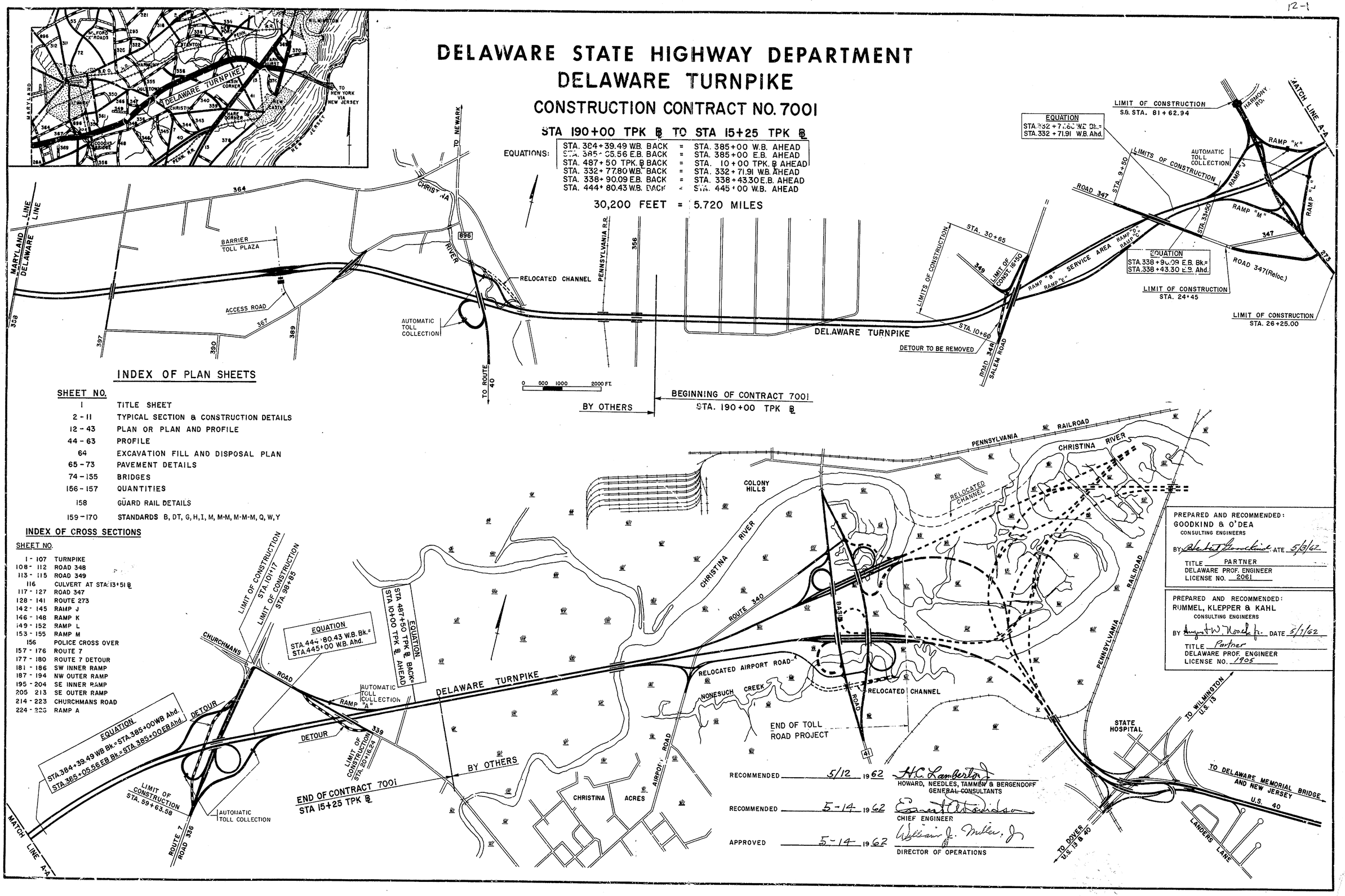
DELAWARE STATE HIGHWAY DEPARTMENT
DELAWARE TURNPIKE
CONSTRUCTION CONTRACT NO. 7001

STA 190+00 TPK ℄ TO STA 15+25 TPK ℄

EQUATIONS:

STA. 384+39.49 W.B. BACK	=	STA. 385+00 W.B. AHEAD
STA. 385+05.56 E.B. BACK	=	STA. 385+00 E.B. AHEAD
STA. 487+50 TPK. ℄ BACK	=	STA. 10+00 TPK. ℄ AHEAD
STA. 332+77.80 W.B. BACK	=	STA. 332+71.91 W.B. AHEAD
STA. 338+90.09 E.B. BACK	=	STA. 338+43.30 E.B. AHEAD
STA. 444+80.43 W.B. BACK	=	STA. 445+00 W.B. AHEAD

30,200 FEET = 5.720 MILES



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PREPARED AND RECOMMENDED:
GOODKIND & O'DEA
CONSULTING ENGINEERS
BY Robert Goodkind DATE 5/3/62
TITLE PARTNER
DELAWARE PROF. ENGINEER
LICENSE NO. 2061

PREPARED AND RECOMMENDED:
RUMMEL, KLEPPER & KAHL
CONSULTING ENGINEERS
BY August W. Roach Jr. DATE 5/7/62
TITLE Partner
DELAWARE PROF. ENGINEER
LICENSE NO. 1905

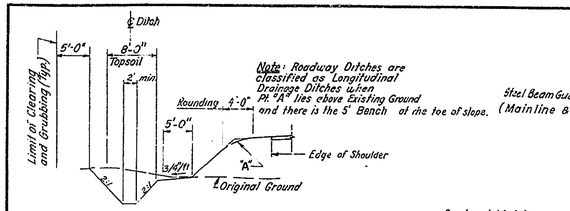
RECOMMENDED 5/12 1962 H.C. Lamberton
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
GENERAL CONSULTANTS

RECOMMENDED 5-14 1962 Earnest A. Hendrickson
CHIEF ENGINEER

APPROVED 5-14 1962 William J. Miller, Jr.
DIRECTOR OF OPERATIONS

COUNTY	CONTRACT	F.A.P. RAD. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE		2	DEL.			2	170

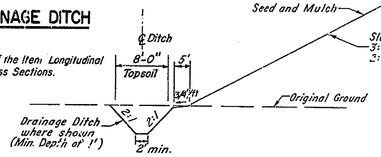
DELAWARE TURNPIKE
CONTRACT 7001
1968

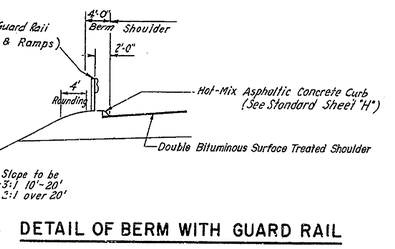


LONGITUDINAL DRAINAGE DITCH

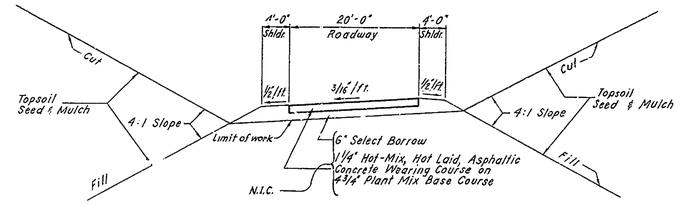
No Scale

Note: For Longitudinal Limits of the item "Longitudinal Ditch Excavation" See Cross Sections.

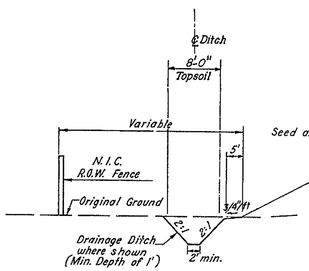




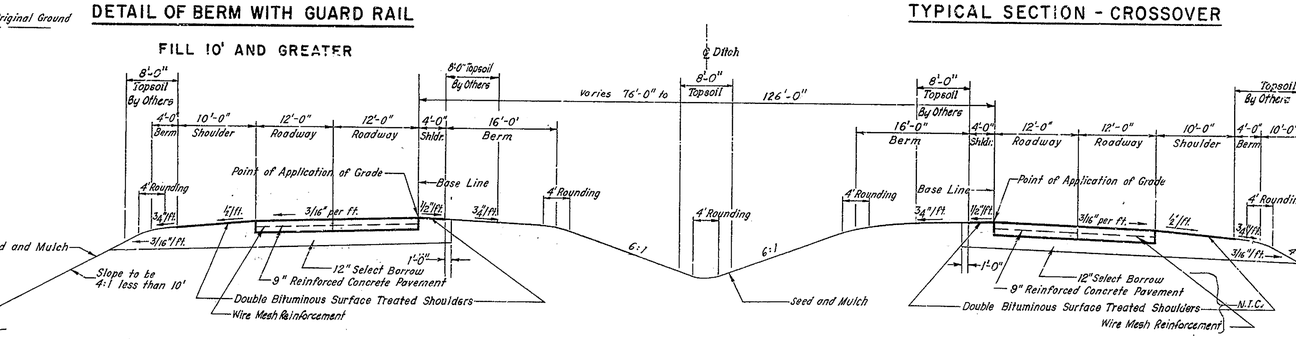
DETAIL OF BERM WITH GUARD RAIL



TYPICAL SECTION - CROSSOVER



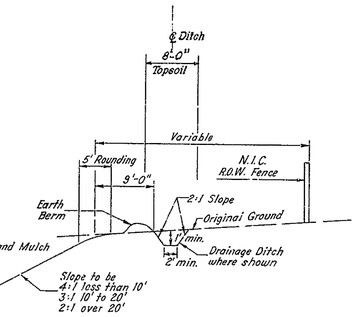
FILL SECTION



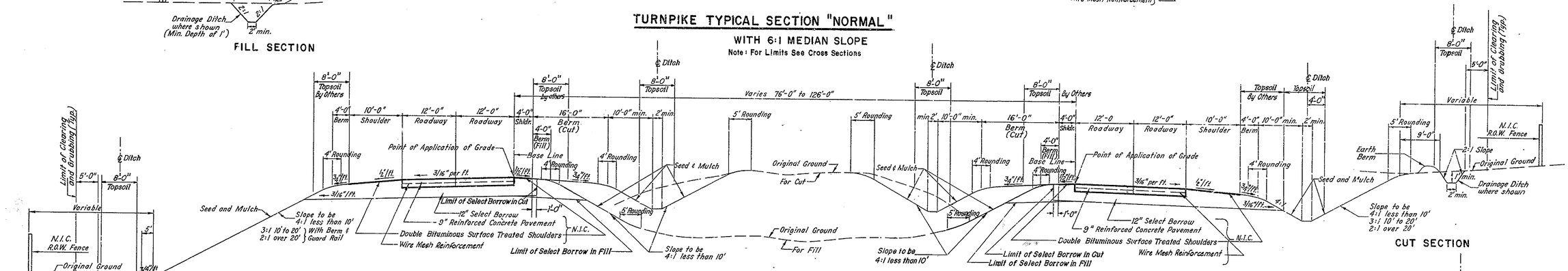
TURNPIKE TYPICAL SECTION "NORMAL"

WITH 6:1 MEDIAN SLOPE

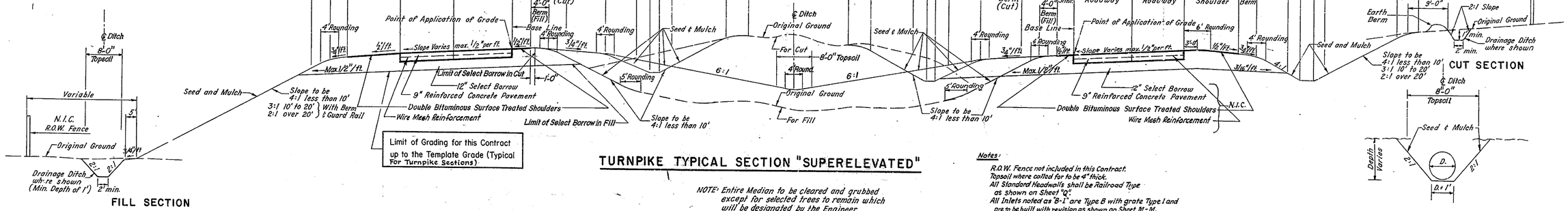
Note: For Limits See Cross Sections



CUT SECTION



TURNPIKE TYPICAL SECTION "NORMAL"



Limit of Grading for this Contract up to the Template Grade (Typical For Turnpike Sections)

TURNPIKE TYPICAL SECTION "SUPERELEVATED"

NOTE: Entire Median to be cleared and grubbed except for selected trees to remain which will be designated by the Engineer.

SCALE: HOR. 3/32" = 1'-0"
VER. 3/16" = 1'-0"

Notes:

R.O.W. Fence not included in this Contract.
Topsoil where called for to be 4" thick.
All Standard Headwalls shall be Railroad Type as shown on Sheet "Q".
All Inlets noted as "B-1" are Type B with grate Type I and are to be built with revision as shown on Sheet M-M.
In areas to be paved by this contract the limits of seeding & Mulching are the edge of shoulder to 3' beyond top of slope, toe of slope or outer edge of drainage ditch when ditch is adjacent to slope.
In areas not paved by this contract the inner limit of seeding & Mulching is the intersection of the slope and template grade.
Median in areas not paved to be seeded & mulched only when slope is steeper than 4:1
Quantities shown on cross section future sheets are for total section including paving contract.

TYPICAL SECTION FOR LATERAL DITCHING

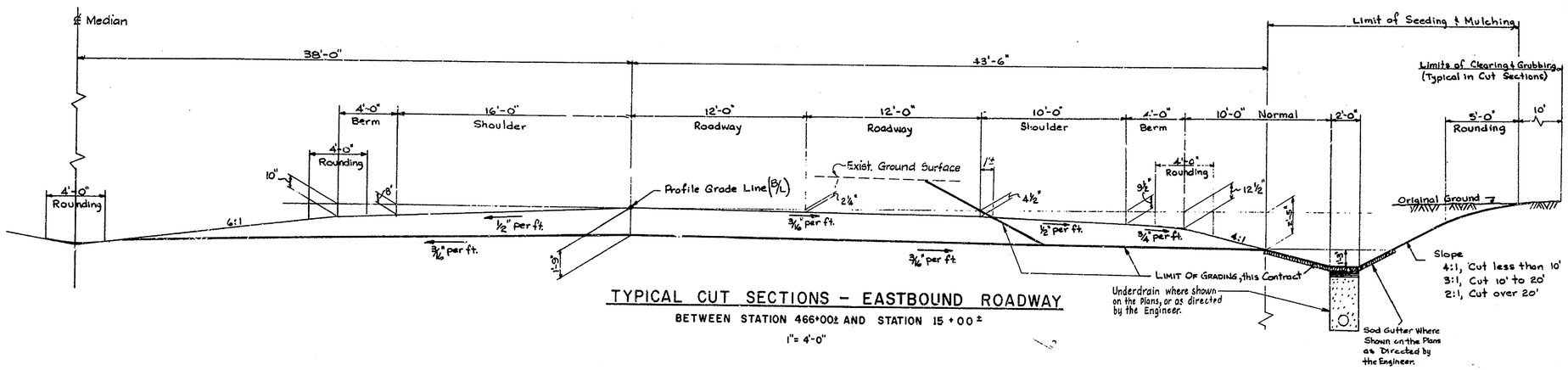
NO SCALE

BENCHMARKS
CROSS MARKS
EARTHWORK
DRAINAGE

DUNDUND & O'DEA
CONSULTING ENGINEERS
MONTCLAIR, NEW JERSEY

"Imperial" 358 W. B. & E.

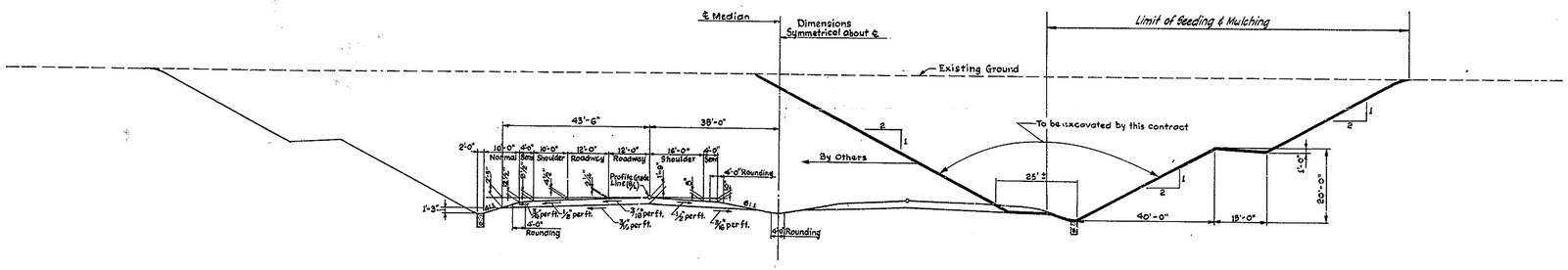
COUNTY	CONTRACT	P.R.A. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE	7001	2	DEL.			3	170



TYPICAL CUT SECTIONS - EASTBOUND ROADWAY

BETWEEN STATION 466+00± AND STATION 15+00±

1" = 4'-0"



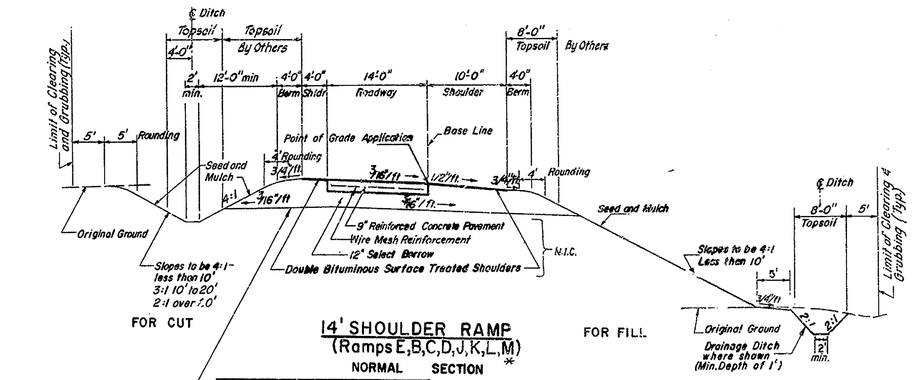
TYPICAL DEEP CUT SECTION

1" = 20'-0"

Notes:

1. For General Notes, see Sheet No. 12.
2. Finished Cut and Fill slopes and Ditches are to be Seeded and Mulched except where otherwise shown on the plans, or as directed by the Engineer.

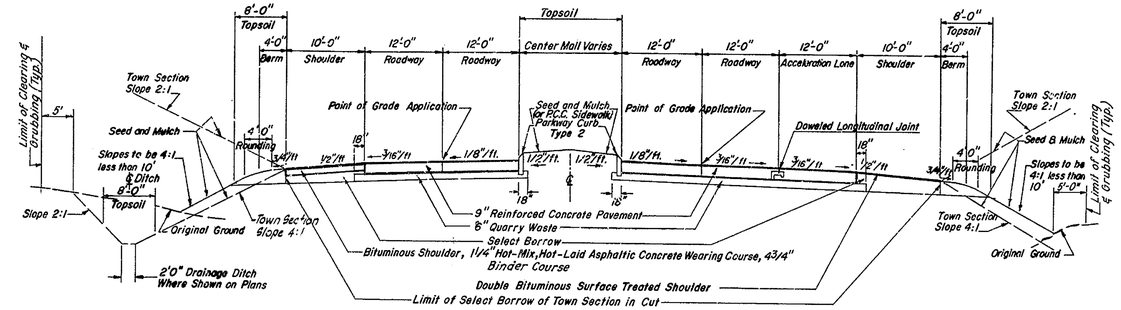
DELAWARE TURNPIKE
CONTRACT 7001
1962



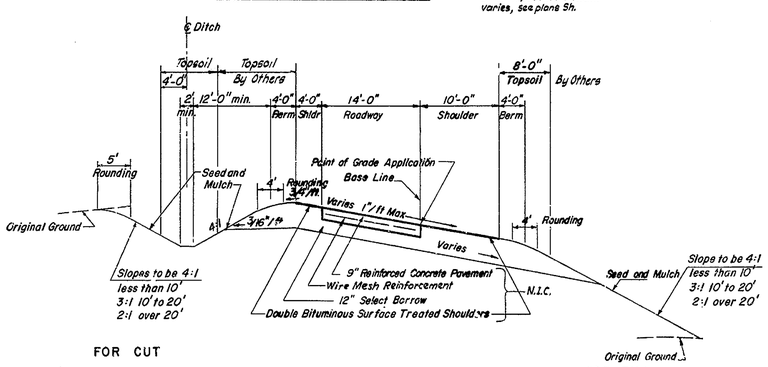
14' SHOULDER RAMP
(Ramps E,B,C,D,J,K,L,M)
NORMAL SECTION *

Limit of Grading for this Contract up to the Template Grade (Typical for Turnpike Ramps)

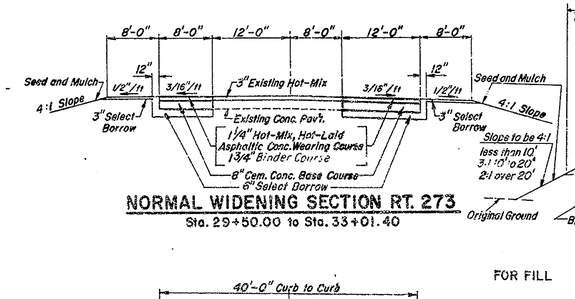
* Also SE outer ramp and N.W. outer ramp Route 7 Interchange on SE outer pavement width varies, see plans Sh.



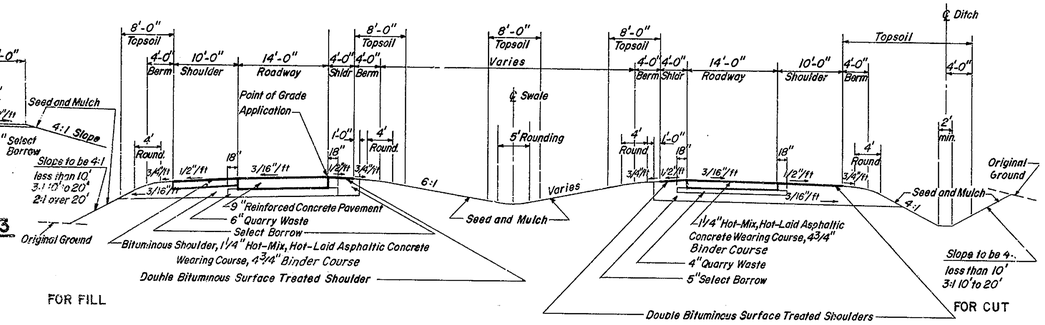
TYPICAL SECTION ROUTE 273 AT STA. 44+00



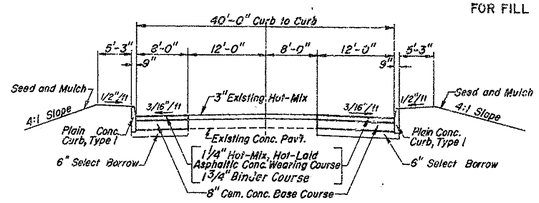
14' SHOULDER RAMP
SUPERELEVATED SECTION



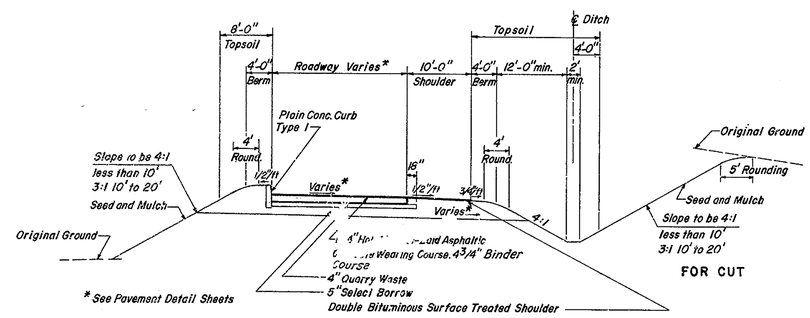
NORMAL WIDENING SECTION RT. 273
Sta. 29+50.00 to Sta. 33+01.40



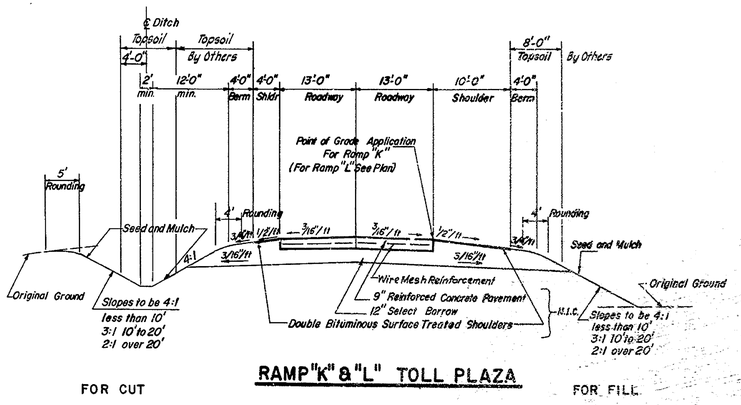
TYPICAL SECTION ROUTE 273 AT STA. 68+00 S.B.



NORMAL WIDENING SECTION ROUTE 273
Sta. 26+25.00 to Sta. 29+50.00



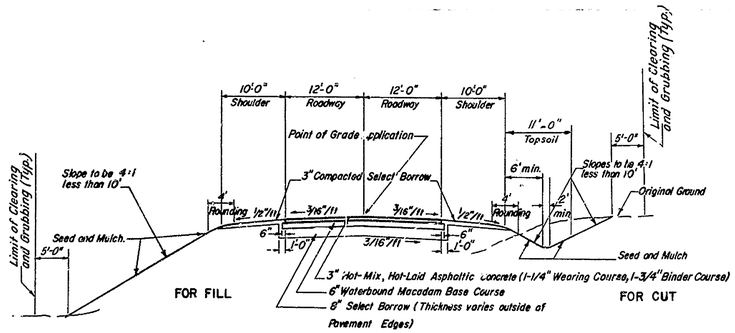
TYPICAL SECTION SPUR



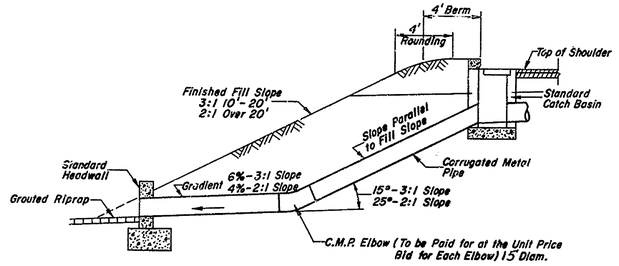
RAMP "K" & "L" TOLL PLAZA

GOODKIND & O'DEA
CONSULTING ENGINEERS
MONTCLAIR, NEW JERSEY

DELAWARE TURNPIKE
CONTRACT 7061
1962

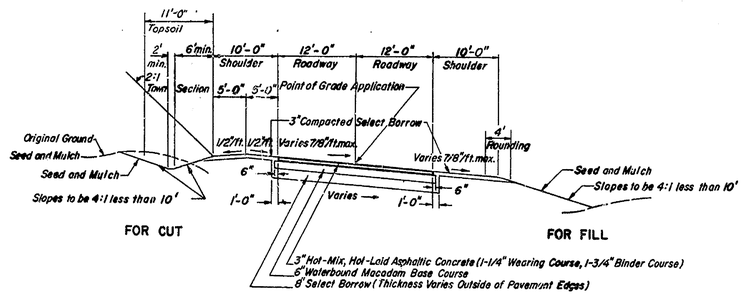


NORMAL SECTION ROADS 347 & 348

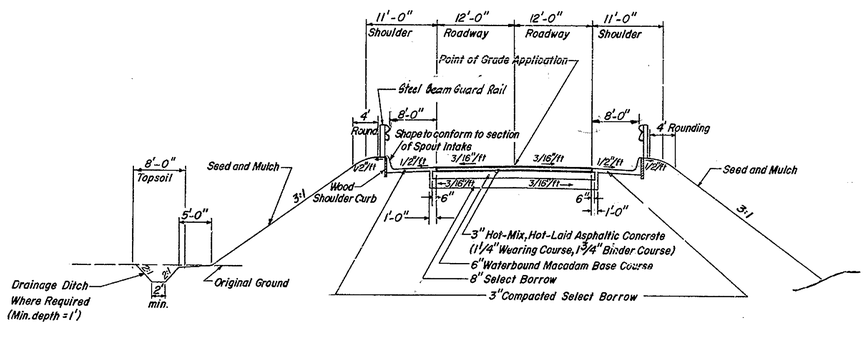


DETAIL OF C.M.P. ELBOWS

No Scale



SUPERELEVATED SECTION ROAD 347



TYPICAL SECTION
ROAD 347 & 348
FILL 10 FT. and GREATER

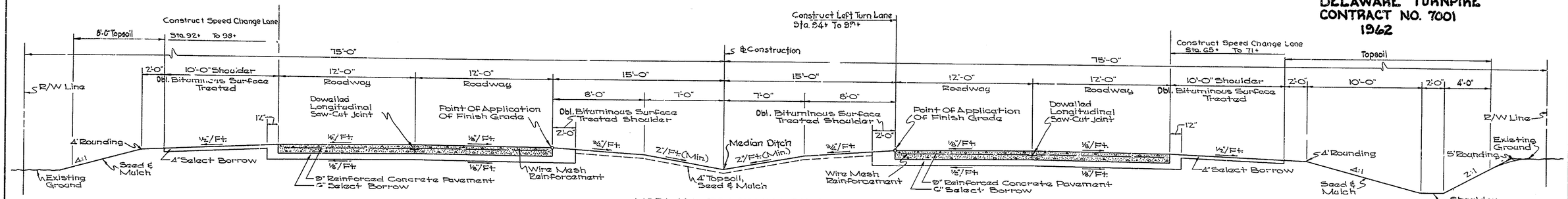
NOTES:

1. For Road 348 Detour and Road 349 Typical Sections See Sheet No. 19
2. For Details of Wood Shoulder Curb and Spout Intake See Standard Sheet "I". (Delete all Details of Wire Rope Fence on that Sheet.)
3. Place Bituminous Surface Treatment on 3" Compacted Select Borrow at all Driveways and Shoulders of Roads 347 & 348.

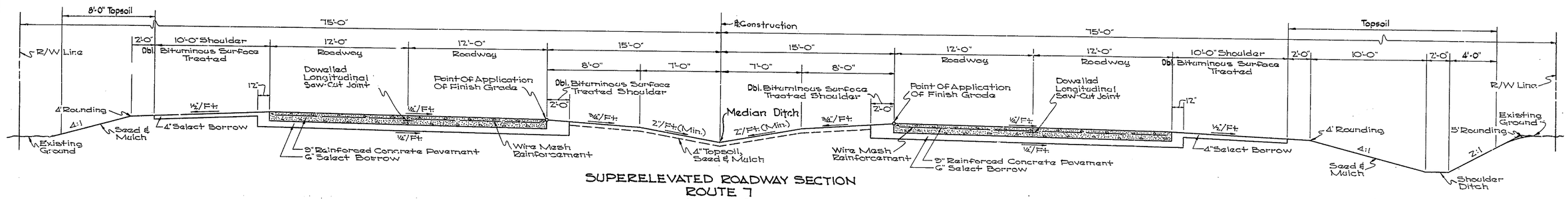
GOODKIND & O'DEA
CONSULTING ENGINEERS
MONTCLAIR, NEW JERSEY

COUNTY	CONTRACT	P.R.A. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
N.C.		2	DEL.			6	170

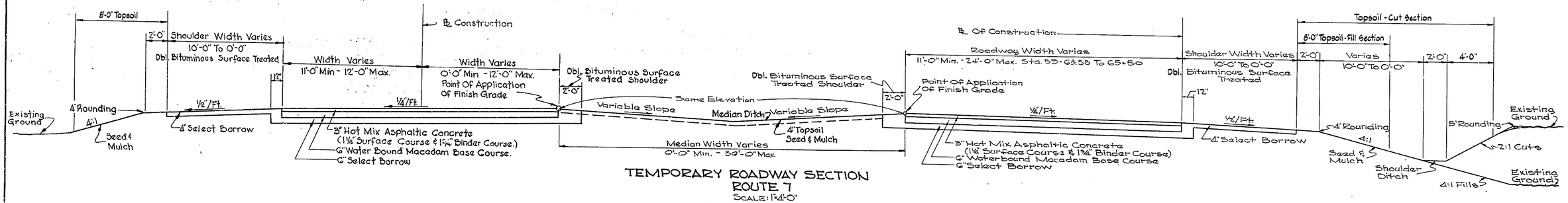
DELAWARE TURNPIKE
CONTRACT NO. 7001
1962



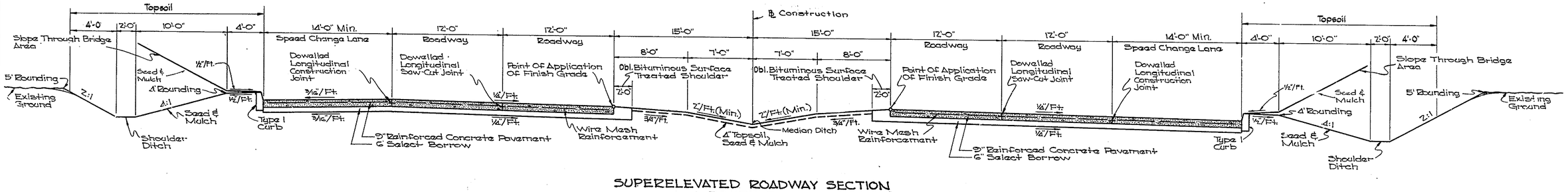
NORMAL ROADWAY SECTION
ROUTE 7
SCALE: 1"=4'-0"
Sta. 65+ To Sta. 73+
Sta. 92+ To Sta. 99+



SUPERELEVATED ROADWAY SECTION
ROUTE 7
SCALE: 1"=4'-0"
Sta. 73+ To Sta. 92+



TEMPORARY ROADWAY SECTION
ROUTE 7
SCALE: 1"=4'-0"
Sta. 55+63.58 To 65+50



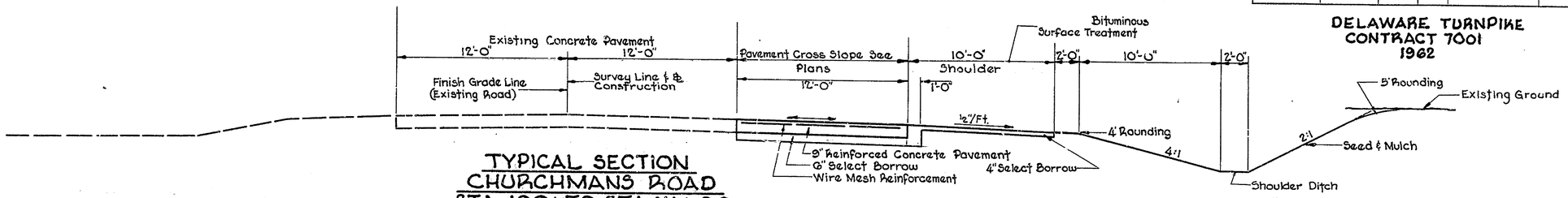
SUPERELEVATED ROADWAY SECTION
ROUTE 7
WITH SPEED CHANGE LANES
SCALE: 1"=5'-0"
S.B.L.- Sta. 74+ To Sta. 84+
N.B.L.- Sta. 80+ To Sta. 84+

TIE POINTS
BENCH MARKS
ELEVATIONS
DRAINAGE

"Imperial" 156 W. B. & Z.

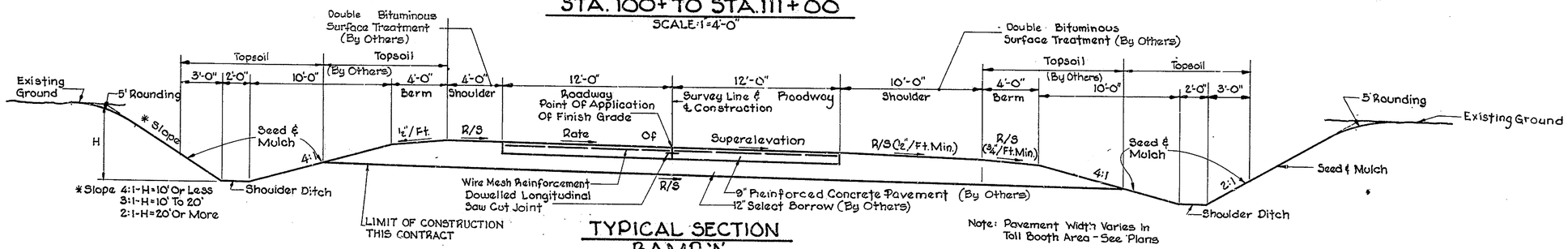
COUNTY	CONTRACT	F.R.A. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
N.C.		2	DEL.			7	170

DELAWARE TURNPIKE CONTRACT 7001 1962



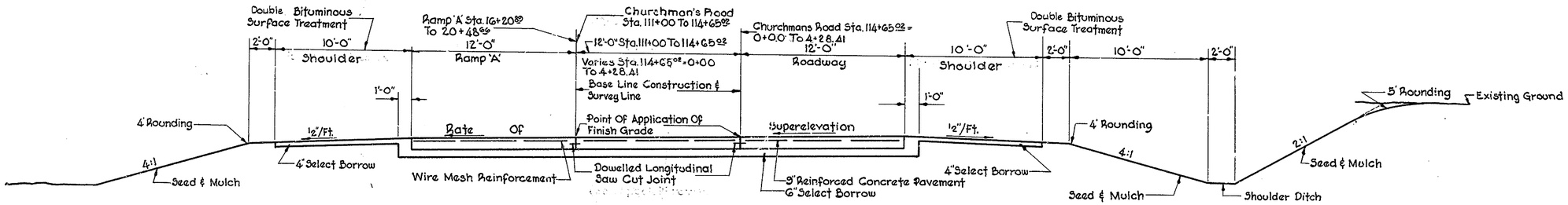
TYPICAL SECTION CHURCHMANS ROAD STA. 100+ TO STA. 111+00

SCALE: 1"=4'-0"



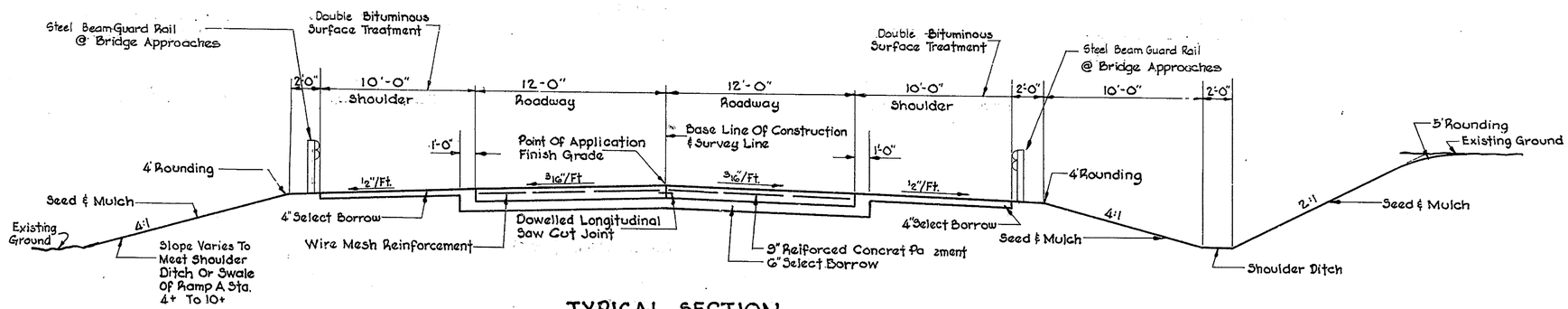
TYPICAL SECTION RAMP 'A' STA. 6+00 TO STA. 16+29.89

SCALE: 1"=4'-0"



TYPICAL SECTION CHRUCHMANS ROAD STA. 111+00 TO STA. 4+28.41 RAMP 'A' STA. 16+20.89 TO STA. 20+48.66

SCALE: 1"=4'-0"



TYPICAL SECTION CHURCHMANS ROAD STA. 4+28.41 TO STA. 20+00

SCALE: 1"=4'-0"

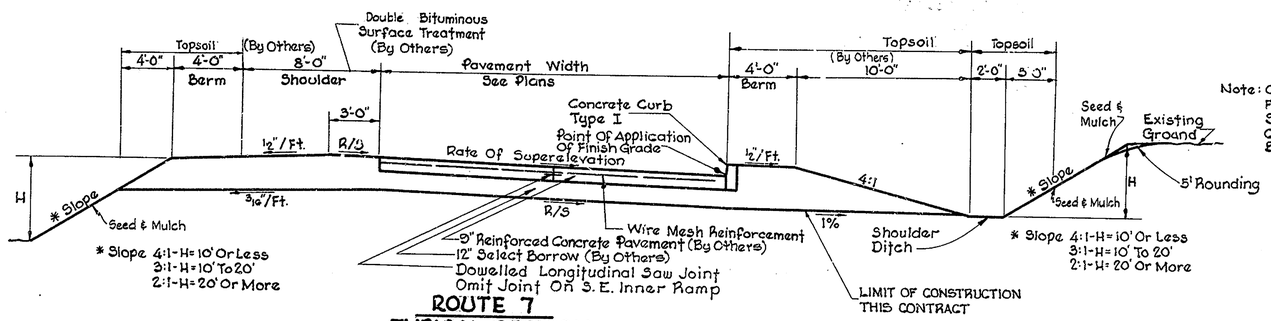
BEARINGS
TIE POINTS
BENCH MARKS
EARTHWORK
DRAINAGE

REVISIONS

"Imperial" 356 W. B. & E.

COUNTY	CONTRACT	P.R.A. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
N.C.		2	DEL.			8	170

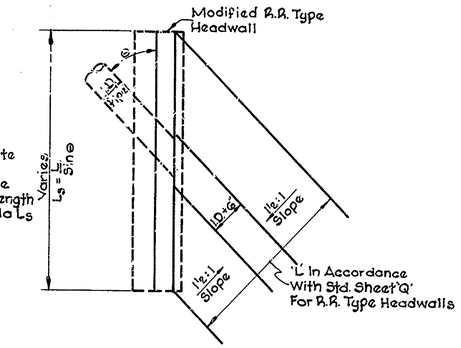
DELAWARE TURNPIKE
CONTRACT 7001
1962



ROUTE 7 TYPICAL SECTION INNER RAMP

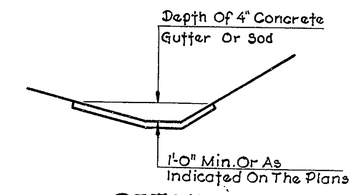
SCALE: 1"=4'-0"

Note: Cubic Yards Of Concrete For Pipe Endwalls For Skewed Pipes Shall Be Computed From The Length Based On The Formula $L_s = \frac{L}{\sin\theta}$



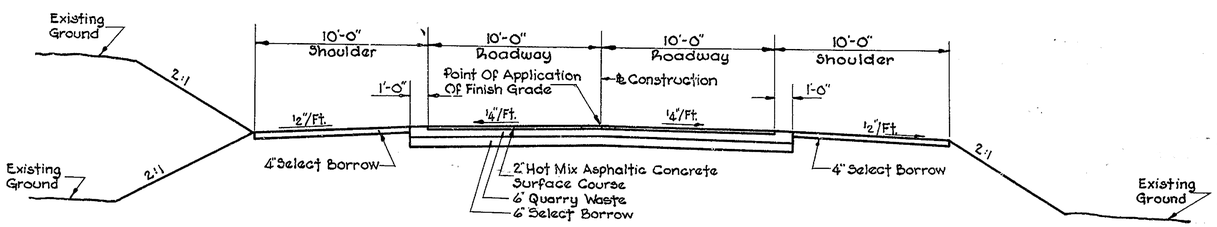
METHOD OF DETERMINING LENGTH OF R.R. TYPE HEADWALL FOR SKEW PIPES

SCALE - 1"=4'-0"



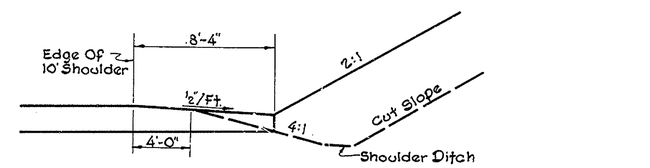
DETAIL SOD OR CONCRETE DITCHES

No Scale
STA. 385+ TO STA. 471+



ROUTE 7 DETOUR ROAD

SCALE-1"=4'-0"

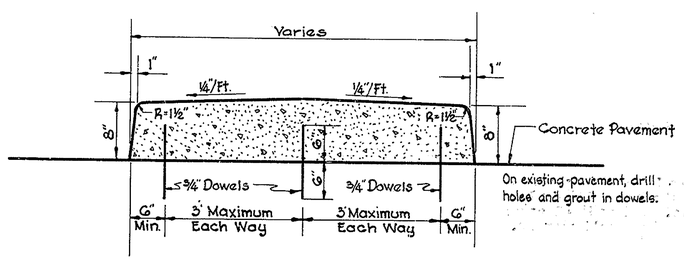


Note: Transition From Bridge Shoulder Section To Shoulder Ditch Section In 50'

SHOULDER DETAIL IN BRIDGE AREA

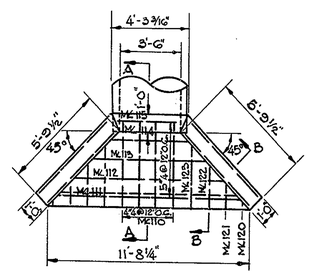
W.B.L. STA. 466+11 TO STA. 466+70 Lt.
E.B.L. STA. 469+24 TO STA. 471+17 Rt.

SCALE-1"=5'-0"

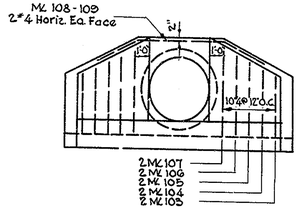


DETAIL CONCRETE ISLAND

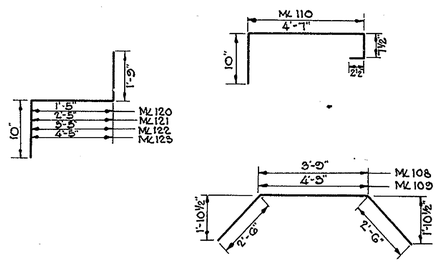
SCALE - 1"=1'-0"



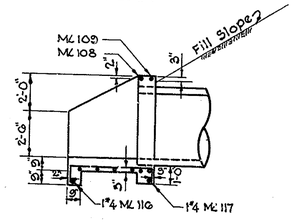
PLAN



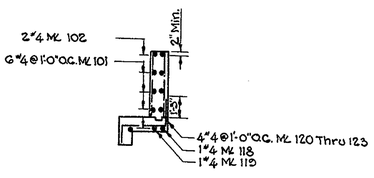
ELEVATION



BENDING DIAGRAMS



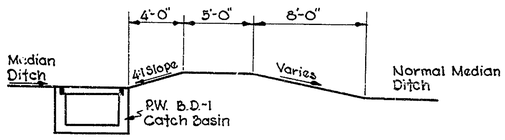
SECTION A-A



SECTION B-B

HEADWALL 42" R.C. PIPE

SCALE: ¼"=1'-0"
STA. 64+ ROUTE #7
STA. 6+50 S.W. INNER RAMP, ROUTE #7 INTERCHANGE



MEDIAN CONSTRUCTION AT CATCH BASIN

SCALE - 1"=5'-0"
STA. 385+ TO STA. 471+

HEADWALL 42" R.C.P. - REINFORCEMENT									
STRAIGHT BARS					BENT BARS				
No.	Size	Length	Mark	Weight	No.	Size	Length	Mark	Weight
12	4	5'-5"	101	43	1	4	8'-9"	108	6
4	4	3'-0"	102	8	1	4	9'-3"	109	6
2	4	2'-5"	103	3	4	4	6'-3"	110	17
2	4	2'-9"	104	4	2	4	4'-0"	120	5
2	4	3'-1"	105	4	2	4	5'-0"	121	7
2	4	3'-5"	106	5	2	4	6'-0"	122	8
2	4	3'-9"	107	5	2	4	7'-0"	123	9
1	4	12'-5"	111	8					
1	4	11'-2"	112	7					
1	4	9'-2"	113	6					
1	4	7'-2"	114	5					
1	4	5'-2"	115	3					
1	4	11'-5"	116	8					
1	4	4'-8"	117	3					
2	4	6'-0"	118	8					
2	4	6'-6"	119	9					
		TOTAL		129#			TOTAL		58#

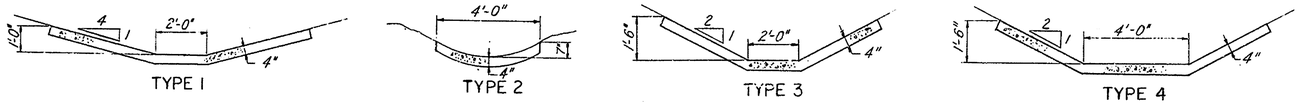
Note: Bars Listed Are For One Headwall, Four Required.

"Imperial" 156 W. B. & E.

(41)

COUNTY	CONTRACT	F.R.A. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
		2	DEL.			9	170

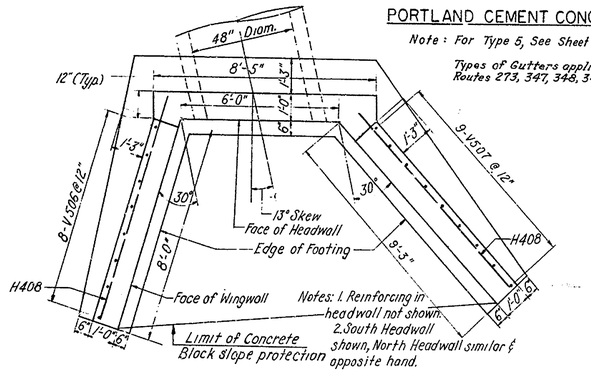
DELAWARE TURNPIKE
CONTRACT 7001
1962



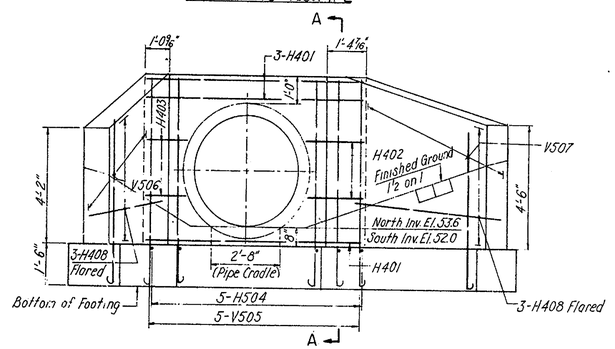
PORTLAND CEMENT CONCRETE GUTTERS

Note: For Type 5, See Sheet 10

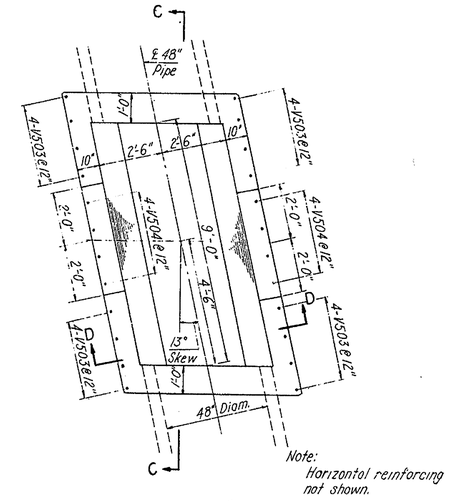
Types of Gutters applicable only between Main Line Sta. 190+00 to Sta 385+00, Routes 273, 347, 348, 349 and Ramps J, K, L and M.



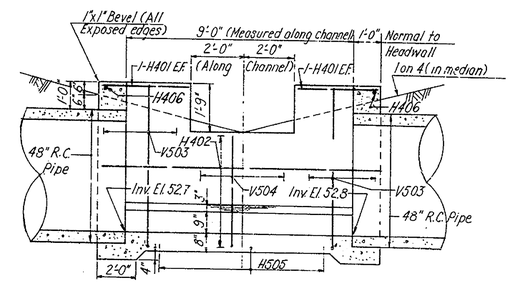
PLAN - 48" R.C. PIPE



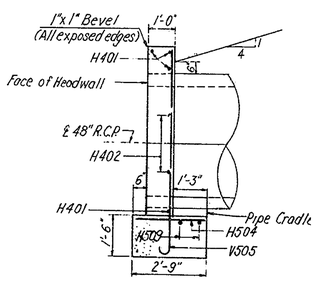
SOUTH ELEVATION



CHANNEL - 48" PIPE



SECTION C-C

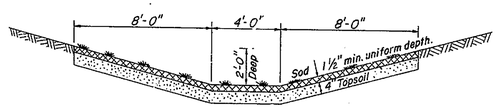


SECTION A-A

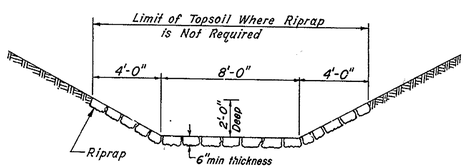
48" Pipe			
H401	#4	8	8'-2"
H402	4	4	2'-3"
H403	4	4	1'-3"
H504	5	10	2'-6"
V505 *	5	10	7'-9"
V506 *	5	16	8 Bars vary by 4" from 5'-6" to 7'-10"
V507 *	5	18	9 Bars vary by 3" from 5'-10" to 7'-10"
H408	4	12	9'-0"
H509	5	4	7'-11"
~~72" Pipe~~			
~~H401~~	~~4~~	~~6~~	~~9'-11"~~
~~H402~~	~~4~~	~~4~~	~~2'-3"~~
~~H403~~	~~4~~	~~4~~	~~2'-0"~~
~~H504~~	~~5~~	~~10~~	~~2'-6"~~
~~V505 *~~	~~5~~	~~10~~	~~9'-10"~~
~~V506 *~~	~~5~~	~~24~~	~~12 Bars vary by 3" from 7'-1" to 9'-10"~~
~~V507 *~~	~~5~~	~~26~~	~~13 Bars vary by 3" from 7'-2" to 10'-2"~~
~~H408~~	~~4~~	~~20~~	~~13'-0"~~
~~H509~~	~~5~~	~~4~~	~~9'-11"~~

Note: Bar List contains all bars for North and South headwalls (48" Pipe)

V505 (48" Pipe)	7'-2"
V506 " "	8 Bars vary by 4" from 4'-11" to 7'-3"
V507 " "	9 Bars vary by 3" from 5'-3" to 7'-3"
~~V505 (72" Pipe)~~	~~9'-3"~~
~~V506 " "~~	~~12 Bars vary by 3" from 6'-6" to 9'-3"~~
~~V507 " "~~	~~13 Bars vary by 3" from 6'-7" to 9'-7"~~

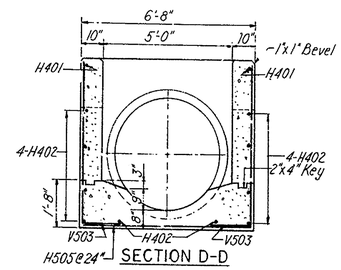


SOD GUTTER



CHANNEL

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



SECTION D-D

Note: Scale 3/8" = 1'-0" except as noted. For Quantities in Headwalls see Table on Sheet 10.

GRADE
BEARINGS
TIE POINTS
BENCH MARKS
EARTHWORK
DRAINAGE

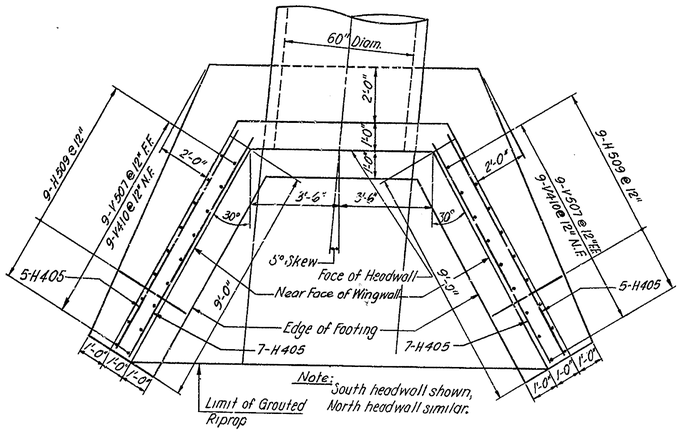
REVISIONS

GOODKIND & O'DEA
CONSULTING ENGINEERS
MONTCLAIR, NEW JERSEY

"Imperial" 156 W. B. & E.

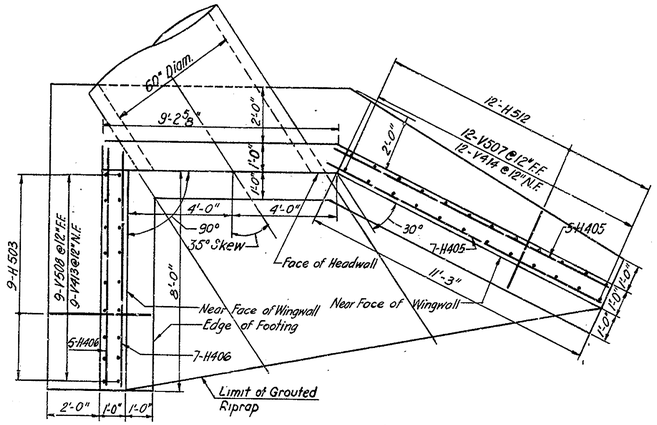
COUNTY	CONTRACT	F. H. A. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE		2	DEL.			10	170

DELAWARE TURNPIKE
CONTRACT 7001
1962



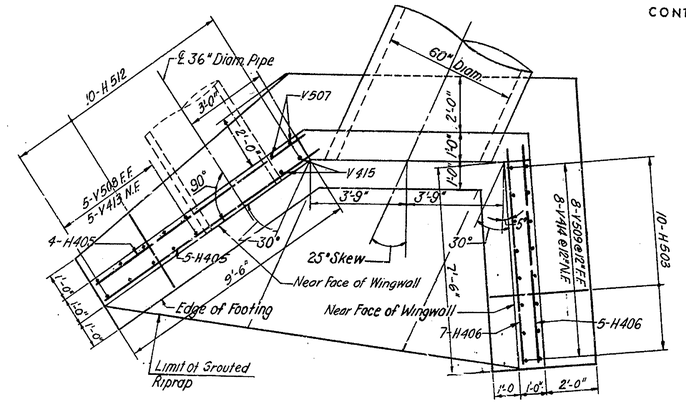
PLAN - 60" R.C. PIPE
SURVEY ⊕ STA. 340+70 & ℄ ROAD 347. STA. 31+33

Note: For Location, See Plan Sheets No. 23 & 24

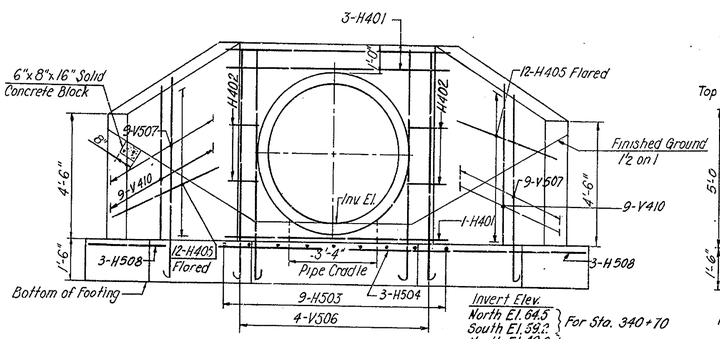


PLAN - 60" R.C. PIPE
RAMP K STA 9+37

Note: For Location, See Plan Sheet No. 31
For Reinforcing in headwalls and their footings see Elevations

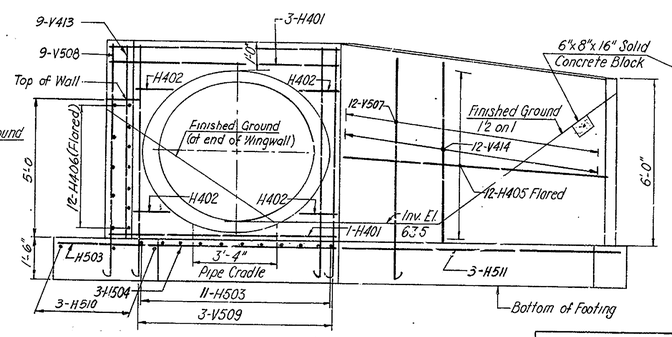


PLAN - 60" R.C. PIPE
RAMP L STA 23+50

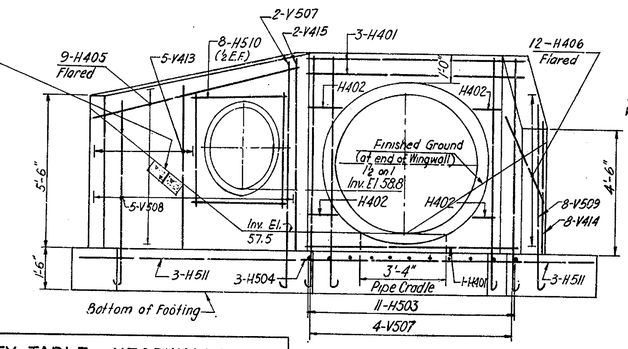


Invert Elev.
North El. 64.5 } For Sta. 340+70
South El. 59.2
North El. 49.0 } For Sta. 31+33
South El. 48.0

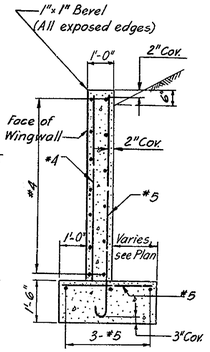
SOUTH ELEVATION



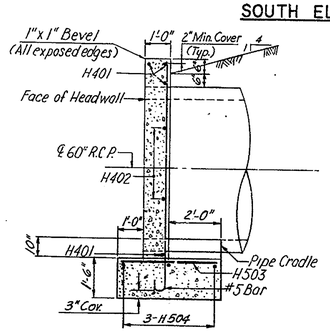
NORTH ELEVATION



SOUTH ELEVATION



TYPICAL SECTION THRU WINGWALL



TYPICAL SECTION THRU HEADWALL

Note: Bar List for 60" Pipe (5° Skew) contains all bars for North and South Headwalls for the two locations indicated

BAR LIST

MARK	SIZE	NO	LENGTH
60" Pipe -	5° Skew		
H401	#4	16	7'-10"
H402	4	16	1'-3"
H503	5	36	3'-6"
H504	5	12	10'-1"
H405	4	96	9'-3"
V506 *	5	16	9'-0"
V507 *	5	72	9 Bars vary 4" from 6'-3" to 8'-11"
H508	5	24	10'-4"
H509	5	72	2'-8"
V410	4	72	9 Bars vary by 4" from 4'-5" to 7'-1"
60" Pipe	-35° Skew		
H401	4	4	8'-9"
H402	4	4	1'-3"
H503	5	20	3'-6"
H504	5	3	11'-3"
H405	4	12	11'-2"
H406	4	12	8'-8"
V507 *	5	12	12 Bars vary by 1" from 7'-9" to 8'-8"
V508 *	5	9	9 Bars vary by 3" from 6'-9" to 8'-9"
V509 *	5	3	9'-0"
H510	5	3	10'-8"
H511	5	3	11'-7"
H512	5	12	2'-8"
V413	4	9	9 Bars vary by 3" from 4'-11" to 6'-11"
V414	4	12	12 Bars " " 1" " 5'-11" to 6'-10"

NORTH

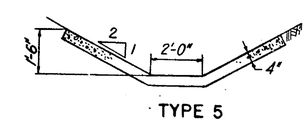
MARK	SIZE	NO	LENGTH
60" Pipe -	25° Skew		
H401	#4	4	8'-4"
H402	4	4	1'-3"
H503	5	21	3'-8"
H504	5	3	10'-10"
H405	4	9	9'-6"
H406	4	12	8'-0"
V507 *	5	6	9'-0"
V508 *	5	5	5 Bars vary by 3" from 7'-0" to 8'-0"
V509 *	5	8	8 Bars vary by 4" from 6'-3" to 8'-7"
H510	5	8	4'-6"
H511	5	6	9'-11"
H512	5	10	2'-8"
V413	4	5	5 Bars vary by 3" from 5'-2" to 6'-2"
V414	4	8	8 Bars vary by 4" from 4'-5 to 6'-9"
V415	4	2	7'-0"

QUANTITY TABLE - HEADWALLS

NO	ITEM	UNIT	QUANTITY
4	Excavation for Structures	C.Y.	105
18	Portland Cement Concrete Masonry - Drainage Structures	C.Y.	90
20	Bar Reinforcement	Lbs.	4500

* BENDING DETAIL

V507-5° Skew	9 Bars vary by 4" from 5'-8" to 8'-4"
V507-35° Skew	12 " " by 1" " 7'-2 to 8'-1"
V508 " "	9 " " by 3" " 6'-2 to 8'-2"
V509 " "	8'-5"
V507-25° Skew	8'-5"
V508 " "	5 Bars vary by 3" from 6'-5" to 7'-5"
V509 " "	8 " " by 4" " 5'-8 to 8'-0"
V506-5° Skew	8'-5"



TYPE 5

PORTLAND CEMENT CONCRETE GUTTERS
NO SCALE

Note: For Types 1 to 4 See Sheet 9.

Types of Gutters applicable only between Main Line Sta. 190+00 to Sta. 385+00, Routes 273, 347, 348, 349 and Ramps J, K, L and M.

SCALE: 3/8" = 1'-0"

GRADE
BEARINGS
TIE POINTS
BENCH MARKS
EARTHWORK
DRAINAGE

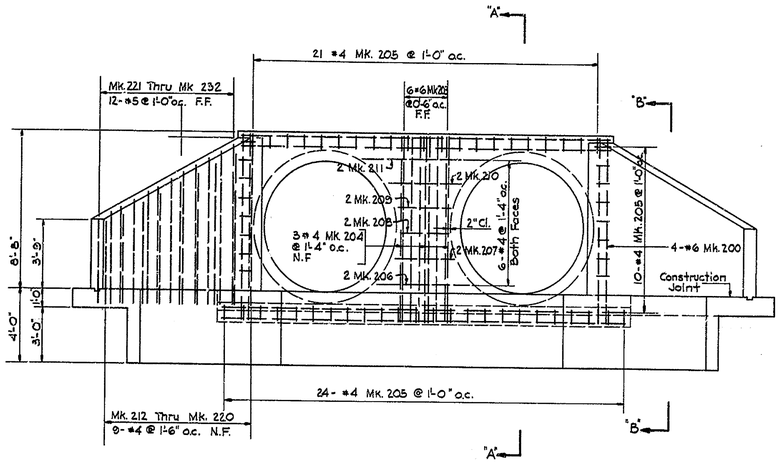
REVISIONS

GOODKIND & O'DEA
CONSULTING ENGINEERS
MONTCLAIR, NEW JERSEY

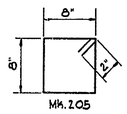
"Imperial" 156 W. B. & E.

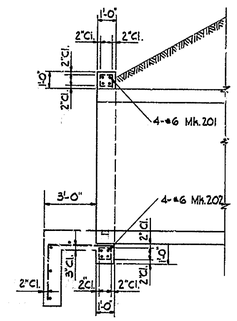
COUNTY	CONTRACT	F. A. A. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
N.C.		2	DEL.			11	170

DELAWARE TURNPIKE
CONTRACT 7001
1962.



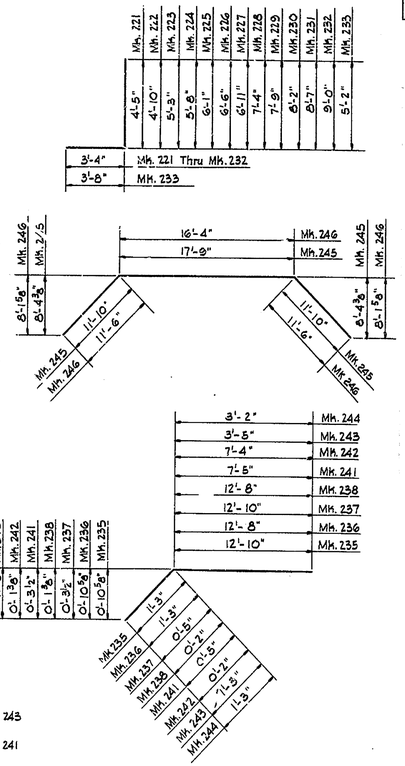
ELEVATION





SECTION "A-A"

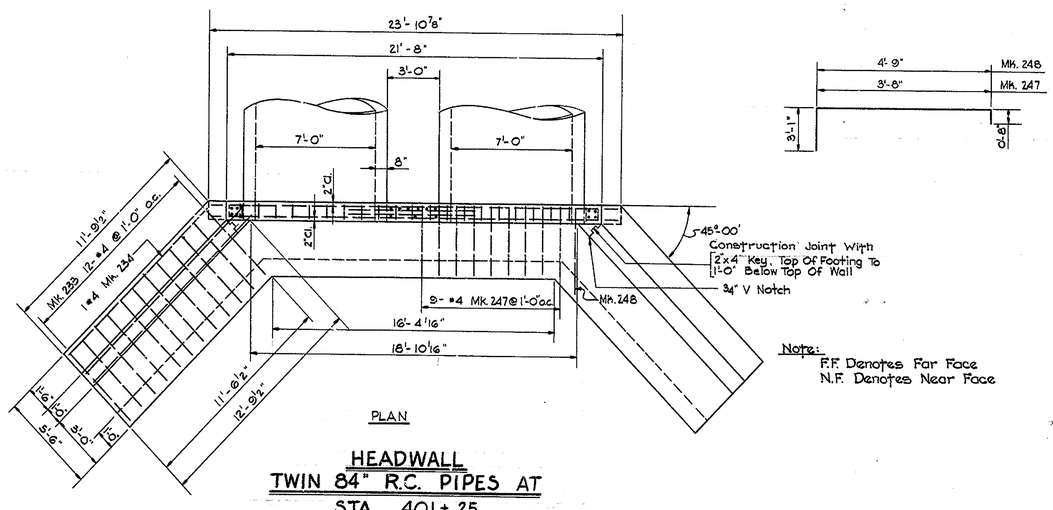
Scale : 1/4" = 1'-0"



HEADWALL TWIN 84" R.C. PIPE REINFORCING									
STRAIGHT BARS					BENT BARS				
No.	SIZE	LENGTH	MARK	WEIGHT	No.	SIZE	LENGTH	MARK	WEIGHT
8	6	10'-0"	200	120	65	4	8'-0"	205	130
4	6	21'-4"	201	128	2	5	7'-9"	221	16
4	6	23'-7"	202	142	2	5	8'-2"	222	17
6	6	10'-0"	203	90	2	5	8'-7	223	18
3	4	10'-0"	204	20	2	5	9'-0"	224	19
2	4	5'-5"	206	7	2	5	9'-5"	225	20
2	4	3'-4"	207	4	2	5	9'-10"	226	21
2	4	2'-8"	208	4	2	5	10'-3"	227	21
2	4	2'-11"	209	4	2	5	10'-8"	228	22
2	4	4'-2"	210	6	2	5	11'-1"	229	23
2	4	7'-3"	211	10	2	5	11'-6"	230	24
2	4	4'-5"	212	6	2	5	11'-11"	231	25
2	4	5'-0"	213	7	2	5	12'-4"	232	26
2	4	5'-7"	214	7	24	4	8'-10"	233	142
2	4	6'-2"	215	8	2	4	14'-1"	235	19
2	4	6'-9"	216	9	2	4	13'-11"	236	19
2	4	7'-3"	217	10	2	4	13'-3"	237	18
2	4	7'-10"	218	10	2	4	12'-10"	238	17
2	4	8'-5"	219	11	2	4	7'-10"	241	10
2	4	9'-0"	220	12	2	4	7'-6"	242	10
2	4	11'-5"	234	15	2	4	4'-8"	243	6
4	4	12'-2"	239	33	2	4	4'-5"	244	6
4	4	11'-8"	240	31	1	4	41'-5"	245	28
			TOTAL	694	3	4	39'-4"	246	79
					18	4	7'-5"	247	89
					2	4	8'-6"	248	11
								TOTAL	836

NOTE: Bars Listed Are For 1 Headwall - 2 Required

TOTAL WEIGHT OF REINFORCING BARS - 1520



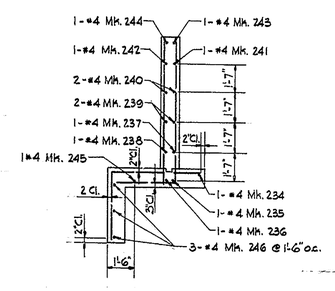
PLAN

Note:
F.F. Denotes Far Face
N.F. Denotes Near Face

HEADWALL
TWIN 84" R.C. PIPES AT
STA. 401 + 25

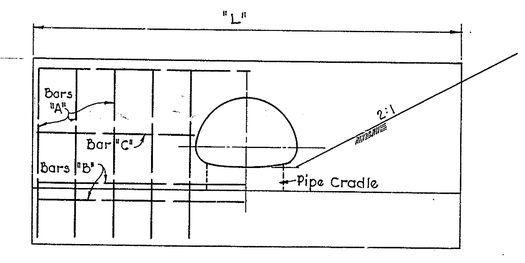
(2 REQUIRED)

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

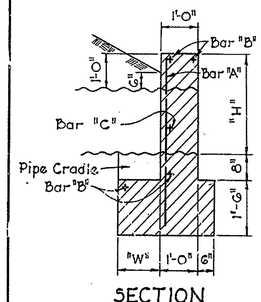


SECTION "B-B"

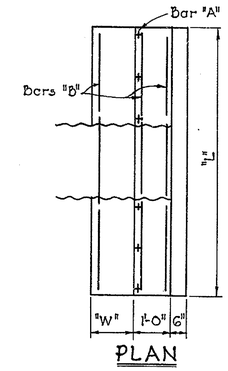
Scale : 1/4" = 1'-0"



END ELEVATION



SECTION



PLAN

R.R. TYPE HEADWALL FOR ARCH PIPE

No Scale

Diameter Of Pipe	H	L	W	Spacing Of Vertical Bars	QUANTITIES FOR 1 HEADWALL															
					1/2" ϕ REINFORCING BARS														CONCRETE	
					Bars "A"				Bars "B"				Bars "C"						Cu. Yds.	
					No	Length	Total Length		No	Length	Total Length		No	Length	Total Length		Total Weight	Walls	Footings	Total
22"×13"	2.08'	6.17'	1'-0"	11"	6	3'-9"	22'-6"	4	6'-0"	24'	2	2'-0"	4'	8'-0"	32.73	0.57	0.86	1.43
36"×22"	2.83'	10.33'	1'-3"	13"	8	4'-6"	36	4	10'-0"	40'	2	3'-6"	7'	61.44	1.17	1.58	2.75	
43"×27"	3.2.5'	12.58'	1'-6"	13"	10	5'-0"	50	4	12'-0"	48'	2	4'-3"	8'-6"	71.14	1.59	2.10	3.69	

BEARINGS
TIE POINTS
BENCH MARKS
EARTHWORK
DRAINAGE

K & E CO. NO. 186

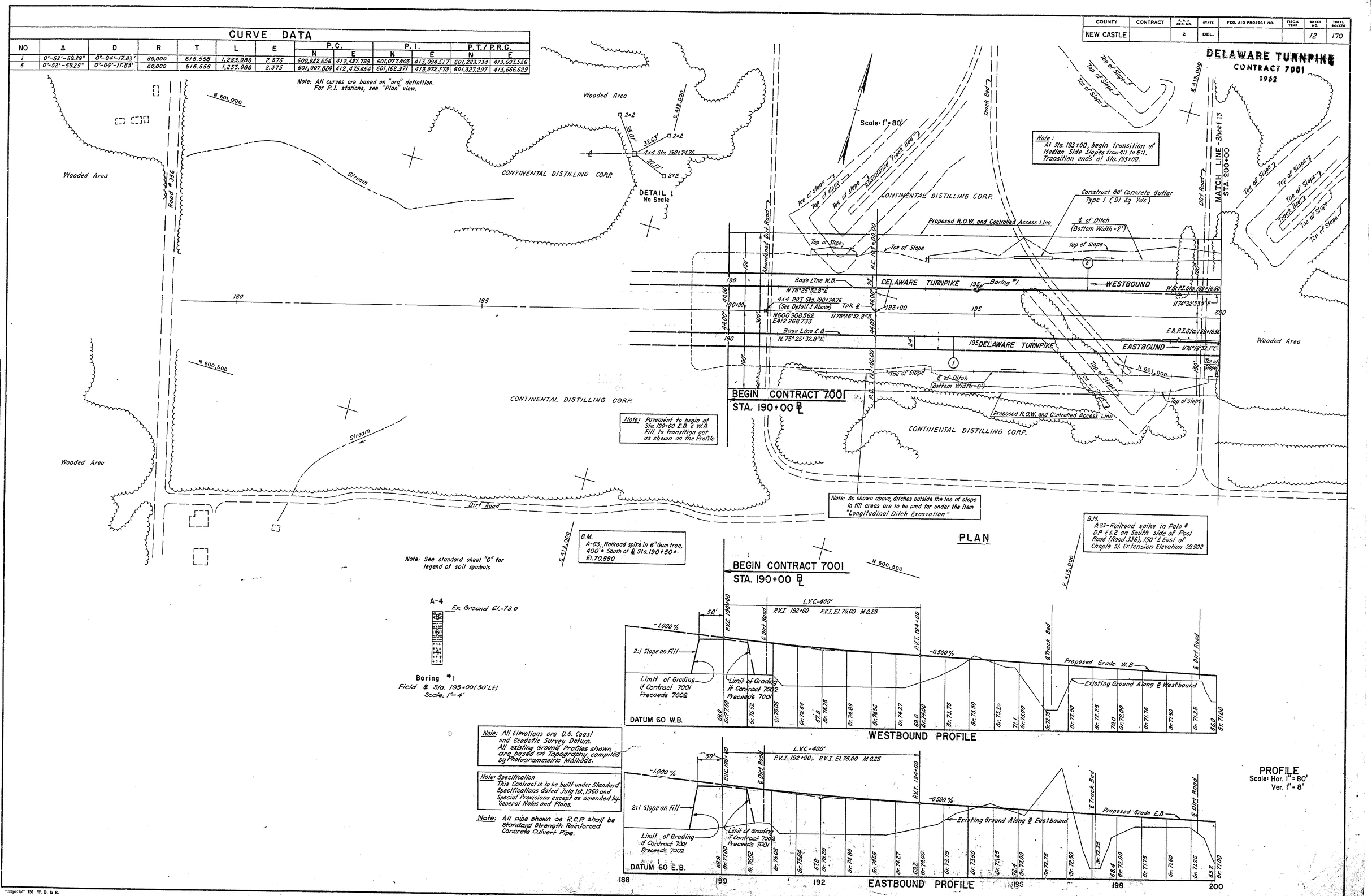
COUNTY	CONTRACT	F.A.A. REG. NO.	STATE	FED. AID PROJECT NO.	FISC.L YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE		2	DEL.			12	170

DELAWARE TURNPIKE
CONTRACT 7001
1962

CURVE DATA

NO	Δ	D	R	T	L	E	P.C. N	P.C. E	P.I. N	P.I. E	P.T./P.R.C. N	P.T./P.R.C. E
1	0°-52'-59.29"	0°-04'-17.83"	80,000	616.558	1,233.088	2.375	600,922.656	412,487.798	601,077.803	413,094.517	601,223.734	413,693.556
6	0°-52'-59.29"	0°-04'-17.83"	80,000	616.558	1,233.088	2.375	601,007.824	412,475.654	601,162.971	413,072.313	601,327.297	413,666.629

Note: All curves are based on "arc" definition.
For P.I. stations, see "Plan" view.



TIE POINTS
BENCH MARKS
EARTHWORK
DRAINAGE

GOODKIND & O'DEA
CONSULTING ENGINEERS
MONTCLAIR, NEW JERSEY

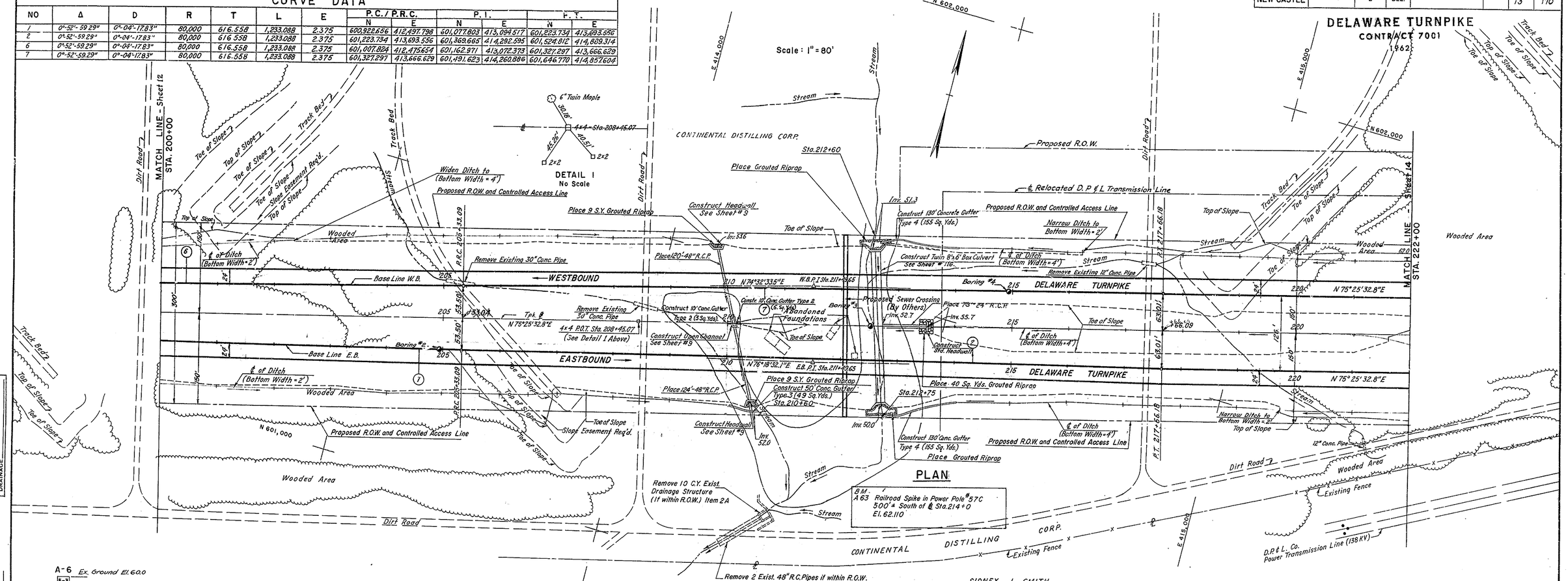
"Imperial" 156 W. B. & E.

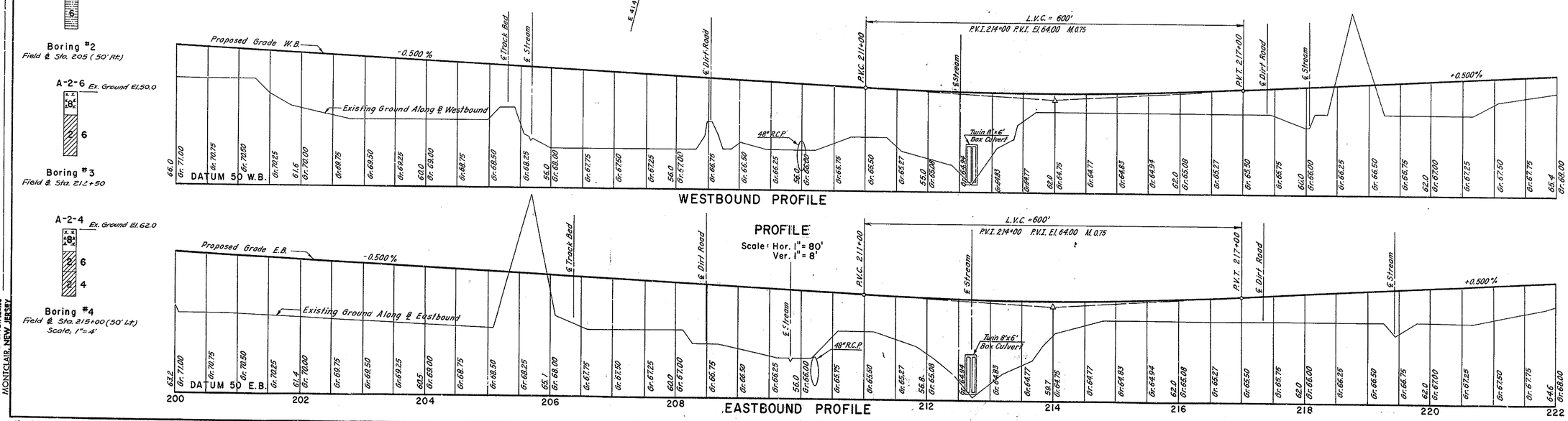
COUNTY	CONTRACT	F.B. & REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE		2	DEL.			13	170

DELAWARE TURNPIKE
CONTRACT 7001
1962

CURVE DATA

NO	Δ	D	R	T	L	E	P.C. / P.R.C. N	P.C. / P.R.C. E	P.I. N	P.I. E	P.T. N	P.T. E
1	0°-52'-59.29"	0°-04'-17.83"	80,000	616.558	1,233.088	2.375	600,922.656	412,497.798	601,077.803	413,094.517	601,223.734	413,693.556
2	0°-52'-59.29"	0°-04'-17.83"	80,000	616.558	1,233.088	2.375	601,223.734	413,693.556	601,369.665	414,292.595	601,524.812	414,889.314
6	0°-52'-59.29"	0°-04'-17.83"	80,000	616.558	1,233.088	2.375	601,007.824	412,475.654	601,162.971	413,072.373	601,327.297	413,666.629
7	0°-52'-59.29"	0°-04'-17.83"	80,000	616.558	1,233.088	2.375	601,327.297	413,666.629	601,491.623	414,260.886	601,646.770	414,857.604





BEARINGS
TIE POINTS
BENCH MARKS
EARTHWORK
DRAINAGE

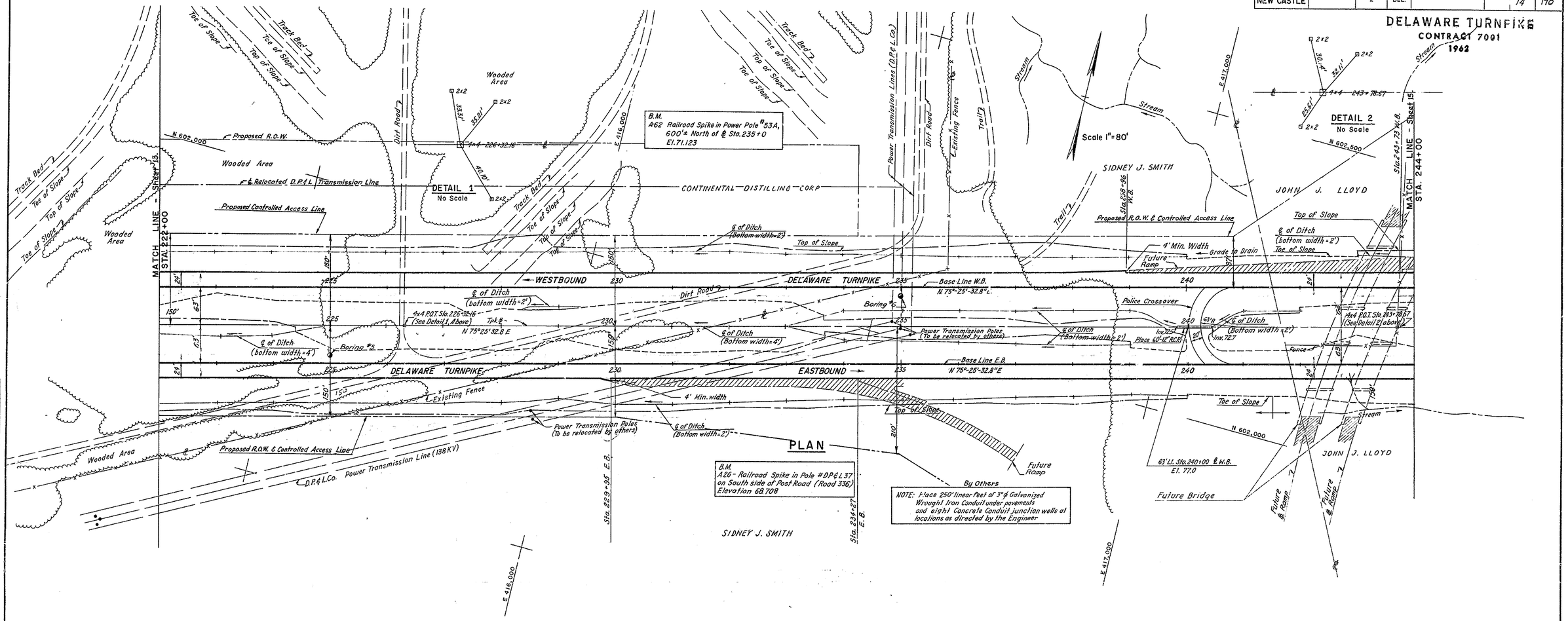
REVISIONS

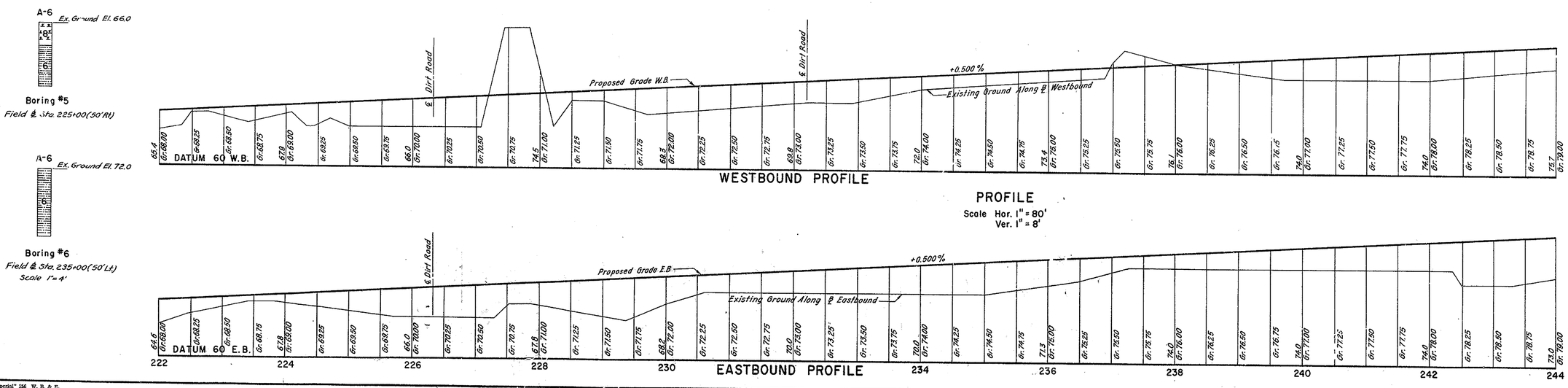
GOODKIND & O'DEA
CONSULTING ENGINEERS
MONTCLAIR, NEW JERSEY

"Imperial" 156 W. B. & E.

