

H-7
E-I-I

FED.AID PROJECT	STATE	FED. RD. DIST. NO.	FISCAL YEAR	1
	OHIO			26
S.H. No. 520 Lake			Sec. B & C. Brs. County	

STATE OF OHIO
DEPARTMENT OF HIGHWAYS

PAINESVILLE-E UCLID ROAD

LAK 4.58-~~XXXXXX~~
SR 283

S.H. (I.C.H.) NO. 520 SEC. B & C. (BRIDGES) PET. NO.
LAKE COUNTY
WILLOUGHBY TWP. NOVEMBER 1931
BR. NO. LA-283-46 AND BR. NO. LA-283-47

The Standard Specifications of the State of Ohio, Department of Highways, in force on date of contract, together with the Supplemental Specifications for Winter Bridge Construction for Emergency Relief, will govern this improvement.

I hereby approve these plans and declare that the making of the improvement will not require the closing to traffic of the highway and that a detour bridge and approaches will be provided as shown on the plans & estimate.

- Approved: A. B. Wilson
Date, 12/7/31 Resident District Deputy Director.
- Approved: DeWitt
Date, 12/7/31 Resident Division Deputy Director.
- Approved: Elmer Hilley
Date, 1/16/32 Chief Engineer Bureau of Construction.
- Approved: _____
Date, _____ Chief Engineer Bureau of Maintenance.
- Approved: W. Burkes
Date, 2-3-32 Chief Engineer Bureau of Bridges.
- Approved: H. P. Chapman
Date, 1-4-32 Chief Engineer & First Assistant Director.
- Approved: Oliver Merrill
Date, 1-4-32 Director of Highways.
- Recommended for Approval: _____
Date, _____ District Engineer Bureau of Public Roads.
- Recommended for Approval: _____
Date, _____ Chief Engineer Bureau of Public Roads.
- Approved: _____
Date, _____ Chief of Bureau.

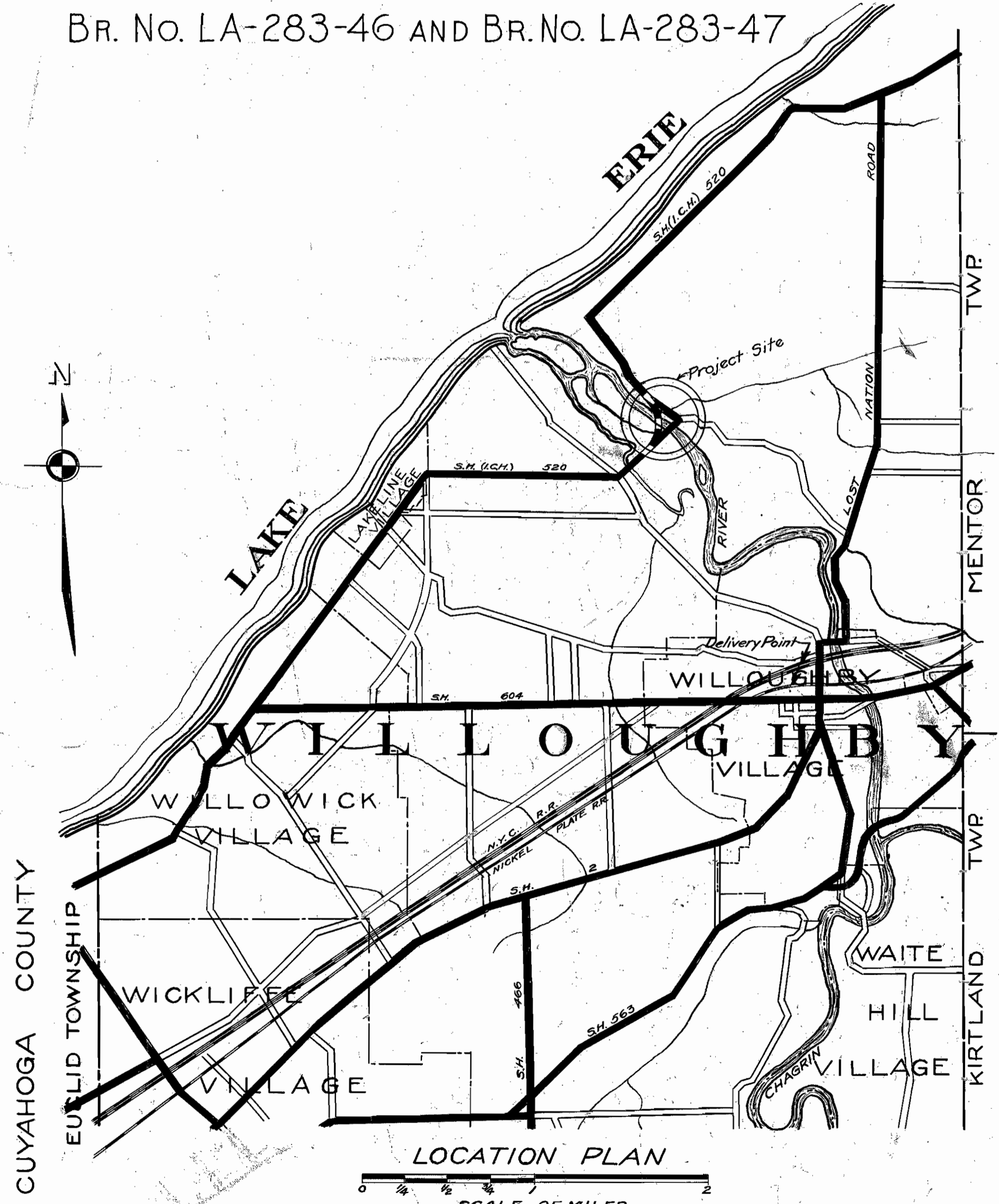
CONVENTIONAL SIGNS

State line	-----
County line	-----
Township line	-----
Section line	-----
Property line not fenced	-----
Center line	-----
City or Village line	-----
Fence	x x x x x x x x x x x x x x x x
Telephone or Telegraph	T T T T T T T T T T T T T T T T
Steam Railroad	-----
Electric line	-----
Guard rail	-----
Drain Pipe-new	-----
Drain Pipe-old	-----

We, the Commissioners of Lake County hereby approve these plans and certify that the right of way 60 minimum width is available for the construction, maintenance and repair of the above highway.

