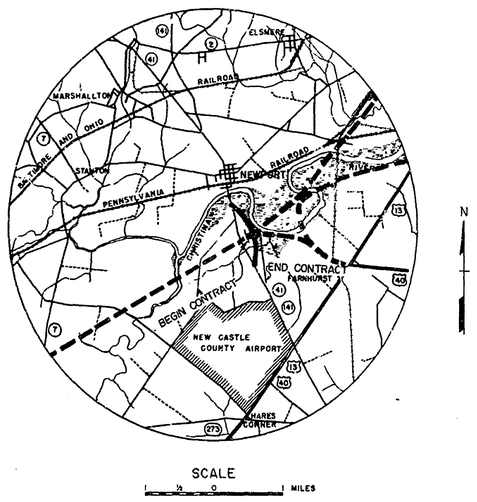


THE STATE OF DELAWARE

STATE HIGHWAY DEPARTMENT

PLAN FOR

CONSTRUCTION OF CONTRACT Nº I-1(21)-1

STA. 120+05 TO STA. 123+06 (CONNECTION A)

301 FEET: 0.057 MILES

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

"AS BUILT PLANS" BY J.R.R. 2-10-65

FEDERAL AID PROJECT Nº I-95-1(18) & 1-95-1(11)
(THIS IS A CONTROLLED ACCESS HIGHWAY)

SUMMARY OF MILEAGE

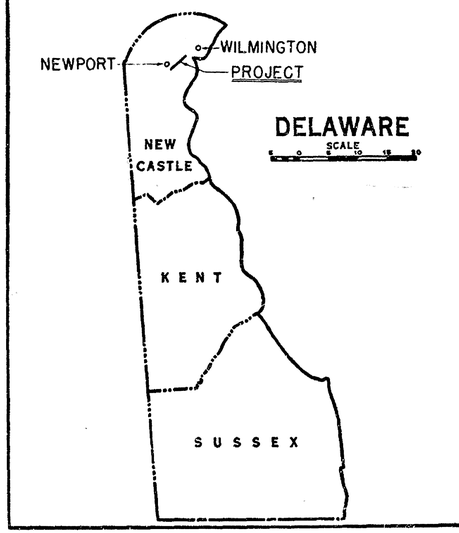
Basin Road (N.B.)	7,055.73 Lin. Ft.
Basin Road (S.B.)	650.00
Airport Road	143.40
Relocated Airport Road	229.12
F.A.I. 1 (W.B.)	600.00
F.A.I. 1 (E.B.)	300.00
Connection A	301.00
Connection E	600.00
Ramp C	298.00
Ramp D	494.41
Ramp F	1,301.00
Ramp J	600.00
Ramp L	450.00
Ramp M	450.00
Ramp N	400.00
TOTAL	13,872.66 Lin. Ft. = 2.627 Miles

DESIGN SPEEDS

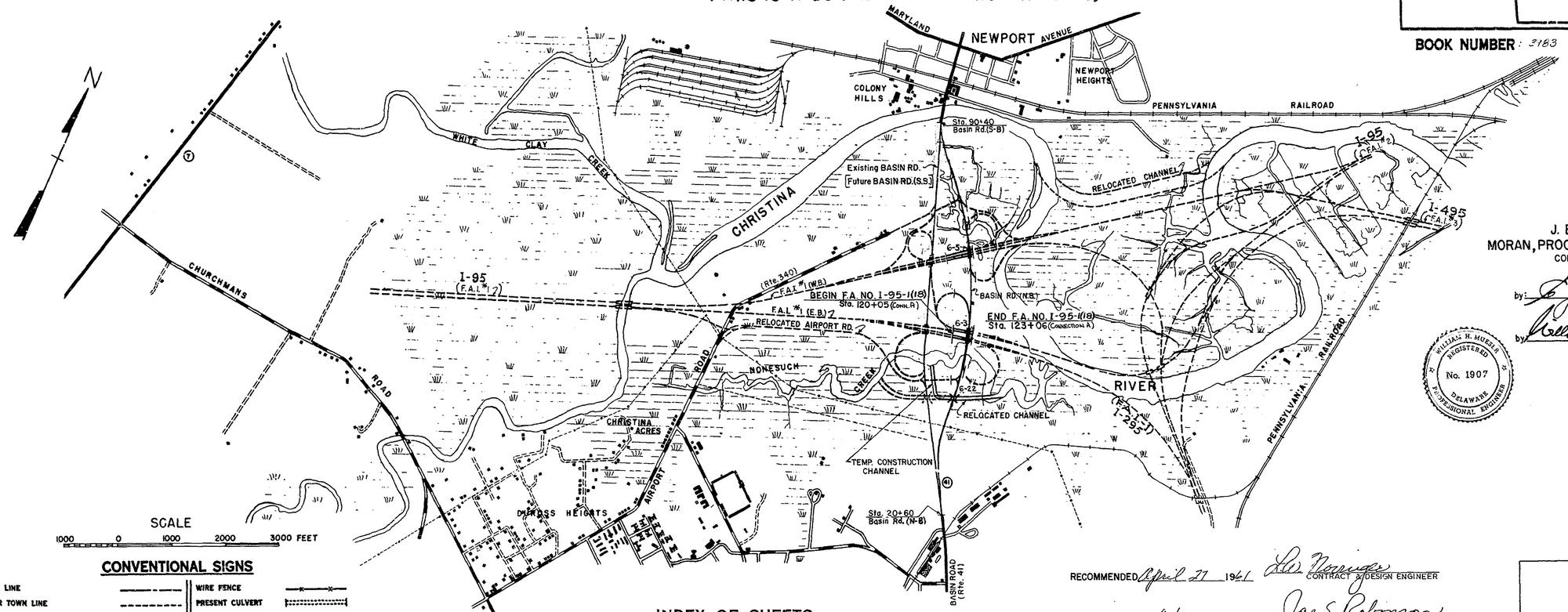
70 M.P.H. F.A.I. # 1
60 M.P.H. Basin Road and Connections A & E
40 M.P.H. Relocated Airport Road
30 M.P.H. All Ramps

COUNTY	CONTRACT	P.R.A. RTE. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE	I-1(21)-1	2	DEL.	I-95-1(18)		1	66

BASIN ROAD



BOOK NUMBER: 3183



CONVENTIONAL SIGNS

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

PROFILE: GRADE, GROUND, DATUM; 24.0 GR. 23.2; 25.6 GR. 24.0

INDEX OF SHEETS

SHEET Nº 1 TITLE SHEET
2-6 TYPICAL SECTION
7-26 PLAN AND PROFILE
27-46 BRIDGES & CULVERTS
47-49 PAVING PLANS
50-51 QUANTITIES
52-60 STANDARDS----B, DT, G, H, M, M-M, Q, W, Y
61-66 UTILITY - WATER

J. E. GREINER CO.
MORAN, PROCTOR, MUESER & RUTLEDGE
CONSULTING ENGINEERS
by: J. J. Donnelly
by: William H. Mueser

WILLIAM H. MUESER REGISTERED No. 1907 DELAWARE PROFESSIONAL ENGINEER

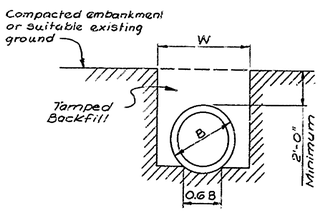
RECOMMENDED April 27 1961 — CONTRACT & DESIGN ENGINEER
RECOMMENDED 4/27 1961 — ASSISTANT CHIEF ENGINEER
APPROVED 4/27 1961 — CHIEF ENGINEER

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

COUNTY	CONTRACT	P.R.S. REQ. NO.	STATE	FED. AID PROJECT NO	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE	I-1(21)-1	2	DEL.	I-95-1(18)		2	66

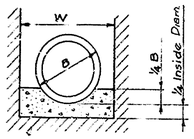
BASIN ROAD

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

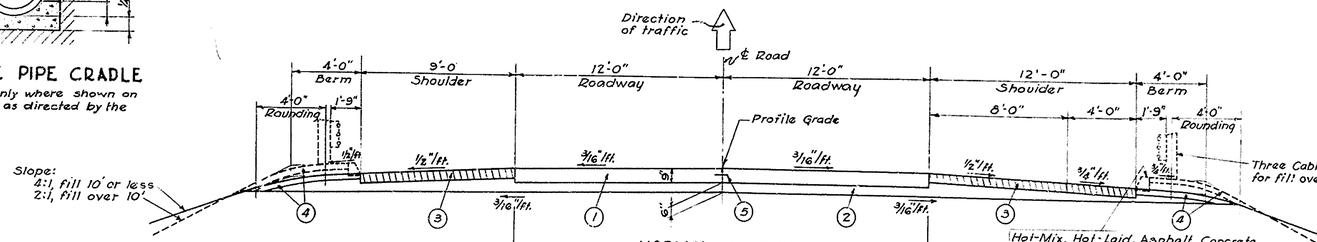


CONCRETE PIPE CRADLE

To be used only where shown on the Plans, or as directed by the Engineer.

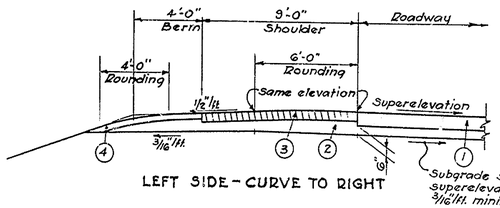
TYPICAL SECTIONS

Scale: ½"=1'-0"

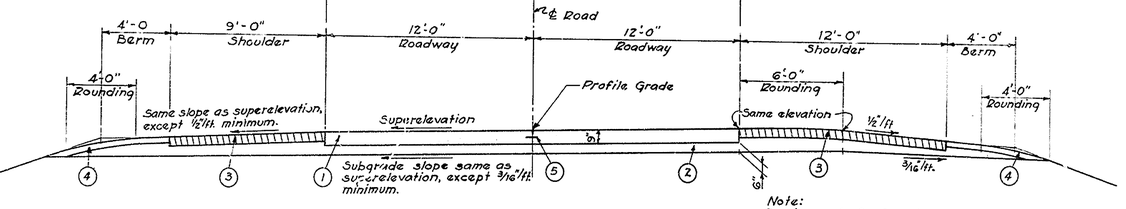


NORMAL SECTION IN FILL

Sta. 82+50 N.B. & 83+45 S.B. to Sta. 89+50
Use Flexible Pavement - See Detail

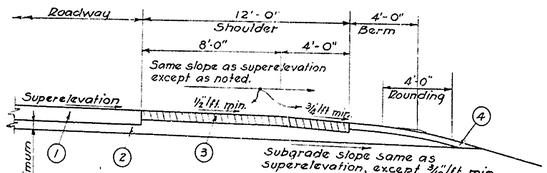


LEFT SIDE - CURVE TO RIGHT

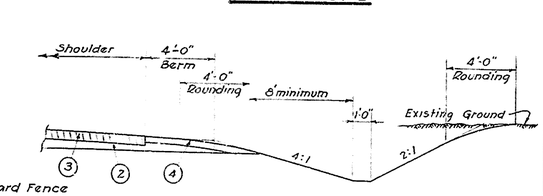


Note:
Requirements for Guard Fence, Asphalt Curb, and side slopes are to be the same as for the normal section.

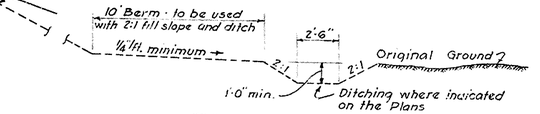
SUPERELEVATED SECTION CURVE TO LEFT



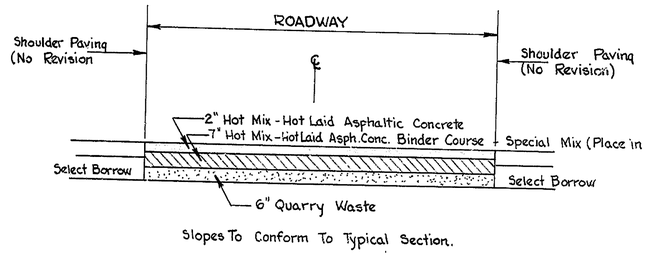
RIGHT SIDE — CURVE TO RIGHT



SECTION IN CUT



TYPICAL LONGITUDINAL DITCH

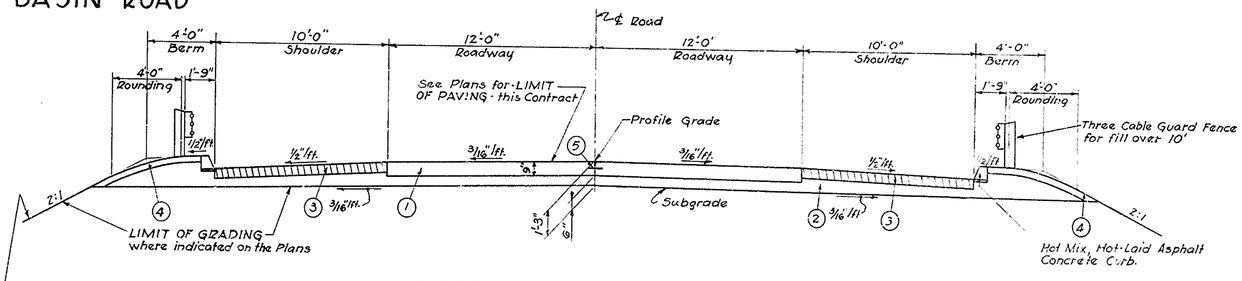


Slopes To Conform To Typical Section.

DETAIL OF FLEXIBLE PAVEMENT FOR BASIN ROAD

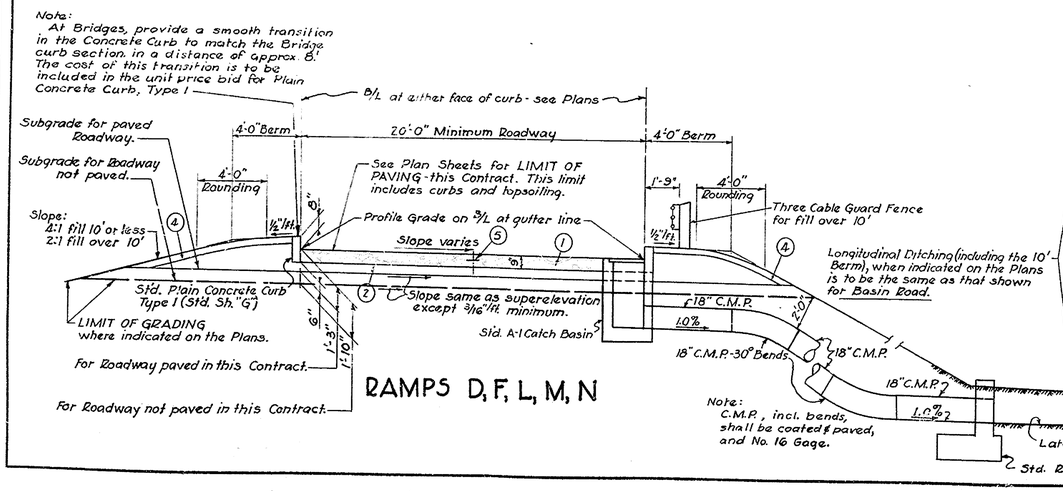
STA. 82+50 N.B. & 83+45 S.B. - STA. 89+50

BASIN ROAD



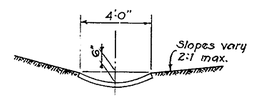
RELOCATED AIRPORT ROAD, AND AIRPORT ROAD

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

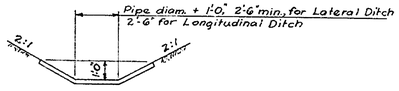


Note:
C.M.P., incl. bends, shall be coated & paved, and No. 16 Gage.

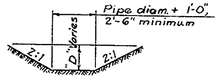
RAMPS D, F, L, M, N



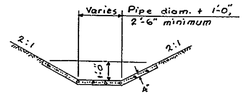
TYPICAL SOD GUTTER



TYPICAL SOD DITCH



TYPICAL LATERAL DITCH



CONC. GUTTER TYPE "3"

Legend

1. 9" Reinforced Concrete Pavement. } See Revision 9/14/62
2. Select Borrow
3. 1½" Hot Mix Asphaltic Concrete. 2½" Binder Course - Special Mix.
4. 4" Topsoil, seed & mulch.
5. Doweled Longitudinal Saw-Cut Joint.
6. Bituminous Surface Treatment.

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 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 C. B. Cullen Jr.
ROAD DESIGN ENGINEER

CHECKED
GRADE
BEARINGS
TIE POINTS
BENCH MARKS
EARTHWORK
DRAINAGE

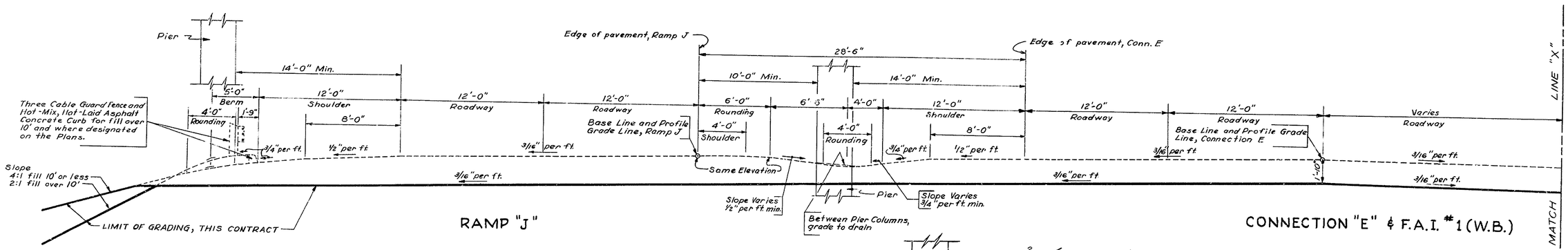
REVISIONS
9/14/62 - Conc. Pavt. to Flexible Pavement Sta. 82+50 N.B. & 83+45 S.B. to Sta. 82+50 - I.E.R.

COUNTY	CONTRACT	F.H.A. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE	I-1(21)-1	2	DEL.	I-95-1(18)		3	66

BASIN ROAD

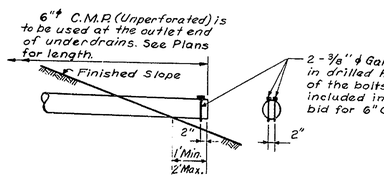
TYPICAL SECTIONS

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

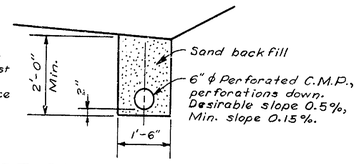


RAMP "J"

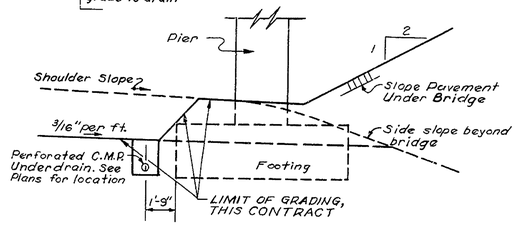
CONNECTION "E" & F.A.I. #1 (W.B.)



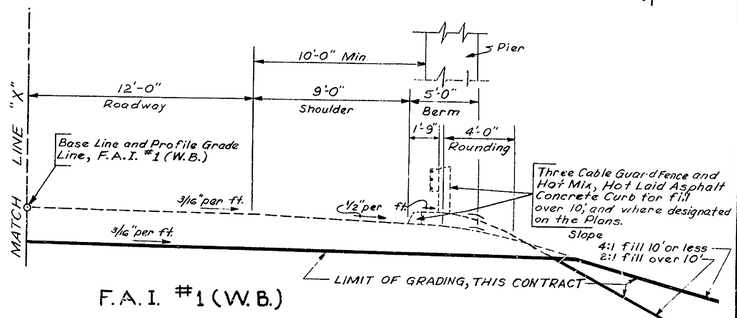
UNDERDRAIN OUTLET DETAIL
Scale: 1/2" = 1'-0"



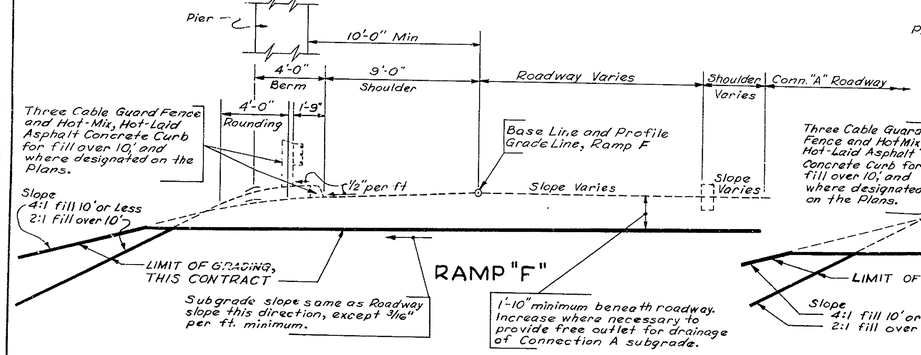
PERFORATED C.M.P. UNDERDRAIN
(Specification Item 31)
Scale: 1/2" = 1'-0"



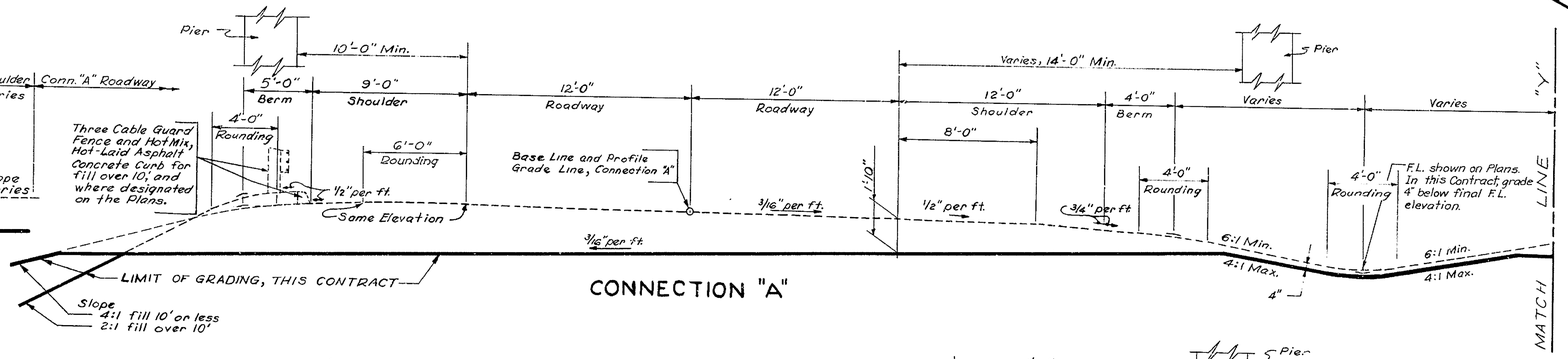
SUBGRADE TREATMENT AT EXTERIOR PIERS



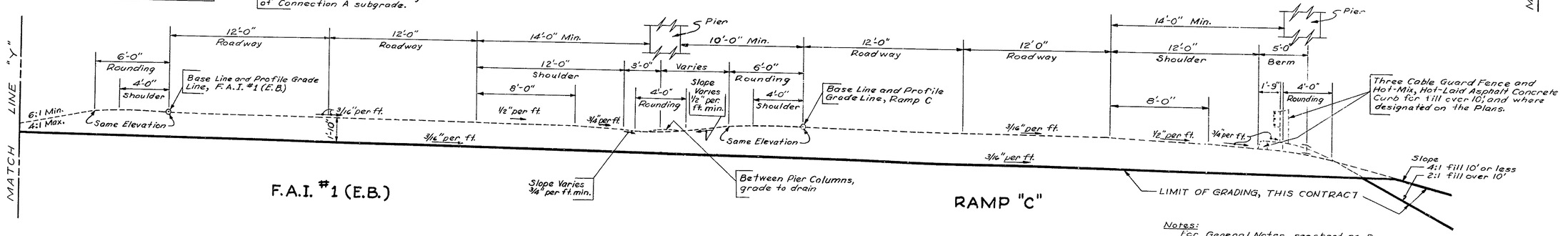
F.A.I. #1 (W.B.)



RAMP "F"



CONNECTION "A"



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

RAMP "C"

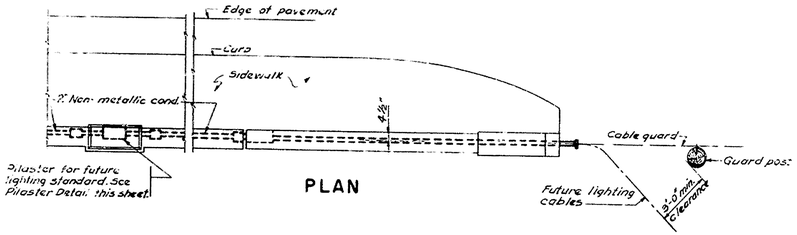
Notes:
For General Notes, see sheet no. 8
Finished slopes are to be seeded (including mulching) except where otherwise directed by the Engineer.
The width of grading shall be determined by the dimensions shown on this sheet regardless of dimensions shown on the plan sheets.

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

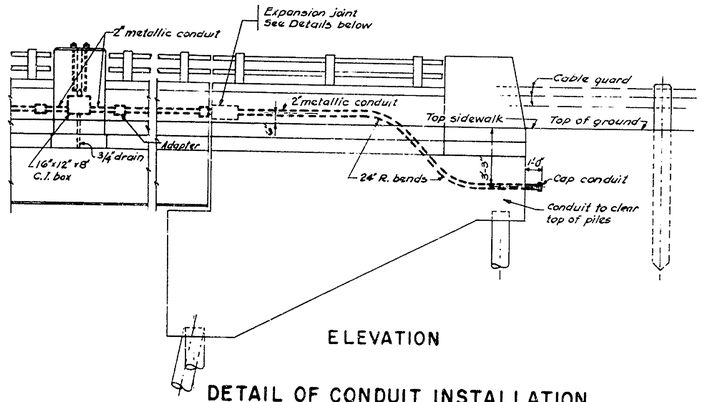
REVISIONS
4/24/61 Changed 13' Lanes To 12' Lanes & Changed Berm Distance From 4'6" & 5' Each

D C B A 1 5 10 A B C D

COUNTY	CONTRACT	F.A.P. REQ. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE	I-1(21)-1	2	DEL.	I-95-1(18)		4	66



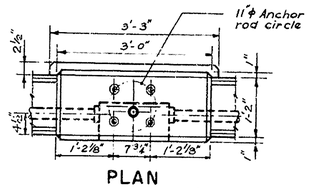
PLAN



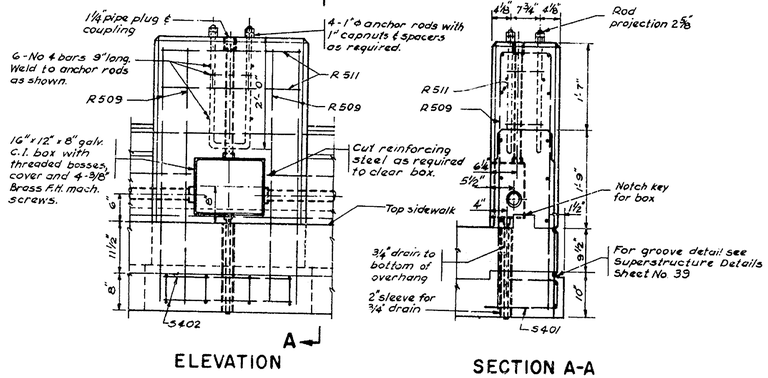
ELEVATION

DETAIL OF CONDUIT INSTALLATION AT BRIDGE ABUTMENTS

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



PLAN

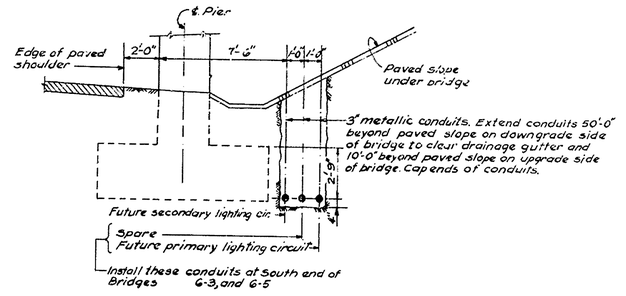


ELEVATION A

SECTION A-A

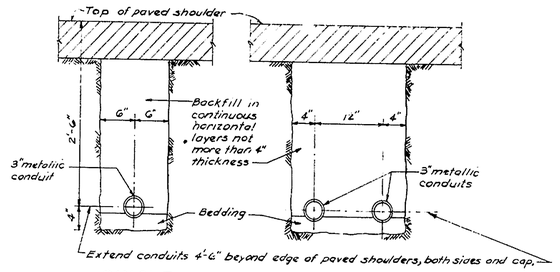
PILASTER DETAIL FOR FUTURE LIGHTING STANDARD

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



CONDUITS CROSSING UNDER PAVED SLOPES

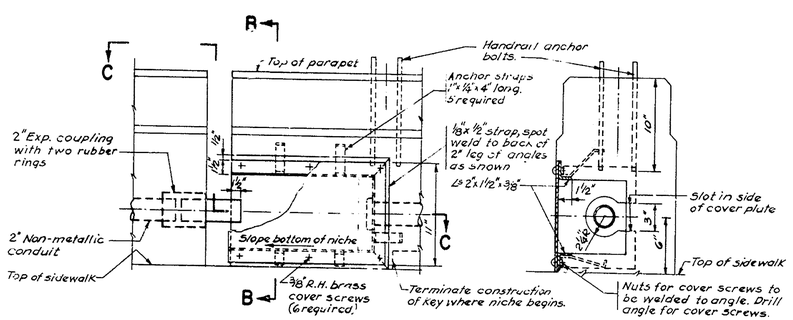
Scale: 1/4"=1'-0"



SINGLE DOUBLE

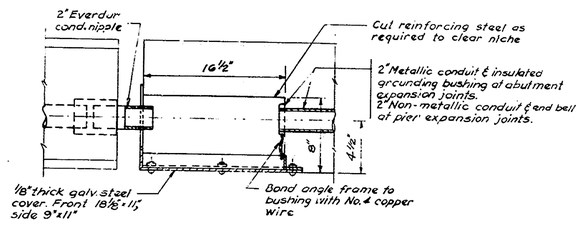
CONDUITS CROSSING UNDER PAVEMENT

Scale: 1"=1'-0"



ELEVATION

SECTION B-B



SECTION C-C

EXPANSION JOINT DETAIL

For joints at piers and both abutments - Bridges G-3 and G-5.

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: _____
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.A.D. CHECKED: W.L.M. DATE: 12-31-59
DRAWN: J.K.C. IN CHARGE: T.F.D. SCALE: As noted

CHECKED W. B. Proctor
DETAILS
BEARINGS
TIE POINTS
BENCH MARK
GEOLOGY
EARTHWORK
DRAINAGE

REVISIONS

COUNTY	CONTRACT	[illegible]	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE	1-1(21)-1	2	DEL	1-95-1(8)		5	66

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

PLAN OF TYPICAL END FILL
FOR F.A.I.-1 AND RAMPS
Scale: 1"=50'

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 47 thru 49.
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.
10. Check borings in Swamp Excavation and special fill areas will be made approximately every 50 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. If hydraulic methods are used, excavated material may be disposed of in the "permissable disposal area" shown on the Plans. The Contractor shall submit proposed methods of diking the disposal area for the approval of the Engineer. Disposal materials shall not interfere with the natural drainage of the area.

CHECKED: GRADE, BEARINGS, TIE POINTS, BENCH MARKS, EARTHWORK, DRAINAGE

REVISIONS

DELAWARE
STATE HIGHWAY DEPARTMENT

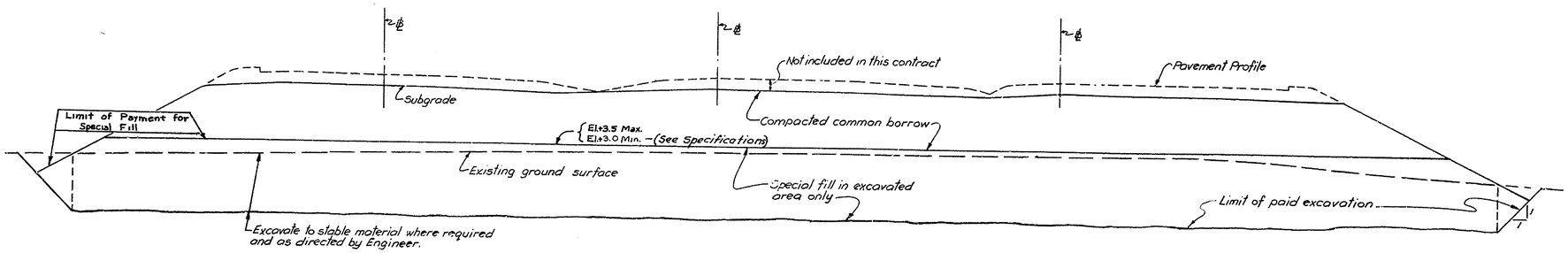
INTERSTATE ROUTE F.A.I.-1.21-1
CHRISTINA RIVER INTERCHANGE

BASIN ROAD-(N.B.)
EARTHWORK PLAN

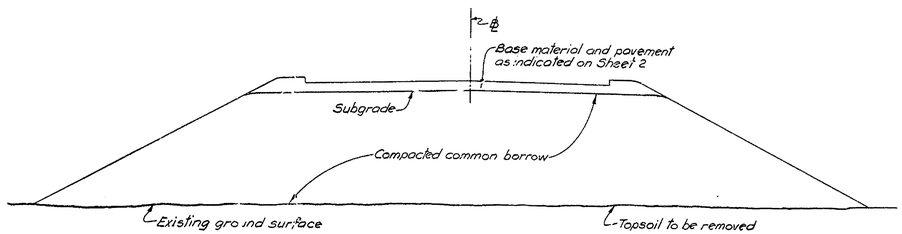
J.E. GREINER CO.
MORAN, PROCTOR, MUESER & RUTLEDGE
CONSULTING ENGINEERS

DESIGNED: R.C.H. CHECKED: R.C.H. DATE: 12-31-59
DRAWN: R.R. IN CHARGE: N.W.K. SCALE: 1"=200'

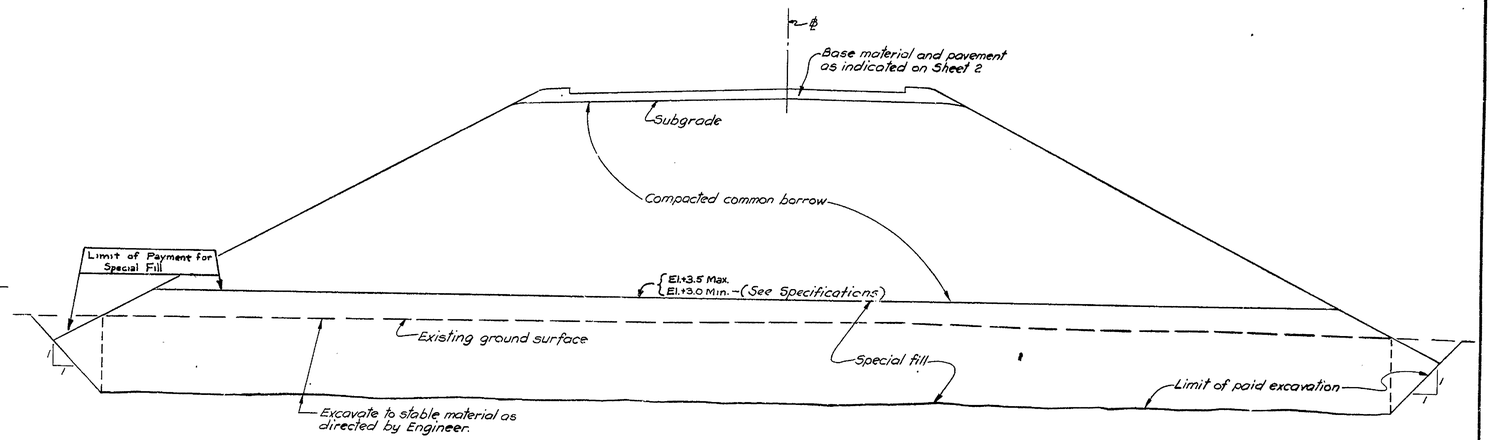
COUNTY	CONTRACT	F.A.I. ROD. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE	I-1(21)-1	2	DEL.	I-95-1(18)		6	66



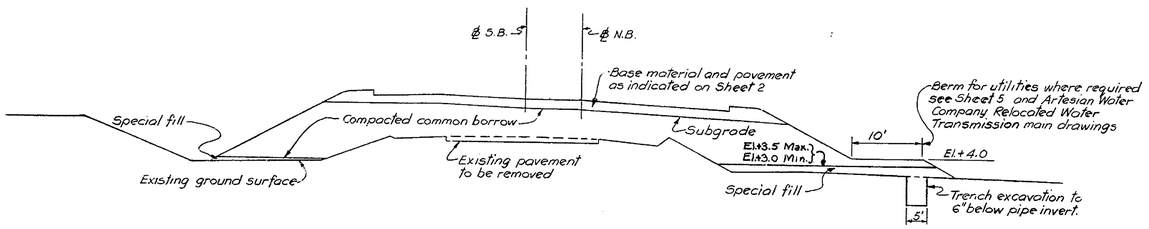
F.A.I-1-EASTBOUND AND WESTBOUND
EXCAVATION-BACKFILL-EMBANKMENT



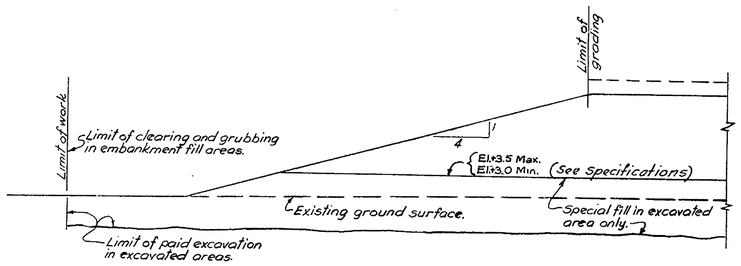
TYPICAL EMBANKMENT SECTION



TYPICAL SWAMP EXCAVATION SECTION



TYPICAL EMBANKMENT SECTION
OVER EXISTING BASIN ROAD



END FILL SECTION

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.

GRADE
BEARINGS
TIE POINTS
BENCH MARKS
EARTHWORK
DRAINAGE

REVISIONS

DELAWARE
STATE HIGHWAY DEPARTMENT

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

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

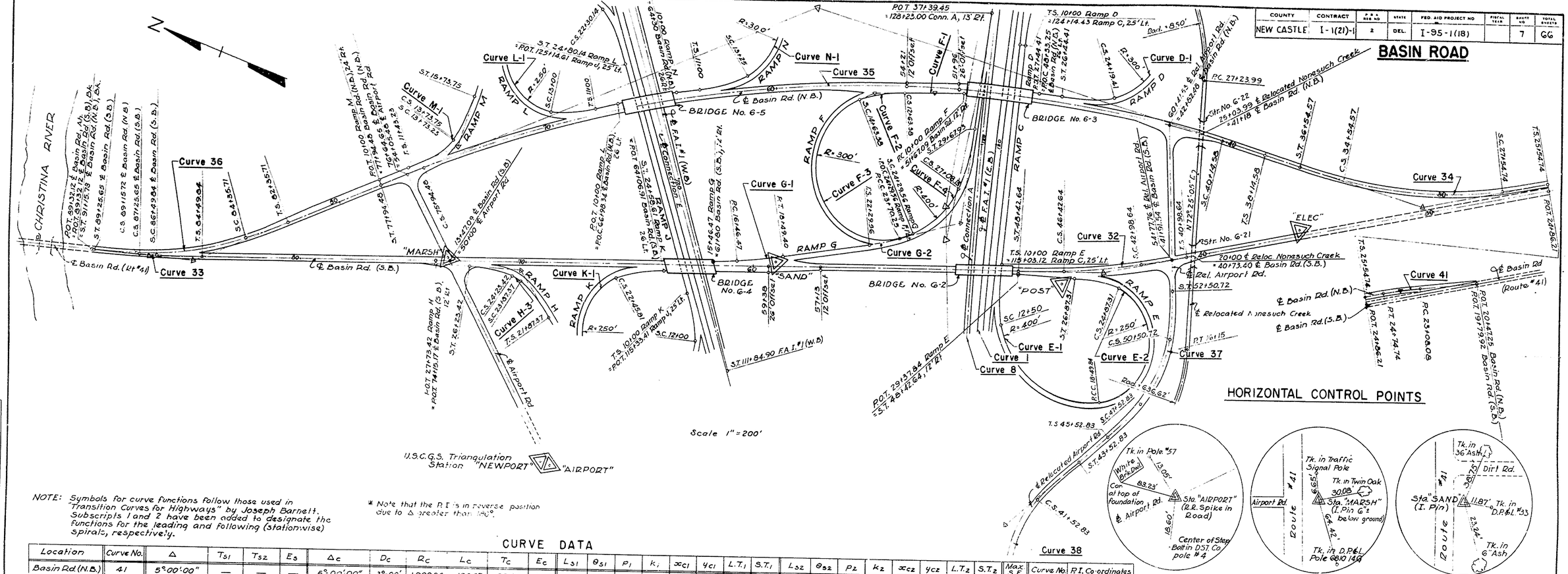
J. E. GREINER CO.
MORAN, PROCTOR, MUESER & RUTLEDGE
CONSULTING ENGINEERS

DESIGNED: RCH CHECKED: RCH DATE: 12-31-59
DRAWN: P.F. IN CHARGE: N.W.K. SCALE: 1"=10'

M

COUNTY	CONTRACT	R & B RTE NO	STATE	FED. AID PROJECT NO	FISCAL YEAR	SHEET NO	TOTAL SHEETS
NEW CASTLE	I-1(21)-I	2	DEL.	I-95-1(18)		7	66

BASIN ROAD



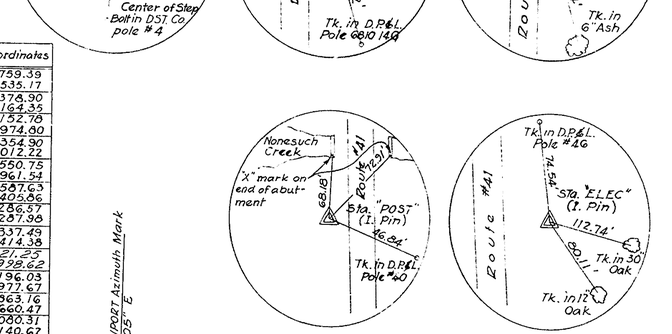
NOTE: Symbols for curve functions follow those used in "Transition Curves for Highways" by Joseph Barnett. Subscripts 1 and 2 have been added to designate the functions for the leading and following (station-wise) spirals, respectively.

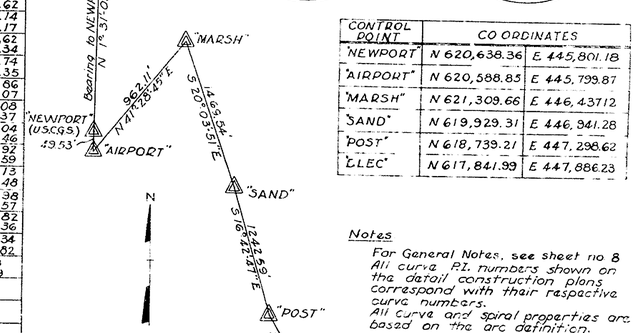
* Note that the P.I.'s in reverse position give to Δ greater than 180°.

CURVE DATA

Location	Curve No.	Δ	T_{S1}	T_{S2}	E_S	Δc	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.	Curve No.	P.I. Co-ordinates
Basin Rd.(N.B.)	41	5°00'00"	—	—	—	5°00'00"	3°-00'	1,909.86	166.67	83.39	1.82	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2.9%	41	N 616,759.39 E 448,535.17
"	34	26°59'40.9"	558.62	558.62	55.14	20°59'40.9"	3°-00'	1,909.86	699.82	353.88	32.81	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%	34	N 617,378.90 E 446,164.35
"	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%	35	N 620,152.78 E 447,974.80
"	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%	36	N 622,354.90 E 446,012.22
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%	33	N 622,550.75 E 445,961.54
"	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%	32	N 618,587.65 E 447,405.86
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	2,806.71	171.23	200	0°15'	0.07	100.00	200.00	0.29	133.33	66.67	—	—	—	—	—	—	—	—	4.7%	32	N 618,586.57 E 447,287.98
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	2408.81	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%	1	N 619,337.49 E 447,414.38
Relocated Airport Rd.	37	5°57'03.8"	368.83	368.83	64.95	3°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	1.56%	8	N 619,547.14 E 447,633.17
Ramp D	D-1	271°05'12.4"	*189.25	*189.25	*730.10	228°06'53.8"	19°05'54.3"	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%	37	N 618,187.25 E 446,998.62
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	149.58	250	17°54'17.8	6.49	124.59	247.57	25.86	167.53	84.12	—	—	—	—	—	—	—	—	7.8%	D-1	N 619,196.03 E 447,977.67
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	7.1%	E-1	N 618,963.76 E 446,660.47
Ramp F	F-1	2°38'01.8"	—	—	—	2°38'01.8"	1°00'	5,729.58	263.38	131.71	1.51	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	8.0%	E-2	N 616,080.31 E 448,140.62
"	F-2	20°05'54.9"	—	—	—	Spiral between Curves F-1 & F-3				—	—	200	10°05'54.3	5.24	—	—	—	131.24	70.83	—	—	—	—	—	—	—	—	2.2%	F-1	N 619,547.14 E 447,633.17
"	F-3	173°11'55.7"	—	—	—	173°11'55.7"	19°05'54.3	300.00	906.87	5,048.68	4757.58	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	↓	F-2	N 619,797.62 E 447,736.34
"	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	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	7.8%	F-3	N 623,613.74 E 444,330.35
Ramp G	G-1	6°05'15.9"	—	—	—	6°05'15.9"	3°-00'	1,909.86	202.93	101.56	2.70	—	—	—	—	—	—	—	—	259.80	18°36'24.5	7.00	129.44	257.07	27.91	174.17	87.48	7.1%	F-4	N 619,249.66 E 447,375.07
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	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	G-1	N 620,015.08 E 446,910.37
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	200	22°55'05.9	6.63	99.47	196.82	26.36	134.47	67.70	8.0%	H-3	N 620,987.04 E 446,497.46
Ramp L	L-1	264°44'16.6"	*185.59	*157.72	—	218°-10'-18.3"	22°55'05.9	250.00	930.14	*839.36	*1125.60	200	22°55'05.9	6.63	99.47	196.82	26.36	134.47	67.70	212.80	21°23'06.3	7.50	105.76	208.98	29.80	143.24	72.18	8.0%	K-1	N 620,319.32 E 446,760.59
Ramp M	M-1	49° 5'-30.9"	230.39	220.28	—	0°-07'-03.7"	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%	M-1	N 627,428.38 E 446,869.57
Ramp N	N-1	149° '-23.2"	1,222.64	1,210.70	—	108°-35'-19"	19°05'54.3	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°05'54.3	5.53	99.63	197.79	22.05	134.12	67.38	7.8%	N-1	N 619,444.82 E 448,065.36
Ramp G	G-2	14°-1 '-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%	G-2	N 619,475.34 E 447,209.82
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%	38	N 618,579.53 E 448,190.29

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 446,941.28
"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.

