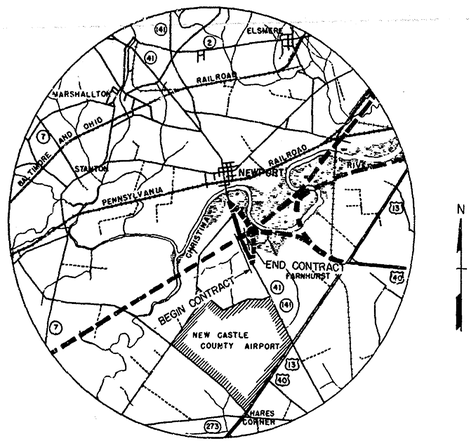
COUNTY	CONTRACT	P.R.A. REG. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE	I-1(21)-2	2	DEL.	I-95-1(19)		1	58



SCALE

1 ½ 0 1 MILES

THE STATE OF DELAWARE

State of Delaware

STATE HIGHWAY DEPARTMENT

PLAN FOR AS BUILT PLANS

3-17-65 BY: J.R.R.

CONSTRUCTION OF CONTRACT Nº I-1(21)-2

STA. 111+01 TO STA. 120+05 (CONNECTION A)

904 FEET: 0.171 MILES

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

SUMMARY OF MILEAGE

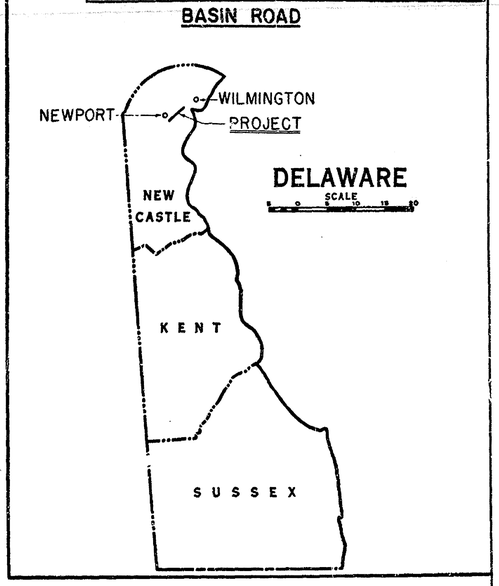
Basin Road (S.B.)	4,795.00 Lin. Ft.
Airport Road	931.10
Relocated Airport Road	2,030.76
F.A.I. 1 (W.B.)	250.00
F.A.I. 1 (E.B.)	900.00
Connection A	904.00
Connection E	250.00
Ramp C	900.00
Ramp E	1,937.84
Ramp F	921.00
Ramp G	883.09
Ramp H	473.42
Ramp J	250.00
Ramp K	308.61
Total	15,734.82 Lin. Ft. =2.980 Miles

DESIGN SPEEDS

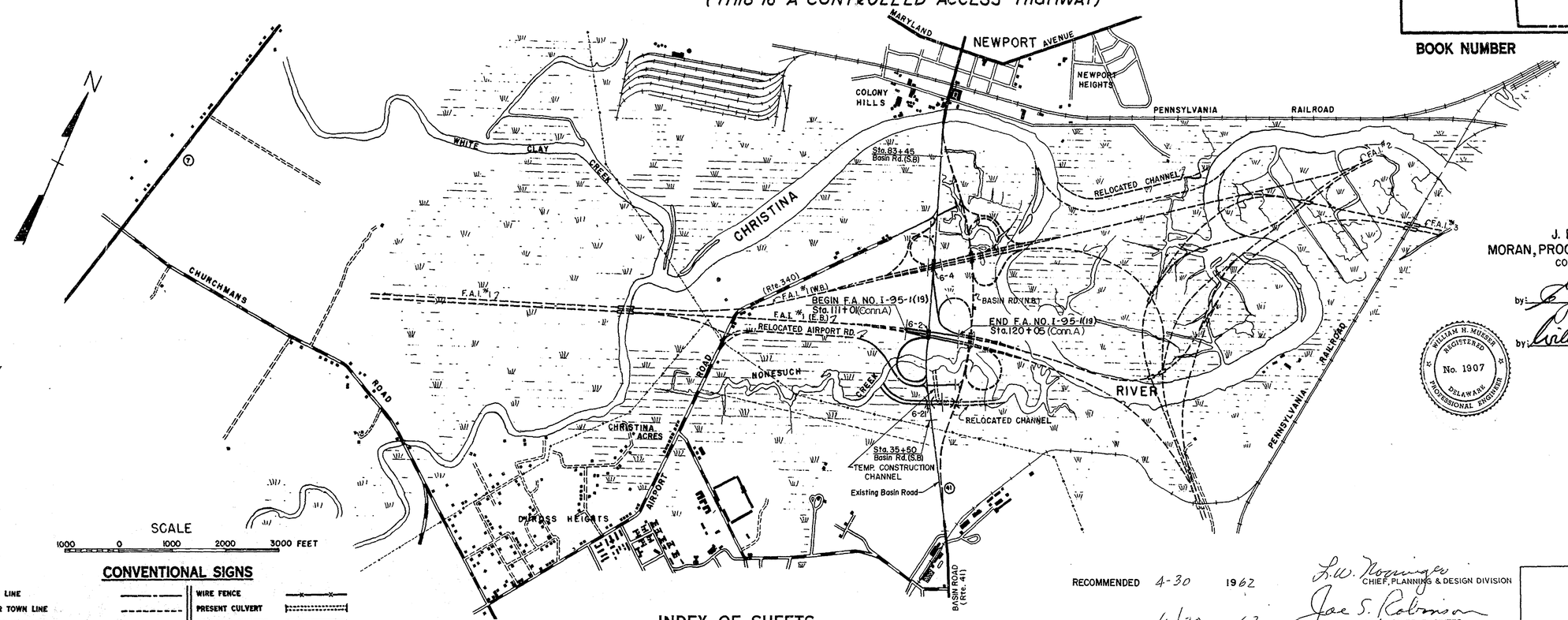
70 M.P.H. F.A.I. # 1
60 M.P.H. Basin Road and Connections A & E
40 M.P.H. Relocated Airport Road
30 M.P.H. All Ramps

FEDERAL AID PROJECT Nº I-95-1(19)

(THIS IS A CONTROLLED ACCESS HIGHWAY)



BOOK NUMBER



SCALE

1000 0 1000 2000 3000 FEET

CONVENTIONAL SIGNS

COUNTY LINE		WIRE FENCE	
CITY OR TOWN LINE		PRESENT CULVERT	
RIGHT OF WAY LINE		PROPOSED CULVERT	
CENTRE LINE, PROPOSED ROAD	240	TELEGRAPH POLE	
MACADAM, TRAVELLED ROAD		TREE	
TROLLEY OR RAILROAD			
CONC. INTAKE APRON, TYPE 2			
CONDUIT			

PROFILE: GRADE, GROUND, DATUM, 25.0 GR. 23.2, 29.8 GR. 28.0

INDEX OF SHEETS

SHEET Nº 1 TITLE SHEET
2-6 TYPICAL SECTION
7-25 PLAN AND PROFILE
26-45 BRIDGES & CULVERTS
46-47 PAVING PLANS
48-49 QUANTITIES
50-58 STANDARDS---- B, DT, G, H, M, M-M, Q, W, Y,

J. E. GREINER CO.
MORAN, PROCTOR, MUESER & RUTLEDGE
CONSULTING ENGINEERS

by: C. J. Donnelly
by: William H. Mueser

WILLIAM H. MUESER REGISTERED No. 1907 DELAWARE PROFESSIONAL ENGINEER

RECOMMENDED	4-30	1962	L. W. Norringer, CHIEF, PLANNING & DESIGN DIVISION
RECOMMENDED	4/30	1962	Joe S. Robinson, ASS'T. CHIEF ENGINEER
APPROVED	4-30	1962	Ernest A. Hamilton, CHIEF ENGINEER
APPROVED	4/30	1962	William J. Miller Jr., DIRECTOR OF OPERATIONS

DEPARTMENT OF COMMERCE
BUREAU OF PUBLIC ROADS

APPROVED:

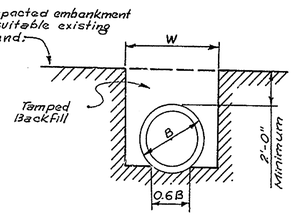
DIVISION ENGINEER DATE

COUNTY	CONTRACT	F.B.A. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE	I-1(21)-2	2	DEL.	I-95-1(19)		2	58

E-4 K-3

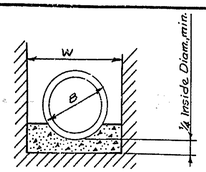
BASIN ROAD

Note:
A quantity of Stone Bedding for Pipes has been provided in the Proposal. This item is to be used only as directed by the Engineer.



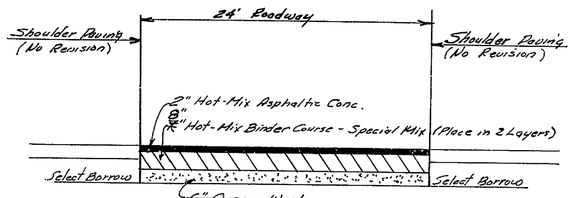
B = outside diameter of pipe.
W = B + 20" for pipe under 42" size.
W = B + 24" for pipe 42" size and over.

TYPICAL PIPE TRENCH & BEDDING



CONCRETE PIPE CRADLE

To be used only as directed by the Engineer.

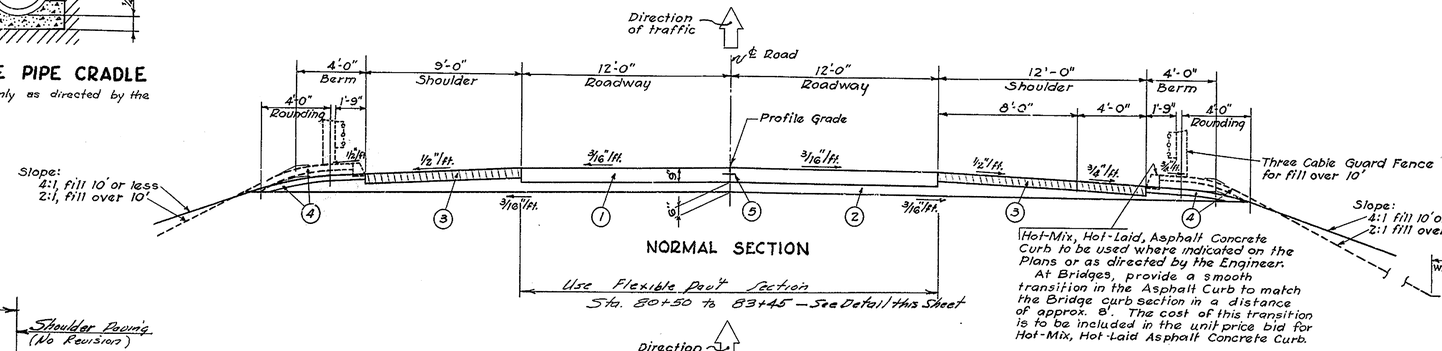


Use Slopes Shown in Typical Section Revised 1/30/63 - See Revision Notes

Detail of Flexible Pavement
Sta. 80+50 to Sta. 83+45

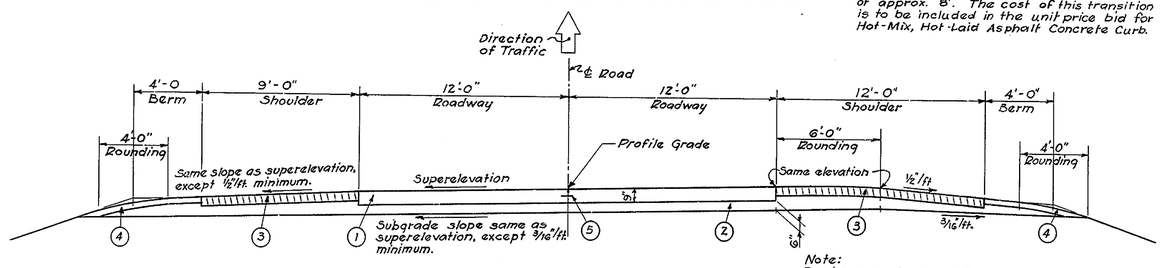
TYPICAL SECTIONS

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



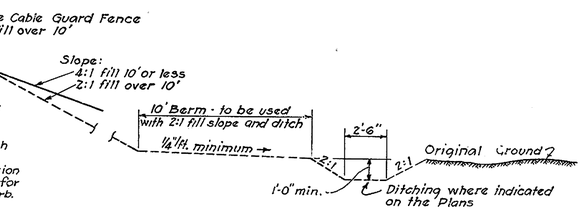
NORMAL SECTION

Hot-Mix, Hot-Laid, Asphalt Concrete Curb to be used where indicated on the Plans or as directed by the Engineer.
At Bridges, provide a smooth transition in the Asphalt Curb to match the Bridge curb section in a distance of approx. 8'. The cost of this transition is to be included in the unit price bid for Hot-Mix, Hot-Laid Asphalt Concrete Curb.

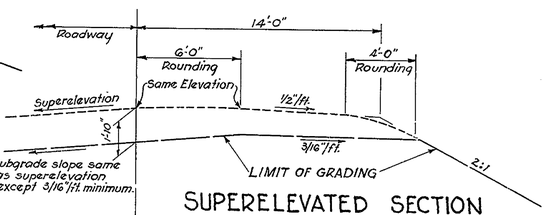


SUPERELEVATED SECTION

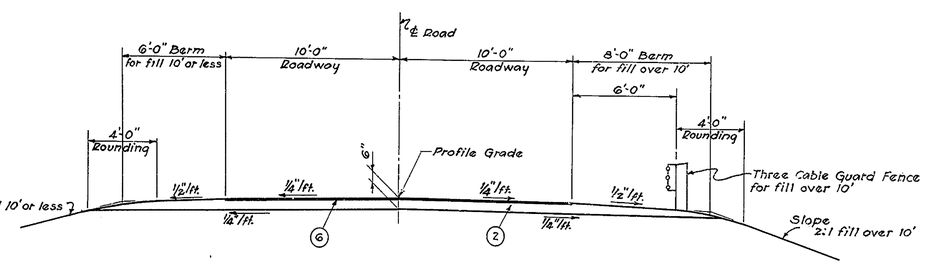
Note:
Requirements for Guard Fence, Asphalt Curb, and side slopes are to be the same as for the normal section.



TYPICAL LONGITUDINAL DITCH



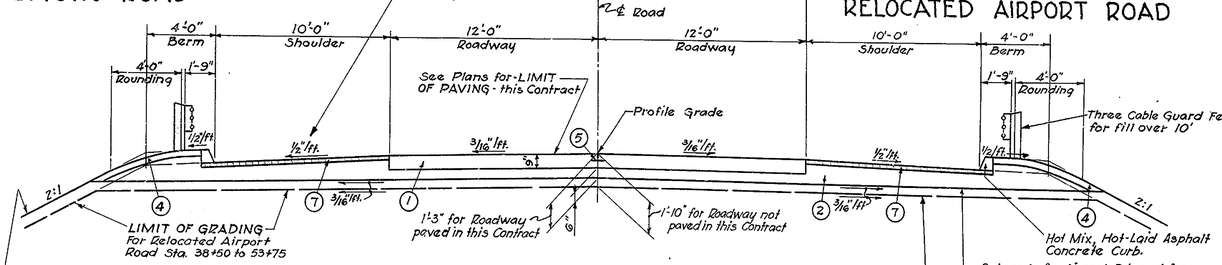
SUPERELEVATED SECTION RELOCATED AIRPORT ROAD



AIRPORT ROAD STA. 43+27 TO 48+68

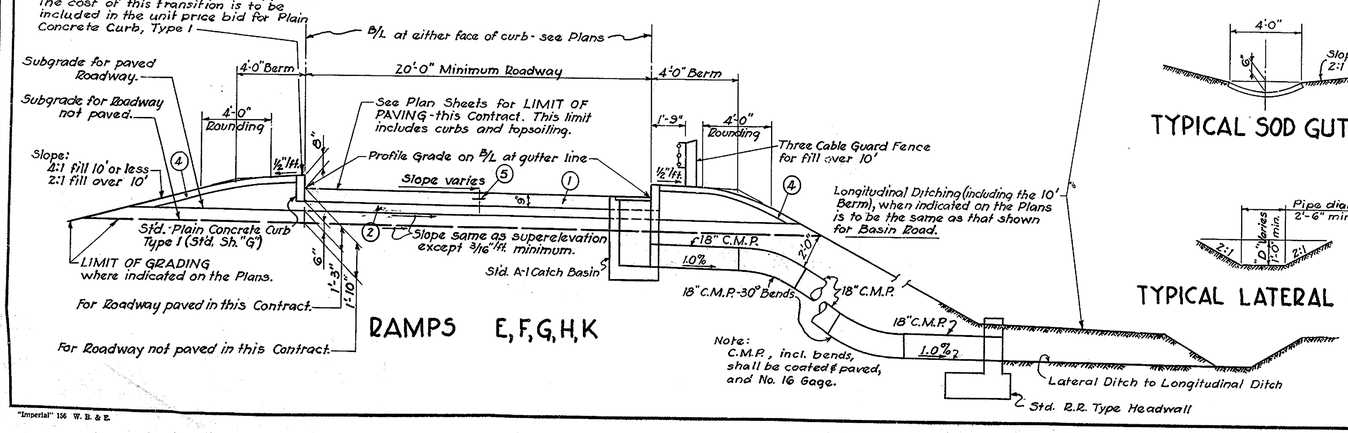
BASIN ROAD

For Superelevated Section, slope is same as superelevation, except 1/2"/ft. minimum.



RELOCATED AIRPORT ROAD, AND AIRPORT ROAD STA. 48+68 TO 52+90

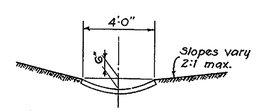
Note:
At Bridges, provide a smooth transition in the Concrete Curb to match the Bridge curb section in a distance of approx. 8'. The cost of this transition is to be included in the unit price bid for Plain Concrete Curb, Type I



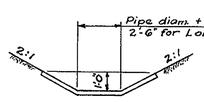
Longitudinal Ditching (including the 10' Berm), when indicated on the Plans is to be the same as that shown for Basin Road.

Note:
C.M.P., incl. bends, shall be coated & paved, and No. 16 Gage.

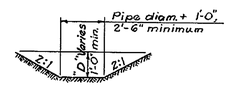
RAMPS E, F, G, H, K



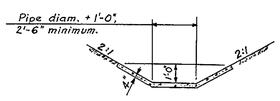
TYPICAL SOD GUTTER



TYPICAL SOD DITCH



TYPICAL LATERAL DITCH



CONC. GUTTER-TYPE 3

Legend

1. 9" Reinforced Concrete Pavement.
2. Select Borrow
3. 1 1/2" Hot Mix Asphaltic Concrete. 4 3/4" Binder Course - Special Mix.
4. 4" Topsoil, seed & mulch.
5. Dowelled Longitudinal Saw-Cut Joint.
6. Bituminous Surface Treatment.
7. 2" Hot Mix Asphaltic Concrete

Notes:
For General Notes see Sheet No. 8.
Finished cut and fill slopes, and ditches are to be seeded (including mulching) except where otherwise indicated on the Plans.
Pavement details shown on Standard Sheet "B" shall apply with the exception that the thickness of reinforced concrete pavement shall be 9".
Portions of Ramps and of Relocated Airport Rd. which are to be graded but not paved in this Contract will have a lower subgrade to provide for a deeper paving section. The transition in depth of subgrade shall be made in a distance of approximately ten feet beyond the limit of paving shown on the Plans.

DESIGNED AND DRAWN UNDER THE SUPERVISION OF A. B. Cullen Jr. 30 Apr. 62
ROAD DESIGN ENGINEER

CHECKED W. K. Upton
GRADE
BEARINGS
TIE POINTS
BENCH MARKS
EARTHWORK
DRAINAGE

REVISIONS
Align. Corr. Pavt. & Curb Pavt. Sta. 80+50 to 83+45
Sta. 83+45 Ramp to Sta. 83+45 - Change Pavt. Section
1/30/63 Sta. Ramp to Sta. 83+45 - Change Pavt. Section
Sta. Section this Sheet

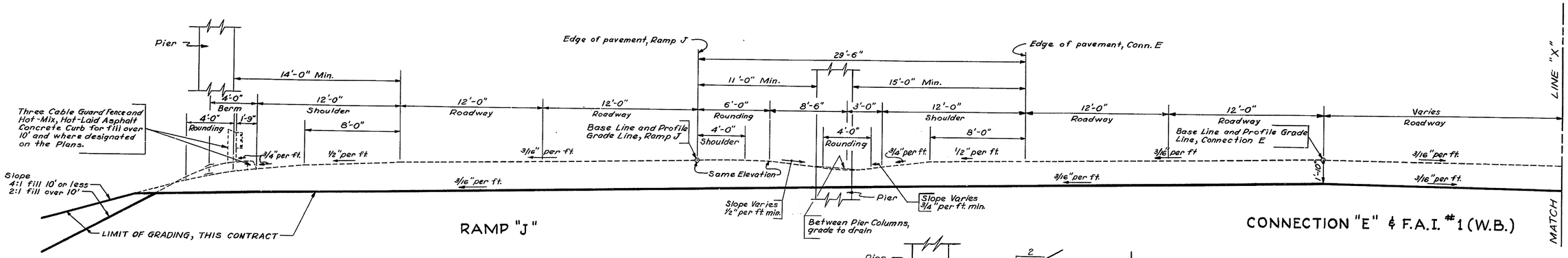
"Imperial" 156 W. B. & E.

COUNTY	CONTRACT	F.R.A. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE	I-1(21)-2	2	DEL.	I-95-1(19)		3	58

TYPICAL SECTIONS

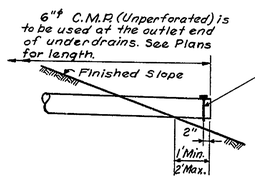
Scale: 1/4" = 1'-0"
Unless Noted

BASIN ROAD

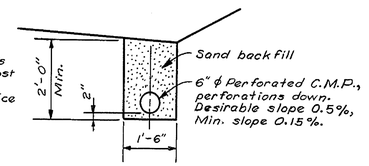


RAMP "J"

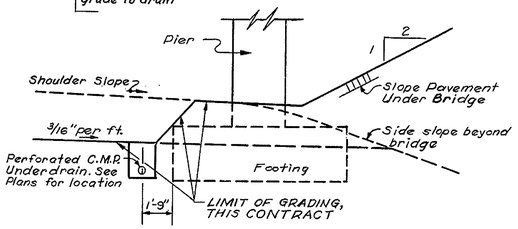
CONNECTION "E" & F.A.I. #1 (W.B.)



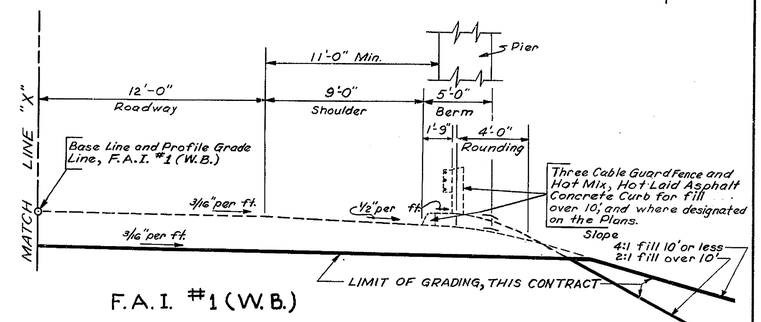
UNDERDRAIN OUTLET DETAIL
Scale: 1/2" = 1'-0"



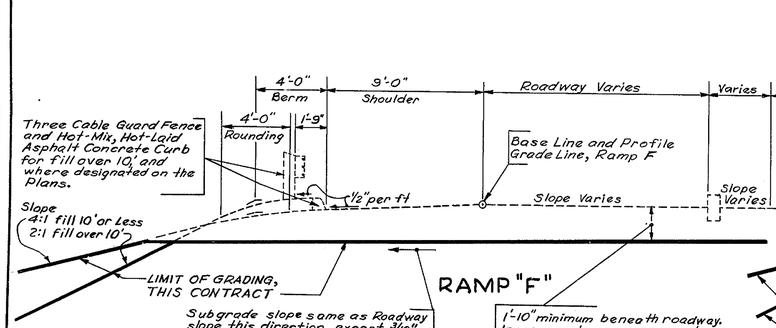
PERFORATED C.M.P. UNDERDRAIN
(Specification Item 31)
Scale: 1/2" = 1'-0"



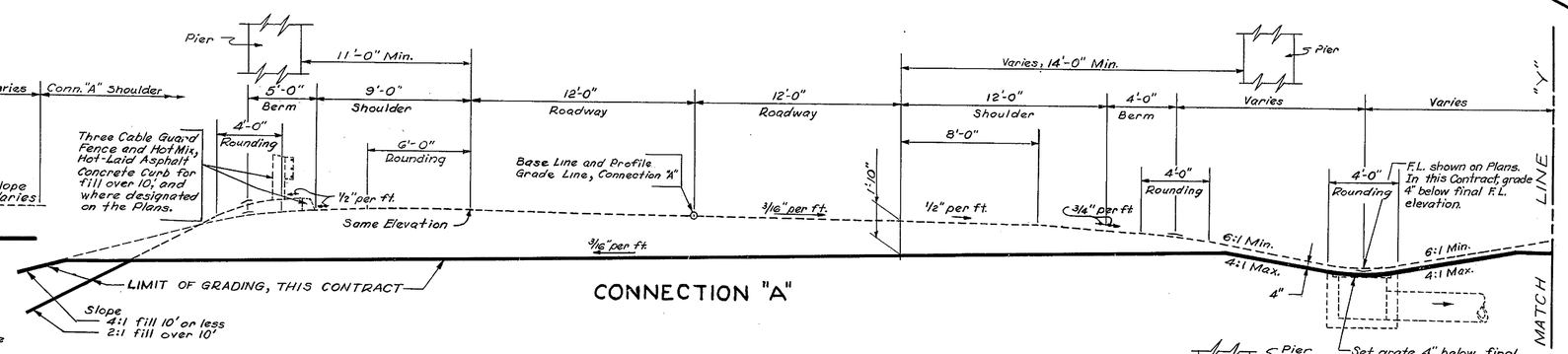
SUBGRADE TREATMENT AT EXTERIOR PIERS



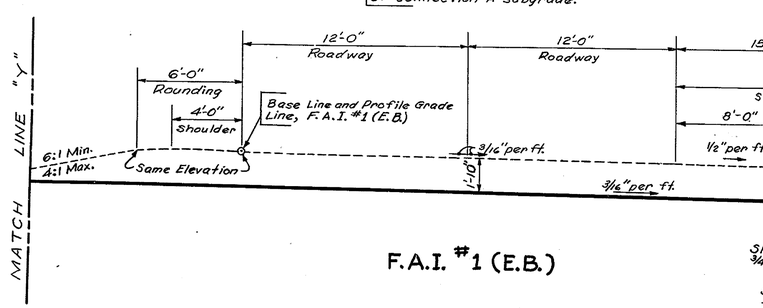
F.A.I. #1 (W.B.)



RAMP "F"



CONNECTION "A"



F.A.I. #1 (E.B.)

RAMP "C"

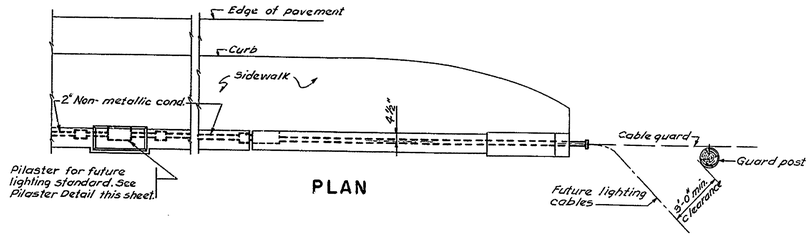
Notes:
For General Notes, see sheet no. 8
Finished slopes are to be seeded (including mulching) except where otherwise directed by the Engineer.

GRADE
BEARINGS
TIE POINTS
BENCH MARKS
EARTHWORK
DRAINAGE
W. A. Upton

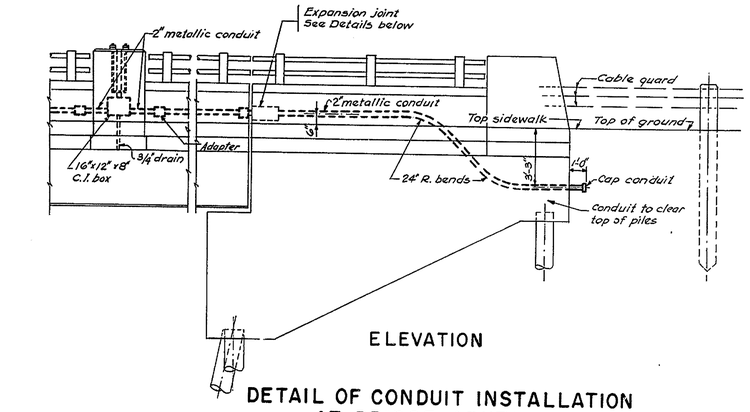
REVISIONS

"Imperial" 156 W. B. & E.

COUNTY	CONTRACT	F.A.A. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE	I-1(21)-2	2	DEL.	I-95-1(19)		4	58



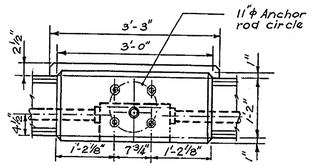
PLAN



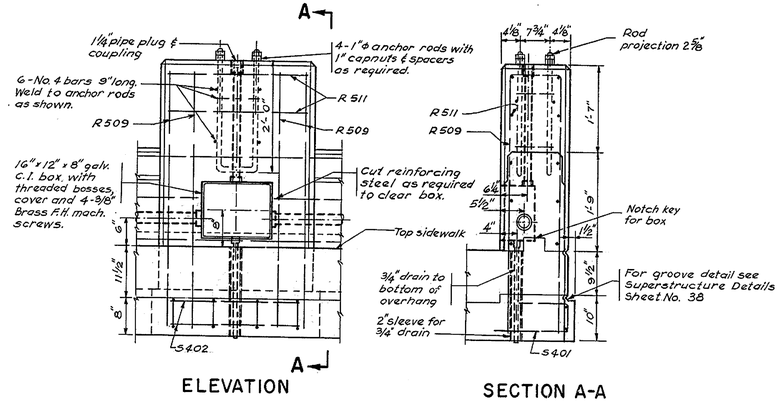
ELEVATION

DETAIL OF CONDUIT INSTALLATION AT BRIDGE ABUTMENTS

Scale: ¼"=1'-0"



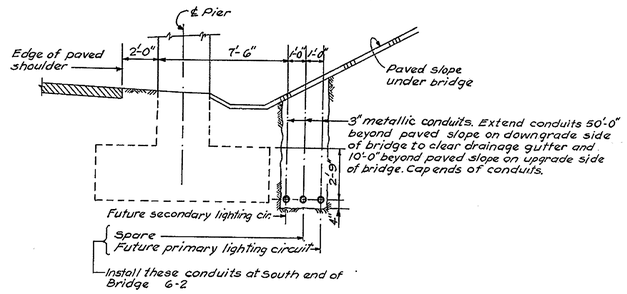
PLAN



ELEVATION SECTION A-A

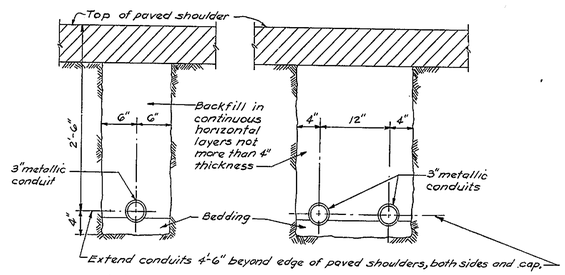
PILASTER DETAIL FOR FUTURE LIGHTING STANDARD

Scale: ¾"=1'-0"



CONDUITS CROSSING UNDER PAVED SLOPES

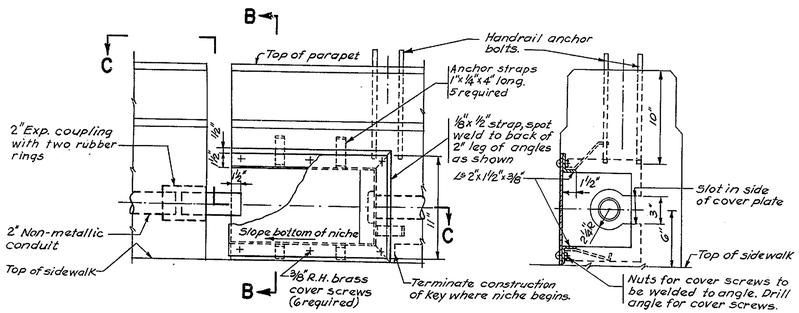
Scale: ¼"=1'-0"



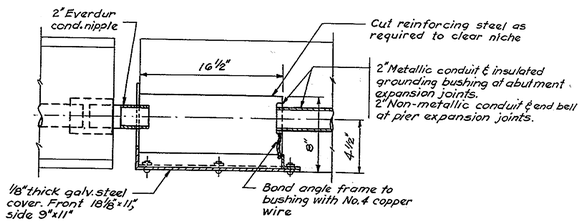
SINGLE DOUBLE

CONDUITS CROSSING UNDER PAVEMENT

Scale: 1"=1'-0"



ELEVATION SECTION B-B

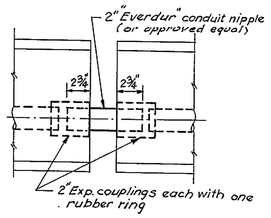


SECTION C-C

EXPANSION JOINT DETAIL

For joints at both abutments-Bridges G-2 and G-4.

Scale: 1½"=1'-0"



EXPANSION JOINT DETAIL

For joints at piers - Bridges G-2 and G-4.

Scale: 1½"=1'-0"

NOTES

1. For locations of pilasters on bridges and reinforcing bar schedule, see Superstructure-Deck Sheet, for the individual bridge.
2. For locations of conduit crossings under paved areas, see Sheets 9, 10 and 11.
3. For General Notes, see Sheet No. 8.

Approved: J. M. Fox
Bridge Engineer

DELAWARE STATE HIGHWAY DEPARTMENT

INTERSTATE ROUTE F.A.I.-1(21)
CHRISTINA RIVER INTERCHANGE

CONDUIT DETAILS

J. E. GREINER CO.
MORAN, PROCTOR, MUESER & RUTLEDGE
CONSULTING ENGINEERS

DESIGNED: W.E.D. CHECKED: W.J.M. DATE: 2-29-60
DRAWN: W.R.C. IN CHARGE: W.E.D. SCALE: AS NOTED

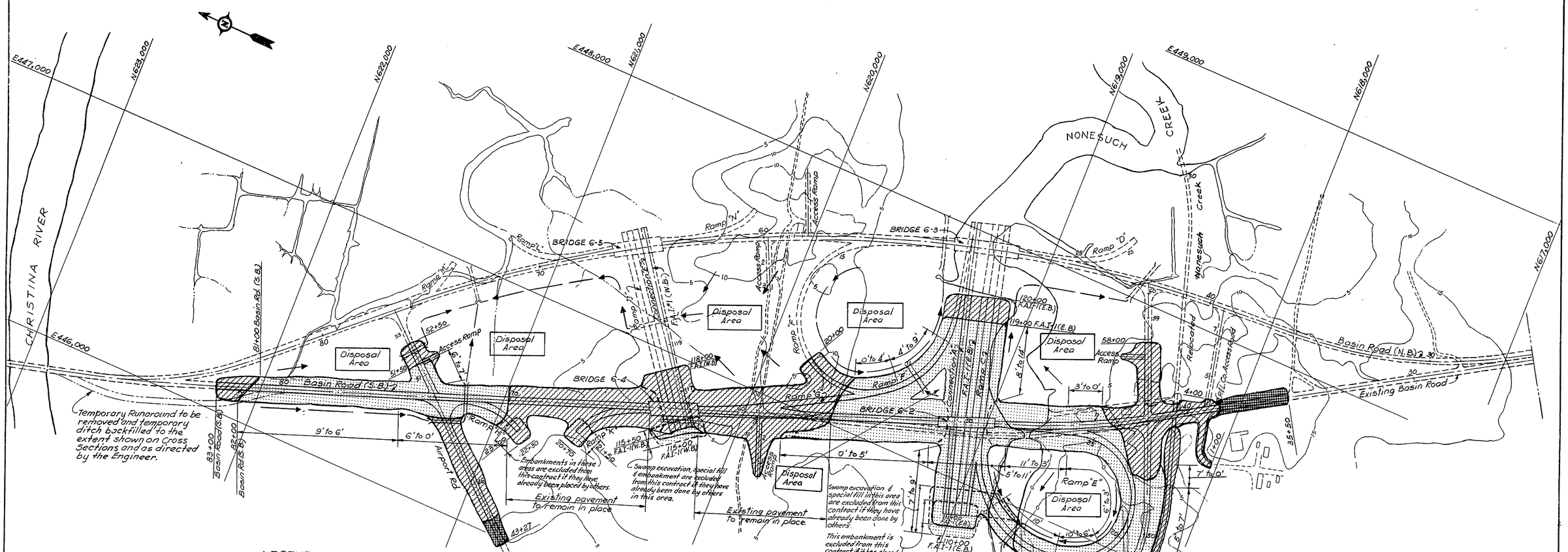
DETAILS — K. R. Lewis
REVISIONS
TIE POINTS
BENCH MARKS
EARTHWORK
DRAINAGE

REVISIONS

Vol. 3/24/62

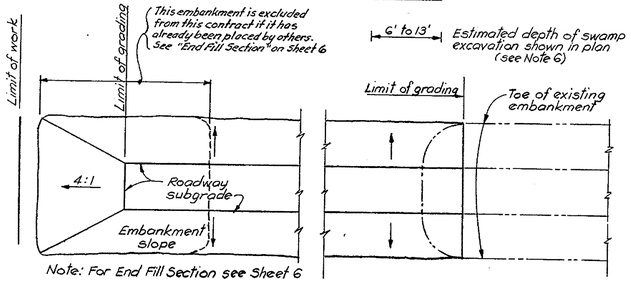
"Imperial" 156 W. B. & E.

COUNTY	CONTRACT	F.A.I. ROG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE	I-1(21)-2	2	DEL.	I-95-1(19)		5	58



LEGEND

- Excavation to Subgrade
- Swamp Excavation - Special Fill to Elev. +3.0 - Embankment.
- Embankment
- Channel Excavation
- 6' to 13' — Estimated depth of swamp excavation shown in plan (see Note 6)

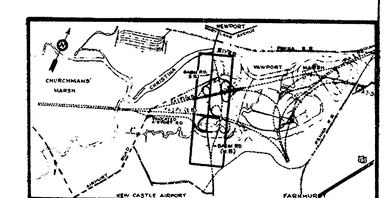


Note: For End Fill Section see Sheet 6

TYPICAL PLANS OF END FILL
No Scale

NOTES

1. For typical sections of earthwork see Sheet 6
2. The limits of earthwork shown are the intersection of the embankment slopes with the existing ground.
3. Grading limits for F.A.I.-1 and Ramps are at subgrade elevation with end fill slopes 4:1. Limit of work represents limit of swamp excavation in excavated areas or limit of clearing and grubbing in embankment fill areas. For limit of paving see Sheets 46 and 47.
4. Existing pavement shall remain within the limits shown or as directed by the Engineer. For construction plans of existing Basin Road see Cranston Heights-Basin Corner Resurfacing-Delaware State Highway Department Contract Number 962.
5. Nonesuch Creek waterway shall be maintained at all times.
6. The indicated depths of swamp excavation are approximate and intended only as information to the Contractor and are not guaranteed or made part of this Contract.
7. Limits of swamp excavation areas shown are approximate and shall be determined by the Engineer as the work progresses.
8. All unsuitable embankment foundation soils, as determined by the Engineer, shall be excavated in areas designated as Swamp Excavation.
9. In areas of Swamp Excavation all streams and local depressions adjacent to the roadway shall be filled in to the elevation of the adjacent ground surface for a distance of 20 ft. beyond the toe of the roadway embankment. With Special Fill placed as a pay item, as directed by the Engineer.
10. Check borings in Swamp Excavation and special fill areas will be made approximately every 150 ft. as located by the Engineer. Borings will be made prior to placement of embankment fill above elevation +3.0 in that vicinity.
11. Any surplus or unsuitable material which covers the special fill within the limits of the roadway shall be removed by the Contractor at his expense.
12. Topography shown on plan was compiled by photogrammetric methods and obtained from drawings prepared by Howard Needles, Tammen and Bergendoff, dated Aug. 19, 1957.
13. Material from swamp excavation shall be disposed of at areas designated as "Disposal Area" and in such areas as approved by the Engineer. Disposed material in the Disposal Areas shall be brought up to a mimimum elevation as to provide a drainage slope leading to drainage points as indicated on the drawings and directed by the Engineer in field. Maximum elevation of disposed material in the "Disposal Area" shall be 5 ft. below berm of adjacent roadway.
14. Areas between North and South Bound of Basin Road not used for disposal shall be graded as directed to provide for natural drainage.



DELAWARE
STATE HIGHWAY DEPARTMENT

INTERSTATE ROUTE F.A.I.-1(21)-2
CHRISTINA RIVER INTERCHANGE

BASIN ROAD-(S.B.)
EARTHWORK PLAN

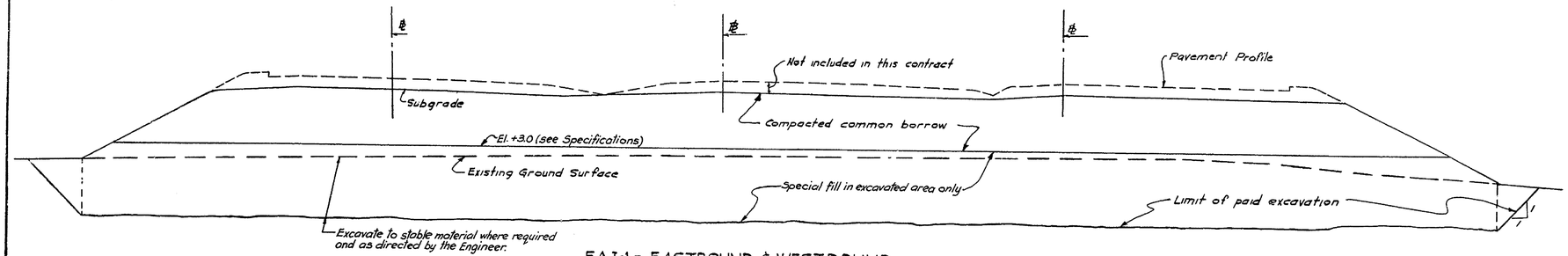
J. E. GREINER CO.
MORAN, PROCTOR, MUESER & RUTLEDGE
CONSULTING ENGINEERS

DESIGNED: R.C.H. CHECKED: R.C.H. DATE: 2-29-60
DRAWN: P.F. IN CHARGE: N.W.K. SCALE: 1"=200'

REVISIONS

GRADE
BEARINGS
TIE POINTS
BENCH MARKS
EARTHWORK
DRAINAGE

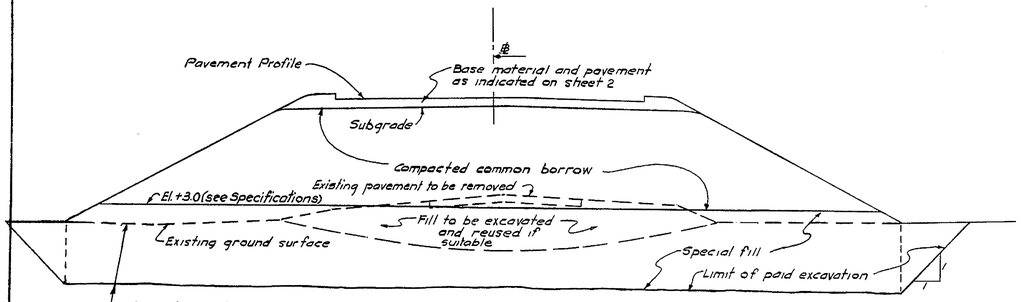
COUNTY	CONTRACT	P.R.A. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE	I-1(21)-2	2	DEL.	I-95-1(19)		6	58



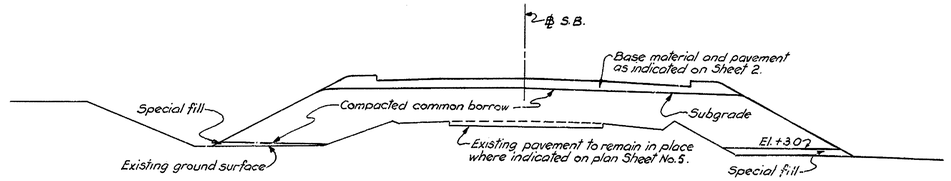
FAI-1- EASTBOUND & WESTBOUND
EXCAVATION - BACKFILL - EMBANKMENT

NOTES

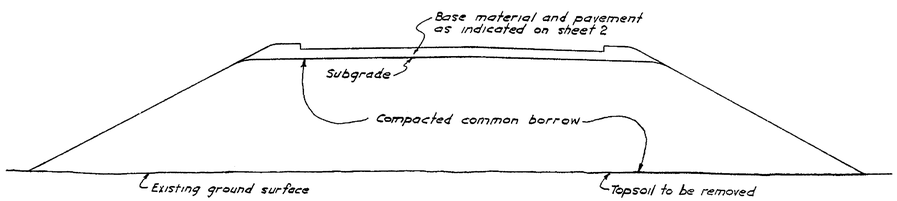
1. Areas for which each type of earthwork shall apply are as noted or as designated on Sheet 5 and as determined by the Engineer.
2. Depths of base material and pavement, dimensions of roadways, shoulders and berms are as shown on Typical Section Sheets 2 & 3.
3. For ditch details see Typical Section Sheet 2
4. For Typical section of Relocated Nonesuch Creek see Sheet 13
5. For embankment fill slope see Typical Section Sheets 2 & 3.
6. No payment will be made for common Borrow placed outside of the embankment limits as shown on the typical sections on sheets 2 & 3.



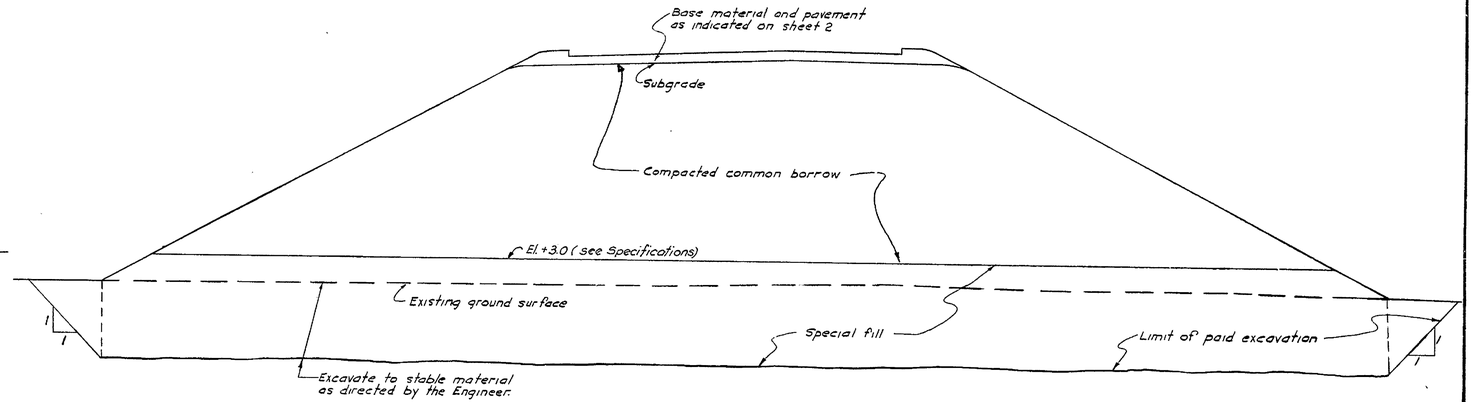
BASIN ROAD - SOUTHBOUND
(STA. 43+00 TO STA. 56+00 & STA. 70+00 TO STA. 83+00)



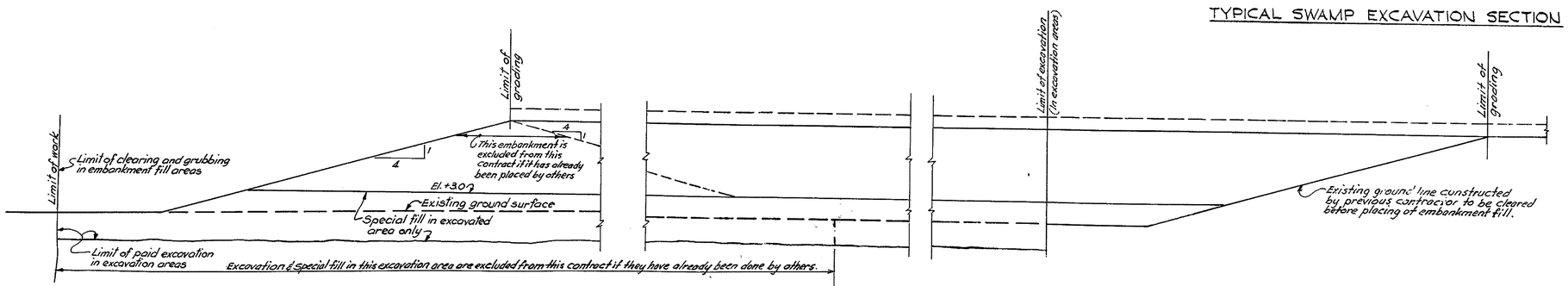
TYPICAL EMBANKMENT SECTION
OVER EXISTING BASIN ROAD
(STA. 35+50 TO STA. 43+00 & STA. 56+00 TO STA. 70+00)



TYPICAL EMBANKMENT SECTION



TYPICAL SWAMP EXCAVATION SECTION



END FILL SECTIONS

GRADE
BEARINGS
TIE POINTS
STRUCTURE
EARTHWORK
DRAINAGE

REVISIONS

DELAWARE
STATE HIGHWAY DEPARTMENT

INTERSTATE ROUTE F.A.I.-1 (21)-2
CHRISTINA RIVER INTERCHANGE

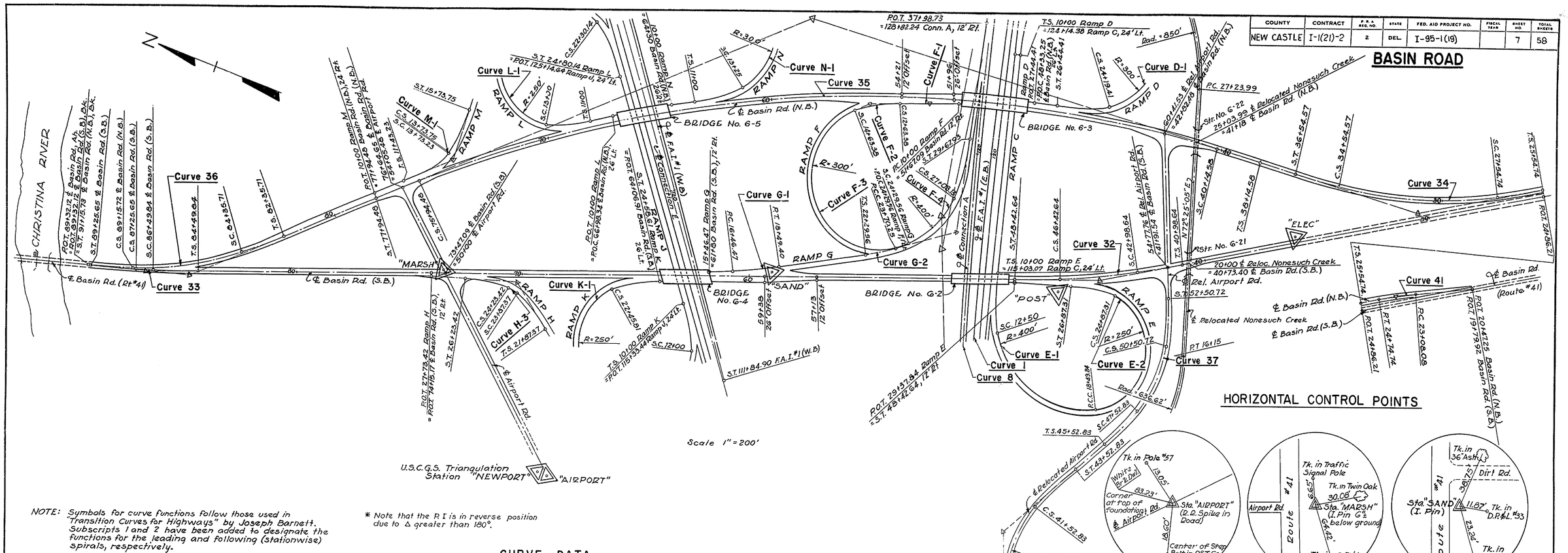
BASIN ROAD - (S.B.)
TYPICAL SECTIONS FOR EARTHWORK

J. E. GREINER CO.
MORAN, PROCTOR, MUESER & RUTLEDGE
CONSULTING ENGINEERS

DESIGNED: W.H.M. JR. CHECKED: W.H.M. JR. DATE: 2-29-60
DRAWN: W.R. IN CHARGE: W.H.M. SCALE: 1" = 10'

COUNTY	CONTRACT	F.B.A. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE	I-1(21)-2	2	DEL.	I-95-1(19)		7	58

BASIN ROAD



NOTE: Symbols for curve functions follow those used in "Transition Curves for Highways" by Joseph Barnett. Subscripts 1 and 2 have been added to designate the functions for the leading and following (stationwise) spirals, respectively.

