

PLAN

Note: Guardrail to be continuous over approaches and bridges.

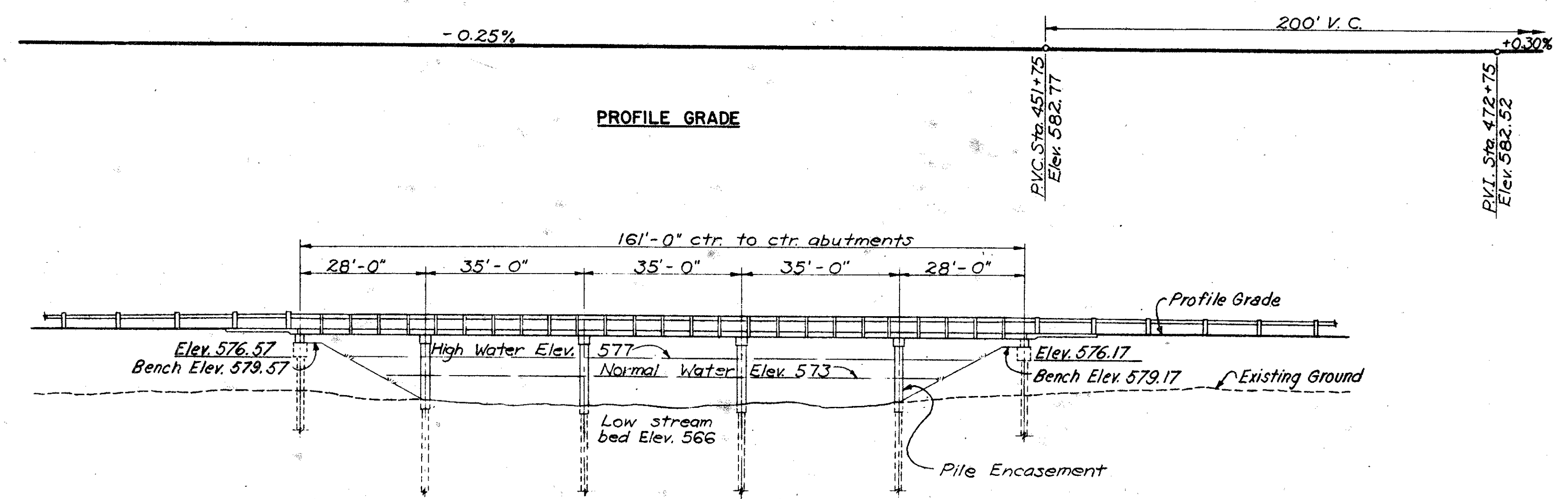
Boring No.	Soil Description	Boring No.	Soil Description
566.8		570.4	
552.3	Sandy Silt	544.4	Sandy Clay-Gray
537.3	Sandy Clay-Gray	541.4	Gravelly Clay-Gray
534.3	Silt & Clay-Gray	532.4	Sandy Clay-Gray
528.3	Sandy Clay-Gray	529.4	Gravelly Sandy Clay-Gray
525.3	Silty Clay-Gray	528.4	Gravelly Clay-Gray
522.3	Sandy Clay-Gray	523.4	Silt
516.3	Gravelly Silt	514.4	Sandy Silt

B 33-4

B 33-6

BORING DATA

Note: The Boring data shown is for informational purposes only. Its accuracy is not guaranteed.



PROFILE GRADE

ELEVATION

Note: All piling to be 14"Ø cast-in-place reinforced concrete with an estimated length of 61 feet at piers and 55 feet at abutments. This estimate is based on the borings shown and is approximate only. The contractor shall assume full responsibility for lengths of piles selected for driving.

Note: The following items are not included in the Bridge plans. See Roadway Plans for details. Relocation or removal of existing utilities, approach grading, pavement, slabs, and guard rails.

PROPOSED STRUCTURE	
TYPE:	5 Span Continuous Concrete Slab Bridge
SPANS:	28'-0" 3 @ 35'-0" 28'-0" 161'-0"
ROADWAY:	2 @ 42'-5" + 3'-2" Median
LOADING:	CF 2000
SKEW:	None
SURFACE COURSE:	2 1/2" Asphaltic Concrete
APPROACH SLABS:	AS-1-54 (20'-0" Long)
ALIGNMENT:	On Tangent

WATERWAY AREA: 1350 Sq. Ft. Adjacent Detroit and Toledo Shoreline R.R. Bridge over Ottawa River has an opening of approximately 1280 Sq. Ft.