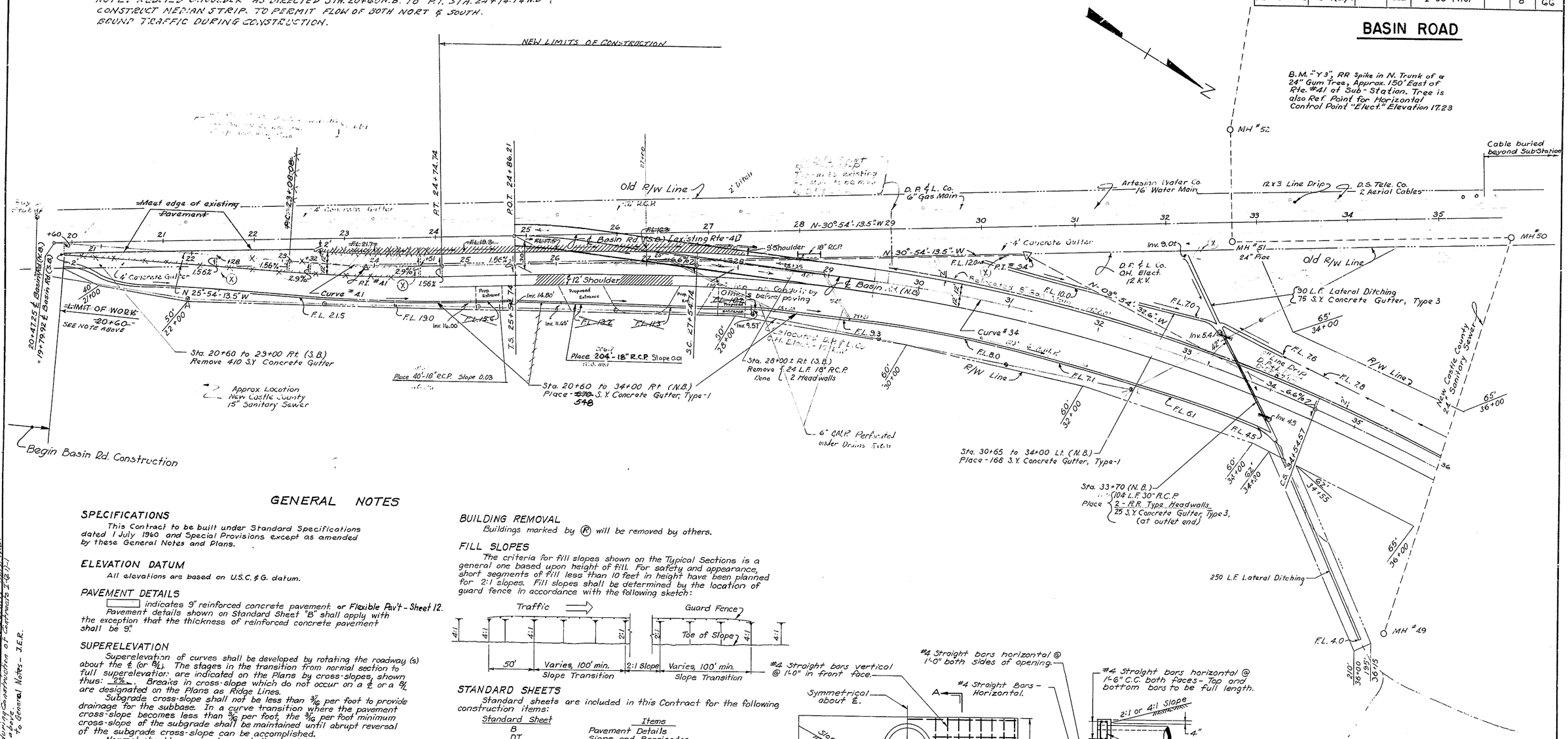
CHECKED
GRADE
BEARINGS W.H. Upton
TIE POINTS W.H. Upton
BENCH MARKS
EARTHWORK
DRAINAGE

REVISIONS

COUNTY	CONTRACT	F.A.P. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE	I-1(21)-1	2	DEL.	I-95-1(18)		8	66

NOTE: REBUILD SHOULDER AS DIRECTED STA. 20+60 N.B. TO P.T. STA. 24+74.74 N.B. CONSTRUCT MEDIAN STRIP. TO PERMIT FLOW OF BOTH NORT & SOUTH BOUND TRAFFIC DURING CONSTRUCTION.

BASIN ROAD



GENERAL NOTES

SPECIFICATIONS

This Contract 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.

PAVEMENT DETAILS

[ ] indicates 9" reinforced concrete pavement or Flexible Pav't - Sheet 12.

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 ℅). 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 ℅ 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

Utility construction included in this Contract consists of the relocation of the Delaware Power and Light Co. 8" Gas Main, and the relocation of the Artesian Water Co. 16" Water Main. The location of this work is shown on the Plans. Details not shown are covered in Supplemental Plans and Special Provisions.

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.

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:

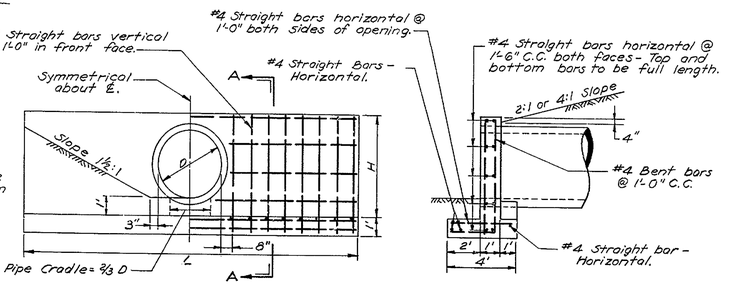
STANDARD SHEETS

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 and Concrete Gutter
H	Guard Fence, Asphalt Curb, Concrete Intake Apron, Type 2 and Downspout Splash Apron
M, M-M, W, Y	Catch Basins
Q	Headwalls

Gas and Water Mains shall be placed, tested and accepted prior to surfacing paved areas.

Note: The lateral limits of this contract shall extend from the Westerly R/W of South Bound Basin Road called existing Basin Road to the Easterly R/W or easement line of the North Bound Basin Road and shall include the "Permissable Disposal Area".



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

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

STRAIGHT HEADWALL FOR 48" PIPE

Notes:

For Curve Data, see sheet no. 7

For Profile, see sheet no. 16

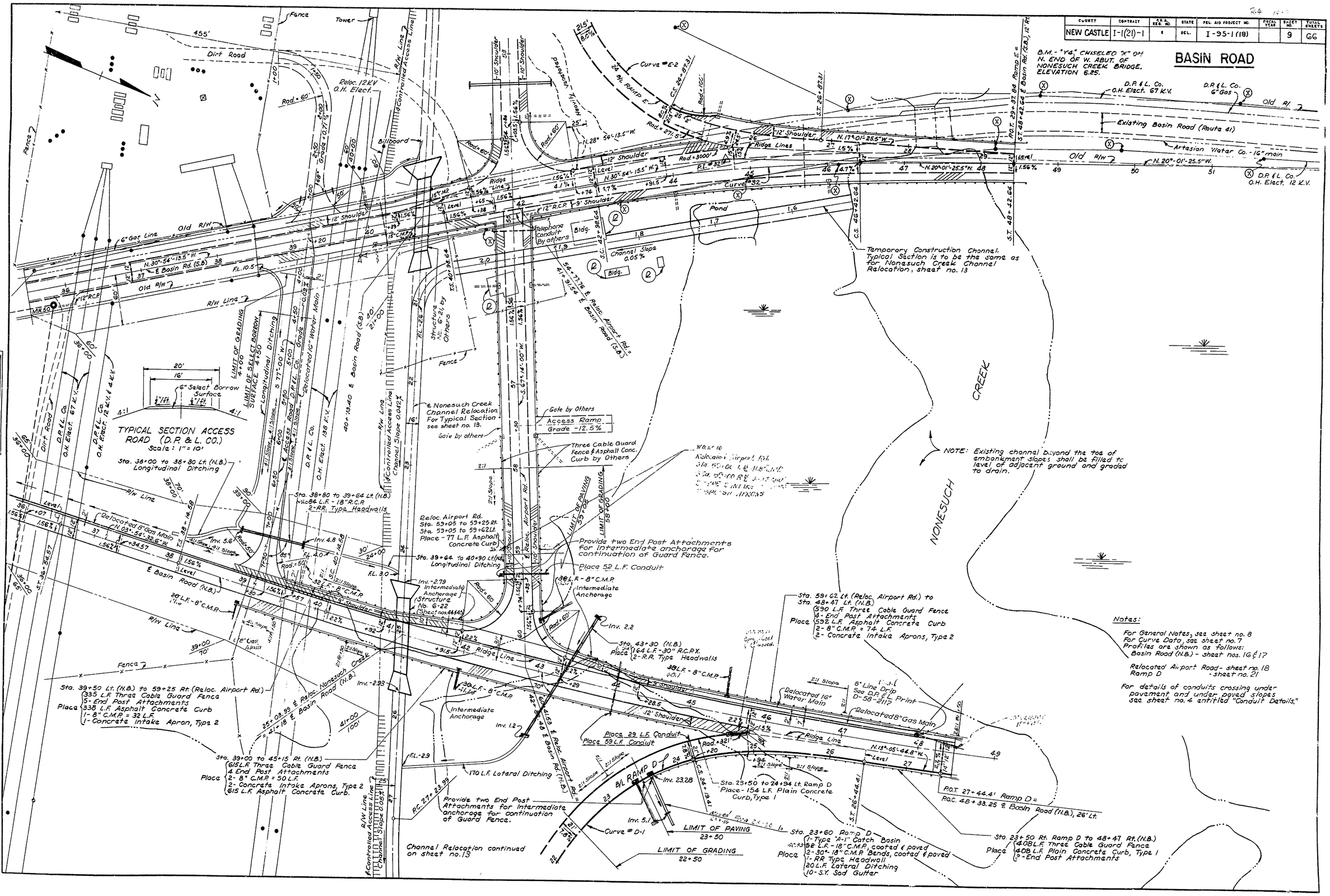
GRADE — CHECKED
BEARINGS — W.K. Upton
TIE POINTS —
BENCH MARKS — W.K. Upton
EARTHWORK —
DRAINAGE — R.P. Beardsley

REVISIONS - Added four proposed entrances and 24" of 18" R.C.P. under proposed entrance. Revised d/c grades in this area. - J.J.S.
8/22/62 - Shown Beginning of Construction at P.C. 23+40.08 N.B. and P.T. 24+74.74 N.B. Added Note to be placed in Paragraph 2-(c) 2 and 1974 Specifications regarding Construction of Contracts I-1(21)-1 and I-95-1(18). - J.E.R.
9/14/62 - Added Flexible Pav't to General Notes - J.E.R.

"Imperial" 156 W. B. & E.

COUNTY	CONTRACT	F.A.R. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE	I-1(21)-1	8	DEL.	I-95-1(18)		9	66

BASIN ROAD



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

REVISIONS

COUNTY	CONTRACT	P. P. & R. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE	I-1(21)-I	2	DEL.	I-95-1(18)		10	66

BASIN ROAD

CHECKED
GRADE W.K.V.
BEARINGS
TRAVERSE
BENCH MARKS
EARTHWORK
DRAINAGE R.D.B.

REVISIONS

BEGIN CONTRACT I-1(21)-I
STA. 120+05 (CONNECTION A).

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

BRIDGE No. 6-2 by Others

BRIDGE No. 6-4 by Others

BRIDGE No. 6-3

Old R/W Line

Existing Basin Rd. (Plan 41)

Curve #G-1

Curve #G-2

Curve #F-1

Curve #F-2

Curve #F-3

Curve #F-4

Curve #F

Curve #N-1

Curve #35

Ramp F
Sta. 14+09 to 14+85 Lt.
Sta. 14+47 to 14+85 Rt.
Place 117 L.F. Plain Conc. Curb, Type 1

Sta. 14+05 Lt. (Ramp F)
Place
1-Type "B" Catch Basin
44 L.F. 18" C.M.P., Coated & Paved
1-R.R. Type Headwall
2-30° 18" C.M.P. Bends, Coated & Paved
25 L.F. Lateral Ditching
12 S.Y. Sod Gutter

Sta. 10+07 to 14+10 Lt. (Ramp F)
Place
403 L.F. Three Cable Guard Fence
403 L.F. Asphalt Conc. Curb
1-8" C.M.P. = 94 L.F.
1-Conc. Intake Apron, Type 2
1-End Post Attachment

Sta. 52+00 (N-B)
Place
242 L.F. 30" R.C.P.
2-R.R. Type Headwalls
20 L.F. Conc. Pipe Cradle

Sta. 50+85 to 52+00 (N-B)
Longitudinal Ditching

Sta. 51+71 to 57+92 Rt. (N-B)
Place
621 L.F. Three Cable Guard Fence
621 L.F. Asphalt Conc. Curb
3-8" C.M.P. = 204 L.F.
5-Conc. Intake Apron Type 2.
3 End Post Attachments
68 L.F. 8" C.M.P.
58 L.F. 8" C.M.P.

Sta. 56+42 to 59+72 Lt. (N.E.)
Place
330 L.F. Three Cable Guard Fence
330 L.F. Asphalt Conc. Curb
2-End Post Attachments
2-Concrete Intake Aprons, Type 2
1-8" C.M.P. = 74 L.F.
1-10" C.M.P. = 170 L.F.

Sta. 59+88 to 64+15 Lt. (N-B)
Place
427 L.F. Three Cable Guard Fence
427 L.F. Asphalt Conc. Curb
2-8" C.M.P. = 144 L.F.
2-Conc. Intake Aprons, Type 2
1-End Post Attachment
60 L.F. 8" C.M.P.
84 L.F. 8" C.M.P.

Sta. 58+08 to 61+35 Rt. (N-B)
Place
327 L.F. Three Cable Guard Fence
2-End Post Attachments

Sta. 58+08 to 60+00 Rt. (N-B)
Place
192 L.F. Asphalt Conc. Curb
1-8" C.M.P. = 82 L.F.
1-Conc. Intake Aprons, Type 2.

Sta. 10+10 to 13+25 Lt. (Ramp N)
Place
315 L.F. Three Cable Guard Fence
315 L.F. Plain Conc. Curb, Type 1
2-End Post Attachments

Sta. 12+50 to 13+25 Rt. (Ramp N)
Place-80 L.F. Plain Conc. Curb, Type 1.

Place 29 L.F. Conduit

Provide two End Post Attachments for Intermediate Anchorages for continuation of Guard Fence.

Intermediate Anchorage

Telephone Conduit by others

Gate by Others

Access Ramp Grade -12.5%

Dirt Road

LIMIT OF GRADING 20+00

LIMIT OF PAVING

LIMIT OF GRADING 14+00

Basin Bridge 48'-6"x46.62'

Bldg. (R)

Temp. Outlet Inv. 12.1

Inv. 2.1

Inv. 32.36

Inv. 0.4

Relocated 16" Water Main

Relocated 8" Gas Main

Relocated 8" Line Drip See D.P.&L. Print D-58-2117

Place Conduits = 330 L.F. 4" Conc. Encased PVC

Place 66 L.F. Conduit

Place 110 L.F. Conduit

24" Water Main in casing under embankment of F.A.I.=1(E.B.) Conn. A & Ramps C & F

ST 29+66.93

ST 27+44.41 Ramp D

ST 27+08.19

ST 20+59 F.A.I.=1(E.B.)

ST 19+30 Ramp F

ST 18+69.49 Connection A

ST 16+24.09 F.A.I.=1(W.B.)

ST 16+41.34 Ramp J

ST 16+43.79 F.A.I.=1(E.B.)

ST 12+00.07 F.A.I.=1(E.B.)

ST 10+00.00 Connect A

ST 9+19.65 Ramp F

ST 5+01.03 F.A.I.=1(W.B.)

POC 24+29.56 Ramp G

POC 24+29.56 Ramp F

PCC 23+10.25

PT 18+49.10

PC 16+46.47

TS 22+29.56

TS 11+00

PI #F-1

PI #F-2

PI #F-3

PI #F-4

PI #G-1

PI #G-2

Ridge Line

Basin Rd. (N.B)

Basin Rd. (S.B)

Connection A

Connection E

Ramp C

Ramp F

Ramp G

Ramp J

Ramp N

Bituminous Surface Treatment

TYPICAL SECTION ACCESS RAMP
Scale: 1" = 10'

Notes:
For General Notes, see sheet no. 8
For Curve Data, see sheet no. 7
Profiles are shown as follows:
Basin Road (N-B) - sheet no. 16 & 17
Ramp F - sheet no. 22
Ramp N - sheet no. 26
Details of transition of Guard Fence, Asphalt Conc. Curb and Shoulders, and Approach Slabs at bridge No. 6-3 - sheet no. 27
For details of conduits crossing under pavement and under paved slopes see sheet no. 4 entitled "Conduit Details"

END CONTRACT I-1(21)-I
STA. 132+06 (CONN. A)

NONESUCH CREEK

D C B A 1 5 10 A B C D

COUNTY	CONTRACT	REG. NO.	STATE	FED. AID PROJECT NO.	YEAR	SHEET	TOTAL SHEETS
NEW CASTLE	I-1(21)-1	2	DEL.	I-95-1(18)	11	GG	

BASIN ROAD

CHECKED
GRADE W.K. Upton
DEARINGS
STRUCTURES
BENCH MARKS
EARTHWORK
DRAINAGE R.P. Borcherding

REVISIONS

Curve #K-1
Curve #H-3
Bldg. (R)
K RAMP
H RAMP
D.P.&L. Co. 6" Gas Main
Existing Basin Rd Rte. # 41
D.P.&L. Co. buried cable
12' Shoulder
D.P.&L. Co. OH. Elect. 12 K.V. & 4 K.V.
D.P.&L. Co. OH. Elect. 67 K.V.
Ridge Line
9' Shoulder
18" R.C.P.
Old R/W Line
Telephone Conduit by others
Artesian Water Co. 16" Main
8" Water Main
Basin Rd (N.B.)
Airport Rd
Access Ramp Grade 12.5%
Controlled Access Line
Provide two End Post Attachments for Intermediate Anchorage for continuation of Guard Fence
Sta. 53+12 Lt. (Airport Rd.) to 79+00 Lt. (N.B.) Place 283 L.F. Three Cable Guard Fence, 283 L.F. Asphalt Conc. Curb, 1-8" C.M.P. = 13 L.F., 1-Conc. Intake Apron, Type 2, 4-End Post Attachments.
Airport Rd. Sta. 52+90 to 53+12 Lt. Sta. 52+90 to 53+00 Rt. Place 32 L.F. Asphalt Conc. Curb
Three Cable Guard Fence & Asphalt Conc. Curb by others
LIMIT OF GRADING 52+50
LIMIT OF PAVING 52+90
Sta 53+00 Rt., Airport Rd. to 72+00 Lt. (N.B.) Longitudinal Ditching
Sta 69+00 to 72+00 Lt (N.B.) Longitudinal Ditching
Sta 66+79 Lt (N.B.) to 53+00 Rt (Airport Rd) Place 998 L.F. Three Cable Guard Fence, 998 L.F. Asphalt Conc. Curb, 3-8" C.M.P. = 152 L.F., 3-Conc. Intake Aprons, Type 2, 6-End Post Attachments
Intermediate Anchorage
46'-8" C.M.P.
Relocated 16" Water Main
Relocated 8" Gas Main
Relocated 12 K.V. O.H. Elect.
5-54'-8" C.M.P.
Place Conduit
Intermediate Anchorage Sleeve for Water Main under Pavt.
Ramp M
Sta 13+15 Lt (Ramp M) to 79+00 Rt (N.B.) Place 417 L.F. Three Cable Guard Fence, 422 L.F. Asphalt Conc. Curb, 2-8" C.M.P. = 72 L.F., 2-Conc. Intake Aprons, Type 2, 3-End Post Attachments
Ramp M Sta. 13+05 to 13+72 Rt, Sta 13+17 to 13+73 Lt Place 131 L.F. Plain Conc. Curb, Type 1
Culvert & Ditching to be placed under another Contract
170 L.F. Lateral Ditching (temporary outlet ditch)
Meet existing ditch
Sta 66+84 Rt (N.B.) to 13+70 Rt (Ramp L) Place 381 L.F. Three Cable Guard Fence, 384 L.F. Plain Conc. Curb, Type 1, 2-End Post Attachments
Sta 70+00 to 74+10 Rt (N.B.) Place 410 L.F. Three Cable Guard Fence, 410 L.F. Asphalt Conc. Curb, 1-8" C.M.P. = 60 L.F., 1-Conc. Intake Apron, Type 2, 2-End Post Attachments
Sta 70+00 to 74+10 Lt (N.B.) Place 152 L.F. 48" R.C.P., 2-Straight Headwalls, 15 L.F. Lateral Ditching
Sta 12+89 to 13+70 Lt (Ramp L) Place 66 L.F. Plain Conc. Curb Type 1
Sta 13+60 (Ramp L) Place 88 L.F. 18" C.M.P. coated & paved, 2-52-30°-18" C.M.P. bends, coated & paved, 1-Type "A-1" Catch Basin, 1-R.R. Type Headwall, 30 L.F. Lateral Ditching, Sod Gutter (15 Sr. Sodding)
BRIDGE NO. 6-5
Begin Bridge
End Bridge
8" Line Drip See D.P.&L. print 058-2117
Place Conduit
Ridge Lines
Curve #M-1
Curve #L-1
Provide two End Post Attachments for Intermediate Anchorage for continuation of Guard Fence
Controlled Access Line
R/W Line
Basin Rd (N.B.)
Airport Rd
Ramp M
Ramp L
Ramp H
Ramp K
Ramp J
Connection E
Connection D
Connection B
Basin Rd
Place Conduit
3 Conduits = 330 L.F.
Place 10 L.F. 3.5 Dia. Pipe Culvert
Place 61 L.F. Conduit
Relocated 16" Water Main
Relocated 8" Gas Main
5" Cork Expansion Joint Installed
Intermediate Anchorage
Sleeve for Water Main under Pavt.
Plain Conc. Curb, Type 1
Plain Conc. Curb
Sod Gutter
Grassy Slopes
Temp. outlet
Inv. 5.1
Inv. 16.51
Inv. -2.0
F.L. 0.0
F.L. 1.9
F.L. 2.5
F.L. 0.9
F.L. 0.3
Inv. I.C.
Inv. -2.3
Slopes 2:1
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Curve #995
Curve #996
Curve #997
Curve #998
Curve #999
Curve #1000

Notes

For General Notes, see sheet no. 8
For Curve Data, see sheet no. 9
Profiles are shown as follows
Basin Rd (N.B) - sheet no. 17
Airport Rd. - sheet no. 18
Ramp L - sheet no. 24
Ramp M - sheet no. 25

Details of transition of Guard Fence, Asphalt Conc. Curb and Shoulders, and Approach Slabs at Bridge No. 6-5 are shown on sheet no. 33.
For details of Straight Headwall, see sheet no. 8
For details of conduits crossing under pavement and under paved slopes, see sheet no. 4 entitled "Conduit Details"

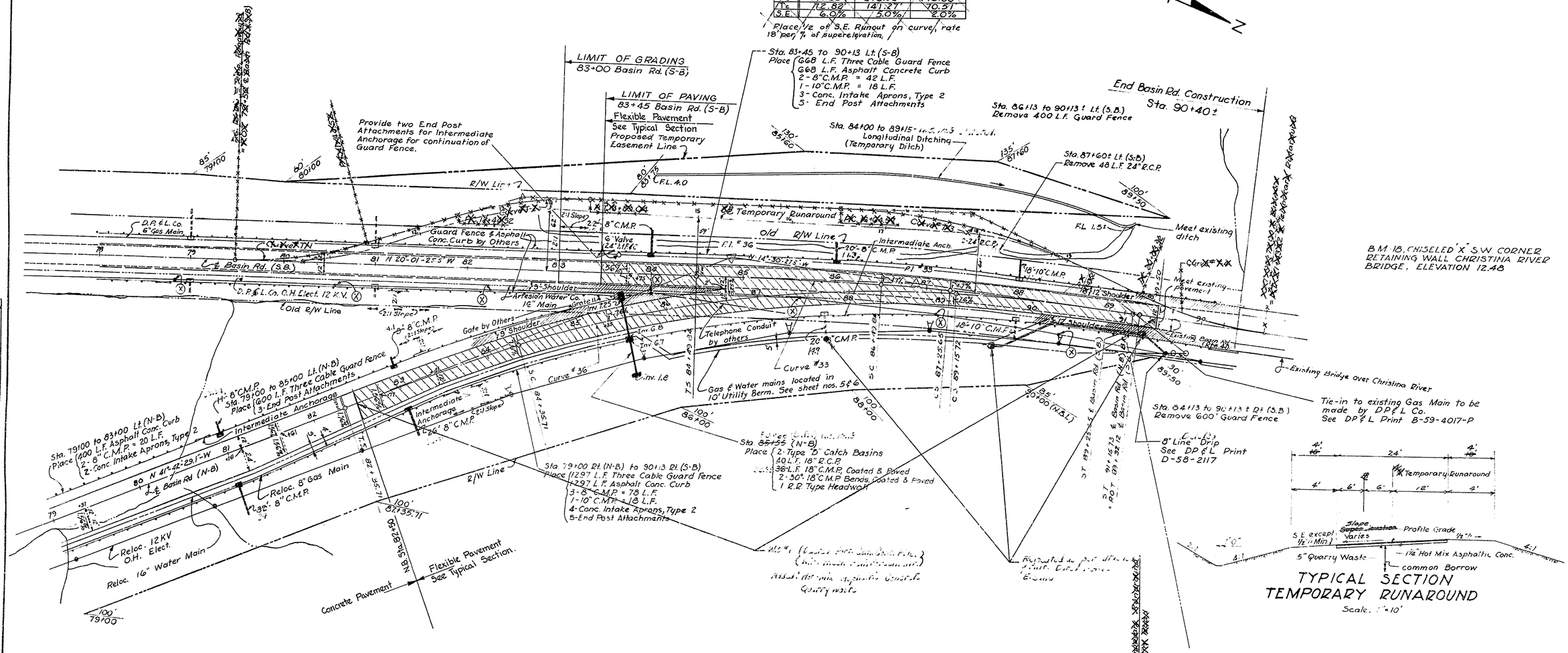
D C B A 1 5 10 A B C D

COUNTY	CONTRACT	R & B ROUTE NO.	STATE	FED. AID PROJECT NO.	PUBLICITY SIGN	SHEET NO.	TOTAL SHEETS
NEW CASTLE	I-1(21)-1	2	DEL.	I-95-1(18)		12	66

BASIN ROAD

℄ TEMPORARY RUNAROUND			
Curve	T-1 & T-2	T-3	T-4
Δ_c	17°-20'-32"	22°-18'-58"	16°-48'-00"
D_c	12°-00'	8°-00'	12°-00'
R_c	477.47'	716.20'	477.47'
L_c	144.52'	278.95'	140.00'
T_c	72.82'	141.27'	70.51'
S.E.	6.0%	5.0%	2.0%

Place 1/2 of S.E. Runout on curve, rate 18" per 1% of superelevation.



B.M. 18, CHISELED 'X' S.W. CORNER RETAINING WALL CHRISTINA RIVER BRIDGE, ELEVATION 12.48

TYPICAL SECTION TEMPORARY RUNAROUND

Scale: 1" = 10'

Notes

For General Notes, see sheet no 8
For Curve Data not shown, see sheet no 7
Profiles are shown as follows:
Basin Rd (N-B) - sheet nos. 17 & 18
Basin Rd (S-B) - sheet no. 19

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

REVISIONS
Relocated Temporary Runaround and changed grade of same 3/4/42
Revised Temp. Easement Line Sheet to at Sta. 87+60 Lt. 9/14/42
Revised Temp. Pavement to Flexible Pav't. Sta. 82+50 N.B. & 83+45 S.B. to Sta. 89+50 - Limit of Paving - 11.8.

COUNTY	CONTRACT	P.R.A. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO	TOTAL SHEETS
NEW CASTLE	I-1(21)-1	2	DEL.	I-95-1(18)		13	66

BASIN ROAD

GRADE
BEARINGS C. Robinson
TIE POINTS
BENCH MARKS
EARTHWORK
DRAINAGE R.D. Barcheesding

REVISIONS

C.S. 24+19.41

℄ Basin Rd. (N.B.)

21' B/L RAMP D

Construction by Others

Marsh

NONESUCH CREEK

Channel Relocation Contd. from sheet no. 9

P.C. 27+23.99

Channel Slope 0.05%

Rad.=850'

F.L. -3.2

N72°-25'-05"E

℄ Nonesuch Creek Channel Relocation

R/W Line

℄ Controlled Access Line

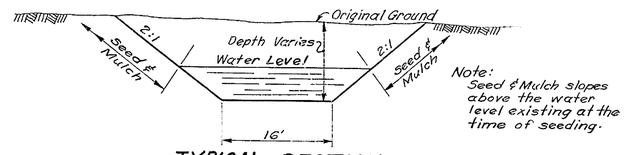
Marsh

Marsh

Fence

Pole

D.P.&L. Co O.H. Elect 138 KV.



Note: Seed & Mulch slopes above the water level existing at the time of seeding.

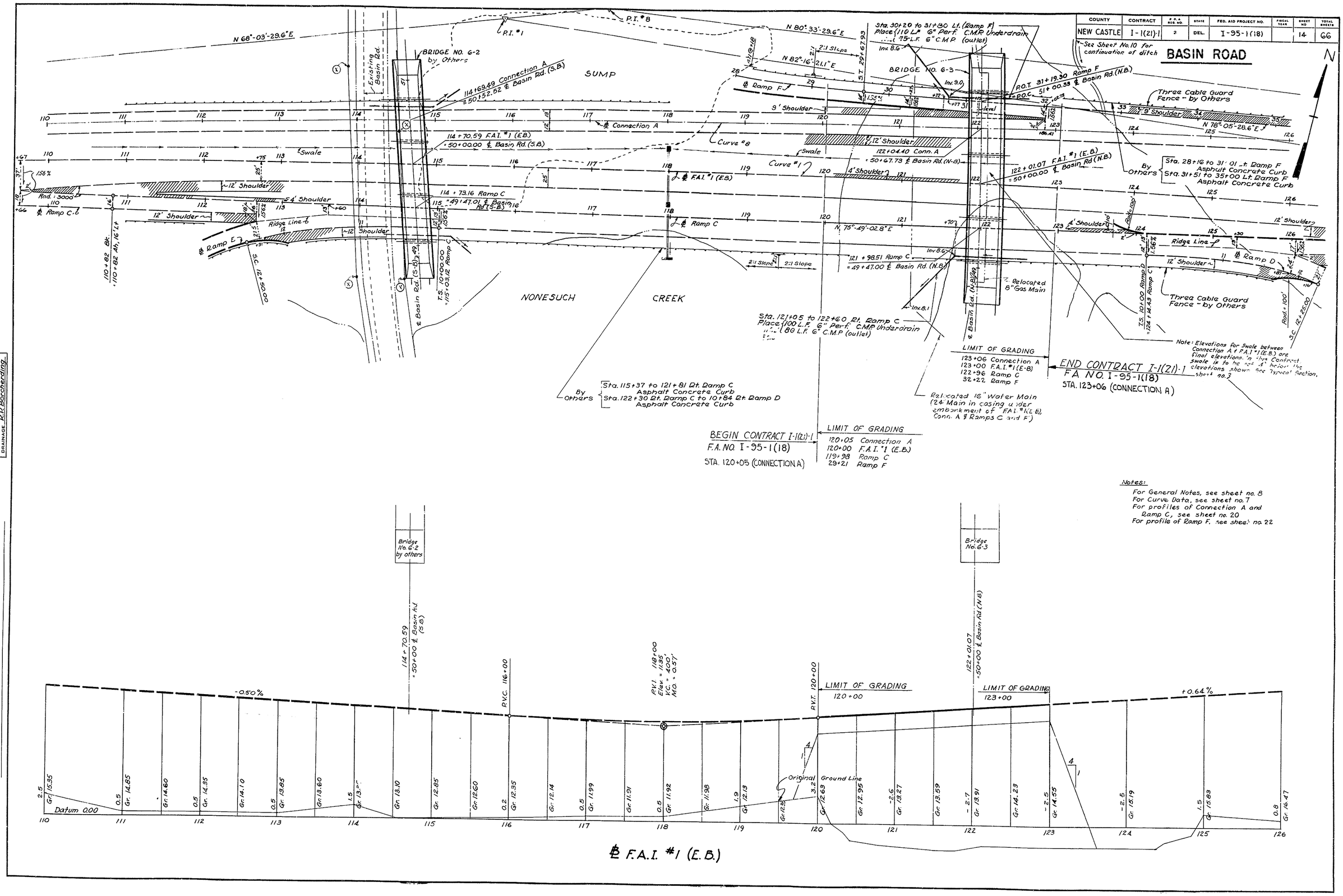
TYPICAL SECTION
NONESUCH CREEK CHANNEL RELOCATION
Scale 1"=10'-0"

Notes:

For General Notes, see sheet no. 8

"Imperial" 156 W. B. & E.

COUNTY	CONTRACT	P.O.A. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE	I-1(21)-1	2	DEL.	I-95-1(18)		14	66

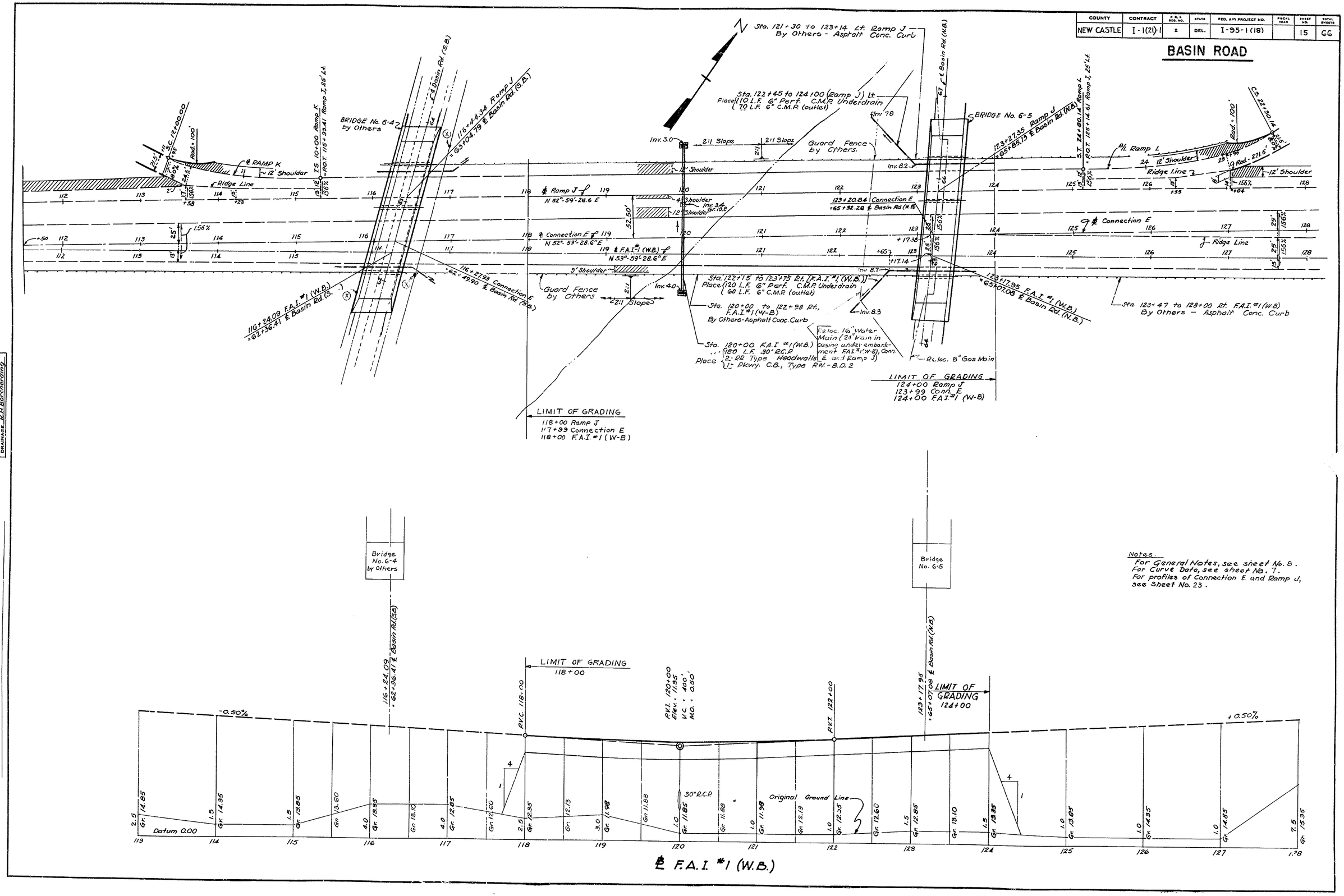


REVISIONS

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

COUNTY	CONTRACT	F.R.A. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE	I-1(21)-1	2	DEL.	I-95-1(18)		15	66

BASIN ROAD



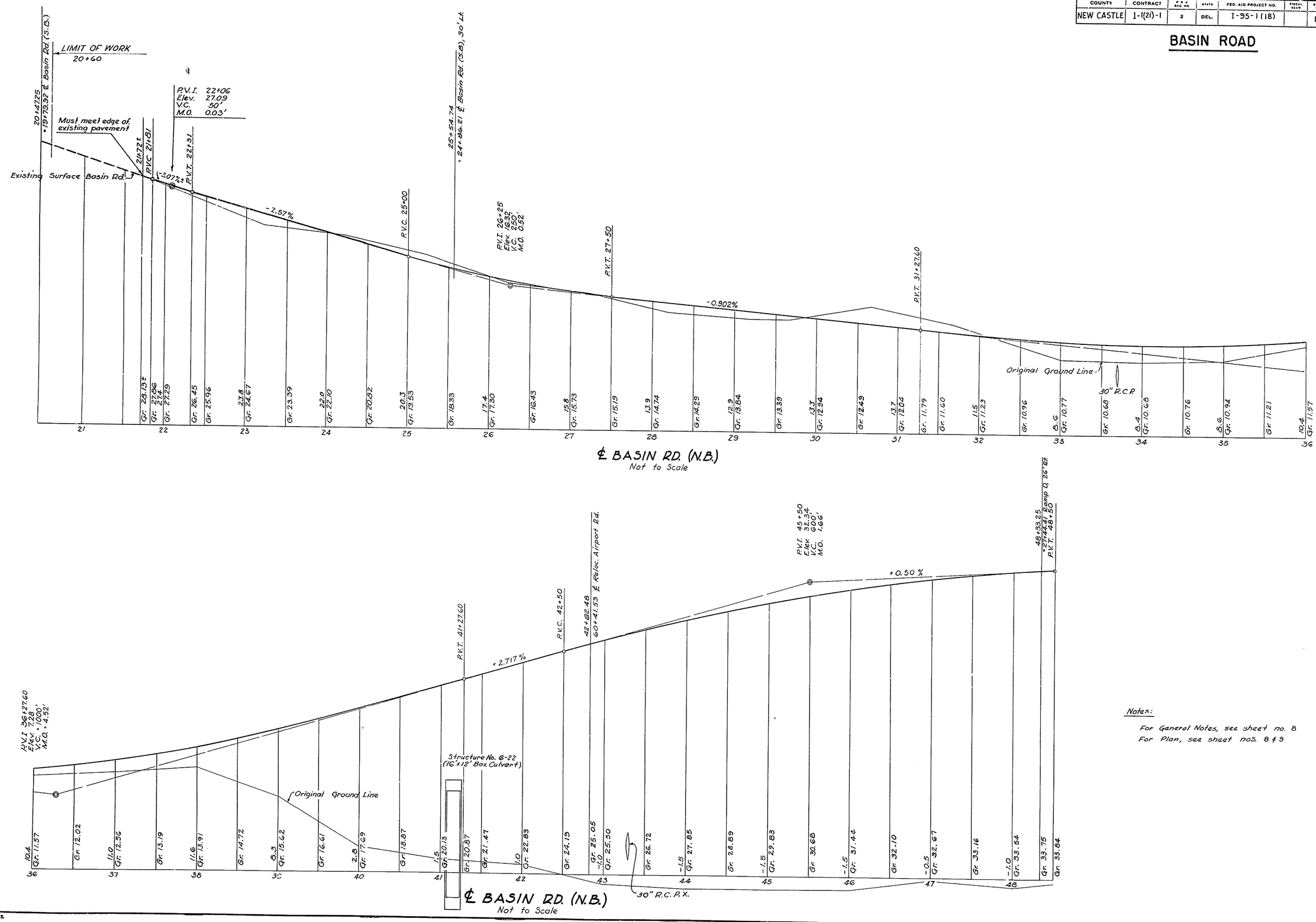
Notes.
For General Notes, see sheet No. 8.
For Curve Data, see sheet No. 7.
For profiles of Connection E and Ramp J, see Sheet No. 23.

REVISIONS

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

COUNTY	CONTRACT	P. R. A. REC. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE	1-1(21)-1	2	DEL.	I-95-1(18)		16	66

BASIN ROAD



CHECKED M.C. Upton
GRADE
BEARINGS
TIE POINTS
BENCH MARKS
EARTHWORK
DRAINAGE

REVISIONS

Notes:

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

"Imperial" 155 W. B. & E.

COUNTY	CONTRACT	P. & A. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE	I-1(21)-1	2	DEL.	I-95-1(18)		17	66

BASIN ROAD

P.V.I. 63+50
Elev. 41.34
V.C. 1,000'
M.O. 4.25'

P.V.T. 48+50 | 51+67.09 = 10+00 Ramp F, 12' Lt. | P.V.C. 58+50 | -2.899 % | +0.50 %

Bridge No. 6-3

43+47 = 121+98.51 Ramp C
50+00 = 122+01.07 F.A.I. #1 (E.B.)
50+67.73 = 122+04.40 Connection A
51+00.33 = 3+19.30 Ramp F

	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64
Gr.	33.84	34.09	34.34	34.59	34.84	35.09	35.34	35.43	35.59	35.84	36.09	36.34	36.59	36.84	37.09	37.34	37.59	37.84	38.09	38.34	38.59	38.84	39.05	39.17	39.21	39.16	39.03	38.81	38.51	38.12	37.65	37.09	36.45
	0.0	0.6	2.3	0.5	0.5	0.5	2.0	9.0	10.5	11.0	11.0	19.5	12.5	7.0	5.5	5.0

30" R.C.P.X. in Conc. Pipe Cradle

℄ BASIN RD. (N.B.)
Not to Scale

64+30 = 10+00 Ramp N, 26' Lt.

66+98.34 = 10+00 Ramp L, 26' Lt.

P.V.T. 68+50 | P.V.C. 68+98.20 | -2.899 % | P.V.I. 70+98.20, Elev. 19.03, V.C. 1,000', M.O. = 1.200' | P.V.T. 72+98.20 | -0.50 % | 76+64.65 = 54+05.48 ℄ Airport Road | 77+94.48 = 10+00 Ramp M, 24' Rt.

Bridge No. 6-5

65+07.08 = 123+17.95 F.A.I. #1 (W.B.)
65+32.28
65+85.19 = 123+20.84 Connection E
65+27.35 Ramp J

Datum Elev. 0.00

	64	65	66	67	68	69	70	71	73	74	75	76	77	78	79	80
Gr.	36.45	36.02	35.72	34.91	34.01	33.03	31.96	30.85	30.81	29.57	28.25	26.85	25.40	25.45	24.03	22.81	21.74	20.82	20.05	19.43	18.96	18.65	18.64	18.39	18.14	17.89	17.64	17.39	17.14	16.89	16.82	16.64	16.39	16.17	16.14	15.89	15.64	15.39	15.14
	5.0	2.1	1.0	1.0	1.0	1.0	1.0	0.2	-1.5	-1.5	1.0	0.2	0.6	1.4	1.0	5.0	1.0

48" R.C.P.

Original Ground Line

℄ BASIN RD. (N.B.)

Notes:

For General Notes, see sheet no. 8
For Plan, see sheet nos. 10 & 11

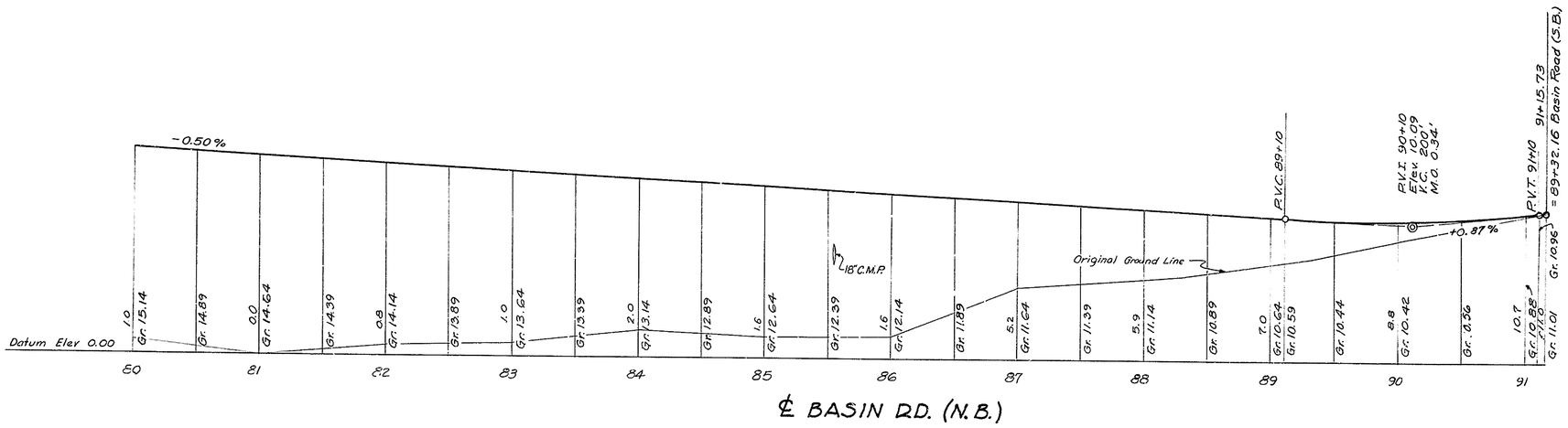
GRADE W. K. Upton
BEARINGS
TIE POINTS
BENCH MARKS
EARTHWORK
DRAINAGE

REVISIONS

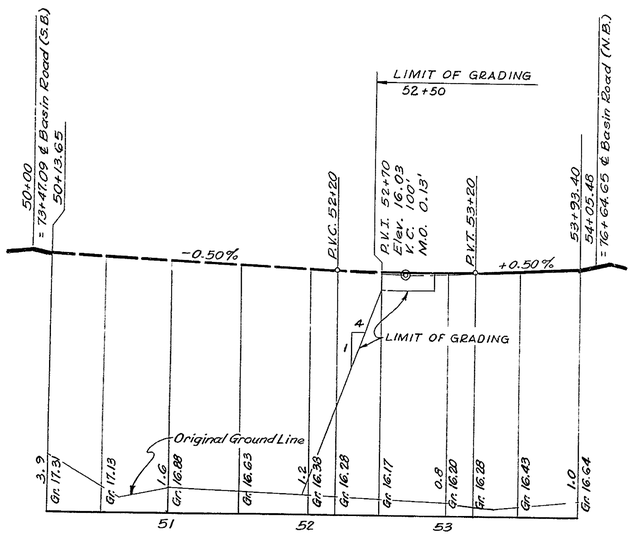
"Imperial" 156 W. B. & E.

COUNTY	CONTRACT	F.R.A. REQ. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE	I-1(21)-1	2	DEL.	I-95-1(18)		18	66

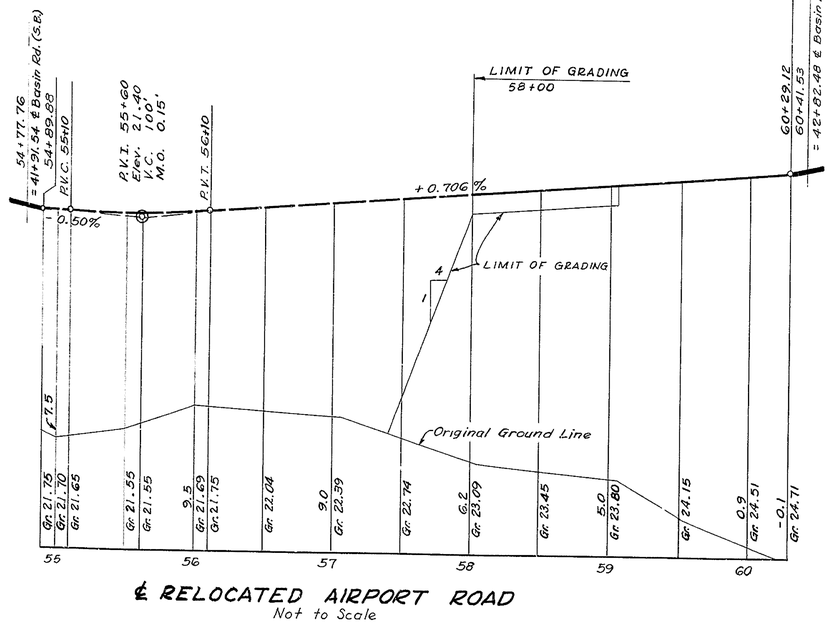
BASIN ROAD



℄ BASIN RD. (N.B.)



