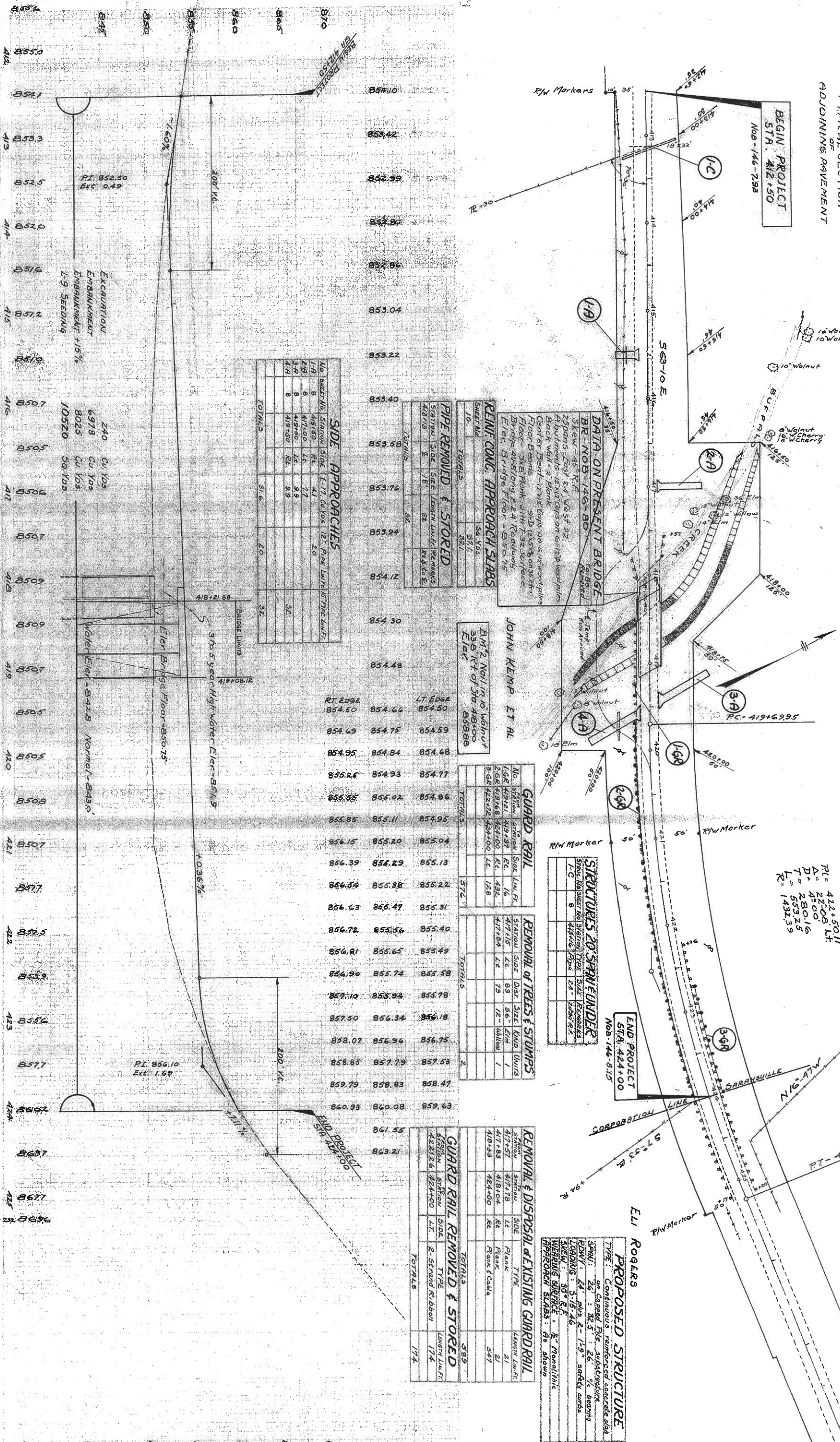


ADJOINING PAVEMENT
TYPE 710

JOHN KEMP ET AL

OKEY JOHNS
2 OHIO H.L.F. 1980 12
NOB-146-792



BEGIN PROJECT
STA. 412+50
NOB-146-792

END PROJECT
STA. 424+00
NOB-146-815

STRUCTURES 20' SPAN UNDER
NOB-146-815

PROPOSED STRUCTURE
Type: Continuous reinforced concrete slab
on gapped pile substructure
Span: 26' x 32.5' x 26'
RWY: 24' plus 2' 1.5% safety curbs
CONCRETE: 3-1/2" x 46"
SKEW: 30° R.E.
WEARING SURFACE: 3" Monolithic
APPROACH SLABS: as shown

REINFORCED CONCRETE APPROACH SLABS

SHEET NO.	NO.	TYPE	LENGTH
10	1	50' Yds	341'
TOTALS			341'

PIPE REMOVED & STORED

STATION	SIZE	LENGTH	TYPE
418+13	18"	82'	RK & S
418+13	18"	82'	RK & S
TOTALS		164'	

GUARD RAIL

NO.	STATION	START	END	TYPE
1	418+13	418+13	418+13	16
2	418+13	418+13	418+13	128
TOTALS				144'

REMOVAL OF TREES & STUMPS

STATION	SIZE	DIST.	SIZE	KIND	UNITS
417+84	12"	63'	56"	FHM	1
417+84	12"	75'	12"	Willow	1
TOTALS					2

REMOVAL & DISPOSAL OF EXISTING GUARD RAIL

STATION	TYPE	LENGTH
417+87	Plank	21'
418+04	Plank	21'
418+03	Plank & Cables	547'
TOTALS		589'

GUARD RAIL REMOVED & STORED

STATION	TYPE	LENGTH
421+6	2-Strand Ribbon	174'
TOTALS		174'

SIDE APPROACHES

NO. SHEETS	STARTING SIDE	ENDING SIDE	TYPE	LENGTH
8	418+50	418+50	20'	20'
8	417+00	417+00	22'	22'
2	419+00	419+00	93'	93'
4	419+50	419+50	93'	93'
TOTALS				316'

