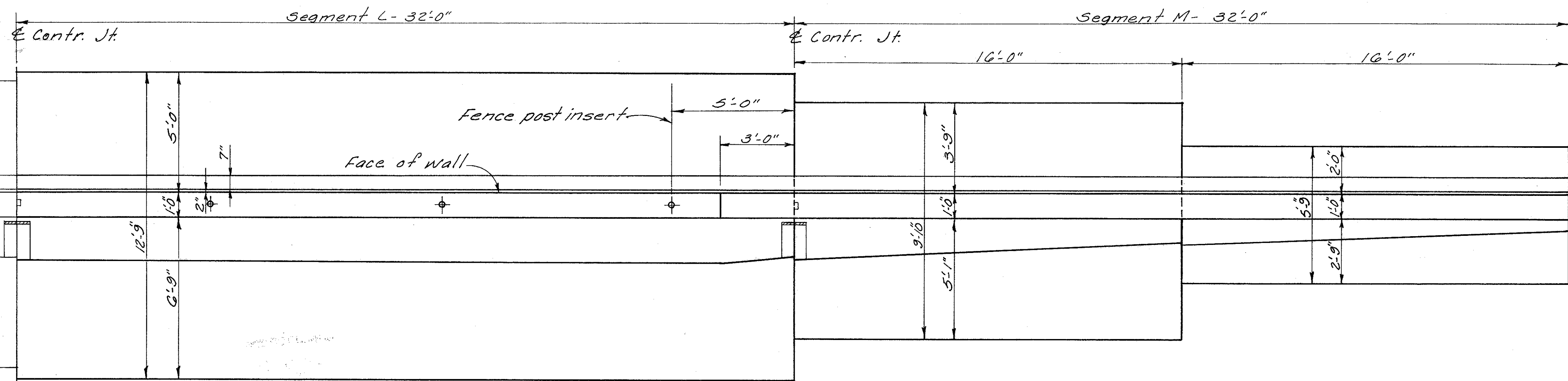
ALDEN E. STILSON & ASSOCIATES, LIMITED  
CONSULTING ENGINEERS  
COLUMBUS, OHIO

**SEGMENTS J & K**  
RETAINING WALL ALONG RAMP B-I  
CUYAHOGA COUNTY

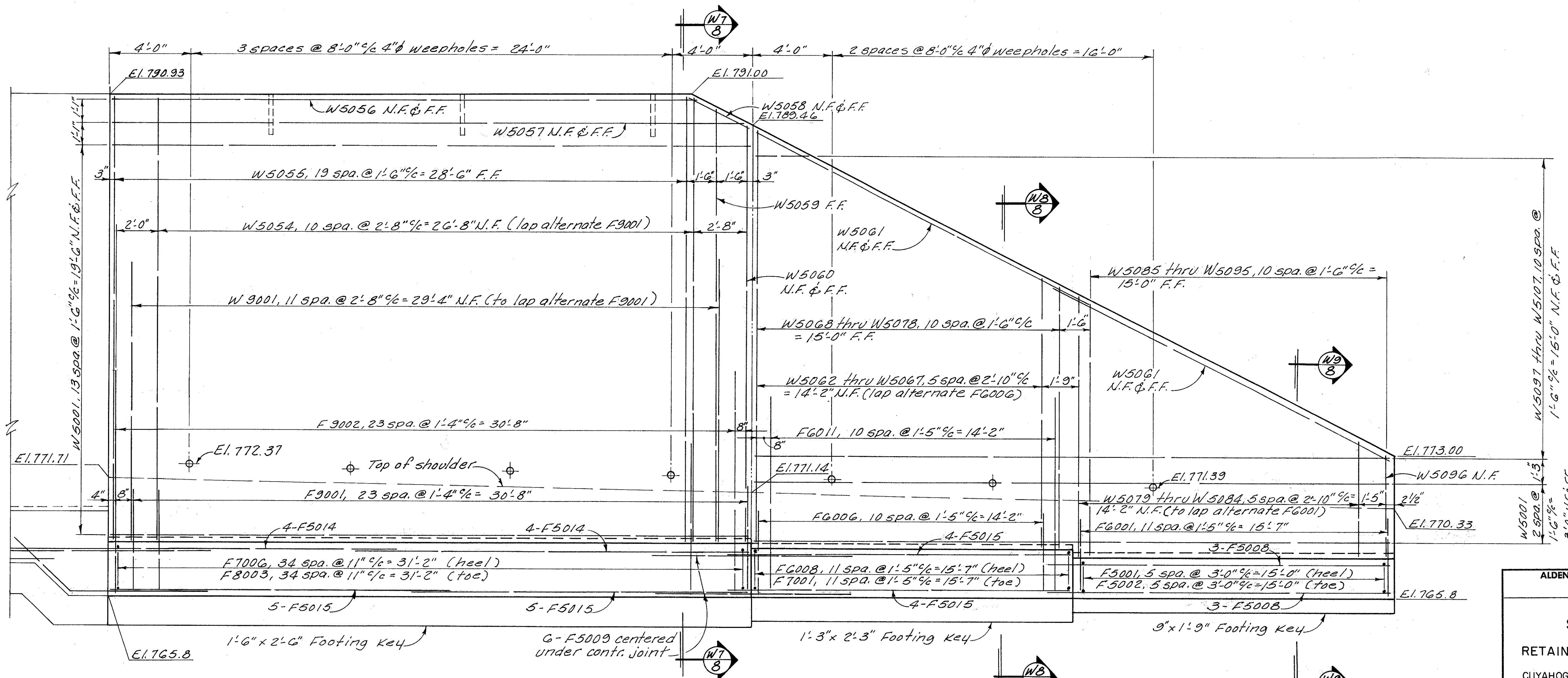
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVIS
DEM.	R.T.		W.M.	G.W.M.	5/12/78	



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DEC 6 1982



PLAN



ELEVATION

FED. RD. DIVISION	STATE	PROJECT	TYPE FUNDS
2	OHIO		

276G  
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CUYAHOGA COUNTY  
CUY-480-6.78

For notes see sht. 2/9

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ALDEN E. STILSON & ASSOCIATES, LIMITED  
CONSULTING ENGINEERS  
COLUMBUS, OHIO

**SEGMENTS L & M**  
RETAINING WALL ALONG RAMP B-I  
CUYAHOGA COUNTY

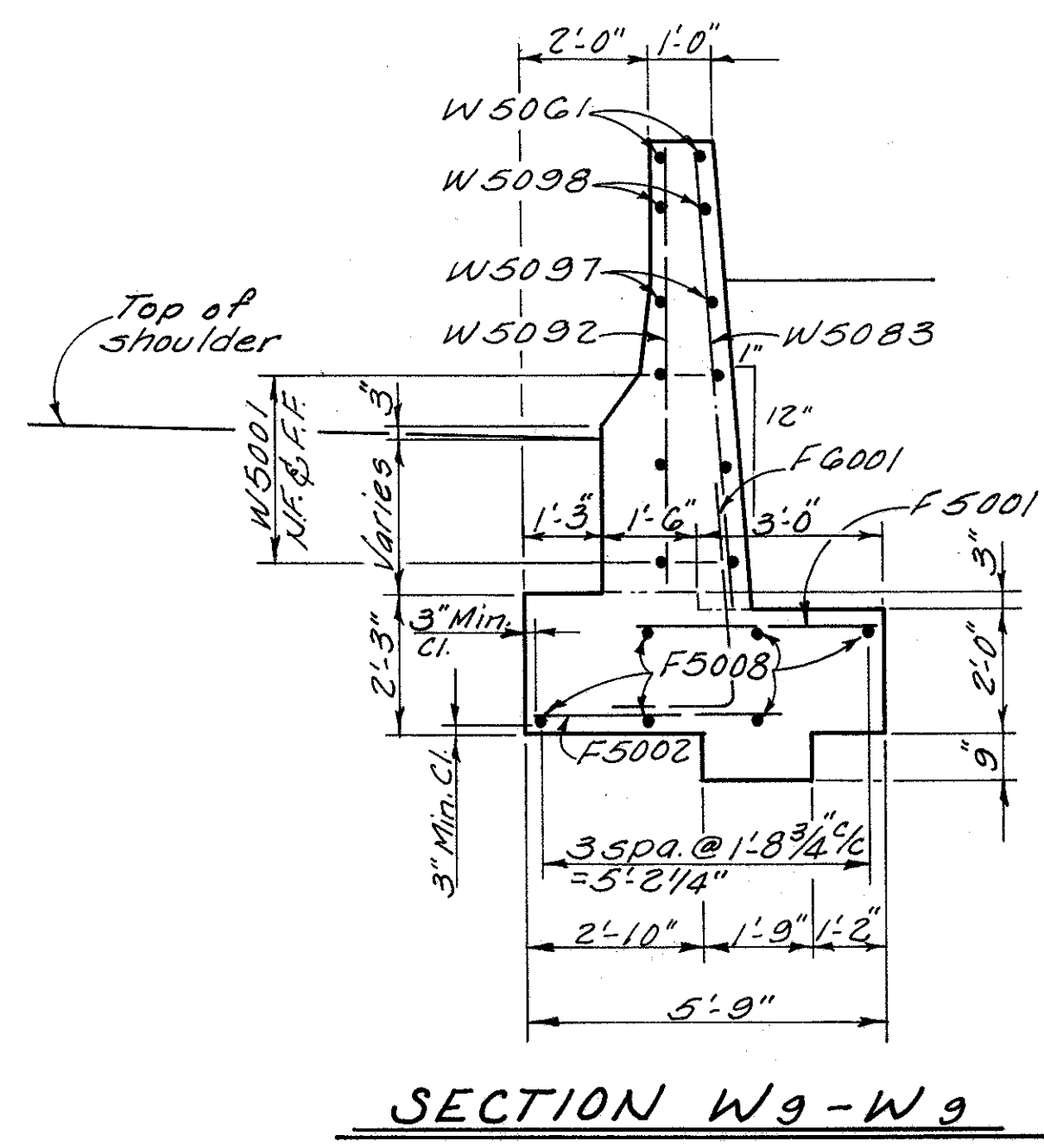
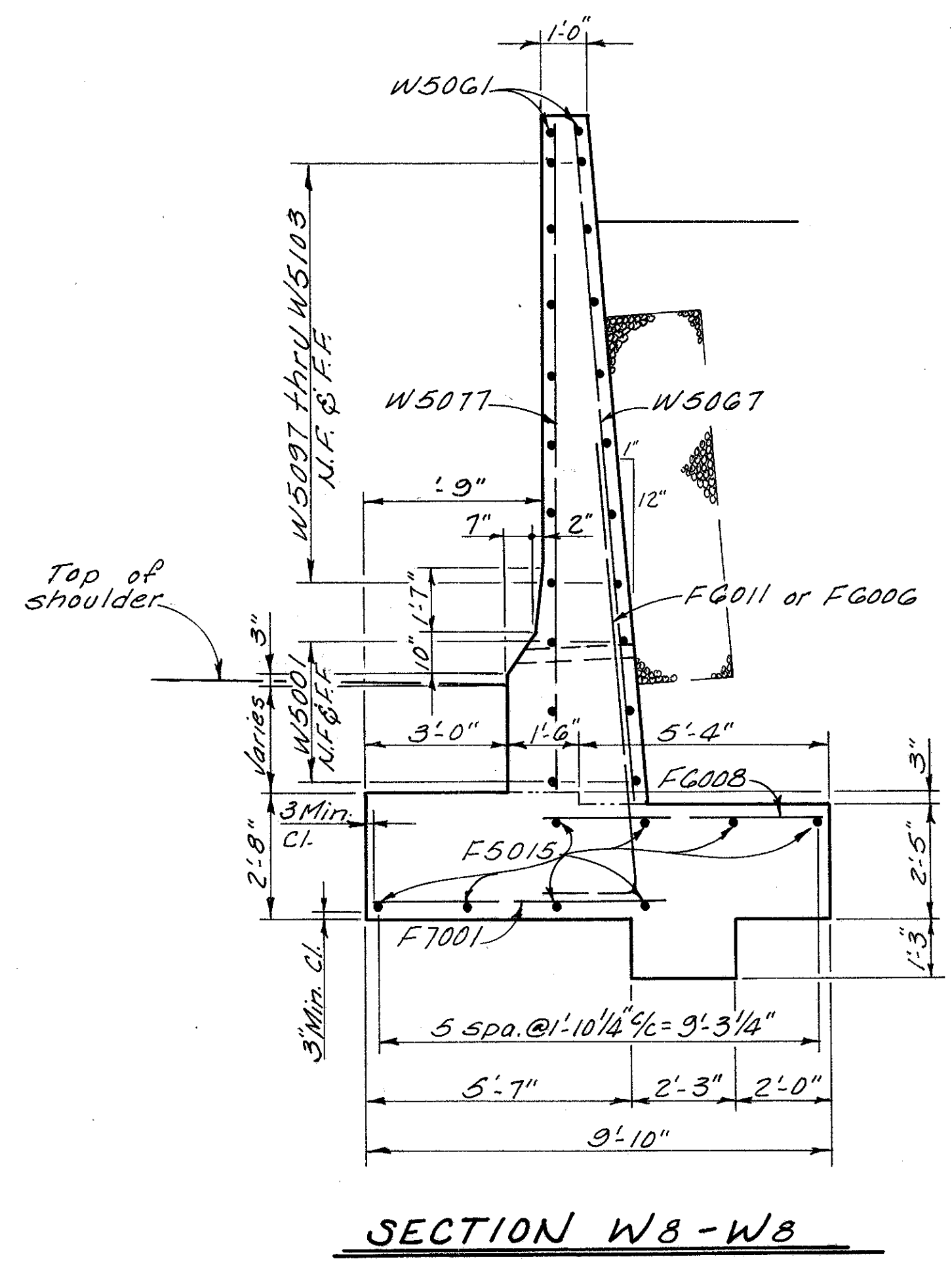
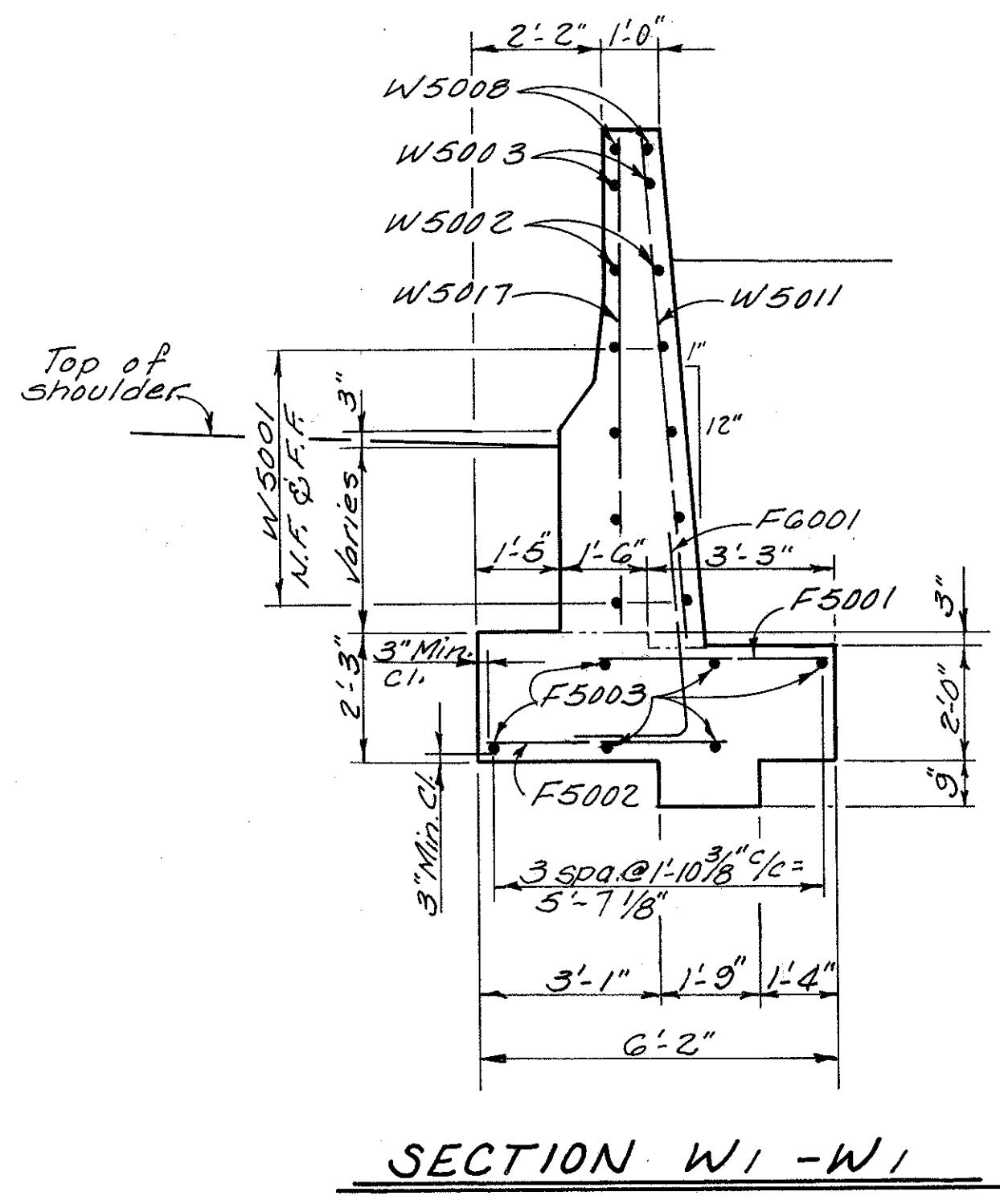
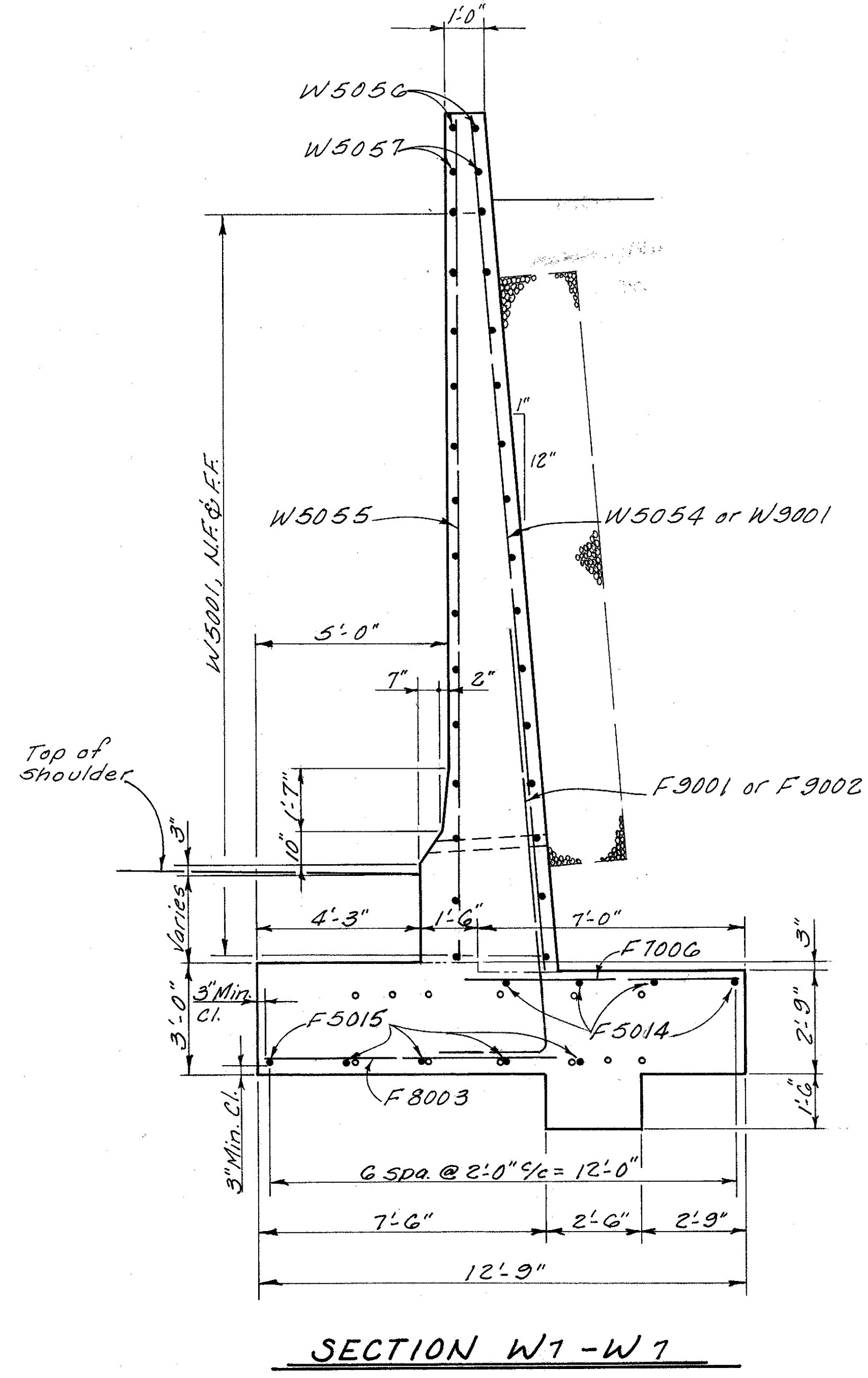
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
D.E.M.	R.T.		W.M.	G.W.M.	9/21/78	

MICROFILMED  
DEC 6 1982

FED. RD. DIVISION	STATE	PROJECT	TYPE FUNDS
2	OHIO		

276A  
317

CUYAHOGA COUNTY  
CUY-480-6.78



For notes see Sht. 2/9

ALDEN E. STILSON & ASSOCIATES, LIMITED CONSULTING ENGINEERS COLUMBUS, OHIO						
<b>SECTIONS</b>						
RETAINING WALL ALONG RAMP B-I CUYAHOGA COUNTY						
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
D.E.M.	R.T.		W.M.	G.W.M.	9/12/78	

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MICROFILMED  
DEC 6 1982

FED. RD. DIVISION	STATE	PROJECT	TYPE FUNDS
2	OHIO		

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317

CUYAHOGA COUNTY  
CUY-480-G.78

**CURVE DATA**

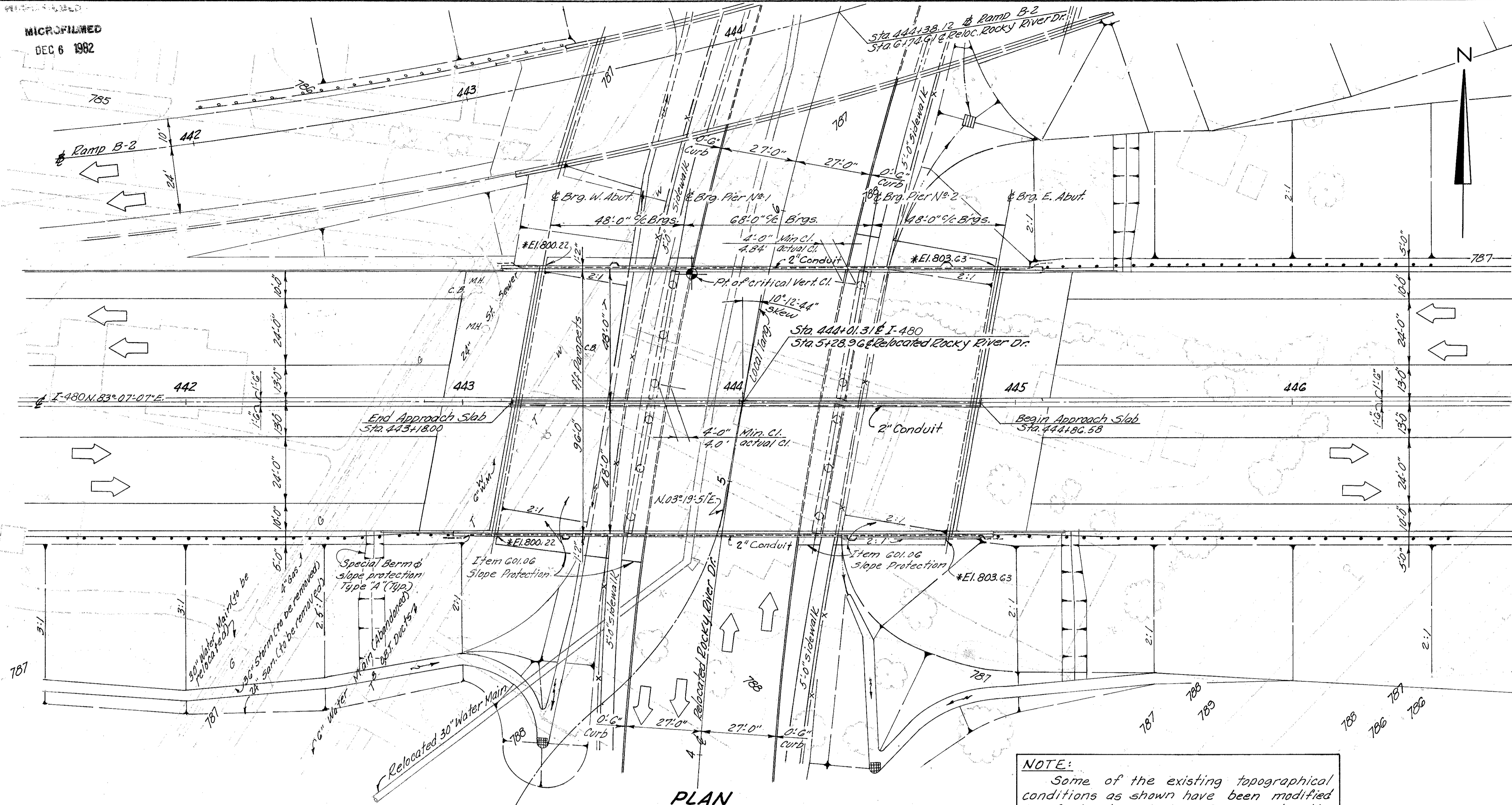
RAMP B-2	RELOC. ROCKY RIVER DR.
PI = Sta. 443+73.54	PI = Sta. G+70.68
$\Delta = 28^{\circ}52'24''$	$\Delta = 29^{\circ}58'20''$
$D = 3^{\circ}30'00''$	$D = 5^{\circ}00'00''$
$R = 1637.02'$	$R = 1145.92'$
$Lc = 724.95'$	$Lc = 599.44'$
$T = 423.54'$	$T = 306.75'$

NOTE: For drainage details see sheets 30 & 56

For details of relocated 30" water main see sheet No. 209 & 210.

\* Elevations marked with an asterisk are top of slope at face of abutment.

Earthwork limits as shown are schematic, actual slopes shall conform to plan cross sections.



**PLAN**

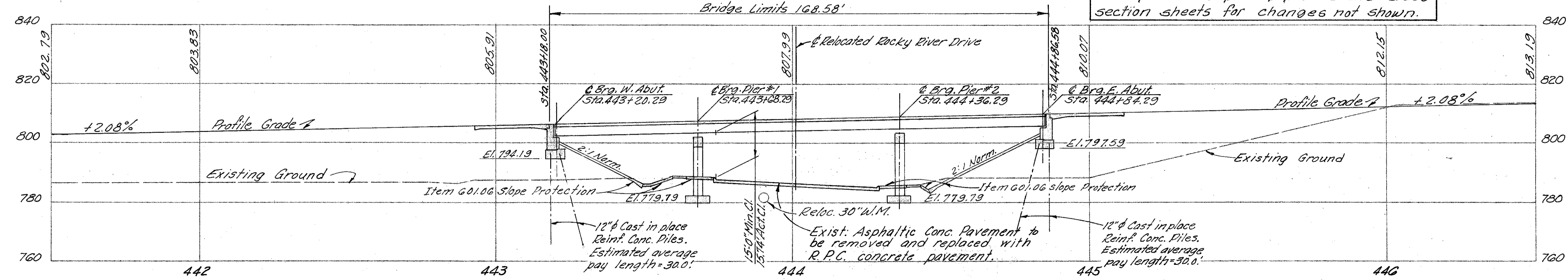
NOTE: Some of the existing topographical conditions as shown have been modified by Contract CUY-480-8.00 construction. See pertinent plan & profile and cross section sheets for changes not shown.

**PROPOSED STRUCTURE**

TYPE: Continuous steel beam with reinforced concrete deck and reinforced concrete substructure  
 SPANS: 48'-0", 68'-0", 48'-0" % Brgs.  
 ROADWAY: 96'-0" Parapets of BR-1-67 railing, with 3'-0" barrier median.  
 LOADING: C.F.-2000 (1957) Adequate for the Alternate Military Loading  
 WEARING SURFACE: 2 1/2" Asphalt Concrete  
 SKEW: 10°-12'-44" Lt Forward  
 ALIGNMENT: Tangent  
 APPROACH SLABS: AS-1-72 (25' long) Mod.

**TRAFFIC ESTIMATE**

Design Year - 1987  
 Total A.D.T. - 48,695



**PROFILE ALONG I-480**

NOTE: The reasons for excess vertical clearance shown are:  
 1. The I-480 grade line is controlled by the structure over the N.Y.C. R.R. Mainline and the S.B. 237-3 level structure.  
 2. The Rocky River Drive grade is controlled by the proximity of Ramps B-1 & B-2.

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 CLEVELAND, OHIO COLUMBUS, OHIO WHEELING, W. VA.

**SITE PLAN**  
 BRIDGE No. CUY-480-0793  
 I-480 OVER RELOCATED  
 ROCKY RIVER DRIVE  
 CUYAHOGA COUNTY STA. 443+18.00  
 STA. 444+86.58

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
D.H.S.	R.T.		G.W.M.	G.W.M.	8/5/76	

# GENERAL NOTES

FED. RD. DIVISION	STATE	PROJECT	TYPE FUNDS
2	OHIO		



**CUYAHOGA COUNTY**  
CUY-480-G.78

MICROFILMED  
DEC. 6 1982

**REFERENCES:**

STANDARD DRAWINGS:

End Dam, End Crossframe, Scupper and Bolted Beam Splice Details	SD-1-69, Sheets 1, 2, 3, & 4 dated 6-12-69
Bridge Roadway Railing	BR-1-67, Sheet 1 Revised 10-15-71
Rockers and Bolsters	RB-1-55 Revised 2-2-59
Reinforced Concrete Approach Slabs	AS-1-72 (Mod) * 6-30-72
Highway Lighting	HL-4 dated 1-21-76 HL-5 dated 9-6-73 HL-6 dated 3-22-77 HL-7 dated 1-21-76

SUPPLEMENTAL SPECIFICATIONS:

Chemical Admixture for Concrete, Type A, B or D	808, dated 1-1-71
Concrete Curing and Protective Membrane	836, dated 3-12-75
Special Pile Tests	838 dated 1-13-77

DESIGN SPECIFICATIONS:

This structure conforms to the requirements of "Design Specifications for Highway Structures" of the State of Ohio, Department of Highways, dated 9-1-57, together with current revisions thereof.

DESIGN DATA:

- Design Loading-CF 2,000 (57) and the Alternate Military Loading
- Concrete Class C-Basic Unit Stress 1,333 p. s. i. for superstructure & piers above footings.  
Basic Unit Stress 1,133 p. s. i. for abutments & footings
- Structural Steel-ASTM A 36-Basic Unit Stress 20,000 p. s. i.
- Reinforcing Steel-ASTM A615, A616, A617.  
Basic Unit Stress 20,000 p. s. i.  
Spiral reinforcement may be plain bars.  
ASTM A82, or A 615

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

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

FOUNDATION BEARING PRESSURE:

Pier footings are designed for a maximum bearing pressure of 2.5 tons per square foot.

UTILITY LINES:

All expense involved in relocating the affected utility lines shall be borne by the owners. The Contractor and Owners are requested to cooperate by arranging their work in such a manner that inconvenience to either will be held to a minimum.

\* Std. Dwg. AS-1-72 shall be modified to provide 3" clearance to the top re-bars instead of the 2" shown and jacking holes shall be omitted.

COMMON DETAILS

Deck Drainage Details Sht. 307

MONOLITHIC WEARING SURFACE thickness is assumed to be 1".

DECK PROTECTION METHOD: Epoxy coated reinforcing steel, top mat only and Membrane Waterproofing with Asphalt concrete overlay.

SUPPLEMENTAL SPECIFICATION REFERENCES

DESCRIPTION	NO.	DATE
Painting for new Structural Steel	846	4-25-77
Inorganic Zink Silicate Paint 950		4-25-77
Blue-Green Vinyl Paint 951		4-25-77

PARAPET TRANSITIONS AND WINGWALL ENDS shall be as shown on Std. Dwg. BR-1-67 revised 10-15-71. Reinforcing Steel shall be field bent or cut to fit the revised shape.

PREFORMED BEARING PADS: In lieu of the hardness requirement of 711.21, Preformed Bearing Pads shall have shore A durometer of 80 ± 10.

Minimum bar lap shall be 30 diameters.

BEARINGS shall be in accordance with Std. Dwg. RB-1-55 except that the upper plate element shall be beveled to match roadway grade and tabulated plate thickness C shall apply at centerline of plate.

PREMOLDED SEALING STRIP AS PER PLAN: In lieu of Premolded Sealing Strip, Type B Waterproofing (36" wide) may be used and shall be paid for by the linear foot at the same unit price bid for Item 512, Premolded Sealing Strip as per plan.

BRIDGE TERMINAL ASSEMBLIES at three corners shall be Type A per Standard Drawing GR-3 without wheelguard. Concrete anchor assemblies per Standard Construction Drawings GR-3 and GR-1 shall be placed during parapet construction for attachment of guardrail to the concrete parapets.

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ALDEN E. STILSON & ASSOCIATES, LIMITED CONSULTING ENGINEERS CLEVELAND, OHIO COLUMBUS, OHIO WHEELING, W. VA.						
<b>GENERAL NOTES</b>						
BRIDGE NO. CUY-480-0793 I-480 OVER RELOCATED ROCKY RIVER DRIVE						
CUYAHOGA COUNTY STA. 443+18.00 STA. 444+86.58						
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
D.H.S.	P.Y.		G.W.M.	G.W.M.	8/5/66	

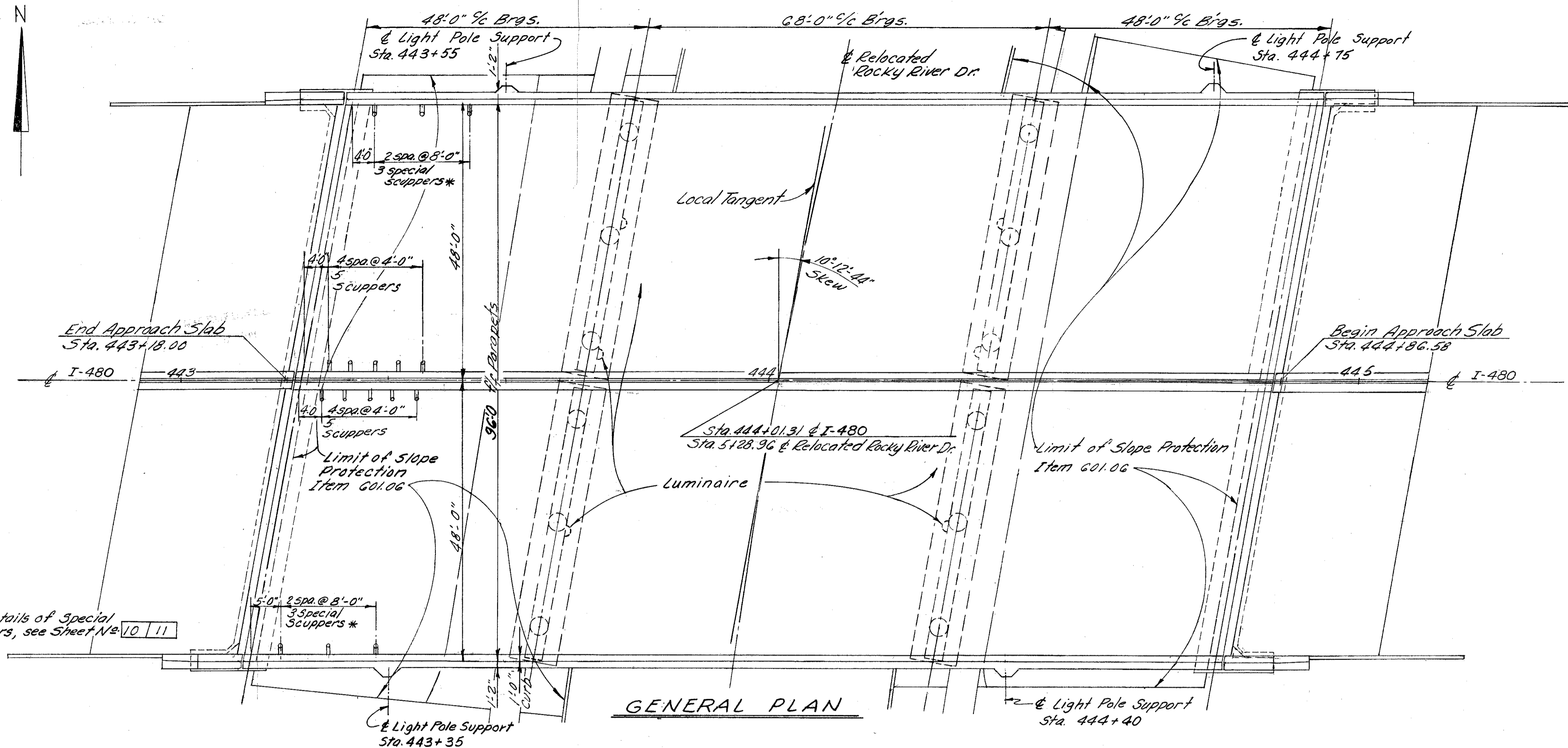
MICROFILMED  
DEC 6 1982



FED. RD. DIVISION	STATE	PROJECT	TYPE FUNDS
2	OHIO		

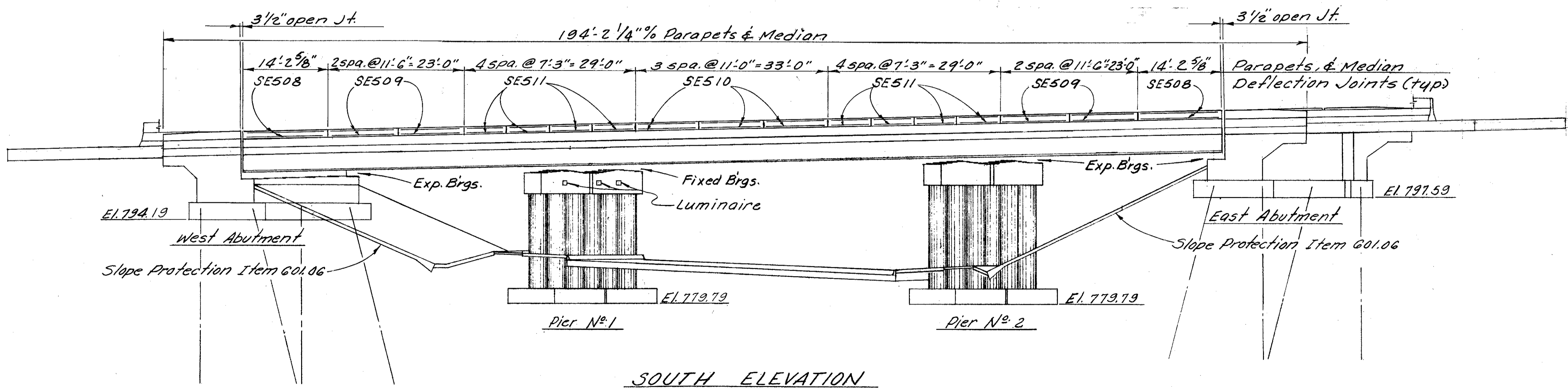
CUYAHOGA COUNTY  
CUY-480-6.78

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317



\* For details of Special Scuppers, see Sheet No. 10 | 11

**NOTES:**  
For light pole support details and reinforcing see Standard Construction Drg. HL-4.  
For underpass lighting details see sheet No. 235

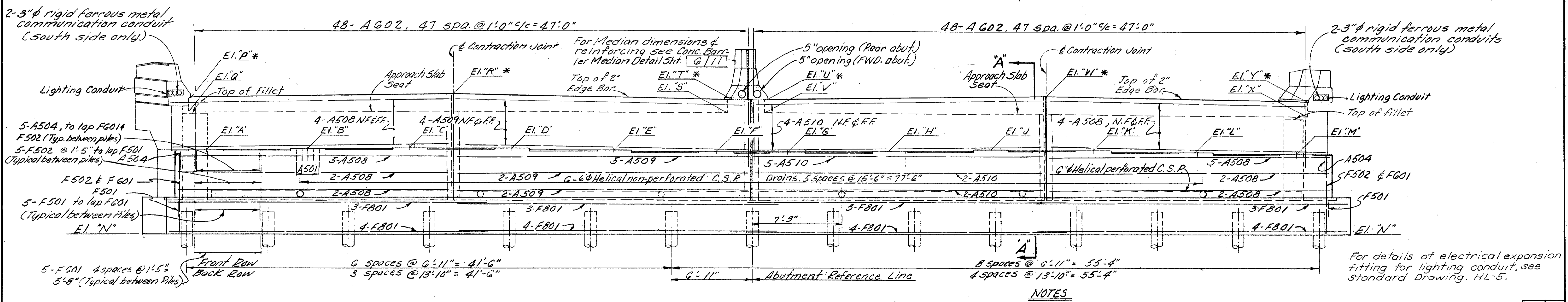
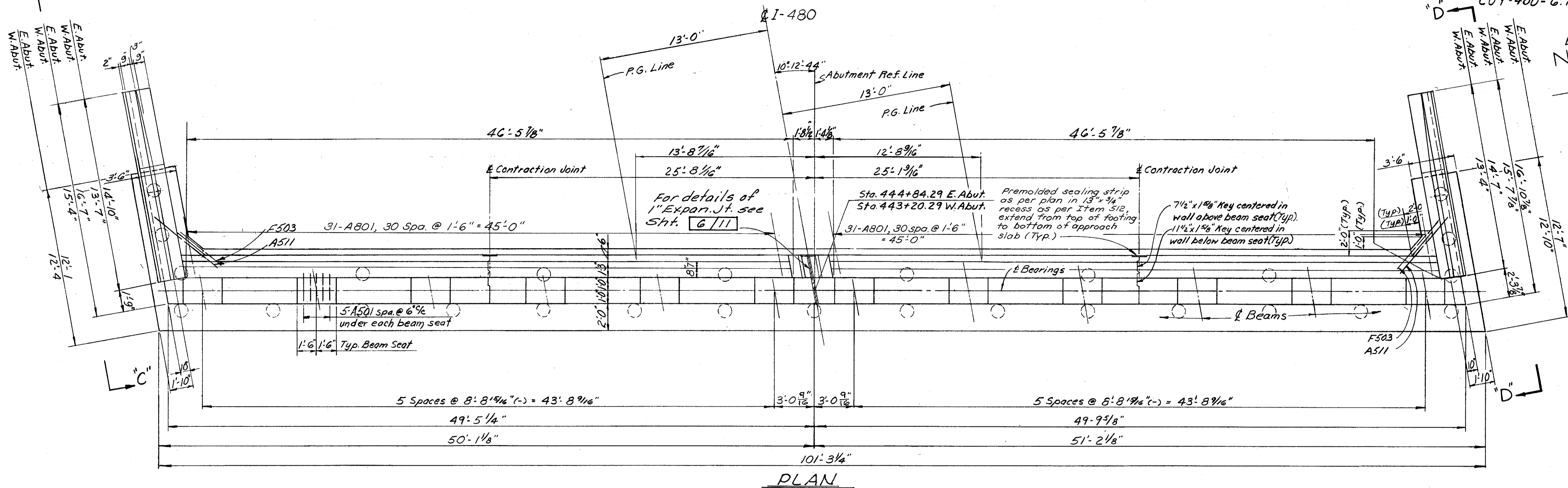


ALDEN E. STILSON & ASSOCIATES, LIMITED  
CONSULTING ENGINEERS  
CLEVELAND, OHIO COLUMBUS, OHIO WHEELING, W. VA.

**GENERAL PLAN & ELEVATION**  
BRIDGE No. CUY-480-0793  
I-480 OVER RELOCATED  
ROCKY RIVER DRIVE  
CUYAHOGA COUNTY STA. 443+18.00  
STA. 444+86.58

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
D.H.S.	R.T.		G.W.M.	G.W.M.	8/9/66	

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DEC 6 1992



BACKWALL CONCRETE: In addition to the provisions of 511.08, Backwall Concrete or Backwall Concrete above the Optional Construction Joint at the Approach Slab seat shall not be placed until after the Deck Concrete in the Span adjacent to the abutment has been placed.

\* Elevations marked with an asterisk are to the top of 2" edge bar.

**NOTES**

All piles are 12" cast in place reinforced concrete piles.  
 The shape of the median on the abutment shall match the shape of median on the superstructure except for the open joint. See Transverse Section Sht. 5/11.  
 For Section "A-A" see Sheet 6/11  
 For additional notes, see Sheet 6/11  
 For Elevations "C-C" & "D-D", see Sheet 5/11

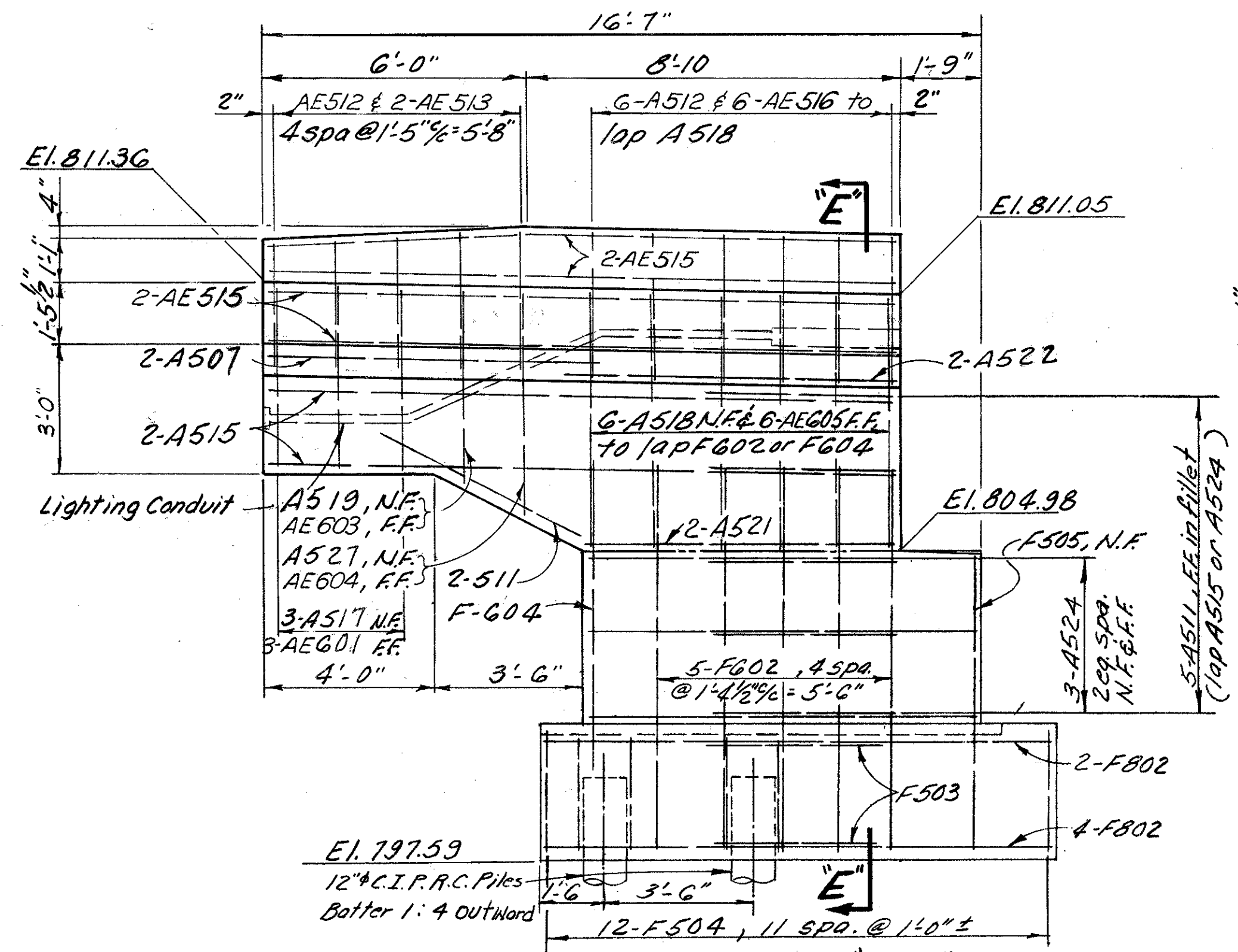
Location	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T	U	V	W	X	Y
E. Abut.	804.98	805.08	805.18	805.13	804.97	804.80	804.78	804.88	804.98	804.97	804.80	804.63	797.59	809.78	808.30	810.02	808.11	809.59	809.57	808.09	809.85	807.94	808.42
W. Abut.	801.22	801.39	801.55	801.57	801.47	801.37	801.39	801.56	801.72	801.77	801.67	801.57	794.19	805.95	804.47	806.37	804.61	806.09	806.12	804.64	806.56	804.82	806.30

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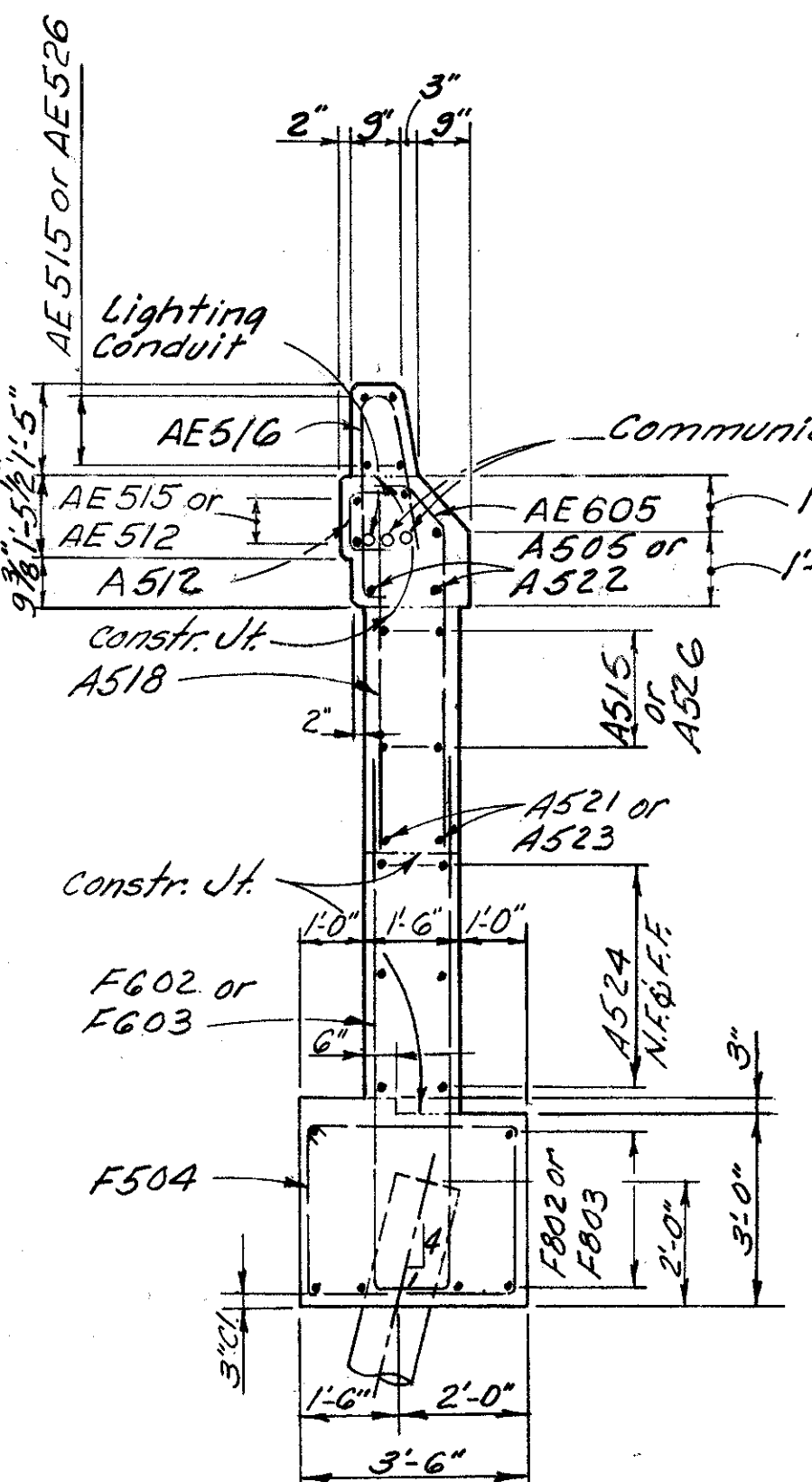
**ABUTMENT DETAILS**

BRIDGE No CUY-480-0793  
 I-480 OVER RELOCATED ROCKY RIVER DRIVE  
 CUYAHOGA COUNTY STA. 444+86.58

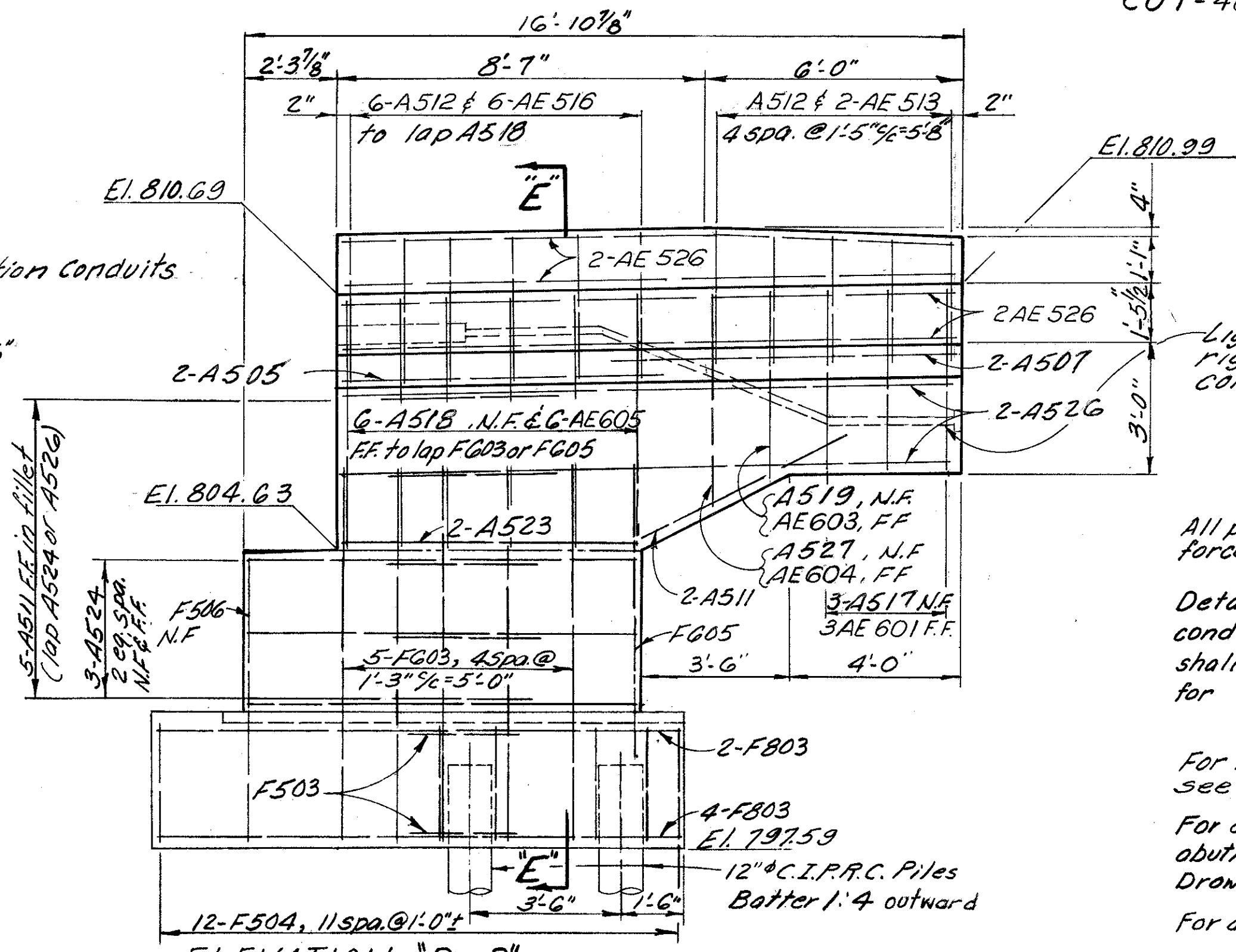
DESIGNED	D.H.S.	DRAWN	R.J.P.	TRACED		CHECKED	D.H.S.	REVIEWED	G.W.M.	DATE	9/6/66	REVISED	
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**ELEVATION "C-C"**  
VIEW OF N.E. WINGWALL



**SECTION "E-E"**

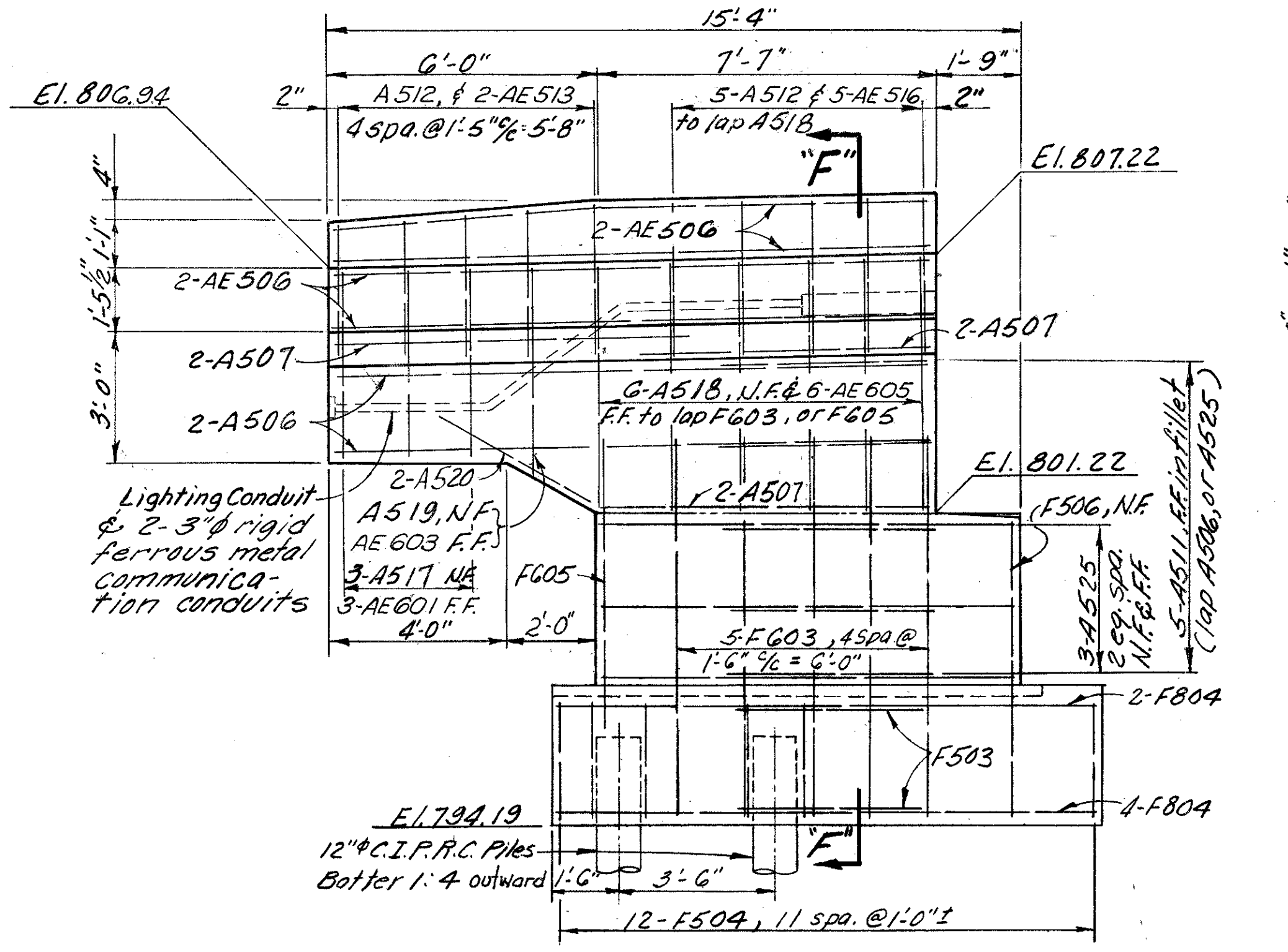


**ELEVATION "D-D"**  
VIEW OF S.E. WINGWALL

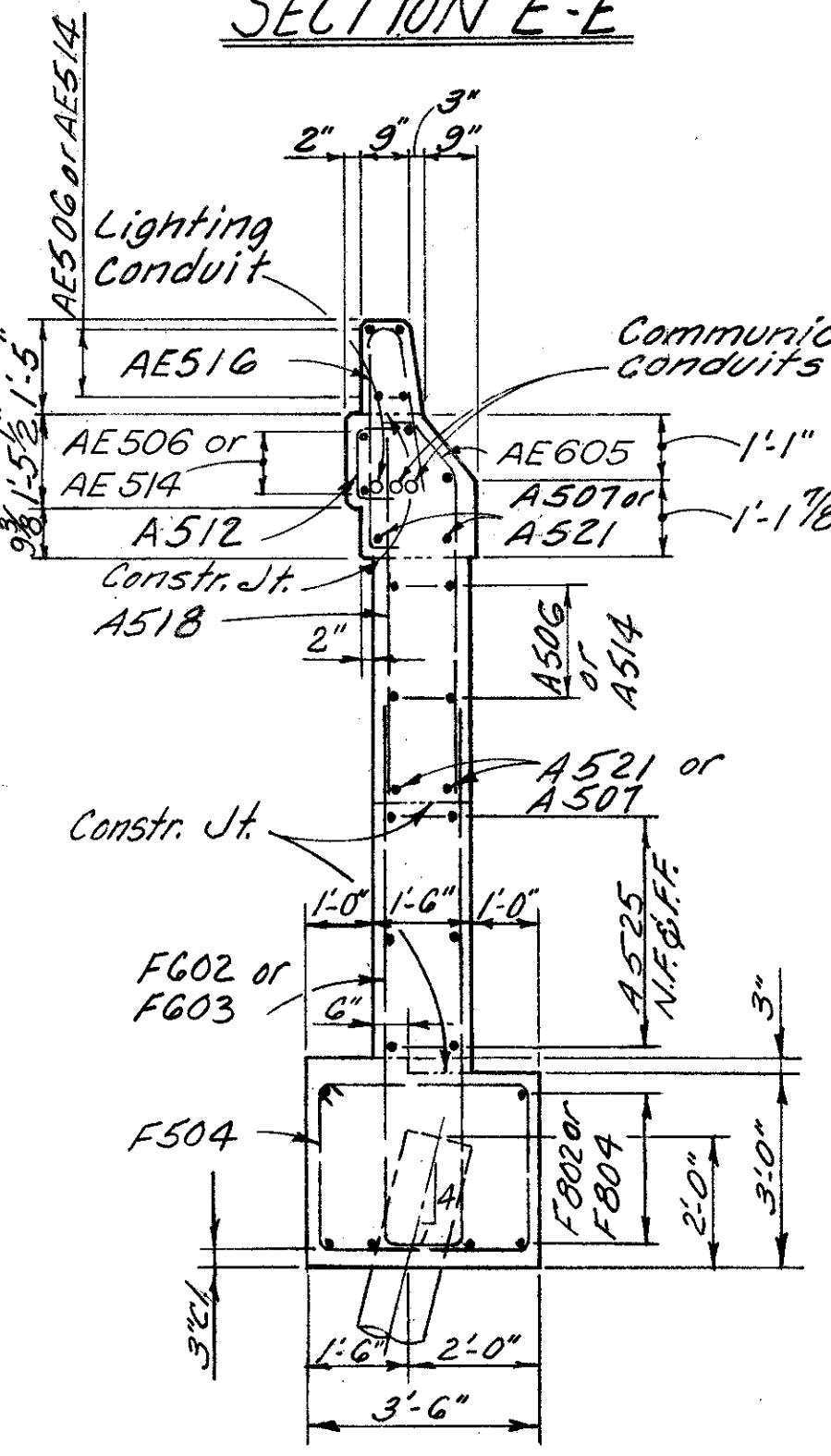
Lighting conduit & 2-3" rigid ferrous metal communication conduits.

**NOTES**

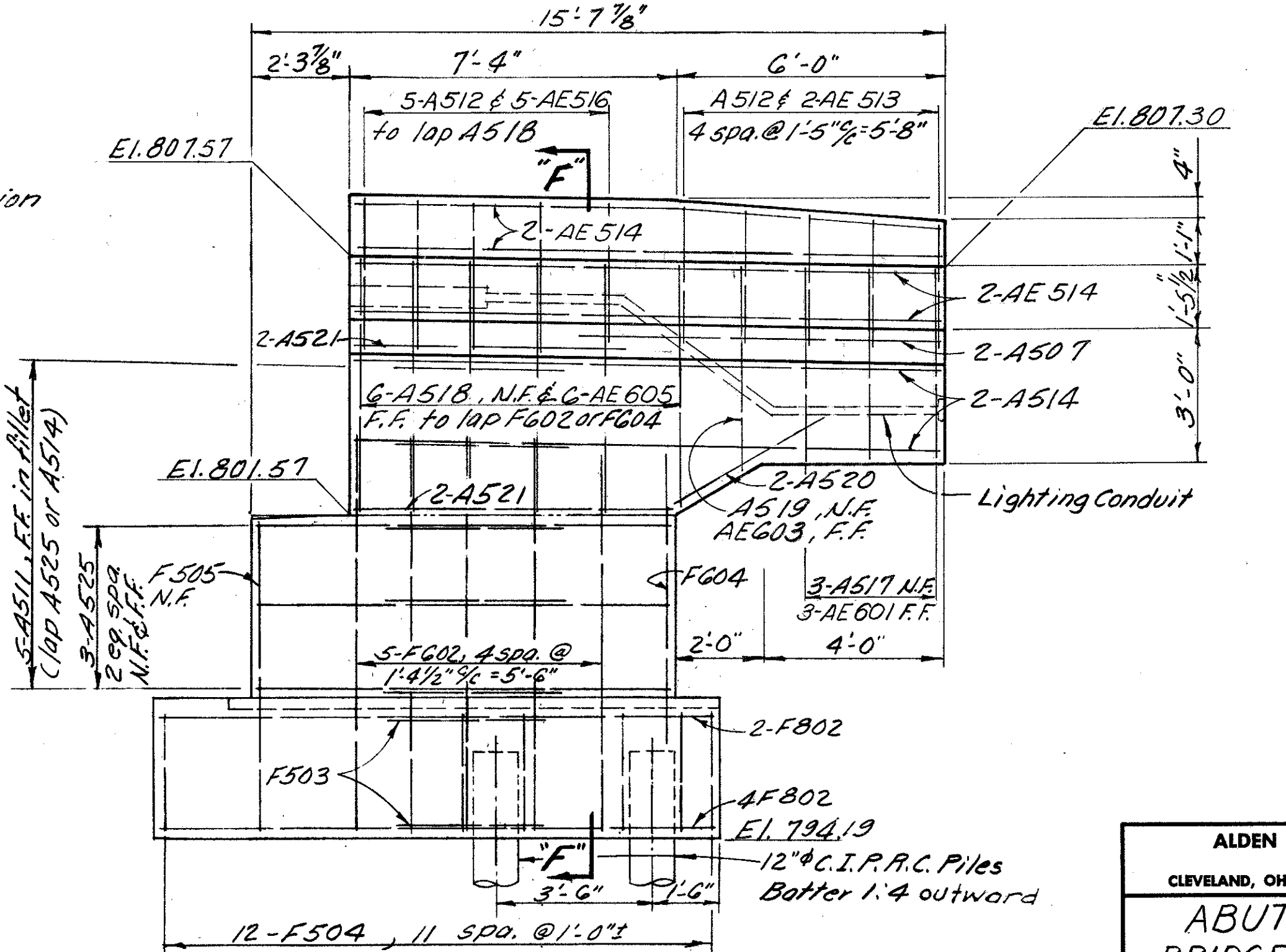
- All piles are 12" cast-in-place reinforced concrete piles.
- Details of communication conduits in the abutments shall be similar to those for the lighting conduits.
- For location of Elev. "C-C" & "D-D" see Sheet 4/11.
- For details of lighting conduits in abutments see Std. Construction Drawing HL-5
- For additional notes, see Sheet 6/11



**ELEVATION "C-C"**  
VIEW OF S.W. WINGWALL



**SECTION "F-F"**



**ELEVATION "D-D"**  
VIEW OF N.W. WINGWALL

ALDEN E. STILSON & ASSOCIATES, LIMITED  
CONSULTING ENGINEERS  
CLEVELAND, OHIO COLUMBUS, OHIO WHEELING, W. VA.

