

Details from ⑦ to intersection with 24" Scale 1"=4'-0"

Details at ⑤ Scale 1"=4'-0"

Details at ⑧ Scale 1"=4'-0"

Details at ③ Scale 1"=4'-0"

Details at ② Scale 1"=4'-0"

Details at ⑬ Scale 1"=4'-0"

Details at ⑭ Scale 1"=4'-0"

Details at ⑫ Scale 1"=4'-0"

Details at ⑪ Scale 1"=4'-0"

Details at ⑩ Scale 1"=4'-0"

Details at ⑨ Scale 1"=4'-0"

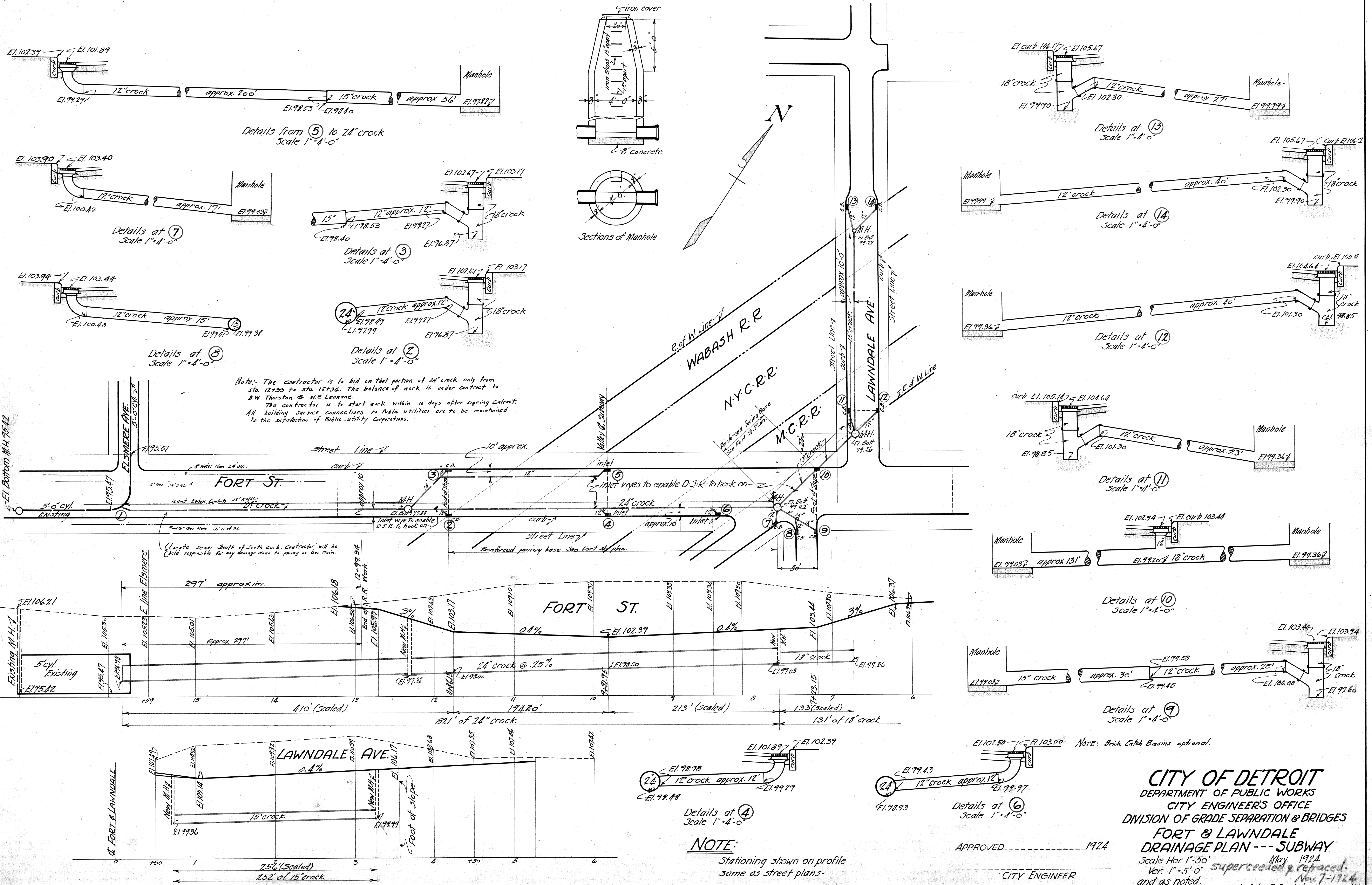
Details at ④ Scale 1"=4'-0"

Details at ⑥ Scale 1"=4'-0"

NOTE:
Stationing shown on profile same as street plans.

APPROVED _____ 1924
CITY ENGINEER

CITY OF DETROIT
DEPARTMENT OF PUBLIC WORKS
CITY ENGINEER'S OFFICE
DIVISION OF GRADE SEPARATION & BRIDGES
FORT & LAWNDALE DRAINAGE PLAN --- SUBWAY
Scale Hor. 1"=50' Nov. 1924
Ver. 1"=5'-0' Retraced & superceding former drainage plan. Nov. 7, 1924.



Details from ⑤ to 24" crock
Scale 1"=4'-0"

Details at ⑦
Scale 1"=4'-0"

Details at ⑧
Scale 1"=4'-0"

Details at ③
Scale 1"=4'-0"

Details at ②
Scale 1"=4'-0"

Sections of Manhole

Details at ⑬
Scale 1"=4'-0"

Details at ⑭
Scale 1"=4'-0"

Details at ⑫
Scale 1"=4'-0"

Details at ⑪
Scale 1"=4'-0"

Details at ⑩
Scale 1"=4'-0"

Details at ⑨
Scale 1"=4'-0"

Note: The contractor is to bid on that portion of 24" crock only from sta. 12+35 to sta. 15+36. The balance of work is under contract to J.W. Thurston & W.E. Lennane.
The contractor is to start work within 10 days after signing contract.
All building service connections to public utilities are to be maintained to the satisfaction of Public Utility Corporations.

Locate sewer south of south curb. Contractor will be held responsible for any damage done to paving or gas main.

NOTE: Brick Catch Basins optional.

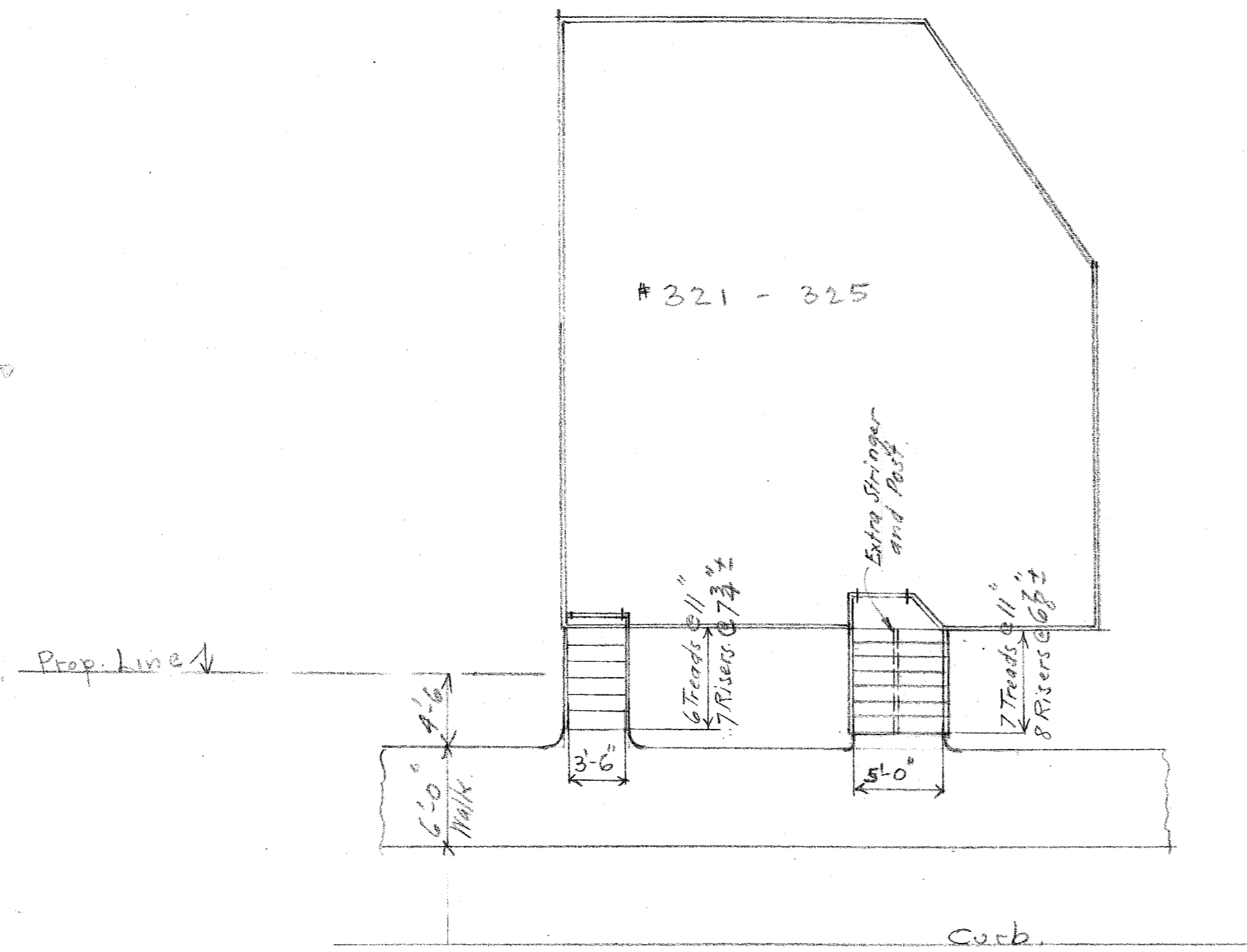
Details at ④
Scale 1"=4'-0"

Details at ⑥
Scale 1"=4'-0"

NOTE: Stationing shown on profile same as street plans.

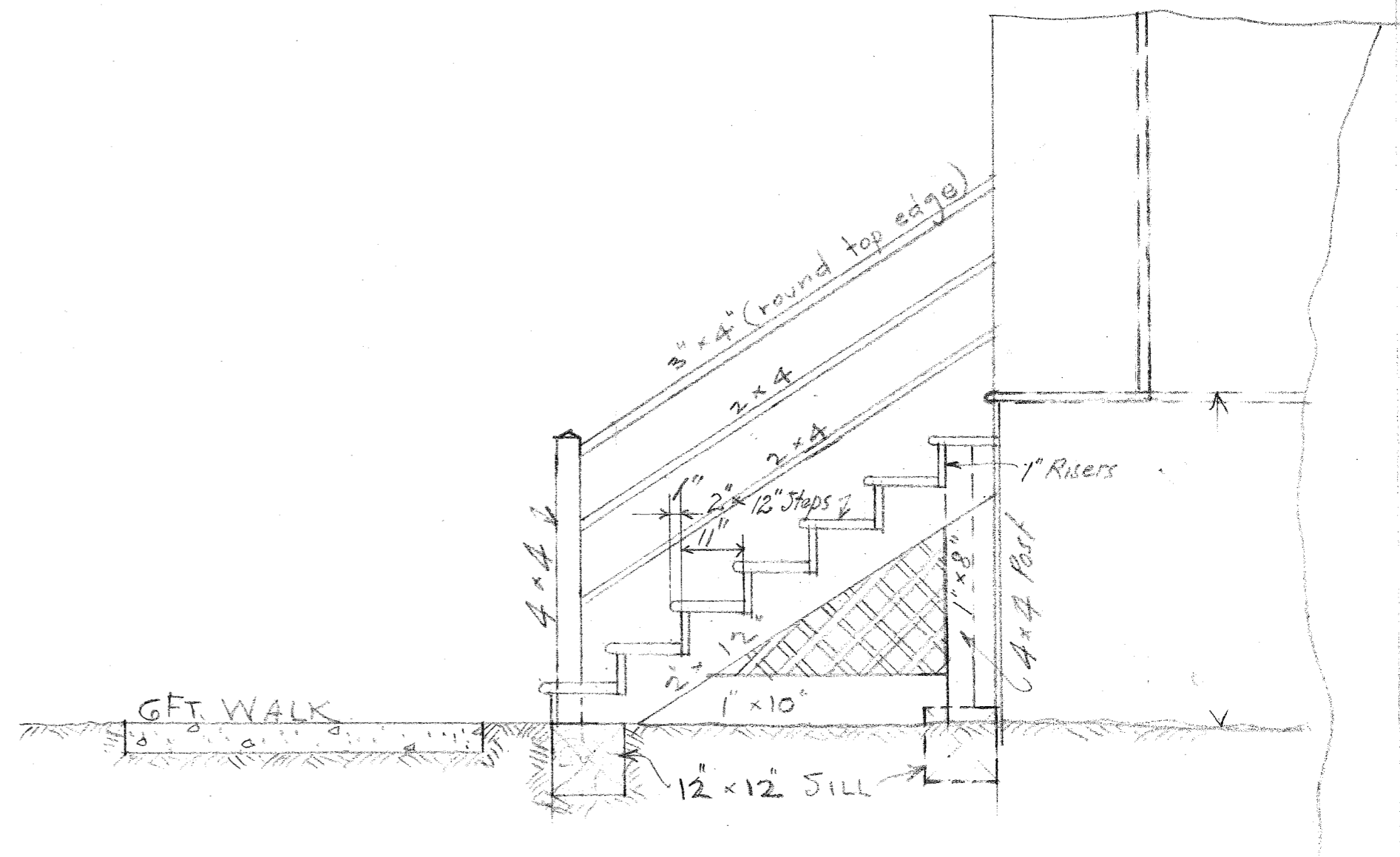
APPROVED _____ 1924
CITY ENGINEER

CITY OF DETROIT
DEPARTMENT OF PUBLIC WORKS
CITY ENGINEERS OFFICE
DIVISION OF GRADE SEPARATION & BRIDGES
FORT & LAWNDALE
DRAINAGE PLAN --- SUBWAY.
Scale Hor. 1"=50'
Ver. 1"=5'-0"
May 1924
superceded & retraced.
Nov. 7-1924
checked by R.S. 7/1/24. AN



LAWNDALE AVE.

PLAN
1/8" = 1 FT.



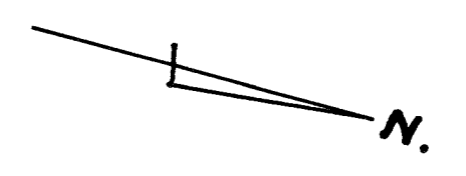
TYPICAL ELEVATION FOR ALL STAIRS
1/2" = 1'-0"

CITY OF DETROIT
DIV. OF GRADE SEPARATION & BRIDGES
STEPS TO HOUSE & STORE
#321-25, LAWNDALE AVE.
Jan. 8th 25

by R.S.

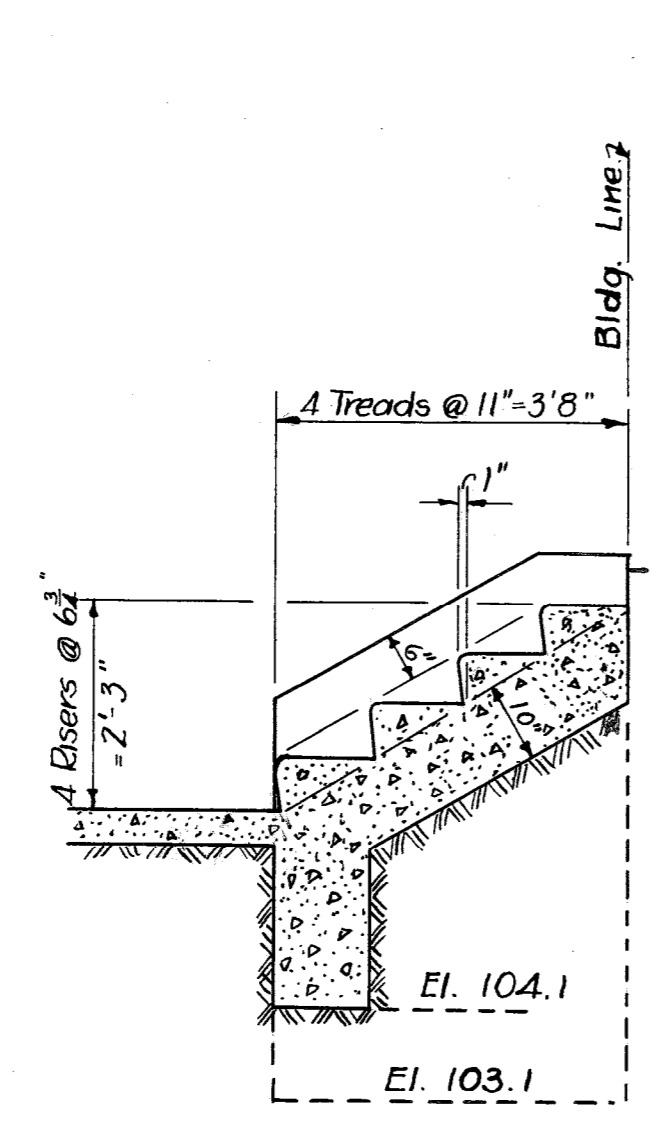
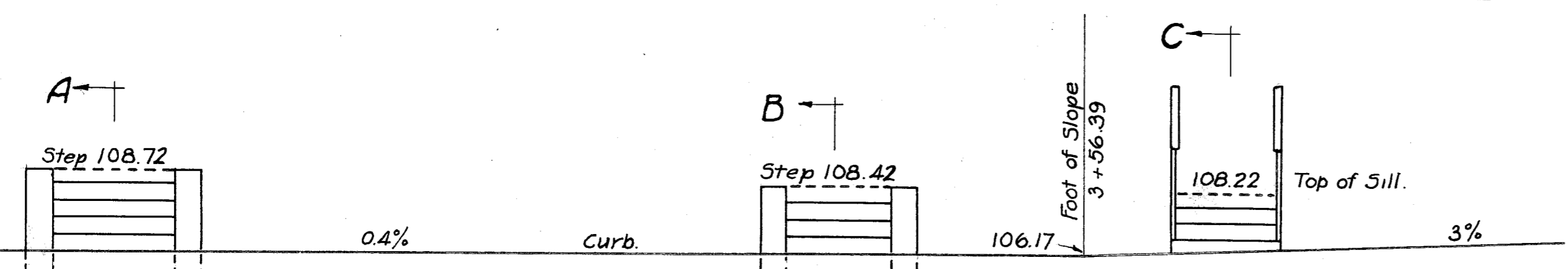
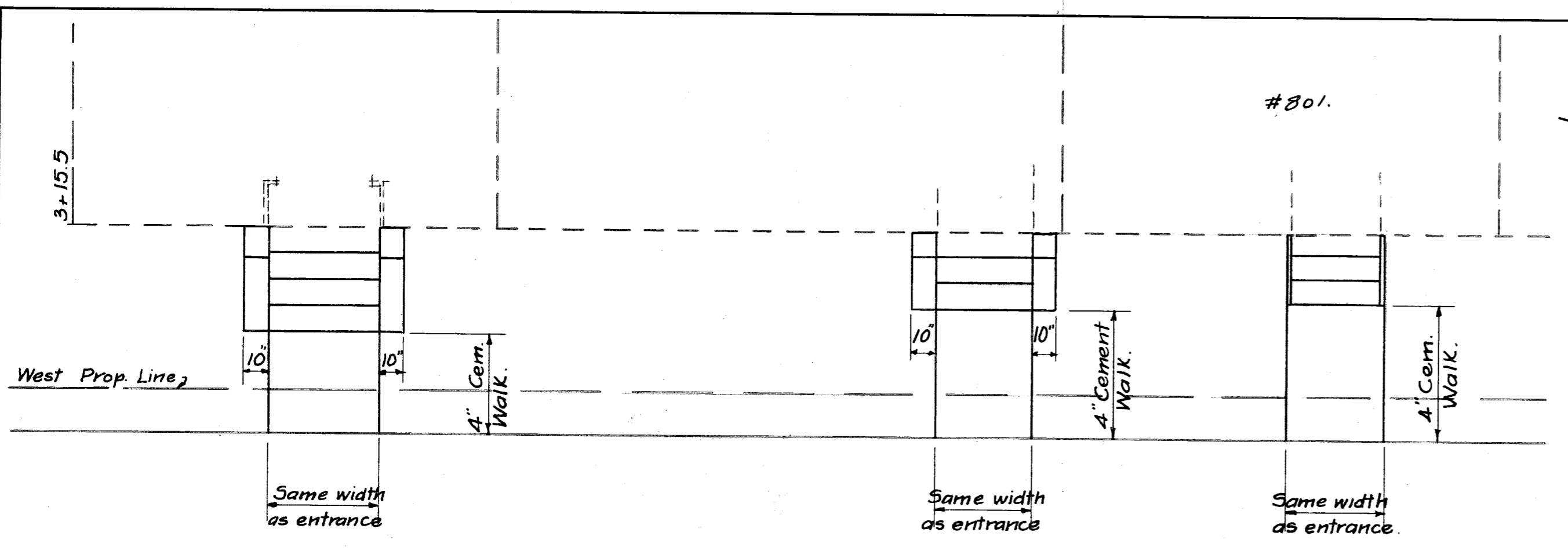
Owner.

#801.

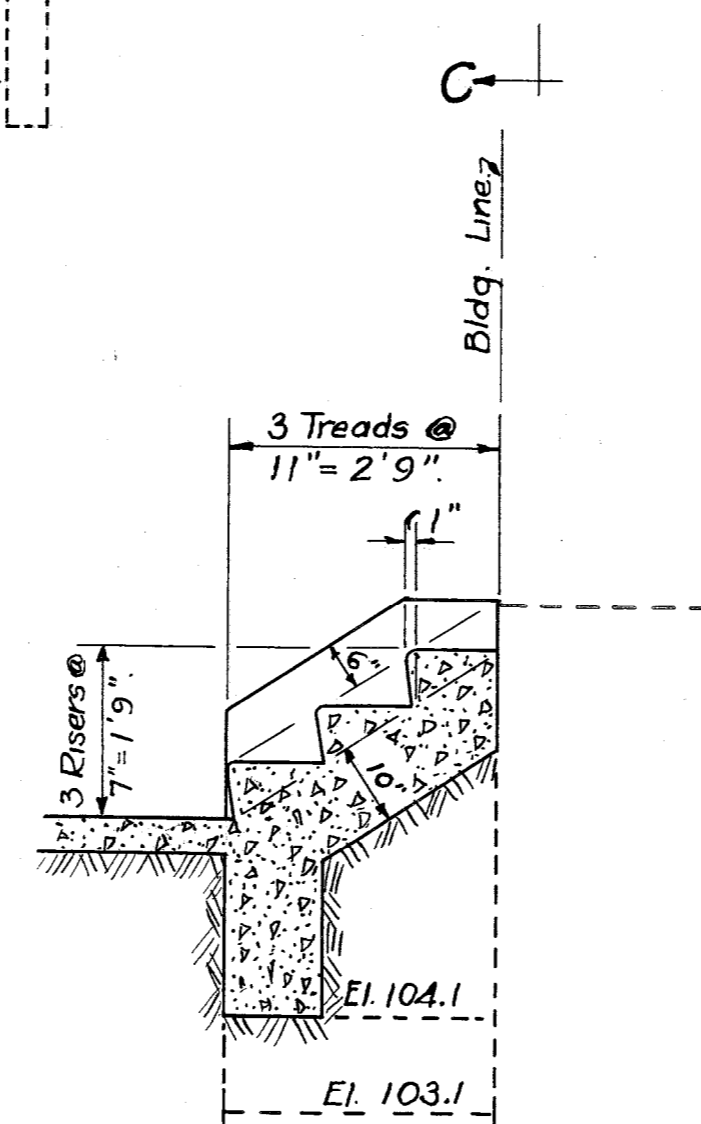


GENERAL NOTES.

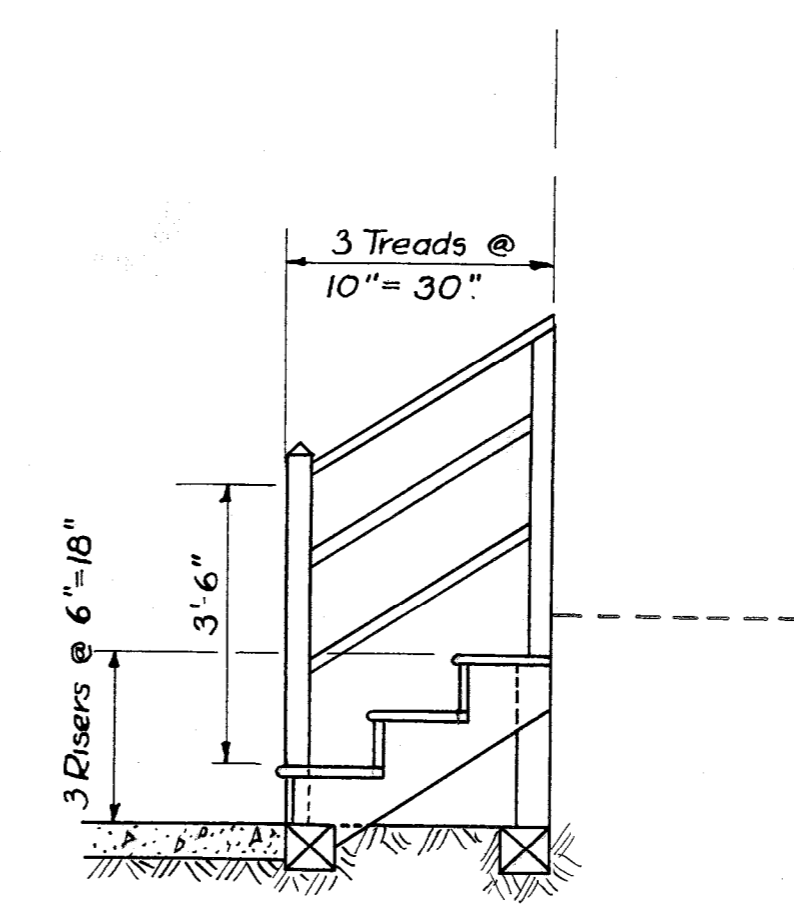
All concrete mix 1:2:4.
 All exposed corners rounded off or chamfered 1".
 All walks to be 4" thick and same width as stairs.
 Wooden steps in front of #801 Lawndale Ave. to have:
 8"X6" Sills.
 2"X10" Stringers.
 1" Risers.
 2"X12" Treads.
 Railing: 4"X4" Posts.
 3"X4" Top rail (Top edge rounded)
 2"X4" Rails laid flat.
 Paint: Two coats.



SECTION A-A.



SECTION B-B.



SECTION C-C.

CITY OF DETROIT

DEPARTMENT OF PUBLIC WORKS
 OFFICE OF CITY ENGINEER
 DIVISION OF GRADE SEPARATION & BRIDGES

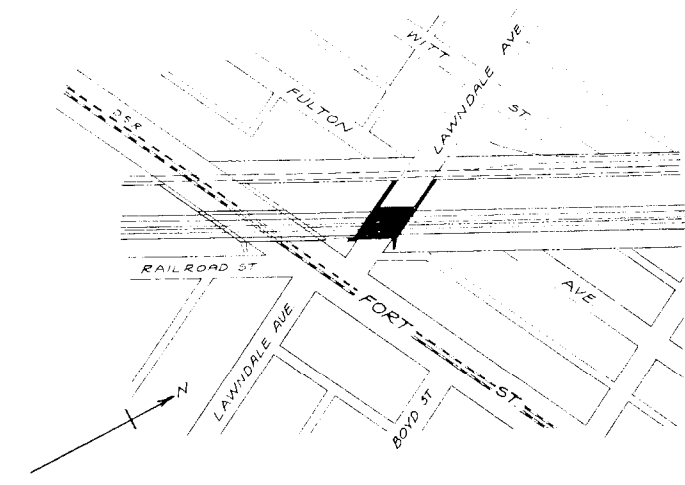
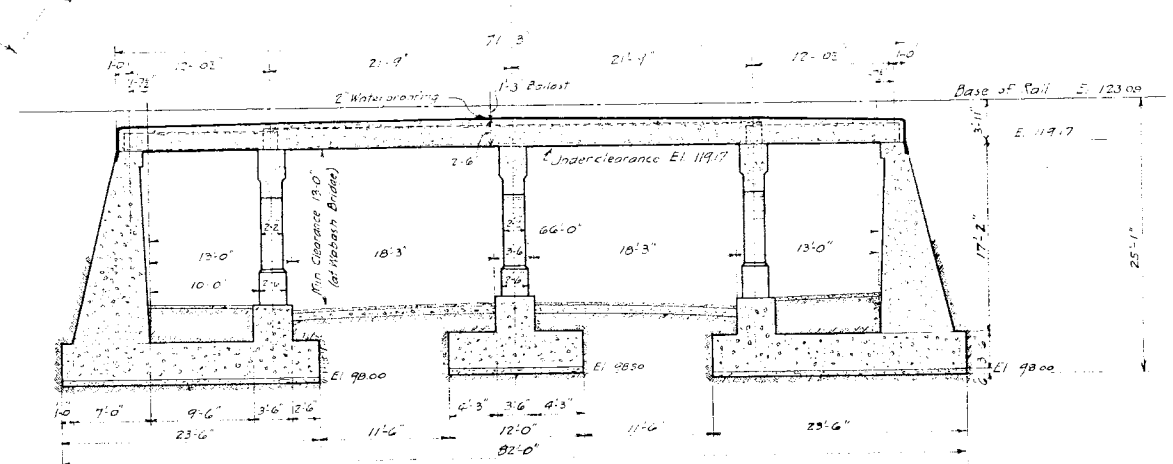
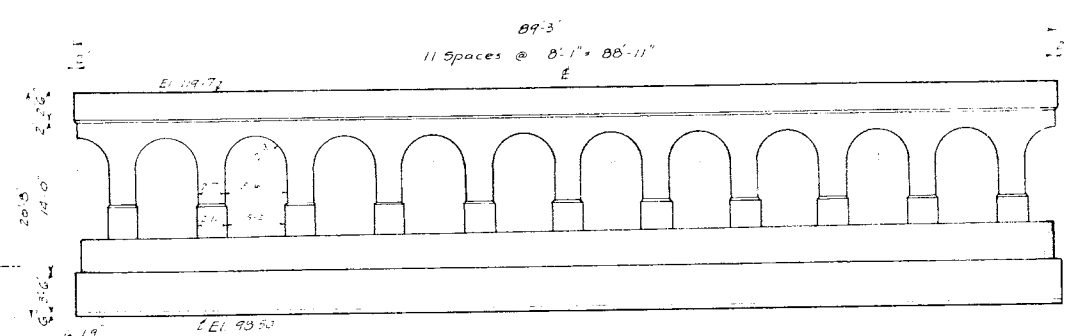
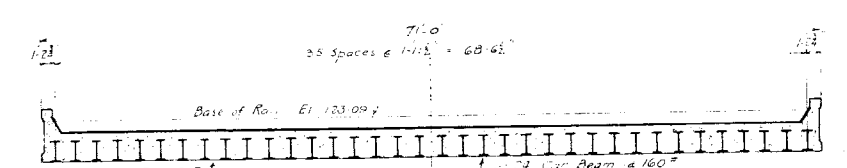
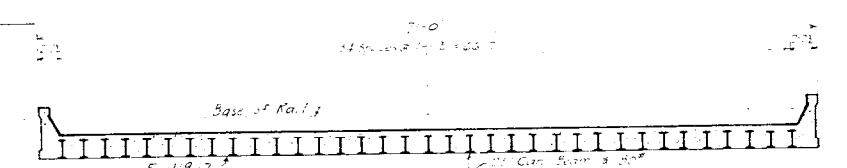
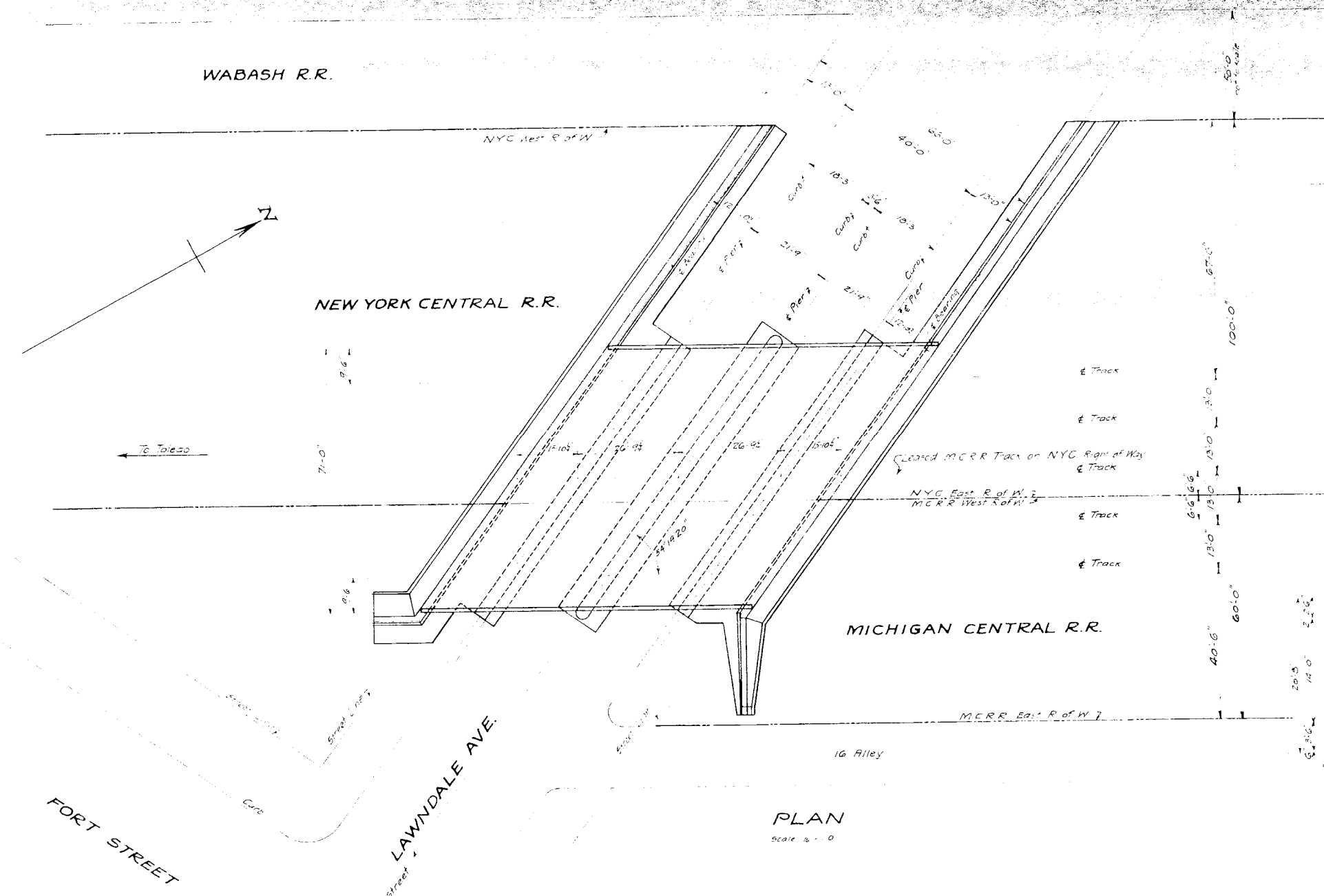
**STEPS TO HOUSES
 WEST SIDE OF LAWNDALE NORTH OF WABASH R.R.**

SCALES: $\frac{1}{2}$ " & $\frac{1}{4}$ " = 1'0"

MARCH 1925

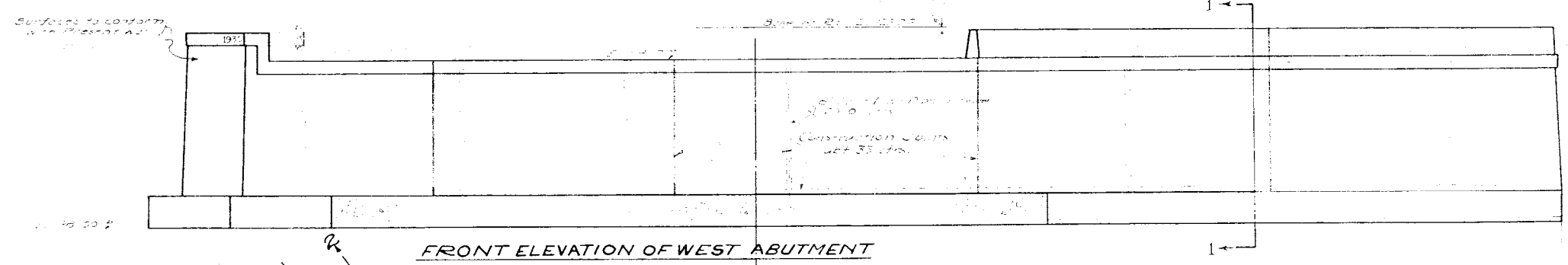
Made By H.T.J.
 Chkd.