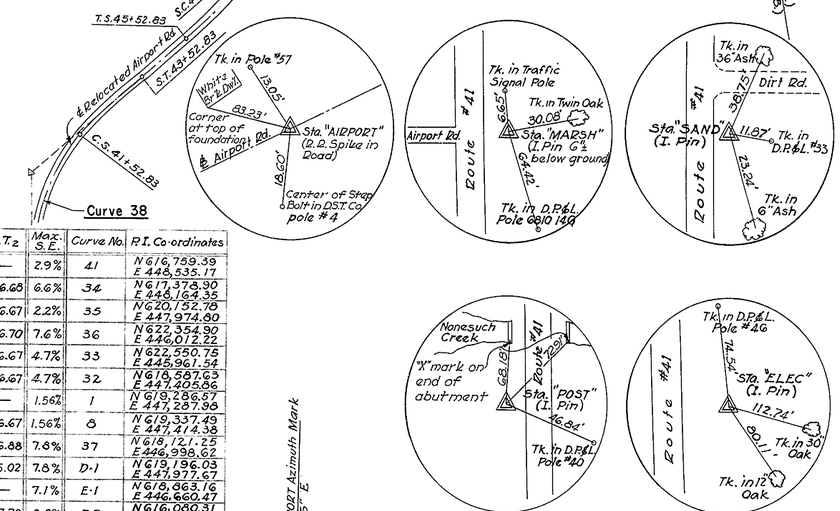
* Note that the R.I is in reverse position due to Δ greater than 180°.

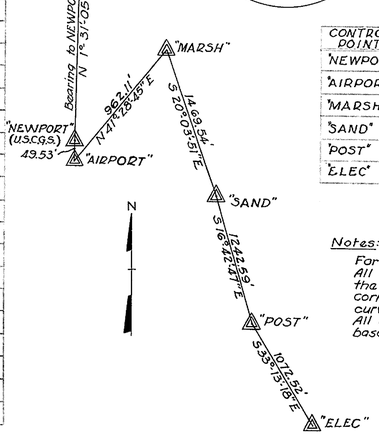
CURVE DATA

Location	Curve No.	Δ	T_{S1}	T_{S2}	E_S	Δ_C	D_C	R_C	L_C	T_C	E_C	L_{S1}	θ_{S1}	P_1	k_1	x_{C1}	y_{C1}	$L.T._1$	$S.T._1$	L_{S2}	θ_{S2}	P_2	k_2	x_{C2}	y_{C2}	$L.T._2$	$S.T._2$	Max. S.E.
Basin Rd. (N.B.)	41	5°00'00"	—	—	—	5°00'00"	3°00'	1,909.86	166.67	83.39	1.82	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2.9%
"	34	26°59'40.9"	558.62	558.62	55.14	20°59'40.9"	3°00'	1,909.86	699.82	353.88	32.51	200	3°00'	0.87	99.99	199.95	3.49	133.35	66.68	200	3°00'	0.87	99.99	199.95	3.49	133.35	66.68	6.6%
"	35	37°47'56.5"	2061.72	2061.72	326.80	35°47'56.5"	1°00'	5,729.58	3579.90	1850.55	291.44	200	1°00'	0.29	100.00	199.99	1.16	133.34	66.67	200	1°00'	0.29	100.00	199.99	1.16	133.34	66.67	2.2%
"	36	27°12'01.6"	446.80	446.80	42.52	19°12'01.6"	4°00'	1,432.39	480.01	242.28	20.35	200	4°00'	1.16	99.98	199.90	4.65	133.37	66.70	200	4°00'	1.16	99.98	199.90	4.65	133.37	66.70	7.6%
Basin Rd. (S.B.)	33	5°30'58"	238.03	238.03	3.90	1°30'58"	2°00'	2,864.79	75.81	37.90	0.25	200	2°00'	0.58	100.00	199.98	2.33	133.34	66.67	200	2°00'	0.58	100.00	199.98	2.33	133.34	66.67	4.7%
"	32	10°52'48"	372.87	372.87	13.55	6°52'48"	2°00'	2,864.79	344.00	172.21	5.17	200	2°00'	0.58	100.00	199.98	2.33	133.34	66.67	200	2°00'	0.58	100.00	199.98	2.33	133.34	66.67	4.7%
F.A.I. #1 (E.B.)	1	14°12'51.5"	2,957.24	2,857.83	—	13°57'51.5"	0°15'	22,918.31	5,585.72	2,806.77	171.23	200	0°15'	0.07	100.00	200.00	0.29	133.33	66.67	—	—	—	—	—	—	—	—	—	1.56%
Connection A	8	12°30'00"	2,609.97	2,609.97	137.11	12°00'00"	0°15'	22,918.31	4,800.00	2,408.81	126.24	200	0°15'	0.07	100.00	200.00	0.29	133.33	66.67	200	0°15'	0.07	100.00	200.00	0.29	133.33	66.67	1.56%
Relocated Airport Rd.	37	51°52'03.8"	368.83	368.83	64.95	31°01'58.4"	10°25'02.7"	550.00	297.89	152.70	20.80	200	10°25'02.7"	3.03	99.89	199.34	12.09	133.56	66.88	200	10°25'02.7"	3.03	99.89	199.34	12.09	133.56	66.88	7.8%
Ramp D	D-1	271°05'12.4"	*189.25	*189.25	*130.10	228°06'53.8"	19°05'54.9"	300.00	1,194.41	*672.00	*1035.92	225	21°29'09.3"	7.00	111.97	221.86	27.84	151.12	76.02	225	21°29'09.3"	7.00	111.97	221.86	27.84	151.12	76.02	7.8%
Ramp E	E-1	103°49'30.6"	636.56	517.05	—	85°55'12.9"	14°19'26.2"	400.00	599.84	372.49	146.58	250	17°54'17.8"	6.49	124.59	247.57	25.86	167.53	84.12	—	—	—	—	—	—	—	—	7.1%
Ramp E	E-2	169°00'57.7"	2,634.95	2,733.78	—	146°05'51.7"	22°55'05.9"	250.00	637.47	820.21	607.47	—	—	—	—	—	—	—	—	200	22°55'05.9"	6.63	99.47	196.82	26.36	134.47	67.70	8.0%
Ramp F	F-1	2°38'01.8"	—	—	—	2°38'01.8"	1°00'	5,729.58	263.38	131.71	1.51	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2.2%
"	F-2	20°05'54.9"	—	—	Spiral between Curves F-1 & F-3			—	—			200	18°05'54.9"	5.24	—	—	—	131.24	70.83	—	—	—	—	—	—	—	—	↓
"	F-3	173°11'55.7"	—	—	—	173°11'55.7"	19°05'54.9"	300.00	906.87	5,048.68	4,757.58	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	↑
"	F-4	67°00'17.5"	272.39	391.25	—	48°23'53"	14°19'26.2"	400.00	337.88	179.76	38.54	—	—	—	—	—	—	—	—	259.80	18°36'24.5"	7.00	129.44	257.07	27.91	174.17	87.48	7.1%
Ramp G	G-1	6°05'15.9"	—	—	—	6°05'15.9"	3°00'	1,909.86	202.93	101.56	2.70	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ramp H	H-3	54°05'53.3"	230.50	230.50	38.15	8°15'41.5"	22°55'05.9"	250.00	36.05	18.06	0.65	200	22°55'05.9"	6.63	99.47	196.82	26.36	134.47	67.70	200	22°55'05.9"	6.63	99.47	196.82	26.36	134.47	67.70	8.0%
Ramp K	K-1	286°59'05.9"	* 91.39	* 83.92	—	239°40'53.7"	22°55'05.9"	250.00	1,045.81	*435.80	*752.42	200	22°55'05.9"	6.63	99.47	196.82	26.36	134.47	67.70	212.80	24°23'06.3"	7.50	105.76	208.98	29.80	143.24	72.18	8.0%
Ramp L	L-1	264°44'16.6"	*185.59	*157.72	—	213°10'18.3"	22°55'05.9"	250.00	930.14	*839.36	*1125.80	200	22°55'05.9"	6.63	99.47	196.82	26.36	134.47	67.70	250	28°36'24"	10.32	123.97	243.82	40.93	168.90	85.37	8.0%
Ramp M	M-1	49°23'30.9"	230.39	220.28	—	0°07'03.2"	22°55'05.9"	250.00	0.51	0.26	0.00	230	26°21'21.8"	8.75	114.19	225.18	34.74	155.07	78.25	200	22°55'05.9"	6.63	99.47	196.82	26.36	134.47	67.70	8.0%
Ramp N	N-1	149°10'23.2"	1,222.64	1,210.70	—	108°35'19"	19°05'54.9"	300.00	568.57	417.41	214.03	225	21°29'09.3"	7.00	111.97	221.86	27.84	151.12	76.02	200	19°05'54.9"	5.53	99.63	197.79	22.05	134.12	67.38	7.8%
Ramp G	G-2	14°17'17.6"	—	—	—	0°	14°17'17.6"	401.00	0.00	—	—	200	14°17'17.6"	4.15	99.79	198.76	16.55	133.77	67.06	—	—	—	—	—	—	—	—	7.1%
Relocated Airport Rd.	38	50°26'33.8"	360.38	360.38	61.30	29°36'28.4"	10°25'02.7"	550.00	284.22	145.36	18.88	200	10°25'02.7"	3.03	99.89	199.34	12.09	133.56	66.88	200	10°25'02.7"	3.03	99.89	199.34	12.09	133.56	66.88	7.8%

Curve No.	P.I. Co-ordinates
41	N 616,759.39 E 448,535.17
34	N 617,374.90 E 448,164.35
35	N 620,152.78 E 447,974.60
36	N 622,354.90 E 446,012.22
33	N 622,550.75 E 445,961.54
32	N 618,587.63 E 447,405.86
1	N 619,286.67 E 447,257.98
8	N 619,337.49 E 447,414.38
37	N 618,121.25 E 446,998.62
D-1	N 619,196.03 E 447,977.67
E-1	N 618,863.16 E 446,660.47
E-2	N 616,080.31 E 448,140.62
F-1	N 619,547.14 E 447,833.17
F-2	N 619,791.62 E 447,736.34
F-3	N 623,613.74 E 444,330.35
F-4	N 619,249.66 E 447,315.07
G-1	N 620,013.06 E 446,910.37
H-3	N 620,987.04 E 446,497.46
K-1	N 620,319.92 E 446,760.59
L-1	N 620,739.13 E 447,331.48
M-1	N 621,428.98 E 446,869.57
N-1	N 619,444.82 E 445,085.36
G-2	N 619,475.34 E 447,208.82
38	N 618,579.53 E 446,190.23

HORIZONTAL CONTROL POINTS





CONTROL POINT	CO-ORDINATES	
"NEWPORT"	N 620,638.36	E 445,801.18
"AIRPORT"	N 620,588.85	E 445,799.87
"MARSH"	N 621,309.66	E 446,437.12
"SAND"	N 619,929.31	E 446,841.28
"POST"	N 618,739.21	E 447,298.62
"ELEC"	N 617,841.99	E 447,886.23

Notes:

For General Notes, see sheet no. 8
All curve P.I. numbers shown on the detail construction plans correspond with their respective curve numbers.
All curve and spiral properties are based on the arc definition.

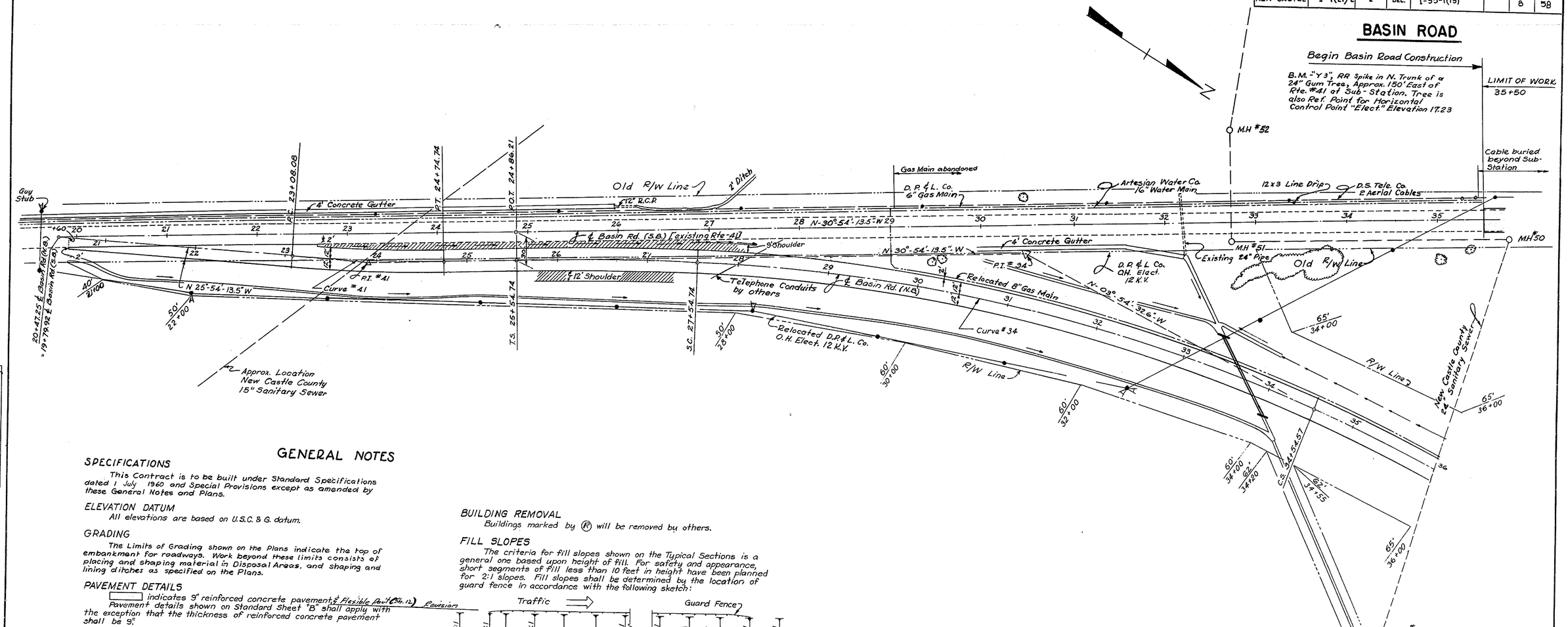
BEARINGS W.A. Upton
TIE POINTS W.A. Upton
BENCH MARKS
STRUCTURE
DRAINAGE

REVISIONS

"Imperial" 156 W. B. & E.

COUNTY	CONTRACT	P. R. & SEC. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO	TOTAL SHEETS
NEW CASTLE	I-1(21)-2	2	DEL.	I-95-1(19)		8	58

BASIN ROAD



GENERAL NOTES

SPECIFICATIONS

This Contract is to be built under Standard Specifications dated 1 July 1960 and Special Provisions except as amended by these General Notes and Plans.

ELEVATION DATUM

All elevations are based on U.S.C. & G. datum.

GRADING

The Limits of Grading shown on the Plans indicate the top of embankment for roadways. Work beyond these limits consists of placing and shaping material in Disposal Areas, and shaping and lining ditches as specified on the Plans.

PAVEMENT DETAILS

▭ indicates 9" reinforced concrete pavement & Flexible Pavt. (Sh. 12) Revision

Pavement details shown on Standard Sheet "B" shall apply with the exception that the thickness of reinforced concrete pavement shall be 9".

SUPERELEVATION

Superelevation of curves shall be developed by rotating the roadway (s) about the ℄ (or B/L). The stages in the transition from normal section to full superelevation are indicated on the Plans by cross-slopes, shown thus: 2%. Breaks in cross-slope which do not occur on a ℄ or a B/L are designated on the Plans as Ridge Lines.

Subgrade cross-slope shall not be less than 3/16 per foot to provide drainage for the subbase. In a curve transition where the pavement cross-slope becomes less than 3/16 per foot, the 3/16 per foot minimum cross-slope of the subgrade shall be maintained until abrupt reversal of the subgrade cross-slope can be accomplished.

Normal shoulder cross-slopes shall be maintained on the outside of curve transitions until the adjacent pavement cross-slope becomes level.

GUARD FENCE REMOVAL

Existing Guard Fence along Basin Road is to be removed and stored at the location designated by the Engineer. Payment for removal and storage of Guard Fence will not be made separately, but will be included in the cost of excavation.

SEEDING

Waste areas and other disturbed areas within the limits of construction shall be seeded (including mulching) as directed by the Engineer.

UTILITIES

All work required for removing and relocating electric and telephone facilities will be done by the respective owners. Changes in these utilities have been noted on the Plans for information.

(X) indicates utility poles which are to be removed by Others.

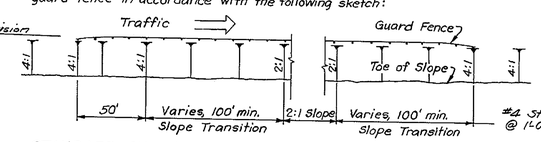
Portions of original underground utilities along existing Basin Road have been abandoned. These consist of Delaware Power and Light Co. 6" gas main, Artesian Water Co. 16" main and Diamond State Telephone Co. cable. The cost of removal and disposal of underground utilities remaining in excavation areas shall be included in the unit price bid for swamp excavation.

BUILDING REMOVAL

Buildings marked by (R) will be removed by others.

FILL SLOPES

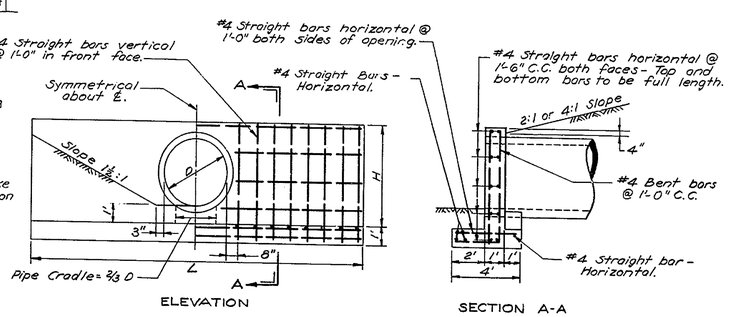
The criteria for fill slopes shown on the Typical Sections is a general one based upon height of fill. For safety and appearance, short segments of fill less than 10 feet in height have been planned for 2:1 slopes. Fill slopes shall be determined by the location of guard fence in accordance with the following sketch:



STANDARD SHEETS

Standard sheets are included in this Contract for the following construction items:

Standard Sheet	Items
B	Pavement Details
DT	Signs and Barricades
G	Concrete Curb
H	Guard Fence, Asphalt Curb, Concrete Intake Apron, Type 2 and Downspout Splash Apron
M, M-M, W, Y	Catch Basins
Q	Headwalls
K	



Pipe Size D	H	L	Conc.-C.Y.	Steel-Lbs.
48"	6'-0"	17'-0"	5.7	330
60"	7'-0"	21'-0"	7.6	430

Note:
3/4" chamfer on edges. Cover over reinforcing bars shall be 2". Quantities are for one headwall.

STRAIGHT HEADWALL FOR 48" & 60" PIPES

CHECKED
GRADE
BEARINGS
TIE POINTS
BENCH MARKS W.H. Upton
EARTHWORK
DRAINAGE R. P. Boochardig

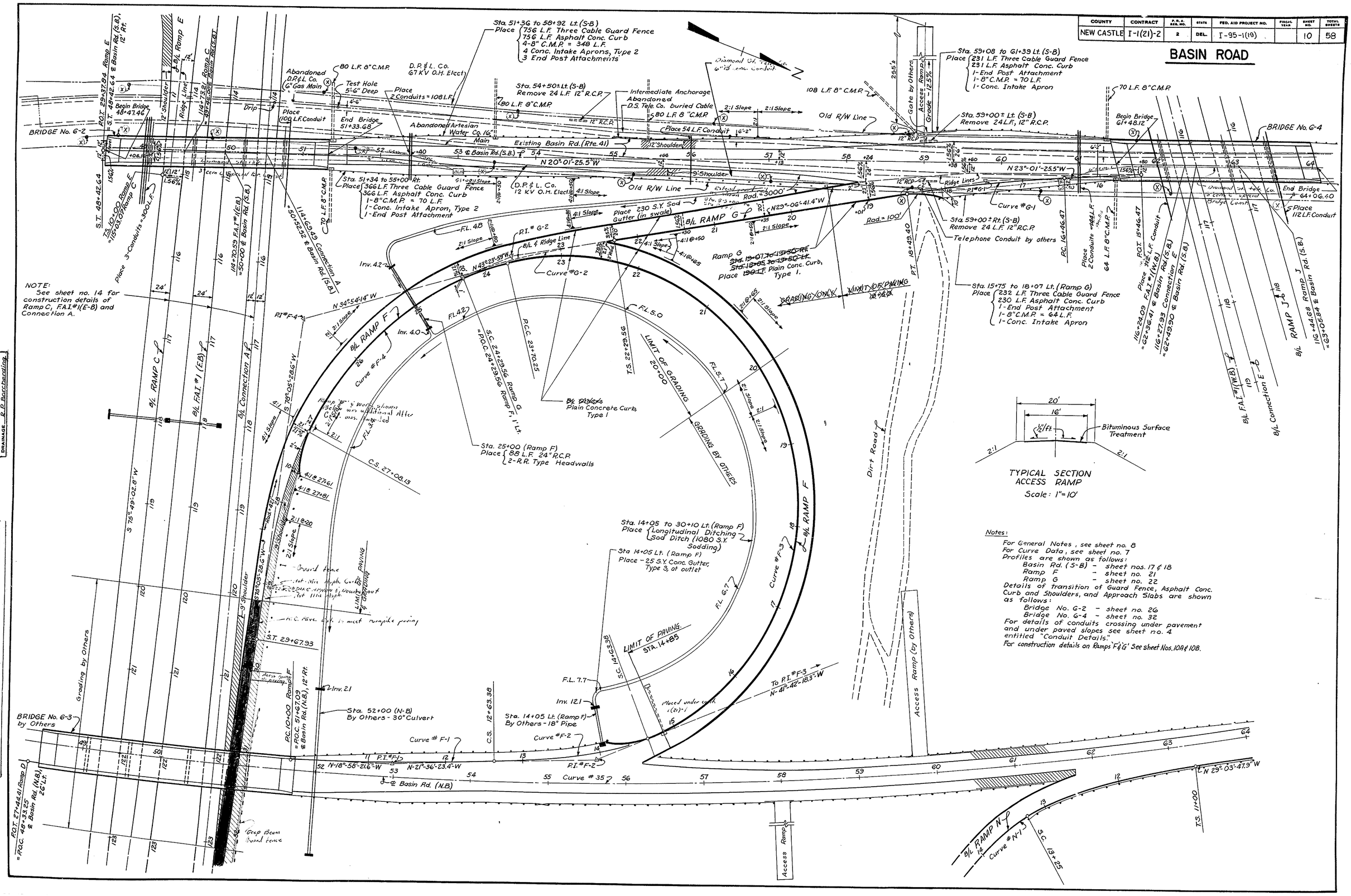
REVISIONS
Flexible Pavt. & General Lt's. 8/14/64

"Imperial" 150 W. B. & E.

10-4
COUNTY: NEW CASTLE | CONTRACT: I-1(21)-2 | STATE: DEL. | FED. AID PROJECT NO.: I-95-1(19) | SHEET NO.: 9 | TOTAL SHEETS: 58
BASIN ROAD
B.M. - "Y4" CHISELED "X" ON N. END OF W. ABUT. OF NONESUCH CREEK BRIDGE. ELEVATION 6.25.
Provide two End Post Attachments for Intermediate Anchorage for continuation of Guard Fence.
RAMP "E" Sta. 24+87.31 to Sta. 25+47 Lt. Sta. 24+87.31 to Sta. 25+41.5 Rt. Place - 119 L.F. Plain Conc. Curb, Type 1
Sta. 44+10± to 50+10± Lt. (S.B.) (W. Side existing road) Remove 570 L.F. Guard Fence
Sta. 53+35 Reloc. Airport Rd. Place {108 L.F. - 18" R.C.P. 2-RR. Type Headwalls
Channel Relocation continued on sheet no. 13
Sta. 40+00 Lt. (S.B.) to 53+75 (Reloc. Airport) Place {230 L.F. Three Cable Guard Fence 5-End Post Attachments 1-8" C.M.P. = 25 L.F. 1-Concrete Intake Apron, Type 2 230 L.F. Asphalt Concrete Curb
Sta. 41+10± Lt. (S.B.) Remove {18± L.F., 15" C.M.P. 2-Headwalls
Sta. 39+18 to 39+62 Lt. (S.B.) Place {44 L.F. - 18" R.C.P. 2-RR. Type Headwalls
Sta. 38+80 to 39+16 Lt. (S.B.) Sta. 39+62 to 40+75 Lt. (S.B.) Longitudinal Ditching
LIMIT OF WORK 35+50
Meet existing pavement.
Continue 6" thick Basin Rd. shldr. to Sta. 53+75 Relocated Airport Rd.
Sta. 36+00± Rt. (S.B.) Remove 24 L.F., 12" R.C.P.
Sta. 40+00 to 41+65 Rt (S.B.) Place {165 L.F. Three Cable Guard Fence 2-End Post Attachments 165 L.F. Asphalt Concrete Curb 1-8" C.M.P. = 22 L.F. 1-Concrete Intake Apron, Type 2
TYPICAL SECTION ACCESS ROAD (D.P. & L. CO.) Scale: 1" = 10'
Sta. 53+75 Lt. (Reloc. Airport Rd.) to Sta. 44+40 Lt. (S.B.) Place {265 L.F. Three Cable Guard Fence 5-End Post Attachments 1-8" C.M.P. = 34 L.F. 1-Conc. Intake Apron, Type 2 270 L.F. Asphalt Conc. Curb
Sta. 42+00± Rt. (S.B.) Remove 24 L.F.-12" R.C.P.
Sta. 42+12 to 48+46 Rt. (S.B.) Place {634 L.F. Three Cable Guard Fence 3-End Post Attachments 634 L.F. Asphalt Concrete Curb 2-8" C.M.P. = 92 L.F. 2-Concrete Intake Aprons, Type 2
The diamond St. Tele. Co. 6'B' Conc. Conduit
Remove existing Nonesuch Creek Bridge. See Special Provisions.
℄ Temporary Construction Channel by Others. After completion of Structure No. 6-21 and Nonesuch Creek Channel Relocation, the Temporary Construction Channel is to be backfilled to original ground level, with disposal material, except under relocated Airport Road where Special Fill will be used. No payment will be made for this work except for fill under Airport Rd.
Sta. 45+60± to 51+10± Lt. (S.B.) (E. side of existing road) Remove 520 L.F. Guard Fence.
Sta. 25+45 Lt. (Ramp E) to 48+47 Lt. (S.B.) Place {397 L.F. Three Cable Guard Fence 1-End Post Attachment 393 L.F. Asphalt Concrete Curb 1-8" C.M.P. = 42 L.F. 1-Concrete Intake Apron, Type 2
Existing Basin Road (Route 41)
Artesian Water Co. - 16" main (abandoned)
Sta. 54+98 to 57+42 Rt. (Reloc. Airport Rd.) Place {244 L.F. Three Cable Guard Fence 2-End Post Attachments 244 L.F. Asphalt Concrete Curb 1-10" C.M.P. = 24 L.F. 1-Concrete Intake Apron, Type 2
Sta. 55+04 to 57+42 Lt. (Reloc. Airport Rd.) Place {238 L.F. Three Cable Guard Fence 2-End Post Attachments 238 L.F. Asphalt Concrete Curb 1-10" C.M.P. = 26 L.F. 1-Concrete Intake Apron, Type 2
Sta. 57+58 to 59+37 Rt. (Reloc. Airport Rd.) Place {179 L.F. Three Cable Guard Fence 1-End Post Attachment 147 L.F. Asphalt Concrete Curb (57+58 to 59+05) 1-8" C.M.P. = 36 L.F. 1-Concrete Intake Apron, Type 2
Sta. 57+58 to 59+74 Lt. (Reloc. Airport Rd.) Place {216 L.F. Three Cable Guard Fence 1-End Post Attachment 147 L.F. Asphalt Concrete Curb (57+58 to 59+05) 1-8" C.M.P. = 38 L.F. 1-Concrete Intake Apron, Type 2
Sta. 43+60 to 48+50 Lt. (N.B.) Place {Longitudinal Ditching 390 S.Y. Sod Ditch
Sta. 43+30 (N.B.) 30" Culvert by Others
For continuation of ditch see sheet no. 14
End Post Attachment provided by Others
Placed under Cont. I-21-1
(Structure No. 6-22) By Others
25+03.99 ℄ Reloc. Nonesuch Creek = 41+18 ℄ Basin Road (N.B.)
60+41.53 ℄ Reloc. Airport Rd. = 42+82.48 ℄ Basin Rd. (N.B.)
B/L RAMP D
Ditching by Others
Ditching & Culvert by Others
Notes:
For General Notes, see sheet no. 8
For Curve Data, see sheet no. 7
Profiles are shown as follows:
Basin Road (S.B.) - sheet no. 17
Ramp E - sheet no. 20
Relocated Airport Road - sheet no. 22
For Typical Section of Access Ramp, see sheet no. 10
For details of conduits crossing under pavement and under paved slopes see sheet no. 4 entitled "Conduit Details."
4" P.C.C. Gutter
Hot-mix Asph.
Bit. Sur. Tr.
REVISIONS
11 Oct. '62 - Ramp E Paving included in this Contract. L.J.S.
3/30/62 - Note Nonesuch Creek Bridge V.J.
CHECKED: GRADE W.K. Upton; BENCH MARKS W.K. Upton; DRAINAGE R.P. Borcharding

COUNTY	CONTRACT	P.R.A. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE	I-1(21)-2	2	DEL.	I-95-1(19)		10	58

BASIN ROAD



NOTE:
See sheet no. 14 for construction details of Ramp C, F.A.I.#1(E-B) and Connection A.

Notes:

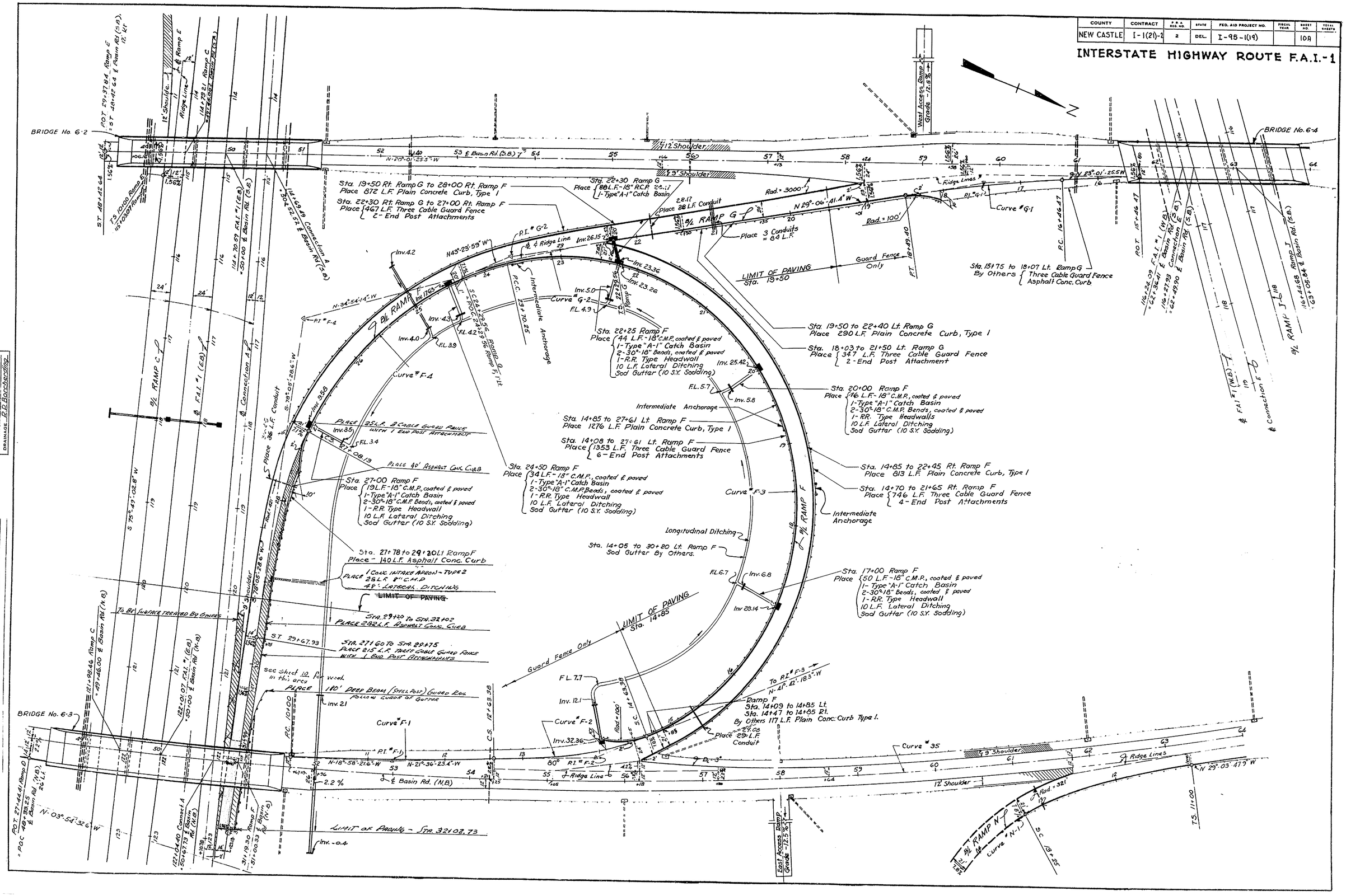
For General Notes, see sheet no. 8
For Curve Data, see sheet no. 7
Profiles are shown as follows:
Basin Rd. (S-B) - sheet nos. 17 & 18
Ramp F - sheet no. 21
Ramp G - sheet no. 22
Details of transition of Guard Fence, Asphalt Conc. Curb and Shoulders, and Approach Slabs are shown as follows:
Bridge No. G-2 - sheet no. 26
Bridge No. G-4 - sheet no. 32
For details of conduits crossing under pavement and under paved slopes see sheet no. 4 entitled "Conduit Details."
For construction details on Ramps 'F' & 'G' See sheet Nos. 10A & 10B.

CHECKED
GRADE
BEARINGS W.K. Upton
TIE POINTS
BENCH MARKS
EARTHWORK
DRAINAGE R.P. Borcherding

REVISIONS
11 Oct. 62 - Ramp 'F' & 'G' paving included in this contract - J.J.S.
15 Oct. 62 - Sheet Nos. 10A & 10B added to this contract to show construction details on Ramps 'F' & 'G' - J.J.S.

COUNTY	CONTRACT	F.A.I. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE	I-1(21)-2	2	DEL.	I-95-1(19)		10A	

INTERSTATE HIGHWAY ROUTE F.A.I.-1



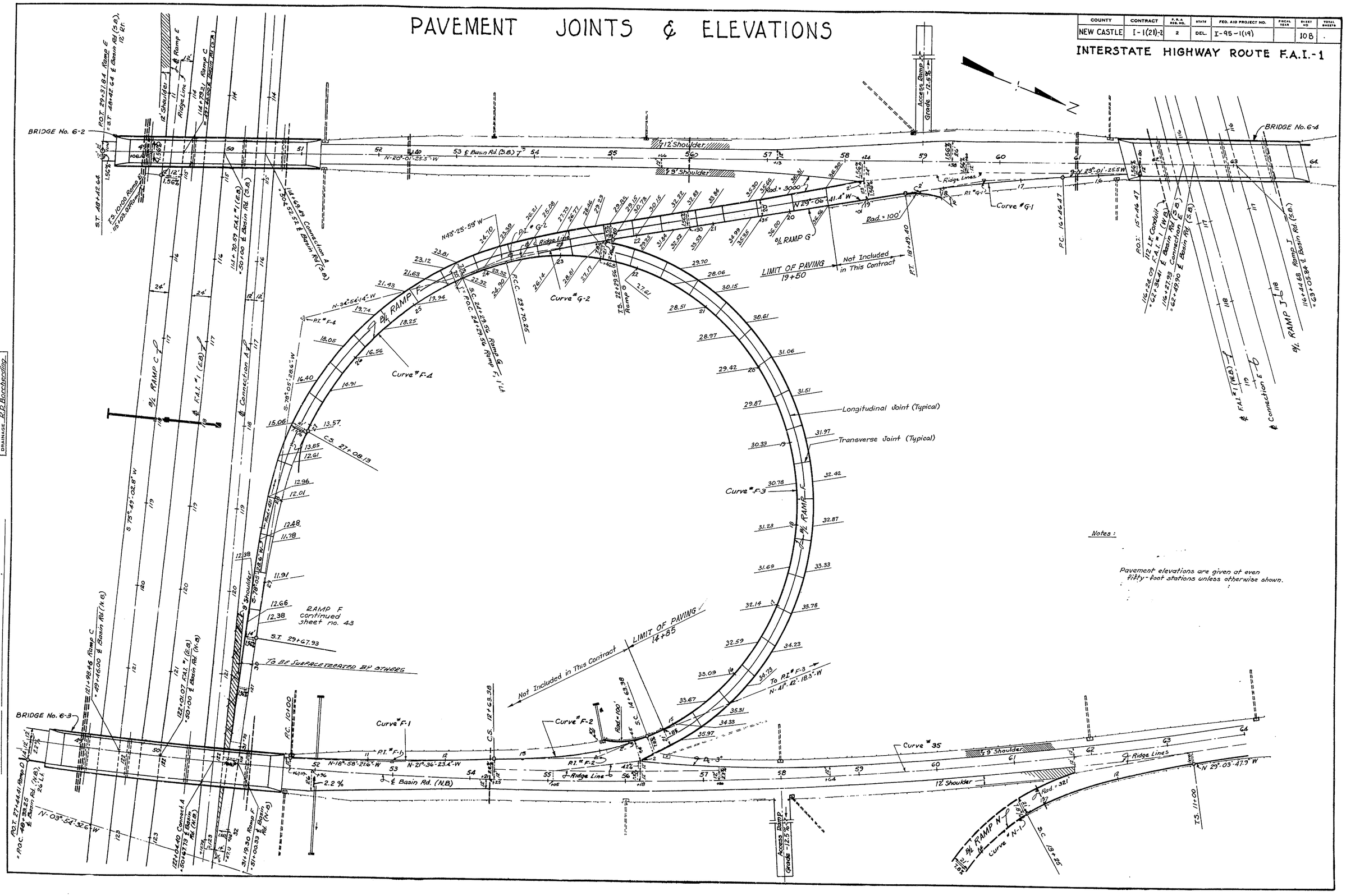
REVISIONS
15 Oct. 62 - Sheet added by Wilm. Contract - 115.
19 March 64 - Added Conc. Curb, Asphalt Curb & Guard Fence Place 824 Cons. in Curves, Place Sheet Cat. Sta. 22+25 to Sta. 32+02 Sod F.

GRADE	
BEARINGS	W. K. Upton
TIE POINTS	
BENCH MARKS	
EARTHWORK	
DRAINAGE	R.D. Baccheschi

PAVEMENT JOINTS & ELEVATIONS

COUNTY	CONTRACT	F.A.A. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE	I-1(21)-2	2	DEL.	I-95-1(19)		108	.

INTERSTATE HIGHWAY ROUTE F.A.I.-1

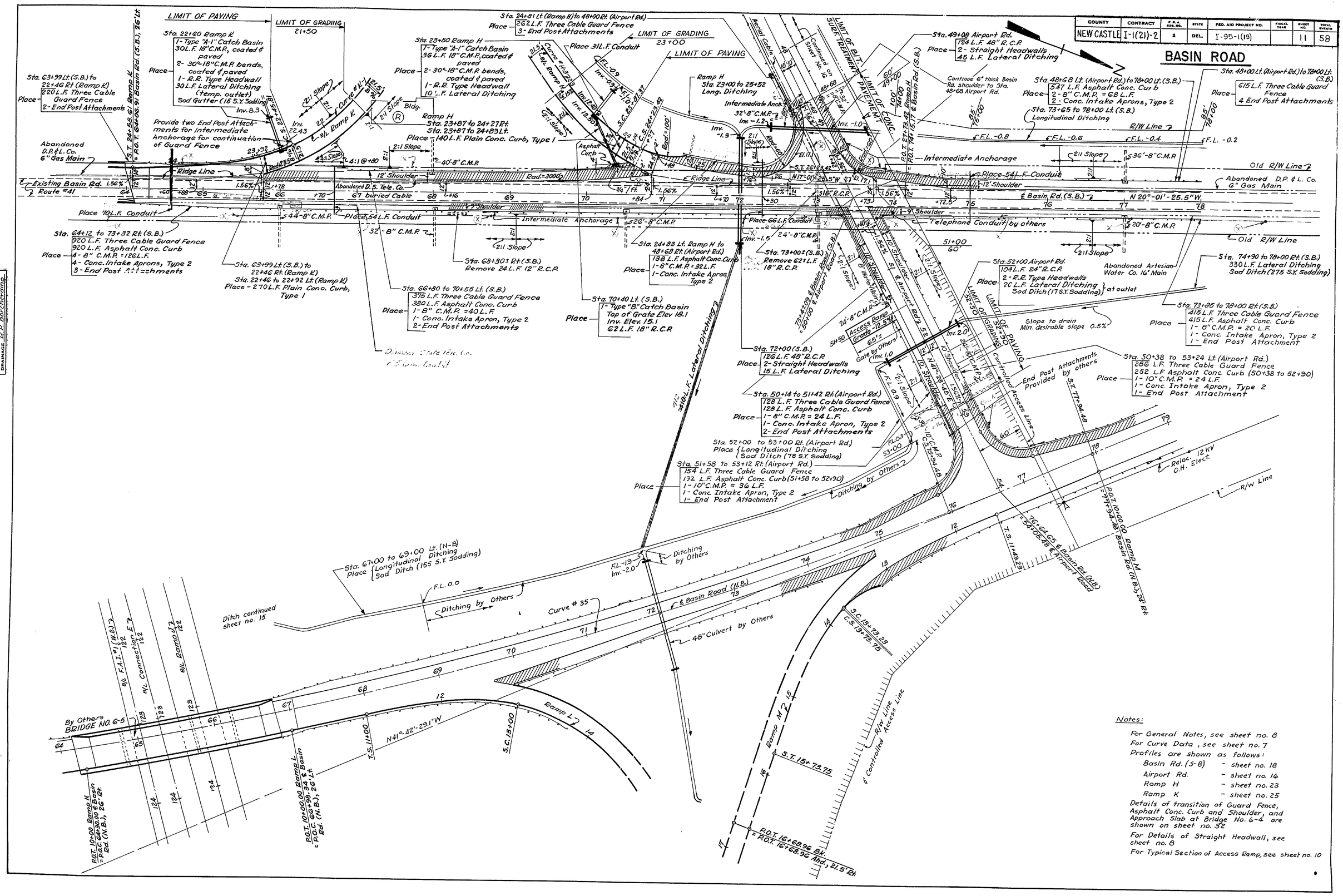


CHECKED
GRADE C. Robinson
BEARINGS W. K. Upton
TIE POINTS
BENCH MARKS
EARTHWORK
DRAINAGE R.P. Borchardt

REVISIONS
15 Oct. 62 Sheet added to this Contract - J.J.S.
In Basin Rd. Beach property - Chas. L. Slade Road - R.P.W.
STA. 29+22 To STA. 33+25.

COUNTY	CONTRACT	F.A.P. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE	I-1(21)-2	2	DEL.	I-95-1(19)		11	58

BASIN ROAD



Notes:

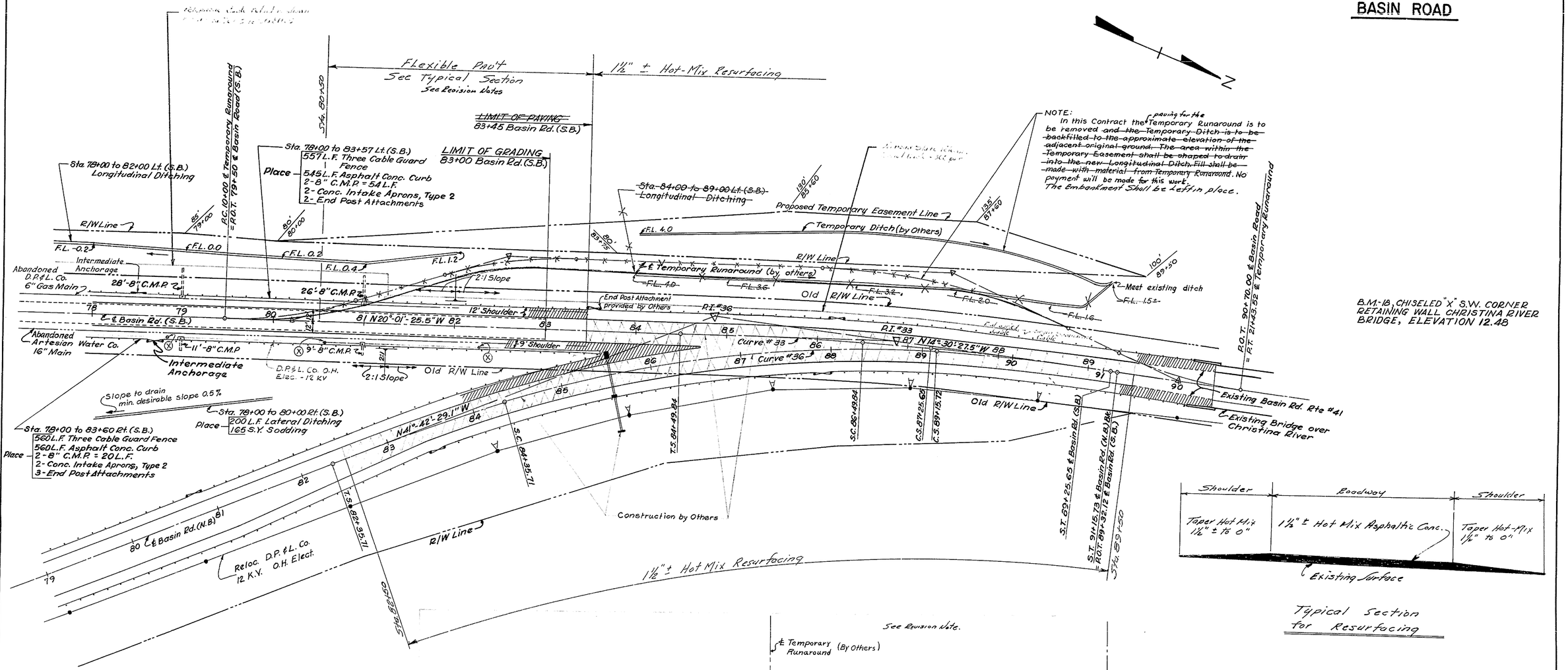
For General Notes, see sheet no. 8
For Curve Data, see sheet no. 7
Profiles are shown as follows:
Basin Rd. (S-B) - sheet no. 18
Airport Rd. - sheet no. 16
Ramp H - sheet no. 23
Ramp K - sheet no. 25
Details of transition of Guard Fence, Asphalt Conc. Curb and Shoulder, and Approach Slab at Bridge No. 6-4 are shown on sheet no. 32
For Details of Straight Headwall, see sheet no. 8
For Typical Section of Access Ramp, see sheet no. 10

CHECKED
GRADE
ALIGNMENT W. K. Linton
TIE POINTS
BENCH MARKS
EARTHWORK
DRAINAGE R. P. Borcherding

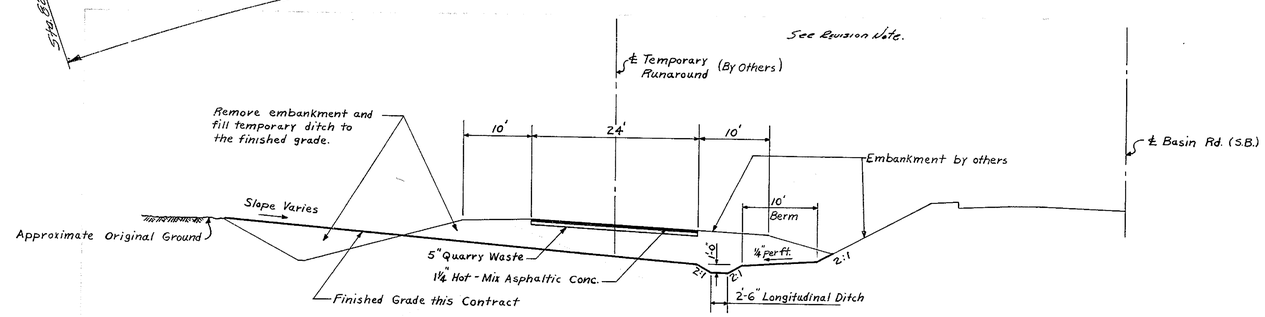
REVISIONS

COUNTY	CONTRACT	P.R.A. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE	I-1(21)-2	2	DEL.	I-95-1(19)		12	58

BASIN ROAD



Typical Section for Resurfacing



TYPICAL SECTION
REMOVAL OF TEMPORARY RUNAROUND

Scale: 1" = 1'-0"

Notes:

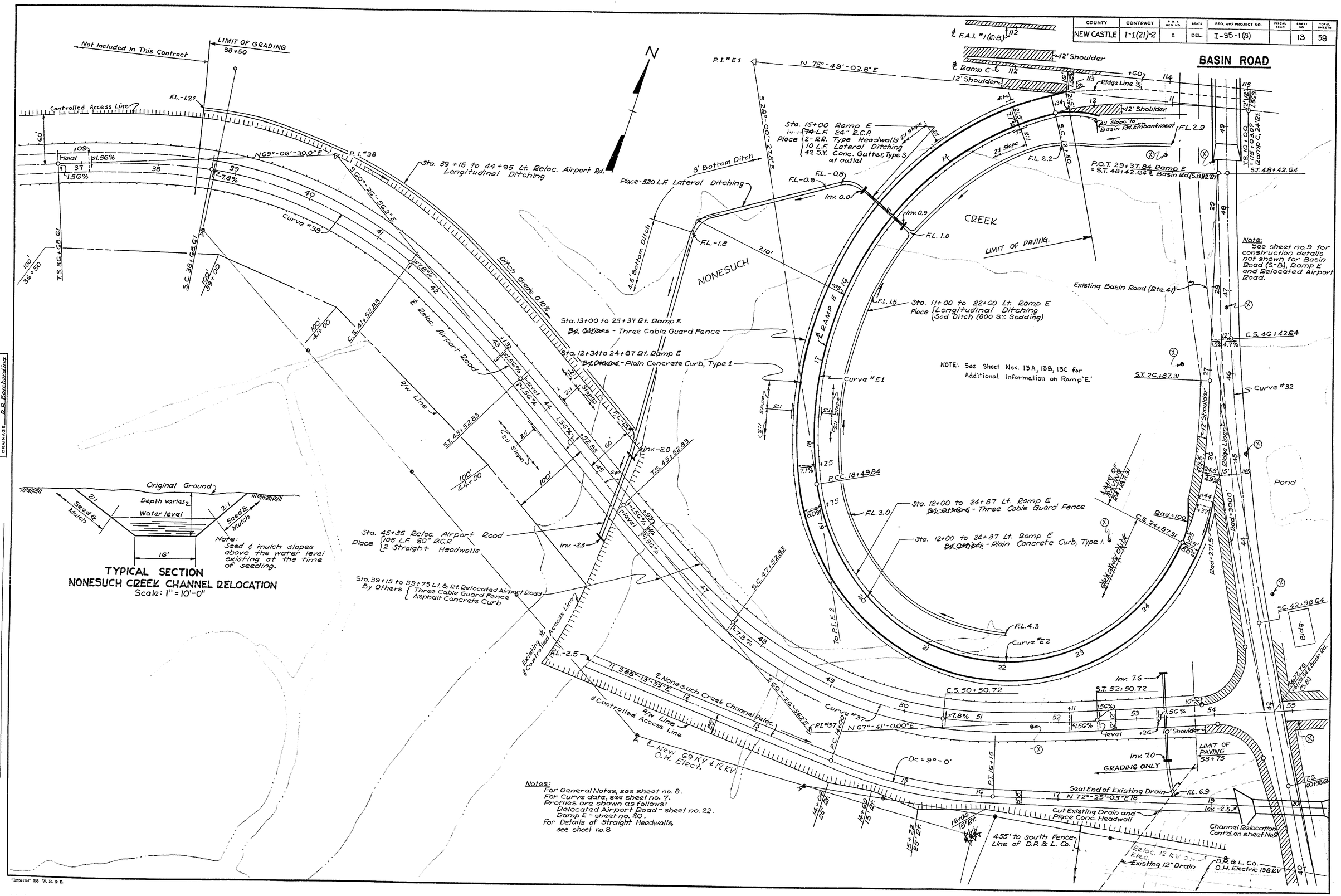
For General Notes, see sheet no. 8
For Curve Data, see sheet no. 7
For Profile, see sheet no. 18

Denotes 1½" ± Hot-Mix Resurfacing on Existing Pavt — See Typical Section this Sheet.

