01-0 U-10

MICROFILMED AUG 17 1970

MICROFILMED MAR 7 1980

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
CUY. 480-23.95
CUYAHOGA COUNTY
CITY OF MAPLE HEIGHTS
CITY OF WARRENSVILLE HEIGHTS
CITY OF BEDFORD HEIGHTS

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	I-480-4(33)177	

1 / 332

LIMITED ACCESS

THIS IMPROVEMENT IS ESPECIALLY DESIGNED FOR THROUGH TRAFFIC AND HAS BEEN DECLARED A LIMITED ACCESS HIGHWAY OR FREEWAY BY ACTION OF THE DIRECTOR OF HIGHWAYS IN ACCORDANCE WITH THE PROVISIONS OF SECTION 5511.02, REVISED CODE OF OHIO.

CUYAHOGA COUNTY
CUY. 480 - 23.95

NOTE:
PROJECT DESIGNATION CUY-80-23.95 APPEARING THROUGHOUT THIS PLAN SHALL BE CONSIDERED TO READ CUY-480-23.95

FEDERAL NUMBER I-80-4(33)177 APPEARING THROUGHOUT THIS PLAN SHALL BE CONSIDERED TO READ I-480-4(33)177

I-480-4(33)177

1969 SPECIFICATIONS

THE STANDARD SPECIFICATIONS OF THE STATE OF OHIO, DEPARTMENT OF HIGHWAYS, INCLUDING CHANGES AND SUPPLEMENTAL SPECIFICATIONS LISTED IN THE PROPOSAL SHALL GOVERN THIS IMPROVEMENT.

THE RIGHT OF WAY FOR THIS IMPROVEMENT WILL BE PROVIDED BY THE STATE OF OHIO.

I HEREBY APPROVE THESE PLANS AND DECLARE THAT THE MAKING OF THIS IMPROVEMENT WILL NOT REQUIRE THE CLOSING OF THE HIGHWAY TO TRAFFIC AND THAT PROVISIONS FOR THE MAINTENANCE AND SAFETY OF TRAFFIC WILL BE AS SET FORTH ON THE PLANS AND ESTIMATES.

APPROVED Charles M. Spurick
DATE 3-24-70 DIVISION DEPUTY DIRECTOR

APPROVED C. H. Abbate
DATE 8-14-70 ENGINEER OF BRIDGES

APPROVED R. E. Gatlin
DATE 8-14-70 ENGINEER OF LOCATION AND DESIGN

APPROVED George J. Thomas
DATE 8-17-70 DEPUTY DIRECTOR OF DESIGN AND CONSTRUCTION

APPROVED T. H. Bovelle
DATE 8-21-70 DEPUTY DIRECTOR OF RIGHT OF WAY

APPROVED Lowell M. Major
DATE 8-21-70 DEPUTY DIRECTOR OF PLANNING AND PROGRAMMING

APPROVED R. W. Wilson
DATE 8-24-70 FIRST ASSISTANT DIRECTOR

APPROVED P. E. Masheter
DATE 8-24-70 DIRECTOR OF HIGHWAYS

Sheet Nos. 26, 28, 29 Revised 11-10-70 AWG
Sheet No. 287 revised 3-19-71 EBL

CONVENTIONAL SIGNS

PROPERTY LINE — R
EXISTING RIGHT OF WAY
LIMITED ACCESS LINE — L/A
RIGHT OF WAY LINE — R/W
TEMPORARY RIGHT OF WAY — T
CENTER LINE
WORK AGREEMENT LINE
FENCE LINE
GUARD RAIL(EXISTING)
GUARD RAIL(PROPOSED)
RAILROAD
POWER POLES
TELEPHONE POLES
POWER AND TELEPHONE POLES
LIGHT POLES
TREES (EXISTING)
WATER LINE — W
GAS LINE — G
TELEPHONE CONDUIT — T
SEWER(EXISTING) — S
FIRE HYDRANT
MANHOLE (STORM)
MANHOLE (TELEPHONE)
CATCH BASIN OR INLET
MANHOLE SANITARY
SUBDIVISION LINE
SUBLOT LINE OR EXISTING EASEMENT
ORIGINAL TOWNSHIP LOT LINE
LIMITED ACCESS - RIGHT OF WAY LINE — LA/RW

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* SHEETS 32 & 316 Omitted

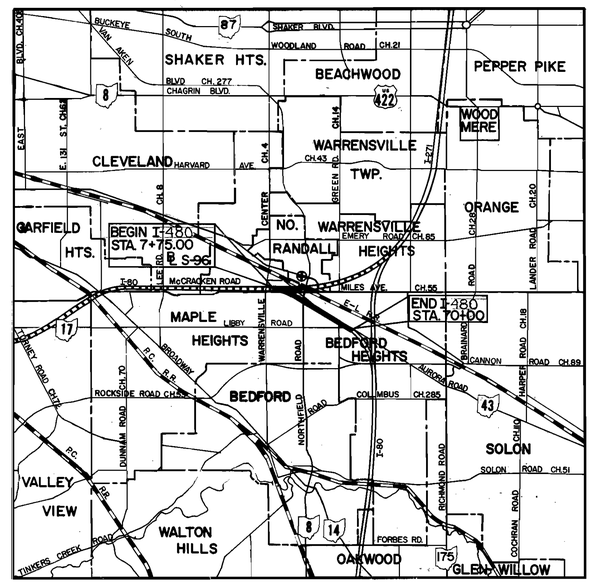
PREPARED AND RECOMMENDED BY

HOWARD NEEDLES TAMMEN & BERGENDOFF — H.G. SOURS
CONSULTING ENGINEERS — ASSOCIATE
KANSAS CITY CLEVELAND NEW YORK — COLUMBUS

Browning Crow
BROWNING CROW

STATE OF OHIO — BROWNING CROW 18873 — REGISTERED PROFESSIONAL ENGINEER

FILE NO.	CUYAHOGA COUNTY 00354 DATE OF LETTING CONTRACT NO.