Owner.

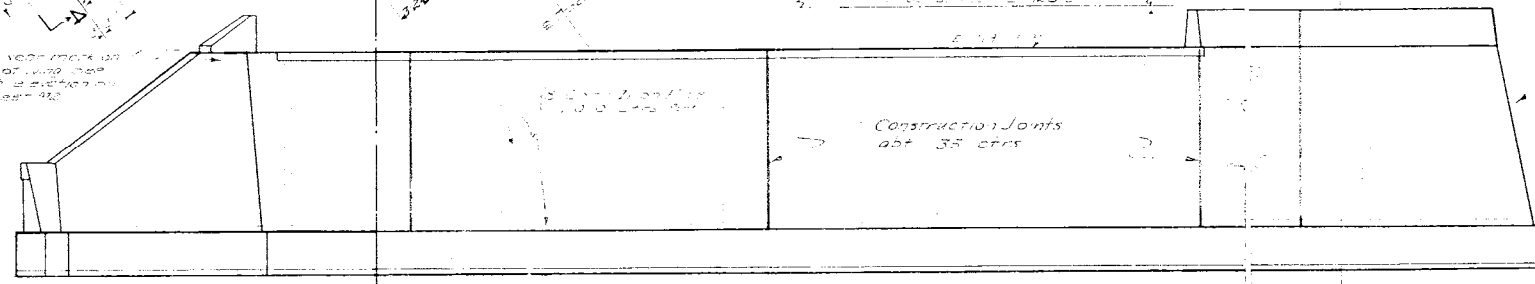
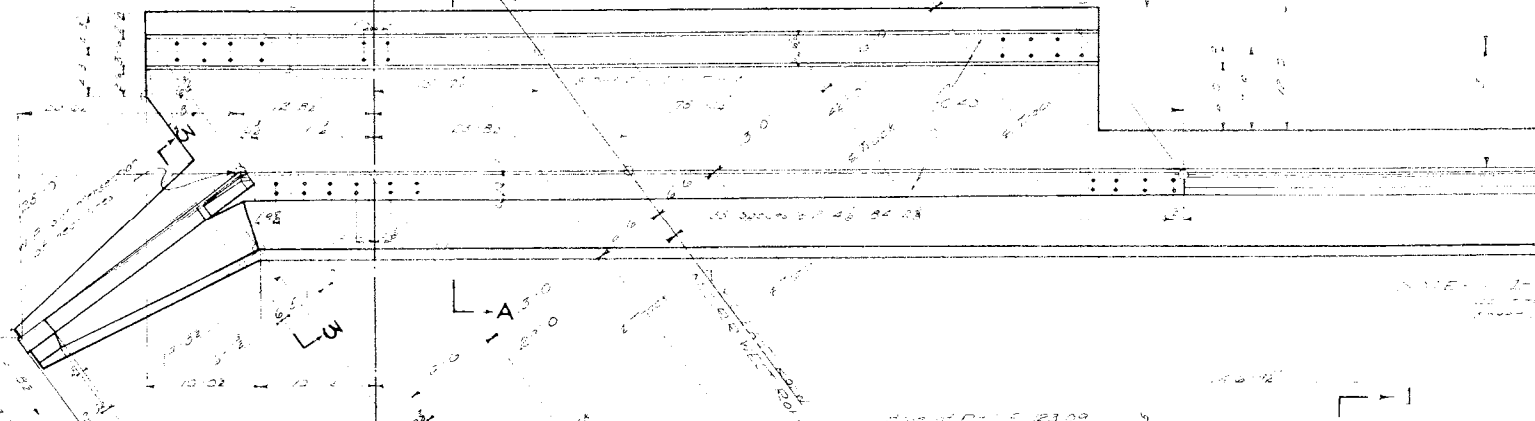
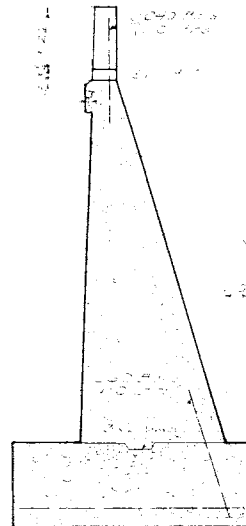
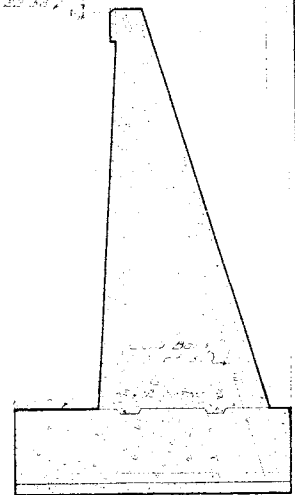
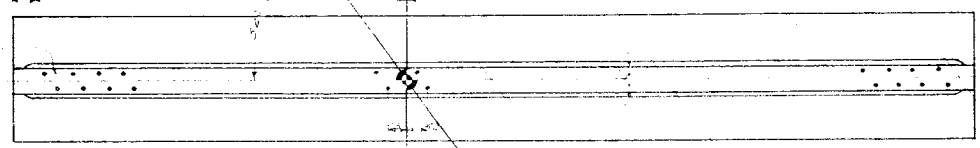
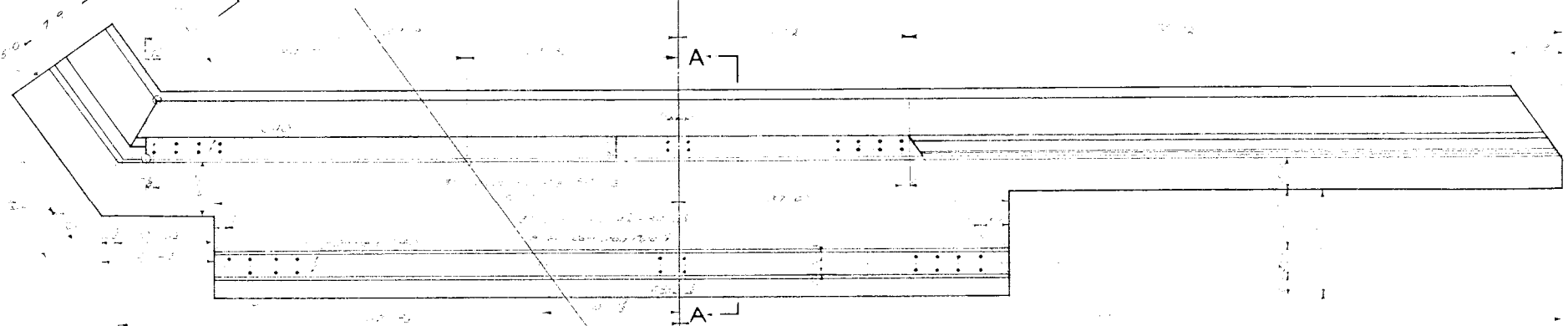
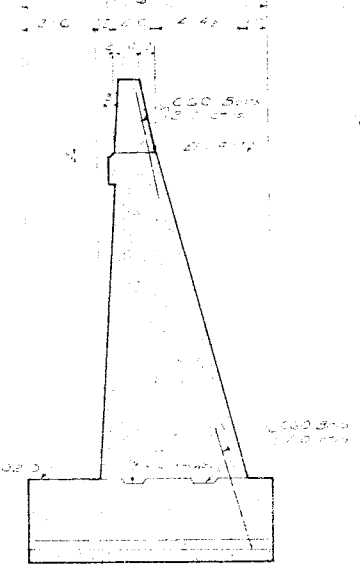


Note - NYC Lines Specifications for Steel R.R. Bridges - 1917
E₇₀ Loading - Full Impact

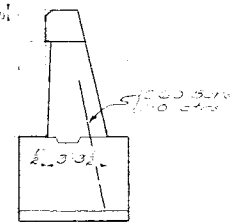
REVISIONS		M.C.R.R. - TOLEDO DIV.	
1	As shown	BRIDGE 493 LAWDALE AVE. SUBWAY	
		GENERAL DRAWING	
SCALE:	8 1/2" = 1 FOOT	DRAWN BY	J.B. 12-22-1921
APPROVED		CHECKED BY	C.C.C. 12-23-1921
ISSUE NO.		TRACED BY	J.B. 12-25-1921
DATE	1921	BRIDGE ENGINEER	SHEET 1 OF 1



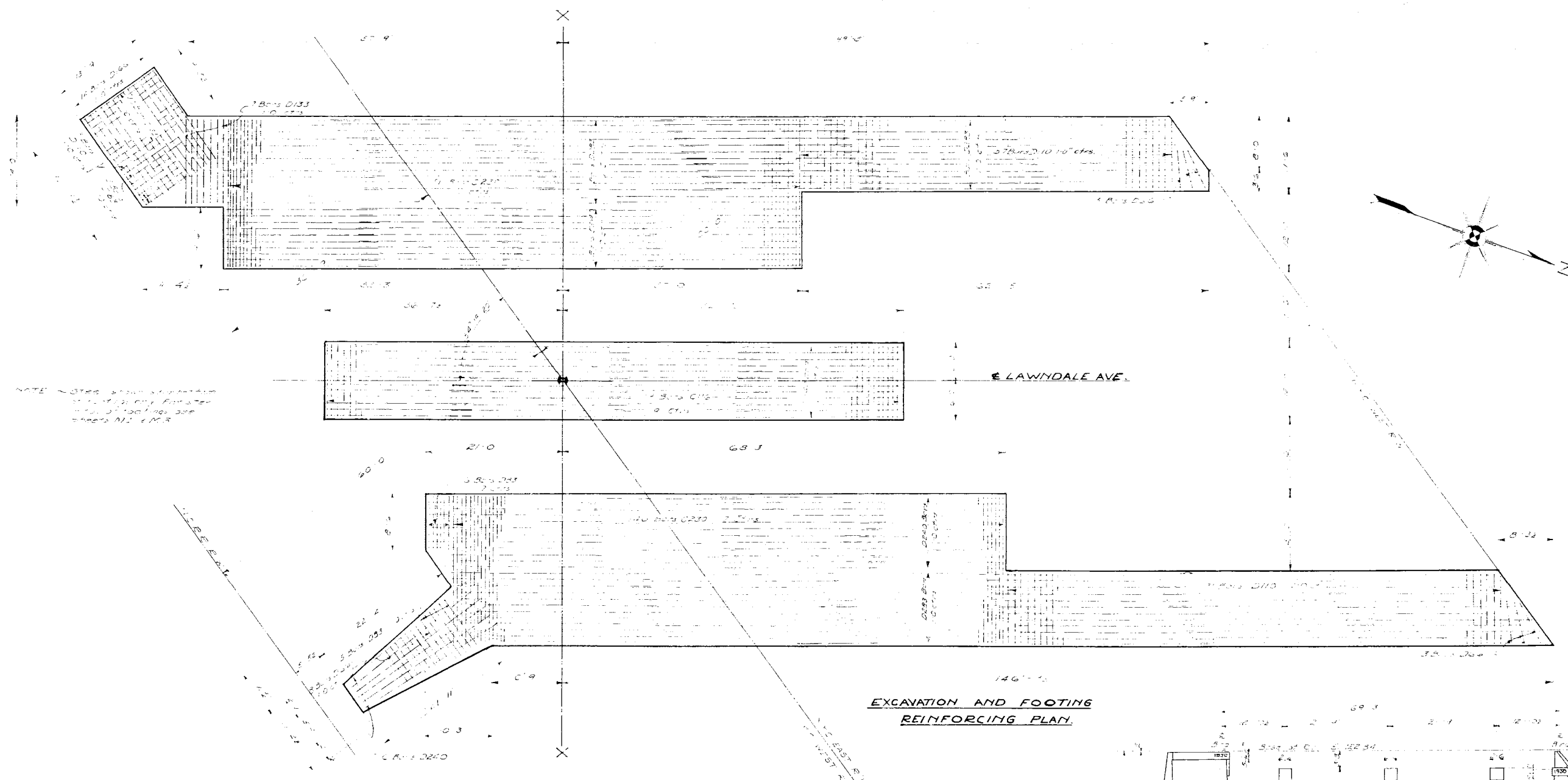
FRONT ELEVATION OF WEST ABUTMENT



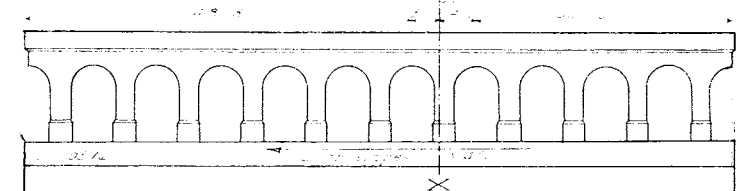
REAR ELEVATION OF EAST ABUTMENT



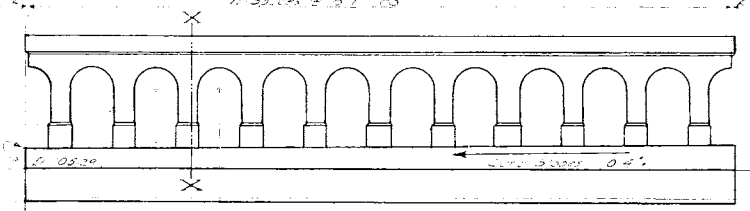
REVISIONS		M.C.R.R.-TOLEDODIV.	
		BRIDGE 493 LAWDALE AVE. SUBWAY	
		ABUTMENTS AND SUBSTRUCTURE PLAN	
		SCALE 8" = 1' FOOT	DRAWN BY J.M.S. Jan. 19, 30
		APPROVED	CHECKED BY J.E.K. 4.11.1930
			TRACED BY J.C. 4.11.1930
ISSUE NO / DATE		BRIDGE ENGINEER	SHEET M.L. OF 4
4-17	1930		



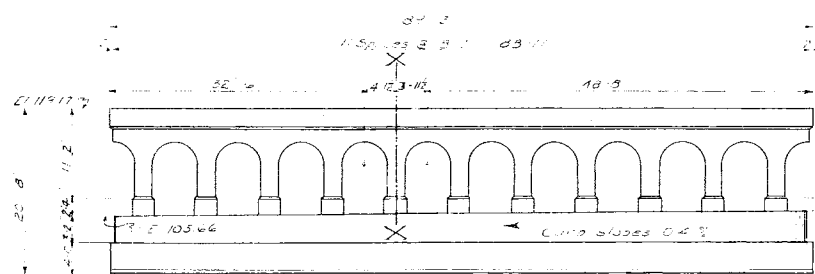
EXCAVATION AND FOOTING REINFORCING PLAN.



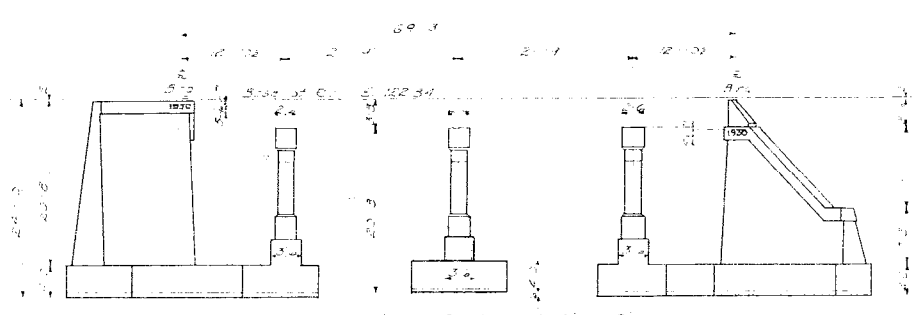
ELEVATION OF SOUTHWEST PIER
(Looking South West)



ELEVATION OF NORTHEAST PIER
(Looking South West)



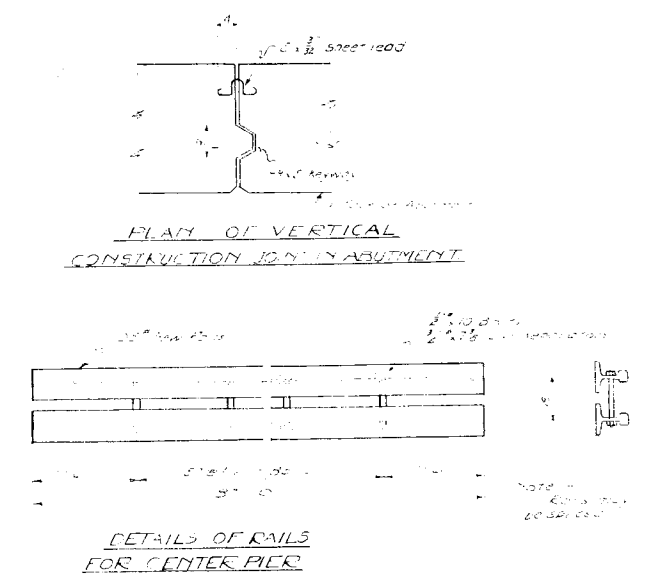
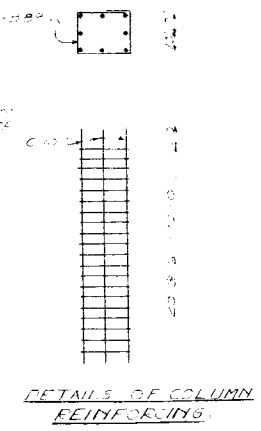
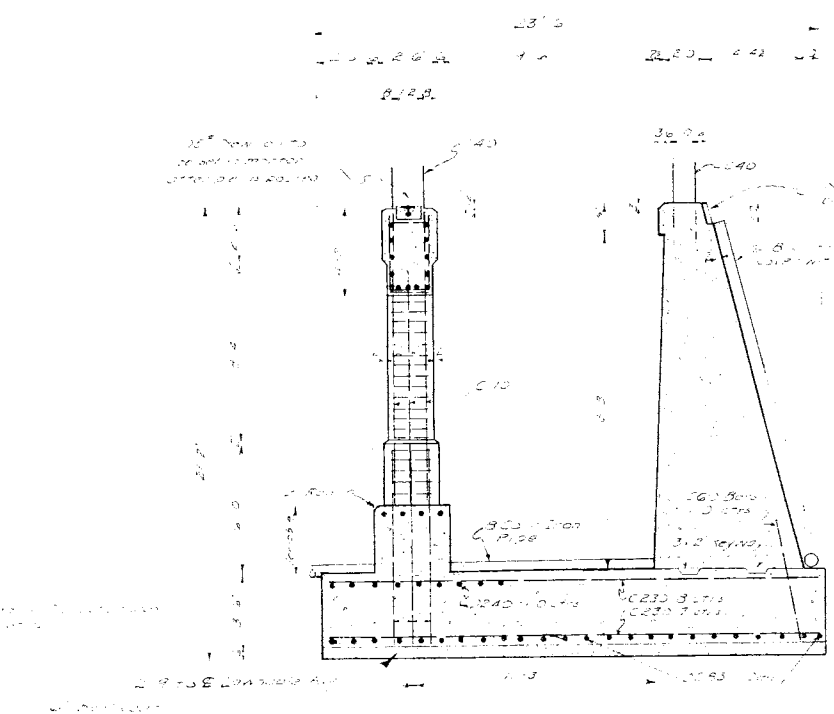
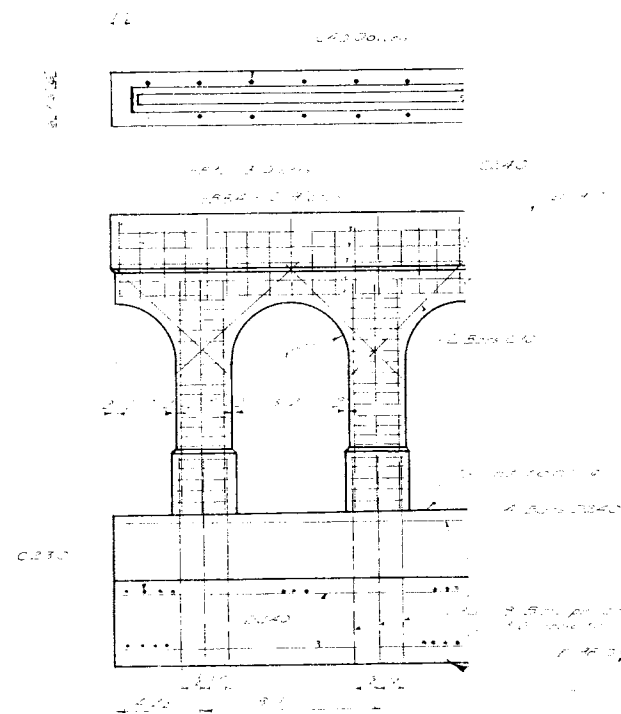
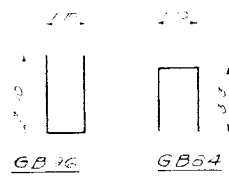
ELEVATION OF CENTER PIER
(Looking South West)



ELEVATION OF SOUTH END.

Specifications on Sheet M3

REVISIONS		M.C.R.R.-TOLEDO-DIV.	
		BRIDGE 493 LAWDALE AVE. SUBWAY.	
		FOOTING PLAN AND PIER ELEVATIONS	
SCALE 1/4" = 1 FOOT	DRAWN BY M.S. Feb. 1930	CHECKED BY J.E.K. 4-11-1930	
APPROVED		TRACED BY A.C. 4-11-1930	
ISSUE NO. 1	DATE 4-17-1930	BRIDGE ENGINEER	SHEET M2 OF 4



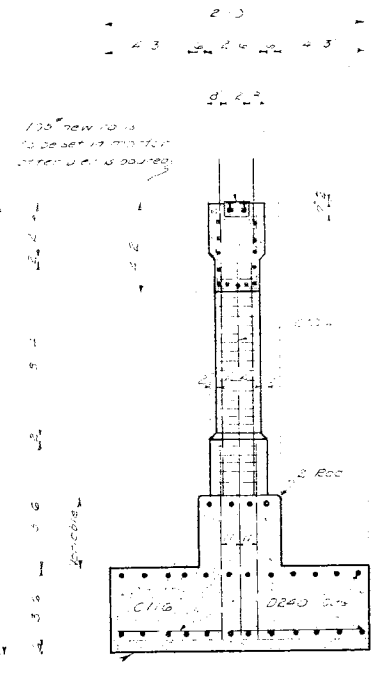
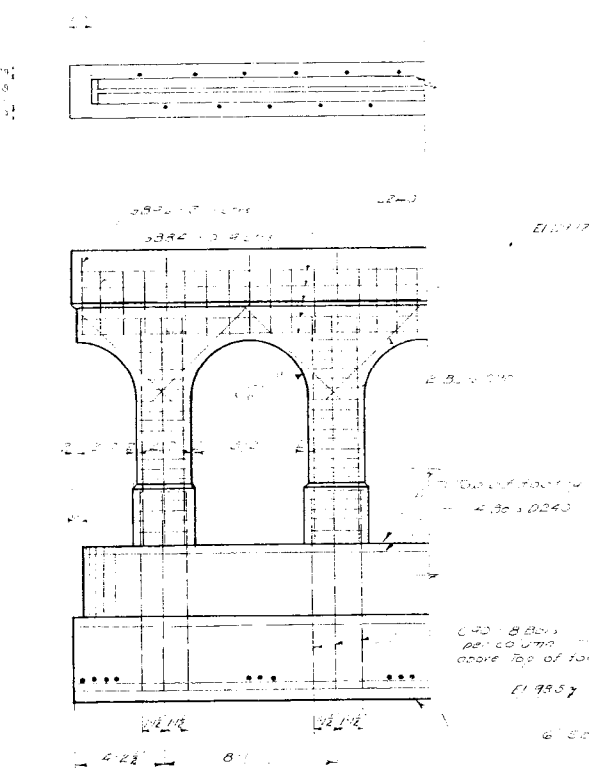
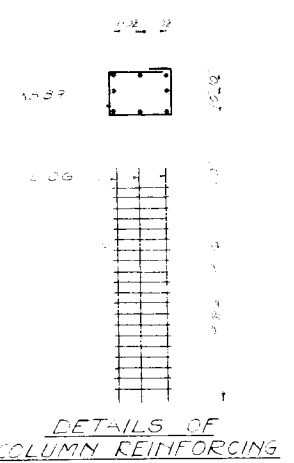
GENERAL NOTES

1. All dimensions are in feet and inches unless otherwise specified.

2. Reinforcement bars shall be furnished in accordance with the specifications of the American Institute of Steel Construction, Inc., and shall be furnished in accordance with the specifications of the American Concrete Institute, Inc.

3. All reinforcement bars shall be furnished in accordance with the specifications of the American Institute of Steel Construction, Inc., and shall be furnished in accordance with the specifications of the American Concrete Institute, Inc.

4. All reinforcement bars shall be furnished in accordance with the specifications of the American Institute of Steel Construction, Inc., and shall be furnished in accordance with the specifications of the American Concrete Institute, Inc.



DESCRIPTION	UNITS	M.Y.C.	M. F. C.			TOTALS
			ON M.C.	ON T.C.	ON N.C.	
Class B Concrete	cu yd					
Footings						
East Abutment		257.0	47.0	32	179	436
West Abutment		250.0	52.0	32	184	440
Center Pier		78.5	72.5	32	104.5	177
Class D Concrete	cu yd					
East Abutment		34.0	20.0	3.0	23	57
West Abutment		34.0	20.0	3.0	23	57
Center Pier		8.5	8.5	3.0	11.5	20
Total Class B Concrete						2238 cu yd
Total Class D Concrete						34
Reinforcing Steel	Pounds	45,000	30,000	10,000	40,000	82,000
5" dia. Iron Pipe	cu ft	370	330	30	300	450
4" dia. Iron Pipe	cu ft	2	2		2	4
Tees for Drain Pipe	cu ft	2	2		2	4
45° Ells	cu ft	2	2		2	4
2" x 2" Joists	cu ft	23	23	12	35	58
2" x 4" Joists	cu ft	23	23	12	35	58
Sheet Pile	sq ft	102	34		34	136
Water-proofing	sq ft	4800	1750		1750	6550
105° Pipe	lbs	5000	5000	2200	7200	12,200

SUBSTRUCTURE BARS				LOCATION
NO.	SIZE	LENGTH	WEIGHT	
1087	2"	26'	6.6	Columns in Abutment
1088	2"	16'	5.3	Columns in Abutment
1089	2"	11.0'	3.0	Columns in Abutment
1090	2"	16.6'	5.3	Columns in Abutment
1091	2"	11.0'	3.0	Columns in Abutment
1092	2"	23.0'	5.3	Columns in Center Pier
1093	2"	23.0'	5.3	Columns in Center Pier
1094	2"	23.0'	5.3	Columns in Center Pier
1095	2"	23.0'	5.3	Columns in Center Pier
1096	2"	23.0'	5.3	Columns in Center Pier
1097	2"	23.0'	5.3	Columns in Center Pier
1098	2"	23.0'	5.3	Columns in Center Pier
1099	2"	23.0'	5.3	Columns in Center Pier
1100	2"	23.0'	5.3	Columns in Center Pier
1101	2"	23.0'	5.3	Columns in Center Pier
1102	2"	23.0'	5.3	Columns in Center Pier
1103	2"	23.0'	5.3	Columns in Center Pier
1104	2"	23.0'	5.3	Columns in Center Pier
1105	2"	23.0'	5.3	Columns in Center Pier
1106	2"	23.0'	5.3	Columns in Center Pier
1107	2"	23.0'	5.3	Columns in Center Pier
1108	2"	23.0'	5.3	Columns in Center Pier
1109	2"	23.0'	5.3	Columns in Center Pier
1110	2"	23.0'	5.3	Columns in Center Pier
1111	2"	23.0'	5.3	Columns in Center Pier
1112	2"	23.0'	5.3	Columns in Center Pier
1113	2"	23.0'	5.3	Columns in Center Pier
1114	2"	23.0'	5.3	Columns in Center Pier
1115	2"	23.0'	5.3	Columns in Center Pier
1116	2"	23.0'	5.3	Columns in Center Pier
1117	2"	23.0'	5.3	Columns in Center Pier
1118	2"	23.0'	5.3	Columns in Center Pier
1119	2"	23.0'	5.3	Columns in Center Pier
1120	2"	23.0'	5.3	Columns in Center Pier
1121	2"	23.0'	5.3	Columns in Center Pier
1122	2"	23.0'	5.3	Columns in Center Pier
1123	2"	23.0'	5.3	Columns in Center Pier
1124	2"	23.0'	5.3	Columns in Center Pier
1125	2"	23.0'	5.3	Columns in Center Pier
1126	2"	23.0'	5.3	Columns in Center Pier
1127	2"	23.0'	5.3	Columns in Center Pier
1128	2"	23.0'	5.3	Columns in Center Pier
1129	2"	23.0'	5.3	Columns in Center Pier
1130	2"	23.0'	5.3	Columns in Center Pier
1131	2"	23.0'	5.3	Columns in Center Pier
1132	2"	23.0'	5.3	Columns in Center Pier
1133	2"	23.0'	5.3	Columns in Center Pier
1134	2"	23.0'	5.3	Columns in Center Pier
1135	2"	23.0'	5.3	Columns in Center Pier
1136	2"	23.0'	5.3	Columns in Center Pier
1137	2"	23.0'	5.3	Columns in Center Pier
1138	2"	23.0'	5.3	Columns in Center Pier
1139	2"	23.0'	5.3	Columns in Center Pier
1140	2"	23.0'	5.3	Columns in Center Pier
1141	2"	23.0'	5.3	Columns in Center Pier
1142	2"	23.0'	5.3	Columns in Center Pier
1143	2"	23.0'	5.3	Columns in Center Pier
1144	2"	23.0'	5.3	Columns in Center Pier
1145	2"	23.0'	5.3	Columns in Center Pier
1146	2"	23.0'	5.3	Columns in Center Pier
1147	2"	23.0'	5.3	Columns in Center Pier
1148	2"	23.0'	5.3	Columns in Center Pier
1149	2"	23.0'	5.3	Columns in Center Pier
1150	2"	23.0'	5.3	Columns in Center Pier

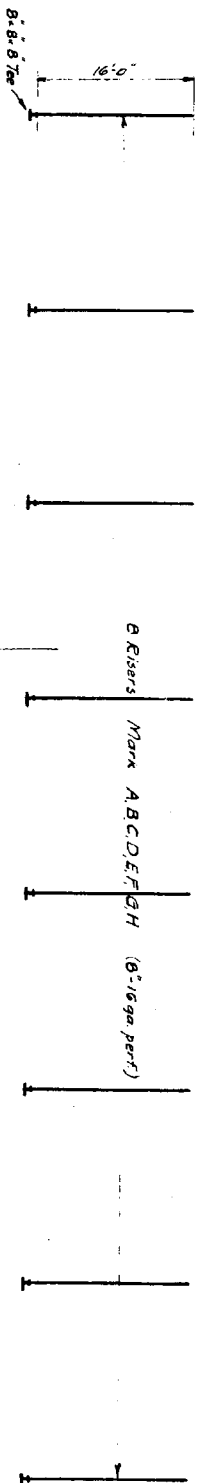
REVISIONS

M.C.R.R.-TOLEDO-DIV.
BRIDGE 493 LAWINDALE AVE
PIERS AND DETAILS

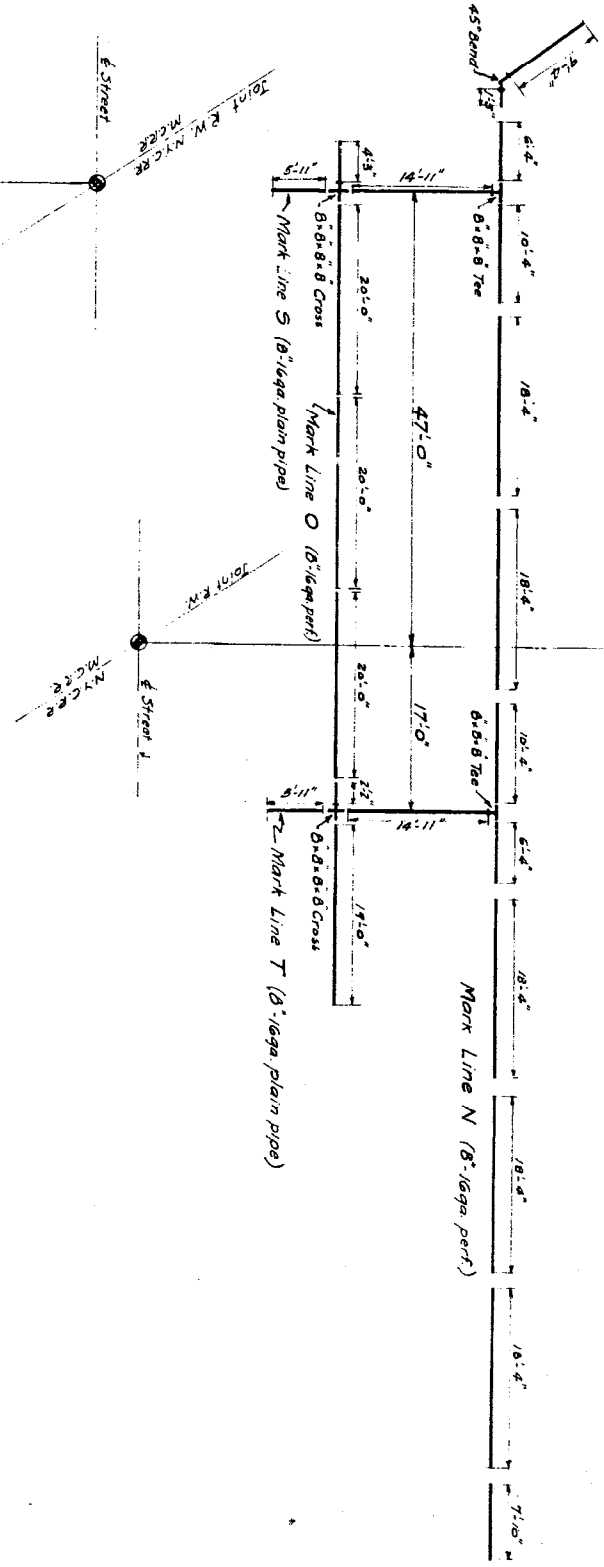
SCALE: 1" = 10'
DRAWN BY: J.M.S. Feb 1930
CHECKED BY: J.E.K. 5.6.1930
TRACED BY: J.E.K. 2.22.1930

BRIDGE ENGINEER
SHEET 113 OF 14

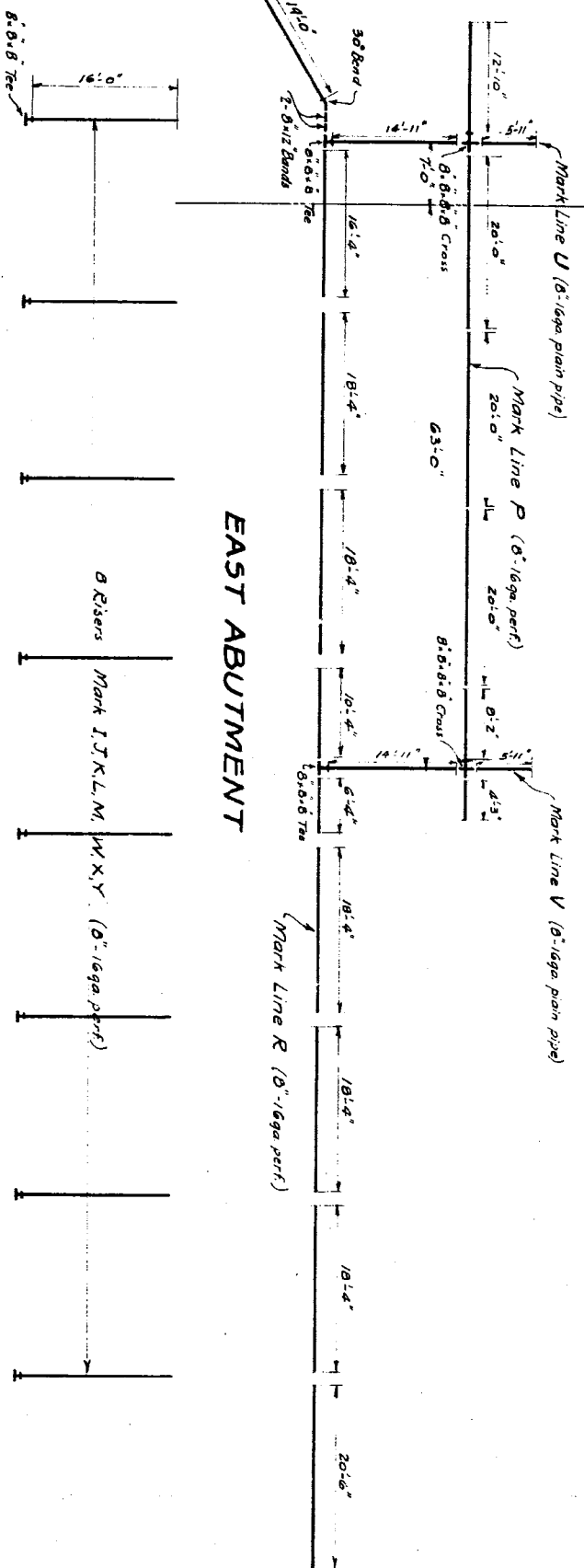
Note: Quantities for steel with 33% A.Y.C. increased to 40% and shown in separate column and changed to M.C.P.P. Out of 930 cu ft of 8" cast iron drain pipes 350 cu ft should be perforated.