EXCAVATION
EMBANKMENT
L-9 SEEDING

240 CU YDS
6978 CU YDS
8025 CU YDS
10520 SQ YDS

Water Elev. - 843.8
Normal - 843.8

PI 866.10
Ext. 1.69

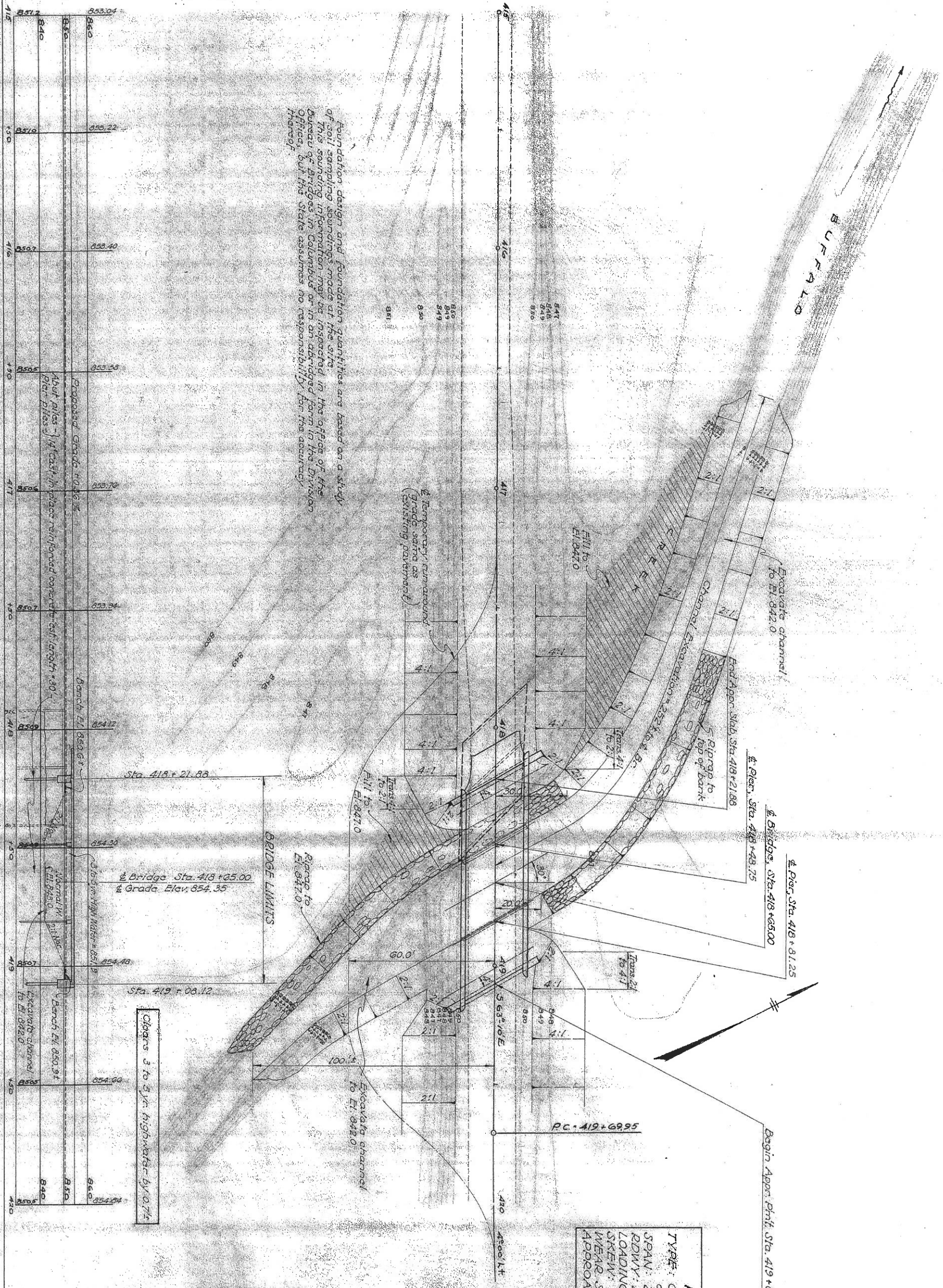
845
850
855
860
865
870

REL. NO.	STATE	PROJECT	FISCAL YEAR
2	OHIO	H. I. F.	1950

NOB-146-792
 .2 1/2 mile W. of Sardesville

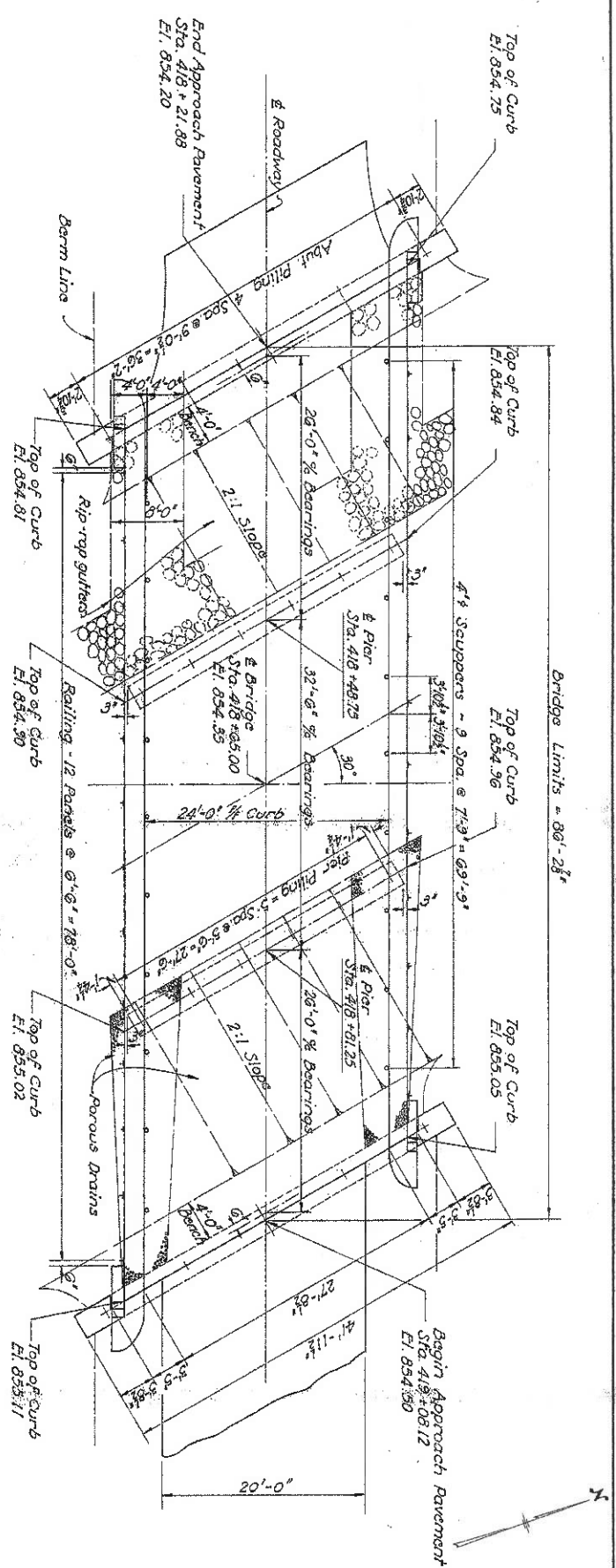
PROPOSED STRUCTURE
 TYPE: Continuous reinforced concrete slab on capped pile substructure.
 SPAN: 26'; 32.5'; 26' @ bearing
 RDWY: 24' plus two 1'-9" safety curbs
 LOADING: S-15-46
 SKEW: 30° R.F.
 WEAR SURFACE: 1/4" Monolithic
 APPROACH SLABS: As shown

Foundation design and foundation quantities are based on a study of soil sampling soundings made at the site. This sounding information may be inspected in the office of the Bureau of Bridges in Columbus or in an approved form in the Division thereof, but the State assumes no responsibility for the accuracy thereof.



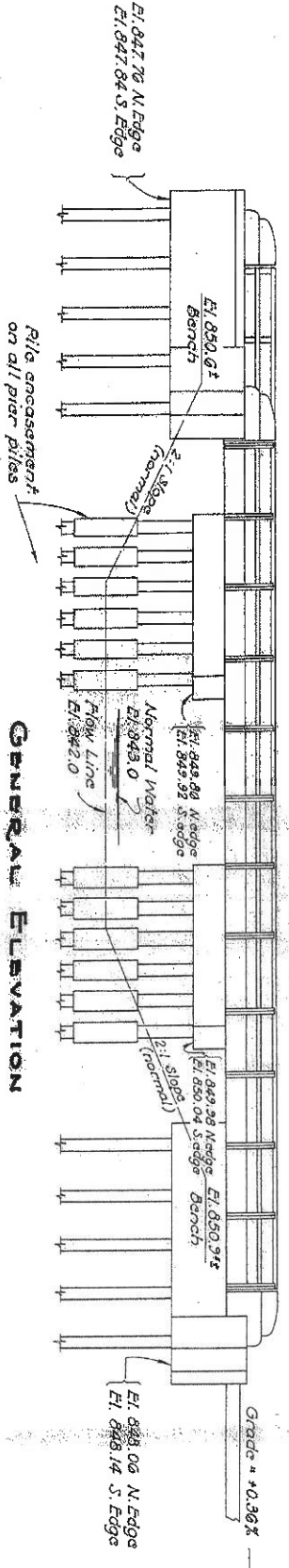
BRIDGE AREA	6,455 sq. ft.
NORMAL WATER ELEV.	843.00
5105 YEAR HIGH WATER ELEV.	851.9
DATA ON PRESENT BRIDGE	
BR-NOB-146-80 (to be removed)	
Skew - 45° R.F.	
Abutments - East 24', West 22' Ldg. H. 8.5	
Back Wall - 2' Plank	
Center Bent 12 x 12' Cop on 6-1/2" wood piles	
Floor Beams 9-1/2" x 6-1/2" on 3" cfr	
Floor 3x8 planks with 732 surface	
Bridge 47'-8" long & 24' roadway	
Elevation Bridge Floor	850.75