COUNTY	CONTRACT	F.R.A. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE		2	DEL.			14	170

DELAWARE TURNPIKE
CONTRACT 7001
1962





BEARINGS
TIE POINTS
BENCH MARKS
EARTHWORK
DRAINAGE

REVISIONS

GOODKIND & O'DEA
CONSULTING ENGINEERS
MONTCLAIR, NEW JERSEY

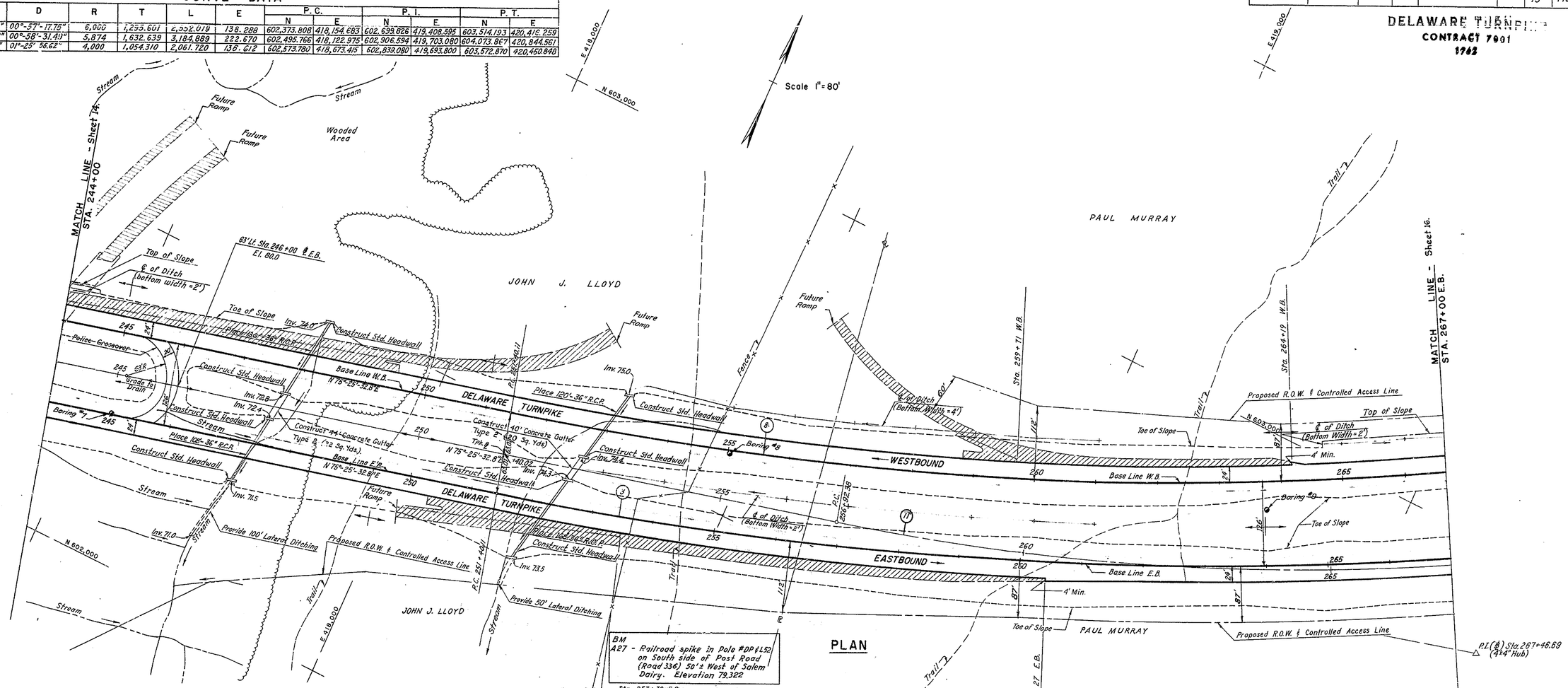
"Imperial" 156 W. B. & E.

COUNTY	CONTRACT	F.A.P. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE		2	DEL.			15	170

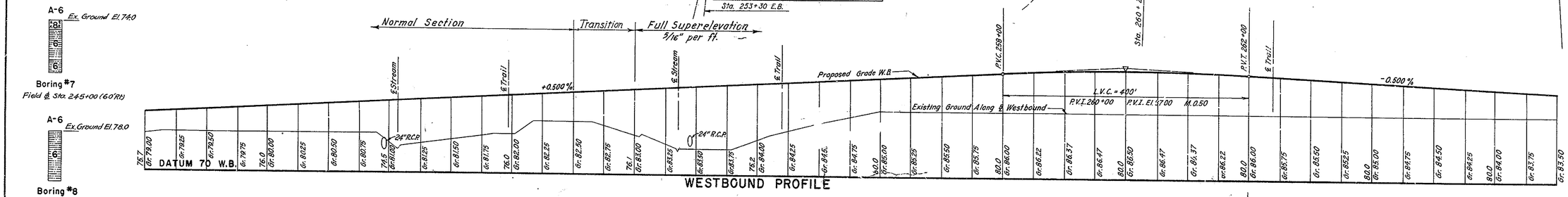
DELAWARE TURNPIKE
CONTRACT 7901
1962

CURVE DATA

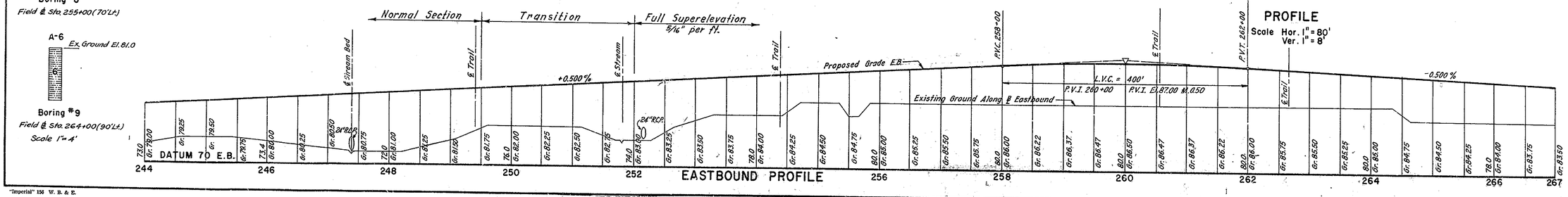
NO.	Δ	D	R	T	L	E	P.C. N	P.C. E	P.I. N	P.I. E	P.T. N	P.T. E
3	24°-22'-11.25"	00°-57'-17.75"	6,000	1,255.601	2,552.019	138.288	602,373.808	418,154.683	602,699.826	419,408.595	603,514.193	420,415.259
8	31°-03'-56.98"	00°-58'-31.41"	5,874	1,632.639	3,184.889	222.670	602,495.766	418,122.975	602,906.594	419,703.080	604,073.867	420,844.561
11	29°-31'-55.20"	01°-25'-56.62"	4,000	1,054.310	2,061.720	138.612	602,573.780	418,673.415	602,839.080	419,693.800	603,572.870	420,450.840



PLAN



WESTBOUND PROFILE



EASTBOUND PROFILE

PROFILE
Scale Hor. 1" = 80'
Ver. 1" = 8'

REVISIONS
BEARINGS.
TRACK MATTERS.
BENCH MARKS.
EARTHWORK.
DRAINAGE.

GOODKIND & O'DEA
CONSULTING ENGINEERS
MONTCLAIR, NEW JERSEY

"Imperial" 150 W. B. & E.

COUNTY	CONTRACT	F.H.A. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO	TOTAL SHEETS
NEW CASTLE		2	DEL.			16	170

DELAWARE TURNPIKE

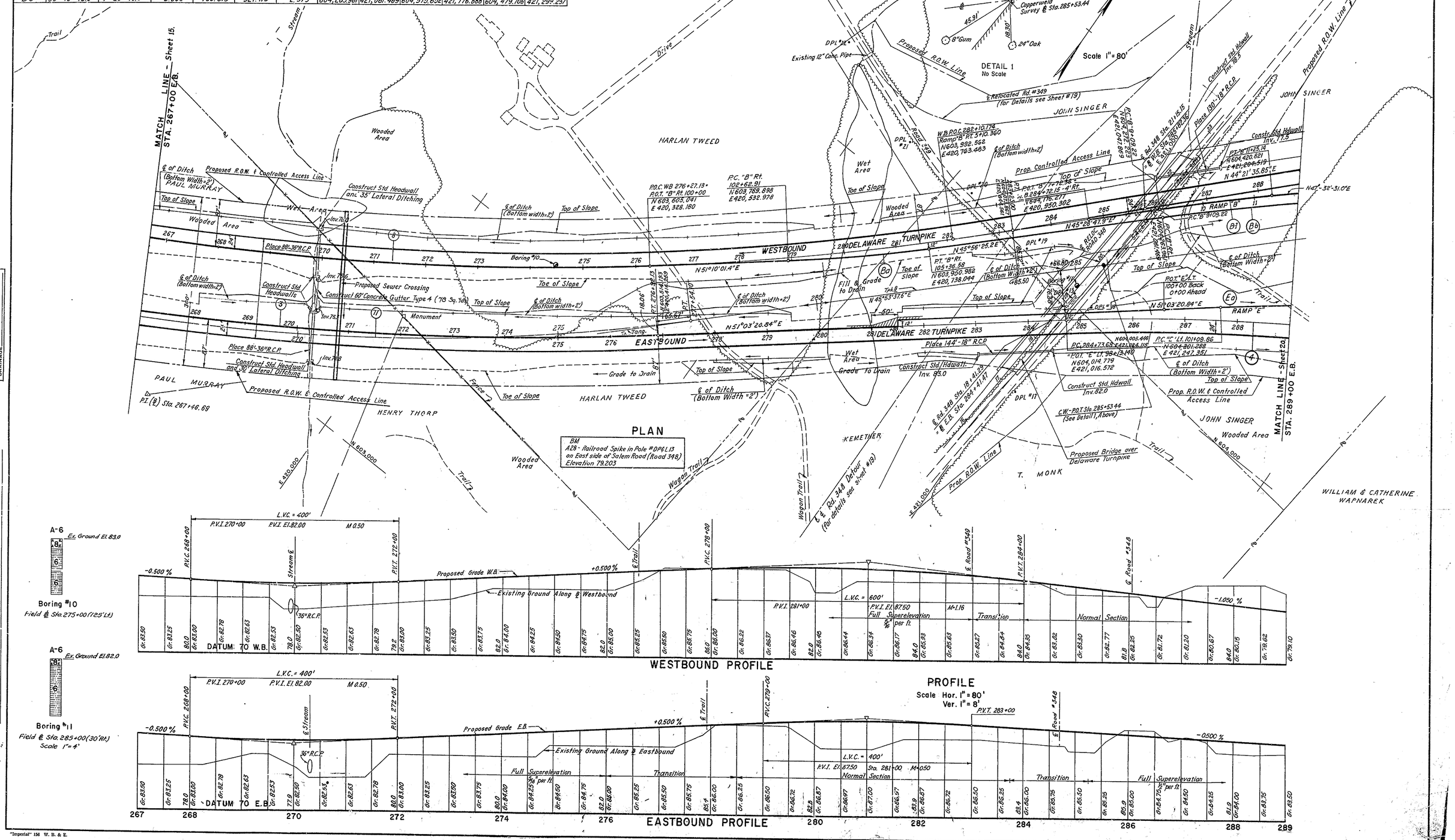
CONTRACT 7001

1962

Revised May 21, 1963

CURVE DATA

NO.	Δ	D	R	T	L	E	P.C. N	P.C. E	P.I. N	P.I. E	P.T. N	P.T. E
3	24°-22'-11.95"	0°-57'-17.75"	6,000	1,295.001	2,552.019	138.288	602,375.808	418,154.683	602,699.826	419,408.595	603,514.193	420,416.259
4	009°-15'-22.59"	1°-25'-25.86"	4,024	290.430	579.855	10.467	604,005.446	421,024.115	604,188.000	421,250.000	604,336.224	421,499.758
11	29°-11'-55.20"	1°-25'-56.62"	4,000	1,054.310	2,061.720	136.612	602,573.720	418,673.415	602,839.080	419,693.800	603,[illegible]-12.870	420,450.848
8	31°-03'-56.98"	0°-58'-31.49"	5,874	1,632.639	3,184.889	222.670	602,495.766	418,122.975	602,906.594	419,703.080	604,073.867	420,844.561
B-1	02°-03'-43.1"	0°-51'-17.8"	6,000	107.978	215.929	0.971	604,272.223	421,047.969	604,347.927	421,124.852	604,420.821	421,204.519
B a	03°-13'-36.2"	1°-54'-35.6"	3,000	136.930	273.870	3.123	603,769.898	420,532.978	603,855.760	420,639.644	603,950.982	420,738.044
B b	03°-40'-46.9"	1°-20'-40.5"	5,000	160.613	321.115	2.579	604,263.961	421,061.469	604,375.652	421,176.888	604,479.706	421,299.231



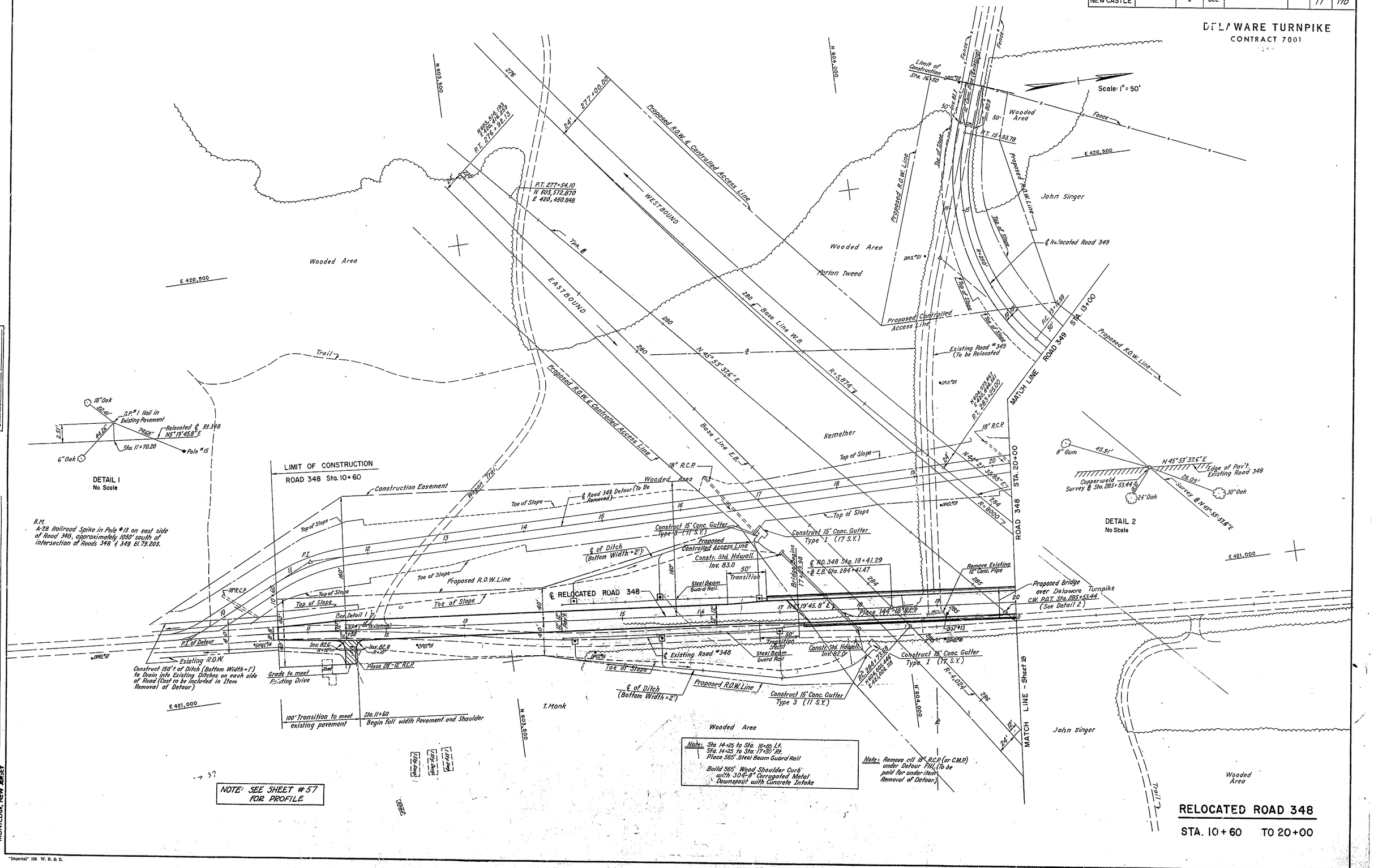
BEARINGS
COORDINATES
BENCH MARKS
EARTHWORK
DRAINAGE

GOODKIND & O'DEA
CONSULTING ENGINEERS
MONTCLAIR, NEW JERSEY

"Imperial" 156 W. B. & E.

COUNTY	CONTRACT	F.H.A. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE		2	DEL.			17	170

DELAWARE TURNPIKE
CONTRACT 7001



RELOCATED ROAD 348
STA. 10+60 TO 20+00

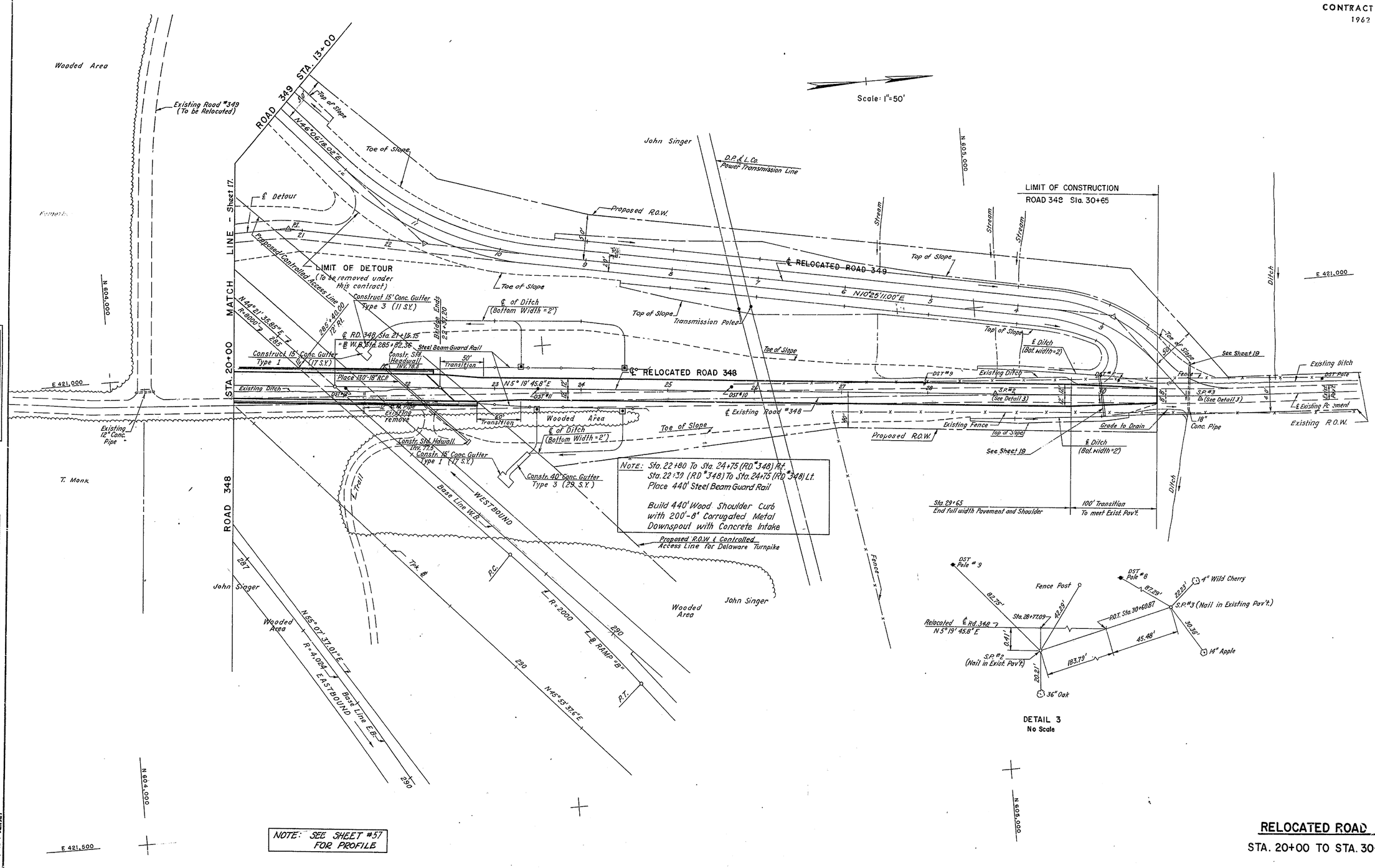
TIE POINTS
BENCH MARKS
EARTHWORK
DRAINAGE

GOODKIND & O'DEA
CONSULTING ENGINEERS
MONTCLAIR, NEW JERSEY

"Imperial" 156 W. B. & E.

COUNTY	CONTRACT	F.A.A. DIV. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE			DEL.			18	170

DELAWARE TURNPIKE
CONTRACT 7001
1962



DETAIL 3
No Scale

RELOCATED ROAD 348
STA. 20+00 TO STA. 30+65

BEARINGS
TIE POINTS
BENCH MARKS
EARTHWORK
DRAINAGE

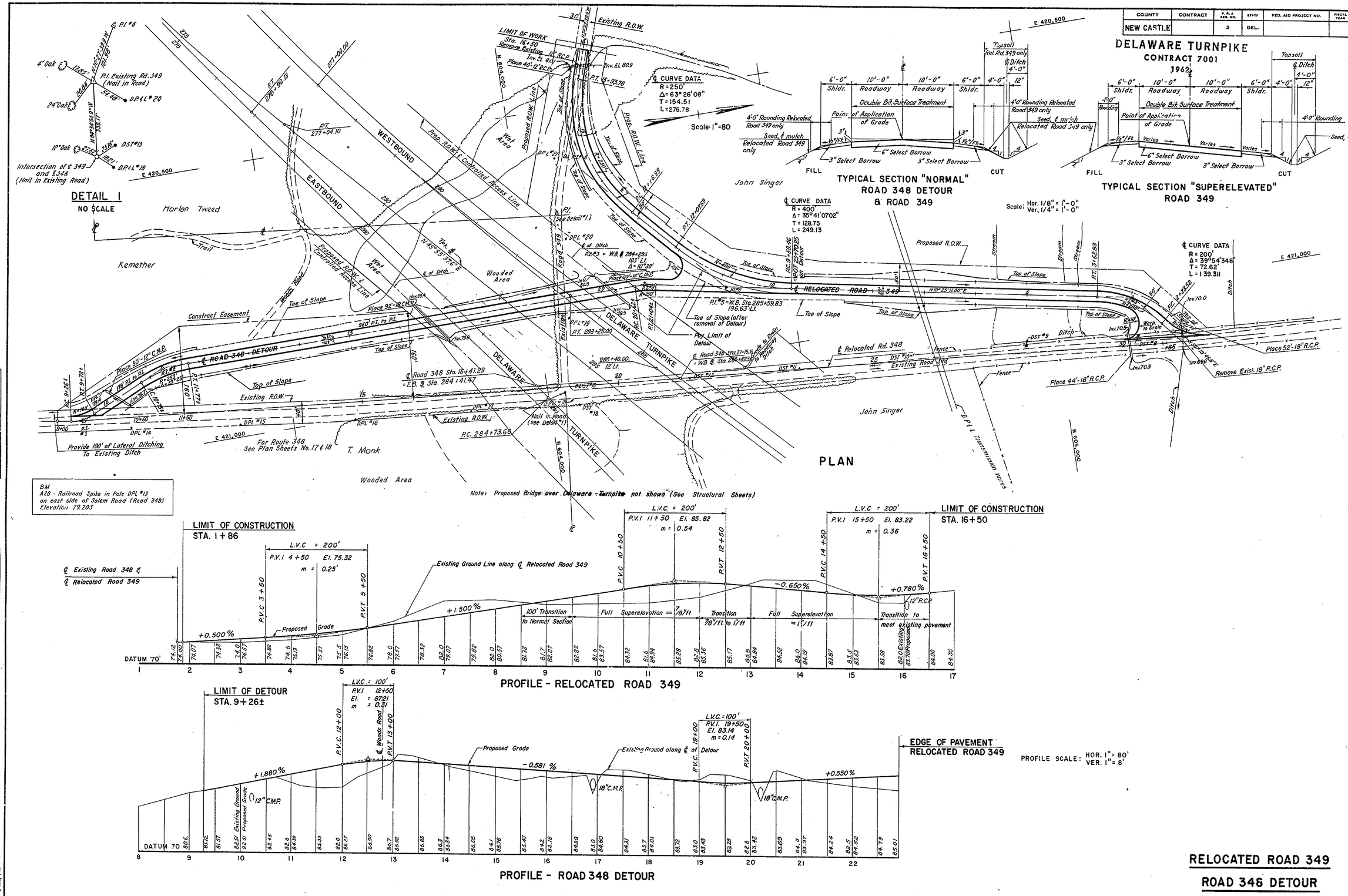
REVISIONS

GOODKIND & O'BRIEN
CONSULTING ENGINEERS
MONTCLAIR, NEW JERSEY

"Imperial" 156 W. B. & L.

COUNTY	CONTRACT	P.R.A. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE		2	DEL.			19	170

DELAWARE TURNPIKE
CONTRACT 7001
1962



RELOCATED ROAD 349

ROAD 348 DETOUR

REVISIONS

GOODKIND & O'DEA
CONSULTING ENGINEERS
MONTCLAIR, NEW JERSEY

"Imperial" 156 W. B. & E.

COUNTY	CONTRACT	F. A. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
		2	DEL.			20	170

DELAWARE TURNPIKE

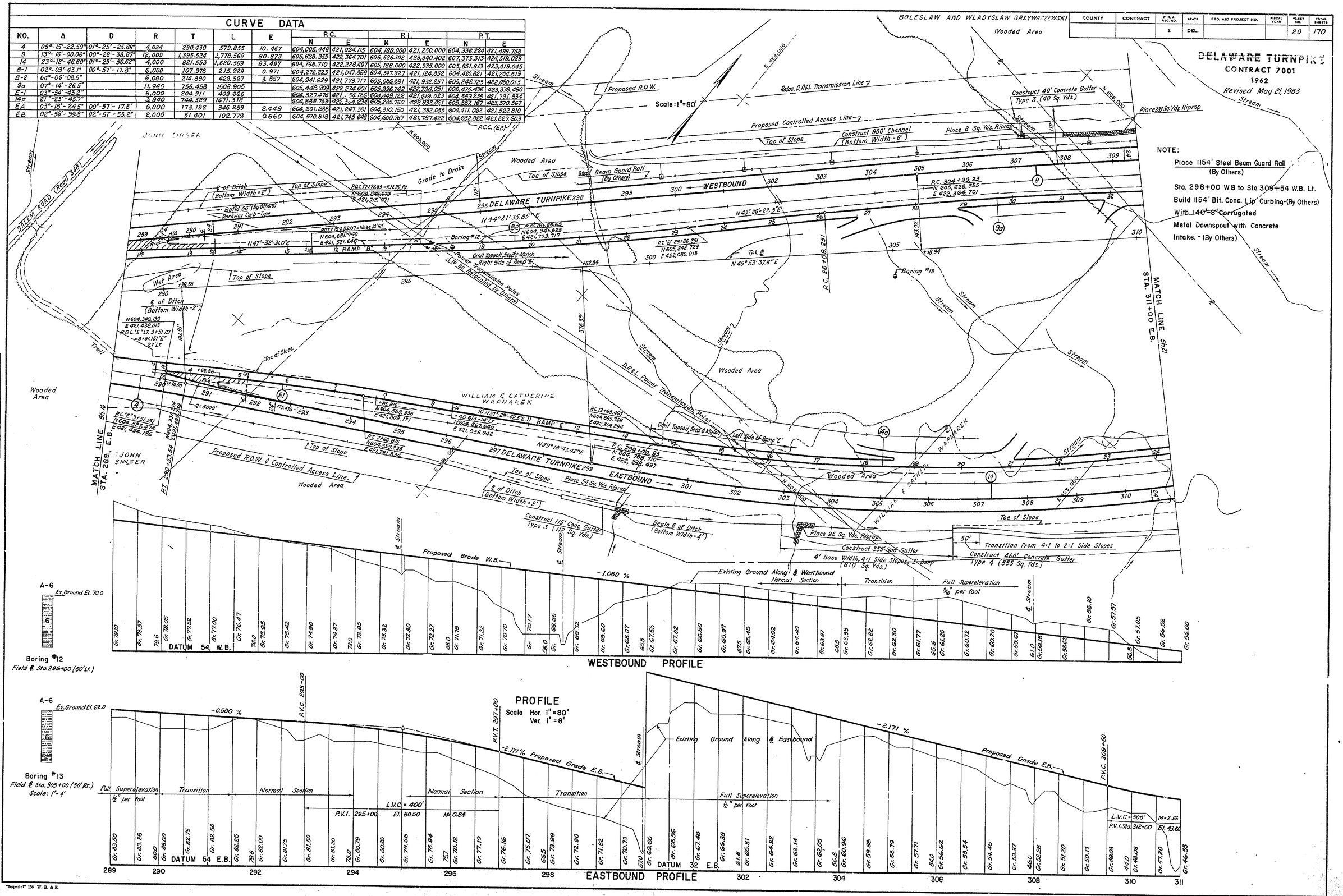
CONTRACT 7001

1962

Revised May 21, 1963

CURVE DATA

NO.	Δ	D	R	T	L	E	P.C. N	P.C. E	P.I. N	P.I. E	P.T. N	P.T. E
4	08°-15'-22.59"	01°-25'-25.86"	4,024	290.430	579.855	10.467	604,005.446	421,024.115	604,188.000	421,250.000	604,336.224	421,499.758
9	13°-16'-00.06"	00°-28'-38.87"	12,000	1,395.524	2,778.568	80.873	605,628.355	422,364.701	606,626.102	423,340.402	607,373.313	424,519.029
14	23°-12'-46.60"	01°-25'-56.62"	4,000	821.553	1,620.569	83.497	604,768.710	422,228.497	605,188.000	422,935.000	605,851.813	423,419.045
B-1	02°-03'-43.1"	00°-57'-17.8"	6,000	107.978	215.929	0.971	604,272.223	421,047.869	604,347.927	421,126.852	604,480.821	421,204.519
B-2	64°-06'-08.5"		6,000	214.890	429.597	3.857	604,941.629	421,773.717	605,086.091	421,932.257	605,242.723	422,080.013
9a	07°-14'-26.5"		11,940	755.458	1508.905		605,445.209	422,274.601	605,996.742	422,794.051	606,475.438	423,378.490
E-1	03°-54'-43.2"		6,000	204.911	409.665		604,327.474	421,[illegible]52.126	604,449.122	421,619.023	604,569.239	421,791.834
14a	21°-23'-45.7"		3,940	744.329	1471.318		604,885.769	422,344.294	605,285.750	422,932.081	605,887.167	423,370.567
E.A	03°-18'-24.5"	00°-57'-17.8"	6,000	173.192	346.289	2.449	604,201.288	421,247.351	604,310.150	421,382.053	604,411.062	421,522.810
E.B	02°-56'-39.8"	02°-51'-53.2"	2,000	51.401	102.779	0.660	604,570.818	421,745.648	604,600.767	421,787.422	604,632.822	421,827.603



GRADE
BEARINGS
TIE POINTS
BENCH MARKS
BENCH MARK
DRAINAGE

CHECKED

REVISIONS

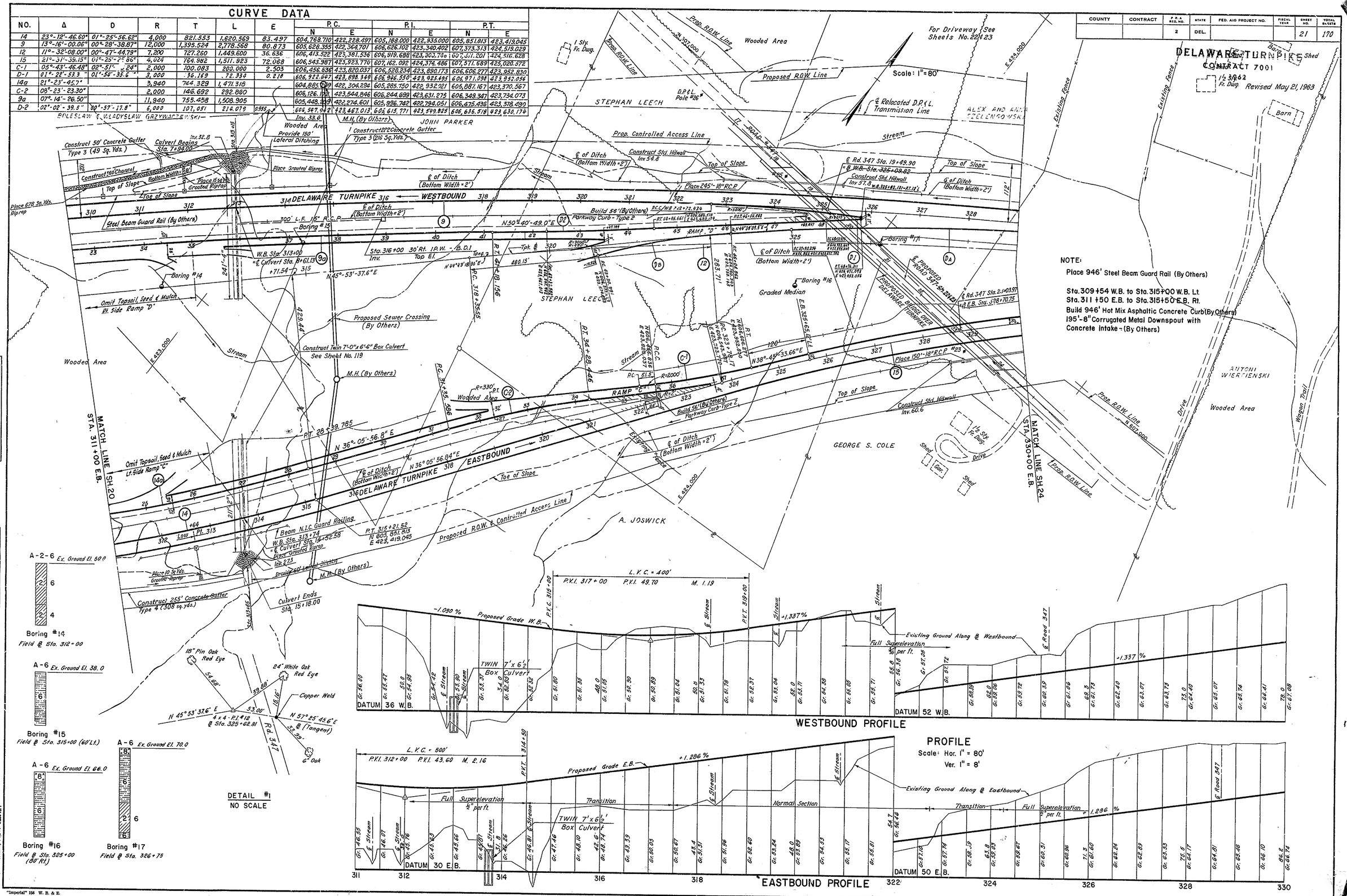
GOODKIND & O'DEA
CONSULTING ENGINEERS
MONTCLAIR, NEW JERSEY

"Imperial" 156 W. B. & E.

COUNTY	CONTRACT	F.A.A. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
		2	DEL.			21	170

CURVE DATA

NO.	Δ	D	R	T	L	E	P.C. N	P.C. E	P.I. N	P.I. E	P.T. N	P.T. E
14	23°-12'-46.60"	01°-25'-56.62"	4,000	821.553	1,620.569	83.497	604,768.710	422,228.497	605,188.000	422,935.000	605,851.813	423,418.045
9	13°-16'-00.06"	00°-28'-38.87"	12,000	1,395.524	2,778.568	80.873	605,628.355	422,364.701	606,626.102	423,340.402	607,373.313	424,519.029
12	11°-32'-08.00"	00°-47'-44.79"	7,200	727.260	1,449.600	36.636	606,413.522	423,381.536	606,919.688	423,903.74[illegible]	607,311.201	424,516.628
15	21°-31'-39.15"	01°-25'-2[illegible].86"	4,024	764.982	1,511.923	72.068	606,543.987	423,923.770	607,162.092	424,374.486	607,571.689	425,020.372
C-1	05°-43'-46.48"	02°-51'-[illegible]24"	2,000	100.083	200.000	2.503	606,456.636	423,820.037	606,520.234	423,890.173	606,606.277	423,952.830
D-1	01°-22'-53.3 "	01°-50'-35.6 "	3,000	36.169	72.334	0.218	606,922.647	423,898.349	606,986.550	423,925.495	606,971.098	423,952.056
14a	21°-23'-45.7"		3,940	744.329	1,471.318		604,882.[illegible]	422,304.224	605,285.150	422,932.921	605,881.167	423,370.567
C-2	08°-23'-23.30"		2,000	146.692	292.860		606,126.102	423,544.846	606,244.699	423,631.275	606,349.347	423,734.073
9a	07°-14'-26.50"		11,940	755.458	1,508.905		605,448.[illegible]	422,274.601	605,936.742	422,794.051	606,475.436	423,318.490
D-2	02°-02'-39.5"	00°-57'-17.8"	6,000	107.051	214.079	0.955	606,567.942	423,467.013	605,615.771	423,549.825	606,636.518	423,630.174



GRADE
BEARINGS
TIE POINTS
BRIDGE WORKS
EARTHWORK
DRAINAGE

REVISIONS

GOODKIND & O'DEA
CONSULTING ENGINEERS
MONTCLAIR, NEW JERSEY

"Imperial" 156 W. B. & E.

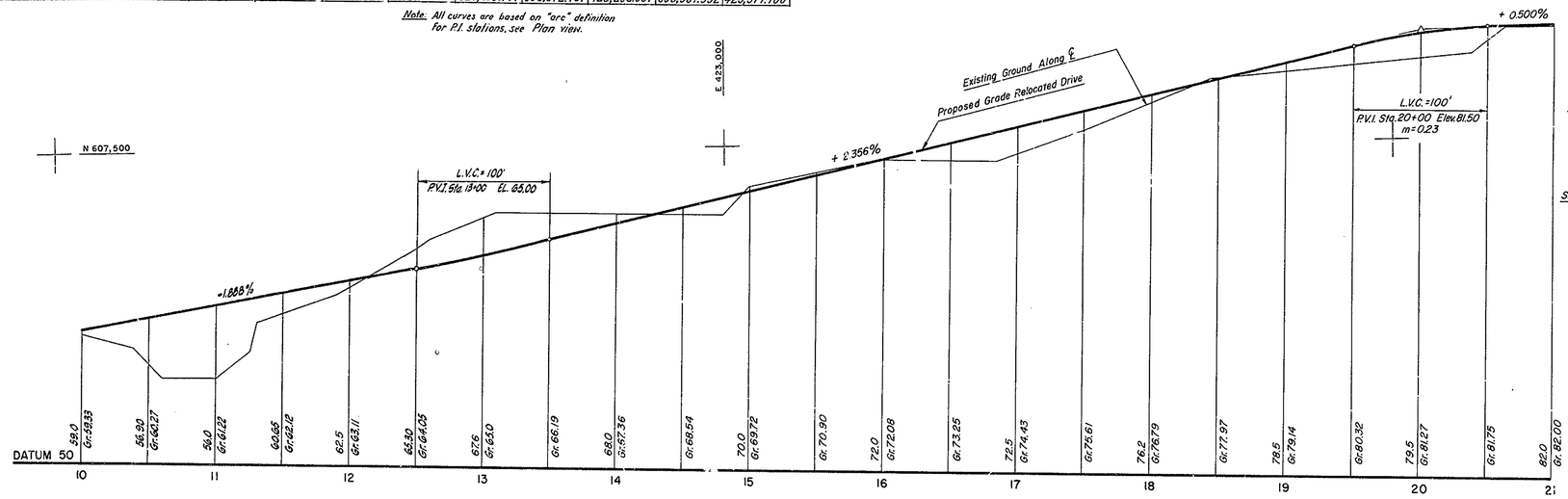
COUNTY	CONTRACT	F.A.P. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE			DEL			22	110

DELAWARE TURNPIKE
CONTRACT 7001
1962

CURVE DATA

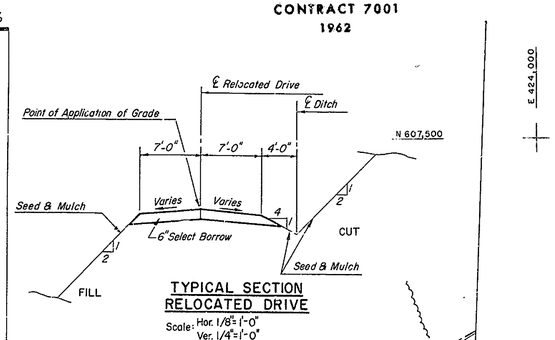
NO.	Δ	D	R	T	L	P.C. N	P.C. E	P.I. N	P.I. E	P.T. N	P.T. E
1	7° 32' 52.5"	4°-46' 28.7"	1200	79.156	158.083	606,963.791	423,219.147	606,972.101	423,298.051	606,967.992	423,377.100

Note: All curves are based on "arc" definition
For P.I. stations, see Plan view.



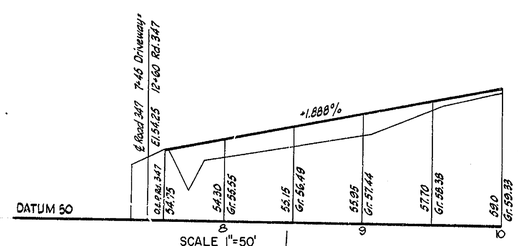
RELOCATED DRIVE PROFILE

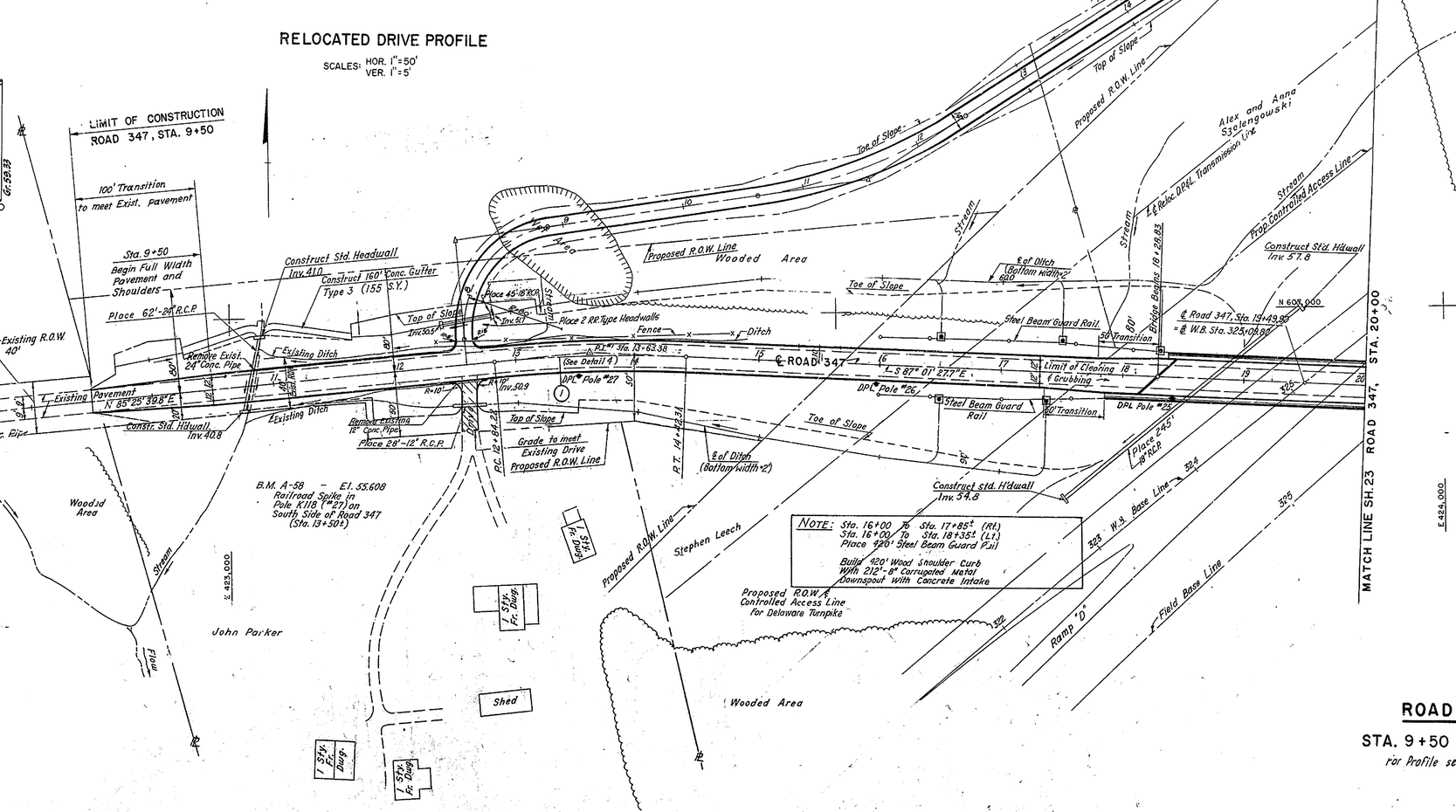
SCALES: HOR. 1" = 50'
VER. 1" = 5'



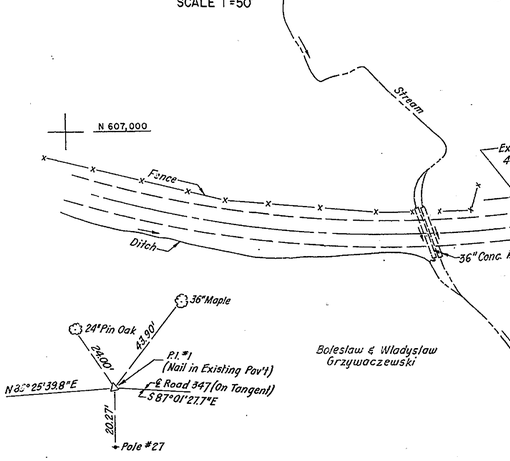
TYPICAL SECTION
RELOCATED DRIVE

Scale: Hor. 1/8" = 1'-0"
Ver. 1/4" = 1'-0"





NOTE: Sta. 16+00 To Sta. 17+85± (Rt.)
Sta. 16+00 To Sta. 18+35± (Lt.)
Place 420' Steel Beam Guard Rail
Build 420' Wood Shoulder Curb
With 212'-8" Corrugated Metal
Downspout With Concrete Intake



DETAIL 4
(Not to Scale)

NOTE: SEE SHEET #58 FOR PROFILE

ROAD 347

STA. 9+50 TO STA. 20+00

For Profile see Sh. 58

BENCHMARKS
CONTROL POINTS
EARTHWORK
DRAINAGE

KIND & O'DEA
CONSULTING ENGINEERS
MONTCLAIR, NEW JERSEY

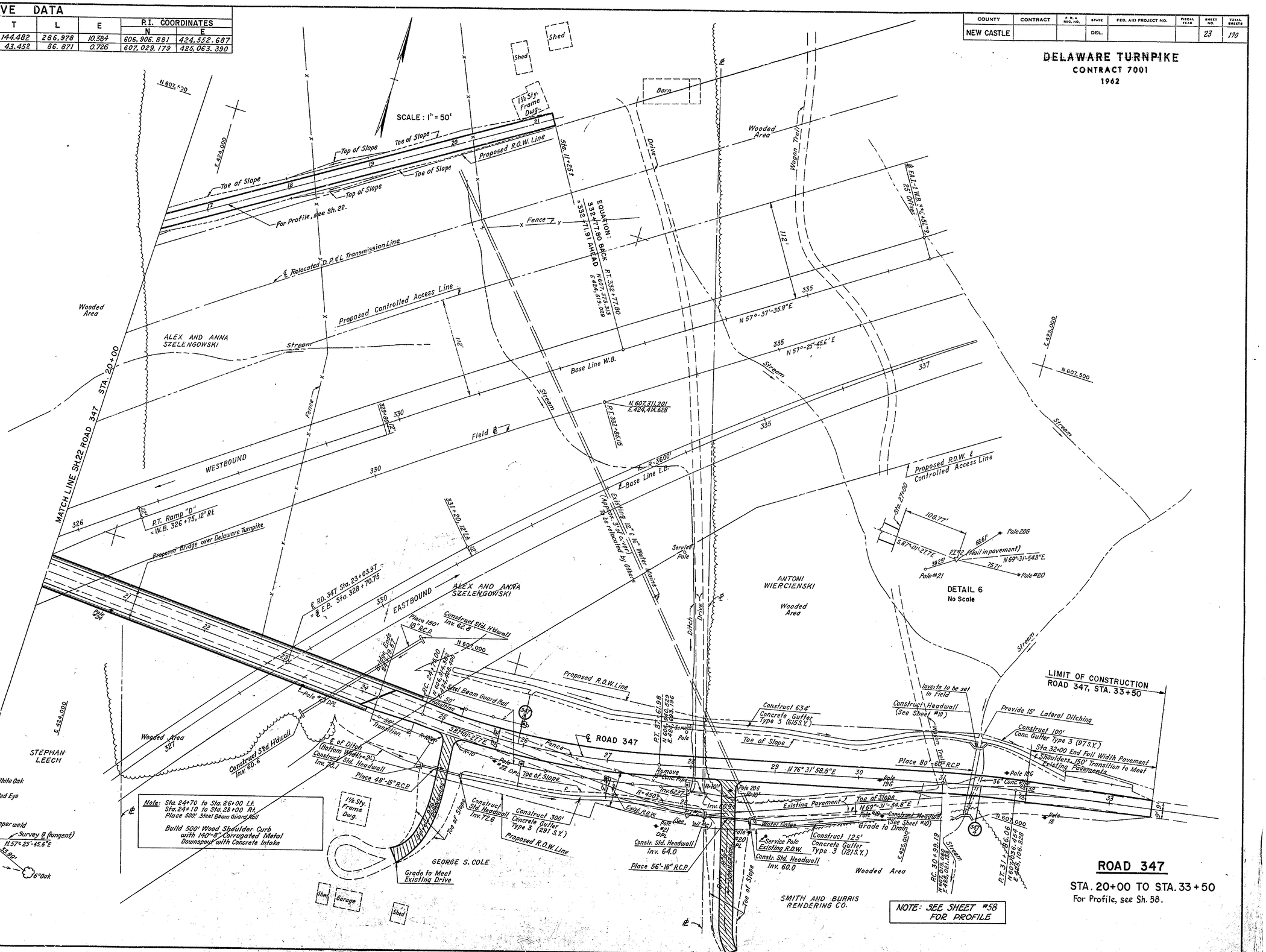
"Imperial" 156 W. B. & E.

COUNTY	CONTRACT	F.A.P. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE			DEL.			23	110

DELAWARE TURNPIKE
CONTRACT 7001
1962

CURVE DATA

NO.	Δ	D	R	T	L	E	P.I. COORDINATES N	P.I. COORDINATES E
347-3	16° 26' 33.47"	05° 43' 46.48"	1,000	144.482	286.978	10.384	606,906.881	424,552.687
347-4	03° 49' 43.46"	04° 24' 26.52"	1,300	43.452	86.871	0.726	607,029.179	425,063.390



EARTHWORK
DRAINAGE

CONSULTING ENGINEERS
MONTCLAIR, NEW JERSEY

"Imperial" 156 W. B. & E.

COUNTY	CONTRACT	F.P.A. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE		2	DEL.			24	170

DELAWARE TURNPIKE

CONTRACT 7001

1962

Revised May 21, 1963

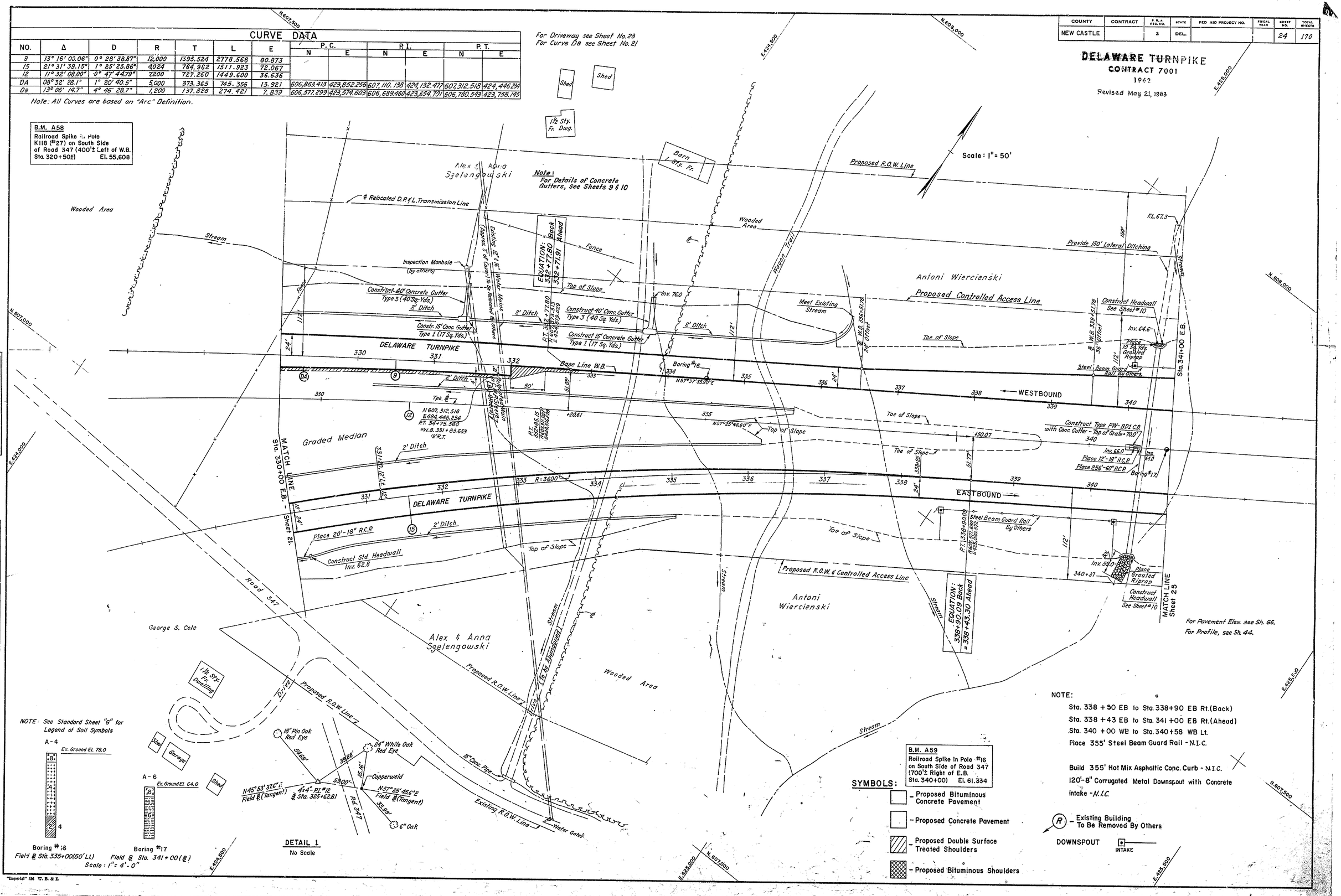
CURVE DATA

NO.	Δ	D	R	T	L	E	P.C. N	P.C. E	P.I. N	P.I. E	P.T. N	P.T. E
9	13° 16' 00.06"	0° 28' 38.87"	12,000	1395.524	2778.568	80.873						
15	21° 31' 39.15"	1° 25' 25.86"	4024	764.962	1511.923	72.067						
12	11° 32' 08.00"	0° 47' 44.79"	7200	727.260	1449.600	36.636						
DA	08° 32' 28.1"	1° 20' 40.5"	5,000	373.365	745.356	13.921	606,863.413	423,852.256	607,110.138	424,132.477	607,312.518	424,446.234
Ds	13° 06' 14.7"	4° 46' 28.7"	1,200	137.826	274.421	7.839	606,577.299	423,874.603	606,689.460	423,654.701	606,780.543	423,758.145

Note: All Curves are based on "Arc" Definition.

For Driveway see Sheet No. 23
For Curve Ds see Sheet No. 21

B.M. A58
Railroad Spike in Pole
K118 (#27) on South Side
of Road 347 (400'± Left of W.B.
Sta. 320+50±) El. 55.608



NOTE: See Standard Sheet "G" for Legend of Soil Symbols

Boring #16
Field @ Sta. 335+00 (50' Lt.)

Boring #17
Field @ Sta. 341+00 (℄)

Scale: 1" = 4'-0"

DETAIL 1
No Scale

B.M. A59
Railroad Spike in Pole #16
on South Side of Road 347
(700'± Right of E.B.
Sta. 340+00) El. 61.334

NOTE:

Sta. 338 + 50 EB to Sta. 338+90 EB Rt. (Back)
Sta. 338 + 43 EB to Sta. 341 + 00 EB Rt. (Ahead)
Sta. 340 + 00 WB to Sta. 340 + 58 WB Lt.
Place 355' Steel Beam Guard Rail - N.I.C.

Build 355' Hot Mix Asphaltic Conc. Curb - N.I.C.
120'-8" Corrugated Metal Downspout with Concrete intake - N.I.C.

SYMBOLS:

- Proposed Bituminous Concrete Pavement
- Proposed Concrete Pavement
- Proposed Double Surface Treated Shoulders
- Proposed Bituminous Shoulders

(R) - Existing Building To Be Removed By Others

DOWNSPOUT — INTAKE

TIE POINTS
BENCH MARKS
EARTHWORK
DRAINAGE

GOODKIND & O'DEA
CONSULTING ENGINEERS
MONTCLAIR, NEW JERSEY

"Imperial" 156 W. B. & E.

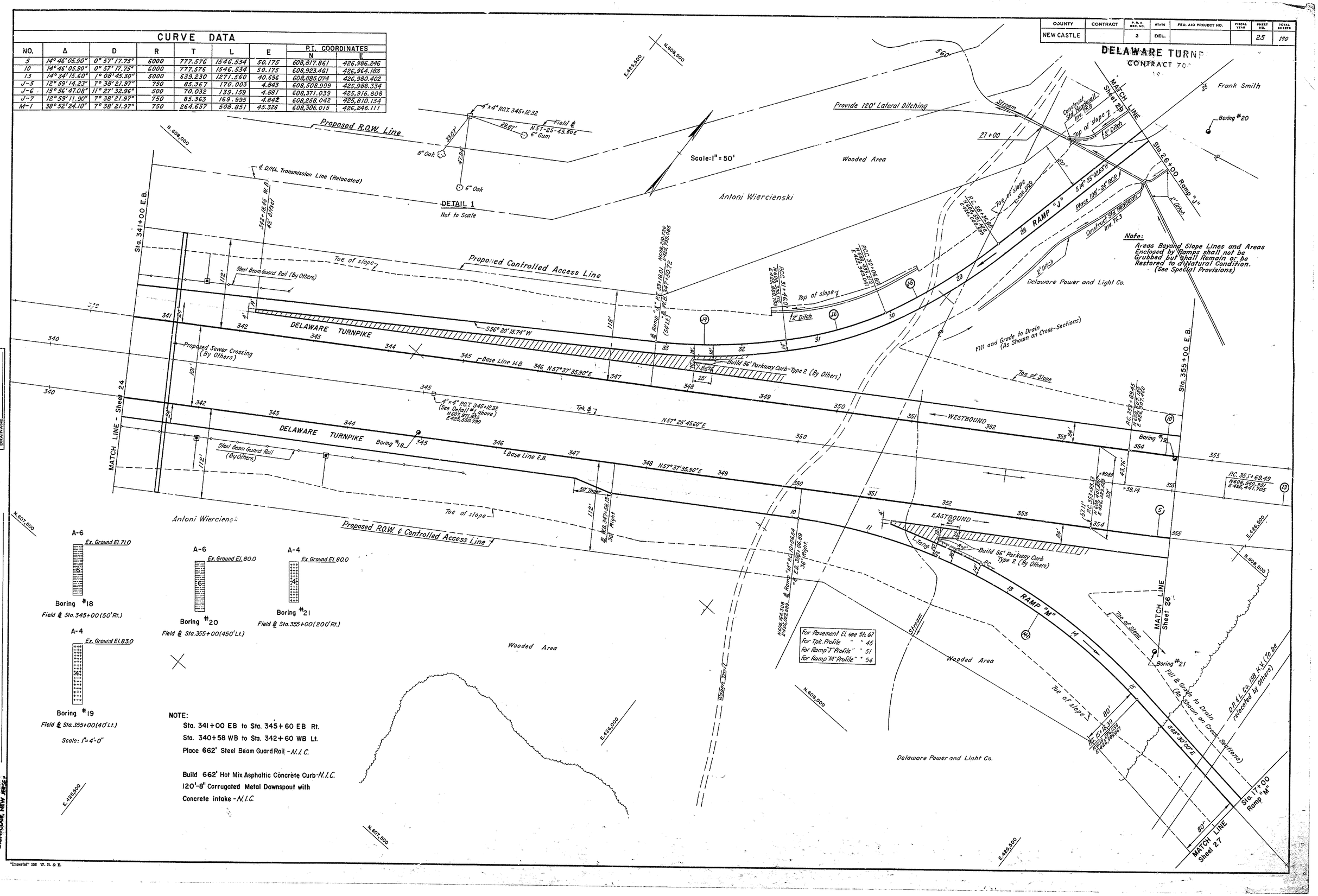
COUNTY	CONTRACT	P. R. A. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE		2	DEL.			25	110

DELAWARE TURNPIKE

CONTRACT 70

CURVE DATA

NO.	Δ	D	R	T	L	E	P.I. COORDINATES N	P.I. COORDINATES E
5	14° 46' 05.90"	0° 57' 17.75"	6000	777.576	1546.534	50.175	608,817.861	426,986.246
10	14° 46' 05.90"	0° 57' 17.75"	6000	777.576	1546.534	50.175	608,923.461	426,964.183
13	14° 34' 15.60"	1° 08' 45.30"	5000	639.230	1271.560	40.696	608,885.074	426,980.402
J-5	12° 59' 14.23"	7° 38' 21.97"	750	85.367	170.003	4.843	608,508.999	425,988.334
J-6	15° 56' 47.08"	11° 27' 32.96"	500	70.032	139.159	4.881	608,371.039	425,916.808
J-7	12° 59' 11.90"	7° 38' 21.97"	750	85.363	169.995	4.842	608,258.042	425,810.134
M-1	38° 52' 24.10"	7° 38' 21.97"	750	264.657	508.851	45.326	608,306.015	426,246.111



GRADE
BEARINGS
TIE POINTS
BRIDGE WORKS
EARTHWORK
DRAINAGE

REVISIONS

GOODKIND & O'BREA
CONSULTING ENGINEERS
MONTCLAIR, NEW JERSEY

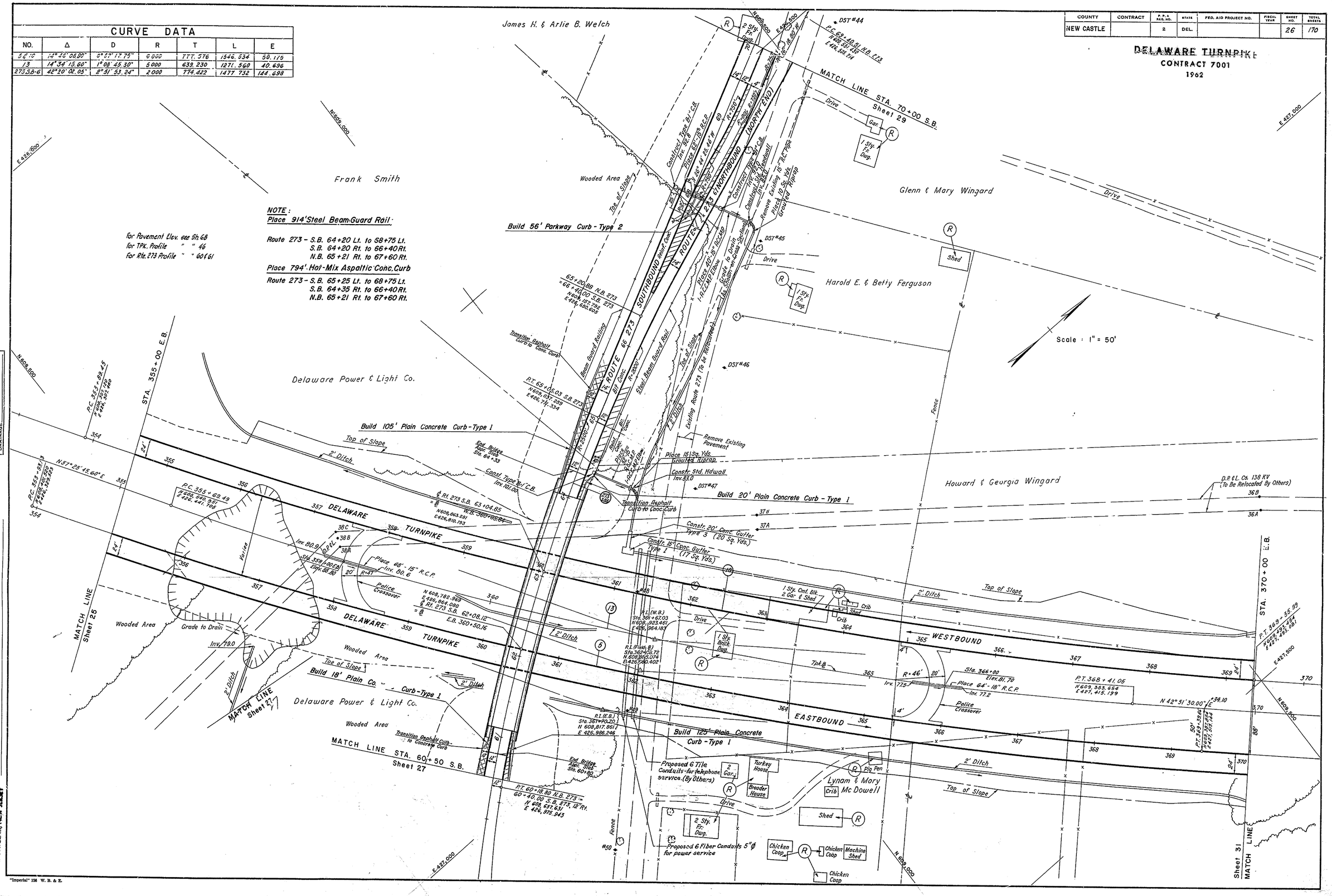
"Imperial" 156 W. B. & E.

COUNTY	CONTRACT	P.P.A. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE		2	DEL.			26	170

DELAWARE TURNPIKE
CONTRACT 7001
1962

CURVE DATA

NO.	Δ	D	R	T	L	E
5&10	14° 46' 06.90"	0° 57' 17.75"	6.000	777.576	1546.534	50.119
13	14° 34' 15.60"	1° 08' 45.30"	5.000	639.230	1271.560	40.696
273 S.B.-6	42° 20' 02.05"	2° 51' 53.24"	2.000	774.422	1477.732	184.698



TIE POINTS
BENCH MARKS
BUILDINGS
DRAINAGE

GOODKIND & O'DEA
CONSULTING ENGINEERS
MONTCLAIR, NEW JERSEY

"Imperial" 156 W. B. & E.

COUNTY	CONTRACT	F.P.A. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
		2	DEL.			27	170

CURVE DATA

NO.	Δ	D	R	T	L	E	P.I. COORDINATES N	P.I. COORDINATES E
M-2	14°06'42.27"	07°38'21.97"	750	92.831	184.722	5.723	608,139.834	427,441.357
M-3	59°34'24.04"	28°38'52.50"	200	114.479	207.950	30.446		
M-4	95°52'11.69"	114°35'31.77"	50	55.404	83.662	24.630		
L-3	11°27'32.96"	07°38'21.97"	750	72.251	150.000	3.766	608,382.089	427,928.641
273-S.B.6	42°20'02.05"	02°51'53.24"	2000	774.422	1,477.732	144.698	608,345.658	427,059.784
273-N.B.5	06°21'28.79"	03°34'51.55"	1600	88.866	177.549	2.466	608,217.187	427,728.134
273-N.B.8	25°14'46.56"	06°21'58.31"	900	201.555	396.567	22.293	608,503.373	427,105.669
L-4	104°36'09.31"	01°08'45.29"	5000	200.934	401.652	4.036	609,209.413	427,891.786

DELAWARE TURNPIKE
CONTRACT 7001
1962

Scale: 1" = 50'

NOTE:

Place 1628' Steel Beam Guard Rail

Route 273 - N.B. 53+50 Rt. to 60+18 Rt.
N.B. 53+50 Lt. to 55+00 Lt.
S.B. 54+00 Rt. to 54+80 Rt.
S.B. 60+40 Rt. to 61+00 Rt.
S.B. 55+17 Lt. to 60+97 Lt.
Route 273 - S.B. 54+80 Rt. 70' Along Spur to 273 N.B.

Place 875' Steel Beam Guard Rail

Ramp "M" - 19+50 Rt. to 24+30 Rt. - N.I.C.
19+50 Lt. to 21+80 Lt. - N.I.C.
21+80 Lt. 125' Along Spur to 273 S.B. N.I.C.

Place 2148' Hot Mix Asphaltic Conc. Curb

Route 273 - N.B. 53+50 Rt. to 59+50 Rt.
N.B. 53+50 Lt. to 55+00 Lt.
S.B. 54+00 Rt. to 54+80 Rt.
S.B. 55+17 Lt. to 60+80 Lt.
Ramp "M" - 19+50 Rt. to 24+30 Rt. - N.I.C.
19+50 Lt. to 21+55 Lt. - N.I.C.
Route 273 - S.B. 54+80 Rt. 70' Along Spur to 273 N.B.

For Pavement Elev. see Sh. 70
For Profile Rte. 273, see Sh. 59 & 60.
For Profile Ramp M, see Sh. 54
For Profile Ramp L, see sh. 52 & 53

BENCH MARKS
EARTHWORK
DRAINAGE

CONSULTING ENGINEERS
MONTCLAIR, NEW JERSEY

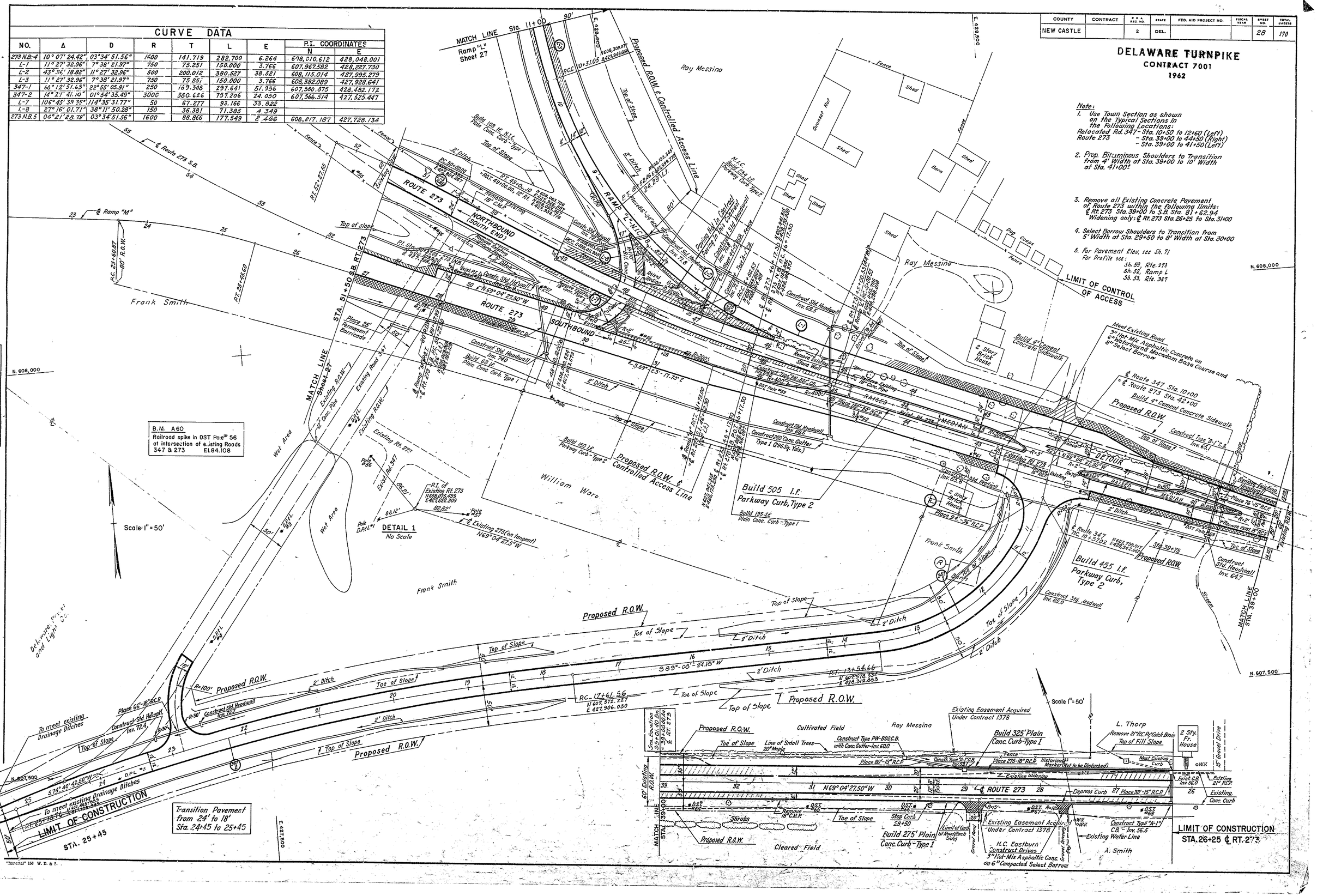
"Imperial" 156 W. B. & E.

COUNTY	CONTRACT	P.B.A. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE		2	DEL.			28	170

DELAWARE TURNPIKE
CONTRACT 7001
1962

CURVE DATA

NO.	Δ	D	R	T	L	E	P.I. COORDINATES N	P.I. COORDINATES E
273 N.B.-4	10° 07' 24.42"	03° 34' 51.56"	1600	141.719	282.700	6.264	608,010.612	428,048.001
L-1	11° 27' 32.96"	7° 38' 21.97"	750	75.251	150.000	3.766	607,967.582	428,227.730
L-2	43° 36' 18.82"	11° 27' 32.96"	500	200.012	380.527	38.521	608,115.014	427,995.279
L-3	11° 27' 32.96"	7° 38' 21.97"	750	75.251	150.000	3.766	608,382.089	427,928.641
347-1	68° 12' 51.63"	22° 55' 05.91"	250	169.308	297.641	51.936	607,580.875	428,482.172
347-2	14° 21' 41.10"	01° 54' 35.49"	3000	380.626	757.206	24.050	607,566.514	427,525.447
L-7	106° 45' 39.35"	114° 35' 31.77"	50	67.277	93.166	33.822		
L-8	27° 16' 01.71"	38° 11' 50.28"	150	36.381	71.385	4.349		
273 N.B.5	06° 21' 28.19"	03° 34' 51.56"	1600	88.866	177.549	2.466	608,217.187	427,728.134



Note:
1. Use Town Section as shown on the Typical Sections in the Following Locations:
   Relocated Rd. 347 - Sta. 10+50 to 12+60 (Left)
   Route 273 - Sta. 39+00 to 44+50 (Right)
   - Sta. 39+00 to 41+50 (Left)
2. Prop. Bituminous Shoulders to Transition from 4' Width at Sta. 39+00 to 10' Width at Sta. 41+00.
3. Remove all Existing Concrete Pavement of Route 273 within the Following Limits:
   ℄ Rt. 273 Sta. 39+00 to S.B. Sta. 81+62.94
   Widening only: ℄ Rt. 273 Sta. 26+25 To Sta. 31+00
4. Select Borrow Shoulders to Transition from 5' Width at Sta. 29+50 to 8' Width at Sta. 30+00
5. For Pavement Elev. see Sh. 71
   For Profile see: Sh. 59, Rte. 273
   Sh. 52, Ramp L
   Sh. 53, Rte. 347

BENCH MARKS
EARTHWORK
DRAINAGE

"Imperial" 150 W. D. & S.

COUNTY	CONTRACT	F. H. A. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE		2	DEL.			29	170

DELAWARE TURNPIKE
CONTRACT 7001
1962

CURVE DATA						
NO.	Δ	D	R	T	L	E
J-3	50° 59' 35.68"	11° 27' 32.96"	500	238.452	445.000	53.949
J-4	10° 41' 42.76"	7° 38' 21.97"	750	70.204	140.000	3.279
K-4, K-6	16° 58' 04.40"	7° 38' 21.97"	750	111.873	222.253	8.298
K-5	17° 37' 46.09"	8° 48' 53.06"	650	100.797	200.000	7.769
273 N.B-9	32° 16' 3.51"	5° 12' 31.35"	1100	318.202	619.494	45.099
273 S.B-7	42° 23' 52.05"	5° 05' 34.66"	1125	436.334	832.479	81.653
K-7	11° 14' 39.47"	3° 34' 51.56"	1600	157.506	314.000	7.734
K-9	25° 48' 0.19"	38° 11' 50.28"	150	34.354	67.544	3.884
K-10	109° 46' 40.04"	57° 17' 45.23"	100	142.227	191.598	73.863
J-8	73° 59' 36.96	114° 35' 31.77"	50	37.673	64.571	12.604
J-9	73° 14' 5.01"	38° 11' 50.28"	150	111.470	191.728	36.884

CURVE NO.	P.I. COORDINATES	
	N	E
J-3	609,825.896	426,267.736
J-4	609,517.891	426,247.699
K-4	609,726.813	426,799.874
K-5	609,759.964	426,589.804
K-6	609,855.181	426,399.640
K-7	610,040.832	426,204.451
273 NB-9	609,849.922	426,394.965
273 SB-7	610,032.614	426,209.843

"Imperial" 19c W. B. & E.

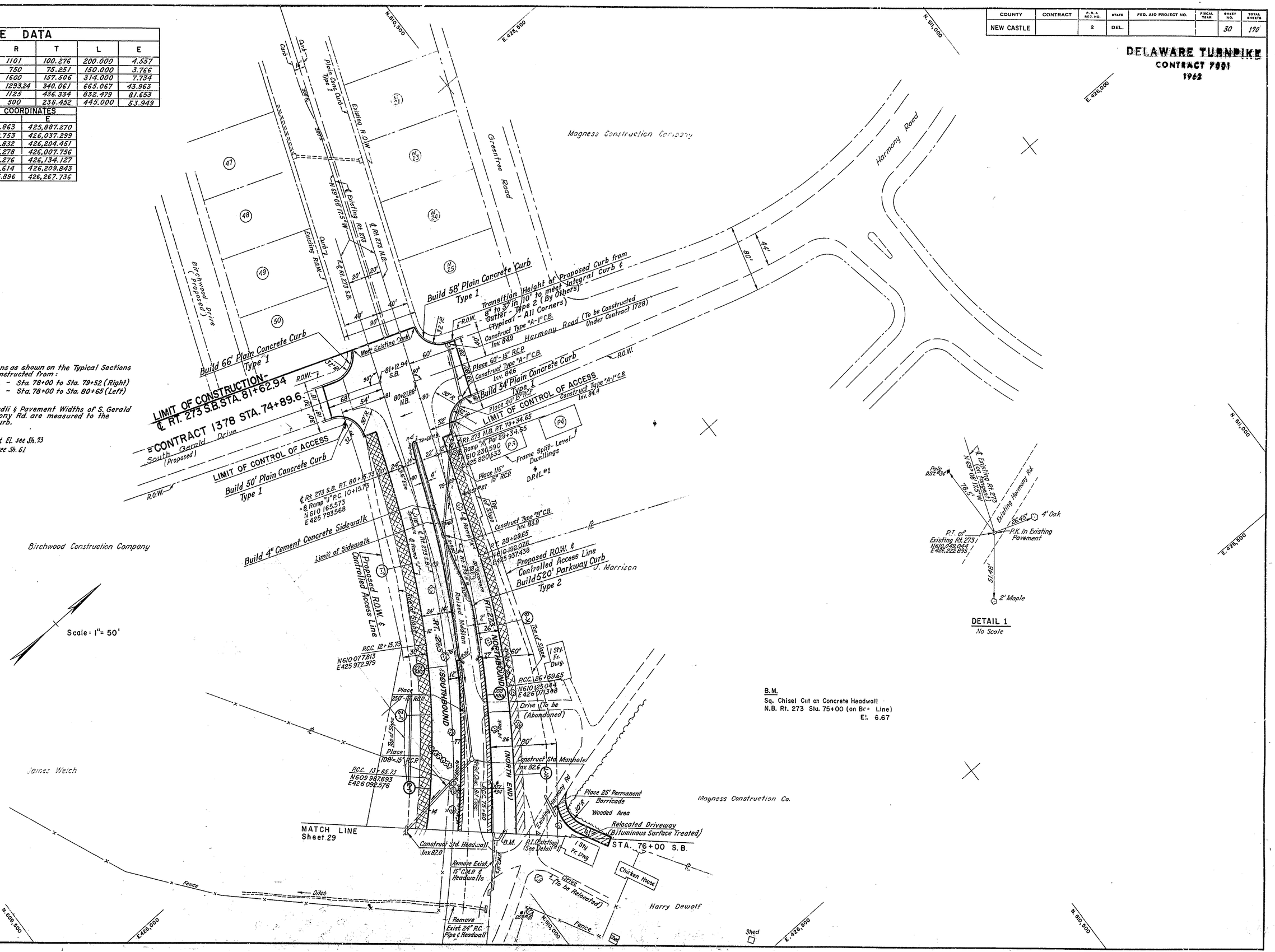
COUNTY	CONTRACT	F. R. A. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE		2	DEL.			30	170

DELAWARE TURNPIKE
CONTRACT 7891
1962

CURVE DATA

NO.	Δ	D	R	T	L	E
J-1	10° 24' 28.63"	5° 12' 14.32"	1101	100.276	200.000	4.557
J-2 & K-8	11° 27' 32.96"	7° 38' 21.97"	750	75.251	150.000	3.766
K-7	11° 14' 39.47"	3° 34' 51.56"	1600	157.506	314.000	7.734
273 N.B.-5	29° 27' 54.59"	4° 25' 49.47"	1293.24	340.061	665.067	43.963
273 S.B.-7	42° 23' 52.05"	5° 05' 34.66"	1125	436.334	832.479	81.653
ℓ -3	50° 59' 35.68"	11° 27' 32.96"	500	236.452	445.000	53.949

CURVE NO.	P.I. COORDINATES N	E
J-1	610,129.863	425,887.270
J-2	610,038.753	426,037.299
K-7	610,040.832	426,204.451
K-8	610,165.278	426,007.756
273 N.B.-5	610,104.276	426,134.127
273 S.B.-7	610,032.614	426,209.843
J-3	609,825.896	426,267.736



Note:
Town Sections as shown on the Typical Sections shall be Constructed from:
Rt. 273 N.B. - Sta. 78+00 to Sta. 79+52 (Right)
Rt. 273 S.B. - Sta. 78+00 to Sta. 80+65 (Left)

All Curb Radii & Pavement Widths of S. Gerald Dr. & Harmony Rd. are measured to the Back of Curb.

For Pavement El. see Sh. 73
For Profile see Sh. 61

EARTHWORK
DRAINAGE

CONSULTING ENGINEERS
MONTCLAIR, NEW JERSEY

"Imperial" 156 W. B. & E.

COUNTY	CONTRACT	F.R.A. P.O.L. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE		2	DEL.			31	170

DELAWARE TURNPIKE

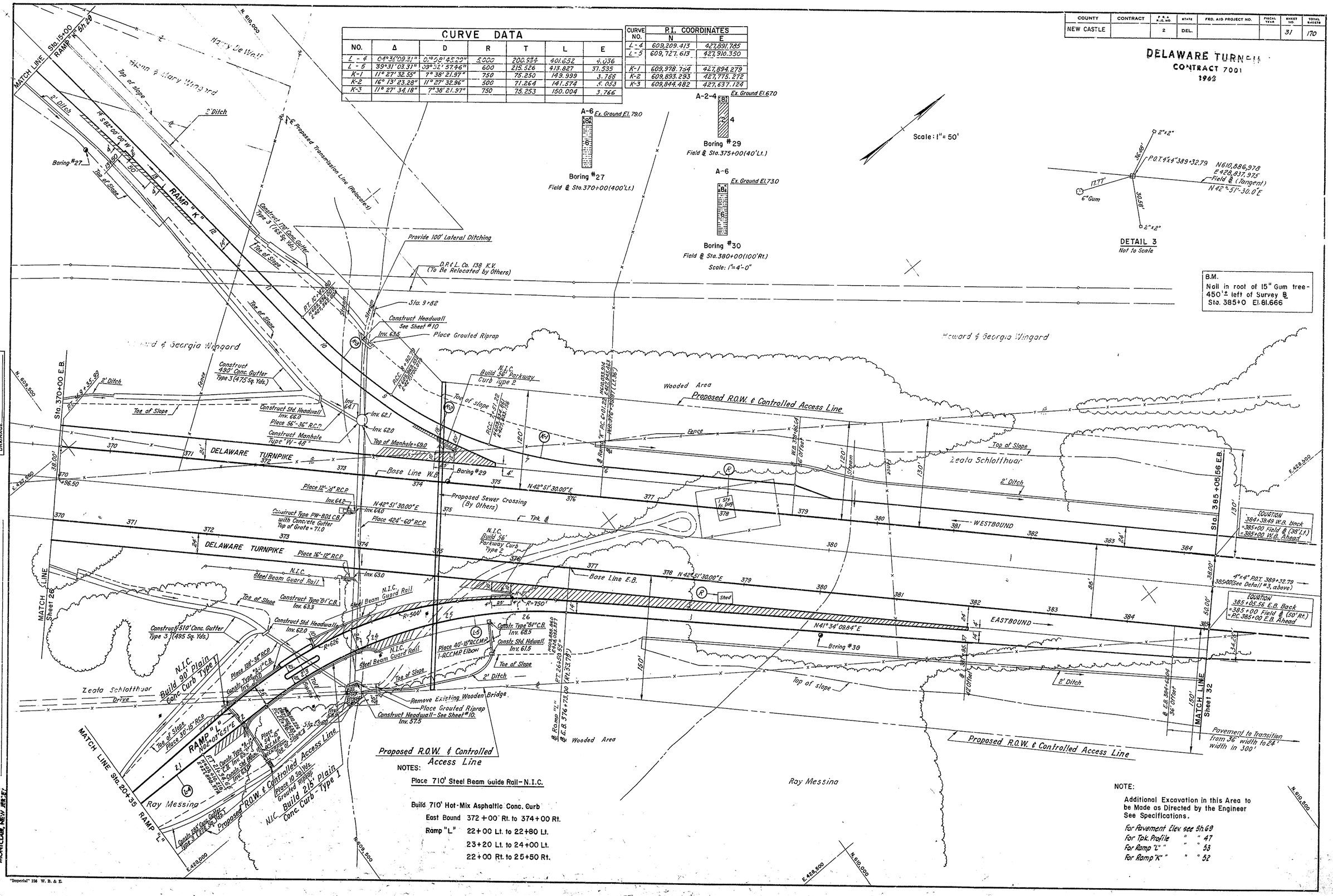
CONTRACT 7001

1963

CURVE DATA

NO.	Δ	D	R	T	L	E
L - 4	04°31'09.31"	0°19'45.20"	5,000	200.934	401.652	4.036
L - 5	39°31'03.31"	39°32'57.46"	600	215.526	413.827	37.335
K-1	11° 27' 32.55"	7° 38' 21.97"	750	75.250	149.999	3.766
K-2	16° 13' 23.28"	11° 27' 32.96"	500	71.264	141.574	5.053
K-3	11° 27' 34.18"	7° 38' 21.97"	750	75.253	150.004	3.766

CURVE NO.	P.I. COORDINATES N	E
L - 4	609,209.413	427,891.785
L - 5	609,727.613	427,910.350
K-1	609,978.754	427,894.279
K-2	609,893.293	427,775.272
K-3	609,844.482	427,637.124



NOTES:

Place 710' Steel Beam Guide Rail - N.I.C.

Build 710' Hot-Mix Asphaltic Conc. Curb

East Bound 372+00 Rt. to 374+00 Rt.

Ramp "L" 22+00 Lt. to 22+80 Lt.

23+20 Lt. to 24+00 Lt.

22+00 Rt. to 25+50 Rt.

NOTE:

Additional Excavation in this Area to be Made as Directed by the Engineer See Specifications.