H.N.T.B. BR. NO.33 PART II

TOLEDO EXPRESSWAY SYSTEM

EXPRESSWAY OVER OTTAWA RIVER

BR. NO. LUC-24A-0717

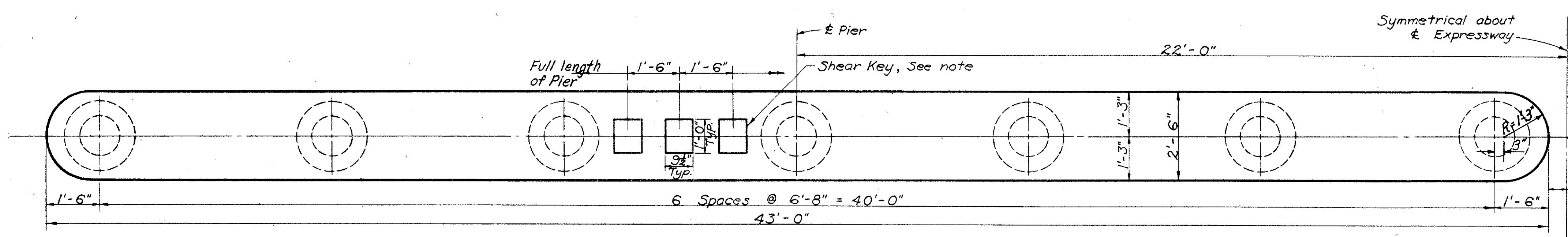
SITE PLAN 450+9.25
451+70.75

TOLEDO LUCAS COUNTY, OHIO

SCALE 1"=20'
MADE BY Q.D. DATE 6-27-56
TRCD DATE DATE
CRD. DATE 1-10-57

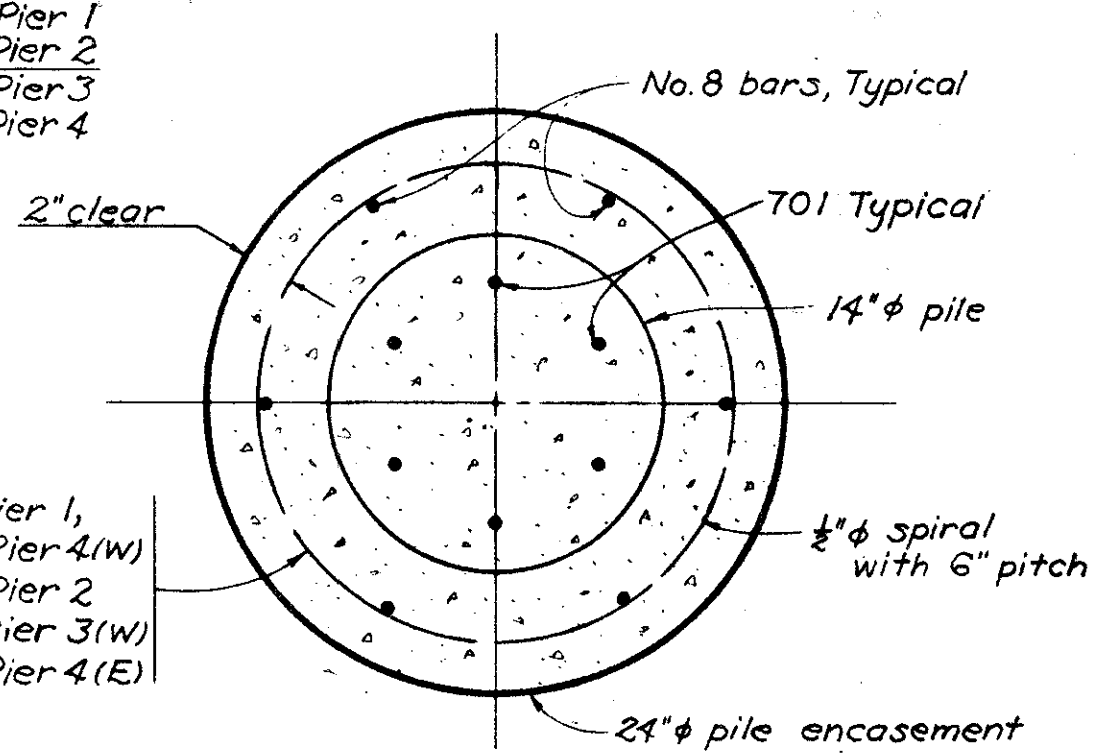
HOWARD, NEEDLES, TAMMEN & BERGENOFF
CONSULTING ENGINEERS
CLEVELAND NEW YORK
KANSAS CITY CLEVELAND NEW YORK
810 SHEET 139

LUCAS COUNTY
CITY OF TOLEDO
TOLEDO EXPRESSWAY SYSTEM
LUC-24A-5.53



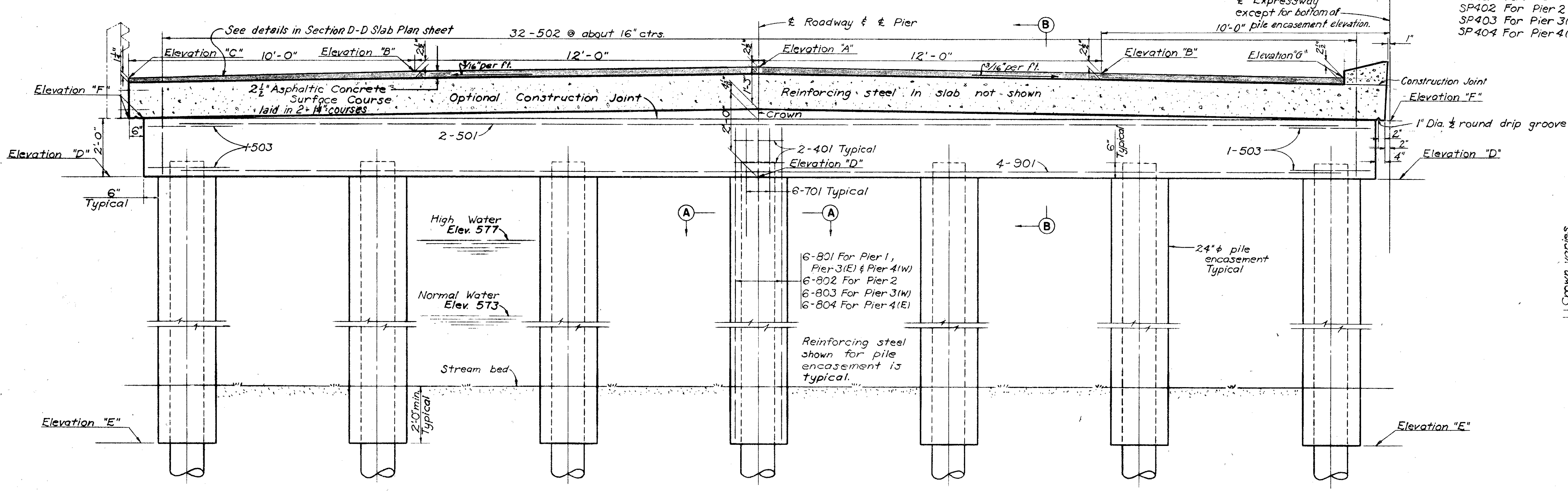
Note:
Place shear keys only if optional construction joint is used. Shear keys may be formed with 12" lengths of 3"x10" plank.

PLAN - WEST ROADWAY
(Slab not shown)
Scale: 1/4" = 1'-0"



SP401 For Pier 1, Pier 3(E) & Pier 4(W)
SP402 For Pier 2
SP403 For Pier 3(W)
SP404 For Pier 4(E)

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



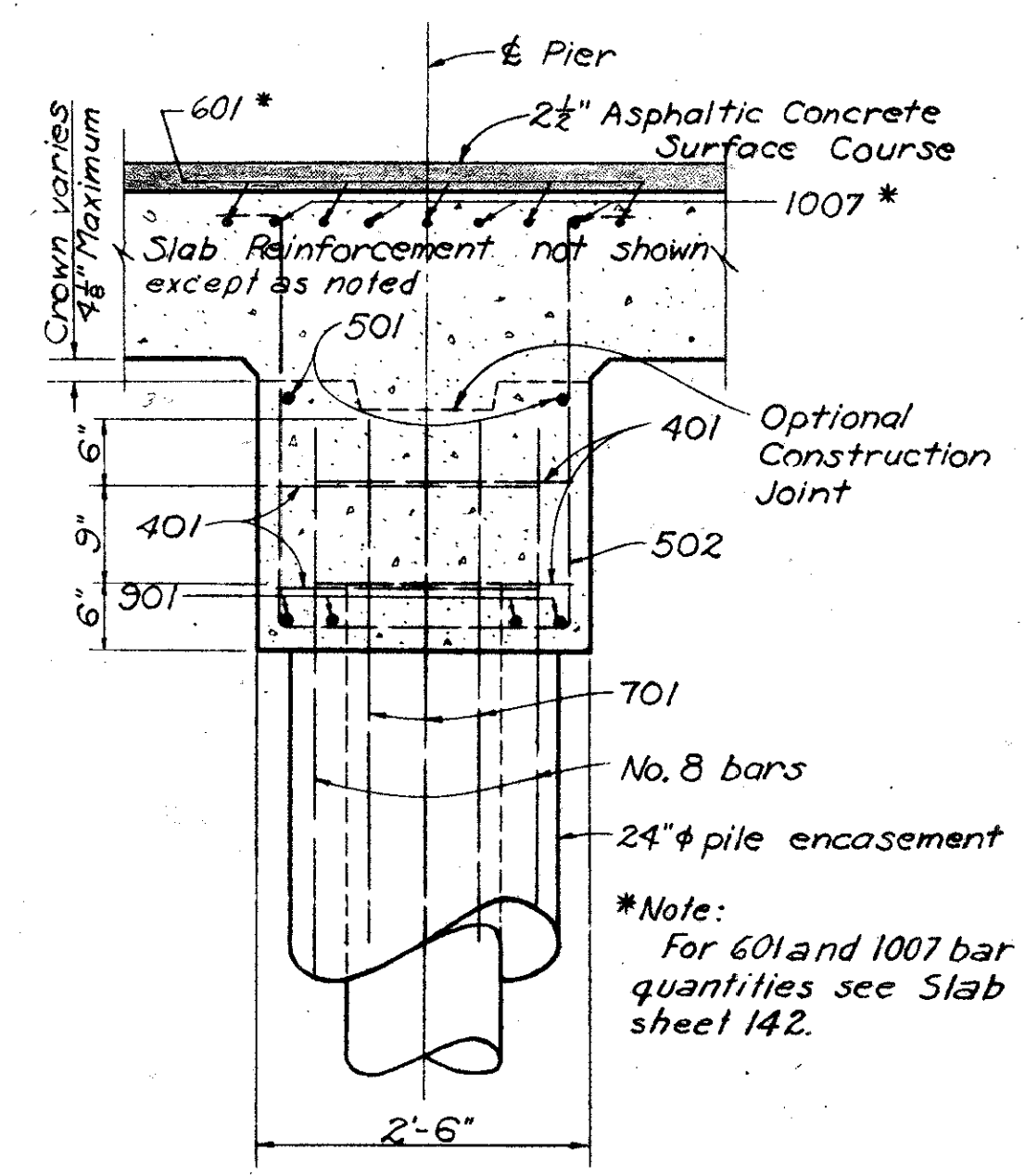
ELEVATION
Scale: 1/2" = 1'-0"