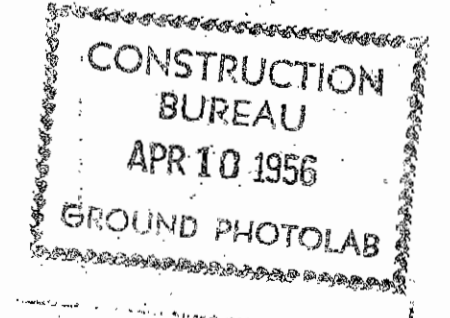
N. O. Regier
Chas. M. ...
Le H. ...

Date, _____ County Commissioners.



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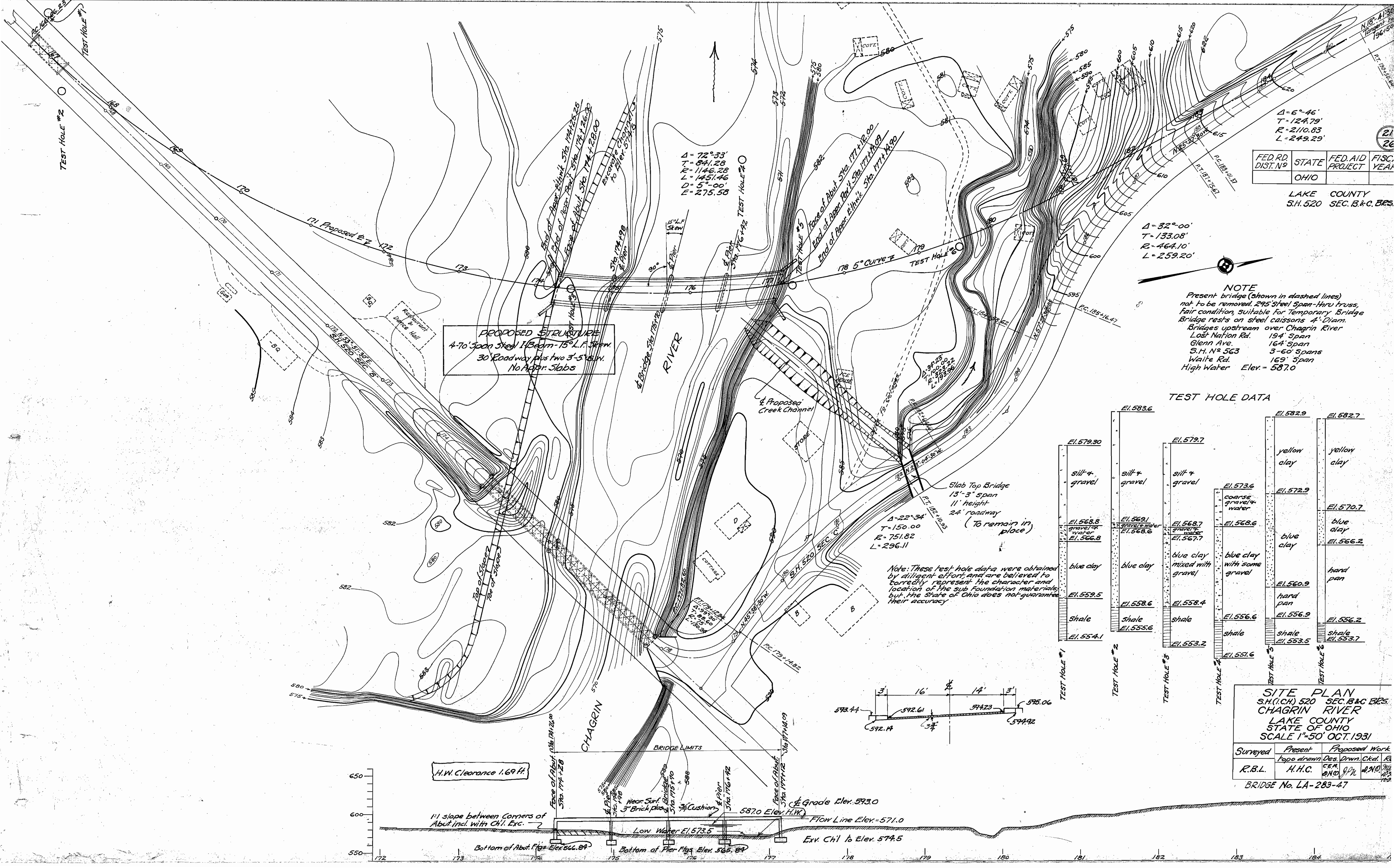
Title page	page 1
Typical Sections	" 2
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Cross Sections (channel exc., borrow pits)	" 4-16
Structural Plan	" 17
Summary of Quantities	"
Supplemental Standard Drawings # 3R-A	"



SCALES

Plan	1" = 100'
Profile (vertical)	1" = 10'
Profile (horizontal)	1" = 100'
Cross-Sections	1" = 5'

000049



FED. RD. DIST. NO.	STATE	FED. AID PROJECT	FISC. YEAR
	OHIO		

LAKE COUNTY
S.H. 520 SEC. B & C. BR5

$\Delta = 32^{\circ}00'$
 $T = 133.08'$
 $R = 464.10'$
 $L = 259.20'$

NOTE
Present bridge (shown in dashed lines) not to be removed. 295' Steel Span-Haru truss, fair condition, suitable for Temporary Bridge. Bridge rests on steel caissons 4'-Diam. Bridges upstream over Chagrin River: Lost Nation Rd. 194' Span, Glenn Ave. 164' Span, S.H. No. 563 3-60' Spans, Waite Rd. 169' Span, High Water Elev. = 587.0

PROPOSED STRUCTURE
4-70' Span Steel I-Beam - 15' L.F. Skew.
30' Roadway plus two 3'-5' Sidewalks.
No Appr. Slabs

Slab Top Bridge
13'-3" span
11' height
24' roadway
(to remain in place)

Note: These test hole data were obtained by diligent effort and are believed to correctly represent the character and location of the sub foundation materials, but the State of Ohio does not guarantee their accuracy.

