



CUY-90-14.90

PID 77332/85531

APPENDIX EX-65

**Carnegie Bridge Plans
(Reference Document)**

State of Ohio
Department of Transportation
Jolene M. Molitoris, Director

**Innerbelt Bridge
Construction Contract Group 1 (CCG1)**

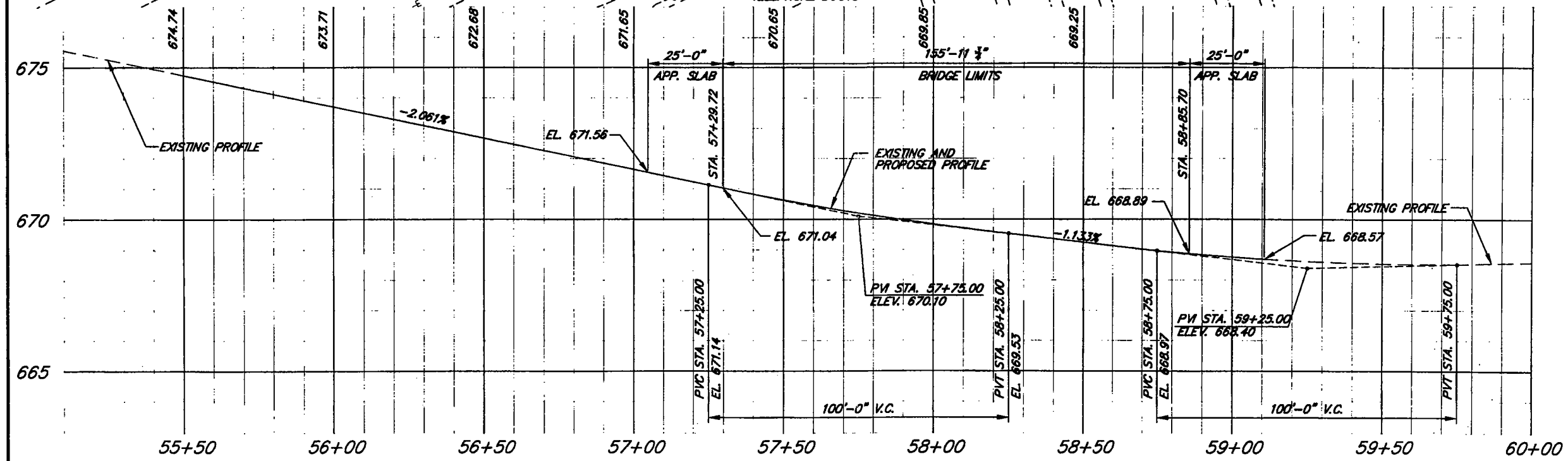
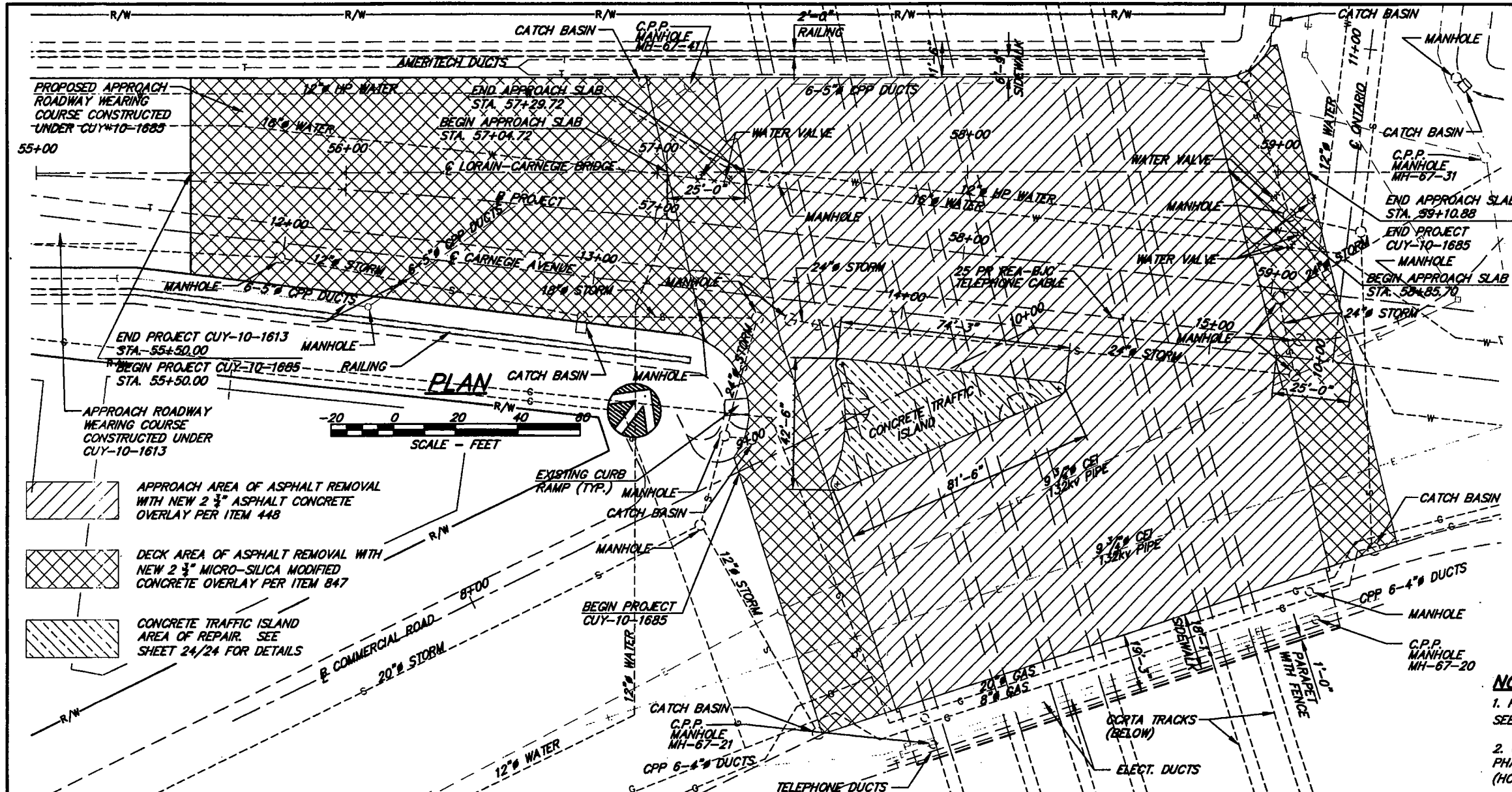
Request for Proposal
Issued XX, XX, 2010

EXISTING STRUCTURE:
 TYPE: REINFORCED CONCRETE GIRDER, DECK, AND SUBSTRUCTURE
 SPAN: SEE PLAN
 ROADWAY: VARIES
 NORTH SIDEWALK 6'-9"
 SOUTH SIDEWALK 18'-1"
 LOADING: HS-20-44 CASE II AND THE ALTERNATE MILITARY LOADING
 SKEW: VARIES
 WEARING SURFACE: 2 1/2" ASPHALT CONCRETE
 APPROACH SLABS: WEST APP. SLAB 25'-0" ALIGNED WITH E LORAIN-CARNEGIE BRIDGE
 EAST APP. SLAB 25'-0" ALIGNED WITH E CARNEGIE AVENUE
 ALIGNMENT: TANGENT
 SUPERELEVATION: VARIES
 DATE BUILT: 1932, 1982
 STR. FILE No.: 1801511

PROPOSED WORK:
 ALL DATA IS SAME AS EXISTING STRUCTURE, EXCEPT AS FOLLOWS:
 WEARING SURFACE: 2 3/4" MICRO-SILICA MODIFIED CONCRETE

BENCHMARK LOCATION:
 O.M. 42 SQUARE IRON BOX
 SOUTH WALK OF CARNEGIE AVENUE 250 FEET EAST OF BROADWAY AVENUE CENTERLINE

NOTES:
 1. FOR EXISTING/PROPOSED PAVEMENT ELEVATIONS SEE SHEET 23/24.
 2. COORDINATE MAINTENANCE OF TRAFFIC AND WORK PHASES WITH CONTRACTOR ON PROJECT CUY-10-1613 (HOPE MEMORIAL BRIDGE REHABILITATION).



PROFILE ALONG PROJECT B

- APPROACH AREA OF ASPHALT REMOVAL WITH NEW 2 3/4" ASPHALT CONCRETE OVERLAY PER ITEM 448
- DECK AREA OF ASPHALT REMOVAL WITH NEW 2 3/4" MICRO-SILICA MODIFIED CONCRETE OVERLAY PER ITEM 847
- CONCRETE TRAFFIC ISLAND AREA OF REPAIR. SEE SHEET 24/24 FOR DETAILS

DESIGN AGENCY
 CUYAHOGA COUNTY ENGINEER
 BRIDGE DESIGN DEPARTMENT

DATE
 2/28/80

DESIGNED
 BGF

DRAWN
 CPK

REVIEWED
 WLD

REVISOR
 BGF

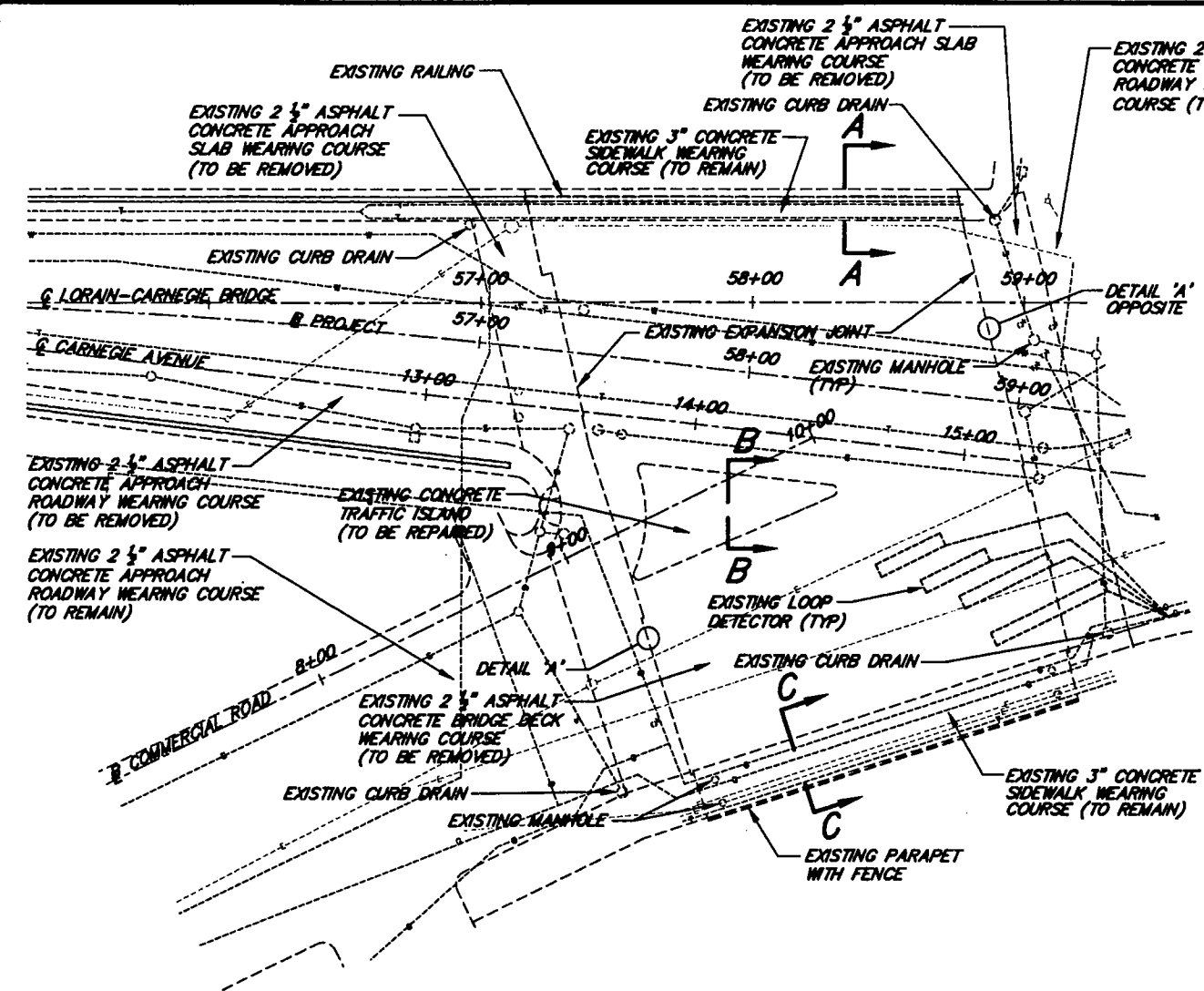
STR. FILE No.: 1801511

B-No. 23
 Report No. 7249

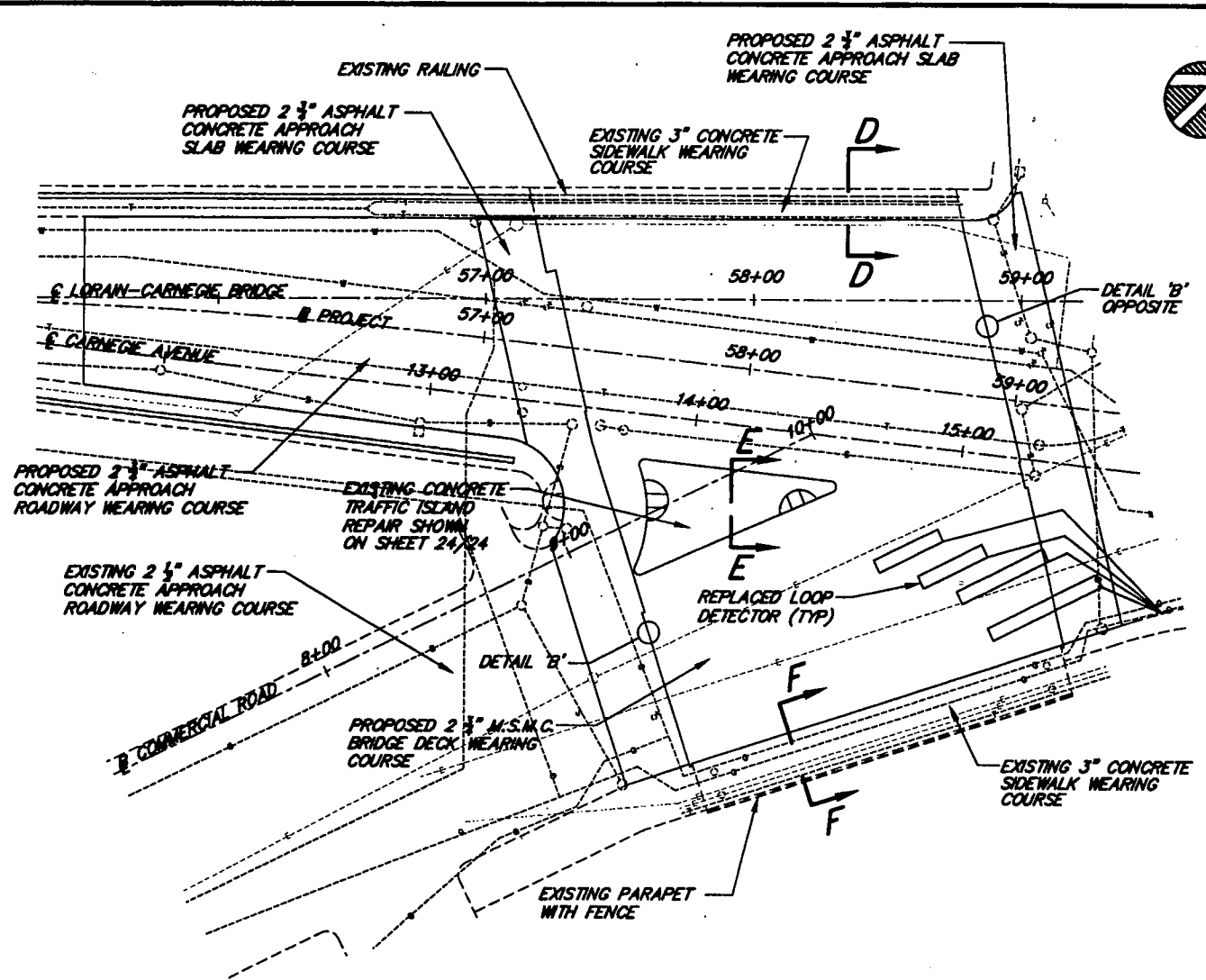
GENERAL PLAN AND PROFILE
 LORAIN-CARNEGIE BRIDGE No. 148
 OVER GCRTA TRACKS

CUY-10-1685

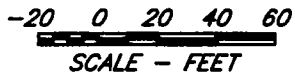
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 PLOT DATE: 02/28/80



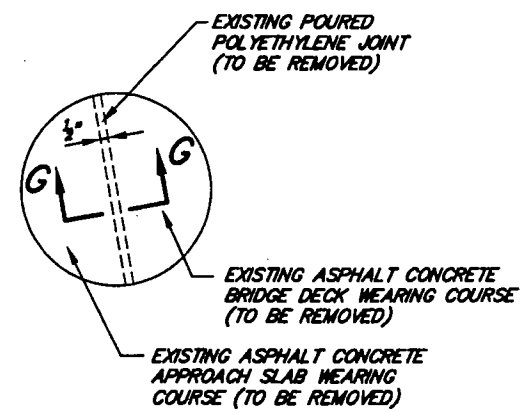
EXISTING PLAN



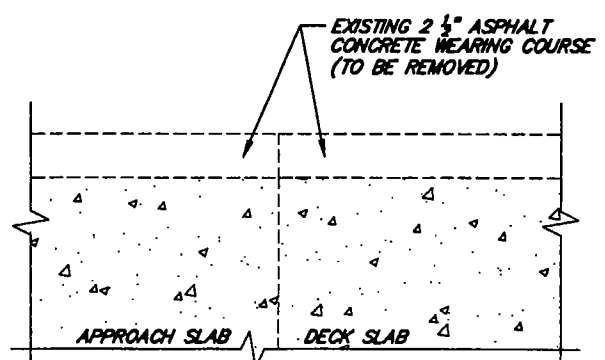
PROPOSED PLAN



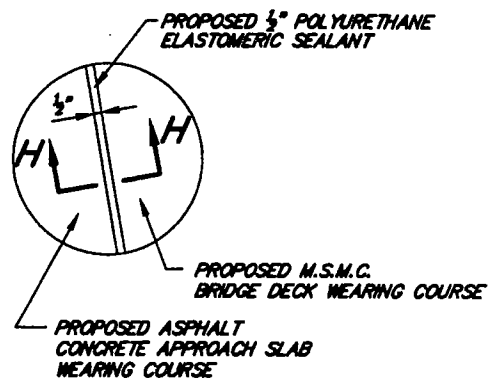
NOTE:
 1. FOR SECTIONS A-A, B-B, C-C, D-D, E-E, AND F-F SEE SHEET 22/24.
 2. FOR CONCRETE TRAFFIC ISLAND REPAIR DETAILS SEE SHEET 24/24.



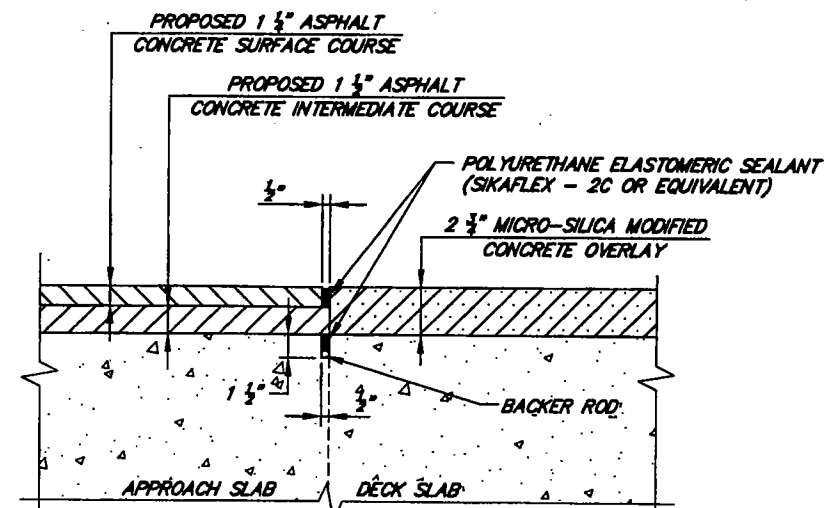
DETAIL 'A'
EXISTING JOINT



SECTION G-G
EXISTING JOINT DETAIL
WEST APPROACH SLAB SHOWN
EAST APPROACH SLAB OPPOSITE

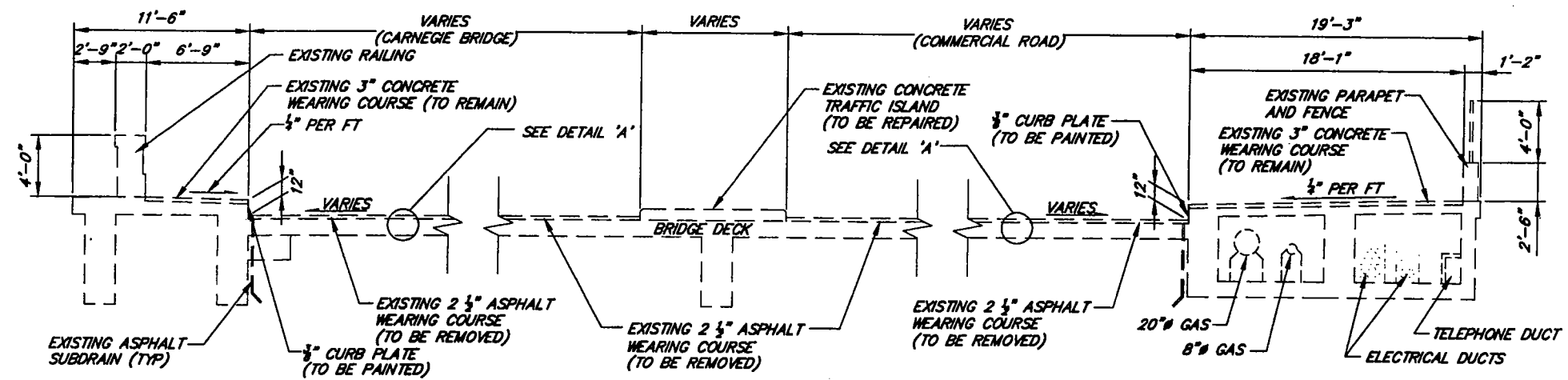


DETAIL 'B'
PROPOSED JOINT SEALER



SECTION H-H
PROPOSED JOINT DETAIL
WEST APPROACH SLAB SHOWN
EAST APPROACH SLAB OPPOSITE

DRAWING NAME: 21.dwg
 PLOTTING SCALE: 1"=40'
 PLOT DATE: 02/24/00



SECTION A-A

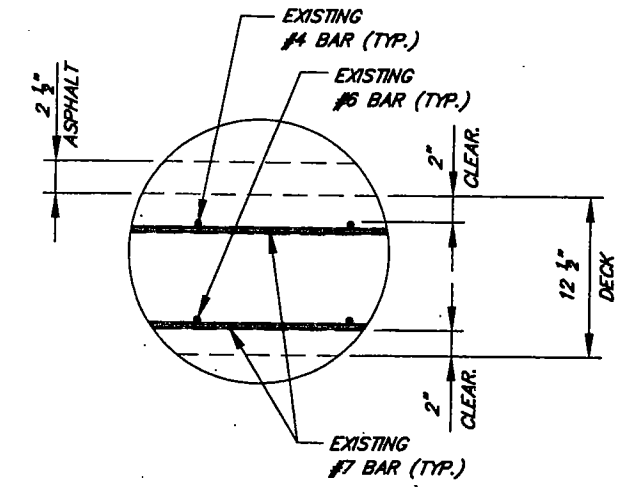
EXISTING NORTH SIDEWALK AND CURB DETAIL

SECTION B-B

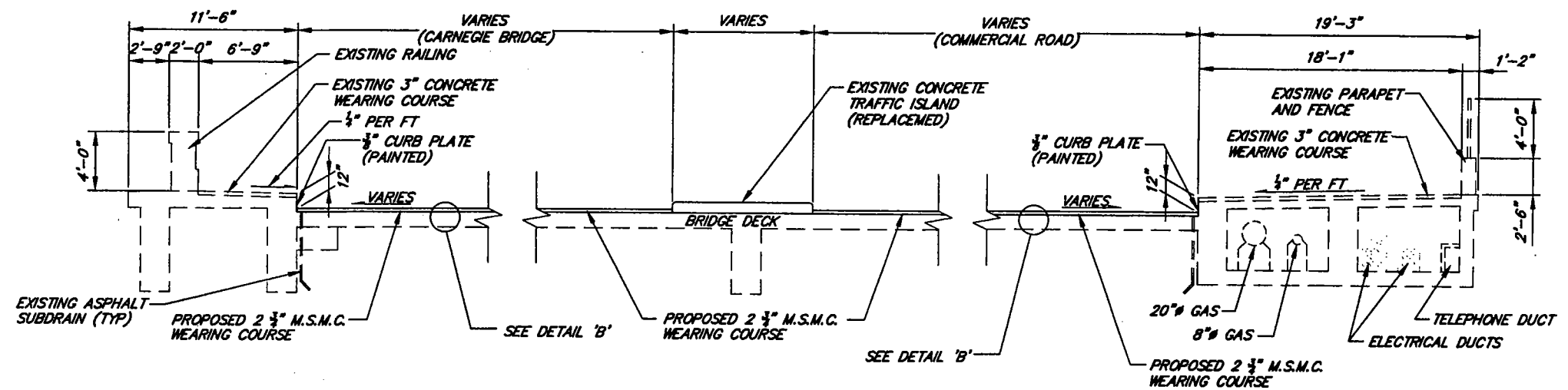
EXISTING CONCRETE TRAFFIC ISLAND DETAIL

SECTION C-C

EXISTING SOUTH SIDEWALK AND CURB DETAIL



DETAIL 'A'



SECTION D-D

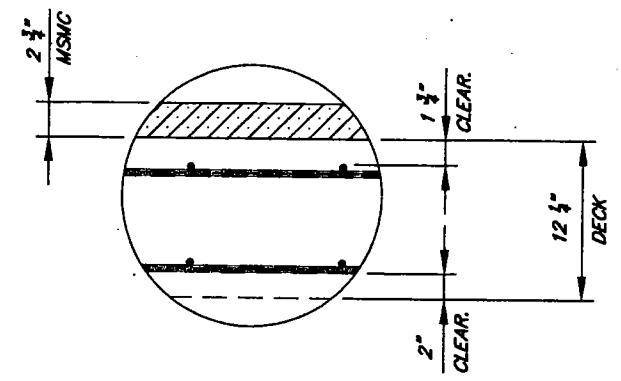
PROPOSED NORTH SIDEWALK AND CURB DETAIL

SECTION E-E

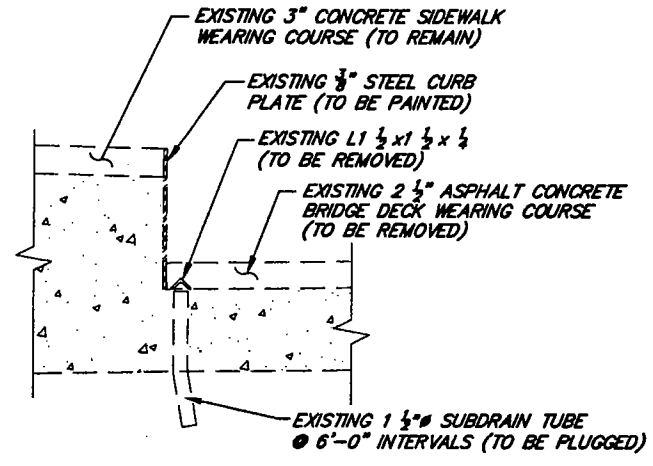
PROPOSED CONCRETE TRAFFIC ISLAND DETAIL

SECTION F-F

PROPOSED SOUTH SIDEWALK AND CURB DETAIL



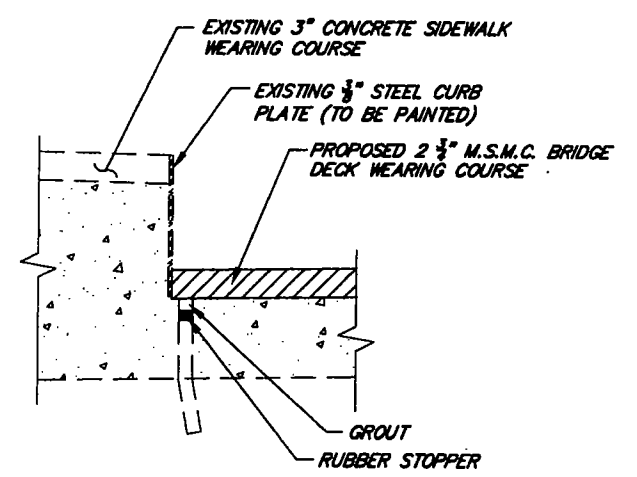
DETAIL 'B'



EXISTING SUBDRAIN DETAIL
REINFORCEMENT NOT SHOWN FOR CLARITY

SUBDRAIN PLUGGING PROCEDURE:

1. REMOVE ANGLES OVER SUBDRAIN TUBES. INCLUDE WITH ITEM 847 - WEARING COURSE REMOVED, ASPHALT, AS PER PLAN.
2. THOROUGHLY SANDBLAST OR WIREBRUSH CLEAN UPPER INSIDE OF EACH DRAIN PIPE TO 1" MINIMUM DEPTH.
3. DRIVE RUBBER STOPPER IN EACH DRAIN TUBE TO A MINIMUM DEPTH OF 1".
4. GROUT TUBE WITH GELTITE 42-14 EPOXY GROUT, SIKAGROUT 212, SIKAFLEX 1CSL OR AN EQUIVALENT TO A POINT LEVEL WITH THE DECK.



PROPOSED SUBDRAIN PLUGGING DETAIL
REINFORCEMENT NOT SHOWN FOR CLARITY

NOTES:

1. INCLUDE EXISTING L1 1/2 x 1 1/2 x 1/2 REMOVAL WITH ITEM 847 - WEARING COURSE REMOVED, ASPHALT, AS PER PLAN.
2. PAYMENT FOR PLUGGING ASPHALT SUBDRAINS SHALL BE MADE UNDER ITEM 518 - STRUCTURAL DRAINAGE, MISC.: PLUGGING ASPHALT SUBDRAINS.
3. SUBDRAIN PLUGGING ESTIMATE: 27-1 1/2" PLASTIC TUBES ALONG NORTH GUTTER LINE AND 25-1 1/2" PLASTIC TUBES ALONG SOUTH GUTTER LINE FOR BRIDGE No. 148.
4. FOR SECTION LOCATIONS SEE SHEET 21/24.
5. FOR CONCRETE TRAFFIC ISLAND DETAILS SEE SHEET 24/24.

DRAWING NAME: #22.dwg
PLOT SCALE: 1=60
PLOT DATE: 02/24/00

DESIGN AGENCY
CUYAHOGA COUNTY ENGINEER
BRIDGE DESIGN DEPARTMENT

REVIEWED DATE
2/20/00
DRAWN
CPX
CHECKED
BGF

DESIGNED
CPX
STRUCTURE FILE No.
1801511

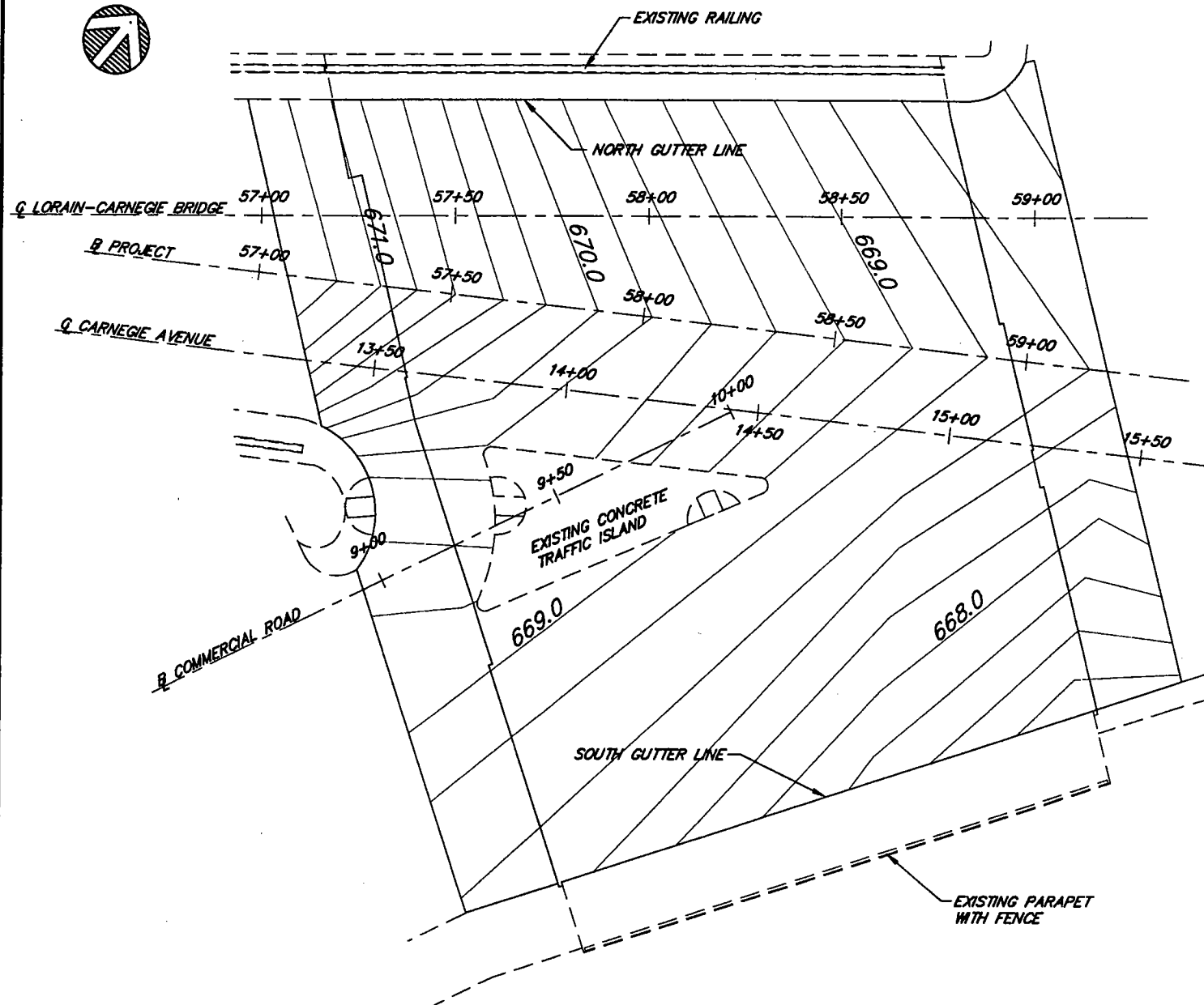
B-No. 23
Report No. 7249

SECTIONS AND DETAILS
LORAIN-CARNEGIE BRIDGE No. 148
OVER GORTA TRACKS

CUY-10-1685

3/5

22
24

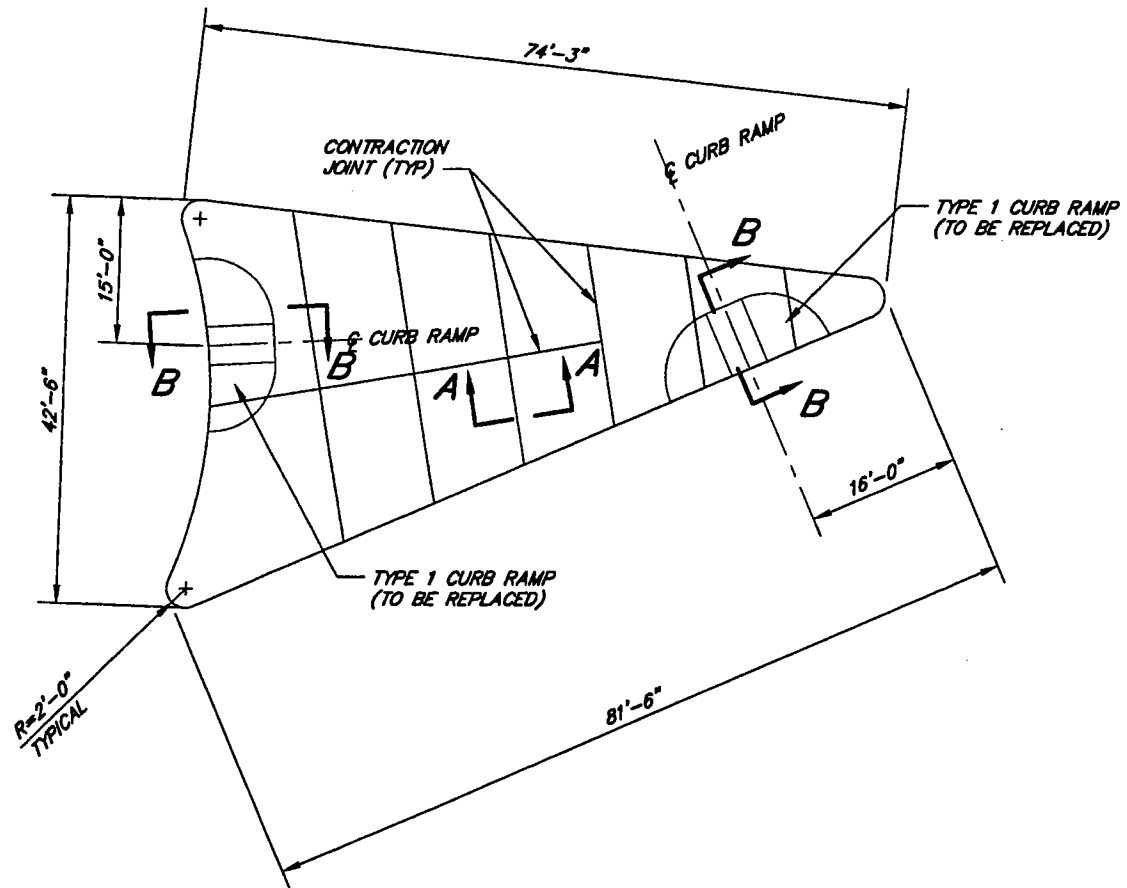


CONTOUR PLAN
 TOP OF M.S.M.C. OVERLAY ON BRIDGE AND
 ASPHALT WEARING COURSES ON APPROACH SLABS

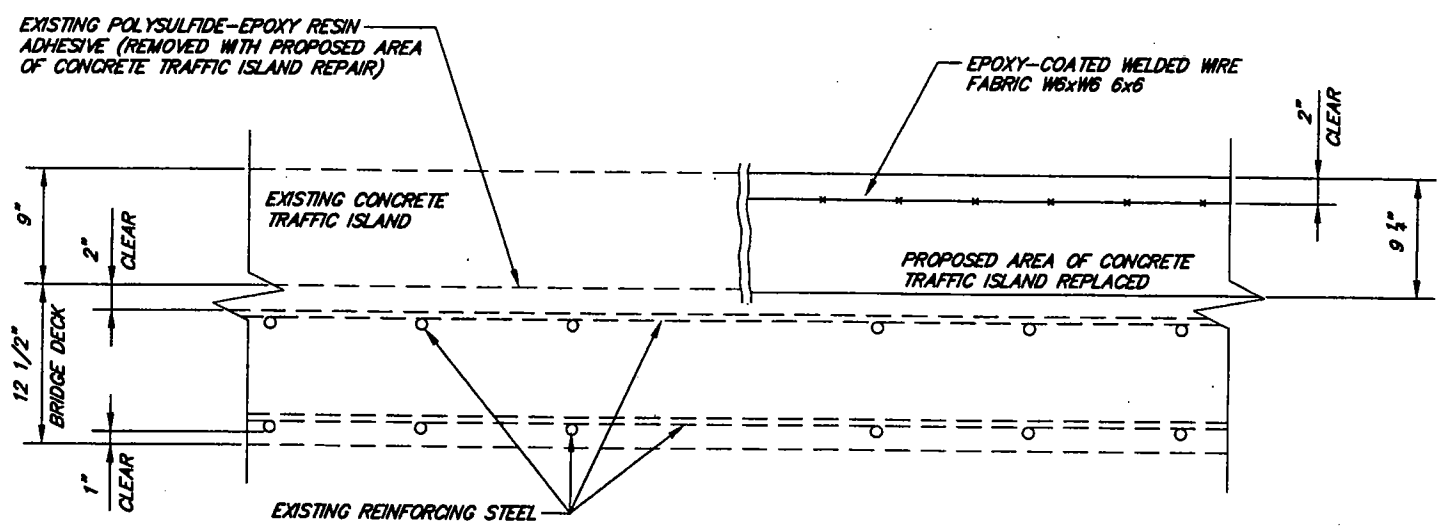
-20 0 20 40 60
 SCALE - FEET

DRAWING NAME: 1-234-9
 PLOTTING SCALE: 1-240
 PLOT DATE: 02/20/00

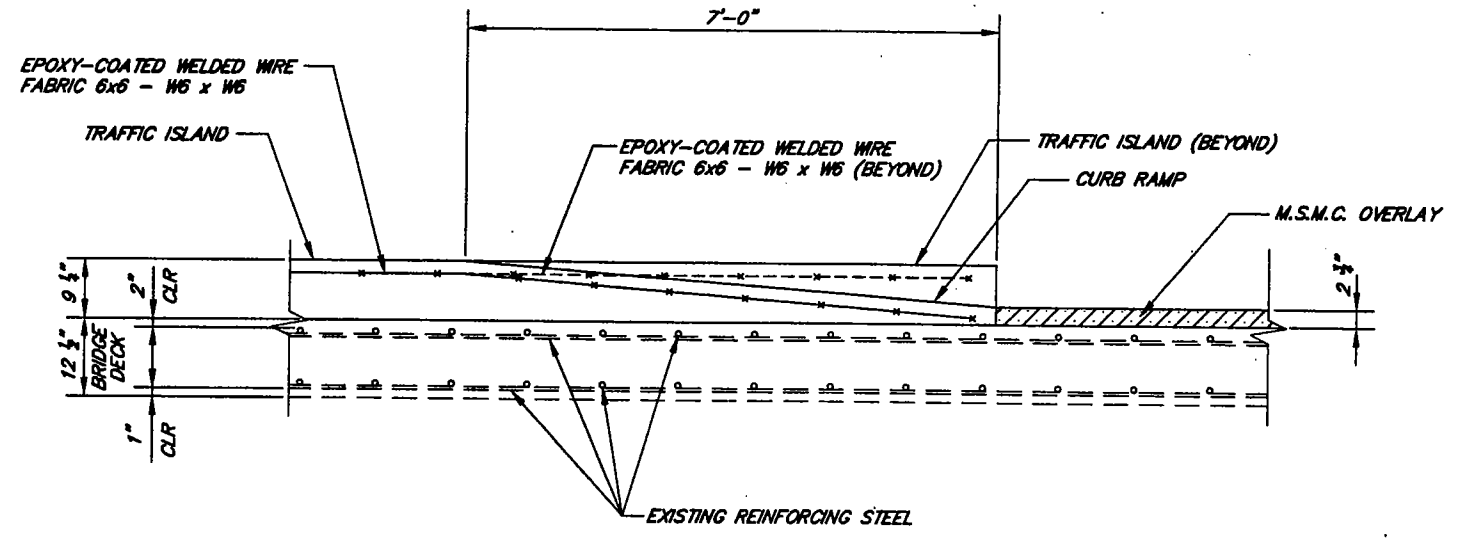
CUY-10-1685 4/5 23/24	CONTOUR PLAN LORAIN-CARNEGIE BRIDGE No. 148 OVER GORTA TRACKS	B-No. 23 Report No. 7249	DESIGNED LFK CHECKED BCF	DRAWN CPK	REVIEWED WJD DATE 2/22/00	STRUCTURE FILE No. 1801511	DESIGN AGENCY CUYAHOGA COUNTY ENGINEER BRIDGE DESIGN DEPARTMENT
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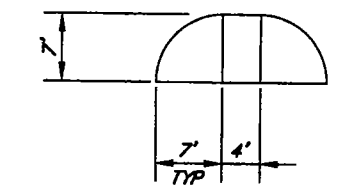
CONCRETE TRAFFIC ISLAND
AREA OF CONCRETE REMOVAL AND REPLACEMENT



SECTION A-A
CONCRETE TRAFFIC ISLAND DETAIL



SECTION B-B
CONCRETE TRAFFIC ISLAND DETAIL



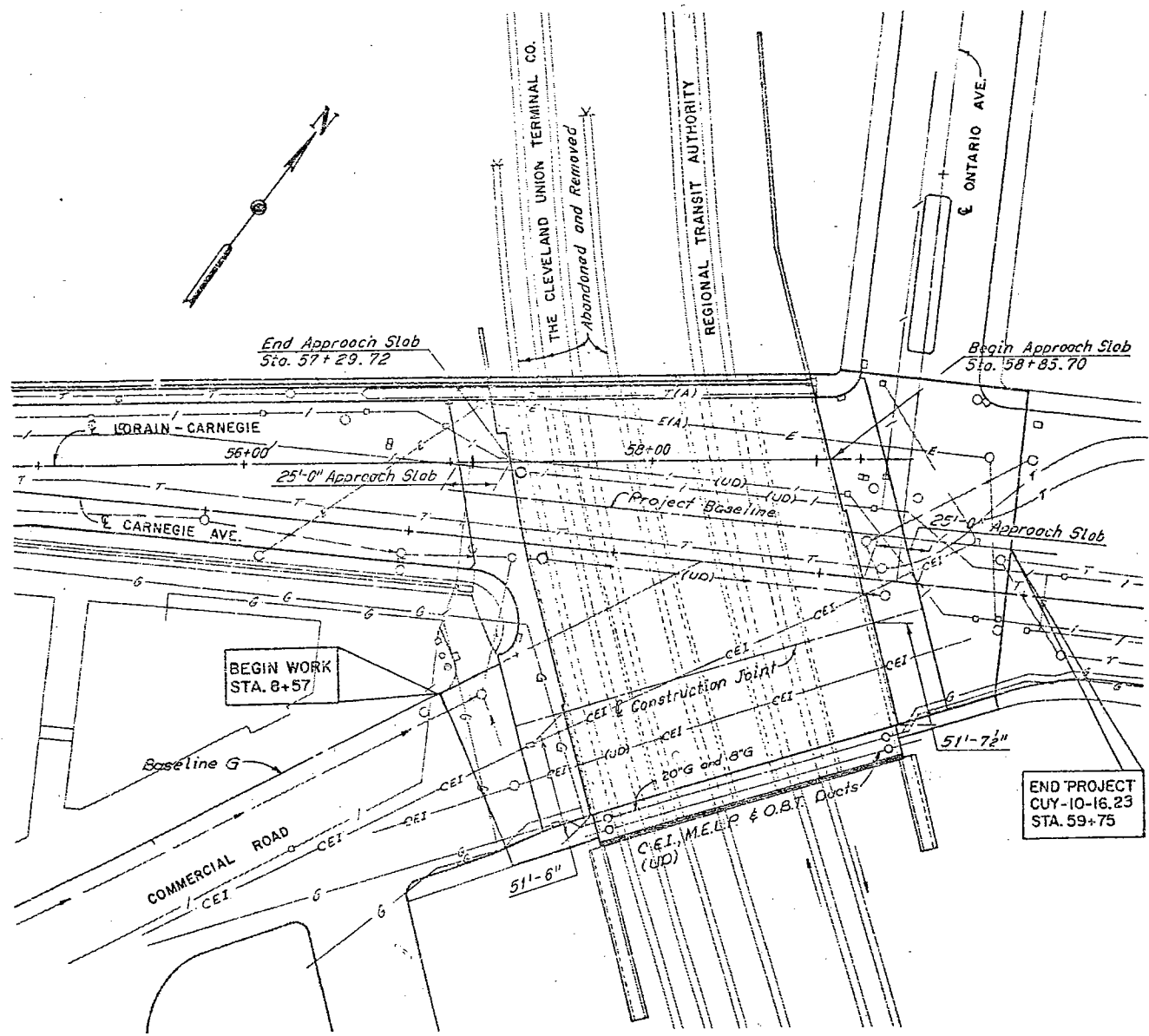
CURB RAMP DETAIL
CONCRETE TRAFFIC ISLAND

- NOTES:**
1. EPOXY-COATED WELDED WIRE FABRIC SHALL BE INCLUDED IN ITEM 842 - CLASS S CONCRETE, MISC.: 9" REINFORCED CONCRETE TRAFFIC ISLAND FOR PAYMENT.
 2. SPACE CONTRACTION JOINTS AT 10'-0" MAXIMUM.

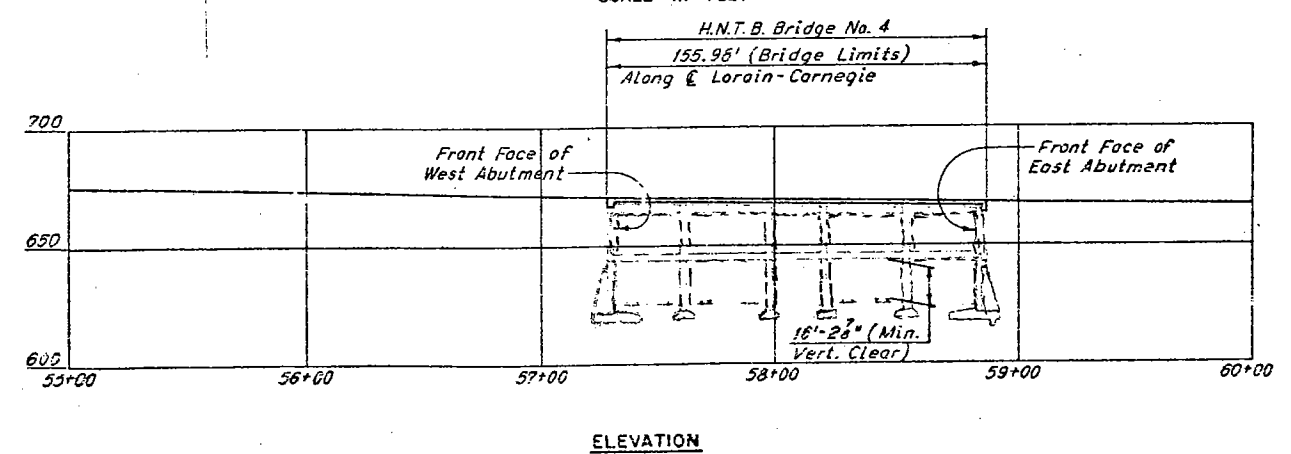
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PLOT DATE: 02/24/00
PLOT SCALE: 1:120

DESIGNED CLPK	CHECKED BGF	DRAWN CPK	REVISED WLD	DATE 7/29/00	STRUCTURE FILE NO. 1801481/1801511	DESIGN AGENCY CUYAHOGA COUNTY ENGINEER BRIDGE DESIGN DEPARTMENT
B-No. 23		Report No. 7249		CONCRETE TRAFFIC ISLAND DETAIL LORAIN-CARNEGIE BRIDGE No. 148 OVER GORTA TRACKS		
5/5		24/24		CUY-10-1685		

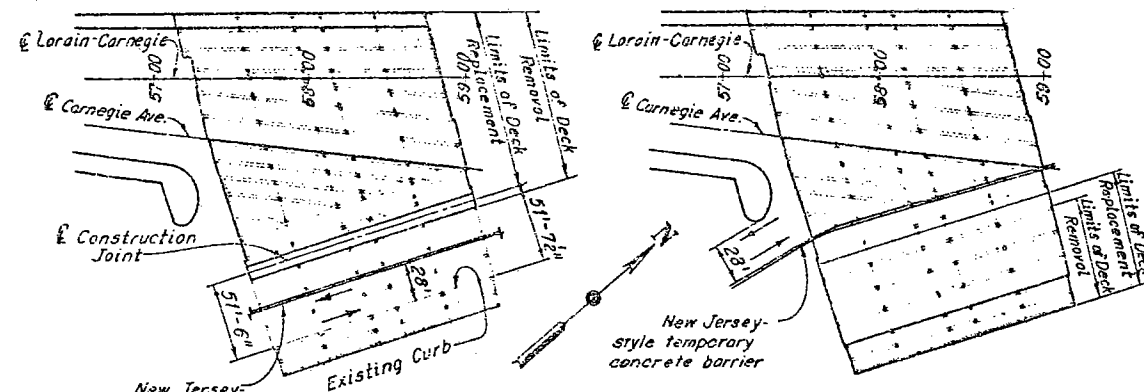
CUYAHOGA COUNTY
CUY-10-16.23



PLAN
(Utilities not shown otherwise are underground utilities)
40 0 40 80 120 160
SCALE IN FEET



ELEVATION



STAGE I
STAGE II
TRAFFIC MAINTENANCE - CARNEGIE AVENUE GRADE SEPARATION STRUCTURE
Scale: 1"=60'

The stage construction applies within the bridge and approach slab limits. All repair work shall be coordinated with the stage construction as shown.

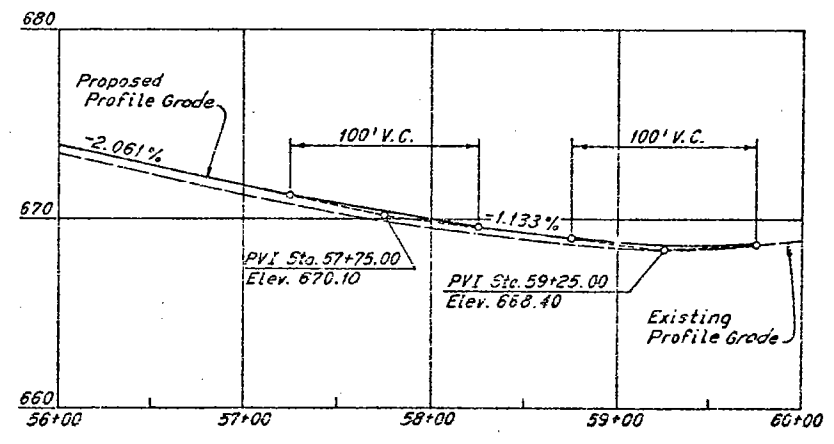
Notes:
Subeaved linework indicates existing conditions.
For Project Baseline Data, and Baseline G Data,
See Roadway Plans.

Note:
Underground and underdeck utilities not indicated as being abandoned shall remain. The information shown on this drawing concerning type and location of underground and underdeck utilities is not guaranteed to be accurate or all inclusive. The Contractor is responsible for making his own determination as to the type and location of underground and underdeck utilities as may be necessary to avoid damage thereto. Full expense involved in relocating the affected utility, except where the relocation is covered in these plans, shall be borne by the Owner of the utility. The Contractor and Owner are requested to cooperate by arranging their work in such a manner that inconvenience to either will be held to a minimum.

UTILITY LEGEND

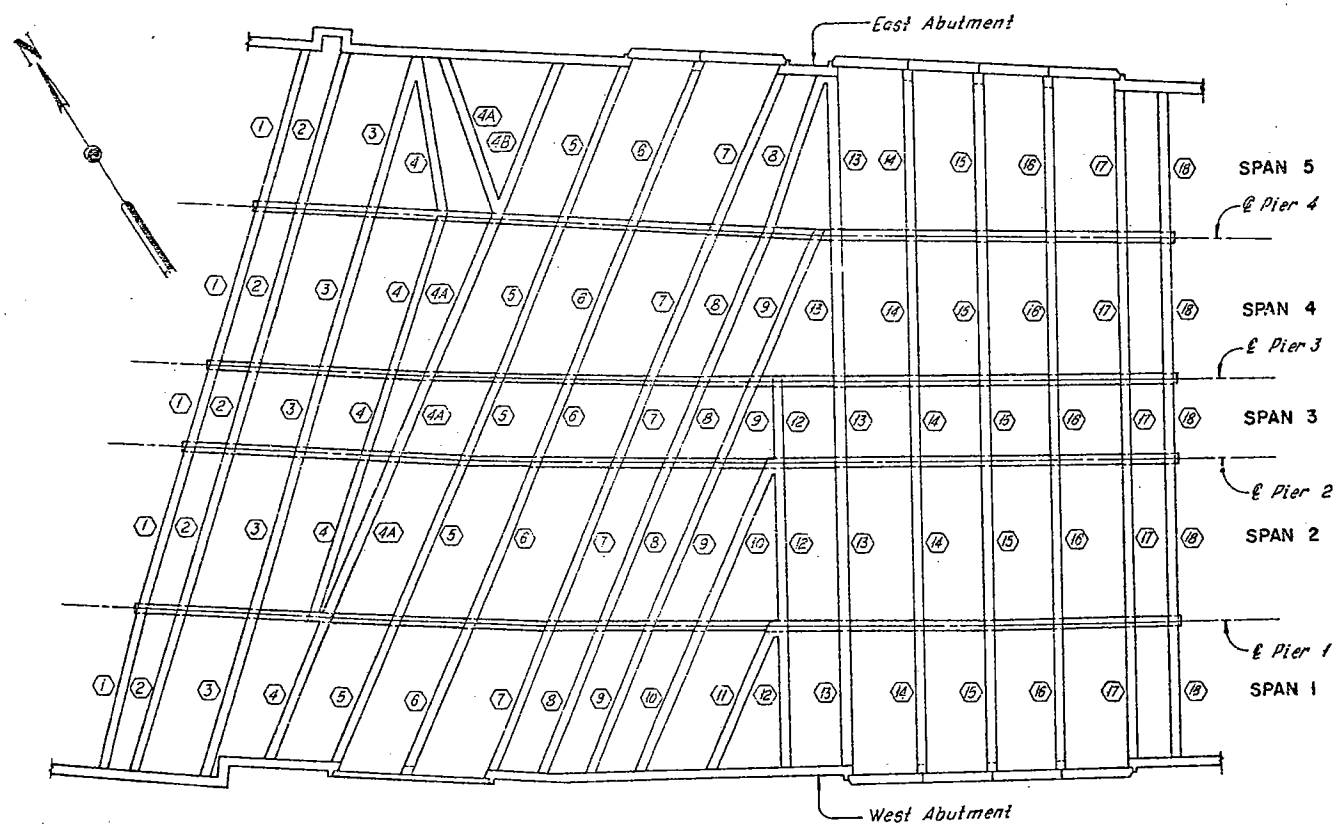
- (A) - Indicates a utility to be abandoned
- (UD) - Indicates an underdeck utility
- E - Indicates Municipal Electric Light and Power line (M.E.L.P.)
- T - Indicates Ohio Bell Telephone Line (O.B.T.)
- l - Indicates water line
- G - Indicates gas line
- - Indicates sewer line
- CEI— - Indicates Cleveland Electric Illuminating Company line (C.E.I.)

PROPOSED STRUCTURE DATA ON CONCRETE GIRDERS
BRIDGE NO. CUY-10-1685
TYPE: Reinforced Concrete Girder, Deck and Substructure
SPAN: See Framing Plan, Sheet No. 150.
ROADWAY: Varies
LOADING: HS 20-44 Case II and The Alternate Military Loading
SKEW: Varies
WEARING SURF: 2 3/4" Asphalt Concrete (Rubberized)
ALIGN: Tangent

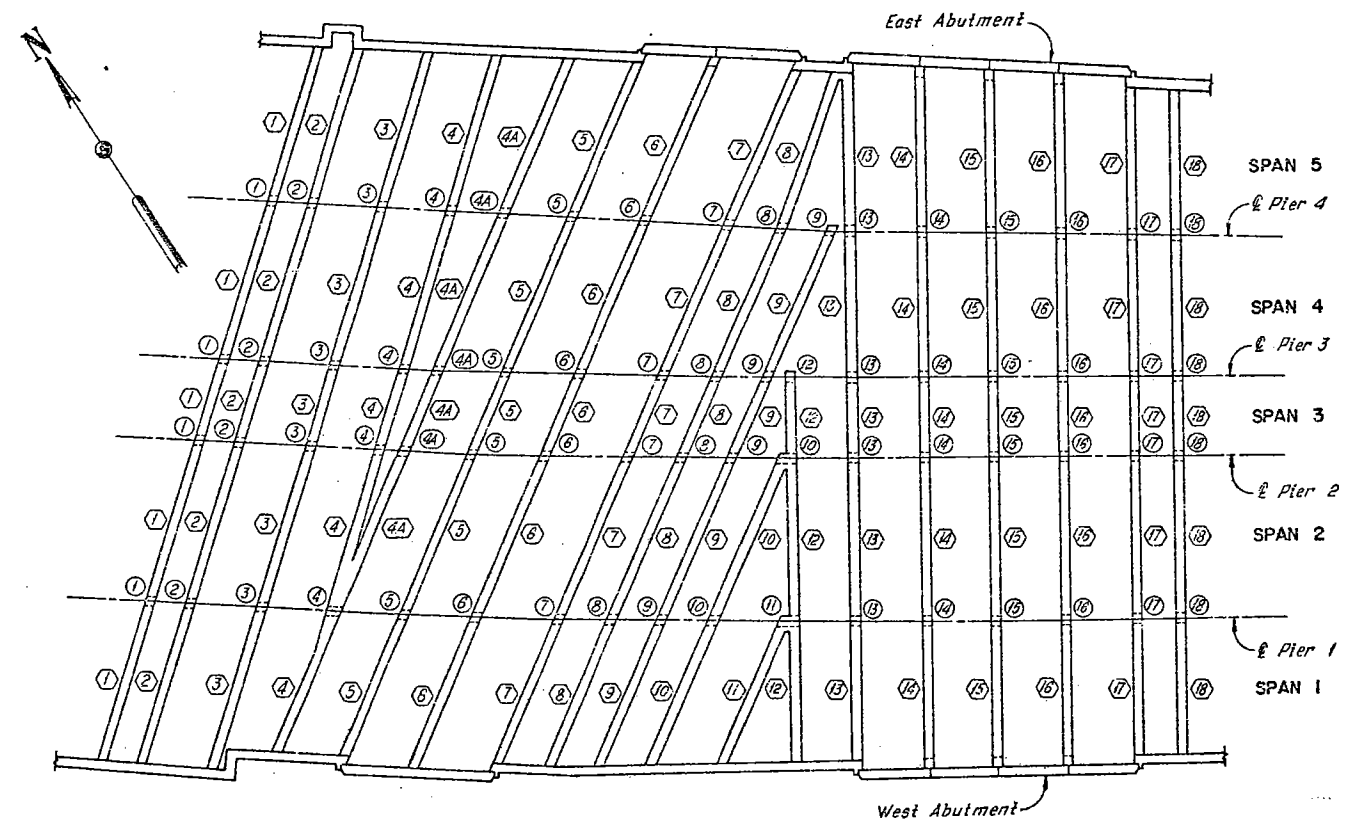


PROFILE GRADE GRADE SEPARATION
ALONG PROJECT BASELINE

HNTB BRIDGE NO. 4		HNTB
HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND		
SITE PLAN		
REHABILITATION OF THE CARNEGIE AVENUE GRADE SEPARATION STRUCTURE (S.R.10 OVER THE CLEVELAND UNION TERMINALS CO. AND THE REGIONAL TRANSIT AUTHORITY) BR. NO. CUY-10-1685 STA. 57+29.72 CUYAHOGA COUNTY OHIO STA. 58+85.70		
DRAWN BY DATE 9-23-75	TRACED BY D.L.B. DATE 9-7-75	CHECKED BY R.A.S. DATE 9-25-75
		REVIEWED BY DATE SHEET 1/31



STRUT AND PIER IDENTIFICATION PLAN
(Lower Level Framing)



GIRDER AND COLUMN IDENTIFICATION PLAN
(Upper Level Framing)

LEGEND:

- Strut or Girder
- Column

HNTB BRIDGE NO. 4

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
CLEVELAND

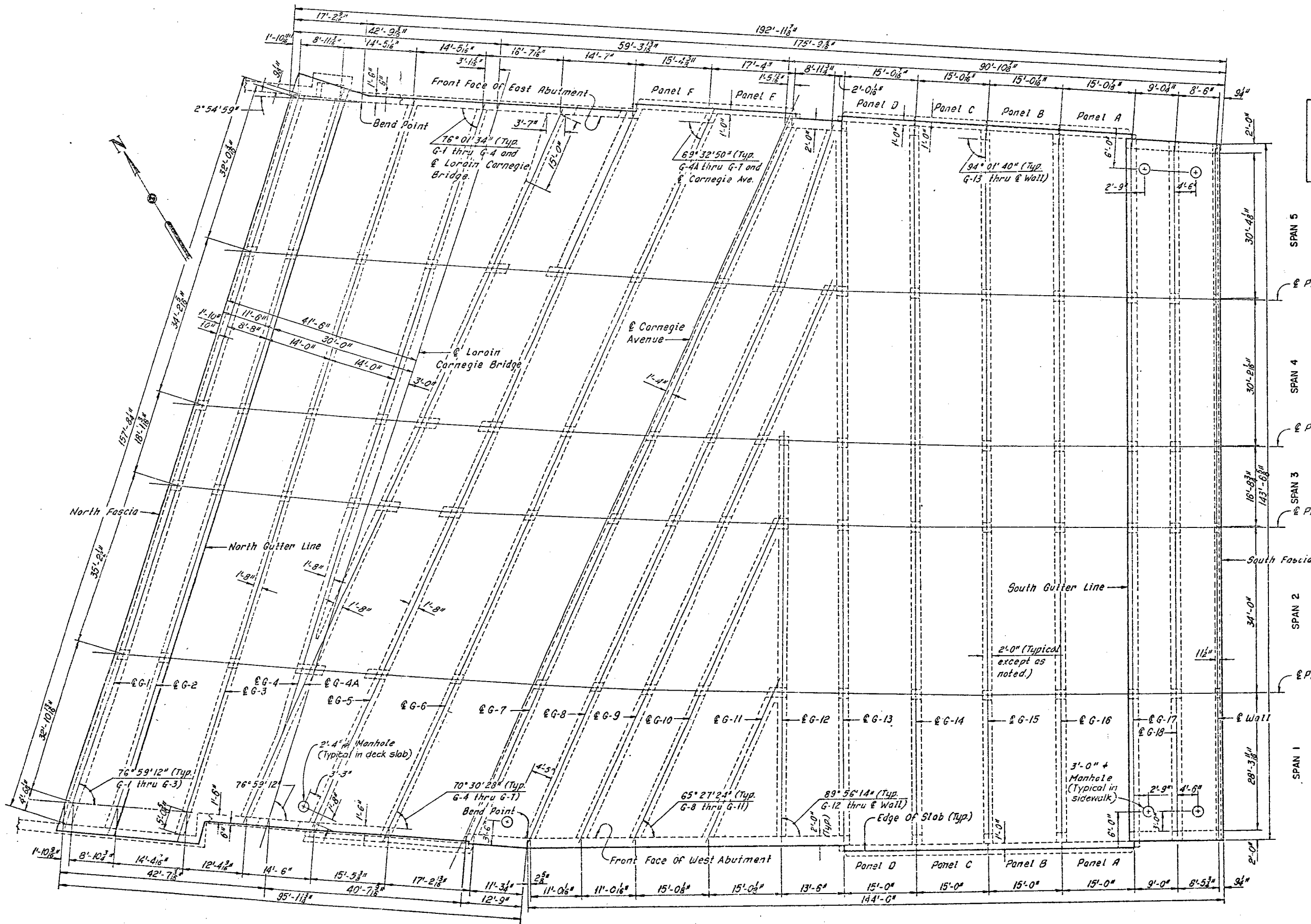
HNTB

MEMBER IDENTIFICATION PLANS

REHABILITATION OF THE
CARNEGIE AVENUE GRADE SEPARATION STRUCTURE
(S.R. 10 OVER THE CLEVELAND UNION TERMINALS CO.
AND THE REGIONAL TRANSIT AUTHORITY)
BR. NO. CUY-10-1685 STA. 57+29.72
CUYAHOGA COUNTY STA. 58+85.70
OHIO

DRAWN BY	TRACED BY	CHECKED BY	REVIEWED	REVISED
DATE: 4-25-85	DATE: 4-25-85	DATE: 4-25-85	DATE:	DATE:

Note:
Prior to deck removal over the girders, Girders 2 thru 16 shall be shored. For Girders 2 thru 18 removal, see removal plans, typical section along Pier 3, Sheet 4/31.



Notes:
For typical deck and girder removal details, see Sheet 4/31.
The existing manholes shall be reconstructed to grade. For details, see Sheets 25/31 and 27/31.
For strut and column removal details, see Sheet 6/31.
For removal plans of the West Abutment, see Sheets 7/31 thru 9/31.
For removal plans of the East Abutment, see Sheets 10/31 thru 12/31.
For removal plans along Pier 3, see Sheets 4/31 and 5/31.
For stage construction, see Sheet 1/31.

DECK PLAN

HNTB BRIDGE NO. 4

HOWARD, NEEDLES TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
CLEVELAND

HNTB

DECK REMOVAL AND FRAMING PLAN

REHABILITATION OF THE
CARNegie AVENUE GRADE SEPARATION STRUCTURE
(S.R.10 OVER THE CLEVELAND UNION TERMINALS CO.
AND THE REGIONAL TRANSIT AUTHORITY)

BR. NO. CUY. -10-1685 STA 57+29.72
STA 58+85.70

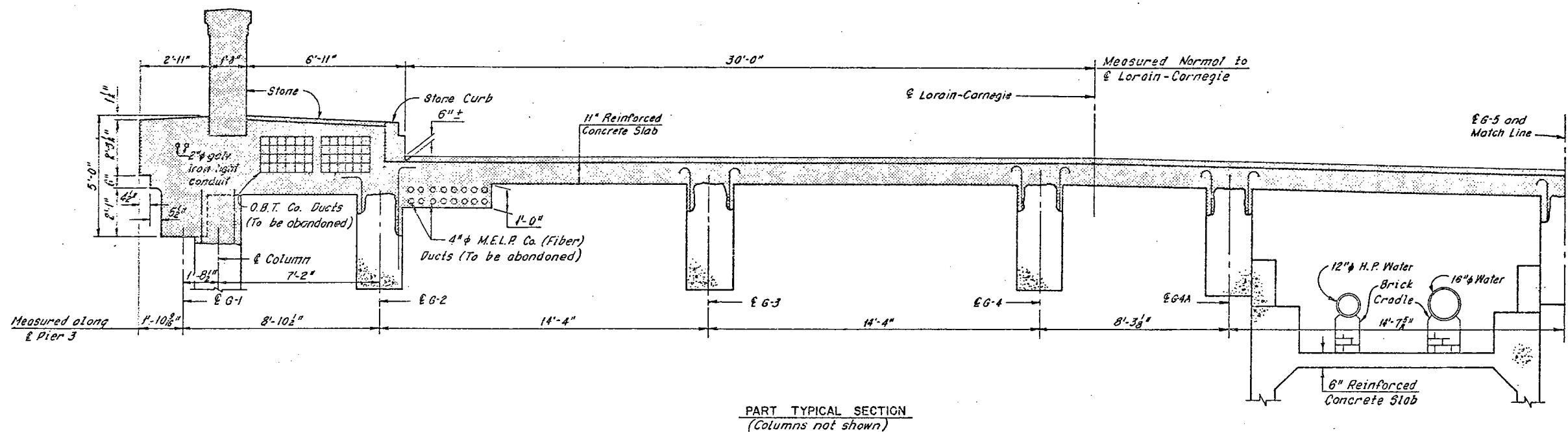
CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
BO	EP	FR		
DATE 20-7-72	DATE 20-7-72	DATE 7-72	DATE	SHEET 3/31

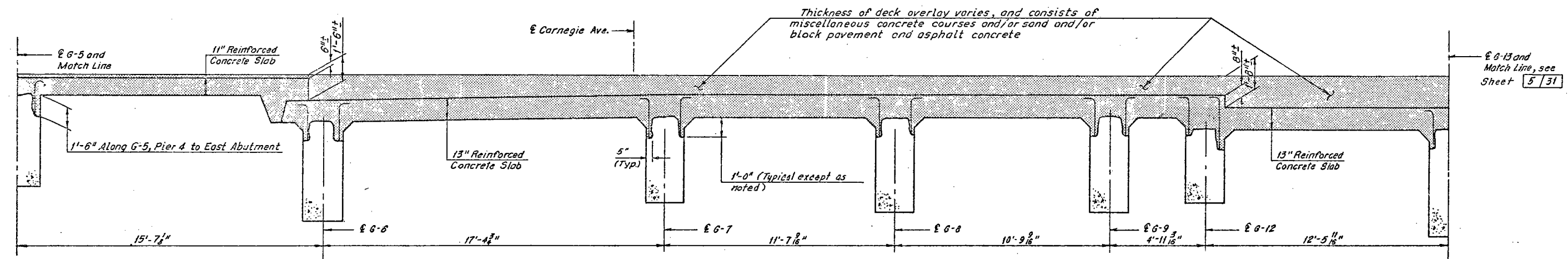
FHWA REGION	STATE	PROJECT
5	OHIO	

151
185

CUYAHOGA COUNTY
CUY-10-16.23



PART TYPICAL SECTION
(Columns not shown)



PART TYPICAL SECTION
(Columns not shown)

SPECIAL REQUIREMENTS FOR GIRDER 1 AND DECK REMOVAL

- The girders are under a compressive load from the abutments. Before Girder 1 replacement work begins the Contractor shall temporarily support the abutments at the girder. The supports shall be preloaded to resist a total compressive force of 35 kips at each abutment and shall be retained until the replacement Girder 1 attains its design strength. (For requirements and payment for temporary supports see General Note 9 on Sheet GN-1 and notes on Sheet E-1)
- Suggested deck removal sequence:
 - Laterally support Girders 2 thru 18 at each pier before deck removal operations begin.
 - Remove the deck between girders.
 - Shore girders 2 thru 18 continually throughout their length. Preload the supports with an upward force equal to the weight of the girder and remaining deck (Shoring shall remain in place until the replacement deck attains its design strength).
 - Remove the remaining portion of the deck.
 - An alternate sequence may be submitted to the Director for consideration and approval.

Notes:

- Zip-a-tone indicates portions of the structure to be removed.
- For Removal Details at Girders 2 thru 13, see Detail A, Sheet 5/31.
- For Framing Plan, see Sheet 3/31.
- For Modified Typical Section at Pier 3, see Sheets 22/31 and 23/31.
- The following abbreviations are used:
 - Typ. = Typical
 - O.B.T. = Ohio Bell Telephone Company
 - C.E.I. = Cleveland Electric Illuminating Company
 - M.E.L.P. = Municipality Electric Light and Power
 - P.H.P. = Plain and, high pressure
 - H.P. = High Pressure
- All existing reinforcing shown shall be retained. Other existing reinforcing shall be removed, except as noted in Detail A, Sheet 5/31.
- For Stage Construction, see Sheet 1/31.

HNTB BRIDGE NO. 4

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
CLEVELAND

HNTB

REMOVAL PLANS
TYPICAL SECTION ALONG PIER 3
REHABILITATION OF THE
CARNegie AVENUE GRADE SEPARATION STRUCTURE
(S.R.10 OVER THE CLEVELAND UNION TERMINALS CO.
AND THE REGIONAL TRANSIT AUTHORITY)
BR. NO. CUY-10-1685 STA. 57+29.72
CUYAHOGA COUNTY STA. 58+85.70 OHIO

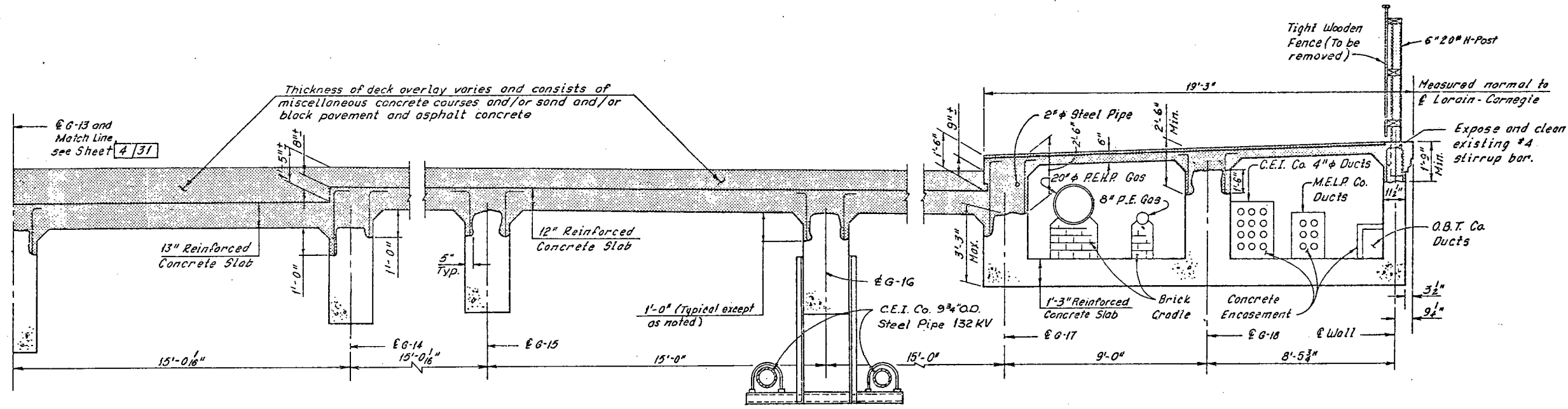
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DATE: 11-78	DATE: 3-78	DATE: 7-78	DATE:	DATE:

SHEET 4/31

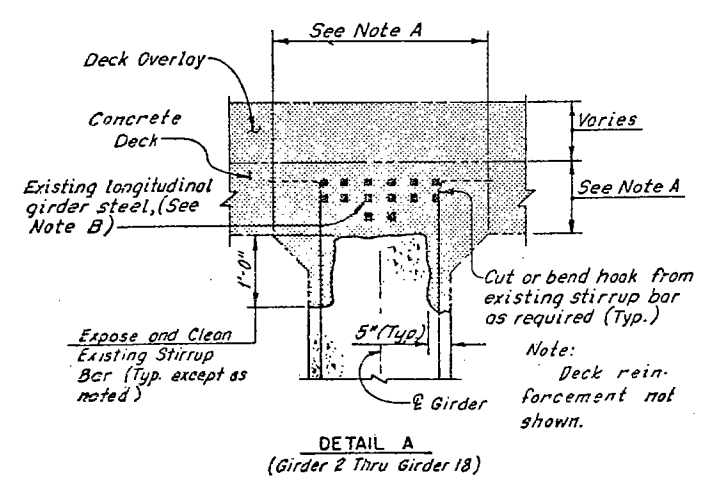
FHWA REGION	STATE	PROJECT
5	OHIO	

152
185

CUYAHOGA COUNTY
CUY-10-16.23



PART TYPICAL SECTION
(Columns and C.E.I. Protection not shown)



DETAIL A
(Girder 2 Thru Girder 18)

Note A:
Concrete above the girders shall remain in place until the girders have been properly shored. Special requirements for Girder 1 and Deck Removal, see Sheet 4/31.

Note B:
All existing longitudinal girder reinforcement shall be retained except at the option of the Contractor and with the approval of the Engineer new bars may be substituted for the original bars. The new bars may be round or square with a cross-sectional area equal or greater than the original bars. No additional payment will be made for substituting new bars for the original bars.

Notes:
Zip-a-tone indicates portions of the structure to be removed.
For Framing Plan, see Sheet 3/31.
For Modified Typical Section of Pier 3, see Sheets 22/31 and 23/31.
The following abbreviations are used:
Typ. = Typical
O.B.T. = Ohio Bell Telephone Company
C.E.I. = Cleveland Electric Illuminating Company
M.E.L.P. = Municipaly Electric Light and Power
P.E.H.P. = Plain end, high pressure
H.P. = High Pressure
All existing reinforcing shown shall be retained. Other existing reinforcing shall be removed, except as noted in Detail A.
For Stage Construction, see Sheet 1/31.

HNTB BRIDGE NO. 4

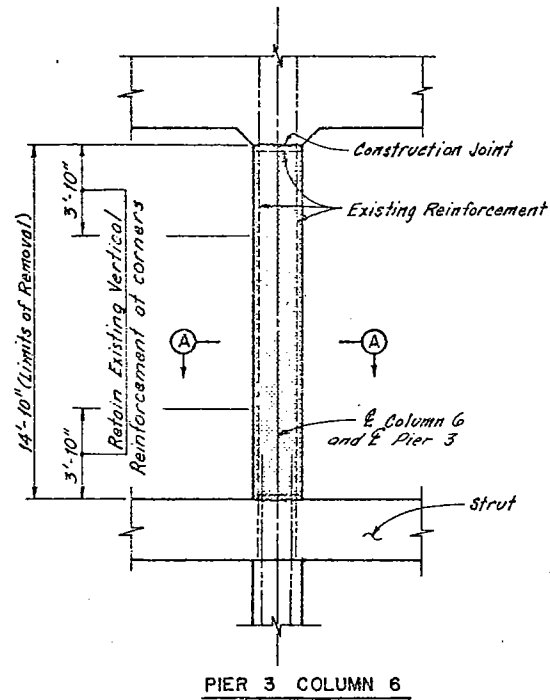
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
CLEVELAND

HNTB

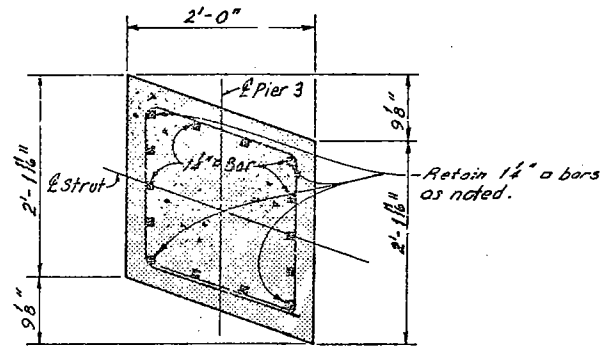
REMOVAL PLANS
TYPICAL SECTION ALONG PIER 3
REHABILITATION OF THE
CARNegie AVENUE GRADE SEPARATION STRUCTURE
(S.R.10 OVER THE CLEVELAND UNION TERMINALS CO.
AND THE REGIONAL TRANSIT AUTHORITY)
BR. NO. CUY.-10-1685 STA. 57+29.72
CUYAHOGA COUNTY STA. 58+85.70 OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
SP	SP	SP	SP	
DATE 5-17-77	DATE 5-31-77	DATE 7-7-78	DATE	

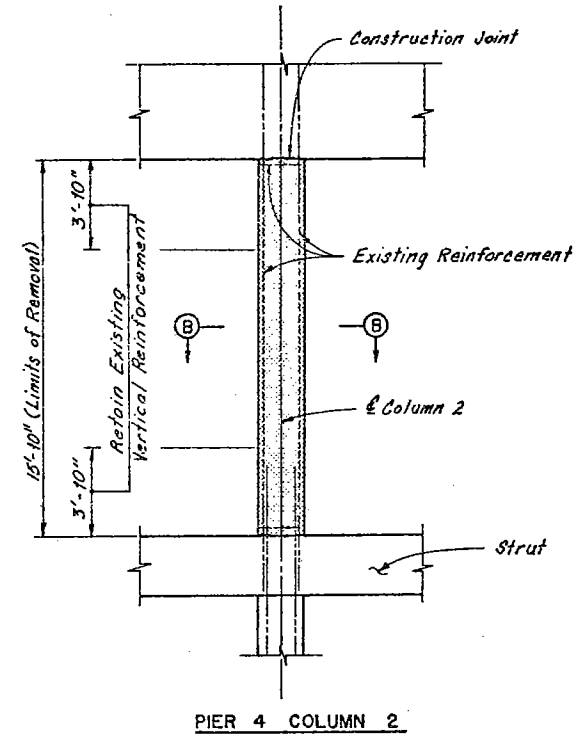
SHEET 5/31



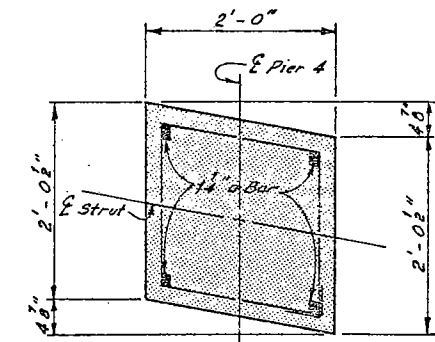
PIER 3 COLUMN 6



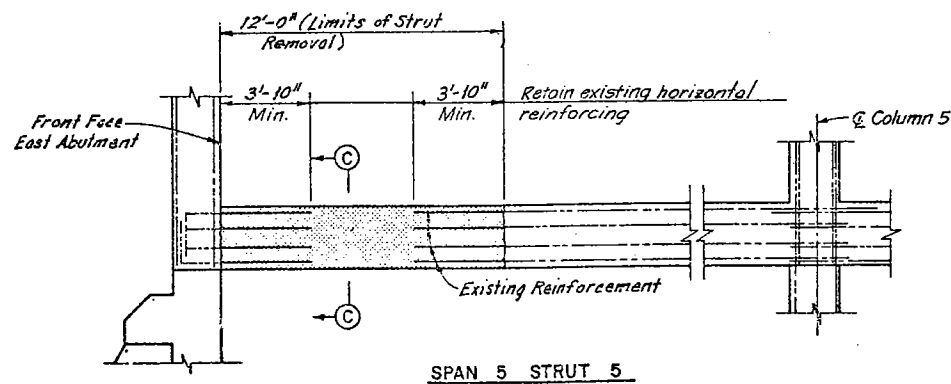
SECTION A-A



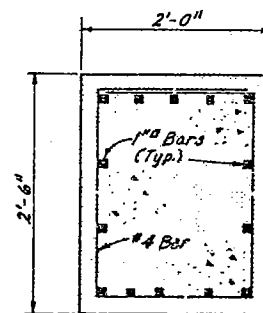
PIER 4 COLUMN 2



SECTION B-B



SPAN 5 STRUT 5



SECTION C-C

Special Requirements for Strut Removal

1. The strut removal and repair shall be accomplished prior to shoring the girders.
2. The strut is under a compressive load from the abutments. Before strut removal work begins, the Contractor shall install temporary supports between Column 5 and the East Abutment as close as possible to the strut top. The supports shall be preloaded with a total load 153.5 kips and this load shall be retained until the replacement strut attains design strength.