N

SCALE
.5 0 2 4 MILES

PORTION TO BE IMPROVED
STATE ROADS
OTHER ROADS
FUTURE CONSTRUCTION
INTERSTATE FREEWAYS

SCALE
PLAN — 1"=50'
PROFILE — HOR 1"=100'
PROFILE — VERT 1"=10'
CROSS SECTIONS — 1"=10'

SUPPLEMENTAL SPECIFICATIONS

NUMBER	DATE	NUMBER	DATE
801	1-1-69	938	8-12-69
808	11-19-69	1001	1-1-69
811	1-1-69	934	1-1-69
815	1-1-69	836	6-17-69
816	1-1-69	927	1-1-69
806	1-1-69		

LINE DATA

Begin Project and Lane S-96 Sta. 7+75.00
End Lane S-96 Sta. 33+65.74
Begin I-80 Sta. 33+65.74
End I-80 and Project Sta. 70+00.00
Net Length of Project — 6225.00 L.F. or 1.178 Miles

ADD FOR APPROACHES
Add work Sta. 1306+18.29 to 1316+50 — 1031.71 L.F.
Add work Sta. 70+00.00 to 81+50.00 — 1150.00 L.F.
Northfield Road Sta. -6+25 to 23+25 — 2950.00 L.F.
Relocated Libby Road Sta. 0+00.00 to 5+02.01 — 502.01 L.F.
Net Length of Work — 11,858.72 L.F. or 2.245 Miles

STANDARD DRAWINGS

NUMBER	DATE	NUMBER	DATE
BP-1	6-1-65	FACI-2	6-1-65
BP-2	12-1-68	GR-1	1-1-67
BP-3	12-1-68	GR-2A	1-1-67
BP-4	12-1-68	GR-6	7-15-68
BP-5	6-1-65	HW-E	6-1-65
BP-6	6-1-65	I-2A	6-6-69
BP-7	1-1-66	L-1	6-1-65
HL-1	11-1-65	MC-1	6-13-69
HL-2	11-1-65	MC-3	6-20-69
HL-3	11-1-65	MC-4	6-13-69
HL-4	1-1-66	MC-5	6-1-65
CB-2-2A&B	6-1-65	MC-6	6-1-65
CB-2-5&2-6	6-1-65	MC-7	10-1-68
CB-3A	6-1-65	MH-1	10-1-68
CB-5	9-1-69	MH-1A	10-1-68
CB-6	6-1-65	MH-2	10-1-68
F-1	3-10-69	RB-1-55	2-2-59
F-3	3-10-69	BR I-65 Sh. 1 & 2	11-24-65
I-3	1-20-70	SD I-69 Sh. 12, 3&4	6-12-69
FACI-1	9-15-67	AS-1-67	6-12-69
GR-2B	2-15-68	CB-3	6-1-65
MH-2A	10-1-68	I-1	6-1-65
CB-8	9-1-69		

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
BUREAU OF PUBLIC ROADS

APPROVED

DIVISION ENGINEER — DATE

MICROFILMED
AUG 17 1984

SCHEMATIC PLAN

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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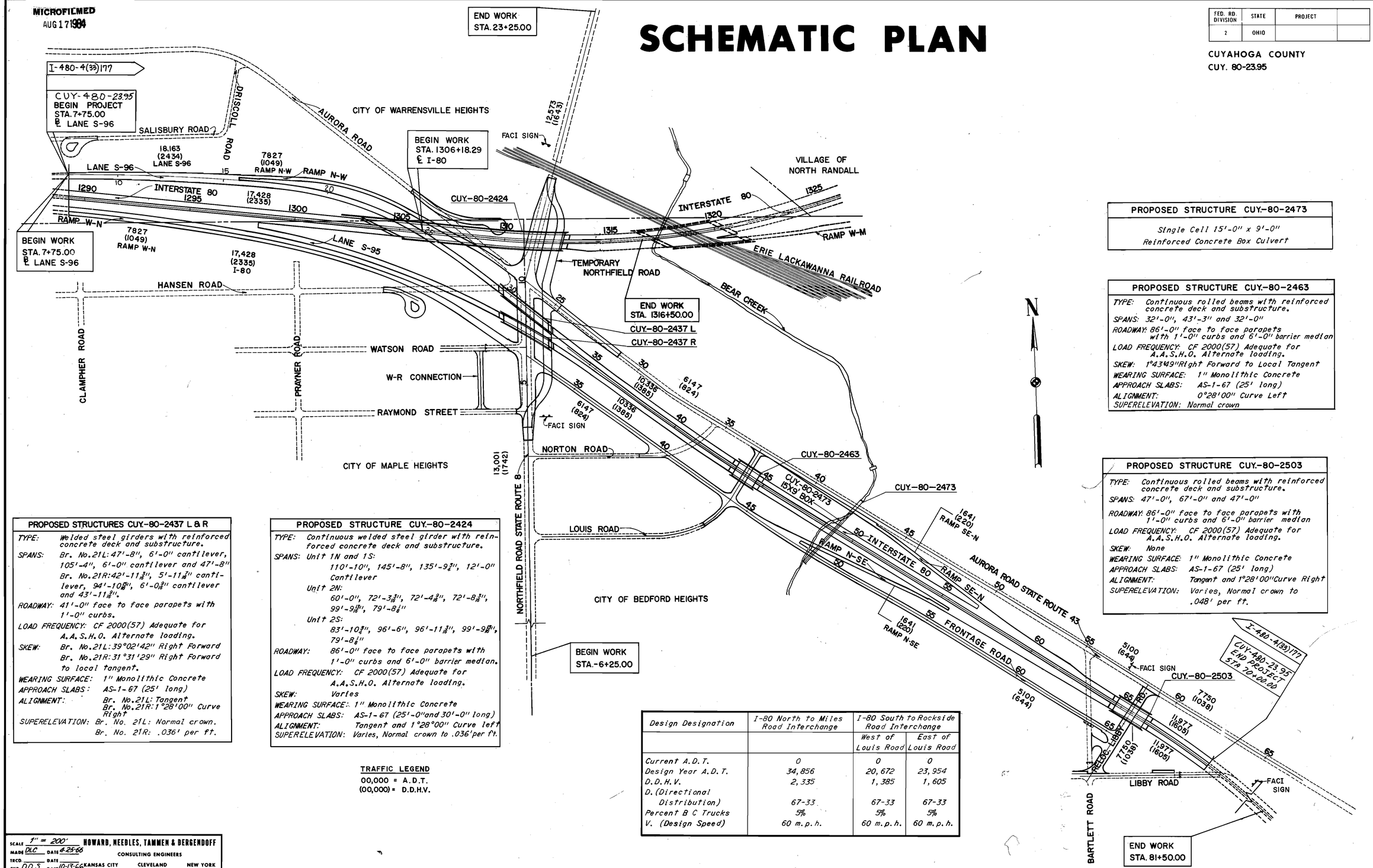
CUYAHOGA COUNTY
CUY. 80-23.95



