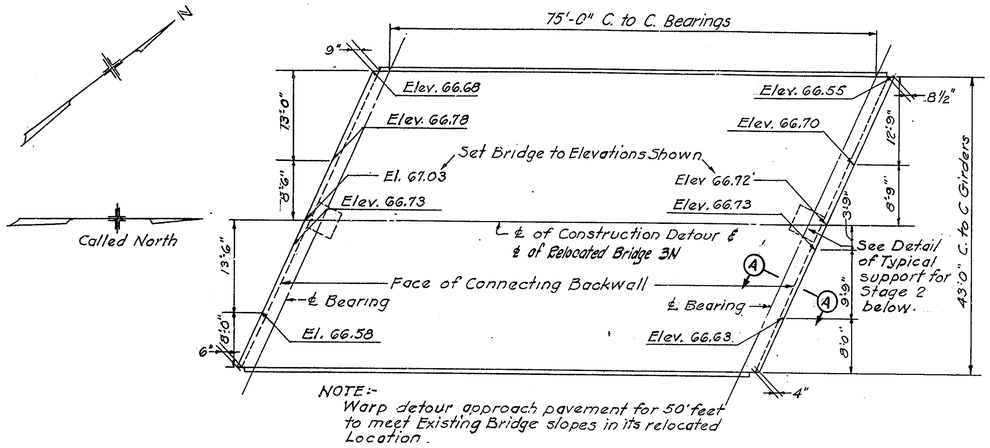
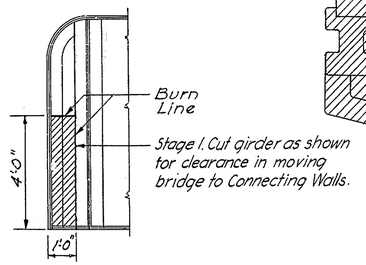
COUNTY	CONTRACT	P.R.A. DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
N. C.	I-1(6)	2	DEL.	I-01(6)		28	37

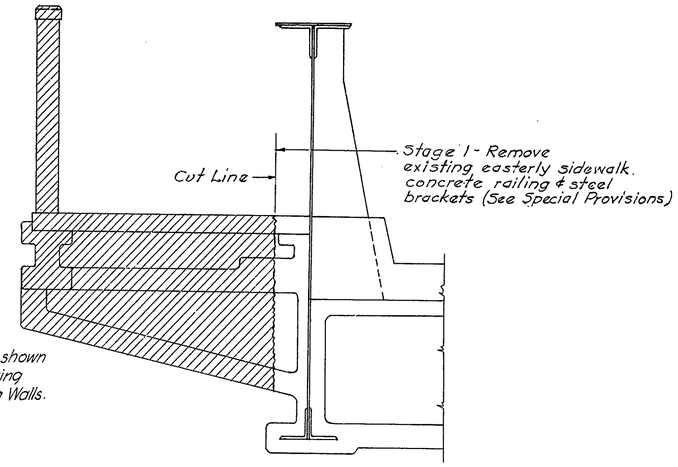
FARNHURST INTERCHANGE



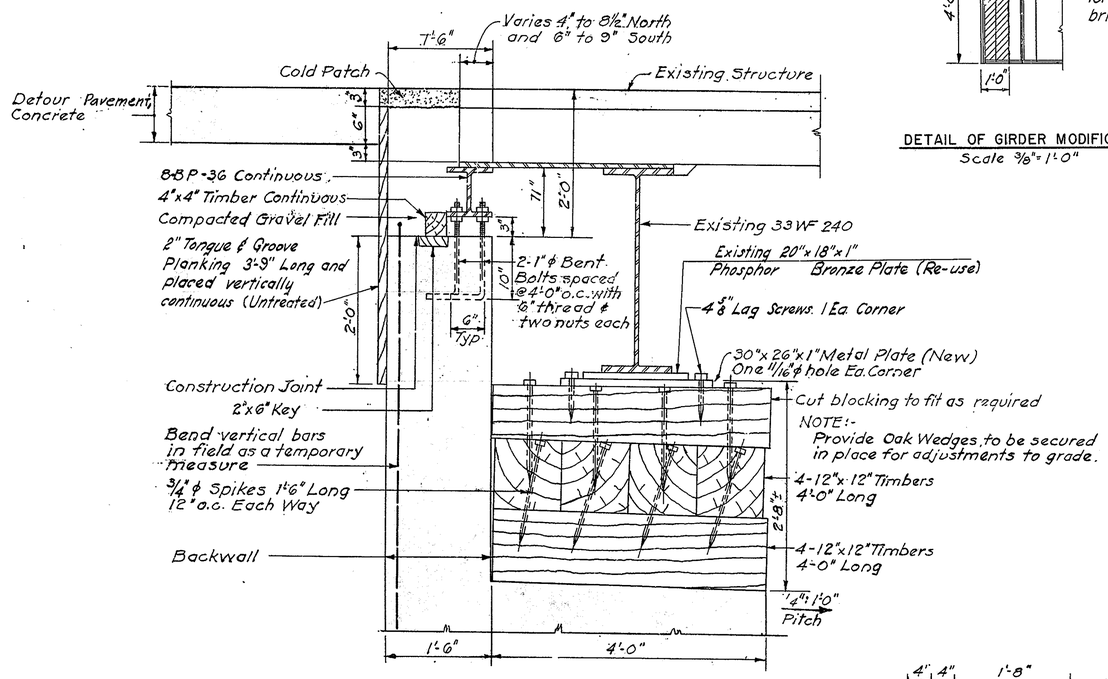
PLAN OF DECK
Scale 3/32" = 1'-0"
Note,- Plan shows Bridge Relocated Position



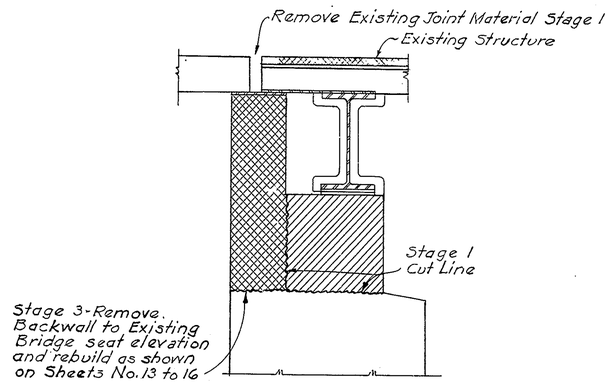
DETAIL OF GIRDER MODIFICATION
Scale 3/8" = 1'-0"



DETAIL OF SIDEWALK MODIFICATION.
Not To Scale

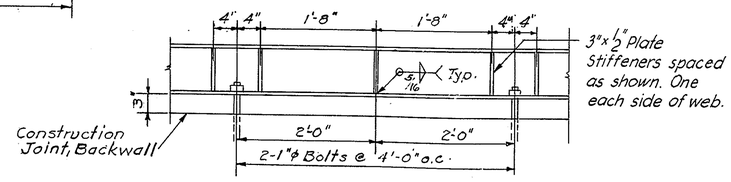


TYPICAL SUPPORT STAGE 2
Scale 1" = 1'-0"



SECTION A-A
Scale 1/2" = 1'-0"

NOTES:
For General Notes, see Sh. 11
See Special Provisions for sequence of operations.
Contractor should check existing bridge for minor discrepencies.



ELEVATION OF 8BP36
Scale 1" = 1'-0"

	BY	DATE				
MADE	F.P.B.	4-2-58				
TRACED						
CHECKED	P.R.N.	4-10-58				
IN CHARGE OF	J.F.M.		No.	REVISION	BY	DATE

Corrected as Built
J. K. Smith Jr.
Freeways Division Engineer

APPROVED _____ BRIDGE ENGINEER

DELAWARE STATE HIGHWAY DEPARTMENT
INTERSTATE HIGHWAY ROUTE FA I-1
FARNHURST INTERCHANGE
CONTRACT NO. I-1 (6) FEDERAL AID PROJECT NO. I-01(6)

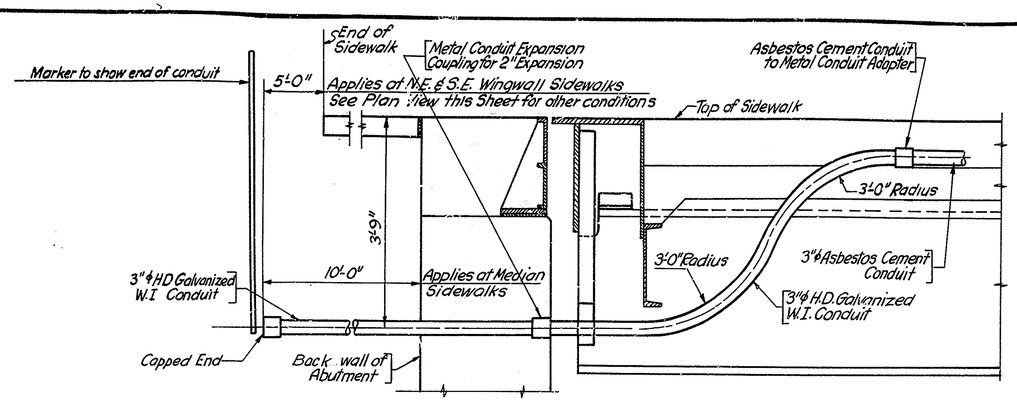
EXISTING NORTHBOUND U.S. 13 BRIDGE
DETAILS OF MODIFICATIONS

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

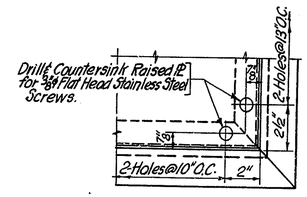
SCALE AS NOTED
DATE 4-2-58
SHEET NO. 28 OF 37

COUNTY	CONTRACT	P.R. & DIV. NO	STATE	FED. AID PROJ. NO	FISCAL YEAR	SHEET NO	TOTAL SHEETS
N. C	I-1 (6)	2	DEL	I-01(6)		27	37

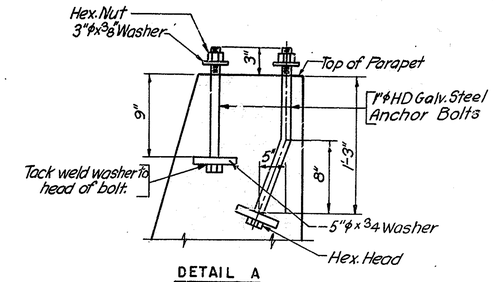
FARNHURST INTERCHANGE



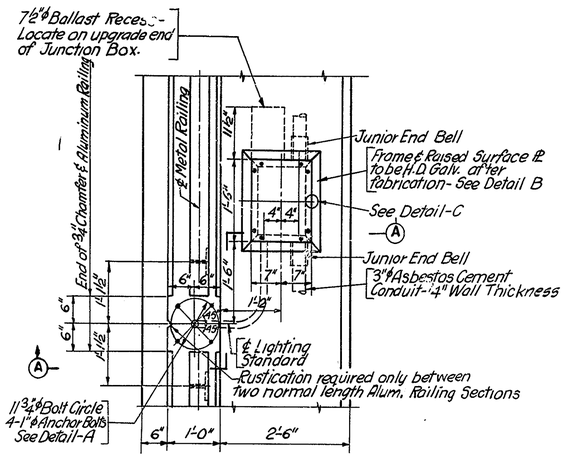
SECTION THRU ABUTMENT AT OPEN EXPANSION JOINT
3/4" = 1'-0"



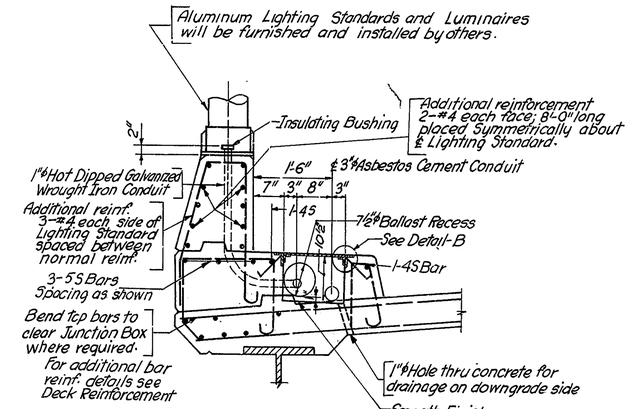
VIEW B-B
3" = 1'-0"



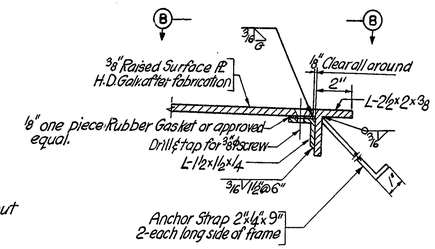
DETAIL A
1 1/2" = 1'-0"



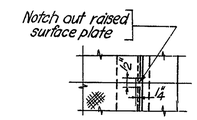
PLAN AT LIGHTING STANDARD
3/4" = 1'-0"



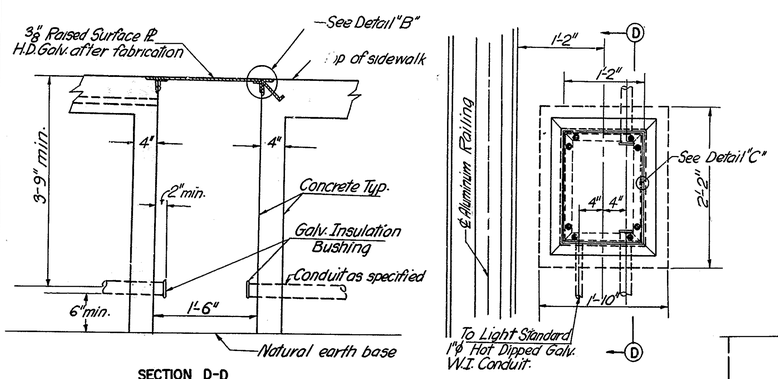
SECTION A-A
3/4" = 1'-0"



DETAIL B
3" = 1'-0"

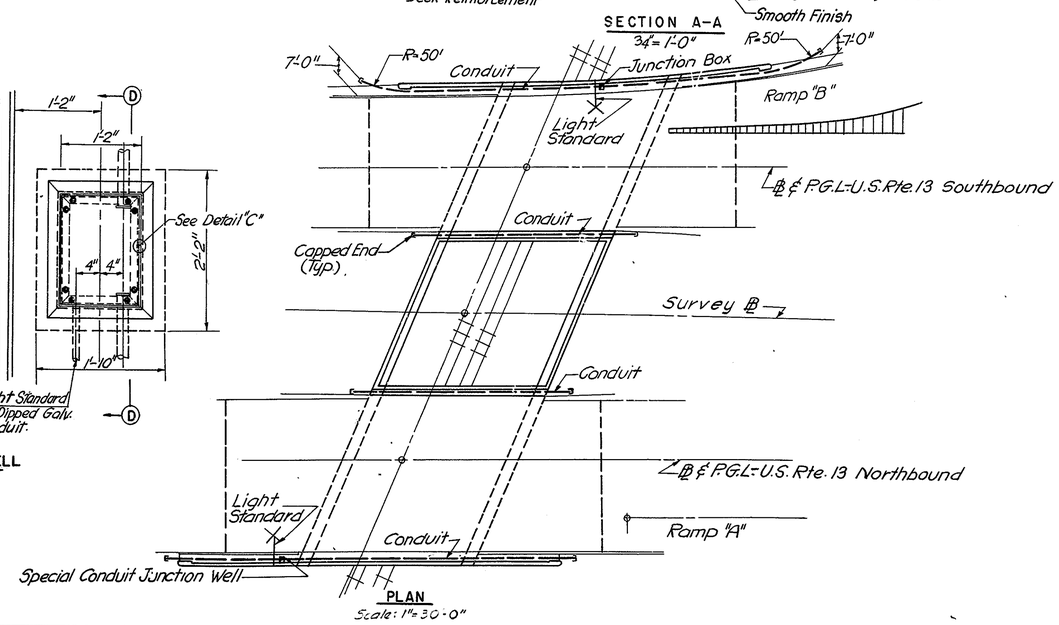


DETAIL C
3" = 1'-0"



SECTION D-D

SPECIAL CONDUIT JUNCTION WELL
Scale: 1" = 1'-0"



PLAN
Scale: 1" = 30'-0"

Note:

Longitudinal reinforcing in safety walk is to be cut in field to lengths required to fit location of junction boxes.

Conduit Wells set in sidewalks shall be finished flush with the surface of the sidewalk.

Wells shall be constructed to a depth that will insure a minimum of 6" from the bottom of well to the lowest conduit.

For general notes see Sheet No. 11.

For reinforcing details see Sheet No. 22.

	BY	DATE	No.	REVISION	BY	DATE
MADE	R.E.F.	3-26-58				
TRACED						
CHECKED	P.R.N.	4-1-58				
IN CHARGE OF	J.F.M.					

DELAWARE STATE HIGHWAY DEPARTMENT

INTERSTATE HIGHWAY ROUTE FAI-1

FARNHURST INTERCHANGE

CONTRACT NO. I-1 (6) FEDERAL AID PROJECT NO. I-01(6)

Correct as Built
J. K. Smith, Jr.
Freeways Division Engineer

APPROVED _____
BRIDGE ENGINEER

BRIDGES 3N & 3S

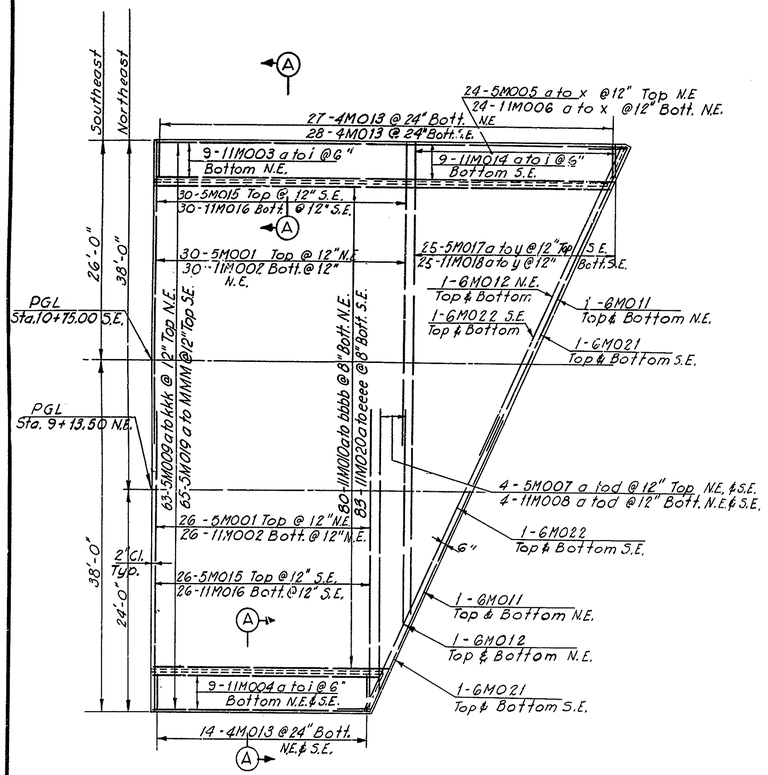
BRIDGE LIGHTING DETAILS

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

SCALE As noted
DATE 3-26-58
SHEET NO 27 OF 37

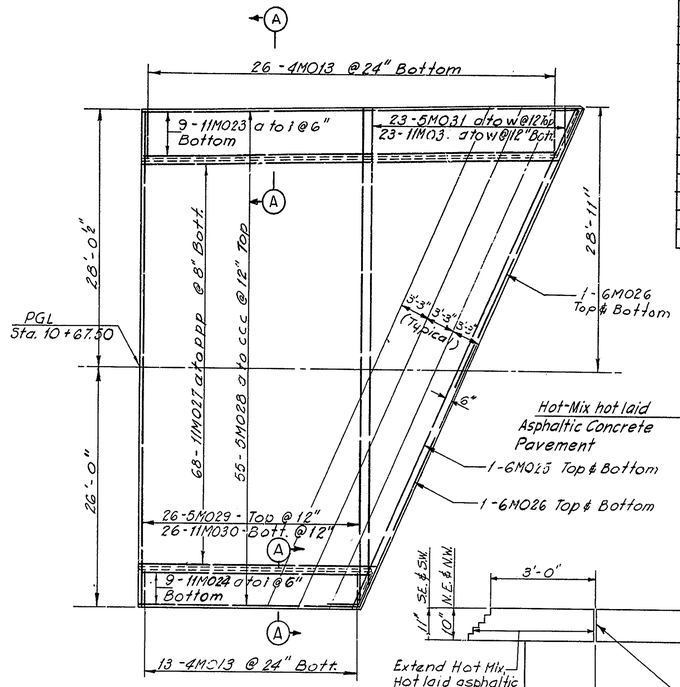
COUNTY	CONTRACT	P.R.A. DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
N. C.	I-1(6)	2	DEL.	I-01(6)		26	37

FARNHURST INTERCHANGE



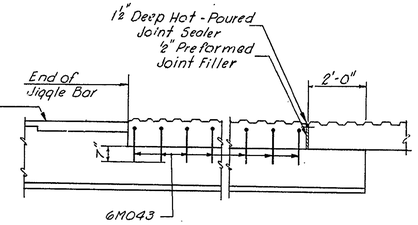
PLAN – SOUTHEAST & NORTHEAST APPROACH SLAB

1/8" = 1'-0"



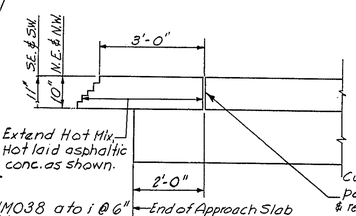
PLAN – SOUTHWEST APPROACH SLAB

1/8" = 1'-0"

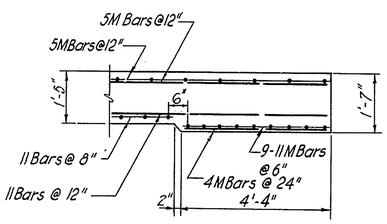


SECTION B-B

3/8" = 1'-0"



DETAIL C



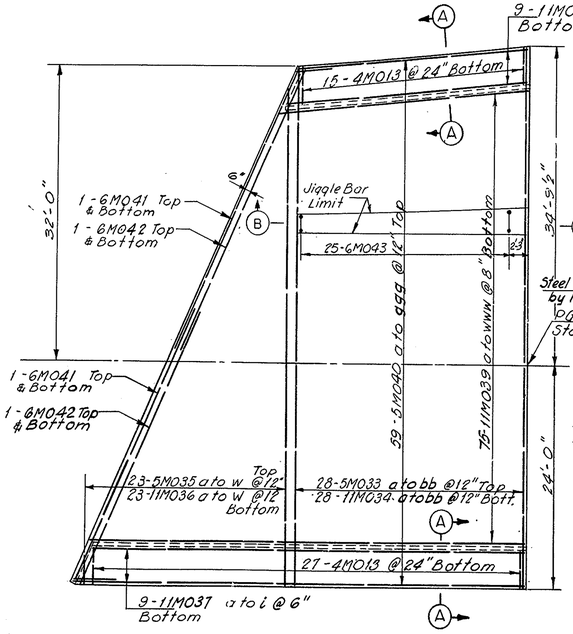
SECTION A-A

Typical for all Approach Slabs.

1/2" = 1'-0"

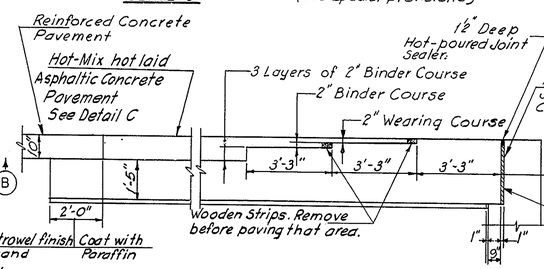
NOTES

For General Notes see Sheet No. 11



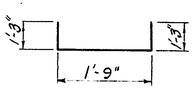
PLAN – NORTHWEST APPROACH SLAB

1/8" = 1'-0"

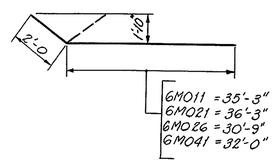


TYPICAL LONGITUDINAL SECTION THRU APPROACH SLAB

3/8" = 1'-0"



6M043



6M011, 6M021, 6M026 & 6M041

Note: Bend as necessary

Mark	Size	No. Req'd	Length	Total Length	Weight Pounds	Remarks
11M038a	11	9	29'-6"	255.8	1,359	Straight
to i			to 27'-4"			"
11M039a	11	75	50'-2"	2987.5	15873	"
to www			to 29'-6"			"
5M040a	5	59	52'-3"	2,347.6	2,449	"
to ggg			to 27'-4"			"
6M041	6	4	34'-0"	136.0	204	Detailed
6M042	6	4	32'-0"	128.0	192	Straight
6M043	6	25	4'-3"	106.3	160	Detailed

Total 152,576 lbs.

BAR LIST

Mark	Size	No. Req'd	Length	Total Length	Weight-Pounds	Remarks
5M001	5	56	32'-0"	1,792.0	1,869	Straight
11M002	11	56	32'-6"	1,820.0	9,670	"
11M003a	11	9	54'-6"	490.2	2,550	"
to i			to 52'-3"			"
11M004a	11	18	27'-6"	477.0	2,534	"
to i			to 25'-6"			"
5M005a	5	24	52'-3"	675.1	704	"
to x			to 4'-0"			"
11M006a	11	24	52'-3"	675.1	3,587	"
to x			to 4'-0"			"
5M007a	5	8	31'-0"	212.0	221	"
to d			to 22'-0"			"
11M008a	11	8	31'-6"	216.0	1,148	Straight
to d			to 22'-6"			2 of each side
5M009a	5	63	54'-6"	2,520.0	2,628	"
to kkk			to 25'-6"			"
11M010a	11	80	52'-4"	3,193.6	16,968	"
to bbbb			to 27'-6"			"
6M011	6	4	37'-3"	149.0	224	Detailed
6M012	6	4	35'-3"	141.0	212	Straight
4M013	4	164	4'-0"	656.0	438	"
11M014a	11	9	55'-4"	488.6	2,596	"
to i			to 53'-3"			"
5M015	5	56	33'-0"	1,848.0	1,927	"
11M016	11	56	33'-6"	1,876.0	9,967	"
5M017a	5	25	54'-3"	728.3	760	"
to y			to 4'-0"			"
11M018a	11	25	54'-3"	728.3	3,869	"
to y			to 4'-0"			"
5M019a	5	65	25'-3"	2,616.3	2,729	"
to mmm			to 55'-3"			"
11M020a	11	83	27'-6"	3,351.5	17,807	"
to eeee			to 53'-3"			"
6M021	6	4	38'-3"	153.0	230	Detailed
6M022	6	4	36'-3"	145.0	218	Straight
11M023a	11	9	50'-3"	442.2	2,349	"
to i			to 48'-0"			"
11M024a	11	9	27'-3"	235.9	1,253	"
to i			to 25'-2"			"
6M025	6	2	59'-3"	118.5	178	"
6M026	6	4	32'-9"	131.0	197	Detailed
11M027a	11	68	27'-3"	2,558.8	13,595	Straight
to ppp			to 48'-0"			"
5M028a	5	55	50'-0"	2,069.7	2,159	"
to ccc			to 25'-3"			"
5M029	5	26	53'-9"	1,397.5	1,458	"
11M030	11	26	53'-9"	1,397.5	7,425	"
5M031a	5	23	51'-6"	638.3	666	"
to w			to 4'-0"			"
11M032a	11	23	51'-6"	638.3	3,391	"
to w			to 4'-0"			"
5M033a	5	28	55'-8"	1,598.5	1,667	"
to bb			to 58'-6"			"
11M034a	11	28	55'-8"	1,598.5	8,493	"
to bb			to 58'-6"			"
5M035a	5	23	4'-0"	661.3	690	"
to w			to 53'-6"			"
11M036a	11	23	4'-0"	661.3	3,513	"
to w			to 53'-6"			"
11M037a	11	9	52'-3"	460.9	2,449	"
to i			to 50'-2"			"

	BY	DATE				
MADE	J.G.S.	3-7-58				
TRACED						
CHECKED	A.J.M.K.S.	3-24-58				
IN CHARGE OF	J.F.M.		No.	REVISION	BY	DATE

DELAWARE STATE HIGHWAY DEPARTMENT

INTERSTATE HIGHWAY ROUTE FA I-1

FARNHURST INTERCHANGE

CONTRACT NO. I-1 (6) FEDERAL AID PROJECT NO. I-01(6)

BRIDGES 3N & 3S

APPROACH SLAB

Correct as Built

J. K. Smith, Jr.

Freeways Division Engineer

APPROVED _____ BRIDGE ENGINEER

HOWARD, NEEDLES, TAMMEN & BERGENDOFF

CONSULTING ENGINEERS

NEW YORK KANSAS CITY

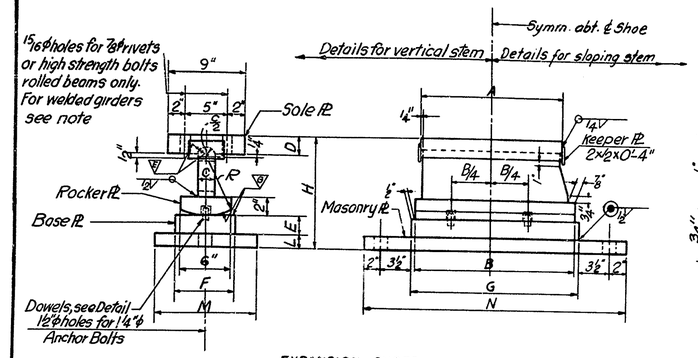
SCALE: AS NOTED

DATE 3-7-58

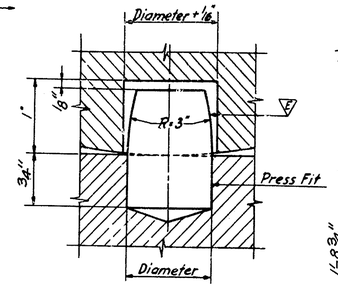
SHEET NO. 26 OF 37

COUNTY	CONTRACT	P.R.A. DIV. NO.	STATE	FED.AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
N. C.	I-1(6)	2	DEL.	I-01(6)		25	37

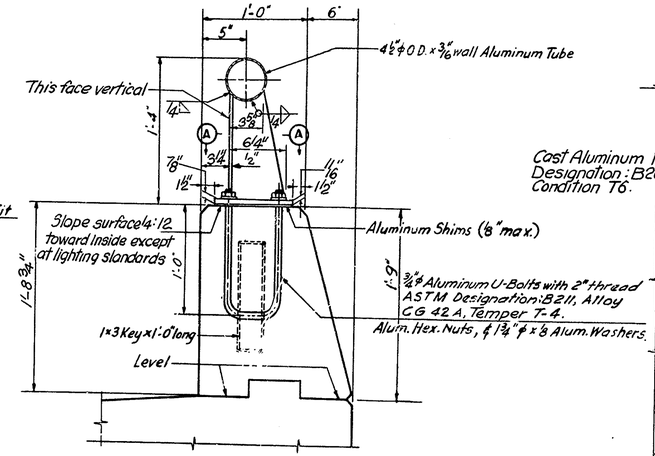
FARNHURST INTERCHANGE

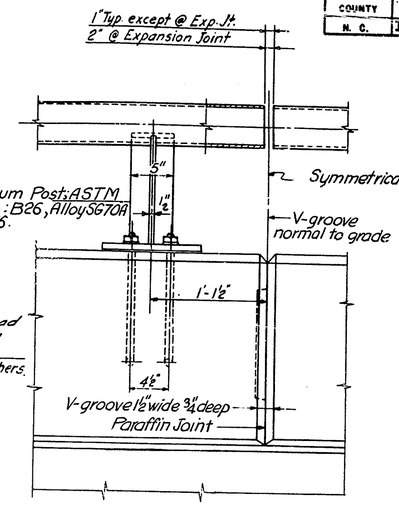


EXPANSION SHOES
1 1/2"=1'-0"



DOWEL DETAIL
Full Scale

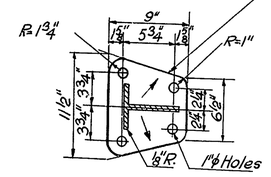




ALUMINUM RAILING DETAIL
1 1/2"=1'-0"

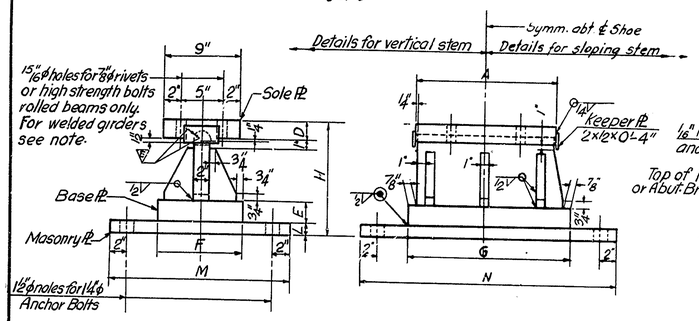
Provide 4-1" slip joints at conn. wall. 1" joints & details subject to approval of Engineer.

Cast with drift to provide positive drainage away from the T-shaped stem.

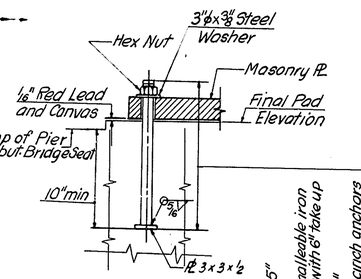


SECTION A-A

NOTE:
All exterior arrises shall be molded to 1/4" radii, except as noted. All fillets shall be 1/2" radii.

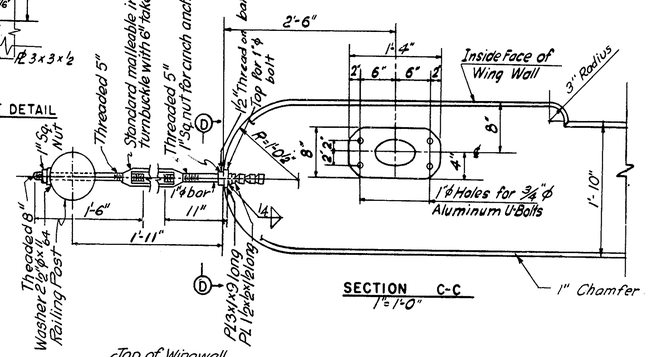


FIXED SHOES
1 1/2"=1'-0"

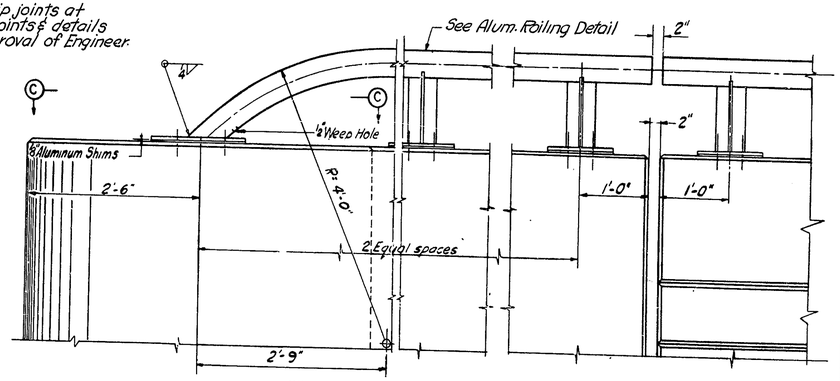


ANCHOR BOLT DETAIL
No scale

1'-6" Min. except as required to have 3x3x1/2 Pl. remain above existing bridge seat.