**ABUTMENT DETAILS**  
BRIDGE No CUY-480-0793  
I-480 OVER RELOCATED ROCKY RIVER DRIVE  
CUYAHOGA COUNTY STA. 443+18.00 STA. 444+86.58

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
D.H.S.	R.J.P.		G.W.M.	G.W.M.	8/6/66	



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DEC 6 1982

FED. RD. DIVISION	STATE	PROJECT	TYPE FUNDS
2	OHIO		

282  
317

CUYAHOGA COUNTY  
CUY-480-G.78

NOTES:

Porous backfill shall extend upward to the underside of the approach slab or underside of the paved shoulders and outward to the inside face of the wingwalls. 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.

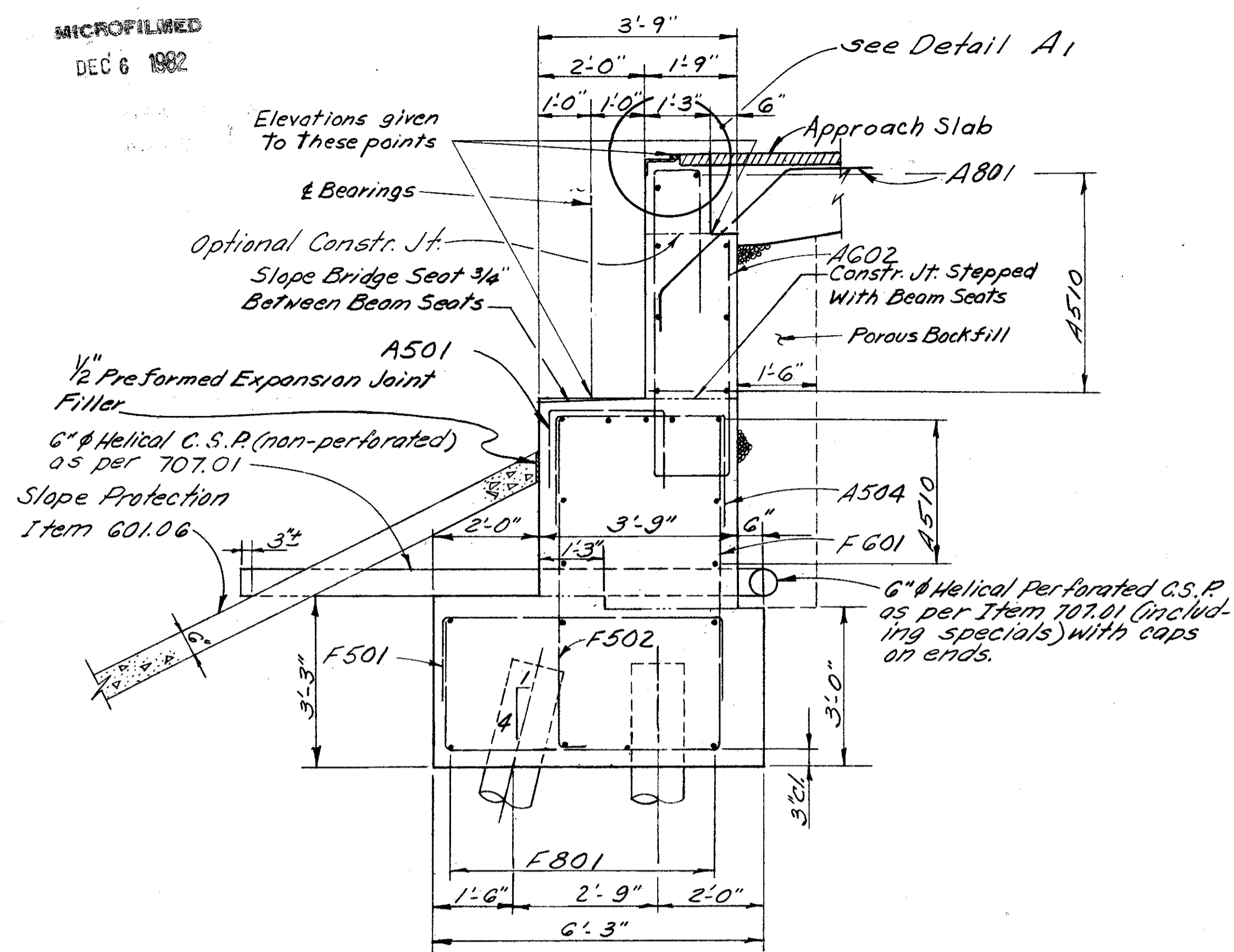
Procedure: The embankment shall be placed and compacted up to the finished spill-thru slope and to the level of the subgrade for a distance of 200 feet back of the abutments, after which excavation shall be made for the abutment and piles driven.

A joint shall be provided in the abutment portion of the end dam at each contraction joint.

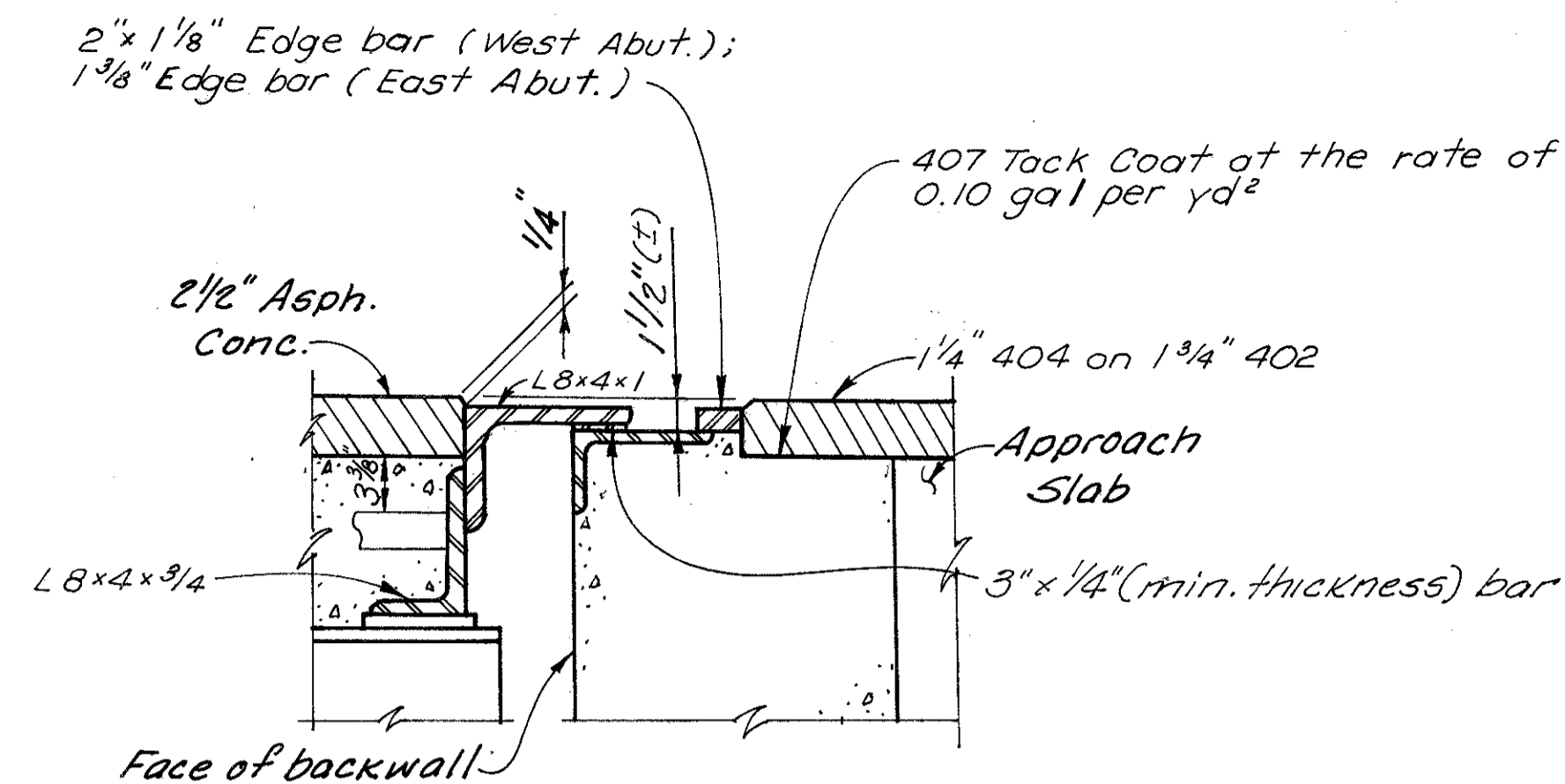
In reinforcing steel callouts: N.F. indicates near face and F.F. indicates far face.

For location of Section A-A see Sheet 4/11

BACKWALL CONCRETE: In addition to the provisions of 511.08, backwall concrete above the bridge seat or backwall concrete above the optional construction joint at the approach slab seat shall not be placed until after the deck concrete in the span adjacent to the backwall has been placed.

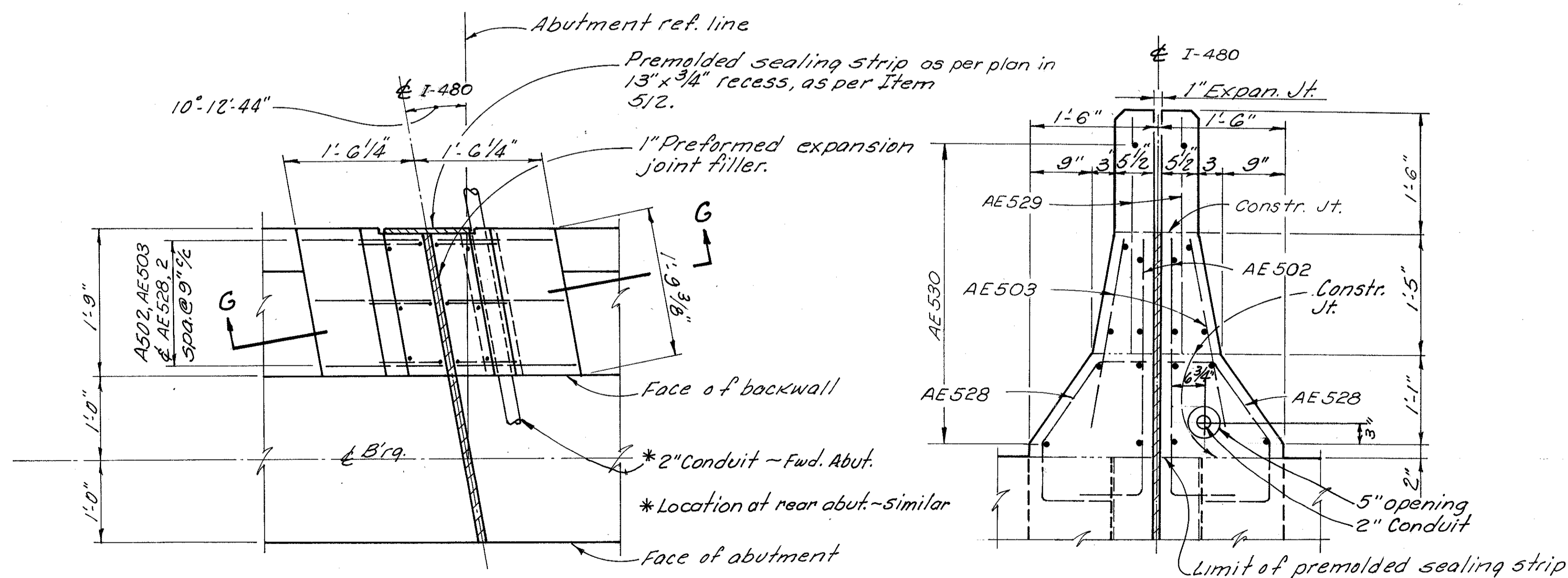


SECTION "A-A"



DETAIL A1

For additional notes and details see  
Std. Dwg. 5D-1-69 Sht. No. 1



CONCRETE BARRIER  
MEDIAN DETAIL (Abutment)

SECTION G-G

ALDEN E. STILSON & ASSOCIATES, LIMITED  
CONSULTING ENGINEERS  
CLEVELAND, OHIO COLUMBUS, OHIO WHEELING, W. VA.

ABUTMENT DETAILS  
BRIDGE No CUY-480-0793  
I-480 OVER RELOCATED ROCKY  
RIVER DRIVE  
CUYAHOGA COUNTY STA. 443+18.00  
STA. 444+86.58

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
D.H.S.	R.J.P.		G.W.M.	G.W.M.	8/5/64	

6/11

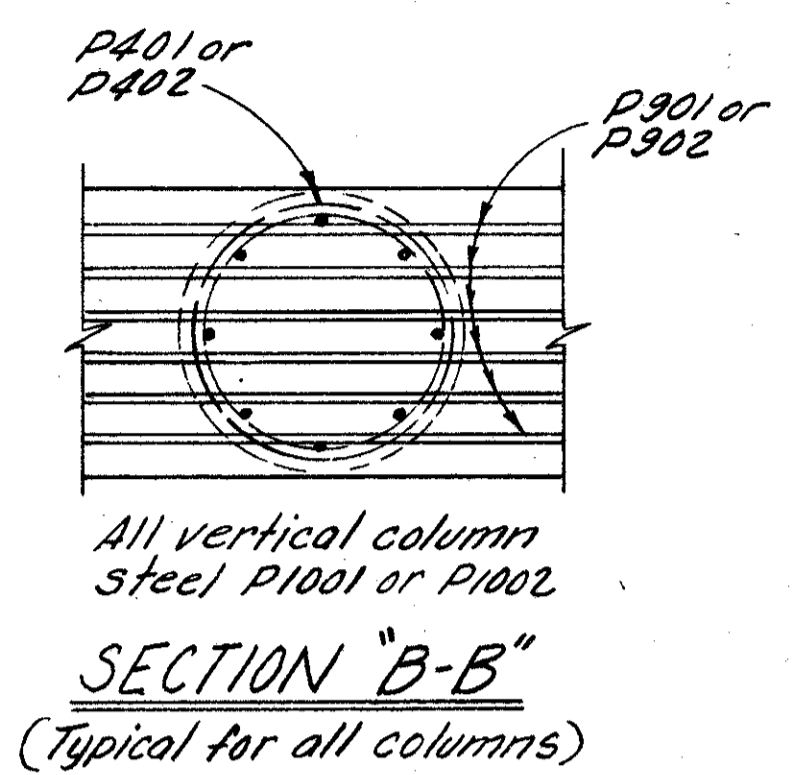
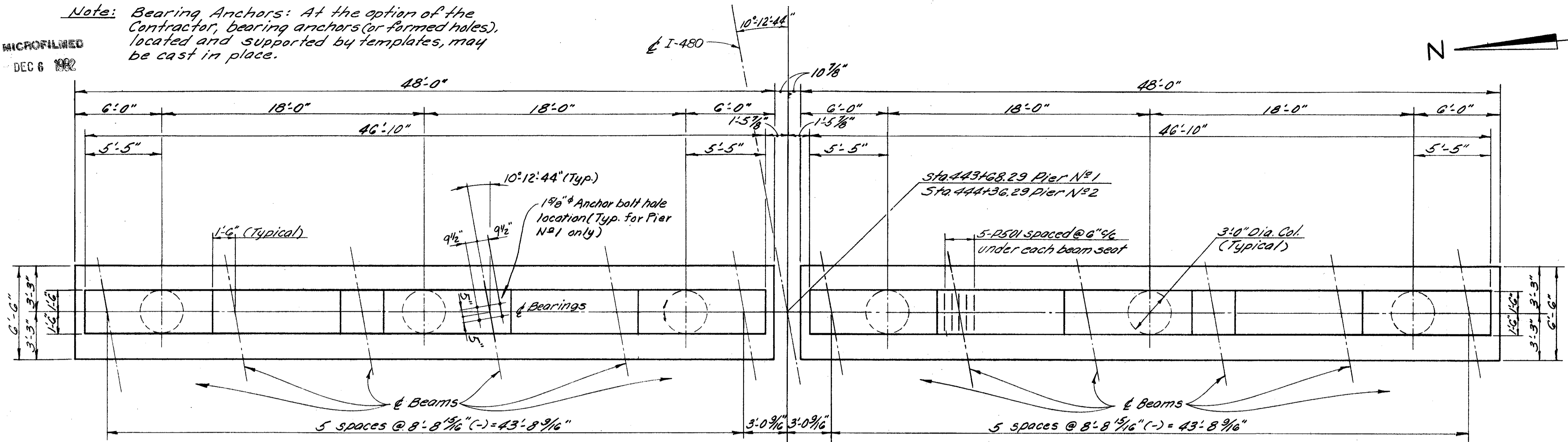
MICROFILMED  
DEC 6 1982

Note: Bearing Anchors: At the option of the Contractor, bearing anchors (or formed holes), located and supported by templates, may be cast in place.

FED. RD. DIVISION	STATE	PROJECT	TYPE FUNDS
2	OHIO		

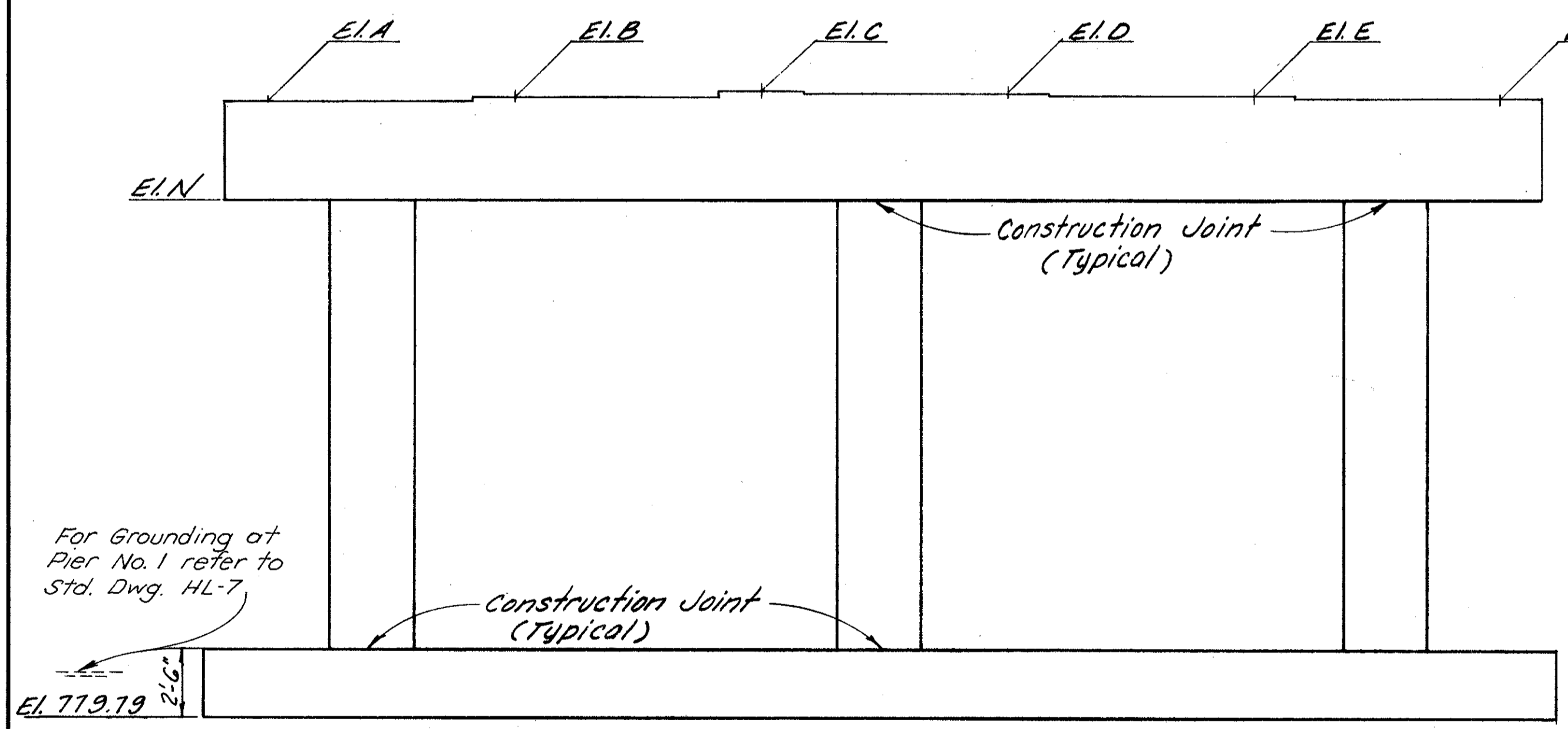
CUYAHOGA COUNTY  
CUY-480-6.78

283  
317



NOTE: Special care shall be taken at Pier No. 1 in placing reinforcing steel in the cap so as to avoid interference with the drilling of anchor bolt holes or the pre-setting of bearing anchors.

PLAN

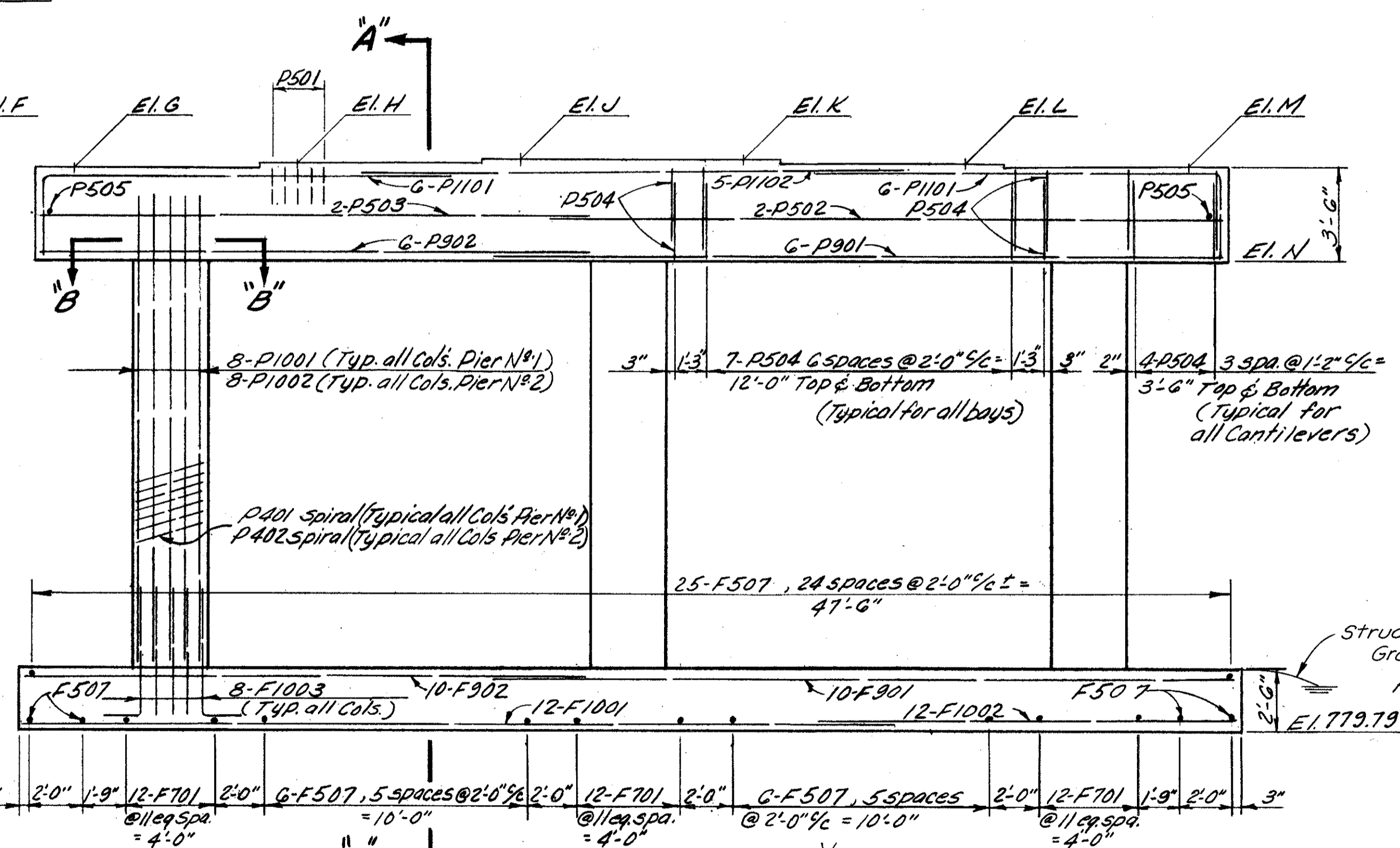


For Grounding at Pier No. 1 refer to Std. Dwg. HL-7

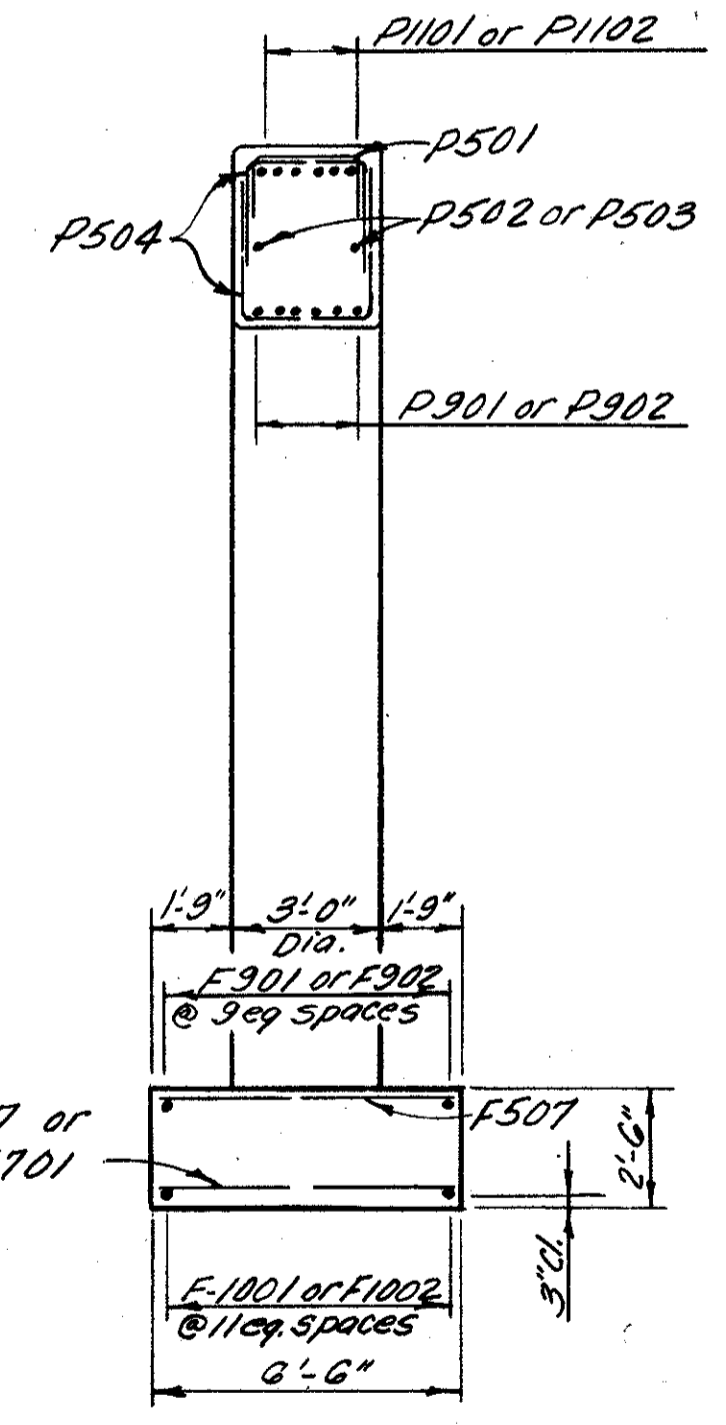
FOR REINFORCING STEEL SEE SOUTH BENT

BRIDGE SEAT REINFORCING: Reinforcing steel in the vicinity of the bridge seat of Pier No. 1 shall be accurately placed to avoid interference with the drilling of bearing anchor holes or the pre-setting of bearing anchors.

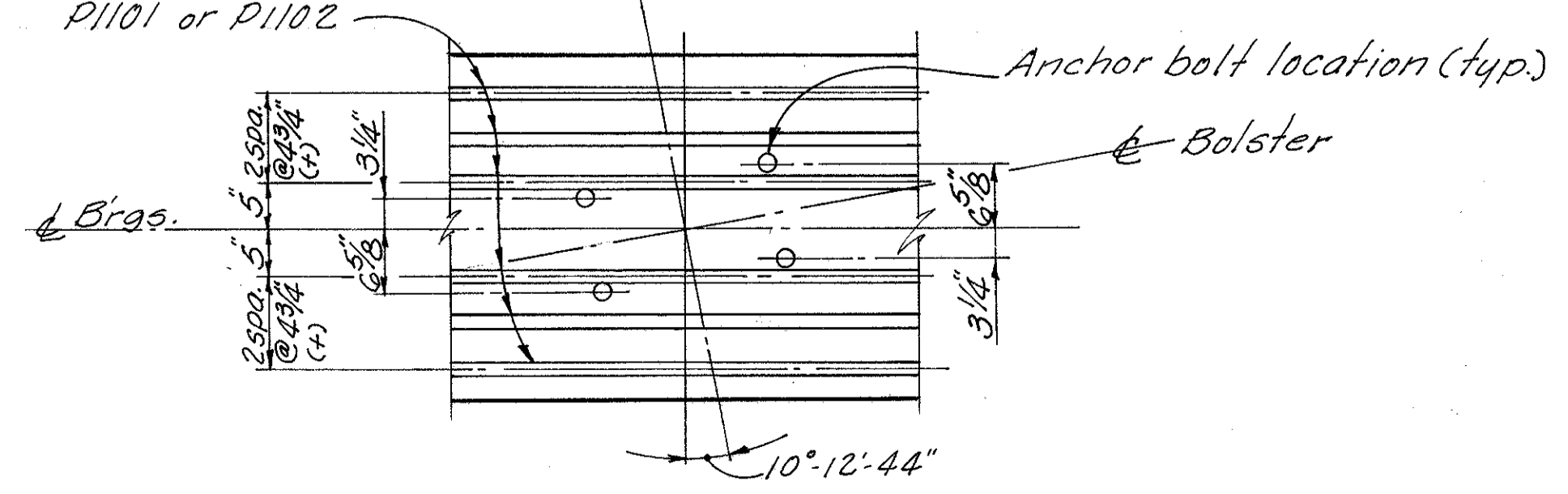
BEARING ANCHORS: At the option of the Contractor, bearing anchors (or formed holes), located and supported by templates, may be cast in place.



ELEVATION



SECTION "A-A"



TOP CAP STEEL LOCATION DIAGRAM  
Anchor bolt for Pier No. 1 only.

LOCATION	A	B	C	D	E	F	G	H	J	K	L	M	N
Pier No. 1	802.10	802.20	802.30	802.25	802.09	801.92	801.90	802.00	802.10	802.09	801.92	801.75	799.25
Pier No. 2	803.51	803.61	803.72	803.67	803.50	803.33	803.31	803.41	803.52	803.50	803.33	803.17	799.67

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PIER DETAILS

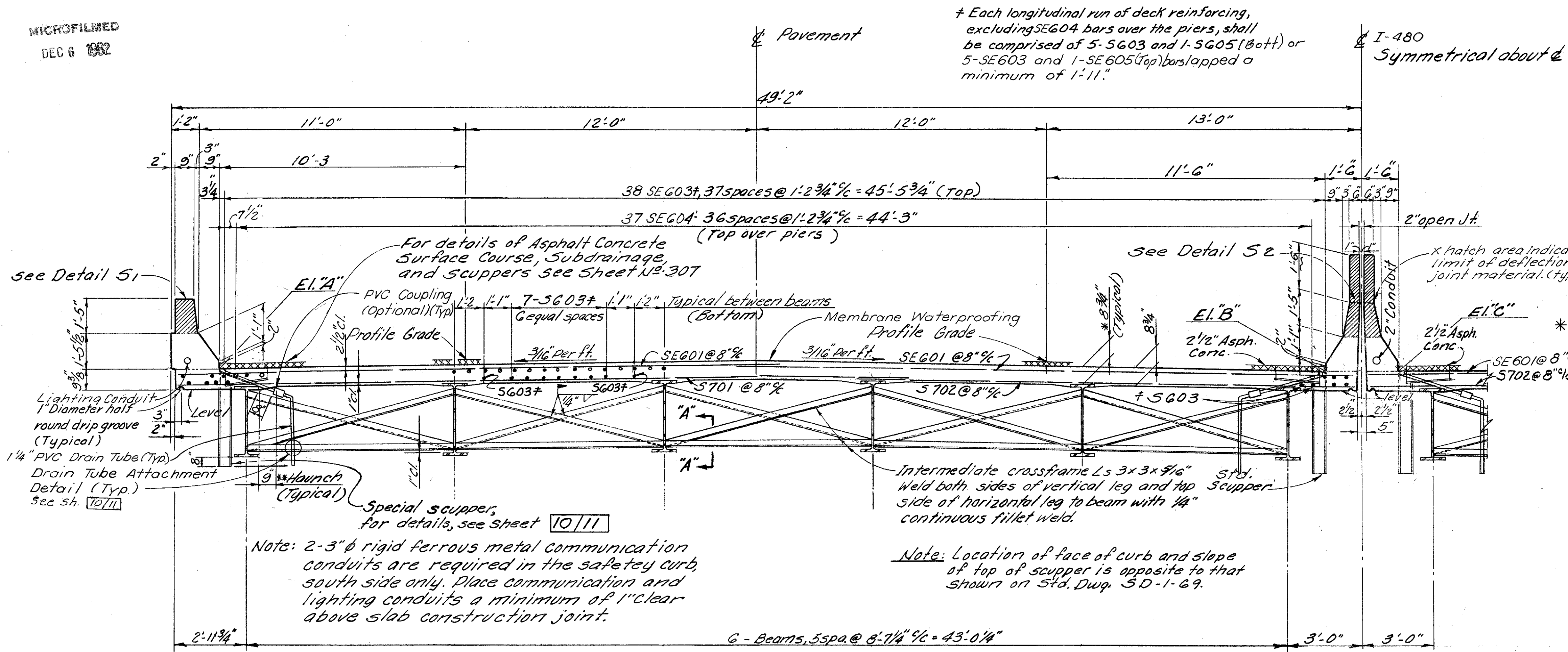
BRIDGE No. CUY-480-0793  
I-480 OVER RELOCATED  
ROCKY RIVER DRIVE  
CUYAHOGA COUNTY STA. 443+18.00  
STA. 444+86.58

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
D.H.S.	R.T.		G.W.M.	G.W.M.	8/5/66	

7111

† Each longitudinal run of deck reinforcing, excluding SE604 bars over the piers, shall be comprised of 5-SE603 and 1-SE605 (Bottom) or 5-SE603 and 1-SE605 (Top) bars lapped a minimum of 1'-11".

I-480  
Symmetrical about &



**NOTES**

\* This is the nominal dimension. The quantity of deck concrete to be paid for shall be based on this dimension even though deviation from it may be necessary because the top flange of the beam may not have the exact camber or the conformation required to place it parallel to the finished grade.

\* A typical haunch width of 9" shall be used for computing quantities of concrete. However the haunch width may vary between 6" and 12" provided that the slope shall be not more than 1:4 for a haunch less than 9" in width.

For location of 1" diameter hole in Special and Standard Scuppers, see sheet 10/11.

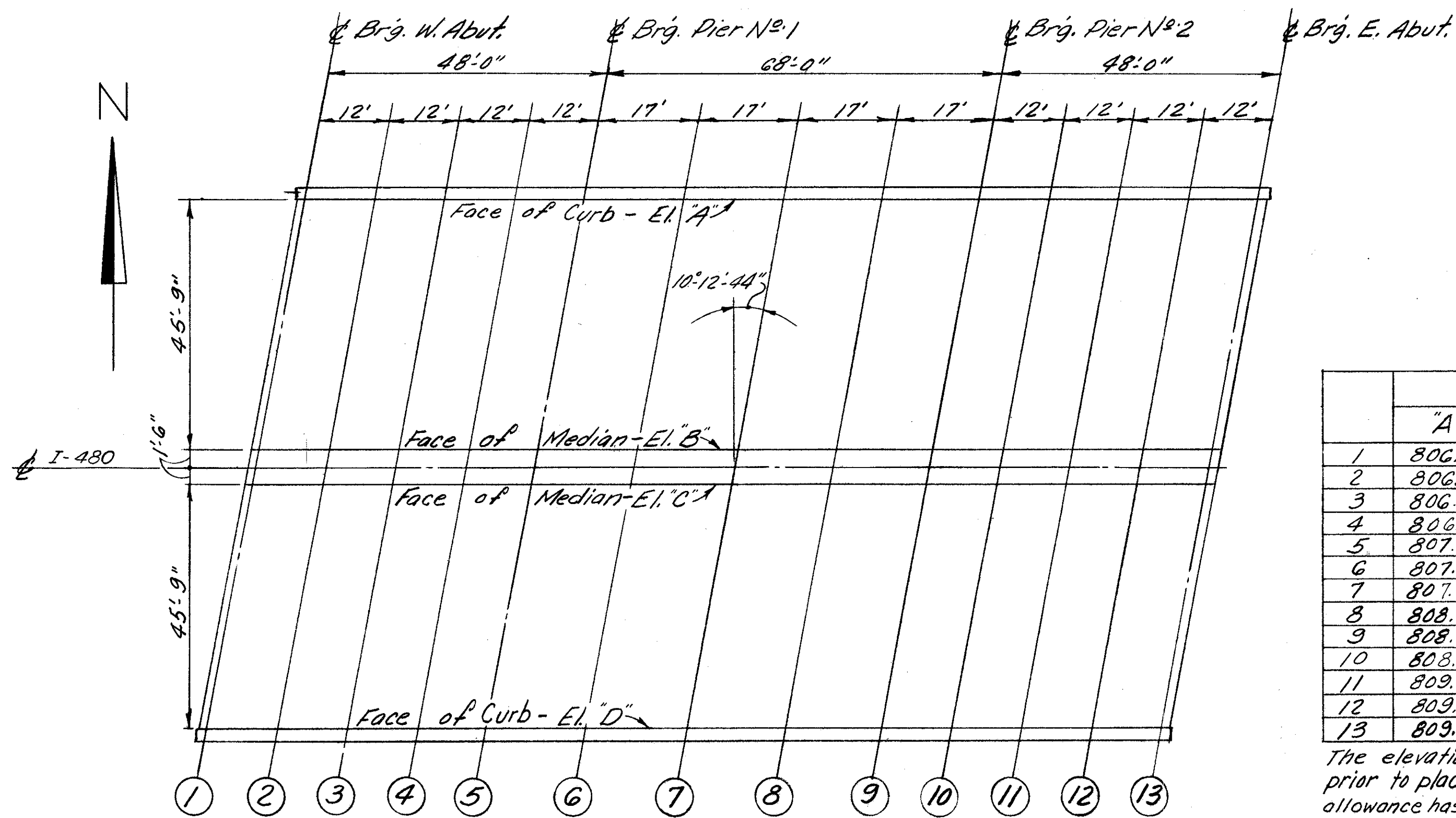
For additional deck drainage details see sheet 307.

Longitudinal reinforcing steel shall be field cut as necessary to avoid interference with scuppers.

Transverse reinforcing steel shall be placed parallel to the & of bearings and spaced 8" along & of I-480.

Steel Erection: During the erection of end dams and cross frames care shall be taken to insure that stringers, bearing parts and bridge seats remain in bearing contact.

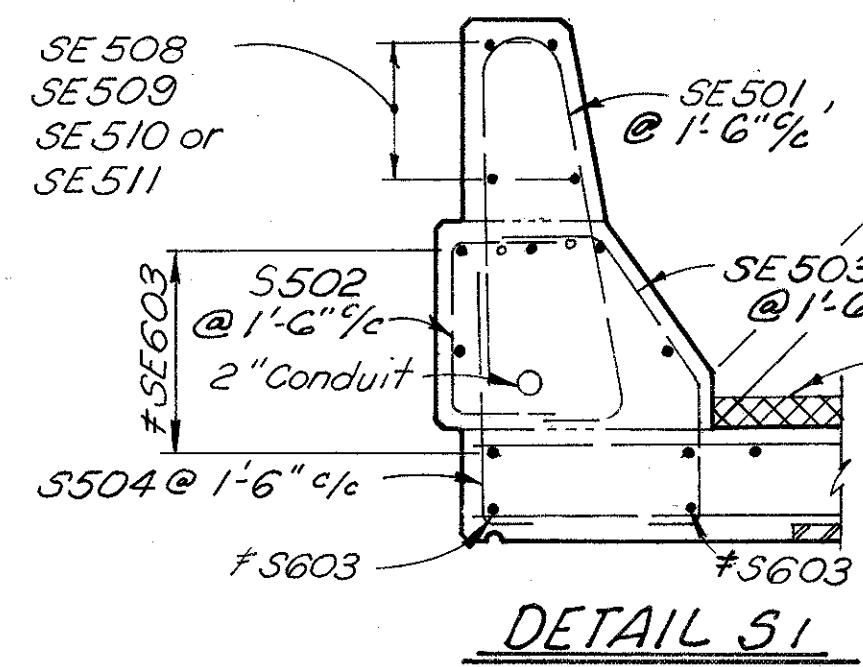
**HALF TRANSVERSE SECTION**



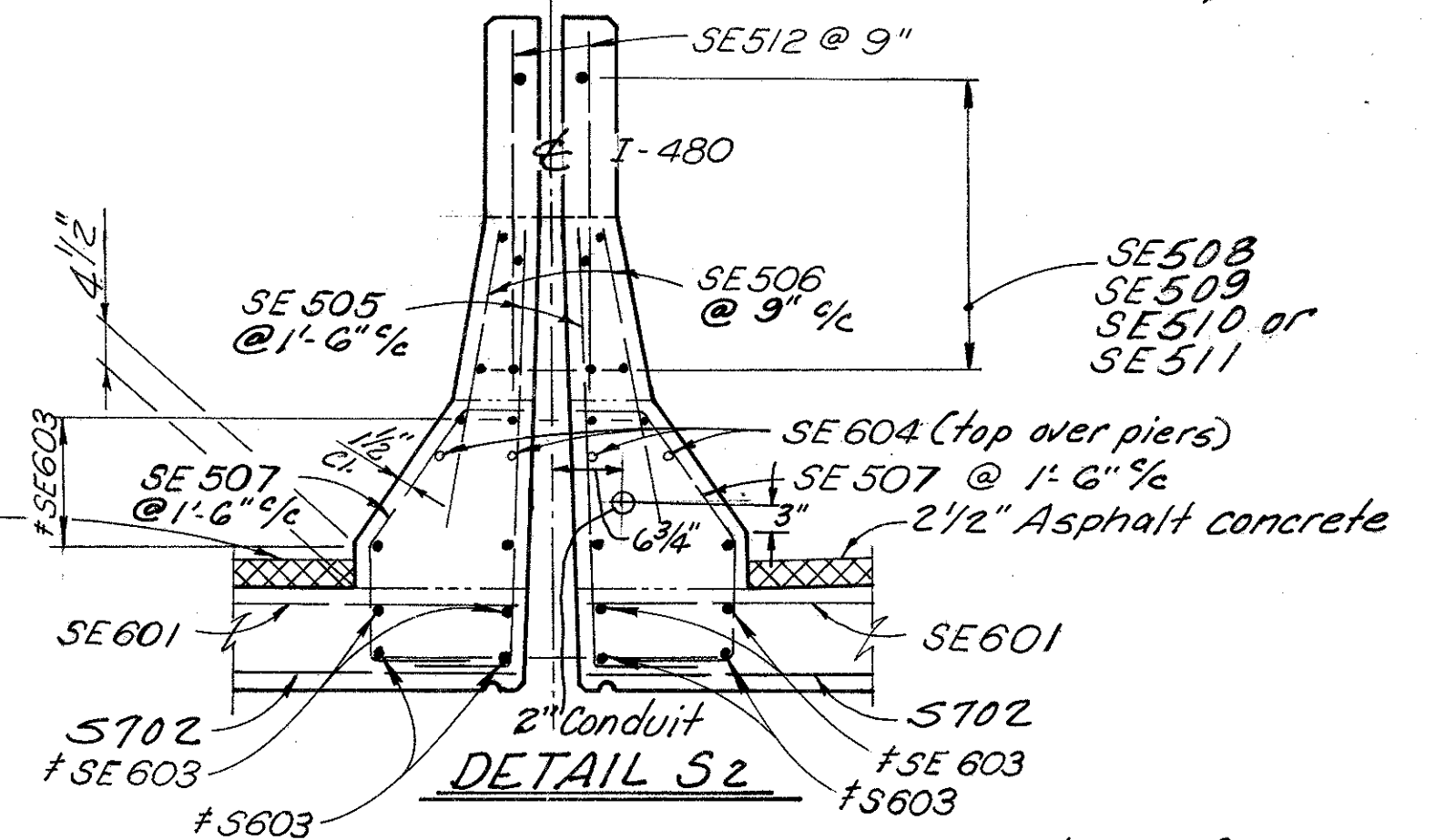
**DECK ELEVATIONS**

	ELEVATION			
	"A"	"B"	"C"	"D"
1	806.14	805.96	805.94	805.79
2	806.40	806.22	806.19	806.05
3	806.65	806.47	806.44	806.30
4	806.89	806.71	806.69	806.54
5	807.14	806.96	806.93	807.79
6	807.51	807.33	807.31	807.16
7	807.88	807.69	807.67	807.53
8	808.22	808.04	808.01	807.87
9	808.56	808.37	808.35	808.20
10	808.81	808.62	808.60	808.46
11	809.06	808.88	808.86	808.71
12	809.31	809.13	809.11	808.96
13	809.55	809.37	809.35	809.20

The elevation shown is that which is required prior to placing of the concrete deck. Proper allowance has been made for the dead load deflections caused by the weight of concrete.



**DETAIL S1**



**DETAIL S2**

Note: For location of bars 5508 thru 5511 see Sht. 3/11

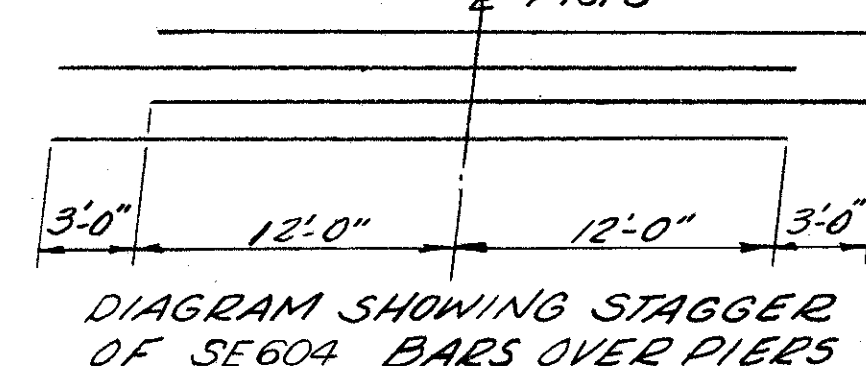
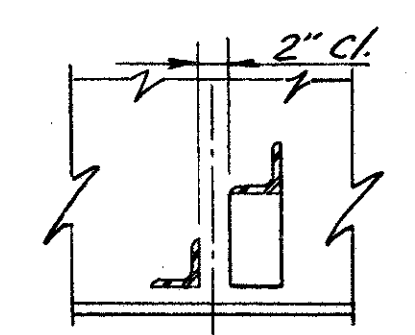


DIAGRAM SHOWING STAGGER OF SE604 BARS OVER PIERS



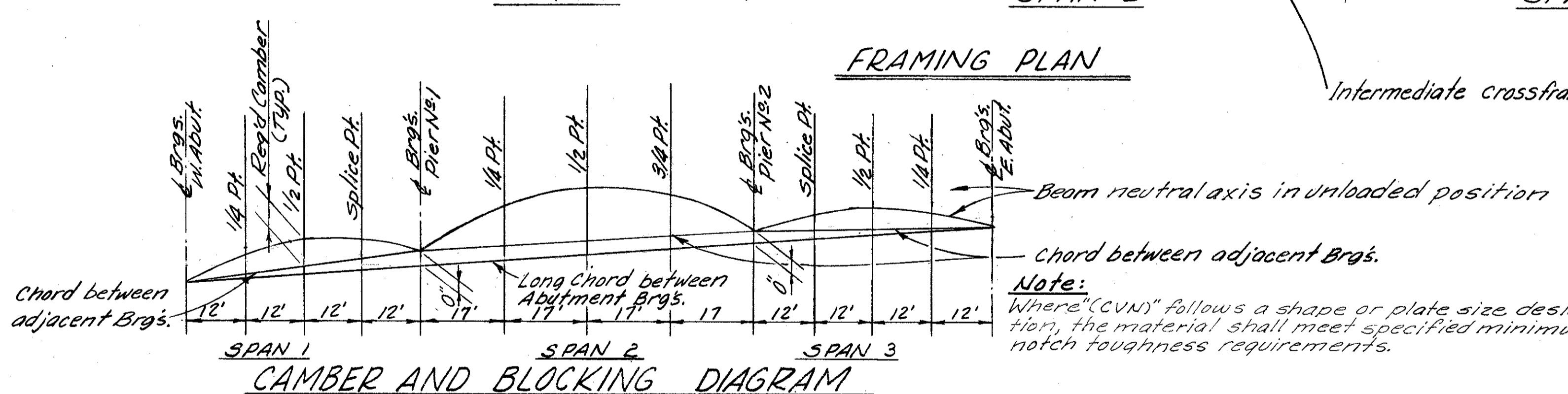
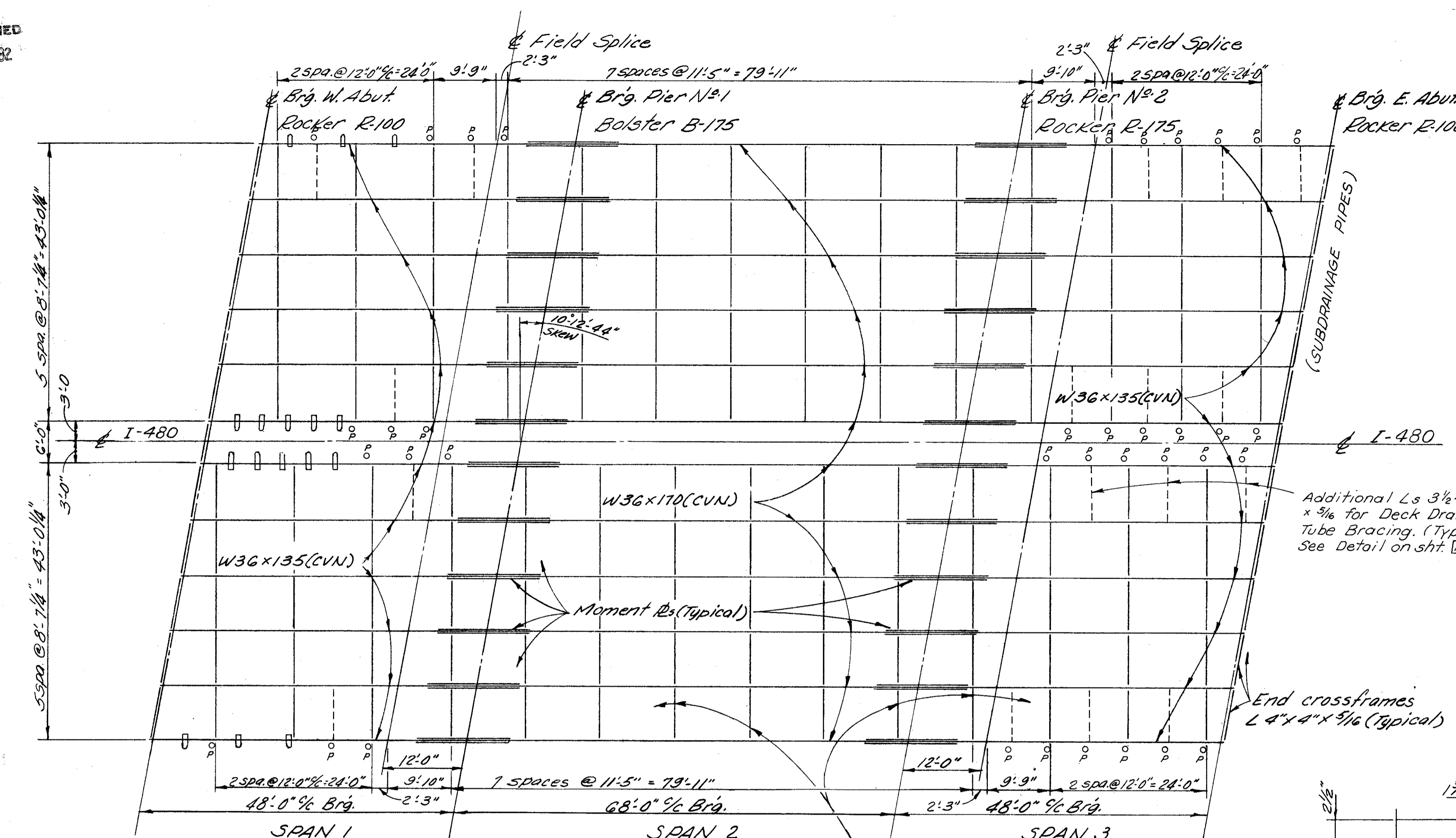
**SECTION "AA"**

ALDEN E. STILSON & ASSOCIATES, LIMITED  
CONSULTING ENGINEERS  
CLEVELAND, OHIO COLUMBUS, OHIO WHEELING, W. VA.

**SUPERSTRUCTURE DETAILS**

BRIDGE No. CUY-480-0793  
I-480 OVER RELOCATED  
ROCKY RIVER DRIVE  
CUYAHOGA COUNTY STA. 443+18.00  
CUYAHOGA COUNTY STA. 444+86.58

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
D.H.S.	R.T.		G.W.M.	G.W.M.	2/6/66	

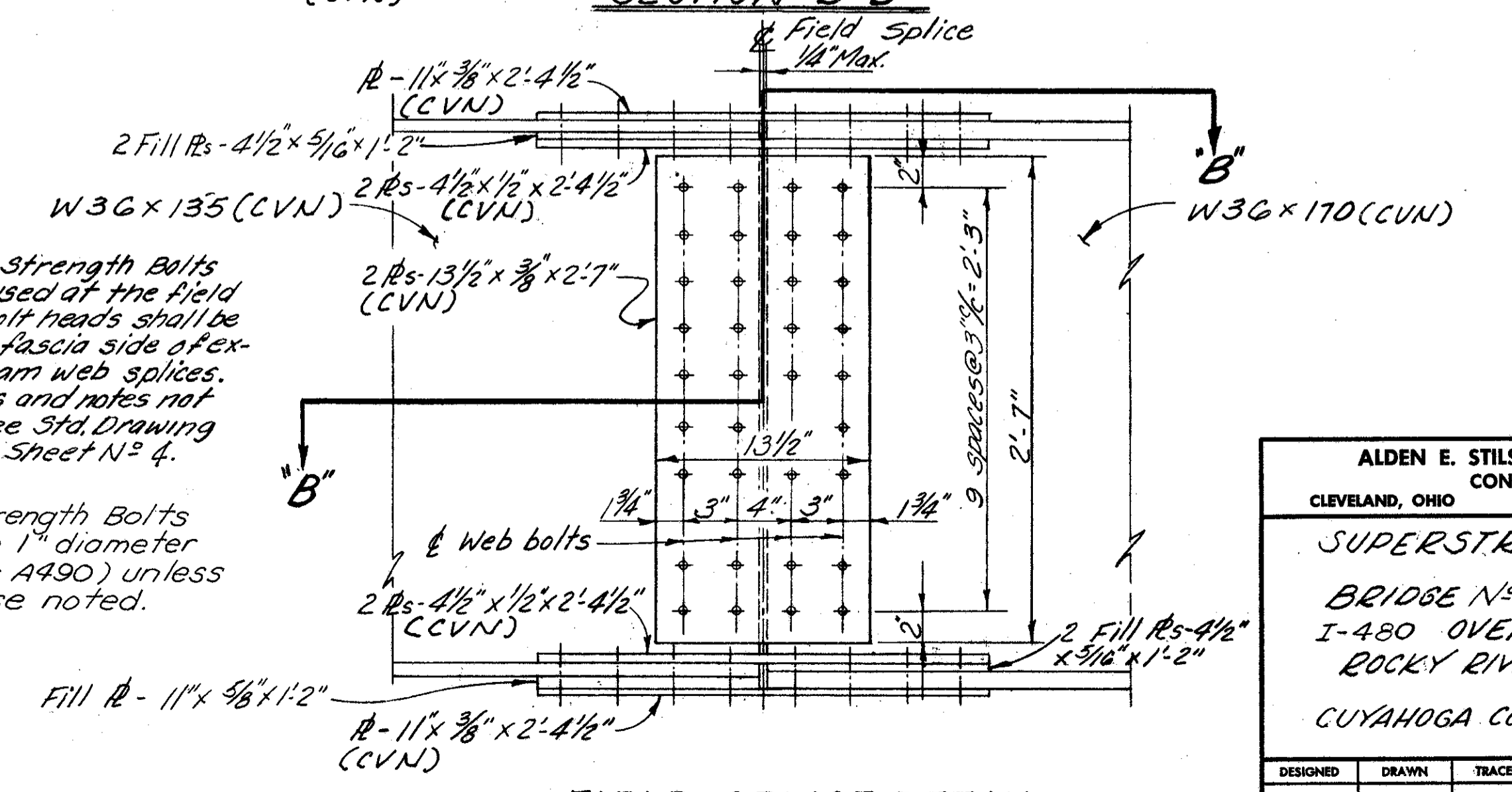
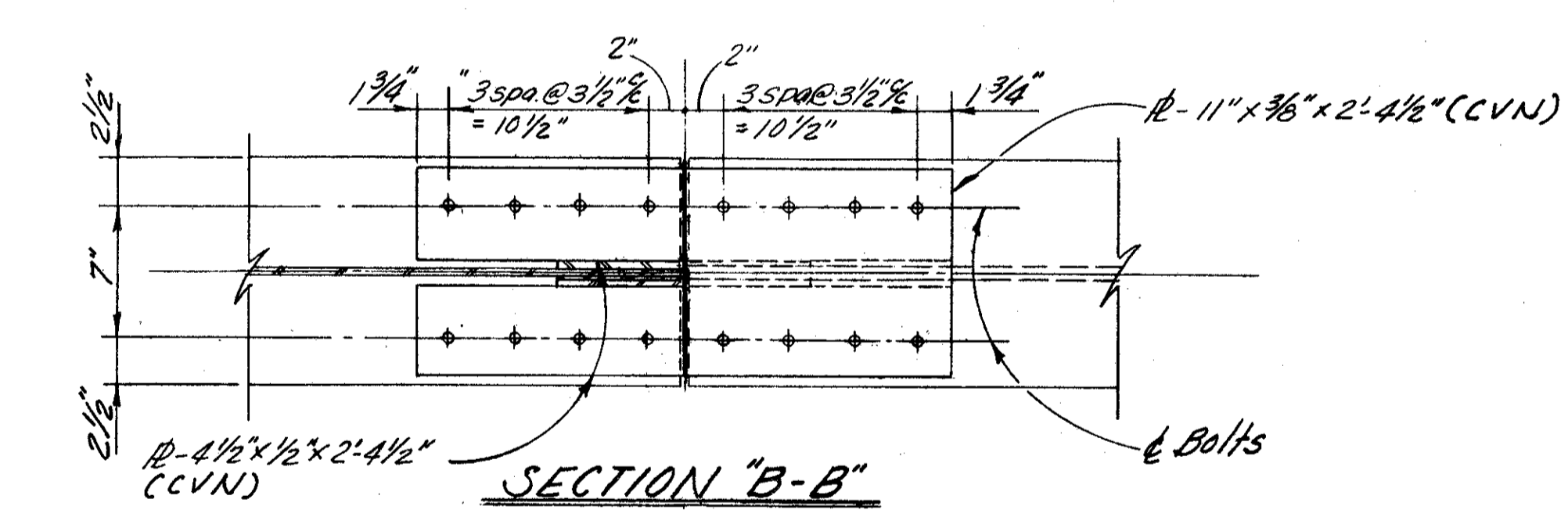
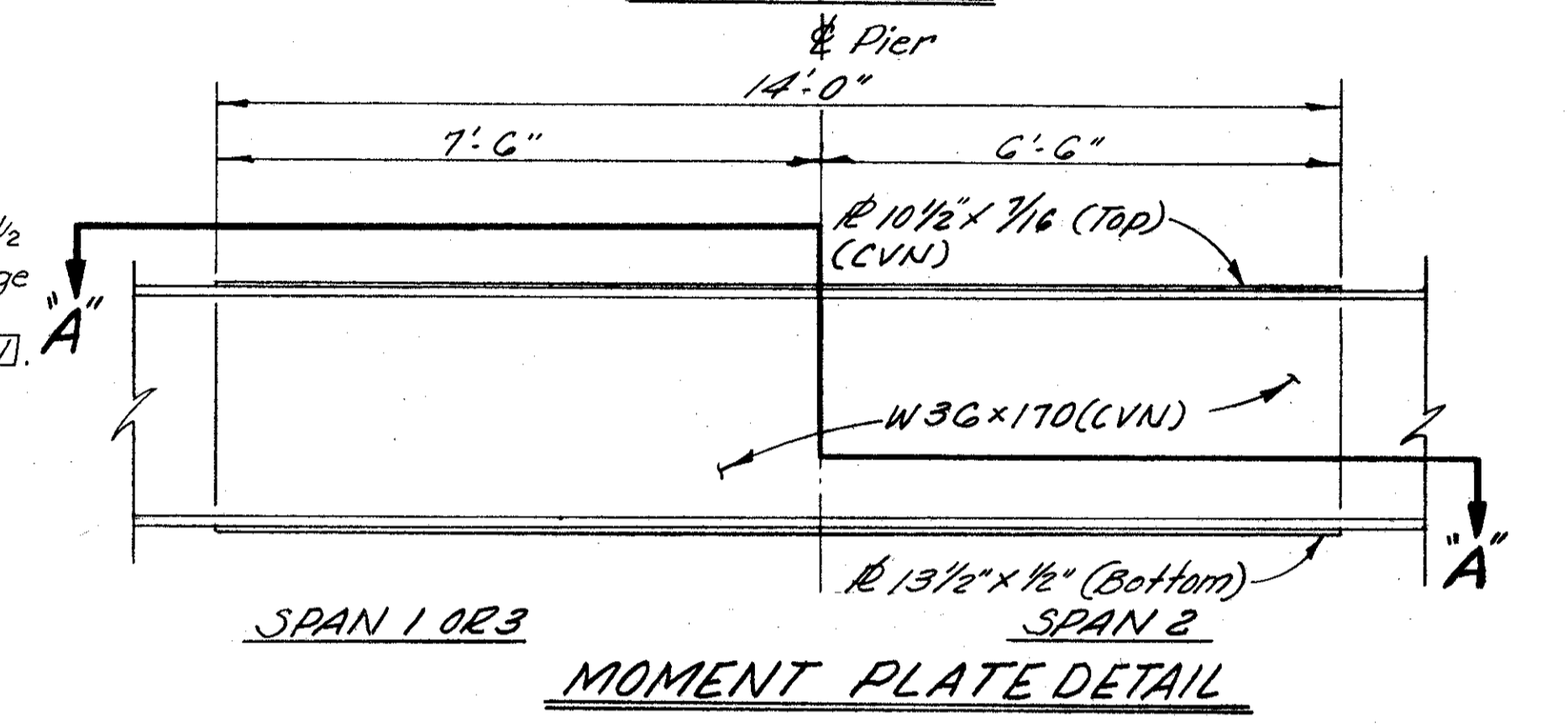
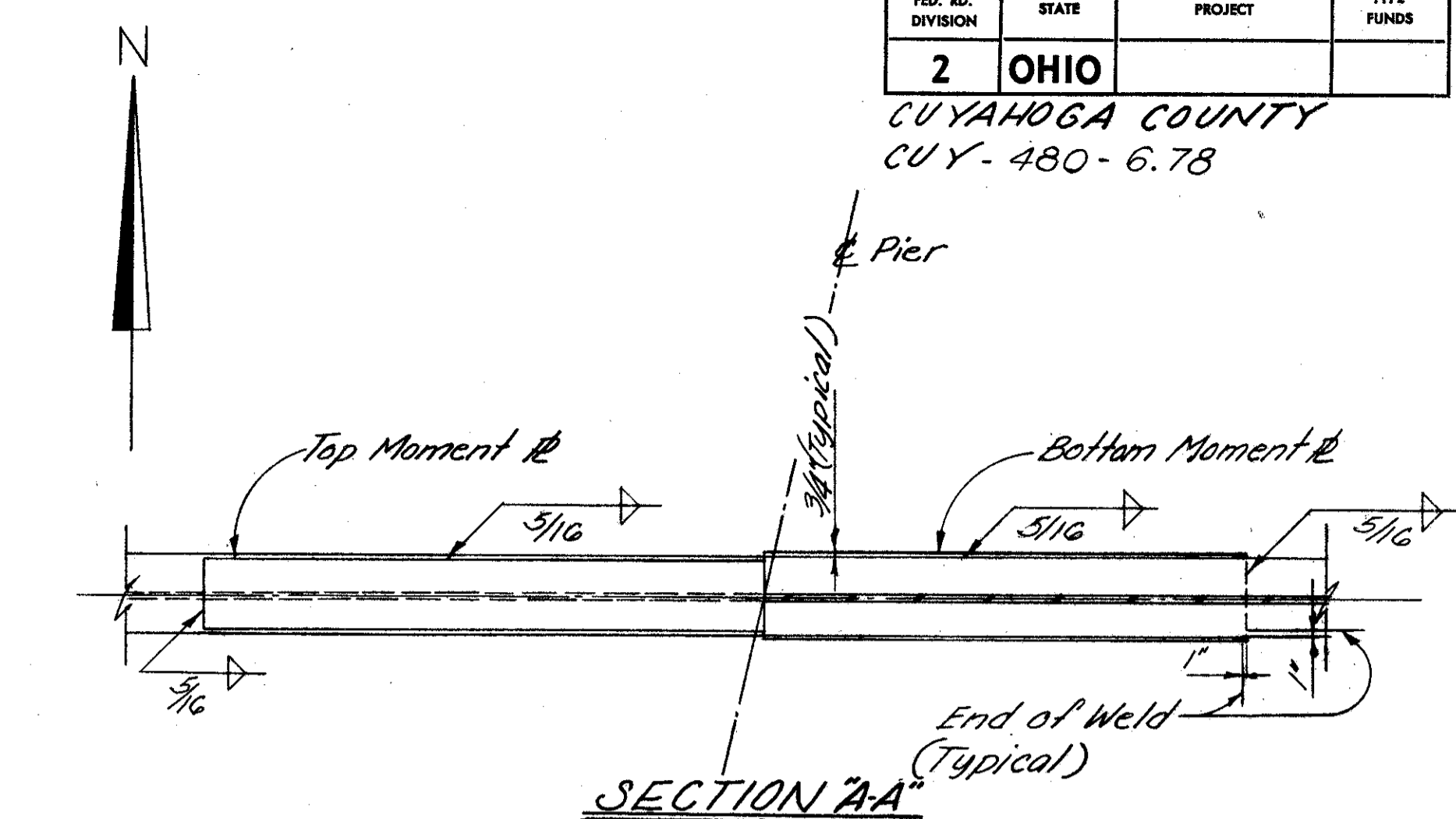


LOCATION	SPAN 1 OR 3			SPAN 2		
	1/4 Point	1/2 Point	Splice Point	1/4 Point	1/2 Point	Splice Point
Deflection due to weight of steel	0"	0"	0"	1/16"	1/16"	1/16"
Deflection due to remain 170 Dead load	1/8"	1/8"	1/16"	3/16"	3/8"	3/16"
Required snap camber	1/8"	1/8"	1/16"	1/4"	1/16"	1/4"

**Note:**  
Where "(CVN)" follows a shape or plate size designation, the material shall meet specified minimum notch toughness requirements.