PIER PILE ENCASEMENT:
Pier pile encasement as shown may be omitted provided that the tapered portion, if any, of all pier piles does not extend above the stream bed or the proposed surface of the ground. If the tapered portion of any pile extends above these limitations, the encasement will be required for all the pier piles. If the encasement is omitted, the painting of the piles shall extend to low water elevation.

Notes:
Pile encasement shall consist of Class "C" or "E" concrete and may be placed in water as per Sec. 3-1.18, care being taken to remove all dirt between the piles and the forms. Metal forms, if used, may be left in place if the exposed portion is painted or galvanized. Corrugated metal may be used. Metal forms with irregular deformations, such as oil drums, will not be permitted.
Payment for piles, per lineal foot, includes payment for the encasement (concrete, reinforcement, forms, painting, galvanizing and excavation) and preboring.
Horizontal construction joint between the top of pier cap and bottom of slab will be permitted if keys, as shown, are provided at the top of the cap. If such a joint is not provided, the concrete in the slab and cap shall be placed in a continuous operation.
The pier cap shall not be used to support falsework for the deck slab.
The 1001, 901, and 501 bars, at the option of the Contractor, may be furnished in one length as shown, or in pairs lapped 30 diameters at or near the centerline of the roadway. Determination of the pay quantity will be according to the number and length of bars as shown on Plan.

	ELEVATIONS			
	Pier 1	Pier 2	Pier 3	Pier 4
Elevation "A"	583.30	583.22	583.13	583.04
Elevation "B"	583.11	583.03	582.94	582.85
Elevation "C"	582.85	582.77	582.68	582.59
Elevation "D"	579.50	579.42	579.33	579.24
Elevation "E"	565.0±(E) 565.0±(W)	564.7±(E) 564.7±(W)	565.0±(E) 564.0±(W)	565.8±(E) 565.0±(W)
Elevation "F"	581.50	581.42	581.33	581.24
Elevation "G"	582.98	582.90	582.81	582.72

Notes:
All piles are 14" Cast-in-place concrete piles.
(E) denotes piers east of Expressway.
(W) denotes piers west of Expressway.



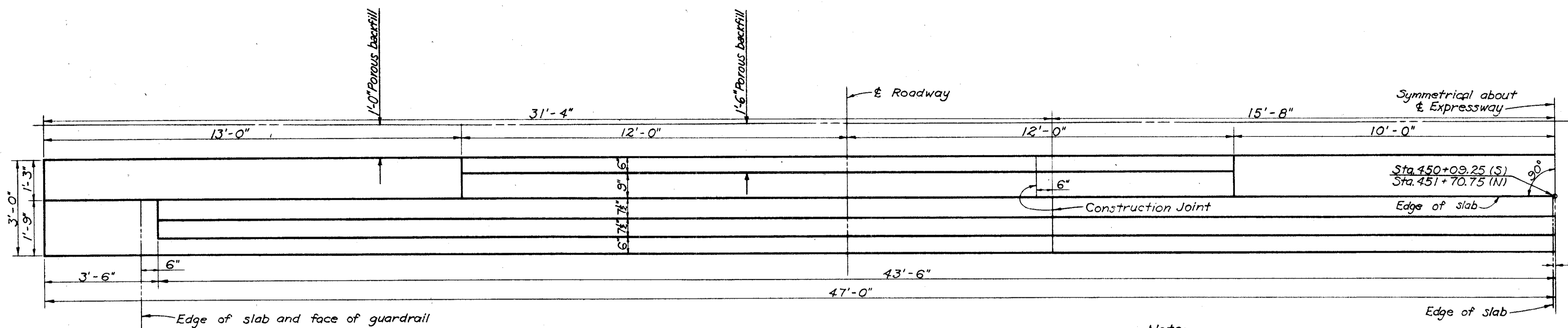
SECTION B-B
Scale: 1/2" = 1'-0"

H.N.T.B. BR. NO. 33 PART 11
TOLEDO EXPRESSWAY SYSTEM
EXPRESSWAY OVER OTTAWA RIVER
BR. NO. LUC-24A-0717
PIERS
TOLEDO LUCAS COUNTY, OHIO
SCALE As Noted
MADE BY DATE 7-17-56
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
810 SHEET 140
Revised 3-23-57

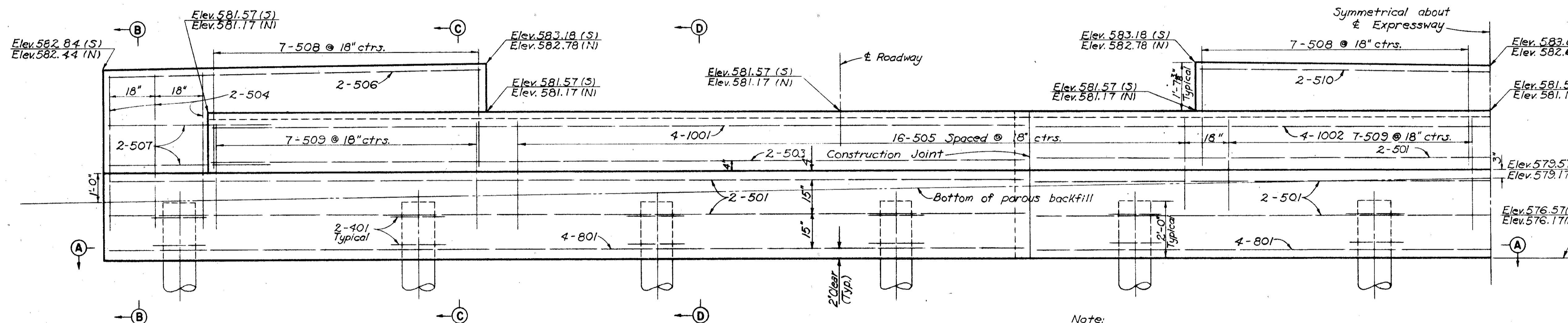
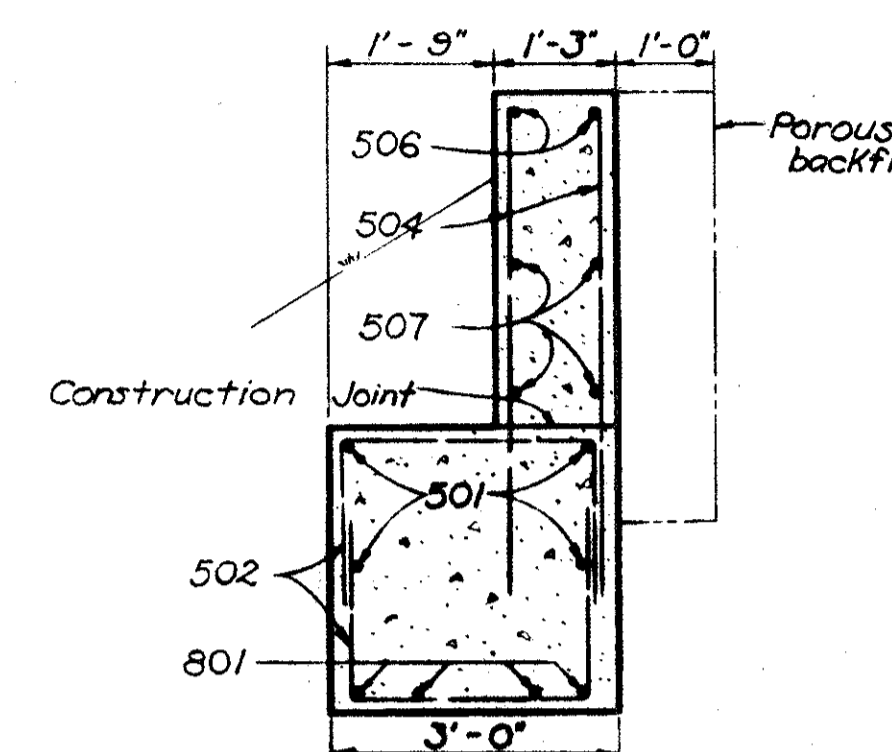
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FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	TYPE	FIGURE
2	OHIO			141 164