STATE OF OHIO
 DEPARTMENT OF HIGHWAYS
 BUREAU OF BRIDGES
SITE PLAN
 BRIDGE NO. NO-146-80
 OVER
 BUFFALO CREEK
 NOB-146-792
 NOBLE COUNTY
 Scale 1"=20'



GENERAL PLAN

NOTE: - Slab thickness of 14 1/2" includes 1/2" for monolithic wearing surface.



GENERAL NOTES

REFERENCE shall be made to Standard Drawings CS-3-47, revised 7-27-43; A-1-49 dated 7-27-43; P-1-49 dated 7-27-43.

TEMPORARY RUN-AROUND BRIDGE AND APPROACHES shall be paid for as lump sum under Item S-15, except furnish- ing and placing approach surface course. Surface course material, Item M-10, shall be paid for per cu. yd. Calcium chloride, Item M-10, used as a dust preventative, shall be paid for per ton. Amount of surface material applied and paid for to be as directed by the Engineer. Embankment to be substantially in accordance with E-1-105 and M-10 slopes not steeper than 1 1/2:1. Items I-17 and M-10 included with roadway quantities for payment.

REMOVAL OF EXISTING BRIDGE: Existing superstructure shall be removed. Steel beams shall be stored along the right of way for disposal by the States. Facias, timber rail and floor shall become the property of the Contractor. Existing substructure shall be removed to E1. 842.0 and become the property of the Contractor.

GENERAL NOTES

or slag. Construction procedure shall conform essentially to Item T-3. Trench excavation shall be included for pay- ment with the price per cu. yd. bid for porous drains on embankment slopes.

RIPRAP GUTTER: If riprap is constructed using stone, concrete blocks or broken concrete, it shall be grouted over an 8 ft. width, centered under the scuppers. The upper extended portion of the riprap, whether it is constructed as stated above or as a reinforced concrete slab, shall be depressed 6" at the center to form a gutter. This depression will be tapered to zero in the upper two feet of the stream bank riprap (below the extended portion). Grouting as described above shall be included with Item T-10 type A riprap for payment.

ABUTMENTS: - East abutment shall be constructed as shown on Standard Drawing A-1-49 dated 7-27-43 except that A16 bars in approach slab seat shall be omitted.

EXCAVATION quantity includes the removal of fill material between top of earth bench and bottom of abutment crossbeam.

PILING shall be driven to a minimum bearing capacity of 25 tons at the abutments and 35 tons at the piers.

SURFACE FINISH OF CONCRETE: Facias of deck, curb and railing and posts shall receive a rubbed surface finish. All other exposed surfaces shall be governed by the provisions of Item S-1.

POROUS DRAINS extending from face of abutment to E1. 843.0 shall be placed on and flush with embankment slopes at both east corners of the bridge. The drains shall be 8 ft. wide at the low end, tapering to 5 ft. wide at face of abut- ment, and one ft. thick. They shall be centered under the scuppers. They shall be composed of No. 1 gravel, stone,

REINFORCING STEEL LIST

Mark. Size	No.	Length	Height	Sp.
A	1 st	30'-3"	6.587	Stk
B	1 st	22'-9"	1.702	Stk
C	1 st	20'-1"	1.366	Stk
D	1 st	20'-3"	1.57	Stk
E	1 st	17'-0"	5.78	Stk
F	1 st	23'-0"	4.979	Stk
G	1 st	13'-0"	1.238	Stk
H	1 st	10'-3"	3.06	Stk
I	1 st	28'-0"	7.29	Stk
J	1 st	19'-0"	3.94	Stk
K	1 st	14'-0"	3.87	Stk
L	1 st	32'-0"	2.93	Stk
M	1 st	30'-0"	4.002	Stk
N	1 st	31'-0"	1.87	Stk
O	1 st	5'-5"	4.77	Stk
P	1 st	2'-2"	4.77	Stk
Q	1 st	8'-0"	4.77	Stk
R	1 st	16'-0"	4.77	Stk
S	1 st	16'-0"	3.87	Stk
T	1 st	16'-0"	1.339	Stk
U	1 st	16'-0"	1.339	Stk

Included with railing for payment

ESTIMATED QUANTITIES

Item	Total	Unit	Description	Abut.	Superst.	Piers	General	As Built
E-2	46	Cu Yd	Unclassified excavation	46				
E-3	2178	Cu Yd	Channel excavation		135		2118	
S-1	135	Cu Yd	Class 'C' concrete, superstructure & pier caps					
S-1	48	Cu Yd	Class 'C' concrete, abutments	48				
S-4	37194	Lb.	Reinforcing steel	4278	30472	2704	141	*2,428,386.394
S-9	40	Lin Ft.	1/2" Promoted expansion joint filler		40			
S-14	178	Lin Ft.	Railing (Steel with concrete end posts)		178			
S-15	Lump	Sum	Temporary run-around bridge & approaches					
S-16	Lump	Sum	First rest pile					
S-18	360	Lin Ft.	1/2" C.I.P. reinforced concrete piling (with 1/2" spacing)		360			
S-24	Lump	Sum	Removal of existing structure					
S-25	20	Each	Scuppers (21" cast iron pipe)		20			
S-29	13	Cu Yd	Porous drains on embankment slopes				13	
T-10	498	Sq. Yd.	Type 'M' macadam (grouted riprap gutter)				498	

*Distribution of Ab. correction was not determinable.