SUBDRAINAGE PIPE locations are indicated P. Additional location restrictions shall be as shown on sheet 307 except pipes need not clear Crossframes by 6" but shall be located beside the outstanding leg of the horizontal L 3 1/2" x 3 1/2" x 5/16 of the crossframe.

**NOTE:**  
1" High Strength Bolts shall be used at the field splices. Bolt heads shall be placed on fascia side of exterior beam web splices. For details and notes not shown see Std. Drawing 3D-1-63 Sheet N° 4.  
High Strength Bolts shall be 1" diameter A325 (or A490) unless otherwise noted.

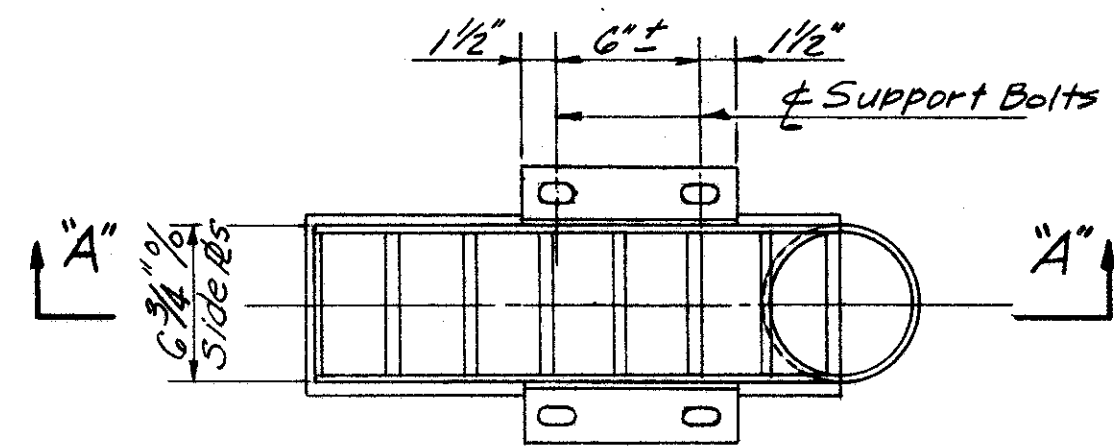


ALDEN E. STILSON & ASSOCIATES, LIMITED  
 CLEVELAND, OHIO CONSULTING ENGINEERS  
 COLUMBUS, OHIO WHEELING, W. VA.

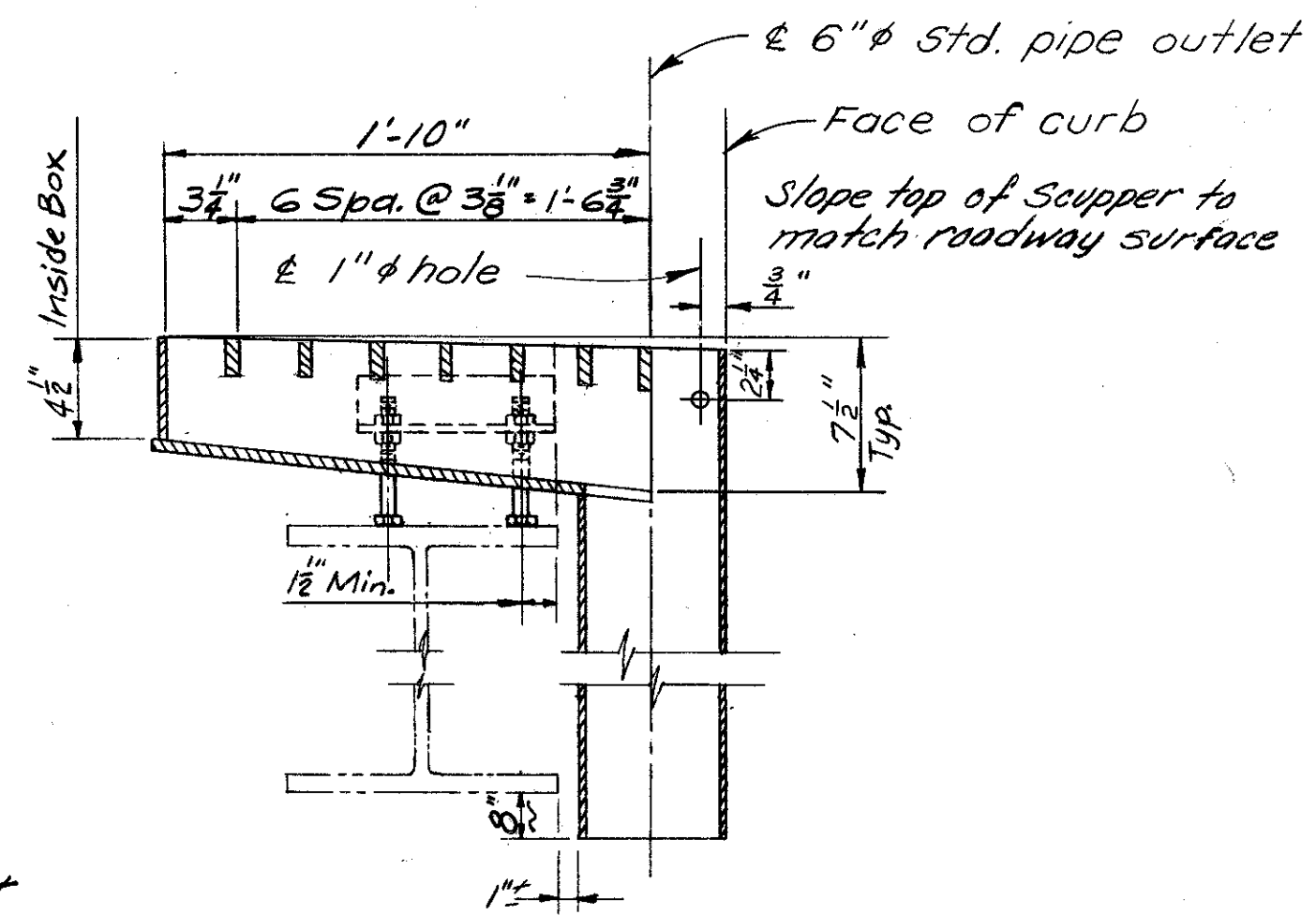
**SUPERSTRUCTURE DETAILS**  
 BRIDGE N° CUY-480-0793  
 I-480 OVER RELOCATED  
 ROCKY RIVER DRIVE  
 STA. 443+18.00  
 CUYAHOGA COUNTY STA. 444+86.5B

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
D.H.S.	R.T.		R.J.P.	G.W.M.	8/1/66	

MICROFILMED  
DEC 6 1982



SCUPPER PLAN



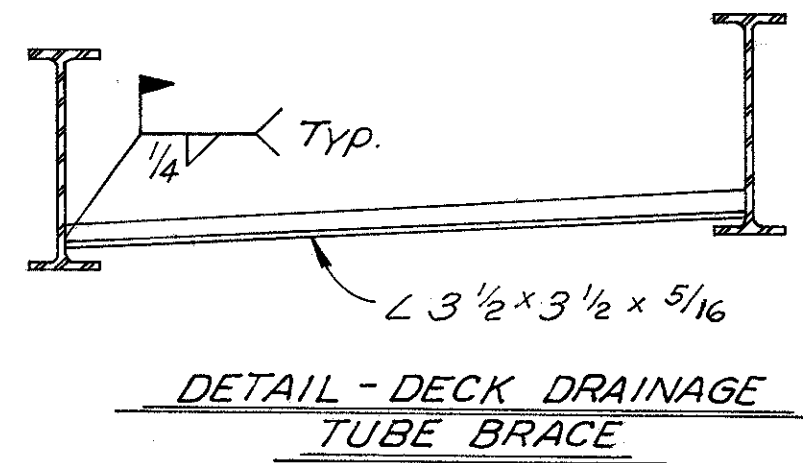
SECTION "A-A"

NOTE:

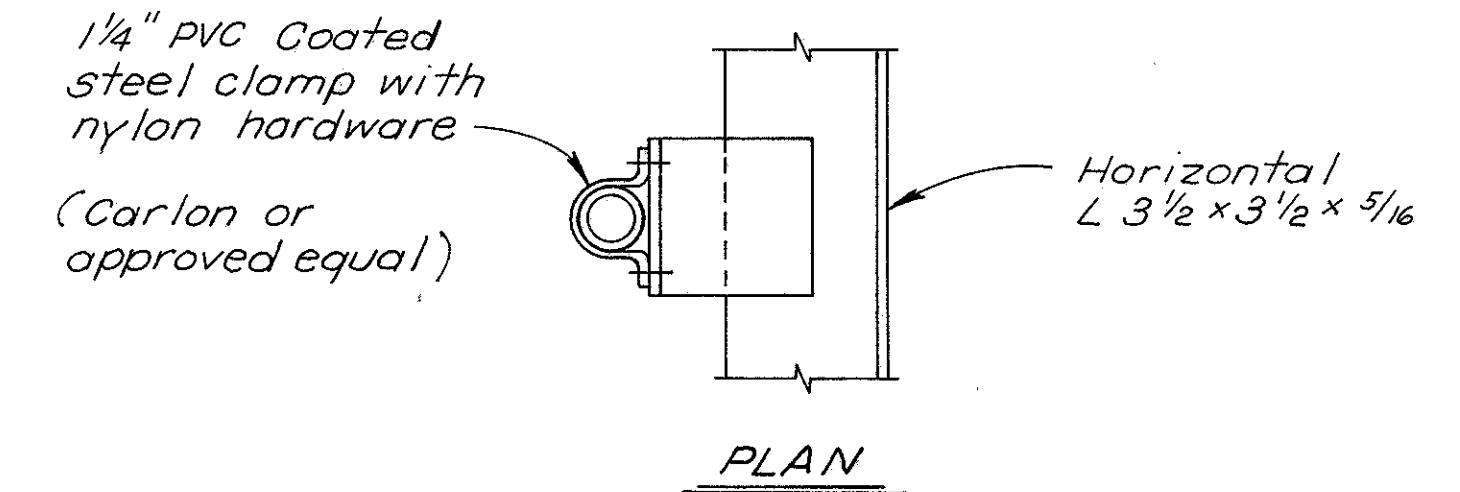
Scupper Details not shown, same as for Standard Scupper. See DWG. SD-1-69, Sheet 3

SPECIAL SCUPPER DETAILS

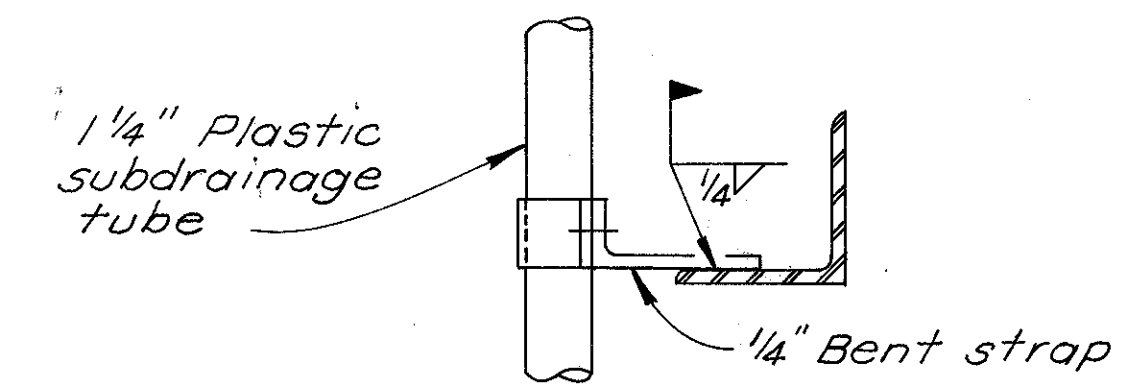
For location of Scuppers see Sheet 3/11



DETAIL - DECK DRAINAGE TUBE BRACE



PLAN



SECTION

DRAINTUBE ATTACHMENT DETAIL

For curb plate details of roadway parapets and median, see Std. Dwg. SD-1-69.

10/11

ALDEN E. STILSON & ASSOCIATES, LIMITED CONSULTING ENGINEERS CLEVELAND, OHIO COLUMBUS, OHIO WHEELING, W. VA.						
MISCELLANEOUS DETAILS						
BRIDGE NO CUY-480-0793						
I-480 OVER RELOCATED ROCKY RIVER DRIVE						
CUYAHOGA COUNTY STA. 443+18.00 STA. 444+86.58						
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
D.H.S.	A.H. R.T.		G.W.M.	G.W.M.	8/1/66	



CUYAHOGA COUNTY  
CUY-480-6.78

**NOTE:**  
Some of the existing topographical conditions as shown have been modified by Contract CUY-480-8.00 construction. See pertinent plan & profile and cross section sheets for changes not shown.

**CURVE DATA**

BRIDGE B-2	RELOC. ROCKY RIVER DR.
P.I. = Sta. 443+73.54	P.I. = Sta. 6+70.68
$\Delta = 28^{\circ}52'24''$	$\Delta = 29^{\circ}58'20''$
D = 3^{\circ}30'00"	D = 5^{\circ}00'00"
R = 1637.02'	R = 1145.92'
Lc = 724.95'	Lc = 599.44'
T = 423.54'	T = 306.75'
Ts = 519.58'	
Ls = 200.00'	
Os = 3^{\circ}30'00"	

**NOTES:**

The vertical curve data does not apply to bridge or graphic grade elevations. The bridge elevations were obtained by adding 0.21 feet to the elevations obtained from vertical curve data and worked out within the graphic grade limits.  
For drainage details see sht. n° 56.  
Elevations marked with an asterisk are top of slope of the face of abutment.

Earthwork limits shown are schematic, actual slopes shall conform to plan cross sections.

**PROPOSED STRUCTURE**

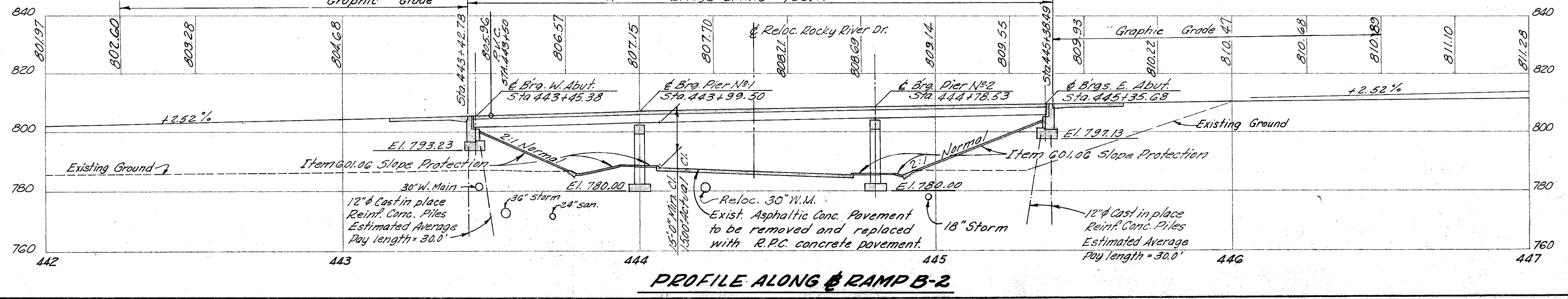
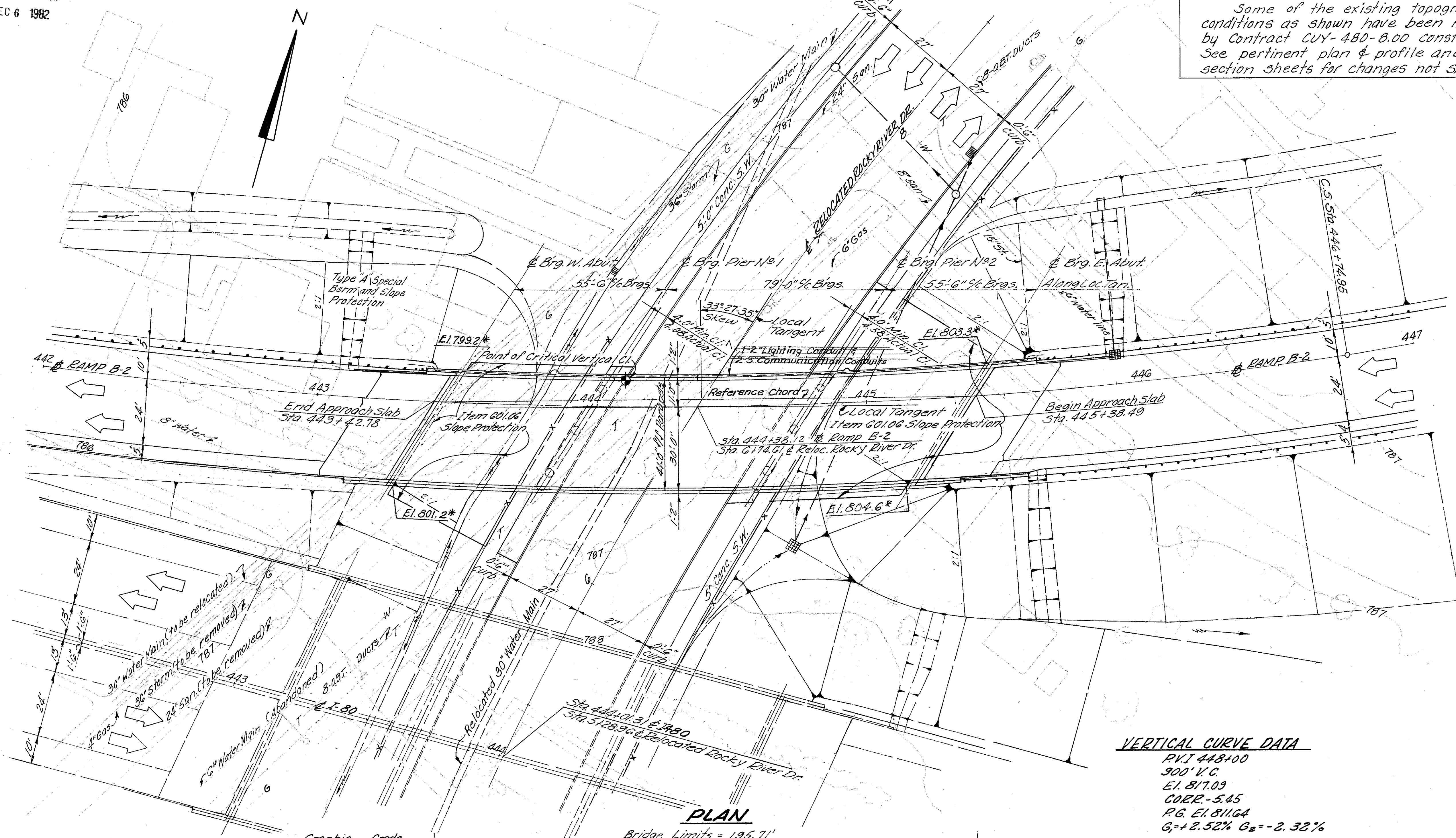
**TYPE:** Continuous steel beam with reinforced concrete deck and reinforced concrete substructure  
**SPANS:** 55'-6", 79'-0", 55'-6" % Brigs along loc. tan.  
**ROADWAY:** 41'-0" % Parapets of BR-1-67 Railing  
**LOADING:** C.F-2000 (1957) Adequate for the Alternate Military Loading.  
**WEARING SURFACE:** 2" Asphalt Concrete  
**SKEW:** 33°27'35" Lt. Fwd. with respect to Ref. chord.  
**ALIGNMENT:** 3°30'00" Curve  
**APPROACH SLABS:** AS-1-72 Mod. (25' lg.)  
**SUPERELEVATION:** 0.058 ft. per ft.

**TRAFFIC ESTIMATE**

Design Year - 1987  
Total A.D.T. - 21,854

**VERTICAL CURVE DATA**

PVI 448+00  
300' V.C.  
E1. 817.09  
CORR. - 5.45  
P.G. E1. 811.64  
G<sub>1</sub> = +2.52% G<sub>2</sub> = -2.38%



ALDEN E. STILSON & ASSOCIATES, LIMITED  
CONSULTING ENGINEERS  
CLEVELAND, OHIO COLUMBUS, OHIO WHEELING, W. VA.

**SITE PLAN**  
BRIDGE N° CUY-480-0795  
RAMP B-2 OVER RELOCATED ROCKY RIVER DRIVE  
CUYAHOGA COUNTY STA. 443+42.78  
STA. 445+38.49

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
G.W.M.	R.T.		G.W.M.	G.W.M.	8/17/86	

CUYAHOGA COUNTY  
 CUY-480-678

DECK PROTECTION METHOD: Epoxy Coated Reinforcing Steel, Top Mat Only and Membrane Waterproofing with Asphalt Concrete Overlay.

SUPPLEMENTAL SPECIFICATION REFERENCES (CONT.)

Description	No.	Date
Painting for new Structural Steel	846	4-25-77
Inorganic zink Silicate Paint	950	4-25-77
Blue Green Vinyl Paint	951	4-25-77

PARAPET TRANSITIONS AND WINGWALL ENDS Shall be as shown on Standard Drawing BR-1-67 Revised 10-15-71. Reinforcing Steel shall be field bent or cut fit the revised shape.

PREFORMED BEARING PADS: In lieu of the hardness requirements of 711.21, Preformed Bearing Pads shall have Shore A Durometer of 80 ± 10.

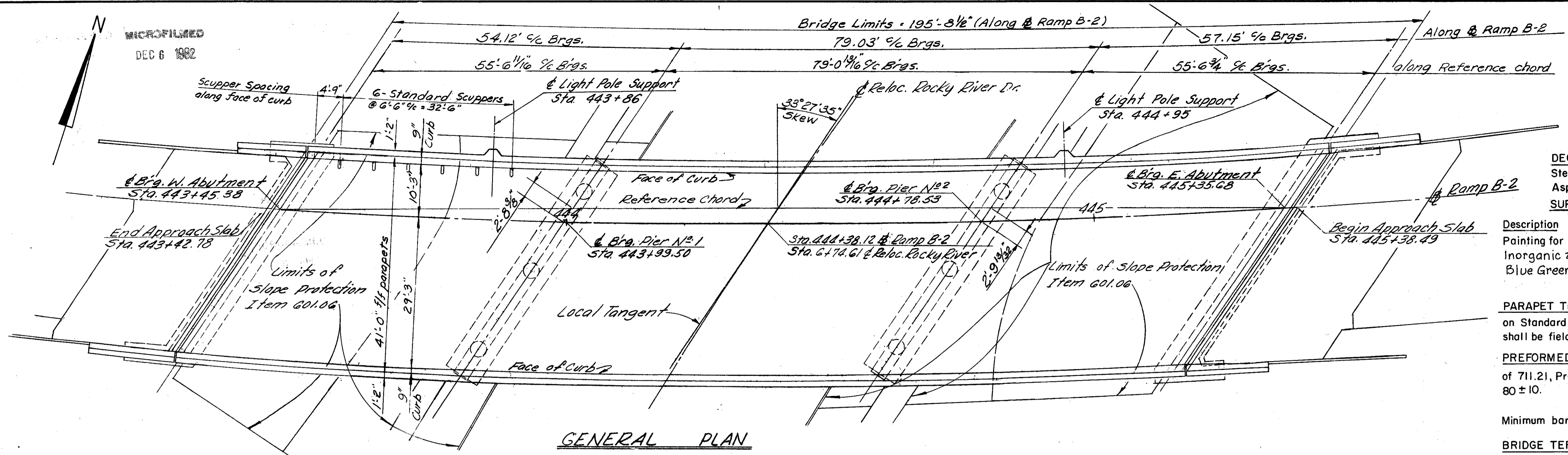
Minimum bar lap shall be 30 diameters.

BRIDGE TERMINAL ASSEMBLIES at three corners shall be type A per standard drawing GR-3 without wheelguard. Concrete anchor assemblies per Standard Construction Drawings GR-3 and GR-1 shall be placed during parapet construction for attachment of guardrail to the concrete parapets.

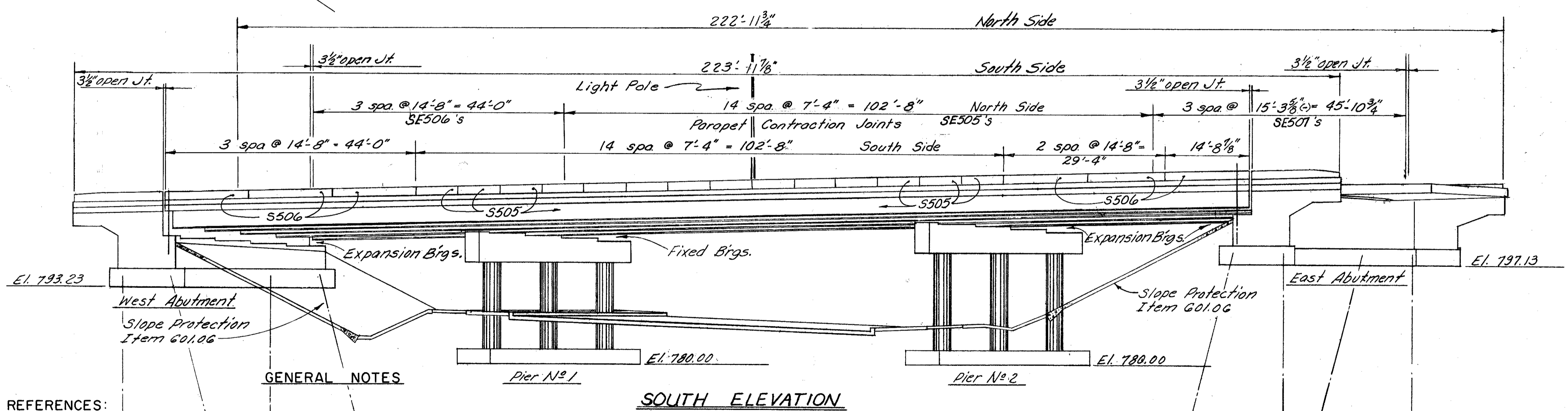
BEARINGS Shall be in accordance with Standard Drawing RB-1-55 except that at the Rear Abutment and Pier No 1 the upper plate element shall be beveled to match Roadway Grade and the Tabulated Plate thickness C shall apply at centerline of plate.

NOTE:  
 For light pole support details and reinforcing steel see Standard Construction Drawing HL-4.

REFERENCES:  
 COMMON DETAILS  
 Deck Drainage Details, see Sht. 307



GENERAL PLAN



SOUTH ELEVATION

- REFERENCES:
- STANDARD DRAWINGS:**
- End Dam, End Crossframe, Scupper and Bolted Beam Splice Details BR-1-67 Bridge Roadway Railing Revised 10-15-71
  - Rockers and Bolsters RB-1-55 Revised 2-2-59
  - Reinforced Concrete Approach Slabs HL-3 dated 7-27-73 HL-4 dated 1-21-76 HL-5 dated 9-6-73 HL-7 dated 1-21-76
  - Highway Lighting HL-4 dated 1-21-76
- SUPPLEMENTAL SPECIFICATION:**
- Chemical Admixture for Concrete, Type A, B or D 808, dated 1-1-71
  - Concrete Curing and Protective Membrane 836, dated 3-12-75
  - Special Pile Tests 838, dated 1-13-77
- GENERAL NOTES:**
- SD-1-69, Sheets 1, 2, 3 & 4 dated 6-12-69
  - AS-1-72 (Mod.)\*

- DESIGN SPECIFICATION:**
- This structure conforms to the requirements of "Design Specifications for Highway Structures" of the State of Ohio, Department of Highways, dated 9-1-57 together with current revisions thereof.
- DESIGN DATA:**
- Design Loading-CF 2,000 (57)
  - Concrete Class C-Basic Unit Stress 1,333 P. S. I. for supers. & piers above footings.
  - Concrete Class C-Basic Unit Stress 1,133 P. S. I. for abutments & footings.
  - Structural Steel-ASTM A 36-Basic Unit Stress 20,000 P. S. I.
  - Reinforcing Steel-ASTM A615, A616, A617 Basic Unit Stress 20,000 P. S. I. Spiral reinforcement may be plain bars. ASTM A 82, or A 615
- EXCAVATION QUANTITY** includes the removal of fill material required for construction of the abutments.
- EXCAVATION QUANTITY** for the piers includes the removal of fill material required for construction of the piers.

- PILES** for the abutments shall be driven to a minimum bearing capacity of 35 tons per pile.
- FOUNDATION BEARING PRESSURE:**
- Pier footings are designed for a maximum bearing pressure of 2.5 tons per square foot.

**UTILITY LINES:**

All expense involved in relocating the affected utility lines shall be borne by the owners. The Contractor and Owners are requested to cooperate by arranging their work in such a manner that inconvenience to either will be held to a minimum.

\* Std. Dwg. AS-1-72 shall be modified to provide 3" clearance to the top re-bars instead of the 2" shown and jacking holes shall be omitted.

ALDEN E. STILSON & ASSOCIATES, LIMITED  
 CONSULTING ENGINEERS  
 CLEVELAND, OHIO COLUMBUS, OHIO WHEELING, W. VA.

**GENERAL PLAN & ELEVATION**  
 BRIDGE NO. CUY-480-0795  
 RAMP B-2 OVER RELOCATED  
 ROCKY RIVER DRIVE  
 CUYAHOGA COUNTY STA. 443+42.78  
 STA. 445+38.49

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
G.W.M.	E.T.		G.W.M.	G.W.M.	8/11/66	

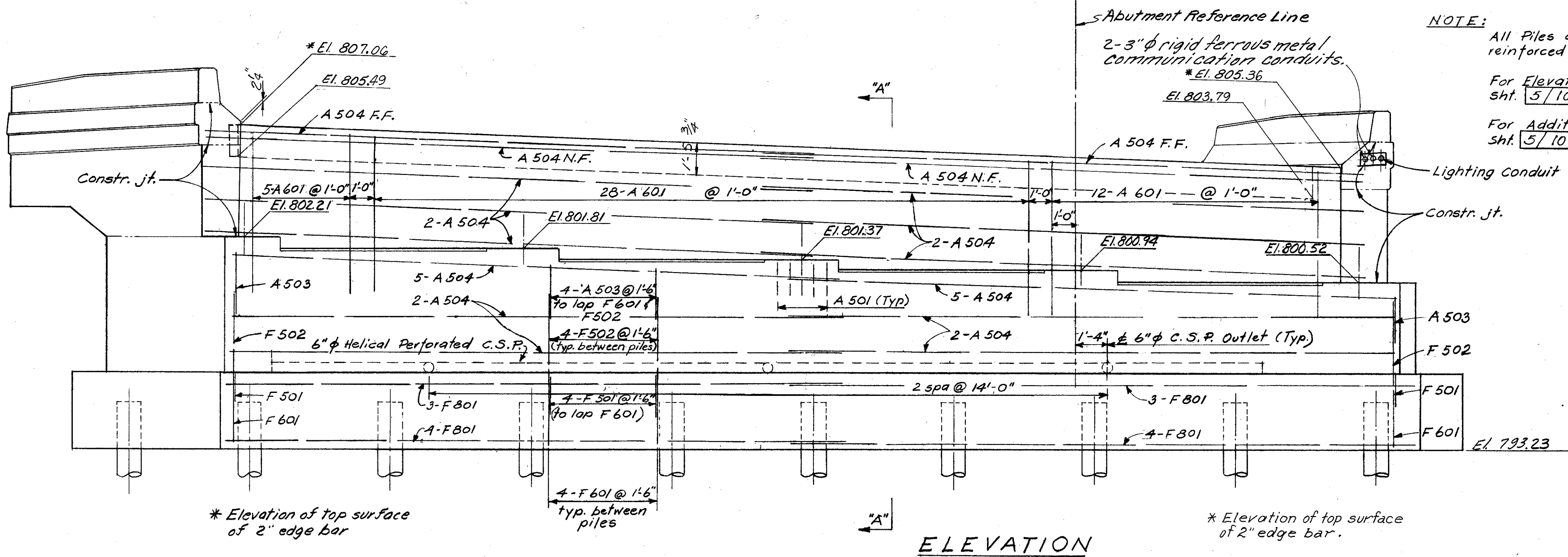
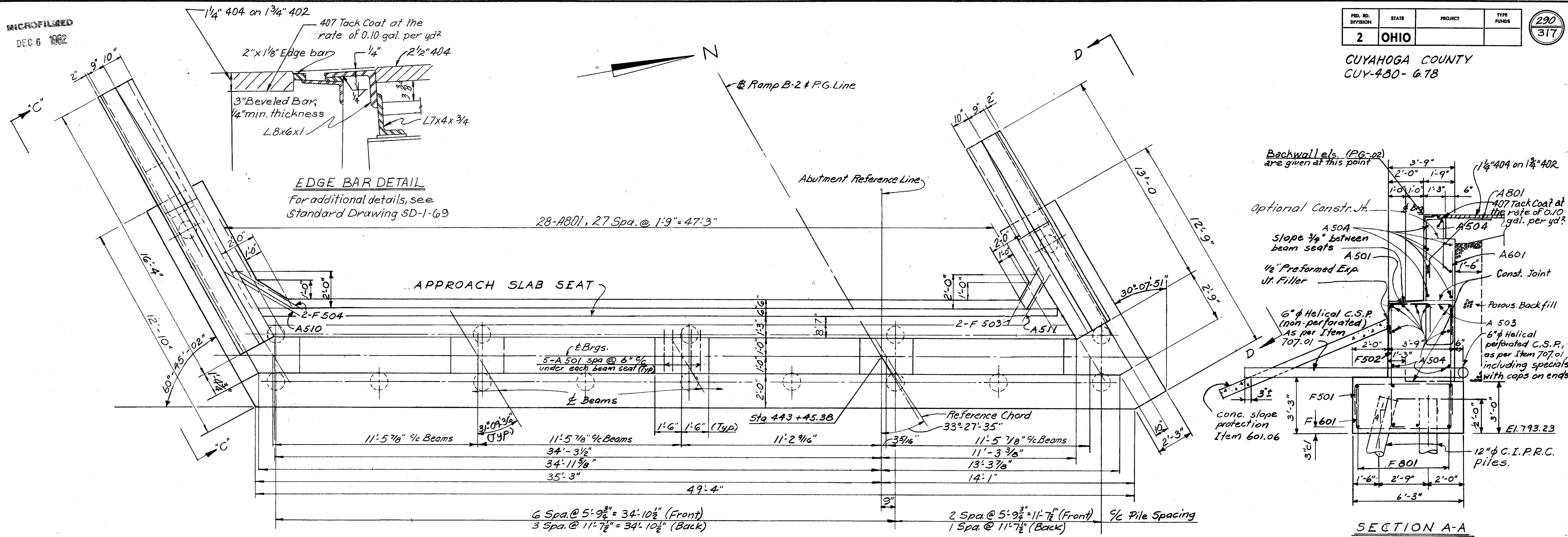


MICROFILMED  
DEC 6 1982

FED. RD. DIVISION	STATE	PROJECT	TYPE FUNDS
2	OHIO		

290  
317

CUYAHOGA COUNTY  
CUY-480-678



**NOTE:**

All Piles are 12" phi Cast-in-Place reinforced concrete piles.

For Elevation C-C and D-D see sht. 5/10

For Additional Notes see sht. 5/10

**BACKWALL CONCRETE:** In addition to the provisions of 511.08, backwall concrete above the bridge seat or Backwall Concrete above the optional Construction Joint at the approach slab seat shall not be placed until after the deck concrete in the span adjacent to the abutment has been placed.

For details of electrical expansion fitting for lighting conduit see standard drawing HL-5. Details for communication conduits shall be similar.

3/10

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CONSULTING ENGINEERS  
CLEVELAND, OHIO COLUMBUS, OHIO WHEELING, W. VA.

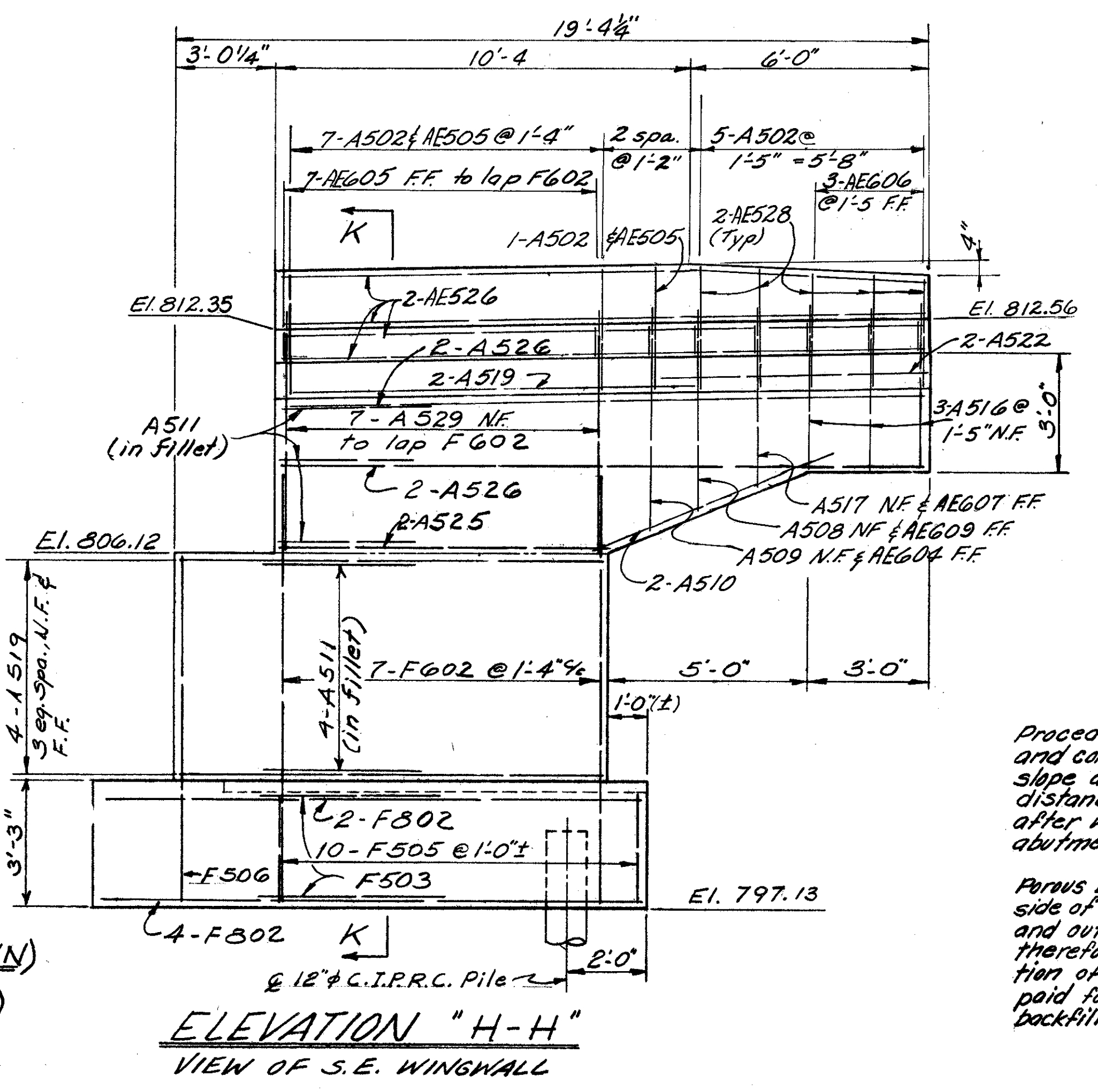
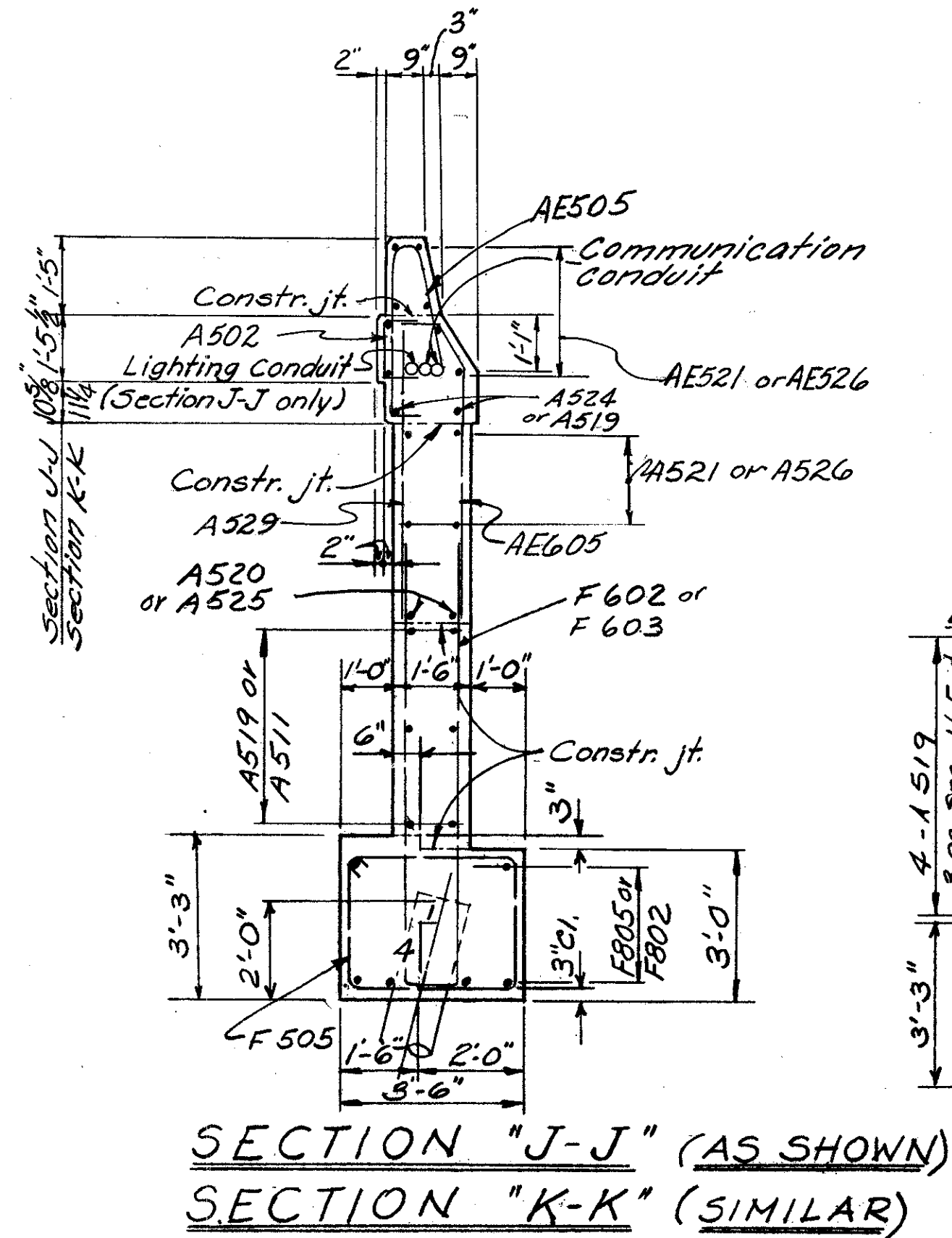
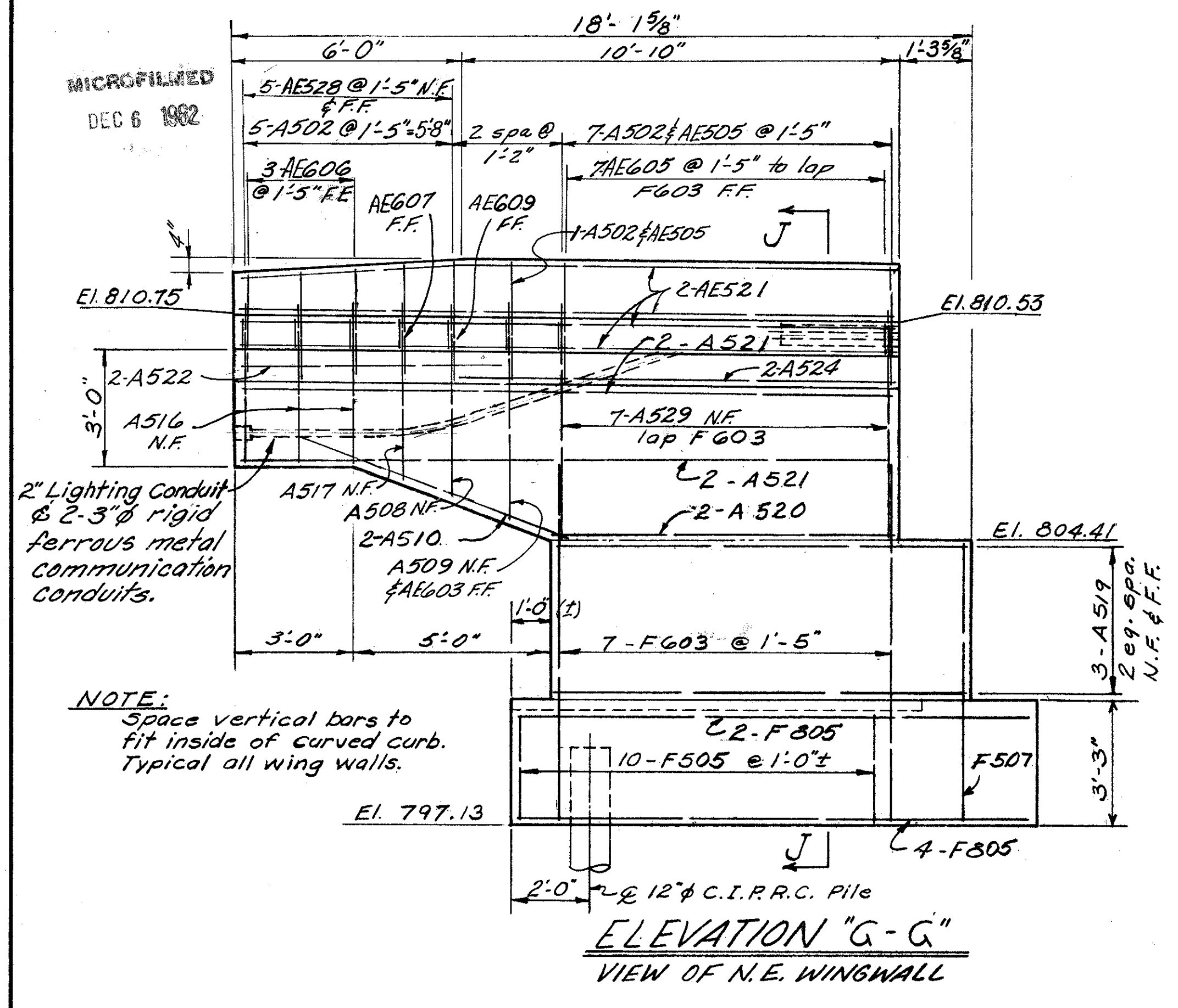
**WEST ABUTMENT DETAILS**

BRIDGE No. CUY-480-0795  
RAMP B-2 OVER RELOCATED  
ROCKY RIVER DRIVE  
CUYAHOGA COUNTY STA. 443+42.78  
CUYAHOGA COUNTY STA. 445+38.49

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
G.W.M.	H.S. R.T.		G.W.M.	G.W.M.	8/11/66	



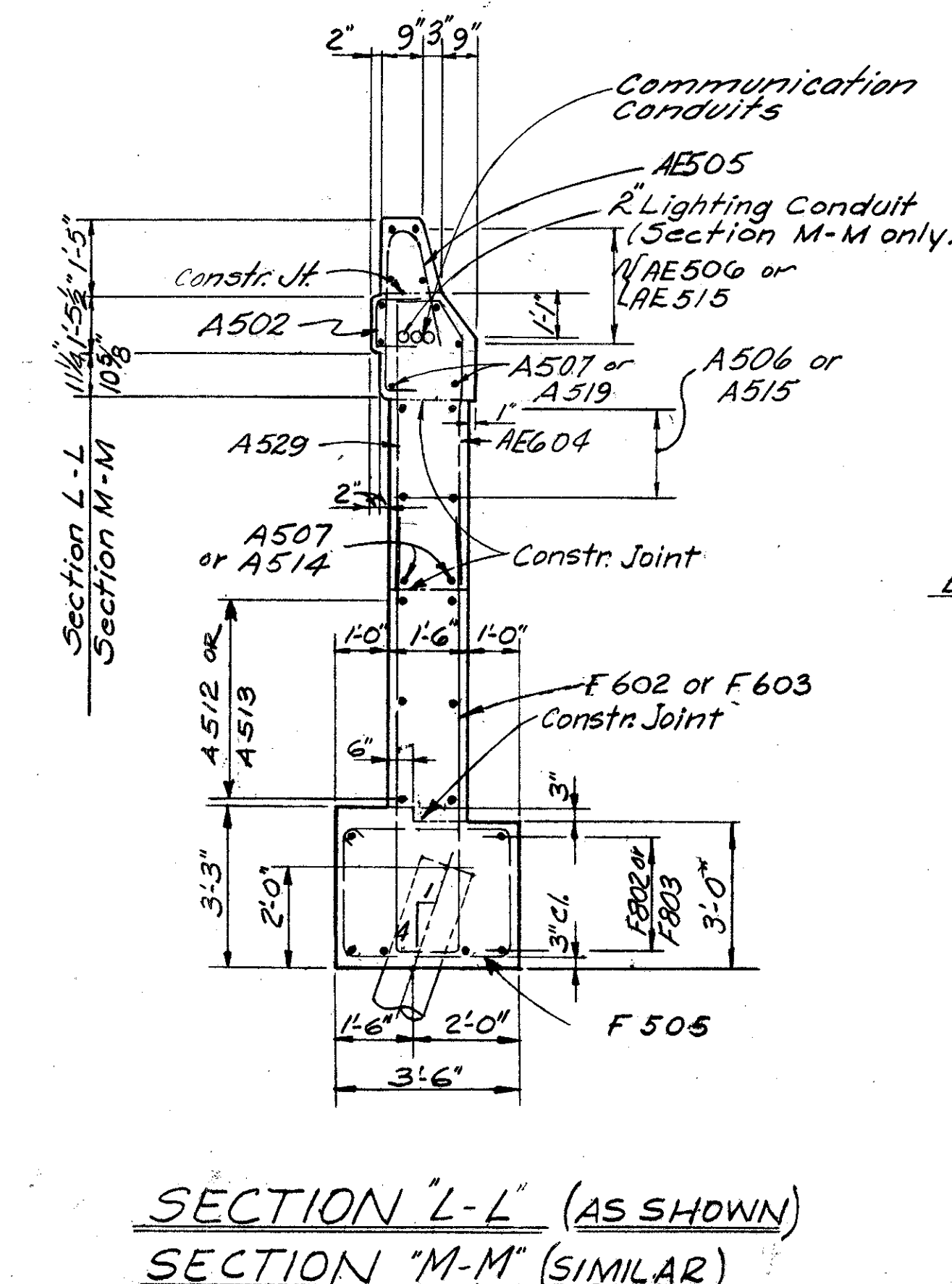
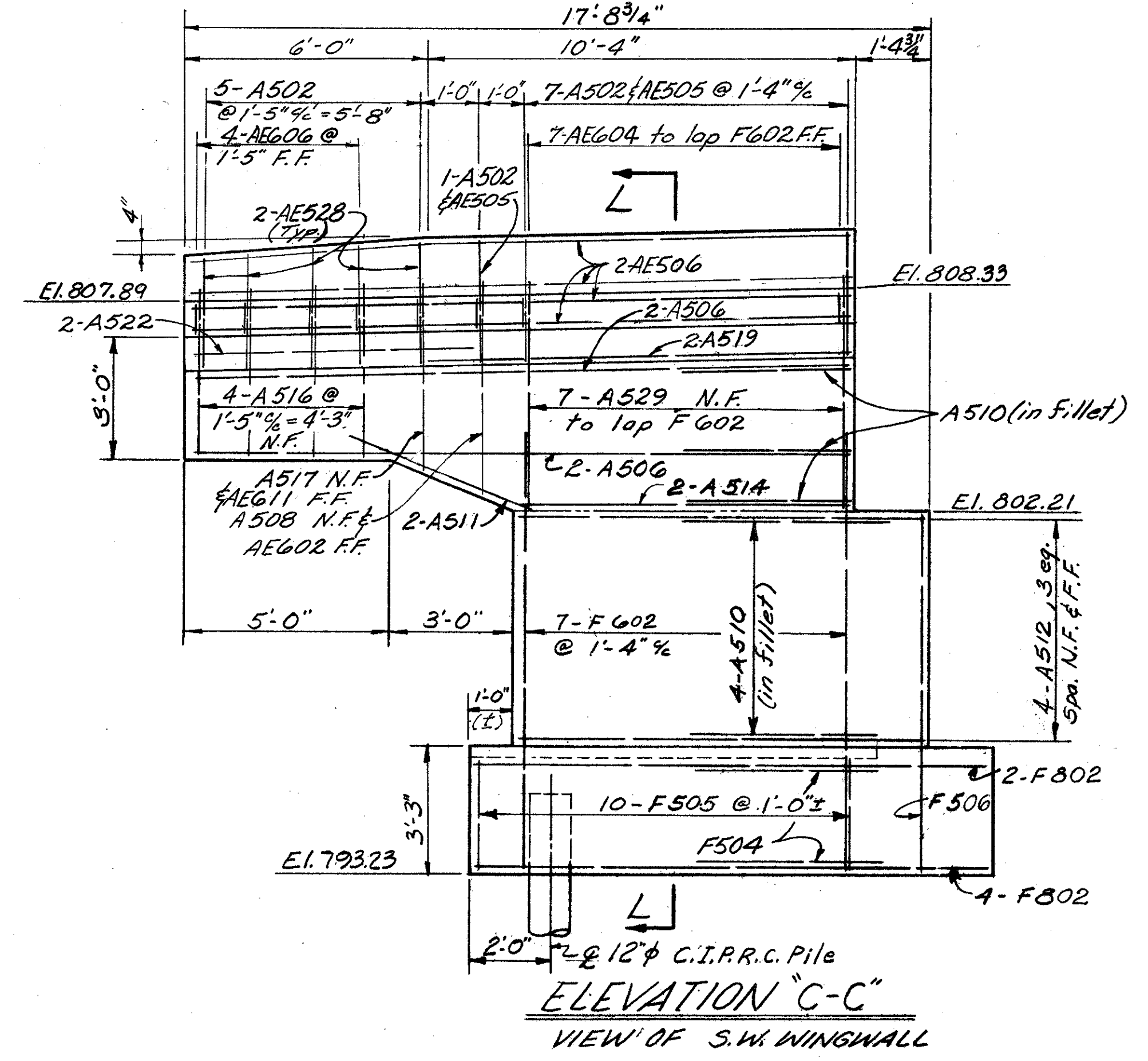
CUYAHOGA COUNTY  
CUY-480-6.78

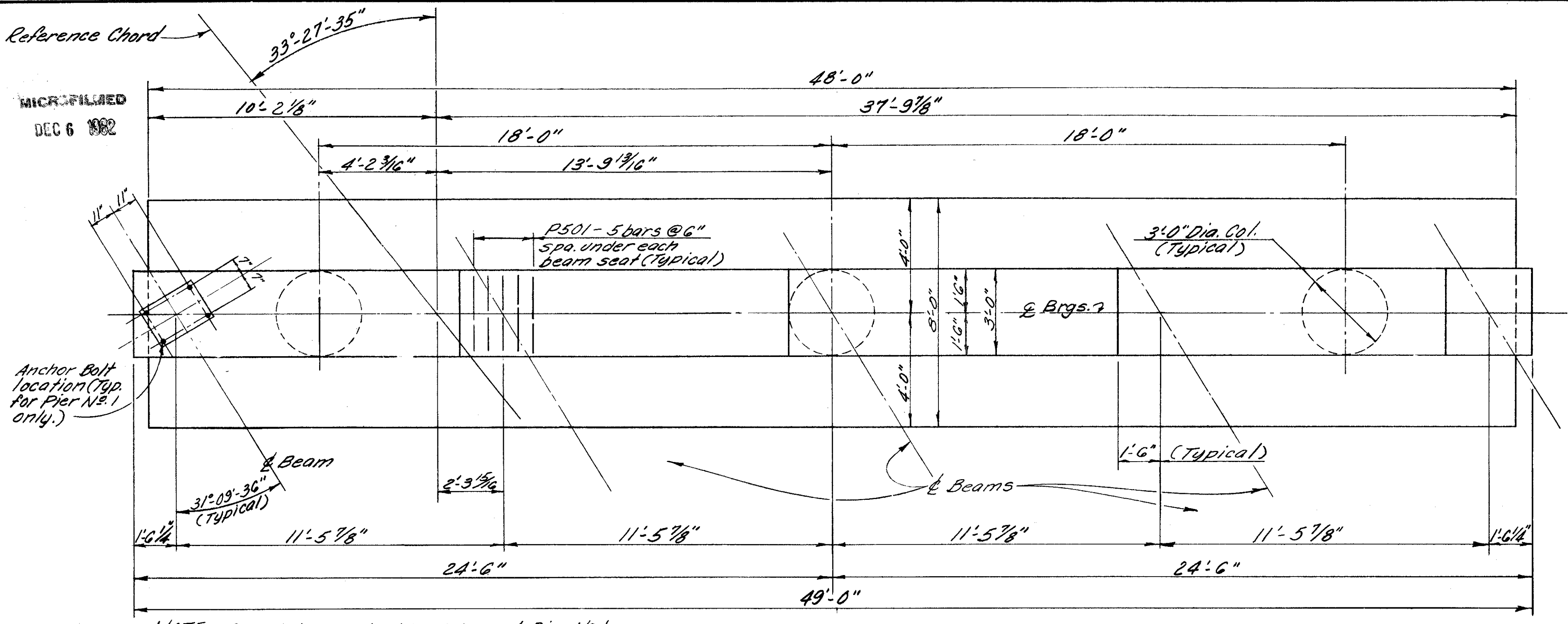


**NOTE:**  
Space vertical bars to fit inside of curved curb. Typical all wing walls.

**NOTES:**  
Procedure: The embankment shall be placed and compacted up to the finished spill-thru slope and to the level of the subgrade for a distance of 200 feet back of the abutments, after which excavation shall be made for the abutment and piles driven.  
Parous backfill shall extend upward to the underside of the approach slab and the paved shoulders, and outward to the inside of the wings. 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 parous backfill.

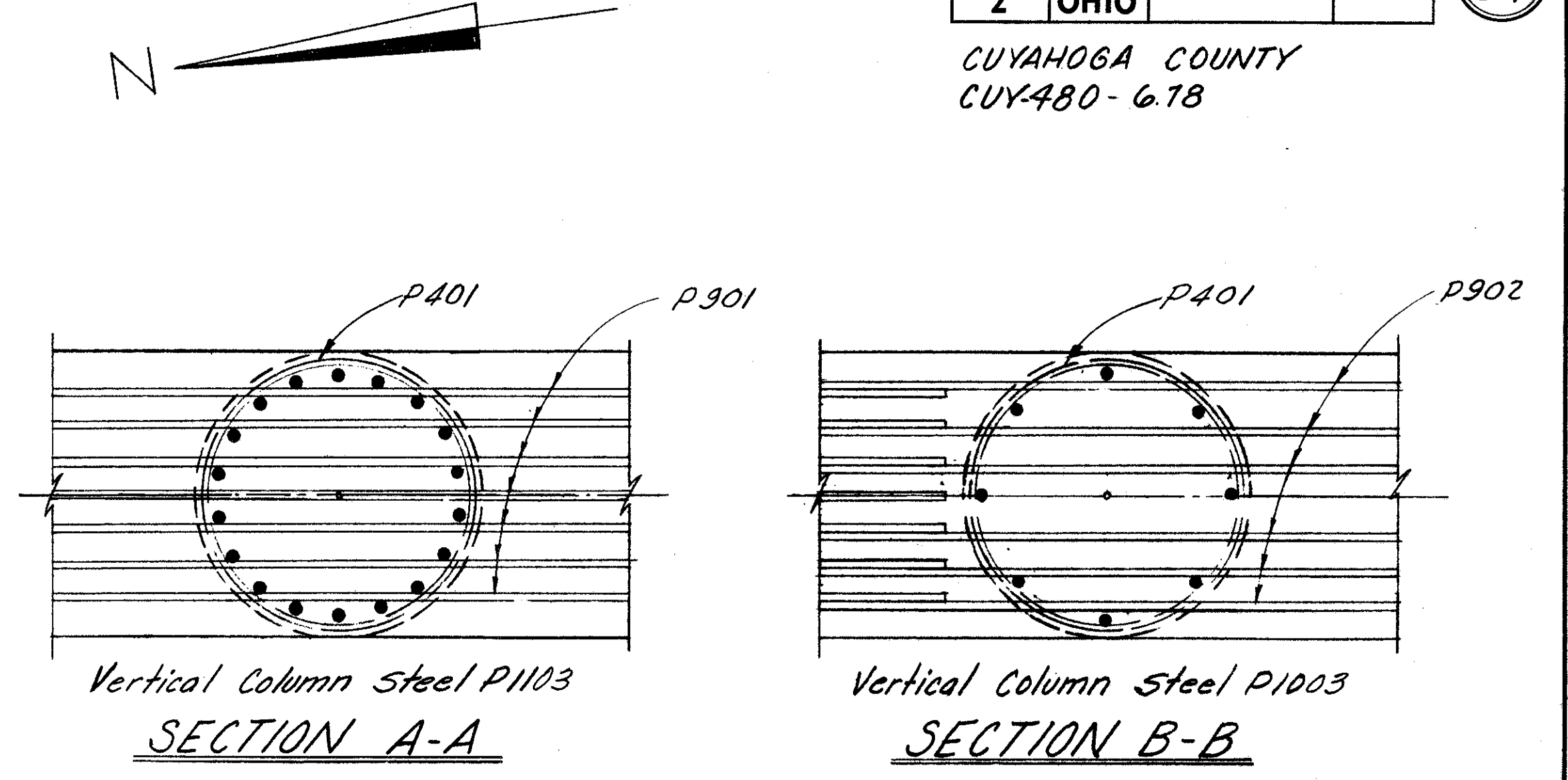
In reinforcing bar callouts, N.F. indicates near face & F.F. indicates far face.  
For location of Elevation C-C & D-D see Sheet 3/10  
For location of Elevation G-G & H-H see Sheet 4/10  
For details of lighting conduits in abutments see Standard Construction Drawing HL-5.  
Details of communication conduits in the abutments shall be similar to those for the lighting conduits.





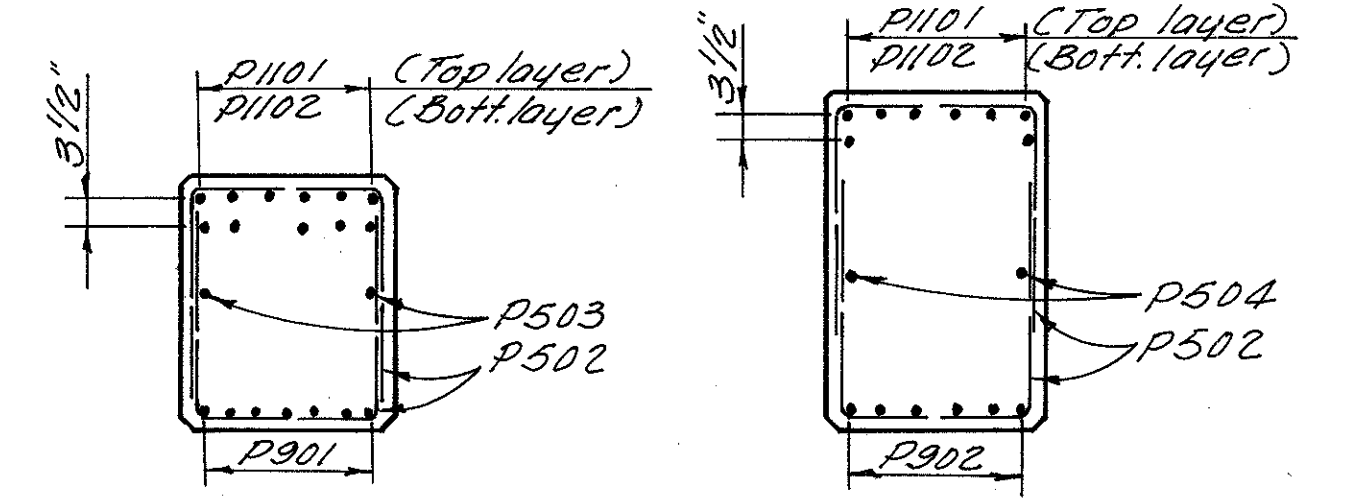
**NOTE:** Special care shall be taken at Pier No. 1 in placing reinforcing steel in the top of the cap so as to avoid interference with the drilling of anchor bar holes or the pre-setting of bearing anchors.