PROPOSED STRUCTURE CUY.-80-2473

Single Cell 15'-0" x 9'-0"
Reinforced Concrete Box Culvert

PROPOSED STRUCTURE CUY.-80-2463

TYPE: Continuous rolled beams with reinforced concrete deck and substructure.
SPANS: 32'-0", 43'-3" and 32'-0"
ROADWAY: 86'-0" face to face parapets with 1'-0" curbs and 6'-0" barrier median
LOAD FREQUENCY: CF 2000(57) Adequate for A.A.S.H.O. Alternate loading.
SKEW: 1°43'49" Right Forward to Local Tangent
WEARING SURFACE: 1" Monolithic Concrete
APPROACH SLABS: AS-1-67 (25' long)
ALIGNMENT: 0°28'00" Curve Left
SUPERELEVATION: Normal crown

PROPOSED STRUCTURE CUY.-80-2503

TYPE: Continuous rolled beams with reinforced concrete deck and substructure.
SPANS: 47'-0", 67'-0" and 47'-0"
ROADWAY: 86'-0" face to face parapets with 1'-0" curbs and 6'-0" barrier median
LOAD FREQUENCY: CF 2000(57) Adequate for A.A.S.H.O. Alternate loading.
SKEW: None
WEARING SURFACE: 1" Monolithic Concrete
APPROACH SLABS: AS-1-67 (25' long)
ALIGNMENT: Tangent and 1°28'00" Curve Right
SUPERELEVATION: Varies, Normal crown to .048' per ft.

PROPOSED STRUCTURES CUY.-80-2437 L & R

TYPE: Welded steel girders with reinforced concrete deck and substructure.
SPANS: Br. No.21L: 47'-8", 6'-0" cantilever, 105'-4", 6'-0" cantilever and 47'-8"
Br. No.21R: 42'-11 3/16", 5'-11 1/16" cantilever, 94'-10 15/16", 6'-0 3/16" cantilever and 43'-11 3/16".
ROADWAY: 41'-0" face to face parapets with 1'-0" curbs.
LOAD FREQUENCY: CF 2000(57) Adequate for A.A.S.H.O. Alternate loading.
SKEW: Br. No.21L: 39°02'42" Right Forward
Br. No.21R: 31°31'29" Right Forward to local tangent.
WEARING SURFACE: 1" Monolithic Concrete
APPROACH SLABS: AS-1-67 (25' long)
ALIGNMENT: Br. No.21L: Tangent
Br. No.21R: 1°28'00" Curve Right
SUPERELEVATION: Br. No. 21L: Normal crown.
Br. No. 21R: .036' per ft.

PROPOSED STRUCTURE CUY.-80-2424

TYPE: Continuous welded steel girder with reinforced concrete deck and substructure.
SPANS: Unit 1N and 1S:
110'-10", 145'-8", 135'-9 3/16", 12'-0" Cantilever
Unit 2N:
60'-0", 72'-3 3/16", 72'-4 3/16", 72'-8 3/16", 99'-9 15/16", 79'-8 1/8"
Unit 2S:
83'-10 3/16", 96'-6", 96'-11 3/16", 99'-9 15/16", 79'-8 1/8"
ROADWAY: 86'-0" face to face parapets with 1'-0" curbs and 6'-0" barrier median.
LOAD FREQUENCY: CF 2000(57) Adequate for A.A.S.H.O. Alternate loading.
SKEW: Varies
WEARING SURFACE: 1" Monolithic Concrete
APPROACH SLABS: AS-1-67 (25'-0" and 30'-0" long)
ALIGNMENT: Tangent and 1°28'00" Curve left
SUPERELEVATION: Varies, Normal crown to .036' per ft.

TRAFFIC LEGEND

00,000 = A.D.T.
(00,000) = D.D.H.V.

Design Designation	I-80 North to Miles Road Interchange	I-80 South to Rockside Road Interchange	
		West of Louis Road	East of Louis Road
Current A.D.T.	0	0	0
Design Year A.D.T.	34,856	20,672	23,954
D.D.H.V.	2,335	1,385	1,605
D. (Directional Distribution)	67-33	67-33	67-33
Percent B C Trucks	5%	5%	5%
V. (Design Speed)	60 m.p.h.	60 m.p.h.	60 m.p.h.