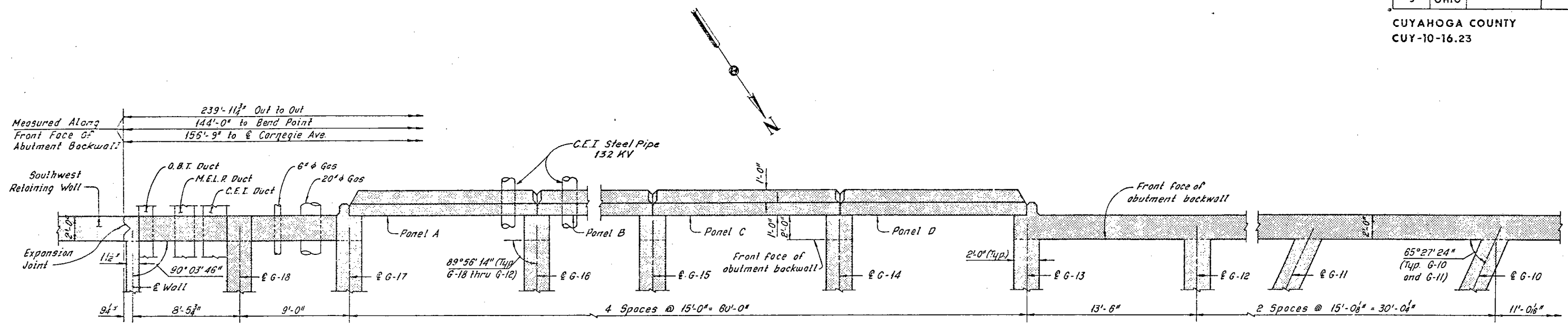
Note:
 Zipatone indicates portions of structure to be removed.
 For strut and column repair details, see Sheet 19/31.
 For member identification plans, see Sheet 2/31.

HNTB BRIDGE NO. 4		HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND		HNTB	
STRUT AND COLUMN REMOVAL DETAILS REHABILITATION OF THE CARNEGIE AVENUE GRADE SEPARATION STRUCTURE (SR 10 OVER THE CLEVELAND UNION TERMINALS CO. AND THE REGIONAL TRANSIT AUTHORITY) BR. NO. CUY-10-1685 STA. 57+29.72 CUYAHOGA COUNTY OHIO STA. 58+85.70					
DRAWN	TRACED	CHECKED	REVIEWED	REVISED	
AJT	DES	RAJ			
DATE 8-1-78	DATE 8-3-78	DATE 9-6-78	DATE		SHEET 5/31

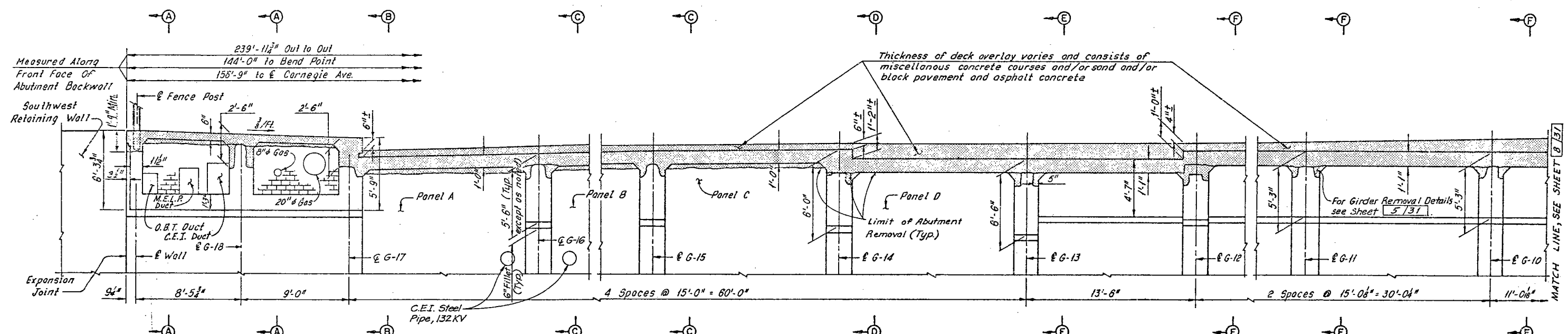
FHWA REGION	STATE	PROJECT
5	OHIO	

154
185

CUYAHOGA COUNTY
CUI-10-16.23



PART PLAN - WEST ABUTMENT
(Slab not shown)

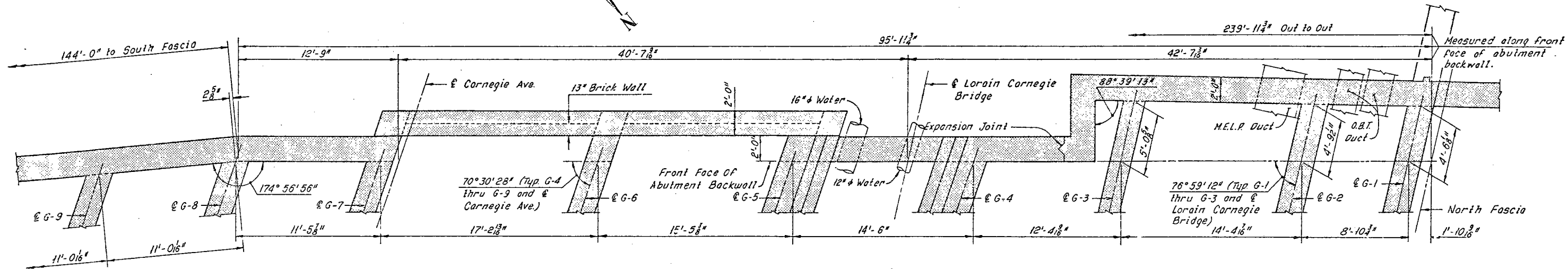


PART ELEVATION - WEST ABUTMENT

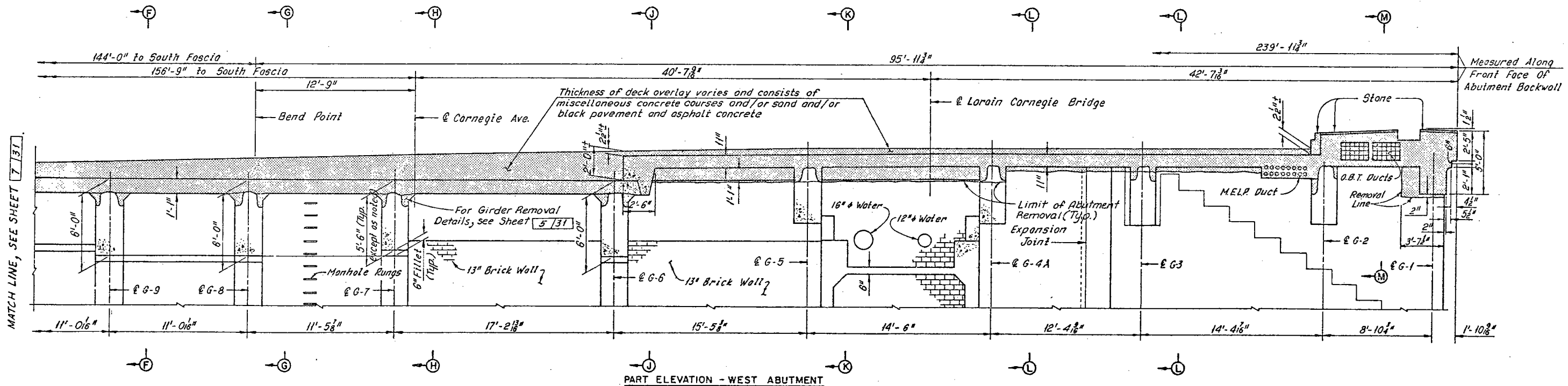
Note:
All existing vertical abutment reinforcement and all existing horizontal abutment reinforcement below the bottom of the new deck shall be retained as part of the new construction, except at new slab edge beams shown on Sheet 14/31. Horizontal reinforcement may be replaced in kind at no additional cost to the State.

Notes:
Zip-a-tone indicates portions of the structure to be removed.
For Sections A-A thru F-F, see Sheet 9/31.
For Modified West Abutment Details, see Sheets 13/31 thru 15/31.
The following abbreviations are used:
Typ. = Typical
M.E.L.P. = Municipal Electric Light and Power
O.B.T. = Ohio Bell Telephone Company
C.E.I. = Cleveland Electric Illuminating Company
For Stage Construction, see Sheet 1/31.

HNTB BRIDGE NO. 4				
HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND				HNTB
REMOVAL PLANS WEST ABUTMENT				
REHABILITATION OF THE CARNegie AVENUE GRADE SEPARATION STRUCTURE (S.R.10 OVER THE CLEVELAND UNION TERMINALS CO. AND THE REGIONAL TRANSIT AUTHORITY)				
BR NO. CUY. -10-1685		STA. 57+29.72 STA. 58+85.70		
CUYAHOGA COUNTY OHIO				
DRAWN BP DATE 5-17-85	TRACED SP DATE 10-13-85	CHECKED PB DATE 7-7-85	REVIEWED DATE	REVISED DATE
				SHEET 7/31



PART PLAN - WEST ABUTMENT
(Slab not shown)



PART ELEVATION - WEST ABUTMENT

Note:
All existing vertical abutment reinforcement and all existing horizontal abutment reinforcement below the bottom of the new deck shall be retained as part of the new construction, except at new slab edge beams shown on Sheet 14/31. Horizontal reinforcement may be replaced in kind at no additional cost to the State.

Notes:
Zia-a-tone indicates portions of the structure to be removed.
For Sections F-F thru M-M, see Sheet 9/31.
For modified West Abutment details, see Sheets 13/31 thru 15/31.
The following abbreviations are used:
Typ. = Typical
M.E.L.P. = Municipal Electric Light and Power
O.B.T. = Ohio Bell Telephone Company
C.E.I. = Cleveland Electric Illuminating Company

HNTB BRIDGE NO. 4

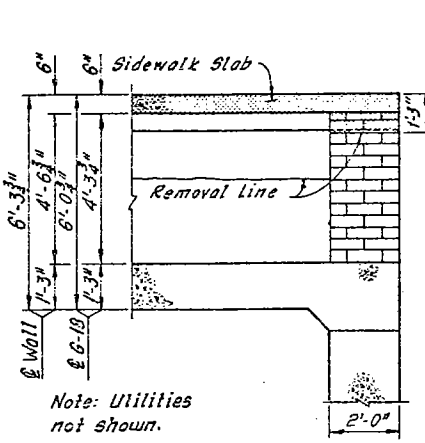
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
CLEVELAND

HNTB

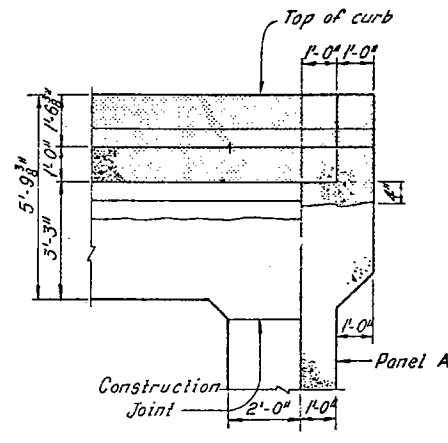
**REMOVAL PLANS
WEST ABUTMENT**
REHABILITATION OF THE
CARNEGIE AVENUE GRADE SEPARATION STRUCTURE
(S.R.10 OVER THE CLEVELAND UNION TERMINALS CO.
AND THE REGIONAL TRANSIT AUTHORITY)
BR. NO. CUY-10-1685 STA. 57+29.72
CUYAHOGA COUNTY OHIO STA. 58+25.70

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
DATE 3-18-21	DATE 10-11-21	DATE 7-7-21	DATE	DATE

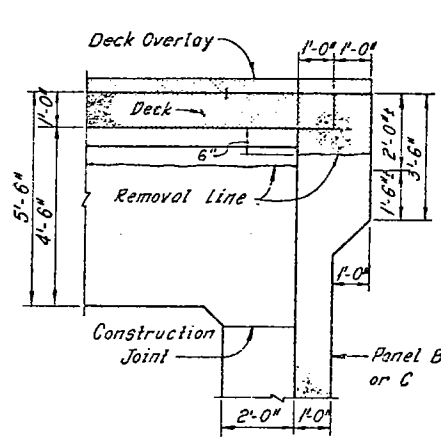
SHEET 8/31



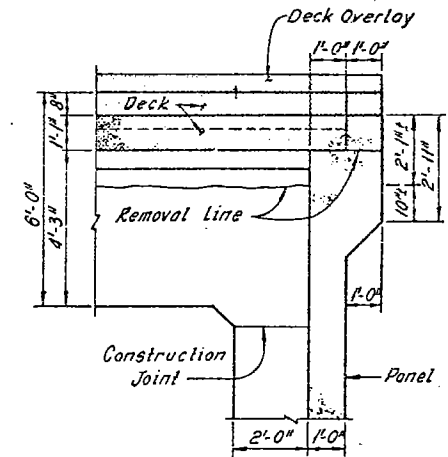
SECTION A-A



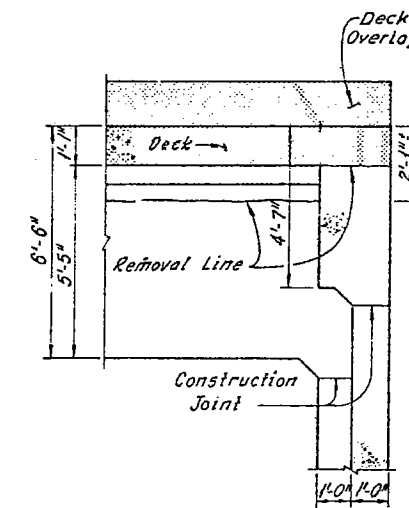
SECTION B-B



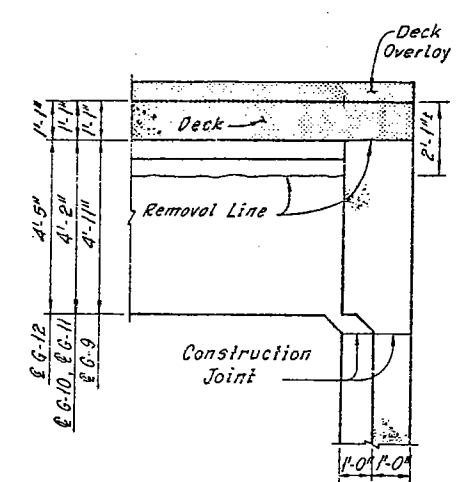
SECTION C-C



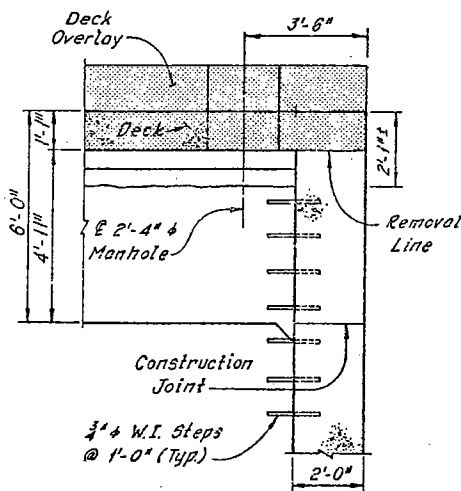
SECTION D-D



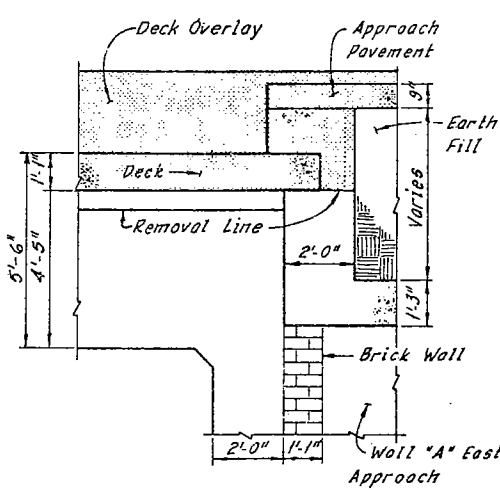
SECTION E-E



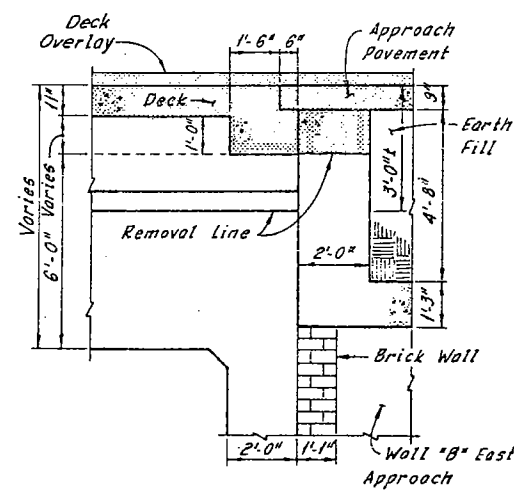
SECTION F-F



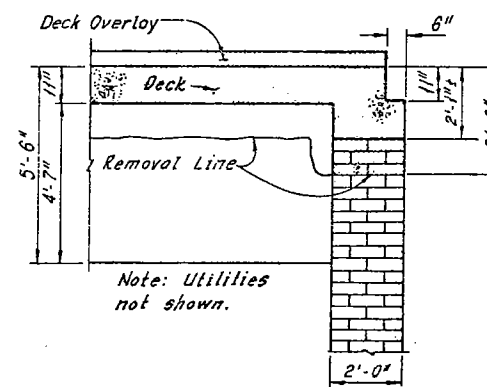
SECTION G-G



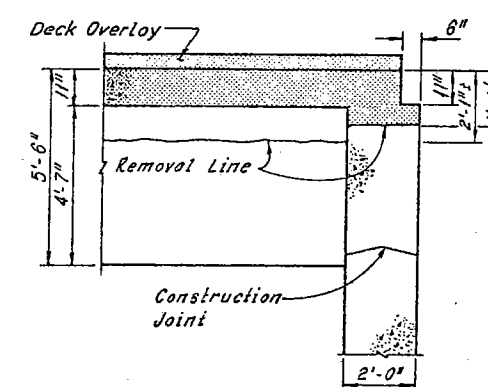
SECTION H-H



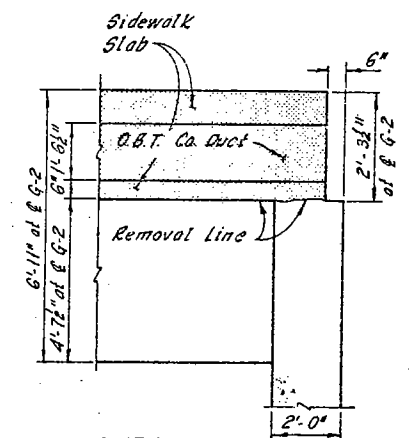
SECTION J-J



SECTION K-K



SECTION L-L



SECTION M-M

Note:
Existing reinforcement not shown. All existing vertical abutment reinforcement and all existing horizontal abutment reinforcement below the bottom of the new deck slab shall be retained as part of the new construction, except at new slab edge beams shown on Sheet 14/31. Horizontal reinforcement may be replaced in kind at no additional cost to the State.

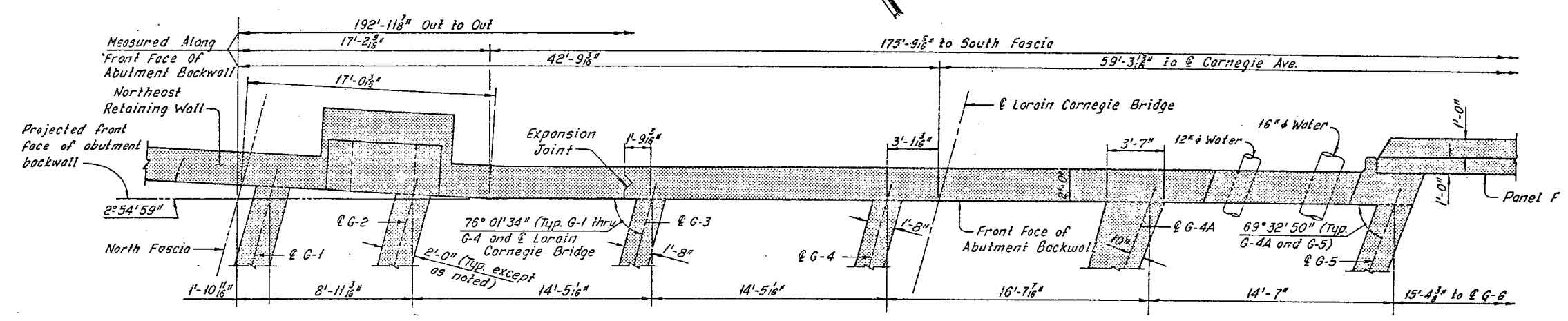
Notes:
Zip-a-tone indicates portions of structure to be removed.
For limits of existing girder removal, see Detail A, Sheet 5/31.
For location of Sections A-A thru F-F, see Sheet 7/31.
For location of Sections F-F thru M-M, see Sheet 8/31.

HNTB BRIDGE NO. 4		HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND		HNTB	
REMOVAL PLANS WEST ABUTMENT					
REHABILITATION OF THE CARNegie AVENUE GRADE SEPARATION STRUCTURE (S.R.10 OVER THE CLEVELAND UNION TERMINALS CO. AND THE REGIONAL TRANSIT AUTHORITY)					
BR. NO. CUY. -10-1685			STA. 57+29.72 STA. 58+85.70		
CUYAHOGA COUNTY			OHIO		
DRAWN BP	CHECKED BP	DATE 7.7.75	REVIEWED F3	DATE 7.7.75	REVISED
					SHEET 9/31

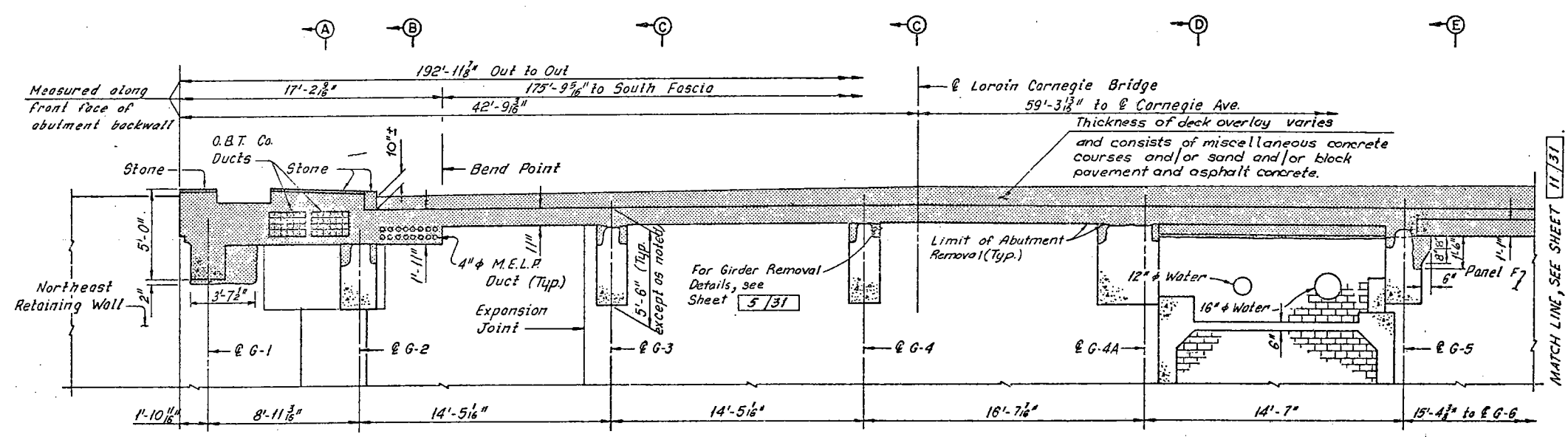
FHWA REGION	STATE	PROJECT
5	OHIO	

157
185

CUYAHOGA COUNTY
CUY-10-16.23



PART PLAN - EAST ABUTMENT
(Slab not shown)



PART ELEVATION - EAST ABUTMENT

Note:
All existing vertical abutment reinforcement and all existing horizontal abutment reinforcement below the bottom of the new deck slab shall be retained as part of the new construction, except at new slab edge beams shown on Sheet 16/31. Horizontal reinforcement may be replaced in kind at no additional cost to the State.

Notes:
Zip-a-tone indicates portions of the structure to be removed.
For Sections A-A thru E-E, see Sheet 12/31.
For modified East Abutment details, see Sheets 18/31 thru 19/31.
The following abbreviations are used:
Typ. = Typical
M.E.L.P. = Municipal Electric Light and Power
O.B.T. = Ohio Bell Telephone Company
C.E.I. = Cleveland Electric Illuminating Company

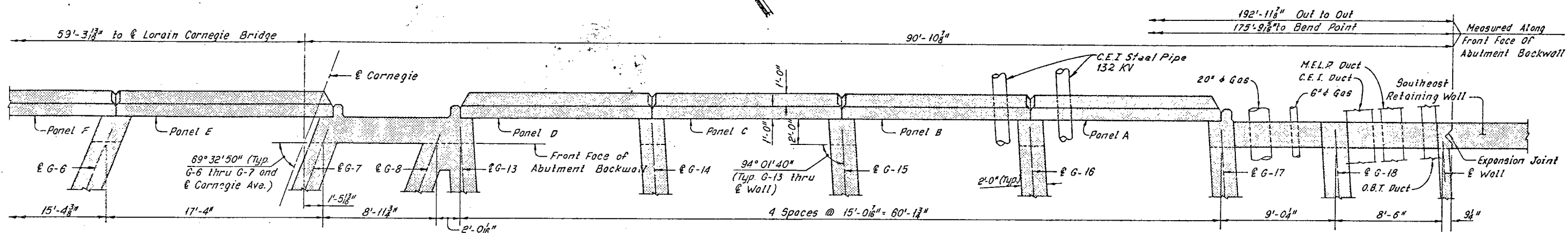
HNTB BRIDGE NO. 4

HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND		HNTB
REMOVAL PLANS EAST ABUTMENT		
REHABILITATION OF THE CARNEGIE AVENUE GRADE SEPARATION STRUCTURE (S.R.10 OVER THE CLEVELAND UNION TERMINALS CO. AND THE REGIONAL TRANSIT AUTHORITY)		
BR NO. CUY.-10-1685	STA. 57+29.72	STA. 58+85.70
CUYAHOGA COUNTY		OHIO
DRAWN 8/3	TRACED 3/3	CHECKED FB
DATE 3-17-35	DATE 6-22-35	DATE 7-7-35
REVIEWED	REVISED	SHEET 10/31

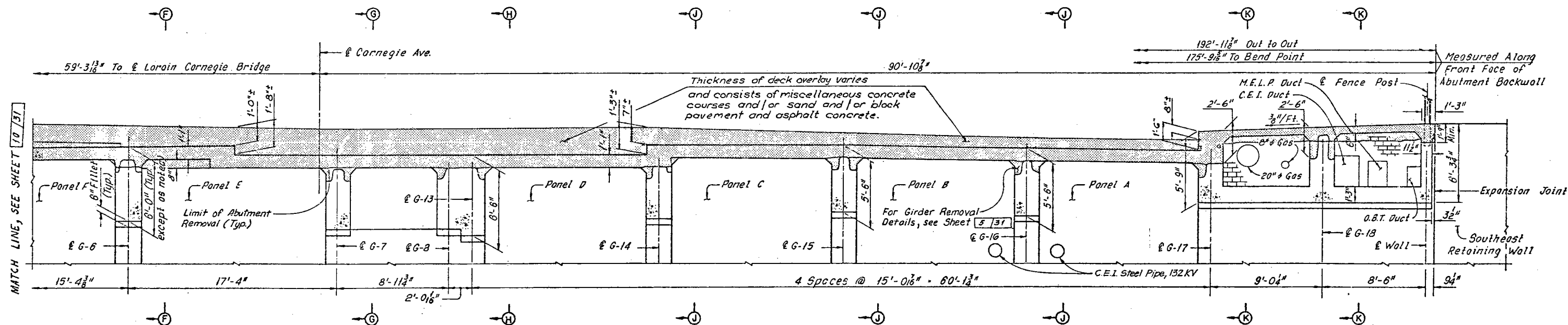
FHWA REGION	STATE	PROJECT
5	OHIO	

158
185

CUYAHOGA COUNTY
CUY-10-16.23



PART PLAN - EAST ABUTMENT
(Slab not shown)



PART ELEVATION - EAST ABUTMENT

Note:
All existing vertical abutment reinforcement and all existing horizontal abutment reinforcement below the bottom of the new deck slab shall be retained as part of the new construction, except at new slab edge beams shown on Sheet 16/31. Horizontal reinforcement may be replaced in kind at no additional cost to the State.

Notes:
Zip-a-tone indicates portions of the structure to be removed.
For Sections F-F thru K-K, see Sheet 12/31.
For modified East Abutment details, see Sheets 16/31 thru 18/31.
The following abbreviations are used:
Typ. = Typical
M.E.L.P. = Municipal Electric Light and Power
O.B.T. = Ohio Bell Telephone Company
C.E.I. = Cleveland Electric Illuminating Company
For stage construction, see Sheet 11/31.

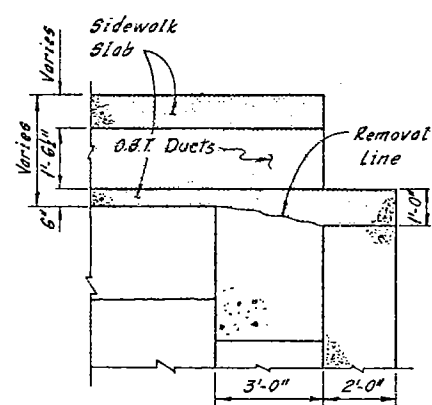
HNTB BRIDGE NO. 4

HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND		HNTB
REMOVAL PLANS EAST ABUTMENT		
REHABILITATION OF THE CARNEGIE AVENUE GRADE SEPARATION STRUCTURE (S.R.10 OVER THE CLEVELAND UNION TERMINALS CO. AND THE REGIONAL TRANSIT AUTHORITY)		
BR. NO. CUY-10-1685	STA. 57+29.72	STA. 58+85.70
CUYAHOGA COUNTY		OHIO
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DATE: 7-7-78	DATE: 7-7-78	DATE: 7-7-78
		SHEET 11/31

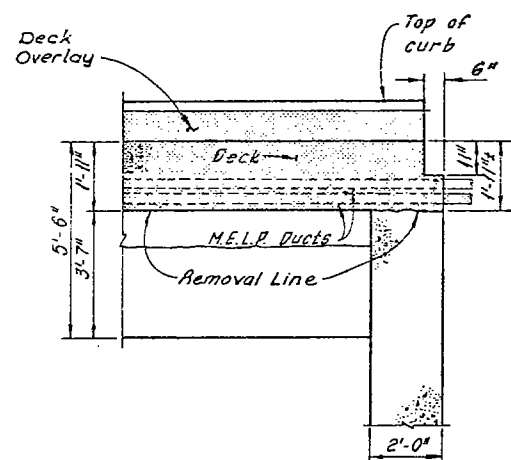
FHWA REGION	STATE	PROJECT
5	OHIO	

159
185

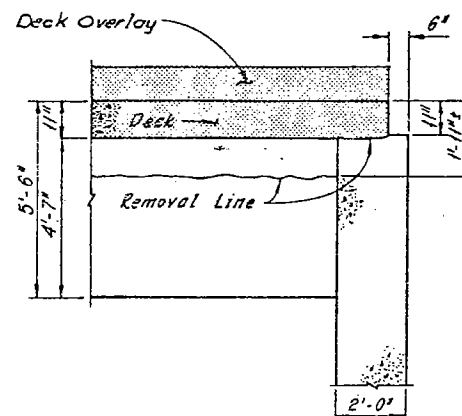
CUYAHOGA COUNTY
CUY-10-16.23



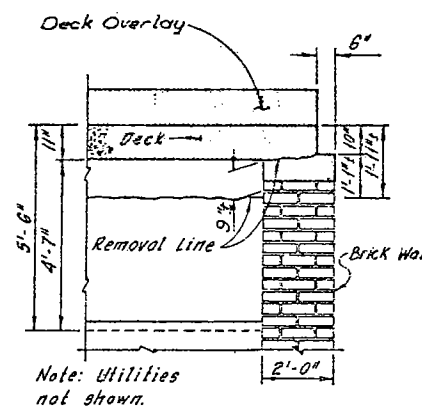
SECTION A-A



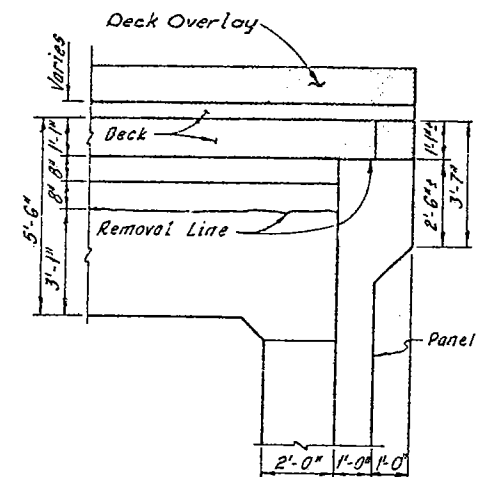
SECTION B-B



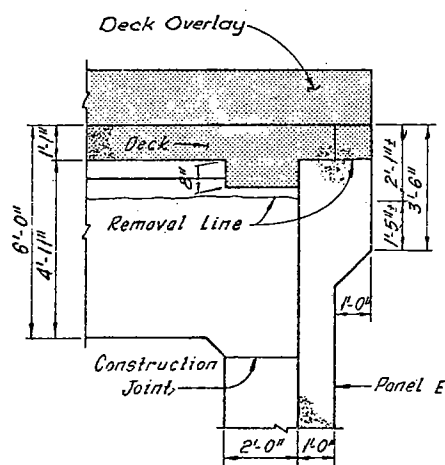
SECTION C-C



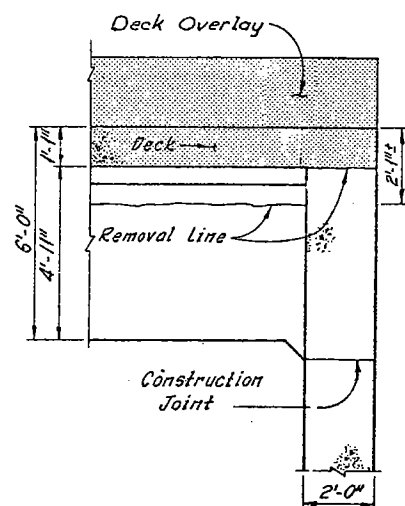
SECTION D-D



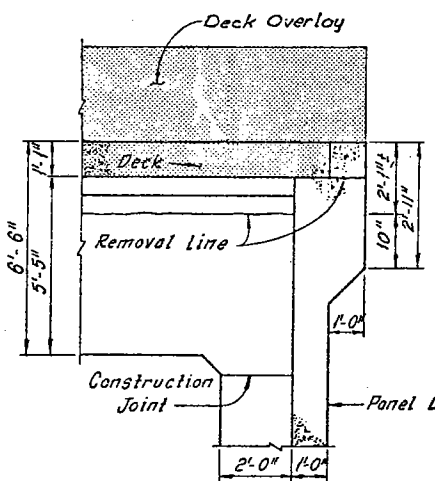
SECTION E-E



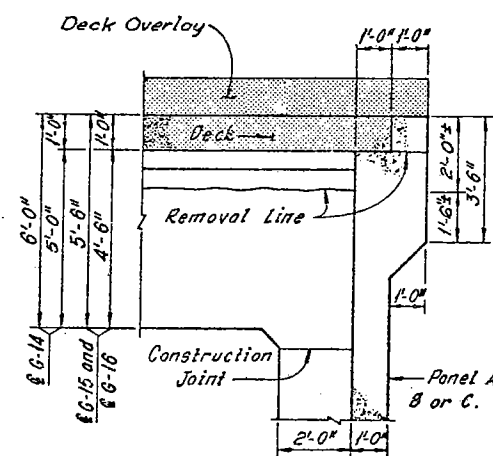
SECTION F-F



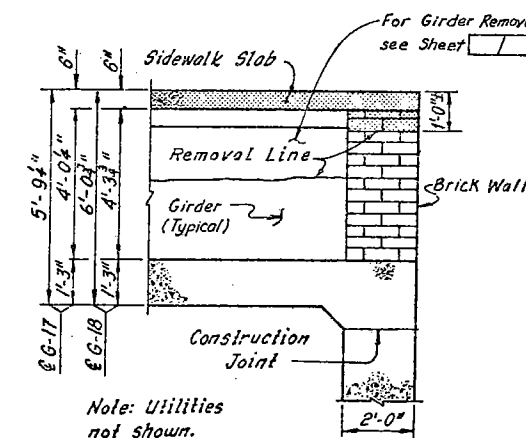
SECTION G-G



SECTION H-H



SECTION J-J



SECTION K-K

Note:
Existing reinforcement not shown. All existing vertical abutment reinforcement and all existing horizontal abutment reinforcement below the bottom of the new deck slab shall be retained as part of the new construction, except at new slab edge beams shown on Sheet 16/31. Horizontal reinforcement may be replaced in kind at no additional cost to the State.

Notes:
Zip-a-tone indicates portions of structure to be removed.
For limits of existing girder removal, see Detail A, Sheet 5/31.
For location of Sections A-A thru E-E, see Sheet 10/31.
For location of Sections F-F thru K-K, see Sheet 11/31.

HNTB BRIDGE NO. 4

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
CLEVELAND

HNTB

REMOVAL PLANS
EAST ABUTMENT
REHABILITATION OF THE
CARNEGIE AVENUE GRADE SEPARATION STRUCTURE
(S.R.10 OVER THE CLEVELAND UNION TERMINALS CO.
AND THE REGIONAL TRANSIT AUTHORITY)
BR. NO. CUY.-10-1685 STA. 57+29.72
STA. 58+85.70
OHIO

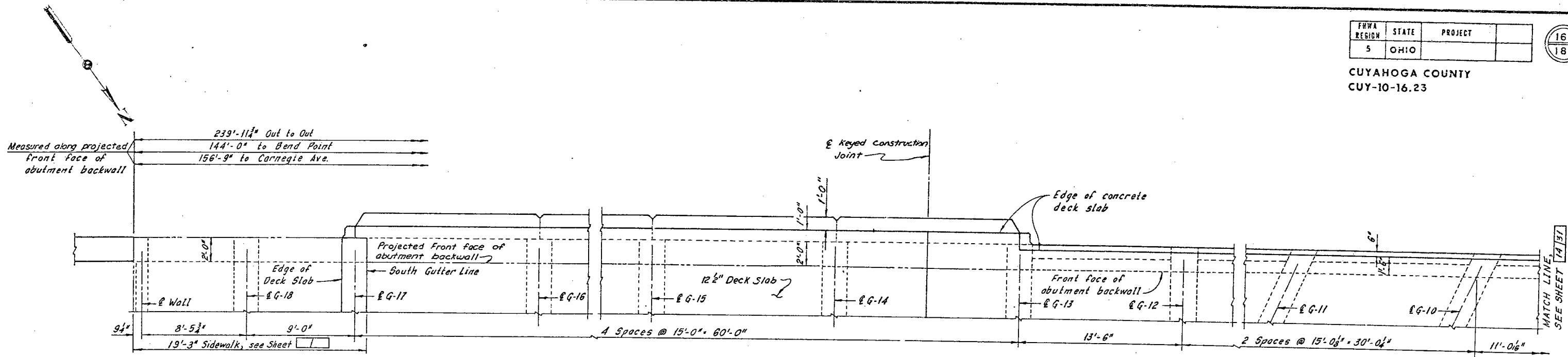
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SP	F2	F2		
DATE: 11-75	DATE: 10-25	DATE: 2-75	DATE:	DATE:

SHEET 12/31

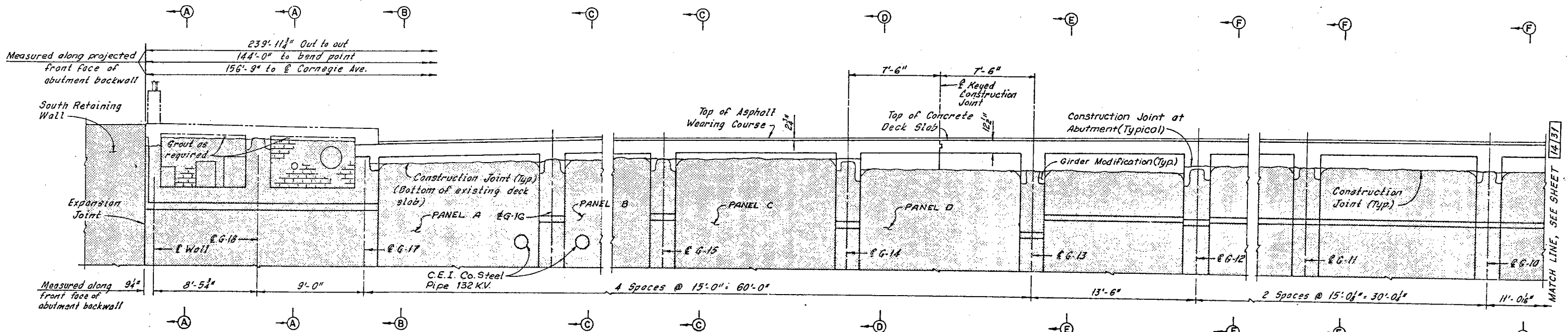
FHWA REGION	STATE	PROJECT	
5	OHIO		

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185

CUYAHOGA COUNTY
CUI-10-16.23



PART PLAN - WEST ABUTMENT



PART ELEVATION - WEST ABUTMENT

(Deck slab, girder and retained abutment reinforcement not shown)

Notes:

- Zip-a-tone indicates existing structure.
- For removal of West Abutment, see Sheets 7/31 thru 9/31.
- For Typical Girder Modification Repair, see Sheet 23/31.
- For Sections A-A thru F-F, see Sheet 15/31.
- For Sidewalk Details, see Sheet 27/31.
- For Stage Construction, see Sheet 1/31.
- For Contour Plan, see Sheet 30/31.

HNTB BRIDGE NO. 4

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
CLEVELAND

HNTB

PART MODIFIED PLAN AND ELEVATION
WEST ABUTMENT
REHABILITATION OF THE
CARNEGIE AVENUE GRADE SEPARATION STRUCTURE
(S.R.10 OVER THE CLEVELAND UNION TERMINALS CO.
AND THE REGIONAL TRANSIT AUTHORITY)
BR. NO. CUY. 10-1685 STA. 57+29.72
STA. 58+85.70

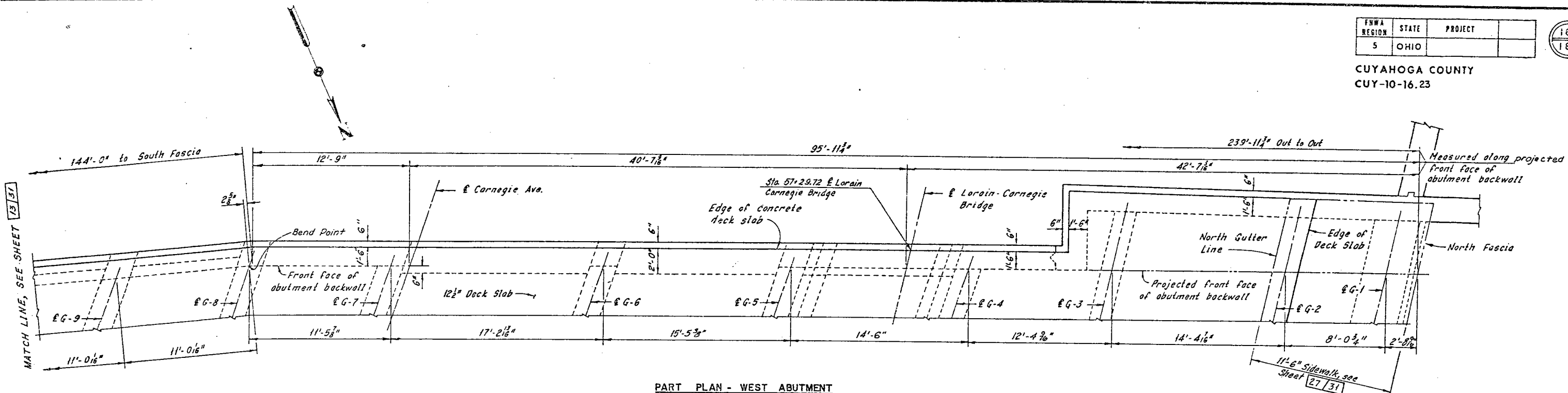
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DATE 12-2-72	DATE 12-2-72	DATE 2-27-73	DATE	DATE

SHEET 13/31

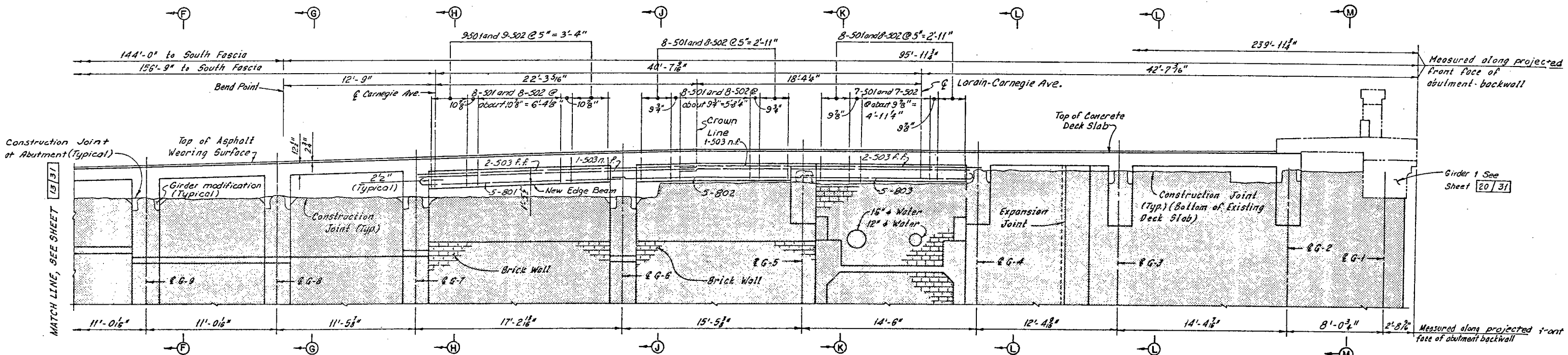
FHWA REGION	STATE	PROJECT
5	OHIO	

161
185

CUYAHOGA COUNTY
CUY-10-16.23



PART PLAN - WEST ABUTMENT



PART ELEVATION - WEST ABUTMENT
(Deck slab, girder and retained abutment reinforcement not shown)

Note:
All reinforcing bar marks shall be prefixed MA.

Notes:
Zip-a-tone indicates existing structure.
Phantom lines indicate new construction details of which are shown elsewhere in these plans.
For Sections F-F thru M-M, see Sheet 15/31.
For Reinforcement Schedule, see Sheet R/4.
For Stage Construction, see Sheet 7/31.
For Contour Plan, see Sheet 30/31.
For additional notes, see Sheet 13/31.

HNTB BRIDGE NO. 4

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
CLEVELAND

HNTB

PART MODIFIED PLAN AND ELEVATION
WEST ABUTMENT

REHABILITATION OF THE
CARNEGIE AVENUE GRADE SEPARATION STRUCTURE
(S.R.10 OVER THE CLEVELAND UNION TERMINALS CO.
AND THE REGIONAL TRANSIT AUTHORITY)

BR. NO. CUY.-10-1685 STA. 57+29.72
CUYAHOGA COUNTY STA. 58+85.70
OHIO

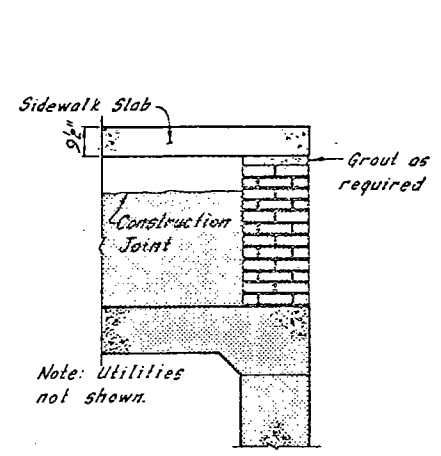
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DATE 2-24-78	DATE 3-7-78	DATE 3-22-78	DATE	DATE

SHEET 14/31

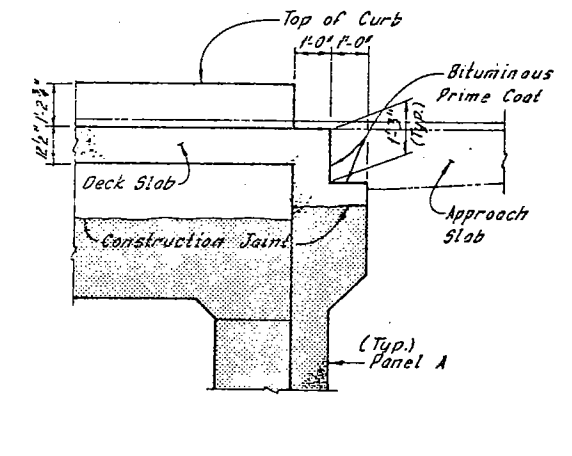
FHWA REGION	STATE	PROJECT
5	OHIO	

162
185

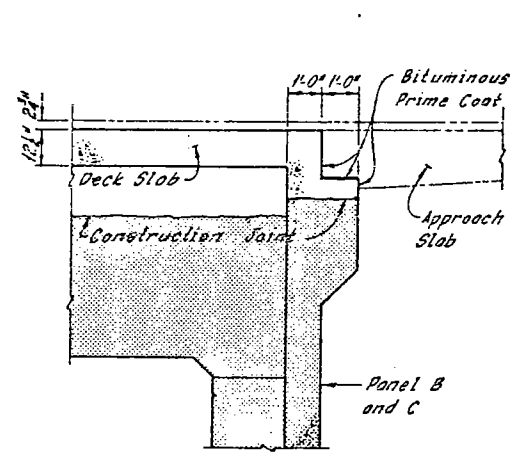
CUYAHOGA COUNTY
CUY-10-16.23



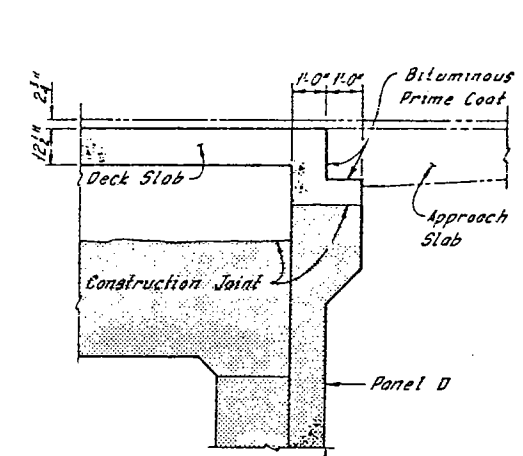
SECTION A-A



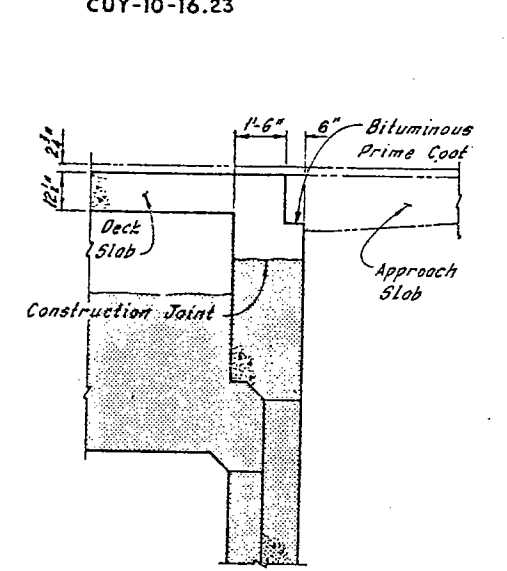
SECTION B-B



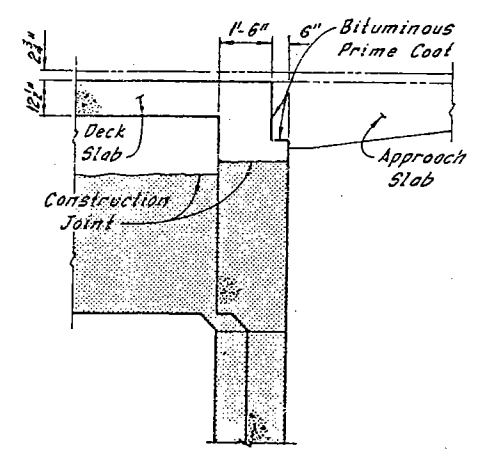
SECTION C-C



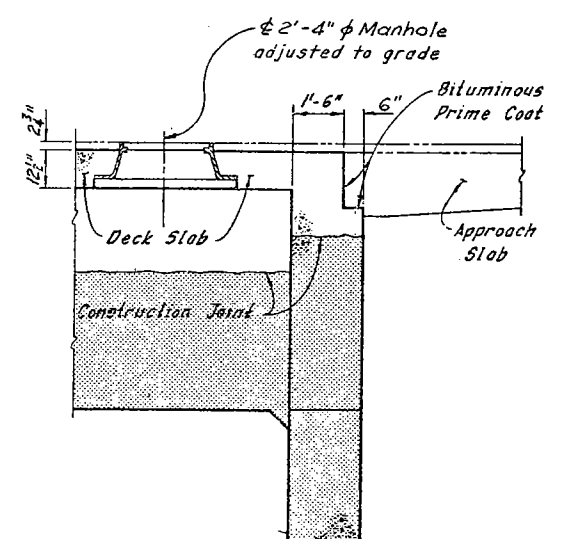
SECTION D-D



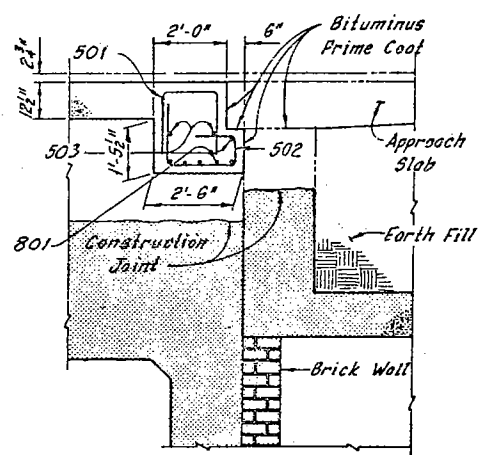
SECTION E-E



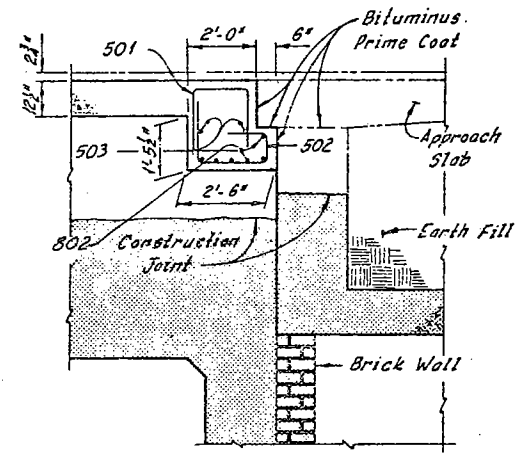
SECTION F-F



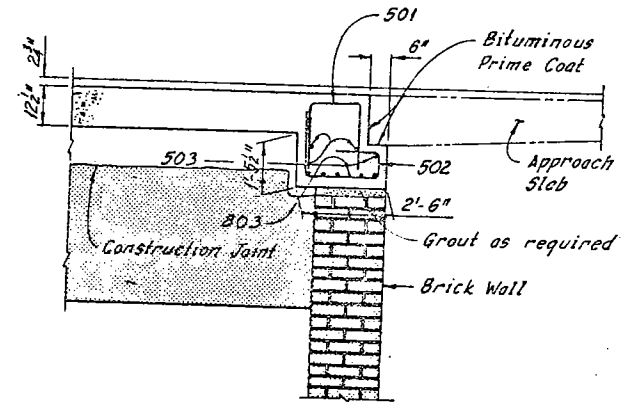
SECTION G-G



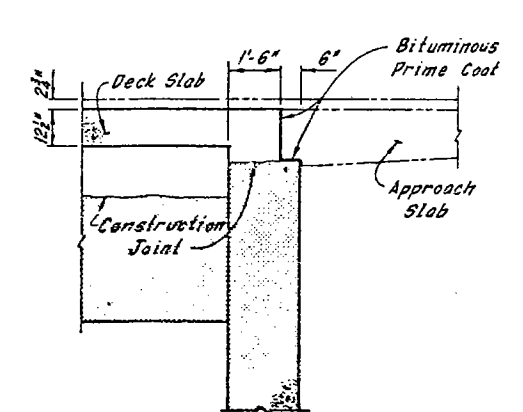
SECTION H-H



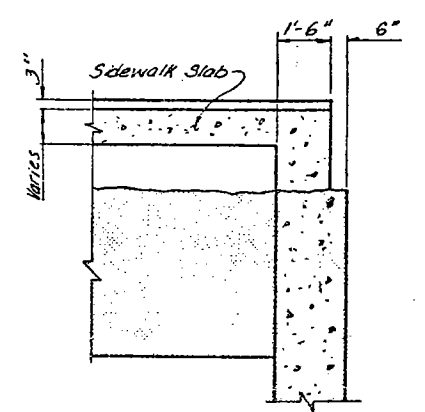
SECTION J-J



SECTION K-K



SECTION L-L



SECTION M-M

Note: All reinforcing bar marks shall be prefixed WA.

Notes:
 Zip-tone indicates existing structure.
 Sidewalk, deck, girder and retained existing abutment reinforcement is not shown.
 For location of Sections A-A thru F-F, see Sheet 13/31.
 For location of Sections G-G thru M-M, see Sheet 14/31.
 For manhole locations, see Sheet 26/31.
 The cost of grouting shall be included with the unit price bid for Item 511, Class C Concrete, Abutments Above Footings, for payment.
 For Reinforcement Schedule, see Sheet R/R.

HNTB BRIDGE NO. 4

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
CLEVELAND

HNTB

MODIFIED TYPICAL CROSS SECTIONS
WEST ABUTMENT

REHABILITATION OF THE
CARNEGIE AVENUE GRADE SEPARATION STRUCTURE
(S.R.10 OVER THE CLEVELAND UNION TERMINALS CO.
AND THE REGIONAL TRANSIT AUTHORITY)

BR. NO. CUY. -10-1685 STA. 57+29.72
STA. 58+85.70

CUYAHOGA COUNTY OHIO

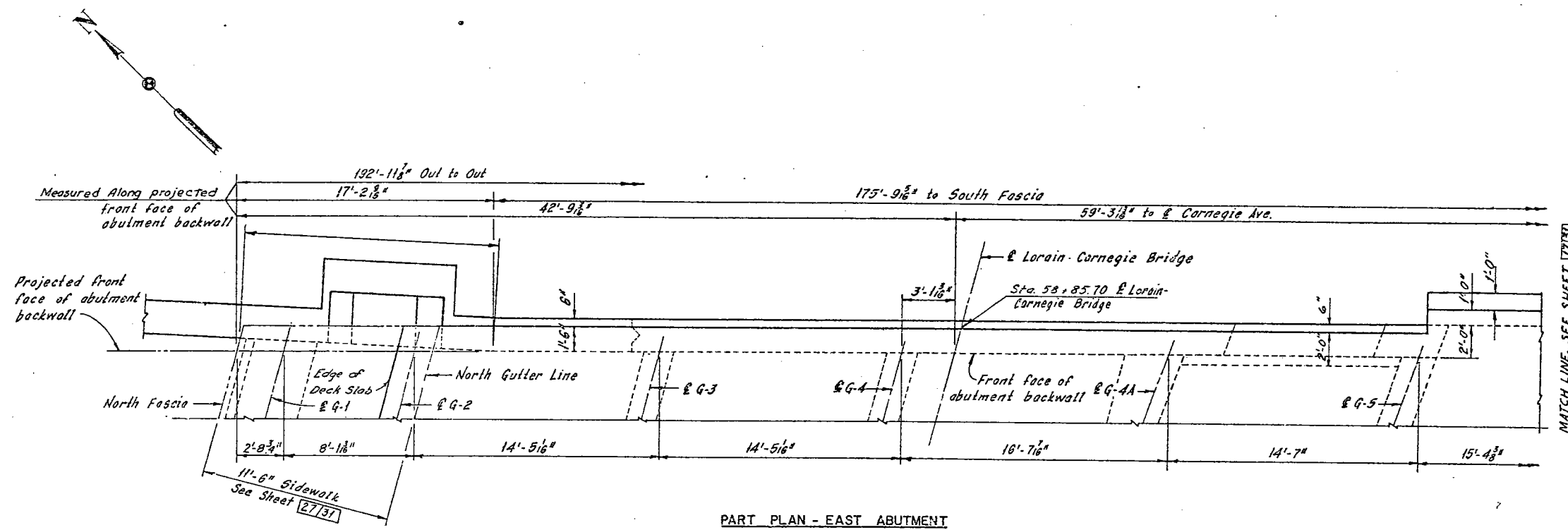
DRAWN	TRACED	CHECKED	REVIEWED	REVISED
WJT	CWB	RAS		
DATE 8-24-83	DATE 8-27-83	DATE 2-7-84	DATE	DATE

SHEET 15/31

FHWA REGION	STATE	PROJECT
5	OHIO	

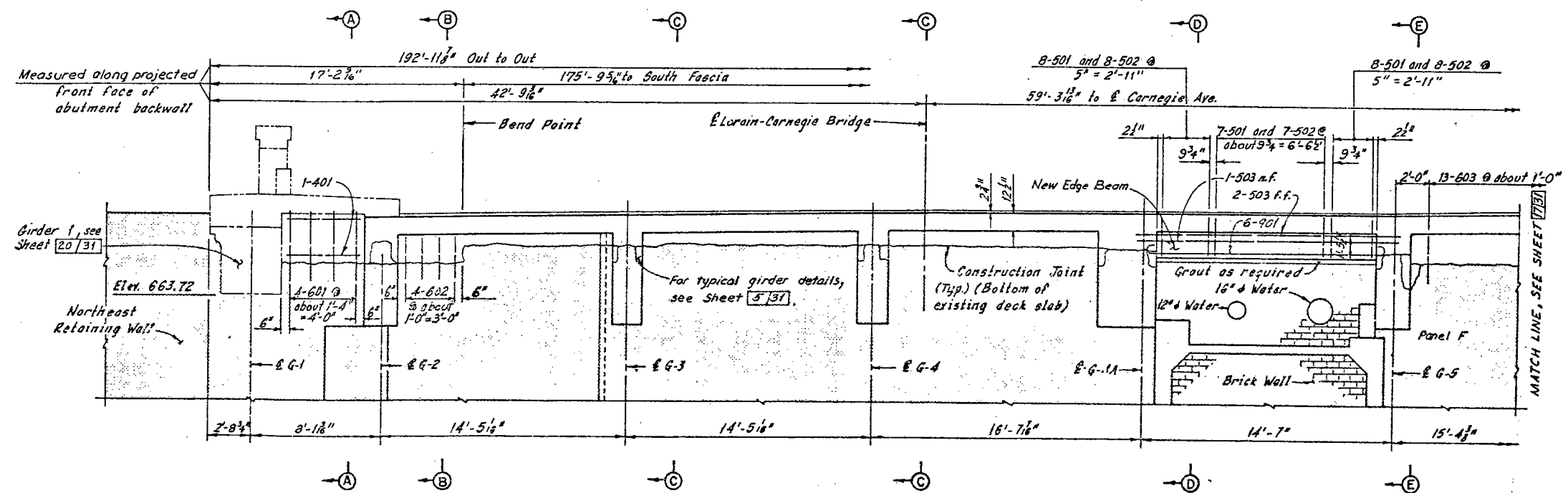
163
185

CUYAHOGA COUNTY
CUY-10-16.23



PART PLAN - EAST ABUTMENT

Note:
All reinforcing bar marks shall be prefixed EA.



PART ELEVATION - EAST ABUTMENT
(Deck slab, girder and retained abutment reinforcement not shown)

Notes:
Zip-a-tone indicates existing structure.
Phantom lines indicate new construction details of which are shown elsewhere on these plans.
For Removal of East Abutment, see Sheets 10/31 thru 12/31.
For Typical Girder Repair, see Sheet 23/31.
For Approach Slab Details, see roadway plans.
For Sections A-A thru E-E, see Sheet 18/31.
For Contour Plan, see Sheet 30/31.
For reinforcement schedule see Sheet R/4.

HNTB BRIDGE NO. 4

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
CLEVELAND

HNTB

PART MODIFIED PLAN AND ELEVATION
EAST ABUTMENT
REHABILITATION OF THE
CARNEGIE AVENUE GRADE SEPARATION STRUCTURE
(S.R.10 OVER THE CLEVELAND UNION TERMINALS CO.
AND THE REGIONAL TRANSIT AUTHORITY).
BR. NO. CUY-10-1685 STA. 57+29.72
CUYAHOGA COUNTY STA. 58+85.70
OHIO

DRAWN AJT	TRACED DES	CHECKED RAS	REVIEWED	REVISED
DATE: 10-14-78	DATE: 10-15-78	DATE: 9-22-78	DATE	DATE

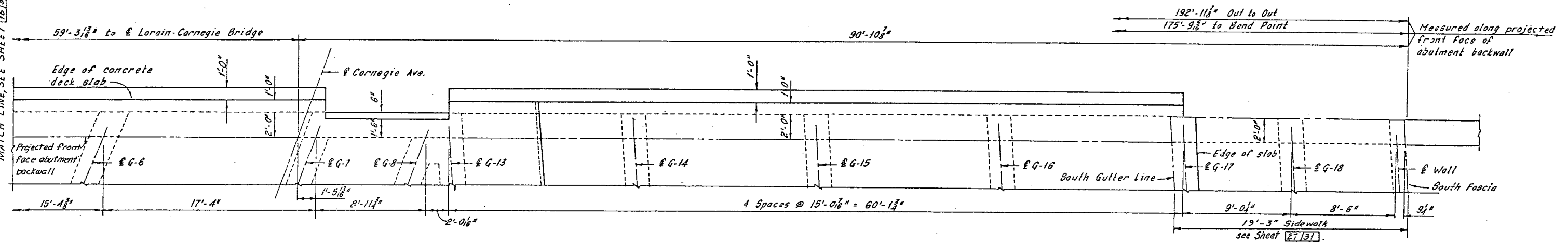
SHEET 16/31

FHWA REGION	STATE	PROJECT
5	OHIO	

184
185

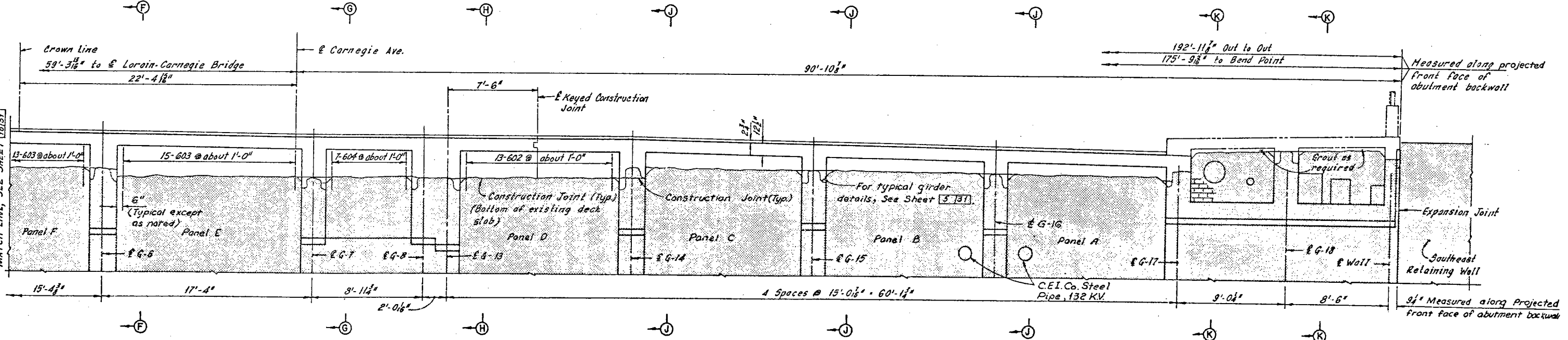
CUYAHOGA COUNTY
CUY-10-16.23

MATCH LINE, SEE SHEET 183



PART PLAN - EAST ABUTMENT

MATCH LINE, SEE SHEET 183



PART ELEVATION - EAST ABUTMENT
(Deck slab, girder, and retained abutment reinforcement not shown)

Note:
All reinforcing bar marks
shall be prefixed EA.

- Notes:
- Zip-o-tone indicates existing structures.
 - For Removal of East Abutment, see Sheets 10/31 thru 12/31.
 - For Typical Girder Repair, see Sheet 23/31.
 - For Approach Slab Details, see roadway plans.
 - For Sections F-F thru K-K, see Sheet 18/31.
 - For Contour Plan, see Sheet 30/31.
 - For reinforcement schedule, see Sheet R/4.

HNTB BRIDGE NO. 4

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
CLEVELAND

HNTB

PART MODIFIED PLAN AND ELEVATION
EAST ABUTMENT
REHABILITATION OF THE
CARNEGIE AVENUE GRADE SEPARATION STRUCTURE
(S.R.10 OVER THE CLEVELAND UNION TERMINALS CO.
AND THE REGIONAL TRANSIT AUTHORITY)
BR. NO. CUY-10-1625 STA. 57+29.72
CUYAHOGA COUNTY STA. 58+85.70
OHIO

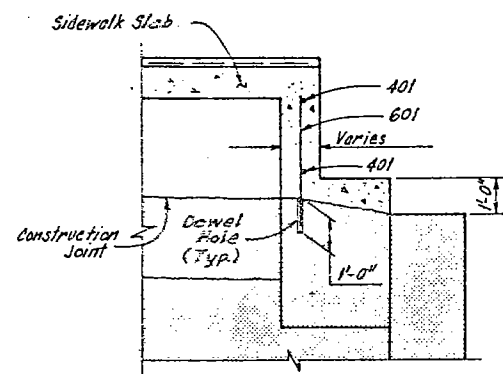
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DATE 10/78	DATE 11/78	DATE 12/78	DATE	DATE

SHEET 17/31

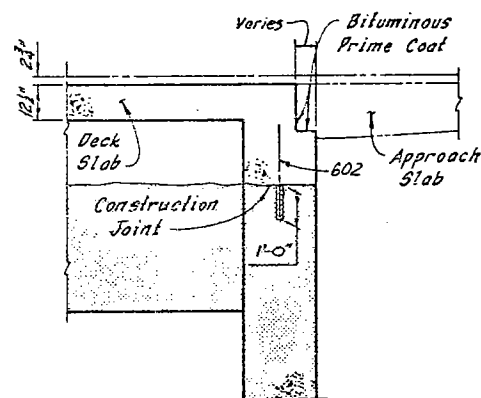
FHWA REGION	STATE	PROJECT
5	OHIO	

165
185

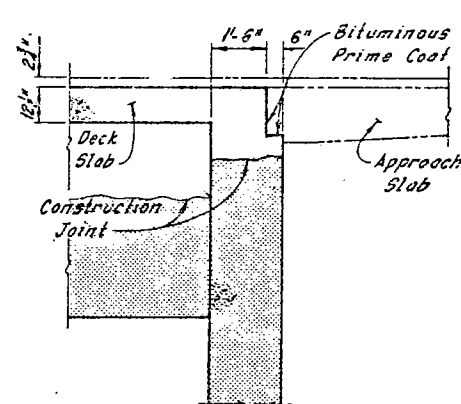
CUYAHOGA COUNTY
CUY-10-16.23



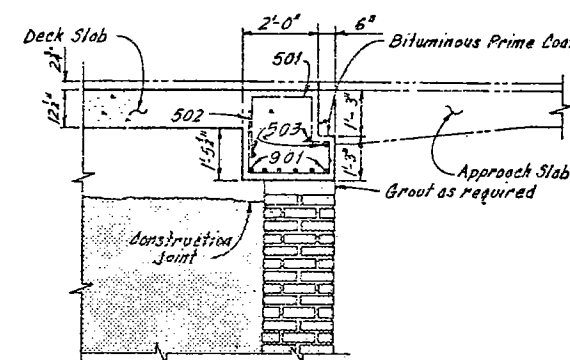
SECTION A-A



SECTION B-B

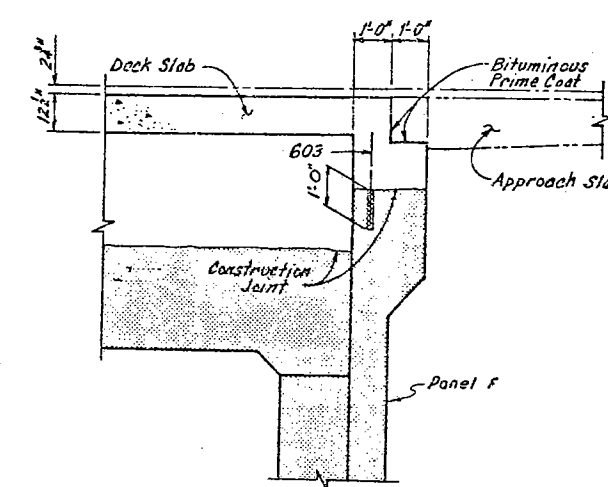


SECTION C-C

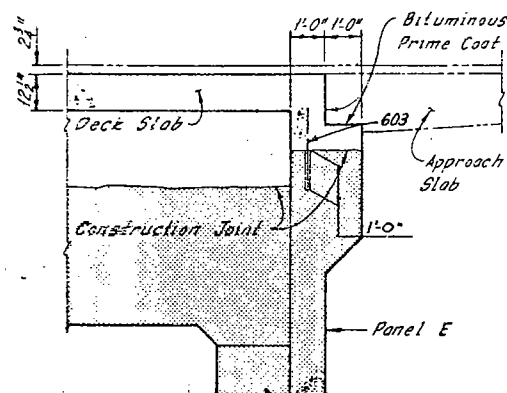


Note: Utilities not shown.

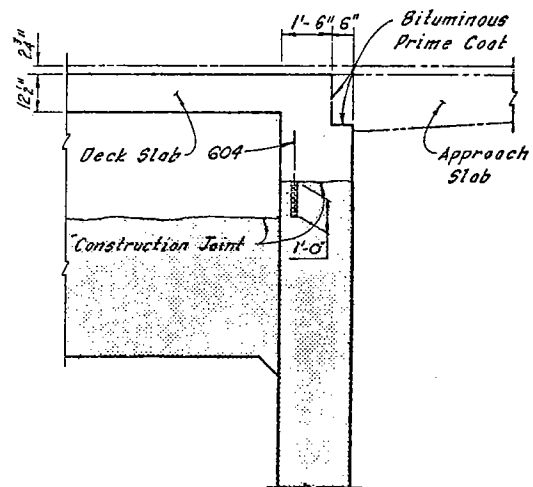
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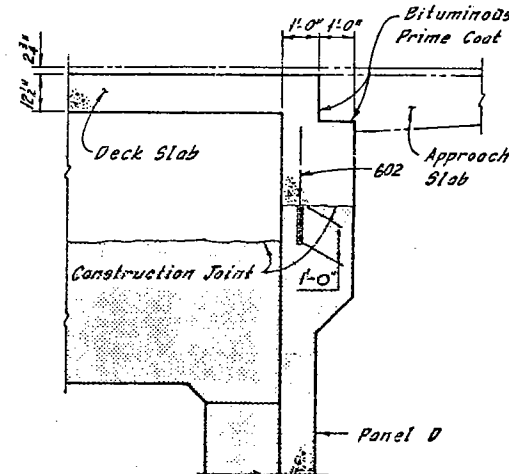
SECTION E-E



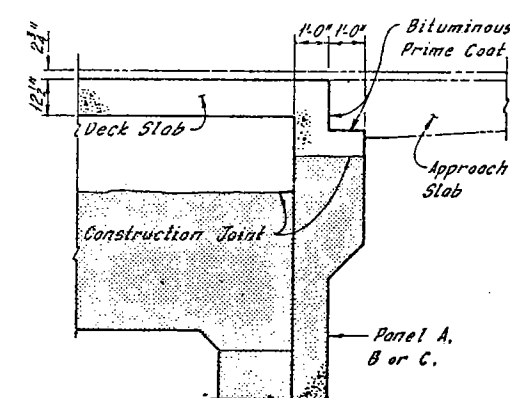
SECTION F-F



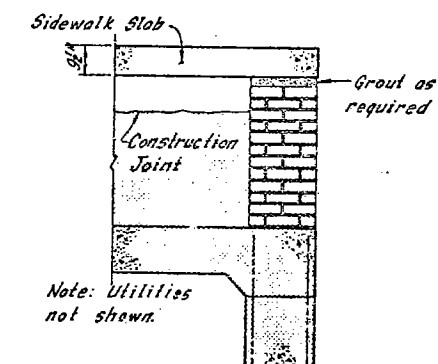
SECTION G-G



SECTION H-H



SECTION J-J



SECTION K-K

Note:
All reinforcing bar marks shall be prefixed EA.

Notes:
Zip-tone indicates existing structures.
Sidewalk, deck, existing girder and retained abutment reinforcement is not shown.
The cost of grouting shall be included with the unit price bid for Item 511, Class C Concrete, Abutments Above Footings, for payment.
For reinforcement schedule see Sheet R/4.

HNTB BRIDGE NO. 4

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
CLEVELAND

HNTB

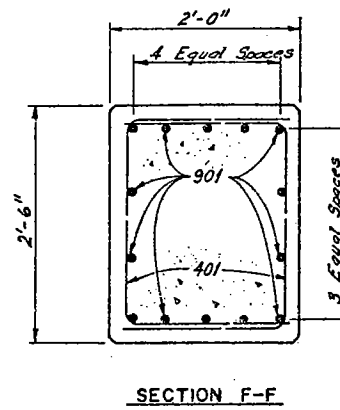
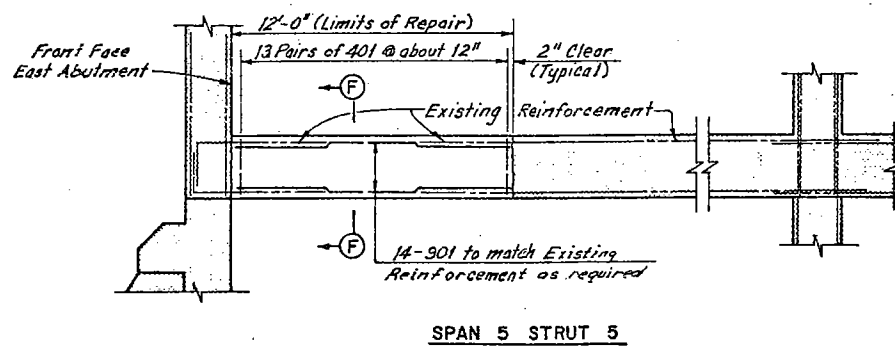
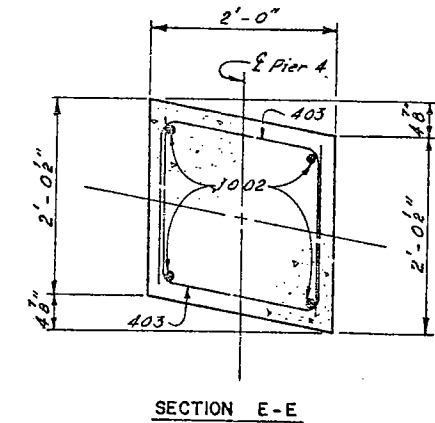
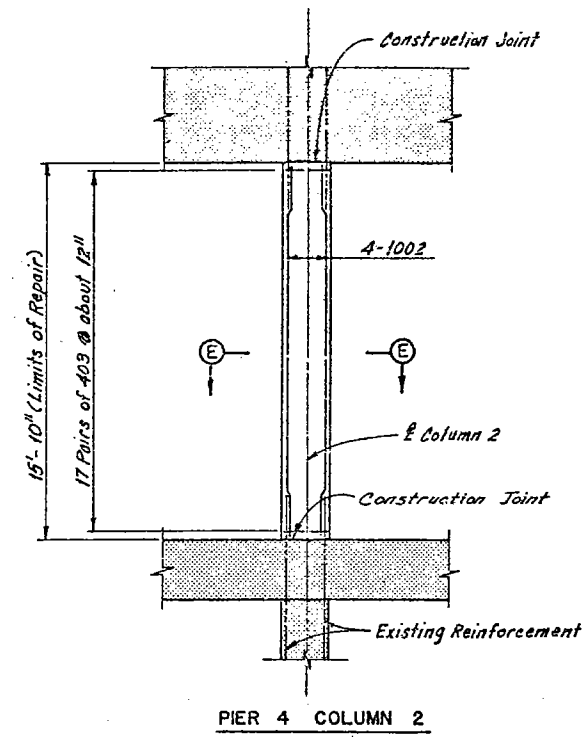
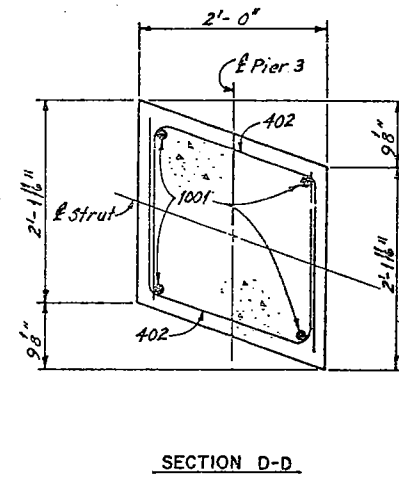
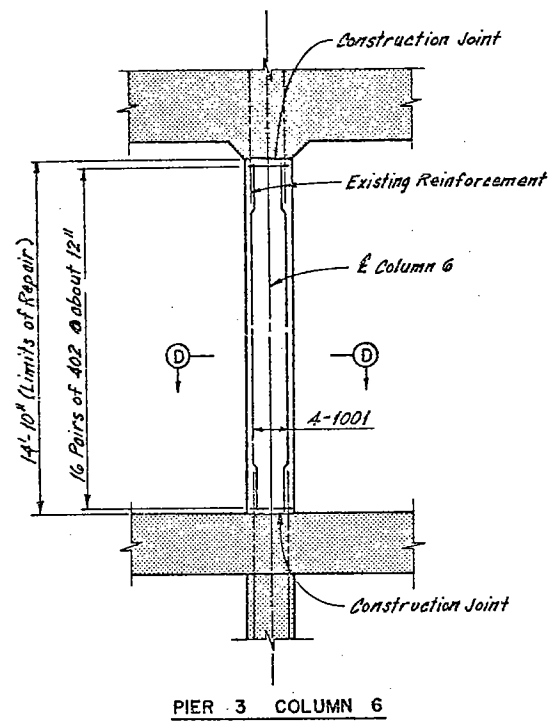
MODIFIED TYPICAL CROSS SECTIONS
EAST ABUTMENT
REHABILITATION OF THE
CARNegie AVENUE GRADE SEPARATION STRUCTURE
(S.R. 10 OVER THE CLEVELAND UNION TERMINALS CO.
AND THE REGIONAL TRANSIT AUTHORITY)
BR. NO. CUY-10-1685 STA. 57+29.72
CUYAHOGA COUNTY STA. 58+85.70 OHIO

DRAWN A/T	TRACED DES	CHECKED R.F.S	REVIEWED DATE	REVISED
DATE: 11-78	DATE: 12-78	DATE: 12-78	DATE	SHEET 15/31

FHWA REGION	STATE	PROJECT	
5	OHIO		

166
185

CUYAHOGA COUNTY
CUY-10-16.23



Notes:
 Zip-a-tone indicates existing structure.
 For strut and column removal details, see Sheet 6/31.
 For reinforcement schedule, see Sheet R/S.

Note: All reinforcing bar marks shall be prefixed SC.