GRADE
CHECKED
BEARINGS W.K. Upton
TIE POINTS
BENCH MARKS W.K. Upton
EARTHWORK
DRAINAGE R.P. Barchending

REVISIONS
9/14/62 Conc. to Flexible Pav't Sta. 80+50 Sta 83+45
Flexible Hot Mix Resurfacing Sta. 83+45 to 89+45
Sta. 89+50 Rt. Sta. 89+50 Lt.
Temporary Runaround Embankment Left in Place.
Remove Paving for Same.

COUNTY	CONTRACT	P.R.A. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE	I-1(21)-2	2	DEL.	I-95-1(19)		13	58



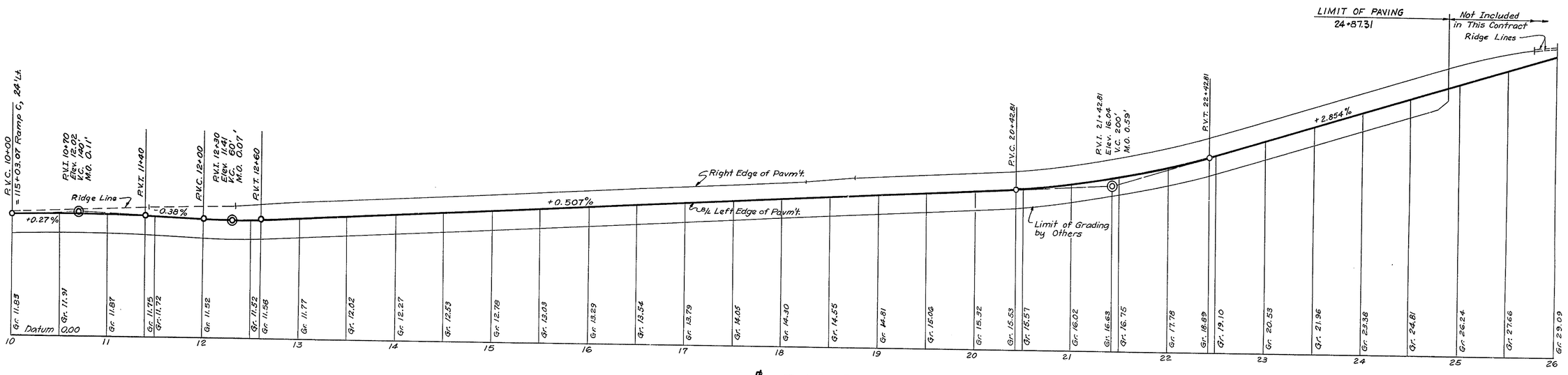
REVISIONS
11 Oct. 62 - Ramp 'E' paving added to this Contract - J.J.S.
15 Oct. 62 - Sheets 13A, 13B, 13C Added to this contract to show Ramp 'E' construction details - J.J.S.

GRADE
BEARINGS R. May
TIE POINTS
BENCH MARKS
EARTHWORK
DRAINAGE R.P. Borcherding

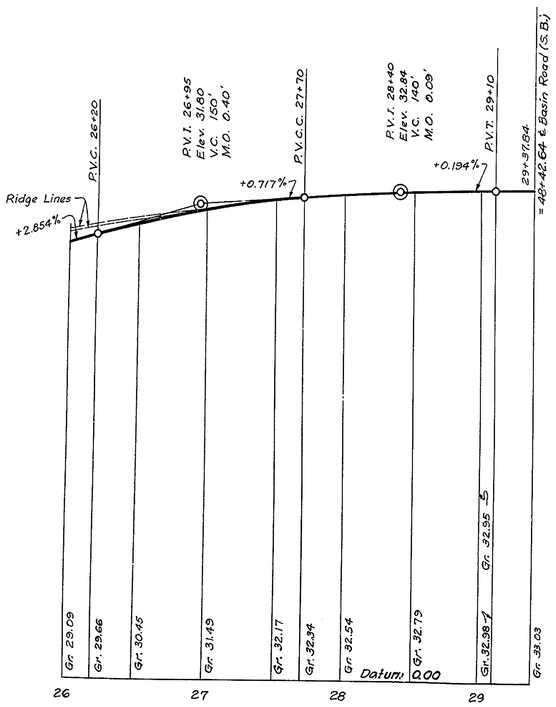
"Imperial" 156 W. B. & E.

COUNTY	CONTRACT	F.R.A. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE	I-1(21)2	2	DEL.	I-95-1(19)		13A	

INTERSTATE HIGHWAY ROUTE F.A.I.-1



℄ RAMP E



℄ RAMP E

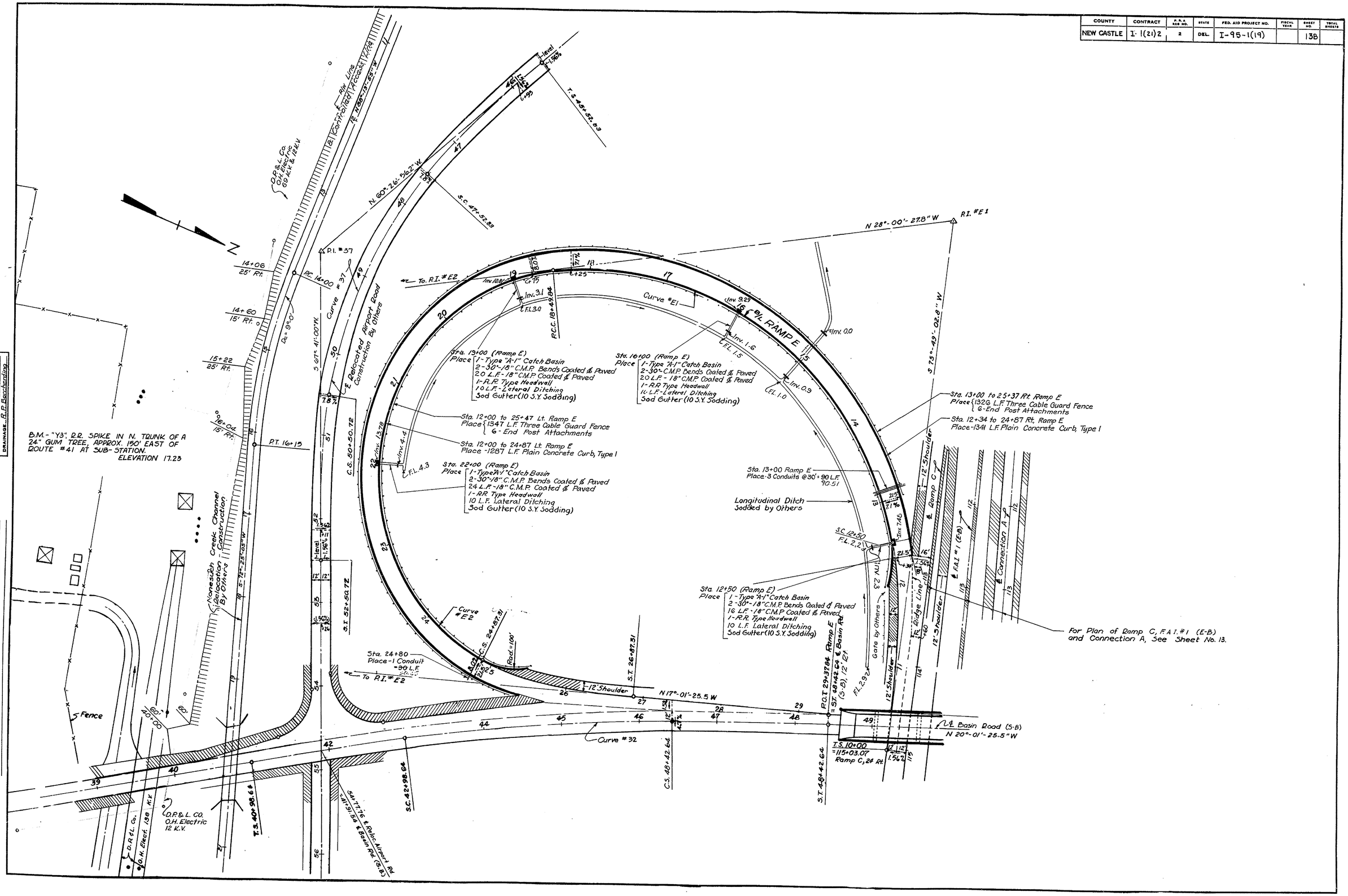
For Plan, see sheet nos. 13, 13B, & 13C

REVISIONS
15 Oct 62 - Sheet added to this Contract - J.J.S.

GRADE
BEARINGS
TIE POINTS
BENCH MARKS
EARTHWORK
DRAINAGE

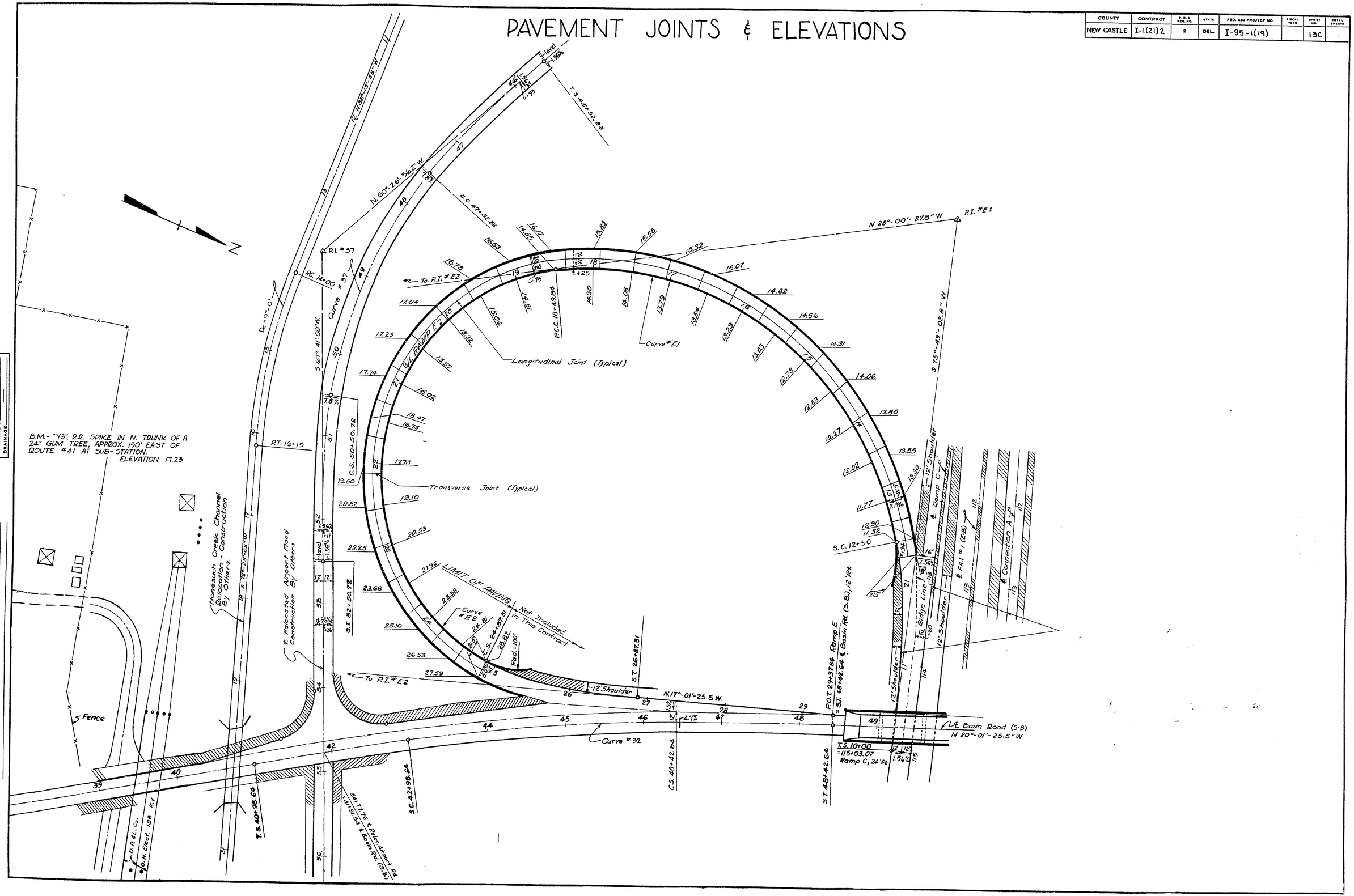
"Imperial" 156 W. B. & E.

COUNTY	CONTRACT	F.A.P. REF. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE	I-1(21)2	2	DEL.	I-95-1(19)		13B	



PAVEMENT JOINTS & ELEVATIONS

COUNTY	CONTRACT	F.A.P. RES. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO	TOTAL SHEETS
NEW CASTLE	I-1(21)2	2	DEL.	I-95-1(19)		13C	



CHECKED	
GRADE	C. Robinson
BEARINGS	C. Robinson
TIE POINTS	
BENCH MARKS	W. K. Upton
EARTHWORK	
DRAINAGE	

REVISIONS

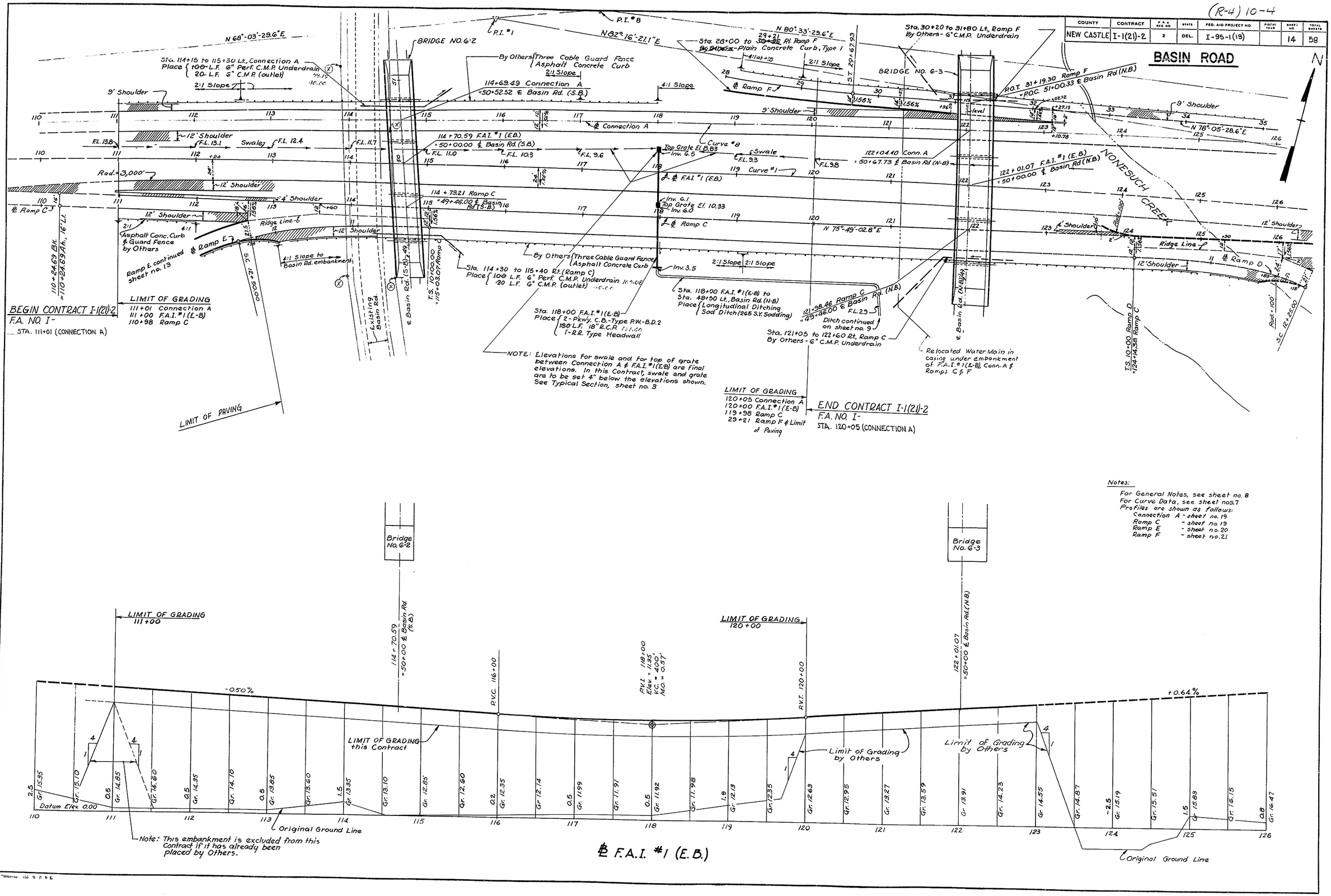
15 Oct. 62 - Sheet added to this Contract J.J.S.

D C B A 1 5 10 A B C D

(R-4) 10-4

COUNTY	CONTRACT	F.A.I. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE	I-1(21)-2	2	DEL.	I-95-1(19)		14	58

BASIN ROAD



Notes:

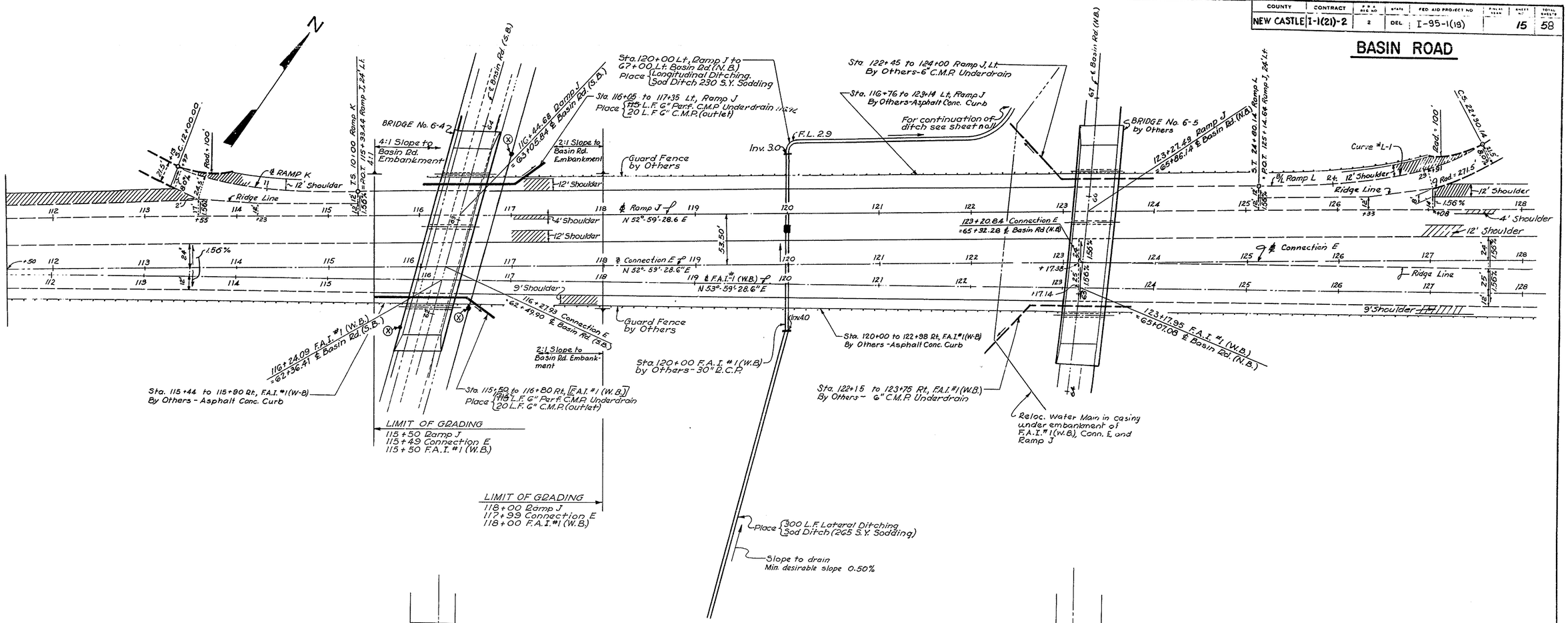
For General Notes, see sheet no. 8
For Curve Data, see sheet nos. 7
Profiles are shown as follows:
Connection A - sheet no. 19
Ramp C - sheet no. 19
Ramp E - sheet no. 20
Ramp F - sheet no. 21

REVISIONS
11 Oct. 02 - Ramps 'E' & 'F' Paving indicated on this Contract JJS

CHECKED
GRADE W. K. Lipton
BEARINGS W. K. Lipton
TIE POINTS
BENCH MARKS
EARTHWORK
DRAINAGE C. P. Beachboard

COUNTY	CONTRACT	F.A.P. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE	I-1(21)-2	2	DEL.	I-95-1(19)		15	58

BASIN ROAD



Notes:
For General Notes, see sheet No. 8
For Curve Data, see sheet No. 7
Profiles are shown as follows:
Connection E - sheet no. 24
Ramp J - sheet no. 24

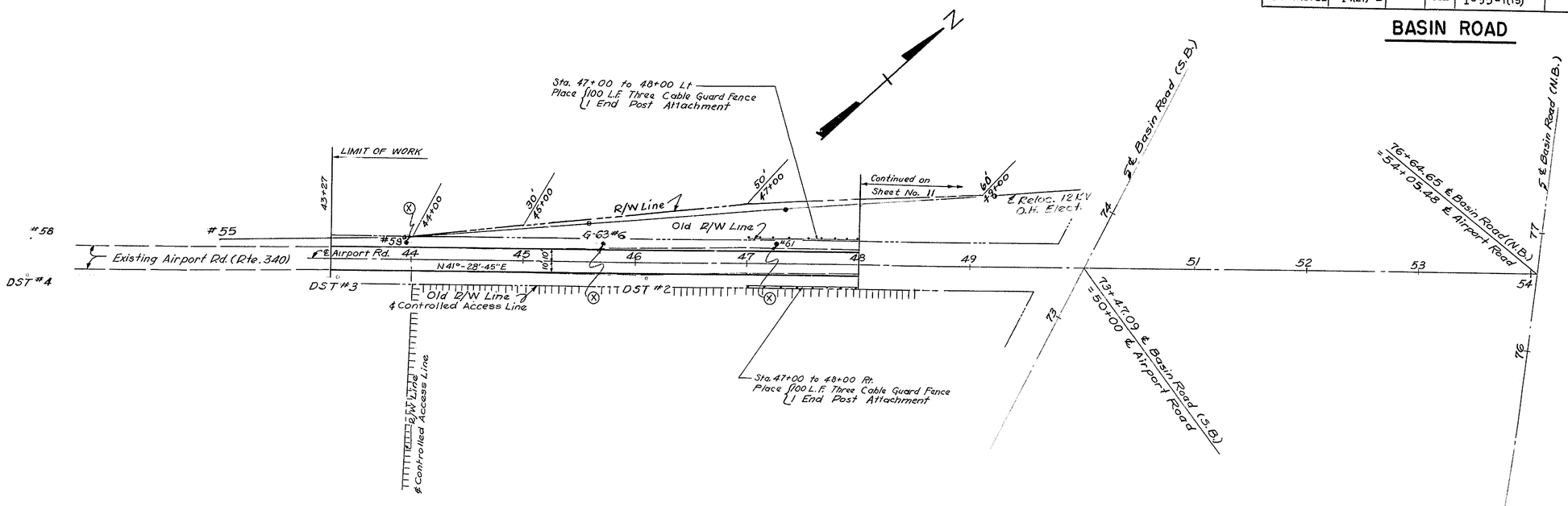
CHECKED
GRADE W.L. Upton
BEARINGS A.K. Upton
TIE POINTS
BENCH MARKS
EARTHWORK
DRAINAGE R.P. Borcherding

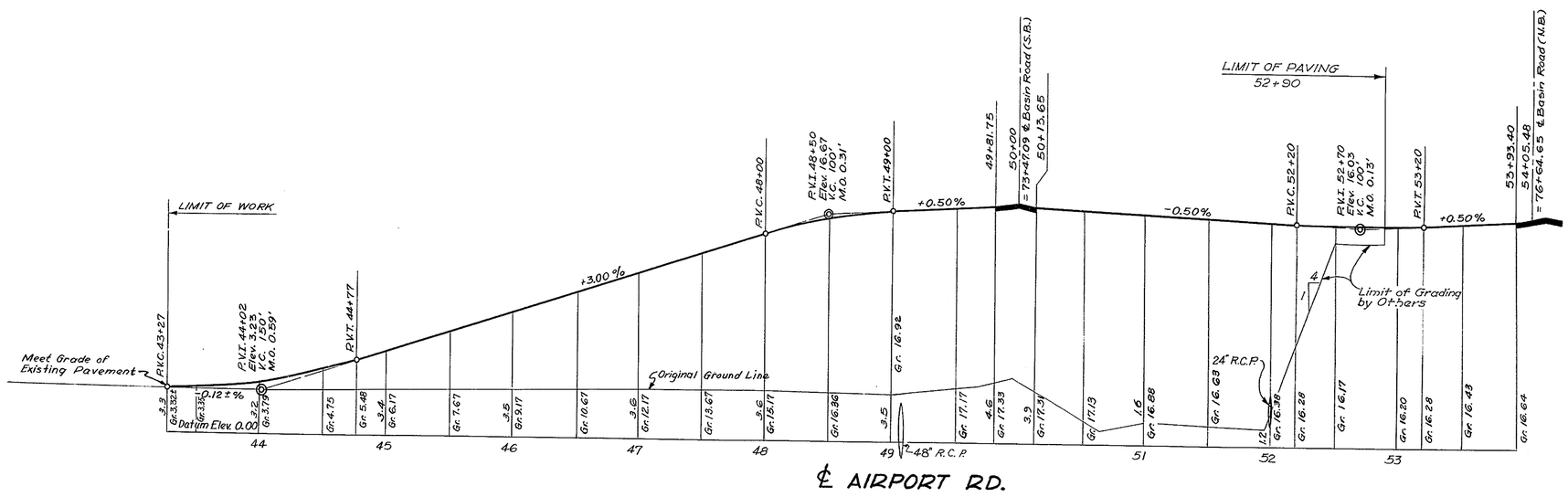
REVISIONS

"Imperial" 195 W. B. & E.

COUNTY	CONTRACT	P.R.A. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE	I-1(21)-2	2	DEL.	I-95-1(19)		16	58

BASIN ROAD





℄ AIRPORT RD.

Notes:
For General Notes, see sheet no. 8

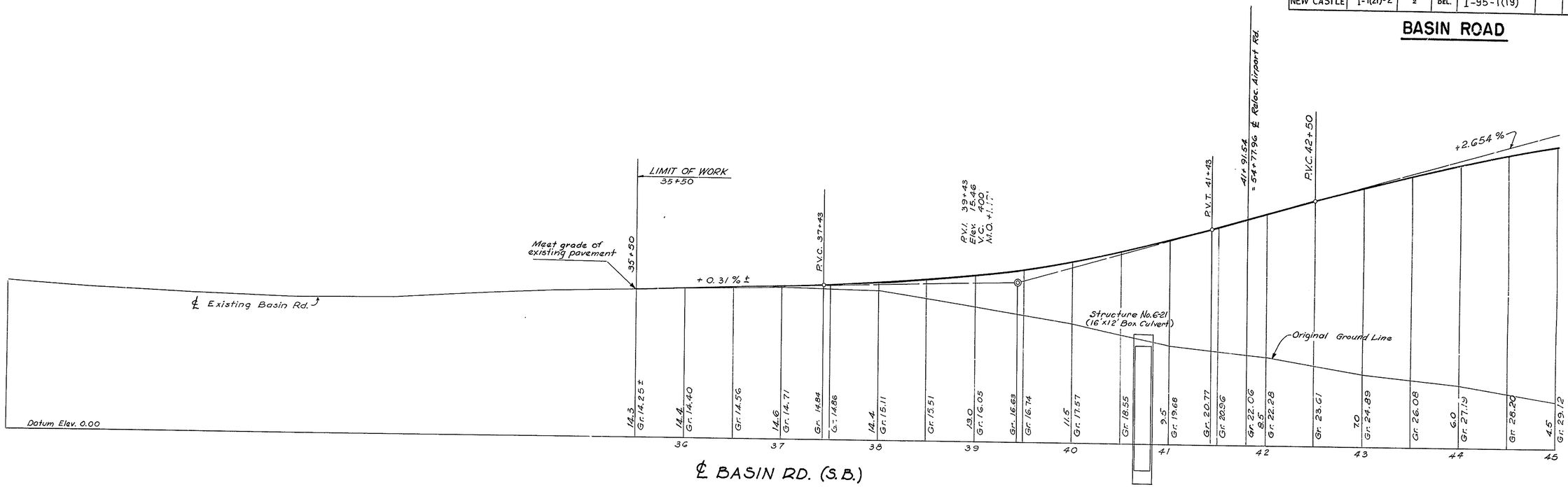
GRADE	W. K. Upton
DRAINAGE	W. K. Upton
TIE POINTS	
BENCH MARKS	W. K. Upton
EARTHWORK	
DRAINAGE	

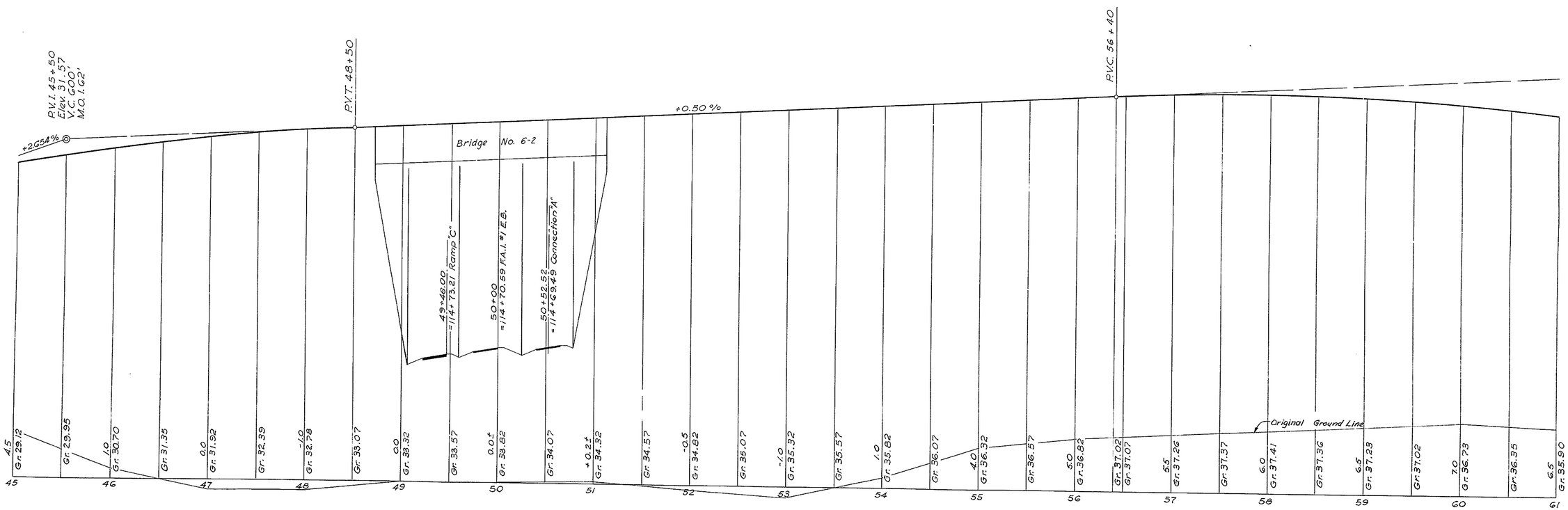
REVISIONS

"Imperial" 156 W. B. & E.

COUNTY	CONTRACT	F. A. A. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE	I-1(21)-2	2	DEL.	I-95-1(19)		17	58

BASIN ROAD





Notes:
For General Notes, see sheet no. 8
For Plan, see sheet nos. 9 & 10

CHECKED W. K. Upton
GRADE
BEARINGS
TIE POINTS
BENCH MARKS
EARTHWORK
DRAINAGE

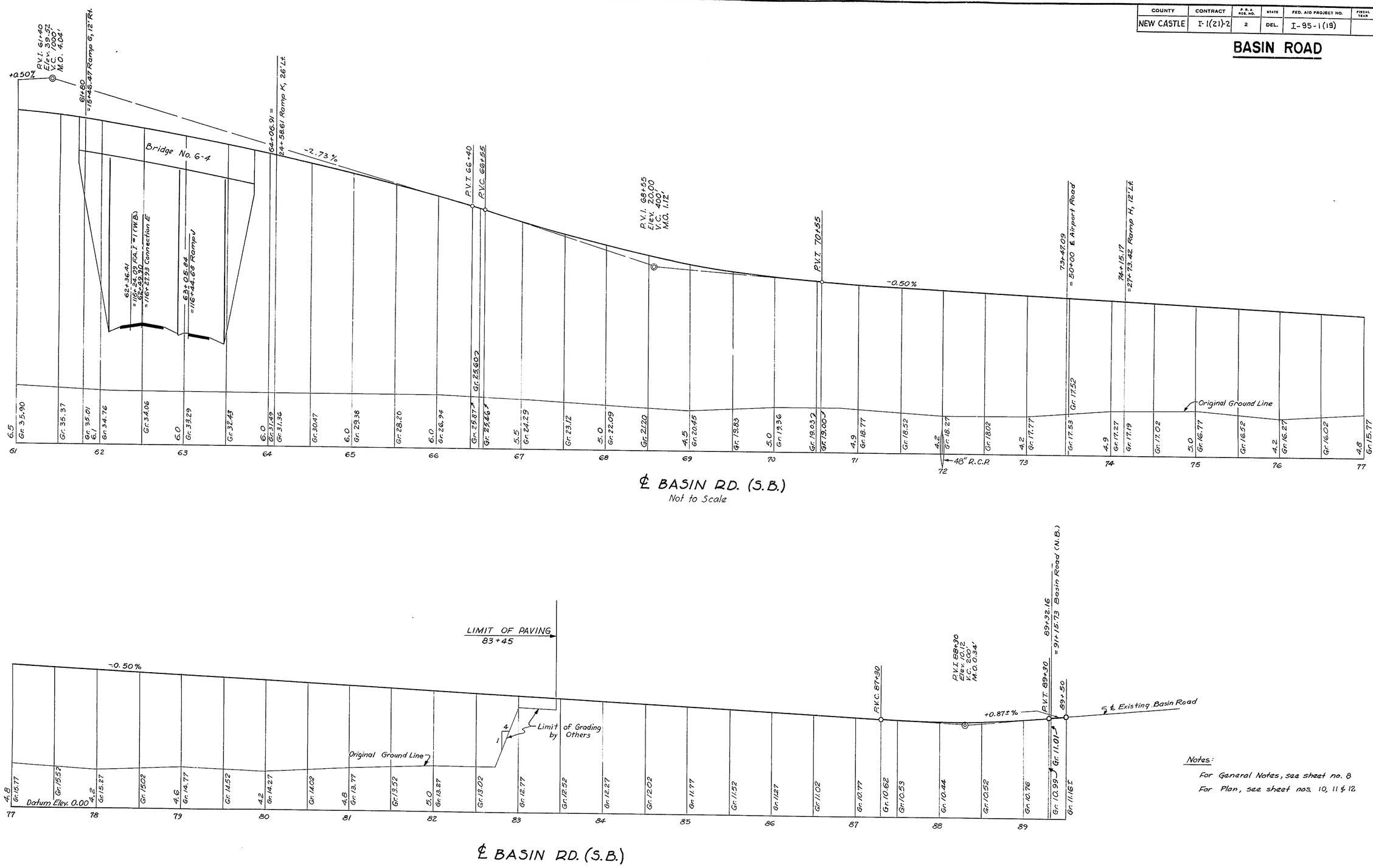
REVISIONS

"Imperial" 156 W. B. & E.

D C B A 1 5 10 A B C D

COUNTY	CONTRACT	F.A.A. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE	I-1(21)-2	2	DEL.	I-95-1(19)		18	58

BASIN ROAD



Notes:

For General Notes, see sheet no. 8

For Plan, see sheet nos. 10, 11 & 12

CHECKED W. K. Upton

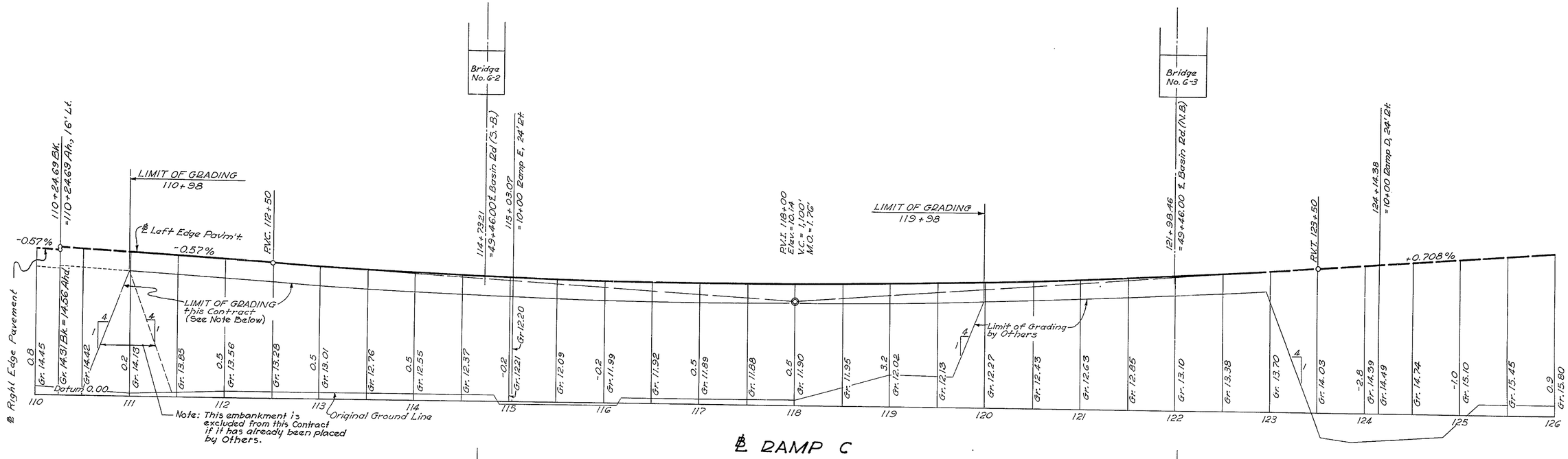
GRADE
BEARINGS
TIE POINTS
BENCH MARKS
EARTHWORK
DRAINAGE

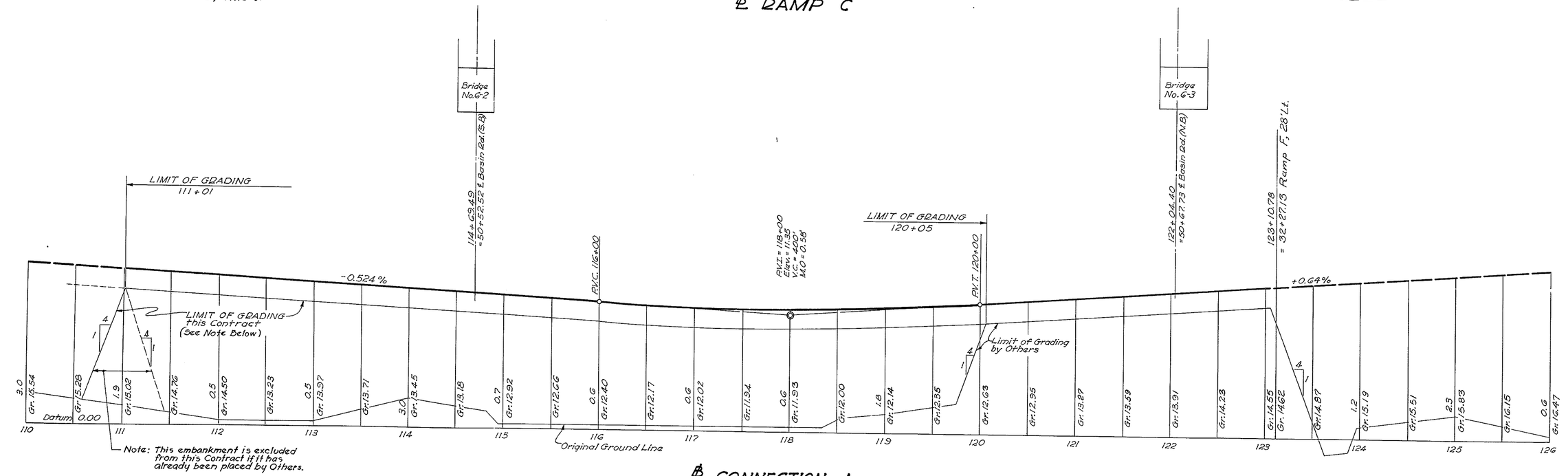
REVISIONS

"Imperial" 156 W. B. & E.