SECTION C-C
1"=1'-0"



WINGWALL RAILING DETAIL
1"=1'-0"

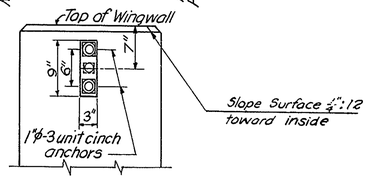
SHOE DETAILS FOR ROLLED BEAMS AND WELDED GIRDERS

NOTES:
At shoes for welded girders, omit rivet holes in sole Pl. and shop weld sole Pl. to Flange Pl. or connection Pl. with a 1/8" fillet weld along edges normal to ℄ stringer.
Weld sizes shown are the minimum to be used for design requirements. 1/2" fillet weld shall be used where the maximum thickness of parts welded exceeds 2 1/4".

SHOE FINISH NOTES:
The following Contact surfaces shall be finished in accordance with Standard No. 3, Standards for Machined Surface Finishes of the Association of Iron and Steel Engineers to the class of finish prescribed:
Tops of rocker stems and grooves in sole plates - Fine Finish Symbol
Top surfaces of base plates, for expansion shoes only, and bottoms of rockers - Medium Finish - Symbol

SHOE NOTES:
All material to be in accordance with the requirements of the Special Provisions of the Specifications.
Top of sole plates and masonry plates, and top and bottom of base plates, shall be planed, straightened or otherwise treated to secure true level surfaces.
Bottom of main vertical stem shall be finished to bear on base plate or rocker plate.
Rockers on Expansion Shoes are to be set so as to be vertical under full dead load at a temperature of 68°F.
Radius on sole plate to be finished to radius on main vertical stem plus 0.01 in.
For field adjustment, the base plate may be offset a maximum of 1/2" in any direction from position shown with respect to masonry plate, and then field welded.
Pad elevations are finished elevations. Pads shall be poured integrally with piers or abutments and shall be not less than 1/8" or more than 1/4" above finished elevations. Pads shall be dressed down by tooling or grinding to true level surfaces at the finished elevations.

AS BUILT PLANS 5/20/60 HRC



SECTION D-D
Scale: 1 1/2"=1'-0"

Note:
Guard Rail Anchor Details as shown above are to be set in the ends of the Northeast, Southeast and Northwest wingwalls only. Payment for these guard rail anchors shall be included in the prices bid for the various items of work.

SHOE DIMENSIONS

Type	A	B	C	D	E	F	G	H	L	M	N
Fixed											
F1	16 1/2	—	2	2 1/4	10	17 3/4	12 1/2	14	14	28 3/4	
F21	15 3/4	—	2	2 1/4	10	17	12 1/2	14	14	28	
Expansion											
E12	16 1/2	17 3/4	2	2	2	7	18 3/4	12 3/4	13 3/8	11	29 3/4
E7 (Mod.)	15 3/4	16 3/4	2	2	1 3/4	7	17 3/4	12 3/4	14	11	28 3/4

Note:
Fixed shoes F1 & F21 have three ribs & have vertical stems.
Expansion shoes E7 & E12 have 1" diameter dowels.

NOTE:

8-2' SLEEVES USED IN HAND RAIL OVER EXPANSION JOINTS IN CONNECTING WALLS

NOTES:
All posts to be set normal to grade.
Aluminum surfaces in contract with concrete shall be coated with an approved caulking compound or zinc chromate paint.
Aluminum Alloy shims shall be used under posts and base plates where required for alignment (1/8" max.)
To insure proper setting of anchor bolts one 1/4" template, the length of the railing unit, shall be furnished for each unit of different post spacing. At the option of the Contractor an alternate method for properly setting anchor bolts may be submitted for approval.
Maximum spacing of posts = 9'.
Maximum length of 2 unit railing = 20'-2"
Maximum length of 3 unit railing = 29'-2"
Use paraffined rustication at each double post (except at expansion jt.)
Reinforcing in parapet shall not pass through paraffin joint.

Correct as Built
J. K. Smith, Jr.
Freeways Division Engineer

APPROVED _____
BRIDGE ENGINEER

DELAWARE STATE HIGHWAY DEPARTMENT

INTERSTATE HIGHWAY ROUTE FAI-1
FARNHURST INTERCHANGE
CONTRACT NO. I-1 (6) FEDERAL AID PROJECT NO. I-01(6)

BRIDGES 3N & 3S
SHOES AND ALUMINUM RAILING DETAILS

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

SCALE: AS NOTED
DATE 3-22-58
SHEET NO. 25 OF 37

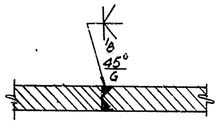
	BY	DATE	No	REVISION	BY	DATE
MADE	C.R.Z.	3-22-58				
TRACED						
CHECKED	E.J.M.	4-2-58				
IN CHARGE OF	J.F.M.					

COUNTY	CONTRACT	P.R.A. DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
N. C.	I-1(6)	2	DEL.	I-01(6)		24	37

FARNHURST INTERCHANGE

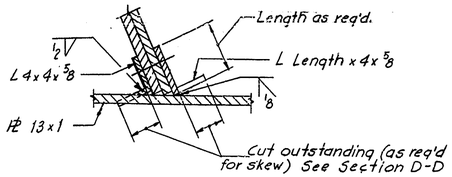
NOTES:

For General Notes see sheet 11.
For Drainage Trough Details see sheet 23.
Expansion joint field connections may be made with 7/8" ϕ H.S. Bolts. Where bolts are used place head of bolt on outside of fascia stringer.
Bearing stiffeners shall be milled to bear on bottom flanges.

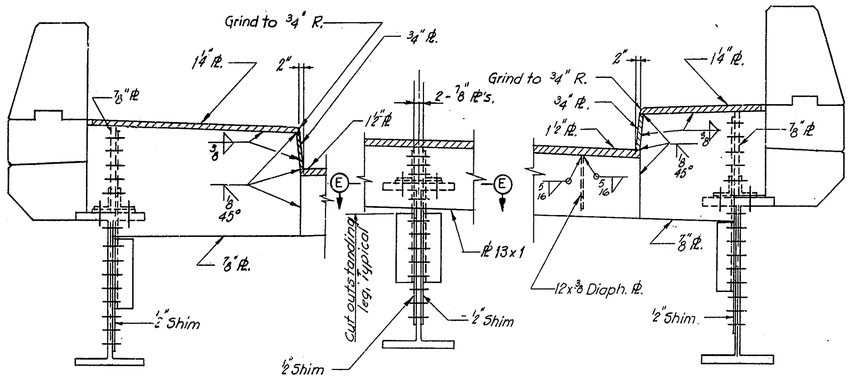


ROADWAY PLATE WELD DETAIL
3" = 1'-0"

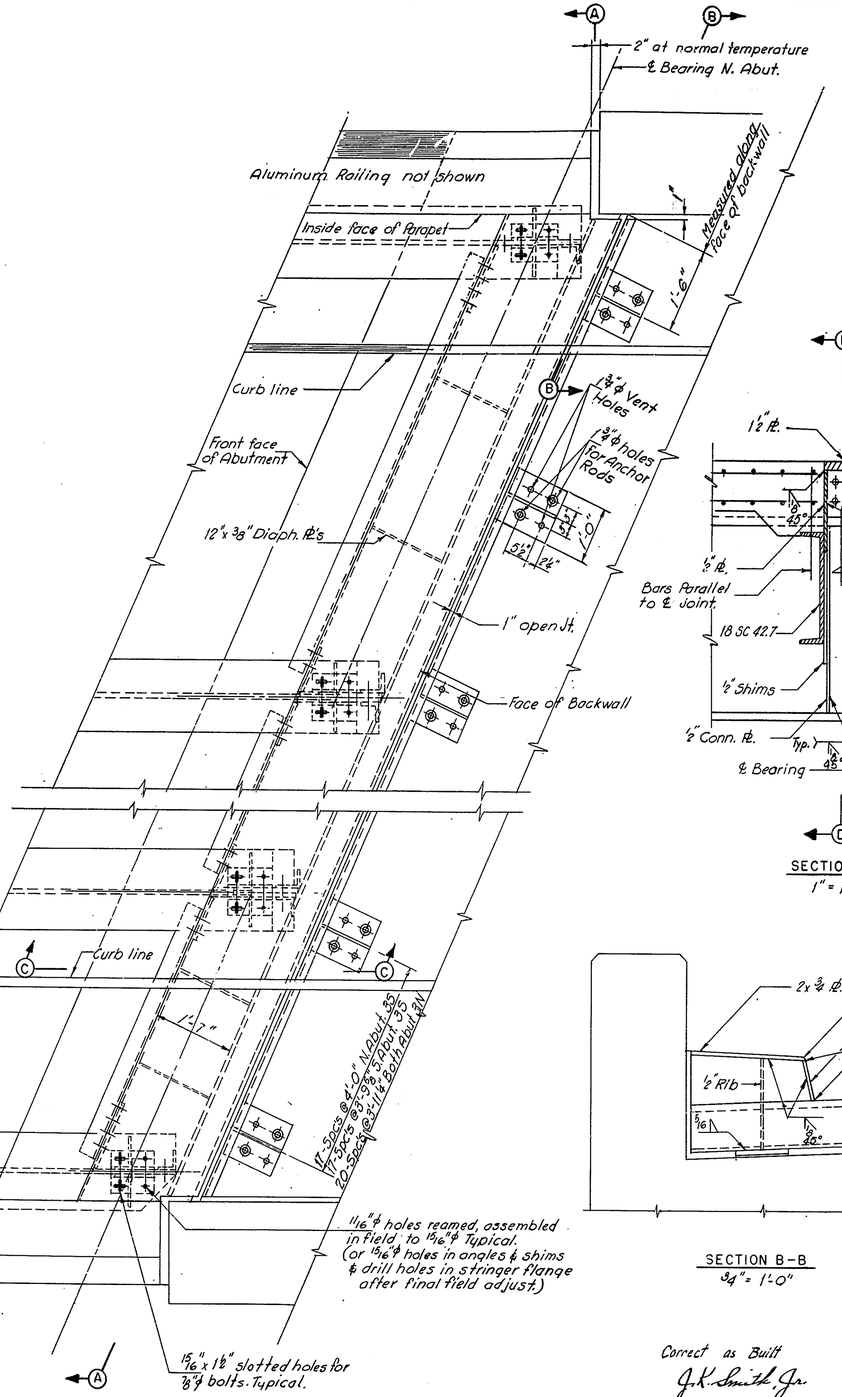
(Above weld to be used if expansion joint roadway plate cannot be furnished in one length. Not more than one joint will be permitted for each plate.)



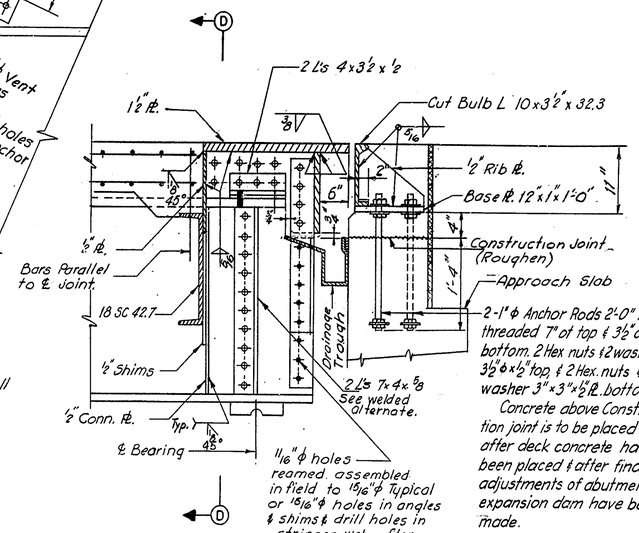
SECTION E-E
1½" = 1'-0"



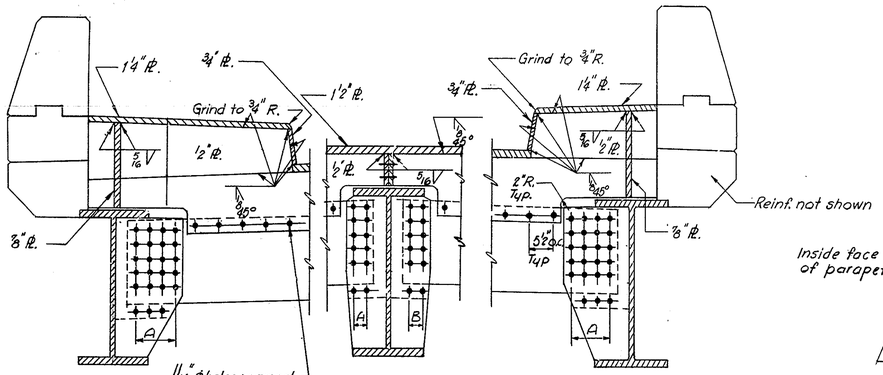
SECTION A-A
¾" = 1'-0"



PLAN AT ABUTMENTS
¾" = 1'-0"



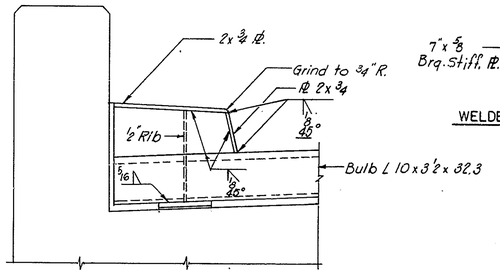
SECTION C-C
1" = 1'-0"



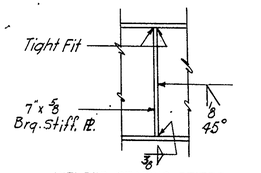
SECTION D-D
¾" = 1'-0"

End Interior Diaphram			
Mark	Location	A(Rows)	B(Rows)
D14	3N & 3S	2	2
D15	3N	3	3
D16	3N	3	2

End Exterior Diaphram			
Mark	Location	A(Rows)	B(Rows)
D10	3S	4	2
D11	3N	5	3
D12	3N	5	2
D13	3S	4	2



SECTION B-B
¾" = 1'-0"



WELDED BEARING STIFFENER
No Scale

Correct as Built
J. K. Smith Jr.
Freeways Division Engineer

DELAWARE STATE HIGHWAY DEPARTMENT
INTERSTATE HIGHWAY ROUTE FA I-1
FARNHURST INTERCHANGE
CONTRACT NO. I-1 (6) FEDERAL AID PROJECT NO. I-01(6)

BRIDGES 3N & 3S
EXPANSION JOINTS

APPROVED _____ BRIDGE ENGINEER

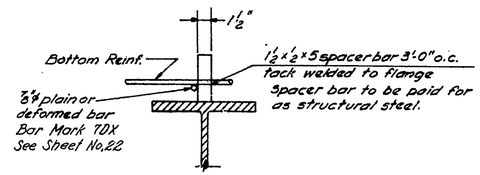
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
NEW YORK KANSAS CITY

SCALE: AS NOTED
DATE 2-10-58
SHEET NO 24 OF 37

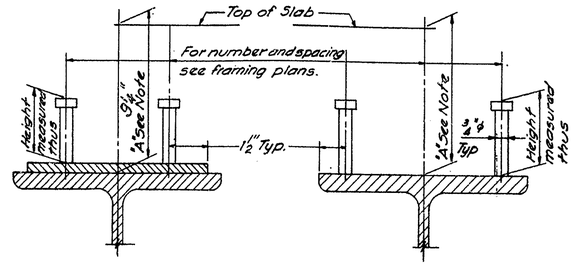
	BY	DATE	No.	REVISION	BY	DATE
MADE	J.G.S.	2-10-58				
TRACED						
CHECKED	P.R.N.	4-1-58				
IN CHARGE OF	J.F.M.					

COUNTY	CONTRACT	P.R.A. DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
N. C.	I-1(6)	2	DEL.	I-01(6)		23	37

FARNHURST INTERCHANGE



DETAIL "Y"
1½" = 1'-0"

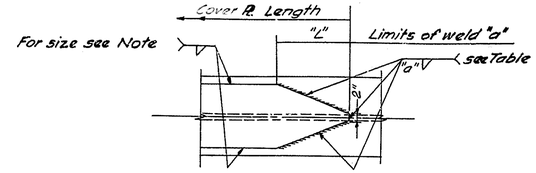


DETAILS OF STUDS ON COVER PLATES
3" = 1'-0"

DETAILS OF STUDS ON WF
3" = 1'-0"

NOTES:
Height of studs: Use 4" for distance "A" equal to or less than 10"
Use 6" for distance "A" greater than 10"

At the Contractors option shear lugs as shown below may be used as an alternate.

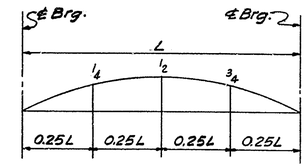


NOTE:
For intermediate Cov. PL welding use 5/16" fillet if flange or PL does not exceed 1½" in thickness and ⅜" fillet if flange or PL is greater than 1½"

END COVER PLATE WELDING
¾" = 1'-0"

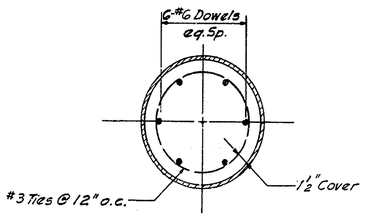
Thickness	Cover PL 10½" "a"	"L"	15" "a"	"L"
½"	5/16	1'-6"	–	–
5/8"	3/8	1'-6"	3/8	2'-0"
3/4"	7/16	1'-6"	7/16	2'-0"
7/8"	½	1'-6"	5/8	2'-0"
1"	½	2'-0"	5/8	2'-0"
1⅛"	½	2'-0"	5/8	2'-6"
1¼"	5/8	2'-0"	5/8	2'-6"
1⅜"	5/8	2'-0"		

TABLE OF WELD SIZE "a"

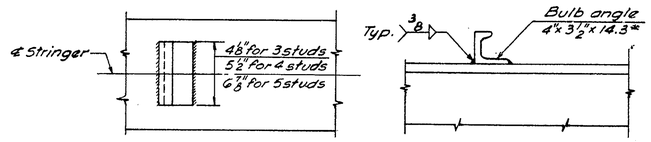


CAMBER DIAGRAM

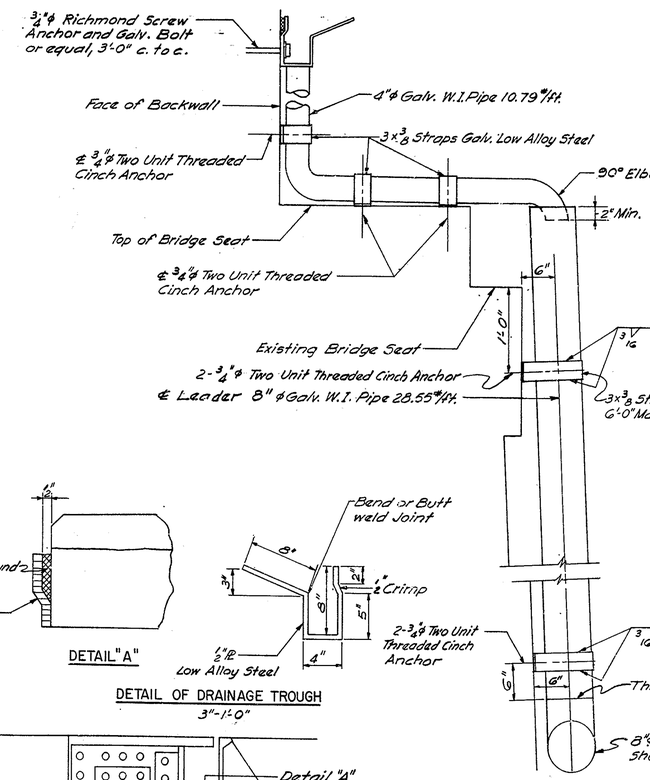
CAMBER NOTES
S = Camber due to weight of structural steel.
C = Camber due to weight of all concrete, except sidewalk and parapet. D = Camber due to weight of Utilities.
B = Camber due to weight of sidewalk, parapet, and railing.
T = Total camber due to full dead load.
All Cambers are in inches.
Attention is called to the fact that cambers shown are for dead load only. Camber for profile grade vertical curvature, if any, is to be added. When total camber (Dead Load Deflection + profile grade ordinate) is more than 1," shop camber will be required. However, for stringers where shop camber is not required, any mill tolerance deviation from straightness shall be turned in direction indicated by the camber diagram.
The deck is to be constructed so that the top of slab will assume its normal outline under full dead load.
The forms and supports for transverse deck reinforcement shall be placed above their theoretical final elevations by the amount shown for "C"+"B" or for "C"+"B"+"D".
The surface of the concrete slab over stringers under the sidewalk shall be finished to a profile above its theoretical elevation by the amount shown for "B".



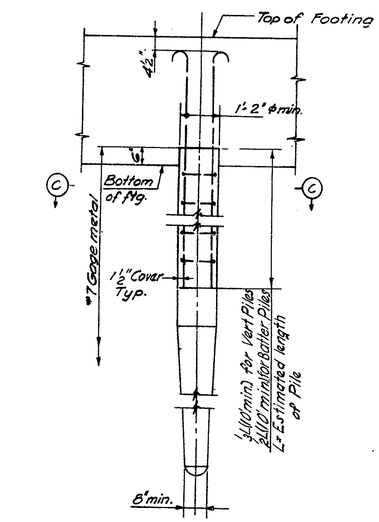
SECTION C-C
1½" = 1'-0"



SHEAR LUG DETAILS
1½" = 1'-0"

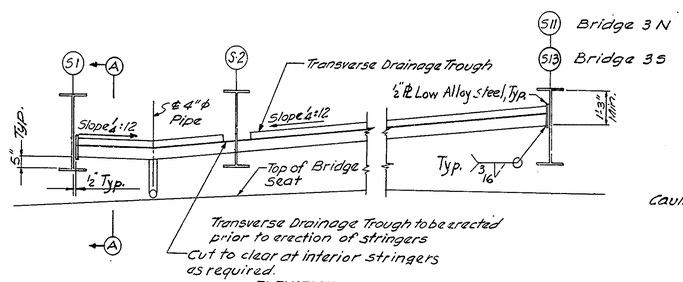


DRAINAGE DETAIL
1" = 1'-0"

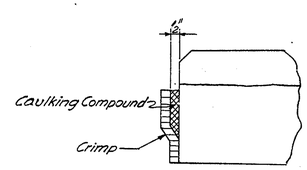


CAST-IN-PLACE CONCRETE PILE
½" = 1'-0"

NOTE:
Approved metal spacers shall be attached to the top and bottom hoops to insure that the minimum required distance to the shell will be obtained.

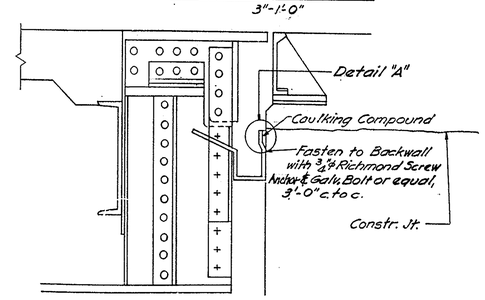


ELEVATION
⅜" = 1'-0"



DETAIL "A"

DETAIL OF DRAINAGE TROUGH
3" = 1'-0"



SECTION A-A
1" = 1'-0"

CAMBER SCHEDULE
BRIDGE 3 NORTH

	S1		S2-S6		S7		S8		S9		S10		S11	
	¼℄¾	½	¼℄¾	½	¼℄¾	½	¼℄¾	½	¼℄¾	½	¼℄¾	½	¼℄¾	½
S	0.35	0.46	0.32	0.42	0.35	0.47	0.39	0.52	0.40	0.53	0.39	0.52	0.29	0.39
C	0.68	0.91	0.84	1.12	0.81	1.08	0.89	1.18	0.87	1.16	0.80	1.06	0.54	0.72
B	0.57	0.76	—	—	—	—	—	—	—	—	0.14	0.19	0.80	1.06
T	1.60	2.13	1.16	1.54	1.16	1.55	1.28	1.71	1.27	1.69	1.33	1.77	1.63	2.17

CAMBER SCHEDULE
BRIDGE 3 SOUTH

	S1		S2		S3,S4		S5-S12		S13	
	¼℄¾	½	¼℄¾	½	¼℄¾	½	¼℄¾	½	¼℄¾	½
S	0.39	0.52	0.40	0.54	0.40	0.53	0.41	0.54	0.35	0.46
C	0.77	1.06	0.87	1.16	0.80	1.07	0.87	1.16	0.68	0.91
B	0.84	1.12	0.12	0.16	—	—	—	—	0.76	1.01
D	—	—	—	—	0.12	0.16	—	—	—	—
T	2.00	2.70	1.39	1.86	1.38	1.83	1.28	1.70	1.79	2.38

NOTES:
Dimension "A" is the distance from the top of slab-to top of stringer at intersection of ℄ bearing with ℄ stringer.
Dimension "A" is theoretical and between bearings may be varied as required to care for variation in camber or stringer depth, except that no portion of stringer flange or cover plate may fall within the thickness shown for the slab.
Minimum height of haunch equals 1" measured to the top of flange or cover plate on the low side of the roadway cross-slope at supports of rolled beams.

	BY	DATE				
MADE	G.M.M.	4-2-58				
TRACED						
CHECKED	P.R.N.	4-5-58				
IN CHARGE OF	J.F.M.		No.	REVISION	BY	DATE

REVISIONS
Dimension "A" = 9¼" - E.Z. 8/21/58

Correct as Built
J. K. Smith Jr.
Freeways Division Engineer

APPROVED _____
BRIDGE ENGINEER

DELAWARE STATE HIGHWAY DEPARTMENT
INTERSTATE HIGHWAY ROUTE FA I-1
FARNHURST INTERCHANGE
CONTRACT NO. I-1 (6) FEDERAL AID PROJECT NO. I-01(6)

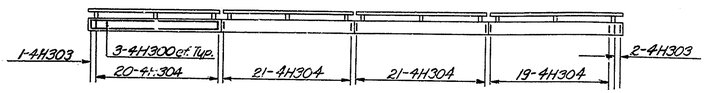
BRIDGES 3N & 3S
MISCELLANEOUS BRIDGE DETAILS

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

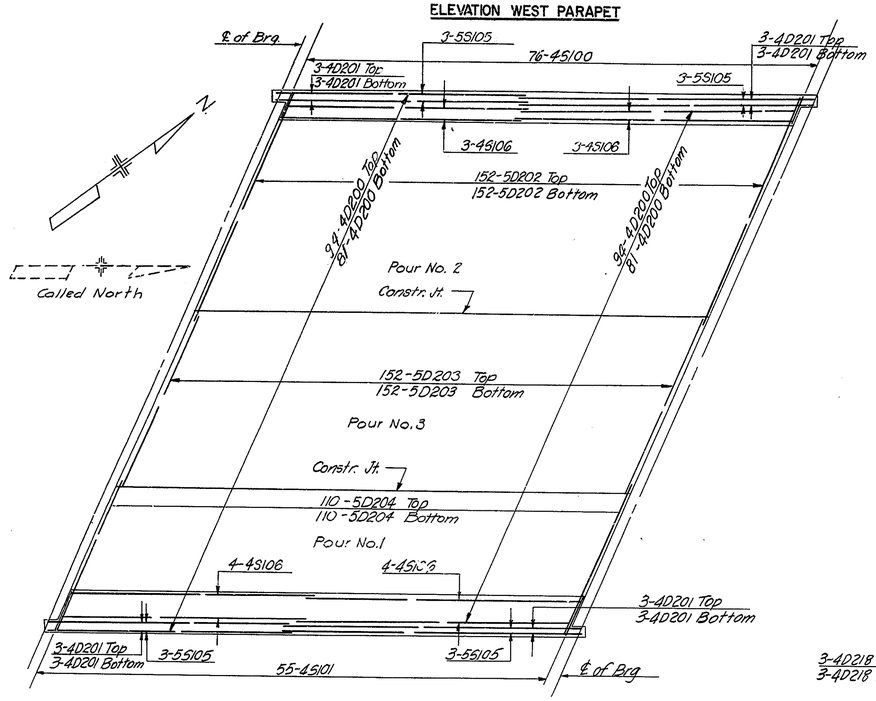
SCALE AS NOTED
DATE 4-2-58
SHEET NO. 23 OF 37

COUNTY	CONTRACT	P. R. A. DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
N. C.	I-1 (6)	2	DEL.	I-01 (6)		22	37

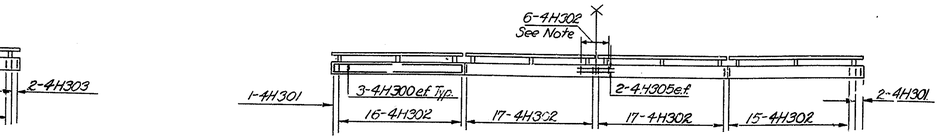
FARNHURST INTERCHANGE



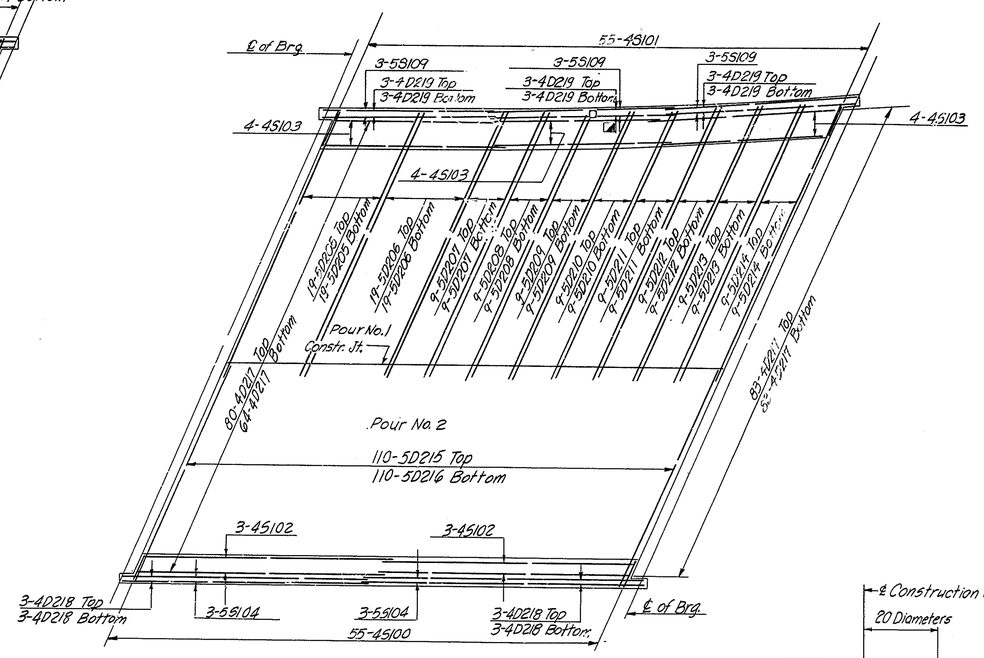
ELEVATION WEST PARAPET



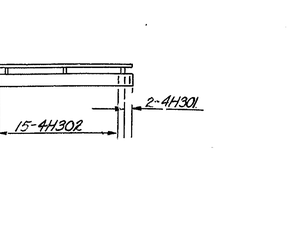
PLAN BRIDGE 3N



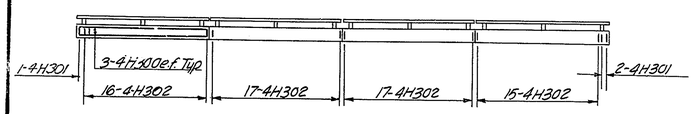
ELEVATION WEST PARAPET



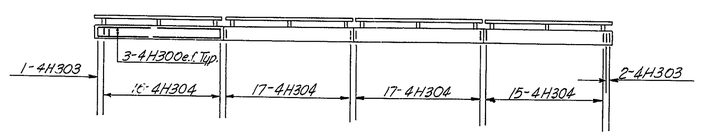
PLAN BRIDGE 3S



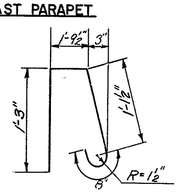
TYPICAL CONSTRUCTION JOINT



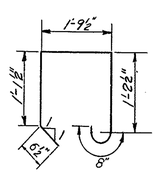
ELEVATION OF EAST PARAPET



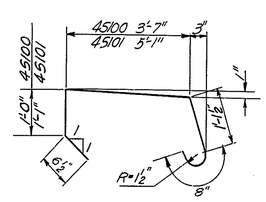
ELEVATION OF EAST PARAPET



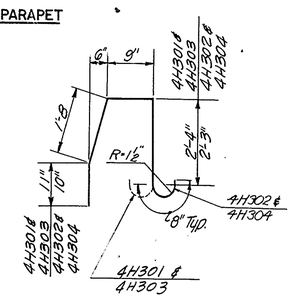
4S107



4S108



4S100 & 4S101



4H301, 4H302, 4H303, & 4H304

SYMBOLS
- Denotes Ltg. Std.
- Denotes Junction Box
- Ltg. Std. Location

BAR LIST

Mark	Size	No.	Length	Tot. Length	Weight Lbs	Remarks
Deck				3N		
4D200	4	350	37'-9"	13,212.5	8826	Straight
4D201	4	24	39'-3"	942.0	629	"
5D202	5	304	34'-0"	10,336.0	10780	"
5D203	5	304	26'-3"	7,980.0	8323	"
5D204	5	220	22'-3"	4,895.0	5105	"
7DX	7	22	37'-0"	814.0	(See Notes)	
Sidewalk						
4S100	4	76	6'-11"	525.9	351	Detailed
4S101	4	55	8'-6"	467.5	312	"
5S105	5	12	39'-3"	471.0	491	Straight
4S106	4	14	37'-6"	525.0	351	"
Parapet						
4H300	4	48	18'-9"	900.0	601	Straight
4H301	4	3	6'-4"	19.0	13	Detailed
4H302	4	65	6'-2"	400.8	268	"
4H303	4	3	6'-4"	19.0	13	"
4H304	4	81	6'-2"	499.5	334	"
				3S		
Deck						
5D205	5	38	39'-9"	1510.5	1575	Straight
5D206	5	38	40'-0"	1520.0	1585	"
5D207	5	18	40'-3"	724.5	756	"
5D208	5	18	40'-6"	729.0	760	"
5D209	5	18	40'-9"	733.5	765	"
5D210	5	18	41'-0"	738.0	770	"
5D211	5	18	41'-3"	742.5	774	"
5D212	5	18	41'-6"	747.0	779	"
5D213	5	18	41'-9"	751.5	784	"
5D214	5	18	42'-0"	756.0	789	"
5D215	5	110	32'-10"	3611.7	3767	"
5D216	5	110	32'-7"	3584.2	3738	"
4D217	4	310	37'-0"	11470.	7662	"
4D218	4	12	38'-6"	462.0	309	"
4D219	4	18	26'-6"	477.0	319	"
7DX	7	26	36'-6"	949.0	(See Notes)	
Sidewalk						
4S100	4	55	6'-11"	380.4	254	Detailed
4S101	4	55	8'-6"	467.5	312	"
4S102	4	6	37'-0"	222.0	148	Straight
4S103	4	12	25'-6"	306.0	204	"
5S104	5	6	38'-6"	231.0	241	"
4S107	4	2	4'-10"	9.7	6	Detailed
4S108	4	2	5'-4"	10.7	7	"
5S109	5	9	26'-0"	234.0	244	Straight
Parapet						
4H300	4	48	18'-9"	900.0	601	Straight
4H301	4	3	6'-4"	19.0	13	Detailed
4H302	4	71	6'-2"	437.8	292	"
4H303	4	3	6'-4"	19.0	13	"
4H304	4	65	6'-2"	400.8	268	"
4H305	4	4	8'-0"	32.0	21	Straight

Total = 67,757

NOTES

For location of reinforcement at Junction Box and Light Standard, see Sh. No. 27.