SCALE 1" = 200'
MADE DLC DATE 4-25-66
TRCD. DATE
CKD. D.D.S. DATE 10-13-66

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

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FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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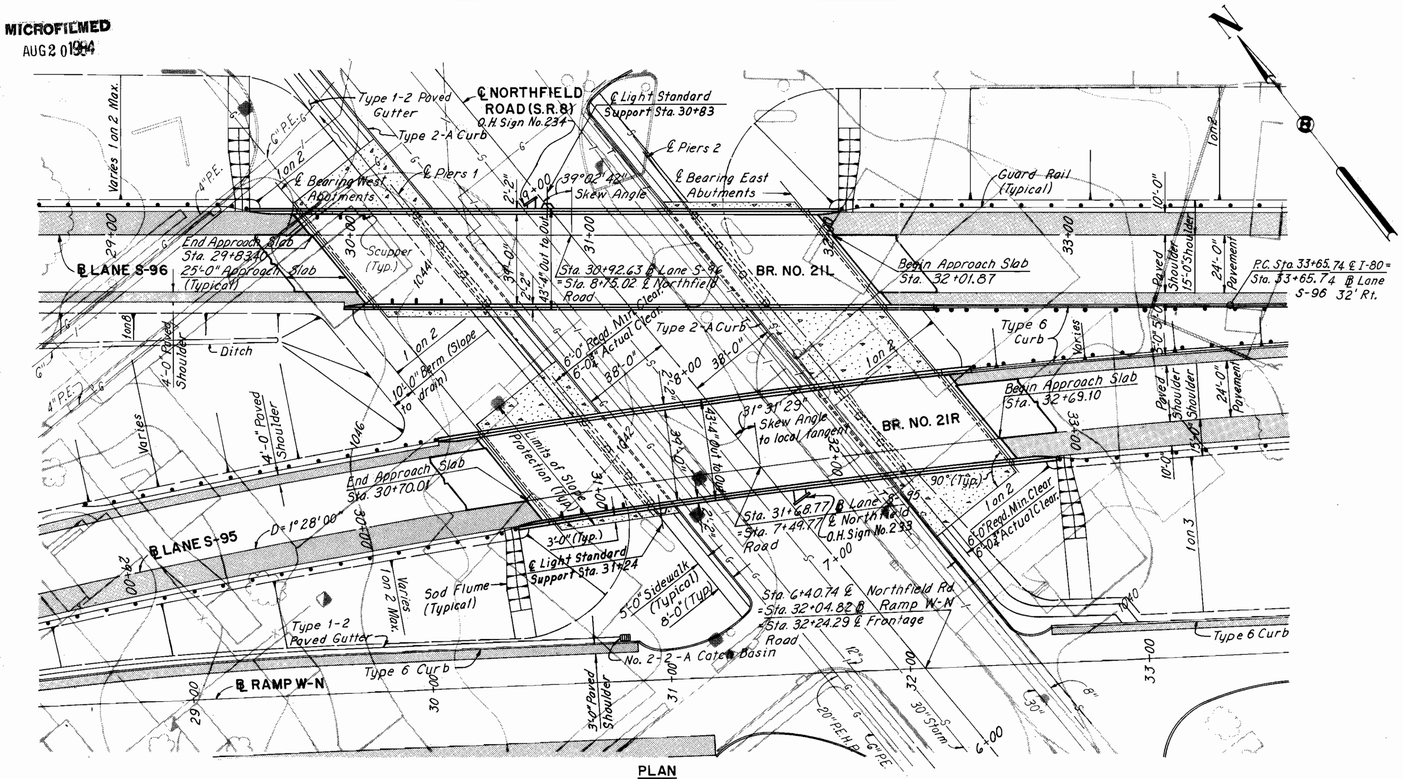
332

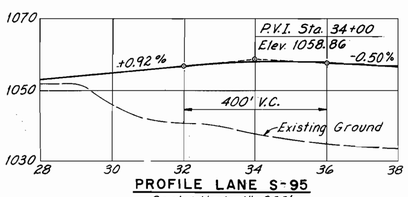
CUYAHOGA COUNTY
CUY - 80 - 23.95

LEGEND

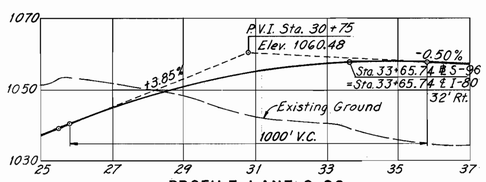
Water —I—I—I—	Power Poles
Gas —G—G—	Telephone Poles
Sewers —S—S—	Power and Telephone Poles
Telephone Conduit —T—	Light Poles



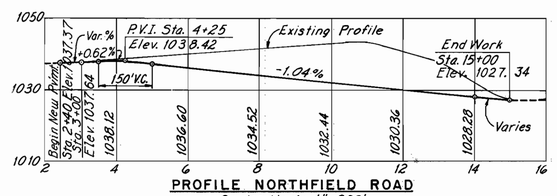
PLAN
Scale 1" = 30'



PROFILE LANE S-95
Scale: Horiz. 1" = 200'
Vert. 1" = 20'