COUNTY	CONTRACT	P.R.A. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE	I-1(21)-2	2	DEL.	I-95-1(19)		19	58

BASIN ROAD





Notes:
For General Notes, see sheet no. 8
For Plan, see sheet no. 14

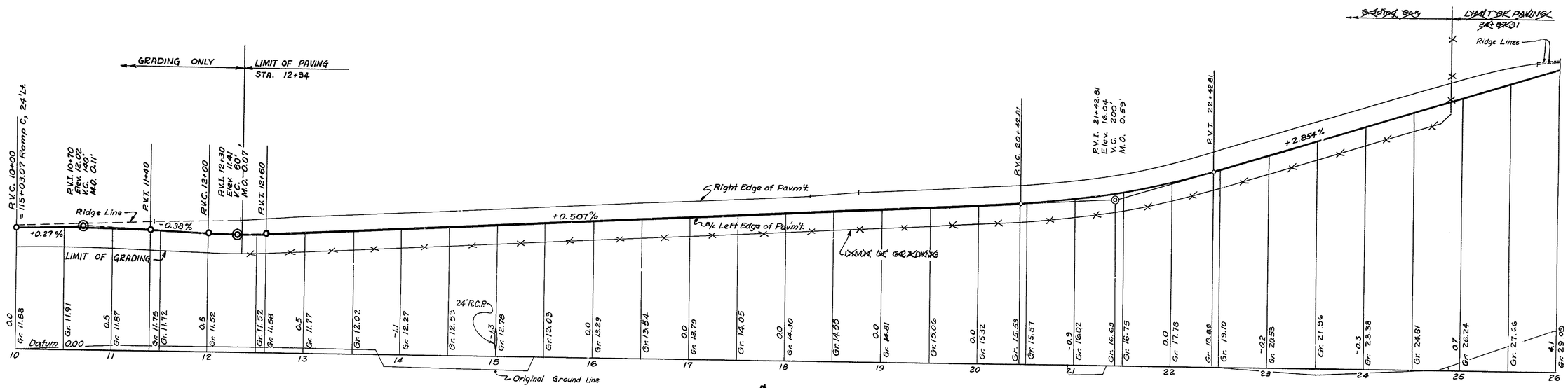
GRADE W. W. Upton
BEARINGS
TIE POINTS
BENCH MARKS
EARTHWORK
DRAINAGE

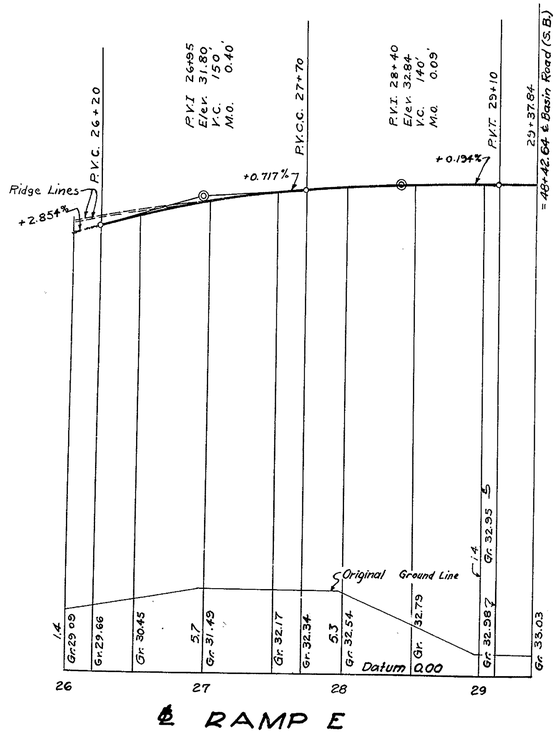
REVISIONS

D C B A 1 5 10 A B C D

COUNTY	CONTRACT	F.P.A. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE	I-1(21)-2	2	DEL.	I-95-1(19)		20	58

BASIN ROAD





Notes:

For General Notes, see sheet no. 8

For Plan, see sheet nos. 9, 13 & 14

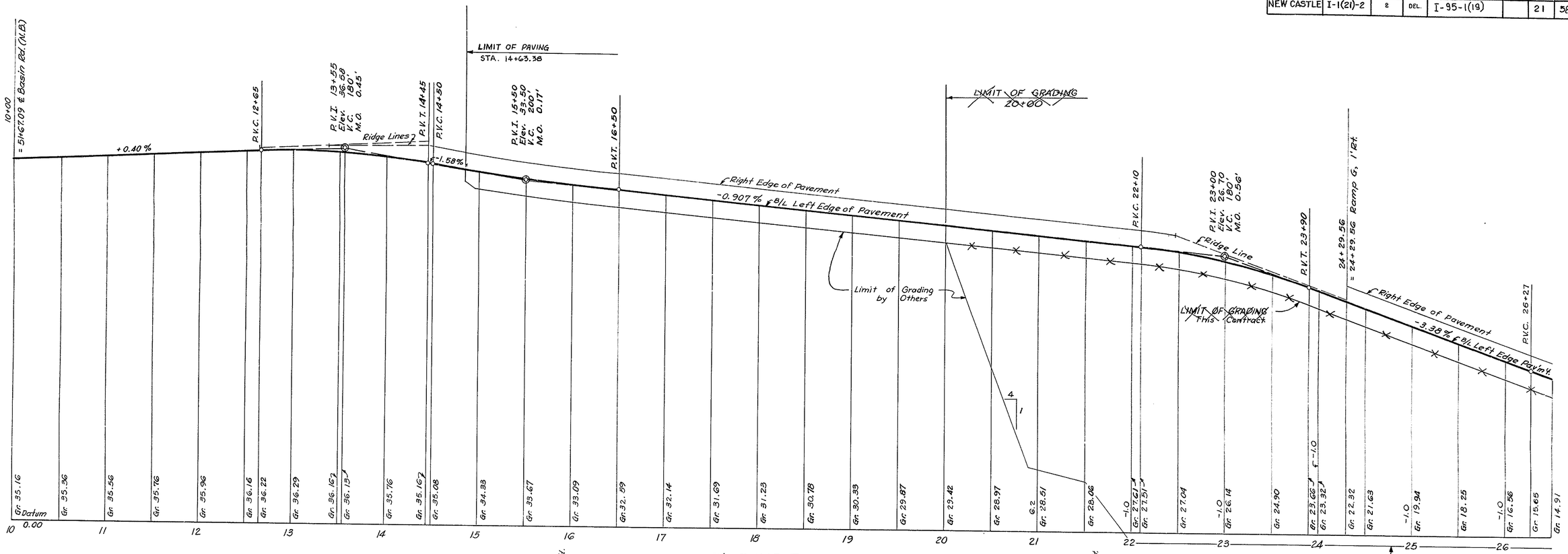
CHECKED W. L. Upton

GRADE
BENCHES
TIE POINTS
BENCH MARKS
EARTHWORK
DRAINAGE

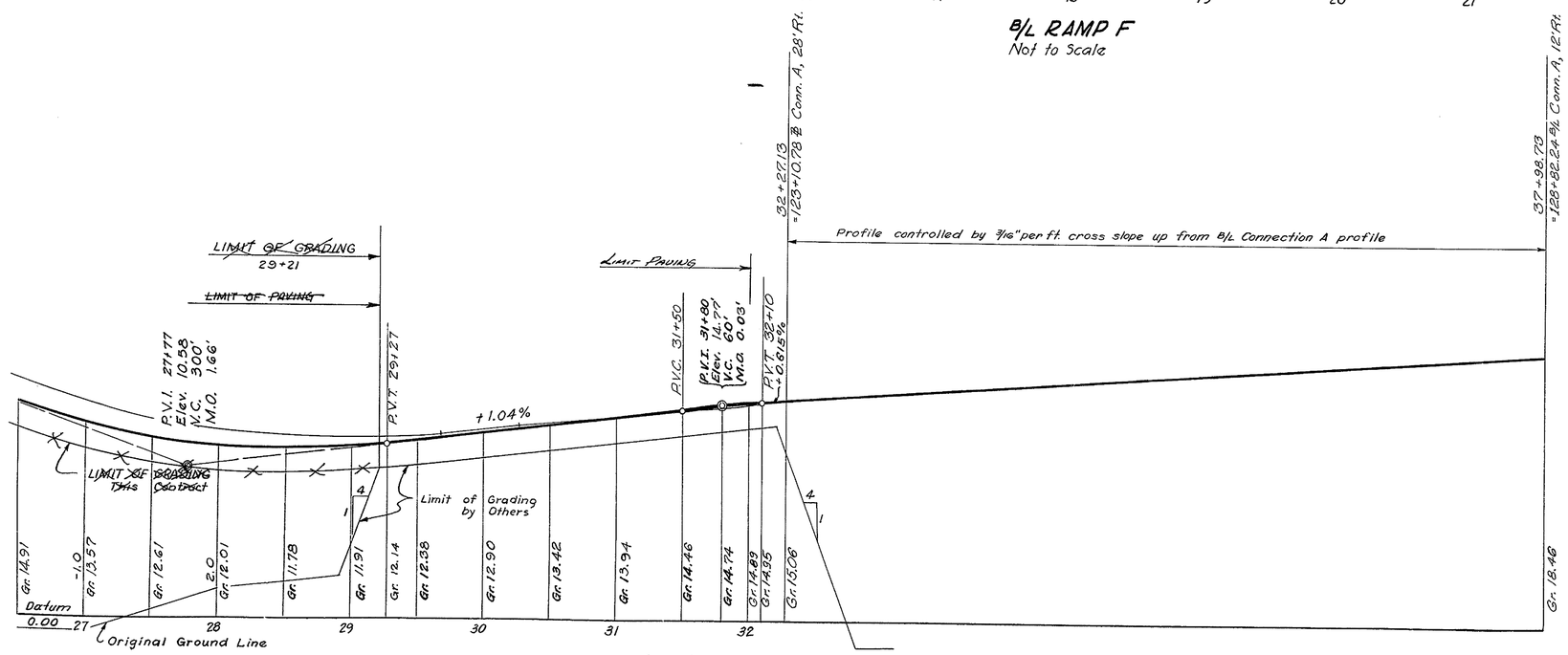
REVISIONS

11 Oct. 62 - Ramp 'E' Paving added to this Contract J.J.S.

COUNTY	CONTRACT	P.R.A. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE	I-1(21)-2	8	DEL.	I-95-1(19)		21	58



B/L RAMP F
Not to Scale



B/L RAMP F

Notes:

For General Notes, see sheet no. 8
For Plan, see sheet no. 10

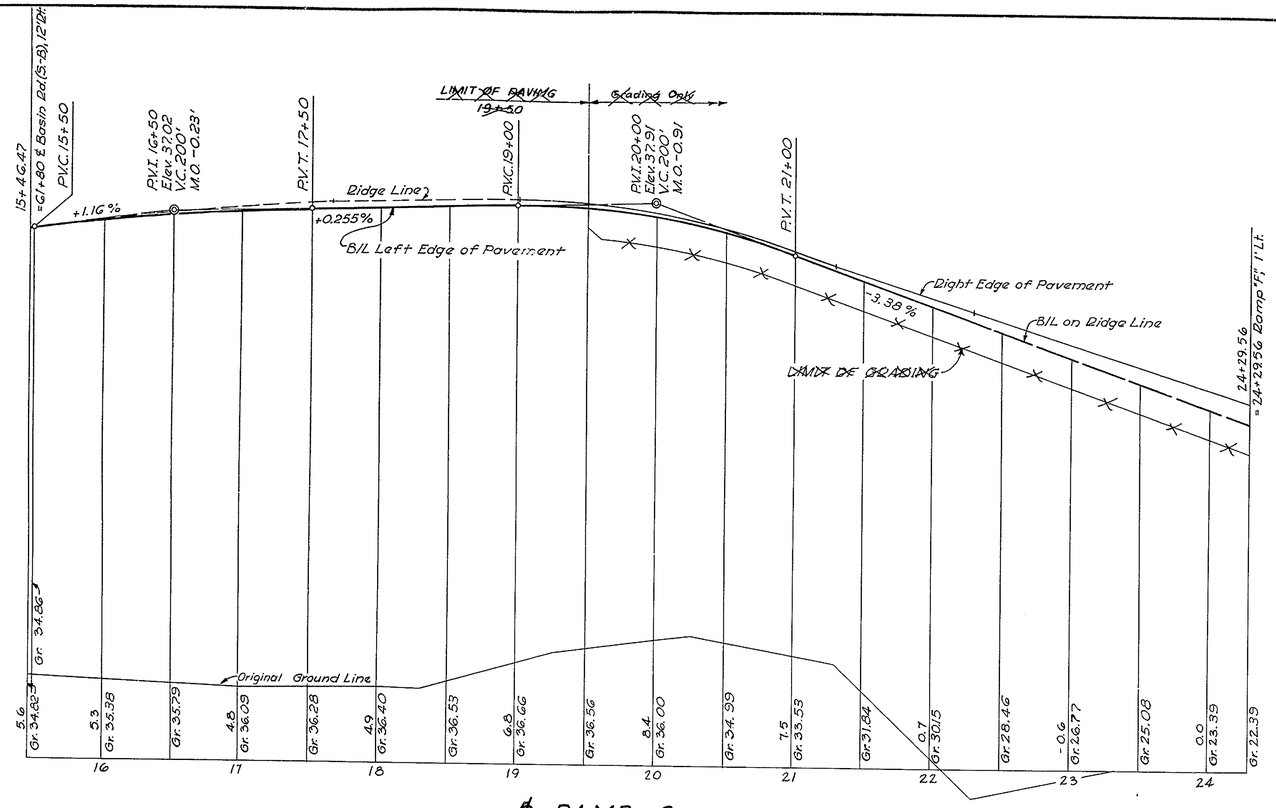
REVISIONS
11 Oct. 82 - Ramp 'F' Paving added to this Contract J.J.S.
28 March 83 - Revise Paving - Sta. 29+00 to 32+00 R.A.M.

BEARINGS
TIE POINTS
BENCH MARKS
EARTHWORK
DRAINAGE

COUNTY	CONTRACT	P.R.A. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE	I-1(21)-2	2	DEL.	I-95-1(19)		22	58

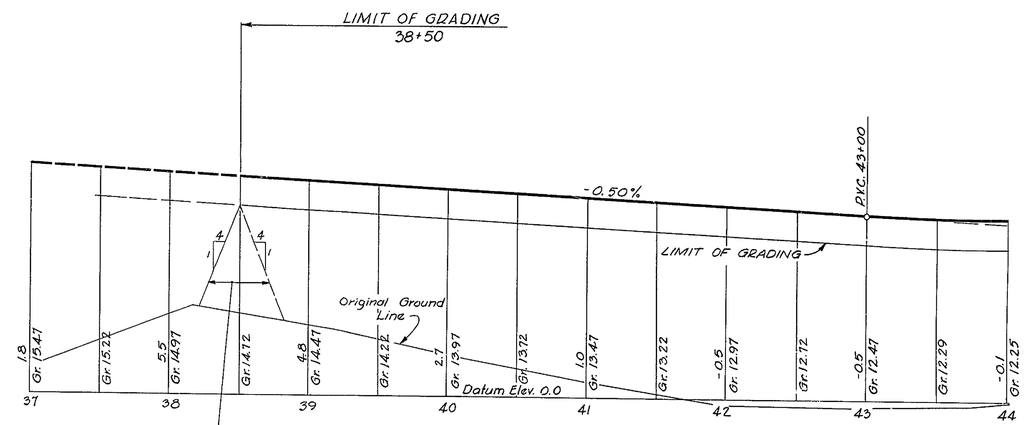
BASIN ROAD

Notes:
For General Notes, see sheet no. 8
For Plan, see sheet nos. 9, 10 & 13



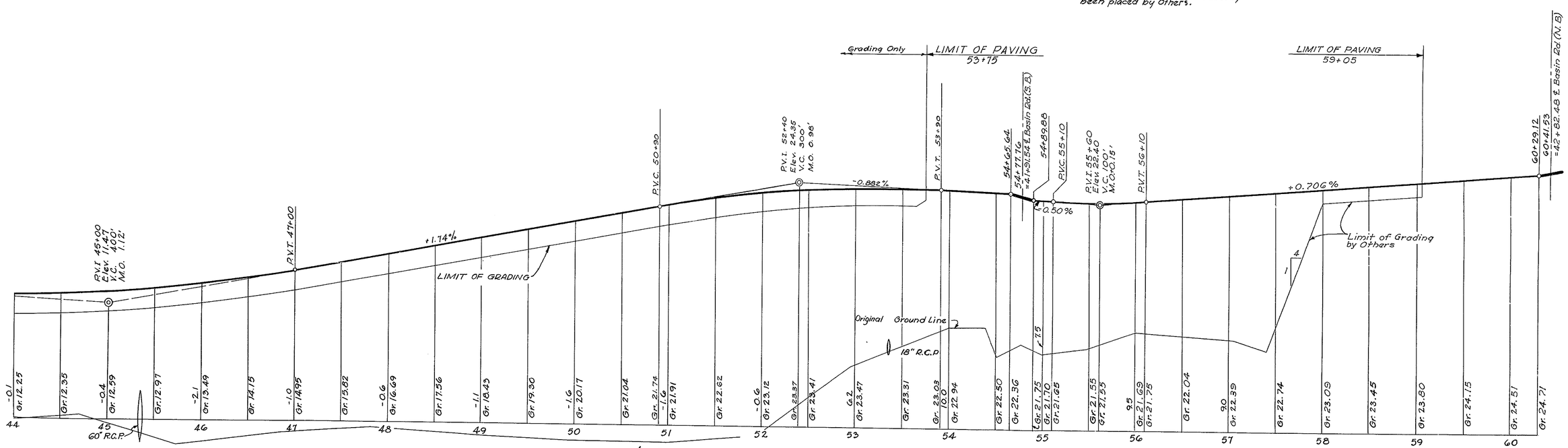
℄ RAMP G

Not to Scale



℄ RELOCATED AIRPORT ROAD

Note: This embankment is excluded from this contract if it has already been placed by others.



℄ RELOCATED AIRPORT ROAD

Not to Scale

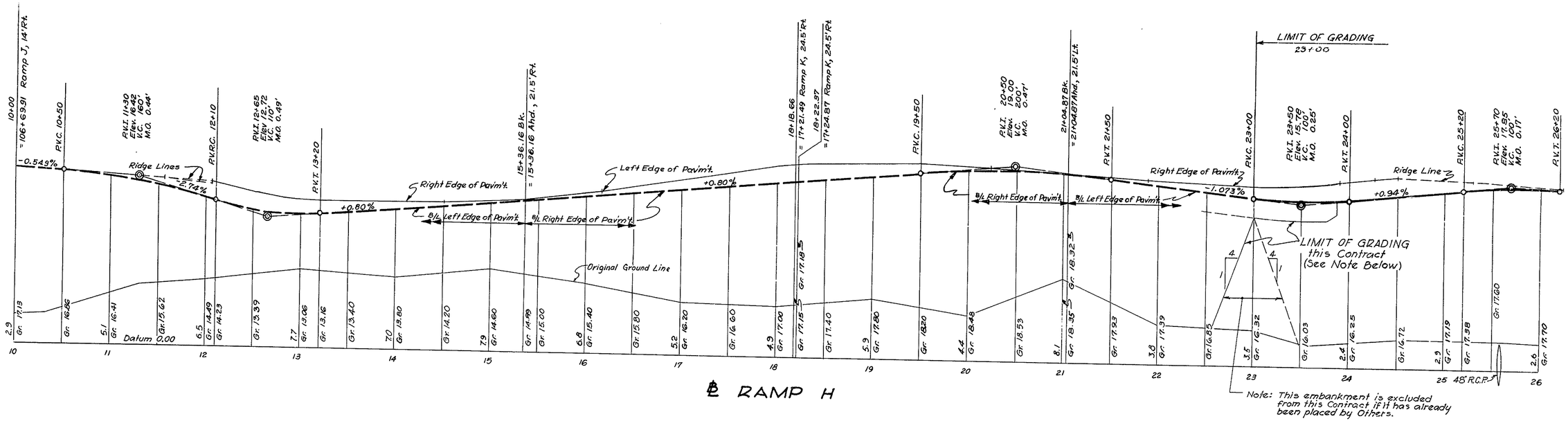
REVISIONS
11 Oct. 62 - Remainder of Ramp "G" Paving added to this Contract J.J.S.

GRADE
BEARINGS
TIE POINTS
BENCH MARKS
EARTHWORK
DRAINAGE

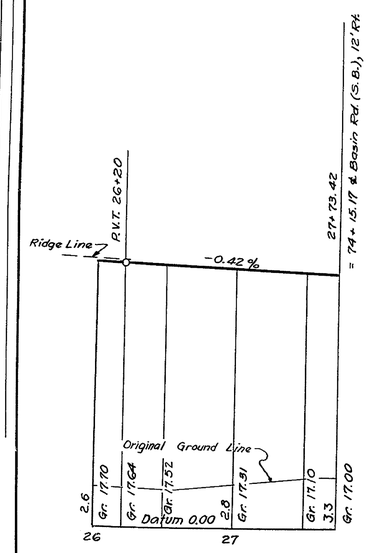
"Imperial" 156 W. B. & E.

COUNTY	CONTRACT	P.A.-A. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE	I-1(21)-2	2	DEL.	I-95-1(19)		23	58

BASIN ROAD



℄ RAMP H



℄ RAMP H

Notes:

For General Notes, see sheet no. 8

For Plan, see sheet no. 11

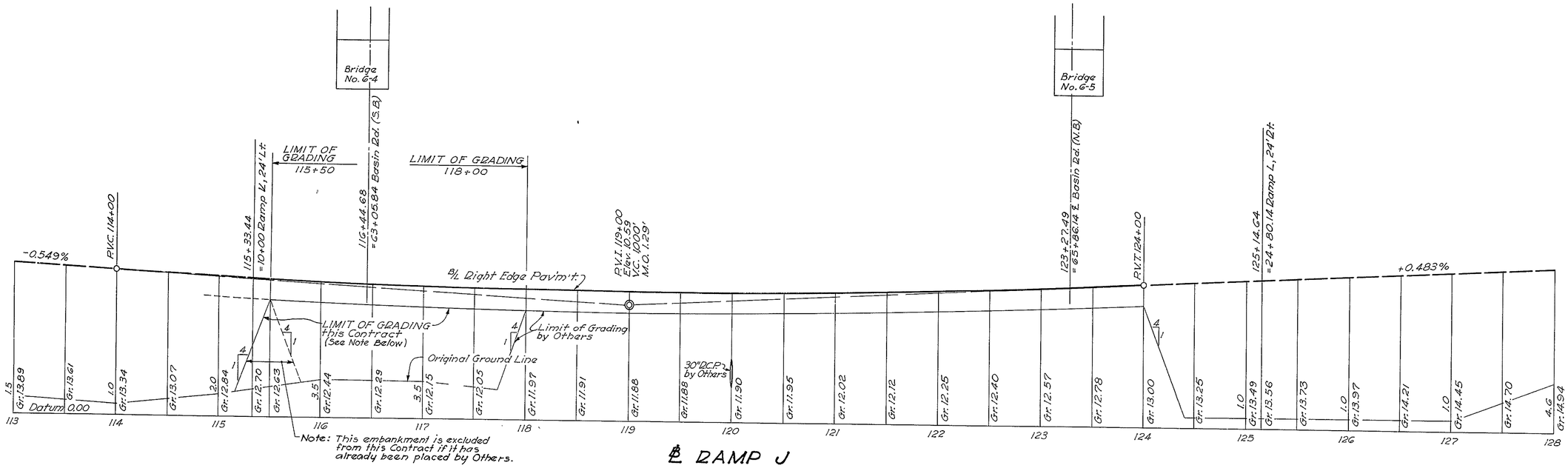
CHECKED W.K. Upton

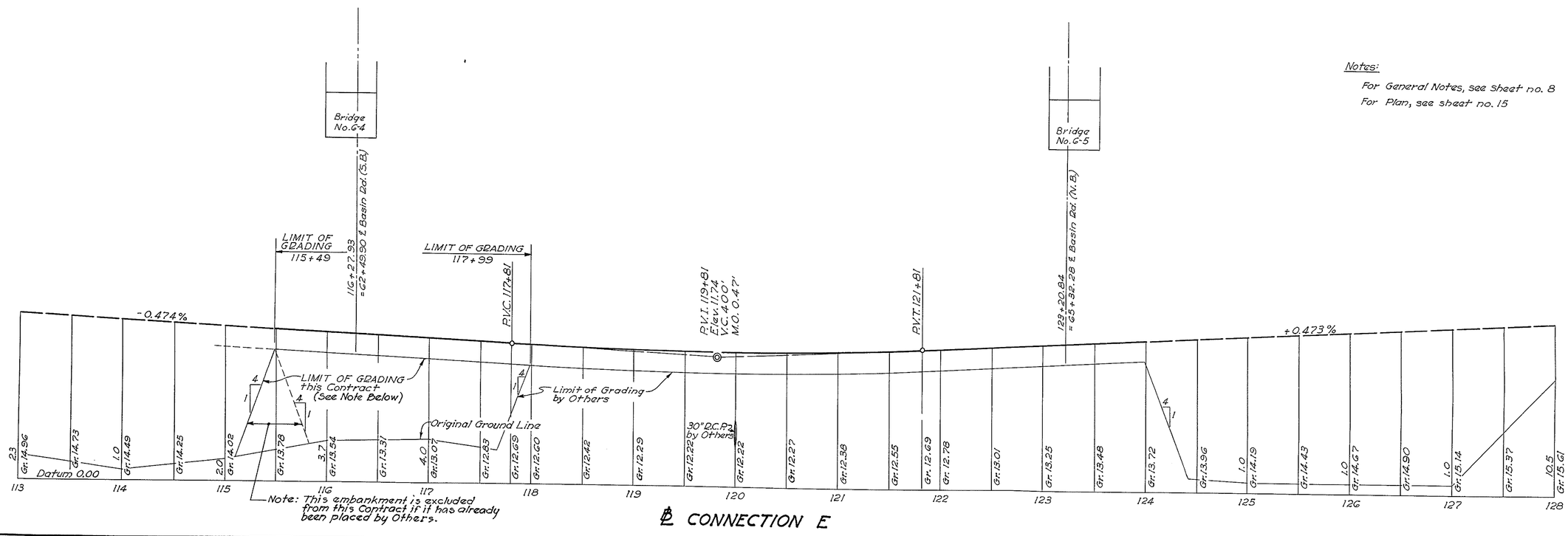
GRADE
BEARINGS
TIE POINTS
BENCH MARKS
EARTHWORK
DRAINAGE

REVISIONS

COUNTY	CONTRACT	P.R.A. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE	I-1(21)-2	2	DEL.	I-95-1(19)		24	58

BASIN ROAD





Notes:

For General Notes, see sheet no. 8

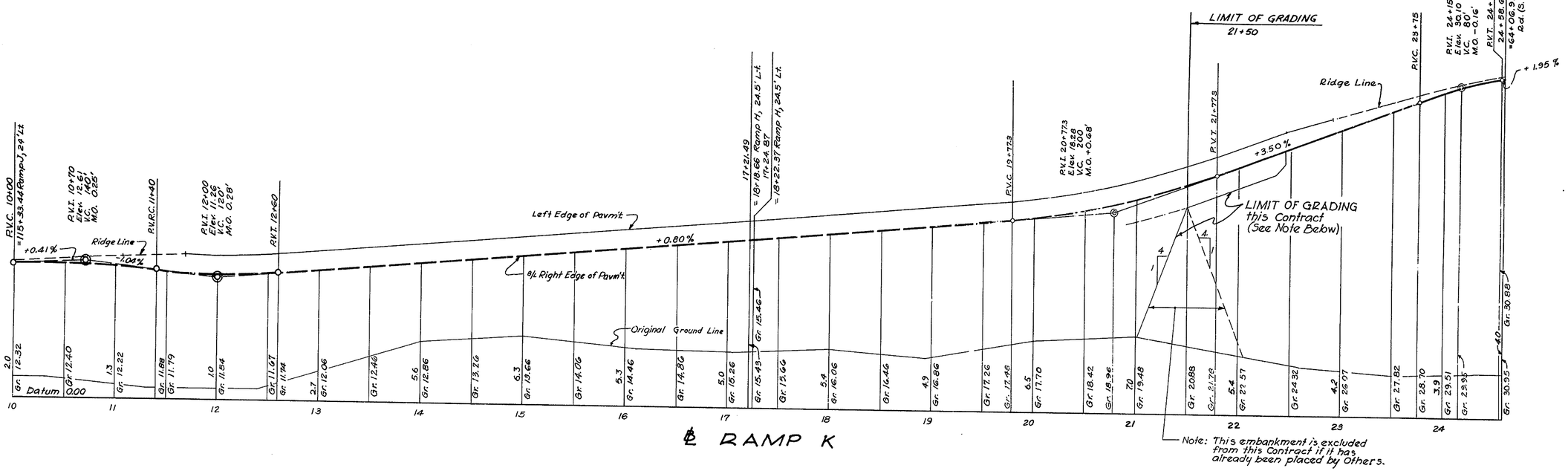
For Plan, see sheet no. 15

REVISIONS

GRADE
BEARINGS
TIE POINTS
BENCH MARKS
EARTHWORK
DRAINAGE

COUNTY	CONTRACT	F.A.A. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE	I-1(21)-2	2	DEL.	I-95-1(19)		25	58

BASIN ROAD



Notes:

For General Notes, see sheet no. 8

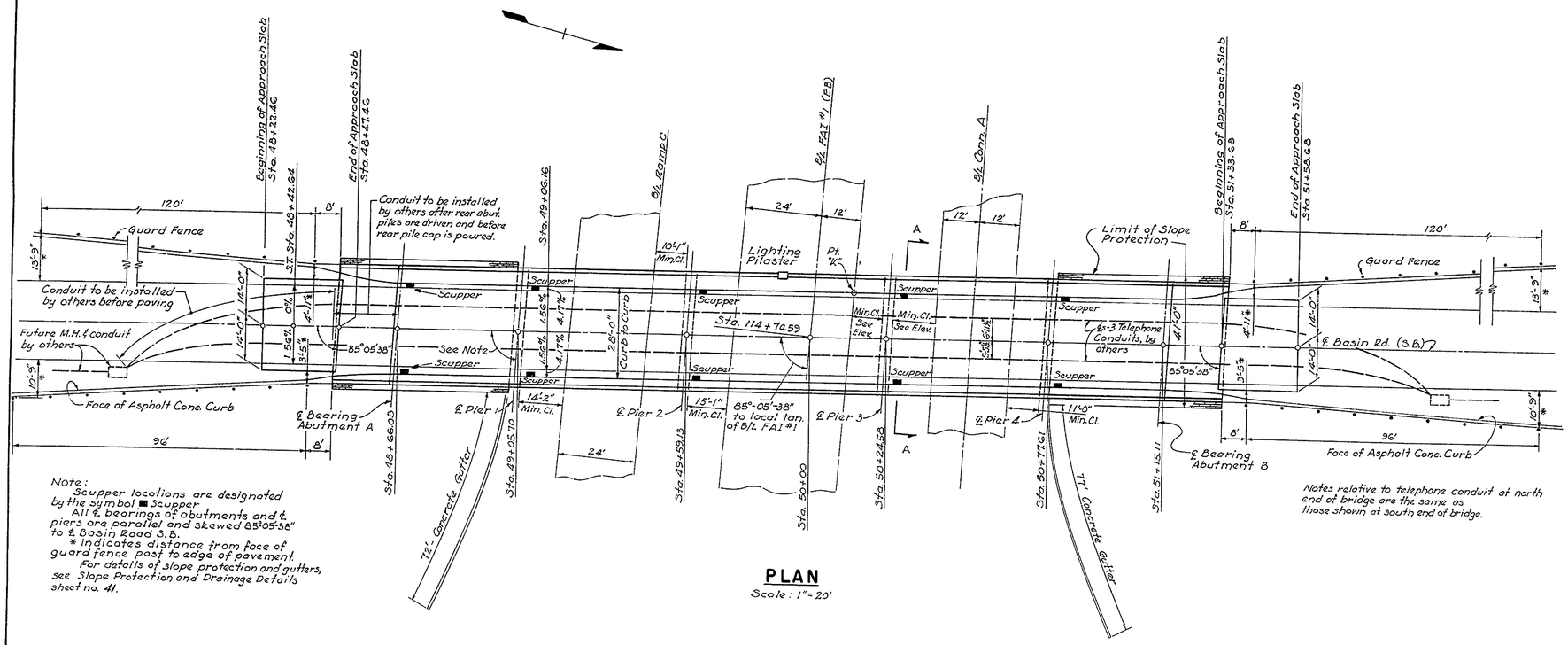
For Plan, see sheet no. 11

CHECKED W.K. Upton

GRADE
BENCHMARKS
TIE POINTS
BENCH MARKS
EARTHWORK
DRAINAGE

REVISIONS

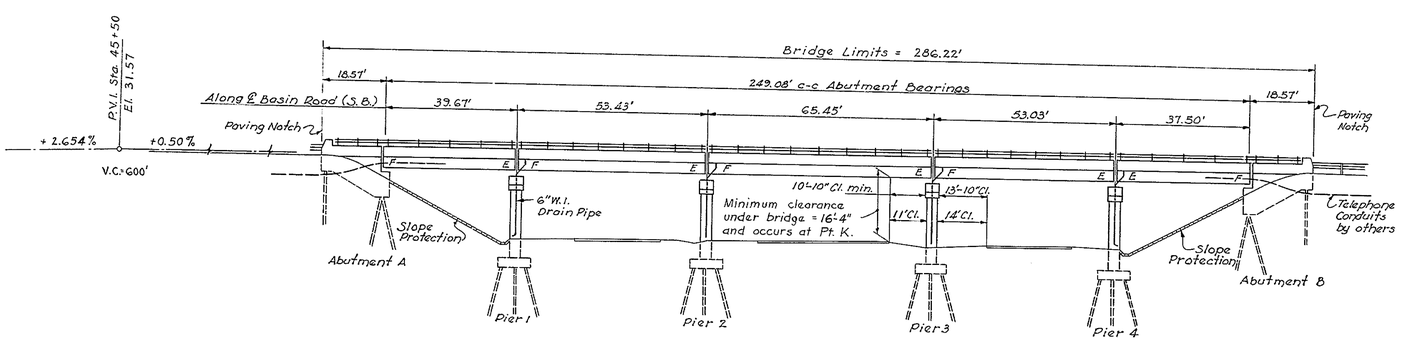
COUNTY	CONTRACT	F.P.A. REG. NO	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE	I-1(21)-2	2	DEL.	I-95-1(19)		26	58



Note:
Scupper locations are designated by the symbol ■ Scupper.
All ℄ bearings of abutments and ℄ piers are parallel and skewed 85°05'-38" to ℄ Basin Road S.B.
* Indicates distance from face of guard fence post to edge of pavement.
For details of slope protection and gutters, see Slope Protection and Drainage Details sheet no. 41.

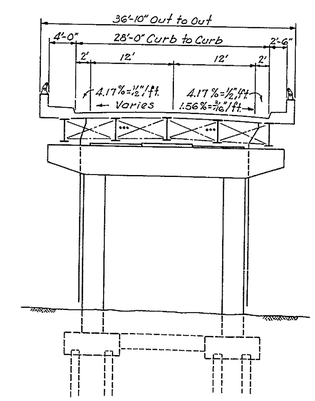
PLAN

Scale: 1" = 20'



ELEVATION

Scale: 1" = 20'



SECTION A-A

Scale: 1" = 10'

NOTES:

Dead Load: Concrete - 150 # per cu. ft.; Wearing Surface - 25 # per sq. ft.

Live Load: H20-S16-44 Modified, Slab designed for 16 K wheel load.

Unit Stresses: Reinforcing Steel (Intermediate Grade) f_s = 20,000 p.s.i. Concrete f'_c = 3000 p.s.i.; f_c = 1200 p.s.i.

Superstructure: Concrete Deck, Steel Beam Construction, composite action under live load.

GENERAL NOTES FOR STRUCTURES

Specifications: Design criteria are based on 1961 Standard Specifications for Highway Bridges, American Association of State Highway Officials, with current corrections and addenda.

Material and workmanship are to conform with State of Delaware, State Highway Department Standard Specifications dated July 1, 1960 unless otherwise noted and/or specified by Special Provisions of Specifications.

Elevations: Elevations are based on U.S.C. & G. datum.

Borings: The subsoil data and interpretations do not form a part of the Contract, and will be available to the bidders for their information only. Available soil samples taken at the site may be examined by arrangement with State Highway Department, Interstate Highway Office, DuPont Highway and State Road, Wilmington, Delaware. The State makes no representations regarding the character or extent of the soil or other sub-surface conditions to be encountered. The correctness of boring information is not guaranteed.

The contractor must make his own deductions of subsoil conditions which may affect his methods or cost of construction.

Foundations: All piles shall be castin-place concrete piles. The nominal diameter and shell thickness of the steel casings or shells shall be as shown in the Specifications or on the Plans or approved by the Engineer.

All piles in pier and abutment footings shall be driven to develop a minimum bearing capacity of 35 tons as determined in Special Provisions to Standard Specifications.

At least one test pile per bridge shall be driven in a pier footing of permanent pile location, as directed by the Engineer.

Excavation for Structures: The depth of excavation measured for payment shall be the vertical distance from the bottom of concrete to the ground line existing at the time of excavation but not above finished grade. The horizontal limits of excavation for payment shall be 1'-6" beyond the face of concrete.

Portland Cement Concrete Masonry:

Cover over bar reinforcement shall be 2" except as otherwise noted on the drawings or as follows: Pile Caps - 3". Abutment Slab - 1½".

All exposed edges of concrete shall be chamfered 1" x 1" unless otherwise shown.

Concrete in all areas under bearing plates to be a minimum of ⅛" above finished elevations. See Specifications.

Bar Reinforcement: Bar reinforcement to be deformed type (ASTM-A305), billet steel of intermediate grade (ASTM-A15). Lapped splices, unless otherwise noted, to be 35 bar diameters.

Superficial Waterproofing: Interior faces of the front and side walls of abutments shall be waterproofed in accordance with Delaware Standard Specifications, Item 19.

Silicone Surface Treatment: The following surfaces and areas are to be given an application of an approved silicone solution (See Special Provisions)

1. Surfaces of sidewalks and safety walks (including curbs) on superstructures.
2. Inside and outside faces of parapet (superstructures and abutments).
3. Top surfaces at piers and abutments.

Slope Protection: Precast concrete block slope protection to the extent indicated on the drawings shall be as specified in Special Provisions.

Structural Steel and Steelwork: All welded structural steel shall conform with the requirements of A.S.T.M. Designation A-373-58T (Structural Steel for Welding). All structural steel not welded shall conform with the requirements of A.S.T.M. Designation A-7 or A.S.T.M. Designation A373-58T.

All welding shall conform to the 1956 Standard Specifications for Welded Highway and Railway Bridges of the American Welding Society, with current corrections and addenda.

For notes pertaining to shoes see sheet entitled "Bearing Details."

All dimensions shown on the drawings are for the structures at a normal temperature of + 68° F.

To avoid oversight the shop drawings shall show clearly the nature, dimensions and locations of all welds, bolt sizes, open holes, painting, etc.

Deck Slab: Longitudinal construction joints in the superstructure deck slab are optional with the contractor. Location of these joints, if used, shall be approved by the Engineer.

Shear Connectors: Three general types of shear connectors are eligible for use, at the contractor's option:

1. Structural Shapes. (Detailed on contract plans)
2. Spirals.
3. Welded Studs.
   (a) Solid-flux welding end.
   (b) Granular-flux-filled welding end.

Should the contractor elect to use a different type of shear connector than shown on the plans, he shall submit, for approval, complete detailed shop drawings and all other pertinent data concerning the shear connector he proposes to use. The proposed shear connector shall develop the equivalent shear of the connector shown on the plans, and shall be approved by the Engineer. See Special Provisions.

APPROVED _____ BRIDGE ENGINEER

DELAWARE STATE HIGHWAY DEPARTMENT

INTERSTATE ROUTE F.A.I.-1(21)-2
CHRISTINA RIVER INTERCHANGE

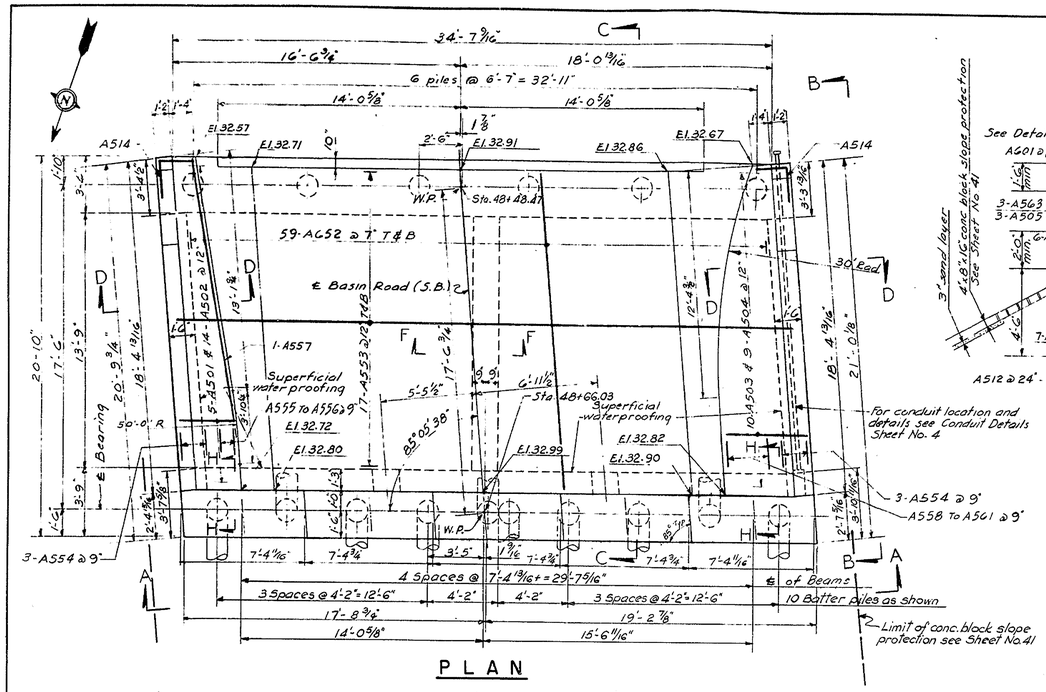
BASIN ROAD (S.B.) - BRIDGE NO. 6-2
SITE PLAN

J. E. GREINER CO.
MORAN, PROCTOR, MUESER & RUTLEDGE
CONSULTING ENGINEERS

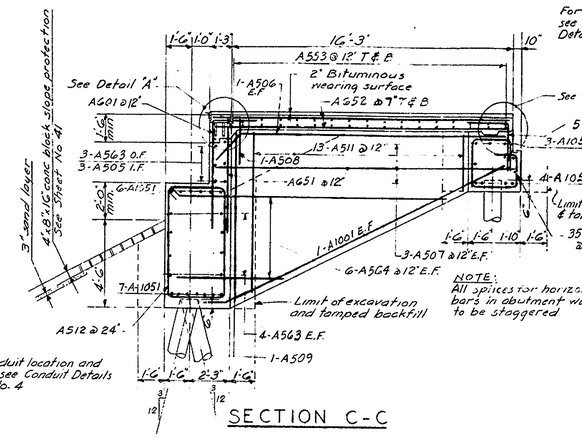
DESIGNED: J.E.F. CHECKED: C.B.M. DATE: 2-29-60
DRAWN: J.W.Y. IN CHARGE: B.W.L. SCALE: As Shown

REVISIONS
Notes: Shear Connectors Sheet Only.

COUNTY	CONTRACT	P.R.A. ROD. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE	I-1(21)-2	2	DEL.	I-95-1(19)		27	58

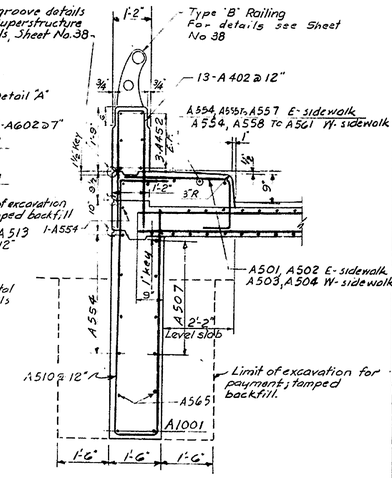


PLAN



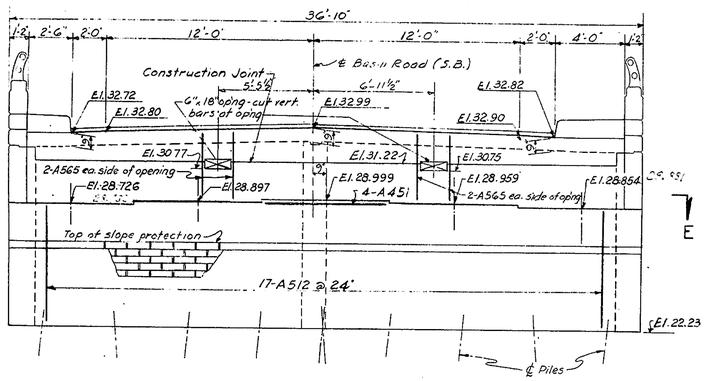
NOTE: All splices for horizontal bars in abutment walls to be staggered

SECTION C-C

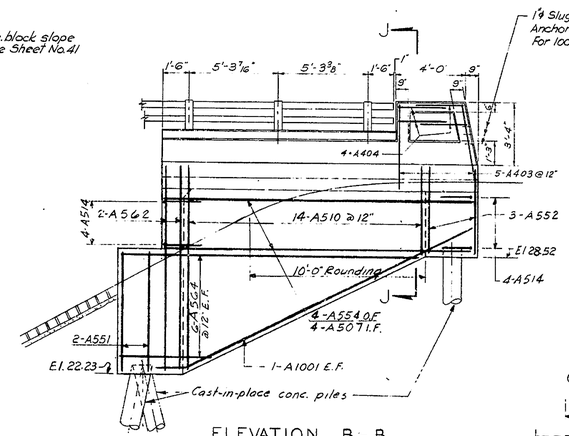


SECTION D-D

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

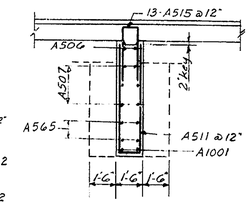


ELEVATION A-A

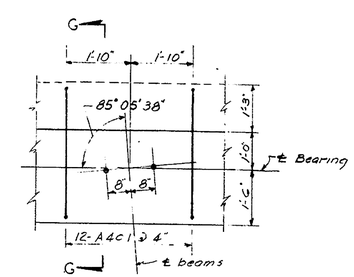


ELEVATION B-B

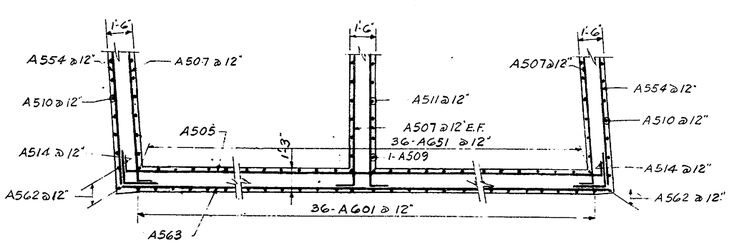
Reinforcing shown for west side only. Reinforcing for east side same.



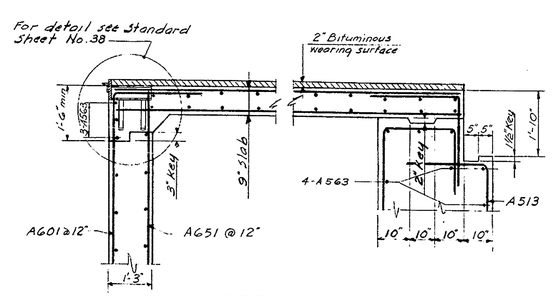
SECTION F-F



PLAN

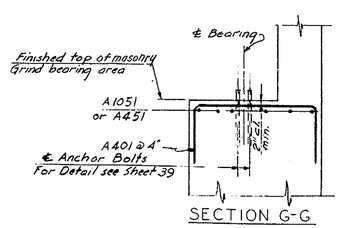


SECTION E-E



DETAIL "A"

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



SECTION G-G

GRILLAGE UNDER BEARING PLATES

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

REINFORCING SCHEDULE

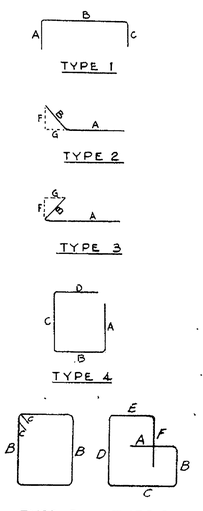
BENT BARS (All dimensions are out to out)

MARK	NO.	SIZE	LENGTH	TYPE	A	B	C	D	E	F	G	REMARKS
A401	60	4	6-4	1	1-6	3-5	1-6					
A402	26	4	7-0	1	3-2	0-8	3-2					
A501	5	5	5-3	1	3-3	1-3	0-9					
A502	14	5	4-0 To 5-1	1	2-0 To 3-1	1-3	0-9					Increment = 1"
A503	10	5	6-8	1	4-8	1-3	0-9					
A504	9	5	4-6 To 6-6	1	2-6 To 4-6	1-3	0-9					Increment = 3"
A505	3	5	38-0	1	36-0	0-9	0-9					
A506	2	5	18-1	2	15-3	2-10				2-0	2-0	
A507	14	5	17-11	1	17-2	0-9	—					
A508	1	5	7-8	1	3-3	1-2	3-3					
A509	1	5	18-2	1	8-6	1-2	8-6					
A510	28	5	10-5 To 23-5	4	3-9 To 10-3	1-2	4-6 To 11-0	1-0				Increment = 6" 2 of each
A511	13	5	6-10 To 18-10	1	2-10 To 8-10	1-2	2-10 To 8-10					Increment = 6"
A512	17	5	19-4	5	3-5	5-9	0-6					
A513	35	5	14-1	8	2-3	1-10	3-0	2-10	2-2	2-0		
A514	16	5	4-0	1	2-0	2-0						
A515	13	5	6-8	1	2-9	1-2	2-9					
A601	36	6	8-1	1	5-3	2-3	—					
A602	59	6	4-9	1	2-6	2-3	—					
A1001	6	10	19-0	2	17-6	1-6				0-7 1/2	1-4 1/2	
A403	10	4	10-2	1	4-9	0-8	4-9					Pylon Reinforcing
A404	8	4	6-1	1	2-9	0-7	2-9					Pylon Reinforcing

STRAIGHT BARS

MARK	NO.	SIZE	LENGTH	REMARKS
A451	4	4	7-3	
A452	12	4	17-10	
A551	4	5	6-2	
A552	6	5	4-6	
A553	34	5	35-4	Slope in field to slab shape
A554	16	5	18-0	
A555	1	5	14-3	
A556	1	5	5-3	
A557	1	5	15-3	
A558	1	5	17-3	
A559	1	5	15-3	
A560	1	5	13-0	
A561	1	5	8-0	
A562	4	5	11-0	
A563	15	5	36-6	
A564	36	5	6-0 To 16-0	Increment = 2'-0" 6 of each
A565	8	5	4-0	
A651	36	6	5-3	
A652	118	6	17-3	
A1051	20	10	36-6	

NOTE: All above marks are prefixed by G-2



NOTES:
1. For General Notes see Sheet No. 26
2. For Abutment "B" & Notes see Sheet No. 28
3. For Sections H-H & J-J see Abut. "B" Sheet No. 28
4. Elevations shown at beam bearings are finished top of masonry elevations. See Section G-G.
5. For Cast-in-place concrete pile details see Sheet No. 28

APPROVED _____ BRIDGE ENGINEER

DELAWARE STATE HIGHWAY DEPARTMENT

INTERSTATE ROUTE F.A.I.-1(21)-2
CHRISTINA RIVER INTERCHANGE

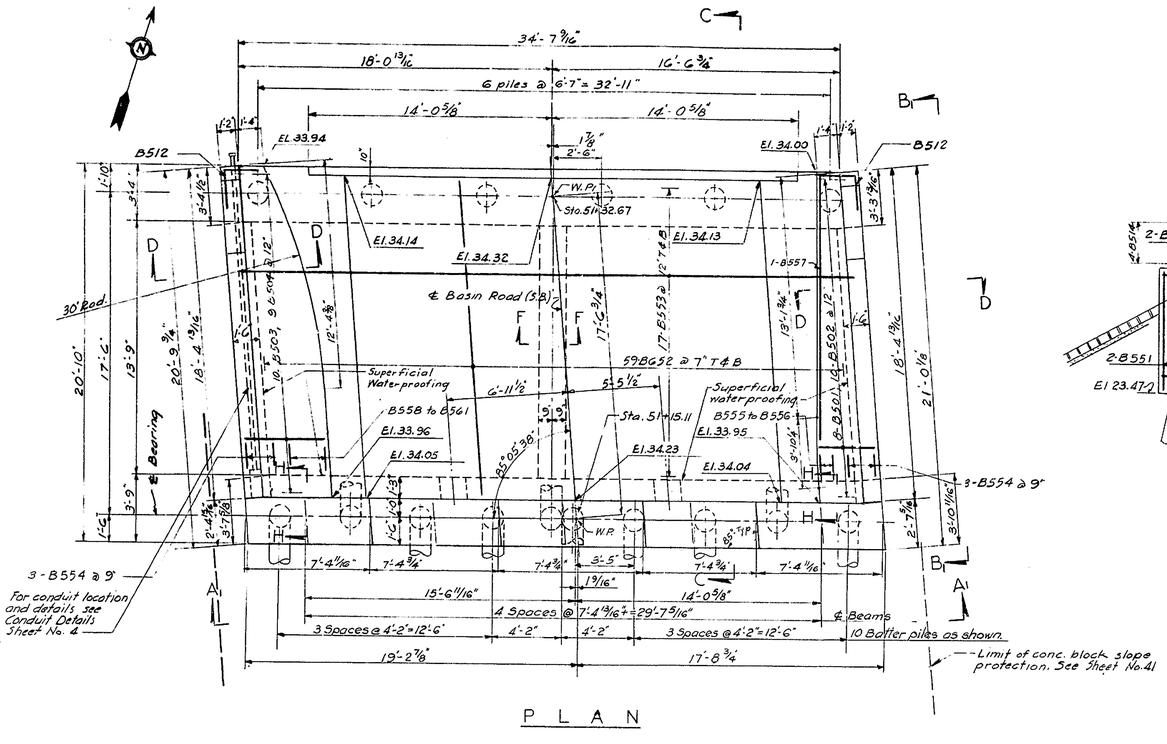
BASIN ROAD (S.B.) - BRIDGE NO. 6-2
ABUTMENT "A"

J. E. GREINER CO.
MORAN, PROCTOR, MUESER & RUTLEDGE
CONSULTING ENGINEERS

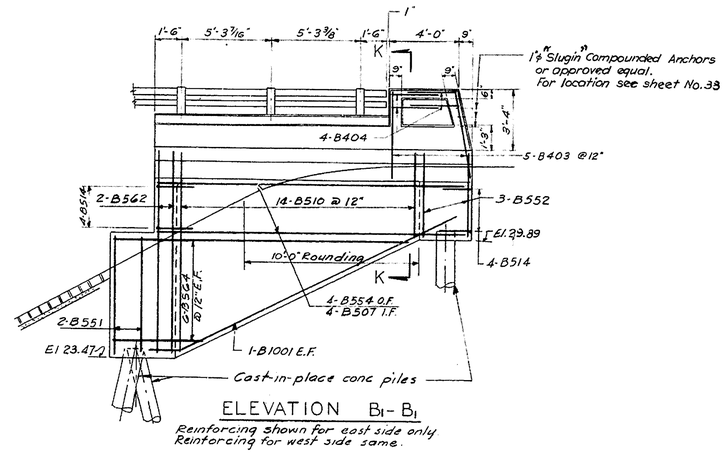
DESIGNED: S.H.T. CHECKED: R.P.A. & N.A.S. DATE: 2-29-60
DRAWN: N.S. IN CHARGE: N.K.K. SCALE: AS NOTED

REVISIONS
GRADE
ALIGNMENT
TIE POINTS
BENCH MARKS
EARTHWORK
DRAINAGE
Beam seat elev. changed, skewing 1.5 ahead to. Batter piles 2/14/63

COUNTY	CONTRACT	P.R.A. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO	TOTAL SHEETS
NEW CASTLE	I-1(21)-2	2	DEL.	I-95-1(19)		23	58

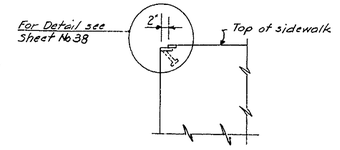


PLAN



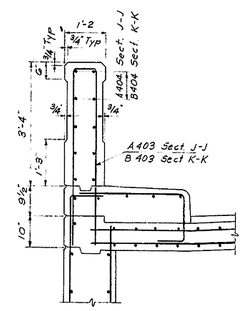
ELEVATION B_1-B_1

Reinforcing shown for east side only.
Reinforcing for west side same.