Total length of ⅝"ϕ plain or deformed bar, Mark 7DX, 1763' Weight 3604 lbs, for location, see Sh. 21.

For Typical Cross Sections, see Sh. 21

For General Notes, see Sh. 11

Deck concrete shall be placed in accordance with sequence shown in Plan Views.

For aluminum Railing Details, see Sh. 25

Correct as Built
J. K. Smith Jr.
Freeways Division Engineer

DELAWARE STATE HIGHWAY DEPARTMENT

INTERSTATE HIGHWAY ROUTE FAI-1

FARNHURST INTERCHANGE

CONTRACT NO. I-1 (6) FEDERAL AID PROJECT NO. I-01(6)

BRIDGES 3N & 3S
DECK REINFORCEMENT

	BY	DATE	No.	REVISION	BY	DATE
MADE	J.J.P.	4-3-58				
TRACED						
CHECKED	K.N.S.	4-4-58				
IN CHARGE OF	J.F.M.					

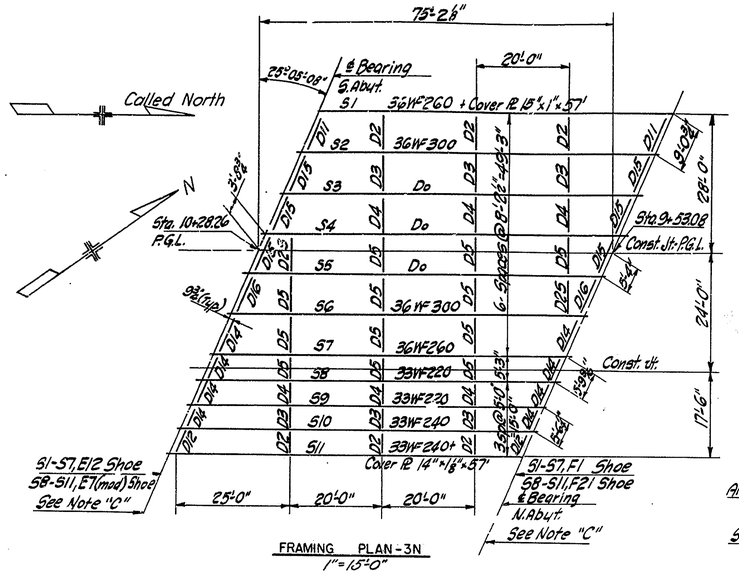
APPROVED _____ BRIDGE ENGINEER

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

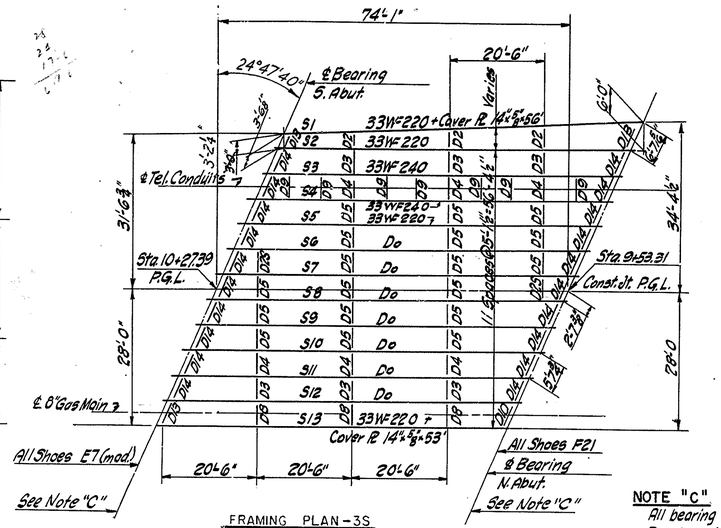
SCALE: 1" = 10'
DATE: 4-3-58
SHEET NO. 22 OF 37

COUNTY	CONTRACT	P.R.A. DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
N. C.	I-1(6)	2	DEL.	I-01 (6)		21	37

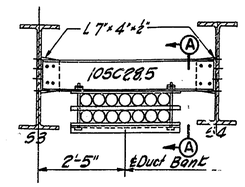
FARNHURST INTERCHANGE



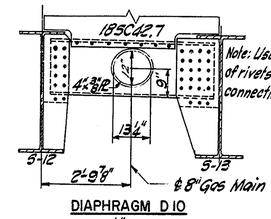
FRAMING PLAN - 3N
1" = 15'-0"



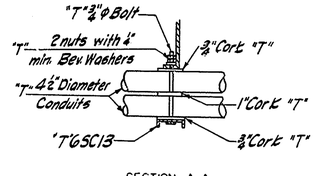
FRAMING PLAN - 3S
1" = 15'-0"



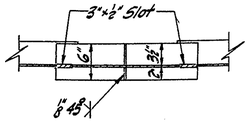
DIAPHRAGM D9
Scale: ½" = 1'-0"



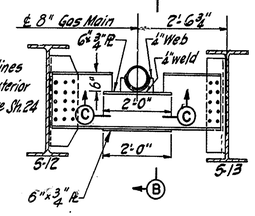
DIAPHRAGM D10
Scale: ½" = 1'-0"



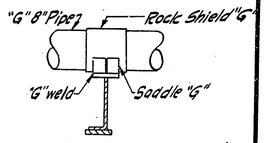
SECTION A-A
Scale: ¾" = 1'-0"



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



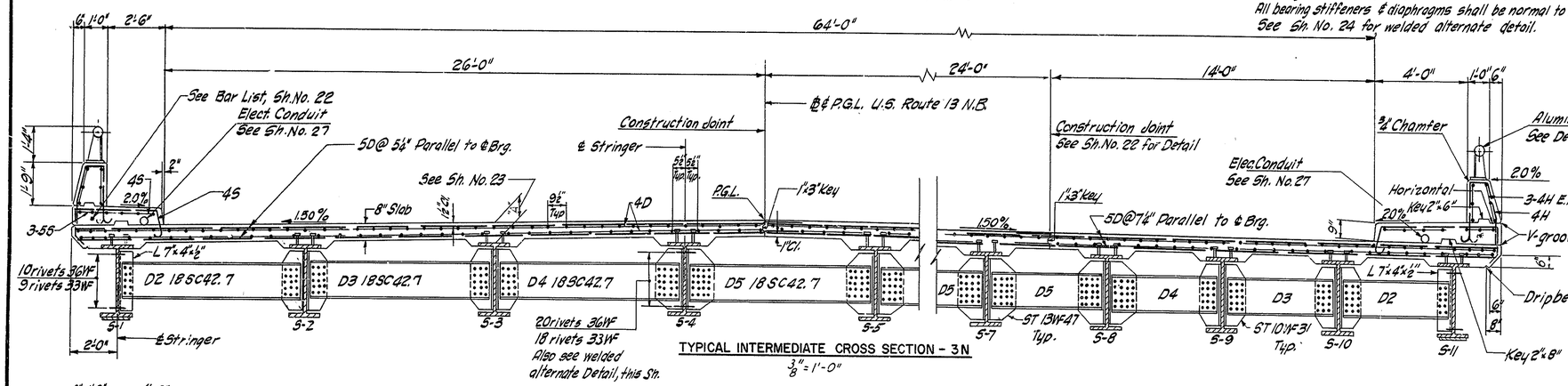
DIAPHRAGM D8
Scale: ½" = 1'-0"



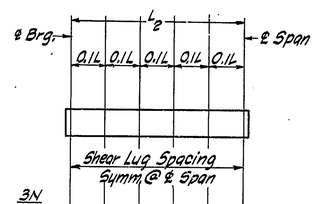
SECTION B-B
Scale: ¾" = 1'-0"

NOTE "C"

All bearing stiffeners to be 2-L's 7" x 4" x ⅝"
Bearing stiffeners shall be milled to bear on bottom flanges of stringers.
All bearing stiffeners & diaphragms shall be normal to stringer flange.
See Sh. No. 24 for welded alternate detail.

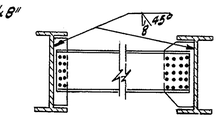


TYPICAL INTERMEDIATE CROSS SECTION - 3N
⅜" = 1'-0"



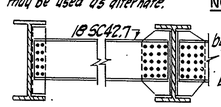
	Shear Lug Spacing Symm. @ ℄ Span				
3N					
S1	6½"	7½"	9½"	12½"	15"
S2 - S6	9"	10½"	11½"	12½"	13½"
S7	12"	12½"	14"	15"	16½"
S8, S9	13½"	15½"	17"	18½"	20½"
S10	13"	15"	17"	18½"	20½"
S11	11"	9½"	11½"	14½"	17"
3S					
S1	8½"	12"	15"	19"	24"
S2	14"	16"	18"	19½"	21"
S3-S12	14"	15½"	17"	18½"	20"
S13	11½"	14½"	18½"	23½"	24"

MAXIMUM SHEAR LUG SPACING



WELDED CONNECTING PLATES

Note: At contractors option, welded connecting plates as shown may be used as alternate.

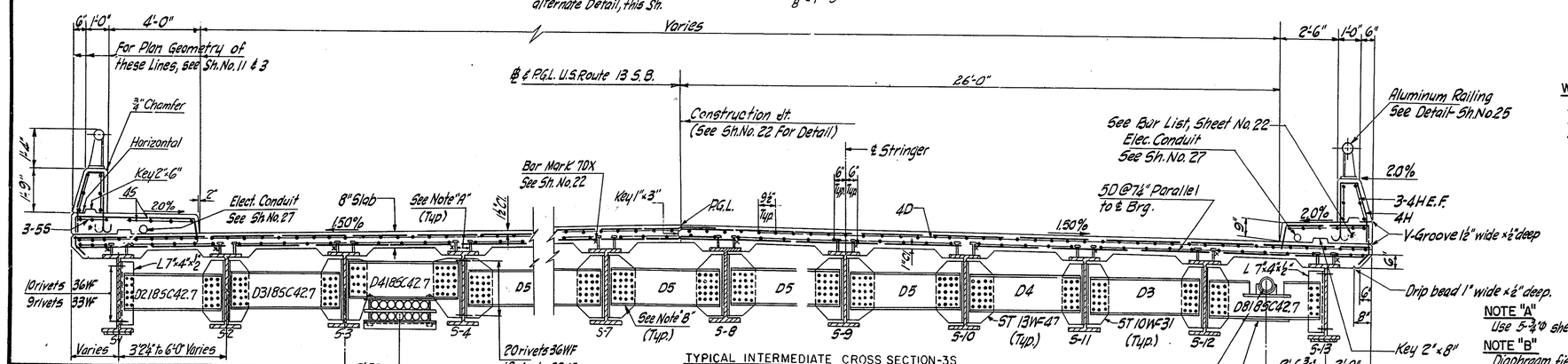


DIAPHRAGM D2S

Use two lines of rivets on exterior connections.

NOTES:

All items marked "T" will be furnished by & installed by others.
All items marked "G" will be furnished by & installed by others.
All cover plates to be placed symmetrically about ℄ span.
For miscellaneous details see Shs. No. 23 to 25 incl.
For General Notes, see Sh. No. 11



TYPICAL INTERMEDIATE CROSS SECTION - 3S
⅜" = 1'-0"

NOTE "A"

Use 5-¾" φ shear studs per row, see Sh. 23

NOTE "B"

Diaphragm field connections may be made with ⅞" φ high strength bolts.

Correct as Built
J. K. Smith, Jr.
Freeways Division Engineer

	BY	DATE
MADE	G.J.D.	3-22-58
TRACED		
CHECKED	K.N.S.	4-1-58
IN CHARGE OF	J.F.M.	

No.	REVISION	BY	DATE

REVISIONS
Correction 3'-2¼" - E.Z. 8/21/59

APPROVED _____ BRIDGE ENGINEER

DELAWARE STATE HIGHWAY DEPARTMENT

INTERSTATE HIGHWAY ROUTE FA I-1

FARNHURST INTERCHANGE

CONTRACT NO. I-1 (6) FEDERAL AID PROJECT NO. I-01(6)

BRIDGES 3N & 3S

FRAMING PLANS & CROSS SECTIONS

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

SCALE AS NOTED
DATE 3-22-58
SHEET NO. 21 OF 37

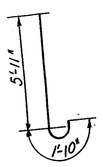
COUNTY	CONTRACT	P.R.A. DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
N. C.	I-1(6)	2	DEL.	I-01(6)		20	37

FARNHURST INTERCHANGE

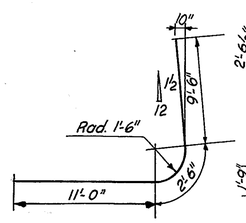
Mark	Size	S.E. Wingwall No.	S.E. Wingwall Length	S.W. Wingwall No.	S.W. Wingwall Length	N.E. Wingwall No.	N.E. Wingwall Length	N.W. Wingwall No	N.W. Wingwall Length	Total Length	Weight Pounds	Remarks
6F401	6	29	31'-6"							913.5'	1,372	Straight
6F402	6			29	19'-6"					565.5'	849	"
6F403	6					29	22'-6"			652.5'	980	"
6F404	6							29	25'-6"	739.5'	1,111	"
11F405	11	33	12'-0"	21	12'-0"	24	12'-0"	27	12'-0"	1260.0'	6,694	"
6F406	6	33	10'-0"	21	10'-0"	24	10'-0"	27	10'-0"	1050.0'	1,577	"
11F407	11	29	23'-0"	17	23'-0"	20	23'-0"	23	23'-0"	2047.0'	10,876	Detailed
9F408	9	30	7'-9"	18	7'-9"	21	7'-9"	24	7'-9"	720.8'	2451	"
6F409	6	16	4'-0"	10	4'-0"	12	4'-0"	13	4'-0"	204.0'	306	Straight
8F410	8	33	12'-0"	21	12'-0"	24	12'-0"	27	12'-0"	1260.0'	3,364	"
6W601	6	40	33'-9¾"							1350.0'	2028	Straight
6W602	6			37	26'-6"					980.5'	1473	"
6W603	6					38	26'-0"			988.0'	1484	"
6W604	6							37	30'-3"	1119.3'	1681	"
6W605	6	4	41'-3"							165.0'	248	"
6W606	6			4	33'-3"					133.0'	200	"
6W607	6					4	33'-0"			132.0'	198	"
6W608	6							4	37'-3"	149.0'	224	"
6W609	6	16	16'-0"	10	16'-0"	12	16'-0"	13	16'-0"	816.0'	1226	"
9W610	9	30	17'-0"	18	17'-0"	21	17'-0"	24	17'-0"	1581.0'	5375	"
6W611	6	54	13'-3"							715.5'	1075	"
6W612	6	2	12'-0"	2	12'-0"	2	12'-0"	2	12'-0"	96.0'	144	"
8W613	8	29	10'-9"	17	10'-9"	20	10'-9"	23	10'-9"	956.8'	2555	"
6W614	6	1	10'-1"	1	10'-1"	1	10'-1"	1	10'-1"	40.3'	60	Detailed
6W615	6	5	4'-9"	5	4'-9"	5	4'-9"	5	4'-9"	95.0'	143	"
6W616	6	40	4'-6"	32	4'-6"	32	4'-6"	36	4'-6"	630.0'	946	"
6W617	6	2	19'-9"	2	19'-9"	2	19'-9"	2	19'-9"	158.0'	237	"
6W618	6	5	21'-0"	5	21'-0"	5	21'-0"	5	21'-0"	420.0'	631	"
6W619	6	2	4'-3"	2	4'-3"	2	4'-3"	2	4'-3"	34.0'	51	Straight
11W620	11	2	17'-0"	2	17'-0"	2	17'-0"	2	17'-0"	136.0'	723	"
6W621	6	2	21'-0"	4	21'-0"	2	21'-0"	4	21'-0"	252.0'	379	"
11W622	11	4	21'-0"	8	21'-0"	5	21'-0"	6	21'-0"	483.0'	2566	"
6W623	6	8	2'-3"							18.0'	27	"
6W624	6			8	7'-0"					56.0'	84	"
6W625	6					8	3'-6"			28.0'	42	"
6W626	6							8	4'-9"	38.0'	57	"
6W627	6	4	9'-6"	4	9'-6"	4	9'-6"	4	9'-6"	152.0'	228	"
6W628	6	1	17'-0"	1	17'-0"	1	17'-0"	1	17'-0"	68.0'	102	Detailed
6W629	6	1	13'-0"	1	13'-0"	1	13'-0"	1	13'-0"	52.0'	78	"
6W630a	6	3	7'-6"	3	7'-6"	3	7'-6"	3	7'-6"	138.0'	207	"
to c			to 15'-6"		to 15'-6"		to 15'-6"		to 15'-6"			
6W631a	6	5	18'-6"	5	18'-6"	5	18'-6"	5	18'-6"	410.0'	616	"
to e			to 22'-6"		to 22'-6"		to 22'-6"		to 22'-6"			
6W632a	6	4	14'-9"	4	14'-9"	4	14'-9"	4	14'-9"	260.0'	391	"
to d			to 17'-9"		to 17'-9"		to 17'-9"		to 17'-9"			
6W633	6			42	11'-6"					483.0'	725	
6W634	6					38	12'-3"			465.5'	699	
6W635	6							48	11'-0"	528.0'	793	
4W636	4	45	3'-0"	38	3'-0"	37	3'-0"	41	3'-0"	483.0'	323	

Total : 57,599 lbs

NOTES:-
For General Notes See Sheet No. 11.
For Location of Reinforcing See Sheet No 19.



9F408



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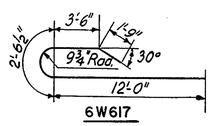
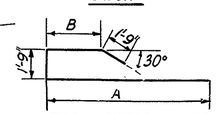
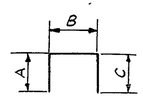


6W617



6W618 6W628 6W629



Mark	A	B
6W618	12'-9"	4'-10"
6W628	10'-9"	2'-10"
6W629	8'-9"	10"

Mark	A	B	C
6W614	4'-2"	1'-9"	4'-2"
6W615	1'-6"	1'-9"	1'-6"
6W616	1'-6"	1'-6"	1'-6"
6W630	3'-0" to	1'-6"	3'-0" to
a to c	7'-0"	.	7'-0"
6W631	8'-6" to	1'-6"	8'-6" to
a to e	10'-6"		10'-6"
6W632	6'-3" to	1'-9"	6'-3" to
a to d	7'-6"		7'-6"

	BY	DATE
MADE	F.P.B.	3-28-58
TRACED		
CHECKED	G.M.M. K.N.S.	4-4-58
IN CHARGE OF	J.F.M.	

No.	REVISION	BY	DATE

Correct as Built
J. K. Smith Jr.
Freeways Division Engineer

APPROVED _____ BRIDGE ENGINEER

DELAWARE STATE HIGHWAY DEPARTMENT

INTERSTATE HIGHWAY ROUTE FA I-1

FARNHURST INTERCHANGE

CONTRACT NO. I-1 (6) FEDERAL AID PROJECT NO. I-01(6)

BRIDGES 3N & 3S

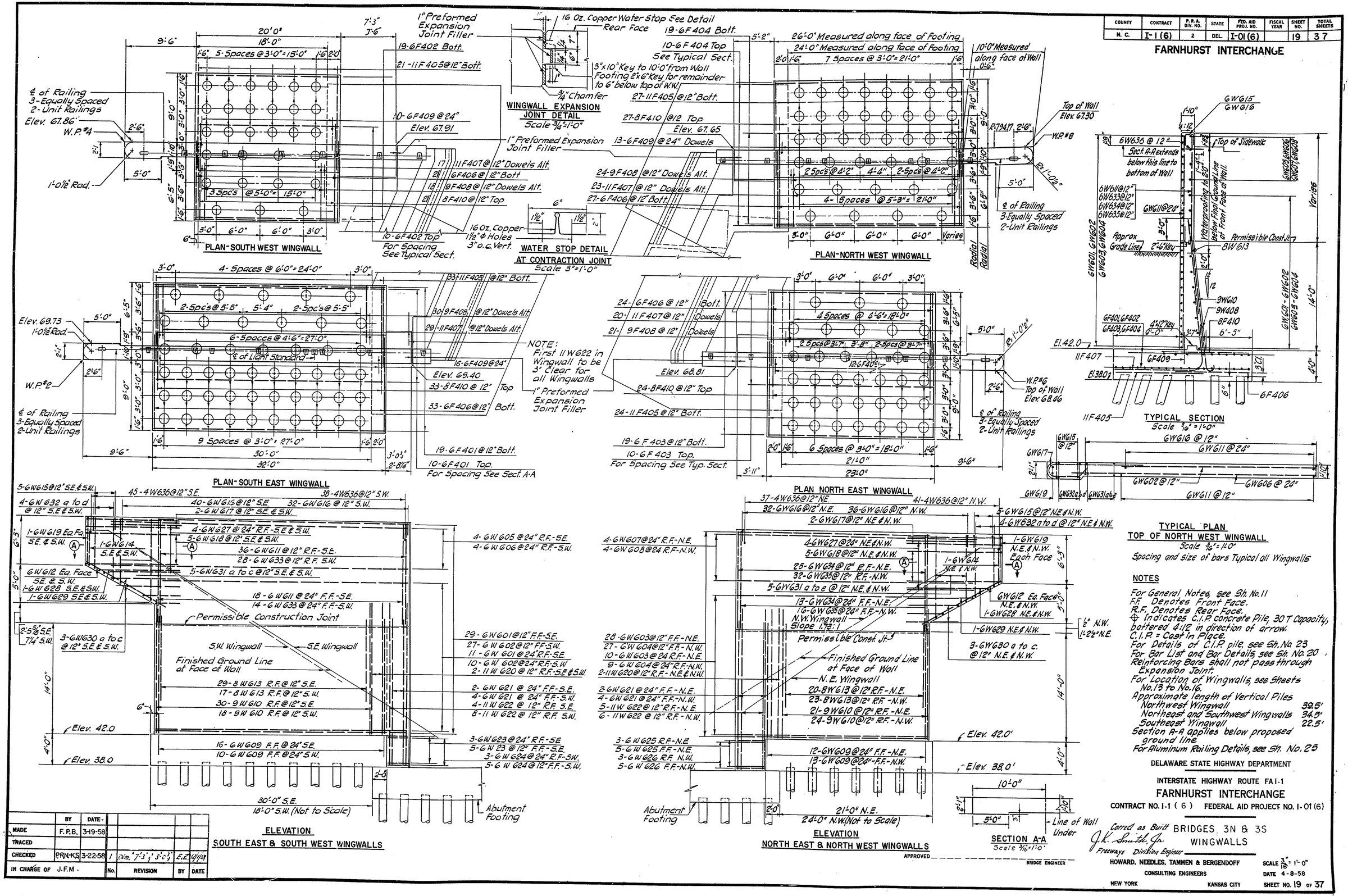
BAR LIST & BAR DETAILS FOR WINGWALLS

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

SCALE NO SCALE
DATE 4-4-58
SHEET NO. 20 OF 37

COUNTY	CONTRACT	P.R.A. DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
N. C.	I-1 (6)	2	DEL.	I-01 (6)		19	37

FARNHURST INTERCHANGE



NOTES

For General Notes, see Sh. No. 11
F.F. Denotes Front Face.
R.F. Denotes Rear Face.
⊕ Indicates C.I.P. concrete Pile, 30 T Capacity, battered 4:12 in direction of arrow.
C.I.P. = Cast in Place.
For Details of C.I.P. pile, see Sh. No. 23
For Bar List and Bar Details, see Sh. No. 20
Reinforcing Bars shall not pass through Expansion Joint.
For Location of Wingwalls, see Sheets No. 13 to No. 16.
Approximate length of Vertical Piles
Northwest Wingwall 39.5'
Northeast and Southwest Wingwalls 34.5'
Southeast Wingwall 22.5'
Section A-A applies below proposed ground line
For Aluminum Railing Details, see Sh. No. 25

DELAWARE STATE HIGHWAY DEPARTMENT

INTERSTATE HIGHWAY ROUTE FA I-1

FARNHURST INTERCHANGE

CONTRACT NO. I-1 (6) FEDERAL AID PROJECT NO. I-01 (6)

Correct as Built BRIDGES 3N & 3S WINGWALLS

J.K. Smith, Jr. Freeways Division Engineer

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

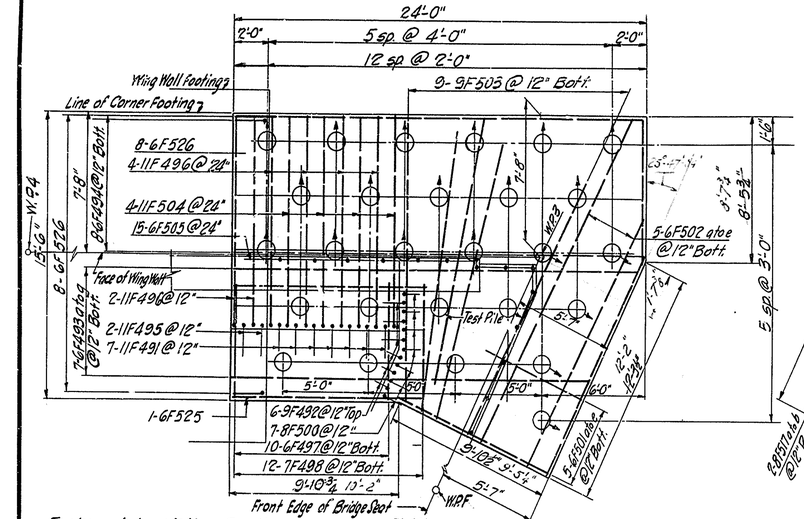
SCALE 3/16" = 1'-0"
DATE 4-8-58
SHEET NO. 19 OF 37

	BY	DATE				
MADE	F.P.B.	3-19-58				
TRACED						
CHECKED	P.R.N.-K.S.	3-22-58	1	Dim. 7'-3" & 3'-0¾"	E.Z.	12/1/58
IN CHARGE OF J.F.M.			No.	REVISION	BY	DATE

APPROVED _____ BRIDGE ENGINEER

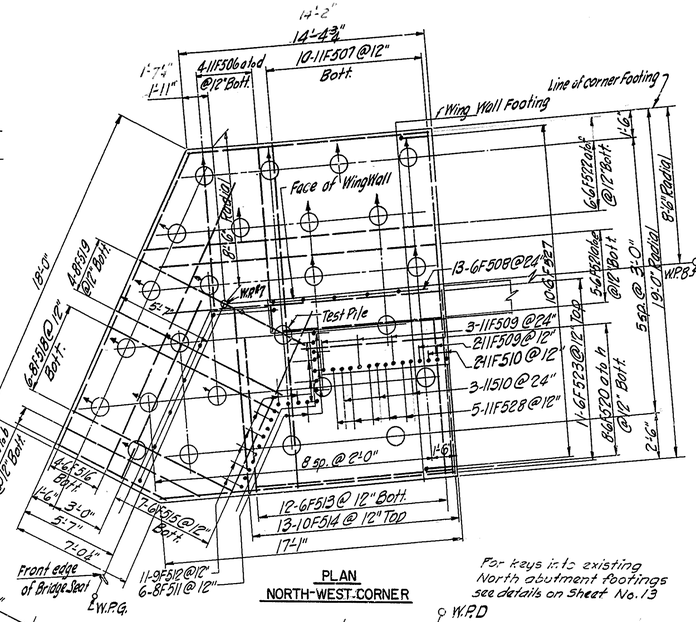
COUNTY	CONTRACT	P.R.A. DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
N. C.	I-1 (6)	2	DEL.	I-01 (6)		18	37

FARNHURST INTERCHANGE



For keys into existing South abutment footings see details on Sheet No. 15.

PLAN
SOUTH-WEST CORNER

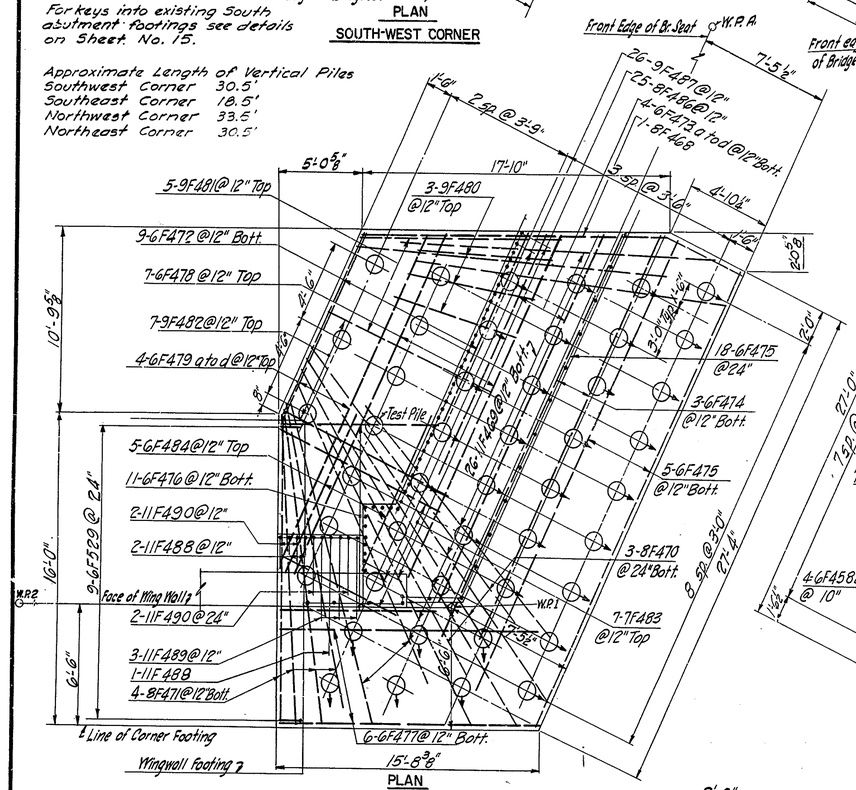


For keys into existing North abutment footings see details on Sheet No. 13

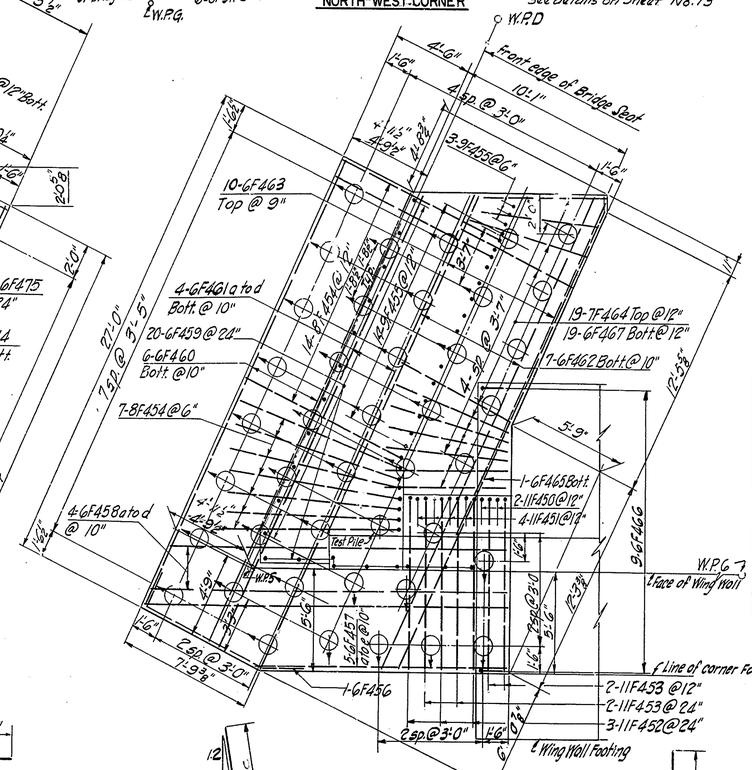
PLAN
NORTH-WEST CORNER

Approximate Length of Vertical Piles

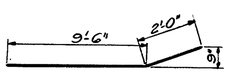
Southwest Corner	30.5'
Southeast Corner	18.5'
Northwest Corner	33.5'
Northeast Corner	30.5'



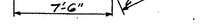
PLAN
SOUTH-EAST CORNER



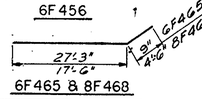
PLAN
NORTH-EAST CORNER



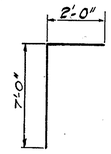
6F525



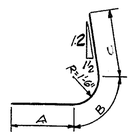
6F456



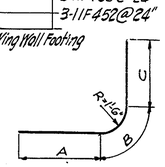
6F465 & 8F468



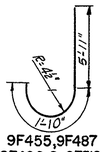
6F466, 6F526
6F527 & 6F529



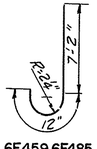
MARK	A	B	C
11F504	7'-6"	2'-4"	9'-5"
11F452	7'-6"	2'-4"	9'-5"
11F453	7'-6"	2'-4"	13'-11"
11F496	11'-0"	2'-4"	13'-11"