WEST ABUTMENT



EAST ABUTMENT



Line N	1 Reg'd	8" x 16ga perf
O	"	"
P	"	"
R	"	"
S	"	8" x 16ga plain pipe
T	"	"
U	"	"
V	"	"

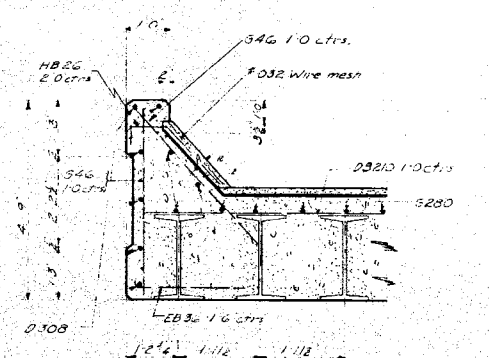
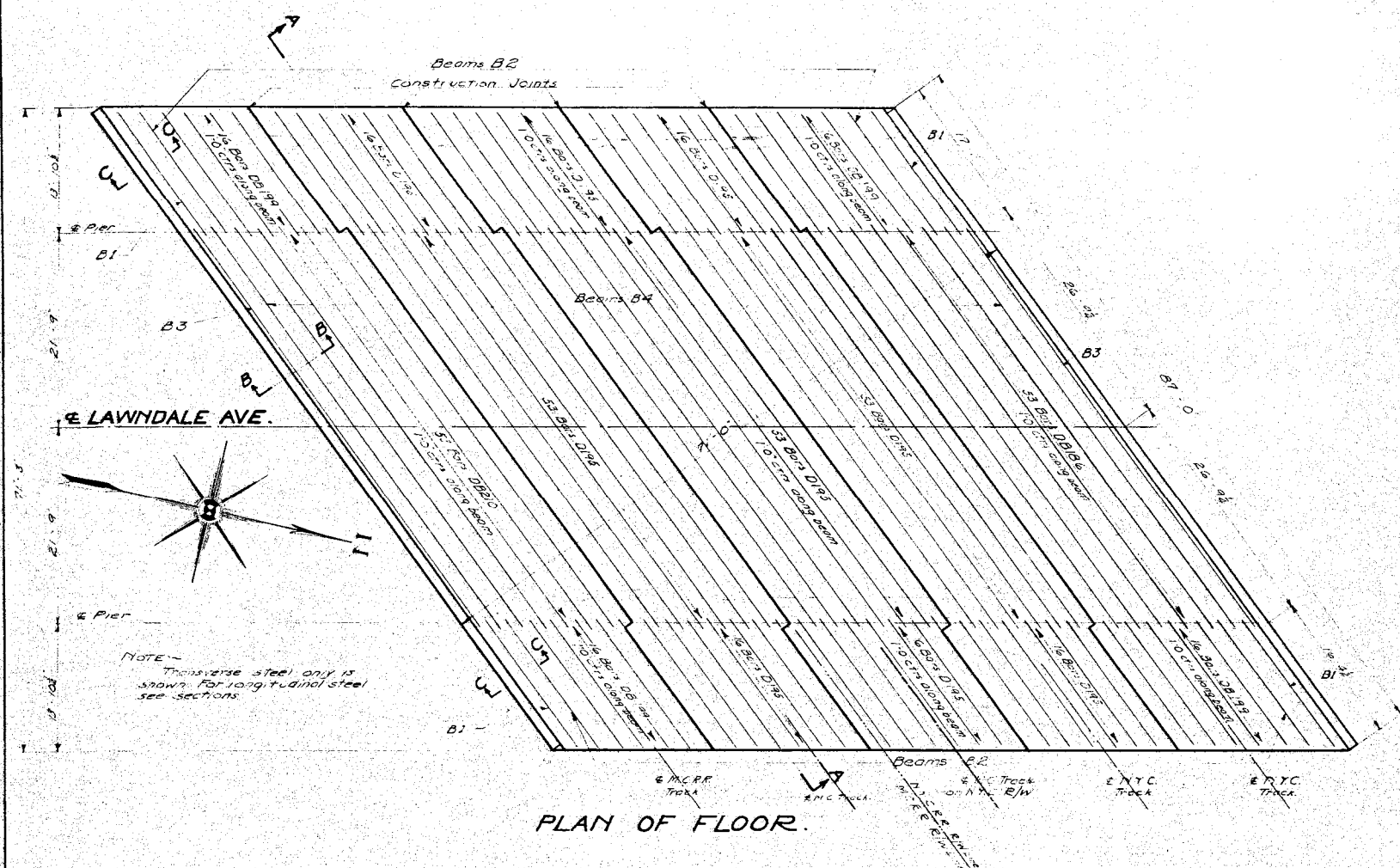
Risers A,B,C,D,E,F,G,H,I,J,K,L,M,N,X,Y - 16 Reg'd 8" x 16ga perf
 Fittings for above
 1- 45° Bend
 20- 8" x 8" Tee
 4- 8" x 8" x 8" Crosses
 24- End Caps 8"
 54- 8" Reg Bands
 2- 8" x 1/2" Bands

Note: Fittings to be riveted to pipe where no open spaces are shown.

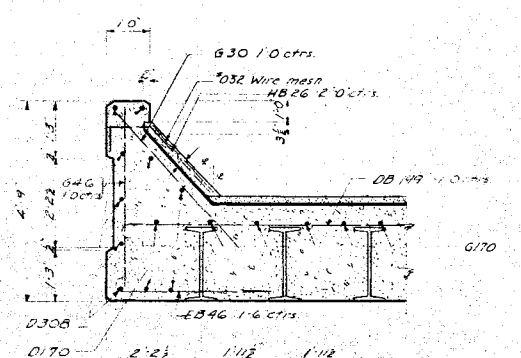
M.C.R.R. - TOLEDO DIV.
 BRIDGE 493 LAWNDALE AVE.
 DRAIN PIPES

SCALE: 3/8" = 1 FOOT
 DRAWN BY: G.P.S. 7-7-1930
 CHECKED BY: G.W.C. 7-8-1930
 TRACED BY: G.M.S.K. 7-8-1930
 REVISED

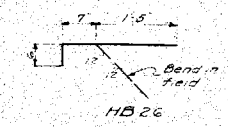
DESIGN ENGINEER SHEET D1 OF 1



SECTION B.B.



SECTION C.C.



BENT BAR DETAILS

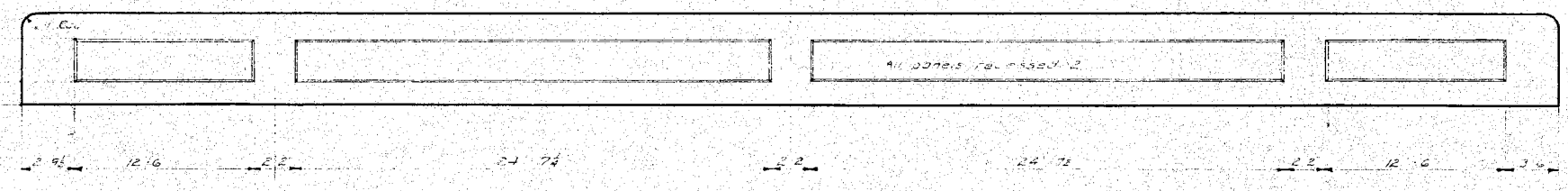
STRUCTURAL STEEL		
MARK	NO	DESCRIPTION
B1	4	2 CB @ 80" x 16 9/4"
B2	66	"
B3	4	24 CB @ 160" x 27 4/8"
B4	68	"
D	72	R 5 1/2" x 10 1/4"
D	216	Mark Est. 2 1/2" x 10 1/4"
TOTAL WEIGHT = 409,700*		

GENERAL NOTES:
 Concrete - Class A 4.75 gals. of water per sack of cement and 9.25 sacks of cement per cu. yd. of concrete. N.Y.C. Specifications for Concrete Masonry. Top surfaces to have a steel wire mesh.
 All exposed surfaces to be rubbed as soon as forms are removed. In no case shall there be wearing rubbing surfaces. Bevel all exposed corners & unless otherwise shown.
 Reinforcing Bars shall be securely wired together at each intersection. At splices they shall lap for a length of 40 diameters and be securely wired. All bars shall be deformed.
 Waterproofing - as per N.Y.C. Lines Specifications for Waterproofing Floors of Railroad Bridges 1925. That to be used as directed by Engineer.
 No steel shall be on beams.
 Steelwork - N.Y.C. Lines 1917 Specifications for Steel Railway Bridges. Open holes to be punched full size. Bolt splice plates in place for shipment.

NOTE -
 Transverse steel only is shown. For longitudinal steel see sections.

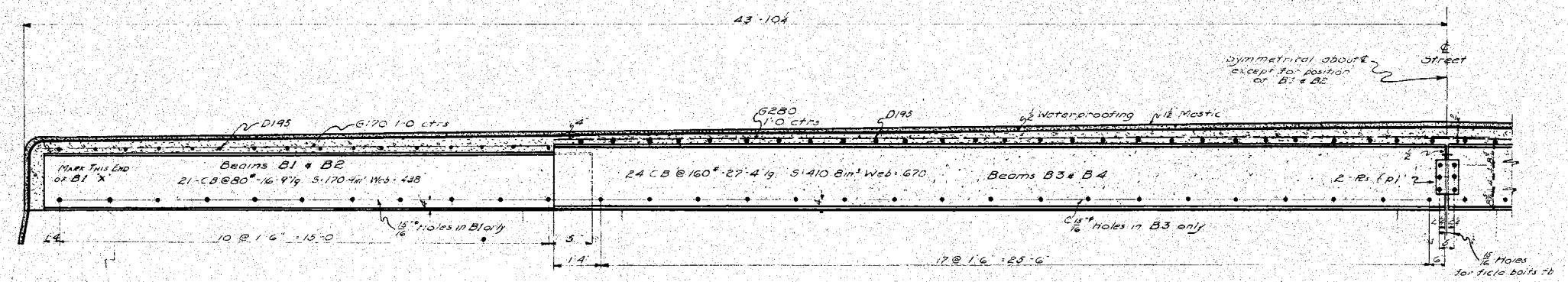
PLAN OF FLOOR.

DESCRIPTION	UNITS	M.C.R.R.			TOTALS
		NYC	OP. M.C. R.W.	NYC 5/4	
Class B Concrete	cu yds	228	228	95	551
Structural Steel	lbs	167,600	167,600	74,500	409,700
Reinforcing Steel	lbs	8860	8860	2100	10,820
#32 Wire Mesh - 18" x 18"	sq yds	87	87	87	172
Mastic & Trak	sq ft	2325	2325	1200	3745
Membrane	sq ft	2780	2780	1130	3950



ELEVATION OF FASCIA GIRDER.

NOTE -
 Quantities of floor within 18" NYC to be used for M.C. and shown in separate column and enlarged to M.C.R.



SECTION AA.

BILL OF BARS IN FLOOR				
MARK	NO	SIZE	LENGTH	LOCATION
D170	8	1 1/2"	17'-0"	Longitudinal in side spans
D196	235	1 1/2"	19'-3"	Longitudinal in side spans
D308	36	3/8"	30'-8"	Longitudinal in side spans
DB 186	53	1/2"	18'-6"	Transverse in side spans
DB 199	64	1/2"	19'-9"	Transverse in side spans
DB 210	53	1/2"	21'-0"	Transverse in side spans
EB 36	72	3/8"	3'-6"	Bottom of out beams - cross-section
EB 46	42	3/8"	4'-6"	Bottom of out beams - cross-section
G30	69	3/8"	3'-0"	Diag. in fascia side spans
G46	280	3/8"	4'-6"	Vert. diag. in fascia
G170	148	1/2"	17'-0"	Longitudinal in side spans
G260	148	1/2"	26'-0"	Longitudinal in side spans
H226	88	1/2"	2'-6"	Fascia

REVISIONS

M.C.R.R.-TOLEDO-DIV.
 BRIDGE 493 LAWDALE AVE.
FLOOR DETAILS

SCALE: 1" = 1 FOOT
 DRAWN BY: J.M.S. Feb 1930
 CHECKED BY: J.E.K. 4.5.1930
 TRACED BY: J.E.K. 1930

ISSUE NO. DATE
 19

BAIDGE ENGINEER SHEET M.A. of 4

WABASH R.R.

NYC West R of W

NEW YORK CENTRAL R.R.

MICHIGAN CENTRAL R.R.

Cleared M.C.R.R. Track on NYC. Right of Way

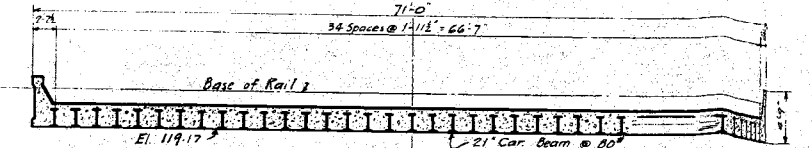
NYC. East R of W

M.C.R.R. West R of W

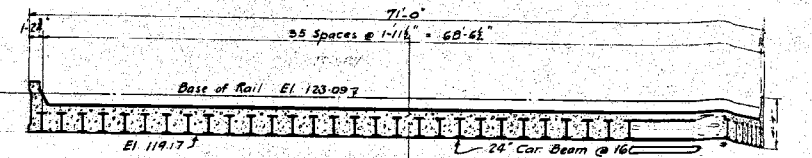
M.C.R.R. East R of W

16' Alley

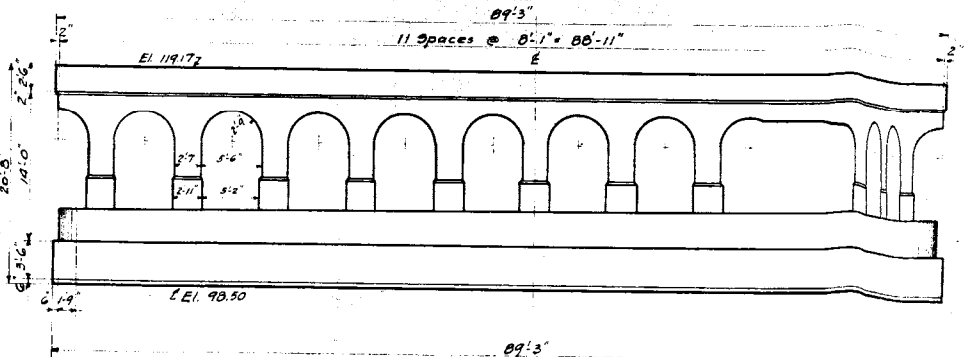
PLAN
Scale 1/8" = 10'



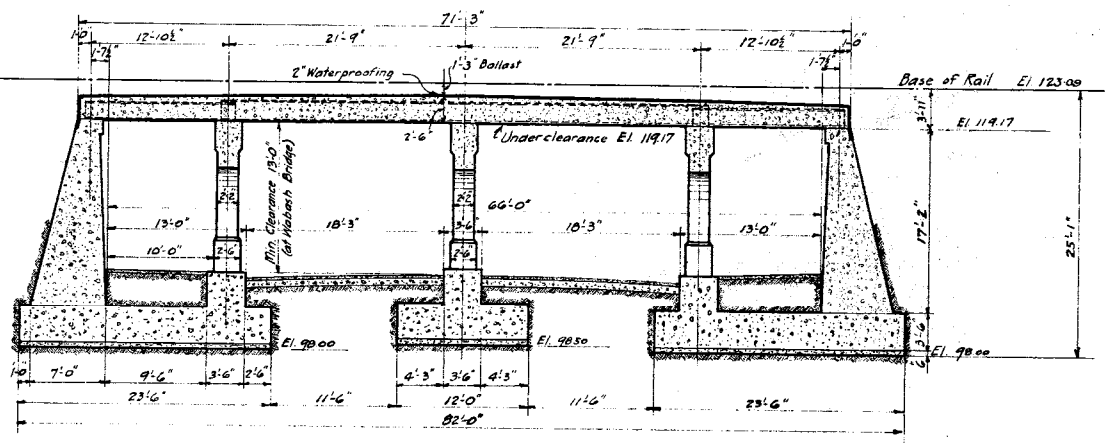
FLOOR SECTION AT RIGHT ANGLES TO TRACK



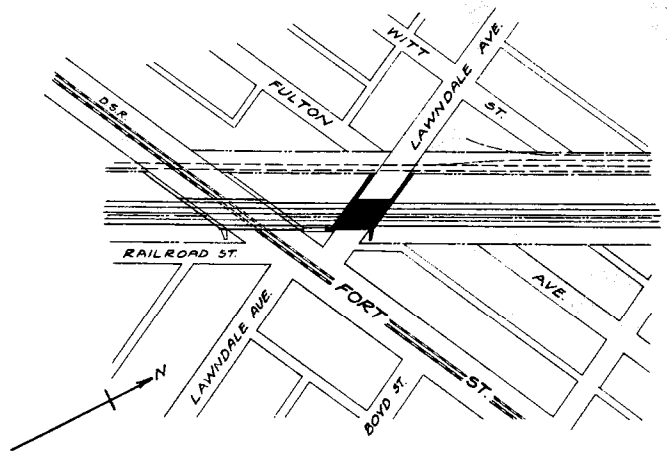
FLOOR SECTION AT RIGHT ANGLES TO TRACK



ELEVATION OF CENTER PIER
Scale 1/8" = 10'



SECTION AT RIGHT ANGLES TO STREET
Scale 1/8" = 10'



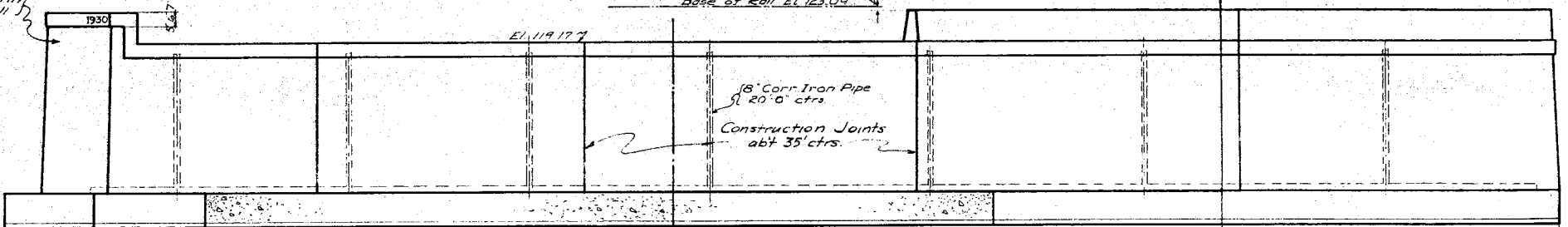
LOCATION PLAN
Scale 1" = 200'

Note: - NYC Lines Spec. C. 1100 to 1105 - 1917
E to Loading - Full Trip

REVISIONS	M.C.R.R. DIV.
3-3-1950 Base of Rail raised 3" See notes	
BRIDGE 493 LAWDALE SUBWAY	
GENERAL DRAWING	
SCALE	
APPROVED	
ISSUE NO 2	
DATE 3-3-1950	
BRIDGE ENGINEER	

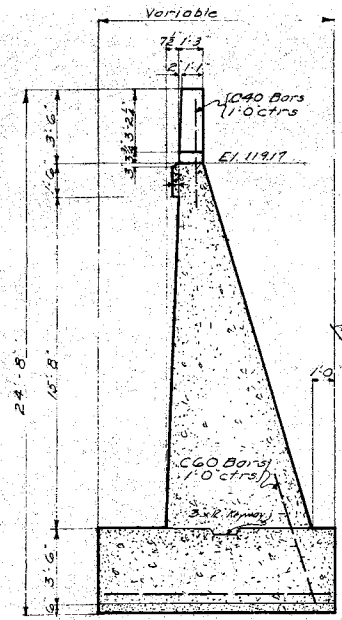
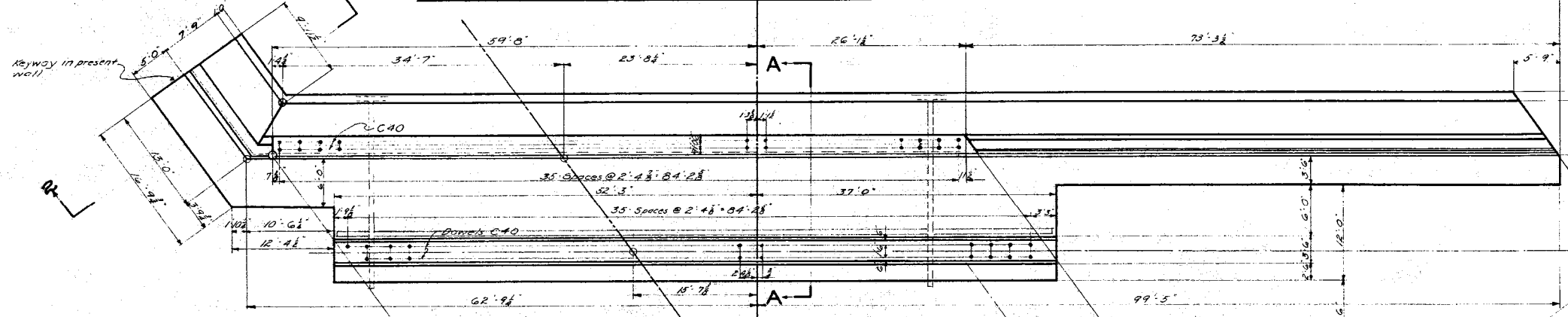
Surfaces to conform with Present wall

Base of Rail El 123.09

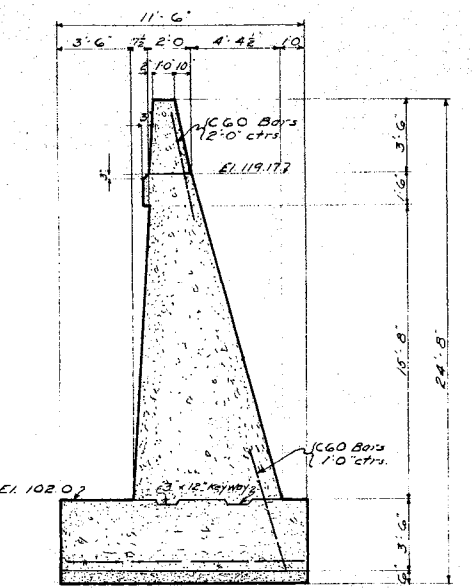


FRONT ELEVATION OF WEST ABUTMENT

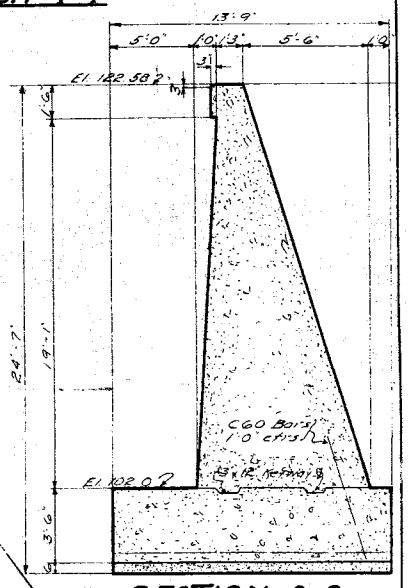
Keyway in present wall



SECTION 3-3

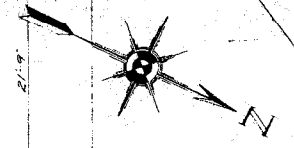


SECTION 1-1



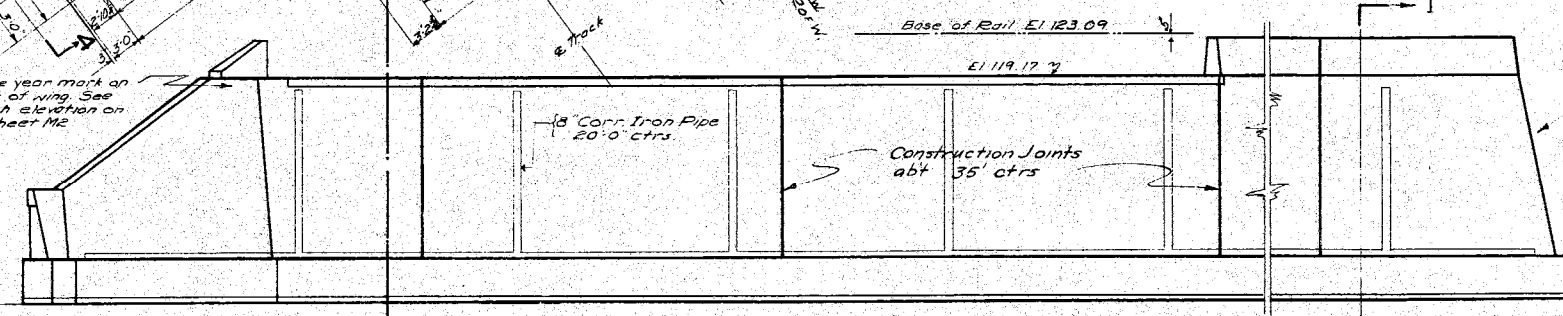
SECTION 2-2

LANWDALE AVE.

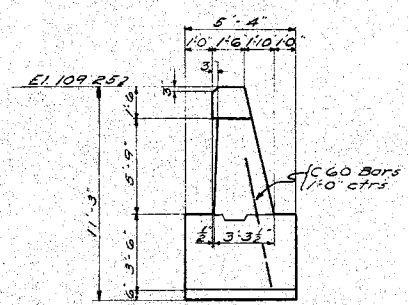


NOTE: If built before Wobash R.R. abutments provide keyways with sheet lead in ends of both abutments.

Place year mark on front of wing. See south elevation on sheet M2



REAR ELEVATION OF EAST ABUTMENT



VIEW 4-4

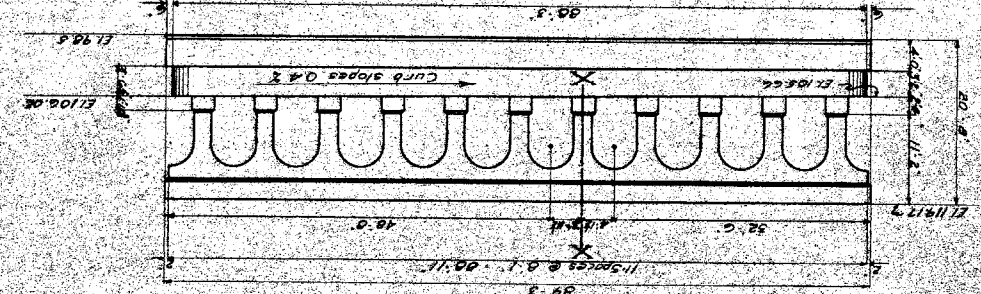
Section A-A on Sheet M3 Specifications on Sheet M3

REVISIONS		M.C.R.R.-TOLEDODIV.	
		BRIDGE 4.93 LANWDALE AVE. SUBWAY	
		ABUTMENTS AND SUBSTRUCTURE PLAN	
		SCALE: 1/4" = 1 FOOT	DRAWN BY J.M.S. 100.19.30
		APPROVED	CHECKED BY J.E.K. 4-11-1930
		ISSUE NO. DATE	TRACED BY J.E.K. 2-19-30
		BRIDGE ENGINEER	SHEET M1 OF 4

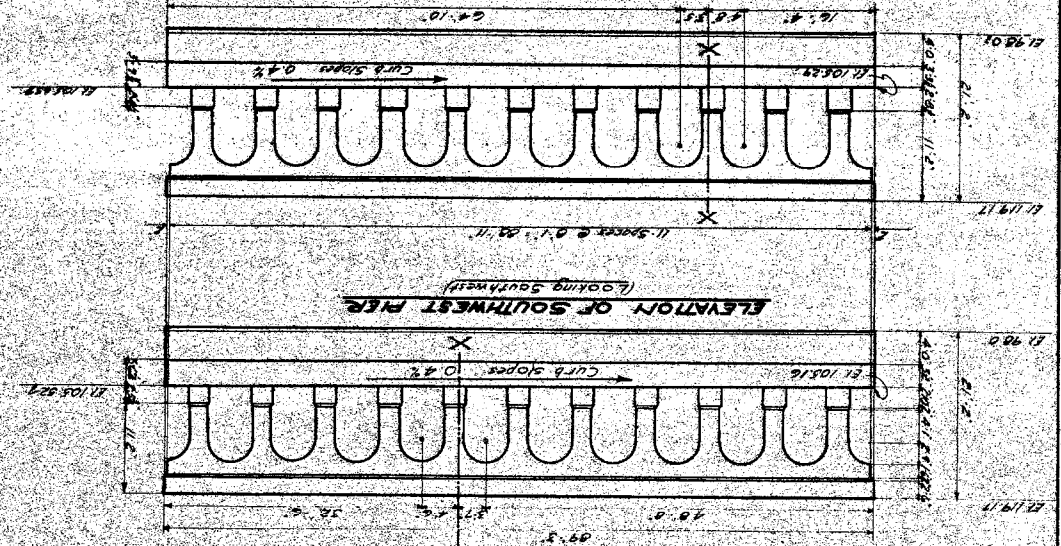
M.C.R.R.-TOLEDO-DIV.
BRIDGE, 453 LAMUNDALE AVE. SUBWAY
FOOTING PLAN AND
PIER ELEVATIONS
 Scale: 1/4" = 1'-0"
 DRAWN BY: J.M. ...
 CHECKED BY: ...
 DATE: ...
 REVISIONS:

Specifications on Sheet M3

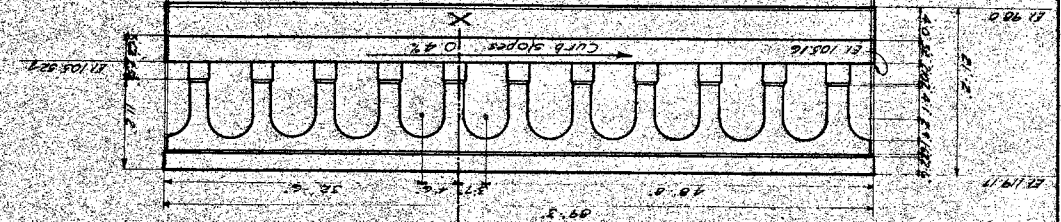
ELEVATION OF CENTER PIER
(Looking South West)



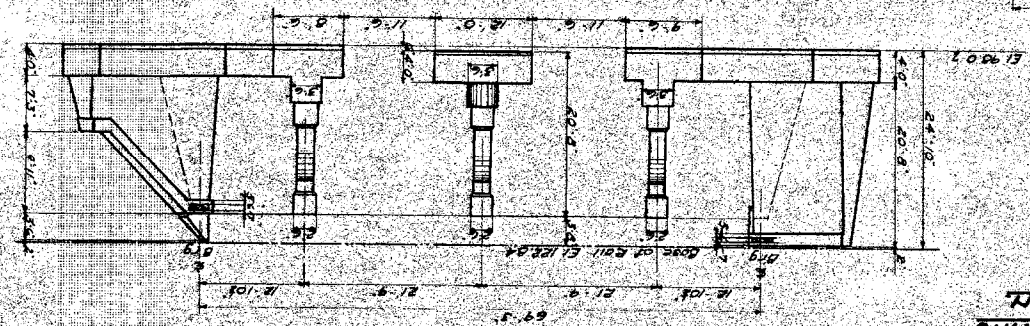
ELEVATION OF NORTHWEST PIER
(Looking South West)



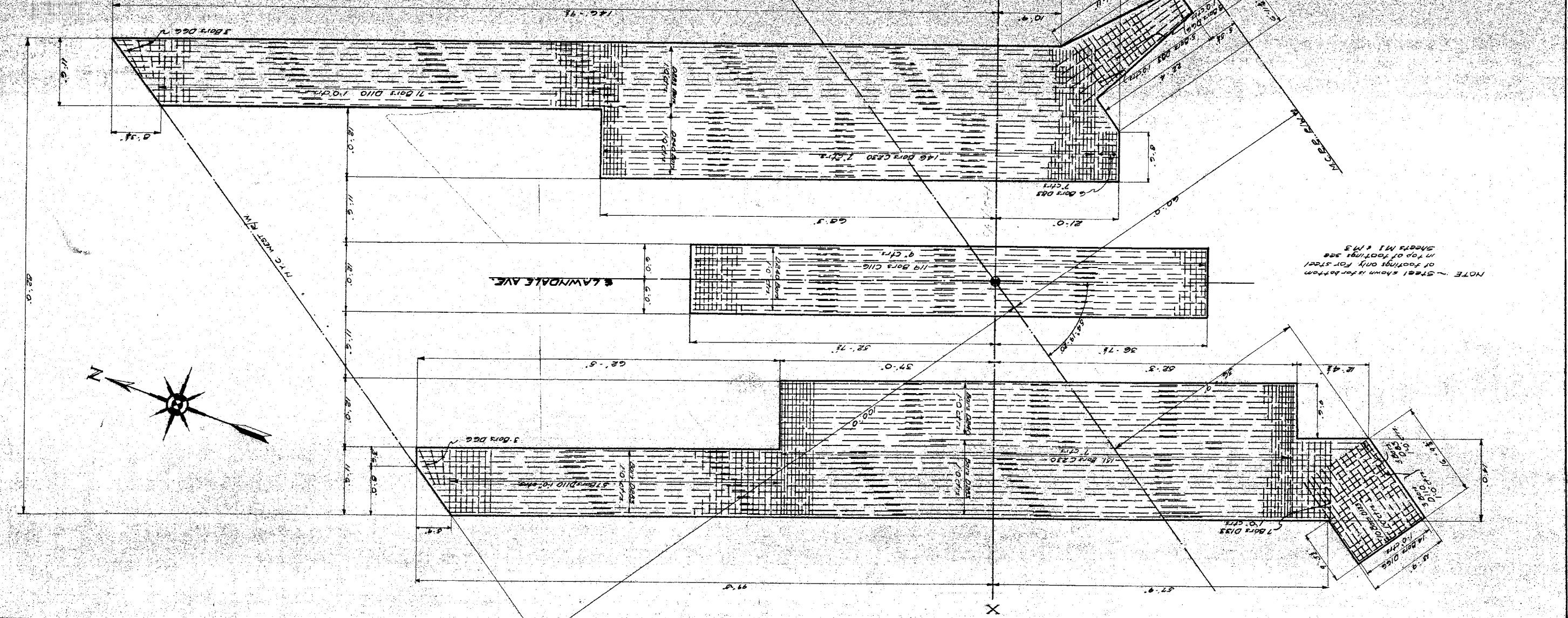
ELEVATION OF SOUTHWEST PIER
(Looking South West)



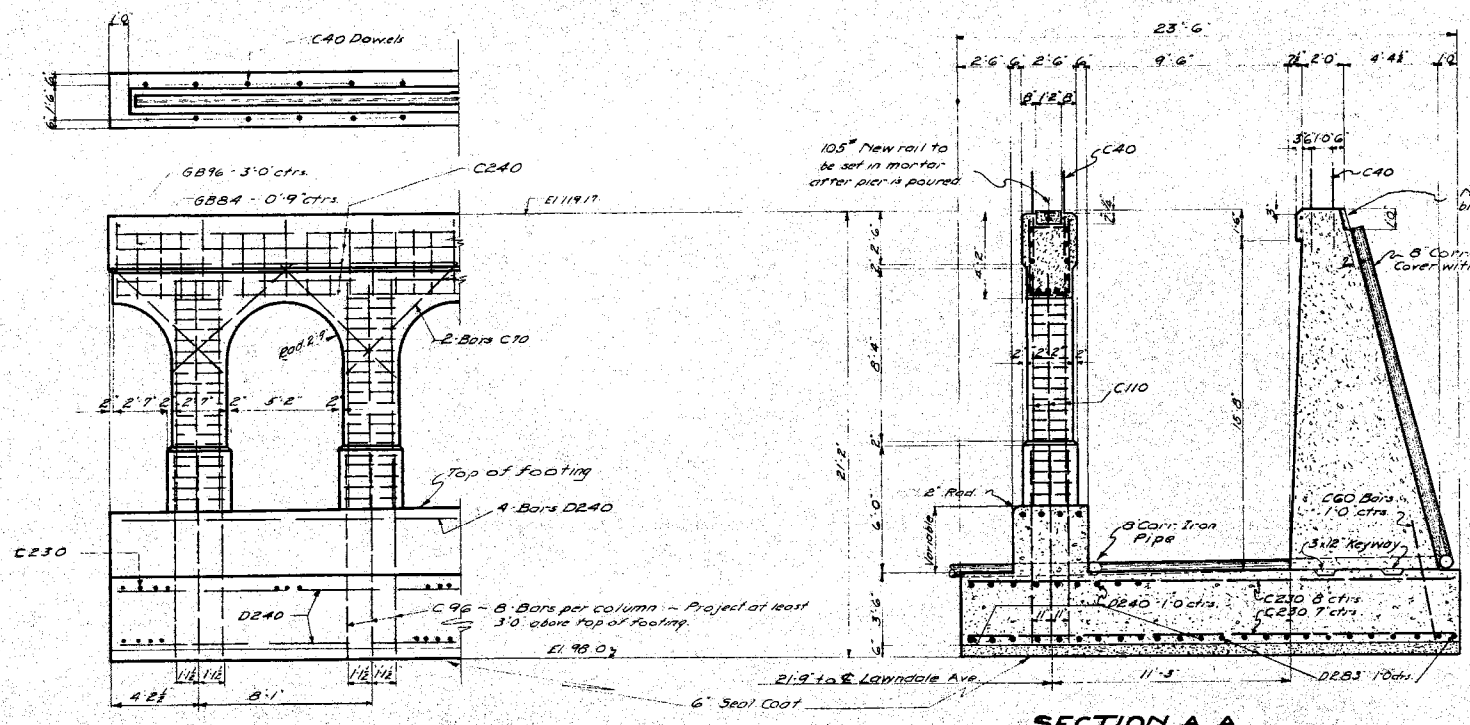
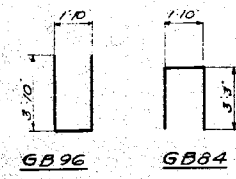
ELEVATION OF SOUTH END



EXAMINATION AND FOOTING REINFORCING PLAN

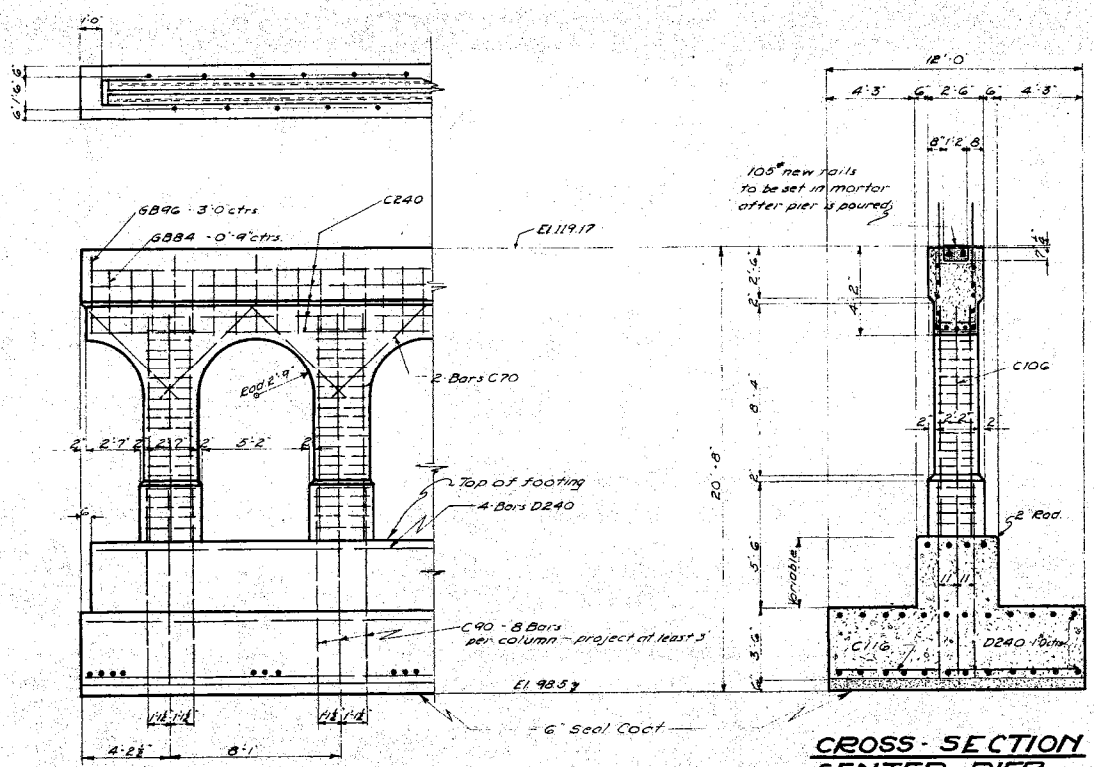
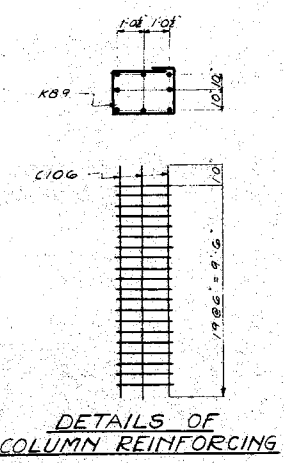


NOTE - Steel shown is for bottom
 of footings only. For steel
 in top of footings see
 sheets M1 & M3



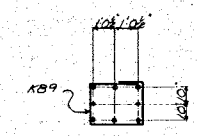
DETAILS OF SIDEWALK PIER.