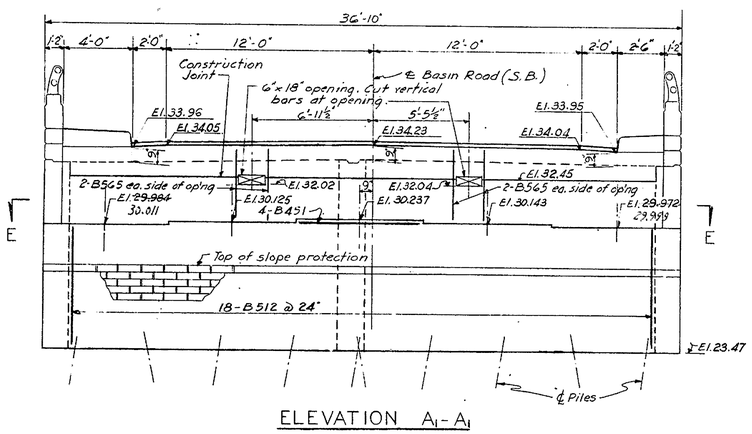
SECTION H-H

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

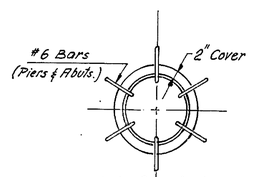


SECTION J-J (See Sheet No. 27)
SECTION K-K

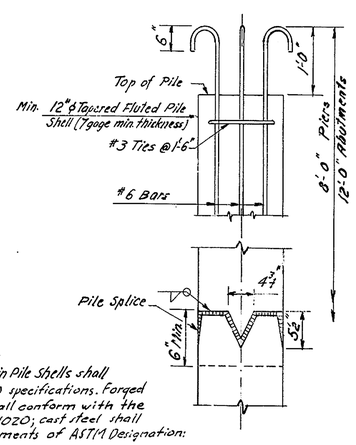
Scale: 1/2" = 1'-0"



ELEVATION A_1-A_1



Note: Cost of pile reinforcing to be included in Item 35.



PILE DETAILS

Scale 1" = 1'-0"

Note:
1. Steel in Pile Shells shall conform with SAE-1010 specifications. Forged steel for pile points shall conform with the requirements of SAE-1020; cast steel shall conform to the requirements of ASTM Designation: A27-60, Grade H-1.
2. Other types of piles will be accepted if meeting the requirements of the Standard Specifications and Special Provisions

REINFORCING SCHEDULE

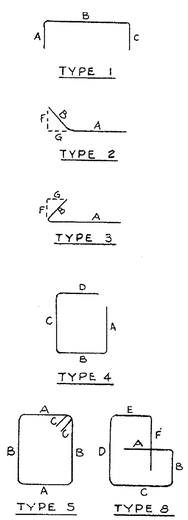
Bent Bars (All dimensions are out to out)

MARK	NO	SIZE	LENGTH	TYPE	A	B	C	D	E	F	G	REMARKS
B401	60	4	6-4	1	1-6	3-5	1-6					
B402	26	4	7-0	1	3-2	0-8	3-2					
B501	5	5	5-3	1	3-3	1-3	0-9					
B502	14	5	4-0 To 5-1	1	2-10 To 3-1	1-3	0-9					Increment = 1"
B503	10	5	6-8	1	4-8	1-3	0-9					
B504	9	5	4-6 To 6-6	1	2-6 To 4-6	1-3	0-9					Increment = 3"
B505	3	5	38-0	1	36-6	0-9	0-9					
B506	2	5	18-1	2	15-3	2-10				2-0	2-0	
B507	14	5	17-11	1	17-2	0-9	—					
B508	1	5	7-8	1	3-3	1-2	3-3					
B509	1	5	18-2	1	8-6	1-2	8-6					
B510	28	5	10-5 To 23-5	4	7-9 To 10-3	1-2	4-6 To 11-0	1-0				Increment = 6" 2 of each
B511	13	5	6-10 To 18-10	1	2-10 To 8-10	1-2	2-10 To 8-10					Increment = 6"
B512	17	5	19-4	5	3-5	5-9	0-6					
B513	35	5	14-1	8	2-3	1-10	3-0	2-10	2-2	2-0		
B514	16	5	4-0	1	2-0	2-0	—					
B515	13	5	6-8	1	2-9	1-2	2-9					
B601	36	6	8-1	1	5-3	2-3	—					
B602	59	6	4-9	1	2-6	2-3	—					
B1001	6	10	19-0	2	17-6	1-6				0-7 1/2	1-4 1/2	
B403	10	4	10-2	1	4-9	0-8	4-9					Pylon Reinforcing
B404	8	4	6-1	1	2-9	0-7	2-9					Pylon Reinforcing

STRAIGHT BARS

MARK	NO	SIZE	LENGTH	REMARKS
B451	4	4	7-3	
B452	12	4	17-10	
B551	4	5	6-2	
B552	6	5	4-6	
B553	34	5	35-4	Slope to field to slab thickness
B554	16	5	18-0	
B555	1	5	14-3	
B556	1	5	5-3	
B557	1	5	15-3	
B558	1	5	17-3	
B559	1	5	15-3	
B560	1	5	13-0	
B561	1	5	8-0	
B562	4	5	11-0	
B563	15	5	36-6	
B564	36	5	6-0 To 16-0	Increment = 2'-0" 6 of each
B565	8	5	4-0"	
B651	36	6	5-3	
B652	118	6	17-3	
B1051	20	10	36-6	

NOTE: All above marks are prefixed by 6-2



NOTES:

1. For Sections C-C, D-D, E-E, F-F, Detail "A" and Grillage Detail see Abutment "A" Sheet No. 27. Reinforcing detailing for these sections for Abutment "B" is similar to Abutment "A" and is shown on schedule for Abutment "B" by substituting prefix "B" for prefix A for corresponding bar mark numbers.
2. For Key Plan see Sheet No. 29
3. For Railing and Deck Joint details see Sheet No. 38
4. For slope protection and drainage details see Sheet No. 41
5. For shoe and anchor bolt details see Sheet No. 39
6. Elevations shown at beam bearings are finished top of masonry elevations. See Section G-G on Sheet No. 27

APPROVED _____ BRIDGE ENGINEER

DELAWARE
STATE HIGHWAY DEPARTMENT

INTERSTATE ROUTE F.A.I.-1(21)-2
CHRISTINA RIVER INTERCHANGE

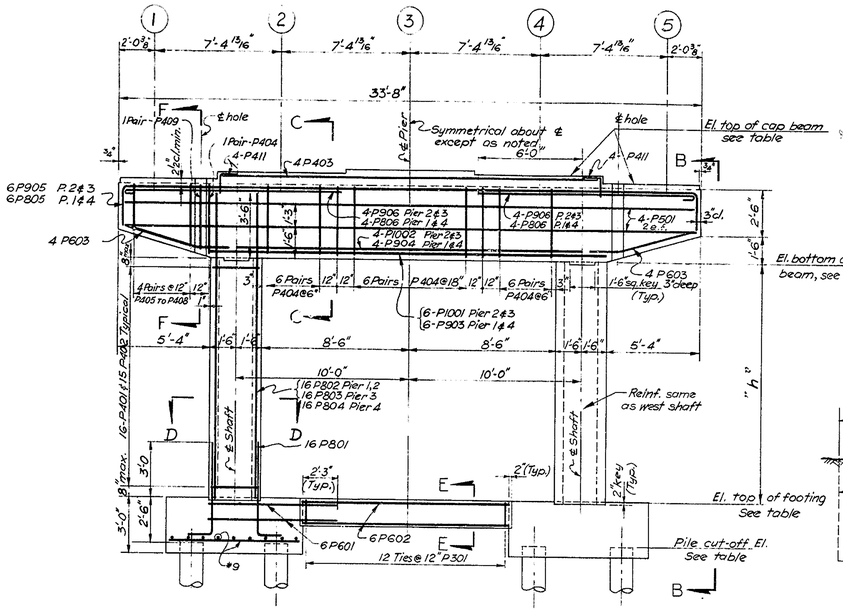
BASIN ROAD (S.B.) - BRIDGE NO. 6-2
ABUTMENT "B"

J.E. GREINER CO.
MORAN, PROCTOR, MUESER & RUTLEDGE
CONSULTING ENGINEERS

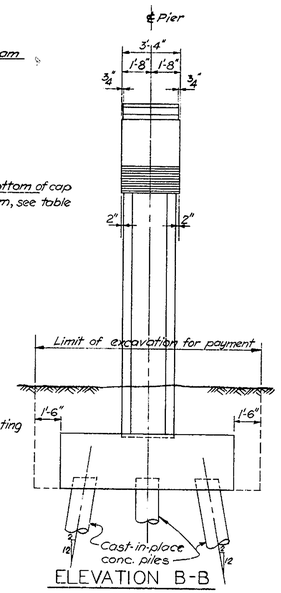
DESIGNED: S.L.T. CHECKED: R.P.A. M.A.G. DATE: 2-29-60
DRAWN: I.S. IN CHARGE: J.W.K. SCALE: AS NOTED

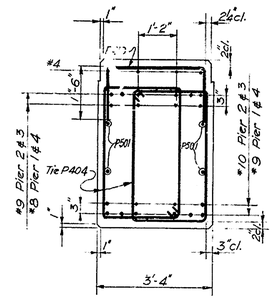
REVISIONS: BEARINGS, TIE POINTS, BENCH MARKS, EARTHWORK, DRAINAGE

COUNTY	CONTRACT	F.A.P. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO	TOTAL SHEETS
NEW CASTLE	I-1(21)-2	2	DEL.	I-95-1(19)	.	29	58

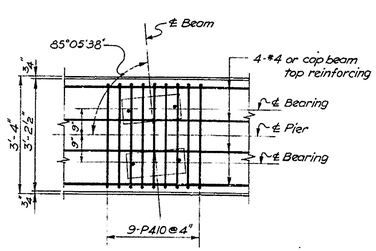


SECTION A-A

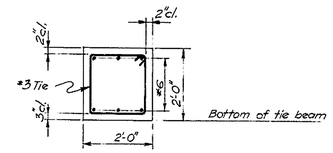




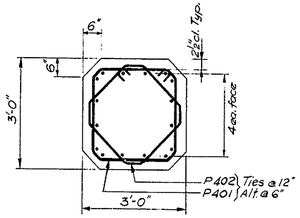
SECTION C-C



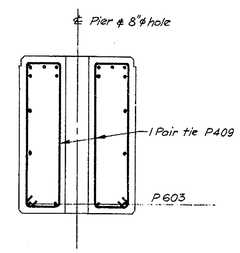
GRILLAGE UNDER BEARING PLATES



SECTION E-E

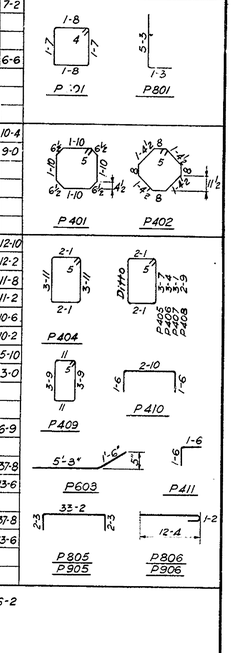


SECTION D-D

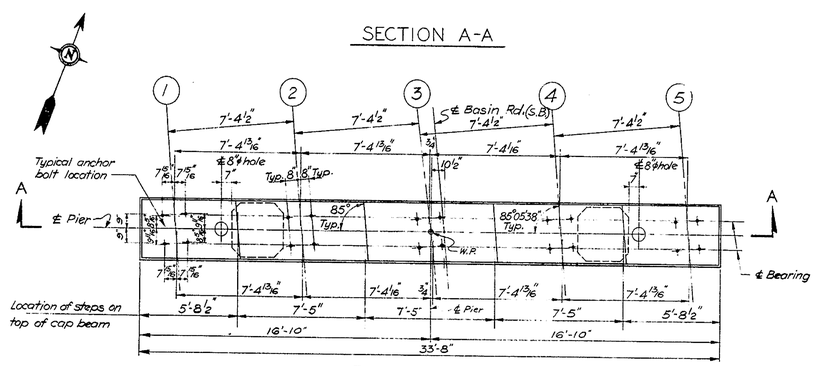


SECTION F-F

LOCATION	REINFORCING SCHEDULE FOR PIERS 1,2,3 & 4 — STRAIGHT BARS: MARK	PIER	TOTAL REQ'D	SIZE	LENGTH	BENT BARS: MARK	PIER	TOTAL REQ'D	SIZE	LENGTH	BENDING DIAGRAMS (All dimensions are out to out)
FOOTING	P601	1,2,3,4	48	#6	7'-9	P301	1,2,3,4	48	#3	7'-2	
	P602	1,2,3,4	24	#6	12'-0						
	P901	1,2,3,4	88	#9	7'-6	P801	1,2,3,4	128	#8	6'-6	
	P902	1,2,3,4	72	#9	9'-6						
SHAFT	P802	1,2,	64	#8	19'-6	P401	1,2,3,4	128	#4	10'-4	
	P803	3	32	#8	20'-0	P402	1,2,3,4	120	#4	9'-0	
	P804	4	32	#8	19'-0						
CAP BEAM	P403	1,2,3,4	16	#4	21'-11	P404	1,2,3,4	176	#4	12'-10	
						P405	↓	16	↑	12'-2	
	P501	1,2,3,4	16	#5	33'-0	P406		16		11'-8	
						P407		16		11'-2	
	P903	1,4	12	#9	23'-0	P408		16		10'-6	
	P904	1,4	8	#9	20'-0	P409		16		10'-2	
						P410	↓	180	↑	5'-10	
	P1001	2,3	12	#10	23'-0	P411	1,2,3,4	32	#4	3'-0	
	P1002	2,3	8	#10	20'-0						
						P603	2,3,4	32	#6	6'-9	
						P805	1,4	12	#8	37'-8	
						P806	1,4	16	#8	13'-6	
						P9[illegible]	2,3	12	#9	37'-8	
						P9[illegible]	2,3	16	#9	13'-6	



NOTE: All above marks are prefixed by 6-2



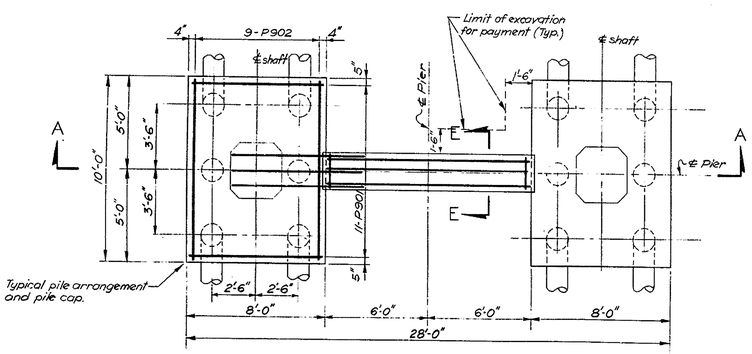
PLAN - CAP BEAM

TABULATION OF ELEVATIONS & HEIGHTS OF PIERS	PIER 1	PIER 2	PIER 3	PIER 4
El ①	~~28.934~~	29.054	29.382	29.647
El. ②	29.312	29.349	29.522	30.018
El. ③	29.424	29.461	29.634	30.129
El. ④	29.330	29.367	29.540	30.035
El. ⑤	28.921	29.042	29.369	29.634
El. bottom of cap beam	24.671	24.792	25.119	25.384
El. top of footing	8.838	8.959	8.786	10.051
Pile cut-off El.	6.338	6.459	6.286	7.551
Dimension "h"	15'-10"	15'-10"	16'-4"	15'-4"

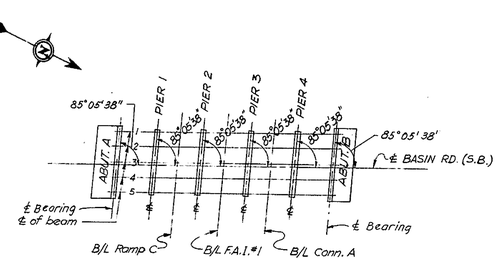
NOTE: Elevations ① thru ⑤ are finished top of pier elevations.

NOTES

1. For General Notes see sheet 26
2. Angles given on key plan are from ℄ of Pier or ℄ of Bearing on Abutment to ℄ of Basin Road (S.B.)
3. For shoe and anchor bolt details see sheet 39
4. For drainage details see sheet 41
5. For pile details see Sheet No. 28



PLAN OF FOOTING



KEY PLAN

APPROVED _____ BRIDGE ENGINEER

DELAWARE STATE HIGHWAY DEPARTMENT

INTERSTATE ROUTE F.A.I.-1(21)-2
CHRISTINA RIVER INTERCHANGE

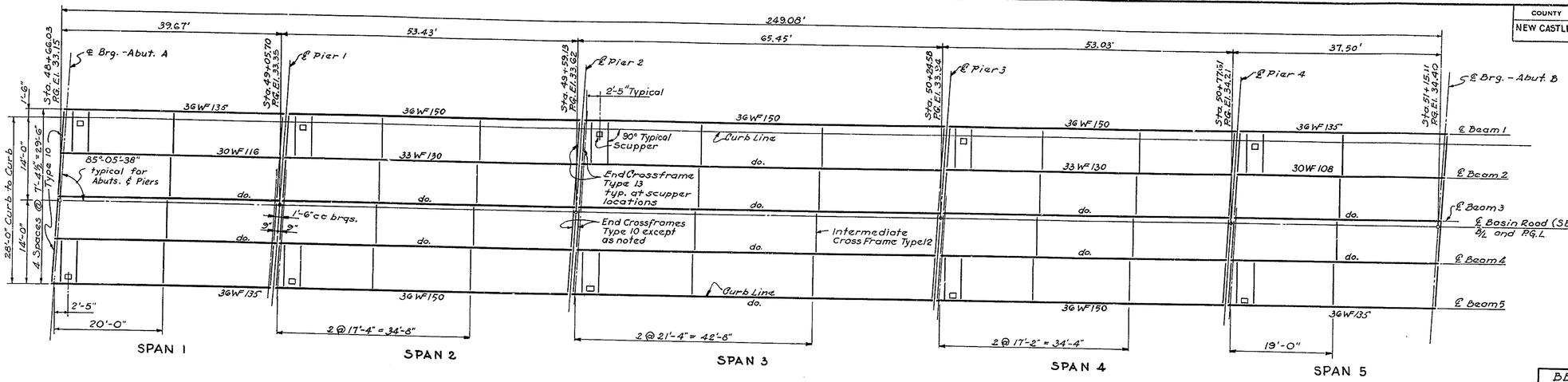
BASIN ROAD (S.B.) - BRIDGE NO. 6-2
PIERS 1, 2, 3 & 4

J. E. GREINER CO.
MORAN, PROCTOR, MUESER & RUTLEDGE
CONSULTING ENGINEERS

DESIGNED: J.H. CHECKED: Y.F. DATE: 2-29-60
DRAWN: S.R. IN CHARGE: N.W.K. SCALE: K.P.A.

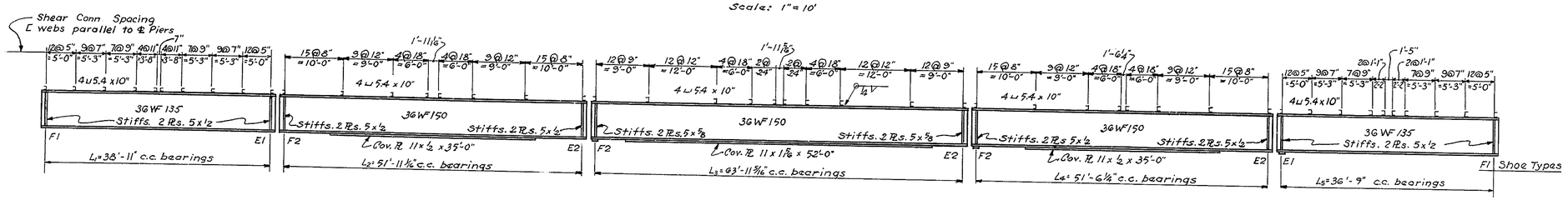
REVISIONS: Tabulation of elevations changed according to J.E. Greiner letter dated 8/13/63 — 8/14/63

COUNTY	CONTRACT	P.R.A. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE	I-1(21)-2	2	DEL.	I-95-1(19)		30	58

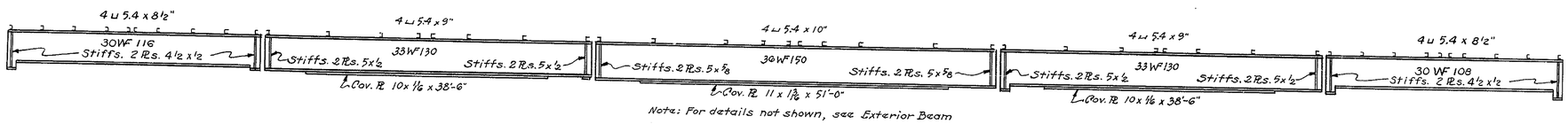


FRAMING PLAN

Scale: 1" = 10'

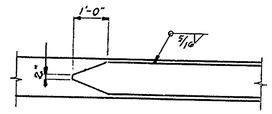


EXTERIOR BEAM



Note: For details not shown, see Exterior Beam

INTERIOR BEAM



BOTTOM FLANGE DETAIL

BEARING FILL HEIGHTS AT SHOES		
Location	Beams 1 & 5	Beams 2-4, incl.
Abutment A	—	5 7/8" *
Pier 1-Span 1	7/8" 1/4"	3 1/16" *
Pier 2-Span 2	—	1 5/16"
Pier 2-Span 3	1 7/8"	—
Pier 3-Span 4	1 7/8"	4 5/8" *
Pier 4-Span 5	1 7/8" 2 3/16"	5 1/16" *
Abutment B	—	6" *
Use stool for fills noted *, otherwise use solid fill. See Bearing Details sheet.		

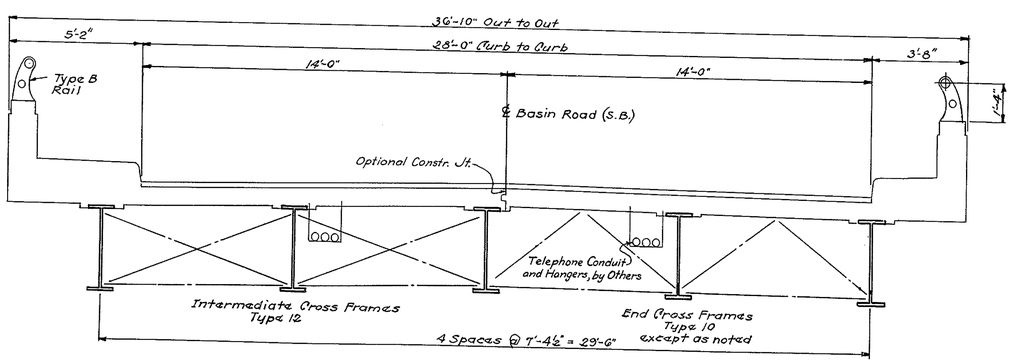
Notes:

For General Notes see Sheet No. 26.

For cross frames, dams and bridge railing see Superstructure Details sheet No. 38.

For scuppers and scupper framing see Scupper Details sheet No. 40.

For shoes, see Bearing Details sheet No. 39.



CROSS SECTION

Scale: ⅜" = 1'-0"

CAMBER INCREMENTS FOR DEAD LOADS (INCHES) (NO VERTICAL CURVE)										
	SPANS 1 and 5				SPANS 2 and 4				SPAN 3	
	Bms. 1 & 5		Bms. 2,3,4		Bms. 1 & 5		Bms. 2,3,4		Bms. 1 to 5	
	$\frac{1}{4}L_1$	$\frac{1}{2}L_1$	$\frac{1}{4}L_1$	$\frac{1}{2}L_1$	$\frac{1}{4}L_2$ $\frac{1}{4}L_4$	$\frac{1}{2}L_2$ $\frac{1}{2}L_4$	$\frac{1}{4}L_2$ $\frac{1}{4}L_4$	$\frac{1}{2}L_2$ $\frac{1}{2}L_4$	$\frac{1}{4}L_3$	$\frac{1}{2}L_3$
Structural Steel	—	—1/16	—	1/16	1/16	1/8	1/16	1/8	3/16	1/4
Concrete Deck Slab	1/16	1/8	3/16	1/4	5/16	3/8	3/8	1/2	9/16	13/16
Sidewalk and Parapet	—	—	1/16	1/16	1/16	1/8	1/8	1/8	1/8	3/16
2" Wearing Surface	—	—	—	—	—	—	—	1/16	1/16	1/16
Full Dead Load	1/16	1/8	1/4	3/8	7/16	5/8	9/16	13/16	15/16	1 5/16
Vertical Curve	None		None		None		None		None	
Total Camber at ½ Ln	Natural Camber Place Up		Natural Camber Place Up		5/8		13/16		1 5/16	

GRADE
BEARINGS
TIE POINTS
BENCH MARKS
ELECTRICAL WORK
DRAINAGE

REVISIONS
Revise fill heights on Pier 1 & Abutments, change
accordingly. J.E. Greiner letter dated 2-14-63 — E.F. Pyle

APPROVED _____ BRIDGE ENGINEER

DELAWARE
STATE HIGHWAY DEPARTMENT

INTERSTATE ROUTE F.A.I.-1(21)-2
CHRISTINA RIVER INTERCHANGE

BASIN ROAD (S.B.) - BRIDGE NO. 6-2
SUPERSTRUCTURE - FRAMING

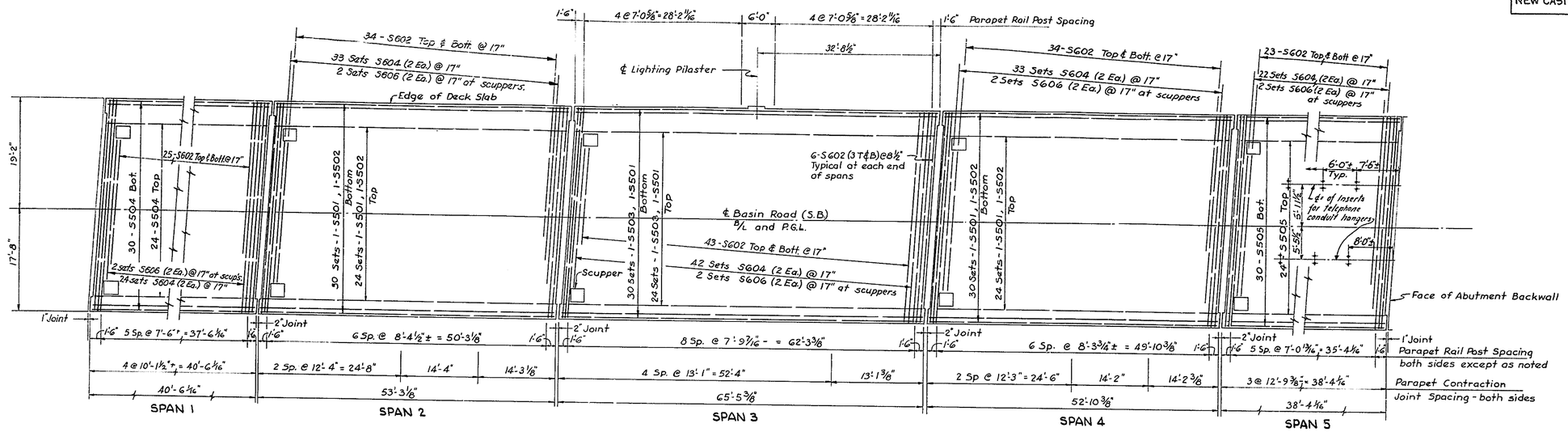
J. E. GREINER, CO.
MORAN, PROCTOR, MUESER & RUTLEDGE
CONSULTING ENGINEERS

DESIGNED: F.F.W. CHECKED: C.B.M. DATE: 2-29-60
DRAWN: J.E.P. IN CHARGE: E.W.L. SCALE: As Shown

"Imperial" 156 W. B. & E.

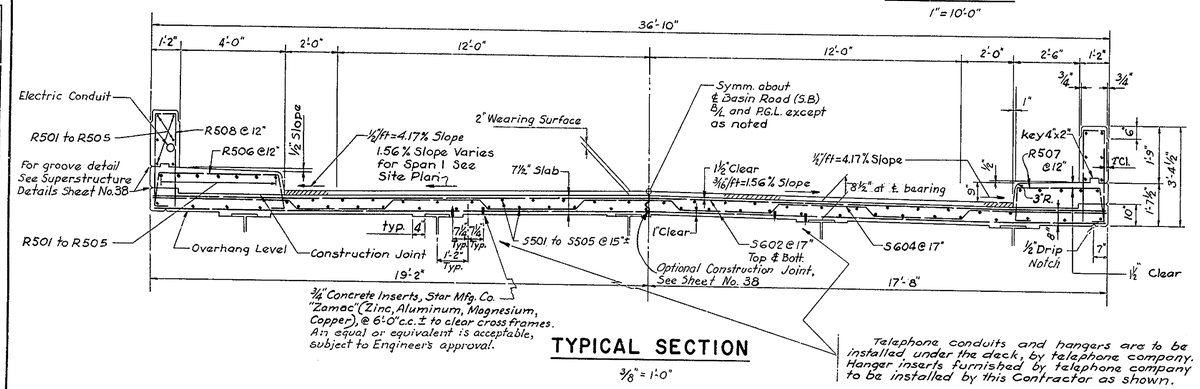
10·4

COUNTY	CONTRACT	F.A.I. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE	I-1(21)-2	2	DEL.	I-95-1(19)		31	58



DECK PLAN

1" = 10'-0"



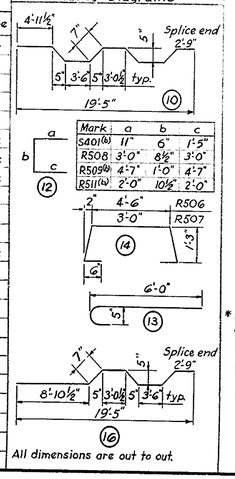
TYPICAL SECTION

⅜" = 1'-0"

REINFORCING SCHEDULE

Loc.	Mark *	Number Required Span 1	Span 2	Span 3	Span 4	Span 5	Length	Total Weight	Type
Deck	S602	62	80	98	80	58	36'-6"		Str.
	S604	48	66	84	66	44	20'-1"		10
	S606 (a)	4	4	4	4	4	19'-11"		16
	S607 (a)	12	12	12	12	12	6'-0"		Str.
	S501		54	54	54		29'-6"		Str.
	S502		54		54		24'-2"		Str.
	S503			54			36'-2"		Str.
	S504	54					39'-8"		Str.
	S505					54	37'-6"		Str.
	S507 (a)	6	6	6	6	6	6'-5		13
	S401 (b)			4			2'-10		12
	S402 (b)			2			2'-6"		Str.
Sidewalk & Parapet	R501	96					9'-8"		Str.
	R502		48		48		11'-10"		Str.
	R503			120			12'-8"		Str.
	R504 (b)		48		48		13'-10"		Str.
	R505					72	12'-4"		Str.
	R506	41	54	66	54	39	8'-0"		14
	R507	41	54	66	54	39	6'-6"		14
	R508	82	108	129	108	78	6'-8½"		12
	R509 (b)			4			10'-2"		12
	R511			4			4'-10½"		12
						TOTAL	WEIGHT	58,940	lbs.

Bending Diagrams



Mark	a	b	c
S401 (a)	11"	6"	1'-5"
R508	3'-0"	8½"	3'-0"
R509 (a)	4'-7"	1'-0"	4'-7"
R511 (a)	2'-0"	10½"	2'-0"

All dimensions are out to out.

* Bar size is indicated in the bar mark. The first digit where three digits are used, and the first two digits where four digits are used indicate the bar size.
See Scupper Details sheet for modification of reinforcing bars around scuppers, noted by (a). (Sheet No. 40)
See Conduit sheet for modification of reinforcing bars and additional bars in lighting pilaster, noted by (b). (Sheet No. 4)

NOTE:
For General Notes see sheet No. 26.
For railing details, roadway and sidewalk dams, see Superstructure Details sheet No. 38
For details of roadway slab construction joints and parapet contraction joints see Superstructure Details Sheet No. 38.
For details of electric conduit and boxes in parapet see Conduit Details sheet No. 4.

APPROVED _____ BRIDGE ENGINEER

DELAWARE
STATE HIGHWAY DEPARTMENT

INTERSTATE ROUTE F.A.I.-1(21)-2
CHRISTINA RIVER INTERCHANGE

BASIN ROAD (S.B.) - BRIDGE NO. 6-2
SUPERSTRUCTURE - DECK

J. E. GREINER CO.
MORAN, PROCTOR, MUESER & RUTLEDGE
CONSULTING ENGINEERS

DESIGNED: F.F.W. CHECKED: R.L.N. DATE: 2-29-60
DRAWN: A.W. IN CHARGE: R.W.L. SCALE: As Noted.

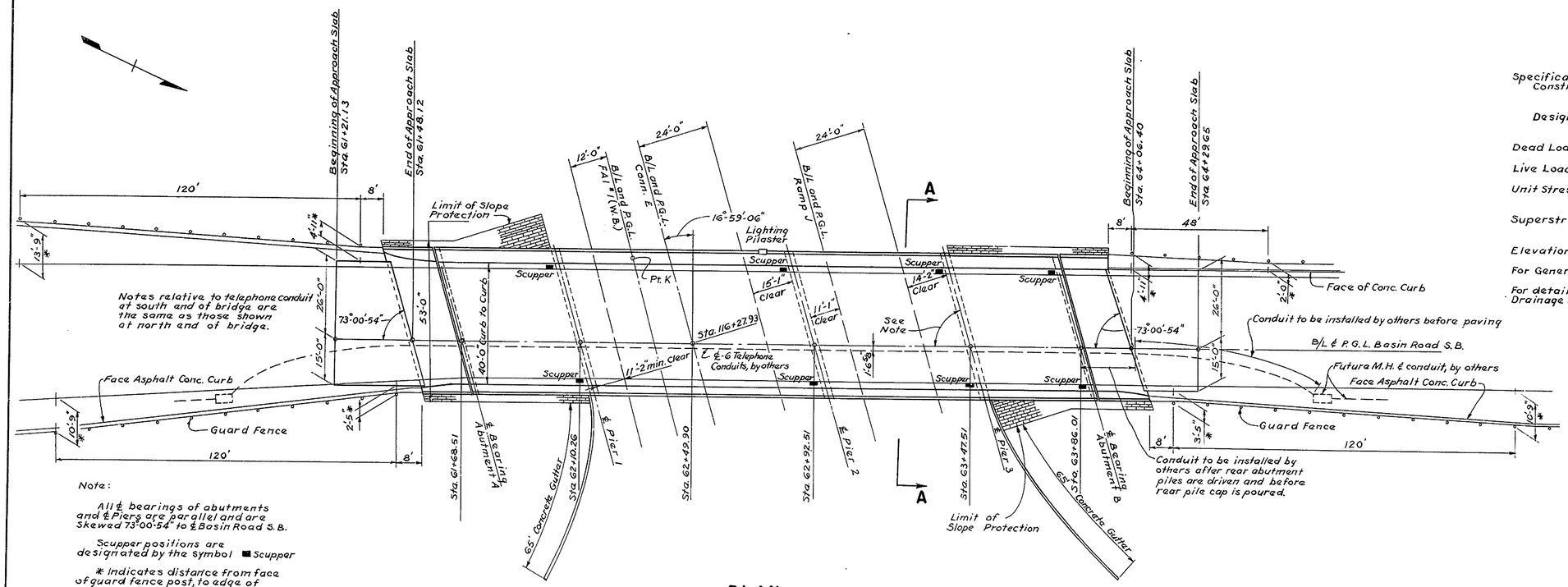
BEARINGS
TIE POINTS
BENCH MARKS
EARTHWORK
DRAINAGE

REVISIONS

8/20/62 V.L.

"Imperial" 156 W. B. & E.

COUNTY	CONTRACT	P.R.A. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE	I-1(21)-2	2	DEL.	I-95-1(19)		32	58



Note:

All ℄ bearings of abutments and ℄ Piers are parallel and are skewed 73°00'-54" to ℄ Basin Road S.B.

Scupper positions are designated by the symbol ■ Scupper

* Indicates distance from face of guard fence post, to edge of pavement.

PLAN

Scale: 1" = 20'

NOTES

Specification:
Construction: State of Delaware, State Highway Department, Standard Specifications, 1960.

Design: A.A.S.H.O. Standard Specifications for Highway Bridges, 1961.

Dead Load: Concrete - 150# per cu. ft.; Wearing Surface - 25# per sq. ft.

Live Load: H20-S16-44 Modified. Slab designed for 16K wheel load.

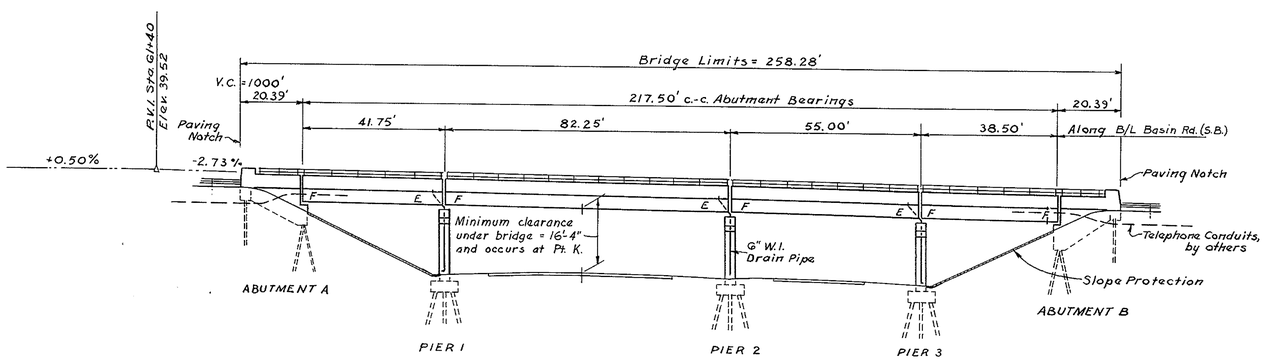
Unit Stresses: Reinforcing Steel (Intermediate Grade) fs = 20,000 p.s.i. Concrete fc = 3,000 p.s.i.; fc = 1200 p.s.i.

Superstructure: Concrete Deck - Steel Beam Construction, composite action under live load.

Elevations: Elevations are based on U.S.C. & G. datum.

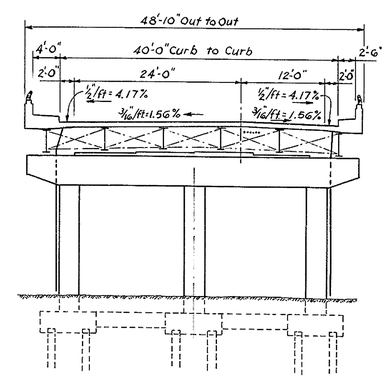
For General Notes see Sheet No. 26.

For details of slope protection and gutters, see Slope Protection and Drainage Details sheet No. 41.



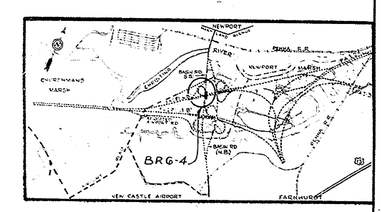
ELEVATION

Scale: 1" = 20'



SECTION A-A

Scale: 1" = 10'



APPROVED _____ BRIDGE ENGINEER

DELAWARE
STATE HIGHWAY DEPARTMENT

INTERSTATE ROUTE F.A.I. - 1(21)-2
CHRISTINA RIVER INTERCHANGE

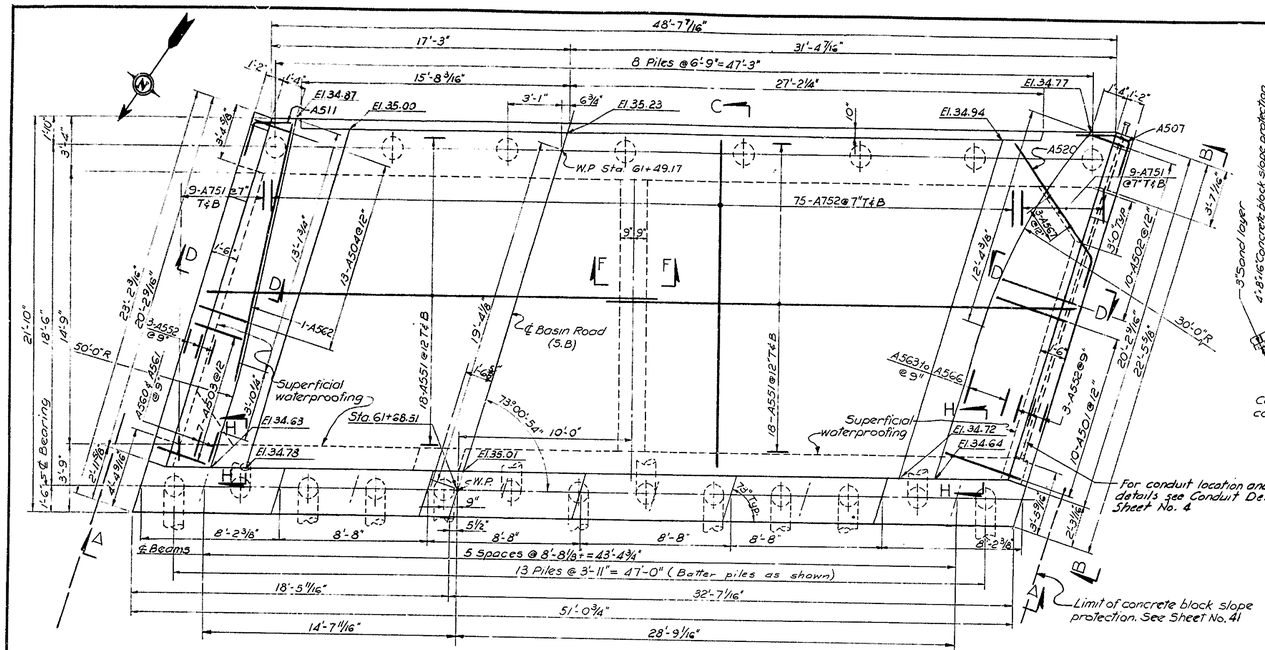
BASIN ROAD (S.B.) - BRIDGE NO. 6-4
SITE PLAN

J. E. GREINER CO.
MORAN, PROCTOR, MUESER & RUTLEDGE
CONSULTING ENGINEERS

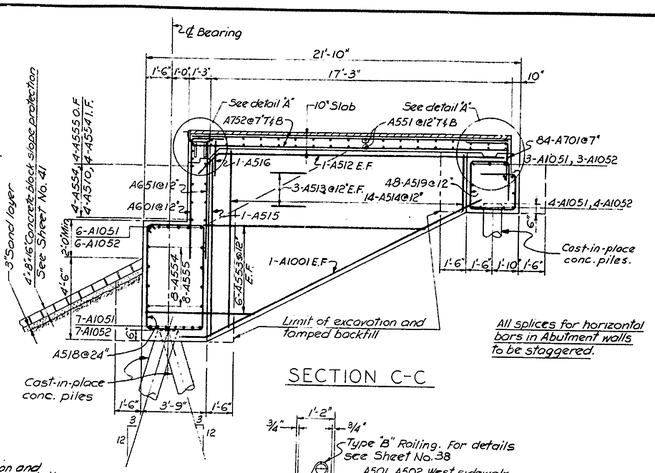
DESIGNED: ..... CHECKED: ..... DATE: 2-29-60
DRAWN: ..... IN CHARGE: ..... SCALE: As Shown

REVISIONS

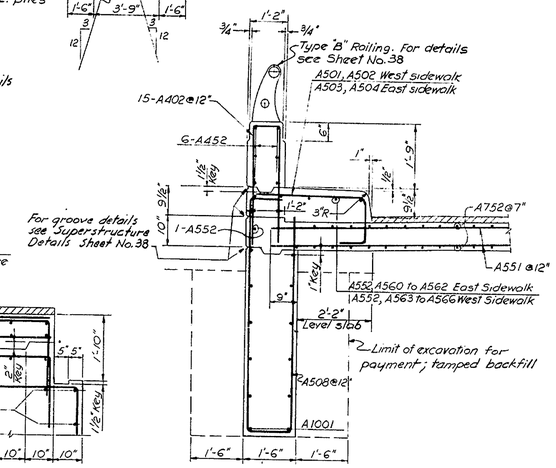
COUNTY	CONTRACT	F.R.A. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO	TOTAL SHEETS
NEW CASTLE	I-1(21)-2	2	DEL.	I-95-1(19)		33	98



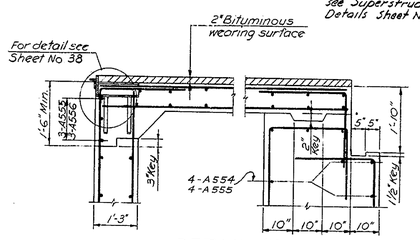
PLAN



SECTION C-C

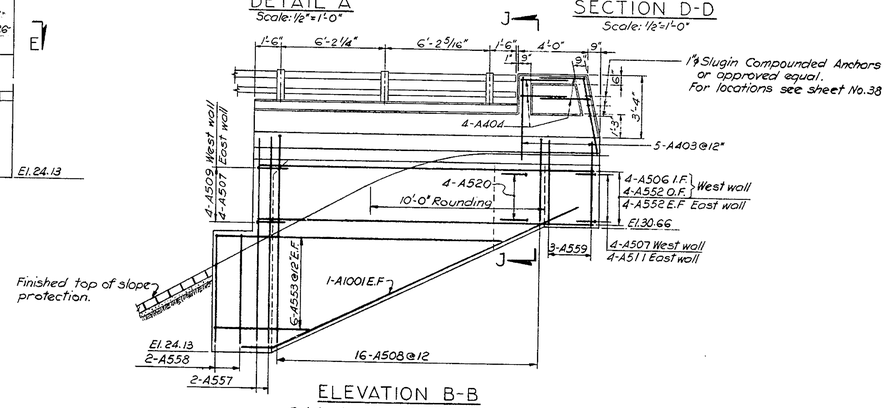


SECTION D-D
Scale: 1/2" = 1'-0"

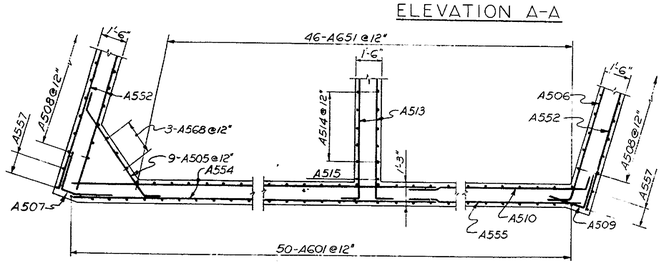


DETAIL 'A'
Scale: 1/2" = 1'-0"

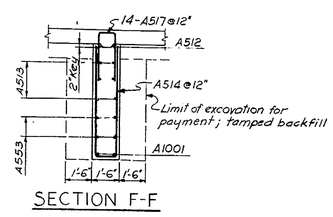
ELEVATION A-A



ELEVATION B-B
Reinforcing shown for West side only. Reinforcing for East side similar, except as noted.



SECTION E-E



SECTION F-F

REINFORCING SCHEDULE

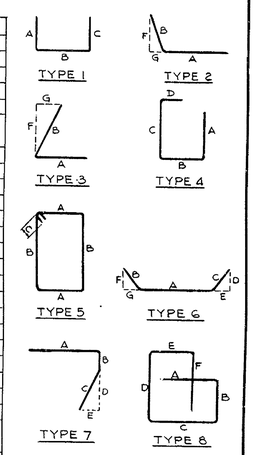
BENT BARS (All dimensions are out to out)

MARK	NO.	SIZE	LENGTH	TYPE	A	B	C	D	E	F	G	REMARKS
A401	72	#4	6-3	1	1-6	3-5	1-6					
A402	30	#4	7-0	1	3-2	8"	3-2					
A501	10	#5	6-9	1	4-9	1-3	9"					
A502	10	#5	4-5 To 6-8	1	2-5 To 4-8	1-3	9"					Increment 3"
A503	7	#5	5-3	1	3-3	1-3	9"					
A504	13	#5	4-1 To 5-1	1	2-1 To 3-1	1-3	9"					Increment 1"
A505	9	#5	7-9	6	9"	6-3	9"	7"	5"	7"	5"	
A506	4	#5	20-7	1	9"	19-10	—					
A507	8	#5	4-11	7	2-0	11"	2-0	1-11	7"			
A508	32	#5	10-5 To 22-11	4	5-9 To 10-0	1-2	4-6 To 10-9	1-0				Increment 5' 2 bars of each
A509	4	#5	4-0	1	2-0	2-0	—					
A510	4	#5	18-6	1	9"	17-9	—					
A511	4	#5	4-0	2	2-0	2-0				1-11	7"	
A512	2	#5	18-6	2	16-3	2-3				1-8	1-8	
A513	6	#5	18-11	1	9"	18-2	—					
A514	14	#5	8-2 To 19-0	1	3-6 To 8-11	1-2	3-6 To 8-11					Increment 5'
A515	1	#5	19-6	1	9-2	1-2	9-2					
A516	1	#5	7-8	1	3-3	1-2	3-3					
A517	14	#5	6-8	1	2-9	1-2	2-9					
A518	24	#5	19-6	5	3-5	5-10	6"					
A519	48	#5	18-11	8	2-3	1-10	3-0	2-9	2-2	1-11		
A520	4	#5	9-6	2	7-9	1-9				1-4	1-0	
A601	50	#6	7-6	1	2-3	5-3	—					
A701	84	#7	4-9	1	2-6	2-3	—					
A1001	6	#10	20-0	2	18-6	1-6				7"	1-4	
A403	10	#4	10-2	1	4-9	8"	4-9					Pylon reinforcing
A404	8	#4	6-1	1	2-9	7"	2-9					Pylon reinforcing

STRAIGHT BARS

MARK	NO	SIZE	LENGTH	REMARKS
A451	4	#4	25-6	
A452	12	#4	19-10	
A551	72	#5	25-9	Slope in field to slab slope.
A552	20	#5	19-10	
A553	36	#5	5-0 To 16-8	Increment 2'-4" 6 bars of each
A554	20	#5	34-9	
A555	19	#5	17-9	
A556	3	#5	32-3	
A557	4	#5	10-9	
A558	4	#5	6-0	
A559	6	#5	2-10	
A560	1	#5	15-3	
A561	1	#5	7-3	
A562	1	#5	15-0	
A563	1	#5	11-0	
A564	1	#5	15-2	
A565	1	#5	17-6	
A566	1	#5	19-3	
A567	7	#5	4-0	
A568	3	#5	9-0	
A651	46	#6	5-3	
A751	36	#7	1-2 To 17-2	Increment 2'-0" 4 bars of each
A752	150	#7	18-0	
A1051	20	#10	35-6	
A1052	20	#10	19-0	

NOTE: All above marks are prefixed by 6-4



NOTES:

1. For general notes see Sheet No. 26
2. For Abutment "B", Sections H-H & J-J and Notes see Sheet No. 34
3. For pile details see Sheet No. 28
4. Elevations shown at beam bearings are finished top of masonry elevations. See Section G-G on Sheet No. 34.