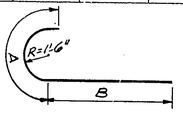
MARK	A	B	C
8F454	9'-6"	2'-4"	8'-10"
8F518	9'-6	2'-4"	8'-10



9F455, 9F487
9F492 & 9F512



6F459, 6F485
6F505 & 6F508



MARK	A	B
11F488, 11F495 11F450 & 11F509	2'-4"	10'-4"
11F491, 11F451, 11F489 & 11F528	2'-4"	5'-3"
11F490 & 11F510	2'-4"	14'-10"

BAR LISTS

NORTHEAST CORNER

Mark	Size	No.	Length	Tot. Length	Weight Lbs.	Remarks
11F450	11	2	12'-8	25.3'	134	Det.
11F451	11	4	7'-7"	30.3'	161	Det.
11F452	11	3	19'-3"	57.8'	307	Det.
11F453	11	4	23'-9"	95.0'	505	Det.
8F454	8	21	20'-8"	434.1'	1159	Det.
9F455	9	17	7'-9"	131.8	445	Det.
6F456	6	1	11'-6"	11.5'	17	Det.
6F457 a	6	5	14'-3"	87.9'	132	Str.
to e			to 20'-11"			
6F458 a	6	4	19'-5"	80.7'	121	Str.
to d			to 20'-11"			
6F459	6	20	8'-2"	163.4'	245	Det.
6F460	6	6	26'-8"	160.0'	240	Str.
6F461 a	6	4	27'-2"	110.7'	166	Str.
to d			to 28'-2"			
6F462	6	7	28'-2"	197.2'	296	Str.
6F463	6	10	20'-0"	200.0'	300	Str.
7F464	7	19	7'-0"	133.0'	272	Str.
6F465	6	1	28'-0"	28.0'	42	Det.
6F466	6	9	9'-0"	81.0'	122	Det.
6F467	6	19	7'-0"	133.0'	200	Str.
			Total	4867		

SOUTHEAST CORNER

Mark	Size	No.	Length	Tot. Length	Weight Lbs.	Remarks
8F468	8	1	22'-0"	22.0'	59	Det.
11F469	11	26	18'-0"	468.0'	2486	Str.
8F470	8	3	19'-0"	57.0'	152	Str.
8F471	8	4	16'-6"	66.0'	176	Str.
6F472	6	9	11'-0"	99.0'	149	Str.
6F473 a	6	4	14'-6"	73.7'	111	Str.
to d			to 22'-3"			
6F474	6	3	24'-0"	72.0'	108	Str.
6F475	6	5	27'-0"	135.0'	203	Str.
6F476	6	11	9'-0"	99.0'	149	Str.
6F477	6	6	14'-9"	88.5'	133	Str.
6F478	6	7	21'-0"	147.0'	221	Str.
6F479 a	6	4	11'-0"	61.5'	92	Str.
to d			to 19'-9"			
9F480	9	3	7'-6"	22.5'	76	Str.
9F481	9	5	11'-0"	55.0'	187	Str.
9F482	9	7	10'-6"	73.5'	250	Str.
7F483	7	7	10'-0"	70.0'	143	Str.
6F484	6	5	9'-6"	47.5'	71	Str.
6F485	6	18	8'-2"	147.0'	221	Det.
8F486	8	25	10'-3"	256.3'	684	Str.
9F487	9	26	7'-9"	201.5'	685	Det.
11F488	11	3	12'-8"	38.0'	202	Det.
11F489	11	3	7'-7"	22.8'	121	Det.
11F490	11	4	17'-2"	68.7'	365	Det.
6F529	6	9	9'-0"	81.0'	122	Det.
			Total	7166		

SOUTHWEST CORNER

Mark	Size	No.	Length	Tot. Length	Weight Lbs.	Remarks
11F491	11	7	7'-7"	53.1'	282	Det.
9F492	9	6	7'-9"	46.5'	158	Det.
6F493 a	6	7	20'-0"	145.3	218	Str.
to g			to 21'-6"			
6F494	6	8	23'-6"	188.0'	282	Str.
11F495	11	2	12'-8"	25.4'	135	Det.
11F496	11	6	27'-3"	163.5'	869	Det.
6F497	6	10	6'-0"	60.0'	90	Str.
7F498	7	12	6'-6"	78.0'	159	Str.
6F499	6	7	11'-0"	77.0'	116	Str.
8F500	8	7	10'-3"	71.9'	192	Str.
6F501 a	6	5	6'-3"	39.6'	59	Str.
to e			to 9'-6"			
6F502 a	6	5	12'-9"	80.6'	121	Str.
to e			to 19'-6"			
9F503	9	9	15'-0"	135.0'	459	Str.
11F504	11	4	19'-3"	77.0'	409	Det.
6F505	6	15	8'-2"	122.5	184	Det.
6F525	6	1	11'-6"	11.5'	17	Det.
6F526	6	8	9'-0"	72.0'	108	Det.
			Total	3858		

NORTHWEST CORNER

Mark	Size	No.	Length	Tot. Length	Weight Lbs.	Remarks
11F506 a	11	4	8'-6"	37.0'	197	Str.
to d			to 10'-0"			
11F507	11	10	18'-6"	185.0'	983	Str.
6F508	6	13	8'-2"	106.2'	160	Det.
11F509	11	5	12'-8"	63.4	336	Det.
11F510	11	5	17'-2"	85.9'	456	Det.
8F511	8	6	10'-3"	61.5'	164	Str.
9F512	9	11	7'-9"	85.3'	290	Det.
6F513	6	12	8'-0"	96.0'	144	Str.
10F514	10	13	10'-0"	130.0'	559	Str.
6F515	6	7	11'-0"	77.0'	116	Str.
6F516	6	4	17'-6"	70.0'	105	Str.
8F517 a	8	2	6'-9"	15.2'	41	Str.
to b			to 8'-6"			
8F518	8	6	20'-8"	124.0'	331	Det.
8F519	8	4	10'-6"	42.0'	112	Str.
6F520 a	6	8	8'-3"	82.0'	123	Str.
to h			to 12'-3"			
6F521 a	6	5	9'-3"	63.1	95	Str.
to e			to 16'-0"			
6F522 a	6	6	16'-9"	91.5	137	Str.
to f			to 13'-9"			
6F523	6	11	12'-0"	132.0'	198	Str.
6F527	6	10	9'-0"	90.0'	135	Det.
11F528	11	5	7'-7"	37.9'	201	Det.
			Total	4,883		

Notes: See Sheet No. 11 for General Notes
See Sheet No. 13 and No. 15 for Location
C.I.P. Denotes Cast In Place
C.I.P. Battered 4:12 in direction of arrow
All Piles are 30 Ton, 14"ϕ C.I.P. Piles
For Details of C.I.P. Pile See Sheet No. 23

DELAWARE STATE HIGHWAY DEPARTMENT

INTERSTATE HIGHWAY ROUTE FA I-1

FARNHURST INTERCHANGE

CONTRACT NO. I-1 (6) FEDERAL AID PROJECT NO. I-01(6)

Correct as Built
J. K. Smith, Jr.
Freeways Division Engineer

BRIDGES 3N & 3S
ABUTMENT FOOTINGS

APPROVED _____
BRIDGE ENGINEER

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

SCALE ¼ : 1'-0"
DATE 3-31-58
SHEET NO. 18 OF 37

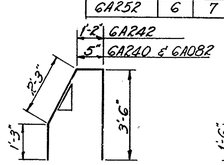
	BY	DATE				
MADE	G.M.M.	3-31-58				
TRACED						
CHECKED	K.N.S. F.C.P.	4-3-58	1	Dimensions	F.C.P.	4-4-58
IN CHARGE OF J.F.M.			No.	REVISION	BY	DATE

COUNTY	CONTRACT	P. R. A. DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
N. C.	I-1 (6)	2	DEL.	I-01 (6)		17	37

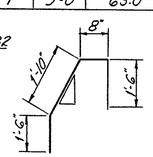
FARNHURST INTERCHANGE

SOUTH ABUTMENT

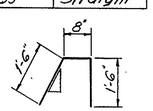
Mark	Size	No.	Length	Total Length	Weight - Pounds	Remarks
6A200	6	38	22'-6"	855.0	1284	Detailed
9A201	9	41	23'-6"	963.5	3276	Straight
6A202	6	46	5'-6"	253.0	380	"
6A203	6	32	4'-9"	152.0	228	Detailed
6A204	6	12	21'-3"	255.0	383	"
6A205	6	24	29'-3"	702.0	1054	"
8A206	8	72	8'-6"	612.0	1634	"
8A207	8	12	6'-6"	78.0	208	"
8A208	8	12	5'-0"	60.0	160	"
6A209	6	55	5'-0"	275.0	413	Straight
6A210	6	24	4'-0"	96.0	144	Detailed
6A211	6	24	8'-8"	208.0	312	"
6A212	6	12	6'-6"	78.0	117	"
6A213	6	12	6'-0"	72.0	108	"
9A214	9	8	21'-3"	170.0	578	Straight
6A215	6	12	7'-6"	90.0	135	Detailed
6A216	6	24	10'-9"	258.0	388	"
6A217	6	33	6'-9"	222.8	335	"
6A218	6	18	48'-6"	873.0	1311	Straight
6A219	6	13	34'-0"	442.0	664	"
6A220	6	2	34'-3"	68.5	103	Detailed
6A221	6	2	39'-9"	79.5	119	"
6A222	6	15	31'-3"	468.8	704	Straight
6A223	6	15	30'-6"	457.5	687	"
6A224	6	8	36'-0"	288.0	433	"
9A225	9	1	22'-6"	22.5	77	"
6A226	6	9	14'-3"	128.3	193	Detailed
6A227	6	9	12'-3"	110.3	166	Straight
6A228	6	23	3'-0"	69.0	104	"
6A229	6	3	6'-0"	18.0	27	Detailed
6A230	6	3	8'-3"	24.8	37	"
6A231 a	6	5	4'-0"	24.2	36	"
to e			to 5'-8"			
6A232	6	7	6'-9"	47.3	71	Straight
6A233	6	6	7'-9"	46.5	70	Detailed
6A234	6	6	4'-0"	24.0	36	"
6A235	6	6	9'-3"	55.5	83	Straight
6A236	6	9	2'-3"	20.3	30	"
6A237	6	17	3'-6"	59.5	89	"
6A238	6	5	5'-3"	26.3	40	Detailed
6A239	6	130	6'-0"	780.0	1172	"
6A240	6	130	7'-10"	1018.2	1530	"
6A241	6	6	6'-9"	40.5	61	Straight
6A242	6	12	8'-8"	104.0	156	Detailed
6A243	6	3	50'-3"	150.8	227	"
4A244	4	33	7'-9"	255.8	171	"
4A245	4	33	6'-3"	206.3	138	"
4A246	4	26	6'-6"	169.0	113	"
4A247	4	22	5'-7"	122.8	82	"
6A248	6	42	6'-0"	252.0	378	Straight
6A249	6	21	3'-8"	77.0	116	Detailed
6A250	6	8	8'-2"	65.3	98	"
6A251	6	8	4'-8"	37.3	56	"
6A252	6	7	9'-0"	63.0	95	Straight



6A240, 6A242, 6A082



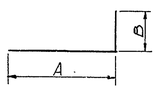
6A048

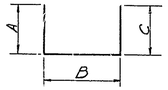


6A249

SOUTH ABUTMENT (continued)

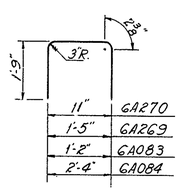
Mark	Size	No.	Length	Total Length	Weight - Pounds	Remarks
6A253	6	3	9'-0"	27.0	41	Detailed
6A254	6	2	4'-2"	8.3	13	"
6A255	6	1	6'-3"	6.3	9	"
6A256	6	12	8'-3"	99.0	149	Straight
6A257	6	9	8'-3"	74.3	112	Detailed
6A258	6	1	5'-9"	5.8	9	"
6A259	6	2	5'-3"	10.5	16	"
6A260	6	3	38'-6"	115.5	174	Straight
6A261	6	3	32'-9"	98.3	148	"
4A262	4	51	5'-2"	263.5	176	Detailed
4A263	4	30	5'-5"	162.5	109	"
6A264	6	13	6'-0"	78.0	118	Straight
6A265	6	6	8'-3"	49.5	75	"
6A266	6	10	6'-6"	65.0	98	"
6A267 a	6	4	4'-3"	20.0	30	Detailed
to d			to 5'-9"			
6A268	6	3	3'-6"	10.5	16	Detailed
6A269	6	8	4'-5"	35.4	53	"
6A270	6	12	3'-10"	46.0	69	"
6A271	6	75	3'-9"	281.3	423	Straight
					22,448	Total



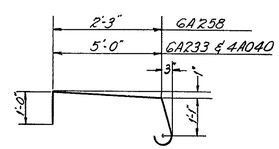


Mark	A	B
North Abut.		
6A006	21'-2"	1'-3"
6A012	2'-9"	1'-3"
4A014	4'-3"	1'-5"
6A017	3'-8"	1'-9"
6A018	3'-2"	1'-3"
4A020	4'-3"	1'-4"
6A021	4'-8"	1'-9"
6A028	5'-6"	3'-3"
6A032	1'-3"	1'-3"
4A034	4'-3"	2'-9"
6A035	3'-4"	1'-6"
6A046	6'-3"	1'-7"
4A054	4'-3"	1'-10"
4A055	4'-3"	1'-9"
6A059	4'-0"	1'-3"
6A060	7'-0"	1'-3"
6A061	5'-9"	1'-7"
6A062	3'-0"	1'-6"
4A063	4'-3"	0'-9"
4A064	4'-3"	1'-0"
6A085	7'-3"	1'-9"
South. Abut.		
6A200	21'-3"	1'-3"
6A210	2'-3"	1'-9"
6A211	6'-11"	1'-9"
6A212	4'-9"	1'-9"
6A213	4'-3"	1'-9"
6A229	4'-9"	1'-3"
6A230	7'-0"	1'-3"
6A238	4'-0"	1'-3"
6A239	4'-6"	1'-6"
4A244	4'-3"	3'-6"
4A245	4'-3"	2'-0"
4A246	4'-3"	2'-3"
4A247	4'-3"	1'-4"
4A262	4'-5"	0'-9"
4A263	4'-5"	0'-3"
6A268	2'-0"	1'-6"

Mark	A	B	C
North Abut.			
6A003	1'-3"	4'-0"	1'-3"
6A029	1'-3"	2'-2"	1'-3"
6A036 a	1'-3"	1'-9"	1'-3"
to d	1'-3"	to 3'-6"	1'-3"
6A038	1'-3"	1'-4"	1'-3"
6A051 a	2'-0"	0'-8"	2'-3"
to b	2'-0"	to 0'-11"	2'-3"
6A052 a	1'-0"	0'-8"	1'-3"
to b	1'-0"	to 0'-11"	1'-3"
6A083	1'-9"	1'-2"	1'-9"
6A084	1'-9"	2'-4"	1'-9"
South Abut.			
6A203	1'-3"	2'-3"	1'-3"
6A217	1'-3"	4'-3"	1'-3"
6A231 a	1'-3"	1'-6"	1'-3"
to e	1'-3"	to 3'-2"	1'-3"
6A234	1'-3"	1'-6"	1'-3"
6A250	3'-0"	1'-2"	4'-0"
6A251	1'-3"	1'-2"	2'-3"
6A267 a	1'-3"	1'-9"	1'-3"
to d	1'-3	to 3'-3"	1'-3"



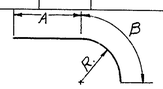
6A083, 6A084
6A269, 6A270



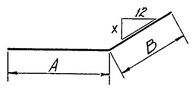
NOTES
For general notes see Sheet No. 11
For abutment details see Sheet No. 14 & 16

NORTH ABUTMENT (continued)

Mark	Size	No.	Length	Total Length	Weight - Pounds	Remarks
6A052a	6	2	2'-11"	6.1	9	Detailed
to b			to 3'-2"			
6A053	6	3	3'-0"	9.	14	Detailed
4A054	4	29	6'-1"	176.3	118	"
4A055	4	27	6'-0"	162.0	108	"
4A056	4	6	5'-3"	31.5	21	Straight
6A057	6	5	8'-3"	41.3	62	"
6A058	6	2	3'-6"	7.	11	Detailed
6A059	6	4	6'-3"	25.	38	Straight
6A060	6	2	8'-3"	16.5	25	Detailed
6A061	6	6	7'-4"	44.	66	"
6A062	6	59	4'-6"	265.5	399	"
4A063	4	51	5'-0"	255.	170	"
4A064	4	32	5'-3"	168.	112	"
6A065	6	6	23'-0"	138	207	Straight
6A066	6	2	41'-6"	83.	125	Detailed
6A067	6	7	43'-6"	304.5	457	Straight
6A068	6	5	36'-0"	180.	270	"
6A069	6	11	38'-0"	418.	628	"
6A070	6	2	47'-0"	94	141	Detailed
6A071	6	7	43'-6"	304.5	457	"
6A072	6	4	7'-3"	29.	44	Straight
6A073	6	3	8'-9"	26.3	39	"
6A074	6	7	39'-6"	276.5	415	"
6A075	6	7	37'-6"	262.5	394	Detailed
6A076	6	14	33'-6"	469.	704	Straight
6A077	6	7	4'-8"	32.7	49	Detailed
6A078	6	2	34'-0"	68.	102	Straight
6A079	6	7	5'-5"	37.9	57	Detailed
6A080	6	7	3'-5"	23.9	36	Detailed
6A081	6	54	5'-0"	270.	406	Straight
6A082	6	152	7'-5"	1127.3	1693	Detailed
6A083	6	12	4'-8"	56.	84	"
6A084	6	8	5'-11"	47.3	71	"
6A085	6	2	9'-0"	18.	27	"
					21,510	Total



Mark	A	B	R.
6A050	2'-10"	2'-6"	2'-6"
6A058	2'-0"	1'-6"	1'-6"
6A254	2'-0"	2'-0"	1'-6"
6A259	2'-6"	2'-9"	2'-6"



Mark	A	B	X
North Abut.			
6A002	20'-0"	5'-6"	5 5/8
6A005	23'-4"	1'-3"	5 5/8
6A031	13'-0"	4'-3"	25 5/8
6A047	6'-3"	1'-3"	25 5/8
South Abut.			
6A204	19'-6"	1'-9"	25 5/8
6A205	25'-6"	3'-9"	25 5/8
6A215	6'-6"	1'-0"	5 5/8
6A216	9'-3"	1'-6"	5 5/8
6A220	32'-9"	1'-6"	25 5/8
6A221	38'-6"	1'-3"	5 5/8
6A226	12'-0"	2'-3"	25 5/8
6A243	48'-6"	1'-9"	25 5/8
6A253	7'-6"	1'-6"	5 5/8
6A257	6'-9"	1'-6"	5 5/8

NORTH ABUTMENT

Mark	Size	No.	Length	Total Length	Weight - Pounds	Remarks
9A001	9	48	23'-9"	1,140.	3,876	Straight
6A002	6	12	22'-6"	270.	406	"
6A003	6	33	6'-6"	214.5	322	"
6A004	6	23	4'-6"	103.5	156	"
6A005	6	23	24'-7"	565.3	849	Detailed
6A006	6	35	22'-5"	784.7	1,179	"
8A007	8	48	8'-0"	384.	1,025	See Det. X
6A008	6	18	8'-0"	144.	216	Straight
9A009	9	1	21'-3"	21.3	72	"
6A010	6	20	4'-9"	95.	143	"
9A011	9	3	22'-6"	67.5	230	"
6A012	6	12	4'-0"	48.	72	Detailed
8A013	8	12	5'-0"	60.	160	See Det. X
4A014	4	3	5'-8"	17.	11	Detailed
8A015	8	12	6'-3"	75.	200	See Det. X
6A016	6	10	13'-0"	130.	195	Straight
6A017	6	23	5'-5"	124.7	187	Detailed
6A018	6	12	4'-5"	53.	80	"
8A019	8	12	5'-3"	63.	168	See Det. X
4A020	4	3	5'-7"	16.7	11	Detailed
6A021	6	23	6'-5"	147.7	222	"
8A022	8	12	7'-0"	84.	224	See Det. X
6A023	6	11	12'-6"	137.5	207	Straight
6A024	6	5	2'-3"	11.3	17	"
6A025	6	6	6'-0"	36.	54	"
6A026	6	8	3'-6"	28.	42	"
6A027	6	120	3'-9"	450.	675	"
6A028	6	18	8'-9"	157.5	237	Detailed
6A029	6	20	4'-8"	93.4	140	"
6A030	6	12	9'-0"	108.	162	Straight
6A031	6	23	17'-3"	396.8	596	"
6A032	6	4	2'-6"	10.0	15	Detailed
6A033	6	11	5'-9"	63.3	95	Straight
4A034	4	63	7'-0"	441.0	295	Detailed
6A035	6	69	4'-10"	333.5	501	"
6A036 a	6	8	4'-3"	41.	62	Det. 2 each
to d			to 6'-0"			
6A037	6	17	7'-0"	119.	179	Straight
6A038	6	5	3'-10"	19.2	29	Detailed
6A039	6	2	4'-0"	8.	12	Straight
4A040	4	6	7'-9"	46.5	31	Detailed
6A041	6	3	5'-3"	15.8	24	Straight
6A042	6	6	9'-6"	57.	86	"
6A043	6	10	8'-6"	85.	128	"
6A044	6	10	6'-9"	67.5	101	"
6A045 a	6	2	4'-2"	8.6	13	Detailed
to b			to 4'-5"			
6A046	6	3	7'-10"	23.5	35	Detailed
6A047	6	2	7'-6"	15.	23	"
6A048	6	18	5'-6"	99.	149	"
6A049	6	1	5'-3"	5.3	8	"
6A050	6	2	5'-4"	10.7	16	"
6A051 a	6	2	4'-11"	10.1	15	"
to b			to 5'-2"			

Correct as Built
J. K. Smith, Jr.
Freeways Division Engineer

	BY	DATE				
MADE	J.G.S. C.R.Z.	4-10-58				
TRACED						
CHECKED	E.I.M. P.R.N.	4-17-58				
IN CHARGE OF J.F.M.			No.	REVISION	BY	DATE

APPROVED _____
BRIDGE ENGINEER

DELAWARE STATE HIGHWAY DEPARTMENT

INTERSTATE HIGHWAY ROUTE FA I-1

FARNHURST INTERCHANGE

CONTRACT NO. I-1 (6) FEDERAL AID PROJECT NO. I-01(6)

BRIDGES 3N & 3S

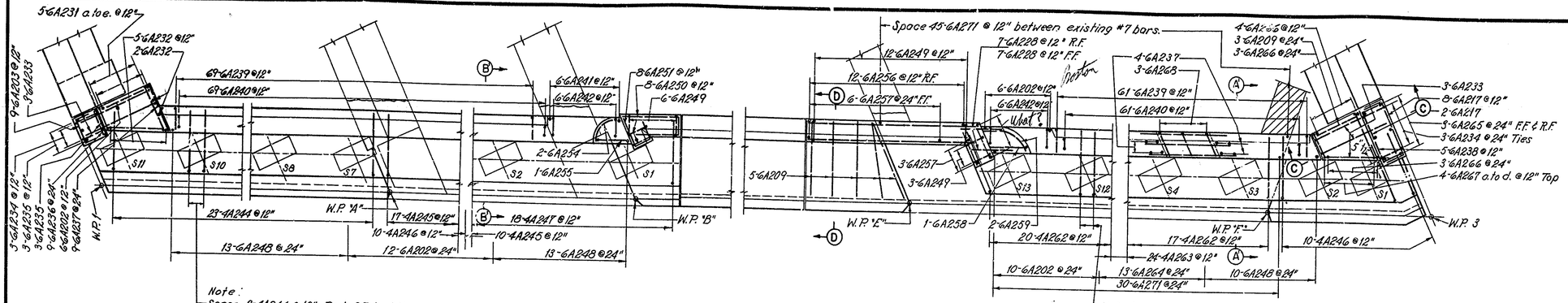
BAR LISTS & BAR DETAILS FOR ABUTMENTS

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

SCALE
DATE 4-10-58
SHEET NO. 17 OF 37

COUNTY	CONTRACT	F.H.A. DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
N. C.	I-1 (6)	2	DEL.	I-01 (6)		16	37

FARNHURST INTERCHANGE

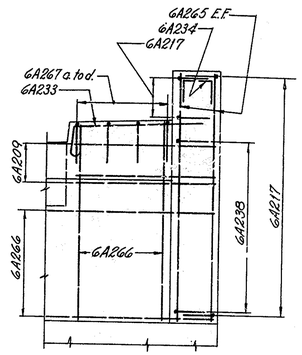


Note:
Space 2-4A244 @ 12" Pad S7 to S11
Space 2-4A245 @ 12" Pad S3, S5 & S6
Space 2-4A246 @ 12" Pad S4
Space 2-4A247 @ 12" Pad S1 & S2

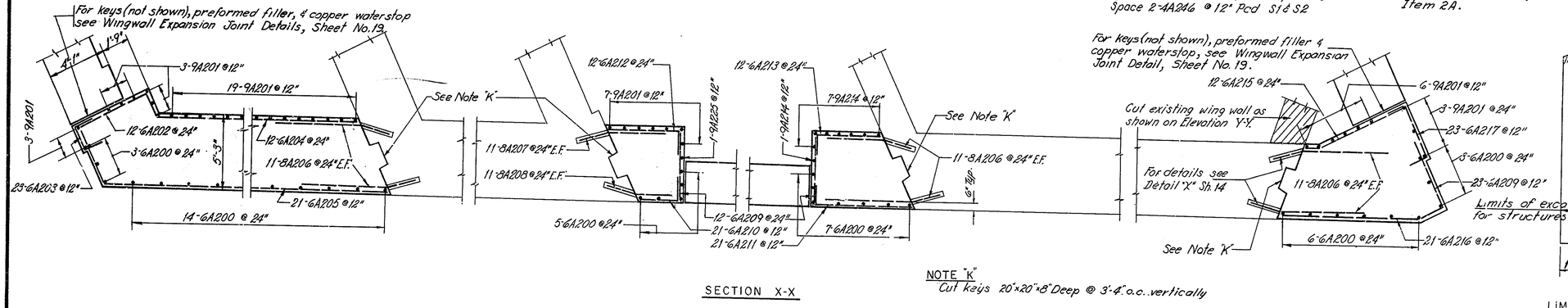
PLAN OF BRIDGE SEAT AND BACKWALL

Note:
Space 2-4A262 @ 12" Pad S10 to S13
Space 2-4A263 @ 12" Pad S7, S8 & S9
Space 2-4A262 @ 12" Pad S4, S5 & S6
Space 2-4A246 @ 12" Pad S1 & S2

Existing Masonry; removal of same to be paid for under "Removal of Existing Masonry," Item 2A.

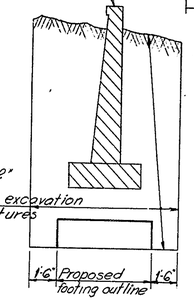


SECTION C-C
Not to Scale.



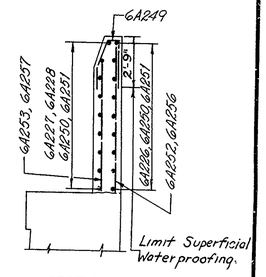
SECTION X-X

NOTE "K"
Cut keys 20"×20"×8" Deep @ 3'-4" o.c. vertically

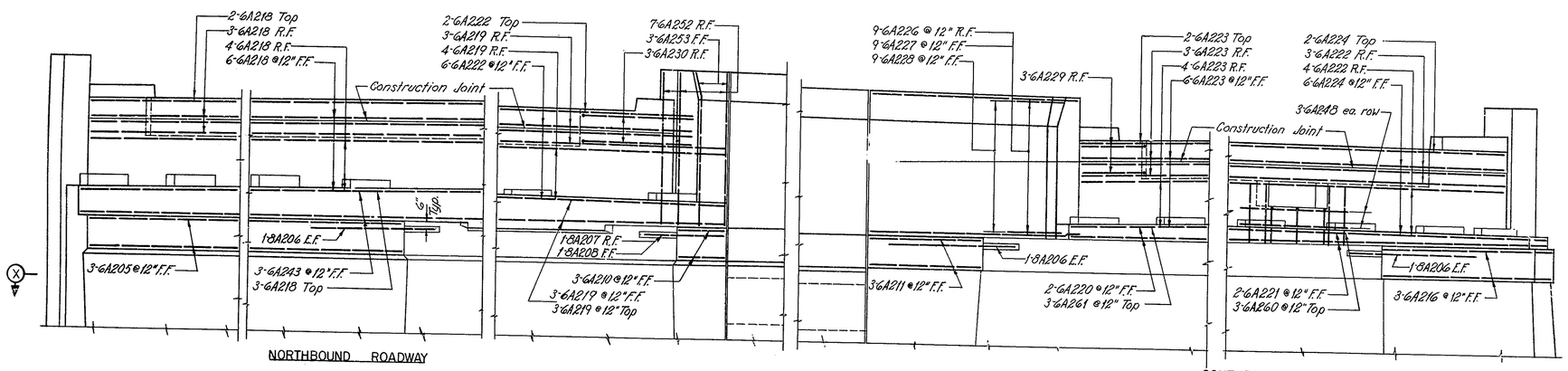


LIMITS OF EXCAVATION FOR STRUCTURES
Not to scale

NOTE:
Structure excavation yardage shall be reduced by yardage of existing masonry excavated within structure excavation limits.



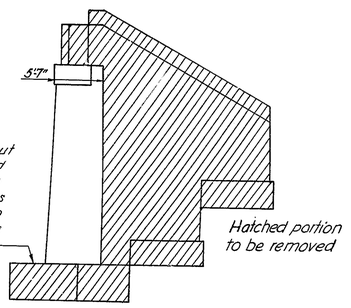
SECTION-D-D
Not to Scale.



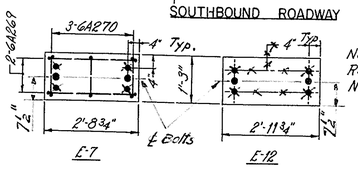
NORTHBOUND ROADWAY

SOUTHBOUND ROADWAY

ELEVATION OF BRIDGE SEAT AND BACKWALL



ELEVATION Y-Y
For location see Sh. 15
Scale: 1/8" = 1'-0"



EXPANSION SHOE PADS
Not to Scale

Note:
Reinforcing in Pads S8 to S11 Northbound Abutment only.

NOTES:
For Section A'-A' & B'-B' see Sheet No. 14
For general notes see Sheet No. 11.
For plan and elevation of abutments see Sheet No. 15.
For connecting wall details see Sheet No. 12.
For wingwall details see Sheet No. 19.
For bar list & bar details, see Sheet No. 17.
Superficial waterproofing shall be applied to the back of all concrete except as shown.

	BY	DATE
MADE	J.R.W.	4-11-58
TRACED		
CHECKED	P.R.N.	4-11-58
IN CHARGE OF	J.F.M.	

No.	REVISION	BY	DATE
2	Dim. "S" typ.	E.Z.	12/1/58
1	Expansion Shoe Anchor Bolts	P.R.N.	10/10/58

Revision #1 transferred from print to tracing by E.Z. 10/27/58

Correct as Built
J. K. Smith, Jr.
Freeways Division Engineer

DELAWARE STATE HIGHWAY DEPARTMENT
INTERSTATE HIGHWAY ROUTE FA I-1
FARNHURST INTERCHANGE
CONTRACT NO. I-1 (6) FEDERAL AID PROJECT NO. I-01(6)

BRIDGES 3S & 3N
SOUTH ABUTMENT DETAILS

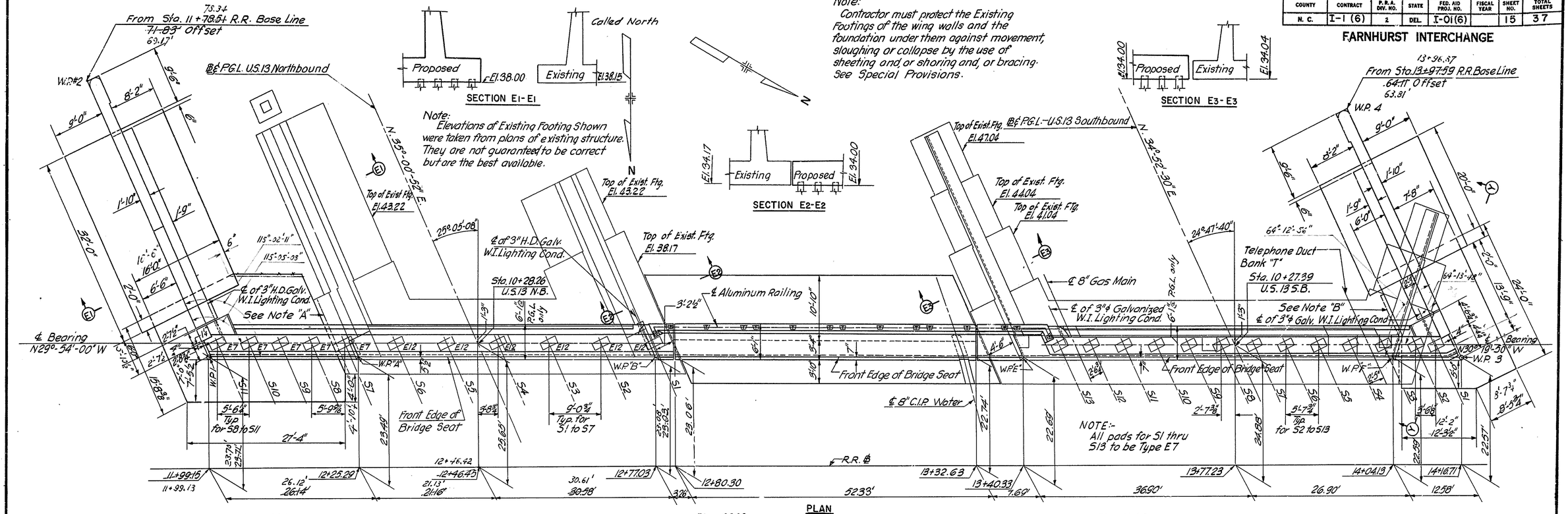
APPROVED _____
BRIDGE ENGINEER

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

SCALE 1/4" = 1'-0"
DATE 4-11-58
SHEET NO. 16 OF 37

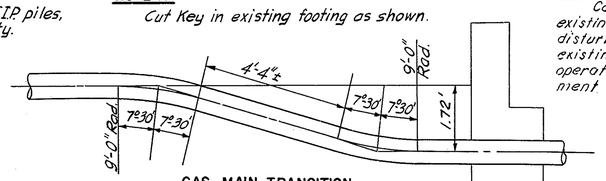
COUNTY	CONTRACT	P.R.A. DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
N. C.	I-1 (6)	2	DEL.	I-01(6)		15	37

FARNHURST INTERCHANGE



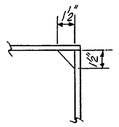
NOTE:
All piles 14"ϕ C.I.P. piles, 30 ton capacity.