LUCAS COUNTY
CITY OF TOLEDO
TOLEDO EXPRESSWAY SYSTEM
LUC-24A-553

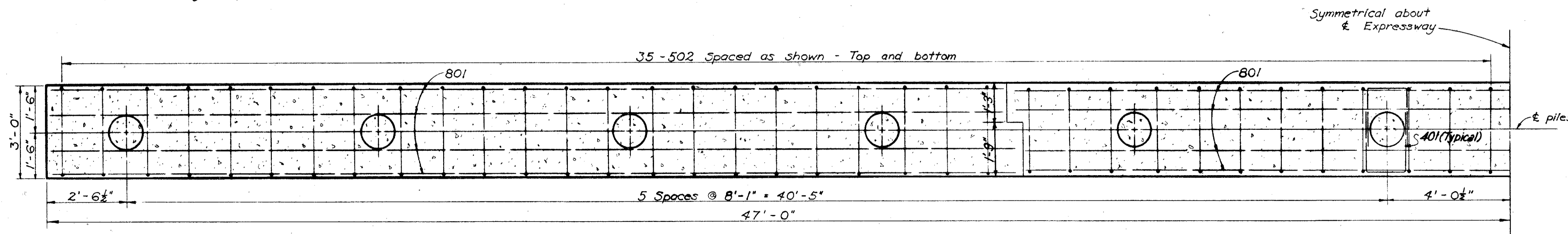
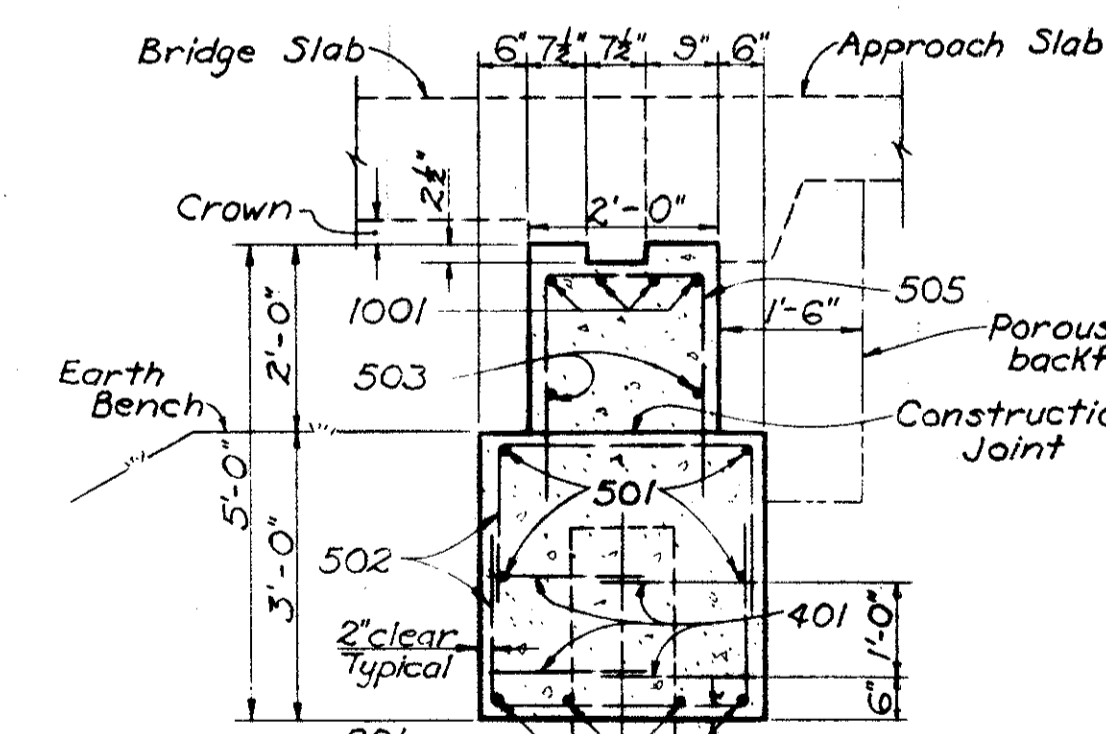
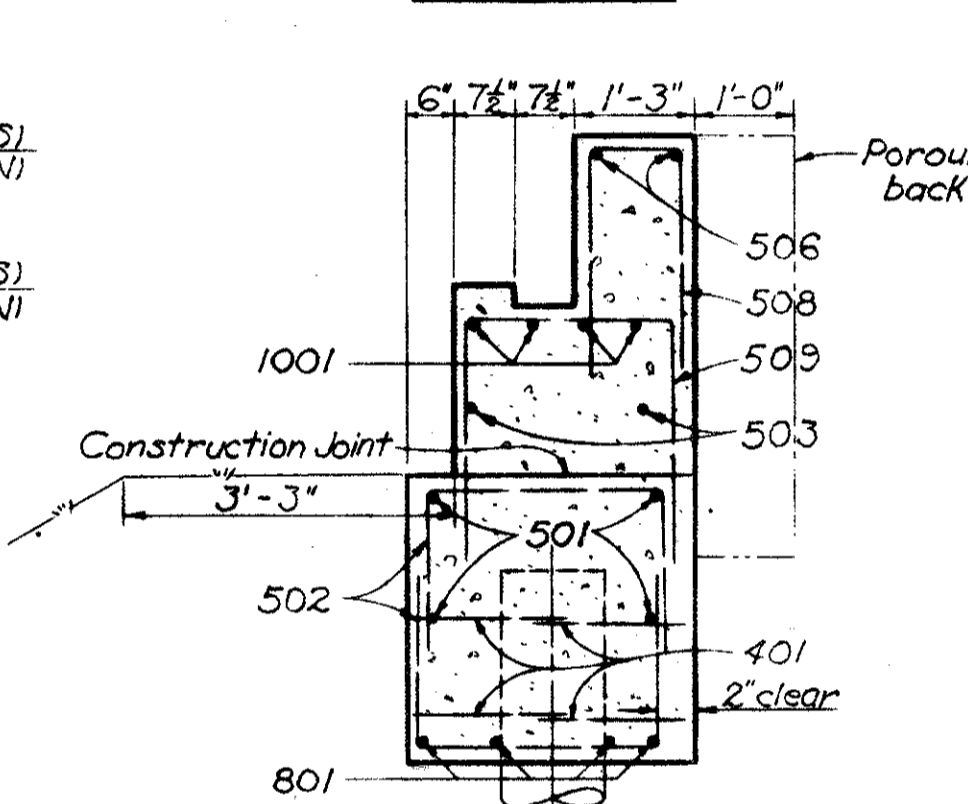