SECTION A.A.

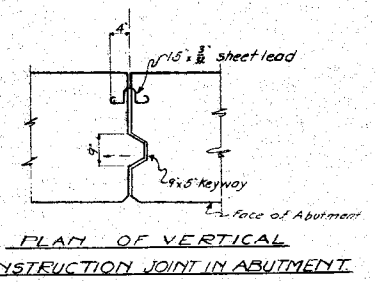


DETAILS OF CENTER PIER.

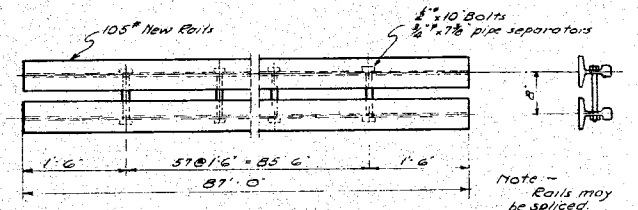
CROSS-SECTION CENTER PIER.



DETAILS OF COLUMN REINFORCING.



PLAN OF VERTICAL CONSTRUCTION JOINT IN ABUTMENT.



DETAILS OF RAILS FOR CENTER PIER.

GENERAL NOTES:

Specifications - N.Y.C. Lines for Concrete Masonry
 Concrete - To be Class 'B' (6.25 gals. of water per sack of cement and 52.5 sacks of cement per cu. yd. concrete) except seal coat which is to be Class 'D' (8 gals. of water per sack of cement and 3.75 sacks of cement per cu. yd. of concrete).
 Bevel all exposed corners 1/4" unless otherwise shown. Top surfaces to have a side walk finish. There shall be no horizontal joints except at top of footing and at coping. Exposed surfaces to be rubbed as soon as forms are removed. No cement grout to be used in rubbing surfaces.
 Reinforcing - All bars to be deformed. They shall be securely wired together at each intersection. At splices they shall lap for a length of 40 diameters and be securely wired.
 Waterproofing - Backs of Abutments shall be painted with two coats of asphaltic waterproofing.
 Drains - Shall be laid to drain and be connected to city sewer by substructure contractor.

DESCRIPTION	UNITS	M.C.R.R.			TOTALS
		N.Y.C.	ON M.C.	ON N.Y.C.	
Class B Concrete					
East Abutment	cu. yds.	55.5	1.2	56.7	
West Abutment		55.7	1.2	56.9	
Center Pier		22.0	0.8	22.8	
Above Footing	cu. yds.				
East Abutment		1.5	14.4	15.9	
West Abutment		1.5	13.4	14.9	
East Pier		1.5	23.1	24.6	
West Pier		1.5	23.5	25.0	
Center Pier		1.5	23.5	25.0	
Class D Concrete	cu. yds.				
East Abutment		2.5	19.9	22.4	
West Abutment		2.5	19.9	22.4	
Center Pier		1.19	8.2	9.39	
Reinforcing Steel	Pounds	33,470	25,410	58,880	
B' Corr. Iron Drain Pipe	Ln. ft.	545	160	705	
Crosses for Drain Pipe	Per.	2	3	5	
Tees for Drain Pipe	Per.	14	6	20	
105' Rails	Ln. ft.	1,125	12	1,137	
1/2" x 10' Bolts	Per.	23	23	46	
1/2" x 7/8" Pipe separators	Ln. ft.	1,07	16.7	1,087	
Sheet Lead - 15' x 8'	Sq. ft.	28	34	62	
Waterproofing	Sq. ft.	9,570	125.0	9,695	

SUBSTRUCTURE BARS				
MARK	NO.	SIZE	LENGTH	LOCATION
D66	14	3/4"	6'-6"	Transverse in Abutment Footings
D83	16		8'-3"	
D110	131		11'-0"	
D166	14		16'-6"	West Abutment Footing
D133	17		13'-3"	
C230	557		23'-0"	Transverse in Pier Footings
D240	310		24'-0"	Longitudinal in all Footings
D283	152		28'-3"	Abut.
C40	356	3/4"	4'-0"	Dowels in top of Piers & Abutments
C40	424		6'-0"	Dowels in Abutments
C70	132		7'-0"	Diagonals over pier Arches
C90	88		9'-0"	Dowels in center pier columns
C96	176		9'-6"	Dowels in side pier columns
C106	88		10'-6"	Vertical in center pier columns
C110	176		11'-0"	Vertical in side pier columns
C116	119		11'-6"	Transverse in center Pier Footings
C240	186		24'-0"	Longitudinal in top of Piers
GB84	267	1/2"	8'-4"	stirrups in Piers
GB96	90		9'-6"	
K89	649	3/4"	8'-9"	Col ties

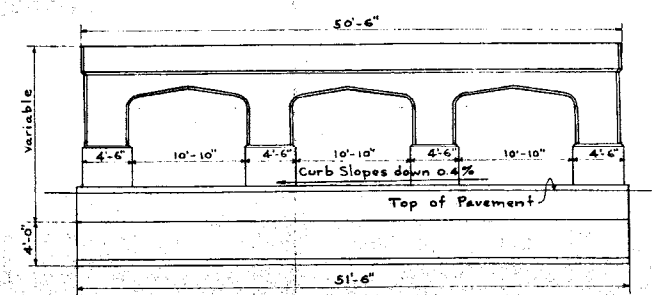
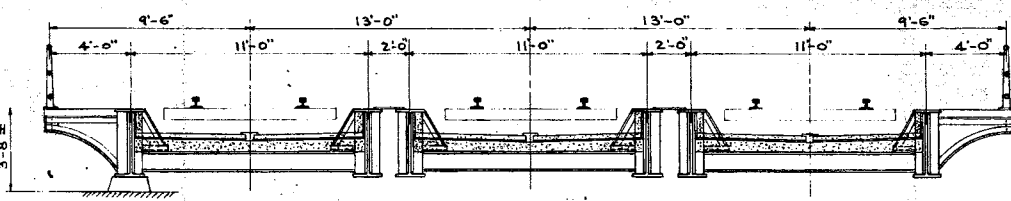
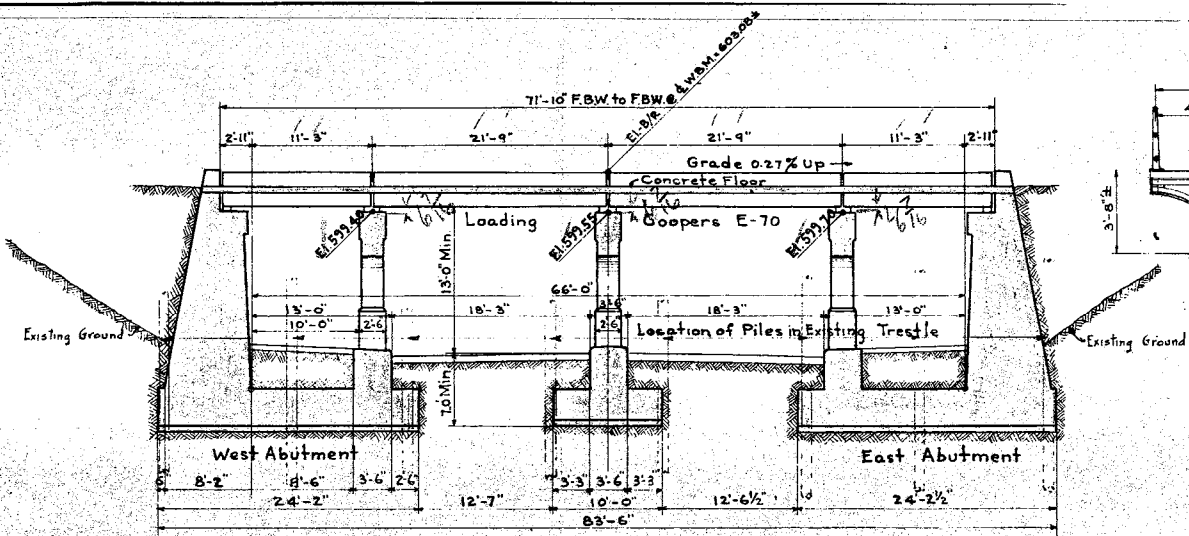
REVISIONS

M.C.R.R.-TOLEDO-DIV.
 BRIDGE - 493 LAWINDALE AVE
PIERS AND DETAILS

SCALE - 1/4" = 1 FOOT
 DRAWN BY JMS Feb. 19, 30
 CHECKED BY _____
 TRACED BY J.E. 2-23-1930.

ISSUE NO. _____
 DATE _____

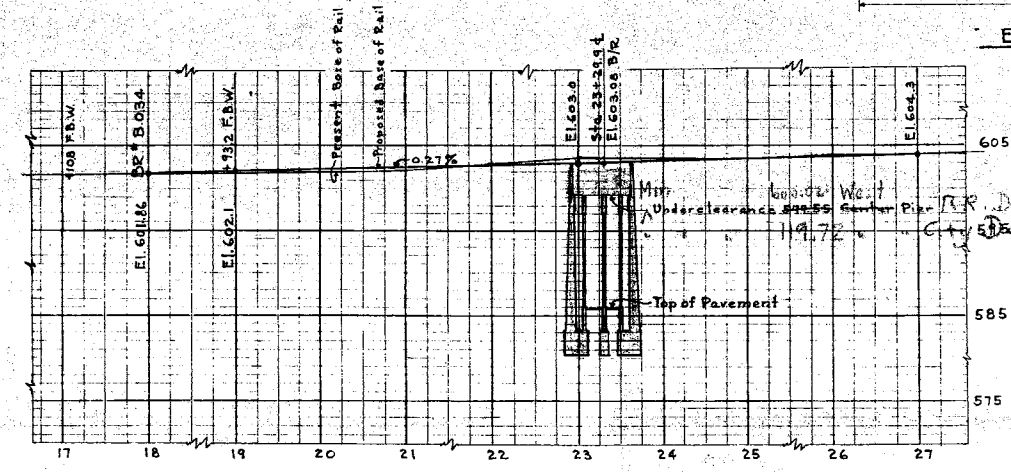
BRIDGE ENGINEER _____
 SHEET M.S. OF 4



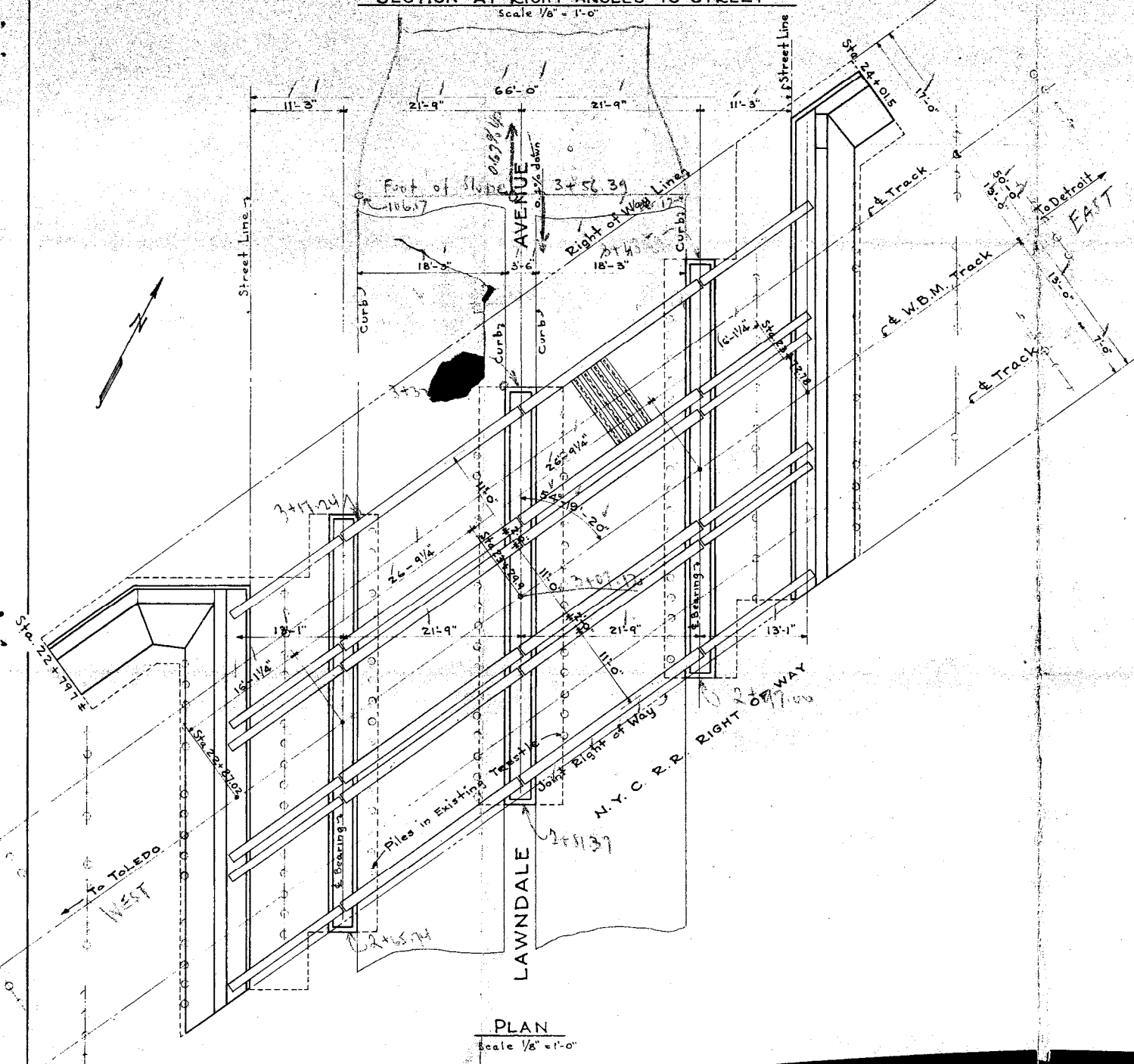
SECTION AT RIGHT ANGLES TO STREET
Scale 1/8" = 1'-0"

SECTION THRU DECK
Scale 1/4" = 1'-0"

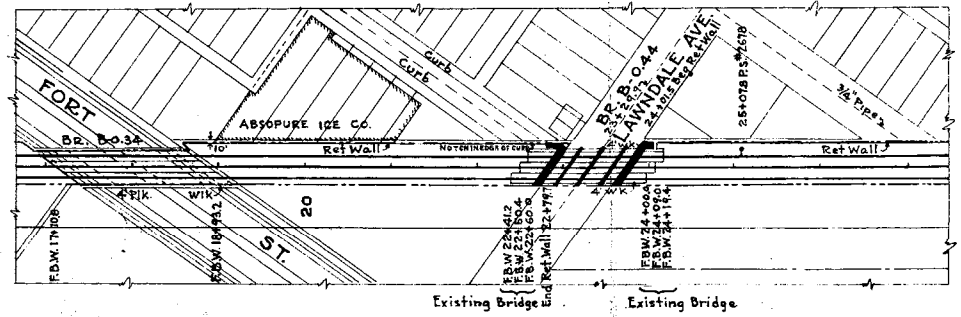
ELEVATION OF PIER
Scale 1/8" = 1'-0"



PROFILE
Horizontal Scale 1" = 100'
Vertical Scale 1" = 10'



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



LOCATION PLAN
Scale 1" = 100'

TABLE OF QUANTITIES		
DESCRIPTION	UNIT	AMT
VIT. PIPE 6" φ	Lin. Ft.	60.
ARMOR COAT	Sqs	255
SHEETING & SHORING	Sq. Ft.	2,970.
TILE DRAIN 6" φ	Lin. Ft.	240.
VIT. PIPE 8" φ	Lin. Ft.	180.
DRAINAGE PLATES	LBS.	4,700
HANDRAIL	Lin. Ft.	184
DECK & WALK CONCRETE	CU YD	87.
EXCAVATION	CU YD	848.
FOOTING CONCRETE	" "	438.5
ABUTMENT + PIER CONC.	" "	666.
REINFORCING STEEL	LBS.	76,823.
STRUCTURAL STEEL	" "	287,316
WATERPROOFING (ABUT)	Sqs	24
WATERPROOFING (DECK)	" "	343
FOOTING CONC. SEAL	CU YD	63.2
REMOVING EXISTING TIMBER	M.B.M.	90.7
CUT OFF PILES	EACH	180.

LIST OF DRAWINGS	
#1	GENERAL PLAN
2	STEEL DESIGN
3	EAST ABUTMENT DETAILS
4	WEST "
5	CENTER PIER DETAILS
6	CONCRETE FLOOR
7	STANDARD HAND RAIL

WABASH RAILWAY COMPANY
OFFICE OF THE CHIEF ENGINEER

STRUCTURE: LAWNDALE AVE.
LOCATION: DETROIT MICH.
DIVISION: DETROIT

SCALE: AS NOTED

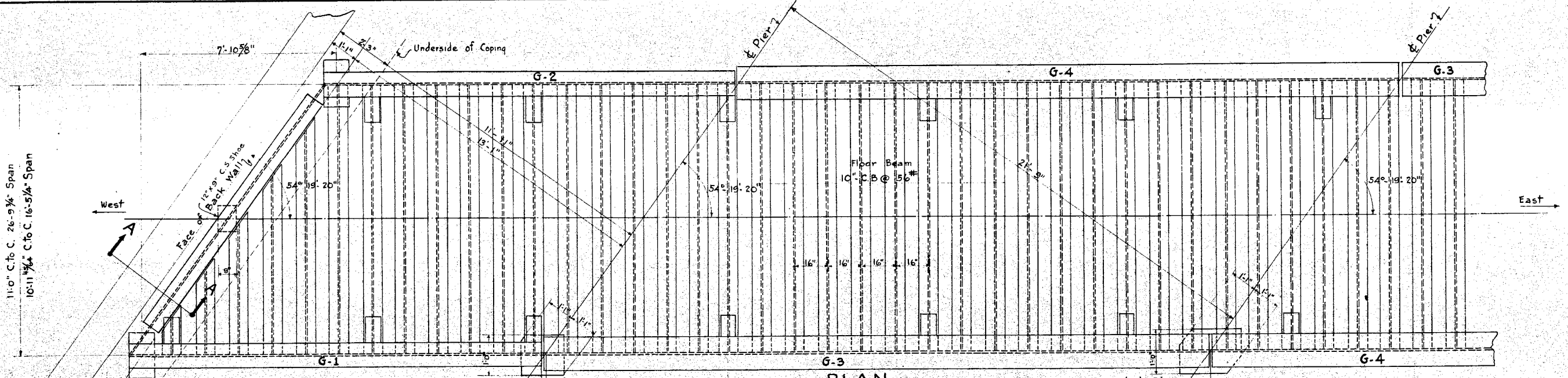
DATE: 3-22-30
DRAWN BY: D.E.B.
TRACED BY: H.R.P.
CHECKED BY: R.D.W.

GENERAL PLAN

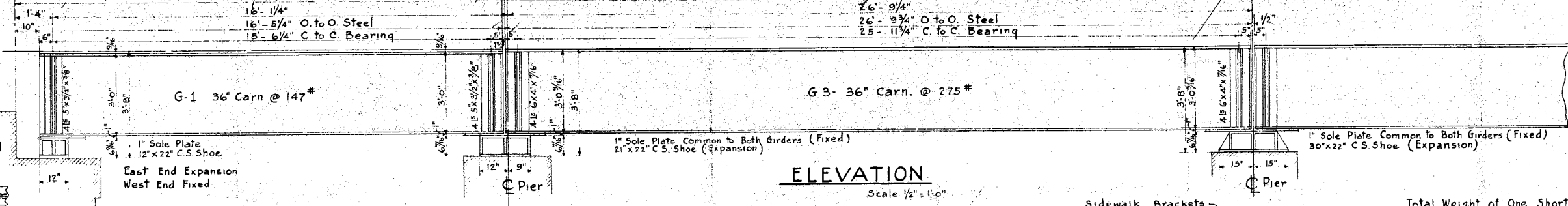
SHEET NO.	NO. OF SHEETS
1	7

Quan Calc by A.J.F.
Quan Ckd by D.K.P.

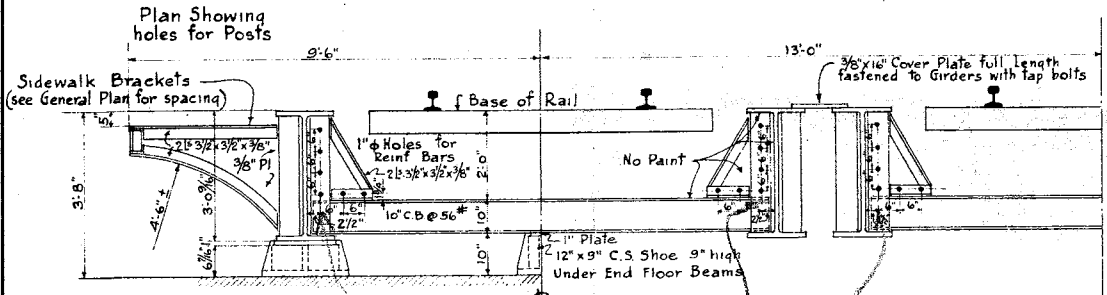
P.S.
4/15/30



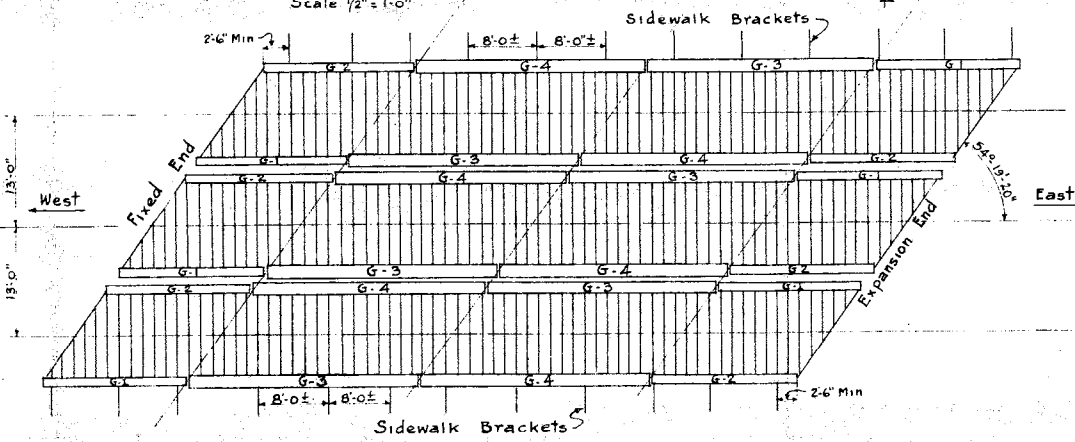
PLAN



ELEVATION



SECTION



GENERAL PLAN

DESIGN DATA

FLOOR BEAMS	
11'-0" C to C Bearings	
Track	150
Ballast	1500
Conc	1200
Beam	500
Armor Coat	400
	3550
Use	3600#s
Maximum Moments	
D.L. 3600x11x1/8	4,950
L.L.	26,250
Impact	26,250
	57,450 Ft. Lbs.
Section Modulus	
57,450x12	43.1 per Ft. of Br. Fl.
Use 10" C.B. @ 56#	Sec Mod 56.64
Spacing of Beams	
56.64 x 12	= 15.85
Use	43
Space Beams	16" C to C.

SPANS G3 & G4	
26'-0" C to C Bearings	
11'-0" C to C Girders	
Dead Load	
Floor	1800
Steel	300
Total	2,100#/Ft.
Maximum Moments	
D.L. 2100x26x1/8	= 178,000
L.L.	568,000
Impact	556,000
Total	1,302,000 Ft. Lbs.
Maximum Shears	
D.L. 2100x26x1/2	= 27,300
L.L.	102,000
Impact	99,500
Total	228,800 Lbs.
Web Area Required	
228,800	= 2288"
Furnished	32.0"
Section Modulus Required	
1,302,000x12	= 976 Mod.
Use 36" Carn. @ 275#	
Modulus	= 1006.8

SPANS G3 & G4 (Cont'd)	
Bearing Required (Pier Reaction)	
D.L. 27x2100	= 54,600
L.L.	140,000
Impact	128,000
Total	324,600 = 600.541"
Use 30"x22"	= 660"
End Stiffeners	
228,800	= 433
24,000x4x3.5	
Use 4 1/2"x4"x7/16"	
SPANS G1 & G2	
15'-6" C to C Bearings	
11'-0" C to C Girder	
Dead Load	
Floor	1800
Steel	200
Total	2000#/Ft.
Maximum Moments	
D.L. 2000x15.5x1/8	60,000
L.L.	232,000
Impact	230,000
Total	522,000 Ft. Lbs.

SPANS G1 & G2 (Cont'd)	
Maximum Shears	
D.L. 2000x15.5x1/2	= 15,500
L.L.	72,300
Impact	71,600
Total	159,400
Section Modulus Required	
522,000x12	= 391 Mod.
Use 36" Carn 147# (S-502.2)	
Web Area Required	
159,400	= 15.94"
Furnished	21.2"
End Stiffeners	
159,400	= 0.368
Use 4 1/2"x3/2"x3/8"	
End Bearing Required	
159,400	= 266"
Use 12"x22"	= 264"

Total Weight of One Short Girder 2,423 #
 " " " " Long " 7,360 #

REQUIRED

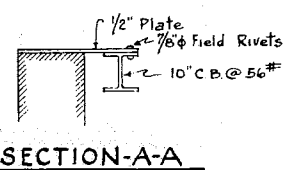
3 Spans @ 89,321 #	Total Wt.	267,963 Lbs
24 Sidewalk Brackets @ 207 #		4,968 "
2 Girder Protection Plates @ 1817.5 "		3,635 "
6-30"x22" C.S. Shoes, 6 1/4" high		3,000 "
12-21"x22" " " " "		4,200 "
12-12"x22" " " " "		2,400 "
6-12"x9" " " " "		1,150 "
	Total	287,316 "

Note: Base of shoes to be shaped as shown in plan above

GENERAL NOTES

Specifications	A.R.E.A. Latest revisions
Live Load	Cooper's E-70
Alignment	Tangent
Grade	0.27%
Rivets	7/8" φ
Paint	One shop coat #2400 Detroit Graphite
	Do not paint top of Floor Beams, nor inside of Girders above Floor Beams

R.S. 4-15-30



SECTION-A-A

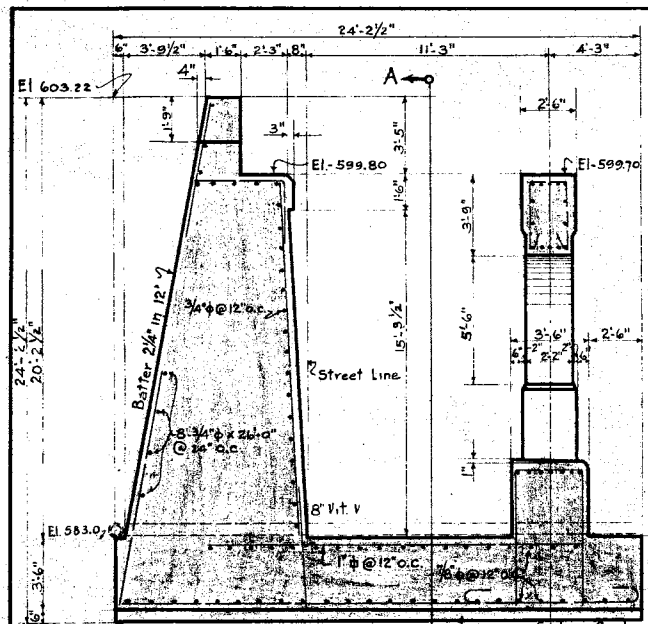
How are intermediate beams attached to girders?

WABASH RAILWAY COMPANY
 OFFICE OF THE CHIEF ENGINEER
 STRUCTURE: LAWDALE AVE
 LOCATION: DETROIT MICH
 DIVISION: DETROIT TERMINAL

SCALE:	SHEET NO.	NO. OF SHEETS
As shown	27	

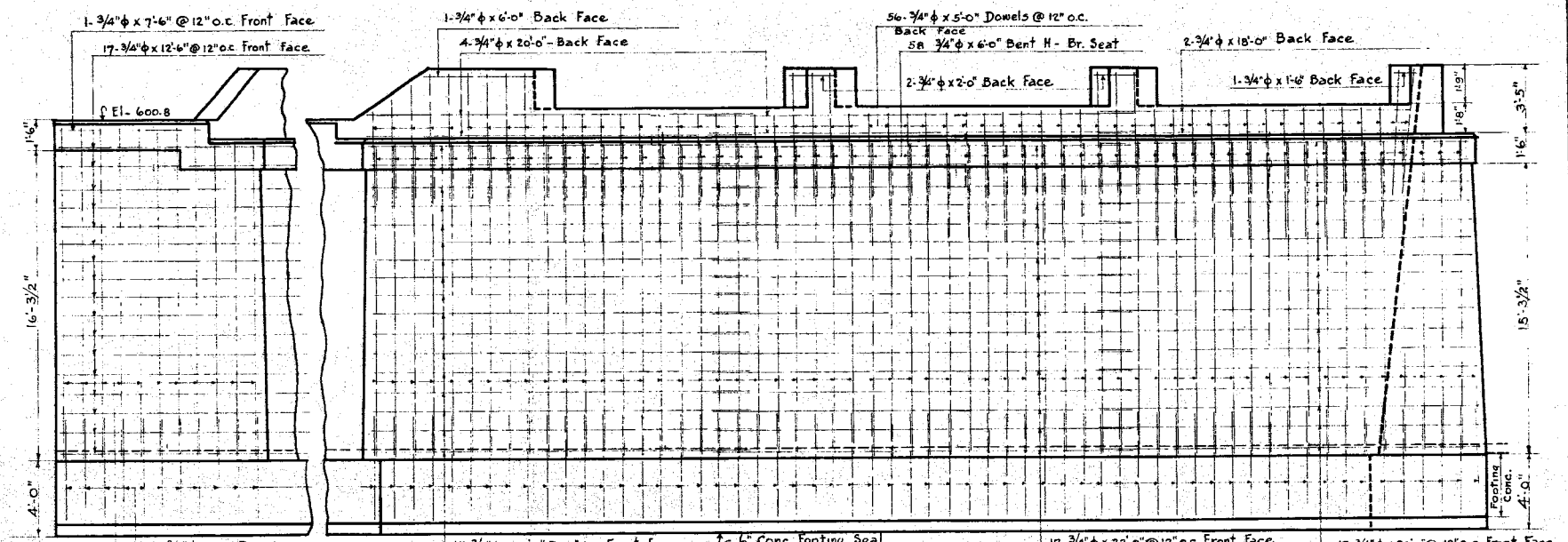
DATE: Mch 15-1930
 DRAWN BY: D.E.B.
 CHECKED BY: A.J.F.
 QUANTITIES: Ckd. by - R.J.