HNTB BRIDGE NO. 4

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
CLEVELAND

HNTB

STRUT AND COLUMN REPAIR DETAILS

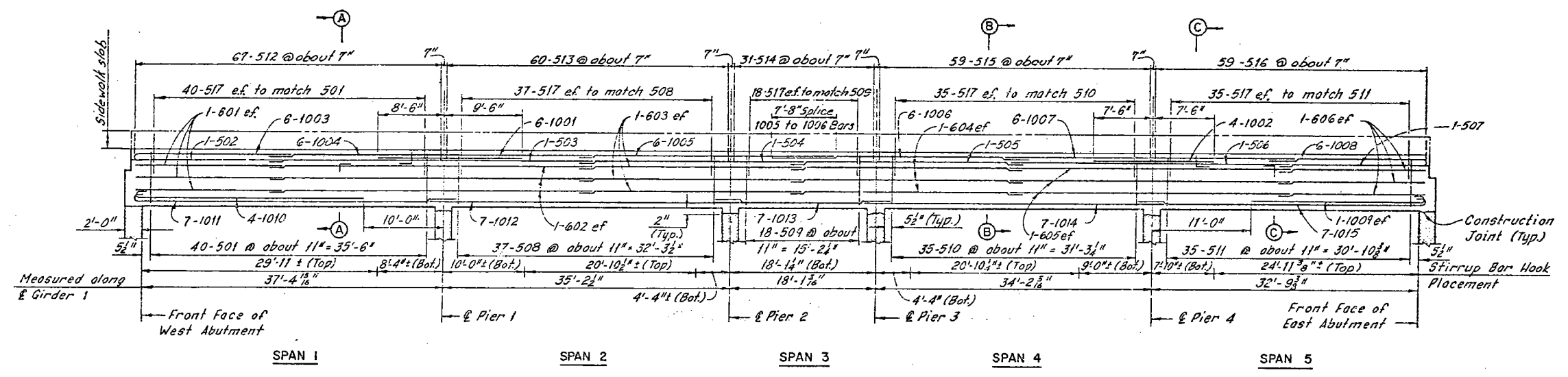
REHABILITATION OF THE
CARNEGIE AVENUE GRADE SEPARATION STRUCTURE
(S.R. 10 OVER THE CLEVELAND UNION TERMINALS CO.
AND THE REGIONAL TRANSIT AUTHORITY)

BR. NO. CUY-10-1685 STA. 57+29.72
STA. 58+85.70

CUYAHOGA COUNTY OHIO

DRAWN AUT DATE 8-1-75	TRACED DES DATE 8-3-75	CHECKED RAS DATE 9-6-75	REVIEWED DATE	REVISED
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SHEET 19/31



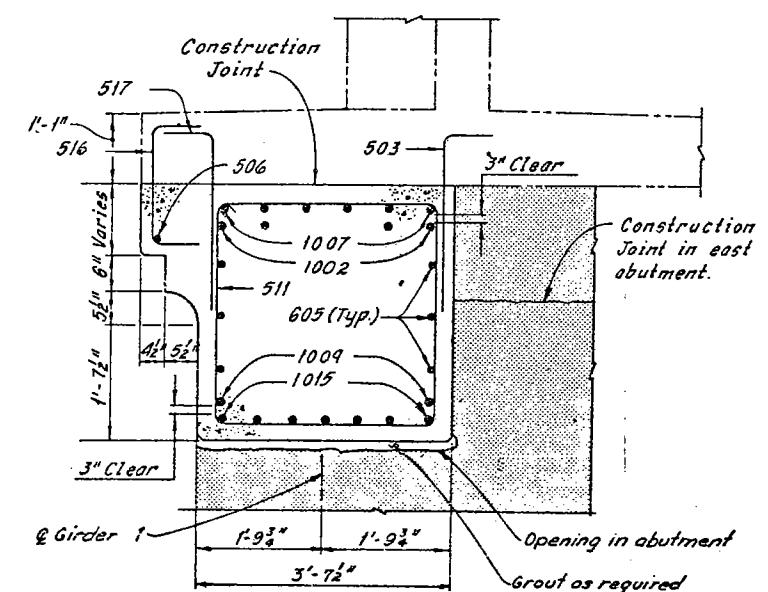
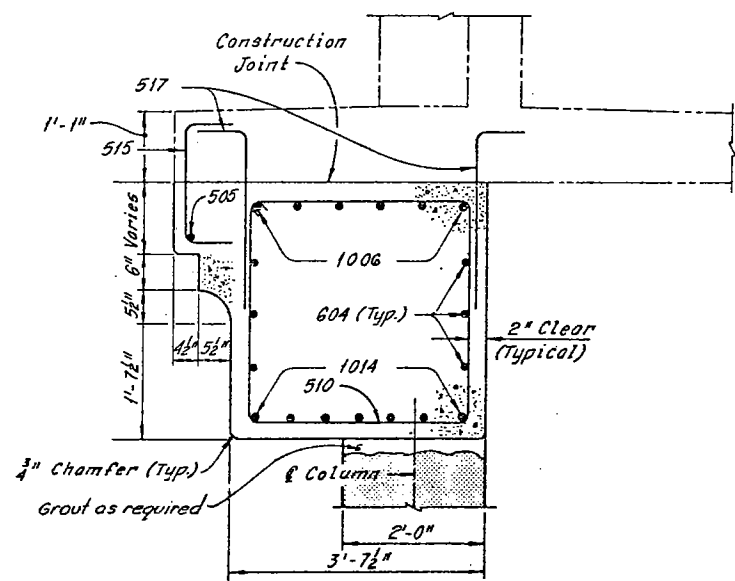
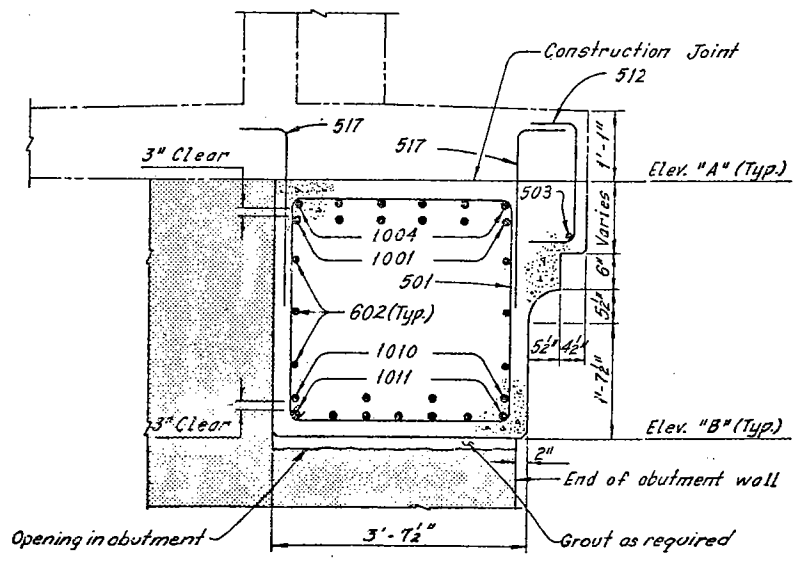
GIRDER ELEVATION
(Looking North)

Note: All reinforcing bar marks shall be prefixed GM.

MINIMUM LAP LENGTHS (Except as noted)	
Bar No.	Lengths
5	1' - 7"
6	1' - 11"
10	3' - 2"

GIRDER DEPTH		
Location	Elev. A	Elev. B
* Front face of west abutment	670.95	667.60
& Pier 1	670.27	666.83
& Pier 2	669.62	666.13
& Pier 3	669.36	665.77
& Pier 4	668.91	665.07
* Front face of east abutment	668.48	663.72

* Given to the actual front face of abutment backwall



Notes:
Zip-a-tone indicates existing structure. Phantom lines indicate new construction, details of which are shown elsewhere in these plans.
For Removal Plans, see Sheets 4/31
For Sidewalk Plans, see Sheets 27/31
For Reinforcement Schedule, see Sheet R/S
The following abbreviations are used:
Typ. = Typical Bot. = Bottom
e.f. = each face f.f. = far face
The cost of grouting shall be included with the unit price bid for Item 511, Class C Concrete, Abutments Above Footings, for payment.

FNTB BRIDGE NO. 4

HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND

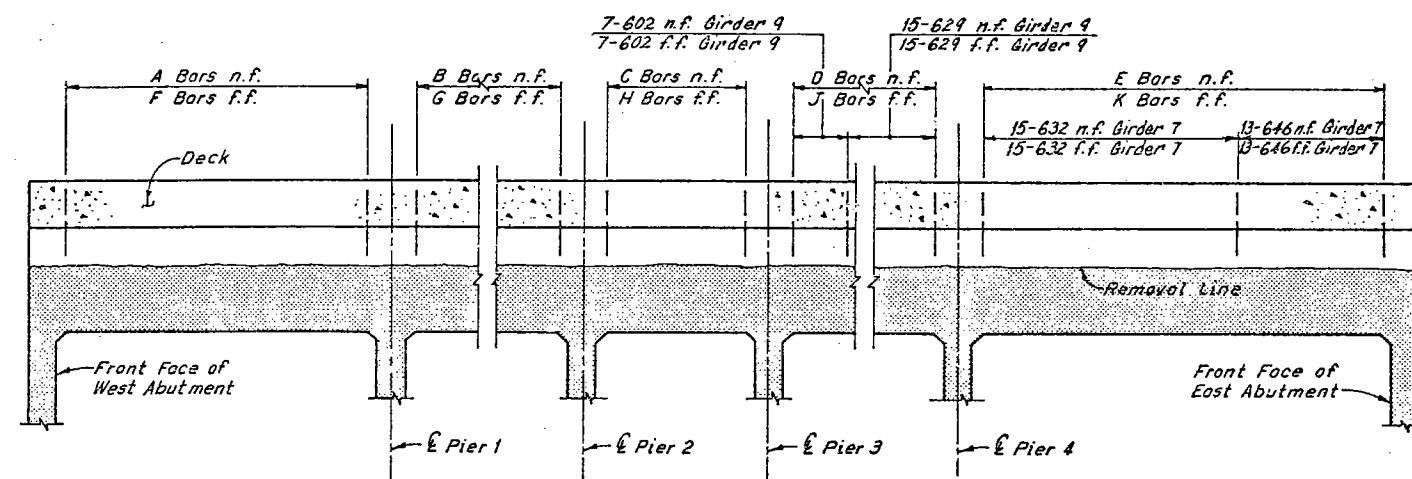
HNTB

GIRDER-I REPLACEMENT

REHABILITATION OF THE CARNEGIE AVENUE GRADE SEPARATION STRUCTURE (S.R. 10 OVER THE CLEVELAND UNION TERMINALS CO. AND THE REGIONAL TRANSIT AUTHORITY) BR. NO. CUY. -10-1685 STA. 57+29.72 STA. 58+85.70 CUYAHOGA COUNTY OHIO

DRAWN BY	TRACED BY	CHECKED BY	REVIEWED BY	REVISED BY
DATE 7-28-72	DATE 8-1-72	DATE 9-7-72	DATE	DATE

SHEET 20/31



Note:
Reinforcing bars shall be spaced to match existing girder reinforcement.

TYPICAL GIRDER ELEVATION
(Existing Girder reinforcement and new slab reinforcement not shown)

GIRDER	BAR A		BAR B		BAR C		BAR D		BAR E		BAR F		BAR G		BAR H		BAR J		BAR K	
	NO.	MARK	NO.	MARK	NO.	MARK	NO.	MARK	NO.	MARK	NO.	MARK	NO.	MARK	NO.	MARK	NO.	MARK	NO.	MARK
2	24	602	22	602	4	605	1 Ser. 16	607	1 Ser. 16	609	24	601	22	601	4	603	1 Ser. 16	606	1 Ser. 16	608
3	26	610	24	610	4	611	1 Ser. 20	612	1 Ser. 18	613	26	610	24	610	4	611	1 Ser. 20	612	1 Ser. 18	613
4	16	614	18	615	4	611	1 Ser. 16	616	1 Ser. 20	617	16	614	18	615	4	611	1 Ser. 16	616	1 Ser. 20	617
4A	-	-	18	615	4	611	1 Ser. 16	618	1 Ser. 20	619	-	-	18	615	4	611	1 Ser. 16	618	1 Ser. 20	619
5	18	611	22	620	1 Ser. 4	621	1 Ser. 20	622	1 Ser. 22	625	18	611	22	620	1 Ser. 4	621	1 Ser. 20	622	1 Ser. 22	624
6	1 Ser. 23	626	1 Ser. 32	627	8	628	28	628	26	629	1 Ser. 23	626	1 Ser. 32	627	8	628	28	628	26	629
7	22	629	28	630	8	630	1 Ser. 23	631	15 13 632 646	22	629	28	630	8	630	1 Ser. 23	631	15 13 632 646	26	635
8	17	603	19	633	8	601	1 Ser. 17	634	26	635	17	603	19	633	8	601	1 Ser. 17	634	26	635
9	17	601	19	605	8	602	15 602 629	-	-	17	601	19	605	8	602	15 602 629	-	-	-	-
10	19	636	21	605	-	-	-	-	-	19	635	21	605	-	-	-	-	-	-	-
11	1 Ser. 16	637	-	-	-	-	-	-	-	1 Ser. 16	637	-	-	-	-	-	-	-	-	-
12	1 Ser. 21	638	29	640	8	629	-	-	-	1 Ser. 21	639	29	636	8	636	-	-	-	-	-
13	23	601	24	633	8	630	20	629	32	635	23	601	24	633	8	630	20	629	32	635
14	19	620	32	641	8	641	19	642	21	643	19	601	32	601	8	601	19	633	21	645
15	1 Ser. 17	644	20	620	7	620	14	641	16	641	1 Ser. 17	644	20	620	7	620	14	641	16	641
16	17	611	20	611	7	620	14	620	16	604	17	611	20	611	7	620	14	620	16	604
17	16	≠641	20	≠620	8	≠620	16	≠620	18	≠604	16	≠611	20	≠641	8	≠642	16	≠642	18	≠623
18	18	604	28	604	7	641	20	641	17	642	18	604	28	604	7	641	20	641	17	642

Notes:
Zip-4-tone indicates existing structure.
For Girder 1 replacement details, see Sheet 20/31.
For Reinforcement Schedule, see Sheet R/5.
For Member Identification Plans, see Sheet 2/31.
For Typical Section thru girders, see Modified Typical Section Along Pier 3, see Sheet 22/31.

Note: All reinforcing bar marks shall be prefixed GR.

≠ denotes epoxy coated reinforcing steel

HNTB BRIDGE NO. 4

HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND HNTB

GIRDER REINFORCEMENT
GIRDERS 2 THRU 18
REHABILITATION OF THE
CARNEGIE AVENUE GRADE SEPARATION STRUCTURE
(S.R.10 OVER THE CLEVELAND UNION TERMINALS CO.
AND THE REGIONAL TRANSIT AUTHORITY)
BR. NO. CUY. -10-1685 STA. 57+29.72
CUYAHOGA COUNTY OHIO STA. 58+85.70

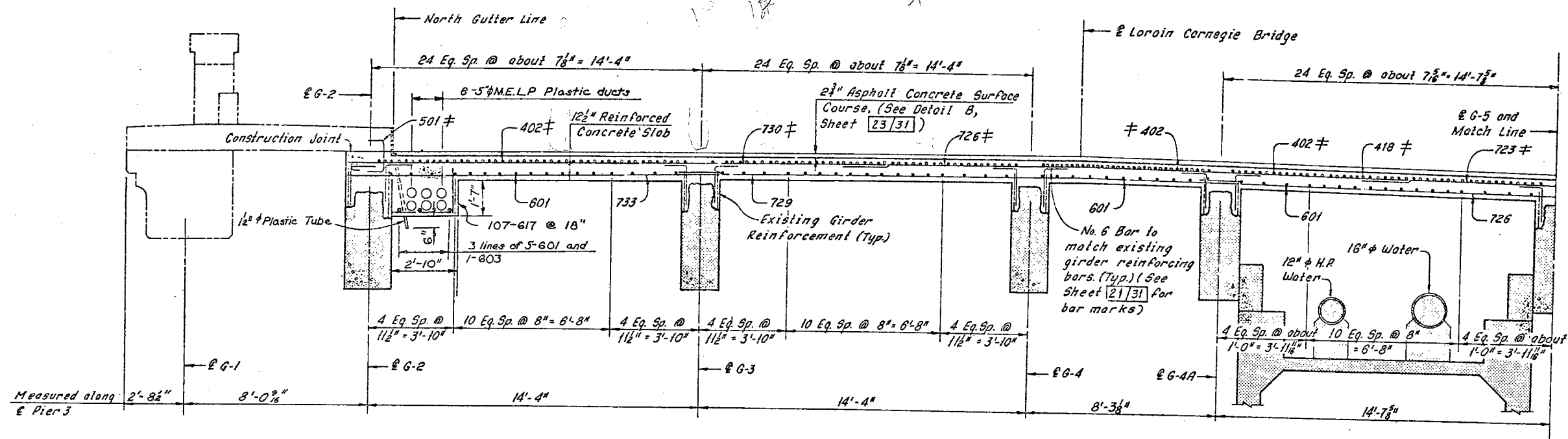
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DATE 8-2-78	DATE 8-4-78	DATE 8-7-78	DATE	DATE

SHEET 21/31

FHWA REGION	STATE	PROJECT
5	OHIO	

169
185

CUYAHOGA COUNTY
CUY-10-16.23

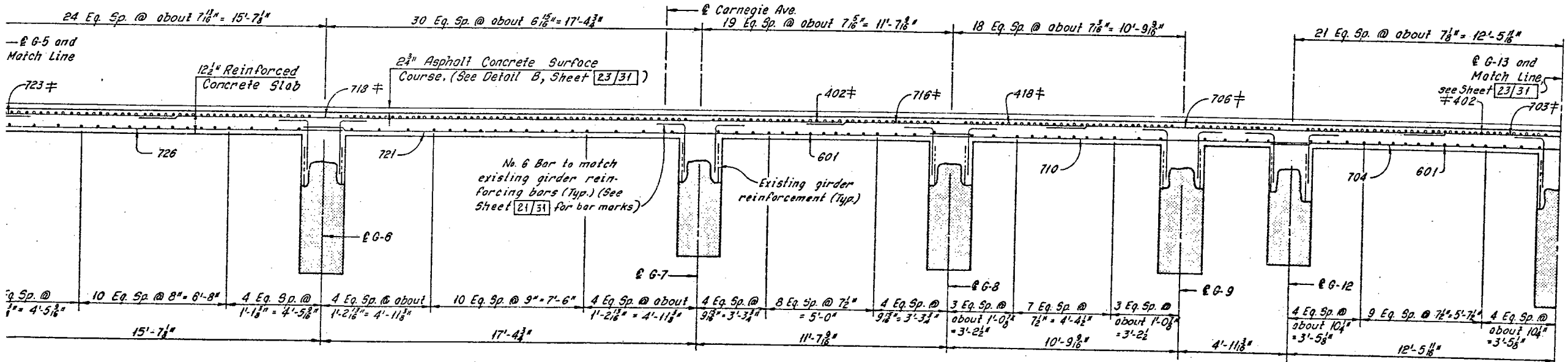


PART TYPICAL SECTION
(Columns Not Shown)

denotes epoxy coated reinforcing steel

Note: Existing Longitudinal Girder Reinforcement not shown.

Note:
Reinforcing bars shown shall be prefixed as follows:
BR = Bottom Transverse Reinforcing
TR = Top Transverse Reinforcing
LR = Longitudinal Reinforcing



PART TYPICAL SECTION
(Columns Not Shown)

Notes:
Zip-a-tone indicates existing structures.
Phantom lines indicate new construction, details of which are shown elsewhere in these plans.
For Removal Plans, see Sheet 4/31.
For Sidewalk Details, see Sheet 27/31.
For Girder 1 Details, see Sheet 30/31.
For Reinforcement Schedule, see Sheet R/4.
The following abbreviations are used:
Typ. = Typical
H.P. = High Pressure
Eq. Sp. = Equal Spaces
For Slab Plans, see Sheets 24/31, 25/31 and 26/31.
For stage construction see Sheet 1/31.

HNTB BRIDGE NO. 4

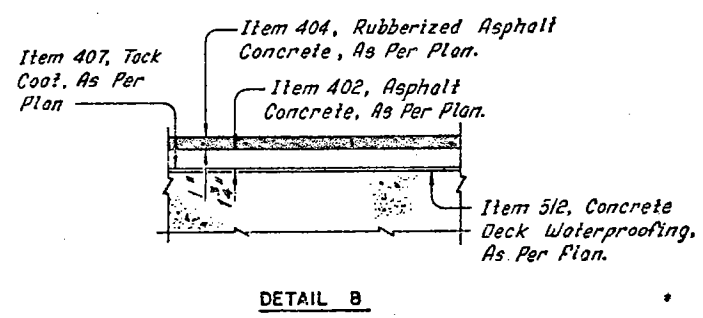
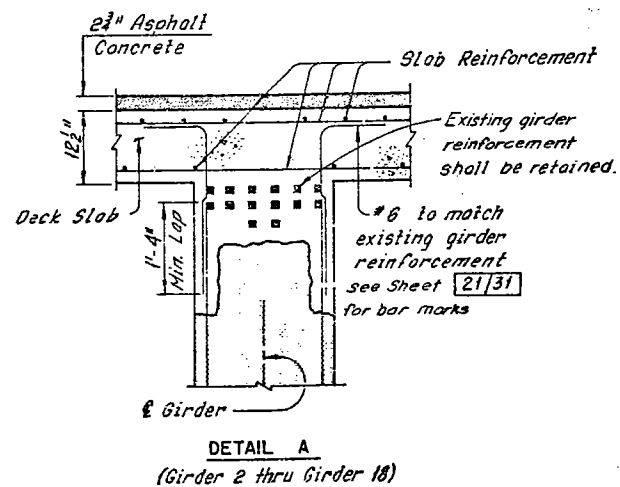
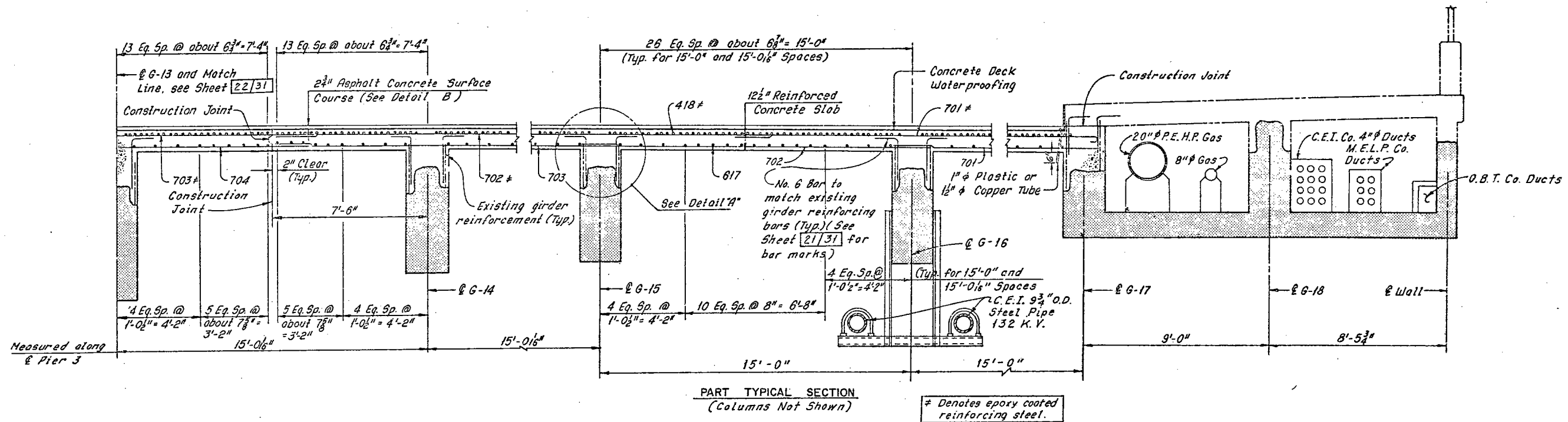
HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND

HNTB

MODIFIED TYPICAL SECTION
ALONG PIER 3
REHABILITATION OF THE
CARNEGIE AVENUE GRADE SEPARATION STRUCTURE
(S.R.10 OVER THE CLEVELAND UNION TERMINALS CO.
AND THE REGIONAL TRANSIT AUTHORITY)
BR. NO. CUY-10-1685 STA. 57+29.72
CUYAHOGA COUNTY OHIO STA. 58+65.70

DRAWN BY	TRACED BY	CHECKED BY	REVIEWED	REVISED
DATE 9-25-78	DATE 10-3-78	DATE 7-7-78	DATE	DATE

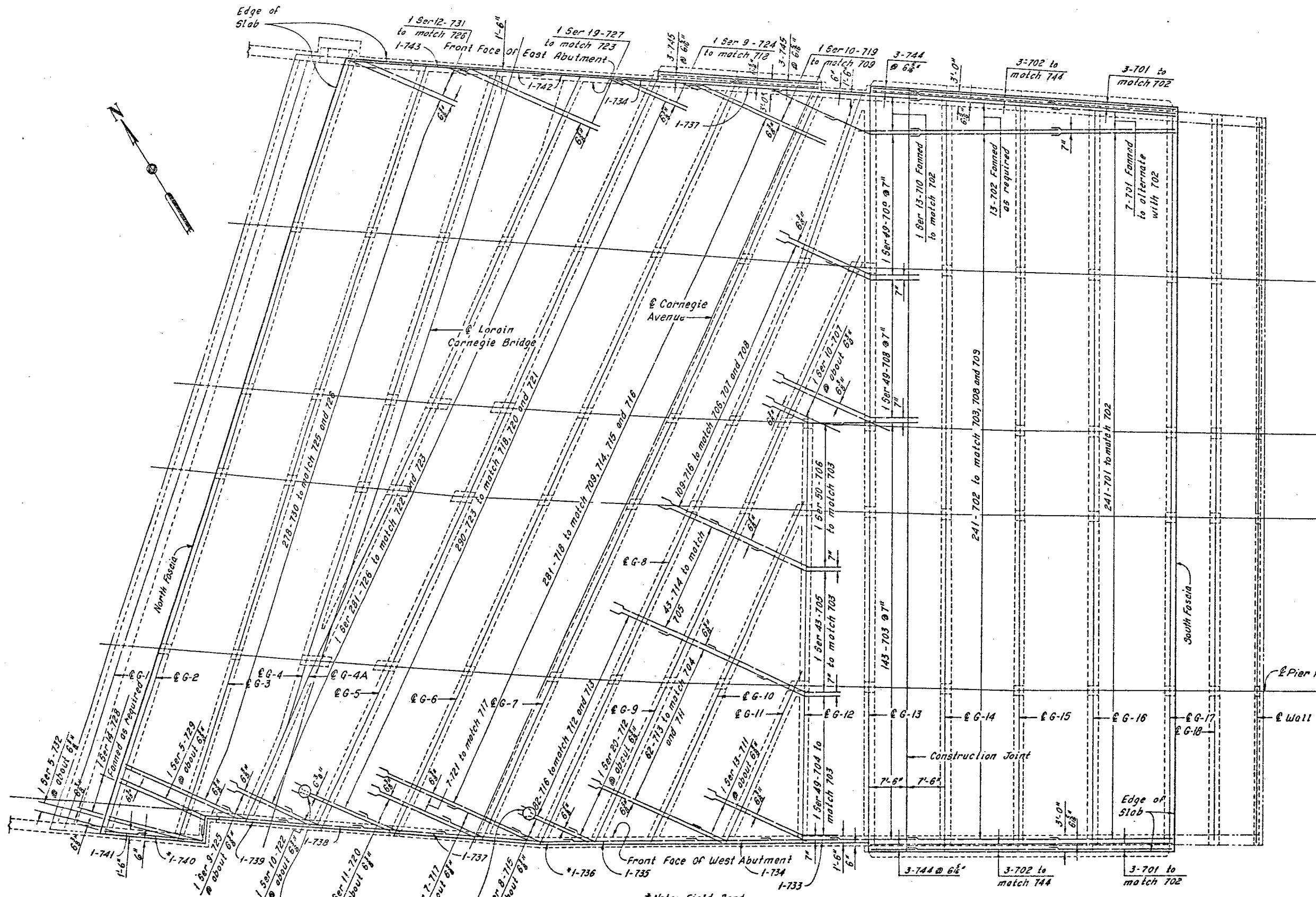
SHEET 22/31



Note:
Reinforcing bars shown shall be prefixed as follows:
BR = Bottom Transverse Reinforcing
TR = Top Transverse Reinforcing
LR = Longitudinal Reinforcing

Note:
For Notes, see Sheet 22/31

HNTB BRIDGE NO. 4
HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND
HNTB
MODIFIED TYPICAL SECTION ALONG PIER 3
REHABILITATION OF THE CARNEGIE AVENUE GRADE SEPARATION STRUCTURE (S.R.10 OVER THE CLEVELAND UNION TERMINALS CO. AND THE REGIONAL TRANSIT AUTHORITY)
BR NO. CUY. -10-1685 STA 57+29.72 STA 58+85.70
CUYAHOGA COUNTY OHIO
DRAWN BY: TRACES BY: CHECKED BY: REVIEWED: RES: SEU
DATE: 9-25-83 DATE: 10-3-83 DATE: 7-7-83 DATE: DATE: SHEET 23/31



REQUIRED LAP LENGTHS
No. 7 Bar 2'-0" Min.

Notes:
 For longitudinal deck slab reinforcement, see Sheet 26/31.
 For bottom transverse deck slab reinforcement, see Sheet 25/31.
 For Modified Typical Section at Pier 3, see Sheet 22/31.
 For Sidewalk Plans and Details, see Sheet 27/31.
 For Hailing Plans and Details, see Sheet 29/31.
 For Approach Slab Details, see roadway plans.
 For reinforcement Schedule and Bending Diagrams, see Sheet R/4.
 For additional reinforcement at 30" Manholes, see Detail A, Sheet 26/31.
 For slope construction, see Sheet 1/31.

*Note: Field Bend as required.

Note: All reinforcing steel shown on this sheet shall be epoxy coated.

Note: All reinforcing bar marks shall be prefixed TR.

HNTB BRIDGE NO. 4

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
CLEVELAND

HNTB

SLAB PLAN
TOP TRANSVERSE REINFORCEMENT
REHABILITATION OF THE
CARNEGIE AVENUE GRADE SEPARATION STRUCTURE
(S.R.10 OVER THE CLEVELAND UNION TERMINALS CO.
AND THE REGIONAL TRANSIT AUTHORITY)
BR. NO. CUY. -10-1685 STA. 57+29.72
CUYAHOGA COUNTY OHIO STA. 58+85.70

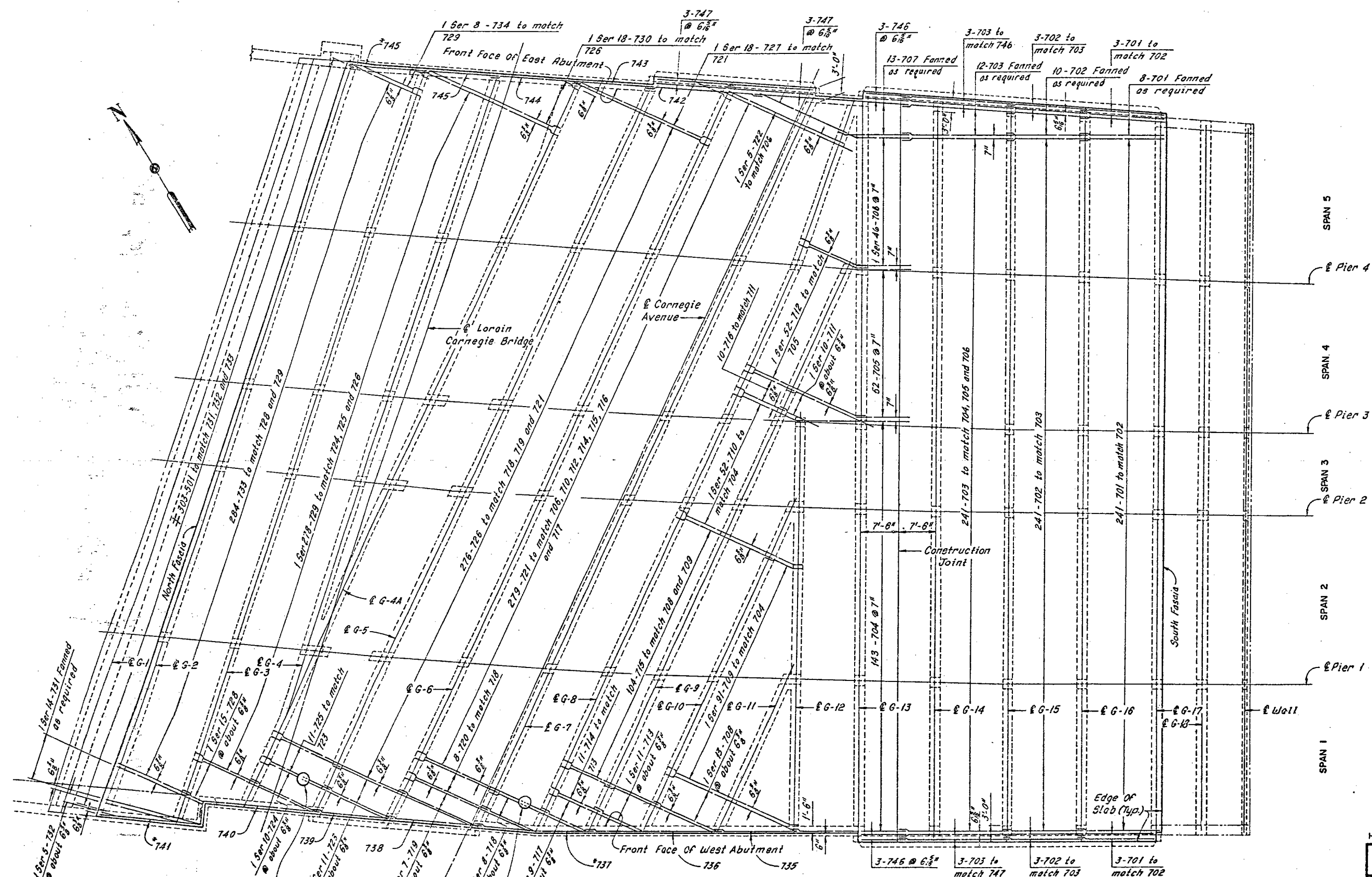
DRAWN E.P.	TRACED B.P.	CHECKED P.B.	REVIEWED P.B.	DATE 7-70
DATE 3-11-70				DATE 7-70

SHEET 24/31

FHWA REGION	STATE	PROJECT
5	OHIO	

172
185

CUYAHOGA COUNTY
CUY-10-16.23



REQUIRED LAP LENGTHS	
No. 7 Bar	21'-0" Min.

Notes:
 For longitudinal deck slab reinforcement, see Sheet 26/31.
 For top transverse deck slab reinforcement, see Sheet 24/31.
 For Modified Typical Section at Pier 3, see Sheet 22/31.
 For Sidewalk Plans and Details, see Sheet 27/31.
 For Railing Plans and Details, see Sheet 29/31.
 For Approach Slab Details, see roadway plans.
 For Reinforcement Schedule and Bending Diagrams, see Sheet R/4.
 For additional reinforcement of 30" Manhole, see Detail A, Sheet 26/31.
 For slope construction, see Sheet 1/31.

*Note: Field bend as required.

Note: All reinforcing bar marks shall be prefixed BR.

± denotes epoxy coated reinforcing steel.

HNTB BRIDGE NO. 4

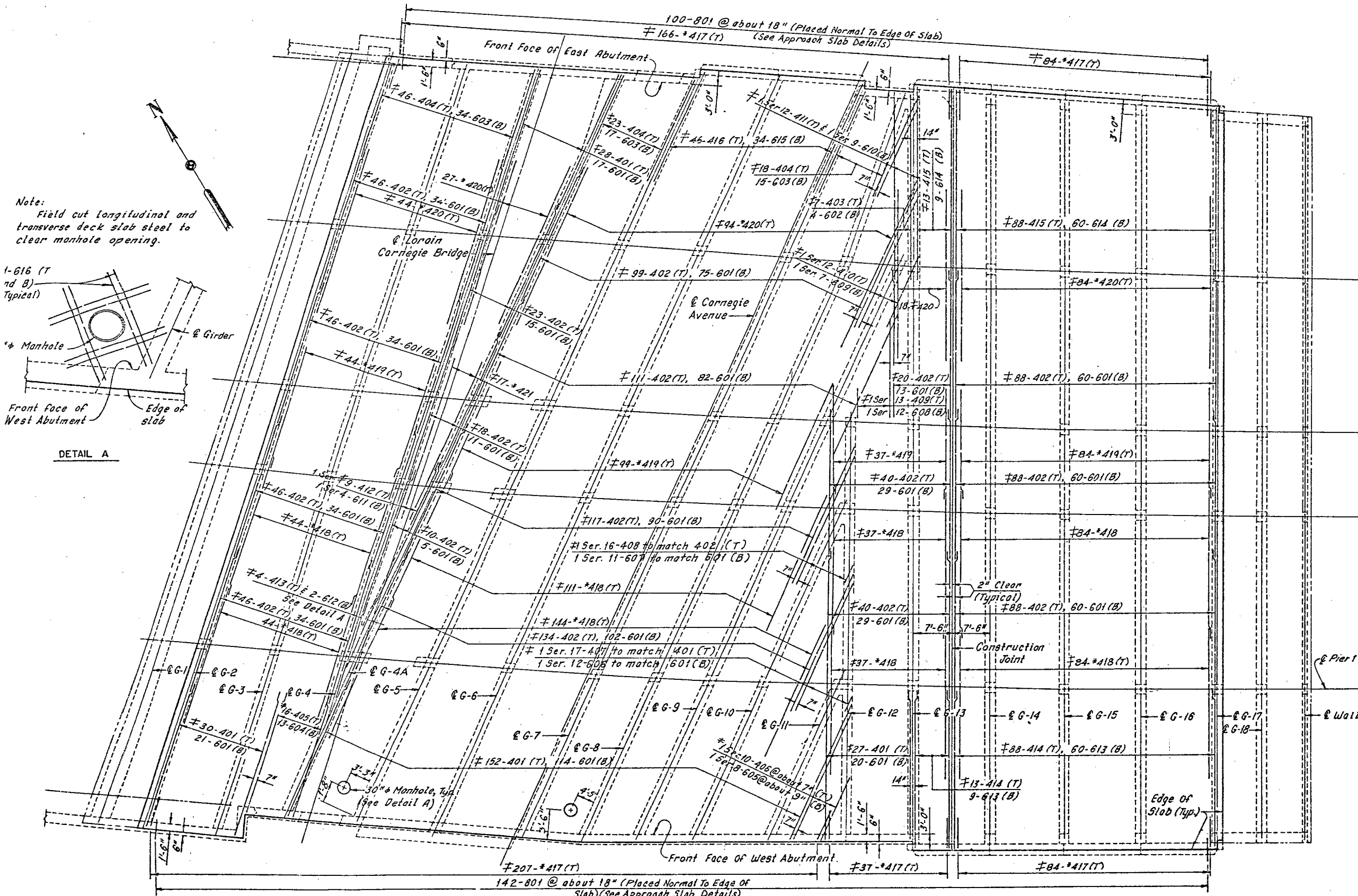
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
CLEVELAND

HNTB

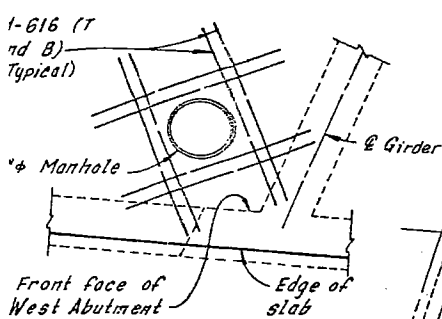
SLAB PLAN
 BOTTOM TRANSVERSE REINFORCEMENT
 REHABILITATION OF THE
 CARNEGIE AVENUE GRADE SEPARATION STRUCTURE
 (S.R.10 OVER THE CLEVELAND UNION TERMINALS CO.
 AND THE REGIONAL TRANSIT AUTHORITY)
 BR. NO. CUY.-10-1685 STA. 57+29.72
 CUYAHOGA COUNTY STA. 58+85.70
 OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
DATE 3/20/72	DATE 3/21/72	DATE 3/21/72	DATE	DATE

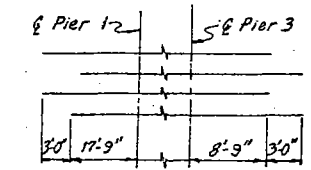
SHEET 25/31



Note:
Field cut longitudinal and transverse deck slab steel to clear manhole opening.



DETAIL A



PLACEMENT OF ADDITIONAL REINFORCEMENT OVER PIERS

MINIMUM REQUIRED BAR SPLICE LENGTH	
Bar No.	Splice length
4	1'-0"
6	1'-5"

Notes:
 * Indicates additional reinforcement over piers or at abutments.
 For placement of longitudinal slab reinforcement, see Sheets 22/31 and 23/31.
 For additional notes, see Sheet 24/31.
 For Approach Slab Details, see roadway plans.
 For stage construction, see Sheet 1/31.

denotes epoxy coated reinforcing steel

Note: All reinforcing bar marks shall be prefixed L.R.

HNTB BRIDGE NO. 4

HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND

HNTB

SLAB PLAN LONGITUDINAL REINFORCEMENT

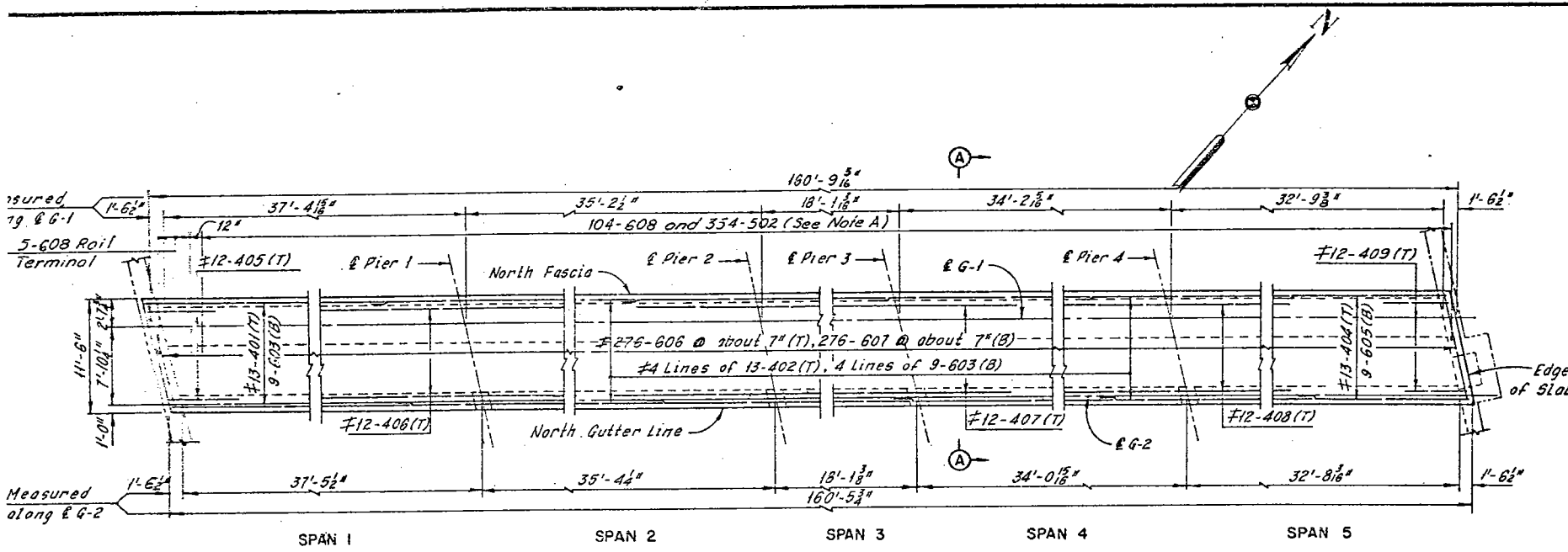
REHABILITATION OF THE CARNegie AVENUE GRADE SEPARATION STRUCTURE (S.R.10 OVER THE CLEVELAND UNION TERMINALS CO. AND THE REGIONAL TRANSIT AUTHORITY).
 BR NO. CUY.-10-1685 STA. 57+29.72
 CUYAHOGA COUNTY STA. 58+85.70 OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
BP	BP	PS	PS	
DATE: 2-27-78	DATE: 2-27-78	DATE: 2-27-78	DATE: 2-27-78	DATE: 2-27-78

SHEET 26/31

FHW REGION	STATE	PROJECT
5	OHIO	

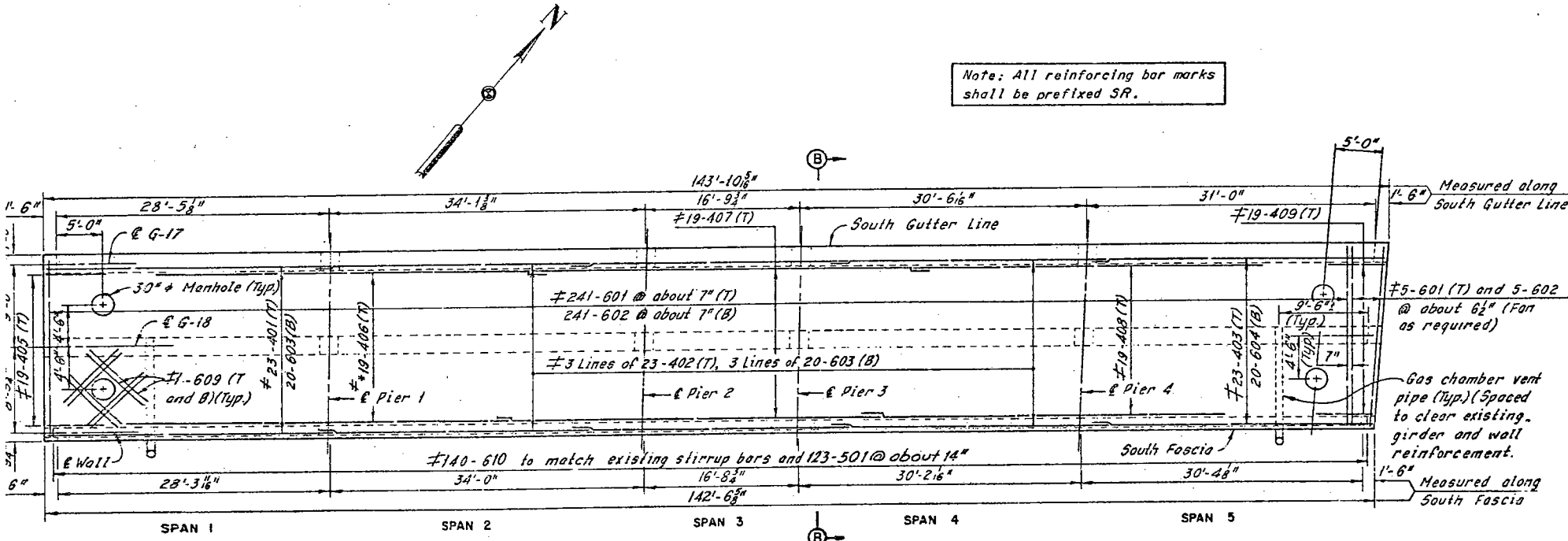
CUYAHOGA COUNTY
CUY-10-16.23



NORTH SIDEWALK PLAN
(Concrete railing not shown)

* Indicates additional reinforcement over piers, see Placement Diagram.

Note: All reinforcing bar marks shall be prefixed SR.



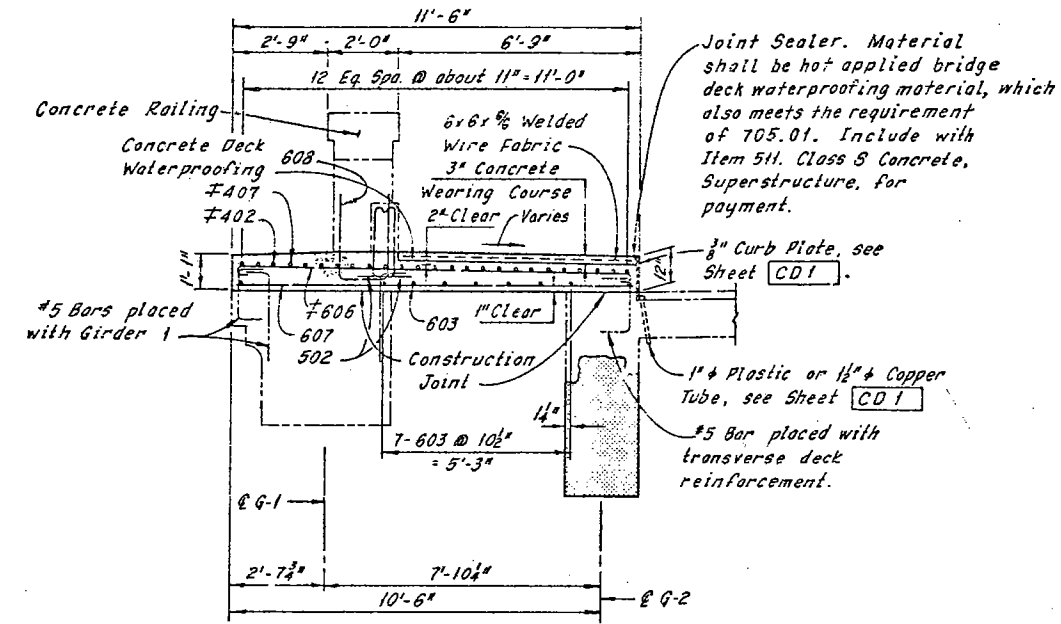
SOUTH SIDEWALK PLAN
(Parapet and fence not shown)

* Indicates additional reinforcement over piers, see Placement Diagram.

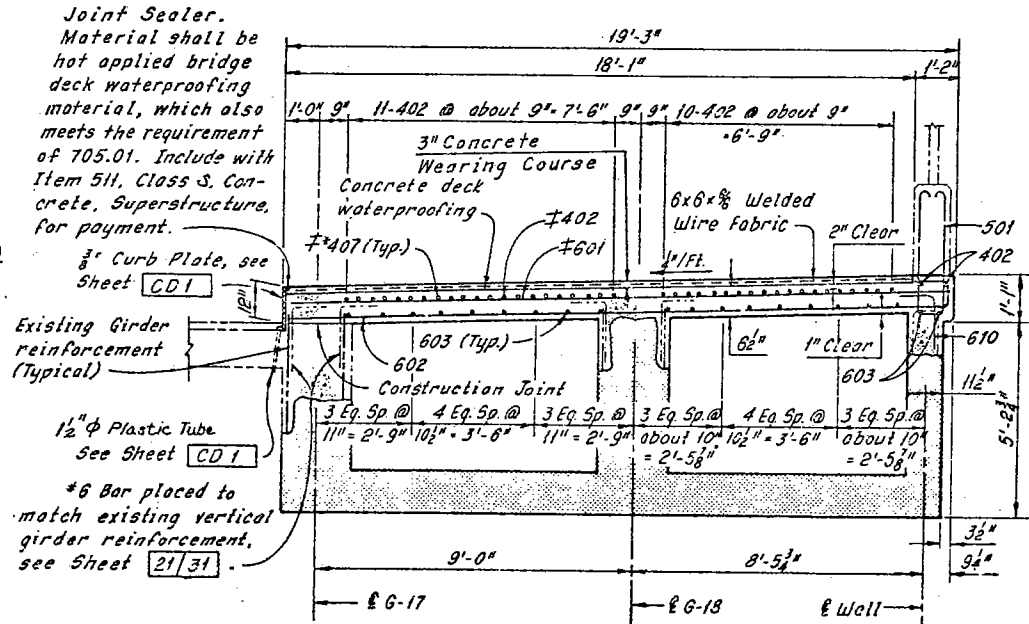
denotes epoxy coated reinforcing steel

Note A:
Bars SR502 shall be placed at 2 equal spaces (3 sets of 2 bars) between railing posts and at 1 space (2 sets of 2 bars) between railing posts and deflection joints and or railing posts and open joints. Bars SR 608 shall be placed at each face of railing posts.

PLACEMENT OF ADDITIONAL REINFORCEMENT OVER PIERS



SECTION A-A



SECTION B-B
(Utilities Not Shown)

Notes:
Zip-a-tone indicates existing structure. Phantom lines indicate new construction, details of which are shown elsewhere in these plans.
For Removal Plans, see Sheets 4/31 and 5/31.
For details of concrete railing on north sidewalk, see Sheet 29/31.
For details of fence and parapet on south sidewalk, see Sheet 28/31.
For Girder 1 Replacement Details, see Sheet 20/31.
For Reinforcement Schedule, see Sheet R/4.
For Gas Vent Detail, see Sheet 31/31.

HNTB BRIDGE NO. 4
HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND HNTB

SIDEWALK PLANS
REHABILITATION OF THE CARNEGIE AVENUE GRADE SEPARATION STRUCTURE (S.R. 10 OVER THE CLEVELAND UNION TERMINALS CO. AND THE REGIONAL TRANSIT AUTHORITY)
BR. NO. CUY-10-1685 STA. 57+29.72
CUYAHOGA COUNTY OHIO STA. 53+85.70

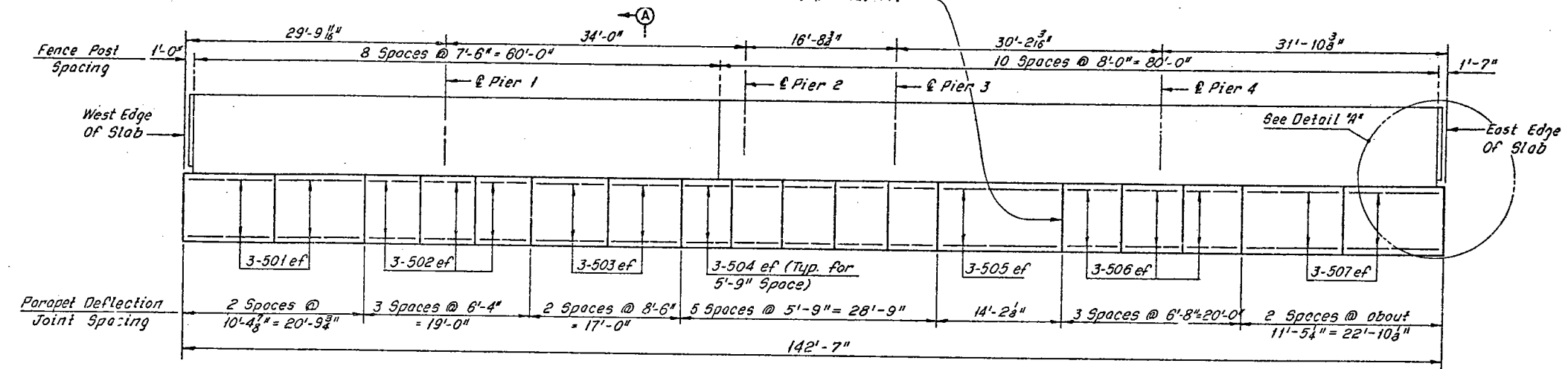
DATE	BY	CHECKED	REVIEWED	REVISION
DATE 5-21-79	BP	FB	FB	
DATE 7-7-79				

FHWA REGION	STATE	PROJECT
5	OHIO	

175
185

CUYAHOGA COUNTY
CUY-10-16.23

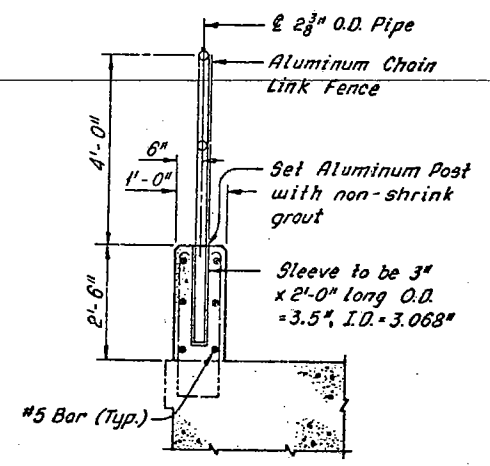
Preformed Expansion Joint Filler in the fencing parapet deflection joints may be either 1/2" gray sponge rubber or 1/2" gray cellular polyvinyl chloride (PVC) sponge. Either material shall meet the requirements of AASHTO M-153, Type 1 except the density of PVC sponge shall be not less than 20 lb. per cu. ft.



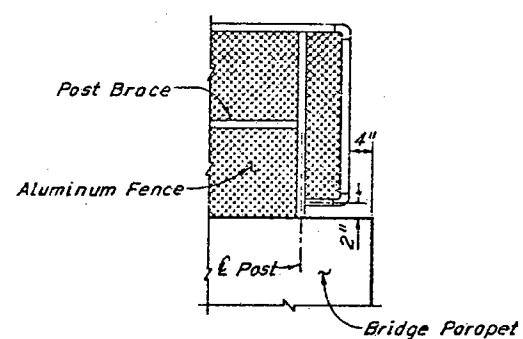
SOUTH PARAPET AND FENCE DETAILS
(Looking North)

Note:
All reinforcing bar marks shall be prefixed RB.

MARK	NO.	LENGTH	TYPE	WEIGHT (LBS)
RB501	12	10'-0"	Str.	125
RB502	18	6'-0"	Str.	113
RB503	12	8'-3"	Str.	103
RB504	30	5'-6"	Str.	172
RB505	6	13'-9"	Str.	86
RB506	18	6'-3"	Str.	117
RB507	12	11'-0"	Str.	138
TOTAL WEIGHT =				854



SECTION A-A



DETAIL A

Notes:
Payment for parapet and fence shall be made at the contract unit price for Item 517, Railing (Concrete Parapet with Chain-Link Fence-AASHTO Designation M-181-Type III Aluminum alloy fabric, posts, hardware and fittings.) Payment length shall be the over-all length of the parapets. Sleeves, parapet expansion joint material, grout and longitudinal reinforcing steel in the parapets shall be included with the unit price bid for Item 517, Railing (Concrete Parapet with Chain-Link Fence-AASHTO Designation M-181-Type III Aluminum alloy fabric, posts, hardware and fittings.), for payment. All other reinforcing steel in the parapets is included with Item 509, Reinforcing Steel, for payment.
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 sponge filler. Filler shall be flush with surface of mortar. The anchor posts shall be set in non-shrink grout.
The following abbreviation is used:
ef= each face

HNTB BRIDGE NO. 4

HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND

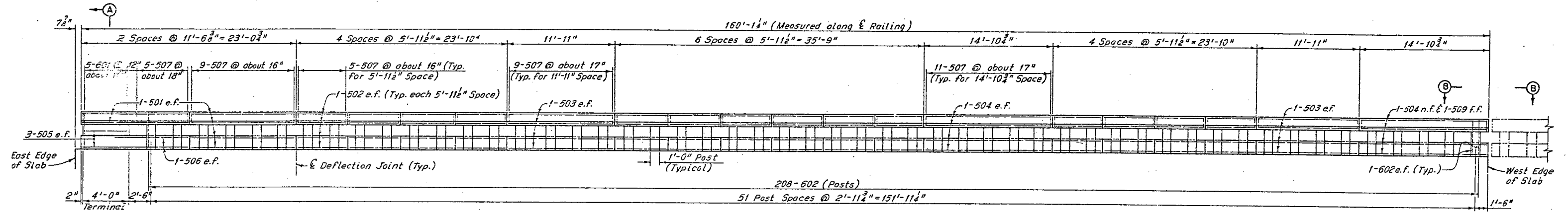
HNTB

SOUTH PARAPET AND FENCE DETAILS

REHABILITATION OF THE CARNegie AVENUE GRADE SEPARATION STRUCTURE (S.R.10 OVER THE CLEVELAND UNION TERMINALS CO. AND THE REGIONAL TRANSIT AUTHORITY)
BR. NO. CUY. -10-1685 STA. 57+29.72
CUYAHOGA COUNTY STA. 58+85.70 OHIO

DRAWN R.A.S.	TRACED D.L.R.	CHECKED C.K.T.	REVIEWED	REVISED
DATE 11-27	DATE 11-76	DATE 12-77	DATE	

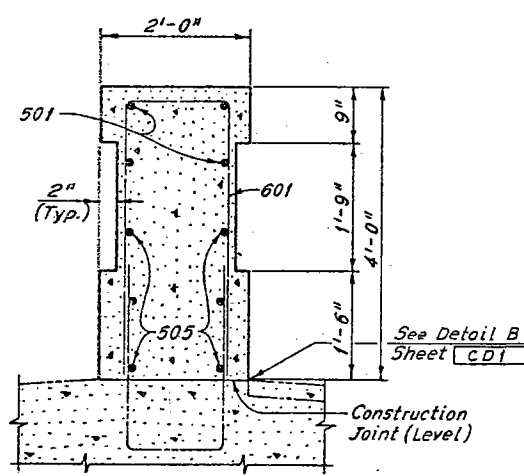
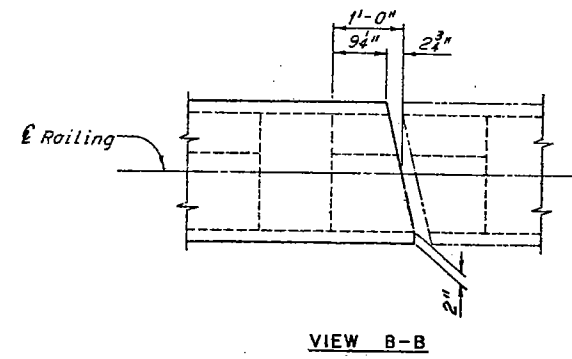
SHEET 28/31



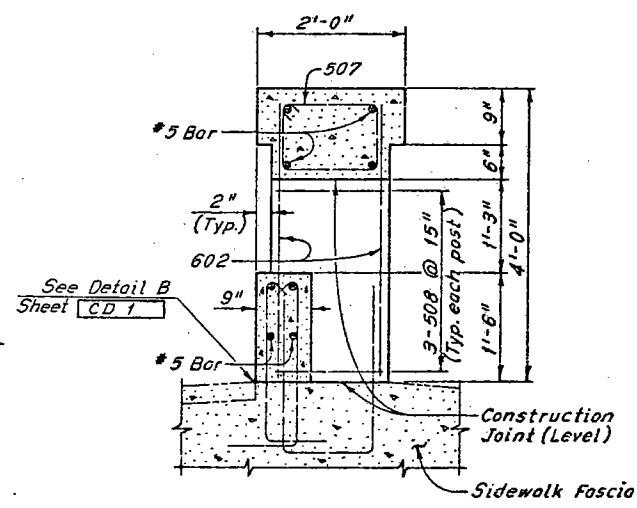
NORTH RAILING
(Looking South)

Note: All reinforcing bar marks shall be prefixed RA.

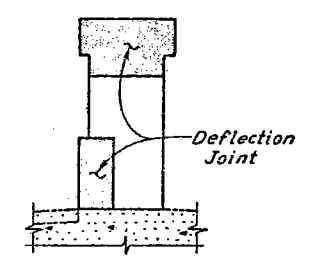
Note: The deflection joints in the railing may be either 1/4" gray sponge rubber or 1/4" gray cellular polyvinyl chloride (PVC) sponge. Either material shall meet the requirements of AASHTO M-153, Type 1, except the density of the (PVC) sponge shall be not less than 20 lb. per cu. ft.



SECTION A-A



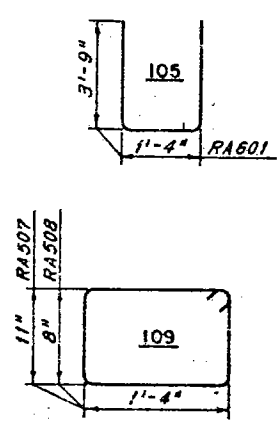
TYPICAL RAILING SECTION



DEFLECTION JOINT DETAIL

MARK	NO.	LENGTH	TYPE	WEIGHT (LBS)
RA 501	12	11'-3"	Str.	141
RA 502	112	5'-6"	Str.	643
RA 503	16	11'-6"	Str.	192
RA 504	12	14'-6"	Str.	181
RA 505	6	3'-9"	Str.	24
RA 506	4	8'-9"	Str.	37
RA 507	124	3'-2"	Str.	668
RA 508	156	4'-8"	Str.	759
RA 509	4	14'-3"	Str.	59
RA 601	5	8'-6"	Str.	64
RA 602	208	3'-9"	Str.	1172
TOTAL WEIGHT =				3940

BENDING DIAGRAMS



Notes:
Payment for the railing shall be made at the contract unit price bid for Items 517, Railing, As Per Plan. Payment length shall be the overall length of the railings. Railing expansion joint and deflection joint material and all reinforcing steel that does not extend into the sidewalk shall be included with Item 517 for payment. Reinforcing steel extending from the sidewalk is included with Item 509, Reinforcing Steel, for payment. Railings shall be placed in alternate sections by the use of bulkheads. Closing sections shall be placed after removal of bulkheads and after placement of sponge filler. The filler shall be attached to the face of the concrete on one side, flush with the surface of concrete and exposed edges shall be free of mortar.

The following abbreviations are used:
e.f. = each face n.f. = near face
Typ. = typical f.f. = far face

HNTB BRIDGE NO. 4

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
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CLEVELAND

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NORTH RAILING DETAILS

REHABILITATION OF THE
CARNEGIE AVENUE GRADE SEPARATION STRUCTURE
(S.R.10 OVER THE CLEVELAND UNION TERMINALS CO.
AND THE REGIONAL TRANSIT AUTHORITY)
BR. NO. CUY.-10-1685 STA. 57+29.72
CUYAHOGA COUNTY STA. 58+85.70 OH:O

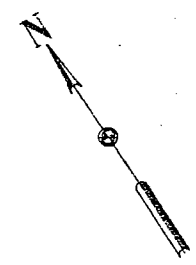
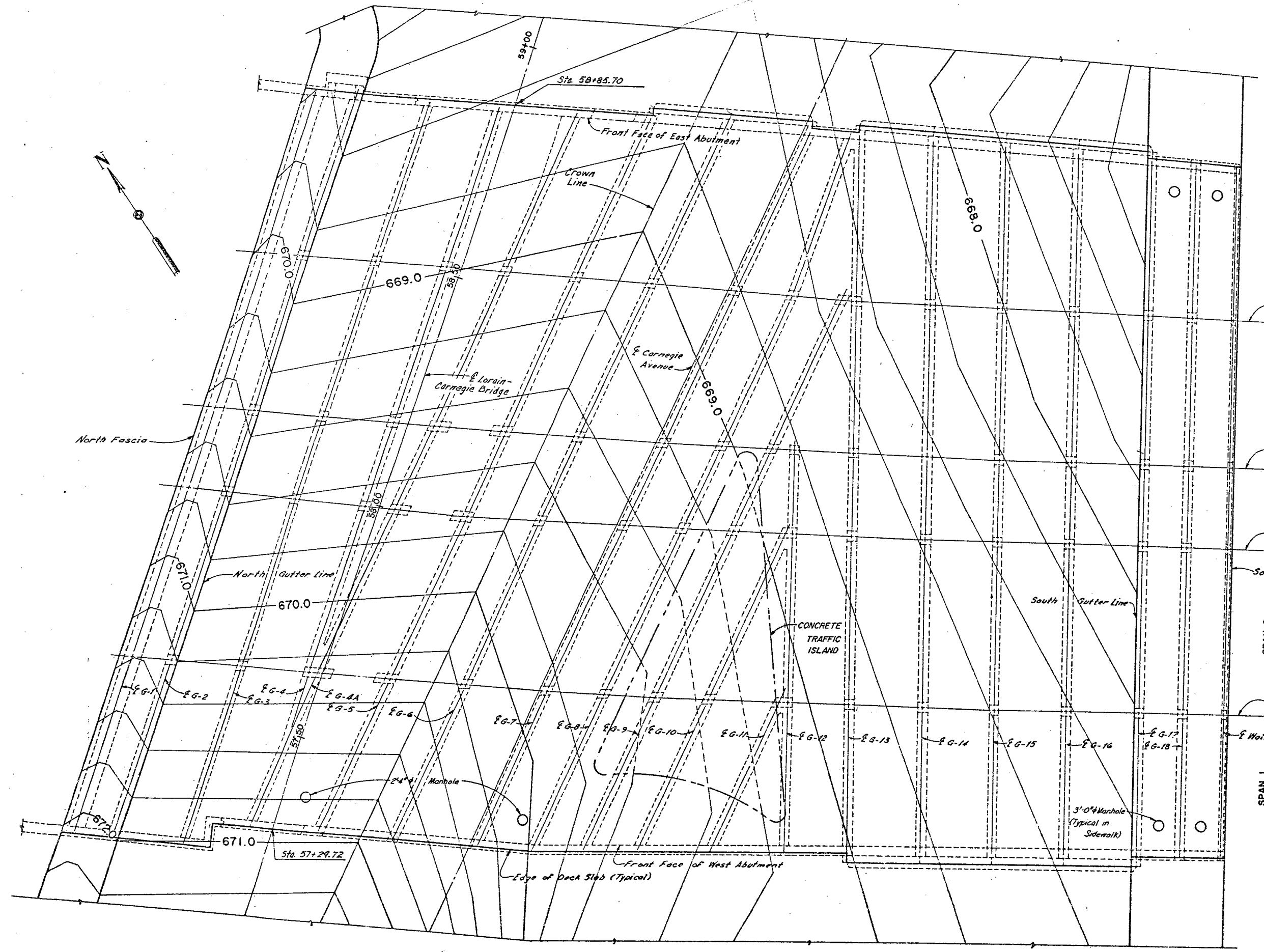
DRAWN RAS	TRACED DLR	CHECKED CKB	REVIEWED	REVISED
DATE: 11-76	DATE: 4-78	DATE: 9-78	DATE:	DATE:

SHEET 29/31

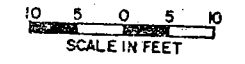
FHWA REGION	STATE	PROJECT
5	OHIO	

177
185

CUYAHOGA COUNTY
CUY-10-16.23



Note:
Contours are shown at top of the asphalt concrete surface course. For details of Concrete Traffic Island see Roadway Plans



CONTOUR PLAN

HNTB BRIDGE NO. 4

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
CLEVELAND OHIO

HNTB

CONTOUR PLAN

REHABILITATION OF THE
CARNegie AVENUE GRADE SEPARATION STRUCTURE
(SR 10 OVER THE CLEVELAND UNION TERMINALS CO.
AND THE REGIONAL TRANSIT AUTHORITY)
BR. NO. CUY.-10-1685 STA. 57+29.72
CUYAHOGA COUNTY STA. 58+85.70 OHIO

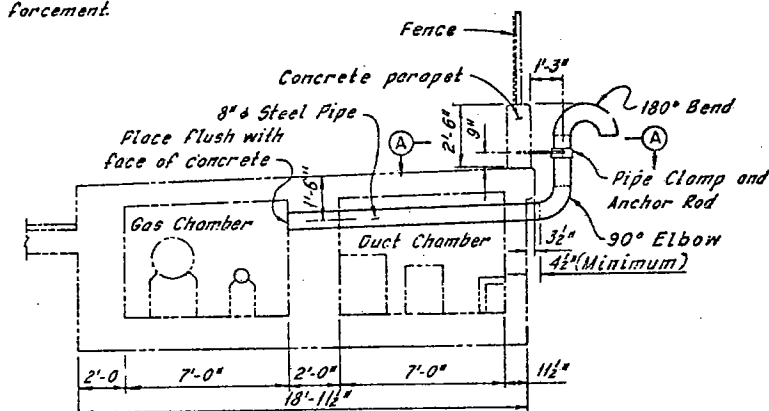
DRAWN 80	TRACED 104	CHECKED R.S.	REVIEWED	REVISED
DATE 9-25-52	DATE 6-22-53	DATE 9-18-53	DATE	DATE

SHEET 30/31

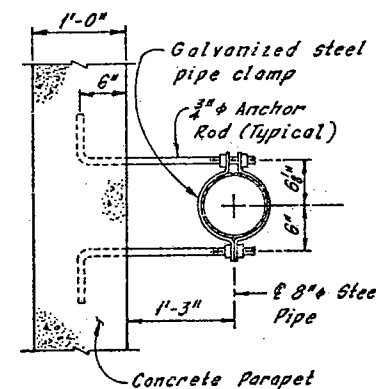
ESTIMATED REPAIR QUANTITIES

LOCATION	PCS		LOCATION	REPAIR OF CRACKS		LOCATION	PCS		LOCATION	REPAIR OF CRACKS	
	SQ. FT.	LN. FT.		SQ. FT.	LN. FT.		SQ. FT.	LN. FT.		SQ. FT.	LN. FT.
PIERS											
			4-15	1	-	4-1	-	-	4-3	-	4
1	34	188	4-16	-	-	4-2	-	-	4-4	-	-
2	99	114	4-17	-	-	4-3	1	-	4-4A	-	-
3	75	114	4-18	68	-	4-4	-	-	4-5	-	-
4	311	69				4-4A	-	-	4-6	279	-
			5-1	20	-	4-5	-	-	4-7	-	-
			5-2	74	-	4-6	7	-	4-8	40	-
STRUTS											
			5-3	-	2	4-7	-	-	4-9	-	-
1-1	-	-	5-4	4	-	4-8	-	-	4-13	-	-
1-2	2	-	5-5	65	-	4-9	-	-	4-14	-	-
1-3	11	-	5-4B	86	-	4-13	-	-	4-15	-	-
1-4	2	-	5-5	-	-	4-14	-	-	4-16	4	-
1-5	-	-	5-6	97	9	4-15	-	-	4-17	18	-
1-5	20	-	5-7	12	-	4-16	-	-	4-18	11	-
1-7	-	-	5-8	8	-	4-17	-	-			
1-8	-	-	5-13	11	-	4-18	-	-	5-1	206	-
1-9	39	-	5-14	-	-				5-2	396	-
1-10	-	-	5-15	-	-				5-3	-	-
1-11	-	-	5-16	-	-	GIRDERS			5-4	6	-
1-12	-	-	5-17	65	-	1-1	48	24	5-4A	-	-
1-13	-	-	5-18	25	-	1-2	75	-	5-5	33	-
1-14	-	-				1-3	19	6	5-6	74	-
1-15	1	-				1-4	1	-	5-7	7	-
1-16	7	-	COLUMNS			1-5	2	6	5-8	-	-
1-17	-	-	1-1	1	-	1-6	132	8	5-13	2	-
1-18	13	-	1-2	18	13	1-7	-	-	5-14	-	-
			1-3	2	-	1-8	72	7	5-15	-	-
2-1	4	-	1-4	-	-	1-9	40	6	5-16	1	-
2-2	44	-	1-5	-	-	1-10	1	-	5-17	132	-
2-3	1	-	1-6	-	-	1-11	-	-	5-18	18	-
2-4	-	-	1-7	-	-	1-12	-	-			
2-4A	1	-	1-8	-	-	1-13	6	-			
2-5	1	-	1-9	1	-	1-14	-	-	ABUTMENTS AND WINGWALLS		
2-6	14	-	1-10	1	-	1-15	-	-	EAST	2297	253
2-7	-	-	1-11	1	-	1-16	-	-	WEST	543	196
2-8	-	-	1-13	1	-	1-17	79	-			
2-9	1	-	1-14	-	-	1-18	77	51			
2-10	-	-	1-15	-	-						
			1-16	-	-	2-1	18	2	UTILITY CHAMBERS		
2-12	-	-	1-17	26	-	2-2	54	-	17-18	1,265	-
2-13	-	-	1-18	6	13	2-3	-	13	7-8	7	-
2-14	-	-				2-4	1	-	4-5	567	-
2-15	-	-	2-1	-	-	2-4A	2	-	At 2	539	24
2-16	1	-	2-2	-	-	2-5	1	-			
2-17	20	1	2-3	-	-	2-6	190	-			
2-18	70	6	2-4	1	-	2-7	6	-	GRAND TOTAL	10,002	1,237
			2-4A	2	-	2-8	11	-			
			2-5	-	-	2-9	13	-			
3-1	-	-	2-6	6	-	2-10	7	-			
3-2	-	6	2-7	1	-	2-12	-	-			
3-3	1	2	2-8	-	-	2-13	1	-			
3-4	2	2	2-9	-	-	2-14	3	-			
3-4A	2	-	2-10	-	-	2-15	-	-			
3-5	1	-	2-13	-	-	2-16	8	-			
3-6	65	-	2-14	-	-	2-17	80	22			
3-7	1	-	2-15	1	-	2-18	86	55			
3-8	-	-	2-16	-	-						
3-9	1	-	2-17	45	-	3-1	54	-			
3-12	-	-	2-18	1	-	3-2	158	-			
3-13	-	-				3-3	-	-			
3-14	-	1				3-4	-	-			
3-15	-	-	3-1	4	-	3-4A	-	-			
3-16	-	-	3-2	2	-						
3-17	19	-	3-3	-	2	3-5	8	-			
3-18	-	-	3-4	-	-	3-5	95	-			
			3-4A	1	-	3-7	-	-			
4-1	-	-	3-5	-	-	3-8	20	-			
4-2	-	-	3-6	-	-	3-9	-	-			
4-3	-	1	3-7	-	-	3-12	1	-			
4-4	6	17	3-8	-	-	3-13	1	-			
4-4A	6	-	3-9	-	-	3-14	-	-			
4-5	1	-	3-12	-	-	3-15	-	-			
4-6	58	-	3-13	-	-	3-16	7	-			
4-7	1	-	3-14	-	-	3-17	92	-			
4-8	-	-	3-15	-	-	3-18	40	-			
4-9	6	-	3-16	-	-						
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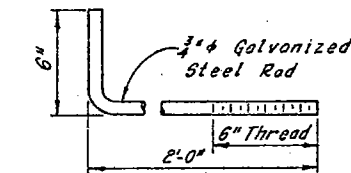
Note:
The 8" steel pipe shall be placed to clear vertical reinforcement.



TYPICAL GAS CHAMBER VENT DETAIL



SECTION A-A
(Parapet Reinforcement not shown)

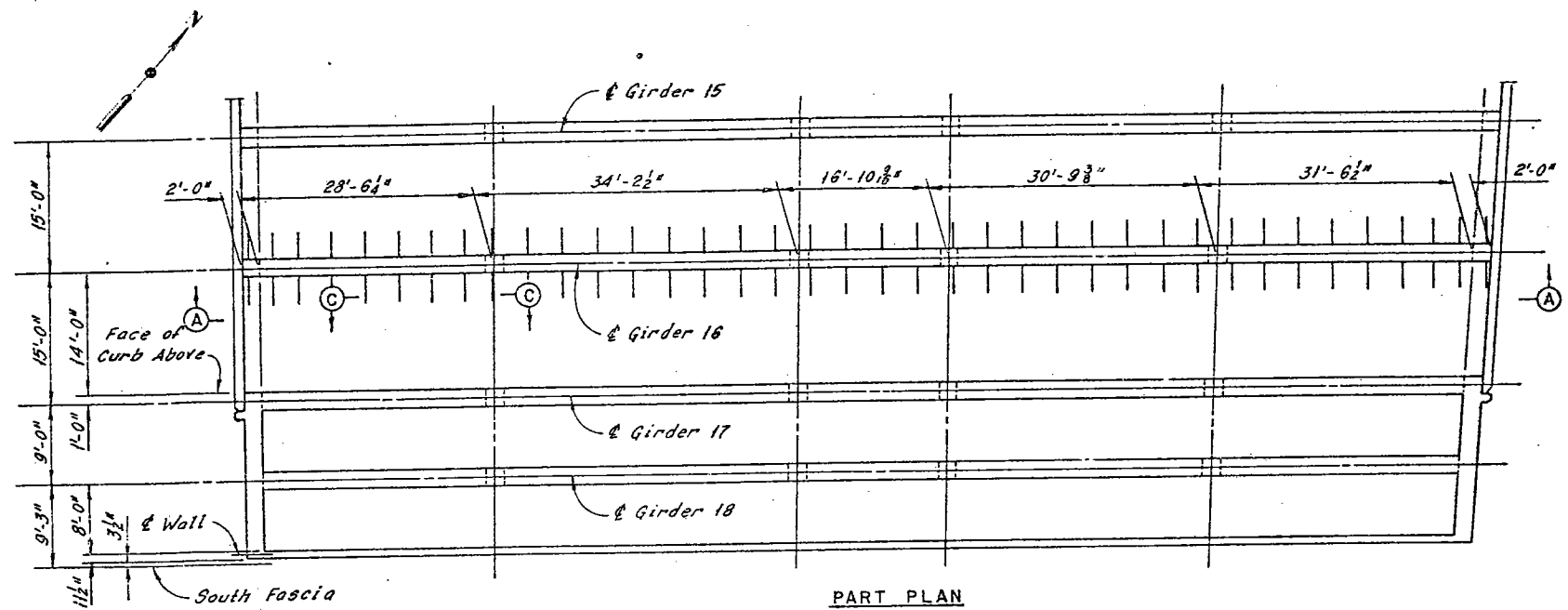


ANCHOR BOLT DETAIL
4 Required

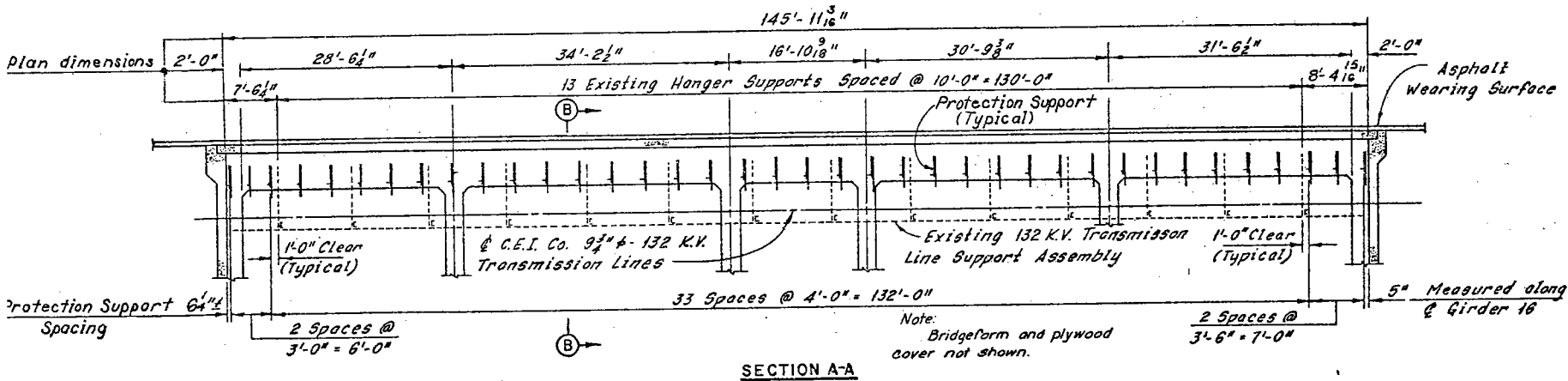
(Threads are to be Unified Standard Series for Basic Major Diameter of 3/4")

Notes:
PCS indicates Patching Concrete Structures.
For Member Identification Plans, see Sheet 2/31.
For location of Gas Chamber Vents, see Sheet 27/31.
Utility Chambers are identified as at or between the girders called out, for the entire length of the Grade Separation.
All costs for venting the gas chamber shall be borne by the gas company, and shall be paid for at the Lump Sum price bid for Item Special, East Ohio Gas Company H. P. Pipe Air Vents, Complete As Per Plan.