Note:
North Abutment detailed.
South Abutment similar by
180° rotation except as noted.



Note:
All abutment piles shall be prebored through the embankment material to the existing ground line, if necessary to facilitate penetration. The estimated length of piles shown on sheet 139 includes the prebored length of pile.

Note:
Porous backfill shall extend upward to the approach slab and to the surface of the earth shoulders, and outward to the surface of the embankment slopes. Excavation therefor, in excess of that required for construction of the footing, shall be considered as paid for in the bid price per cu. yd. paid for porous backfill.



Notes:
All piles are 14" cast-in-place concrete piles.
(S) denotes South Abutment.
(N) denotes North Abutment.

H.N.T.B. BR. NO. 33 PART II

TOLEDO EXPRESSWAY SYSTEM
EXPRESSWAY OVER OTTAWA RIVER

BR. NO. LUC-24A-0717

ABUTMENTS

TOLEDO LUCAS COUNTY, OHIO

SCALE: 1/2" = 1'-0"
MADE BY: DYO DATE: 7-6-56
TRCD: DATE: 7-6-56
CRD: DATE: 1-10-57

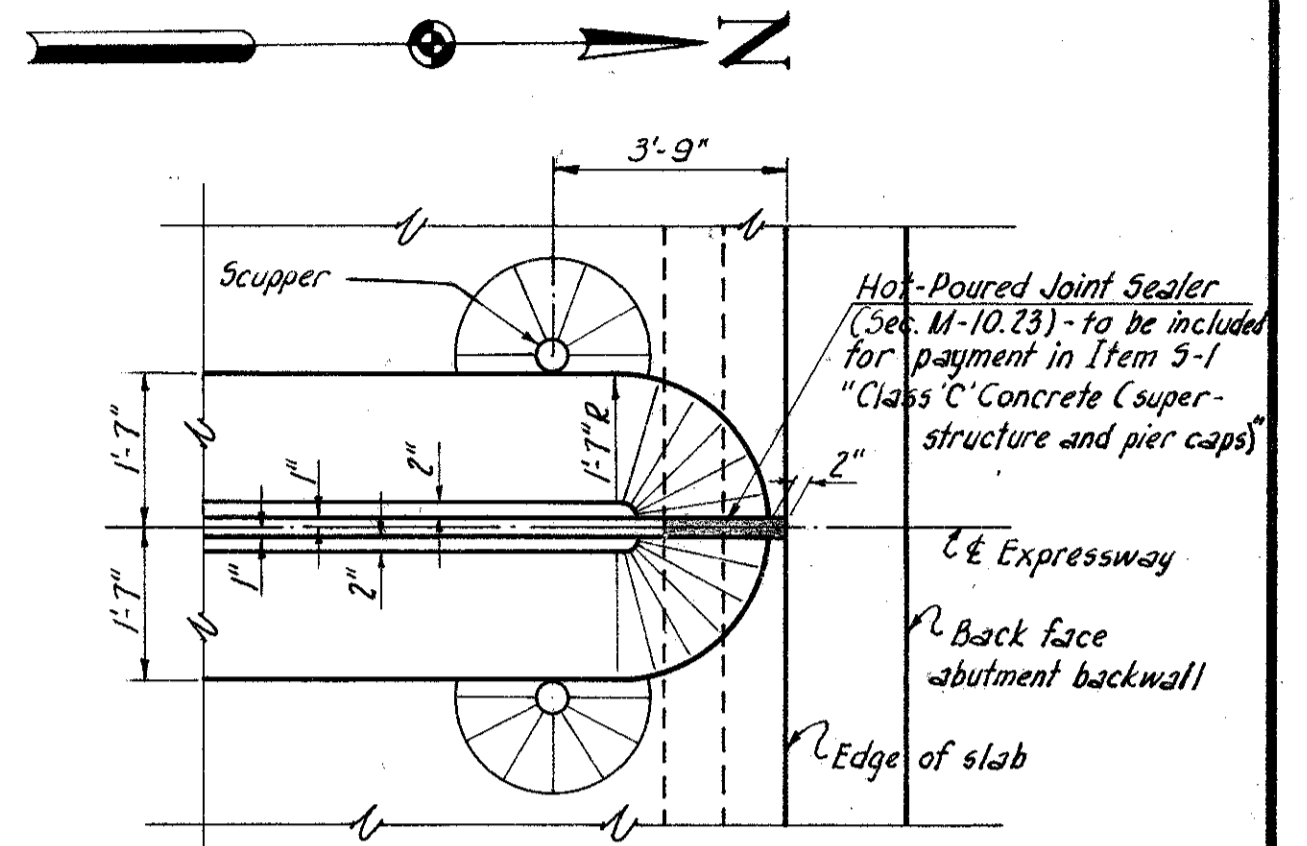
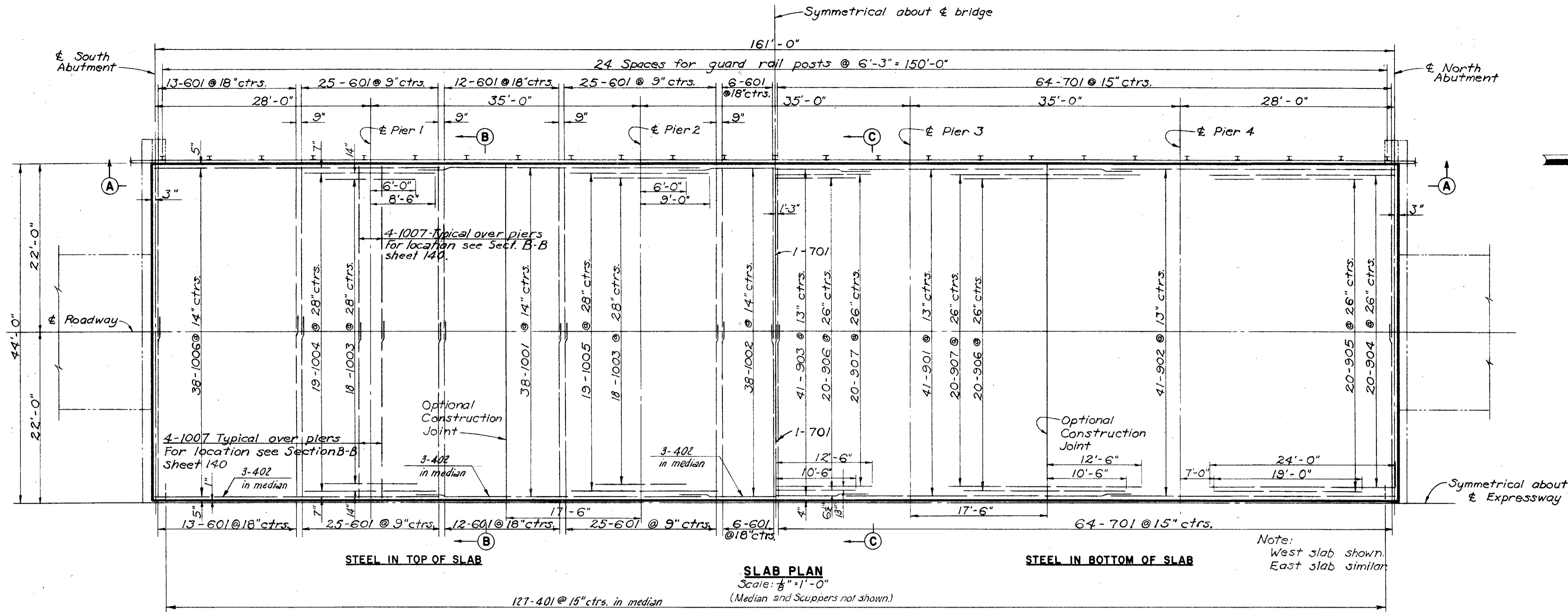
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
810 SHEET: 141