APPROVED _____ BRIDGE ENGINEER

DELAWARE
STATE HIGHWAY DEPARTMENT

INTERSTATE ROUTE F.A.I.-1(21)-2
CHRISTINA RIVER INTERCHANGE

BASIN ROAD (S.B.) - BRIDGE NO. 6-4
ABUTMENT "A"

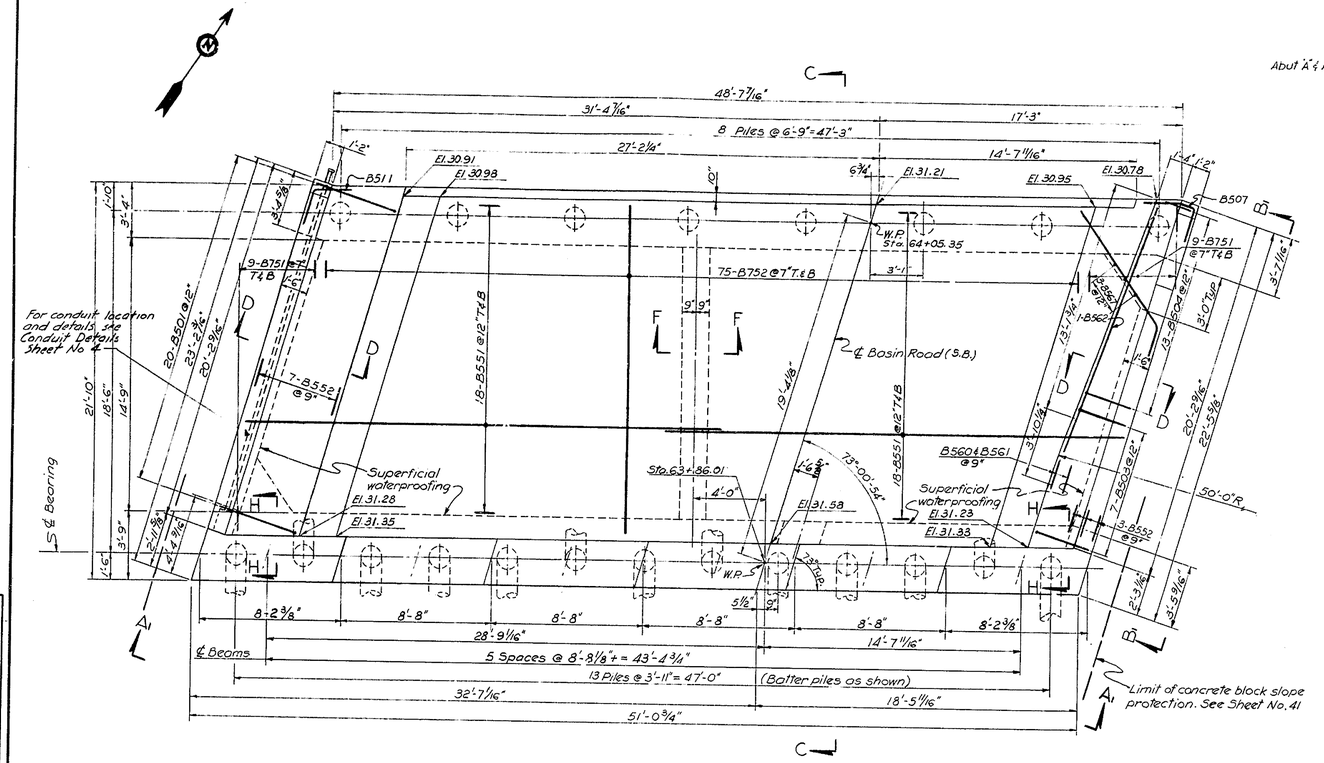
J. E. GREINER CO.
MORAN, PROCTOR, MUESER & RUTLEDGE
CONSULTING ENGINEERS

DESIGNED: R.L.T. CHECKED: R.P.A.N.A.G. DATE: 2-29-60
DRAWN: R.C. IN CHARGE: K.W.B. SCALE: AS NOTED

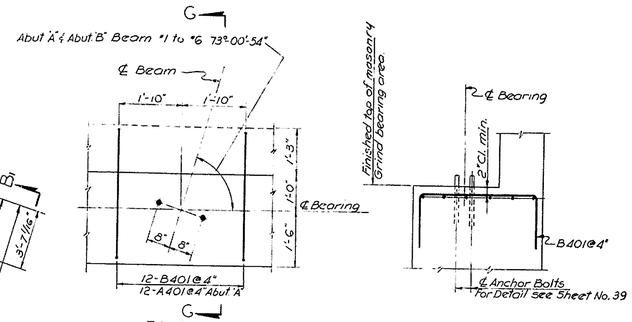
REVISIONS

GRADE
BEARINGS
TIE POINTS
STRUCTURES
EARTHWORK
DRAINAGE

COUNTY	CONTRACT	F.A.A. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOT AL SHEETS
NEW CASTLE	I-1(21)-2	2	DEL.	I-95-1(19)		34	58



PLAN

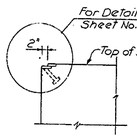


PLAN

SECTION G-G

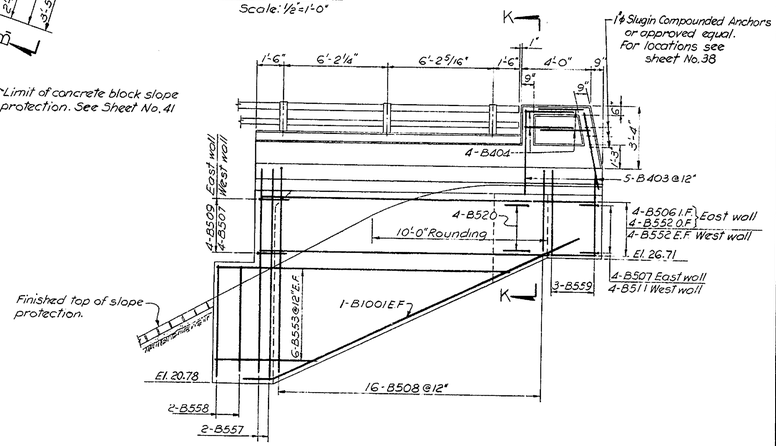
GRILLAGE UNDER BEARING PLATES

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



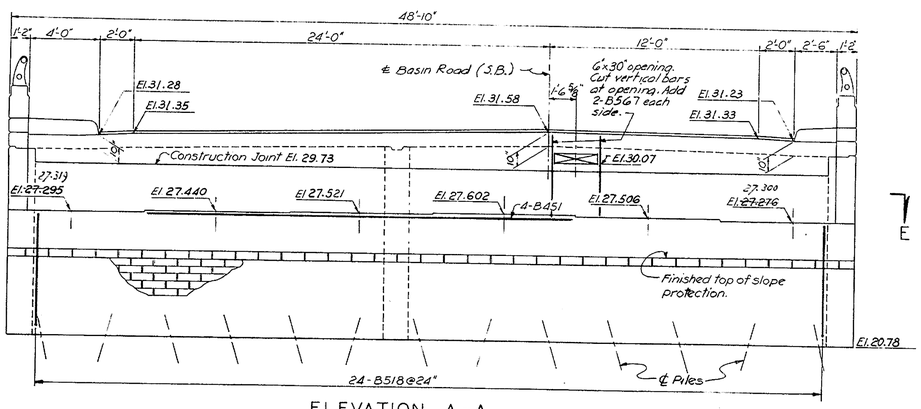
SECTION H-H

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

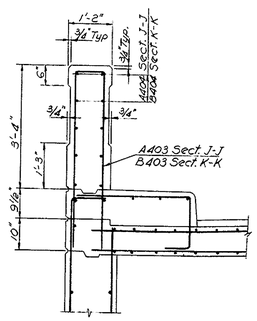


ELEVATION B-B

Reinforcing shown for East side only. Reinforcing for West side similar, except as noted



ELEVATION A1-A1



SECTION J-J (See Sheet No 33)

SECTION K-K

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

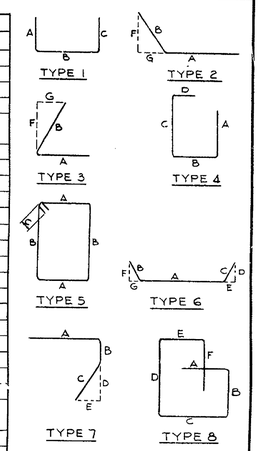
REINFORCING SCHEDULE

BENT BARS (All dimensions are out to out)

MARK	NO.	SIZE	LENGTH	TYPE	A	B	C	D	E	F	G	REMARKS
B401	72	#4	6-5	1	1-6	3-5	1-6					
B402	30	#4	7-0	1	3-2	8"	3-2					
B501	20	#5	6-9	1	4-9	1-3	9"					
B503	7	#5	5-3	1	3-3	1-3	9"					
B504	13	#5	4-1 To 5-1	1	2-1 To 3-1	1-3	9"					Increment 1"
B505	9	#5	7-9	6	9"	6-3	9"	7"	5"	7"	5"	
B506	4	#5	20-7	1	9"	19-10	—					
B507	8	#5	4-11	7	2-0	11"	2-0	1-11	7"			
B508	32	#5	10-5 To 22-11	4	3-9 To 10-0	1-2	4-6 To 10-9	1-0				Increment 5" 2 bars of each
B509	4	#5	4-0	1	2-0	2-0	—					
B510	4	#5	18-6	1	9	17-9	—					
B511	4	#5	4-0	2	2-0	2-0				1-11	7"	
B512	2	#5	18-6	2	16-3	2-3				1-8	1-8	
B513	6	#5	18-11	1	9"	18-2	—					
B514	14	#5	8-2 To 19-0	1	3-6 To 8-11	1-2	3-6 To 8-11					Increment 5"
B515	1	#5	19-6	1	9-2	1-2	9-2					
B516	1	#5	7-8	1	3-3	1-2	3-3					
B517	14	#5	6-8	1	2-9	1-2	2-9					
B518	24	#5	19-6	5	3-5	5-10	6"					
B519	48	#5	13-11	8	2-3	1-10	3-0	2-9	2-2	1-11		
B520	4	#5	9-6	2	7-9	1-9				1-4	1-0	
B601	50	#6	7-6	1	2-3	5-3	-					
B701	84	#7	4-9	1	2-6	2-3	-					
B1001	6	#10	20-0	2	18-6	1-6				7"	1-4	
B403	10	#4	10-2	1	4-9	6"	4-9					Pylon reinforcing
B404	8	#4	6-1	1	2-9	7"	2-9					Pylon reinforcing

STRAIGHT BARS

MARK	NO.	SIZE	LENGTH	REMARKS
B451	4	#4	25-6	
B452	12	#4	19-10	
B551	72	#5	25-9	Slope in field to slab shape.
B552	24	#5	19-10	
B553	36	#5	5-0 To 16-8	Increment 2'-4" 6 bars of each
B554	20	#5	34-9	
B555	19	#5	17-9	
B556	3	#5	32-3	
B557	4	#5	10-9	
B558	4	#5	6-0	
B559	6	#5	2-10	
B560	1	#5	15-3	
B561	1	#5	7-3	
B562	1	#5	15-0	
B567	7	#5	4-0	
B568	3	#5	9-0	
B651	46	#6	5-3	
B751	36	#7	1-2 To 17-2	Increment 2'-0" 4 bars of each
B752	150	#7	18-0	
B1051	20	#10	35-6	
B1052	20	#10	19-0	



NOTE: All above marks are prefixed by G-4

NOTES:

1. For sections C-C, D-D, E-E, F-F, Detail 'A' see Abutment 'A' Sheet No. 33. Reinforcing detailing for these sections for Abutment 'B' is similar to Abutment 'A' and is shown on schedule for Abutment 'B' by substituting prefix 'B' for prefix 'A' for corresponding bar mark numbers.
2. For key plan see Sheet No 35
3. For Railing and Deck Joint details see Sheet No. 38
4. For slope protection and drainage details see Sheet No. 41
5. For shoe and anchor bolt details see Sheet No. 39
6. Elevations shown at beam bearings are finished top of masonry elevations. See Section G-G.
7. For pile details see Sheet No. 28

APPROVED _____ BRIDGE ENGINEER

DELAWARE
STATE HIGHWAY DEPARTMENT

INTERSTATE ROUTE F.A.I.-1(21)-2
CHRISTINA RIVER INTERCHANGE

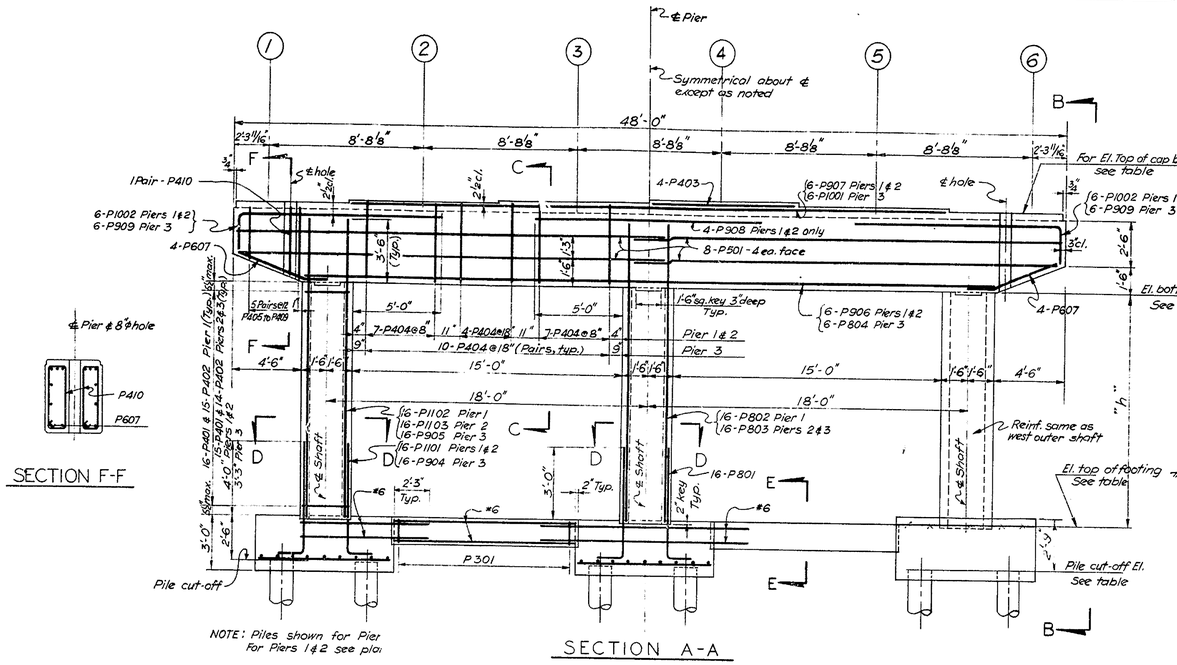
BASIN ROAD (S.B.)-BRIDGE NO. 6-4
ABUTMENT "B"

J. E. GREINER CO.
MORAN, PROCTOR, MUESER & RUTLEDGE
CONSULTING ENGINEERS

DESIGNED: S.A.T. CHECKED: R.B.A.M.G. DATE: 2-29-60
DRAWN: R.F. IN CHARGE: A.W.K. SCALE: AS NOTED

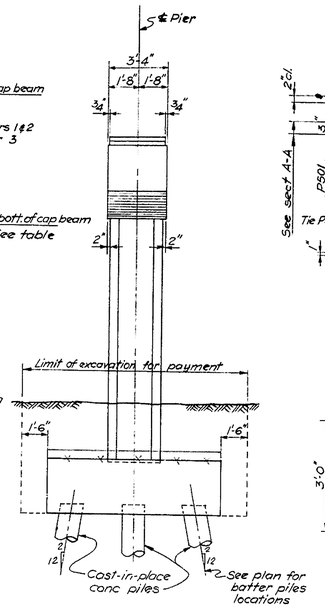
CHECKED
GRADE
BEARINGS
TIE POINTS
BENCH MARKS
EARTHWORK
DRAINAGE

REVISIONS
Beam seat elevations changed according J.E. Greiner letter dated 3/8/63 - 2/26/63

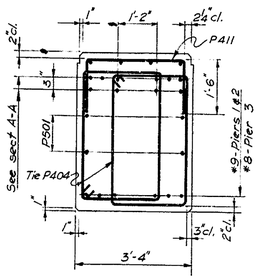


SECTION A-A

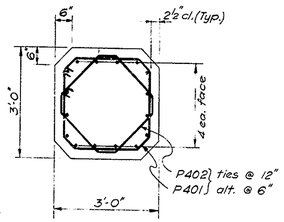
SECTION F-F



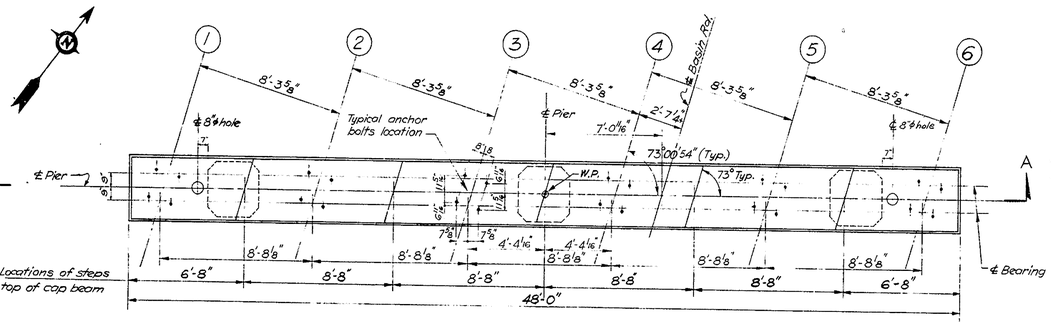
ELEVATION B-B



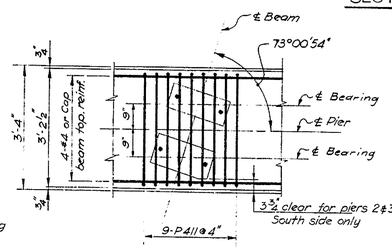
SECTION C-C



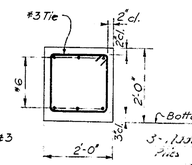
SECTION D-D



PLAN - CAP BEAM



GRILLAGE UNDER BEARING PLATES



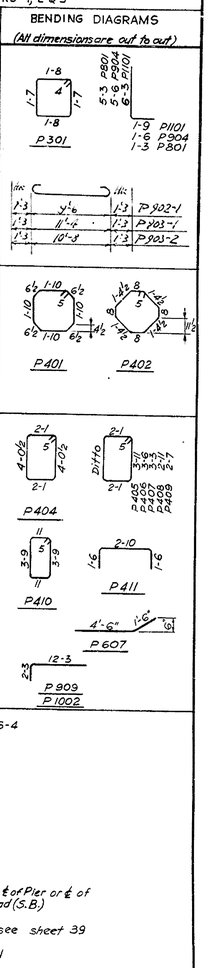
SECTION E-E

COUNTY	CONTRACT	F. A. PROJ. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO	TOTAL SHEETS
NEW CASTLE	I-1(21)-2	2	DEL.	I-95-1(19)		35	58

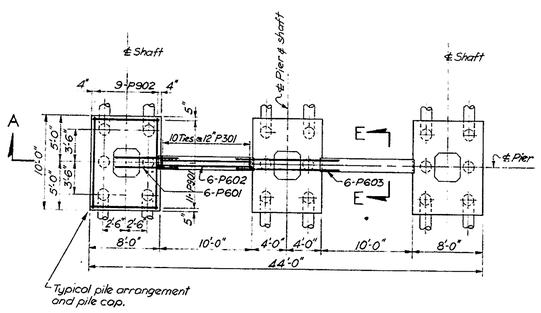
REINFORCING SCHEDULE FOR PIERS 1, 2 & 3

LOCATION	STRAIGHT BARS MARK	PIER	TOTAL REQ'D	SIZE	LENGTH	BENT BARS MARK	PIER	TOTAL REQ'D	SIZE	LENGTH
FOOTING	P601	3	12	#6	7-9	P301	1,2,3	56	#3	7-2
	P602	3	12	↑	10-0					
	P603	3	6		12-6	P801	1,2,3	48	#8	6-6
	P604	1,2	24		8-3					
	P605	1,2	24		9-0	P904	3	32	#9	7-0
	P606	1,2	12	#6	13-6					
	P901	3	33	#9	7-6	P1101	1,2	64	#11	8-0
	P902	1,2,3	88	#9	9-6	P902-1	1,2	20	#9	12'-3
	P903	1,2	66	#9	8-6	P903-1	1	12	#9	12'-10
						P903-2	2	12	#9	13'-2
SHAFT	P802	1	16	#8	19-7	P401	1,2,3	138	#4	10-4
	P803	2,3	32	#8	18-6	P402	1,2,3	129	#4	9-0
	P1102	1	32	#11	19-7					
	P1103	2	32	#11	18-6					
	P905	3	32	#9	18-6					
CAP BEAM	P403	1,2,3	12	#4	8-4	P404	1,2,3	184	#4	13-1
						P405	↑	12	↑	12-10
	P501	1,2,3	24	#5	24-8	P406		12		12-0
						P407		12		11-6
	P804	3	6	#8	39-0	P408		12		10-10
						P409		12		10-2
	P906	1,2	12	#9	39-0	P410	↑	12	↑	10-2
	P907	1,2	12	#9	34-4	P411	1,2,3	162	#4	5-10
	P908	1,2	8	#9	13-0					
						P607	1,2,3	24	#6	6-0
	P1001	3	6	#10	34-4					
						P909	3	12	#9	14-6
						P1002	1,2	24	#10	14-6

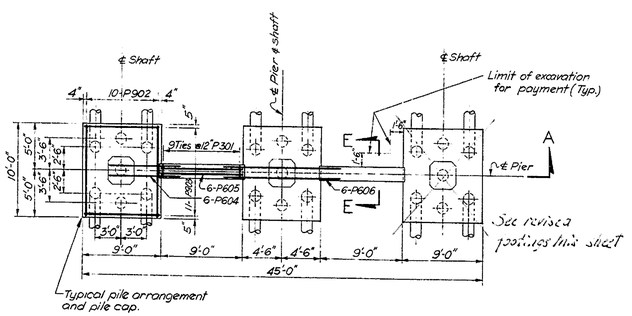
BENDING DIAGRAMS (All dimensions are out to out)



NOTE: All above marks are prefixed by 6-4



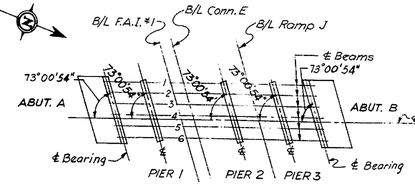
PLAN OF FOOTING
PIER 3



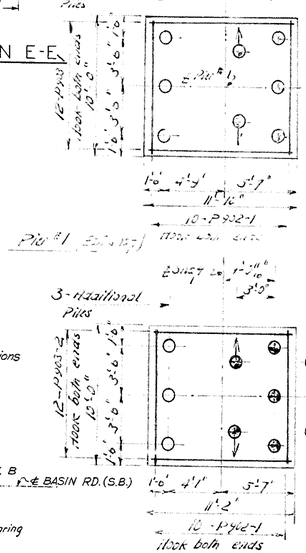
PLAN OF FOOTING
PIERS 1 & 2

TABULATION OF ELEVATIONS & HEIGHTS OF PIERS	PIER 1	PIER 2	PIER 3
El. ①	30.077	28.766	27.864
El. ②	30.236	28.918	28.240
El. ③	30.332	29.006	28.325
El. ④	30.427	29.095	28.409
El. ⑤	30.345	29.005	28.316
El. ⑥	30.129	28.782	27.861
El. bottom of cap beam	25.827	24.516	23.611
El. top of footing	9.910	9.683	8.778
Pile cut-off El.	7.410	7.183	6.278
Dimension "h"	15'-11"	14'-10"	14'-10"

NOTE: Elevations ① thru ⑥ are finished top of pier elevations



KEY PLAN



NOTES

1. For General Notes see sheet 26
2. Angles given on key plan are from ℄ of Pier or ℄ of Bearing on Abutment to ℄ of Basin Road (S.B.)
3. For shoe and anchor bolt details see sheet 39
4. For drainage details see sheet 41
5. For pile details see Sheet No. 28.

Note: Thickness of the pile cap is increased by 3"; that means that pile cap bottom cut-off elevation is now 2'-9" instead of 2'-6". This increase in the thickness of the pile cap, the vertical sized in the shafts will penetrate 3" inches into cap beam. Spacing of ties is to be reduced to fit the new height of the shafts.

Reduced piles

APPROVED _____ BRIDGE ENGINEER

DELAWARE STATE HIGHWAY DEPARTMENT

INTERSTATE ROUTE F.A.I.-1(21)-2
CHRISTINA RIVER INTERCHANGE

BASIN ROAD (S.B.) - BRIDGE NO. 6-4
PIERS 1, 2, & 3

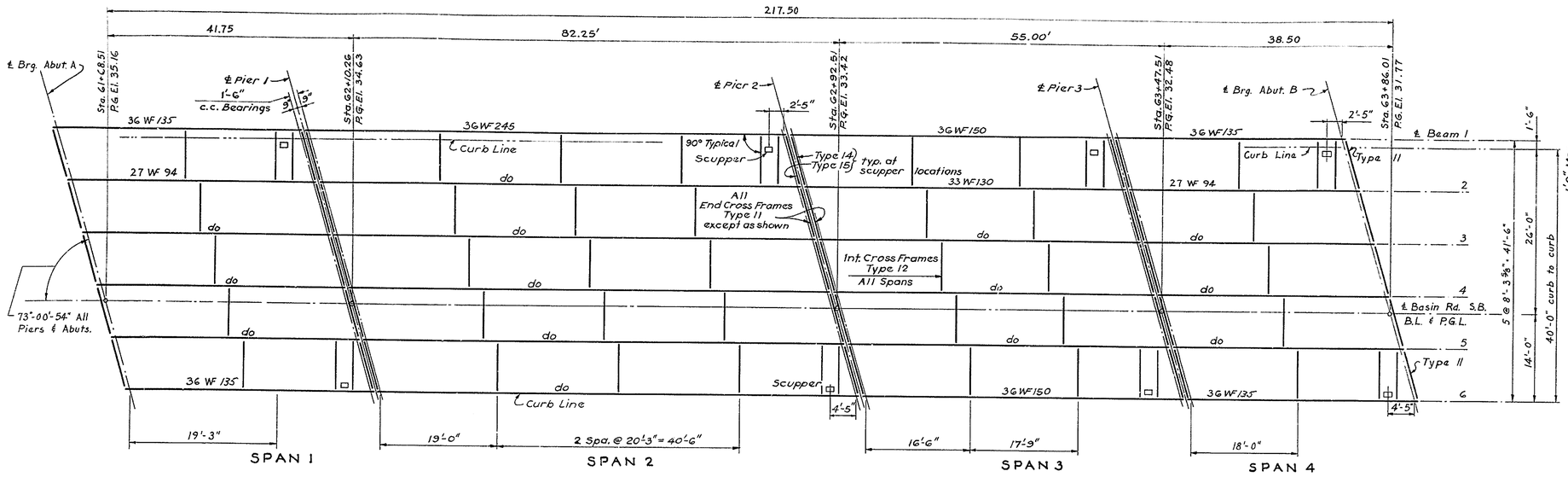
J. E. GREINER CO.
MORAN, PROCTOR, MUESER & RUTLEDGE
CONSULTING ENGINEERS

DESIGNED: W.A.A. CHECKED: J.J. DATE: 2-29-60
DRAWN: S.P. IN CHARGE: W.W.K. SCALE: 3/16" = 1'-0"

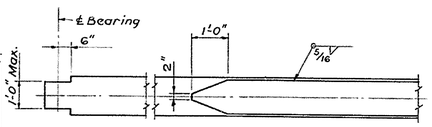
REVISIONS

GRADE ___ CHECKED ___
BEARINGS ___
TIE POINTS ___
BENCH MARKS ___
EARTHWORK ___
DRAINAGE ___

COUNTY	CONTRACT	F.A.P. REG. NO	STATE	FED. AID PROJECT NO	FISCAL YEAR	SHEET NO	TOTAL SHEETS
NEW CASTLE	I-1(21)-2	2	DEL.	I-95-1(19)		36	58



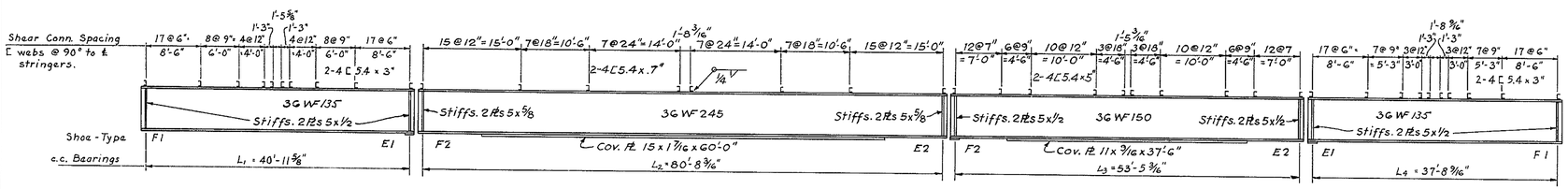
FRAMING PLAN
1" = 10'



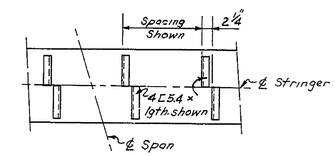
BOTTOM FLANGE DETAIL
3/8" = 1'-0"

BEARING FILL HEIGHTS AT SHOES		
Location	Beams 1 & 6	Beams 2-5 incl.
Abutment A	–	8 13/16" *
Pier 1-Span 1	3/16" 1/4"	9 3/8" *
Pier 2-Span 3	1 3/16"	4 7/16" *
Pier 3-Span 4	1 7/16" 1 5/16"	7 5/8" *
Abutment B	–	8 15/16" *

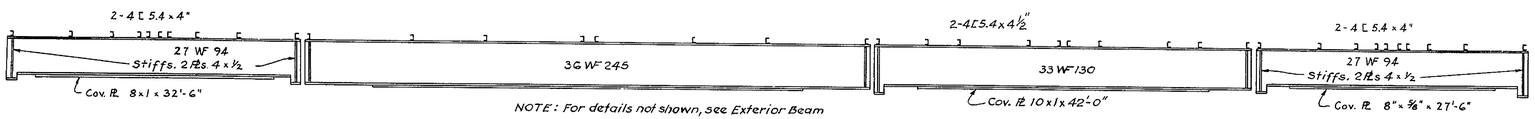
Use stools for fills noted *, otherwise use solid fill. See Bearing Details sheet.



EXTERIOR BEAMS



SHEAR CONN. DETAIL

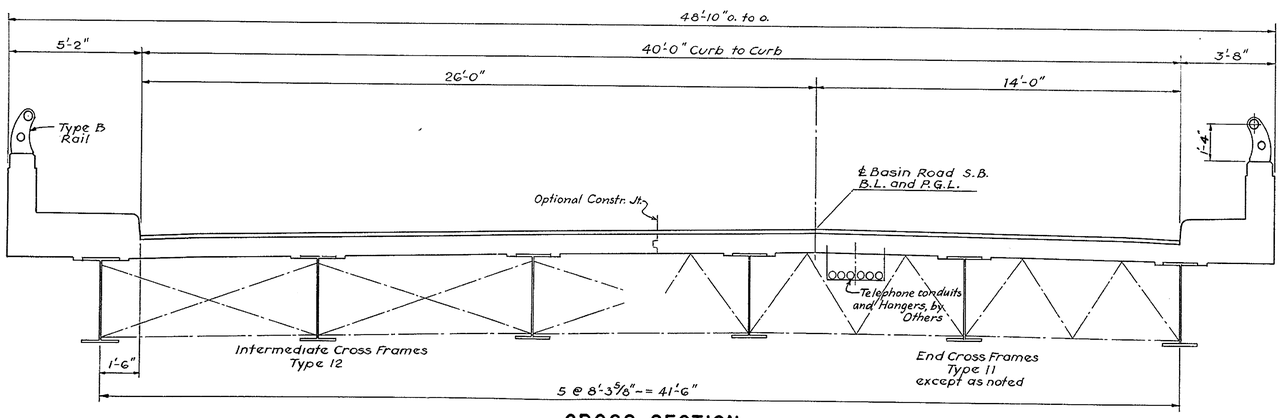


NOTE: For details not shown, see Exterior Beam

INTERIOR BEAMS

NOTES
For General Notes see Sheet No. 26.
For cross frames, dams and bridge railing see Superstructure Details sheet No. 38.
For scuppers and scupper framing see Scupper Details sheet No. 40.
For shoes, see Bearing Details sheet No. 39.

CAMBER INCREMENTS FOR DEAD LOADS (INCHES) (VERTICAL CURVE)															
	SPAN 1				SPAN 2				SPAN 3				SPAN 4		
	Bms. 1 & 6	Bms. 2,3,4 & 5			Bms. 1 & 6				Bms. 1 & 6	Bms. 2,3,4 & 5			Bms. 1 & 6	Bms. 2,3,4 & 5	
	1/4 L_1	1/2 L_1	3/4 L_1	1/2 L_1	1/4 L_2	1/2 L_2	1/4 L_3	1/2 L_3	1/2 L_3	1/2 L_3	3/4 L_4	1/2 L_4	3/4 L_4	1/4 L_4	1/4 L_4
Structural Steel	1/16	1/16	1/16	1/8	3/8	1/2	1/16	1/8	1/16	1/8	–	1/16	1/16	1/16	
Concrete Deck Slab	1/8	3/16	3/8	1/2	7/8	1 1/2	3/8	1/2	7/16	5/8	1/8	1/8	1/4	3/8	
Sidewalk and Parapet	–	–1/16	1/16	1/16	3/16	1/4	1/16	1/16	1/16	1/16	–	–	1/16	1/16	
2" Wearing Surface	–	–	–	–	1/16	1/8	–	1/16	–	1/16	–	–	–	–	
Full Dead Load	3/16	1/4 3/16	1/2	1/16	1 1/2	2 7/8	1/2	3/4	9/16	7/8	1/8	3/16	3/8	1/2	
Vertical Curve	1/16	1/8	1/16	1/8	1/4	5/16	1/8	1/8	1/8	1/8	1/16	1/16	1/16	1/16	
Total Camber at 1/2 L_n	Natural Camber Place Up		13/16"		2 7/16"		7/8"		1"		Natural Camber Place Up		9/16"		



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

APPROVED J. M. Fox BRIDGE ENGINEER

DELAWARE STATE HIGHWAY DEPARTMENT

INTERSTATE ROUTE F.A.I.- (21)-2
CHRISTINA RIVER INTERCHANGE

BASIN ROAD (S.B.)-BRIDGE NO. 6-4
SUPERSTRUCTURE - FRAMING

J. E. GREINER CO.
MORAN, PROCTOR, MUESER & RUTLEDGE
CONSULTING ENGINEERS

DESIGNED: J.E.P. CHECKED: R.L.N. DATE: 2-29-60
DRAWN: A.J.S. IN CHARGE: B.W.L. SCALE: As Shown

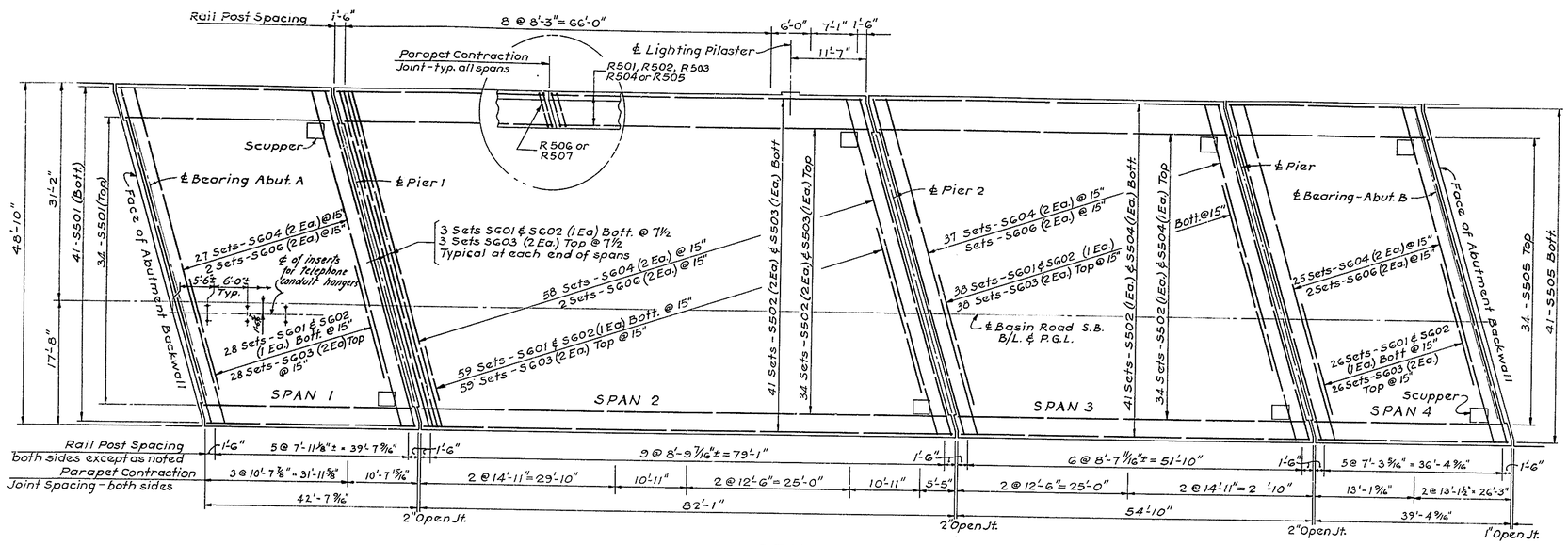
DESIGN J.E.P. & R.L.N. R.L.N. & F.F.W.
DETAILING A.J.S. & J.J.K. R.L.N. & F.F.W.
CHECKING C.H.W. & F.F.W.
QUANTITIES S.C.P. & F.F.W. C.H.W. & F.F.W.
IN CHARGE B.W.L.

GRADE
BEARINGS
TIE POINTS
BENCH MARKS
EARTHWORK
DRAINAGE

REVISIONS
Bearing Fill heights on Camber Increments changed
Spacing of F.F. Gauge lines added 2-29-60

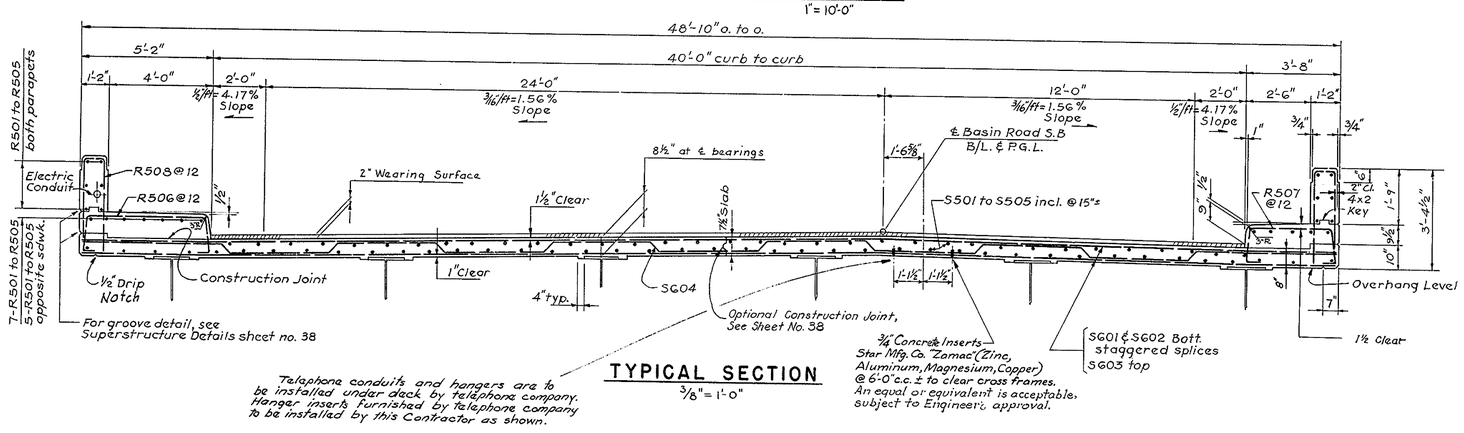
"Imperial" 156 W. B. & E.

COUNTY	CONTRACT	P.M.S. REQ. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE	I-1(21)-2	2	DEL.	I-95-1(19)		37	58



DECK PLAN

1" = 10'-0"



Telephone conduits and hangers are to be installed under deck by telephone company. Hanger inserts furnished by telephone company to be installed by this Contractor as shown.

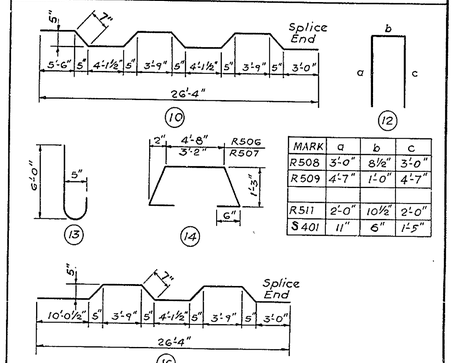
TYPICAL SECTION

3/8" = 1'-0"

REINFORCING SCHEDULE

Loc.	Mark*	Number Required Span 1	Span 2	Span 3	Span 4	Length	Total Weight	Type
Deck	SG01	34	65	44	32	30'-8"		Str.
	SG02	34	65	44	32	22'-0"		Str.
	SG03	68	130	88	64	26'-4"		Str.
	SG04	54	116	74	52	27'-2"		10
	SG06(a)	4	4	4	4	27'-0"		16
	SG07(a)	12	12	12	12	6'-0"		Str.
	S501	75	–	–	–	41'-8"		Str.
	S502	–	150	75	–	30'-0"		Str.
	S503	–	75	–	–	24'-3"		Str.
	S504	–	–	75	–	25'-8"		Str.
	S505	–	–	–	75	38'-5"		Str.
	S507(a)	6	6	6	6	6'-5"		13
								Str.
	S401(b)	–	4	–	–	2'-10"		12
	S402(b)	–	2	–	–	2'-6"		Str.
Sidewalk and Parapet	R501	96	48	–	–	10'-4"		Str.
	R502	–	48	48	–	12'-0"		Str.
	R503	–	48	48	–	14'-6"		Str.
	R504	–	24	–	–	5'-0"		Str.
	R505	–			72	12'-9"		Str.
	R506	43	83	56	39	8'-2"		14
	R507	43	83	56	39	6'-8"		14
	R508	86	163	112	78	6'-8½"		12
	R509(b)	–	4	–	–	10'-2"		12
	R511(b)	–	4	–	–	4'-10½"		12
						TOTAL WEIGHT	69,989	lbs.

Bending Diagrams



MARK	a	b	c
R508	3'-0"	8½"	3'-0"
R509	4'-7"	1'-0"	4'-7"
R511	2'-0"	10½"	2'-0"
S401	11"	6"	1'-5"

* Bar size is indicated in the bar mark. The first digit where three digits are used, and the first two digits where four digits are used indicate the bar size.

See Scupper Details sheet for modification of reinforcing bars around scuppers, noted by (a). (Sheet No. 40)

See Conduit sheet for modification of reinforcing bars and additional bars in lighting pilaster, noted by (b). (Sheet No. 4)

NOTE:

For General Notes see Sheet No. 26

For railing details, roadway and sidewalk dams, see Superstructure Details sheet No. 38

For details of roadway slab construction joints and parapet contraction joints, see Superstructure sheet No. 38

For details of electric conduit and boxes in parapet see Conduit Details sheet No. 4.

APPROVED _____ BRIDGE ENGINEER

DELAWARE STATE HIGHWAY DEPARTMENT

INTERSTATE ROUTE F.A.I.-1(21)-2
CHRISTINA RIVER INTERCHANGE

BASIN ROAD (S.B.) - BRIDGE NO. 6-4
SUPERSTRUCTURE - DECK

J. E. GREINER CO.
MORAN, PROCTOR, MUESER & RUTLEDGE
CONSULTING ENGINEERS

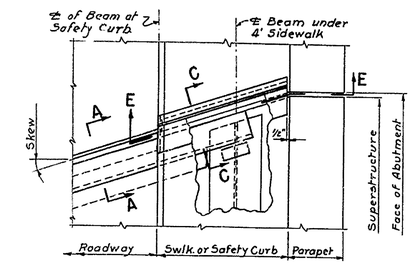
DESIGNED: R.L.N. CHECKED: R.L.N. DATE: 2-29-60
DRAWN: A.J.S. IN CHARGE: R.W.L. SCALE: As Noted

DESIGN R.L.N. R.L.N.
DRAWN: A.J.S. R.L.N.
TRACED: A.J.K. J.L.K.
CHECKED: F.E.W.
IN CHARGE: R.W.L.

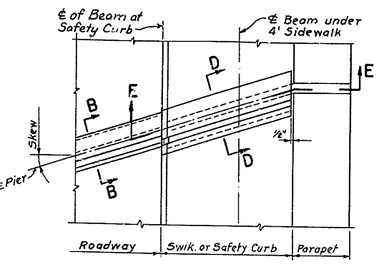
REVISIONS
BEARINGS
TIE POINTS
BENCH MARKS
EARTHWORK
DRAINAGE

"Imperial" 156 W. B. & E.

COUNTY	CONTRACT	F.A.A. REG. NO	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO	TOTAL SHEETS
NEW CASTLE	I-1(21)-2	2	DEL.	I-95-1(19)		38	58

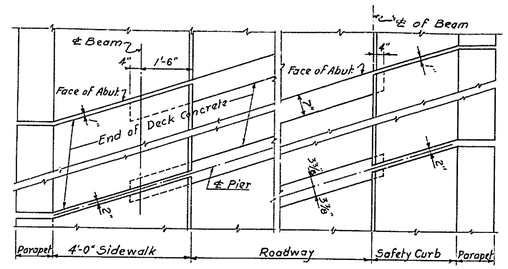


AT ABUTMENTS

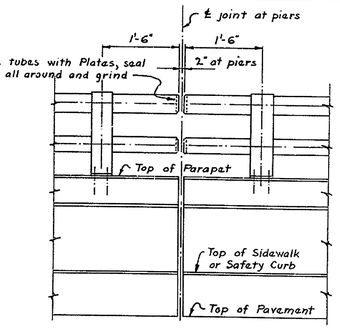


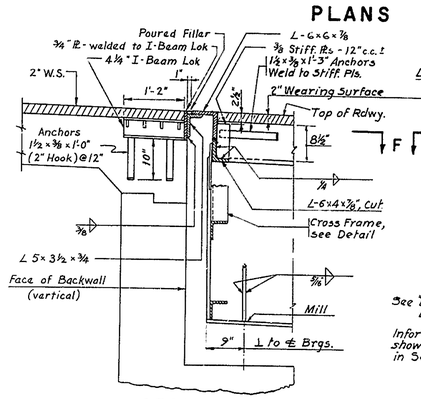
AT PIERS

PLANS

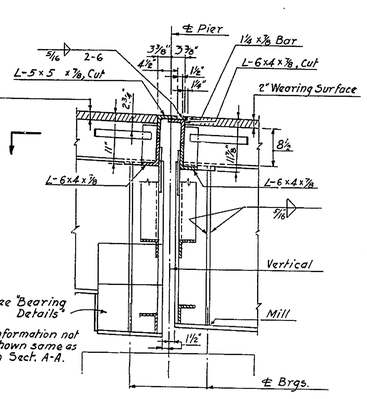


VIEW F-F
Scale: 1/2"=1'-0"

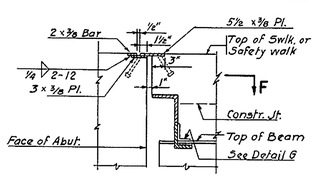




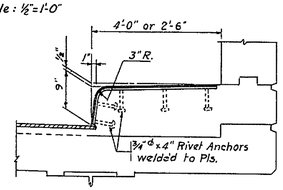
SECTION A-A



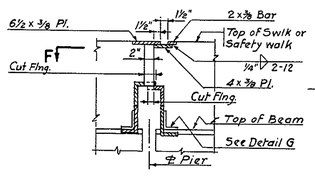
SECTION B-B



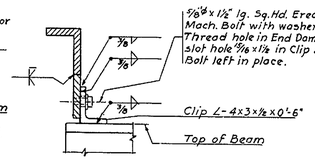
SECTION C-C



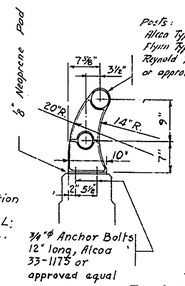
SECTION E-E

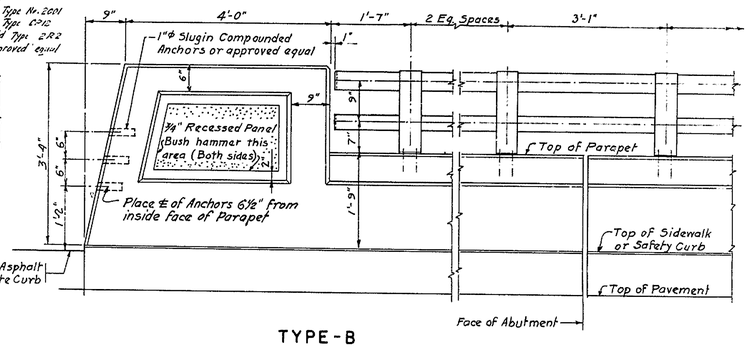


SECTION D-D



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

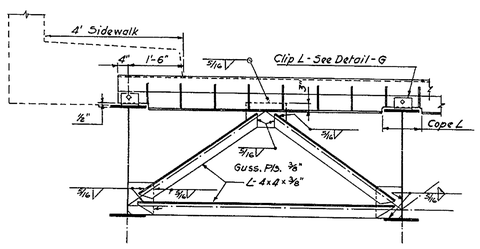




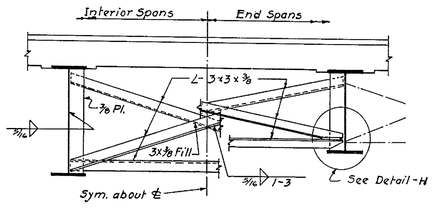
TYPE-B

RAILING
Scale: 3/4"=1'-0"

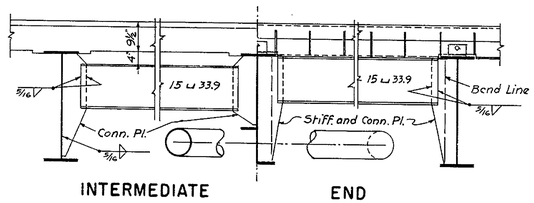
ROADWAY AND SIDEWALK DAMS
Scale: 3/4"=1'-0", except as noted



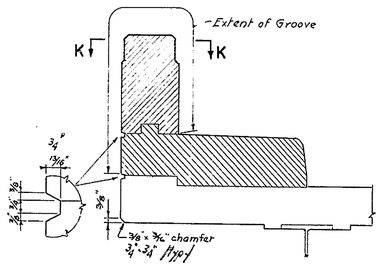
END-TYPES 10 & 13



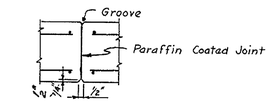
INTERMEDIATE-TYPE 12



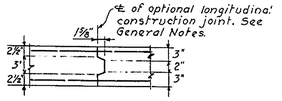
INTERMEDIATE END
TYPE 16



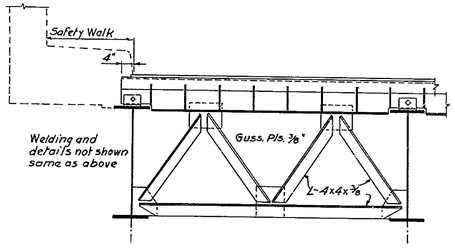
PARAPET CONTRACTION JOINT
Scale: 3/4"=1'-0"



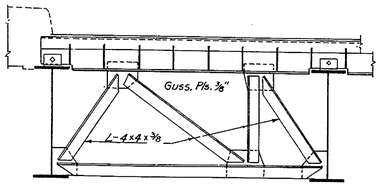
SECTION K-K



SLAB CONSTRUCTION JOINT
Scale: 3/4"=1'-0"



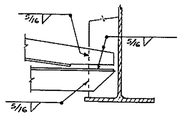
END-TYPES 11 & 14



END-TYPE 15

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

Note.- Types 13, 14 and 15 are in sloping planes at downspouts.