For Pavement Elev. see Sh. 69

For Tpk. Profile " " 47

For Ramp "L" " " 53

For Ramp "K" " " 52

TIE POINTS
BRIDGE WORKS
EARTHWORK
DRAINAGE

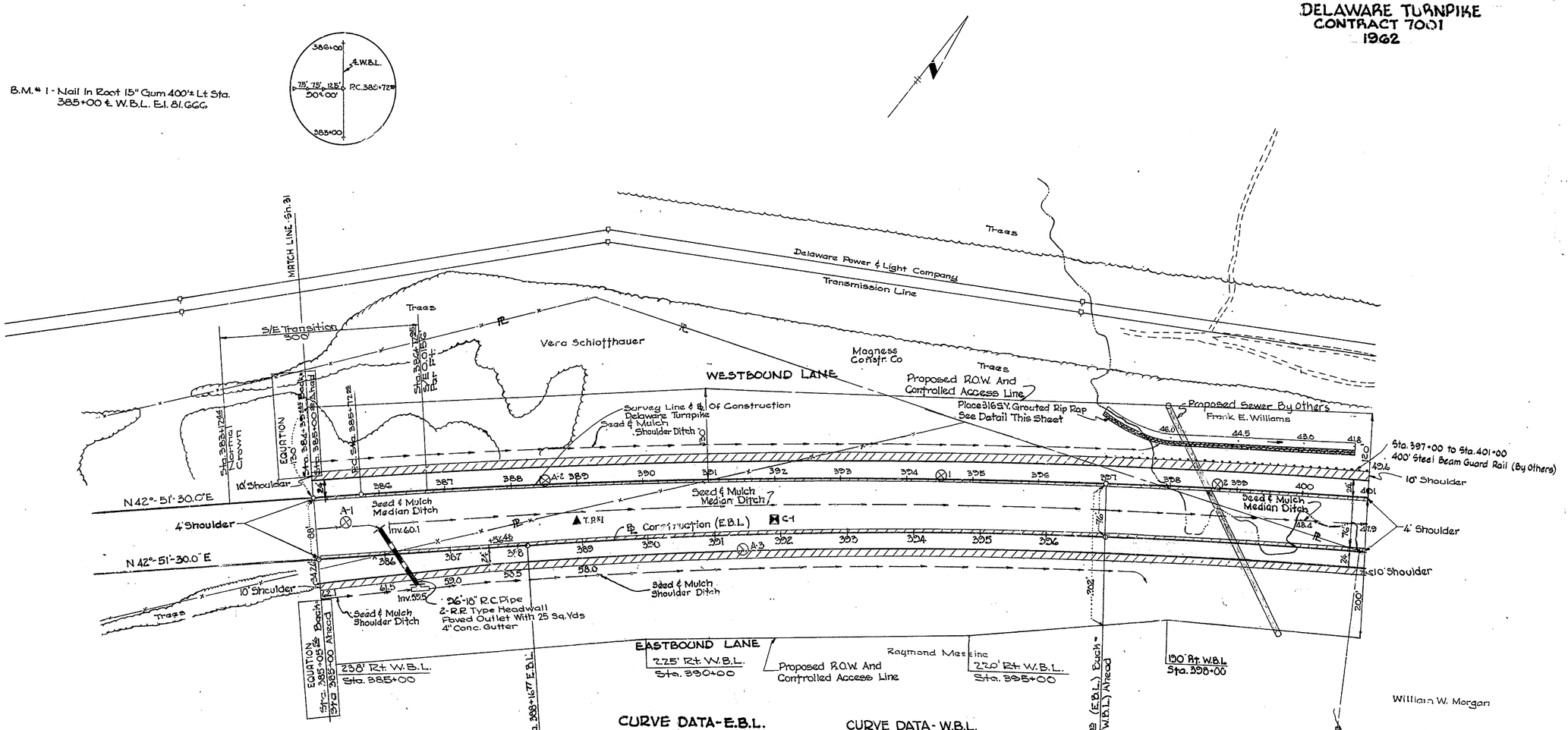
GOODKIND & O'DEA
CONSULTING ENGINEERS
MONTCLAIR, NEW JERSEY

"Imperial" 156 W. B. & E.

COUNTY	CONTRACT	F. A. P. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
N. C.		2	DEL.			32	170

DELAWARE TURNPIKE
CONTRACT 7001
1962

B.M.# 1 - Nail In Root 15" Gum 400'± Lt Sta. 385+00 ℄ W.B.L. El. 81.666



B.M.# 2 - Nail In Root 18" Poplar 125'± Lt. Sta. 395+20 ℄ W.B.L. El. 59.022

LEGEND FOR BORINGS STA. 385+ TO STA. 471+

- ⊗ AUGER BORING FOR ROADWAY CONSTRUCTION
- ⊠ CASING BORING FOR ROADWAY CONSTRUCTION
- ▲ TEST PIT FOR ROADWAY CONSTRUCTION

CURVE DATA - E.B.L.

P.I. = 392+54.29
Δ = 5°38'-06.26"
D = 0°38'-37.22"
R = 8900.121'
T = 438.033'
L = 875.36'
S/E = 0.0156' Per Ft.

CURVE DATA - W.B.L.

P.I. = 411+33.62
Δ = 25°-11'-36.4"
D = 0°-30'-00"
R = 11459.16'
T = 2560.74'
L = 5038.69'
S/E = 0.0156' Per Ft.

GENERAL NOTES FOR SOIL DATA
STA. 385+ TO STA. 471+

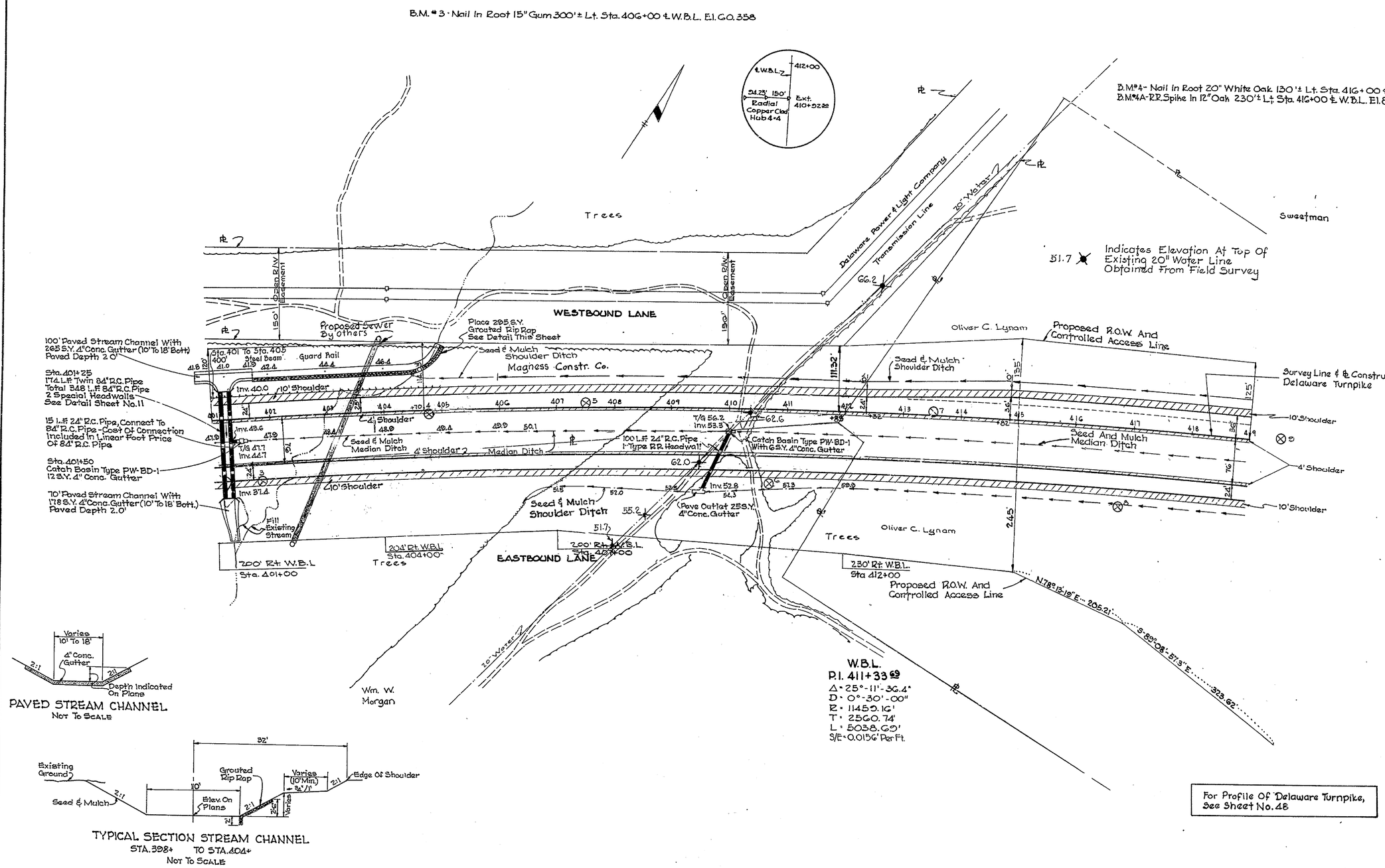
1. All Soil Borings Made By Warren George Of New York City, New York During Period June 11, 1958 To July 9, 1958.
2. All Laboratory Soils Tests Performed By Rummel, Klepper & Kahl, Engineers Of Baltimore, Maryland & Reported To State Highway Department, State Of Delaware.
3. Soil Classifications For Auger Borings Made In Accordance With Standard Recommended Practice For The Classification Of Soils & Soil Aggregate Mixtures For Highway Construction Purposes, AASHO Designation M145-49 As Modified By Delaware State Highway Department.
4. W.T. = Water Table.
5. Logs For Borings At The Route #7 & Churchmans Road Structures May Be Obtained From Delaware State Highway Department.
6. Soil Symbols Are In Accordance With Standard Symbols For Soil Classification Of Samples, See Standard Sheet G

For Profile Delaware Turnpike, See Sheet No. 48

BENCH MARKS
BACKWATER
DRAINAGE

COUNTY	CONTRACT	F.A.A. REG. NO.	STATE	FED. AID PROJECT NO	FISCAL YEAR	SHEET NO	TOTAL SHEETS
N. C.		2	DEL.			33	170

DELAWARE TURNPIKE
CONTRACT 7001
1962

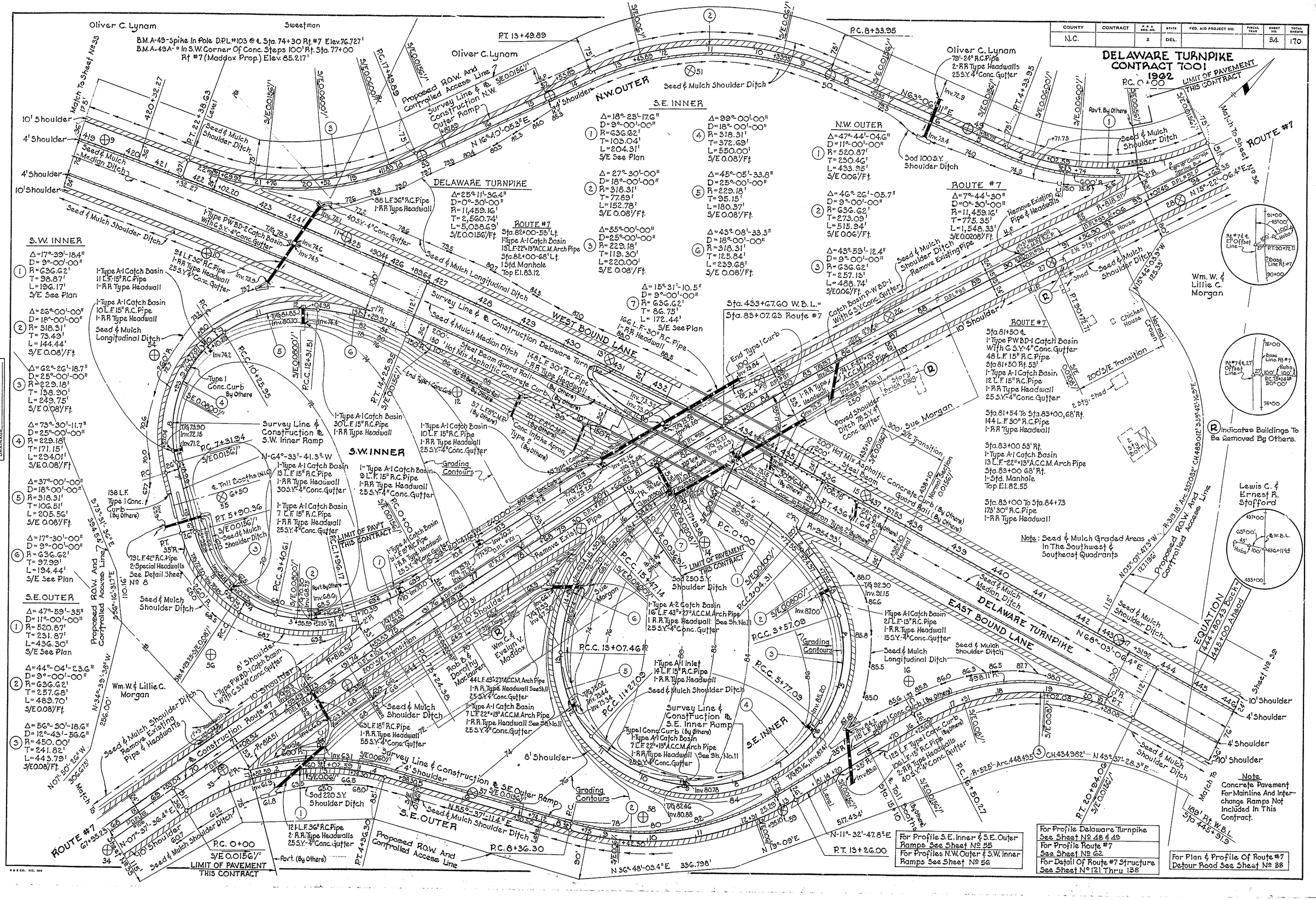


For Profile Of Delaware Turnpike, See Sheet No. 48

BENCH MARKS
EARTHWORK
DRAINAGE

COUNTY	CONTRACT	P.B.A. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
N.C.		2	DEL.			34	170

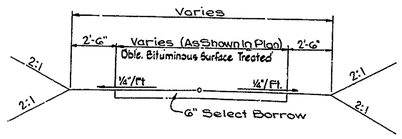
DELAWARE TURNPIKE CONTRACT 7001 1962



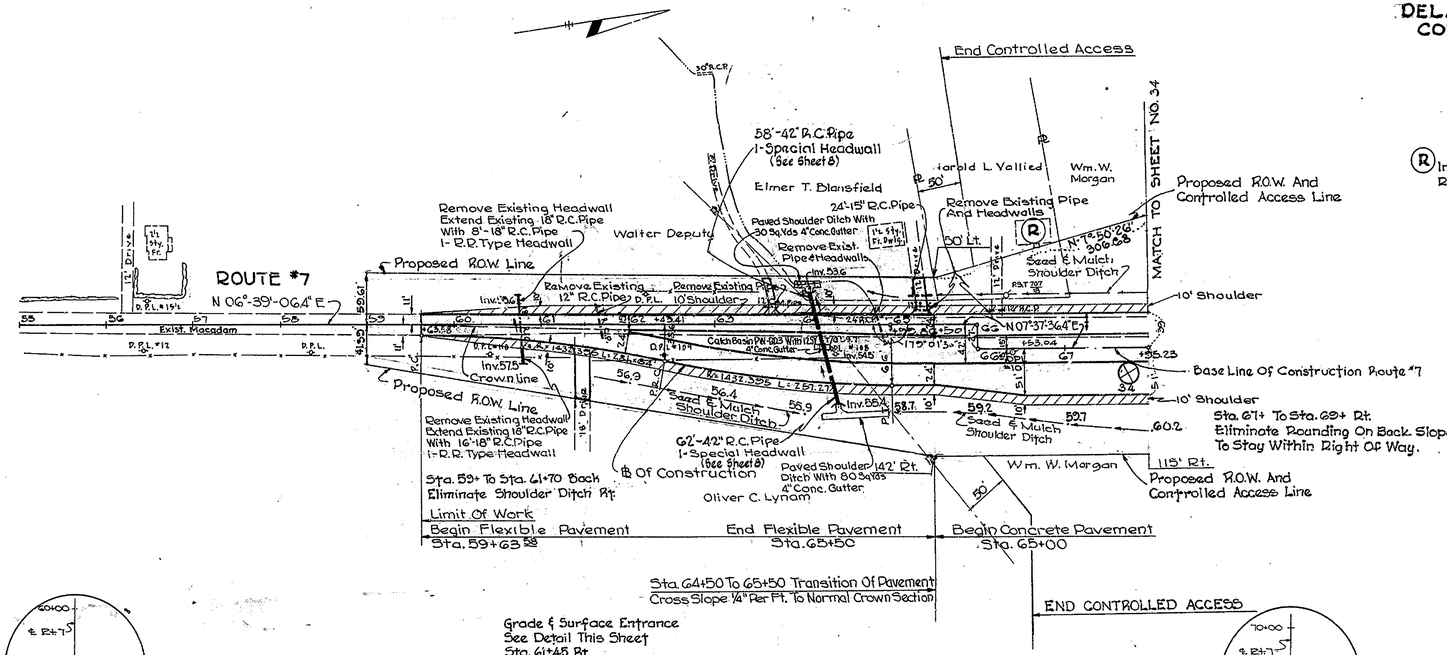
COUNTY	CONTRACT	F.A. & REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
N. C.		2	DEL.			35	170

DELAWARE TURNPIKE
CONTRACT 7001
1962

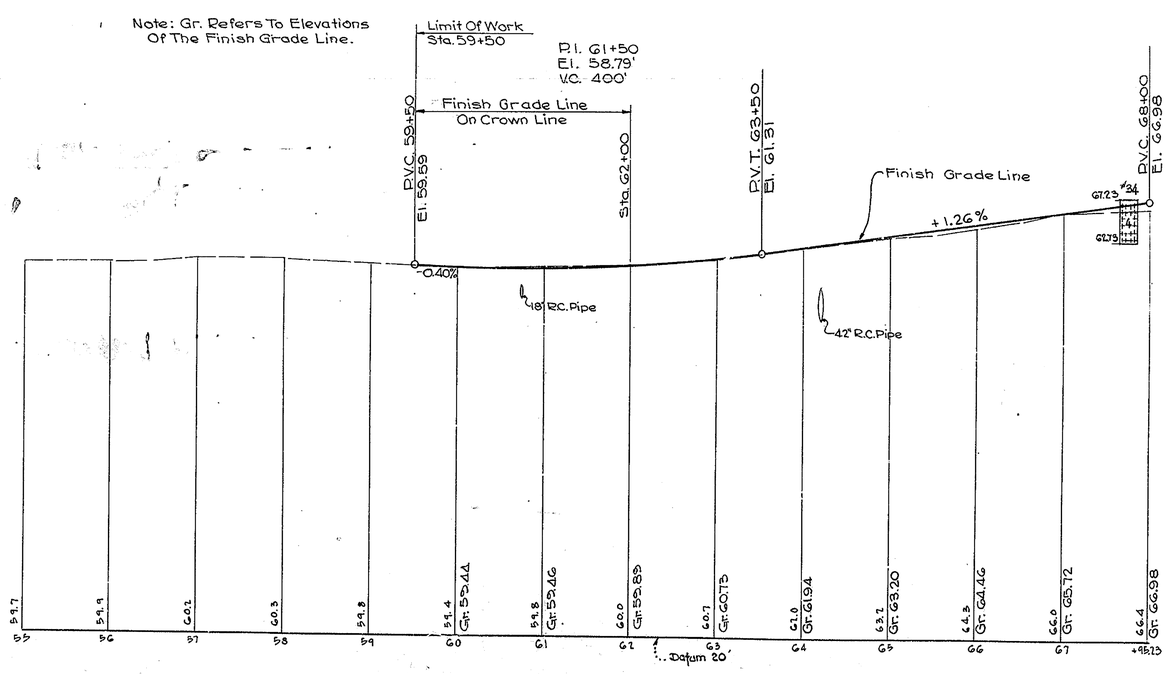
B.M. #9 - Sta. 65+ Headwall Lt. EL 63.17



TYPICAL SECTION - ENTRANCE
Scale: 1" = 4'-0"
All Entrances Except Field Entrances Shall Be Bituminous Surface Treated To R/W Line As Shown Or As Directed.



(R) Indicates Buildings To Be Removed By Others



For Profile Rt. #7 from Sta. 68100 to 110+00 See Sheet No. 62

TIE POINTS
BENCH MARKS
R.R. CROSSINGS
DRAINAGE

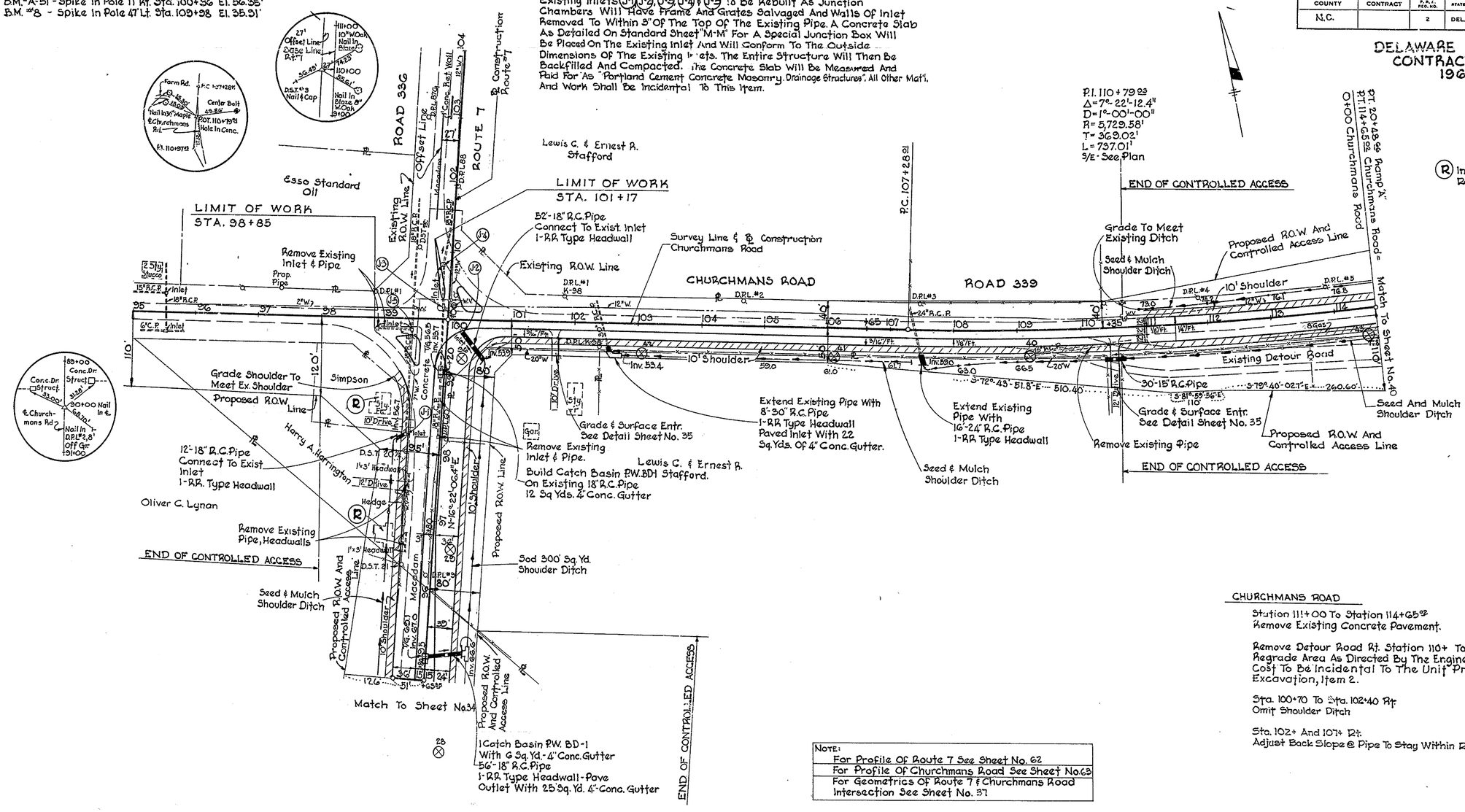
"Imperial" 156 W. B. & E.

COUNTY	CONTRACT	P.A.I. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
N.C.		2	DEL.			36	170

DELAWARE TURNPIKE
CONTRACT 7001
1962

B.M.-A-51 - Spike In Pole 11' Rt. Sta. 100+36 El. 56.35'
B.M. #8 - Spike In Pole 47' Lt. Sta. 109+98 El. 35.91'

Existing Inlets (J-1) (J-2) (J-3) (J-4) & (J-5) To Be Rebuilt As Junction Chambers Will Have Frame And Grates Salvaged And Walls Of Inlet Removed To Within 3" Of The Top Of The Existing Pipe. A Concrete Slab As Detailed On Standard Sheet "M-M" For A Special Junction Box Will Be Placed On The Existing Inlet And Will Conform To The Outside Dimensions Of The Existing Inlets. The Entire Structure Will Then Be Backfilled And Compacted. The Concrete Slab Will Be Measured And Paid For As "Portland Cement Concrete Masonry, Drainage Structures". All Other Mat'l. And Work Shall Be Incidental To This Item.



(R) Indicates Buildings To Be Removed By Others

NOTE:
For Profile Of Route 7 See Sheet No. 62
For Profile Of Churchmans Road See Sheet No. 63
For Geometrics Of Route 7 & Churchmans Road Intersection See Sheet No. 37

CHURCHMANS ROAD

Station 111+00 To Station 114+65.92
Remove Existing Concrete Pavement.

Remove Detour Road Rt. Station 110+ To Station 114+ & Regrade Area As Directed By The Engineer. The Cost To Be Incidental To The Unit Price Bid For Excavation, Item 2.

Sta. 100+70 To Sta. 102+40 Rt
Omit Shoulder Ditch

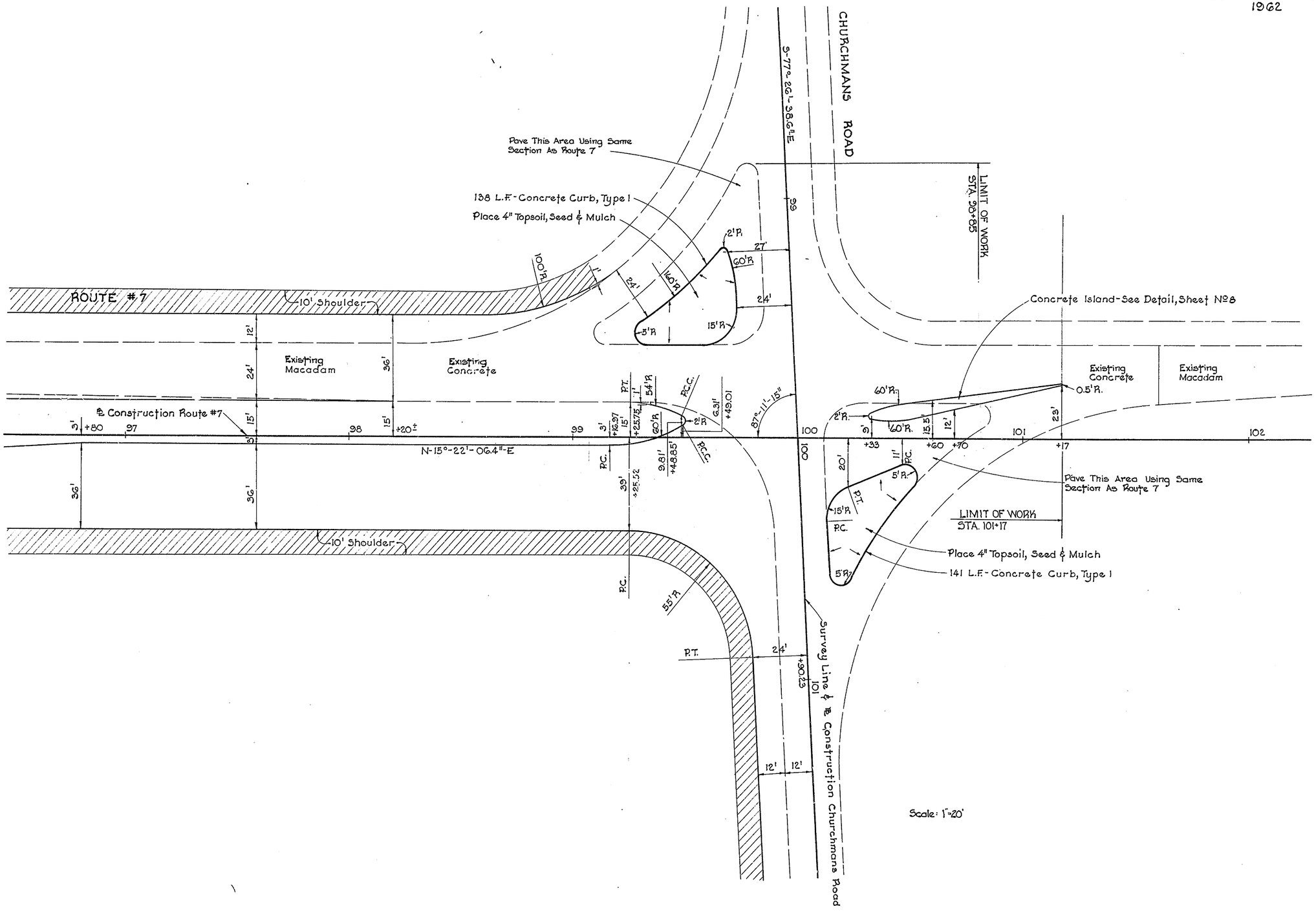
Sta. 102+ And 107+ Rt.
Adjust Back Slope @ Pipe To Stay Within Right Of Way.

DIS. POINTS
TIE POINTS
BENCH MARKS
EARTHWORK
DRAINAGE

"Imperial" 156 W. B. & K.

COUNTY	CONTRACT	F.A.A. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
N.C.		2	DEL.			37	170

DELAWARE TURNPIKE
CONTRACT 7001
1962

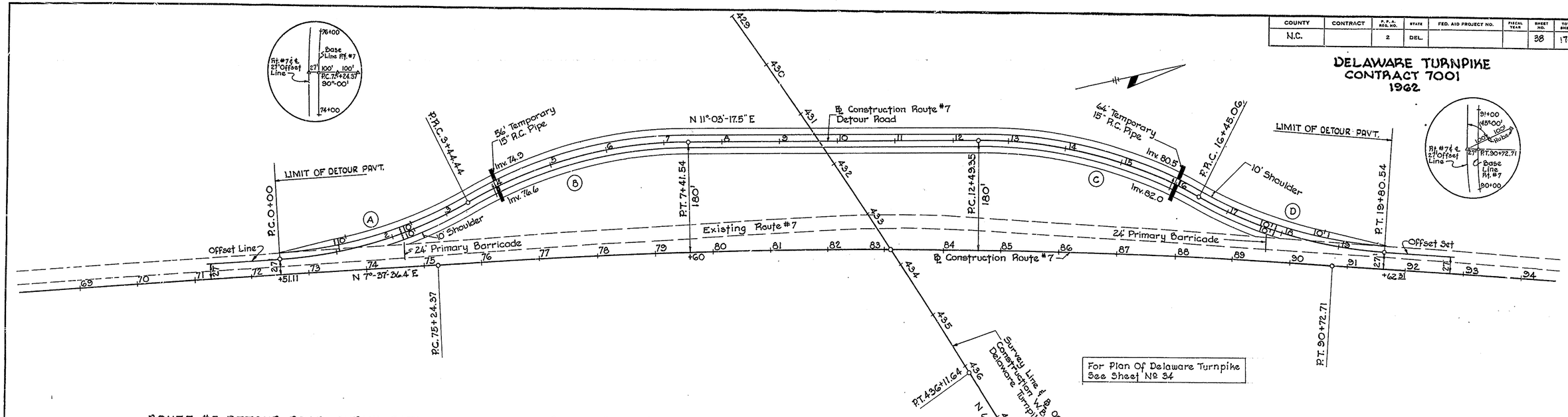


EARTH WORKS
STRUCTURE WORK
DRAINAGE

"Imperial" 156 W. B. & E.

COUNTY	CONTRACT	F.P.A. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
N.C.		2	DEL.			38	170

DELAWARE TURNPIKE
CONTRACT 7001
1962



For Plan Of Delaware Turnpike
See Sheet № 34

ROUTE #7 DETOUR ROAD CURVE DATA

(A)
P.I. 1+74.93
Δ = 24°-40'-07"
D = 7°-09'-43"
R = 800.00'
T = 174.93'
L = 344.44'

(B)
P.I. 5+44.62
Δ = 28°-05'-48.1"
D = 7°-09'-43"
R = 800.00'
T = 200.18'
L = 397.10'

(C)
P.I. 14+51.34
Δ = 28°-20'-25.7"
D = 7°-09'-43"
R = 800.00'
T = 201.99'
L = 395.71'

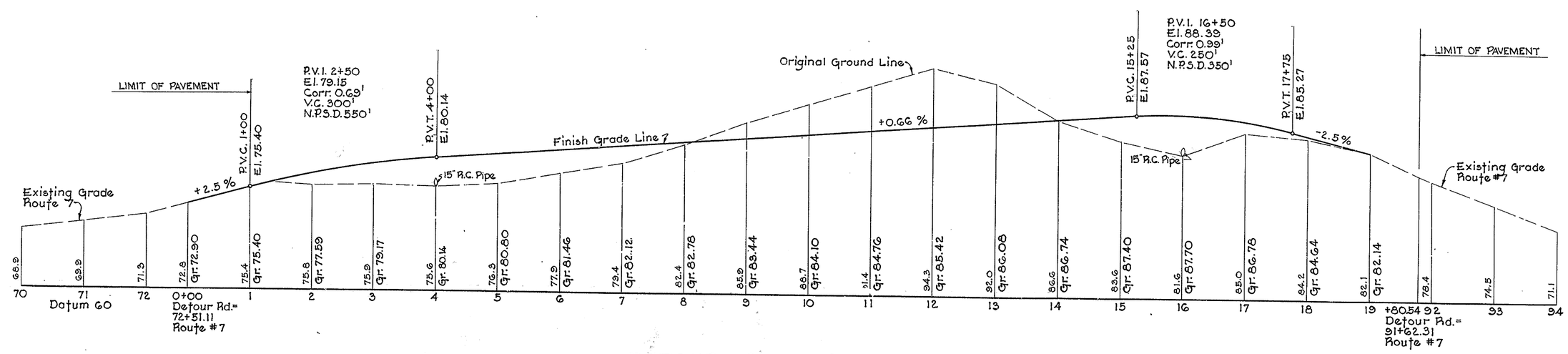
(D)
P.I. 18+15.30
Δ = 24°-01'-36.8"
D = 7°-09'-43"
R = 800.00'
T = 170.24
L = 335.48'

ROUTE #7 CURVE DATA

P.I. 82+99.73
Δ = 7°-44'-30"
D = 0°-30'-00"
R = 11,459.16'
T = 775.35'
L = 1,548.33'
S/E = 0.0208' Per Ft.

W.B.L. CURVE DATA

P.I. 411+33.69
Δ = 25°-11'-36.4"
D = 0°-30'-00"
R = 11,459.16'
T = 2,560.74'
L = 5,038.69'
S/E = 0.0156' Per Ft.



DETOUR ROAD ROUTE #7

TIE POINTS
BENCH MARKS
BRIDGEWORK
DRAINAGE

"Imperial" 136 W. B. & E.

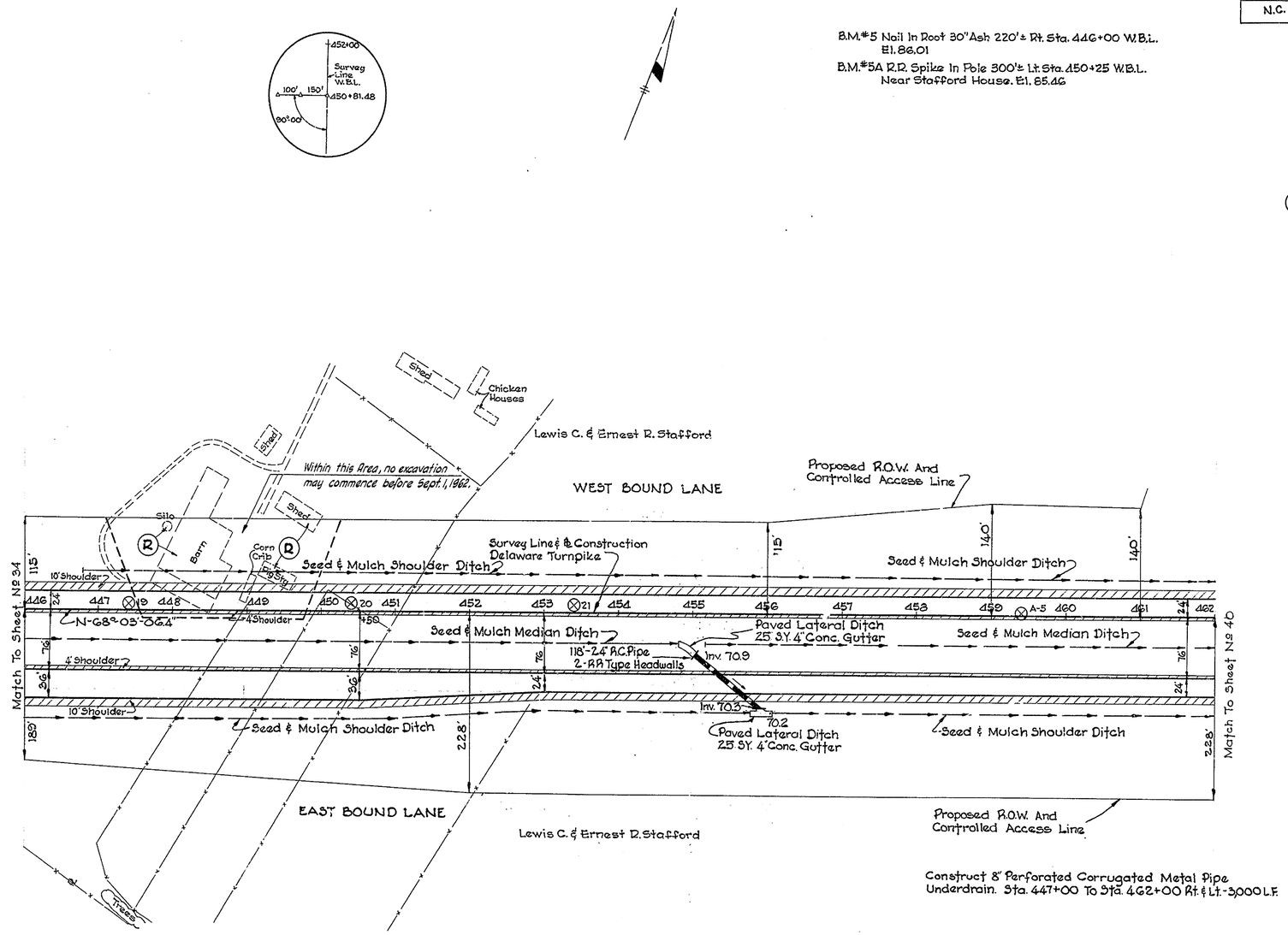
COUNTY	CONTRACT	P.B.A. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
N.C.		2	DEL.			39	170

DELAWARE TURNPIKE
CONTRACT 7001
1962

B.M.#5 Nail In Root 30" Ash 220'± Rt. Sta. 446+00 W.B.L. El. 86.01

B.M.#5A R.R. Spike In Pole 300'± Lt. Sta. 450+25 W.B.L. Near Stafford House. El. 85.46

(R) Indicates Buildings To Be Removed By Others.



Construct 8" Perforated Corrugated Metal Pipe Underdrain. Sta. 447+00 To Sta. 462+00 Rt. & Lt.-3000 L.F.

For Profile Of Delaware Turnpike, See Sheet No. 49

BENCH MARKS
EARTHWORK
DRAINAGE

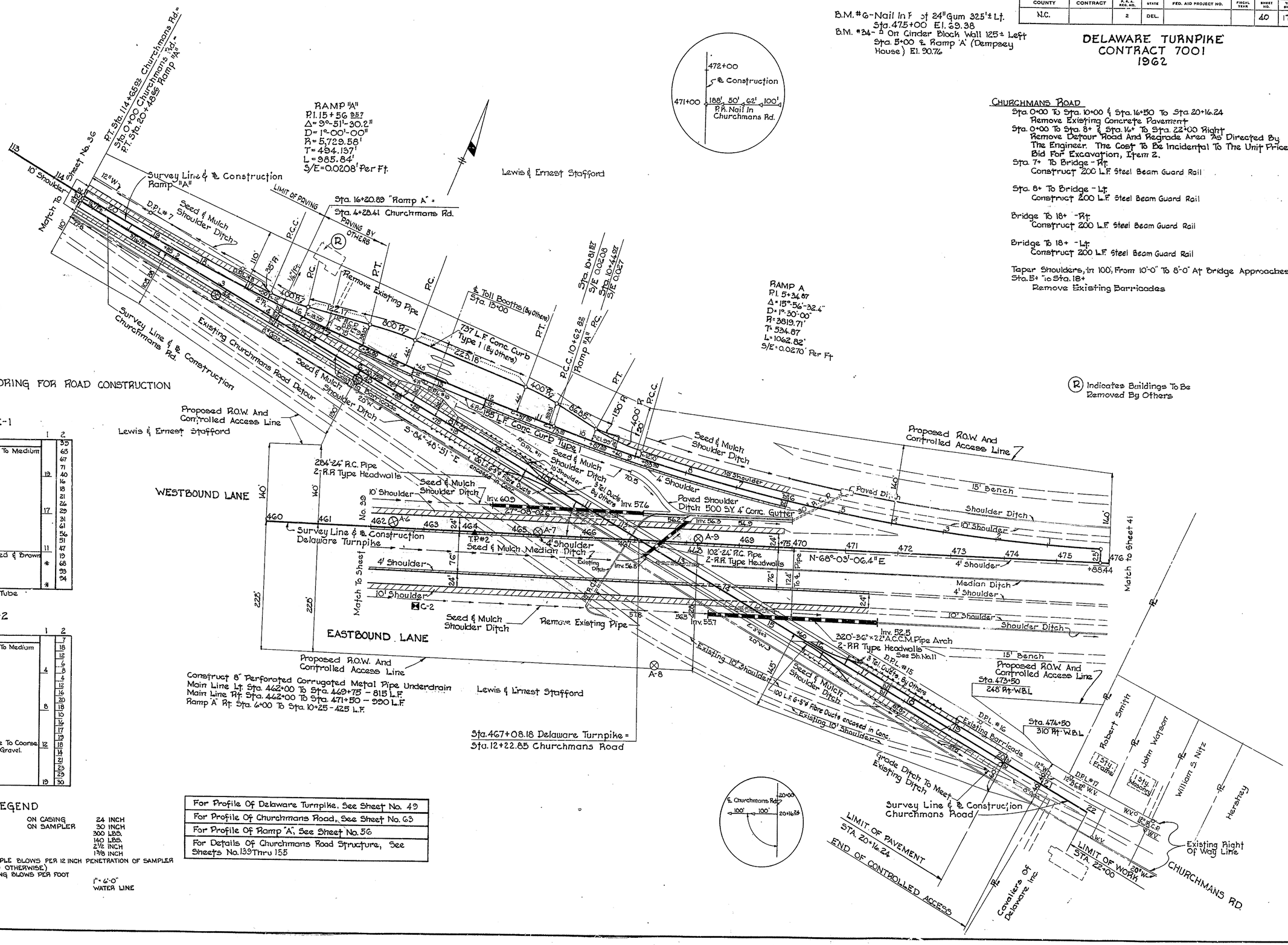
"Imperial" 156 W. B. & E.

COUNTY	CONTRACT	P.R.A. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
N.C.		2	DEL.			40	170

DELAWARE TURNPIKE
CONTRACT 7001
1962

B.M. #6 - Nail In F of 24" Gum 32.5'± Lt. Sta. 475+00 El. 89.38

B.M. #34 - Δ On Cinder Block Wall 125± Left Sta. 5+00 & Ramp 'A' (Dempsey House) El. 90.76



RAMP "A"
P.I. 15+56.25
Δ = 9°-51'-30.2"
D = 1°-00'-00"
R = 5,729.58'
T = 494.137'
L = 985.84'
S/E = 0.0208' Per Ft.

CHURCHMANS ROAD
P.I. 110+79.23
Δ = 7°-22'-12.4"
D = 1°-00'-00"
R = 5,729.58'
T = 369.02'
L = 737.01'

RAMP A
P.I. 5+34.87
Δ = 15°-56'-32.4"
D = 1°-30'-00"
R = 3819.71'
T = 534.87
L = 1062.82'
S/E = 0.0270' Per Ft

℄ Churchmans Rd. 20+00 100' 100' 20+16.24

Lewis & Ernest Stafford

Construct 8" Perforated Corrugated Metal Pipe Underdrain
Main Line Lt. Sta. 462+00 To Sta. 469+75 - 815 L.F.
Main Line Rt. Sta. 462+00 To Sta. 471+50 - 990 L.F.
Ramp "A" Rt. Sta. 6+00 To Sta. 10+25 - 425 L.F.

Sta. 467+08.18 Delaware Turnpike = Sta. 12+22.85 Churchmans Road

(R) Indicates Buildings To Be Removed By Others

CHURCHMANS ROAD

Sta. 0+00 To Sta. 10+00 & Sta. 16+50 To Sta. 20+16.24
Remove Existing Concrete Pavement

Sta. 0+00 To Sta. 8+ & Sta. 16+ To Sta. 22+00 Right
Remove Detour Road And Regrade Area As Directed By The Engineer. The Cost To Be Incidental To The Unit Price Bid For Excavation, Item 2.

Sta. 7+ To Bridge - Rt.
Construct 200 L.F. Steel Beam Guard Rail

Sta. 8+ To Bridge - Lt.
Construct 200 L.F. Steel Beam Guard Rail

Bridge To 18+ - Rt.
Construct 200 L.F. Steel Beam Guard Rail

Bridge To 18+ - Lt.
Construct 200 L.F. Steel Beam Guard Rail

Taper Shoulders, In 100, From 10'-0" To 8'-0" At Bridge Approaches.

Sta. 5+ To Sta. 18+
Remove Existing Barricades

LOGS OF CASING BORING FOR ROAD CONSTRUCTION

C-1

ELEV.	Description	Column 1	Column 2
81.37	Topsoil		35
	Brown Fine To Medium Sand.		65
			67
			71
76.37		19	40
W.L. 74.9±			16
			18
			21
71.37			26
		17	29
			31
			61
			56
			51
66.37		11	47
	Mottled Red & Brown Clay	*	19
			68
			99
61.37		*	94

* Shelby Tube

C-2

ELEV.	Description	Column 1	Column 2
92.16	Topsoil		7
	Brown Fine To Medium Sand		18
			12
			6
87.16		4	3
			4
			12
			16
			20
82.16		8	18
			10
			14
W.L. 78.5±			17
			19
77.16	Grading Fine To Coarse Sand With Gravel.	12	18
			14
			21
			23
			29
72.16		19	30

LEGEND

DISTANCE HAMMER DROP	ON CASING	24 INCH
	ON SAMPLER	30 INCH
DRIVE HAMMER		300 LBS.
SAMPLER HAMMER		140 LBS.
CASING SIZE		2½ INCH
SAMPLER SIZE		1⅜ INCH

COLUMN 1 DENOTES SAMPLE BLOWS PER 12 INCH PENETRATION OF SAMPLER (UNLESS NOTED OTHERWISE)
COLUMN 2 DENOTES CASING BLOWS PER FOOT
VERTICAL SCALE 1" = 6'-0"
W.L. WATER LINE

For Profile Of Delaware Turnpike, See Sheet No. 49
For Profile Of Churchmans Road, See Sheet No. 63
For Profile Of Ramp "A", See Sheet No. 56
For Details Of Churchmans Road Structure, See Sheets No. 139 Thru 155

BEARINGS
TIE POINTS
BENCH MARKS
EARTHWORK
DRAINAGE

REVISIONS

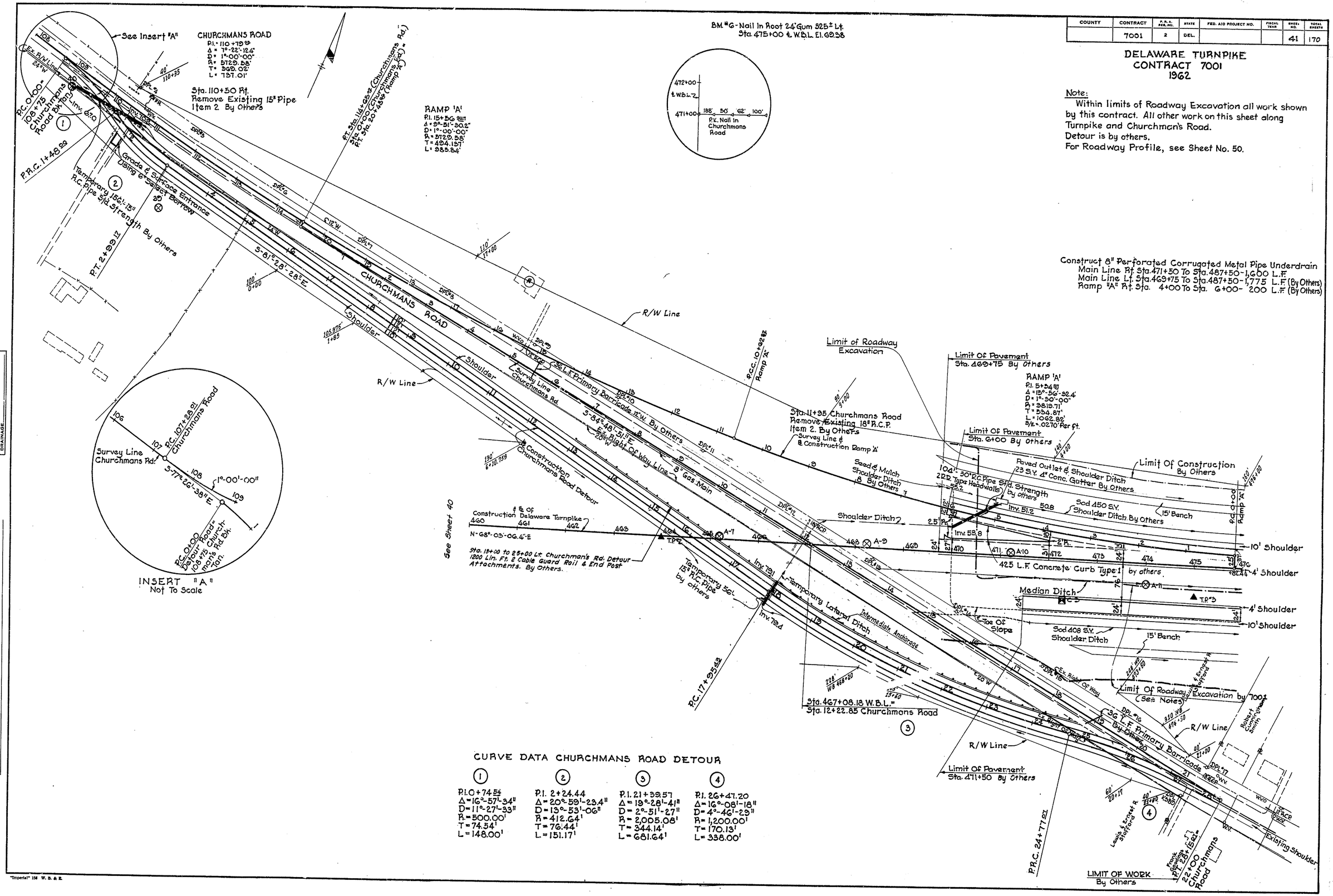
"Imperial" 156 W. B. & E.

COUNTY	CONTRACT	F.A.P. RES. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	7001	2	DEL.			41	170

DELAWARE TURNPIKE
CONTRACT 7001
1962

Note:
Within limits of Roadway Excavation all work shown by this contract. All other work on this sheet along Turnpike and Churchman's Road.
Detour is by others.
For Roadway Profile, see Sheet No. 50.

Construct 8" Perforated Corrugated Metal Pipe Underdrain
Main Line Rt. Sta. 471+50 To Sta. 487+50 - 1,600 L.F.
Main Line Lt. Sta. 469+75 To Sta. 487+50 - 1,775 L.F. (By Others)
Ramp "A" Rt. Sta. 4+00 To Sta. 6+00 - 200 L.F. (By Others)



CURVE DATA CHURCHMANS ROAD DETOUR

(1)	(2)	(3)	(4)
P.I. 0+74.54	P.I. 2+24.44	P.I. 21+39.57	P.I. 26+47.20
Δ = 16°-57'-34"	Δ = 20°-59'-23.4"	Δ = 19°-28'-41"	Δ = 16°-08'-18"
D = 11°-27'-33"	D = 13°-53'-06"	D = 2°-51'-27"	D = 4°-46'-23"
R = 500.00'	R = 412.64'	R = 2,005.08'	R = 1,200.00'
T = 74.54'	T = 76.44'	T = 344.14'	T = 170.13'
L = 148.00'	L = 151.17'	L = 681.64'	L = 338.00'

GRADE
RECORDS
TIE POINTS
BENCH MARKS
EARTHWORK
DRAINAGE

REVISIONS

"Imperial" 156 W. B. & R.

COUNTY	CONTRACT	F. A. A. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
						42	170

DELAWARE TURNPIKE CONTRACT 7001 1962

LOGS OF CASING BORING FOR ROAD CONSTRUCTION

C-3

ELEV.	Description	1	2
86.51	Topsoil		10
	Brown Fine To Medium Sand With Gravel		25
			49
			96
		35	79
			55
			71
			84
			81
W.L. 76±		15	181
			39
			65
			75
			81
71.51	Grading Medium To Coarse	17	85
			51
			56
			86
			77
68.51	Grading Light Gray And Fine	17	65
			30
			56
			70
			78
61.51			92
59.51	Mottled Brown & Gray Sandy Loam With Some Decayed Wood	*	
57.51	Mottled Light Gray & Brown Silty Loam	*	
56.51	Mottled Light Gray & Brown Clay	16	

* Shelby Tube

C-5

ELEV.	Description	1	2
82.79	Topsoil		8
			8
			6
79.79			25
77.79	Brown Fine To Coarse Sand With Gravel	18	39
W.L. 76.5±			18
			26
			25
			25
72.79		10	16
	Reddish Gray Clay		8
			9
			11
			10
67.79		15	12
	Gray Silty Clay With Layers Of Gray Fine Sand.		10
			19
			25
			55
		12	50
57.79		17	
	Gray Fine To Median Sand		
51.79		16	

C-6

ELEV.	Description	1	2
87.41	Brown Sandy Clay Loam.		5
			8
84.41			15
			16
82.41	Brown Fine To Medium Sand And Gravel.	17	31
			34
			42
W.L. 79±			45
			61
77.41		21	102
			39
			110
			115
			119
72.41	Grading Yellowish Brown	44	79
			61
			82
			120
			105
67.41		16	116
			106
			71
	Grading Light Brown & Gray Fine.		70
62.41		*	
	Brownish Gray Sand Loam		
59.41		14	
	Gray Sand Loam With Layers Of Gray Fine Sand & Trace Decayed Vegetation.	*	
54.41			
	Mottled Gray & Brown Fine To Medium Sand With Layers Of Yellowish Brown Clay & Trace Of Decayed Wood	21	
		*	
48.41		24	
47.41	Mottled Red & Gray Clay		

* Shelby Tube

C-8

ELEV.	Description	1	2
72.2	Brown Clay With Some Gravel		12
			12
			10
			9
68.2		19	8
W.L. 66±	Brown Fine To Coarse Sand With Some Gravel		10
			19
			26
			28
62.2		14	29
			17
			26
			51
			55
58.2		18	56
	Grading Mottled Brown & Gray & Fine		15
			20
			21
			21
52.2		12	23
	Light Gray Sandy Loam		
48.2		18	
	Grading Dark Gray With Decayed Wood Fragments		
41.2			
42.2	Mottled Red & Gray Clay	16	

LEGEND

DISTANCE HAMMER DROP	ON CASING	24	INCH
	ON SAMPLER	30	INCH
DRIVE HAMMER		300	LBS.
SAMPLER HAMMER		140	LBS.
CASING SIZE		2 1/2	INCH
SAMPLER SIZE		1 3/8	INCH

COLUMN 1 DENOTES SAMPLE BLOWS PER 12 INCH PENETRATION OF SAMPLER. (UNLESS NOTED OTHERWISE)

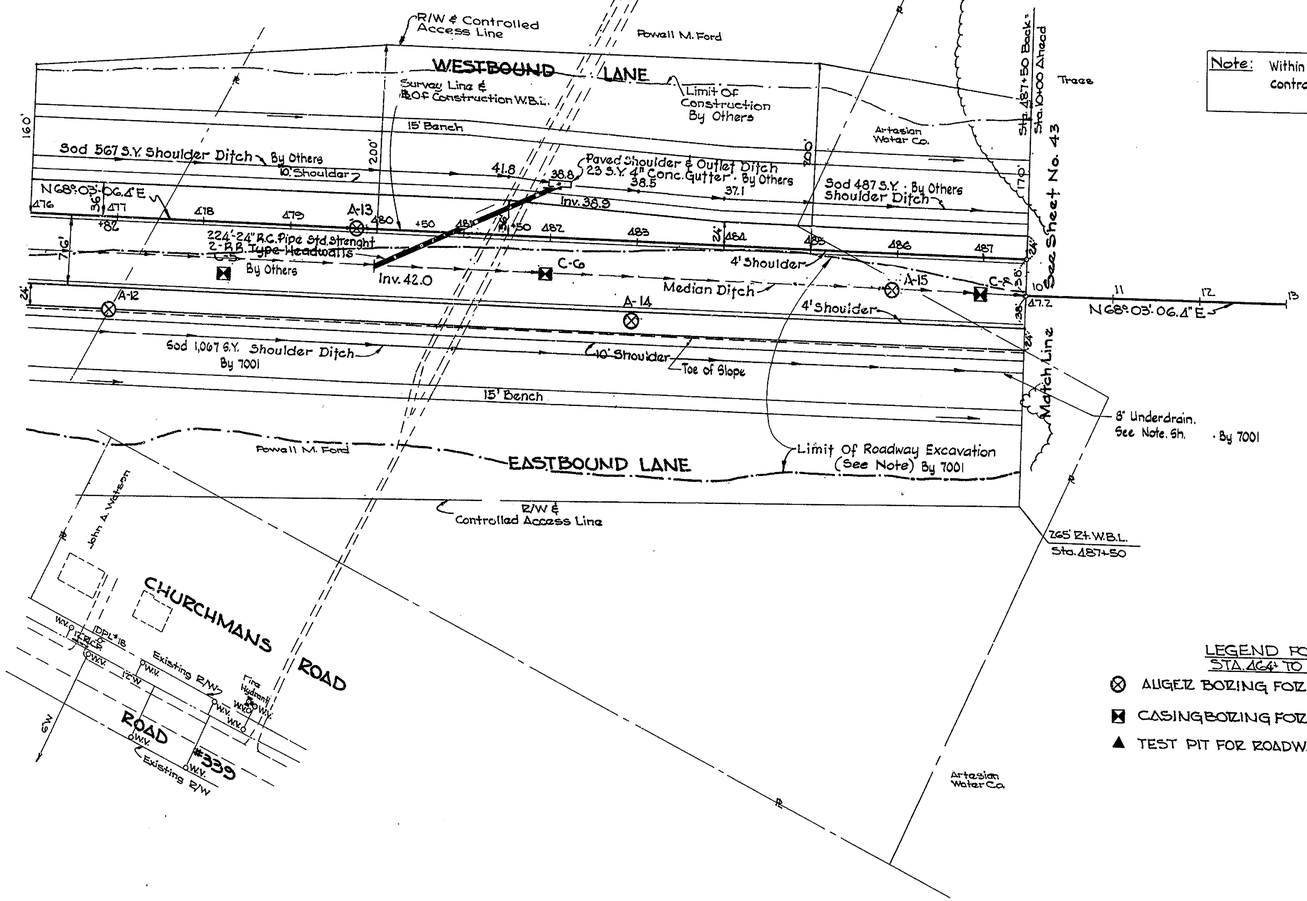
COLUMN 2 DENOTES CASING BLOWS PER FOOT.

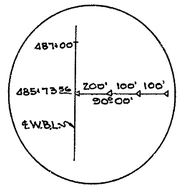
VERTICAL SCALE 1" = 6'-0"

W.L. WATER LEVEL

NOTE: For Profile Delaware Turnpike See Sheet No. 50

B.M.#7-Spike In Root 30" Poplar 100'± Lt. Sta. 485+00 W.B.L. El. 65.309





GENERAL NOTES FOR SOILS DATA STA. 464+ TO STA. 487+

1. All Soil Borings Made By Warren George Of New York City, New York During Period June 11, 1958 To July 9, 1958
2. All Laboratory Soils Tests Performed By Rummel, Klapper & Kahl, Engineers Of Baltimore, Maryland & Reported To State Highway Department, State Of Delaware
3. Soil Classifications For Auger Borings Made In Accordance With Standard Recommended Practice For The Classification Of Soils & Soil Aggregate Mixtures For Highway Construction Purposes, AASHO Designation M 145-49 As Modified By Delaware State Highway Department
4. W.L. Water Level
5. Logs For Borings At The Churchmans Road Structure May Be Obtained From Delaware State Highway Department
6. Soil Symbols Are In Accordance With Standard Symbols For Soil Classification Of Samples, See Standard Sheet G.

Note: Within limits of Roadway Excavation all work by this contract. All other work on this sheet by others.

LEGEND FOR BORINGS STA. 464+ TO STA. 487+

- ⊗ AUGER BORING FOR ROADWAY CONSTRUCTION
- ⊠ CASING BORING FOR ROADWAY CONSTRUCTION
- ▲ TEST PIT FOR ROADWAY CONSTRUCTION

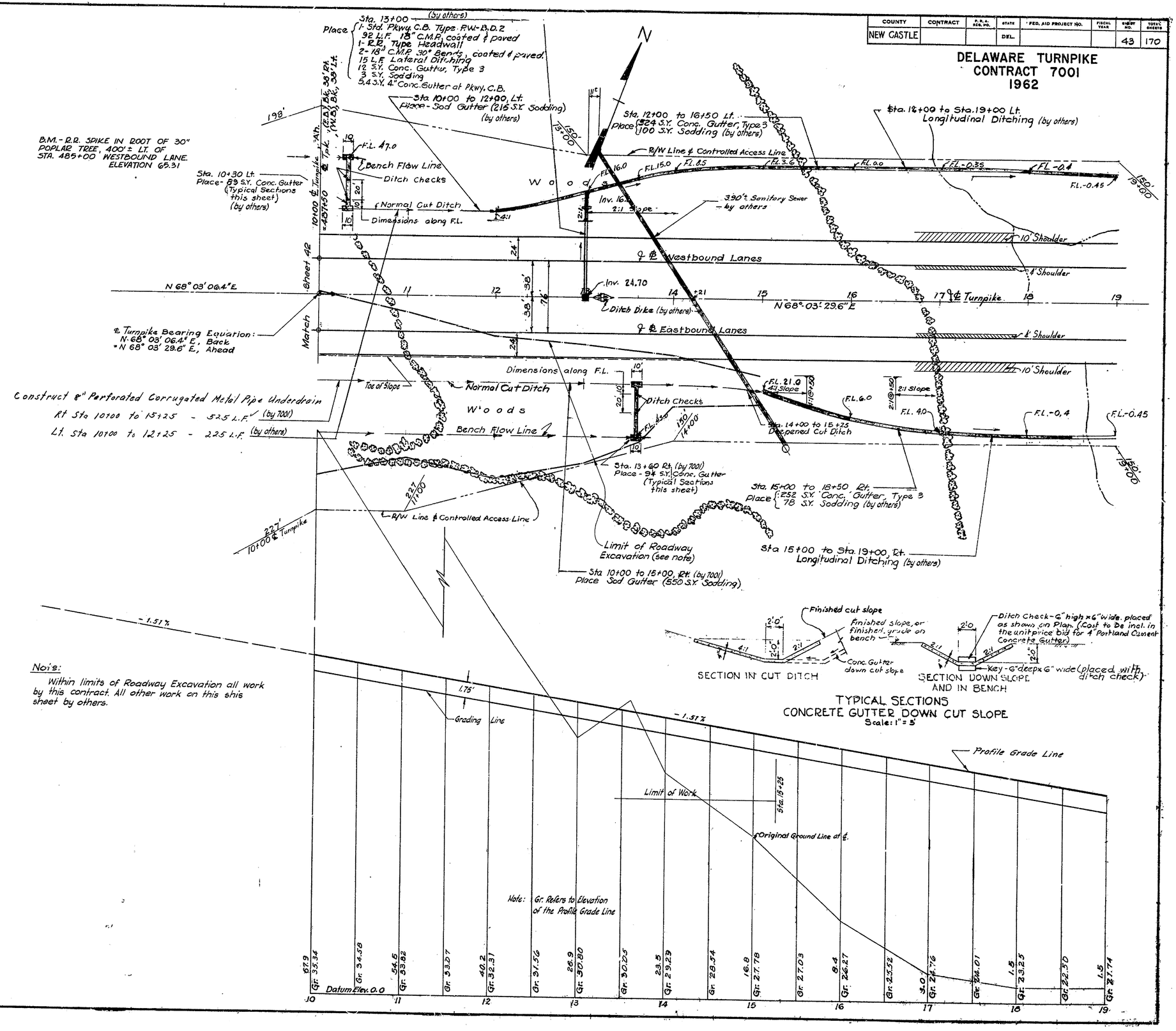
REVISIONS

BEARINGS
TIE POINTS
BENCH MARKS
EARTHWORK
DRAINAGE

"Imperial" 156 W. B. & K.

COUNTY	CONTRACT	F.A.P. & REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE			DEL.			43	170

DELAWARE TURNPIKE
CONTRACT 7001
1962



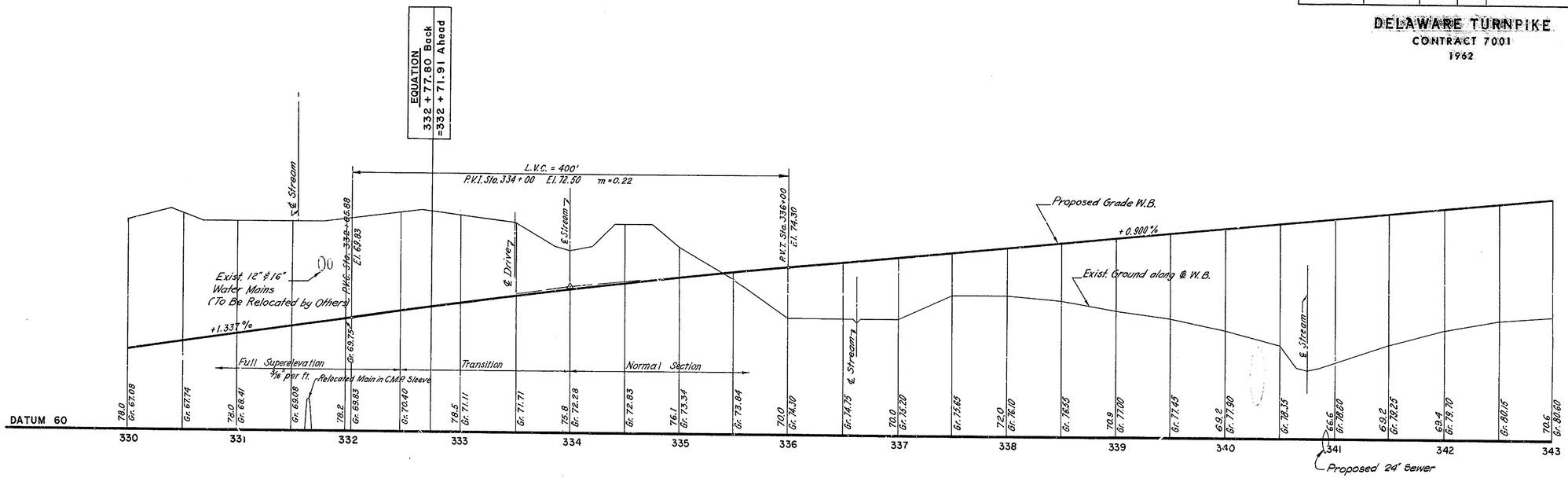
Note:
Within limits of Roadway Excavation all work by this contract. All other work on this shis sheet by others.

BENCH MARKS W.K. Lynch
EARTHWORK
DRAINAGE C.R. Borcherding

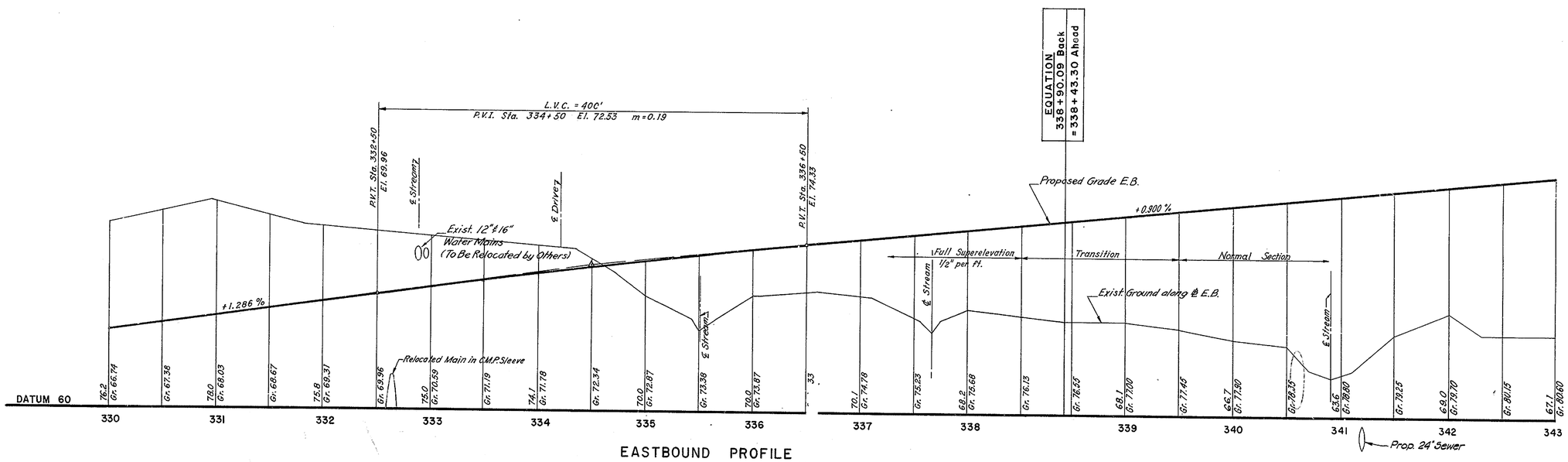
"Imperial" 156 W. B. & B.

COUNTY	CONTRACT	F.P.A. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE		2	DEL.			44	170

DELAWARE TURNPIKE
CONTRACT 7001
1962



WESTBOUND PROFILE



EASTBOUND PROFILE

NOTE: All Existing Ground Profiles Shown are Based on Topography Compiled by Photogrammetric Methods.

PROFILES

Scales: Hor. 1" = 50'
Ver. 1" = 5'

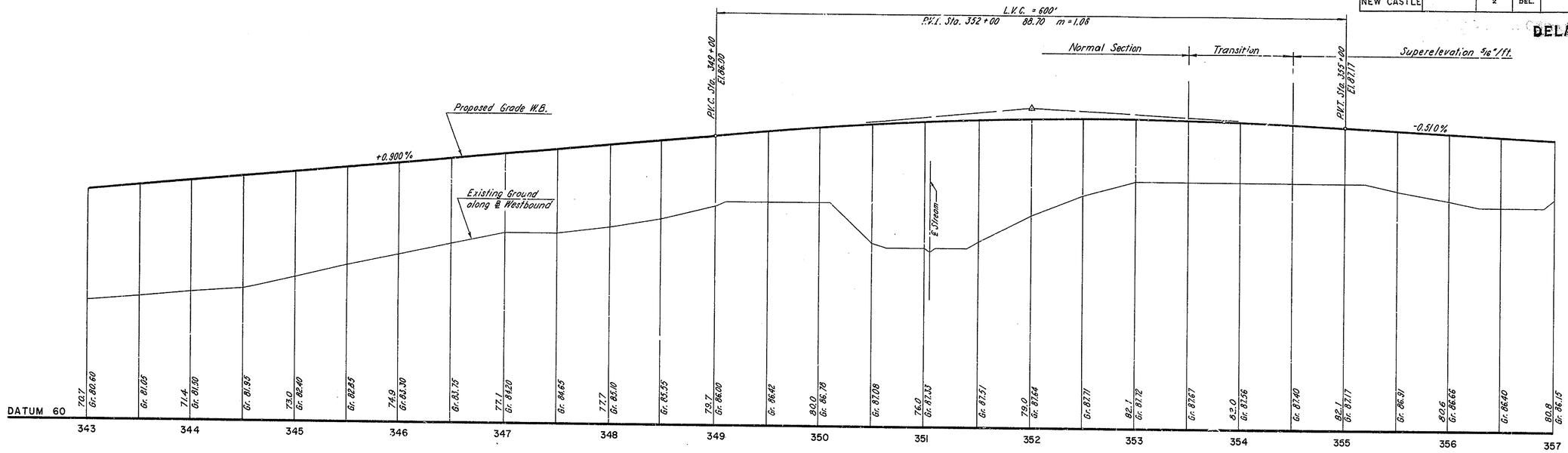
BENCH MARKS
EARTHWORK
DRAINAGE

CONSULTING ENGINEERS
MONTCLAIR, NEW JERSEY

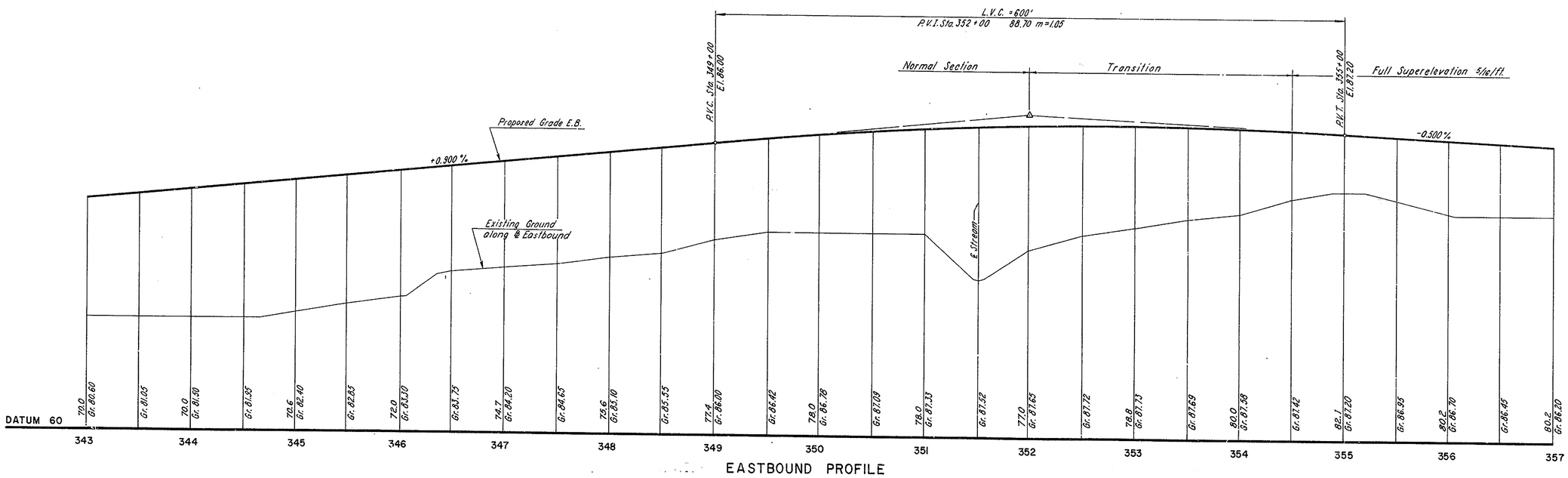
"Imperial" 156 W. B. & E.

COUNTY	CONTRACT	F.R.A. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE		2	DEL.			45	170

DELAWARE TURNPIKE
CONTRACT 7001
1962



WESTBOUND PROFILE



EASTBOUND PROFILE

BENCH MARKS
EARTHWORK
DRAINAGE

WOODKIND & O'DEA
CONSULTING ENGINEERS
MONTCLAIR, NEW JERSEY

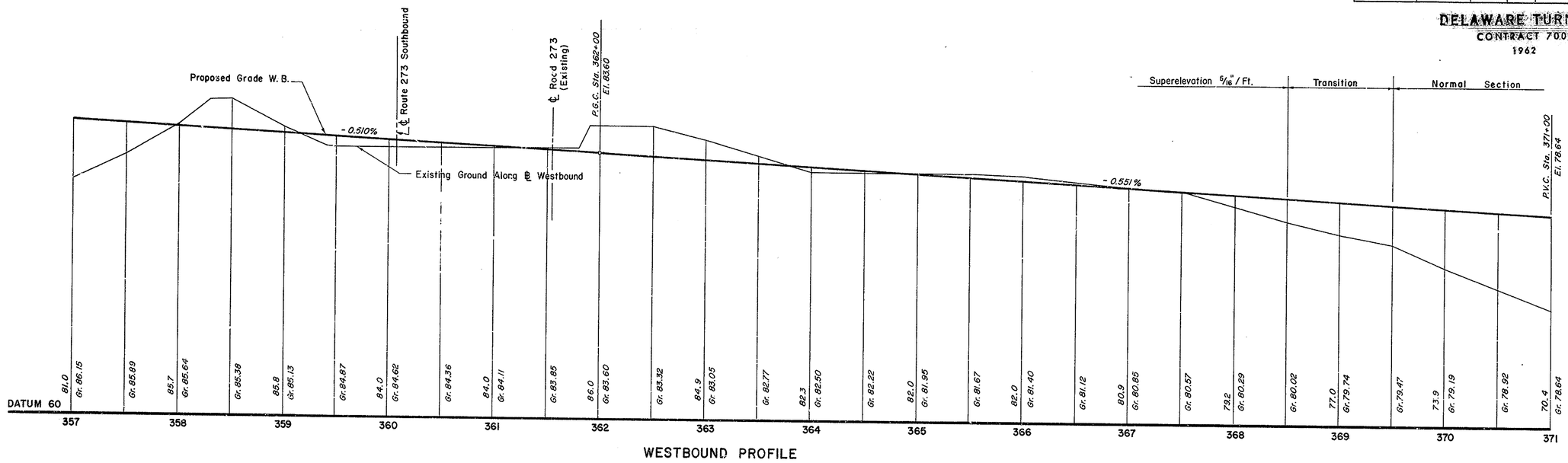
PROFILES

Scales: Hor. 1" = 50'
Ver. 1" = 5'

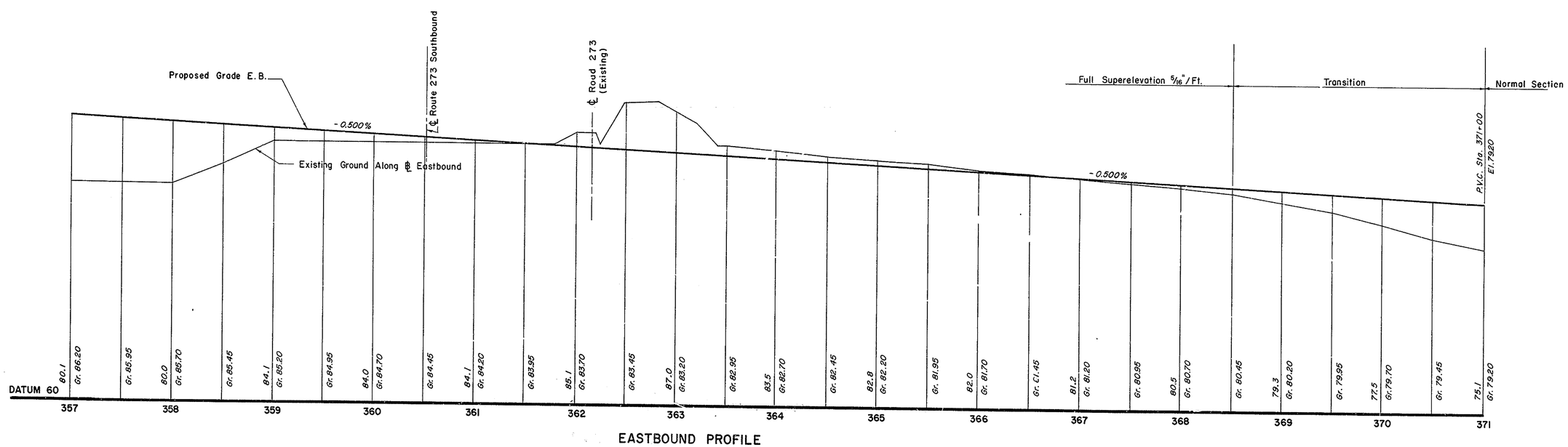
"Imperial" 156 W. B. & E.

COUNTY	CONTRACT	F.H.A. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE		2	DEL.			46	170

DELAWARE TURNPIKE
CONTRACT 7001
1962



WESTBOUND PROFILE



EASTBOUND PROFILE

PROFILES

Scales: Hor. 1" = 50'
Ver. 1" = 5'

REVISIONS

GRADE
BEARINGS
TIE POINTS
BENCH MARKS
EARTHWORK
DRAINAGE

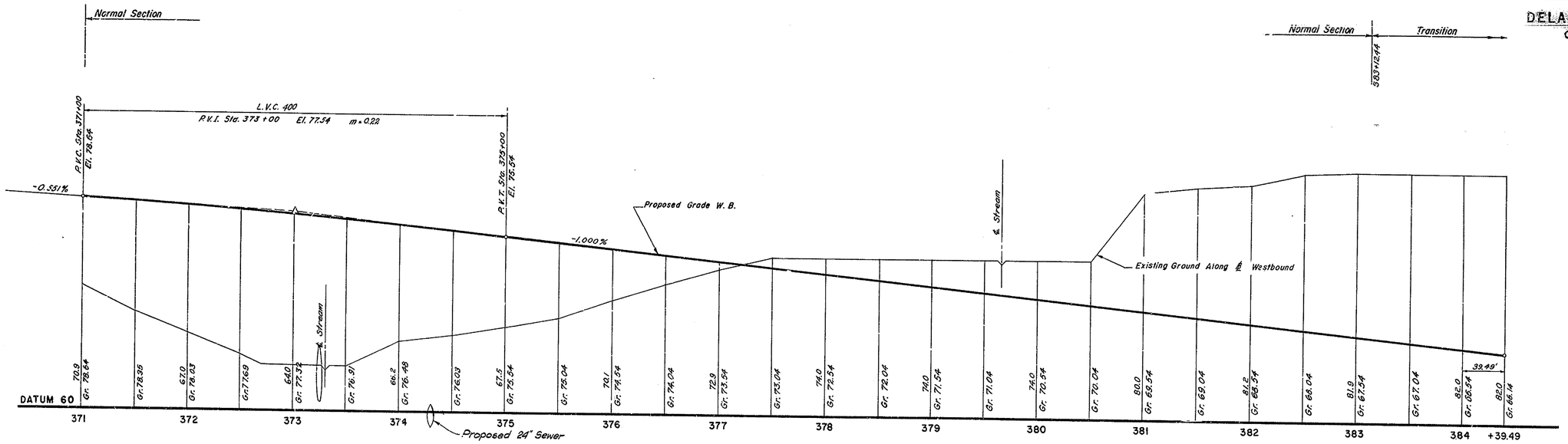
CHECKED

GOODKIND & O'DEA
CONSULTING ENGINEERS
MONTCLAIR, NEW JERSEY

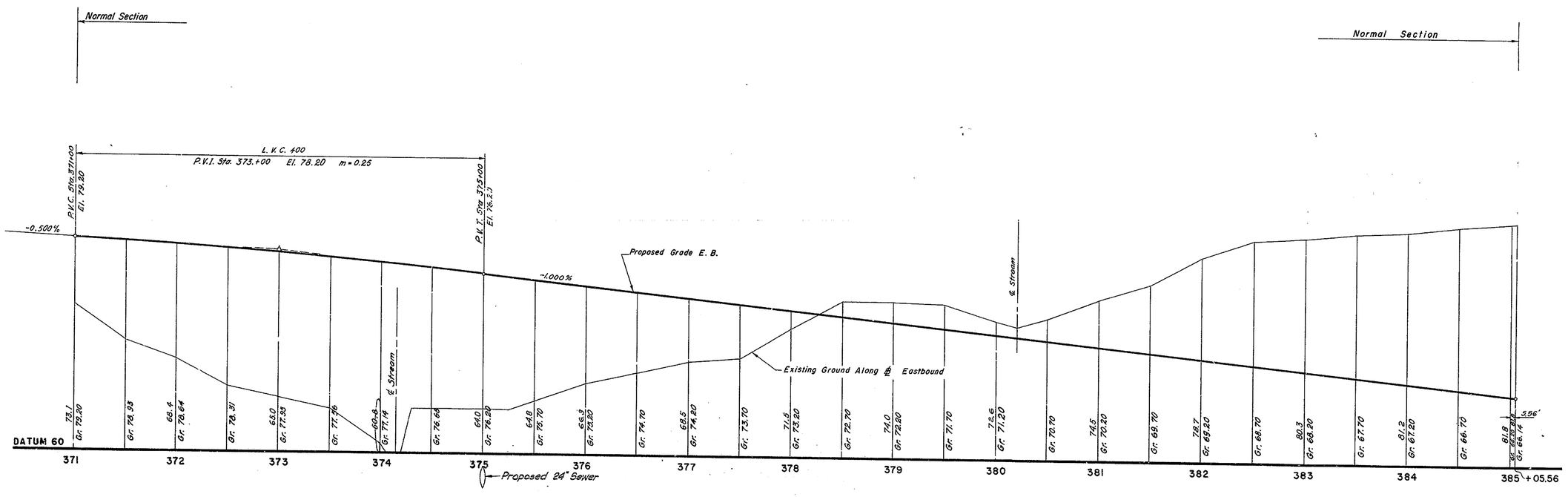
"Imperial" 156 W. B. & E.

COUNTY	CONTRACT	P. R. & REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE		2	DEL.			47	170

DELAWARE TURNPIKE
CONTRACT 7-001
1962



WESTBOUND PROFILE



EASTBOUND PROFILE

PROFILES
Scale: Hor. 1" = 50'
Ver. 1" = 5'

GRADE
BEARINGS
BENCH MARKS
EARTHWORK
DRAINAGE

REVISIONS

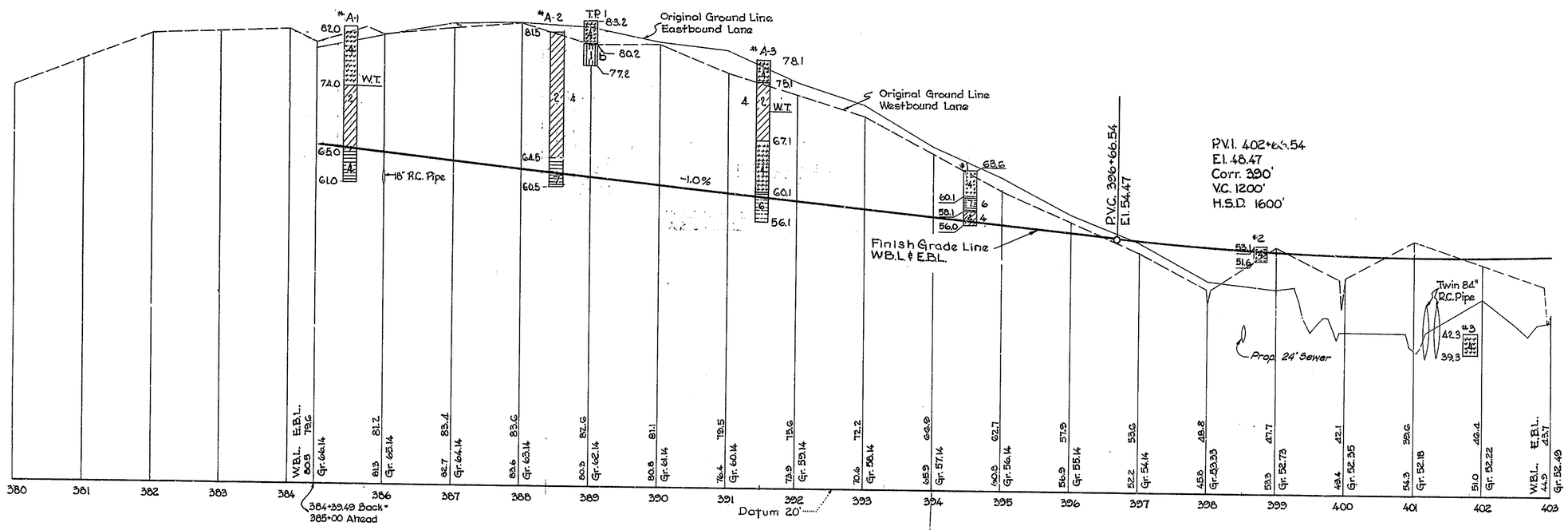
GOODKIND & O'DEA
CONSULTING ENGINEERS
MONTCLAIR, NEW JERSEY

"Imperial" 156 W. B. & E.