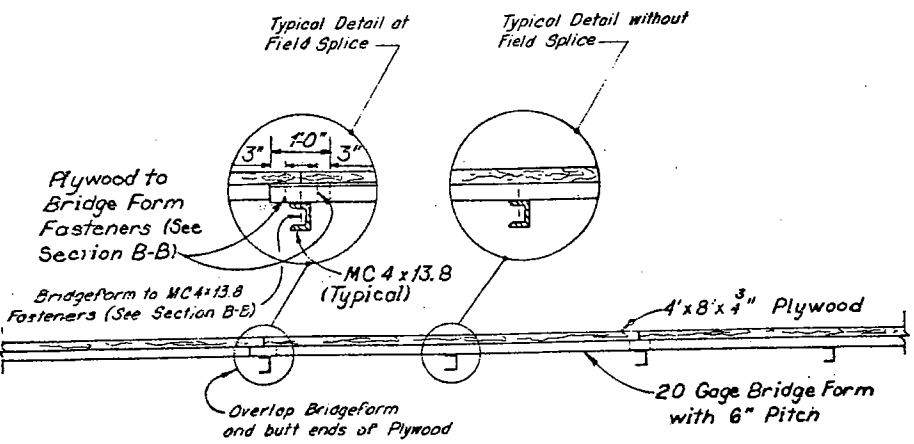
HNTB BRIDGE NO. 4				
HOWARD, NEEDLES TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND				HNTB
ESTIMATED REPAIR QUANTITIES AND GAS CHAMBER VENT DETAILS				
REHABILITATION OF THE CARNEGIE AVENUE GRADE SEPARATION STRUCTURE (S.R.10 OVER THE CLEVELAND UNION TERMINALS CO. AND THE REGIONAL TRANSIT AUTHORITY) BR. NO. CUY-10-1685 STA. 57+29.72 STA. 58+65.70				
CUYAHOGA COUNTY OHIO				
DATE: 2/13/22	TRACED: BP	CHECKED: RAS	REVIEWED: DATE:	REVISED: DATE:
				SHEET 31 / 31



PART PLAN
CARNEGIE AVENUE GRADE
SEPARATION STRUCTURE
(Dimension shown are from original plans)



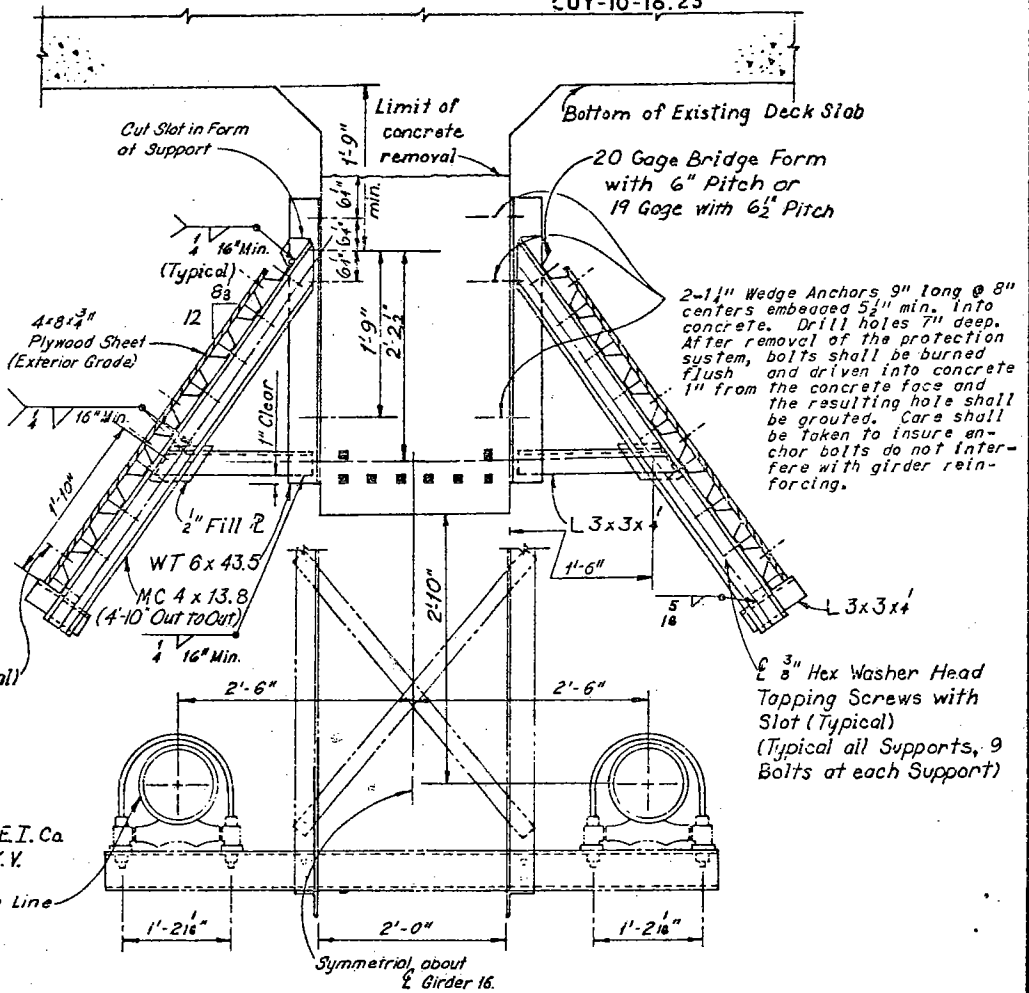
SECTION A-A



SECTION C-C

Notes:
All structural steel shall be ASTM A572 except as noted. (Approx. 16,000 lbs.)
ASTM A572 shall be given one shop coat of primer as per Article 514, System B.
Bridge form, similar to Bethlehem Bridgeform, shall be ASTM A446, Grade E with the following properties:
Thickness = 20 gage
Pitch = 6 in. Depth = 2 in.
I = .400 in.⁴/ft.
S.M. = 0.372 in.³/ft.
F_y = 80,000 psi
Allowable design stress = 30,000 psi
Wedge anchors shall be equivalent to Phillips Wedge Anchors with a minimum pullout load of 40,600 lbs. and a minimum shear load of 48,660 lbs.
1/2" turned bolts shall be ASTM A307.
All temporary protection at the 132 K.V. Transmission Lines, as per plan, shall be in place prior to concrete deck and girder removal between Girder 15 and Girder 17, and shall remain in place until all required work is complete on the permanent structure between Girder 15 and Girder 17.

1/2" Turned Bolt with two Washers or 4" Wood Screws placed from the underside with one washer, 4 per line on 4' max. centers and as shown in Section C-C (Typical)



SECTION B-B

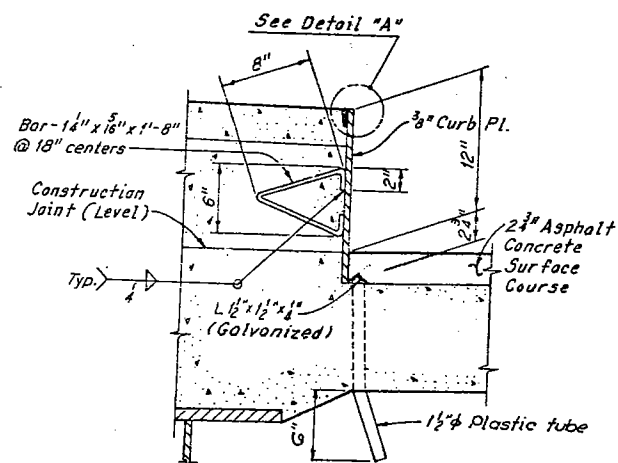
Note: The 132 K.V. pipe type cables contain three copper insulated cables and insulating fluid at a nominal 200 psi. The steel pipes and corrosion control covering on the pipes must be protected from any and all damage.

All labor, material and equipment required for the placement and removal of all temporary transmission line protection devices, as per plan, shall be included in the unit price bid for Item Special, Temporary Protection At 132 K.V. Transmission Lines.
Materials used in the protection system shall become the property of the Contractor upon completion of the work, and shall be removed by him from the site.
The Contractor shall assume full responsibility for any damage to the 132 K.V. lines and its supports, and for damages resulting from damage to these lines. The Contractor shall take extraordinary precautions to insure against any damage to the 132 K.V. lines during erection and removal of the temporary protection system and against concrete dropping between Girders 15 and 17. The protection system is designed only for an accidental occurrence of a 50 lb. block of concrete dropping from the level of the deck. If any concrete pieces drop on the protection system, the Contractor shall cease operations, inspect the protection system and make necessary repairs to the system subject to the approval, prior to resuming operations, by the State of Ohio Project Engineer assigned to implement the contract.

Supporting members have been designed for basic allowable stresses increased 50%. Anchors have been designed for a 1.6 Factor of Safety.
The Contractor or his agents must notify the Cleveland Electric Illuminating Company (623-1350, Extension 2445) at least 24 hours in advance if any work is to be performed in the vicinity of the two C.E.I. 132 K.V. pipe type cables. The Illuminating Company will provide a field representative during the time any work is performed near the 132 K.V. cables.

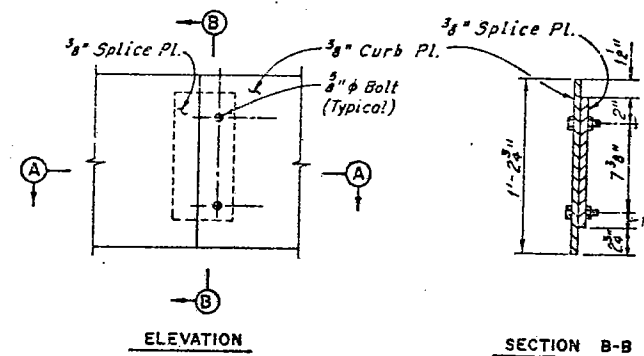
HNTB BRIDGE NO. 4

HOWARD NEEDLES TAMMEN & BERGENOFF CONSULTING ENGINEERS CLEVELAND		HNTB
TEMPORARY PROTECTION FOR THE 132 K.V. TRANSMISSION LINES		
REHABILITATION OF THE CARNEGIE AVENUE GRADE SEPARATION STRUCTURE (S.R.10 OVER THE CLEVELAND UNION TERMINALS CO. AND THE REGIONAL TRANSIT AUTHORITY)		
BR NO. CUY.-10-1685	STA. 57+29.72	STA. 58+85.70
CUYAHOGA COUNTY		OHIO
DRAWN B.M.P. DATE 3-16-79	TRACED M.M.P. DATE 3-30-79	CHECKED J.H.S.F.S. DATE 4-12-79
REVIEWED	REVISION	SHEET 31A/31

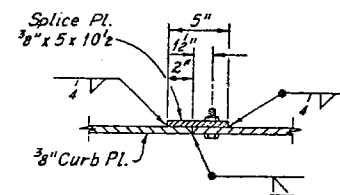


SIDWALK CURB PLATE AND
SUBDRAINAGE FOR SURFACE COURSE DETAIL

For location of drain tubes,
see General Note 24, Sheet GN.5.

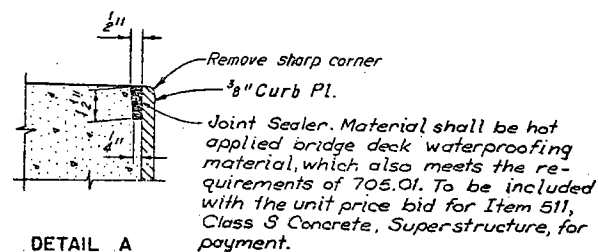


ELEVATION SECTION B-B

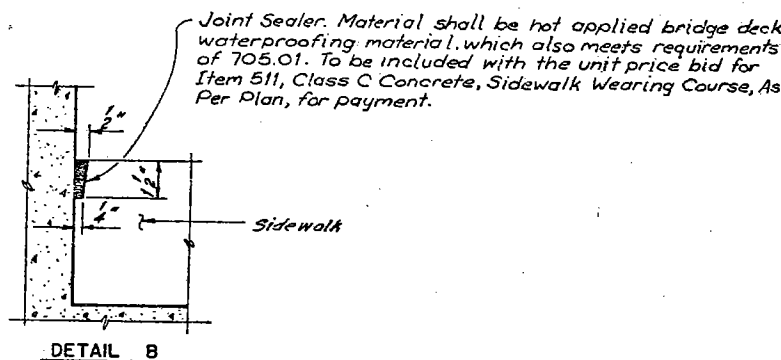


SECTION A-A CURB PLATE SPLICE DETAIL

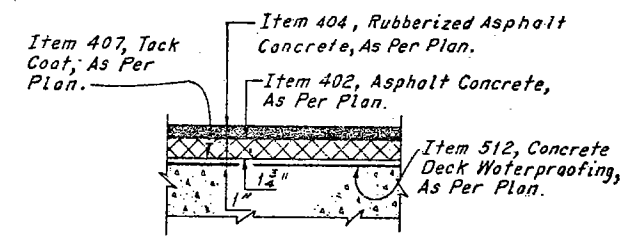
Note:
Remove bolts after field
welds have been completed
Plug weld holes flush with
curb plate.



DETAIL A

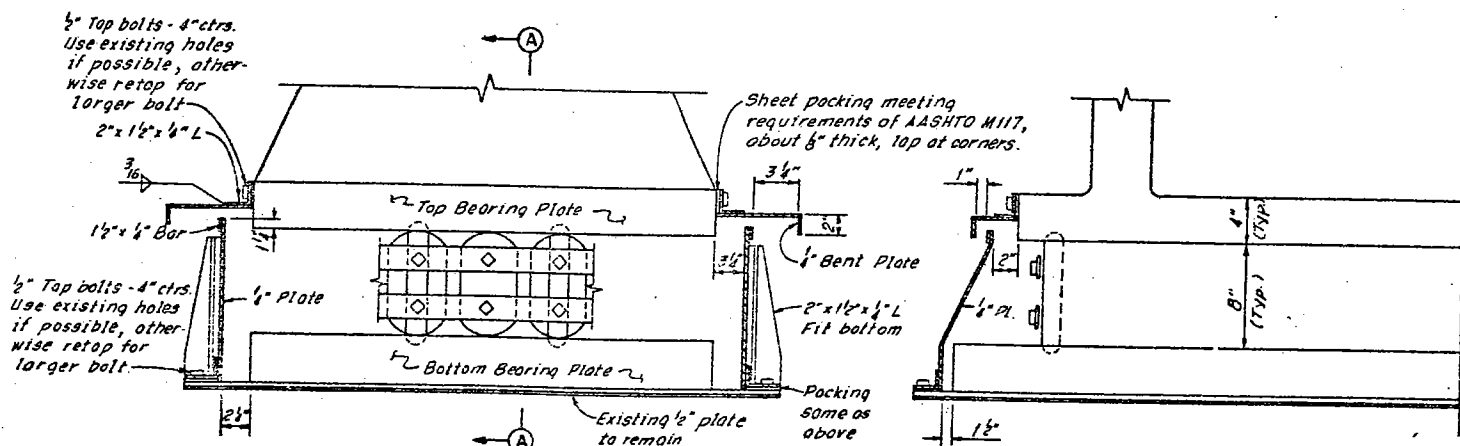


DETAIL B



ASPHALT CONCRETE SURFACE COURSE DETAIL

Note:
Curb plate, curb plate anchors and splice plates
shall be ASTM A36 Steel.



SECTION THROUGH GREASE BOX

SECTION A-A

EXPANSION BEARING GREASE BOX REPLACEMENT DETAILS
All new metal parts shall be ASTM A588

LOCATION	TOP PLATE		BOTTOM PLATE		NUMBER OF GREASE BOXES REQUIRED	BASE PLATE THICKNESS
	LONG.	TRANS.	LONG.	TRANS.		
West Pylon - Exterior	3'-4"	2'-8"	3'-6"	3'-5"	2	3 1/2"
West Pylon - Interior	3'-4"	3'-1"	3'-6"	3'-11"	2	4"
East Abutment - Exterior	3'-4"	3'-3"	3'-6"	3'-11 1/2"	2	4"
East Abutment - Center	2'-7"	2'-8"	2'-7"	3'-5"	1	3 1/2"

HNTB BRIDGE NO. 3 AND 4

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
CLEVELAND

HNTB

COMMON DETAILS

CUYAHOGA COUNTY OHIO
DRAWN: CAP, CHECKED: CES, DATE: 4/25/12
DESIGNED: RAS, DATE: 12/16/11
REVIEWED: RAS, DATE: 2/20/12
REVISION: _____ DATE: _____
SHEET CD / 1

MARK	NO	LENGTH	TYPE	SER INCR.	WEIGHT (LBS.)
EAST ABUTMENT					
*EA401	52	29'-9"	Str		1033
*EA402	48	10'-6"	Str		337
EA501	41	3'-2"	105		135
EA502	4	31'-3"	Str		130
EA503	264	3'-9"	163		1033
EA504	37	6'-0"	Str		232
EA505	13	18'-0"	Str		244
*EA601	118	12'-6"	100		2215
EA602	76	6'-0"	105		595
Total Weight (Uncoated)					= 2,459
*Total Weight (Epoxy Coated)					= 3,585
BOX AT E. ABUTMENT					
*B401	26	21'-9"	Str		378
B501	96	3'-9"	163		375
*B601	46	12'-6"	100		864
B602	28	6'-0"	105		252
Total Weight (Uncoated)					= 627
*Total Weight (Epoxy Coated)					= 1,242
WEST PYLON					
*WP401	127	27'-6"	Str		2517
*WP402	12	2'-9"	Str		22
WP501	82	15'-3"	100		845
WP502	4	26'-6"	Str		111
WP503	4	26'-9"	Str		112
WP504	12	23'-0"	Str		288
WP505	14	36'-3"	Str		425
WP506	204	13'-3"	100		2707
WP507	24	2'-9"	Str		60
WP601	82	12'-9"	Str		1570
WP602	82	27'-9"	Str		3419
WP603	82	21'-9"	Str		2833
WP604	41	20'-0"	Str		1784
WP605	4	5'-9"	100		34
WP606	4	5'-11"	105		32
WP607	52	21'-0"	105		2007
WP608	52	21'-7"	105		2000
WP609	52	7'-2"	105		560
WP610	14	21'-7"	105		230
WP611	12	7'-12"	105		141
WP612	12	21'-0"	100		150
WP701	111	29'-12"	100		3545
WP1001	10	29'-3"	100		1216
WP1002	6	29'-6"	100		981
WP1101	29	24'-3"	Str		3608
WP1102	12	31'-6"	Str		2327
WP1103	2	20'-0"	Str		80
WP1104	28	17'-6"	Str		1248
WP1105	10	31'-0"	Str		2418
Total Weight (Uncoated)					= 24,848
Total Weight (Epoxy Coated)					= 16,848

MARK	NO	LENGTH	TYPE	SER INCR.	WEIGHT (LBS.)
PIER 10					
10P401	10	19'-0"	Str		127
10P402	4	23'-6"	Str		63
10P403	1	9'-6"	Str		6
10P404	1	8'-6"	Str		6
10P405	1	8'-3"	Str		6
10P406	2	16'-9"	Str		22
10P407	1	16'-6"	Str		11
10P408	2	18'-6"	Str		25
10P409	6	4'-6"	Str		18
10P410	7	3'-11"	104		18
10P411	2	7'-3"	104		15
10P412	4	13'-5"	104		36
10P413	2	15'-10"	104		21
10P414	3	21'-3"	126		43
10P415	1	6'-0"	Str		4
10P416	2	5'-3"	Str		7
10P417	6	5'-2"	104		25
10P418	6	6'-5"	104		26
Total Weight =					479
PIER 12					
12P401	35	15'-6"	Str		397
12P402	2	4'-3"	Str		5
12P403	2	3'-3"	Str		4
12P404	2	2'-7"	Str		4
12P405	2	11'-6"	Str		15
12P406	1	11'-3"	Str		8
12P407	2	7'-6"	103		88
12P408	2	18'-7"	105		50
12P409	2	25'-1"	105		33
12P410	2	5'-6"	Str		7
12P411	2	6'-0"	Str		6
Total Weight =					620

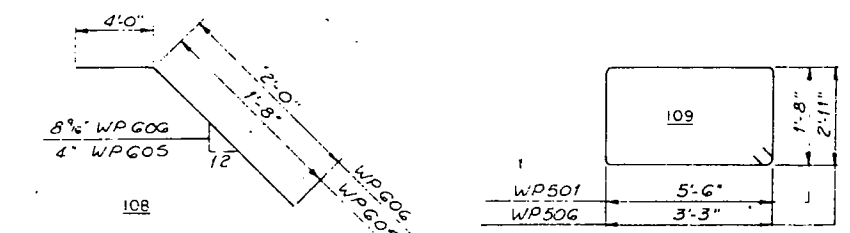
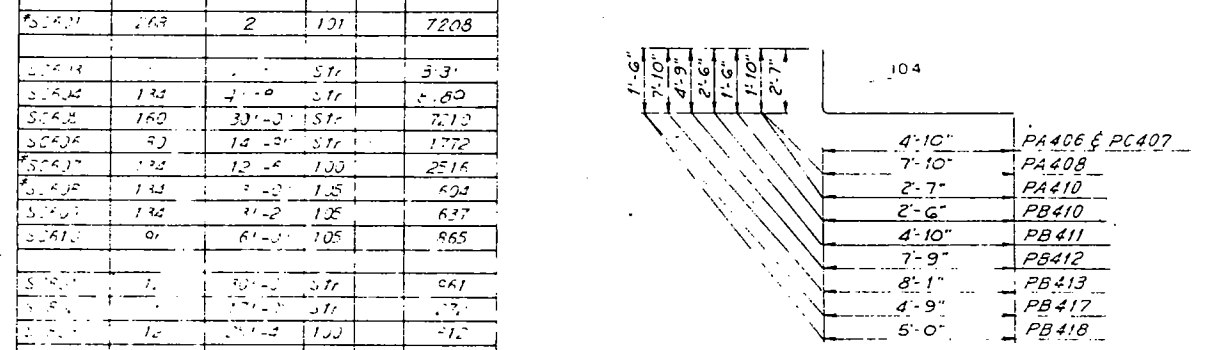
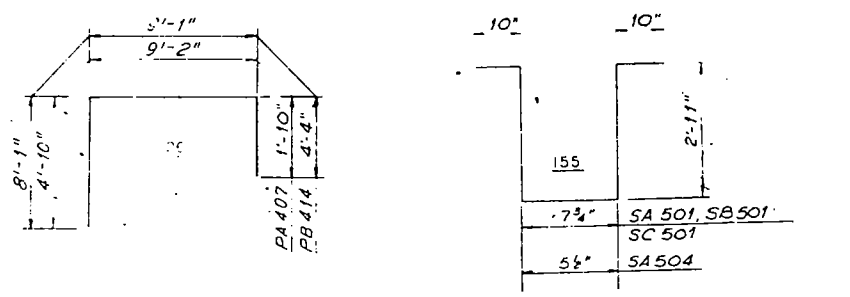
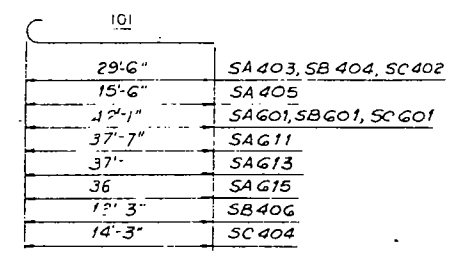
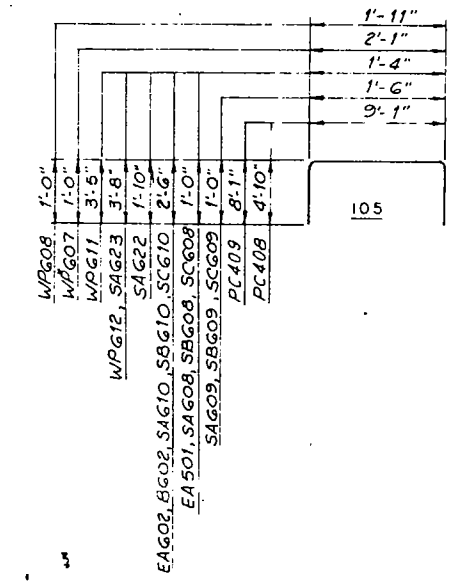
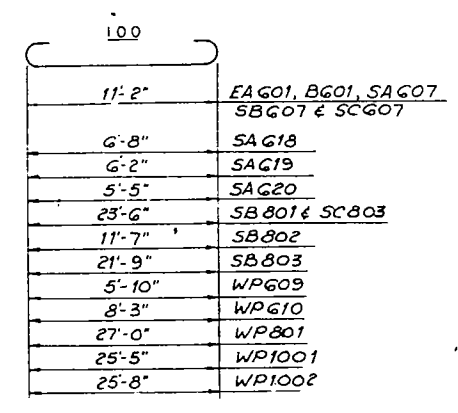
MARK	NO	LENGTH	TYPE	SER INCR.	WEIGHT (LBS.)
SLAB - SPAN 1					
*SB401	103	13'-0"	Str		894
*SB402	103	24'-6"	Str		1686
*SB403	618	12'-0"	Str		4954
*SB404	82	30'-0"	101		1643
*SB405	688	30'-0"	Str		13788
*SB406	82	12'-9"	101		698
*SB407	28	12'-3"	Str		229
SB501	290	7'-10"	155		2369
SB502	8	23'-6"	Str		195
SB503	4	11'-6"	Str		48
SB504	28	21'-9"	Str		635
SB505	28	30'-0"	Str		876
SB506	4	14'-3"	Str		59
SB507	980	3'-6"	163		3577
*SB601	794	1'-9"	101		98
SB603	97	40'	Str		24,000
SB604	397	-3' 8"	Str		2,038
SB605	560	30'-0"	Str		25234
SB606	80	14'-6"	Str		1742
*SB607	400	12'-6"	100		7510
*SB608	400	3'-0"	105		1800
SB609	400	3'-2"	105		1903
SB610	288	6'-0"	105		2595
SB601	8	25'-4"	100		541
SB602	4	13'-5"	100		143
SB603	28	23'-7"	100		1763
SB604	42	30'-0"	Str		3364
SB605	6	21'-0"	Str		369
Total Weight (Uncoated)					= 5221
*Total Weight (Epoxy Coated)					= 5413
SLAB - SPAN 2					
*SB401	206	13'-0"	Str		1789
*SB402	92	30'-0"	101		1643
*SB403	138	30'-0"	Str		2766
*SB404	82	14'-9"	101		808
*SB405	28	13'-9"	Str		257
SB501	96	7'-10"	155		782
SB502	12	23'-6"	Str		202
SB503	2	20'-3"	Str		250
SB504	4	14'-6"	Str		41
SB505	304	3'-6"	163		1183
*SB601	268	2	101		7208
SB603	104	2	Str		313
SB604	124	4'-9"	Str		2,680
SB605	160	30'-0"	Str		7,070
SB606	82	14'-9"	Str		1,772
*SB607	124	12'-6"	100		2516
SB608	144	3'-2"	105		694
SB609	144	21'-2"	105		637
SB610	91	6'-0"	105		865
SB611	12	30'-0"	Str		861
SB612	12	17'-0"	Str		73
SB613	12	21'-0"	100		71
Total Weight (Uncoated)					= 32,02
*Total Weight (Epoxy Coated)					= 33,20

Denotes Epoxy Coated Reinforcing Steel.

FHWA REGION	STATE	PROJECT
5	OHIO	



CUYAHOGA COUNTY
CUY-10-16 05



EA403 & B501
SB405, SB507
& SC405

HNTB BRIDGE NO 3
H. WARD, NEILSON, TAMMIN & BURGESS LLP
CLEVELAND, OHIO

HNTB

REINFORCEMENT SCHEDULE

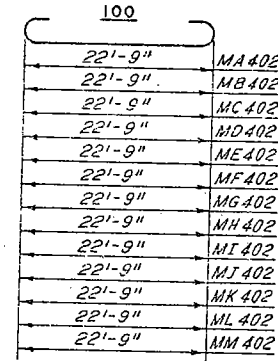
REHABILITATION OF THE
LORAIN-CARNEGIE BRIDGE
(SR 10 OVER THE CUYAHOGA RIVER)
BR NO CUY-10-1618 STA. 22+19.19
STA. 55+04.56

MARK	NO.	LENGTH	TYPE	SER. INCR.	WEIGHT (LBS.)
SLAB - SPAN 11					
1401	515	13'-0"	Str		4472
1402	82	30'-0"	101		1543
1403	82	23'-0"	101		1575
1404	358	30'-0"	Str		7174
1405	28	27'-9"	Str		519
Total Weight (Uncoated) = 64,373					
Total Weight (Epoxy Coated) = 56,412					
SLAB - SPAN 12					
1501	192	7'-10"	155		1562
1502	18	30'-0"	Str		501
1503	4	29'-0"	Str		121
1504	24	23'-6"	Str		522
1505	648	3'-6"	163		2366
Total Weight (Uncoated) = 181,825					
Total Weight (Epoxy Coated) = 161,257					
SLAB - SPAN 13					
1601	522	29'-2"	101		23300
1602	266	23'-9"	Str		11487
1603	522	31'-9"	Str		25370
1604	266	23'-0"	Str		2730
1605	320	30'-0"	Str		14419
1606	80	29'-3"	Str		3515
1607	268	12'-6"	100		5032
1608	248	3'-0"	105		1,208
1609	268	3'-2"	105		1,275
1610	192	6'-0"	105		1730
Total Weight (Uncoated) = 64,373					
Total Weight (Epoxy Coated) = 56,412					

MARK	NO.	LENGTH	TYPE	SER. INCR.	WEIGHT (LBS.)
SPAN 1					
SN425	322	30'-0"	Str		14418
SN426	82	5'-3"	Str		531
SN427	224	12'-6"	100		4206
SN428	224	3'-0"	105		1009
SN429	224	3'-2"	105		1065
SN430	163	5'-0"	105		1242
Total Weight (Uncoated) = 53,791					
Total Weight (Epoxy Coated) = 46,994					
SPAN 2					
SP401	927	13'-0"	Str		8050
SP402	103	23'-0"	Str		1720
SP403	82	30'-0"	101		1643
SP404	908	30'-0"	Str		18196
SP405	82	13'-0"	101		753
SP406	28	12'-9"	Str		238
Total Weight (Uncoated) = 122,869					
Total Weight (Epoxy Coated) = 108,747					
(M 1 BAR SPAN 1 THRU 13)					
SPAN 1					
MA401	250	22'-9"	Str		3951
MA402	216	23'-9"	100		3427
MA403	119	30'-0"	Str		2395
MA404	113	12'-0"	Str		906
MA405	16	13'-0"	Str		139
MA406	22	11'-0"	Str		162
MA407	16	25'-0"	Str		267
MA408	154	21'-0"	Str		2160
Total Weight = 13,397					
SPAN 2					
MB401	116	22'-9"	Str		1763
MB402	72	23'-9"	100		1142
MB403	34	30'-0"	Str		681
MB404	17	12'-0"	Str		145
MB405	22	23'-5"	Str		331
MB406	32	13'-0"	Str		278
Total Weight = 4340					

MARK	NO.	LENGTH	TYPE	SER. INCR.	WEIGHT (LBS.)
SPAN 3					
MC401	508	22'-9"	Str		7720
MC402	288	23'-9"	100		4569
MC403	153	30'-0"	Str		3066
MC404	17	25'-3"	Str		288
MC405	128	13'-0"	Str		1112
MC406	44	11'-0"	Str		223
MC407	32	25'-0"	Str		534
MC408	22	23'-0"	Str		338
Total Weight = 17950					
SPAN 4					
MD401	116	22'-9"	Str		1763
MD402	72	23'-9"	100		1142
MD403	34	30'-0"	Str		681
MD404	17	12'-0"	Str		145
MD405	22	23'-6"	Str		331
MD406	32	13'-0"	Str		278
Total Weight = 4340					
SPAN 5					
ME401	399	22'-0"	Str		6054
ME402	311	23'-9"	100		4934
ME403	170	30'-0"	Str		3407
ME404	17	20'-3"	Str		230
ME405	144	13'-0"	Str		1250
ME406	44	11'-0"	Str		223
ME407	32	25'-0"	Str		534
ME408	22	23'-0"	Str		338
ME409	154	22'-6"	Str		2315
Total Weight = 19,395					
SPAN 6					
MF401	141	22'-9"	Str		2143
MF402	119	23'-9"	100		1888
MF403	51	30'-0"	Str		1022
MF404	17	30'-9"	Str		349
MF405	64	12'-6"	Str		534
MF406	88	22'-6"	Str		1323
Total Weight = 7259					
SPAN 7					
MG401	622	22'-9"	Str		9453
MG402	336	23'-9"	100		5331
MG403	127	30'-0"	Str		3747
MG404	17	15'-9"	Str		179
MG405	160	13'-0"	Str		1389
MG406	44	11'-0"	Str		223
MG407	32	25'-0"	Str		534
Total Weight = 20956					
SPAN 8					
MH401	186	22'-9"	Str		2827
MH402	120	23'-9"	100		1904
MH403	51	30'-0"	Str		1022
MH404	17	31'-6"	Str		358
MH405	64	13'-0"	Str		556
MH406	22	23'-0"	Str		338
MH407	22	22'-6"	Str		331
Total Weight = 7336					
SPAN 9					
MI401	682	22'-9"	Str		10516
MI402	384	23'-9"	100		6092
MI403	221	30'-0"	Str		4429
MI404	17	6'-0"	Str		68
MI405	192	13'-0"	Str		1667
MI406	44	11'-0"	Str		223
MI407	32	25'-0"	Str		534
MI408	22	23'-0"	Str		338
Total Weight = 23967					

MARK	NO.	LENGTH	TYPE	SER. INCR.	WEIGHT (LBS.)
SPAN 10					
MJ401	232	22'-9"	Str		3525
MJ402	144	23'-9"	100		2285
MJ403	68	30'-0"	Str		1363
MJ404	17	25'-6"	Str		301
MJ405	80	13'-0"	Str		655
MJ406	22	23'-0"	Str		338
MJ407	22	22'-6"	Str		331
Total Weight = 8839					
SPAN 11					
MK401	739	22'-9"	Str		11215
MK402	408	23'-9"	100		6473
MK403	239	30'-0"	Str		4770
MK404	208	13'-0"	Str		1806
MK405	44	11'-0"	Str		323
MK406	32	25'-0"	Str		534
MK407	22	23'-0"	Str		338
Total Weight = 25459					
SPAN 12					
ML401	186	22'-9"	Str		2827
ML402	120	23'-9"	100		1904
ML403	51	30'-0"	Str		1022
ML404	17	31'-6"	Str		358
ML405	64	13'-0"	Str		556
ML406	22	23'-0"	Str		338
ML407	22	22'-6"	Str		331
Total Weight = 7336					
SPAN 13					
MM401	495	22'-9"	Str		7523
MM402	275	23'-9"	100		4363
MM403	153	30'-0"	Str		3066
MM404	17	13'-6"	Str		153
MM405	144	13'-0"	Str		1250
MM406	22	11'-0"	Str		162
MM407	16	25'-0"	Str		267
MM408	22	23'-0"	Str		338
Total Weight = 17122					



* Denotes Epoxy Coated Reinforcing Steel.

VOID 3/14/84

H.N.T.B. BRIDGE NO. 3				
HOWARD NEEDLES TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND				HNTB
REINFORCEMENT SCHEDULE				
REHABILITATION OF THE LORAIN - CARNEGIE BRIDGE (S.R. 10 OVER THE CUYAHOGA RIVER)				
BR. NO. CUY.-10-16:8		STA. 22+19.19		
		STA. 55+04.56		
CUYAHOGA COUNTY OHIO				
DRAWN BY	TRACED	CHECKED	REVIEWED	REvised
12/4/83		DIP		
DATE	DATE	DATE	DATE	DATE
				SHEET P 13

FHWA REGION	STATE	PROJECT
5	OHIO	

165
185

CUYAHOGA COUNTY
CUY-10-16.23

MARK	NO.	LENGTH	TYPE	SER INCR.	WEIGHT (LBS.)
STAIR - COLUMN REPAIR					
SC401	25	5'-4"	104		93
SC402	32	5'-1"	104		105
SC403	35	2'-10"	104		110
SC901	14	1'-10"	STR		550
SC1301	2	1'-4"	STR.		250
SC1302	4	1'-4"	STR.		259
Total weight =					1,390

MARK	NO.	LENGTH	TYPE	SER INCR.	WEIGHT (LBS.)
SIMPLE GI					
GM501	40	1'-2"	104		540
GM502	1	1'-2"	STR.		21
GM503	1	3'-10"	STR.		40
GM504	1	2'-11"	STR.		30
GM505	1	2'-9"	STR.		29
GM506	1	3'-10"	STR.		38
GM507	1	1'-7"	STR.		20
GM508	37	1'-3"	104		511
GM509	19	1'-5"	104		251
GM510	35	1'-7"	104		494
GM511	1 Ser. 35	14'-0"	104	0.2"	551
GM512	67	1'-0"	104		210
GM513	60	1'-1"	104		193
GM514	31	1'-2"	104		102
GM515	59	1'-3"	104		202
GM516	1 Ser. 59	3'-2"	104	0.2"	224
GM517	330	1'-4"	104		1,146

GM601	8	2'-5"	STR.		185
GM602	8	3'-0"	STR.		351
GM603	6	2'-0"	STR.		250
GM604	6	2'-2"	STR.		255
GM605	6	3'-1"	STR.		327
GM606	5	1'-3"	STR.		174

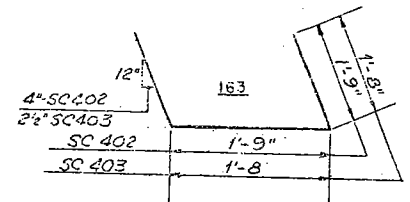
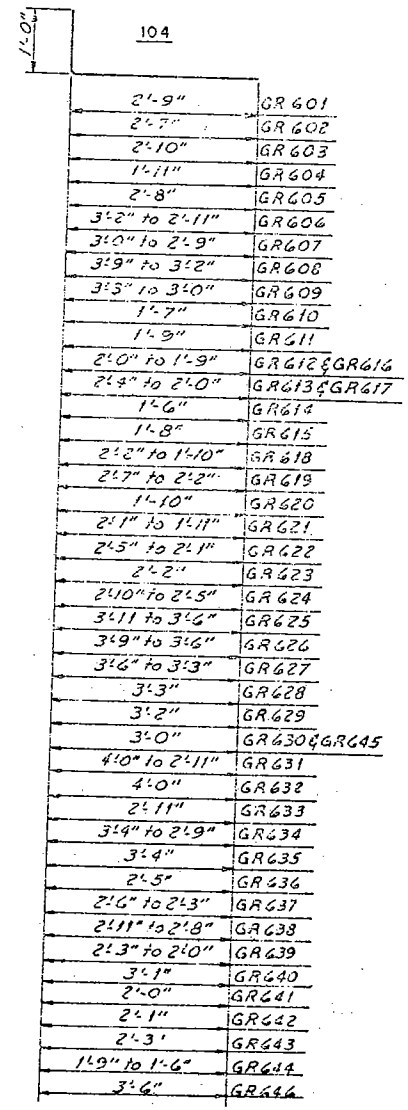
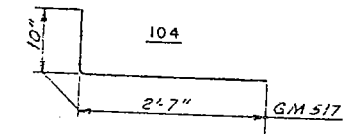
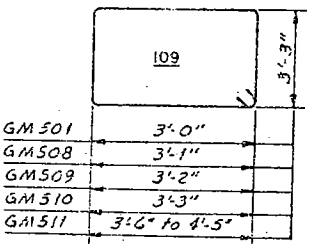
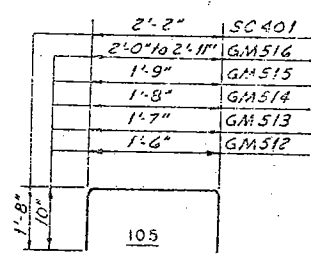
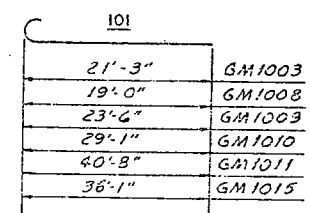
GM1001	6	1'-1"	STR.		464
GM1002	4	1'-3"	STR.		258
GM1003	6	2'-0"	101		585
GM1004	6	4'-2"	STR.		1,093
GM1005	6	3'-2"	STR.		833
GM1006	6	3'-1"	STR.		820
GM1007	6	3'-5"	STR.		868
GM1008	6	2'-5"	101		527
GM1009	2	2'-11"	101		214
GM1010	4	3'-5"	101		525
GM1011	7	4'-1"	101		1,267
GM1012	7	3'-5"	STR.		1,160
GM1013	7	2'-5"	STR.		648
GM1014	7	3'-5"	STR.		1,130
GM1015	7	3'-5"	101		1,130
Total weight =					17,750

MARK	NO.	LENGTH	TYPE	SER INCR.	WEIGHT (LBS.)
GIRDER 2-19					
GM501	231	2'-7"	104		1,092
GM502	75	2'-5"	104		390
GM503	33	3'-0"	104		209
GM504	162	2'-0"	104		587
GM505	64	2'-5"	104		442
GM506	1 Ser. 14	3'-9"	104	0.2"	93
GM507	1 Ser. 14	3'-10"	104	0.2"	99
GM508	1 Ser. 14	4'-0"	104	0.2"	103
GM509	1 Ser. 14	3'-9"	104	0.2"	95
GM510	102	2'-5"	104		363
GM511	15	2'-0"	104		592
GM512	2 Ser. 21	2'-10"	104	0.2"	143
GM513	2 Ser. 17	2'-7"	104	0.2"	142
GM514	12	2'-11"	104		112
GM515	72	2'-0"	104		270
GM516	2 Ser. 17	2'-10"	104	0.2"	130
GM517	2 Ser. 21	2'-10"	104	0.2"	140
GM518	2 Ser. 14	2'-5"	104	0.2"	134
GM519	2 Ser. 21	2'-10"	104	0.2"	143
GM520	23	2'-0"	104		213
GM521	2 Ser. 4	2'-5"	104	0.2"	34

MARK	NO.	LENGTH	TYPE	SER INCR.	WEIGHT (LBS.)
GM622	2 Ser. 27	2'-11"	104	0.2"	185
GM623	12	3'-0"	104		81
GM624	1 Ser. 22	3'-3"	104	0.1"	114
GM625	1 Ser. 22	3'-2"	104	0.1"	150
GM626	2 Ser. 22	4'-7"	104	0.1"	308
GM627	2 Ser. 22	4'-4"	104	0.1"	405
GM628	22	4'-1"	104		441
GM629	174	4'-0"	104		1,045
GM630	23	3'-10"	104		507
GM631	2 Ser. 23	3'-9"	104	0.2"	297
GM632	30	4'-10"	104		213
GM633	125	3'-5"	104		591
GM634	2 Ser. 17	3'-7"	104	0.2"	198
GM635	115	4'-2"	104		725
GM636	75	3'-3"	104		376
GM637	2 Ser. 14	3'-4"	104	0.2"	154
GM638	1 Ser. 21	3'-6"	104	0.2"	114
GM639	1 Ser. 21	3'-10"	104	0.2"	93
GM640	25	3'-11"	104		171
GM641	150	2'-10"	104		809
GM642	77	2'-11"	104		337
GM643	21	3'-11"	104		97
GM644	2 Ser. 17	2'-4"	104	0.2"	126
GM645	21	2'-10"	104		121
GM646	25	4'-4"	104		169
Total Weight (uncoated) =					13,400
# Total Weight (Epoxy Coated) =					651

Denotes Epoxy Coated Reinforcing Steel.

Note:
Only 18-GR604 bars, 16-GR611 bars, 44-GR620 bars, 36-GR641 bars and 24-GR642 bars shall be epoxy coated.



HNTB BRIDGE NO 4

HOWARD NEEDLES TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND

HNTB

REINFORCEMENT SCHEDULE

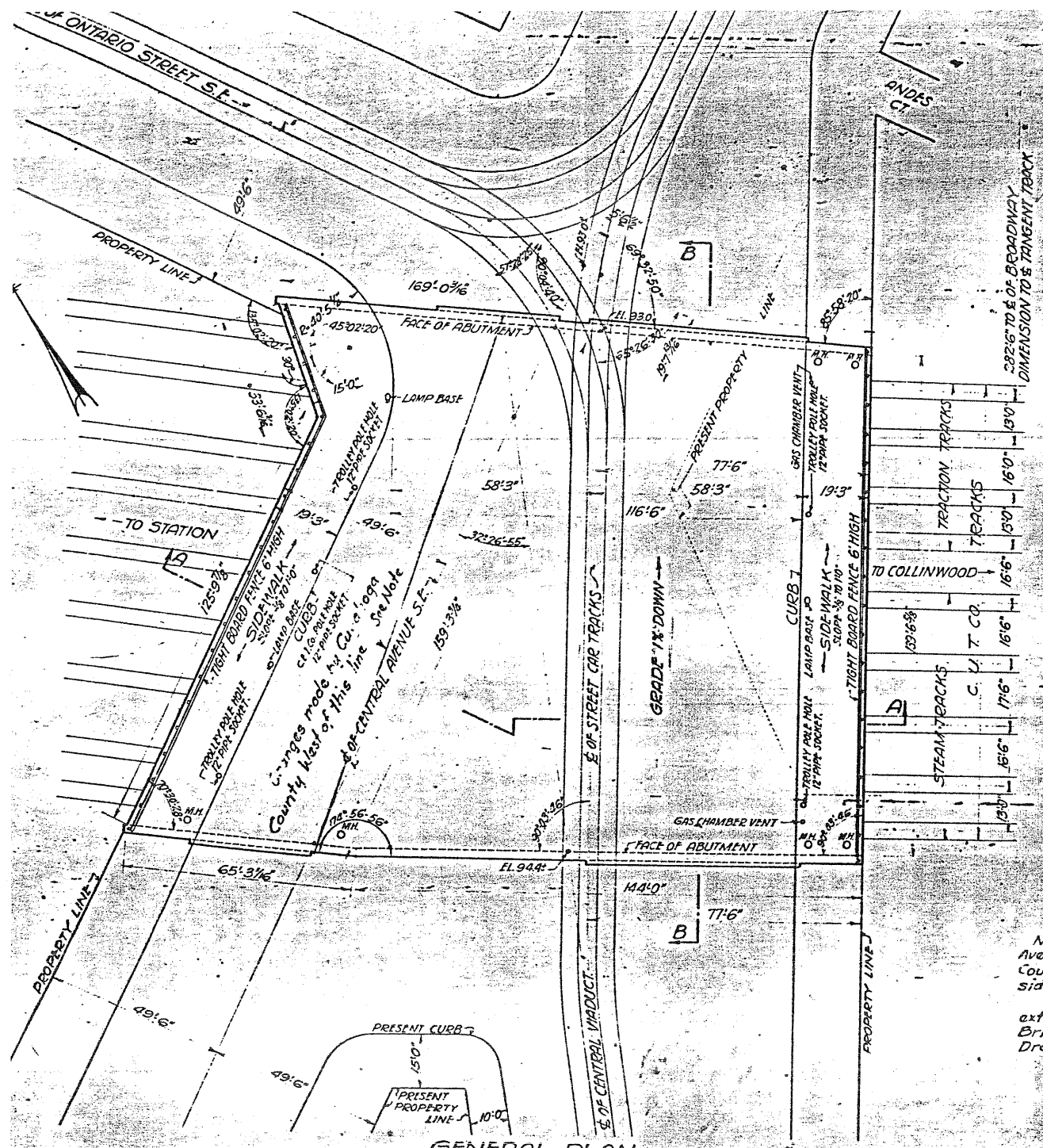
REHABILITATION OF THE CARNEGIE AVENUE GRADE SEPARATION STRUCTURE (SR 10) OVER THE CLEVELAND UNION TERMINALS CO. AND THE REGIONAL TRANSIT AUTHORITY BR. NO. CUY-10-1685

CUYAHOGA COUNTY

DATE: 03/10

REVISION: 01

STA 57+29.72
STA 58+85.70

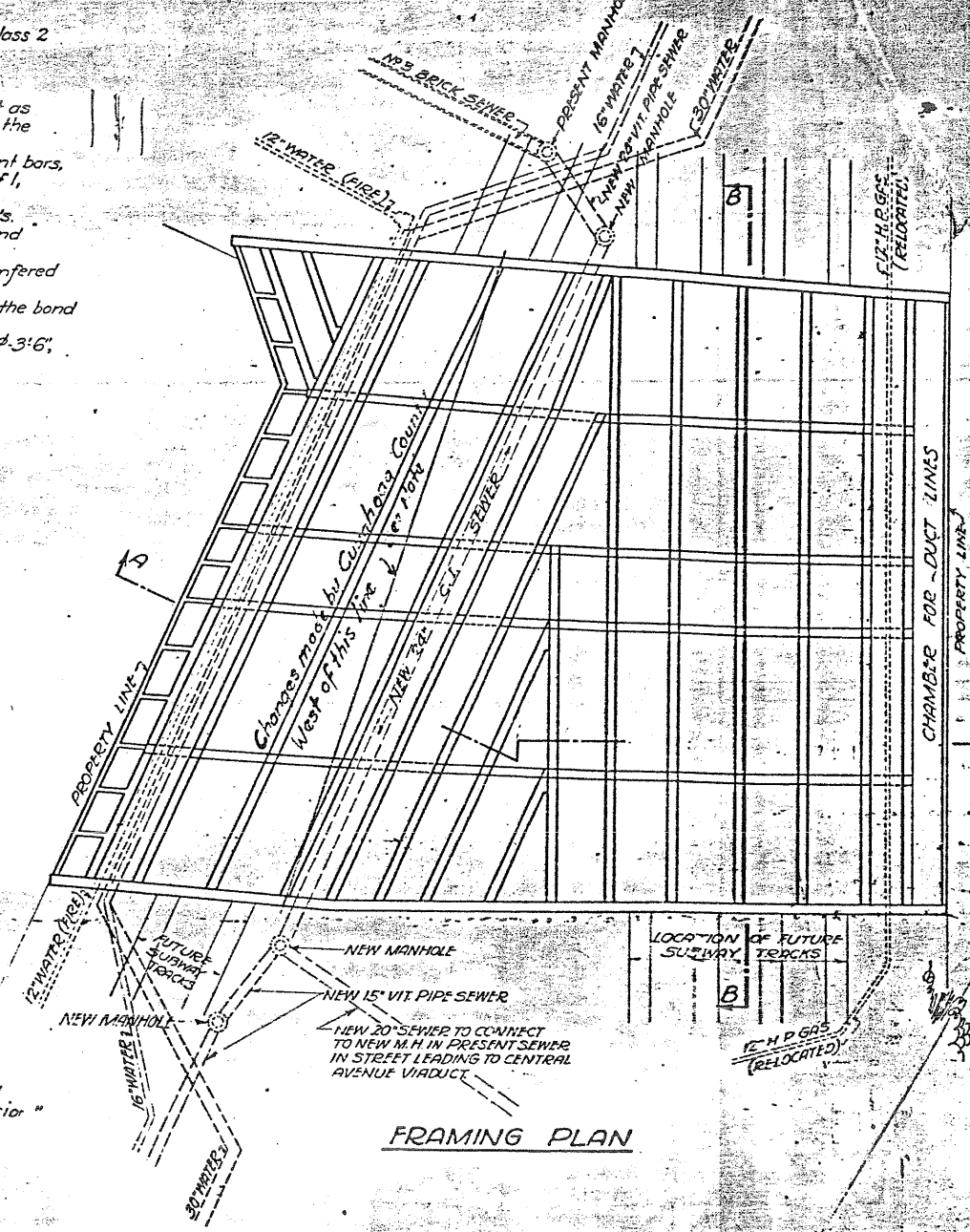


GENERAL PLAN

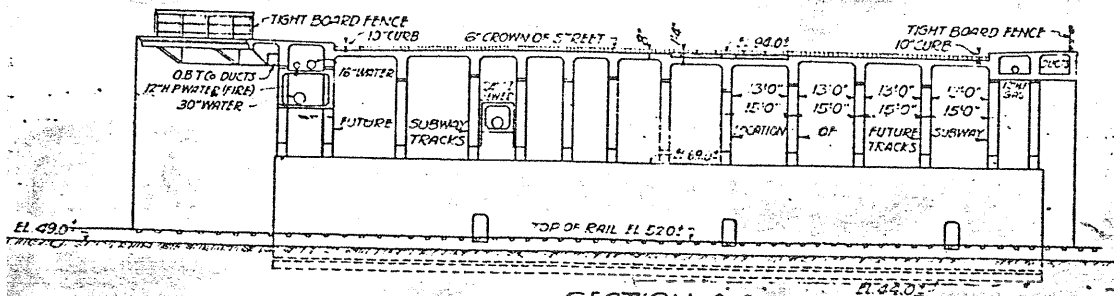
GENERAL NOTES:

All Concrete except duct encasement to be Class 2
 (6 Bags of Cement per Cu. Yd.)
 Duct encasement concrete to be Class 3
 (4 1/2 Bags of Cement per Cu. Yd.)
 No Construction Joints to be made, except as shown, without specific authority from the Engineer of Structures, C.U.T. Co.
 For explanation of method of marking bent bars, see "Standard Bar Marks" Sheet No 1 of 1, Issue No 2 dated June 20, 1927.
 Specifications used for design - C.U.T. Co's. "Specifications for Highway Bridges and Viaducts" Issue No 1 dated July 10, 1924.
 All exposed edges of Concrete to be chamfered 3/4" unless otherwise noted.
 In making splices for reinforcement bars the bond distance shall be as follows:
 3/8" φ 1'-6"; 1/2" φ 2'-0"; 5/8" φ 2'-6"; 3/4" φ 3'-0"; 7/8" φ 3'-6";
 1" φ 4'-0"; 1 1/8" φ 4'-6" and 1 1/4" φ 5'-0".

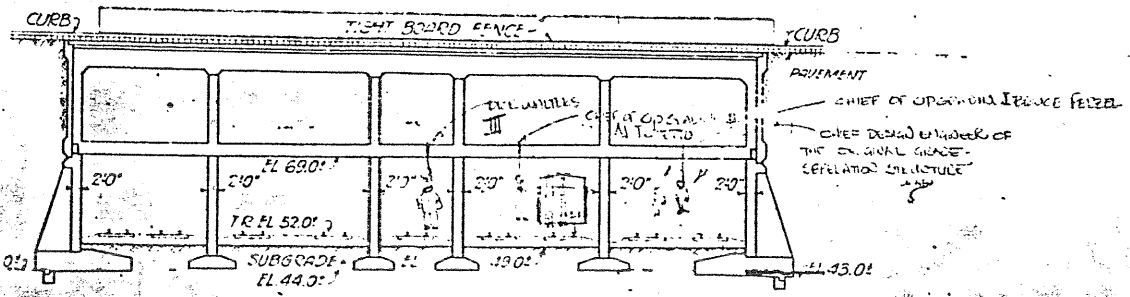
Note: Subsequent to the completion of the Central Avenue Bridge, in accordance with this Plan, the County of Cuyahoga made alterations in the western side of this Bridge and extended it to the west.
 For information concerning the alterations and extensions see the County's Plans for "Lorain-Centra" Bridge, Cleveland, Ohio; Central Ave. Bridge Extension" Drawings Nos. 18 to 22 inclusive.



FRAMING PLAN



SECTION A-A



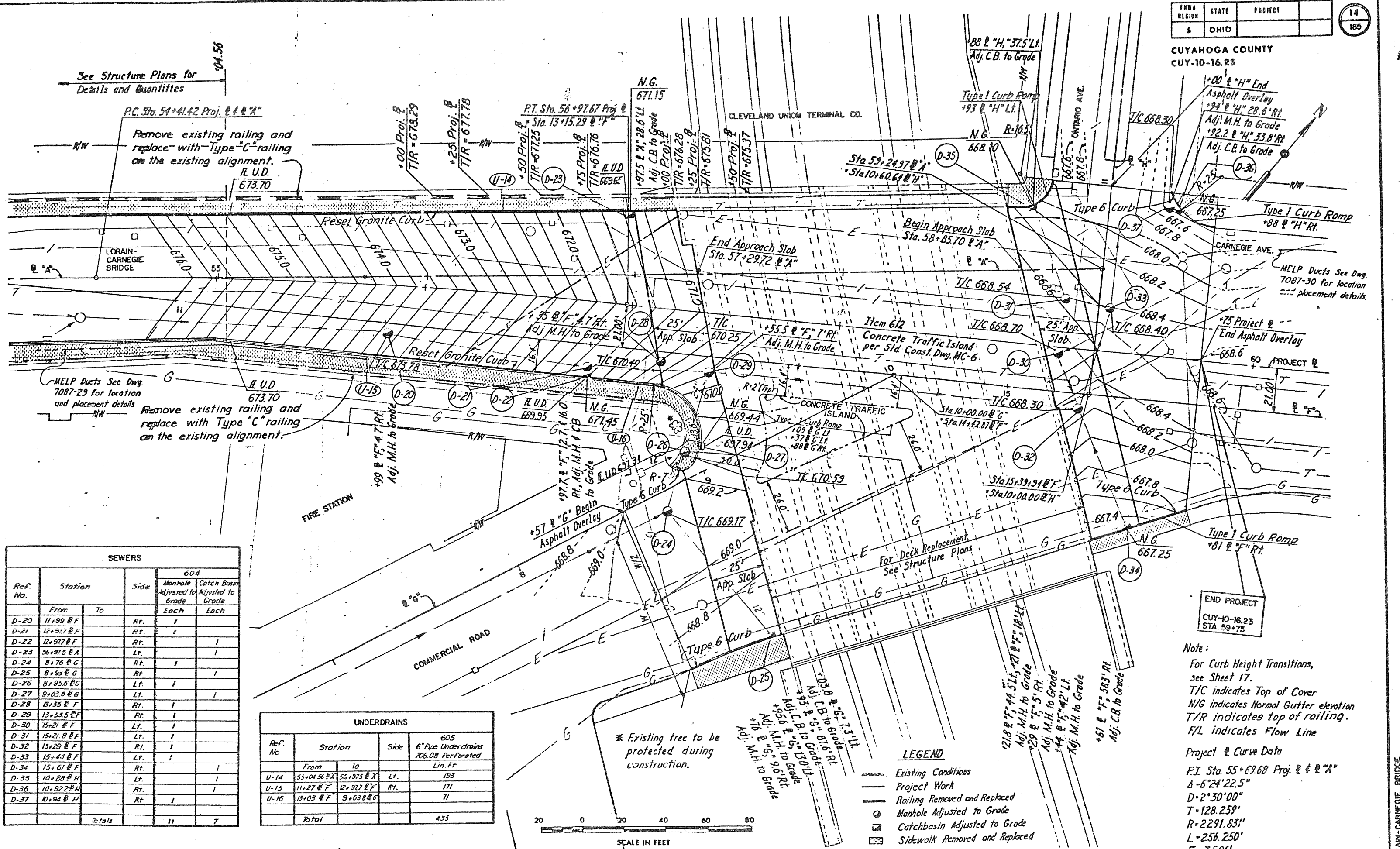
SECTION B-B

W. J. ...
 Engineer of Structures
 W. J. ...
 Principal Assistant Engineer

Plan Approved
 CITY OF CLEVELAND

THE CLEVELAND UNION TERMINALS CO.
 CENTRAL AVE. BRIDGE
 GENERAL PLAN
 AND SECTIONS
 CLEVELAND, OHIO

CUYAHOGA COUNTY
CUY-10-16.23



SEWERS					
Ref. No.	Station		Side	604	
	From	To		Manhole Adjusted to Grade Each	Catch Basin Adjusted to Grade Each
D-20	11+99	12+00	Rt.	1	
D-21	12+00	12+07	Rt.	1	
D-22	12+07	12+08	Rt.		1
D-23	12+08	12+09	Lt.		1
D-24	12+09	12+10	Rt.	1	
D-25	12+10	12+11	Rt.		1
D-26	12+11	12+12	Lt.	1	
D-27	12+12	12+13	Lt.		1
D-28	12+13	12+14	Rt.	1	
D-29	12+14	12+15	Rt.	1	
D-30	12+15	12+16	Lt.	1	
D-31	12+16	12+17	Lt.	1	
D-32	12+17	12+18	Rt.	1	
D-33	12+18	12+19	Lt.	1	
D-34	12+19	12+20	Rt.		1
D-35	12+20	12+21	Lt.	1	
D-36	12+21	12+22	Rt.		1
D-37	12+22	12+23	Rt.	1	
Total			11	7	

UNDERDRAINS					
Ref. No.	Station		Side	605	
	From	To		6" Pipe Underdrains	706.08 Perforated Lin. Ft.
U-14	55+04.56	56+97.5	Lt.		193
U-15	11+27	12+92.7	Rt.		171
U-16	13+03	9+03.8	G		71
Total					435

LEGEND

- Existing Conditions
- Project Work
- Railing Removed and Replaced
- Manhole Adjusted to Grade
- Catchbasin Adjusted to Grade
- Sidewalk Removed and Replaced

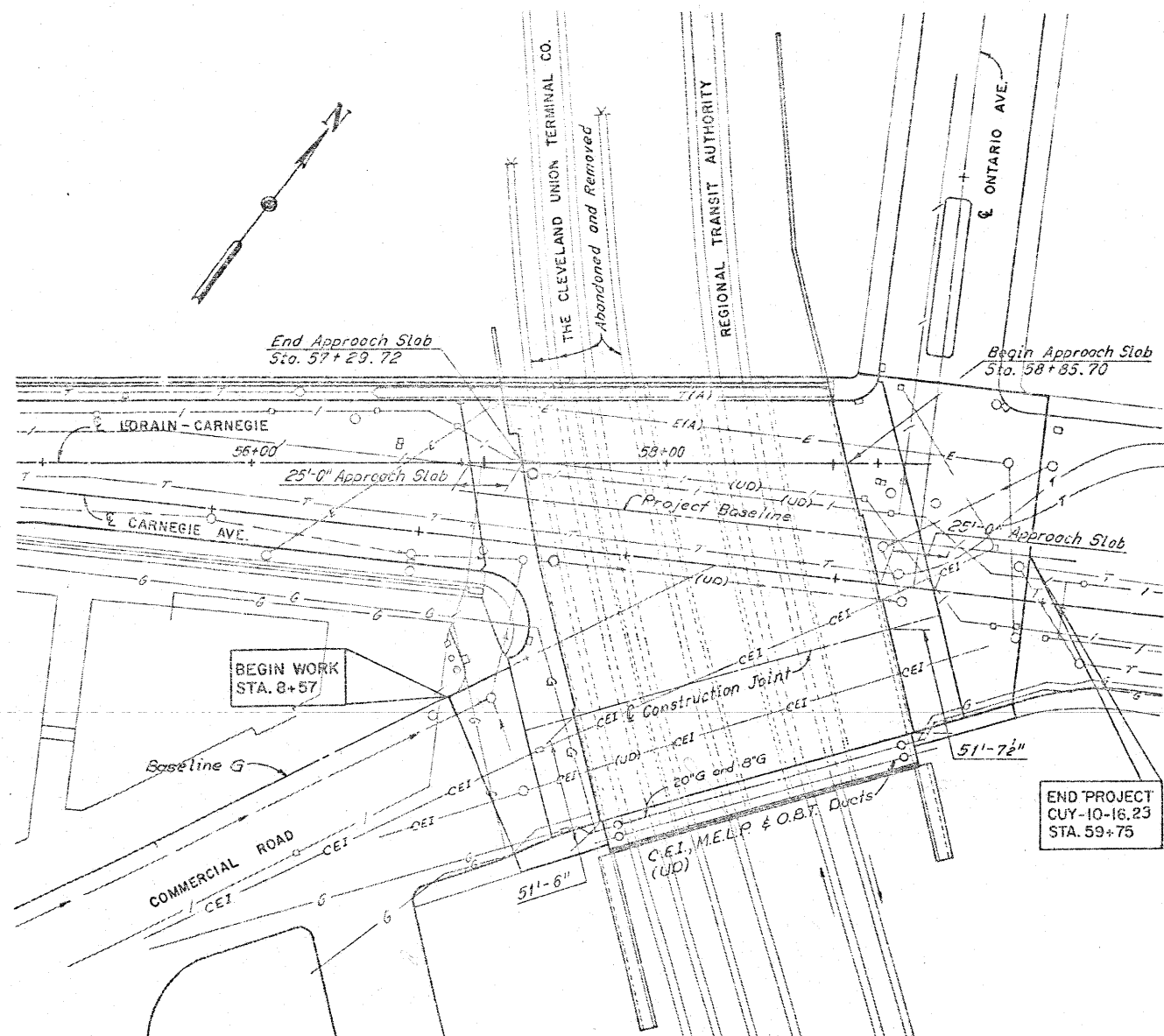
Note:
For Curb Height Transitions, see Sheet 17.
T/C indicates Top of Cover
N/G indicates Normal Gutter elevation
T/R indicates top of railing.
F/L indicates Flow Line

Project & Curve Data
P.I. Sta. 55+69.68 Proj. & Curve "A"
Δ=6°24'22.5"
D=2°30'00"
T=128.259'
R=2291.83'
L=256.250'
E=3.586'

FHWA REGION	STATE	PROJECT
5	OHIO	

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185

CUYAHOGA COUNTY
CUY-10-16.23

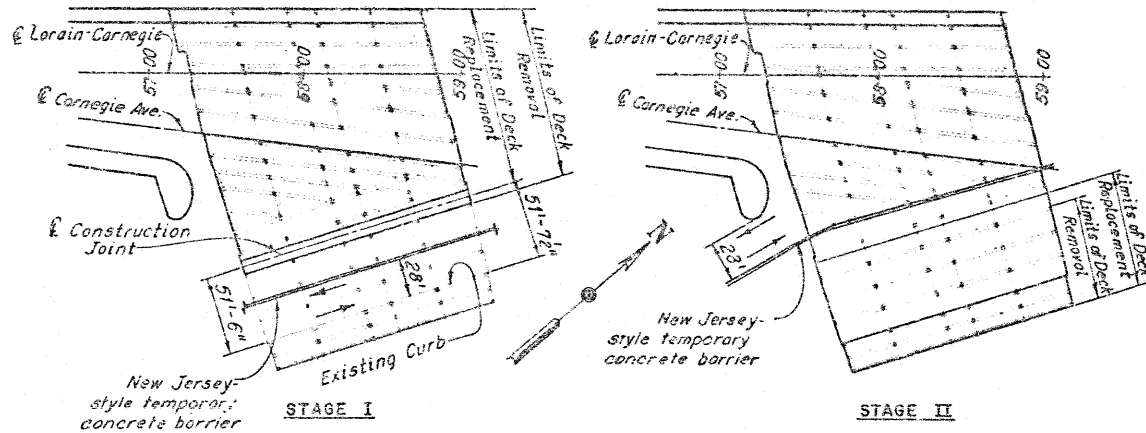


BEGIN WORK
STA. 8+57

END PROJECT
CUY-10-16.23
STA. 59+75

PLAN

(Utilities not shown otherwise are
underground utilities)



TRAFFIC MAINTENANCE - CARNEGIE AVENUE GRADE SEPARATION STRUCTURE
Scale: 1" = 60'

The stage construction applies within the bridge and approach slab limits. All repair work shall be coordinated with the stage construction as shown.

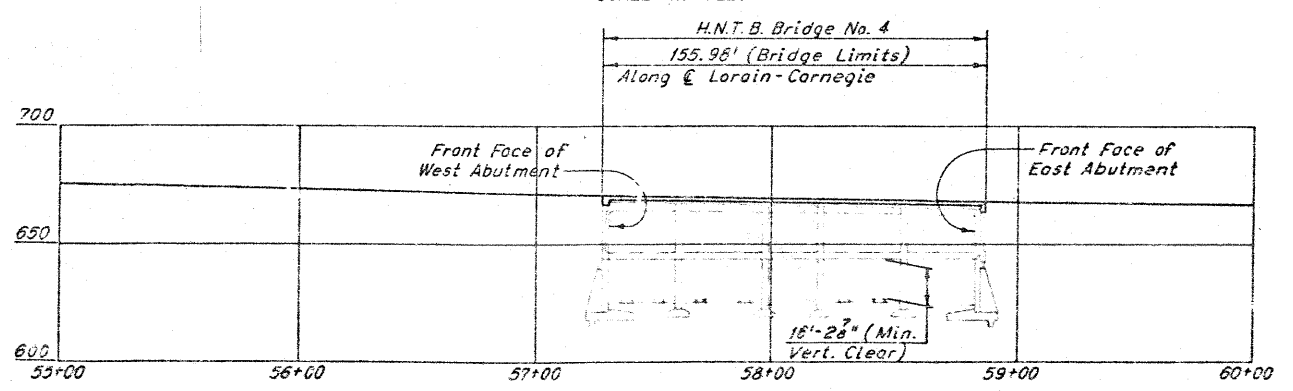
Notes:
Subdued linework indicates existing conditions.
For Project Baseline Data, and Baseline G Data,
See Roadway Plans.

Note:
Underground and underdeck utilities not indicated as being abandoned shall remain. The information shown on this drawing concerning type and location of underground and underdeck utilities is not guaranteed to be accurate or all inclusive. The Contractor is responsible for making his own determination as to the type and location of underground and underdeck utilities as may be necessary to avoid damage thereto. Full expense involved in relocating the affected utility, except where the relocation is covered in these plans, shall be borne by the Owner of the utility. The Contractor and Owner are requested to cooperate by arranging their work in such a manner that inconvenience to either will be held to a minimum.

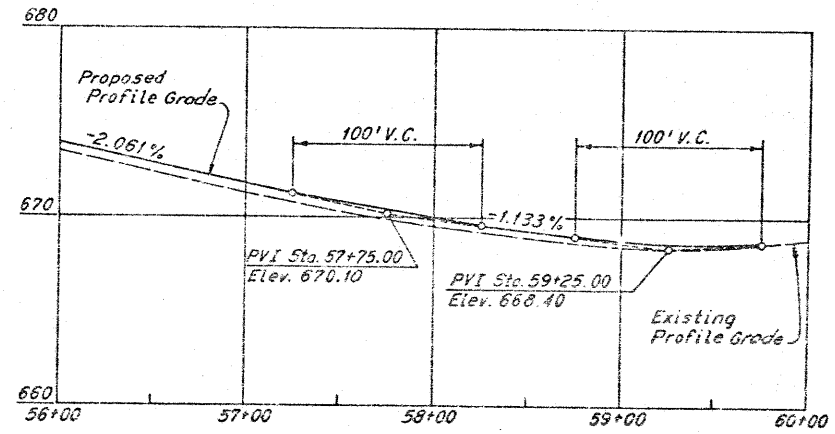
UTILITY LEGEND

- (A) - Indicates a utility to be abandoned
- (UD) - Indicates an underdeck utility
- E - Indicates Municipal Electric Light and Power line (M.E.L.P.)
- T - Indicates Ohio Bell Telephone Line (O.B.T.)
- I - Indicates water line
- G - Indicates gas line
- S - Indicates sewer line
- CEI - Indicates Cleveland Electric Illuminating Company line (C.E.I.)

PROPOSED STRUCTURE DATA ON CONCRETE GIRDERS
BRIDGE NO. CUY-10-1685
TYPE: Reinforced Concrete Girder, Deck and Substructure
SPAN: See Framing Plan, Sheet No. 150.
ROADWAY: Varies
LOADING: HS 20-44 Case II and The Alternate Military Loading
SKEW: Varies
WEARING SURF: 2 3/4" Asphalt Concrete (Rubberized)
ALIGN: Tangent



ELEVATION



PROFILE GRADE SEPARATION
ALONG PROJECT BASELINE

HNTB BRIDGE NO. 4

HOWARD NEEDLES TAMMEN & BERGENOFF
CONSULTING ENGINEERS
CLEVELAND

HNTB

SITE PLAN

REHABILITATION OF THE
CARNEGIE AVENUE GRADE SEPARATION STRUCTURE
(SR 10 OVER THE CLEVELAND UNION TERMINALS CO.
AND THE REGIONAL TRANSIT AUTHORITY)
BR. NO. CUY-10-1685 STA. 57+29.72
CUYAHOGA COUNTY STA. 58+85.70 OHIO

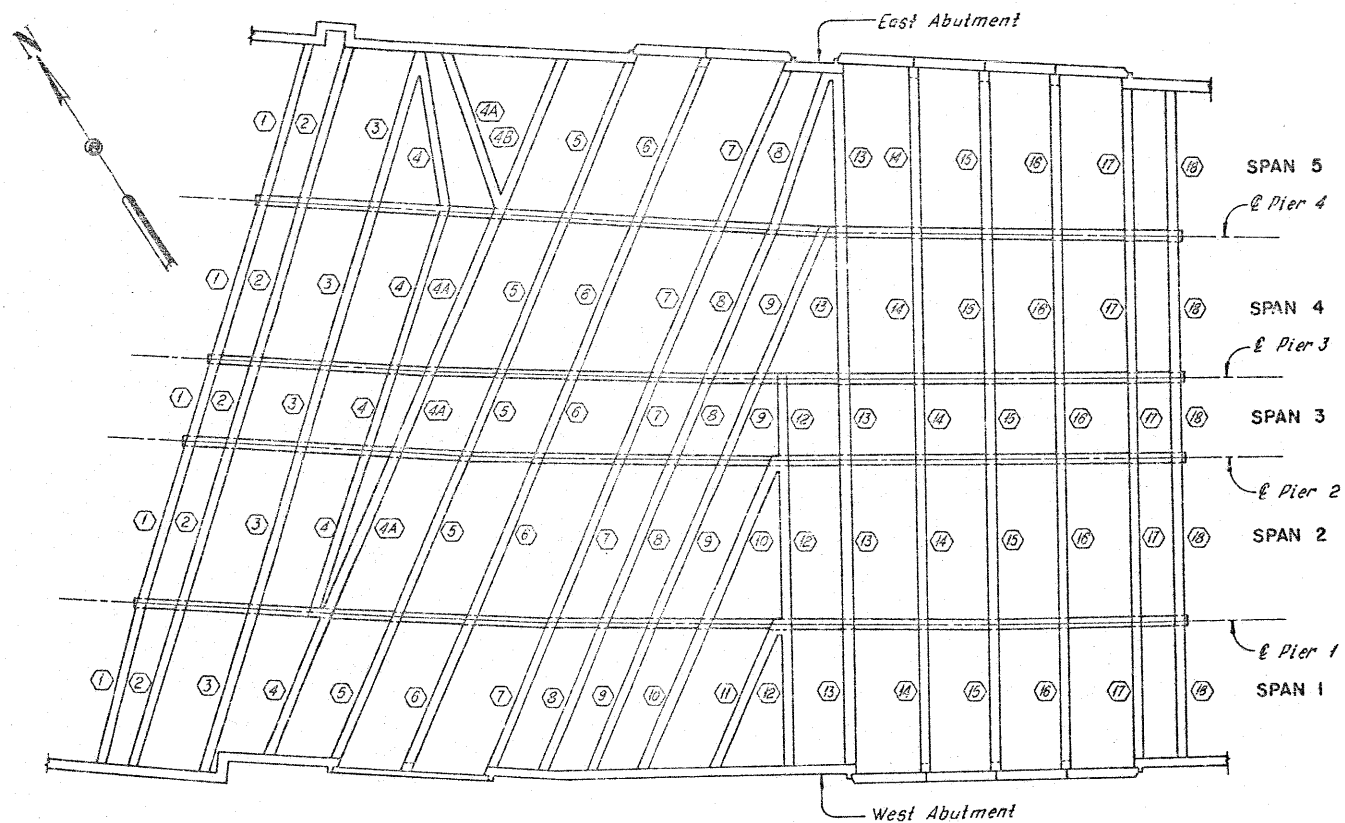
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DESIGNED	CHECKED	REVIEWED	REVISED
DATE 9/20/00	DATE 9/20/00	DATE 9/20/00	DATE

SHEET 1 | 31

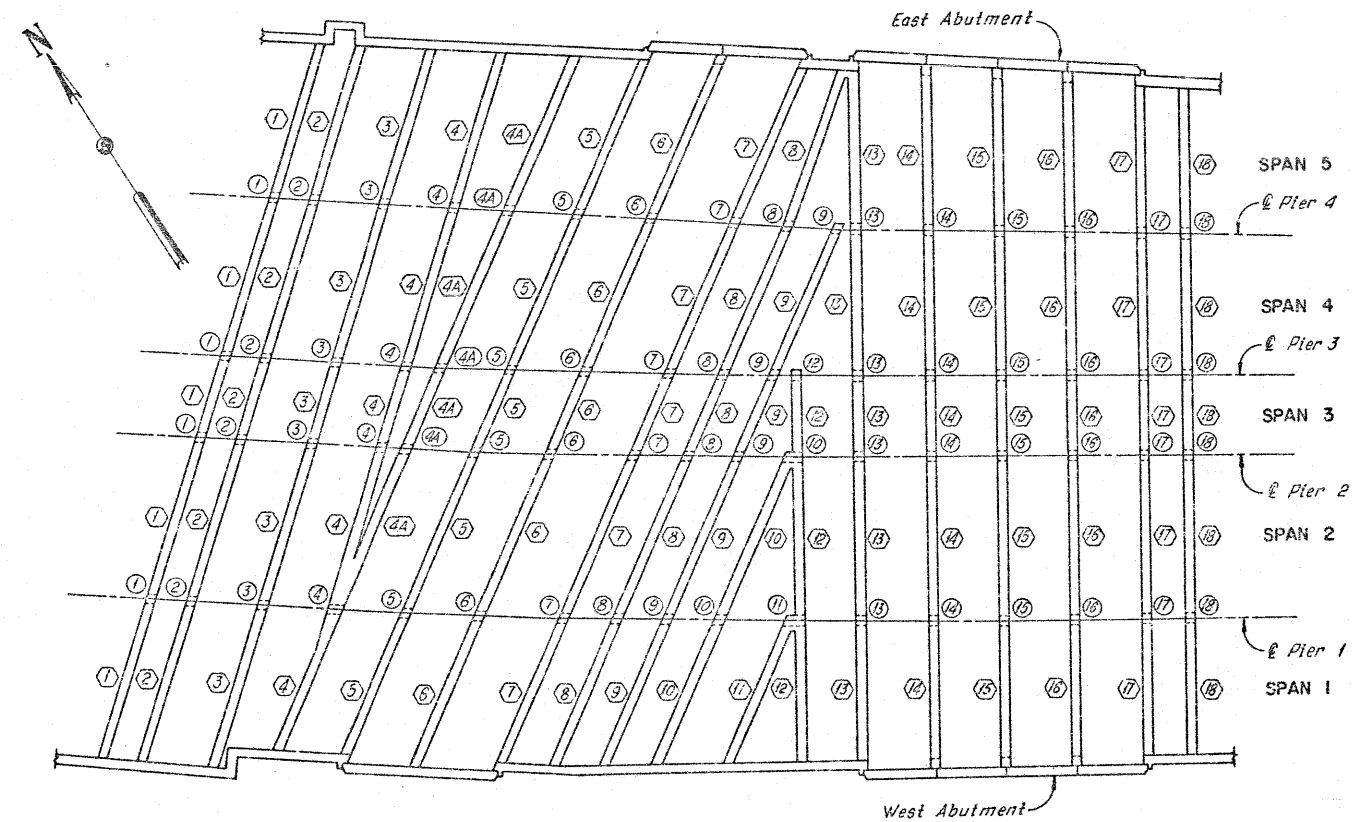
FHWA REGION	STATE	PROJECT	
5	OHIO		

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CUYAHOGA COUNTY
CUY-10-16.23



STRUT AND PIER IDENTIFICATION PLAN
(Lower Level Framing)



GIRDER AND COLUMN IDENTIFICATION PLAN
(Upper Level Framing)

LEGEND:

- Strut or Girder
- Column

HNTB BRIDGE NO. 4

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
CLEVELAND

HNTB

MEMBER IDENTIFICATION PLANS

REHABILITATION OF THE
CARNegie AVENUE GRADE SEPARATION STRUCTURE
(S.R. 10 OVER THE CLEVELAND UNION TERMINALS CO.
AND THE REGIONAL TRANSIT AUTHORITY)
BR. NO. CUY-10-1685 STA. 57+29.72
CUYAHOGA COUNTY STA. 58+85.70 OHIO

DRAWN BY	TRACED BY	CHECKED BY	REVIEWED	REVISED
DATE	DATE	DATE	DATE	DATE

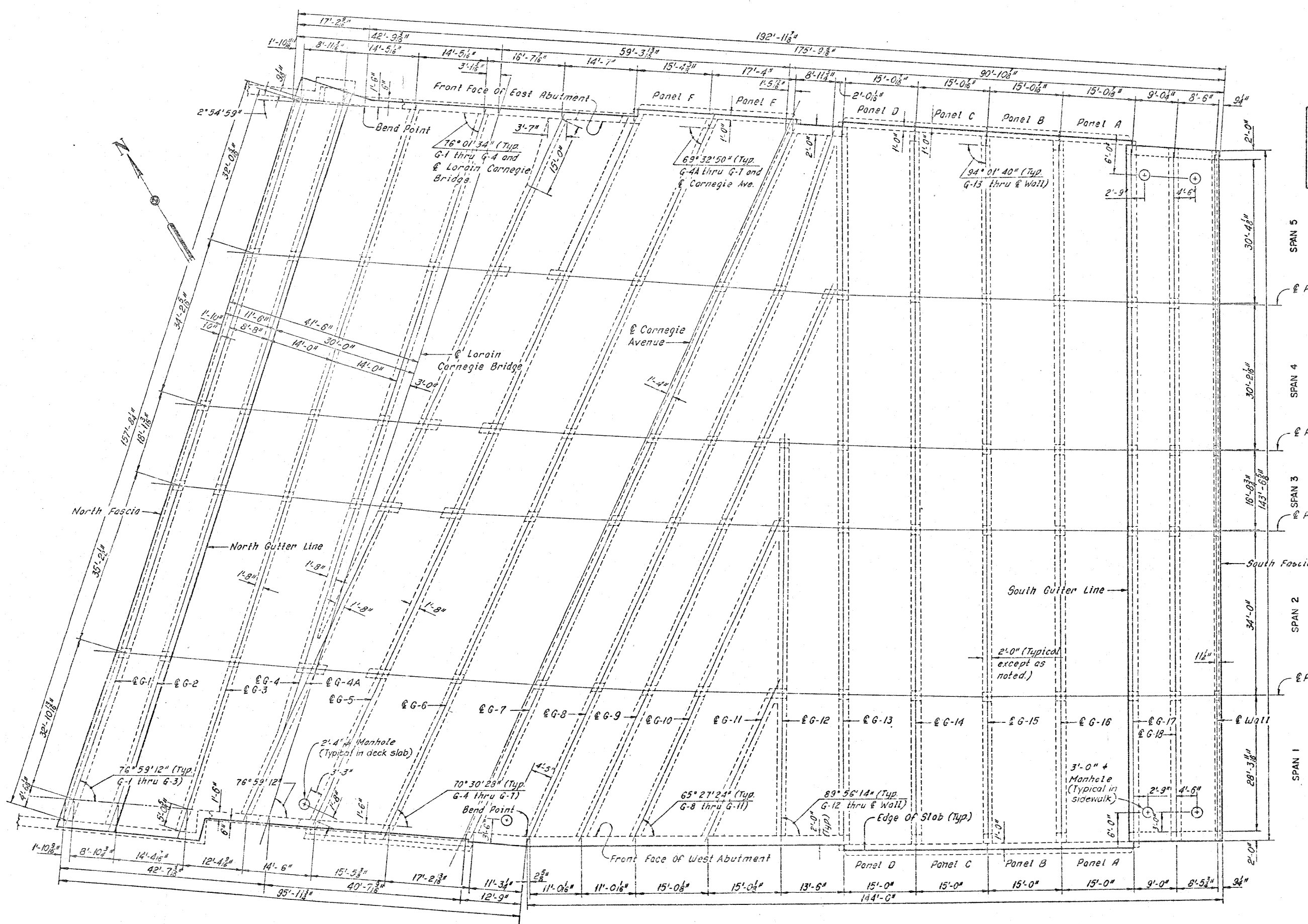
SHEET 2 | 31

FHWA REGION	STATE	PROJECT
5	OHIO	

150
185

CUYAHOGA COUNTY
CUY-10-16.23

Note:
Prior to deck removal over the girders, Girders 2 thru 18 shall be shored. For Girders 2 thru 18 removal, see removal plans, typical section along Pier 3, Sheet 4/31.



Notes:
For typical deck and girder removal details, see Sheet 4/31.
The existing manholes shall be reconstructed to grade. For details, see Sheets 26/31 and 27/31.

For strut and column removal details, see Sheet 6/31.

For removal plans of the West Abutment, see Sheets 7/31 thru 9/31.

For removal plans of the East Abutment, see Sheets 10/31 thru 12/31.

For removal plans along Pier 3, see Sheets 4/31 and 5/31.

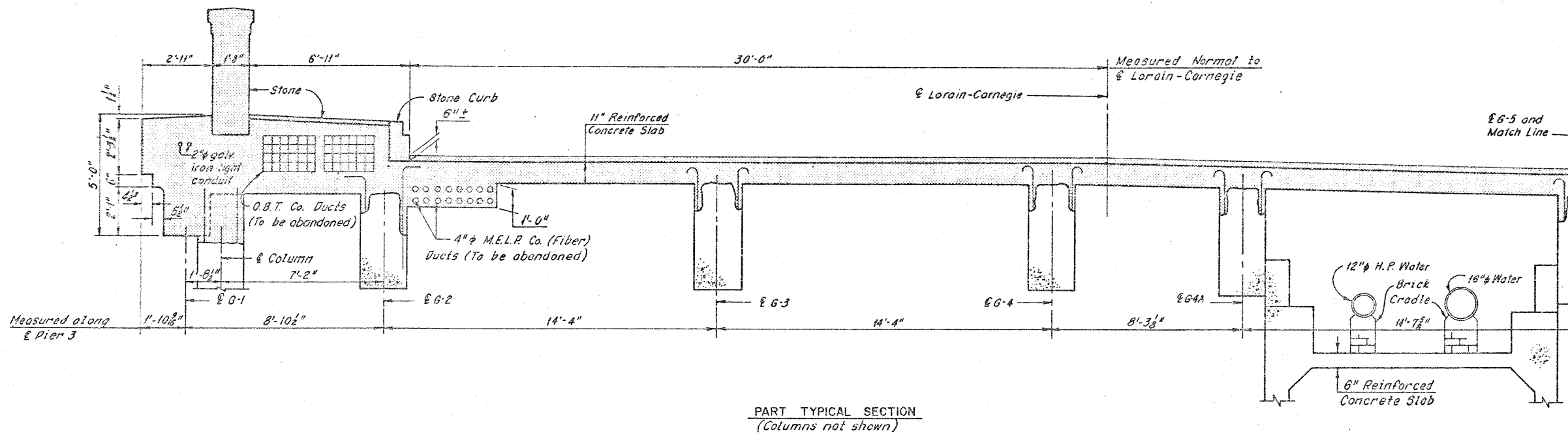
For stage construction, see Sheet 1/31.

HNTB BRIDGE NO. 4
HOWARD NEEDLES TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND

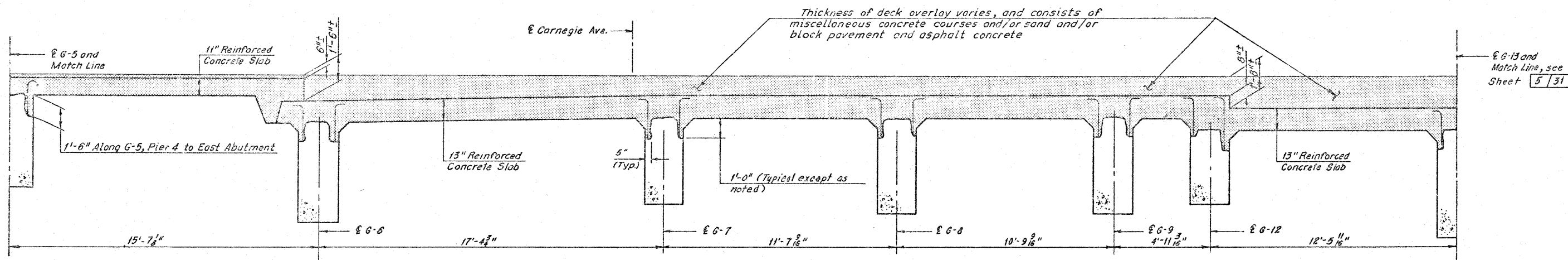
HNTB
DECK REMOVAL AND FRAMING PLAN
REHABILITATION OF THE CARNEGIE AVENUE GRADE SEPARATION STRUCTURE (S.R. 10 OVER THE CLEVELAND UNION TERMINALS CO. AND THE REGIONAL TRANSIT AUTHORITY)
BR. NO. CUY-10-1685 STA 57+29.72
CUYAHOGA COUNTY STA 58+85.70 OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
DATE 20-7-72	DATE 20-7-72	DATE 20-7-72	DATE	

DECK PLAN



PART TYPICAL SECTION
(Columns not shown)



PART TYPICAL SECTION
(Columns not shown)

SPECIAL REQUIREMENTS FOR GIRDER 1 AND DECK REMOVAL

- The girders are under a compressive load from the abutments. Before Girder 1 replacement work begins the Contractor shall temporarily support the abutments at the girder. The supports shall be preloaded to resist a total compressive force of 35 kips at each abutment and shall be retained until the replacement Girder 1 attains its design strength. (For requirements and payment for temporary supports see General Note 9 on Sheet GN-1 and notes on Sheet E-1)
- Suggested deck removal sequence:
 - Laterally support Girders 2 thru 18 at each pier before deck removal operations begin.
 - Remove the deck between girders.
 - Shore girders 2 thru 18 continually throughout their length. Preload the supports with an upward force equal to the weight of the girder and remaining deck (Shoring shall remain in place until the replacement deck attains its design strength).
 - Remove the remaining portion of the deck.
 - An alternate sequence may be submitted to the Director for consideration and approval.