℄ AIRPORT ROAD



℄ RELOCATED AIRPORT ROAD
Not to Scale

Notes:

For General Notes, see sheet no. 8

For Plan, see the following sheets:
Basin Rd. (N-B) - sheet no. 12
Airport Rd. - sheet no. 11
Relocated Airport Rd. - sheet no. 9

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

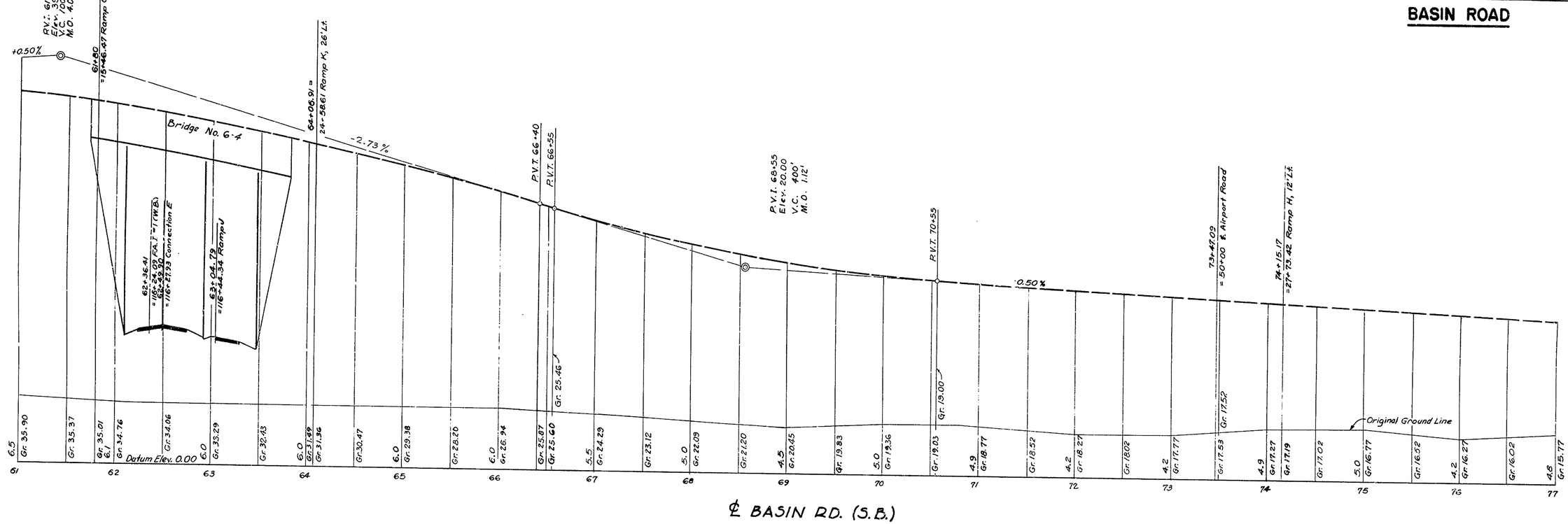
REVISIONS

"Imperial" 156 W. B. & E.

D C B A 1 5 10 A B C D

COUNTY	CONTRACT	F.R.A. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE	I-1(21)-1	2	DEL.	I-95-1(18)		19	66

BASIN ROAD



Notes:

For General Notes, see sheet no. 8

For Plan, see sheet no. 12

CHECKED W. K. Upton

GRADE

BEARINGS

TIE POINTS

BENCH MARKS

EARTHWORK

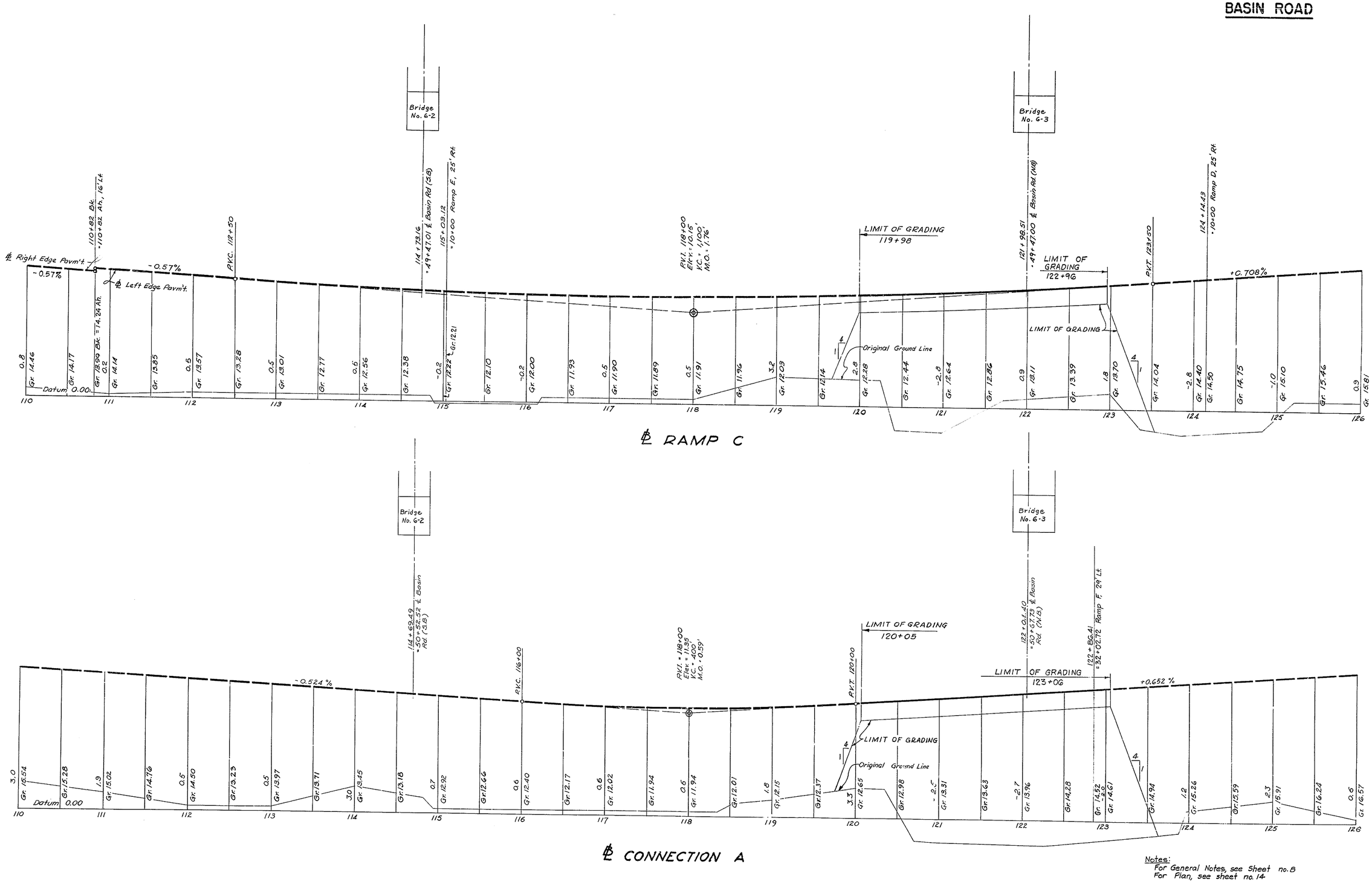
DRAINAGE

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)-1	2	DEL.	I-95-1(18)		20	66

BASIN ROAD



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

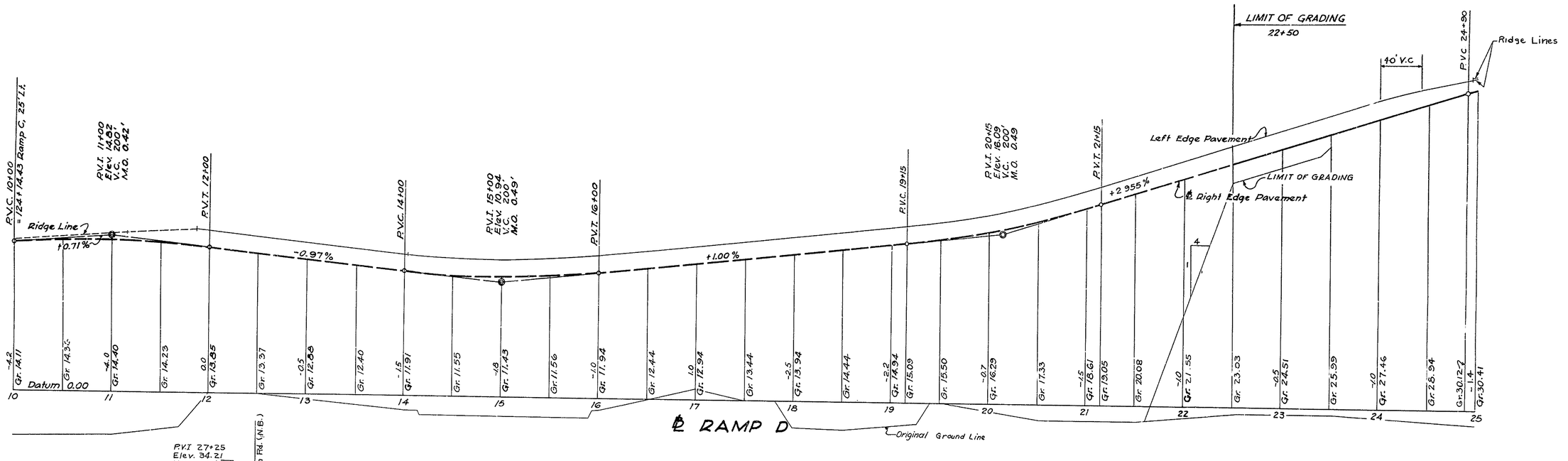
CHECKED W.K. Upton
GRADE
BEARINGS
TIE POINTS
BENCH MARKS
EARTHWORK
DRAINAGE

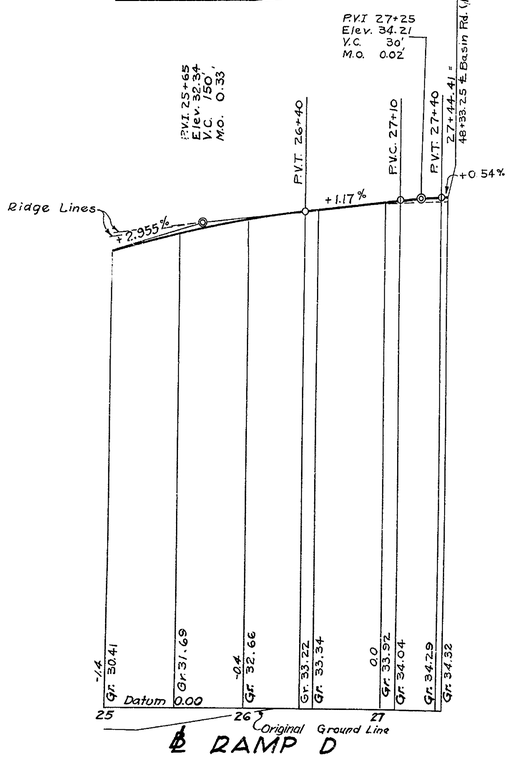
REVISIONS

"Imperial" 155 W. B. & E.

COUNTY	CONTRACT	P. R. & REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE	I-1(21)-1	2	DEL.	I-95-1(18)		21	66

BASIN ROAD





Notes:

For General Notes, see sheet no. 8

For Plan, see sheet no. 9

CHECKED W.K. Upton

GRADE
BEARINGS
TIES
BENCH MARKS
EARTHWORK
DRAINAGE

REVISIONS

COUNTY	CONTRACT	F.H.A. RTE. NO.	STATE	FED. A.D. PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE	I-1(21)-1	E	DEL	I-95-1(18)		22	GG

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

REVISIONS

10+00 = 5467.09 ℄ Basin Rd. (N.E.)
+0.40%
P.V.C. 12+65
P.V.I. 13+55 Elev. 36.58 V.C. 180' M.O. 0.45'
P.V.T. 14+45
P.V.C. 14+50
Ridge Lines
-1.58%
LIMIT OF PAVING 14+85
Grading Only
P.V.I. 15+50 Elev. 33.50 V.C. 200' M.O. 0.17'
P.V.T. 16+50
LIMIT OF GRADING 20+00
℄ Right Edge of Pavement
-0.907% ℄ B/L Left Edge of Pavement
LIMIT OF GRADING
P.V.C. 22+10
P.V.I. 23+00 Elev. 26.70 V.C. 180' M.O. 0.56'
℄ Ridge Line
P.V.T. 23+90
24+29.56 = 24+29.56 Ramp G, 1'Rt.
℄ Right Edge of Pavement
-3.36% ℄ B/L Left Edge Pavm't.
P.V.C. 26+27
Original Ground Line

	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
Cut/Fill	0.5	0.5	0.0	2.0	7.0	9.5	3.5	8.5	8.0	7.0	8.5	6.2	-1.0	-1.0	-1.0	-1.0	-1.0
Gr.	35.16	35.36	35.56	35.96	36.16	36.22	36.29	36.13	35.16	35.08	34.33	33.67	33.09	32.59	32.14	31.69	31.23	30.78	30.33	29.87	29.42	28.97	28.51	28.06	27.61	27.51	27.04	26.14	24.90	23.66	23.32	22.32	21.63	19.94	18.25	16.56	15.65	14.91

B/L RAMP F
Not to Scale

32+02.72 = 122+86.41 B/L Conn. A, 29'Rt.
P.V.I. 27+77 Elev. 10.58 V.C. 200' M.O. 1.66'
LIMIT OF GRADING 29+21
LIMIT OF GRADING 32+22
P.V.T. 29+27
P.V.C. 31+60
P.V.I. 31+80 Elev. 14.84 V.C. 40' M.O. 0.02'
P.V.T. 32+00
+0.58%
Profile controlled by 3/16" per ft. cross slope up from B/L Connection A profile
37+39.45 = 128+23 B/L Conn. A, 13'Rt.
Right Edge of Pavm't.
B/L Left Edge of Pavm't.
-3.38%
+1.057%
LIMIT OF GRADING
Datum 0.00
Original Ground Line

	27	28	29	30	31	32
Cut/Fill	-1.0	2.0	3.0	0.0	-2.1	-2.2
Gr.	14.91	13.58	12.61	12.02	11.79	11.93	12.41	12.94	13.47	13.99	14.52	14.68	14.96	14.97	18.22

B/L RAMP F

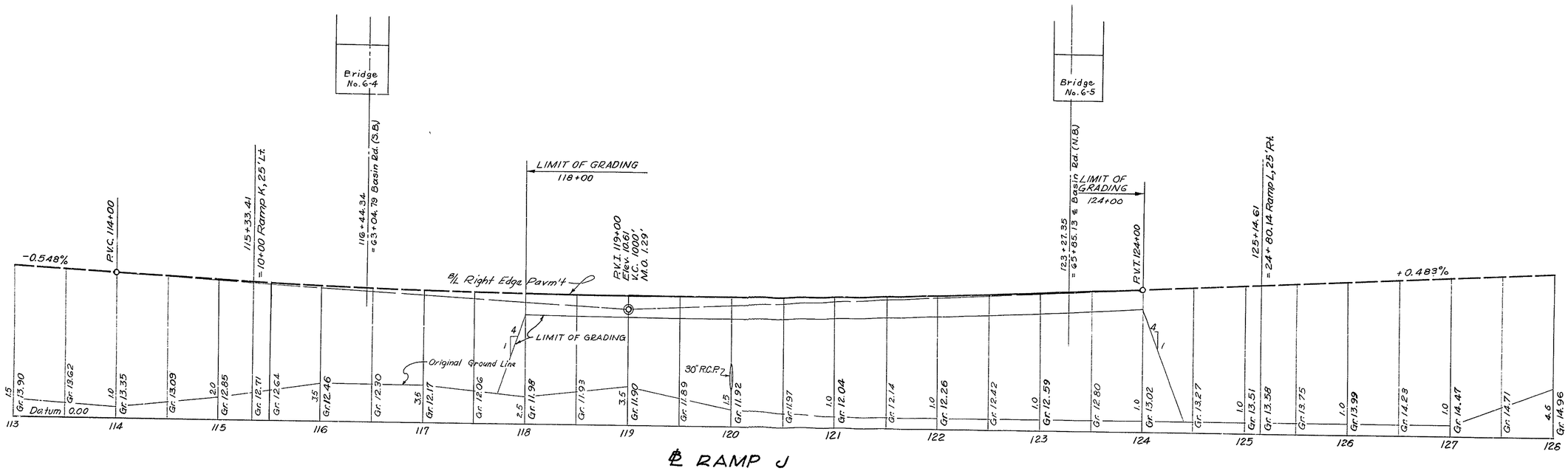
Notes:

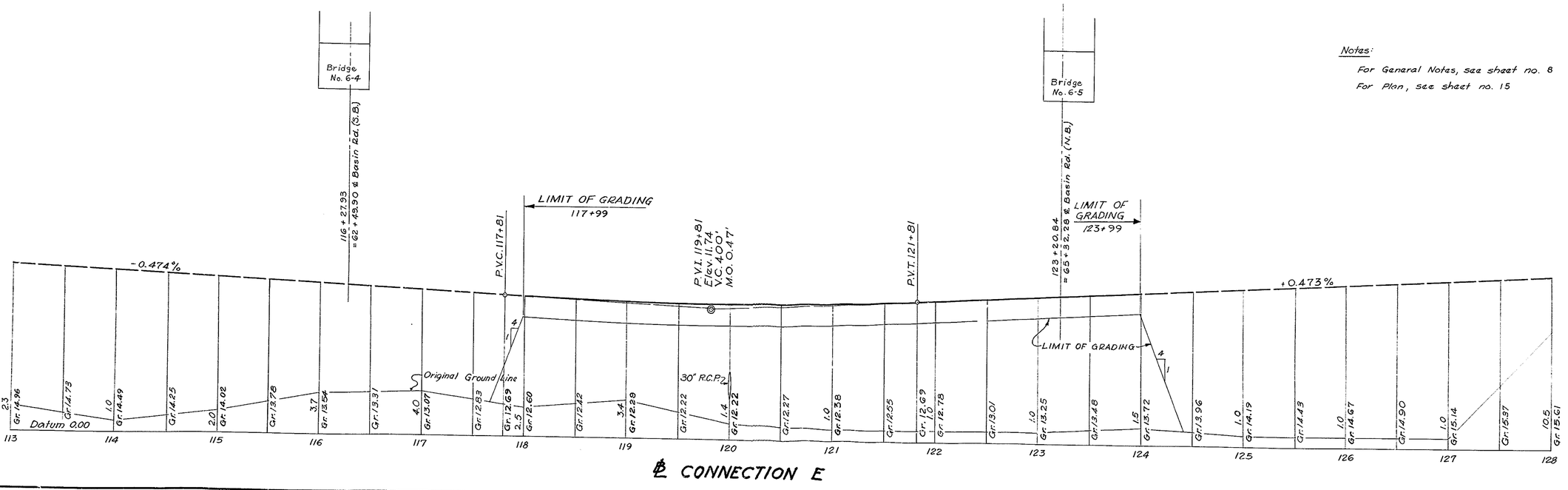
For General Notes, see sheet no. 8
For Plan, see sheet nos. 10 & 14.

D C B A 1 5 10 A B C D

COUNTY	CONTRACT	P. A. & P.C. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE	I-1(21)-1	2	DEL.	I-95-1(18)		23	66

BASIN ROAD





Notes:

For General Notes, see sheet no. 8

For Plan, see sheet no. 15

CHECKED
W.K. Upton

GRADE
BEARINGS
TIE POINTS
BENCH MARKS
EARTHWORK
DRAINAGE

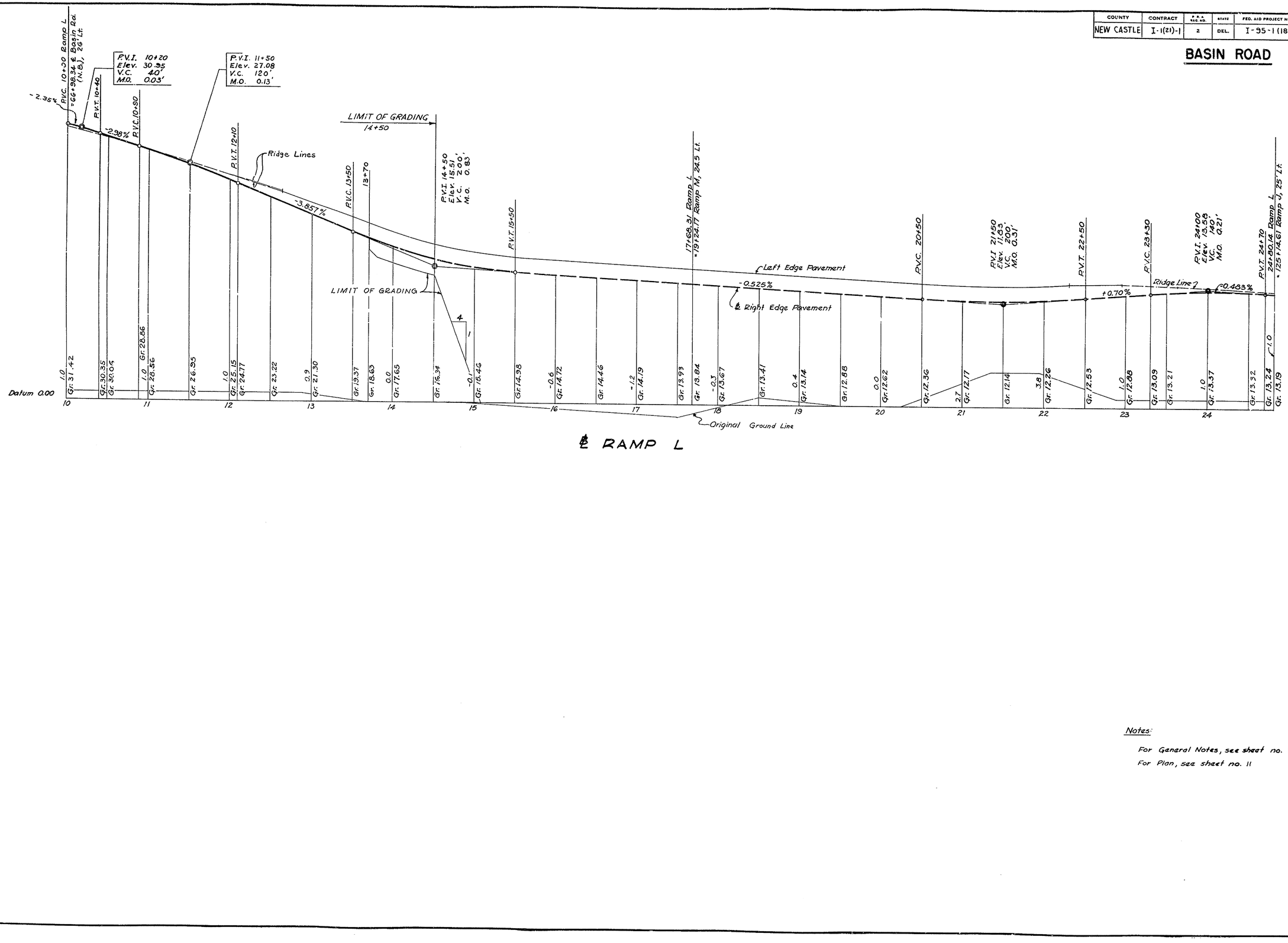
REVISIONS

"Imperial" 155 W. B. & E.

D C B A 1 5 10 A B C D

COUNTY	CONTRACT	P.R.A. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE	I-1(21)-1	2	DEL.	I-95-1(18)		24	66

BASIN ROAD



℄ RAMP L

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

REVISIONS

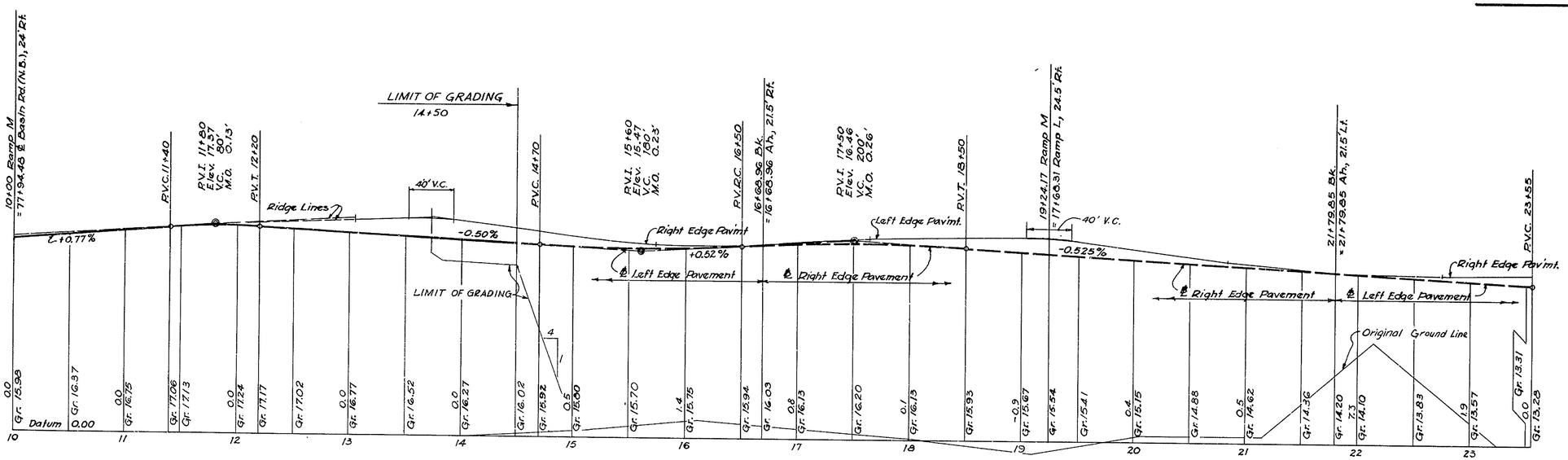
Notes:

For General Notes, see sheet no. 8

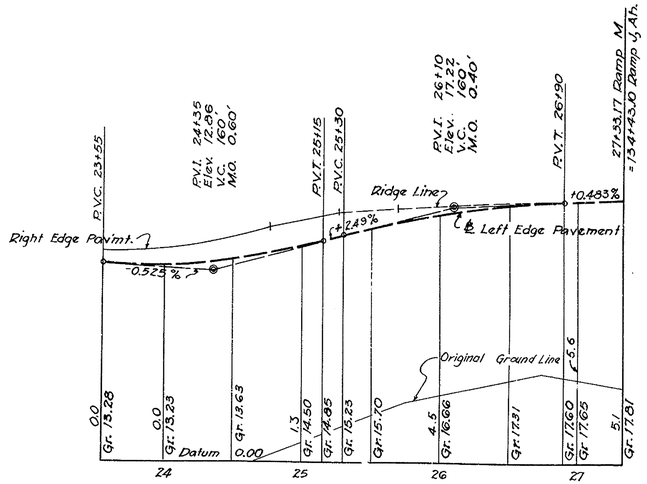
For Plan, see sheet no. 11

COUNTY	CONTRACT	P.A. REG. NO	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO	TOTAL SHEETS
NEW CASTLE	I-1(21)-1	2	DEL.	I-95-1(18)		25	66

BASIN ROAD



℄ RAMP M



℄ RAMP M

Notes:

For General Notes, see sheet no. 8

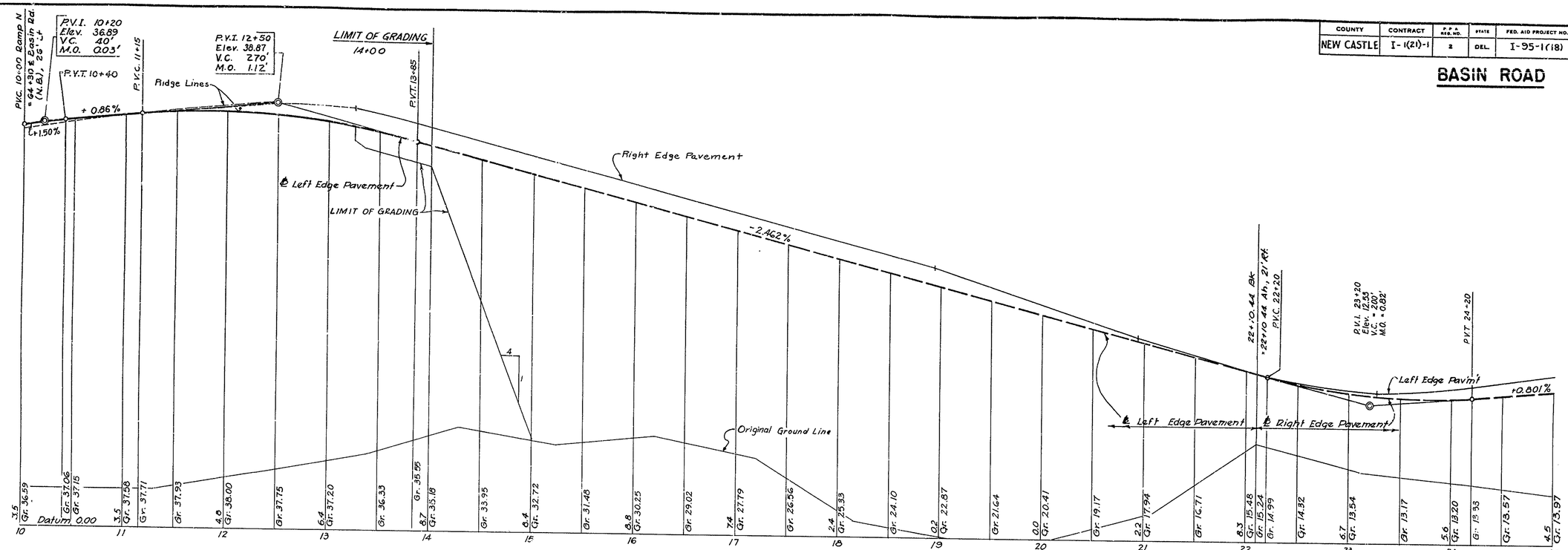
For Plan, see sheet no. 11

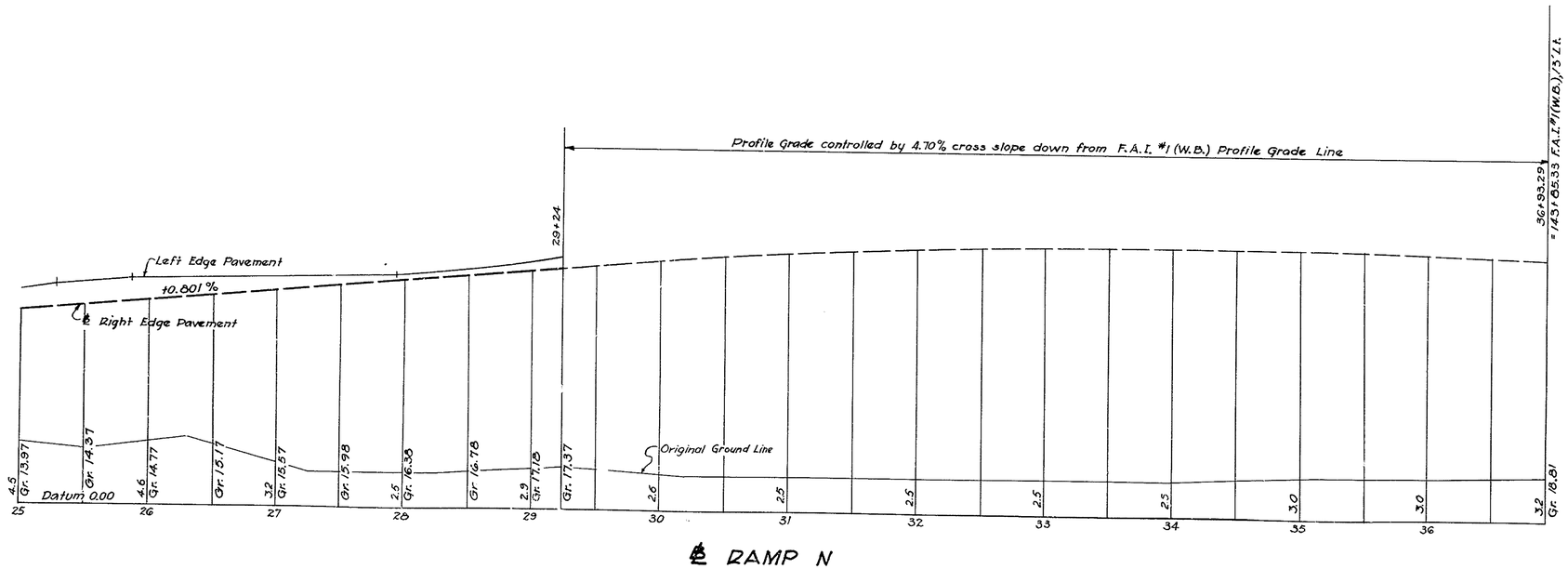
REVISIONS

GRADE
BEARINGS
TIE POINTS
BENCH MARKS
EARTHWORK
DRAINAGE

COUNTY	CONTRACT	P. P. A. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE	I-1(21)-1	2	DEL.	I-95-1(18)		26	66

BASIN ROAD





Notes:

For General Notes, see sheet no. 8

For Plan, see sheet nos. 10 & 11

CHECKED W.L. Upton

GRADE
BEARINGS
TIE POINTS
BENCH MARKS
EARTHWORK
DRAINAGE

REVISIONS

COUNTY	CONTRACT	R.R.A. REC'D NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE	I-1(21)-1	1	DEL.	I-95-1(18)		27	66

DRAWN: C.A.S. & E.C.C. E.L.N. & E.G.B.
TRACED: A.J.S. & E.C.D. E.L.N. & E.C.C.
CHECKED: B.W.L.

GENERAL NOTES FOR STRUCTURES

Specifications: Design criteria are based on 1957 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 subsurface 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 cast-in-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 under item "Pile Bearing Values."

At least one test pile per bridge shall be driven in a pier footing at 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: All concrete shall be controlled concrete with a minimum compressive strength of 3000 psi in 28 days. 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" 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 at parapet (super structures 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.

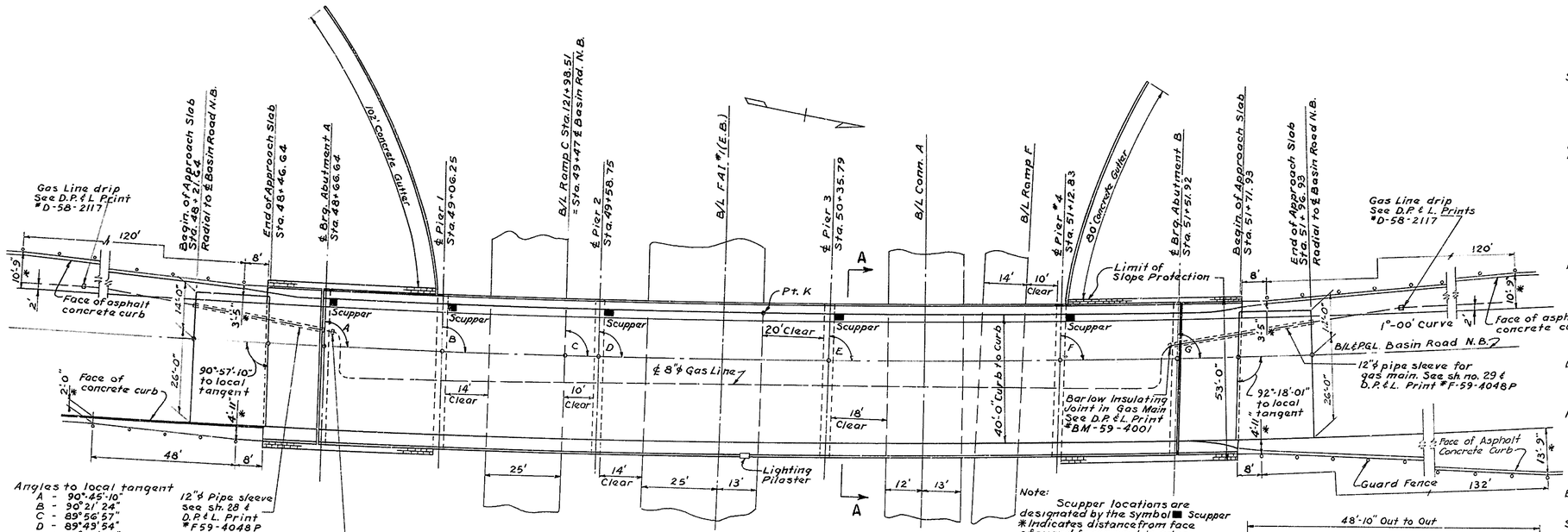
For notes pertaining to shoes see sheet entitled "Bearing Details."

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.

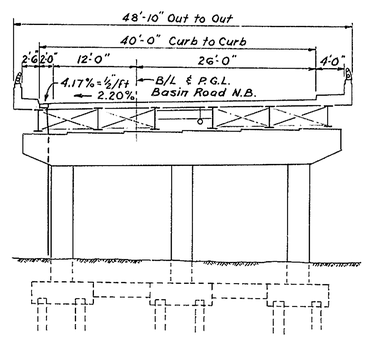
Deck Slab: Longitudinal construction joints in the superstructure deck slab are optional with the contractor. Location of these joints, if used, shall be approved by the Engineer.

Shear Connectors: The contractor may submit in writing for approval by the Engineer, alternate shear connector devices which will develop the equivalent shear of the connectors shown on the Plans. See Special Provisions.

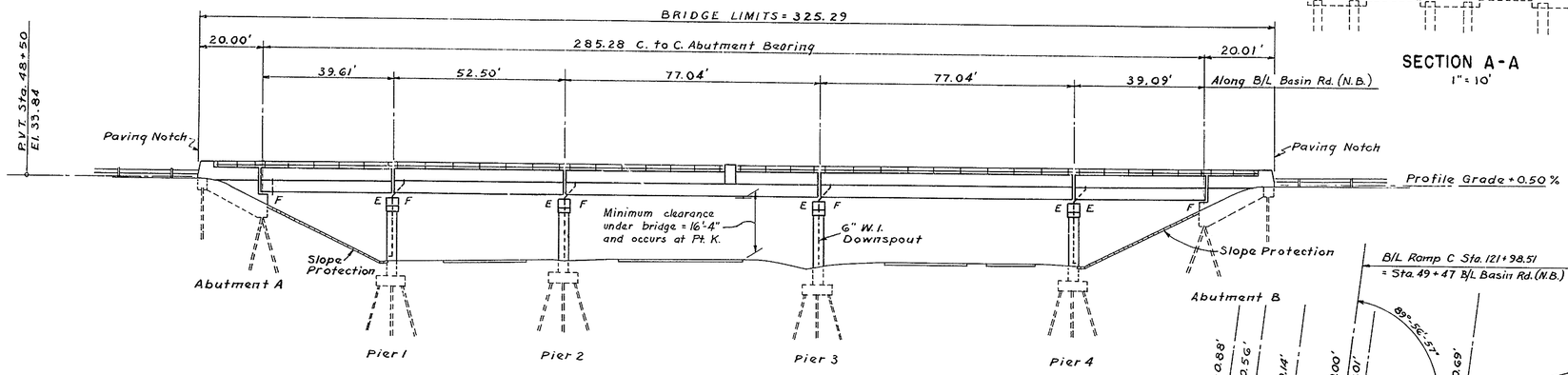


PLAN
1" = 20'

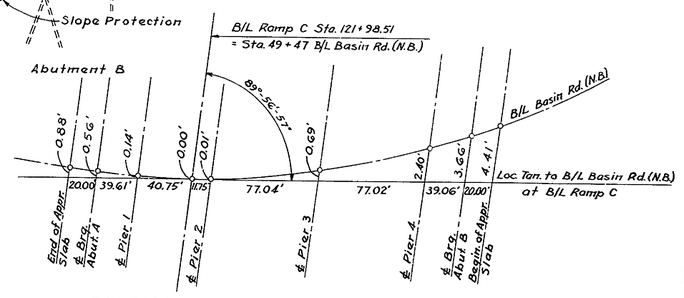
Note: Scupper locations are designated by the Symbol ■ Scupper * Indicates distance from face of guard fence post to edge of pavement.



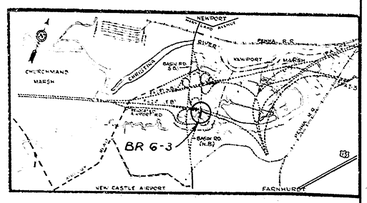
SECTION A-A
1" = 10'



ELEVATION
1" = 20'



B/L BASIN ROAD (N.B.) FROM TANGENT AT B/L RAMP C
No Scale



NOTES:
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 f'c = 3,000 p.s.i.; fc = 1200 p.s.i.
Superstructure: Concrete Deck, Steel Beam Construction, composite action under live load
For details of Slope protection and gutters, see Slope Protection and Drainage Details sheet no. 42.

APPROVED _____ BRIDGE ENGINEER

DELAWARE
STATE HIGHWAY DEPARTMENT

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

BASIN ROAD (N.B.) - BRIDGE NO. 6-3
SITE PLAN

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

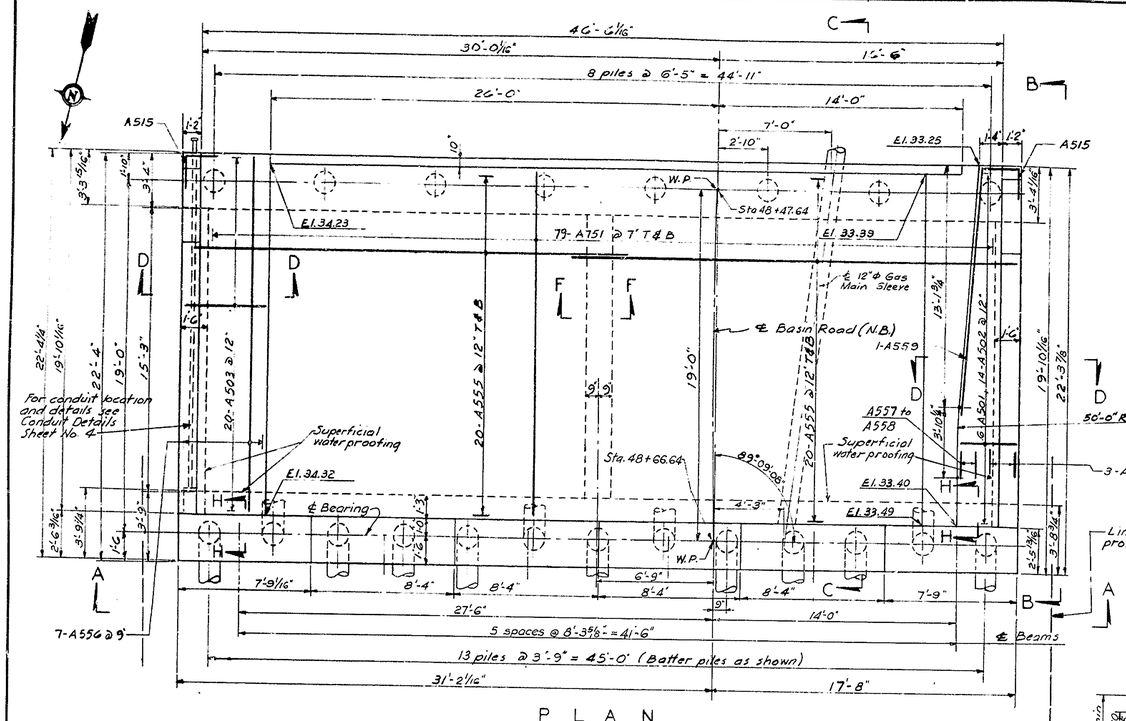
DESIGNED: C.A.S. CHECKED: E.L.N. DATE: 12-31-59
DRAWN: A.J.S. IN CHARGE: B.W.L. SCALE: As Shown

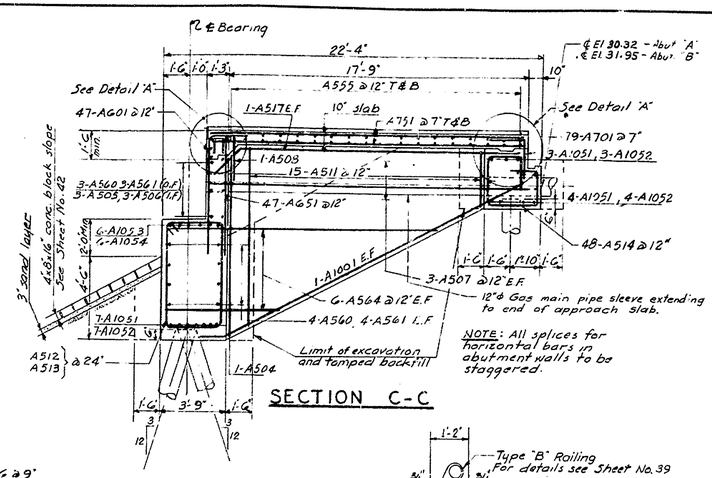
REVISIONS
Added Note at standard specification from 8'-0" to 10'-0"

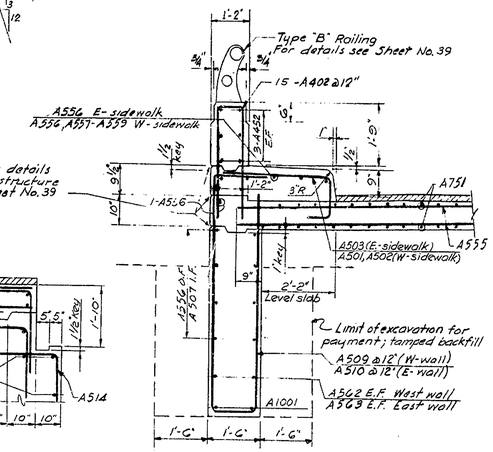
COUNTY	CONTRACT	F. A. PROJ. NO.	STATE	FED. AID PROJECT NO.	FINAL YEAR	SHEET NO	TOTAL SHEETS
NEW CASTLE	I-1(21)-1	S	DEL.	I-95-1(18)		28	66

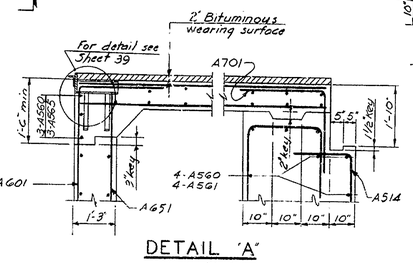
GRADE
BRIDGE
TIE POINTS
MISCELLANEOUS
EARTHWORK
DRAINAGE

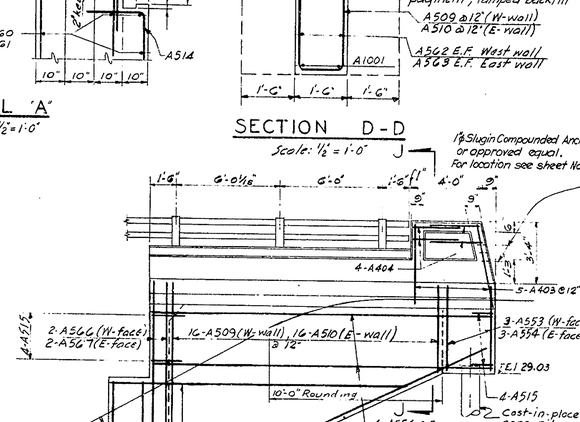
REVISIONS



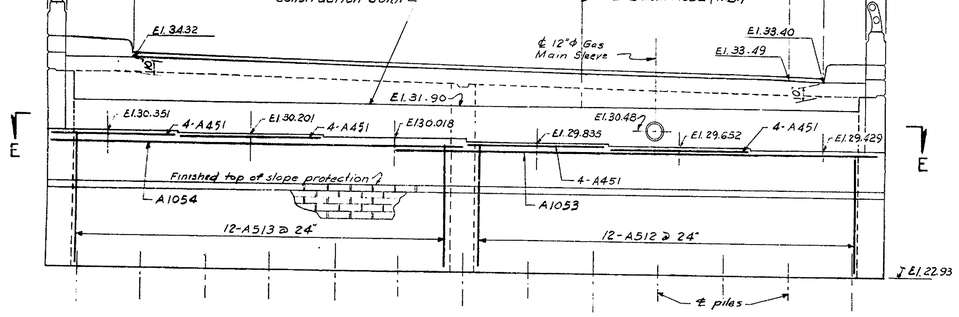


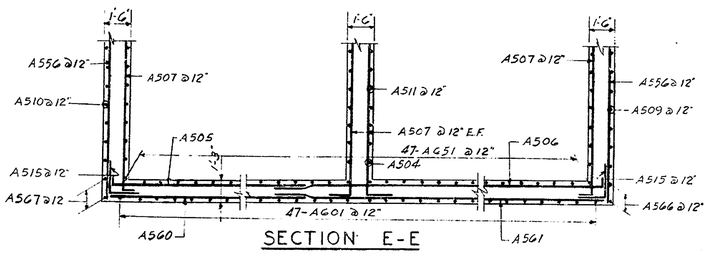


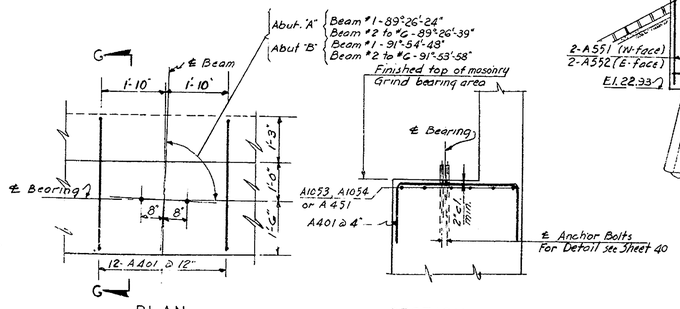




NOTE
Contractor should exercise care in placing borrow under abutments where piles will later be driven to see that fill is free of stones or other matter which would interfere with augering through fill (Typical).