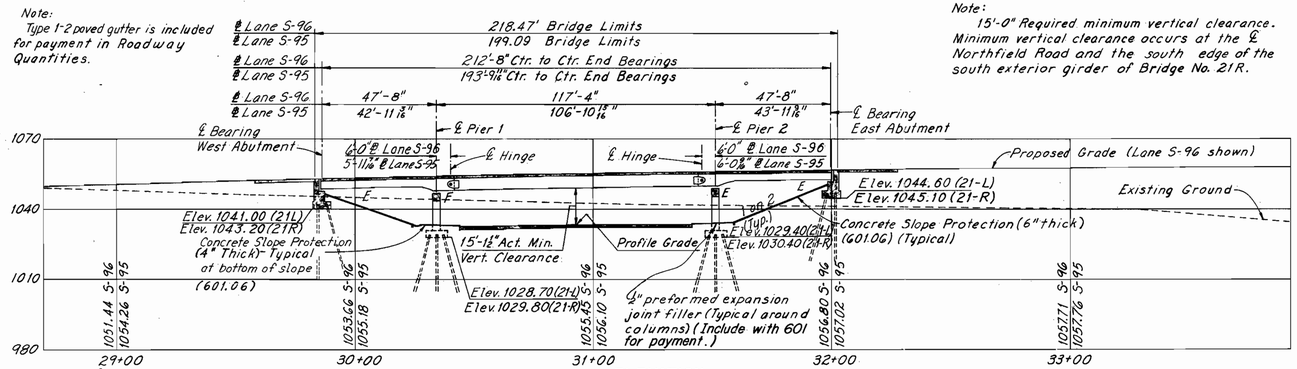
PROFILE LANE S-96
Scale: Horiz. 1" = 200'
Vert. 1" = 20'



PROFILE NORTHFIELD ROAD
Scale: Horiz. 1" = 200'
Vert. 1" = 20'

Note:
Type 1-2 paved gutter is included for payment in Roadway Quantities.

Note:
15'-0" Required minimum vertical clearance. Minimum vertical clearance occurs at the ℄ Northfield Road and the south edge of the south exterior girder of Bridge No. 21R.



ELEVATION
Scale: 1" = 30'

ESTIMATED QUANTITIES

CUY-80-2437 L & R H.N.T.B. BRIDGE NO. 21L & 21R

ITEM	TOTAL	UNIT	DESCRIPTION	ABUTMENTS	PIERS	SUPERSTRUCTURE	GENERAL		
503	808	Cu. Yd.	Unclassified Excavation	555	253				
505	Lump Sum	Lump Sum	First Test Pile				Lump Sum		
507	3,720	Lin. Ft.	12" ϕ C.I.P. Reinforced Concrete Piles	1,830	1890				
509	246,356	Pounds	Reinforcing Steel	33,328	51,524	161,504			
511	561	Cu. Yd.	Class "C" Concrete, Superstructure			561			
511	108	Cu. Yd.	Class "C" Concrete, Pier Caps and Columns		108				
511	257	Cu. Yd.	Class "C" Concrete, Abutment (Above footing)	257					
511	282	Cu. Yd.	Class "C" Concrete, Footings	176	106				
513	640,350	Pounds	Structural Steel			640,350			
514	640,350	Pounds	Field Painting of Structural Steel			640,350			
516	165	Sq. Ft.	½" Preformed Expansion Joint Filler	115	50				
516	215	Lin. Ft.	Preformed Elastic Joint Sealer & Lubricant Adhesive			215			
517	941.84	Lin. Ft.	Railing (Type 1)	123.04		818.80			
518	81	Cu. Yd.	Porous Backfill	81					
518	172	Lin. Ft.	6" Helical C.M.P. (Section 707.01) Non-Perforated	172					
518	168	Lin. Ft.	6" Perforated Helical C.M.P. (Section 707.01) Including Specials	168					
518	10	Each	Scuppers, Including Supports			10			
601	1,169	Sq. Yd.	Concrete Slope Protection (6" thick)				1,169		
601	477	Sq. Yd.	Concrete Slope Protection (4" thick)				477		
625			For Lighting Quantities see Lighting Plans						
808	561	Units	Chemical admixture for concrete, Type A, B or D			561			

FOUNDATION DATA:

All piles are 12" ϕ C.I.P. Reinforced Concrete with estimated average vertical lengths of 30' at the abutments and 25' at the piers. The piles shall be driven to a minimum bearing capacity of 35 tons per pile at the abutments and 40 tons per pile at the piers.

Earthwork limits shown are schematic. Actual slopes shall conform to plan cross-sections.

CURVE DATA ℄ LANE S-95

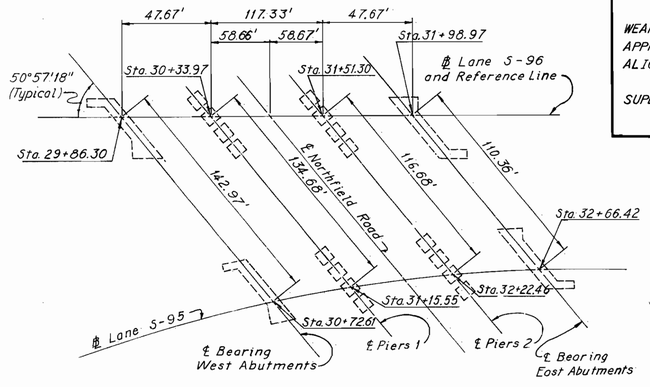
P.I. Sta. 26+59.04
Δ = 26°05'37"
D = 1°28'00" Right
R = 3,906.53'
T = 905.26'
L = 1,779.11'
E = 103.52'

PROPOSED STRUCTURES

TYPE: Welded steel girders with reinforced concrete deck and substructure.
SPANS: Br. No. 21L: 47'-8", 6'-0" cantilever, 105'-4", 6'-0" cantilever and 47'-8"
Br. No. 21R: 42'-11¾", 5'-11 7/16", cantilever, 94'-10 9/16", 6'-0 9/16" cantilever and 43'-11¾".
ROADWAY: 41'-0" Face to face parapets.
LOAD FREQUENCY: CF2000 (57) Adequate for A.A.S.H.O. Alternate loading.
SKEW: Br. No. 21L: 39°02'42" Right Forward.
Br. No. 21R: 31°31'29" Right Forward. to local tangent.
WEARING SURFACE: 1" Monolithic Concrete.
APPROACH SLABS: AS-1-67 (25' long).
ALIGNMENT: Br. No. 21L: Tangent
Br. No. 21R: 1°28'00" Curve Right.
SUPERELEVATION: Br. No. 21L: Normal crown.
Br. No. 21R: .036' per ft.