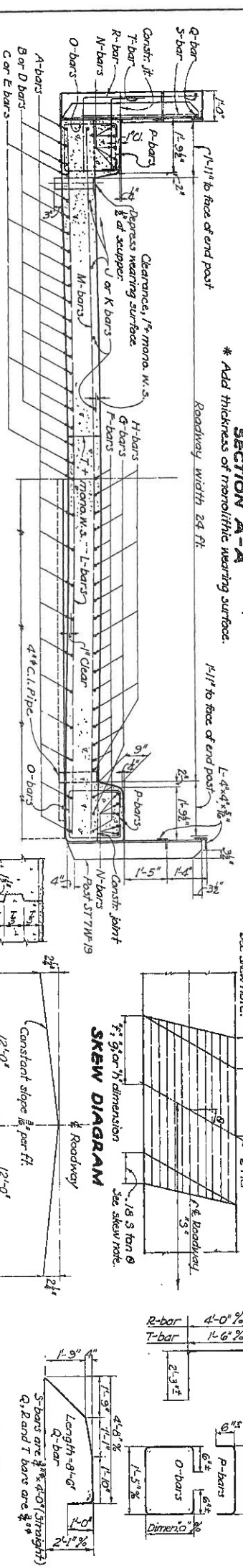
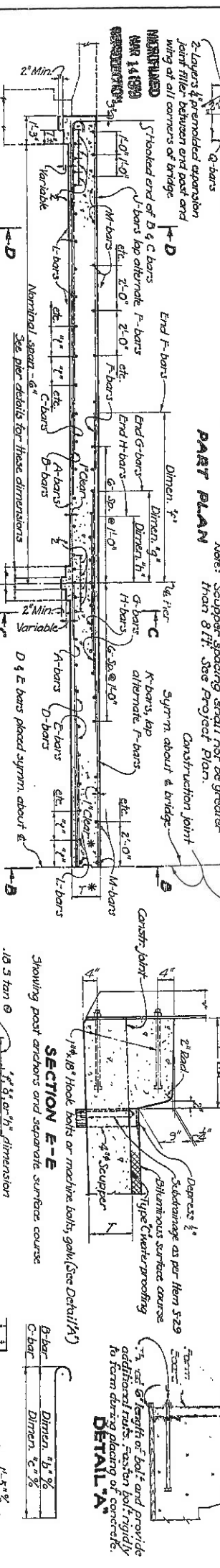
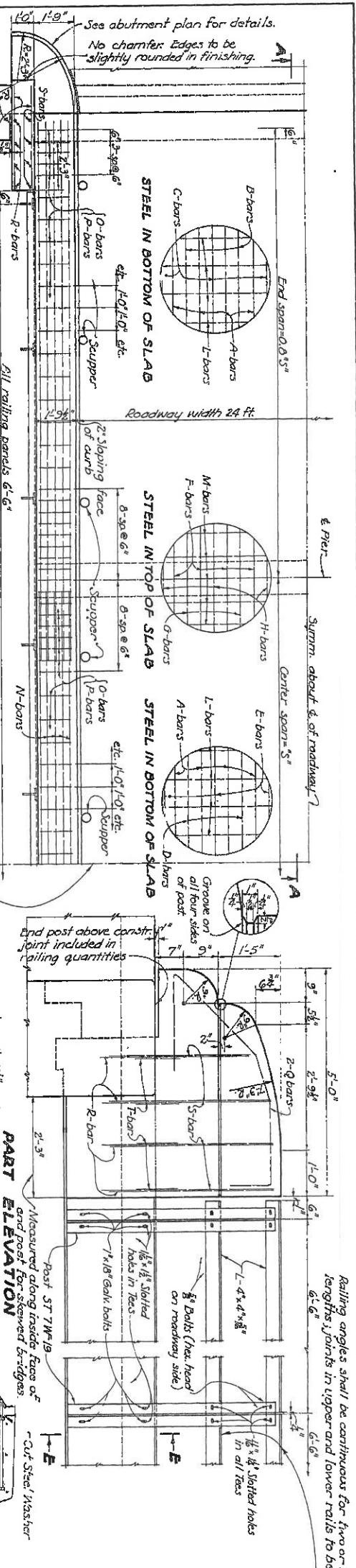
NOBLE COUNTY
NOB-146-7.92

GENERAL PLAN & ELEVATION,
NOTES, QUANTITIES & STEEL LIST

Revised No. NO-146-80
OVER BUFFALO CREEK

NOBLE COUNTY
Sec. NOB-146-7.92
Sta. 418+65.00

DESIGNED BY: [Signature]
CHECKED BY: [Signature]
APPROVED BY: [Signature]



SLAB DATA

Span	A, B, C, D, & E bars					F, G, & H bars					J & K bars					L, M, N, O, P, Q, R, S, T bars									
	Sp. L.	Sp. W.	Sp. H.	Sp. No.	Sp. Dia.	Sp. L.	Sp. W.	Sp. H.	Sp. No.	Sp. Dia.	Sp. L.	Sp. W.	Sp. H.	Sp. No.	Sp. Dia.	Sp. L.	Sp. W.	Sp. H.	Sp. No.	Sp. Dia.	Sp. L.	Sp. W.	Sp. H.	Sp. No.	Sp. Dia.
20'-25'-20'	103	89	12	180	19123	19123	36	40	18	139	12	180	19123	19123	36	40	18	139	12	180	19123	19123	36	40	18
22'-27'-22'	103	89	14	190	21623	21719	37	41	20	152	14	190	21623	21719	37	41	20	152	14	190	21623	21719	37	41	20
24'-30'-24'	103	89	16	206	23827	23925	39	42	22	165	16	206	23827	23925	39	42	22	165	16	206	23827	23925	39	42	22
26'-33'-26'	103	89	18	224	26330	26428	40	44	24	178	18	224	26330	26428	40	44	24	178	18	224	26330	26428	40	44	24
28'-35'-28'	103	89	20	244	29033	29131	42	45	26	191	20	244	29033	29131	42	45	26	191	20	244	29033	29131	42	45	26
30'-37'-30'	103	89	22	266	31836	31934	44	47	28	204	22	266	31836	31934	44	47	28	204	22	266	31836	31934	44	47	28
32'-40'-32'	103	89	24	290	34839	34937	46	49	30	217	24	290	34839	34937	46	49	30	217	24	290	34839	34937	46	49	30

QUANTITIES

Span	Concrete		Reinforcing Steel		Formwork		Other	
	Vol. (cu yd)	Wt. (lbs)	Vol. (cu yd)	Wt. (lbs)	Area (sq ft)	Area (sq ft)	Other	Other
20'-25'-20'	71	12	180	19123	19123	36	40	18
22'-27'-22'	82	14	190	21623	21719	37	41	20
24'-30'-24'	96	16	206	23827	23925	39	42	22
26'-33'-26'	109	18	224	26330	26428	40	44	24
28'-35'-28'	124	20	244	29033	29131	42	45	26
30'-37'-30'	143	22	266	31836	31934	44	47	28
32'-40'-32'	167	24	290	34839	34937	46	49	30

LOADING

Span	A-bars					B-bars					C-bars					D-bars					E-bars					F-bars					G-bars					H-bars					I-bars					J & K bars					L, M, N, O, P, Q, R, S, T bars				
	Sp. L.	Sp. W.	Sp. H.	Sp. No.	Sp. Dia.	Sp. L.	Sp. W.	Sp. H.	Sp. No.	Sp. Dia.	Sp. L.	Sp. W.	Sp. H.	Sp. No.	Sp. Dia.	Sp. L.	Sp. W.	Sp. H.	Sp. No.	Sp. Dia.	Sp. L.	Sp. W.	Sp. H.	Sp. No.	Sp. Dia.	Sp. L.	Sp. W.	Sp. H.	Sp. No.	Sp. Dia.	Sp. L.	Sp. W.	Sp. H.	Sp. No.	Sp. Dia.	Sp. L.	Sp. W.	Sp. H.	Sp. No.	Sp. Dia.															
20'-25'-20'	103	89	12	180	19123	19123	36	40	18	139	12	180	19123	19123	36	40	18	139	12	180	19123	19123	36	40	18	139	12	180	19123	19123	36	40	18	139	12	180	19123	19123	36	40	18	139													
22'-27'-22'	103	89	14	190	21623	21719	37	41	20	152	14	190	21623	21719	37	41	20	152	14	190	21623	21719	37	41	20	152	14	190	21623	21719	37	41	20	152	14	190	21623	21719	37	41	20	152													
24'-30'-24'	103	89	16	206	23827	23925	39	42	22	165	16	206	23827	23925	39	42	22	165	16	206	23827	23925	39	42	22	165	16	206	23827	23925	39	42	22	165	16	206	23827	23925	39	42	22	165													
26'-33'-26'	103	89	18	224	26330	26428	40	44	24	178	18	224	26330	26428	40	44	24	178	18	224	26330	26428	40	44	24	178	18	224	26330	26428	40	44	24	178	18	224	26330	26428	40	44	24	178													
28'-35'-28'	103	89	20	244	29033	29131	42	45	26	191	20	244	29033	29131	42	45	26	191	20	244	29033	29131	42	45	26	191	20	244	29033	29131	42	45	26	191	20	244	29033	29131	42	45	26	191													
30'-37'-30'	103	89	22	266	31836	31934	44	47	28	204	22	266	31836	31934	44	47	28	204	22	266	31836	31934	44	47	28	204	22	266	31836	31934	44	47	28	204	22	266	31836	31934	44	47	28	204													
32'-40'-32'	103	89	24	290	34839	34937	46	49	30	217	24	290	34839	34937	46	49	30	217	24	290	34839	34937	46	49	30	217	24	290	34839	34937	46	49	30	217	24	290	34839	34937	46	49	30	217													