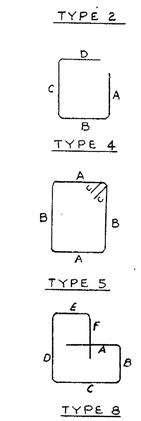
REINFORCING SCHEDULE

Bent Bars (All dimensions are out to out)

MARK	NO	SIZE	LENGTH	TYPE	A	B	C	D	E	F	G	REMARKS
A401	72	4	6-5	1	1-6	3-5	1-6					
A402	30	4	7-7	1	3-2	0-8	3-2					
A501	6	5	5-3	1	3-3	1-3	0-9					
A502	14	5	4-0 To 5-1	1	2-9 To 3-1	1-3	0-9					Increment = 1"
A503	20	5	6-8	1	4-8	1-3	0-9					
A504	1	5	18-10	1	8-10	1-2	8-10					
A505	3	5	17-11	1	0-9	17-2	—					
A506	3	5	33-11	1	0-9	33-2	—					
A507	14	5	19-5	1	0-9	18-8	—					
A508	1	5	7-8	1	3-3	1-2	3-3					
A509	16	5	10-7 To 23-1	4	3-10 To 10-1	1-2	4-7 To 10-10	1-0				Increment = 5"
A510	16	5	12-7 To 25-1	4	4-10 To 11-1	1-2	5-7 To 11-10	1-0				Increment = 5"
A511	15	5	7-6 To 19-2	1	3-2 To 14-0	1-2	3-2 To 14-0					Increment = 5"
A512	12	5	19-6	5	3-5	5-10	0-6					
A513	12	5	7-6	5	3-5	6-4	0-6					
A514	48	5	3-10 To 15-11	8	2-3	1-10 To 2-10	3-0	2-9 To 3-9	2-2	1-11		Increment = 3/4" 2 of each
A515	8	5	4-0	1	2-0	2-0	—					
A516	15	5	6-8	1	2-9	1-2	2-9					
A517	2	5	18-6	2	16-3	2-3				1-8	1-8	
A601	47	6	7-6	1	2-3	5-3	—					
A701	79	7	4-9	1	2-3	2-6	—					
A1001	6	10	19-6	2	18-0	1-6				6-7	1-6½	
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	16	4	8-0	
A452	12	4	19-4	
A551	2	5	6-2	
A552	2	5	7-1	
A553	3	5	4-7	
A554	3	5	5-7	
A555	80	5	24-7	Slope in field to slab shape
A556	20	5	19-6	
A557	1	5	6-9	
A558	1	5	15-9	
A559	1	5	15-3	
A560	18	5	17-2	
A561	15	5	33-2	
A562	12	5	5-10 To 17-6	Increment = 2'-4" 2 of each
A563	12	5	6-8 To 18-4	Increment = 2'-4" 2 of each
A564	12	5	5-6 To 17-2	Increment = 2'-4" 2 of each
A565	3	5	30-2	
A566	2	5	11-0	
A567	2	5	11-10	
AG51	47	6	5-3	
A751	158	7	18-8	
A1051	14	10	17-6	
A1052	14	10	34-6	
A1053	6	10	28-6	
A1054	6	10	24-0	



NOTE: All above marks are prefixed by G-3

APPROVED
BRIDGE ENGINEER

NOTES:

1. For General Notes see Sheet No. 27.
2. For Abutment "B" Notes, Sections F-F, H-H, J-J and Pile Details see Sheet No. 29
3. Elevations shown at beam bearings are finished top of masonry elevations. See Section G-G.

DELAWARE
STATE HIGHWAY DEPARTMENT

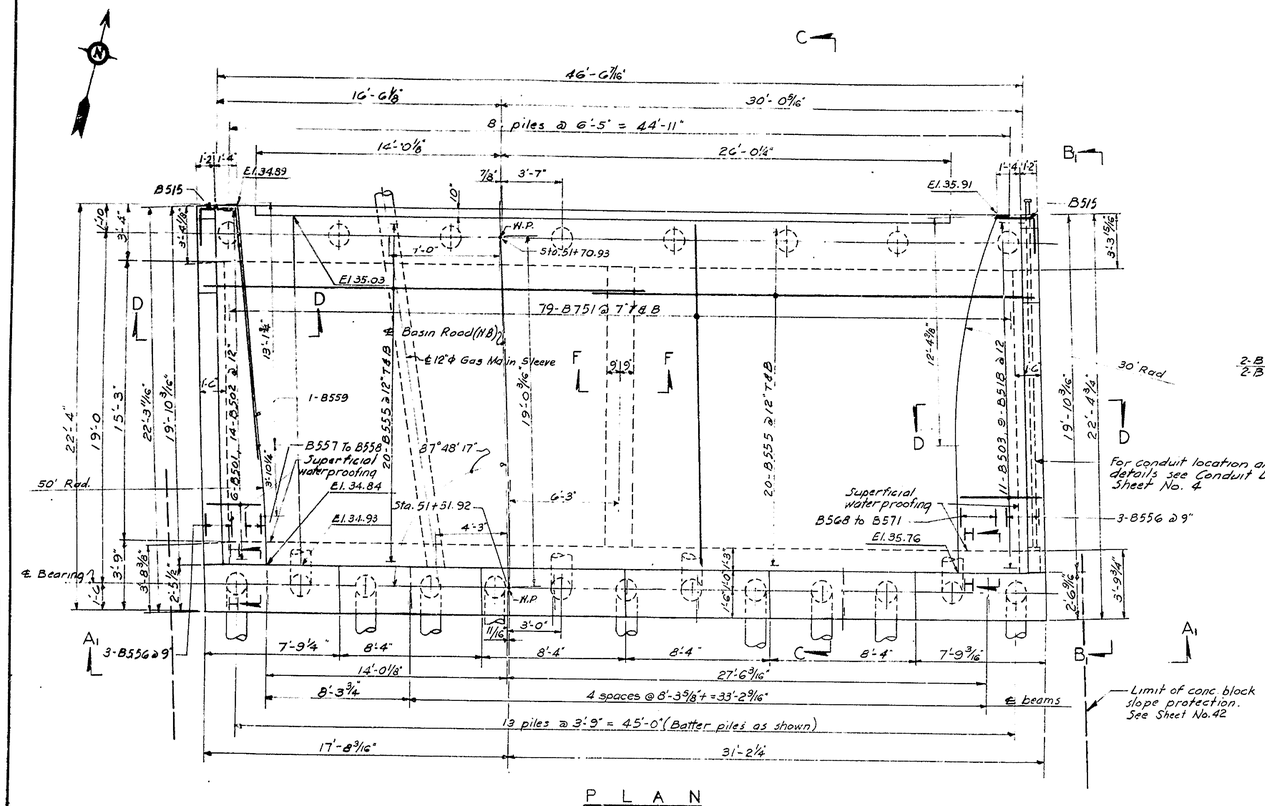
INTERSTATE ROUTE F.A.I.-1 (21)-1
CHRISTINA RIVER INTERCHANGE

BASIN ROAD (N.B.) - BRIDGE NO. 6-3
ABUTMENT "A"

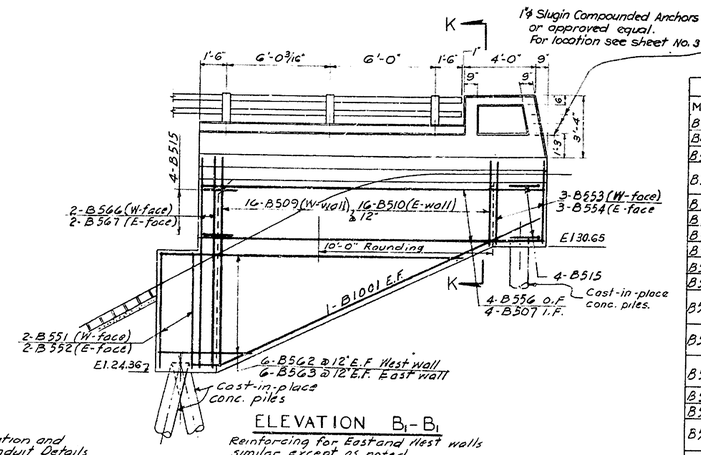
J. E. GREINER CO.
MORAN, PROCTOR, MUESER & RUTLEDGE
CONSULTING ENGINEERS

DESIGNED: A.W.T. CHECKED: R.P. & M.A.G. DATE: 12-31-59
DRAWN: J.A. IN CHARGE: H.W.K. SCALE: 1/4" = 1'-0"

COUNTY	CONTRACT	F.A.I. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE	I-1(21)-1	2	DEL.	I-95-1(18)		29	66

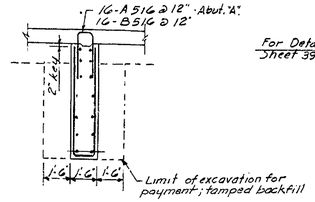


P L A N

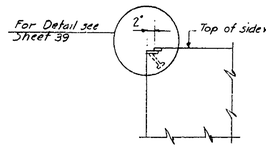


ELEVATION B_1-B_1

Reinforcing for East and West walls similar except as noted.

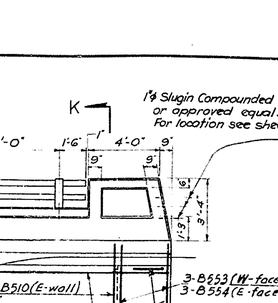


SECTION F-F



SECTION H-H

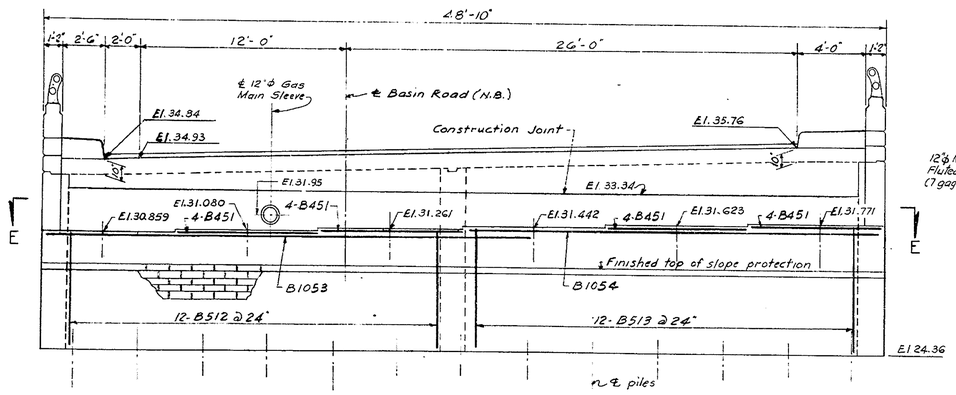
Scale: 1/2" = 1'-0"



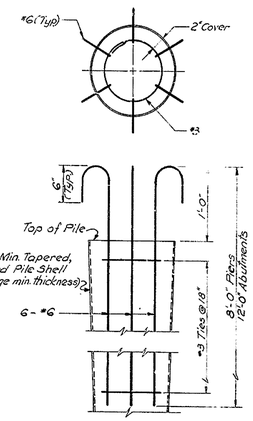
SECTION J-J (See Sheet No 28)

SECTION K-K

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

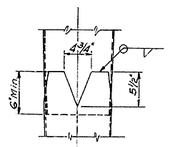


ELEVATION A_1-A_1



PILE DETAILS

Scale: 1"=1'-0"



TYPICAL PILE SPLICE

Scale: 1"=1'-0"

NOTES:

1. For Sections C-C, D-D, E-E, Detail "A" and Grillage Detail see Abutment "A" Sheet No. 28 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. 30
3. For railing and deck joint details see Sheet No. 39
4. For slope protection and drainage details see Sheet No. 42
5. For shoe and anchor bolt details see Sheet No. 40
6. Elevations shown at beam bearings are finished Top of masonry elevations. See Section G-G on Sheet No. 28
7. For fill under Abutments see Sheet 28.

REINFORCING SCHEDULE

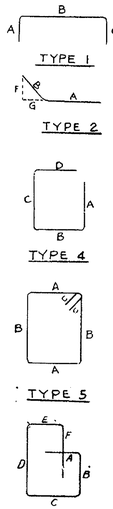
BENT BARS (All dimensions are out to out)

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	40	4	7-7	1	3-5	0-9	3-5					
B501	6	5	5-3	1	3-3	1-3	0-9					
B502	14	5	4-0 To 5-1	1	2-0 To 3-1	1-3	0-9					Increment = 1"
B503	11	5	6-8	1	1-3	4-8	0-9					
B504	1	5	18-10	1	8-10	1-2	8-10					
B505	3	5	17-11	1	0-9	17-2	—					
B506	3	5	33-11	1	0-9	33-2	—					
B507	14	5	19-5	1	0-9	18-8	—					
B508	1	5	7-8	1	3-3	1-2	3-3					
B509	16	5	10-7 To 23-1	4	3-10 To 10-1	1-2	4-7 To 10-10	1-0				Increment = 5"
B510	16	5	12-7 To 25-1	4	8-10 To 11-1	1-2	5-7 To 11-10	1-0				Increment = 5"
B511	15	5	7-6 To 19-2	1	3-8 To 9-0	1-2	3-2 To 9-6					Increment = 5"
B512	12	5	19-6	5	3-5	5-10	0-6					
B513	12	5	20-6	5	3-5	6-4	0-6					
B514	48	5	13-11 To 15-11	8	2-3	4-10 To 2-10	3-0	2-9 To 3-9	2-2	1-11		Increment = 3/4" 2 of each
B515	8	5	4-0	1	2-0	2-0	—					
B516	15	5	6-8	1	2-9	1-2	2-9					
B517	2	5	18-6	2	16-3	2-3				1-8	1-8	
B518	9	5	4-6 To 6-6	1	2-6 To 4-6	1-3	0-9					Increment = 3"
B601	47	6	7-6	1	2-3	5-3	—					
B701	79	7	4-9	1	2-3	2-6	—					
B1001	6	10	19-6	2	18-0	1-6				0-7	1-4½	
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	16	4	8-0	
B452	12	4	19-4	
B551	2	5	6-2	
B552	2	5	7-1	
B553	3	5	4-7	
B554	3	5	5-7	
B555	80	5	24-7	Steps as field to suit slope
B556	16	5	19-6	
B557	1	5	6-9	
B558	1	5	15-9	
B559	1	5	15-3	
B560	18	5	17-2	
B561	15	5	33-2	
B562	12	5	5-10 To 17-6	Increment = 2-6 2 of each
B563	12	5	6-8 To 18-4	Increment = 2-4" 2 of each
B564	12	5	5-6 To 17-2	Increment = 2-6 2 of each
B565	3	5	30-2	
B566	2	5	11-0	
B567	2	5	11-10	
B568	1	5	18-3	
B569	1	5	16-9	
B570	1	5	14-6	
B571	1	5	9-6	
B651	47	6	5-3	
B751	158	7	18-8	
B1051	14	10	17-6	
B1052	14	10	34-6	
B1053	6	10	28-6	
B1054	6		24-0	

NOTE: All above marks are prefixed by G-3



APPROVED _____ BRIDGE ENGINEER

DELAWARE
STATE HIGHWAY DEPARTMENT

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

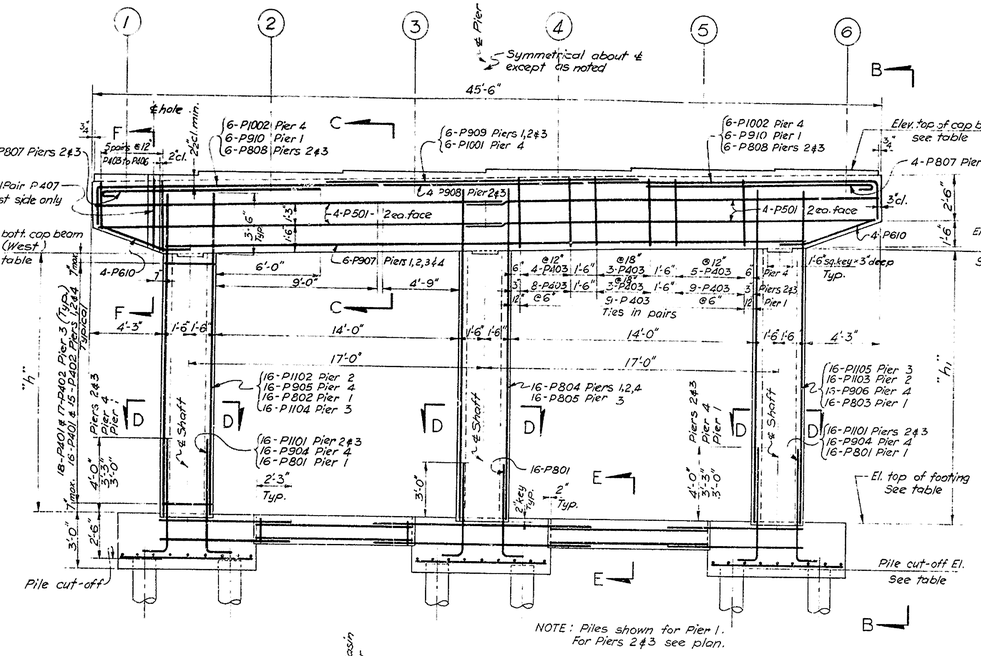
BASIN ROAD (N.B.) - BRIDGE NO. 6-3
ABUTMENT "B"

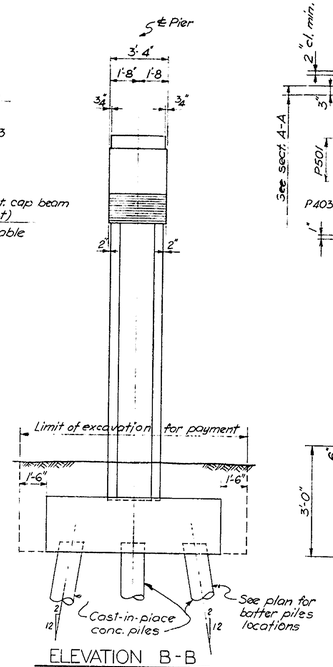
J.E. GREINER CO.
MORAN, PROCTOR, MUESER & RUTLEDGE
CONSULTING ENGINEERS

DESIGNED: A.H.J. CHECKED: R.P.M.R. DATE: 12-31-56
DRAWN: A.A. IN CHARGE: H.W.K. SCALE: AS SHOWN

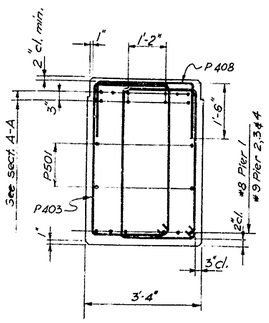
GRADE ____ CHECKED
BEARINGS ____
TIE POINTS ____
BENCH MARKS ____
EARTHWORK ____
DRAINAGE ____

REVISIONS
Weight - Pile notes deleted 12/57

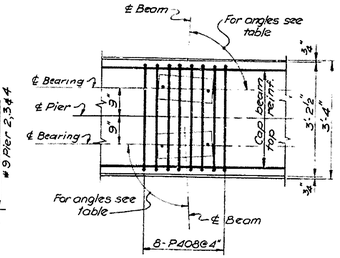




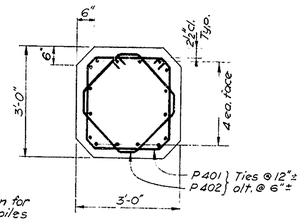
ELEVATION B-B



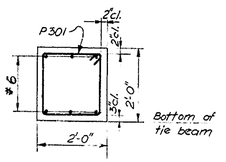
SECTION C-C



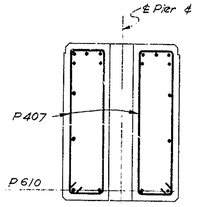
GRILLAGE UNDER BEARING PLATES



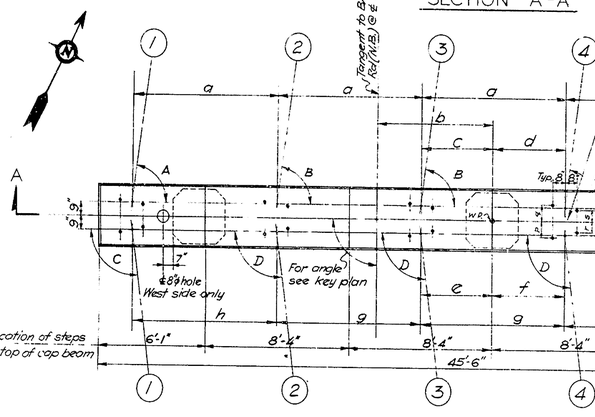
SECTION D-D



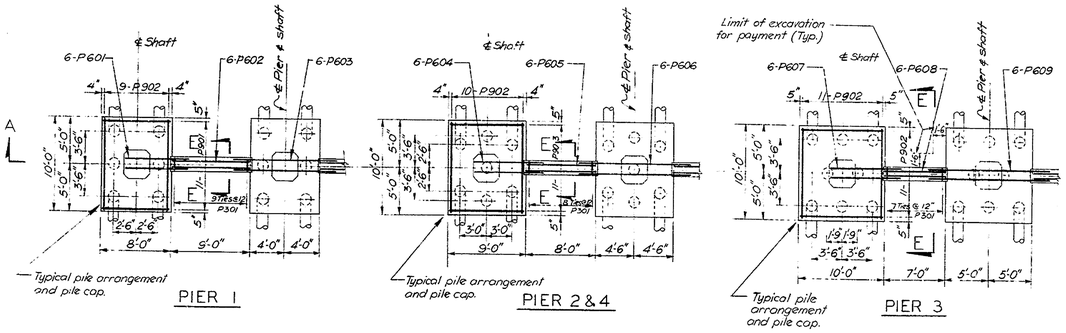
SECTION E-E



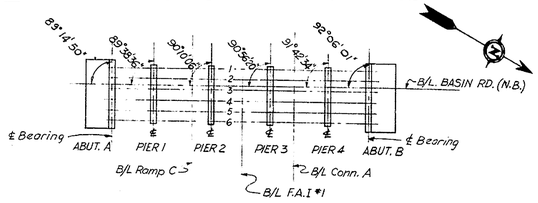
SECTION F-F



PLAN - CAP BEAM



FOOTING PLANS



KEY PLAN

ANGLE & DIMENSION VALUES FOR PLAN OF CAP BEAM

	PIER 1	PIER 2	PIER 3	PIER 4
Angle A	89°54'20"	90°33'17"	91°19'38"	91°54'48"
" B	89°54'23"	90°33'03"	91°19'03"	91°53'58"
" C	89°26'24"	89°54'20"	90°33'17"	91°19'38"
" D	89°26'39"	89°54'23"	90°33'03"	91°19'03"
Dimension a	8'-3⅝"	8'-3⅝"	8'-3⅝"	8'-3⅝"
" b	6'-9"	6'-9"	6'-9"	6'-9"
" c	4'-1 15/16"	4'-1 15/16"	4'-1 15/16"	4'-2 1/16"
" d	4'-1 15/16"	4'-1 15/16"	4'-1 15/16"	4'-1 9/16"
" e	4'-1⅞"	4'-1 15/16"	4'-1⅝"	4'-1½"
" f	4'-1¾"	4'-1 15/16"	4'-2"	4'-2⅛"
" g	8'-3⅝"	8'-3⅝"	8'-3⅝"	8'-3⅝"
h	8'-3 9/16"	8'-3⅝"	8'-3 7/16"	8'-3¾"

ELEVATIONS & HEIGHTS OF PIERS

	PIER 1	PIER 2	PIER 3	PIER 4
El. ①	29.628	29.745	30.128	30.514
El. ②	30.086	30.117	30.350	30.735
El. ③	30.269	30.300	30.532	30.917
El. ④	30.452	30.482	30.714	31.098
El. ⑤	30.635	30.665	30.895	31.279
El. ⑥	30.582	30.697	31.077	31.461
El. bott. of cap beam (West)	25.334	25.451	25.834	26.220
" " (East)	26.229	26.343	26.726	27.112
El. top of footing	10.001	10.118	8.501	10.887
Pile cut-off El.	7.501	7.618	6.001	8.387
Dimension "h"	15'-4"	15'-4"	17'-4"	15'-4"
Dimension "h₁"	16'-2¾"	16'-3 7/16"	18'-3 7/16"	16'-3 7/16"

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

ANCHOR BOLT LOCATIONS

	PIER 1	PIER 2	PIER 3	PIER 4
p	8 5/16"	9"	9 1/16"	9 3/16"
r	9 1/16"	9"	8 15/16"	8 13/16"
q	9"	8 15/16"	8 13/16"	8¾"
s	9"	9 1/16"	9 3/16"	9½"

NOTES

1. For General Notes see sheet No. 27
2. Angles given on key plan are to local tangent of B/L Basin Road (N.B.)
3. For shoe and anchor bolt details see sheet No. 40
4. For drainage details see sheets No's 41 & 42
5. For pile details see sheet No. 29

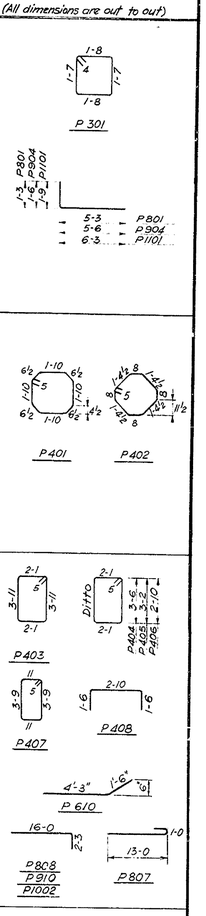
APPROVED _____ BRIDGE ENGINEER

COUNTY	CONTRACT	F. A. PROJ. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE	I-1(21)-1	2	DEL.	I-95-1(18)		30	66

REINFORCING SCHEDULE FOR PIERS 1,2,3 & 4

LOCATION	STRAIGHT BARS MARK	PIER	TOTAL REQ'D	SIZE	LENGTH	BENT BARS MARK	PIER	TOTAL REQ'D	SIZE	LENGTH
FOOTING	P601	1	12	#6	7-9	P301	1,2,3,4	64	#3	7-2
	P602	1	12	↓	9-0					
	P603	1	6		12-6	P801	1,2,3,4	96	#8	6-6
	P604	2,4	24		8-3					
	P605	2,4	24		8-0	P904	4	32	#9	7-0
	P606	2,4	12		13-6					
	P607	3	12		8-9	P1101	2,3	64	#11	8-0
	P608	3	12	↓	7-0					
	P609	3	6	#6	14-6					
	P901	1	33	#9	7-6					
	P902	1,2,4	153	#9	9-6					
	P903	2,4	66	#9	8-6					
SHAFT	P802	1	16	#8	19-0	P401	1,2,3,4	198	#4	10-4
	P803	1	16	#8	20-0	P402	1,2,3,4	186	#4	9-0
	P804	1,2,4	48	#8	19-6					
	P805	3	16	#8	21-6					
	P905	4	16	#9	19-0					
	P906	4	16	#9	20-0					
	P1102	2	16	#11	19-0					
	P1103	2	16	#11	20-0					
	P1104	3	16	#11	21-0					
	P1105	3	16	#11	22-0					
CAP BEAM	P501	1,2,3,4	32	#5	23-5	P403	1,2,3,4	260	#4	12-10
						P404	↓	16	↓	12-0
						P405		16		11-4
						P406		16		10-8
	P907	1,2,3,4	24	#9	37-0					
	P908	2,3	8	#9	12-6	P407	↓	8	↓	10-2
	P909	1,2,3	18	#9	19-6	P408	1,2,3,4	192	#4	5-10
	P1001	4	6	#10	20-0	P610	1,2,3,4	32	#6	5-9
						P807	2,3	16	#8	14-0
						P808	2,3	24	#8	18-3
						P910	1	12	#9	18-3
						P1002	4	12	#10	18-3

BENDING DIAGRAMS (All dimensions are out to out)



NOTE: All above marks are prefixed by 6-3

BEARINGS	
TIE POINTS	
BENCH MARKS	
EARTHWORK	
DRAINAGE	

DELAWARE STATE HIGHWAY DEPARTMENT

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

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

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

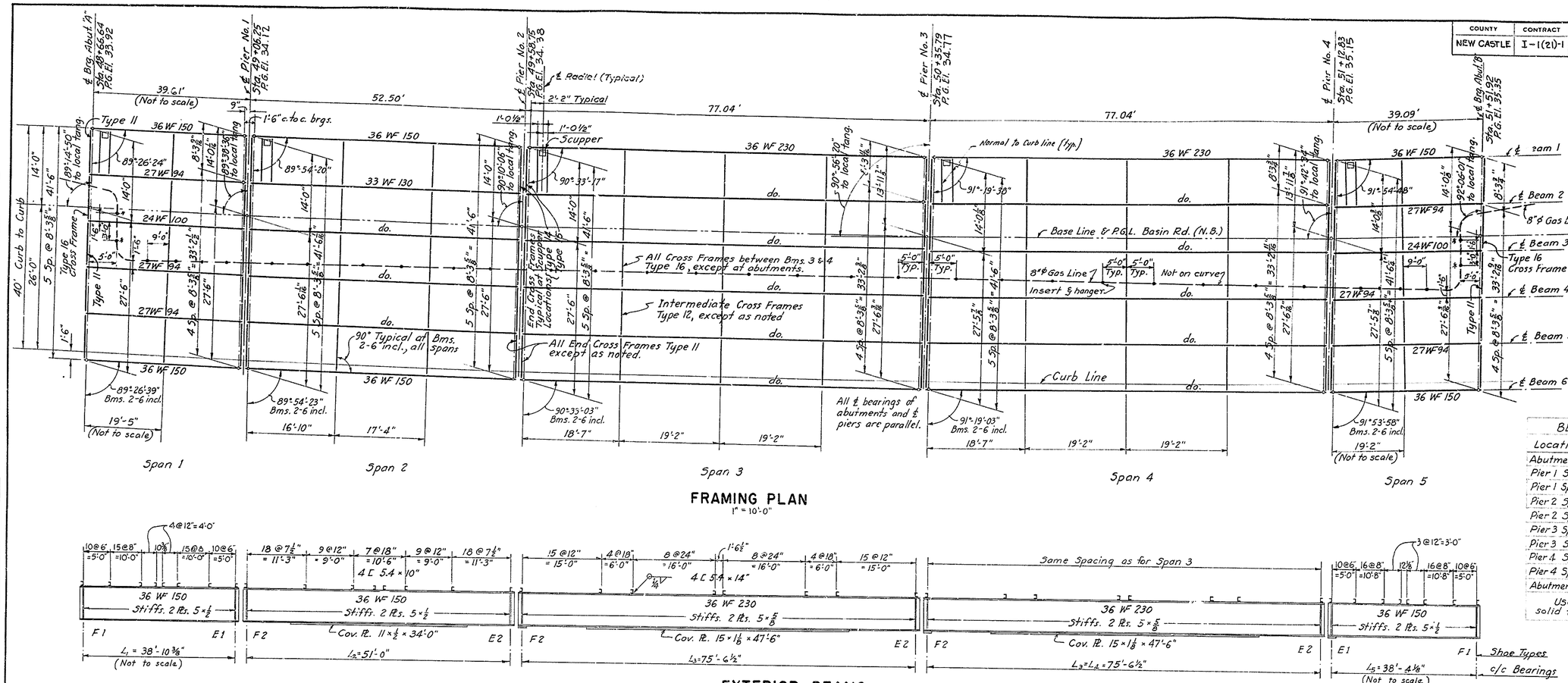
DESIGNED: Y.S. CHECKED: L.L. DATE: 6-3-59
DRAWN: A.P. IN CHARGE: N.W.K. SCALE: 1/8, 1/4, 1/10

COUNTY	CONTRACT	P.R.A. REQ. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE	I-1(21)-1	2	DEL.	I-95-1(18)		31	66

MADE BY	CHECKED BY
DESIGN FFW & RCC	RLN & EGR
DRAWING	RCC
TRACING SCP & HA	
QUANTITIES SCP & EGR	CHW & FFW
CHECKED BY	
IN CHARGE	

CHECKED
GRADE
BEARINGS
TIE POINTS
BENCH MARKS
EARTHWORK
DRAINAGE

REVISIONS



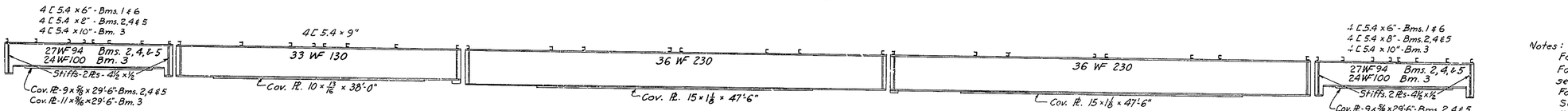
Note: See Sheets 28 & 29 for location of 8"ϕ Gas Line through Abutments A & B.

Use standard hangers for Gas Main at all points except where noted as swivel hangers (*) See D.P.S.L. Print # 5-58-2255-P

FRAMING PLAN

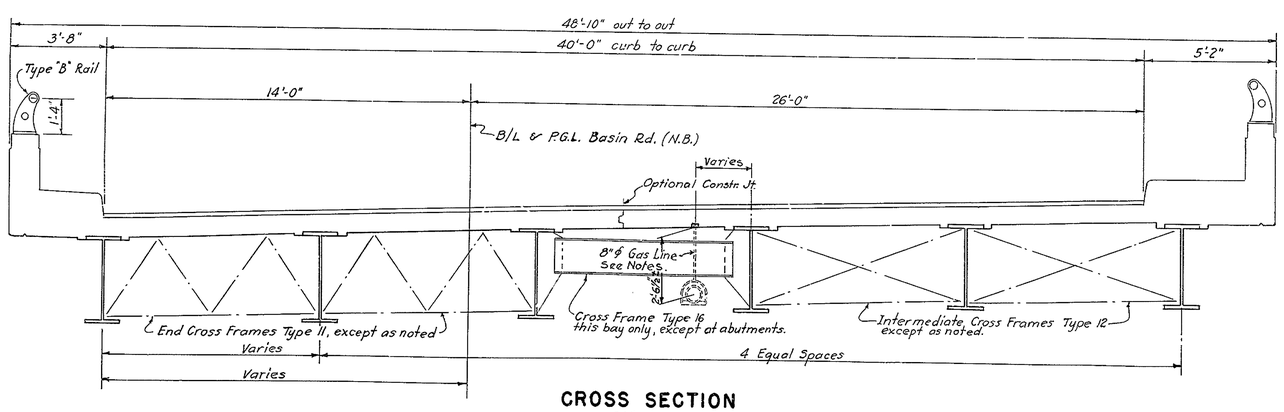
1" = 10'-0"

EXTERIOR BEAMS



For details not shown, see Exterior Beam.

INTERIOR BEAMS

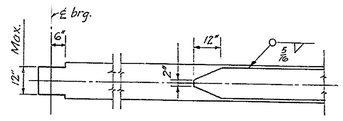


CROSS SECTION

3/8" = 1'-0"

CAMBER INCREMENTS FOR DEAD LOADS (INCHES) (NO VERTICAL CURVE)

	SPANS 1 and 5		SPAN 2		SP. 3 & 4	
	Bms. 1 & 6	Bms. 2, 3, 4 & 5	Bms. 1 & 6	Bms. 2, 3, 4 & 5	Bms. 1 to 6	
	¼L1 ½L5	½L1 ½L5	¼L1 ½L5	½L1 ½L5	¼L2	½L2	¼L2	½L2	¼L3	½L3
Structural Steel	–	1/16	1/16	1/16	1/16	1/8	1/16	1/8	5/16	1/16
Concrete Deck Slab	1/8	1/8	1/4	5/16	5/16	3/8	3/8	1/2	7/8	1 3/16
Sidewalk and Parapet	–	–	–	1/16	1/16	1/8	1/16	1/8	3/16	
2" Wearing Surface	–	–	–	–	–	–	1/16	1/16	1/8	
Full Dead Load	1/8	3/16	5/16	7/16	7/16	5/8	1/2	3/4	1 3/8	1 5/16
Vertical Curve	None		None		None		None		None	
Total Camber at ½ Ln	Natural Camber Place Up		Natural Camber Place Up		5/16"		3/4"		1 5/16"	



BOTTOM FLANGE DETAIL

BEARING FILL HEIGHTS AT SHOES

Location	Beams 1 & 6	Beams 2, 4 & 5	Beam 3
Abutment "A"	–	9" *	11⅞" *
Pier 1 Span 1	–	6 3/16" *	9 1/16" *
Pier 1 Span 2	–	–	–
Pier 2 Span 2	–	1 5/16"	1 5/16"
Pier 2 Span 3	1 13/16"	–	–
Pier 3 Span 3	–	–	–
Pier 3 Span 4	1 13/16"	1 13/16"	1 13/16"
Pier 4 Span 4	–	–	–
Pier 4 Span 5	1 3/16"	10 13/16" *	13 1/16" *
Abutment "B"	–	9" *	11⅞" *

Use stool for fills noted *, otherwise use solid fill. See Bearing Details sheet No. 59

Notes:
For General Notes, see Sheet No. 27
For cross frames, dams and bridge railing, see "Superstructure Details" sheet No. 39
For scuppers and scupper framing, see "Scupper Details" sheet No. 41
For shoes, see "Bearing Details" sheet No. 40
For details of 8"ϕ Gas Line, inserts, hangers and pipe see Delaware Power & Light Co. drawings and Special Provisions.

APPROVED _____ BRIDGE ENGINEER

DELAWARE
STATE HIGHWAY DEPARTMENT
INTERSTATE ROUTE F.A.I.-1(21)-1
CHRISTINA RIVER INTERCHANGE
BASIN ROAD (N.B.)-BRIDGE NO. 6-3
SUPERSTRUCTURE - FRAMING
J. E. GREINER CO.
MORAN, PROCTOR, MUESER & RUTLEDGE
CONSULTING ENGINEERS
DESIGNED ....F.F.W. CHECKED:....R.L.N. DATE: 12-31-59....
DRAWN:.....S.C.F. IN CHARGE: B.W.L. SCALE: As Shown

"Imperial" 156 W. B. & E.

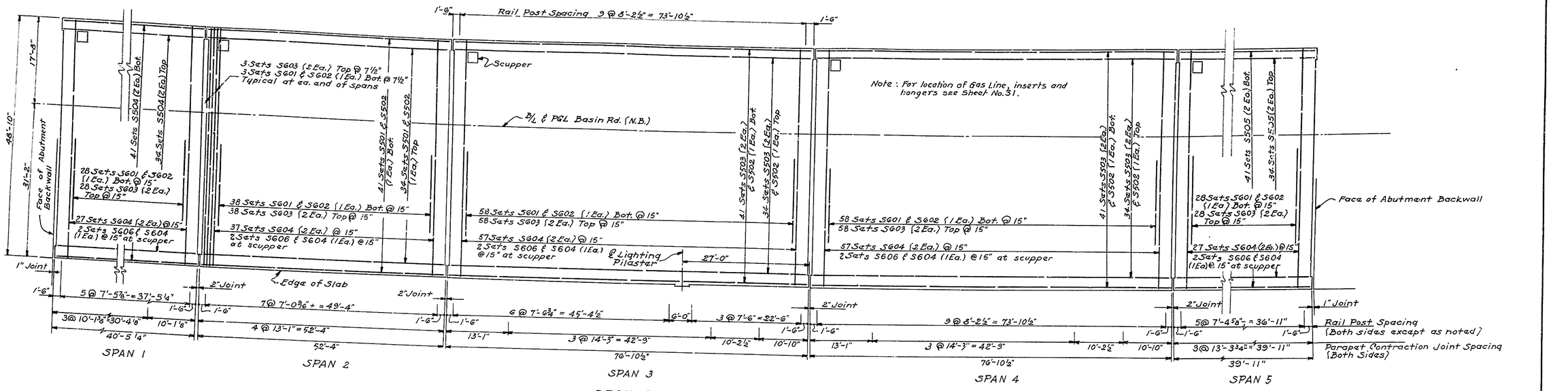
D C B A 1 5 10 A B C D

COUNTY	CONTRACT	R.B.&L. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE	I-1(21)-1	2	DEL.	I-95-1(18)		32	66

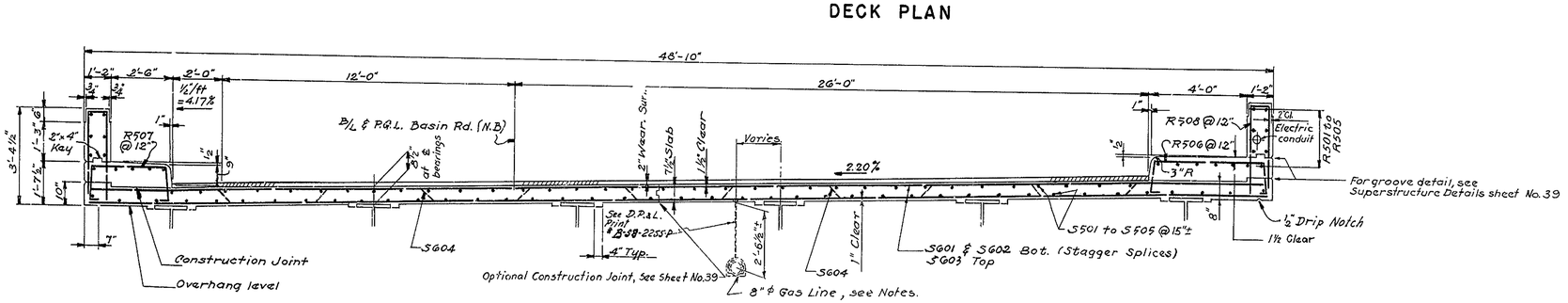
DESIGN RLN & KCC RLN & EGR
DRAWING JEP & EDR RLN & RCC
QUANTITIES SCP & EGR CHW & FFW
IN CHARGE BWL

GRADE
BEARINGS
TIE POINTS
BENCH MARKS
EARTHWORK
DRAINAGE

REVISIONS



DECK PLAN



TYPICAL SECTION

3/8" = 1'-0"

REINFORCING SCHEDULE

Loc.	Mark*	Straight Bars: Number Required Span 1	Span 2	Span 3	Span 4	Span 5	Length	Total Weight
Deck	S601	34	44	64	64	34	29'-8"	
	S602	34	44	64	64	34	20'-8"	
	S603	68	88	128	128	68	25'-2"	
	S607 (a)	6	6	6	6	6	6'-0"	
	S501		75				29'-8"	
	S502		75	75	75		23'-2"	
	S503			150	150		28'-4"	
	S504	150					20'-8"	
	S505					150	20'-5"	
	S402 (b)			2			2'-6"	
Sidewalk and Parapet	R501	96		24	24		9'-9"	
	R502		96	24	24		12'-7"	
	R503			72	72		13'-9"	
	R504			24	24		10'-4"	
	R505					72	12'-10"	

Loc.	Mark*	Bent Bars: Number Required Span 1	Span 2	Span 3	Span 4	Span 5	Length	Total Weight	Type
Deck	S604	56	76	116	116	56	26'-1"		10
	S606 (a)	2	2	2	2	2	25'-11"		16
	S507 (a)	3	3	3	3	3	6'-5"		13
	S401 (b)			4			2'-10"		12
Sidewalk and Parapet	R506	41	53	77	77	41	8'-0"		14
	R507	41	53	77	77	41	6'-6"		14
	R508	82	106	151	154	82	6'-8½"		12
	R509 (b)			4			10'-2"		12
	R511 (b)			4			4'-10½"		12

TOTAL WEIGHT 91,923 lbs.

"Imperial" 156 W. B. & E.

Bending Diagrams

	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"

All dimensions are out to out.
*Bar size is indicated in the bar mark. The first digit where three digits are used indicate the bar size.
See Scupper Details sheet for modification of reinforcing bars around scuppers, noted by (a). (Sheet No. 41)
See Conduit sheet for modification of reinforcing bars and additional bars in lighting pilasters noted by (b). (Sheet No. 4)

NOTE
For General Notes see Sheet No. 27

For railing details, roadway and sidewalk dams, see Superstructure Details sheet No. 39

For details of roadway slab construction joint and parapet contraction joints, see Superstructure Details sheet No. 39

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

For details of 8" ϕ Gas Line, inserts, hangers and pipe see Delaware Power & Light Co. drawings and Special Provisions.

APPROVED _____ BRIDGE ENGINEER

DELAWARE
STATE HIGHWAY DEPARTMENT
INTERSTATE ROUTE F.A.I.-1(21)-1
CHRISTINA RIVER INTERCHANGE.

BASIN ROAD (N.B.) - BRIDGE NO. 6-3
SUPERSTRUCTURE - DECK

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

DESIGNED:...R.L.N. CHECKED:...R.L.N. DATE:12-31-59...
DRAWN:.....J.E.P. IN CHARGE:B.W.L. SCALE:As Shown

MADE BY	CHECKED BY
DESIGN C.A.S. & R.L.N.	J.E.P. & F.F.W.
DRAWING E.J.S.	R.L.N.
IN CHARGE B.W.L.	

GRADE
BEARINGS
TIE POINTS
BENCH MARKS
EARTHWORK
DRAINAGE

REVISIONS
9/25/61 Date of Standard Specs. from 57 to 60 UAL

COUNTY	CONTRACT	P.R.A. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE	I-1(21)-1	2	DEL.	I-95-1(18)		33	66

PLAN
Scale: 1" = 20'

NOTES

Specifications:
Construction: State of Delaware, State Highway Department, Standard Specifications, 1960.
Design: A.A.S.H.O. Standard Specifications for Highway Bridges, 1957.