NOTE "A"
Cut Key in existing footing as shown.



GAS MAIN TRANSITION
At South Abutment only
Scale 1/2" = 1'-0"

NOTE:
Contractor is cautioned not to disturb existing footings except as noted and not to disturb the foundation material under the existing footings during his excavation operations for connecting wall and abutment corner footings.



TYPICAL CHAMFER

NOTES
For general notes see Sheet No. 11
For details of connecting wall see Sheet No. 12
For pile locations on corners see Sheet No. 18
For wingwall details see Sheet No. 19
For abutment details see Sheet No. 16
For drainage details see Sheet No. 23
Items marked "T" to be furnished & installed by others.
Items marked "G" will be furnished by D.P. & L. Co. & installed under this contract.
Offsets from R.R. ℄ are not to scale.
For expansion joint details see Sheet No. 24
For shoes and aluminum railing details see Sheet No. 25
For electrical details see Sheet No. 26
For location and spacing of anchor bolts for expansion dam supports see Sheet No. 24
For Section YY See Sheet No. 16
WP Denotes Working Point.

NOTE "B"
Cut existing footing full depth as shown and cut key in remaining part of existing footing.

Correct as Built
J. K. Smith Jr.
Freeways Division Engineer

DELAWARE STATE HIGHWAY DEPARTMENT
INTERSTATE HIGHWAY ROUTE FA1-1
FARNHURST INTERCHANGE
CONTRACT NO. I-1 (6) FEDERAL AID PROJECT NO. I-01 (6)

BRIDGES 3N & 3S
SOUTH ABUTMENTS

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

SCALE 1/8" = 1'-0"
DATE 3-17-58
SHEET NO. 15 OF 37

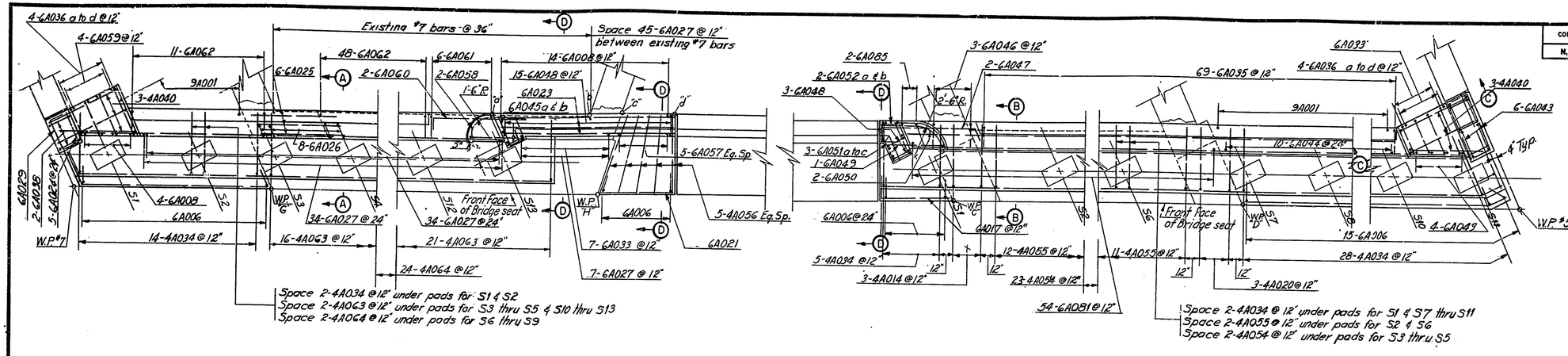
	BY	DATE
MADE	R.E.F.	3-17-58
TRACED		
CHECKED	E.J.M.	4-1-58
IN CHARGE OF	J.F.M.	

No.	REVISION	BY	DATE
2	Several ain. in Plan	E.Z.	10/1/58
1	Dim. 16'-6" & 4'-10½"	E.Z.	10/17/58

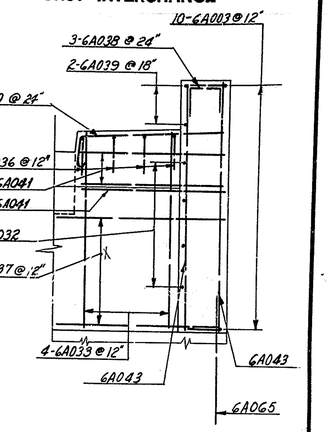
South Abut.	Pad Elevations												
	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13
Northbound	61.75	61.94	62.09	62.25	62.26	62.17	62.14	62.34	62.28	62.21	62.05	—	—
Southbound	60.63	60.74	60.80	60.88	60.98	61.05	61.13	61.13	61.06	60.98	60.90	60.82	60.69

COUNTY	CONTRACT	F.R.A. DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
N. C.	I-1(6)	2	DEL.	I-01 (6)		14	37

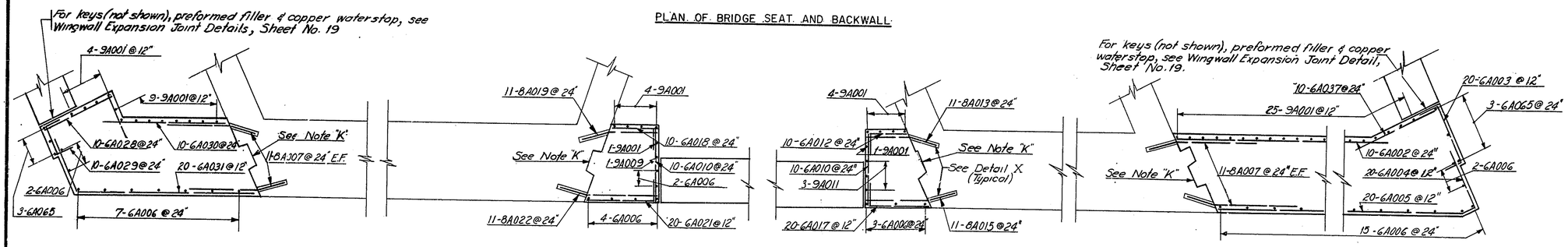
FARNHURST INTERCHANGE



PLAN OF BRIDGE SEAT AND BACKWALL

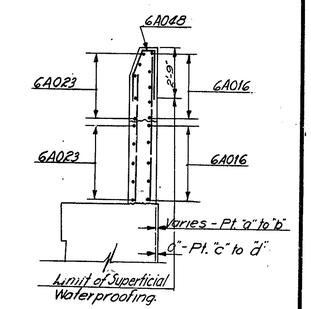


SECTION C-C
3/8" = 1'-0"

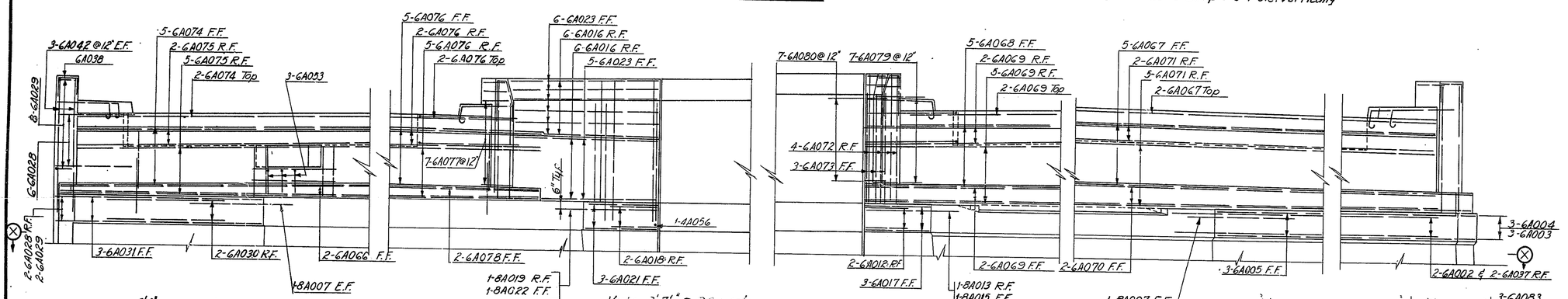


SECTION X-X

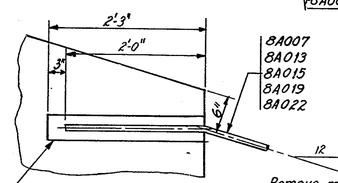
NOTE K
Cut keys 20"×20"×8" Deep @ 3'-4" o.c. vertically



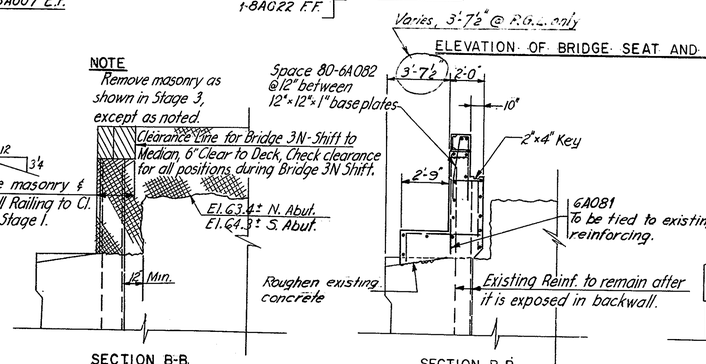
SECTION D-D

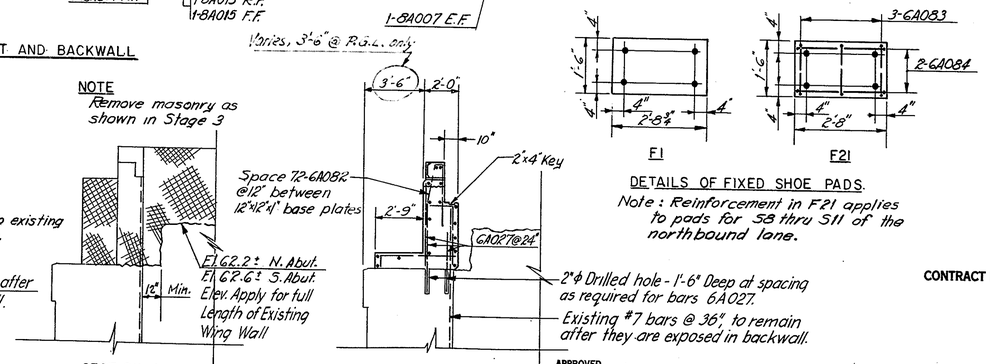


NOTES:
For general notes, see Sheet No. 11
For plan & elevation of abutments, see Sheet No. 13
For connecting wall details, see Sheet No. 12
For wingwall details, see Sheet No. 19
For bar list & bar details, see Sheet No. 17
For location of Sections A-A & B-B see Sheet No. 16
Superficial waterproofing shall be applied to the back of all concrete except as shown.



DETAIL X





DETAILS OF FIXED SHOE PADS.
Note: Reinforcement in F21 applies to pads for S8 thru S11 of the northbound lane.

Correct as Built
J. K. Smith, Jr.
Freeways Division Engineer

	BY	DATE				
MADE	C.R.Z.	4-9-58				
TRACED						
CHECKED	E.J.M.	4-10-58	1	Sections F-9 & F-8	E.J.M.	12/1/63
IN CHARGE OF J.F.M.			No.	REVISION	BY	DATE

APPROVED _____ BRIDGE ENGINEER

DELAWARE STATE HIGHWAY DEPARTMENT

INTERSTATE HIGHWAY ROUTE FA I-1

FARNHURST INTERCHANGE

CONTRACT NO. I-1 (6) FEDERAL AID PROJECT NO. I-01(6)

BRIDGES 3N & 3S

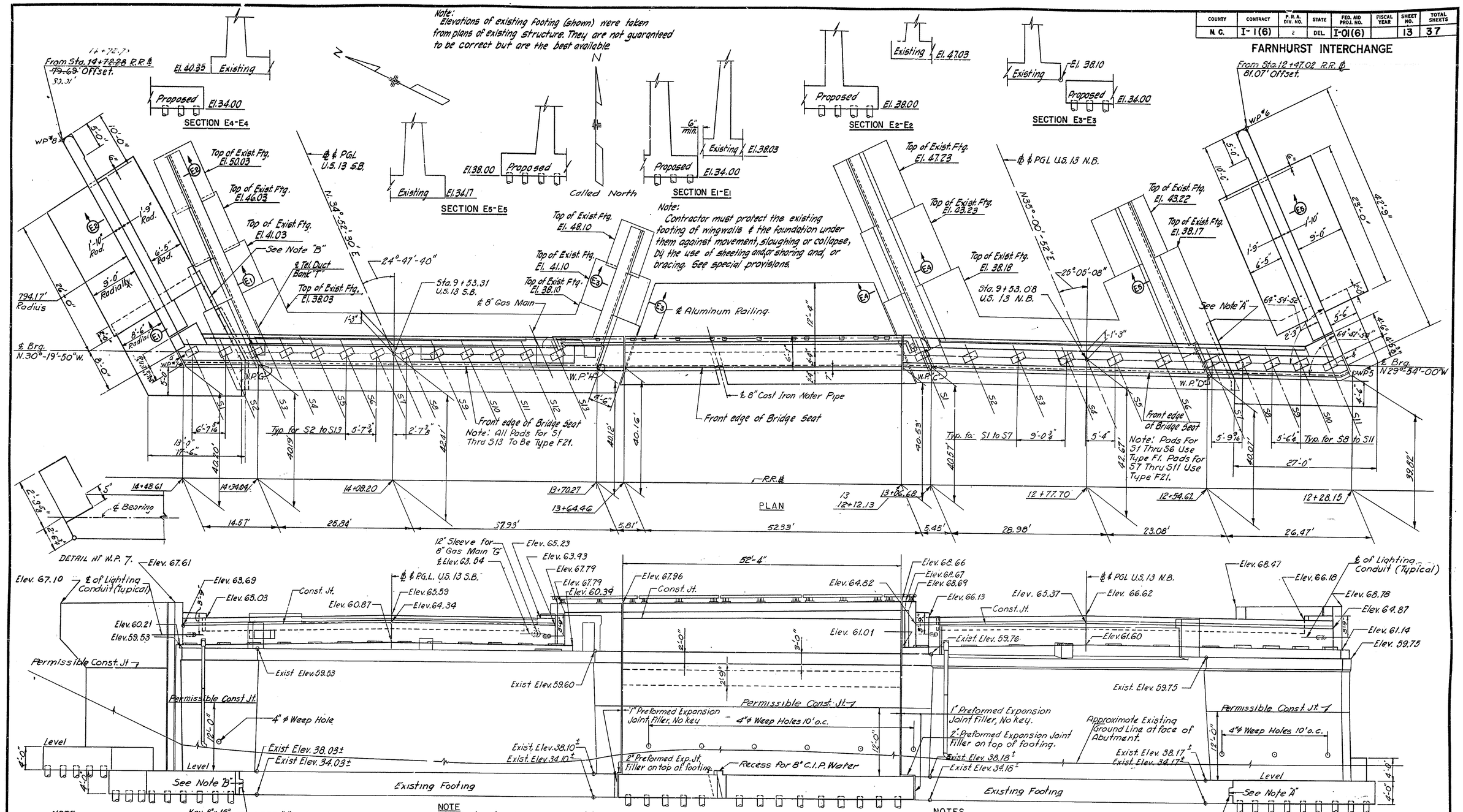
NORTH ABUTMENT DETAILS

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

SCALE ¼" = 1'-0"
DATE 4-9-58
SHEET NO. 14 OF 37

COUNTY	CONTRACT	F. R. A. DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
N. C.	I-1(6)	2	DEL.	I-01(6)		13	37

FARNHURST INTERCHANGE



NOTE
All piles to be 14" ϕ cast-in-place piles, 30 ton capacity.

NOTE "A"
Cut key in existing footing as shown

NOTE "B"
Cut existing footing full depth as shown & cut key in remaining part of existing footing.

NOTE
Contractor is cautioned not to disturb existing footing except as noted & not to disturb the foundation material under existing footing during his excavation operations for connecting wall & abutment corner footings.

TYPICAL CHAMFER

NOTES
For general notes see Sheet No. 11
For details of connecting wall see Sheet No. 12
For pile locations on corners see Sheet No. 18
For wingwall details see Sheet No. 19
For abutment details see Sheet No. 14
For drainage details see Sheet No. 23
Items marked "T" to be furnished & installed by others.
Items marked "G" will be furnished by D.P.&L. Co. & installed under this contract.
Offsets from R.R. ℄ are not to scale.
For expansion joint details see Sheet No. 24
For shoe & aluminum railing details see Sheet No. 25
For electrical details see Sheet No. 26
For location & spacing of anchor bolts for expansion dam supports see Sheet No. 24

	BY	DATE					
MADE	C.R.Z.	3-13-58					
TRACED							
CHECKED	E.J.M.	4-1-58	1	Dim. in Plan	E.Z.	12/1/58	
IN CHARGE OF	J.F.M.		No.	REVISION	BY	DATE	

North Abut.

Pad Elevations	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13
Northbound	61.20	61.38	61.53	61.68	61.69	61.60	61.55	61.75	61.69	61.61	61.45	—	—
Southbound	60.36	60.52	60.59	60.88	60.78	60.87	60.96	60.97	60.90	60.83	60.76	60.70	60.57

DELAWARE STATE HIGHWAY DEPARTMENT

INTERSTATE HIGHWAY ROUTE FA1-1

FARNHURST INTERCHANGE

CONTRACT NO. I-1 (6) FEDERAL AID PROJECT NO. I-01(6)

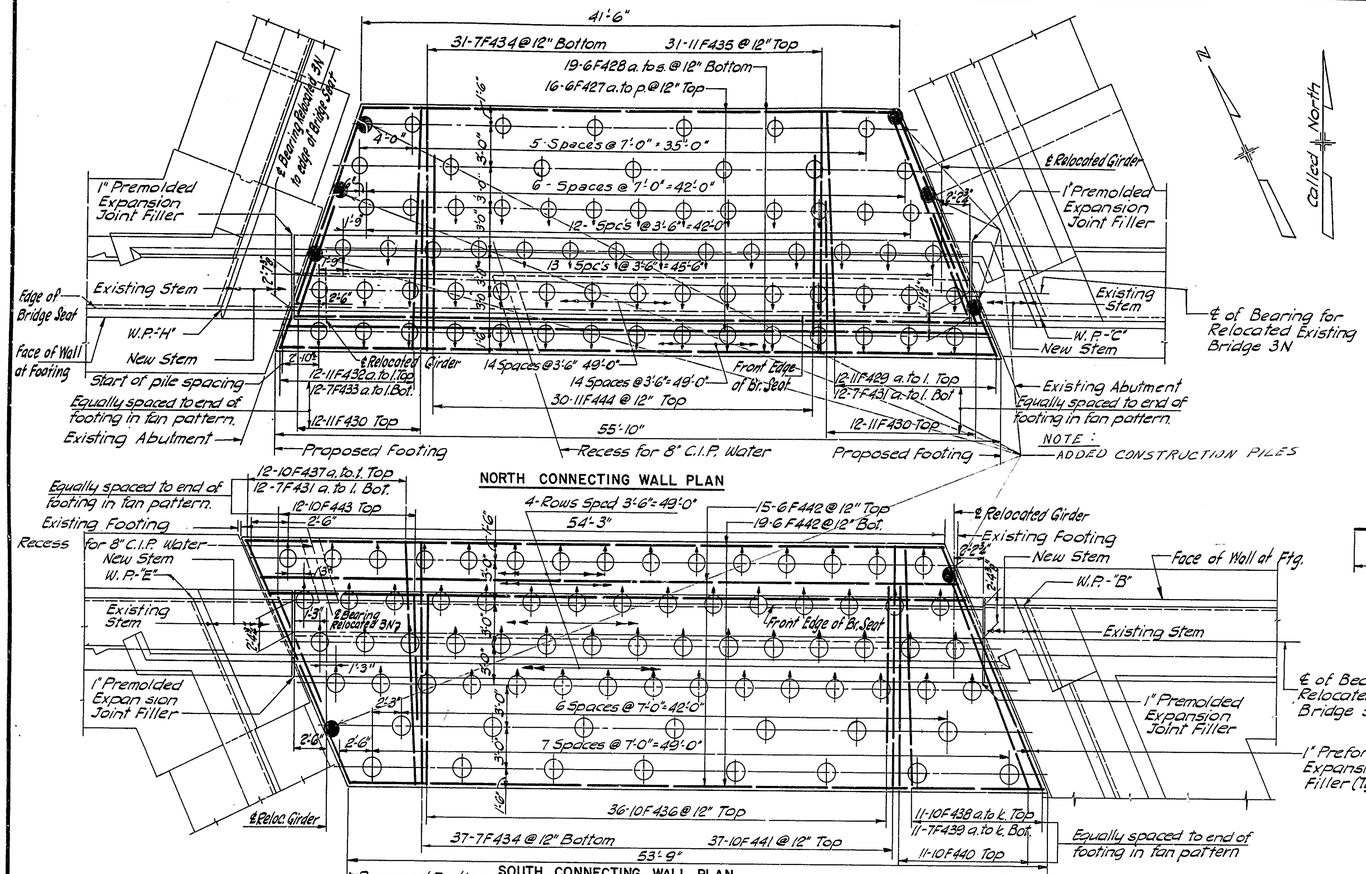
Correct as Built
J. R. Smith Jr.
Freeways Division Engineer

BRIDGE 3N & 3S
NORTH ABUTMENTS

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

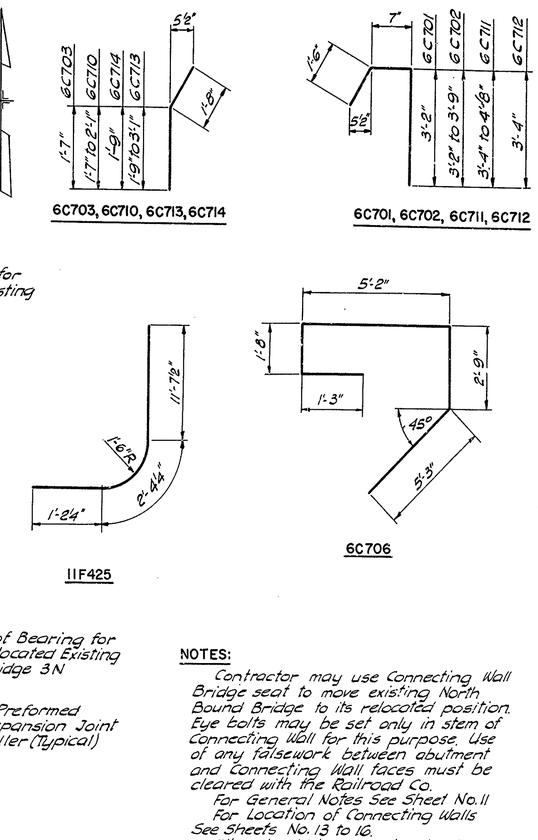
SCALE: 1/8" = 1'-0"
DATE: 3-13-58
SHEET NO. 13 OF 37

COUNTY	CONTRACT	P.R.A. DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
N. C.	I-1 (6)	2	DEL.	I-01 (6)		12	37



NORTH CONNECTING WALL PLAN

SOUTH CONNECTING WALL PLAN



NOTES:

Contractor may use Connecting Wall Bridge seat to move existing North Bound Bridge to its relocated position. Eye bolts may be set only in stem of Connecting Wall for this purpose. Use of any falsework between abutment and Connecting Wall faces must be cleared with the Railroad Co.

For General Notes See Sheet No. 11

For Location of Connecting Walls See Sheets No. 13 to 16.

Piles should be relocated to clear water line recess if necessary. Min. clearance to be 1'-6" to water line.

For Aluminum Railing Post locations, See Sheets No 13 & No. 15.

ô Indicates C.I.P. Piles battered 4:12 in direction of Arrow, 30 T. Capacity.

o Indicates 14" ϕ C.I.P. Piles, 30 T. Capacity.

C.I.P. = Cast-in-place.

Approximate length of vertical piles
North Connecting Wall 34.5
South Connecting Wall 26.5

Longitudinal reinforcing to be cut in field to clear water line recess.

Transverse reinforcing to be shifted in field to clear water line recess.

W.P. Denotes Working Point.

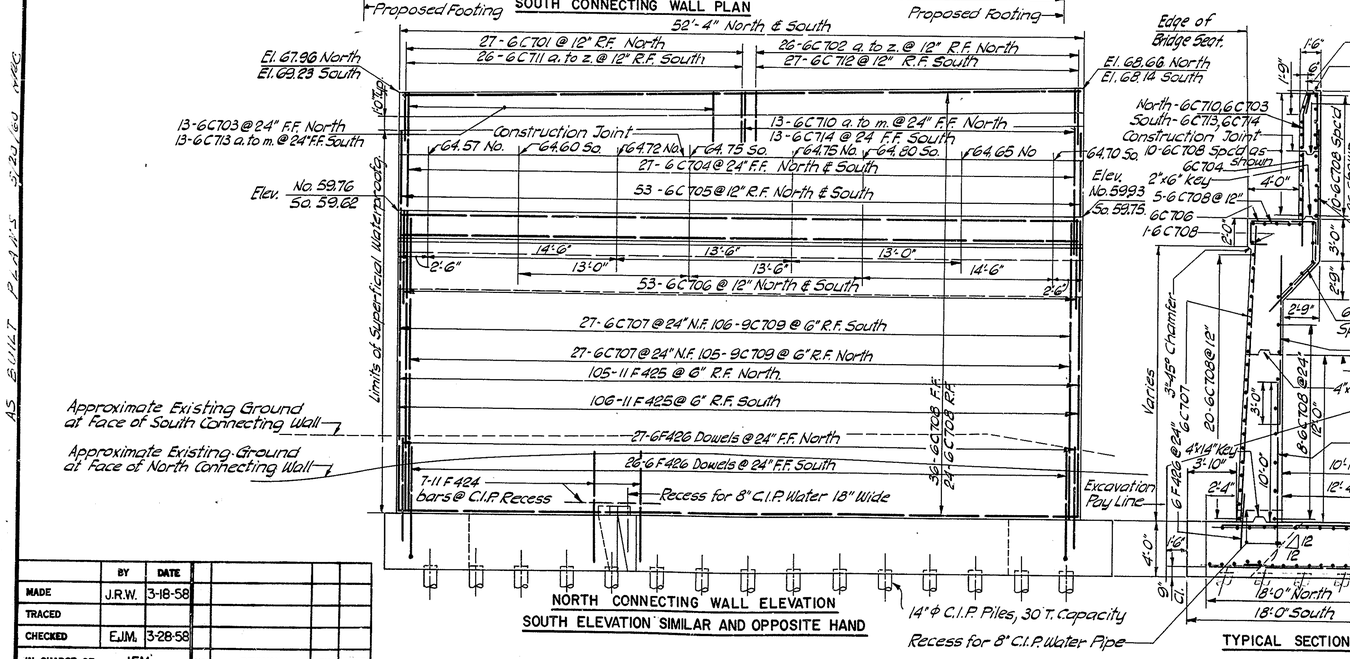
Sub-foundation concrete added:
North Connecting wall - 34.37 C.Y.
South " " - 17.53 C.Y.

FARNHURST INTERCHANGE

BAR LIST

Mark	Size	No.	Length	Total Length	Weight Pounds	Remarks
North Connecting Wall						
6C701	6	27	5'-3"	141.8	213	Detailed
6C702a	6	26	5'-3"	144.0	216	"
to z			to 5'-10"			"
6C703	6	13	3'-3"	42.3	63	"
6C704	6	27	8'-0"	216.0	324	Straight
6C705	6	53	9'-9"	516.8	776	"
6C706	6	53	16'-1"	852.2	1,280	Detailed
6C707	6	27	21'-3"	573.8	862	Straight
6C708	6	60	52'-0"	3,120.0	4,686	"
9C709	9	106	12'-0"	1,272.0	4,284	"
6C710 a	6	13	3'-3"	45.5	68	Detailed
to m			to 3'-9"			"
11F424	11	21	8'-0"	168.0	893	Straight
11F425	11	106	15'-2"	1,593.0	8,463	Detailed
6F426	6	27	4'-0"	108.0	162	Straight
6F427a	6	16	41'-0"	752.0	1,130	"
to p			to 53'-0"			"
6F428a	6	19	41'-0"	912.0	1,370	"
to s			to 55'-0"			"
11F429a	11	12	15'-3"	192.0	1020	"
to l			to 16'-9"			"
11F430	11	24	8'-6"	204.0	1084	"
7F431a	7	12	17'-6"	219.0	448	"
to l			to 19'-0"			"
11F432a	11	12	15'-3"	189.0	1004	"
to l			to 16'-3"			"
7F433a	7	12	17'-6"	216.0	422	Straight
to l			to 18'-6"			"
7F434	7	31	17'-6"	542.5	1,109	"
11F435	11	31	16'-3"	503.8	2,677	"
11F444	11	30	13'-6"	405.0	2,152	"
South Connecting Wall						
6C704	6	27	8'-0"	216.0	324	Straight
6C705	6	53	9'-9"	516.8	776	"
6C706	6	53	16'-1"	852.4	1,280	Detailed
6C707	6	27	21'-3"	573.8	862	Straight
6C708	6	60	52'-0"	3,120.0	4,686	"
9C709	9	106	12'-0"	1,272.0	4,325	"
6C711a	6	26	5'-5"	158.1	238	Detailed
to z			to 6'-9"			"
6C712	6	27	5'-5"	146.3	220	"
6C713a	6	13	3'-5"	53.1	80	"
to m			to 4'-9"			"
6C714	6	13	3'-5"	44.4	67	"
11F424	11	21	8'-0"	168.0	893	Straight
11F425	11	106	15'-2"	1608.0	8,543	Detailed
6F426	6	26	4'-0"	104.0	160	Straight
7F431a	7	12	17'-6"	219.0	448	"
to l			to 19'-0"			"
7F434	7	37	17'-6"	647.5	1,324	"
10F436	10	36	11'-0"	396.0	1,704	"
10F437a	10	12	13'-9"	174.0	749	"
to l			to 15'-3"			"
10F438a	10	11	15'-0"	170.5	734	"
to k			to 16'-0"			"
7F439a	7	11	17'-6"	200.8	410	"
to k			to 19'-0"			"
10F440	10	11	15'-0"	168.0	710	"
10F441	10	37	14'-6"	536.5	2,309	"
6F442	6	34	53'-6"	1819.0	2,732	"
10F443	10	12	8'-6"	102.0	439	"

Grand Total = 68,739



NORTH CONNECTING WALL ELEVATION

SOUTH ELEVATION SIMILAR AND OPPOSITE HAND

TYPICAL SECTION

Correct as Built
J. K. Smith Jr.
Freeways Division Engineer

DELAWARE STATE HIGHWAY DEPARTMENT

INTERSTATE HIGHWAY ROUTE FA I-1

FARNHURST INTERCHANGE

CONTRACT NO. I-1 (6) FEDERAL AID PROJECT NO. I-01 (6)

BRIDGES 3N & 3S
CONNECTING WALLS

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

SCALE 3/16" = 1'-0"
DATE 4-8-58
SHEET NO. 12 OF 37

APPROVED _____ BRIDGE ENGINEER

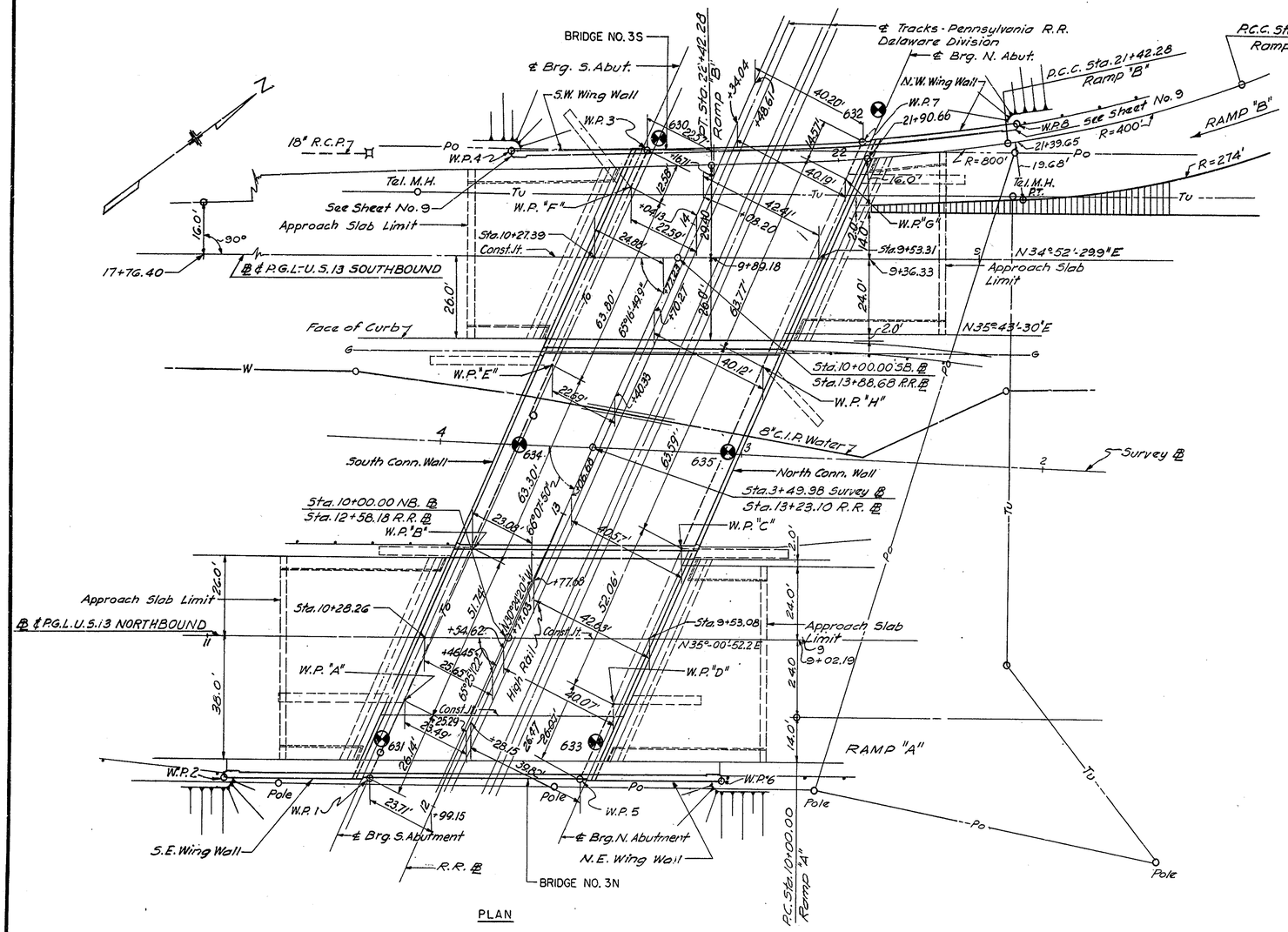
	BY	DATE				
MADE	J.R.W.	3-18-58				
TRACED						
CHECKED	E.J.M.	3-28-58				
IN CHARGE OF	J.F.M.		No.	REVISION	BY	DATE

AS BUILT PLANS 5-20-60 NRC

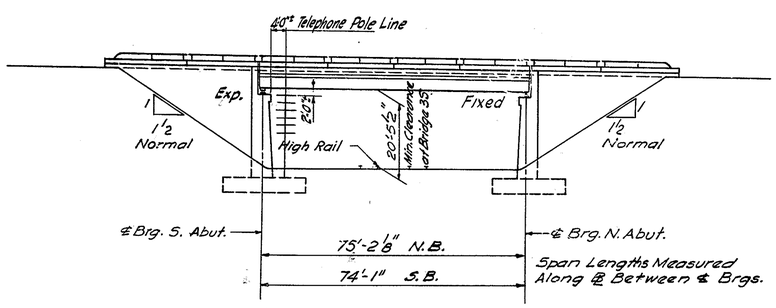
I 8-2

COUNTY	CONTRACT	P.R.A. DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
N. C.	I-1 (6)	2	DEL.	I-01 (6)		11	37

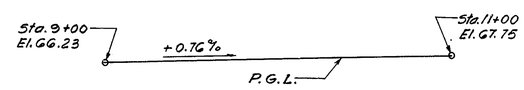
FARNHURST INTERCHANGE



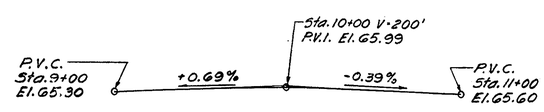
PLAN



ELEVATION



PROFILE DATA (NORTHBOUND)



PROFILE DATA (SOUTHBOUND)

GENERAL NOTES

MISCELLANEOUS NOTES

Elevations are based on U.S.C.&G. datum.
All dimensions are measured horizontally or vertically unless otherwise indicated.