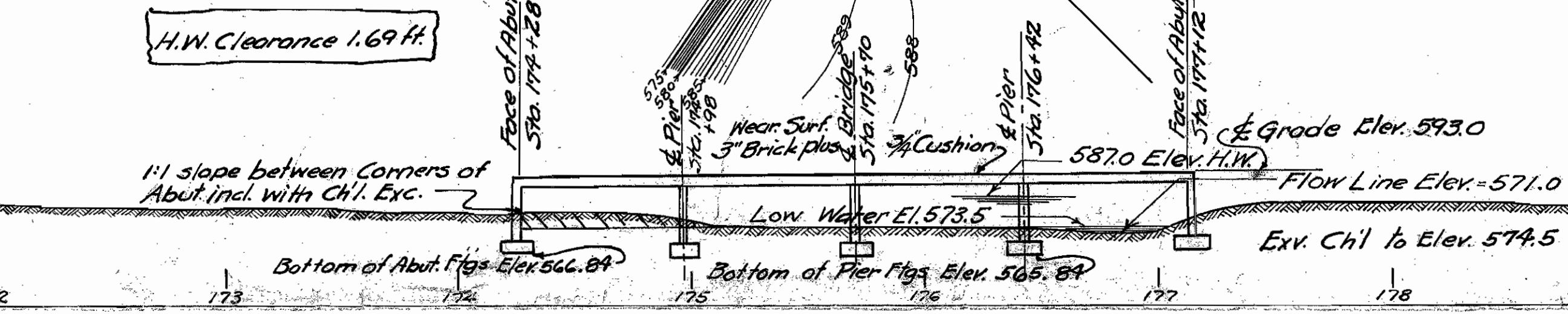
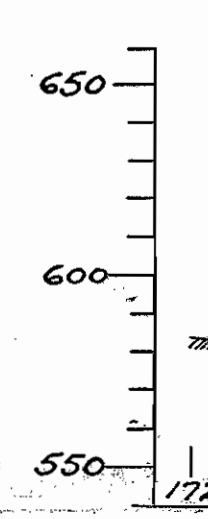
TEST HOLE DATA

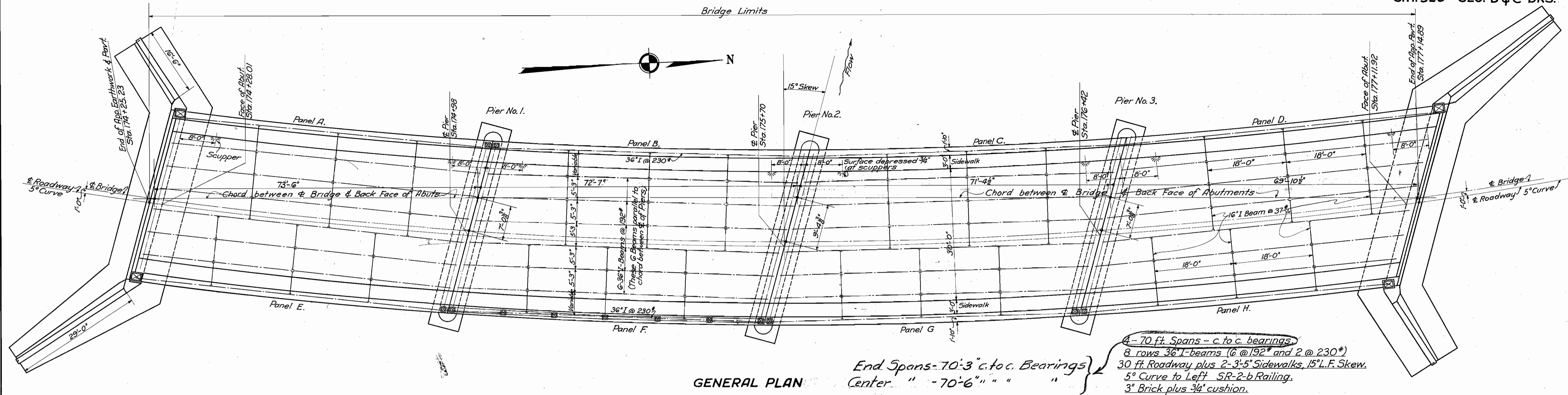
TEST HOLE #	EL. 583.6	EL. 582.9	EL. 582.7
TEST HOLE #1	EL. 579.30 silt & gravel	EL. 579.7 silt & gravel	EL. 573.6 coarse gravel & water
TEST HOLE #2	EL. 568.8 gravel & water	EL. 568.7 gravel & water	EL. 572.9 blue clay
TEST HOLE #3	EL. 566.8 blue clay	EL. 567.7 blue clay mixed with gravel	EL. 570.7 blue clay
TEST HOLE #4	EL. 559.5 shale	EL. 558.4 shale	EL. 566.2 hard pan
TEST HOLE #5	EL. 554.1 shale	EL. 555.6 shale	EL. 560.9 hard pan
TEST HOLE #6		EL. 556.9 shale	EL. 556.2 shale
TEST HOLE #7		EL. 553.5 shale	EL. 553.7 shale
TEST HOLE #8		EL. 551.6 shale	

SITE PLAN
S.H. (I.C.H.) 520 SEC. B & C BR5
CHAGRIN RIVER
LAKE COUNTY
STATE OF OHIO
SCALE 1"=50' OCT. 1931

Surveyed	Present		Proposed Work	
	Popo. drawn	Des. Drwn.	Ckd.	As
R.B.L.	H.H.C.	W.N.O.	J.P.N.	A.N.O.