**PLAN**

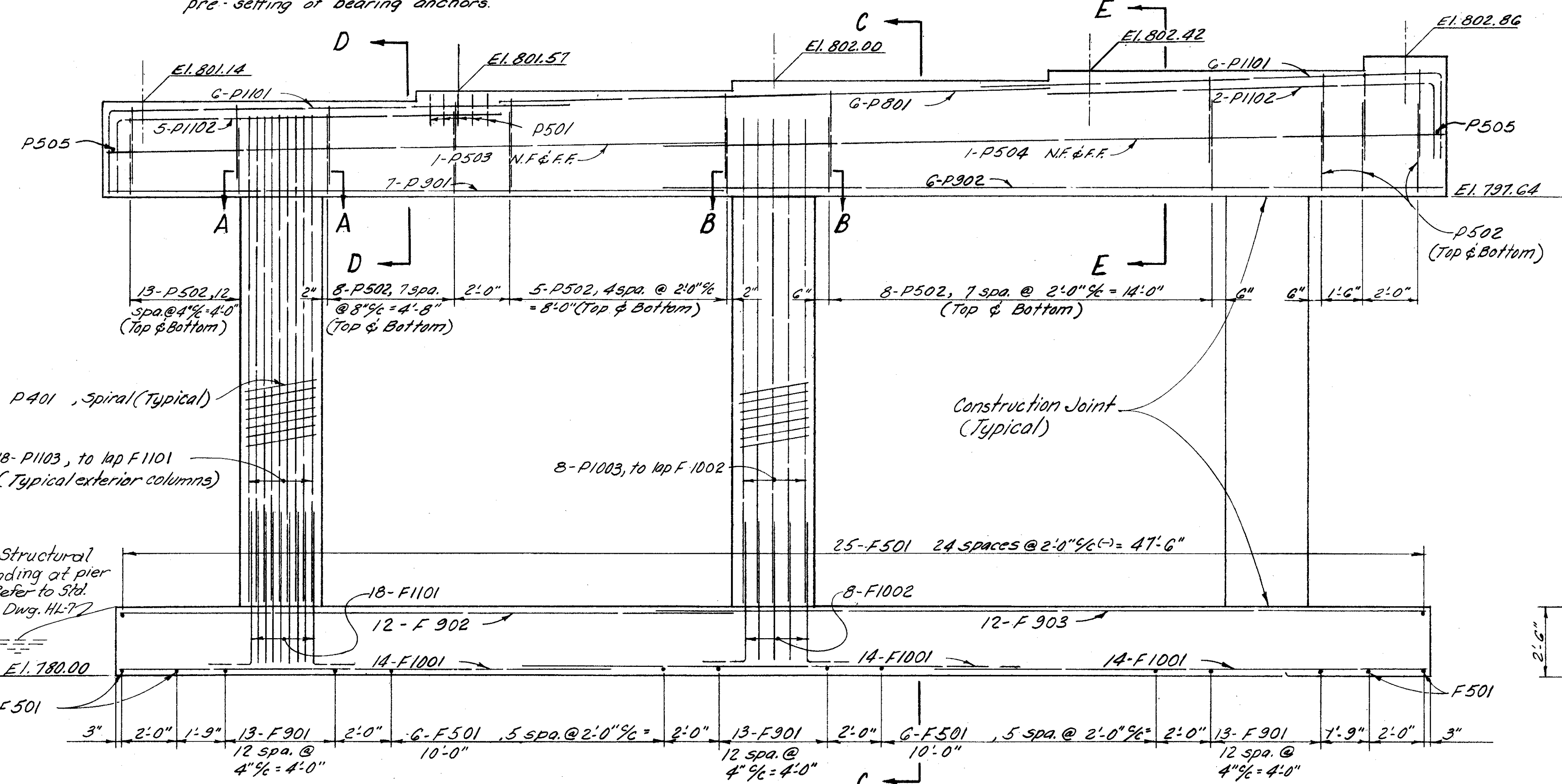


Vertical Column Steel P1103  
**SECTION A-A**

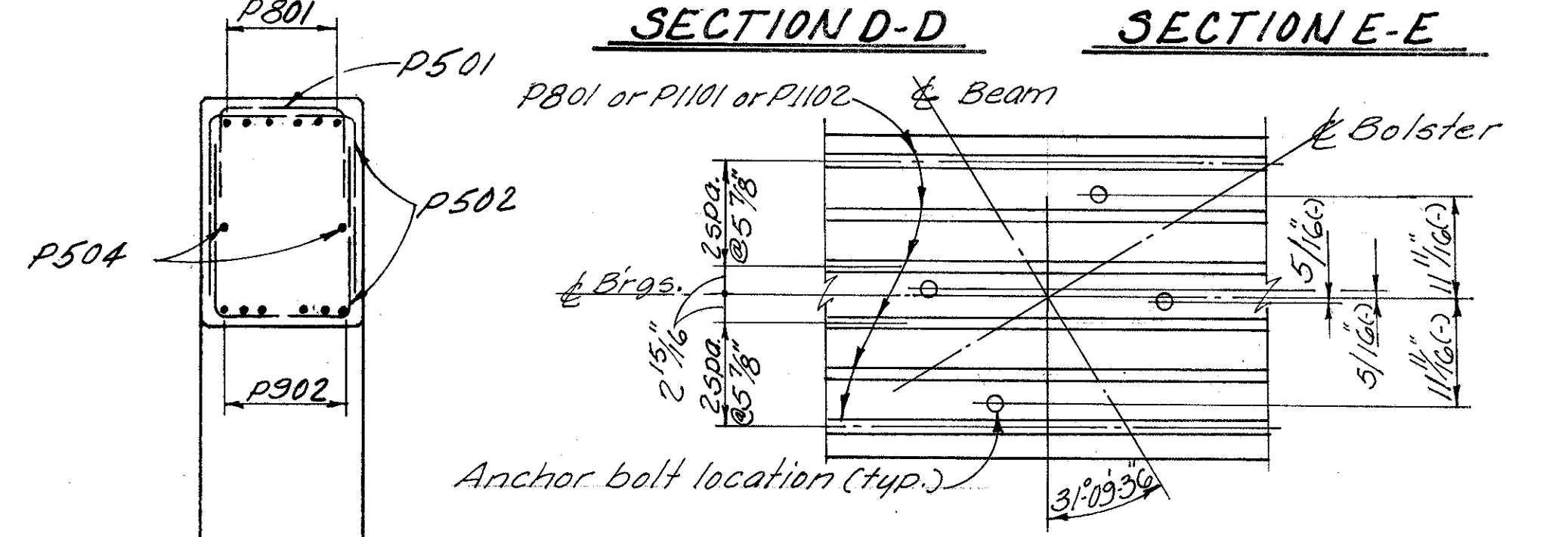
Vertical Column Steel P1103  
**SECTION B-B**



**SECTION D-D**      **SECTION E-E**

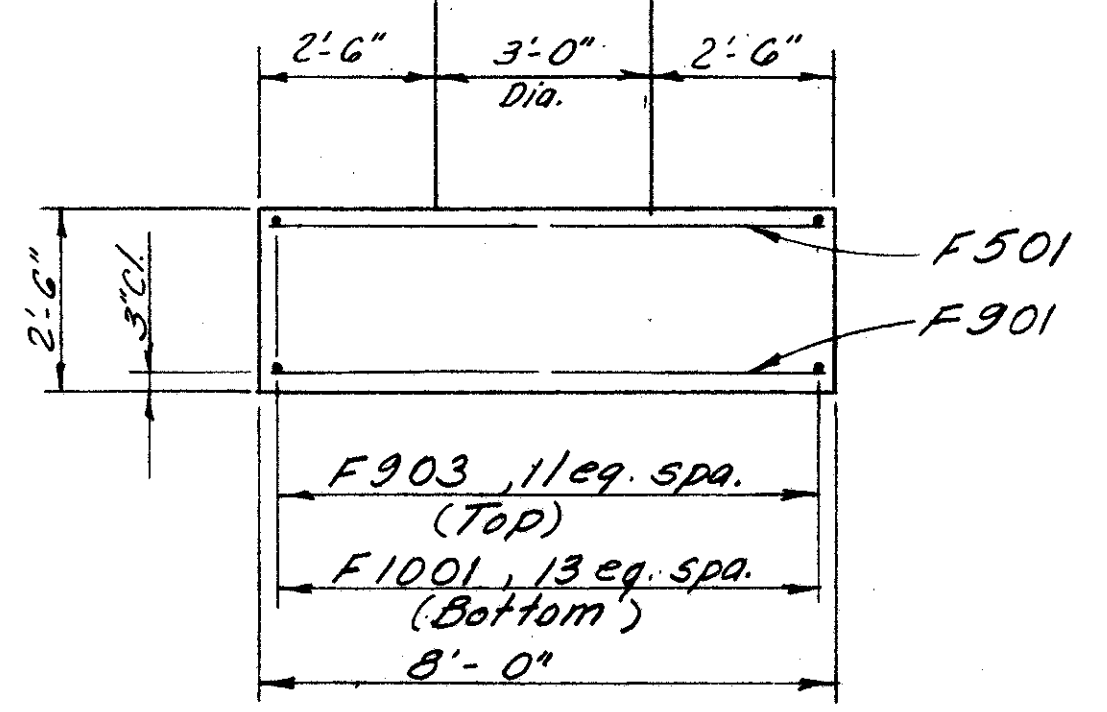


**ELEVATION**



**TOP CAP STEEL LOCATION DIAGRAM**

**Note:**  
**BEARING ANCHORS:** At the option of the Contractor, bearing anchors (or formed holes), located and supported by templates, may be cast in place.  
**BRIDGE SEAT REINFORCING:** Reinforcing steel in the vicinity of the bridge seat shall be accurately placed to avoid interference with the drilling of bearing anchor holes or the pre-setting of bearing anchors.



**SECTION C-C**

ALDEN E. STILSON & ASSOCIATES, LIMITED						
CONSULTING ENGINEERS						
CLEVELAND, OHIO	COLUMBUS, OHIO	WHEELING, W. VA.				
<b>PIER NO. 1 DETAILS</b>						
BRIDGE NO. CUY-480-0795						
RAMP B-2 OVER RELOCATED						
ROCKY RIVER DRIVE						
CUYAHOGA COUNTY STA. 443+42.78						
STA. 445+38.49						
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
G.W.M.	R.T.		R.J.P.	G.W.M.	9/1/66	

For Structural Grounding at pier No. 1 Refer to Std. Const. Dwg. HL-77

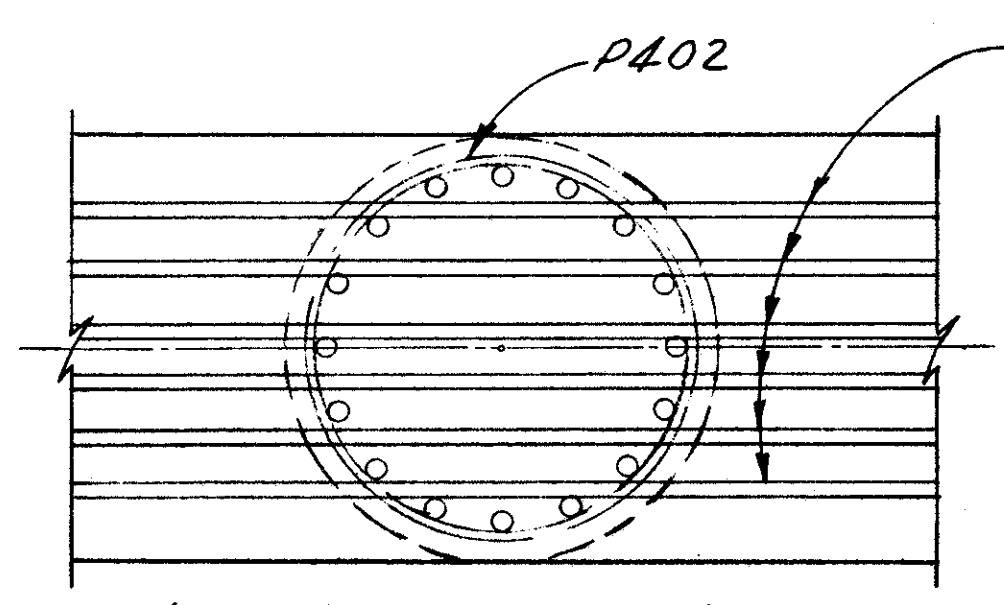
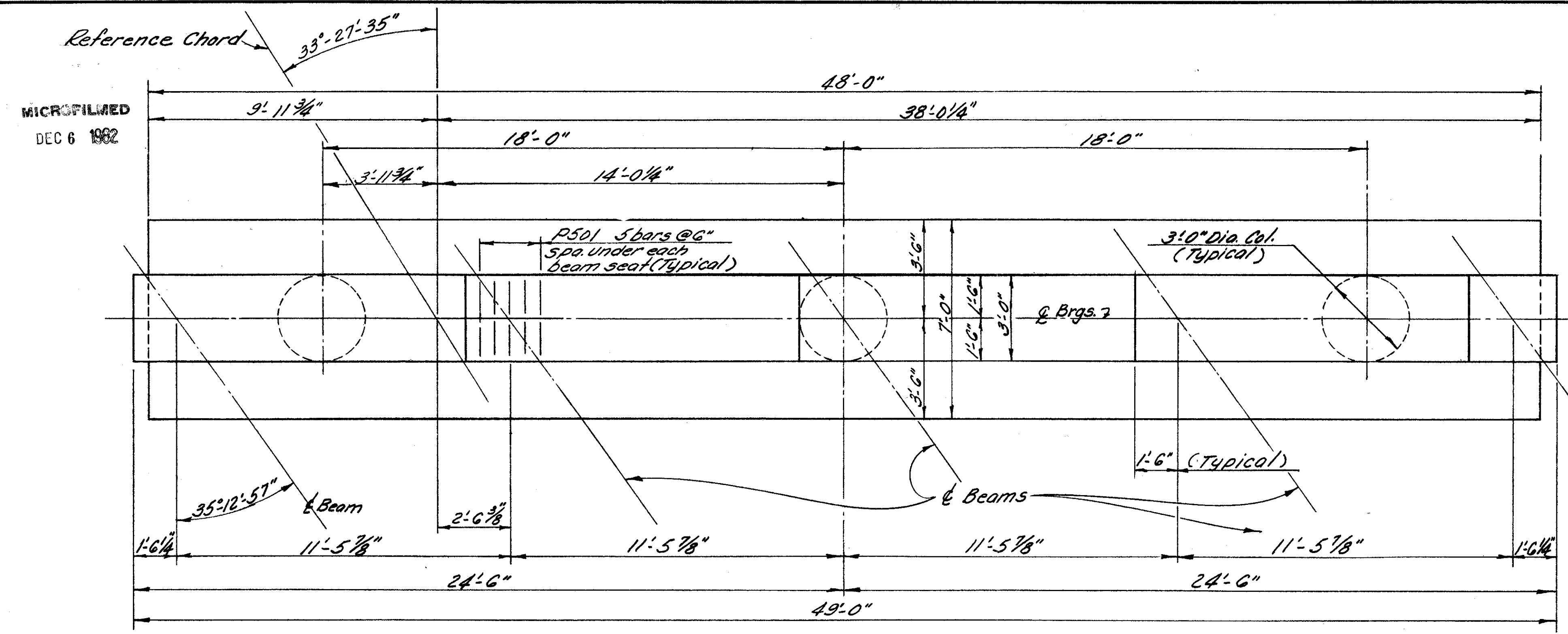
6/10

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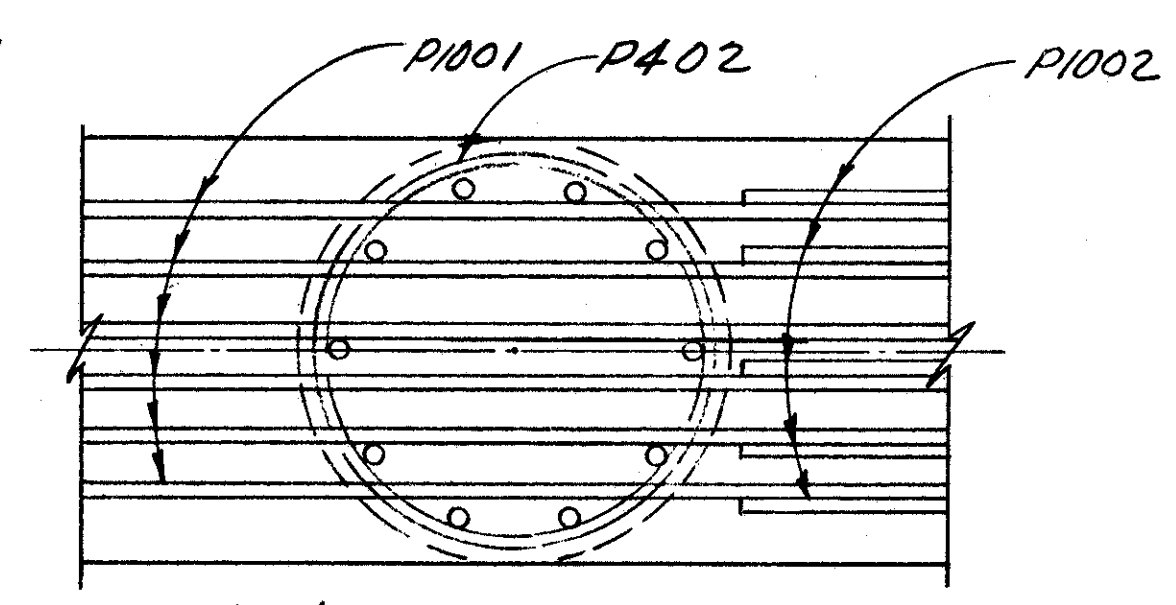
FED. RD. DIVISION	STATE	PROJECT	TYPE FUNDS
2	OHIO		

294  
317

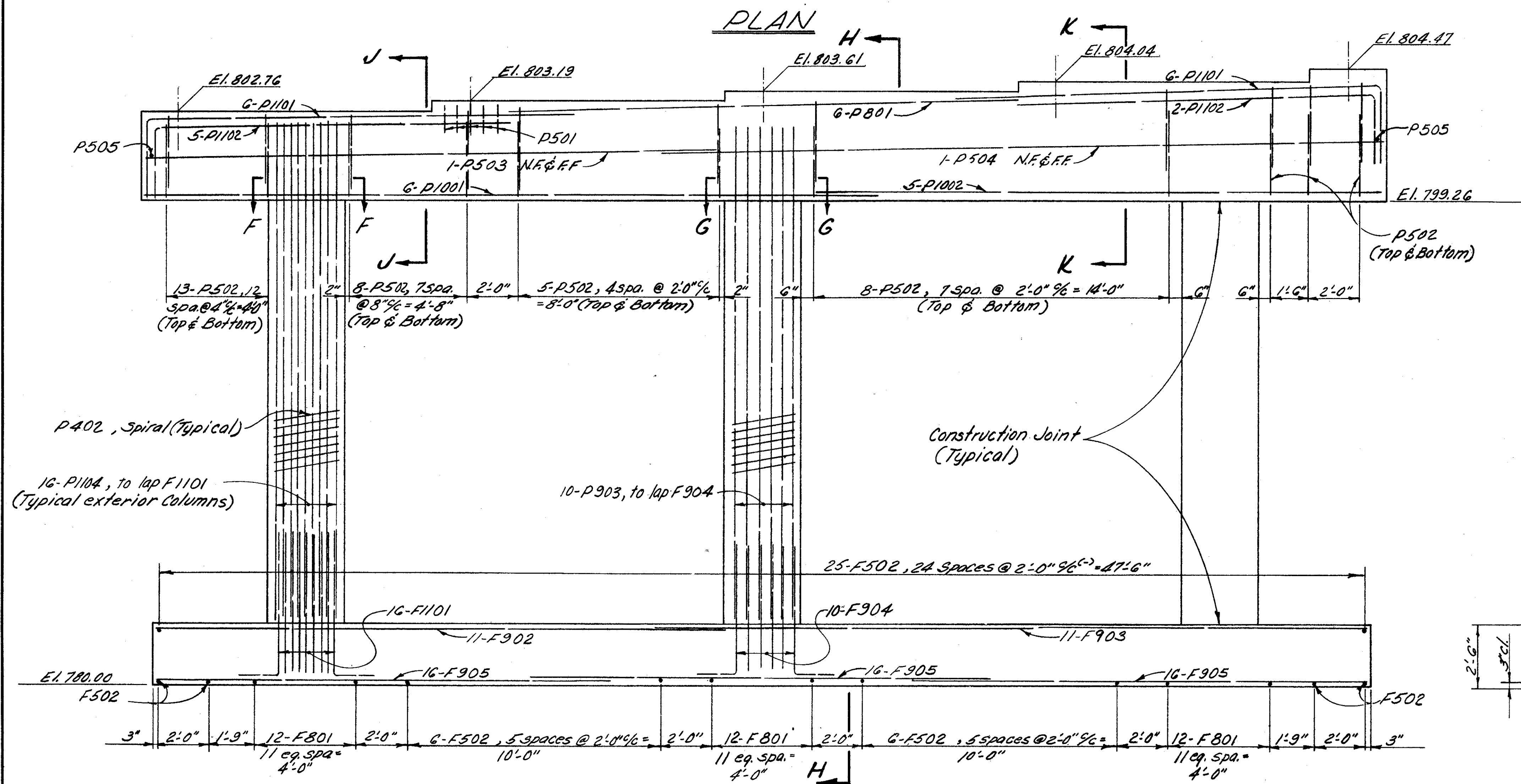
CUYAHOGA COUNTY  
CUY-480-6.78



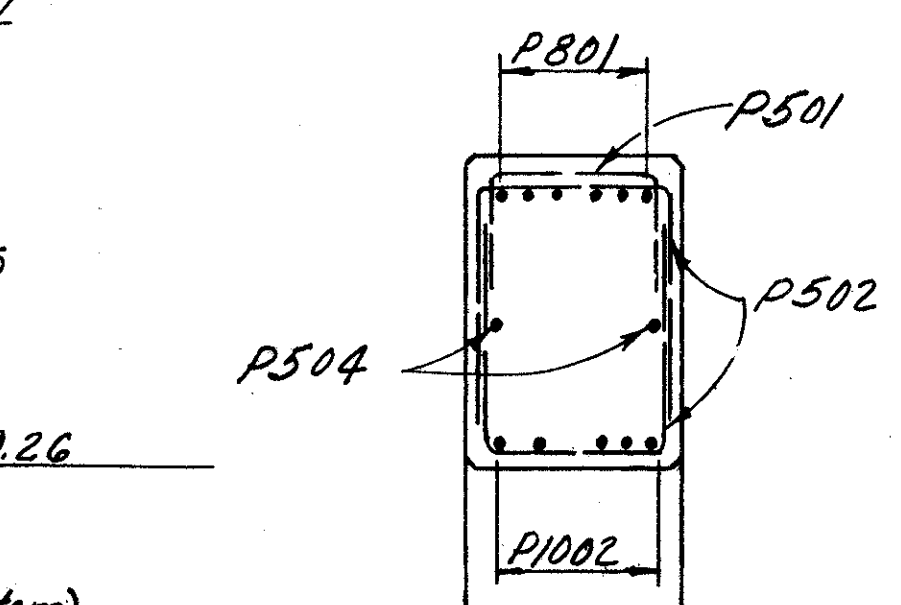
Vertical Column Steel P1104  
SECTION F-F



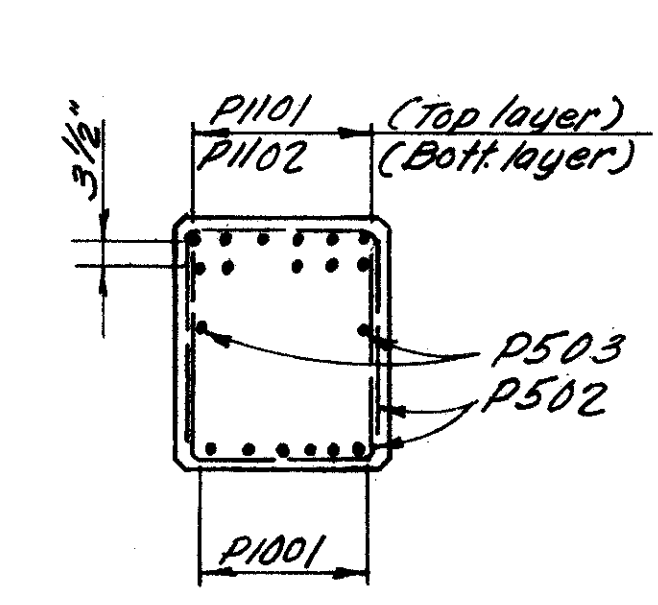
Vertical Column Steel P903  
SECTION G-G



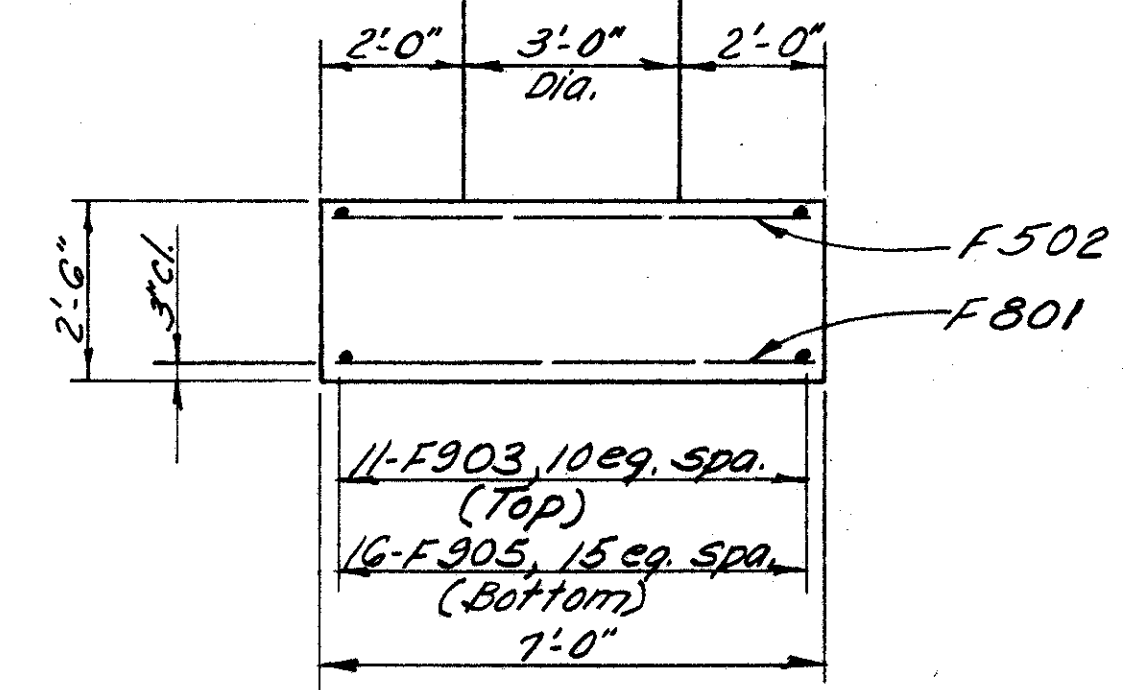
ELEVATION



SECTION J-J



SECTION K-K



SECTION H-H

ALDEN E. STILSON & ASSOCIATES, LIMITED						
CLEVELAND, OHIO		CONSULTING ENGINEERS		COLUMBUS, OHIO WHEELING, W. VA.		
<b>PIER No. 2 DETAILS</b>						
BRIDGE No. CUY-480-0795						
RAMP B-2 OVER RELOCATED						
ROCKY RIVER DRIVE						
CUYAHOGA COUNTY					STA 443+42.78	
					STA 445+38.49	
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
G.W.M.	R.T.		R.J.P.	G.W.M.	8/1/66	

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DEC 6 1962

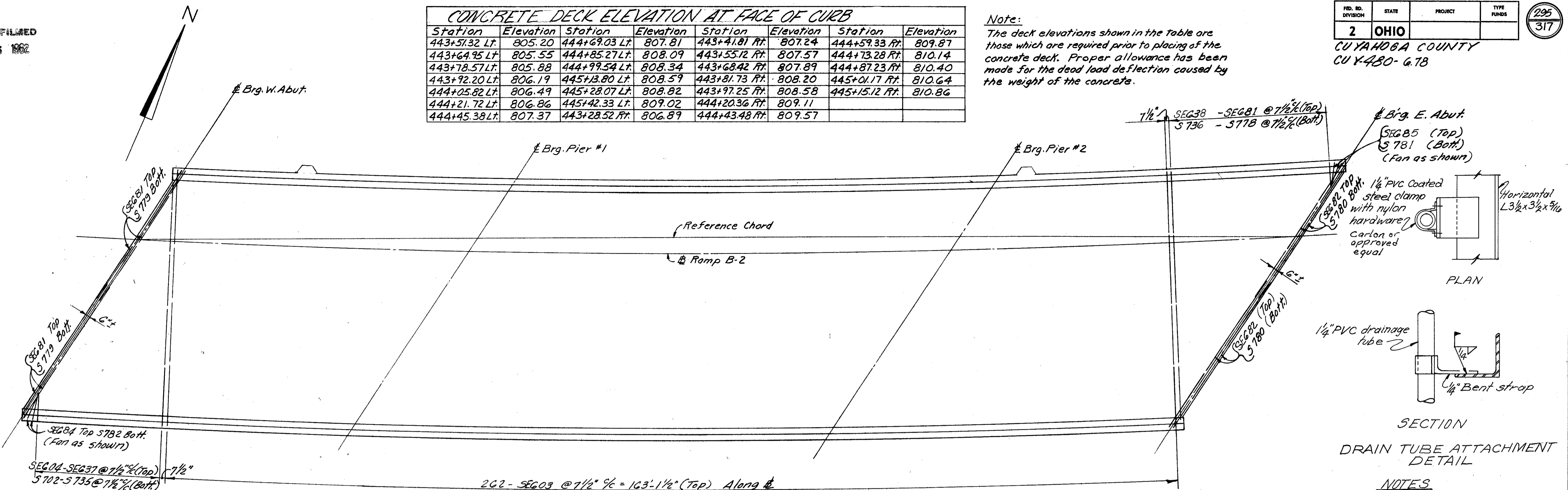
MICROFILMED  
DEC 6 1962

CONCRETE DECK ELEVATION AT FACE OF CURB							
Station	Elevation	Station	Elevation	Station	Elevation	Station	Elevation
443+51.32 Lt.	805.20	444+69.03 Lt.	807.81	443+41.81 Rt.	807.24	444+59.33 Rt.	809.87
443+64.95 Lt.	805.55	444+85.27 Lt.	808.09	443+55.12 Rt.	807.57	444+73.28 Rt.	810.14
443+78.57 Lt.	805.88	444+99.54 Lt.	808.34	443+68.42 Rt.	807.89	444+87.23 Rt.	810.40
443+92.20 Lt.	806.19	445+13.80 Lt.	808.59	443+81.73 Rt.	808.20	445+01.17 Rt.	810.64
444+05.82 Lt.	806.49	445+28.07 Lt.	808.82	443+97.25 Rt.	808.58	445+15.12 Rt.	810.86
444+21.72 Lt.	806.86	445+42.33 Lt.	809.02	444+20.36 Rt.	809.11		
444+45.38 Lt.	807.37	443+28.52 Rt.	806.89	444+43.48 Rt.	809.57		

Note:  
The deck elevations shown in the table are those which are required prior to placing of the concrete deck. Proper allowance has been made for the dead load deflection caused by the weight of the concrete.

FED. DIVISION	STATE	PROJECT	TYPE FUNDS
2	OHIO		

CUYAHOGA COUNTY  
CU Y-480-678



**PLACEMENT OF TRANSVERSE SLAB REINFORCING**  
(BARS ARE PLACED RADIALLY)

For location of 1" deck drainage hole in scupper and additional deck drainage details, see Sh. 307

For details of pilaster anchor bolts and pilaster, see Std. Dwg. HL-3 & HL-4.

\* This is a nominal dimension. The quantity of deck concrete to be paid for shall be based on this dimension even though deviation from it may be necessary because the top flange of the beam may not have the exact camber or conformation required to place it parallel to the finished grade.

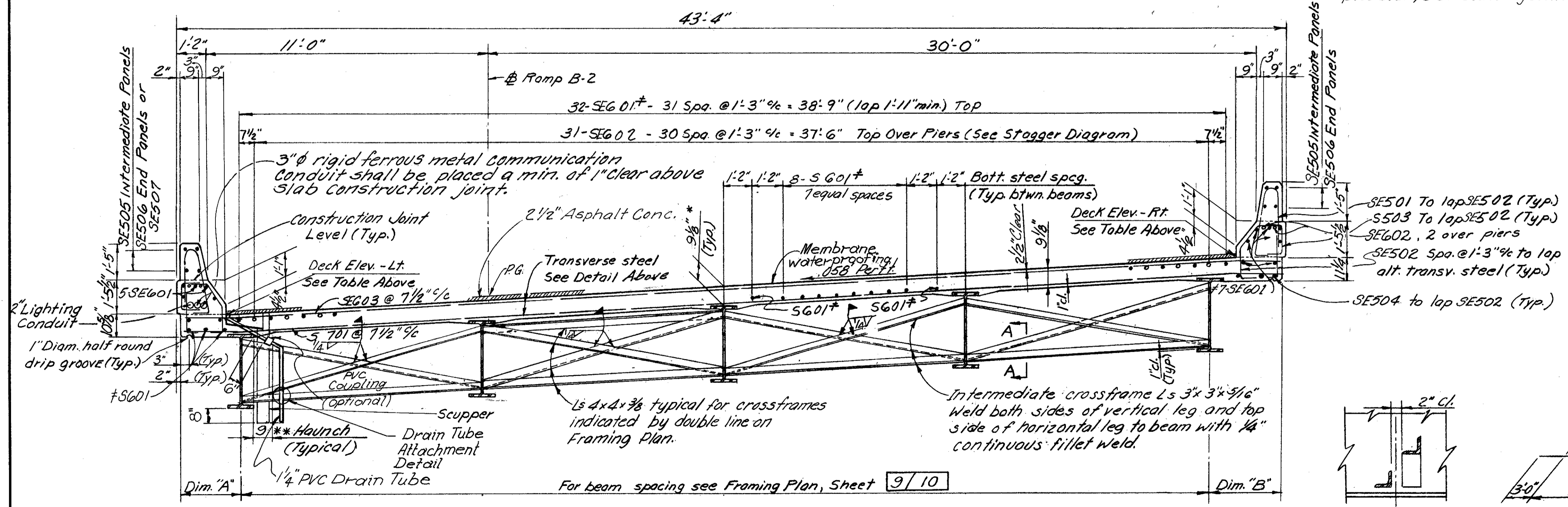
\*\* A typical haunch width of 9" shall be used for computing quantities of concrete. However the haunch width may vary between 6" and 12" provided that the slope shall be not more than 1:4 for a haunch less than 9" in width.

Longitudinal reinforcing steel shall be field cut as necessary to avoid interference with scuppers.

Transverse slab bars shall be field bent below bridge railing as required. Cost of field bending shall be included in Item 509 for payment.

STEEL ERECTION: During the erection of end dams and crossframes care shall be taken to insure that stringers, bearing parts and bridge seats remain in bearing contact.

SLAB CANTILEVERS		
Location	Dim. "A"	Dim. "B"
Brg. W. Abut.	1'-10"	1'-4"
1/4 Point Span #1	1'-8 1/4"	1'-8"
1/2 Point Span #1	1'-8"	1'-10 1/2"
3/4 Point Span #1	1'-9 1/8"	1'-11 7/8"
Brg. Pier #1	1'-11 1/2"	1'-11 7/8"
Splice Point Span #2	2'-4"	1'-10 1/4"
1/2 Point Span #2	2'-3"	2'-3 1/2"
Splice Point Span #2	2'-6"	2'-4 3/4"
Brg. Pier #2	2'-4 1/2"	2'-9 1/2"
1/4 Point Span #3	2'-4 1/2"	3'-0"
1/2 Point Span #3	2'-6 1/4"	3'-1 1/8"
3/4 Point Span #3	2'-9 3/8"	3'-0 3/4"
Brg. E. Abut.	3'-2"	2'-10 7/8"



**TRANSVERSE SECTION**

\* Each longitudinal run of deck reinforcing, excluding SEG02 bars over the piers, shall be comprised of 6-5601 and 1-5683 (both) & 6-5601 and 1-5683 (top) bars lapped a minimum of 1'-11"

**SECTION "A-A"**

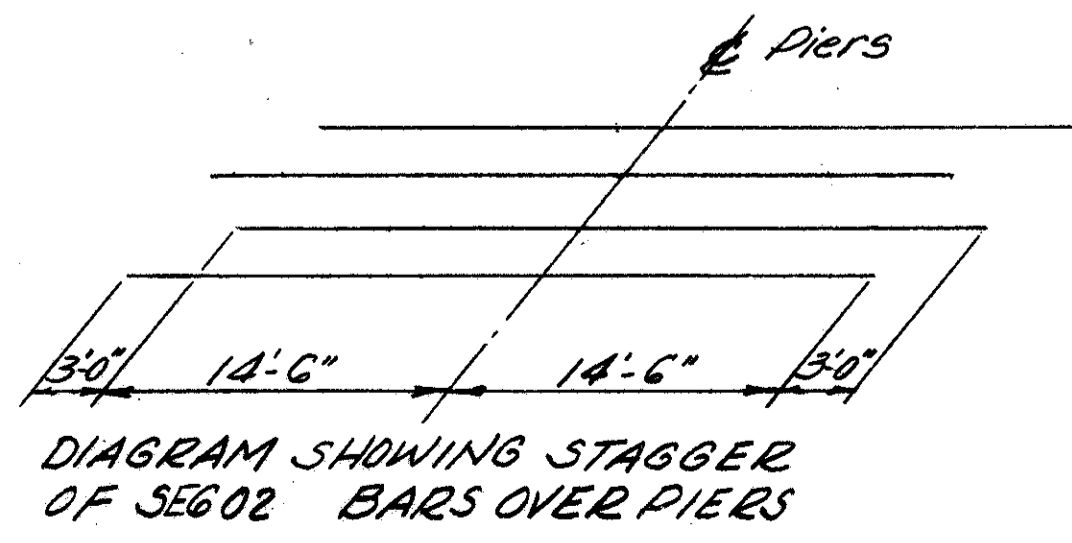


DIAGRAM SHOWING STAGGER OF SEG02 BARS OVER PIERS

ALDEN E. STILSON & ASSOCIATES, LIMITED  
CONSULTING ENGINEERS  
CLEVELAND, OHIO COLUMBUS, OHIO WHEELING, W. VA.

**SUPERSTRUCTURE DETAILS**

BRIDGE No CUY-480-0795  
RAMP B-2 OVER RELOCATED  
ROCKY RIVER DRIVE  
CUYAHOGA COUNTY STA 443+42.78  
STA 445+38.49

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
G.W.M.	R.T.		R.J.P.	G.W.M.	8/1/66	







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DEC 6 1982

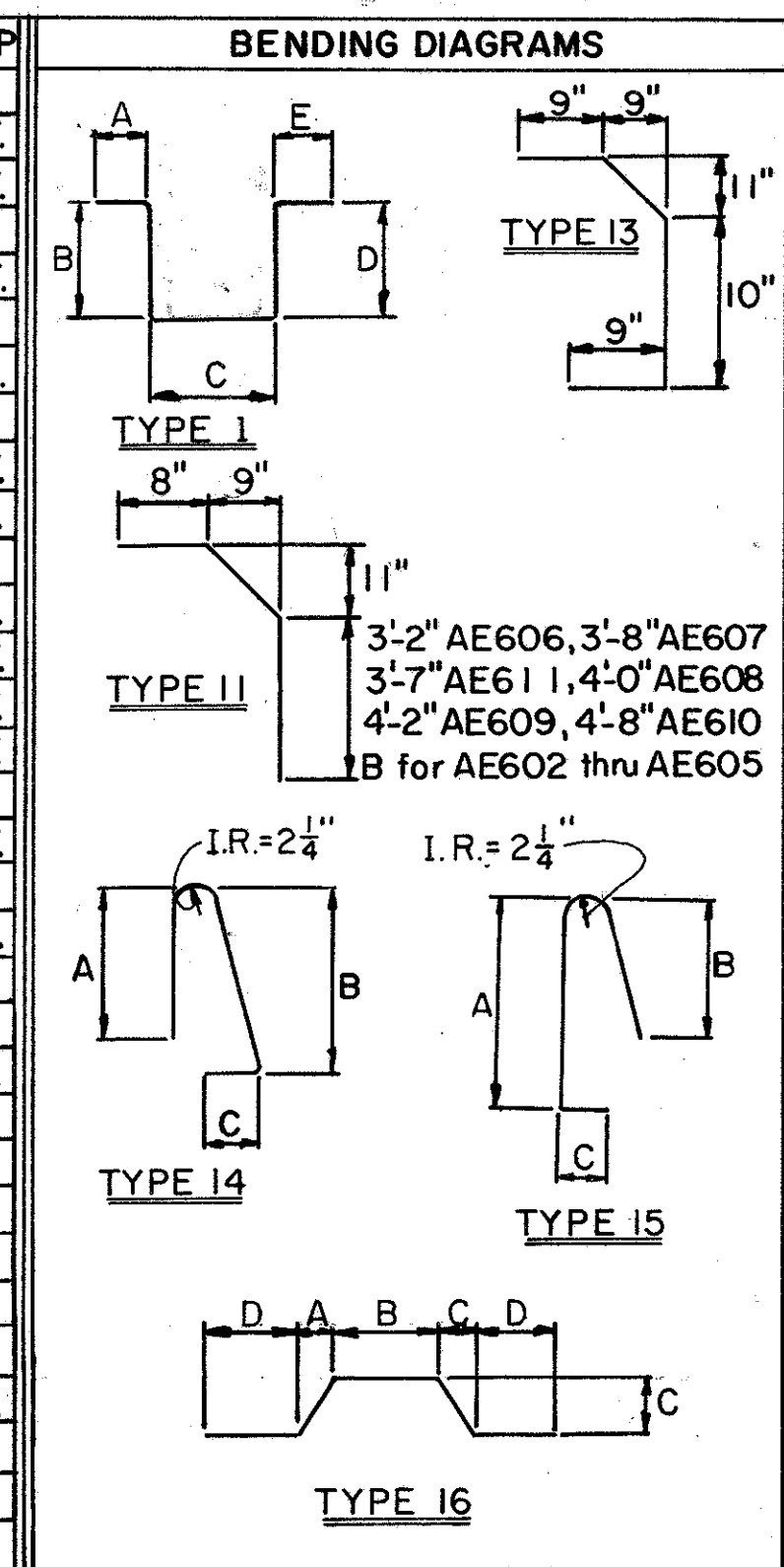
FHWA REGION	STATE	PROJECT
5	OHIO	

297A  
317

CUYAHOGA COUNTY  
CUY-480-6.78

### EPOXY COATED REINFORCING STEEL LIST

MARK	NO.	LENGTH	WEIGHT	TYPE	A	B	C	D	E	SHP	MARK	NO.	LENGTH	WEIGHT	TYPE	A	B	C	D	E	SHP	
SUPERSTRUCTURE																						
SE501	308	5'-6"	1767	14	2'-3"	2'-6"	0'-7½"			BT.	AE505	14	6'-6"	95	15	3'-4"	2'-6"	0'-6"			BT.	
SE502	308	3'-8"	1178	13						BT.	AE506	8	16'-0"	134							ST.	
SE504	308	2'-5"	776	1	0'-9"	1'-7"				BT.	AE515	8	12'-8"	106							ST.	
SE505	112	7'-0"	817							ST.	AE528	20	3'-0"	63							ST.	
SE506	36	14'-4"	538							ST.	AE602	1	5'-10"	9	11	4'-0"					BT.	
SE507	12	14'-11"	187							ST.	AE604	13	6'-7"	129	11	4'-9"					BT.	
SE601	276	30'-0"	12437							ST.	AE606	7	4'-11"	52	11						BT.	
SE602	70	32'-0"	3364							ST.	AE608	1	5'-9"	9	11						BT.	
SE603	262	42'-8"	16791							ST.	AE610	1	6'-5"	10	11						BT.	
SE604	1	5'-1"								ST.	AE611	1	5'-4"	8	11						BT.	
THRU	TO	1173			VARY LENGTH BY 2'-2"						EAST ABUTMENT											
SE637	1	40'-10"								ST.	AE505	16	6'-6"	109	15	3'-4"	2'-6"	0'-6"			BT.	
SE638	1	40'-10"								ST.	AE521	8	16'-6"	138							ST.	
THRU	TO	1515			VARY LENGTH BY 10"						AE526	8	16'-0"	134							ST.	
SE681	1	5'-0"								ST.	AE528	20	3'-0"	63							ST.	
SE682	4	27'-6"	165							ST.	AE603	1	6'-5"	10	11	4'-7"					BT.	
SE683	46	23'-8"	1635							ST.	AE604	1	6'-7"	10	11	4'-9"					BT.	
SE684	2	5'-1"	15							ST.	AE605	14	6'-10"	144	11	5'-0"					BT.	
SE685	2	5'-0"	15							ST.	AE606	6	4'-11"	44	11						BT.	
SE686	4	25'-7"	154							ST.	AE607	2	5'-5"	17	11						BT.	
AE609	2	5'-11"	18	11						BT.	LIGHT POLE SUPPORTS											
LE505	8	2'-10"	24	1	0	0'-7½"	1'-10"	0'-7½"	*	BT.	LE506	8	8'-5"	71	4	0'-6½"	3'-2"	2'-4"	3'-2"	*	BT.	
LE507	12	7'-3"	91	16	1'-10"	1'-4"	1'-10"	0'-6"	*	BT.	LE508	8	3'-2"	27								ST.



\* See Standard Construction Drawing HL-4 for Placement.

STATE OF OHIO DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS BUREAU OF BRIDGES					10A/10
REINFORCING STEEL LIST AND ESTIMATED QUANTITIES					
BRIDGE NO. CUY-480-0795					
RAMP B-2 OVER RELOCATED					
ROCKY RIVER DRIVE					
CUYAHOGA COUNTY					STA. 443+42.78 STA. 445+38.49
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE
	GFJ				

MICROFILMED  
DEC 6 1982

FED. RD. DIVISION	STATE	PROJECT	TYPE FUNDS
2	OHIO		

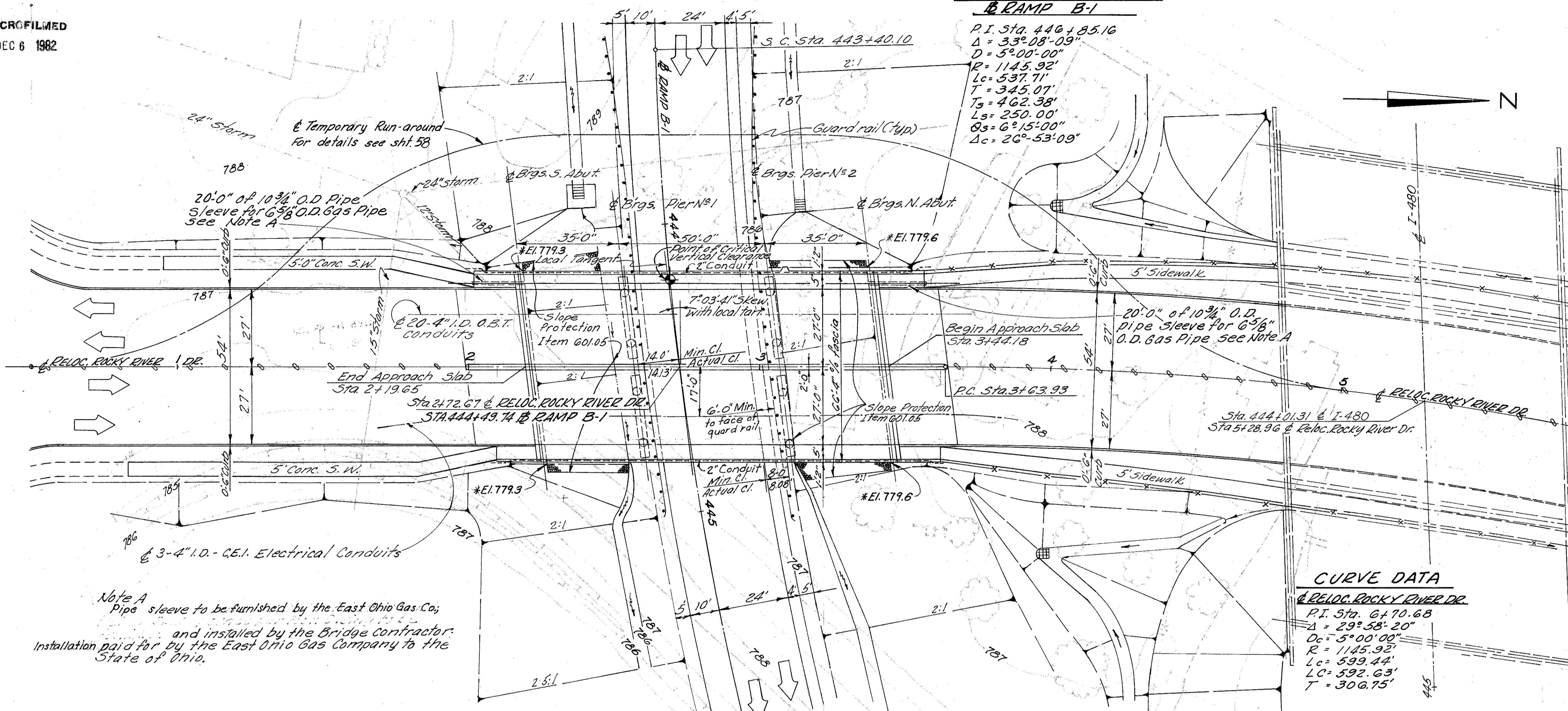
CUYAHOGA COUNTY  
CUY-480-6.78

298  
317

**SPIRAL CURVE DATA  
RAMP B-1**

P.I. Sta. 446+85.16  
Δ = 33°08'-09"  
D = 5°00'-00"  
R = 1145.92'  
Lc = 537.71'  
T = 345.07'  
Ts = 462.38'  
Ls = 250.00'  
Bs = 6°15'-00"  
Δc = 26°53'-09"

**NOTE:**  
Some of the existing topographical conditions as shown have been modified by Contract CUY-480-8.00 construction. See pertinent plan & profile and cross section sheets for changes not shown.



**RELOC. ROCKY RIVER DR.  
VERTICAL CURVE DATA**

P.V.I. STA. 1+25.00  
150' V.C.  
EL. 784.82  
CORR. = +0.38'  
P.G. EL. 785.20  
G<sub>1</sub> = -1.60%, G<sub>2</sub> = +0.40%

**CURVE DATA  
RELOC. ROCKY RIVER DR.**

P.I. Sta. 6+70.68  
Δ = 29°38'-20"  
Dc = 5°00'-00"  
R = 1145.92'  
Lc = 599.44'  
T = 306.75'

**RELOC. ROCKY RIVER DR.  
VERTICAL CURVE DATA**

P.V.I. Sta. 6+00.00  
300' V.C.  
EL. 786.72  
CORR. = -0.26'  
P.G. EL. = 786.46  
G<sub>1</sub> = +0.40%, G<sub>2</sub> = -0.28%

**PROPOSED STRUCTURE**

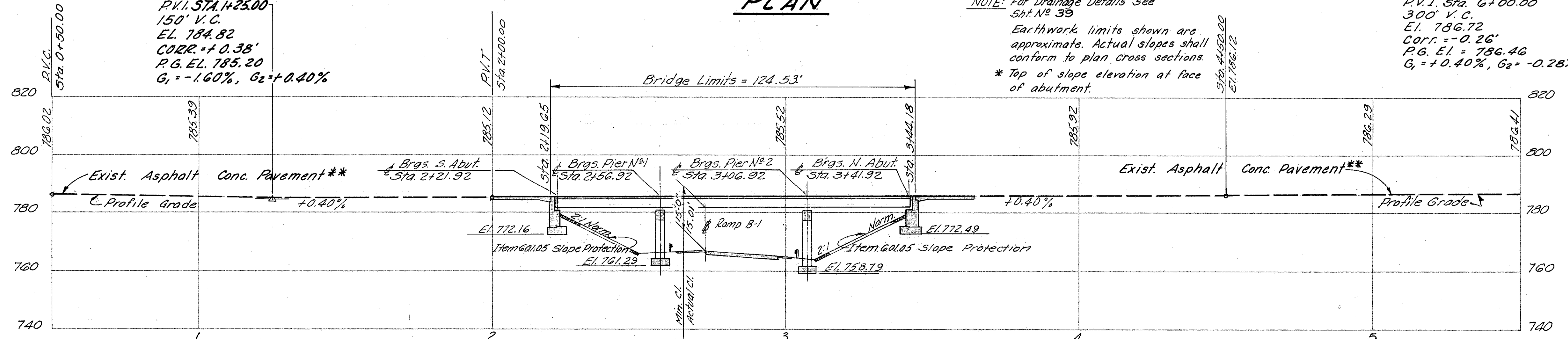
TYPE: Continuous steel beam with reinforced concrete deck and reinforced concrete substructure  
SPANS: 35'-0", 50'-0", 35'-0" % Bearings  
ROADWAY: 54'-0" ff curbs, with 5'-0" sidewalks, concrete parapets with 4'-0" chain-link fence and 2'-0" raised median.  
LOADING: CF-2000 (1957) Adequate for alternate military loading.  
WEARING SURFACE: 2" Asphalt Concrete  
SKEW: 7°03'-41" Rt. forward  
ALIGNMENT: Tangent  
APPROACH SLABS: A5-1-72 Modified (20'-0" Long)  
SUPERELEVATION: Variable

**TRAFFIC ESTIMATE**

Design Year - 1987  
Total A.D.T. - 22,400

**PLAN**

NOTE: For Drainage Details see Sht. No. 39  
Earthwork limits shown are approximate. Actual slopes shall conform to plan cross sections.  
\* Top of slope elevation at face of abutment.



**PROFILE ALONG RELOC. ROCKY RIVER DR.**

\*\* To be removed and replaced with R.P.C. concrete pavement

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CLEVELAND, OHIO COLUMBUS, OHIO WHEELING, W. VA.

**SITE PLAN**  
BRIDGE No. CUY-480-  
RELOCATED ROCKY RIVER DRIVE  
OVER RAMP B-1  
CUYAHOGA COUNTY STA. 2+19.65  
STA. 3+44.18

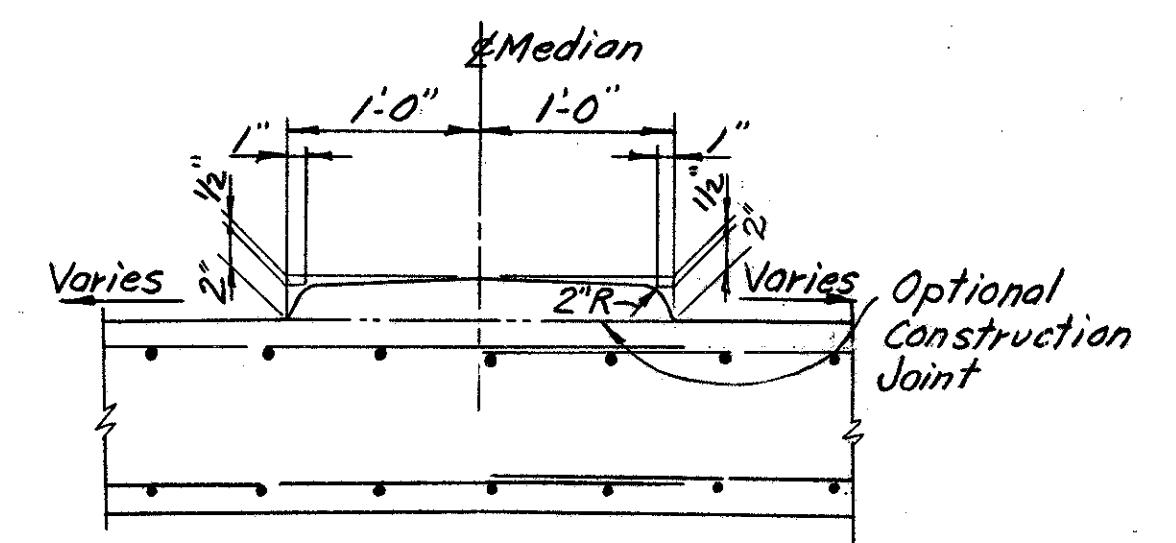
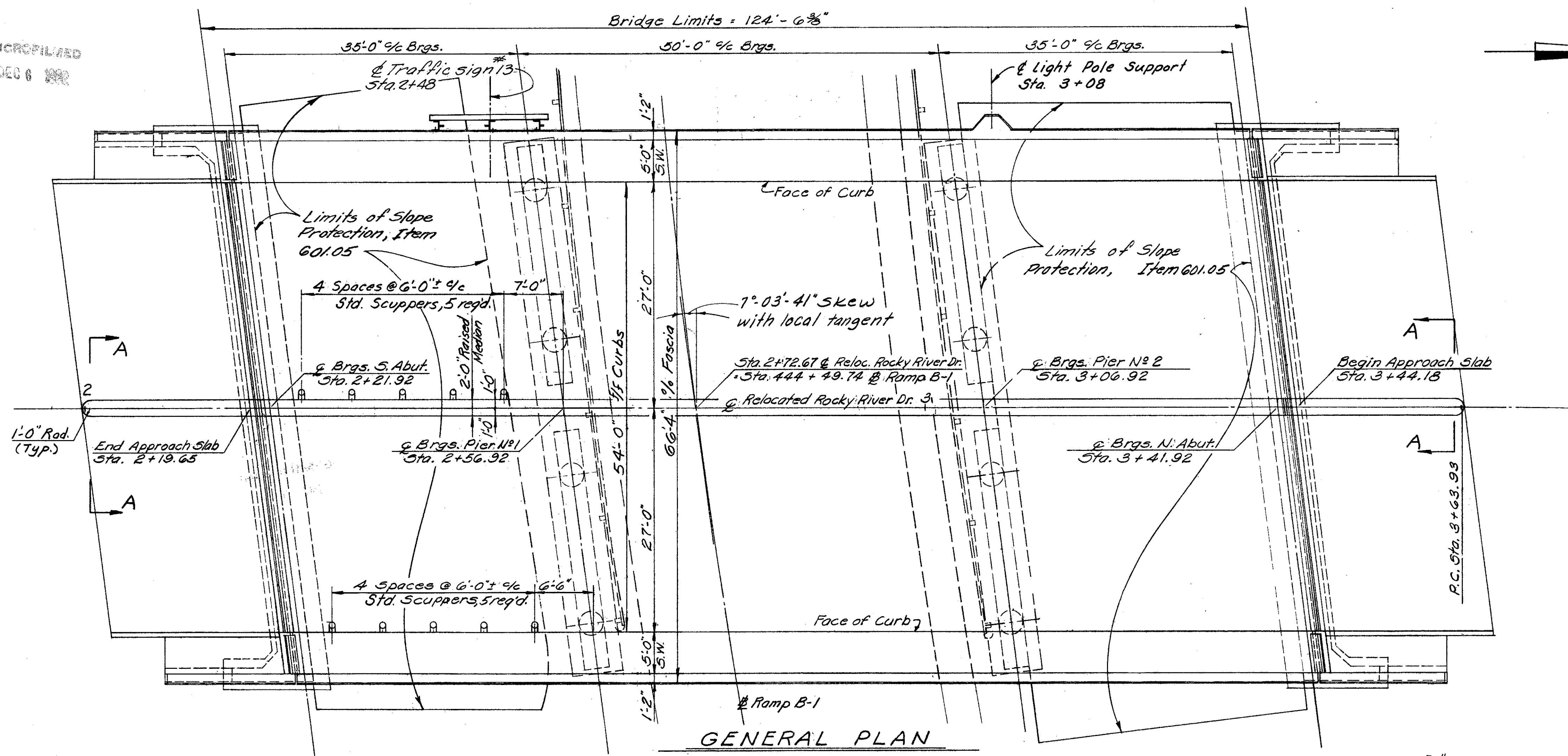
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
R.J.P.	R.T.		D.H.S.	G.W.M.	8/1/76	11-20-75

MICROFILMED  
DEC 6 1982

FED. RD. DIVISION	STATE	PROJECT	TYPE FUNDS
2	OHIO		

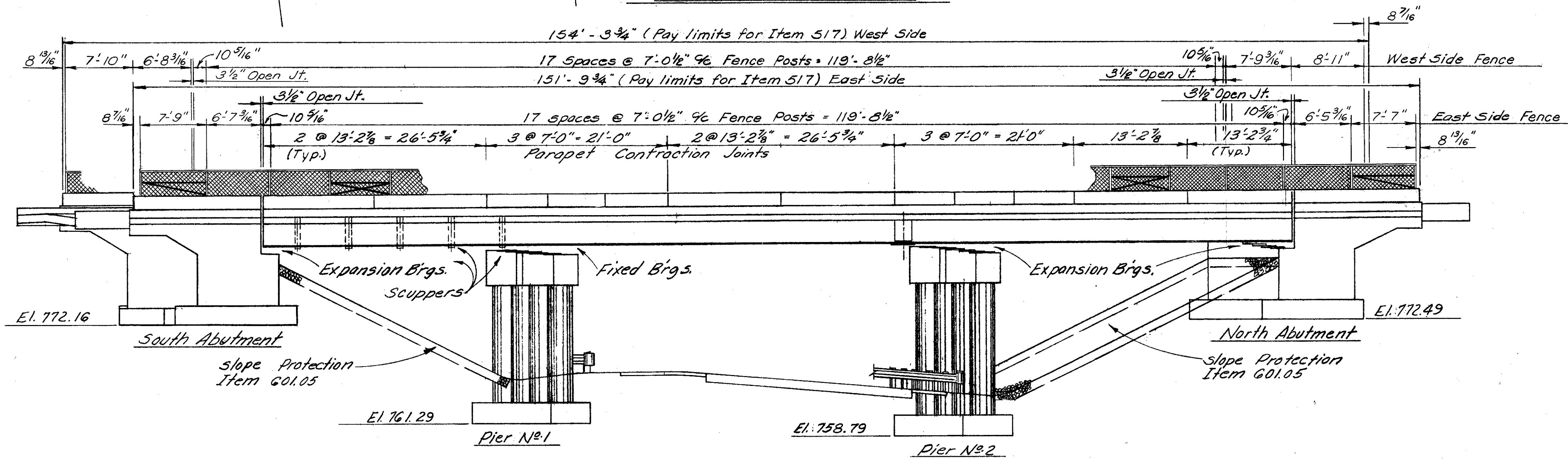
300  
317

CUYAHOGA COUNTY  
CUY-480-6.78



SECTION A-A

Note: The median shall be transitioned, within the length of the approach slab, from a section to match that at the abutment backwall to the section shown in Section A-A above.  
For additional approach slab details, see Std. Drawing No AS-1-72.



EAST ELEVATION

NOTES:  
For light pole support details and reinforcing see Standard Construction Drawing HL-4  
For details of Traffic Sign Mounting See Standard Dwg. No TC-18.26  
For Details of traffic Sign No 13 See Sheet No 251  
  
For chain-link fence details, see sheet No. 307A.  
For details of Anchor Bolts, see Std. Dwg. HL-3.  
For diameter of anchor bolt circle see Lighting Plans.

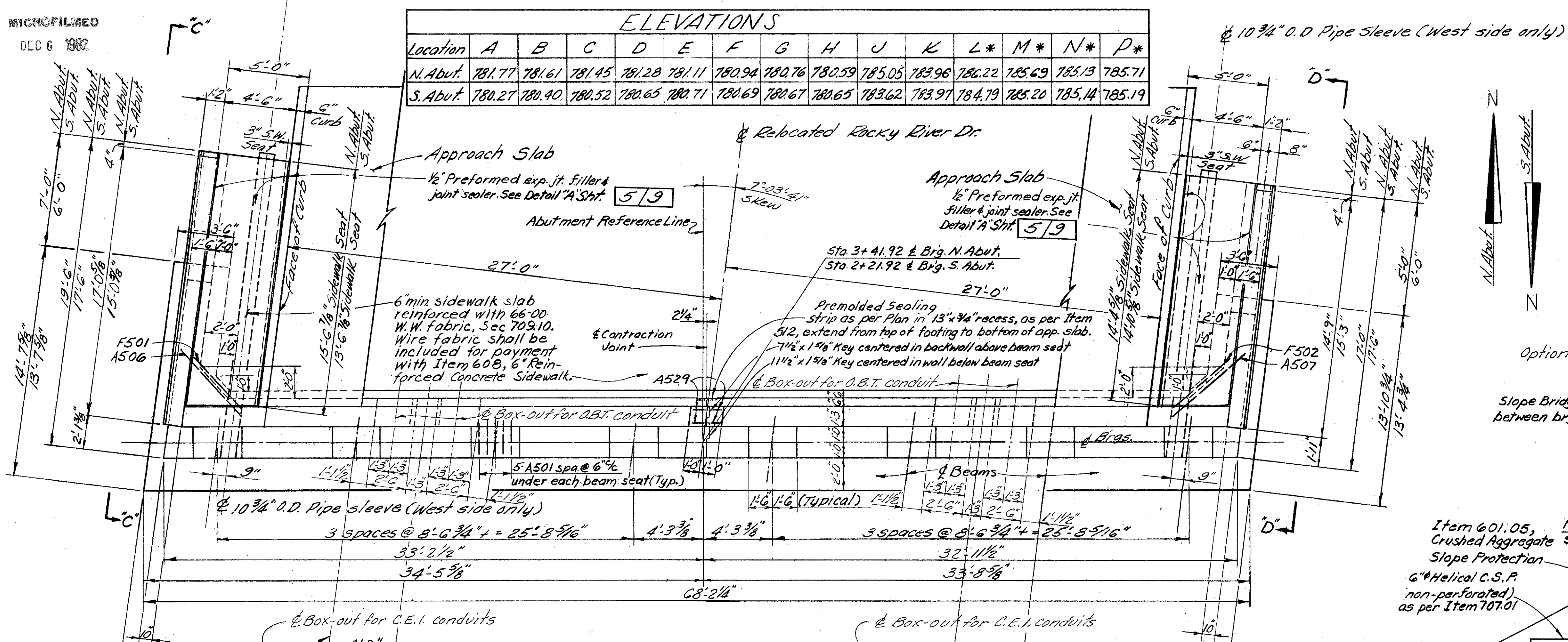
3/9

ALDEN E. STILSON & ASSOCIATES, LIMITED  
CONSULTING ENGINEERS  
CLEVELAND, OHIO COLUMBUS, OHIO WHEELING, W. VA.