DETAIL-H
Scale: 1"=1'-0"

NOTE
All angles used in Roadway Dams shall conform to A.S.T.M. Specifications, Designation A-373.-
At all points of change in roadway cross-slope, cut, fit and buttweld expansion dam sections.

REVISIONS
Change detail 3/4" x 3/4" tips, table groove dimensions ∠ 8/26/62

CHECKED
GRADE
BEARINGS
TIE POINTS
BENCH MARKS
EARTHWORK
DRAINAGE

APPROVED _____ BRIDGE ENGINEER

DELAWARE
STATE HIGHWAY DEPARTMENT

INTERSTATE ROUTE F.A.I.-1(21)-2
CHRISTINA RIVER INTERCHANGE

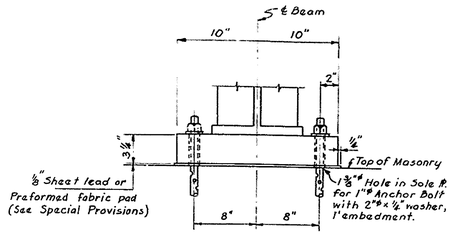
BASIN ROAD
SUPERSTRUCTURE DETAILS

J.E. GREINER CO.
MORAN, PROCTOR, MUESER & RUTLEDGE
CONSULTING ENGINEERS

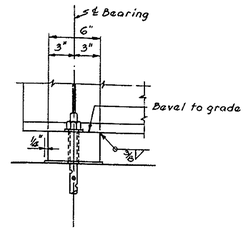
DESIGNED: U.C. CHECKED: F.F.W. DATE: 2-29-60
DRAWN: U.C. IN CHARGE: D.W.L. SCALE: As noted

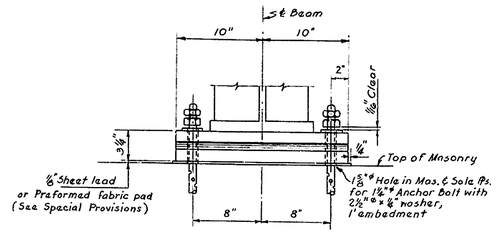
"Imperial" 156 W B & E

COUNTY	CONTRACT	P.R.A. REG NO	STATE	FED AID PROJECT NO	FISCAL YEAR	SHEET NO	TOTAL SHEETS
NEW CASTLE	I-1(21)-2	2	DEL.	I-95-1(19)		39	58



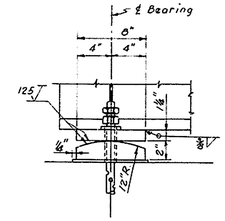
TYPE F1

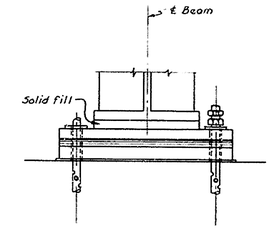


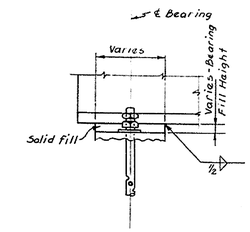


TYPE F2

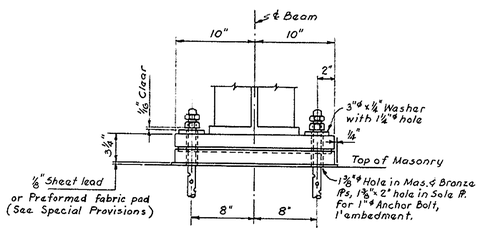
FIXED SHOES
1 1/2" = 1'-0"



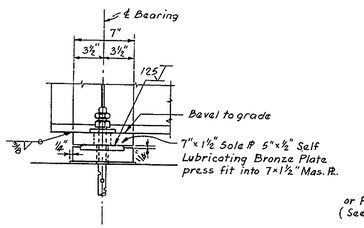


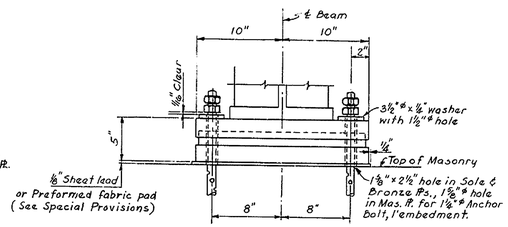


SOLID FILL
1 1/2" = 1'-0"



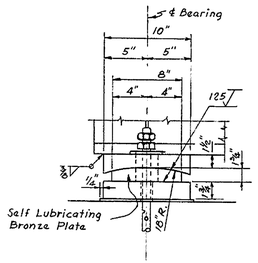
TYPE E1

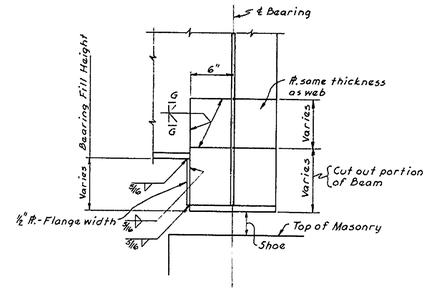




TYPE E2

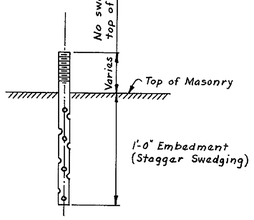
EXPANSION SHOES
1 1/2" = 1'-0"





STOOL
1" = 1'-0"

BEARING FILLS



ANCHOR BOLT DETAILS
1 1/2" = 1'-0"

NOTES:

Corners of masonry plates shall be cut where necessary to provide a minimum of 3 3/8" to the edge of pier cap.
The surface finish of metal in contact indicated by the symbol √ shall meet the requirements as defined in American Standard Association Specification ASA B-46.1.
All sliding surfaces to be finished in the direction of expansion or rotation.
For General Notes see Sheet No. 26

APPROVED _____ BRIDGE ENGINEER

GRADE	
BEARINGS	
TIE POINTS	
BENCH MARKS	
EARTHWORK	
DRAINAGE	

CHECKED

REVISIONS

DELAWARE
STATE HIGHWAY DEPARTMENT

INTERSTATE ROUTE F.A.I.-1(21)-2
CHRISTINA RIVER INTERCHANGE

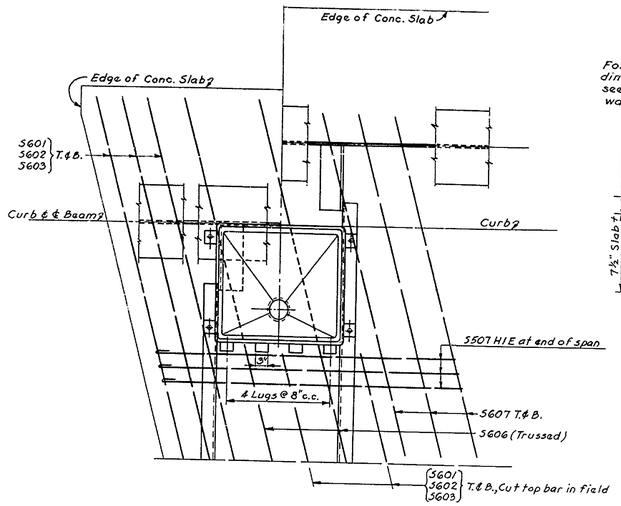
BASIN ROAD
BEARING DETAILS

J. E. GREINER CO.
MORAN, PROCTOR, MUESER & RUTLEDGE
CONSULTING ENGINEERS

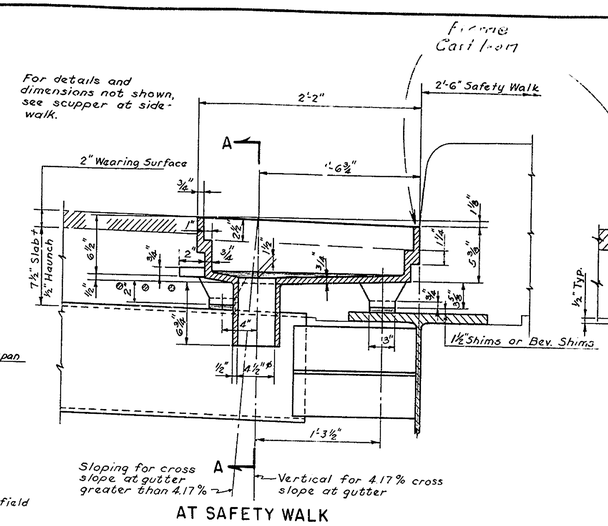
DESIGNED: S.J.S., F.F.W. CHECKED: F.F.W. DATE: 2-23-60.
DRAWN: W.V.W. IN CHARGE: D.W.L. SCALE: As Shown

"Imperial 124 W B & E"

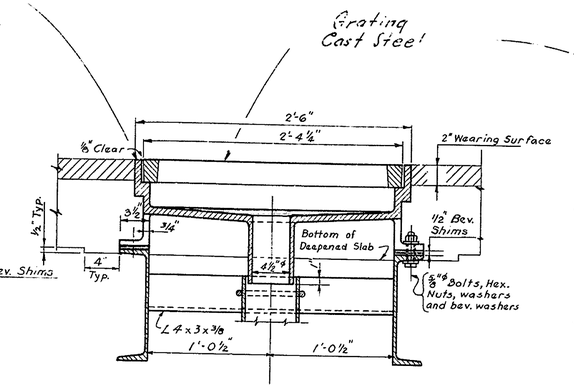
COUNTY	CONTRACT	F.A.A. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE	I-1(21)-2	2	DEL.	I-95-1(19)		40	58



PLAN
3/4" = 1'-0"

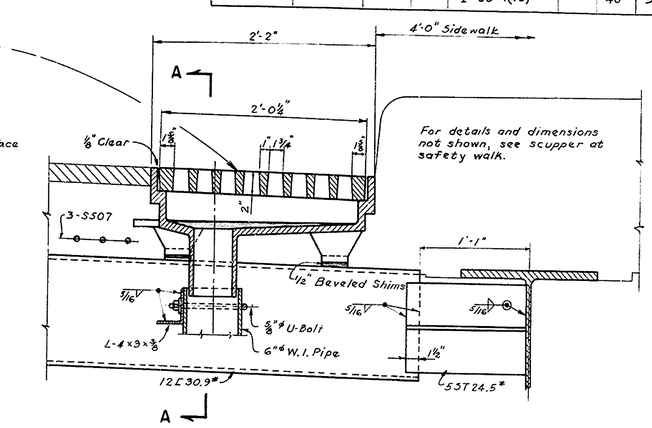


AT SAFETY WALK

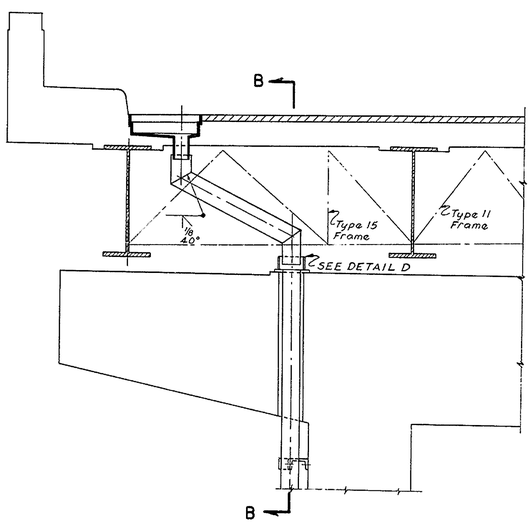


SECTION A-A

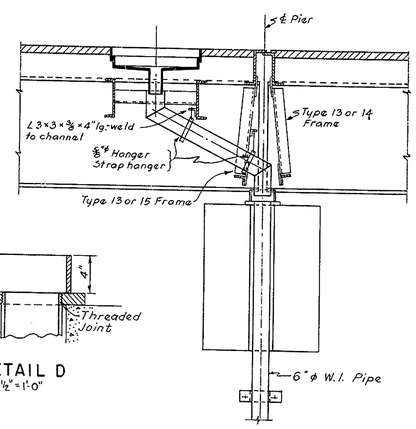
SCUPPERS
1 1/2" = 1'-0"



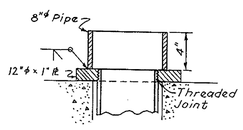
AT SIDEWALK



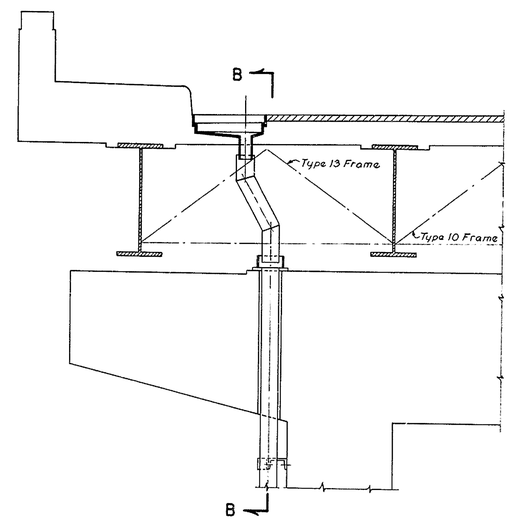
AT SAFETY WALK-PIERS



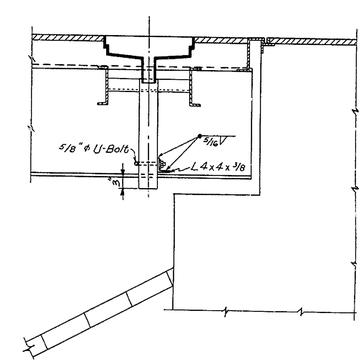
SECTION B-B



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



AT SIDEWALK-PIERS



AT ABUTMENT

PIPE CONNECTIONS
1/2" = 1'-0"

NOTES:

For General Notes see Sheet No. 26.

All Gratings to be cast steel in accordance with A.S.T.M. A27-60 Grade 65-35.

All drain pipe to be 6"ϕ W.I.

Pipe supports shall be spaced 12' maximum.

For details of pipe outlet and pipe supports, see Slope Protection and Drainage Details sheet 41.

All frames to be iron castings conforming to ASTM Designation: A48-60T, Class No. 30. See special provisions.

CHECKED
GRADE
BEARING
TIE POINTS
BENCH MARKS
EARTHWORK
DRAINAGE

REVISIONS
7/19/63 Notes since initial coat. J.L.

APPROVED _____ BRIDGE ENGINEER

DELAWARE
STATE HIGHWAY DEPARTMENT

INTERSTATE ROUTE F.A.I.-1(21)-2
CHRISTINA RIVER INTERCHANGE

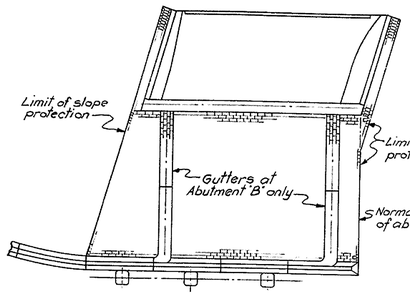
BASIN ROAD
SCUPPER DETAILS

J. E. GREINER CO.
MORAN, PROCTOR, MUESER & RUTLEDGE
CONSULTING ENGINEERS

DESIGNED: U.C. CHECKED: R.L.N. DATE: 2-29-60
DRAWN: W.W.W. IN CHARGE: R.W.L. SCALE: As Shown

Form 156 W B & E

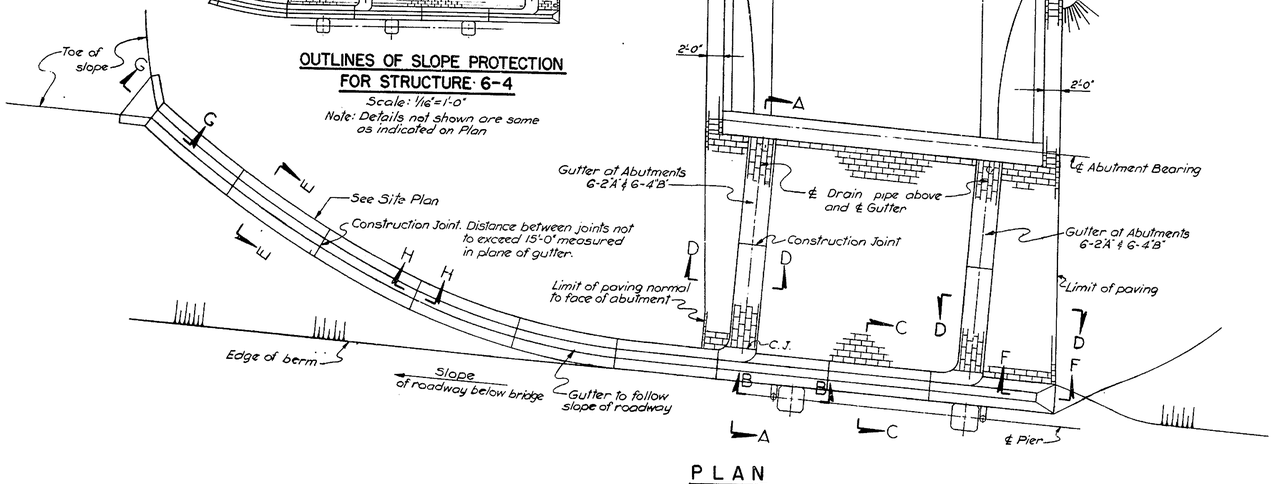
COUNTY	CONTRACT	F.A.I. REG. NO.	UNITS	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO	TOTAL SHEETS
NEW CASTLE	I-1(21)-2	2	DEL.	I-95-1(19)		41	58



OUTLINES OF SLOPE PROTECTION FOR STRUCTURE 6-4

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

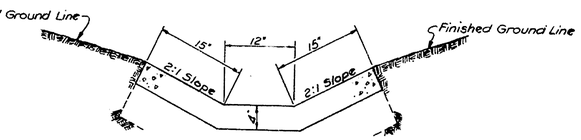
Note: Details not shown are same as indicated on Plan



PLAN

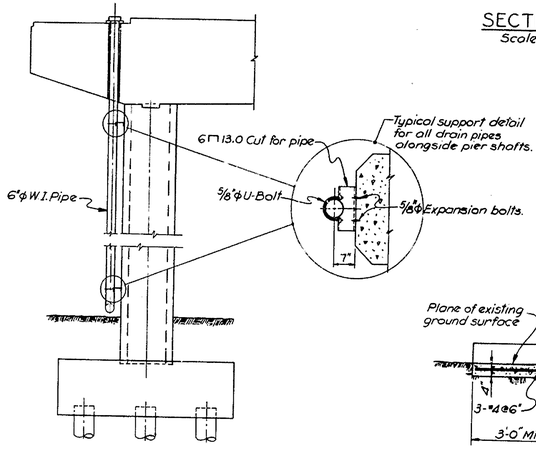
Scale: 1/8"=1'-0"

Note: For outlines of slope protection for structure 6-4 see sketch above.



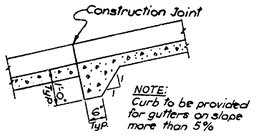
SECTION E-E

Scale: 1"=1'-0"



SECTION B-B

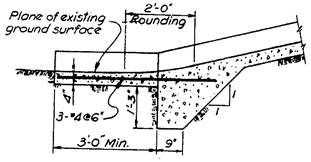
Scale: 1/4"=1'-0"



NOTE: Curb to be provided for gutters on slope more than 5%

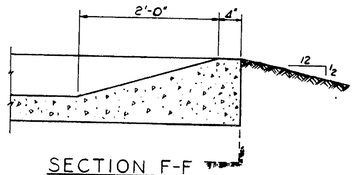
SECTION H-H

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



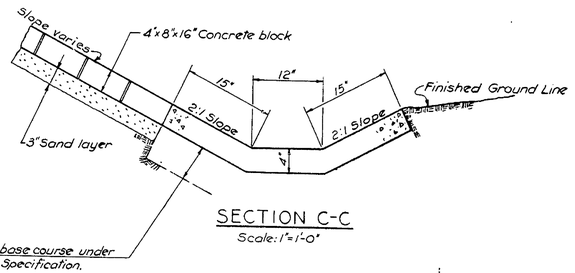
SECTION G-G

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



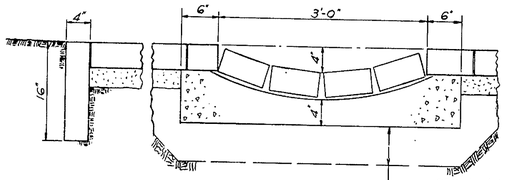
SECTION F-F

Scale: 1"=1'-0"

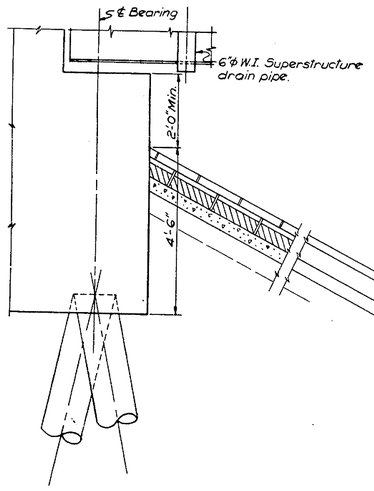


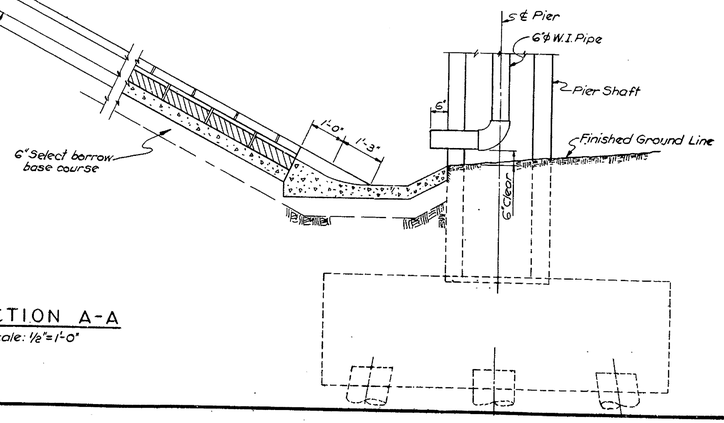
SECTION C-C

Scale: 1"=1'-0"



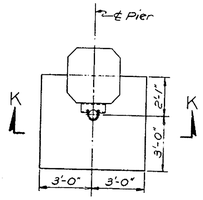
SECTION D-D



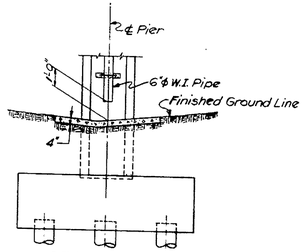


SECTION A-A

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



PLAN



SECTION K-K

Note: Concrete splash pad to follow slope of ground as directed by Engineer in field.

DETAILS OF SPLASH PAD UNDER DRAINAGE PIPE

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

APPLIES TO THE FOLLOWING LOCATIONS:

BRIDGE	PIER NO.	LOCATIONS
6-2	2 & 3	West and East Shafts
6-4	2	West and East Shafts

NOTES:

1. For General Notes see Sheet No. 26
2. For lengths and locations of concrete gutters see Site Plans for Bridges No's. 6-2 and 6-4
3. For locations of drain pipes see Superstructure-Framing for Bridges No's. 6-2 and 6-4
4. For details of drain pipes see Sheet No. 40

APPROVED J. M. Fox BRIDGE ENGINEER

DELAWARE STATE HIGHWAY DEPARTMENT

INTERSTATE ROUTE F.A.I.-1(21)-2 CHRISTINA RIVER INTERCHANGE

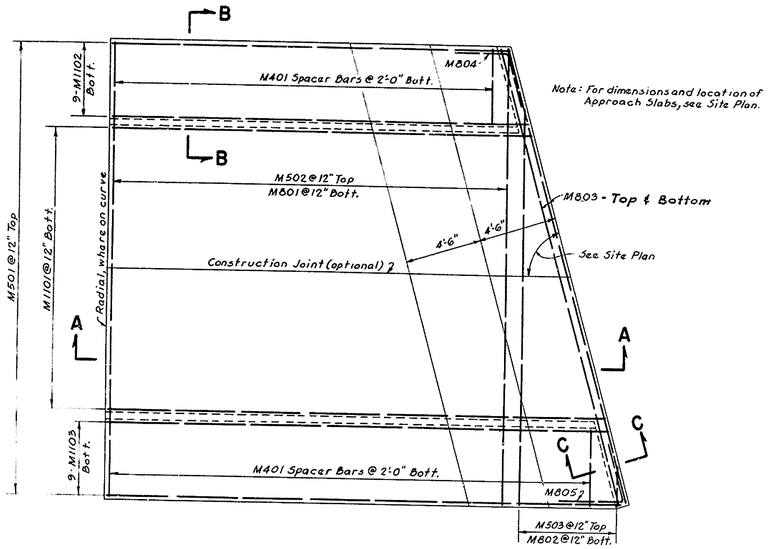
BASIN ROAD-BRIDGE NOS. 6-2 & 6-4 SLOPE PROTECTION & DRAINAGE DETAILS

J. E. GREINER CO.
MORAN, PROCTOR, MUEBER & RUTLEDGE
CONSULTING ENGINEERS

DESIGNED: W.J.A. CHECKED: M.A.S. DATE: 2-29-60
DRAWN: E.F. IN CHARGE: W.H.K. SCALE: AS SHOWN

BEARINGS
TIE POINTS
BENCH MARKS
EARTHWORK
DRAINAGE

COUNTY	CONTRACT	F.A.A. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEWCASTLE	I-1(21)-2	2	DEL	I-95-1(19)		42	58

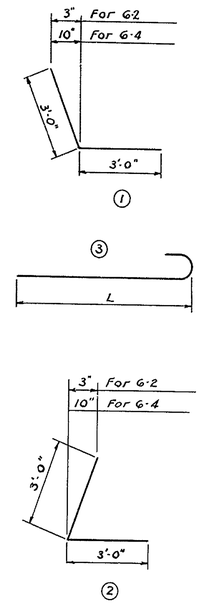


DECK PLAN

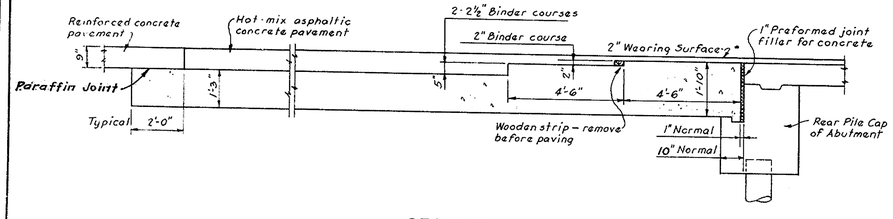
No Scale

REINFORCING SCHEDULE

Mark	Type	BRIDGE NO. G-2 (2 Required) Number Required	Length	L	BRIDGE NO. G-4 ABUTMENT "A" Number Required	Length	L	ABUTMENT "B" Number Required	Length	L
M1101	3	19	Varies 25'-4" to 26'-11"	Varies 23'-9" to 25'-4"	32	Varies 21'-4" to 31'-2"	Varies 19'-9" to 29'-7"	31	Varies 21'-6" to 30'-10"	Varies 19'-11" to 29'-3"
M1102	3	9	Varies 25'-0" to 25'-4"	Varies 23'-5" to 23'-9"	9	Varies 20'-1" to 21'-4"	Varies 18'-6" to 19'-9"	9	Varies 20'-0" to 21'-6"	Varies 18'-5" to 19'-11"
M1103	3	9	Varies 26'-11" to 27'-4"	Varies 25'-4" to 25'-9"	9	Varies 31'-2" to 32'-5"	Varies 29'-7" to 30'-10"	9	Varies 30'-10" to 32'-3"	Varies 29'-3" to 30'-8"
M801	St.	25	27'-8"		20	40'-8"		20	39'-8"	
M802	"	2	Varies 2'-0" to 14'-10"		11	Varies 2'-0" to 36'-10"		11	Varies 2'-0" to 36'-3"	
M803	St.	4	27'-10"		4	42'-6"		4	41'-6"	
M804	1	4	6'-0"		4	6'-0"		4	6'-0"	
M805	2	4	6'-0"		4	6'-0"		4	6'-0"	
M501	St.	29	Varies 23'-5" to 25'-9"		42	Varies 18'-6" to 30'-10"		41	Varies 18'-5" to 30'-8"	
M502	"	25	27'-8"		20	40'-8"		20	39'-8"	
M503	"	2	Varies 2'-0" to 14'-10"		11	Varies 2'-0" to 36'-10"		11	Varies 2'-0" to 36'-3"	
M401	St.	27	4'-2"		28	4'-2"		28	4'-2"	
TOTAL WEIGHT-LBS. 9010 x 2				18,020			12,515			12,240

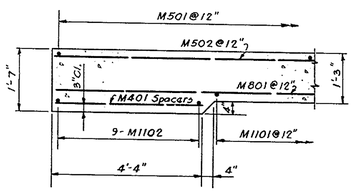


All dimensions are out to out.
Bar size is indicated in bar mark. The first digit where three digits are used, and the first two digits where four digits are used indicate the bar size.



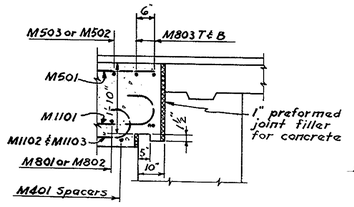
SECTION A-A

⅜" = 1'-0"



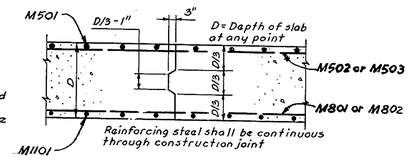
SECTION B-B

½" = 1'-0"



SECTION C-C

½" = 1'-0"



LONGITUDINAL CONSTRUCTION JOINT DETAIL

No Scale

Note: Clear distance from face of concrete to reinforcing steel shall be 2" except on bottom where it shall be 3".

CHECKED
GRADE
BEARINGS
TEST BORINGS
BENCH MARKS
EARTHWORK
DRAINAGE

REVISIONS

APPROVED _____ BRIDGE ENGINEER

DELAWARE
STATE HIGHWAY DEPARTMENT

INTERSTATE ROUTE F.A.I.-1(21)-2
CHRISTINA RIVER INTERCHANGE

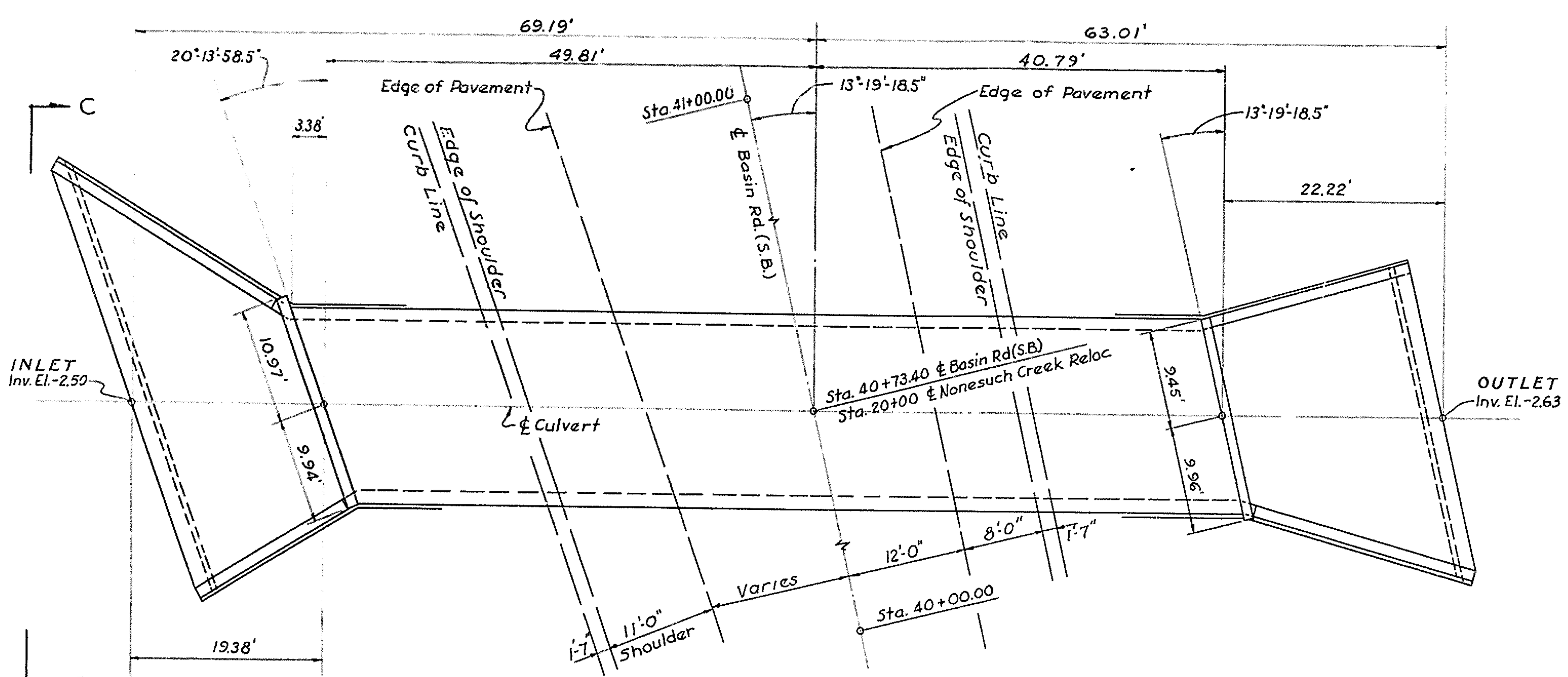
BASIN ROAD (S.B.)
APPROACH SLABS

J. E. GREINER CO.
MORAN, PROCTOR, MUESER & RUTLEDGE
CONSULTING ENGINEERS

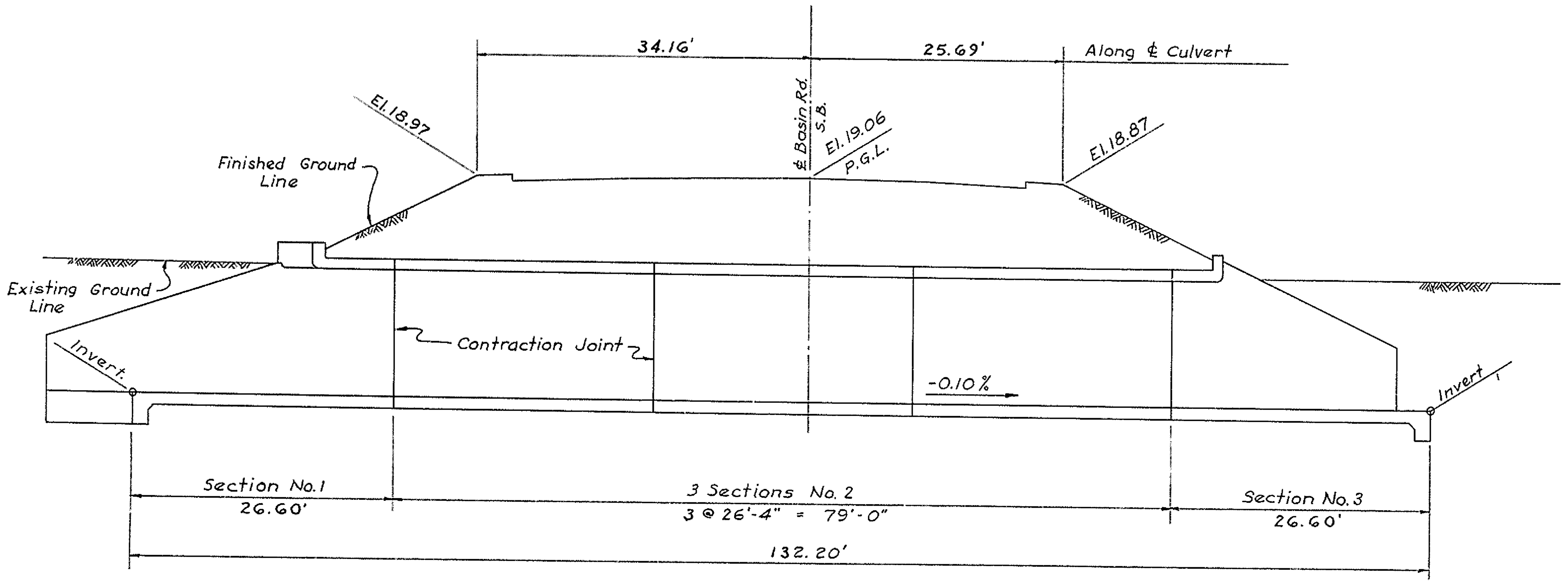
DESIGNED: J.W.H. CHECKED: J.W.H. DATE: 2-29-60
DRAWN: W.V.W. IN CHARGE: B.W.L. SCALE: As Shown

"Imperial" 136 W. B. & E.

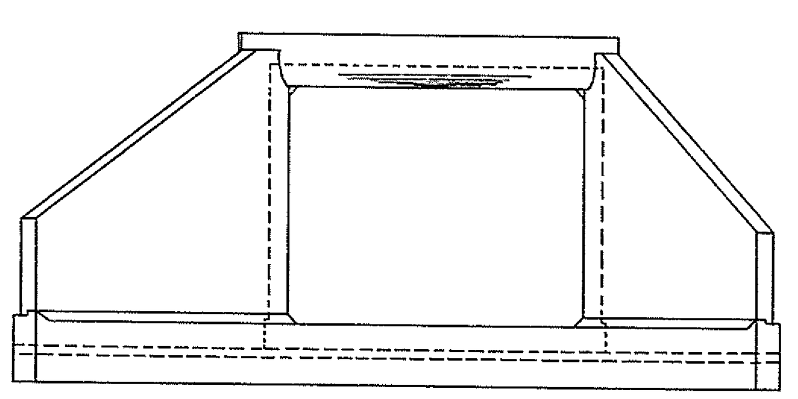
COUNTY	CONTRACT	P.R.A. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEWCASTLE	I-1(21)-2	2	DEL.	I-95-1(19)		43	58



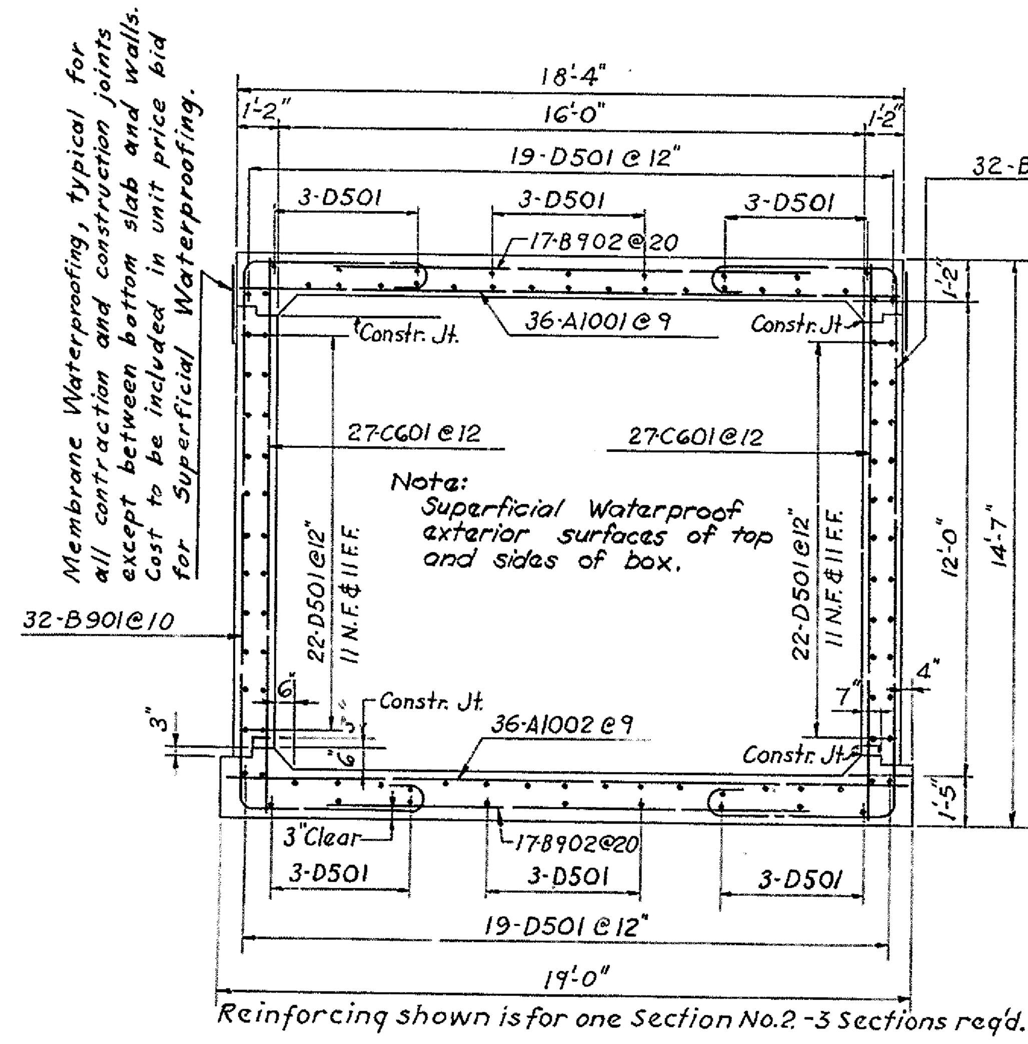
PLAN
Scale 1"=10'



SECTION ALONG ℄ CULVERT
Scale 1"=10'



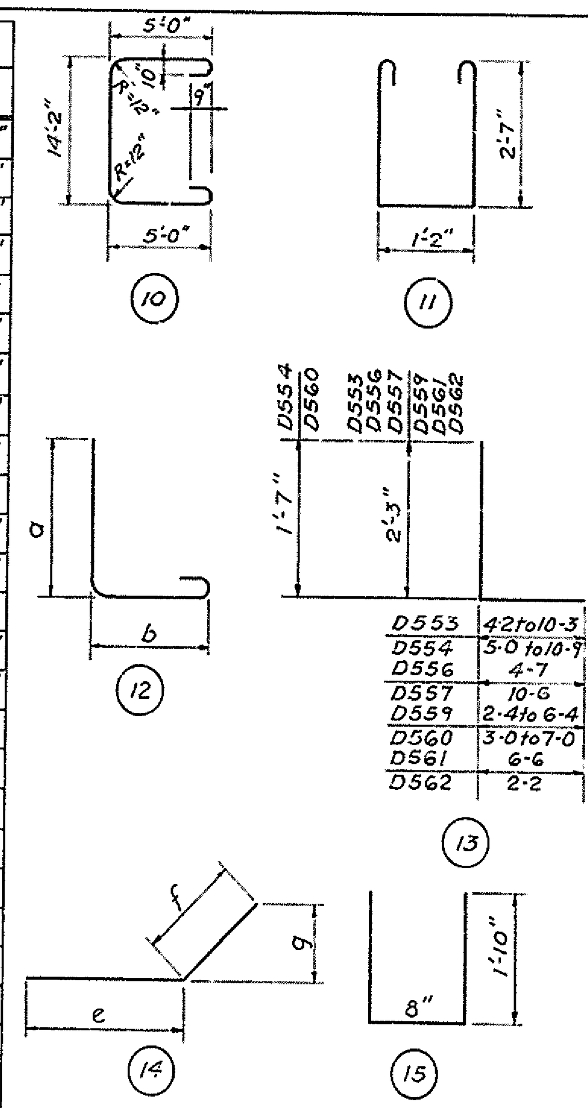
ELEVATION C-C
Scale ⅛"=1'-0"



Reinforcing shown is for one Section No. 2 - 3 Sections req'd.

SECTION B-B

Type 14			
Mark	e	f	g
D506	18'-1"	3'-8"	1'-10"
D507	18'-7"	3'-8"	1'-10"
D508	27'-0"	10'-5"	5'-2½"
D509	27'-6"	10'-5"	5'-2½"
D510	6'-4"	23'-10"	6'-2"
D511	5'-10"	24'-6"	6'-4"
D513	1'-10"	21'-6"	5'-7"
D514	1'-6"	22'-0"	5'-9"
D519	3'-6"	10'-5"	5'-2½"
D520	4'-0"	10'-5"	5'-2½"
D523	6'-6"	2'-0"	1'-0"
D524	4'-6"	2'-3"	1'-1½"
D527	2'-0"	3'-4"	10½"
D528	1'-6"	4'-0"	1'-0½"
D531	2'-0"	5'-0"	1'-3½"
D532	1'-6"	5'-8"	1'-5½"
D533	2'-0"	3'-0"	9½"
D534	1'-6"	3'-8"	11½"
D538	3'-10"	1'-10"	11"
D539	4'-5"	1'-8"	10"
D540	2'-6"	1'-10"	11"
D541	3'-0"	1'-8"	10"
D542	3'-8"	3'-4"	1'-8"
D543	3'-8"	3'-8"	1'-10"
D545	6'-4"	3'-6"	11"
D546	5'-10"	4'-1"	1'-1"
D548	6'-4"	5'-0"	1'-2"
D549	5'-10"	5'-5"	1'-4"
D550	6'-4"	3'-6"	11"
D551	5'-10"	3'-11"	1'-2"
D563	5'-0"	2'-3"	1'-1½"
D564	7'-0"	2'-0"	1'-0"



D553	4-2 to 10-3
D554	5-0 to 10-9
D556	4-7
D557	10-6
D559	2-4 to 6-4
D560	3-0 to 7-0
D561	6-6
D562	2-2

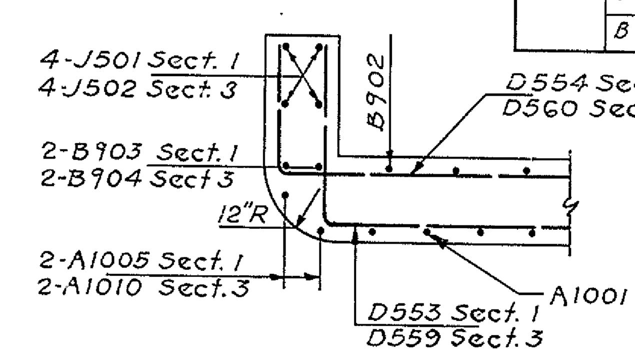
Type 12		
Mark	a	b
B501	6'-4" to 8'-4"	4'-0"
B502	6'-4" to 8'-4"	4'-0"
B503	4'-6" to 8'-6"	4'-0"
B504	4'-7" to 8'-8"	4'-0"
B908	8'-9" to 12'-5"	6'-0"
B909	12'-9" to 14'-9"	6'-0"
B910	12'-6" to 14'-9"	6'-0"
B911	9'-0" to 12'-0"	6'-0"
B912	12'-4" to 14'-7"	6'-0"
B913	8'-10" to 11'-10"	6'-0"
B915	12'-6" to 14'-10"	6'-0"

REINFORCING SCHEDULE

MARK	NO.	LENGTH	WEIGHT	TYPE
SECTION 1	1 REQ'D.			
A1001	6	18'-0"		Str.
A1002	9	18'-8"		Str.
A1003	8	6'-9" to 20'-2" 1'-11" Incr.		Str.
A1004	8	4'-1" to 17'-6" 1'-11" Incr.		Str.
A1005	2	20'-6"		Str.
B901	24	25'-6"		10
B902	14	14'-6"		Str.
B903	4	16'-2"		Str.
B908	12	16'-0" to 19'-8" 4" Incr.		12
B909	9	20'-0" to 22'-0" 3" Incr.		12
B501	7	10'-11" to 12'-11" 4" Incr.		12
B912	7	19'-7" to 21'-10" 4½" Incr.		12
B913	7	16'-1" to 19'-1" 6" Incr.		12
B502	5	10'-11" to 12'-11" 6" Incr.		12
C601	16	14'-2"		Str.
C504	26	6'-4" to 14'-8" 4" Incr.		Str.
C505	2	14'-8"		Str.
C506	3	15'-8"		Str.
C508	18	6'-4" to 14'-8" 6" Incr.		Str.
D502	2 Sets of 15	23'-9" to 28'-10" 4⅜" Incr.		Str.
D506	1	21'-9"		14
D507	2	22'-3"		14
D508	1	37'-5"		14
D509	2	37'-11"		14
D517	2	26'-3"		Str.
D519	11	13'-11"		14
D520	11	14'-5"		14
D521	10	25'-2"		Str.
D522	2 Sets of 6	8'-2" to 23'-2" 3'-0" Incr.		Str.
D523	1	8'-6"		14
D524	1	6'-9"		14
D535	12	5'-4" to 15'-4" 2'-0" Incr.		Str.
D536	10	16'-8"		Str.
D537	2	18'-6"		Str.
D538	1	5'-8"		14
D539	1	6'-1"		14
D540	1	4'-4"		14
D541	1	4'-8"		14

MARK	NO.	LENGTH	WEIGHT	TYPE
D542	11	7'-0"		14
D543	11	7'-4"		14
D553	17	6'-5" to 12'-6" 4½" Incr.		13
D554	17	6'-7" to 12'-4" 4½" Incr.		13
D556	1	6'-10"		13
D557	1	12'-9"		13
D558	1	4'-4"		15
E501	3	42'-3"		Str.
E502	3	43'-0"		Str.
E503	2 Sets of 10	22'-3" to 41'-0" 2'-1" Incr.		Str.
F501	2 Sets of 9	5'-0" to 29'-0" 3'-0" Incr.		Str.
F502	2 Sets of 9	5'-0" to 21'-0" 2'-0" Incr.		Str.
H501	43	7'-6"		11
J501	4	20'-4"		Str.
D563	1	7'-3"		14
D564	1	9'-0"		14
Wt. per Section			13,203 lbs.	
SECTION NO. 2-3 REQ'D.				
A1001	36	18'-0"		Str.
A1002	36	18'-8"		Str.
B901	64	25'-6"		10
B902	34	14'-6"		Str.
C601	54	14'-2"		Str.
D501	100	26'-0"		Str.
Wt. per Section			16,767 lbs.	
SECTION NO. 3	1-REQ'D.			
A1001	8	18'-0"		Str.
A1002	6	18'-8"		Str.
A1010	2	19'-0"		Str.
B503	9	9'-1" to 13'-1" 6" Incr.		12
B504	10	9'-2" to 13'-3" 5½" Incr.		12
B901	15	25'-6"		10
B902	10	14'-6"		Str.
B904	2	19'-0"		Str.
B910	7	19'-9" to 22'-0" 4½" Incr.		12
B911	2 Sets of 7	16'-3" to 19'-3" 6" Incr.		12
B915	8	19'-9" to 22'-1" 4" Incr.		12
C601	9	14'-2"		Str.
C506	3	15'-8"		Str.