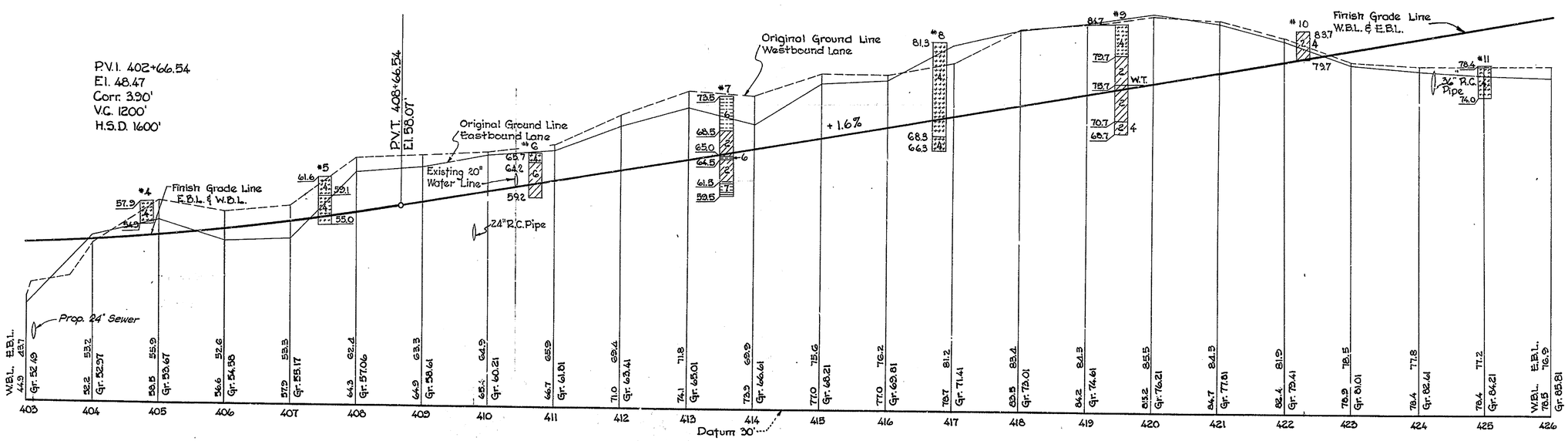
COUNTY	CONTRACT	F.R.A. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
N.C.		2	DEL.			48	170

DELAWARE TURNPIKE
CONTRACT 7001
1962

Note: Gr. Refers To Elevation Of The Finish Grade Line.



DELAWARE TURNPIKE



DELAWARE TURNPIKE

BEARINGS
TIE POINTS
BENCH MARKS
EARTHWORK
DRAINAGE

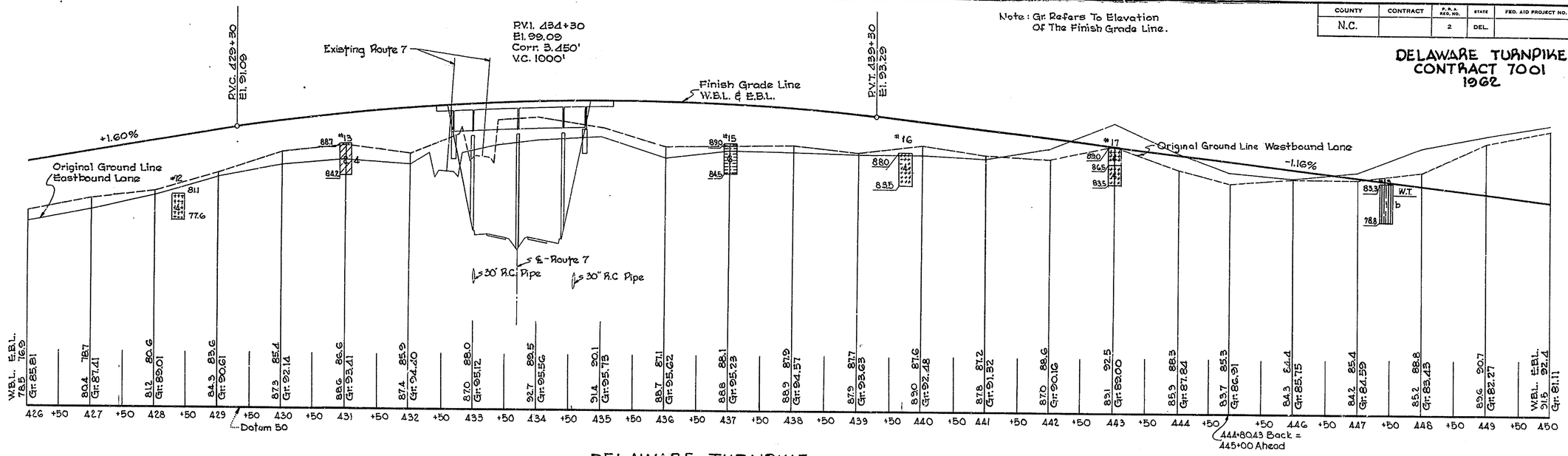
REVISIONS

"Imperial" 156 W. B. & E.

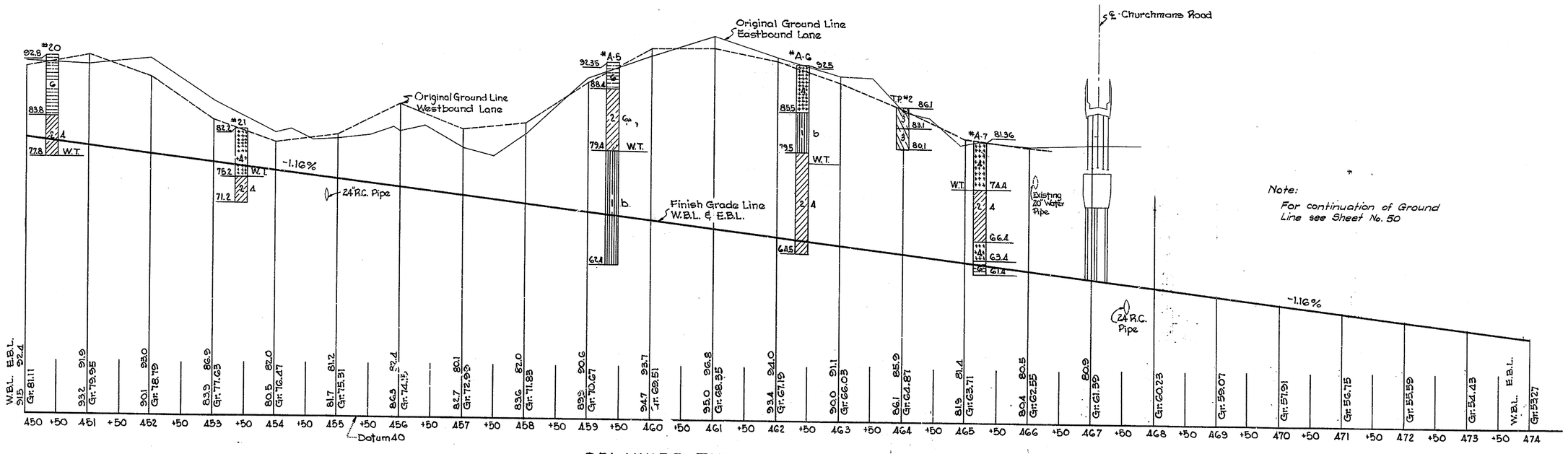
COUNTY	CONTRACT	P.R.A. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
N.C.		2	DEL.			49	170

DELAWARE TURNPIKE CONTRACT 7001 1962

Note: Gr. Refers To Elevation Of The Finish Grade Line.



DELAWARE TURNPIKE



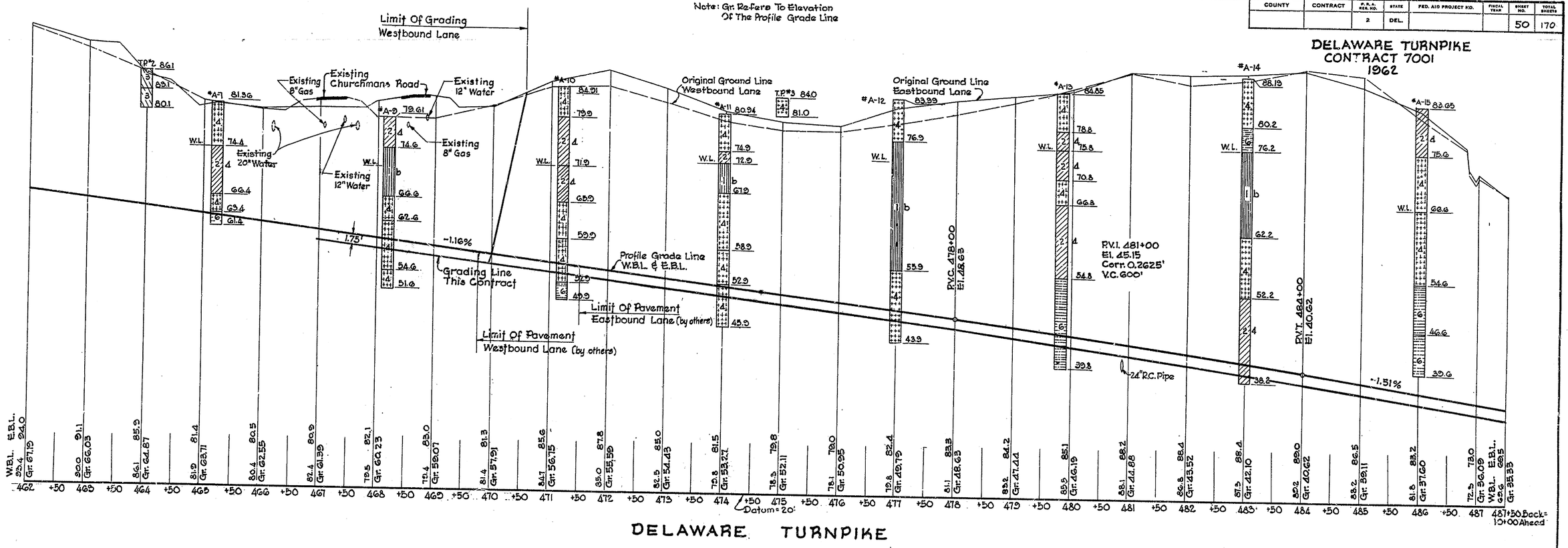
DELAWARE TURNPIKE

TIE POINTS
BENCH MARKS
EARTHWORK
DRAINAGE

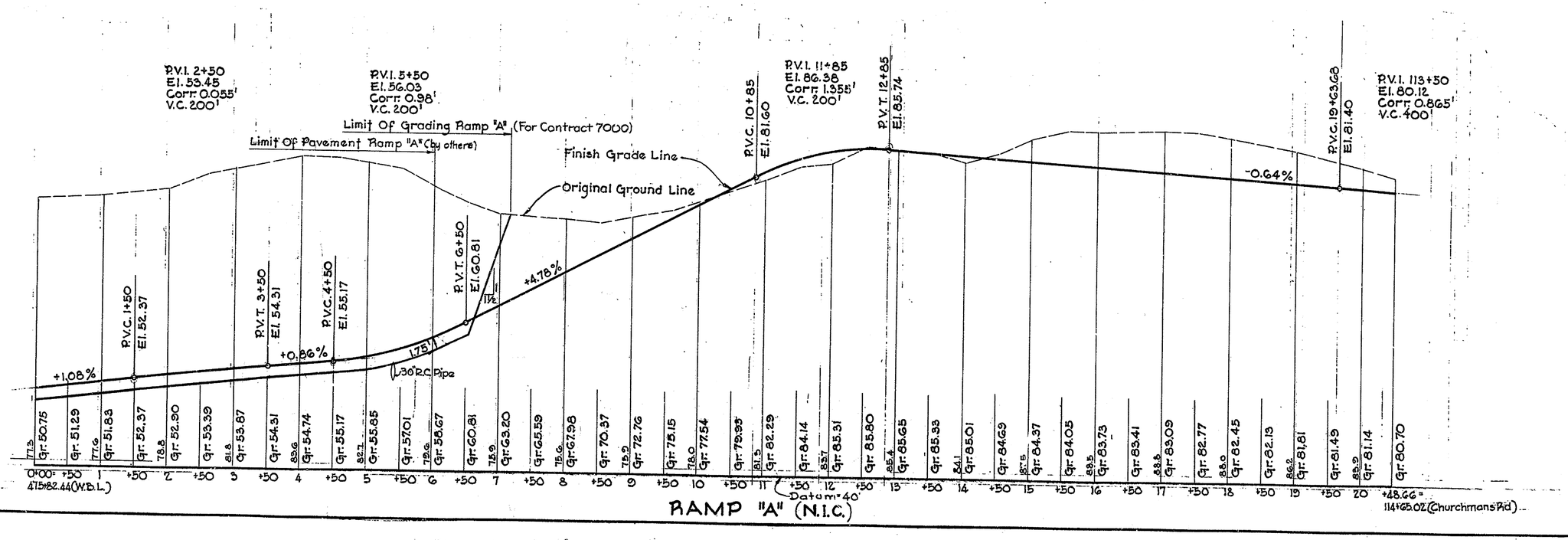
"Imperial" 156 W. B. & E.

COUNTY	CONTRACT	F.A.P. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
		2	DEL.			50	170

DELAWARE TURNPIKE
CONTRACT 7001
1962



DELAWARE TURNPIKE



RAMP "A" (N.I.C.)

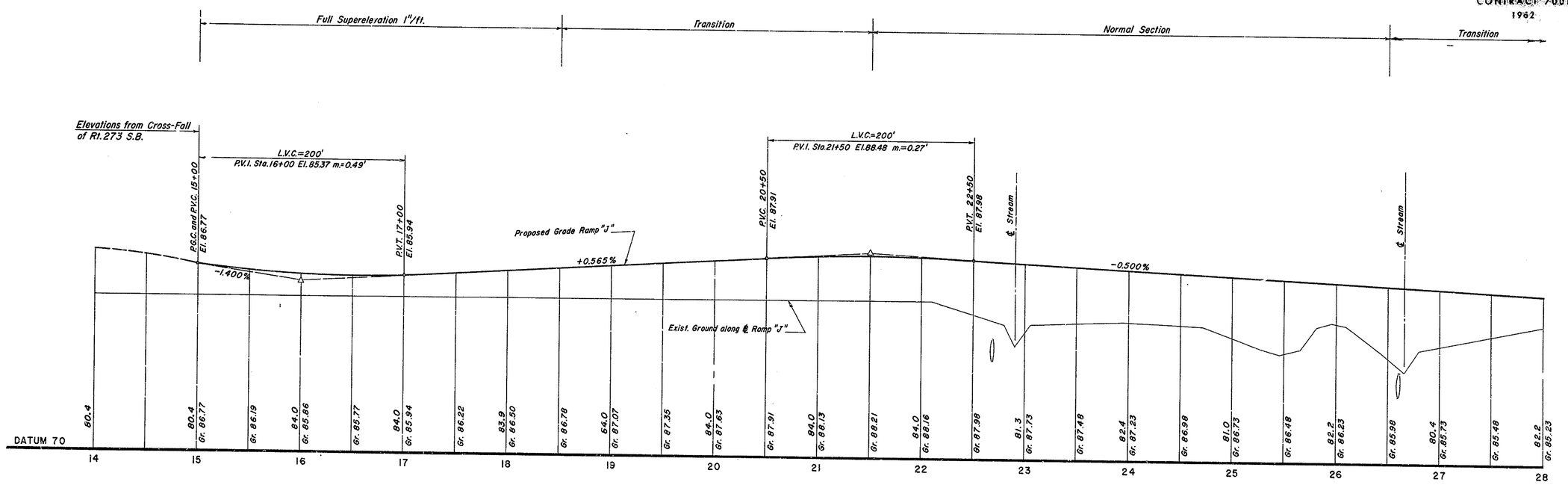
DRAWING
REVISIONS
TIE POINTS
BENCH MARKS
EARTHWORK
DRAINAGE

REVISIONS

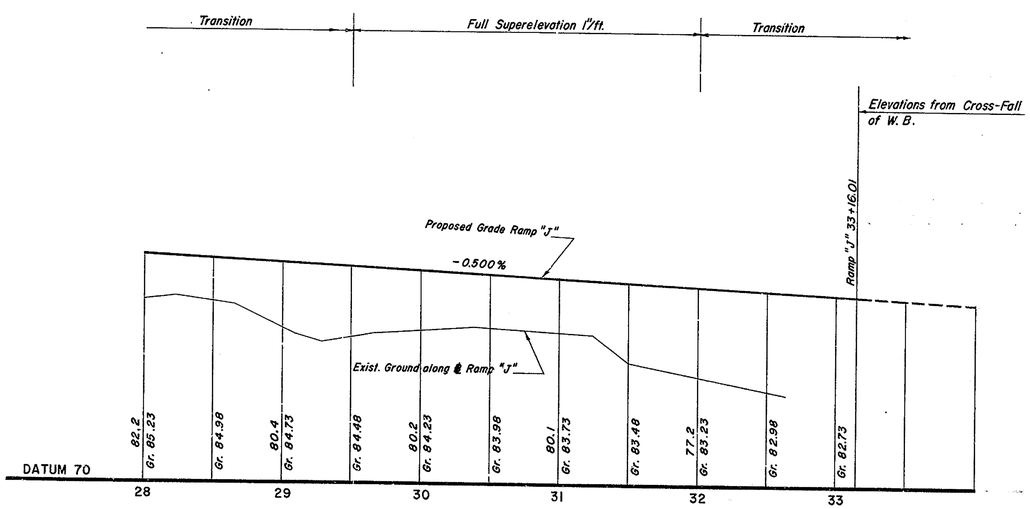
"Imperial" 334 W. B. & R.

COUNTY	CONTRACT	P. R. A. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE		2	DEL.			51	170

DELAWARE TURNPIKE
CONTRACT 7001.
1962



PROFILE RAMP "J"



RAMP "J" PROFILE
Scale: Hor. 1" = 50'
Ver. 1" = 5'

BEARINGS
TIE POINTS
BENCH MARKS
EARTHWORK
DRAINAGE

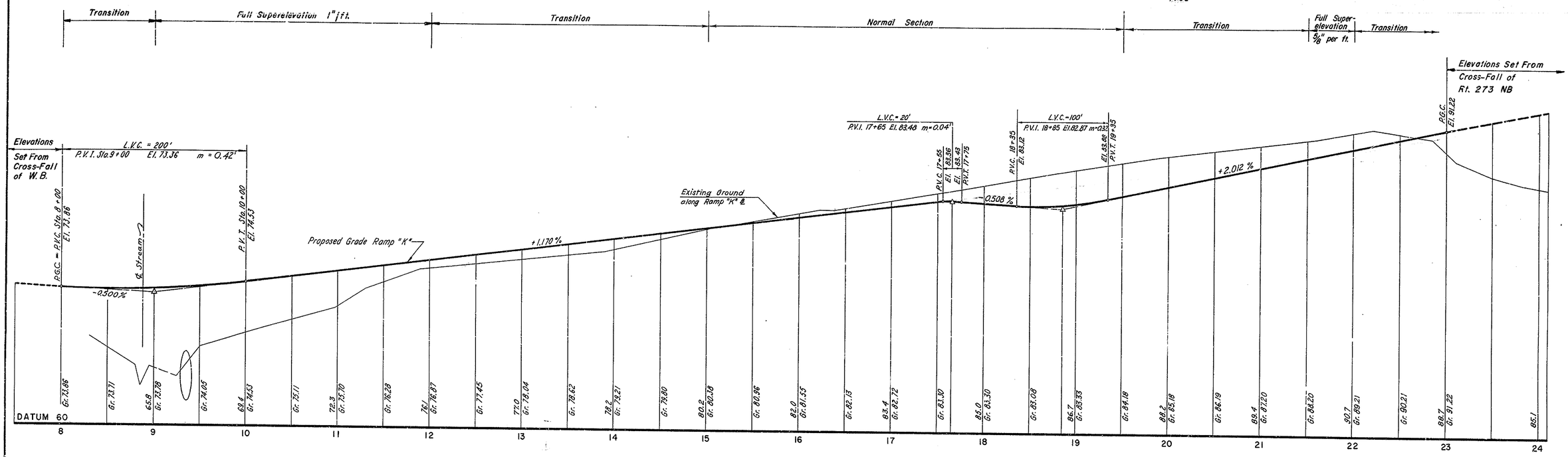
REVISIONS

GOODKIND & O'DEA
CONSULTING ENGINEERS
MONTCLAIR, NEW JERSEY

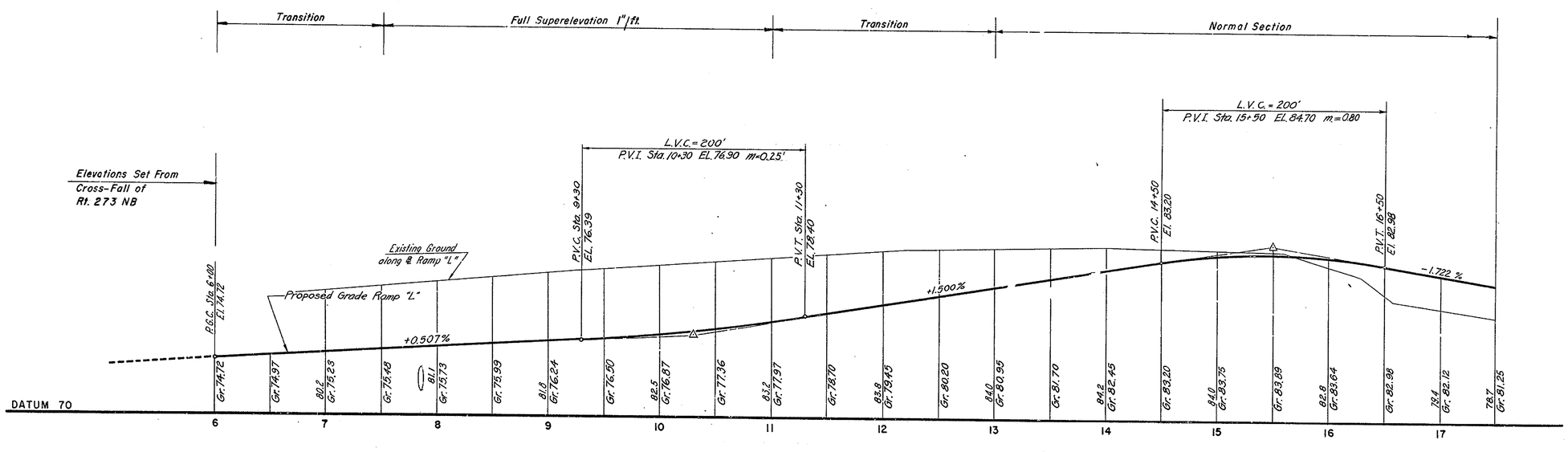
"Imperial" 156 W. B. & K.

DELAWARE TURNPIKE
CONTRACT 7001
1962

COUNTY	CONTRACT	P. R. A. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE		2	DEL.			52	170



PROFILE RAMP "K"



PROFILE RAMP "L"

RAMPS "K" & "L" PROFILES

Scales: Ver. 1" = 5'
Hor. 1" = 50'

GRADE
SUPERELEVATION
TIE POINTS
BENCH MARKS
EARTHWORK
DRAINAGE

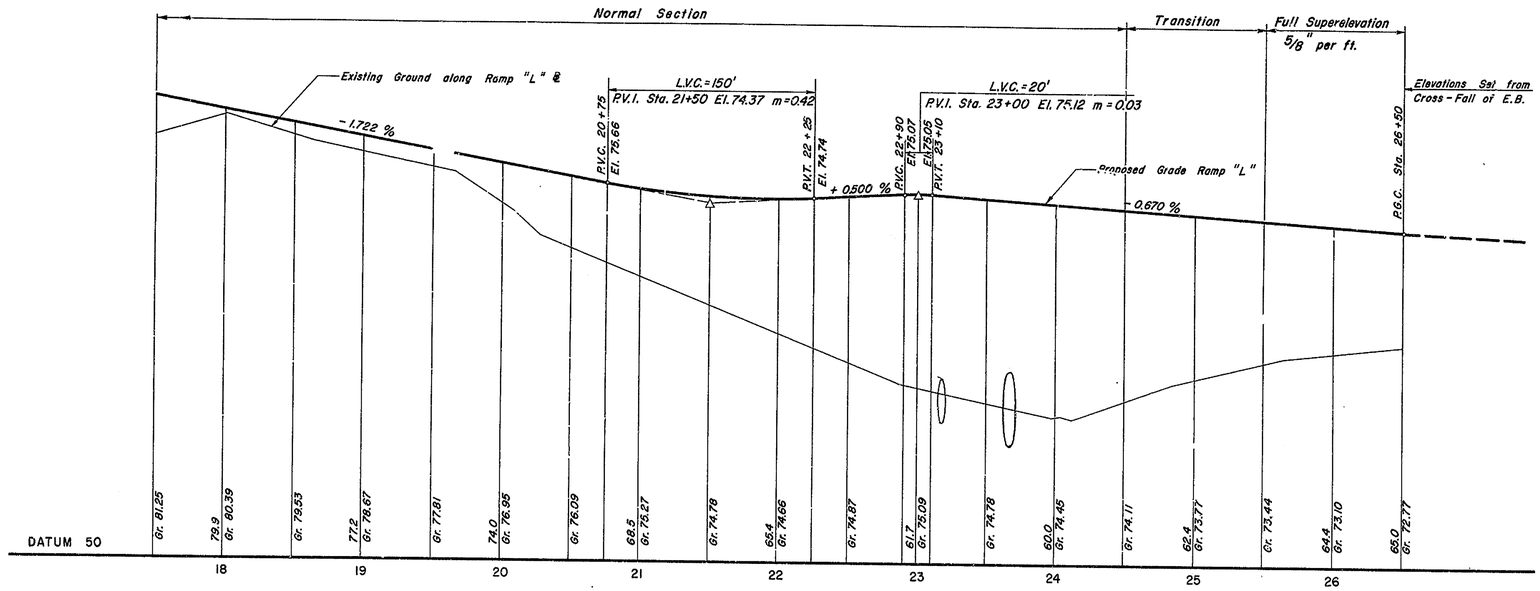
REVISIONS

GOODKIND & O'DEA
CONSULTING ENGINEERS
MONTCLAIR, N.J.

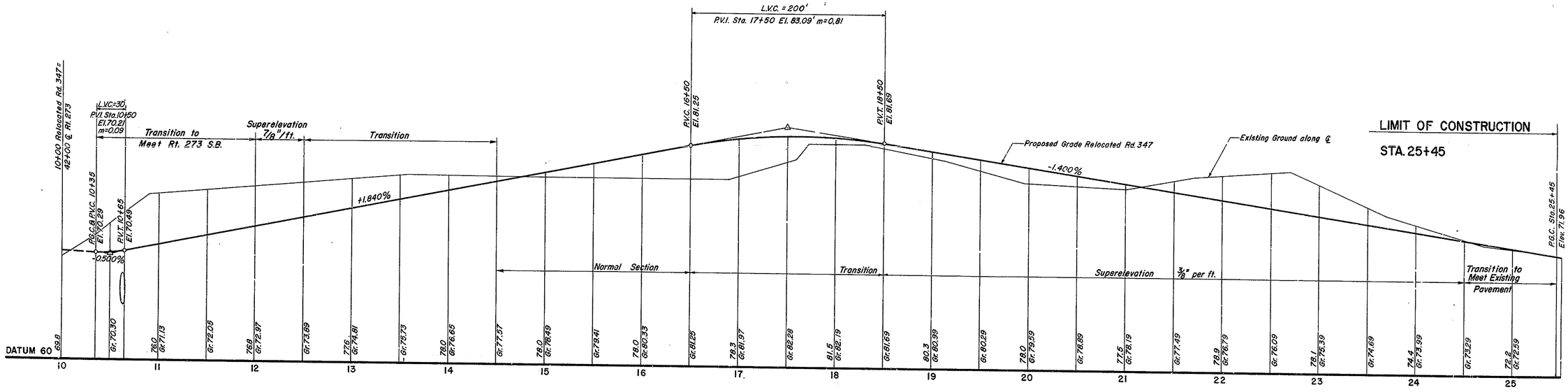
"Imperial" 154 W. B. & E.

COUNTY	CONTRACT	F.R.A. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
		2	DEL.			53	170

DELAWARE TURNPIKE
CONTRACT 7001
1962



RAMP "L" PROFILE



PROFILE RELOCATED ROAD 347

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

BEARINGS
TIE POINTS
BENCH MARKS
EARTHWORK
DRAINAGE

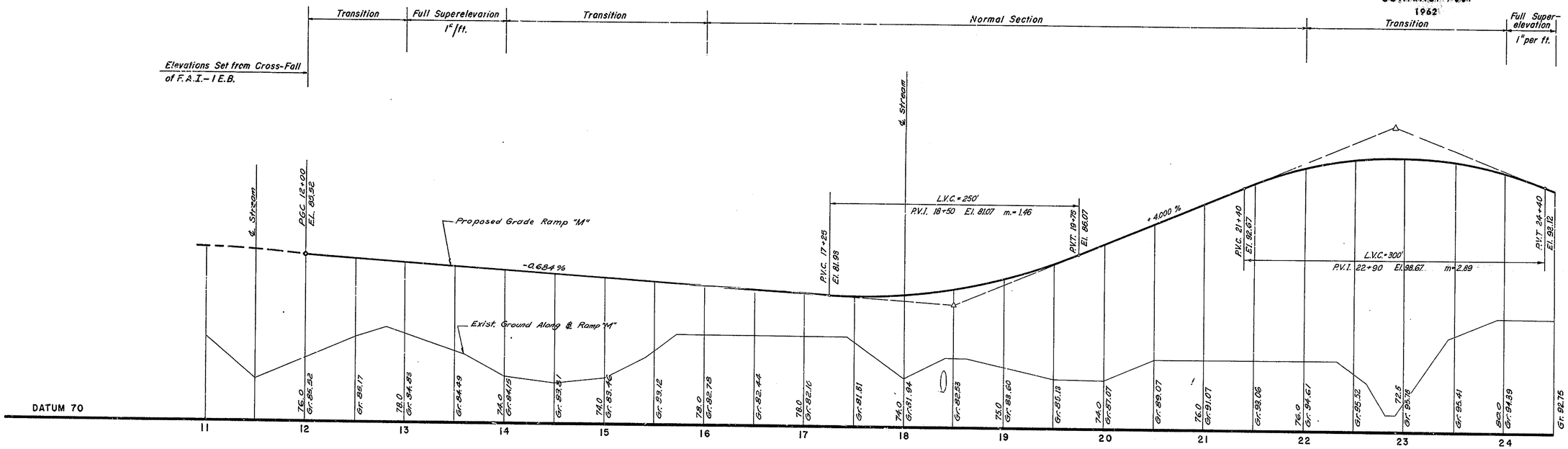
REVISIONS

GRIND & O'DEA
CONSULTING ENGINEERS
MONTCLAIR, NEW JERSEY

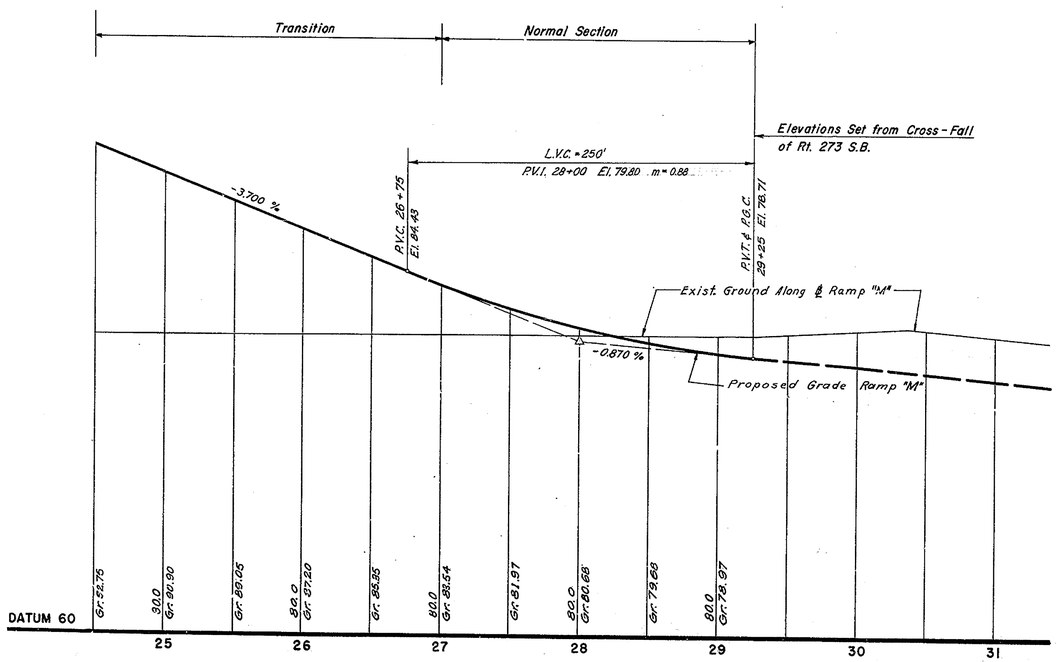
"Imperial" 156 W. B. & E.

COUNTY	CONTRACT	F.R.A. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE		2	DEL.			54	170

DELAWARE TURNPIKE
CONTRACT 7001
1962



PROFILE RAMP "M"



RAMP "M" PROFILE

Scale: Hor. 1" = 50'
Ver. 1" = 5'

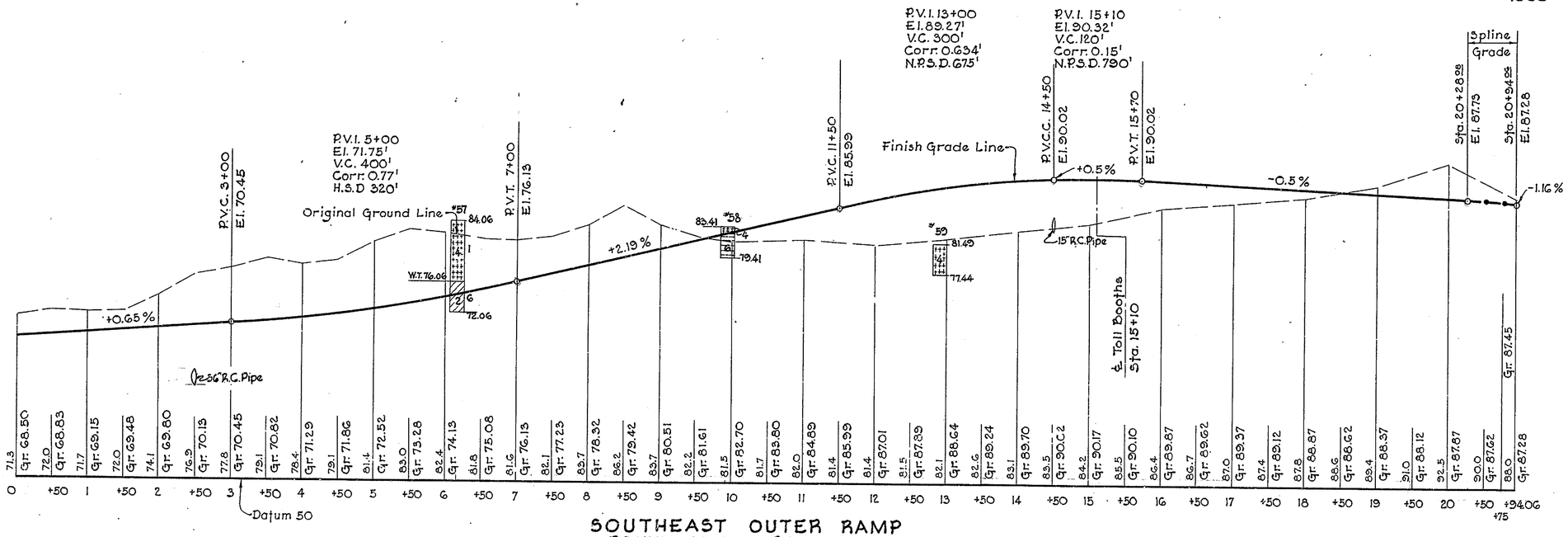
REVISIONS
STRAINGS
BEARINGS
TIE POINTS
BENCH MARKS
EARTHWORK
DRAINAGE

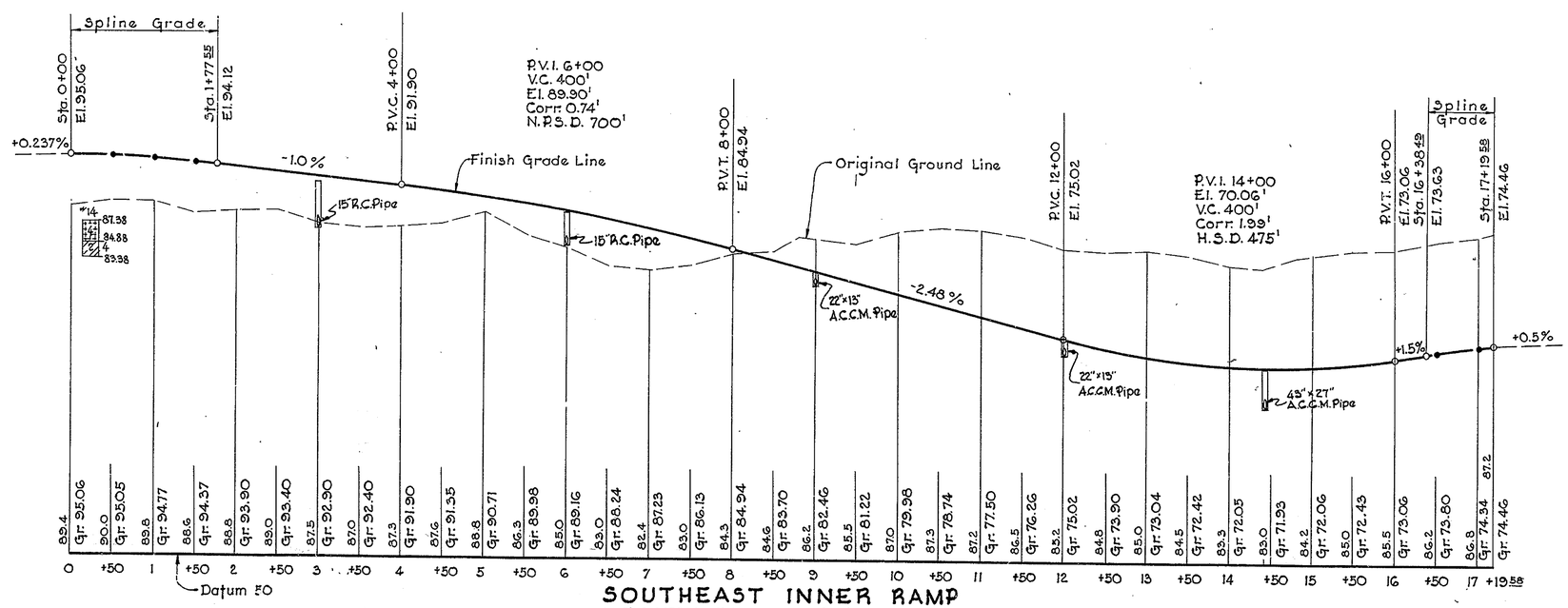
GOODKIND & O'DEA
CONSULTING ENGINEERS
MONTCLAIR, NEW JERSEY

"Imperial" 154 W. B. & E.

COUNTY	CONTRACT	F.H.A. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
N.C.		2	DEL.			55	170

DELAWARE TURNPIKE
CONTRACT 7001
1962





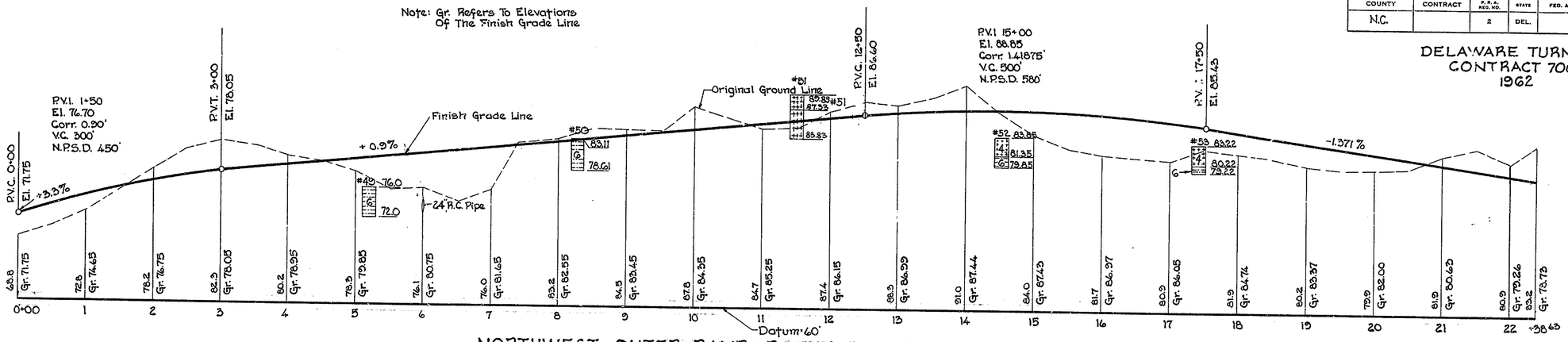
TIE POINTS
BENCH MARKS
EARTHWORK
DRAINAGE

"Imperial" 156 W. B. & E.

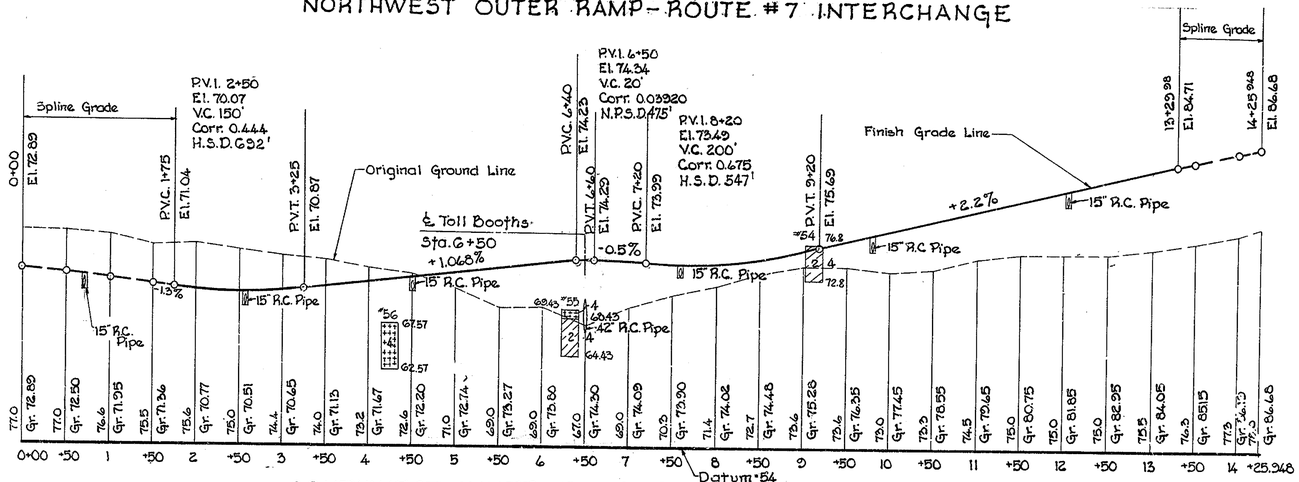
COUNTY	CONTRACT	F.P.A. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
N.C.		2	DEL.			56	170

DELAWARE TURNPIKE
CONTRACT 7001
1962

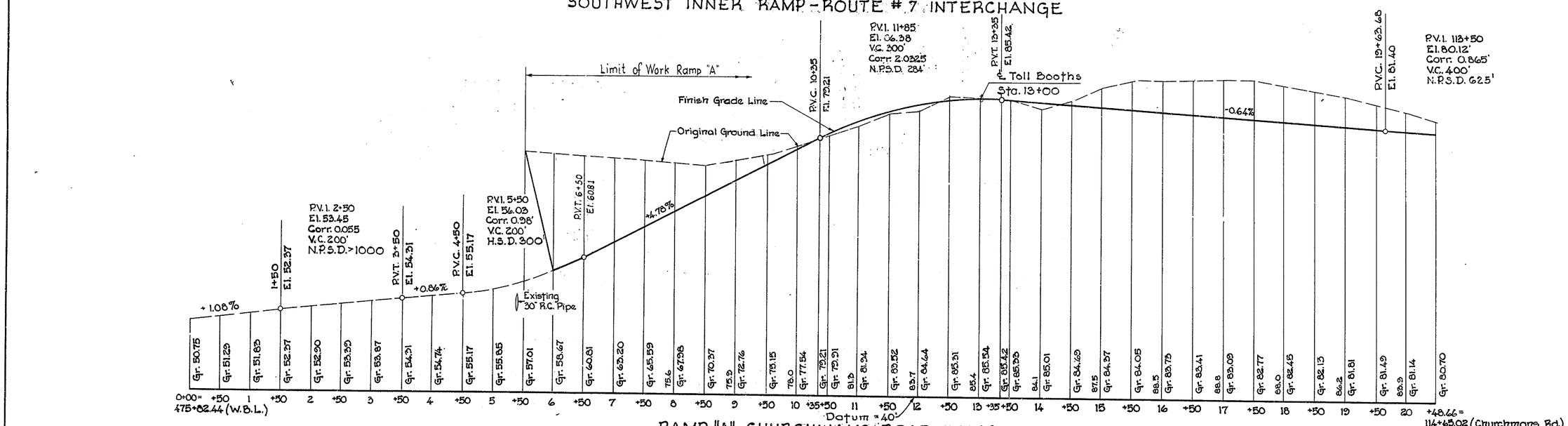
Note: Gr. Refers To Elevations Of The Finish Grade Line



NORTHWEST OUTER RAMP-ROUTE #7 INTERCHANGE



SOUTHWEST INNER RAMP-ROUTE #7 INTERCHANGE



RAMP "A" CHURCHMANS ROAD INTERCHANGE

0+00 = 475+82.44 (W.B.L.)

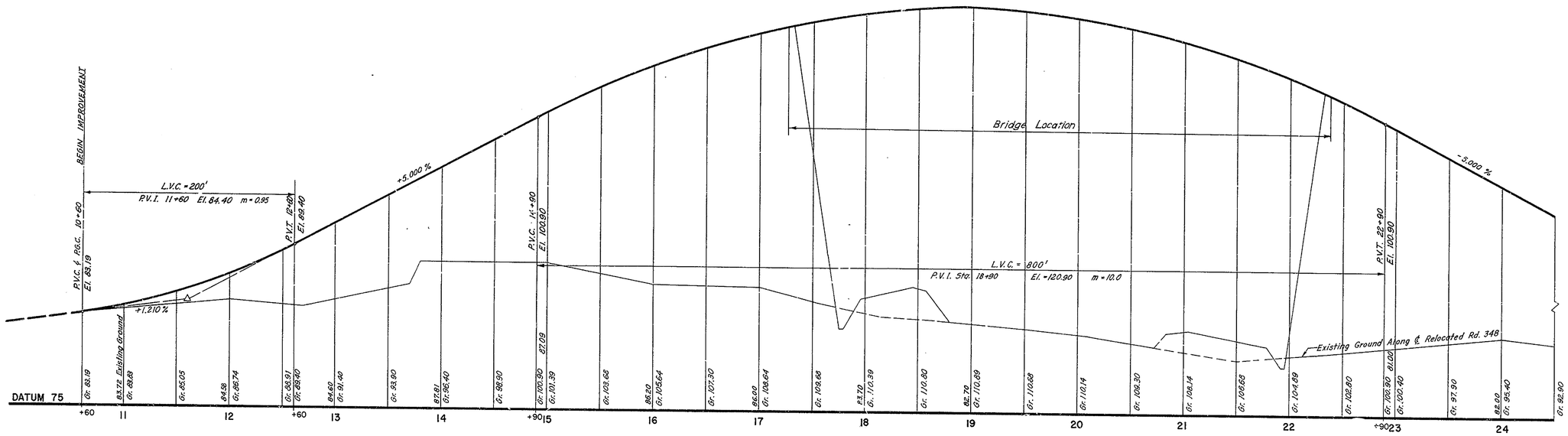
+48.66 = 114+65.02 (Churchmans Rd.)

REARINGS
TIE POINTS
BENCH MARKS
EARTHWORK
DRAINAGE

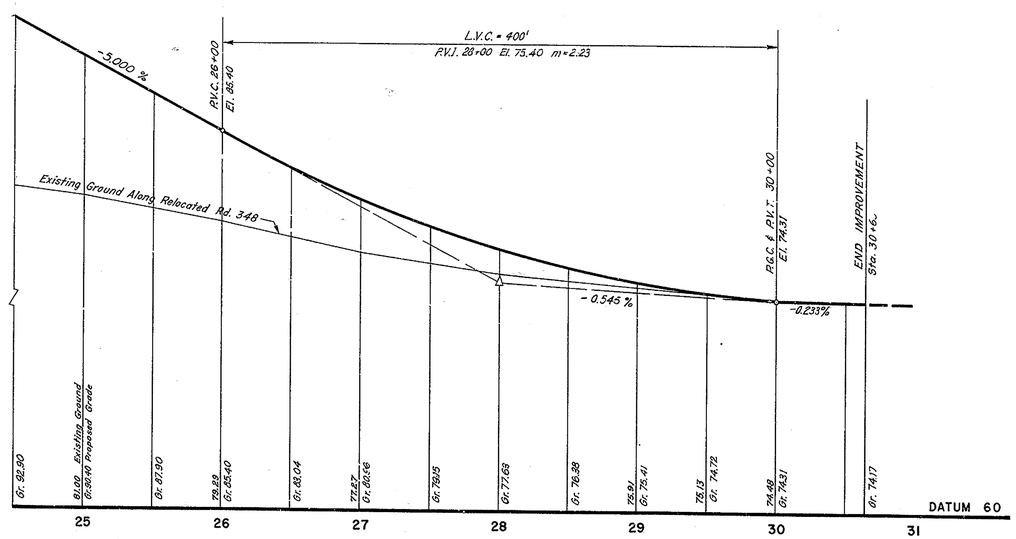
K&E CO. NO. 186

COUNTY	CONTRACT	F.A.P. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE		2	DEL.			57	170

DELAWARE TURNPIKE
CONTRACT 7001
1962



PROFILE-RELOCATED ROAD 348



PROFILE-RELOCATED ROAD 348

Scale: Hor. 1" = 50'
Ver. 1" = 5'

PROFILE-RELOCATED ROAD 348

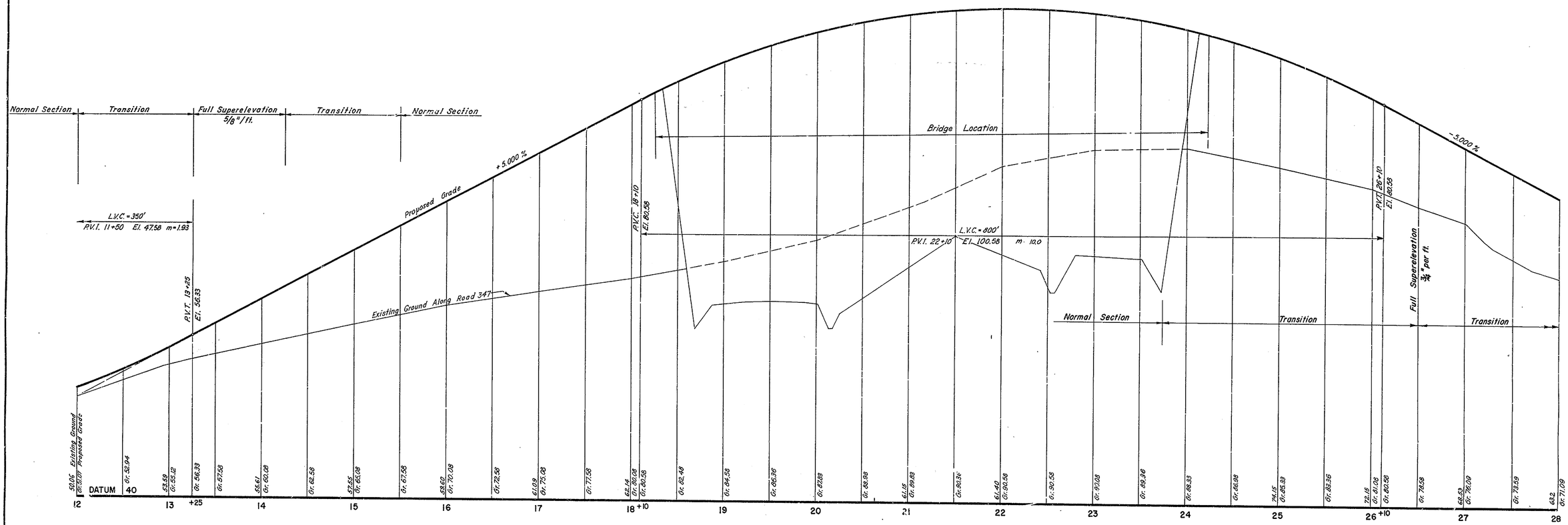
TIE POINTS
BENCH MARKS
EARTHWORK
DRAINAGE

GOODKIND & O'DEA
CONSULTING ENGINEERS
MONTCLAIR, NEW JERSEY

"Imperial" 156 W. B. & E.

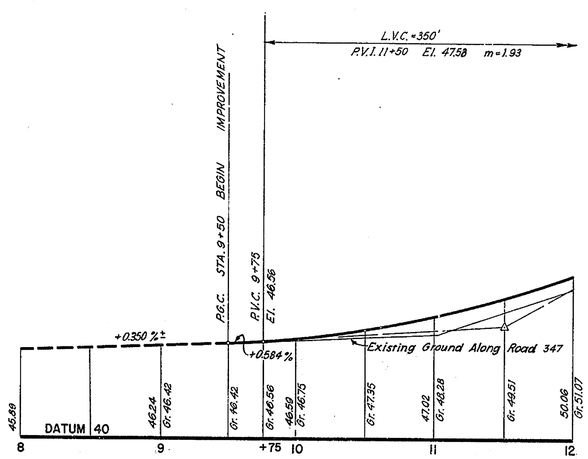
COUNTY	CONTRACT	F. A. P. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE		3	DEL.			58	170

DELAWARE TURNPIKE
CONTRACT 7001
1962

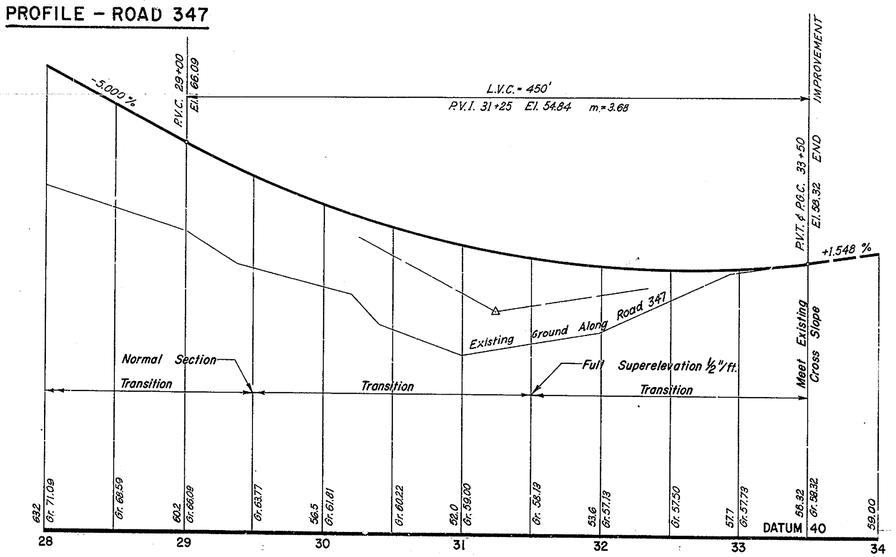


PROFILE - ROAD 347

SCALE: Hor: 1" = 50'
Ver: 1" = 5'



PROFILE ROAD 347



PROFILE ROAD 347

BEARINGS
TIE POINTS
BENCH MARKS
EARTHWORK
DRAINAGE

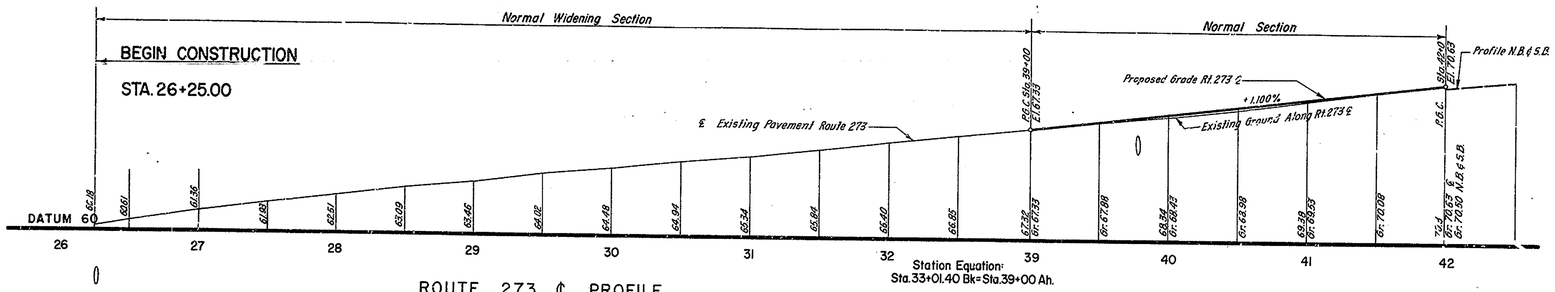
REVISIONS

GOODKIND & O'DEA
CONSULTING ENGINEERS
MONTCLAIR, NEW JERSEY

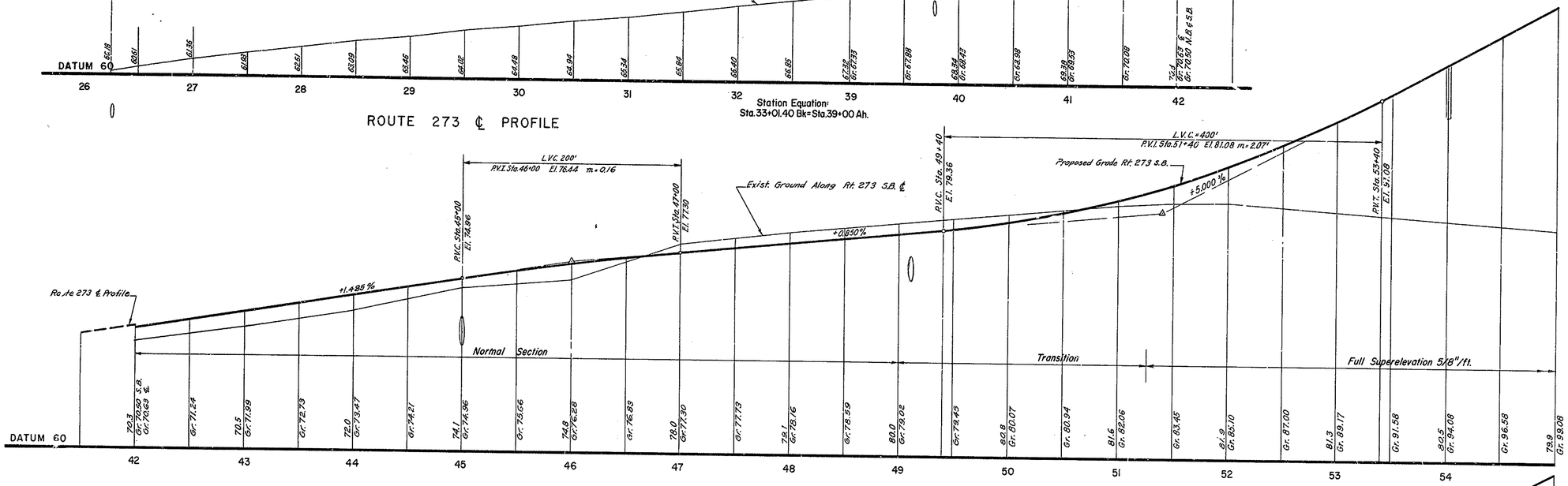
"Imperial" 156 W. B. & E.

COUNTY	CONTRACT	F.R.A. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE		2	DEL.			59	110

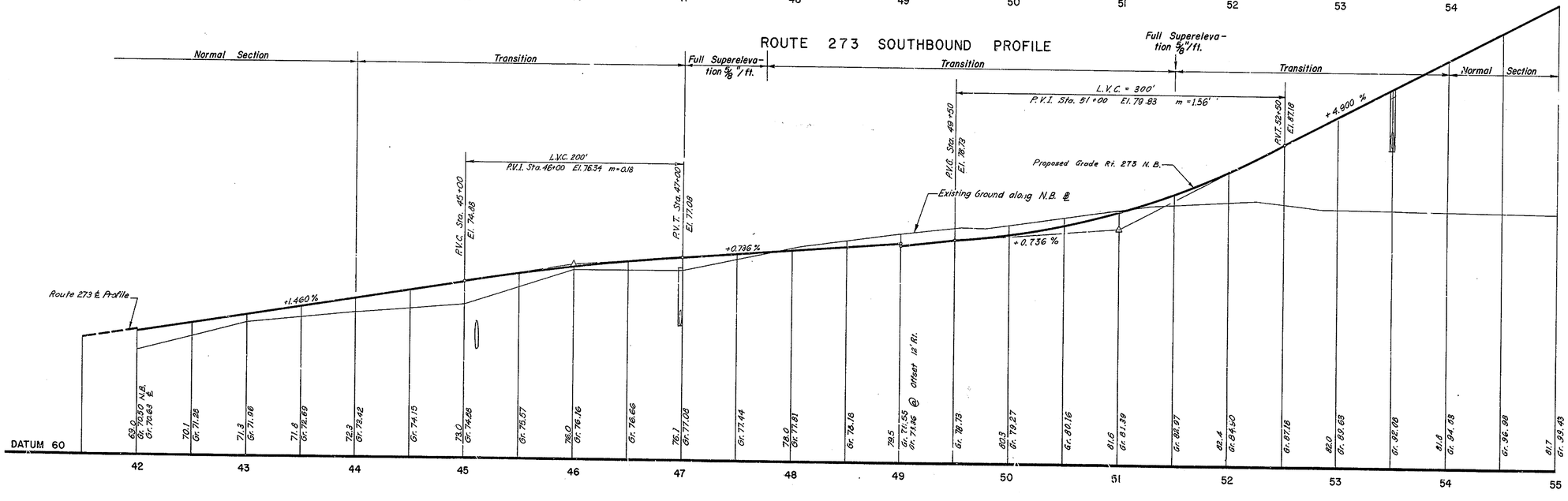
ELAWARE TURNPIKE
CONTRACT 7001
1962



ROUTE 273 ℄ PROFILE



ROUTE 273 SOUTHBOUND PROFILE



ROUTE 273 NORTHBOUND PROFILE
SOUTH END

ROUTE 273 SOUTHBOUND AND NORTHBOUND PROFILES

Scales : Hor. 1" = 50'
Ver. 1" = 5'

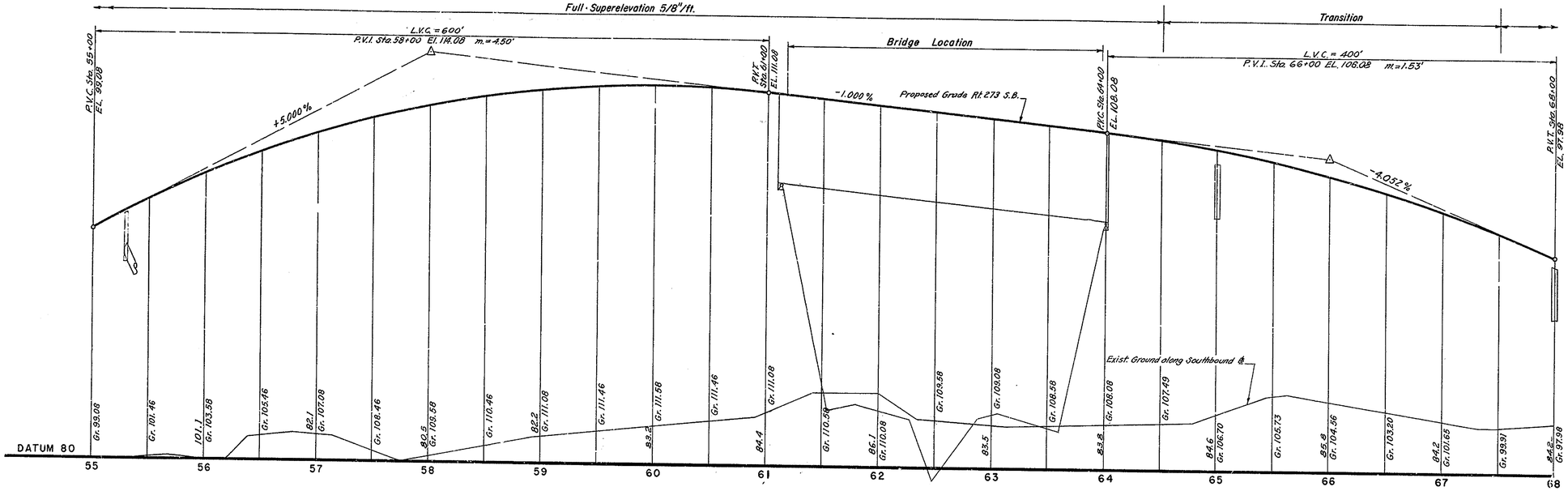
TIE POINTS
BENCH MARKS
EARTHWORK
DRAINAGE

GOODEND & O'DEA
CONSULTING ENGINEERS
MONTCLAIR, NEW JERSEY

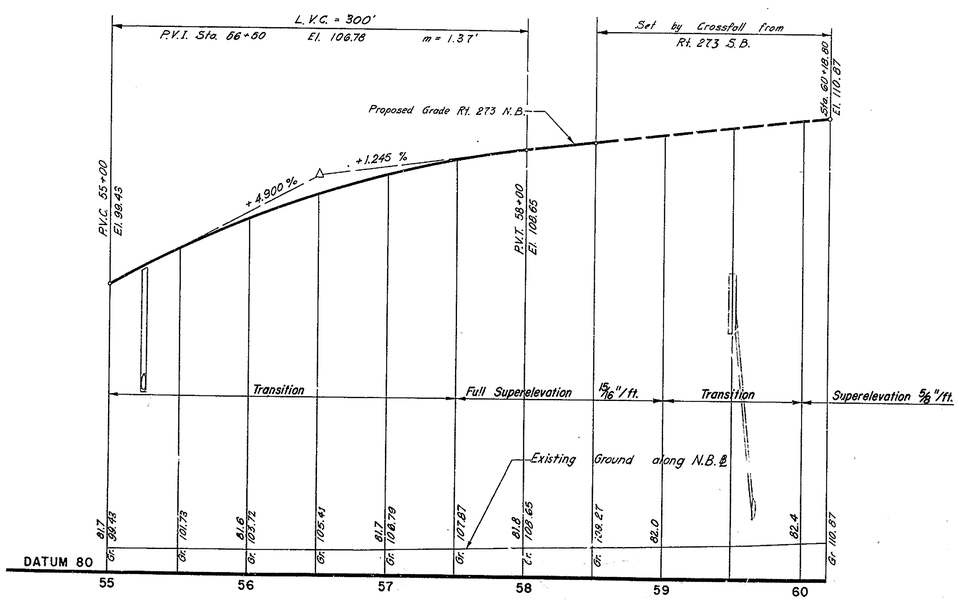
"Imperial" 156 W. B. & Z.

COUNTY	CONTRACT	F.A.A. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE		2	DEL.			60	110

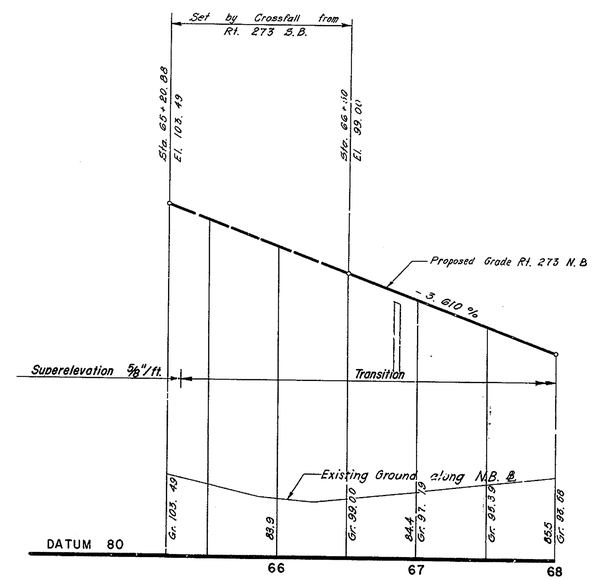
DELAWARE TURNPIKE
CONTRACT 7001
1962



ROUTE 273 SOUTHBOUND PROFILE



ROUTE 273 NORTHBOUND PROFILE
SOUTH END



ROUTE 273 NORTHBOUND PROFILE
NORTH END

ROUTE 273 SOUTHBOUND AND NORTHBOUND PROFILES

Scale: Hor. 1"=50'
Ver. 1"=5'

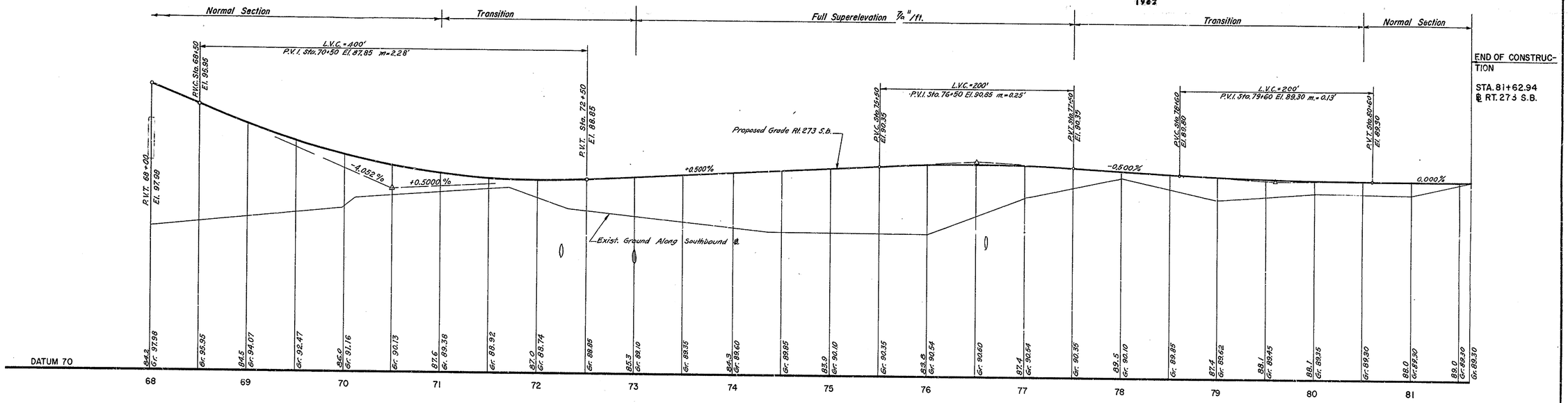
TIE POINTS
BENCH MARKS
EARTHWORK
DRAINAGE

GOODKIND & O'DEA
CONSULTING ENGINEERS
MONTCLAIR, NEW JERSEY

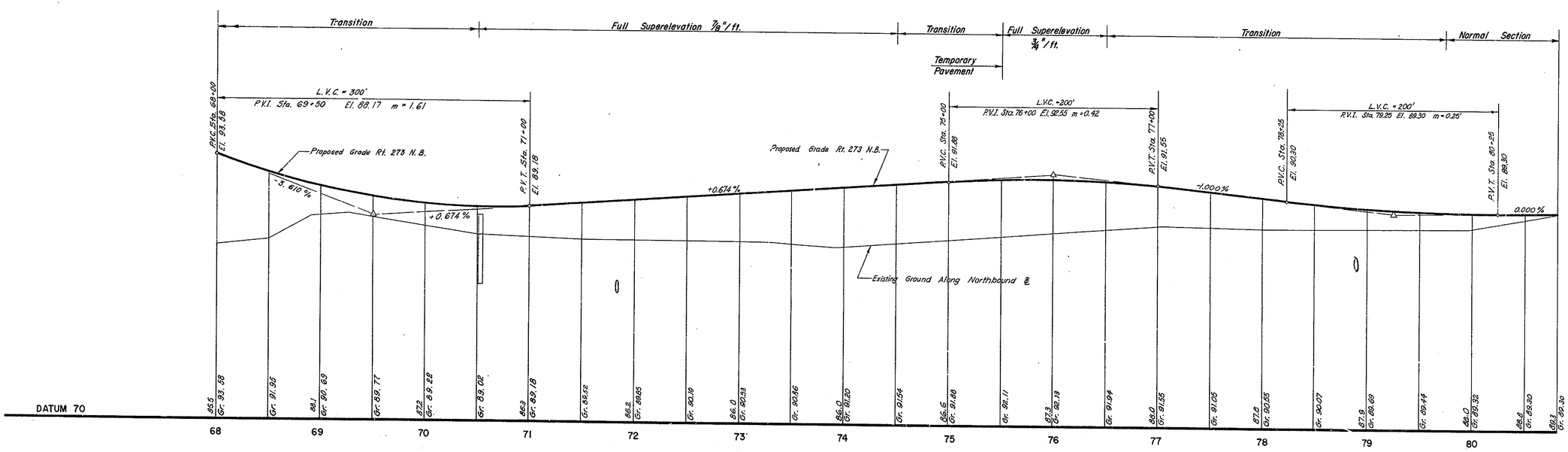
"Imperial" 156 W. B. & E.

DELAWARE TURNPIKE
CONTRACT 7001
1962

COUNTY	CONTRACT	F. A. PROJ. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE		2	DEL.			61	172



ROUTE 273 SOUTHBOUND PROFILE



ROUTE 273 NORTHBOUND PROFILE
NORTH END

ROUTE 273 SOUTHBOUND AND NORTHBOUND PROFILES

Scale: Hor. 1" = 50'
Ver. 1" = 5'

TIE POINTS
BENCH MARKS
EARTHWORK
DRAINAGE

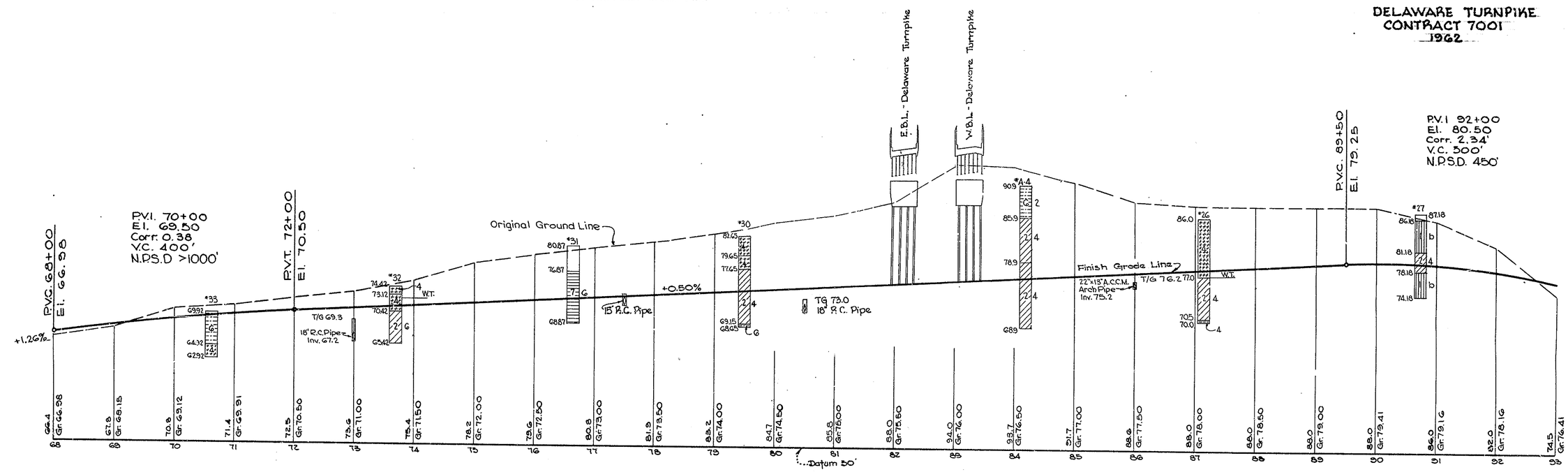
GOODKIND & O'DEA
CONSULTING ENGINEERS
MONTCLAIR, NEW JERSEY

"Imperial" 156 W. B. & E.

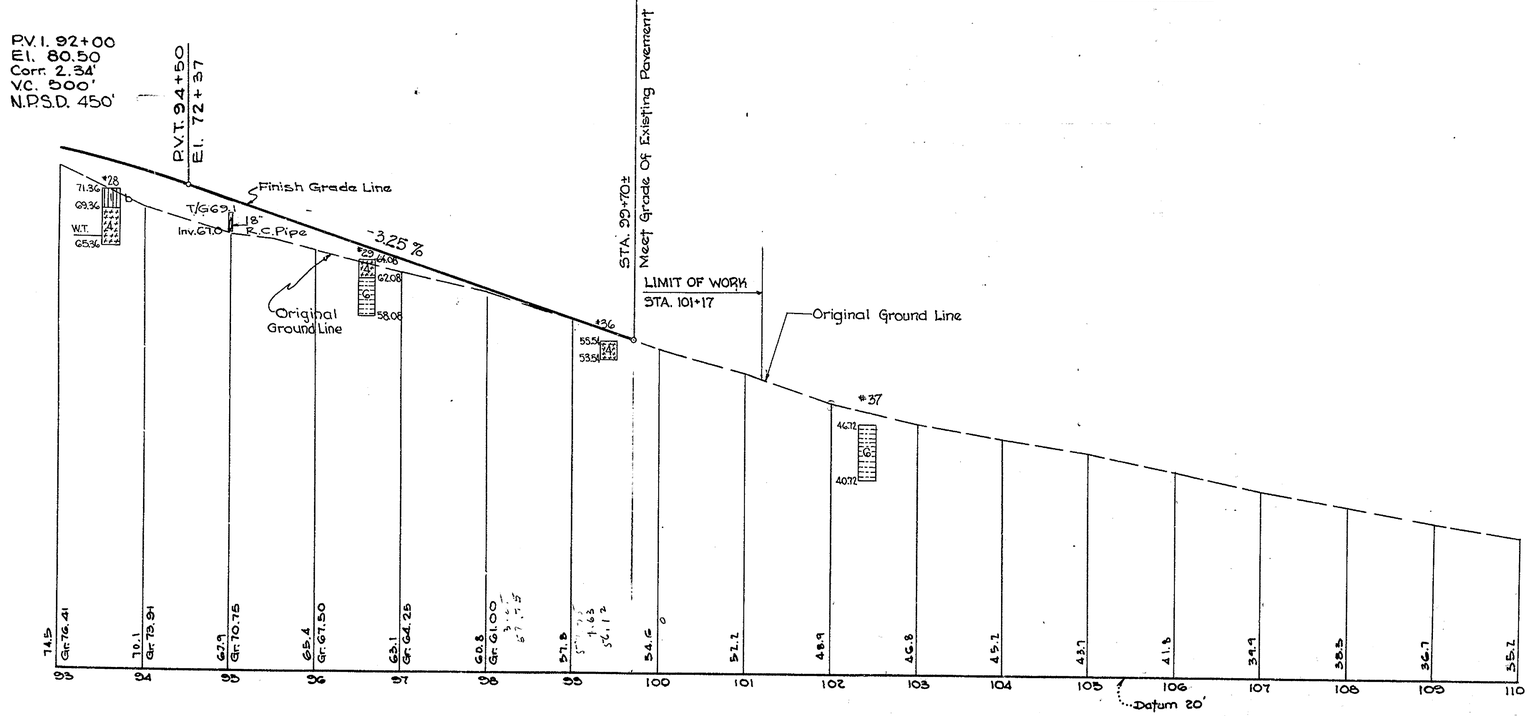
COUNTY	CONTRACT	F. A. A. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
N. C.		2	DEL.			62	170

DELAWARE TURNPIKE
CONTRACT 7001
1962

Note: Gr. Refers To Elevation Of The Finish Grade Line.



ROUTE #7



ROUTE #7

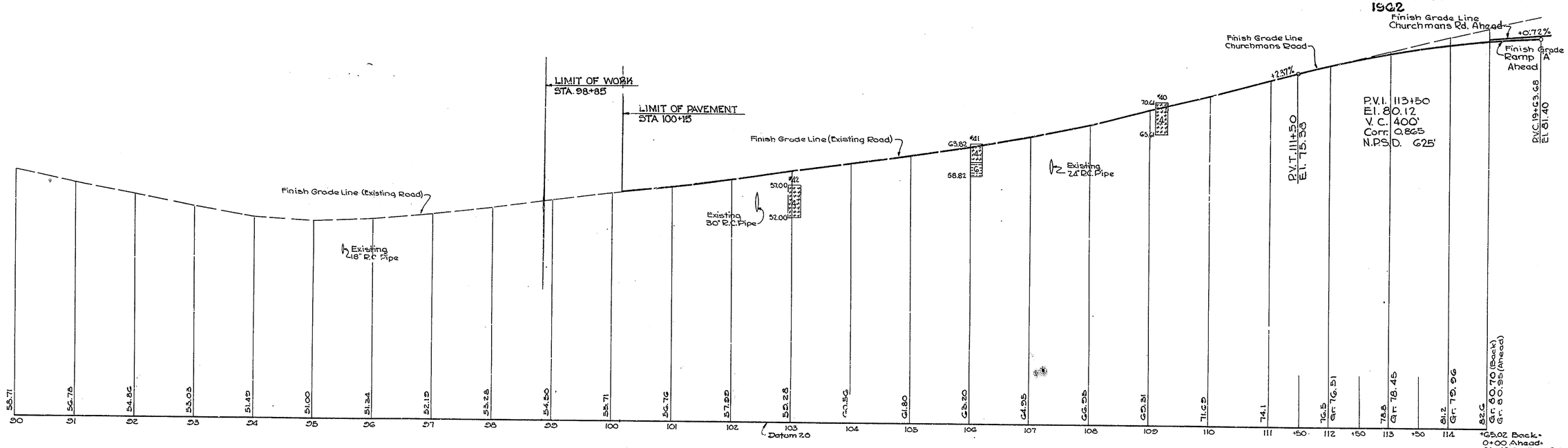
BEARINGS
TIE POINTS
BENCHMARKS
EARTHWORK
DRAINAGE

REVISIONS

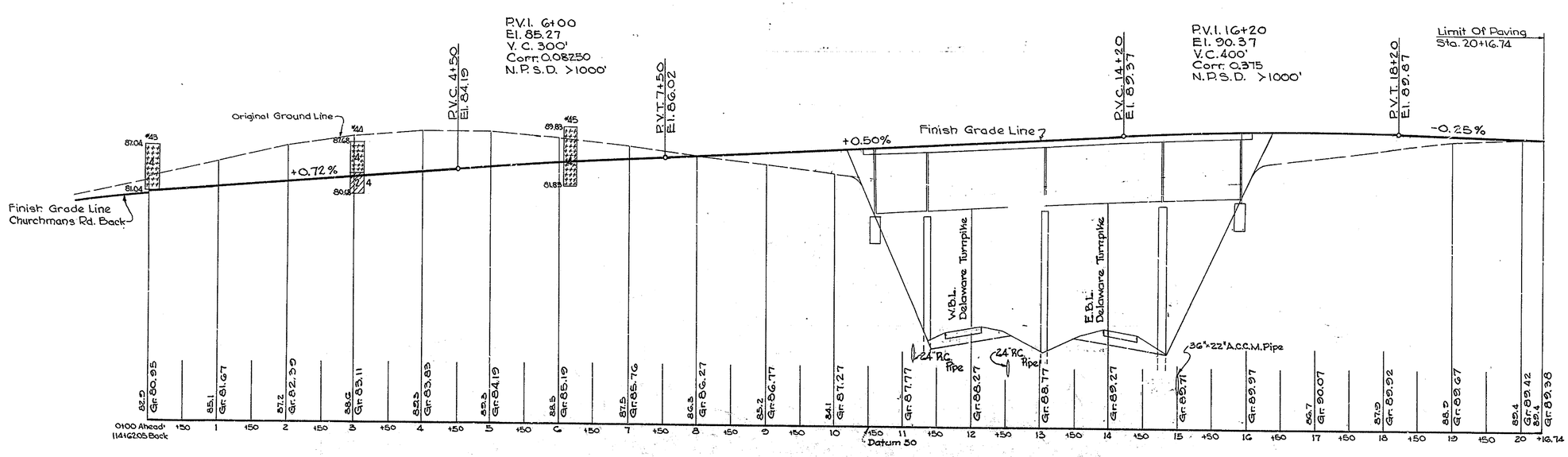
COUNTY	CONTRACT	F.A.P. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
N.C.		2	DEL.			68	170

DELAWARE TURNPIKE
CONTRACT 7001
1962

Note: Gr. Refers To The Elevation Of The Finish Grade.



CHURCHMANS RD.

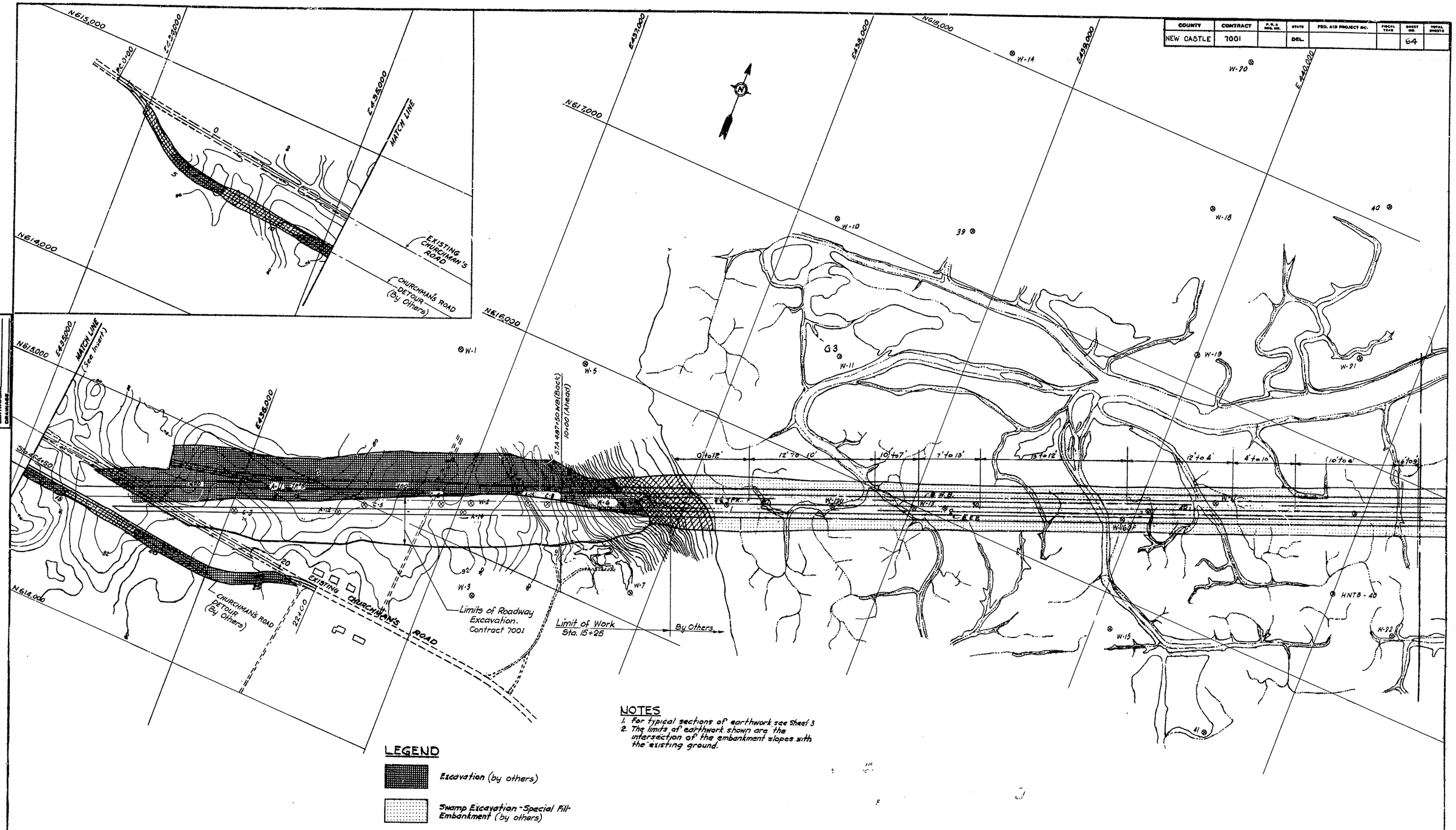


CHURCHMAN'S RD.

BENCH MARKS
EARTHWORK
DRAINAGE

"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	7001		DEL.			64	



NOTES

1. For typical sections of earthwork see Sheet 3
2. The limits of earthwork shown are the intersection of the embankment slopes with the existing ground.