Notes:
 Zip-a-tone indicates portions of the structure to be removed.
 For Removal Details at Girders 2 thru 13, see Detail A, Sheet 5/31.
 For Framing Plan, see Sheet 3/31.
 For Modified Typical Section at Pier 3, see Sheets 22/31 and 23/31.
 The following abbreviations are used:
 Typ. = Typical
 O. B. T. = Ohio Bell Telephone Company
 C. E. I. = Cleveland Electric Illuminating Company
 M. E. L. P. = Municipality Electric Light and Power
 P. E. H. P. = Plain end, high pressure
 H. P. = High Pressure
 All existing reinforcing shown shall be retained. Other existing reinforcing shall be removed, except as noted in Detail A, Sheet 5/31.
 For Stage Construction, see Sheet 1/31.

HNTB BRIDGE NO. 4

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
CLEVELAND

HNTB

REMOVAL PLANS
TYPICAL SECTION ALONG PIER 3
REHABILITATION OF THE
CARNegie AVENUE GRADE SEPARATION STRUCTURE
(S.R.10 OVER THE CLEVELAND UNION TERMINALS CO
AND THE REGIONAL TRANSIT AUTHORITY)
BR. NO. CUY.-10-1685 STA. 57+29.72
CUYAHOGA COUNTY OHIO STA. 58+85.70

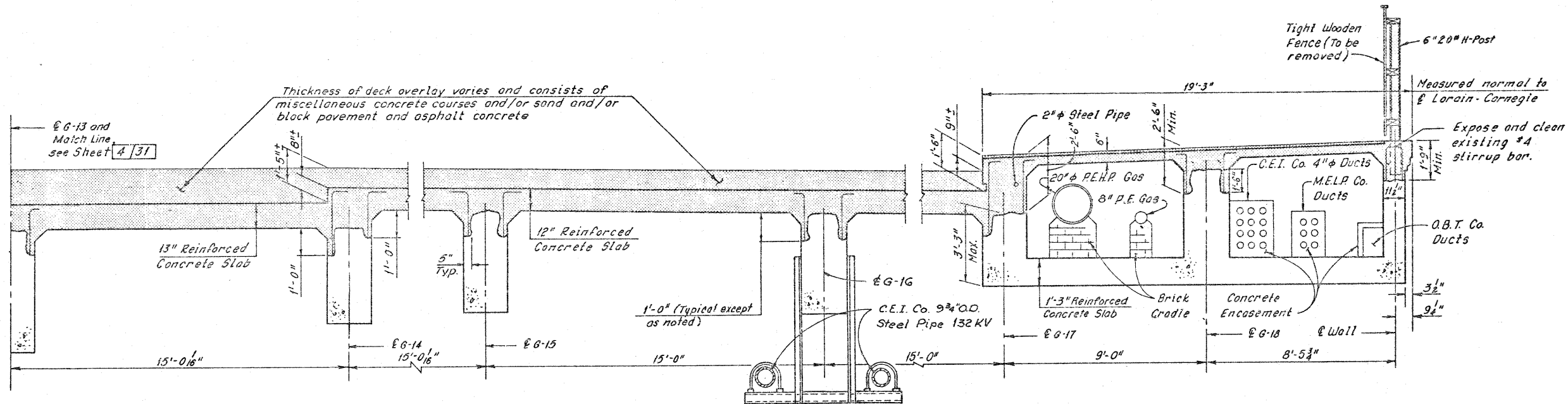
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DATE: 11-78	DATE: 11-78	DATE: 7-78	DATE	

SHEET 4/31

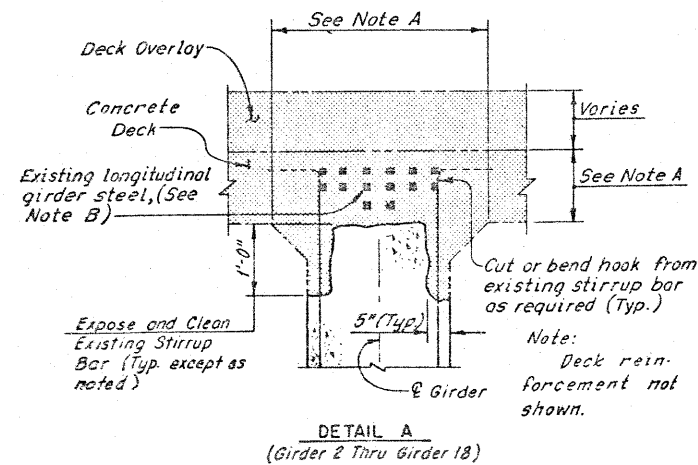
FHWA REGION	STATE	PROJECT
5	OHIO	

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CUYAHOGA COUNTY
CUY-10-16.23



PART TYPICAL SECTION
(Columns and C.E.I. Protection not shown)



Note A:
Concrete above the girders shall remain in place until the girders have been properly shored. Special requirements for Girder 1 and Deck Removal, see Sheet **4/31**.

Note B:
All existing longitudinal girder reinforcement shall be retained except at the option of the Contractor and with the approval of the Engineer new bars may be substituted for the original bars. The new bars may be round or square with a cross-sectional area equal or greater than the original bars. No additional payment will be made for substituting new bars for the original bars.

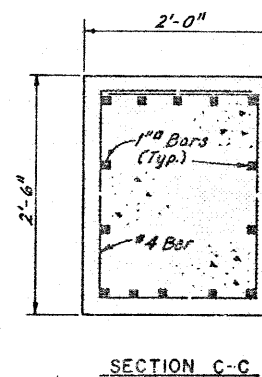
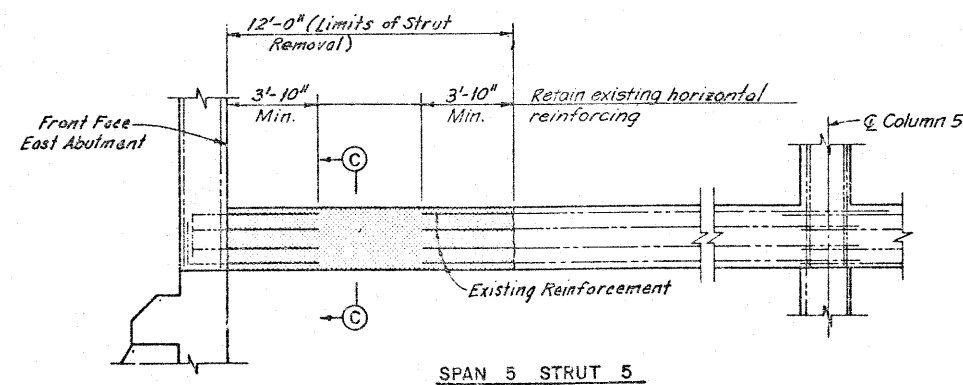
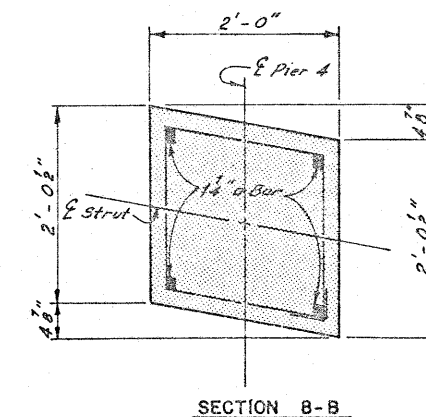
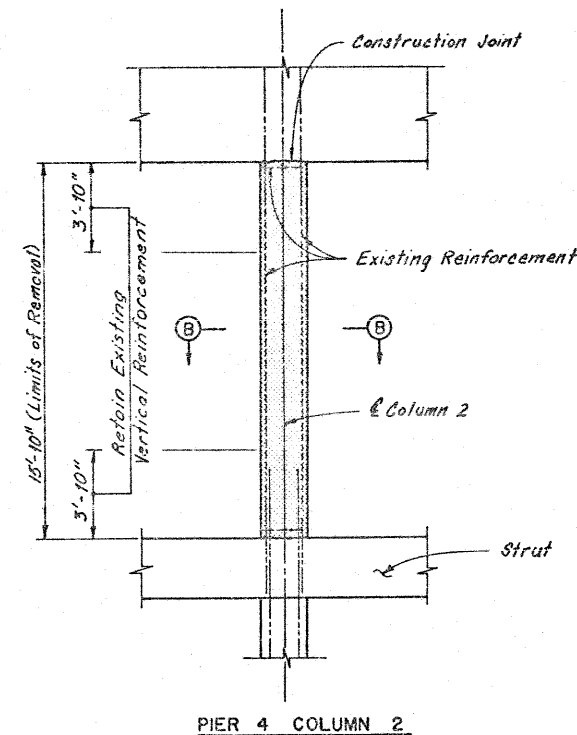
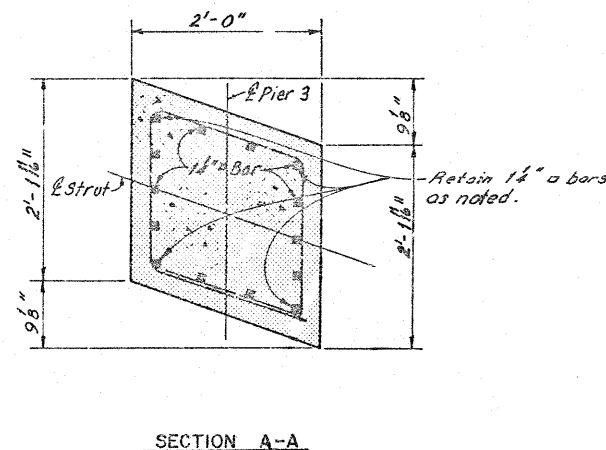
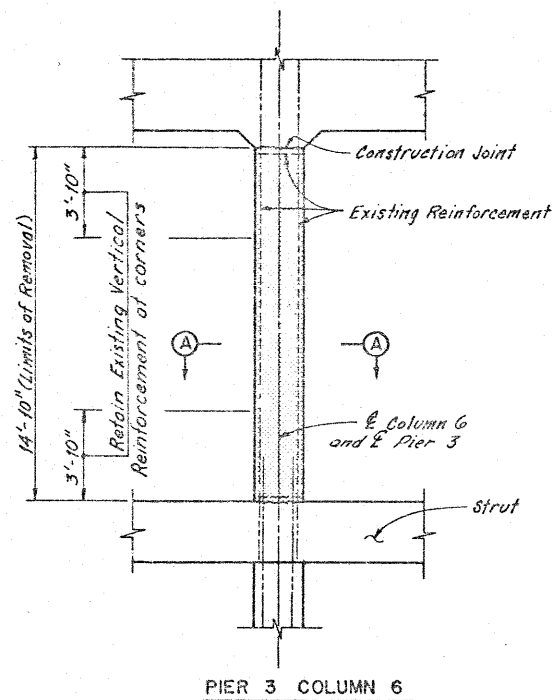
Notes:
Zip-a-tone indicates portions of the structure to be removed.
For Framing Plan, see Sheet **3/31**.
For Modified Typical Section at Pier 3, see Sheets **22/31** and **23/31**.
The following abbreviations are used:
Typ. = Typical
O.B.T. = Ohio Bell Telephone Company
C.E.I. = Cleveland Electric Illuminating Company
M.E.L.P. = Municipally Electric Light and Power
P.E.H.P. = Plain end, high pressure
H.P. = high Pressure
All existing reinforcing shown shall be retained. Other existing reinforcing shall be removed, except as noted in Detail A.
For Stage Construction, see Sheet **1/31**.

HNTB BRIDGE NO. 4		HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND		HNTB	
REMOVAL PLANS					
TYPICAL SECTION ALONG PIER 3					
REHABILITATION OF THE					
CARNegie AVENUE GRADE SEPARATION STRUCTURE					
(S.R.10 OVER THE CLEVELAND UNION TERMINALS CO. AND THE REGIONAL TRANSIT AUTHORITY)					
BR. NO. CUY.-10-1685			STA. 57+29.72		
CUYAHOGA COUNTY			OHIO		
DRAWN	TRACED	CHECKED	REVIEWED	REVISED	
DATE: 5-11-77	DATE: 5-24-77	DATE: 7-7-77	DATE:	DATE:	
					SHEET 5/31

FHWA REGION	STATE	PROJECT
5	OHIO	

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185

CUYAHOGA COUNTY
CUY-10-16.23



Special Requirements for Strut Removal

1. The strut removal and repair shall be accomplished prior to shoring the girders.
2. The strut is under a compressive load from the abutments. Before strut removal work begins, the Contractor shall install temporary supports between Column 5 and the East Abutment as close as possible to the strut top. The supports shall be preloaded with a total load 153.5 kips and this load shall be retained until the replacement strut attains design strength.

Note:
Zitalic indicates portions of structure to be removed.
For strut and column repair details, see Sheet 19/31.
For member identification plans, see Sheet 2/31.

HNTB BRIDGE NO. 4

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
CLEVELAND

HNTB

STRUT AND COLUMN
REMOVAL DETAILS
REHABILITATION OF THE
CARNEGIE AVENUE GRADE SEPARATION STRUCTURE
(S.R.10 OVER THE CLEVELAND UNION TERMINALS CO.
AND THE REGIONAL TRANSIT AUTHORITY)
BR. NO. CUY-10-1685 STA. 57+29.72
CUYAHOGA COUNTY OHIO STA. 58+85.70

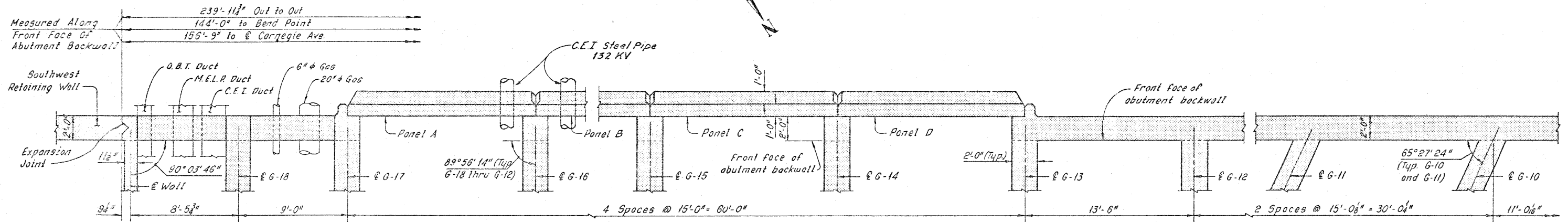
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DATE 8-1-78	DATE 8-3-78	DATE 9-6-78	DATE	DATE

SHEET 5/31

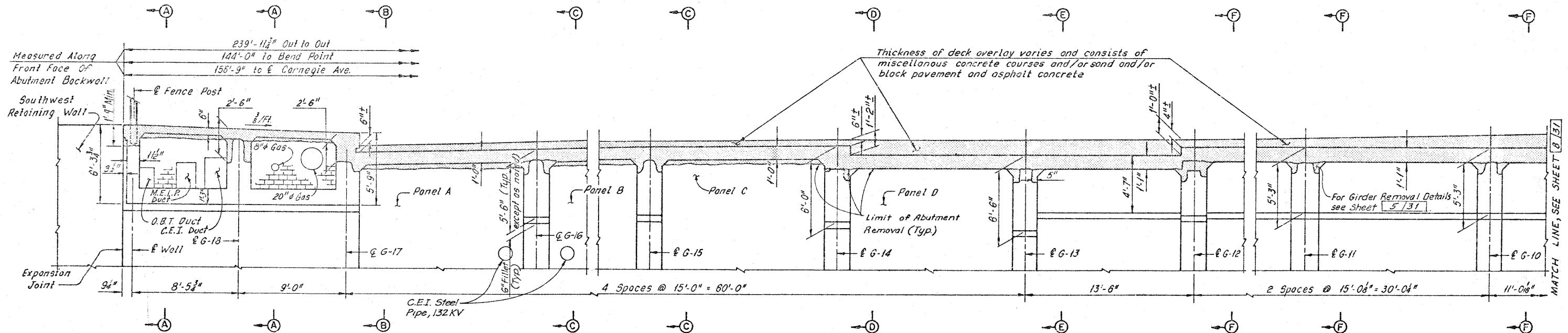
FHWA REGION	STATE	PROJECT
5	OHIO	

154
185

CUYAHOGA COUNTY
CUY-10-16.23



PART PLAN - WEST ABUTMENT
(Slab not shown)



PART ELEVATION - WEST ABUTMENT

Notes:
All existing vertical abutment reinforcement and all existing horizontal abutment reinforcement below the bottom of the new deck shall be retained as part of the new construction, except at new slab edge beams shown on Sheet 14/31. Horizontal reinforcement may be replaced in kind at no additional cost to the State.

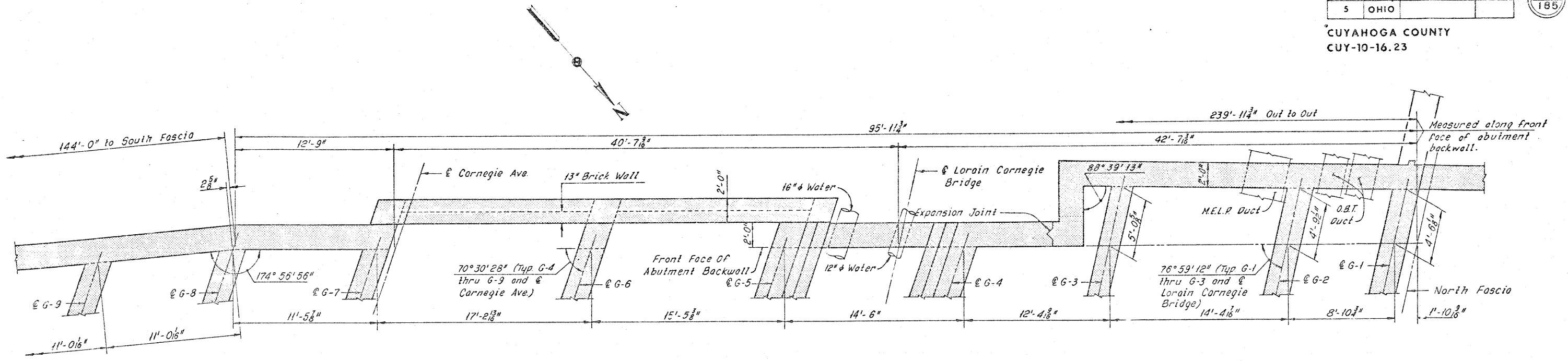
Notes:
Zip-a-tone indicates portions of the structure to be removed.
For Sections A-A thru F-F, see Sheet 9/31.
For Modified West Abutment Details, see Sheets 13/31 thru 15/31.
The following abbreviations are used:
Typ. = Typical
M.E.L.P. = Municipal Electric Light and Power
O.B.T. = Ohio Bell Telephone Company
C.E.I. = Cleveland Electric Illuminating Company
For Stage Construction, see Sheet 1/31.

HNTB BRIDGE NO. 4													
HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND	HNTB												
REMOVAL PLANS WEST ABUTMENT REHABILITATION OF THE CARNEGIE AVENUE GRADE SEPARATION STRUCTURE (S.R.10 OVER THE CLEVELAND UNION TERMINALS CO. AND THE REGIONAL TRANSIT AUTHORITY) BR NO. CUY-10-1685 STA 57+29.72 CUYAHOGA COUNTY OHIO STA. 58+85.70													
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DATE 3/17/31	DATE 10/13/31	DATE 7/7/31	DATE										

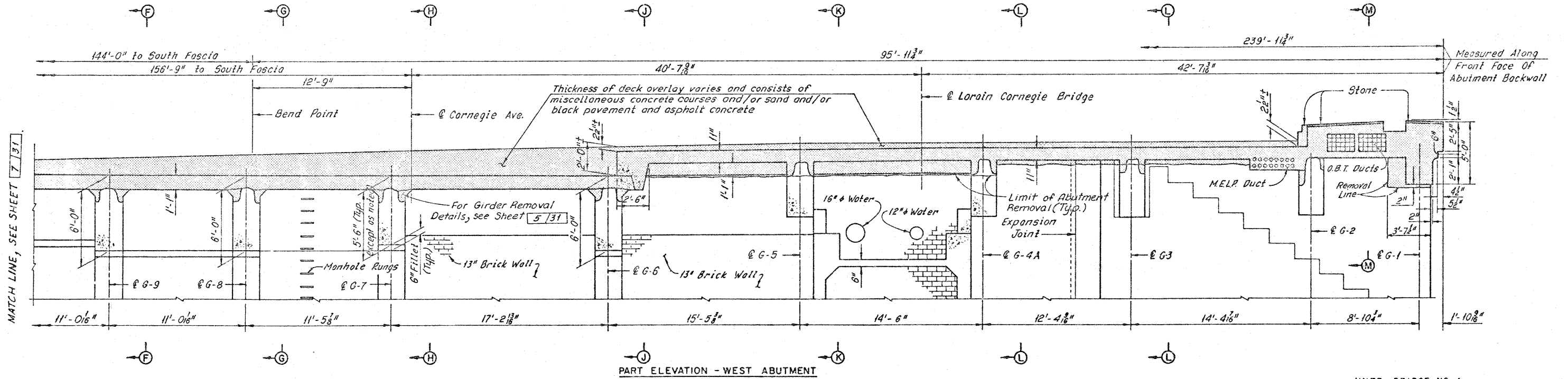
FRWA REGION	STATE	PROJECT
5	OHIO	

155
185

CUYAHOGA COUNTY
CUY-10-16.23



PART PLAN - WEST ABUTMENT
(Slab not shown)



PART ELEVATION - WEST ABUTMENT

Note:
All existing vertical abutment reinforcement and all existing horizontal abutment reinforcement below the bottom of the new deck shall be retained as part of the new construction, except of new slab edge beams shown on Sheet 14/31. Horizontal reinforcement may be replaced in kind at no additional cost to the State.

Notes:
Zid-a-tone indicates portions of the structure to be removed.
For Sections F-F thru M-M, see Sheet 9/31.
For modified west abutment details, see Sheets 13/31 thru 15/31.
The following abbreviations are used:
Typ. = Typical
M.E.L.P. = Municipal Electric Light and Power
O.B.T. = Ohio Bell Telephone Company
C.E.I. = Cleveland Electric Illuminating Company

HNTB BRIDGE NO. 4

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
CLEVELAND

HNTB

REMOVAL PLANS
WEST ABUTMENT
REHABILITATION OF THE
CARNegie AVENUE GRADE SEPARATION STRUCTURE
(S.R.10 OVER THE CLEVELAND UNION TERMINALS CO.
AND THE REGIONAL TRANSIT AUTHORITY)
BR. NO. CUY-10-1685 STA. 57+29.72
CUYAHOGA COUNTY STA. 58+85.70
OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
DATE 3/16/75	DATE 4/20/75	DATE 7/7/75	DATE	DATE

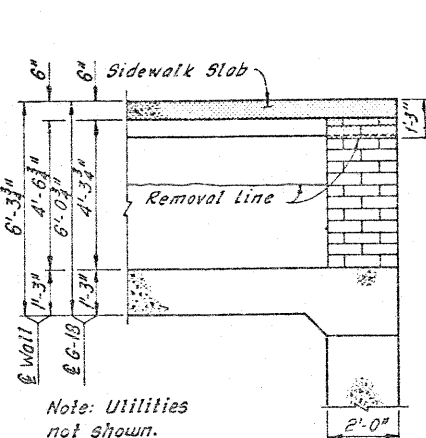
SHEET 8/31

MATCH LINE, SEE SHEET 7/31

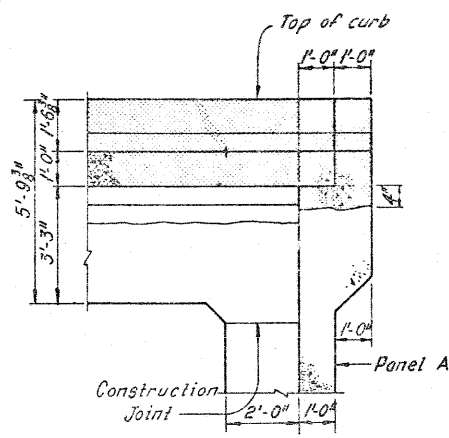
FHWA REGION	STATE	PROJECT
5	OHIO	

156
185

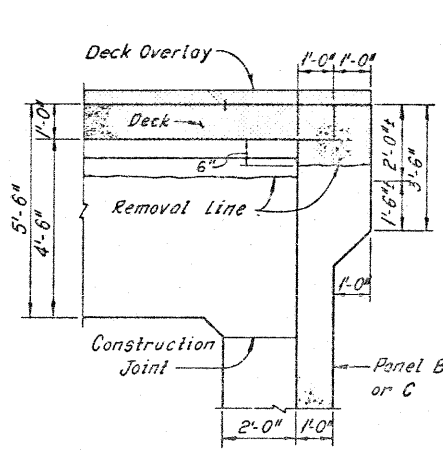
CUYAHOGA COUNTY
CUI-10-16.23



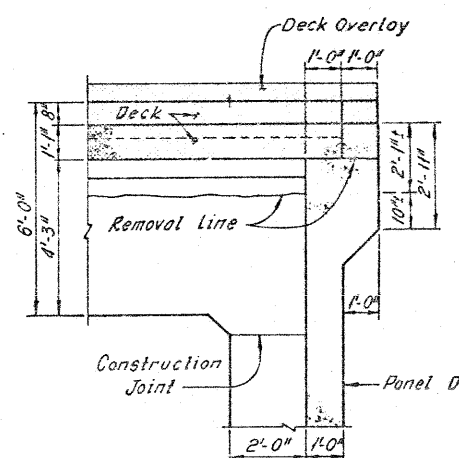
SECTION A-A



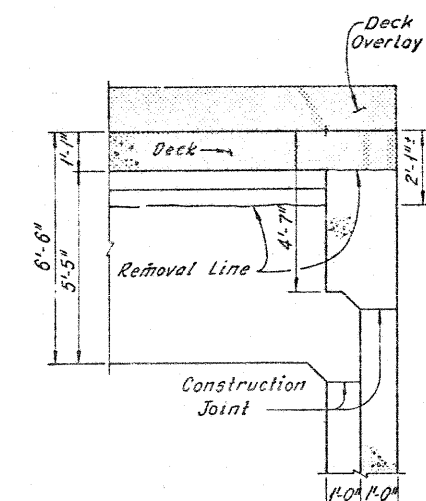
SECTION B-B



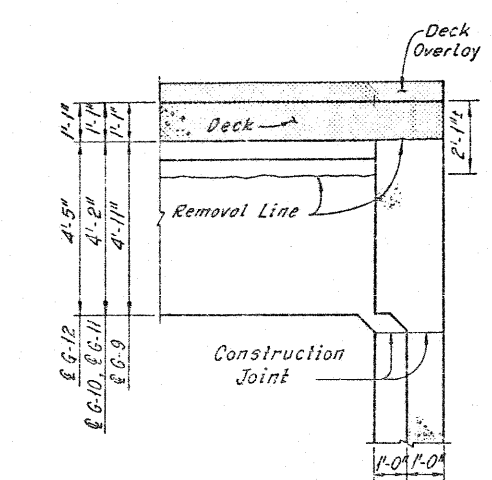
SECTION C-C



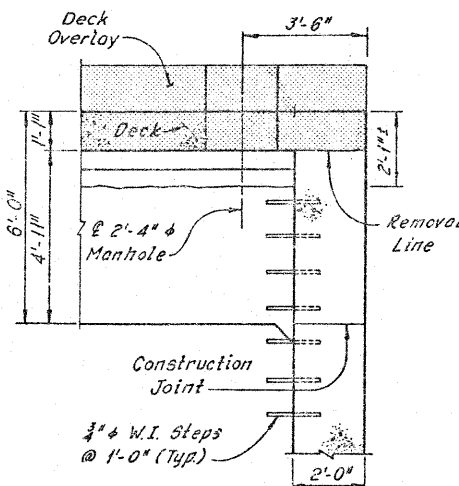
SECTION D-D



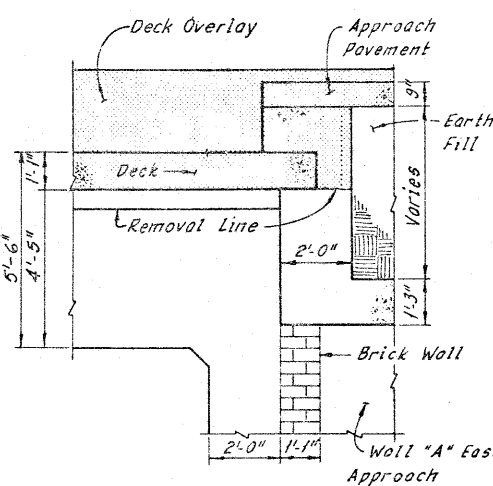
SECTION E-E



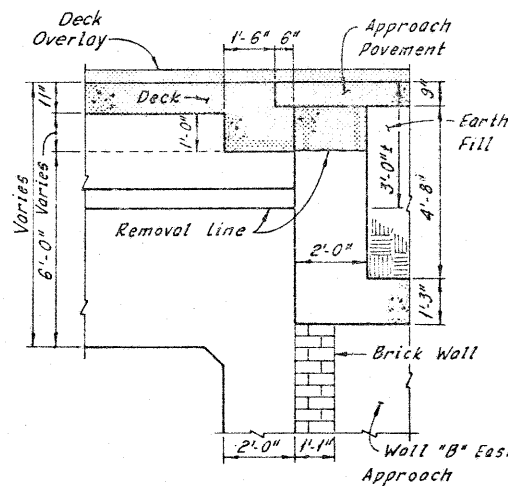
SECTION F-F



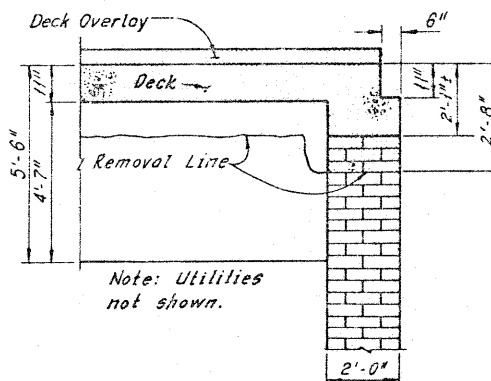
SECTION G-G



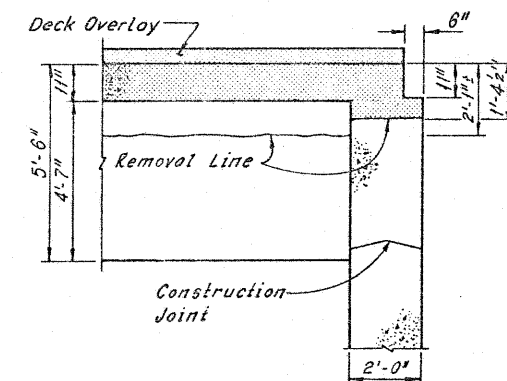
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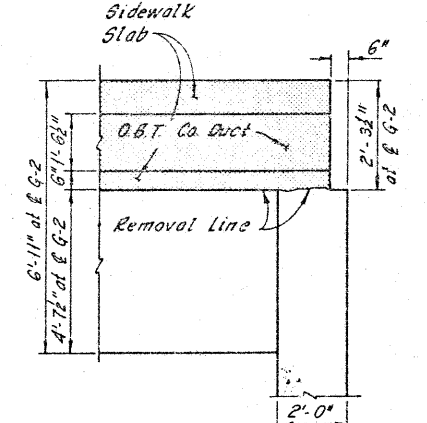
SECTION J-J



SECTION K-K



SECTION L-L



SECTION M-M

Note:
Existing reinforcement not shown. All existing vertical abutment reinforcement and all existing horizontal abutment reinforcement below the bottom of the new deck slab shall be retained as part of the new construction, except at new slab edge beams shown on Sheet 14/31. Horizontal reinforcement may be replaced in kind at no additional cost to the State.

Notes:
Zip-a-tone indicates portions of structure to be removed.
For limits of existing girder removal, see Detail A, Sheet 5/31.
For location of Sections A-A thru F-F, see Sheet 7/31.
For location of Sections F-F thru M-M, see Sheet 8/31.

HNTB BRIDGE NO. 4

HOWARD, NEEDLES TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND

HNTB

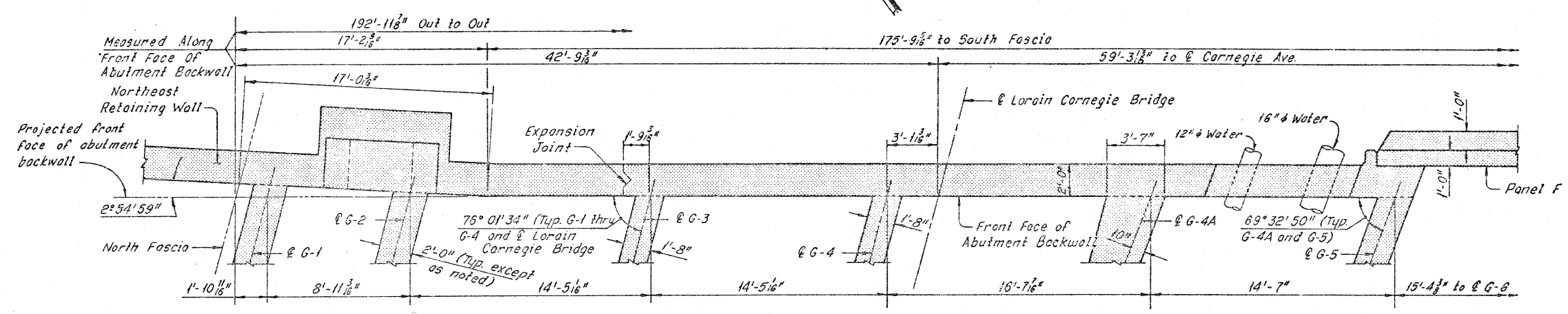
REMOVAL PLANS
WEST ABUTMENT
REHABILITATION OF THE
CARNegie AVENUE GRADE SEPARATION STRUCTURE
(SR 10 OVER THE CLEVELAND UNION TERMINALS CO. AND THE REGIONAL TRANSIT AUTHORITY)
BR. NO. CUY-10-1685 STA. 57+29.72
CUYAHOGA COUNTY STA. 58+85.70 OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
BP	BP	PS		
DATE: 7-7-72	DATE: 7-7-72	DATE: 7-7-72	DATE:	SHEET 9/31

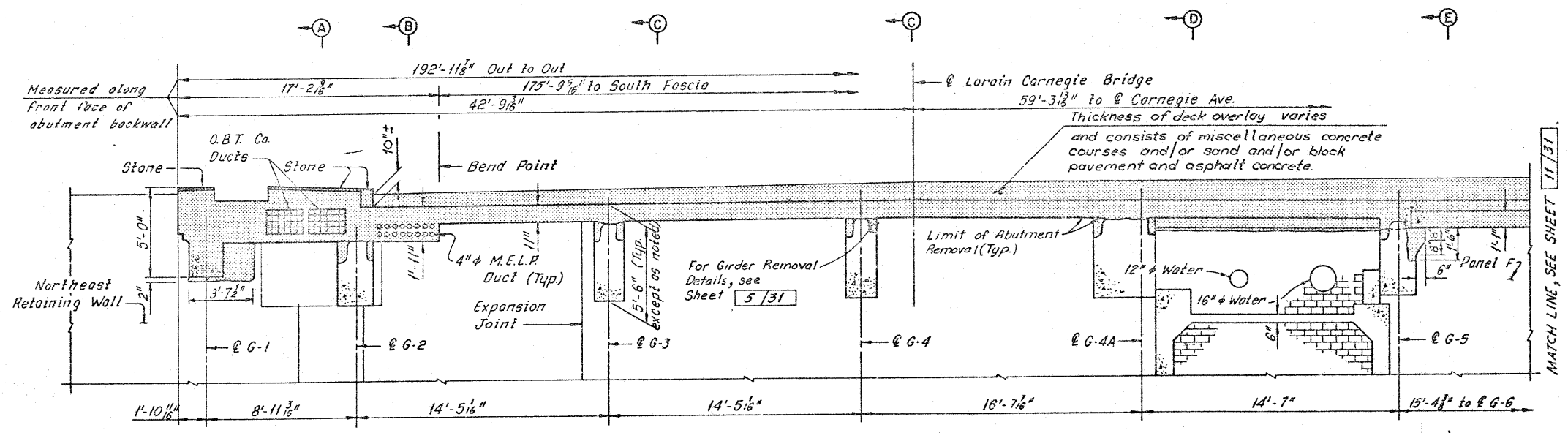
FHWA REGION	STATE	PROJECT
5	OHIO	

157
185

CUYAHOGA COUNTY
CUY-10-16.23



PART PLAN - EAST ABUTMENT
(Slab not shown)



PART ELEVATION - EAST ABUTMENT

Note:
All existing vertical abutment reinforcement and all existing horizontal abutment reinforcement below the bottom of the new deck slab shall be retained as part of the new construction, except at new slab edge beams shown on Sheet 16/31. Horizontal reinforcement may be replaced in kind at no additional cost to the State.

Notes:
Zip-a-tone indicates portions of the structure to be removed.
For Sections A-A thru E-E, see Sheet 12/31.
For modified East Abutment details, see Sheets 16/31 thru 18/31.
The following abbreviations are used:
Typ. = Typical
M.E.L.P. = Municipal Electric Light and Power
O.B.T. = Ohio Bell Telephone Company
C.E.I. = Cleveland Electric Illuminating Company

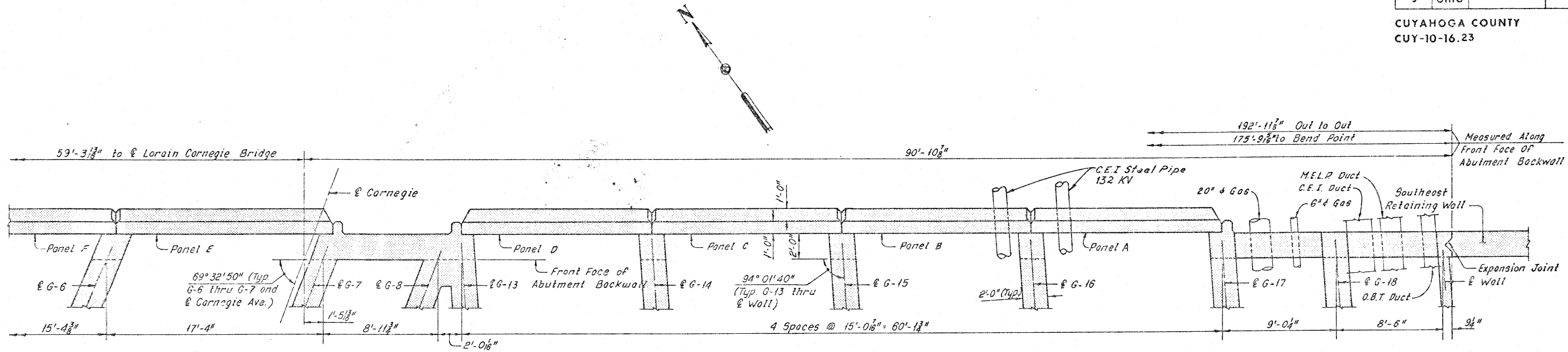
HNTB BRIDGE NO. 4

HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND		HNTB
REMOVAL PLANS EAST ABUTMENT		
REHABILITATION OF THE CARNegie AVENUE GRADE SEPARATION STRUCTURE (S.R.10 OVER THE CLEVELAND UNION TERMINALS CO. AND THE REGIONAL TRANSIT AUTHORITY)		
BR. NO. CUY. -10-1685	STA. 57+29.72	STA. 58+85.70
CUYAHOGA COUNTY	OHIO	
DRAWN B.P.	TRACED B.P.	CHECKED F.B.
DATE 3-17-75	DATE 3-10-75	DATE 7-7-75
REVIEWED		REVISED
		DATE
		SHEET 10/31

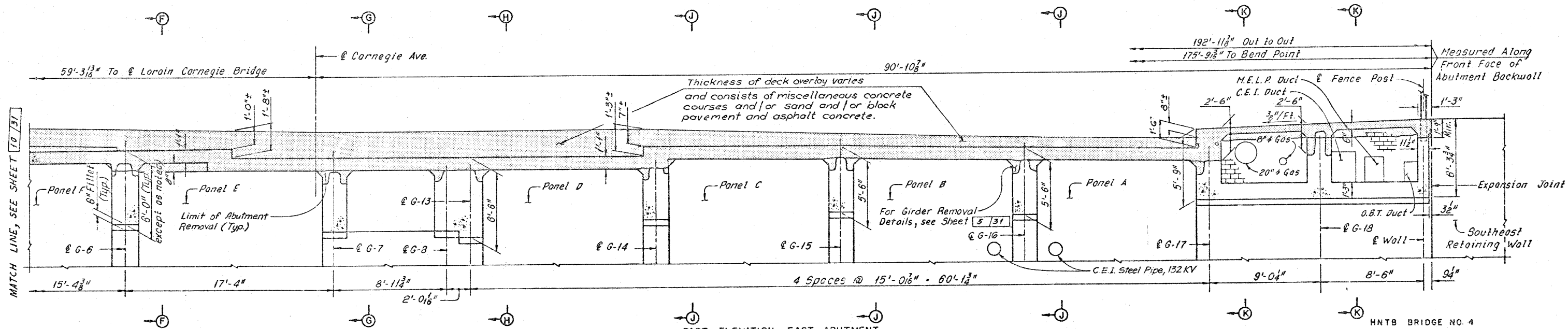
FNWA REGION	STATE	PROJECT
5	OHIO	

158
185

CUYAHOGA COUNTY
CUY-10-16.23



PART PLAN - EAST ABUTMENT
(Slab not shown)



PART ELEVATION - EAST ABUTMENT

Note:
All existing vertical abutment reinforcement and all existing horizontal abutment reinforcement below the bottom of the new deck slab shall be retained as part of the new construction, except at new slab edge beams shown on Sheet 16/31. Horizontal reinforcement may be replaced in kind at no additional cost to the State.

Notes:
Zig-zag line indicates portions of the structure to be removed.
For Sections F-F thru K-K, see Sheet 16/31.
For modified East Abutment details, see Sheets 16/31 thru 16/31.
The following abbreviations are used:
Typ. = Typical
M.E.L.P. = Municipal Electric Light and Power
O.B.T. = Ohio Bell Telephone Company
C.E.I. = Cleveland Electric Illuminating Company
For stage construction, see Sheet 16/31.

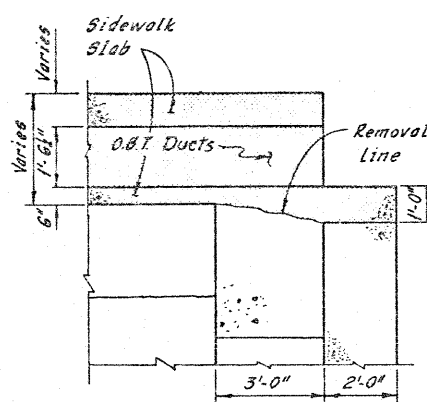
HNTB BRIDGE NO. 4

HOWARD, NEEDLES, TAMMEN & BERGENOFF CONSULTING ENGINEERS CLEVELAND		HNTB
REMOVAL PLANS EAST ABUTMENT		
REHABILITATION OF THE CARNEGIE AVENUE GRADE SEPARATION STRUCTURE (S.R. 10 OVER THE CLEVELAND UNION TERMINALS CO. AND THE REGIONAL TRANSIT AUTHORITY)		
BR. NO. CUY-10-1685		STA. 57+29.72 STA. 58+85.70
CUYAHOGA COUNTY		OHIO
DRAWN BP	TRACED BP	CHECKED F.P.
DATE: 11-75	DATE: 10-75	DATE: 7-75
REVIEWED		REVISION
		SHEET 11/31

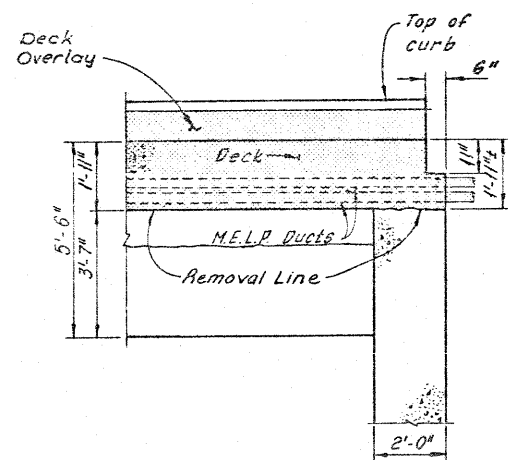
FHWA REGION	STATE	PROJECT
5	OHIO	

159
185

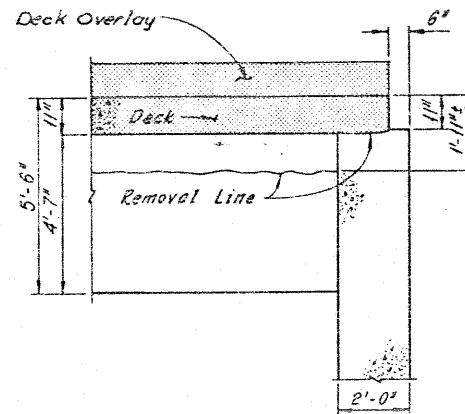
CUYAHOGA COUNTY
CUY-10-16.23



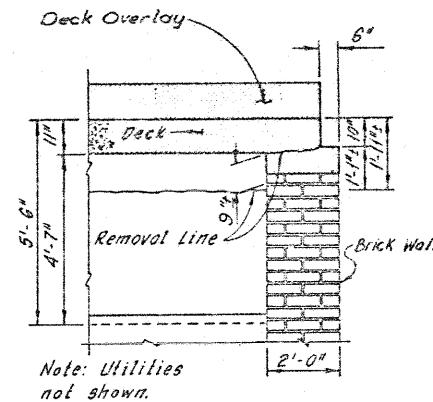
SECTION A-A



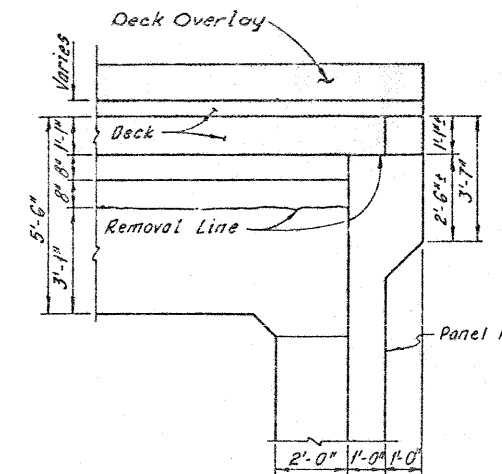
SECTION B-B



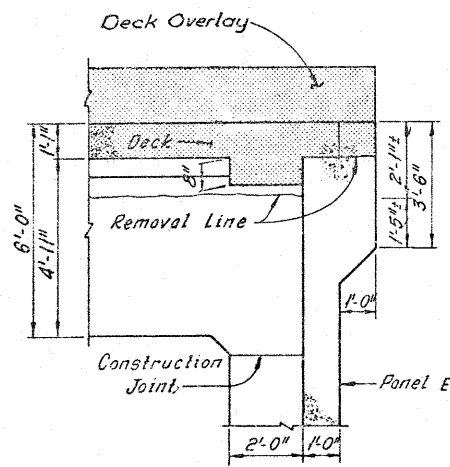
SECTION C-C



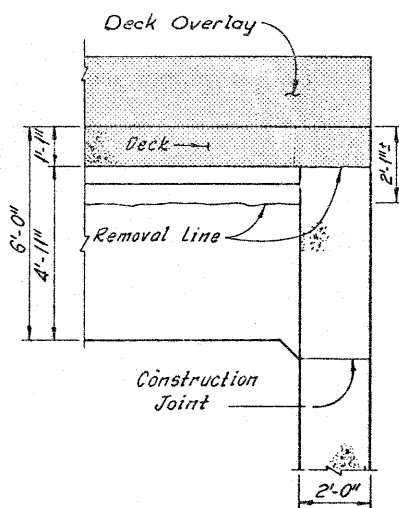
SECTION D-D



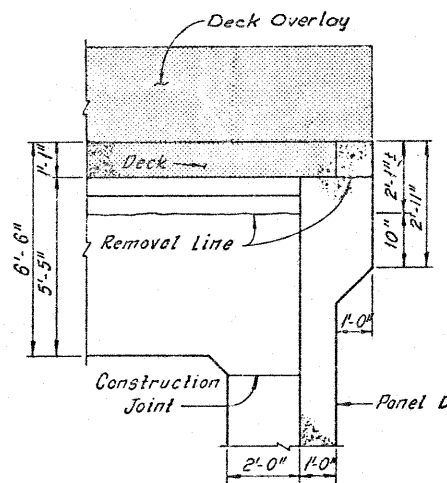
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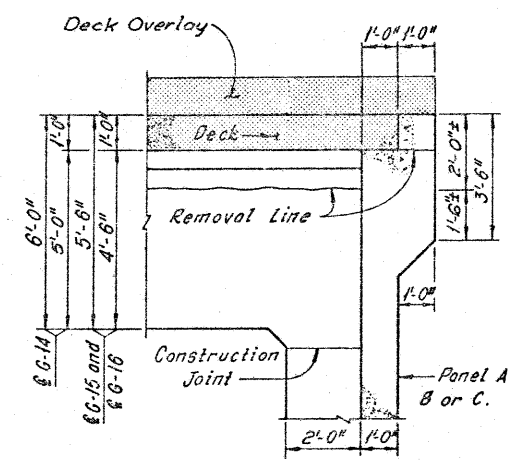
SECTION F-F



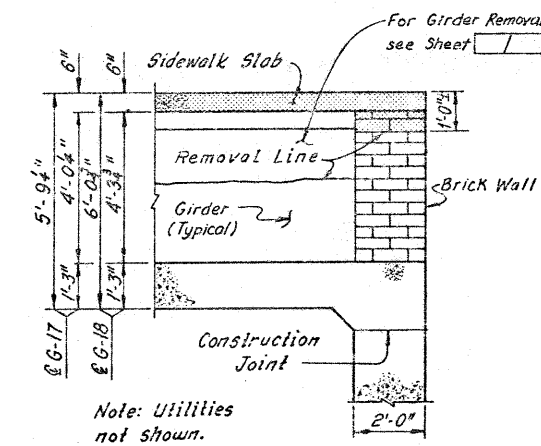
SECTION G-G



SECTION H-H



SECTION J-J



SECTION K-K

Note:
Existing reinforcement not shown. All existing vertical abutment reinforcement and all existing horizontal abutment reinforcement below the bottom of the new deck slab shall be retained as part of the new construction, except at new slab edge beams shown on Sheet 16/31. Horizontal reinforcement may be replaced in kind at no additional cost to the State.

Notes:
Zip-a-tone indicates portions of structure to be removed.
For limits of existing girder removal, see Detail A, Sheet 5/31.
For location of Sections A-A thru E-E, see Sheet 10/31.
For location of Sections F-F thru K-K, see Sheet 11/31.

HNTB BRIDGE NO. 4

HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND

HNTB

REMOVAL PLANS
REHABILITATION OF THE
CARNEGIE AVENUE GRADE SEPARATION STRUCTURE
(S.R.10 OVER THE CLEVELAND UNION TERMINALS CO.
AND THE REGIONAL TRANSIT AUTHORITY)
BR. NO. CUY-10-1685 STA. 57+29.72
CUYAHOGA COUNTY OHIO STA. 58+85.70

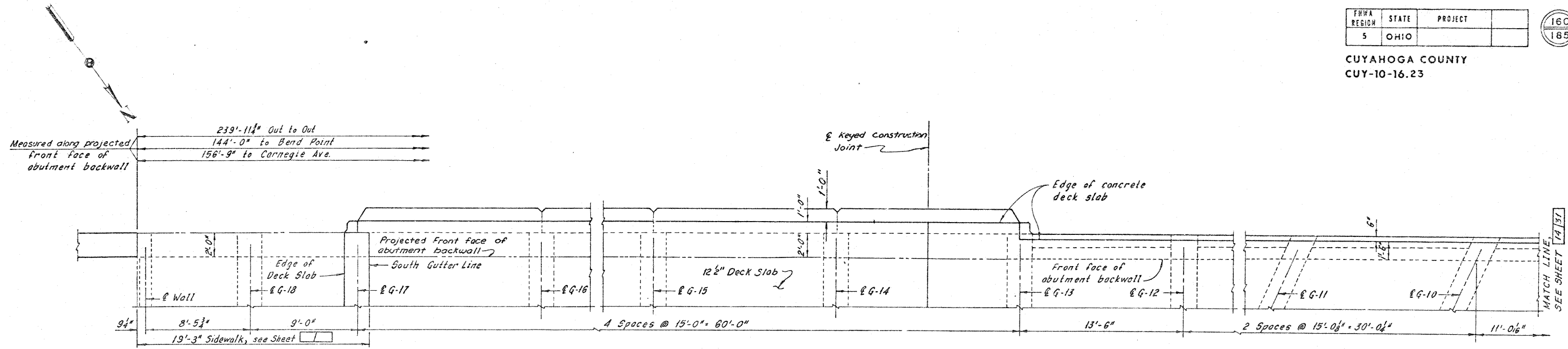
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DATE 3-17-75	DATE 10-13-75	DATE 6-24-75		

SHEET 12/37

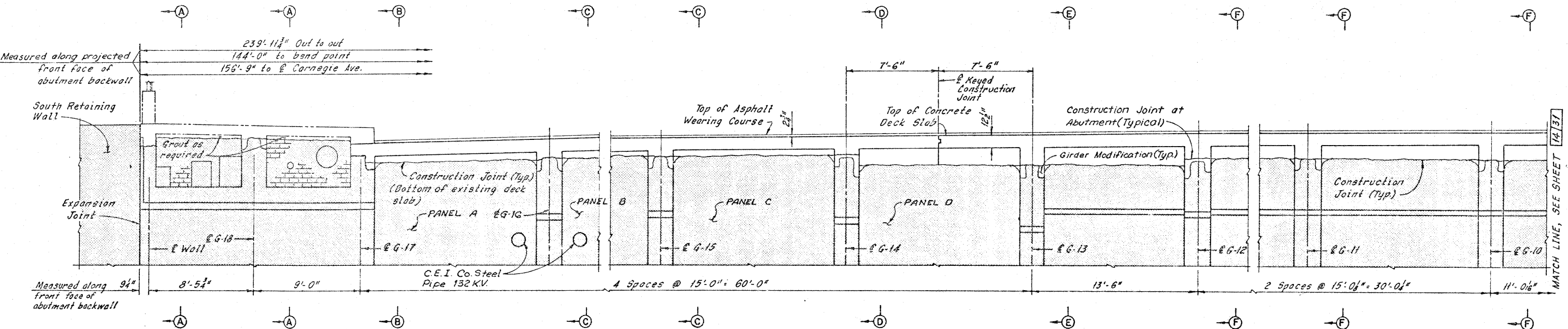
FHWA REGION	STATE	PROJECT
5	OHIO	

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185

CUYAHOGA COUNTY
CUY-10-16.23



PART PLAN - WEST ABUTMENT



PART ELEVATION - WEST ABUTMENT
(Deck slab, girder and retained abutment reinforcement not shown)

Notes:
 Zip-a-tone indicates existing structure.
 For removal at West Abutment, see Sheets 7/31 thru 9/31.
 For Typical Girder Modification Repair, see Sheet 23/31.
 For Sections A-A thru F-F, see Sheet 15/31.
 For Sidewalk Details, see Sheet 27/31.
 For Stage Construction, see Sheet 1/31.
 For Contour Plan, see Sheet 30/31.

HNTB BRIDGE NO. 4

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
CLEVELAND

HNTB

PART MODIFIED PLAN AND ELEVATION
WEST ABUTMENT

REHABILITATION OF THE
CARNEGIE AVENUE GRADE SEPARATION STRUCTURE
(S.R.10 OVER THE CLEVELAND UNION TERMINALS CO.
AND THE REGIONAL TRANSIT AUTHORITY)

BR. NO. CUY-10-1685 STA 57+29.72
STA 58+85.70

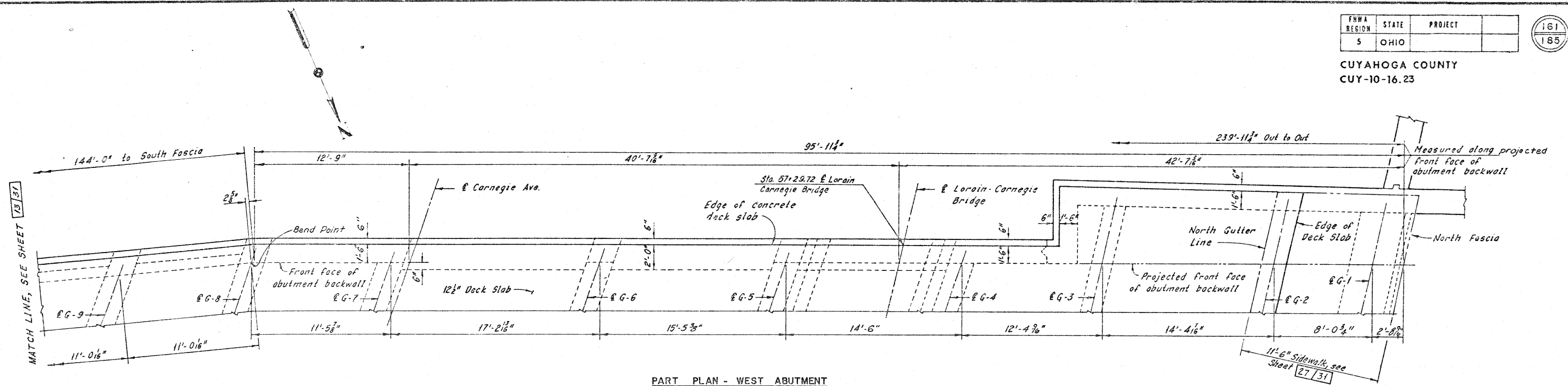
CUYAHOGA COUNTY OHIO

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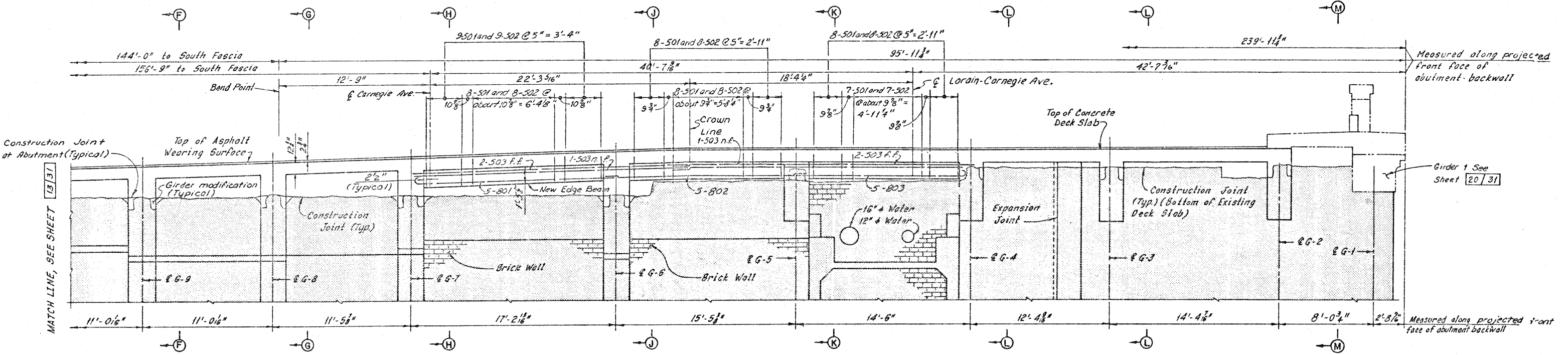
FHWA REGION	STATE	PROJECT
5	OHIO	

161
185

CUYAHOGA COUNTY
CUY-10-16.23



PART PLAN - WEST ABUTMENT



PART ELEVATION - WEST ABUTMENT
(Deck slab, girder and retained abutment reinforcement not shown)

Note:
All reinforcing bar marks shall be prefixed WA.

- Notes:
- Zip-a-tone indicates existing structure.
 - Phantom lines indicate new construction details of which are shown elsewhere in these plans.
 - For Sections F-F Thru M-M, see Sheet 15/31.
 - For Reinforcement Schedule, see Sheet R/4.
 - For Stage Construction, see Sheet 1/31.
 - For Contour Plan, see Sheet 30/31.
 - For additional notes, see Sheet 13/31.

HNTB BRIDGE NO. 4

HOWARD NEEDLES TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND

HNTB

PART MODIFIED PLAN AND ELEVATION WEST ABUTMENT

REHABILITATION OF THE CARNEGIE AVENUE GRADE SEPARATION STRUCTURE (S.R.10 OVER THE CLEVELAND UNION TERMINALS CO. AND THE REGIONAL TRANSIT AUTHORITY)

BR. NO. CUY-10-1685 STA. 57+29.72
STA. 58+85.70

CUYAHOGA COUNTY OHIO

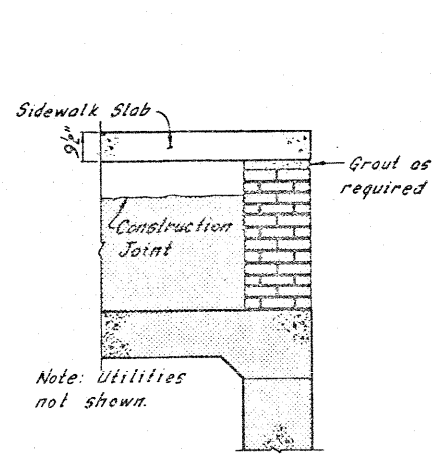
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SHEET 14/31

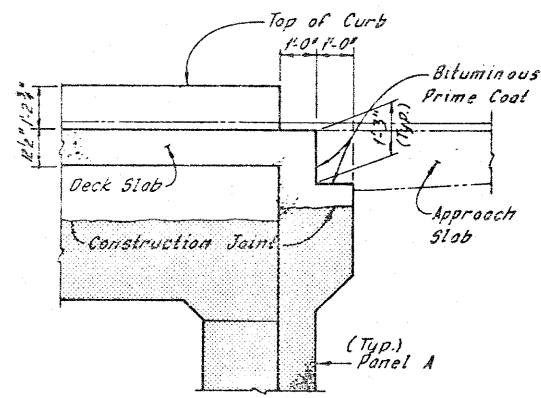
FHWA REGION	STATE	PROJECT	
5	OHIO		

162
185

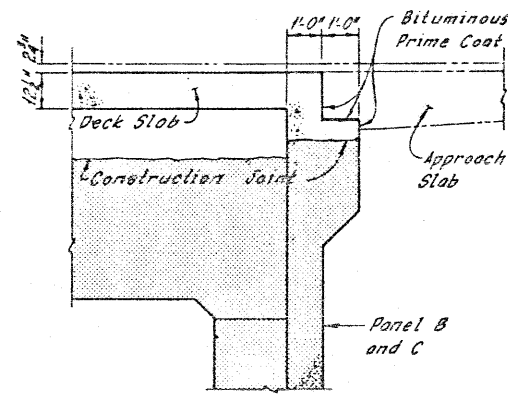
CUYAHOGA COUNTY
CUY-10-16.23



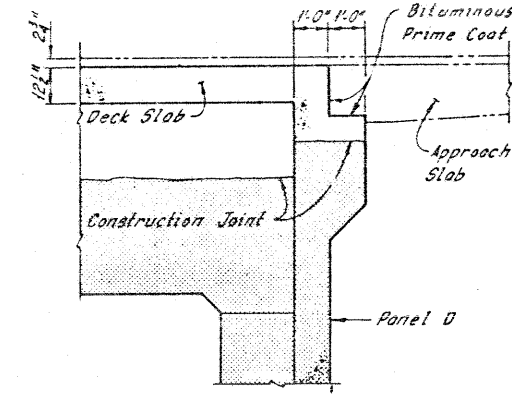
SECTION A-A



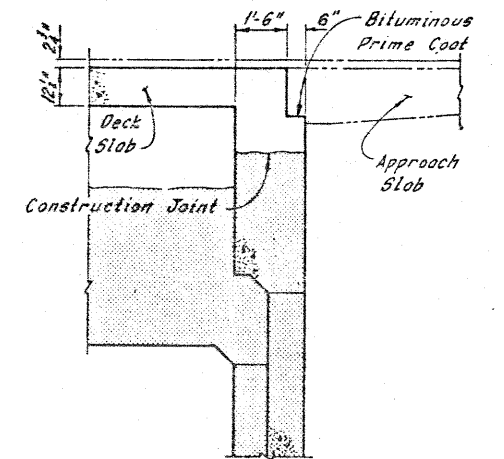
SECTION B-B



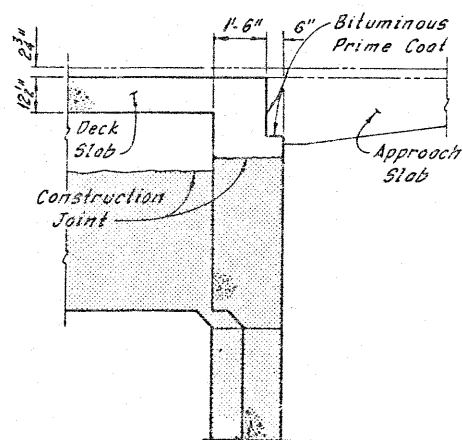
SECTION C-C



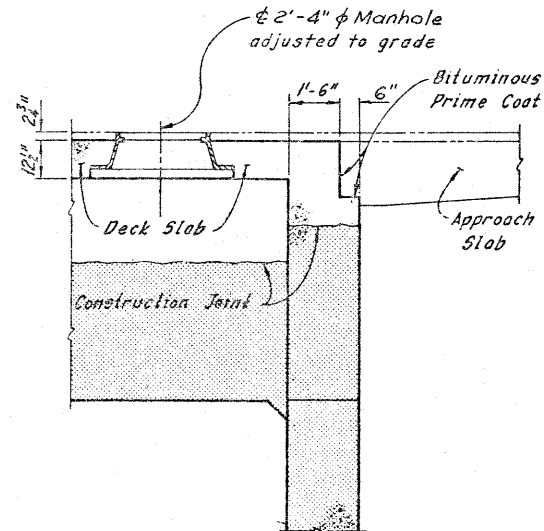
SECTION D-D



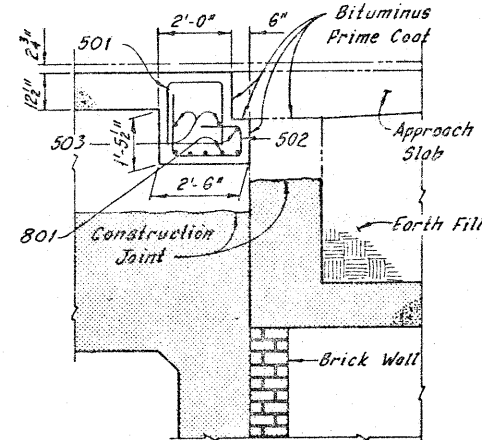
SECTION E-E



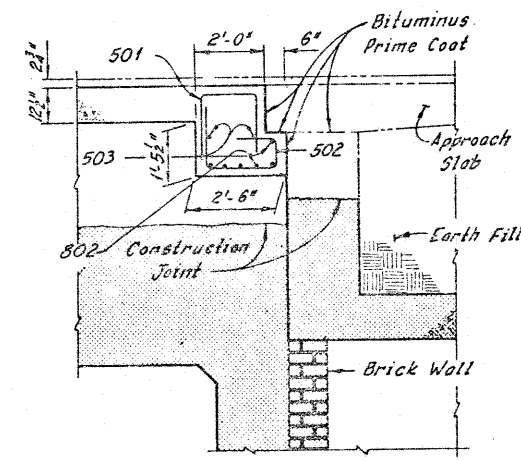
SECTION F-F



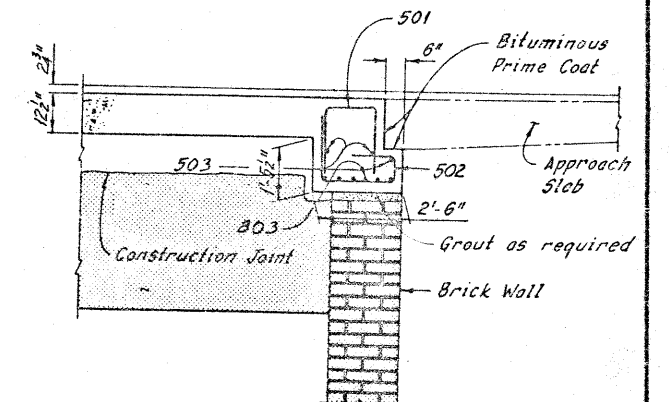
SECTION G-G



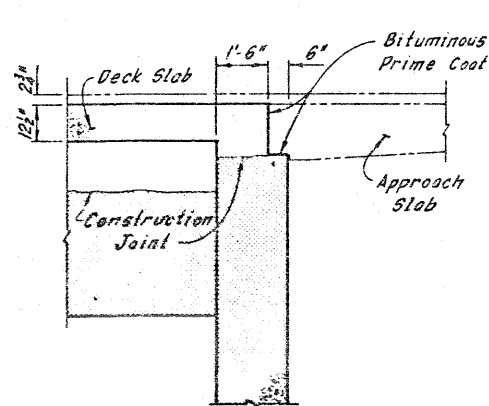
SECTION H-H



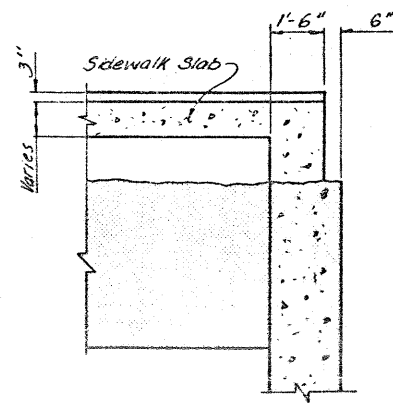
SECTION J-J



SECTION K-K



SECTION L-L



SECTION M-M

Note:
All reinforcing bar marks shall be prefixed WA.

Notes:
Zip-tone indicates existing structure.
Sidewalk, deck, girder and retained existing abutment reinforcement is not shown.
For location of Sections A-A thru F-F, see Sheet 13/31.
For location of Sections G-G thru M-M, see Sheet 14/31.
For manhole locations, see Sheet 26/31.
The cost of grouting shall be included with the unit price bid for Item 511, Class C Concrete, Abutments Above Footings, for payment.
For Reinforcement Schedule, see Sheet R/R.

HNTB BRIDGE NO. 4

HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND

HNTB

MODIFIED TYPICAL CROSS SECTIONS
WEST ABUTMENT

REHABILITATION OF THE
CARNEGIE AVENUE GRADE SEPARATION STRUCTURE
(S.R.10 OVER THE CLEVELAND UNION TERMINALS CO.
AND THE REGIONAL TRANSIT AUTHORITY)

BR. NO. CUY-10-1685 STA 57+29.72
CUYAHOGA COUNTY, OHIO STA 58+85.70

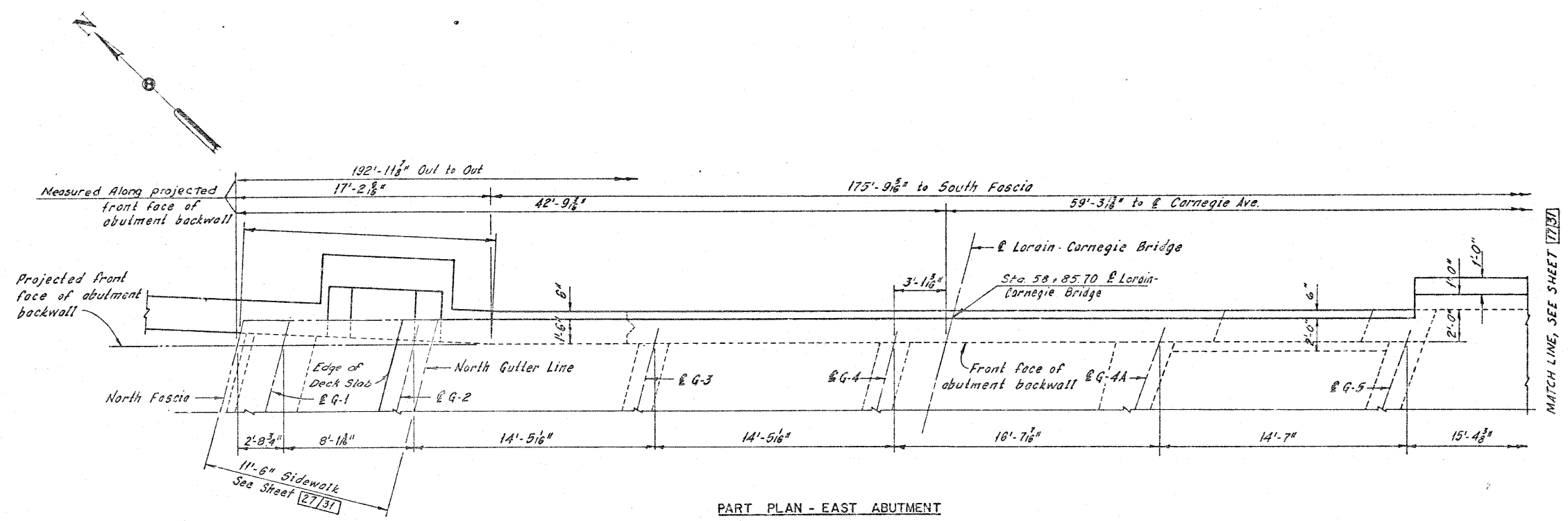
DRAWN H.T.	TRACED C.W.B.	CHECKED P.A.S.	REVIEWED
DATE 8-24-78	DATE 8-25-78	DATE 8-27-78	DATE

SHEET 15/31

FHWA REGION	STATE	PROJECT
5	OHIO	

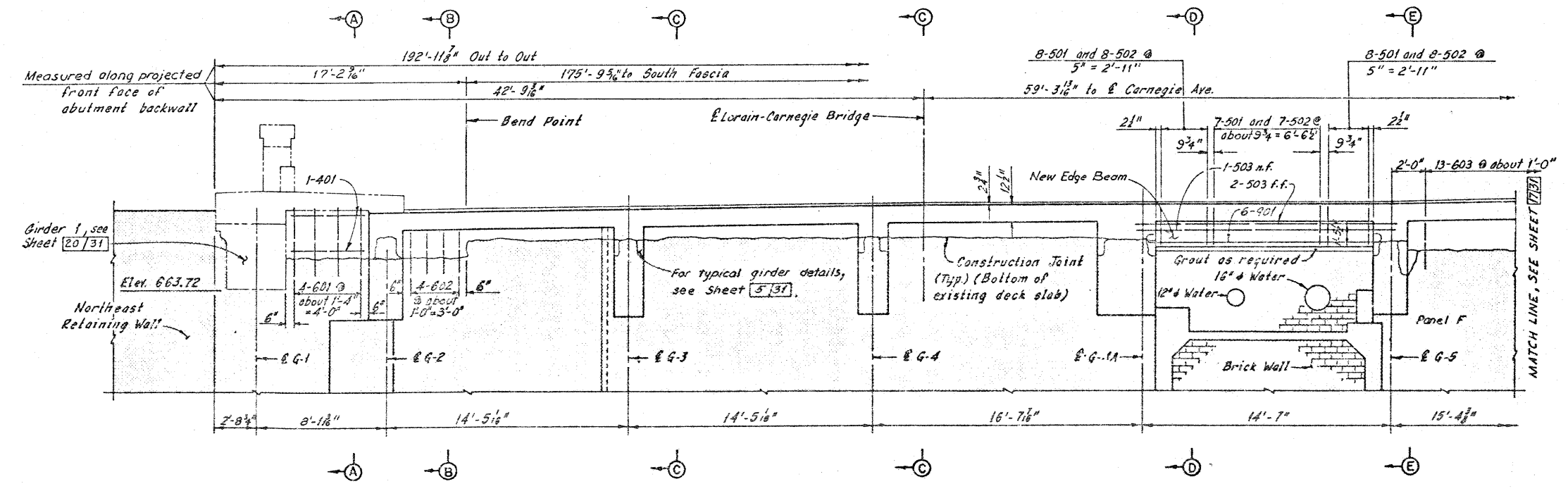
163
185

CUYAHOGA COUNTY
CUY-10-16.23



Note:
All reinforcing bar marks shall be prefixed EA.

PART PLAN - EAST ABUTMENT



Notes:
Zip-tone indicates existing structure.
Phantom lines indicate new construction details of which are shown elsewhere on these plans.
For Removal at East Abutment, see Sheets 10/31 thru 12/31.
For Typical Girder Repair, see Sheet 23/31.
For Approach Slab Details, see roadway plans.
For Sections A-A thru E-E, see Sheet 18/31.
For Contour Plan, see Sheet 30/31.
For reinforcement schedule see Sheet R/F.

PART ELEVATION - EAST ABUTMENT
(Deck slab, girder and retained abutment reinforcement not shown)

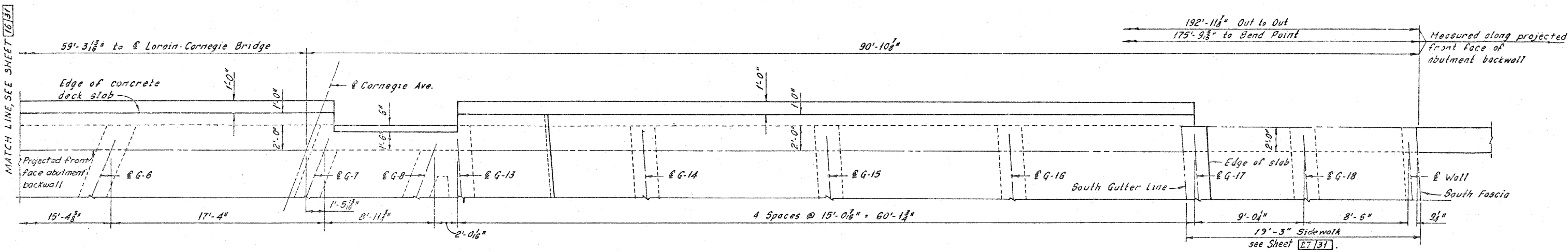
HNTB BRIDGE NO. 4

HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND		HNTB	
PART MODIFIED PLAN AND ELEVATION EAST ABUTMENT REHABILITATION OF THE CARNEGIE AVENUE GRADE SEPARATION STRUCTURE (S.R.10 OVER THE CLEVELAND UNION TERMINALS CO. AND THE REGIONAL TRANSIT AUTHORITY)			
BR. NO. CUY. -10-1685		STA. 57+29.72 STA. 58+85.70	
CUYAHOGA COUNTY		OHIO	
DRAWN BY DATE: 11-28	TRACED BY DATE: 12-28	CHECKED BY DATE: 12-28	REVIEWED BY DATE: 12-28
			REVISIONS DATE: 12-28
			SHEET 16/31

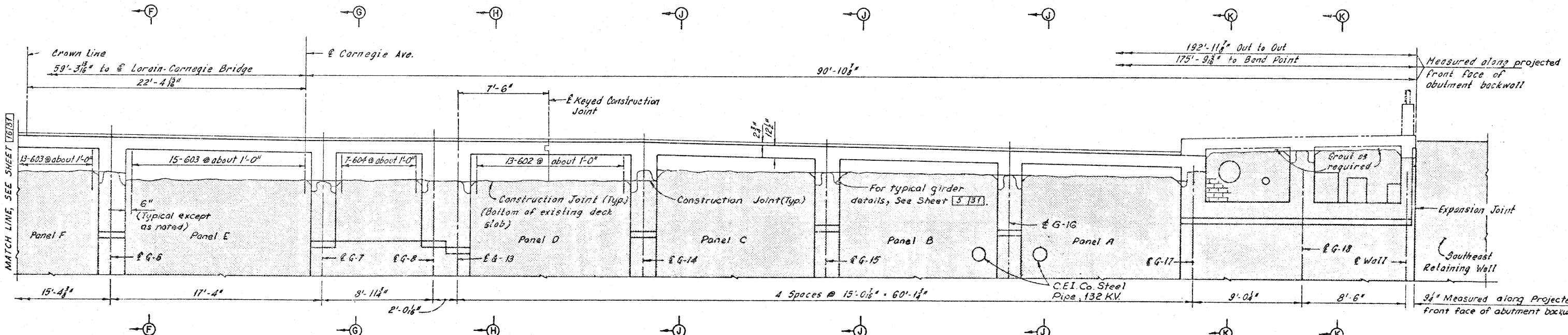
FHWA REGION	STATE	PROJECT
5	OHIO	

164
185

CUYAHOGA COUNTY
CUY-10-16.23



PART PLAN - EAST ABUTMENT



PART ELEVATION - EAST ABUTMENT
(Deck slab, girder, and retained abutment reinforcement not shown)

Note:
All reinforcing bar marks shall be prefixed EA.

- Notes:
- Zip-a-tone indicates existing structures.
 - For Removal of East Abutment, see Sheets 10/31 thru 12/31.
 - For Typical Girder Repair, see Sheet 23/31.
 - For Approach Slab Details, see roadway plans.
 - For Sections F-F Thru K-K, see Sheet 18/31.
 - For Contour Plan, see Sheet 30/31.
 - For reinforcement schedule, see Sheet R/4.

HNTB BRIDGE NO. 4

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
CLEVELAND

HNTB

PART MODIFIED PLAN AND ELEVATION
EAST ABUTMENT
REHABILITATION OF THE
CARNEGIE AVENUE GRADE SEPARATION STRUCTURE
(S.R. 10 OVER THE CLEVELAND UNION TERMINALS CO.
AND THE REGIONAL TRANSIT AUTHORITY)
BR. NO. CUY-10-1685 STA. 57+29.72
CUYAHOGA COUNTY OHIO STA. 58+85.70

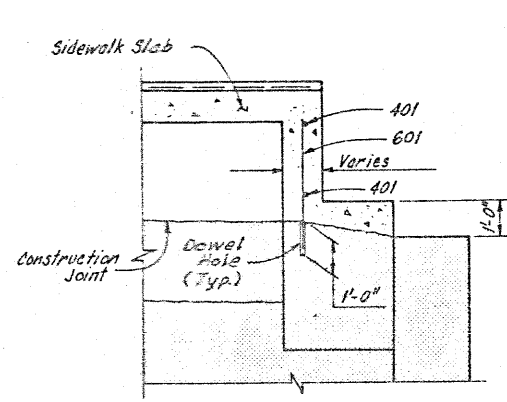
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DATE	DATE	DATE	DATE

SHEET 17/31

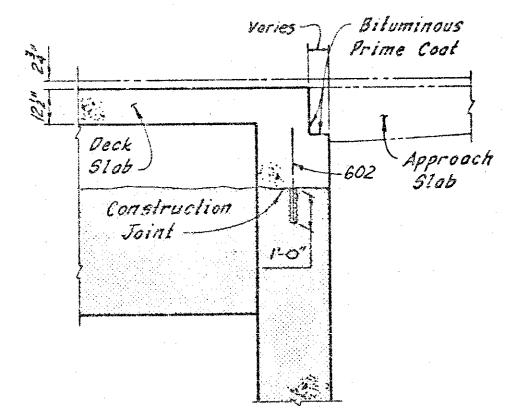
FHWA REGION	STATE	PROJECT	
5	OHIO		

165
185

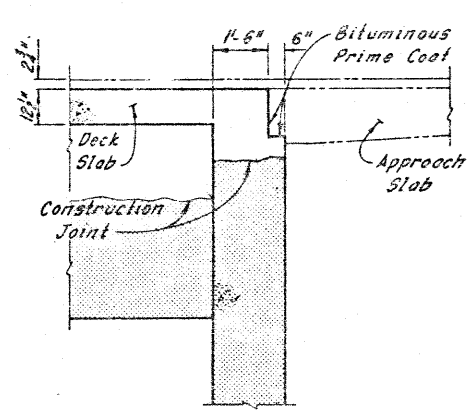
CUYAHOGA COUNTY
CUY-10-16.23



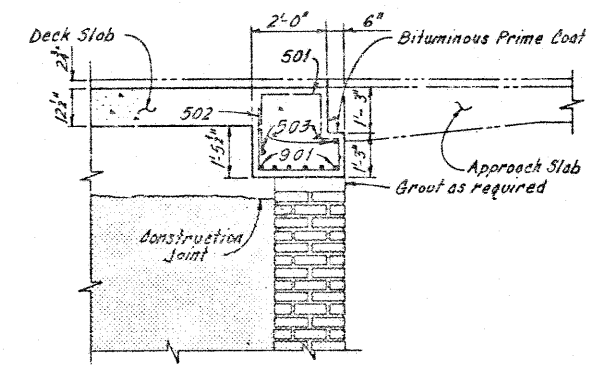
SECTION A-A



SECTION B-B

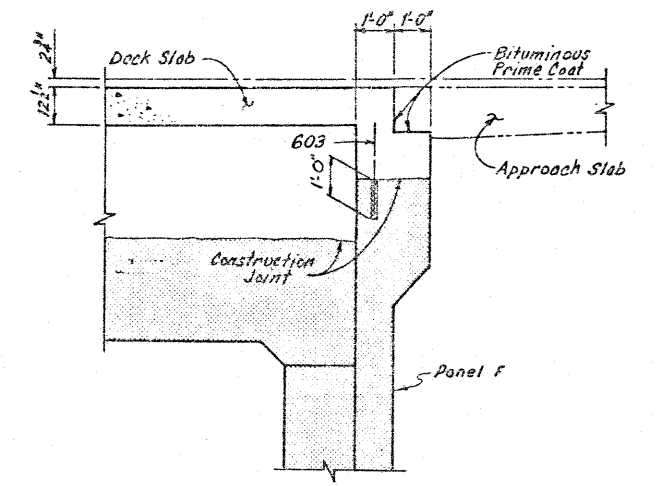


SECTION C-C

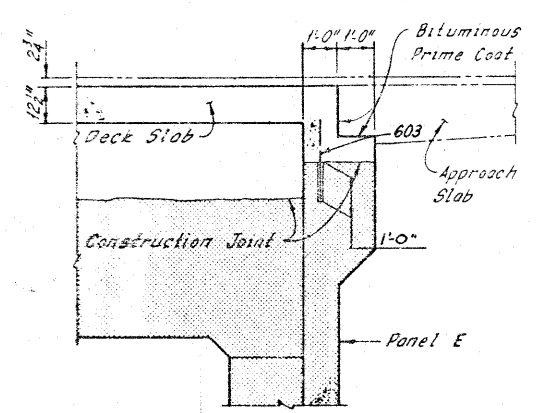


Note: Utilities not shown.