GENERAL PLAN & ELEVATION  
BRIDGE No CUY-480-  
RELOCATED ROCKY RIVER DRIVE  
OVER RAMP B-1  
CUYAHOGA COUNTY STA. 2+19.65  
STA. 3+44.18

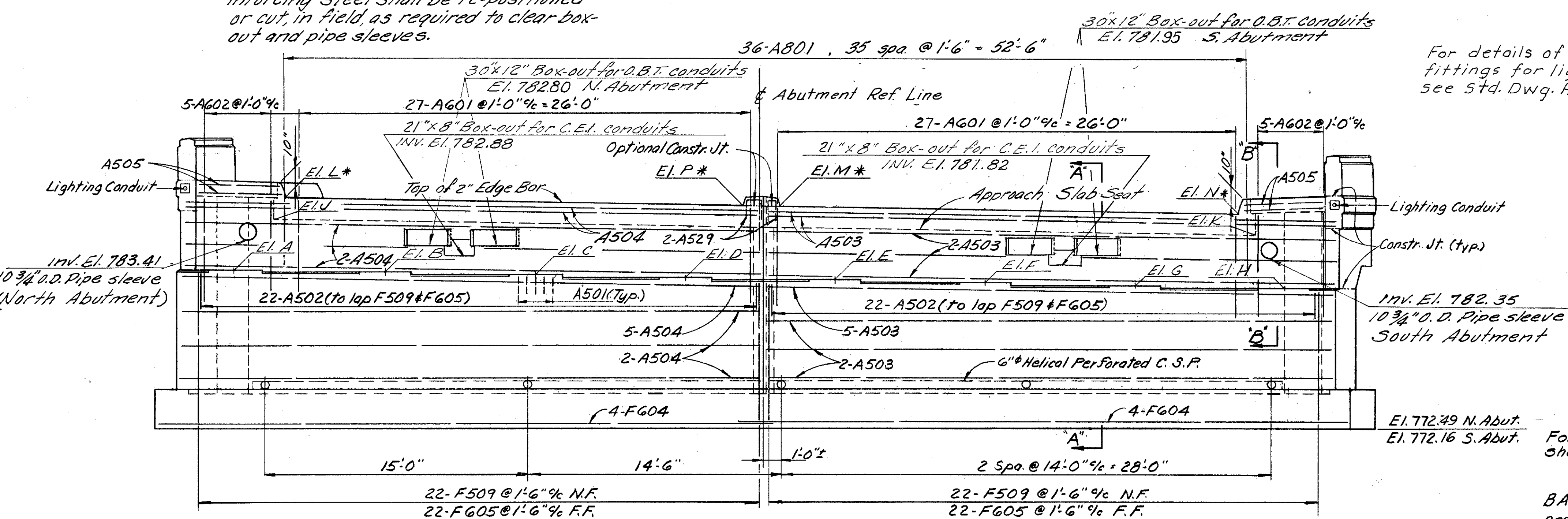
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
R.-J.-P.	R.T.		D.H.S.	G.W.M.	9/1/60	

		ELEVATIONS													
Location		A	B	C	D	E	F	G	H	J	K	L*	M*	N*	P*
N. Abut.		781.77	781.61	781.45	781.28	781.11	780.94	780.76	780.59	785.05	783.96	782.22	785.69	785.13	785.71
S. Abut.		780.27	780.40	780.52	780.65	780.71	780.69	780.67	780.65	783.62	783.97	784.79	785.20	785.14	785.19



NOTE: Box-outs for O.B.T. conduits are at west side of Bridge. Box-outs for C.E.I. conduits are on east side of Bridge. Reinforcing steel shall be re-positioned or cut, in field as required to clear box-out and pipe sleeves.

PLAN  
For Elevations 'C-C' and 'D-D' see sheet 5/9

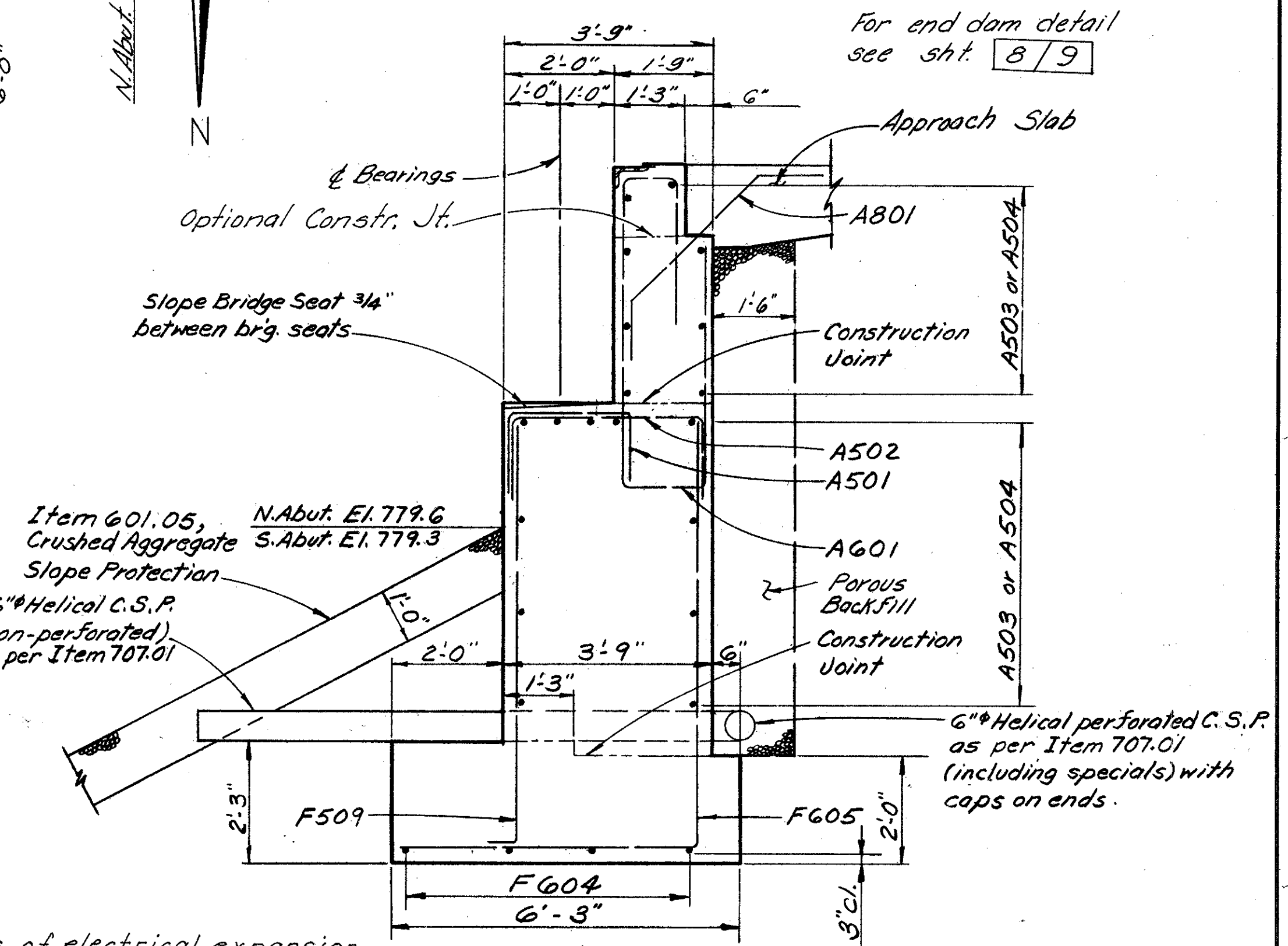
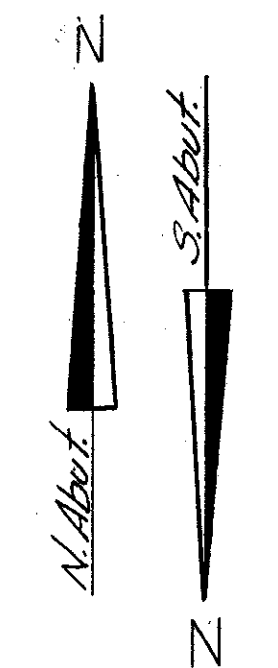


\* Elevation of top surface of 2" edge bar.

NOTE: North Abutment seats shall be as shown. Seat at E.I. on South Abutment shall be only 3'-0" wide and lowered to E.I. D and E.I. F 1'-6" each side of & Beam at E.I. E.

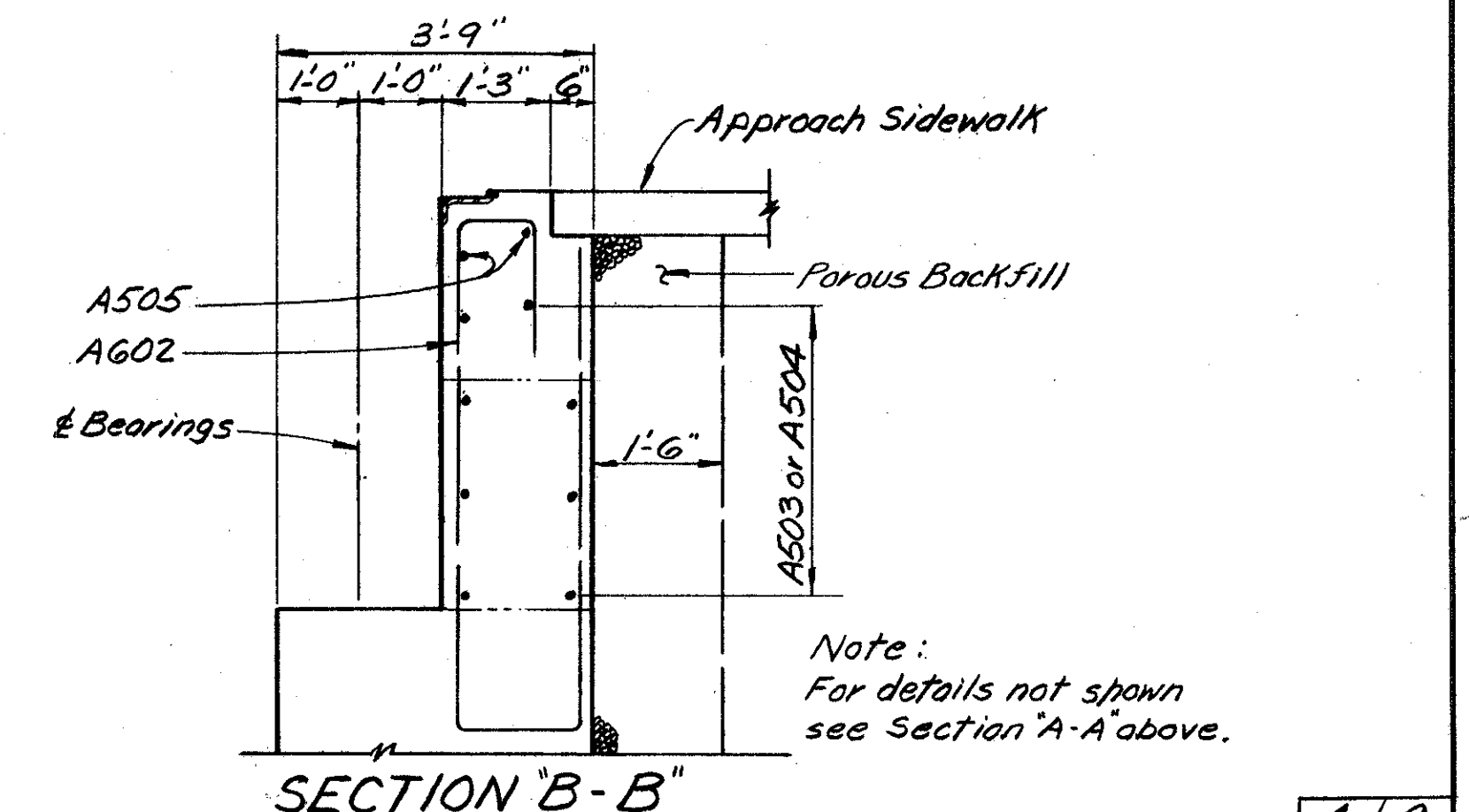
ELEVATION

10 3/4" O.D. Pipe Sleeve (West side only)



For details of electrical expansion fittings for lighting conduit see Std. Dwg. HL-5

SECTION 'A-A'



Note: For details not shown see Section 'A-A' above.

SECTION 'B-B'

For additional notes see sheet 5/9

BACKWALL CONCRETE: In addition to the provisions of 511.08, \*backwall concrete above the optional Construction Joint at the approach slab seat shall not be placed until after the deck concrete in the span adjacent to the backwall has been placed.

\* or backwall concrete above the bridge seat

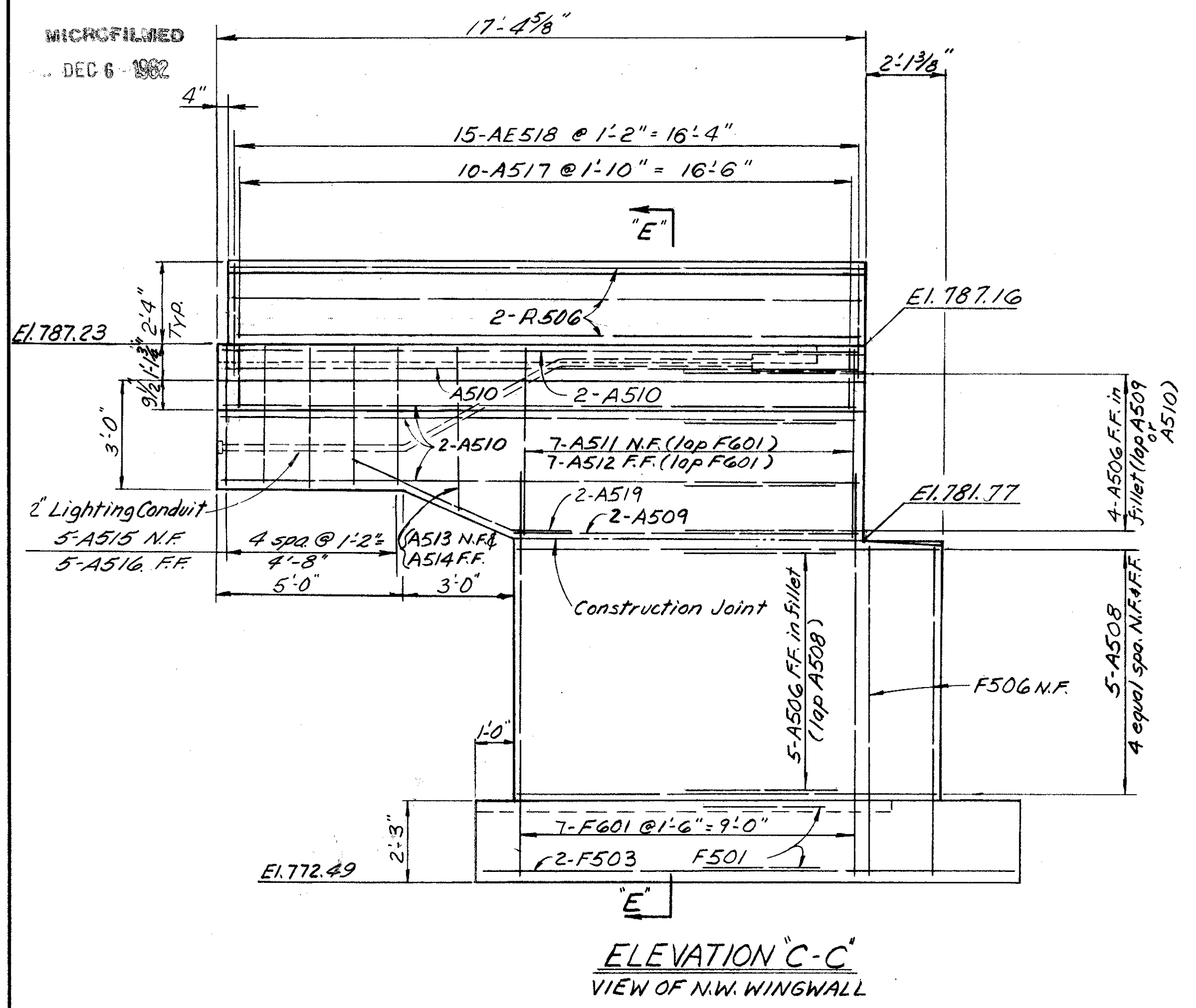
ALDEN E. STILSON & ASSOCIATES, LIMITED CONSULTING ENGINEERS CLEVELAND, OHIO COLUMBUS, OHIO WHEELING, W. VA.					
<b>ABUTMENT DETAILS</b>					
BRIDGE N <sup>o</sup> . CUY-480- RELOCATED ROCKY RIVER DRIVE OVER RAMP B-1 CUYAHOGA COUNTY STA. 2+13.65 STA. 3+44.18					
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE
R.J.P.	R.J.P.	R.T.	D.H.S.	G.W.M.	9/1/60

MICROFILMED  
DEC 6 1962

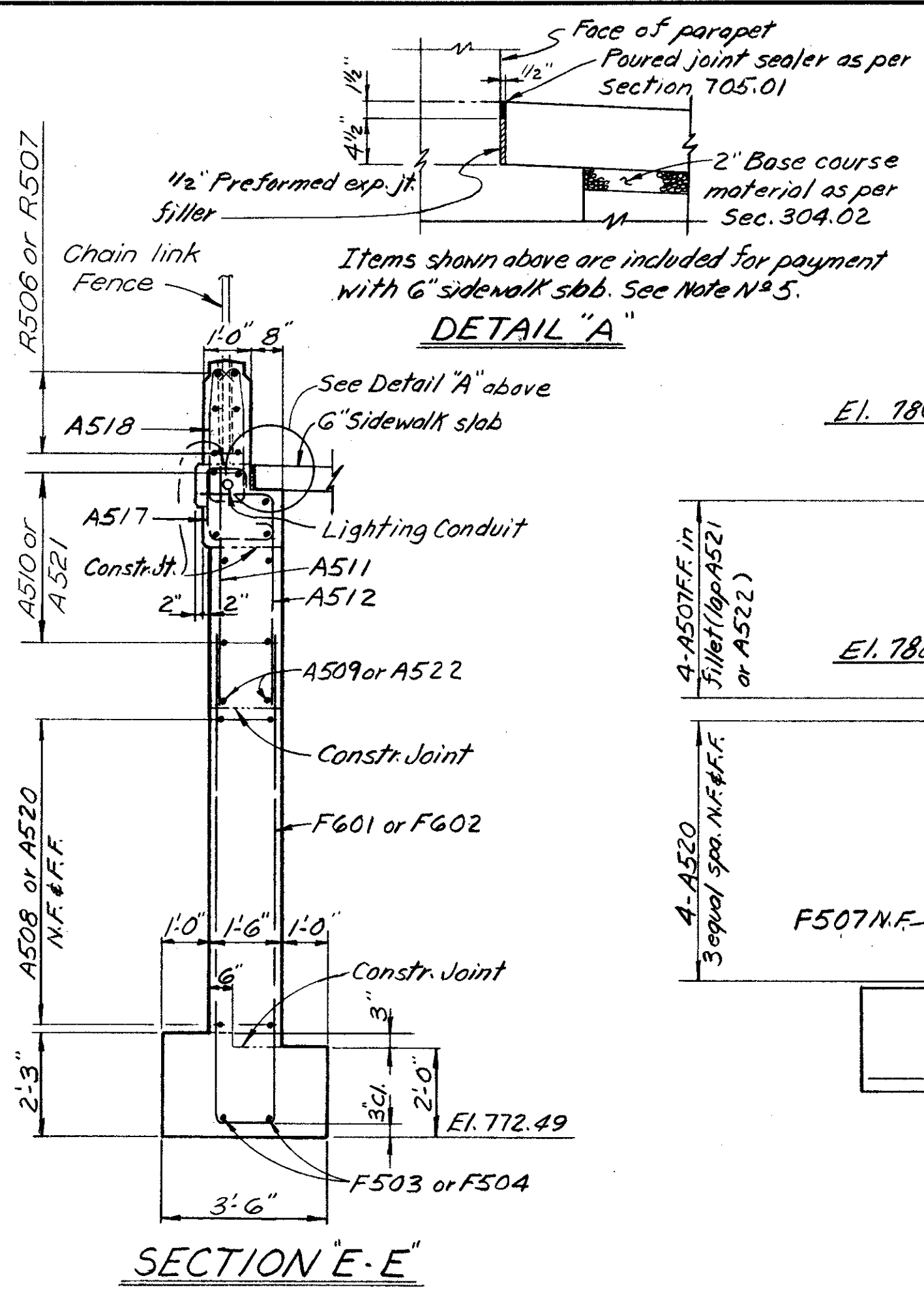
FED. RD. DIVISION	STATE	PROJECT	TYPE FUNDS
2	OHIO		

302  
317

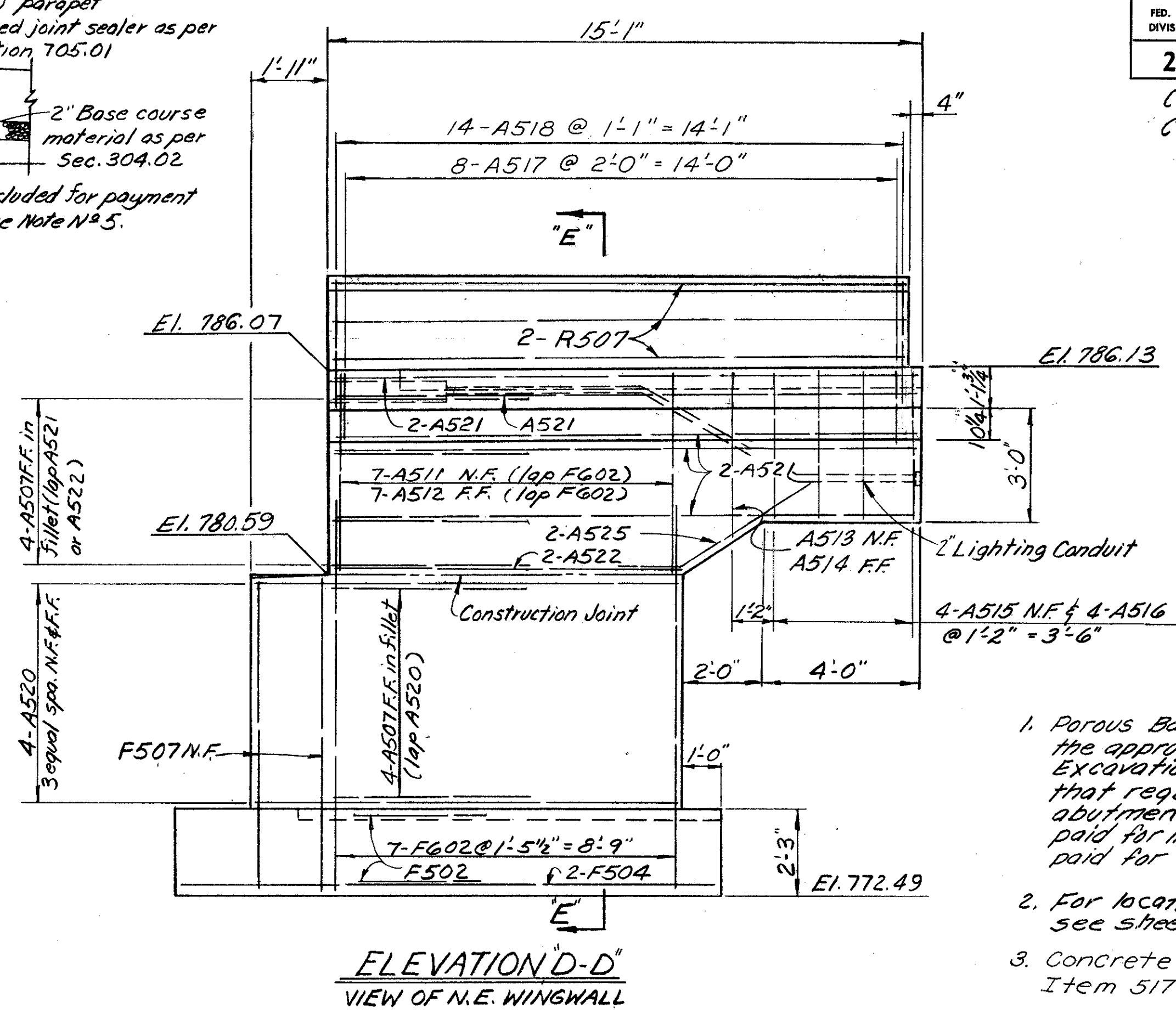
CUYAHOGA COUNTY  
CUY-480-6.78



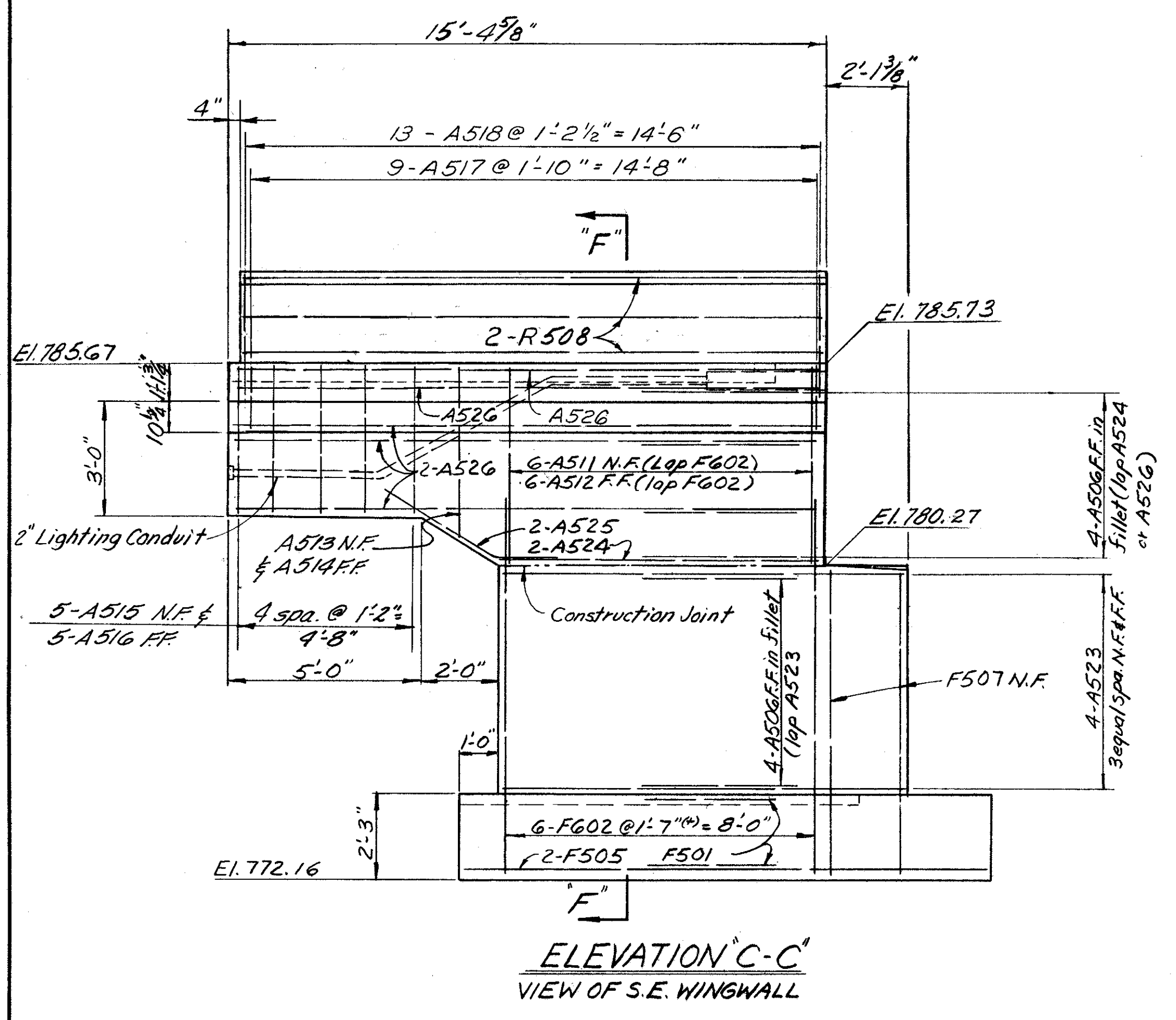
ELEVATION C-C  
VIEW OF N.W. WINGWALL



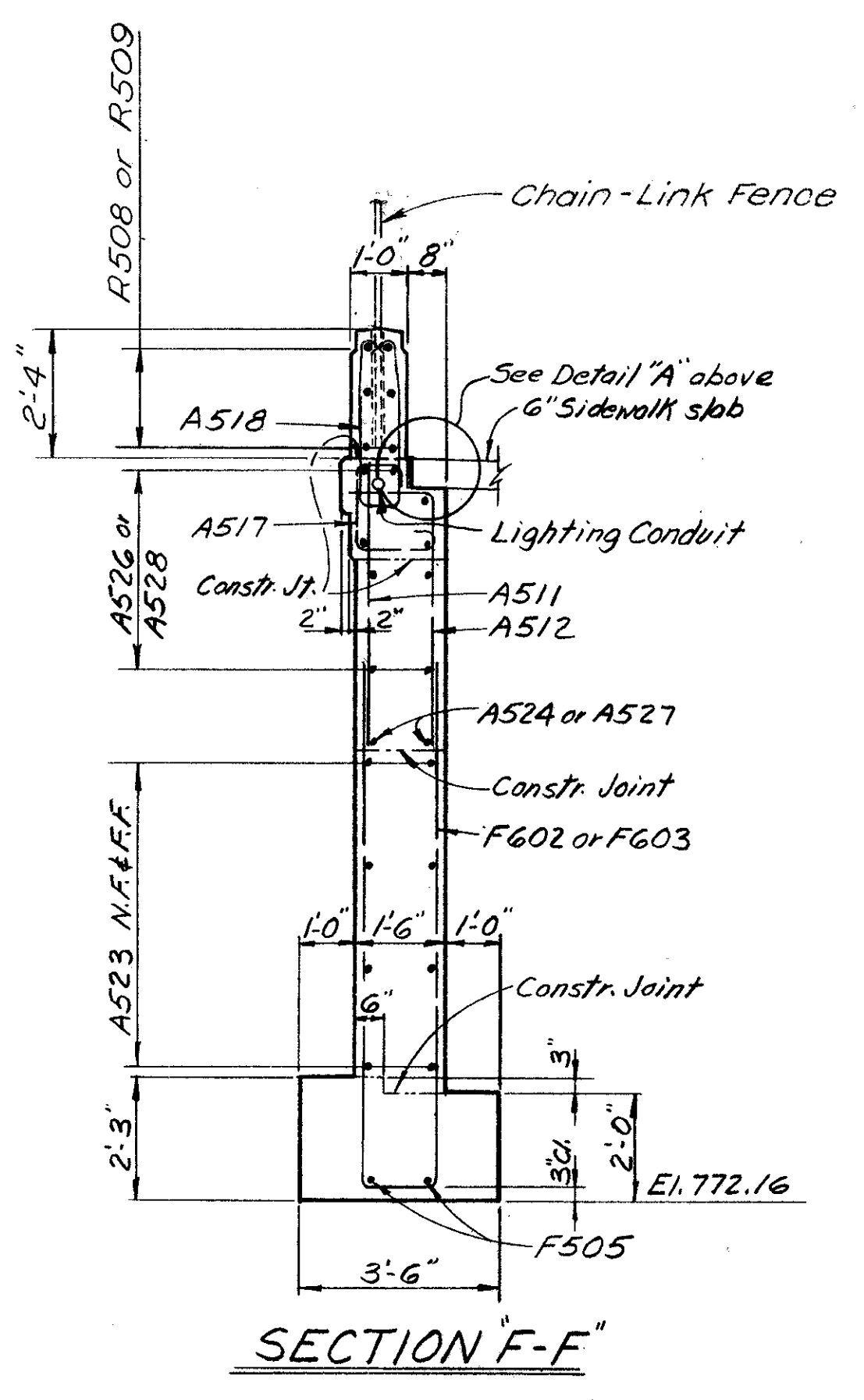
SECTION E-E



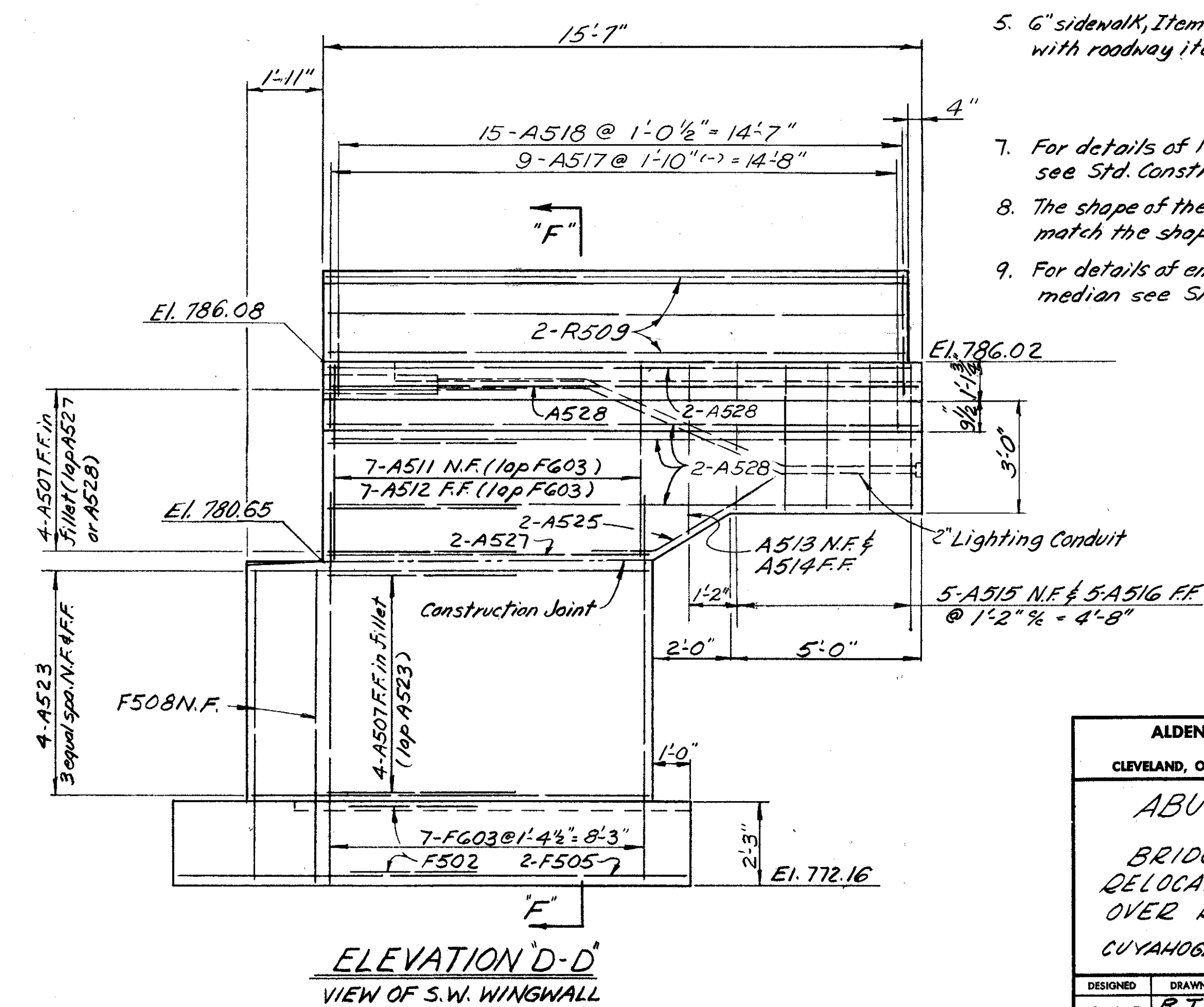
ELEVATION D-D  
VIEW OF N.E. WINGWALL



ELEVATION C-C  
VIEW OF S.E. WINGWALL



SECTION F-F



ELEVATION D-D  
VIEW OF S.W. WINGWALL

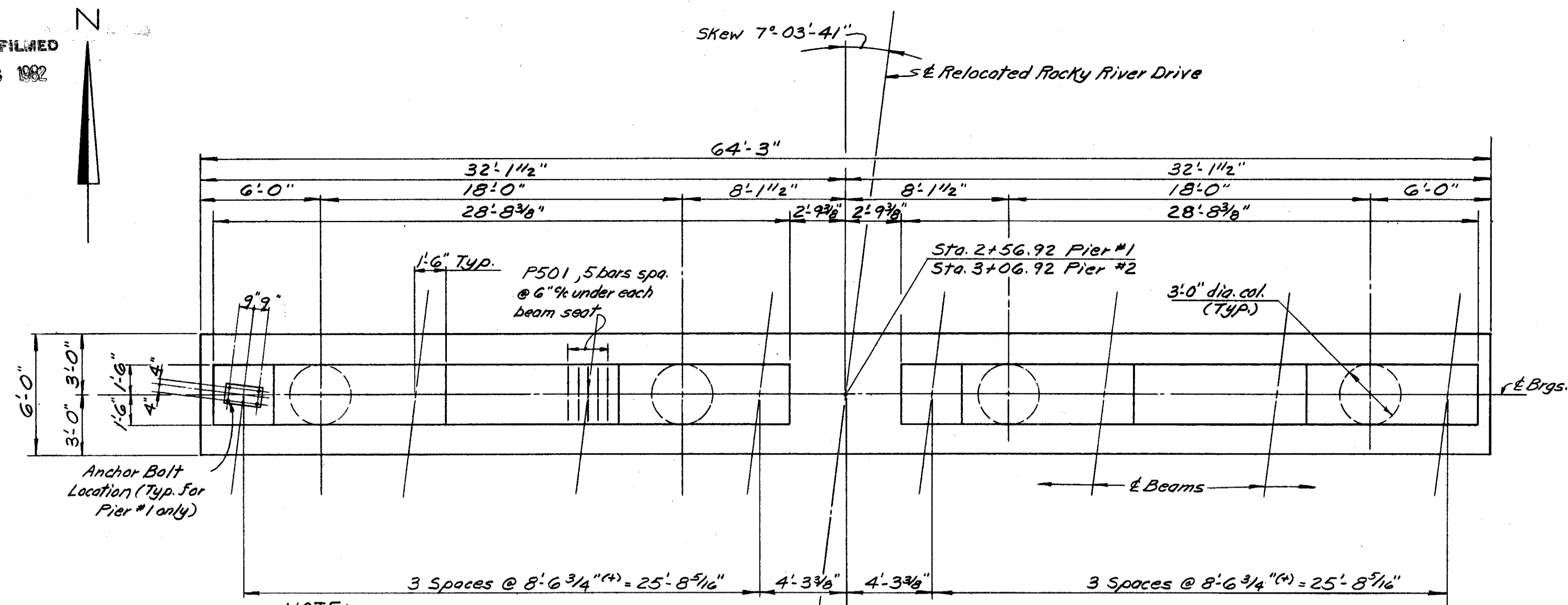
- Notes:
1. Porous Backfill shall extend upward to the approach slab or the sidewalk. Excavation therefore, in excess of that required for construction of the abutment, shall be considered as paid for in the bid price per cu. yd. paid for Porous Backfill.
  2. For location of elevation C-C & D-D see sheet 4/9
  3. Concrete parapets are included with Item 517 Bridge railing for payment.
  4. In reinforcing steel callouts: N.F. indicates near face. F.F. indicates far face.
  5. 6" sidewalk, Item 608, is included for payment with roadway items.
  7. For details of lighting conduits in abutments see Std. Construction Dwg. HL-5
  8. The shape of the median on the abutments shall match the shape of the median on the superstructure.
  9. For details of end dam and curb plates at the median see sheet 8/9

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CLEVELAND, OHIO COLUMBUS, OHIO WHEELING, W. VA.

ABUTMENT DETAILS  
BRIDGE No CUY-480 -  
DELOCATED ROCKY RIVER DRIVE  
OVER RAMP B-1  
CUYAHOGA COUNTY STA. 2+19.65  
STA. 3+44.18

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
R.J.P.	R.J.P.		D.H.S.	G.W.M.	6/1/66	

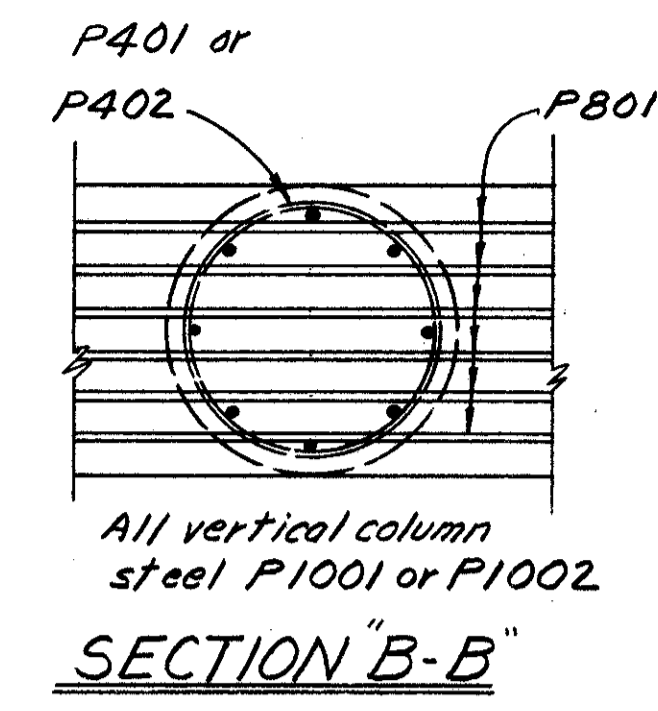
MICROFILMED  
DEC 6 1982



**NOTE:**  
Special care shall be taken at Pier #1 in placing reinforcing steel in the top of the cap so as to avoid interference with the drilling of anchor bar holes or the pre-setting of bearing anchors.

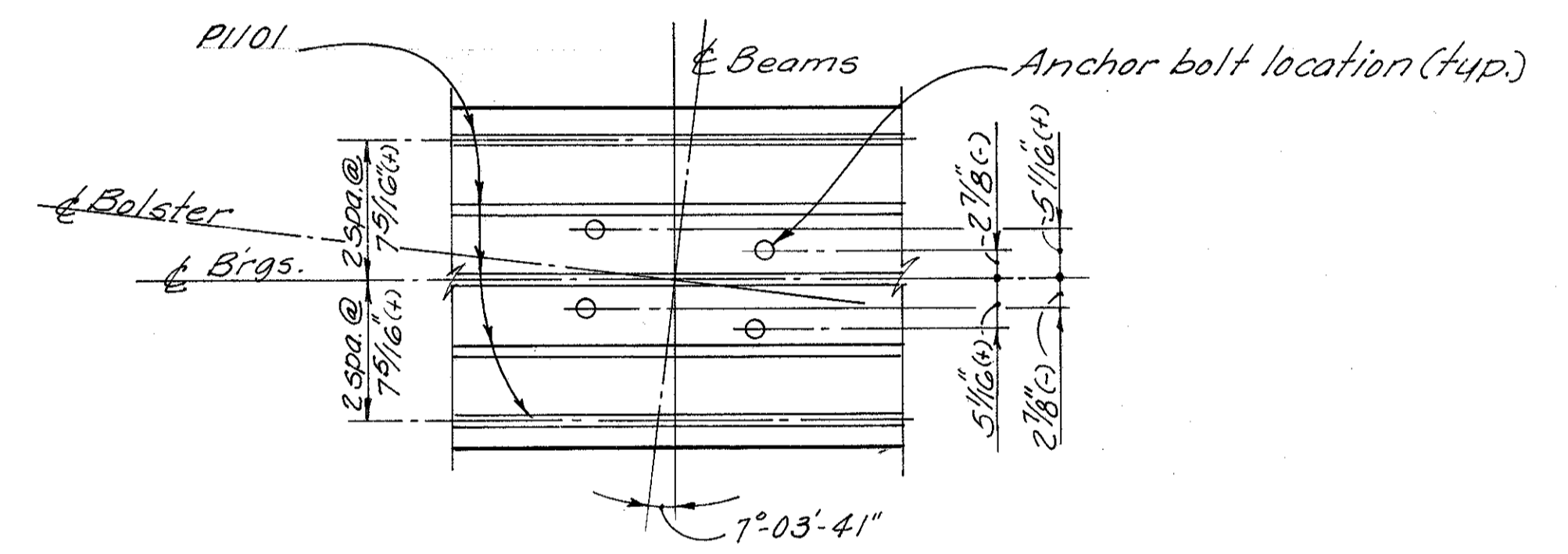
**BEARING ANCHORS:** At the option of the Contractor, bearing anchors (or formed holes), located and supported by templates, may be cast in place.

PLAN

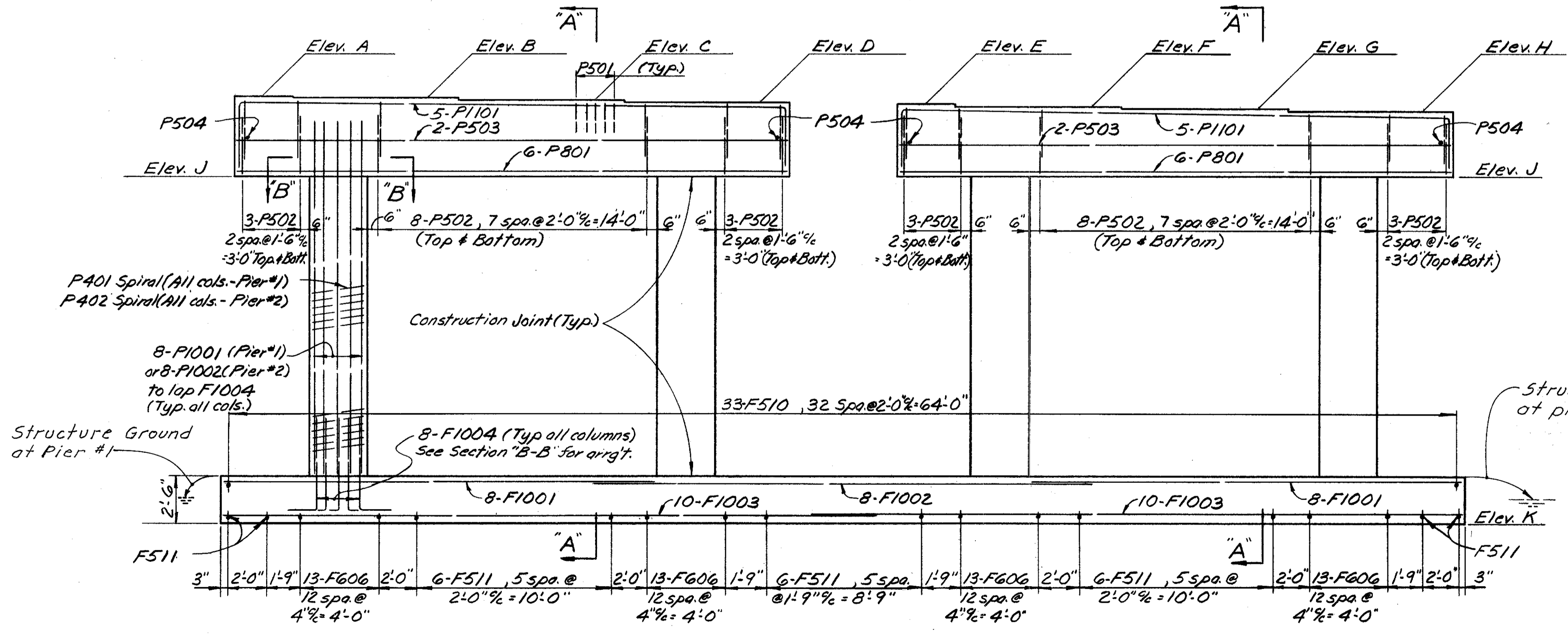


ELEVATION TABLE

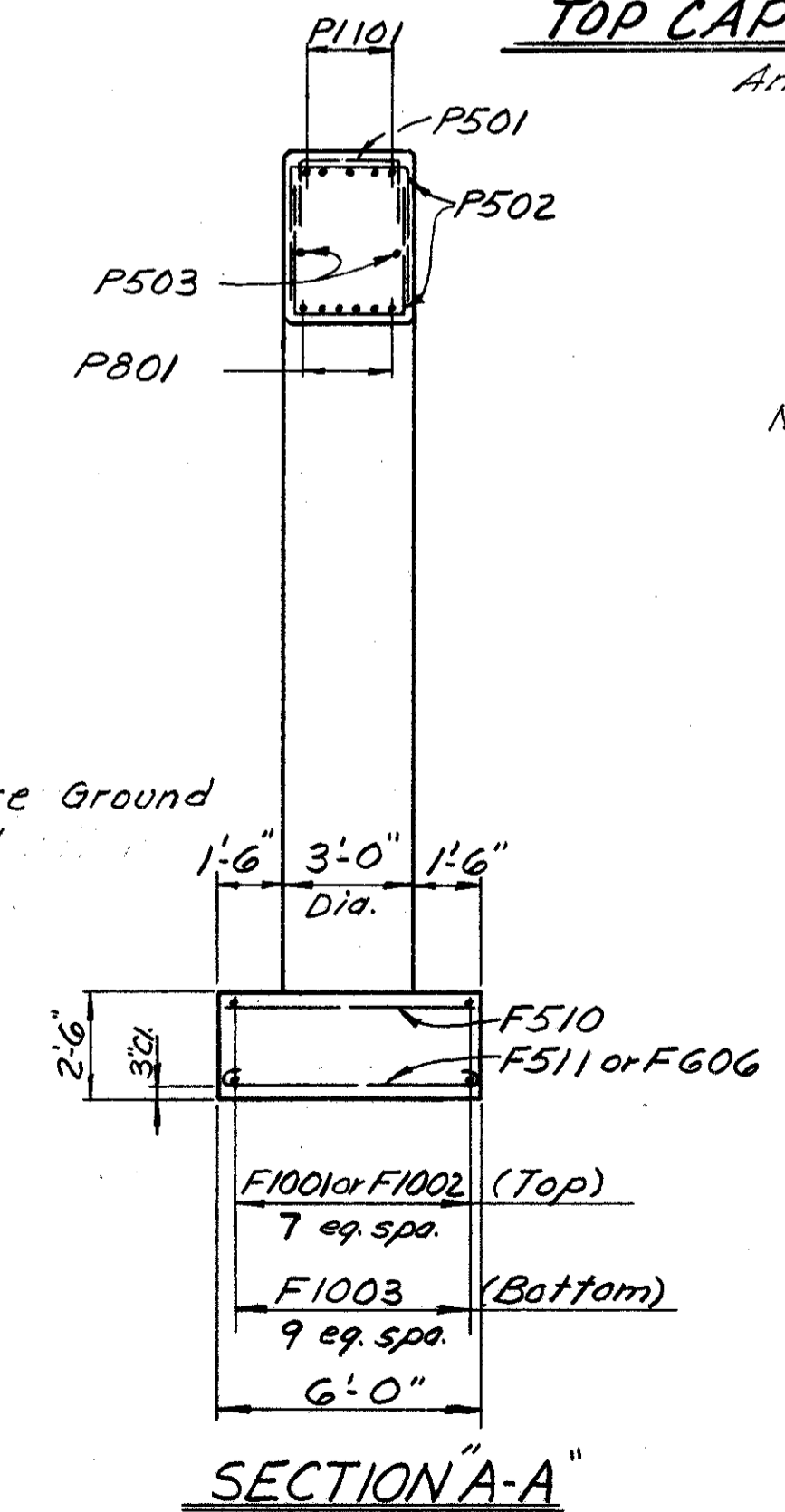
Location	A	B	C	D	E	F	G	H	J	K
Pier #1	780.63	780.61	780.59	780.56	780.48	780.35	780.22	780.19	776.59	761.29
Pier #2	781.30	781.01	780.90	780.80	780.68	780.55	780.41	780.28	776.78	758.79



TOP CAP STEEL LOCATION DIAGRAM  
Anchor Bolts typical for Pier #1 only.



ELEVATION



Note: For grounding details at Pier #1, see Std. Dwg. HL-7

6/9

ALDEN E. STILSON & ASSOCIATES, LIMITED  
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CLEVELAND, OHIO COLUMBUS, OHIO WHEELING, W. VA.

**PIER DETAILS**

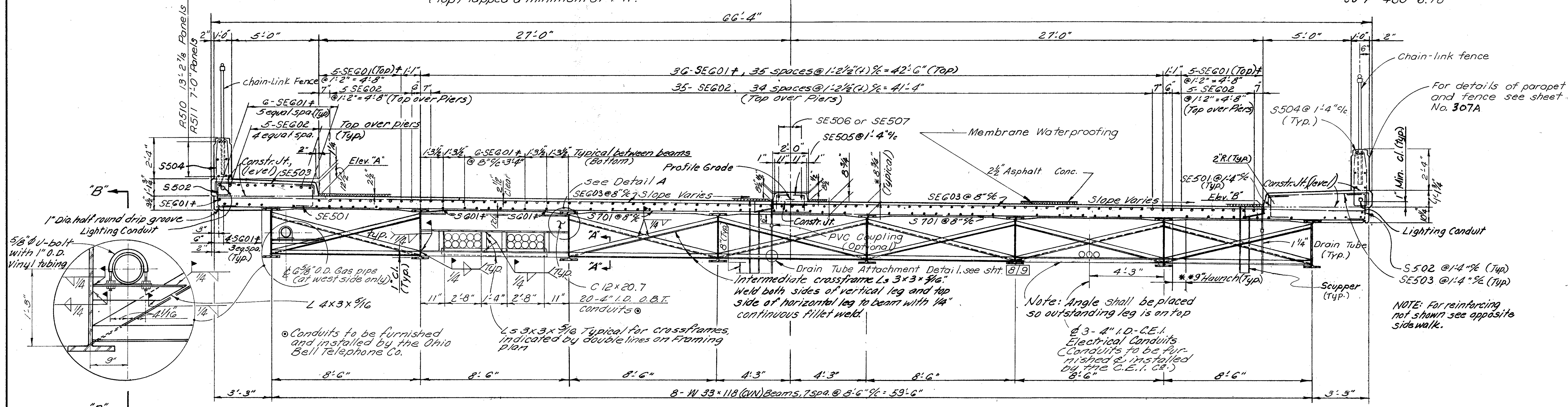
BRIDGE # CUY-480-  
RELOCATED ROCKY RIVER DRIVE  
OVER RAMP B-1  
CUYAHOGA COUNTY STA. 2+19.65  
STA. 3+44.18

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
R.J.P.	R.J.P.		D.H.S.	G.W.M.	6/166	

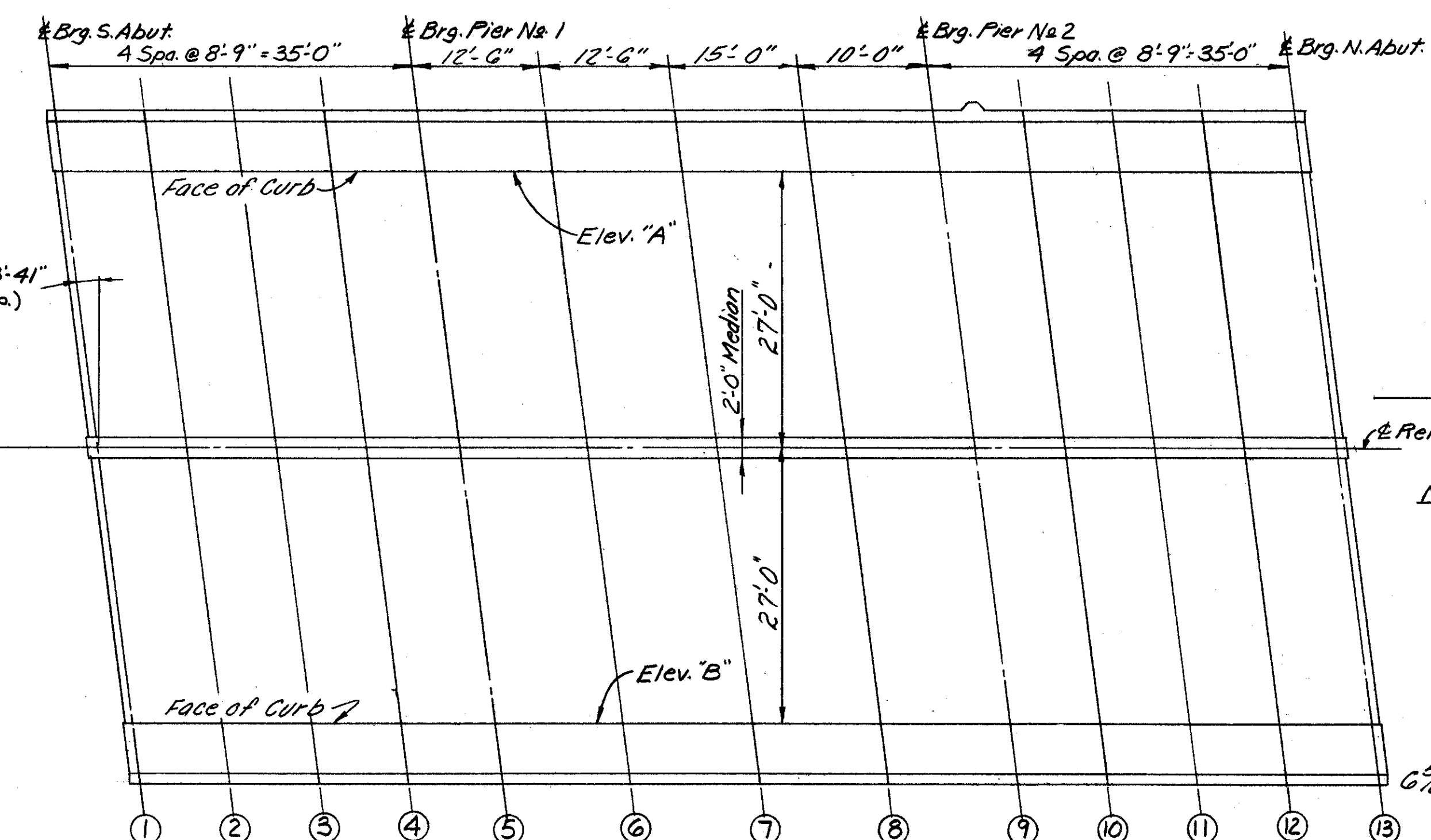
MICROFILMED  
DEC 6 1982

\* Each longitudinal run of deck reinforcing, excluding SE602 bars over the piers, shall be comprised of 4-SE601 and 1-SE604 bars (Both) and 4-SE601 and 1-SE604 (Top) lapped a minimum of 1'-11".

Relocated Rocky River Dr.



TRANSVERSE SECTION



DECK ELEVATIONS

Line	1	2	3	4	5	6	7	8	9	10	11	12	13
Elev. "A"	784.94	785.00	785.08	785.15	785.22	785.34	785.45	785.58	785.67	785.75	785.84	785.92	786.00
Elev. "B"	784.59	784.63	784.66	784.70	784.73	784.79	784.85	784.90	784.91	784.94	784.94	784.94	784.92

Note:  
For details of asphalt concrete surface course, subdrainage, and scuppers, see sht. #307

For location of 1" deck drainage hole in scupper and additional deck drainage details, see sht. #307.

NOTE:  
The deck elevations shown are those which are required prior to placing of the concrete deck. Proper allowance has been made for the dead load deflection caused by the weight of the concrete.

NOTES:

For additional notes see sht. 8/9  
\* This is a nominal dimension. The quantity of deck concrete to be paid for shall be based on this dimension even though deviation from it may be necessary because the top flange of the beam may not have the exact camber or conformation required to place it parallel to the finished grade.

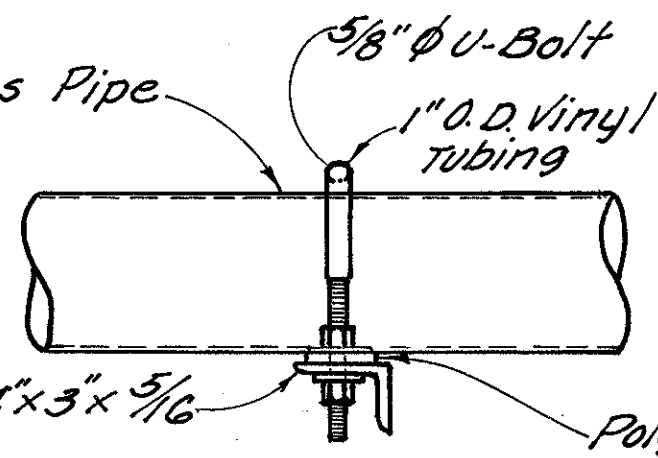
\*\* A typical haunch width of 9" shall be used for interior beams in computing quantity of concrete. However the haunch width may vary between 6" and 12" provided that the slope shall be not more than 1:4 for a haunch less than 9" in width.

Refer to sht. 3/9 for fence post spacing.

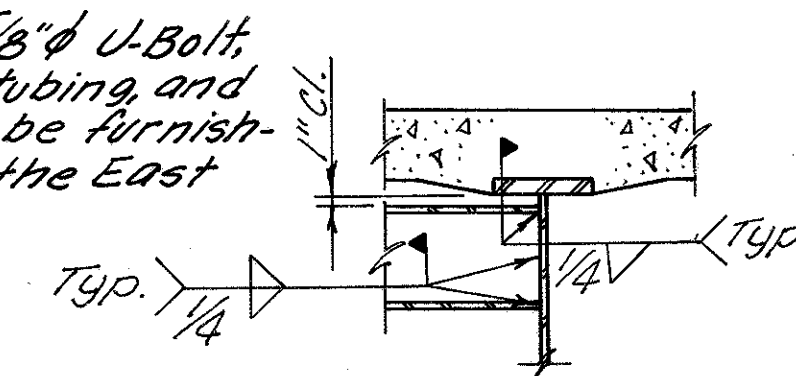
Longitudinal reinforcing steel shall be field cut as necessary to avoid interference with scuppers.

Concrete parapets are included for payment with Item 517, Bridge Railing

Transverse slab reinforcing steel shall be placed parallel to the abutments.



SECT. "B-B"



DETAIL A

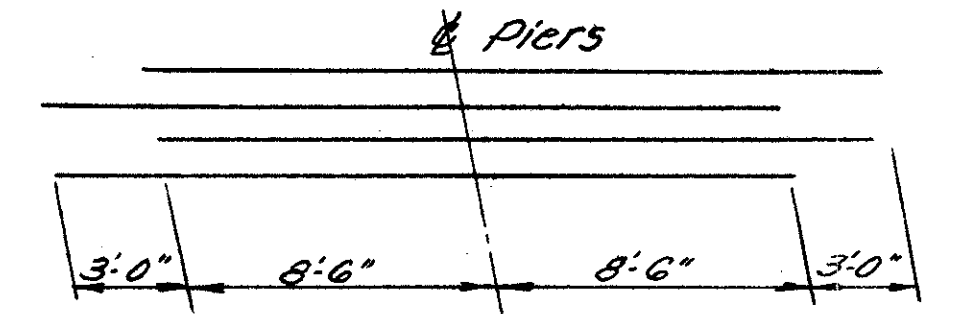
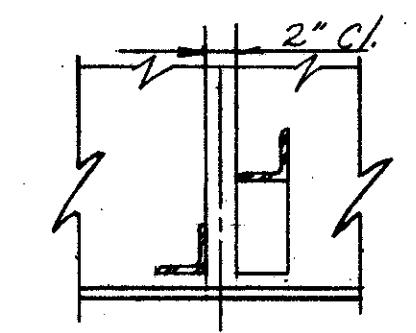


DIAGRAM SHOWING STAGGER OF SE602 BARS OVER PIERS



SECTION "A-A"

7/9

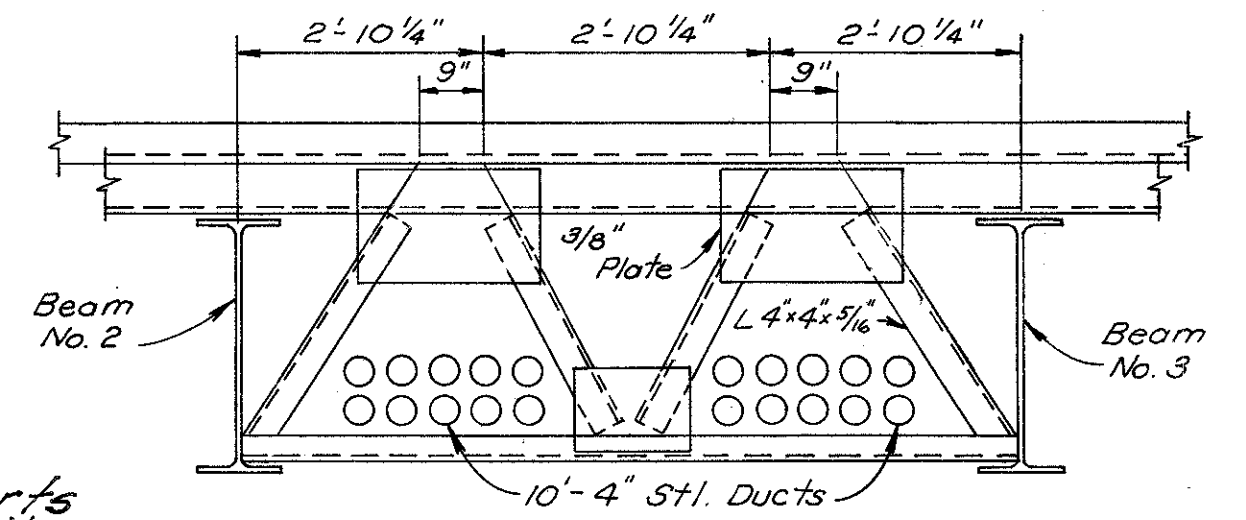
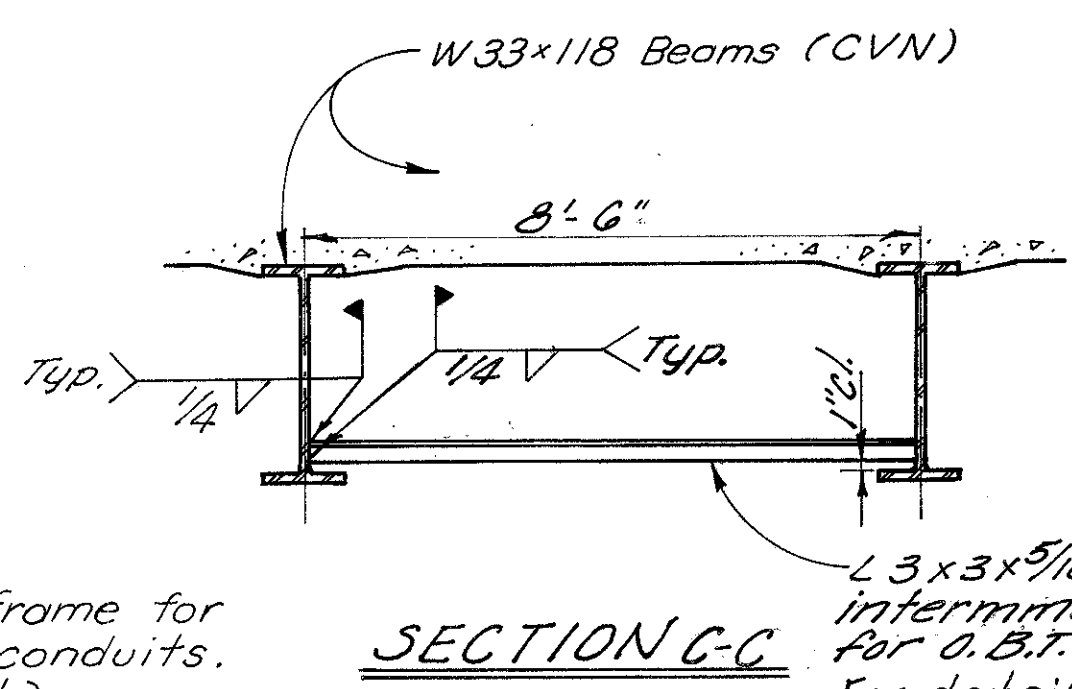
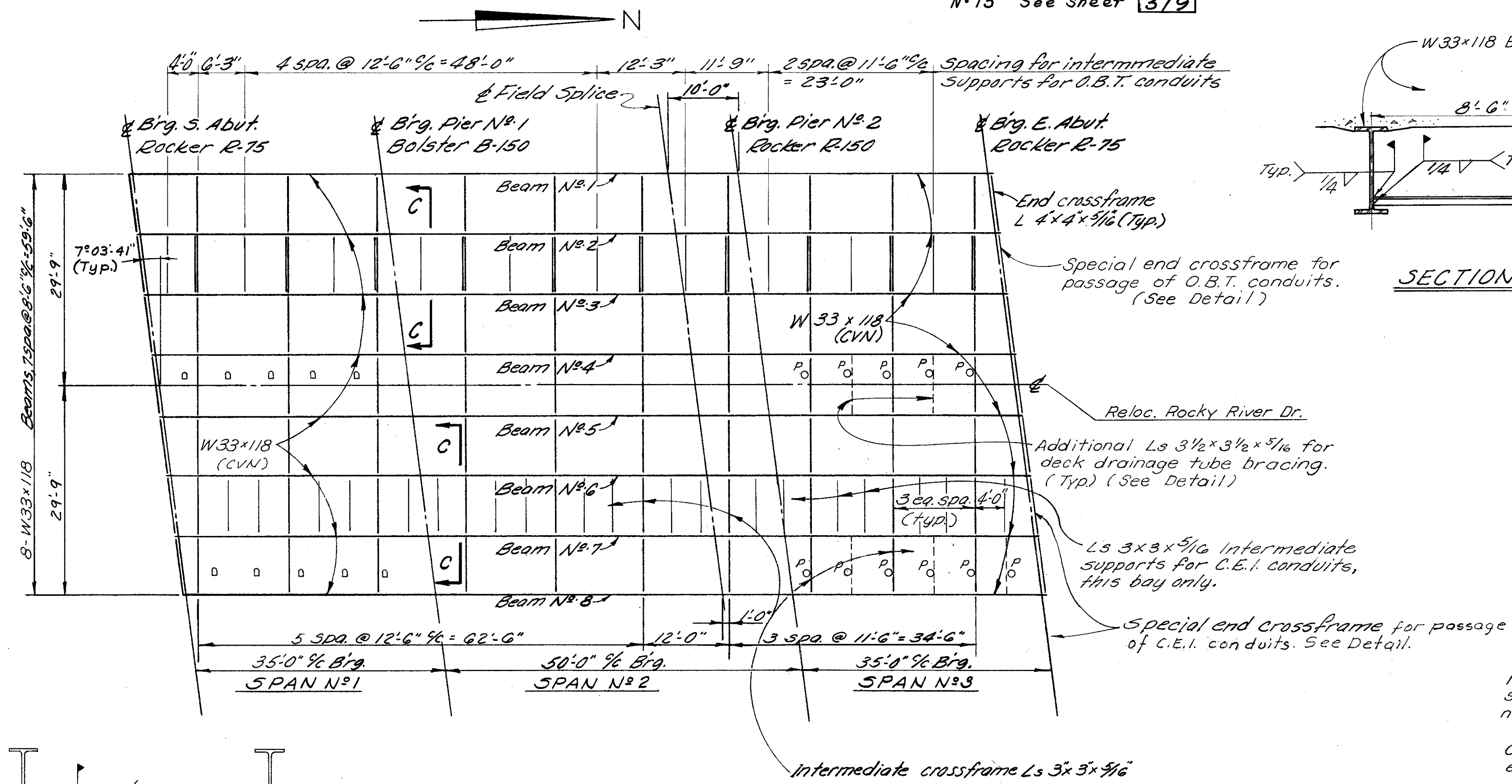
ALDEN E. SILLSON & ASSOCIATES, LIMITED  
CONSULTING ENGINEERS  
CLEVELAND, OHIO COLUMBUS, OHIO WHEELING, W. VA.