STEEL DESIGN



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

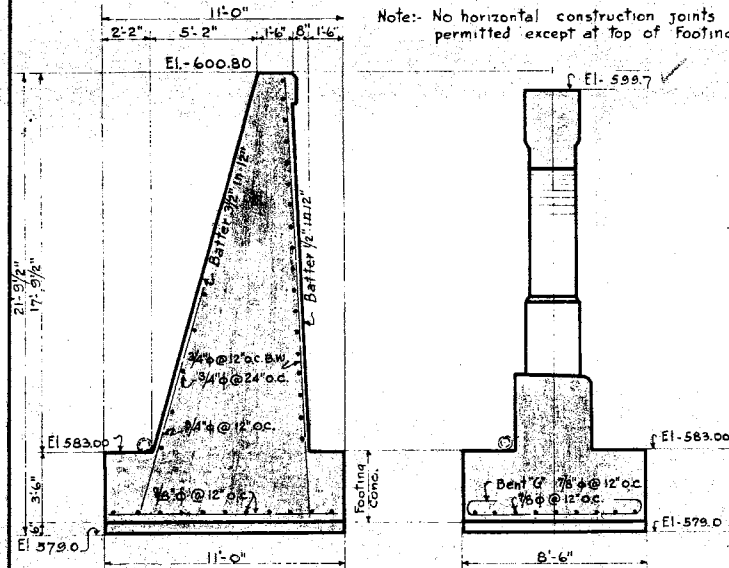
Note: Curb Pier is similar to the Center Pier above the Footing Seal for Details & Reinforcing see "Center Pier Details" Sheet No 5



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

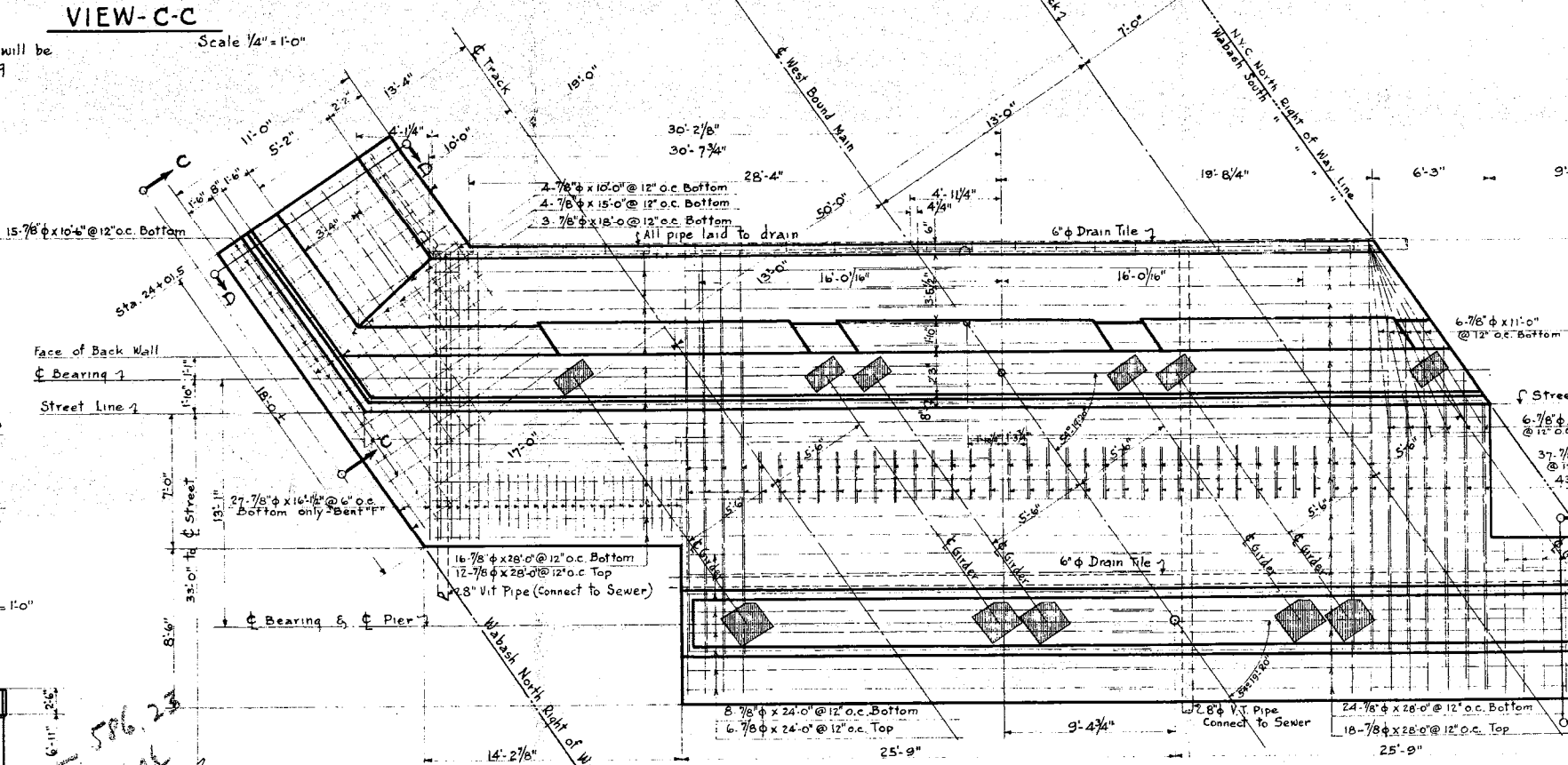
TABLE OF RODS				
EAST ABUTMENT				
NO	SIZE	LENGTH	C.B.C.	LOCATION
15	7/8"	10'-6"	12"	Trans Bot. Footing
33	"	16'-1/2"	6"	" " Bent "F"
37	"	24'-7"	12"	" " Bent "E"
9	"	9'-0"	"	" " Bent "G"
6	"	11'-0"	Var	" " " "
43	1"	17'-6"	12"	" " Top
4	7/8"	10'-0"	"	Long - Bottom
4	"	15'-0"	"	" " " "
3	"	18'-0"	"	" " " "
40	"	28'-0"	"	" " " "
8	"	24'-0"	"	" " " "
30	"	28'-0"	"	" " Top
6	"	24'-0"	"	" " " "
70	3/4"	5'-0"	"	Vert. Dowels Abut. Front Face
70	"	16'-0"	"	" " Str
38	"	6'-0"	"	Bent "H" Br. Seat
17	"	12'-6"	"	Hor. Str Front Face
34	"	7'-6"	"	" " " "
17	"	22'-0"	"	" " " "
8	"	20'-0"	"	" " Br Seat
4	"	22'-0"	"	" " " "
50	"	11'-0"	"	Dowels @ Bottom Back Face
8	"	26'-0"	24"	Hor Str " " " "
56	"	5'-0"	12"	Vert Dowels @ Top " " " "
4	"	20'-0"	Var	Long - St Top " " " "
1	"	6'-0"	"	" " " "
2	"	18'-0"	"	" " " "
2	"	2'-0"	"	" " " "
1	"	1'-6"	"	" " " "

CURB PIER See Sheet #				
NO	SIZE	LENGTH	C.B.C.	LOCATION
14	7/8"	27'-0"	"	Horz. Curtain Wall
26	"	16'-0"	"	" " Bent C
64	"	4'-6"	"	Dowels, Cols
64	"	11'-0"	"	" " " "
40	3/8"	12'-0"	"	Hoops Bent "D"
24	7/8"	14'-0"	"	Diagonals Piers
28	"	27'-0"	"	Horz " " " "
67	3/4"	11'-6"	"	Stirrups Bent "B"

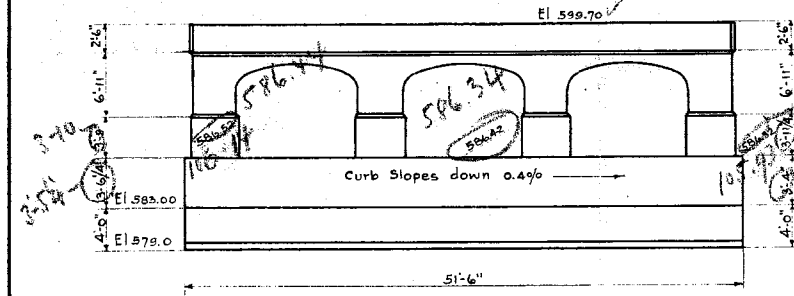


SECTION D-D Scale 1/4" = 1'-0"
SECTION B-B Scale 1/4" = 1'-0"

Note: No horizontal construction joints will be permitted except at top of Footing

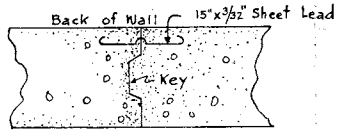


PLAN
Scale 1/4" = 1'-0"

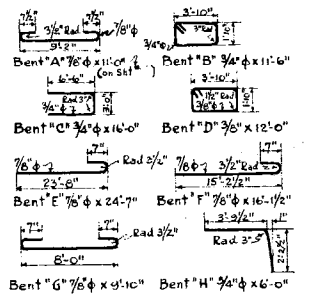


GENERAL ELEVATION OF CURB PIER
LOOKING EAST

Note: For Details & Reinforcing see Center Pier Details Sheet No 5
Scale 1/8" = 1'-0"



DETAIL OF VERTICAL CONSTRUCTION JOINTS



DETAIL OF BENT BARS

TABLE OF QUANTITIES		
DESCRIPTION	UNIT	AMOUNT
Footing Concrete	Cu. Yd.	185.8
Abutment " "	"	254.6
Pier " "	"	52.4
Reinforcing Steel	Lbs.	25387
Footing Seal Concrete	Cu. Yds.	26.6
Excavating	"	424.

WABASH RAILWAY COMPANY
OFFICE OF THE CHIEF ENGINEER

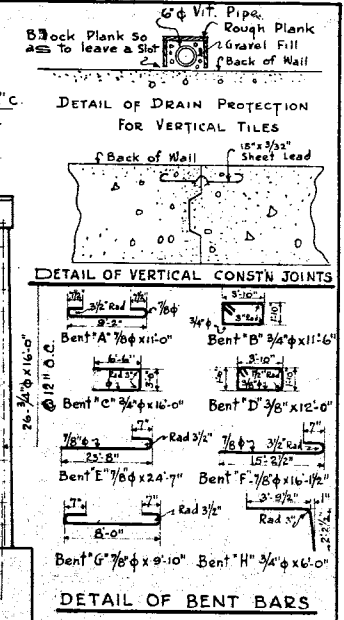
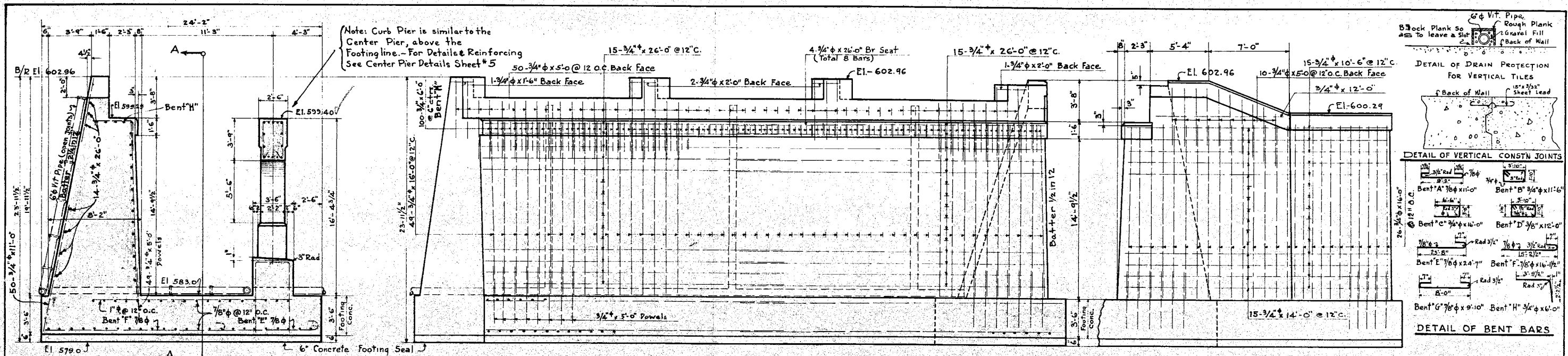
STRUCTURE: **LAWDALE AVE**
LOCATION: **DETROIT MICH**
DIVISION: **DETROIT**

SCALE: As Shown
DATE: Mch 15-30
DRAWN BY: D. E. B.
TRACED BY: A. J. F.
CHECKED BY: R. D. W.

EAST ABUTMENT
DETAILS

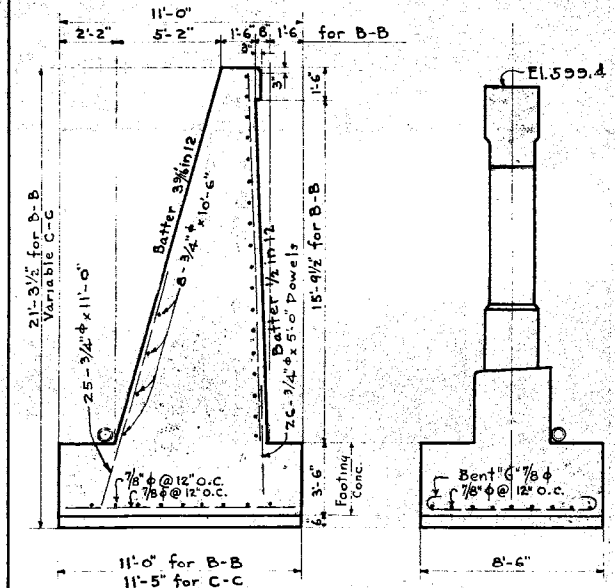
SHEET NO.	NO. OF SHEETS
3	7

Quan. Calc. by - D. F. P.
" Ckd. by - R. J. S.

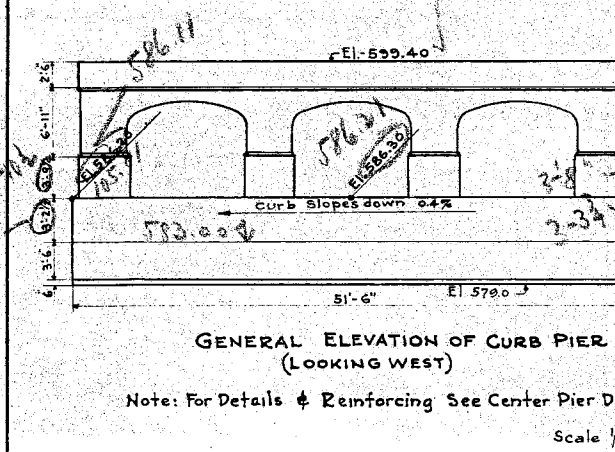


SECTION Scale 1/4" = 1'-0" SECTION "A-A" Scale 1/4" = 1'-0" VIEW "D-D" Scale 1/4" = 1'-0"

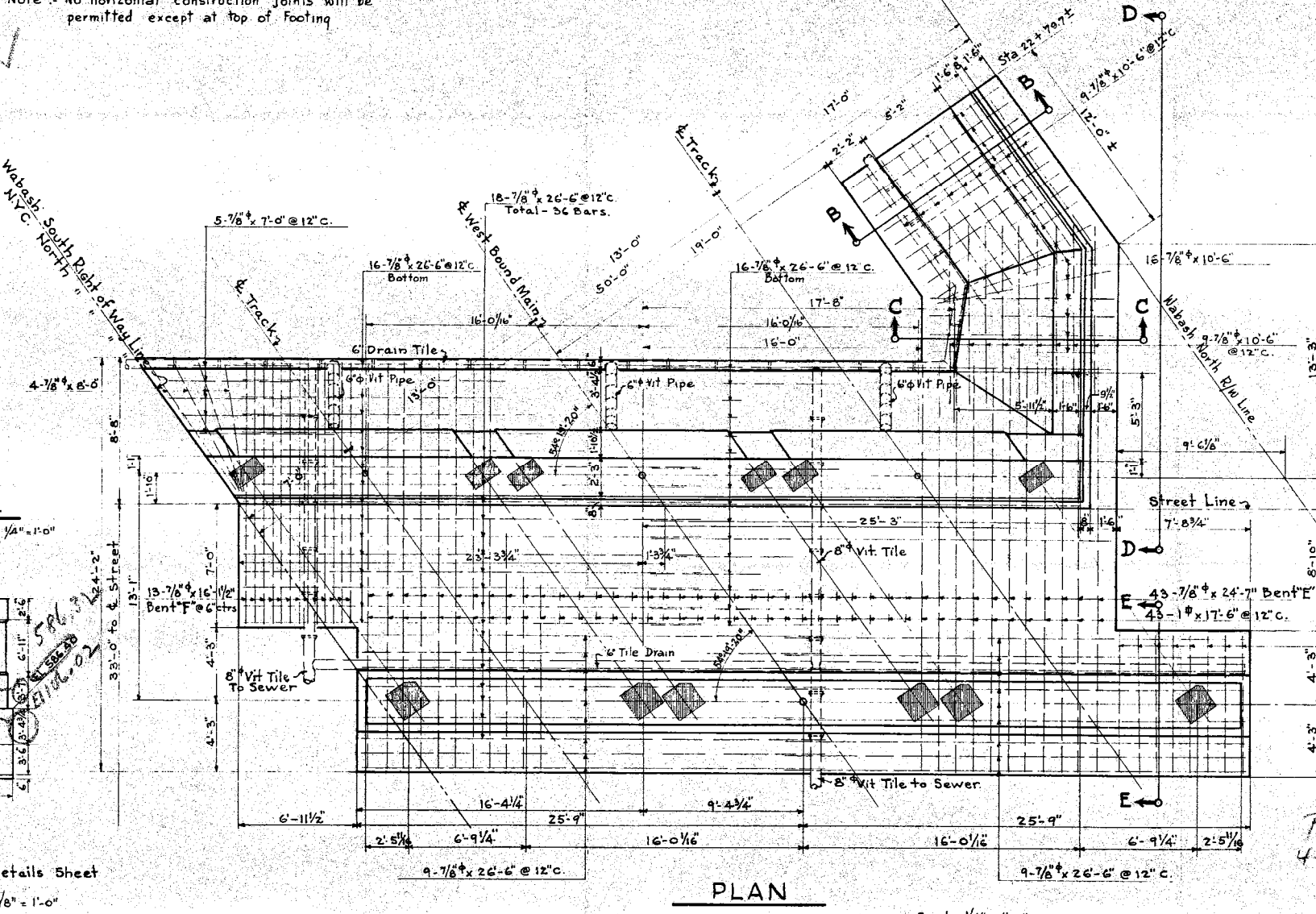
Note: No horizontal construction joints will be permitted except at top of Footing



SECTION B-B & C-C Scale 1/4" = 1'-0" SECTION E-E Scale 1/4" = 1'-0"



Scale 1/8" = 1'-0"



PLAN Scale 1/4" = 1'-0"

BILL OF REINFORCING BARS			
No	SIZE	LENGTH	LOCATION
43	7/8"	24'-7"	Horiz. in Footing - Bent "E"
13	"	16'-1/2"	" " " Bent "F"
4	"	8'-0"	" " " " "
8	"	9'-10"	" " " Bent "G"
34	"	10'-6"	" " " " "
50	"	26'-6"	" " " " "
5	"	7'-0"	" " " " "
43	1"	17'-6"	" " " (Top)
36	7/8"	27'-6"	" " " " "
28	"	26'-0"	" " " Curtain Wall
26	"	16'-0"	" " " Bent "C"
64	"	4'-6"	Dowels " Coils
64	"	11'-0"	" " " " "
40	3/8"	12'-0"	Hoops " " Bent "D"
24	7/8"	14'-0"	Diagonals " Piers
28	"	27'-0"	Horiz. " Bent "B"
67	3/4"	11'-6"	Vert. " Abutment
38	"	26'-0"	Horiz. " Bent "G"
15	"	14'-0"	" " " " "
15	"	10'-6"	" " " " "
75	"	16'-0"	Vert. " " "
100	"	6'-0"	" " " Br. Seat Bent "H"
14	"	26'-0"	Horiz. " Abutment (rear face)
8	"	10'-6"	" " " " "
75	"	11'-0"	Vert. " " "
60	"	5'-0"	" " " " "
75	"	5'-0"	" " " Footing Powels
1	"	1'-6"	Horiz. " Abut (rear face)
3	"	2'-0"	" " " " "

TABLE OF QUANTITIES	
FOOTING CONCRETE	CU.YD. 186
ABUTMENT CONCRETE	" " 255
PIER CONCRETE	" " 524
REINFORCING STEEL	LBS. 26600
FOOTING CONCRETE SEAL	CU.YD. 27
Excavating	" " 424

WABASH RAILWAY COMPANY
OFFICE OF THE CHIEF ENGINEER

STRUCTURE: LAWDALE AVE.
LOCATION: DETROIT MICH.
DIVISION: DETROIT

SCALE: As shown
DATE: MAR. 15-30
DRAWN BY: P. E. B.
TRACED BY: H. R. P.
CHECKED BY: R. D. W.

WEST ABUTMENT
DETAILS

SHEET NO.	NO. OF SHEETS
4	7

Quan Calc. By: R.S.
" ckd. " R.D.W.

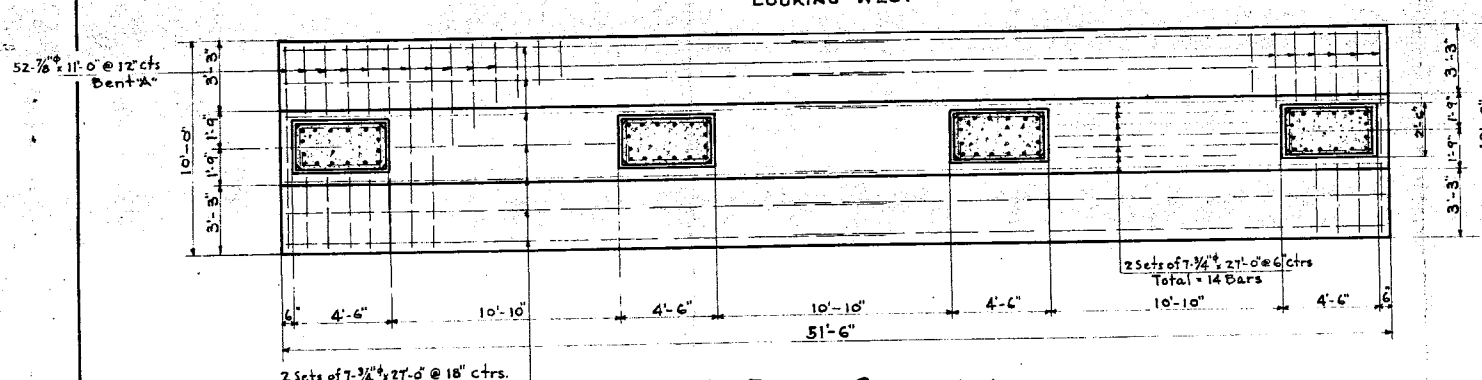
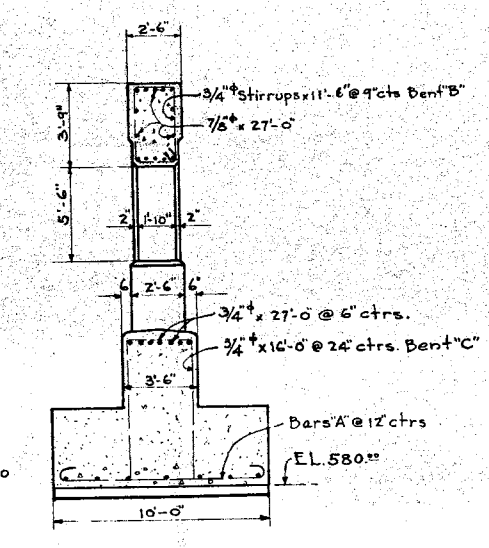
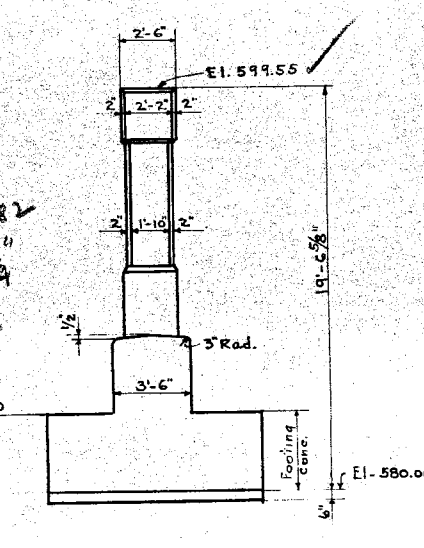
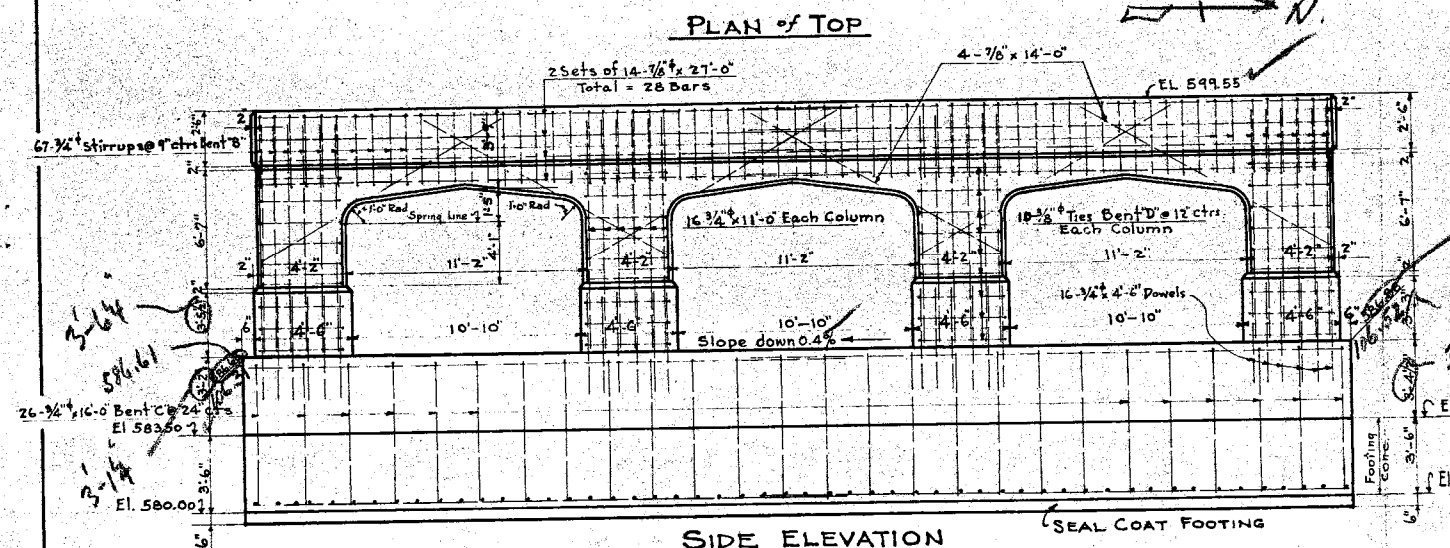
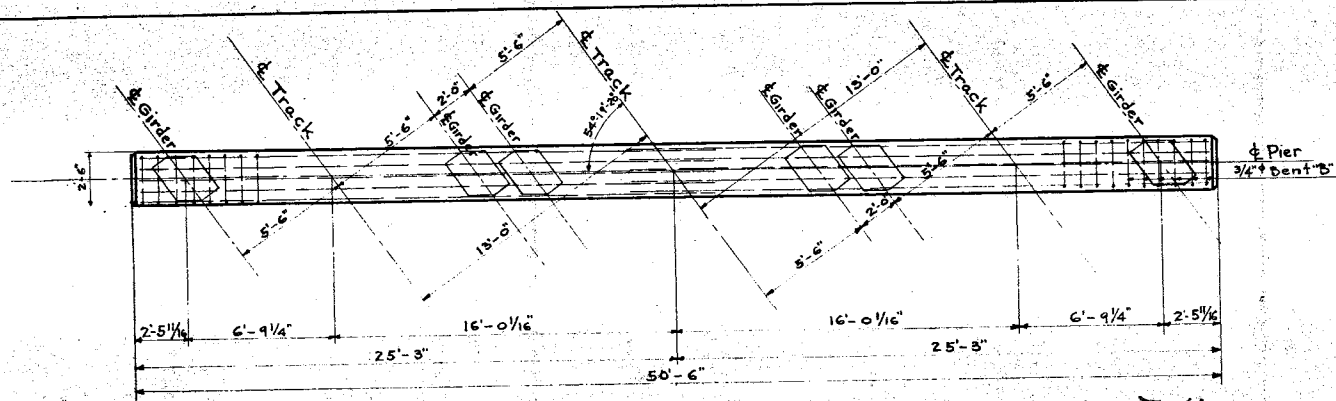


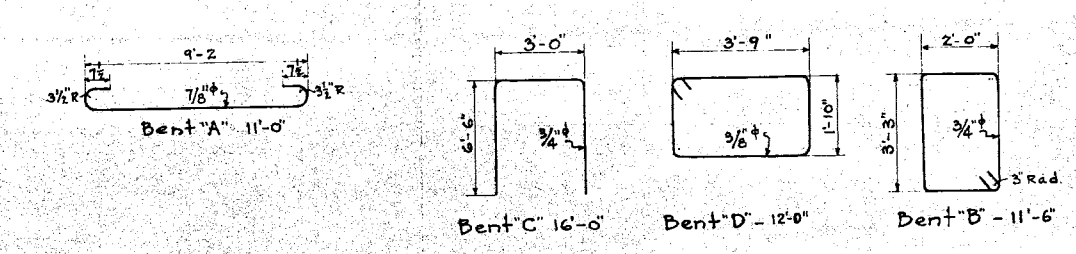
TABLE OF QUANTITIES

ITEM	UNIT	No
FOOTING CONCRETE	CU Yd	66.7
PIER CONCRETE	" "	51.6
REINFORCING STEEL	LBS.	7785
SEAL COAT FOOTING	CU Yd	9.6

TABLE OF BARS (ONE PIER)

No	SIZE	LENGTH	LOCATION
52	7/8"	11'-0"	in Footing Bent A
28	3/4"	27'-0"	in Footg + Curtain Wall
26	3/4"	16'-0"	" Curtain Wall Bent C
64	3/4"	4'-6"	Dowels in Cols.
64	3/4"	11'-0"	" " " "
40	3/8"	12'-0"	Hoops " " Bent D
24	7/8"	14'-0"	Diagonal in Piers
28	7/8"	27'-0"	Horizontal " " "
67	3/4"	11'-6"	Vertical " " Bent B

General Notes:
 Loading - Coopers E-70
 Soil Pressure 2600#/ft²
 fs = 16000#/in² fc = 800#/in²



Required
 1 - Center Pier as shown

WABASH RAILWAY COMPANY
 OFFICE OF THE CHIEF ENGINEER

STRUCTURE: LAWNDALE AVENUE
 LOCATION: DETROIT MICH.
 DIVISION: DETROIT TERMINAL

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

DATE: 3-15-30
 DRAWN BY: D.E.B.
 TRACED BY: H.R.P.
 CHECKED BY: R.D.W.

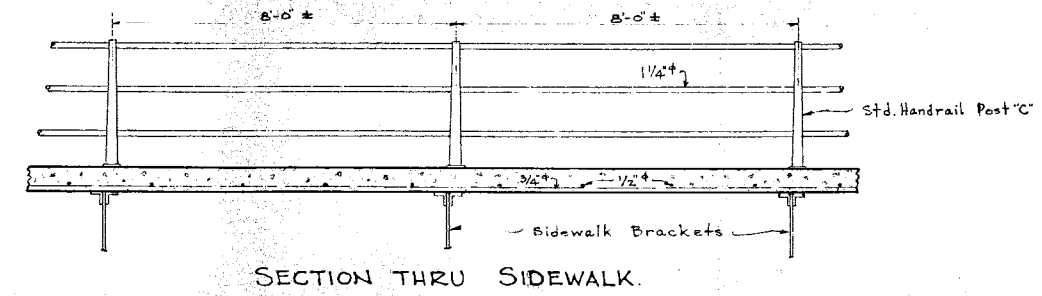
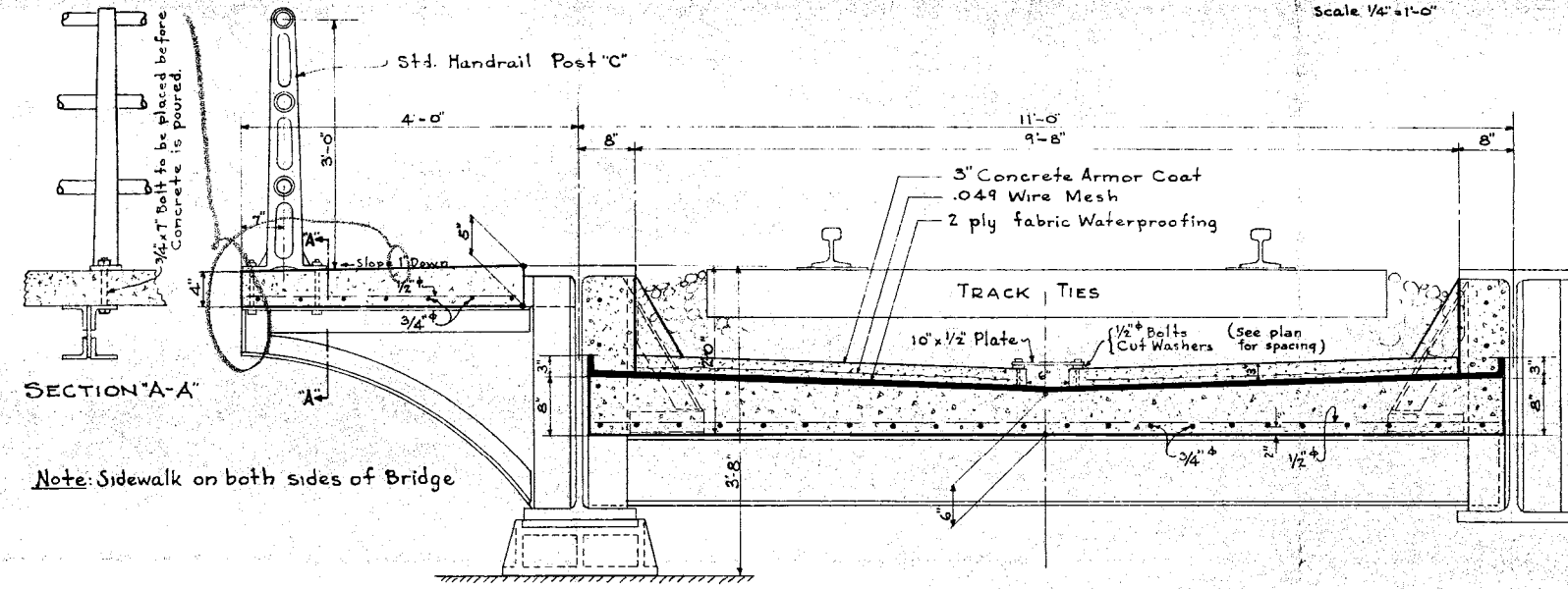
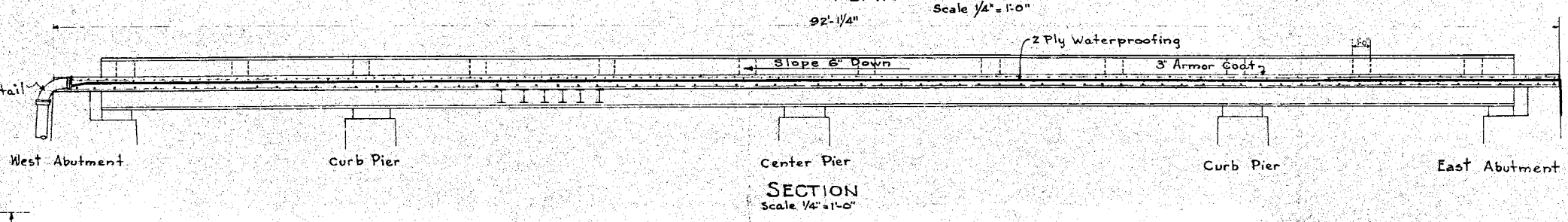
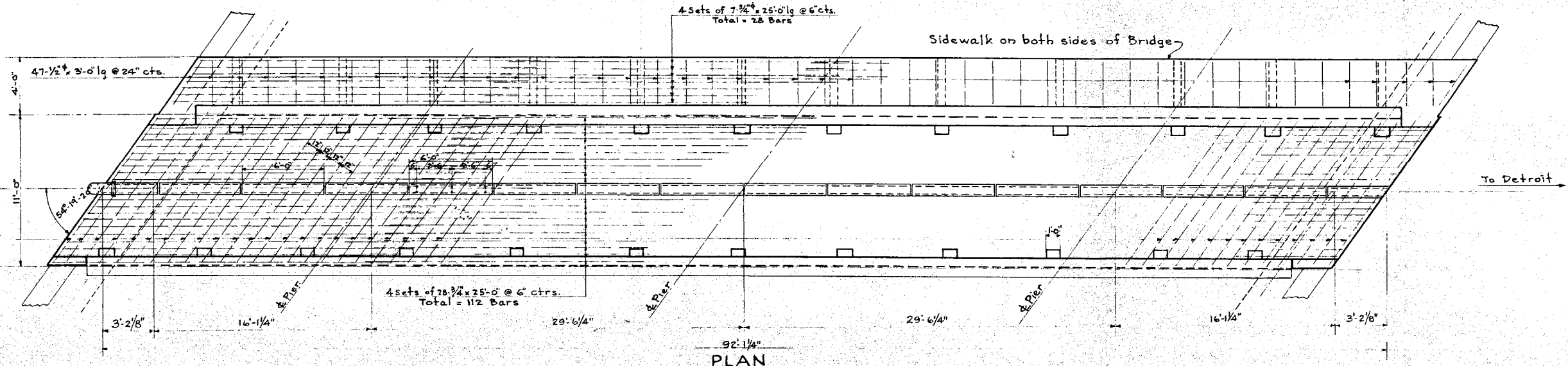
CENTER PIER
 DETAILS

SHEET NO. 5
 NO. OF SHEETS 7

Quan Calc. by D.F.P.
 Ckd. by R.D.W.