REVISIONS

No.	Date	Description
1	7-27-49	As shown

CONTINUOUS STANDARD SLAB BRIDGE

24 FT. ROADWAY

MIDDLE SPAN 25 FT. TO 40 FT.

LOADINGS 5'-12'-46 AND 5'-15'-46

DATE: 9-18-49

DESIGNED BY: [Signature]

CHECKED BY: [Signature]

DRAWN BY: [Signature]

PROJECT NUMBER: CS-3-47

GENERAL NOTES

GENERAL: This drawing provides design and general construction details for bridges without skew. The Project Plans for each structure will show spans, skew, elevations, wearing surface, substructure details, and necessary notes and details. Skewed bridges will require special details and quantities.

ADDITIONAL INTERMEDIATE SPANS: not to exceed two, may be incorporated into the structure without change in slab thickness or area of reinforcing steel. In case of added spans, Project Plans will show revised details and estimated quantities.

SKEL: For bridges with skew, place longitudinal bars parallel to centerline of roadway and transverse bars parallel to pier and abutments. For skews from 10 to 30 degrees, and 11 bars shall be reinforced an amount equal to .10 S tan theta and be placed as shown in skew Diagram (S = length of center span in feet). For skews 0 or less, reinforcement as shown for square bridges may be used. For skew greater than 30 another type of bridge should be used.

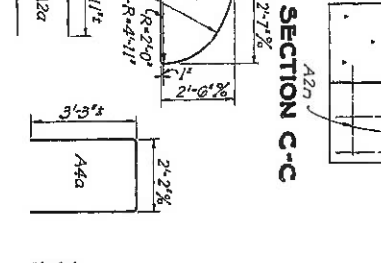
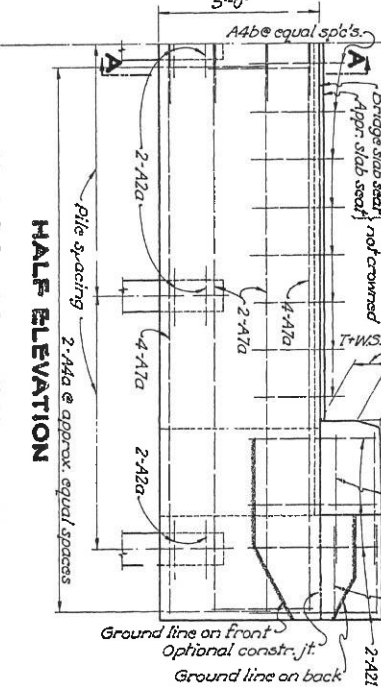
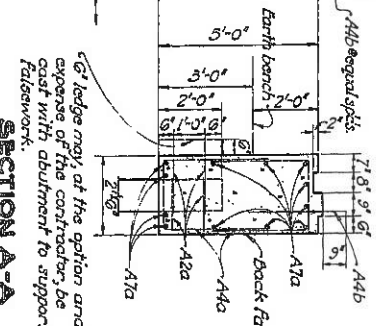
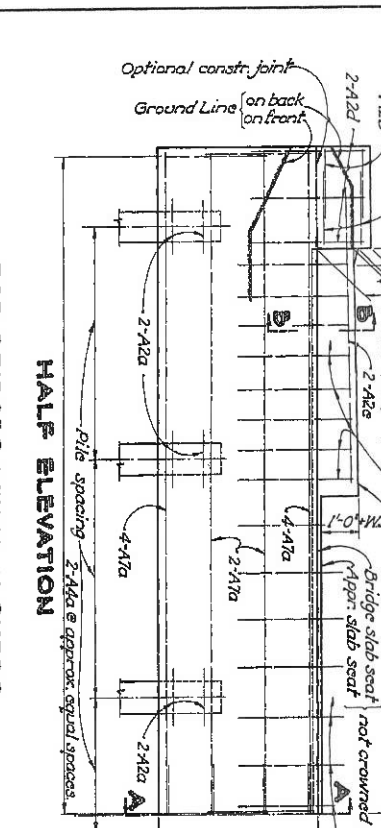
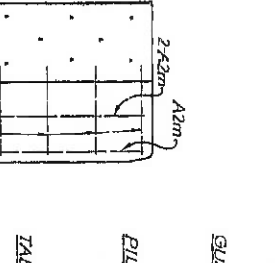
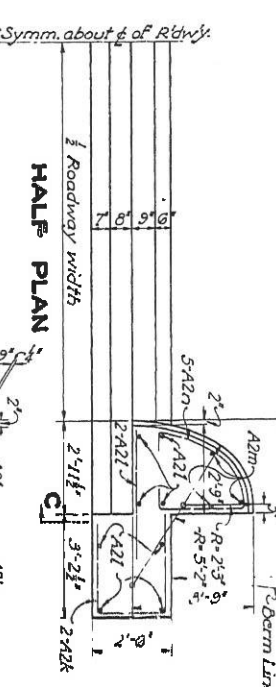
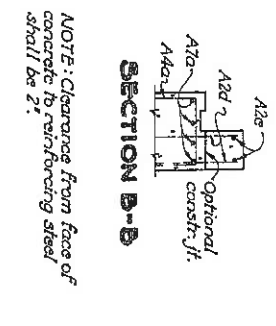
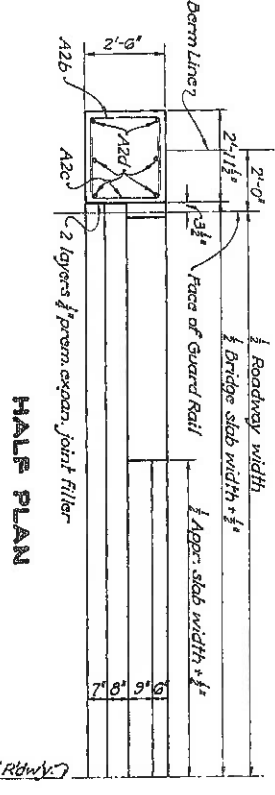
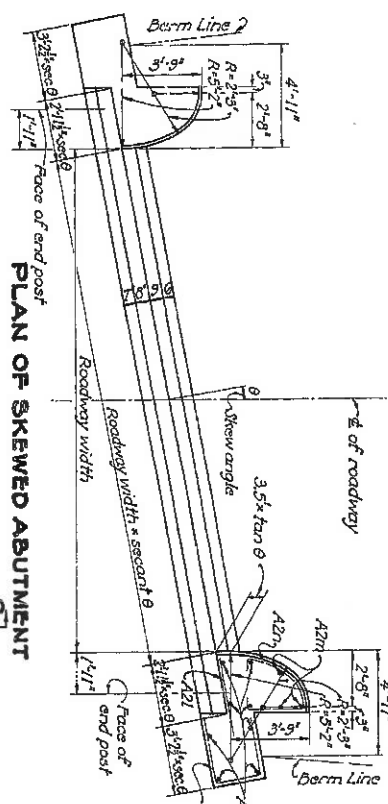
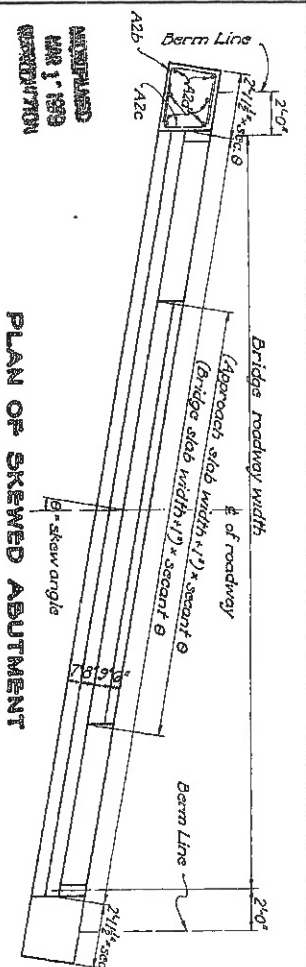
ROADWAY CROWN: shown shall be used except that on super-elevated bridges, full width of bridge slab shall be super-elevated at the same rate as approach pavement.