"SUPERSTRUCTURE DETAILS  
BRIDGE NO. CUY-480  
RELOCATED ROCKY RIVER DRIVE  
OVER RAMP B-1  
CUYAHOGA COUNTY STA. 2+19.65  
STA. 3+44.13

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
R.J.P.	R.T.		D.H.S.	G.W.M.	9/1/66	

NOTE: Provisions Shall Be Made  
For Mounting Traffic Sign  
No 13 See Sheet 379

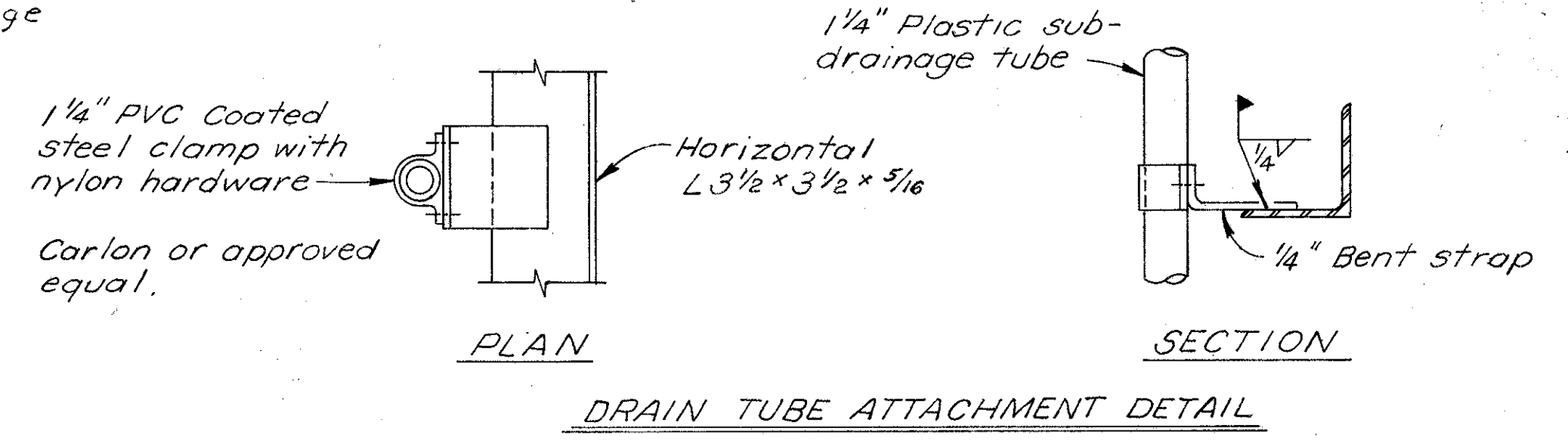
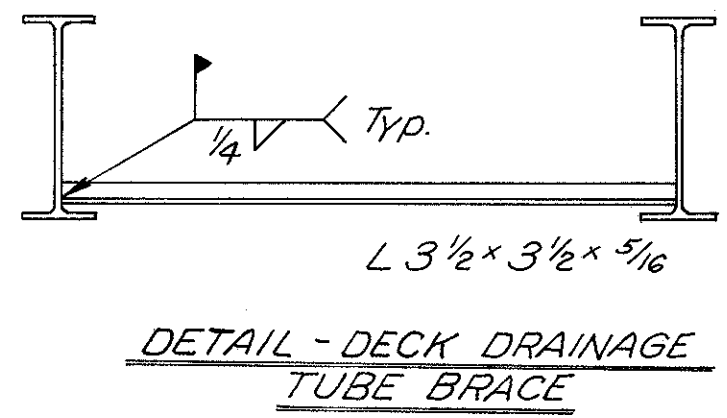
CUYAHOGA COUNTY  
CUY-480-6.78



NOTES

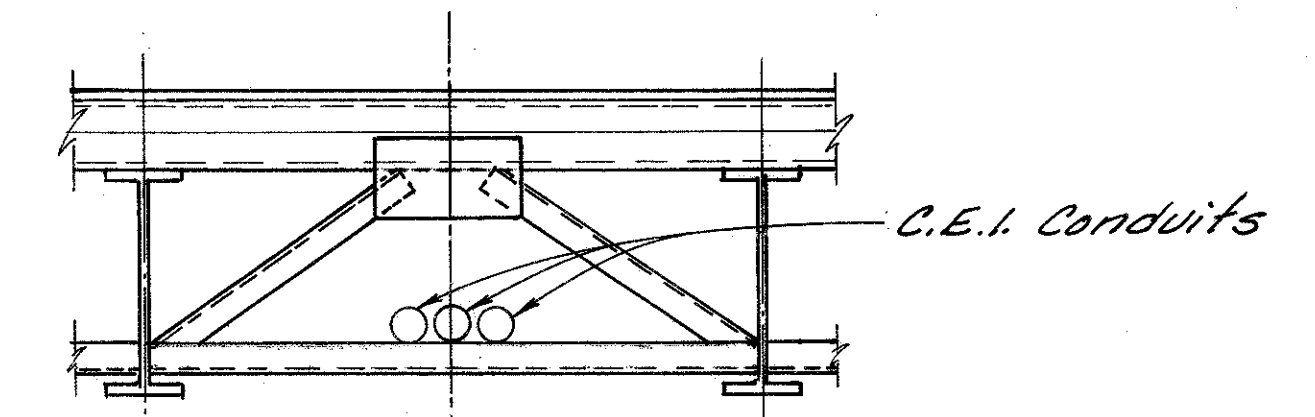
Where "(CVN)" follows a shape or plate size designation, the material shall meet specified minimum notch toughness requirements.

SUBDRAINAGE PIPE locations are indicated P<sub>0</sub>. Additional location restrictions shall be as shown on sht. 307 except pipes need not clear crossframes by 6" but shall be located beside the outstanding legs of the horizontal Ls 3 1/2 x 3 1/2 x 5/16 of the crossframes.



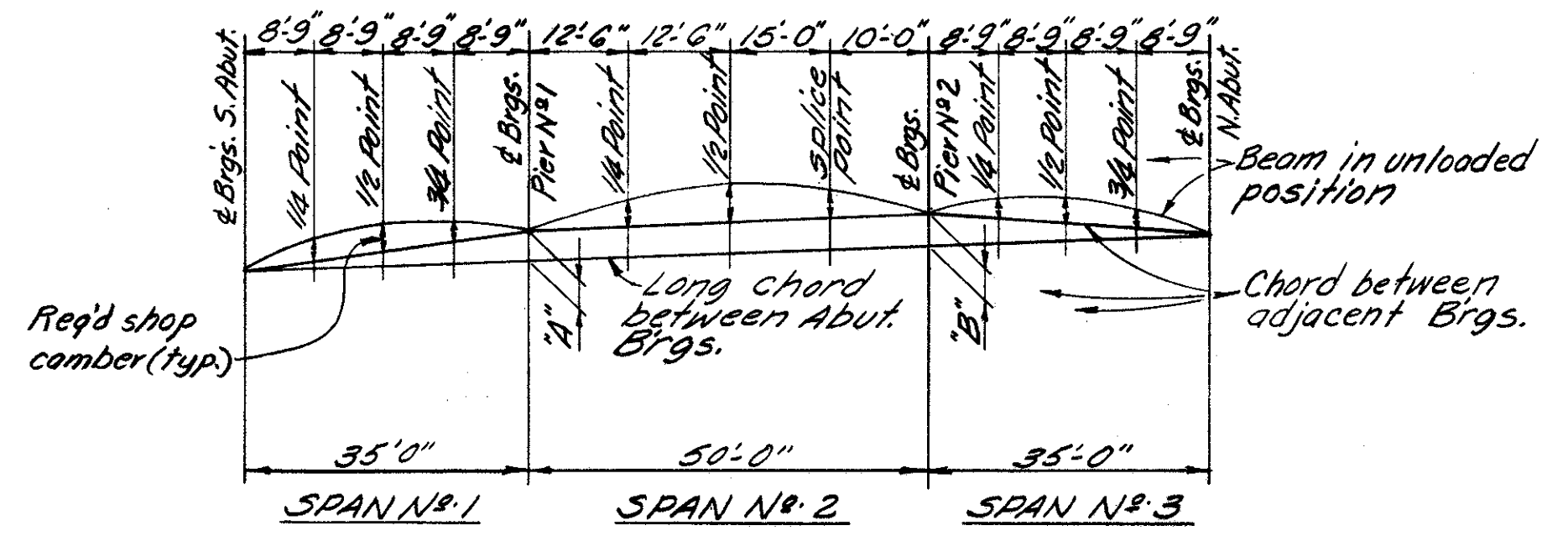
NOTE: For bolted splice details see Standard Drawing No. SD-1-69 Sheet No. 4

LOCATION	SPAN 1			SPAN 2			SPAN 3											
	0.25		0.50	0.25		SPLICE PT.	0.25		0.50	0.75								
	Ext.	Int.	Ext.	Int.	Ext.	Int.	Ext.	Int.	Ext.	Int.								
Deflection due to weight of steel	0"	0"	0"	0"	0"	0"	0"	1/16"	1/16"	0"	0"	0"	0"	0"	0"	0"	0"	
Deflection due to remaining D.L.	1/16"	1/16"	1/16"	1/16"	0"	0"	3/16"	1/8"	1/4"	3/16"	3/16"	1/8"	0"	0"	1/16"	1/16"	1/16"	1/16"
Required Camber	1/16"	1/16"	1/16"	1/16"	0"	0"	3/16"	1/8"	5/16"	1/4"	3/16"	1/8"	0"	0"	1/16"	1/16"	1/16"	1/16"



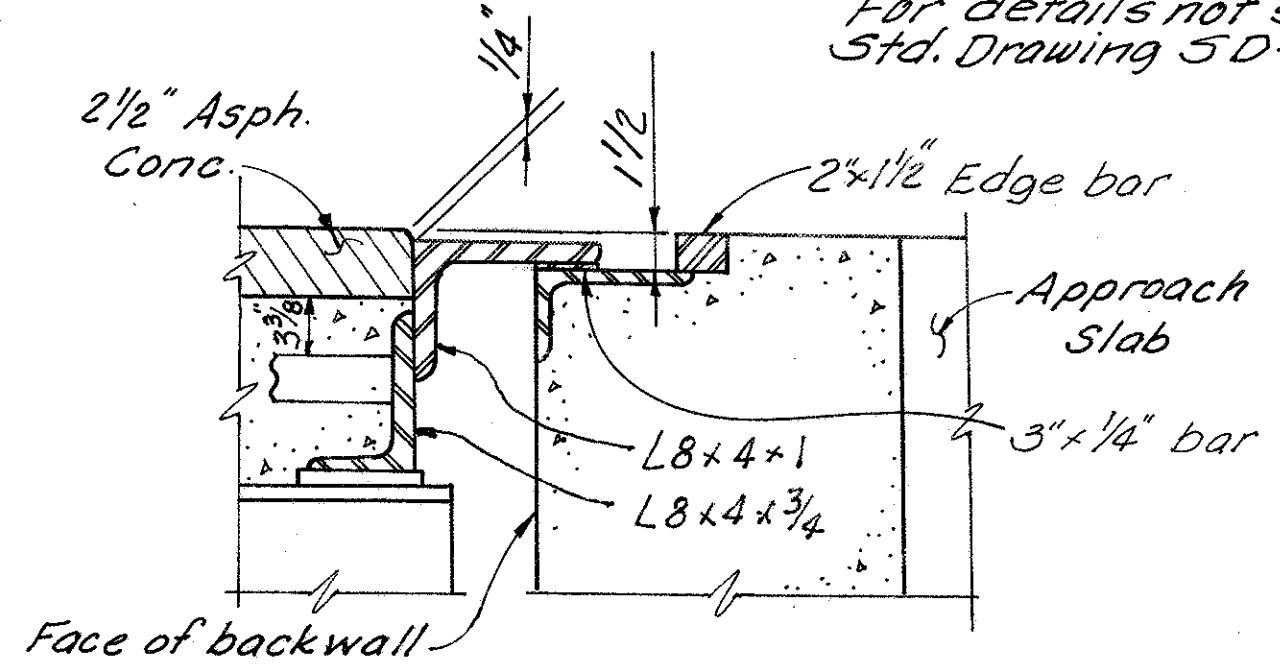
SPECIAL END CROSSFRAME DETAIL FOR C.E.I. CONDUITS

For details not shown see Std. Drawing SD-1-69, Sht. 1



BEAM NO.	1	2	3	4	5	6	7	8
DIM. "A"	-5/16"	-1/4"	-1/8"	-1/16"	1/16"	1/4"	3/8"	9/16"
DIM. "B"	-1/4"	-3/16"	-1/8"	-1/16"	1/8"	1/2"	13/16"	13/16"

Negative dimensions in the table above indicate ordinates below long chord between abutment bearings.



For additional notes and details see Std. Dwg. SD-1-69 Sht. No. 1

ALDEN E. STILSON & ASSOCIATES, LIMITED  
CLEVELAND, OHIO CONSULTING ENGINEERS WHEELING, W. VA. COLUMBUS, OHIO

SUPERSTRUCTURE DETAILS  
BRIDGE NO. CUY-480  
RELOCATED ROCKY RIVER DRIVE OVER RAMP B-1  
CUYAHOGA COUNTY STA. 2+19.65 STA. 3+44.18

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
R.J.P.	R.T.		D.H.S.	G.W.M.	9/1/66	



### REINFORCING

Mark	N <sup>o</sup>	Length	Weight	Type	"A"	"B"	"C"	"D"	"E"	Shp.
<b>ABUTMENTS</b>										
A501	80	4'-11"	410	1	1'-6"	2'-2"	1'-6"			Bt.
A502	88	8'-6"	780	1	2'-8"	3'-5"	2'-8"			Bt.
A503	38	32'-5"	1285							St.
A504	38	33'-0"	1308							St.
A505	8	4'-8"	39							St.
A506	17	6'-0"	106							St.
A507	16	6'-3"	104							St.
A508	10	11'-0"	115							St.
A509	2	9'-0"	19							St.
A510	9	17'-0"	160							St.
A511	27	5'-3"	148							St.
A512	27	6'-1"	171	1	4'-9"	1'-6"				Bt.
A513	4	4'-5"	18							St.
A514	4	5'-3"	22	1	3'-11"	1'-6"				Bt.
A515	19	3'-9"	74							St.
A516	19	4'-7"	90	1	3'-3"	1'-6"				Bt.
A517	36	4'-5"	166	10	1'-4"	1'-7"	0'-8"	0'-8"		Bt.
A518	57	7'-5"	441	8	0'-0 3/4"	3'-0"	0'-0 3/4"	3'-0"	0'-8"	Bt.
A519	2	6'-6"	14	6	4'-6"	2'-0"	1'-7"			Bt.
A520	8	10'-8"	89							St.
A521	7	14'-9"	108							St.
A522	2	8'-9"	18							St.
A523	16	10'-0"	167							St.
A524	2	8'-0"	17							St.
A525	6	5'-4"	33	6	3'-3"	2'-0"	1'-7"			Bt.
A526	7	15'-0"	110							St.
A527	2	8'-3"	17							St.
A528	7	15'-3"	111							St.
A529	8	2'-10"	24	7	1'-0"	0'-3"				Bt.
A601	108	14'-11"	2420	2	4'-4"	1'-5"	5'-10"	0'-11"	3'-0"	Bt.
A602	20	16'-9"	503	2	6'-4"	1'-5"	6'-8"	0'-11"	2'-0"	Bt.
F501	4	4'-6"	19							St.
F502	4	4'-9"	20							St.
F503	2	14'-0"	29							St.
F504	2	13'-8"	29							St.
F505	4	13'-0"	54							St.
F506	2	9'-1"	19	1	8'-9"	0'-6"				Bt.
F507	4	8'-0"	33	1	7'-8"	0'-6"				Bt.
F508	2	8'-4"	17	1	8'-0"	0'-6"				Bt.
F509	88	7'-11"	727	1	7'-7"	0'-6"				Bt.
F601	7	22'-0"	231	1	10'-7"	1'-2"	10'-7"			Bt.
F602	13	19'-10"	387	1	9'-6"	1'-2"	9'-6"			Bt.
F603	7	20'-6"	216	1	9'-10"	1'-2"	9'-10"			Bt.
F604	16	34'-11"	839							St.
F605	88	12'-10"	1696	1	7'-7"	5'-5"				Bt.
<b>PIERS</b>										
P501	80	5'-5"	452	1	1'-6"	2'-8"	1'-6"			Bt.
P502	112	8'-9"	1022	1	3'-2"	2'-8"	3'-2"			Bt.
P503	8	28'-4"	236							St.
P504	8	2'-8"	22							St.
P801	24	28'-4"	1816							St.
<b>PIERS (Cont.)</b>										
P1001	32	15'-10"	2180							St.
P1002	32	18'-6"	2547							St.
P1101	20	34'-0"	3613	1	3'-2"	28'-4"	3'-2"			Bt.
<b>PARAPETS</b>										
RE506	6	16'-8"		St.						
RE507	6	14'-5"		St.						
RE508	6	14'-8"		St.						
RE509	6	14'-11"		St.						
RE510	72	12'-10"		St.						
RE511	72	6'-8"		St.						

Mark	N <sup>o</sup>	Length	Core	Pitch	Turns	Spacers	Weight
P401	4	12'-10"	32"	4 1/2"	37	16	256
P402	4	15'-6"	32"	4 1/2"	44	16	1139

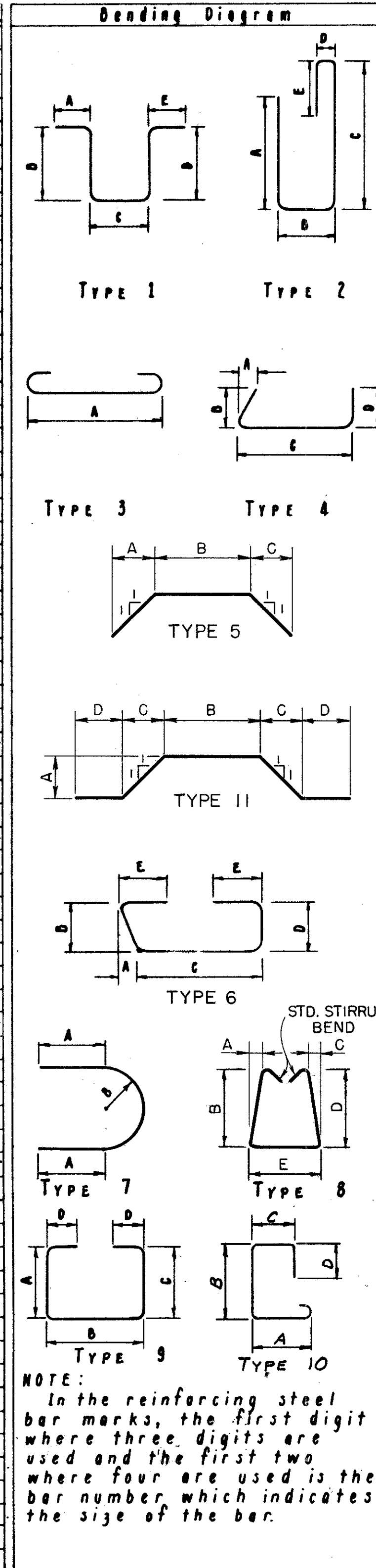
#### SPIRALS

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 IN THE STEEL LIST FOR THE SPIRAL BARS IS THE "LENGTH" DIVIDED BY THE PITCH, PLUS 3 TURNS (TOTAL NUMBER OF CLOSED COILS), EXPRESSED AS THE NEAREST WHOLE NUMBER.  
SPIRAL REINFORCING BARS MAY NOT HAVE DEFORMATIONS BUT

### STEEL

Mark	N <sup>o</sup>	Length	Weight	Type	"A"	"B"	"C"	"D"	"E"	Shp.
F606	104	7'-0"	1093	3	5'-8"					Bt.
F1001	32	22'-4"	3075							St.
F1002	16	25'-7"	1761							St.
F1003	40	33'-7"	5780							St.
F1004	64	6'-7"	1813	1	5'-6"	1'-5"				Bt.
<b>EPOXY COATED REINFORCING STEEL - SUPERSTRUCTURE</b>										
SE601	240	30'-0"	10814							St.
SE602	110	20'-0"	3304							St.
SE603	366	34'-3"	18829							St.
SE604	60	8'-9"	789							St.
SE501	184	2'-2"	416	1	0'-6"	1'-5"	0'-6"			Bt.
SE503	184	6'-9"	1295	1	0'-8"	5'-8"	0'-8"			Bt.
SE505	92	3'-3"	312	1	1'-0"	1'-6"	1'-0"			Bt.
SE506	8	30'-0"	250							St.
SE507	2	7'-5"	16							St.
<b>SUPERSTRUCTURE</b>										
S601	256	30'-0"	11535							St.
S604	64	8'-9"	841							St.
S701	366	34'-3"	25623							St.
S502	184	2'-4"	448	1	0'-6"	1'-7"	0'-6"			Bt.
S504	184	7'-5"	1423	8	0'-0 3/4"	3'-0"	0'-0 3/4"	3'-0"	0'-8"	Bt.
<b>LIGHT POLE SUPPORT</b>										
L501	4	3'-1"	13	1	0-7/8"	2'-1"	0-7/8"			* Bt.
L502	4	9'-4"	39	1	3-9/8"	2'-1"	3-9/8"			* Bt.
L503	7	8'-0"	58	11	2'-1"	1'-4"	2'-1"	0'-6"		* Bt.
L504	4	3'-9"	16							* St.

### LIST



		ESTIMATED QUANTITIES					
Item	Total	Unit	Description	Abut.	Pier	Supers.	General
503	Lump	Sum	Cofferdams, Cribbs and Sheeting				Lump
503	584	Cu. Yd.	Unclassified Excavation	387	197		
509	82649	Lbs.	Reinforcing Steel	14444	28209	39996	
Special	36025	Lbs.	Epoxy Coated Reinforcing Steel (See Prop. Note)				36025
511	287	Cu. Yd.	Class C Concrete, Superstructure (See Prop. Note)				287
511	79	Cu. Yd.	Class C Concrete, Pier Caps and Columns		79		
511	188	Cu. Yd.	Class C Concrete, Abutments above Footings	188			
511	147	Cu. Yd.	Class C Concrete, Footings	76	71		
512	19	Lin. Ft.	Premolded Sealing Strip (As per plan)	19			
513	157000	Lbs.	Structural Steel, Primer As Per 846 (See Proposal Note)				157000
846	157000	Lbs.	Field Painting of Structural Steel				157000
517	30346	Lin. Ft.	Bridge Railing (Concrete parapet with 4'-0" Chain link fence As per plan)	59.44		244.02	
518	65	Cu. Yd.	Porous Backfill	65			
518	118	Lin. Ft.	6" Perforated, Helical C.S.P. Including Specials, 707.01	118			
518	120	Lin. Ft.	6" Non-Perforated, Helical C.S.P., 707.01	120			
518	10	Each	Scuppers, including Supports			10	
518	243	Lin. Ft.	Subdrainage for Wearing Course As per plan			243	
601	548	Sa. Yd.	Crushed Aggregate Slope Protection				548
5625			See Sht. No. 215 for lighting summary				
808	287	Units	Chemical admixtures for concrete, Type A, B or D.			287	
404	49	Cu. Yd.	Asphalt Concrete, AC-20 As Per Plan			49	
SPEC.	702	Sq. Yd.	Membrane Waterproofing (See Proposal Note)			702	
SPEC.	40	Lin. Ft.	10 3/4" O.D. Steel Pipe, Installation Only			40	

① 1930 lbs. to be paid for by the Ohio Bell Telephone Co.  
② 1000 lbs. to be paid for by the Cleveland Illuminating Co.  
③ to be paid for by the East Ohio Gas Co.  
④ 200 lbs. to be paid for by the East Ohio Gas Co.

Bar dimensions are out to out.

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

\* See Standard Drawing HL-4 for placement of re-bars.

SHALL IN OTHER RESPECTS CONFORM TO ITEM 509  
1/2 CLOSED COILS SHALL BE PROVIDED AT THE ENDS OF EACH SPIRAL UNIT.  
FOUR STEEL CHANNEL, TEE OR ANGLE SPACERS, WEIGHING APPROXIMATELY 0.80 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 0.80 LB. PER LIN. FT., WILL BE PAID FOR AS REINFORCING STEEL, AND IS INCLUDED IN THE TABULATED QUANTITY OF SPIRAL BARS.

9/9

ALDEN E. STILSON & ASSOCIATES, LIMITED  
CONSULTING ENGINEERS  
CLEVELAND, OHIO COLUMBUS, OHIO WHEELING, W. VA.

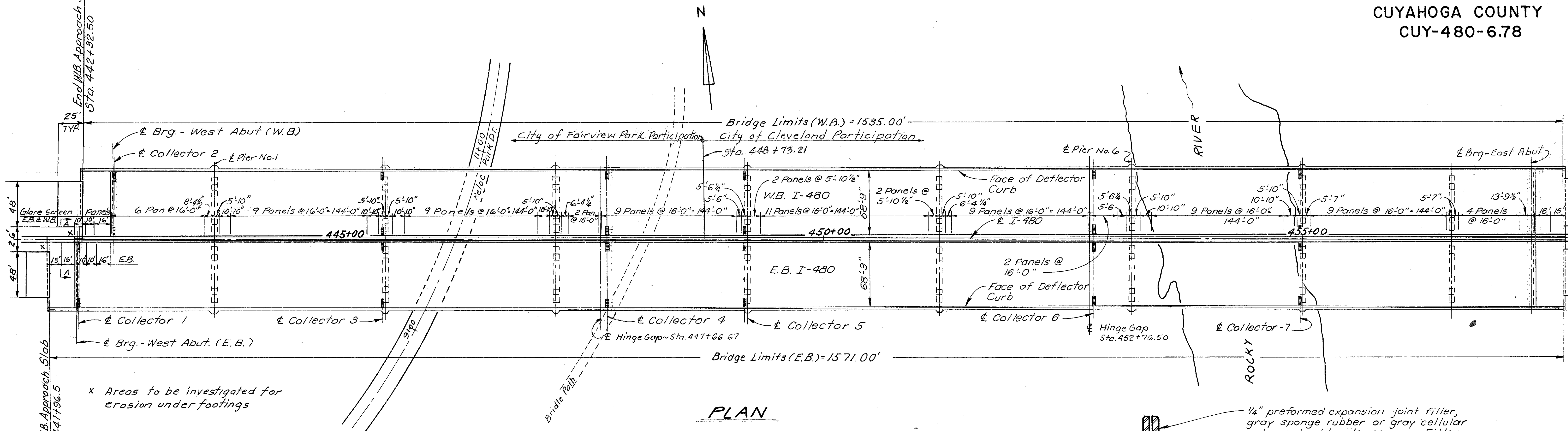
**REINFORCING STEEL LIST AND ESTIMATED QUANTITIES**  
BRIDGE N<sup>o</sup> CUY-480-RELOCATED ROCKY RIVER DRIVE OVER RAMP B-1 STA. 2+19.65  
CUYAHOGA COUNTY STA. 3+44.18

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISION
R.J.P.			D.H.S.	G.W.M.	6/1/66	11-20-78

CUY-480-0648  
I-480 OVER ROCKY RIVER

FHWA REGION	STATE	PROJECT	
5	OHIO		306A 317

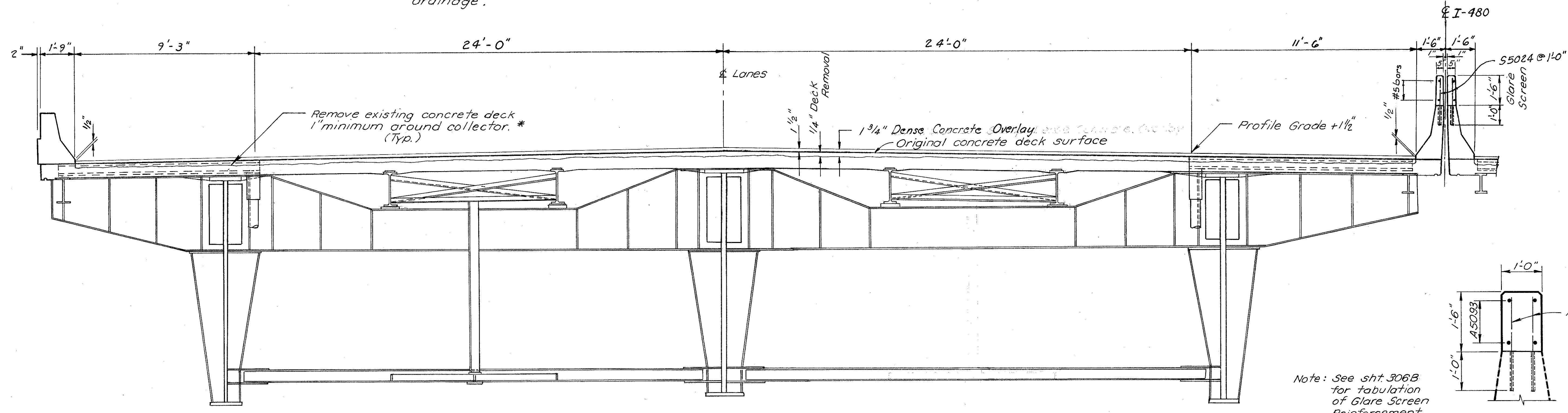
CUYAHOGA COUNTY  
CUY-480-6.78



PLAN

\* Note: Collectors shall be covered before placing Dense Concrete Overlay. After placing overlay, remove covers and hand-finish pavement around collectors for surface drainage.

SECTION THROUGH GLARE SCREEN JOINT  
1/4" preformed expansion joint filler, gray sponge rubber or gray cellular polyvinyl chloride sponge. Filler shall conform to AASHTO M-153, Type I, except density of PVC sponge shall be not less than 20 lb. per cu.ft. Include with 511 for payment. (TYP for joints)



TYPICAL SECTION

WESTBOUND ~ AS SHOWN  
EAST BOUND ~ OPPOSITE HAND

SECTION A-A  
(Double Panel)

Note: See sht. 306B for tabulation of Glare Screen Reinforcement.

# GENERAL NOTES

FHWA REGION	STATE	PROJECT
5	OHIO	

306 B  
317

CUYAHOGA COUNTY  
CUY-480-6.78

## BRIDGE DECK OVERLAY WITH DENSE CONCRETE

Longitudinal joints in the dense concrete overlay are permitted but only to the extent necessary to facilitate changes in roadway crown, to accommodate the width of the finishing machine and to permit maintenance of vehicular traffic. Except as approved by the Director, joints shall not be used in close proximity to raised curbs, barriers or edges of deck.

Prior to the scarification of the deck surface the Contractor shall establish periodic bench marks from the existing surface on the curbs, parapets or railings. Support rails for the finishing machine shall be set with reference to these bench marks so that the finished Dense Concrete surface generally will be 1 1/2 (+0, -1/8) inches above the original deck surface except where low spots occur and the Dense Concrete overlay generally will not be less than 1 3/4 (+0, -1/8) inches thick.

After the screed rails have been set to proper profile and prior to placing the overlay, the finishing machine with 1 5/8 inch thick filler blocks attached to the bottom of the screed shall be passed over the entire area of the deck to be overlaid. Except where surface profile adjustments have been made, the filler blocks should generally clear the scarified deck surface by not more than 1/8 inch. Concrete which does not clear the filler blocks shall be removed. As an alternate to using the finishing machine to precheck the overlay thickness, approved templates supported on support rails may be used.

In areas where, in the opinion of the Engineer, obvious irregularities in the longitudinal surface profile would detrimentally affect the riding quality of the finished overlay surface, the screed rails and finishing machine supports shall be adjusted upward to achieve a satisfactory alignment. Where such upward adjustments as directed have been made, the plus overlay thickness tolerance limitation shall not apply.

The last sentence in the first paragraph on page 5 of Supplemental Specification 850 is void. The following shall apply to 850.06: The placement of Dense Concrete overlay shall be performed and completed when the atmospheric temperature is between 45 and 75 degrees Fahrenheit and during the night hours between sunset and sunrise. The Contractor shall submit a plan for providing adequate lighting for the work and receive written approval from the Engineer before placing the concrete. Cost of the lighting is to be included in the bid price for Item Special, Lighting for Dense Concrete Overlay Placement. The overlay shall not be placed when rain is imminent.

The Contractor shall suitably protect the expansion joint from the intrusion of concrete during the placement of the overlay. Adequate precautions shall be taken to protect freshly placed material from sudden or unexpected rain.

Reference shall be made to Supplemental Specification 850 dated 6-27-77, Supplemental Specifications 808 dated 1-1-71 and 837 dated 12-7-72 and to Std. Dwg. BP-5, dated 8-11-75. If the Latex Modified Concrete overlay is used, reference shall be made to Supplemental Specifications 845 and 953 both dated 6-27-77.

**DESIGN DATA:** Concrete Class C - unit stress 1,200 p.s.i.  
Reinforcing Steel - ASTM A615, A616 or A617 - unit stress 20,000 p.s.i.

## ITEM 510 DOWEL HOLES

The work performed and material used in placing the steel for dowels shall be according to SS 853; however, in lieu of 853.10, payment for the work and material shall be included under Item 510.

## ITEM 516 - VERTICAL EXTENSION OF ABUTMENT END DAMS WITH SEAL, AS PER PLAN

The Contractor shall furnish and weld steel bars with a continuous bead to the existing abutment end dam plates. Bars shall conform to the dimensions shown on the Miscellaneous Details Sheet No. 306C. See Standard Drawing BP-5 for additional details. All cost of materials, installation, cleaning the steel end dam plates and placing the joint sealer shall be included in the price bid per lineal foot for Item 516 "Vertical Extension of Abutment End Dams With Seal, As Per Plan."

LWC L/H SIDE  
306 C

## ITEM 516 - VERTICAL EXTENSION OF HINGE EXPANSION JOINTS, AS PER PLAN

Work under this item shall consist of removal of portions of the existing expansion dams of the hinge joints, replacement with new steel assemblies and replacement of deck concrete that was removed. All cost of removal, materials and installation shall be included in the price bid per lineal feet for Item 516 Vertical Extension of Hinge Expansion Joints, As Per Plan.

306 E

## ITEM 516 - VERTICAL EXTENSION OF EXISTING DRAINAGE COLLECTORS, AS PER PLAN

The work shall consist of removing the existing grates and grate supports Ls 2 1/2 x 2 1/2 x 1/2 from 24 drainage collectors, adding 3/8" and plates and reinstalling the Ls 2 1/2 x 2 1/2 x 1/2 to collectors as shown on the plans, preparing the newly positioned angles for painting according to 514.06, painting the angles with zinc rich paint and reinstalling the grates. All cost of material, removal, reinstallation, steel cleaning and painting shall be included in the contract price bid for Item 516 Each, Vertical Extension of Drainage Collectors, As per plan.

CANOE L/H SIDE  
306 C

## ITEM 518 - COLLECTOR AND CONNECTION TO EXISTING SUBSTRUCTURE DRAINAGE SYSTEM USING 6" STANDARD PIPE DOWNSPOUTS ALLOY STEEL (707.11) OR HOT-DIPPED GALVANIZED STEEL INCLUDING SPECIALS, AS PER PLAN

Work under this item shall consist of waterproofing the revised hinge expansion joints by altering the ends of existing stringers and girders, hanging elastomeric troughs under the joints, providing two downspouts per trough and connecting each downspout into the existing subdrainage system. All cost of removal, materials and installation shall be included in the price bid for Item 518.

306 E, F & G

## FIELD PAINTING OF EXISTING STRUCTURE

Existing Structural Steel which is modified by joint work and other damaged areas as directed by the Engineer shall be cleaned and painted according to Supplemental Specification 837. After the above mentioned Structural Steel has been cleaned all bare steel shall be given one coat of spot prime paint. The spot primed areas, adjacent areas and all other surfaces within the vicinity of the joint where the existing finish point is thin or missing shall be spot painted with a prime paint tinted for contrast. Finally, all second prime painted areas shall be painted with one coat of finish paint conforming to 708.08. Include surface preparation and painting in 837 items for payment.

FAIRVIEW PK	CLEVELAND	CUY-480-0648 ESTIMATED QUANTITIES		
2	2	Item 404	4 Cu.Yd.	Asphalt concrete, AC-20
47	47	Item 407	94 Gal.	Tack Coat: 702.02, RC-250; or 702.04, MS-2, RS-1, SS-1 or SS-1h
2	2	Item 407	4 Ton	Cover aggregate
60	60	Item 837	120 Sq.Ft.	Surface preparation
5.5	5.5	Item 837	11 Sq.Ft.	Spot prime painting, as per plan
60	60	Item 837	120 Sq.Ft.	Second coat prime painting, as per plan
60	60	Item 837	120 Sq.Ft.	Finish paint, as per plan
1375	1375	Item 516	275 L.F.	Vertical Extension of Abutment End Dams With Seal, As per plan
1375	1375	Item 516	275 L.F.	Vertical Extension of Hinge Expansion Joints, As per plan
12	12	Item 516	24 Ea.	Vertical Extension of Existing Drainage Collectors, As per plan
4	4	Item 518	8 E.a.	Collector and Connection to Existing Substructure Drainage System using 6" Standard Pipe Downspout Alloy Steel (707.11) or Hot-Dip Galvanized Steel Including Specials, As per plan
9604	13,203	Item 850	22,807 S.Y.	Dense Concrete Overlay (1 3/4 inches thick), As per plan
42%	58%	Special	Lump Sum	Lighting for Dense Concrete Overlay Placement
6053	8023	Item 509	14,076 Lb.	Reinforcing Steel
1358	1800	Item 510	3,158 Ea.	Dowel Holes
31	42	Item 511	73 C.Y.	Class C Concrete, Glare Screen (See Proposal Note)
2	2	Item 518	4 Ea.	Pairs of Elastomeric Drainage Troughs, As per plan
31	42	Item 808	73 Units	Chemical Admixture for Concrete, Type A, B or D

GLARE SCREEN		
No. of Panels	Panel Length	Reinforcement per panel
4	5'-6"	2-S5022 and 6-S5024
4	5'-6 1/4"	2-S5022 and 6-S5024
6	5'-7"	2-S5022 and 6-S5024
16	5'-10"	2-S5019 and 6-S5024
8	5'-10 1/2"	2-S5019 and 6-S5024
4	6'-4 1/4"	2-S5021 and 7-S5024
2	8'-4 1/2"	2-S5018 and 9-S5024
4	10'-0"	2-S5016 and 10-S5024
12	10'-10"	2-S5020 and 11-S5024
2	13'-9 1/2"	2-S5023 and 14-S5024
2	15'-0"	2-A5092 and 15-S5024
1	* 15'-0"	4-A5092 and 30-S5024
162	16'-0"	2-S5017 and 16-S5024
1	* 16'-0"	4-A5093 and 32-S5024

\* Double Panel at East Abutment

GLARE SCREEN				
Mark	No.	Length	Weight	Shp
A5092	8	14'-8"	122	St.
A5093	4	15'-8"	65	St.
S5016	8	9'-8"	81	St.
S5017	324	15'-8"	5294	St.
S5018	4	8'-0"	33	St.
S5019	48	5'-6"	275	St.
S5020	24	10'-6"	263	St.
S5021	8	6'-0"	50	St.
S5022	28	5'-3"	153	St.
S5023	4	13'-5"	56	St.
S5024	3158	2'-4"	7684	St.

For additional notes, see Sh. 306 C

For additional quantities, see Sh. 306 F

EXISTING BRIDGE CUY-480-0648

Revised 11-20-78

GENERAL NOTES AND ESTIMATED QUANTITIES

REV 3-2-79

GENERAL NOTES CON'T

**LATEX MODIFIED CONCRETE OPTION:** At the Contractor's option, latex modified concrete (LMC) may be used in lieu of dense concrete. If LMC is used, work shall be in accordance with 55 845. The thickness of the LMC overlay shall be 1 1/4", as per 55 845, as opposed to 3/4" specified for dense concrete.

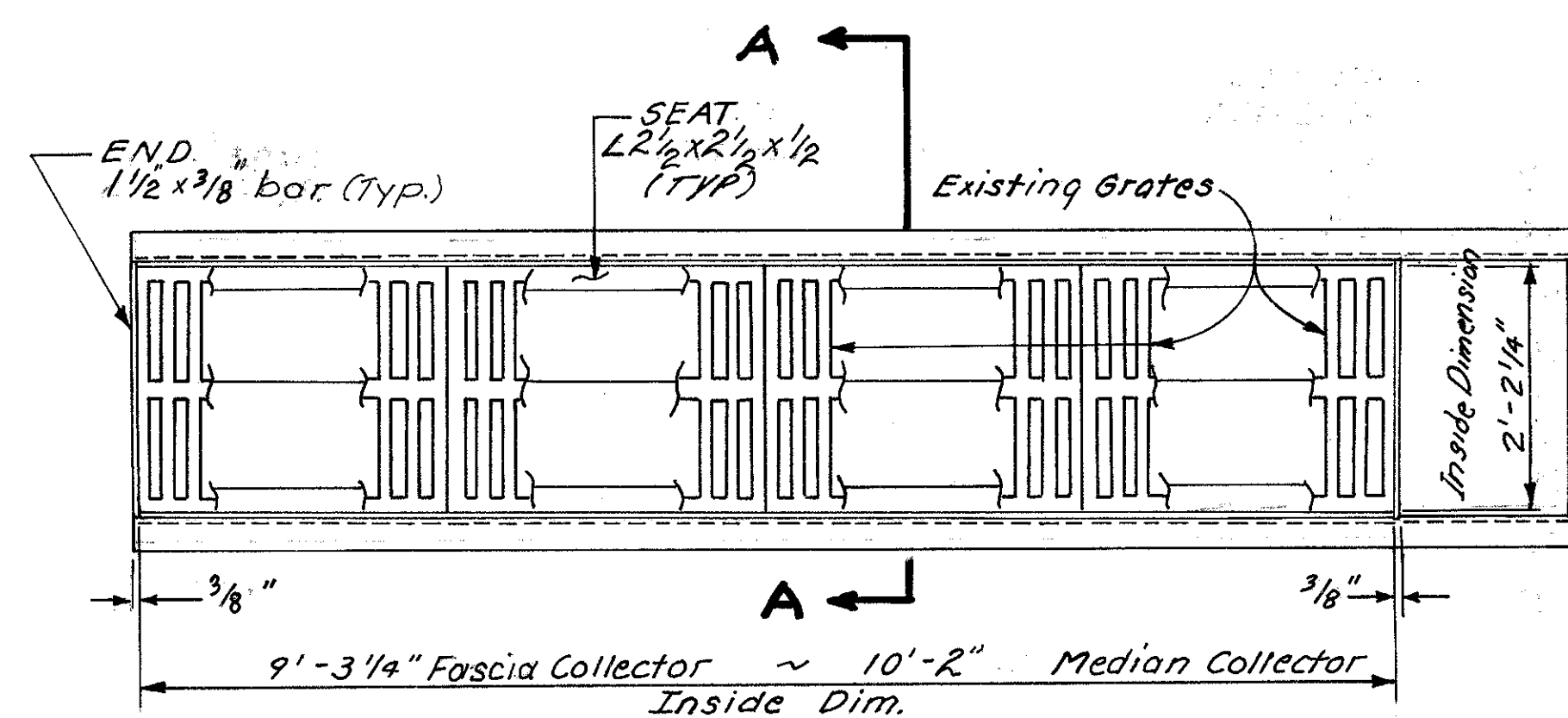
The latex for concrete modification shall be in accordance with 55 953 amended as follows: The pH of the latex admixture shall be from 8.5 to 11.0. The manufacturer shall certify that the material furnished is identical to that submitted to and prequalified by the FHWA Fairbank Highway Research Station. The latex shall have been used successfully on previous ODOT projects and recommended for continued use by the Department.

At the existing drainage collectors end vertical extension bars shall be 1" x 3/8" instead of 1 1/2" x 3/8" and the Ls 2 1/2" x 2 1/2" x 1/2" shall be reinstalled 1/2" lower than shown for dense concrete. At the abutment end dams the vertical extension bars and plates shall be 1/2" thinner than those shown for dense concrete and at the hinge expansion joints the upper plates and bars shall be 1/2" thinner than those shown for dense concrete.

Payment for Item 845, latex modified concrete overlay (1 1/4 inches thick) shall be made at the unit price bid for Item 850, dense concrete overlay (3/4 inches thick) as per plan.

Payment for Items 516, Vertical extension of abutment end dams with seal, as per plan, Vertical extension of hinge expansion joints, as per plan and Vertical extension of existing drainage collectors, as per plan shall be made at the unit prices bid without adjustment for the thinner plates.

Quantities of affected roadway items shall be adjusted at the time of construction.



COLLECTOR FRAME PLAN VIEW

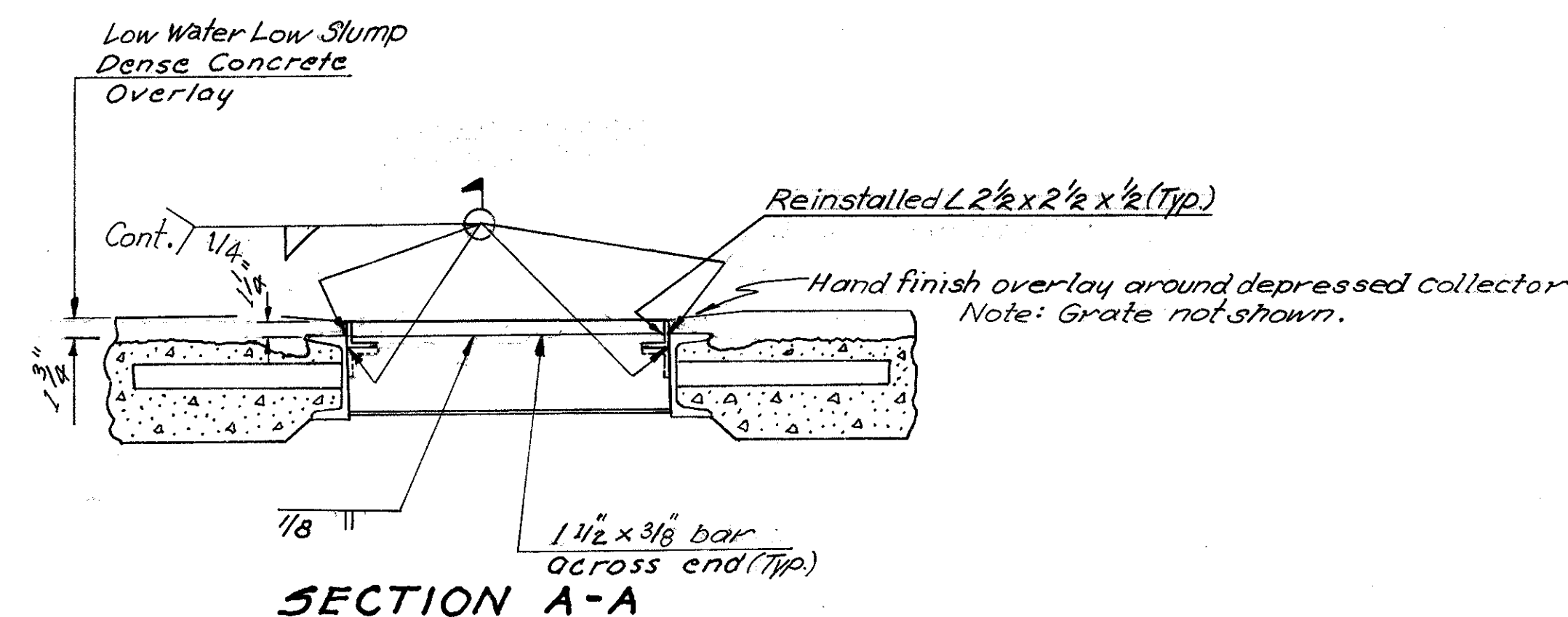
Note: Missing grates shall be replaced by State forces. The sections shall be tack welded one to another and to the collector frame.

NOTE 1: Sandblast sides and wipe clean. Re-sandblast if rust forms before joint is filled.

NOTE 2: Bond to bottom surface shall be prevented by use of foil or other suitable bond-breaker barrier satisfactory to the Engineer. Care shall be taken not to displace barrier when placing joint sealer.

Cost of surface preparation and furnishing and placing joint sealer shall be included in Item 516 for payment.

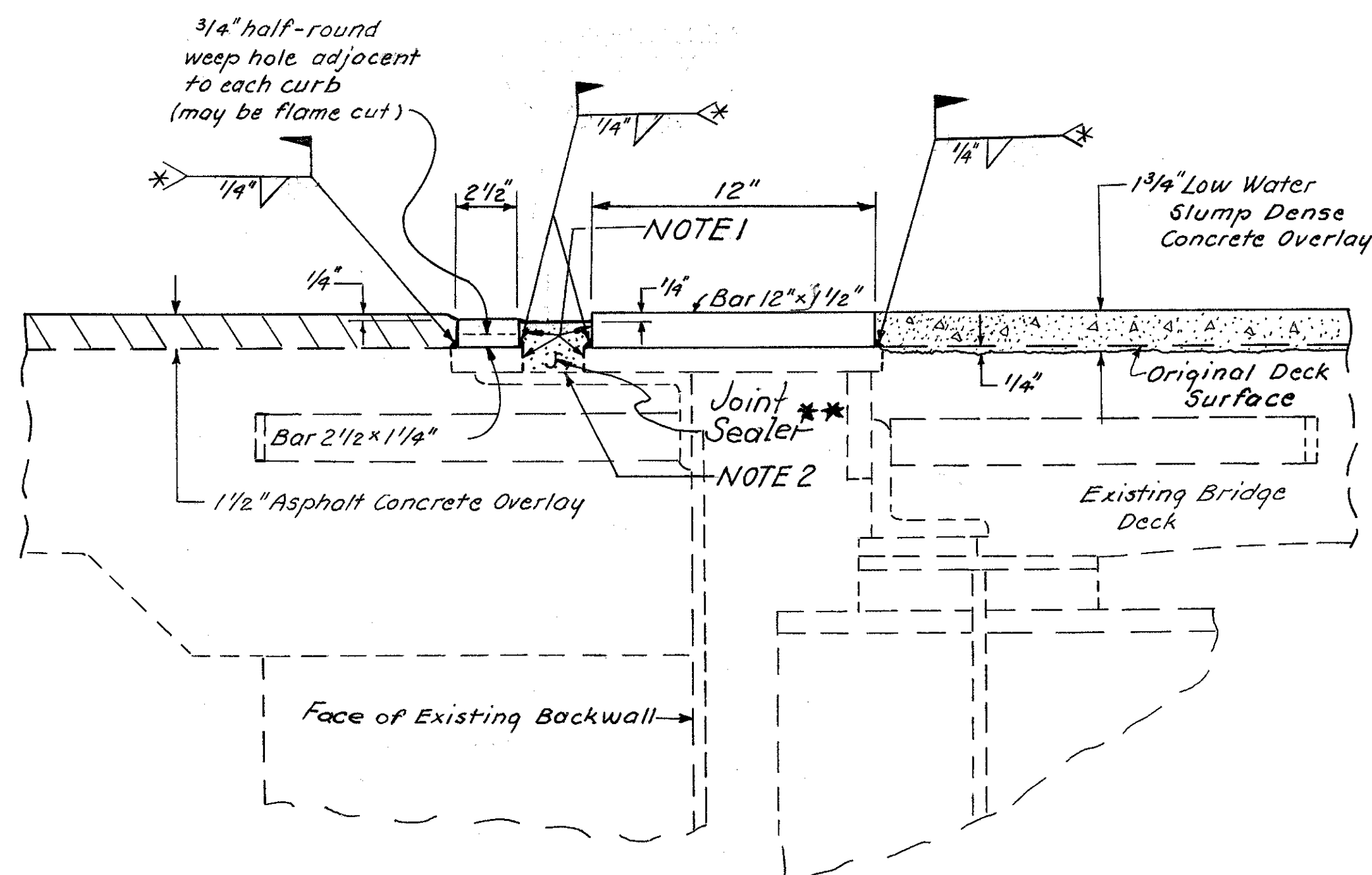
For additional details see Std. Const. Dwg. BP-5



RAISING EXISTING DRAINAGE COLLECTORS

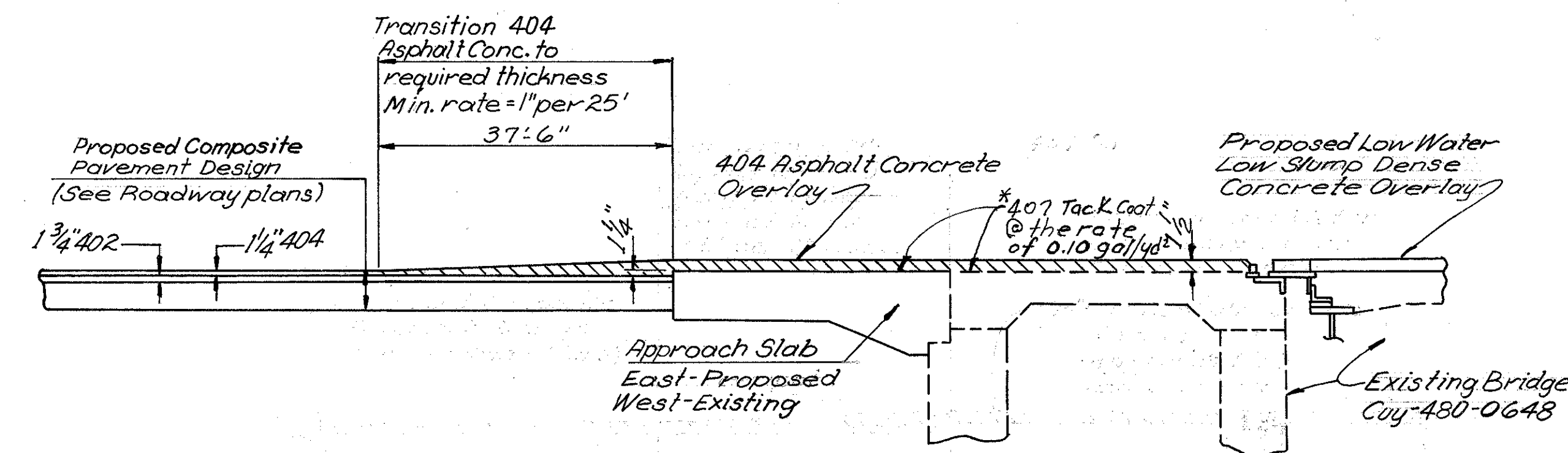
LONGITUDINAL JOINTS in the LMC/dense concrete overlay are permitted but only to the extent necessary to accommodate the width of the finishing machine, to facilitate changes in roadway crown, and to permit maintenance of vehicular traffic. Except as approved by the Director, joints shall not be used adjacent to raised curbs, barriers or edges of decks.

- \* Continuous
  - \*\* Material shall be a hot-applied bridge deck waterproofing material which also meets the requirements of 705.01.
- Vertical Extension Bars shall be installed across the structure in sections sufficient to place the overlay, but not beyond the portion of structure closed for the overlay operations.