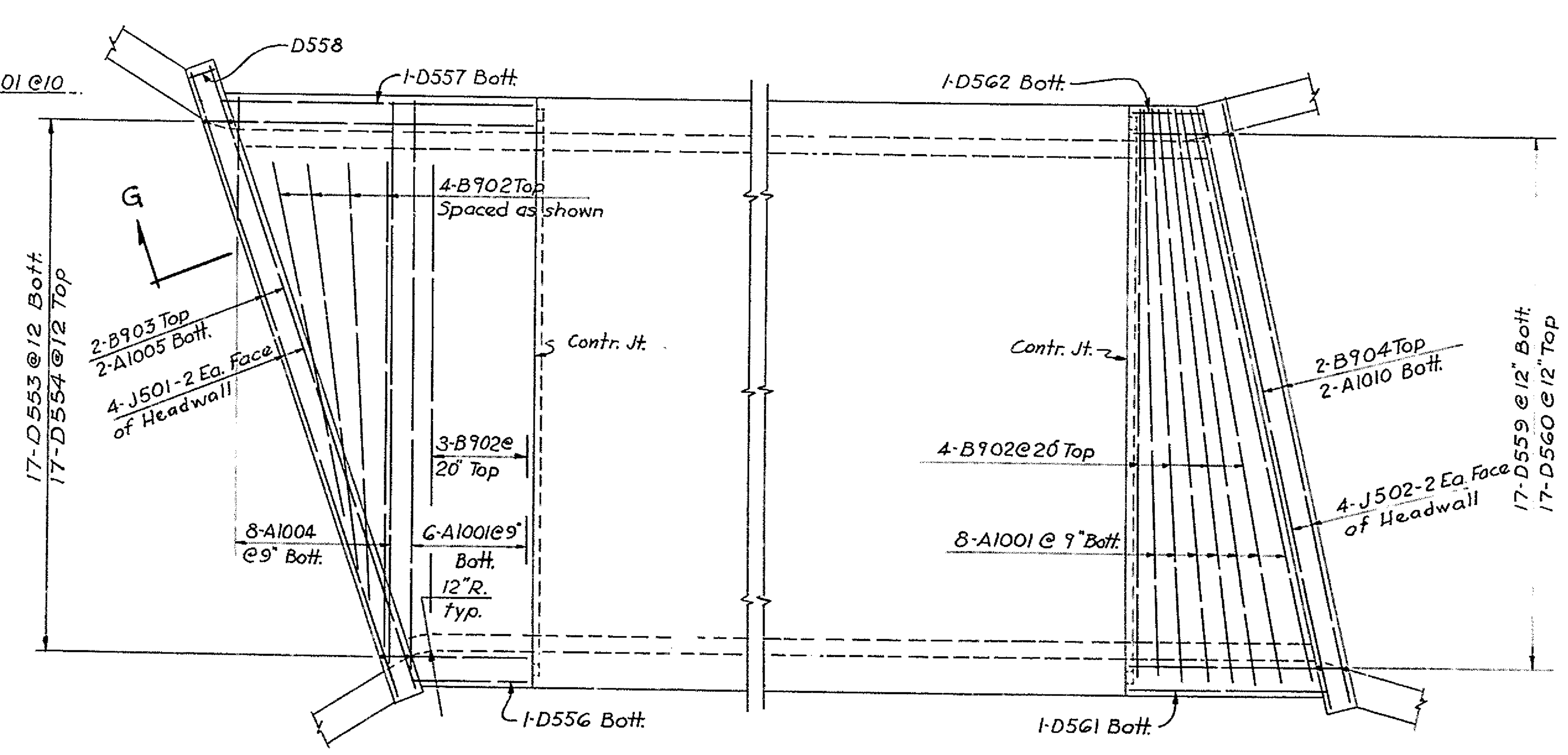
MARK	NO.	LENGTH	WEIGHT	TYPE
C507	21	4'-8" to 14'-8" 6" Incr.		Str.
C509	23	4'-8" to 14'-6" 5⅜" Incr.		Str.
D504	2 Sets of 15	24'-6" to 28'-0" 3" Incr.		Str.
D510	1	30'-2"		14
D511	2	30'-4"		14
D513	1	23'-4"		14
D514	2	23'-6"		14
D516	2	22'-4"		Str.
D527	11	5'-4"		14
D528	11	5'-6"		14
D529	2 Sets of 7	6'-0" to 18'-0" 2'-0" Incr.		Str.
D530	8	20'-0"		Str.
D531	1	7'-0"		14
D532	1	7'-2"		14
D533	1	5'-0"		14
D534	1	5'-2"		14
D544	6	22'-3"		Str.
D545	11	9'-10"		14
D546	11	9'-11"		14
D547	2 Sets of 8	5'-4" to 21'-1" 2'-3" Incr.		Str.
D548	1	11'-4"		14
D549	1	11'-3"		14
D550	1	9'-10"		14
D551	1	9'-9"		14
D552	4	24'-3"		Str.
C505	1	14'-8"		Str.
D559	17	4'-7" to 8'-7" 3" Incr.		13
D560	17	4'-7" to 8'-7" 3" Incr.		13
D561	1	8'-9"		13
D562	1	4'-5"		13
E504	2 Sets of 13	20'-6" to 30'-0" 9½" Incr.		Str.
E506	3	30'-6"		Str.
E507	3	30'-0"		Str.
F503	2 Sets of 5	6'-8" to 22'-8" 4'-0" Incr.		Str.
F504	2 Sets of 6	8'-0" to 25'-6" 3'-6" Incr.		Str.
H501	31	7'-6"		11
J502	4	19'-0"		Str.
Wt. per Section			10082 lbs.	
Total Weight of Bar Reinf. for Struct.			73,586 lbs.	



SECTION G-G

HYDRAULIC DATA

DRAINAGE AREA = 1.8 SQ. MI.
DISCHARGE ($Q_{50yr.}$) = 940 CFS.
TAILWATER ELEVATION = +9.3
VELOCITY = 5.0 '/SEC.



REINFORCING IN TOP SLAB
Scale ¼"=1'-0"

Note:

Bar size is indicated in the bar mark. The first digit where three digits are used, and the first two digits where four digits are used indicate the bar size.

The clear distance from face of concrete to reinforcing shall be 2" except where noted.

Superficial Waterproof backside of wingwalls from top of footing up to 9" below the retained ground line.

All membrane waterproofing 2-ply, 24 wide.

Place subfoundations as directed by the Engineer for local soil conditions.

APPROVED ______ BRIDGE ENGINEER

DELAWARE
STATE HIGHWAY DEPARTMENT

INTERSTATE ROUTE F.A.I.-I(21)-2
CHRISTINA RIVER INTERCHANGE

BASIN ROAD (S.B.)
STRUCTURE NO. 6-21

J. E. GREINER CO.
MORAN, PROCTOR, MUESER & RUTLEDGE
CONSULTING ENGINEERS

DESIGNED: J.W.H.-R.C.C. CHECKED: H.F.M. DATE: 2-29-60
DRAWN: A.J.C.A.J.S. IN CHARGE: S.W.L. SCALE: As Shown

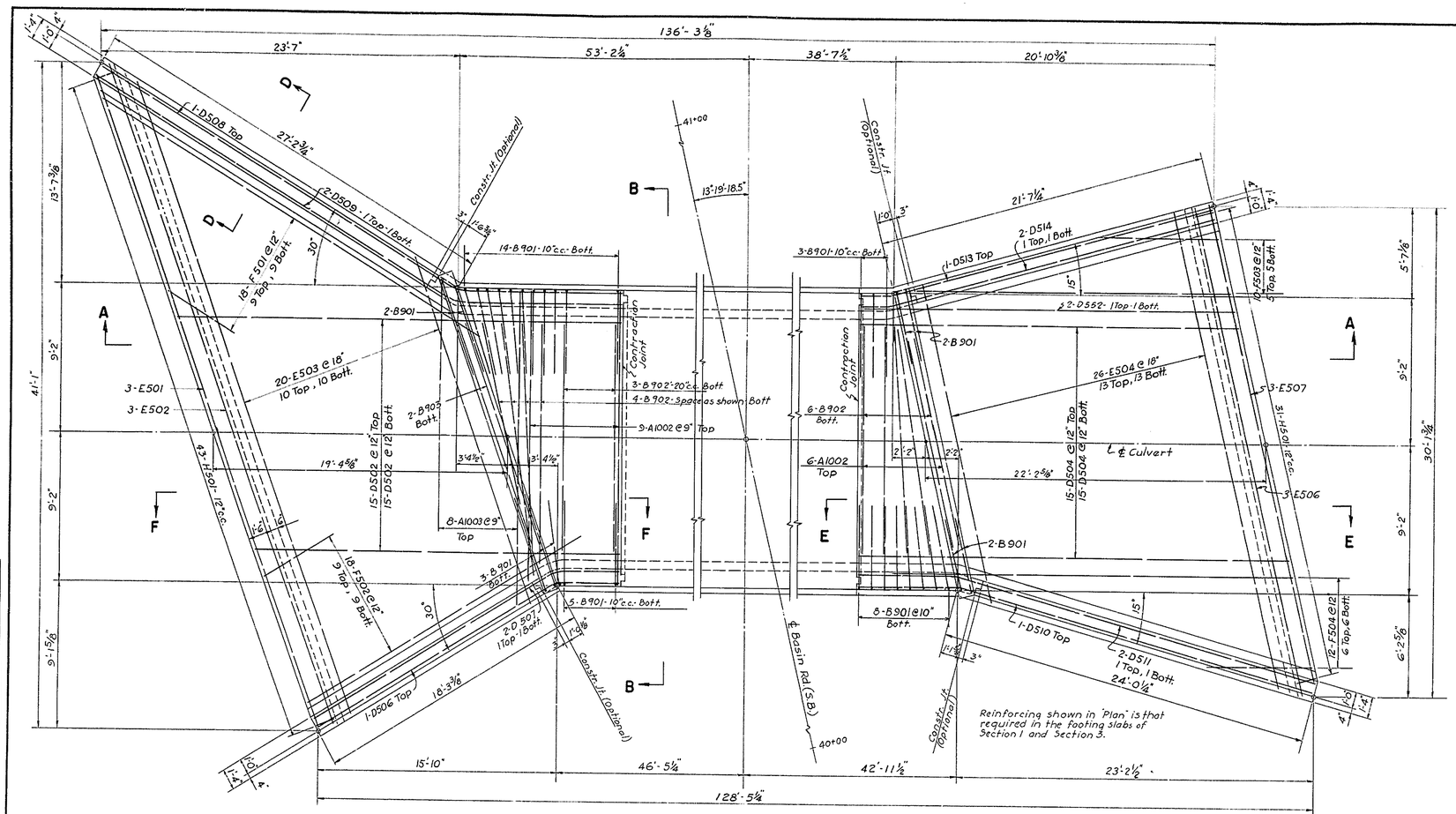
REVISIONS
Const. Joints moved 3" higher

BEARINGS
TIE POINTS
BENCH MARKS
EARTHWORK
DRAINAGE

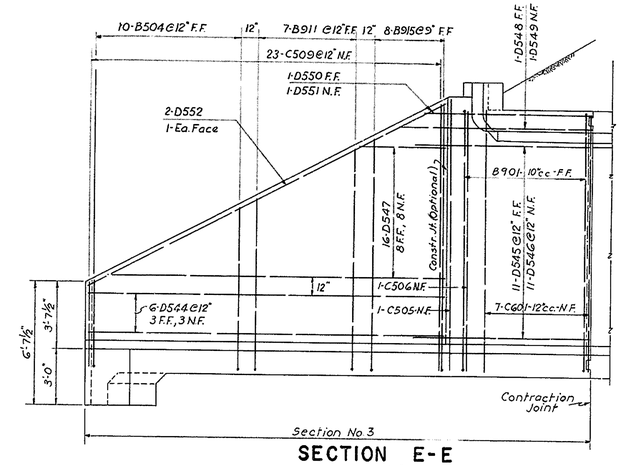
"Imperial" 156 W. D. & R.

D C B A A B C D

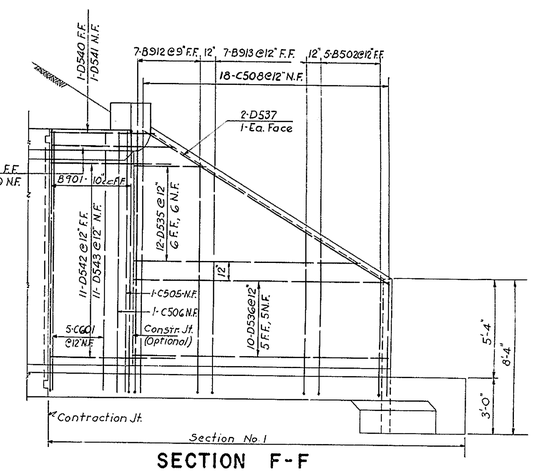
COUNTY	CONTRACT	F.A.I. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE	I-1(21)-2	2	DEL.	I-95-1(19)		44	58



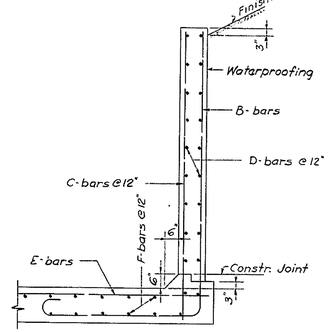
PLAN
Scale: ¼" = 1'-0"



SECTION E-E
Scale: ¼" = 1'-0"

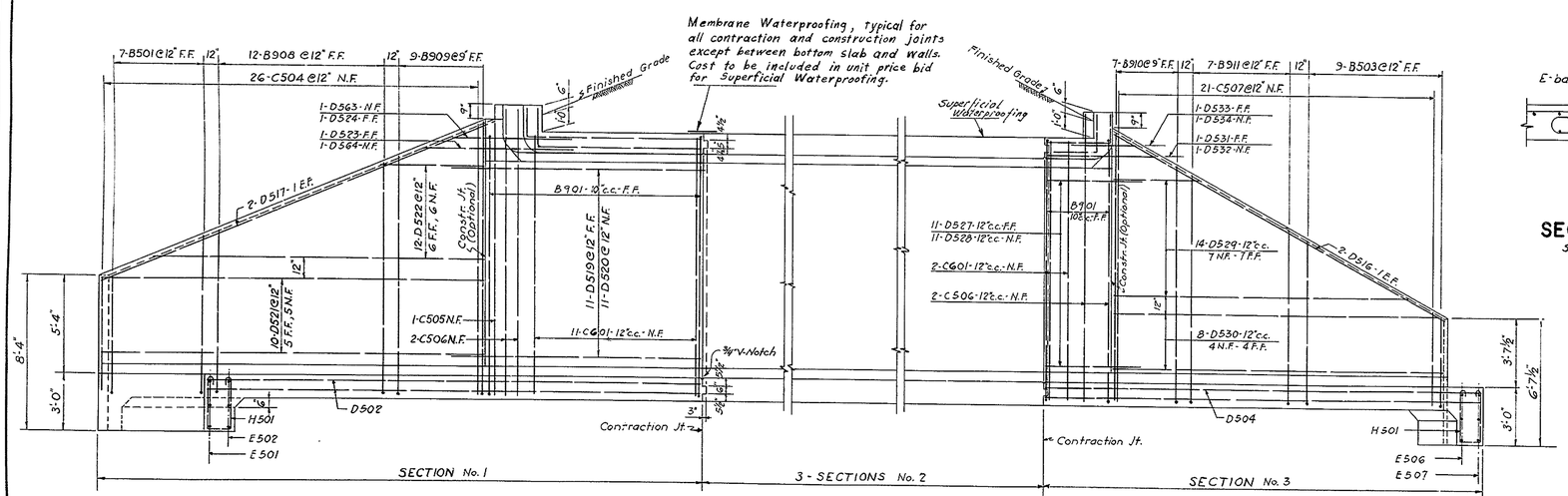


SECTION F-F
Scale: ¼" = 1'-0"



B bars to be set normal to back of wall. Skew these bars only when necessary to keep them within base.

SECTION D-D
Scale: ⅜" = 1'-0"



SECTION A-A
Scale: ¼" = 1'-0"

APPROVED _____ BRIDGE ENGINEER

DELAWARE
STATE HIGHWAY DEPARTMENT

INTERSTATE ROUTE F.A.I.-1(21)-2
CHRISTINA RIVER INTERCHANGE

BASIN ROAD (S.B.)
STRUCTURE NO. 6-21

J. E. GREINER CO.
MORAN, PROCTOR, MUESER & RUTLEDGE
CONSULTING ENGINEERS

DESIGNED: R.C.C. & W.H. CHECKED: H.F.M. DATE: 2-29-60
DRAWN: A.J. IN CHARGE: B.W.L. SCALE: As shown

GRADE
BEARINGS
TIE POINTS
BENCH MARKS
ELEVATIONS
DRAINAGE

REVISIONS

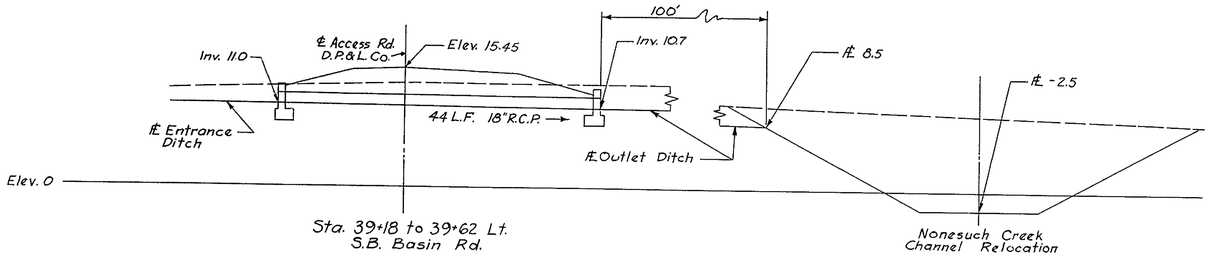
"Imperial" 156 W. B. & E.

COUNTY	CONTRACT	P.R.A. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE	I-1(21)-2	2	DEL.	I-95-1(19)		45	58

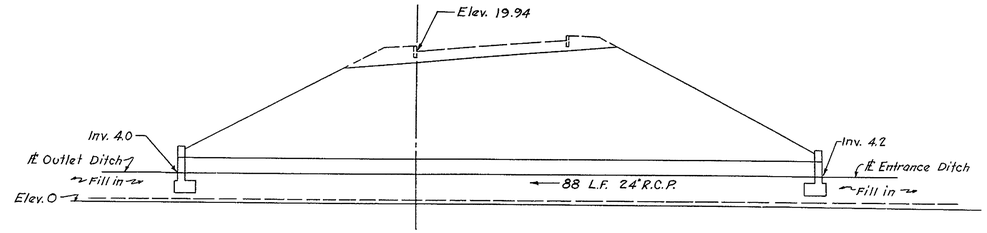
BASIN ROAD

PIPE CULVERT SECTIONS

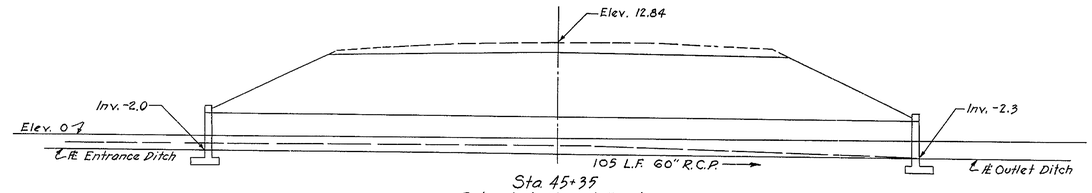
Scale: 1" = 10'



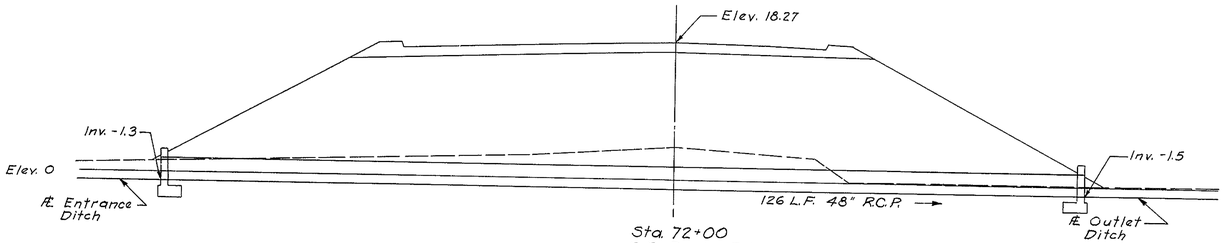
Sta. 39+18 to 39+62 Lt.
S.B. Basin Rd.



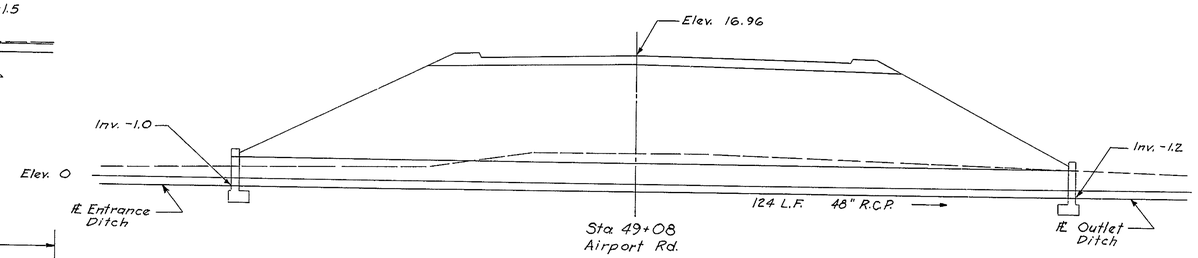
Sta. 25+00
Ramp F



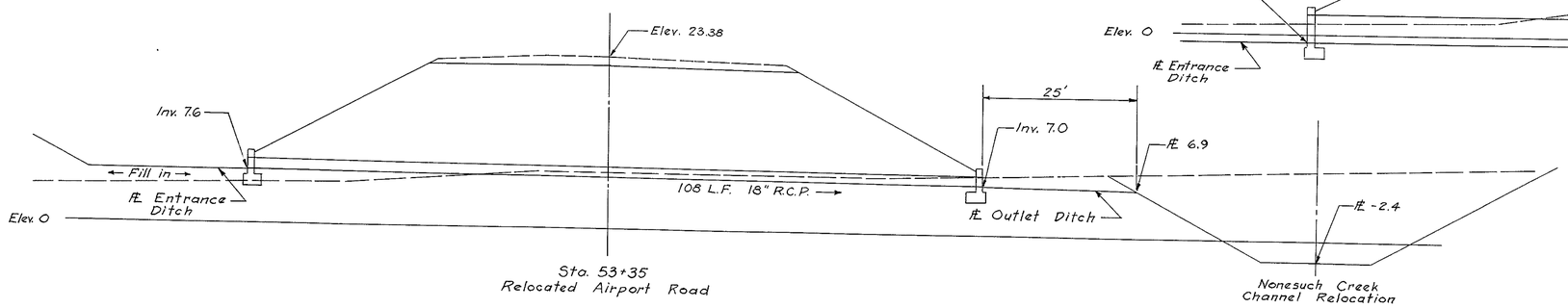
Sta. 45+35
Relocated Airport Road



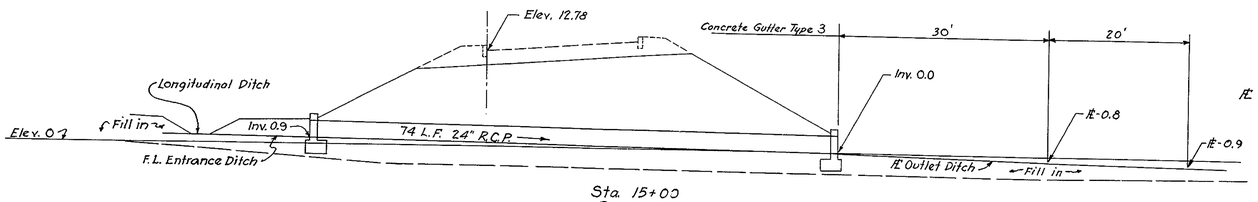
Sta. 72+00
S.B. Basin Rd.



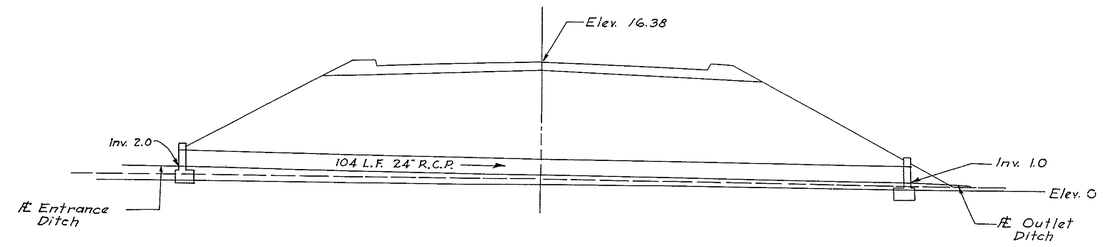
Sta. 49+08
Airport Rd.



Sta. 53+35
Relocated Airport Road



Sta. 15+00
Ramp E



Sta. 52+00
Airport Rd.

Notes:
For General Notes, see sheet no. 8

CHECKED
GRADE W.E. Ruchinsky
BEARINGS
TIE POINTS
BENCH MARKS
EARTHWORK
DRAINAGE R.P. Borcherding

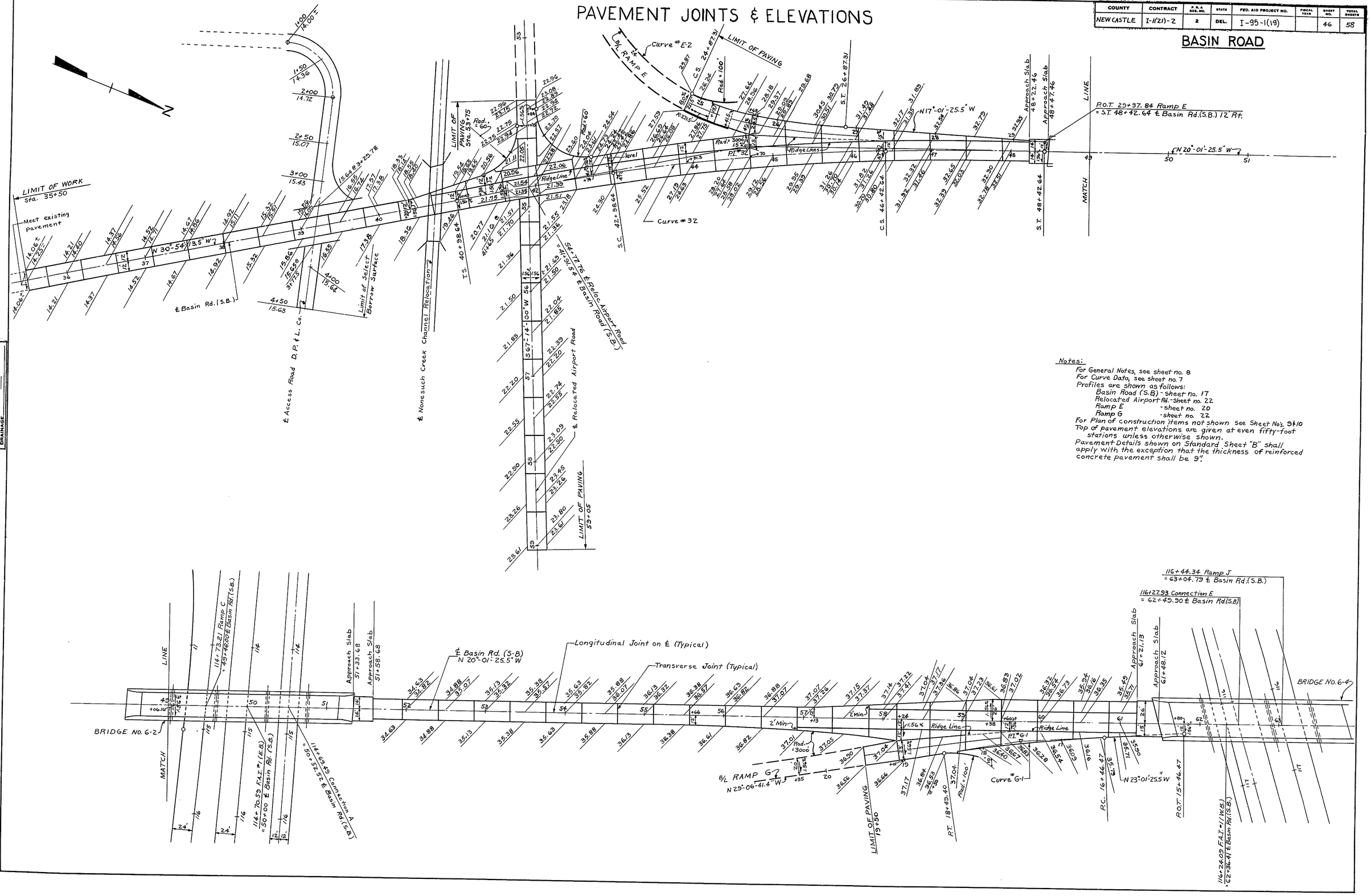
REVISIONS

D C B A 1 5 10 A B C D

COUNTY	CONTRACT	F.A.R. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE	I-1(21)-2	2	DEL.	I-95-1(19)		46	58

PAVEMENT JOINTS & ELEVATIONS

BASIN ROAD



Notes:

For General Notes, see sheet no. 8
For Curve Data, see sheet no. 7
Profiles are shown as follows:
Basin Road (S.B.) - sheet no. 17
Relocated Airport Rd. - sheet no. 22
Ramp E - sheet no. 20
Ramp G - sheet no. 22
For Plan of construction items not shown see Sheet No's. 9 & 10
Top of pavement elevations are given at even fifty-foot stations unless otherwise shown.
Pavement Details shown on Standard Sheet "B" shall apply with the exception that the thickness of reinforced concrete pavement shall be 9".

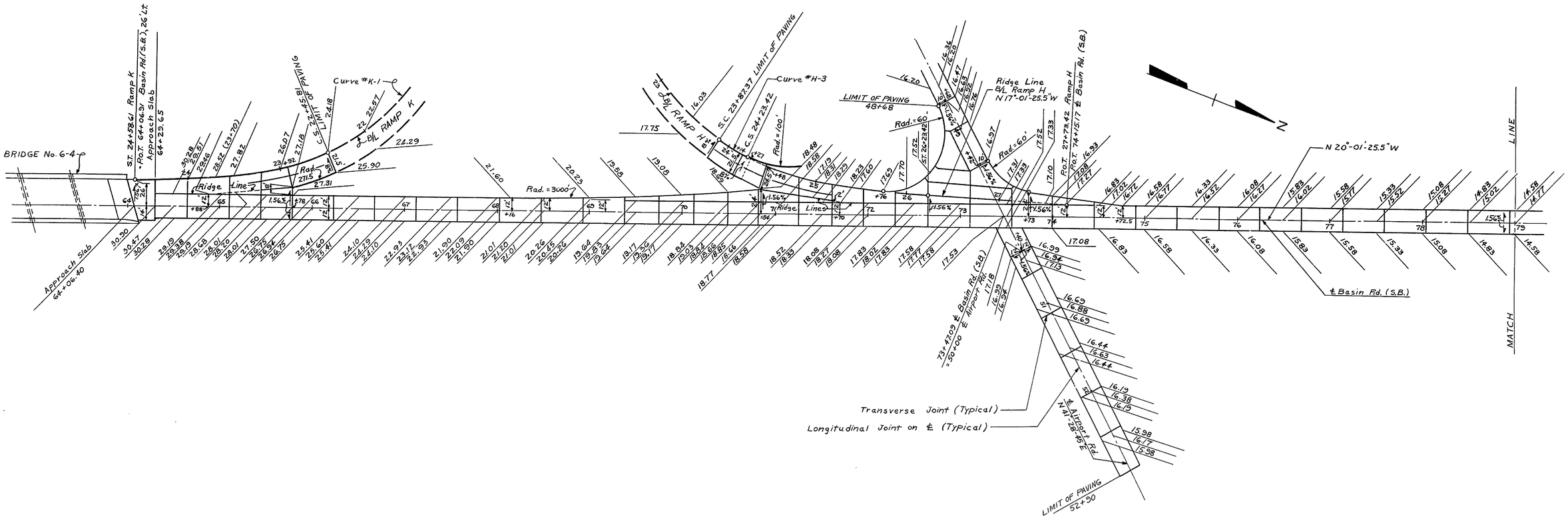
CHECKED P.A. Grill
GRADE
BEARINGS P.A. Grill
TIE POINTS
BENCH MARKS
EARTHWORK
DRAINAGE

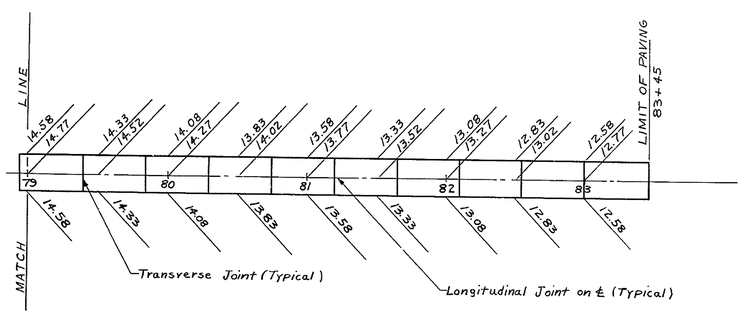
REVISIONS

COUNTY	CONTRACT	P.R.A. REQ. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE	I-1(21)-2		DEL	I-95-1(19)		47	58

PAVEMENT JOINTS & ELEVATIONS

BASIN ROAD





Notes:

For General Notes, see sheet no. 8
For Curve Data, see sheet no. 7
Profiles are shown as follows:
- Basin Rd. (S.B.) - sheet no. 18
- Ramp K - sheet no. 25
- Ramp H - sheet no. 23
- Airport Rd. - sheet no. 16

Top of pavement elevations are given at even fifty foot stations unless otherwise shown.

Pavement Details shown on Standard Sheet "B" shall apply with the exception that the thickness of reinforced concrete pavement shall be 9".

For Plan of construction items not shown, see sheet nos. 11 & 12.

BEARINGS P.A.G.-III
TIE POINTS
BENCH MARKS
EARTHWORK
DRAINAGE

REVISIONS

COUNTY	CONTRACT	P.B.S. SEC. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE	I-1(21)-2	2	DEL	I-95-1(19)		48	58

BASIN ROAD

NOTE: P= Participating
NP= Non-Participating

	ITEM NO.		44			60	37	26					18	20	31	29	29	29		4
	STATIONS	SIDE	CATCH BASINS Type A-1 Ea.	CATCH BASINS Type B Ea.	CATCH BASINS Type P.W.-B.R.Z Ea.	Lateral Ditching L.F.	4" Portland Cement Conc. Gutter S.Y.	18" R.C.P. L.F.	24" R.C.P. L.F.	48" R.C.P. L.F.	60" R.C.P. L.F.		Portland Cement Conc. Masonry C.Y.	Bar Reinf. lbs.	6" Perforated C.M.P. Underdrains L.F.	18" C.M.P. 16 Ga. Coated & Paved L.F.	18" C.M.P. 16 Ga. 30° Bends Coated & Paved Ea.	6" C.M.P. L.F.		Excavation For Structures C.Y.
	Basin Road (S-B)																			
P	39+18 to 39+62	L						44					4.0	86						20
NP	41+50 to 42+70 (53+35 Reloc. Airport Rd)	L				25		108					4.0	86						20
P	70+40	L		1				62												
P	72+00	L & R				425				126			11.4	660						62
50%P	72+35 to 73+65 (49+08 Airport Rd.)	L				45				124			11.4	660						62
50%P	73+90 to 74+90 (52+00 Airport Rd.)	R				20			108				5.6	117						27
P	74+90 to 78+00	R				330														
P	78+00 to 80+00	R				200														
	Relocated Airport Road																			
NP	45+35	L & R				520					105		15.2	960						95
	F.A.I. #1 (E.B.)																			
NP	116+00	L & R			2			131					2.0	43						10
	F.A.I. #1 (W.B.)																			
NP	115+50 to 116+80	R													115			20		
NP	**Connection A**																			
	114+15 to 115+30	L													100			20		
NP	**Ramp C**																			
	114+50 to 115+40	R													100			20		
	Ramp F																			
P	25+00	L & R							88				5.6	117						27
P	14+05	L					25													
	Ramp H																			
NP	23+50	L	1			10							2.0	43		40	2			10
	Ramp J																			
NP	116+05 to 117+35	L													115			20		
	Ramp K																			
P	22+60	R	1			30							2.0	43		30	2			10
	Nonesuch Creek Ch'nl. Reloc.																			
50%P	18+30 (for exist. drain)	R											2.0	40						
	Ramp E																			
P	15+00	L & R				10	42		74				5.6	117						27
	From Structure Summary						258													
	GRAND TOTALS		2	1	2	1,615	325	345	270		250	105	70.8	2,972	430	70	4	80		370
	PROPOSAL		2	1	2	1,615	325	345	270		250	105	70.8	*	430	70	4	80		*

*See Structure Summary.

ITEM NO.		48	49	SP	38		S.P.	S.P.	29		
STATIONS	SIDE	Wire Rope Guardfence (Wood Posts) L.F.	End Post Attachments Ea.	Machine Laid, Hot Mix Asphalt Conc. Curb L.F.	Portland Cement Concrete Curb, Type 1. L.F.		Concrete Intake Apron, Type 2. Ea.	Downspout Splash Apron Ea.	8" C.M.P. 16 Ga. L.F.	10" C.M.P. 16 Ga. L.F.	
Basin Road (S-B)											
P 40+00 to 41+65	R	165	2	165			1	1	22		
P 40+00 to 53+75 (Reloc. Airport Rd.)	L	230	5	230			1	1	25		
P 44+40 to 53+75 (Reloc. Airport Rd.)	L	265	5	270			1	1	34		
P 42+12 to 46+46	R	634	3	634			2	2	92		
P 45+47 to 25+45 (Ramp E)	L	397	1	393			1	1	42		
P 51+36 to 58+92	L	756	3	756			4	4	348		
P 51+34 to 55+00	R	366	1	366			1	1	70		
P 59+08 to 61+39	L	231	1	231			1	1	70		
P 64+12 to 73+32	R	920	3	922			4	4	126		
P 63+99 to 22+46 (Ramp "K")	L	220	2								
P 66+80 to 70+55	L	375	2	380			1	1	40		
P 73+85 to 78+00	R	415	1	415			1	1	20		
P 78+00 to 83+57	L	557	2	545			2	2	54		
P 78+00 to 83+60	R	560	3	560			2	2	20		
P 48+00 (Airport Rd.) to 78+00	L	615	4								
P 48+68 (Airport Rd.) to 78+00	L			547			2	2	68		
Airport Road											
50%P 51+58 to 53+12	R	154	1	132			1	1		36	
50%P 47+00 to 48+00	R	100	1								
50%P 47+00 to 48+00	L	100	1								
50%P 50+14 to 51+42	R	128	2	128			1	1	24		
50%P 50+38 to 53+24	L	286	1	252			1	1		24	
Relocated Airport Rd.											
NP 54+98 to 57+42	R	244	2	244			1	1		24	
NP 57+58 to 59+37	R	179	1	147			1	1	36		
NP 55+04 to 57+42	L	238	2	238			1	1		26	
NP 57+58 to 59+74	L	216	1	147			1	1	38		
Ramp G											
P 15+75 to 18+07	L	232	1	230			1	1	64		
P 19+07 to 19+50	R				43						
P 18+05 to 19+50	L				147						
Ramp E											
P 24+87.31 to 25+41.5	R				59						
P 24+87.31 to 25+47	L				60						
Ramp H											
P 23+87 to 24+27	R				45						
P 23+87 to 24+83	L				95						
P 24+81 to 48+00 (Airport Rd.)	L	262	3	188			1	1	32		
Ramp K											
P 22+46 to 63+99	R				221						
P 22+46 to 22+92	L				50						
GRAND TOTALS		8,845	54	8,120	720		33	33	1,225	110	
PROPOSAL		8,845	54	8,120	720		33	33	1,225	110	

ITEM NO	15	21	11		7	14		
LOCATION	9" Portland Cement Concrete Pavement Cu.Yds.	Wire Mesh Reinforcement Squares	Hot Mix, Asphaltic Concrete Tons	R.C.-1 Asphalt Tack Coat Gals.	Select Borrow Cu.Yds	R.C.-1 Asphalt Gals.	R.C.-3 Asphalt Gals.	Coarse Aggregate S.Y.
Basin Road (S-B)								
35+50 to 48+46± (P)	848	293	1,007	600	2,000			
51+34± to 61+47± (P)	642	222	787	470	1,700			
64+08± to 83+45 (P)	1277	444	1,482	900	3,200			
Relocated Airport Road (NP)	499	173	192	240	1,250			
Airport Road (50%P)	342	118	167	180	1,300	600	600	1200
Ramp E (P)	214	74			550			
Ramp G (P)	211	73			400			
Ramp H (P)	197	68			300			
Ramp K (P)	230	80			300			
Access Road (P)					130			
Access Ramps (P)						400	400	800
Bridge No. 6-2 (14.3%P)			205	247				
Bridge No. 6-4 (20%P)			185	223				
GRAND TOTALS	4,460	1,545	4,025	2,860	11,130	1,000	1,000	2000
PROPOSAL	4,460	1,545	4,025	2,860	11,130	1,000	1,000	2,000

ITEM NO.		51	53	54	
LOCATION	Side	Topsoil (4" Deep) Sq. Yds.	Seeding Acres	Mulching Sq. Yds.	
Basin Road (S-B)					
35+50 to 48+47.46	R. & L.	1820	2.33	11,290	P
51+33.68 to 61+48.12	R. & L.	1570	3.78	18,300	P
64+06.40 to 83+45	R. & L.	2810	3.90	18,900	P
Relocated Airport Road	R. & L.	740	3.03	14,660	NP
Airport Road	R. & L.	560	0.36	1,730	50% P
F.A.I. #1 (W-B)	R. & L.		0.08	370	NP
F.A.I. #1 (E-B)	R. & L.		0.44	2,120	NP
See Note at Right			50.08	242,000	
GRAND TOTALS		7,500	64.0	309,370	
PROPOSAL		**	64.0	309,370	

NOTE: % Participating to be determined in the field. All other areas including Ramps, Channels, Access Roads, and Waste Disposal areas.

** 1,900 sq. yds. topsoil
5,600 sq. yds. topsoiling

S.P. TEMPORARY ROADWAY MATERIAL	
ITEM	PROPOSAL
Cold Laid Bituminous Concrete (NP)	100 Tons
Select Borrow (NP)	300 C.Y.

QUANTITIES W.H. Dotson
BEARINGS
TEMPORARY BENCHMARKS
BENCH MARKS
EARTHWORK
DRAINAGE

REVISIONS

COUNTY	CONTRACT	F.A.P. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE	I-1(21)-2	2	DEL.	I-95-1(19)		49	58

BASIN ROAD

NOTE: P = Participating
NP = Non-Participating

	ITEM #		2	SP	SP		SP	5	
	LOCATION	Station Limits	Excavation C.Y.	Swamp Excavation C.Y.	Special Fill C.Y.	Embankment C.Y.	Longitudinal Ditch Excavation C.Y.	Borrow C.Y.	
P	Basin Rd. (S.B.)	35+50 to 48+65	10,243	30,854	52,465	88,233	240	77,990	
P	Basin Rd. (S.B.)	51+25 to 61+65	5,585	11,473	23,726	161,367	88	155,782	
P	Basin Rd. (S.B.)	63+90 to 83+00	10,273	34,858	51,332	85,342	581	74,869	
50% P	Airport Rd. - North End	43+27 to 49+20	204		2,084	9,760		9,556	
50%P	Airport Rd. - North End	50+65 to 52+50		3,182	5,007	6,391		6,391	
NP	F.A.I. #1 (W.B)	115+00 to 118+00		24	48	11,685		11,685	
NP	F.A.I. #1 (E.B)	110+00 to 120+00		83,825	104,582	56,136	135	56,136	
P	Ramp E	13+00 to 25+00		30,514	46,837	34,567	131	34,567	
P	Ramp F	20+00 to 27+32		11,977	19,561	35,461	292	35,461	
P	Ramp G	20+25 to 21+30				6,320		6,320	
P	Ramp H	23+00 to 23+50			163	2,270	37	2,270	
P	Ramp K	21+50 to 22+70				6,030		6,030	
NP	Relocated Airport Rd.	38+50 to 54+10		36,973	57,775	45,571	346	45,571	
NP	Relocated Airport Rd.	55+45 to 58+00				9,006		9,006	
P	D.P. & L. Access Rd.	1+00 to 4+00				456		456	
P	Access Ramp	59+50				4,850		4,850	
P	Temporary Runaround		4,255			1,285		-2,970	
	GRAND TOTALS		30,560	243,680	363,580	564,630	1,850	534,070	
	PROPOSAL		30,560	243,680	363,580		1,850	534,070	

Embankment	564,630	C.Y.
Excavation	-30,560	C.Y.
Borrow	534,070	C.Y.
PROPOSAL Borrow	534,070	C.Y.

	ITEM #		4	18						20	22		35	35	35	SP	SP	SP		SP		37	18	10
				Portland Cement Concrete Masonry																				
	LOCATION	DESCRIPTION	Excavation for Struct's C.Y.	Abutments C.Y.	Pier Footings C.Y.	Piers Above Footings C.Y.	Superstructure C.Y.	Approach Slabs C.Y.	Box Culverts C.Y.	Bar Reinforcement Lb.	Structural Steel Lb.	Structural Steel Lb.	Steel/Shell Pile Load Tests Ea.	Cast-in-Place Concrete Piles L.F.	Steel Shell Test Piles L.F.	Aluminum Bridge Railing L.F.	Slope Paving with Conc. Block S.Y.	Bridge Drainage L.S	Bridge Drainage L.S	Conduit Work on Bridges L.S	Conduit Work on Bridges L.S	Portland Cement Concrete Gutter S.Y.	Portland Cement Concrete Masonry Subfoundations C.Y.	Superficial Waterproofing S.Y.
50%P	Sta. 40+73.40 Basin Road (S-B)	Box Culvert No. 6-1	1,705				339		362	73,586														
14.3%P	Sta. 50+00 Basin Road (S-B)	Bridge No. 6-2	515	138	78	110	440	80		131,960	253,940		1	4000	50	555	350	LS		LS		124	50	552
20%P	Sta. 62+75 Basin Road (S-B)	Bridge No. 6-4	630	182	95	119	509	114		170,882		327,655	1	3070	30	495	480		LS		LS	134		114
							427																	154
	From Drainage Summary		370							2,972														
	GRAND TOTALS		3220	320	173	229	316 949	194	362	379,400	253,940	327,655	2	7,070	80	1,050	830	LS	LS	LS	LS	258	50	820
	PROPOSAL		3220	** 320	** 173	** 229	** 316 949	** 194	** 362	379,400	L.S.	L.S.	2	7,070	80	1,050	830	LS	LS	LS	LS	*	50	820

** Fixed Quantity Items

* See Drainage Summary

S.P.	
P REMOVAL OF NONESUCH CREEK BRIDGE	
PROPOSAL	LUMP SUM

S.P.	
P MAINTENANCE OF TRAFFIC	
PROPOSAL	LUMP SUM

ITEM # 1	
CLEARING AND GRUBBING	
PROPOSAL	LUMP SUM

ITEM # 61	
P CALCIUM CHLORIDE FOR DUST CONTROL	
PROPOSAL	4 Tons

S.P.	
P REMOVAL OF PRESENT CONCRETE PAVEMENT	
LOCATION	Square Yards
Basin Road	8,940
PROPOSAL	8,940

S.P.	
CHECK BORINGS	
PROPOSAL	330 L.F.

Determine % Participating in the field.

ITEM # 55		
SODDING		
LOCATION	Side	Square Yards
Basin Road (S-B)		
P 52+00 to 57+50 ±	R	230
P 74+90 to 78+00	R	275
P 78+00 to 80+00	R	165
Basin Road (N-B)		
P 43+60 to 48+50	L	390
P 67+00 to 69+00	L	155
NP 116+00 F.A.I. #1 (E.B) to 48+50 Basin Rd. (N.B.)		265
NP 120+00 Ramp J to 67+00 Basin Rd. (N.B.)		230
NP 120+00 F.A.I. #1 (W.B)	R	265
50%P 52+00 Airport Rd.	R	17
50%P 52+00 to 53+00 Airport Rd.	R	78
P 11+00 to 22+00 Ramp E	L	800
P 14+05 to 27+32 Ramp F	L	893
NP 27+32 to 30+10 Ramp F	L	187
P 22+60 Ramp K	R	15
GRAND TOTAL		3,965
PROPOSAL		3,965

S.P.	
CONDUITS UNDER PAVED AREAS	
NON-PARTICIPATING	
LOCATION	3" Galvanized Wrought Iron. L.F.
Basin Road (S-B)	
Sta. 40+20	54
Sta. 45+70	74
Sta. 49+00± Under Bridge No. 6-2	303
Sta. 50+80± Under Bridge No. 6-2	100
Sta. 52+40	108
Sta. 56+00	54
Sta. 61+00	144
Sta. 62+00± Under Bridge No. 6-4	112
Sta. 63+50± Under Bridge No. 6-4	112
Sta. 64+60	70
Sta. 66+70	54
Sta. 72+30	66
Sta. 75+00	54
Relocated Airport Road	
Sta. 55+15	54
Ramp "H"	
Sta. 24+00	31
GRAND TOTAL	1,390
PROPOSAL	1,390

ITEM 2B	
CHANNEL EXCAVATION	
LOCATION	Cubic Yards
50%P Relocated Channel - Nonesuch Creek	6,600
GRAND TOTAL	6,600
PROPOSAL	6,600

ITEM 2A	
REMOVAL OF EXISTING MASONRY	
P PROPOSAL	20 Cu. Yds.

S.P.	
CONCRETE PIPE CRADLE	
P PROPOSAL	20 C.Y.

S.P.	
STONE BEDDING FOR PIPES	
P PROPOSAL	20 Tons

BEARINGS
TIE POINTS
BENCH MARKS
EARTHWORK
DRAINAGE

REVISIONS
-Borrow from 676,240 To 534,070 C.Y. 6/21/62
-Relocated Masonry corrected 316 cy. (superseded 427) 6/21/62 (table shown)

3/30/62 J.L.L.