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) f_s = 20,000 p.s.i.
Concrete f'_c = 3,000 p.s.i.; f_c = 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. 27

For Details of slope protection and gutters, see slope Protection and Drainage Details sheet No. 42

ELEVATION
Scale: 1" = 20'

SECTION A-A
Scale: 1" = 10'

B/L BASIN ROAD (N.B.) FROM TANGENT AT B/L CONN. E
No Scale

APPROVED J. M. Fox BRIDGE ENGINEER

DELAWARE
STATE HIGHWAY DEPARTMENT

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

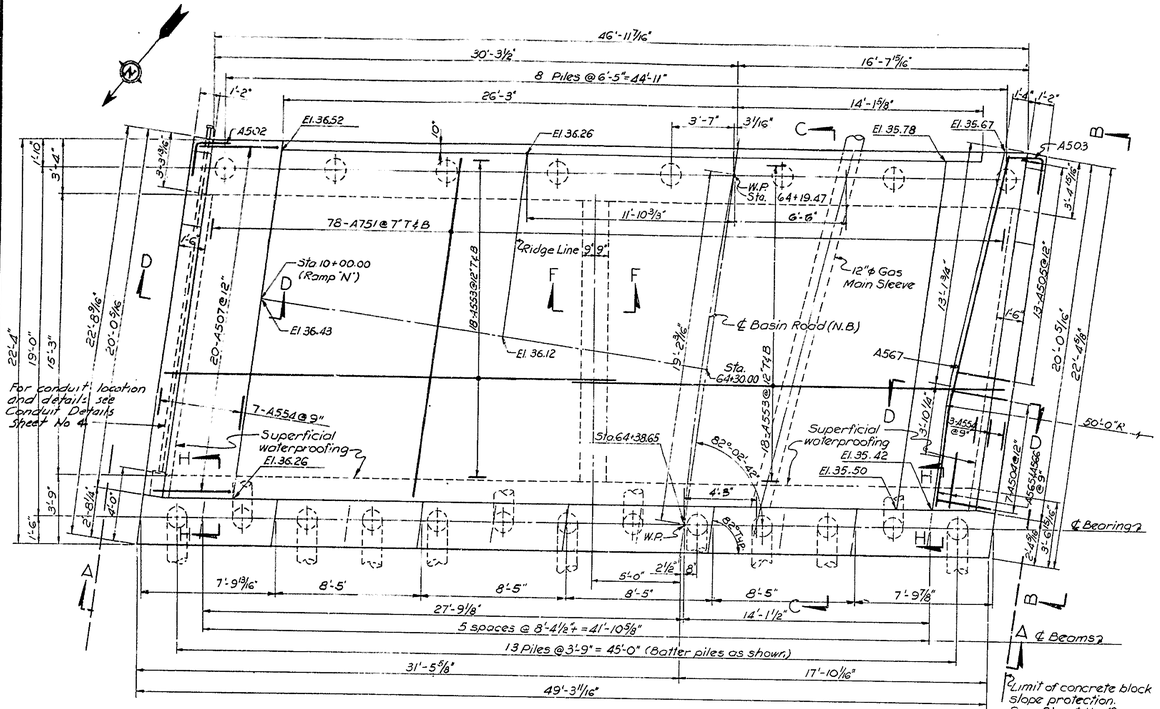
BASIN ROAD (N.B.) BRIDGE NO. 6-5
SITE PLAN

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

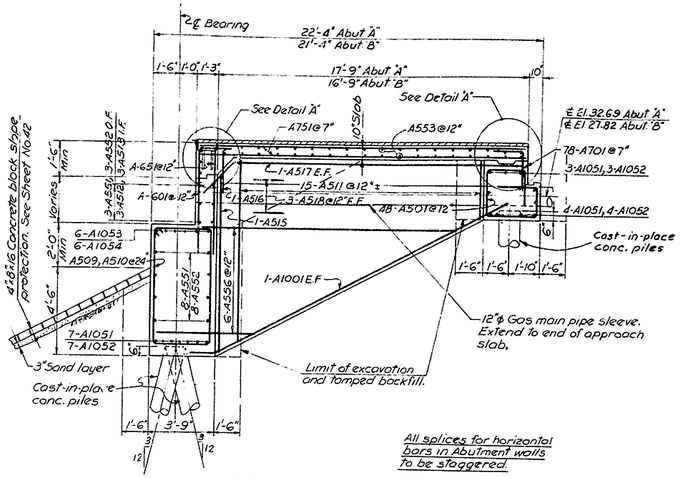
DESIGNED: C.A.S. CHECKED: R.L.N. DATE: 12-31-59
DRAWN: E.J.S. IN CHARGE: B.W.L. SCALE: As Shown

D C B A A B C D

COUNTY	CONTRACT	F. A. & SEC. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO	TOTAL SHEETS
NEW CASTLE	I-1(21)-1	2	DEL.	I-95-1(18)		34	66

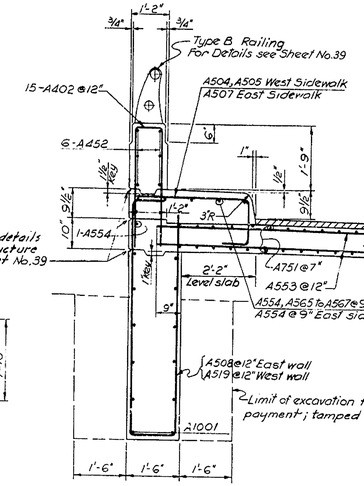


PLAN

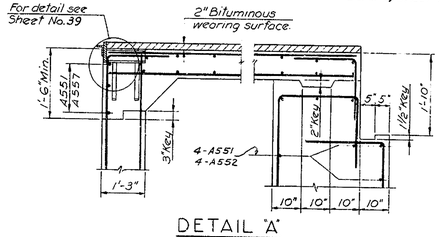


SECTION C-C

All splices for horizontal bars in Abutment walls to be staggered.

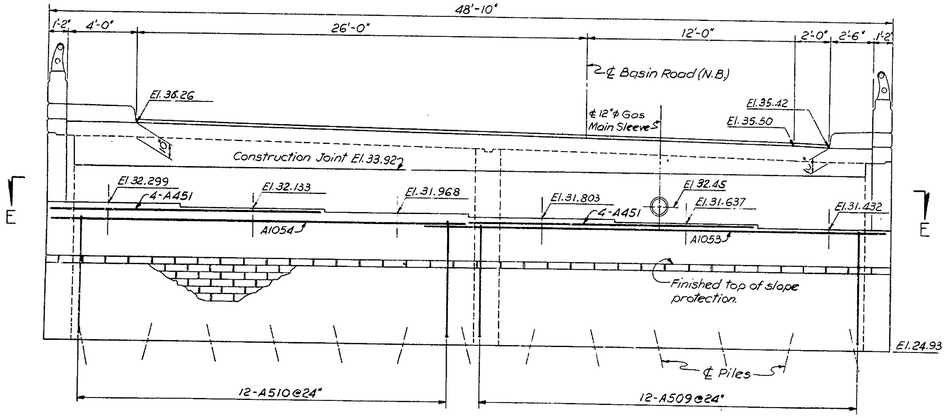


For groove details see Superstructure Details, Sheet No.39

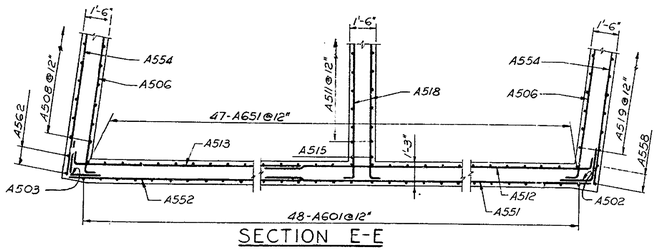


DETAIL 'A'
Scale: 1/2" = 1'-0"

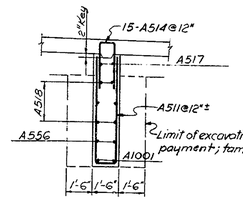
SECTION D-D
Scale: 1/2" = 1'-0"



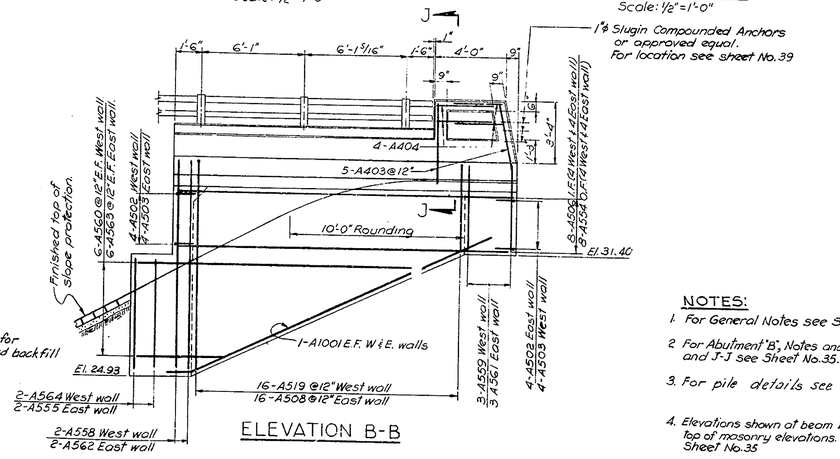
ELEVATION A-A



SECTION E-E



SECTION F-F



ELEVATION B-B

NOTES:

1. For General Notes see Sheet No. 27
2. For Abutment 'B', Notes and Sections H-H and J-J see Sheet No.35.
3. For pile details see Sheet No.29
4. Elevations shown at beam bearings are finished Top of masonry elevations. See Section G-G on Sheet No.35
5. For fill under Abutments su Sheet 28.

REINFORCING SCHEDULE

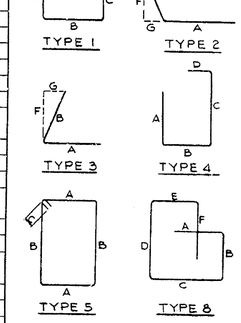
BENT BARS (All dimensions are out to out)

MARK	NO	SIZE	LENGTH	TYPE	A	B	C	D	E	F	G	REMARKS
A401	72	#4	6-5	1	1-6	3-5	1-6					
A402	30	#4	7-0	1	3-2	8"	3-2					
A501	48	#5	13-11 To 15-11	8	2-3	1-10 To 2-10	3-0	2-9 To 3-9	2-2	1-11		Increment 1/2" 2ea.
A502	8	#5	4-0	2	2-0	2-0				1-11	3"	
A503	8	#5	4-0	3	2-0	2-0				1-11	3"	
A504	7	#5	5-3	1	3-3	1-3	9"					
A505	13	#5	4-1 To 5-1	1	2-1 To 3-1	1-3	9"					Increment 1"
A506	8	#5	20-5	1	9	19-8						
A507	20	#5	6-8	1	1-3	4-8	9					
A508	16	#5	12-5 To 24-11	4	4-9 To 11-0	1-2	5-6 To 11-9	1-0				Increment 5'
A509	12	#5	19-6	5	3-5	5-10	6"					
A510	12	#5	20-6	5	3-5	6-4	6"					
A511	15	#5	7-6 To 19-2	1	3-2 To 9-0	1-2	3-2 To 9-0					Increment 5"
A512	3	#5	18-3	1	9"	17-6	—					
A513	3	#5	33-9	1	9"	33-0	—					
A514	15	#5	6-8	1	2-9	1-2	2-9					
A515	1	#5	19-2	1	9-0	1-2	9-0					
A516	1	#5	7-8	1	3-3	1-2	3-3					
A517	2	#5	18-6	2	16-3	2-3				1-8	1-8	
A518	6	#5	19-5	1	9"	18-8	—					-
A519	16	#5	10-5 To 22-11	4	3-9 To 10-0	1-2	4-6 To 10-9	1-0				Increment 5"
A601	48	#6	7-8	1	2-3	5-5	—					
A701	78	#7	4-9	1	2-6	2-3	—					
A1001	6	#10	20-2	2	18-8	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	8	#4	16-6	
A452	12	#4	19-7	
A551	18	#5	17-6	
A552	15	#5	33-0	
A553	72	#5	25-0	
A554	20	#5	19-7	
A555	2	#5	7-0	
A556	12	#5	5-6 To 17-2	Increment 2'-4" 2 of each
A557	3	#5	3-3	
A558	2	#5	10-7	
A559	3	#5	4-6	
A560	12	#5	5-10 To 17-6	Increment 2'-4" 2 of each
A561	3	#5	5-5	
A562	2	#5	11-5	
A563	12	#5	6-8 To 18-3	Increment 2'-4" 2 of each
A564	2	#5	6-2	
A565	1	#5	6-6	
A566	1	#5	16-3	
A567	1	#5	14-6	
AG51	47	#6	5-3	
A751	156	#7	18-9	
A1051	14	#10	17-9	
A1052	14	#10	35-0	
A1053	6	#10	28-3	
A1054	6	#10	24-0	

NOTE: All above marks are prefixed by G-5



APPROVED _____ BRIDGE ENGINEER

DELAWARE
STATE HIGHWAY DEPARTMENT
INTERSTATE ROUTE F.A.I.-1 (21)-1
CHRISTINA RIVER INTERCHANGE
BASIN ROAD (N.B.) - BRIDGE NO. 6-5
ABUTMENT "A"

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

DESIGNED: S.N.T. CHECKED: R.P.A.MAG DATE: 12-21-59
DRAWN: P.E. IN CHARGE: N.W.K. SCALE: W.A. 1"=1'-0"

REVISIONS
GRADE
BEARINGS
TEST HOLES
BENCH MARKS
EARTHWORK
DRAINAGE

COUNTY	CONTRACT	F.A.I. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO	TOTAL SHEETS
NEW CASTLE	I-1(21)-1	2	DEL.	I-95-1(18)		35	66

REINFORCING SCHEDULE

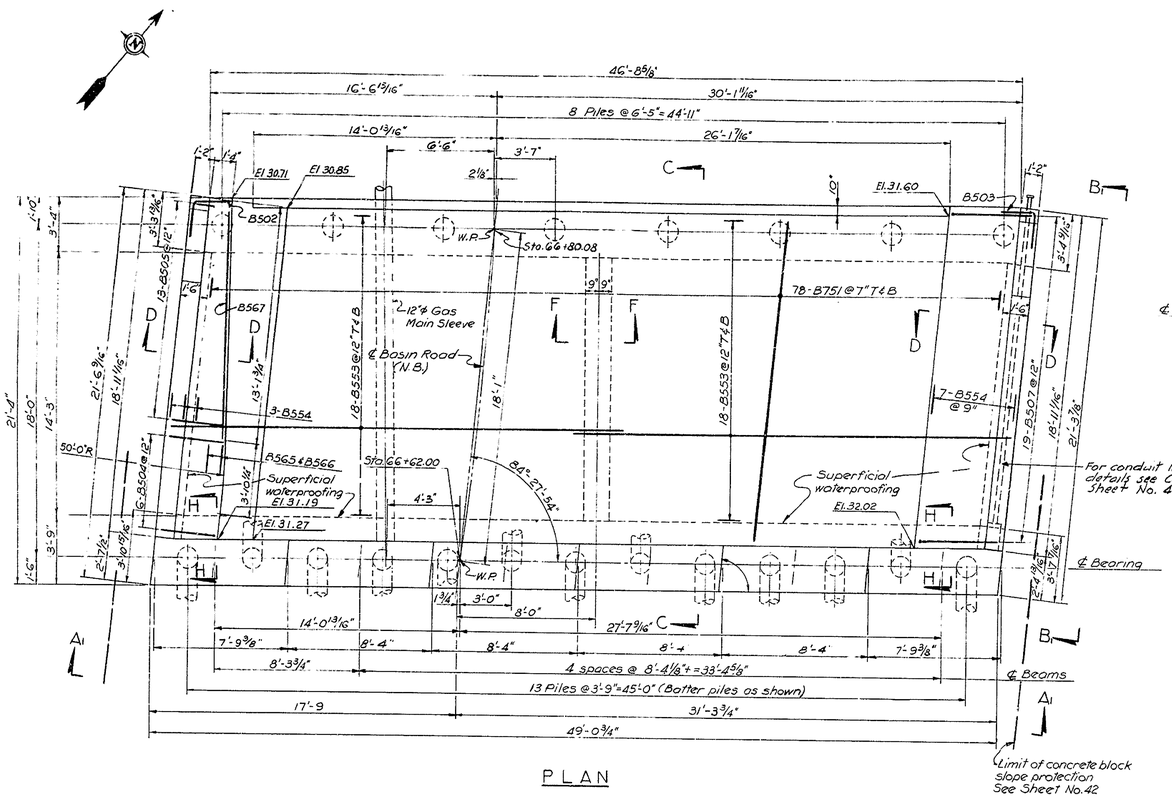
BENT BARS (All dimensions are out to out)

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	28	#4	7'-0	1	3'-2	8"	3'-2					
B501	48	#5	13'-11 To 15'-11	8	2'-3	1'-10 To 2'-10	3'-0	2'-9 To 3'-9	2'-2	1'-11		Increment ½" 2 ea.
B502	8	#5	3'-6	2	1'-0	2'-0				1'-11	3"	
B503	8	#5	3'-6	3	2'-0	2'-0				1'-11	3"	
B504	6	#5	5'-3	1	3'-3	1'-3	9"					
B505	13	#5	4'-1 To 5'-1	1	2'-1 To 3'-1	1'-3	9"					Increment 1" per bar
B506	8	#5	19'-4	1	9"	18'-7						
B507	19	#5	5'-11	1	1'-3	4'-8						
B508	15	#5	12'-9 To 24'-4	4	4'-11 To 10'-9	1'-2	5'-8 To 11'-6	1'-0				Increment 5"
B509	12	#5	19'-6	5	3'-5	5'-10	6"					
B510	12	#5	20'-6	5	3'-5	6'-4	6"					
B511	15	#5	7'-6 To 19'-2	1	3'-2 To 9'-0	1'-2	3'-2 To 9'-0					Increment 5" per Tie
B512	3	#5	18'-3	1	9"	17'-6	—					
B513	3	#5	33'-9	1	9"	33'-0	—					
B514	15	#5	6'-8	1	2'-9	1'-2	2'-9					
B515	1	#5	19'-0	1	8'-11	1'-2	8'-11					
B516	1	#5	7'-8	1	3'-3	1'-2	3'-3					
B517	2	#5	17'-6	2	15'-3	2'-3				1'-8	1'-8	
B518	6	#5	18'-5	1	9"	17'-8	—					
B519	15	#5	10'-9 To 22'-4	4	3'-11 To 9'-9	1'-2	2'-8 To 10'-6	1'-0				Increment 5" per bar
B601	48	#6	7'-8	1	2'-3	5'-5	—					
B701	78	#7	4'-9	1	2'-6	2'-3	—					
B1001	6	#10	18'-9	2	17'-3	1'-6				7"	1'-4	
B403	10	#4	10'-2	1	4'-9	8"	4'-9					Pylon reinforcing
B404	8	#4	6'-1	1	2'-9	7"	2'-9					Pylon reinforcing

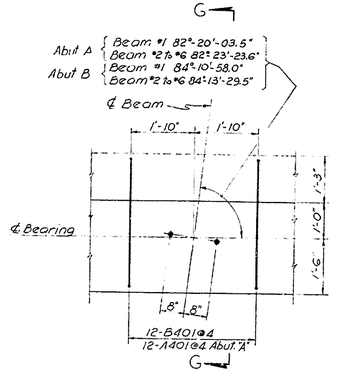
STRAIGHT BARS

MARK	NO	SIZE	LENGTH	REMARKS
B451	8	#4	16'-6	
B452	12	#4	18'-7	
B551	18	#5	17'-6	
B552	15	#5	33'-0	
B553	72	#5	24'-9	
B554	20	#5	18'-7	
B555	2	#5	7'-0	
B556	12	#5	5'-6 To 17'-2	Increment 2'-4" 2 of each
B557	3	#5	31'-3	
B558	2	#5	10'-7	
B559	3	#5	4'-6	
B560	12	#5	5'-4 To 17'-0	Increment 2'-4" 2 of each
B561	3	#5	5'-5	
B562	2	#5	11'-5	
B563	12	#5	5'-7 To 17'-3	Increment 2'-4" 2 of each
B564	2	#5	6'-2	
B565	1	#5	5'-0	
B566	1	#5	13'-3	
B567	1	#5	15'-0	
B651	47	#6	5'-3	
B751	156	#7	17'-8	
B1051	14	#10	17'-6	
B1052	14	#10	35'-0	
B1053	6	#10	28'-3	
B1054	6	#10	24'-0	

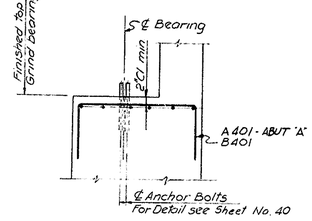
NOTE: All above marks are prefixed by G-5



PLAN



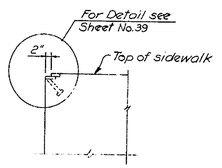
PLAN



SECTION G-G

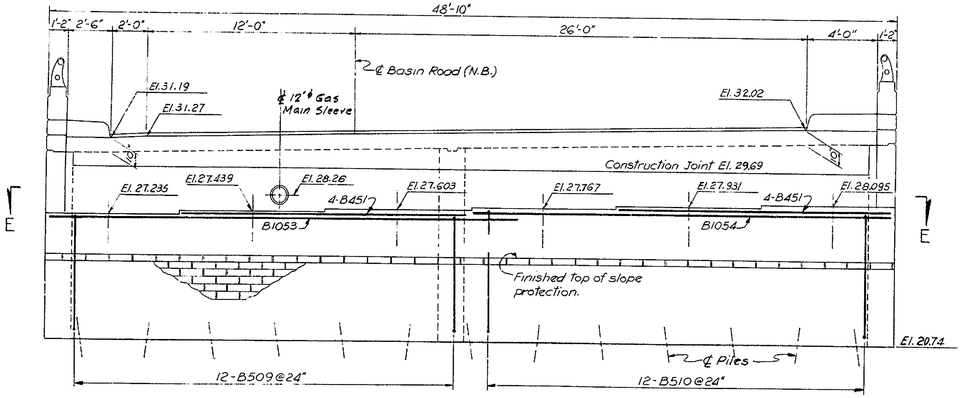
GRILLAGE UNDER BEARING PLATES

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

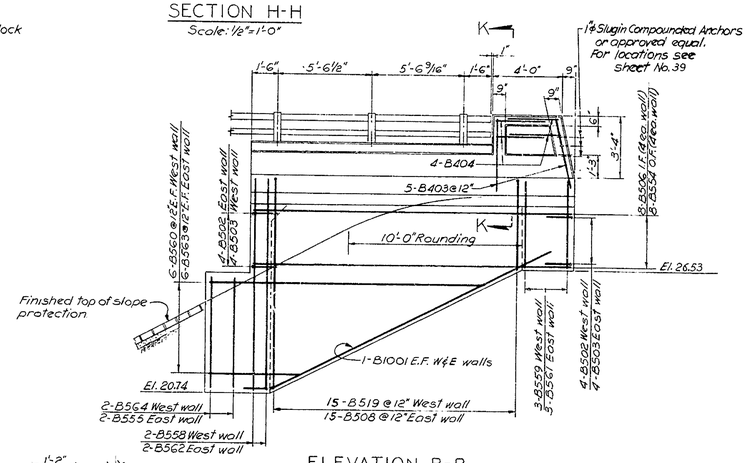


SECTION H-H

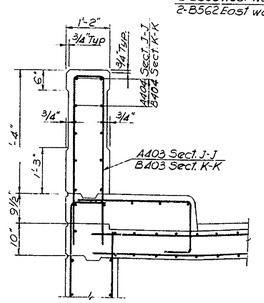
Scale: 1/2" = 1'-0"



ELEVATION A1-A1



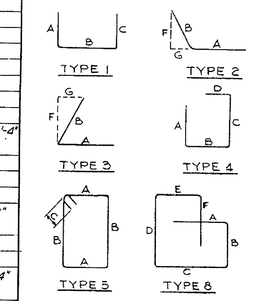
ELEVATION B1-B1



SECTION J-J (See Sheet No. 34)

SECTION K-K

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



NOTES:

1. For sections C-C, D-D, E-E, F-F, Detail "A" see Abutment "A" Sheet No. 34. 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. 36
3. For Railing and Deck Joint details see Sheet No. 39.
4. For slope protection and drainage details see Sheet No. 42
5. For shoe and anchor bolt details see Sheet No. 40
6. Elevations shown at beam bearings are finished top of masonry elevations. See Section G-G.
7. For pile details see Sheet No. 29.
8. For fill under Abutments see Sh. 25.

APPROVED _____ BRIDGE ENGINEER

DELAWARE
STATE HIGHWAY DEPARTMENT

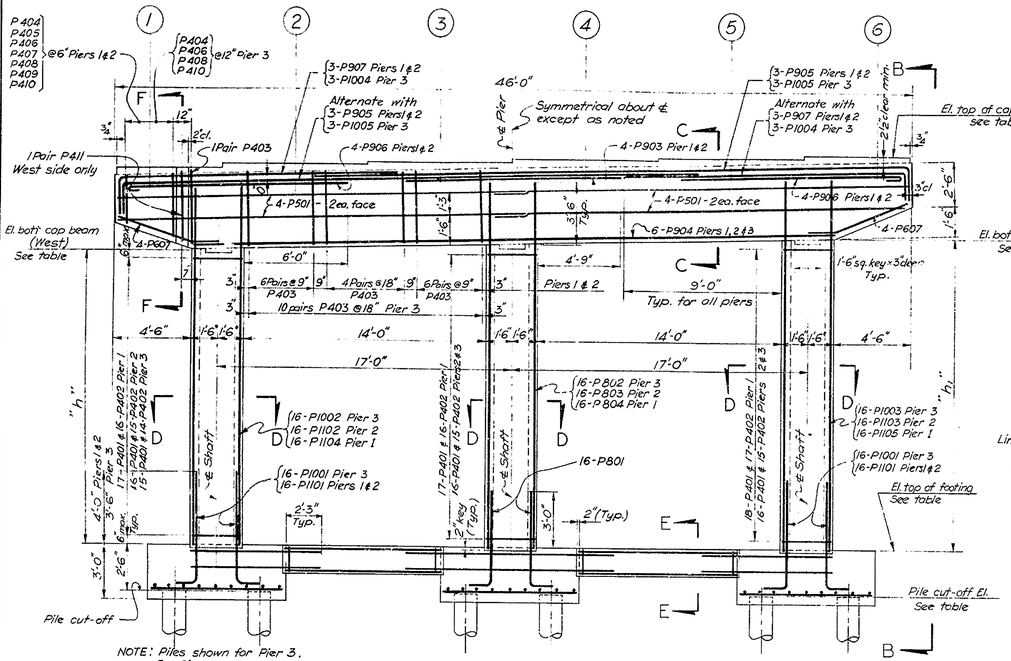
INTERSTATE ROUTE F.A.I.-1(21)-1
CHRISTINA RIVER INTERCHANGE

BASIN ROAD (N.B.) - BRIDGE NO. 6-5
ABUTMENT "B"

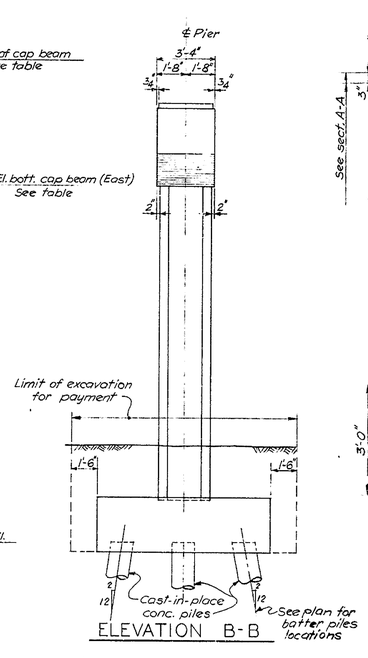
J.E. GREINER CO.
MORAN, PROCTOR, MUESER & RUTLEDGE
CONSULTING ENGINEERS

DESIGNED: S.L.T. CHECKED: G.P.A.M.R. DATE: 12-31-59
DRAWN: R.F. IN CHARGE: A.W.K. SCALE: 1/4" = 1'-0"

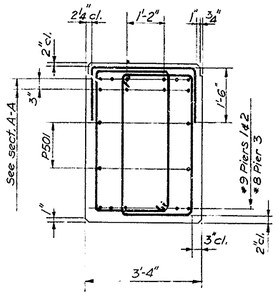
REVISIONS
GRADE
BEARINGS
TIE POINTS
BENCH MARKS
RAILROAD
DRAINAGE



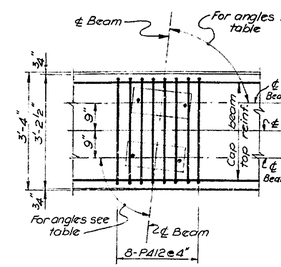
SECTION A-A



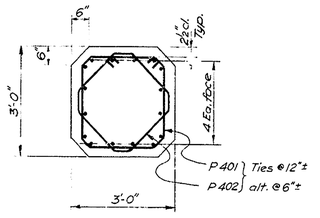
ELEVATION B-B



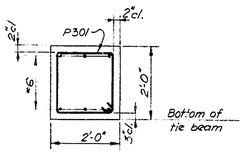
SECTION C-C



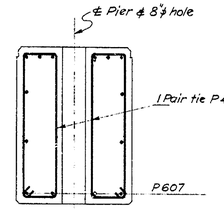
GRILLAGE UNDER BEARING PLATES



SECTION D-D



SECTION E-E



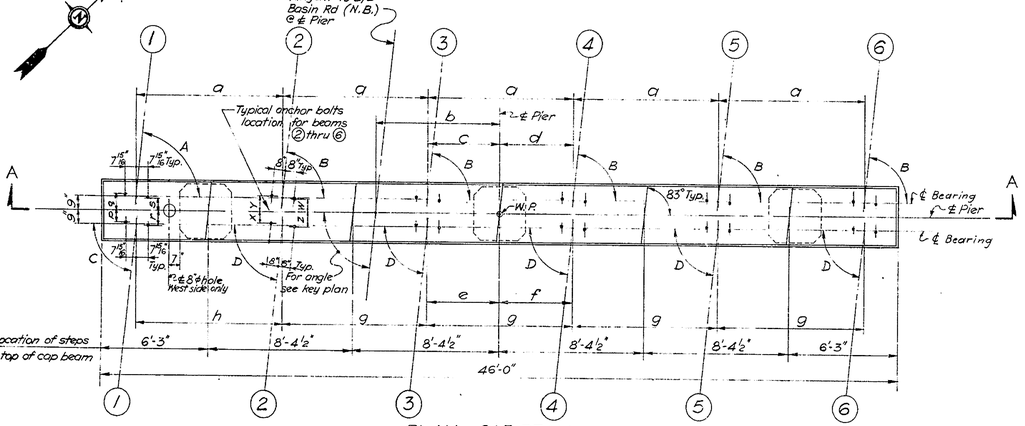
SECTION F-F

ANGLE & DIMENSION VALUES FOR PLAN OF CAP BEAM			
	PIER 1	PIER 2	PIER 3
Angle A	83°00'46"	83°44'03"	84°10'58"
" B	83°03'48"	83°46'46"	84°13'30"
" C	83°20'04"	83°00'46"	83°44'03"
" D	82°23'24"	83°03'48"	83°46'46"
Dimension a	8'-4 7/16"	8'-4 1/4"	8'-4 1/8"
" b	6'-9 11/16"	6'-9 9/16"	6'-9 1/2"
" c	4'-1 1/16"	4'-1 1/16"	4'-1 1/8"
" d	4'-3 3/8"	4'-3 3/16"	4'-3"
" e	4'-3 5/8"	4'-3 3/4"	4'-3 7/8"
" f	4'-0 7/8"	4'-0 11/16"	4'-0 5/8"
" g	8'-4 1/2"	8'-4 7/16"	8'-4 1/4"
" h	8'-4 3/8"	8'-3 1/2"	8'-3 3/4"

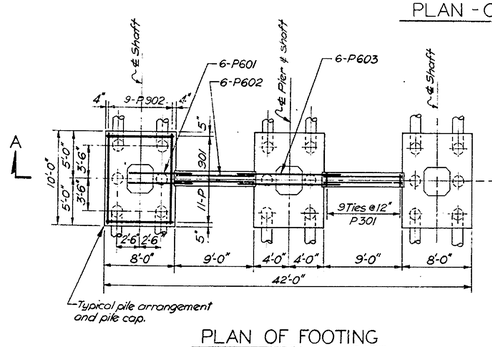
ELEVATIONS & HEIGHTS OF PIERS			
	PIER 1	PIER 2	PIER 3
El. ①	30.668	28.903	27.903
El. ②	30.872	29.106	28.334
El. ③	31.037	29.270	28.498
El. ④	31.202	29.434	28.662
El. ⑤	31.366	29.598	28.826
El. ⑥	31.531	29.762	28.762
El. bott. of cap beam (West)	26.380	24.615	23.615
-"- (East)	27.183	25.414	24.414
El. top of footing	9.713	9.448	8.865
Pile cut-off El.	7.213	6.948	6.365
Dimension "h"	16'-8"	15'-2"	14'-9"
Dimension "h1"	17'-5 5/8"	15'-11 5/8"	15'-6 5/8"

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

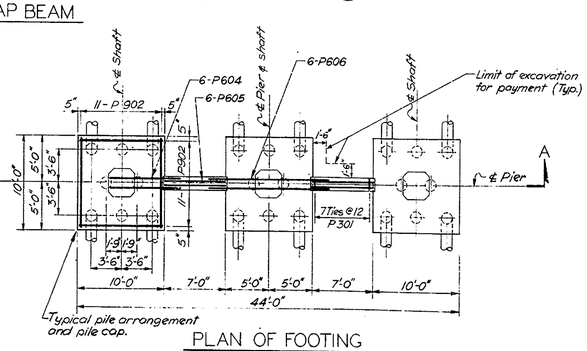
ANCHOR BOLT LOCATIONS			
	PIER 1	PIER 2	PIER 3
Y	9 15/16"	9 3/8"	9 13/16"
X	7 15/16"	8 1/16"	8 1/8"
Z	10 1/16"	9 15/16"	9 7/8"
W	8 1/16"	8 1/8"	8 3/16"
P	7 15/16"	8"	8 1/8"
q	10"	9 3/8"	9 13/16"
r	10 1/16"	10"	9 7/8"
S	8"	8 1/8"	8 3/16"



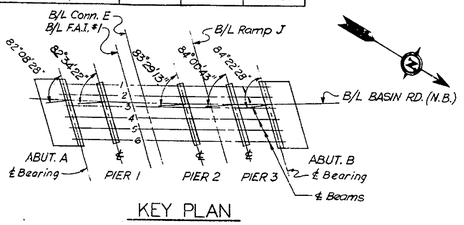
PLAN - CAP BEAM



PLAN OF FOOTING
PIER 3



PLAN OF FOOTING
PIER 1 & 2



KEY PLAN

NOTES

1. For General Notes see sheet 27
2. Angles given on key plan are to local tangent of B/L Basin Road (N.B.)
3. For shoe and anchor bolt details see sheet 40
4. For drainage details see sheets 41 & 42
5. For pile details see Sheet No 29

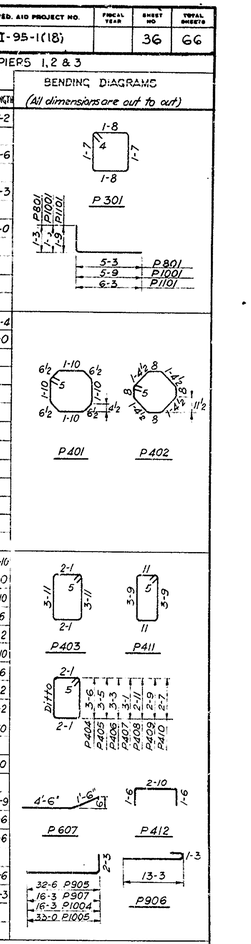
APPROVED _____ BRIDGE ENGINEER

COUNTY	CONTRACT	F. A. or REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE	I-1(21)1	2	DEL.	I-95-1(18)		36	66

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	P501	1,2,3	46	#3	7-2
	P602	3	12		9-0					
	P603	3	6		12-6	P801	1,2,3	48	#8	6-6
	P604	1,2	24		8-9					
	P605	1,2	24		7-0	P1001	3	32	#10	7-3
	P606	1,2	12	#6	14-6					
						P1101	1,2	64	#11	8-0
	P901	3	33	#9	7-6					
	P902	1,2,3	159	#9	9-6					
SHAFT	P802	3	16	#8	19-0	P401	1,2,3	147	#4	10-4
	P803	2	16	#8	19-3	P402	1,2,3	138	#4	9-0
	P804	1	16	#8	19-9					
	P1002	3	16	#10	18-6					
	P1003	3	16	#10	19-3					
	P1102	2	16	#11	19-0					
	P1103	2	16	#11	19-9					
	P1104	1	16	#11	20-3					
	P1105	1	16	#11	21-3					
CAP BEAM	P501	1,2,3	24	#5	23-8	P403	1,2,3	180	#4	2-10
						P404	1,2,3	12		12-0
						P405	1,2	8		11-10
						P406	1,2,3	12		11-6
	P903	1,2	8	#9	12-6	P407	1,2	8		11-2
	P904	1,2,3	18	#9	37-0	P408	1,2,3	12		10-10
						P409	1,2	8		10-6
						P410	1,2,3	12		10-2
						P411	1,2,3	6		10-2
						P412	1,2,3	144	#4	5-10
						P607	1,2,3	24	#6	6-0
	P905	1,2	12	#9	34-9					
	P906	1,2	16	#9	14-6					
	P907	1,2	12	#9	18-6					
	P1004	3	6	#10	18-6					
	P1005	3	6	#10	35-3					

BENDING DIAGRAMS (All dimensions are out to out)



NOTE: All above marks are prefixed by 6-5

DELAWARE STATE HIGHWAY DEPARTMENT
INTERSTATE ROUTE F.A.I.-1 (21)-1 CHRISTINA RIVER INTERCHANGE
BASIN ROAD (N.B.) - BRIDGE NO. 6-5 PIERS 1, 2 & 3
J. E. GREINER CO. MORAN, PROCTOR, MUESER & RUTLEDGE CONSULTING ENGINEERS
DESIGNED: J.J. CHECKED: W.J.A. DATE: 12-31-59
DRAWN: P.C. IN CHARGE: J.W.K. SCALE: 1/4" = 1'-0"

REVISIONS

BEARINGS
TIE POINTS
BENCH MARKS
EARTHWORK
DRAINAGE

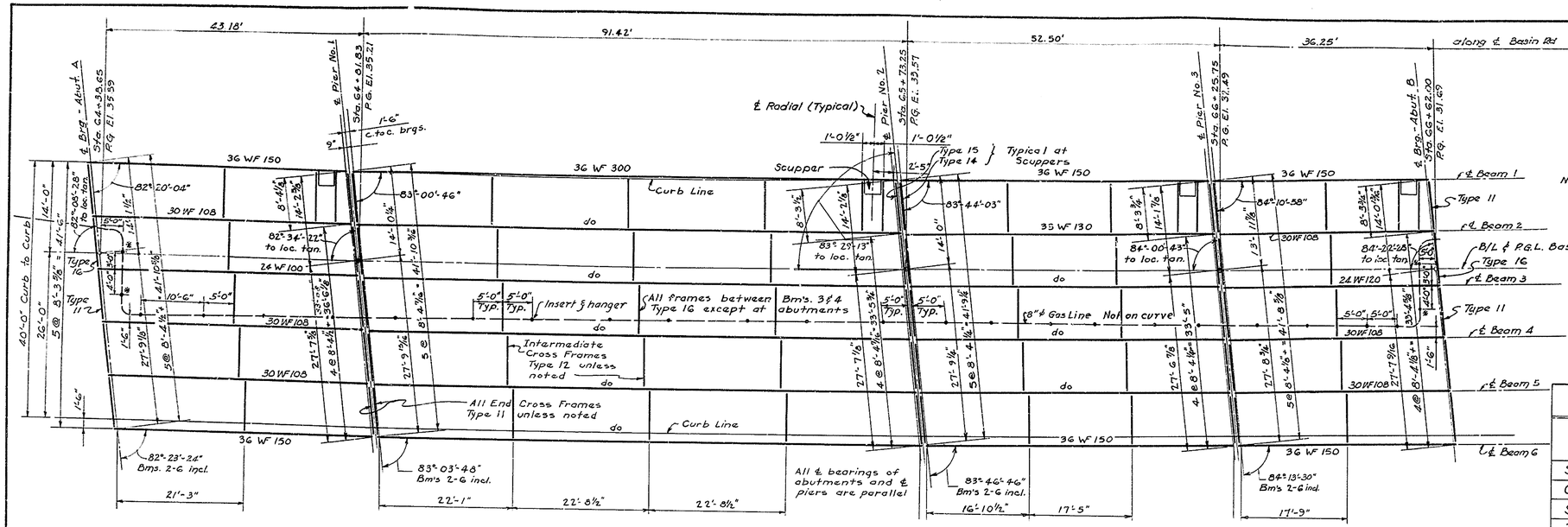
COUNTY	CONTRACT	P.M.A. REG. NO.	STATE	FED. A.D. PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE	I-1(21)-1	2	DEL.	I-95-1(18)		37	66

	MADE BY	CHECKED BY
DESIGN	M.E.P.	R.L.N.
DRAWING	B.L.M.	R.L.N.
TRACING	B.L.M. & J.M.K.	C.W.& J.M.K.
QUANTITIES	M.E.P. & F.E.W.	C.W.& J.M.K.
IN CHARGE	M.E.P.	

CHECKED
GRADE
ALIGNMENT
TIE POINTS
BENCH MARKS
EARTHWORK
DRAINAGE

REVISIONS

Distribution 33-6-6 - 2 Reproducibles



SPAN 1 SPAN 2 SPAN 3 SPAN 4

FRAMING PLAN
1" = 10'

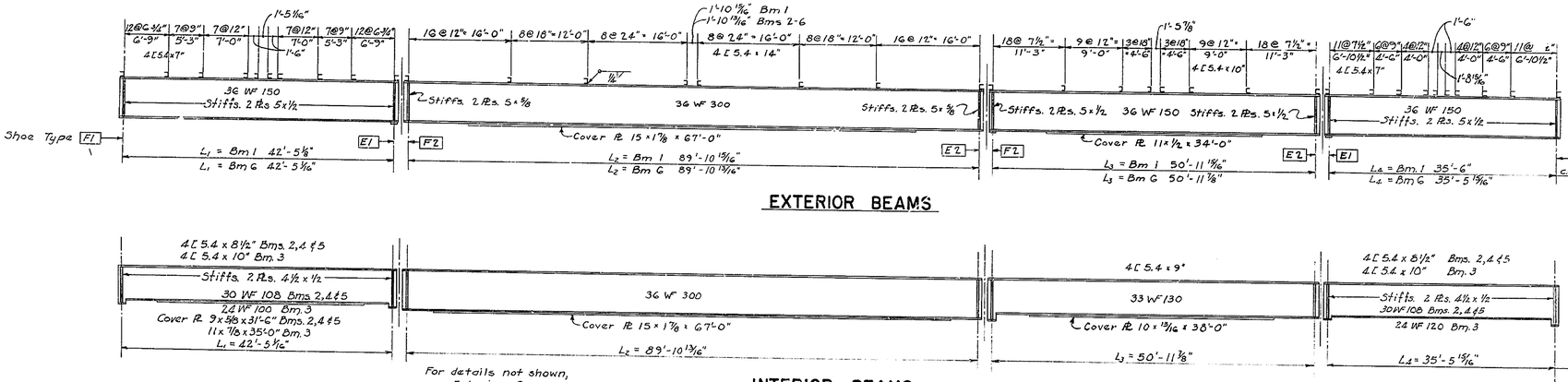
Note: See Sheets No. 34 & 35 for location of 8"ϕ Gas Line through Abutments A & B.
Use Standard Hangers for Gas Main at all points except where noted as swivel Hangers (*). See D.P.&L. Print # 3-56-2235-P

BEARING FILL HEIGHTS AT SHOES			
Location	Beams 1 & 6	Beams 2, 4 & 5	Beam 3
Abutment A	—	6" *	11 5/16" *
Pier 1 - Span 1	1 7/16"	7 3/16" *	13" *
Pier 2 - Span 3	2 1/16"	5" *	5" *
Pier 3 - Span 4	1 3/8"	4 5/8" *	10 1/8" *
Abutment B	—	6" *	11 1/2" *

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

CAMBER INCREMENTS FOR DEAD LOADS (INCHES) (VERTICAL CURVE)

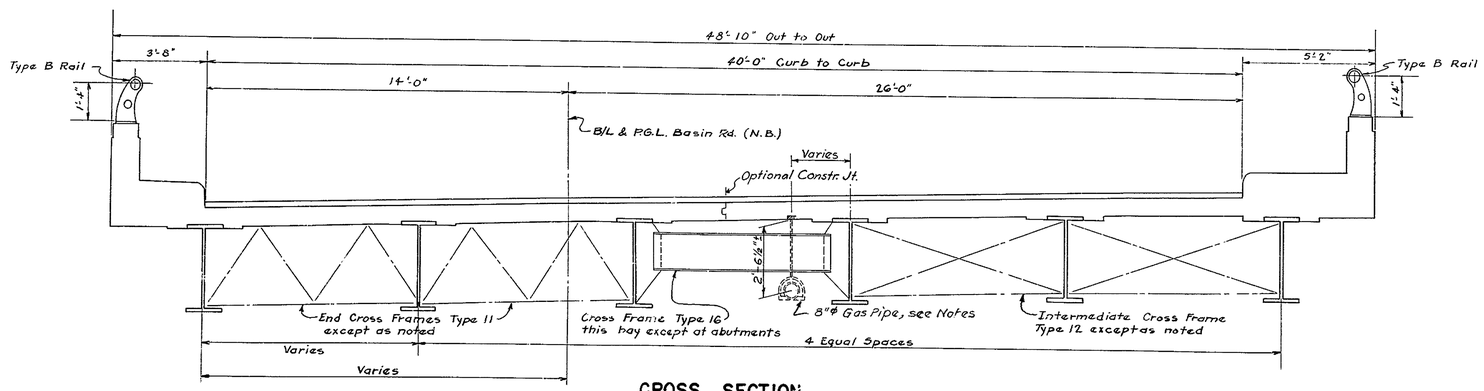
	SPAN 1				SPAN 2		SPAN 3				SPAN 4			
	Bms. 1 & 6		Bms. 2, 3, 4 & 5		Bms. 1 to 6		Bms. 1 & 6		Bms. 2, 3, 4 & 5		Bms. 1 & 6		Bms. 2, 3, 4 & 5	
	¼ L1	½ L1	¼ L1	½ L1	¼ L2	½ L2	¼ L3	½ L3	¼ L3	½ L3	¼ L4	½ L4	¼ L4	½ L4
Structural Steel	1/16	1/16	1/16	1/16	9/16	3/4	1/16	1/8	1/16	1/8	–	–	1/16	1/16
Concrete Deck Slab	1/8	3/16	1/4	3/8	1	1 7/16	5/16	3/8	3/8	1/2	1/8	1/8	3/16	3/16
Sidewalk and Parapet	1/16	1/16	1/16	1/16	1/4	3/8	1/16	1/8	1/16	1/16	–	–	–	1/16
2" Wearing Surface	–	–	–	–	3/16	1/4	–	–	–	1/16	–	–	–	–
Full Dead Load	1/4	5/16	3/8	1/2	2	2 13/16	7/16	5/8	1/2	3/4	1/8	1/8	1/4	5/16
Vertical Curve	1/16	1/8	1/16	1/8	5/16	7/16	1/8	1/8	1/8	1/8	1/16	1/16	1/16	1/16
Total Camber at ½ Ln	Natural Camber Place Up		5/8"		3 1/4"		3/4"		7/8"		Natural Camber Place Up		Natural Camber Place Up	



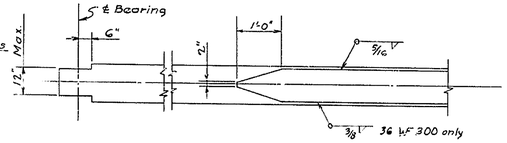
EXTERIOR BEAMS

For details not shown, see Exterior Beam

INTERIOR BEAMS



CROSS SECTION
⅜" = 1'-0"



BOTTOM FLANGE DETAIL
⅜" = 1'-0"

Notes:
For General Notes, see Sheet No. 27
For cross frames, end dams, and bridge railing, see Superstructure Details sheet No. 39
For shoes, see Bearing Details sheet No. 40
For scuppers, see Scupper Details sheet No. 41
For details of 8"ϕ Gas Line, inserts, hangers and pipe see Delaware Power & Light Co. drawings and Special Provisions.