RAISING AND SEALING EXISTING ABUTMENT END DAM

Note: For Isometric View of Collector at Median see Sh. 306 F

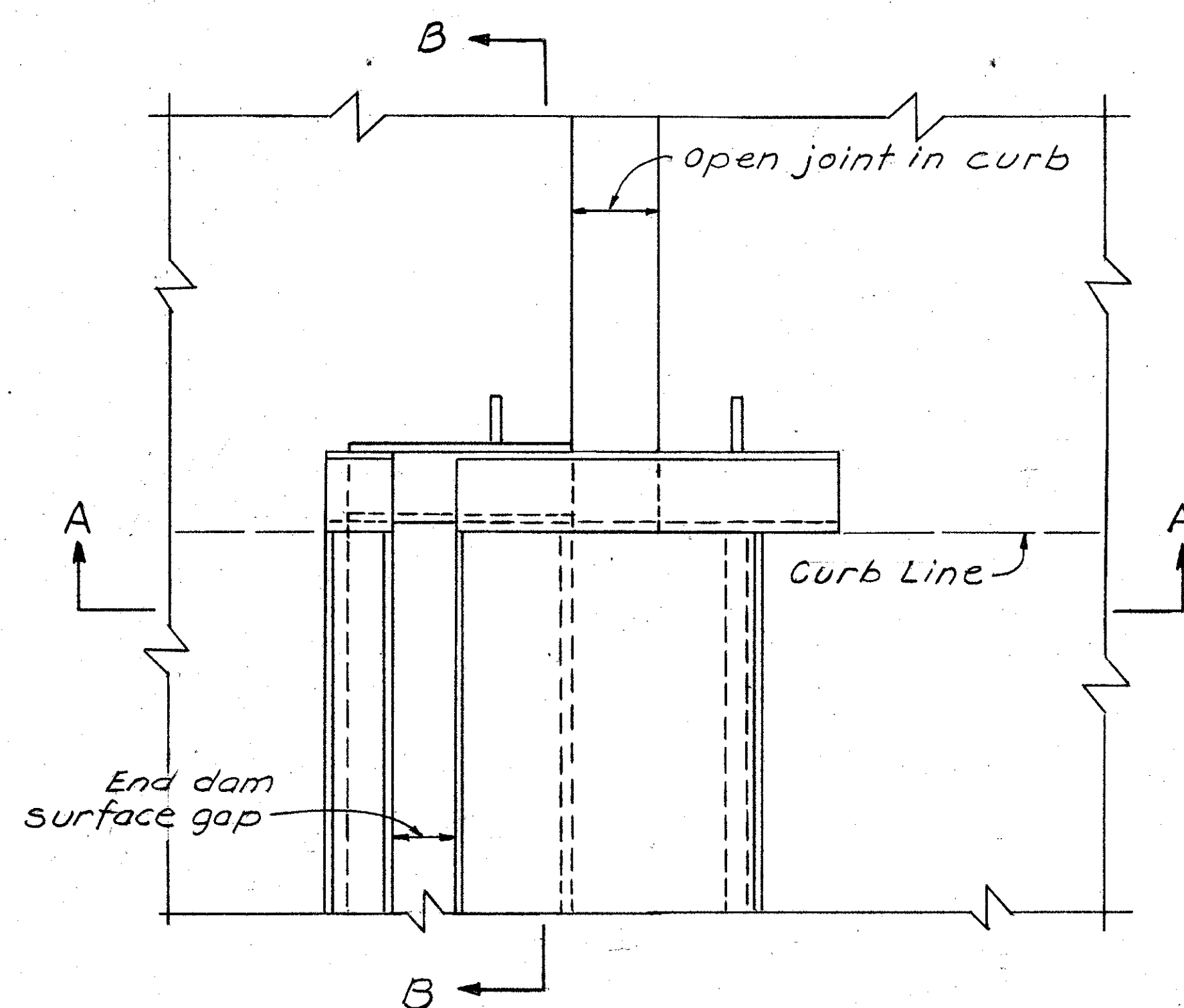


ROADWAY APPROACH PROFILE TRANSITION

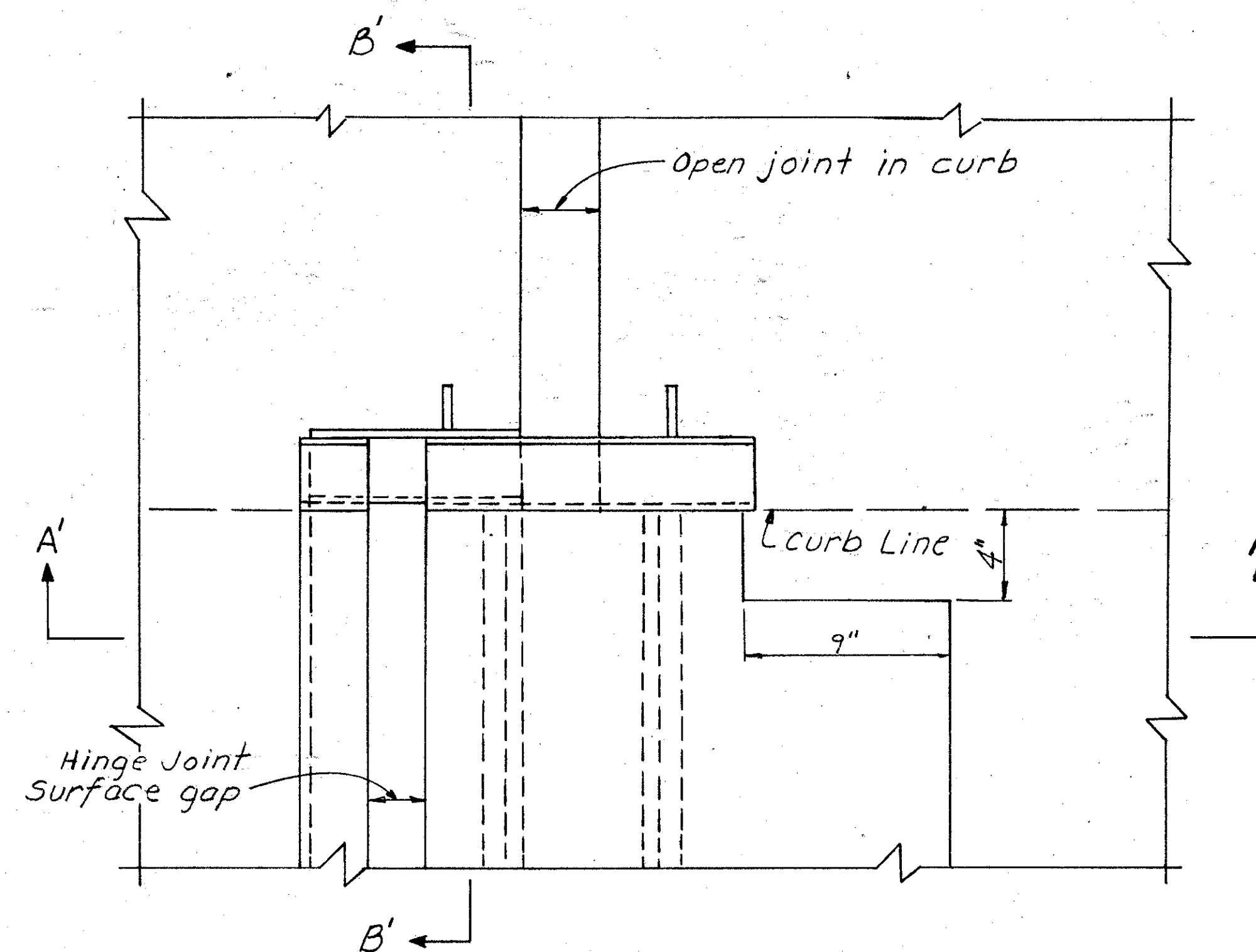
FHWA REGION	STATE	PROJECT
5	OHIO	

306D  
317

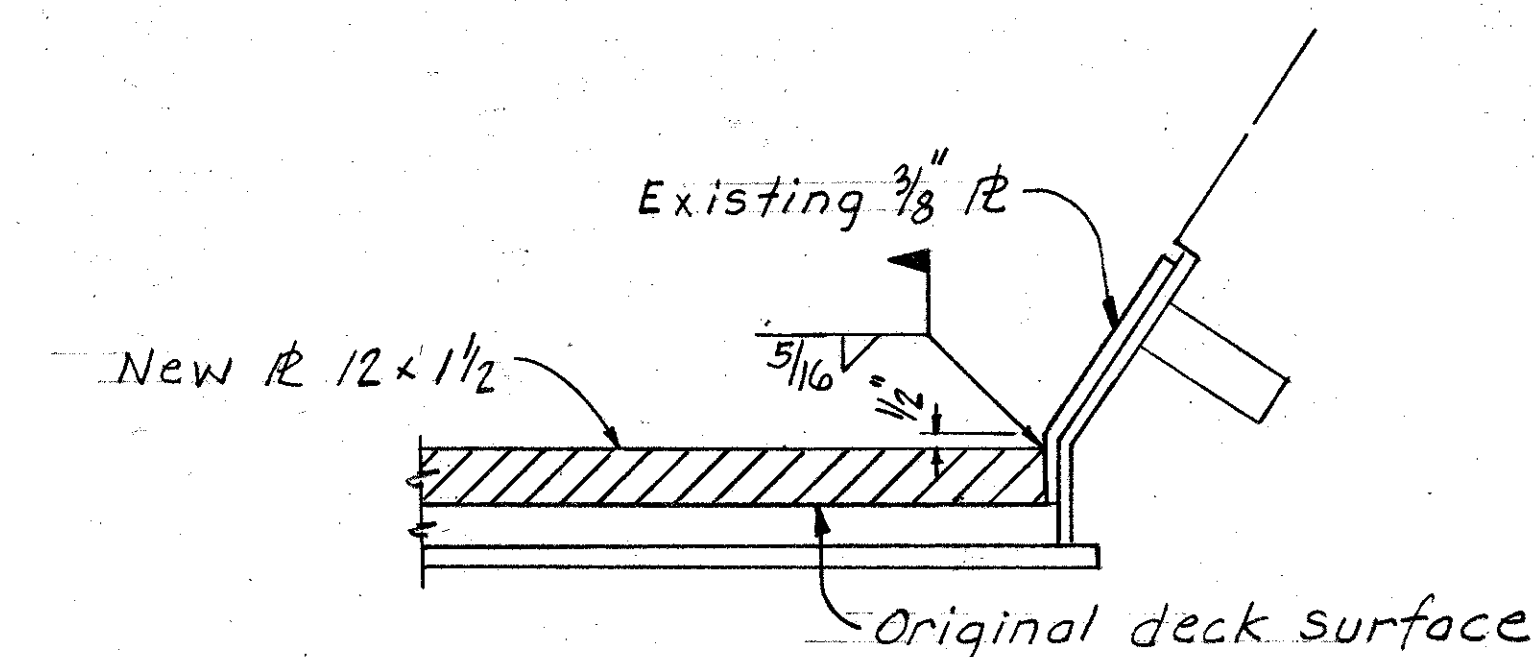
CUYAHOGA COUNTY  
CUY-480-6.78



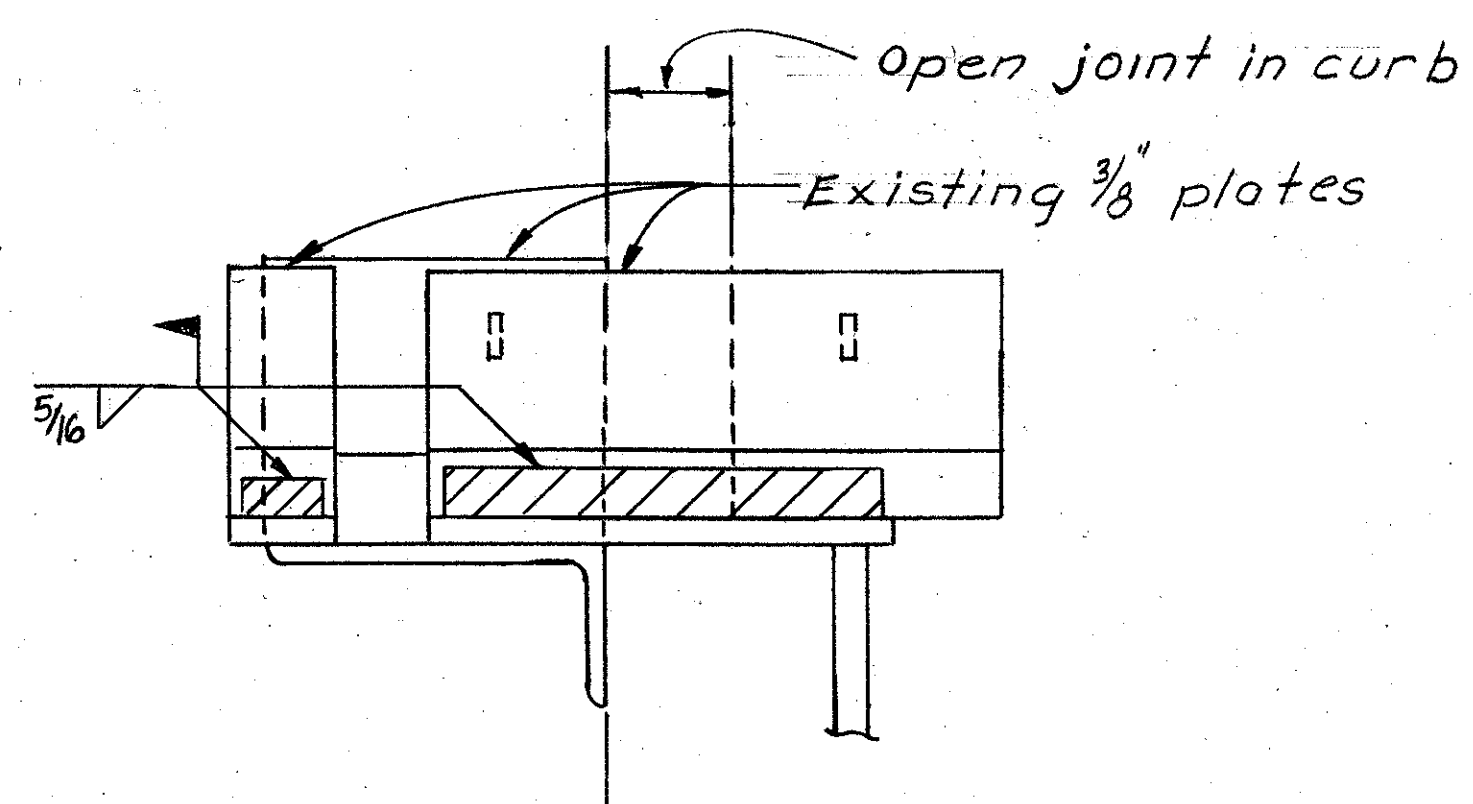
PLAN VIEW  
CURB PLATES  
AT ABUTMENT JOINT



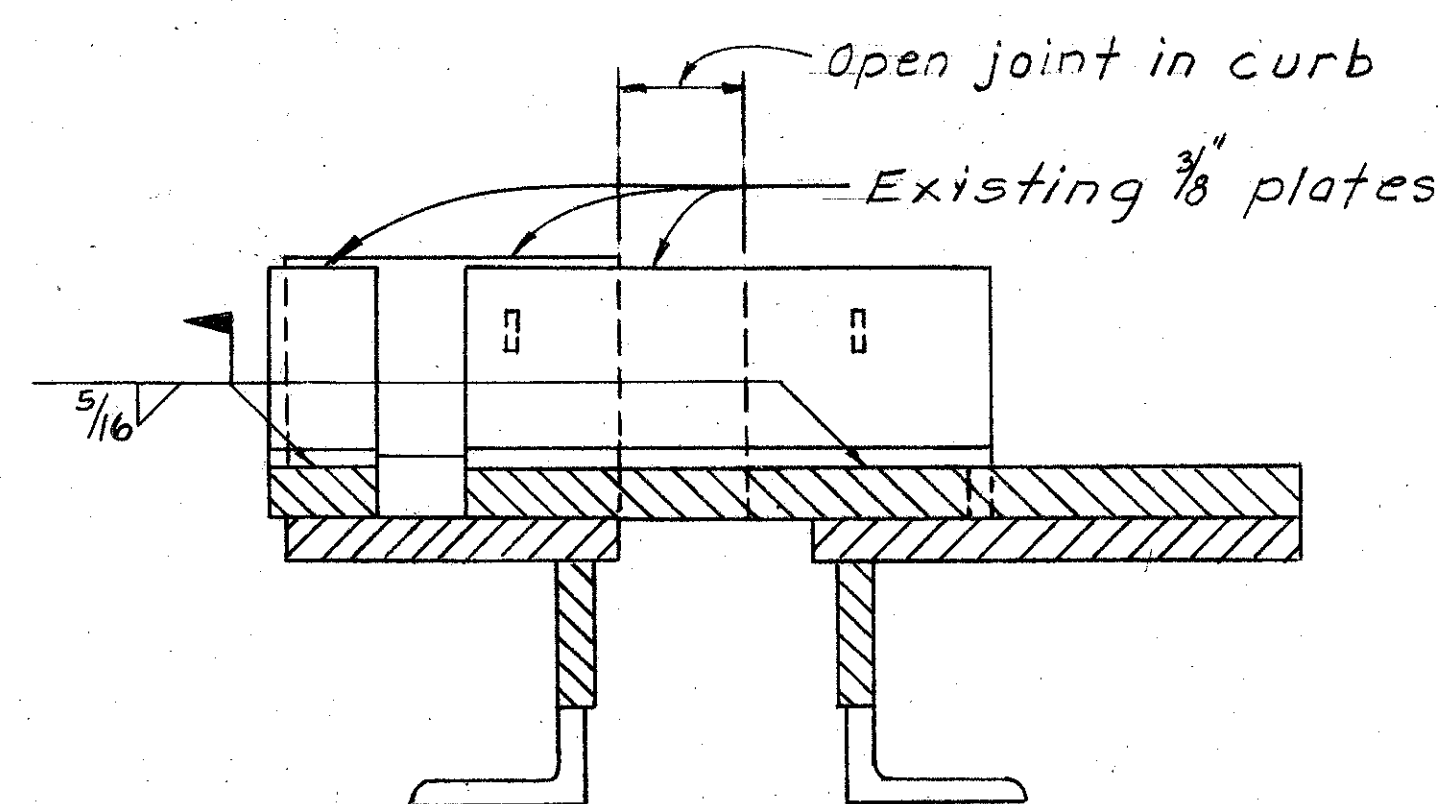
PLAN VIEW  
CURB PLATES  
AT HINGE JOINT



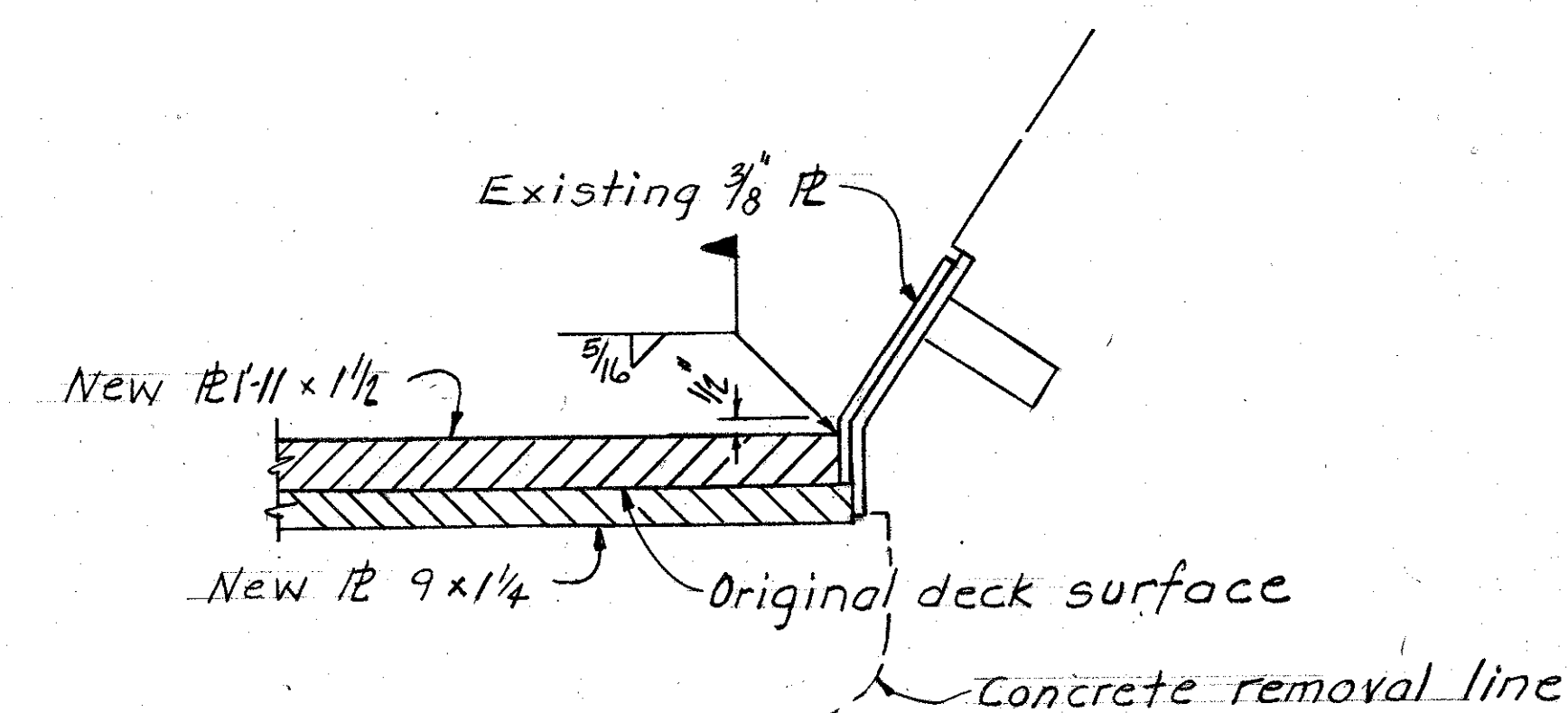
SECTION B-B



SECTION A-A  
AT ABUTMENT JOINT



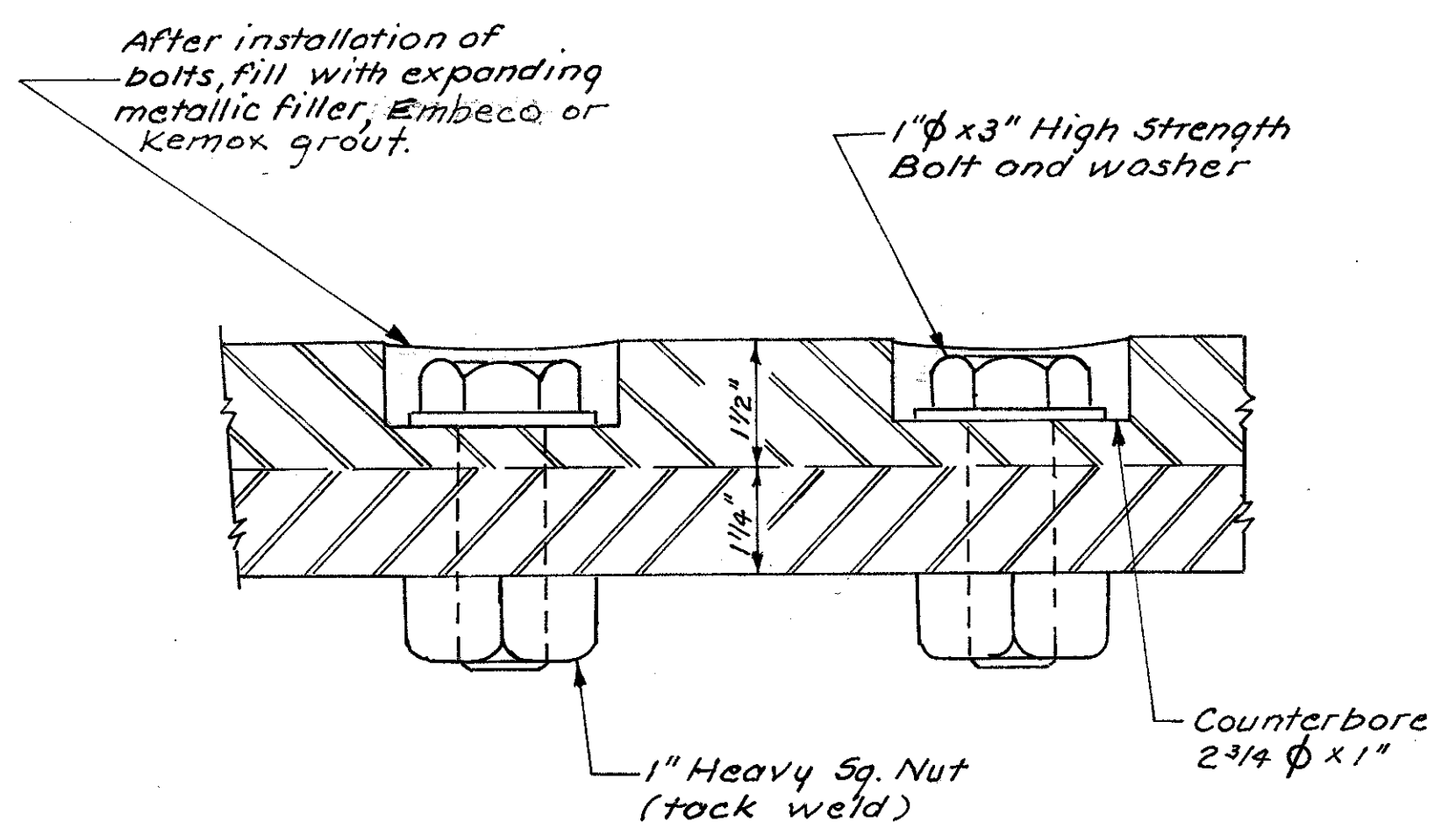
SECTION A'-A'  
AT HINGE JOINT



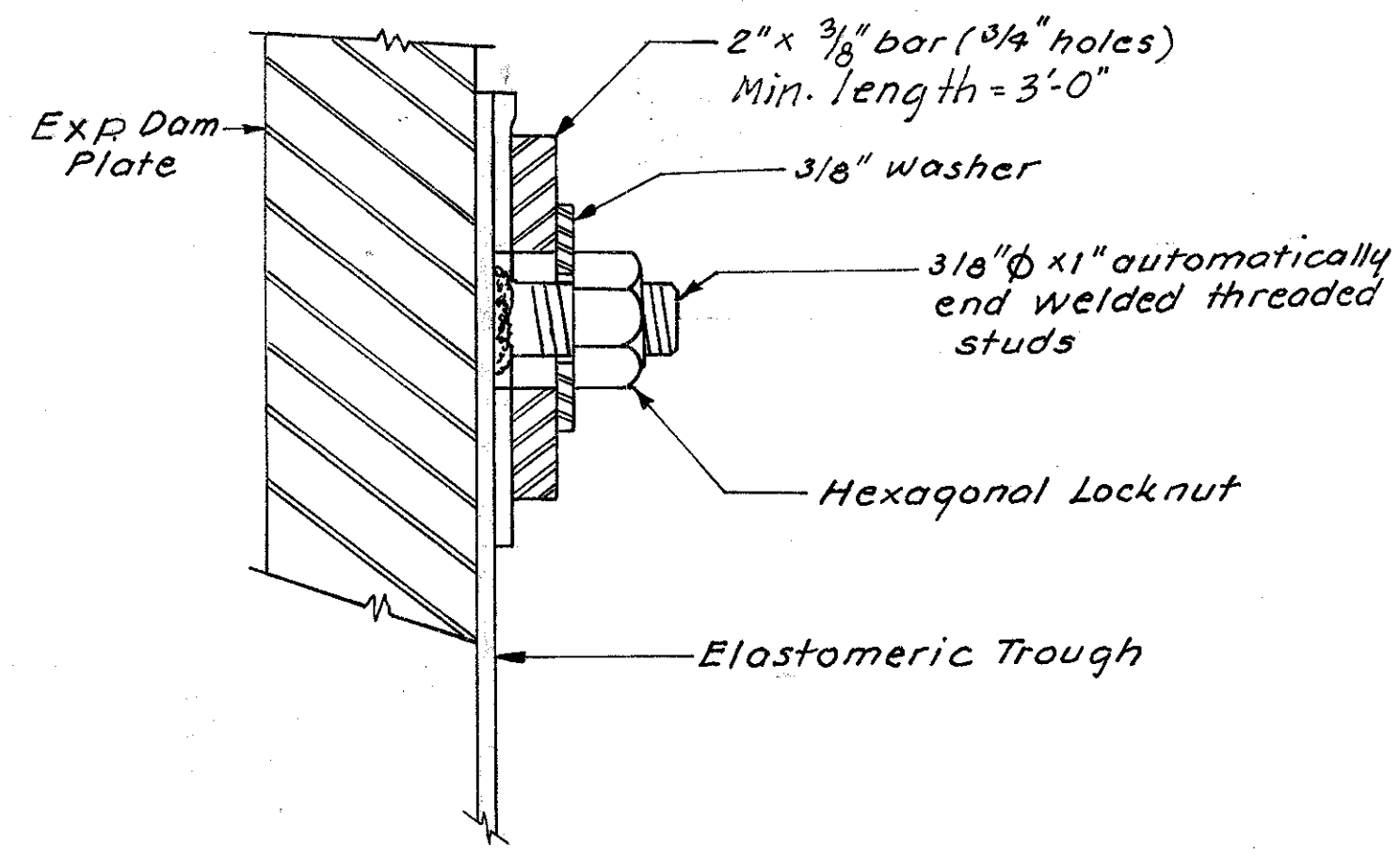
SECTION B'-B'

STATE OF OHIO DEPARTMENT OF TRANSPORTATION BUREAU OF BRIDGES AND STRUCTURAL DESIGN						
CURB PLATE DETAILS BRIDGE No. CUY 480-0648 OUTERBELT SOUTH over ROCKY RIVER						
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
WTF	WTF			WJJ	9-12-78	

**CUYAHOGA COUNTY**  
**CUY-480-6.78**



**DETAIL "A"**



**DETAIL "B"**

Elastomeric Drainage Trough shall be shop fabricated and vulcanized from material furnished in conformance with the following: Du Ponts Fairprene NN-0003, a 3/32 inch thick sheet of Nylon Reinforced Neoprene, or a suitable alternate. The ply material shall conform to ASTM D751 and the following:

- Thickness 0.094 ± 0.01 in.
- Breaking Strength, Grab, W x F, minimum 700 x 700 lbs.
- Adhesion, 1" strip, 2"/min., 9 lbs.
- Bursting Strength (Mullen), min. 1,400 p.s.i.
- Heat aging, 180° bend without cracking after 70 hrs. at 212°F
- Low temperature brittleness, ASTM D2136, pass flex test after 5 hours at -40°F

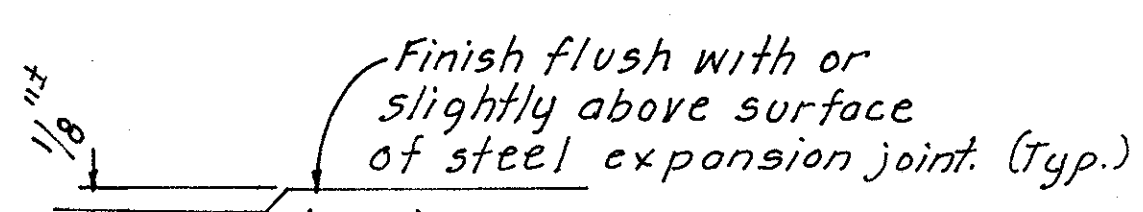
Connection for Elastomeric Trough  
All clamp bars and washers shall be galvanized according to 711.02. Studs and nuts shall be stainless steel.

Bituminous Coating: Steel work inside the trough area above the elastomeric trough and the trough fasteners (Detail B) shall be cleaned, by abrasive blasting if necessary and protected with a bituminous coating conforming to the latest edition of Federal Specification WW-P-405 b, Coating F.

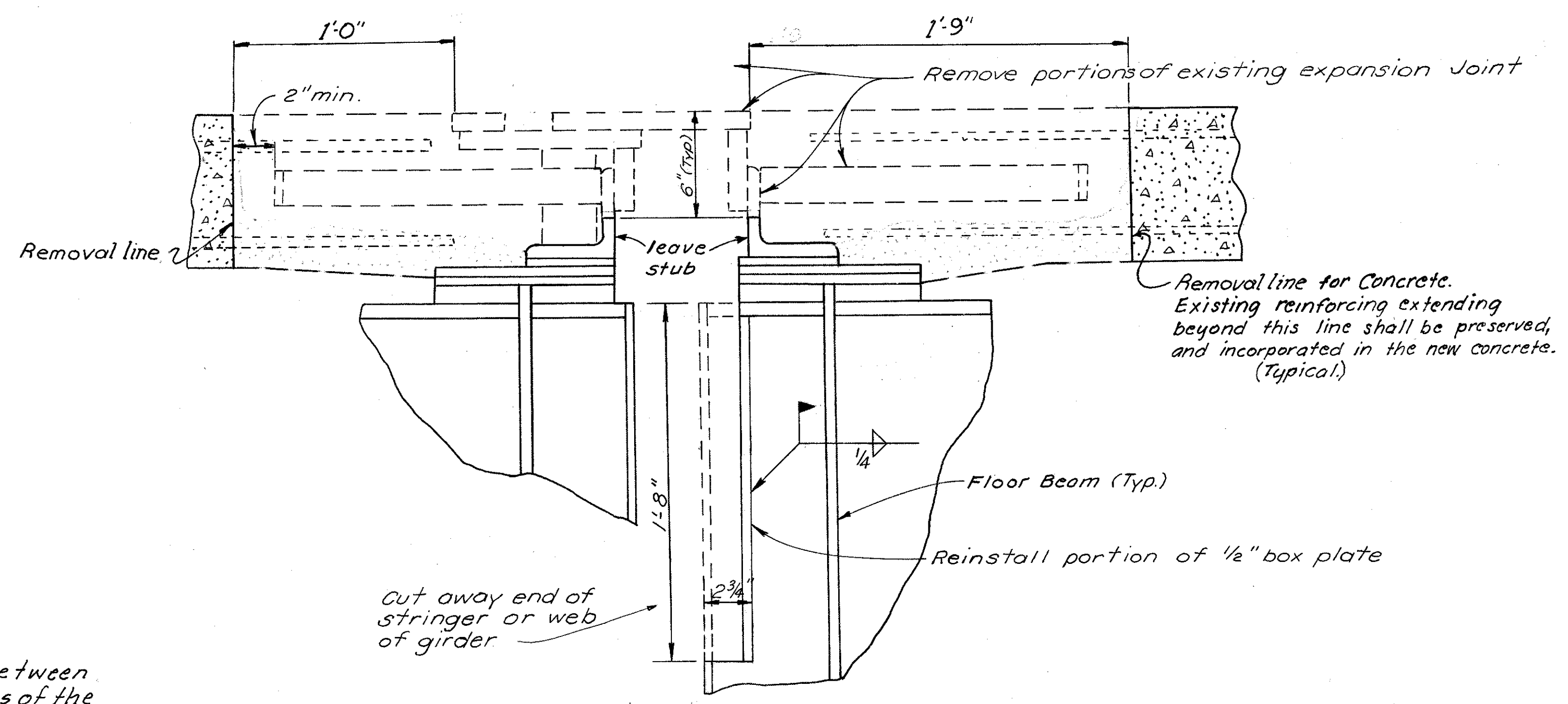
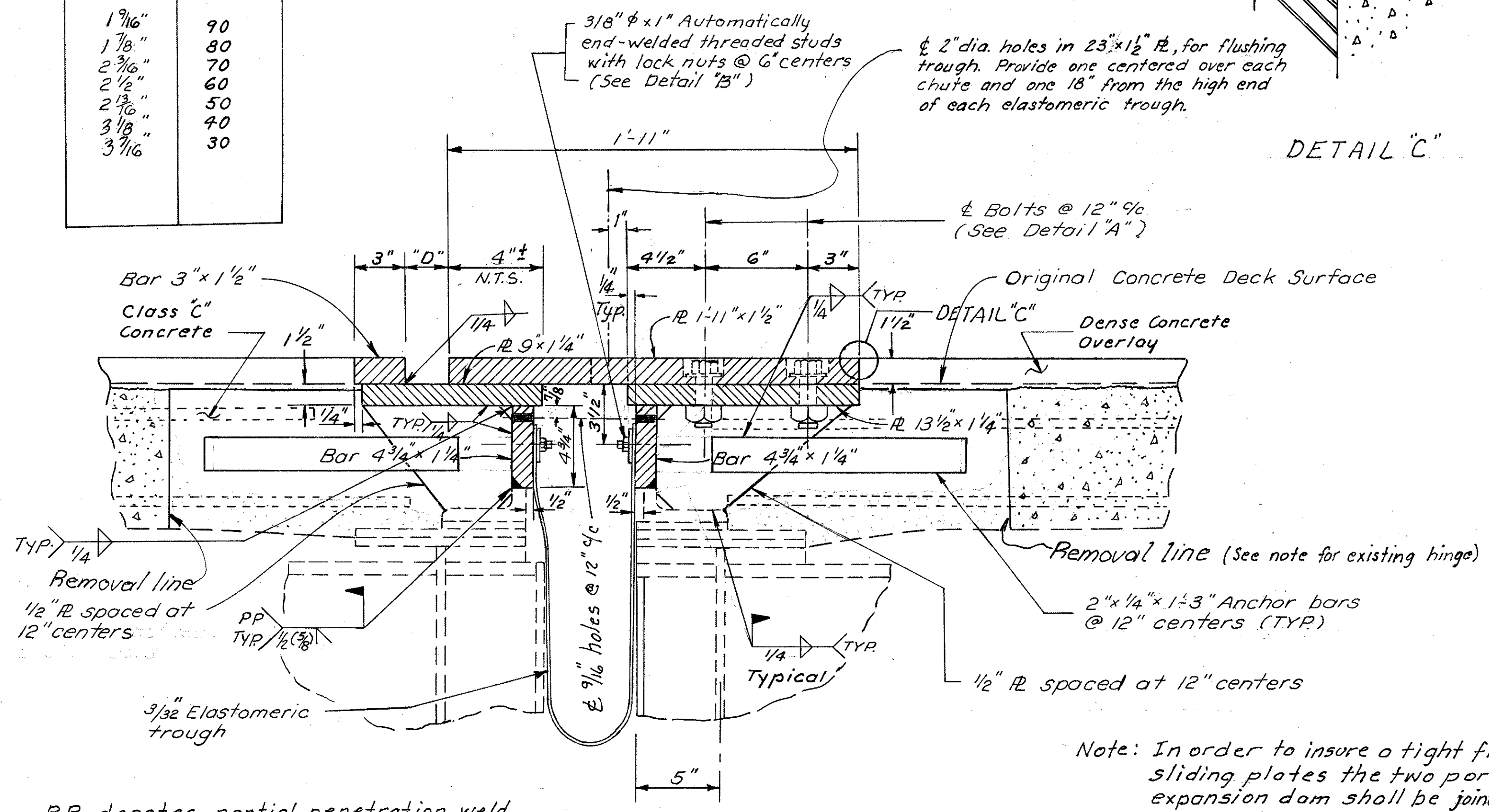
REMOVAL OF PORTIONS OF EXISTING EXP. DAMS

When removing portions of existing expansion dams at hinge joints care shall be exercised by the Contractor to preserve the existing deck reinforcing steel. Any reinforcing steel that is damaged or removed shall be repaired or replaced by the Contractor at no additional expense to the State.

"D" Inches	Temp. °F
1 7/16"	90
1 7/8"	80
2 1/16"	70
2 1/2"	60
2 7/16"	50
3 1/8"	40
3 1/16"	30



**DETAIL "C"**



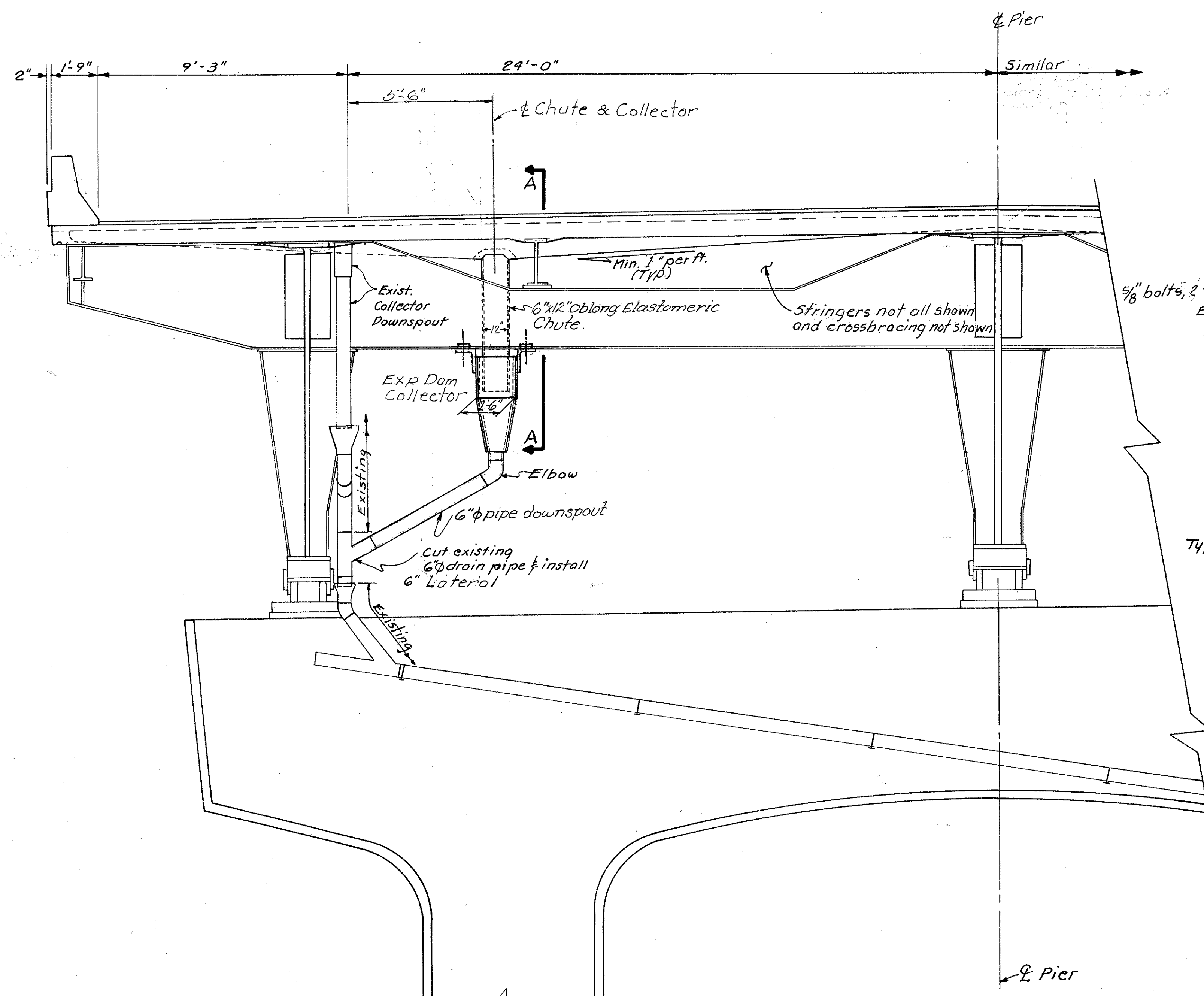
**EXISTING HINGE EXPANSION JOINT**

Note: In order to insure a tight fit between sliding plates the two portions of the expansion dam shall be joined in the shop, shipped together, and remain assembled until after installation has been made. Shop drawings shall show method of connection.

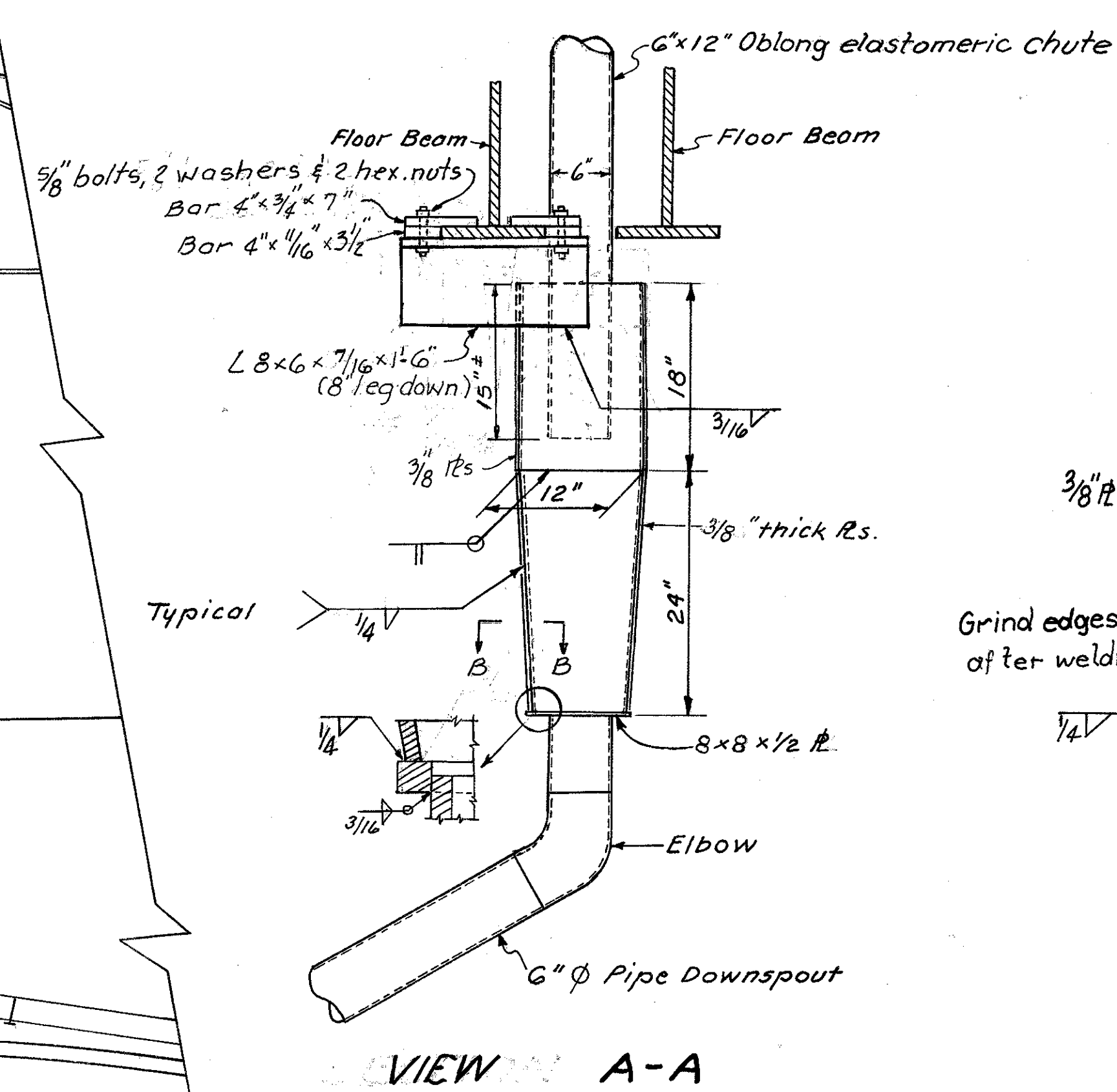
**RAISING AND WATERPROOFING EXISTING HINGE EXPANSION JOINT**

CUYAHOGA COUNTY  
CUY-480-6.78

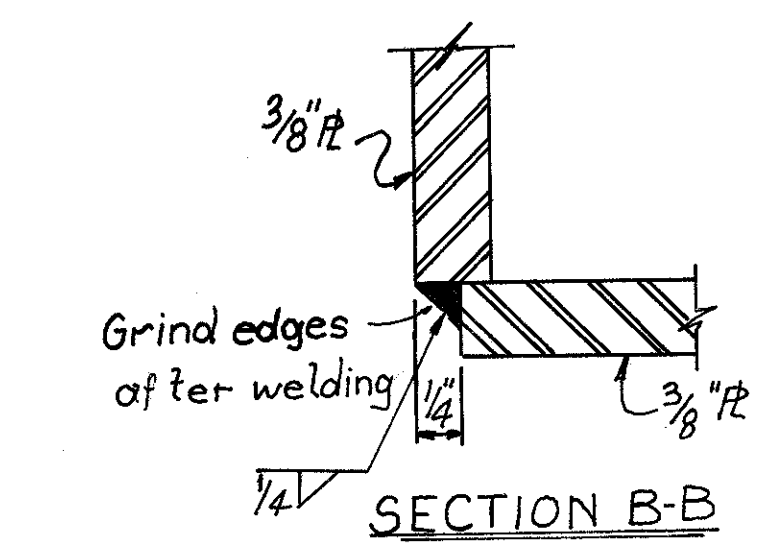
Expansion Dam Collectors, collector clamp assemblies & support angles shall be galvanized according to 711.02. Field welds and metal surfaces adjacent to field welds shall be painted according to 837.



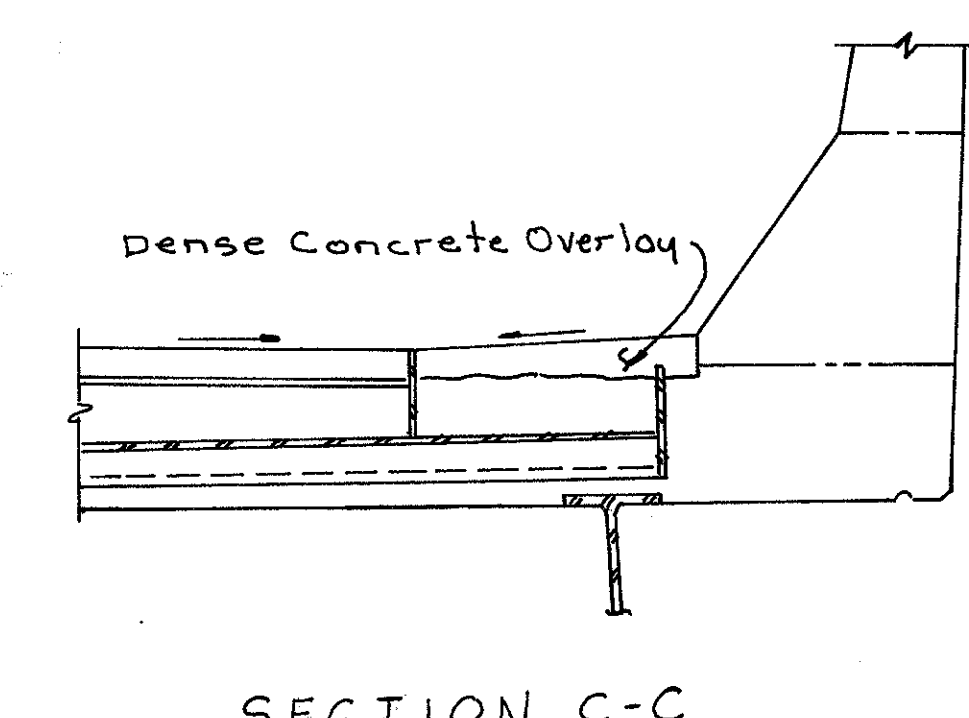
TROUGH & DOWNSPOUT DETAIL



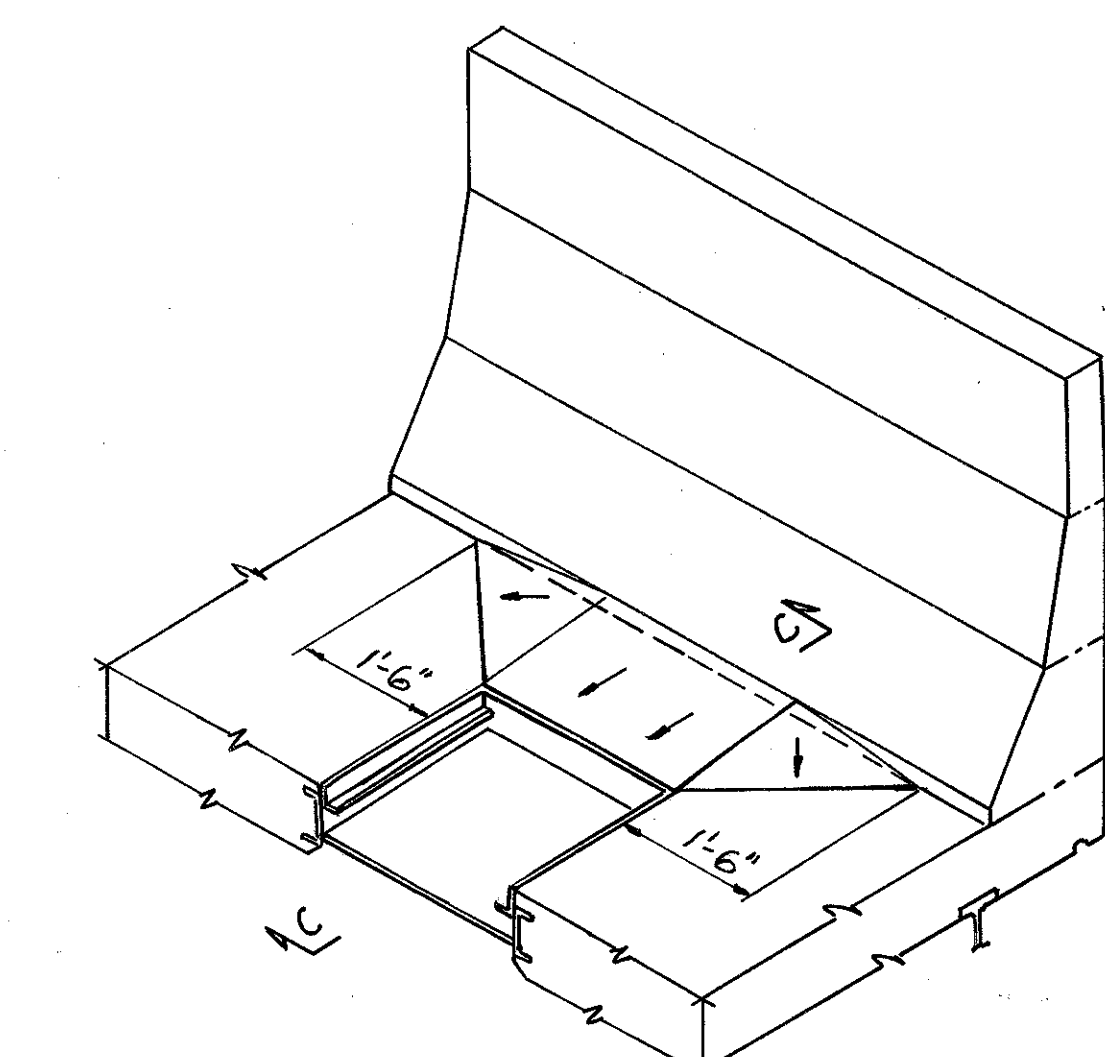
VIEW A-A



SECTION B-B



SECTION C-C

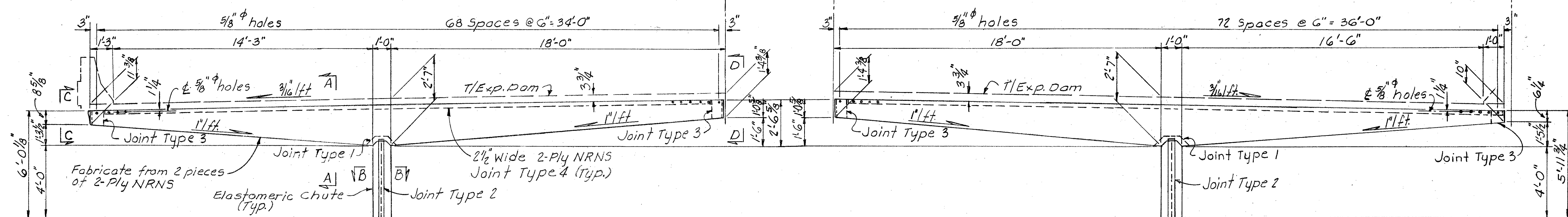
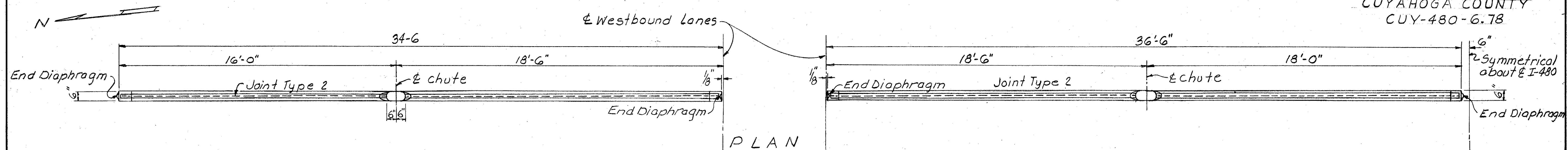


ISOMETRIC VIEW OF COLLECTOR AT MEDIAN  
(Grates not shown)

*ADDITIONAL ESTIMATED QUANTITIES					
Item	Total	Unit	Description	Fairview Park	Cleveland
203	7	Cu.Yd.	Embankment	7	
503	39	Cu.Yd.	Unclassified excavation	9	30
503	Lump	sum	Cofferdams, cribs and sheeting	Lump	
511	4	Cu.Yd.	Class C concrete footings	4	
514	40	Sq.Ft.	Field painting of structural steel	40	
518	2	Cu.Yd.	Perous backfill	2	
518	20	Lin.Ft.	6" helical perforated CSP including specials	20	
601	371	Cu.Yd.	Dumped rock fill, Type A	141	230
660	13	Sq.Yd.	Reinforced sodding	13	
Special	24	Each	Cleaning collectors and downspouts	12	12
Special	3	Cu.Yd.	No. 1 crushed stone or slag	2	1

\* See Proposal Note which describes additional work.

CUYAHOGA COUNTY  
CUY-480-6.78



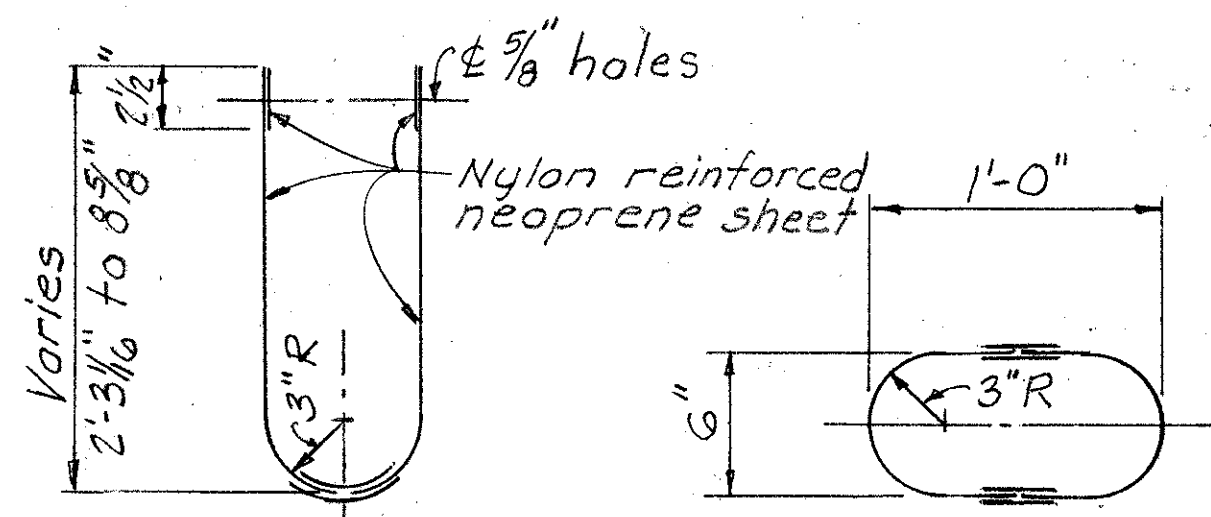
ELEVATION

PAIR OF ELASTOMERIC DRAINAGE TROUGHS  
(4 PAIRS REQ'D)

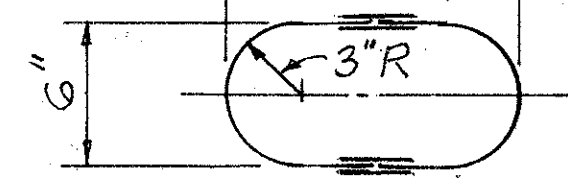
SHOP DRAWINGS for the elastomeric trough shall be prepared by the trough fabricator. These drawings, after being coordinated with the drawings of the structural fabricator shall be submitted to the Director. Fabrication shall not begin before approval.

NRNS refers to Nylon Reinforced Neoprene Sheet.

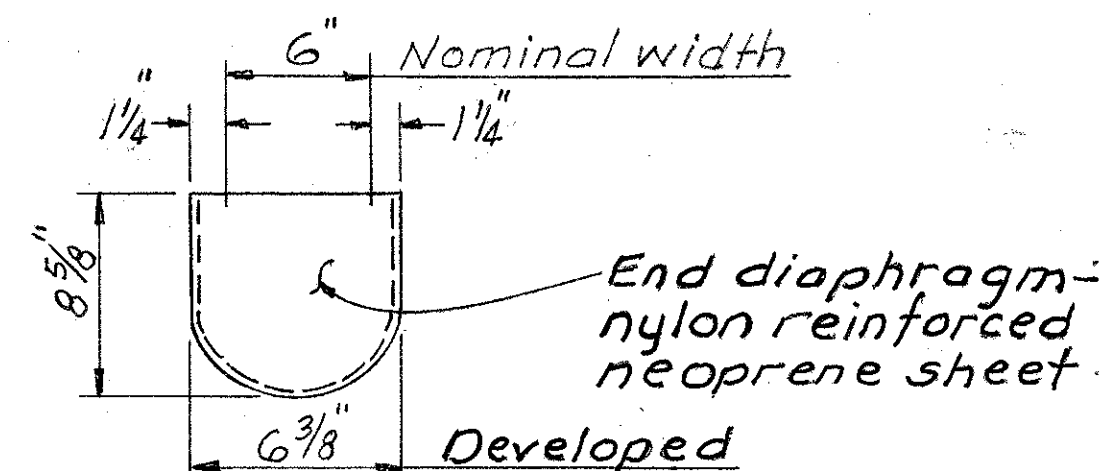
Payment for elastomeric drainage troughs shall be made under Item 518 Pairs of Elastomeric Drainage Troughs, As per Plan.



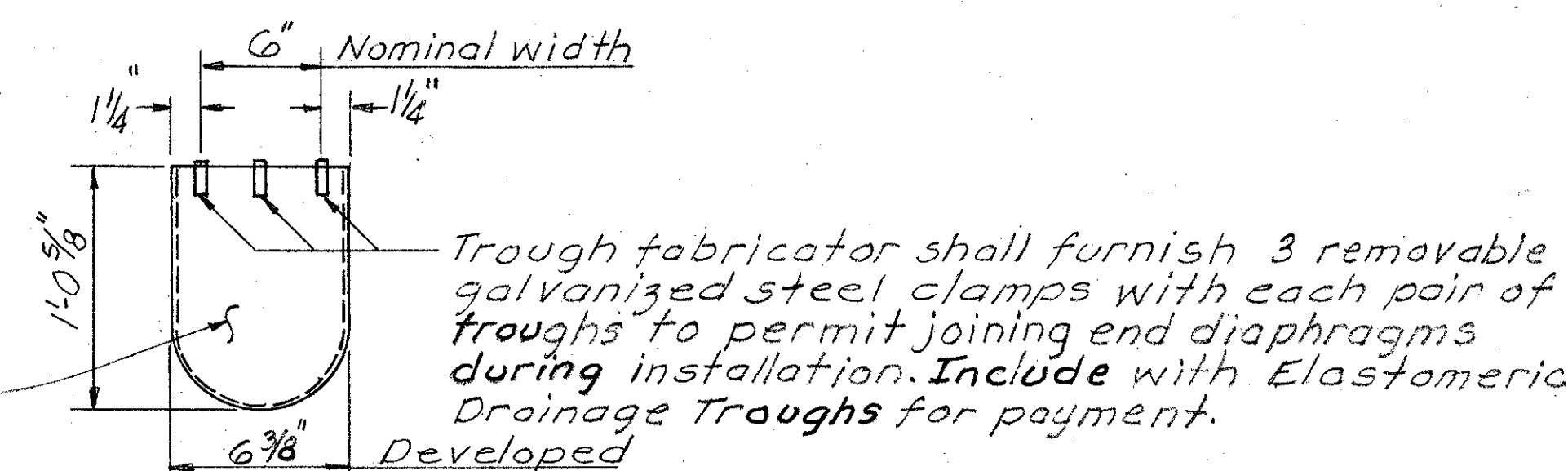
SECTION A-A



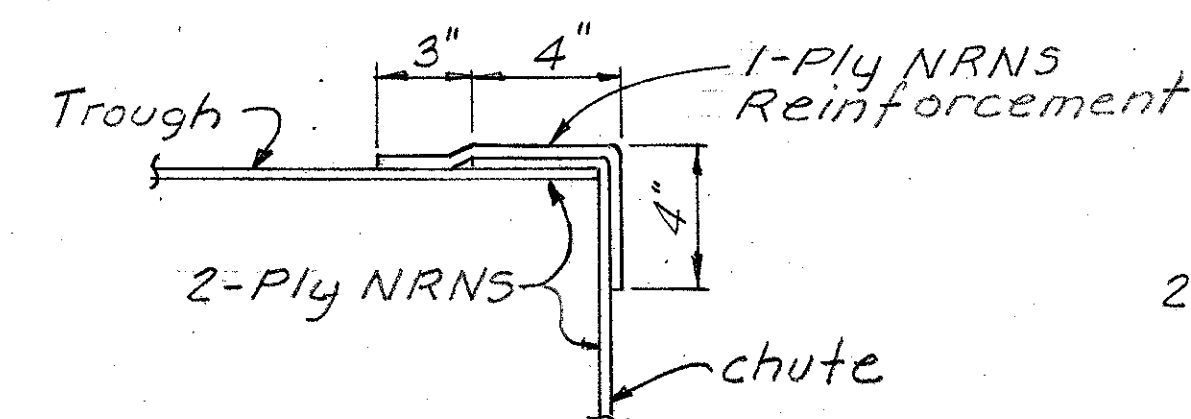
SECTION B-B



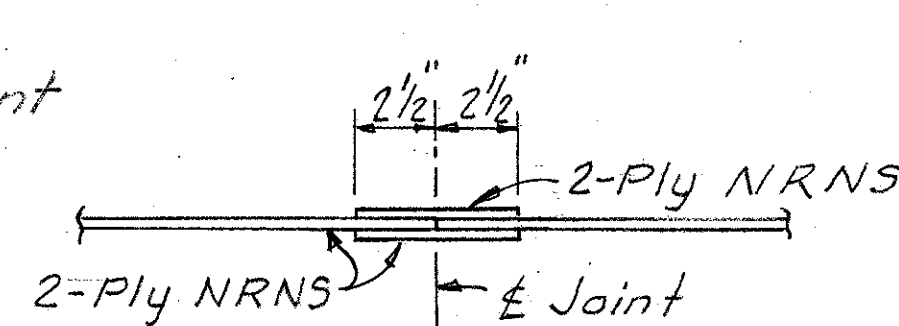
DEVELOPED VIEW C-C



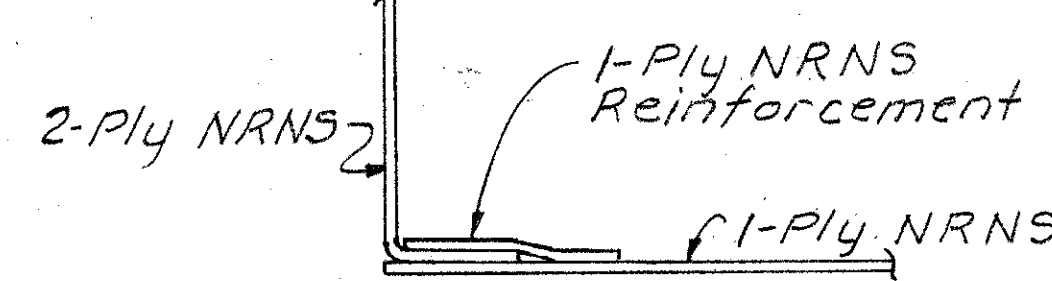
DEVELOPED VIEW D-D



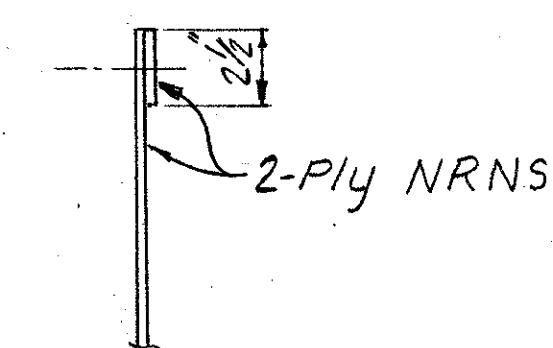
JOINT TYPE 1



JOINT TYPE 2



JOINT TYPE 3



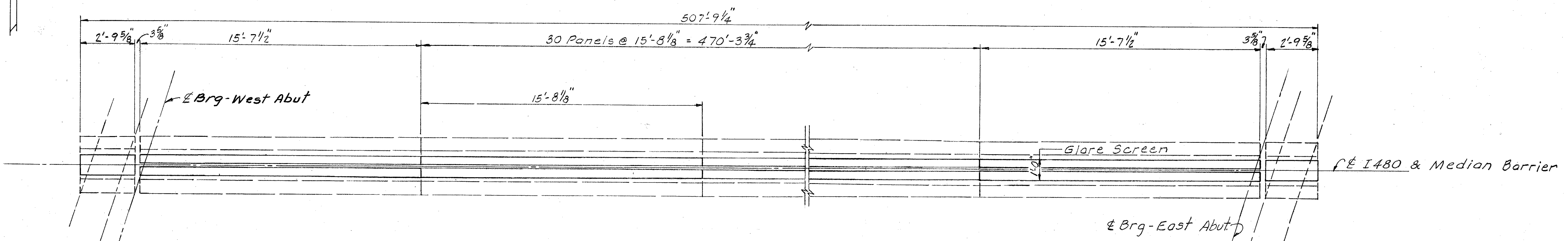
JOINT TYPE 4

STATE OF OHIO  
DEPARTMENT OF TRANSPORTATION  
BUREAU OF BRIDGES AND STRUCTURAL DESIGN

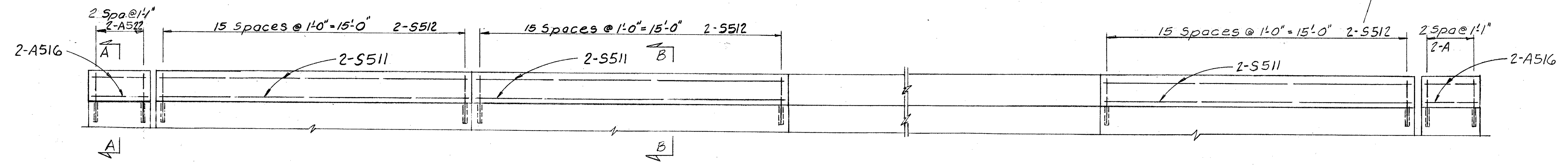
ELASTOMERIC TROUGH DETAILS  
BRIDGE NO. CUY-480-0648  
OUTERBELT SOUTH OVER ROCKY RIVER

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
WTF	WTF			WJW	9-12-78	





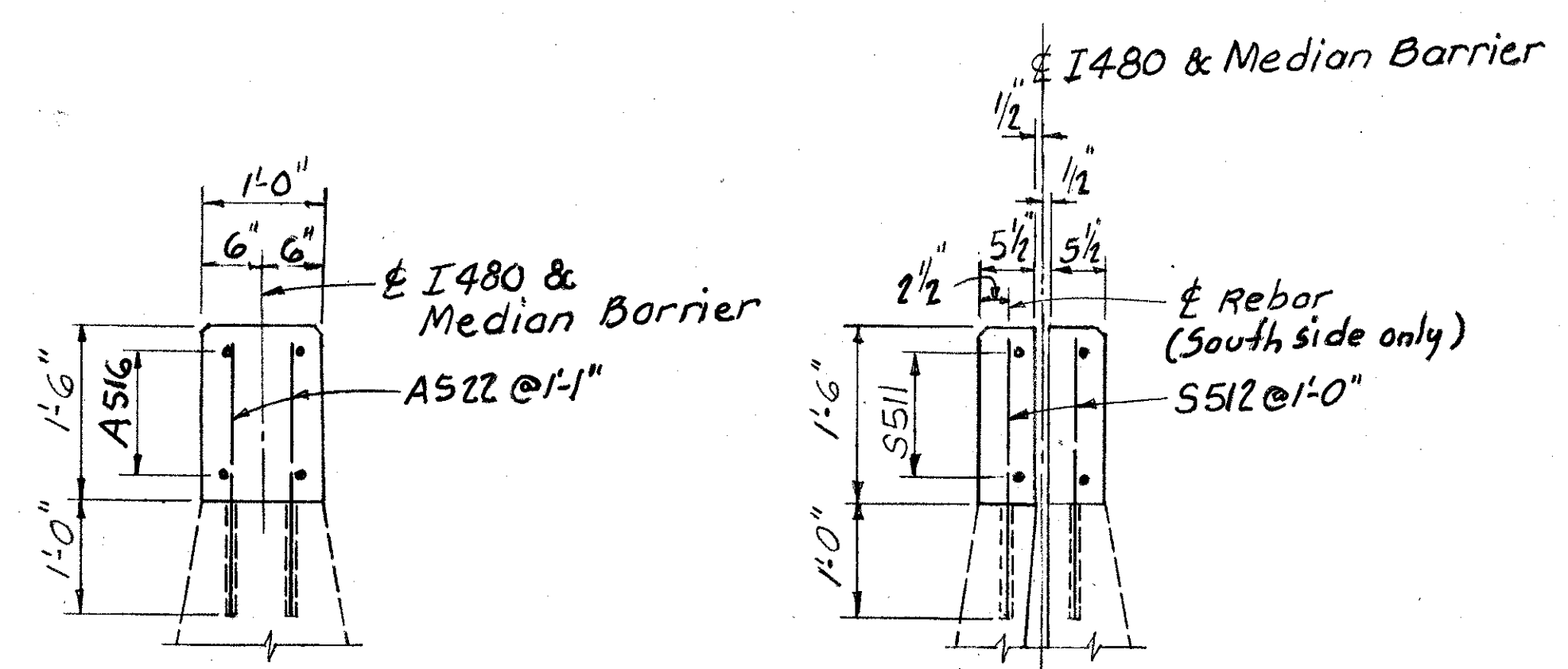
PLAN - GLARE SCREEN



ELEVATION

DESIGN DATA:

Concrete Class C - unit stress 1,200 p.s.i.  
Reinforcing Steel - ASTM A615, A616 or A617  
unit stress 20,000 p.s.i.