SPECIFICATIONS

1957 Standard Specifications for Highway Bridges of the American Association of State Highway Officials.
Live Load:
Roadway: H20-S16-44 (Modified)
Sidewalk Live Load: See design specification for the project.
Delaware State Highway Dept. Standard Specs. Dated April 1, 1957.

STEELWORK

Unless otherwise provided for on the Plans or in Specifications, details of the steel work in general shall conform to the requirements of the 1957 Standard Specifications for Highway Bridges of the A.A.S.H.O.

All rivets to be ⅞"φ & Open holes shall be 15/16"φ unless otherwise indicated. Bolts shall be of the size shown on the Plans.

All field connections shall be riveted unless otherwise noted.

For Shoe Notes and shoe Finish Notes see Sheet No. 25.

For general requirements regarding punching, reaming, painting and shop practice, see Specifications. In order to avoid oversight, these shall be clearly noted on the shop drawings.

All dimensions shown on the Plans are for the structure at a normal temperature of +68°F. The temperature range for movement is -10°F to +120°F.

All Expansion Joints are to be detailed to provide for vertical, longitudinal and transverse adjustment in order to obtain proper alignment and openings under normal temperature conditions.

WELDING

All welding shall conform to the current Specifications for welded Highway and Railway Bridges, Design, Construction, and Repair, of the American Welding Society. The welding symbols used are those recomended in the 1956 Edition of the Standard Code for Arc & Gas welding in Building Construction of the American Welding Society.

To avoid oversight, the shop drawings shall show clearly the nature, dimensions and locations of each weld.

SILICONE SURFACE TREATMENT

The following surfaces and areas are to be given an application of a water soluble silicone solution.

1. Roadway surfaces and surfaces of sidewalks and safety walks (including curbs) on superstructure.
2. Inside and outside faces of parapets (Superstructure and wingwalls)
3. Top surfaces of connecting walls, extensions to abutments and the wingwalls.

CONCRETE AND REINFORCING STEEL

Exposed edges of concrete shall be chamfered 1½" and inside corners shall be filleted 1½" unless otherwise noted.

All chamfer strips shall be dressed lumber.

The general details of fabrication, bending and placement of reinforcing steel shall conform to the requirements of the 1957 Standard Specifications for Highway Bridges of the A.A.S.H.O. Unless otherwise noted, all reinforcing bars shall be spliced 20 diameters.

All measurements to bars shown on the Plans are to the centerline of bars unless otherwise noted.

Except as otherwise shown, the clear distance between reinforcement and face of concrete shall be not less than the following:

Footings ---------- 3"

Exposed and rear faces of abutments & wingwalls 2"

Placing stem reinforcing dowels into position during or after pouring of footing concrete is absolutely prohibited.

The contractor shall check all bar lists for number, lenght & dimensions before ordering bars.

In bar lists on all sheets, under 'Mark' column, the first numeral is the bar size. Example: GP510, the "G" refers to a # G bar.

Reinforcing Steel shall be Intermediate Grade A.S.T.M. A-15; Deformations, A.S.T.M. A-305.

Pad elevations are finished elevations. Pads shall be poured integrally with abutment bridge seat and shall be not less than ½" or more than ¼" above finished elevations. Pads shall be dressed down by tooling or grinding to true level surfaces at the finished elevations.

STRUCTURAL STEEL

Unless otherwise noted or provided on the plans or in the special provisions, all welded structural steel shall conform with the requirements of A.S.T.M. Designation; A 373-54T (Structural Steel for Welding) Structural steel not welded shall conform with the requirements of A.S.T.M. Designation A-7.

NOTES

All piles to be 14"φ Cast-in-place Piles. 30 ton Cap.
Exp. = Expansion Shoes
Fix. = Fixed Shoes
W.P. = Working Point
⊗ Denotes 2½" cased hole boring
631 ⊗ Indicates location of boring. For Logs of Borings. See Sheet No. 10
Bridge deck construction joint not shown. See Sheet No. 22
For Typical Bridge Cross Section See Sheet No. 21.
℄ Bearing of Abutments are not parallel to face of Abutments. See Sheets No. 13 to 16 incl.

Correct as Built
J. K. Smith, Jr.
Freeways Division Engineer

APPROVED _____ BRIDGE ENGINEER

	BY	DATE				
MADE	G.M.M.	3-7-58				
TRACED						
CHECKED	E.J.M.	3-14-58	1	DIM. "26.47"	E.J.M.	9/23/62
IN CHARGE OF	J.F.M.		NO.	REVISION	BY	DATE

DELAWARE STATE HIGHWAY DEPARTMENT

INTERSTATE HIGHWAY ROUTE FA I-1

FARNHURST INTERCHANGE

CONTRACT NO. I-1 (6) FEDERAL AID PROJECT NO. I-01 (6)

BRIDGES 3N & 3S

GENERAL PLAN & ELEVATION

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

SCALE 1" = 20'-0"
DATE 3-7-58
SHEET NO. 11 OF 37

COUNTY	CONTRACT	P. R. A. DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
N. C.	I-1 (6)	2	DEL.	I-01(6)		10	37

FARNHURST INTERCHANGE

630

Sta. 14+19.3±
Offset: 21.5'± Left

Ground Elev. 42.8'

G.W.

Description	Elev.
Yellow Br. SAND, Little Gravel	37.8'
	32.8'
	29.3'
	27.8'
	22.8'
	18.3'
Mottled CLAY	15.8'
	11.8'
	10.8'
Red Br. Med.-Fine SAND, Trace of Silt & Trace of Fine Gravel	6.8'
	1.8'
	-3.2'
Mottled Silty CLAY	-8.2'
	-13.2'
	-14.2'
Gray Med.-Fine SAND, Trace of Silt (Organic Matter)	-18.2'
	-23.2'
	-28.2'

Bott. Elev. -30.2'

631

Sta. 12+11.4'±
Offset: 24'± Left

Ground Elev. 42.9'

G.W.

Description	Elev.
Yellow Br. SAND and Gravel, Trace of Silt	37.9'
	32.9'
	31.9'
	28.9'
	27.9'
Yellow Br. SAND, Trace of Silt	22.9'
	19.9'
Mottled CLAY	17.9'
	12.9'
	11.9'
Gray Med. to fine SAND, Trace of Silt	7.9'
	4.4'
LIGHT Gray SAND	2.9'
	-2.1'
Mottled CLAY	-6.1'
	-7.1
Yellow Br. Med. to fine SAND and clayey Silt	-10.1'
	-12.1'
Gray fine SAND and clayey Silt	-17.1'
	-19.1'

Bott. Elev. -19.1'

632

Sta. 14+58.9'±
Offset: 40.2'± Right

Ground Elev. 41.6'

G.W.

Description	Elev.
Dark Br. SILT, Little Gravel, Trace of Sand	37.6'
	32.6'
	31.0'
	24.6'
	21.6'
Mottled CLAY	17.6'
	12.6'
	6.6'
Varied Colored SAND, Trace Silt	4.6'
	1.6'
	-3.4'
Gray SILT, Little Med.-Fine Sand	-7.4'
	-12.4'
	-17.4'
	-22.4'
	-27.4'

Bott. Elev. -29.4'

633

Sta. 12+40.9'±
Offset: 39.7'± Right

Ground Elev. 41.2'

G.W.

Description	Elev.
Br. SAND, Little Gravel, Little Silt	36.2'
	31.2'
	28.2
	25.2'
	23.2'
Mottled CLAY, Little fine sand, Trace of fine Gravel	17.2'
	12.2'
	7.2'
Gray SILT, Little fine Sand	3.2'
	2.2
GRAY SAND	-2.8'
Red CLAY	-7.8'
	-9.8'
Mottled Med. fine SAND and Silt	-12.8
	-17.8'
GRAY Clayey SILT	-20.8'
	-22.8'
	-27.8'
Gray Silty CLAY	-32.8'

Bott. Elev. -34.8'

634

Sta. 13+12.6±
Offset: 22.8'± Left

Ground Elev. 42.8'

G.W.

Description	Elev.
Black Sand some Gravel, Little Silt	37.8'
	32.8'
	31.8'
Yellow Brown Sand some Gravel	25.8'
	20.8'
	17.8'
Gray Silty CLAY (Mica)	12.8'
	9.8'
	7.8'
Gray fine SAND and Silt, Trace of fine Gravel (Mica)	2.8'
	-2.2'
Mottled Silty CLAY and Sand	-7.2'
	-9.2'

Bott. Elev. -9.2'

635

Sta. 13+40.9±
Offset: 40.8'± Right

Ground Elev. 41.7'

G.W.

Description	Elev.
Note "A"	40.0'
Orange SAND, some Gravel	36.7'
	32.7'
	30.7'
	27.7'
	22.7'
	18.7'
	17.7'
Mottled CLAY, Dark Silty Clay	12.7'
	7.7'
Gray SAND, Trace of Silt	3.7'
	2.7'
Yellow Gray SAND, Trace of fine Gravel	-1.3'
	-2.3'
Mottled Silty CLAY	-7.3'
	-11.3'
	-12.3'
Gray Clayey Silt Trace of fine Sand	-17.3'
	-19.3'
Note "B"	

Bott. Elev. -19.3'

NOTE "A"
Br. SILT, some Gravel & Little Sand (FILL)

NOTE "B"
Gray fine SAND & Clayey Silt

SOIL LEGEND

- Silt, Clayey Silt
- Clay, Silty Clay
- Sand
- Gravel
- Organic Material
- Silt & Clay
- Sand & Silt
- Sand & Clay
- Sand & Gravel
- Silt & Gravel
- Sand, Gravel & Silt
- Organic Silt & Clay
- Clay & Gravel
- Organic Silt
- Sand, Gravel & Clay

LEGEND

(a) Hammer Blows Required to Drive the Casing One Foot
(b) Legend of Soil Types
(c) Soil Classification of Obtained Samples.
(d) Sample Numbers
(e) Sample Blows on Spoon
(f) Penetration of Sample Spoon
(g) Elevation of Top of Each Sample Taken and Elevation of Limits of Different Soil Layers and Elevation of Ground Water Table.

SAMPLING

Samples taken with 1 3/8" I.D. Split Spoon

HAMMER
Wt. of Hammer: 300 Lbs. on Casing
140 Lbs. on Sample Spoon

AVERAGE FALL
24" on Casing, 30" on Spoon

SCALE
Vertical Scale of Boring Profile: 3/16" = 1'-0"

(a) (b) (c) (d) (e) (f) (g)

Ground Elev. 271.1'

Description	Elev.
Mottled Silty CLAY	267.1'
	266.1'
SAND & Some Silt (G.W.)	265.1'

NOTES

1. Location of borings is referenced to Railroad Base Line.
2. Offsets are taken looking in the direction of increasing stations.

	BY	DATE
MADE	G.M.M.	4-2-58
TRACED		
CHECKED	P.R.N.	4-3-58
IN CHARGE OF W. E. B.		

No.	REVISION	BY	DATE

APPROVED _____ BRIDGE ENGINEER

DELAWARE STATE HIGHWAY DEPARTMENT

INTERSTATE HIGHWAY ROUTE FA I-1

FARNHURST INTERCHANGE

CONTRACT NO. I-1 (6) FEDERAL AID PROJECT NO. I-01 (6)

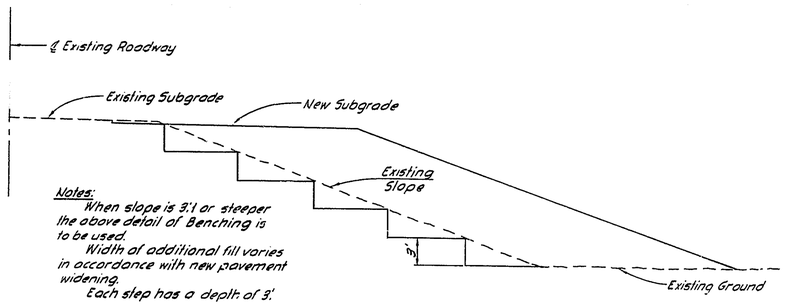
BORING LOGS

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

SCALE NO SCALE
DATE 3-5-58
SHEET NO. 10 OF 37

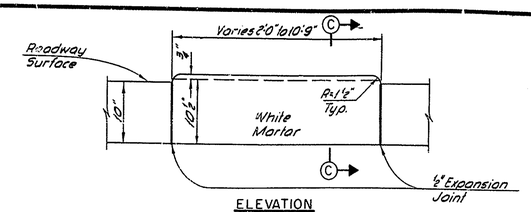
COUNTY	CONTRACT	P.R.A. DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
N. C.	I-1 (6)	2	DEL.	I-01 (6)		9	37

FARNHURST INTERCHANGE

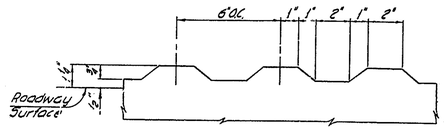


Notes:
When slope is 3:1 or steeper the above detail of Benching is to be used.
Width of additional fill varies in accordance with new pavement widening.
Each step has a depth of 3'.

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

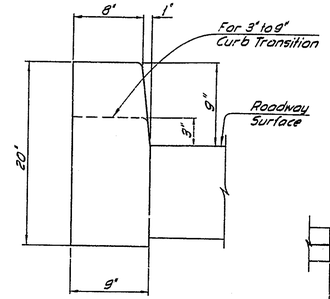


ELEVATION
Scale: 1"=1'-0"



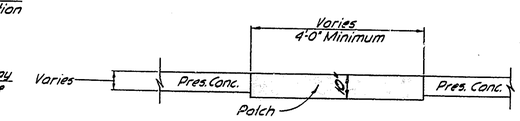
SECTION C-C
Scale: 3"=1'-0"

JIGGLE BAR DIVIDER

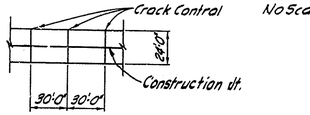


PORTLAND CEMENT CONCRETE CURB
TYPE I (MODIFIED)
Scale: 1½"=1'-0"

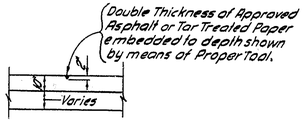
Provide 10' transition from 1" setback to 2" setback on Bridges 3N & 3S



PATCH DETAIL
No Scale



PLAN



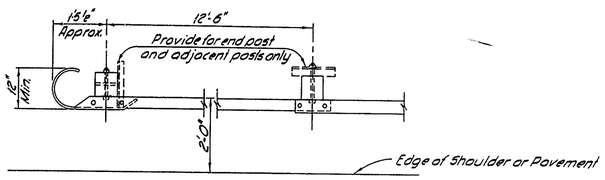
SECTION

CRACK CONTROL DETAIL
No Scale

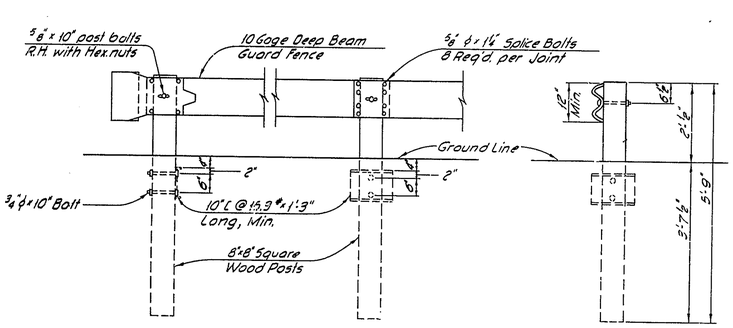
Place Patches to a Uniform Thickness of 10".

All Patches over 90'-0" in length shall be placed with Dummy Type Contraction Joints spaced at 30'-0" intervals. The composition of the Mix for Patches shall conform to Item No. 16 of the Standard Specifications.

After the Existing Pavement is removed, all Base Material designated unsuitable by the Engineer, shall be removed and replaced by Select Borrow and compacted to a depth specified by the Engineer.



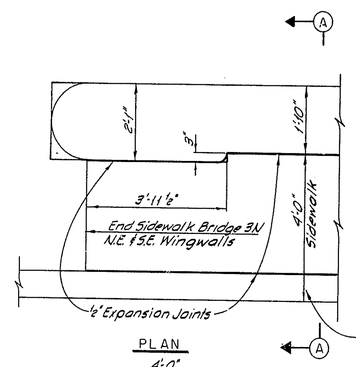
PLAN



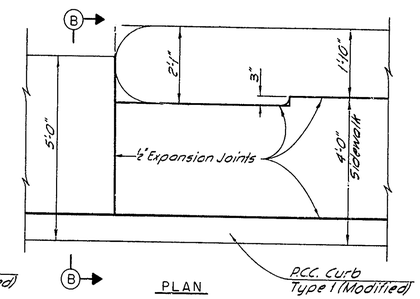
ELEVATION

SIDE ELEVATION

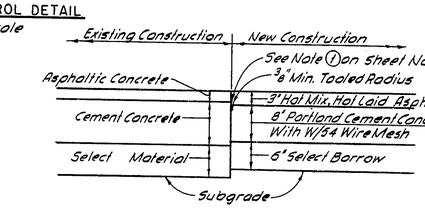
DETAILS
DEEP BEAM GUARD FENCE
(WOOD-POSTS)
Scale: ½"=1'-0"
As mfg'd. by Bethlehem Steel Co. or approved equal



PLAN

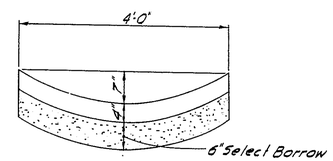


PLAN

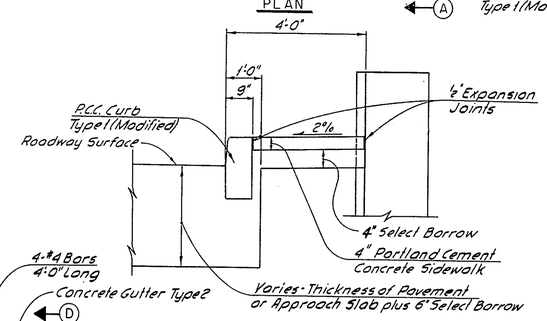


DETAILS OF PAVEMENT JOINT BETWEEN EXISTING AND NEW CONSTRUCTION
Scale: ½"=1'-0"

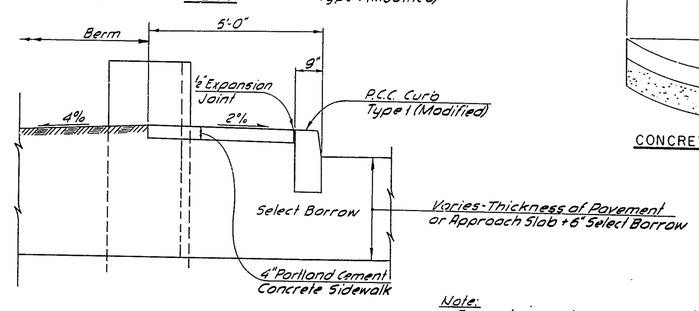
This detail applies where Acceleration Lane for Ramp B is placed adjacent to Existing U.S. Route 13 S.B. Roadway Pavement.



CONCRETE GUTTER TYPE 2 PW
Scale: 3/8"=1'-0"



SECTION A-A
Typical for all Wingwalls, Bridges 3N & 3S

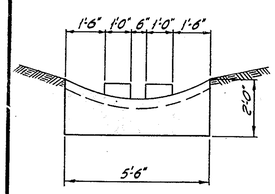


SECTION B-B
Typical for Bridge 3S, SW & NW Wingwalls

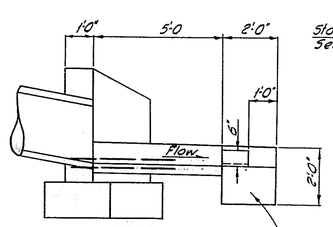
Note:
Expansion Joints to consist of ½" of Preformed Expansion Joint Filler for Concrete and ½"x1" deep Hot Poured Joint Sealer.

SIDEWALK & CURB DETAILS AT BRIDGE 3N & 3S WINGWALLS
Scale: ½"=1'-0"

For Location of Curbs and Sidewalks, See Sheet No. 6
For Details of Wingwalls see Sheet No. 19.

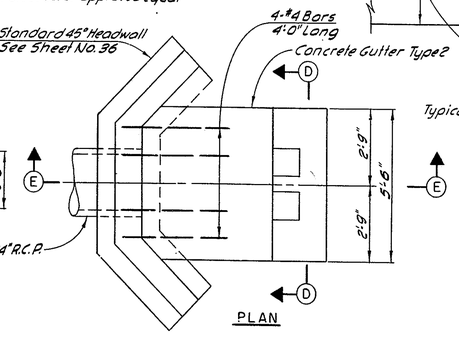


SECTION D-D



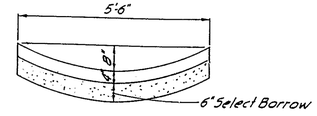
SECTION E-E

Ditch Check to be paid for Under Item 18, Portland Cement Concrete Masonry for Drainage Structures, and Item 20 Bar Reinf.



PLAN

STANDARD 45° HEADWALL WITH DITCH CHECK
Scale: 3/8"=1'-0"



CONCRETE GUTTER TYPE 2
Scale: ½"=1'-0"

	BY	DATE				
MADE	CAV	3-20-58				
TRACED						
CHECKED	REG	3-26-58				
IN CHARGE OF WEB			No.	REVISION	BY	DATE

DELAWARE STATE HIGHWAY DEPARTMENT

INTERSTATE HIGHWAY ROUTE FA I-1

FARNHURST INTERCHANGE

CONTRACT NO. I-1 (6) FEDERAL AID PROJECT NO. I-01(6)

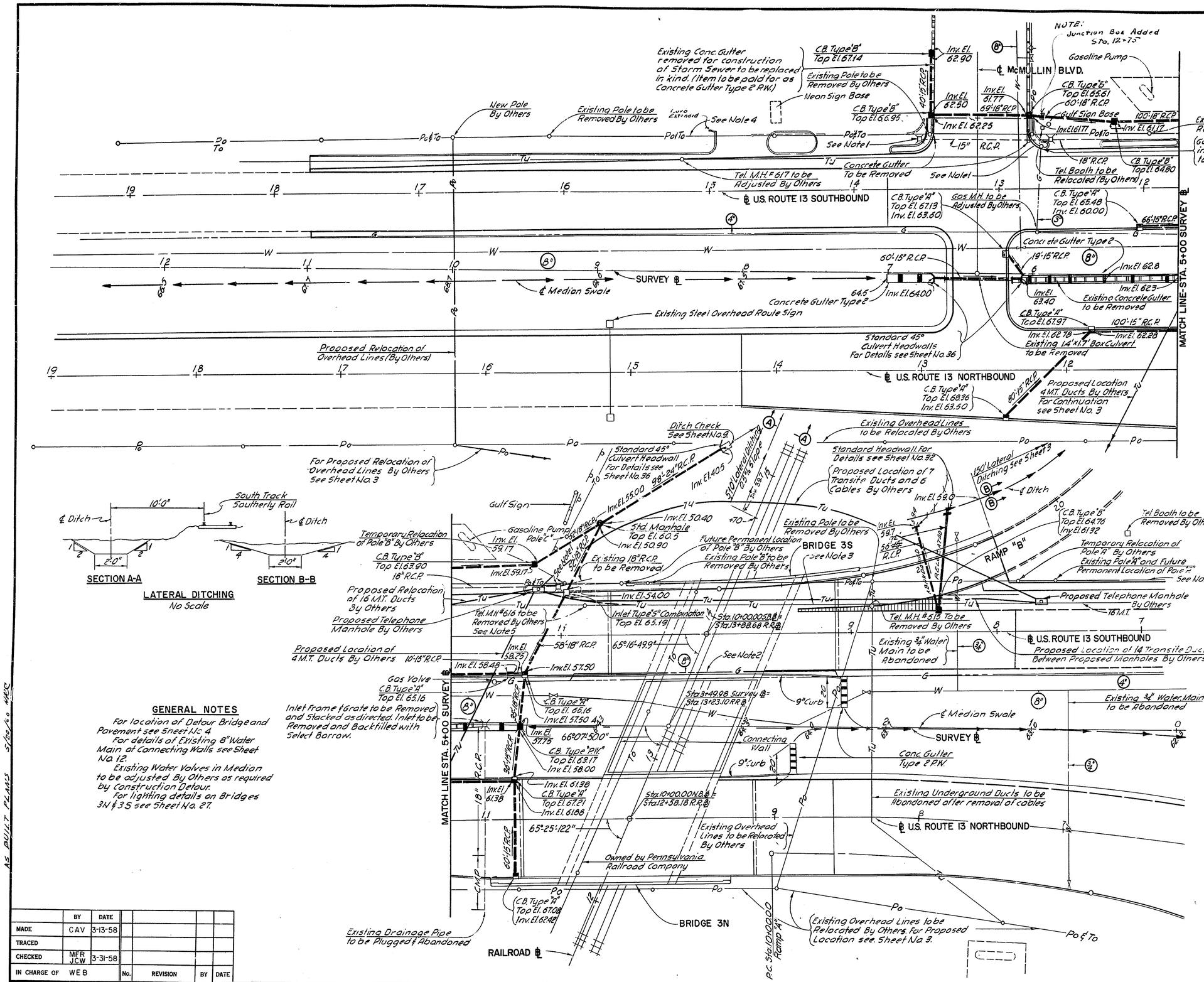
MISCELLANEOUS DETAILS

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

SCALE AS NOTED
DATE 3-20-58
SHEET NO. 9 OF 37

COUNTY	CONTRACT	P.R.A. DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
N. C.	I-1 (6)	2	DEL.	I-01 (6)		8	37

FARNHURST INTERCHANGE



NOTES

(1) Inlet frame and grate to be removed and stacked as directed. Inlet to be removed and backfilled with select borrow. Existing 15" and 18" sewer pipes between these inlets are to be plugged and abandoned.

(2) Proposed 8" gas main to be furnished and installed on Bridge 35 by others except that a 12" sleeve at each abutment will be furnished by others and installed under this Contract. For additional details of gas main on Bridge 35 see Sheet No. 21. The Delaware Power and Light Company will discontinue service in the gas main on the approaches and across the existing bridge structure during the demolition and reconstruction of the superstructure of Bridge 35. They will also remove the existing 4" main from within the limits of Bridge 35.

(3) The Diamond State Telephone Company will construct two new manholes and new permanent facilities clear of Bridge 35 as shown on the plans. Upon completion of the new facilities they will abandon the present underground ducts between the new manholes after first removing the existing cables. Removal of the existing iron pipe ducts on the existing superstructure will be removed under the item in the Contract entitled "Removal of Bridge Superstructures" and become the property of the contractor.

The Telephone Company will furnish and install the new ducts in the new bridge superstructure and on the approaches between the new manholes as shown on the plans. For additional details see Sheet No. 21.

(4) The Delaware Power and Light Company will respace the poles within the limits of the Contract as shown on the plans and reinstall the overhead lines with a minimum of 25' above the top of roadway. The telephone lines on these poles will be adjusted by the Diamond State Telephone Company. However, upon completion of the installation of the new telephone facilities clear of Bridge 35, the overhead crossing of the railroad tracks will be removed. The Delaware Power and Light Company will also install temporary poles at locations shown on the plans for the span over the railroad tracks during construction.

(5) The Diamond State Telephone Company will abandon the existing underground duct between existing manhole #616 and existing pole "B" and between the same manhole and existing pole "C" following the installation of a new duct and cable between the new manhole and pole "C" and new manhole and pole "B" in its temporary location. Following the installation of pole "B" in its final location, they will provide an underground connection from the pole to the new manhole.

GENERAL NOTES

For location of Detour Bridge and Pavement see Sheet No. 4

For details of Existing 8" Water Main at Connecting Walls see Sheet No. 12.

Existing Water Valves in Median to be adjusted by Others as required by Construction Detour.

For lighting details on Bridges 3N & 3S see Sheet No. 27.

AS BUILT PLANS 5/30/60 HRC

	BY	DATE	No.	REVISION	BY	DATE
MADE	CAV	3-13-58				
TRACED						
CHECKED	MFR JCW	3-31-58				
IN CHARGE OF	WEB					

DELAWARE STATE HIGHWAY DEPARTMENT

INTERSTATE HIGHWAY ROUTE FA I-1

FARNHURST INTERCHANGE

CONTRACT NO. I-1 (6) FEDERAL AID PROJECT NO. I-01(6)

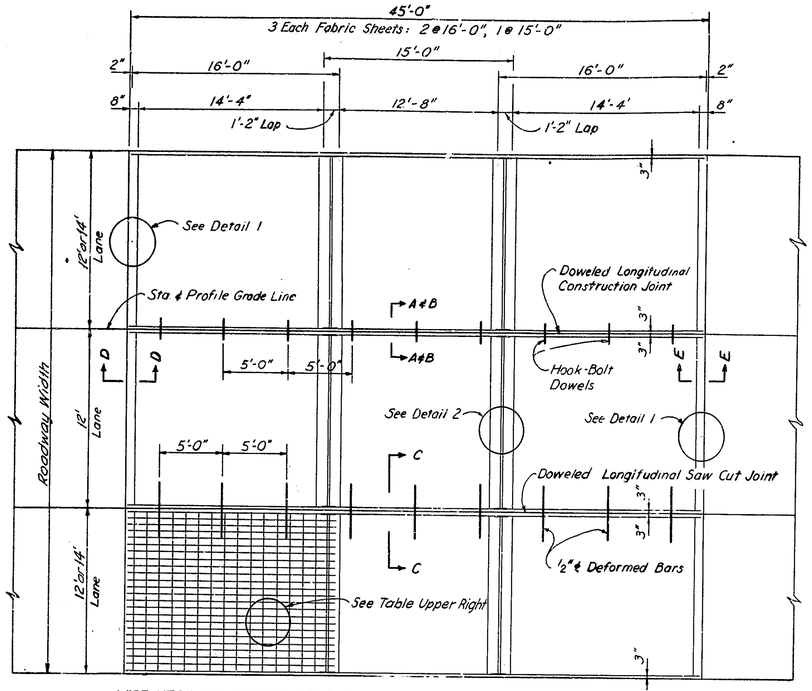
DRAINAGE & UTILITIES

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

SCALE 1" = 30'-0"
DATE 3-13-58
SHEET NO. 8 OF 37

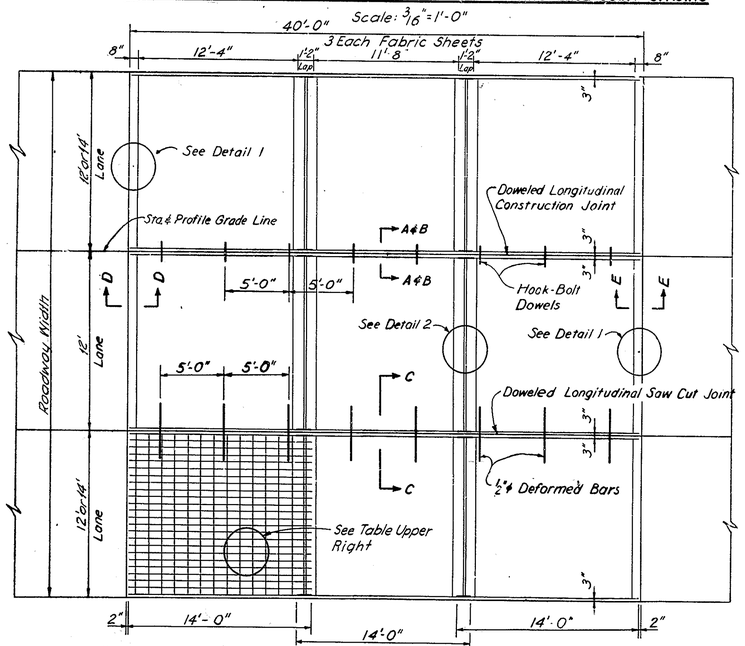
COUNTY	CONTRACT	P.R.A. DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
N. C.	I-14(6)	2	DEL.	I-01(6)		7	37

FARNHURST INTERCHANGE



WIRE MESH REINFORCEMENT & DOWELS FOR 45'-0" TRANSVERSE JOINT SPACING

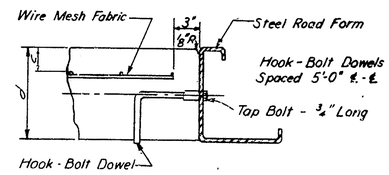
Scale: 3/16" = 1'-0"



WIRE MESH REINFORCEMENT & DOWELS FOR 40'-0" TRANSVERSE JOINT SPACING

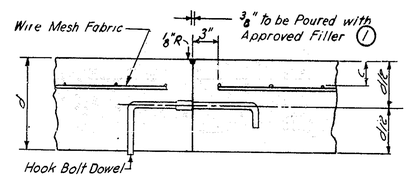
Scale: 3/16" = 1'-0"

SLAB LENGTH	SHEETS PER SLAB	ROADWAY LANE WIDTH	③ WIRE MESH REINFORCEMENT (STANDARD SLABS)								WEIGHT IN LBS. PER 100 SQ. FT. OF MESH FABRIC
			WIDTH	LENGTH	WIRE SPACING		GAUGE		WIRE DIAMETER		
					LONG.	TRANS.	LONG.	TRANS.	LONG.	TRANS.	
45'-0"	3	12'-0"	11'-6"	16'-0" 15'-0"	6" o.c.	12" o.c.	#2	#4	0.2625"	0.2253"	54
45'-0"	3	13'-0"	12'-6"	16'-0" 15'-0"	6" o.c.	12" o.c.	#2	#4	0.2625"	0.2253"	54
40'-0"	3	12'-0"	11'-6"	14'-0"	6" o.c.	12" o.c.	#2	#4	0.2625"	0.2253"	54
40'-0"	3	14'-0"	13'-6"	14'-0"	6" o.c.	12" o.c.	#2	#4	0.2625"	0.2253"	54



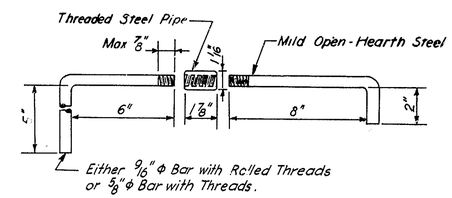
SECTION A-A

Scale: 1 1/2" = 1'-0"



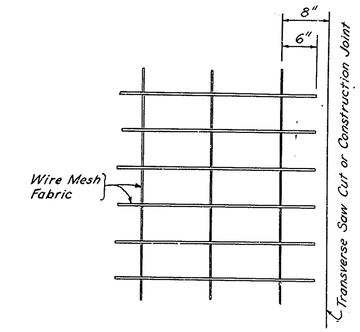
SECTION B-B

Scale: 1 1/2" = 1'-0"



DETAIL OF HOOK-BOLT DOWEL

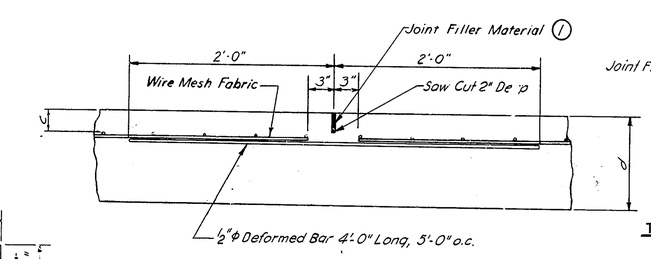
Scale: 3" = 1'-0"



DETAIL 1

Scale: 1" = 1'-0"

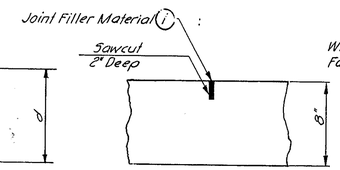
DOWELED LONGITUDINAL CONSTRUCTION JOINT



SECTION C-C

DOWELED LONGITUDINAL SAW CUT JOINT

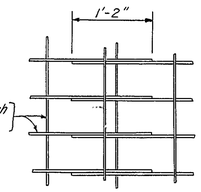
Scale: 1 1/2" = 1'-0"



TRANSVERSE SAW CUT CONTRACTION JOINT CONSTRUCTION DETOUR

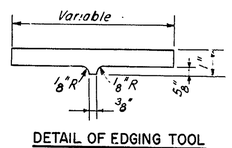
Scale: 1 1/2" = 1'-0"

Longitudinal sawcut joint to be same as shown for transverse saw cut joint.