TRAFFIC DATA

1986 = 10,336 A.D.T. (Each way)
1,385 D.D.H.V.



BRIDGE LAYOUT DIAGRAM
(No Scale)

Notes: For overhead sign details see Signing Plans.
For underpass lighting details see Lighting Plans.

H.N.T.B. BR. NO. 21L & 21R

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

SITE PLAN

LANES S-95 AND S-96 OVER NORTHFIELD ROAD (S.R. - 8)

BR. NO. CUY-80-2437 L & R STA. 29+83.40 TO STA. 32+01.87 (℄ S-96)

CUYAHOGA COUNTY OHIO

DRAWN CHD	TRACED	CHECKED DJB	REVIEWED	REVISED
DATE 2-24-67	DATE	DATE 3-2-67	DATE	SHEET 1/14

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FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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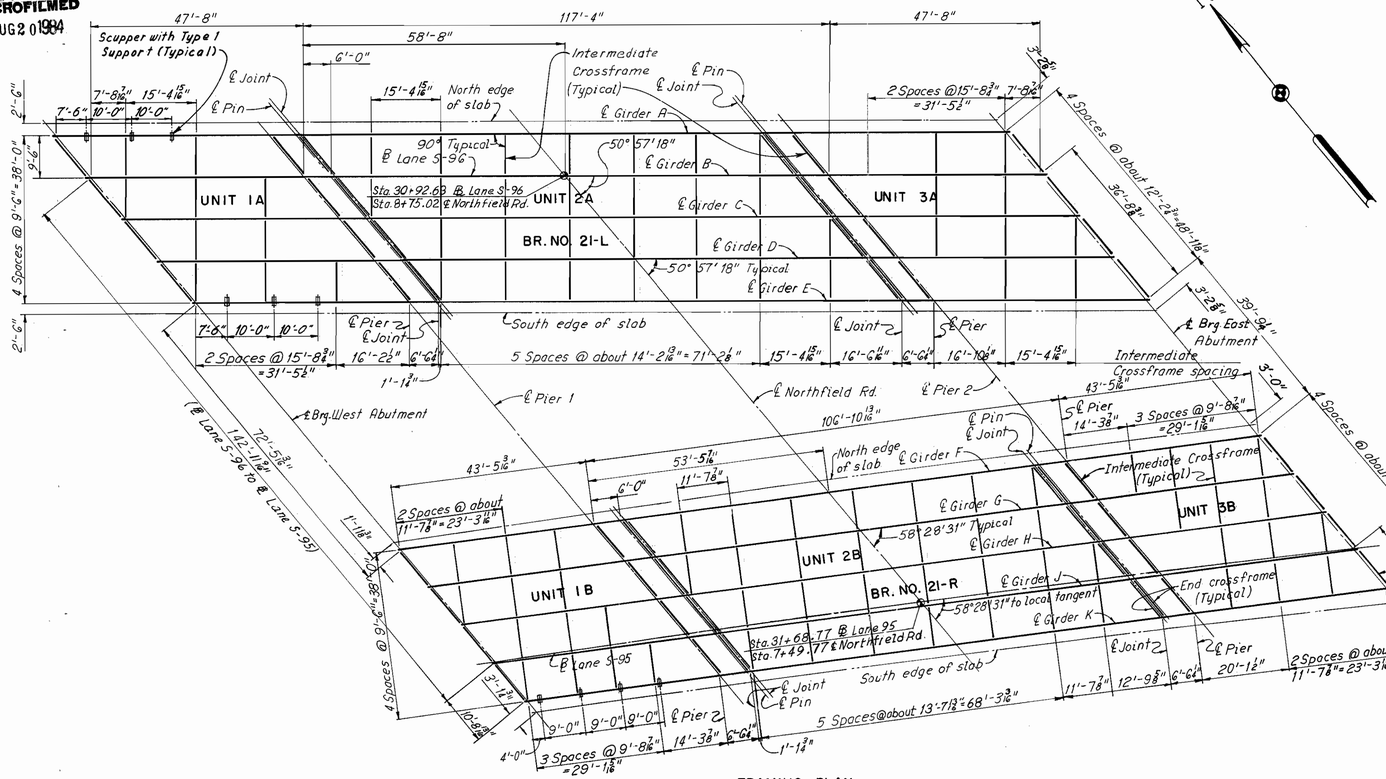
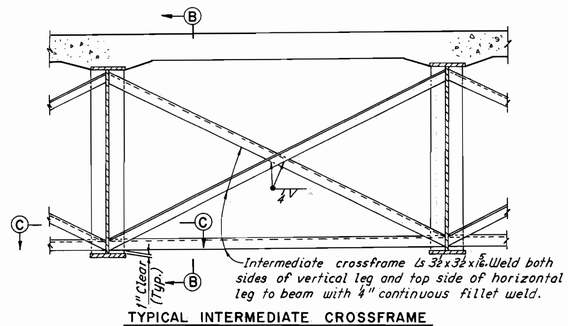
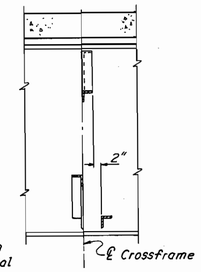
CUYAHOGA COUNTY
CUY - 80 - 23.95



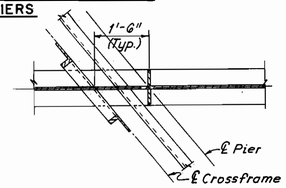
FRAMING PLAN



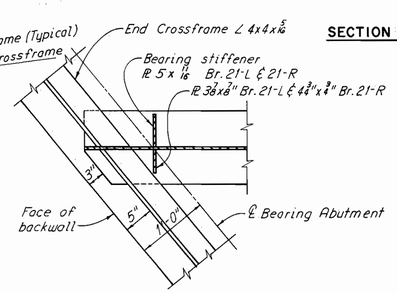
TYPICAL INTERMEDIATE CROSSFRAME AT PIERS