LEGEND

- Excavation (by others)
- Swamp Excavation - Special Fill - Embankment (by others)
- Embankment (by others)
- 0'to6' — Estimated depth of swamp excavation shown in plan (See Note No.3.)
- Direction of Drainage in Disposal Area
- Indicates location of auger or casing boring

DELAWARE TURNPIKE
CONTRACT NO. 7001

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

Drawn by | Checked by | In Charge | Date

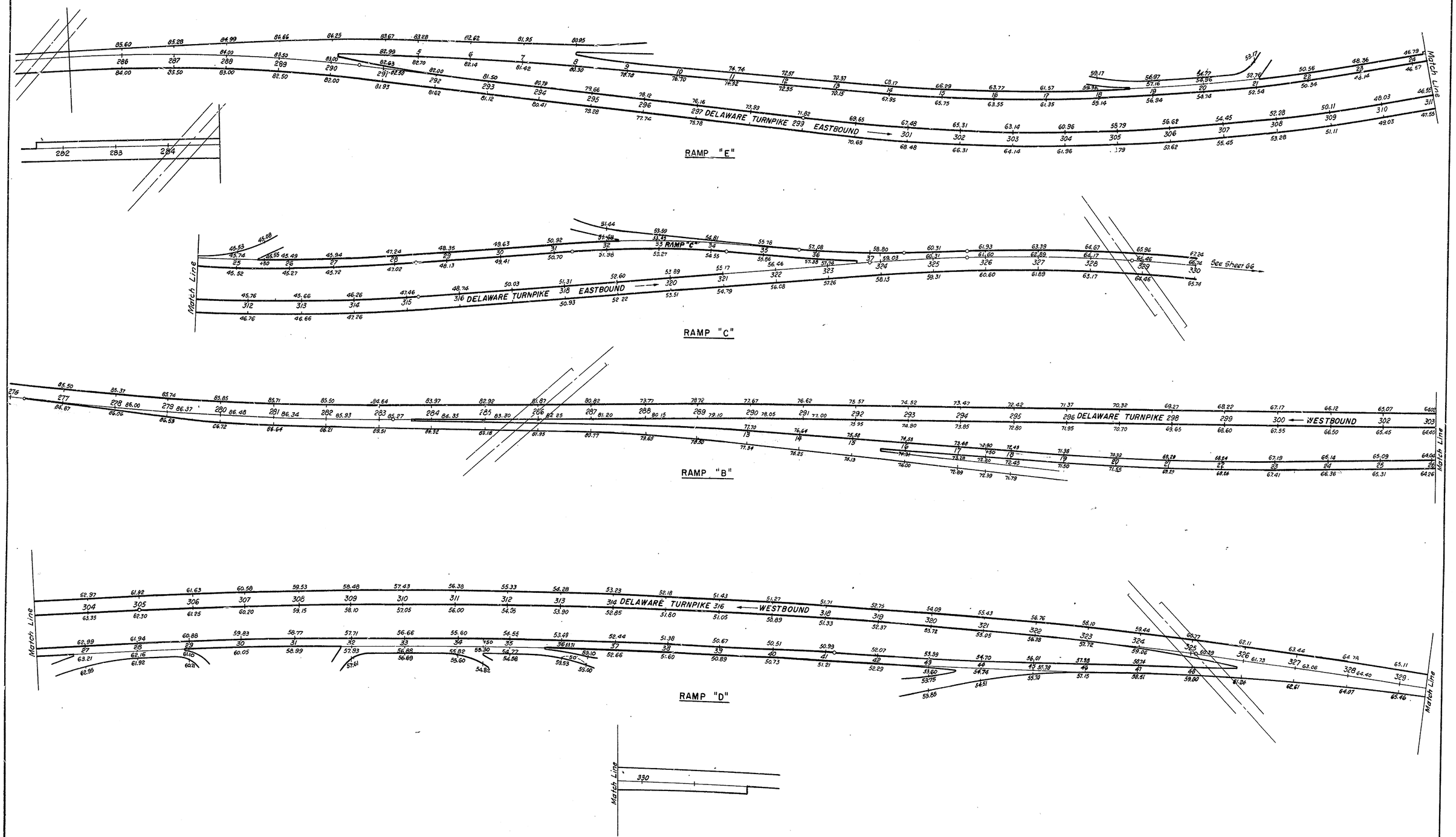
DELAWARE
STATE HIGHWAY DEPARTMENT
~~INTERSTATE ROUTE F.A.I. I (22)~~
CHRISTINA RIVER INTERCHANGE

TPK. WEST OF BASIN ROAD
EXCAVATION, FILL & DISPOSAL PLAN

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

DESIGNED: W.H.M. Jr. CHECKED: A.P. DATE: 7/31/59
DRAWN: W.H.E.Jr. IN CHARGE: W.H.M. SCALE: 1" = 200'

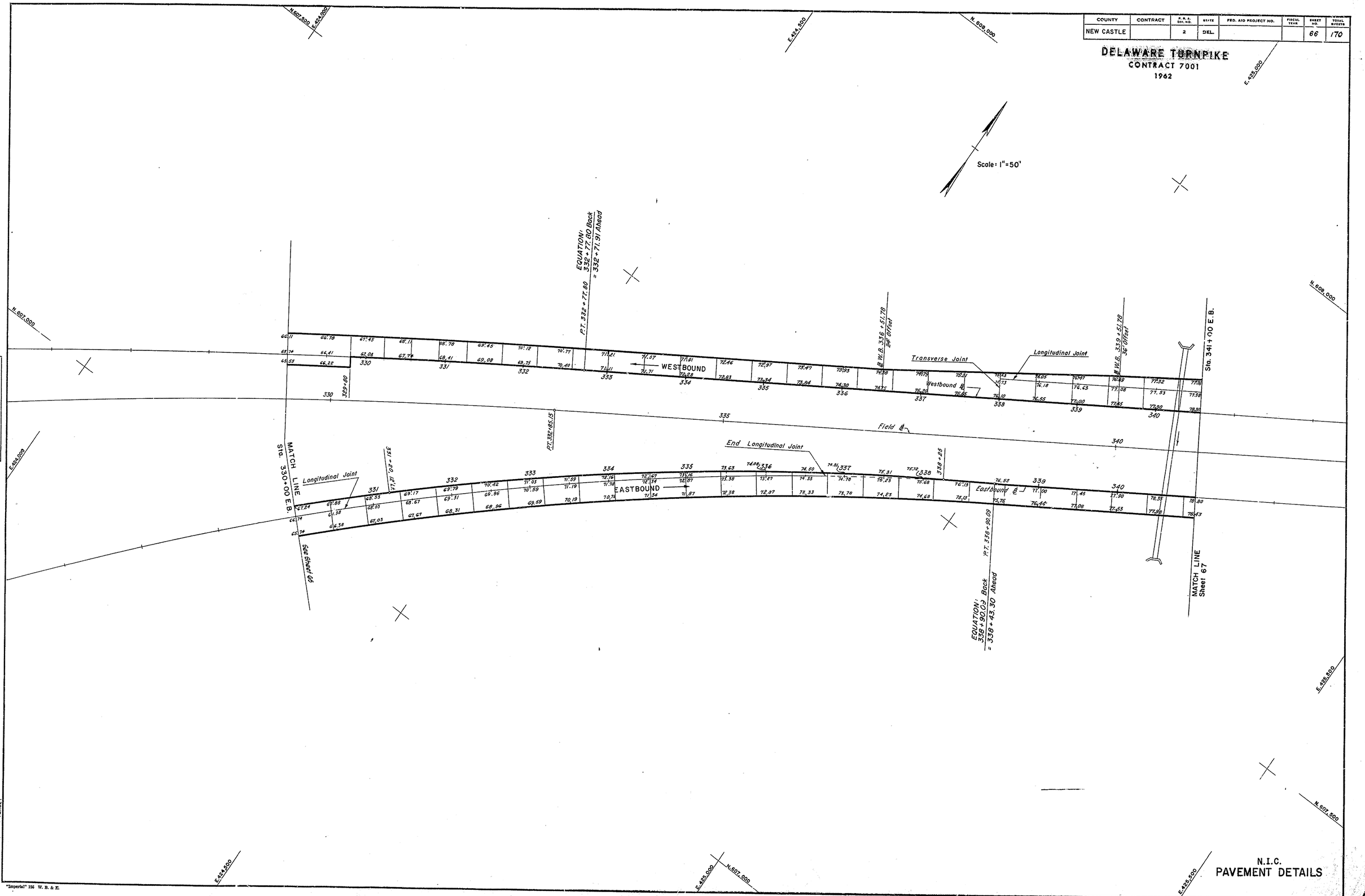
COUNTY	CONTRACT	P.O.A. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	7001	2	DEL.			65	170



PAVEMENT DETAILS

COUNTY	CONTRACT	P.R.R. DIV. NO.	ST/TE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE		2	DEL.			66	170

DELAWARE TURNPIKE
CONTRACT 7001
1962



N.I.C.
PAVEMENT DETAILS

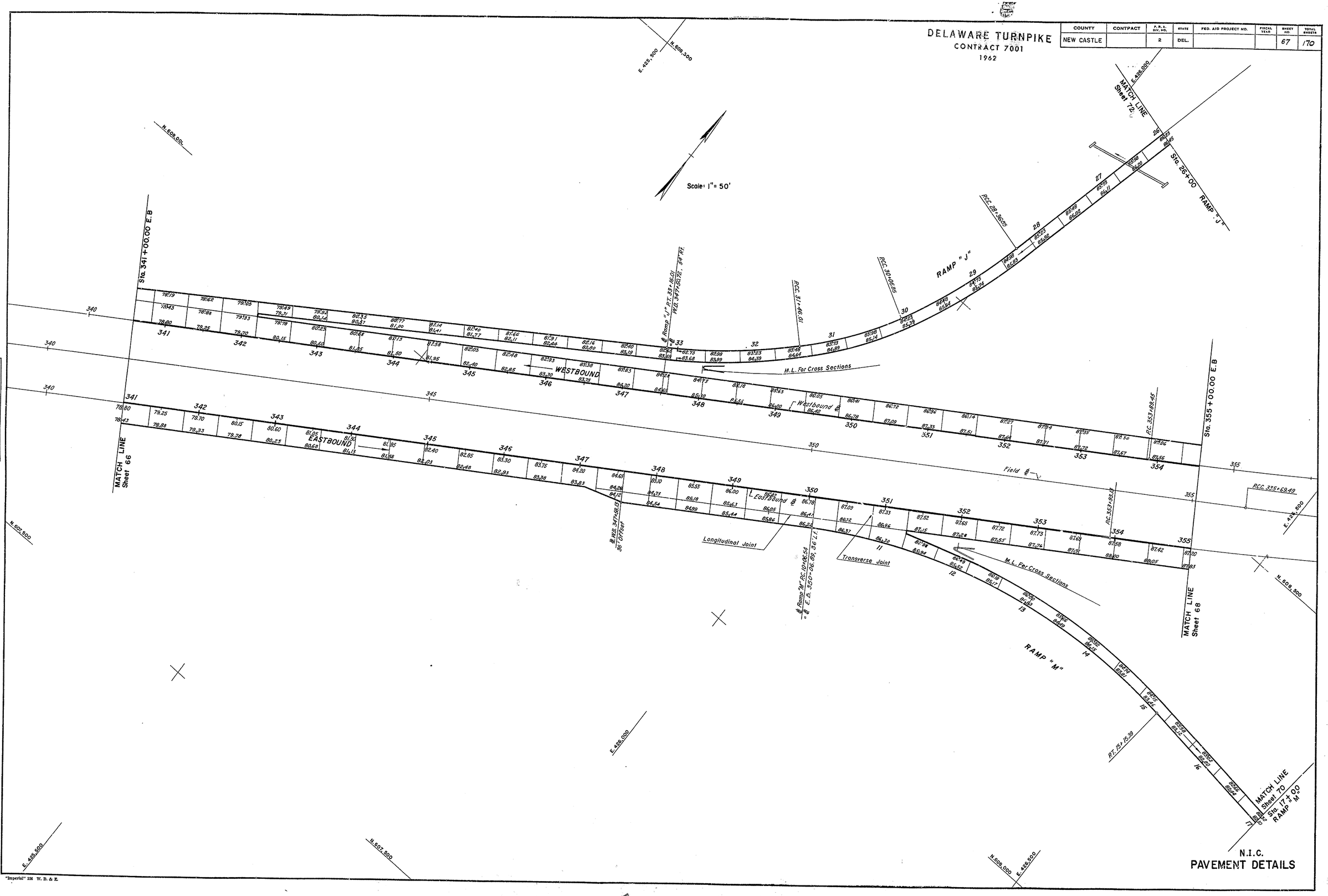
BENCH MARKS
EARTHWORK
DRAINAGE

GOODRIND & O'DEA
CONSULTING ENGINEERS
MONTCLAIR, NEW JERSEY

"Imperial" 156 W. B. & E.

DELAWARE TURNPIKE
CONTRACT 7001
1962

COUNTY	CONTPACT	F. R. A. DIV. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE		2	DEL.			67	170



N.I.C.
PAVEMENT DETAILS

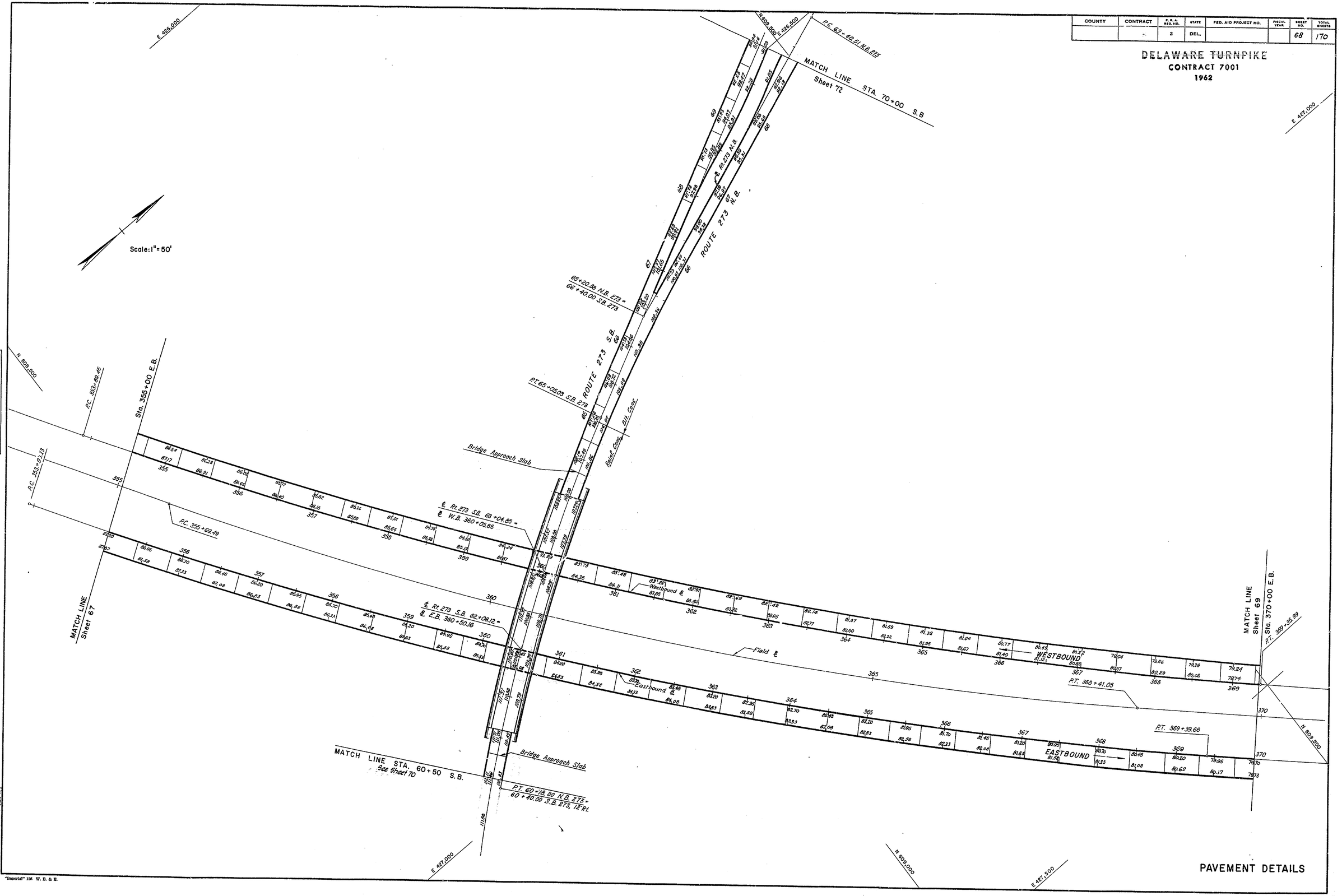
TIE POINTS
BENCH MARKS
EARTHWORK
DRAINAGE

GC DRIND & O'DEA
CONSULTING ENGINEERS
MONTCLAIR, NEW JERSEY

"Imperial" 156 W. B. & E.

COUNTY	CONTRACT	P. R. A. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	-	2	DEL.			68	170

DELAWARE TURNPIKE
CONTRACT 7001
1962



PAVEMENT DETAILS

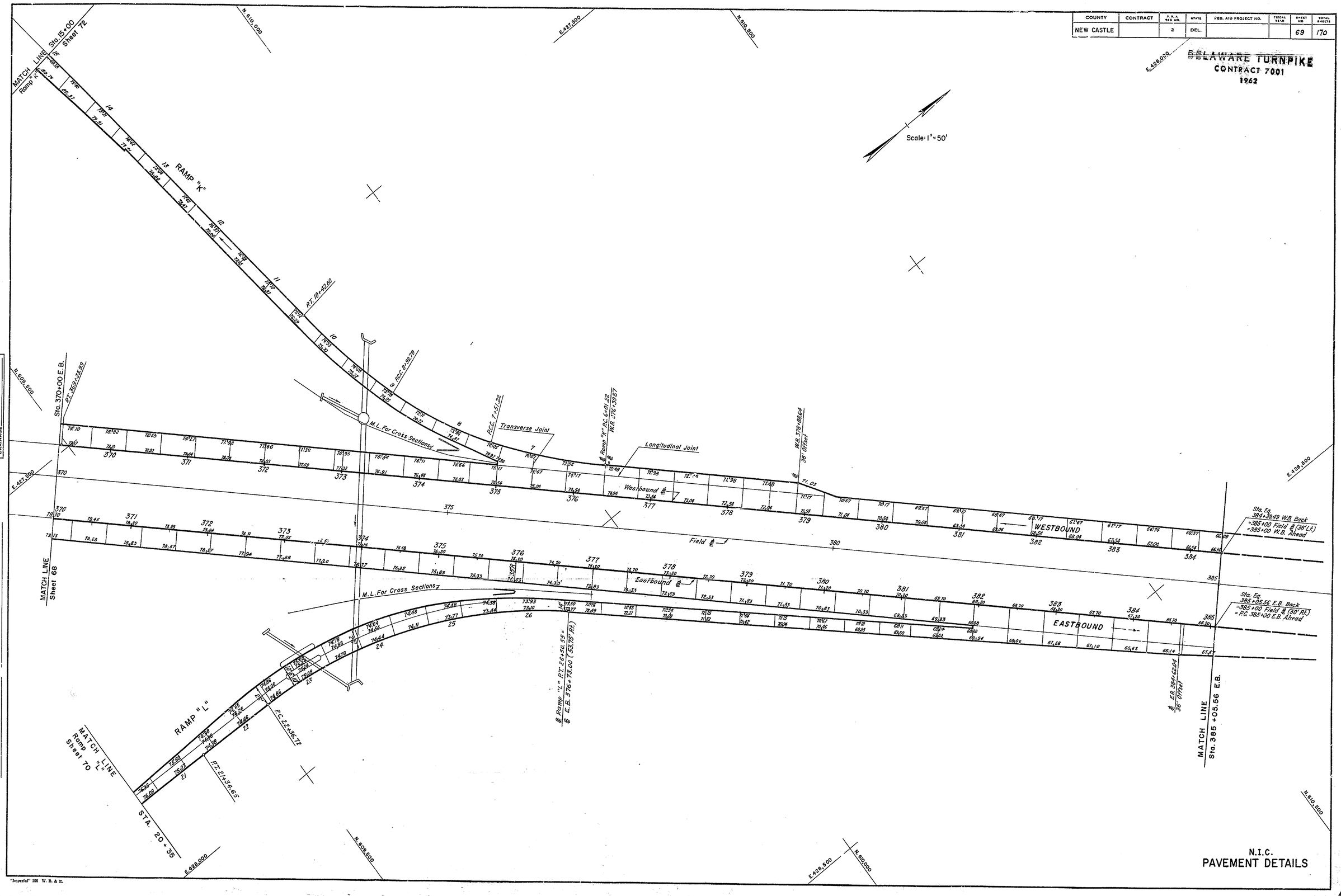
BENCH MARKS
EARTHWORK
DRAINAGE

COOLKIND & O'DEA
CONSULTING ENGINEERS
MONTCLAIR, NEW JERSEY

"Imperial" 15R W. B. & E.

COUNTY	CONTRACT	F.A.A. REG NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO	TOTAL SHEETS
NEW CASTLE		2	DEL.			69	170

DELAWARE TURNPIKE
CONTRACT 7001
1962



N.I.C.
PAVEMENT DETAILS

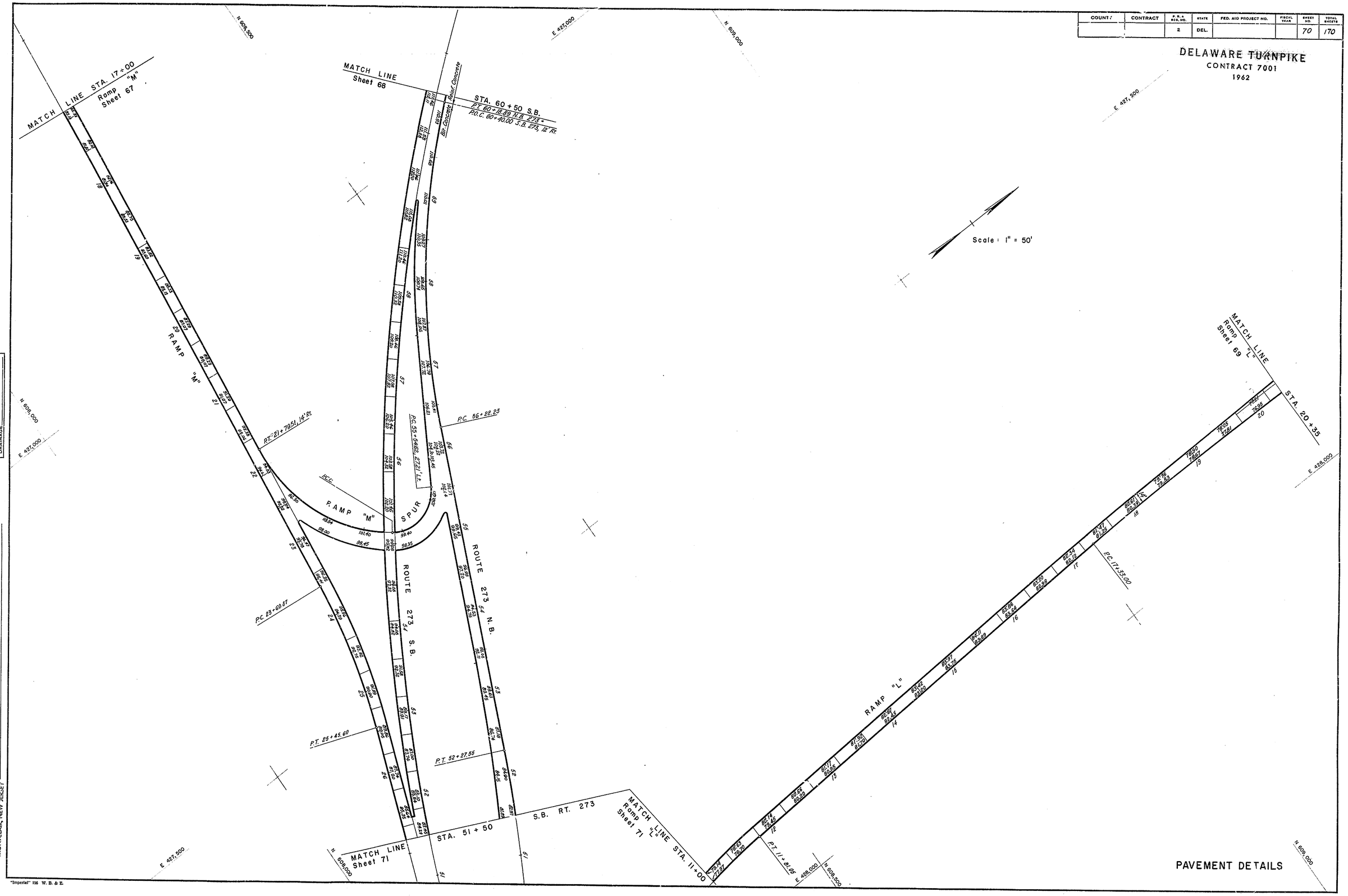
BENCH MARKS
EARTHWORK
DRAINAGE

CONSULTING ENGINEERS
MONTCLAIR, NEW JERSEY

"Imperial" 150 W. B. & E.

COUNTY	CONTRACT	F.R.A. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
		2	DEL.			70	170

DELAWARE TURNPIKE
CONTRACT 7001
1962



PAVEMENT DETAILS

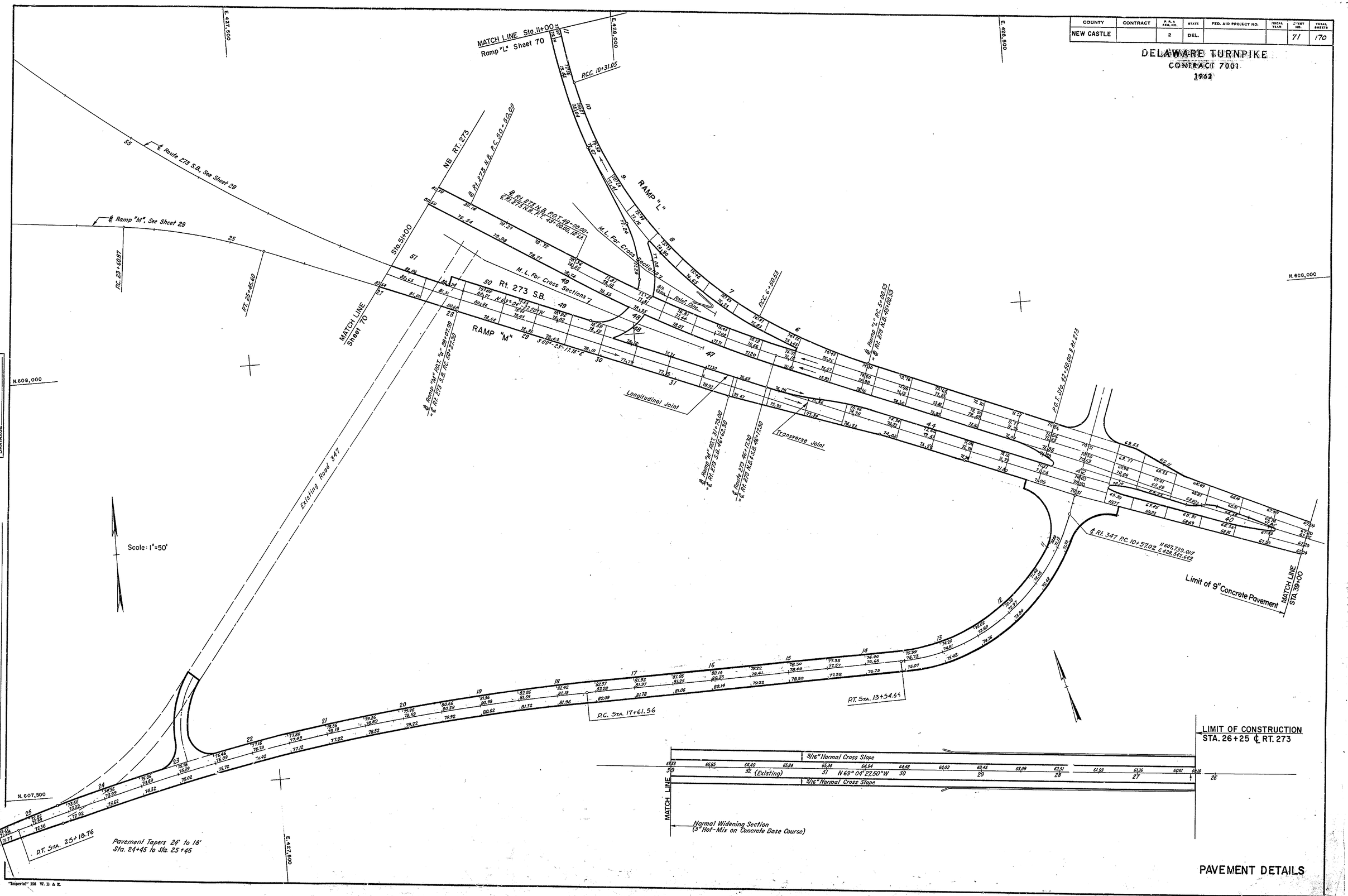
CONSULTING ENGINEERS
MONTCLAIR, NEW JERSEY

EARTHWORK
PAVEMENT
DRAINAGE

"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		2	DEL.			71	170

DELAWARE TURNPIKE
CONTRACT 7001
1962



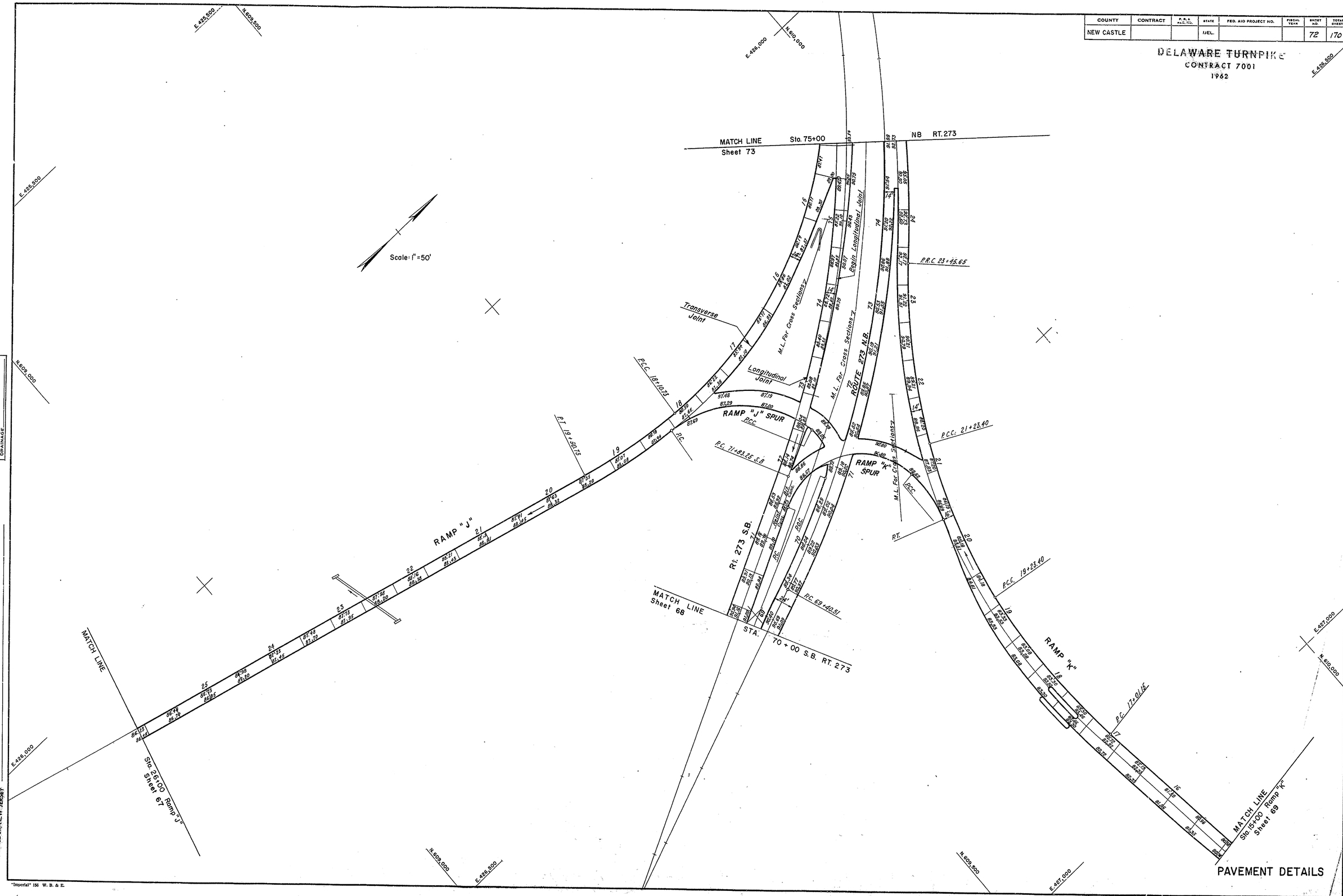
PAVEMENT DETAILS

TIE POINTS
BENCH MARKS
EARTHWORK
DRAINAGE

"Imperial" 156 W. B. & E.

COUNTY	CONTRACT	P.R.A. H.C. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE			DEL.			72	170

DELAWARE TURNPIKE
CONTRACT 7001
1962



PAVEMENT DETAILS

BEARINGS
TIE POINTS
BENCH MARKS
EARTHWORK
DRAINAGE

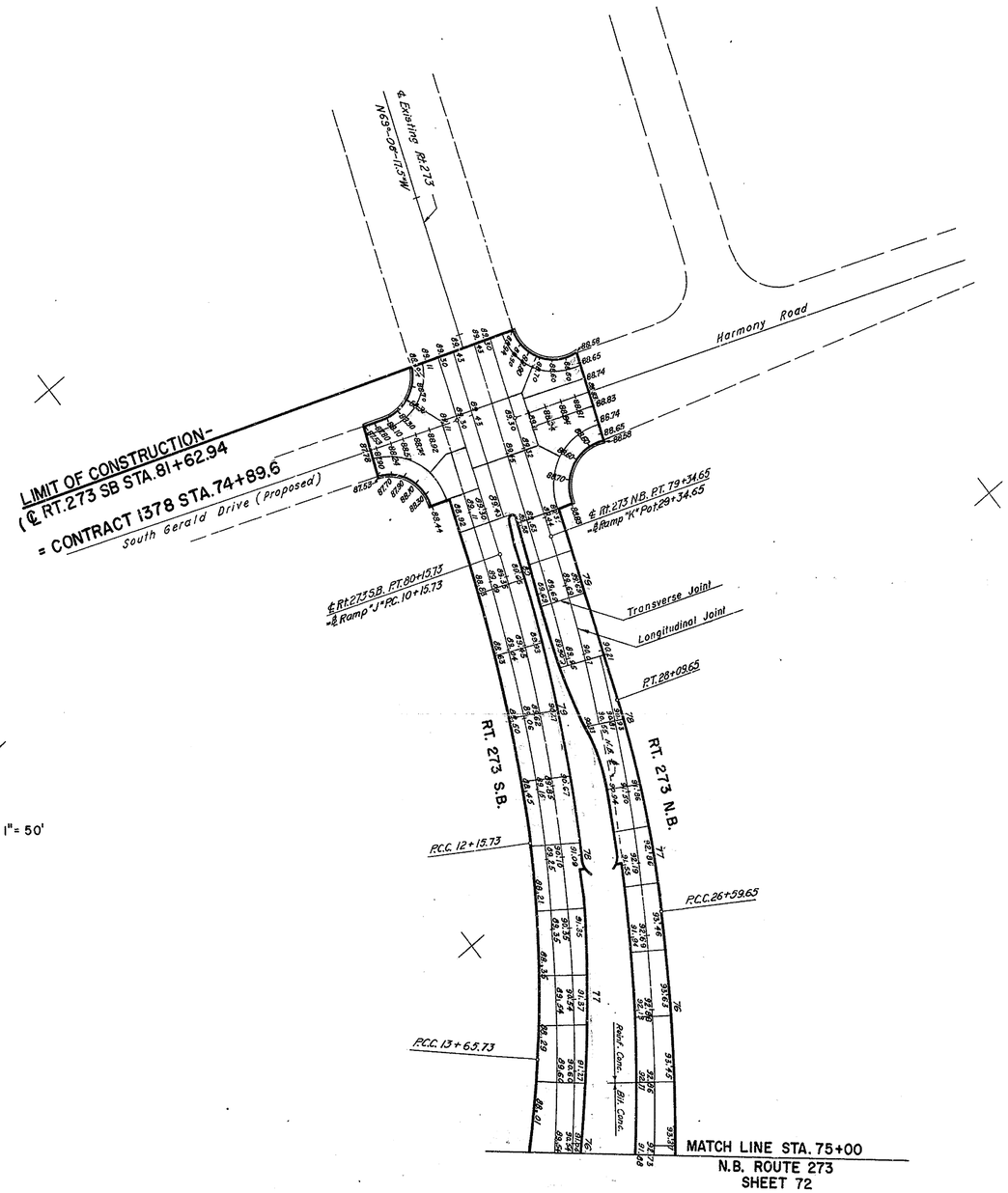
REVISIONS

GOODKIND & O'DEA
CONSULTING ENGINEERS
MONTCLAIR, NEW JERSEY

"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		2	DEL.			73	170

DELAWARE TURNPIKE
CONTRACT 7001
1962



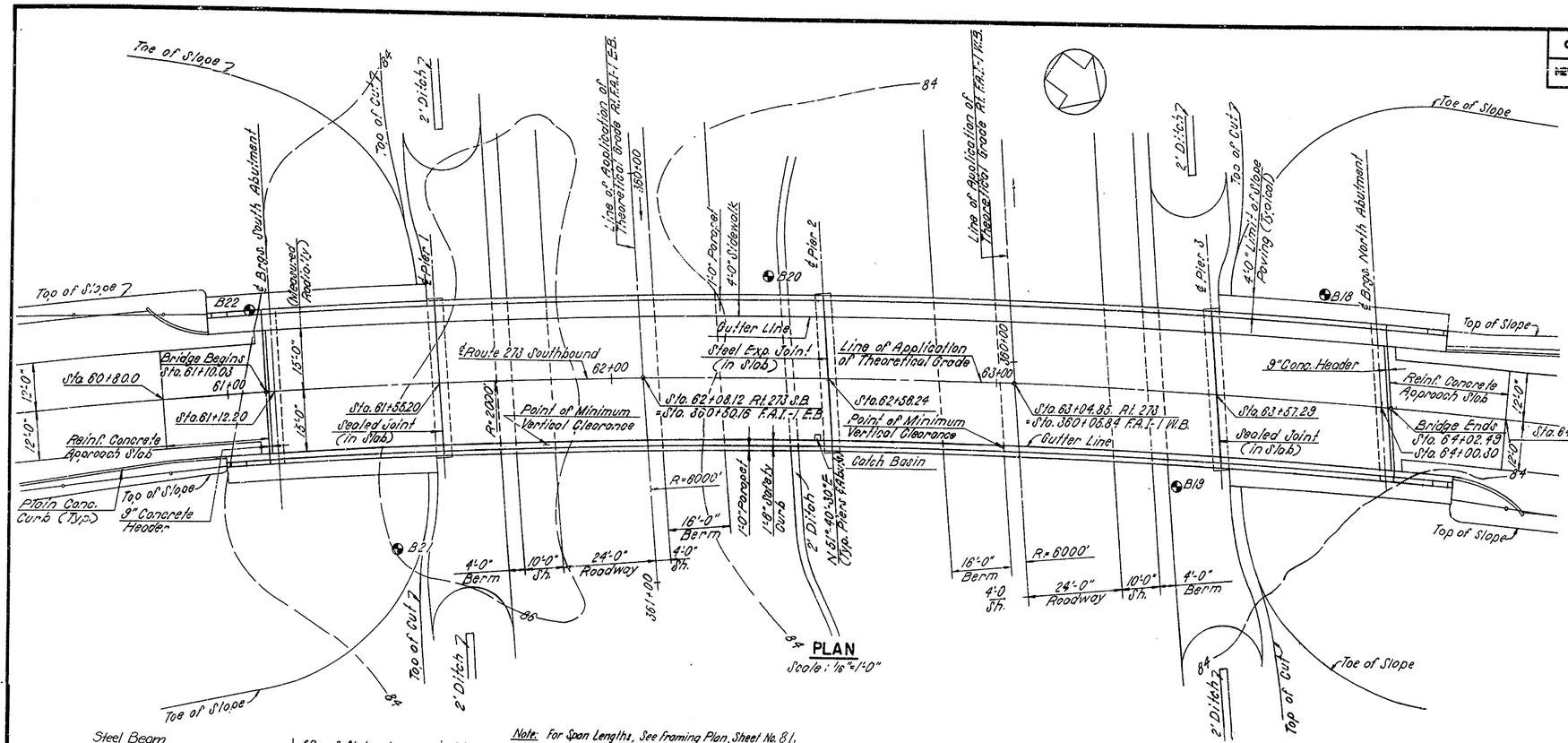
TIE POINTS
BENCH MARKS
EARTHWORK
DRAINAGE

GOODIND & O'DEA
CONSULTING ENGINEERS
MOORESTOWN, NEW JERSEY

"Imperial" 156 W. B. & K.

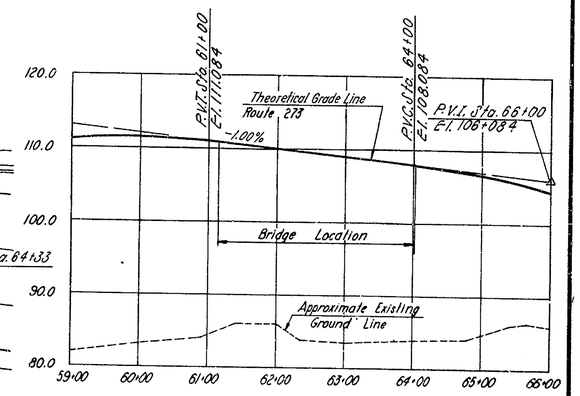
PAVEMENT DETAILS

COUNTY	CONTRACT	FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE		2	DEL			74	170



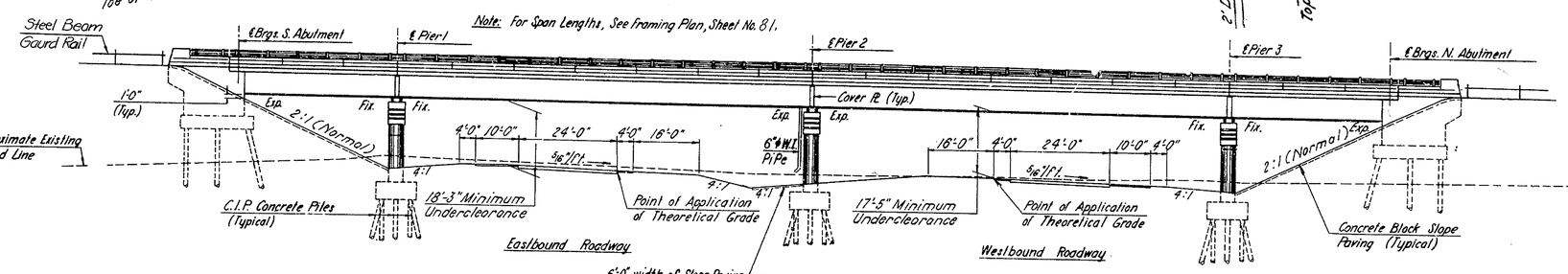
PLAN

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



PROFILE OF ROUTE 273

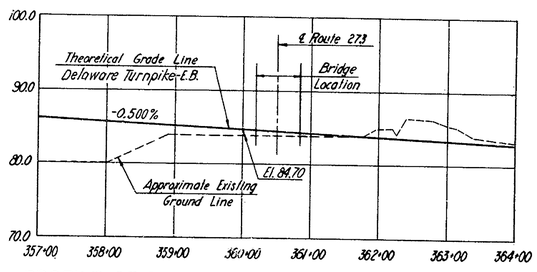
Scales: Vertical 1" = 10'
Horizontal 1" = 100'



ELEVATION

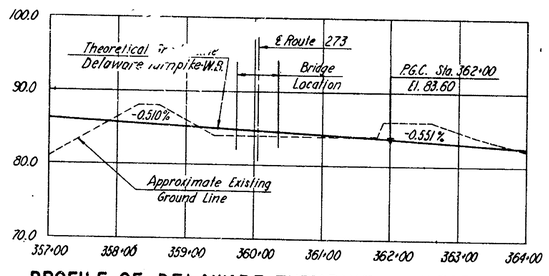
Scale: 1/16" = 1'-0"

Note: 1. For Typical Roadway Sections of Delaware Turnpike, see Sheet No. 2 (Highway Plans)
2. For Typical Roadway Sections of Rt. 273, see Sheet No. 3 (Highway Plans)
3. For Footing Elevations, see Pier and Abutment Sheets.



PROFILE OF DELAWARE TURNPIKE — EASTBOUND

Scales: Vertical 1" = 10'
Horizontal 1" = 100'



PROFILE OF DELAWARE TURNPIKE — WESTBOUND

Scales. Vertical 1" = 10'
Horizontal 1" = 100'

QUANTITIES ROUTE 273 STRUCTURE

ITEM	UNIT	QUANTITY
EXCAVATION FOR STRUCTURES	C.Y.	690
SELECT BORROW - GRADE A	C.Y.	105
HOT-MIX HOT-LAID ASPHALTIC CONCRETE PAVEMENT	TONS	112
PORTLAND CEMENT CONCRETE MASONRY:		
* CONCRETE FOR FOOTINGS	C.Y.	260
* CONCRETE FOR SUBSTRUCTURE	C.Y.	290
* CONCRETE FOR SUPERSTRUCTURE	C.Y.	430
* CONCRETE FOR APPROACH SLAB	C.Y.	50
*BAR REINFORCEMENT	LB.	218,000
STRUCTURAL STEEL (APPROXIMATELY 344,000 LBS.)	L.S.	
6" ϕ PERFORATED CORRUGATED METAL PIPE UNDERDRAIN	L.F.	110
12" ϕ CAST IN PLACE CONCRETE PILES	L.F.	5,200
12" ϕ STEEL SHELL TEST PILES	L.F.	470
ALUMINUM RAILING (TWO RAIL)	L.F.	630
SLOPE PAVING	S.Y.	120
BRIDGE DRAINAGE PIPES (APPROXIMATELY 30 L.F.)	L.S.	
BRIDGE CATCH BASIN	L.S.	
RC-1 ASPHALT FOR TACK COAT	GAL.	100
SUPERFICIAL WATERPROOFING	S.Y.	150
6" ϕ CORRUGATED METAL PIPE UNDERDRAIN	L.F.	10
PROTECTIVE COATING FOR CONCRETE	S.F.	885
COAL TAR EPOXY UNDERSEAL	S.Y.	1025

Notes: 1. Items indicated (*) are Fixed Quantity Items. See Special Provisions.
2. For Layout of Piers and Abutments see Sheet No. 80
3. For General Notes see Sheet No. 88.
4. For Boring Data see Sheet No. 89.

In charge of P.H. Aschehoug
Made by N.E.
Checked by J.D.
Traced by
Checked by

DELAWARE
STATE HIGHWAY DEPARTMENT
DELAWARE TURNPIKE

UNDERPASS - ROUTE 273

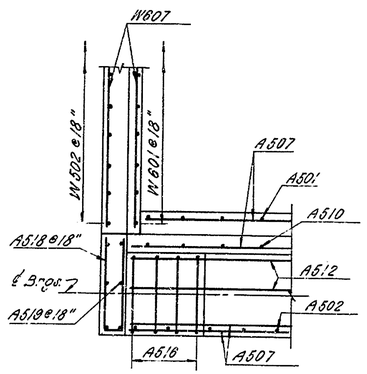
GENERAL PLAN

DWG. NO.	SCALE	DATE
1 OF 16	AS NOTED	MAY 1962

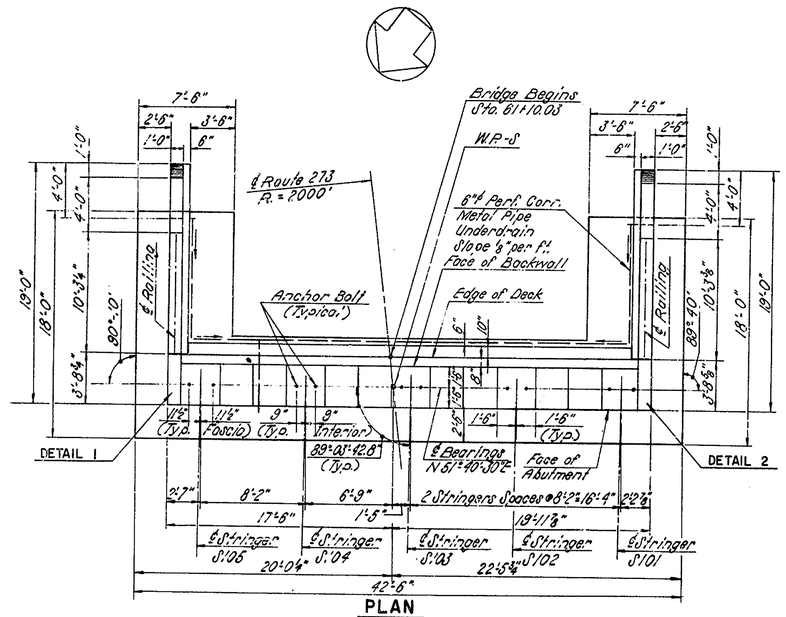
CONTRACT NO.

GOODKIND & O'DEA
CONSULTING ENGINEERS

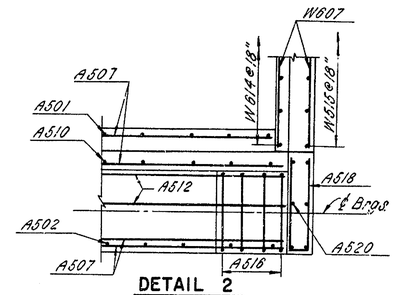
COUNTY	CONTRACT	FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE		2	DEL.			75	170



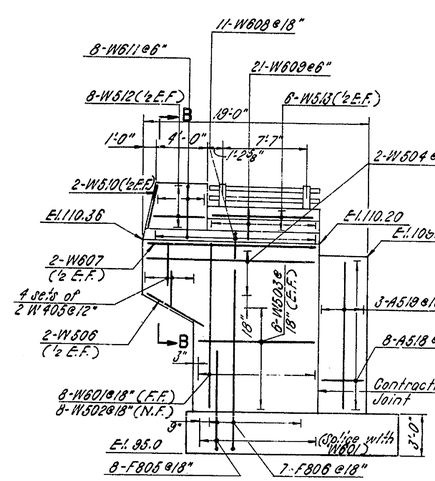
DETAIL 1
Scale: 3/8"=1'-0"



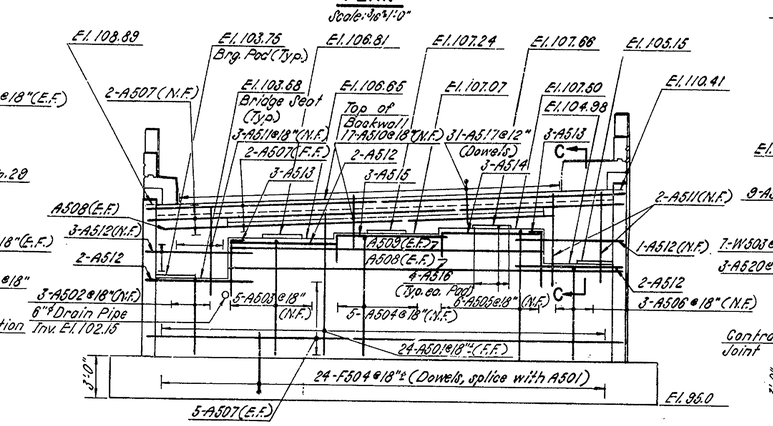
PLAN
Scale: 3/16"=1'-0"



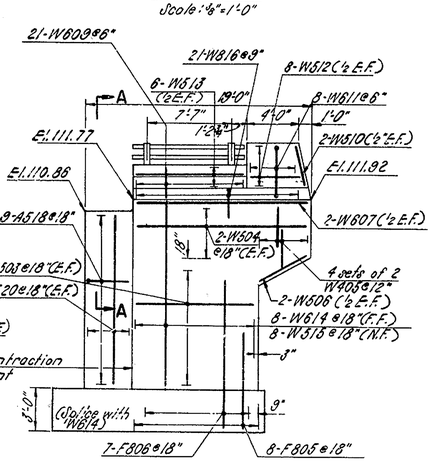
DETAIL 2
Scale: 1/8"=1'-0"



S.E. WINGWALL
Scale: 3/16"=1'-0"

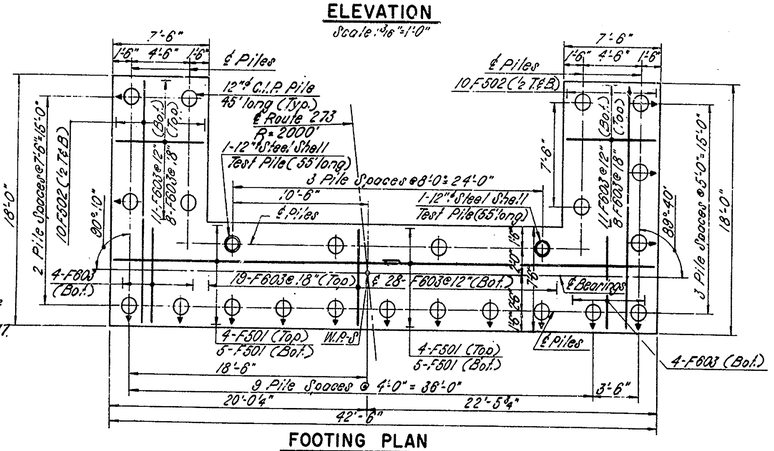


ELEVATION
Scale: 3/16"=1'-0"



S.W. WINGWALL
Scale: 3/16"=1'-0"

NOTES:
1. Bearing Pad elevations shown are bottom of base plate elevations.
2. Top of Cheekwall, Parapet, Pylon, and Railing to follow grade.
3. Piles and footing reinforcing (in Elevation) not shown.
4. For Contraction Joint Detail, see Sheet No. 77.
5. For Layout Plan, see Sheet No. 80.



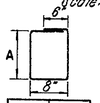
FOOTING PLAN
Scale: 3/16"=1'-0"

NOTES:
1. ○ Indicates Cast-in-Place Concrete Pile battered 1:4 in direction of arrow.
2. ○ Indicates Vertical Cast-in-Place Concrete Pile.
3. For Pile Reinforcing Detail, see Sheet No. 77.
4. ◎ Indicates Vertical 12"ϕ Steel Test Pile.

BAR LIST

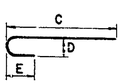
MARK	SIZE	TYPE	LENGTH	SOUTH	NORTH	TOTAL	LOCATION
	Footing						
F501	5	St.	27'-10"	18	18	36	Longitudinal - Top & Bot.
F502	5	St.	17'-6"	20	20	40	Longitudinal - (Wingwall) T&B
F503	6	St.	7'-0"	93	94	187	Transverse - Top & Bot.
F504	5	Bl.	5'-2"	24	24	48	Dowels (Abutment)
F805	8	Bl.	8'-7"	16	16	32	Dowels (Wingwall)
F806	8	Bl.	11'-7"	14	14	28	Dowels (Wingwall)
	Abutment						
A501	5	St.	*	24	24	48	Vertical, E.F.
A502	5	Bl.	8'-9"	3	3	6	Vertical, N.F.
A503	5	Bl.	11'-10"	5	5	10	Vertical, N.F.
A504	5	Bl.	12'-3"	5	5	10	Vertical, N.F.
A505	5	Bl.	12'-8"	6	6	12	Vertical, N.F.
A506	5	Bl.	10'-2"	3	3	6	Vertical, N.F.
A507	5	St.	37'-2"	14	14	28	Horizontal
A508	5	St.	30'-5"	4	4	8	Horizontal
A509	5	St.	24'-8"	2	2	4	Horizontal
A510	5	St.	4'-0"	17	17	34	Vertical, N.F. Backwall
A511	5	St.	6'-4"	5	5	10	Vertical, N.F. Backwall
A512	5	St.	8'-4"	10	10	20	Horizontal, (Pedestals & Backwall
A513	5	Bl.	5'-0"	6	6	12	Horizontal (Seat)
A514	5	Bl.	3'-6"	3	3	6	Horizontal (Seat)
A515	5	Bl.	10'-6"	3	3	6	Horizontal (Seat)
A516	5	Bl.	5'-6"	20	20	40	Transverse (Pads)
A517	5	Bl.	5'-2"	31	31	62	Dowels (Approach Slab)
A518	5	Bl.	7'-8"	17	9	26	Horizontal (Cheekwall)
A519	5	St.	11'-0"	6	6	12	Vertical E.F. (Cheekwall)
A520	5	St.	12'-8"	6	6	12	Vertical E.F. (Cheekwall)
A521	5	Bl.	7'-0"	-	8	8	Horizontal (Cheekwall)
	Wingwalls						
W601	8	St.	12'-0"	8	8	16	Vertical, E.F.
W602	5	St.	12'-0"	8	8	16	Vertical, N.F.
W603	5	St.	10'-0"	26	26	52	Horizontal, E.F.
W604	5	St.	14'-0"	8	8	16	Horizontal, E.F.
W605	4	Bl.	8'-6"	16	16	32	Vertical Ends
W606	5	St.	5'-6"	4	4	8	Horizontal, Ends
W607	6	St.	14'-10"	4	4	8	Horizontal, Top
W608	6	Bl.	4'-6"	11	11	22	Transverse, Safety Curb
W609	6	Bl.	6'-10"	42	42	84	Vertical, Parapet
W610	6	St.	3'-0"	4	4	8	Vertical, Pylon
W611	6	Bl.	10'-0"	16	16	32	Stirrup, Pylon
W612	5	St.	*	16	16	32	Horizontal, Pylons
W613	5	St.	10'-0"	12	12	24	Horizontal, Parapet
W614	6	Bl.	13'-6"	8	8	16	Vertical, E.F.
W615	5	St.	10'-6"	8	8	16	Vertical, N.F.
W816	8	Bl.	7'-7"	21	21	42	Transverse, Sidewalk
W817	5	Bl.	3'-6"	22	22	44	Transverse, Sidewalk & Curb
W818	5	St.	13'-0"	16	16	32	Longitudinal, Sidewalk
W819	5	St.	4'-0"	11	11	22	Transverse, Sidewalk - Bottom

* A501 - Group of 24 bars 3'-6" to 10'-11¼" Δ=¾"
* W612 - 48 groups of 4 bars 3'-9" to 4'-6" Δ=3"
All reinforcing dimensions are out to out.

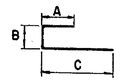


MARK	A
W809	2'-7"
W611	4'-2"

MARK	A	B
A502	3'-5"	5'-4"
A503	3'-5"	8'-5"
A504	3'-5"	8'-10"
A505	3'-5"	9'-3"
A506	3'-5"	6'-9"
A513	1'-0"	4'-0"
A514	7'-9"	1'-8"
A515	9'-0"	1'-8"
A517	1'-8"	3'-6"
W808	2'-0"	2'-6"
W818	4'-2"	3'-5"



MARK	C	D	E
F504	4'-4"	5"	5"
F805	7'-0"	10"	9"
F806	10'-0"	10"	9



MARK	A	B	C
A518	1'-6"	2'-6"	1'-6"
W405	3'-8"	1'-2"	3'-8"
A518	3'-6"	8"	3'-8"
W517	1'-0"	6"	2'-1"
A521	3'-2"	8"	3'-2"

DELAWARE
STATE HIGHWAY DEPARTMENT
DELAWARE TURNPIKE

UNDERPASS - ROUTE 273

SOUTH ABUTMENT

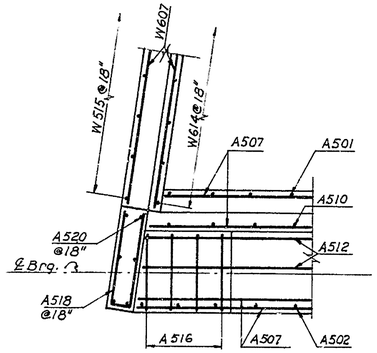
DWG. NO.	SCALE	DATE
2 OF 16	AS NOTED	MAY 1962

CONTRACT NO.

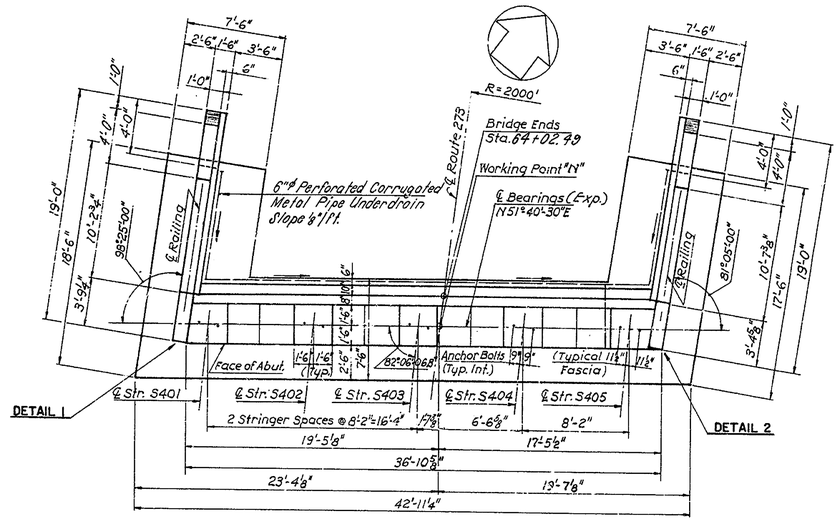
GOODKIND & O'DEA
CONSULTING ENGINEERS

In charge of P.H. AML
Made by N.E.
Checked by J.D.
Traced by
Checked by

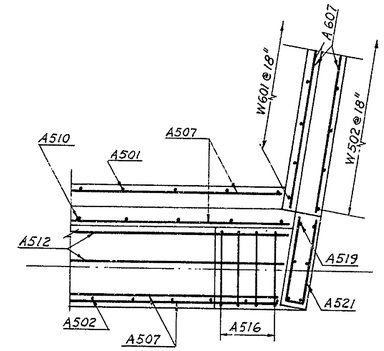
COUNTY	CONTRACT	FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE		2	DEL.			76	170



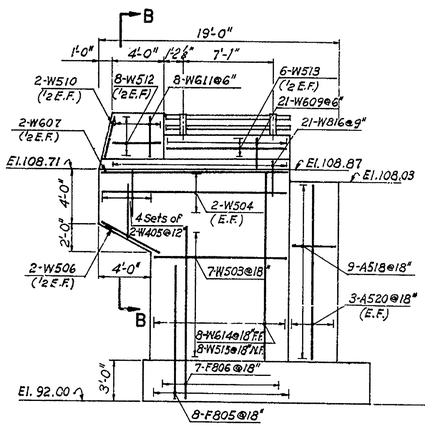
DETAIL 1
Scale: 3/8"=1'-0"



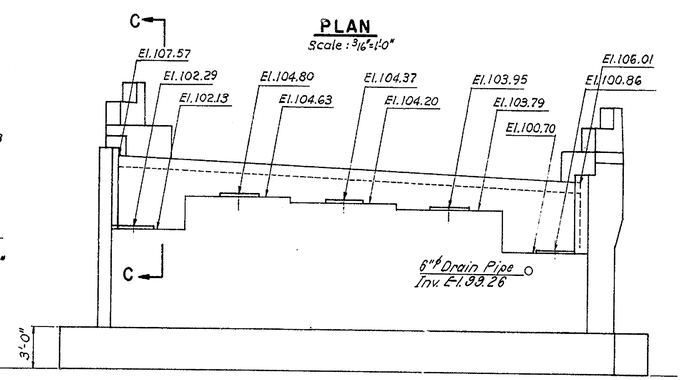
PLAN
Scale: 3/16"=1'-0"



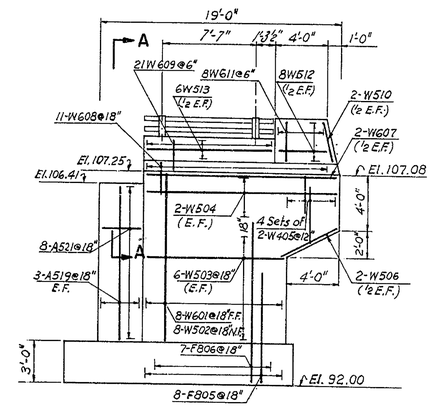
DETAIL 2
Scale: 3/8"=1'-0"



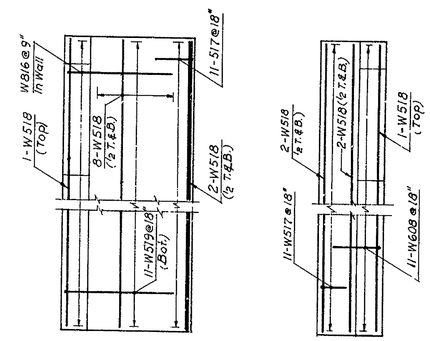
N.W. WINGWALL
Scale: 3/16"=1'-0"



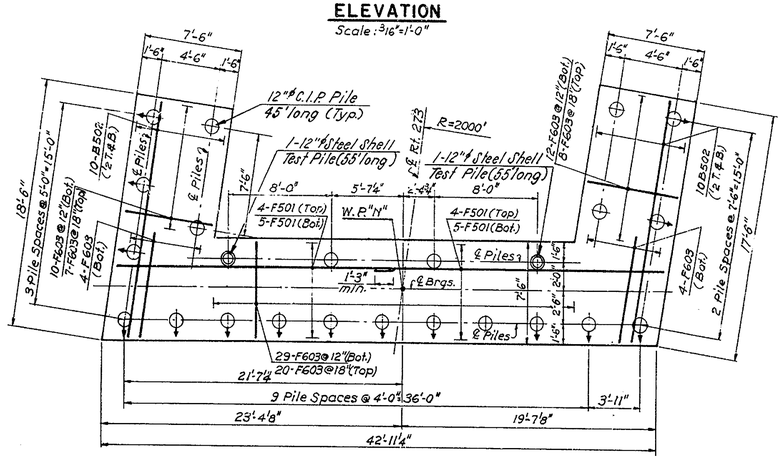
ELEVATION
Scale: 3/16"=1'-0"



N.E. WINGWALL
Scale: 3/16"=1'-0"



SIDEWALK **SAFETY CURB**
Scale: 3/8"=1'-0"



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

NOTES:
1. North Abutment reinforcing similar to South Abutment, see Sheet No. 75.
2. For Additional Notes, see Sheet No. 75.
3. For Layout Plan, see Sheet No. 80.

In Charge of P.H. PGL
Made by N.E.
Checked by J.D.
Traced by
Checked by

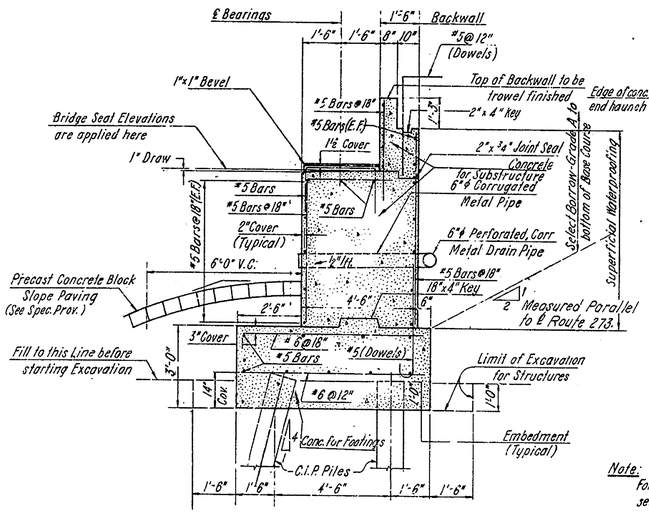
DELAWARE
STATE HIGHWAY DEPARTMENT
DELAWARE TURNPIKE

UNDERPASS-ROUTE 273
NORTH ABUTMENT

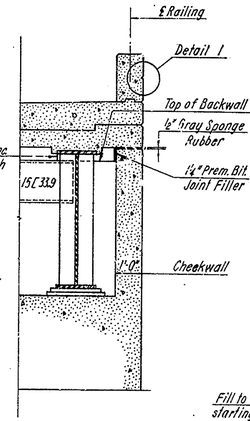
DWG. NO.	SCALE	DATE	
3 OF 16	AS NOTED	MAY 1962	GOODKIND & O'DEA CONSULTING ENGINEERS
CONTRACT NO.			

COUNTY	CONTRACT	FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE		2	DEL			77	170

~~INTERSTATE HIGHWAY ROUTE F.A.I. 1~~
~~UNDER ROUTE 273 SOUTHBOUND~~



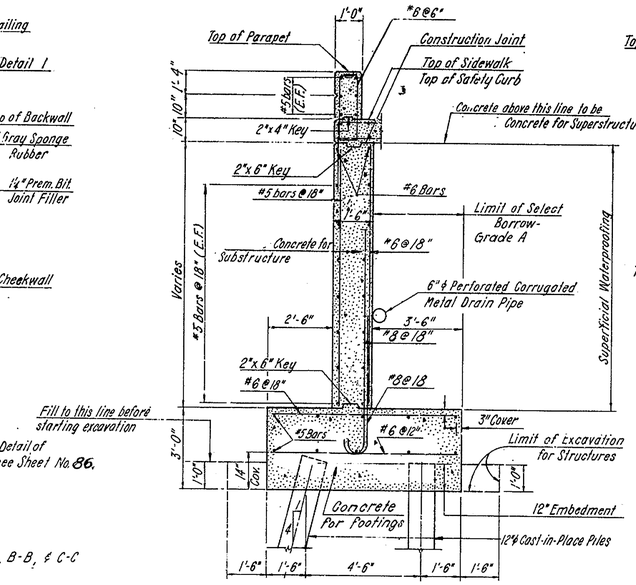
TYPICAL ABUTMENT SECTION
Scale: ⅜" = 1'-0"



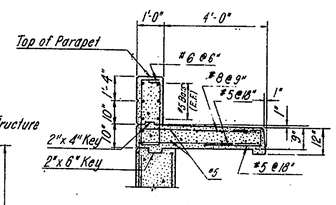
Note: For Architectural Detail of Wingwall Fascia, see Sheet No. 86.

SECTION A-A
Scale: ⅜" = 1'-0"

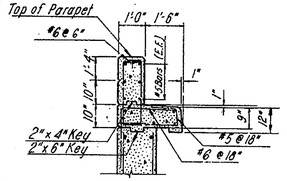
Note:
For Location of Sections A-A, B-B, & C-C see Sheet Nos. 75 & 76.



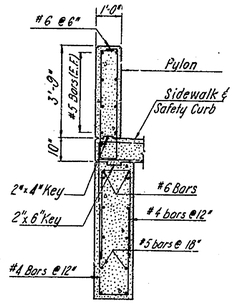
TYPICAL WINGWALL SECTION
Scale: ⅜" = 1'-0"



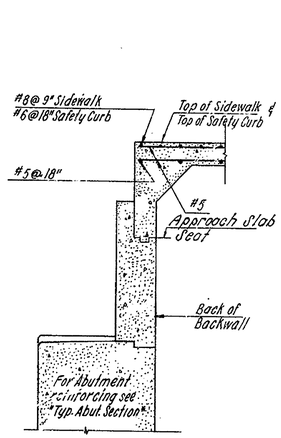
SIDEWALK SECTION
Scale: ⅜" = 1'-0"



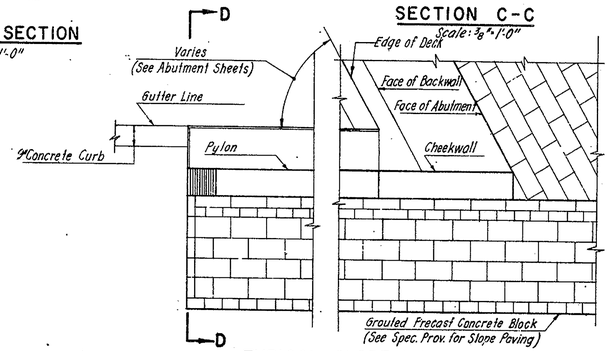
SAFETY CURB SECTION
Scale: ⅜" = 1'-0"



SECTION B-B
Scale: ⅜" = 1'-0"

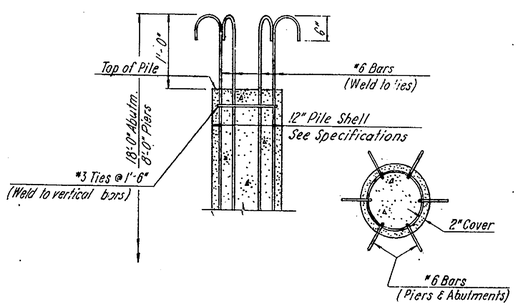


SECTION C-C
Scale: ⅜" = 1'-0"



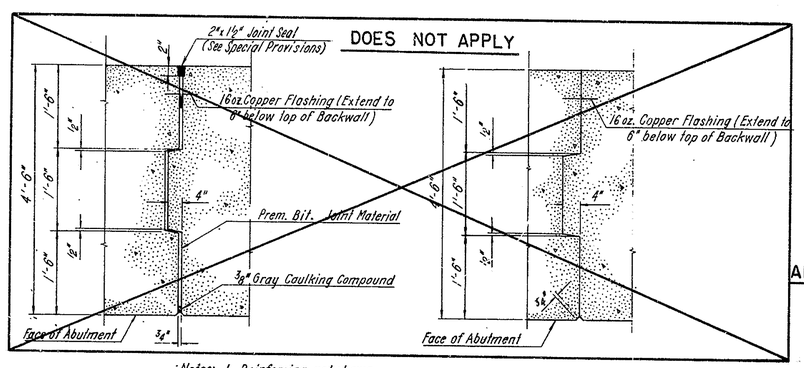
TYPICAL SLOPE PAVING DETAIL
Scale: ⅜" = 1'-0"

Notes:
1. Minimum bearing capacity of piles shall be 35 tons, except for Test Piles (See Special Provisions).
2. Pile lengths shown on footing plans are for estimating only. Actual lengths to be determined by test piles.
3. Two test piles to be driven at each footing as shown on footing plans.

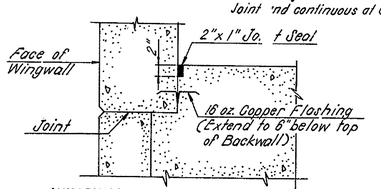


Note:
Cost of pile reinforcing to be included in the item, Cast-in-Place Concrete Piles.
For Bar List and Reinforcing Details see Sheet No. 80.

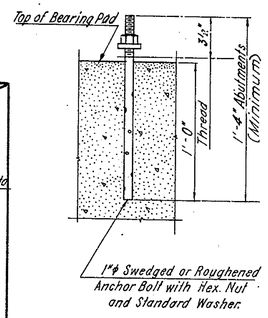
PILE DETAILS
Scale: 1" = 1'-0"



Notes: 1. Reinforcing not shown.
2. Reinforcing to be discontinuous at Contraction Joint and continuous at Construction Joints.

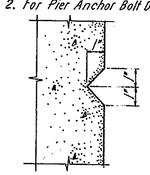


WINGWALL CONTRACTION JOINT
Scale: ¾" = 1'-0"

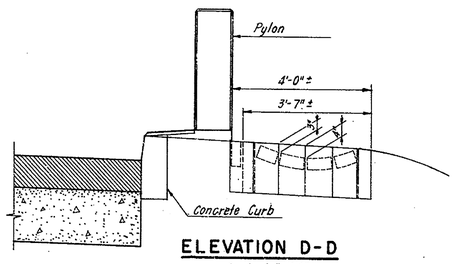


ABUTMENT ANCHOR BOLT DETAIL
Scale: 1½" = 1'-0"

NOTES:
1. Reinforcing to clear Anchor Bolts.
2. For Pier Anchor Bolt Detail, see Sheet No. 80.



DETAIL 1
Scale: 3" = 1'-0"



ELEVATION D-D
Scale: ½" = 1'-0"

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Checked by J.D.
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Checked by

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STATE HIGHWAY DEPARTMENT
DELAWARE TURNPIKE

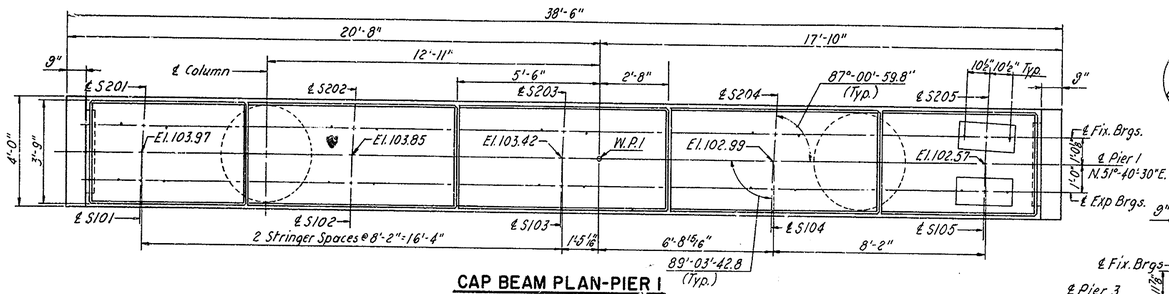
UNDERPASS - ROUTE 273
ABUTMENT DETAILS

DWG. NO.	SCALE	DATE
4 OF 16	AS NOTED	MAY 1962

CONTRACT NO.

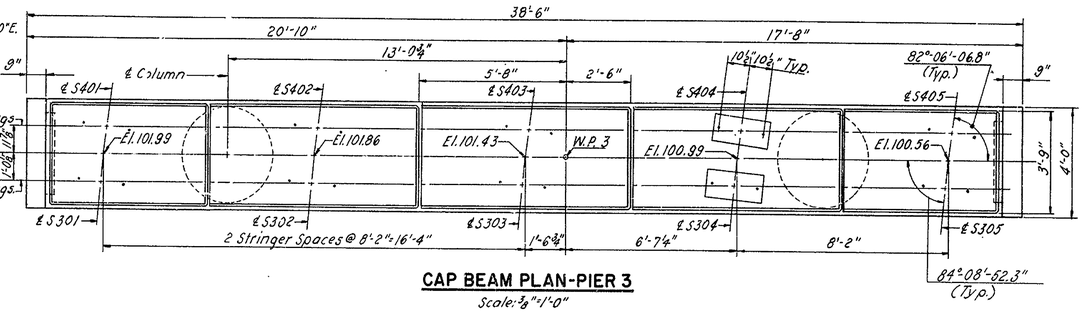
GOODKIND & O'DEA
CONSULTING ENGINEERS

COUNTY	CONTRACT	FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE		2	DEL.			78	170



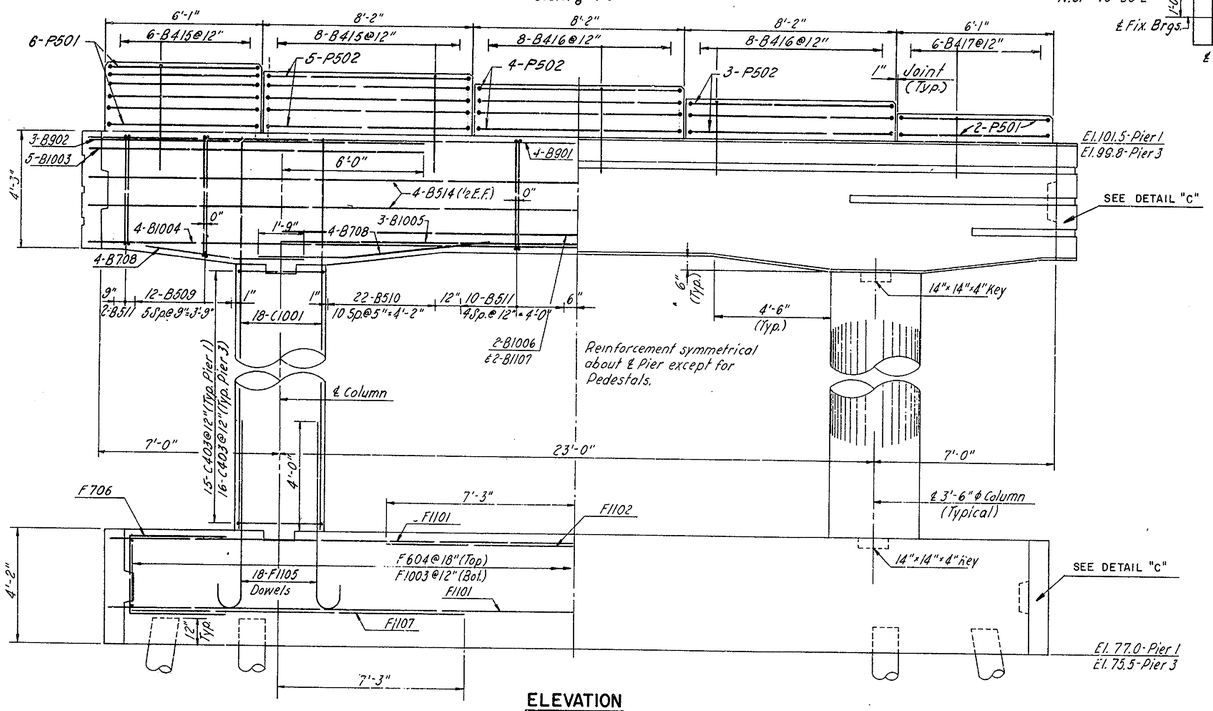
CAP BEAM PLAN-PIER 1

Scale: 3/8" = 1'-0"



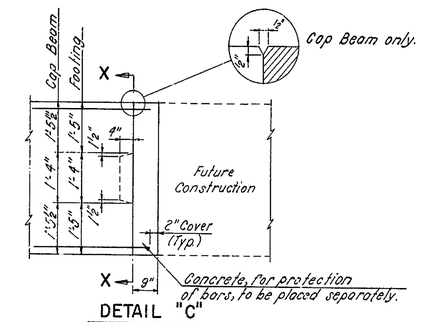
CAP BEAM PLAN-PIER 3

Scale: 3/8" = 1'-0"



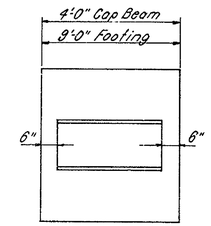
ELEVATION

Scale: 3/8" = 1'-0"



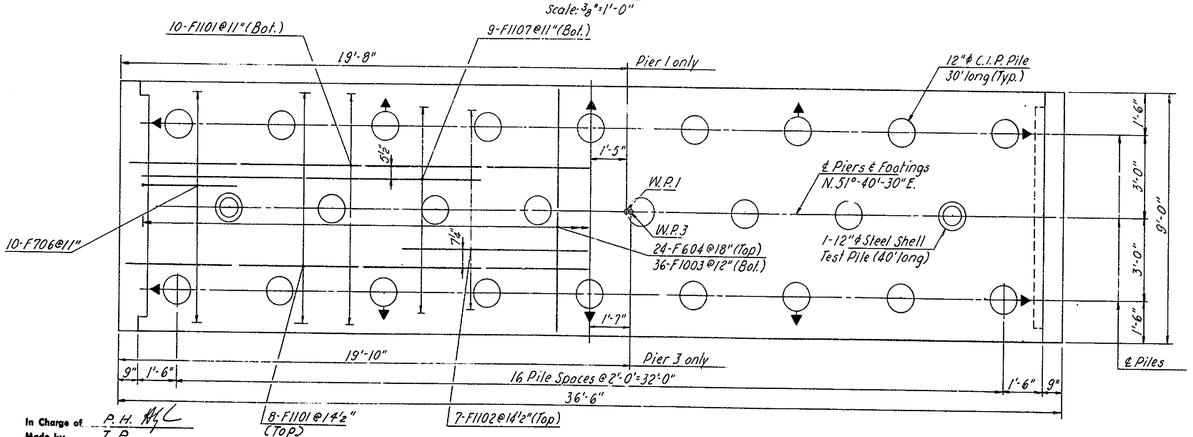
DETAIL "C"

Not to Scale



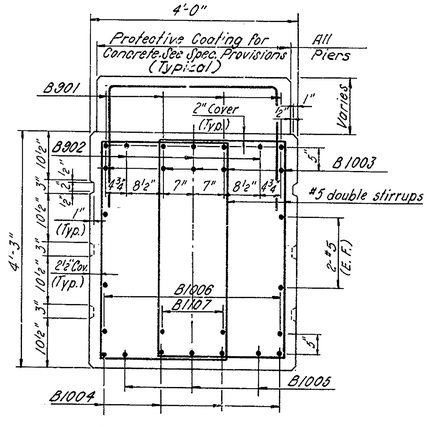
SECTION X-X

Not to Scale



FOOTING PLAN

Scale: 3/8" = 1'-0"



TYPICAL CAP BEAM SECTION

PIERS 1 & 3

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

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Made by T.P.
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DELAWARE
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DELAWARE TURNPIKE

UNDERPASS - ROUTE 273

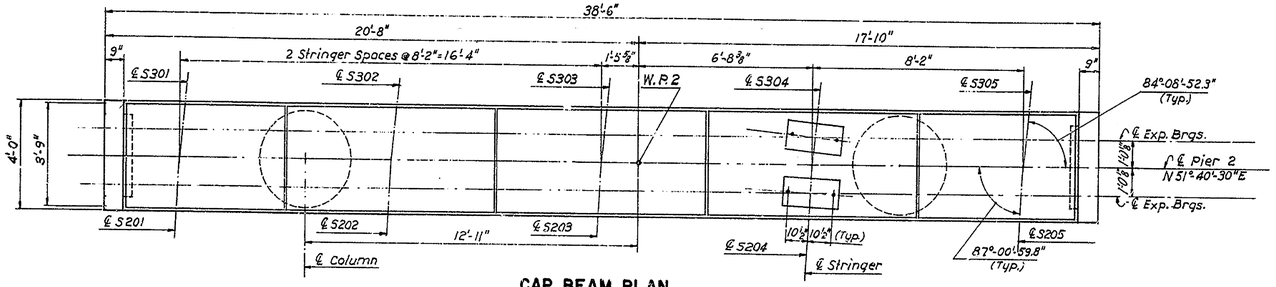
PIERS 1 & 3

DWG. NO.	SCALE	DATE
5 OF 16	AS NOTED	MAY 1962

CONTRACT NO.

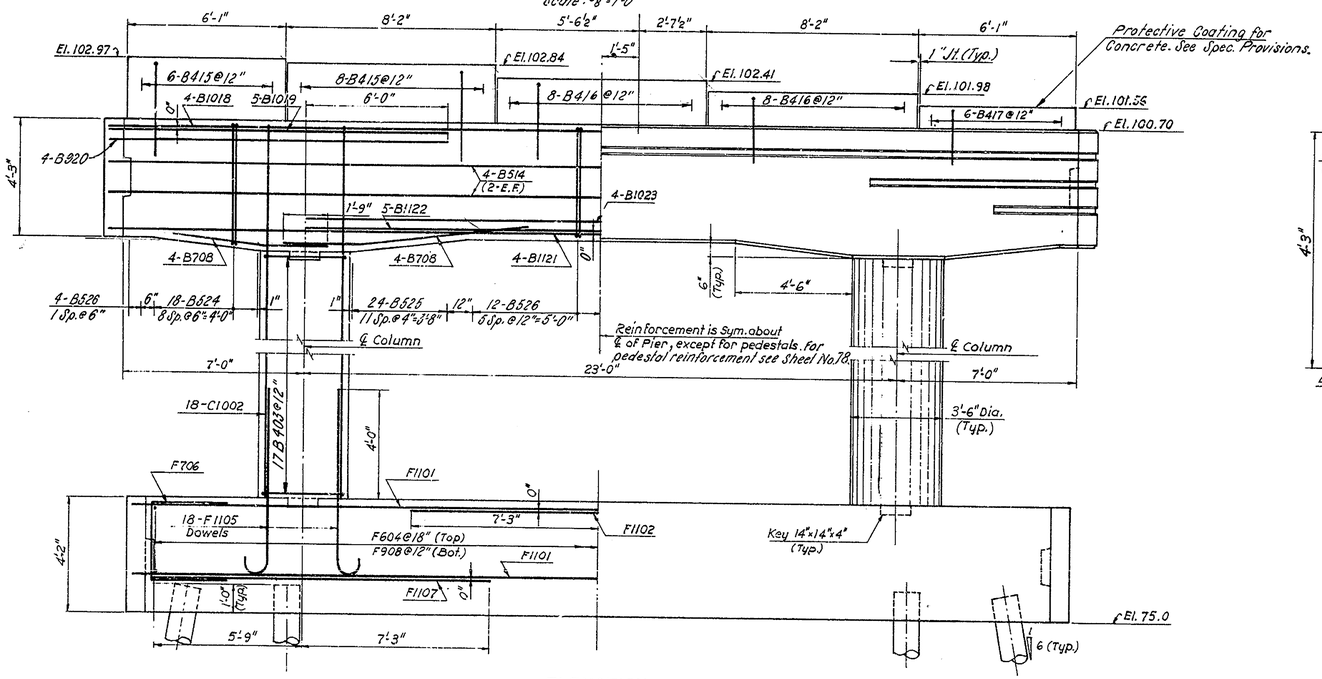
GOODKIND, O'DEA & CO.
CONSULTING ENGINEERS

COUNTY	CONTRACT	FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE		2	DEL.			79	170



CAP BEAM PLAN

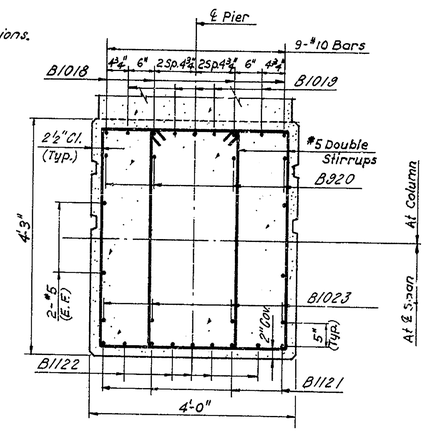
Scale: 3/8" = 1'-0"



ELEVATION

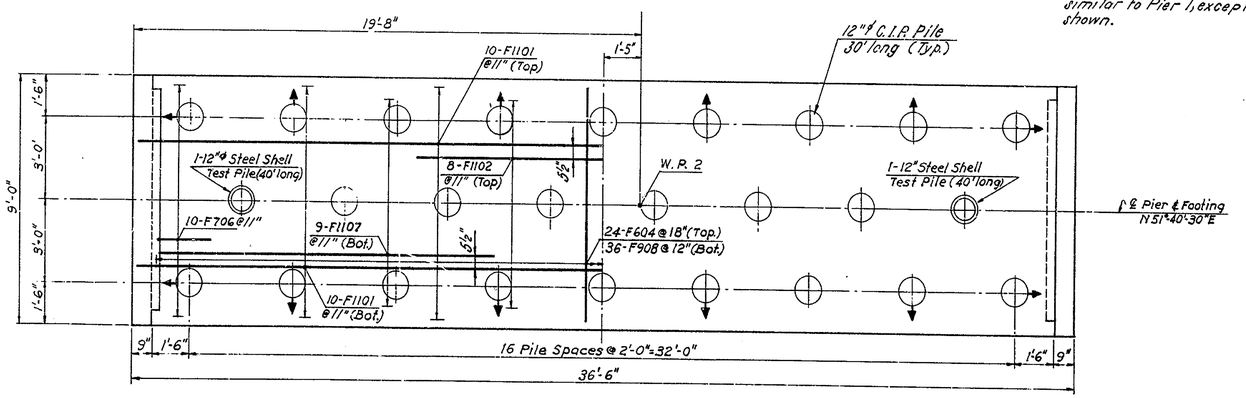
Scale: 3/8" = 1'-0"

NOTE:
Reinforcement for Pier 2 similar to Pier 1, except as shown.