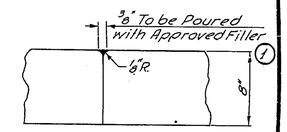
DETAIL 2

Scale: 1" = 1'-0"



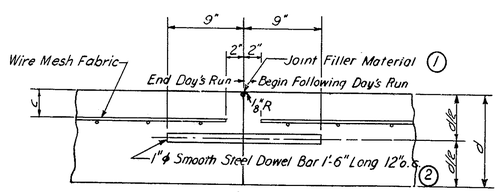
DETAIL OF EDGING TOOL

Not to Scale.



LONGITUDINAL CONSTRUCTION JOINT CONSTRUCTION DETOUR

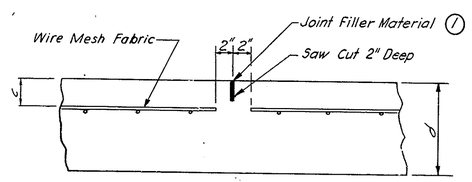
Scale: 1 1/2" = 1'-0"



SECTION D-D

TRANSVERSE CONSTRUCTION JOINT ⑥

Scale: 1 1/2" = 1'-0"



SECTION D-D

TRANSVERSE SAW CUT CONTRACTION JOINT

Scale: 1 1/2" = 1'-0"

Slab Thickness	Dimensions		
	d	c	d/2
10"	10"	3"	5"
8"	8"	2 1/2"	4"

NOTES

1. Hot Poured Joint Filler Material shall conform to Federal Specs. SS-S 164 to be paid for under Item No. 15 - Cem. Conc. Pvmt. or Item No. 9-Cement Concrete Base Course
2. Smooth Dowels for Construction Joints shall be painted with approved red lead before delivery and free end shall be greased before installation.
3. For Method of Measurement and Basis of Payment see Item 21 "Standard Specifications."
4. Radius on outside edges of Pavement to be 1/8".
5. Hinged Reinforcement Mats may be used
6. To be used only at the end of a day's pour, or as directed by the Engineer

	BY	DATE	No.	REVISION	BY	DATE
MADE	E.K.	1-29-58				
TRACED						
CHECKED	H. T. W.	3-14-58				
IN CHARGE OF	W.E.B					

DELAWARE STATE HIGHWAY DEPARTMENT

INTERSTATE HIGHWAY ROUTE FAI-1

FARNHURST INTERCHANGE

CONTRACT NO. I-1(6) FEDERAL AID PROJECT NO. I-01(6)

PAVEMENT DETAILS

HOWARD, NEEDLES, TAMMEN & BERGENDOFF

CONSULTING ENGINEERS

NEW YORK KANSAS CITY

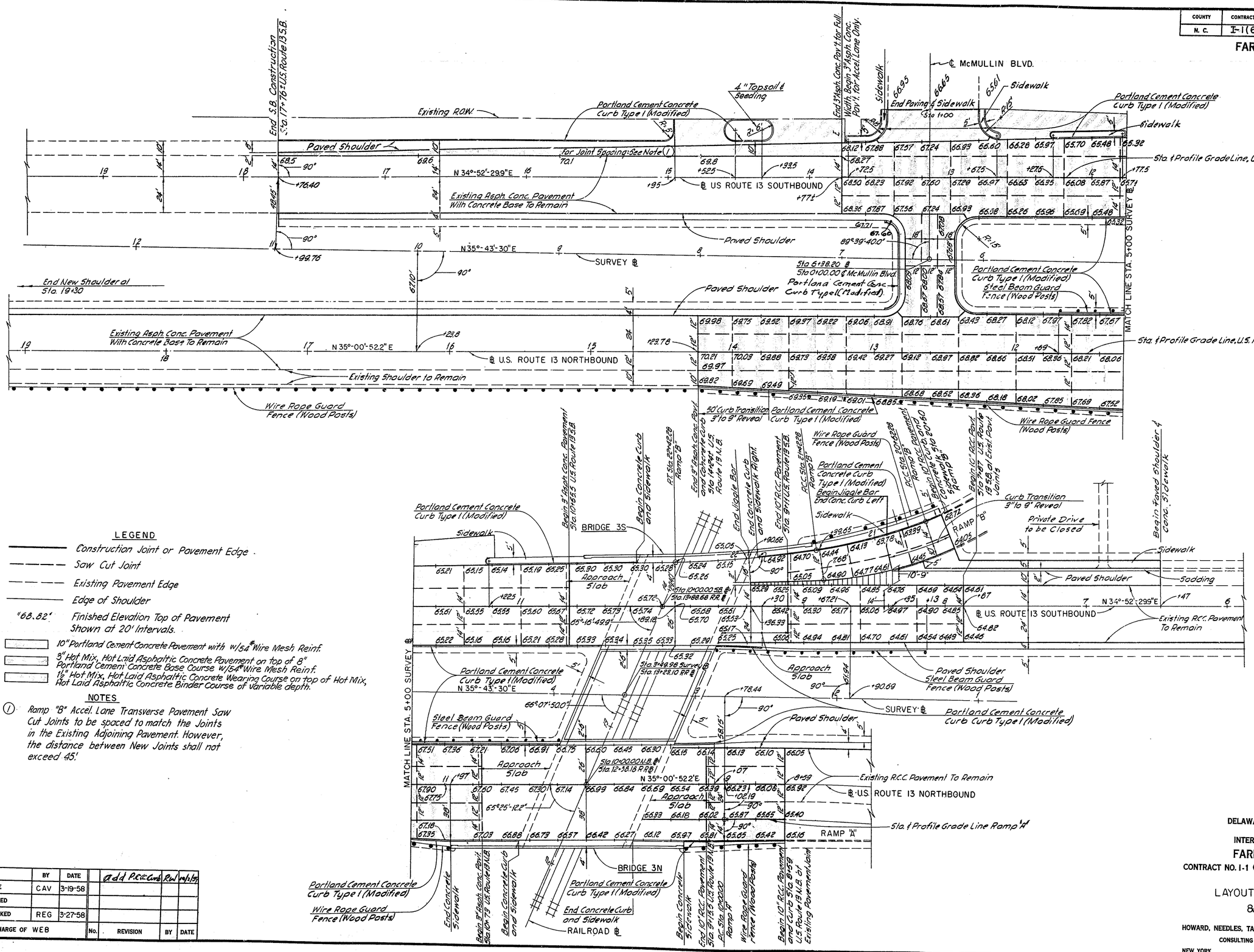
SCALE AS NOTED

DATE 3-31-58

SHEET NO. 7 OF 37

COUNTY	CONTRACT	P.R.A. DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
N. C.	I-1(6)	2	DEL.	I-01(6)		6	37

FARNHURST INTERCHANGE



LEGEND

- Construction Joint or Pavement Edge
- Saw Cut Joint
- Existing Pavement Edge
- Edge of Shoulder
- "68.82" Finished Elevation Top of Pavement Shown at 20' Intervals.
- 10" Portland Cement Concrete Pavement with w/54# Wire Mesh Reinf.
- 8" Hot Mix, Hot Laid Asphaltic Concrete Pavement on top of 8" Portland Cement Concrete Base Course w/54# Wire Mesh Reinf.
- 1½" Hot Mix, Hot Laid Asphaltic Concrete Wearing Course on top of Hot Mix, Hot Laid Asphaltic Concrete Binder Course of Variable depth.

NOTES

(1) Ramp "B" Accel. Lane Transverse Pavement Saw Cut Joints to be spaced to match the Joints in the Existing Adjoining Pavement. However, the distance between New Joints shall not exceed 45'.

	BY	DATE
MADE	CAV	3-19-58
TRACED		
CHECKED	REG	3-27-58
IN CHARGE OF WEB		

No.	REVISION	BY	DATE
	Add P.C.C. Curb	RW	4/1/59

DELAWARE STATE HIGHWAY DEPARTMENT

INTERSTATE HIGHWAY ROUTE FA I-1

FARNHURST INTERCHANGE

CONTRACT NO. I-1 (6) FEDERAL AID PROJECT NO. I-01(6)

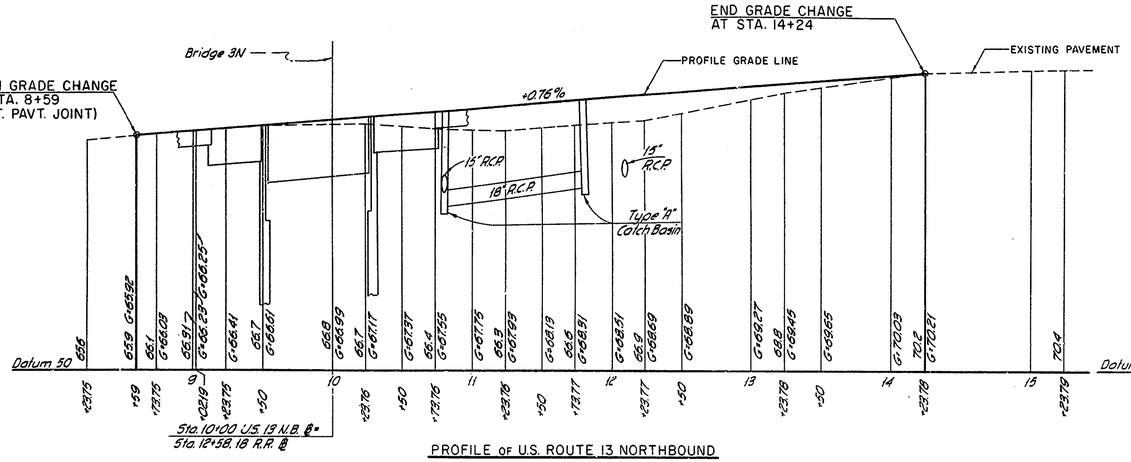
LAYOUT OF PAVEMENT JOINTS & CURB TIE PLAN

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

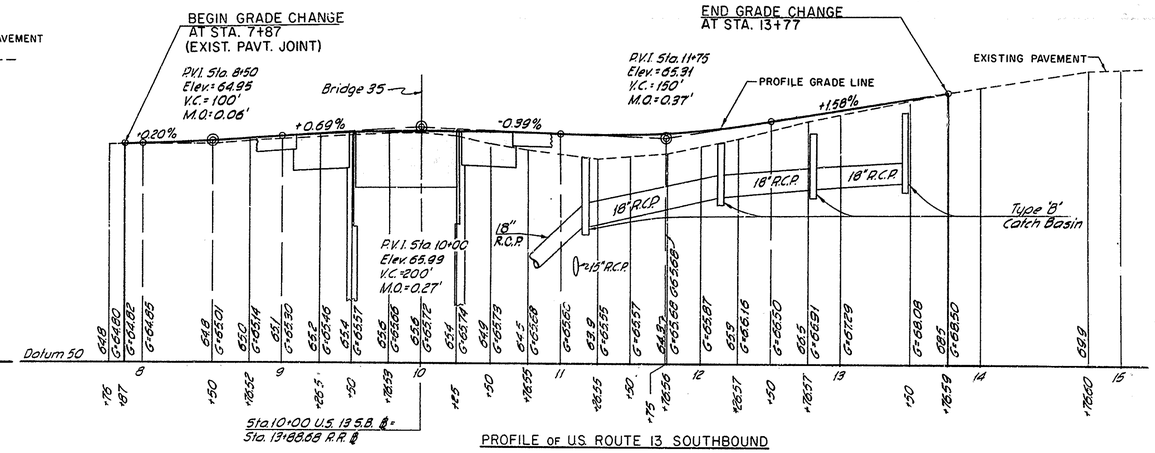
SCALE 1" = 30'-0"
DATE 3-19-58
SHEET NO. 6 OF 37

COUNTY	CONTRACT	P. R. A. DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
N. C.	I-1 (6)	2	DEL.	I-01 (6)		5	37

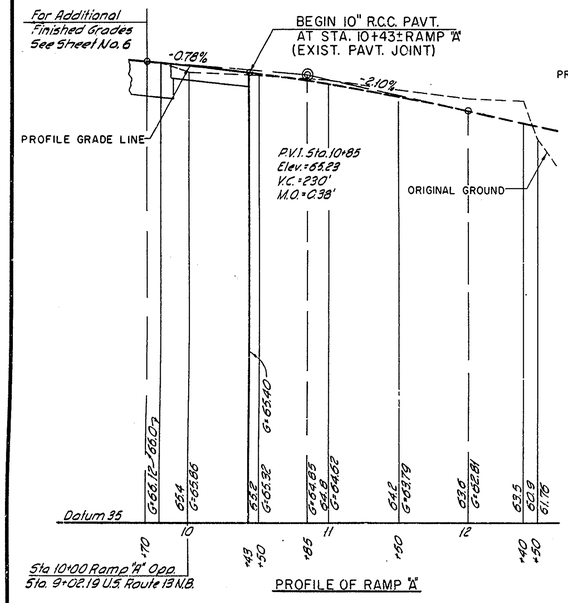
FARNHURST INTERCHANGE



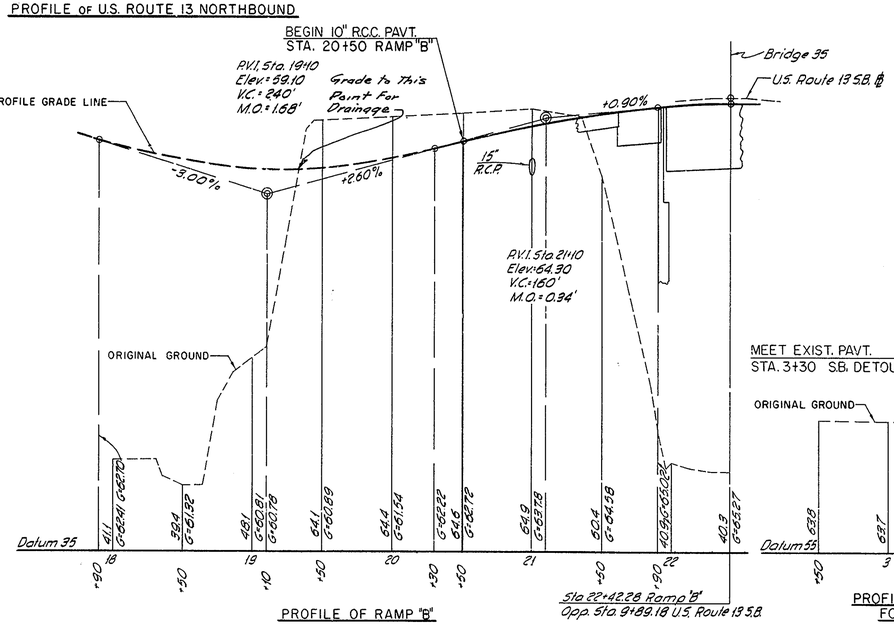
PROFILE OF U.S. ROUTE 13 NORTHBOUND



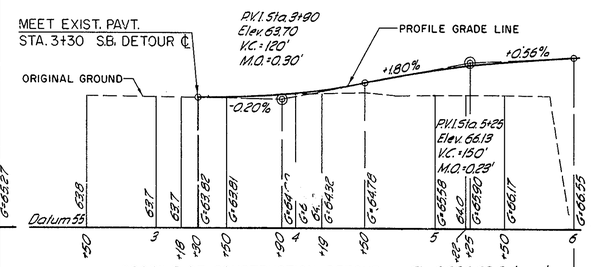
PROFILE OF U.S. ROUTE 13 SOUTHBOUND



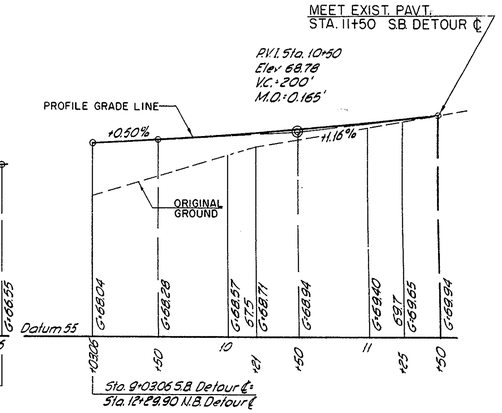
PROFILE OF RAMP "A"



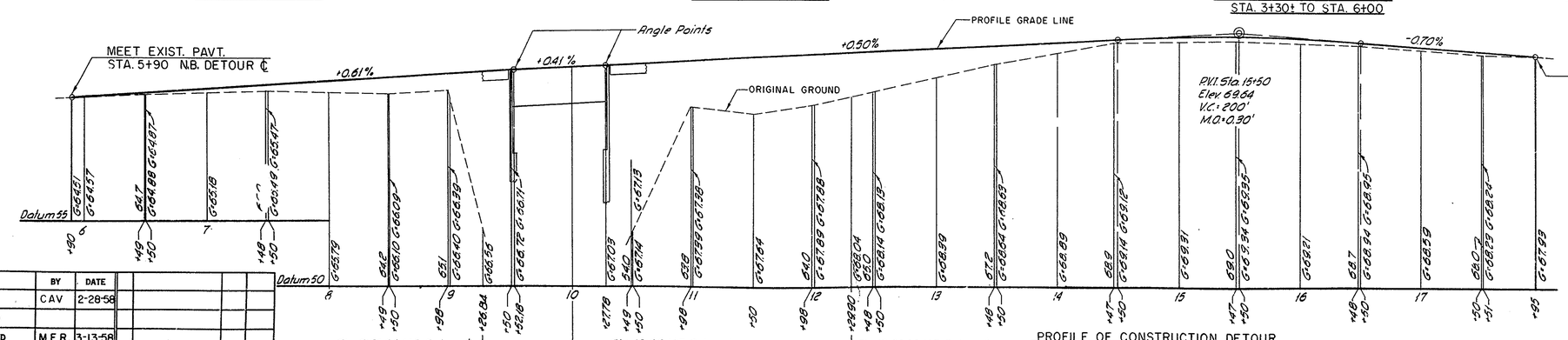
PROFILE OF RAMP "B"



PROFILE OF CONSTRUCTION DETOUR
FOR SOUTHBOUND ROUTE 13
STA. 3+30± TO STA. 6+00



PROFILE OF CONSTRUCTION DETOUR
FOR SOUTHBOUND ROUTE 13
STA. 9+03.06 TO STA. 11+50±



PROFILE OF CONSTRUCTION DETOUR
FOR NORTHBOUND ROUTE 13

	BY	DATE				
MADE	CAV	2-28-58				
TRACED						
CHECKED	MFR	3-13-58				
IN CHARGE OF	WEB		No.	REVISION	BY	DATE

DELAWARE STATE HIGHWAY DEPARTMENT

INTERSTATE HIGHWAY ROUTE FA I-1

FARNHURST INTERCHANGE

CONTRACT NO. I-1 (6) FEDERAL AID PROJECT NO. I-01(6)

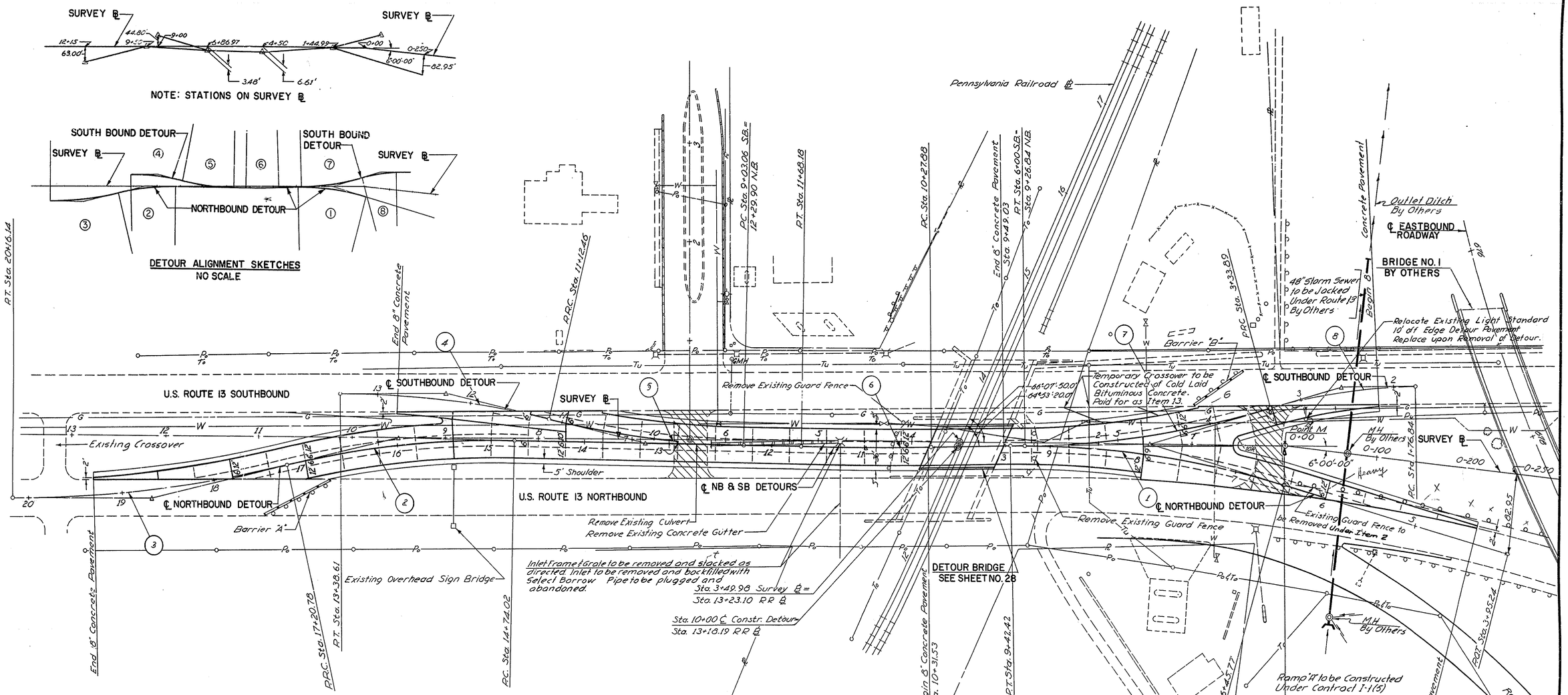
PROFILES

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

SCALE 1"=5'-0" VERT. 1"=50'-0" HOR.
DATE 2-28-58
SHEET NO. 5 OF 37

COUNTY	CONTRACT	P.R.A. DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
N. C.	I-1 (6)	2	DEL.	I-01(6)		4	37

FARNHURST INTERCHANGE



CURVE DATA TABULATION

Curve	1	2	3	4	5	6	7	8
P.I. Sta.*	7+95.22	15+98.06	18+69.13	12+25.79	10+08.16	10+98.05	4+67.76	2+54.90
Δ	17°-00'-00"	14°-08'-29"	13°	13°-30'	12°-00'-00"	2°-00'-36"	15°-15'-00"	15°
T	149.45'	124.04'	148.35'	113.38'	105.10'	70.17	133.87	78.99'
R	1000'	1000'	1300'	960'	1000'	4000'	1000'	600'
L	296.65'	246.76'	295.36'	226.15'	209.40'	140.30'	266.11	157.05

*NOTE P.I. STATIONS ARE DETOUR ℄ STATIONS

LEGEND

- Construction Joint or Edge of Pavement
- Longitudinal or Transverse Saw Cut Joint
- Existing Pavement to be Removed
- 8" Portland Cement Concrete Pavement

NOTES

1. For Relocations and/or Adjustments of Existing Utilities see Sheet No. 8.
2. For Pavement Details See Sh. 7.
3. Spacing of Transverse Saw Cut Joints to be 40' o.c. Unless Otherwise Shown.
4. For Construction Sequence See Special Provisions.
5. Barriers "A" & "B" Shall be Constructed of Sections of Primary Barricade as Shown on Sh. 30 and shall be securely fastened to the pavement with Cinch Anchors or their equal. Payment to be made under "Maintenance of Traffic."
6. For Profiles see Sh. 5.

	BY	DATE	No.	REVISION	BY	DATE
MADE	MFR	3-20-58				
TRACED						
CHECKED	REG	3-25-58				
IN CHARGE OF WEB						

DELAWARE STATE HIGHWAY DEPARTMENT

INTERSTATE HIGHWAY ROUTE FA I-1

FARNHURST INTERCHANGE

CONTRACT NO. I-1 (6) FEDERAL AID PROJECT NO. I-01(6)

PLAN OF CONSTRUCTION DETOUR

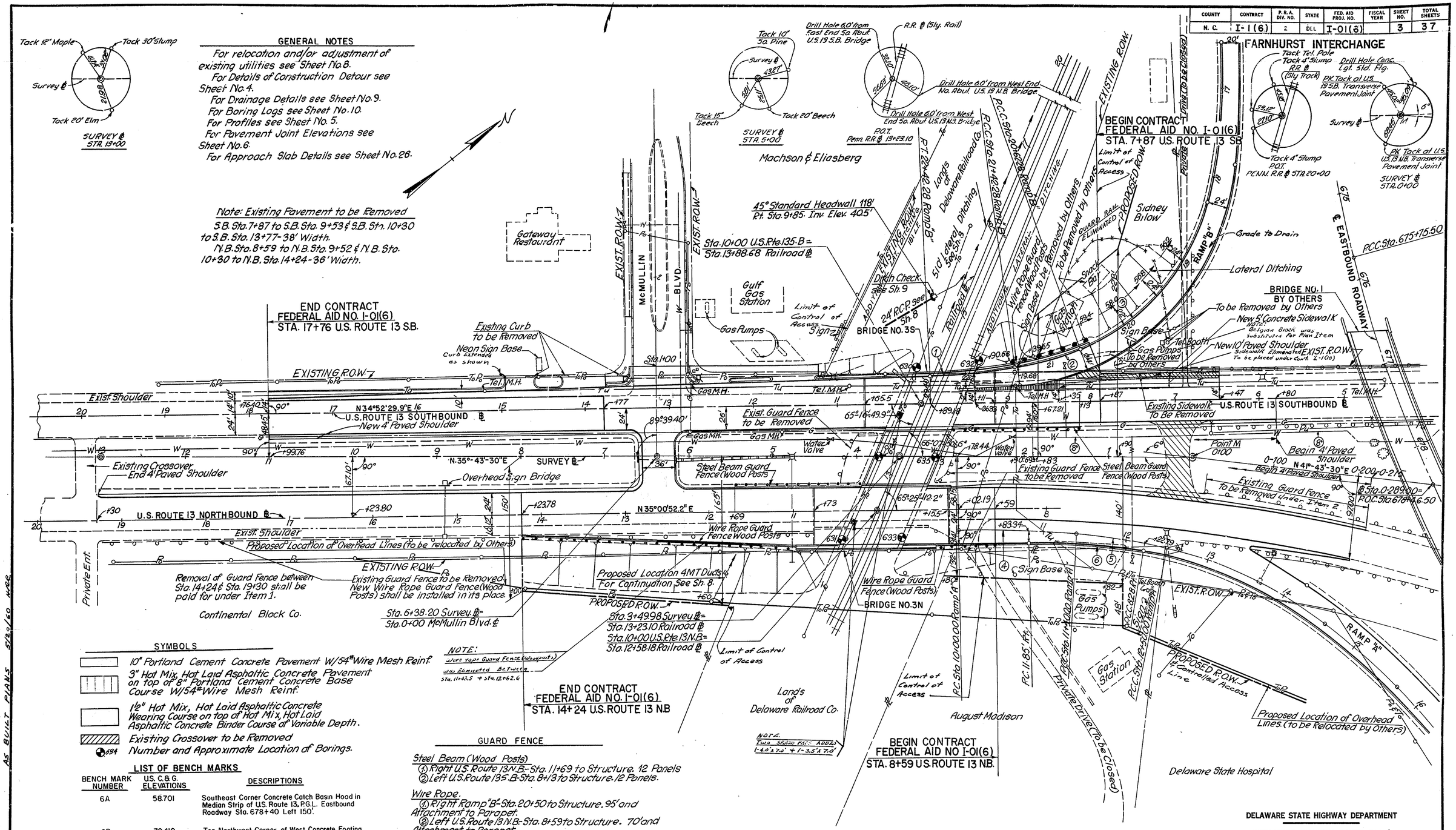
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
NEW YORK KANSAS CITY

SCALE 1" = 50'-0"
DATE 3-31-58
SHEET NO. 4 OF 37

AS BUILT PLANS 5/20/60 WRC

COUNTY	CONTRACT	F. R. A. DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
N. C.	I-1(6)	2	DEL	I-01(6)		3	37

FARNHURST INTERCHANGE



GENERAL NOTES

For relocation and/or adjustment of existing utilities see Sheet No. 8.
For Details of Construction Detour see Sheet No. 4.
For Drainage Details see Sheet No. 9.
For Boring Logs see Sheet No. 10.
For Profiles see Sheet No. 5.
For Pavement Joint Elevations see Sheet No. 6.
For Approach Slab Details see Sheet No. 26.

Note: Existing Pavement to be Removed
S.B. Sta. 7+87 to S.B. Sta. 9+53 ℄ S.B. Sta. 10+30 to S.B. Sta. 13+77 - 38' Width.
N.B. Sta. 8+59 to N.B. Sta. 9+52 ℄ N.B. Sta. 10+30 to N.B. Sta. 14+24 - 36' Width.

SYMBOLS

- 10" Portland Cement Concrete Pavement W/54# Wire Mesh Reinf.
- 3" Hot Mix, Hot Laid Asphaltic Concrete Pavement on top of 8" Portland Cement Concrete Base Course W/54# Wire Mesh Reinf.
- 1½" Hot Mix, Hot Laid Asphaltic Concrete Wearing Course on top of Hot Mix, Hot Laid Asphaltic Concrete Binder Course of Variable Depth.
- Existing Crossover to be Removed
- 034 Number and Approximate Location of Borings.

LIST OF BENCH MARKS

BENCH MARK NUMBER	U.S. C.& G. ELEVATIONS	DESCRIPTIONS
6A	58.701	Southeast Corner Concrete Catch Basin Hood in Median Strip of U.S. Route 13, P.G.L. Eastbound Roadway Sta. 678+40 Left 150'.
6B	70.410	Top Northwest Corner of West Concrete Footing, Overhead Sign Bridge. 25'± Left of Survey Baseline Sta. 8+90±

NOTE:
End post ATTACHMENT (2) Placed on either side of Entrance to Proposed ES&G Gas Station - Sta. 11+70± & Sta. 12+05. End Post ATTACHMENT (1) Placed at end of Wire Rope Guard Rail Section Sta. 19+25 N. Bnd.

NOTE:
Wire rope Guard Fence (Wood posts) was Eliminated Between Sta. 11+85.5 + Sta. 12+62.6

GUARD FENCE

Steel Beam (Wood Posts)
(1) Right U.S. Route 13 N.B. - Sta. 11+69 to Structure. 12 Panels
(2) Left U.S. Route 13 S.B. - Sta. 8+13 to Structure. 12 Panels.