R.S.
 4-75-30

Make Provision to prevent water from washing off dropping into Street below

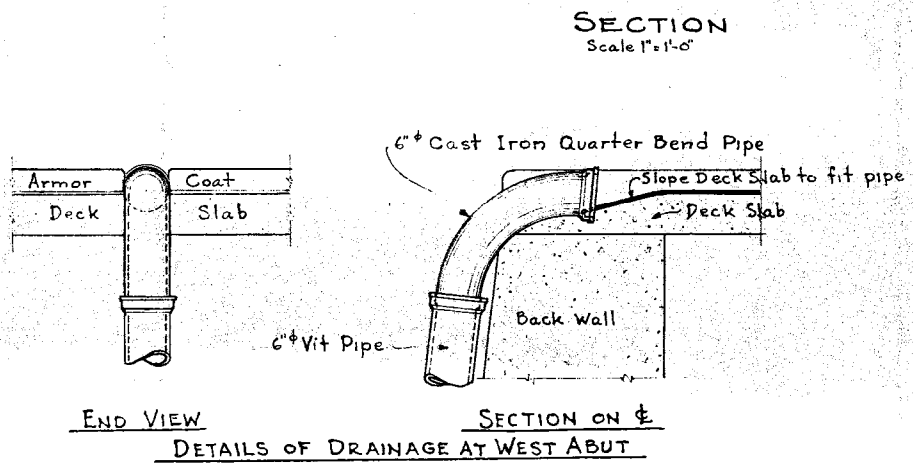


**BILL OF REINFORCING BARS
TOTAL FOR 3 Tracks**

No	SIZE	LENGTH	LOCATION
228	1/2"	13'-0"	Roadway Slab
336	3/4"	25'-0"	"
94	1/2"	3'-0"	Sidewalk Slab
56	3/4"	25'-0"	"

**TABLE OF QUANTITIES
TOTAL SUPERSTRUCTURE - 3 SPANS**

ITEM	UNIT	No
CONCRETE SLAB	CU. YD.	78.5
REINFORCING STEEL	LBS.	17,051
HANDRAIL PIPE	LIN. FT.	552
HANDRAIL POSTS	EA.	24
STEEL PLATES	LBS.	4,700
WATERPROOFING	Sqs.	34.3
ARMORCOAT	"	25.5
CONCRETE SIDEWALK	Cu Yds	8.5



Note: Sidewalk on both sides of Bridge

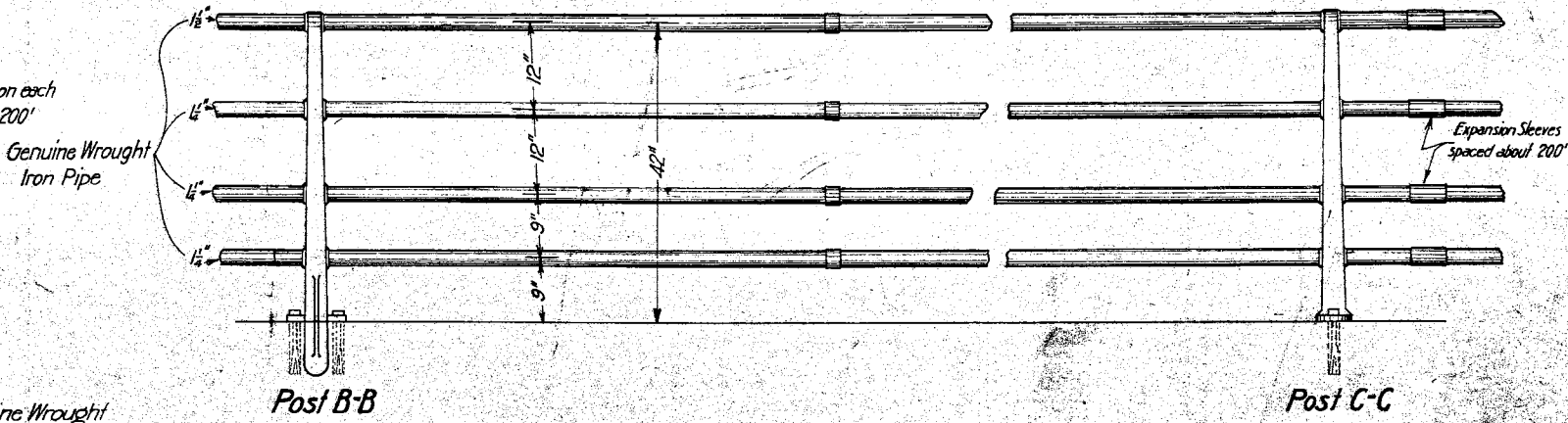
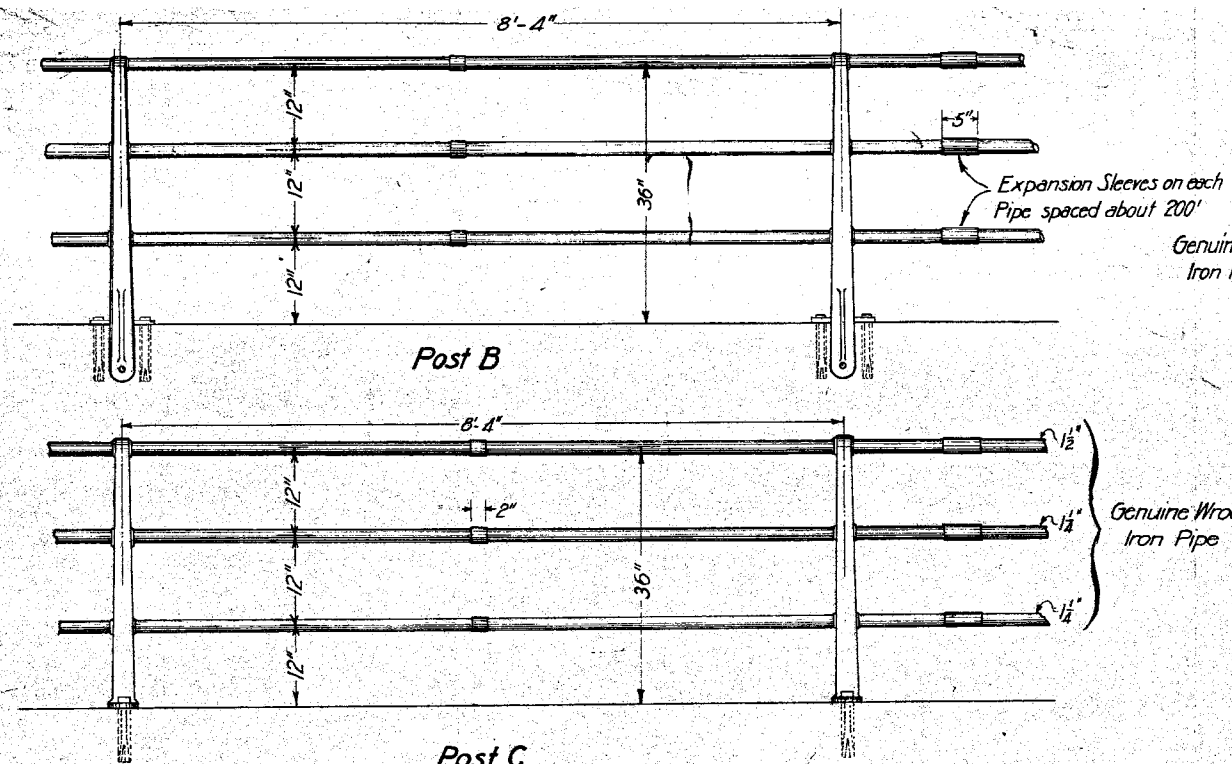
R.S.
4-15-30

WABASH RAILWAY COMPANY
OFFICE OF THE CHIEF ENGINEER

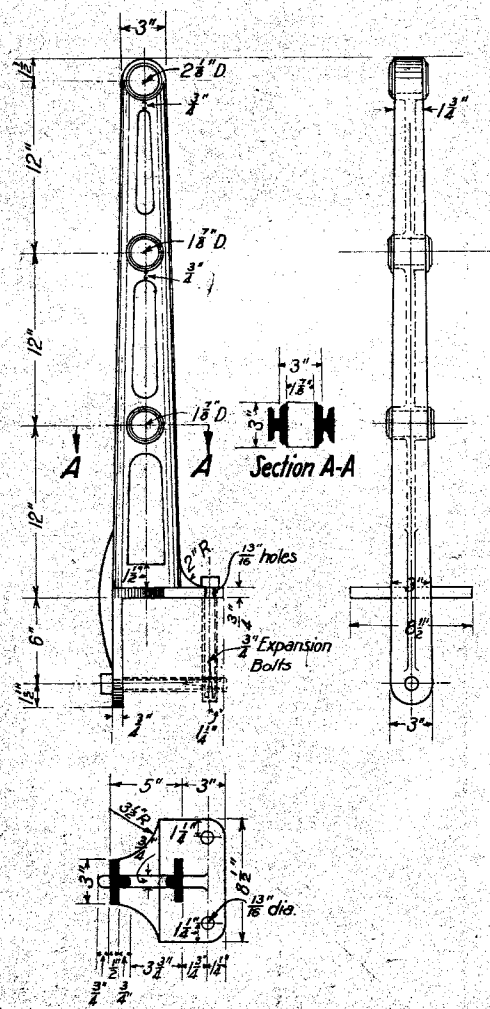
STRUCTURE: **LAWDALE AVE.**
LOCATION: **DETROIT MICH**
DIVISION: **DETROIT TERMINAL**

SCALE: AS SHOWN

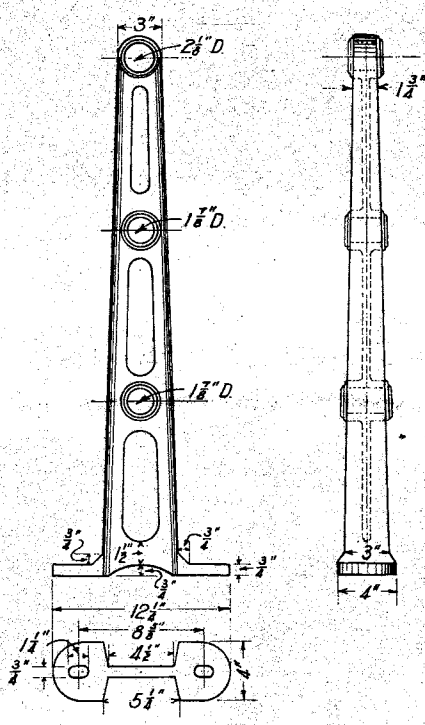
DATE: 3-15-30	CONCRETE FLOOR	SHEET NO.	NO. OF SHEETS
DRAWN BY D.E.B.		6	7
TRACED BY H.R.P.		Quan. Calc. by D.F.P.	
CHECKED BY R.D.W.		" ckd. by C.L.S.	



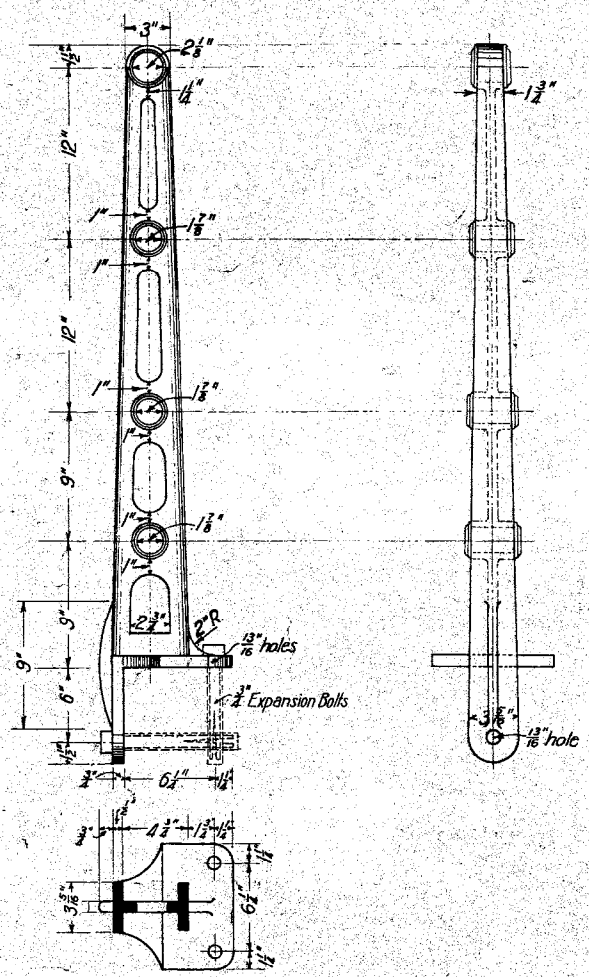
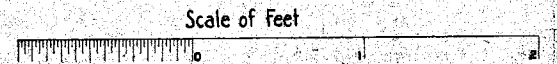
Scale - One inch = One Foot.



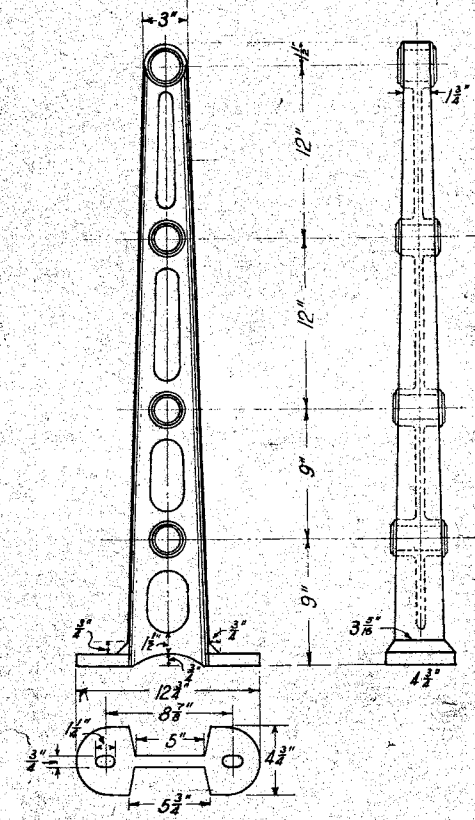
Details of 3-Pipe Post B
For use where railing is along edge of wall.



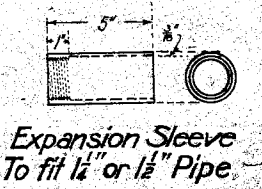
Post C
For use where railing is not along edge of wall.



Details of 4-Pipe Post B-B
For use where railing is along edge of wall.



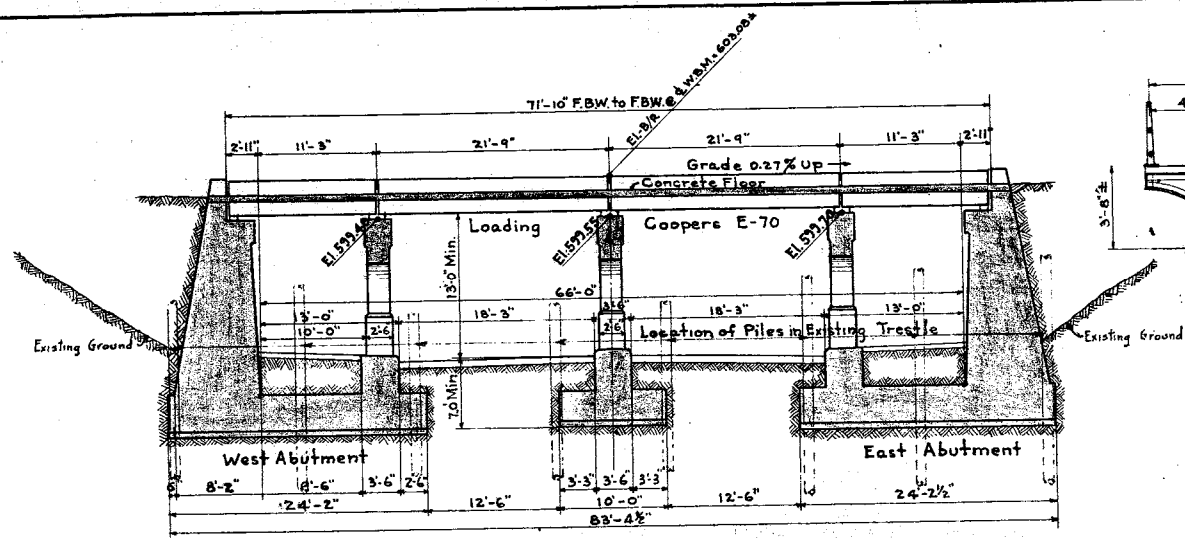
Post C-C
For use where railing is not along edge of wall



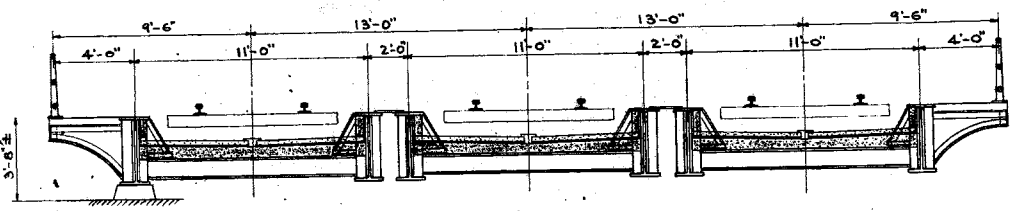
All posts to be of cast-iron.
Shop Paint - One coat 20# red lead to one gallon of paint
Use 4-pipe Railing for Highway Bridges, and in locations for protection of the public. Use 3-pipe Railing elsewhere.

WABASH RAILWAY Standard Hand Rail

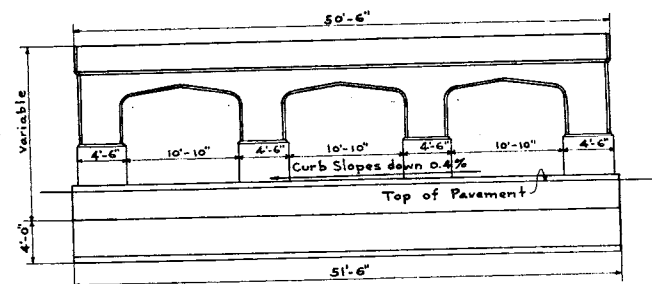
Office of the Chief Engineer
Scale shown
Mar 17, 1926



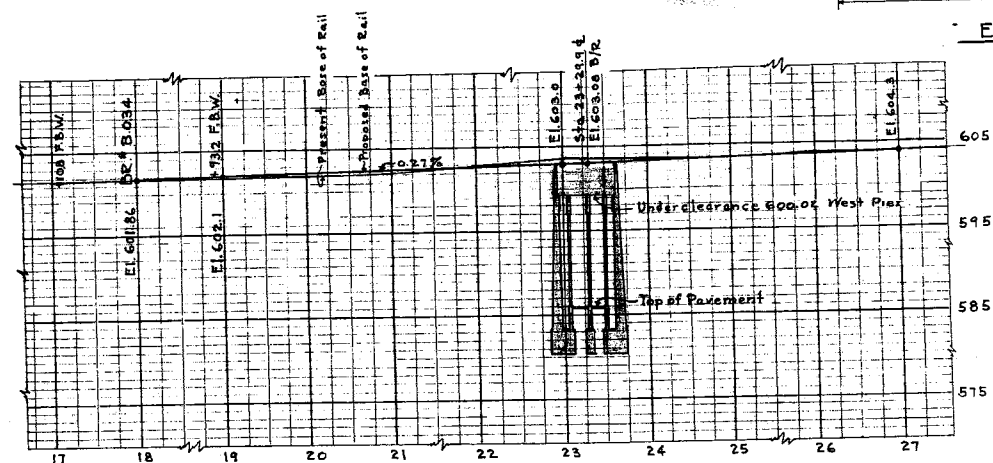
SECTION AT RIGHT ANGLES TO STREET
Scale 1/8" = 1'-0"



SECTION THRU DECK
Scale 1/4" = 1'-0"

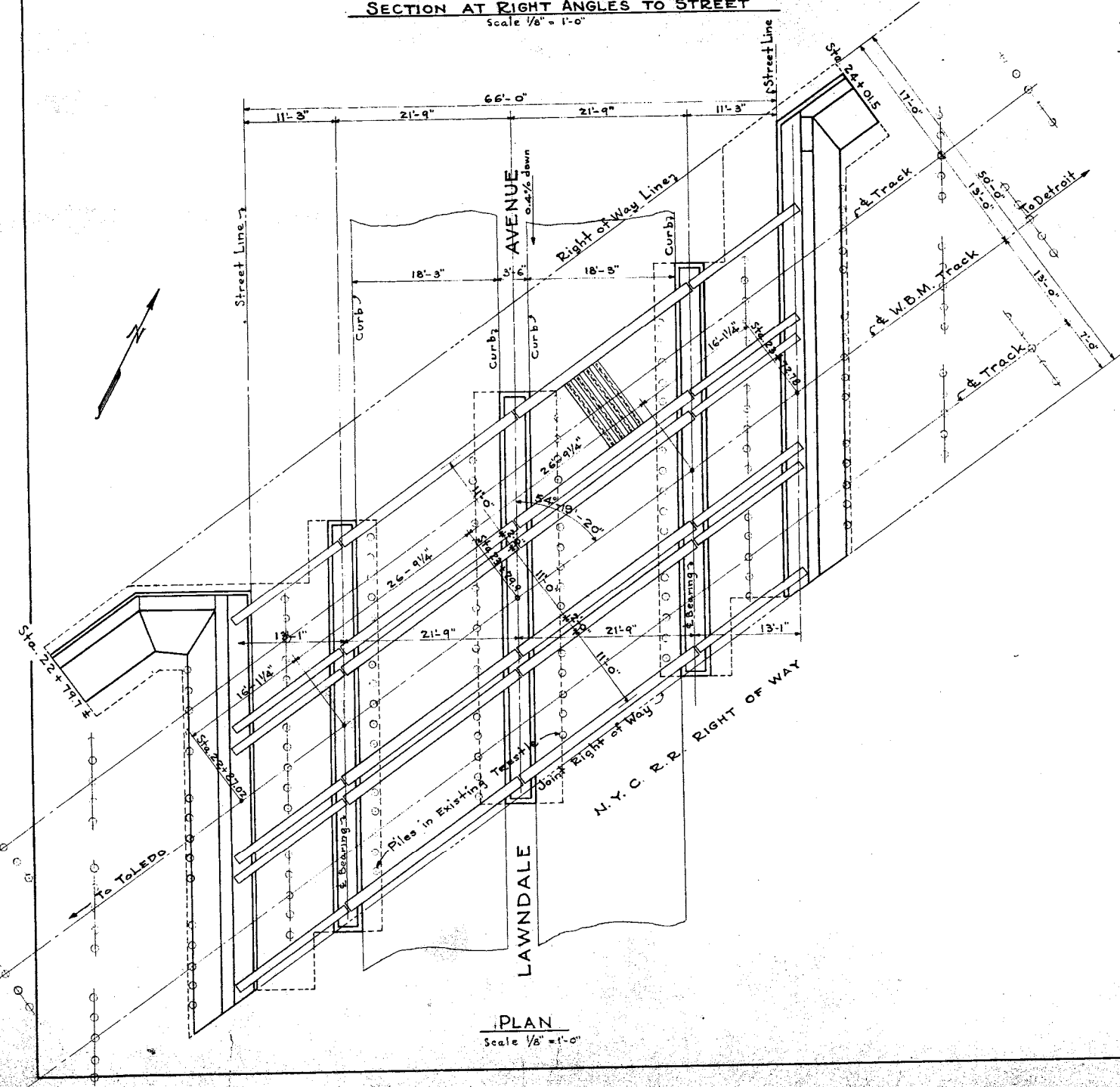


ELEVATION OF PIER
Scale 1/8" = 1'-0"

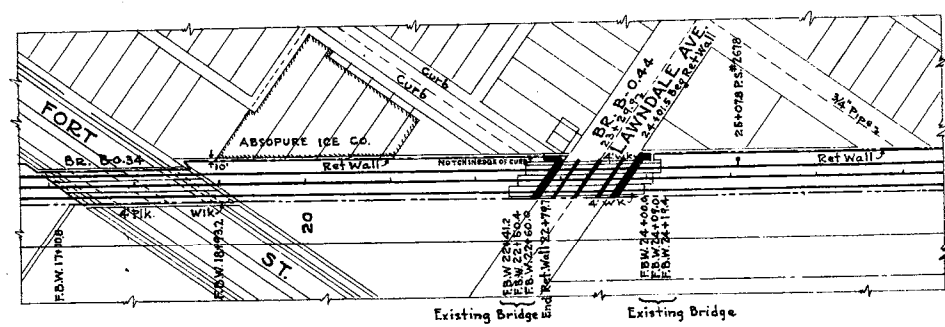


PROFILE
Horizontal Scale 1" = 100'
Vertical Scale 1" = 10'

NOTE: All elevations shown refer to Wabash Datum. To obtain City Datum subtract 480.30.



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



LOCATION PLAN
Scale 1" = 100'

TABLE OF QUANTITIES		
DESCRIPTION	UNIT	AMT
VIT. PIPE 6" φ	Lin. Ft.	60.
ARMOR COAT	SQS.	28.5
SHEETING & SHORING	Sq. Ft.	2,970.
TILE DRAIN 6" φ	Lin. Ft.	240.
VIT. PIPE 8" φ	Lin. Ft.	180.
DRAINAGE PLATES	LBS.	4,700
HANDRAIL	Lin. Ft.	184.
DECK & WALK CONCRETE	CU YD.	87.
EXCAVATION	CU YD.	848.
FOOTING CONCRETE	" "	438.5
ABUTMENT + PIER CONC.	" "	666.
REINFORCING STEEL	LBS.	76,823.
STRUCTURAL STEEL	" "	287,316.
WATERPROOFING (ABUT)	SQS.	24.
WATERPROOFING (DECK)	" "	34.3
FOOTING CONC. SEAL	CU YD.	63.2
REMOVING EXISTING TIMBER	M.B.M.	90.7
CUT OFF PILES	EACH	180.

LIST OF DRAWINGS	
#1	GENERAL PLAN
2	STEEL DESIGN
3	EAST ABUTMENT DETAILS
4	WEST " "
5	CENTER PIER DETAILS
6	CONCRETE FLOOR
7	STANDARD HAND RAIL

WABASH RAILWAY COMPANY
OFFICE OF THE CHIEF ENGINEER

STRUCTURE: LAWDALE AVE.
LOCATION: DETROIT MICH.
DIVISION: DETROIT

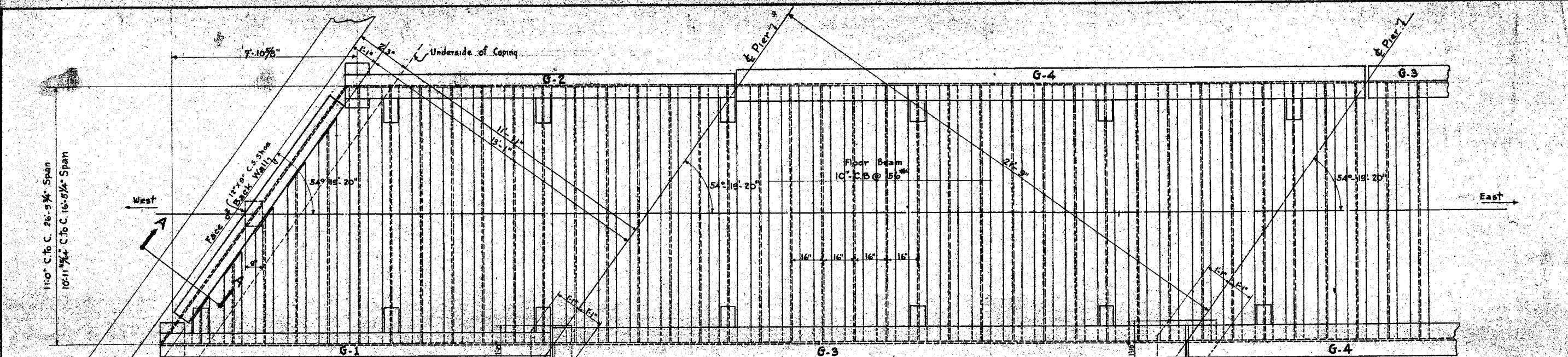
SCALE: AS NOTED

DATE: 3-22-30
DRAWN BY: D.E.B.
TRACED BY: H.R.R.
CHECKED BY: R.D.W.

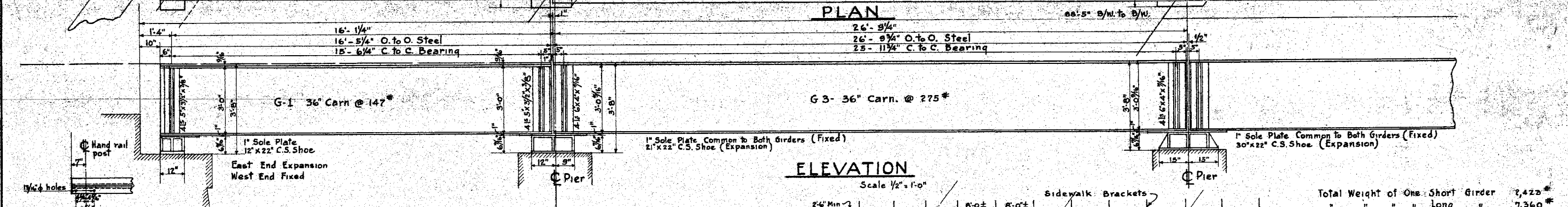
GENERAL PLAN

SHEET NO.	NO. OF SHEETS
1	7

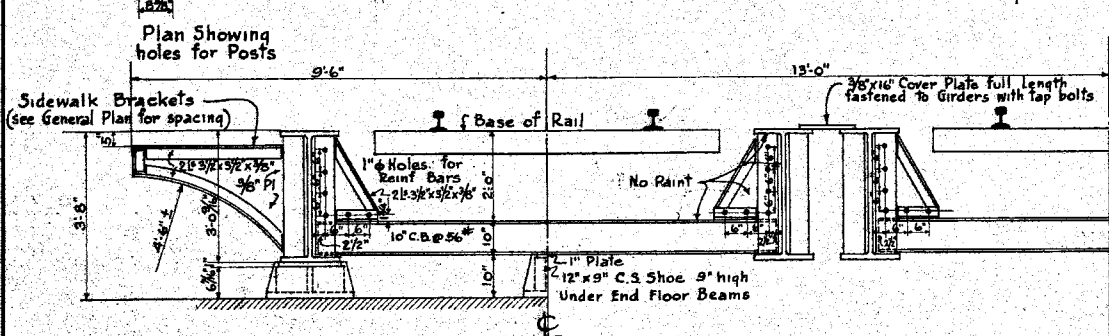
Quan. Calc. by A.J.F.
Quan. Ckd. by D.P.P.



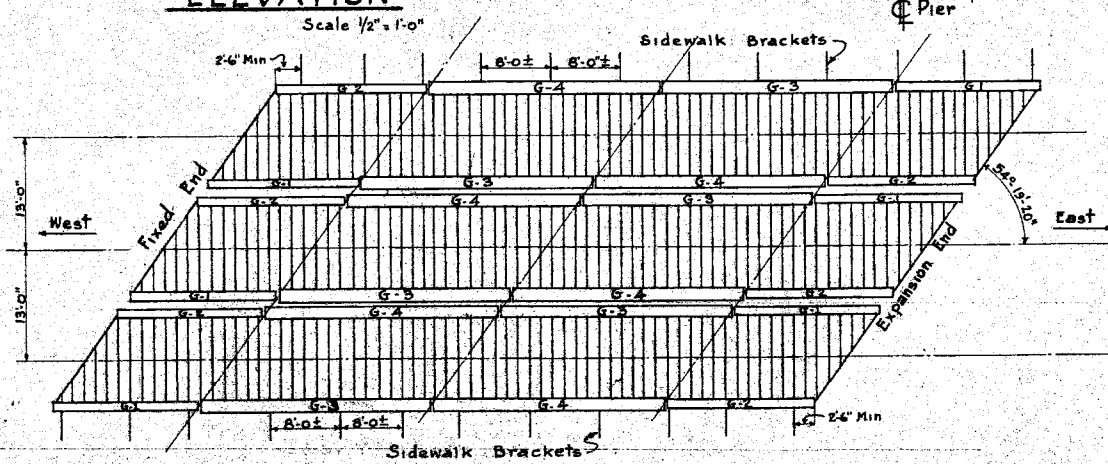
PLAN



ELEVATION



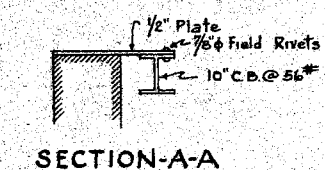
SECTION



GENERAL PLAN

DESIGN DATA

FLOOR BEAMS		SPANS G-3 & G-4		SPANS G-1 & G-2 (Cont'd)	
11'-0" C to C Bearings	26'-0" C to C Bearings	26'-0" C to C Bearings	17'-0" C to C Girders	Bearing: Required (Pier Reaction)	
Dead Load per Ft. of Bridge Floor	Dead Load	Floor 1800	Steel 300	D.L. 27x2100 = 56,600	D.L. 2000x15.5x1/2 = 15,500
Track 150	Total 2,100#/ft.	Conc 1200	Impact 2,100#/ft.	L.L. 140,000	L.L. 71,500
Ballast 1500	Maximum Moments	Beam 300	D.L. 2100x26 1/2 x 1/8 = 178,000	Impact 128,000	Impact 71,500
Armor Coat 400	D.L. 3600x11 1/8 = 4,950	Armor Coat 400	L.L. 56,000	Total 324,600 ÷ 600 = 541"	Total 149,400
Maximum Moments	L.L. 26,250	Use 3600#s	Impact 56,000	End Stiffeners	Section Modulus Required
D.L. 3600x11 1/8 = 4,950	Impact 26,250	Total 1,302,000 Ft. Lbs.	Total 1,302,000 Ft. Lbs.	Use 30"x22" = 660"	522,000x12 = 391 Mod.
L.L. 26,250	Maximum Shears	D.L. 2100x26 1/2 x 1/2 = 27,300	D.L. 2100x26 1/2 x 1/2 = 27,300	Use 45"-6"x4"x7/8"	Web Area Required
Impact 26,250	D.L. 2100x26 1/2 x 1/2 = 27,300	L.L. 102,000	L.L. 102,000	Use 45"-6"x4"x7/8"	159,400 = 15.94"
Section Modulus	Impact 26,250	Impact 99,500	Impact 99,500	SPANS G-1 & G-2	Furnished 21.2"
57,450x12 = 431 per Ft. of Br. Fl.	Section Modulus Required	Total 228,800	Total 228,800	15'-0" C to C Bearings	End Stiffeners
1600	1302,000x12 = 376 Mod.	Web Area Required	Web Area Required	11'-0" C to C Girder	189,400 = 0.368
Use 10" C.B. @ 56" Sec Mod 56.64	10000	228,800 = 2288"	228,800 = 2288"	Maximum Shears	24,000x4x4.5
Space Beams 16" C to C	Furnished 320"	Furnished 320"	Furnished 320"	D.L. 2000x15.5x1/2 = 15,500	Use 45" x 3/2 x 7/8"
	Section Modulus Required	Section Modulus Required	Section Modulus Required	L.L. 140,000	Use 45" x 3/2 x 7/8"
	1302,000x12 = 376 Mod.	1302,000x12 = 376 Mod.	1302,000x12 = 376 Mod.	Impact 128,000	Use 45" x 3/2 x 7/8"
	16,000	16,000	16,000	Total 324,600 ÷ 600 = 541"	Use 12"x22" = 264"
	Use 36" Carn. @ 275"	Use 36" Carn. @ 275"	Use 36" Carn. @ 275"	End Stiffeners	
	Modulus = 1006.8	Modulus = 1006.8	Modulus = 1006.8		



SECTION-A-A

Total Weight of One Short Girder 2,425 #
 " " " Long " 7,360 #

REQUIRED

3 Spans @ 89,321 #	Total Wt.	267,963 Lbs
24 Sidewalk Brackets @ 207 #		4,968 "
2 Girder Protection Plates @ 1817.5 #		3,635 "
6-30"x22" C.S. Shoes, 6 1/2" high		3,000 "
12-21"x22" " " " "		4,200 "
12-12"x22" " " " "		2,400 "
6-12"x9" " " " "		1,150 "
Total		287,316 "