CAP BEAM SECTION

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



FOOTING PLAN

Scale: 3/8" = 1'-0"

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Made by T.P.
Checked by J.D.
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STATE HIGHWAY DEPARTMENT
DELAWARE TURNPIKE

UNDERPASS - ROUTE 273

PIER 2

DWG. NO.	SCALE	DATE
6 OF 16	AS NOTED	MAY 1962

CONTRACT NO.

GOODKIND, O'DEA & CO.
CONSULTING ENGINEERS

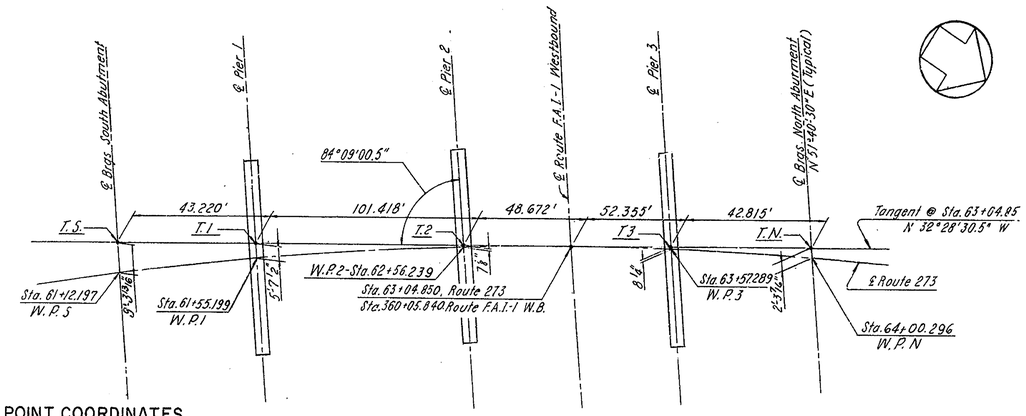
COUNTY	CONTRACT	FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE		2	DEL.			80	170

BAR LIST

MARK	SIZE	TYPE	LENGTH	NUMBER BY PIER PIER 1	PIER 2	PIER 3	TOTAL NO.	LOCATION
Footing								
F1101	11	St.	36'-0"	18	20	18	56	Longit. (Top & Bottom)
F1102	11	St.	14'-6"	7	8	7	22	Longit. (Bottom)
F1003	10	St.	8'-6"	36	–	36	72	Trans. (Bottom)
F604	6	St.	8'-6"	24	24	24	72	Trans. (Top)
F1105	11	Bt.	8'-7"	36	36	36	108	Dowel
F706	7	Bt.	9'-7"	20	20	20	60	Longit. (Ends)
F1107	11	St.	13'-0"	18	18	18	54	Longit. (Bottom)
F908	9	St.	8'-6"	–	36	–	36	Trans. (Bottom)
Columns								
C1001	10	St.	19'-3"	36	–	36	72	Vertical
C1002	10	St.	21'-3"	–	36	–	36	Vertical
C403	4	Bt.	11'-0"	30	34	32	96	Tie
Beam								
B901	9	St.	38'-2"	4	–	4	8	Longit. (Top)
B902	9	St.	13'-7"	6	–	6	12	" "
B1003	10	St.	13'-7"	10	–	10	20	" "
B1004	10	St.	38'-2"	4	–	4	8	" (Bottom)
B1005	10	St.	23'-0"	3	–	3	6	" "
B1006	10	St.	23'-0"	2	–	2	4	" "
B1107	11	St.	23'-0"	2	–	2	4	" "
B708	7	Bt.	8'-3"	16	16	16	48	Horiz. "
B509	5	Bt.	*	24	–	24	48	Stirrups
B510	5	Bt.	*	44	–	44	88	Stirrups
B511	5	Bt.	13'-6"	24	–	24	48	Stirrups
B514	5	St.	38'-2"	4	4	4	12	Horiz. (Sides)
B415	4	Bt.	10'-11"	14	14	14	42	Dowels-Pedestal
B416	4	Bt.	9'-3"	17	17	17	51	" "
B417	4	Bt.	7'-3"	6	6	6	18	" "
B1018	10	St.	38'-2"	–	4	–	4	Longit. (Top.)
B1019	10	St.	13'-7"	–	10	–	10	" "
B920	9	St.	13'-7"	–	8	–	8	" "
B1121	11	St.	38'-2"	–	4	–	4	" (Bottom)
B1122	11	St.	23'-0"	–	10	–	10	" "
B1023	10	St.	23'-0"	–	4	–	4	" "
B524	5	Bt.	*	–	38	–	38	Stirrups
B525	5	Bt.	*	–	48	–	48	"
B526	5	Bt.	13'-11"	–	32	–	32	"
Pedestal								
P501	5	Bt.	19'-2"	8	8	8	24	Horiz.
P502	5	Bt.	23'-4"	12	12	12	36	Horiz.

* Denotes series bar

In charge of P.H. Hyl
Made by T.P.
Checked by J.D.
Traced by
Checked by P.H.



TANGENT LAYOUT PLAN

No Scale

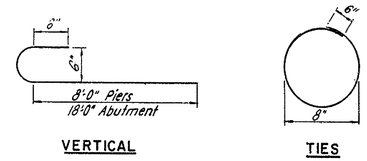
Note:
1. Offsets from tangent Layout Line are measured parallel to Substructure.

WORK POINT COORDINATES

POINT	NORTH	EAST
P.I	608863.291	426810.193
W.P.S	608705.988	426921.300
W.P.1	608740.160	426895.196
W.P.2	608822.597	426836.793
W.P.3	608907.889	426782.623
W.P.N	608944.998	426760.888

PILE REINFORCING BAR LIST

FOOTING		NUMBER BY FOOTING #3 TIES LENGTH = 2'-8"	#6 VERTICAL LENGTH = 18'-8"	#6 VERTICAL LENGTH = 8'-8"
ROUTE 273	C. Abutment	288	144	—
	Pier 1	156	–	156
	Pier 2	156	–	156
	Pier 3	156	–	156
	N. Abutment	288	144	–

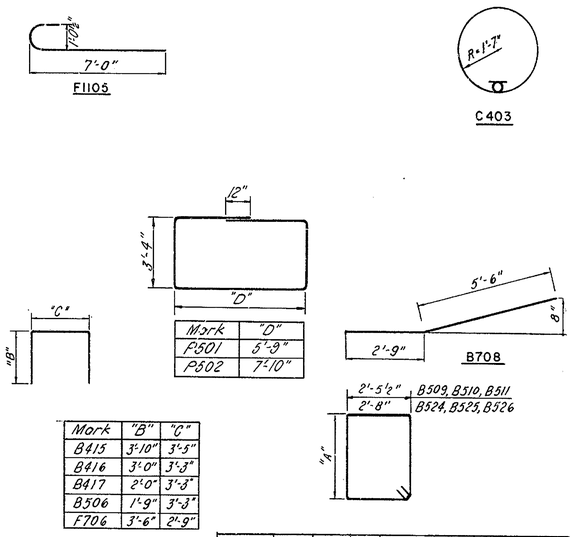


PILE REINFORCING DETAILS

No Scale

For Pile Details, see Sheet No. 77.

BENDING DETAILS

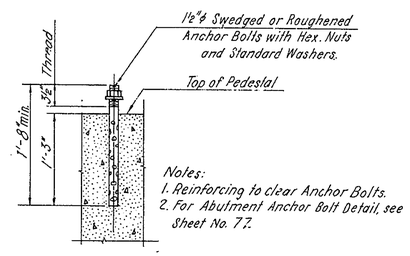


Mark	"D"
P501	5'-9"
P502	7'-10"

Mark	"B"	"C"
B415	3'-10"	3'-5"
B416	3'-0"	3'-3"
B417	2'-0"	3'-3"
B506	1'-9"	3'-3"
F706	3'-6"	2'-9"

Mark	Sets	Per Set	Δ	"A" From	"A" To	Length From	Length To
B509	8	6	1"	4'-0"	4'-5"	13'-8"	14'-6"
B510	8	11	½"	4'-0"	4'-5"	13'-8"	14'-6"
B511	4	12	–	–	3'-11"	–	13'-6"
B524	4	9	⅝"	4'-0"	4'-5"	14'-1"	14'-11"
B525	4	12	1 2/7	4'-0"	4'-5"	14'-1"	14'-11"
B526	2	9	–	–	3'-11"	–	13'-11"

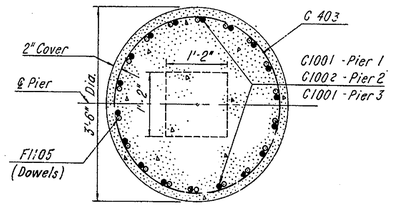
Note: All bar dimensions are out to out.



Notes:
1. Reinforcing to clear Anchor Bolts.
2. For Abutment Anchor Bolt Detail, see Sheet No. 77.

PIER ANCHOR BOLT DETAIL

Scale: 1"=1'-0"



TYPICAL COLUMN SECTION

Scale: ¾"=1'-0"

DELAWARE
STATE HIGHWAY DEPARTMENT
DELAWARE TURNPIKE

UNDERPASS-ROUTE 273

PIER DETAILS

DWG. NO.	SCALE	DATE
7 OF 16	AS NOTED	MAY 1962

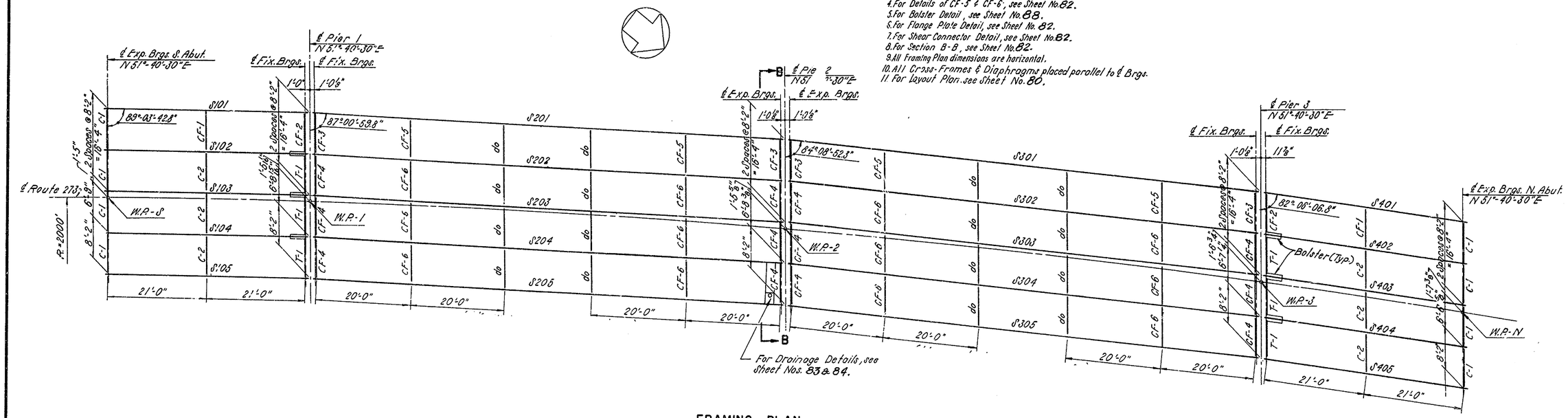
CONTRACT NO.

GOODKIND & O'DEA
CONSULTING ENGINEERS

COUNTY	CONTRACT	FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE		2	DEL.			81	170

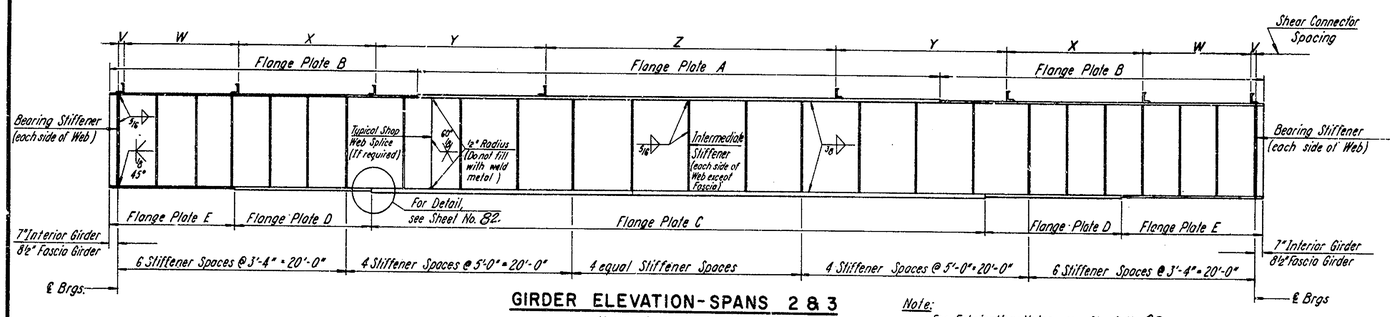
Notes:

1. For Expansion Joint Details, see Sheet No. 83
2. For Details 1, 2, 3 & 4, see Sheet No. 82
3. For Details of C-1, C-2, T-1, CF-1, CF-2, CF-3 & CF-4, see Sheet No. 82
4. For Details of CF-5 & CF-6, see Sheet No. 82.
5. For Bolster Detail, see Sheet No. 88.
6. For Flange Plate Detail, see Sheet No. 82.
7. For Shear Connector Detail, see Sheet No. 82.
8. For Section B-B, see Sheet No. 82.
9. All Framing Plan dimensions are horizontal.
10. All Cross-Frames & Diaphragms placed parallel to ℄ Brgs.
11. For Layout Plan, see Sheet No. 80.



FRAMING PLAN

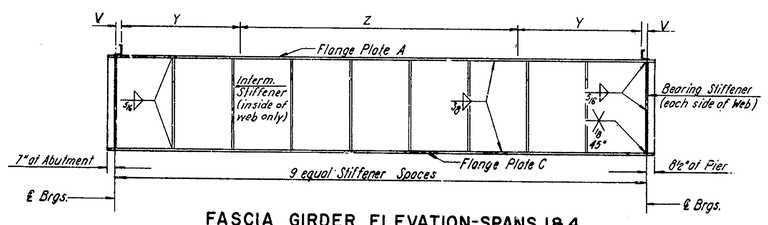
Scale: 1" = 10'



GIRDER ELEVATION - SPANS 2 & 3

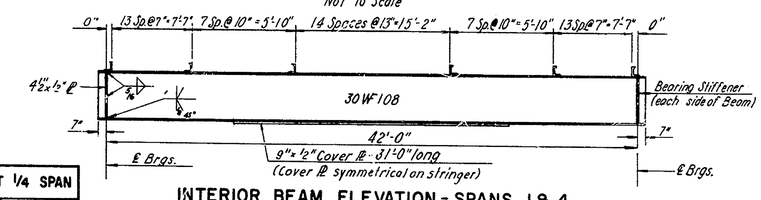
Not to Scale

Note:
For Fabrication Notes, see Sheet No. 82.



FASCIA GIRDER ELEVATION - SPANS 1 & 4

Not to Scale



INTERIOR BEAM ELEVATION - SPANS 1 & 4

Not to Scale

GIRDER SCHEDULE

GIRDER MARK	LENGTH c. to c. Brgs.	WEB SIZE	FLANGE PLATES A SIZE	A LENGTH	B SIZE	B LENGTH	C SIZE	C LENGTH	D SIZE	D LENGTH	E SIZE	E LENGTH	BEARING STIFFENER	INTER. STIFFENER	SHEAR CONNECTOR SPACING V	W	X	Y	Z	MAXIMUM MOMENTS D.L.	S.D.L.	L.L.+I	MAXIMUM SHEARS D.L.	S.D.L.	L.L.+I
S101, S401	42'-0"	60"x⅜"	16"x¾"	43'-3½"	-	-	16"x¾"	43'-3½"	-	-	-	-	7½"x¾"	7½"x½"	-3"	-	-	9 Sp. @ 15" = 11'-3"	10 Sp. @ 24" = 20'-0"	206	122	452	19.7	11.6	51.7
S201, S301	99'-0"	60"x⅝"	16"x1"	50'-6"	16"x¾"	24'-11½"	16"x¾"	67'-6"	16"x1¼"	7'-9"	16"x¾"	8'-8½"	7½"x¾"	7"x¾"	+2"	9 Sp. @ 11½" = 8'-3"	9 Sp. @ 13" = 9'-9"	8 Sp. @ 17" = 11'-4"	20 Sp. @ 24" = 40'-0"	1266	680	1386	51.0	27.5	59.6
S202-S204 S302-S304	99'-0"	60"x⅝"	16"x1"	47'-6"	16"x¾"	26'-9"	16"x2"	69'-6"	16"x1⅜"	6'-5"	16"x¾"	8'-11"	7½"x¾"	7"x¾"	-2"	10 Sp. @ 11½" = 9'-2"	9 Sp. @ 13" = 9'-9"	9 Sp. @ 17" = 12'-9"	18 Sp. @ 24" = 36'-0"	1305	605	1368	52.7	24.4	59.3
S105, S405	42'-0"	60"x⅜"	16"x¾"	43'-3½"	-	-	16"x¾"	43'-3½"	-	-	-	-	7½"x¾"	7½"x½"	-3"	-	-	9 Sp. @ 15" = 11'-3"	10 Sp. @ 24" = 20'-0"	198	103	427	18.9	9.8	49.2
S205, S305	99'-0"	60"x⅝"	16"x⅞"	43'-5"	16"x¾"	28'-6"	16"x1⅞"	69'-0	16"x1¼"	6'-3"	16"x¾"	9'-5½"	7½"x¾"	7"x¾"	+1"	7 Sp. @ 13½" = 7'-7"	9 Sp. @ 14" = 10'-6"	8 Sp. @ 17½" = 11'-4"	20 Sp. @ 24" = 40'-0"	1179	571	1247	47.5	23.1	54.0

MARK	DEFLECTION AT MIDSPAN STEEL	CONC. DECK	S.D.L.		TOTAL	DEFLECTION AT 1/4 SPAN STEEL	CONC. DECK	S.D.L.		TOTAL
S101, S401	-	⅛"	-		⅛"	-	-	-		-
S102-S104 S402-S404	⅛"	⅜"	⅛"		⅝"	1/16"	5/16"	1/16"		7/16"
S105, S405	—	⅛"	—		⅛"	—	—	—		—
S201, S301	½"	1⅛"	9/16"		2 3/16"	⅜"	⅞"	7/16"		1 11/16"
S202-S204 S302-S304	½"	1¼"	½"		2¼"	⅜"	15/16"	⅜"		1 11/16"
S205, S305	7/16"	1¼"	½"		2 3/16"	5/16"	15/16"	⅜"		1⅝"

* On inside face of web only.

Note:
1. For Details of S102 - S104 & S402 - S404 see "Interior Beam Elevation Spans 1 & 4"

In charge of P.H. KYL
Made by T.P.
Checked by J.D.
Traced by
Checked by

DELAWARE
STATE HIGHWAY DEPARTMENT
DELAWARE TURNPIKE

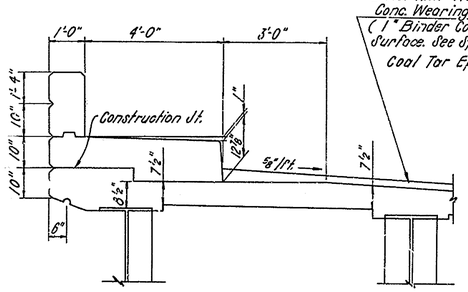
UNDERPASS - ROUTE 273

FRAMING PLAN

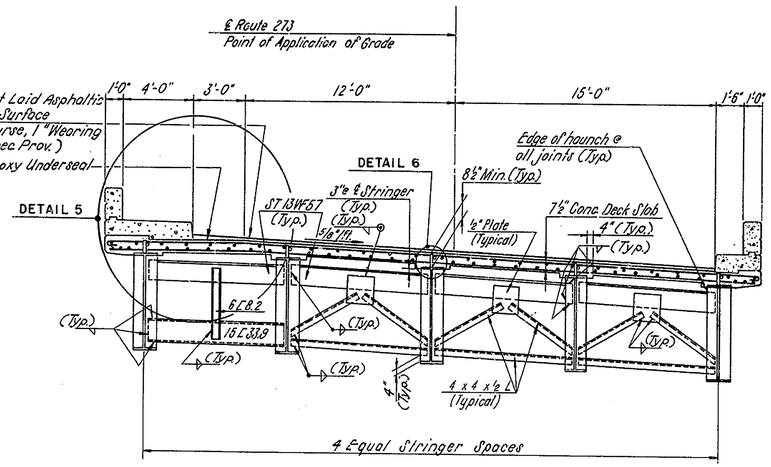
DWG. NO.	SCALE	DATE	
8 OF 16	AS NOTED	MAY 1962	GOODKIND & O'DEA CONSULTING ENGINEERS
CONTRACT NO.			

COUNTY	CONTRACT	FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE		2	DEL			82	170

~~INTERSTATE HIGHWAY ROUTE F.A.I. 1~~
~~UNDER ROUTE 273 SOUTHBOUND~~

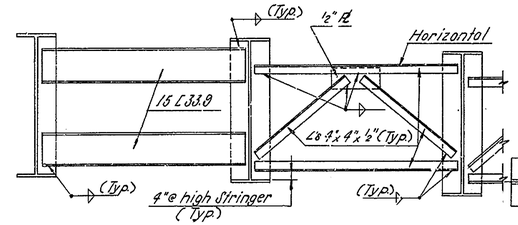


DETAIL 5
Scale: ½"=1'-0"



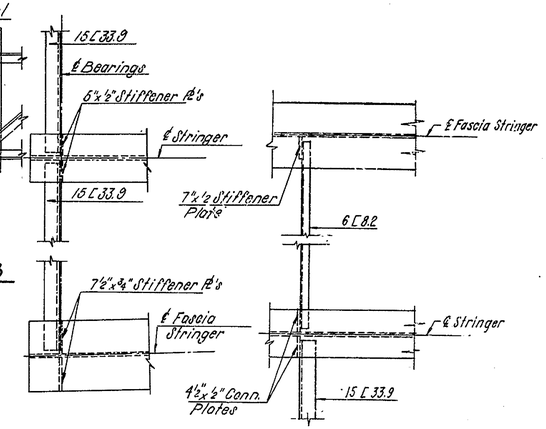
SECTION B-B
Scale: ¼"=1'-0"

Notes:
1. For Location of Section B-B, see Sheet No. 81.
2. Shear Connectors not shown.
3. For Sidewalk and Parapet reinforcing and dimensions, see Sheet No. 85.



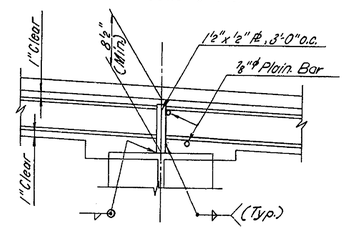
CF-5 CF-6

INTERMEDIATE CROSS FRAMES - SPANS 2&3
Scale: ⅜"=1'-0"



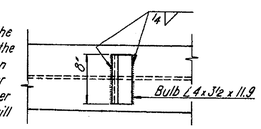
DETAIL 3
Scale: ¾"=1'-0"

DETAIL 4
Scale: ¾"=1'-0"

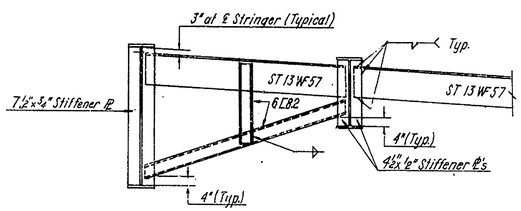


DETAIL 6
Scale: 1"=1'-0"

Note:
An alternate type of shear connector for the composite construction may be allowed by the Engineer. A drawing showing the type, design and details for the proposed alternate shear connector must be submitted to the Engineer for approval before permission for its use will be granted.

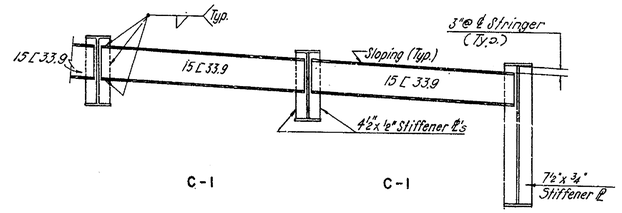


SHEAR CONNECTOR DETAIL
Scale: 1"=1'-0"



CF-2 T-1

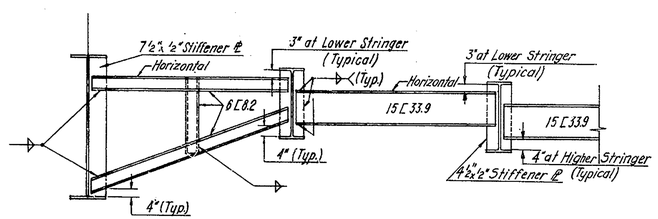
AT PIERS



C-1 C-1

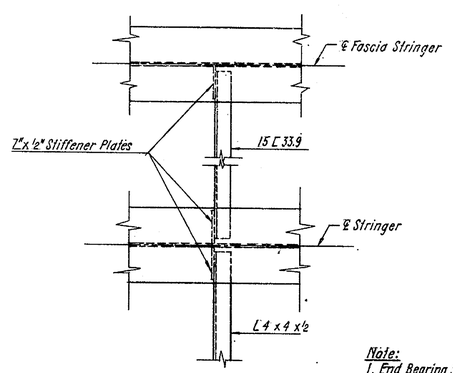
AT ABUTMENTS

END CROSS FRAMES - SPANS 1 & 4
Scale: ⅜"=1'-0"



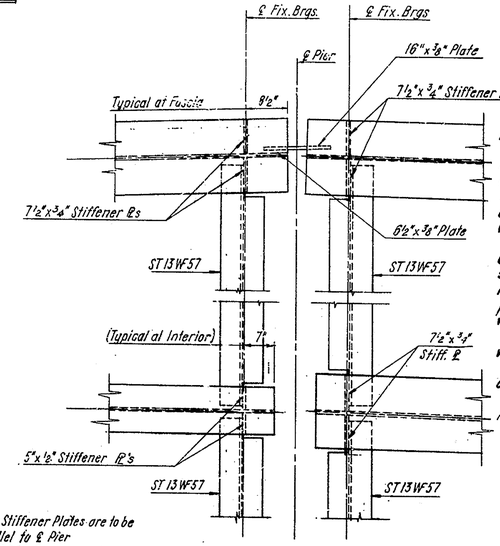
CF-1 C-2

INTERMEDIATE CROSS FRAMES - SPANS 1&4
Scale: ⅜"=1'-0"



DETAIL 1
Scale: ¾"=1'-0"

Note:
1. End Bearing Stiffener Plates are to be placed parallel to ℄ Pier
2. For Detail of Diaphragms at Pier with Expansion Brgs., See Sheet No. 83.
3. For Cross Frame Layout, see "Framing Plan", Sheet No. 81.
4. All welds shown are 5/16 unless otherwise noted.
5. For Location of Details 1, 2, 3, & 4, see Sheet No. 81.



DETAIL 2
Scale: ¾"=1'-0"

NOTES

All structural steel to be welded shall conform to A.S.T.M. Spec. A-373, except as noted in Spec. Provs.

All welding shall comply with the provisions of the current Specifications for Welded Highway and Railway Bridges of the American Welding Society. (See Special Provisions)

Shop splices in the web plates will be allowed as shown.

All Stiffener Plates and Cross Frame Connection Plates shall be vertical when Stringers are in final erected position.

Flange plates of girders to be completely welded before assembly with web plates. Particular attention is directed to the requirement that the ends of all butt welds in the flanges shall be made with extensions as described in Article 505-k of the 1956 A.W.S. Specifications.

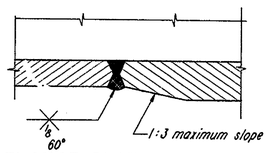
Web plate splices shall be entirely welded with complete penetration groove welds in advance of assembly. In order to avoid locked in stresses when welding flange plates to web plates, welding shall begin at the center of the girders and proceed outward to the ends, leaving the ends free to move as the welds contract. Also when welding the flange plates to the web plates, special precaution must be exercised in the positioning of the electrodes so that the major portion of the welding heat is applied to the thicker flange plates.

Finished girders shall be true to line and shape and free from any distortion, warpage or other shrinkage losses.

Loss of Camber in Girder due to shrinkage shall be compensated for by additional camber to be determined by Fabricator.

Beams and Girders to be cut and ground so that ends are vertical in their final erected position.

No field splices of Girders will be permited.



FLANGE PLATE DETAIL
Not to Scale

Note:
Detail typical for all flange plate splices.

In charge of P.H. AGL
Made by T.P.
Checked by J.D.
Traced by
Checked by

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STATE HIGHWAY DEPARTMENT
DELAWARE TURNPIKE

UNDERPASS - ROUTE 273

STEEL DETAILS

DWG. NO.	SCALE	DATE
9 OF 16	AS NOTED	MAY 1962

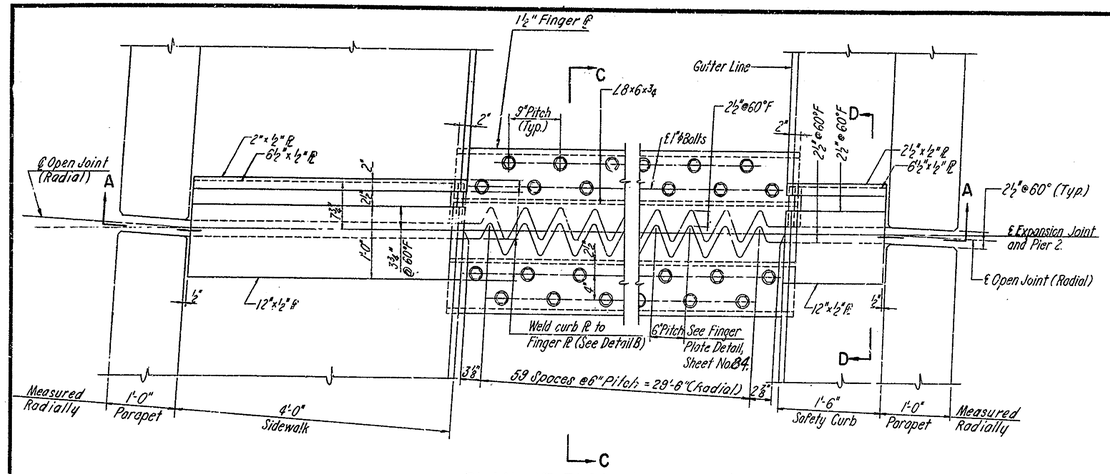
CONTRACT NO.

GOODKIND & O'DEA
CONSULTING ENGINEERS

COUNTY	CONTRACT	FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE		2	DEL.			83	170

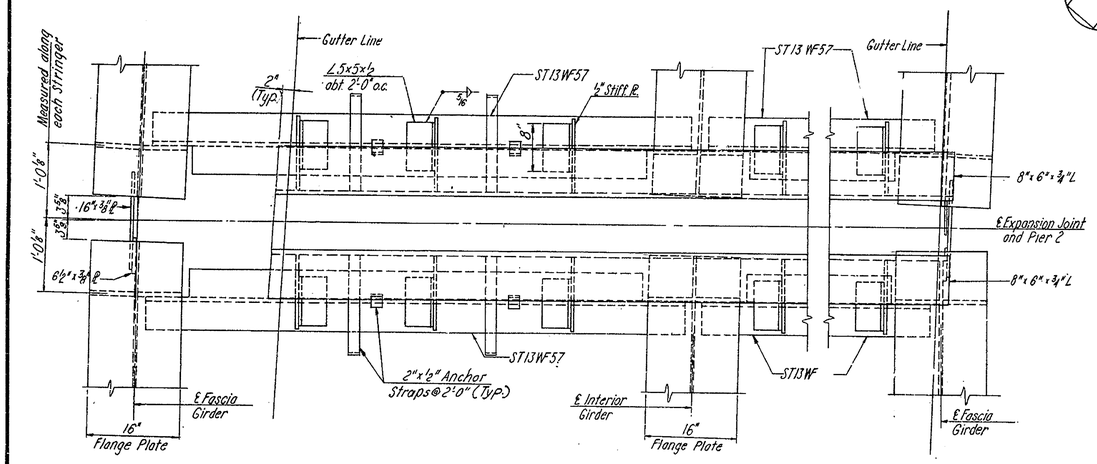
~~INTERSTATE HIGHWAY ROUTE F.A.I. 1~~

~~UNDER ROUTE 273 SOUTHBOUND~~



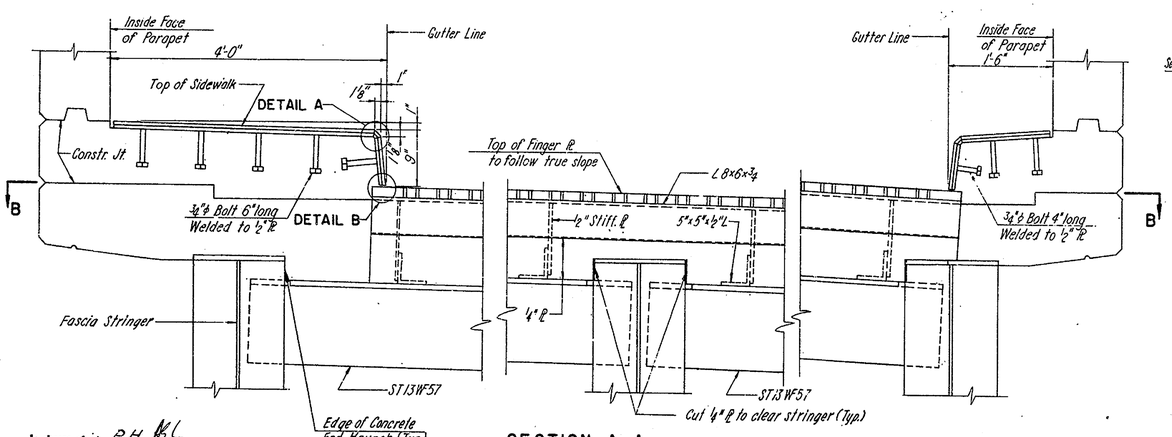
PLAN AT EXPANSION JOINT

Scale: 1" = 1'-0"



SECTION B-B

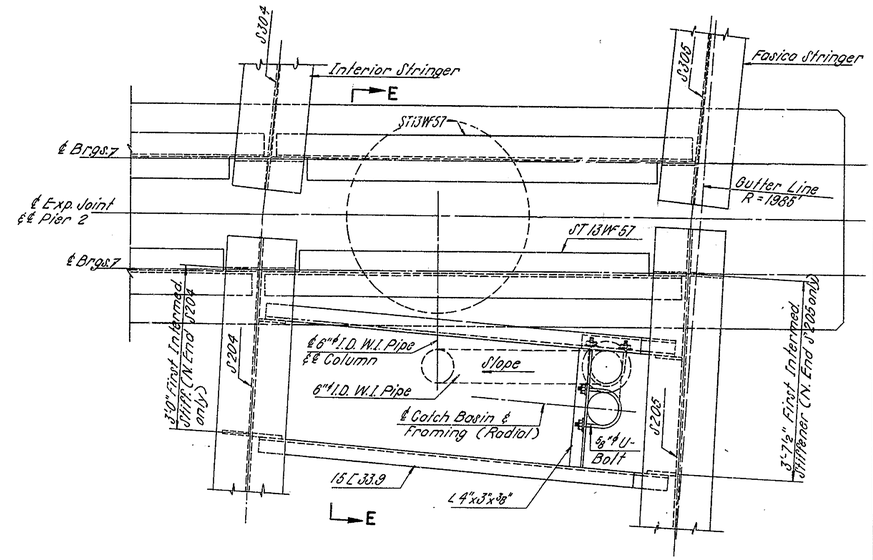
Scale: 1" = 1'-0"



SECTION A-A

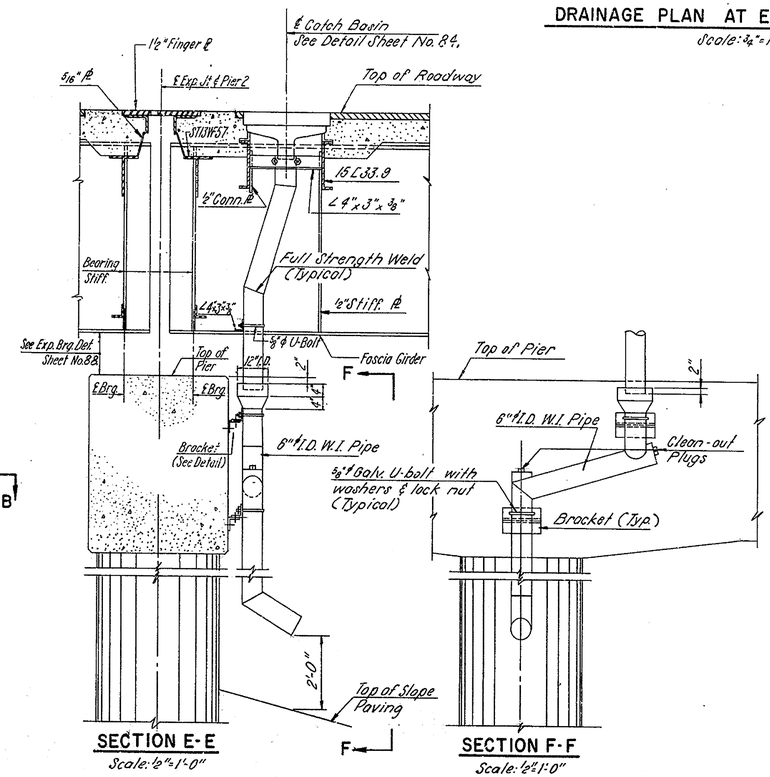
Scale: 1" = 1'-0"

Notes: 1. For Sections C-C & D-D see Sheet No. 84.
2. For Details A & B, see Sheet No. 84.
3. For Finger Plate and Bolt Details see Sheet No. 84.



DRAINAGE PLAN AT EXPANSION JOINT-PIER 2

Scale: ¾" = 1'-0"



SECTION E-E

Scale: ½" = 1'-0"

SECTION F-F

Scale: ½" = 1'-0"

Note: 1. For Catch Basin and Drainage Details, see Sheet No. 84.

In charge of P.H. ML
Made by T.P.
Checked by J.D.
Traced by
Checked by

DELAWARE
STATE HIGHWAY DEPARTMENT
DELAWARE TURNPIKE

UNDERPASS - ROUTE 273

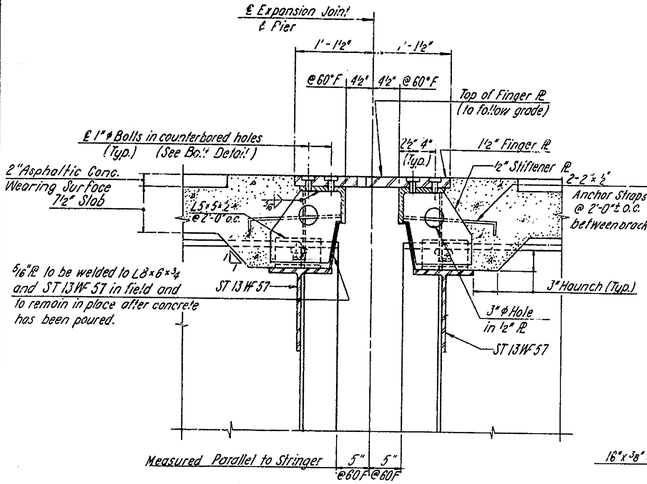
STEEL EXPANSION JOINT

DWG. NO.	SCALE	DATE
10 OF 16	AS NOTED	MAY 1964

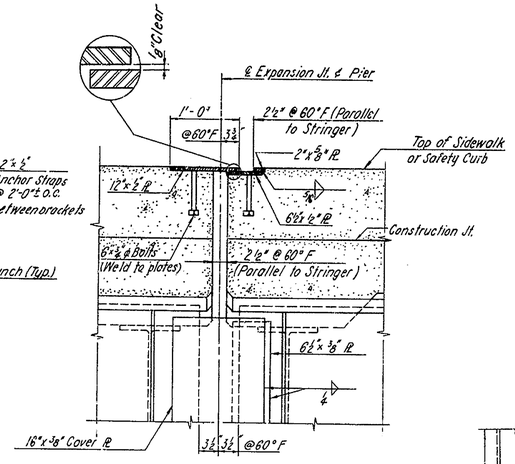
CONTRACT NO.

GOODKIND & O'DEA
CONSULTING ENGINEERS

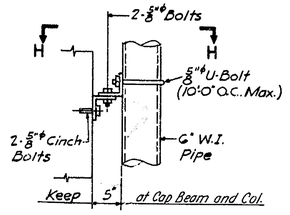
COUNTY	CONTRACT	FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE		2	DEL.			84	170



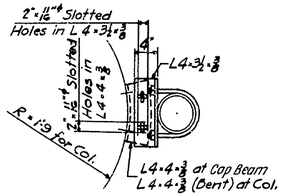
SECTION C-C
Scale: 1" = 1'-0"



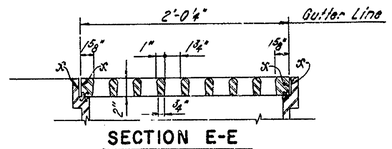
SECTION D-D
Scale: 1" = 1'-0"



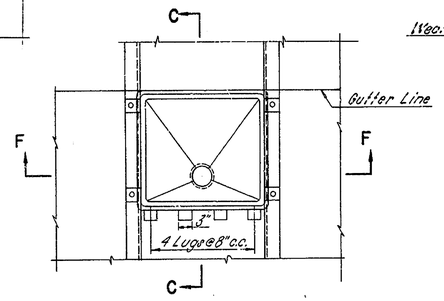
BRACKET DETAIL
Scale: 1" = 1'-0"



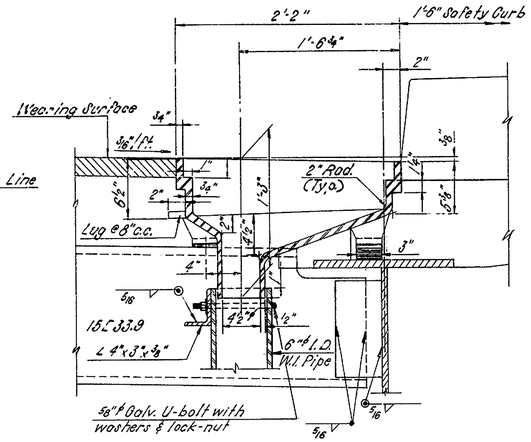
SECTION H-H
Scale: 1" = 1'-0



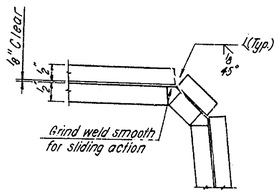
SECTION E-E
Scale: 1½" = 1'-0"



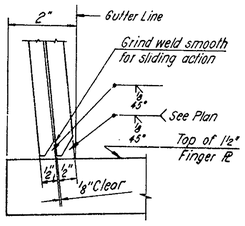
PLAN
Scale: ¼" = 1'-0"



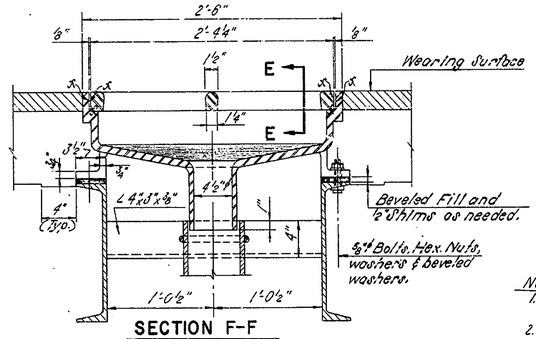
SECTION C-C
Scale: 1½" = 1'-0"



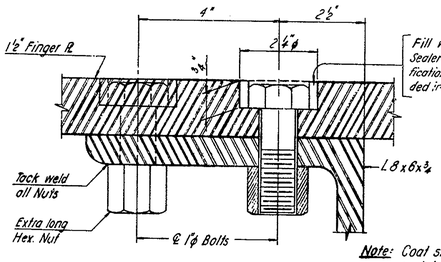
DETAIL A
Scale: 6" = 1'-0"



DETAIL B
Scale: 6" = 1'-0"

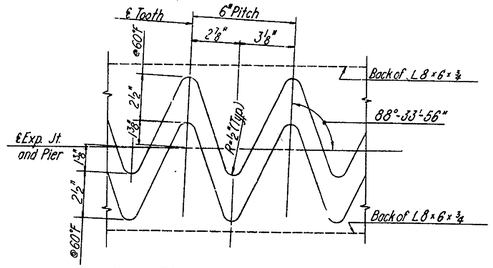


SECTION F-F
Scale: 1½" = 1'-0"



BOLT DETAIL
Scale: 6" = 1'-0"

Note: Coat shank of bolts with rust inhibiting compound and oil all nuts.



FINGER PLATE DETAIL-RT. 273
Scale: 3" = 1'-0"

Notes:
1. For location of Sections C-C & D-D, see Sheet No. 83.
2. For location of Details A, B & C, see Sheet No. 83.

Note:
1. For location of Catch Basin, see Sheet No. 85.

Notes:
1. Payment for all Toothed Plates and connections shall be included in the item "Structural Steel."
2. Payment for Bridge Catch Basin shall be made at the L.Sprice bid for "Bridge Catch Basin"
3. Payment for all W.I. Pipes and connections shall be included in the L.S. item "Bridge Drainage Pipes."

In charge of P.H.
Made by N.E.
Checked by J.D.
Traced by
Checked by

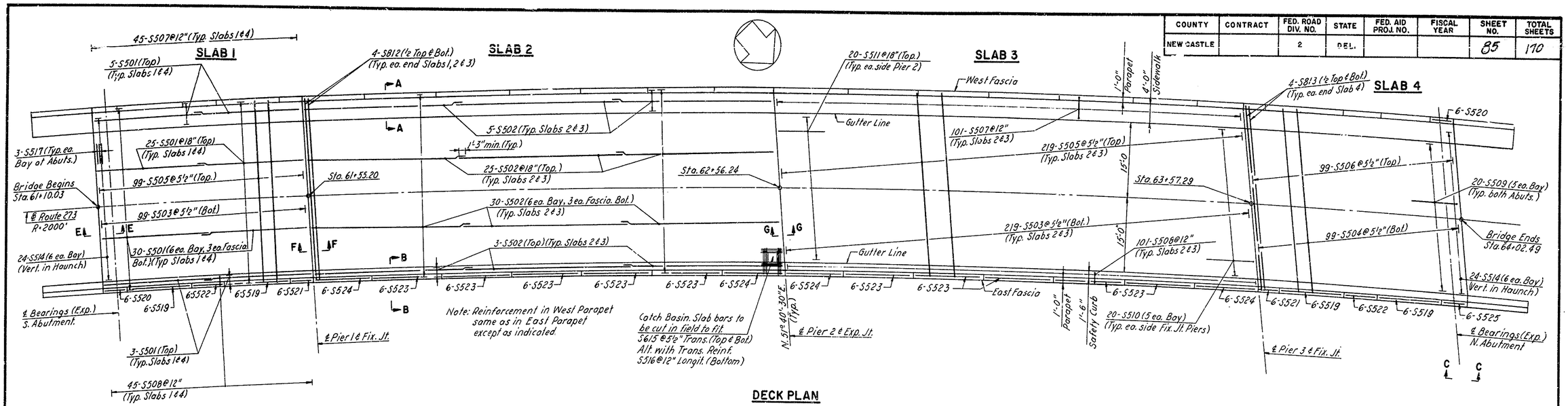
DELAWARE
STATE HIGHWAY DEPARTMENT
DELAWARE TURNPIKE

UNDERPASS - ROUTE 273

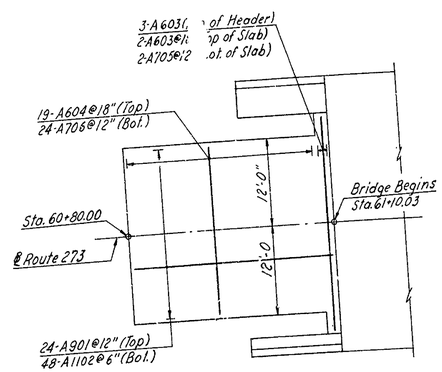
EXPANSION AND DRAINAGE DETAILS

DWG. NO.	SCALE	DATE	
11 OF 16	AS NOTED	MAY 1962	GOODKIND & O'DEA CONSULTING ENGINEERS
CONTRACT NO.			

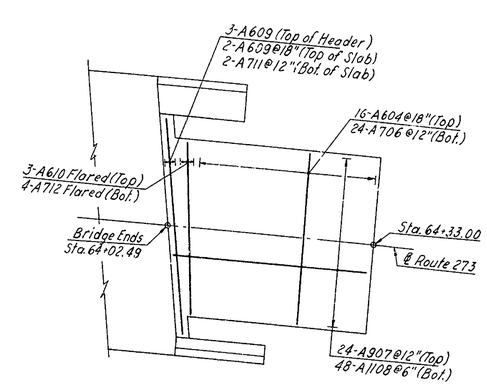
COUNTY	CONTRACT	FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE		2	DEL.			85	170



DECK PLAN



SOUTH APPROACH

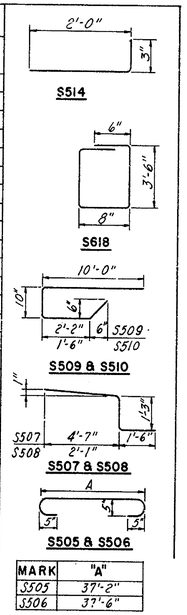


NORTH APPROACH

APPROACH SLABS

BAR LIST

MARK	SIZE	TYPE	LENGTH	NUMBER BY SLAB 1	2	3	4	TOTAL	LOCATION AND DESCRIPTION
S501	5	St.	23'-1"	126	–	–	126	252	Longit. (Top & Bot.)
S502	5	St.	34'-5"	–	189	189	–	378	Longit. (Top & Bot.)
S503	5	St.	37'-2"	99	219	219	–	537	Trans. (Bot.)
S504	5	St.	37'-6"	–	–	–	99	99	Trans. (Bot.)
S505	5	Bt.	38'-4"	99	219	219	–	537	Trans. (Top.)
S506	5	Bt.	38'-8"	–	–	–	99	99	Trans. (Top)
S507	5	Bt.	7'-4"	45	101	101	45	292	Trans. (Sidewalk)
S508	5	Bt.	4'-10"	45	101	101	45	292	Trans. (Safety Curb)
S509	5	Bt.	13'-8"	20	–	–	20	40	Longit. Ends at Abutments
S510	5	Bt.	13'-0"	20	20	20	20	80	Longit. Ends at Piers (Fixed Joint)
S511	5	St.	10'-0"	–	20	20	–	40	Longit. Ends at Piers (Expansion Joint)
S812	8	St.	37'-2"	8	8	8	–	24	Trans. Ends (Top & Bot.)
S813	8	St.	37'-6"	–	–	–	8	8	Trans. Ends (Top & Bot.)
S514	5	Bt.	2'-3"	24	–	–	24	48	Vert. in Haunch at Abutments
S615	6	St.	5'-0"	–	12	–	–	12	Trans. (Top. & Bot.) of Catch Basin
S516	5	St.	5'-9"	–	6	–	–	6	Longit (Bot.) of Catch Basin
S517	5	St.	6'-9"	12	–	–	12	24	Trans.-Haunch at Abutments
S618	6	Bt.	8'-8"	178	400	400	178	1156	Vert. Stirrups in Parapet
S519	5	St.	13'-8"	24	–	–	24	48	Longit.-Parapet
S520	5	St.	4'-8"	12	–	–	6	18	Longit.-Parapet
S521	5	St.	4'-5"	12	–	–	12	24	Longit.-Parapet
S522	5	St.	6'-9"	12	–	–	12	24	Longit.-Parapet
S523	5	St.	14'-10"	–	60	60	–	120	Longit.-Parapet
S524	5	St.	12'-3"	–	24	24	–	48	Longit.-Parapet
S525	5	St.	4'-6"	–	–	–	6	6	Longit.-Parapet (East Parapet only)

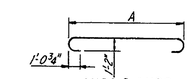


MARK	"A"
S505	37'-2"
S506	37'-6"

BAR LIST-APPROACH SLABS

MARK	SIZE	TYPE	LENGTH	NUMBER BY SLAB S. APPR.	N. APPR.	TOTAL	LOCATION AND DESCRIPTION
A901	9	St.	29'-6"	24	—	24	Longit. (Top.)
A1102	11	Bt.	32'-8"	48	—	48	Longit. (Bot.)
A603	6	St.	29'-6"	5	—	5	Trans. (Top & Header)
A604	6	St.	23'-6"	19	16	35	Trans. (Top)
A705	7	St.	29'-6"	2	—	2	Trans. (Bot.)
A706	7	St.	23'-6"	24	24	48	Trans. (Bot.)
A907	9	St.	*	—	24	24	Longit. (Top) 6 sets of 4; From 31'-10" to 28'-1"; Δ= 9"
A1108	11	Bt.	*	—	48	48	Longit. (Bot.) 6 sets of 8; From 35'-0" to 31'-3"; Δ= 9"
A609	6	St.	29'-10"	—	5	5	Trans. (Top & Header)
A610	6	St.	23'-8"	—	3	3	Trans. (Top)
A711	7	St.	29'-10"	—	2	2	Trans. (Bot.)
A712	7	St.	23'-8"	—	4	4	Trans. (Bot.)

*Denotes Series Bar



A1102 & A1108

MARK	"A"
A1102	29'-6"
A1108	Varies from 28'-1" to 31'-10" Δ= 9"

NOTE:
For Layout Plan, see Sheet No. 80.

In charge of P.H.
Made by N.E.
Checked by J.D.
Traced by
Checked by

DELAWARE
STATE HIGHWAY DEPARTMENT
DELAWARE TURNPIKE

UNDERPASS-ROUTE 273

DECK PLAN

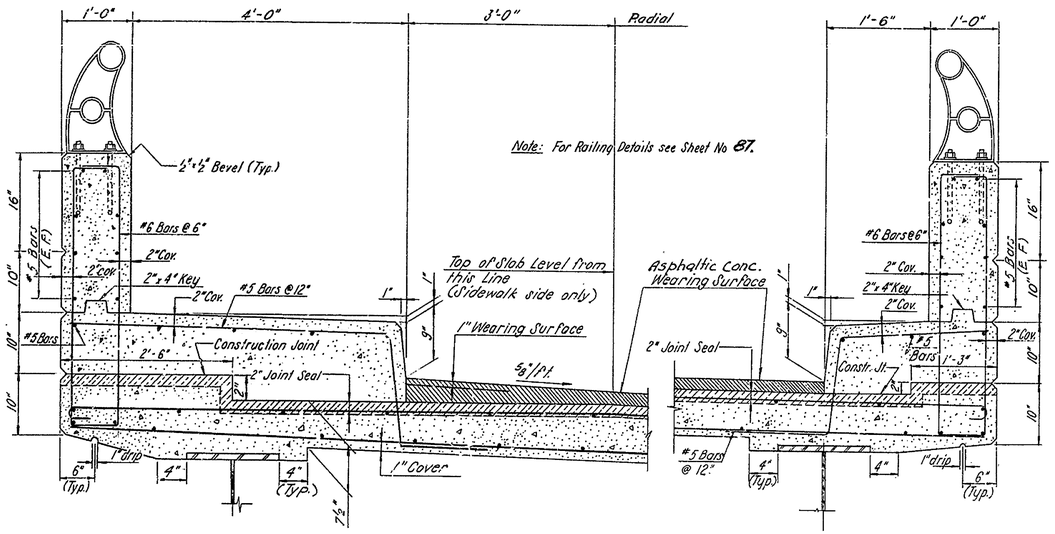
DWG. NO	SCALE	DATE
12 OF 16	1"=10'	MAY 1962

CONTRACT NO.

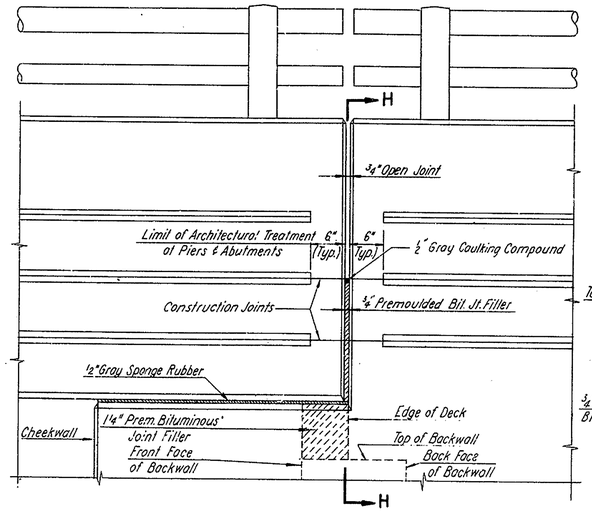
GOODKIND & O'DEA
CONSULTING ENGINEERS

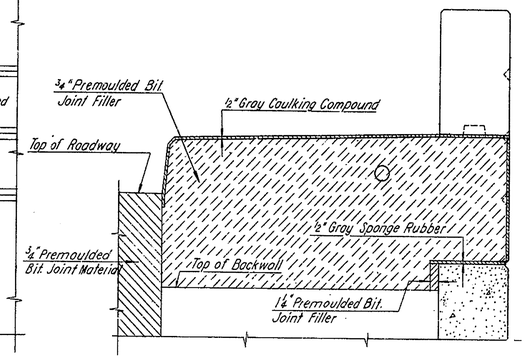
COUNTY	CONTRACT	FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE		2	DEL.			86	170

~~INTERSTATE HIGHWAY ROUTE F.A.I. 1~~
~~UNDER ROUTE 273 SOUTHBOUND~~



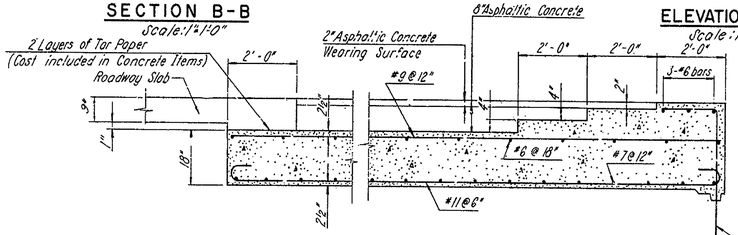
SECTION A-A
Scale: 1"=1'-0"





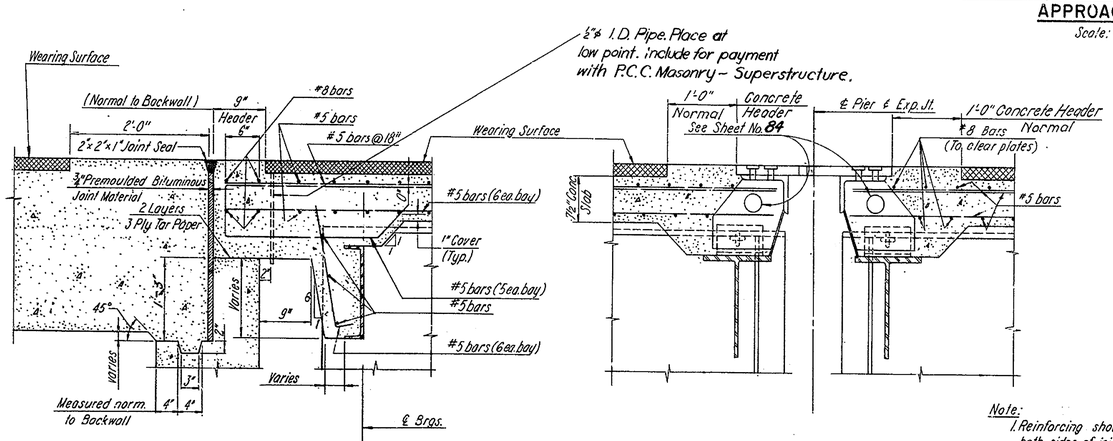
SECTION H-H
Scale: 1"=1'-0"

SECTION B-B
Scale: 1½"=1'-0"



LONGITUDINAL SECTION THRU APPROACH SLAB
Scale: ½" = 1'-0"

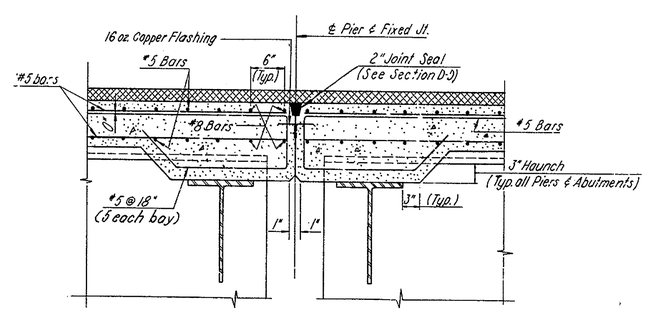
ELEVATION C-C
Scale: 1"=1'-0"



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

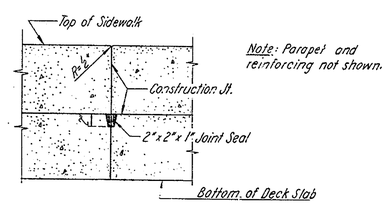
SECTION G-G
Scale: 1½"=1'-0"

Note:
1. Reinforcing shown is typical both sides of joints.
2. For Structural Steel Details, see Sheet No. 82.
3. For Expansion Joint Details, see Sheet No. 84.



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

Note:
For Location of Sections see "Deck Plan" Sheet No 85.



Note: Parapet and reinforcing not shown.

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

In charge of P.H. RJL
Made by N.E.
Checked by J.D.
Traced by P.H.
Checked by P.H.

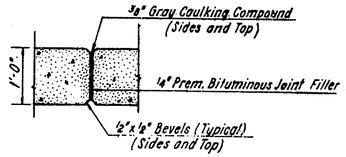
DELAWARE
STATE HIGHWAY DEPARTMENT
DELAWARE TURNPIKE

UNDERPASS - ROUTE 273
DECK DETAILS

DWG. NO.	SCALE	DATE	
13 OF 16	AS NOTED	MAY 1962	GOODKIND & O'DEA CONSULTING ENGINEERS
CONTRACT NO.			

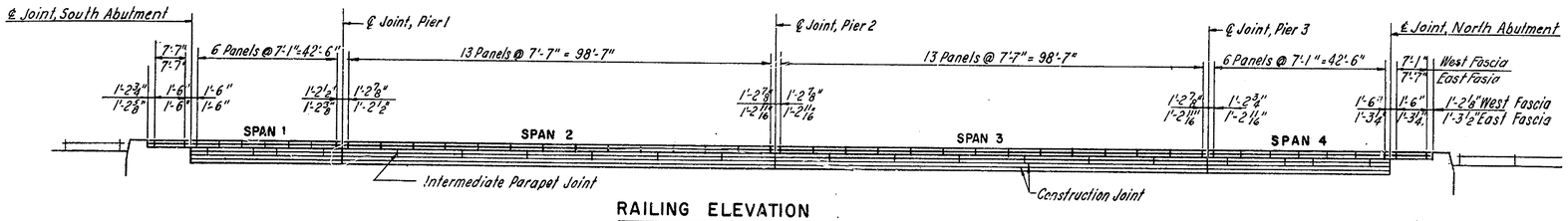
COUNTY	CONTRACT	FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE		2	DEL.			87	170

~~INTERSTATE HIGHWAY ROUTE F.A.I. 1~~
~~UNDER ROUTE 273 SOUTHBOUND~~



INTERMEDIATE PARAPET JOINT DETAIL

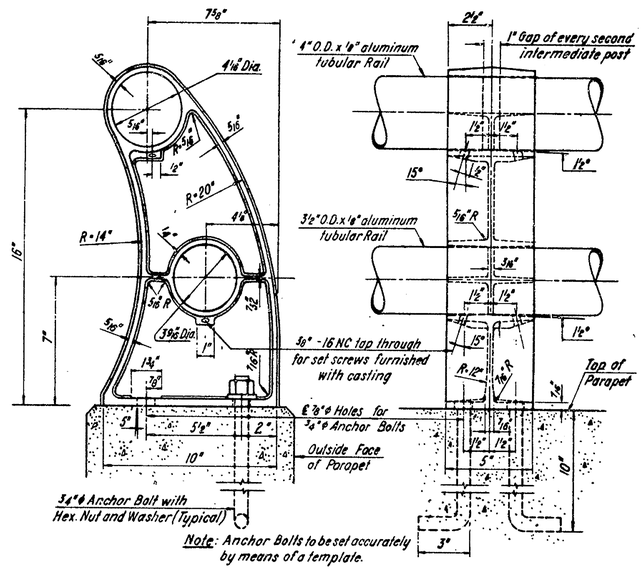
Scale: 3/4" = 1'-0"



RAILING ELEVATION

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

Notes:
1. Intermediate Parapet Joints to be located at the mid-point of alternate railing panels, except as shown
2. No reinforcing to pass thru Intermediate Parapet Joints.
3. 1" clearance to be provided at all rail ends except use 2 1/2" at Pier 2.
4. All dimensions shown in Railing Elevations are horizontal.



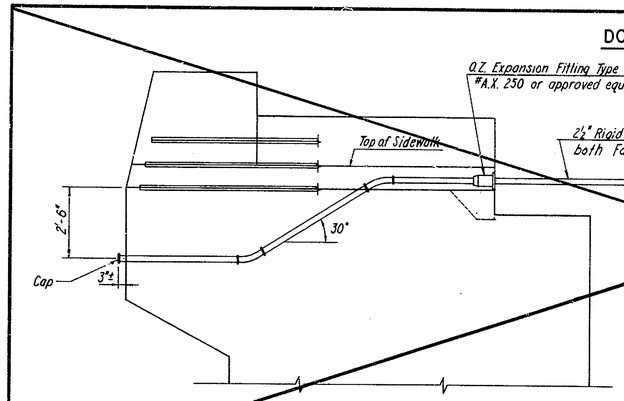
Note: Anchor Bolts to be set accurately by means of a template.

RAILING DETAILS

Scale: 3" = 1'-0"

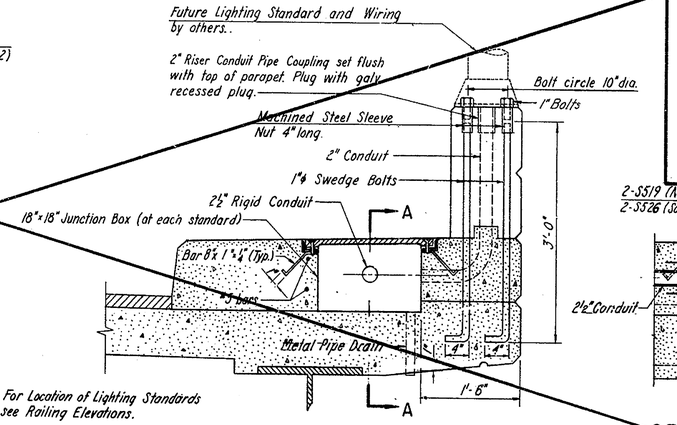
Railing Notes:
1. All railings are to be fabricated and erected so that the rails are parallel to each other and to the top fascia and so that the posts are truly vertical.
2. Anchor Bolts to be of Aluminum Alloy meeting the requirements of the Special Provisions.
3. After nuts have been placed and tightened to the satisfaction of the Engineer, bolts shall be cut off 1/8" above nuts and peened.
4. All rails to be continuous at all end posts adjacent to piers and abutments.
5. Tubular rails shall be closed at all piers and abutments with a welded in aluminum plug.
6. The finished aluminum alloy bolts, nuts and washers shall be given an anodic coating at least 0.0002 inches thick and a chromate seal.

DOES NOT APPLY



CONDUIT AT WINGWALL

Scale: 3/8" = 1'-0"

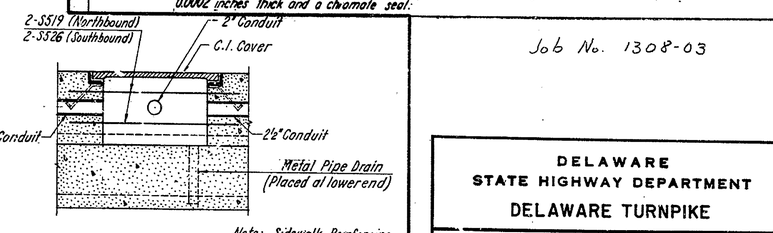


Note: For Location of Lighting Standards see Railing Elevations.

JUNCTION BOX AND ANCHORAGE FOR STD.

Scale: 1" = 1'-0"

Note: The cost of Lighting Standard Anchor Bolts and Sleeves shall be included in the cost of Item "Structural Steel".



SECTION A-A

Scale: 1" = 1'-0"

Note: Sidewalk Reinforcing to be cut in field to fit Junction Box.

Job No. 1308-03

In charge of P.H. McC
Made by T.P.
Checked by J.D.
Traced by
Checked by P.H.

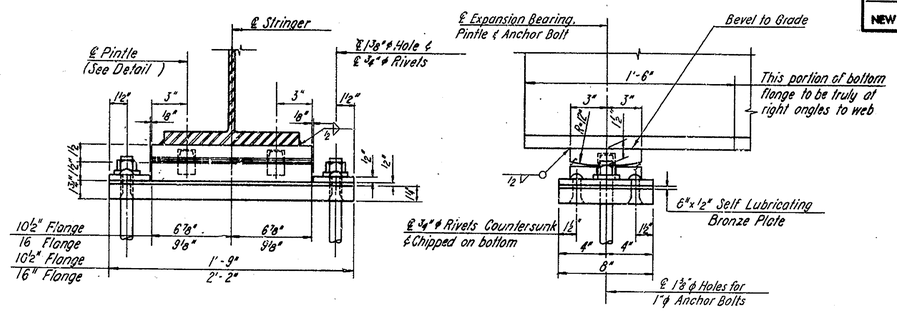
DELAWARE
STATE HIGHWAY DEPARTMENT
DELAWARE TURNPIKE

UNDERPASS - ROUTE 273
RAILING

DWG. NO.	SCALE	DATE	
14 OF 16	AS NOTED	MAY 1962	GOODKIND & O'DEA CONSULTING ENGINEERS
CONTRACT NO.			

COUNTY	CONTRACT	FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE		2	DEL.			88	170

~~INTERSTATE HIGHWAY ROUTE F.A.I. 1~~
~~UNDER ROUTE 273 SOUTHBOUND~~

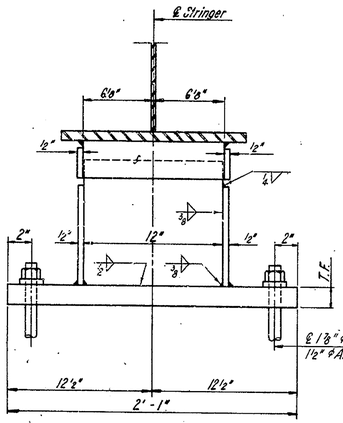


EXPANSION BEARING - ABUTMENTS

Scale: 2"=1'-0"

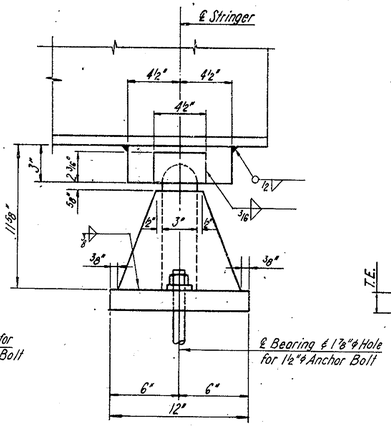
PIERS 1 & 3		PIER 2	
STRINGER	TF	STRINGER	TE
101	2¼"	201-205	2"
102-104	3½"		
105	2⅛"		
305	1⅞"		
402-404	3⅛"		
All others are 1¾"			

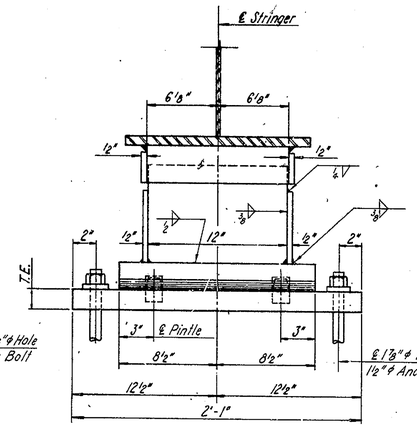
BASE PLATE TABLE



FIXED BEARING - PIERS 1 & 3

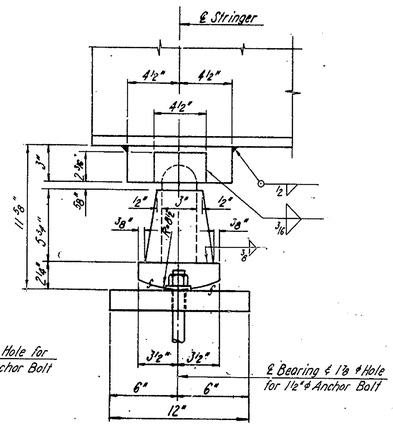
Scale: 2"=1'-0"

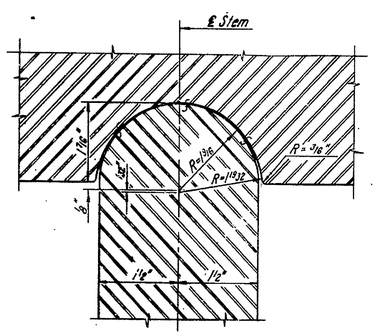




EXPANSION BEARING PIER 2

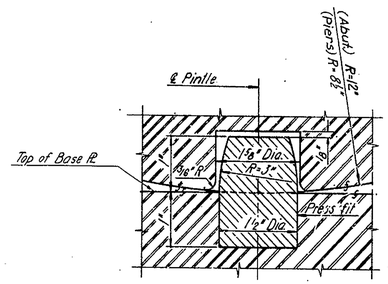
Scale: 2"=1'-0"





STEM DETAIL

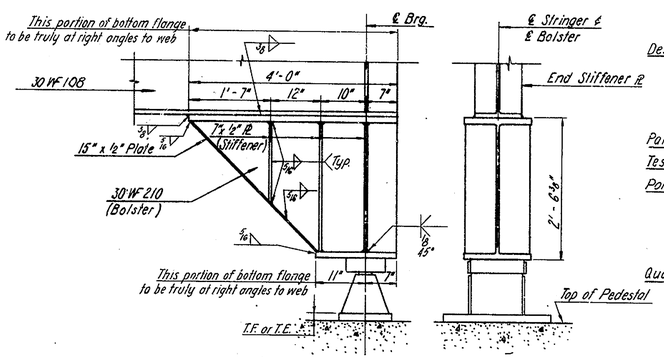
Scale: ¾"=1'



PINTLE DETAIL

Scale: ¾"=1'

Note: For Anchor Bolt Detail, see Sheet No. 77 & 80.



BOLSTER DETAIL

Scale: ¾"=1'-0"

GENERAL NOTES

Design Specifications: A.A.S.H.O. - 1957.

Loading: H-20 - S16 - 44 Modified.

Material and Fabrication Specifications: State of Delaware, State Highway Department, Standard Specifications, Ap. II 1, 1957.
A.W.S. 1936 Standard Specifications for Welded Highway and Railway Bridges.

Design:
Stresses - Structural and Reinforcing Steel: 18,000 psi.
Concrete: fc = 1,200 psi., n = 10
Composite Construction based on no temporary intermediate supports to be used during construction.

Painting: For Shop and Field painting of Structural Steel see Spec. Provisions.

Test Piles: Piles shall be driven according to Standard Specifications.

Portland Cement Concrete Masonry: The cost of furnishing and placing all bituminous joint filler, flashing, joint seal, caulking compound, sponge rubber, tar paper, and concrete water-reducing retarder admixture to be included in this item. See Special Provisions.
All exposed concrete edges shall be bevelled 1"x1" unless otherwise noted.

Quantities: Quantities shown shall not relieve the Contractor of the responsibility of checking them in preparing his bid.

In charge of R.H.
Made by H.E.
Checked by J.D.
Traced by
Checked by

DELAWARE
STATE HIGHWAY DEPARTMENT
DELAWARE TURNPIKE

UNDERPASS-ROUTE 273
BEARINGS

DWG. NO.	SCALE	DATE
15 OF 16	AS NOTED	MAY 1962

CONTRACT NO.

GOODKIND & O'DEA
CONSULTING ENGINEERS

COUNTY	CONTRACT	FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE		2	DEL.			89	170

RT. 273 N.B. OVER DEL. TURNPIKE		
BORING	℄ STATION	OFFSET
B 13	63+08	25 R
B 14	62+66	15 L
B 15	61+96	25 R
B 16	60+57	15 L
B 17	60+23	25 R

For locations of borings B13 thru B17 see Plan Sheets.

DOES NOT APPLY

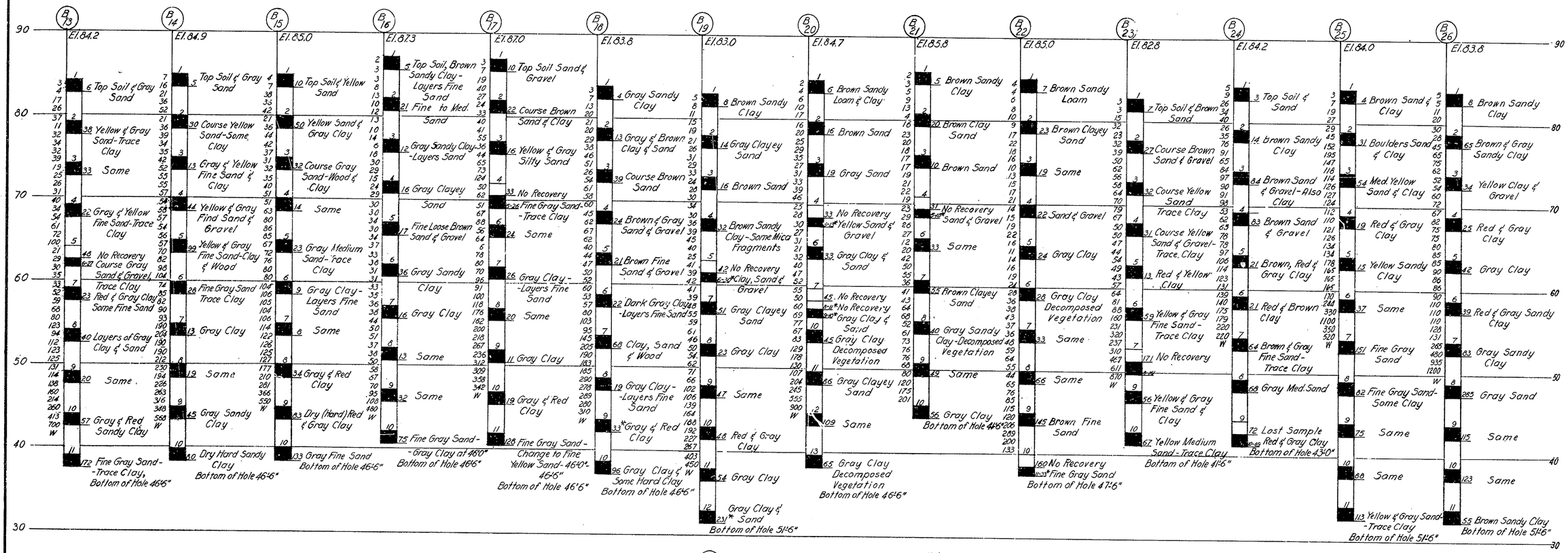
RT. 273 OVER DEL. TURNPIKE		
BORING	℄ STATION	OFFSET
B 18	63+86	20 L
B 19	63+50	25 R
B 20	62+42	20 L
B 21	61+42	40 R
B 22	61+08	20 L

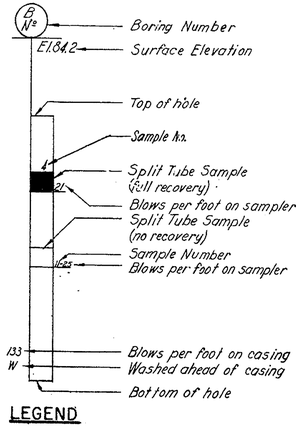
For locations of borings B18 thru B22 see Plan Sheets.

RAMP "H" OVER DEL. TURNPIKE		
BORING	℄ STATION	OFFSET
B 23	11+20	25 Rt.
B 24	10+75	2 Lt.
B 25	10+35	25 Rt.
B 26	9+67	2 Lt.

For locations of borings B23 thru B26 see Plan Sheets.

DOES NOT APPLY





LEGEND

Casing: 2½" I.D. Std, 300 lb. hammer, 24" drop
Sampler: 2" I.D. Split Tube, 140 lb. hammer, 30" drop
unless otherwise noted.

Note:
* Indicates 300 lb. hammer used on sampler.

In charge of P.H.
Made by T.P.
Checked by J.D.
Traced by
Checked by

DELAWARE
STATE HIGHWAY DEPARTMENT
DELAWARE TURNPIKE

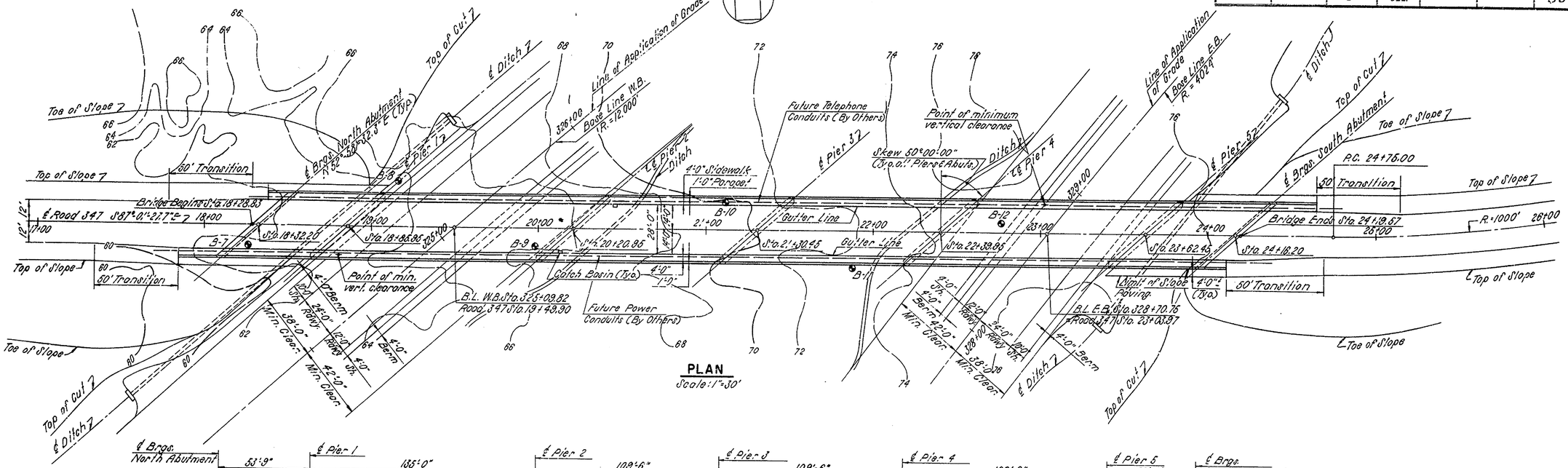
UNDERPASS - ROUTE 273
BORINGS

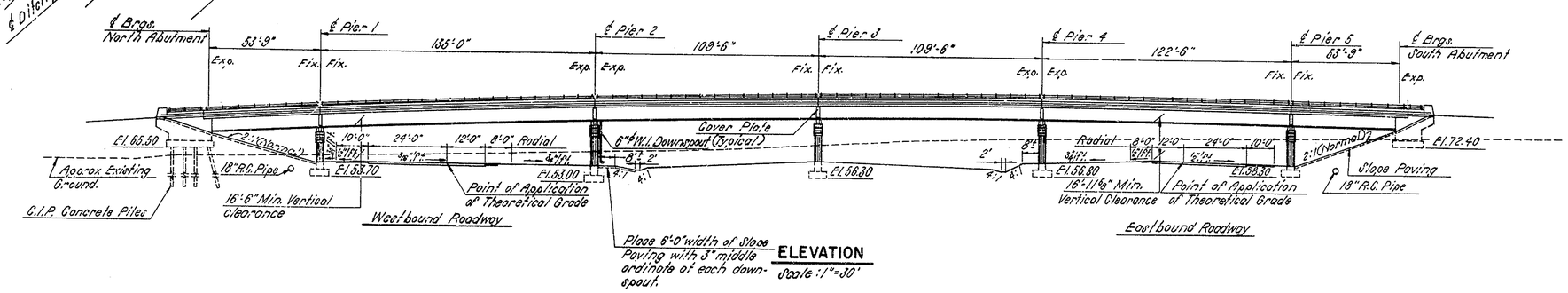
DWG. NO.	SCALE	DATE
16 OF 16	VERT. 1"=6'	MAY 1962

CONTRACT NO.

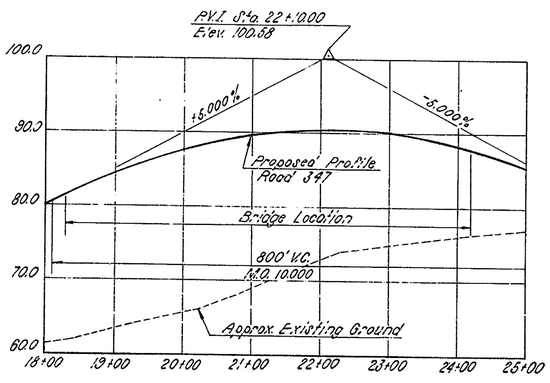
GOODKIND & O'DEA
CONSULTING ENGINEERS

COUNTY	CONTRACT	FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE		2	DEL.			90	170



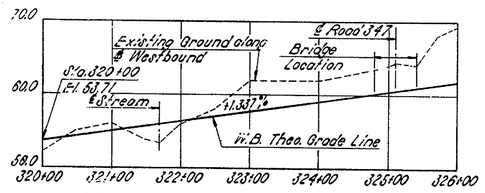


NOTES:
1. For General Notes, see Sheet No. 102.
2. For Borings Logs, see Sheet No. 103.



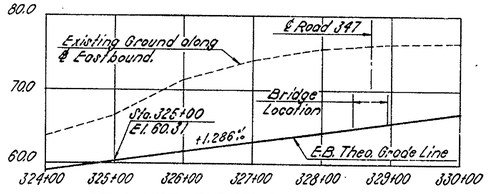
PROFILE OF ROAD 347

Scales: Vertical : 1" = 10'
Horizontal : 1" = 100'



DELAWARE TURNPIKE - WESTBOUND

Scales: Vertical : 1" = 10'
Horizontal : 1" = 100'



DELAWARE TURNPIKE - EASTBOUND

Scales: Vertical : 1" = 10'
Horizontal : 1" = 100'

QUANTITIES - ROAD 347 STRUCTURE

ITEM	UNIT	QUANTITY
EXCAVATION FOR STRUCTURES	C.Y.	2,400
SELECT BORROW - GRADE A	C.Y.	425
HOT-MIX HOT-LAID ASPHALTIC CONCRETE PAVEMENT	TONS	210
PORTLAND CEMENT CONCRETE MASONRY :		
* CONCRETE FOR FOOTINGS	C.Y.	480
* CONCRETE FOR SUBSTRUCTURE	C.Y.	525
* CONCRETE FOR SUPERSTRUCTURE	C.Y.	885
SUPERFICIAL WATERPROOFING	S.Y.	190
*BAR REINFORCEMENT	LBS.	380,000
STRUCTURAL STEEL (APPROXIMATELY 1,118,000 LBS.)	L.S.	
6" ϕ PERFORATED CORRUGATED METAL PIPE UNDERDRAIN	L.F.	160
6" ϕ CORRUGATED METAL PIPE UNDERDRAIN	L.F.	20
12" ϕ CAST IN PLACE CONCRETE PILES	L.F.	1,900
12" ϕ STEEL SHELL TEST PILES	L.F.	120
ALUMINUM RAILING (TWO RAILS)	L.F.	1,240
SLOPE PAVING	S.Y.	130
BRIDGE DRAINAGE PIPES (APPROXIMATELY 60 L.F.)	L.S.	
BRIDGE CATCH BASINS	L.S.	
RC-1 ASPHALT TACK COAT	GAL.	190
PROTECTIVE COATING FOR CONCRETE	S.F.	1,515
COAL TAR EPOXY UNDERSEAL	S.Y.	1,935

Item indicated (*) are Fixed Quantity Items. See Special Provisions.

In Charge of P.H. Shuckhurst
Made by T.P.
Checked by N.E.
Traced by
Checked by

DELAWARE
STATE HIGHWAY DEPARTMENT
DELAWARE TURNPIKE

UNDERPASS - ROAD 347

GENERAL PLAN

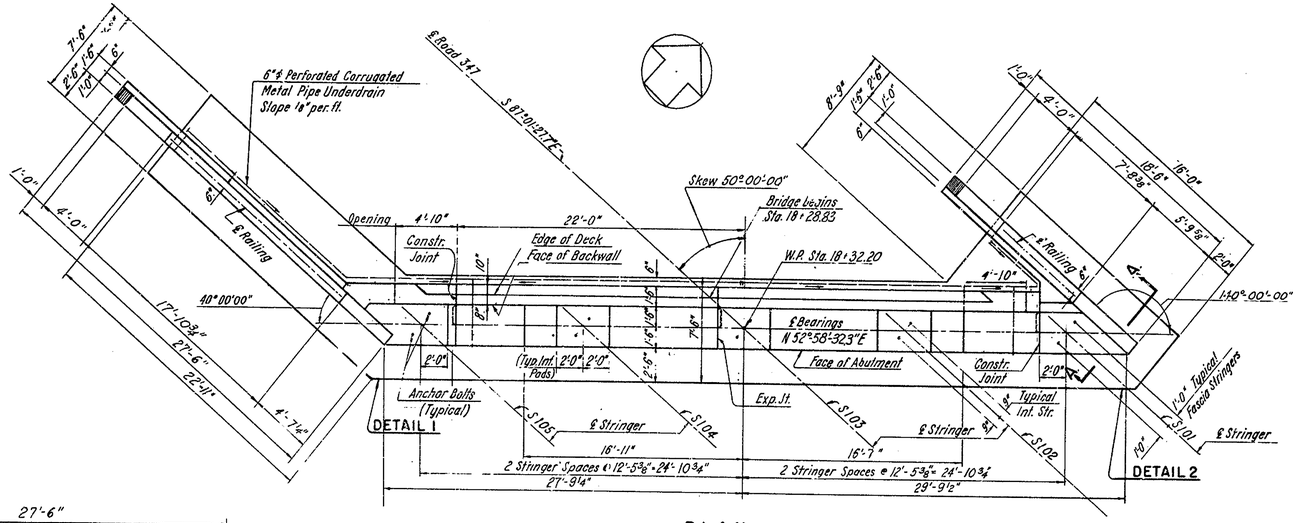
DWG. NO.	SCALE	DATE
1 OF 14	AS NOTED	MAY 1963

CONTRACT NO.