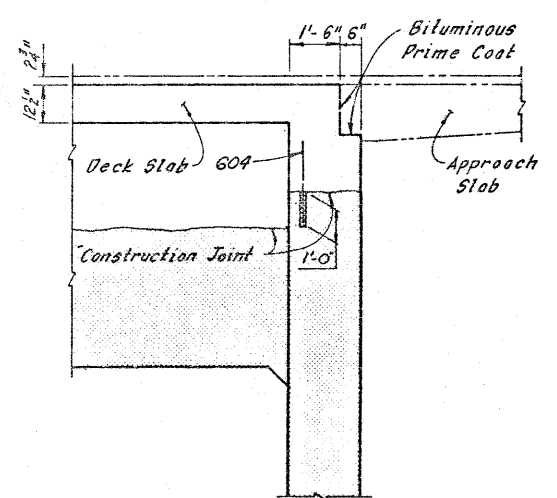
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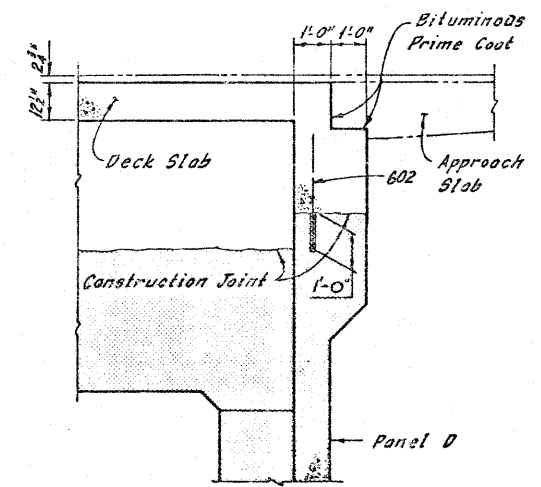
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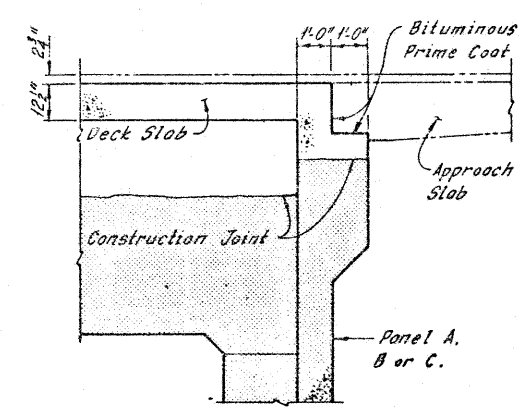
SECTION F-F



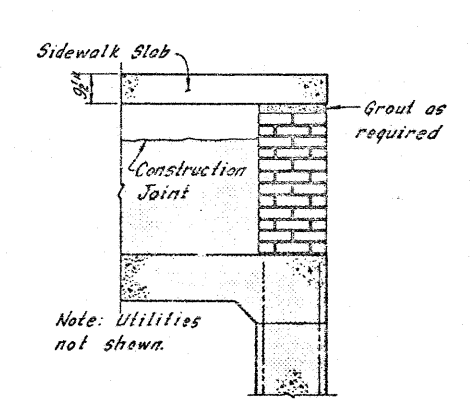
SECTION G-G



SECTION H-H



SECTION J-J



SECTION K-K

Note:
All reinforcing bar marks shall be prefixed EA.

Notes:
Zip-a-tone indicates existing structures.
Sidewalk, deck, existing girder and retained abutment reinforcement is not shown.
The cost of grouting shall be included with the unit price bid for Item 511, Class C Concrete, Abutments Above Footings, for payment.
For reinforcement schedule see Sheet R/4.

HNTB BRIDGE NO. 4

HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND

HNTB

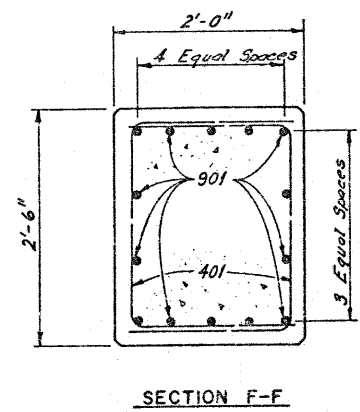
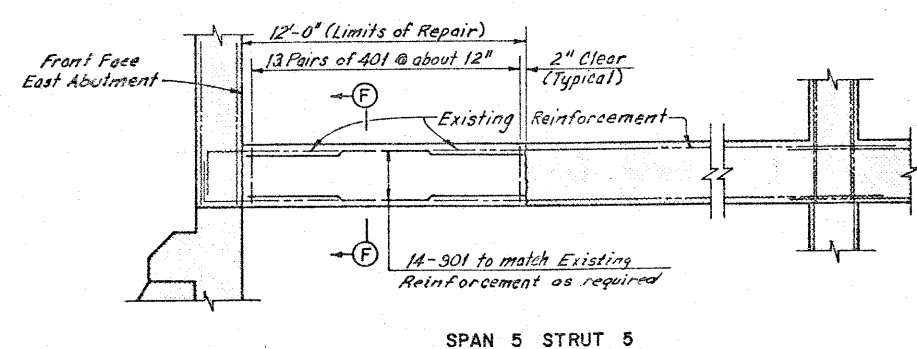
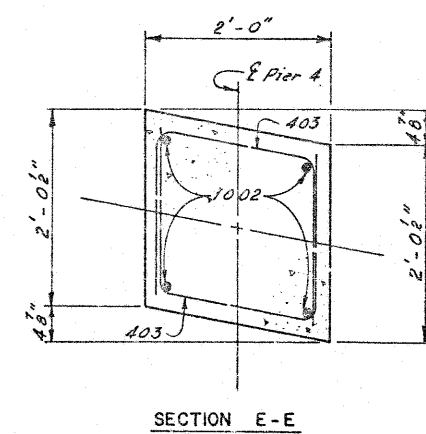
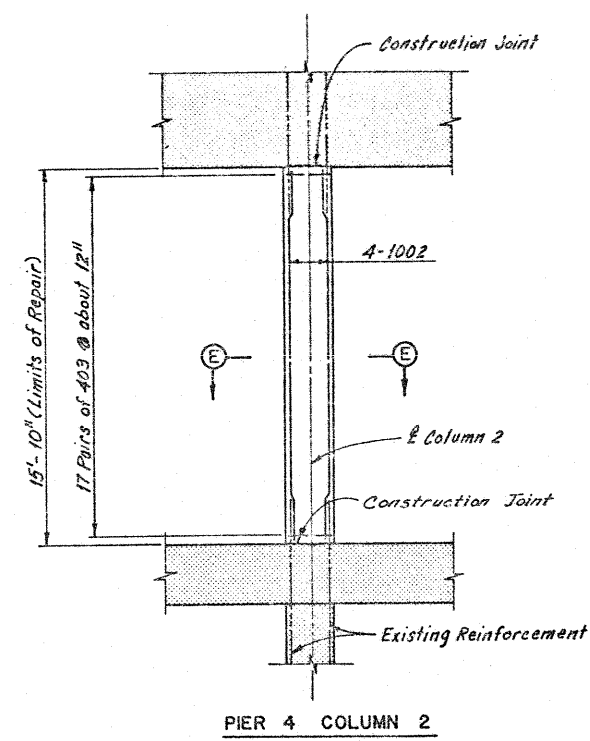
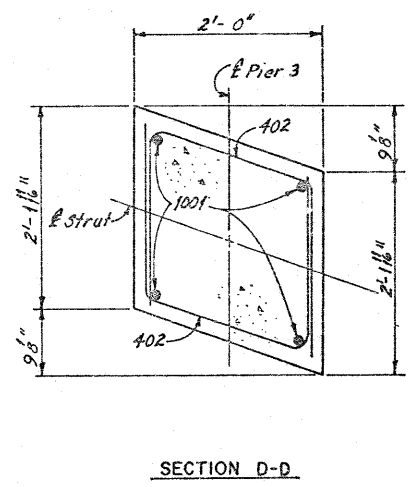
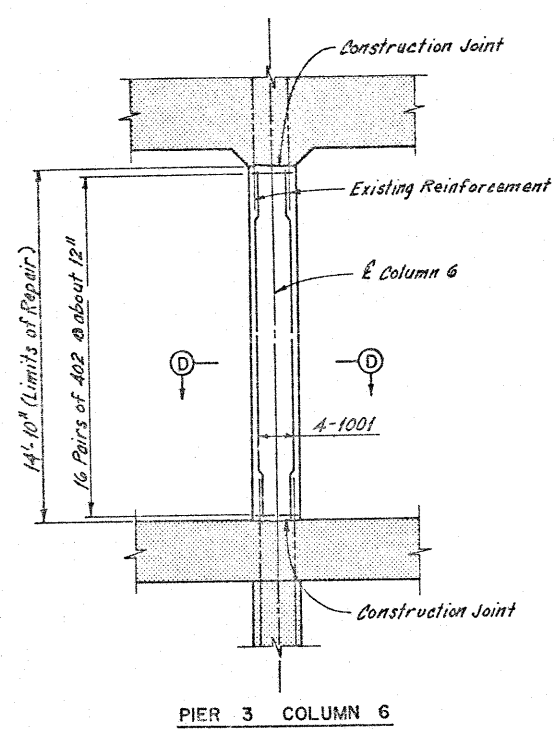
MODIFIED TYPICAL CROSS SECTIONS
EAST ABUTMENT
REHABILITATION OF THE
CARNEGIE AVENUE GRADE SEPARATION STRUCTURE
(S.R. 10 OVER THE CLEVELAND UNION TERMINALS CO. AND THE REGIONAL TRANSIT AUTHORITY)
BR. NO. CUY-10-1685 STA. 57+29.72
CUYAHOGA COUNTY OHIO STA. 58+85.70

DRAWN	TRACES	CHECKED	REVIEWED	REVISION
AL	DES	RAS		
DATE: 11-78	DATE: 11-78	DATE: 11-78	DATE:	SHEET 18/31

FHWA REGION	STATE	PROJECT
5	OHIO	

166
185

CUYAHOGA COUNTY
CUY-10-16.23



Notes:
 Zip-tone indicates existing structure.
 For strut and column removal details, see Sheet 6/31.
 For reinforcement schedule, see Sheet R/S.

Note: All reinforcing bar marks shall be prefixed SC.

HNTB BRIDGE NO. 4

HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND

HNTB

STRUT AND COLUMN REPAIR DETAILS

REHABILITATION OF THE CARNEGIE AVENUE GRADE SEPARATION STRUCTURE (S.R. 10 OVER THE CLEVELAND UNION TERMINALS CO. AND THE REGIONAL TRANSIT AUTHORITY)

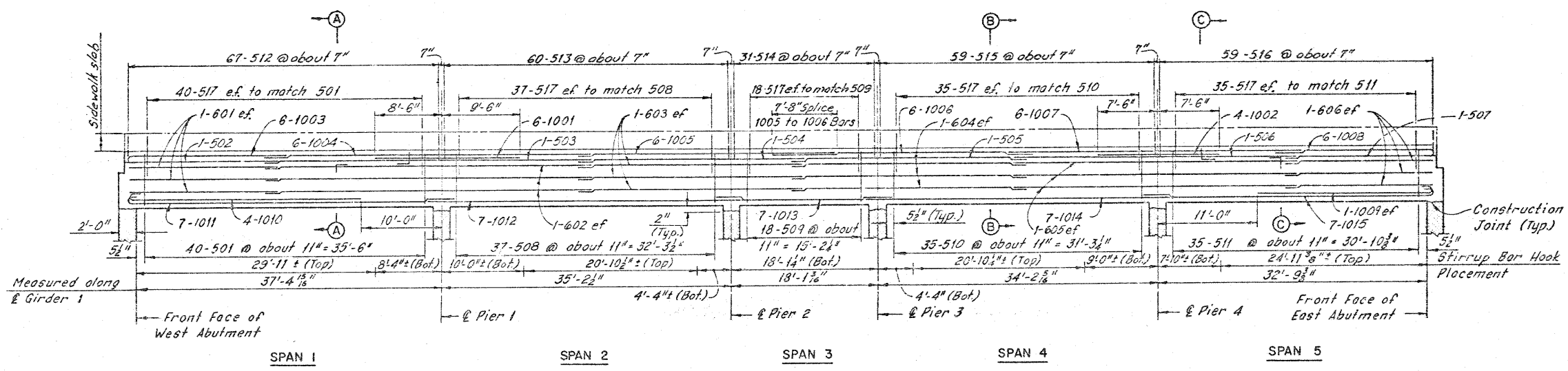
BR. NO. CUY. -10-1685 STA. 57+29.72
 STA. 58+85.70

CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
AUT	DES	PAS		
DATE 8-1-75	DATE 8-3-75	DATE 9-6-75	DATE	

SHEET 19/31

CUYAHOGA COUNTY
CUY-10-16.23



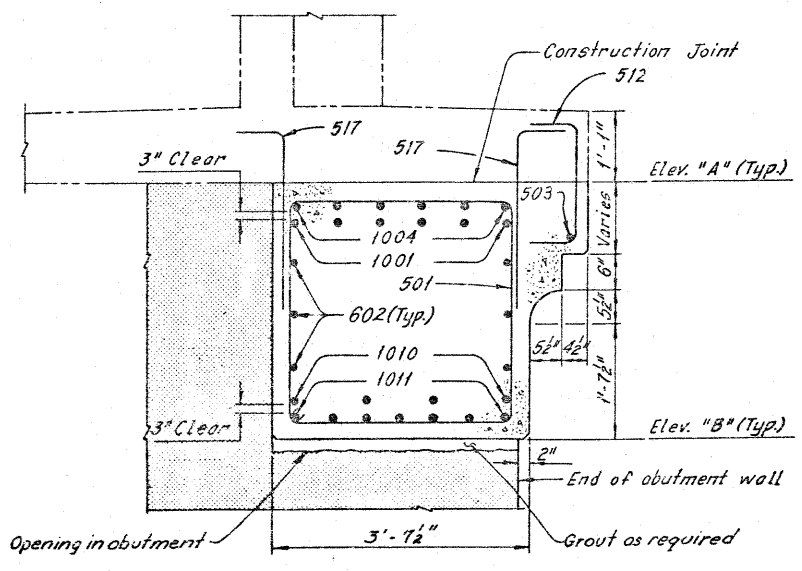
GIRDER ELEVATION
(Looking North)

Note: All reinforcing bar marks shall be prefixed GM.

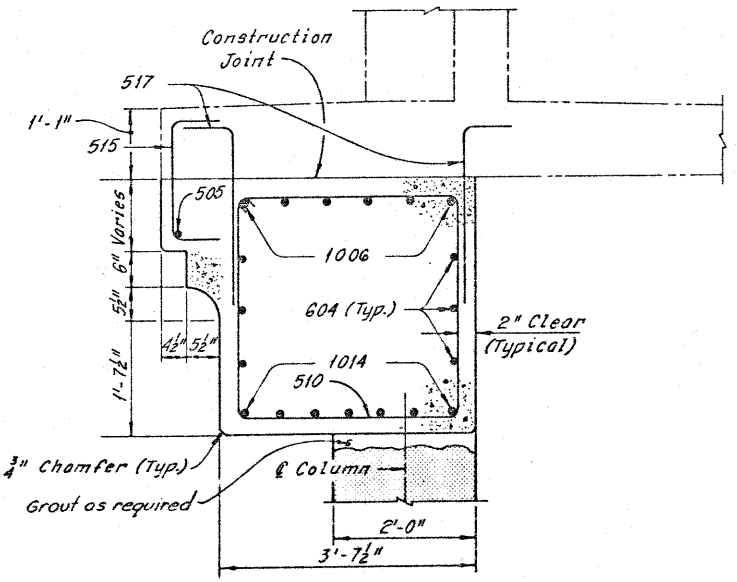
Bar No.	Lengths
5	1' - 7"
6	1' - 11"
10	3' - 2"

Location	Elev. A	Elev. B
*Front face of west abutment	670.95	667.60
± Pier 1	670.27	666.83
± Pier 2	669.62	666.13
± Pier 3	669.36	665.77
± Pier 4	668.91	665.07
*Front face of east abutment	668.48	663.72

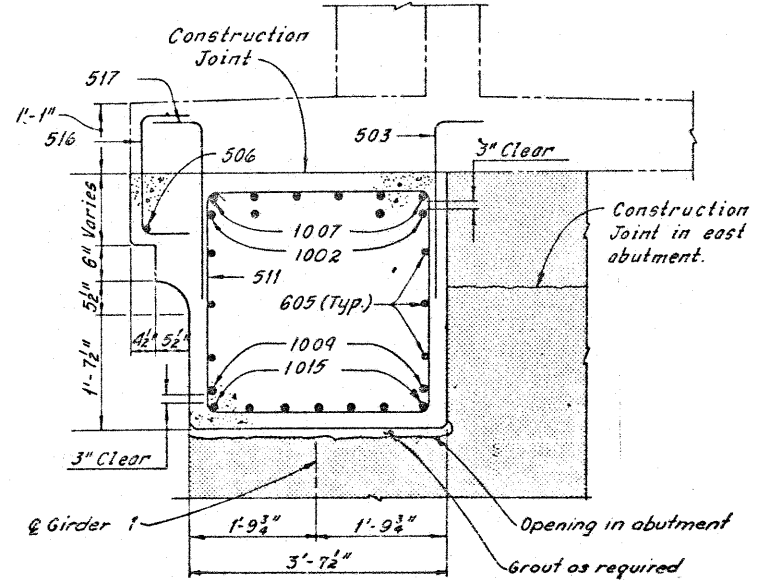
* Given to the actual front face of Abutment backwall



SECTION A-A



SECTION B-B
(Sidewalk reinforcement not shown)



SECTION C-C

Notes:
 Zip-a-tone indicates existing structure.
 Phantom lines indicate new construction, details of which are shown elsewhere in these plans.
 For Removal Plans, see Sheets 4/31
 For Sidewalk Plans, see Sheets 27/31
 For Reinforcement Schedule, see Sheet R/S
 The following abbreviations are used:
 Typ. = Typical Bot. = Bottom
 e.f. = each face f.f. = far face
 The cost of grouting shall be included with the unit price bid for Item 511, Class C Concrete, Abutments Above Footings, for payment.

HNTB BRIDGE NO. 4

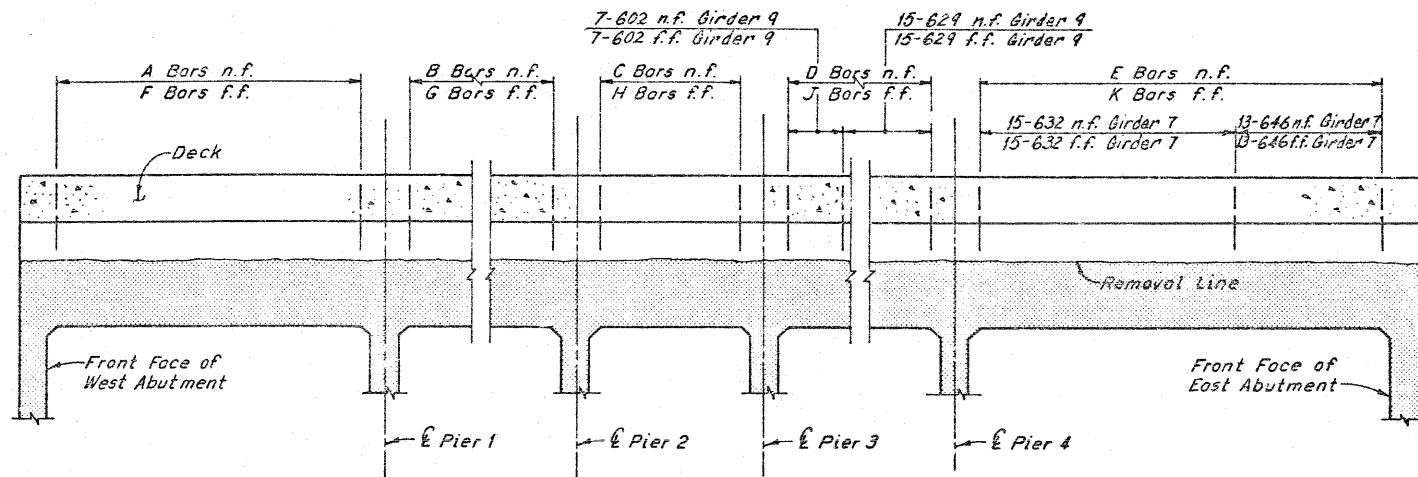
HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND HNTB

GIRDER-1 REPLACEMENT

REHABILITATION OF THE CARNegie AVENUE GRADE SEPARATION STRUCTURE (S.R.10 OVER THE CLEVELAND UNION TERMINALS CO. AND THE REGIONAL TRANSIT AUTHORITY)
 BR. NO. CUY-10-1685 STA. 57+29.72
 CUYAHOGA COUNTY OHIO STA. 58+85.70

DRAWN BY	TRACED BY	CHECKED BY	REVIEWED BY	DATE
7-22-72	1-17-72	1-17-72		

SHEET 20/31



Note:
Reinforcing bars shall be spaced to match existing girder reinforcement.

TYPICAL GIRDER ELEVATION
(Existing Girder reinforcement and new slab reinforcement not shown)

GIRDER	BAR A		BAR B		BAR C		BAR D		BAR E		BAR F		BAR G		BAR H		BAR J		BAR K	
	NO.	MARK	NO.	MARK	NO.	MARK	NO.	MARK	NO.	MARK	NO.	MARK	NO.	MARK	NO.	MARK	NO.	MARK	NO.	MARK
2	24	602	22	602	4	605	1 Ser. 16	607	1 Ser. 16	609	24	601	22	601	4	603	1 Ser. 16	606	1 Ser. 16	608
3	26	610	24	610	4	611	1 Ser. 20	612	1 Ser. 18	613	26	610	24	610	4	611	1 Ser. 20	612	1 Ser. 18	613
4	16	614	18	615	4	611	1 Ser. 16	616	1 Ser. 20	617	16	614	18	615	4	611	1 Ser. 16	616	1 Ser. 20	617
4A	-	-	18	615	4	611	1 Ser. 16	618	1 Ser. 20	619	-	-	18	615	4	611	1 Ser. 16	618	1 Ser. 20	619
5	18	611	22	620	1 Ser. 4	621	1 Ser. 20	622	1 Ser. 22	625	18	611	22	620	1 Ser. 4	621	1 Ser. 20	622	1 Ser. 22	624
6	1 Ser. 23	626	1 Ser. 32	627	8	628	28	628	26	629	1 Ser. 23	626	1 Ser. 32	627	8	628	28	628	26	629
7	22	629	28	630	8	630	1 Ser. 23	631	15 13	632 646	22	629	28	630	8	630	1 Ser. 23	631	15 13	632 646
8	17	603	19	633	8	601	1 Ser. 17	634	26	635	17	603	19	633	8	601	1 Ser. 17	634	26	635
9	17	601	19	605	8	602	7 15	602 629	-	-	17	601	19	605	8	602	7 15	602 629	-	-
10	19	636	21	605	-	-	-	-	-	-	19	636	21	605	-	-	-	-	-	-
11	1 Ser. 16	637	-	-	-	-	-	-	-	-	1 Ser. 16	637	-	-	-	-	-	-	-	-
12	1 Ser. 21	638	29	640	8	629	-	-	-	-	1 Ser. 21	638	29	636	8	636	-	-	-	-
13	23	601	24	633	8	630	20	629	32	635	23	601	24	633	8	630	20	629	32	635
14	19	620	32	641	8	641	19	642	21	643	19	601	32	601	8	601	19	633	21	645
15	1 Ser. 17	644	20	620	7	620	14	641	16	641	1 Ser. 17	644	20	620	7	620	14	641	16	641
16	17	611	20	611	7	620	14	620	16	604	17	611	20	611	7	620	14	620	16	604
17	16	≠ 641	20	≠ 620	8	≠ 620	16	≠ 620	18	≠ 604	16	≠ 611	20	≠ 641	8	≠ 642	16	≠ 642	18	≠ 623
18	18	604	28	604	7	641	20	641	17	642	18	604	28	604	7	641	20	641	17	642

Notes:
Zip-a-tone indicates existing structure.
For Girder 1 replacement details, see Sheet 20/31.
For Reinforcement Schedule, see Sheet R/S.
For Member Identification Plans, see Sheet 2/31.
For Typical Section thru girders, see Modified Typical Section Along Pier 3, see Sheet 22/31.

Note: All reinforcing bar marks shall be prefixed GR.

≠ denotes epoxy coated reinforcing steel

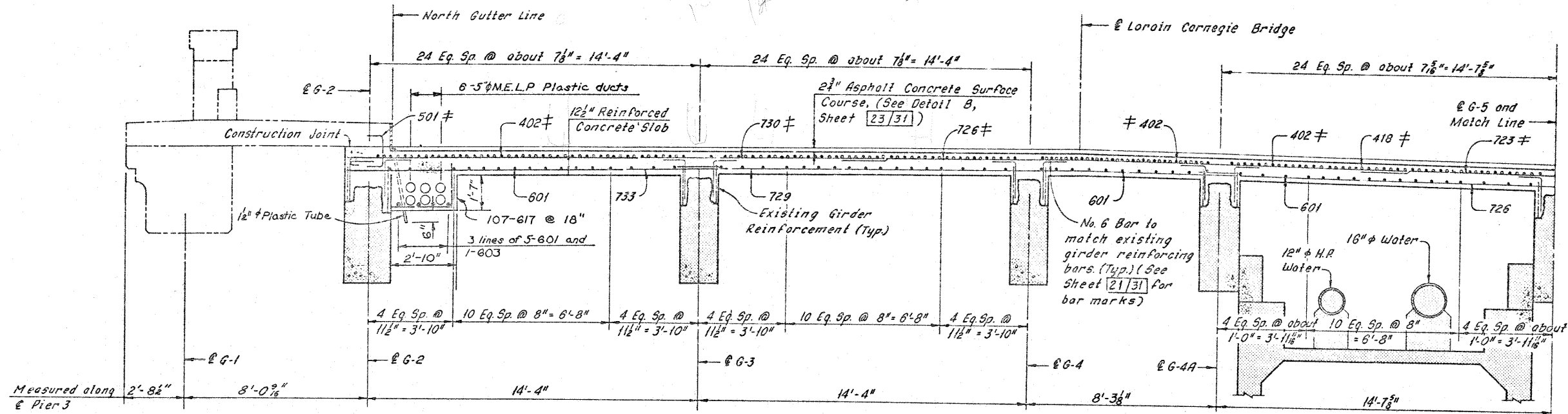
HNTB BRIDGE NO. 4

HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND		HNTB	
GIRDER REINFORCEMENT GIRDERS 2 THRU 18 REHABILITATION OF THE CARNEGIE AVENUE GRADE SEPARATION STRUCTURE (S.R.10 OVER THE CLEVELAND UNION TERMINALS CO. AND THE REGIONAL TRANSIT AUTHORITY) BR. NO. CUY. -10-1685 STA. 57+29.72 STA. 58+85.70 CUYAHOGA COUNTY OHIO			
DRAWN AUT	TRACED DES	CHECKED AN	REVIEWED DATE
DATE: 2-78	DATE: 4-78	DATE: 3-78	DATE: 3-78
			SHEET 21/31

FHWA REGION	STATE	PROJECT
5	OHIO	

169
185

CUYAHOGA COUNTY
CUY-10-16.23

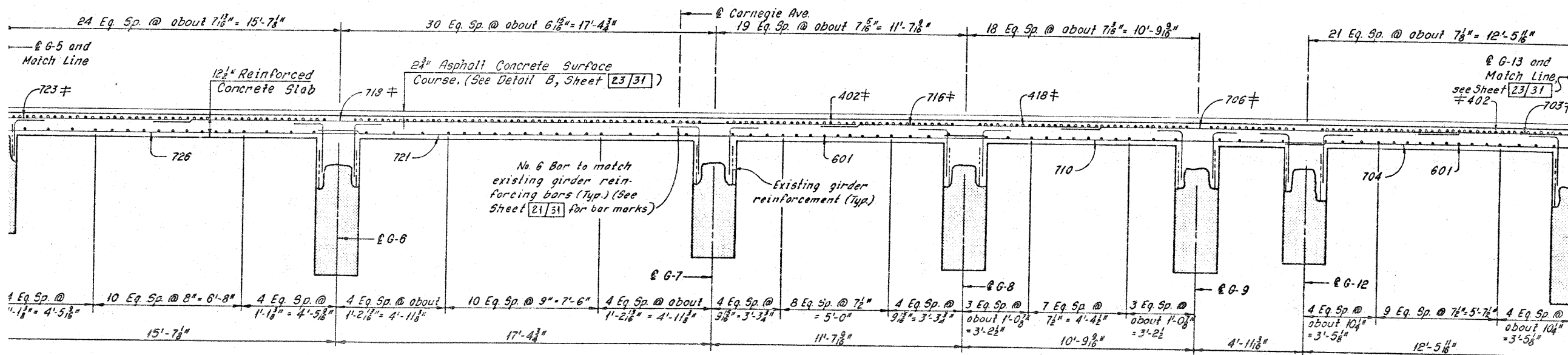


PART TYPICAL SECTION
(Columns Not Shown)

denotes epoxy coated reinforcing steel

Note:
Existing Longitudinal Girder Reinforcement not shown.

Note:
Reinforcing bars shown shall be prefixed as follows:
BR = Bottom Transverse Reinforcing
TR = Top Transverse Reinforcing
LR = Longitudinal Reinforcing



PART TYPICAL SECTION
(Columns Not Shown)

Notes:
Zip-a-tone indicates existing structures.
Phantom lines indicate new construction, details of which are shown elsewhere in these plans.
For Removal Plans, see Sheet 4/31.
For Sidewalk Details, see Sheet 27/31.
For Girder 1 Details, see Sheet 30/31.
For Reinforcement Schedule, see Sheet R/4.
The following abbreviations are used:
Typ. = Typical
H.P. = High Pressure
Eq. Sp. = Equal Spaces
For Slab Plans, see Sheets 24/31, 25/31 and 26/31.

For stage construction see Sheet 1/31.

HNTB BRIDGE NO. 4

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
CLEVELAND

HNTB

MODIFIED TYPICAL SECTION
ALONG PIER 3
REHABILITATION OF THE
CARNEGIE AVENUE GRADE SEPARATION STRUCTURE
(S.R.10 OVER THE CLEVELAND UNION TERMINALS CO.
AND THE REGIONAL TRANSIT AUTHORITY)
BR. NO. CUY-10-1685 STA. 57+29.72
CUYAHOGA COUNTY STA. 58+85.70
OHIO

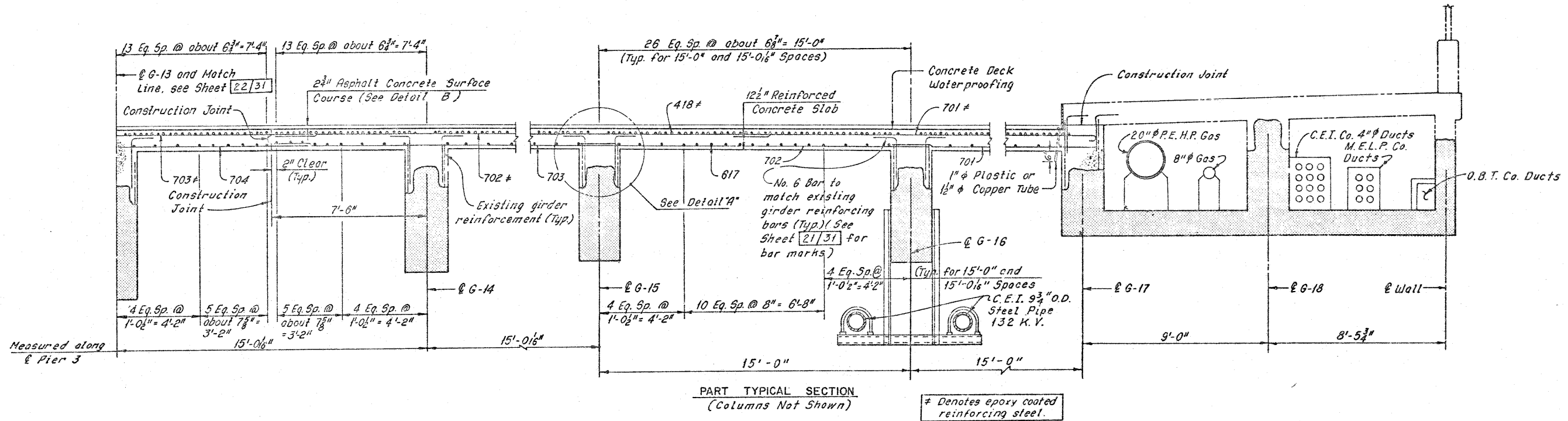
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DATE 9-25-25	DATE 10-3-25	DATE 7-7-25	DATE	

SHEET 22/31

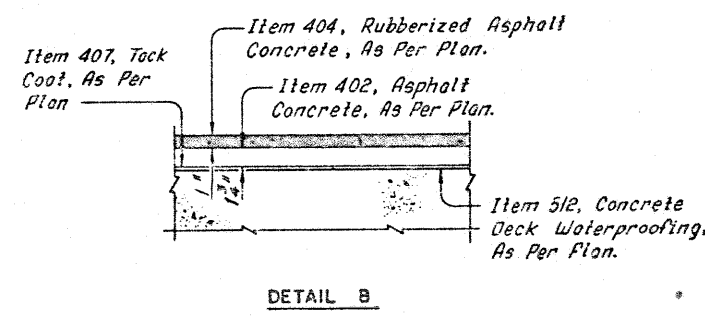
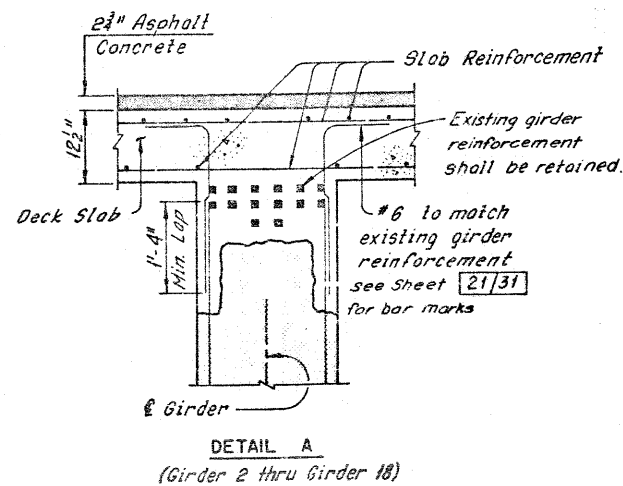
FHWA REGION	STATE	PROJECT
5	OHIO	

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185

CUYAHOGA COUNTY
CUY-10-16.23



Note:
Reinforcing bars shown shall be prefixed as follows:
BR = Bottom Transverse Reinforcing
TR = Top Transverse Reinforcing
LR = Longitudinal Reinforcing



Note:
For Notes, see Sheet 22/31

HNTB BRIDGE NO. 4

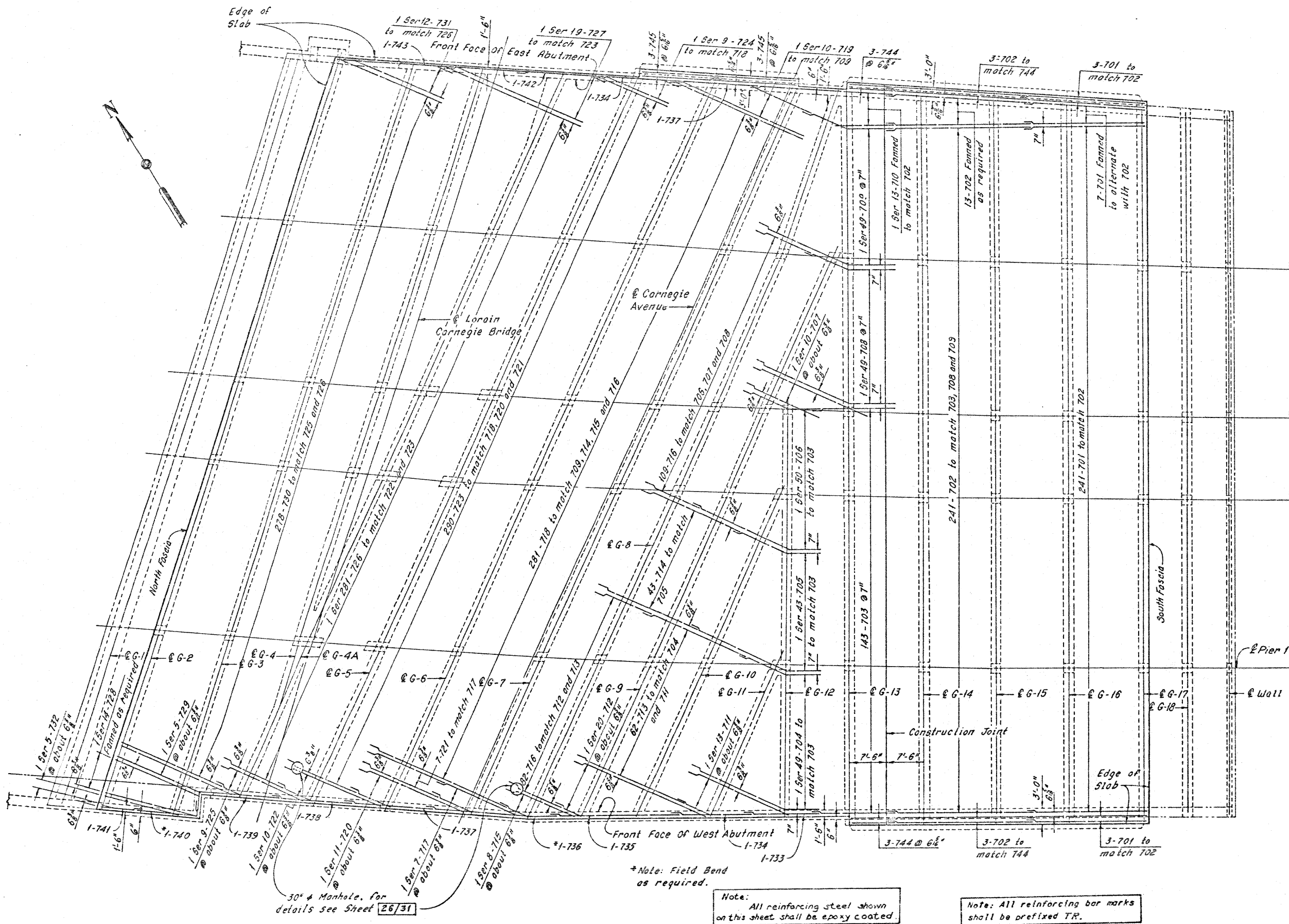
HOWARD NEEDLES TAMMEN & BERGENOFF CONSULTING ENGINEERS CLEVELAND

HNTB

MODIFIED TYPICAL SECTION
ALONG PIER 3
REHABILITATION OF THE
CARNEGIE AVENUE GRADE SEPARATION STRUCTURE
(S.R. 10 OVER THE CLEVELAND UNION TERMINALS CO.
AND THE REGIONAL TRANSIT AUTHORITY)
BR. NO. CUY. -10-1685 STA. 57+29.72
STA. 58+85.70
OHIO

DRAWN BY	TRACED BY	CHECKED BY	REVIEWED	REVISED
DATE 9-25-33	DATE 10-3-33	DATE 7-7-38	DATE	

SHEET 23/31



REQUIRED LAP LENGTHS	
No. 7 Bar	21'-0" Min.

Notes:
 For longitudinal deck slab reinforcement, see Sheet 26/31.
 For bottom transverse deck slab reinforcement, see Sheet 25/31.
 For Modified Typical Section of Pier 3, see Sheet 22/31.
 For Sidewalk Plans and Details, see Sheet 27/31.
 For Hailing Plans and Details, see Sheet 29/31.
 For Approach Slab Details, see roadway plans.
 For Reinforcement Schedule and Bending Diagrams, see Sheet R/4.
 For additional reinforcement at 30" Manholes, see Detail A, Sheet 26/31.
 For slope construction, see Sheet 1/31.

*Note: Field Bend as required.

Note: All reinforcing steel shown on this sheet shall be epoxy coated.

Note: All reinforcing bar marks shall be prefixed TR.

HNTB BRIDGE NO. 4

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
CLEVELAND

HNTB

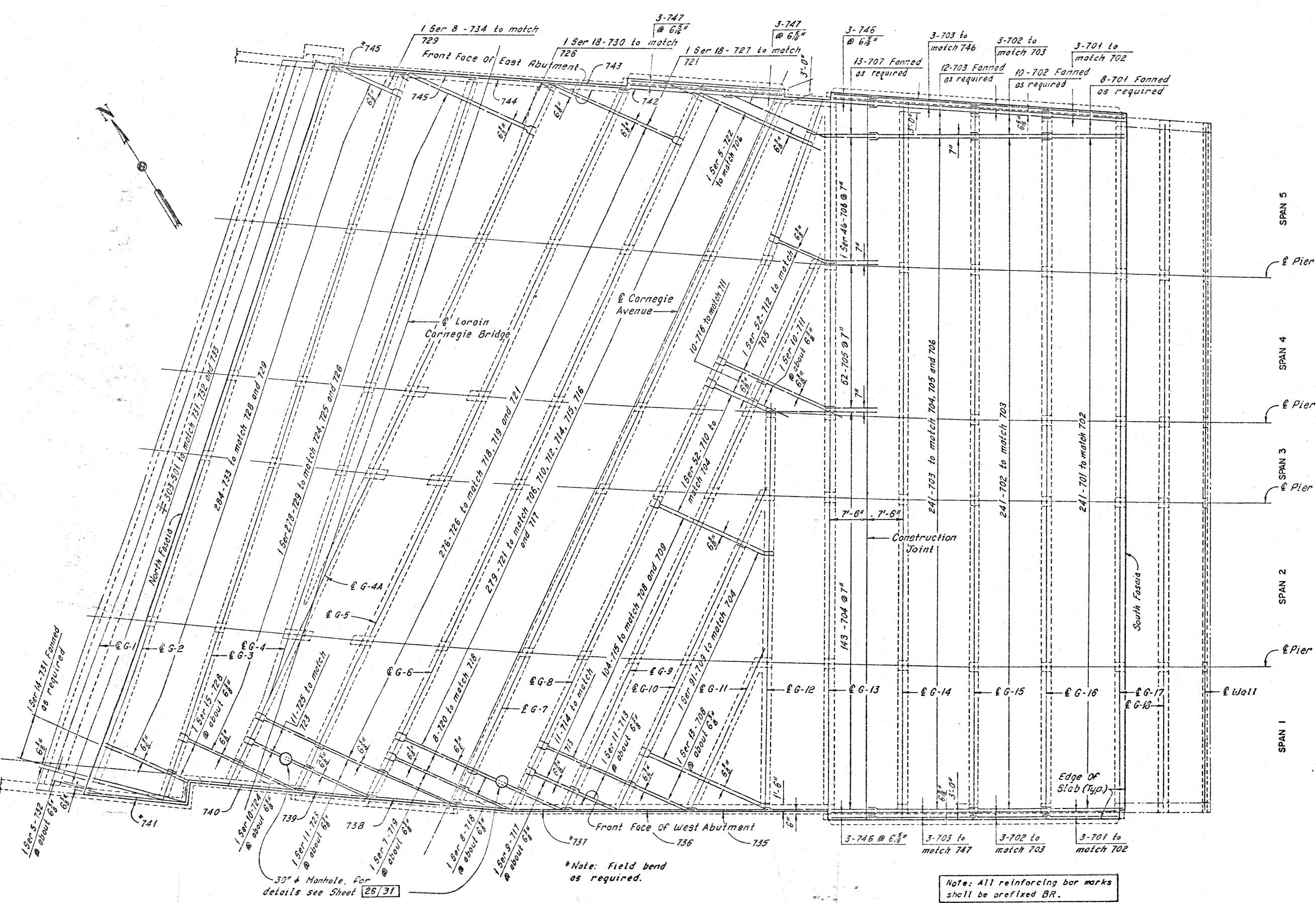
SLAB PLAN
 TOP TRANSVERSE REINFORCEMENT
 REHABILITATION OF THE
 CARNEGIE AVENUE GRADE SEPARATION STRUCTURE
 (S.R. 10 OVER THE CLEVELAND UNION TERMINALS CO.
 AND THE REGIONAL TRANSIT AUTHORITY)
 BR. NO. CUY-10-1685 STA. 57+29.72
 CUYAHOGA COUNTY STA. 58+85.70
 OHIO

DATE: 7-78	TRACED: 8/78	CHECKED: 7/78	REVIEWED: 7/78	DATE: 7-78
				SHEET 24/31

FHWA REGION	STATE	PROJECT
5	OHIO	

172
185

CUYAHOGA COUNTY
CUY-10-16.23



REQUIRED LAP LENGTHS
No. 7 Bar 21'-0" Min.

Notes:
 For longitudinal deck slab reinforcement, see Sheet 26/31.
 For top transverse deck slab reinforcement, see Sheet 24/31.
 For Modified Typical Section of Pier 3, see Sheet 22/31.
 For Sidewalk Plans and Details, see Sheet 27/31.
 For Walling Plans and Details, see Sheet 29/31.
 For Approach Slab Details, see roadway plans.
 For Reinforcement Schedule and Bending Diagrams, see Sheet R/4.
 For additional reinforcement at 30" Manhole, see Detail A, Sheet 26/31.
 For stage construction, see Sheet 1/31.

30" Manhole, for details see Sheet 25/31

*Note: Field bend as required.

Note: All reinforcing bar marks shall be prefixed BR.

± denotes epoxy coated reinforcing steel.

HNTB BRIDGE NO. 4

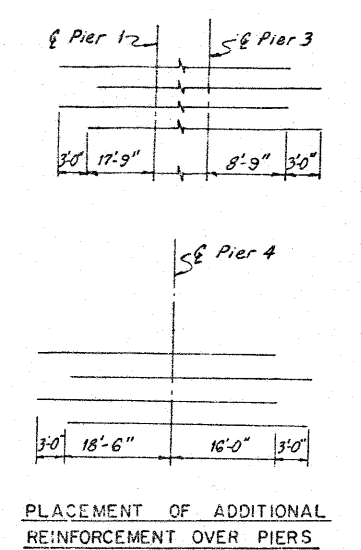
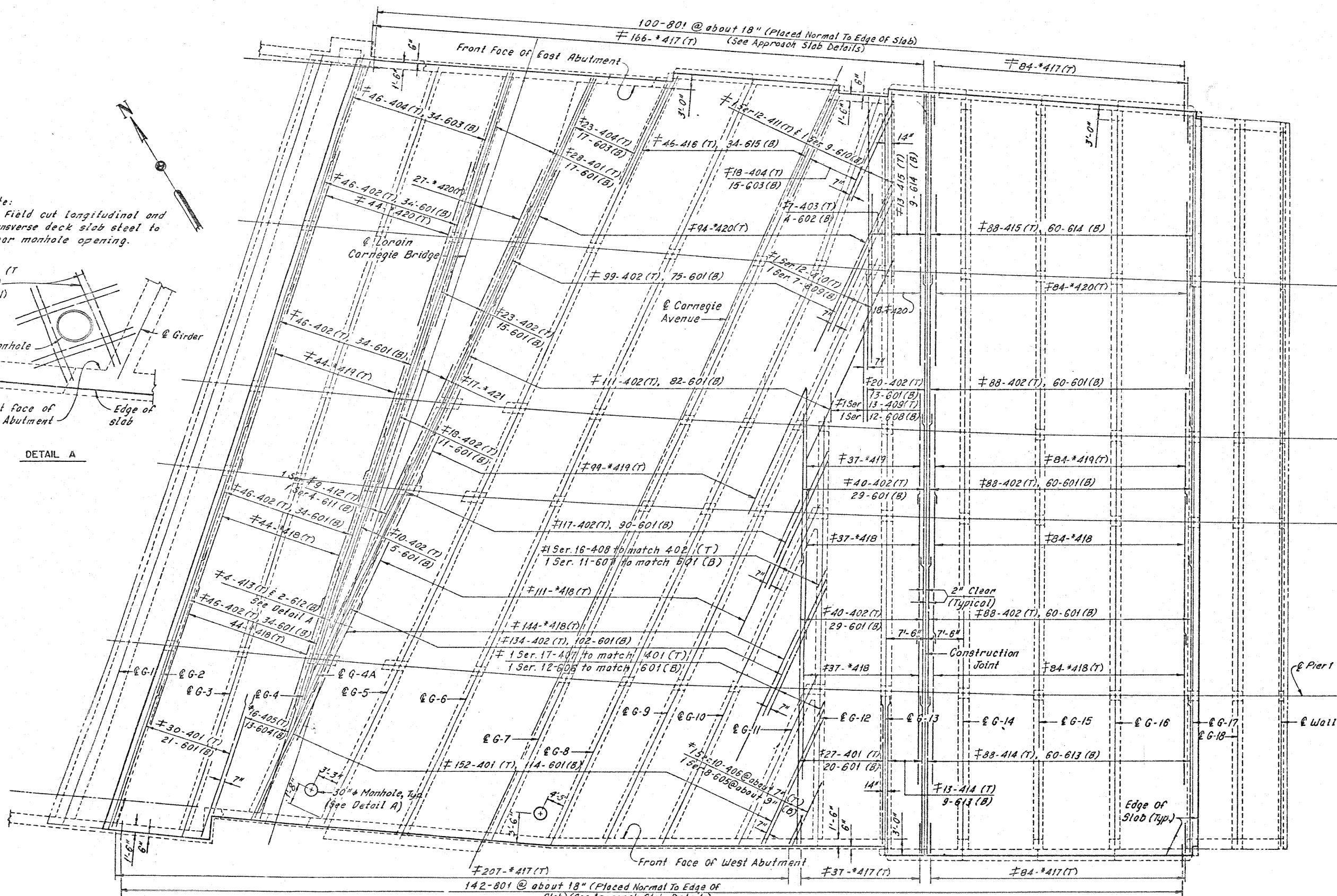
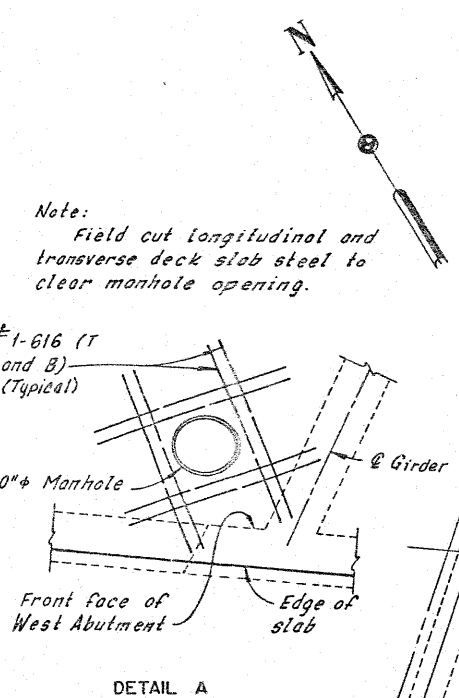
HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND **HNTB**

SLAB PLAN
BOTTOM TRANSVERSE REINFORCEMENT
 REHABILITATION OF THE CARNegie AVENUE GRADE SEPARATION STRUCTURE (S.R.10 OVER THE CLEVELAND UNION TERMINALS CO. AND THE REGIONAL TRANSIT AUTHORITY)
 BR. NO. CUY.-10-1685 STA. 57+29.72
 CUYAHOGA COUNTY OHIO STA. 58+85.70

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
BP	BP	FB	FB	
DATE 3.20.78	DATE 3.21.78	DATE 7.7.78	DATE	

SHEET 25/31

CUYAHOGA COUNTY
CUY-10-16.23



PLACEMENT OF ADDITIONAL REINFORCEMENT OVER PIERS

MINIMUM REQUIRED BAR SPLICE LENGTH	
Bar No.	Splice length
4	1'-0"
6	1'-5"

Notes:
 * Indicates additional reinforcement over piers or at abutments.
 For placement of longitudinal slab reinforcement, see Sheets 22/31 and 23/31.
 For additional notes, see Sheet 24/31.
 For Approach Slab Details, see roadway plans.
 For stage construction, see Sheet 1/31.

denotes epoxy coated reinforcing steel
 Note: All reinforcing bar marks shall be prefixed L.P.

HNTB BRIDGE NO. 4

HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND

HNTB

SLAB PLAN
LONGITUDINAL REINFORCEMENT
 REHABILITATION OF THE
 CARNEGIE AVENUE GRADE SEPARATION STRUCTURE
 (S.R.10 OVER THE CLEVELAND UNION TERMINALS CO.
 AND THE REGIONAL TRANSIT AUTHORITY)
 BR. NO. CUY. -10-1685 STA. 57+29.72
 CUYAHOGA COUNTY STA. 58+85.70 OHIO

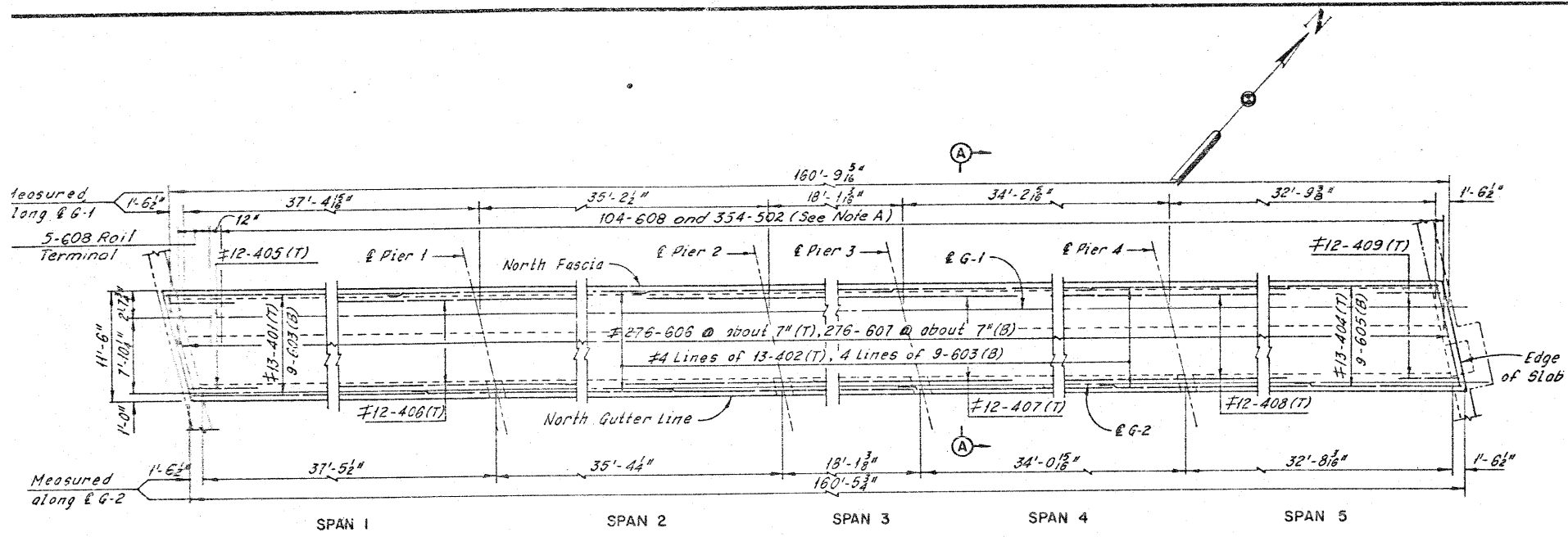
DRAWN	TRACED	CHECKED	REVIEWED	REVISED
SP	SP	FS	DATE	DATE
DATE 5/22/88	DATE 5/23/88	DATE 5/24/88		

SHEET 26/31

FHWA REGION	STATE	PROJECT
5	OHIO	

174
185

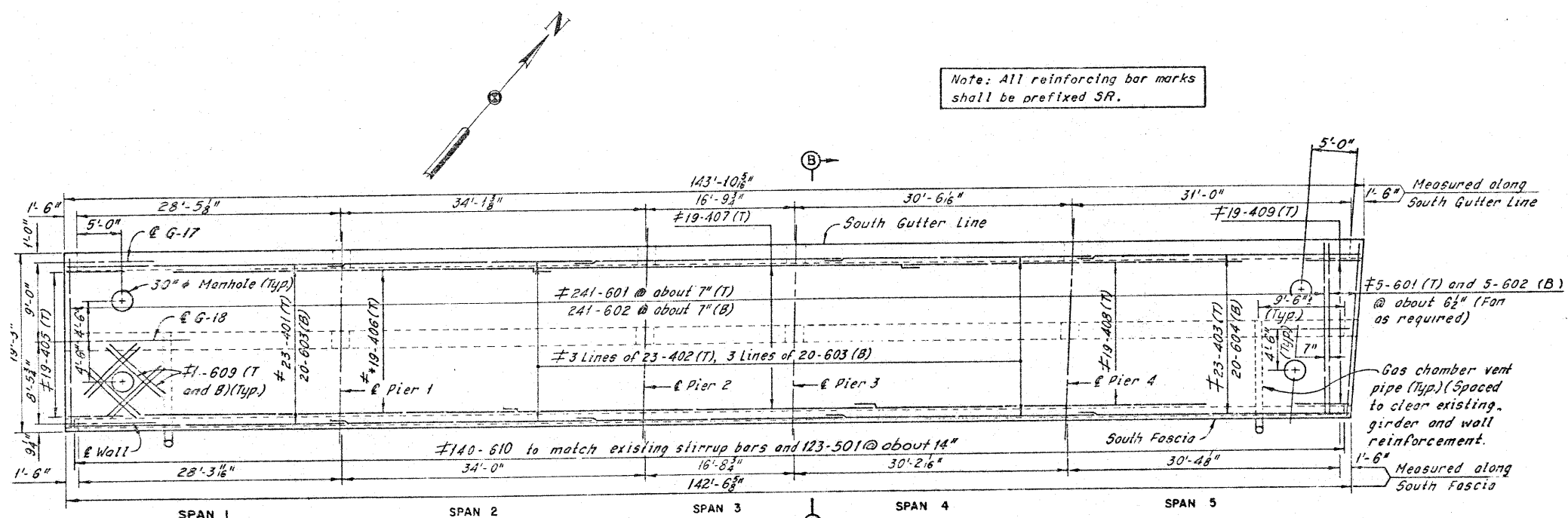
CUYAHOGA COUNTY
CUY-10-16.23



NORTH SIDEWALK PLAN
(Concrete railing not shown)

* Indicates additional reinforcement over piers, see Placement Diagram.

Note: All reinforcing bar marks shall be prefixed SR.



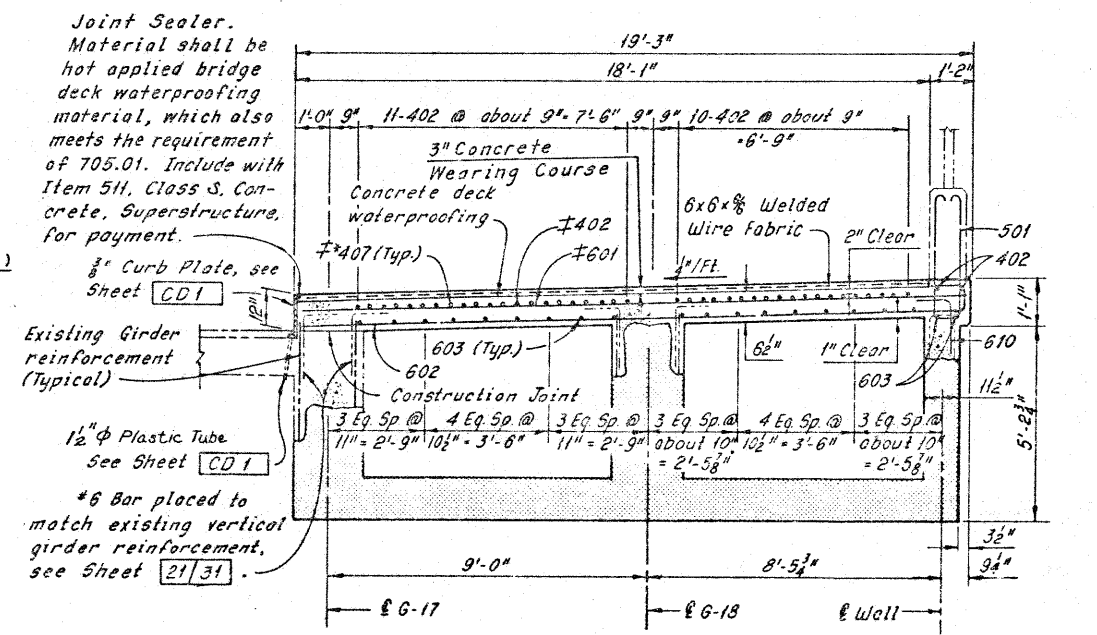
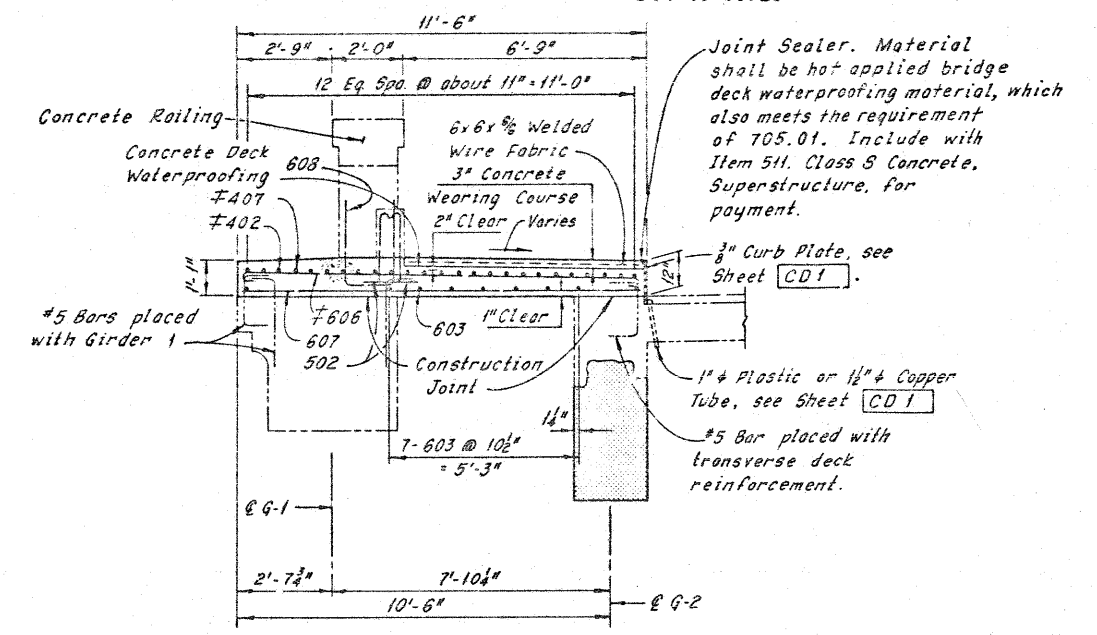
SOUTH SIDEWALK PLAN
(Parapet and fence not shown)

* Indicates additional reinforcement over piers, see Placement Diagram.

≠ denotes epoxy coated reinforcing steel

Note A:
Bars SR502 shall be placed at 2 equal spaces (3 sets of 2 bars) between railing posts and at 1 space (2 sets of 2 bars) between railing posts and deflection joints and or railing posts and open joints. Bars SR 608 shall be placed at each face of railing posts.

PLACEMENT OF ADDITIONAL REINFORCEMENT OVER PIERS



Notes:
Zip-a-tone indicates existing structure.
Phantom lines indicate new construction, details of which are shown elsewhere in these plans.
For Removal Plans, see Sheets 4/31 and 5/31.
For details of concrete railing on north sidewalk, see Sheet 29/31.
For details of fence and parapet on south sidewalk, see Sheet 28/31.
For Girder 1 Replacement Details, see Sheet 20/31.
For Reinforcement Schedule, see Sheet R/4.
For Gas Vent Detail, see Sheet 31/31.

HNTB BRIDGE NO 4

HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND

HNTB

SIDEWALK PLANS

REHABILITATION OF THE CARNEGIE AVENUE GRADE SEPARATION STRUCTURE (S.R.10 OVER THE CLEVELAND UNION TERMINALS CO. AND THE REGIONAL TRANSIT AUTHORITY)

BR. NO. CUY-10-1685 STA. 57+29.72 STA. 53+85.70

CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
S.P.	S.P.	P.B.	P.B.	
DATE 5-21-79	DATE 5-22-79	DATE 7-7-79	DATE	

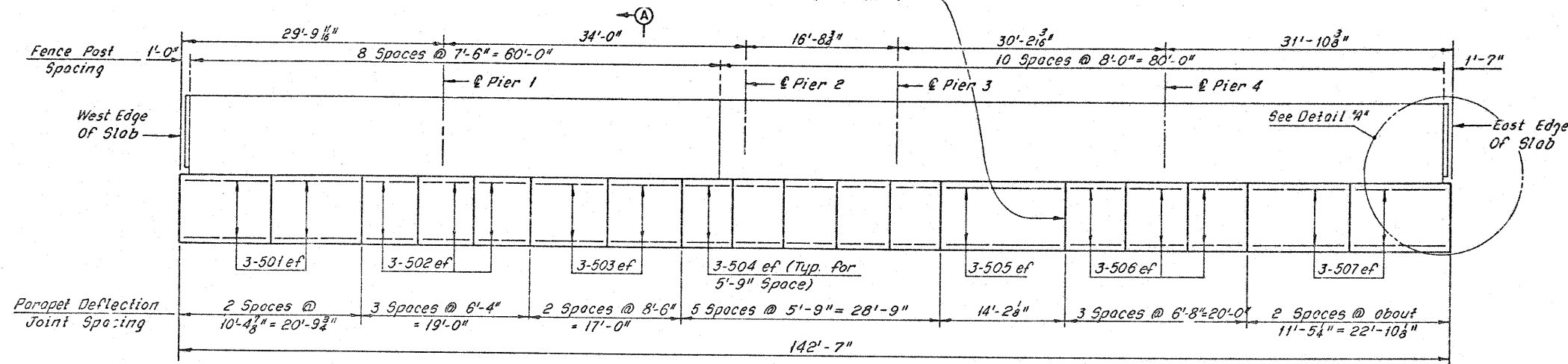
SHEET 27/31

FHWA REGION	STATE	PROJECT	
5	OHIO		

175
185

CUYAHOGA COUNTY
CUY-10-16.23

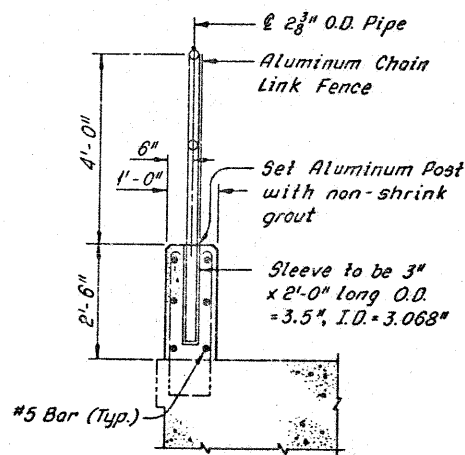
Preformed Expansion Joint Filler in the fencing parapet deflection joints may be either 1" gray sponge rubber or 1" gray cellular polyvinyl chloride (PVC) sponge. Either material shall meet the requirements of AASHTO M-153, Type 1 except the density of PVC sponge shall be not less than 20 lb. per cu. ft.



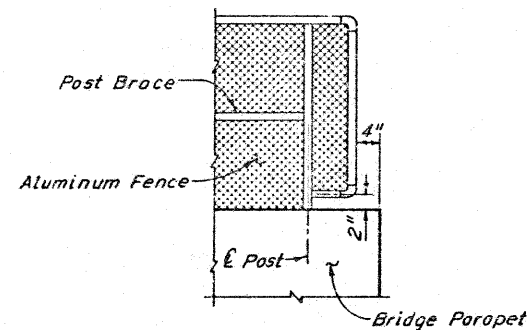
SOUTH PARAPET AND FENCE DETAILS
(Looking North)

Note:
All reinforcing bar marks shall be prefixed RB.

MARK	NO.	LENGTH	TYPE	WEIGHT (LBS)
RB501	12	10'-0"	Str.	125
RB502	18	6'-0"	Str.	113
RB503	12	8'-3"	Str.	103
RB504	30	5'-6"	Str.	172
RB505	6	13'-9"	Str.	86
RB506	18	6'-3"	Str.	117
RB507	12	11'-0"	Str.	138
TOTAL WEIGHT =				854



SECTION A-A



DETAIL A

Notes:

Payment for parapet and fence shall be made at the contract unit price for Item 517, Railing (Concrete Parapet with Chain-Link Fence-AASHTO Designation M-181-Type III Aluminum alloy fabric, posts, hardware and fittings.) Payment length shall be the overall length of the parapets. Sleeves, parapet expansion joint material, grout and longitudinal reinforcing steel in the parapets shall be included with the unit price bid for Item 517, Railing (Concrete Parapet with Chain-Link Fence-AASHTO Designation M-181-Type III Aluminum alloy fabric, posts, hardware and fittings.), for payment. All other reinforcing steel in the parapets is included with Item 509, Reinforcing Steel, for payment.

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 sponge filler. Filler shall be flush with surface of mortar. The anchor posts shall be set in non-shrink grout.

The following abbreviation is used:
ef = each face

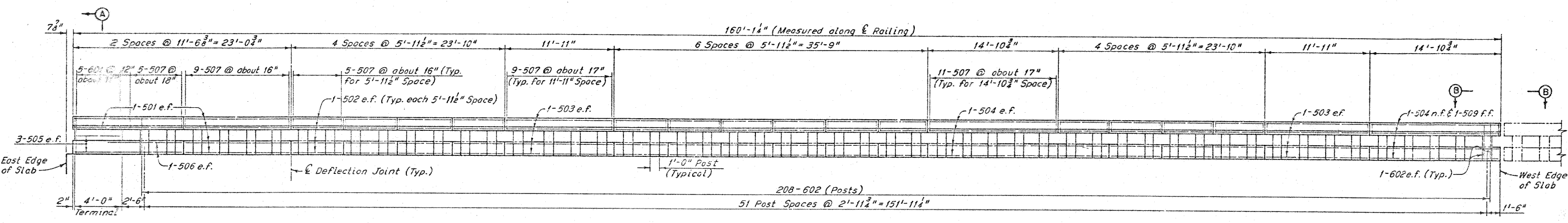
HNTB BRIDGE NO. 4

HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND		HNTB	
SOUTH PARAPET AND FENCE DETAILS			
REHABILITATION OF THE CARNEGIE AVENUE GRADE SEPARATION STRUCTURE (S.R.10 OVER THE CLEVELAND UNION TERMINALS CO. AND THE REGIONAL TRANSIT AUTHORITY)			
BR. NO. CUY. -10-1685		STA. 57+29.72 STA. 58+85.70	
CUYAHOGA COUNTY		OHIO	
DRAWN P.A.S.	TRACED D.L.R.	CHECKED C.C.P.	REVIEWED DATE
DATE 9/11/78	DATE 9/14/78	DATE 9/18/78	DATE
			SHEET 28/31

FHWA REGION	STATE	PROJECT
5	OHIO	

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185

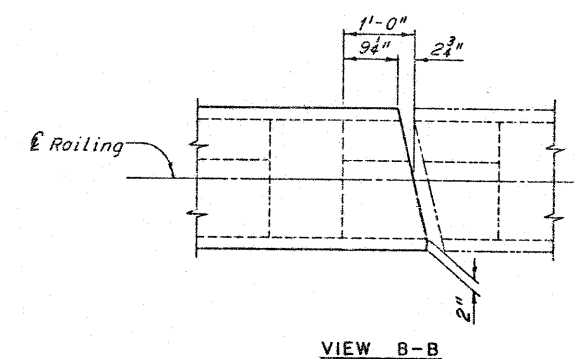
CUYAHOGA COUNTY
CUY-10-16.23



NORTH RAILING
(Looking South)

Note: All reinforcing bar marks shall be prefixed RA.

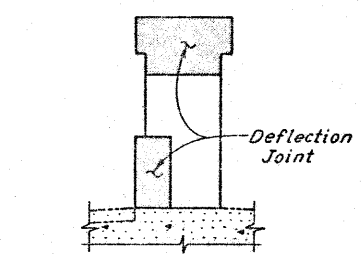
Note: The deflection joints in the railing may be either 1/4" gray sponge rubber or 1/4" gray cellular polyvinyl chloride (PVC) sponge. Either material shall meet the requirements of AASHTO M-153, Type I, except the density of the (PVC) sponge shall be not less than 20 lb. per cu. ft.



VIEW B-B

Notes:
Payment for the railing shall be made at the contract unit price bid for Items 517, Railing, As Per Plan. Payment length shall be the overall length of the railings. Railing expansion joint and deflection joint material and all reinforcing steel that does not extend into the sidewalk shall be included with Item 517 for payment. Reinforcing steel extending from the sidewalk is included with Item 509, Reinforcing Steel, for payment. Railings shall be placed in alternate sections by the use of bulkheads. Closing sections shall be placed after removal of bulkheads and after placement of sponge filler. The filler shall be attached to the face of the concrete on one side, flush with the surface of concrete and exposed edges shall be free of mortar.

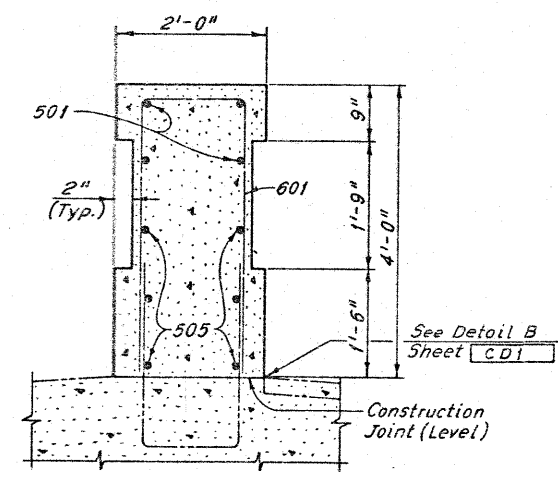
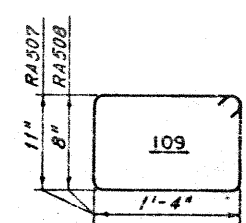
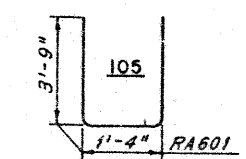
The following abbreviations are used:
e.f. = each face n.f. = near face
Typ. = typical f.f. = far face



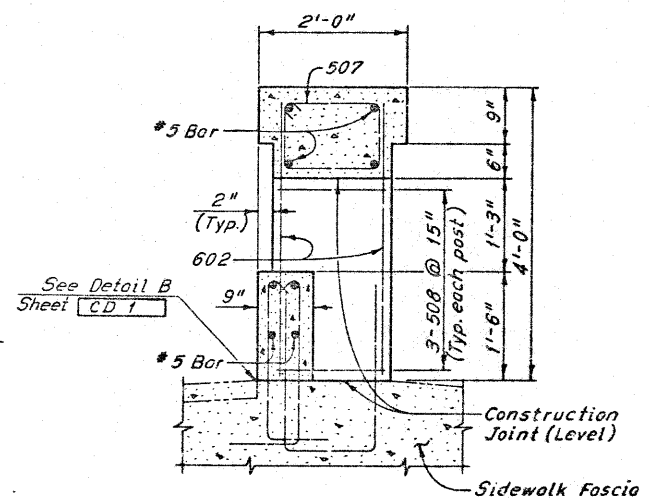
DEFLECTION JOINT DETAIL

MARK	NO.	LENGTH	TYPE	WEIGHT (LBS)
RA501	12	11'-3"	Str.	141
RA502	112	5'-6"	Str.	643
RA503	16	11'-6"	Str.	192
RA504	12	14'-6"	Str.	181
RA505	6	3'-9"	Str.	24
RA506	4	8'-9"	Str.	37
RA507	124	5'-2"	109	668
RA508	156	4'-8"	109	759
RA509	4	14'-3"	Str.	59
RA601	5	8'-6"	105	64
RA602	208	3'-9"	Str.	1172
TOTAL WEIGHT =				3940

BENDING DIAGRAMS



SECTION A-A



TYPICAL RAILING SECTION

HNTB BRIDGE NO. 4

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
CLEVELAND

HNTB

NORTH RAILING DETAILS

REHABILITATION OF THE
CARNEGIE AVENUE GRADE SEPARATION STRUCTURE
(S.R. 10 OVER THE CLEVELAND UNION TERMINALS CO.
AND THE REGIONAL TRANSIT AUTHORITY)
BR NO. CUY.-10-1685 STA. 57+29.72
CUYAHOGA COUNTY OHIO STA. 58+85.70

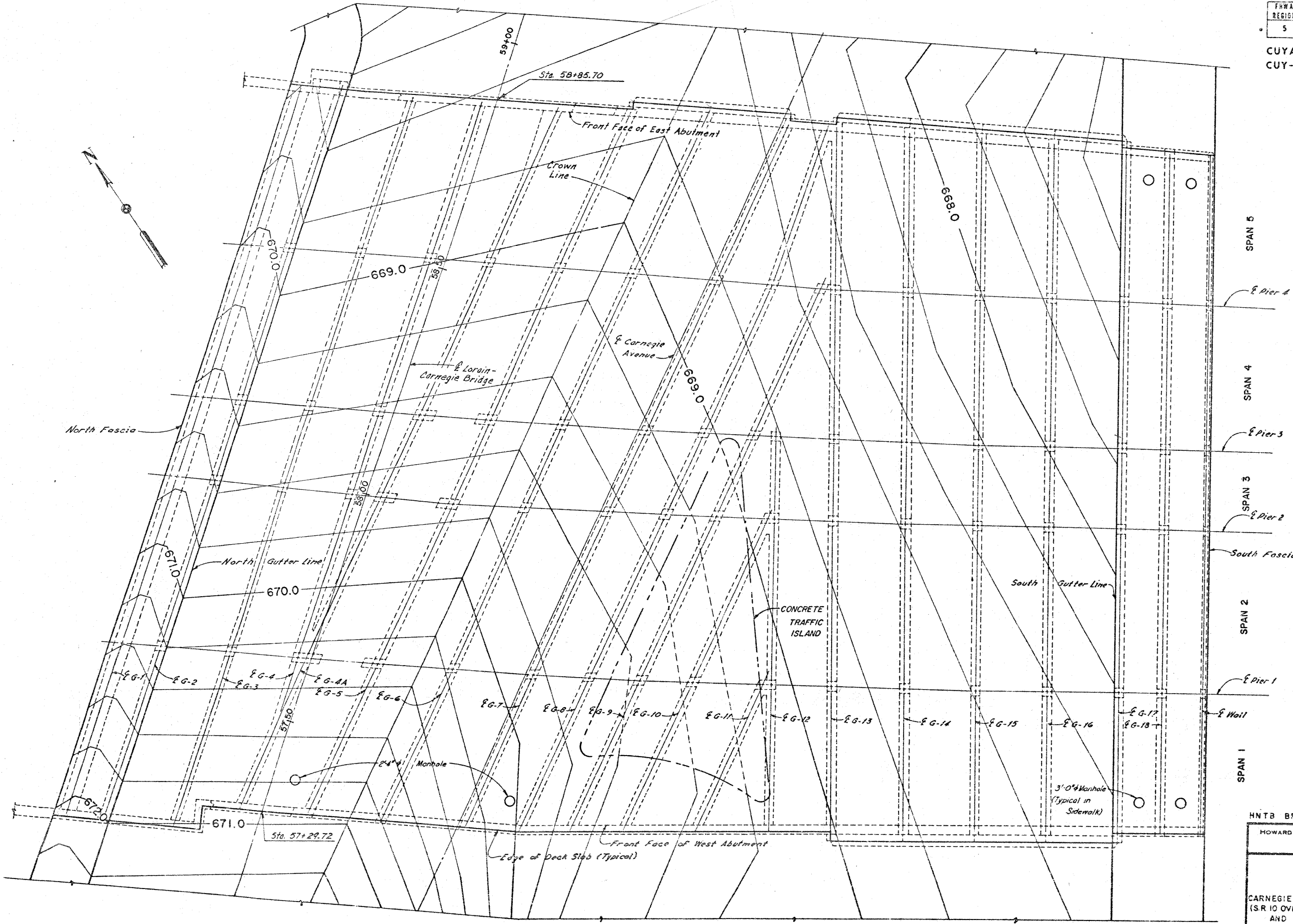
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TRACED: G.L.R. DATE: 11/78
DESIGNED: G.L.R. DATE: 11/78
REVIEWED: G.L.R. DATE: 11/78

SHEET 29/31

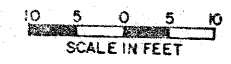
FHWA REGION	STATE	PROJECT
5	OHIO	

177
185

CUYAHOGA COUNTY
CUY-10-16.23



Note:
Contours are shown at top of the asphalt concrete surface course.
For details of Concrete Traffic Island see Roadway Plans



CONTOUR PLAN

HNTB BRIDGE NO. 4

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
CLEVELAND

HNTB

CONTOUR PLAN

REHABILITATION OF THE
CARNEGIE AVENUE GRADE SEPARATION STRUCTURE
(SR 10 OVER THE CLEVELAND UNION TERMINALS CO.
AND THE REGIONAL TRANSIT AUTHORITY)
BR. NO. CUY.-10-1685 STA. 57+29.72
CUYAHOGA COUNTY STA. 58+85.70
OHIO

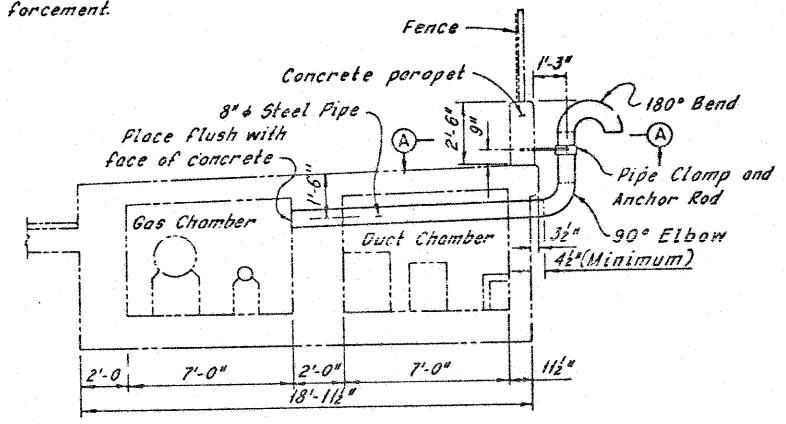
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BP	104	BP	BP	
DATE 9-25-72	DATE 9-29-72	DATE 9-19-72	DATE	

SHEET 30/31

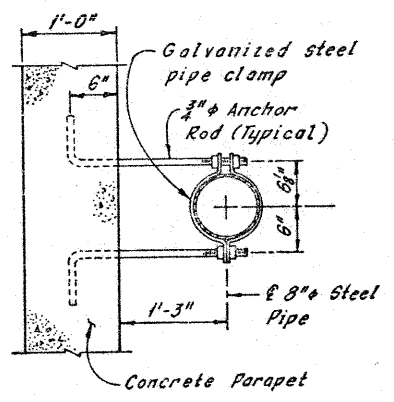
ESTIMATED REPAIR QUANTITIES

LOCATION	REPAIR OF CRACKS		LOCATION	REPAIR OF CRACKS		LOCATION	REPAIR OF CRACKS		LOCATION	REPAIR OF CRACKS	
	PCS	LIQ. FT.		PCS	LIQ. FT.		PCS	LIQ. FT.		PCS	LIQ. FT.
PIERS											
1	34	188	4-15	1	-	4-1	-	-	4-3	-	4
2	99	114	4-16	-	-	4-2	-	-	4-4	-	-
3	75	114	4-17	-	-	4-3	1	-	4-4A	-	-
4	311	69	4-18	68	-	4-4	-	-	4-5	-	-
			5-1	20	-	4-4A	-	-	4-6	279	-
			5-2	74	-	4-5	-	-	4-7	-	-
			5-3	-	2	4-6	7	-	4-8	40	-
STRUTS			5-4	4	-	4-7	-	-	4-9	-	-
1-1	-	-	5-5	-	-	4-8	-	-	4-13	-	-
1-2	2	-	5-6	65	-	4-9	-	-	4-14	-	-
1-3	11	-	5-4B	86	-	4-10	-	-	4-15	-	-
1-4	2	-	5-5	-	-	4-11	-	-	4-16	4	-
1-5	-	-	5-6	97	9	4-12	-	-	4-17	18	-
1-6	20	-	5-7	12	-	4-13	-	-	4-18	11	-
1-7	-	-	5-8	8	-	4-14	-	-			
1-8	-	-	5-13	11	-	4-15	-	-			
1-9	39	-	5-14	-	-	4-16	-	-	5-1	206	-
1-10	-	-	5-15	-	-	4-17	-	-	5-2	396	-
1-11	-	-	5-16	-	-	4-18	-	-	5-3	-	-
1-12	-	-	5-17	65	-				5-4	6	-
1-13	-	-	5-18	25	-	GIRDERS			5-4A	-	-
1-14	-	-				1-1	48	24	5-5	33	-
1-15	1	-				1-2	75	-	5-6	74	-
1-16	1	-	COLUMNS			1-3	19	6	5-7	7	-
1-17	-	-	1-1	1	-	1-4	1	-	5-8	-	-
1-18	13	-	1-2	18	13	1-5	2	6	5-13	2	-
			1-3	2	-	1-6	132	8	5-14	-	-
			1-4	-	-	1-7	-	-	5-15	-	-
2-1	4	-	1-5	-	-	1-8	72	7	5-16	1	-
2-2	44	-	1-6	-	-	1-9	40	6	5-17	132	-
2-3	1	-	1-7	-	-	1-10	1	-	5-18	18	-
2-4	-	-	1-8	-	-	1-11	-	-			
2-4A	1	-	1-9	7	-	1-12	-	-			
2-5	1	-	1-10	1	-	1-13	6	-			
2-6	14	-	1-11	1	-	1-14	-	-	ABUTMENTS AND WINGWALLS		
2-7	-	-	1-12	-	-	1-15	-	-	EAST	2297	253
2-8	-	-	1-13	1	-	1-16	-	-	WEST	543	196
2-9	1	-	1-14	-	-	1-17	79	-			
2-10	-	-	1-15	-	-	1-18	77	51			
			1-16	-	-				UTILITY CHAMBERS		
2-12	-	-	1-17	26	-	2-1	18	2	17-18	1,265	-
2-13	-	-	1-18	6	13	2-2	54	-	7-8	7	-
2-14	-	-				2-3	-	13	4-5	567	-
2-15	-	-				2-4	1	-	At 2	539	24
2-16	1	-				2-4A	2	-			
2-17	20	1				2-5	1	-			
2-18	70	6				2-6	190	-	GRAND TOTAL	10,002	1,237
						2-7	6	-			
						2-8	11	-			
3-1	-	-				2-9	13	-			
3-2	-	6				2-10	7	-			
3-3	1	2				2-11	-	-			
3-4	2	2				2-12	-	-			
3-4A	2	-				2-13	1	-			
3-5	1	-				2-14	3	-			
3-6	65	-				2-15	-	-			
3-7	1	-				2-16	8	-			
3-8	-	-				2-17	80	22			
3-9	1	-				2-18	86	55			
3-12	-	-									
3-13	-	-				3-1	54	-			
3-14	-	1				3-2	158	-			
3-15	-	-				3-3	-	-			
3-16	-	-				3-4	-	-			
3-17	19	-				3-4A	-	-			
3-18	-	-				3-5	8	-			
						3-6	95	-			
						3-7	-	-			
4-1	-	-				3-8	20	-			
4-2	-	-				3-9	-	-			
4-3	-	1				3-10	-	-			
4-4	6	17				3-11	1	-			
4-4A	6	-				3-12	-	-			
4-5	1	-				3-13	-	-			
4-6	58	-				3-14	-	-			
4-7	1	-				3-15	-	-			
4-8	-	-				3-16	7	-			
4-9	6	-				3-17	92	-			
4-13	2	-				3-18	40	-			
4-14	-	-									
						4-1	302	-			
						4-2	145	-			

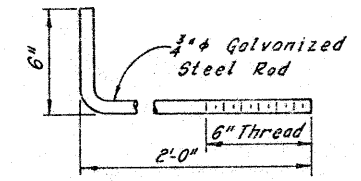
Note:
The 8" steel pipe shall be placed to clear vertical reinforcement.