APPROVED _____ BRIDGE ENGINEER

DELAWARE STATE HIGHWAY DEPARTMENT

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

BASIN ROAD (N.B.)- BRIDGE NO. 6-5

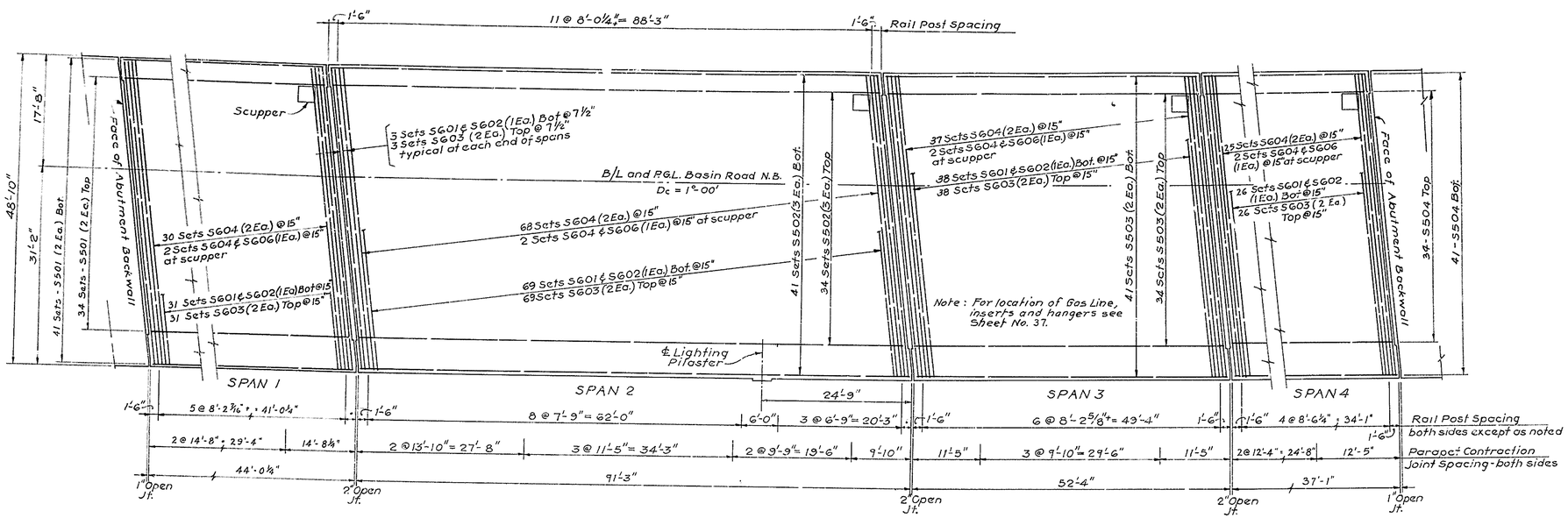
SUPERSTRUCTURE - FRAMING

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

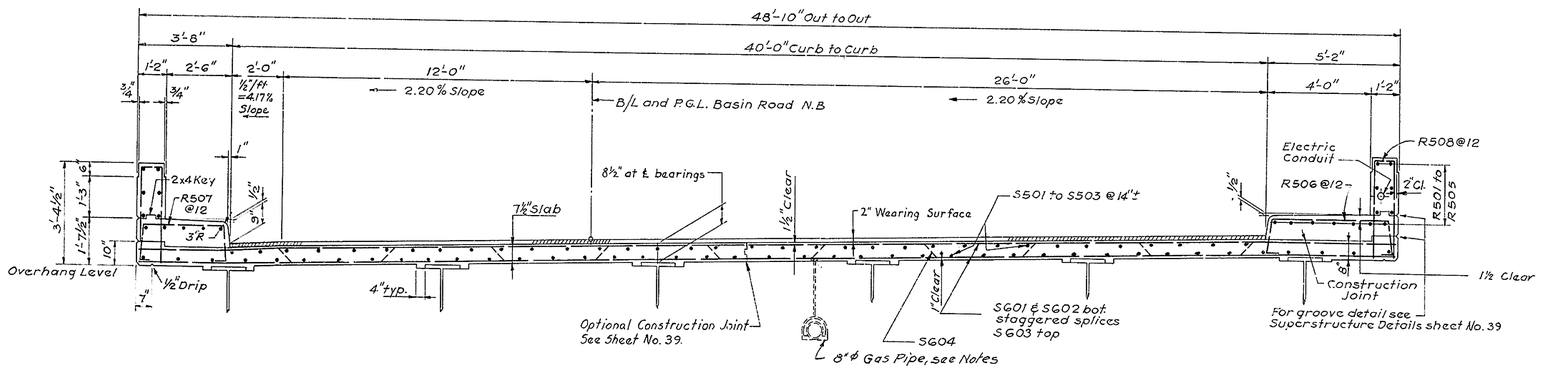
DESIGNED:..M.E.P.. CHECKED:..R.L.N.. DATE:..12-31-59...
DRAWN:....B.L.M.. IN CHARGE:..B.W.L.. SCALE:..As Shown

"Imperial" 156 W. B. & E.

COUNTY	CONTRACT	F.A.P. RES. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE	I-1(21)-1	2	DEL.	I-95-1(18)		38	66



DECK PLAN



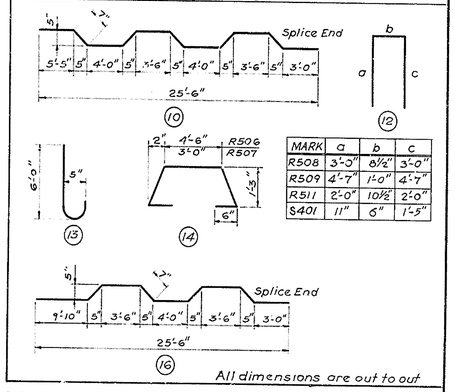
TYPICAL SECTION

3/8" = 1'-0"

REINFORCING SCHEDULE

Loc.	Mark*	Number Required Span 1	Span 2	Span 3	Span 4	Length	Total Weight	Type
Deck	S601	37	75	44	32	30'-0"		Str.
	S602	37	75	44	32	21'-0"		Str.
	S603	74	150	88	64	25'-6"		Str.
	S604	62	138	76	52	26'-4"		10
	S606(a)	2	2	2	2	26'-2"		16
	S607(a)	6	6	6	6	6'-0"		Str.
	S501	150	–	–	–	22'-5"		Str.
	S502	–	225	–	–	31'-2"		Str.
	S503	–	–	150	–	26'-8"		Str.
	S507(a)	3	3	3	3	6'-5"		13
	S504	–	–	–	75	36'-1"		Str.
	S401(b)	–	4	–	–	2'-10"		12
	S402(b)	–	2	–	–	2'-6"		Str.
Sidewalk and Parapet	R501	–	72	48	–	10'-11"		Str.
	R502	–	48	–	–	13'-4"		Str.
	R503	–	72	72	–	9'-4"		Str.
	R506	45	92	53	38	8'-0		14
	R507	45	92	53	38	6'-6"		14
	R508	90	181	106	76	6'-8½"		12
	R509(b)	–	4	–	–	10'-2"		12
	R511(b)	–	4	–	–	4'-10½"		12
	R504	–	–	–	72	11'-9"		Str.
	R505	72	–	–	–	14'-2"		Str.
					TOTAL WEIGHT		72,274	lbs.

Bending Diagrams



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. 41)

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. 27

For railing details, roadway and sidewalk dams, see Superstructure Details sheet. No. 39

For details of roadway slab construction joints and parapet contraction joints, see Superstructure Details Sh. No. 39

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

For details of 8" ϕ Gas Line, inserts, hangers and pipe see Delaware Power & Light Co. drawings and Special Provisions.

APPROVED _____ BRIDGE ENGINEER

DELAWARE
STATE HIGHWAY DEPARTMENT

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

BASIN ROAD (N.B.) - BRIDGE NO. 6-5
SUPERSTRUCTURE - DECK

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

DESIGNED: R.L.N. CHECKED: R.L.N. DATE: 12-31-59
DRAWN: A.J.S. IN CHARGE: B.W.L. SCALE: As Shown

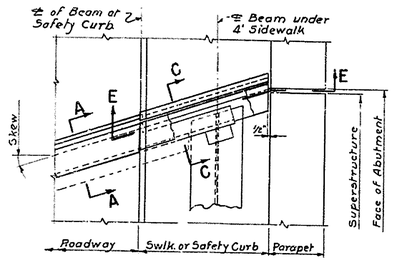
DESIGN R.L.N. & J.I.K.
DRAWING A.J.S. & J.I.K. R.L.N.
TRACING J.I.K. E.D.R.
QUANTITIES B.W.L.

GRADE
BEARINGS
TIE-DOWNS
BENCH MARKS
EARTHWORK
DRAINAGE

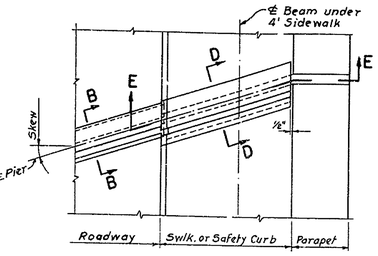
REVISIONS

"Imperial" 156 W. B. & E.

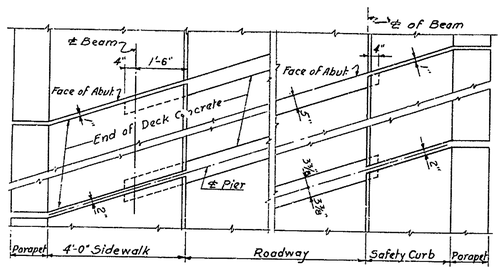
COUNTY	CONTRACT	F.A. REG. NO	STATE	FED. AID PROJECT NO	FISCAL YEAR	SHEET NO	TOT. SH.
NEWCASTLE	I-1(21)-1	2	DEL.	I-95-1(18)		39	66



AT ABUTMENTS

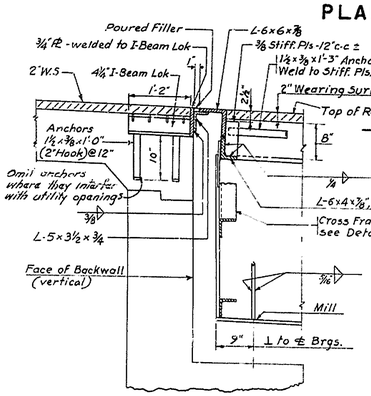


AT PIERS

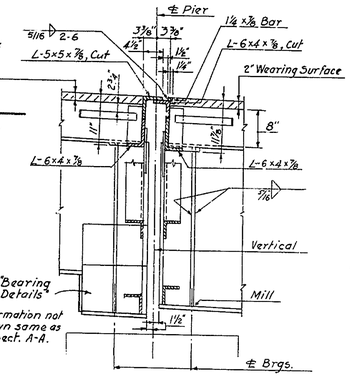


VIEW F-F

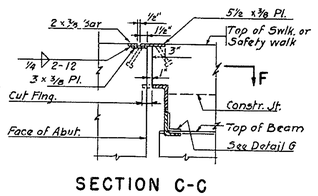
PLANS



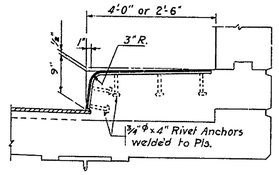
SECTION A-A



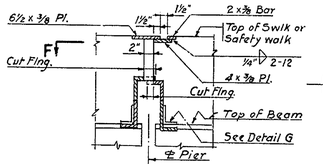
SECTION B-B



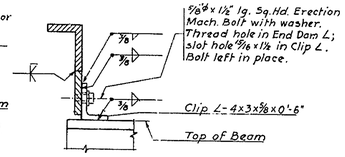
SECTION C-C



SECTION E-E

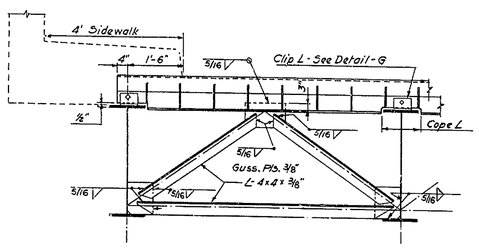


SECTION D-D

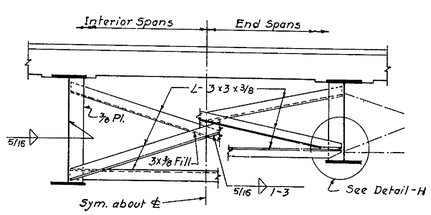


DETAIL-G
Scale: 1½"=1'-0"

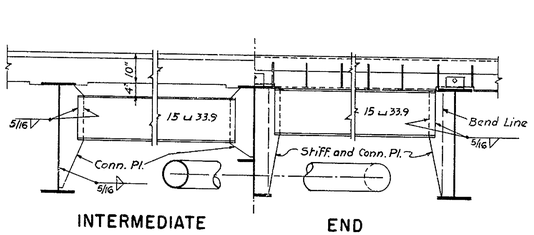
ROADWAY AND SIDEWALK DAMS
Scale: ¾"=1'-0"



END - TYPES 10 & 13

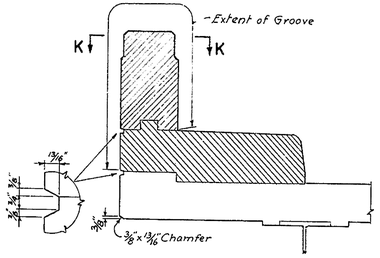


INTERMEDIATE - TYPE 12

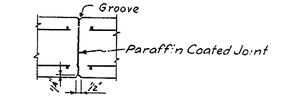


INTERMEDIATE END

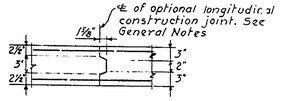
TYPE 16



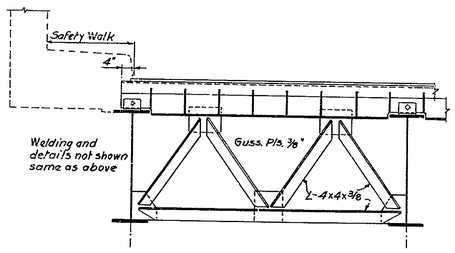
PARAPET CONTRACTION JOINT
Scale: ¾"=1'-0"



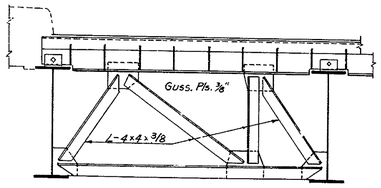
SECTION K-K



SLAB CONSTRUCTION JOINT
Scale: ¾"=1'-0"



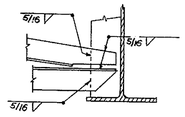
END - TYPES 11 & 14



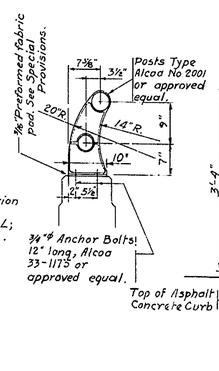
END - TYPE 15

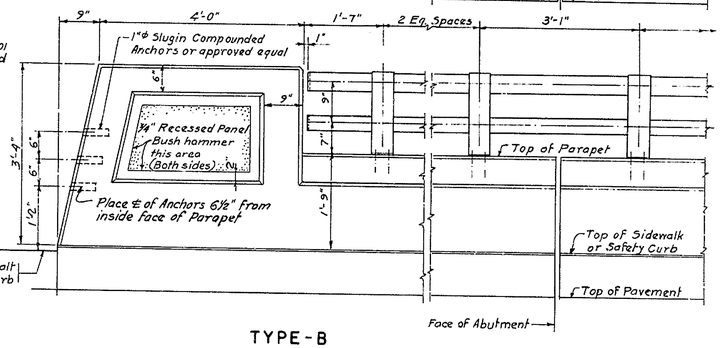
CROSS FRAMES
Scale: ½"=1'-0"

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



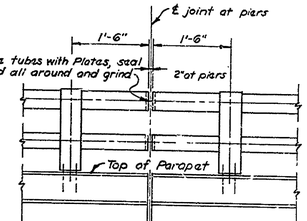
DETAIL-H
Scale: 1"=1'-0"





TYPE-B

RAILING
Scale: ¾"=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.

APPROVED _____ BRIDGE ENGINEER

DELAWARE
STATE HIGHWAY DEPARTMENT

INTERSTATE ROUTE F.A.I.-1(21)-1
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: 12-31-56
DRAWN: U.C. IN CHARGE: D.W.L. SCALE: As noted

CHECKED
GRADE
BEARINGS
TIE POINTS
BENCH MARKS
EARTHWORK
DRAINAGE

REVISIONS

"Imperial" 136 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)-1	2	DEL.	I-95-1(18)		40	66

TYPE F1

TYPE F2

FIXED SHOES
1½" = 1'-0"

SOLID FILL
1½" = 1'-0"

TYPE E1

TYPE E2

EXPANSION SHOES
1½" = 1'-0"

STOOL
1" = 1'-0"

BEARING FILLS

ANCHOR BOLT DETAILS
1½" = 1'-0"

NOTES:

Corners of masonry plates shall be cut where necessary to provide a minimum of 3¾" 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. 27

CHECKED
GRADE
BEARINGS
TIE POINTS
BENCH MARKS
EARTHWORK
DRAINAGE

REVISIONS

APPROVED J. M. Fox BRIDGE ENGINEER

DELAWARE
STATE HIGHWAY DEPARTMENT

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

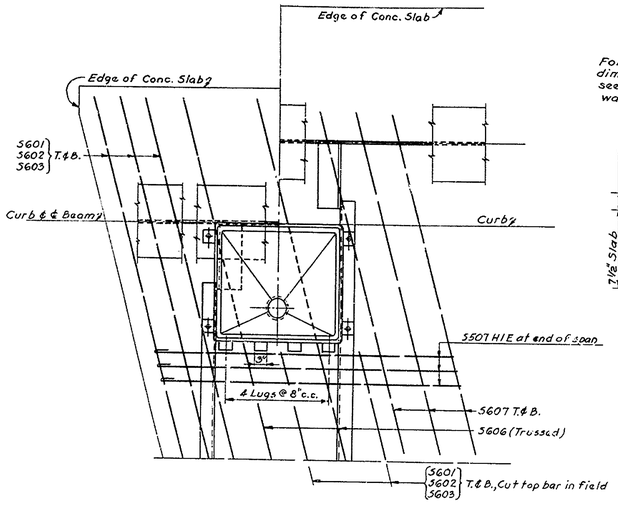
BASIN ROAD
BEARING DETAILS

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

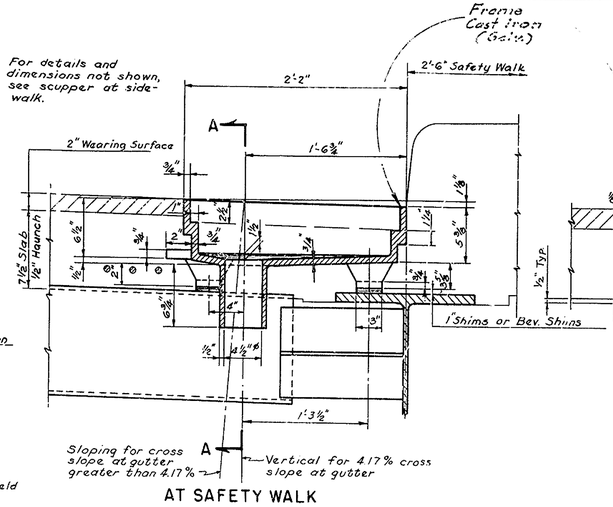
DESIGNED: S.J.S., F.F.W. CHECKED: F.F.W. DATE: 12-31-59
DRAWN: W.V.W. IN CHARGE: B.W.L. SCALE: As Shown

"Imperial" 156 W. B. & E.

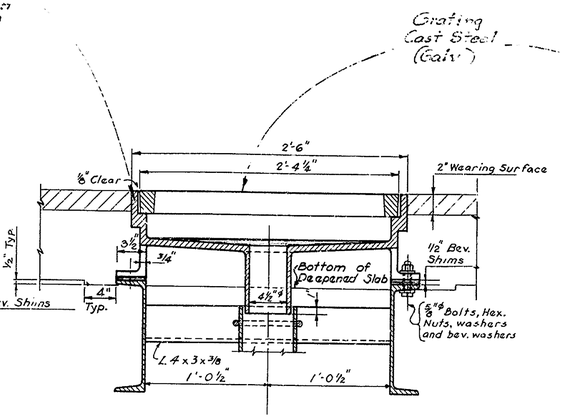
COUNTY	CONTRACT	P. R. & REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO	TOTAL SHEETS
NEW CASTLE	I-1(21)-1	2	DEL.	I-95-1(18)		41	66



PLAN
3/4" = 1'-0"

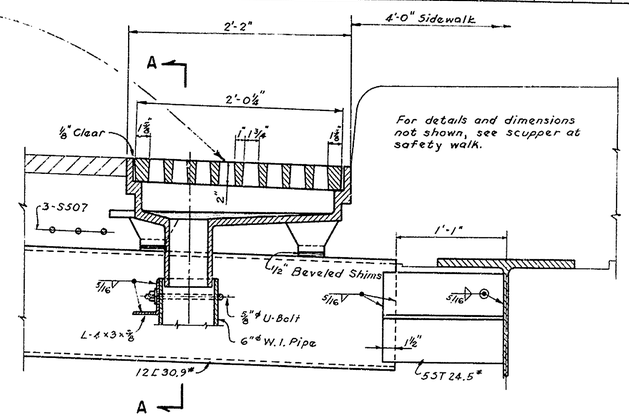


AT SAFETY WALK



SECTION A-A

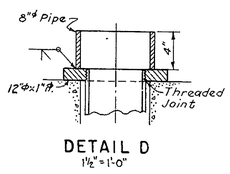
SCUPPERS
1 1/2" = 1'-0"



AT SIDEWALK

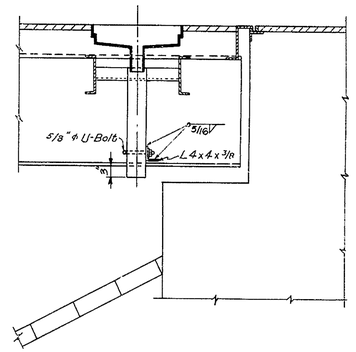
AT SAFETY WALK - PIERS

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. 27

All Gratings to be cast steel in accordance with A.S.T.M. A27-58 Grade 65-35.

All drain pipe to be 6"ø W.I., standard weight galvanized

Pipe supports shall be spaced 12' maximum.

For details of pipe outlet and pipe supports, see Slope Protection and Drainage Details sheet No. 42

All frames to be iron castings, conforming to A.S.T.M. Designation: A48-58, Class No 30. See Spec. Provs.

APPROVED _____ BRIDGE ENGINEER

DELAWARE
STATE HIGHWAY DEPARTMENT

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

BASIN ROAD
SCUPPER DETAILS

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

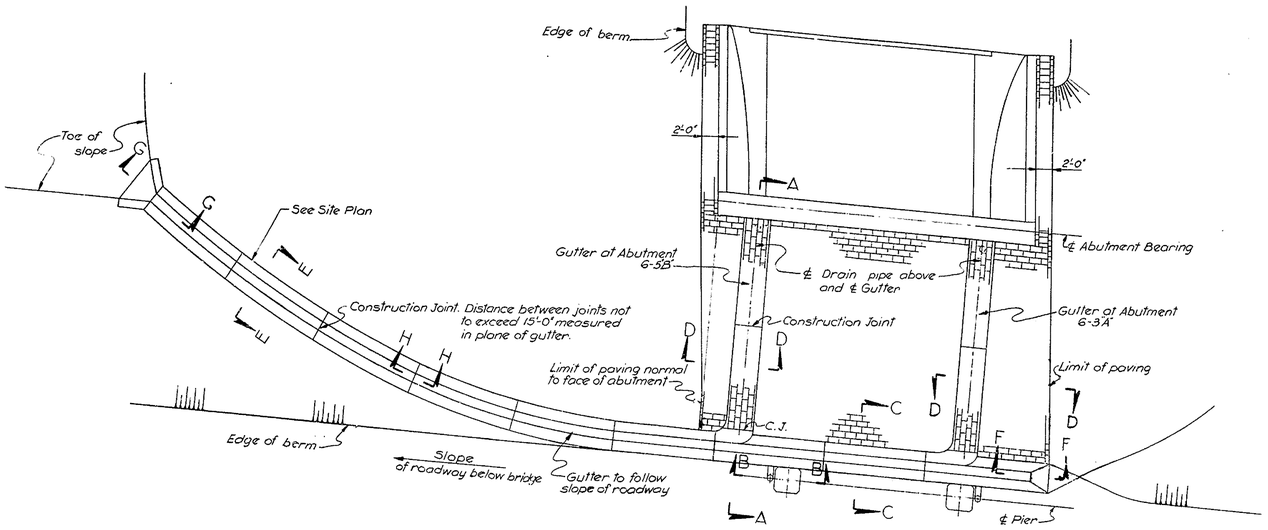
DESIGNED: U.C. CHECKED: A.L.N. DATE: 12-5-58
DRAWN: W.W.W. IN CHARGE: A.W.L. SCALE: As Shown

CHECKED
GRADE
BEARING
TIE POINTS
BENCH MARKS
EARTHWORK
DRAINAGE

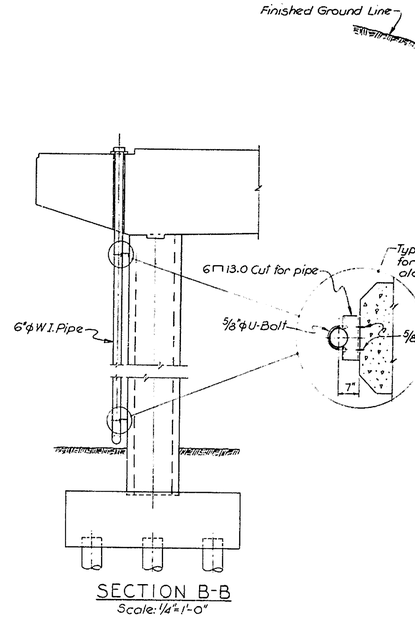
REVISIONS
4/Scupper Note, etc. as directed Asst. Engr. 1-2-59

"Imperial" 156 W. B. & E.

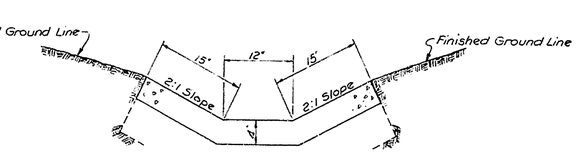
COUNTY	CONTRACT	F. A. A. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE	I-1(21)-1	2	DEL.	I-95-1(18)		42	66



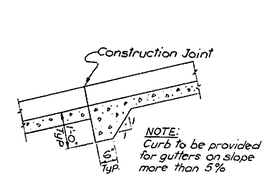
PLAN
Scale: 1/8"=1'-0"



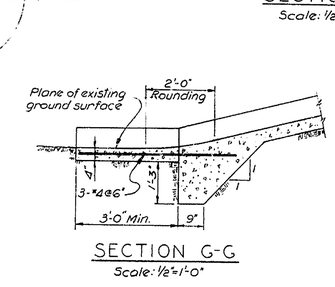
SECTION B-B
Scale: 1/4"=1'-0"



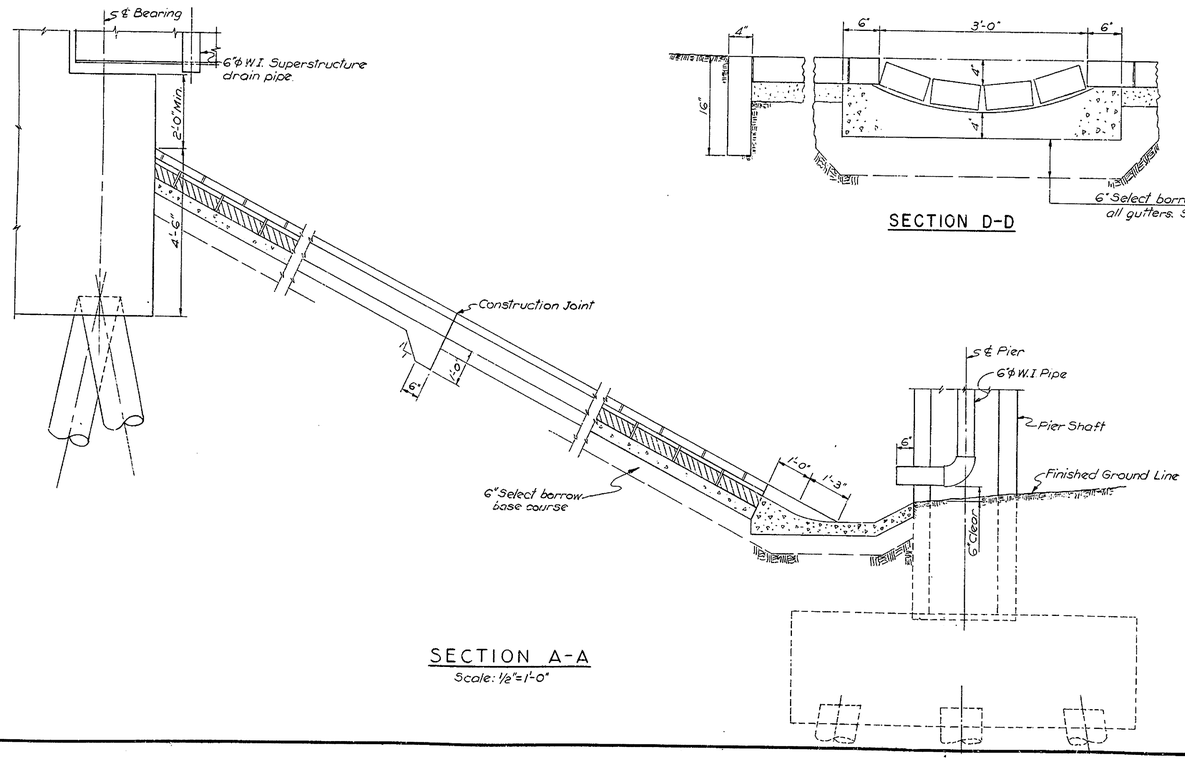
SECTION E-E
Scale: 1/2"=1'-0"



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

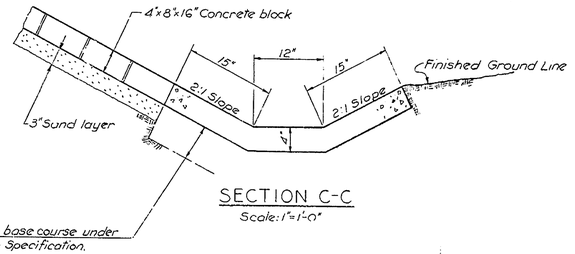


SECTION G-G
Scale: 1/2"=1'-0"

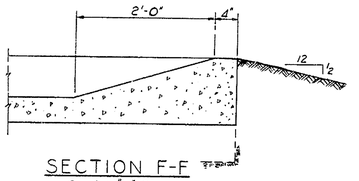


SECTION A-A
Scale: 1/2"=1'-0"

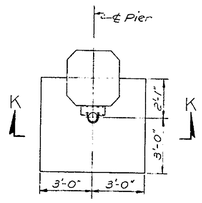
SECTION D-D



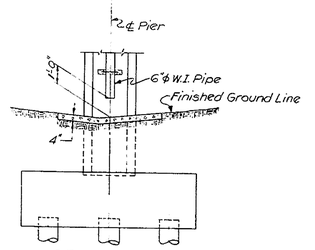
SECTION C-C
Scale: 1"=1'-0"



SECTION F-F
Scale: 1"=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
6-3	2 & 3	West Shaft only
6-5	2	West Shaft only

NOTES:

1. For General Notes see Sheet No 27
2. For lengths and locations of concrete gutters see Site Plans for Bridges No's. 6-3 and 6-5
3. For locations of drain pipes see Superstructure - Framing for Bridges Nos. 6-3 and 6-5
4. For details of drain pipes see Sheet No. 41

APPROVED J. M. Fox BRIDGE ENGINEER

DELAWARE
STATE HIGHWAY DEPARTMENT

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

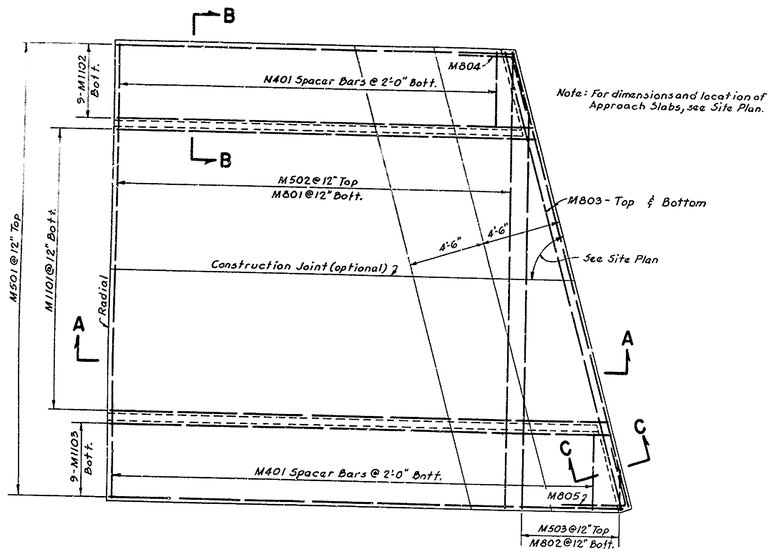
BASIN ROAD - BRIDGE NOS. 6-3 & 6-5
SLOPE PROTECTION & DRAINAGE DETAILS

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

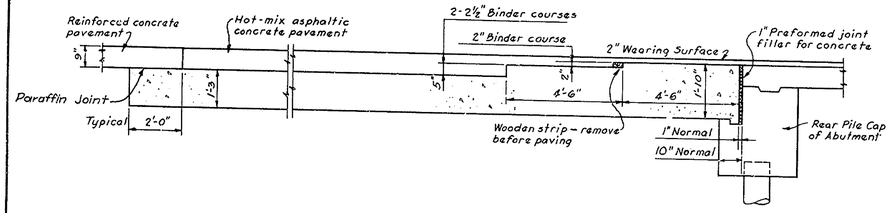
DESIGNED: W.T.A. CHECKED: M.A.S. DATE: 12-21-59
DRAWN: F.F. IN CHARGE: L.W.K. SCALE: AS SHOWN

REVISIONS
BEARINGS
TIE POINTS
BENCH MARKS
EARTHWORK
DRAINAGE

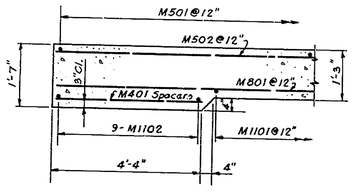
COUNTY	CONTRACT	F. A. P. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE	I-1(21)-1	2	DEL.	I-95-1(18)		43	66



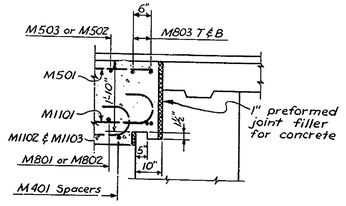
DECK PLAN
No Scale



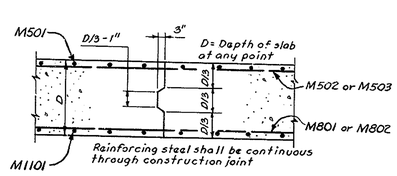
SECTION A-A
⅜" = 1'-0"



SECTION B-B
½" = 1'-0"



SECTION C-C
½" = 1'-0"

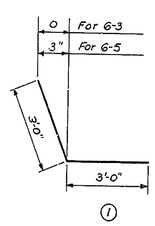


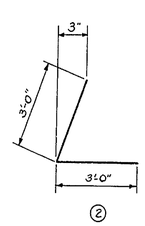
LONGITUDINAL CONSTRUCTION JOINT DETAIL
No Scale

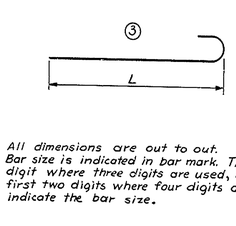
Note: Clear distance from face of concrete to reinforcing steel shall be 2" except on bottom where it shall be 3".

REINFORCING SCHEDULE

		BRIDGE NO. 6-3						BRIDGE NO. 6-5					
		ABUTMENT "A"			ABUTMENT "B"			ABUTMENT "A"			ABUTMENT "B"		
Mark	Type	Number Required	Length	L	Number Required	Length	L	Number Required	Length	L	Number Required	Length	L
M1101	③	31	Varies 26'-0" to 26'-6"	Varies 24'-5" to 24'-11"	31	Varies 26'-0" to 27'-0"	Varies 24'-3" to 25'-5"	31	Varies 24'-0" to 26'-4"	Varies 22'-5" to 26'-5"	31	Varies 24'-8" to 27'-8"	Varies 23'-1" to 26'-1"
M1102	③	9	25'-11"	24'-4"	9	25'-7"	24'-0"	9	Varies 23'-4" to 24'-0"	Varies 21'-9" to 22'-5"	9	Varies 24'-3" to 24'-8"	Varies 22'-6" to 23'-1"
M1103	③	9	26'-6"	24'-11"	9	27'-1"	25'-6"	9	Varies 26'-4" to 29'-0"	Varies 26'-9" to 27'-5"	9	Varies 27'-8" to 28'-1"	Varies 26'-1" to 26'-6"
M801	St.	26	39'-8"		26	39'-8"		24	39'-8"		24	39'-8"	
M802	"							4	Varies 2'-0" to 30'-3"		4	Varies 2'-0" to 30'-3"	
M803	St.	2	39'-9"		2	39'-9"		4	40'-1"		4	40'-1"	
M804	①	4	6'-0"		4	6'-0"		4	6'-0"		4	6'-0"	
M805	②							4	6'-0"		4	6'-0"	
M501	St.	41	Varies 24'-4" to 25'-0"		41	Varies 24'-0" to 25'-7"		41	Varies 21'-9" to 27'-5"		41	Varies 22'-8" to 26'-6"	
M502	"	26	39'-8"		26	39'-8"		24	39'-8"		24	39'-8"	
M503	"							4	Varies 2'-0" to 30'-3"		4	Varies 2'-0" to 30'-3"	
M401	St.	28	4'-2"		28	4'-2"		27	4'-2"		27	4'-2"	
TOTAL WEIGHT-LBS.				12,065			12,114			12,270			12,270







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.

APPROVED _____ BRIDGE ENGINEER

DELAWARE STATE HIGHWAY DEPARTMENT

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

BASIN ROAD (N.B.) APPROACH SLABS

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

DESIGNED: J.W.H. CHECKED: J.W.H. DATE: 12-31-59
DRAWN: W.W.W. IN CHARGE: D.W.L. SCALE: As Shown

CHECKED
GRADE
BEARINGS
TIE POINTS
BENCH MARKS
ELEVATIONS
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
NEWCASTLE	I-1(21)-1	2	DEL.	I-95-1(18)		44	66

DESIGN R.C.C. & J.W.H. — H.F.M. & C.B.M.
DRAWING H.F.M. & E.D.R.
TRACING H.F.M. & E.D.R. — J.W.H. & J.W.H.
QUANTITIES H.F.M. & J.W.H. — J.W.H. & C.B.M.
IN CHARGE B.W.L. & B.W.L.

GRADE
BEARINGS
TIE POINTS
BENCH MARKS
EARTHWORK
DRAINAGE

REVISIONS
B-501 WAS 9'8"-11'7", B-504 WAS 9'9"-11'10", C-504 WAS 14'11", C-509 WAS 14'11"
D-503 WAS 21'8", D-540 WAS 2'2" INCR., F-502 WAS 20'5", C-508 WAS 14'9"
D-523 WAS 6'1", E.K. - E.K. G.

LOCATION PLAN

Scale: 1"=10'

SECTION ALONG CENTER-LINE OF CULVERT

Scale: 1"=10'

HYDRAULIC DATA

DRAINAGE AREA	=	1.8 SQ. MI.
DISCHARGE ($Q_{50 yr.}$)	=	940 CFS.
TAILWATER ELEVATION	=	+ 8.8
VELOCITY	=	5.0 '/SEC.

A - A

Scale: ¼"=1'-0"

Reinforcing shown is for one Section 2 - Three sections required.

B - B

Scale: ¼"=1'-0"

REINFORCING SCHEDULE

SECTION NO. 2 - 3 REQD

Mark	No. Reqd. Per Sect.	Length	Weight Lbs.	Type
A 1001	40	18'-0"		Str.
A 1002	40	18'-8"		Str.
B 901	72	25'-6"		10
B 902	36	14'-8"		Str.
C 601	60	14'-2"		Str.
D 501	100	28'-9"		Str.

Weight Per Section=18,625

D 543	2'-2" to 3'-8"	1" Inc.
D 544	2'-10" to 4'-4"	2" Inc.
D 545	2'-6"	
D 546	3'-8" to 7'-5"	5" Inc.
D 547	3'-1" to 6'-10"	2½" Inc.

SECTION NO. 1 - 1 REQD

Mark	No. Reqd.	Length	Weight Lbs.	Type
A 1001	5	18'-0"		Str.
A 1002	7	18'-8"		Str.
B 501	1 Series of 5	Varies 9'-6" to 11'-6" 5½" Incr.		12
B 504	1 Series of 6	Varies 9'-9" to 11'-9" 5" Incr.		12
B 901	12	25'-6"		10
B 903	4	14'-10"		Str.
B 904	4	15'-10"		Str.
B 905	1 Series of 7	Varies 14'-9" to 17'-6" 5½" Incr.		12
B 906	1 Series of 9	Varies 18'-0" to 20'-10" 4¼" Incr.		12
B 907	1 Series of 9	Varies 15'-0" to 18'-4" 5" Incr.		12
B 908	1 Series of 8	Varies 18'-8" to 20'-10" 3¾" Incr.		12
C 601	8	14'-2"		Str.
C 504	1 Series of 19	Varies 6'-6" to 14'-9" 5½" Incr.		Str.
C 505	4	15'-1"		Str.
C 509	1 Series of 21	Varies 6'-6" to 14'-11" 5" Incr.		Str.
D 502	2 Series of 15 each	Varies 19'-11" to 21'-1" 1" Incr.		Str.
D 503	2	21'-8"		14
D 504	1	21'-4"		14
D 505	2	24'-10"		14
D 506	1	24'-6"		14
D 518	10	17'-9"		Str.
D 519	2 Series of 7 each	Varies 3'-9" to 16'-9" 2'-2" Incr.		Str.
D 520	13	5'-9"		14
D 521	12	5'-5"		14
D 539	10	19'-1"		Str.
D 540	2 Series of 7 each	Varies 4'-5" to 18'-5" 2'-4" Incr.		Str.
D 541	13	7'-4"		14
D 542	12	7'-0"		14
D 543	1 Series of 19	Varies 4'-5" to 5'-11" 1" Incr.		13
D 544	1 Series of 10	Varies 4'-5" to 5'-11" 2" Incr.		13
D 545	9	4'-1"		13
D 555	2	19'-6"		Str.
D 558	2	20'-10"		Str.
E 501	3	37'-4"		Str.
E 502	3	38'-6"		Str.
E 503	2 Series of 10 each	Varies 20'-11" to 36'-8" 1'-9" Incr.		Str.
F 501	2	22'-1"		Str.
F 502	2 Series of 8 each	Varies 5'-4" to 20'-5" 2'-2" Incr.		Str.
F 503	2 Series of 8 each	Varies 7'-2" to 24'-1" 2'-5" Incr.		Str.
H 501	39	7'-6"		11
J 501	4	19'-2"		Str.

Weight per Section = 9,07#5

Dimensions are out to out of bars.

SECTION NO. 3 - 1 REQD.

Mark	No. Reqd	Length	Weight Lbs.	Type
A 1001	6	18'-0"		Str.
A 1002	8	18'-8"		Str.
A 1004	1 Series of 4	Varies 8'-4" to 17'-10" 3'-2" Incr.		Str.
A 1005	1 Series of 3	Varies 8'-6" to 14'-10" 3'-2" Incr.		Str.
B 502	1 Series of 9	Varies 7'-10" to 11'-6" 5½" Incr.		12
B 503	1 Series of 8	Varies 7'-10" to 11'-4" 6" Incr.		12
B 901	16	25'-6"		10
B 902	4	14'-8"		Str.
B 903	2	14'-10"		Str.
B 904	2	15'-10"		Str.
B 909	2	13'-6"		Str.
B 911	2	19'-0"		Str.
B 912	1 Series of 7	Varies 18'-9" to 20'-9" 4" Incr.		12
B 913	1 Series of 9	Varies 14'-7" to 18'-3" 5½" Incr.		12
B 914	1 Series of 7	Varies 14'-6" to 17'-6" 6" Incr.		12
B 915	1 Series of 8	Varies 18'-0" to 20'-4" 4½" Incr.		12
C 601	13	14'-2"		Str.
C 505	3	15'-1"		Str.
C 507	1 Series of 23	Varies 4'-8" to 14'-9" 5½" Incr.		Str.
C 508	1 Series of 21	Varies 4'-8" to 14'-8" 6" Incr.		Str.
D 507	2 Series of 15 each	Varies 25'-2" to 28'-1" 2½" Incr.		Str.
D 508	2	30'-5"		14
D 509	1	30'-2"		14
D 510	2	24'-7"		14
D 511	1	24'-5"		14
D 512	3	21'-11"		Str.
D 513	2 Series of 9 each	Varies 3'-10" to 21'-2" 2'-2" Incr.		Str.
D 514	13	10'-1"		14
D 515	12	9'-11"		14
D 516	6	20'-0"		Str.
D 517	2 Series of 9 each	Varies 3'-2" to 19'-2" 2'-0" Incr.		Str.
D 522	13	5'-3"		14
D 523	12	5'-9"		14
D 545	9	4'-1"		13
D 546	1 Series of 10	Varies 5'-3" to 9'-0" 5" Incr.		13
D 547	1 Series of 19	Varies 5'-4" to 9'-1" 2½" Incr.		13
D 548	2	24'-7"		Str.
D 549	2	22'-4"		Str.
E 504	3	29'-10"		Str.
E 505	3	30'-5"		Str.
E 506	2 Series of 13 each	Varies 19'-8" to 29'-8" 10" Incr.		Str.
F 504	2 Series of 6 each	Varies 6'-9" to 28'-0" 4'-3" Incr.		Str.
F 505	2 Series of 5 each	Varies 7'-6" to 22'-10" 3'-10" Incr.		Str.
F 506	2	24'-10"		Str.
H 501	30	7'-6"		11
J 502	4	18'-11"		Str.