BRIDGE No. LA-283-47

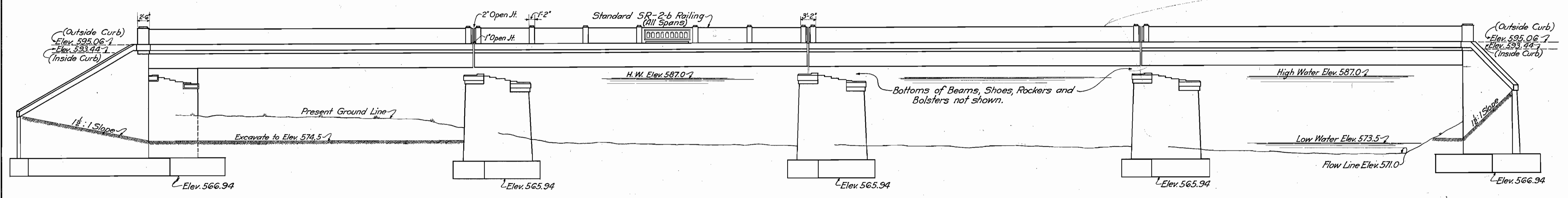




GENERAL PLAN

End Spans - 70'-3" c.to c. Bearings
Center " - 70'-6" " " " "

- 4 - 70 ft. Spans - c. to c. bearings
- 8 rows 36" I-beams (6 @ 192" and 2 @ 230")
- 30 ft. Roadway plus 2 - 3'-5" Sidewalks, 15" L.F. Skew.
- 5° Curve to Left SR-2-b Railing.
- 3" Brick plus 3/4" cushion.
- 0% Grade.



GENERAL ELEVATION

GENERAL NOTES

THE SUPERSTRUCTURE shall be four 70 ft. (center to center) steel I-Beam spans 15° Left Forward skew at Bridge, the entire structure being on a 5° Curve to the left. The Roadway shall be 30 ft. between curbs and there shall be two 3'-5" Sidewalks.

WEARING SURFACE shall be lug brick, wire cut type or lug brick repressed type laid 3" depth with F-1 filler on a 3/4" cushion.

LOADING: Bridge is designed for H-15 Loading.

CAMBER: All 192" I-Beams (Interior Beams) shall have a camber of 1 1/2" under no load; all 230" I-Beams (Outside Beams) shall have a camber of 2" under no load, the purpose of which is to offset deflection.

PAYMENT: 1/8" Sheet Lead, Cast Iron and Cast Steel shall be included with structural steel for payment.

CONCRETE MIX shall be 1:5 1/2 for superstructure and substructure except footings which shall be 1:6 1/2.

RAILING shall be reinforced concrete railing, 1:5 1/2 mix, type SR-2-b.

CONSTRUCTION JOINTS: No horizontal construction joints other than those shown will be permitted. Vertical construction joints, allowed only by special permission of the Engineer. Superstructure

concrete shall be placed full width out to out of curbs between transverse construction joints approved by the Engineer. All construction joints in abutments above low water elevation shall be sealed on back with Type "B" Waterproofing, 36" wide.

CHAMFER all exposed edges 3/4" unless otherwise shown.

PAINT: Structural Steel shall be given one shop coat of red lead or sublimed blue lead and two field coats of aluminum according to Construction and Material Specifications. Contact surfaces to be given one shop coat before assembly.

EXCAVATION above elevation 573.5 not included in "Channel Excavation" shall be classed as Dry Excavation. All below Elev. 573.5 and not included in "Channel Excavation" shall be classed as Wet Excavation.

PAYMENT FOR FRENCH DRAINS included in payment for dry excavation.

REINFORCING BARS in footings shall be securely fastened in proper position before footing concrete is placed. Top of footings shall be thoroughly cleaned before wall concrete is placed.

ANCHOR BOLTS: Special care shall be used in placing reinforcing

steel to allow sufficient space for anchor bolt holes without cutting the bars. Anchor bolt holes shall not be drilled until beams are in place. Anchor Bolts shall be 1 1/2" set 1" O in masonry.

RIVETS: All rivets shall be 3/4".

SETTING ROCKERS: The rockers shall be so placed that when the bridge is completed, the rockers will stand in a vertical position at average temperature.

SHEET LEAD: Place an 1/8" thickness of sheet lead under each bolster and rocker base plate on bridge seat.

END FINISH shall be used as template for top of backwall on abutments. Backwall shall be built after the structural steel has been erected.

NO TEMPORARY DETOUR BRIDGE REQUIRED: Present bridge to remain in place.

GENERAL QUANTITIES

Concrete 1:6 1/2 mix (Figs.)	Piers = 101.0	446
	Abuts. = 359.0	34.50
		460 Cu. Yds.
Concrete 1:5 1/2 mix (Walls)	Pier = 240.0	320
	Abuts. = 320.0	(560) Cu. Yds.
Concrete 1:5 1/2 mix (Superstructure + Sidewalk)		314 Cu. Yds.
Wearing Surface (3" Brick plus 3/4" cushion)		947 Sq. Yds.
Concrete Railing (Type SR-2-b; 1:5 1/2 mix)		578 Lin. Ft.
Reinforcing Steel	Piers = 10,880	
	Abuts. = 36,500	35,850
	Superstr. = 80,135	126,866
		127,515 Lbs.
Structural Steel		550,000 Lbs.
Wet Excavation		1,000 Cu. Yds.
Dry Excavation		700 Cu. Yds.
Channel Excavation		18,249 Cu. Yds.
1/4" Prem. Exp. Jt. Filler		31 Sq. Ft.
Type "B" Waterproofing		45 Sq. Yds.
12" - 24 oz. Folded Copper Strip		465 Lin. Ft.
Steel I-Beam Piling (10"x10"@49') (to establish unit price)		1 Lin. Ft.
Cofferdams, Sheet piling and Pumping		Lump Sum