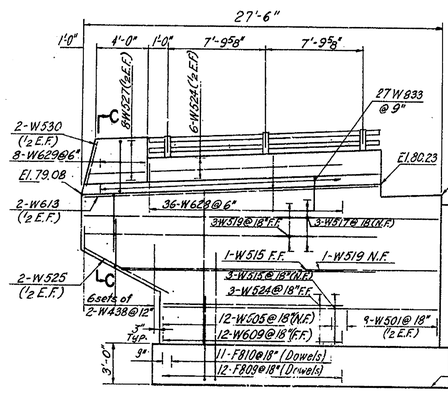
GOODKIND, O'DEA & CO.
CONSULTING ENGINEERS

ue Print Co.

COUNTY	CONTRACT	FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE		2	DEL.			91	170

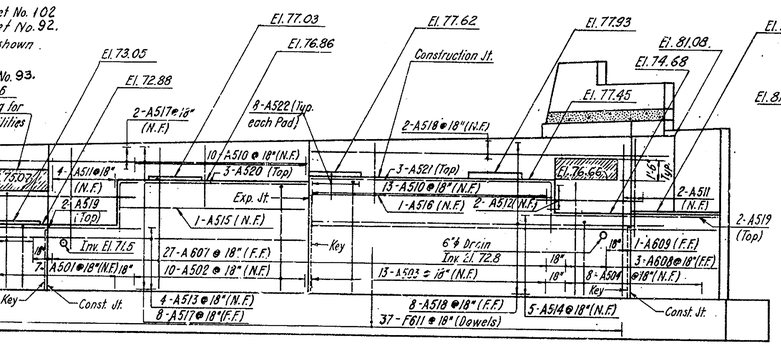


PLAN



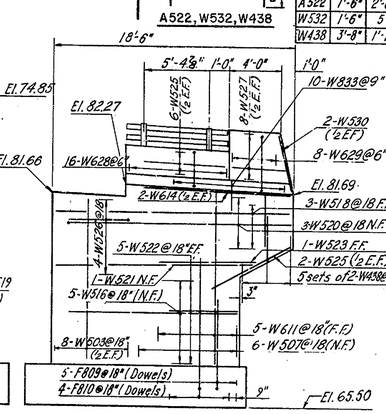
N.W. WINGWALL

Notes:
1. For Railing Detail see Sheet No. 102
2. For Details 1 & 2, see Sheet No. 92.
3. Key in top of Backwall not shown.
4. Sidewalk not shown.
5. For Section A-A, see Sheet No. 93.



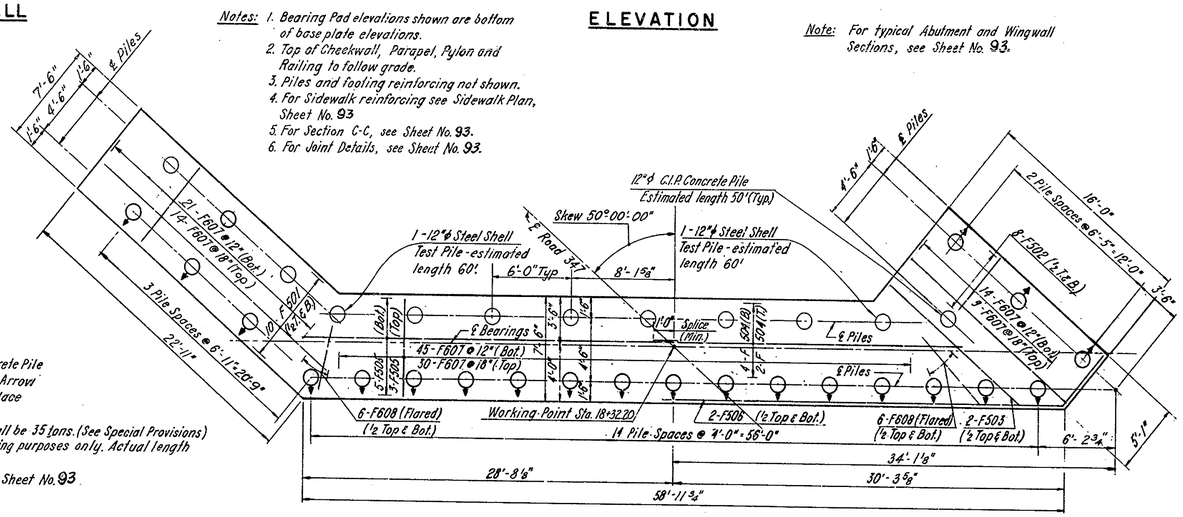
ELEVATION

Note: For typical Abutment and Wingwall Sections, see Sheet No. 93.



N.E. WINGWALL

Notes:
1. Bearing Pad elevations shown are bottom of base plate elevations.
2. Top of Cheekwall, Parapet, Pylon and Railing to follow grade.
3. Piles and footing reinforcing not shown.
4. For Sidewalk reinforcing see Sidewalk Plan, Sheet No. 93
5. For Section C-C, see Sheet No. 93.
6. For Joint Details, see Sheet No. 93.



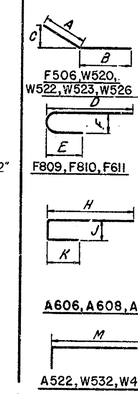
FOOTING PLAN

Note: For typical Abutment and Wingwall Sections, see Sheet No. 93.

Notes:
1. Indicates Cast in Place Concrete Pile battered 1:4 in direction of Arrow
2. Indicates vertical Cast in Place Concrete Pile
3. Min. Bearing Capacity of Piles shall be 35 tons. (See Special Provisions)
4. Pile lengths shown are for estimating purposes only. Actual length to be determined by Test Piles.
5. For Pile Reinforcing Detail, See Sheet No. 93

In charge of P.H. HCL
Made by T.P.
Checked by N.E.
Traced by
Checked by

BENDING DETAILS



Mark	A	B	C
F506	4'-9"	30"	3'-9"
W520	1'-3"	5'-[illegible]	1'-6"
W522	1'-3"	5'-9"	1'-6"
W523	1'-3"	7'-9"	1'-6"
W526	3'-0"	4'-5"	3'-0"

F506, W520, W522, W523, W526

Mark	D	E	F
F809	7'-1"	9"	10"
F810	11'-1"	9"	10"
F611	4'-6"	6"	6"

F809, F810, F611

Mark	H	J	K
A606	6'-3"	1'-2"	2'-6"
A608	7'-10"	1'-2"	2'-6"
A627	7'-6"	1'-2"	2'-6"
A629	8'-6"	1'-2"	2'-6"
W517	27'-2"	8"	4'-0"
W518	18'-2"	8"	1'-0"

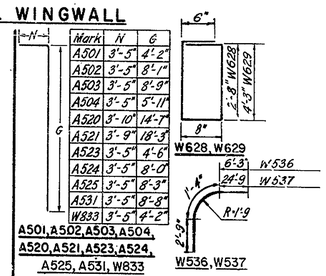
A606, A608, A627, A629, W517, W518

Mark	L	M
A522	1'-6"	2'-6"
W532	1'-6"	5"
W438	3'-8"	1'-2"

A522, W532, W438

BAR LIST

MARK	SIZE	TYPE	LENGTH	TOTAL NUMBER	LOCATION
Footings					
F501	5	St.	22'-5"	10	Longitudinal - Top & Bot. Wingwall (North)
F502	5	St.	15'-6"	16	" " " " (N. & S.)
F503	5	St.	13'-0"	2	" " " " (North)
F504	5	St.	23'-1"	6	Longitudinal - Top & Bot. Abutment (North)
F505	5	St.	29'-1"	8	" " " "
F506	5	Bt.	35'-4"	2	" " " "
F607	6	St.	7'-0"	133	Transverse - Top & Bot. W.W & Abut. (N)
F608	6	St.	6'-0"	12	Transverse - Abutment (Flared) (North)
F809	8	Bt.	8'-2"	34	Dowels - Wingwall (N. & S)
F810	8	Bt.	12'-2"	30	Dowels - Wingwall (N. & S)
F611	6	Bt.	5'-2"	74	Dowels - Abutments
Abutments					
A501	5	Bt.	7'-7"	7	Vertical - N.F. N. Abutment only (N.)
A502	5	Bt.	11'-5"	20	" " " (N. & S.)
A503	5	Bt.	12'-2"	13	" " " N. Abutment only
A504	5	Bt.	9'-4"	8	" " " " " "
A605	6	St.	10'-3"	3	Vertical - F.F. N. Abutment only
A606	6	Bt.	9'-11"	3	" " " " " "
A607	6	St.	*	27	" " " " " "
A608	6	Bt.	11'-6"	3	" " " " " "
A609	6	St.	12'-3"	1	" " " " " "
A510	5	St.	4'-0"	46	Vertical - N.F. Backwall
A511	5	St.	6'-11"	16	Vertical " "
A512	5	St.	8'-0"	4	Horizontal " "
A513	5	St.	25'-0"	8	Horizontal - N.F.
A514	5	St.	31'-0"	10	" "
A515	5	St.	14'-6"	6	" "
A516	5	St.	18'-2"	2	" " "
A517	5	St.	28'-8"	20	Horizontal - F.F. & N.F.
A518	5	St.	25'-6"	20	" " " "
A519	5	St.	11'-6"	8	Horizontal - Bridge Seat
A520	5	Bt.	18'-6"	6	" " "
A521	5	Bt.	22'-0"	6	" " "
A522	5	Bt.	5'-6"	80	Pedestal
A523	5	Bt.	7'-11"	7	Vertical - N.F. - S. Abutment only
A524	5	Bt.	12'-1"	13	" " " " " "
A525	5	Bt.	11'-8"	8	" " " " " "
A626	6	St.	10'-9"	3	Vertical - F.F. - S. Abutment only
A627	6	Bt.	11'-2"	3	" " " " " "
A628	6	St.	*	27	" " " " " "
A629	6	Bt.	12'-2"	3	" " " " " "
A630	6	St.	11'-11"	1	" " " " " "



Mark	N	G
A501	3'-5"	4'-2"
A502	3'-5"	8'-1"
A503	3'-5"	8'-9"
A504	3'-5"	5'-11"
A520	3'-10"	14'-7"
A521	3'-9"	18'-3"
A523	3'-5"	4'-6"
A524	3'-5"	8'-0"
A525	3'-5"	8'-3"
A531	3'-5"	8'-8"
W833	3'-5"	4'-2"

A501, A502, A503, A504, A520, A521, A523, A524, A525, A531, W833

W628, W629

W536, W537

* STRAIGHT BARS IN SERIES

Mark	Sets	Per Set	Δ	From	To
A607	9	3	1½"	10'-2	11'-8"
A628	9	3	5⅝"	10'-5	10'-10
W527	4	8	4"	3'-8"	4'-8"
W534	4	4	1'-0"	22'-0"	25'-0"
W535	4	4	1'-5"	7'-6"	11'-9"
F513	1	5	2'-9"	27'-0"	38'-0"
F514	1	6	2'-2"	27'-2"	38'-0"
F519	2	9	10½"	1'-6"	8'-6"

Notes:
1. All bar dimensions are out to out.
2. Total shown for both abutments (½ each abut.) except as noted in Location
3. For South Abutment Footing Bar List, see Sheet No. 92.

DELAWARE
STATE HIGHWAY DEPARTMENT
DELAWARE TURNPIKE

UNDERPASS – ROAD 347

NORTH ABUTMENT

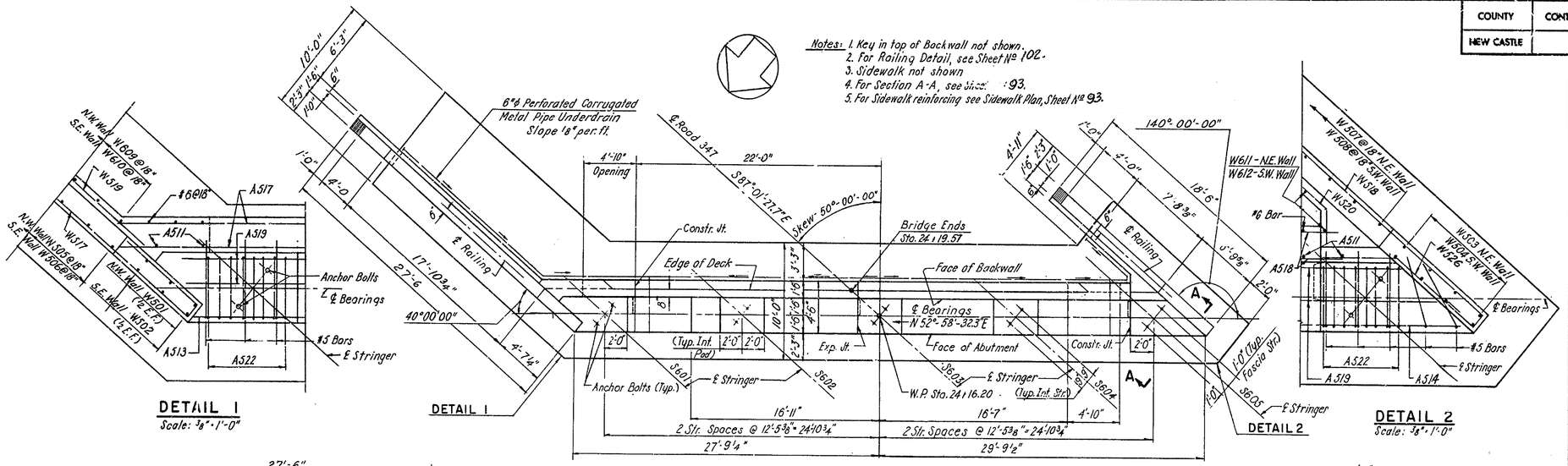
DWG. NO.	SCALE	DATE
2 OF 14	3/16"=1'-0"	MAY 1962

CONTRACT NO.

GOODKIND & O'DEA
CONSULTING ENGINEERS

COUNTY	CONTRACT	FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE		2	DEL.			92	170

Notes: 1. Key in top of Backwall not shown.
2. For Railing Detail, see Sheet № 102.
3. Sidewalk not shown
4. For Section A-A, see Sheet № 93.
5. For Sidewalk reinforcing see Sidewalk Plan, Sheet № 93.

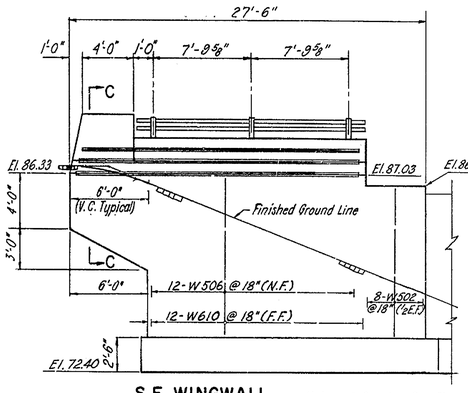


DETAIL 1
Scale: ⅜" = 1'-0"

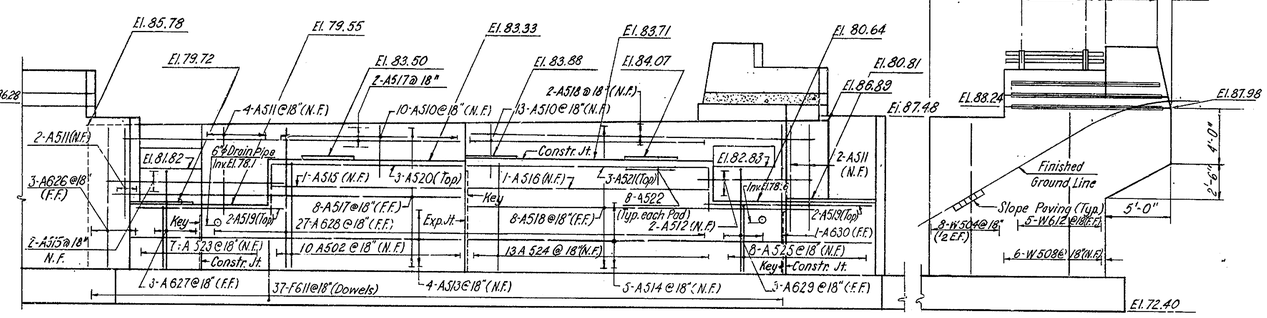
DETAIL 1

DETAIL 2
Scale: ⅜" = 1'-0"

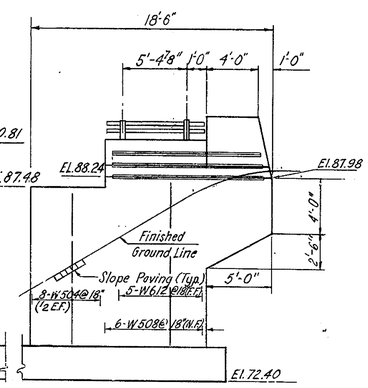
PLAN
Scale: 3/16" = 1'-0"



S.E. WINGWALL
Scale: 3/16" = 1'-0"



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



S.W. WINGWALL
Scale: 3/16" = 1'-0"

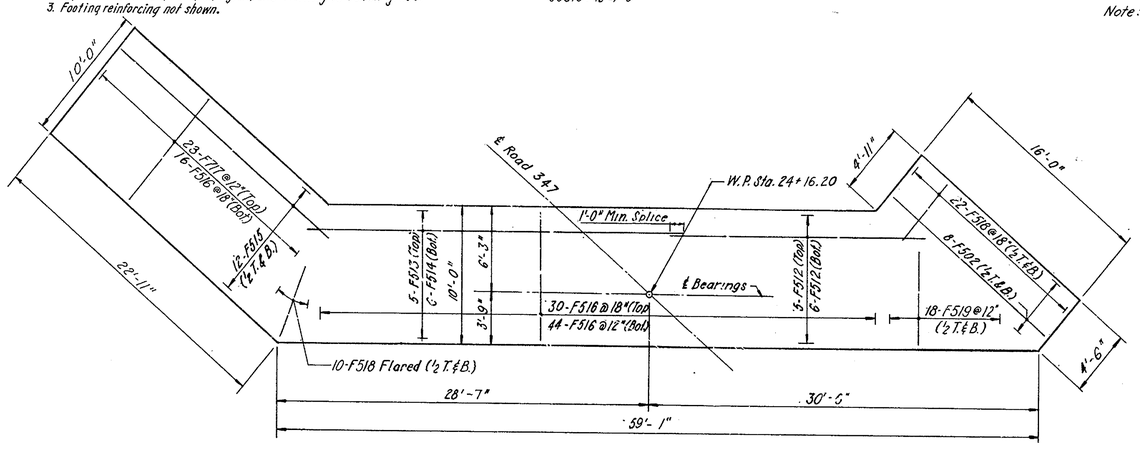
Note: S.E. & S.W. Wingwall Reinforcement similar to N.W. & N.E. Wingwall, respectively, except as noted. See Sheet № 91.

Notes: 1. Bearing Pad Elevations shown are bottom of base plate elevations.
2. Top of Cheekwall, Parapet, Pylon, and Railing to follow grade.
3. Footing reinforcing not shown.

BAR LIST

Mark	Size	Type	Length	NUMBER N.W.	S.E.	N.E.	S.W.	Total	LOCATION
			Wingwalls						
W501	5	St.	10'-9"	8				8	Vert. Cheekwall
W502	5	St.	11'-2"		8			8	"
W503	5	St.	12'-9"			10	2	12	" & Horiz. Sidewalk
W504	5	St.	12'-4"				8	8	"
W505	5	St.	11'-4"	12				12	Vert. N.F.
W506	5	St.	11'-11"		12			12	"
W507	5	St.	13'-7"			6		6	"
W508	5	St.	13'-3"				6	6	"
W509	6	St.	11'-4"	12				12	Vert. F.F.
W610	6	St.	11'-11"		12			12	"
W611	6	St.	13'-7"			5		5	"
W612	6	St.	13'-3"				5	5	"
W613	6	St.	22'-6"	2	2			4	Horiz. E.F
W614	6	St.	12'-4"			2	2	4	" "
W515	5	St.	21'-2"	4	4			8	Horiz. N.F. & F.F.
W516	5	St.	13'-2"			5	5	10	"
W517	5	Bt.	31'-10"	3	3			6	"
W518	5	Bt.	19'-10"			3	3	6	"
W519	5	St.	23'-3"	4	4			8	Horiz. N.F. & F.F.
W520	5	Bt.	11'-0"			3	3	6	Horiz. F.F.
W521	5	St.	14'-6"			1	1	2	Horiz. N.F.
W522	5	Bt.	7'-0"			5	5	10	Horiz. F.F.
W523	5	Bt.	9'-0"			1	1	2	Horiz. F.F.
W524	5	St.	17'-7"	9	9			18	Horiz. F.F. & Parapet
W525	5	St.	7'-7"	2	2	8	8	20	Horiz. Parapet
W526	5	Bt.	7'-5"			4	4	8	Horiz. Cheekwall
W527	5	St.	*	8	8	8	8	32	Horiz. Pylon
W628	6	Bt.	7'-2"	36	36	16	16	104	Stirrups - Parapet
W629	6	Bt.	10'-4"	8	8	8	8	32	Stirrups - Pylon
W530	5	St.	4'-0"	2	2	2	2	8	Vertical - Pylon End
W531	5	St.	4'-3"	17	17	8	8	50	Transverse - Bot. Sidewalk
W532	5	Bt.	3'-5"	16	16	9	9	50	End Sidewalk
W833	8	Bt.	7'-7"	27	27	10	10	74	Transverse - Top Sidewalk
W534	5	St.	*	8	8			16	Longit. - Top & Bot. Sidewalk
W535	5	St.	*			8	8	16	" "
W536	5	Bt.	10'-4"			2	2	4	Longit. - Curb.
W537	5	Bt.	28'-10"	2	2			4	"
W438	4	Bt.	8'-6"	12	12	10	10	44	Stirrups
W539	5	St.	22'-9"	2	2			4	Horiz. Sidewalk

Notes:
1. For Section C-C see Sheet № 93.
2. For Joint Details see Sheet № 93.
3. For Abutment Bar List see Sheet № 91.
4. For Abutment & Wingwall Sections see Sheet № 93.
5. Maximum Design Soil Pressure = 2 Tons/Sq. Ft.



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

BAR LIST

MARK	SIZE	TYPE	LENGTH	TOTAL NUMBER	LOCATION
Footing					
F512	5	St.	19'-11"	11	Longit. T. & B. - Abutment (South)
F513	5	St.	*	5	Longit. Top " "
F514	5	St.	*	6	Longit. Bottom " "
F515	5	St.	23'-6"	12	Longit. T. & B. - Wingwall "
F516	5	St.	8'-6"	90	Trans. T. & B. (South)
F717	7	St.	9'-6"	23	Trans. T. & B. "
F518	5	St.	5'-0"	32	Trans. T. & B. "
F519	5	St.	*	18	Trans. T. & B. "

* Straight bars in series. For description, see Sheet № 91.

In charge of P.H. AJC
Made by N.F.
Checked by T.P.
Traced by
Checked by

DELAWARE
STATE HIGHWAY DEPARTMENT
DELAWARE TURNPIKE

UNDERPASS – ROAD 347

SOUTH ABUTMENT

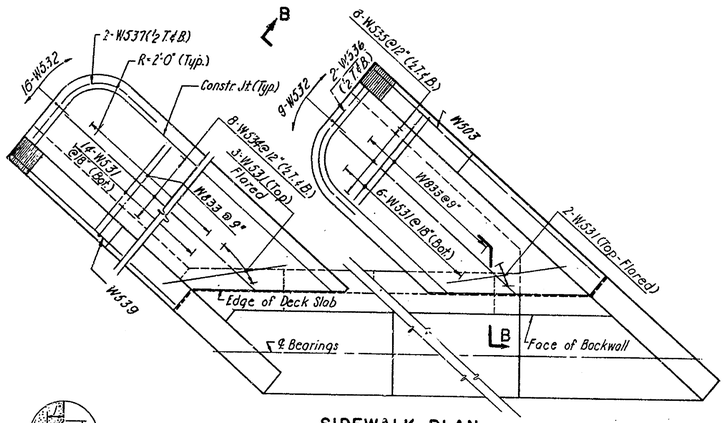
DWG. NO.	SCALE	DATE
3 OF 14	AS NOTED	MAY 1962

CONTRACT NO.

GOODKIND & O'DEA
CONSULTING ENGINEERS

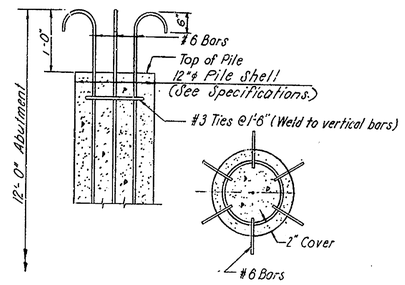
COUNTY	CONTRACT	FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE		2	DEL.			93	170

~~INTERSTATE HIGHWAY ROUTE F.A.I. - 1~~
~~UNDER ROAD 347~~



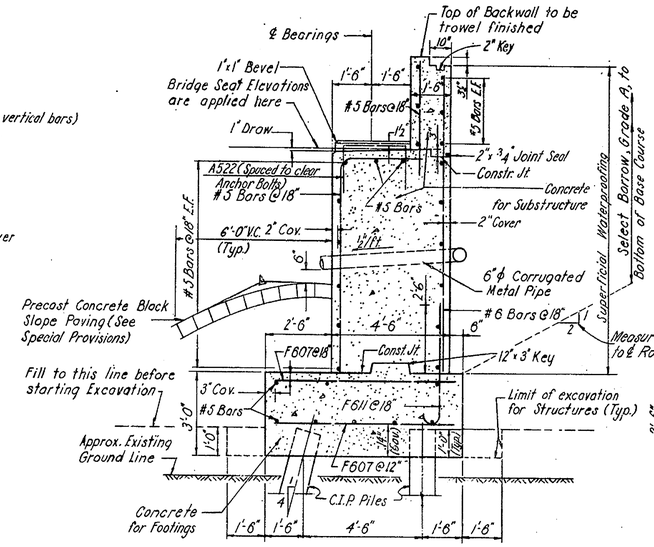
SIDEWALK PLAN
Scale: 3/8" = 1'-0"

Note: Cost of pile reinforcing to be included in Item, 12"ϕ Cast-in-Place Concrete Piles.



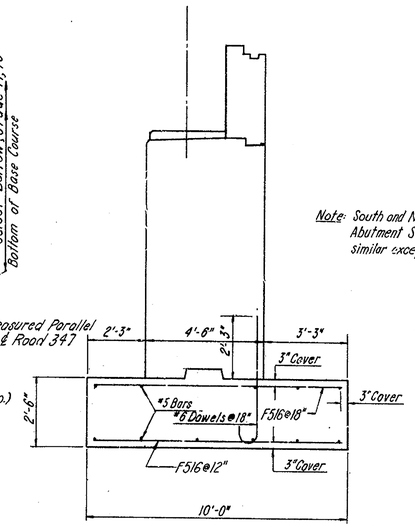
PILE DETAILS
Scale: 1" = 1'-0"

Pile Reinforcing Bars			
Size	Type	Length	No.
#6	Bt	12'-8"	192
#3	Bt	2'-1"	256

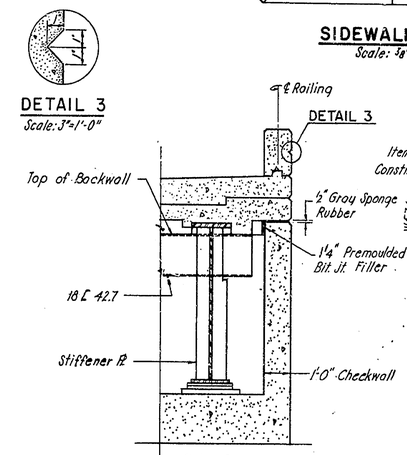


NORTH ABUTMENT SECTION
Scale: 3/8" = 1'-0"

Note: South and North Abutment Sections similar except as noted.

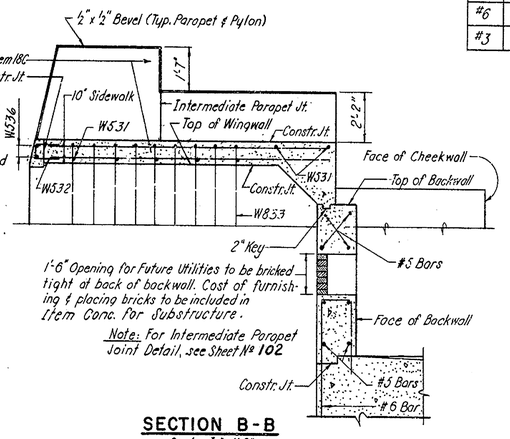


SOUTH ABUTMENT SECTION
Scale: 3/8" = 1'-0"



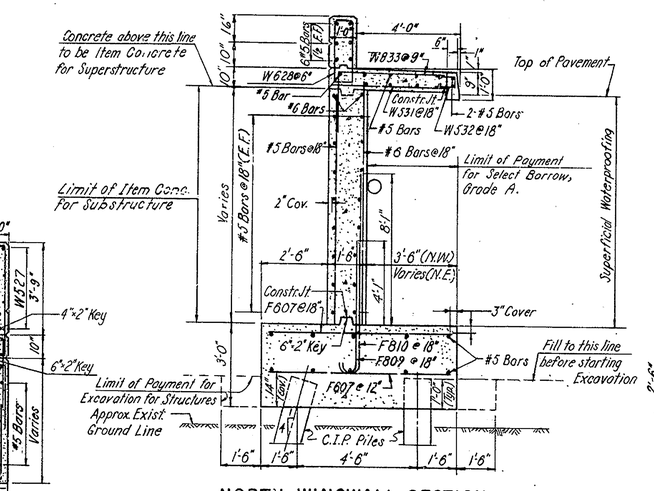
Note: For location of Section A-A, see Sheet Nos. 91 & 92.

SECTION A-A
Scale: 3/8" = 1'-0"



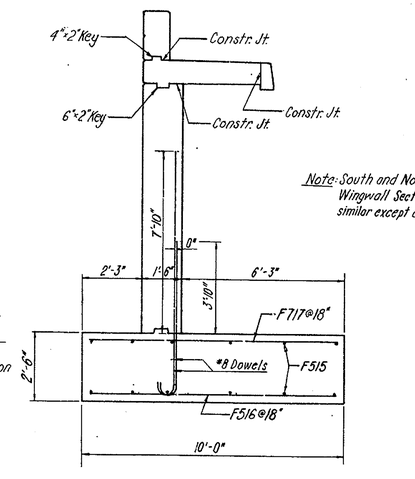
Note: For Intermediate Parapet Joint Detail, see Sheet No. 102

SECTION B-B
Scale: 3/8" = 1'-0"

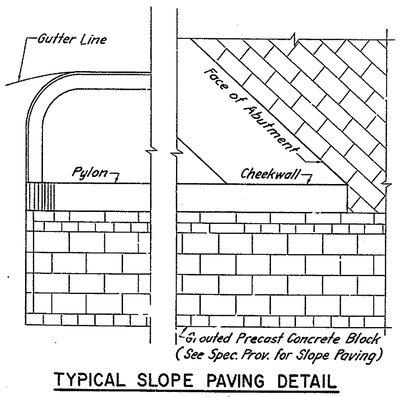


NORTH WINGWALL SECTION
Scale: 3/8" = 1'-0"

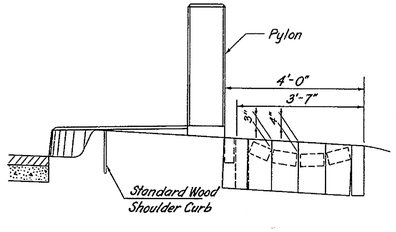
Note: South and North Wingwall Sections similar except as noted.



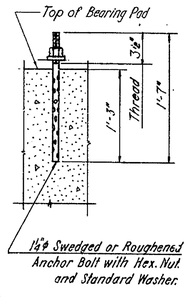
SOUTH WINGWALL SECTION
Scale: 3/8" = 1'-0"



TYPICAL SLOPE PAVING DETAIL
Scale: 3/8" = 1'-0"

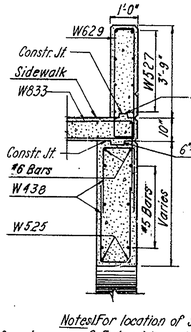


ELEVATION D-D
Scale: 1/2" = 1'-0"



Note:
1. Anchor Bolts to clear reinforcing.

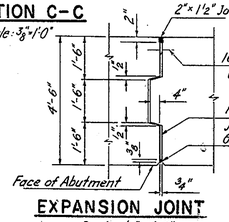
ANCHOR BOLT DETAIL
(ABUTMENT BEARINGS)
Scale: 1" = 1'-0"



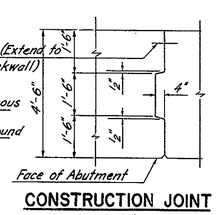
Notes: 1. For location of Section C-C, see Sheet No. 91 & 92
2. Extend keys to within 1'-0" of end of wall.

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

Note: Sidewalk on wingwall to be poured after sidewalk on superstructure is complete.



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



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

Notes for Expansion & Construction Joints
1. Reinforcing not shown.
2. Reinforcing to be discontinuous at Expansion Joint and continuous at Construction Joint
3. Extend Key to 1'-0" below top of Bridge Seat.

In charge of P.H.
Made by T.P.
Checked by N.E.
Traced by
Checked by

DELAWARE
STATE HIGHWAY DEPARTMENT
DELAWARE TURNPIKE

UNDERPASS - ROAD 347

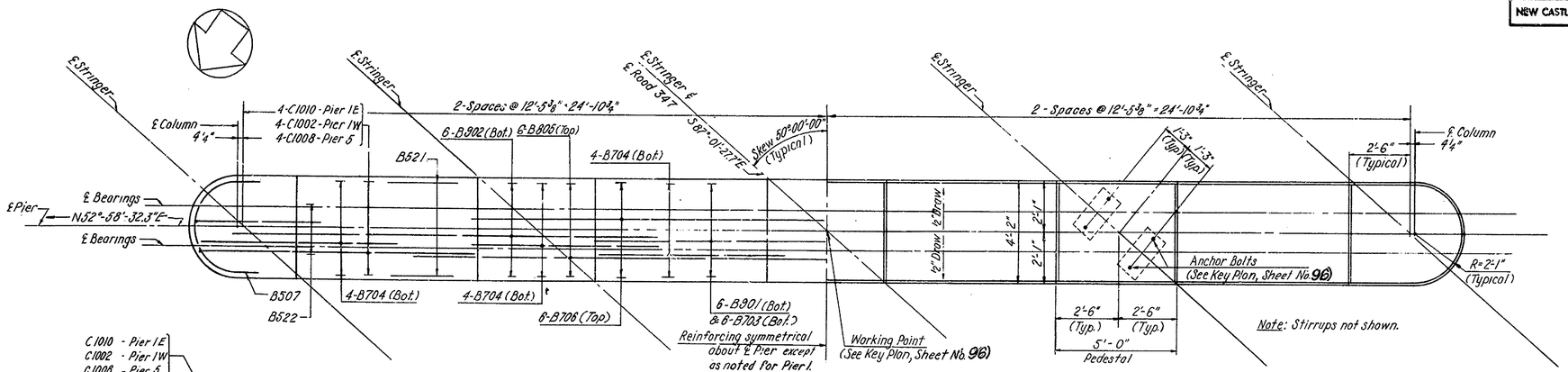
ABUTMENT DETAILS

DWG. NO.	SCALE	DATE
4 OF 14	As Noted	May 1962

CONTRACT NO.

GOODKIND & O'DEA
CONSULTING ENGINEERS

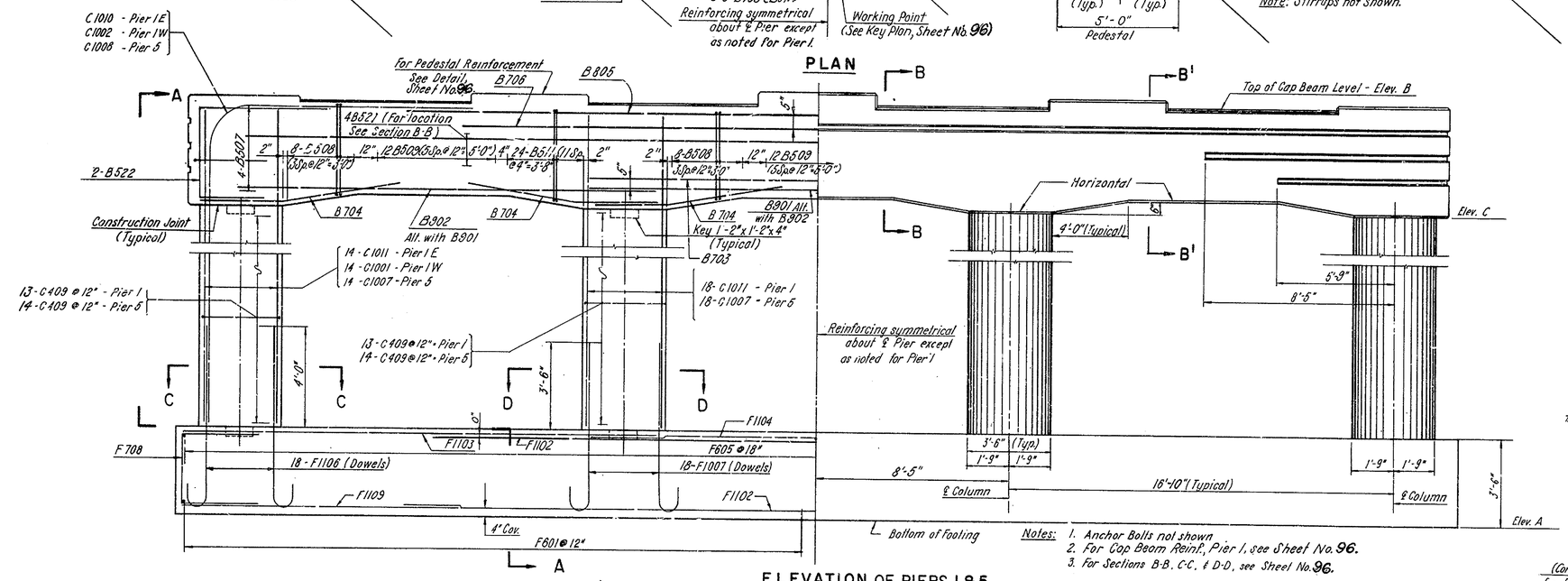
COUNTY	CONTRACT	FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE		2	DEL.			94	170



PLAN

	PIER 1	PIER 2	PIER 3	PIER 4	PIER 5
ELEVATION A	53.7	63.0	68.3	66.8	58.3
ELEVATION B	*	79.15	81.14	81.60	79.98
ELEVATION C	70.06	74.90	76.89	77.85	75.73

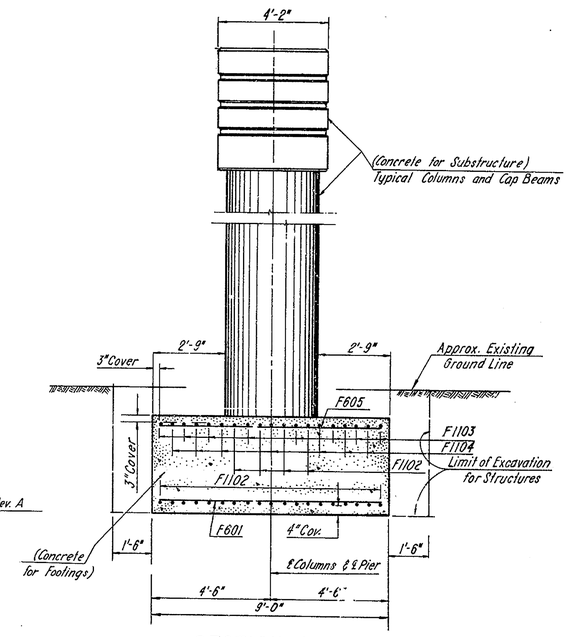
* For Elevations see Cap Beam - Pier 1, Sheet No. 96.



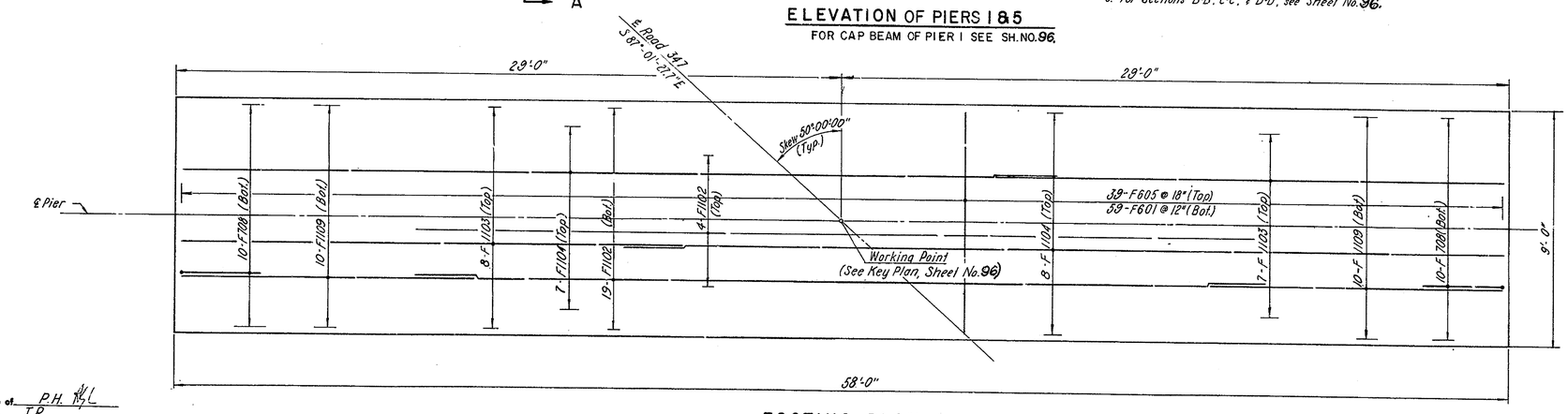
Notes:
1. Anchor Bolts not shown
2. For Cap Beam Reinf., Pier 1, see Sheet No. 96.
3. For Sections B-B, C-C, & D-D, see Sheet No. 96.

ELEVATION OF PIERS 1 & 5

FOR CAP BEAM OF PIER 1 SEE SH. NO. 96.



SECTION A-A



FOOTING PLAN

NOTES

1. For Anchor Bolt Detail, see Sheet No. 96.
2. For Pedestal Elevations see Key Plan, Sheet No. 96.
3. Maximum Design Soil Pressure = 2 Tons/Sq. Ft.
4. For Bar List, see Sheet No. 96.

In charge of P.H. N.L.
Made by T.P.
Checked by N.E.
Traced by
Checked by

DELAWARE
STATE HIGHWAY DEPARTMENT
DELAWARE TURNPIKE

UNDERPASS - ROAD 347

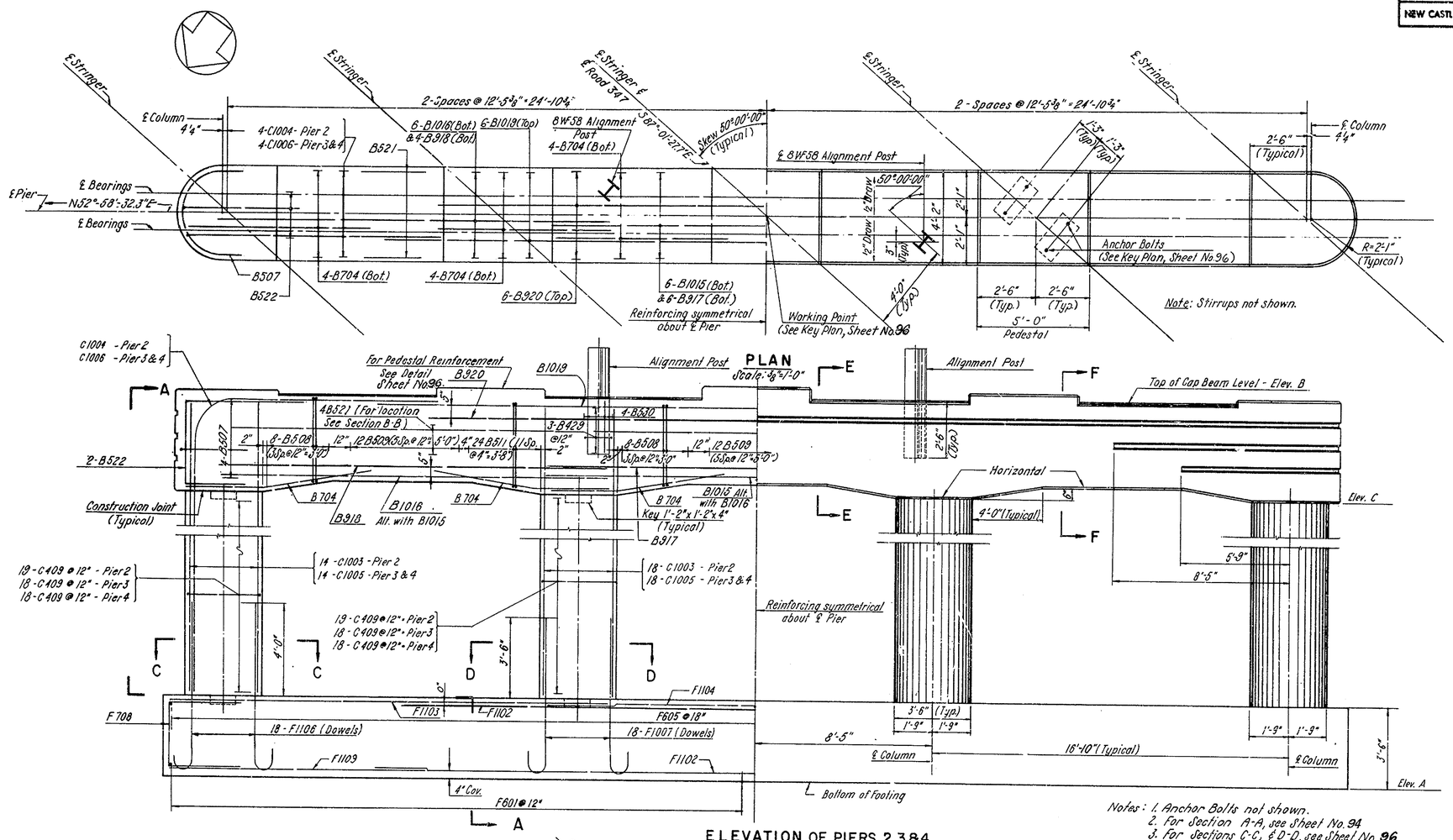
PIERS 1 & 5

DWG. NO.	SCALE	DATE
5 OF 14	¼" = 1'-0"	MAY 1962

CONTRACT NO.

GOODKIND & O'DEA
CONSULTING ENGINEERS

COUNTY	CONTRACT	FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE		2	DEL.			95	170

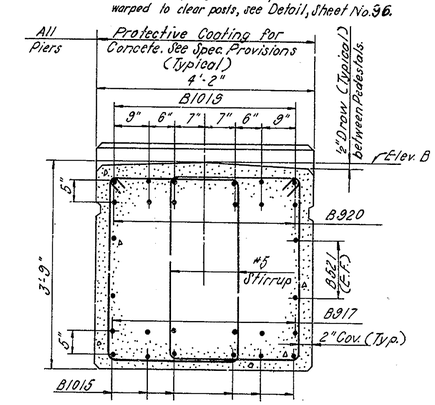


Note: 8WF58 Alignment Posts at Pier 2 & 4 only. Provide holes in cap beam so that posts may be grouted into proper alignment after superstructure steel is erected. Top reinforcing adjacent to posts to be warped to clear posts, see Detail, Sheet No. 96.

Notes: 1. Anchor Bolts not shown.
2. For Section A-A, see Sheet No. 94
3. For Sections C-C, & D-D, see Sheet No. 96

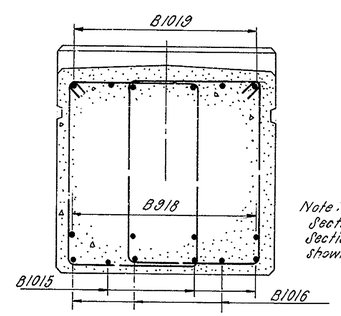
ELEVATION OF PIERS 2,3 & 4

Scale: ⅜"=1'-0"



SECTION E-E

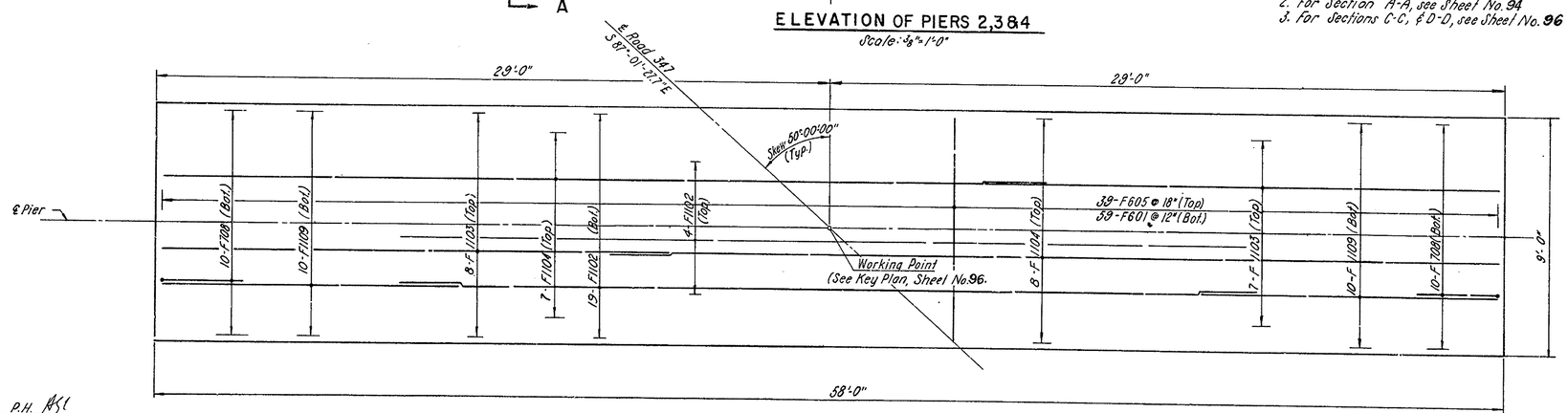
Scale: ¾"=1'-0"



Note: Section F-F similar to Section E-E, except as shown.

SECTION F-F

Scale: ¾"=1'-0"



FOOTING PLAN

Scale: ⅜"=1'-0"

NOTES

1. For Anchor Bolt Detail, see Sheet No. 96.
2. For Pedestal Elevations see Key Plan, Sheet No. 96.
3. Maximum Design Soil Pressure = 2 Tons/Sq. Ft.
4. For Bar List, see Sheet No. 96.

In charge of P.H. RSL
Made by T.P.
Checked by N.E.
Traced by
Checked by

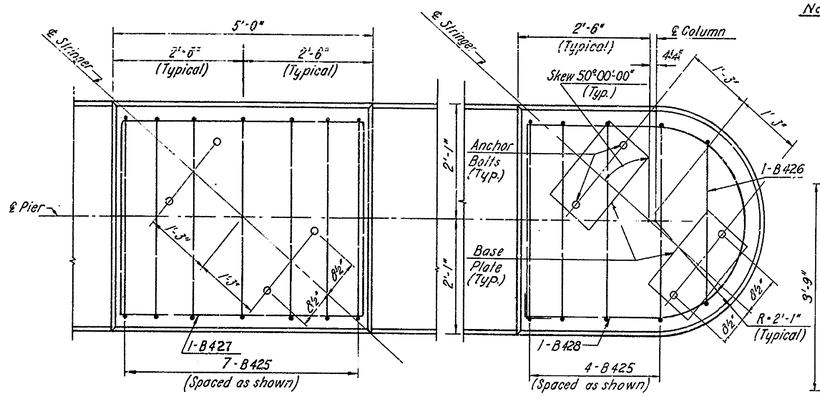
DELAWARE
STATE HIGHWAY DEPARTMENT
DELAWARE TURNPIKE

UNDERPASS - ROAD 347

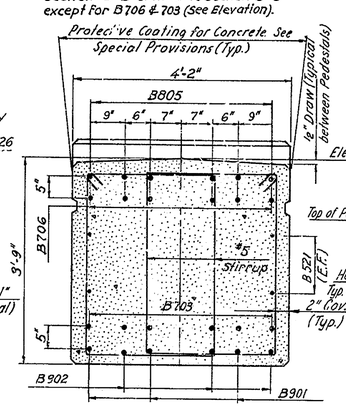
PIERS 2,3 & 4

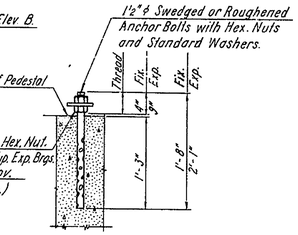
DWG. NO.	SCALE	DATE	
6 OF 14	AS NOTED	MAY 1962	GOODKIND & O'DEA CONSULTING ENGINEERS
CONTRACT NO.			

COUNTY	CONTRACT	FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE		2	DEL.			96	170



Note: Section B'-B' Similar to section B-B except for B706 & 703 (See Elevation).



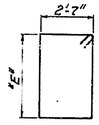


Note: Reinforcing to clear Anchor Bolts.

ANCHOR BOLT DETAIL
(PIER BEARINGS)

SERIES TABLE

MARK	SETS	PER SET	Δ	DIMENSION "E" FROM	DIMENSION "E" TO	LENGTH FROM	LENGTH TO
B508	34	4	1½"	3'-5½"	3'-10"	12'-10"	13'-7"
B511	16	12	½"	3'-4½"	3'-10"	12'-8"	13'-7"
B513	4	12	½"	4'-1½"	4'-7"	14'-2"	15'-1"
B514	6	4	1½"	4'-2½"	4'-7"	14'-4"	15'-1"

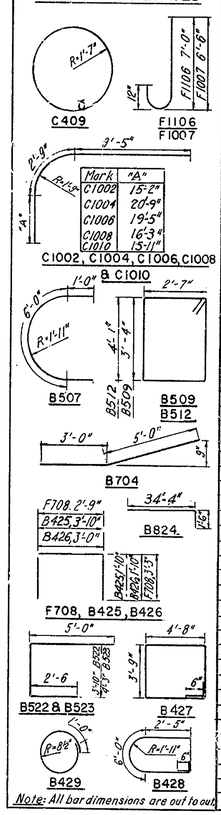


BAR LIST

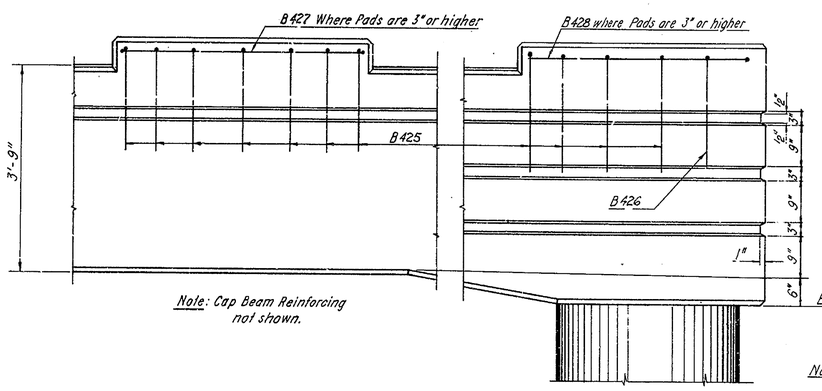
MARK	SIZE	TYPE	LENGTH	NUMBER BY PIER: PIER 1	PIER 2	PIER 3	PIER 4	PIER 5	TOTAL NO.	LOCATION AND DESCRIPTION
Footings										
F601	6	St.	8'-6"	59	59	59	59	59	295	Transverse - Bottom
F1102	11	St.	35'-10"	23	23	23	23	23	115	Longitudinal - T. & B.
F1103	11	St.	21'-10"	15	15	15	15	15	75	-"- Top
F1104	11	St.	38'-6"	15	15	15	15	15	75	-"- Top
F605	6	St.	8'-6"	39	39	39	39	39	195	Transverse - Top
F1106	11	Bt.	8'-7"	36	36	36	36	36	180	Dowels - Ext. Columns
F1007	10	Bt.	7'-11"	36	36	36	36	36	180	-"- Int. Columns
F708	7	Bt.	9'-3"	20	20	20	20	20	100	Longitudinal - Ends
F1109	11	St.	12'-6"	20	20	20	20	20	100	Longitudinal - Bottom
Columns										
C1001	10	St.	16'-2"	14	-	-	-	-	14	Vertical
C1002	10	Bt.	27'-4"	4	-	-	-	-	4	-"-
C1003	10	St.	21'-9"	-	64	-	-	-	64	-"-
C1004	10	Bt.	32'-11"	-	8	-	-	-	8	-"-
C1005	10	St.	20'-5"	-	-	64	64	-	128	-"-
C1006	10	Bt.	31'-7"	-	-	8	8	-	16	-"-
C1007	10	St.	17'-3"	-	-	-	-	64	64	-"-
C1008	10	Bt.	28'-5"	-	-	-	-	8	8	-"-
C409	4	Bt.	11'-0"	52	76	72	72	56	328	Ties
C1010	10	Bt.	28'-1"	4	-	-	-	-	4	Vertical
C1011	10	St.	16'-11"	50	-	-	-	-	50	-"-
Cap Beam										
B901	9	St.	34'-8"	6	-	-	-	6	12	Horizontal - Bottom
B902	9	St.	17'-10"	6	-	-	-	6	12	-"- -"-
B703	7	St.	19'-0"	6	-	-	-	6	12	-"- -"-
B704	7	Bt.	8'-0"	24	24	24	24	24	120	-"- -"-
B805	8	St.	35'-4"	-	-	-	-	6	6	-"- Top
B706	7	St.	31'-0"	6	-	-	-	6	12	-"- -"-
B507	5	Bt.	8'-0"	8	8	8	8	8	40	-"- Ends
B508	5	Bt.	*	8	32	32	32	32	136	Stirrups
B509	5	Bt.	12'-7"	2	36	36	36	36	146	-"-
B511	5	Bt.	*	-	48	48	48	48	192	-"-
B512	5	Bt.	14'-1"	34	-	-	-	-	34	-"-
B513	5	Bt.	*	48	-	-	-	-	48	-"-
B514	5	Bt.	*	24	-	-	-	-	24	-"-
B1015	10	St.	34'-8"	-	6	6	6	-	18	Horizontal - Bottom
B1016	10	St.	17'-10"	-	6	6	6	-	18	-"- -"-
B917	9	St.	19'-0"	-	6	6	6	-	18	-"- -"-
B918	9	St.	18'-0"	-	4	4	4	-	12	-"- -"-
B1019	10	St.	35'-4"	-	6	6	6	-	18	-"- Top
B920	9	St.	31'-0"	-	6	6	6	-	18	-"- "
B521	5	St.	26'-0"	8	8	8	8	8	40	-"- Sides
B522	5	Bt.	11'-4"	2	4	4	4	4	18	Longitudinal - Ends
B523	5	Bt.	12'-1"	2	-	-	-	-	2	" "
B824	8	Bt.	35'-10"	6	-	-	-	-	6	Horizontal - Top
B425	4	Bt.	7'-6"	29	29	29	29	29	145	Vertical Ties - Pedestals
B426	4	Bt.	6'-8"	2	2	2	2	2	10	-"- -"- -"-
B427	4	Bt.	11'-10"	2	2	3	3	3	13	Horizontal Ties - Pedestals
B428	4	Bt.	15'-8"	1	1	1	1	1	5	" " "
B429	4	Bt.	5'-5"	-	6	-	6	-	12	Ties - Alignment Post Hole
B530	5	St.	3'-0"	-	8	-	8	-	16	Vertical -"- -"- -"-

* Indicates series bar - see Table.

BENDING DETAILS



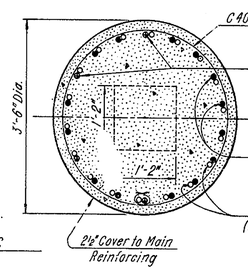
Note: All bar dimensions are out to out.



Note: Cap Beam Reinforcing not shown.

PEDESTAL REINFORCING DETAILS

SECTION B-B

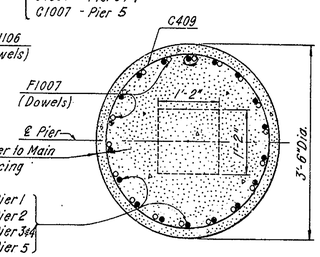


C1010 - Pier 1-E
C1002 - Pier 1-W
C1004 - Pier 2
C1006 - Pier 3 & 4
C1008 - Pier 5

C1011 - Pier 1-E
C1001 - Pier 1-W
C1003 - Pier 2
C1005 - Pier 3 & 4
C1007 - Pier 5

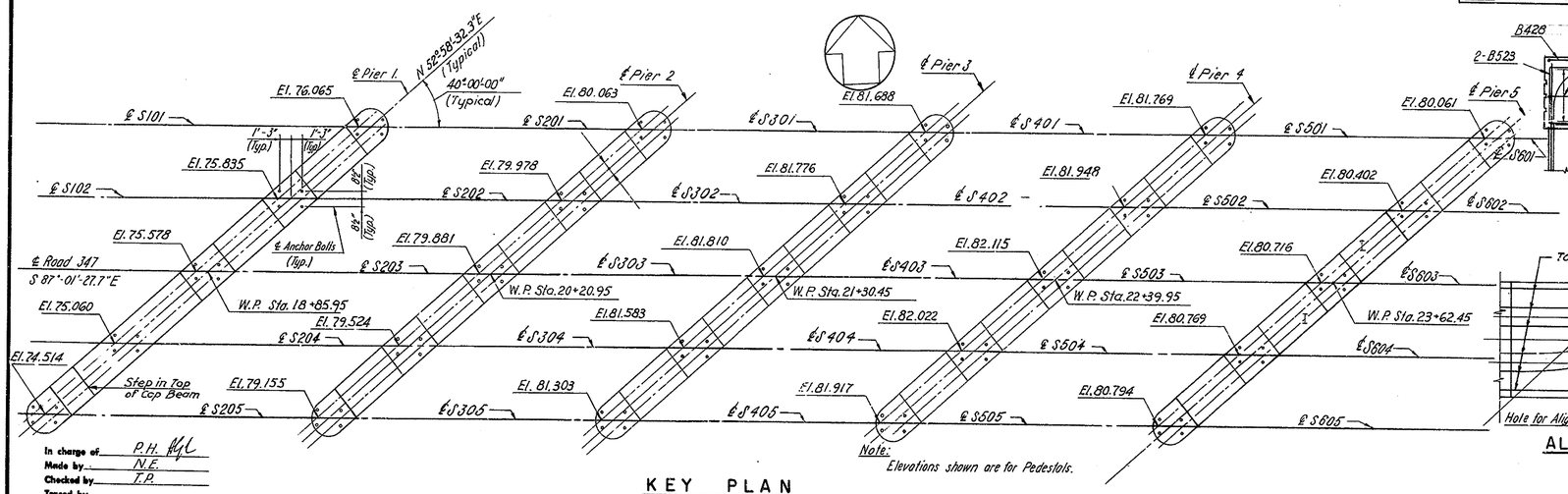
SECTION C-C

Note:
For location of Section B-B, See Sheet No. 94
For location of Sections C-C & D-D, See Sheets No. 94 & 95



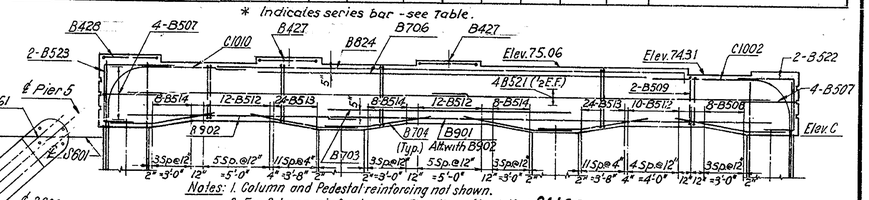
C1011 - Pier 1
C1003 - Pier 2
C1005 - Pier 3 & 4
C1007 - Pier 5

SECTION D-D



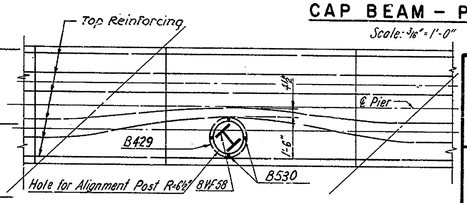
Note: Elevations shown are for Pedestals.

KEY PLAN
No Scale



Notes: 1. Column and Pedestal reinforcing not shown.
2. For Column reinforcing, see Elevation, Sheet Nos. 94 & 95
3. For Pedestal Elevations, see Key Plan.

CAP BEAM - PIER 1
Scale: 3/16" = 1'-0"



ALIGNMENT POST REINFORCING
Scale: ½" = 1'-0"

In charge of P.H.
Made by N.E.
Checked by T.P.
Traced by
Checked by

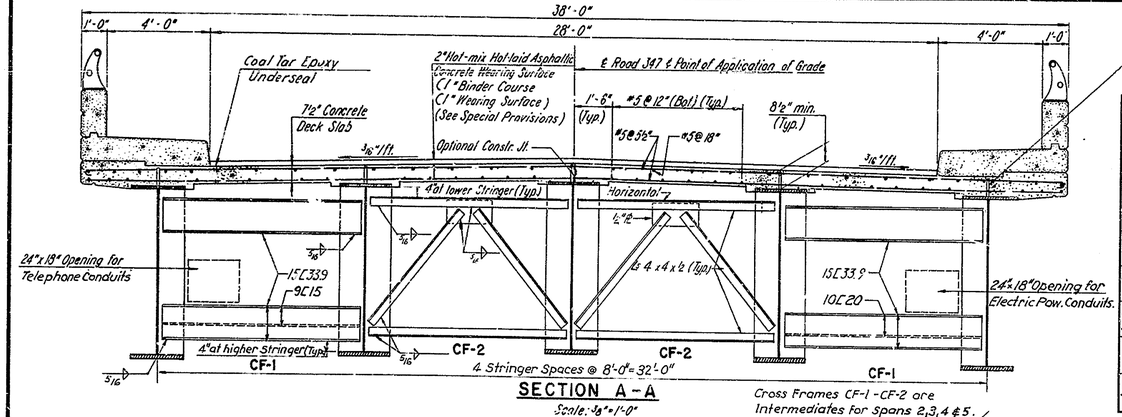
DELAWARE
STATE HIGHWAY DEPARTMENT
DELAWARE TURNPIKE

UNDERPASS ROAD 347

PIER DETAILS

DWG. NO.	SCALE	DATE	
7 OF 14	3/4" = 1'-0" Except as Noted	MAY 1962	GOODKIND & O'DEA CONSULTING ENGINEERS
CONTRACT NO.			

COUNTY	CONTRACT	FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE		2	DEL.			97	170



SECTION A-A

Scale: ⅜" = 1'-0"

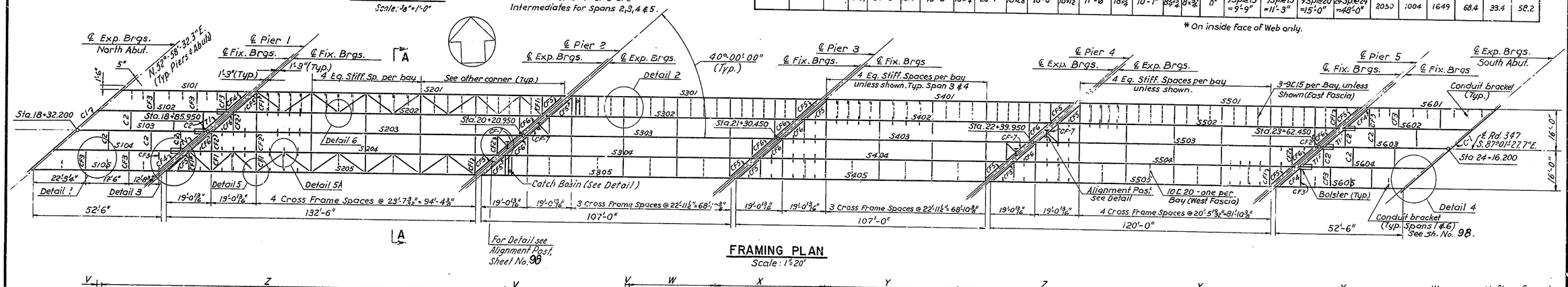
Cross Frames CF-1 - CF-2 are Intermediates for Spans 2,3,4 & 5.

For Slab Reinforcing Support on all Stringers see Detail 6, Sheet No. 82.

GIRDER SCHEDULE

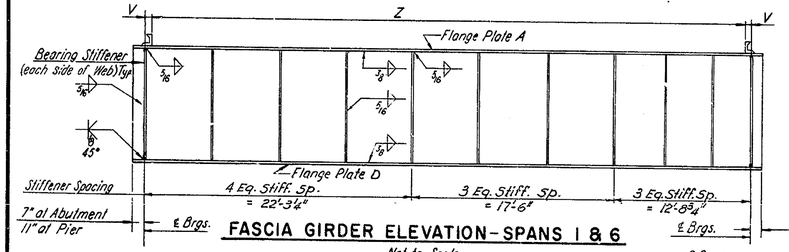
STRINGER MARK	STRINGER LENGTH	STRINGER WEB SIZE	FLANGE PLATES A SIZE	A LENGTH	B SIZE	B LENGTH	C SIZE	C LENGTH	D SIZE	D LENGTH	E SIZE	E LENGTH	F SIZE	F LENGTH	BEARING STIFF.	INTERMED. STIFF.	FENCE	SHEAR CONNECTOR SPACING V	W	X	Y	Z	MAXIMUM MOMENTS D.L.	S.D.L.	L.L.+I	MAXIMUM SHEARS D.L.	S.D.L.	L.L.+I
S101, S105 S601, S605	52'-6"	72"x7/16"	24"x1"	54'-0"	–	–	–	–	24"x1"	54'-0"	–	–	–	–	11"x¾"	*11"x¾"		+3"	–	–	–	26 Sp @ 24" = 52'-0"	383	204	658	29.2	15.6	38.0
S201, S205	132'-6"	do	24"x1⅜"	52'-0"	24"x1½"	18'-0"	24"x1"	23'-2"	24"x2⅛"	86'-0"	24"x1⅝"	11'-0"	24"x1"	13'-2"	do	* do		0"	11 Sp @ 13" = 11'-11"	9 Sp @ 16" = 12'-0"	11 Sp @ 20" = 18'-4"	24 Sp @ 24" = 48'-0"	2695	1342	1971	81.0	40.5	63.1
S202-S204	132'-6"	do	24"x1⅜"	45'-0"	24"x1⅛"	21'-6"	24"x1"	22'-10"	24"x2"	85'-0"	24"x1½"	11'-6"	24"x1"	12'-10"	do	do		0"	11 Sp @ 13" = 11'-11"	9 Sp @ 16" = 12'-0"	11 Sp @ 20" = 18'-4"	24 Sp @ 24" = 48'-0"	2667	1234	1870	80.5	37.2	60.5
S301, S305 S401, S405	107'-0"	do	24"x1"	108'-10"	–	–	–	–	24"x1¼"	66'-0"	24"x1"	21'-5"	–	–	do	* do		-2"	8 Sp @ 14" = 9'-4"	8 Sp @ 17" = 11'-4"	9 Sp @ 20" = 15'-0"	18 Sp @ 24" = 36'-0"	1640	869	1525	61.4	32.5	60.3
S302-S304 S402-S404	107'-0"	do	18"x¾"	108'-2"	–	–	–	–	18"x⅝"	66'-0"	18"x¼"	8'-6"	18"x¾"	12'-7"	8"x¾"	8"x¾"		0"	8 Sp @ 12" = 8'-0"	10 Sp @ 15" = 12'-6"	9 Sp @ 20" = 15'-0"	18 Sp @ 24" = 36'-0"	1531	799	1458	57.3	29.9	58.0
S501, S505	120'-0"	do	24"x1"	121'-10"	–	–	–	–	24"x1⅛"	71'-0"	24"x1½"	8'-0"	24"x1"	17'-5"	11"x¾"	*11"x¾"		+1"	7 Sp @ 14" = 8'-2"	9 Sp @ 16" = 12'-0"	9 Sp @ 21" = 15'-9"	24 Sp @ 24" = 48'-0"	2207	1129	1781	73.6	37.6	60.7
S502-S504	120'-0"	do	18"x1⅛"	50'-0"	18"x1"	15'-6"	18"x¾"	20'-1"	18"x2⅛"	78'-0"	18"x1½"	11'-6"	18"x¾"	10'-1"	8"x¾"	8"x¾"		0"	9 Sp @ 13" = 9'-9"	9 Sp @ 15" = 11'-3"	9 Sp @ 20" = 15'-0"	24 Sp @ 24" = 48'-0"	2050	1004	1649	68.4	33.4	58.2

* On inside face of Web only.



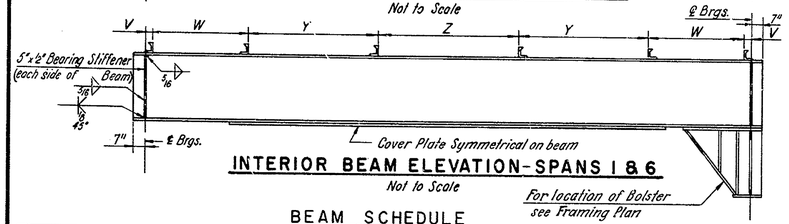
FRAMING PLAN

Scale: 1" = 20'



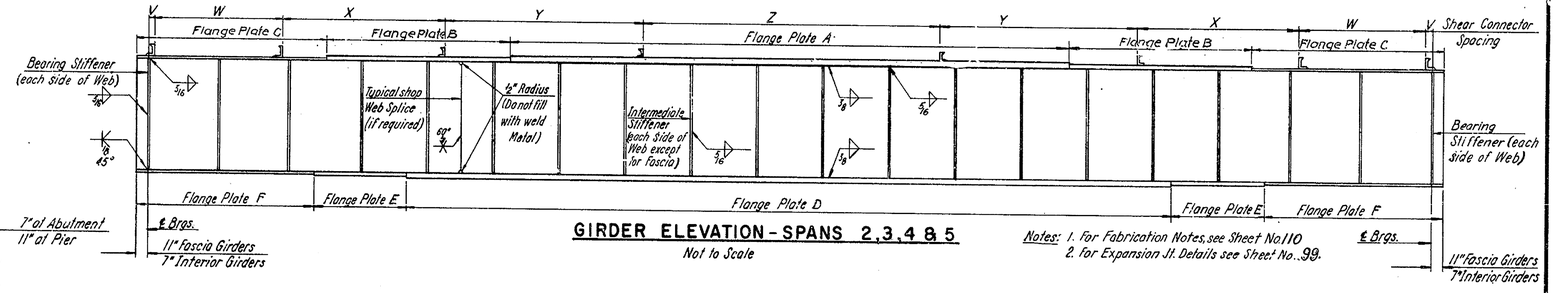
FASCIA GIRDER ELEVATION - SPANS 1 & 6

Not to Scale



INTERIOR BEAM ELEVATION - SPANS 1 & 6

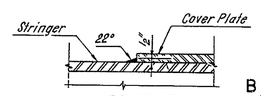
Not to Scale



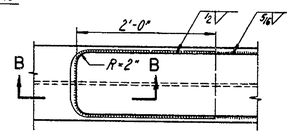
GIRDER ELEVATION - SPANS 2,3,4 & 5

Not to Scale

Notes: 1. For Fabrication Notes, see Sheet No. 110
2. For Expansion Jt. Details see Sheet No. 99.

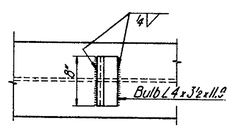


SECTION B-B



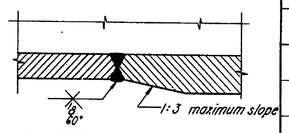
COVER PLATE DETAIL

Scale: 1" = 1'-0"



SHEAR CONNECTOR DETAIL

Scale: 1" = 1'-0"



FLANGE PLATE DETAIL

Not to Scale

Note: Detail typical for all flange plate splices.

BEAM SCHEDULE

STRINGER MARK	STRINGER LENGTH c.to c.Brgs.	STRINGER SIZE	BOTTOM COVER PLATE SIZE	BOTTOM COVER PLATE LENGTH	SHEAR CONNECTOR SPACING V	W	Y	Z	MAXIMUM MOMENTS D.L.	S.D.L.	L.L.+I	MAXIMUM SHEARS D.L.	S.D.L.	L.L.+I
S102-S104 S602-S604	52'-6"	33 WF 141	10"x¾"	38'-6"	+2"	14 Sp @ 7" = 8'-2"	11 Sp @ 10" = 9'-2"	14 Sp @ 15" = 17'-6"	332	196	634	25.1	14.8	55.2

Note: An alternate type of shear connector for the composite construction may be allowed by the Engineer. A drawing showing the type, design and details for the proposed alternate shear connector must be submitted to the Engineer for approval before permission for its use will be granted.

MARK	DEFLECTION AT MIDSPAN STEEL	CONC. DECK	S.D.L.	V.C.	TOTAL	DEFLECTION AT 1/4 POINTS STEEL	CONC. DECK	S.D.L.	V.C.	TOTAL
S201, S205,	7/8"	1 5/8"	1 3/16"	3 5/16"	6 3/4"	11/16"	1 1/4"	11/16"	2 1/2"	5 1/8"
S202-S204,	15/16"	1 9/16"	7/8"	3 5/16"	6 11/16"	11/16"	1 3/16"	11/16"	2 1/2"	5 1/16"
S301, S305, S401, S405,	7/16"	1"	9/16"	2 1/8"	4 1/8"	5/16"	3/4"	7/16"	1 5/8"	3 1/8"
S101, S105, S601, S605,	0"	1/16"	1/16"	1/2"	5/8"	0"	1/16"	1/16"	3/8"	1/2"
S102-S104, S602-S604,	1/8"	1/2"		1/2"	1 5/16"	1/8"	3/8"	1/8"	3/8"	1"
S302-S304, S402-S404,	1/2"	1 1/4"	9/16"	2 1/8"	4 7/16"	3/8"	1"	7/16"	1 5/8"	3 7/16"
S501, S505,	11/16"	1 7/16"	3/4"	2 5/8"	5 1/2"	1/2"	1 1/16"	9/16"	2"	4 1/8"
S502-S504,	11/16"	1 5/16"	11/16"	2 5/8"	5 5/16"	1/2"	1"	1/2"	2"	4"

In charge of P.H. RGC
Made by T.P.
Checked by N.E.
Traced by
Checked by

DELAWARE
STATE HIGHWAY DEPARTMENT
DELAWARE TURNPIKE

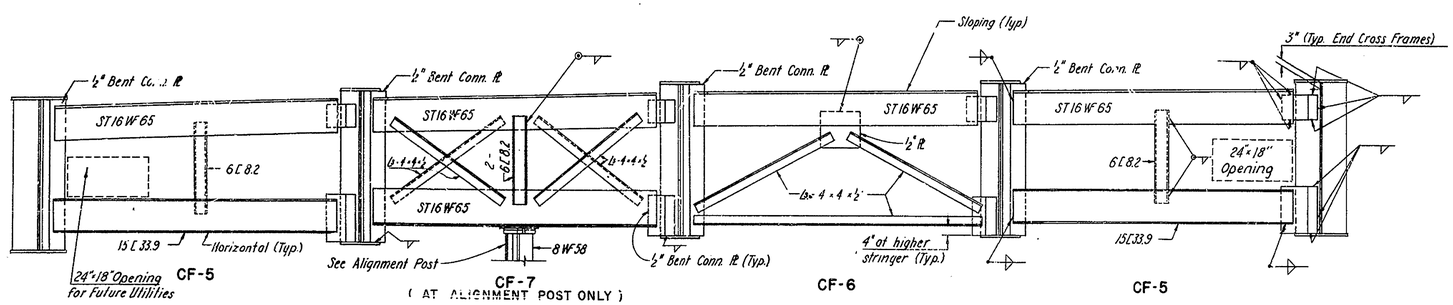
UNDERPASS - ROAD 347
FRAMING PLAN

DWG. NO.	SCALE	DATE
8 OF 14	As Noted	May 1962

CONTRACT NO.

GOODKIND & O'DEA
CONSULTING ENGINEERS

COUNTY	CONTRACT	FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE		2	DEL.			98	170

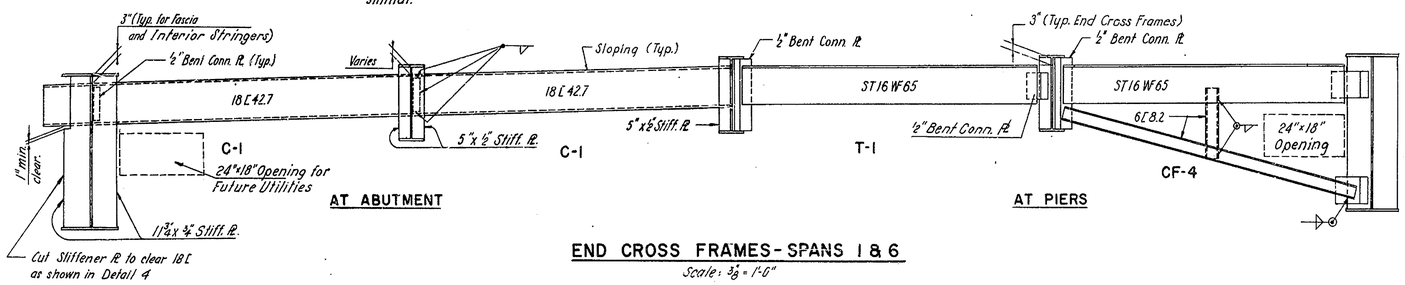


Note: Add fills where required.

Note: Cross frames shown for Span 2. Other Spans similar.

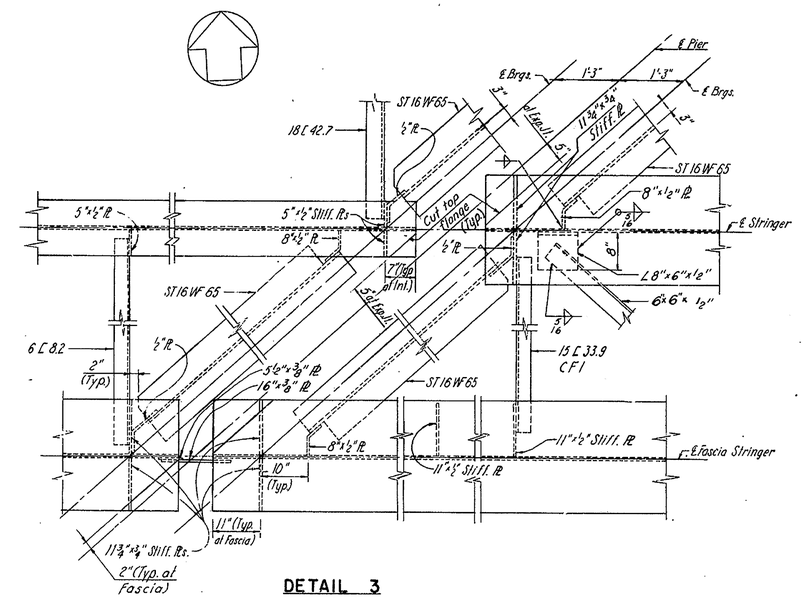
END CROSS FRAMES - SPANS 2 - 5

Scale: 3/8" = 1'-0"



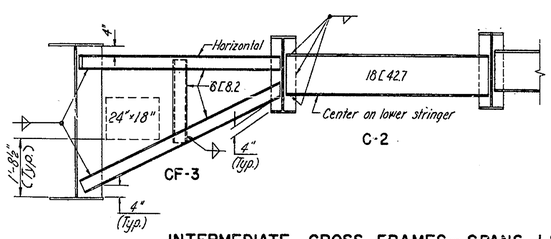
END CROSS FRAMES - SPANS 1 & 6

Scale: 3/8" = 1'-0"



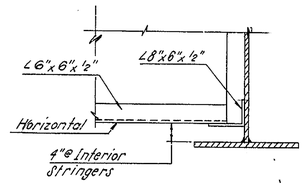
DETAIL 3

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

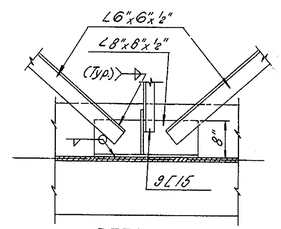


INTERMEDIATE CROSS FRAMES - SPANS 1 & 6

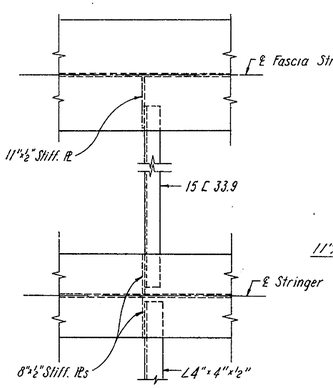
Scale: 3/8" = 1'-0"



SECTION X-X

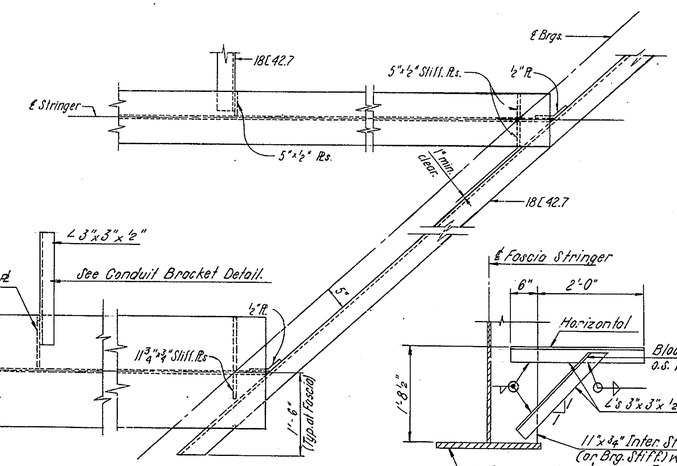


DETAIL 6



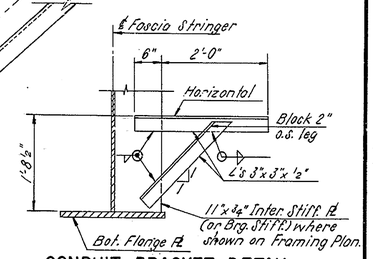
DETAIL 2

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



DETAIL 4

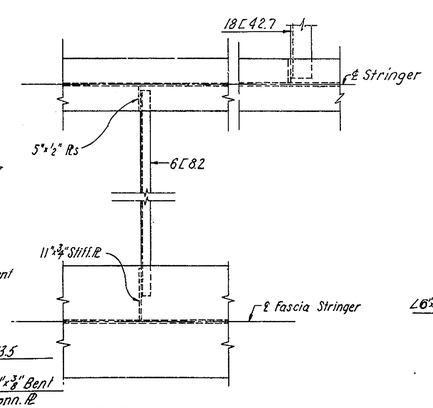
Scale: 3/4" = 1'-0"



CONDUIT BRACKET DETAIL

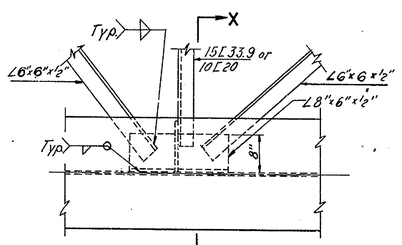
Scale: 3/4" = 1'-0"

NOTE: For location of Conduit Brackets, see Framing Plan.



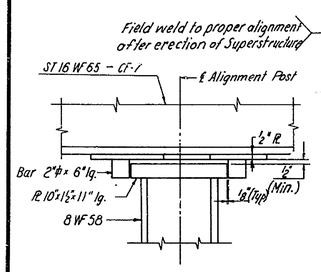
DETAIL 1

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



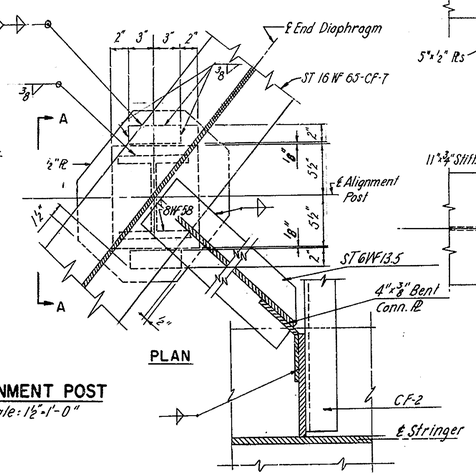
DETAIL 5

Scale: 3/4" = 1'-0



Note: For location of Alignment Posts, see Sheet No. 97.

SECTION A-A



PLAN

ALIGNMENT POST

Scale: 1½" = 1'-0"

Notes:
1. All Cross Frames are in vertical plane.
2. All Welds shown are 5/16 unless otherwise noted.
3. For location of Details 1, 2, 3, 4 & 5 see Sheet No. 97.
4. For Cross Frame layout, see Framing Plan, Sheet No. 97.