SECTION B-B



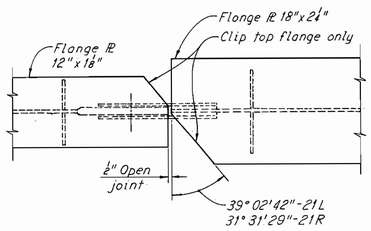
SECTION C-C



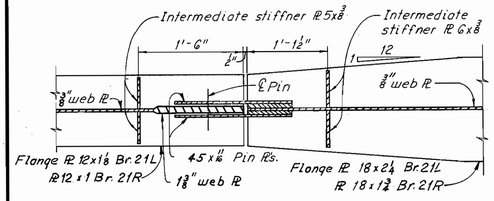
SECTION A-A
(Similar East & West Abutments)

FASCIA OFFSETS - BR. NO. 21R		
Location	℄ Girder F to North Edge of Slab	℄ Girder K to South Edge of Slab
℄ Brg. W. Abut.	1'-8¼"	2'-8⅝"
¼	1'-11⅞"	2'-5¾"
½	2'-3"	2'-3¼"
¾	2'-5⅞"	2'-1⅞"
℄ Pier 1	2'-8½"	1'-11⅜"
℄ Pin 1	2'-9⅝"	1'-10⅝"
¼	3'-1⅞"	1'-8¾"
½	3'-3⅝"	1'-8⅛"
¾	3'-3⅞"	1'-9⅝"
℄ Pin 2	3'-2⅛"	2'-0½"
℄ Pier 2	3'-2"	2'-1½"
¼	3'-0⅝"	2'-3¾"
½	2'-10⅞"	2'-6¼"
¾	2'-8¾"	2'-9⅛"
℄ Brg. E. Abut.	2'-6¼"	3'-0⅜"

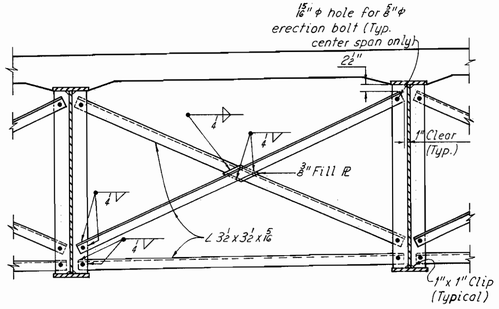
Note.
Fascia offsets are measured perpendicular to ℄ Girder.
Quarter points in center span are measured from ℄ Pier 1 to ℄ Pier 2.



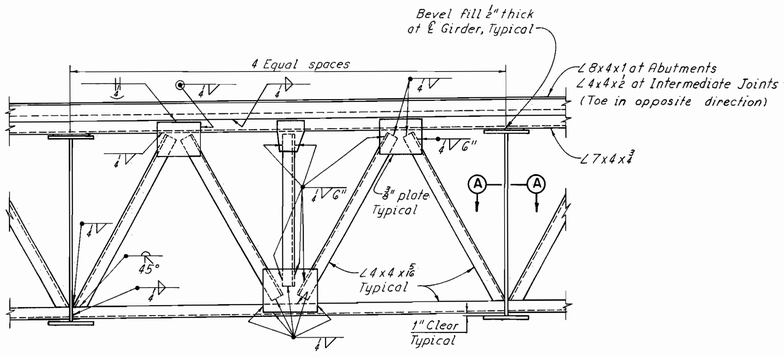
TOP FLANGE AT OPEN JOINT



BOTTOM FLANGE AT OPEN JOINT



TYPICAL INTERMEDIATE CROSSFRAME
(Except as modified at Piers)



TYPICAL END CROSSFRAME

Notes:
For details of roadway end dam see Ohio Standard Drawing SD-1-69, sheets 1 and 2 of 4.
For drainage details, see Sheet CD 1.

H.N.T.B. BR. NO. 21L & 21R

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

FRAMING PLAN

LANES S-95 AND S-96 OVER NORTHFIELD ROAD (S.R.-8)

BR. NO. CUY-80-2437 L & R STA. 29+83.40 TO STA. 32+01.87 (℄ S-96)