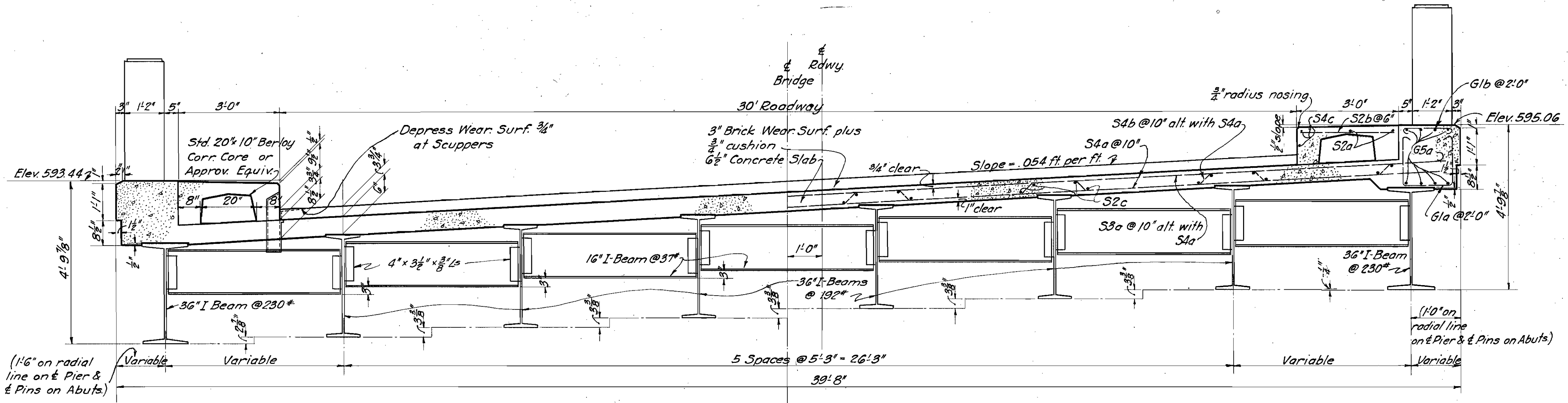
Gen. Note #4 Pier Quantities Revised - Mar. 25, 1932 - GEN
General Quantities Revised - Jan. 25, 1932 - GEN

BR. NO. LA-283-47

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
BUREAU OF BRIDGES

**GENERAL PLAN
ELEVATION & NOTES**
BRIDGE OVER CHAGRIN RIVER
S.H. 520 LAKE COUNTY
SECTION B & C BRs. STA. 175+70

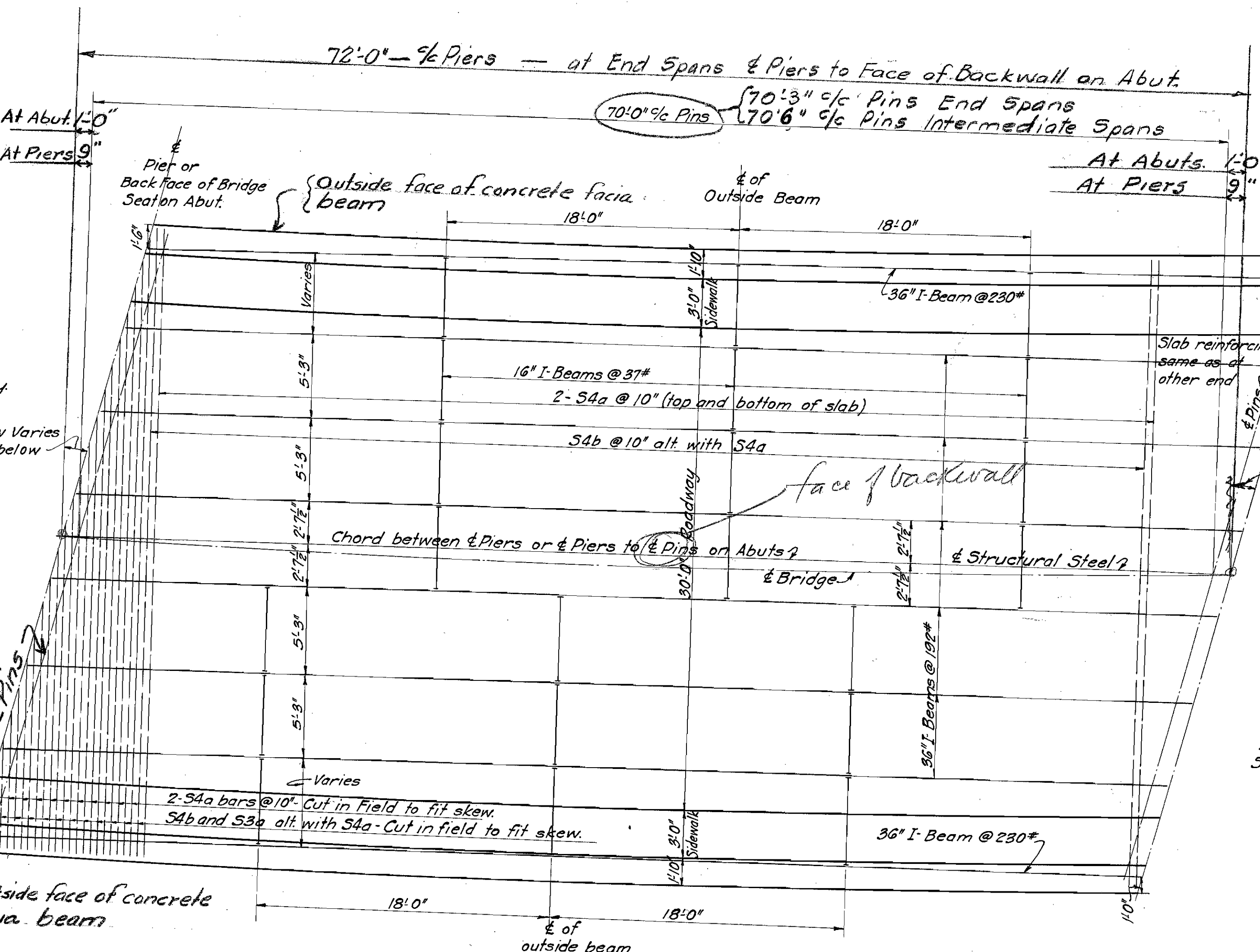
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
C.B.T.	C.B.T.	J.K.G.	K.S.D.	J.H.A.	12-31-31	1-25-32 3-25-32