Weight Per Section = 10,32#5

Type 12

Mark	a	b	c	d
B 501	6'-6" to 8'-4"-5½" Inc.	3'-0"	5"	5"
B 502	4'-8" to 8'-4"-5½" Inc.	3'-0"	5"	5"
B 503	4'-8" to 8'-2"-6" Inc.	3'-0"	5"	5"
B 504	6'-6" to 8'-7"-5" Inc.	3'-0"	5"	5"
B 905	8'-10" to 11'-7"-5½" Inc.	5'-0"	10¼"	11¼"
B 906	12'-1" to 14'-11"-4¼" Inc.	5'-0"	10¼"	11¼"
B 907	9'-1" to 12'-5"-5" Inc.	5'-0"	10¼"	11¼"
B 908	12'-9" to 14'-11"-3¾" Inc.	5'-0"	10¼"	11¼"
B 912	12'-11" to 14'-11"-4" Inc.	5'-0"	10¼"	11¼"
B 913	8'-9" to 12'-5"-5½" Inc.	5'-0"	10¼"	11¼"
B 914	3'-8" to 11'-8"-6" Inc.	5'-0"	10¼"	11¼"
B 915	12'-2" to 14'-11"-4½" Inc.	5'-0"	10¼"	11¼"

Type 14

Mark	e	f	g	h
D 503	19'-8"	2'-0"	1'-0"	1'-9"
D 504	19'-3"	2'-1"	1'-0"	1'-10"
D 505	21'-4"	3'-6"	1'-9"	3'-0"
D 506	20'-11"	3'-7"	1'-9"	3'-1"
D 508	24'-4"	6'-1"	1'-7"	5'-10½"
D 509	23'-8"	6'-6"	1'-8"	6'-3"
D 510	22'-3"	2'-4"	0'-7"	2'-3"
D 511	21'-8"	2'-9"	0'-8½"	2'-8"
D 514	6'-1"	4'-0"	1'-0½"	3'-10"
D 515	6'-6"	3'-5"	0'-10½"	3'-3½"
D 520	3'-9"	2'-0"	1'-0"	1'-9"
D 521	3'-3"	2'-2"	1'-1"	1'-10½"
D 522	2'-11"	2'-4"	0'-7"	2'-3"
D 523	3'-0"	2'-9"	0'-8½"	2'-8"
D 541	3'-10"	3'-6"	1'-9"	3'-0"
D 542	3'-5"	3'-7"	1'-9½"	3'-1"

Total Weight of Bar Reinforcem't for structure. 75,27#5 lbs.

#674

APPROVED J. M. Fox
BRIDGE ENGINEER

DELAWARE
STATE HIGHWAY DEPARTMENT

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

BASIN ROAD (N.B.)
STRUCTURE NO. 6-22

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

DESIGNED: R.C.C. CHECKED: J.W.H. DATE: 12-31-59
DRAWN: H.F.M. IN CHARGE: B.W.L. SCALE: As Shown.

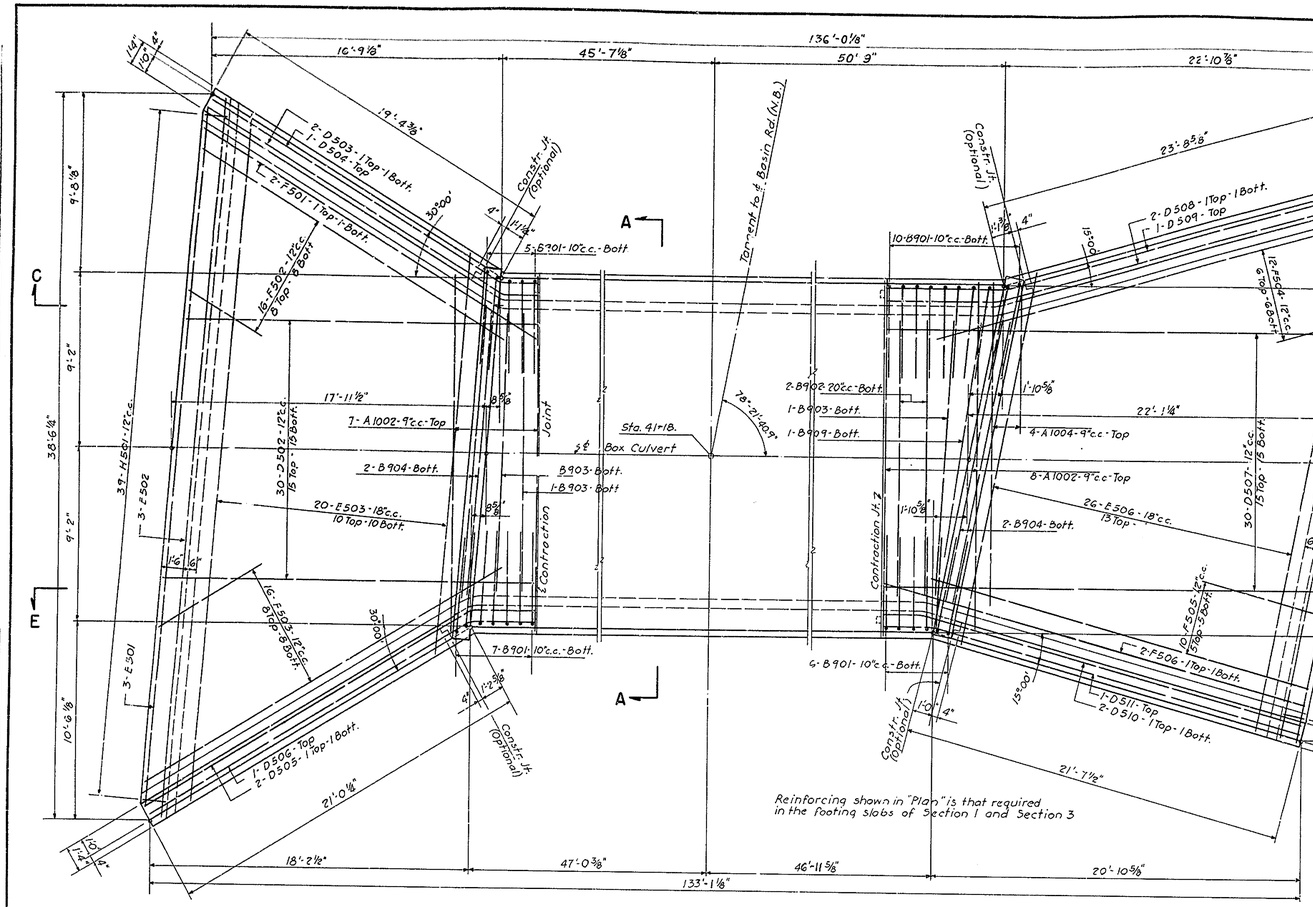
"Imperial" 156 W. B. & E.

COUNTY	CONTRACT	F.A.I. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE	I-1 (21)-1	2	DEL.	I-95-1 (18)		45	66

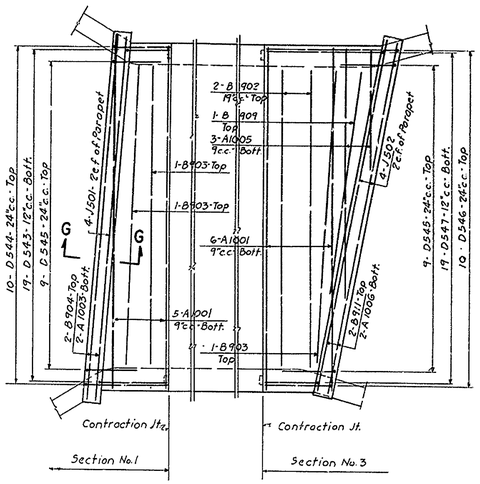
MADE BY — CHECKED BY
DESIGN — Acc. & J.M.H. — H.F.M. & C.B.M.
DRAWING — H.F.M. & E.O.B. — J.W.H. & J.M.H.
TRACING — H.F.M. & E.O.B. — J.W.H. & C.B.M.
QUANTITIES — H.F.M. & J.M.H. — J.W.H. & C.B.M.
IN CHARGE — Bailey & Baird — J.W.H. & C.B.M.

CHECKED
GRADE
BEARINGS
TIE POINTS
BENCH MARKS
EARTHWORK
DRAINAGE

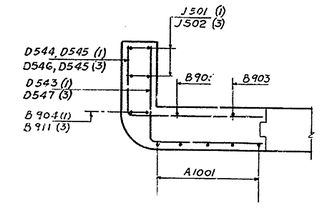
REVISIONS



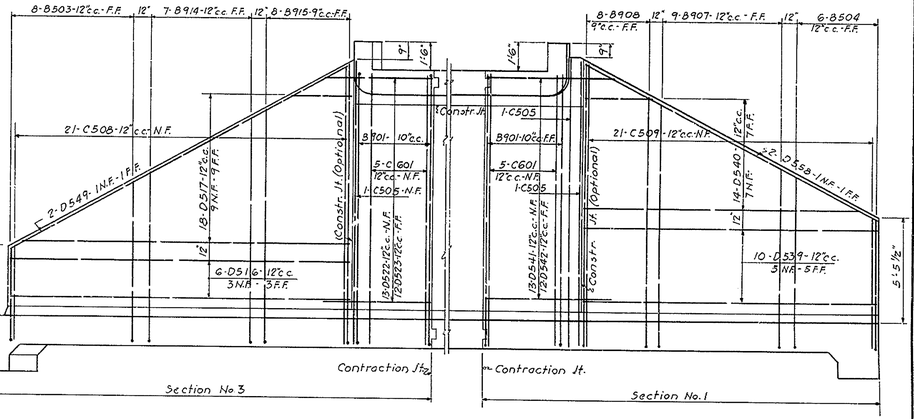
PLAN
Scale: 1/8" = 1'-0"



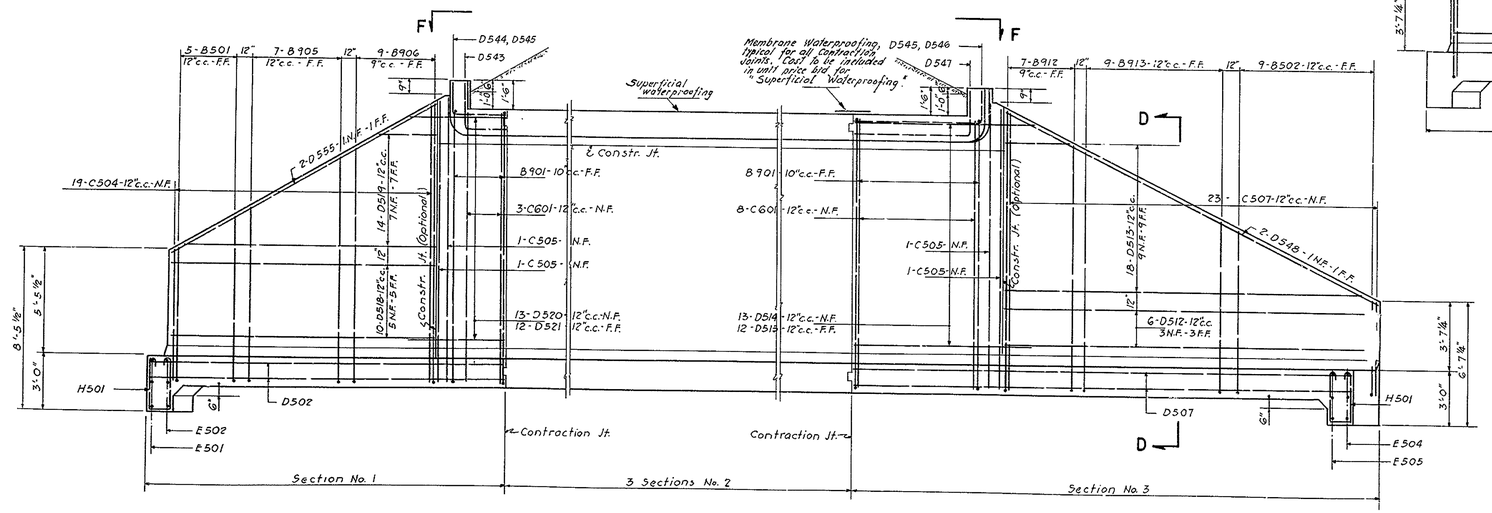
F - F
Scale: 1/8" = 1'-0"



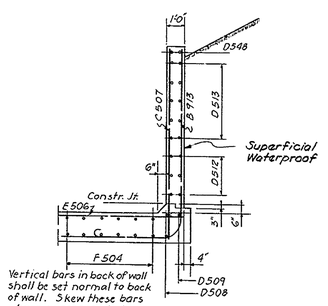
G - G
Scale: 1/2" = 1'-0"



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



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



Vertical bars in back of wall shall be set normal to back of wall. Skew these bars where necessary to keep bar within base.

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

Note:
Clear distance from face of concrete to reinforcing, shall be 2" except as noted.

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

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)-1
CHRISTINA RIVER INTERCHANGE

BASIN ROAD (N.B.)
STRUCTURE NO. 6-22

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

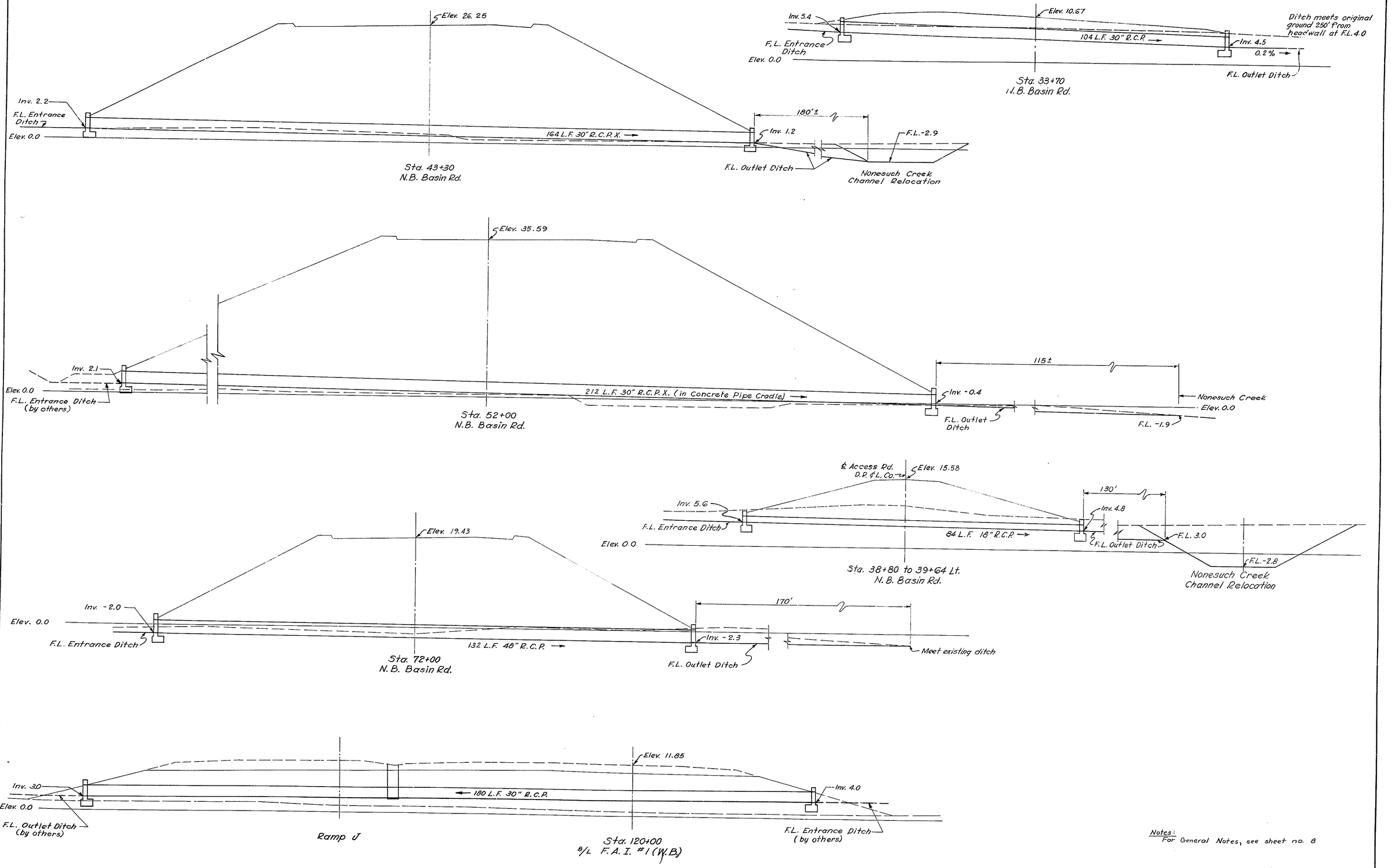
DESIGNED: B.C.C. CHECKED: J.W.H. DATE: 12-31-59
DRAWN: H.F.M. IN CHARGE: J.W.H. SCALE: As Shown.

"Imperial" 156 W. B. & E.

PIPE CULVERT SECTIONS

Scale: 1" = 10'

COUNTY	CONTRACT	F.A.I. RTE. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE	I-1(21)-1	2	DEL.	I-95-1(18)		46	66



Notes:
For General Notes, see sheet no. 8

CHECKED
GRADE
BEARINGS
TIES TO ROW
BENCH MARKS
EARTHWORK
DRAINAGE F. D. Dohmeyer

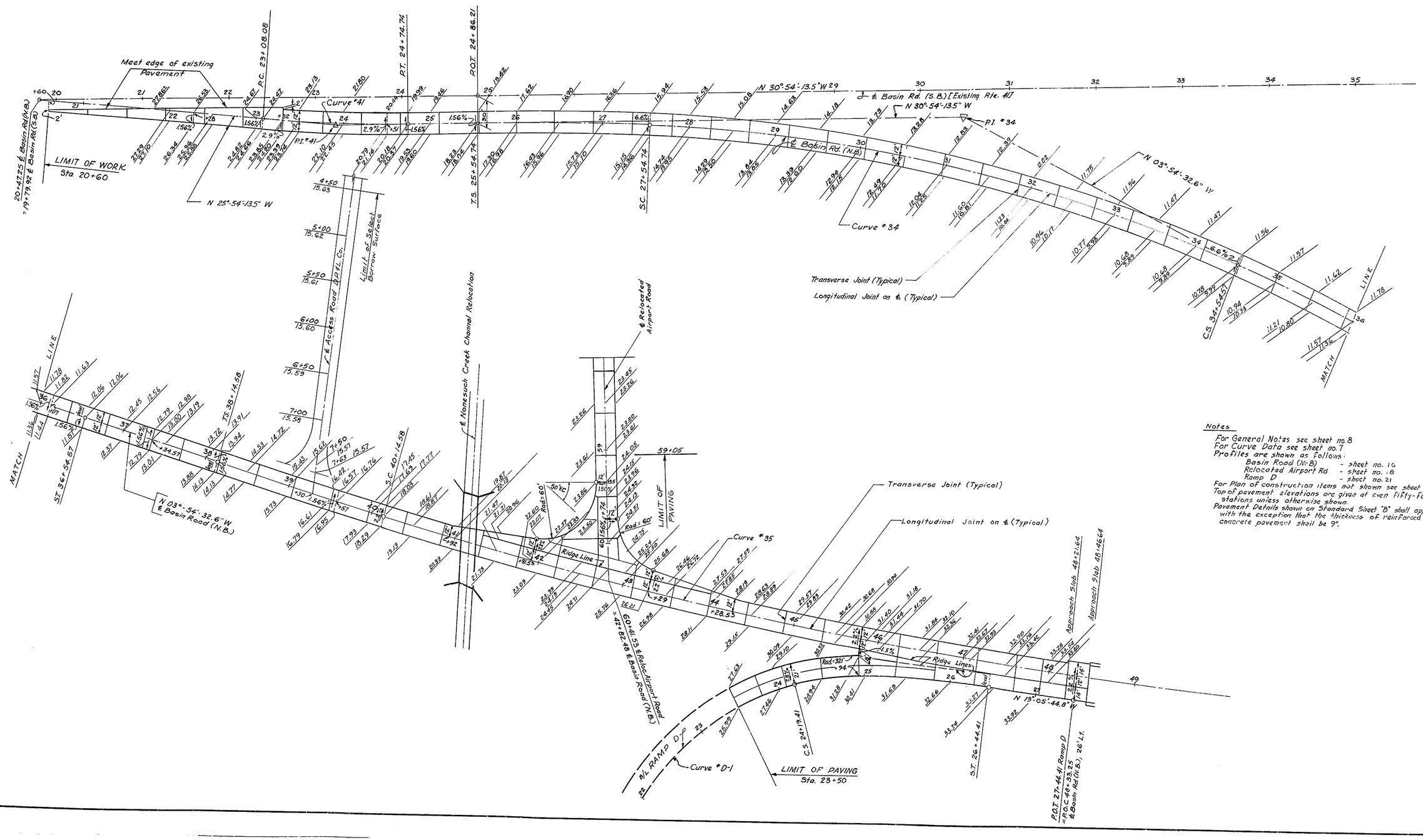
REVISIONS

D C B A 1 5 10 A B C D

COUNTY	CONTRACT	P.R.A. REG NO	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE	I-1(21)-1	2	DEL.	I-95-1(18)		47	66

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 (N-B) - sheet no. 16
Relocated Airport Rd - sheet no. 18
Ramp D - sheet no. 21
For Plan of construction items not shown see sheet nos. 8 & 9
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".

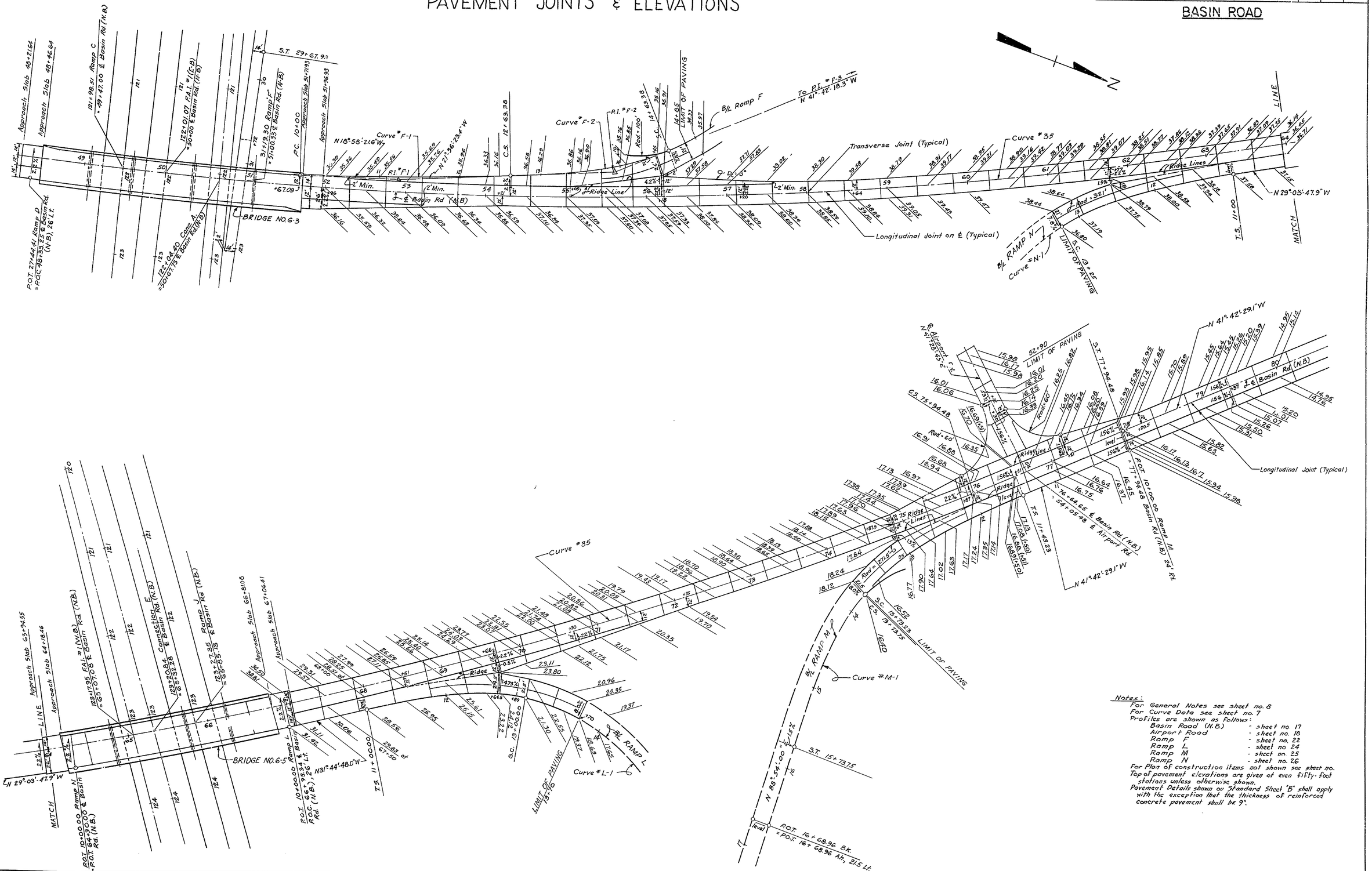
CHECKED
GRADE W.E. Ruchinsky
BEARINGS W.E. Ruchinsky
TIE POINTS
BENCH MARKS
EARTHWORK
DRAINAGE

REVISIONS

COUNTY	CONTRACT	P.R.A. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE	I-1(21)-1	2	DEL.	I-95-1(18)		48	66

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 (N.B.)	- sheet no. 17
Airport Road	- sheet no. 18
Ramp F	- sheet no. 22
Ramp L	- sheet no. 24
Ramp M	- sheet no. 25
Ramp N	- sheet no. 26

For Plan of construction items not shown see sheet no.
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".

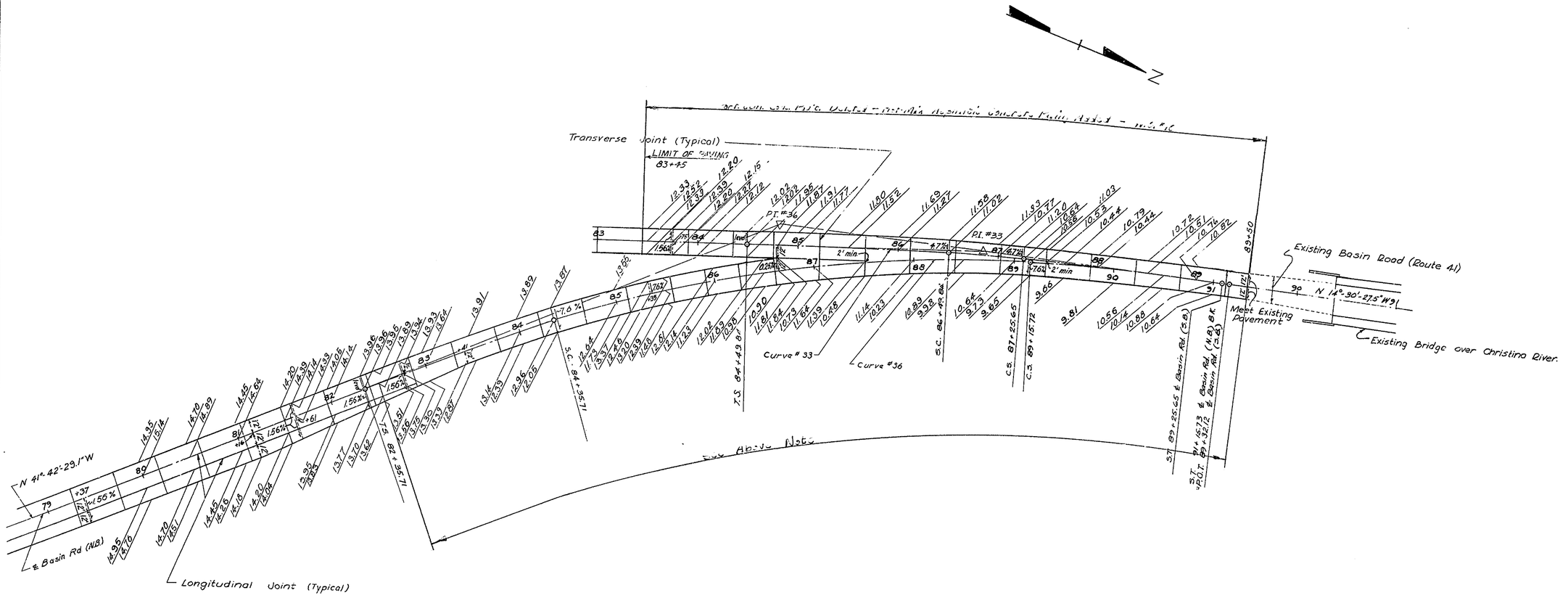
REVISIONS

GRADE W.E. Ruchinsky
BEARINGS W.E. Ruchinsky
TIE POINTS
BENCH MARKS
EARTHWORK
DRAINAGE

COUNTY	CONTRACT	F. H. A. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE	I-1(21)1	2	DEL.	I-95-1(18)		49	66

PAVEMENT JOINTS & ELEVATIONS

BASIN ROAD



Notes:

- For General Notes, see sheet no. 8
- For Curve Data, see sheet no. 7
- For Profile, see sheet nos. 18 & 19
- For Plan of construction items not shown, see sheet no. 12
- 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
GRADE J. Geary
BEARINGS T. Henry
TIE POINTS
BENCH MARKS
EARTHWORK
DRAINAGE

REVISIONS

COUNTY	CONTRACT	F.A. REG. NO.	STATE	FED. AID PROJECT NO.	FINAL PLANS	SHEET NO.	TOTAL SHEETS
NEW CASTLE	I-1(21)-1	2	DEL.	I-95-1(18)		50	66

BASIN ROAD

DRAINAGE

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.	30" R.C.P. L.F.	48" R.C.P. L.F.	30" R.C.P. Extra Str'gth 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" CMP 16 Ga. 30° Bends Coated & Paved Ea.	6" C.M.P. L.F.	Excavation for Structures C.Y.
Basin Road (N-B)																	
20+00 to 34+00	R					670											
30+65 to 34+00	L					168											
33+00 ±	L				90	75											
33+70	L & R				250	25		104			7.8	152					37
38+80 to 39+64	L						84				4.0	86					20
41+60 to 43+00 ±	R				170												
43+30	L & R									164	7.6	192					37
52+00	L & R									212	7.8	152					37
72+00	L & R				185				132		11.4	660					38
85+55	L & R		2				40				2.0	43		36	2		10
F.A.I. #1 (W-B)																	
120+00	R & L			1				180			7.8	152					37
122+15 to 123+75	R												120			60	
Ramp "C"																	
121+05 to 122+60	R												100			80	
Ramp "F"																	
14+05	L		1		25					2.0	43			44	2		10
30+20 to 31+80	L												110			75	
Ramp "J"																	
122+45 to 124+00	L												110			70	
Ramp "L"																	
13+60	R	1			30					2.0	43			28	2		10
Ramp "D"																	
23+60	R	1			20					2.0	43			52	2		10
From Structure Summary						249											
GRAND TOTALS		2	3	1	770	1,187	124	284	132	376	54.6	1,526	440	160	8	285	246
PROPOSAL		2	3	1	800	1,230	130	300	140	400	60	*	500	170	8	300	*

*See Structure Summary.

WIRE ROPE GUARD FENCE & CURB

STATIONS	SIDE	Wire Rope Guard Rail (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.	Down-spout Splash Apron Ea.	8" C.M.P. 16 Ga. L.F.	10" C.M.P. 16 Ga. L.F.
Basin Road (N-B)									
39+00 to 45+15	R	615	4	615		2	2	50	
39+50 to 59+25 (Reloc. Airport Rd)	L	335	5	338		1	1	32	
48+47 to 73+50 (Ramp "D")	R	408	2		408				
48+47 to 59+62 (Reloc. Airport Rd.)	L	590	4	592		2	2	74	
51+71 to 57+92	R	621	3	621		3	3	204	
58+06 to 61+35	R	327	2	192		1	1	82	
56+42 to 59+72	L	330	2	330		2	2	74	170
59+88 to 64+15	L	427	1	427		2	2	144	
66+84 to 131+70 (Ramp "L")	R	381	2		384				
66+79 to 83+00 (Airport Rd.)	L	998	6	998		3	3	152	
70+00 to 74+10	R	410	2	410		1	1	60	
79+00 to 131+15 (Ramp "M")	R	417	3	422		2	2	72	
79+00 to 83+12 (Airport Rd.)	L	283	4	283		1	1	13	
79+00 to 90+13 (S-B)	R	1,297	5	1,297		4	4	78	18
79+00 to 85+00	L	600	3	400		2	2	20	
Basin Road (S-B)									
83+45 to 90+13	L	668	5	668		3	3	42	18
Airport Road									
52+90 to 53+12	L			22					
52+90 to 53+00	R			10					
Relocated Airport Rd.									
59+05 to 59+25	R			20					
59+05 to 59+62	L			57					
Ramp "F"									
10+07 to 14+10	L	403	1	403		1	1	94	
14+09 to 14+85	L				79				
14+47 to 14+85	R				38				
Ramp "L"									
12+89 to 13+70	L				86				
Ramp "M"									
13+05 to 13+73	R				70				
13+17 to 13+73	L				61				
Ramp "N"									
10+10 to 13+25	L	315	2		315				
12+50 to 13+25	R				80				
Ramp "D"									
23+50 to 24+94	L				154				
GRAND TOTALS		9,425	56	8,105	1,675	30	30	1,191	206
PROPOSAL		10,000	60	8,500	1,700	30	30	1,200	220

PAVEMENT

LOCATION	9" Portland Cement Concrete Pavement Cu.Yds.	Wire Mesh Reinforcemnt 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 Sq. Yds
Basin Road (N-B)								
20+GOOO to 48+46+64	1,768	612	2,011	1,171	4,160			
51+7193 to 64+18+46	801	277	863	536	1,912			
66+8108 to 91+15.73	1,481	511	1,627	1,030	3,740			
Bridge Nos. G-3 & G-5			480	600				
Basin Road (S-B)								
83+45 to 89+50	318	110	300	170	600			
Relocated Airport Road	205	71	105	60	355			
Airport Road	190	66	92	52	325			
Temporary Runaround			200	550				
Ramp "D"	254	87			435			
Ramp "F"	209	72			510			
Ramp "L"	252	87			413			
Ramp "M"	320	110			540			
Ramp "N"	160	55			293			
Access Road					140			
Access Ramps						460	460	950
GRAND TOTALS	5,958	2058	5,679	4,139	13,423	460	460	950
PROPOSAL	6,000	2,100	6,000	5,000	16,000	500	500	1000

TOPSOIL & SEEDING

LOCATION	Side	Topsoil (4" Deep) Sq. Yds.	Seeding Acres	Mulching Sq. Yds.
Basin Road (N-B)				
20+60.0 to 48+46.64	R & L	3,820	4.60	22,300
51+71.93 to 64+18.46	R & L	1,910	4.86	23,600
66+81.08 to 91+15.73	R & L	3,200	4.44	21,500
Basin Road (S-B)				
83+45 to 89+50	R & L	465	1.09	5,280
Relocated Airport Road	R & L	188	0.22	1,050
Airport Road	R & L	160	0.13	640
Nonesuch Crk. Channel Reloc.			0.56	2,730
F.A.I. #1 (W-B)	R & L		0.55	2,660
F.A.I. #1 (E-B)	R & L		0.28	1,340
GRAND TOTALS		9,743	16.73	81,100
PROPOSAL		**	17.00	83,000

**
2,500 sq. yds. topsoil
7,500 sq. yds. topsoiling

QUARRY WASTE

Temporary Runaround	2,750 S.Y.
PROPOSAL	3,000 S.Y.

TEMPORARY ROADWAY MATERIAL

ITEM	PROPOSAL
Cold Laid Bituminous Concrete	100 Tons
Select Borrow	300 C.Y.

QUANTITIES
BEARINGS
LENGTHS
CURVATURE
EARTHWORK
DRAINAGE

REVISIONS
Due to 1960 Specs. - Eliminate Castings & B.O. Gratings & Change Bit. Surf. Treat. - Source Agg. from Tabs. to S.Y. - K.A.K. 4-25-61

COUNTY	CONTRACT	F.A.P. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE	I-1(21)-1	2	DEL.	I-95-1(18)		51	66

BASIN ROAD

EARTHWORK

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.
Basin Road (S-B)	83+00 to 90+40		345	1,670	10,000		
Basin Road (N-B)	20+60 to 33+00	5,250					
Basin Road (N-B)	33+00 to 48+60	900	42,300	71,600	42,480	580	
Basin Road (N-B)	51+55 to 64+34		36,100	46,500	177,200	20	
Basin Road (N-B)	66+62 to 84+90		101,400	126,500	98,000	2,070	
Airport Road	51+50 to 53+35		6,770	7,970	4,152		
Relocated Airport Road	57+00 to 59+55		220	400	10,720		
F.A.I. #1 (W-B)	117+50 to 125+00		39,800	46,700	29,720		
F.A.I. #1 (E-B)	119+00 to 124+00		78,500	95,100	24,880		
Ramp "D"	21+50 to 24+10		6,750	11,300	11,200		
Ramp "F"	15+00 to 21+00				39,200		
Ramp "L"	13+00 to 15+50		11,750	13,800	5,880		
Ramp "M"	12+90 to 15+50		9,780	10,740	3,000		
Ramp "N"	12+30 to 15+00				13,840		
Temporary Runaround					3,238	1,850	
Access Roads - Del. P & L.					1,520		
Access Ramps					6,080		
GRAND TOTALS		6,150	333,715	432,280	531,110	4,520	524,960
PROPOSAL		7,000	370,000	480,000		5,000	550,000

Embankment 531,110 C.Y.
Excavation − 6,150 C.Y.
Borrow 524,960 C.Y.
PROPOSAL Borrow 550,000 C.Y.

STRUCTURE QUANTITIES

LOCATION	DESCRIPTION	Excavation for Struct's C.Y.	Portland Cement Concrete Masonry: Abutments C.Y.	Pier Footings C.Y.	Piers Above Footings C.Y.	Superstructure C.Y.	Approach Slabs C.Y.	Box Culverts C.Y.	Superficial Waterproofing S.Y.	Bar Reinforcement Lb.	Structural Steel Lb.	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 Gm. Conc. Block S.Y.	Bridge Drainage L.S.	Conduit Work on Bridges L.S.	Portland Cement Concrete Gutter S.Y.	Portland Cement Concrete Masonry Subfoundations C.Y.
Sta. 41+18 Basin Road (N-B)	Box Culvert No. 22	737						380	576	77,055										50
Sta. 50+00 Basin Road (N-B)	Bridge No. G-3	745	178	130	158	537	112		142	201,819	441,600	1	7,150	45	628	408	L.S.	L.S.	125	
Sta. G5+50 Basin Road (N-B)	Bridge No. G-5	642	175	101	118	438	111		141	173,600	384,200	1	5,880	50	504	430	L.S.	L.S.	124	
From Drainage Summary		246								1,526										
GRAND TOTALS		2,370	353	231	276	975	223	380	859	454,000	LUMP SUM	2	13,030	95	1,132	838	LUMP SUMS	LUMP SUMS	249	50
PROPOSAL		2,400	** 353	231	** 276	** 975	** 223	** 380	900	** 454,000	LUMP SUM	2	14,000	95	1,140	900	LUMP SUMS	LUMP SUMS	*	50

** Fixed Quantity Items

* See Drainage Summary

MAINTENANCE OF TRAFFIC
PROPOSAL LUMP SUM

CLEARING AND GRUBBING
PROPOSAL LUMP SUM

CALCIUM CHLORIDE FOR DUST CONTROL
PROPOSAL 4 Tons

EXTRA PORTLAND CEMENT
PROPOSAL 200 Bags

REMOVAL OF PRESENT CONCRETE PAVEMENT

LOCATION	Square Yards
Basin Road	1,870
PROPOSAL	2,000

CHECK BORINGS
PROPOSAL 270 L.F.

SODDING

LOCATION	Side	Square Yards
23+60 Ramp D	R	10
14+05 Ramp F	L	12
13+60 Ramp L	R	15
GRAND TOTAL		37
PROPOSAL		50

CONDUITS UNDER PAVED AREAS

LOCATION	3" Galvanized Wrought Iron. L.F.
Basin Road (N-B)	
Sta. 44+00	59
Sta. 49+00 ± Under Bridge No. G-3	330
Sta. 51+10 ± Under Bridge No. G-3	110
Sta. 54+25	66
Sta. 64+75 ± Under Bridge No. G-5	330
Sta. 66+30 ± Under Bridge No. G-5	110
Sta. 70+50	61
Sta. 74+20	54
Relocated Airport Road	
Sta. 59+30	52
Ramp "D"	
Sta. 24+20	29
Ramp "L"	
Sta. 13+30	31
Ramp "N"	
Sta. 13+00	29
GRAND TOTAL	1,261
PROPOSAL	1,300 ← Non-Participating

CHANNEL EXCAVATION

LOCATION	Cubic Yards
Temporary Channel-Nonesuch Creek	3,100
Relocated Channel-Nonesuch Creek	7,000
GRAND TOTALS	10,100
PROPOSAL	11,000

REMOVAL OF EXISTING MASONRY
PROPOSAL 5 Cu. Yds.

STONE BEDDING FOR PIPES
PROPOSAL 30 Tons

CONCRETE PIPE CRADLE

LOCATION	Cu. Yds.
Sta. 52+00 Basin Road (N-B)	47
PROPOSAL	90

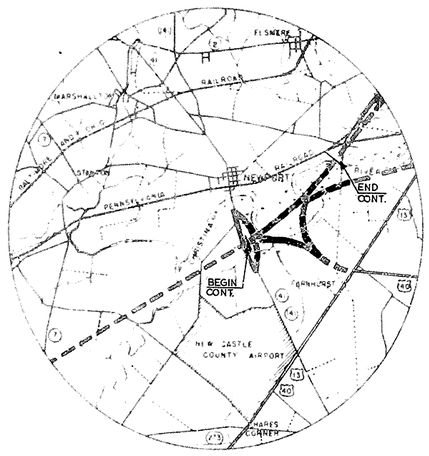
BORROW PIT STRIPPING≠
PROPOSAL 500 C.Y.

≠ This item applicable only to State-owned Borrow Pits.

QUANTITIES CHECKED RG Quill
ALIGNING
TIE POINTS
BENCH MARKS
EARTHWORK
DRAINAGE

REVISIONS
4/20/61 Changed "A" Comp. Total To ESTIMATED Final Quantity
Changed Rock Excavation to C.Y. - RAK.
9/25/61 Eliminate Shrinkage Factor on Embankment - RAK.
4/26/61 Removed Final Quantity from Borrow

D C B A 1 5 10 A B C D



THE STATE OF DELAWARE

STATE HIGHWAY DEPARTMENT

INFORMATION PLAN
FOR

CONSTRUCTION OF CONTRACT Nº I-1(21)-1, I-1(23) & I-1(24)

STA. 120+05 Conn. A TO STA. 205+00 I-95(F.A.I.-2)

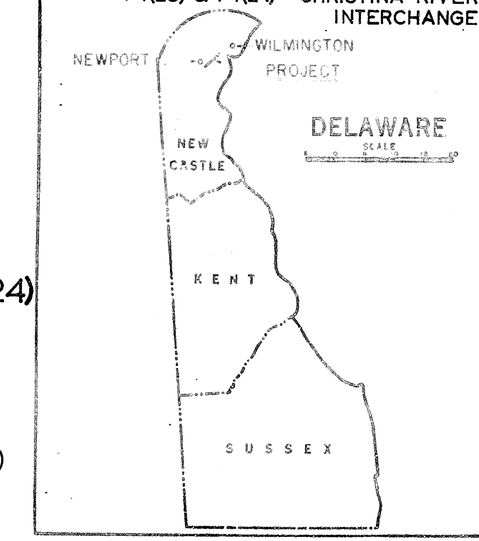
9,890.58 FEET: 1.873 MILES

SCALE: PLAN: 1 IN. = 200 FT.
PROFILE: HOR. 1 IN. = 10 FT.
VERT. 1 IN. = 10 FT.