APPROACH SLAB: details will be shown on Project Plans.

CONCRETE: shall be Class 'C'.

MONOLITHIC WEARING SURFACE: shall be 4" for 5'-12'-46 loading and 5" for 5'-15'-46 loading; concrete quantities have been computed on this basis.

CONSTRUCTION JOINT: One transverse construction joint shall be placed on center of middle span or 1/4 of center when necessary to miss railing posts. A longitudinal joint will be permitted on center of roadway.



GENERAL NOTES

GENERAL: This drawing provides design and general construction details and is to be used with Std. Dwg. CS-1-47, CS-2-47, CS-3-47 and CS-4-47. The Project Plans for each structure will show spans, roadway width, skew elevations, wearing surfaces, estimated quantities, reinforcing steel list and other necessary notes and details.
CONCRETE shall be Class 'C'.
PILING shall be driven to a minimum bearing capacity in tons as shown in table and preferably to an indicated bearing capacity 10% greater than tabulated. Pile spacing for skewed abutments shall be the tabulated spacing length times secant θ .
SKEW: This drawing may be used for skews up to 30° maximum. Concrete quantity for skewed abutments will be * tabulated quantity times secant θ .
PROCEDURE: All earth fill around abutments shall be made full height of earth bench. Excavation shall then be made for abutment cap, after which piling shall be driven. If bottom forms for abutment cap are used they shall be left in place.
GUARD RAIL: For bridges without curbs it is assumed to be Type 1-15.16 (depth 3' from face of rail to face of post). If another type of guard rail is used, details shall be revised accordingly.
PILING may be cross-tied timber, 10" or 12" steel H, 14" precast concrete or 12" cast-in-place concrete, depending upon required capacity and conditions. The type and size will be indicated on the project plans.
TABULATED DATA are for abutments without skew.

BRIDGES WITHOUT CURBS

PILING DATA

BRIDGES WITH CURBS

APPROX QUANTITIES (For 2 Abutments)

BRIDGES WITH CURBS

REINFORCING STEEL DATA

REINFORCING STEEL DATA

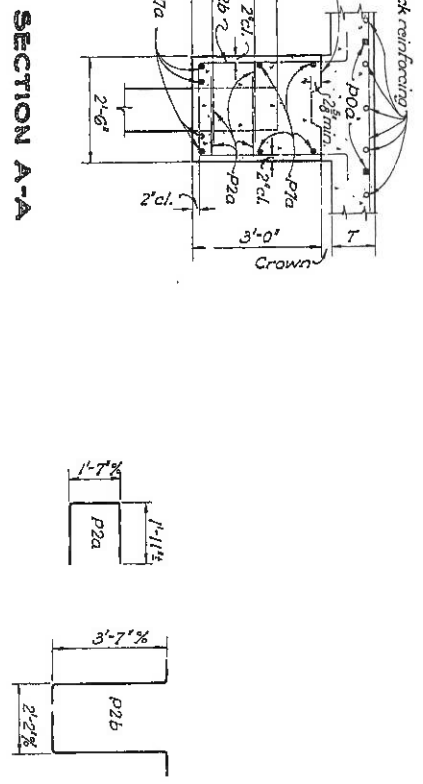
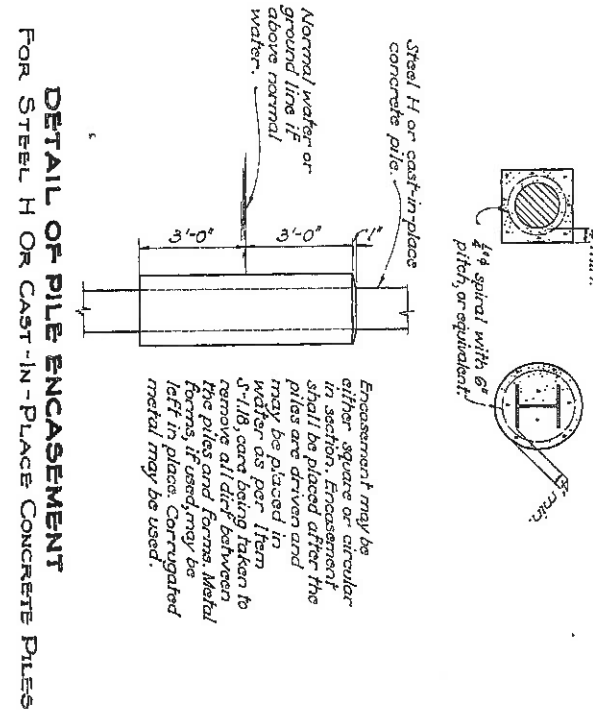
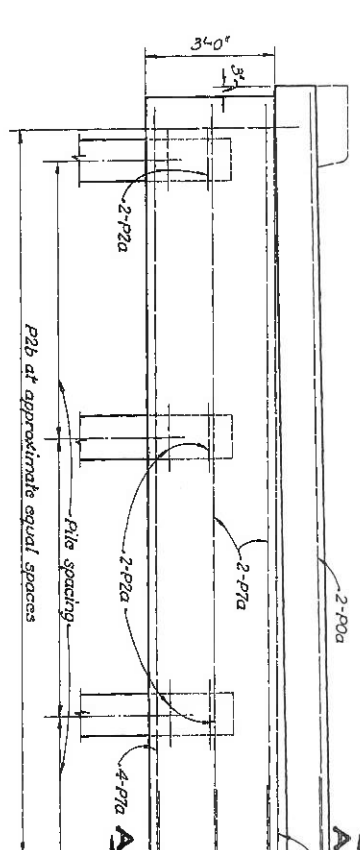
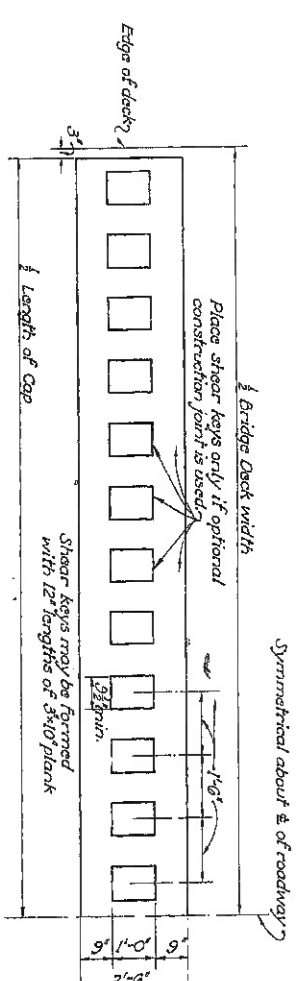
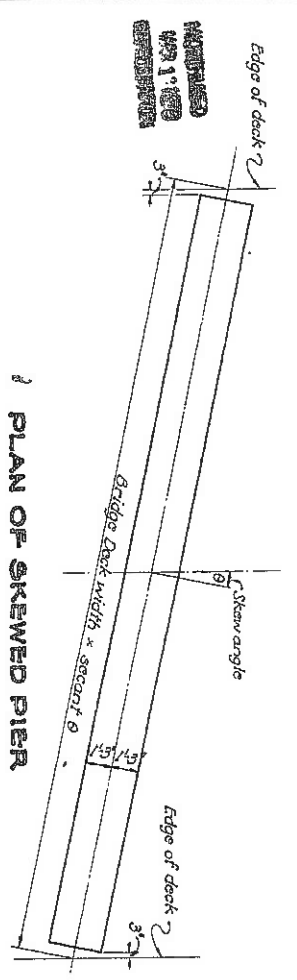
REINFORCING STEEL DATA