Revised 3-29-57

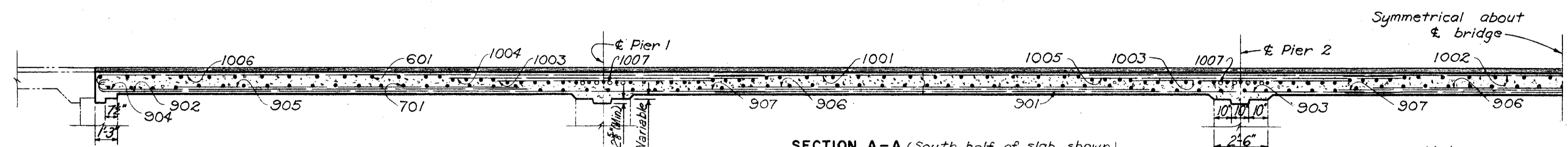
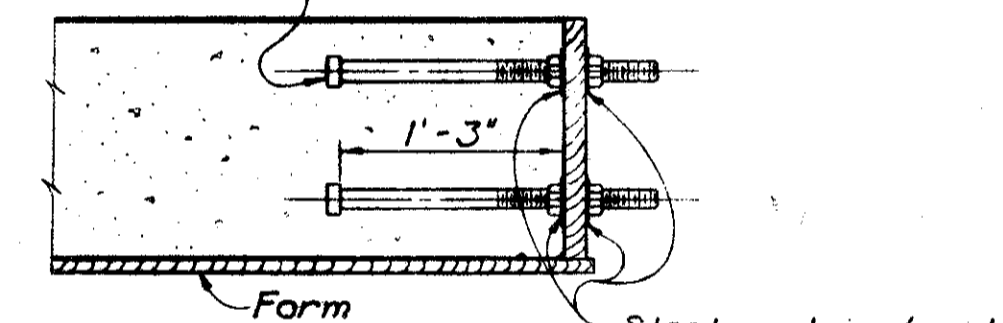
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FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	TYPE FUNDS
2	OHIO		

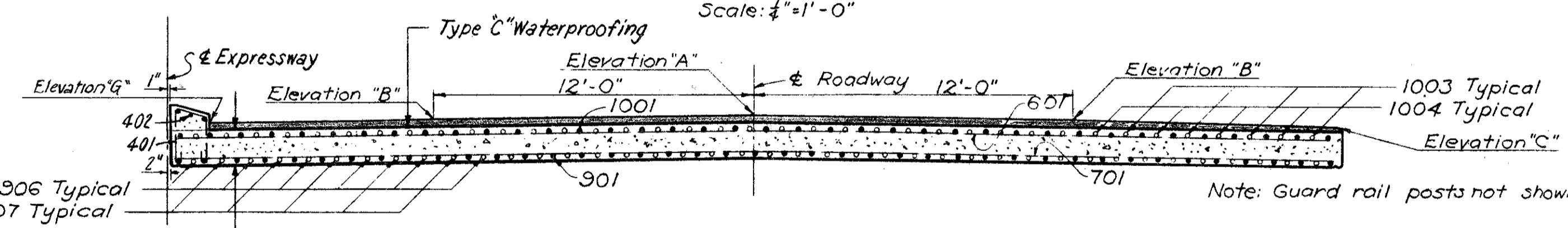
LUCAS COUNTY
CITY OF TOLEDO
EXPRESSWAY SYSTEM
LUC-24A-5.53



1 1/2" x 20" galvanized machine bolts with square heads. Thread 8" length and provide three galvanized hexagonal nuts per bolt. Fasten bolts rigidly to form before placing concrete. Galvanizing of bolts shall be as provided in Sec. M-7.4(d).