Note: Base of shoes to be shaped as shown in plan above

GENERAL NOTES

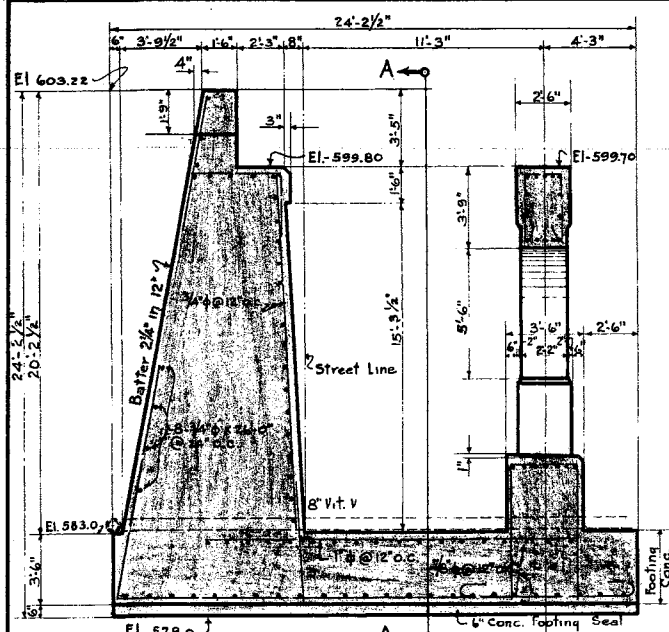
Specifications	A.R.E.A. Latest revisions
Live Load	Coopers E-70
Alignment	Tangent
Grade	0.27%
Rivets	7/8"
Paint	One shop coat #2400 Detroit Graphite
	Do not paint top of Floor Beams, nor inside of Girders above Floor Beams

WABASH RAILWAY COMPANY
 OFFICE OF THE CHIEF ENGINEER
 STRUCTURE: **LAWDALE AVE**
 LOCATION: **DETROIT MICH**
 DIVISION: **DETROIT TERMINAL**

SCALE: As shown
 DATE: **Feb 15-1930**
 DRAWN BY: **D.E.B.**
 TRACED BY: **A.J.F.**
 CHECKED BY: **R.D.W.**

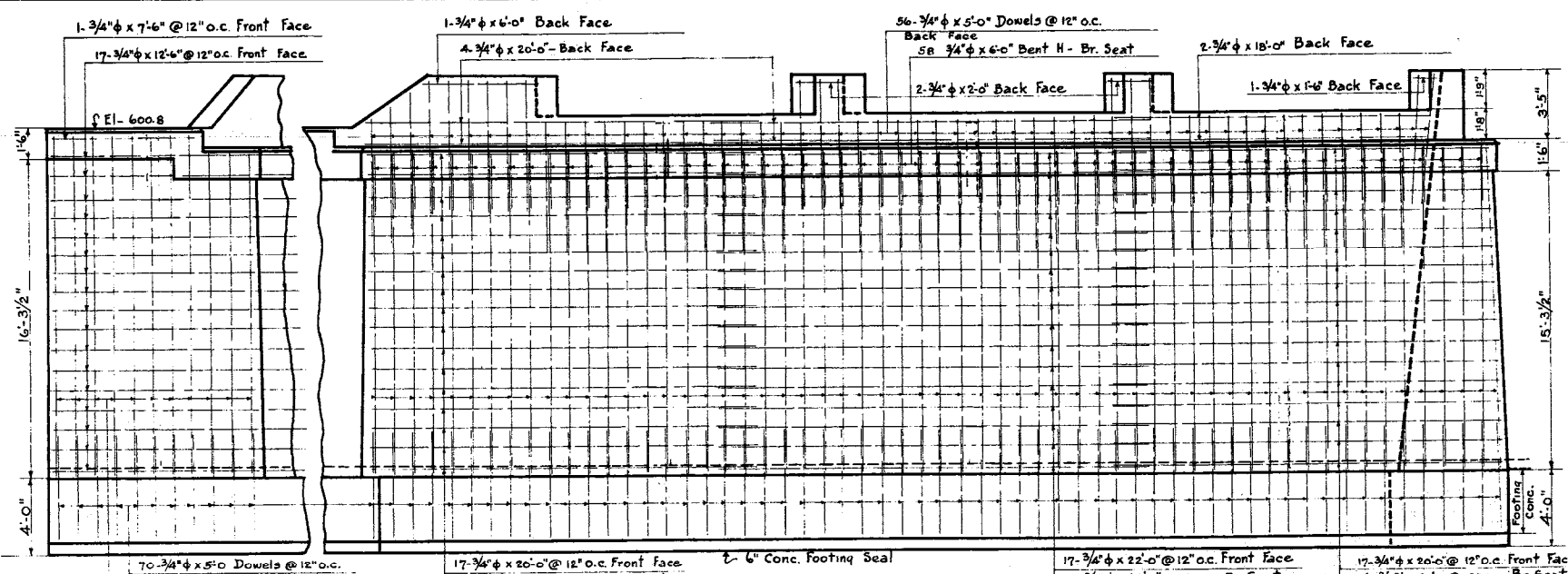
STEEL DESIGN

SHEET NO. **2** OF SHEETS **8**
 QUANT. CALC. BY: **A.J.F.**
 DATE: **Feb 15-1930**



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

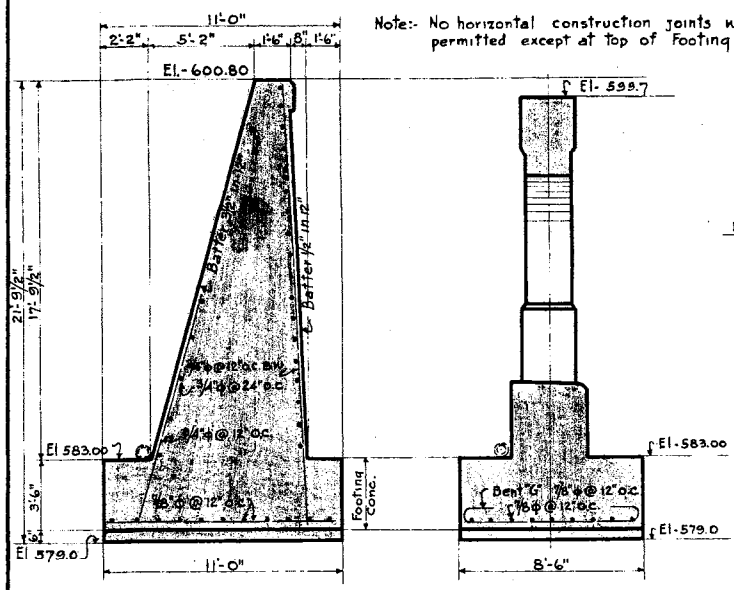
Note: Curb Pier is similar to the Center Pier above the Footing Line. For Details & Reinforcing see "Center Pier Details" Sheet No. 5



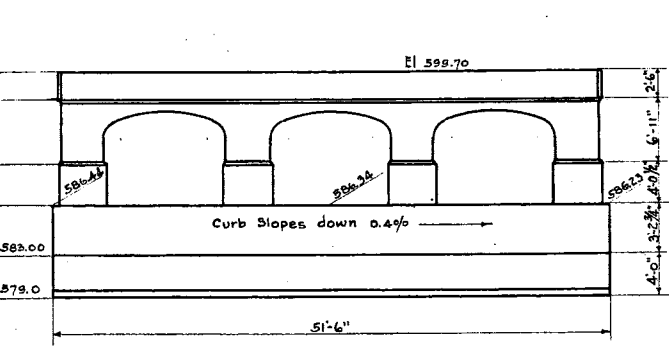
SECTION A-A
Scale 1/4" = 1'-0"

TABLE OF RODS				EAST ABUTMENT	
NO.	SIZE	LENGTH	LOC.	LOCATION	
15	7/8"	10'-0"	12"	Trans.	Bottom Footing
33	"	16'-0"	6"	"	" Bent 'F'
37	"	24'-7"	12"	"	" Bent 'E'
9	"	9'-0"	"	"	" Bent 'G'
6	"	11'-0"	Var.	"	"
43	1"	17'-6"	12"	"	Top
4	7/8"	10'-0"	"	Long.	Bottom
4	"	15'-0"	"	"	"
3	"	18'-0"	"	"	"
40	"	28'-0"	"	"	"
8	"	24'-0"	"	"	"
30	"	28'-0"	"	"	Top
6	"	24'-0"	"	"	"
70	3/4"	5'-0"	"	Vert. Dowels	Abut. Front Face
70	"	16'-0"	"	"	Str.
58	"	6'-0"	"	Bent 'H'	Br. Seat
17	"	12'-6"	"	Hor. Str.	Front Face
1	"	7'-6"	"	"	"
34	"	20'-0"	"	"	"
17	"	22'-0"	"	"	"
8	"	20'-0"	"	"	Br. Seat
4	"	22'-0"	"	"	"
50	"	11'-0"	"	Dowels @ Bottom	Back Face
8	"	26'-0"	"	Hor. Str.	"
56	"	5'-0"	"	Vert. Dowels @ Top	"
4	"	20'-0"	Var.	Long. St	Top
1	"	6'-0"	"	"	"
2	"	18'-0"	"	"	"
2	"	2'-0"	"	"	"
1	"	1'-6"	"	"	"

CURB PIER				See Sheet #	
NO.	SIZE	LENGTH	LOC.	LOCATION	
14	7/8"	27'-0"	"	Horz.	Curtain Wall
26	"	16'-0"	"	"	" Bent 'C'
64	"	4'-6"	"	Dowels,	Cols
64	"	11'-0"	"	"	"
40	3/8"	12'-0"	"	Hoops	" Bent 'D'
24	7/8"	14'-0"	"	Diagonals	Piers
28	"	27'-0"	"	Horz.	"
67	3/4"	11'-6"	"	Stirrups	" Bent 'B'



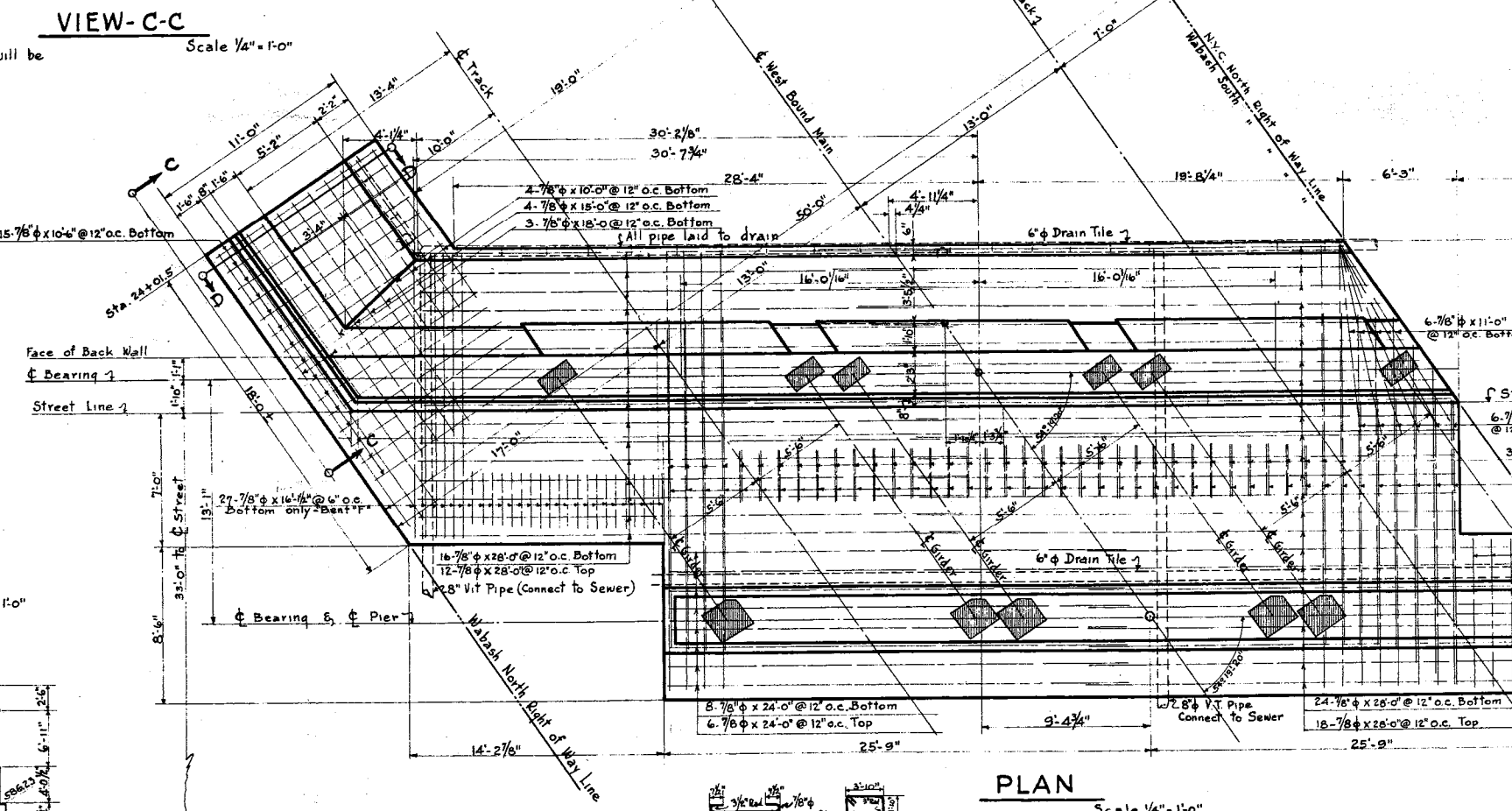
SECTION D-D Scale 1/4" = 1'-0"
SECTION B-B Scale 1/4" = 1'-0"



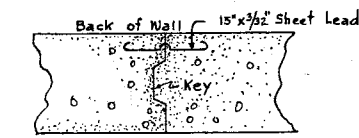
GENERAL ELEVATION OF CURB PIER
LOOKING EAST

Note: For Details & Reinforcing see Center Pier Details Sheet No. 5
Scale 1/8" = 1'-0"

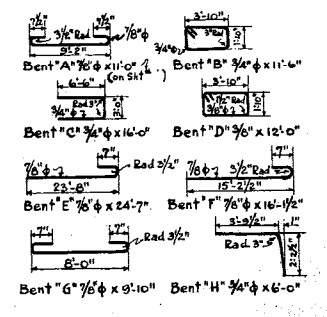
VIEW-C-C
Scale 1/4" = 1'-0"



PLAN
Scale 1/4" = 1'-0"



DETAIL OF VERTICAL CONSTRUCTION JOINTS



DETAIL OF BENT BARS

TABLE OF QUANTITIES		
DESCRIPTION	UNIT	AMOUNT
Footing Concrete	Cu. Yd.	185.8
Abutment "	"	254.6
Pier "	"	52.4
Reinforcing Steel	Lbs.	25387.
Footing Seal Concrete	Cu. Yds.	26.6
Excavating	"	4.24.

WABASH RAILWAY COMPANY
OFFICE OF THE CHIEF ENGINEER

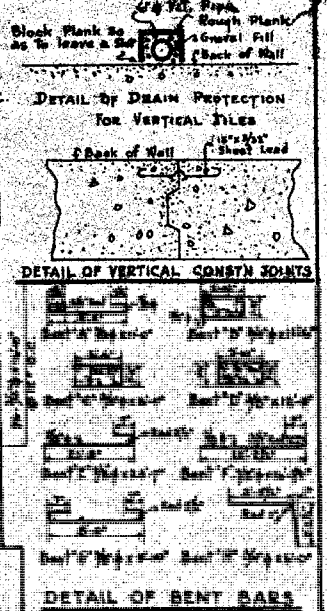
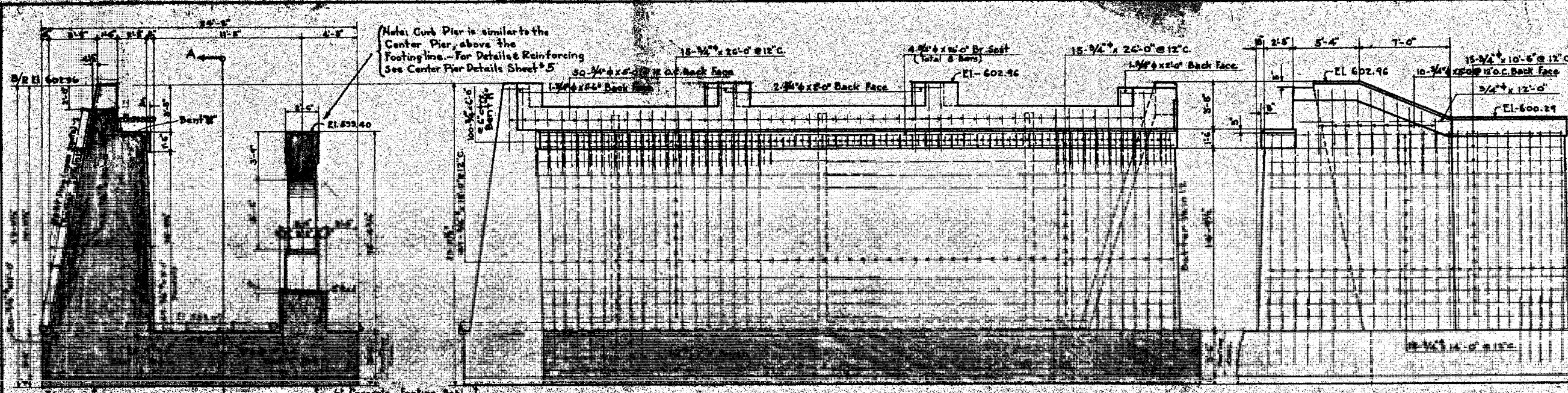
STRUCTURE: **LAWDALE AVE**
LOCATION: **DETROIT MICH**
DIVISION: **DETROIT**

SCALE: As Shown
DATE: **Nov 15-30**
DRAWN BY: **D.F.B**
TRACED BY: **A.J.F.**
CHECKED BY: **R.D.W.**

EAST ABUTMENT
DETAILS

SHEET NO.	NO. OF SHEETS
3	7

Quan. Calc. by: **D.F.P.**
Ckd. by: **R.J.J.**

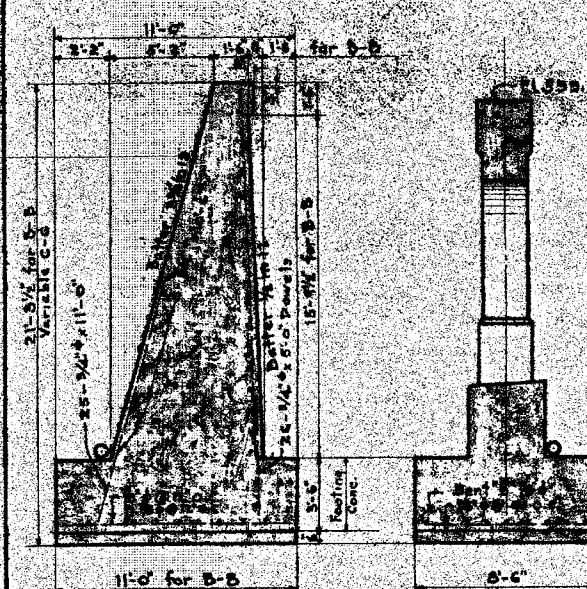


SECTION
Scale 1/4" = 1'-0"

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

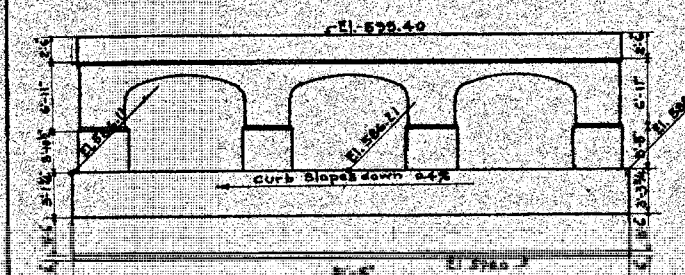
VIEW D-D
Scale 1/4" = 1'-0"

Note: No horizontal construction joints will be permitted except at top of footing.



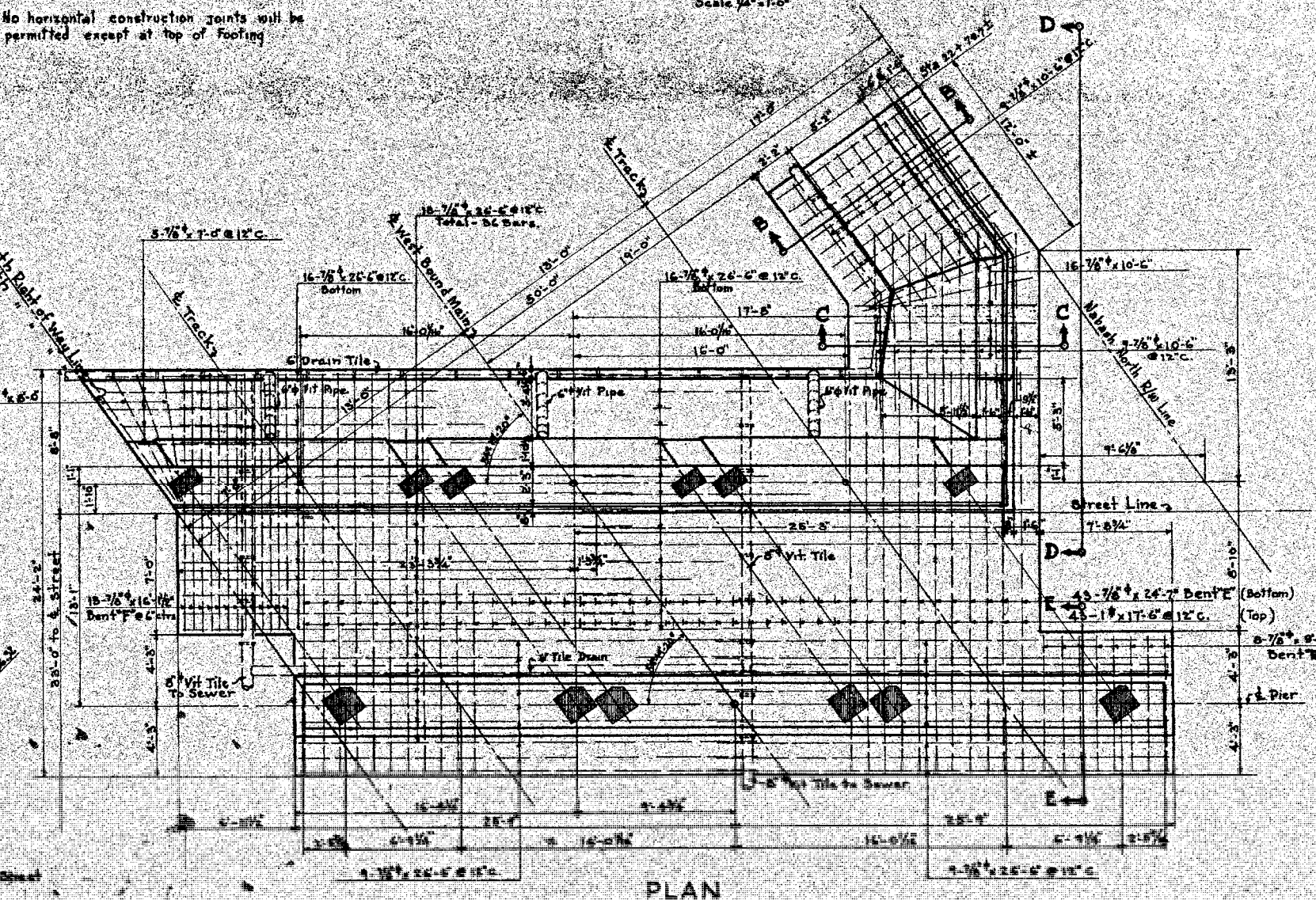
SECTION B-B & C-C
Scale 1/4" = 1'-0"

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



GENERAL ELEVATION OF CURB PIER (LOOKING WEST)

Note: For Details & Reinforcing See Center Pier Details Sheet



PLAN
Scale 1/4" = 1'-0"

BILL OF REINFORCING BARS			
No	SIZE	LENGTH	LOCATION
43	1/2"	24'-7"	Horiz. in Footing - Bent E
18	"	16'-1/2"	" " " Bent F
4	"	8'-0"	" " " Bent G
8	"	9'-10"	" " " Bent H
24	"	10'-6"	" " " Bent I
50	"	26'-6"	" " " Bent J
3	"	7'-0"	" " " Bent K
43	1 1/8"	17'-6"	" " " (Top)
36	7/8"	26'-6"	" " " (Top)
28	"	27'-0"	" " " Curtain Wall
26	"	16'-0"	" " " Bent C
64	"	4'-6"	Dowels - Cols.
64	"	11'-0"	" " " Bent D
40	3/8"	12'-0"	Hoops " " Bent D
24	7/8"	14'-0"	Diagonals - Piers
28	"	27'-0"	Horiz. " Bent B
67	3/4"	11'-6"	Vert. " Bent B
38	"	26'-0"	Horiz. " Abutment
15	"	14'-0"	" " " "
15	"	10'-6"	" " " "
78	"	16'-0"	Vert. " " "
100	"	6'-0"	Dr. Seat Bent H
14	"	26'-0"	Horiz. " Abut. (rear face)
8	"	10'-6"	" " " "
75	"	11'-0"	Vert. " " "
60	"	5'-0"	" " " "
75	"	5'-0"	Footings Dowels
1	"	1'-6"	Horiz. " Abut. (rear face)
3	"	2'-0"	" " " (rear face)

TABLE OF QUANTITIES	
FOOTING CONCRETE	CU YD 186
ABUTMENT CONCRETE	" 255
PIER CONCRETE	" 324
REINFORCING STEEL	LBS 26680
FOOTING CONCRETE SEAL	CU YD 21
Excavating	" 424

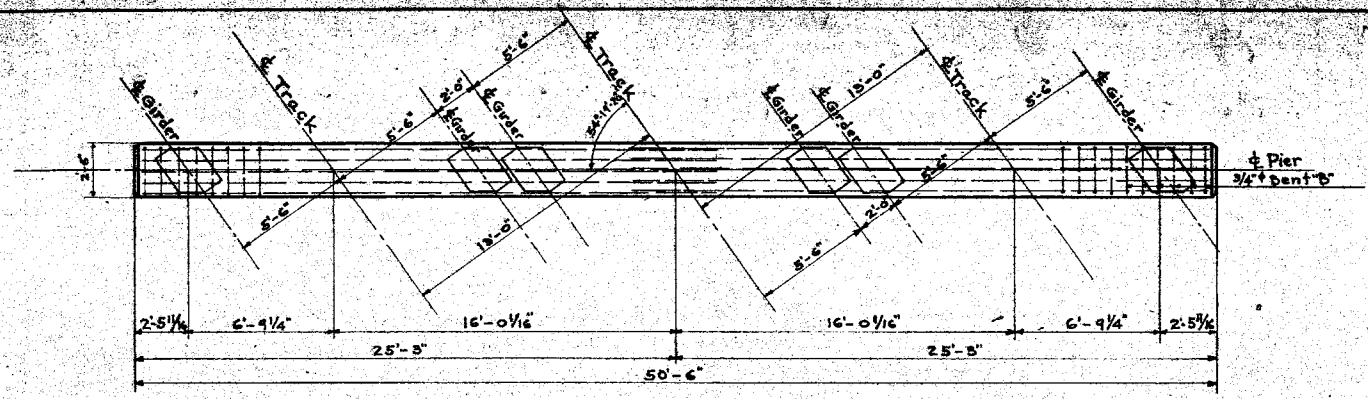
WABASH RAILWAY COMPANY
OFFICE OF THE CHIEF ENGINEER

STRUCTURE: LAWDALE AVE.
LOCATION: DETROIT MICH.
DIVISION: DETROIT

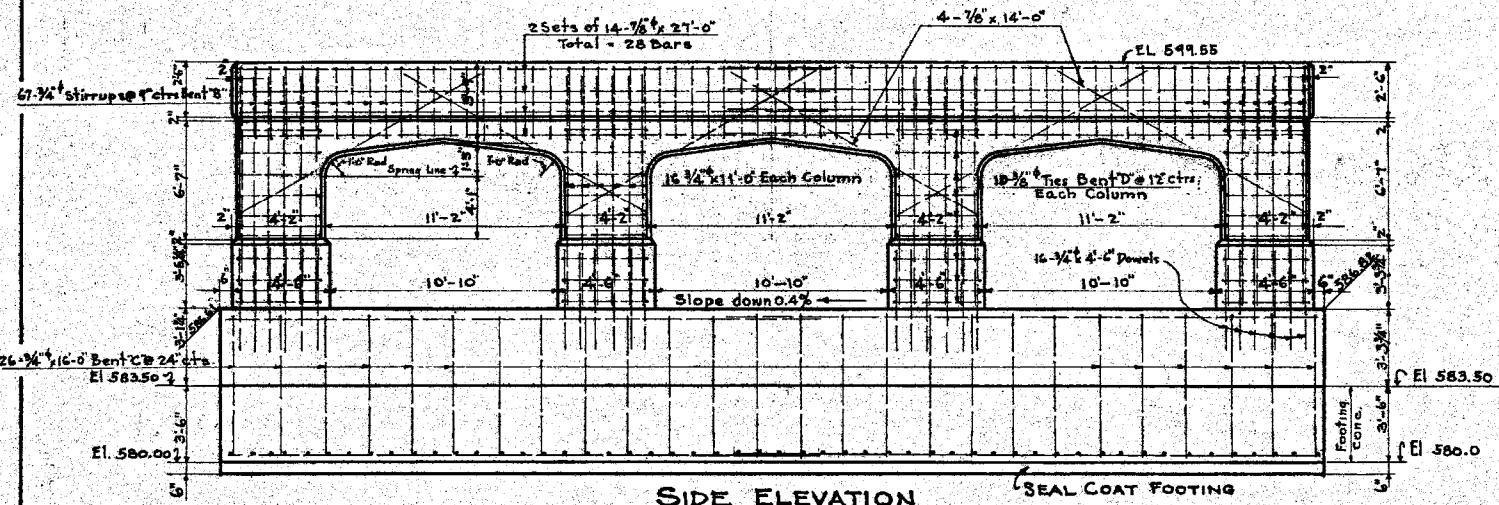
SCALE: AS SHOWN
DATE: MAR - 1924
DRAWN BY: P. J. P.
CHECKED BY: J. L. F.

WEST ABUTMENT
DETAILS

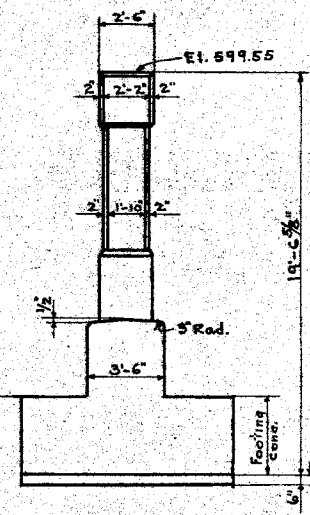
SHEET NO. 4 OF 8



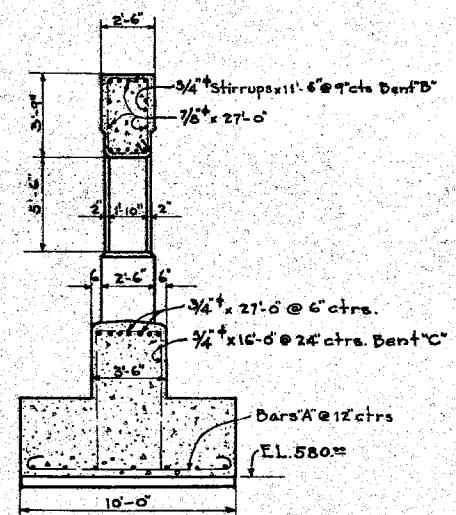
PLAN OF TOP



SIDE ELEVATION
LOOKING WEST



END VIEW



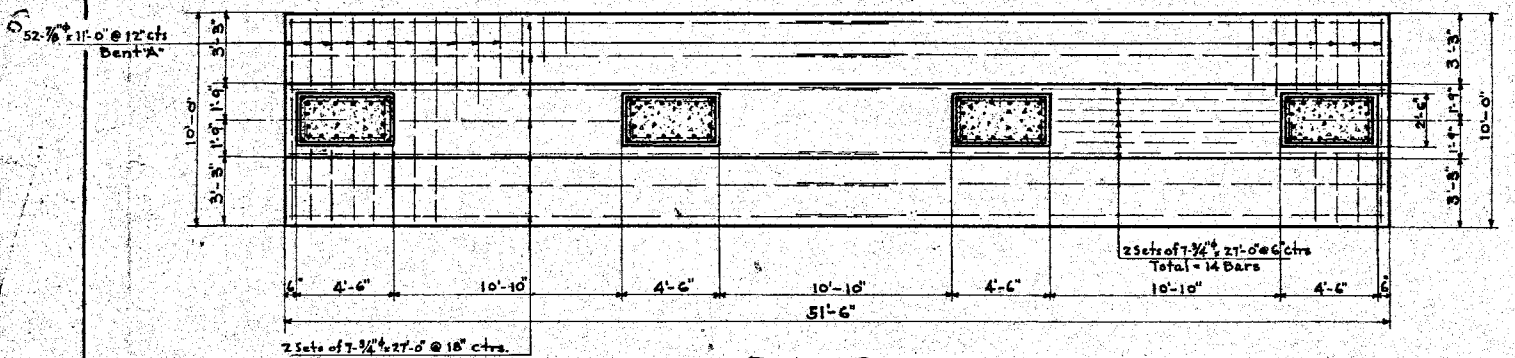
SECTION

No	SIZE	LENGTH	LOCATION
52	7/8"	11'-0"	in Footing Bent A
28	3/4"	27'-0"	in Footing + Curtain Wall
26	3/4"	16'-0"	in Curtain Wall Bent C
64	3/4"	4'-6"	Dowels in Cols.
64	3/4"	11'-0"	Hoops " " Bent D
40	3/4"	12'-0"	Hoops " " Bent D
24	7/8"	14'-0"	Diagonal in Piers
28	7/8"	27'-0"	Horizontal " "
67	3/4"	11'-6"	Vertical " " Bent B

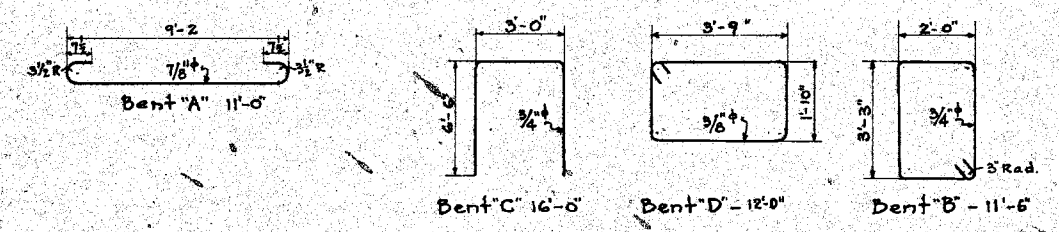
ITEM	UNIT	No
FOOTING CONCRETE	CUYD	66.7
PIER CONCRETE	" "	51.6
REINFORCING STEEL	LBS.	7985
SEAL COAT FOOTING	CUYD	3.6

General Notes:
 Loading - Coopers E-70
 SOIL Pressure 2600#/4
 fs=16000#/sq ft. fc=800#/sq

Required
 1-Center Pier as shown

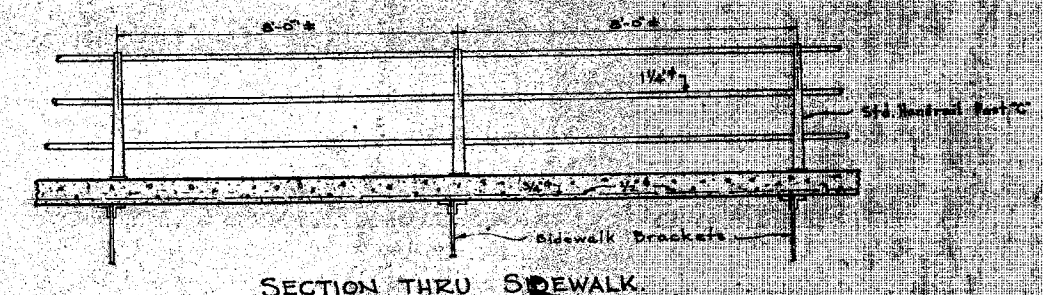
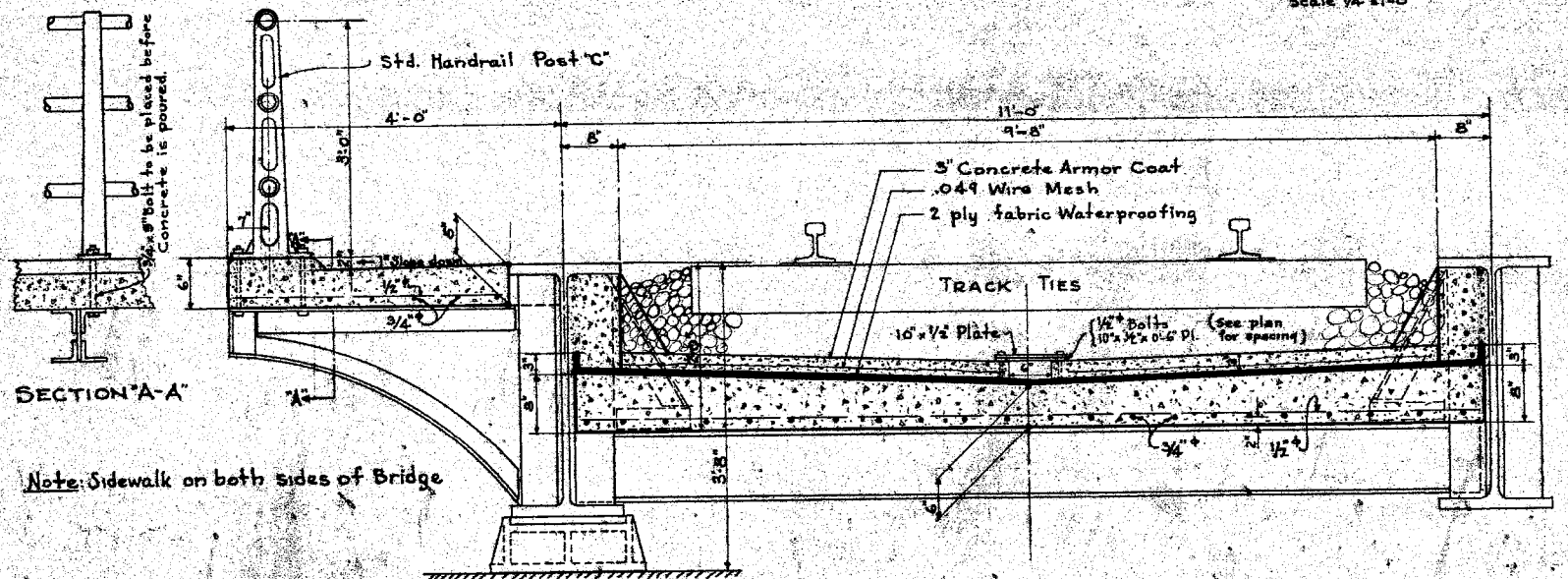
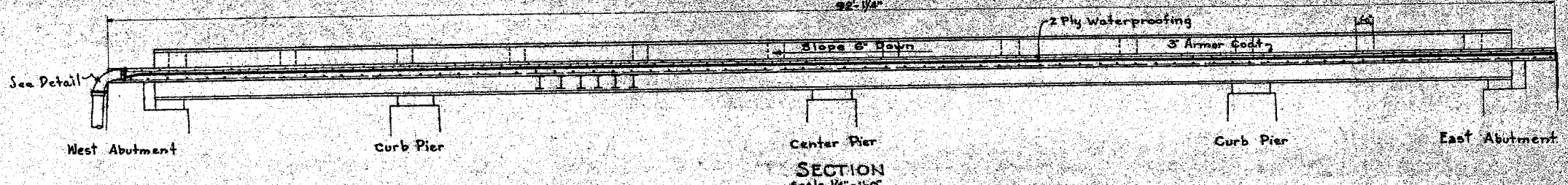
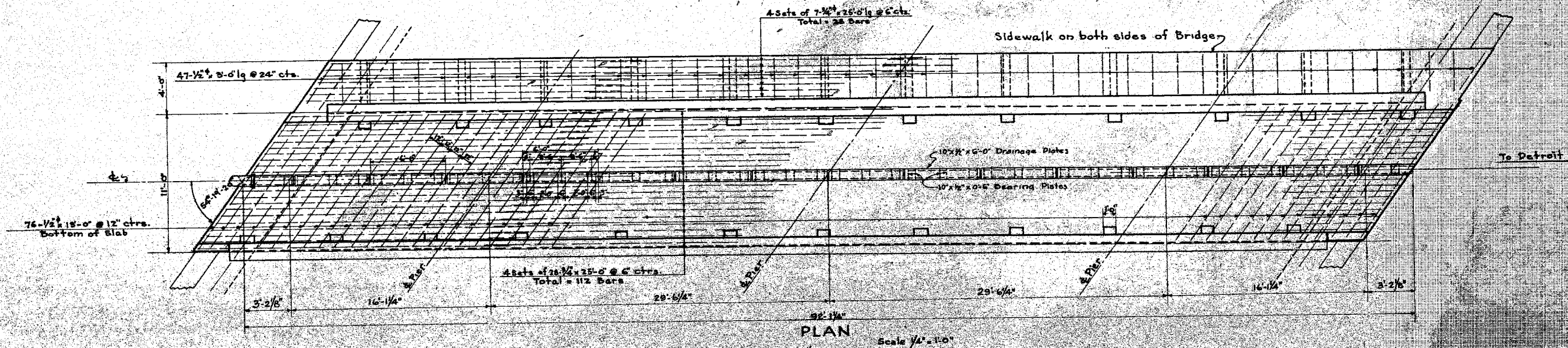


PLAN SECTION



DETAILS OF BENT BARS

WABASH RAILWAY COMPANY			
OFFICE OF THE CHIEF ENGINEER			
STRUCTURE:	LAWDALE AVENUE		
LOCATION:	DETROIT MICH.		
DIVISION:	DETROIT TERMINAL		
SCALE: 1/4" = 1'-0"	CENTER PIER DETAILS	SHEET NO.	NO. OF SHEETS
DATE: 3-15-20		5	7
DRAWN BY D.E.B.		CHECKED BY R.W.	
TRACED BY H.E.P.		DUAL Calc. by D.F.P.	