TYPICAL GAS CHAMBER VENT DETAIL



SECTION A-A
(Parapet Reinforcement not shown)



ANCHOR BOLT DETAIL
4 Required

(Threads are to be Unified Standard Series for Basic Major Diameter of 3/4")

Notes:
PCS indicates Patching Concrete Structures.
For Member Identification Plans, see Sheet 2/31.
For location of Gas Chamber Vents, see Sheet 27/31.
Utility Chambers are identified as at or between the girders called out, for the entire length of the Grade Separation.
All costs for venting the gas chamber shall be borne by the gas company, and shall be paid for at the Lump Sum price bid for Item Special, East Ohio Gas Company H. P. Pipe Air Vents, Complete As Per Plan.

HNTB BRIDGE NO. 4

HOWARD, NEEDLES TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND

HNTB

ESTIMATED REPAIR QUANTITIES AND GAS CHAMBER VENT DETAILS

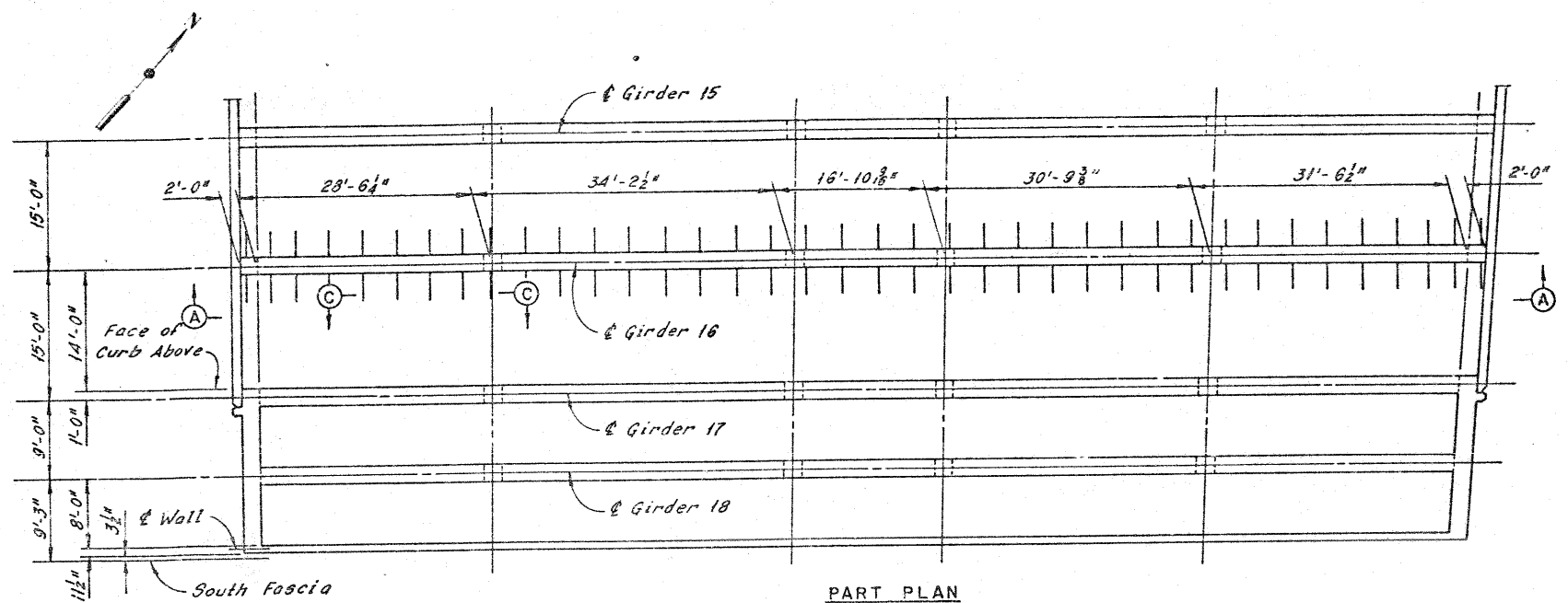
REHABILITATION OF THE CARNegie AVENUE GRADE SEPARATION STRUCTURE (S.R.10 OVER THE CLEVELAND UNION TERMINALS CO. AND THE REGIONAL TRANSIT AUTHORITY)

BR. NO. CUY-10-1685 STA. 57+29.72 STA. 58+65.70

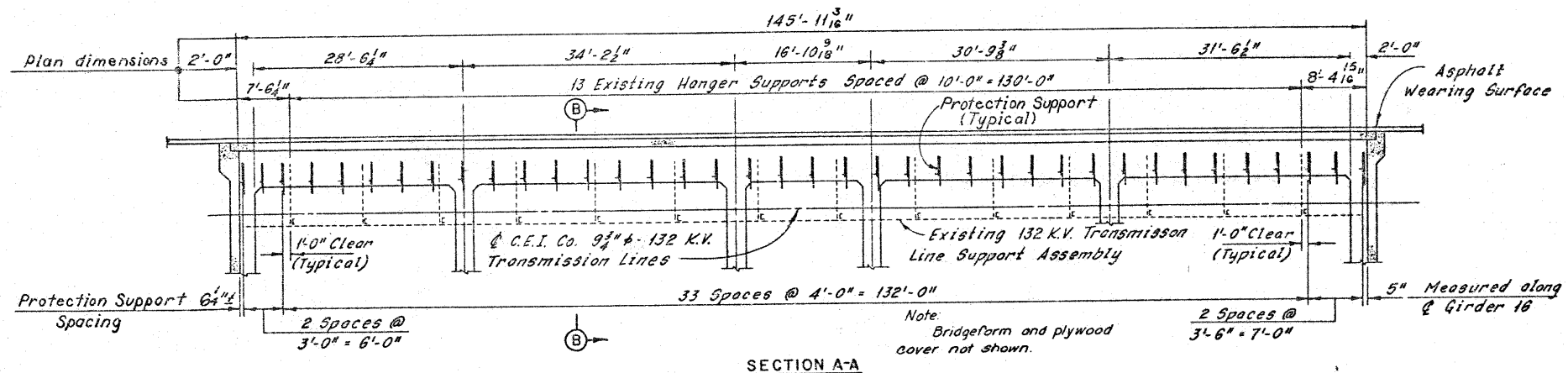
CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
BP	BP	RHS		
DATE: 1-13-75	DATE: 4-14-75	DATE: 4-17-75	DATE:	DATE:

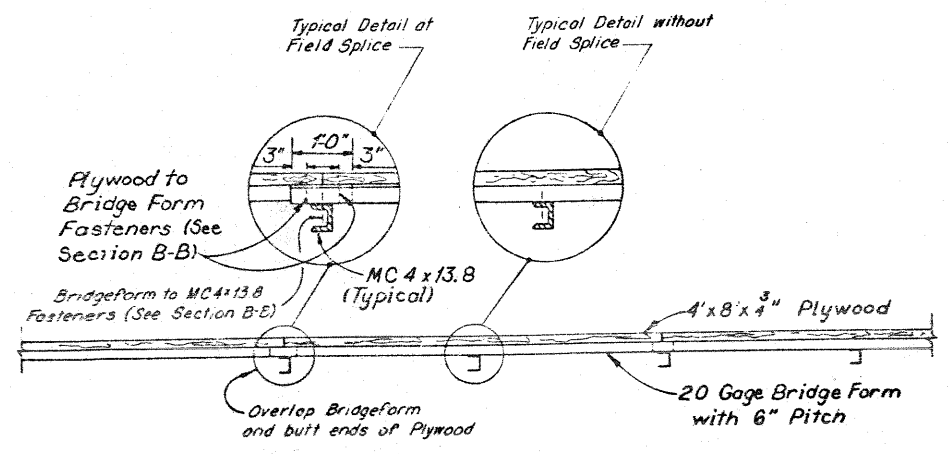
SHEET 31 / 31



PART PLAN
CARNEGIE AVENUE GRADE
SEPARATION STRUCTURE
(Dimension shown are from original plans)



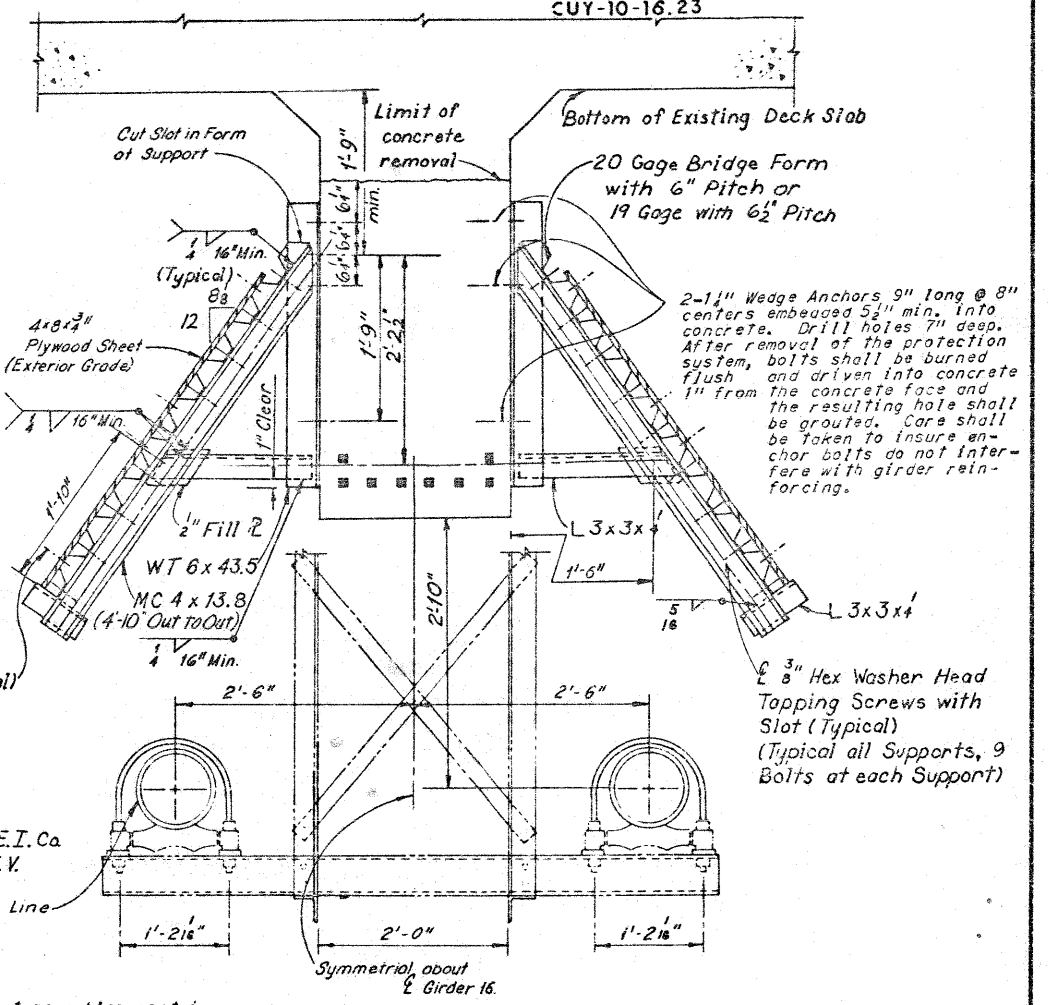
SECTION A-A



SECTION C-C

Notes:
All structural steel shall be ASTM A572 except as noted. (Approx. 16,000 lbs.)
ASTM A572 shall be given one shop coat of primer as per Article 514, System B.
Bridge form, similar to Bethlehem Bridgeform, shall be ASTM A446, Grade E with the following properties:
Thickness = 20 gage
Pitch = 6 in. Depth = 2 in.
I = .400 in.⁴/ft.
S.M. = 0.372 in.³/ft.
Fy = 80,000 psi
Allowable design stress = 30,000 psi
Wedge anchors shall be equivalent to Phillips Wedge Anchors with a minimum pullout load of 40,600 lbs. and a minimum shear load of 48,660 lbs.
1/2" Turned bolts shall be ASTM A307.
All temporary protection at the 132 K.V. Transmission Lines, as per plan, shall be in place prior to concrete deck and girder removal between Girder 15 and Girder 17, and shall remain in place until all required work is complete on the permanent structure between Girder 15 and Girder 17.

1/2" Turned Bolt with two Washers or 4" Wood Screws placed from the underside with one washer, 4 per line on 4" max. centers and as shown in Section C-C (Typical)



SECTION B-B

Note:
The 132 K.V. pipe type cables contain three copper insulated cables and insulating fluid at a nominal 200 psi. The steel pipes and corrosion control covering on the pipes must be protected from any and all damage.

All labor, material and equipment required for the placement and removal of all temporary transmission line protection devices, as per plan, shall be included in the unit price bid for Item Special, Temporary Protection At 132 K.V. Transmission Lines.
Materials used in the protection system shall become the property of the Contractor upon completion of the work, and shall be removed by him from the site.
The Contractor shall assume full responsibility for any damage to the 132 K.V. lines and its supports, and for damages resulting from damage to these lines. The Contractor shall take extraordinary precautions to insure against any damage to the 132 K.V. lines during erection and removal of the temporary protection system and against concrete dropping between Girders 15 and 17. The protection system is designed only for an accidental occurrence of a 50 lb. block of concrete dropping from the level of the deck. If any concrete pieces drop on the protection system, the Contractor shall cease operations, inspect the protection system and make necessary repairs to the system subject to the approval, prior to resuming operations, by the State of Ohio Project Engineer assigned to implement the contract.

Supporting members have been designed for basic allowable stresses increased 50%. Anchors have been designed for a 1.6 Factor of Safety.
The Contractor or his agents must notify the Cleveland Electric Illuminating Company (623-1350, Extension 2445) at least 24 hours in advance if any work is to be performed in the vicinity of the two C.E.I. 132 K.V. pipe type cables. The Illuminating Company will provide a field representative during the time any work is performed near the 132 K.V. cables.

HNTB BRIDGE NO. 4

HOWARD NEEDLES TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND

HNTB

TEMPORARY PROTECTION FOR THE 132 K.V. TRANSMISSION LINES
REHABILITATION OF THE CARNEGIE AVENUE GRADE SEPARATION STRUCTURE (S.R.10 OVER THE CLEVELAND UNION TERMINALS CO. AND THE REGIONAL TRANSIT AUTHORITY)
BR. NO. CUY.-10-1685 STA. 57+29.72 STA. 58+85.70
CUYAHOGA COUNTY OHIO

DRAWN B.M.P.	TRACED M.M.P.	CHECKED D.H.S./F.S.J.	REVIEWED DATE	REVISED DATE
DATE 3-16-77	DATE 3-23-77	DATE 4-12-77		

SHEET 31A/31

COUNTY OF CUYAHOGA
CLEVELAND, OHIO

FROM Felix A. Spittler DATE October 7, 1974
TO Albert S. Porter, County Engineer SUBJECT Lorain-Carnegie Bridge Project
(Carnegie Avenue Grade Separation).

In the initiated Ordinance No. 47814 authorizing the Mayor to enter into a contract with the Cleveland Union Terminals Company passed January 6, 1919, by a vote of 30,731 FOR to 19,859 AGAINST, effective January 8th, 1919, the Cleveland Terminals Company, in Sec. 29, agreed to build the Grade Separation (carry Central Avenue and Central Viaduct over the tracks of said Terminals Company). In Sec. 85 of the same ordinance the Terminals Company agreed to construct, maintain, repair and rebuild the structures mentioned in this ordinance as they became necessary, by and at the expense of the Terminals Company.

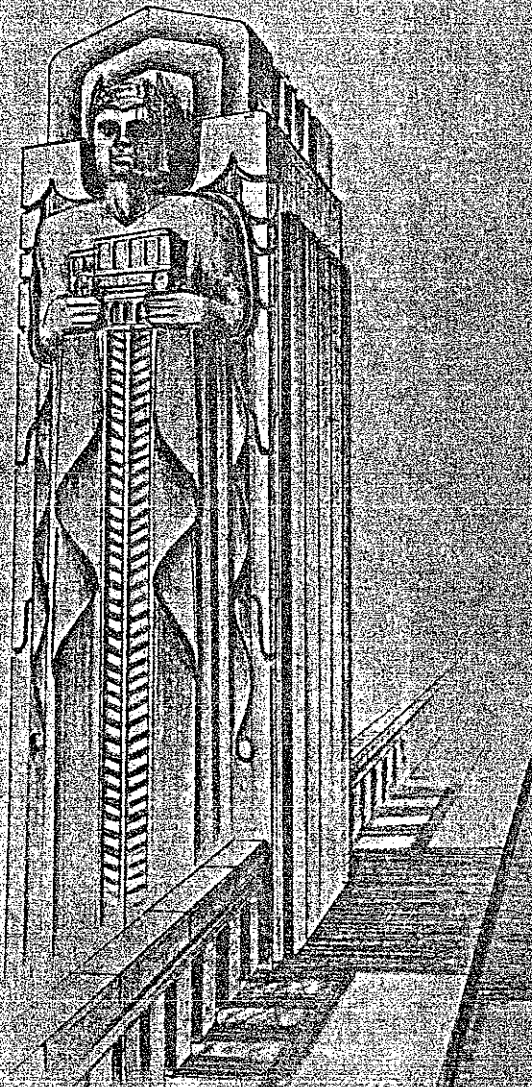
Ordinance No. 8552 passed January 28, 1929, effective March 10, 1929, amended section 30 of Ordinance No. 47814, and provided for the construction of a bridge carrying Central Avenue S.E. and Central Viaduct over the tracks of said Terminals Company, 15 ft. southerly from the center line of Ontario Street S.E. measured along the center line of said avenue and a point 185 feet southerly from the center line of Ontario Street S.E. measured along the center line of said avenue (Carnegie Avenue Grade Separation).

Ordinance No. 93109 passed December 8, 1930, mentioned the extension to the Cleveland Union Terminal Bridge in section 1(d) in connection with the Lorain-Central Bridge project.

Probate Court Case No. 200388 (Lorain-Carnegie Bridge Project) Parcels C, D, and H obligated the County to maintain the southwesterly and northeasterly walls of the Cleveland Union Terminals Company which were to be used as and for piers and/or abutments to support said bridge or bridges and/or approaches thereto and the extension to the Terminals Company bridge.

It appears that the County is responsible for the extension added to the northwest of the original bridge and the southwesterly and northeasterly walls affected, but that the Terminals Company is responsible for the original bridge. To completely follow through on this matter would seem to be a legal matter requiring considerable research by the Prosecutor's Office.

PRELIMINARY ONLY



APRIL
1969

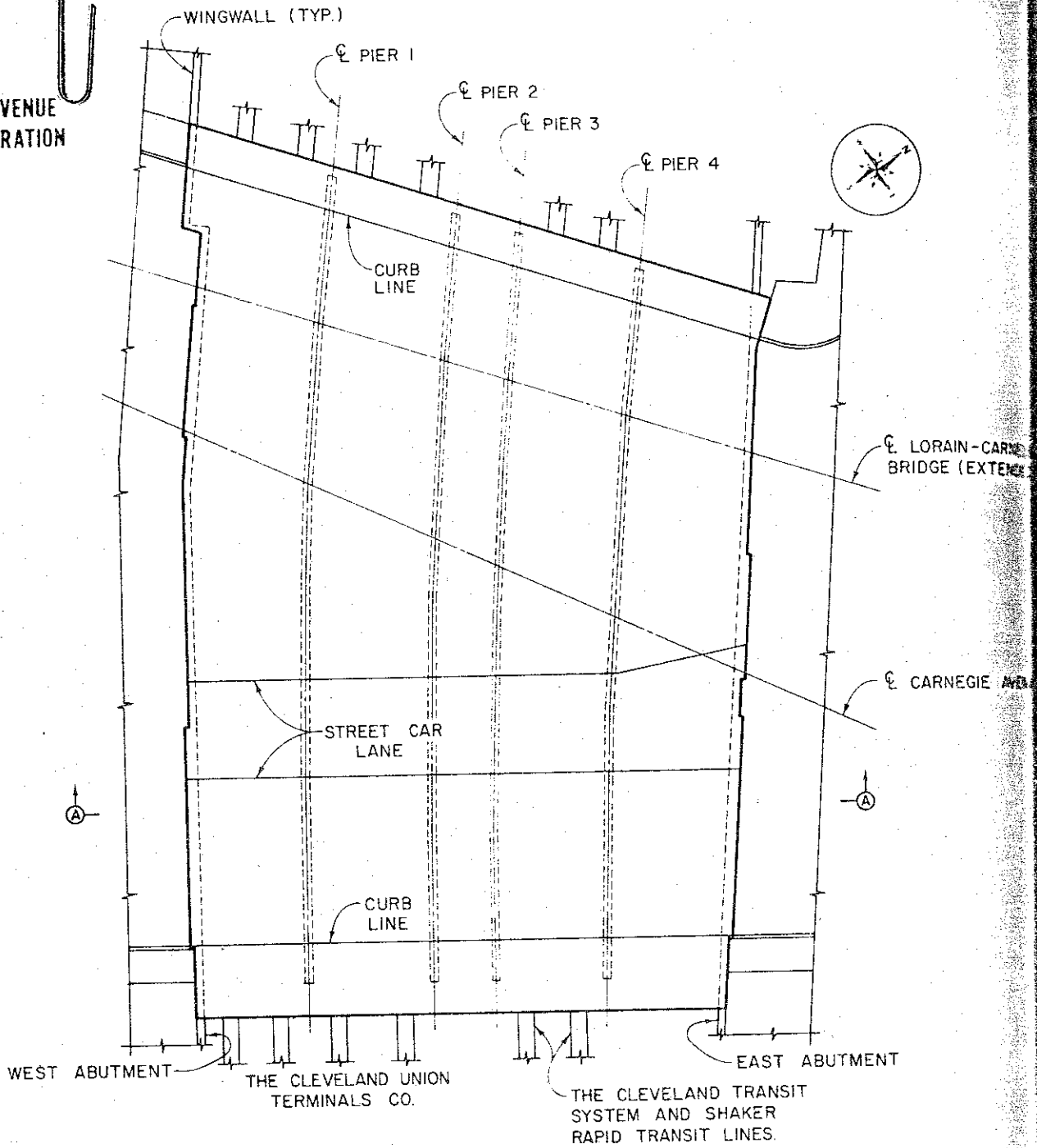
REHABILITATION STUDIES

**LORAIN
CARNEGIE
BRIDGE**

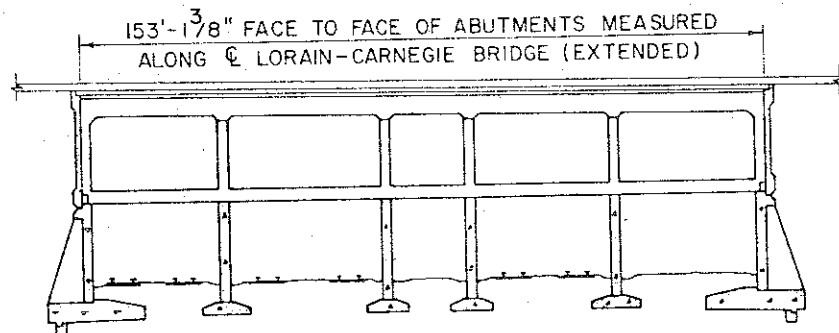
ALBERT S. PORTER
County Engineer
Cuyahoga County, Ohio

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS **HNTB**

FIGURE 5
 CARNEGIE AVENUE
 GRADE SEPARATION
 STRUCTURE



PLAN
 (SHOWING EXISTING
 CONDITIONS)



ELEVATION A-A

The approach roadways are supported on embankment between retaining walls. At the west approach, the retaining walls continue approximately 375 ft beyond the abutment bearings. At the east end, the north wall continues to adjoin the rapid transit grade separation structure, but the south wall terminates at the Commercial Road intersection.

— A General Plan and Elevation of the Carnegie Avenue Grade Separation Structure over the Rapid Transit tracks is shown on Figure 5. This bridge was designed to carry two tracks of street railway traffic and several converging lanes of vehicular traffic on the upper deck with provisions for six tracks of street railway traffic on a future lower deck. The structure comprises five variable length reinforced concrete girder spans having a total length of 153 ft.

C. Lorain-Carnegie Bridge

1. Truss Spans

The steel truss spans over the Cuyahoga River Valley are of deck design, the main carrying elements being Pratt trusses. Each span has four parallel trusses except the simple span at the east end which has three variably spaced trusses. The main members of the trusses are box sections made up of plate and angle channel sections riveted together with lacing bars. Lateral bracing is provided in the exterior bays in the plane of the lower chord members. Each truss line is supported by a pair of bearings on reinforced concrete piers.

The upper roadway deck is a reinforced concrete slab topped with an asphaltic wearing surface. The deck is supported by longitudinal stringers which span between transverse floorbeams. The floorbeams are supported on the top chords of the trusses at panel points (See Figure 6). A planned lower roadway deck has not been constructed, but floorbeams for all three bays are in place. A reinforced concrete utility deck, located in the center bay below the planned lower deck, is carried on longitudinal stringers and transverse floorbeams which are connected to truss verticals.

TABLE II

DESIGN RATING OF EXISTING MEMBERS

LORAIN-CARNEGIE BRIDGE

<u>Location</u>	<u>Member</u>	<u>HS Rating</u>		
		<u>4 Lanes</u>	<u>5 Lanes</u>	<u>6 Lanes</u>
Truss Spans	Interior Stringers	22.2	22.2	20.7
	Fascia Stringers	41.4	42.0	11.7
	Intermediate Floorbeams			
	Center Bay	13.4	16.1	15.3
	Exterior Bays	28.8	24.5	22.9
West Approach Spans	Interior Stringers	25.3	25.3	23.8
	Fascia Stringers	30.1	30.5	8.5
	Intermediate Floorbeams			
	Center Bay	12.4	16.5	15.3
	Exterior Bays	14.1	14.0	13.8

bridge are as follows:

Minimum Yield Point

ASTM A7 - 30,000 psi

ASTM A94 - 45,000 psi

Basic Allowable Design Stress

ASTM A7 - 16,000 psi

ASTM A94 - 24,000 psi

The minimum design ratings obtained using the above allowable stresses are shown in Table II. In order to meet current design standards for modern loadings, the Lorain-Carnegie Bridge should be rehabilitated to provide a minimum rating of HS-20. From a study of Table II, it is apparent that, in the truss spans, the intermediate floorbeams in the center bay will require strengthening for all alternates, and that the fascia stringers will require strengthening for the six-lane alternate. In the approach spans, all floorbeams require strengthening for all alternates, and the fascia stringers must be strengthened for the six-lane alternate. Because of the complexities created by the difference in eccentricity for dead and live loads, the steel columns in the approach spans were not rated, but instead the stresses were checked for HS20 loading. All columns of the approach spans will require strengthening.

At the time of the original construction, the beams used for the intermediate floorbeams in the exterior bays of the truss spans were the minimum sections available with the desired depth. As a result, these floorbeams were understressed for the original design. The ratings shown in Table II assume these members to be in new condition. Deterioration though has occurred in some of the floorbeams adjacent to the curb stringers. Each beam flange could be corroded up to 1/16 inch without overstressing the members, and, for the purposes of this report, it has been assumed that repair or strengthening will not be required.

B. Carnegie Avenue Grade Separation

Design rating of deteriorated reinforced concrete members is not feasible. Therefore, preliminary design of the Carnegie Avenue Grade

Separation consisted of checking the capacity of the members for their repaired condition.

Allowable stresses used for existing concrete members were based on their original composition and on design stresses prevalent at the time of construction. These values should be checked by testing representative core borings prior to preparation of contract plans for reconstruction work. For analyzing the Carnegie Avenue Grade Separation the following values were used for existing materials:

Concrete: Ultimate Compressive Strength	$f'_c = 3,000$ psi	}
Basic Allowable Compression	$f_c = 1,200$ psi	
Shear	$f_v = 90$ psi	
Modular Ratio(E_s/E_c)	$n = 10$	

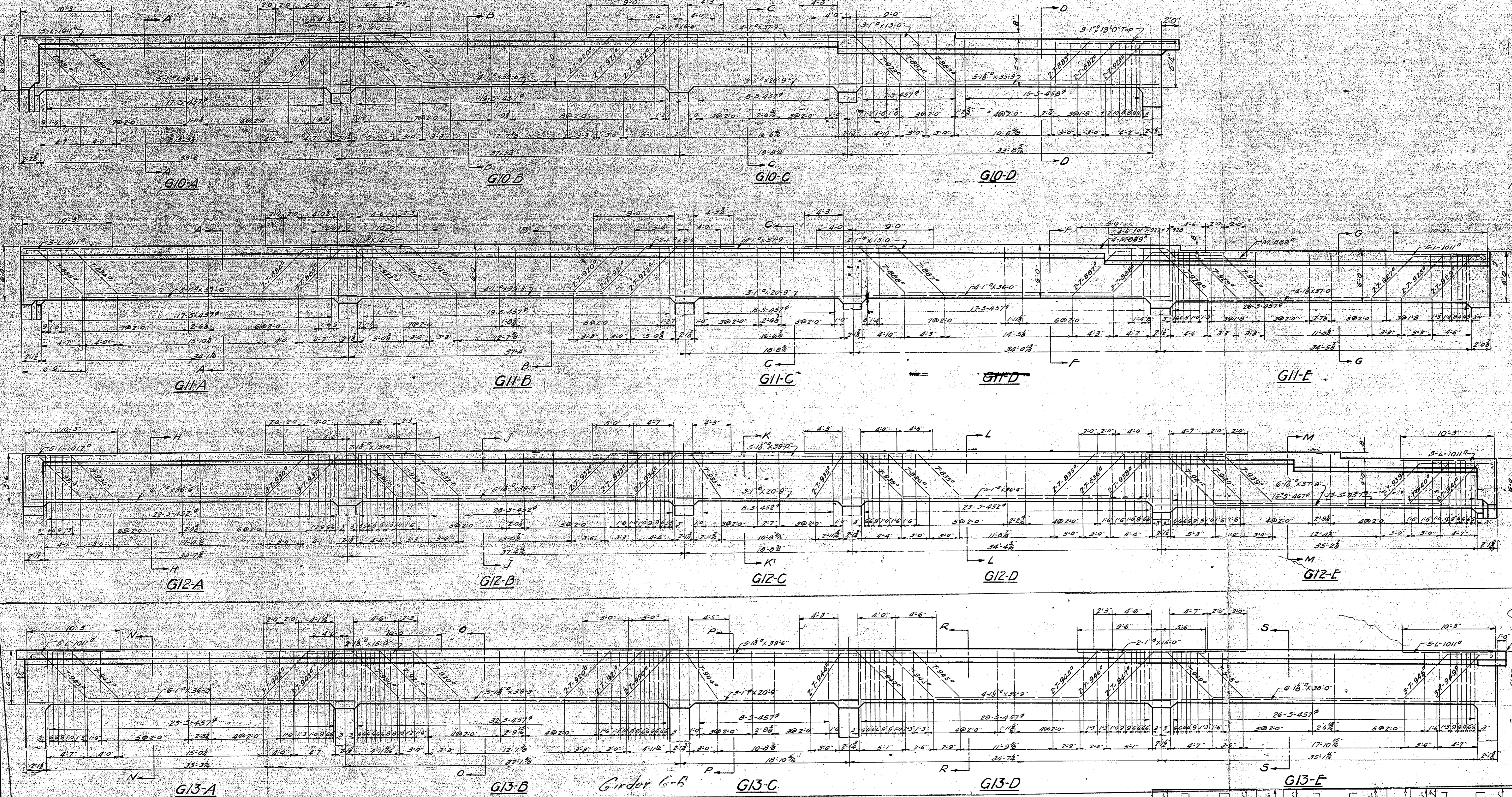
Reinforcing Steel: Basic Allowable Tension $f_s = 18,000$ psi

The allowable stresses for new materials were in accordance with the American Association of State Highway Officials 1965 Standard Specifications for Highway Bridges including the Ohio Department of Highways Supplement thereto.

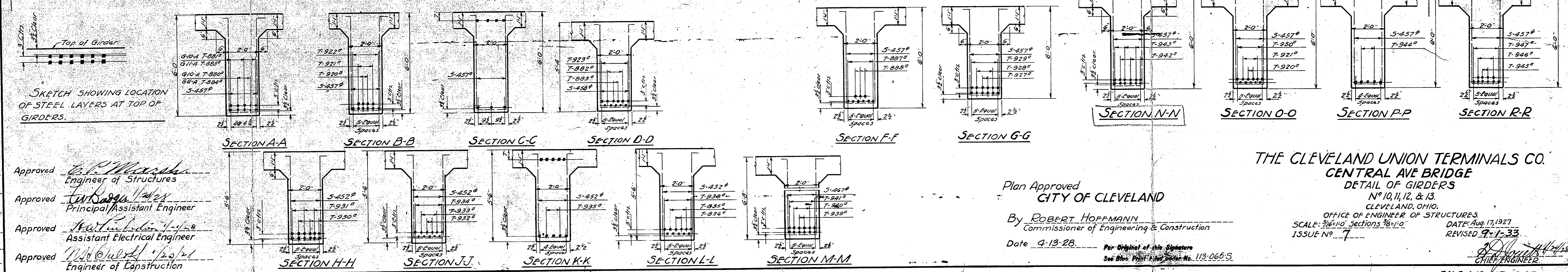
Considering the deck slab to be ineffective, the longitudinal girders were found to be deficient at the supports. By properly bonding the new deck slab to the existing girders to function as a T-beam, the girders, when repaired, will be adequate to carry HS 20 loads. The columns and other substructure elements, when restored, will be adequate for HS 20 loadings without strengthening.

For
Repaired
Condition

Issue No 1 Aug 17, 1927
 Revisions
 Issue No 2 Nov 15, 1927
 Drawing Checked
 Issue No 3 Nov 30, 1927
 Approved by Chief Engineer
 Issue No 4 Dec 20, 1927
 Traced & Checked
 Issue No 5 Dec 23, 1927
 Signed by the Chief Engineer
 Issue No 6 Jan 24, 1928
 Approved by Heads of Departments
 Issue No 7 Feb 8, 1928
 Removed Water Chamber from Elevation and Sections
 Removed Girder G10-E
 Issue No 8 April 24, 1928
 Approved by the City
 Issue No 9 Sept 1, 1933
 Plan Conforms to Structure as Built



Note: All dimensions on elevations are measured on Q Girder



WE HEREBY CERTIFY THAT THIS PLAN SHOWS THE STRUCTURE AS BUILT

W. V. Marsh
 ENGINEER OF STRUCTURES

H. P. ...
 ASST. ENGINEER OF CONSTRUCTION

SKETCH SHOWING LOCATION OF STEEL LAYERS AT TOP OF GIRDERS.

Designed By G.I.C. July 5, 1927
 Detailed By L.C.B. Aug 11, 1927
 Traced By J.I.N. Dec 19, 1927
 Checked By T.W. Dec 20, 1927
 Correct Dec 24, 1927
F. L. Gorman
 Designing Engineer

Approved *W. V. Marsh*
 Engineer of Structures

Approved *W. V. Marsh*
 Principal Assistant Engineer

Approved *W. V. Marsh*
 Assistant Electrical Engineer

Approved *W. V. Marsh*
 Engineer of Construction

Plan Approved
 CITY OF CLEVELAND

By *ROBERT HOFFMANN*
 Commissioner of Engineering & Construction

Date 4-13-28

THE CLEVELAND UNION TERMINALS CO.
 CENTRAL AVE BRIDGE
 DETAIL OF GIRDERS
 No 10, 11, 12, & 13.
 CLEVELAND, OHIO.
 OFFICE OF ENGINEER OF STRUCTURES.
 SCALE: 3/16" = 1'-0" Sections 3/8" = 1'-0"
 ISSUE No 7

DATE: Aug 17, 1927
 REVISED 9-1-33

W. V. Marsh
 CHIEF ENGINEER

Issue No A Oct. 18, 1927.

REVISIONS:
Issue No B Nov. 3, 1927.
Revised for C.F.I. Co. Insert.
Drawing Checked and Traced.

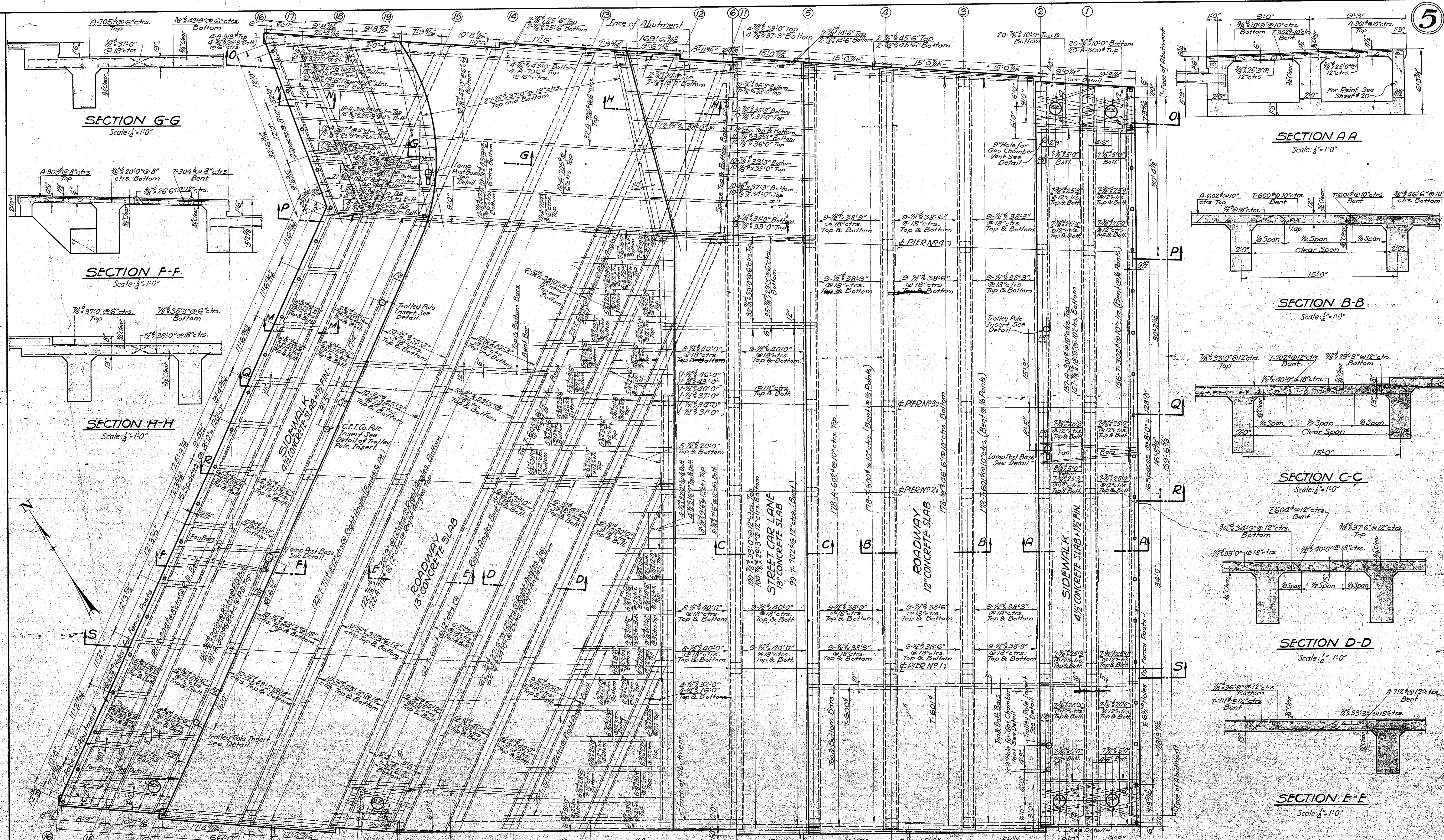
Issue No 1 Nov. 30, 1927.
Signed By Chief Engineer

Issue No 2 Jan. 24, 1928.
Approved By Heads of Departments.

Issue No 3 Feb. 7, 1928.
Removed Water Chambers.

Issue No 4 April 24, 1928.
Approved by the City.

Issue No 5 Sept. 1, 1933.
Plan Conforms to Structure as Built.



SECTION G-G
Scale: 1/4" = 1'-0"

SECTION F-F
Scale: 1/4" = 1'-0"

SECTION H-H
Scale: 1/4" = 1'-0"

SECTION A-A
Scale: 1/4" = 1'-0"

SECTION B-B
Scale: 1/4" = 1'-0"

SECTION C-C
Scale: 1/4" = 1'-0"

SECTION D-D
Scale: 1/4" = 1'-0"

SECTION E-E
Scale: 1/4" = 1'-0"

We HEREBY CERTIFY THAT THIS PLAN SHOWS THE STRUCTURE AS BUILT.

C. V. Wierush 11/1/27
ENGINEER OF STRUCTURES

H. L. Buehler 1/29/34
ASST. ENGINEER OF CONSTRUCTION

Designed By G.T.C. May 27, 1927.
Detailed By S.H. Oct. 18, 1927.
Traced By S.H. Nov. 3, 1927.
Checked By L.C.B. Nov. 5, 1927.
Correct Mar 30, 1927.
J. L. Gorman
Designing Engineer

Approved *C. V. Wierush* 11/1/27
Engineer of Structures
Approved *J. W. Gorman* 11/20/27
Principal Assistant Engineer
Approved *W. H. Gorman* 11/1/27
Assistant Electrical Engineer
Approved *J. L. Gorman* 1/23/28
Engineer of Construction

NOTE: For Sections M-M and N-N See Sheet No 19
For Sections O-O, P-P, Q-Q, R-R & S-S See Sh. No 11
All Manholes are City of Cleveland Standard 2'-4" Manholes.
For Details of Manholes, Lamp Post Base, 9" Hole for Gas Chamber Vent, Trolley Pole & C.F.I. Co. Pole Anchorage See Sheet No 19.
See Sheets #18 & 18A for Details of Curtain Walls.

PLAN OF ROADWAY & SIDEWALK SLABS

Scale: 1/8" = 1'-0"

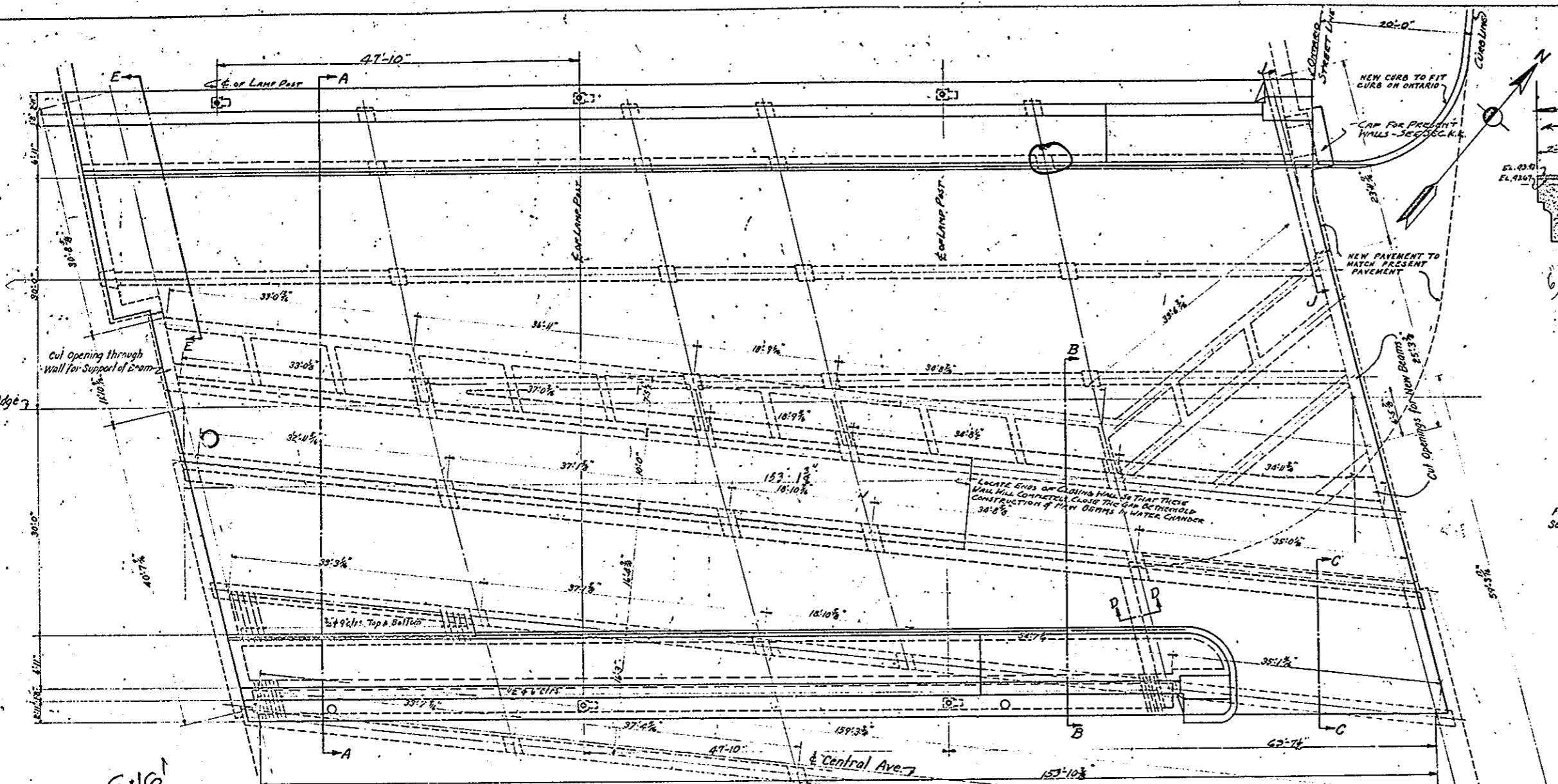
Plan Approved
CITY OF CLEVELAND

By *ROBERT HOFFMANN*
Commissioner of Engineering & Construction

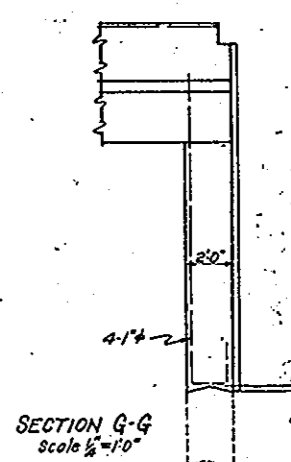
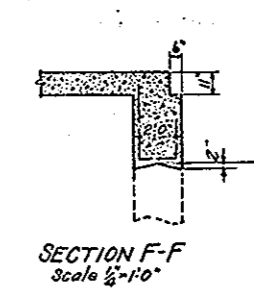
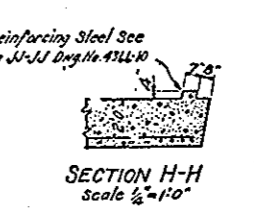
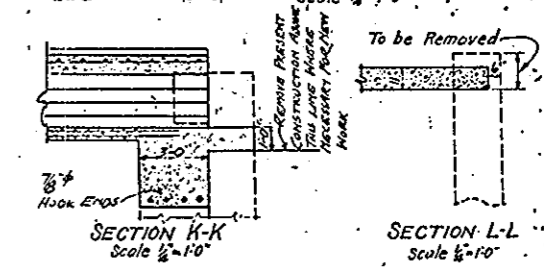
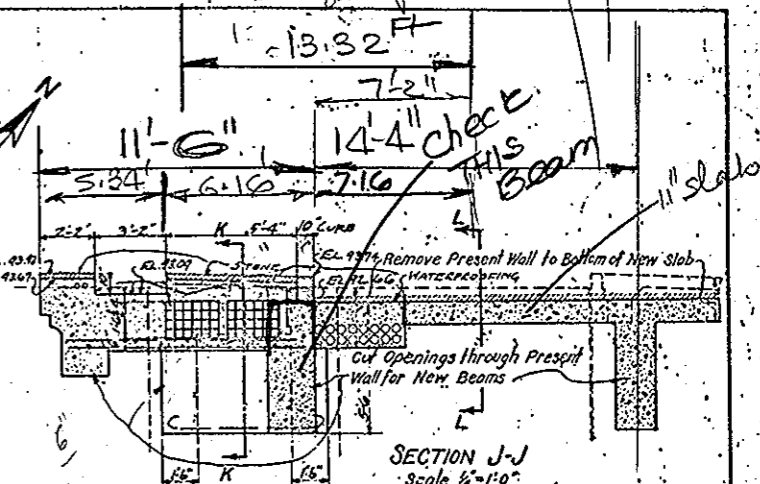
Date 4-13-28

THE CLEVELAND UNION TERMINALS CO.
CENTRAL AVE. BRIDGE
ROADWAY AND SIDEWALK
SLABS
CLEVELAND, OHIO.
OFFICE OF ENGINEER OF STRUCTURES
SCALE AS NOTED.
ISSUE NO. 5
DATE: 10-18-1927.
REVISED 9-1-33

FILE No 113-065

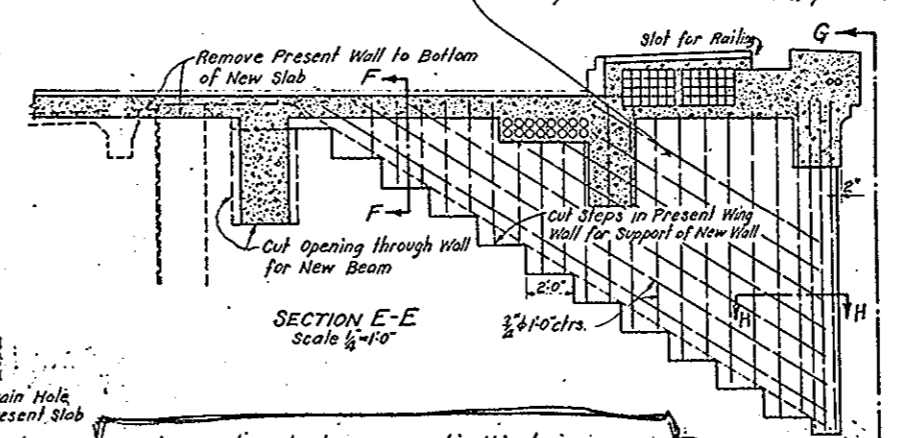
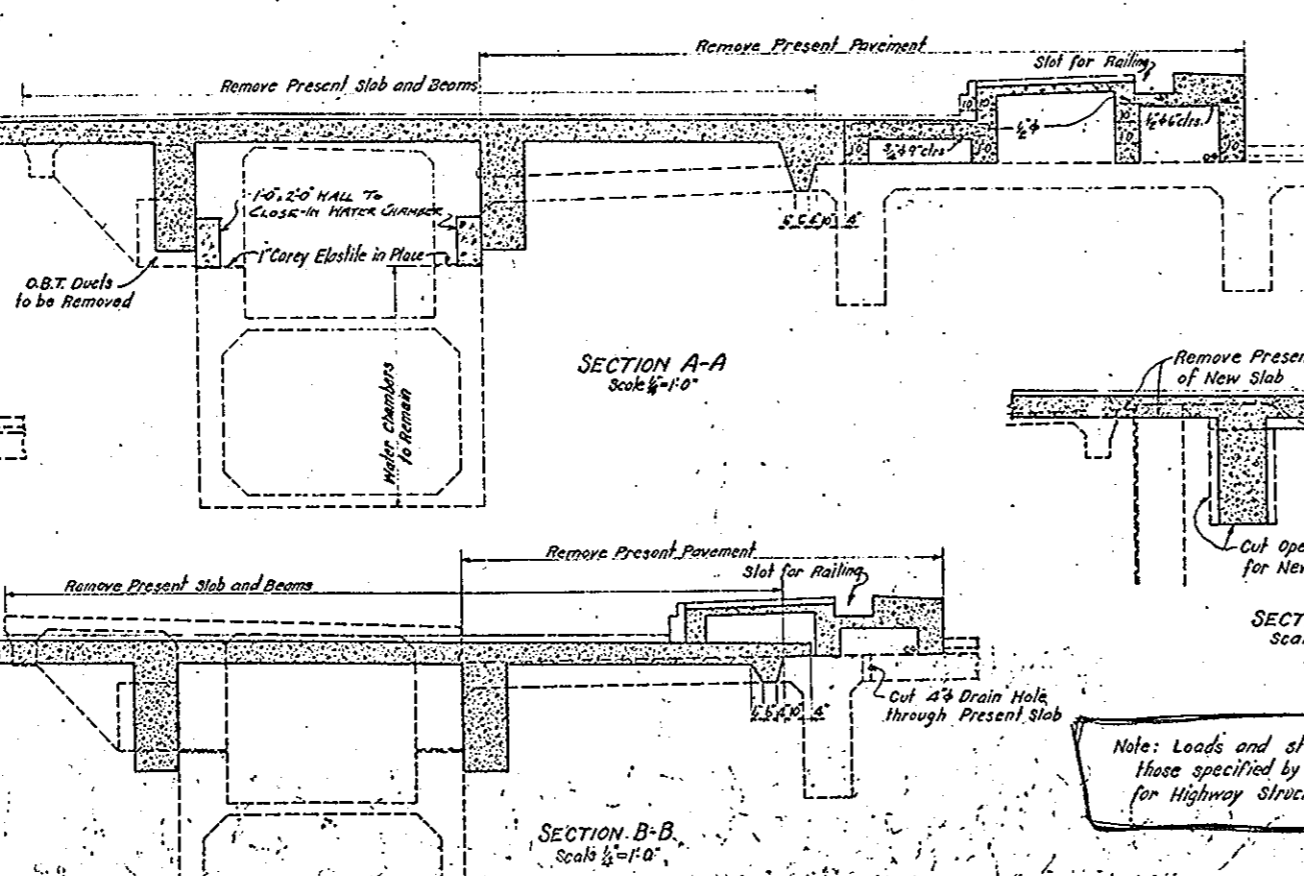
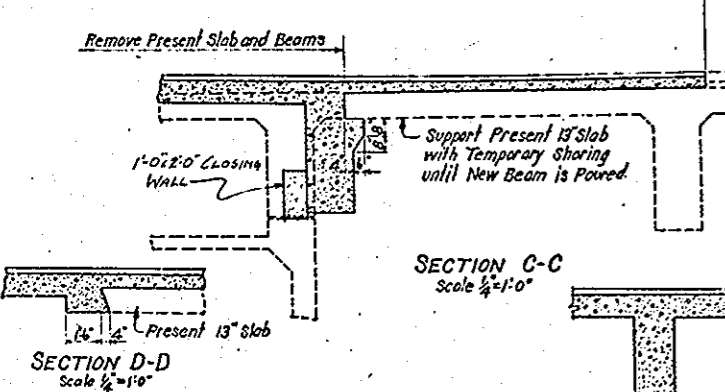
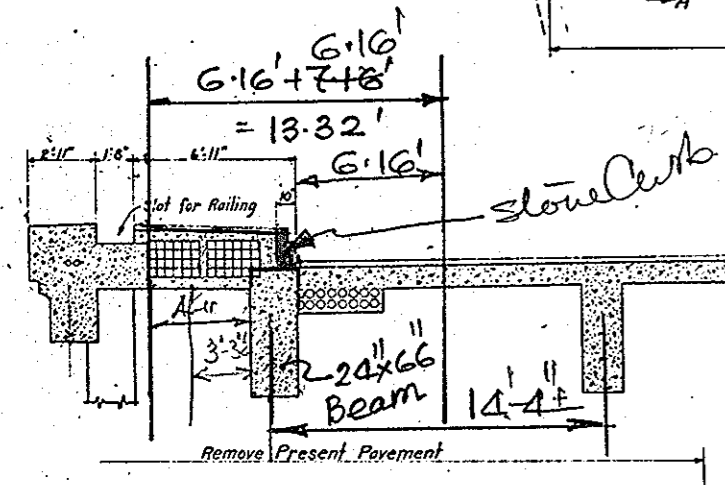


PLAN OF EXTENSION OF CENTRAL AVE. BRIDGE
Scale 1/8"=1'-0"
(Carnegie Ave.)



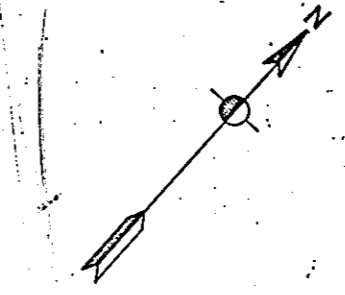
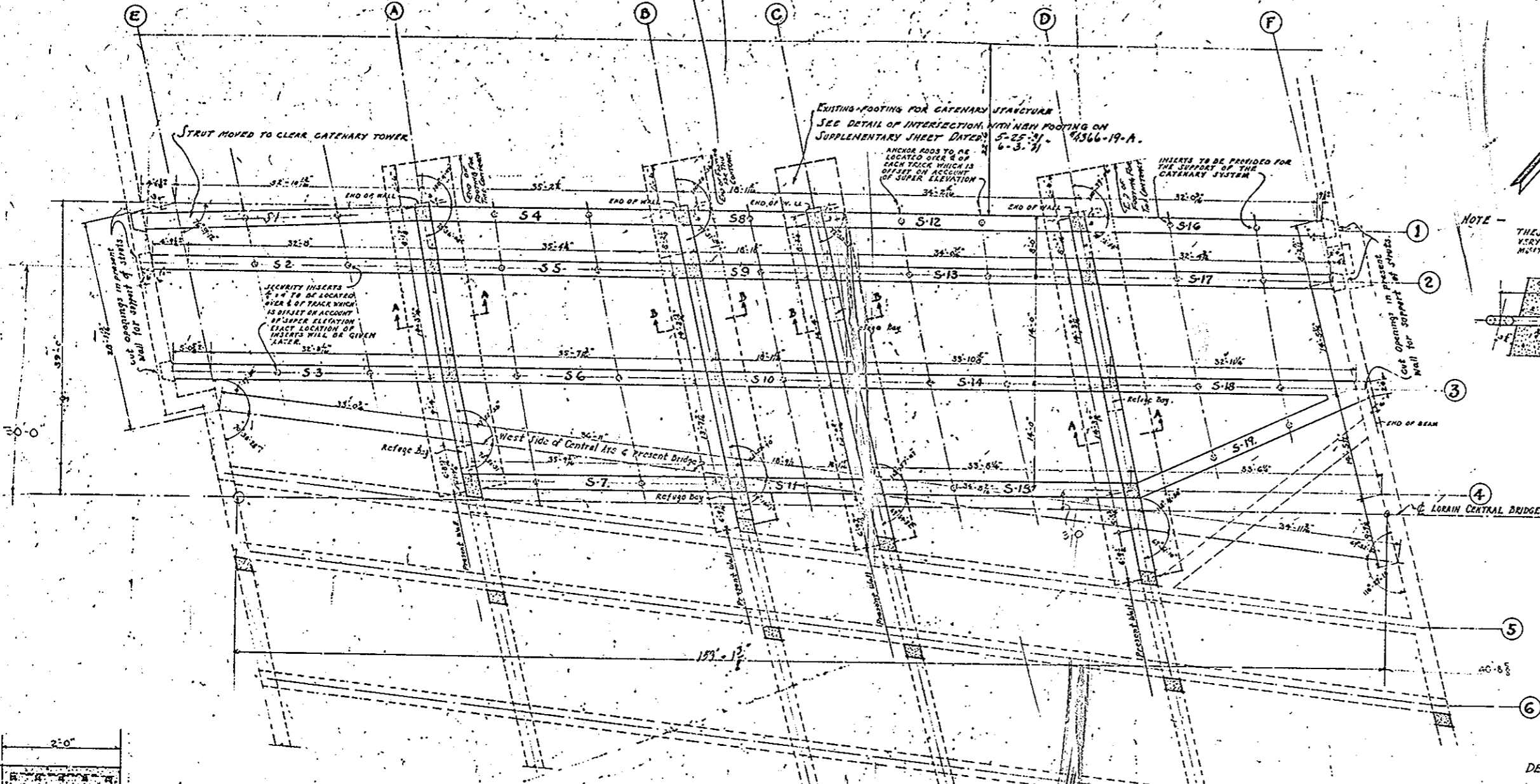
APPROVED BY

CO. COMM.	
CO. AUDITOR	
CO. ENG.	
BRIDGE ENG.	
CITY ENG.	



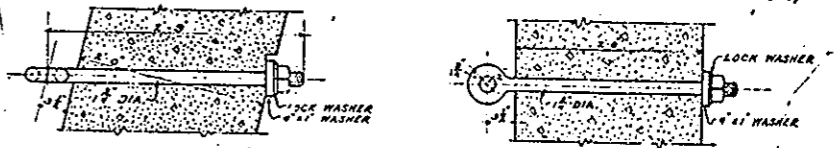
Note: Loads and stresses used in this design are those specified by the Ohio State Highway Department for Highway Structures for H-20 loading. (20 Ton Trucks)

CUYAHOGA COUNTY	
BOARD OF COMMISSIONERS	COUNTY SURVEYOR
J. R. ZMUNT	F. R. WILLIAMS
J. H. HARRIS	COUNTY BRIDGE ENGINEER
W. E. COOK	A. M. FELGATE
LORAIN - CENTRAL BRIDGE CLEVELAND, O.	
CENTRAL AVE BRIDGE EXTENSION	
SCALE 1/8"=1'-0"	DRAWING NO. 18
FILE NO. 4366	WILBUR WATSON AND F. R. WALKER CONSULTING ENGINEERS AND ARCHITECTS CLEVELAND
DR. DATE	APPROVED DATE
JAN. 23, 1920	1-23-20
REV. BY DATE	REMARKS

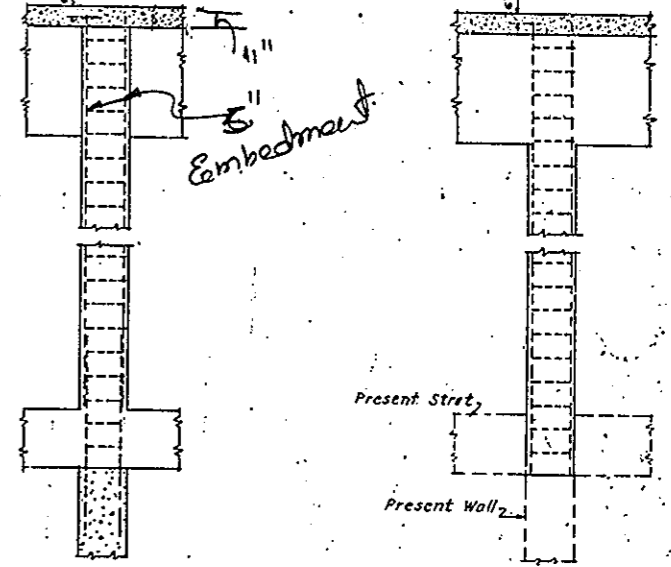


NOTE - THESE STRUTS ARE TO BE BUILT VERY CLOSE TO LIVE WIRES WHICH MUST BE PROTECTED.

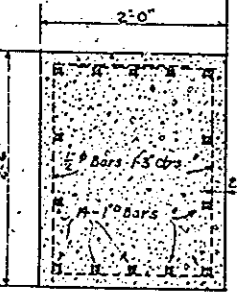
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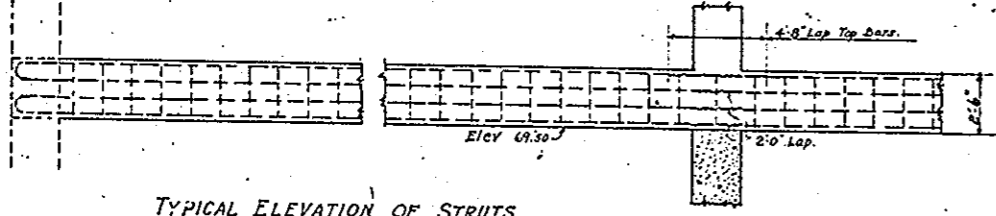
TYPICAL DETAILS OF ANCHOR RODS SCALE 1/2" = 1'-0"



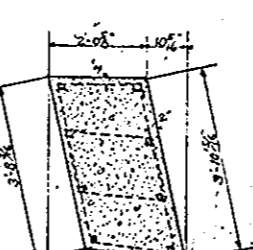
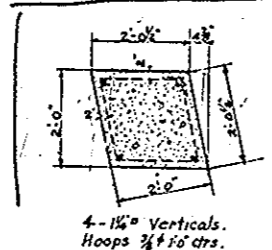
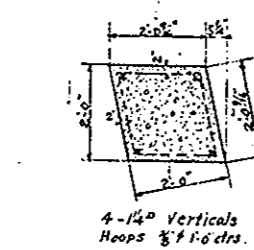
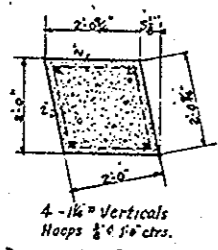
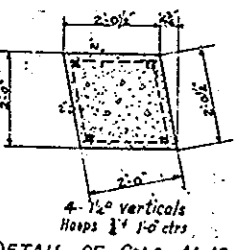
DETAIL OF COLS ON LINES 1-2-3-4 DETAIL OF COLS ON LINES 5-6.



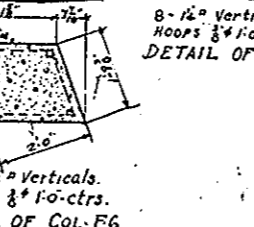
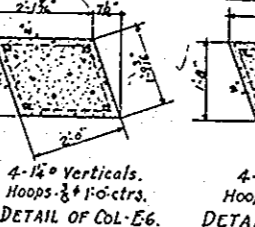
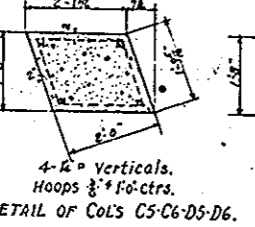
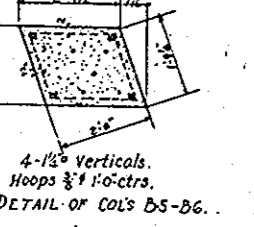
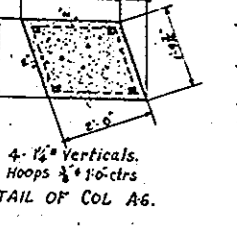
TYPICAL SECTION OF STRUTS S1 TO S19 INCL.



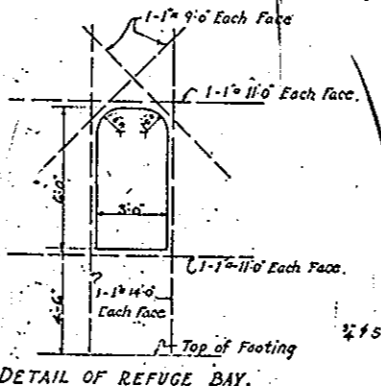
TYPICAL ELEVATION OF STRUTS.



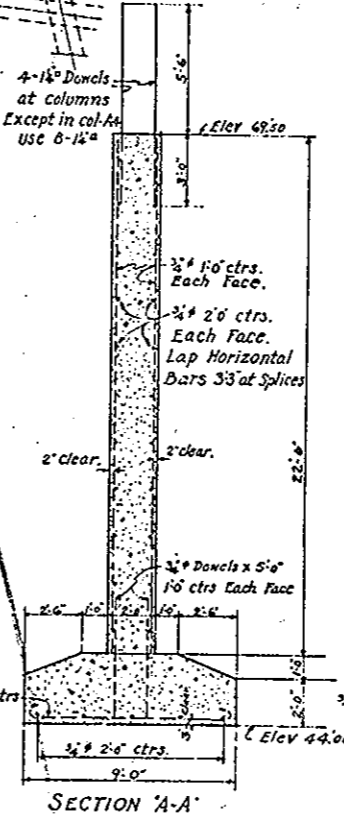
DETAIL OF COLS A1-A2-A3 - DETAIL OF COLS B1-B2-B3-B4 - DETAIL OF COLS C1-C2-C3-C4 - DETAIL OF COLS D1-D2-D3-D4



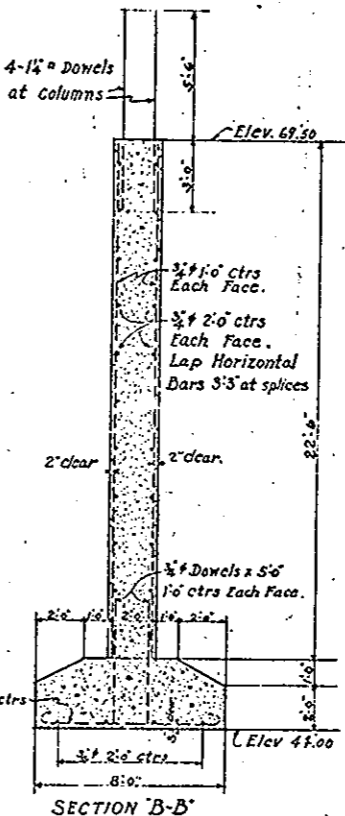
DETAIL OF COL A6 - DETAIL OF COLS B5-B6 - DETAIL OF COLS C5-C6-D5-D6 - DETAIL OF COL E6 - DETAIL OF COL F6



DETAIL OF REFUGE BAY.



SECTION A-A



SECTION B-B

APPROVED BY

CO. COMM. _____
 CO. ENG. _____
 CO. ARCHT. _____
 DESIGN. ENG. _____

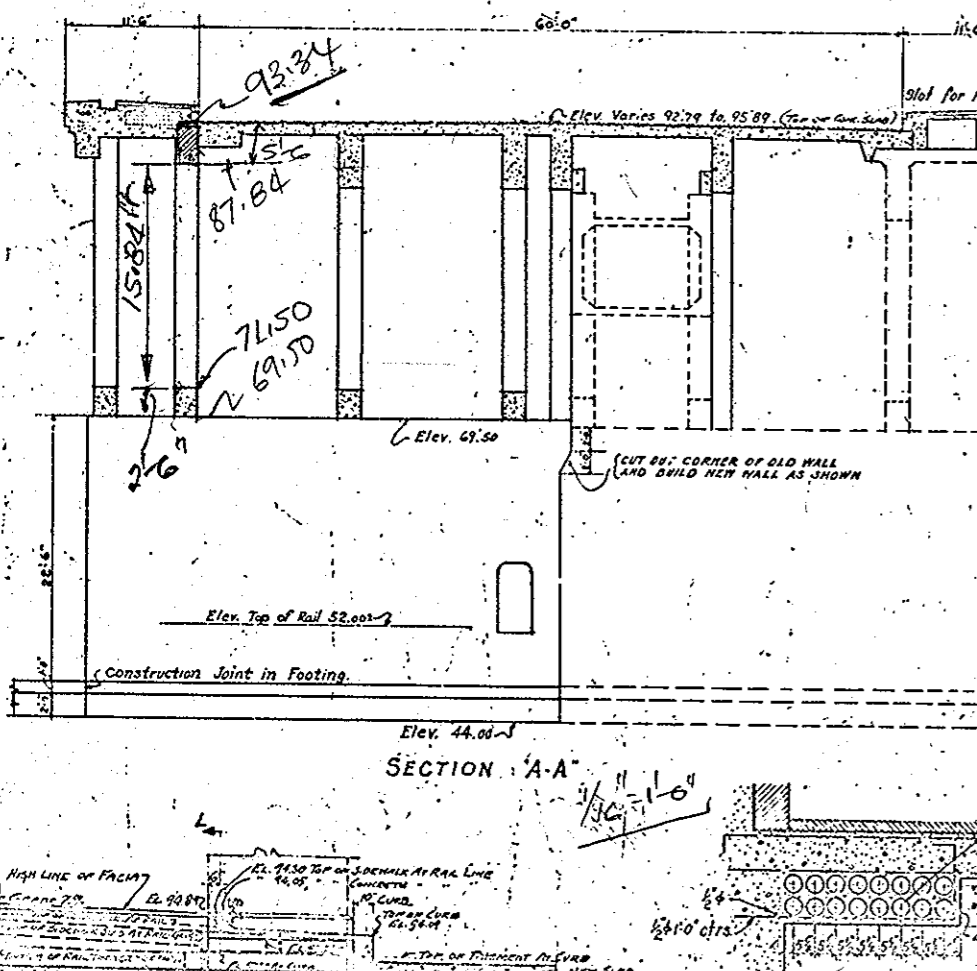
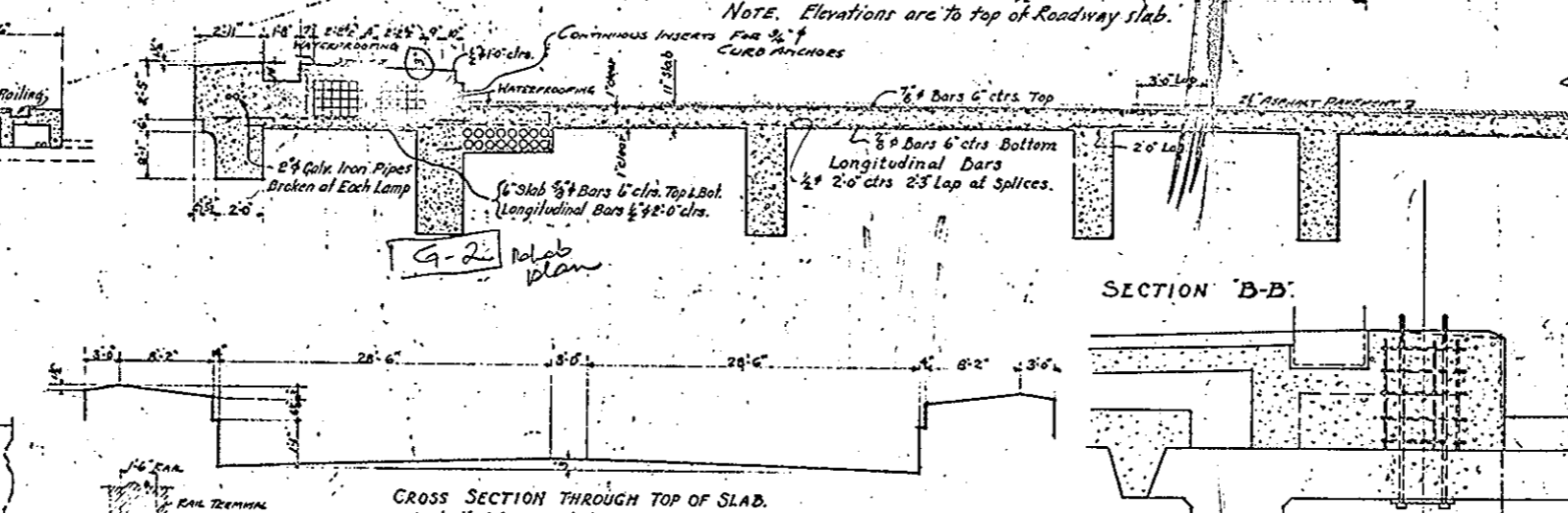
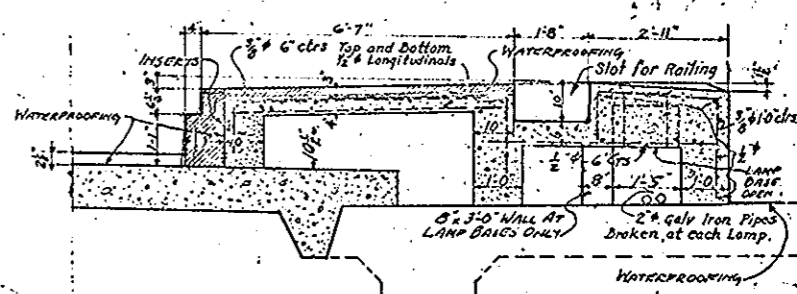
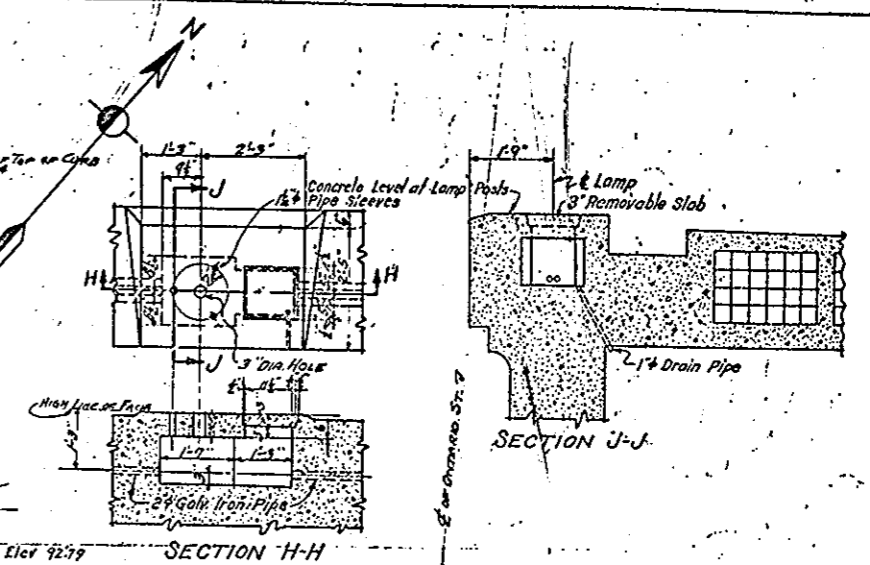
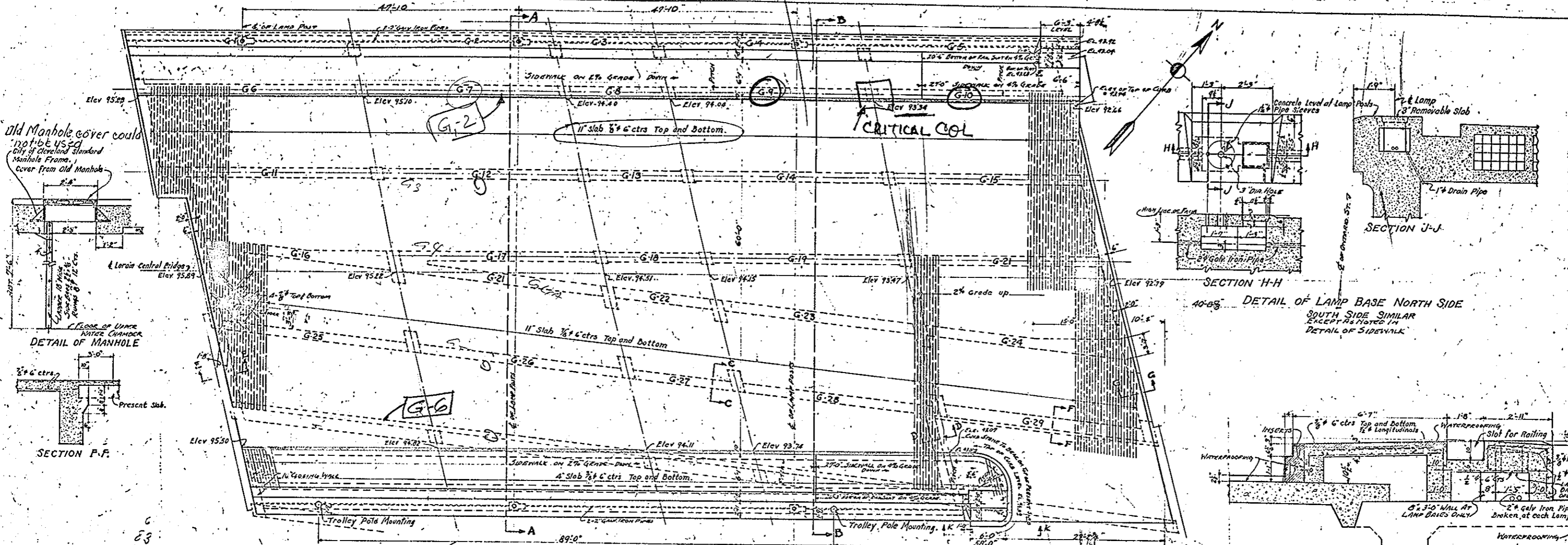
CUYAHOGA COUNTY	
BOARD OF COMMISSIONERS J. R. ZMUNT J. H. HARRIS W. E. COOK	COUNTY SURVEYOR F. R. WILLIAMS COUNTY BRIDGE ENGINEER A. M. FELGATE

LORAIN - CENTRAL BRIDGE
CLEVELAND, O.