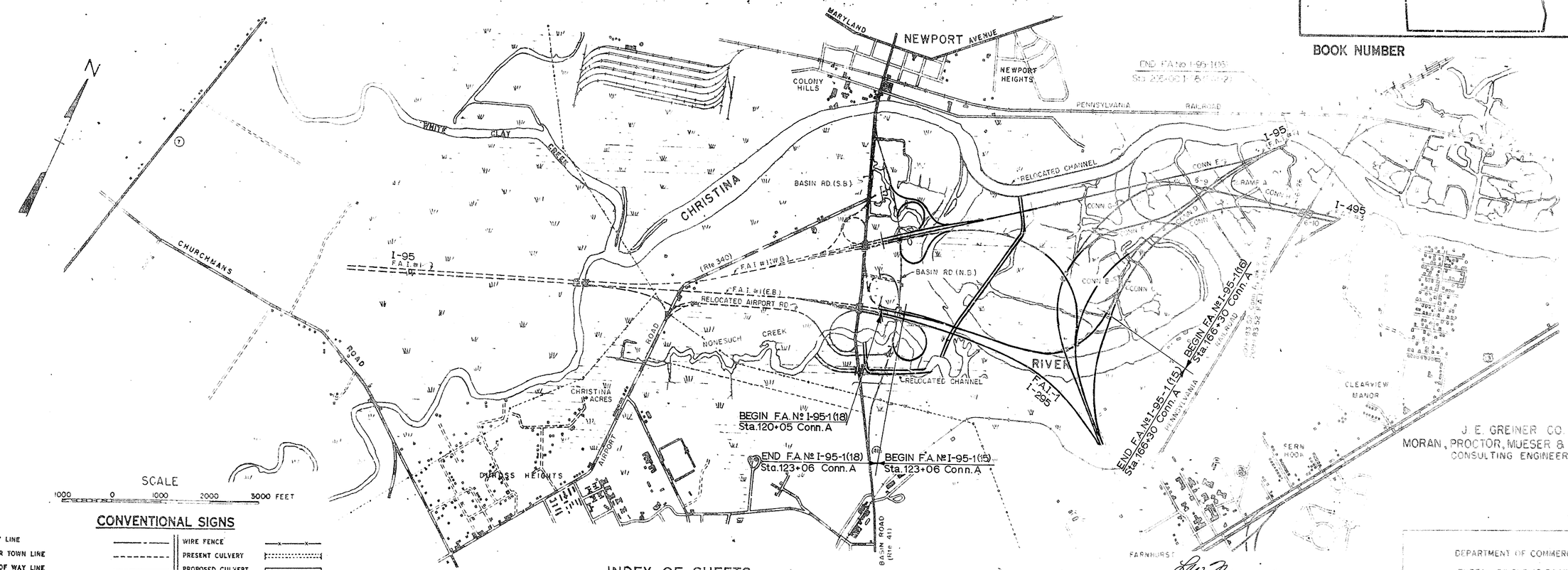
FEDERAL AID PROJECT Nos I-95-1(18), I-95-1(11), I-95-1(15) & I-95-1(16)

COUNTY	CONTRACT	SHEET NO	STATE	FED. AID PROJ. NO	FISCAL YEAR	BRIDGE NO	TOTAL SHEETS
NEW CASTLE	I-1(21)-1 I-1(23) I-1(24)	2	DEL	I-95-1(18) I-95-1(11) I-95-1(15) I-95-1(16)		1	2

INTERSTATE CONTRACTS I-1(21)-1, I-1(23) & I-1(24) – CHRISTINA RIVER INTERCHANGE



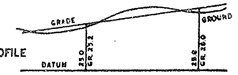
BOOK NUMBER



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

CONVENTIONAL SIGNS

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



INDEX OF SHEETS

SHEET Nº 1 TITLE SHEET
2 QUANTITIES

RECOMMENDED May 4 1961 — CONTRACT & DESIGN ENGINEER

RECOMMENDED May 4 1961 — ASSISTANT CHIEF ENGINEER

APPROVED May 4 1961 — ACTING CHIEF ENGINEER

DEPARTMENT OF COMMERCE
BUREAU OF PUBLIC ROADS

APPROVED

DIVISION ENGINEER DATE

COUNTY	CONTRACT	F.A.P. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE	I-1(21)-1 I-1(23) I-1(24)	2	DEL.	I-95-1(18) I-95-1(11) I-95-1(15) I-95-1(16)		2	2

QUANTITIES

QUANTITY SUMMARY FOR INTERSTATE CONTRACTS I-1(21)-1, I-1(23) & I-1(24) CHRISTINA RIVER INTERCHANGE

ITEM	UNIT	I-1-(21)-1 TOTAL	I-1 (23) TOTAL	I-1 (24) TOTAL	GRAND TOTAL	PROPOSAL
Clearing & Grubbing	L.S.	L.S.	L.S.	L.S.	L.S.	L.S.
Excavation	C.Y.	6,150	2,000		8,150	9,000
Removal of Existing Masonry	C.Y.	5			5	5
Swamp Excavation	C.Y.	333,715	2,066,000	1,228,610	3,628,325	3,770,000
Excavation for Structures	C.Y.	2,370	8,898	3,938	15,206	16,100
Longitudinal Ditch Excavation	C.Y.	4,520	38,110	6,710	49,340	52,000
Channel Excavation	C.Y.	10,100	452,700	5,500	468,300	472,000
Special Fill	C.Y.	432,280	2,799,760	1,586,330	4,818,370	4,880,000
Borrow-(Pit Measurement)	C.Y.		30,240	1,766,965	1,797,205	1,882,000
Sand Drains	L.F.			770,520	770,520	775,000
Sand Blanket	C.Y.			154,580	154,580	160,000
Sand Drain Collector Pipes & Drainage Windrows	L.S.			L.S.	L.S.	L.S.
18" Reinforced Concrete Pipe	L.F.	124			124	130
24" " " "	L.F.		310		310	330
30" " " "	L.F.	284	202	348	834	870
36" " " "	L.F.		100		100	110
42" " " "	L.F.		118		118	130
48" " " "	L.F.	132	84		216	230
54" " " "	L.F.		110		110	120
18" " " " Extra Strength	L.F.			156	156	170
30" " " " " "	L.F.	376	168		544	580
36" " " " " "	L.F.			180	180	190
42" " " " " "	L.F.		162	168	330	350
18" Corrugated Metal Pipe, 16 Ga., Coated & Paved	L.F.	160	22		182	200
18" " " " 16 Ga., 30° Bends, Coated & Paved	Ea.	8			8	8
6" Corrugated Metal Pipe	L.F.	285			285	300
6" Perforated Corrugated Metal Pipe, Underdrain	L.F.	440			440	500
Type A-1 Catch Basin	Ea.	2			2	2
" B " "	Ea.	3			3	3
" P.W.-B.D.2 Catch Basin	Ea.	1		1	2	2
Portland Cement Conc. Masonry for Drainage Structures	C.Y.	54.6	113.72	39.28	207.6	235
Lateral Ditching	L.F.	770	795	510	2,075	2190
Concrete Pipe Cradle	C.Y.	47	100	100	247	290
Stone Bedding for Pipes	Ton	30	50	50	130	130
Portland Cement Concrete Gutter	S.Y.	1,187	27	180	1,394	1460
Tide Gate - 54" ϕ	Ea.		1		1	1
Tide Gate - 7'x7'	Ea.		3		3	3
Plain Rip-Rap	S.Y.		36,660		33,660	37,000
Bedding for Rip-Rap	Ton		16,500		16,500	17,000
Sodding	S.Y.	37	2,364	295	2,696	2860
Removal of Present Concrete Pavement	S.Y.	1,870			1,870	2000
9" Portland Cement Concrete Pavement	C.Y.	5,958			5,958	6,000
Wire Mesh Reinforcement	Square	2,058			2,058	2100
Hot Mix Hot-Laid Asphaltic Concrete	Ton	5,679			5679	6,000
R.C.-1 Tack Coat	Gal.	4,139			4,139	5,000
Select Borrow	C.Y.	13,423	540		13,963	16,600
R.C.-1 Asphalt	Gal.	460			460	500
R.C.-3 Asphalt	Gal.	460			460	500
Coarse Aggregate	S.Y.	950			950	1000
Wire Rope Guard Fence (Wood Posts)	L.F.	9,425			9,425	10,000
End Post Attachments	Ea.	56			56	60
Machine Laid Hot-Mix Asphaltic Concrete Curb	L.F.	8,105			8,105	8,500
Portland Cement Concrete Curb - Type 1	L.F.	1,675			1,675	1,700
Concrete Intake Apron - Type 2	Ea.	30			30	30
Downspout Splash Apron	Ea.	30			30	30
8" Corrugated Metal Pipe - 16 Ga.	L.F.	1,191			1,191	1,200
10" " " " - 16 Ga.	L.F.	206			206	220
Seeding	Acre	16.73	2.2	15.68	34.61	35.5
Mulching	S.Y.	81,100	10,700	75,900	167,700	172,500
Topsoiling	S.Y.	7,500			7,500	7,500
Topsoil (4" Deep)	S.Y.	2,243			2,243	2500
Quarry Waste (Temporary Runaround)	S.Y.	2,750			2,750	3000
Cold Laid Bituminous Concrete - T.R.M.	Ton	100			100	100
Select Borrow - T.R.M.	C.Y.	300			300	300
Extra Portland Cement	Bag	200			200	200
Calcium Chloride for Dust Control	Ton	4			4	4
Maintenance of Traffic	L.S.	L.S.			L.S.	L.S.
Check Borings	L.F.	270	1,700	1,400	3,370	3,370
Settlement Plates - Type A (Control Devices)	Ea.			13	13	15
" " - Type B " "	Ea.			84	84	90
Piezometers " "	Ea.			43	43	50
Alignment Stakes " "	L.S.			L.S.	L.S.	L.S.
Portland Cement Concrete Masonry for Abutments	C.Y.	353			353	353
" " " " " Pier Footings	C.Y.	231			231	231
" " " " " Piers above Footings	C.Y.	276			276	276
" " " " " Superstructures	C.Y.	975			975	975
" " " " " Approach Slabs	C.Y.	223			223	223
" " " " " Box Culverts	C.Y.	380	1,660	1,125	3,165	3,195
" " " " " Subfoundations	C.Y.	50	220	100	370	370
Superficial Waterproofing	S.Y.	859	2,350	1,402	4,611	4810
Bar Reinforcement	Lb.	454,000	318,847	205,569	978,416	978,416
Structural Steel	Lb.	L.S.			L.S.	L.S.
Pile Load Tests	Ea.	2			2	2
Cast-in-Place Concrete Piles	L.F.	13,030			13,030	14,000
Steel Shell Test Piles	L.F.	95			95	95
Aluminum Bridge Railing	L.F.	1,132			1,132	1,140
Slope Paving with Cement Concrete Blocks	S.Y.	838			838	900
Bridge Drainage - Bridge G-3	L.S.	L.S.			L.S.	L.S.
Conduit Work on Bridge G-3	L.S.	L.S.			L.S.	L.S.
Borrow Pit Stripping	C.Y.	500			500	500
Conduits Under Paved Areas - 3" Galvanized Iron	L.F.	1,261			1,261	1,300
Timber Sheet Piles (Left in Place)	M.F.B.M		7.5	1.9	9.4	10
Borrow-(In Place Measurement)	C.Y.	524,960			524,960	550,000
Bridge Drainage - Bridge G-5	L.S.	L.S.			L.S.	L.S.
Conduit Work on Bridge G-5	L.S.	L.S.			L.S.	L.S.

Note:
See Plans of Individual Contracts for Design. The Quantities Shown on this Sheet Are for Roadway and Bridge Constructions. See Contract I-1(21)-1 for Utility Quantities which Are a Part of this Contract.

REVISIONS

GRADE
BEARINGS
TIE POINTS
BENCH MARKS
EARTHWORK
DRAINAGE

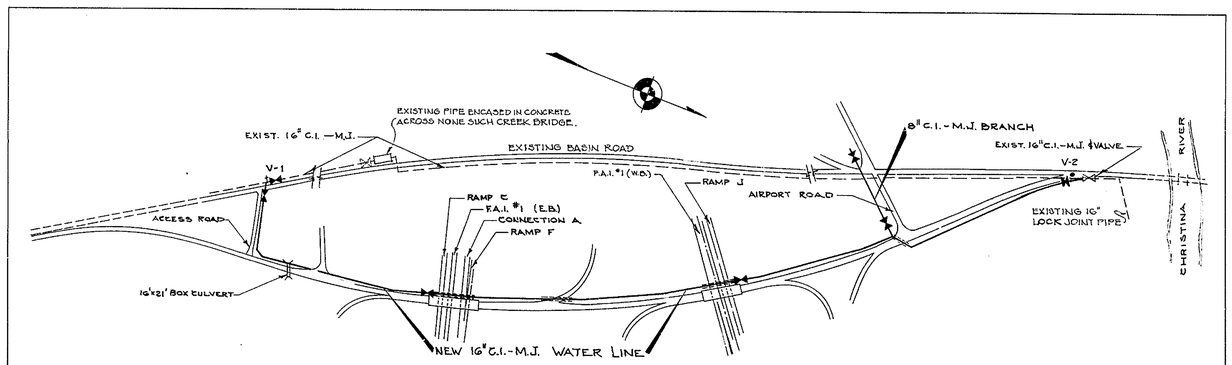
"Imperial" 156 W° B.&W.

ARTESIAN WATER COMPANY

NEWPORT, DELAWARE

RELOCATED WATER TRANSMISSION MAIN

ALBRIGHT & FRIEL INC. CONSULTING ENGINEERS
3 PENN CENTER PLAZA PHILADELPHIA 2 PENNA.



NOTE: EXISTING 16" C.I.M.J. PIPE BETWEEN POINTS V-1 & V-2 MAY BE SALVAGED.

GENERAL PLAN
NORTH BOUND LANE BASIN ROAD INTERCHANGE
SCALE: 1"=400'

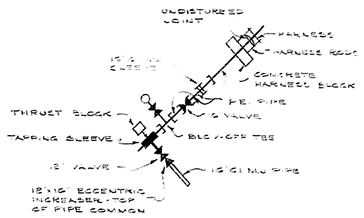
SET CONTAINS ■ DRAWINGS

SET NO. ■

CONTRACT NO.	FEDERAL AID PROJECT NO.	SHEET NO
I-1(21)-1	I-95-1(11)	W-1

TAPPING SLEEVE & VALVE

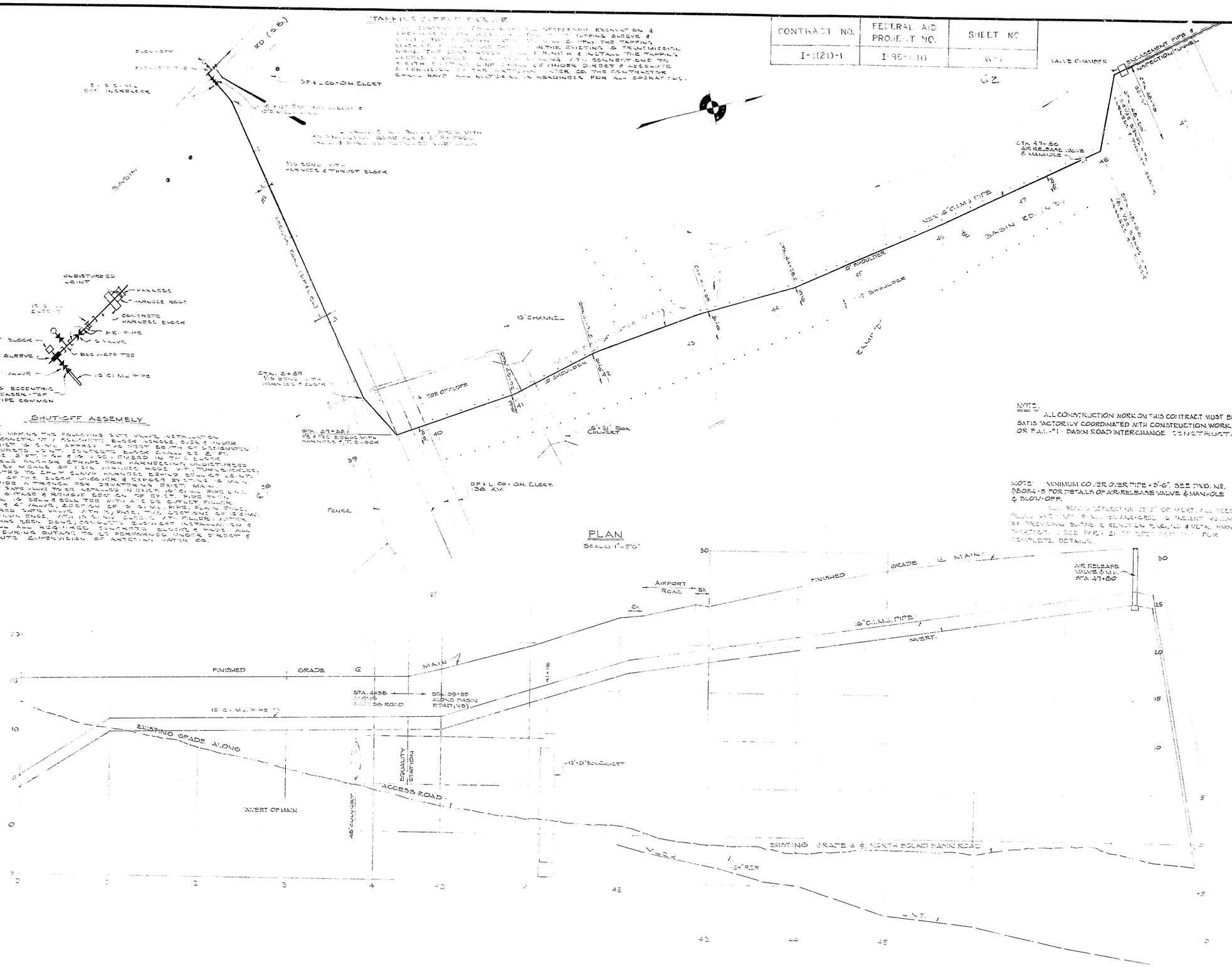
THE CONTRACTOR SHALL MAKE ALL NECESSARY EXCAVATION & BACKFILLING INCIDENTAL TO INSTALLING THE TAPPING SLEEVE & VALVE AS SHOWN ON THE PLANS & SPECIFICATIONS & SHALL SUPPLY THE TAPPING MACHINE & ALL LABOR REQUIRED IN CUTTING IN THE EXISTING 16 INCH MAIN. THE CONTRACTOR SHALL FURNISH & INSTALL THE TAPPING SLEEVE, VALVE & ALL FITTINGS REQUIRED FOR CONNECTING THE 4 INCH BY PASS LINE SHALL BE UNDER DIRECT & ABSOLUTE SUPERVISION OF THE ARTESIAN WATER CO. THE CONTRACTOR SHALL HAVE ALL MATERIALS IN READINESS FOR ALL OPERATIONS.



SHUT-OFF ASSEMBLY

NOTE

ENGINE MAKING AND INSERTING GATE VALVE, INSTALLATION AT FIRST CONVENIENT JOINT, CONCRETE BLOCK LOCATED OVER & UNDER THE EXIST. 16 G.I.M.J. PIPE AT FIRST JOINT OR DESIGNATED UNDISTURBED JOINT. CONCRETE BLOCK SHALL BE 6 FT. ACROSS & 8 FT. IN AT AND VOID. EMBED IN THE EARTH SUITABLE ANCHOR STRAPS FOR HARNESSING UNDISTURBED JOINT BY MEANS OF 1 IN. DIAMETER RODS WITH TURNBUCKLES, CONNECTED TO CAST IRON HARNESS RING SET AT OUTSIDE SURFACE OF THE EARTH. EXCAVATION & EXPENSES INCIDENTAL TO MAKING & PROVIDE A TRENCH FOR DRAWING EXIST. MAIN. THIS GATE VALVE TO BE NUMBERED IN EXIST. 16 G.I.M.J. PIPE LINE. OBTAIN GUTAGE & REMOVE EXIST. PLUG BY CUTTING PIPE WALL. INSTALL 16 SOLID BELL TEE WITH A 16 DIA. CUTOUT FILLING, FITTED & AT VALVE, SECTION OF 16 G.I.M.J. PIPE, PLAIN SPIGOT, 16 GATE VALVE WITH BY PASS, MECHANICAL JOINT, PLAIN ENDS, WITH 16 G.I.M.J. SPECIAL CASTINGS, WITH FILLER, JOINTS THAT HAS BEEN DONE, CONCRETE, EXISTING INSTALLATION & INSTALL ALL REQUIRED CONCRETE, BRICK & MORTAR. ALL WORK DURING OUTAGE TO BE PERFORMED UNDER DIRECT & ABSOLUTE SUPERVISION OF ARTESIAN WATER CO.



PLAN

SCALE: 1"=50'

NOTE: ALL CONSTRUCTION WORK ON THIS CONTRACT MUST BE SATISFACTORILY COORDINATED WITH CONSTRUCTION WORK ON P.A.-N.J. - BASIN ROAD INTERCHANGE CONSTRUCTION

NOTE: MINIMUM COVER OVER PIPE 4'-6". SEE DWG. NO. 58054-5 FOR DETAILS OF AIR-RELEASE VALVE & MANHOLE & BLOW-OFF.

ALL BENDS DEFLECTING 22½° OR MORE, ALL TEES PLUGS AND CAPS SHALL BE ANCHORED TO PREVENT MOVEMENT BY PROVIDING SUITABLE RESTRAINING & METAL HARNESS THRUSTING. SEE PART 2 OF SPECIFICATIONS FOR COMPLETE DETAILS.

PROFILE

SCALE: HOR. 1"=50' SCALE USED 1"=5'

△ REVISION - TRANSMISSION MAIN RE-RELOCATED
△ GENERAL REVISIONS

REGISTERED PROFESSIONAL ENGINEER

ARTESIAN WATER COMPANY
NEWPORT, DELAWARE

SCALE	REVISIONS	
AS NOTED	△	3-5-59
	△	5-6-59

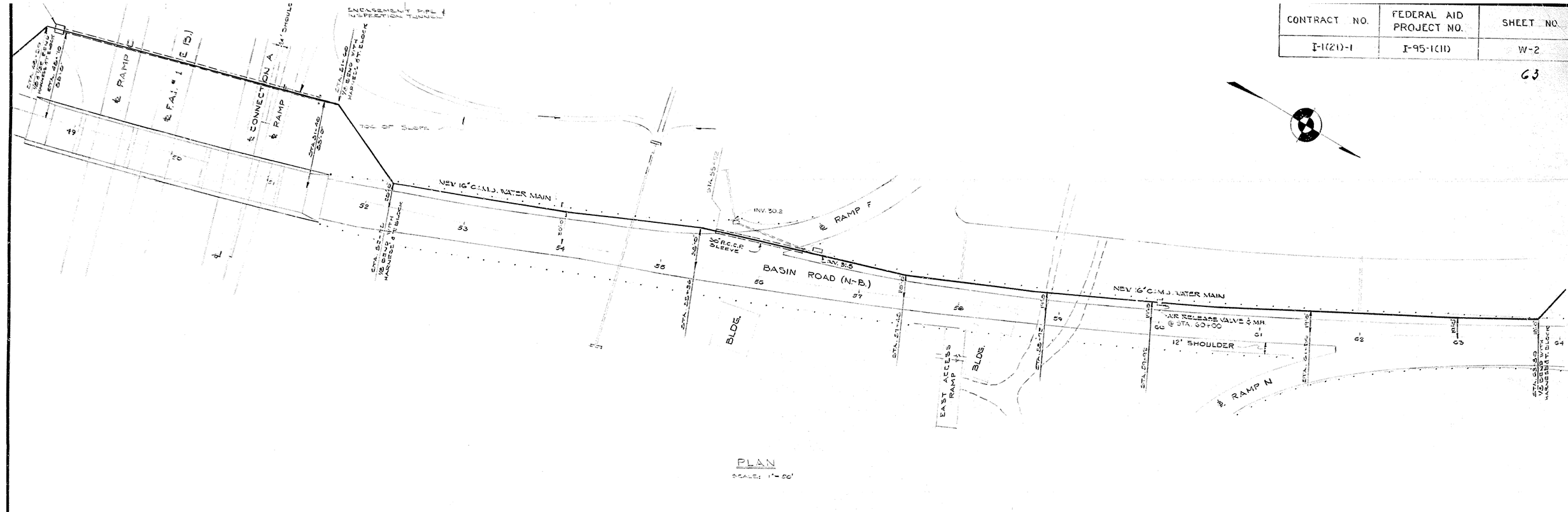
RELOCATED WATER TRANSMISSION MAIN
NORTH BOUND LANE - BASIN ROAD INTERCHANGE
STA. 0+00 to STA. 48+50

ALBRIGHT & FRIEL INC.
CONSULTING ENGINEERS
PHILADELPHIA, PA.

DRAWN BY	CHECKED BY	APPROVED	DATE
R.M.O.	F.V.V.	Francis V. Friel	OCT. 1, 1958
TRACED BY			PLAN NUMBER 58054-1

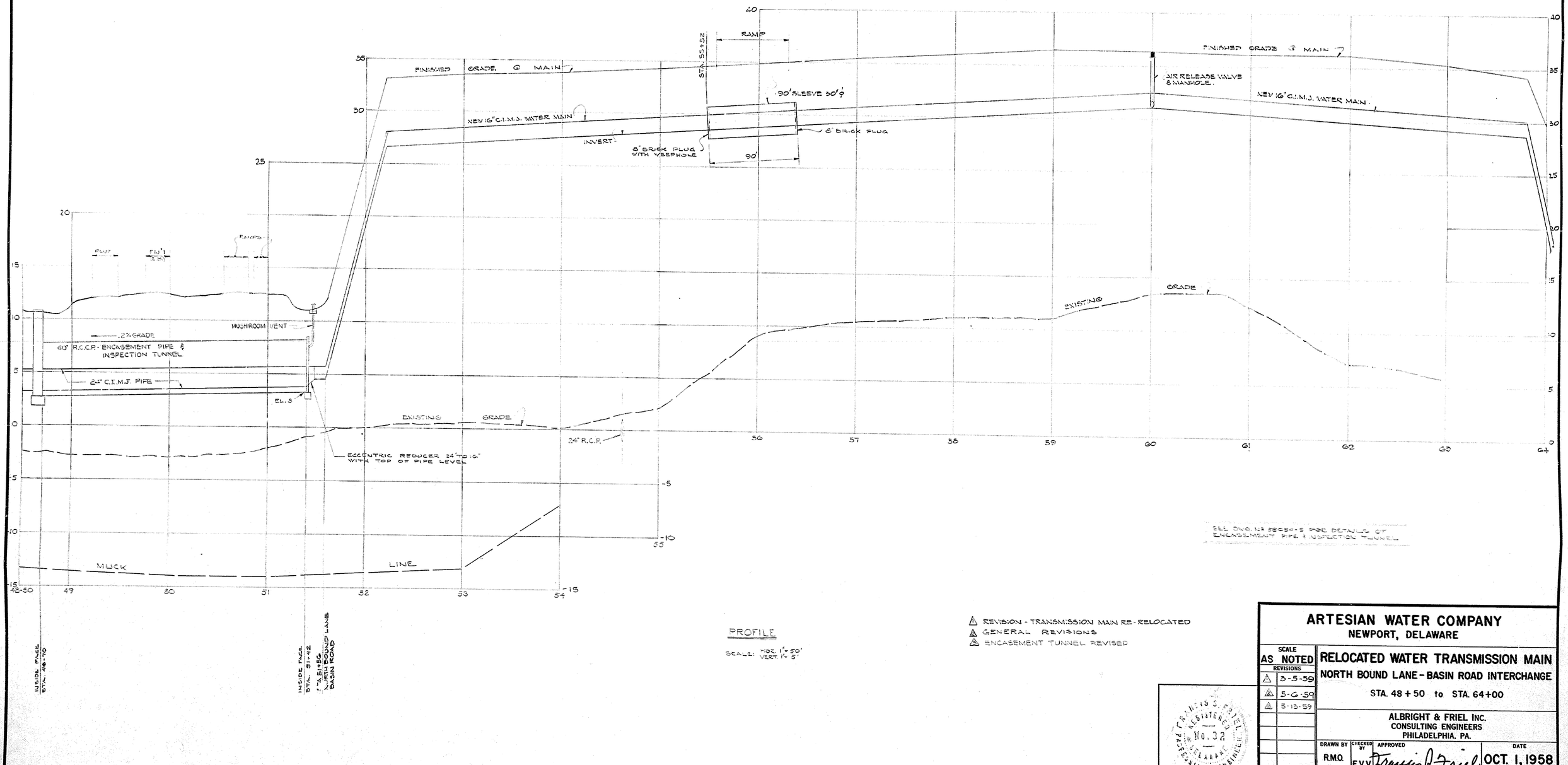
CONTRACT NO.	FEDERAL AID PROJECT NO.	SHEET NO.
I-1(21)-1	I-95-1(11)	W-2

63



PLAN

SCALE: 1" = 50'



PROFILE

SCALE: HOR. 1" = 50'
VERT. 1" = 5'

SEE DWG. NO. 58354-S FOR DETAILS OF ENCASEMENT PIPE & INSPECTION TUNNEL

△ REVISION - TRANSMISSION MAIN RE-RELOCATED
△ GENERAL REVISIONS
△ ENCASEMENT TUNNEL REVISED

FRANCIS V. FRIEL
REGISTERED
No. 33
DELAWARE
PROFESSIONAL ENGINEER

ARTESIAN WATER COMPANY
NEWPORT, DELAWARE

SCALE: AS NOTED

REVISIONS	
△	3-5-59
△	5-6-59
△	5-18-59

RELOCATED WATER TRANSMISSION MAIN
NORTH BOUND LANE - BASIN ROAD INTERCHANGE
STA. 48+50 to STA. 64+00

ALBRIGHT & FRIEL INC.
CONSULTING ENGINEERS
PHILADELPHIA, PA.

DRAWN BY	CHECKED BY	APPROVED	DATE
R.M.O.	F.V.F.	Francis V. Friel	OCT. 1, 1958

TRACED BY

PLAN NUMBER 58354-S

CONTRACT NO.	FEDERAL AID PROJECT NO.	SHEET NO.
I-1(21)-1	I-95-1(11)	W-3

64

BRIDGE NO G-5

℄ RAMP J

℄ B.A.I. # 1 (N-B)

℄ CONNECTION E

ENCASEMENT PIPE & INSPECTION TUNNEL

VALVE CHAMBER

TOE OF SLOPE

AIR RELEASE VALVE & MANHOLE

AIR RELEASE VALVE & MAN. 21E TEMPORARY BRANCH AT AIR RELEASE VALVE FOR CHLORINE CHECK FOR PIPE STERILIZATION

STA 67+10

NEW 16" C.I.M.J. WATER MAIN

℄ BASIN ROAD (N-B)

12' SHOULDER

10' WIDE SHOULDER

12' SHOULDER

℄ RAMP L

℄ RAMP M

℄ AIRPORT ROAD

FOR 8" C.I.M.J. PIPE SEE SUBSKETCH

16"x45° LATERAL, 16"x8" REDUCER & 8" GATE VALVE

30" STEEL SLEEVE

6' SHOULDER

STA. 76+61.01 16"x8" CI. TEE WITH HARNESS & T. BLOCK

STA. 76+61.01 16"x8" CI. TEE WITH HARNESS & T. BLOCK

STA. 64+30.00 16"x8" CI. TEE WITH HARNESS & T. BLOCK

STA. 64+30.00 16" BEND WITH HARNESS & T. BLOCK

STA. 64+30.00 16"x8" CI. TEE WITH HARNESS & T. BLOCK

8" GATE VALVE & BOX

8" DIA. FLANGED DE CAPLEE WITH T. BLOCK

ROAD (S-B)

AIRPORT ROAD

ELEV. 17.1

MANUAL AIR BLEEDER - 2" DIA. 8"x8"x4" TEE & 2" GATE VALVE DISCHARGE INTO DITCH. SEE DETAIL, THIS SHEET.

DITCH

BASIN

8" C.I.M.J. WATER MAIN

ELEV. 16.25

ROAD (N-B)

16" C.I.M.J. WATER MAIN

STA. 76+64.65 ℄ BASIN RD. (N-B)
STA. 84+05.48 ℄ AIRPORT RD.

STA. 76+28 1/8 BEND WITH THRUST BLOCK

STA. 76+51 1/8 BEND WITH HARNESS & T. BLOCK

STA. 76+02 1/16 BEND WITH THRUST BLOCK

16"x45° LATERAL, 16"x8" REDUCER & 8" GATE VALVE WITH CONC. BLOCKING & PADS

30" RCEP SLEEVE

STA. 78+89 45° LATERAL

BASIN

SUBSKETCH OF 8" BRANCH LINE

PLAN

SCALE: 1" = 50'

DETAIL - MANUAL AIR BLEEDER
STA. 48+90 - AIR PORT ROAD
NTS

FINISH GRADE

VALVE BOX

8" GATE VALVE

90° ELBOW

8" C.I.M.J. (TOTAL 28')

TAP CHANGE FOR 2" C.I.M.J.

8"x8"x4" TEE

AIR RELEASE VALVE & M.H. (SEE NOTE ON PLAN)

G MAIN

GRADE

FINISHED

NEW 16" C.I.M.J. WATER TRANSMISSION MAIN

MANHOLE

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

RAMP

FINISHED

MUSHROOM VENT

3% GRADE

60" RCEP ENCASEMENT PIPE & INSPECTION TUNNEL

24" C.I.M.J. PIPE

EL. 3

ECC. REDUCER 24"x16" WITH TOP OF PIPE LEVEL

EXISTING GRADE

MUCK LINE

INSIDE FACE STA. 64+61

INSIDE FACE STA. 66+45

BASIN ROAD (NORTH BOUND)

GRADE

G MAIN

16" WYE CONN.

30" RCEP SLEEVE

NEW 16" C.I.M.J. WATER TRANS. MAIN

8" BRICK PLUG

80'

86'±

8' BRICK PLUG WITH VENT PIPE

45° BEND

EXISTING GRADE

MUCK LINE

PROFILE

SCALE: HOR: 1" = 50'
VERT. 1" = 5'

NOTE: SEE DWG 58054-3 FOR DETAILS OF ENCASEMENT PIPE & INSPECTION TUNNEL

△ REVISION - TRANSMISSION MAIN RE-RELOCATED.
△ GENERAL REVISIONS
△ ENCASEMENT TUNNEL REVISED

FRANCIS S. FRIEL REGISTERED No. 32 CHIEF ASSISTANT CIVIL ENGINEER

REGISTERED PROFESSIONAL ENGINEER

ARTESIAN WATER COMPANY
NEWPORT, DELAWARE

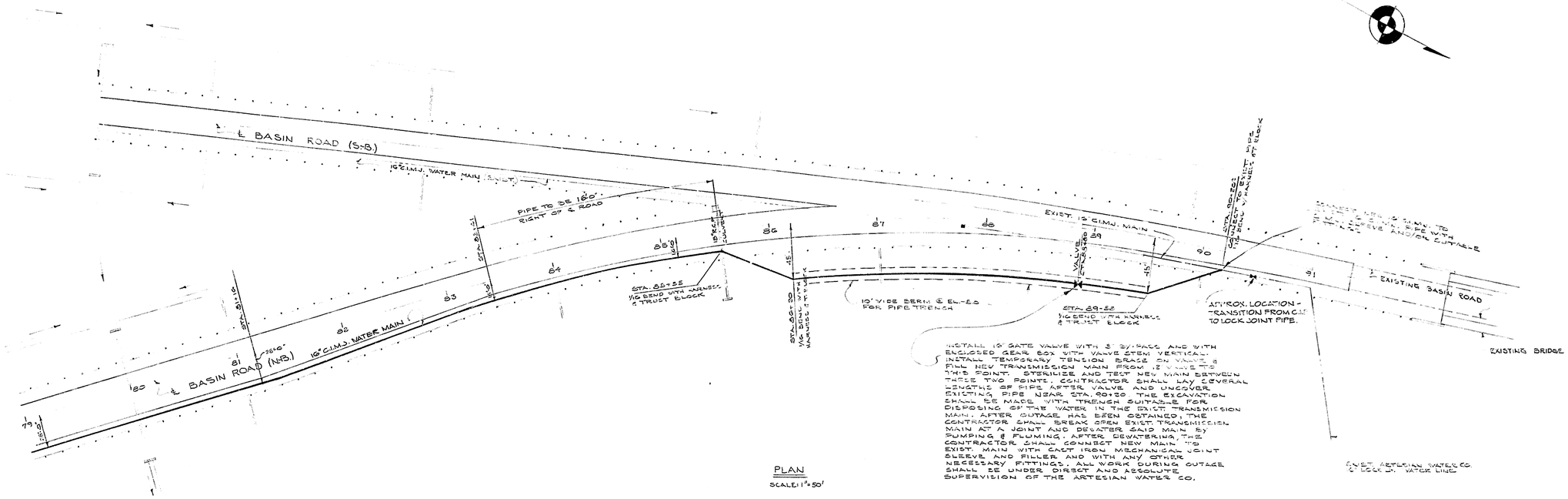
SCALE	RELOCATED WATER TRANSMISSION MAIN
AS NOTED	NORTH BOUND LANE - BASIN ROAD INTERCHANGE
REVISIONS	STA. 64+00 to STA. 79+00
△ 3-5-59	
△ 5-6-59	
△ 5-13-59	

ALBRIGHT & FRIEL INC.
CONSULTING ENGINEERS
PHILADELPHIA, PA.

DRAWN BY	CHECKED BY	APPROVED	DATE
R.M.O.	F.V.V.	Francis S. Friel	OCT. 1, 1958
TRACED BY			PLAN NUMBER 58054-3

CONTRACT NO.	FEDERAL AID. PROJECT NO.	SHEET NO.
I-1(21)-1	I-95-1(11)	W-4

65

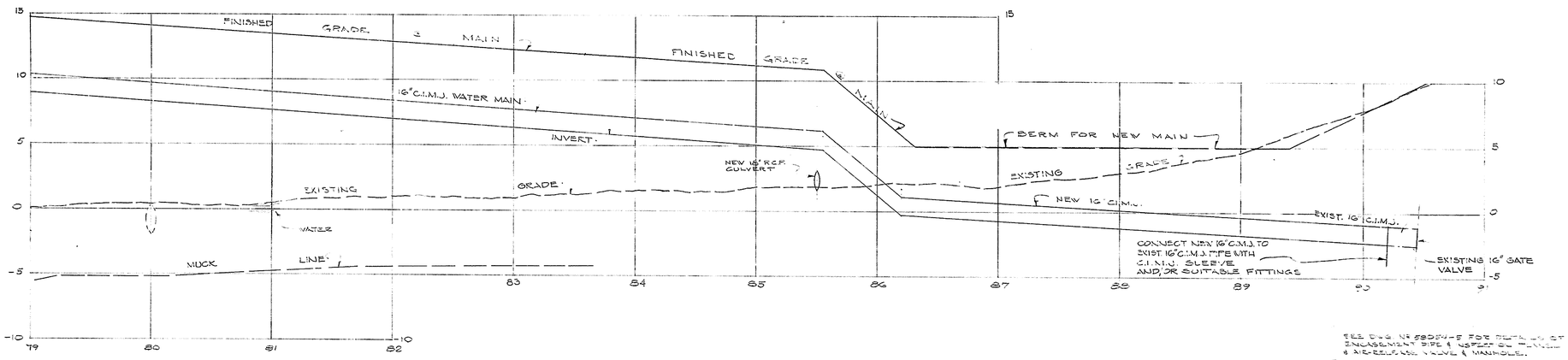


PLAN

SCALE: 1" = 50'

INSTALL 16" GATE VALVE WITH 3" BY-PASS AND WITH ENCLOSED GEAR BOX WITH VALVE STEM VERTICAL. INSTALL TEMPORARY TENSION BRACE ON VALVE & FILL NEW TRANSMISSION MAIN FROM 12" VALVE AT THIS POINT. STERILIZE AND TEST NEW MAIN BETWEEN THESE TWO POINTS. CONTRACTOR SHALL LAY SEVERAL LENGTHS OF PIPE AFTER VALVE AND UNCOVER EXISTING PIPE NEAR STA. 90+20. THE EXCAVATION SHALL BE MADE WITH TRENCH SUITABLE FOR DISPOSING OF THE WATER IN THE EXIST. TRANSMISSION MAIN. AFTER OUTAGE HAS BEEN OBTAINED, THE CONTRACTOR SHALL BREAK OPEN EXIST. TRANSMISSION MAIN AT A JOINT AND DEWATER SAID MAIN BY PUMPING & FLUMING. AFTER DEWATERING, THE CONTRACTOR SHALL CONNECT NEW MAIN TO EXIST. MAIN WITH CAST IRON MECHANICAL JOINT SLEEVE AND FILLER AND WITH ANY OTHER NECESSARY FITTINGS. ALL WORK DURING OUTAGE SHALL BE UNDER DIRECT AND ABSOLUTE SUPERVISION OF THE ARTESIAN WATER CO.

EXIST. ARTESIAN WATER CO. 12" LOCK JT. WATER LINE



PROFILE

SCALE: HOR. 1" = 50'
VERT. 1" = 5'

SEE DWG. NO. S8054-5 FOR DETAILS OF ENCASEMENT PIPE & INSPECTION MANHOLE & RECIRCULATION VALVE & MANHOLE.

△ REVISION - TRANSMISSION MAIN RE-RELOCATED
△ GENERAL REVISIONS
△ ALIGNMENT REVISED

REGISTERED PROFESSIONAL ENGINEER

ARTESIAN WATER COMPANY
NEWPORT, DELAWARE

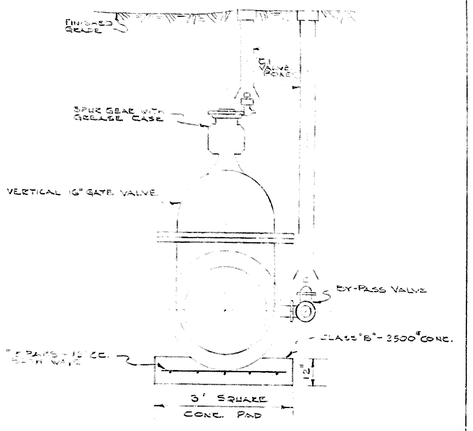
SCALE AS NOTED	RELOCATED WATER TRANSMISSION MAIN
REVISIONS	NORTH BOUND LANE - BASIN ROAD INTERCHANGE
△ 3-5-59	STA. 79+00 to NORTHERN TERMINUS
△ 5-6-59	
△ 5-15-59	

ALBRIGHT & FRIEL INC.
CONSULTING ENGINEERS
PHILADELPHIA, PA.

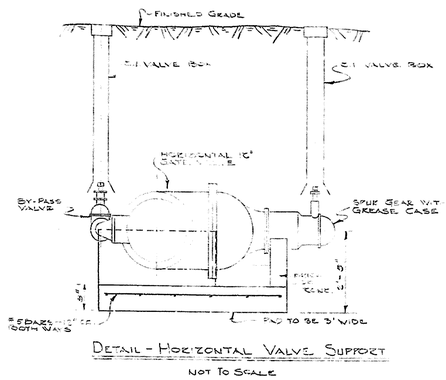
DRAWN BY	CHECKED BY	APPROVED	DATE
R.M.O.	F.V.V.	Francis V. Friel	OCT. 1, 1958
TRACED BY			PLAN NUMBER 58054-4

CONTRACT NO.	FEDERAL AID PROJECT NO.	SHEET NO.
I-1(21)-1	I-95-1(11)	W5

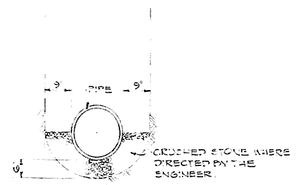
66



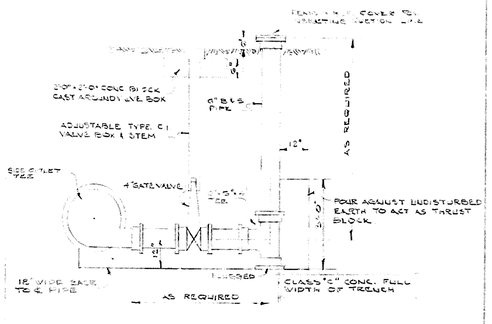
DETAIL - VERTICAL VALVE SUPPORT
NOT TO SCALE



DETAIL - HORIZONTAL VALVE SUPPORT
NOT TO SCALE



DETAIL - STONE BEDDING FOR PIPE
NOT TO SCALE

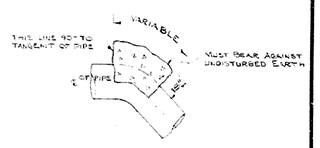


SECTION

NOTE.
THIS TYPE DETAIL NOT USED AT VALVE CHAMBERS

DETAIL - WATER MAIN BLOW-OFF
NOT TO SCALE

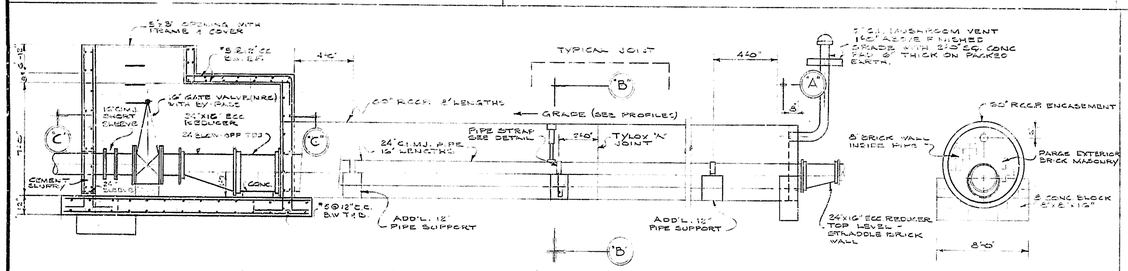
SIZE & TYPE OF FITTING	MINIMUM BEARING AREA REQ'D
90°-45° ELBOWS	28 SQ. FT.
67½° ELBOWS	15 SQ. FT.
6"-22½° ELBOWS	10 SQ. FT.



PLAN

SECTION

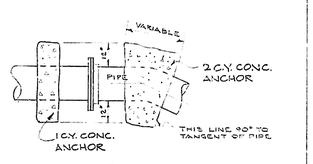
DETAIL - THRUST BLOCK AT BENDS EXCEPT AT SUMMITS
NOT TO SCALE



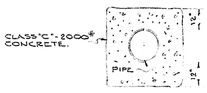
SECTION THROUGH ENCASEMENT PIPE & INSPECTION TUNNEL
SCALE: ¼" = 1'-0"

SECTION A-A

NOTE:
CONC. ANCHOR WILL BE REQ'D FOR 22½° ELBOWS WITH VERTICAL UPTHRUST.
VERT. ELBOWS GREATER THAN 22½° WILL NOT BE PERMITTED.
ANCHORAGE FOR VERT. ELBOWS LESS THAN 22½° WILL BE AS DIRECTED BY ENGR.

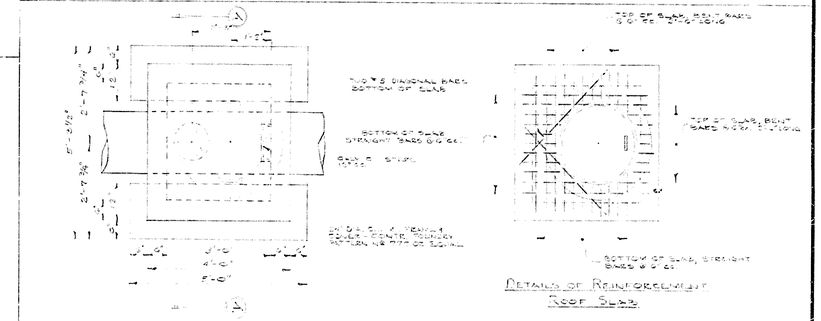


ELEVATION



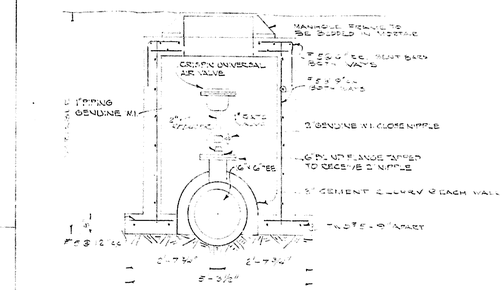
SECTION

DETAIL - ANCHORAGE AT SUMMIT IN PIPELINE △
NOT TO SCALE



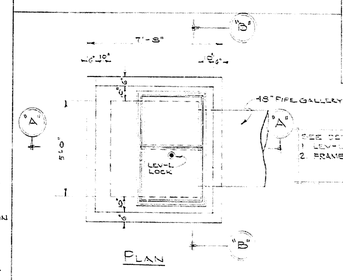
PLAN

Details of Reinforcement Roof Slab

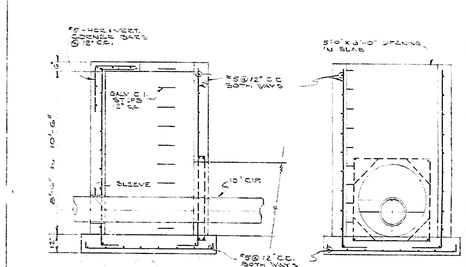


SECTION "A-A"

DETAILS OF AIR RELEASE VALVE & MANHOLE @ STA. 41+90, 60+40, 67+70
NOT TO SCALE



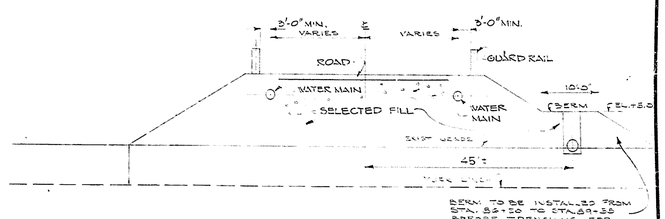
PLAN



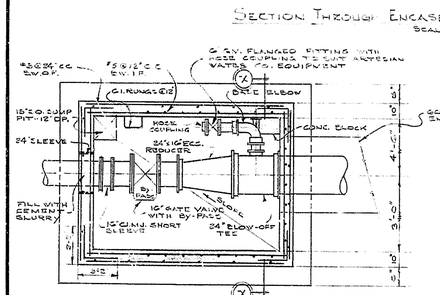
SECTION "A-A"

SECTION "B-B"

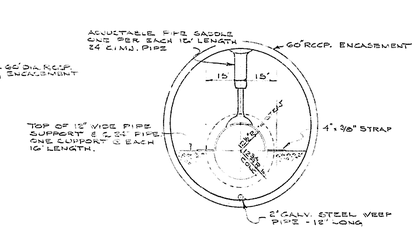
ACCESS MANHOLE
SCALE: ½" = 1'-0"



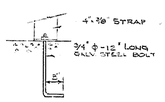
TYPICAL SECTION SHOWING LOCATION OF PIPE TRENCH △
NOT TO SCALE



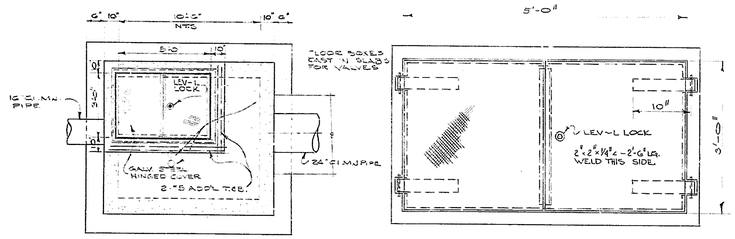
SECTION "C-C"



SECTION "D-B"

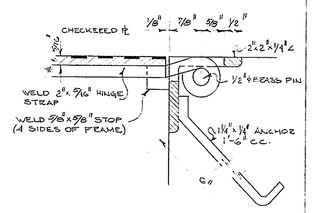


DETAIL PIPE ANCHOR
SCALE: 1" = 1'-0"

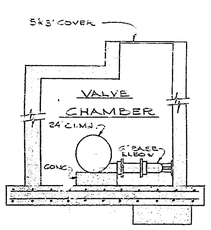


PLAN - VALVE CHAMBER
NTS.

GALV. COVER & FRAME
NOT TO SCALE



SECTION AT HINGE
NOT TO SCALE



SECTION "X-X"

△ REVISION - GENERAL REVISIONS
△ REVISION - VALVE CHAMBER & ENCASEMENT PIPE
△ VALVE CHAMBER & ENCASEMENT PIPE
△ PILING REMOVED

REGISTERED PROFESSIONAL ENGINEER
No. 32

ARTESIAN WATER COMPANY
NEWPORT, DELAWARE

RELOCATED WATER TRANSMISSION MAIN
NORTH BOUND LANE - BASIN ROAD INTERCHANGE
MISCELLANEOUS DETAILS

ALBRIGHT & FRIEL INC.
CONSULTING ENGINEERS
PHILADELPHIA, PA.

SCALE	REVISIONS	DRAWN BY	CHECKED BY	APPROVED	DATE
AS NOTED	△ 5-5-59	R.M.O.	F.V.V.	Francis P. Friel	OCT. 1, 1958
	△ 5-6-59	TRACED BY			PLAN NUMBER
	△ 5-13-59				58054 - 5
	△ 5-15-59				

36.2