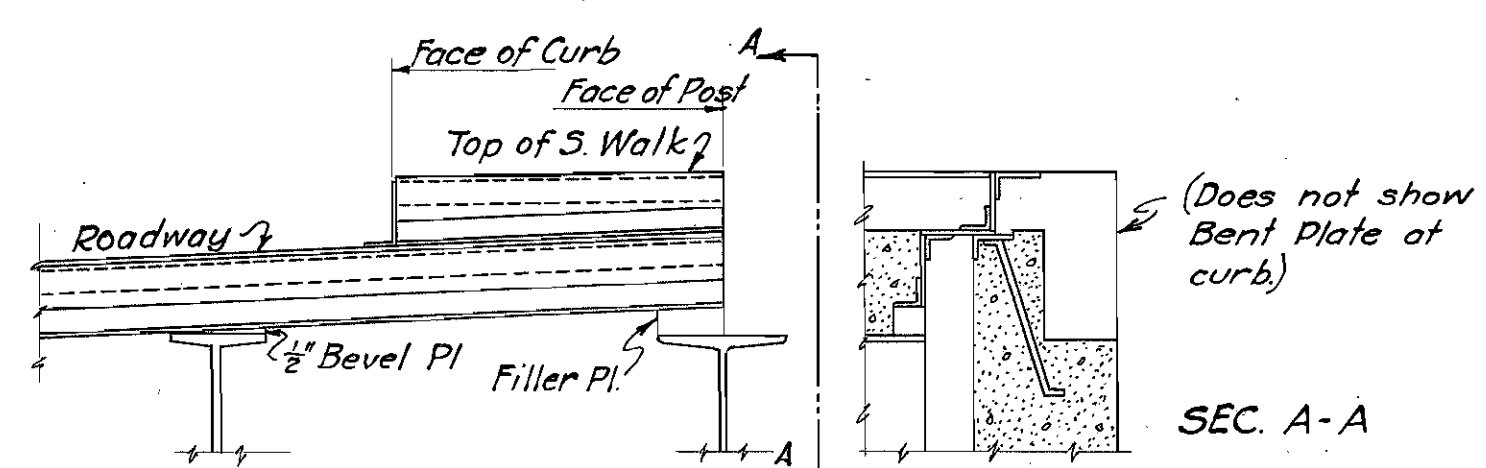
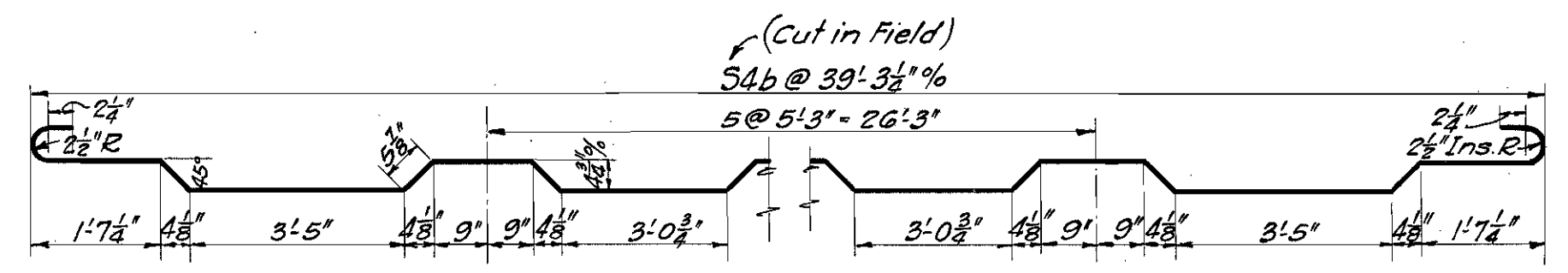
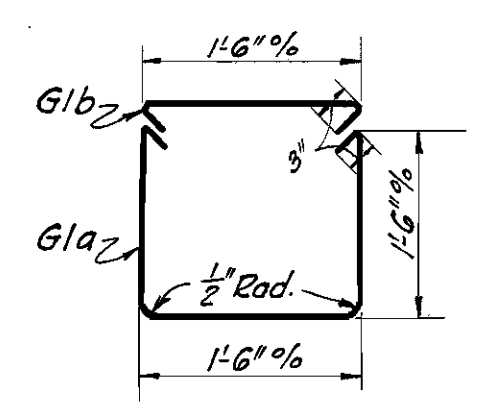
TRANVERSE SECTION

Mark	Size	Shape	Length	No. of Bars	Weight
S2a	1/2"	Str't.	38'-0"	32	812
S2b	1/2"	Str't.	2'-9"	1160	2,131
S2c	1/2"	Str't.	38'-0"	224	5686
S3a	1/2"	Str't.	39'-3"	348	11,620
S4a	5/8"	Str't.	39'-3"	626	28,520
S4b	5/8"	Bent	42'-6"	348	15,441
S4c	5/8"	Str't.	38'-0"	48	1,904
G1a	3/4"	Bent	5'-0"	296	556
G1b	3/4"	Bent	2'-0"	296	223
G5a	3/4"	Str't.	38'-0"	128	7,311
G5b	3/4"	Str't.	23'-0"	80	2,766
Total					76,970