CENTRAL AVE. BRIDGE EXTENSION
SCALE 1/8" = 1'-0"

FILE NO. 4366
 WILBUR WATSON AND F. R. WALKER
 CONSULTING ENGINEERS AND ARCHITECTS
 CLEVELAND

DRAWING MADE	DRAWN BY	TRACED BY	CHECKED BY	DATE	APPROVED	DATE
11/12/20	W.P.	A.M.	W.P.	8-15-20		
REV. NO.	REVISION	REV. BY	DATE	REMARKS		
1	End of footing on line C and struts					



APPROVED BY

G-G Relab plan

CO. COMM. _____

CO. AUDITOR _____

CO. ENG. _____

BRIDGE ENG. _____

CITY ENG. _____

CUYAHOGA COUNTY

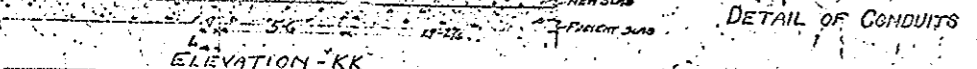
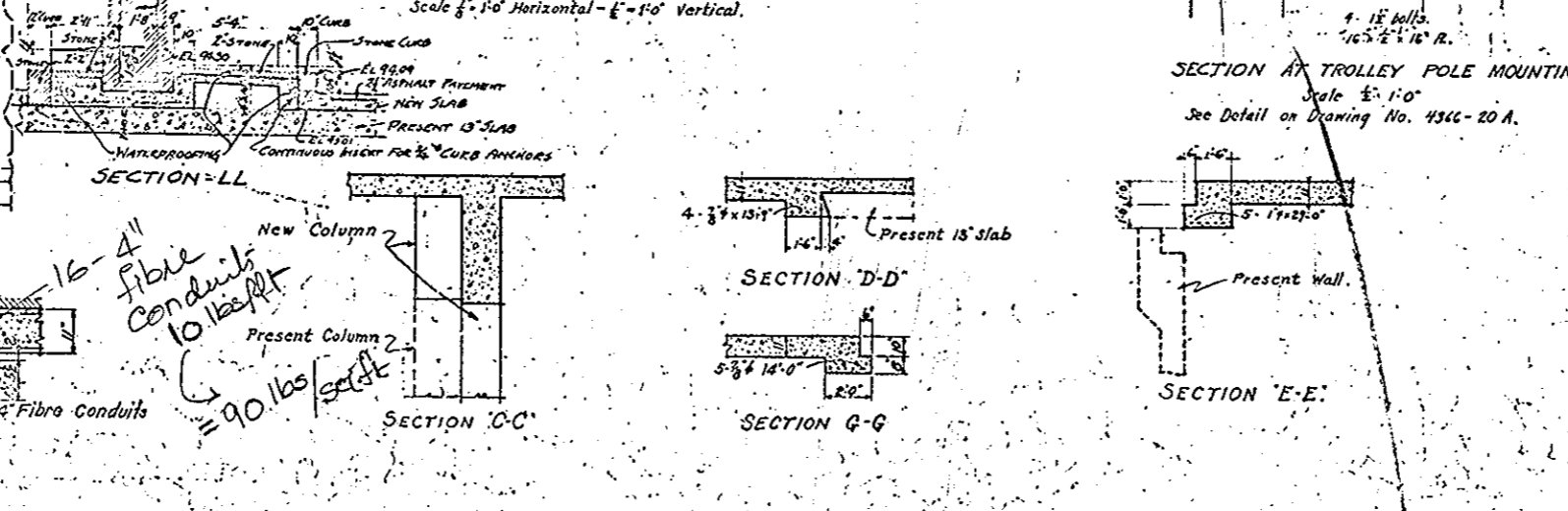
BOARD OF COMMISSIONERS J. R. ZMUNT J. H. HARRIS W. E. COOK	COUNTY SURVEYOR F. R. WILLIAMS COUNTY BRIDGE ENGINEER A. M. FELGATE
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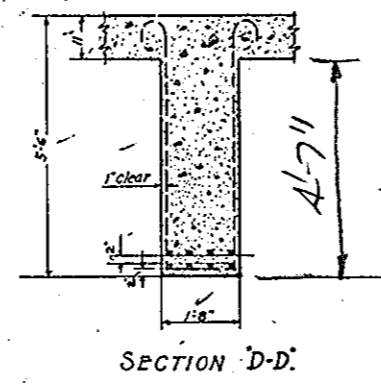
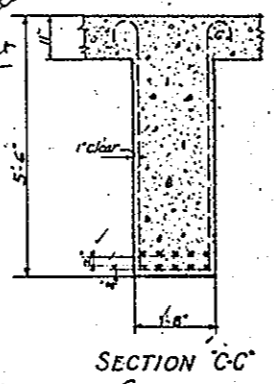
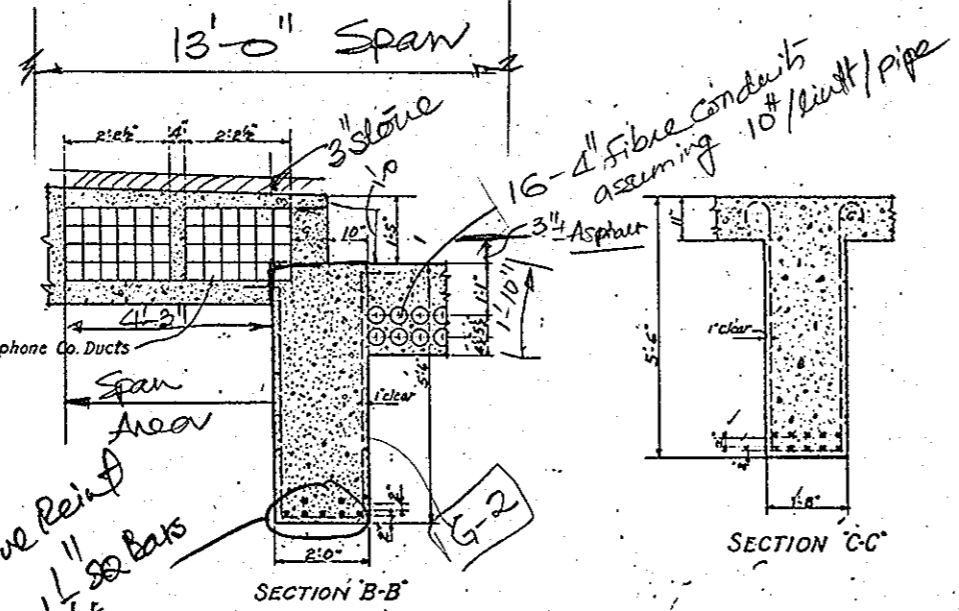
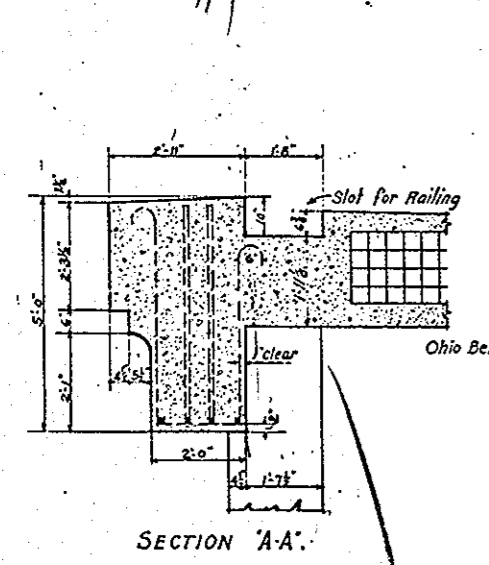
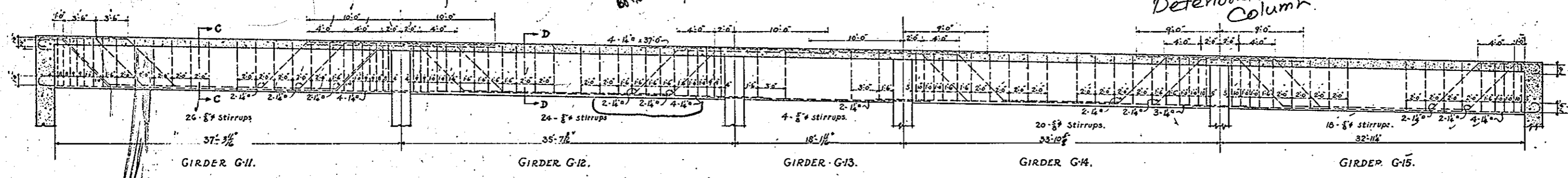
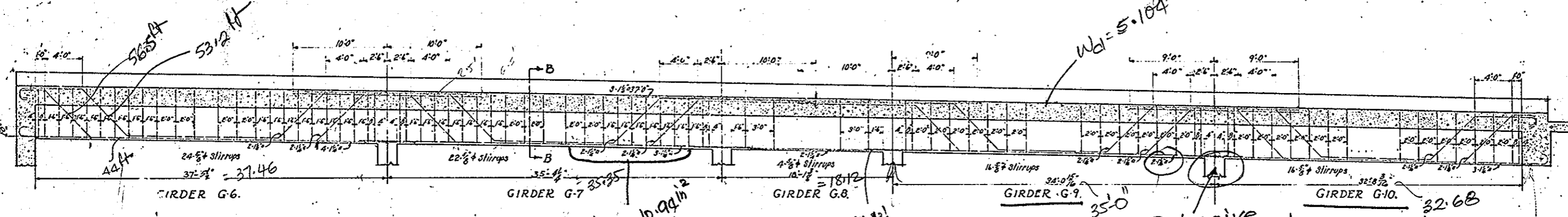
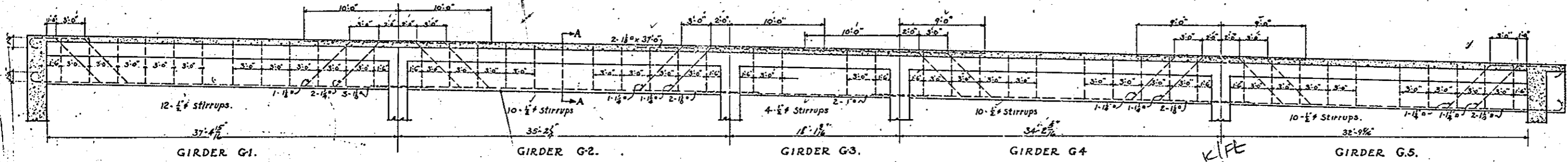
LORAIN-CENTRAL BRIDGE - CLEVELAND, O.

CENTRAL AVE. BRIDGE EXTENSION

SCALE 1/4" = 1'-0"

FILE NO. 4366	DRAWN BY WILBUR WATSON AND F.R. WALKER	DATE 11/18/20	APPROVED BY	DATE
DESIGNED BY	CHECKED BY	DATE	APPROVED BY	DATE
REV. BY	REMARKS	REV. BY	DATE	REMARKS





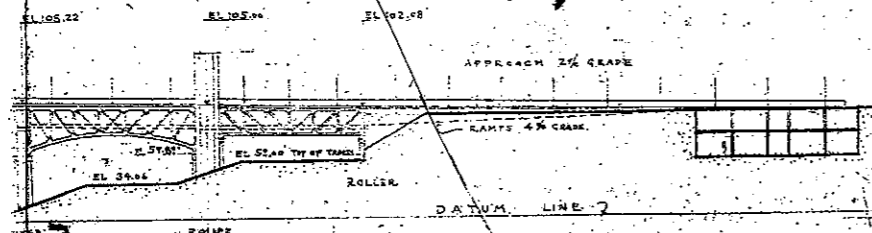
Positive Reinft
7-1 1/4" #8 Bars
For Bars 10.94 sq in.
1/4" = 1'-0"
(D.I.L. = 5.104 K/FT)
4.751 K/FT

Carnegie Grade Separation Structure

APPROVED BY

CO. COMM.	_____
AVOC. COMM.	_____
CO. ENG.	_____
PROJ. ENG.	_____

CUYAHOGA COUNTY	
BOARD OF COMMISSIONERS J. R. ZMUNT J. H. HARRIS W. E. COOK	COUNTY SURVEYOR F. R. WILLIAMS COUNTY BRIDGE ENGINEER A. M. FELGATE
LORAIN - CENTRAL BRIDGE CLEVELAND, O.	
CENTRAL AVE. BRIDGE EXTENSION	
SCALE 3/16" = 1'-0"	
FILE NO. A366	DRAWING NO. 21
DRAWING MADE JAN. 23, 1930	DRAWN BY W. W. A. R.
TRACED BY W. W. A. R.	CHECKED BY W. W. A. R.
DATE 1-15-30	APPROVED BY [Signature]
REV. BY DATE	REMARKS



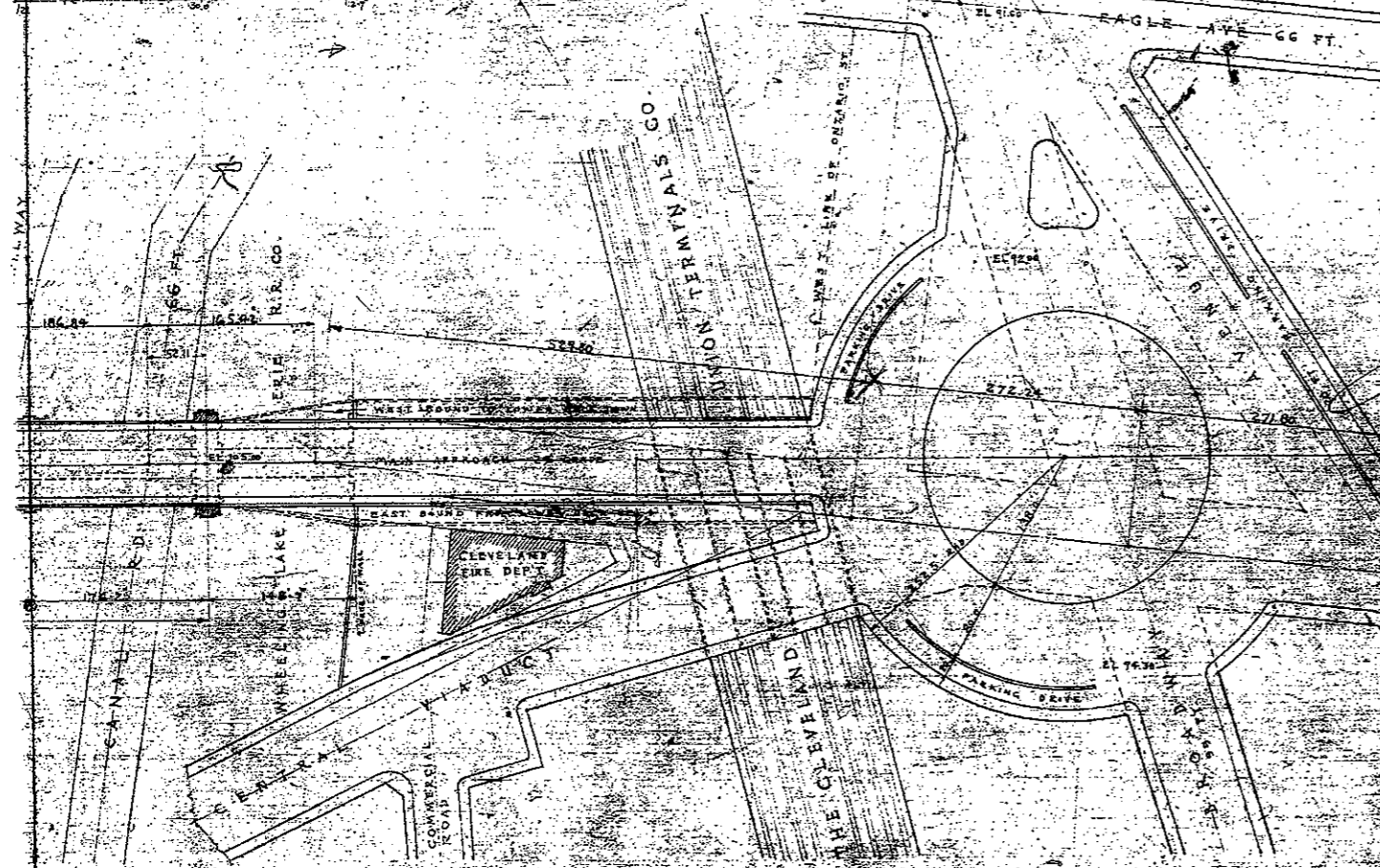
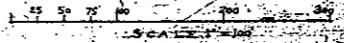
LORAIN CENTRAL BRIDGE

COMMISSIONERS OF CUYAHOGA COUNTY
 J. R. ZMUNT J. H. HARRIS W. E. COOK

COUNTY SURVEYOR
 F. R. WILLIAMS

COUNTY BRIDGE ENGINEER
 A. M. FELGATE

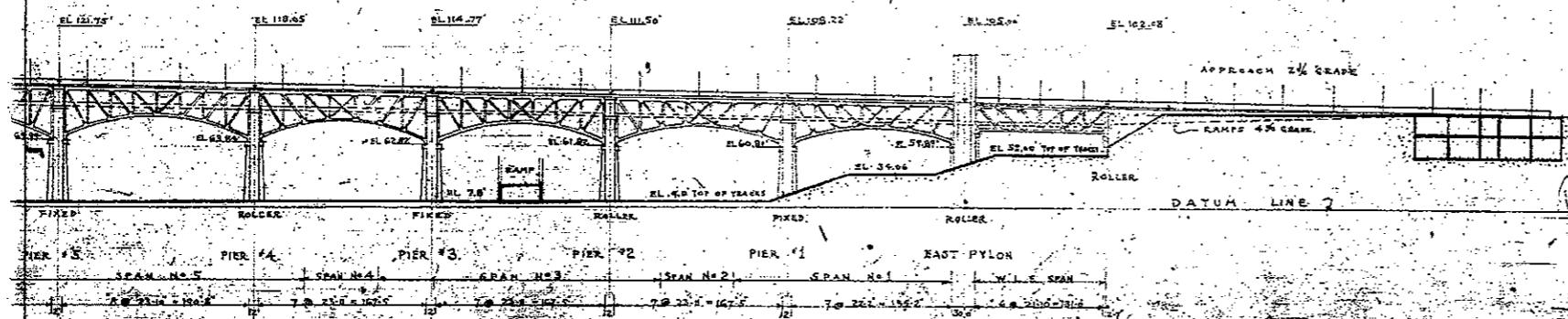
CONSULTING ENGINEERS AND ARCHITECTS
 WILBUR, J. WATSON AND F. R. WALKER



Matt E. Cook CO. COMMRS.
James CO. SUPERVISOR
A. M. Felgate CO. BRIDGE ENG.
W. E. Cook CO. ARCHT.

SFN 1801503

11
 11
 9'8"
 8.5"
 11"
 17"

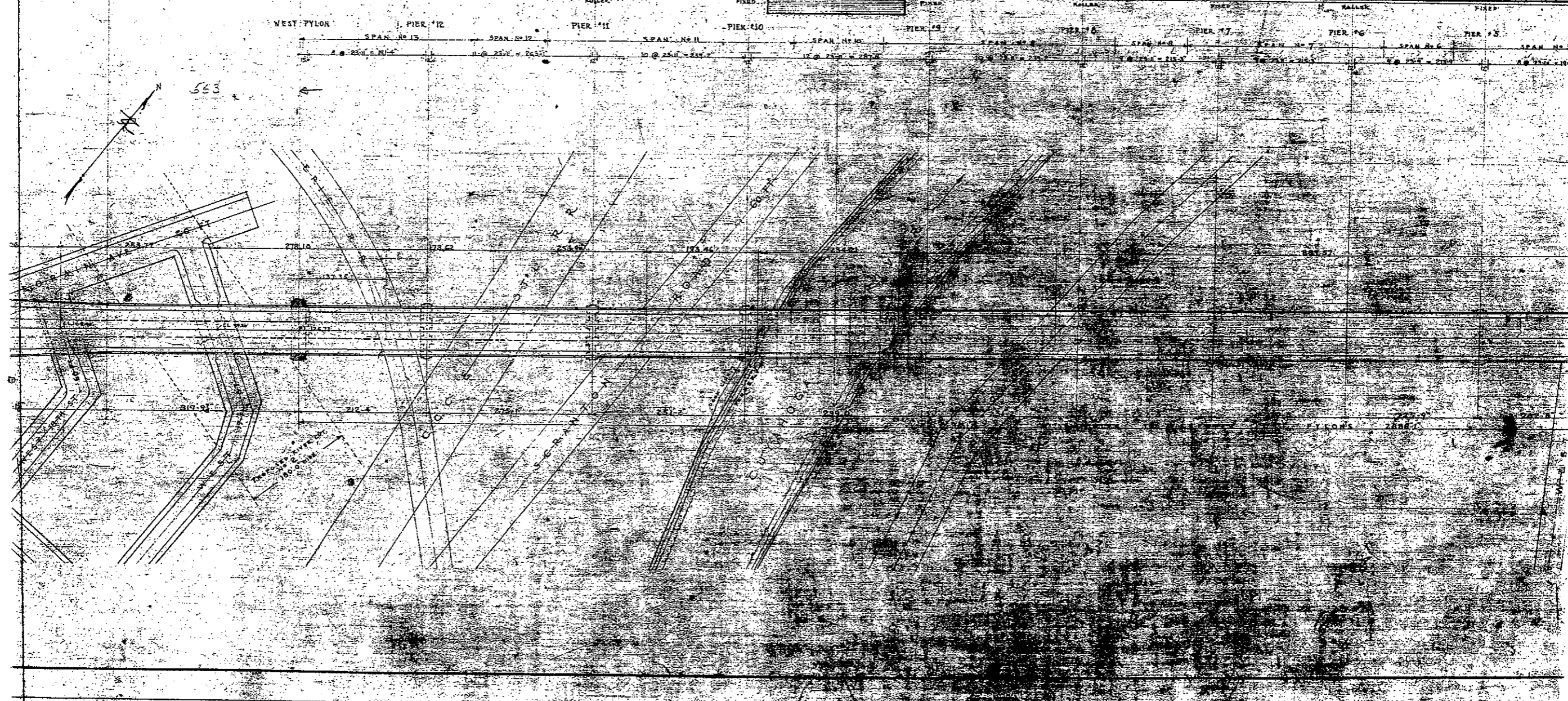
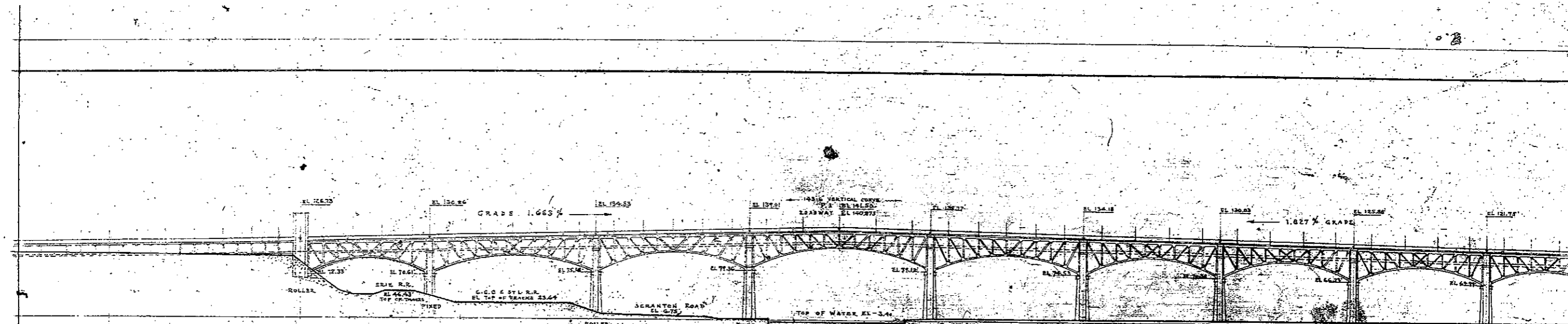


LORAIN CEN
 COMMISSIONERS
 J. R. ZMUNT J. H.
 COUNTY
 F. R. W
 COUNTY BR
 A. M. E
 CONSULTING ENGIN
 WILKIE J. WATSON
 45 57 75 100



Walter E. Cook
James R. ...
W. H. ...
...

SFN 1801503



SFN 1801503

17"

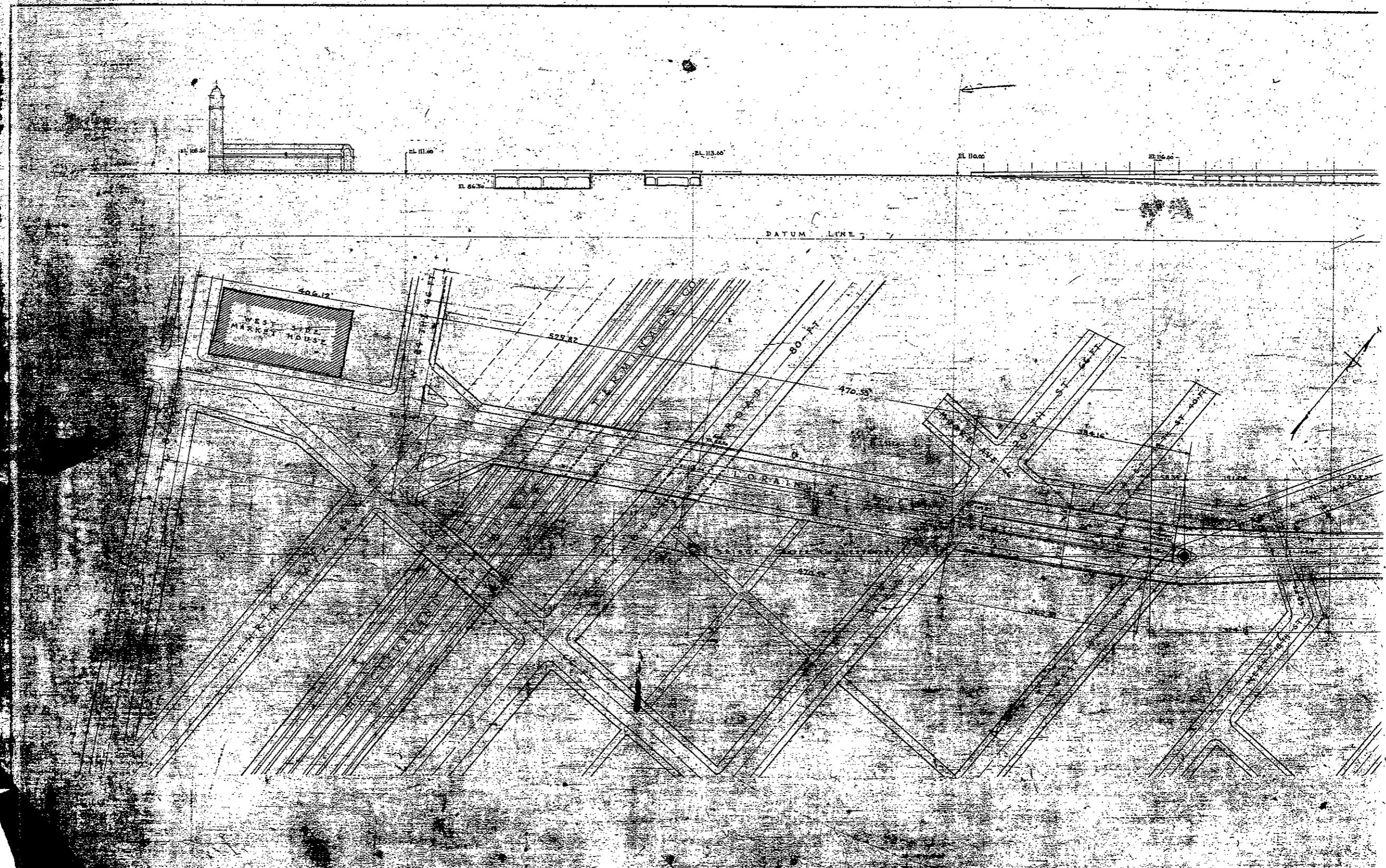
11"

8.5"

8.5"

11"

17"



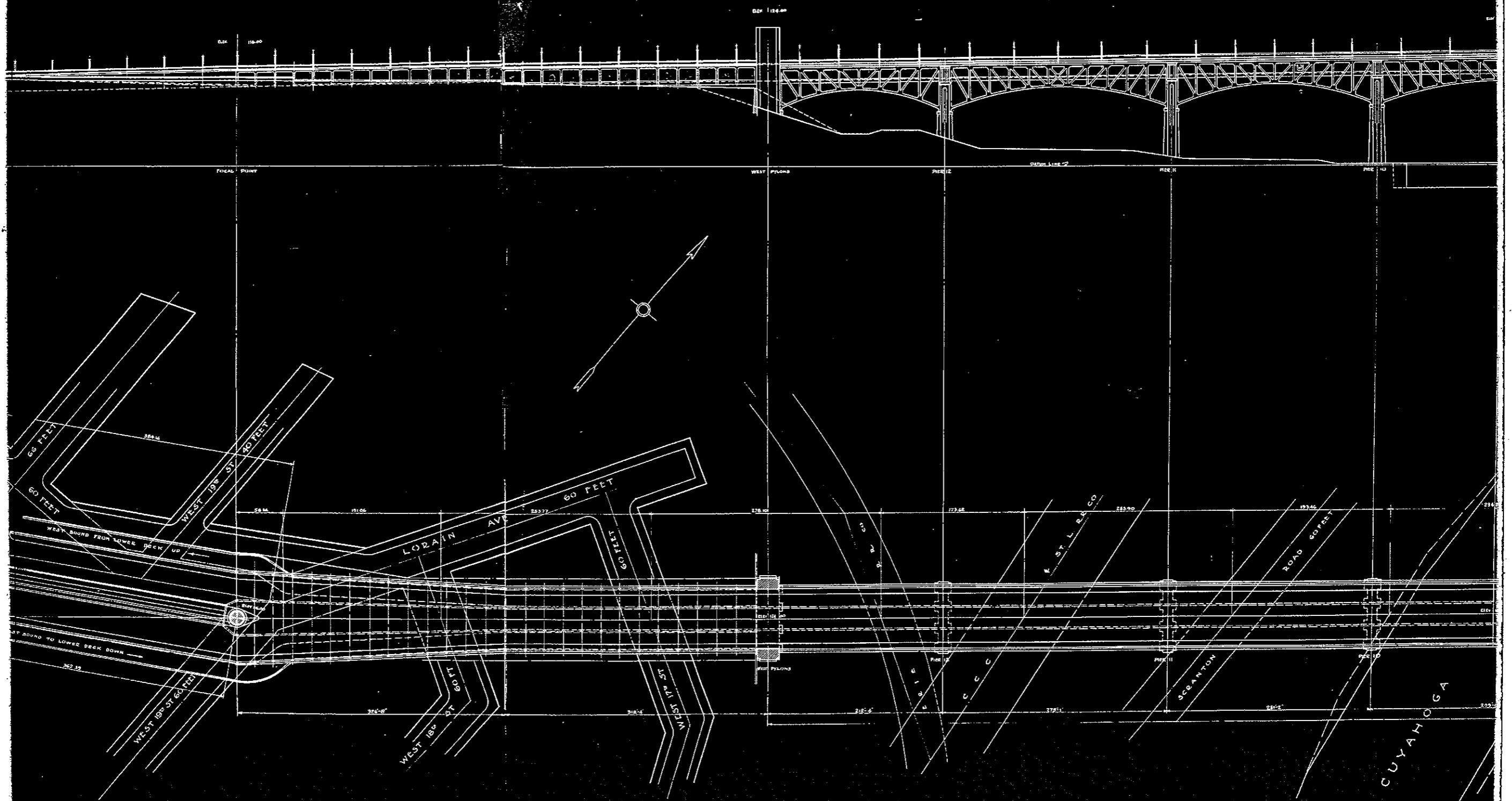
SFN 1801503

MICROFILMED
OCT 6 1987



SFN |80|50|3

MICROFILMED
OCT 6 1987



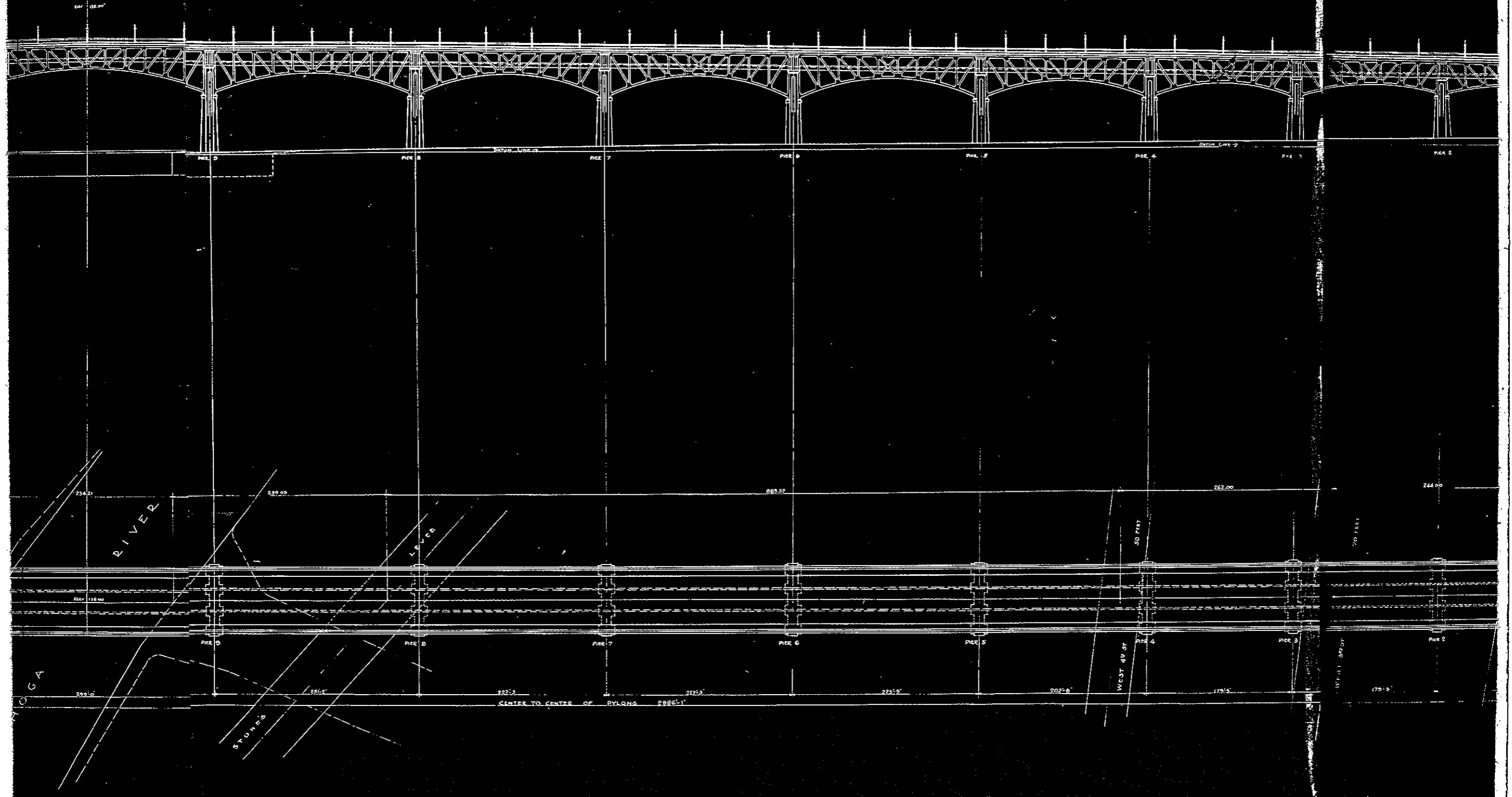
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MICROFILMED

OCT 6 1987

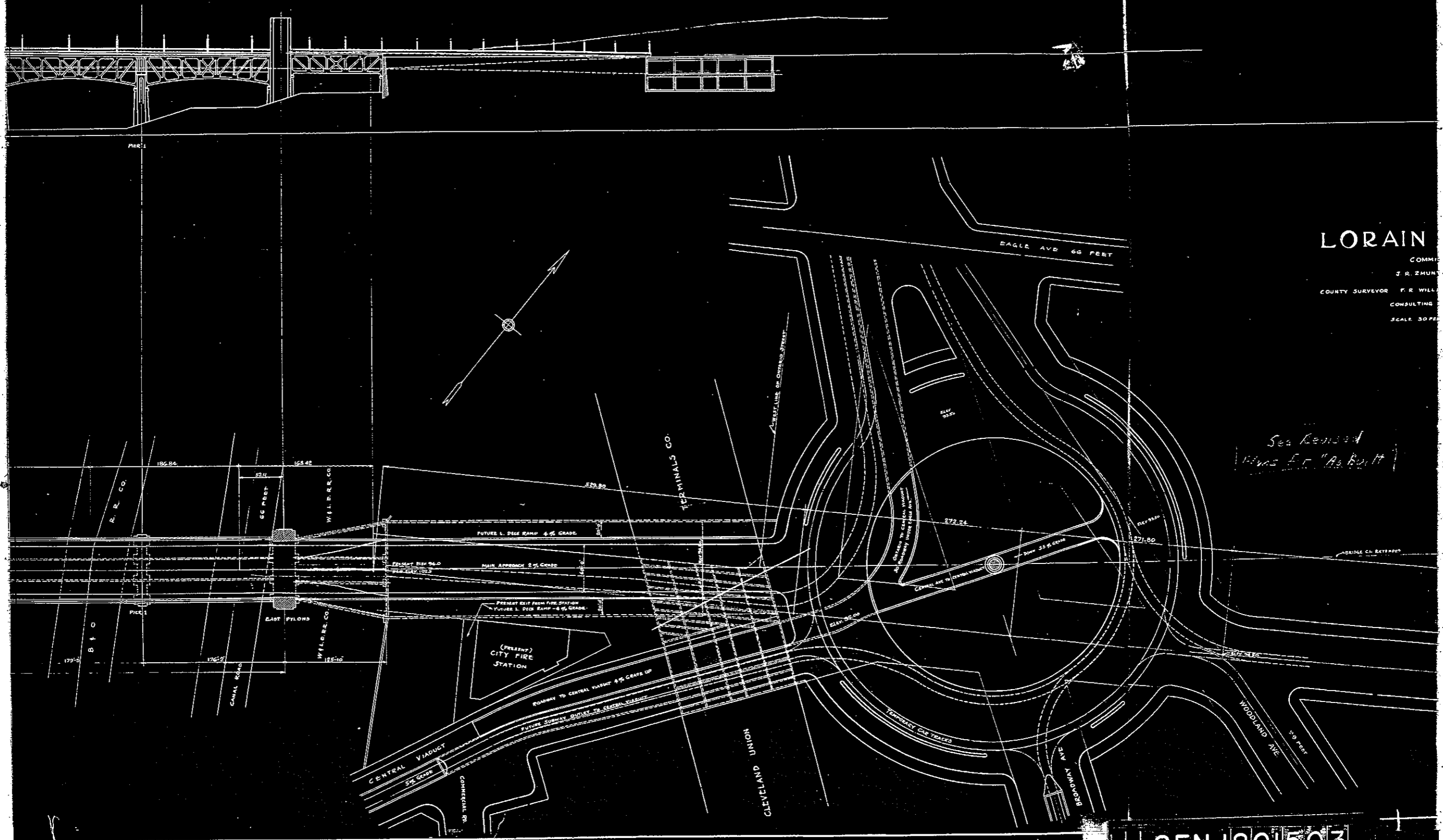
MICROFILMED

JUL 6 1987



SFN 1801503

MICROFILMED
OCT 6 1987

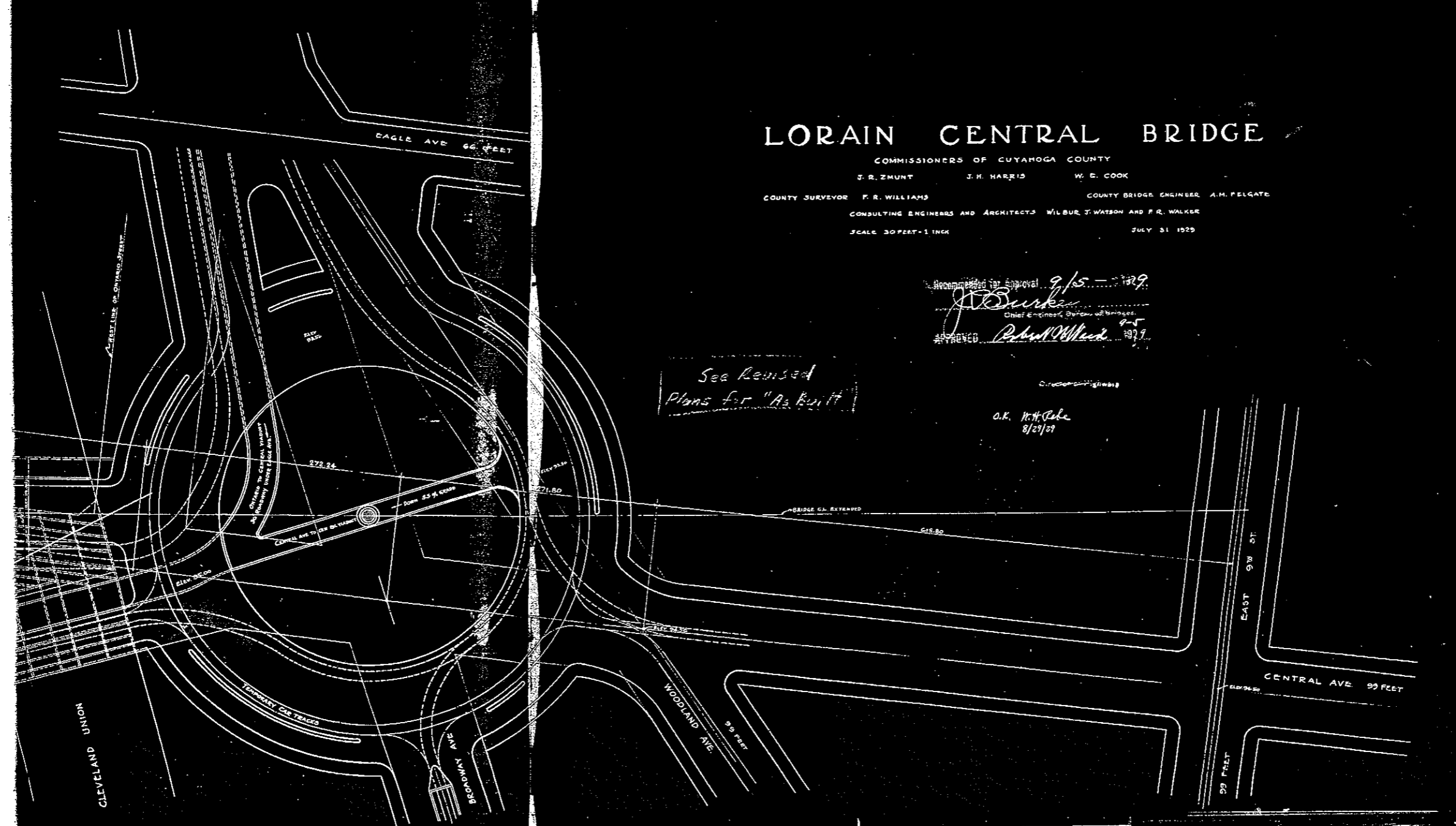
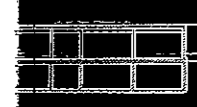


LORAIN

COMM. ...
J. R. ZMUNT ...
COUNTY SURVEYOR F. R. WILL ...
CONSULTING ...
SCALE 30 FEET

SFN 180 503

MICROFILMED
OCT 6 1987



LORAIN CENTRAL BRIDGE

COMMISSIONERS OF CUYAHOGA COUNTY

J. R. ZMUNT J. H. HARRIS W. E. COOK

COUNTY SURVEYOR F. R. WILLIAMS COUNTY BRIDGE ENGINEER A. M. FELGATE

CONSULTING ENGINEERS AND ARCHITECTS WILBUR J. WATSON AND F. R. WALKER

SCALE 30 FEET = 1 INCH JULY 31 1929

Recommended for Approval 9/15 - 1929
J. D. Durkin
Chief Engineer, Division of Highways
APPROVED *Robert M. Wood* 9-5-29

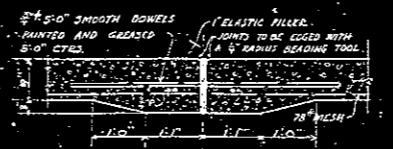
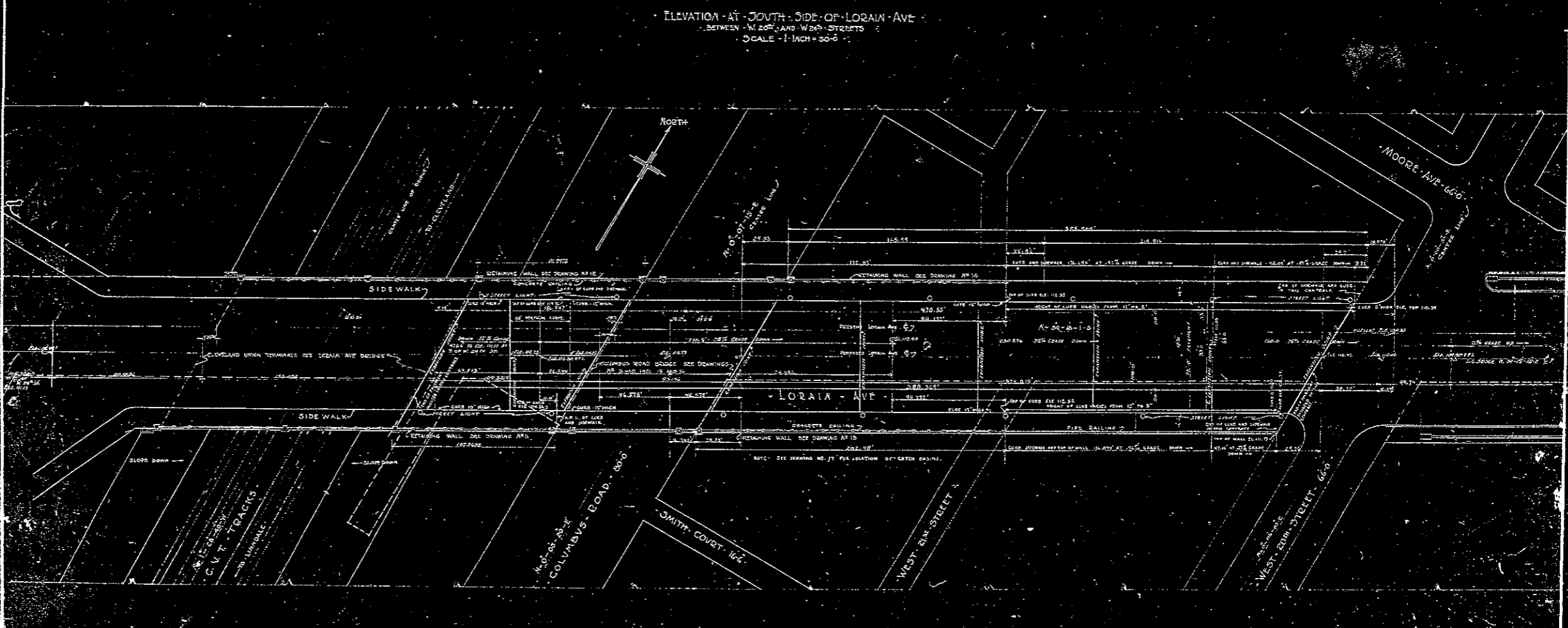
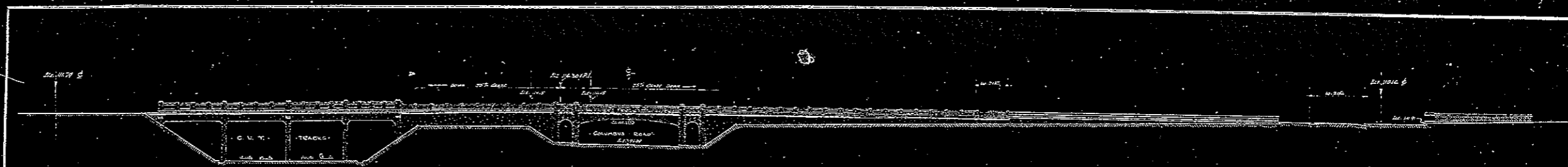
See Revised
Plans for "As Built"

O.K. *W. H. Cole*
8/27/29

CLEVELAND UNION

SFN 1801503

22
17
11
8.5
8.5
11
17
22



APPROVED BY
CITY ENG.
CO. COMM.
ENR.
AUDITOR
CO. CLERK
BRIDGE
TAG.

CUYAHOGA COUNTY	
BOARD OF COMMISSIONERS W. E. COOK J. H. HARRIS J. F. GORMAN	COUNTY SURVEYOR F. R. WILLIAMS COUNTY BRIDGE ENGINEER A. M. FELGATE
LORAIN CENTRAL BRIDGE COLUMBUS ROAD GRADE ELIMINATION CLEVELAND	
LOCATION PLAN WITH ELEVATION ALONG LORAIN AVE	
SCALE	4371
DESIGNED BY WILBUR WATSON AND ASSOCIATES CONSULTING ARCHITECTS & ENGINEERS CLEVELAND	DATE APR 15 1911
CHECKED BY G. G. P. W. S. K.	DATE APR 15 1911
APPROVED BY A. M. FELGATE	DATE APR 15 1911

SFN 1801503

27

17

11

9.8

8.5

11

17

22

SOUTH SIDE



APPROVED BY
Wm. E. Cook
 CO. COMM.
 CO. AUDITOR
 CO. ENG.
 BRIDGE ENG.

CUYAHOGA COUNTY
 BOARD OF COMMISSIONERS
 J. R. ZMUNT
 J. H. HARRIS
 W. E. COOK

COUNTY SURVEYOR
 F. R. WILLIAMS
 COUNTY BRIDGE ENGINEER
 A. M. PELGATE

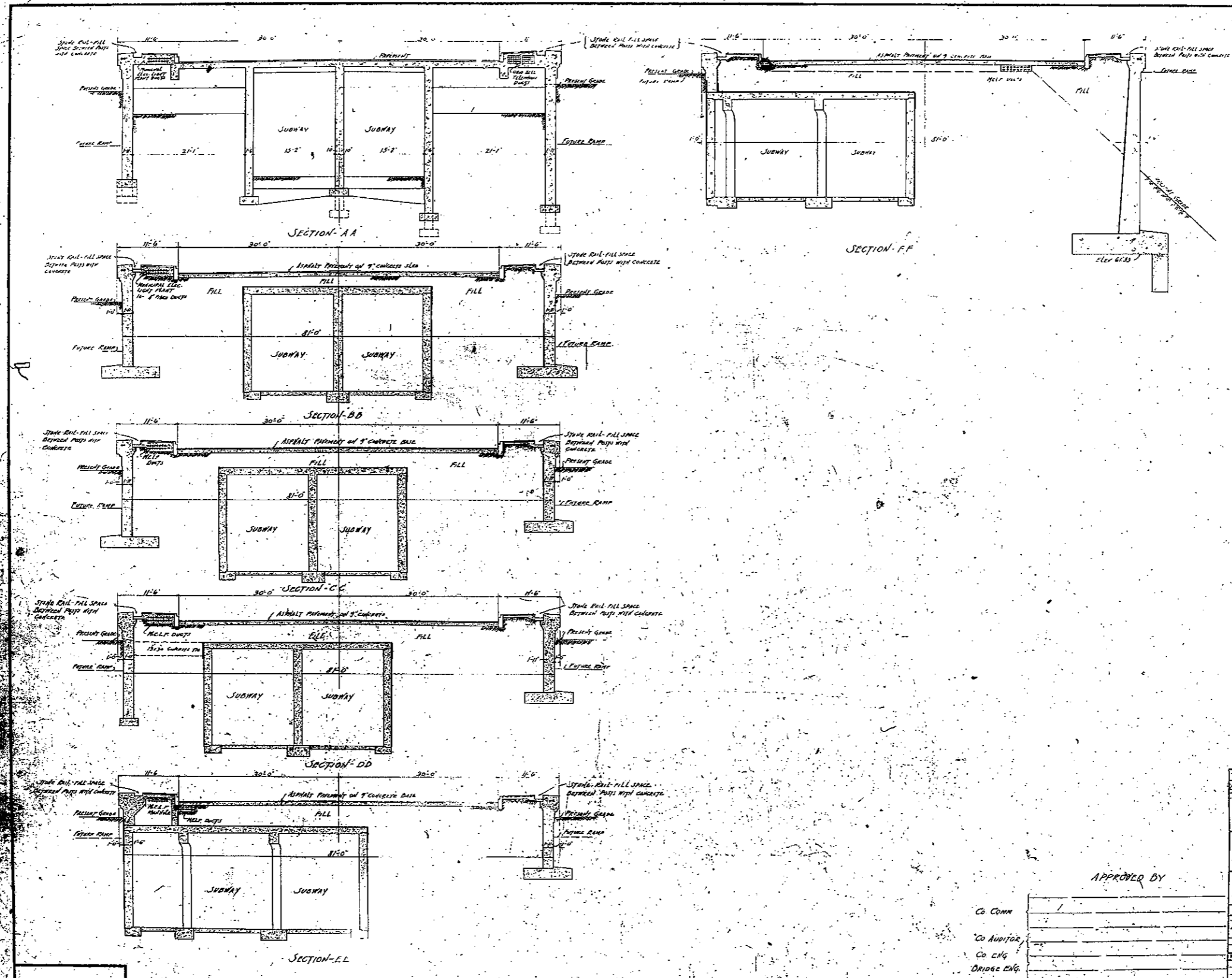
LORAIN CENTRAL BRIDGE
 CLEVELAND

TYPICAL CROSS SECTION AT PIERS
 SCALE: 1" = 10'

FILE NO.	WILBUR WATSON AND FR. WALKER	DRAWING NO.	3
4237	CONSULTING ENGINEERS AND ARCHITECTS	CLEVELAND	
DRAWING DATE	12-22-20	DATE	12-22-20
DATE TO	12-22-20	DATE	12-22-20
REV. BY	DATE	REV. BY	DATE
1		1	

SPN 1801503

22"
17"
11"
8.5"
11"
17"
22"



NOTE: FOR LOCATIONS OF SECTIONS SEE DRG. 412

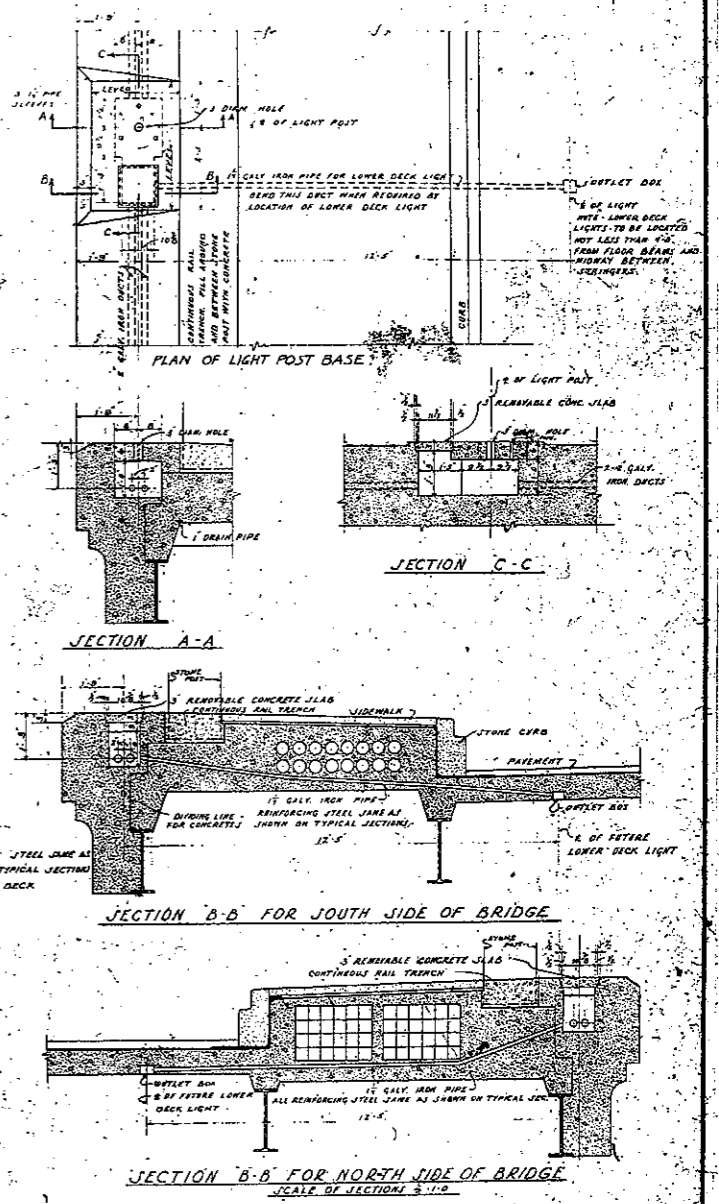
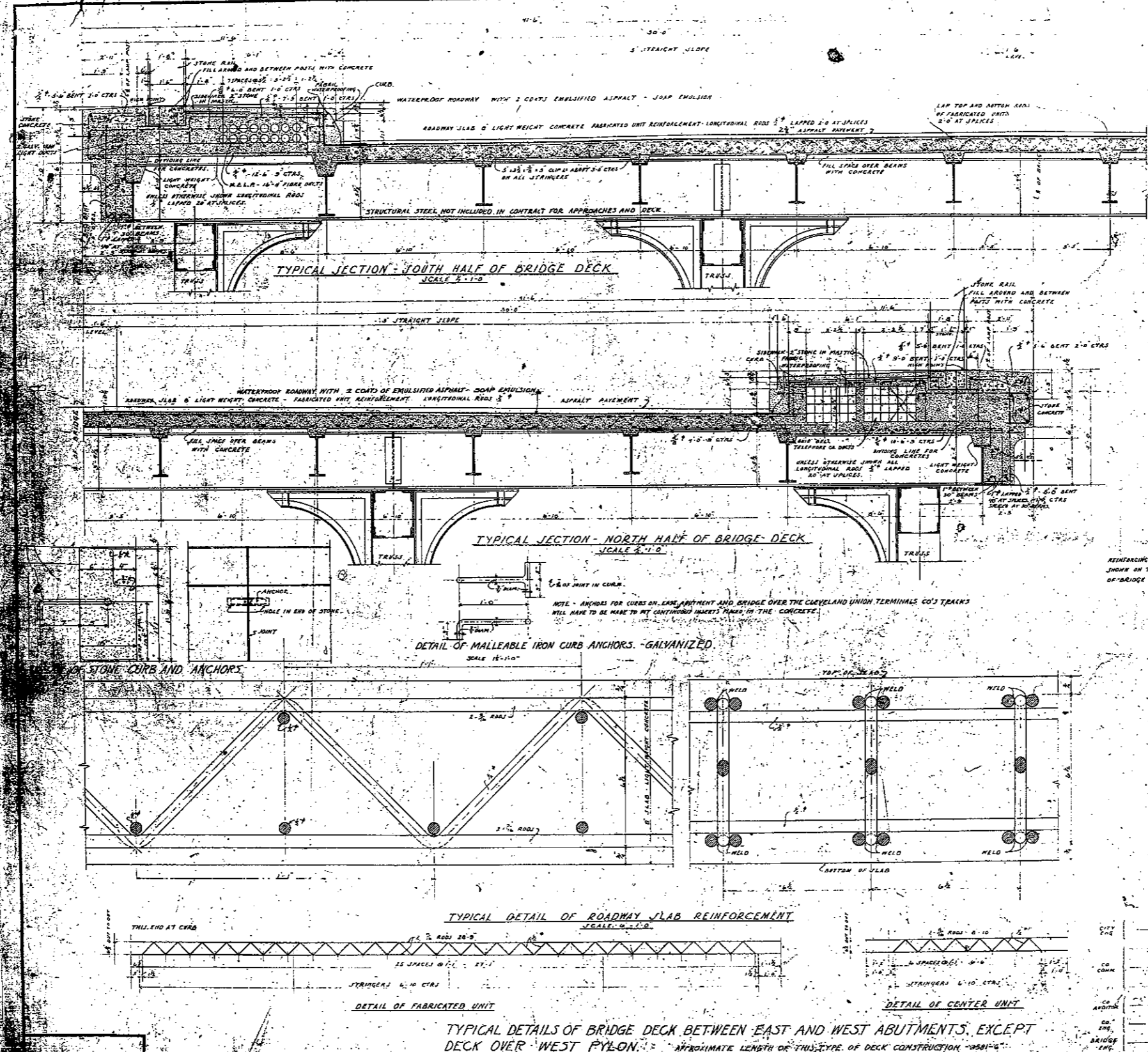
APPROVED BY

Co Comm _____
Co Auditor _____
Co Eng _____
Bridge Eng _____

CUYAHOGA COUNTY	
BOARD OF COMMISSIONERS	COUNTY SURVEYOR
J. R. ZMUNT	F. R. WILLIAMS
J. H. HARRIS	COUNTY BRIDGE ENGINEER
W. E. COOK	A. H. FELLEITE
LORAIN CENTRAL BRIDGE CLEVELAND	
EAST APPROACH CROSS SECTIONS	
SCALE 1/4" = 1'-0"	DATE 7-17-30
FILE NO. 4366	DRAWN BY WILBUR WATSON AND FRANK WALKER
DESIGNED BY W.B. A.S. SEN	CHECKED BY F.B. SEN
REV. BY DATE	REV. BY DATE

SFN 1801503

22
17
11
9.8
8.5
11
17
22



APPROVED BY _____

CITY ENGINEER _____

CO. COMM. _____

CO. ARCHT. _____

CO. ENG. _____

BRIDGE ENG. _____

CUYAHOGA COUNTY	
BOARD OF COMMISSIONERS	COUNTY SURVEYOR
J. R. ZIMMERT	F. R. WILLIAMS
J. H. HARRIS	COUNTY BRIDGE ENGINEER
H. E. COOK	A. M. FELGATE

LORAIN CENTRAL BRIDGE
CLEVELAND

TYPICAL SECTIONS OF DECK CONSTRUCTION

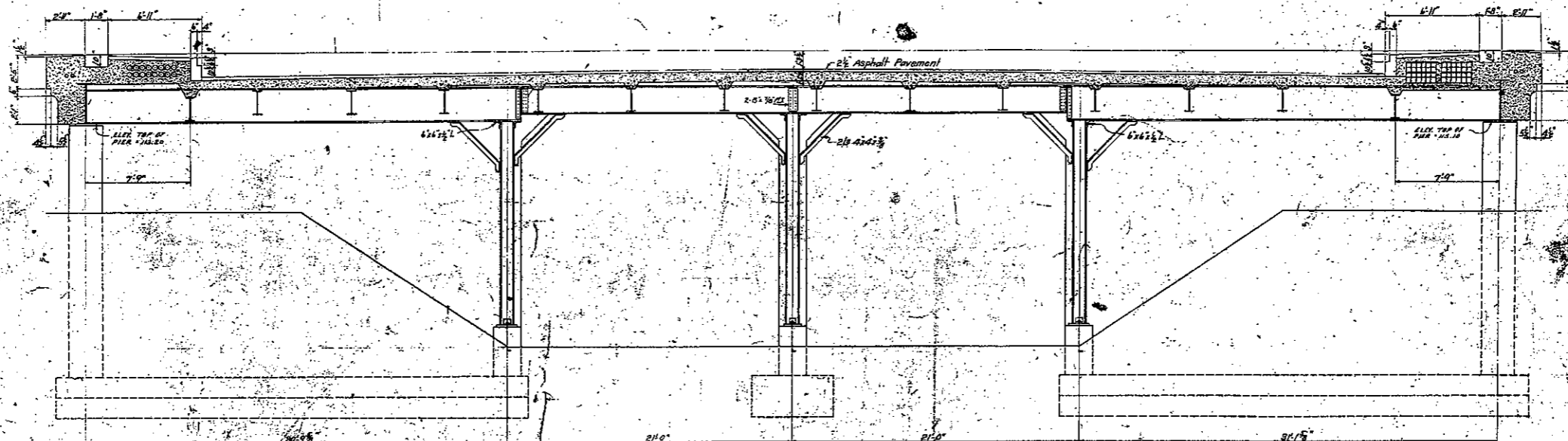
SCALE 3/4"=1'-0" AND 3/8"=1'-0"

FILE NO. 4366

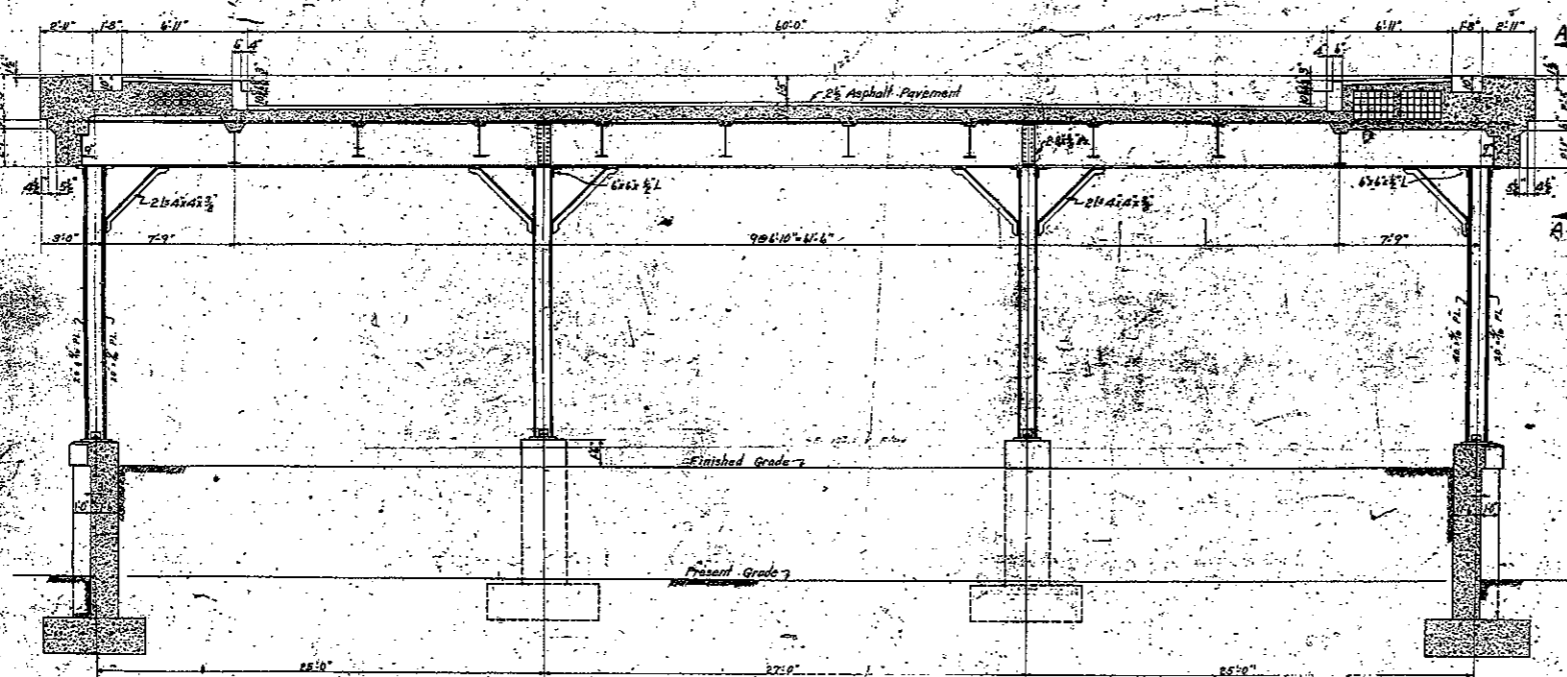
WILBUR WARREN AND FRANK WALKER
CONSULTING ENGINEERS AND ARCHITECTS
CLEVELAND

DRAWING NO. 31

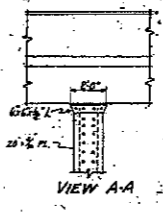
DATE	BY	REVISION



CROSS SECTION X-X



CROSS SECTION Y-Y



VIEW A-A

APPROVED BY

CITY ENG. *[Signature]*

CO. COMM. *[Signature]*

CO. ADVISOR *[Signature]*

CO. ENG. *[Signature]*

BRIDGE ENG. *[Signature]*

CUYAHOGA COUNTY
 BOARD OF COMMISSIONERS: J. R. ZIMMUT, J. H. HARRIS, W. E. COOK
 COUNTY SURVEYOR: T. R. WILLIAMS
 COUNTY BRIDGE ENGINEER: A. W. PELGATE

LORAIN CENTRAL BRIDGE
 CLEVELAND.

CROSS SECTIONS
 WEST APPROACH

SCALE: 1/4" = 1'-0"

DATE: 12-22-20

PROJECT: 123456

CONTRACT: 123456

NO. 1234

DATE: 12-22-20

BY: *[Signature]*

CHECKED: *[Signature]*

APPROVED: *[Signature]*

SFN 1801503

22"

17"

11"

8.5"

8.5"

11"

17"

22"

22"

17"

11"

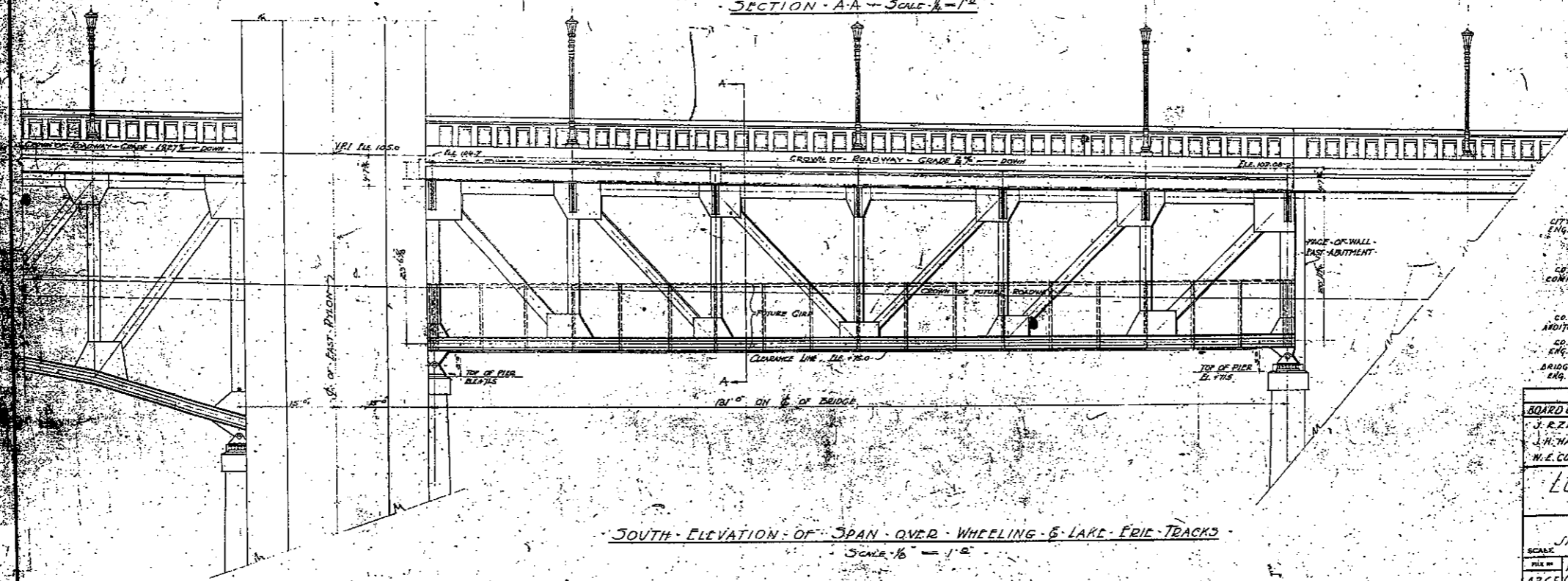
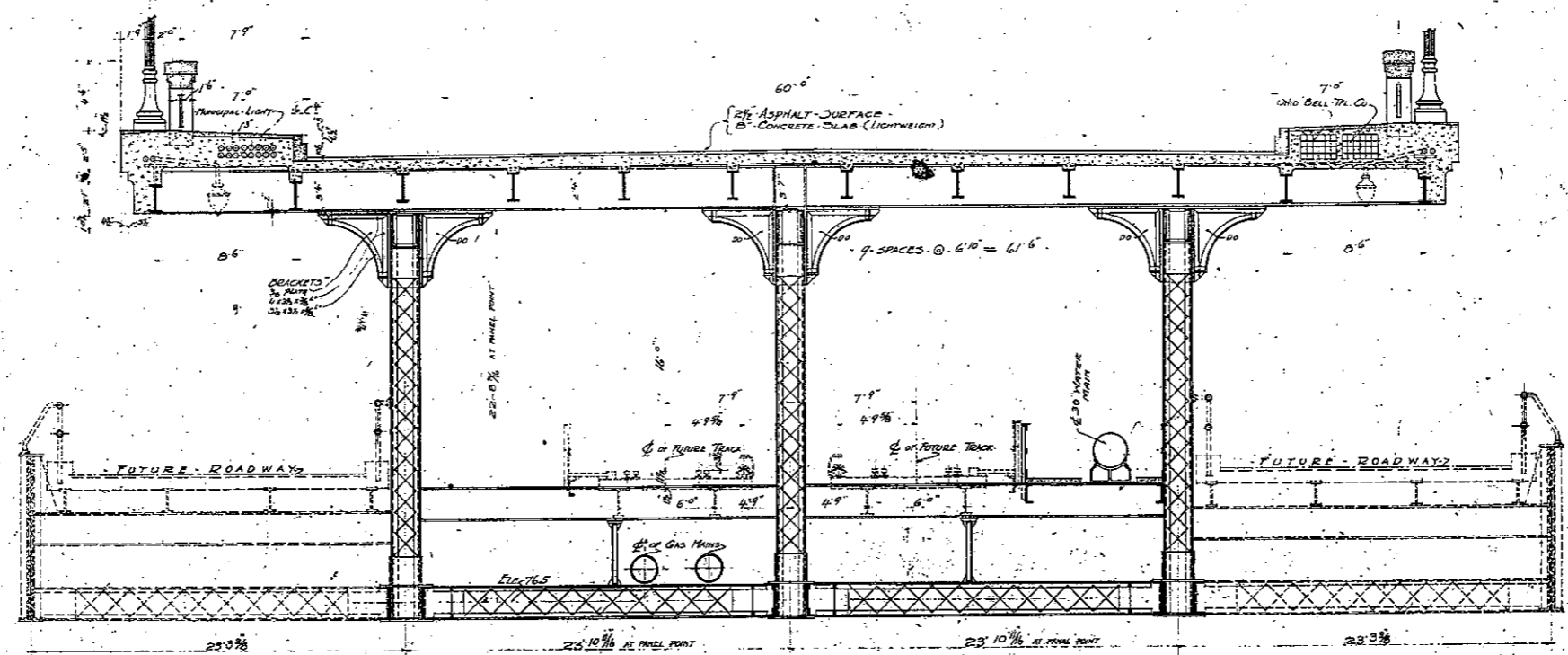
8.5"

8.5"

11"

17"

22"



APPROVED BY

CITY ENG. *[Signature]*

CO. COMM. *[Signature]*

CO. AUDITOR *[Signature]*

CO. BRIDGE ENG. *[Signature]*

CUYAHOGA COUNTY

BOARD OF COMMISSIONERS

J. R. MINT

J. H. HARRIS

W. E. COOK

COUNTY SURVEYOR

E. WILLIAMS

COUNTY BRIDGE ENGINEER

A. M. FELGATE

LORAIN CENTRAL BRIDGE

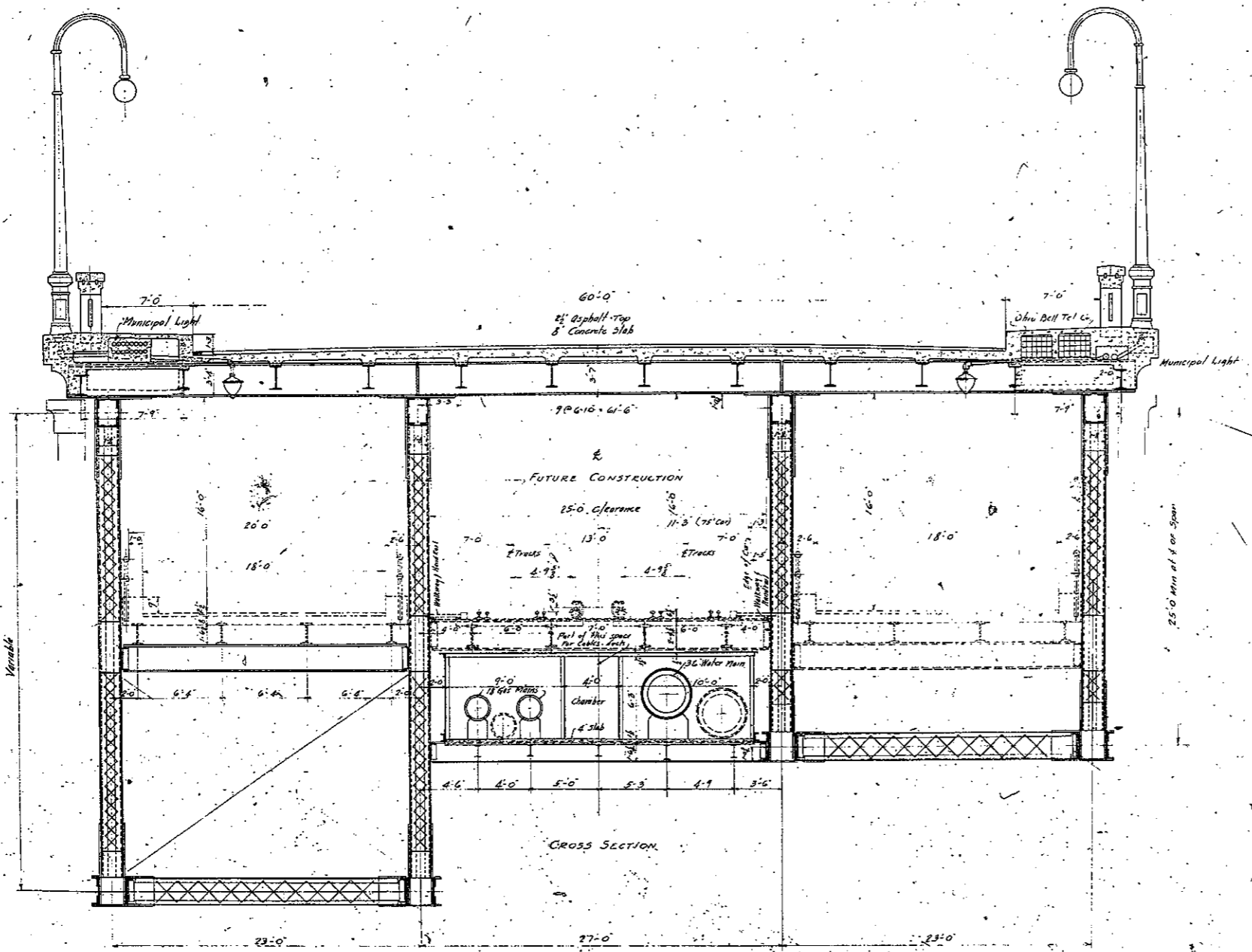
CLEVELAND

SECTION & ELEVATION

SPAN OVER W. & L. E. TRACKS

SCALE	FILE NO.	DATE	BY	CHECKED BY	DATE
1/8" = 1'	4365	6-7-35	W.B.W.	F.W.W.	6-24-35
DRAWING MADE BY: W.B.W. / CHECKED BY: F.W.W. / DATE: 6-24-35					
PROJECT: LORAIN CENTRAL BRIDGE, CLEVELAND					

SFN 1801503



APPROVED BY -

CUYAHOGA COUNTY	
BOARD OF COMMISSIONERS J. R. MUMF J. H. HARRIS W. E. LOON	COUNTY SURVEYOR F. R. WILLIAMS COUNTY BRIDGE ENGINEER A. M. FELGATE
LORAIN CENTRAL BRIDGE CLEVELAND	
TYPICAL CROSS SECTION	
SCALE: 1/4" = 1'-0"	
FILE NO. 4237	DRAWN BY WILBUR WATSON AND F. R. WALKER CONSULTING ENGINEERS AND ARCHITECTS CLEVELAND
DESIGNED BY G. W. B. '15	CHECKED BY B. S. J. '15
APPROVED BY B. S. J. '15	DATE REMARKS

SFN 1801503

22"
17"
11"
8.5"
8.5"
11"
17"
22"

22"
17"
11"
8.5"
8.5"
11"
17"
22"

17"

17"

11"

11"

8.5"

8.5"

8.5"

8.5"

11"

11"

17"

17"

WILBUR WATSON AND ASSOCIATES, CLEVELAND, OHIO

LORAIN-CENTRAL BRIDGE

July 12, 1929

LOADS AND STRESSES FOR FINAL DESIGN

The following loads and unit stresses will be used in final designs for the proposed Lorain-Central Bridge:

LOADS

ROADWAY:

The roadway slab shall be designed to carry 20 ton trucks with 50% impact distributed according to the Ohio State Specifications for Highway Bridges. The highway stringers shall be designed for 20 ton trucks with 25% impact. The floor beams and their immediate supports for the roadway shall be designed for 20 ton trucks with 25% impact. Use Haydite concrete or equivalent for weight.

The Ohio State Specifications shall also be followed for the distribution of loads to stringers and floor beams. Use Silicon Steel.

RAILWAY:

The stringers carrying the railway tracks shall be designed to carry 60 ton electric cars with 50% impact and with the wheels spaced as specified in the Ohio State Specifications for B-60 loading.

The floor beams and their immediate supports shall be designed for the same load with 50% impact.

SIWALKS:

The sidewalk slab and stringers shall be designed to carry a load of 100# per square foot without impact.

RAILING:

All railing shall be designed to carry a vertical load of 100# per lineal foot and a horizontal load of 150# per lineal foot.

TRUSSES & SUB-STRUCTURE:

The trusses and sub-structure shall be designed to carry the following loads without impact:

- 60# per square foot on sidewalks.
- 60# per square foot on roadways, which corresponds approximately to a congested loading of 15 ton trucks.
- 15,000# per lineal foot on electric railway tracks.

SFN 1801503

17"

17"

11"

11"

5.8"

5.8"

8.5"

8.5"

11"

11"

17"

17"

WILSON

WIND LOADS
LONGITUDINAL FORCE
APPROACH GIRDS
REVERSALS
MILLED ENDS

WIND LOADS:

All trusses shall be designed to resist a lateral force of 500 lbs per sq ft on 1/2 times the vertical projection of any truss including the floor beams and railing, and on one-half the vertical projection of each truss in excess of 500 ft. Also 200# per lineal foot on U. Upper Deck and 300# per lineal foot on the lower deck.

LONGITUDINAL FORCE:

The structure shall be proportioned to resist a longitudinal force of 10% of the live load on the bridge, acting 4' above the floor level.

APPROACH GIRDS:

The plate girders in the east approach shall be designed for special loads specified elsewhere.

REVERSALS:

Where members are subject to reversal of stresses the member shall be designed for the larger stress and the connections for the larger plus 50% of the smaller stress.

MILLED ENDS:

In compression members 40% of the stress shall be assumed as taken by the milled ends.

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July 12, 1928

STRUCTURAL STEEL AND RIVET STRESS

See left of Letter Attached

	Carbon	Silicon
TENSION:		
Axial tension, structural members, net section	18,000	27,000
Rivets in tension, where permitted 50% of single shear values.		
AXIAL COMPRESSION:		
Axial compression, gross section	$\frac{18,000}{1 + \frac{1}{18000} \left(\frac{L}{r}\right)^2}$	$\frac{27,000}{1 + \frac{1}{18000} \left(\frac{L}{r}\right)^2}$
but not to exceed	15,000	22,500
<i>L</i> = unsupported length of member, in inches <i>r</i> = least radius of gyration, in inches.		
BENDING ON MEMBERS:		
Rolled shapes, built-up sections, and girders, net section	18,000	27,000
Pins	27,000	40,500
WEAR:		
Girder webs, gross section	12,000	18,000
Pins and shop driven rivets	15,500	
Power driven field rivets and turned bolts in reamed holes	12,000	
BEARING:		
Pins (except for rockers), steel parts in contact, and shop driven rivets	27,000	40,500
Rocker Pins	18,000	27,000
Power driven field rivets and turned bolts	24,000	
Expansion rollers, pounds per linear inch (where <i>d</i> = diameter of roller in inches)	600 <i>d</i>	
DIAGONAL TENSION:		
In webs of girders and rolled beams, at sections where maximum shear and bending occur simultaneously	18,000	27,000
NOTE: Stresses for Concrete shall follow the Specifications of the Joint Committee.		
NOTE: For special steel forgings - Class F Annealed ASTM, A18-27 - use stresses 33-1/3% greater than those for carbon steel.		

8.5"

8.5"

11"

11"

17"

17"

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8.5

8.5

8.5

8.5

11

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W. WATSON AND E. L. HARDING, ENGINEERS - CIVIL, MECH., ARCHT.

WILBUR WATSON AND ASSOCIATES
ARCHITECTS AND ENGINEERS
464 PERSPECT AVENUE
CLEVELAND

August 24, 1929.

W. E. Rabe, Chief Designing Engineer of Bridges,
Department of Highways,
Columbus, Ohio.

Dear Sir:-

As requested in your letter of August 22nd, I am mailing you today, under separate cover, two additional copies of general plan and typical section of the proposed Lorain-Central High Level Bridge. One of the plans we have had photostated and am sending same for your files.

Please note also in regard to the specification for loads and stresses that the base stress for Silicon Steel has been reduced from 27,000# to 25,000#. Other stresses and loads to remain the same.

I shall be pleased at a later date to take up with you the question of approval of the detail plans.

Very truly yours,

Fred L. Plummer

FLP/IK

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