BILL OF REINFORCING BARS
TOTAL FOR 3 TRACKS

No	SIZE	LENGTH	LOCATION
228	1/2"	15'-0"	Roadway Slab
336	3/4"	25'-0"	"
94	1/2"	3'-0"	Sidewalk Slab
56	3/4"	25'-0"	"

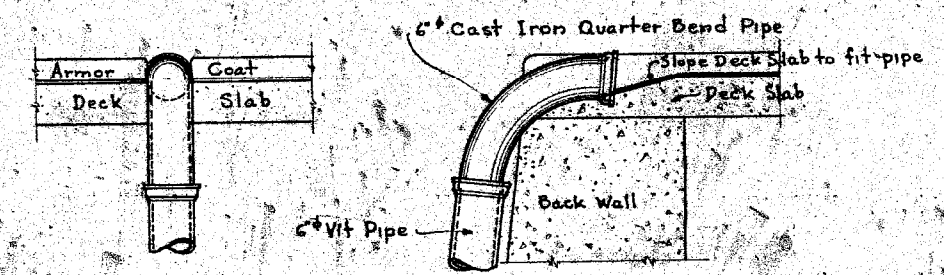


TABLE OF QUANTITIES
TOTAL SUPERSTRUCTURE - 3 SPANS

ITEM	UNIT	No
CONCRETE SLAB	Cu. Yd.	78.5
REINFORCING STEEL	LBS.	11,031
HANDRAIL PIPE	Lin. Ft.	532
HANDRAIL POSTS	EA	24
STEEL PLATES	LBS.	4,700
WATERPROOFING	Sqs.	34.3
ARMOR GOAT	"	25.5
CONCRETE SIDEWALK	Cu Yds	6.5

WABASH RAILWAY COMPANY
OFFICE OF THE CHIEF ENGINEER

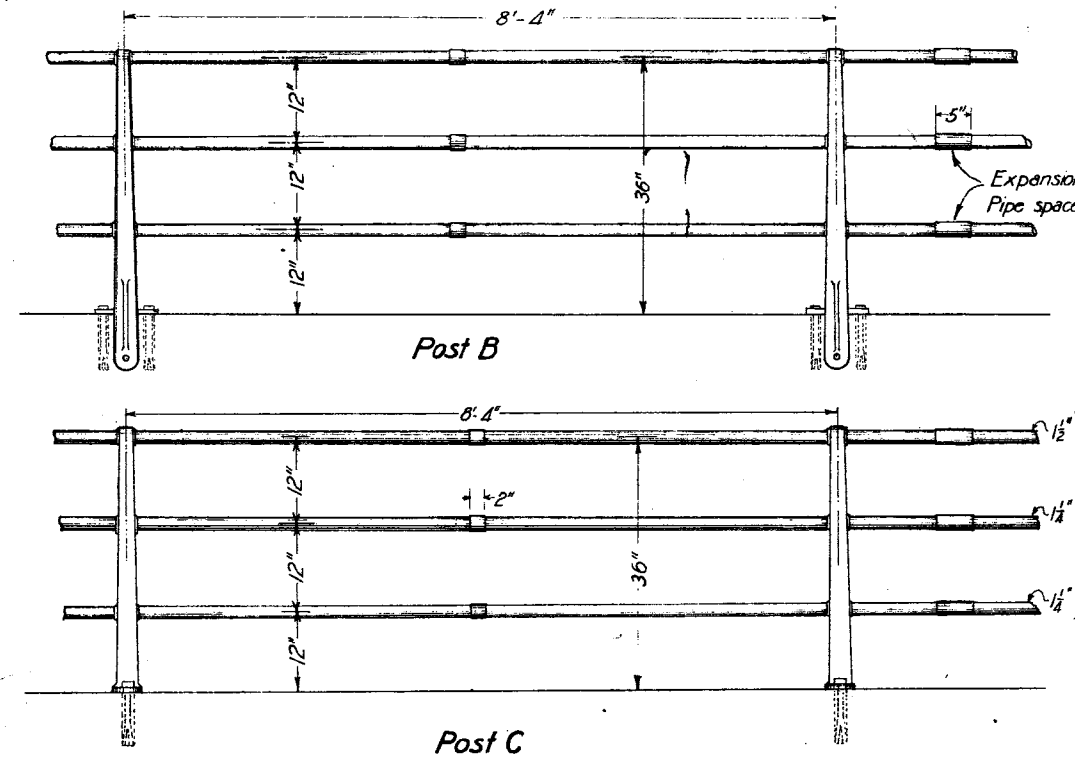
STRUCTURE: **LAWDALE AVE.**
LOCATION: **DETROIT MICH**
DIVISION: **DETROIT TERMINAL**

SCALE AS SHOWN

DATE: 3-15-30
DRAWN BY: P. E. D.
CHECKED BY: S. E. T.

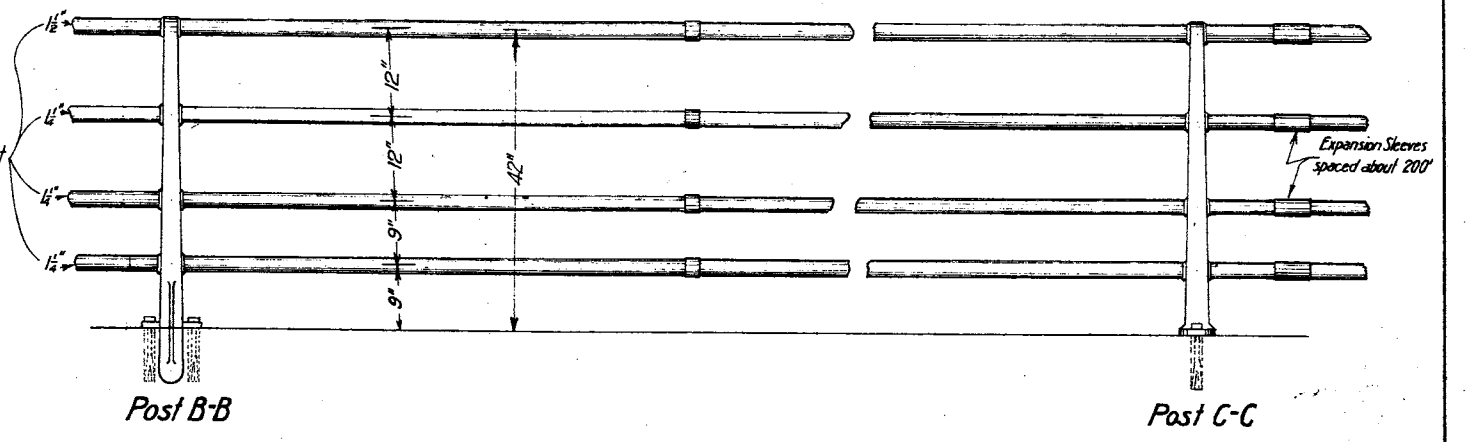
CONCRETE FLOOR

SHEET NO.	TOTAL NO. SHEETS
6	6



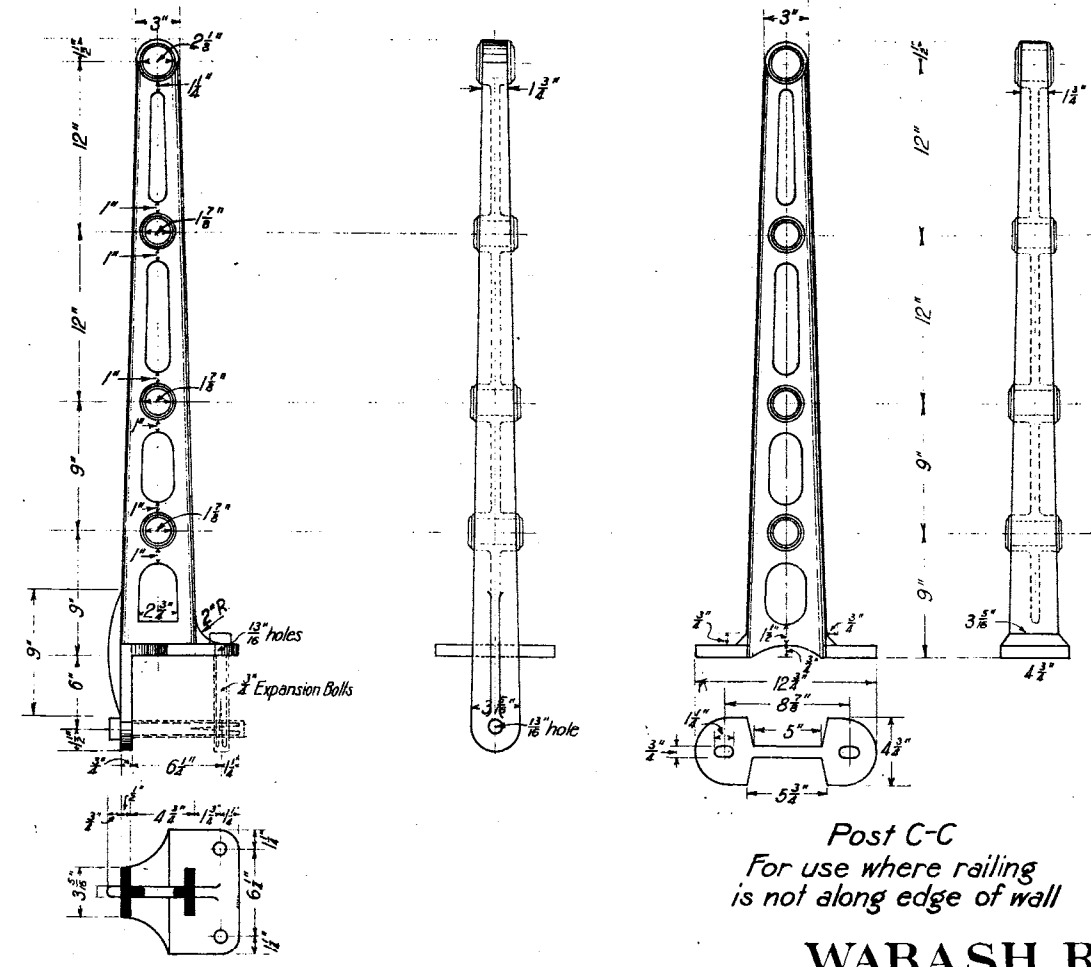
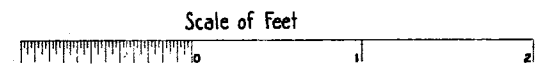
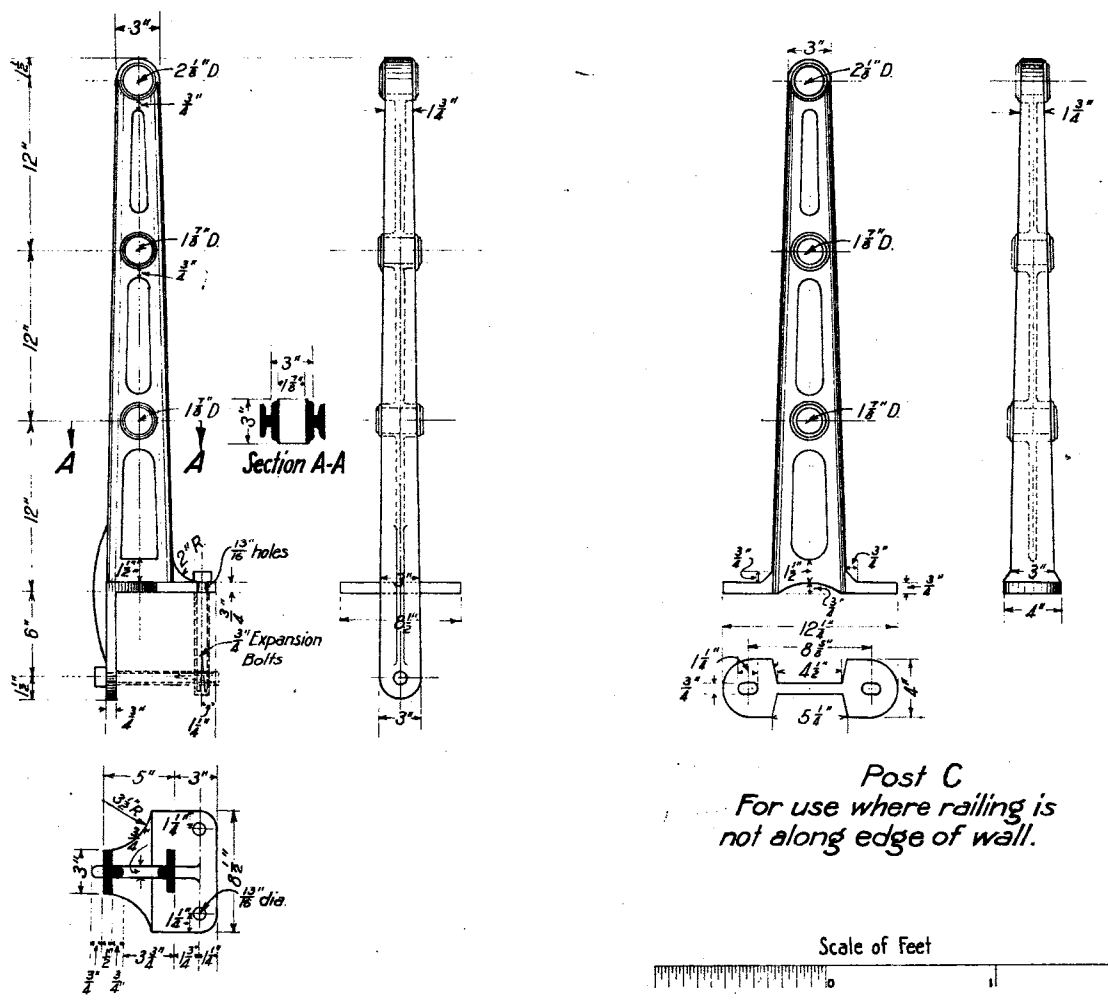
Expansion Sleeves on each Pipe spaced about 200'

Genuine Wrought Iron Pipe



Expansion Sleeves spaced about 200'

Scale: One inch = One Foot.



Expansion Sleeve To fit 1 1/2" or 1 1/4" Pipe

All posts to be of cast-iron. Shop Paint-One coat 20# red lead to one gallon of paint. Use 4-pipe Railing for Highway Bridges, and in locations for protection of the public. Use 3-pipe Railing elsewhere

APPROVED: *Martin R. Fisher* FOR CITY OF DETROIT

Details of 3-Pipe Post B For use where railing is along edge of wall.

Details of 4-Pipe Post B-B For use where railing is along edge of wall.

Post C-C For use where railing is not along edge of wall

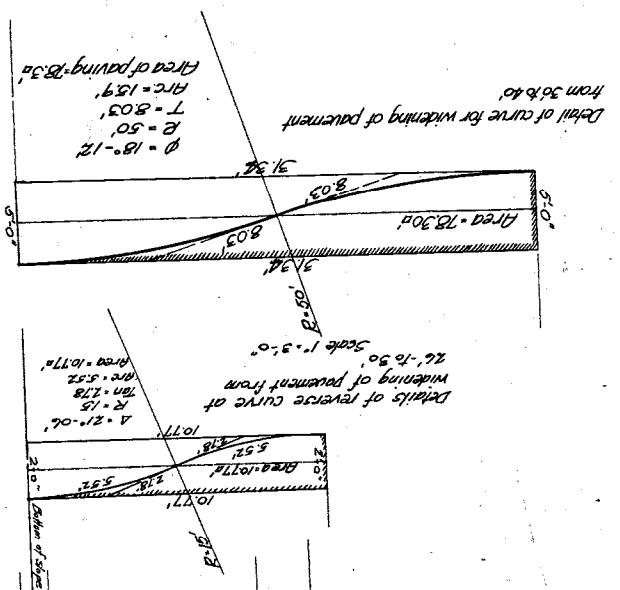
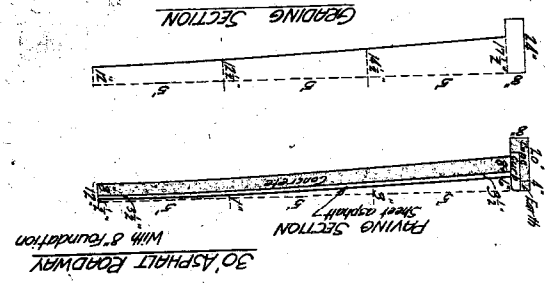
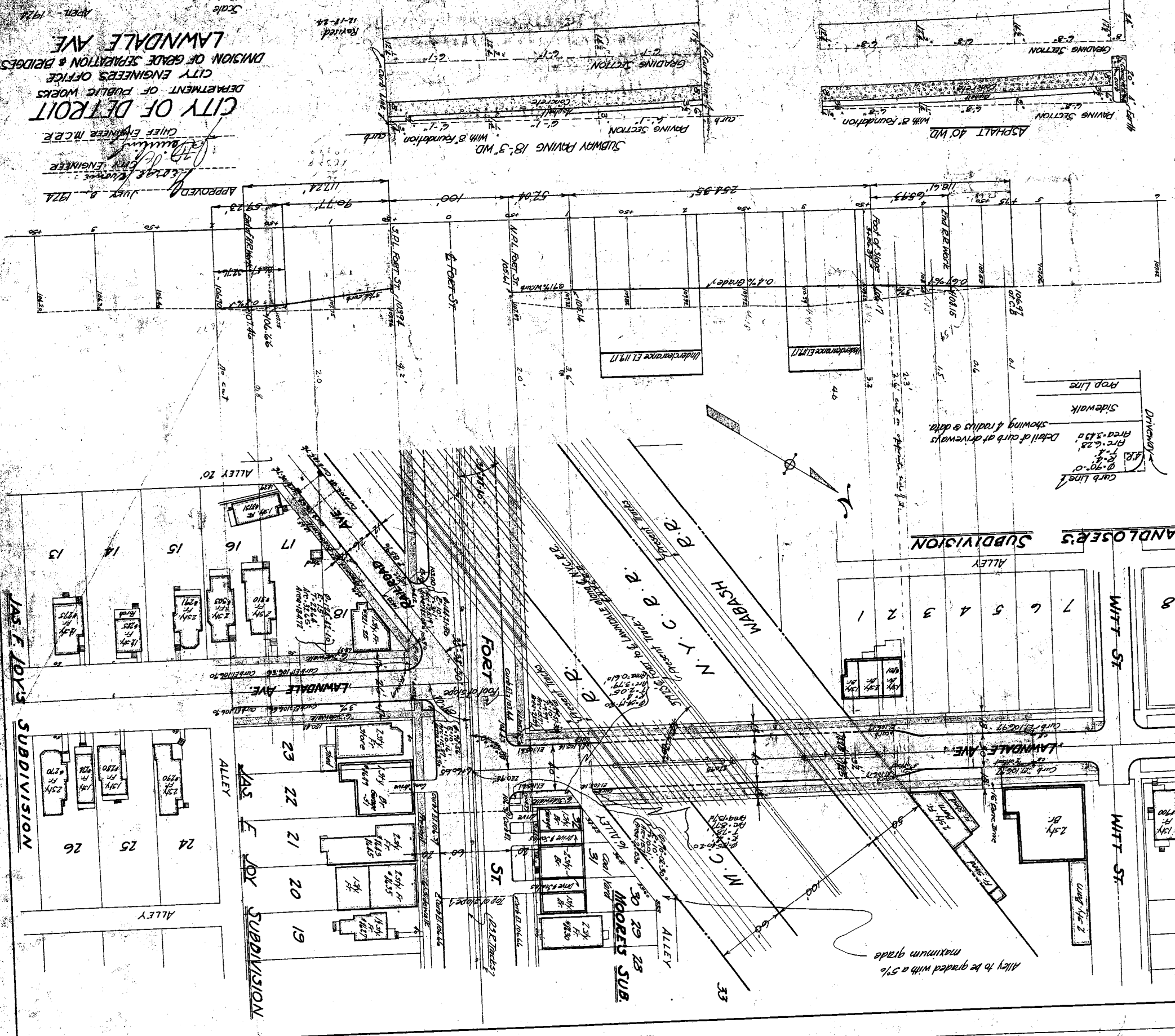
WABASH RAILWAY Standard Hand Rail

Office of the Chief Engineer
Scale shown Mar. 17, 1925

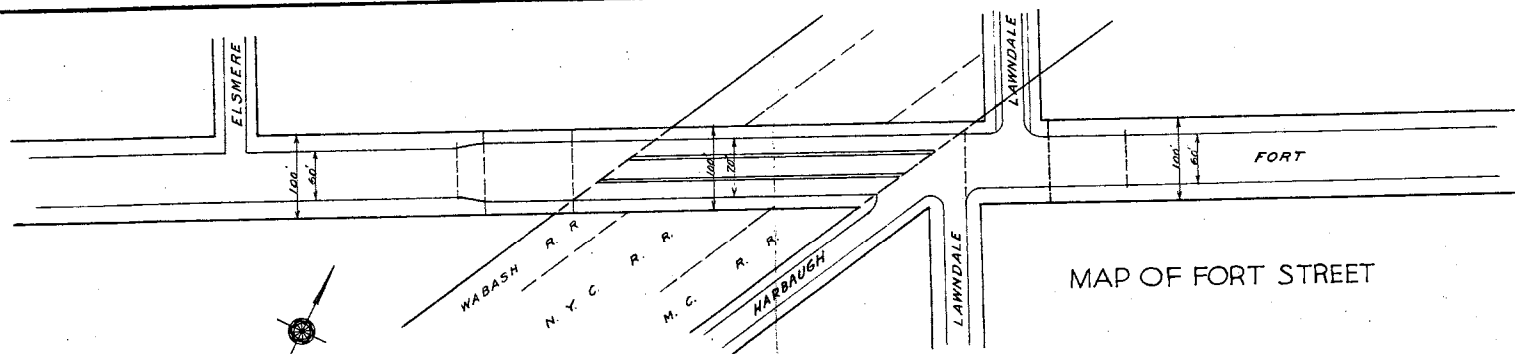
J.C.W.

CITY OF DETROIT
 DEPARTMENT OF PUBLIC WORKS
 CITY ENGINEERS OFFICE
 DIVISION OF GRADE SEPARATION & BRIDGES
 LAMNDALE AVE
 APRIL 1922
 Scale 1" = 40'-0"
 FIELD BOOK #17
 File No. 38-28

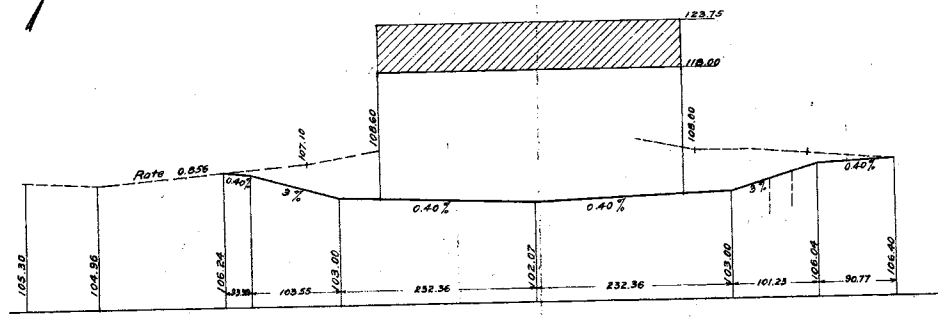
NOTE
 FOR RAILROAD AVE PROFILE SEE PORT ST PLAN
 FOR PAVING SECTION FOR LAMNDALE AVE SO SEE PORT ST PLAN



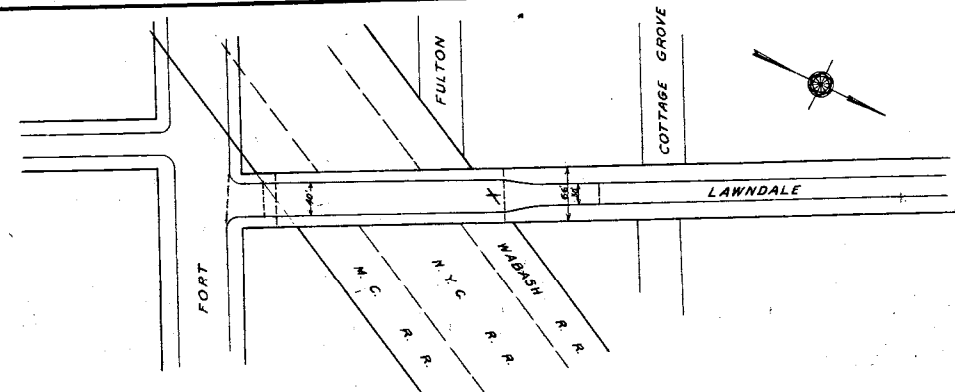
APPROVED
 JULY 8, 1922
 CHIEF ENGINEER M.C.E.
 CITY ENGINEER



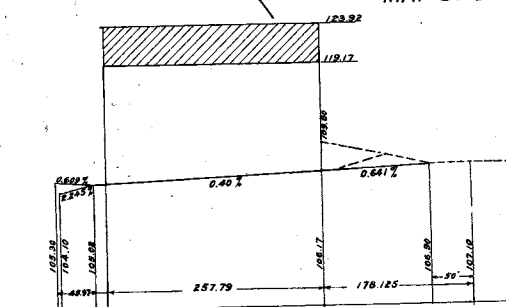
MAP OF FORT STREET



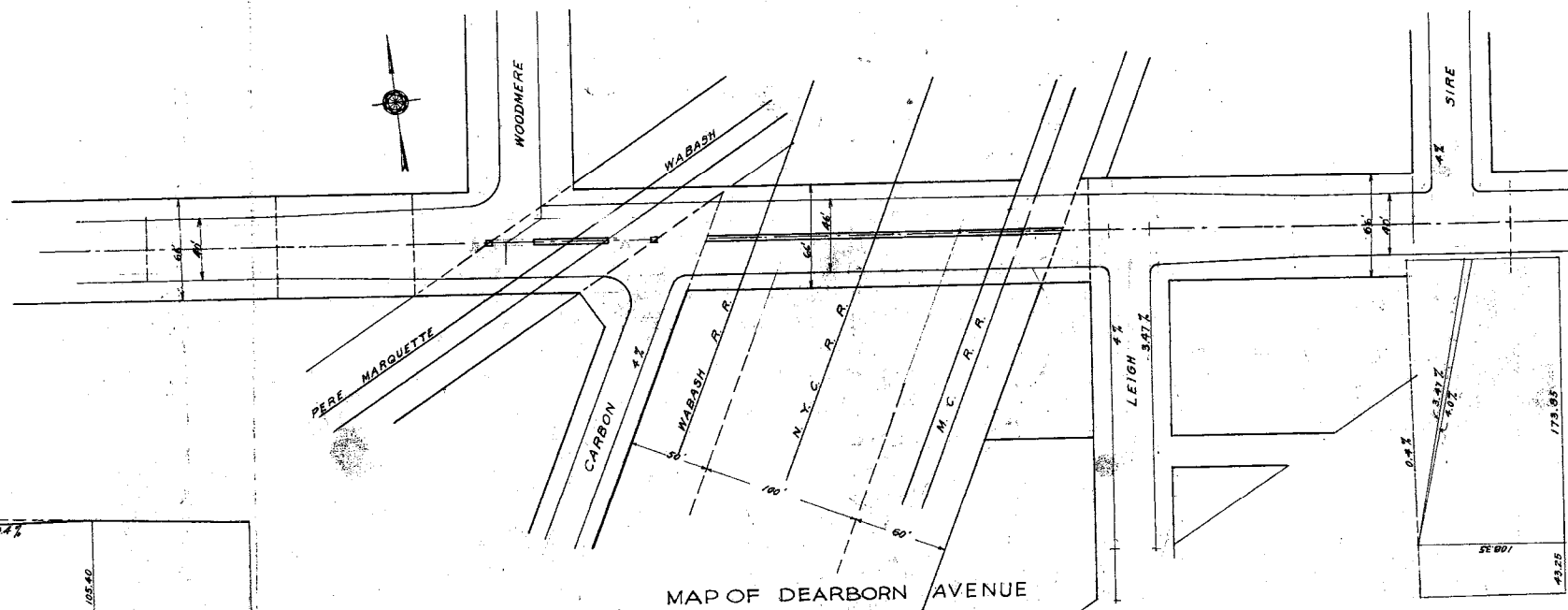
PROFILE ALONG C
 SCALES: HOR. 1"=100'
 VER. 1"=10'



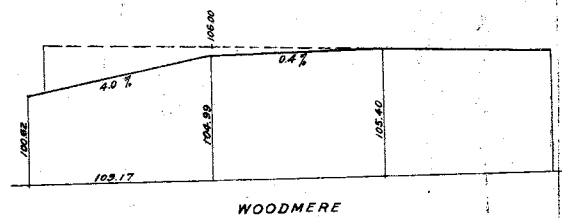
MAP OF LAWDALE AVE.



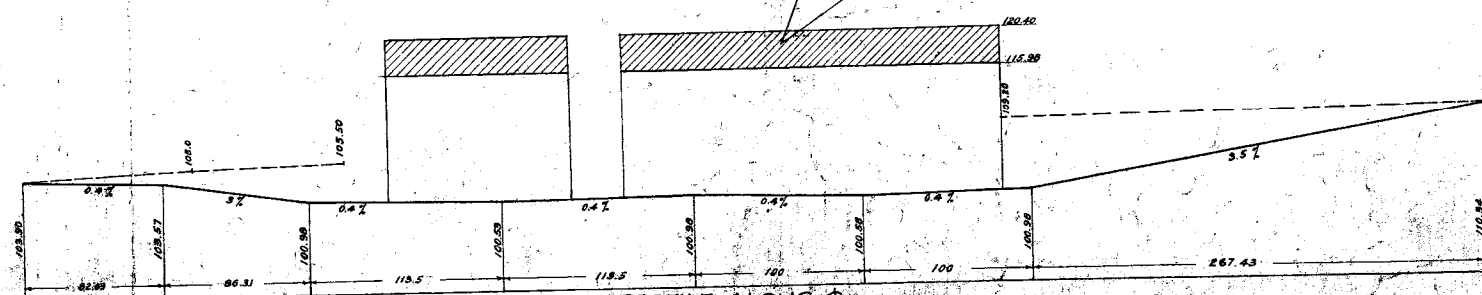
PROFILE ALONG C
 SCALES: HOR. 1"=100'
 VER. 1"=10'



MAP OF DEARBORN AVENUE



WOODMERE



PROFILE ALONG C
 SCALES: HOR. 1"=100'
 VER. 1"=10'

EXHIBIT "B"

PROFILES REFERRED TO IN SUPPLEMENTARY AGREEMENT OF AUG. 6, 1917, BETWEEN M.C.R.R., N.Y.C.R.R., WABASH RY, P.M.RY, D.U.R., AND THE CITY OF DETROIT

NOTE: ELEVATIONS AT UNDERSIDE OF BRIDGES ARE AS PER AGREEMENT.

APPROVED 19
 _____ CITY ENGINEER
 _____ CHIEF ENGINEER, M.C.R.R.

CITY OF DETROIT
 DEPARTMENT OF PUBLIC WORKS
 OFFICE OF CITY ENGINEER DIVISION OF GRADE SEPARATION
 MAPS & PROFILES OF STREETS
 LAWDALE, FORT, DEARBORN
 SCALES AS INDICATED

DRAWN BY
 CHECKED BY
 FIELD BOOK
 GEO. H. FENKELL COMM'R PUBLIC WORKS
 CLARENCE W. HUBBELL CITY ENGINEER
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