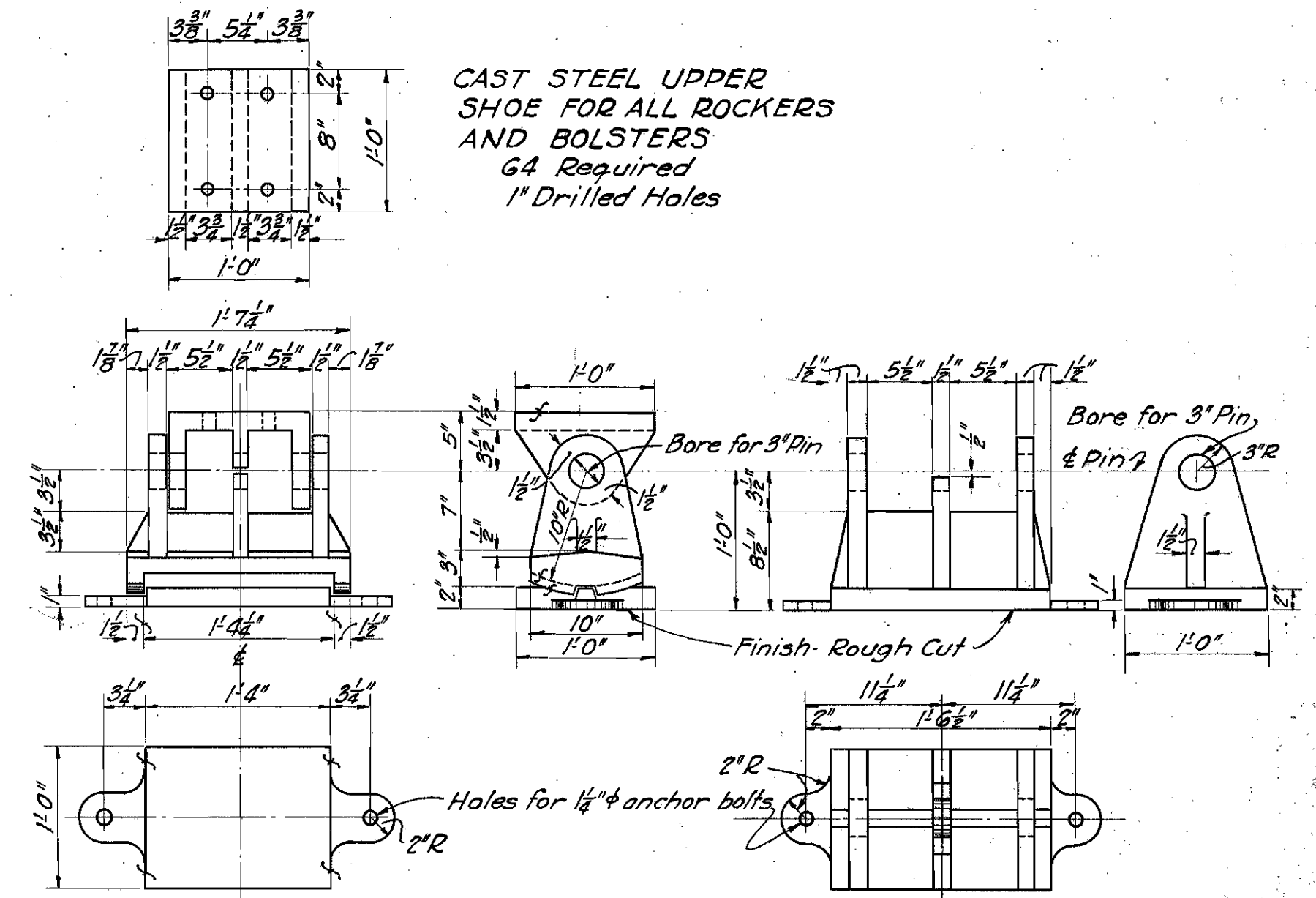
Note! These bars cut in field to fit skew where necessary.