SECTION A-A

SECTION B-B

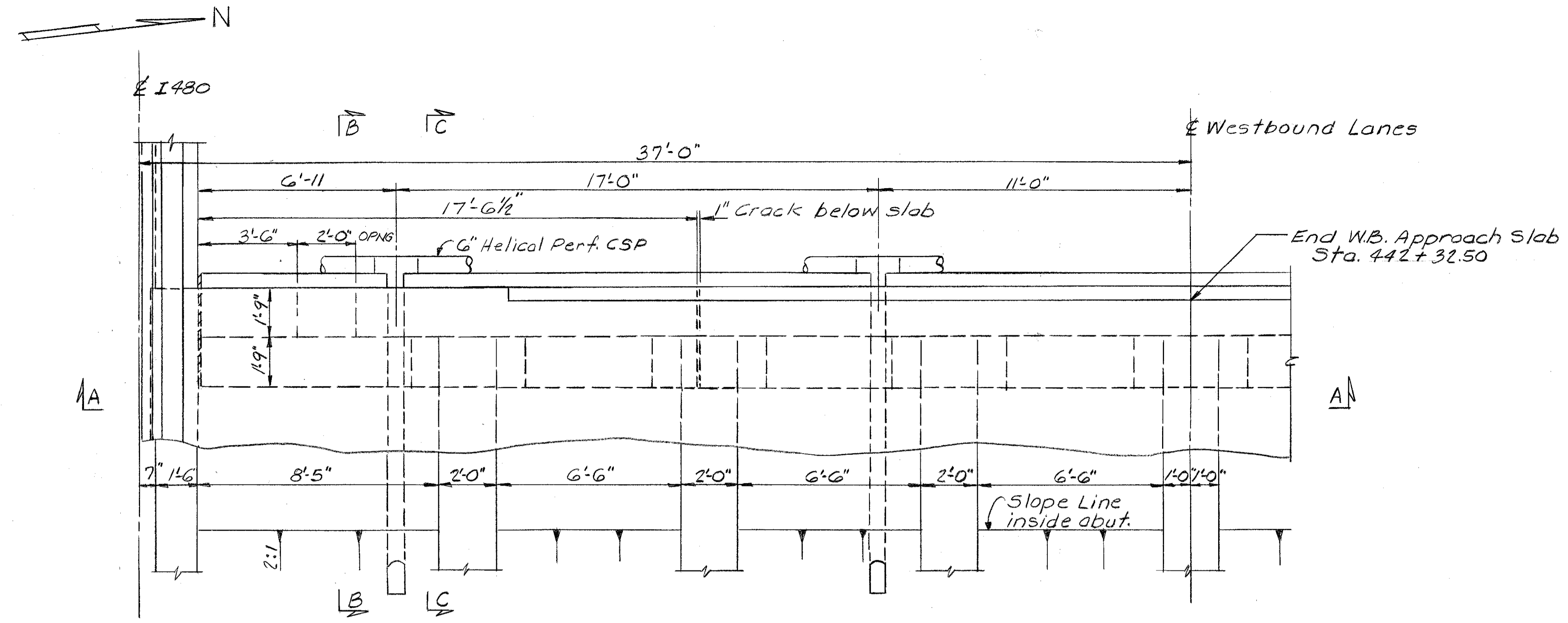
SECTION THROUGH GLARE SCREEN JOINT

1/4" preformed expansion joint filler, gray sponge rubber or gray cellular polyvinyl chloride sponge. Filler shall conform to AASHTO M-153, Type I, except density of PVC sponge shall be not less than 20 lb. per cu. ft. Include with Item 511 for payment.

CUY-480-0800 ESTIMATED QUANTITIES	
Item 509	4588 Lb. Reinforcing steel
Item 510	1036 Ea. Dowel Holes
Item 511	26 C.Y. Class C Concrete, Glare Screen (See Proposal Note)
Item 808	26 Units Chemical Admixture for Concrete, Type A, B or D

REINFORCING STEEL				
MARK	NO.	LENGTH	WEIGHT	SHP.
A516	8	2'-5"	20	str.
A522	12	2'-4"	29	str.
S511	128	15'-4"	2047	str.
S512	1024	2'-4"	2492	str.

STATE OF OHIO DEPARTMENT OF TRANSPORTATION BUREAU OF BRIDGES AND STRUCTURAL DESIGN					
GLARE SCREEN DETAILS					
BRIDGE NO. CUY-480-0800 OVER AIRPORT FREEWAY AND RAMP B-1 & B-5					
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE
WTF	WTF			WJW	9-12-78



PART PLAN - WEST END OF REAR ABUTMENT

**NOTES**

Concrete Class C - unit stress 1,333 p.s.i. for substructure

Item Special - Non-shrinking Mortar. Work under this item shall consist of placing non-shrinking mortar under the two (2) southerlymost concrete girders at the west bridge seat of the rear abutment, in the triangular opening between the top of backwall and abutment slab and in the wall and footing crack. Entrance into the voided abutment shall be accomplished through an access opening made in the back wall.

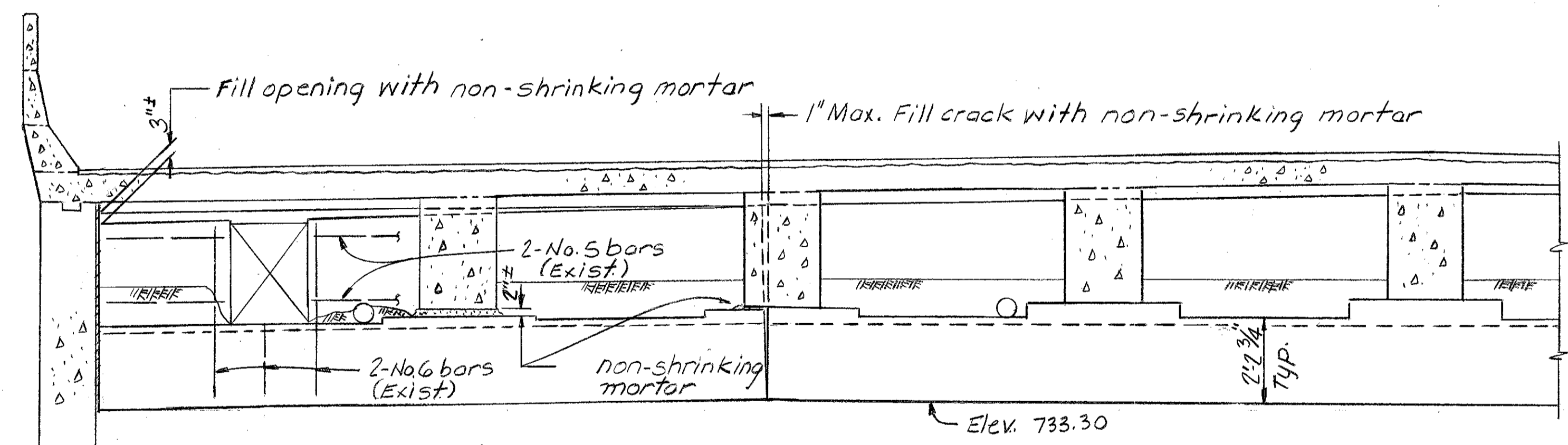
This item shall include the furnishing of all equipment, forms and materials, excavation inside the abutment and the necessary labor to place the mortar.

Non-shrinking Mortar shall be made with materials and proportions as follows:

2680 lbs. sand, 703.02 @ 6% moisture  
 9 bags cement, 701.05  
 40 gallons water, 499.02  
 9 lbs. expanding grouting aid admixture, Intraplast-N by Sika Chemical Corporation, or approved equal

The cement, sand and water shall be mixed first, after which the admixture shall be added. Batch size shall be limited so placement can be completed within 30 minutes. Water shall not be added to increase flowability which has been decreased by delayed use of mortar.

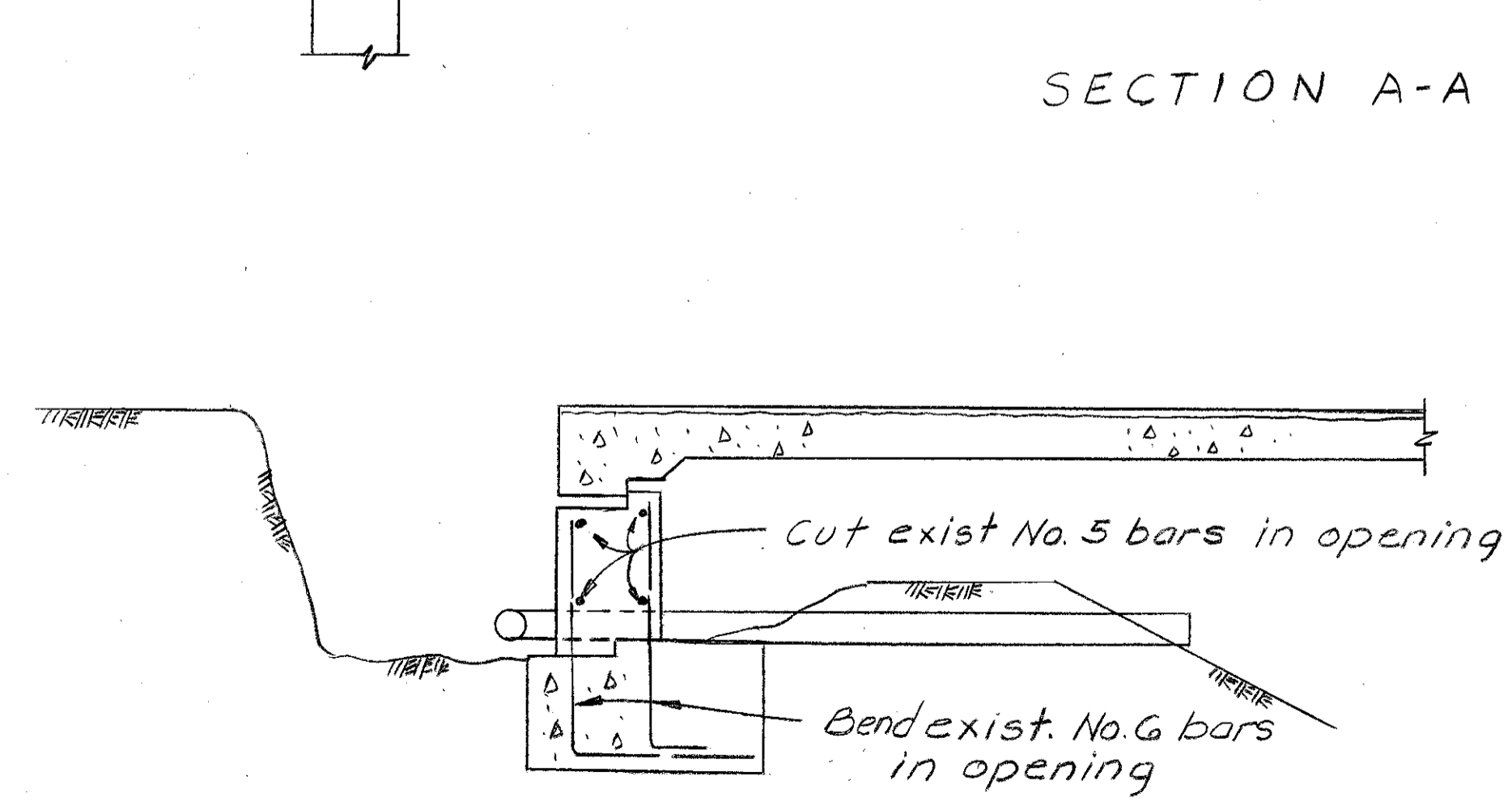
For description of Grout Injection see Sh. 2/2



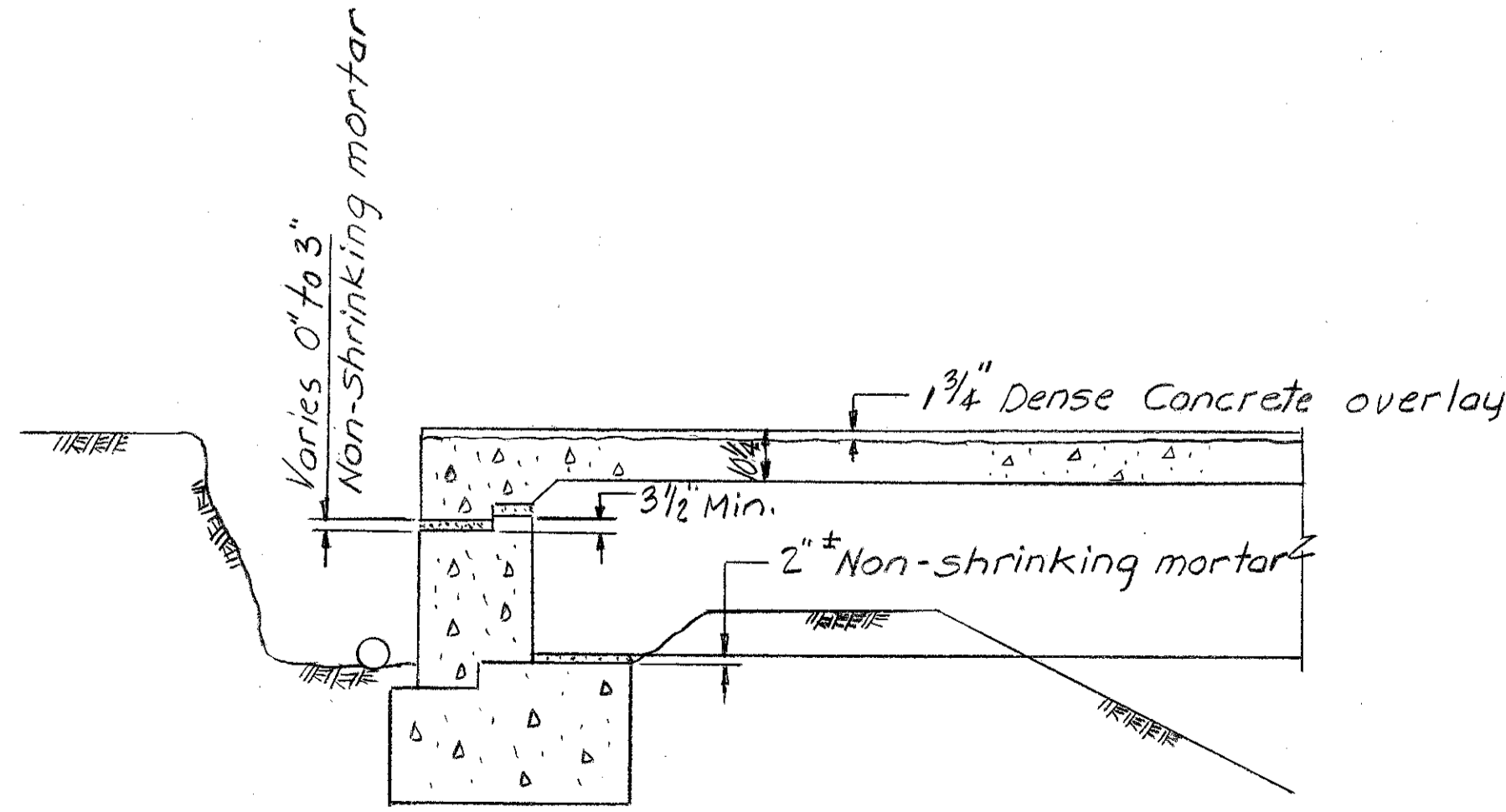
SECTION A-A

ESTIMATED QUANTITIES					
Item	Total	Unit	Description	Abut.	FOURVIEW FORK
202	Lump	Sum	Portions of structure removed	Lump	Lump
511	1	C.Y.	Class C Concrete, abutment above ftg.	1	1
Spec.	1	C.Y.	Non-shrinking Mortar	1	1
Spec.	300	C.F.	Grout Injection A	300	300
Spec.	50	C.F.	Grout Injection B	150	150

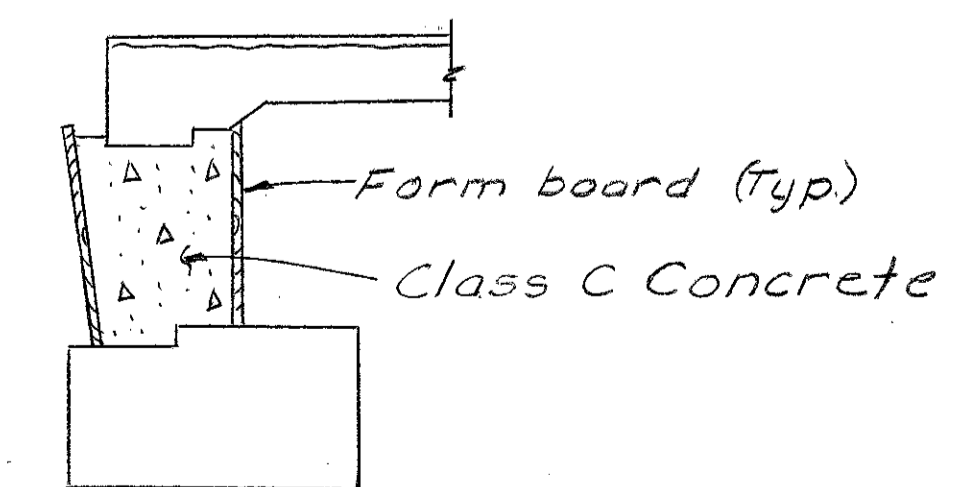
These quantities shall serve as a guide to the Contractor



SECTION B-B



SECTION C-C



DETAIL - CONCRETE REPLACEMENT IN OPENING

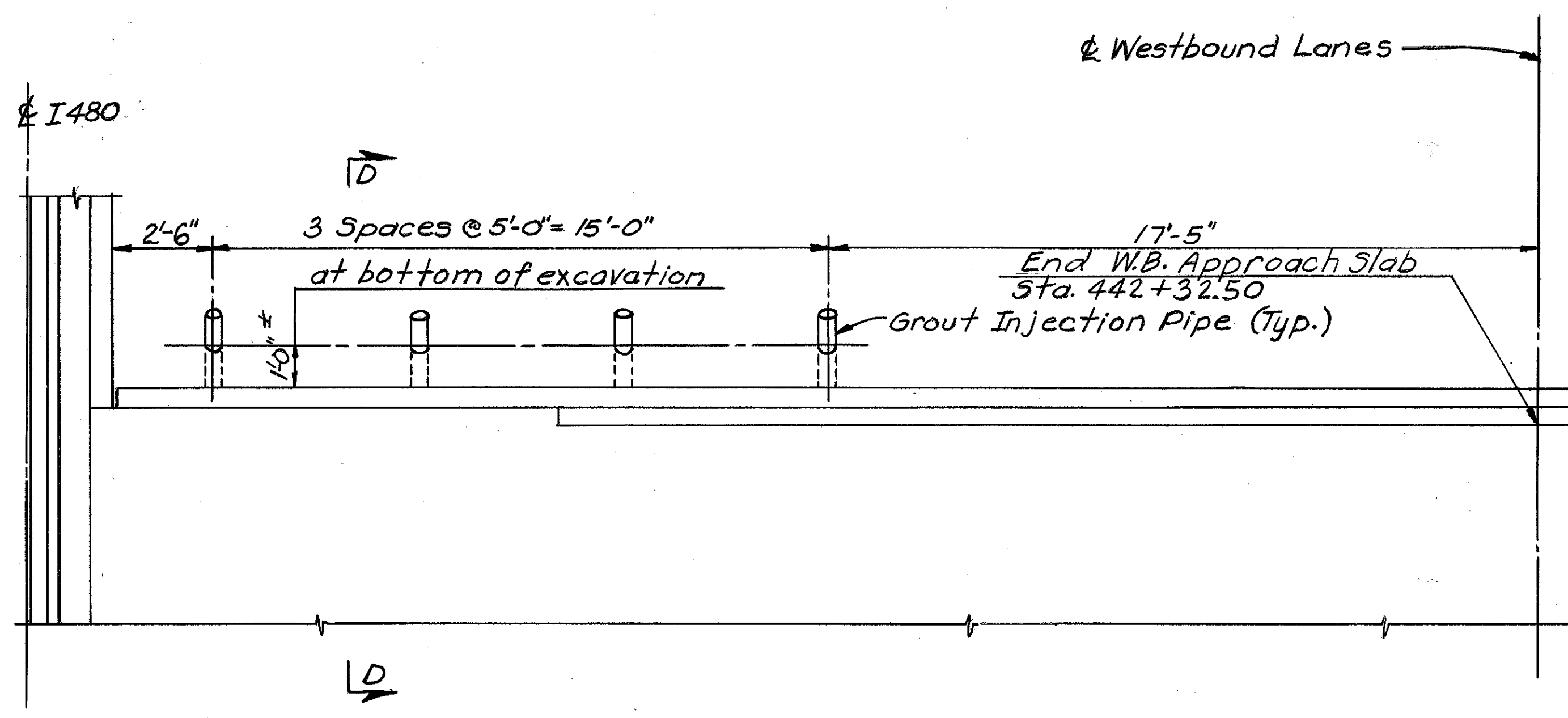
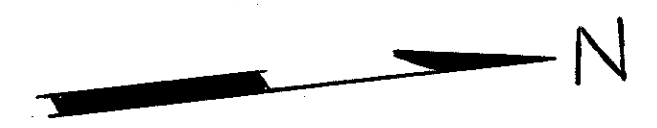
STATE OF OHIO  
 DEPARTMENT OF TRANSPORTATION  
 BUREAU OF BRIDGES AND STRUCTURAL DESIGN

1/2

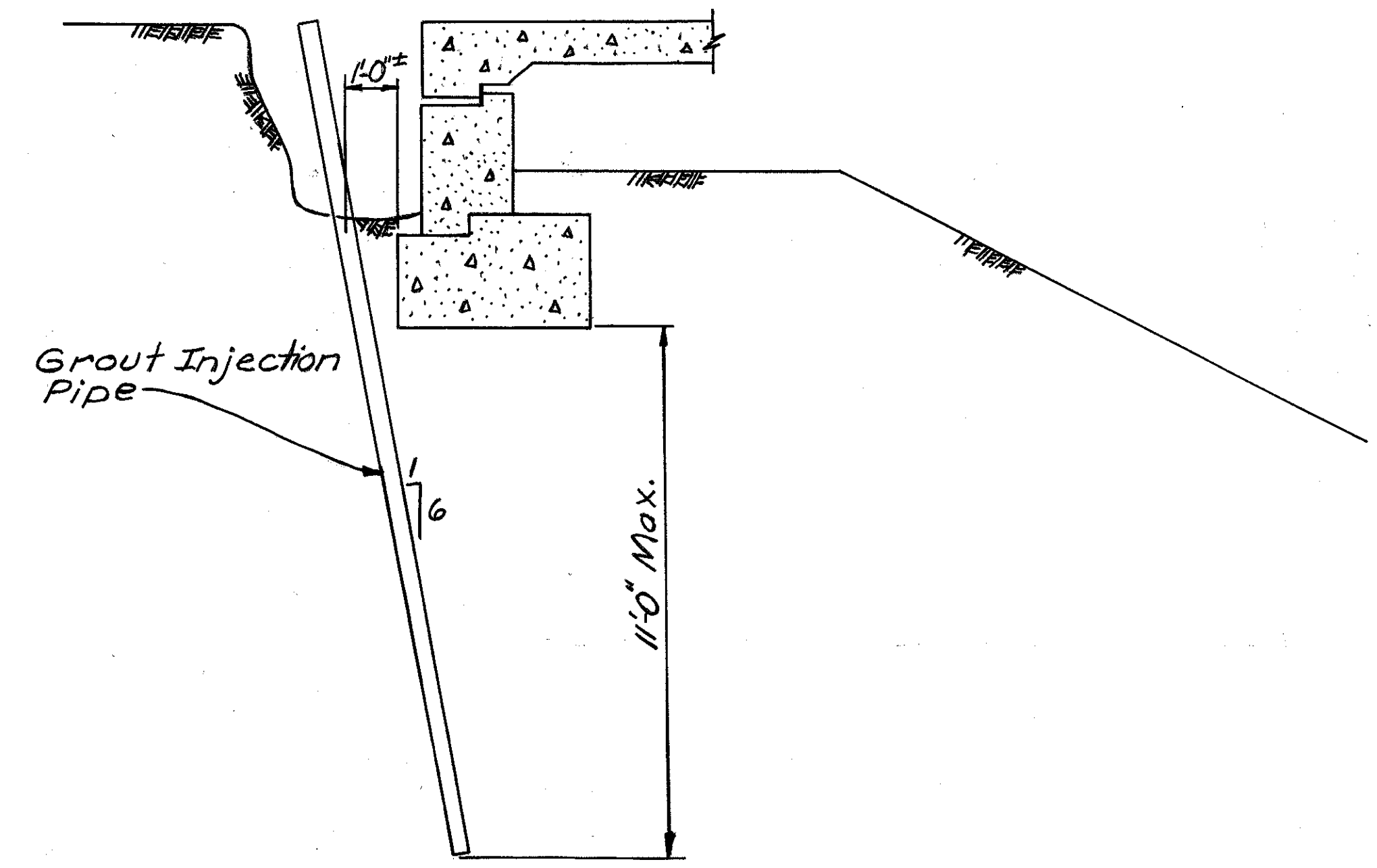
REPAIR PLAN - WEST ABUTMENT  
 BRIDGE NO. CUY-480-0648  
 OUTERBELT SOUTH OVER ROCKY RIVER

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
WTF	WTF			WJJ	4-11-80	

This sheet added 4-11-80



PLAN  
SUGGESTED LOCATION OF GROUT  
INJECTION PIPES AT REAR ABUTMENT



SECTION D-D

**ITEM SPECIAL - GROUT INJECTION**

Stabilization of the foundation under the west end of the rear abutment and adjacent ground shall be done by pressure grouting as described herein. Grouting shall begin approximately 11' below footing elevation and continue upward as directed by the engineer. Spacing and location shall be as shown on this sheet. Grouting shall be done prior to 6" CSP drain replacement behind the abutment.

The proposed work included in these items shall consist of furnishing all supervision, labor, materials and equipment, and performing all operations in connection with the stabilization of the footing and adjacent ground and termination of settlement by the injection of grout as herein described, and as directed by the engineer.

**GENERAL**

The grout shall consist of a mixture of portland cement, mineral filler, grouting agent, sand and water, all so proportioned and mixed as to produce a grout capable of maintaining the solids in suspension without appreciable water gain, yet which may be pumped without difficulty and which will penetrate and completely fill the voids in the foundation.

The grout shall be injected under pressure at such locations, depths, and pressures as may be necessary to complete the work. The limits of the grout injections shall be as determined by the director and project engineer.

The contractor shall furnish records of past successful experience in performing this type of work.

**MATERIALS**

**PORTLAND CEMENT** shall conform to Sec. 701.04 of the January 1979 "Construction and Materials Specifications".

**MINERAL FILLER** shall be a finely powdered material, composed essentially of compounds of amorphous silica, alumina and iron, which possess the property of combining with the lime that is liberated during the process of hydration of portland cement. The mineral filler shall be such as to contribute markedly to the latter-age strength and the impermeability of the grout.

**GROUTING AGENT** shall be a compound possessing such characteristics that it will inhibit early stiffening of the grout, tend to hold the solid constituents of the grout in colloidal suspension and prevent completely all setting shrinkage of the grout.

**SAND** shall meet the requirements of Sec. 703.03 of the January 1979 "Construction and Materials Specifications".

**WATER** shall be fresh, clean and free from injurious amounts of sewage, oil, acid, alkali, salts and organic matter.

**GROUT INJECTION PROCEDURE**

At least 15 days prior to starting operations, the contractor shall submit to the director of transportation for approval a complete description of the materials and proportions to be used, the method of procedure and a plan showing location, spacing, size and approximate depths of injection points.

Accurate records shall be kept for all injection points including location and depth, method of installation, injection pressures, grout proportions and grout consumption.

All materials shall be accurately measured by volume, weight or other approved means.

The grout mix proportions shall be so adjusted for each point of injection if necessary, to obtain optimum grout take and penetration at minimum pressure.

**EQUIPMENT**

Only approved mixing and pumping equipment shall be used in the preparation and handling of the grout; all oil or other rust inhibitors shall be removed from the mixing drums, stirring mechanisms and other portions of the equipment in contact with the grout before the mixers are used.

**METHOD OF MEASUREMENT**

The unit of measurement for grouting will be the cubic foot, as determined from yield test, actually injected into the grout holes, completed and accepted. Yield test shall be made to determine the actual cubic feet of grout by weight of the materials used in the preparation of the grout.

**BASIS OF PAYMENT**

The cubic feet of grout actually injected into the foundation shall be paid for at the contract unit price per cubic foot of Item Special, Grout Injection A or B, measured as above, which price and payment shall constitute full compensation for furnishing and placing all materials, labor, equipment, supervision and incidentals required for performing the placement of injection points and placing the grout and all other work incidental to the completed operation.

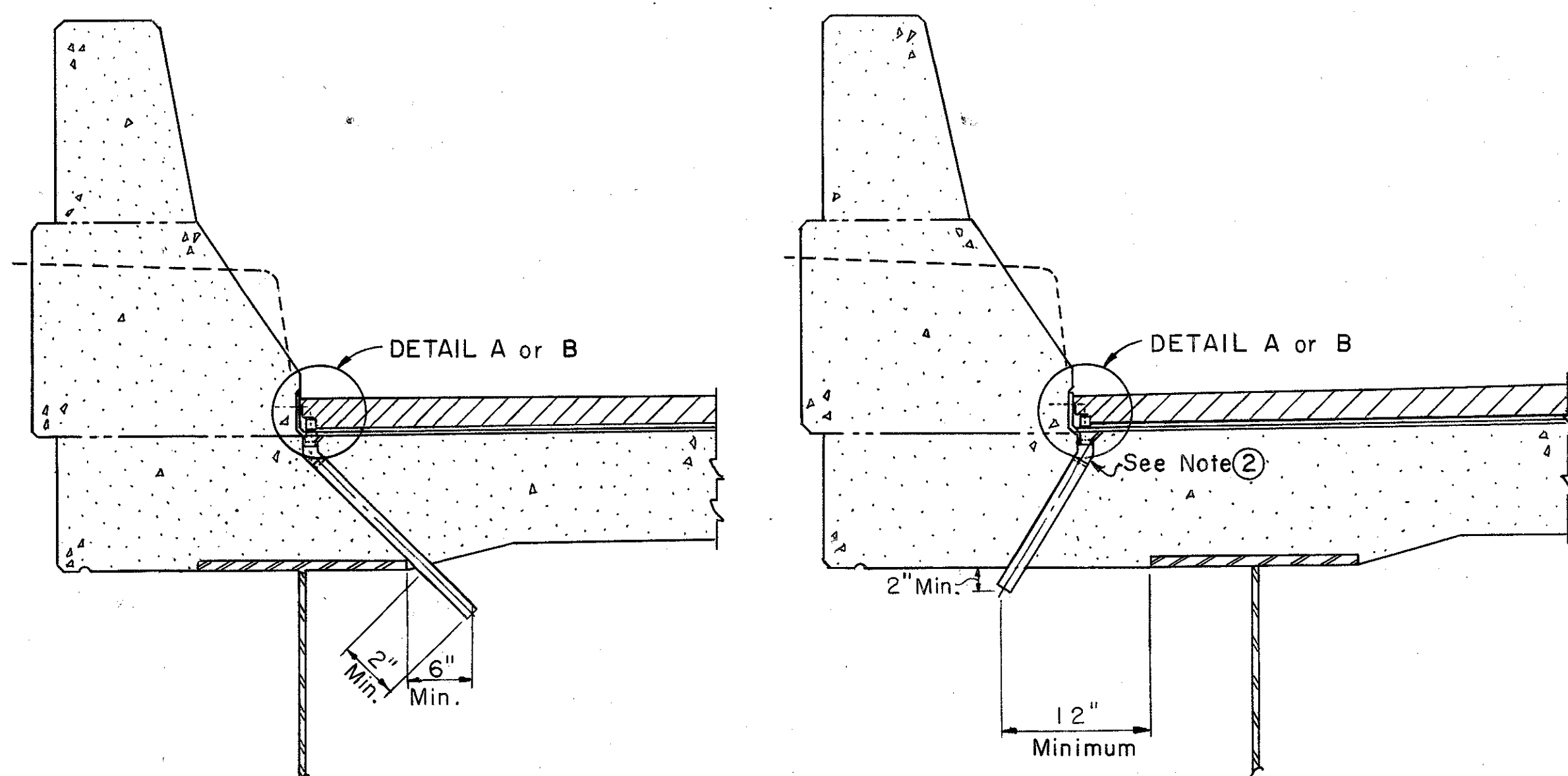
The contract unit price per cubic foot for Item Special, Grout Injection A shall be paid for the first 300 cubic feet of grout.

The contract unit price per cubic foot for Item Special, Grout Injection B shall be paid for each cubic foot in excess of the first 300 cubic feet of grout.

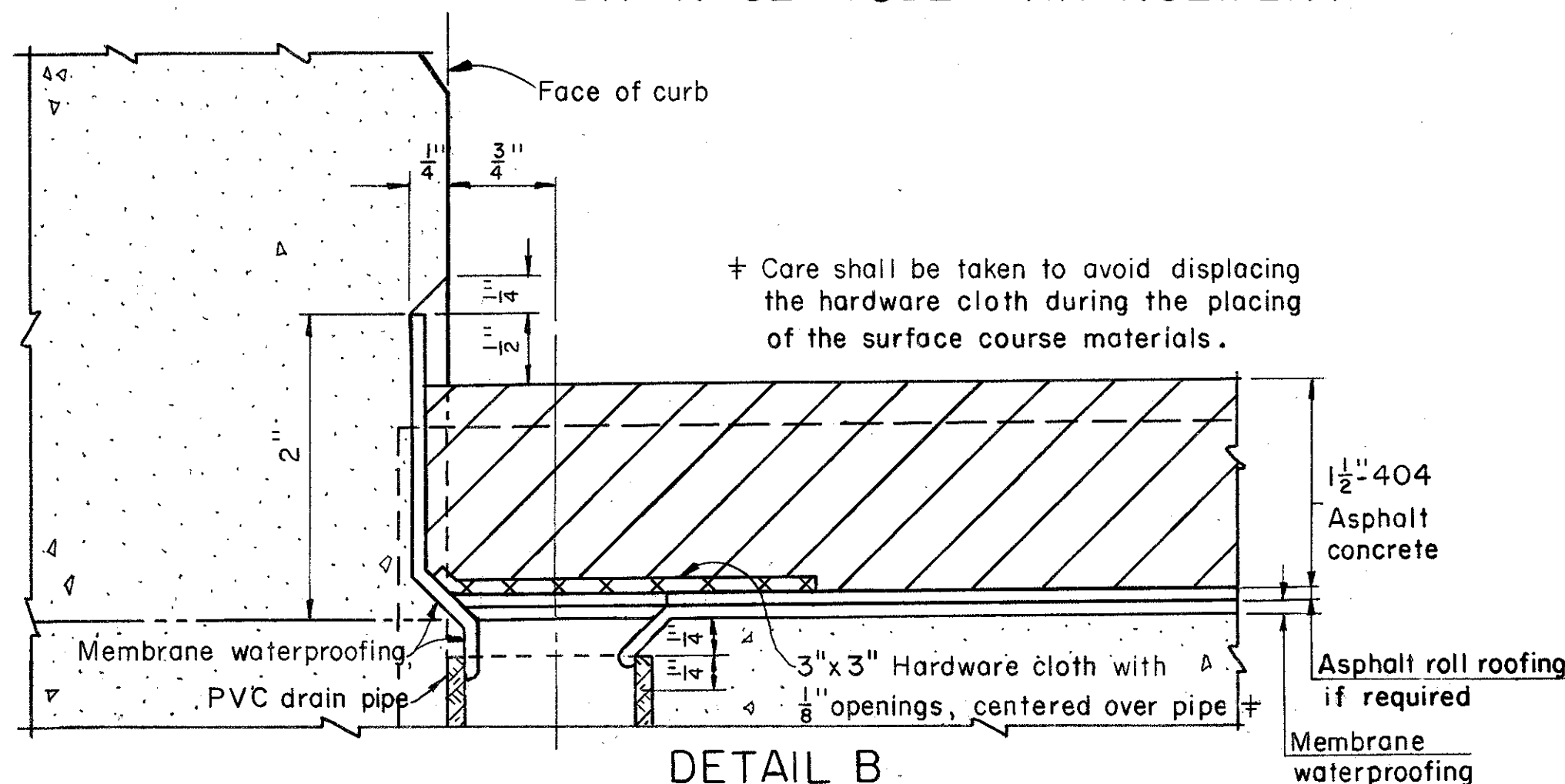
REPAIR PLAN-WEST ABUTMENT  
BRIDGE NO. CUY-480-0648  
OUTERBELT SOUTH OVER ROCKY RIVER

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
WTF	WTF	GFJ		WJW	4-11-80	

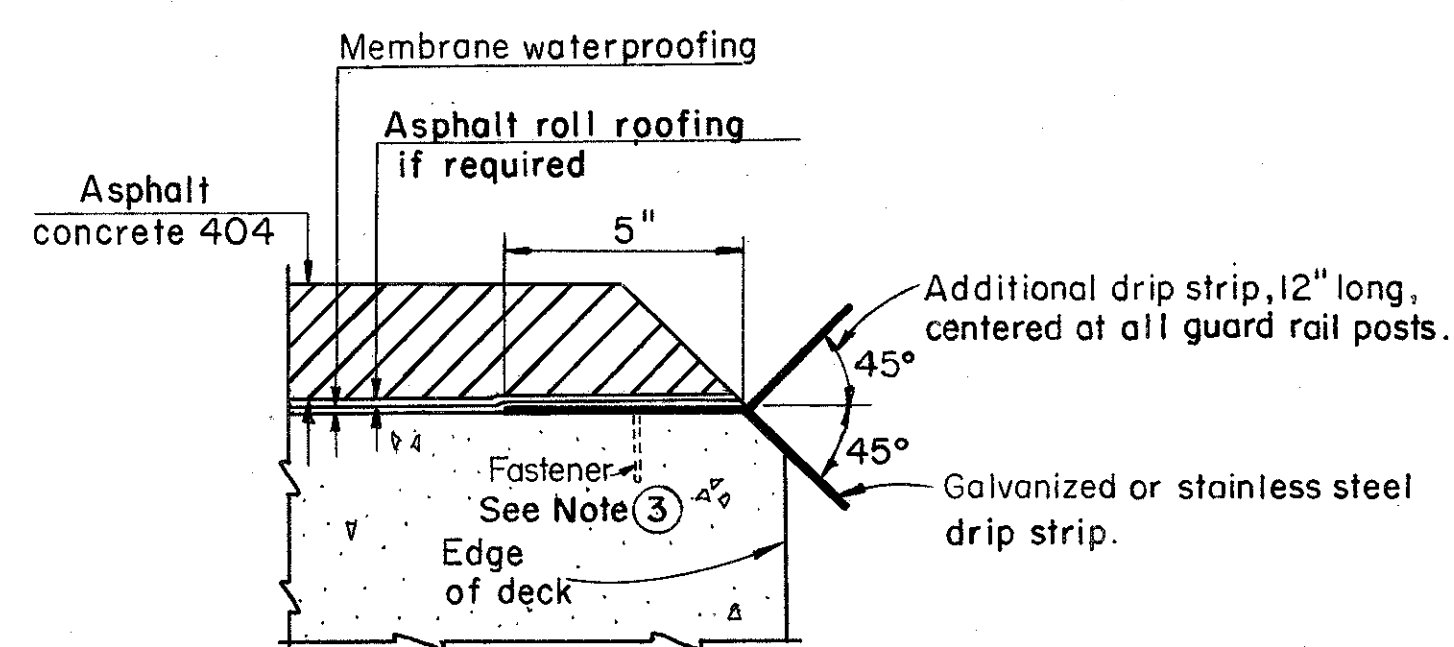
This sheet added 4-11-80



STRUCTURAL STEEL BELOW CURB LINE NO STRUCTURAL STEEL BELOW CURB LINE  
DRAINAGE TUBE ARRANGEMENT

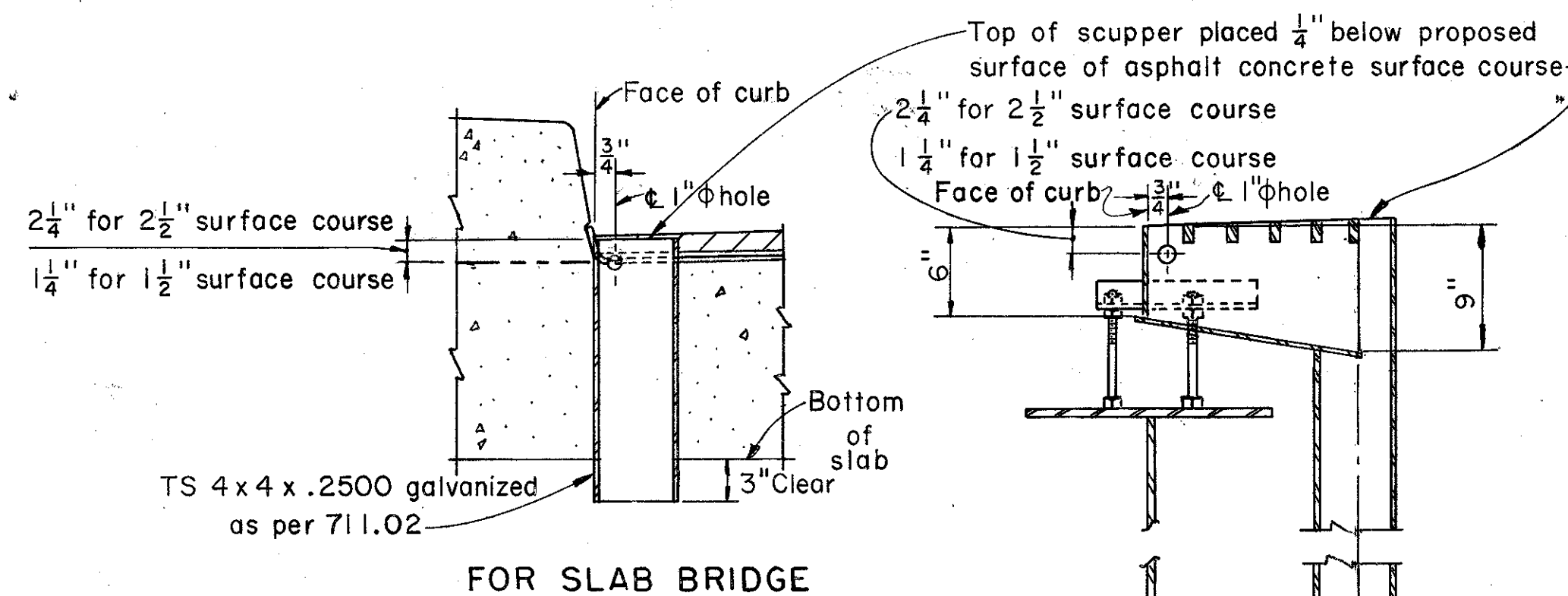


DETAIL B  
SUBDRAINAGE FOR 1 1/2" SURFACE COURSE

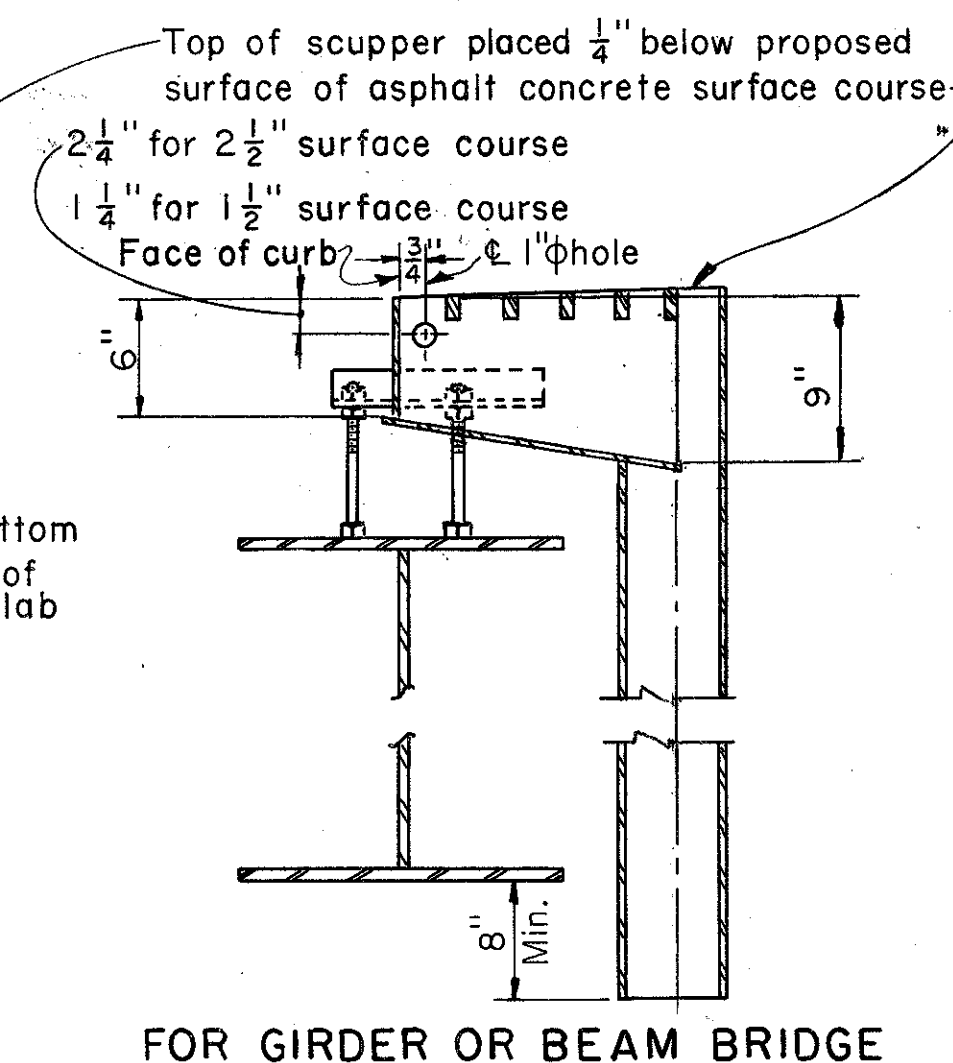


DRIP STRIP  
BRIDGES WITHOUT CURBS

DRIP STRIP: Prior to applying deck membrane waterproofing, a bent drip strip shall be installed along the edges of the deck as shown. The strips shall be fastened at 1'-6" c/c maximum with power driven pins or #10 galvanized screws and expansion anchors, subject to the approval of the Engineer. The strips shall be placed the full length of the deck, ending at the face of abutment wingwall or steel end dam angle. Where splices are required a 3" (Min.) lap shall be used with a fastener through the lap. Steel for galvanized strips shall be 8"x0.105" and shall meet the requirements of ASTM A568. Galvanizing shall be in accordance with 711.02. Stainless steel shall be 20 gauge ASTM A167, Type 304, mill finish. Payment shall be at the contract price bid for item Special Sq. Ft. Steel Drip Strip, which shall include all materials, labor, tools and incidentals necessary to complete item.



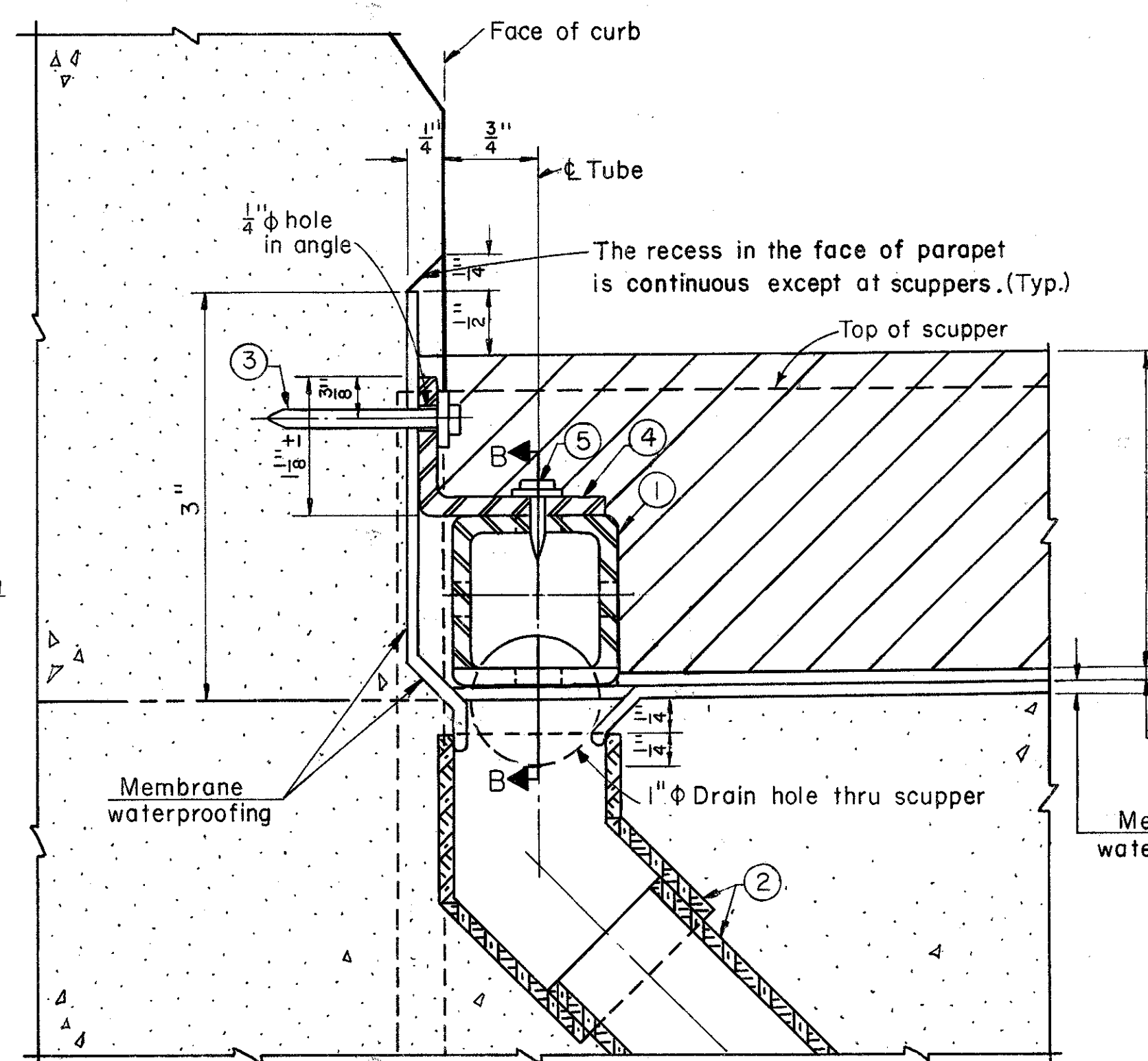
FOR SLAB BRIDGE



FOR GIRDER OR BEAM BRIDGE

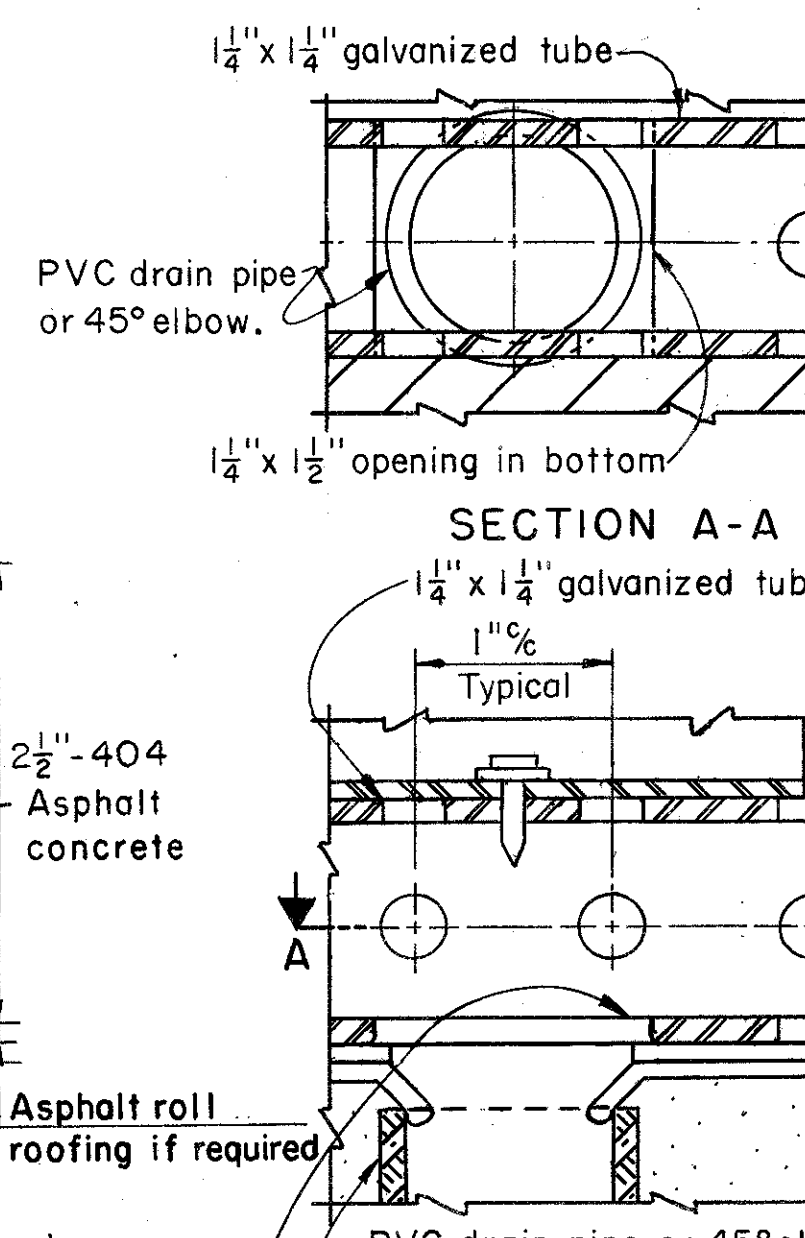
SCUPPER DETAILS

(Scupper details conform to SD-1-69 except as noted)



DETAIL A

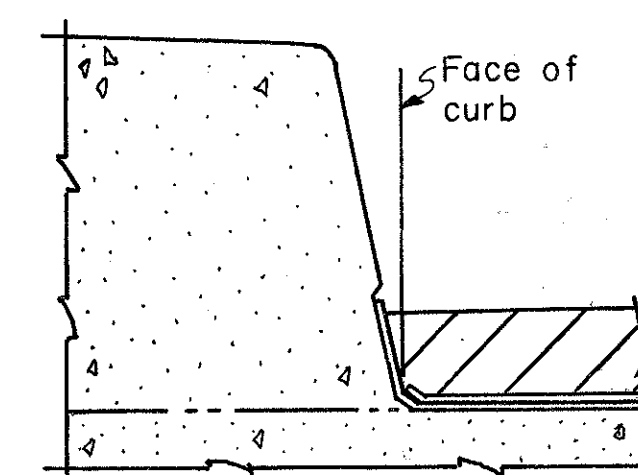
SUBDRAINAGE FOR 2 1/2" SURFACE COURSE



SECTION B-B

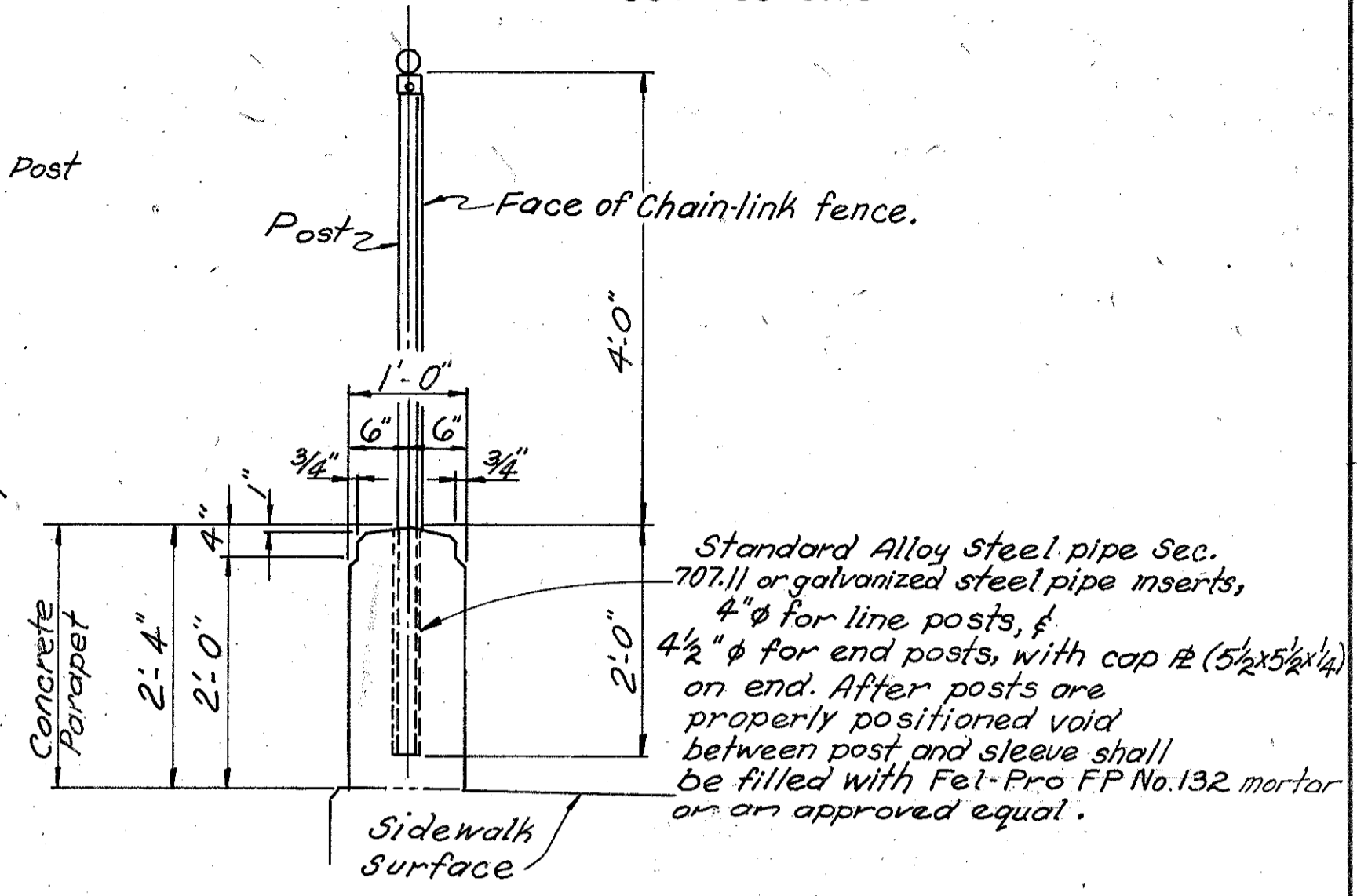
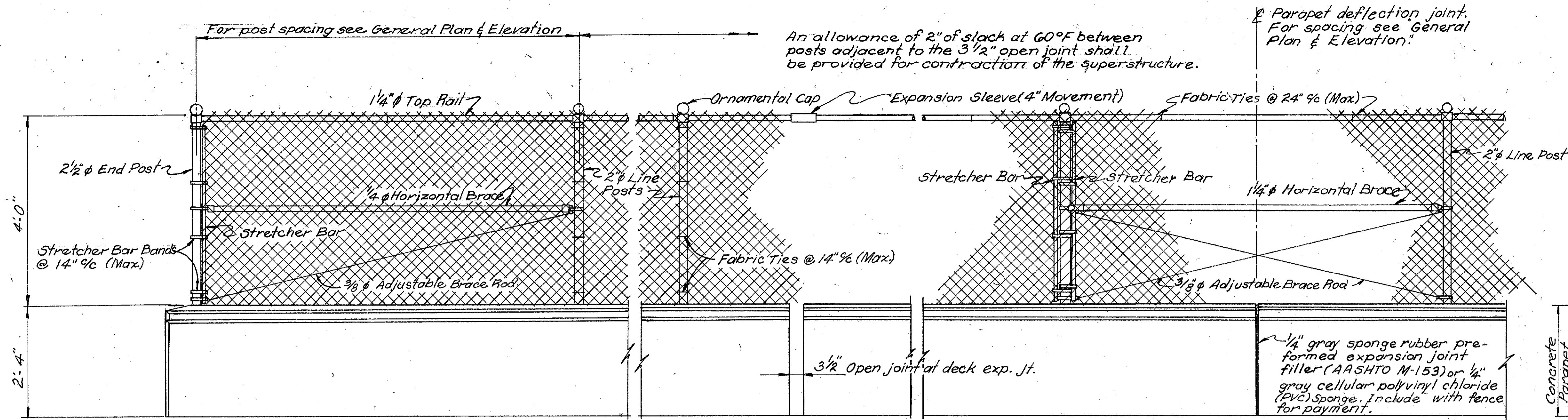
- 1-1/4" x 1/4" galvanized, perforated, structural tube with 1/32" ± φ holes 1" on centers on all four sides as shown. Cut 1/2" ± x 1/4" opening in bottom, centered over each PVC drain pipe. The steel for the structural tube shall conform to the following: PREGALVANIZED, ASTM A446, Grade A Steel, Galvanizing as per ASTM A525. POSTGALVANIZED, ASTM A569 or A366, Galvanizing as per 711.02. The minimum steel thickness shall be 0.105". Any damaged galvanizing shall be repaired as per AASHTO M36. Install tubes with 1/8" expansion opening between pieces.
- 2-1/4" PVC DRAIN PIPE AND 45° ELBOW. Position accurately to match 1/2" x 1/4" openings in perforated tube. Place membrane carefully at the pipe openings, making sure to completely seal around the lip of the pipe but taking care not to plug or constrict the opening. The drain pipe and elbow shall comply with ASTM D2661 or ASTM D2665. The elbow shall be used only as required when structural steel is not below curb line. Where the elbow is not adequate to provide clearance between the PVC pipe and the structural steel, the elbow shall be canted as required and cut on a line 1/4" below and parallel with the deck surface. The solvent cement for the pipe and fittings shall conform to ASTM D2235 or ASTM D2564.
- 3-1/4" x 5/8" x 1/4" flat head drive pin and washer. (Length x Shank Dia. x Head Dia.) Fastening of the structural tube by methods other than shown shall be subject to approval by the Engineer. (Driving pins into bridge deck is prohibited.)
- 4-1 1/2" x 1/2" x 1/8", 3" long, clipped and galvanized, or bent galvanized steel plate 2 1/2" x 3" x 0.105" thick. Attach to curb at approximately 5'-0" except near joints, where the angle shall be placed within 6" of the end of each tube section.
- 5-1/2" x 1/8" x 1/4" flat head drive pin and washer driven thru angle and tube.

Note: Wherever "PVC" appears it shall be considered to read "PVC or ABS".



SHAPE OF SIDEWALK  
CURB

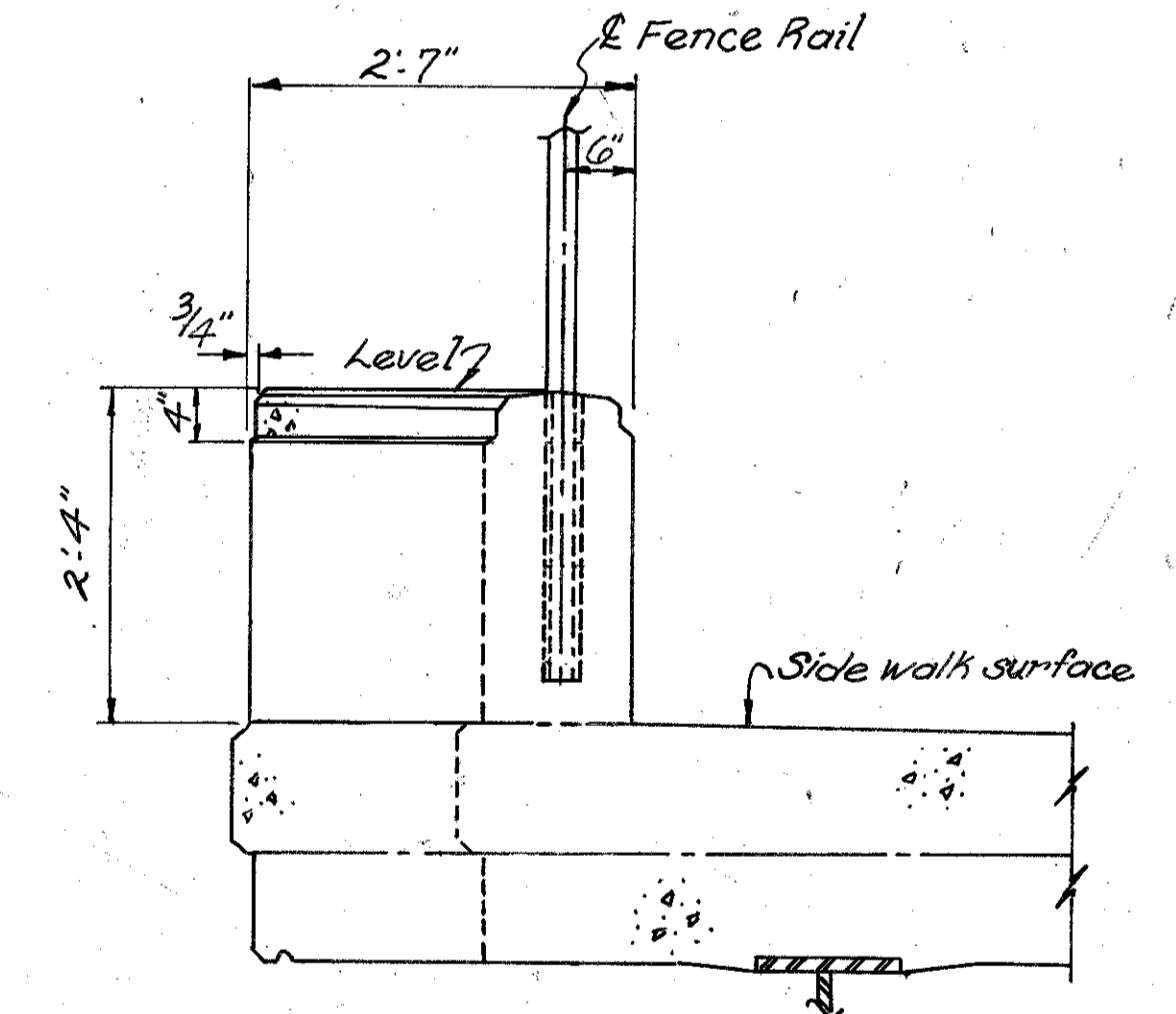
STATE OF OHIO DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS BUREAU OF BRIDGES						
DECK DRAINAGE DETAILS FOR BRIDGES WITH ASPHALT CONCRETE SURFACE COURSE						
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
DLM	GF		CPD	WJJ	4-4-78	



**NOTE:**  
Fence shall conform to AASHTO-M181, Type 1 or Type 2 and 710.03, Chain-Link Fence.  
Concrete parapets shall be placed in alternate sections by the use of bulkheads. Closing sections shall be placed after removal of bulkheads and after placement of preformed expansion joint filler. PEJF shall be flush with surface of concrete and exposed edges shall be free of mortar.

ELEVATION

SECTION



SECTION THRU LIGHT POLE PILASTER FOR BRIDGE WITH SIDEWALK RAILING (See Standard Construction Drawing H-4 for additional details).

STATE OF OHIO DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS BUREAU OF BRIDGES						
COMMON DETAILS FOR CHAIN LINK FENCE (BRIDGES)						
CUYAHOGA COUNTY						
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
		G.F.J.	D.W.I.		4-14-78	