Loading		BRIDGES WITHOUT CURBS												BRIDGES WITH CURBS												APPROX QUANTITIES (For 2 Abutments)												BRIDGES WITH CURBS											
Span	Tram	32' Roadway	34' Roadway	36' Roadway	38' Roadway	40' Roadway	42' Roadway	44' Roadway	20' Roadway	24' Roadway	28' Roadway	32' Roadway	34' Roadway	36' Roadway	38' Roadway	40' Roadway	42' Roadway	20' Roadway	24' Roadway	28' Roadway	32' Roadway	34' Roadway	36' Roadway	38' Roadway	40' Roadway	42' Roadway	20' Roadway	24' Roadway	28' Roadway	32' Roadway	34' Roadway	36' Roadway	38' Roadway	40' Roadway	42' Roadway														
20'-25'-20'	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T												
22'-25'-22'	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T												
24'-30'-24'	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T											
26'-35'-26'	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T											
28'-40'-28'	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T											
30'-45'-30'	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T											
32'-50'-32'	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T											
34'-55'-34'	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T											
36'-60'-36'	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T											
38'-65'-38'	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T											
40'-70'-40'	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T											
42'-75'-42'	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T											
44'-80'-44'	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T											
46'-85'-46'	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T											
48'-90'-48'	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T											
50'-95'-50'	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T											
52'-100'-52'	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T	20T											

REINFORCING STEEL DATA

Roadway	Span	Tram	Reinforcing Steel Data
20'	19'-9"	100	8 40 12 20
24'	21'-9"	112	8 40 12 20
28'	23'-9"	124	8 40 12 20
32'	25'-9"	136	8 40 12 20
36'	27'-9"	148	8 40 12 20
40'	29'-9"	160	8 40 12 20
44'	31'-9"	172	8 40 12 20
48'	33'-9"	184	8 40 12 20
52'	35'-9"	196	8 40 12 20

APPROVED: *[Signature]*
 DATE: 7-27-55
 DRAWING NUMBER: A-1-49



LOADING	NUMBER AND SPACING OF PILES FOR NON-SKEWED PIERS											
	BRIDGES WITHOUT CURBS						BRIDGES WITH CURBS					
5-20-46	SPAN	32' R/W	34' R/W	36' R/W	38' R/W	40' R/W	42' R/W	44' R/W	20' R/W	24' R/W	28' R/W	
	22'-215-20'	5e 7'-3"	5e 7'-9"	6e 6'-7"	6e 7'-0"	6e 7'-5"	6e 7'-10"	7e 6'-10"	4e 6'-10"	5e 6'-11"		
	24'-30'-24'	6e 5'-9"	6e 7'-3"	6e 6'-7"	6e 7'-0"	6e 7'-5"	6e 7'-10"	7e 6'-10"	4e 6'-10"	5e 6'-11"		
	26'-35'-26'	6e 5'-9"	6e 6'-2"	6e 6'-7"	6e 7'-0"	6e 7'-5"	6e 7'-10"	7e 6'-10"	4e 6'-10"	5e 6'-11"		
	28'-35'-28'	6e 5'-9"	6e 6'-2"	6e 6'-7"	6e 7'-0"	6e 7'-5"	6e 7'-10"	7e 6'-10"	4e 6'-10"	5e 6'-11"		
	30'-35'-30'	6e 5'-9"	6e 6'-2"	6e 6'-7"	6e 7'-0"	6e 7'-5"	6e 7'-10"	7e 6'-10"	4e 6'-10"	5e 6'-11"		
	32'-40'-32'	7e 4'-10"	7e 5'-2"	8e 4'-8 1/2"	8e 5'-0"	8e 5'-3 1/4"	8e 5'-5 1/4"	8e 5'-7 1/4"	4e 6'-10"	5e 6'-11"		
	34'-40'-34'	7e 4'-10"	7e 5'-2"	8e 4'-8 1/2"	8e 5'-0"	8e 5'-3 1/4"	8e 5'-5 1/4"	8e 5'-7 1/4"	4e 6'-10"	5e 6'-11"		
	36'-40'-36'	7e 4'-10"	7e 5'-2"	8e 4'-8 1/2"	8e 5'-0"	8e 5'-3 1/4"	8e 5'-5 1/4"	8e 5'-7 1/4"	4e 6'-10"	5e 6'-11"		
	38'-40'-38'	7e 4'-10"	7e 5'-2"	8e 4'-8 1/2"	8e 5'-0"	8e 5'-3 1/4"	8e 5'-5 1/4"	8e 5'-7 1/4"	4e 6'-10"	5e 6'-11"		
	40'-40'-40'	7e 4'-10"	7e 5'-2"	8e 4'-8 1/2"	8e 5'-0"	8e 5'-3 1/4"	8e 5'-5 1/4"	8e 5'-7 1/4"	4e 6'-10"	5e 6'-11"		
	5-15-46	SPAN	32' R/W	34' R/W	36' R/W	38' R/W	40' R/W	42' R/W	44' R/W	20' R/W	24' R/W	28' R/W
22'-215-20'		5e 7'-3"	5e 7'-9"	6e 6'-7"	6e 7'-0"	6e 7'-5"	6e 7'-10"	7e 6'-10"	4e 6'-10"	5e 6'-11"		
24'-30'-24'		6e 5'-9"	6e 7'-3"	6e 6'-7"	6e 7'-0"	6e 7'-5"	6e 7'-10"	7e 6'-10"	4e 6'-10"	5e 6'-11"		
26'-35'-26'		6e 5'-9"	6e 6'-2"	6e 6'-7"	6e 7'-0"	6e 7'-5"	6e 7'-10"	7e 6'-10"	4e 6'-10"	5e 6'-11"		
28'-35'-28'		6e 5'-9"	6e 6'-2"	6e 6'-7"	6e 7'-0"	6e 7'-5"	6e 7'-10"	7e 6'-10"	4e 6'-10"	5e 6'-11"		
30'-35'-30'		6e 5'-9"	6e 6'-2"	6e 6'-7"	6e 7'-0"	6e 7'-5"	6e 7'-10"	7e 6'-10"	4e 6'-10"	5e 6'-11"		
32'-40'-32'		7e 4'-10"	7e 5'-2"	8e 4'-8 1/2"	8e 5'-0"	8e 5'-3 1/4"	8e 5'-5 1/4"	8e 5'-7 1/4"	4e 6'-10"	5e 6'-11"		
34'-40'-34'		7e 4'-10"	7e 5'-2"	8e 4'-8 1/2"	8e 5'-0"	8e 5'-3 1/4"	8e 5'-5 1/4"	8e 5'-7 1/4"	4e 6'-10"	5e 6'-11"		
36'-40'-36'		7e 4'-10"	7e 5'-2"	8e 4'-8 1/2"	8e 5'-0"	8e 5'-3 1/4"	8e 5'-5 1/4"	8e 5'-7 1/4"	4e 6'-10"	5e 6'-11"		
38'-40'-38'		7e 4'-10"	7e 5'-2"	8e 4'-8 1/2"	8e 5'-0"	8e 5'-3 1/4"	8e 5'-5 1/4"	8e 5'-7 1/4"	4e 6'-10"	5e 6'-11"		
40'-40'-40'		7e 4'-10"	7e 5'-2"	8e 4'-8 1/2"	8e 5'-0"	8e 5'-3 1/4"	8e 5'-5 1/4"	8e 5'-7 1/4"	4e 6'-10"	5e 6'-11"		
5-12-46		SPAN	32' R/W	34' R/W	36' R/W	38' R/W	40' R/W	42' R/W	44' R/W	20' R/W	24' R/W	28' R/W
	22'-215-20'	5e 7'-3"	5e 7'-9"	6e 6'-7"	6e 7'-0"	6e 7'-5"	6e 7'-10"	7e 6'-10"	4e 6'-10"	5e 6'-11"		
	24'-30'-24'	6e 5'-9"	6e 7'-3"	6e 6'-7"	6e 7'-0"	6e 7'-5"	6e 7'-10"	7e 6'-10"	4e 6'-10"	5e 6'-11"		
	26'-35'-26'	6e 5'-9"	6e 6'-2"	6e 6'-7"	6e 7'-0"	6e 7'-5"	6e 7'-10"	7e 6'-10"	4e 6'-10"	5e 6'-11"		
	28'-35'-28'	6e 5'-9"	6e 6'-2"	6e 6'-7"	6e 7'-0"	6e 7'-5"	6e 7'-10"	7e 6'-10"	4e 6'-10"	5e 6'-11"		
	30'-35'-30'	6e 5'-9"	6e 6'-2"	6e 6'-7"	6e 7'-0"	6e 7'-5"	6e 7'-10"	7e 6'-10"	4e 6'-10"	5e 6'-11"		
	32'-40'-32'	7e 4'-10"	7e 5'-2"	8e 4'-8 1/2"	8e 5'-0"	8e 5'-3 1/4"	8e 5'-5 1/4"	8e 5'-7 1/4"	4e 6'-10"	5e 6'-11"		
	34'-40'-34'	7e 4'-10"	7e 5'-2"	8e 4'-8 1/2"	8e 5'-0"	8e 5'-3 1/4"	8e 5'-5 1/4"	8e 5'-7 1/4"	4e 6'-10"	5e 6'-11"		
	36'-40'-36'	7e 4'-10"	7e 5'-2"	8e 4'-8 1/2"	8e 5'-0"	8e 5'-3 1/4"	8e 5'-5 1/4"	8e 5'-7 1/4"	4e 6'-10"	5e 6'-11"		
	38'-40'-38'	7e 4'-10"	7e 5'-2"	8e 4'-8 1/2"	8e 5'-0"	8e 5'-3 1/4"	8e 5'-5 1/4"	8e 5'-7 1/4"	4e 6'-10"	5e 6'-11"		
	40'-40'-40'	7e 4'-10"	7e 5'-2"	8e 4'-8 1/2"	8e 5'-0"	8e 5'-3 1/4"	8e 5'-5 1/4"	8e 5'-7 1/4"	4e 6'-10"	5e 6'-11"		