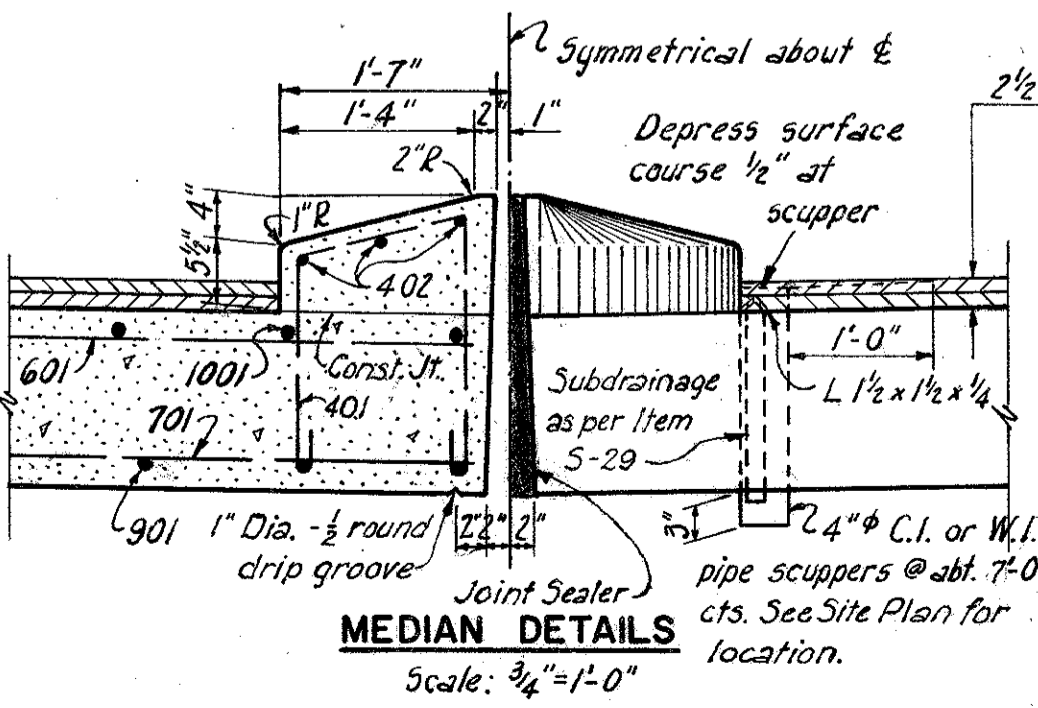
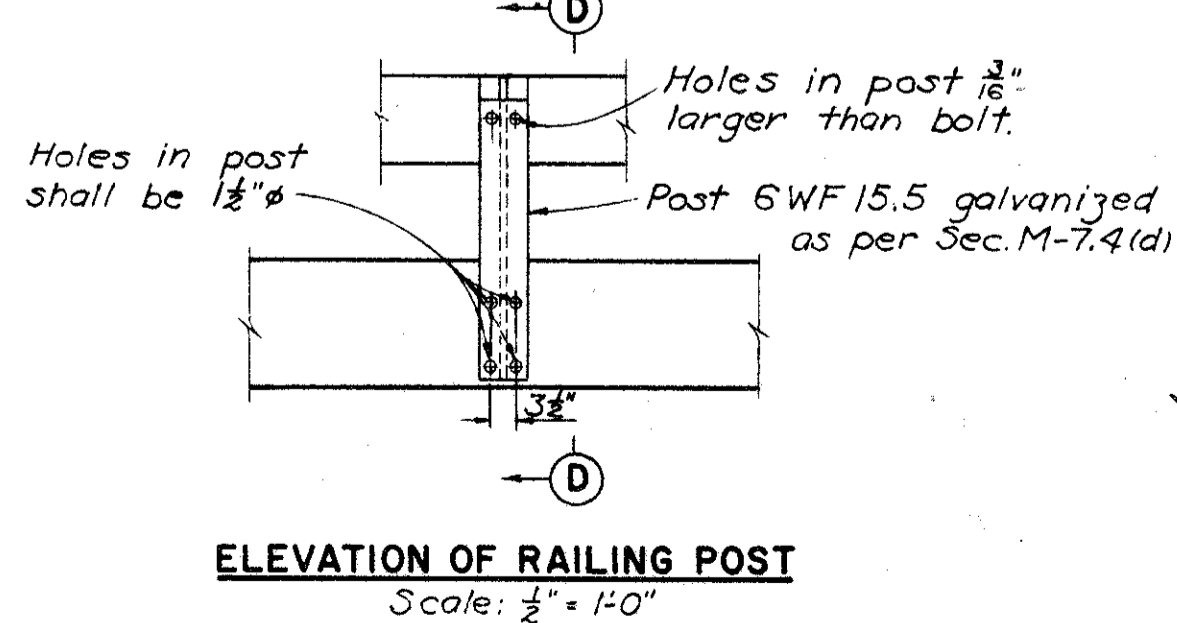
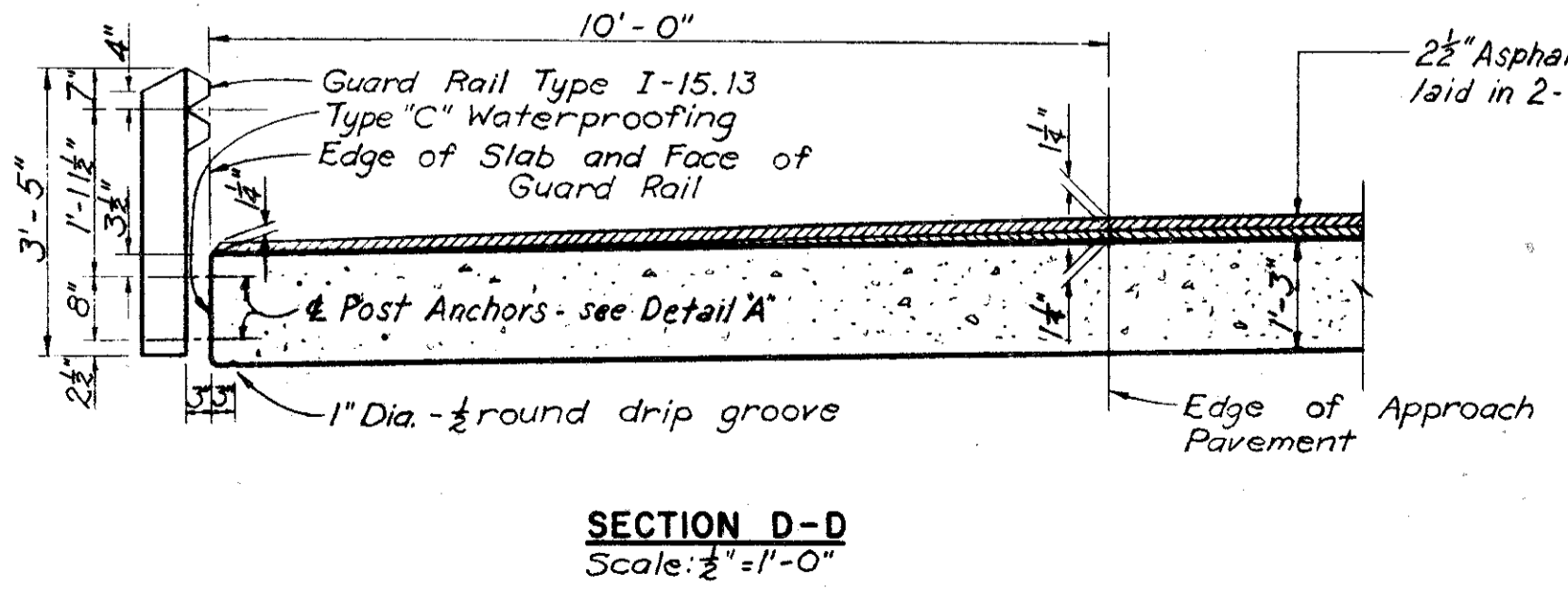
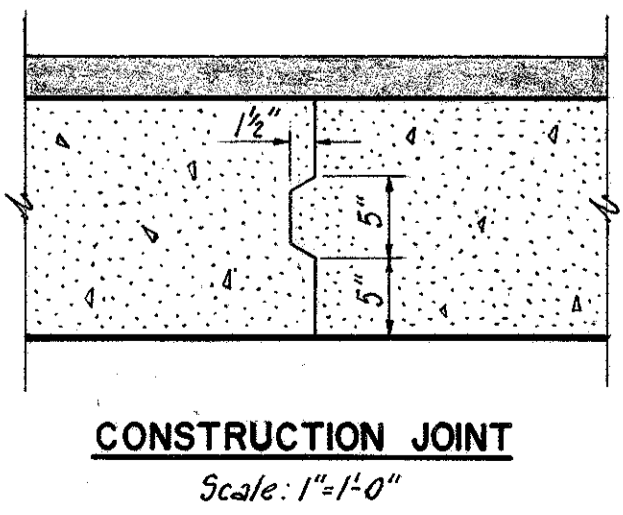
Note: Reinforcing steel clearance for slab - 1 1/4" Typical



Note: Elevation "G" is given on sheet 140

	Elevation "A"	Elevation "B"	Elevation "C"
South Abutment	583.37	583.18	582.92
Pier 1	583.30	583.11	582.85
Pier 2	583.22	583.03	582.77
Pier 3	583.13	582.94	582.68
Pier 4	583.04	582.85	582.59
North Abutment	582.97	582.78	582.52

Notes:
Transition between guard rail height on bridge and on approaches shall be made in a distance of 100 feet from each end of bridge.
Guard rail shall be painted white in accordance with Sec. I-15.07 of the Specifications. Galvanized posts and anchor bolts shall not be painted.
Payment for railing will be made at the Contract unit price per lineal foot for Item S-14, Railing (Type I-15.13) measured between the bridge limits and shall include the cost of all guard rail, posts, anchors, connections, galvanizing, painting, etc., necessary to properly complete the railing installation.