Wire Rope.
(1) Right Ramp "B" - Sta. 20+50 to Structure. 95' and Attachment to Parapet.
(2) Left U.S. Route 13 N.B. - Sta. 8+59 to Structure. 70' and Attachment to Parapet.
(3) Left U.S. Route 13 N.B. - From Structure to Sta. 19+30. 840'. 1 End Post Attachment and one attachment to parapet.
For Guard Fence Details see Sheets Nos. 9, 25, & 33.

NOTE:
Two Span Fill Addtl. 1-4.0' x 7.0' + 1-3.5' x 7.0'

TABULATION OF CURVE DATA

No.	1	2	3	4	5	6
P.I.	21+92.34	21+02.41	19+55.02	10+70.05	11+95.09	—
Δ	7°-09'-43.1"	11°-27'-33.0	53°-23'-51.9"	5°-00'-48.2"	7°-52'-41.4"	9°-45'-18.8"
T	50.07'	40.13'	125.73'	70.05'	55.09'	69.26'
L	100.00'	80.00'	232.99'	140.00'	110.00'	138.19'
R	800.00'	400.00'	250.00'	1600.00'	800.00'	811.63'

	BY	DATE
MADE	WB & CV	3-17-58
TRACED		
CHECKED	REG	3-19-58
IN CHARGE OF	WEB	

No.	REVISION	BY	DATE

DELAWARE STATE HIGHWAY DEPARTMENT

INTERSTATE HIGHWAY ROUTE FA I-1

FARNHURST INTERCHANGE

CONTRACT NO. I-1 (6) FEDERAL AID PROJECT NO. I-01(6)

GENERAL PLAN

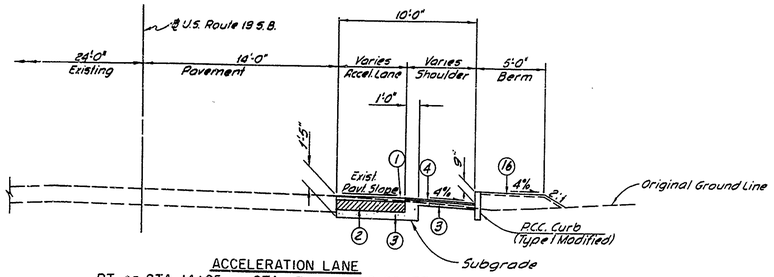
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
NEW YORK KANSAS CITY

SCALE 1" = 50'-0"
DATE 3-19-58
SHEET NO. 3 OF 37

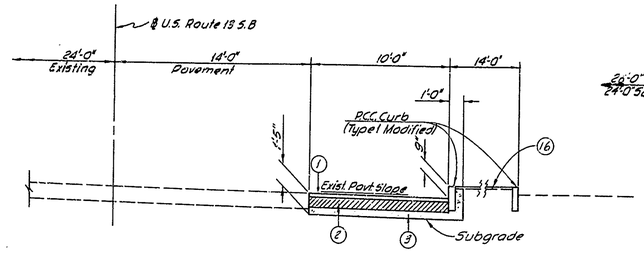
AS BUILT PLANS 5-12-60 HWB

COUNTY	CONTRACT	P.R.A. DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
N. C.	I-I(6)	2	DEL.	I-01(6)		2	37

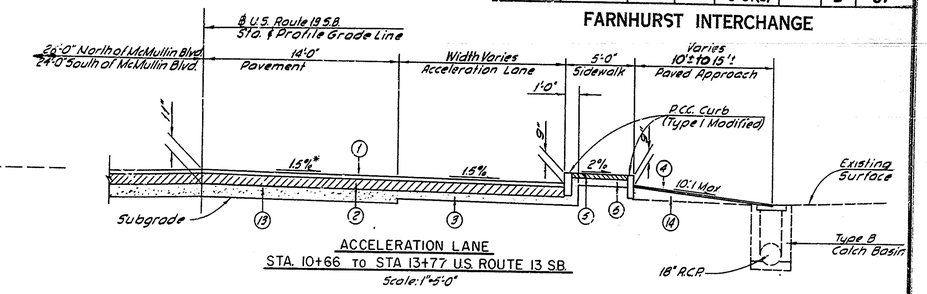
FARNHURST INTERCHANGE



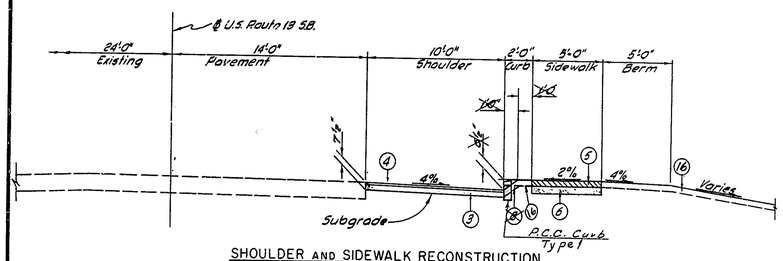
ACCELERATION LANE
RT. OF STA. 14+95 TO STA. 17+76.40 U.S. ROUTE 13 SB.
Scale: 1"=5'-0"



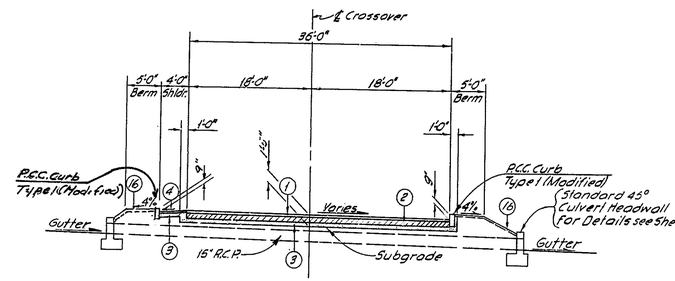
ACCELERATION LANE
RT. OF STA. 13+77 TO STA. 14+95 US. ROUTE 13 SB.
Scale: 1"=5'-0"



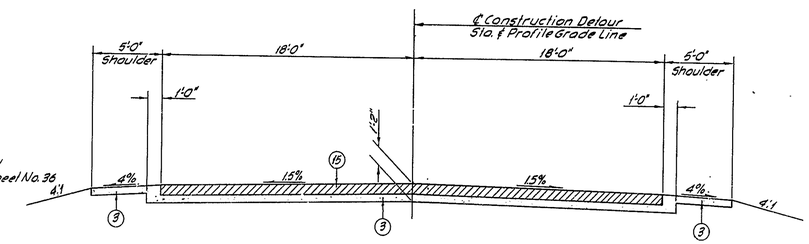
ACCELERATION LANE
STA. 10+66 TO STA 13+77 US. ROUTE 13 SB.
Scale: 1"=5'-0"



SHOULDER AND SIDEWALK RECONSTRUCTION
RT. OF STA. 6+47 TO STA. 8+35 U.S. ROUTE 13 SB.
Scale: 1"=5'-0"

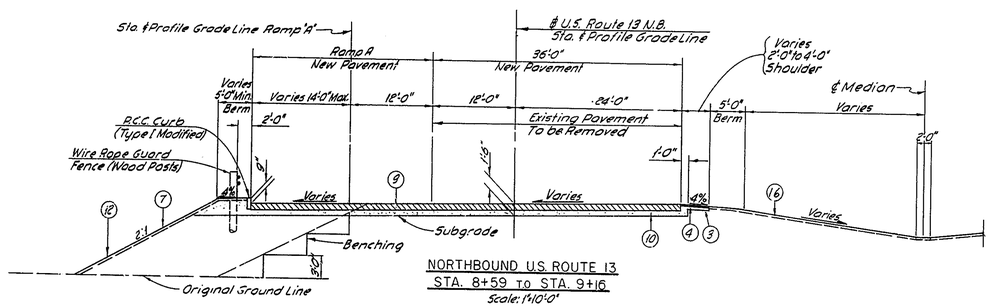


TYPICAL SECTION-CROSSOVER
STA. 6+3820 SURVEY ℄
Scale: 1"=10'-0"

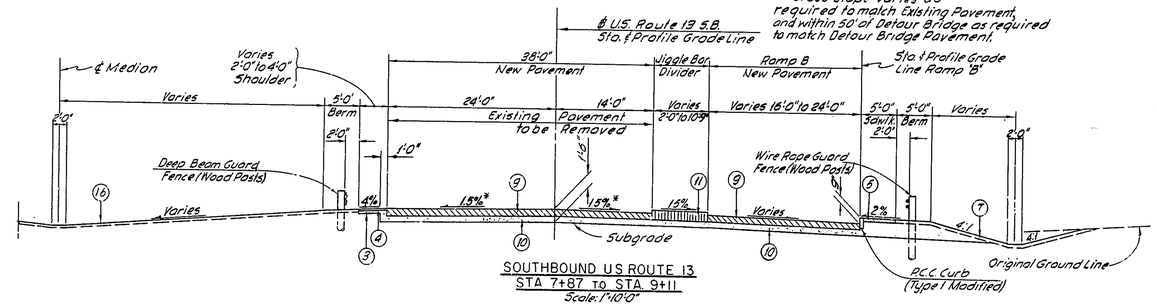


TYPICAL SECTION-CONSTRUCTION DETOUR
Scale: 1"=5'-0"

Note: Cross Slope varies as required to match Existing Pavement, and within 50' of Detour Bridge as required to match Detour Bridge Pavement.

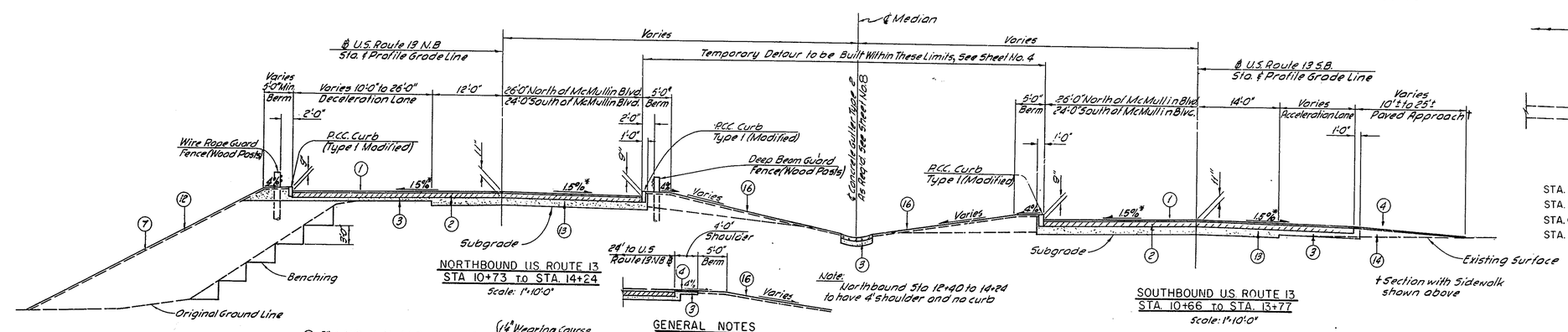


NORTHBOUND U.S. ROUTE 13
STA. 8+59 TO STA. 9+16
Scale: 1"=10'-0"

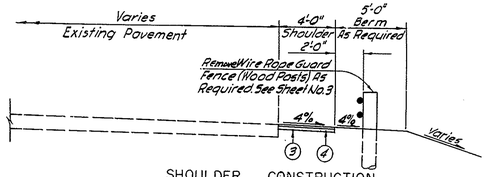


Note: Cross Slope varies as required to match Existing Pavement, and within 50' of Detour Bridge as required to match Detour Bridge Pavement.

SOUTHBOUND US ROUTE 13
STA 7+87 TO STA. 9+11
Scale: 1"=10'-0"



SOUTHBOUND US ROUTE 13
STA. 10+66 TO STA. 13+77
Scale: 1"=10'-0"



SHOULDER CONSTRUCTION
AFTER REMOVAL OF CONSTRUCTION DETOUR

STA. 5+80± TO STA. 7+87± U.S. ROUTE 13 S.B.-EAST SIDE
STA. 13+77± TO STA. 17+76± U.S. ROUTE 13 S.B.-EAST SIDE
STA. 0-215± SURVEY ℄ TO STA. 8+59± U.S. ROUTE 13 N.B.-WEST SIDE
STA. 14+24± TO STA. 19+30 U.S. ROUTE 13 N.B.-WEST SIDE
Scale: 1"=5'-0"

GENERAL NOTES

1. 3" Hot Mix, Hot Laid Asph. Conc. Pavt. { 1½" Wearing Course, 1½" Binder Course }
2. 8" Portland Cement Concrete Base Course W/54# Wire Mesh Reinforcement, Paid for as Items 9 & 21
3. 6" Select Borrow.
4. 1½" Hot Mix, Hot Laid Asphaltic Concrete Pavement (Wearing Course)
5. 4" Portland Cement Concrete Sidewalk.
6. 4" Select Borrow.
7. 4" Topsoil, Seeding & Mulch.
8. Sod Curb.
9. 10" Portland Cement Concrete Pavement. W/54# Wire Mesh Reinforcement. Paid for as Items 13 & 21
10. 8" Select Borrow
11. Jiggle Bar Divider. For Details see Sheet No. 9.
12. For Fills: To 10'-0" use 4:1; 10'-0" to 20'-0" use 3:1; Over 20'-0" use 2:1 } Except where modified for R.O.W. Purposes
13. Select Borrow - After removing Existing Pavement, Backfill with Compacted Select Borrow to within 11" of the finished Paved Surface
14. Hot Mix, Hot Laid Asphaltic Concrete Pavement Binder Course (Variable Depth)
15. 8" Portland Cement Concrete Pavement. Paid for as Item 15.
16. 4" Topsoil & Seeding

* Pavement Cross Slope to be 1.5% except as modified on Layout of Pavement Joints; see Sheet No. 6.

	BY	DATE				
MADE	C.A.V.	2-20-58		Add P.C.C. Curb	RW	10/1/69
TRACED						
CHECKED	JCW	3-26-58				
IN CHARGE OF	WEB		No.	REVISION	BY	DATE

Revised section Sta. 6+47 to Sta. 8+35 & Revised section Route 13 Ramp A & Ramp B 10/1/69 RW

DELAWARE STATE HIGHWAY DEPARTMENT

INTERSTATE HIGHWAY ROUTE FA I-1

FARNHURST INTERCHANGE

CONTRACT NO. I-1 (6) FEDERAL AID PROJECT NO. I-01(6)

TYPICAL SECTIONS

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

SCALE AS NOTED
DATE 2-20-58
SHEET NO. 2 OF 37

COUNTY	CONTRACT	F.R.A. REG. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
N.C.	I-1 (6)	2	DEL.	I-01 (6)		1	37

THE STATE OF DELAWARE

State of Delaware

STATE HIGHWAY DEPARTMENT

PLAN
FOR
CONSTRUCTION OF CONTRACT № I-1(6)

STA. 8+59 N.B. 7+87 S.B. **TO STA.** 14+24 N.B. 17+76 S.B.

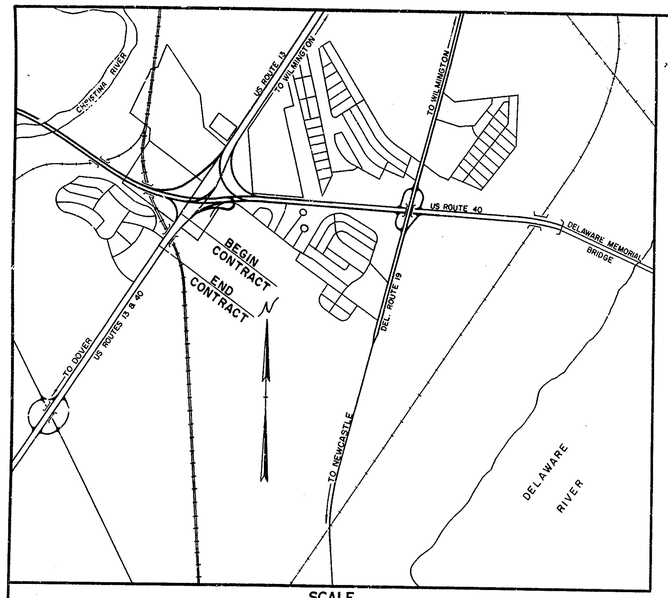
565 N.B. 989 S.B. **FEET: 0.187 MILES**

SCALE: PLAN: 1 IN.= 50 FT.
PROFILE: HOR. 1 IN.= 50 FT.
VERT. 1 IN.= 5 FT.

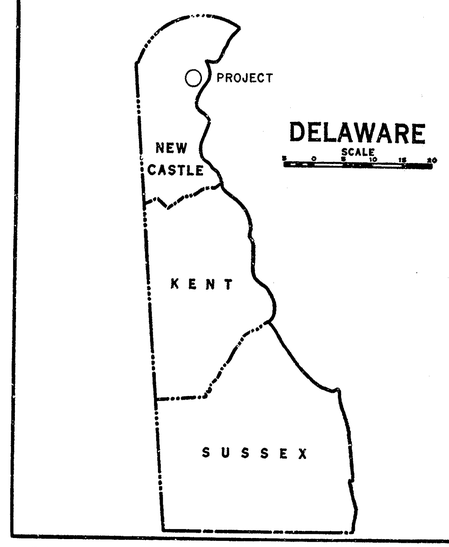
FEDERAL AID PROJECT № I-01(6)

(THIS IS A CONTROLLED ACCESS HIGHWAY)

FARNHURST INTERCHANGE



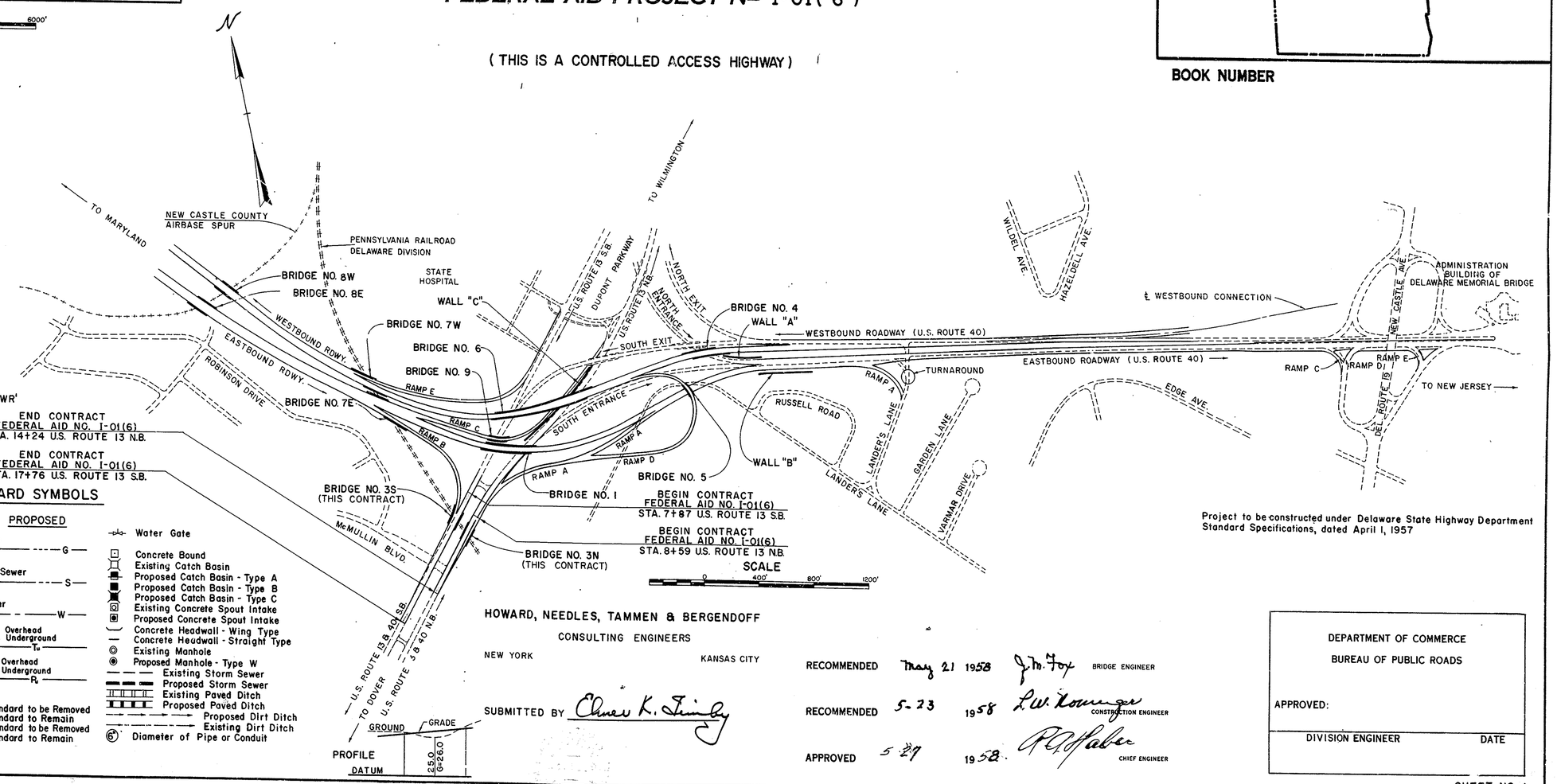
SCALE 0 2000' 4000' 6000'



BOOK NUMBER

LIST OF DRAWINGS

1 TITLE SHEET
2 TYPICAL SECTIONS
3 GENERAL PLAN
4 PLAN OF CONSTRUCTION DETOUR
5 PROFILES
6 LAYOUT OF PAVEMENT JOINTS AND CURB TIE PLAN
7 PAVEMENT DETAILS
8 DRAINAGE AND UTILITIES
9 MISCELLANEOUS DETAILS
10 BORING LOGS
11 GENERAL PLAN AND ELEVATION
12 CONNECTING WALLS
13 NORTH ABUTMENT
14 NORTH ABUTMENT DETAILS
15 SOUTH ABUTMENT
16 SOUTH ABUTMENT DETAILS
17 BAR LISTS AND BAR DETAILS FOR ABUTMENTS
18 ABUTMENT FOOTINGS
19 WINGWALLS
20 BAR LISTS AND BAR DETAILS FOR WINGWALLS
21 FRAMING PLANS AND CROSS SECTIONS
22 DECK REINFORCEMENT
23 MISCELLANEOUS BRIDGE DETAILS
24 EXPANSION JOINTS
25 SHOES AND ALUMINUM RAILING DETAILS
26 APPROACH SLABS
27 BRIDGE LIGHTING DETAILS
28 EXISTING NORTHBOUND U.S. 13 BRIDGE - DETAILS OF MODIFICATIONS
29 QUANTITY SHEET
30 TO 37 STANDARDS 'DT', 'E', 'G', 'I', 'M', 'M-M', 'P', 'WR'



Project to be constructed under Delaware State Highway Department Standard Specifications, dated April 1, 1957

LIST OF STANDARD SYMBOLS

9 10 11 — Sta. and Profile Grade Line
New Edge of Pavement
New Edge of Shoulder
New Edge of Berm
Existing Property Line
Right of Way Line
Existing Roadway
Existing Wire Fence
Existing Guard Fence
Proposed Guard Fence

EXISTING	PROPOSED
Gas	G — G
Sanitary Sewer	S — S
Water	W — W
Telephone {o - Overhead, u - Underground}	To — To
Power {o - Overhead, u - Underground}	Po — Pu

Single Light Standard to be Removed
Single Light Standard to Remain
Double Light Standard to be Removed
Double Light Standard to Remain

Water Gate
Concrete Bound
Existing Catch Basin
Proposed Catch Basin - Type A
Proposed Catch Basin - Type B
Proposed Catch Basin - Type C
Existing Concrete Spout Intake
Proposed Concrete Spout Intake
Concrete Headwall - Wing Type
Concrete Headwall - Straight Type
Existing Manhole
Proposed Manhole - Type W
Existing Storm Sewer
Proposed Storm Sewer
Existing Paved Ditch
Proposed Paved Ditch
Proposed Dirt Ditch
Existing Dirt Ditch
6" Diameter of Pipe or Conduit

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

SUBMITTED BY Elmer K. Timby

RECOMMENDED May 21 1958 J. M. Foy BRIDGE ENGINEER
RECOMMENDED 5-23 1958 L. W. Kornegay CONSTRUCTION ENGINEER
APPROVED 5-27 1958 R. R. Faber CHIEF ENGINEER

DEPARTMENT OF COMMERCE
BUREAU OF PUBLIC ROADS
APPROVED:
DIVISION ENGINEER DATE

SHEET NO. 1

"Imperial" 156 W. B. & B.

COUNTY	CONTRACT	P.R.A. DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
N. C.	I-.1 (6)	2	DEL.	I-01 (6)		29	37

FARNHURST INTERCHANGE

TOPSOIL, SEEDING & MULCHING

LOCATION	TOPSOIL-SQ. YDS.	SEEDING-ACRES	MULCHING-SQ. YDS.
U.S. Route 13 Northbound	7,902	1.9	2,989
U.S. Route 13 Southbound	4,297	1.2	251
Ramp "B"	472	0.1	419
TOTAL	12,671 S.Y.	3.2 Acres	3,659 S.Y.
PROPOSAL	13,300 S.Y.	3.5 Acres	3,900 S.Y.

EARTHWORK

LOCATION	EXCAVATION	EMBANKMENT	BORROW	SELECT BORROW
U.S. Route 13 Northbound	1,404	4,937	—	1,218
U.S. Route 13 Southbound	1,212	475	—	923
Ramp "B"	684	279	—	183
Construction Detour	1,369	2,864	—	1,221
Select Borrow for Backfill	—	—	—	23
Benching	836	—	—	—
TOTAL	5,505 C.Y.	8,555 C.Y.	—	3,568 C.Y.
PROPOSAL	5,800 C.Y.	—	7,000 C.Y.	5,200 C.Y.

PORTLAND CEMENT CONCRETE PAVEMENT OR BASE COURSE

LOCATION	LENGTH	WIDTH	DEPTH	PAVEMENT	BASE COURSE
U.S. Route 13 Northbound	408'	Varies	8"-10"	107 C.Y.	483 C.Y.
U.S. Route 13 Southbound	835'	Varies	8"-10"	145 C.Y.	447 C.Y.
Ramp "B"	117'	Varies	10"	77 C.Y.	—
Construction Detour	1,495'	Varies	8"	1,299 C.Y.	—
Crossover	65'	36'	8"	—	63 C.Y.
TOTAL	—	—	—	1,628 C.Y.	993 C.Y.
PROPOSAL	—	—	—	1,700 C.Y.	1,050 C.Y.

WIRE MESH REINFORCEMENT (54 LB. PER SQUARE)

LOCATION	LENGTH	WIDTH	SQ. FT.	SQUARES
U.S. Route 13 Northbound	408'	Varies	23,028'	230
U.S. Route 13 Southbound	835'	Varies	22,831'	228
Ramp "B"	117'	Varies	2,483'	25
Crossover	65'	36'	2,533'	26
TOTAL	—	—	—	509 Sq.
PROPOSAL	—	—	—	535 Sq.

PORTLAND CEM. CONC. CURB (TYPE 1 MOD)

LOCATION	QUANTITY	UNIT
U.S. Route 13 Northbound	686	L.F.
U.S. Route 13 Southbound	1058	L.F.
Ramp "B"	179	L.F.
Crossover	83	L.F.
TOTAL	2006	L.F.
PROPOSAL	2100	L.F.

HOT-MIX, HOT LAID ASPHALTIC CONCRETE PAVEMENT

LOCATION	PAVEMENT	SHOULDERS	APPROACH SLABS	DRIVEWAY AND APPROACH ADJUSTMENT
U.S. Route 13 Northbound	336	42	291	—
U.S. Route 13 Southbound	362	69	204	136
Ramp "B"	—	—	—	—
Crossover	47	2	—	—
TOTAL				1,483 Tons
PROPOSAL				1,550 Tons

GUARD FENCE

LOCATION	RESETTING WIRE ROPE GUARD FENCE	WIRE ROPE GUARD FENCE WOOD POSTS-2 WIRE	END POST ATTACHMENTS	DEEP BEAM GUARD FENCE WOOD POSTS
U.S. Route 13 Northbound	200	905	2	150
U.S. Route 13 Southbound	—	—	—	150
Ramp "B"	—	95	—	—
TOTAL	200 L.F.	1,000 L.F.	2 ea.	300 L.F.
PROPOSAL	200 L.F.	1,050 L.F.	2 ea.	300 L.F.

REMOVAL OF EXISTING PAVEMENT, CURB, SIDEWALK ETC

LOCATION	PAVEMENT	CURBS	SIDEWALK	GUTTERS
U.S. Route 13 Northbound	1,940	—	—	—
U.S. Route 13 Southbound	2,154	6	136	19
Crossover	272	—	—	60
Turnaround	382	—	—	—
Construction Detour	5,846	—	—	—
TOTAL				10,815 S.Y.
PROPOSAL				11,400 S.Y.

PORTLAND CEMENT CONCRETE MASONRY & CONCRETE GUTTERS

ITEM		PORT. CEM. CONC. MASONRY	PORT. CEM. CONC. GUTTERS	BAR REINFORCEMENT	EXCAVATION FOR STRUCTURES	SELECT BORROW FOR BACKFILL
Concrete Gutters	Type 2	—	118 S.Y.	—	—	19 C.Y.
	Type 2 (P.W.)	—	36 S.Y.	—	—	3 C.Y.
Standard Headwalls	Std. 15 inch	2.4 C.Y.	—	54 Lbs.	10 C.Y.	—
	45° Std. 18 inch	3.5 C.Y.	—	84 Lbs.	18 C.Y.	—
	45° Std. 24 inch	2.4 C.Y.	—	54 Lbs.	14 C.Y.	—
Ditch Check		0.7 C.Y.	—	11 Lbs.	—	1 C.Y.
TOTAL		9.0 C.Y.	154 S.Y.	†203 Lbs.	†42 C.Y.	*23 C.Y.
PROPOSAL		10 C.Y.	160 S.Y.	—	—	—

† Included under Proposal Quantity for Bridge Items.
* Quantity to be paid for under Item No. 7 Select Borrow

DRAINAGE QUANTITIES

ITEM	TOTAL	PROPOSAL
15" Reinforced Concrete Pipe	539 L.F.	564 L.F.
18" Reinforced Concrete Pipe	426 L.F.	448 L.F.
24" Reinforced Concrete Pipe	98 L.F.	104 L.F.
Type "A" Catch Basin	8 ea.	8 ea.
Type "B" Catch Basin	6 ea.	7 ea.
Type PW Catch Basin	1 ea.	1 ea.
Type "S" Combination Inlet	1 ea.	1 ea.
Standard Manhole	1 ea.	1 ea.
Castings	7,175 Lbs.	7,500 Lbs.
Lateral Ditching	660 L.F.	700 L.F.

EARTHWORK COMPUTATIONS

Excavation (By Planimeter) Less Benching = 4,669 C.Y.
Deduct 10% Unsuitable Material = 467 C.Y.
Excavation Available for Embankment = 4,202 C.Y.

Select Borrow (by Planimeter) = 3,568 C.Y.
Swell (35% + 10% Round) = 1,606 C.Y.
Select Borrow = 5,174 C.Y.
Say 5,200 C.Y.

Embankment (By Planimeter) = 8,555 C.Y.
Swell 30% = 2,567 C.Y.
Swelled Embankment = 11,122 C.Y.
Excavation Available for Embankment = 4,202 C.Y.
Borrow = 6,920 C.Y.
Say = 7,000 C.Y.

BRIDGE QUANTITIES

ITEM		BRIDGE 3S	BRIDGE 3N	CONNECT. WALLS	TOTAL	PROPOSAL
Excavation for Structures		1,176 C.Y.	932 C.Y.	977 C.Y.	3,085 C.Y.	3,200 C.Y.
Portland Cement Concrete Masonry	Footings	295 C.Y.	302 C.Y.	270 C.Y.	867 C.Y.	840 C.Y.
	Sub-Foundations	—	—	—	—	80 C.Y.
	Abutments and Wingwalls Above Footings	379 C.Y.	540 C.Y.	361 C.Y.	1,280 C.Y.	1,350 C.Y.
	Decks	162 C.Y.	177 C.Y.	—	339 C.Y.	360 C.Y.
	Approach Slabs	261 C.Y.	309 C.Y.	—	570 C.Y.	600 C.Y.
Superficial Waterproofing		312 S.Y.	380 S.Y.	344 S.Y.	1,036 S.Y.	1,100 S.Y.
Bar Reinforcement	Bridges	90,838 Lbs.	102,531 Lbs.	68,739 Lbs.	262,108 Lbs.	430,000 Lbs.
	Approach Slabs	69,824 Lbs.	82,752 Lbs.	—	152,576 Lbs.	
Structural Steel (Approx. Wt. 650,000 Lbs.)		—	—	—		L.S.
Aluminum Railing		235 L.F.	235 L.F.	138 L.F.	608 L.F.	640 L.F.
Cast-in-Place Concrete Piles		4,275 L.F.	4,521 L.F.	4,510 L.F.	13,306 L.F.	14,000 L.F.
Steel Shell Test Piles		86 L.F.	69 L.F.	81 L.F.	236 L.F.	230 L.F.
Electrical Facilities					—	L.S.
Removal of Bridge Superstructures					—	L.S.
Temporary Relocation of Superstructure - Bridge 3N					—	L.S.
Bridge Drainage (Approx. Wt. 17,000 Lbs.)					—	L.S.

MISCELLANEOUS

ITEM	TOTAL	PROPOSAL
Maintenance of Traffic	—	L.S.
Clearing and Grubbing	—	L.S.
Removal of Existing Masonry	220 C.Y.	230 C.Y.
††Borrow Pit Stripping	—	50 C.Y.
RC1 Asphalt Tack Coat	605 Gal.	640 Gal.
Cold Laid Bituminous Concrete (T.R.M.)	—	50 Tons
Jiggle Bar Divider	53 S.Y.	55 S.Y.
Patching Concrete Pavement	—	50 S.Y.
Portland Cement Concrete Sidewalk	2,564 S.F.	2,700 S.F.
Sodding	45 S.Y.	50 S.Y.
Sand	—	10 Tons
Extra Portland Cement	—	50 Bags
Calcium Chloride for Dust Control	—	5 Tons

†† Not a pay item if other than a State owned Pit is used.

	BY	DATE	No.	REVISION	BY	DATE
MADE	CAV	4-8-58				
TRACED						
CHECKED	RLP	4-9-58				
IN CHARGE OF	WEB					

DELAWARE STATE HIGHWAY DEPARTMENT

INTERSTATE HIGHWAY ROUTE FA I-1

FARNHURST INTERCHANGE

CONTRACT NO. I-1 (6) FEDERAL AID PROJECT NO. I-01(6)

QUANTITY SHEET

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

SCALE NONE
DATE 4-8-58
SHEET NO. 29 OF 37