ROADWAY WIDTH	REINFORCING STEEL DATA QUANTITIES			
	P2a	P2b	Concrete Reinf.	Deck (Approx.)
20'	16	7	1055	
24'	20	8	1220	
28'	22	9	1370	
32'	24	10	1470	
36'	26	11	1560	
40'	29	12	1710	
44'	32	13	1870	

DATA FOR ONE NON-SKEWED PIER
 * For skewed piers multiply fabricated length by secant of skew angle.

GENERAL: This drawing provides design and general construction details and is intended to be used with S&W Specs. CS-1-47, CS-2-47, CS-3-47 and CS-4-47. The project plans for each structure will show spans, roadway width, skew, elevations, type and size of piling, estimated quantities, reinforcing steel list and other necessary notes and details.

The pier design shown on this drawing should generally not be used for the following conditions:-

- Where steep embankment will introduce horizontal pressures against the pile bank. In such cases a pier, which battered piling may be incorporated should be used.
- Where rock or other firm material will prevent driving piling at least ten feet below stream bed.
- Where undrained length of piling from stream bed to bottom of cap, will exceed fifteen feet.

CONCRETE shall be Class 'C'.

PILES shall be driven to a minimum bearing capacity of 35 tons or to the depth indicated on the project plans. Piles may be steel H (12 DPS), 12" cast-in-place reinforced concrete of the type for which the casing is left in place, or 14" precast reinforced concrete. Precast piles may, at the option of the Contractor, be either square, octagonal or circular in section.

For steel H and cast-in-place concrete piles, protective concrete encasement shall be provided as shown herein unless otherwise called for on the project plans, and the exposed portion of the piles above the encasement shall be painted in accordance with Item 5-8 using two coats M-9, M-9.20 or M-9.21 and two coats M-9.12. If metal forms for encasement are left in place the exposed portions shall be similarly painted unless galvanized. Payment for encasement, for painting and for necessary excavation shall be included in the price per lin. ft. of piles.

The metal casing of cast-in-place concrete piles shall have, above the concrete encasement, a minimum thickness of No. 7 gage and a uniform section (not tapered).

At the option of the Contractor, reinforced concrete piles may project into the cap a minimum of 2' instead of 2'-0" as shown herein, provided that suitable reinforcing steel extends from the pile into the cap a minimum of 2'-0". For precast piles such steel may be the regularly spaced pile reinforcement with the concrete cut away after the pile is driven. For cast-in-place piles such steel shall be a cage of reinforcing steel extending at least 2'-3' below the top of the casing and consisting of 6 bars 6" x 6" with hoops of 2" bars spaced 16" or equivalent. Payment for the above cage of reinforcement shall be included in the price per lin. ft. of piling.

Cut-off elevation of piles, for measurement of pile length, shall be considered as 2'-0" above bottom of cap.

SKEM: This drawing may be used for skews up to 30° maximum. Greater skew will require special design. Pile spacing for skewed piers shall be the tabulated spacing times secant θ. Concrete quantity for skewed pier will be: (tabulated quantity x secant θ) minus 0.1 x tangent θ.

PIER-CAP CONCRETE QUANTITY will usually be added to the quantity of superstructure concrete when listed on project plans. Deduction should be provided in Sec. S-1.26.

FALSEWORK SUPPORT: Pier cap shall not be used to support falsework for slabs.

STATE OF OHIO
 DEPARTMENT OF HIGHWAYS
 BUREAU OF BRIDGES

STANDARD
 CAPPED PILE PIERS
 FOR CONTINUOUS SLAB BRIDGES
 WITH OR WITHOUT CURBS
 LOADING: 5-12-46, 5-15-46 & 5-20-46

APPROVED: [Signature]
 DATE: [Date]
 DRAWN: [Signature]
 CHECKED: [Signature]
 INCHES: [Signature]
 P-1-49