STRUCTURAL STEEL LAYOUT

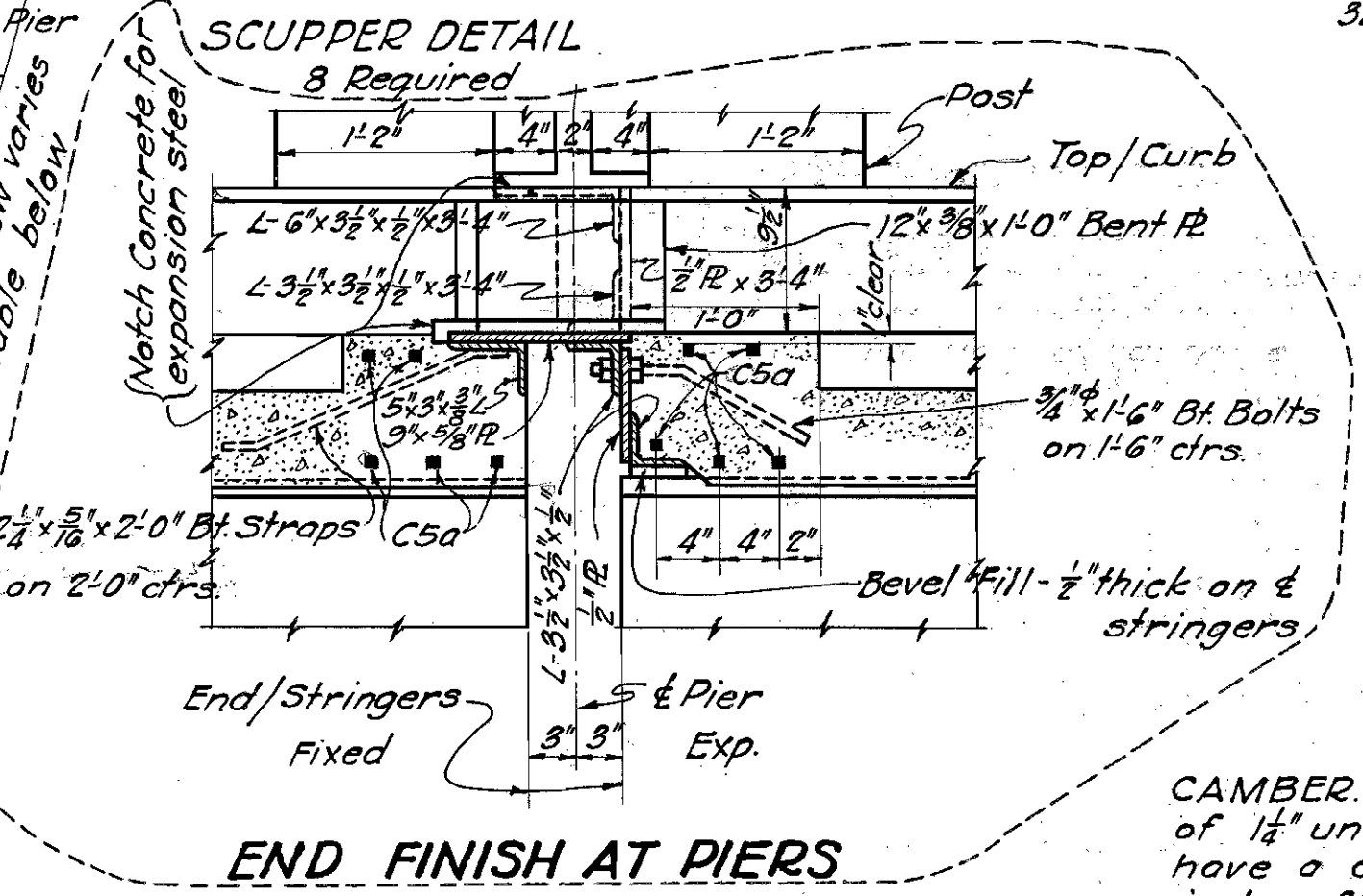


SEC. A-A

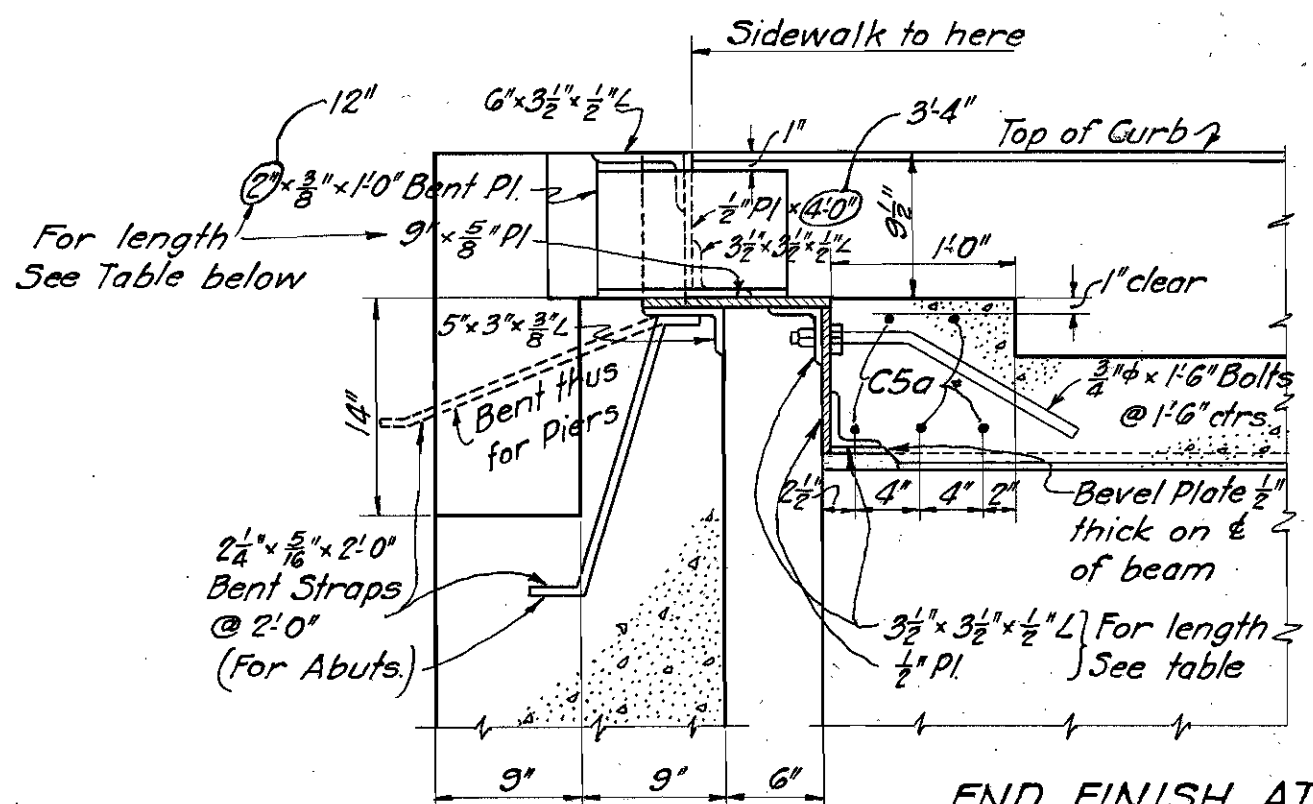


CAST STEEL ROCKER AND BASE PLATE

CAST STEEL BOLSTER



END FINISH AT PIERS



END FINISH AT ABUTMENT

TABLE SHOWING LENGTHS OF ANGLES AND PLATES

Location	Length	Skew
N. Abut.	39'-9"	2°-12'
Pier #3	38'-10"	18°-36'
Pier #2	38'-1 1/2"	15°
Pier #1	37'-7"	11°-24'
S. Abut.	37'-7"	7°-43'

SETTING ROCKERS
The rockers shall be so placed, that when the bridge is completed, the rockers will stand in a vertical position at average temperature.

CAMBER. All 192" I-Beams (interior beams) shall have a camber of 1/2" under no load; all 230" I-Beams (outside beams) shall have a camber of 2" under no load, the purpose of which is to offset deflection.

PAYMENT. 1/2" sheet lead, cast iron and cast steel shall be included with structural steel for payment.

PAINT. Structural steel shall be given one shop coat of red lead or sublimed blue and two field coats of aluminum according to Construction and Material Specifications. Contact surfaces to be given one shop coat before assembly.

RIVETS. All rivets shall be 3/4" diameter.

SHEET LEAD. Place an 1/8" thickness of sheet lead under each bolster and rocker base plate on bridge seat.

END FINISH shall be used as template for top of backwall on abutments. Backwall shall be built after the structural steel has been erected.

ANCHOR BOLTS. special care shall be used in placing reinforcing steel to allow sufficient space for anchor bolts without cutting the bars. Anchor bolt holes shall not be drilled until girders are in place. Anchor Bolts shall be 1/2" diameter set 1'-0" in masonry.

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
BUREAU OF BRIDGES

SUPERSTRUCTURE DETAILS
BRIDGE NO. LA-283-47
BRIDGE OVER CHAGRIN RIVER
S.H. 520 LAKE COUNTY
SECTION B & C BR5. STA. 175 + 70.0

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
067	067	067	067	067	12-31-31	3-28-32

Structural Steel Layout - 3-28-32
End Finishes revised 3-28-32

*checked by [Signature]
See Rebar notes
4-28-32*