H.N.T.B. BR. NO. 33 PART II
TOLEDO EXPRESSWAY SYSTEM
EXPRESSWAY OVER OTTAWA RIVER
BR. NO. LUC-24A-0717
SLAB PLAN

TOLEDO LUCAS COUNTY, OHIO

SCALE: As Noted
MADE D.Y.O. DATE 7-27-56
TRCD. DATE
CRD. W.F. DATE 1-10-57

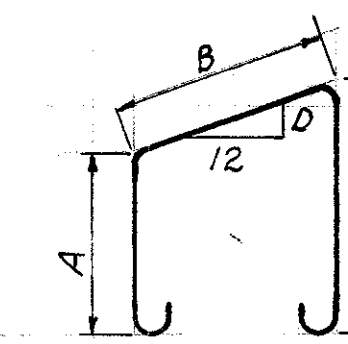
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY - CLEVELAND - NEW YORK
810 SHEET 142

Revised 3-29-57

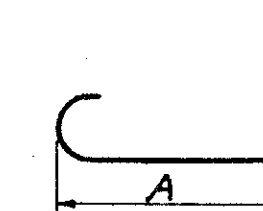
FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	TYPE FUNDS
2	OHIO		

143
164

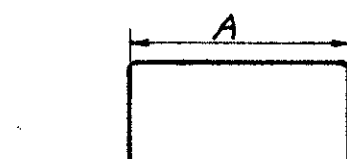
LUCAS COUNTY
CITY OF TOLEDO
TOLEDO EXPRESSWAY SYSTEM
LUC-24A-5.53



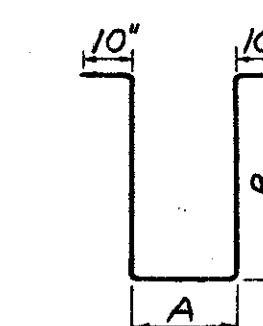
124



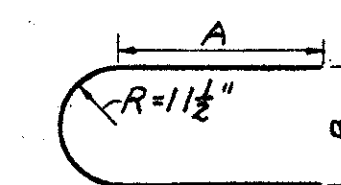
101



105



121



134

BENDING DIAGRAMS

SPIRAL REINFORCING LIST						
MARK	NUMBER	CORE DIA. % SPIRAL	LENGTH	PITCH	NO. OF TURNS	WEIGHT POUNDS
SP401	28	20"	14'-0"±	6"	32	3,138
SP402	14	20"	14'-3"±	6"	32	1,569
SP403	7	20"	14'-9"±	6"	32	809
SP404	7	20"	13'-0"±	6"	32	736
					Spacers	1,600
					Total	7,852

Spiral Reinforcing Bars:
The "Length" shown in the steel list for the spiral bars is the distance from the bottom of the pile encasement 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 shall not have deformations but shall in other respects conform to Item 5-4.
1 1/2 closed coils shall be provided at the ends of each spiral unit.
Three steel channel, tee or angle spacers, weighing approximately 0.68 lb. per lin. ft. of spacer, shall be provided for each spiral unit.
For additional note on pile encasement, see sheet 140.

Notes:
Replacement bars are listed for entire structure.
Bar dimensions are given out to out.

① To be included in Item 5-18 14" Cast-in-Place Reinforced Concrete Piles for payment. See note on sheet 89.

H.N.T.B. BR. NO. 33 PART II
TOLEDO EXPRESSWAY SYSTEM
EXPRESSWAY OVER OTTAWA RIVER
BR. NO. LUC-24A-0717
REINFORCEMENT SCHEDULE

TOLEDO LUCAS COUNTY, OHIO
SCALE: None
MADE BY: DATE: 10-12-56
TRCD: DATE: 1-10-57
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
810 SHEET-143
Revised 3-29-57

MARK	NUMBER	LENGTH	TYPE	DIMENSIONS				SERIES INCRE-MENT	WEIGHT POUNDS	MARK	NUMBER	LENGTH	TYPE	DIMENSIONS				SERIES INCRE-MENT	WEIGHT POUNDS	MARK	NUMBER	LENGTH	TYPE	DIMENSIONS				SERIES INCRE-MENT	WEIGHT POUNDS				
				A	B	C	D							A	B	C	D							A	B	C	D						
ABUTMENT (2 REQUIRED)									PIER CAP (4 REQUIRED)									SLAB															
401	48	5'-5"	105	1'-9"	1'-11"				174	401	56	5'-5"	105	1'-9"	1'-11"				203	601	648	22'-9"	Str.						22,142				
501	14	30'-9"	Str.						449	501	4	40'-6"	Str.						169	701	516	23'-0"	Str.						24,258				
502	140	6'-7"	105	2'-8"	2'-1"				961	502	64	8'-8"	121	2'-2"	2'-8"				579														
503	4	28'-0"	Str.						117	503	8	6'-4"	134	1'-7"	2'-0 1/4"				53														
504	12	5'-6"	Str.						69																								
505	32	7'-11"	105	1'-8"	3'-3"				264											901	164	37'-0"	Str.						20,631				
506	4	12'-6"	Str.						52											902	164	38'-3"	101	37'-0"					21,328				
507	8	5'-0"	Str.						42											903	82	22'-0"	Str.						6,134				
508	28	6'-8"	105	11"	3'-0"				195	701	84	4'-0"	Str.							904	80	25'-3"	101	24'-0"					6,868				
509	28	8'-5"	105	2'-2"	3'-3"				246											905	80	19'-0"	Str.						5,168				
510	2	19'-0"	Str.						40											906	120	21'-0"	Str.						8,568				
																				907	120	25'-0"	Str.						10,200				
										901	8	40'-6"	Str.							1,102													
801	12	30'-9"	Str.						985	Total - One Pier Cap =									2,793														
																				1001	152	37'-0"	Str.						24,200				
																				1002	76	22'-0"	Str.						7,195				
																				1003	144	12'-0"	Str.						7,436				
1001	8	28'-0"	Str.						964											1004	76	17'-0"	Str.						5,559				
1002	4	31'-0"	Str.						534											1005	76	18'-0"	Str.						5,886				
										Total - One Abutment =									5,092				1006	152	38'-5"	101	37'-0"				25,130		
																				1007	64	23'-6"	Str.						6,472				
																				401	30	32'-6"	Str.						651				
																				402	254	5'-3"	124	1'-6"	1'-2"	1'-10"	3		891				
																				Total =						208,717							
																				PILE ENCASEMENTS													
801	168	15'-9"	Str.																										7,065				
802	84	16'-0"	Str.																										3,589				
803	42	16'-6"	Str.																										1,850				
804	42	14'-9"	Str.																										1,655				
																				Total =						14,159							
																				REPLACEMENT REINFORCING STEEL SCHEDULE													
																				SIZE	NUMBER	LENGTH	TYPE										
																				4	1	5'-3"	Str.										
																				5	1	5'-6"	Str.										
																				6	2	6'-0"	Str.										
																				7	2	6'-3"	Str.										
																				8	1	6'-6"	Str.										
																				9	4	7'-0"	Str.										
																				10	4	7'-3"	Str.										