CUYAHOGA COUNTY OHIO

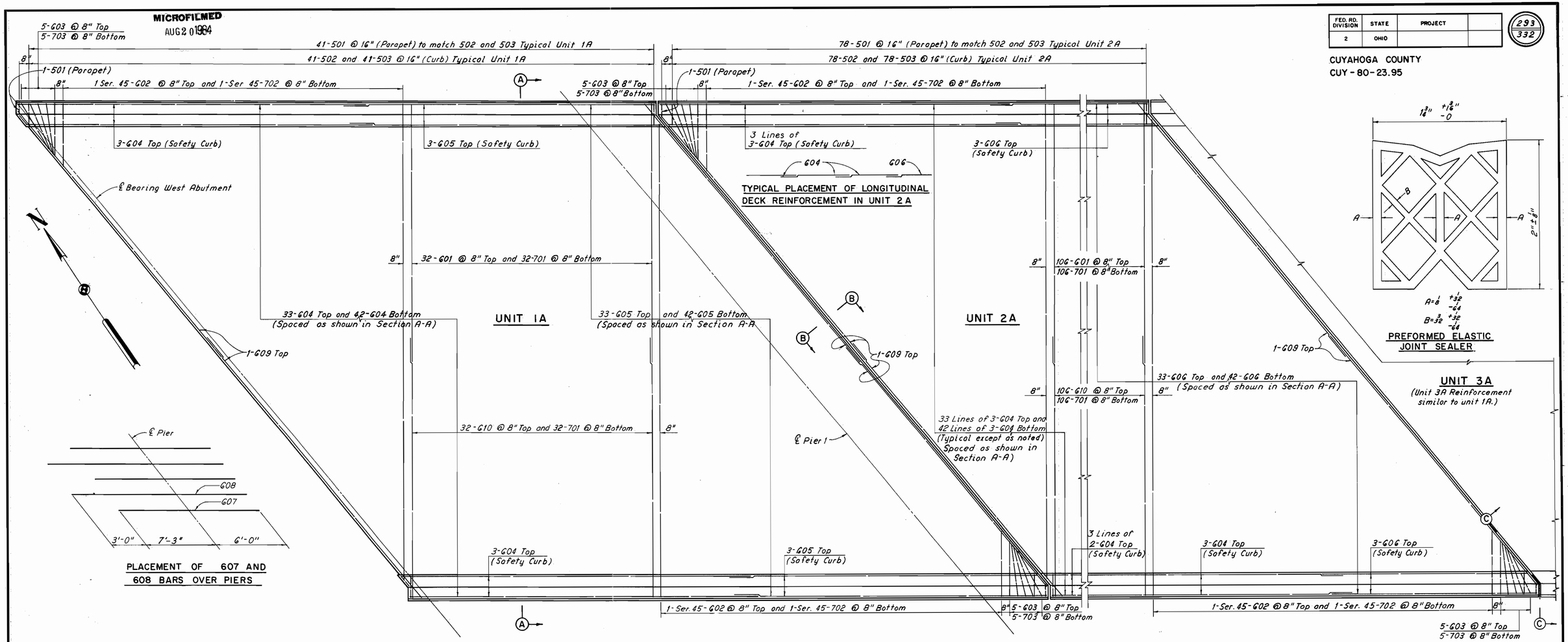
DRAWN LJD	TRACED	CHECKED JEM	REVIEWED	REVISED
DATE 10-14-66	DATE	DATE 3-28-67	DATE	SHEET 8/14

MICROFILMED
AUG 2 0 1984

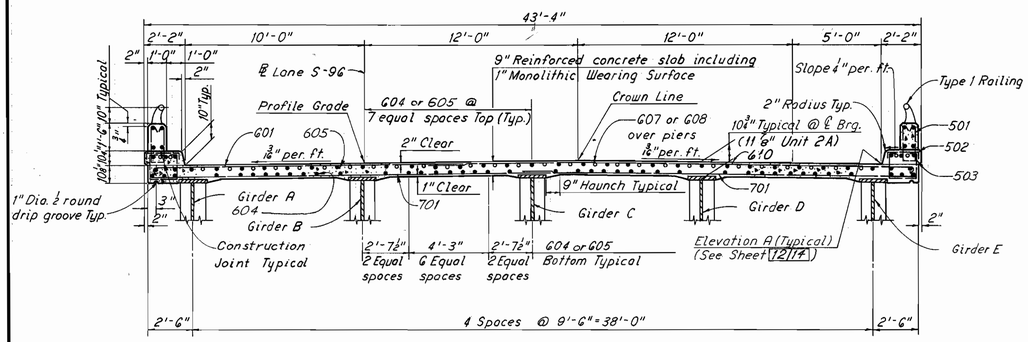
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

293/332

CUYAHOGA COUNTY
CUY - 80 - 23.95

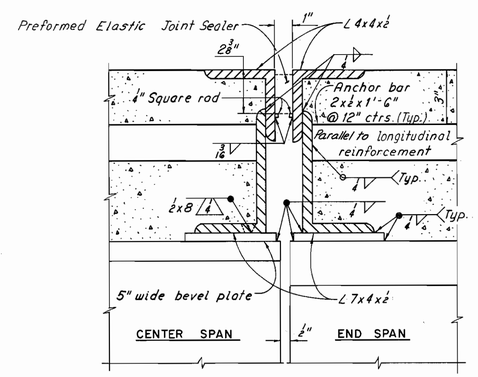


SLAB PLAN



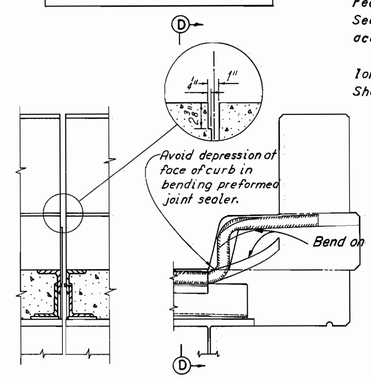
SECTION A-A

Note:
A typical haunch width of 9" shall be used for computing quantity of concrete. However, the haunch width may vary between 6" and 12" provided that the slope shall be not more that 1:4 for a haunch less than 9" in width.



SECTION B-B
DECK JOINT DETAIL

Note:
All reinforcing bar marks shall be prefixed "SL"



SECTION D-D

SECTION C-C

Notes:
The preformed elastic joint sealer shall meet the requirements of "Item 705.11, Preformed Elastic Joint Sealer and Lubricant Adhesive". Installation shall be according to manufactures recommendations.
For railing post and parapet joint spacing and longitudinal reinforcement in the parapet see Sheet CD 2.
For Light Standard Support Details see Sheet CD 3.

H.N.T.B. BR. NO. 21L & 21R

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

DECK REINFORCEMENT AND TYPICAL SECTION LEFT BRIDGE

LANES S-95 AND S-96 OVER NORTHFIELD ROAD (S.R.-8)

BR. NO. CUY-80-2437 L & R STA. 29+83.40 TO STA. 32+01.87 (℄ S-96)

CUYAHOGA COUNTY OHIO

DRAWN JJD	TRACED	CHECKED JEH	REVIEWED	REVISED
DATE 8-24-66	DATE	DATE 3-28-67	DATE	SHEET 10/14