In charge of P.H. H.G.
Made by T.P.
Checked by N.E.
Traced by
Checked by

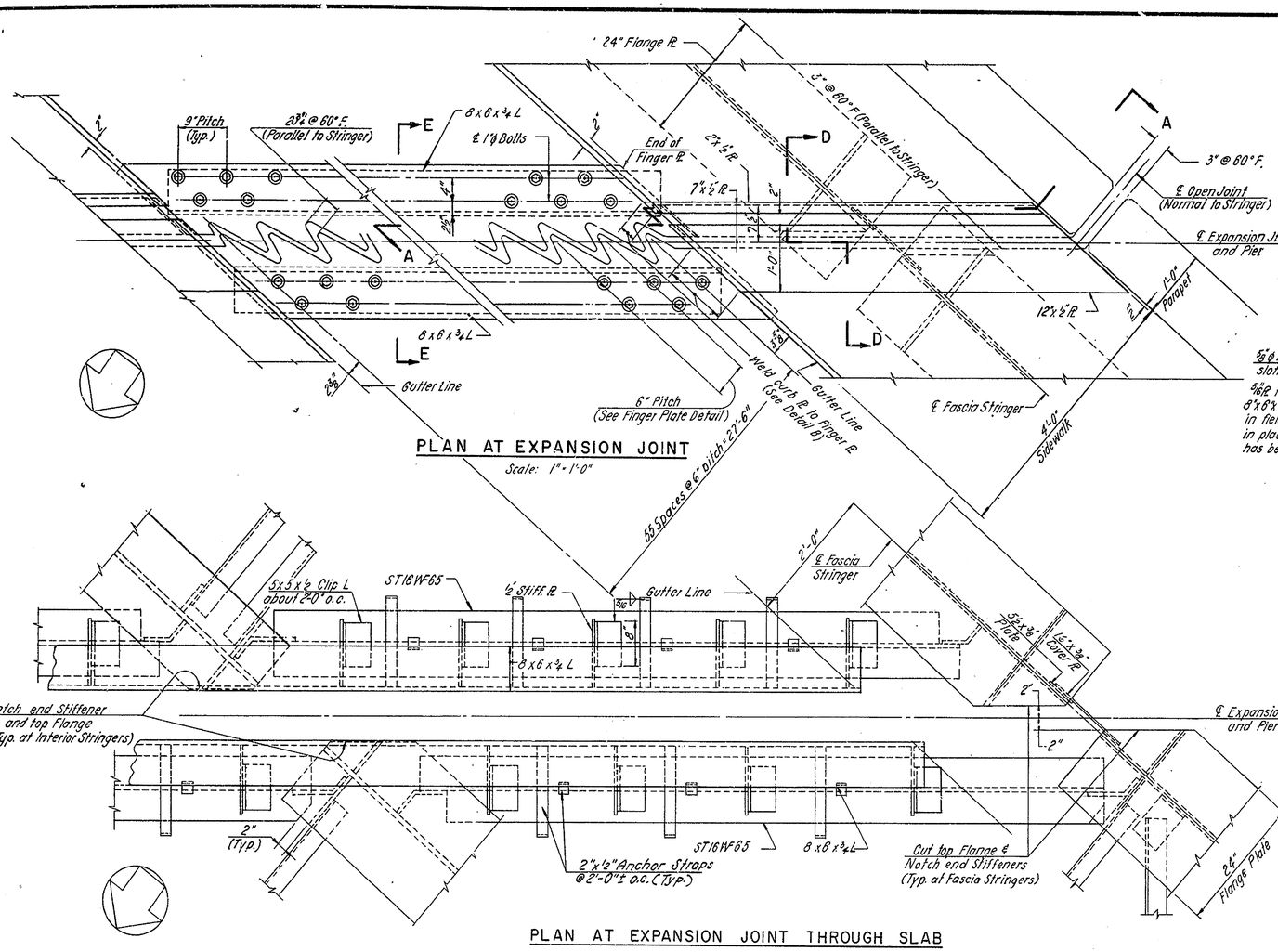
DELAWARE
STATE HIGHWAY DEPARTMENT
DELAWARE TURNPIKE

UNDERPASS - ROAD 347

STEEL DETAILS

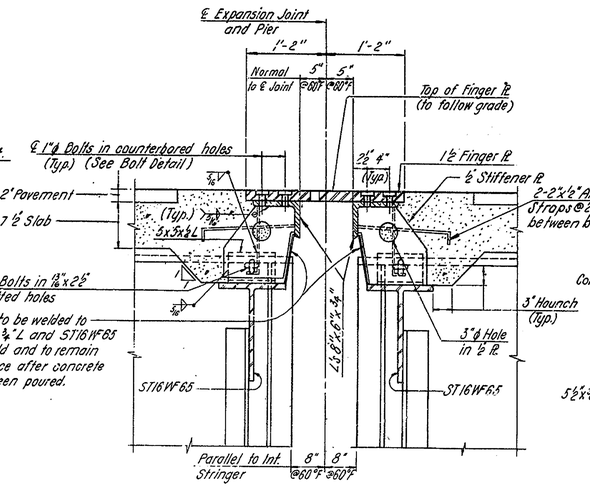
DWG. NO.	SCALE	DATE	
9 OF 14	AS NOTED	MAY 1962	GOODKIND & O'DEA CONSULTING ENGINEERS
CONTRACT NO.			

COUNTY	CONTRACT	FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE		2	DEL.			99	170



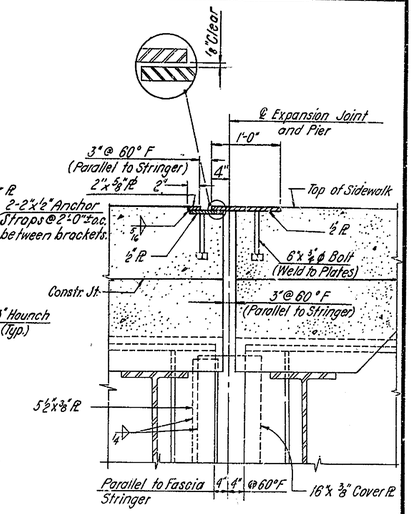
PLAN AT EXPANSION JOINT

Scale: 1" = 1'-0"



SECTION E-E

Scale: 1" = 1'-0"

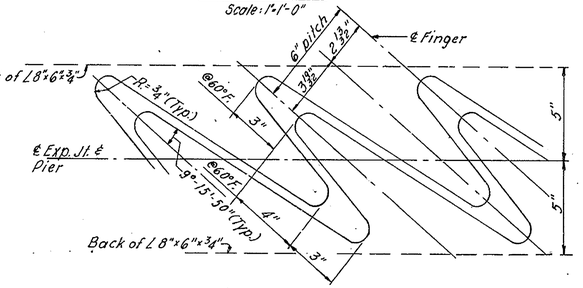


SECTION D-D

Scale: 1" = 1'-0"

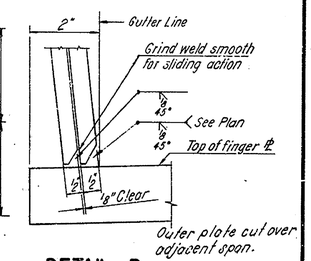
PLAN AT EXPANSION JOINT THROUGH SLAB

Scale: 1" = 1'-0"



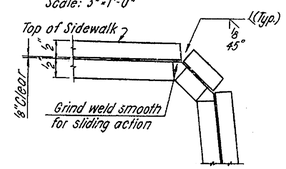
FINGER PLATE DETAIL

Scale: 3" = 1'-0"



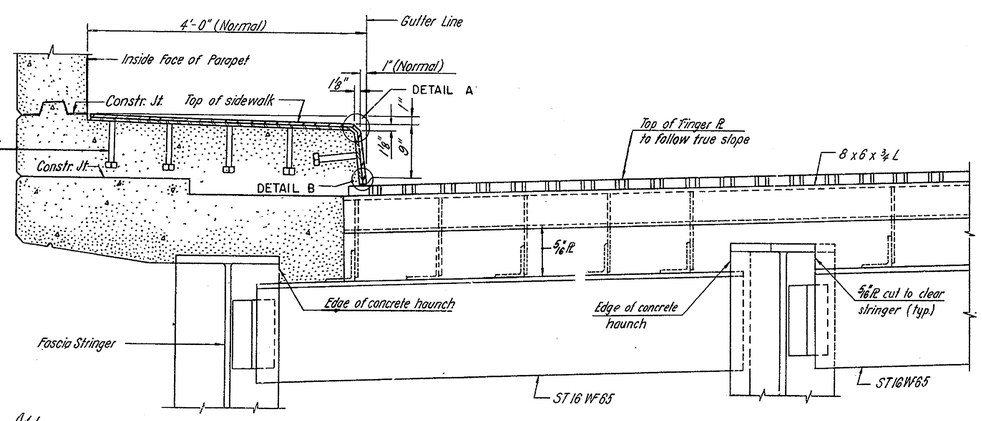
DETAIL B

Scale: 6" = 1'-0"



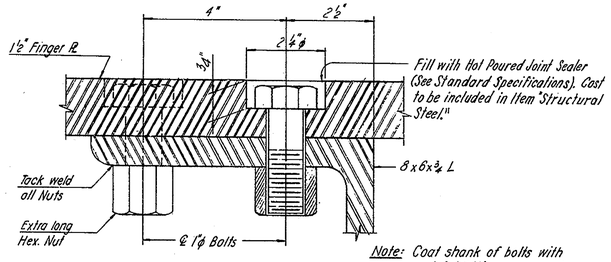
DETAIL A

Scale: 6" = 1'-0"



SECTION A-A

No Scale



BOLT DETAIL

Scale: 6" = 1'-0"

Note: Coat shank of bolts with rust inhibiting compound and oil all nuts.

Notes. 1. For location of Expansion Joints, see Sheet No. 97.
2. Payment for all Toothed Plates and Connections shall be included in the Lump Sum bid for "Structural Steel." (See Special Provisions.)

In charge of P.H.
Made by N.E.
Checked by T.P.
Traced by
Checked by

DELAWARE
STATE HIGHWAY DEPARTMENT
DELAWARE TURNPIKE

UNDERPASS - ROAD 347

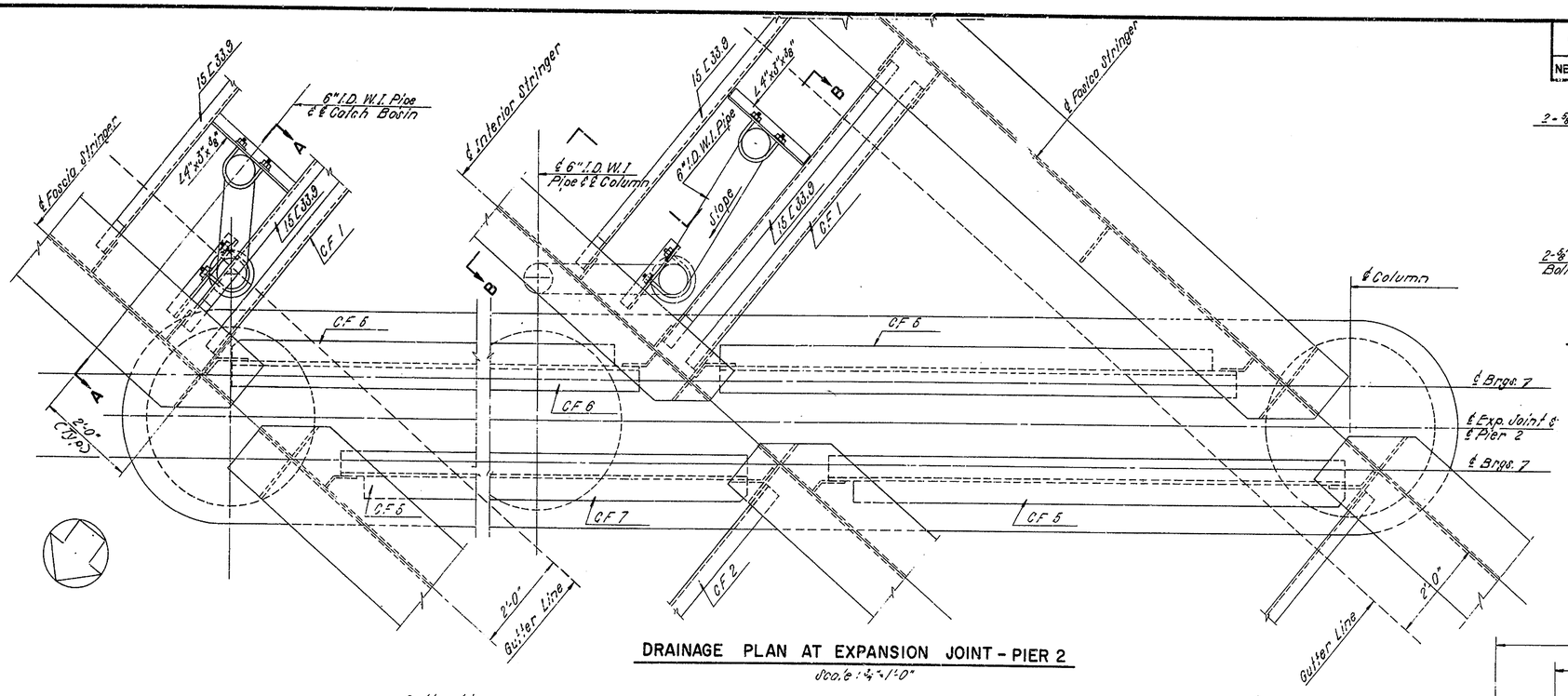
STEEL EXPANSION JOINT

DWG. NO.	SCALE	DATE
10 OF 14	AS NOTED	MAY 1962

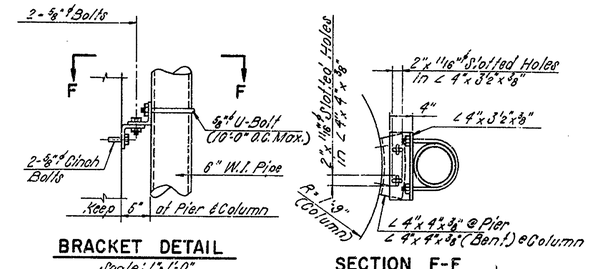
CONTRACT NO.

GOODKIND & O'DEA
CONSULTING ENGINEERS

COUNTY	CONTRACT	FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE		2	DEL.			100	110

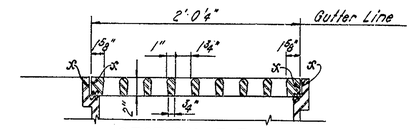


DRAINAGE PLAN AT EXPANSION JOINT - PIER 2
Scale: 1/4" = 1'-0"

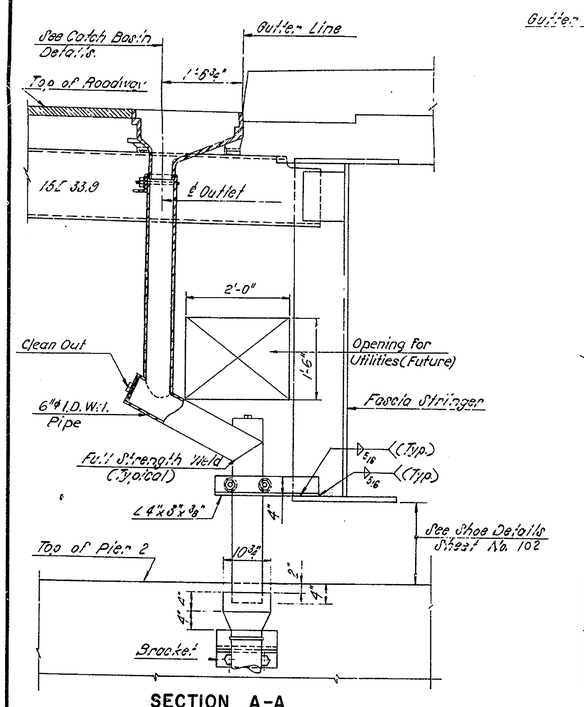


BRACKET DETAIL
Scale: 1" = 1'-0"

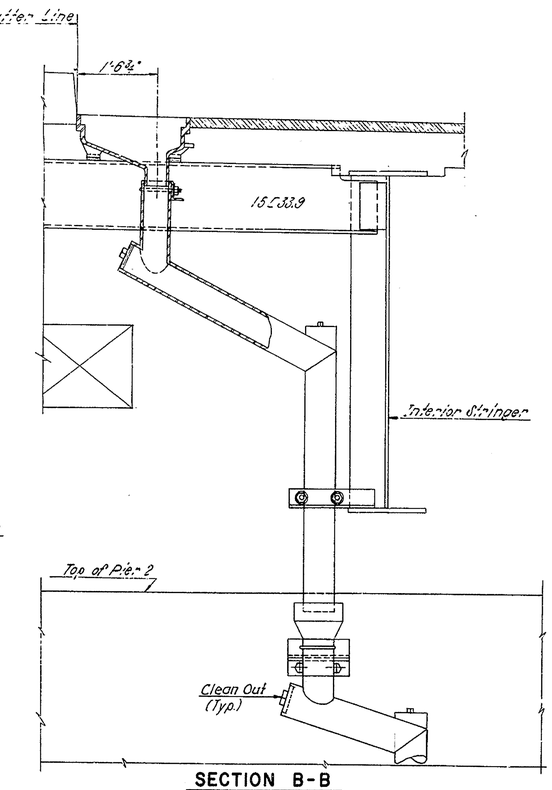
SECTION F-F
Scale: 1" = 1'-0"



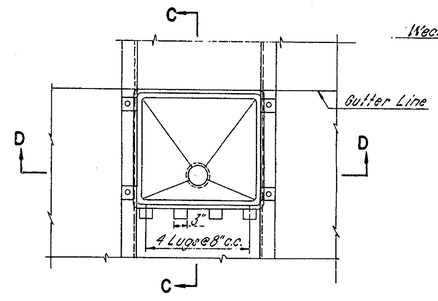
SECTION E-E
Scale: 1½" = 1'-0"



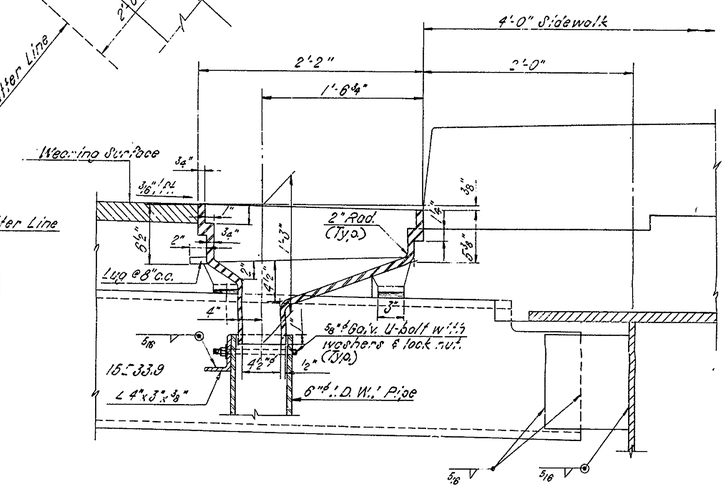
SECTION A-A
Scale: 3/4" = 1'-0"



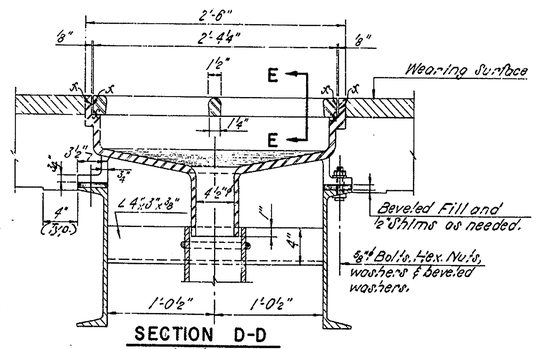
SECTION B-B
Scale: 3/4" = 1'-0"



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



SECTION C-C
Scale: 1½" = 1'-0"



SECTION D-D
Scale: 1½" = 1'-0"

In Charge of P.H.
Made by N.E.
Checked by T.P.
Traced by
Checked by

DELAWARE
STATE HIGHWAY DEPARTMENT
DELAWARE TURNPIKE

UNDERPASS - ROAD 347

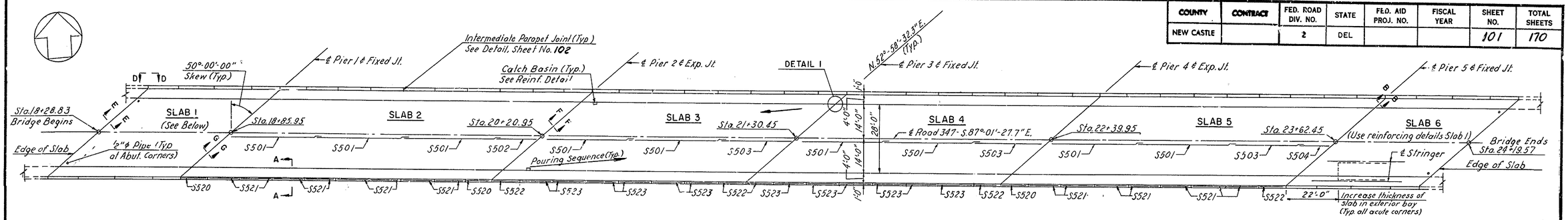
DRAINAGE DETAILS

DWG. NO.	SCALE	DATE
11 of 14	As Noted	MAY 1962

CONTRACT NO.

GOODKIND, O'DEA & CO.
CONSULTING ENGINEERS

COUNTY	CONTRACT	FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE		2	DEL			101	170

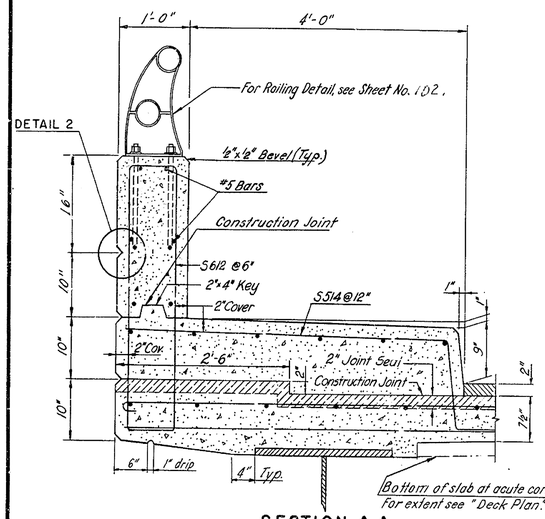


Note: Concrete to be poured as indicated in Slab 3.

DECK PLAN

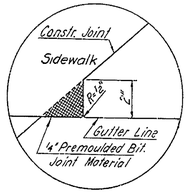
Scale: 1" = 20'

Notes:
1. For Slabs 2, 3, 4 & 5, use reinforcing details shown in Slab 1, except as indicated in "Deck Plan" for longitudinal bars.
2. A concrete water-reducing retarder admixture shall be added to all Superstructure Concrete. (See Special Provisions.)



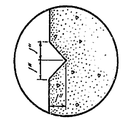
SECTION A-A

Scale: 1" = 1'-0"



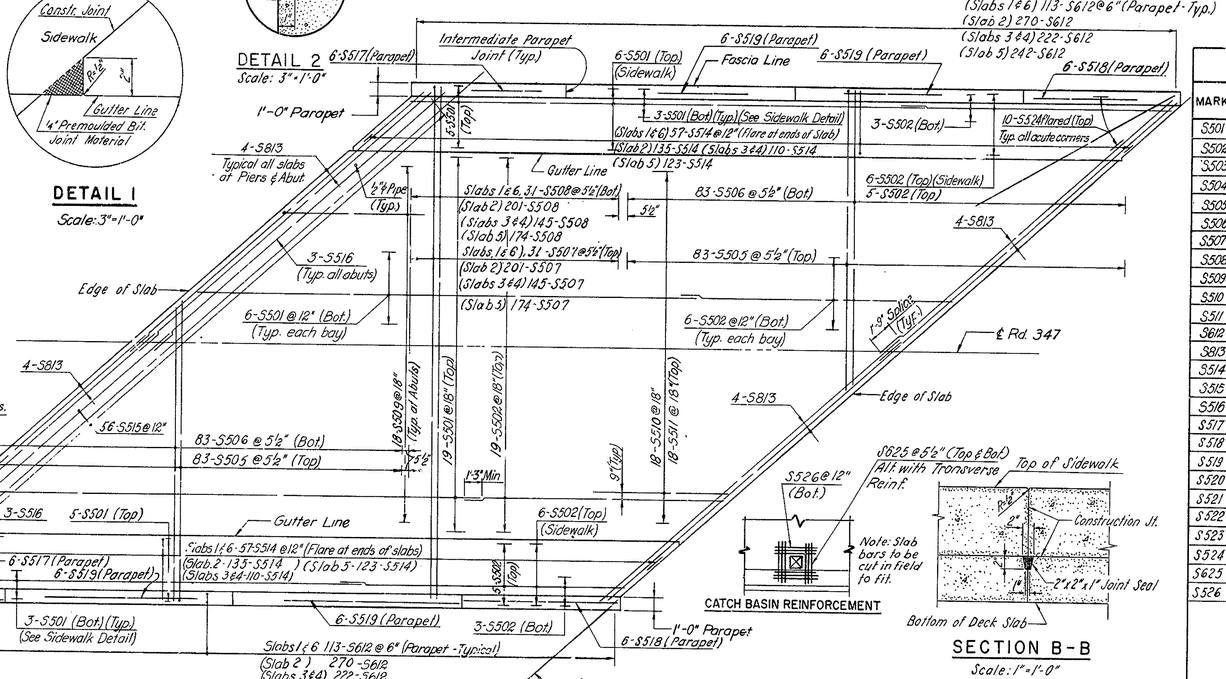
DETAIL 1

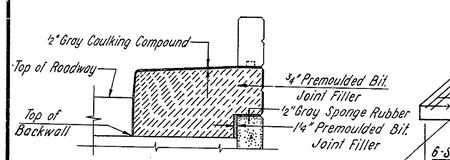
Scale: 3" = 1'-0"



DETAIL 2

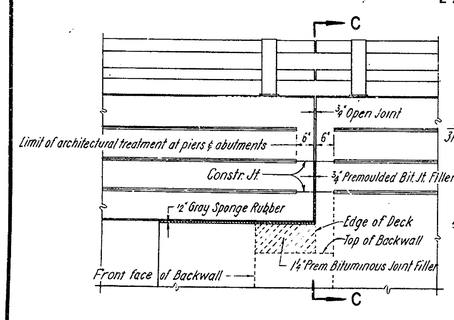
Scale: 3" = 1'-0"





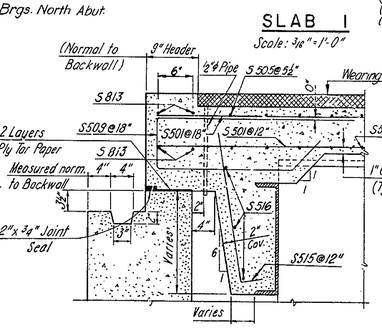
SECTION C-C

Scale: ⅜" = 1'-0"



ELEVATION D-D

Scale: ½" = 1'-0"

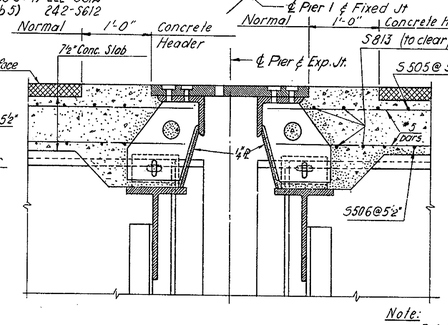


SLAB 1

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

SECTION E-E

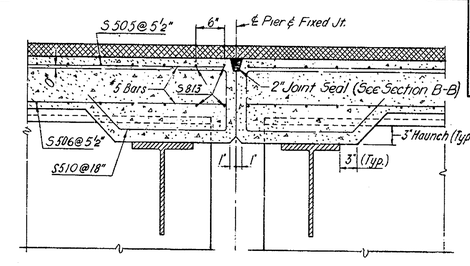
Scale: 1" = 1'-0"



SECTION F-F

Scale: 1" = 1'-0"

Note: Reinforcing shown is typical for both sides of joint. For Structural Steel Details, see Sheet No. 98.



SECTION G-G

Scale: 1" = 1'-0"

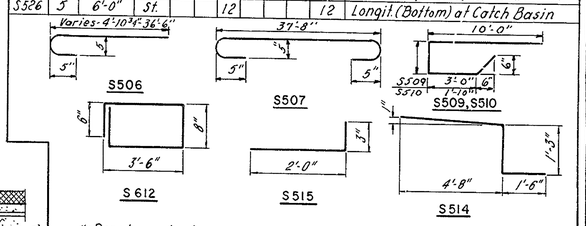
CATCH BASIN REINFORCEMENT

SECTION B-B

Scale: 1" = 1'-0"

BAR LIST

MARK	SIZE	LENGTH	TYPE	SLAB NO. 1	2	3	4	5	6	TOTAL NO.	DESCRIPTION & LOCATION
S501	5	40'-0"	St.	71	213	142	142	142	71	781	Longit. Slab (T. & B.), Sidewalk
S502	5	18'-0"	St.	71	71	–	–	–	71	213	Longit. Slab (T. & B.), Sidewalk
S503	5	31'-0"	St.	–	–	71	71	71	–	213	Longit. Slab (T. & B.), Sidewalk
S504	5	14'-3"	St.	–	–	–	–	71	–	71	Longit. Slab (T & B) Sidewalk
S505	5	*	Bt.	166	166	166	166	166	166	996	Trans. Top 12 sets of 83; 37'-1" to 5'-5½"; Δ=4⅜"
S506	5	*	St.	166	166	166	166	166	166	996	Trans. Bot. 12 sets of 83; 36'-6" to 4'-10¾"; Δ=4⅜"
S507	5	38'-10"	St.	31	201	145	145	174	31	727	Transverse - Top
S508	5	37'-8"	St	31	201	145	145	174	31	727	Transverse-Bottom
S509	5	14'-6"	Bt.	18	–	–	–	–	18	36	Longit. - at Abutments
S510	5	13'-4"	Bt.	18	18	18	18	18	18	108	Longit. - at Piers (Fixed Jts.)
S511	5	10'-0"	St.	–	18	18	18	18	–	72	Longit. - of Piers (Exp. Jts.)
S612	6	8'-8"	Bt.	226	540	444	444	484	226	2364	Vert. Stirrups in Parapet
S813	8	29'-0"	St	16	16	16	16	16	16	96	Transverse (Top & Bot.) at Piers & Abuts.
S514	5	7'-5"	Bt.	114	270	220	220	246	114	1184	Transverse - Sidewalk
S515	5	2'-3"	Bt.	56	–	–	–	–	56	112	Vert. - in Haunch at Abutments
S516	5	29'-0"	St.	6	–	–	–	–	6	12	Trans. - in Haunch at Abutments
S517	5	12'-7"	St.	12	–	–	–	–	12	24	Longit. - Parapet
S518	5	12'-5"	St.	12	–	–	–	–	12	24	Longit. - Parapet
S519	5	15'-4"	St.	24	–	–	–	–	24	48	Longit. - Parapet
S520	5	11'-2"	St.	–	24	–	–	12	–	36	Longit. - Parapet
S521	5	13'-8"	St.	–	96	–	–	84	–	180	Longit. - Parapet
S522	5	11'-5"	St.	–	–	24	24	12	–	60	Longit. - Parapet
S523	5	14'-0"	St.	–	–	72	72	–	–	144	Longit. - Parapet
S524	5	17'-0"	St.	20	20	20	20	20	20	120	Acute Corners (Top)
S625	6	8'-3"	St.			24				24	Trans. (Top & Bot.) at Catch Basin
S526	5	6'-0"	St.			12				12	Longit. (Bottom) at Catch Basin



* Denotes series bars

Note: All bar dimensions are out to out

In charge of P.H. M.
Made by N.E.
Checked by T.P.
Traced by
Checked by

DELAWARE
STATE HIGHWAY DEPARTMENT
DELAWARE TURNPIKE

UNDERPASS – ROAD 347

DECK PLAN

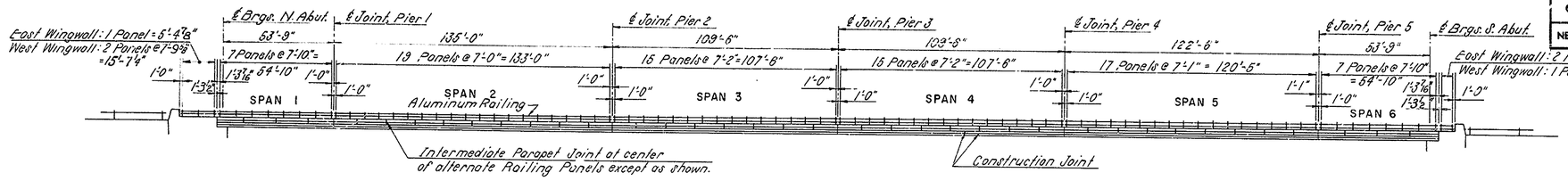
DWG. NO.	SCALE	DATE
12 OF 14	AS NOTED	MAY 1962

CONTRACT NO.

GOODKIND & O'DEA
CONSULTING ENGINEERS

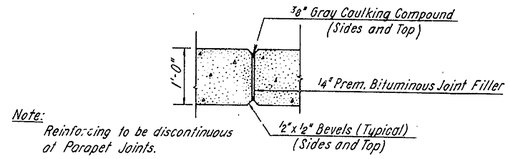
COUNTY	CONTRACT	FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE		2	DEL.			102	170

~~INTERSTATE HIGHWAY ROUTE F.A.I. 1~~
~~UNDER ROAD 347~~



RAILING ELEVATION

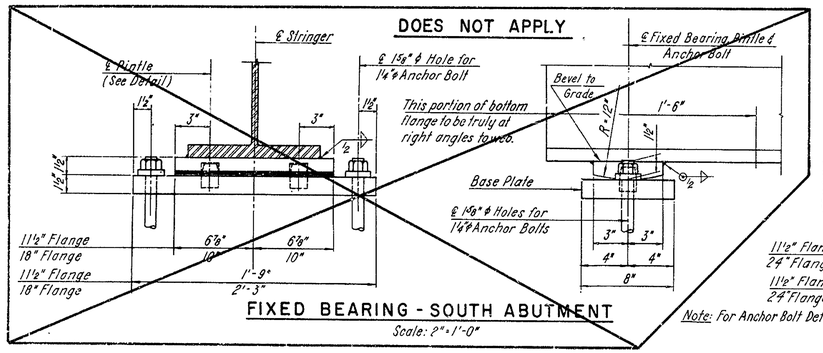
Scale: 1" = 30'



Note: Reinforcing to be discontinuous at Parapet Joints.

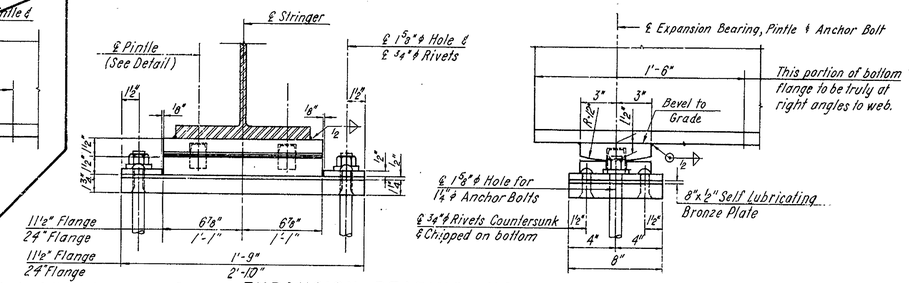
INTERMEDIATE PARAPET JOINT DETAIL

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



FIXED BEARING - SOUTH ABUTMENT

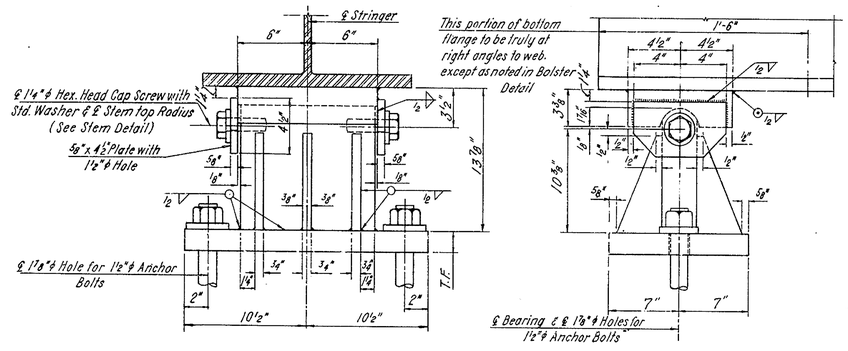
Scale: 2" = 1'-0"



Note: For Anchor Bolt Detail, see Sheet No. 93.

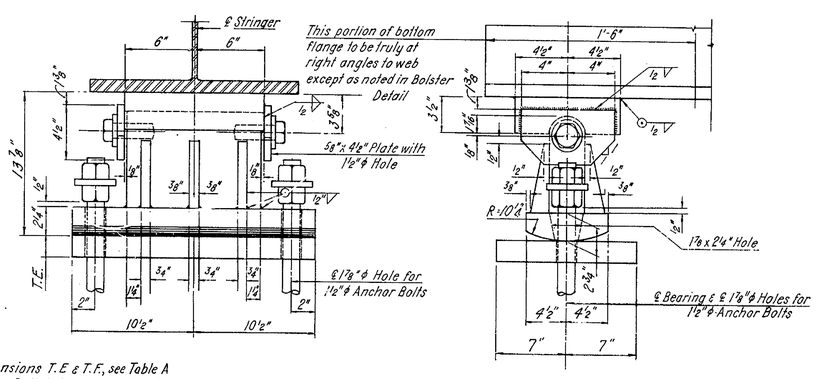
EXPANSION BEARING - NORTH ABUTMENT

Scale: 2" = 1'-0"



FIXED BEARING - PIERS 1, 3 & 5

Scale: 2" = 1'-0"



Notes: 1. For dimensions T.E & T.F., see Table A
2. For Anchor Bolt Details, see Sheet No. 93

EXPANSION BEARING - PIERS 2 & 4

Scale: 2" = 1'-0"

GENERAL NOTES

Design Specifications: A.A.S.H.O. - 1957.

Loading: H-20 - S16-44 Modified.

Material and Fabrication Specifications: State of Delaware, State Highway Department, Standard Specifications, April 1, 1957.
A.W.S. 1956 Standard Specifications for Welded Highway and Railway Bridges.

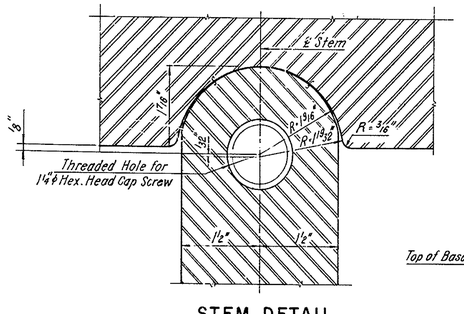
Design:
Stresses - Structural and Reinforcing Steel: 18,000 psi.
Concrete: f_c = 1,200 psi., n = 10.
Composite Construction based on no temporary intermediate supports to be used during construction.

Painting: For Shop and Field painting of Structural Steel see Spec. Provisions.

Test Piles: Piles shall be driven according to Standard Specifications.

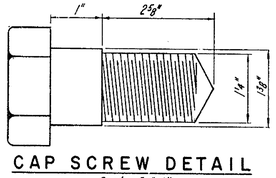
Portland Cement Concrete Masonry: The cost of furnishing and placing all bituminous joint filler, flashing, joint seal, caulking compound, sponge rubber, tar paper and concrete water-reducing retarder admixture to be included in this item. See Special Provisions. All exposed concrete edges shall be bevelled 1" x 1" unless otherwise noted.

Quantities: Quantities shown shall not relieve the Contractor of the responsibility of checking them in preparing his bid.



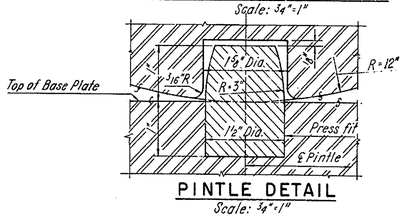
STEM DETAIL

Scale: 3/4" = 1"



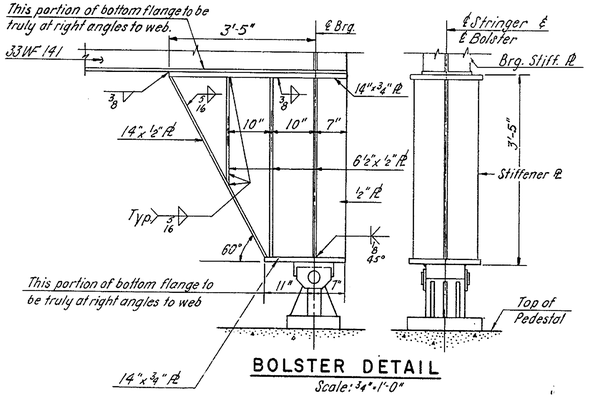
CAP SCREW DETAIL

Scale: 3/4" = 1"



PINTLE DETAIL

Scale: 3/4" = 1"



BOLSTER DETAIL

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

TABLE A

PIERS 1 & 3		PIERS 2 & 4	
STRINGER	TF	STRINGER	TE
201	3 1/4"	301	8 1/2"
202, 203, 501	3 7/8"	302, 303	4 1/16"
204	3 9/16"	304	4 1/8"
205	3 7/16"	305	3 11/16"
401, 402	2 3/4"	401	2 11/16"
403, 404, 504	2 13/16"	402, 403	3 1/8"
406, 503	2 7/8"	404	3 1/16"
502	2 15/16"	405	2 9/16"
506	3"	All others are 2 1/2"	

In charge of P.H. AL
Made by N.E.
Checked by T.P.
Traced by
Checked by

DELAWARE
STATE HIGHWAY DEPARTMENT
DELAWARE TURNPIKE

UNDERPASS - ROAD 347

RAILING AND BEARINGS

DWG. NO.	SCALE	DATE
13 of 14	As Noted	MAY 1962

CONTRACT NO.

GOODKIND & O'DEA
CONSULTING ENGINEERS

COUNTY	CONTRACT	FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE		2	DEL.			103	170

~~INTERSTATE HIGHWAY ROUTE F.A.I-1~~

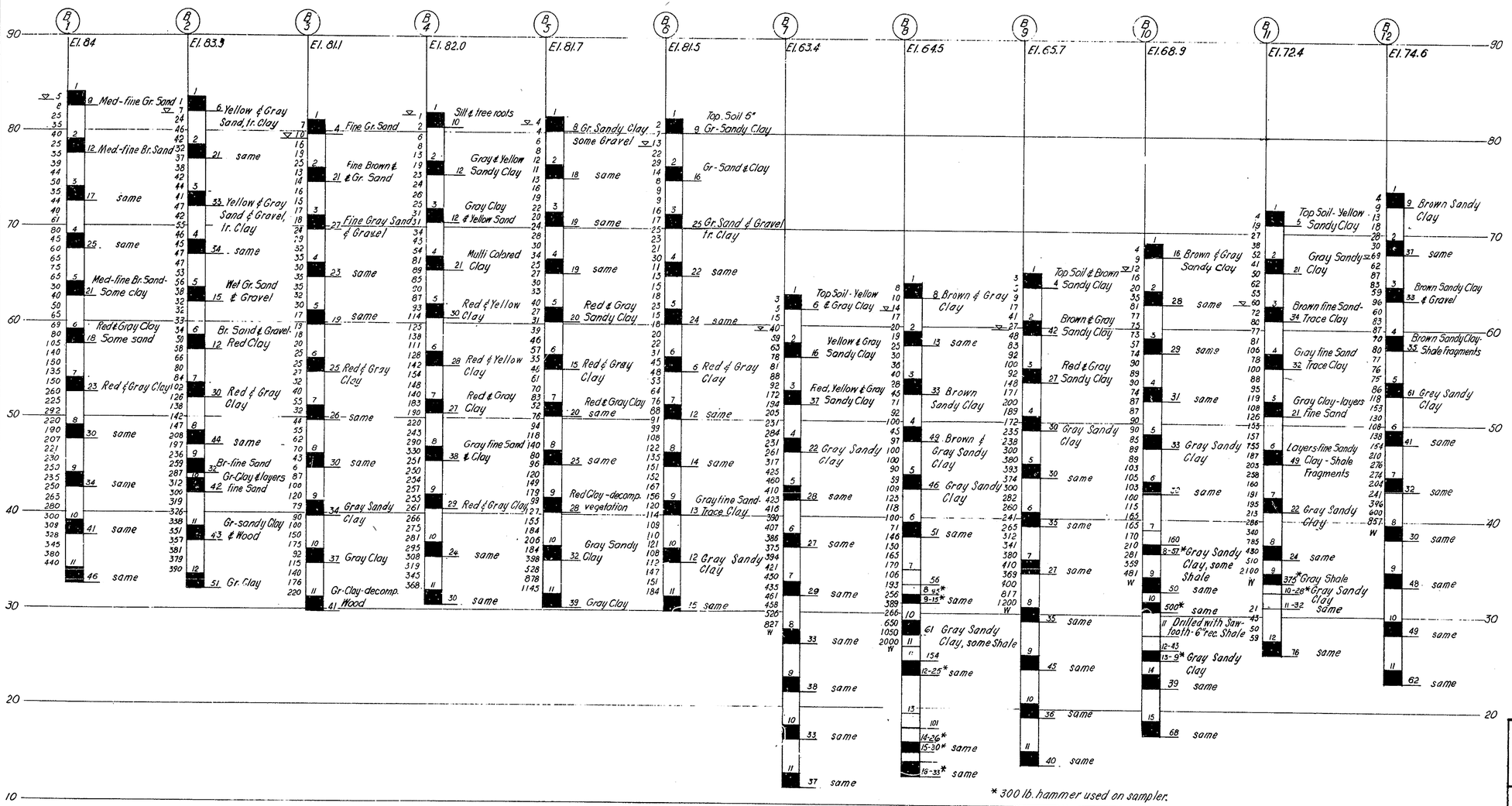
~~UNDER ROADS 347 & 348~~

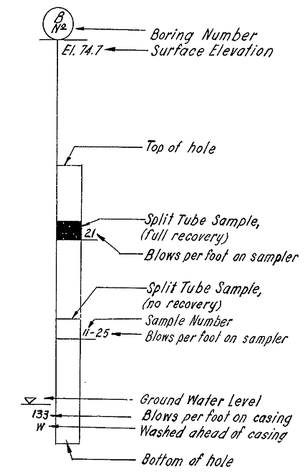
ROAD 348 OVER DEL. TURNPIKE		
BORING	℄ STATION	OFFSET
B1	17+79	℄
B2	18+80	37 R
B3	19+50	℄
B4	20+85	37 R
B5	21+52	℄
B6	22+50	37 R

For locations of borings B1 thru B6 see Plan, Sheet No. 104

ROAD 347 OVER DEL. TURNPIKE		
BORING	℄ STATION	OFFSET
B7	18+26	12R
B8	19+26	26L
B9	19+98	10R
B10	21+11	16L
B11	21+88	21R
B12	22+76	6L

For locations of borings B7 thru B12 see Plan, Sheet No. 90





LEGEND

Casing: 2½" O.D. Std., 300 lb. hammer, 24" drop
Sampler: 2" O.D. Split Tube, 140 lb. hammer, 30" drop unless otherwise noted.

In charge of P.H. HGL
Made by N.E.
Checked by T.P.
Traced by
Checked by

DELAWARE
STATE HIGHWAY DEPARTMENT
DELAWARE TURNPIKE

UNDERPASS-ROAD 347 & 348

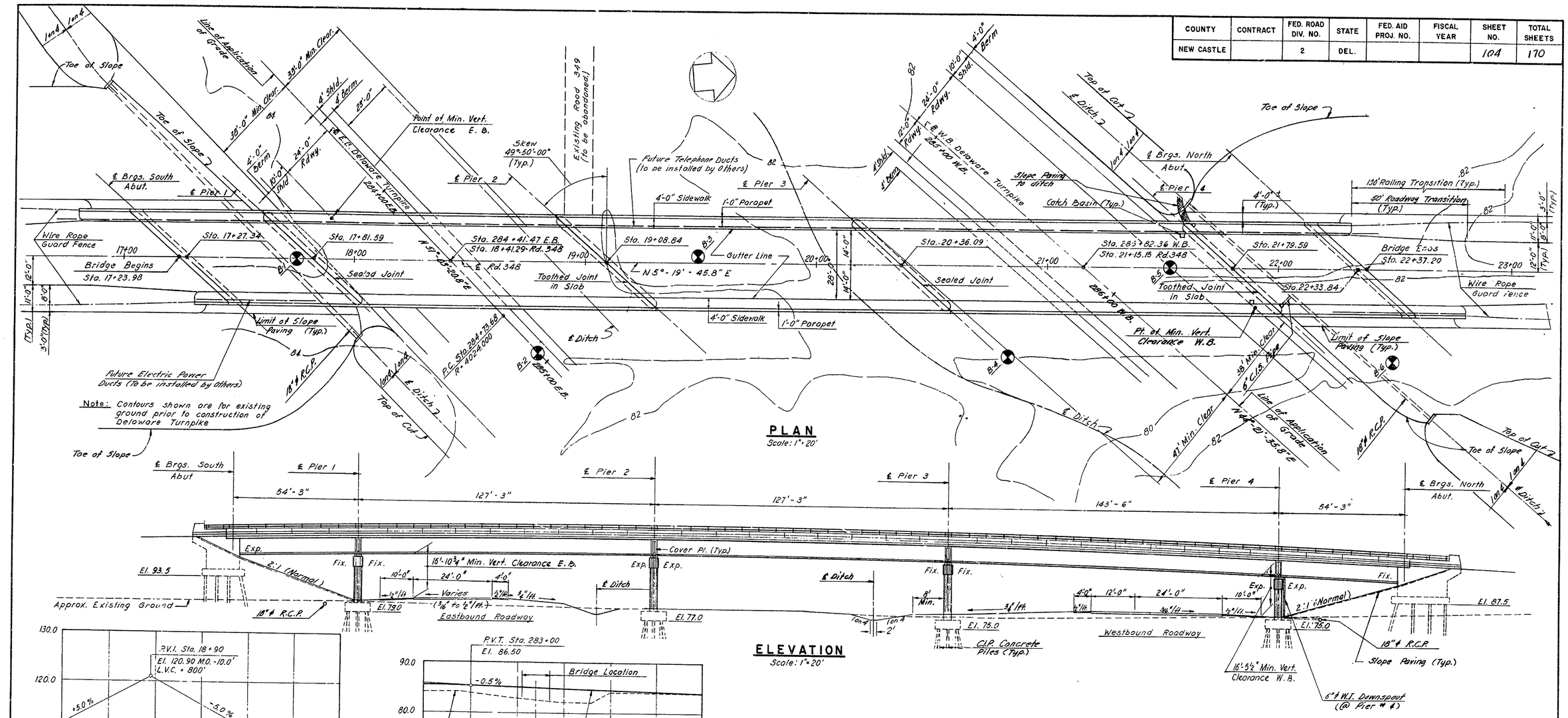
BORINGS

DWG. NO.	SCALE	DATE
14 OF 14	VERT. 1"=6'	MAY 1962

CONTRACT NO.

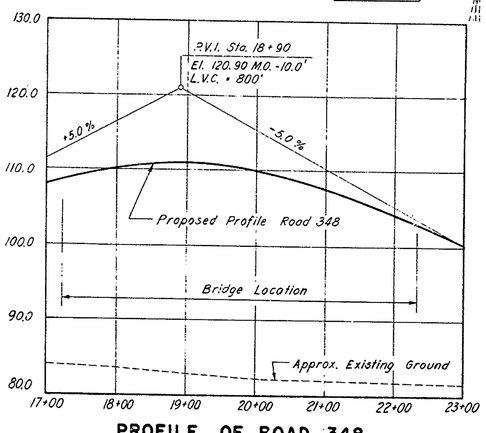
GOODKIND & O'DEA
CONSULTING ENGINEERS

COUNTY	CONTRACT	FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE		2	DEL.			104	170

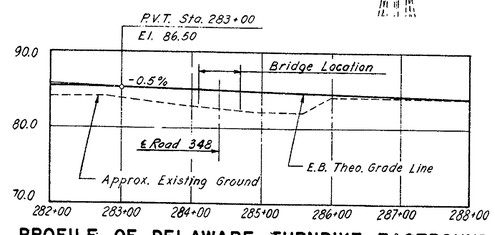


PLAN
Scale: 1" = 20'

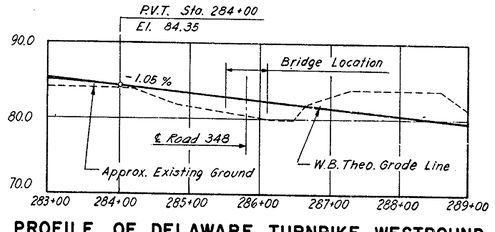
ELEVATION
Scale: 1" = 20'



PROFILE OF ROAD 348
Scales: Vertical: 1" = 10'
Horizontal: 1" = 100'



PROFILE OF DELAWARE TURNPIKE EASTBOUND
Scales: Vertical: 1" = 10'
Horizontal: 1" = 100'



PROFILE OF DELAWARE TURNPIKE WESTBOUND
Scales: Vertical: 1" = 10'
Horizontal: 1" = 100'

QUANTITIES - ROAD 348 STRUCTURE

ITEM	UNIT	QUANTITY
EXCAVATION FOR STRUCTURES	C.Y.	645
SELECT BORROW - GRADE A	C.Y.	560
HOT-MIX HOT-LAID ASPHALTIC CONCRETE PAVEMENT	TONS	195
PORTLAND CEMENT CONCRETE MASONRY:		
* CONCRETE FOR FOOTINGS	C.Y.	435
* CONCRETE FOR SUBSTRUCTURE	C.Y.	455
* CONCRETE FOR SUPERSTRUCTURE	C.Y.	800
SUPERFICIAL WATERPROOFING	S.Y.	225
*BAR REINFORCEMENT	LB.	311,000
STRUCTURAL STEEL (APPROXIMATELY 1,102,000 LBS.)	L.S.	
6" ϕ PERFORATED CORRUGATED METAL PIPE UNDERDRAIN	L.F.	150
12" ϕ CAST IN PLACE CONCRETE PILES	L.F.	12,100
12" ϕ STEEL SHELL TEST PILES	L.F.	640
ALUMINUM RAILING (TWO RAIL)	L.F.	1,081
SLOPE PAVING	S.Y.	510
BRIDGE DRAINAGE PIPES (APPROXIMATELY 96 L.F.)	L.S.	
BRIDGE CATCH BASINS	L.S.	
RC-1 ASPHALT TACK COAT	GAL.	180
PROTECTIVE COATING FOR CONCRETE	S.F.	1,288
COAL TAR EPOXY UNDERSEAL	S.Y.	1680
6" ϕ CORRUGATED METAL PIPE UNDERDRAIN	L.F.	10

Items indicated (*) are Fixed Quantity Items. See Special Provisions.

Notes:

1. For General Notes see Sheet No. 102
2. For Boring Logs, see Sheet No. 103

In charge of I.V. Gilchrist
Made by P.P.
Checked by D.W.
Traced by I.M.S.
Checked by

DELAWARE
STATE HIGHWAY DEPARTMENT
DELAWARE TURNPIKE

OVERPASS - ROAD 348

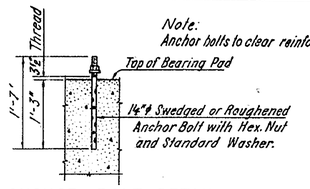
GENERAL PLAN

DWG. NO.	SCALE	DATE
1 OF 12	As Noted	MAY 1962

CONTRACT NO.

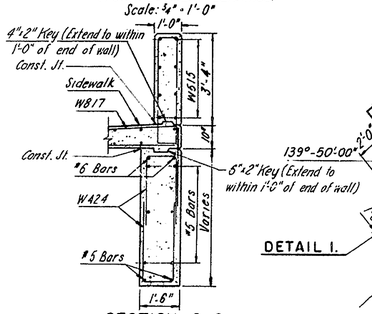
GOODKIND & O'DEA
CONSULTING ENGINEERS

COUNTY	CONTRACT	FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE		2	DEL.			105	170

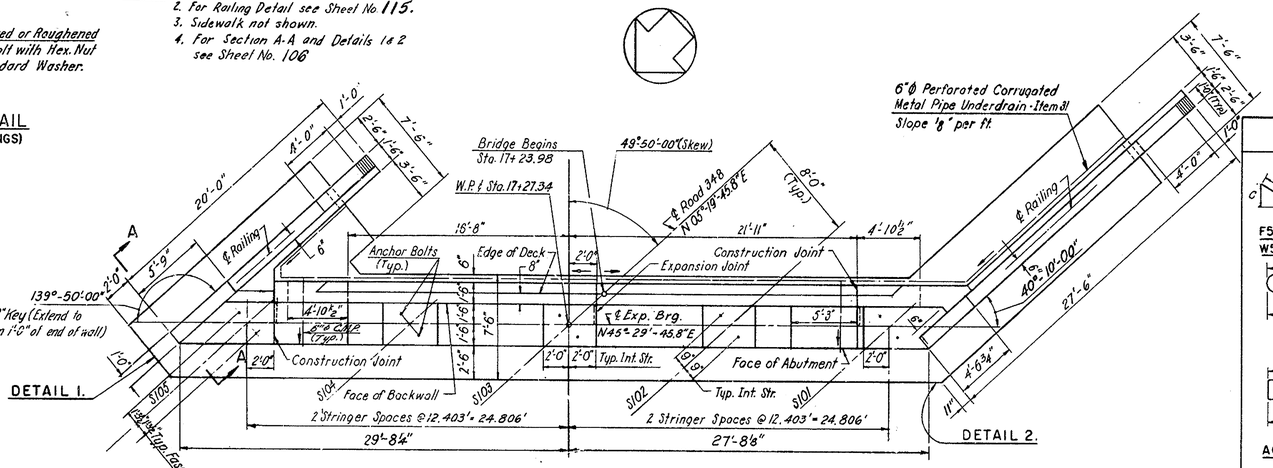


ANCHOR BOLT DETAIL
(FOR ABUTMENT BEARINGS)
Scale: ¼" = 1'-0"

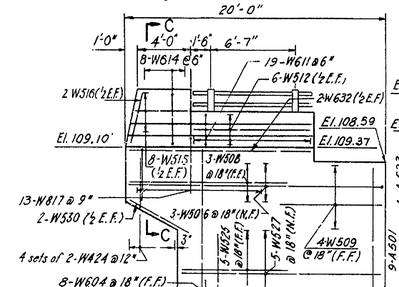
Notes:
1. Key in top of backwall not shown.
2. For Railing Detail see Sheet No. 115.
3. Sidewalk not shown.
4. For Section A-A and Details 1 & 2 see Sheet No. 106



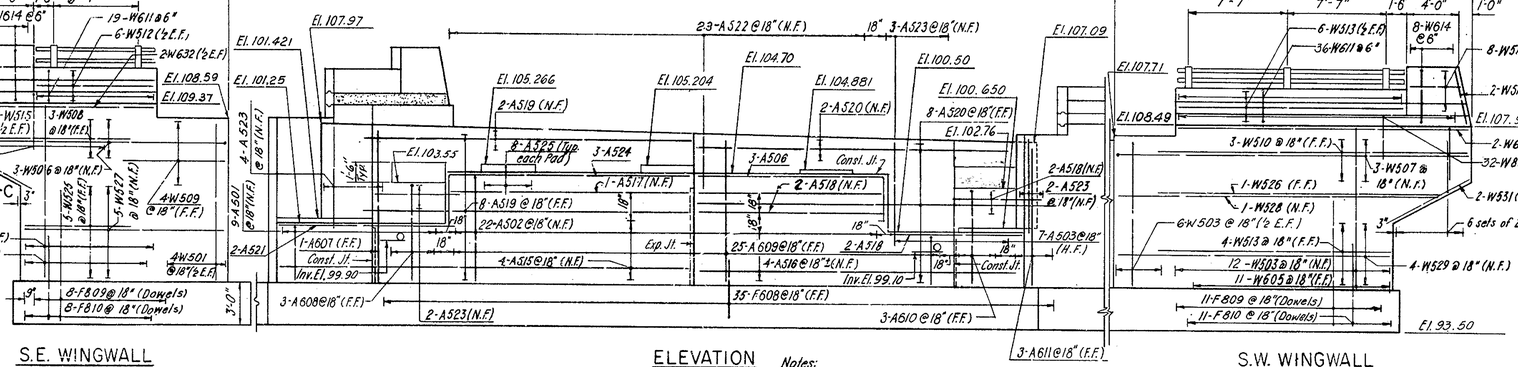
SECTION C-C
Scale: ⅜" = 1'-0"



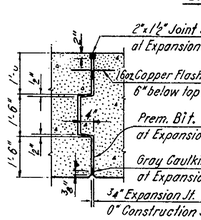
PLAN
Scale: 3/16" = 1'-0"



S.E. WINGWALL



S.W. WINGWALL

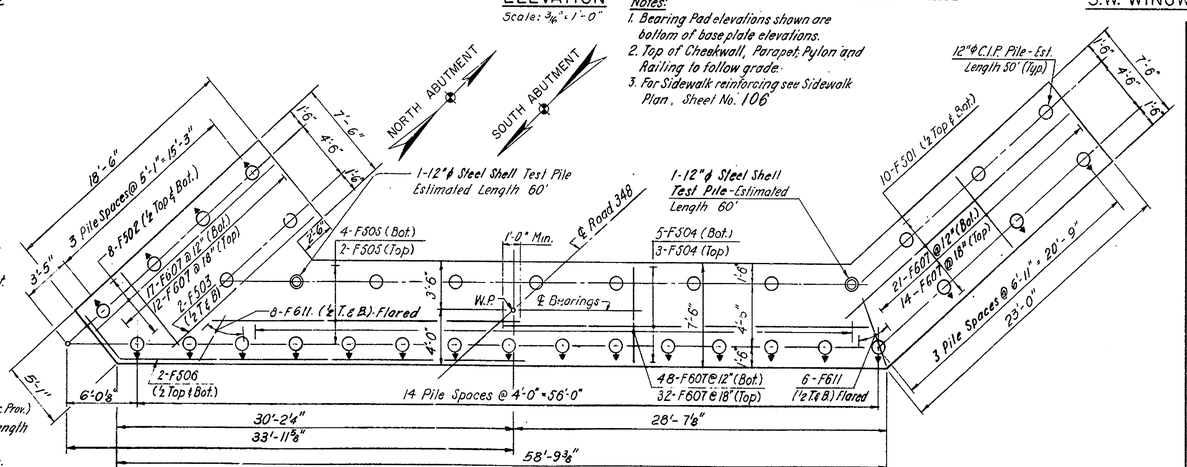


Notes:
1. Reinforcing not shown.
2. Reinforcing to be discontinuous at Expansion Joint and continuous at Construction Joint.
3. Extend Key to 1'-0" below top of Bridge Seat.

JOINT DETAIL
Scale: ⅜" = 1'-0"

Notes:
1. Bearing Pad elevations shown are bottom of base plate elevations.
2. Top of Cheekwall, Parapet, Pylon and Railing to follow grade.
3. For Sidewalk reinforcing see Sidewalk Plan, Sheet No. 106

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



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

Note: Footing Plan shown for South Abutment. North Abutment Footing Plan similar.

Notes:
1. ⊸ Indicates Cast in Place Concrete Pile battered 1:4 in Direction of Arrow.
2. ○ Indicates vertical Cast in Place Concrete Pile
3. Min. Bearing Capacity of Piles shall be 35 tons (See Spec. Prov.)
4. Pile lengths shown are for estimating only. Actual length to be determined by Test Piles.
5. Two Test Piles to be driven at each footing as shown.
6. For Pile Details, see Sheet No. 106

In charge of I.V.
Made by V.P.
Checked by D.W.
Traced by
Checked by

BENDING DETAILS

F506, W508, W509, W525

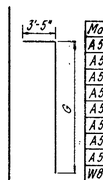
Mark	A	B	C
F506	4'-7"	30'-5"	3'-6"
W508	2'-0"	10'-9"	1'-6"
W509	4'-2"	3'-8"	2'-8"
W525	2'-0"	6'-9"	1'-6"

F608, F809, F810

Mark	D	E	F
F608	4'-3"	6"	6"
F809	8'-8"	9"	10"
F810	5'-5"	9"	10"

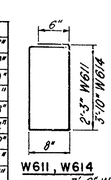
A608, A610, A613, W506, W507

Mark	H	J	K
A608	6'-10"	1'-2"	2'-6"
A610	5'-9"	1'-2"	2'-9"
A613	7'-6"	1'-2"	2'-6"
W506	19'-8"	8"	1'-0"
W507	27'-2"	8"	3'-9"

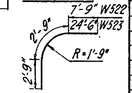


A501, A502, A503, A504, A505, A506, A526, A524, W817,

Mark	G
A501	4'-6"
A502	8'-0"
A503	3'-9"
A504	5'-5"
A505	8'-8"
A506	14'-4"
A526	8'-2"
A524	18'-4"
W817	4'-2"



W611, W614



W522, W523

A525, W519, W424

Mark	L	M
A525	1'-6"	2'-6"
W519	1'-6"	5"
W424	3'-8"	1'-2"

STRAIGHT BARS IN SERIES

Mark	Sets	Per set	Δ	From	To
A609	5	5	1½"	10'-0"	10'-6"
A614	5	5	3"	10'-0"	11'-0"
W515	4	1	3	3'-9"	4'-6"
W520	4	4	1'-0"	9'-8"	12'-8"
W521	4	4	1'-0"	19'-9"	22'-9"

BAR LIST

MARK	SIZE	TYPE	LENGTH	TOTAL NUMBER	LOCATION
Footings					
F501	5	St.	22'-6"	20	Longit. Top & Bot. Wingwall
F502	5	St.	18'-0"	16	" " " " "
F503	5	St.	14'-6"	4	" " " "
F504	5	St.	29'-0"	16	Longit. Top & Bot. Abutment
F505	5	St.	23'-10"	12	" " " " "
F506	5	Bt.	35'-0"	4	" " " " "
F607	6	St.	7'-0"	288	Transverse Top & Bot.
F608	6	Bt.	4'-11"	70	Dowels - Abutment
F809	8	Bt.	9'-7"	38	Dowels - Wingwall
F810	8	Bt.	6'-4"	38	" "
F611	6	St.	5'-0"	28	Transverse Top & Bot.
Abutments					
A501	5	Bt.	7'-11"	9	Vertical N.F. - South Abut. only
A502	5	Bt.	11'-5"	22	" " " " "
A503	5	Bt.	7'-2"	14	Vertical N.F. - N. & S. Abutments
A504	5	Bt.	8'-10"	9	Vertical N.F. - North Abut. only
A505	5	Bt.	12'-1"	13	" " " " "
A506	5	Bt.	17'-9"	6	Abutment Seat
A607	6	St.	10'-6"	1	Vertical F.F. - South Abut. only
A608	6	Bt.	10'-6"	3	" " " " "
A609	6	St.	Avg. 6'-3"	25	" " " " "
A610	6	Bt.	9'-9"	6	Vertical F.F. - S. & N. Abutments
A611	6	St.	10'-1"	6	" " " " "
A612	6	St.	11'-7"	1	-"- " " -N. Abut. only
A613	6	Bt.	11'-2"	3	" " " " "
A614	6	St.	Avg. 11'-6"	25	" " " " "
A515	5	St.	31'-4"	8	Horizontal N.F.
A516	5	St.	25'-4"	8	" " "
A517	5	St.	18'-4"	2	" " "
A518	5	St.	14'-4"	12	Horiz. N.F. & Abutment Seat
A519	5	St.	24'-6"	20	Horiz. N.F. & F.F. - Backwall
A520	5	St.	28'-6"	20	" " " " " - "
A521	5	St.	12'-6"	4	Horiz. Abutment Seat
A522	5	St.	4'-0"	46	Vert. N.F. Backwall
A523	5	St.	7'-8"	22	Vert. & Horiz. Backwall
A524	5	Bt.	21'-9"	6	Abutment Seat
A525	5	Bt.	5'-6"	80	" "
A526	5	Bt.	11'-7"	9	Vert. N.F. - North Abut. only
Wingwalls					
W501	5	St.	11'-10"	16	Vert. Cheekwall
W502	5	St.	12'-4"	16	" " "
W503	5	St.	10'-10"	44	" Cheekwall & N.F.
W604	6	St.	12'-11"	16	Vert. F.F.
W605	6	St.	12'-0"	22	" " "
W506	5	Bt.	21'-4"	6	Horiz. N.F.
W507	5	Bt.	31'-7"	6	" " "
W508	5	Bt.	12'-9"	6	" F.F.
W509	5	Bt.	7'-8"	8	" " "
W510	5	St.	23'-6"	6	" " "
W611	6	Bt.	6'-4"	110	Stirrups - Parapet
W512	5	St.	9'-0"	12	Horiz. - Parapet
W513	5	St.	17'-7"	20	" " & Wingwall
W614	6	Bt.	9'-6"	32	Stirrups - Pylon
W515	5	St.	Avg. 4'-1½"	32	Horizontal - Pylon
W516	5	St.	4'-0"	8	Vertical end - Pylon
W817	8	Bt.	7'-7"	90	Transverse Top - Sidewalk
W518	5	St.	4'-2"	58	" Top & Bot. "
W519	5	Bt.	3'-5"	66	End - Sidewalk
W520	5	St.	Avg. 11'-8"	16	Longit. Top & Bot. Sidewalk
W521	5	St.	Avg. 21'-9"	16	" " "
W522	5	Bt.	13'-3"	4	Longitudinal - Curb
W523	5	Bt.	30'-0"	4	" "
W424	4	Bt.	8'-6"	40	Stirrups
W525	5	Bt.	8'-9"	10	Horiz. F.F.
W526	5	St.	20'-6"	2	" " "
W527	5	St.	15'-8"	10	Horiz. N.F.
W528	5	St.	24'-2"	2	" " "
W529	5	St.	21'-2"	6	" " "
W530	5	St.	5'-6"	4	Horiz. F.F.
W531	5	St.	7'-9"	4	" " "
W632	6	St.	14'-0"	4	" " "
W633	6	St.	22'-8"	4	" " "

Notes:
1. All bar dimensions are out to out.
2. Total shown for both abutments (½ each abutment) except as noted in location.

DELAWARE
STATE HIGHWAY DEPARTMENT

DELAWARE TURNPIKE

OVERPASS – ROAD 348
SOUTH ABUTMENT

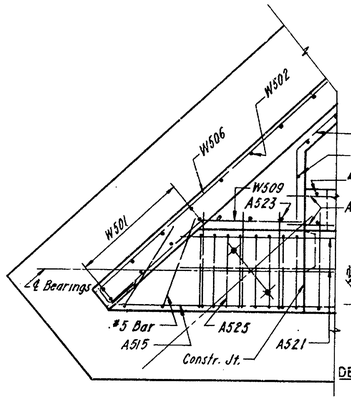
DWG. NO.	SCALE	DATE
2 OF 12	As Noted	May 1962

CONTRACT NO.

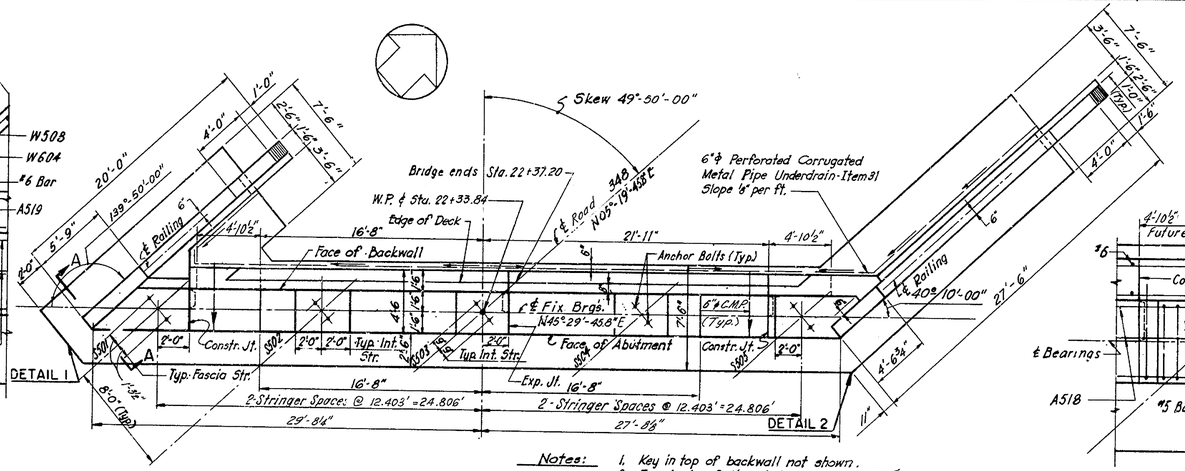
GOODKIND & O'DEA
CONSULTING ENGINEERS

COUNTY	CONTRACT	FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE		2	DEL.			106	170

~~INTERSTATE HIGHWAY ROUTE F.A.I. - 1~~
~~UNDER ROAD 348~~

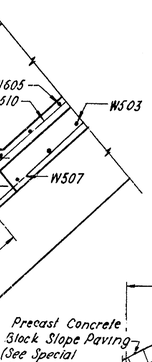


DETAIL 1
Scale: 3/8" = 1'-0"

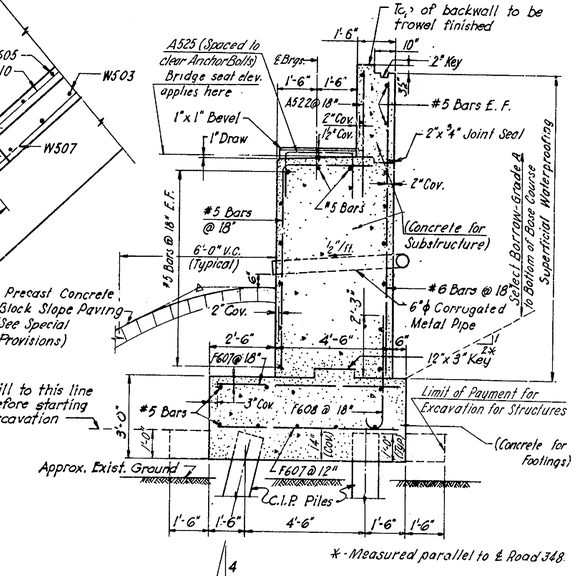


PLAN
Scale: 3/16" = 1'-0"

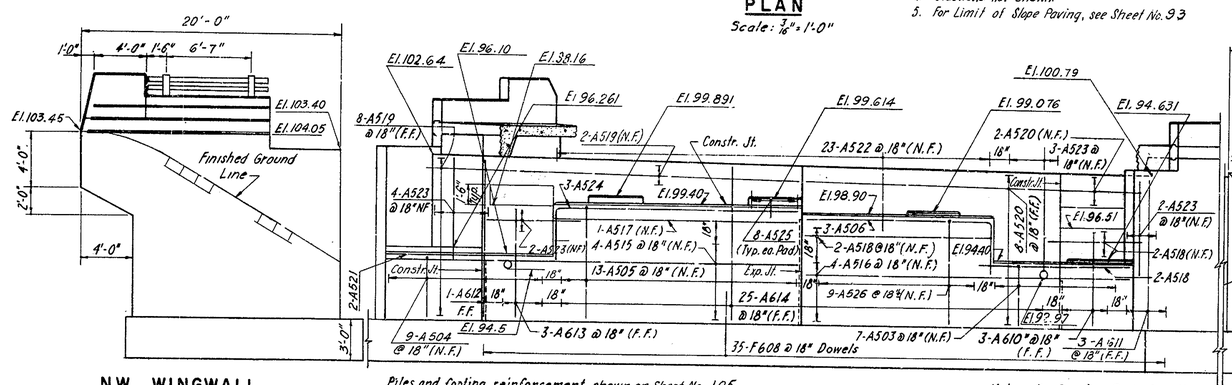
Notes:
1. Key in top of backwall not shown.
2. For Anchor Bolt Detail see Sheet No. 105
3. For Railing Detail see Sheet No. 115
4. Sidewalk not shown.
5. For Limit of Slope Paving, see Sheet No. 93



DETAIL 2
Scale: 3/8" = 1'-0"



TYPICAL ABUTMENT SECTION
Scale: 3/8" = 1'-0"



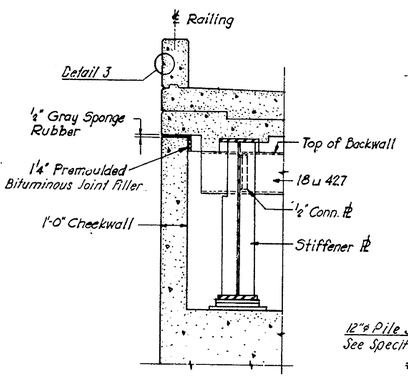
N.W. WINGWALL

Piles and footing reinforcement shown on Sheet No. 105
Wingwall reinforcement similar to South Wingwalls.

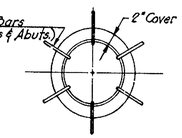
ELEVATION
Scale: 3/16" = 1'-0"

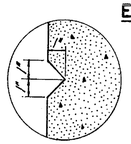
Notes:
1. Bearing Pad elevations shown are bottom of base plate elevations.
2. Top of Cheekwall, Parapet, Pylon, and Railing to follow grade.
3. For Footing Plan, see Sheet No. 105

N.E. WINGWALL

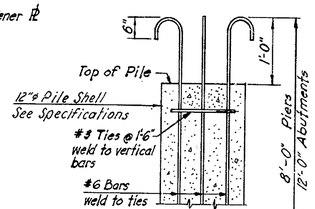


SECTION A-A
Scale: 3/8" = 1'-0"



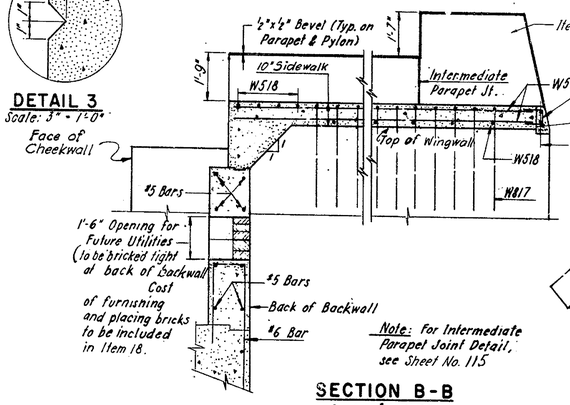


DETAIL 3
Scale: 3" = 1'-0"



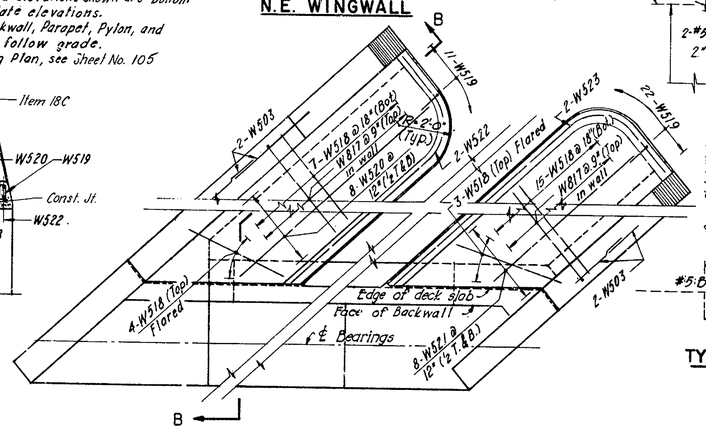
Note:
Cost of pile reinforcing to be included in Item 12" ϕ Cast-in-Place Concrete Piles. for Bar List and Reinforcing Details see Sheet No. 105

PILE DETAILS
Scale: 1" = 1'-0"



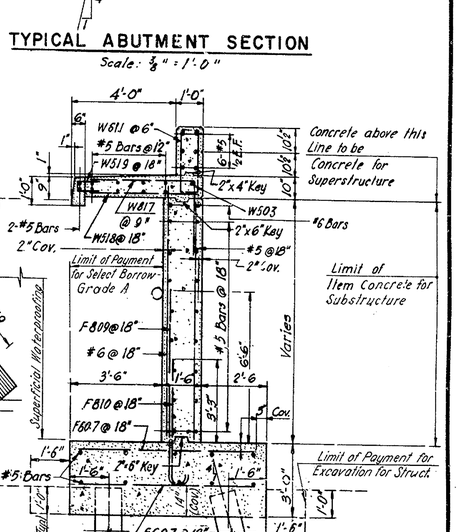
Note: For Intermediate Parapet Joint Detail, see Sheet No. 115

SECTION B-B
Scale: 3/8" = 1'-0"



SIDEWALK PLAN
Scale: 3/8" = 1'-0"

Note:
Sidewalk on wingwall to be poured after sidewalk in superstructure is completed.



TYPICAL WINGWALL SECTION
Scale: 3/8" = 1'-0"

PILE REINFORCING BARS

SIZE	TYPE	LENGTH	S. ABUT.	PIER 1	PIER 2	PIER 3	PIER 4	N. ABUT.	TOTAL
#6A	Bl.	12'-8"	210	—	—	—	—	210	420
#6P	Bl.	8'-8"	—	192	228	228	192	—	840
#3	Bl.	2'-1"	280	160	190	190	160	280	1260

In charge of I.V. AGL
Made by V.P.I.
Checked by D.W.
Traced by
Checked by

DELAWARE
STATE HIGHWAY DEPARTMENT
DELAWARE TURNPIKE

OVERPASS - ROAD 348
NORTH ABUTMENT

DWG. NO.	SCALE	DATE
3 OF 12	As Noted	MAY 1962

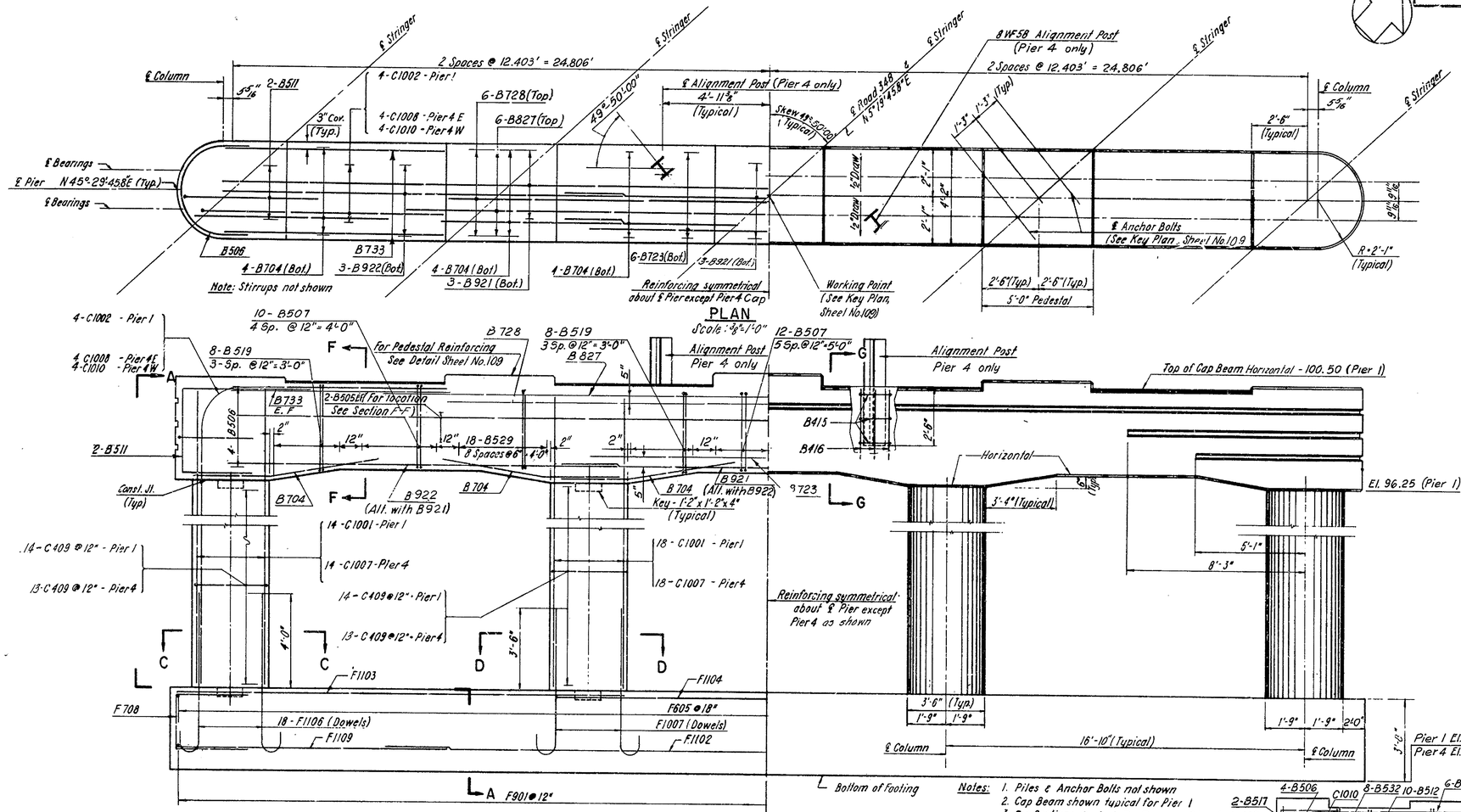
CONTRACT NO.

GOODKIND & O'DEA
CONSULTING ENGINEERS

COUNTY	CONTRACT	FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE		2	DEL.			107	170

~~INTERSTATE HIGHWAY ROUTE F.A.I. - 1~~

~~UNDER ROAD 348~~



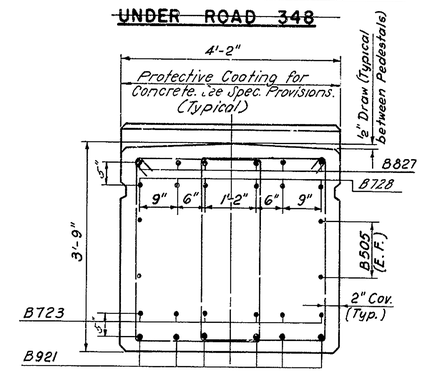
PLAN

Scale: 3/8" = 1'-0"

ELEVATION OF PIERS 1 & 4

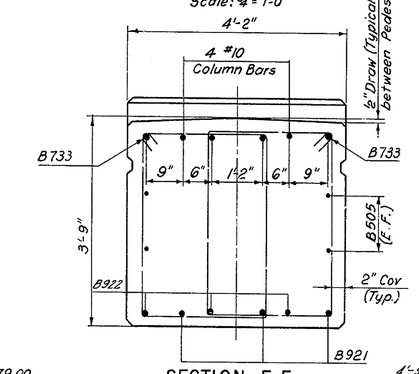
Scale: 3/8" = 1'-0"

Notes:
1. Piles & Anchor Bolts not shown
2. Cap Beam shown typical for Pier 1
3. For Sections C-C & D-D see Sheet No. 109
4. For Reinforcing at Alignment Post, see Sheet No. 109
5. All laps to be 30 d, except where shown otherwise.
6. For Section A-A, see Sheet No. 108



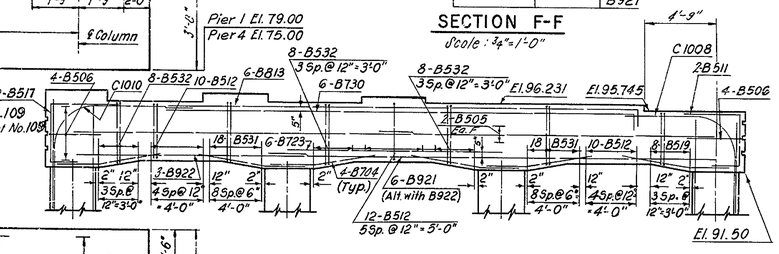
SECTION G-G

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



SECTION F-F

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

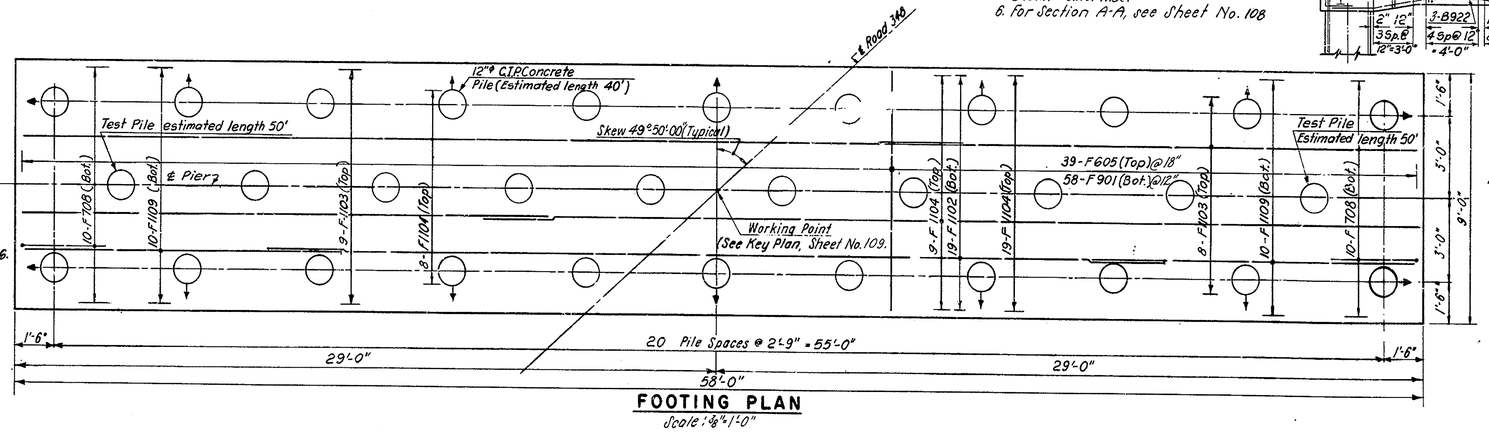


CAP BEAM - PIER 4

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

Notes:
1. Column and Pedestal reinforcing not shown.
2. For Column reinforcing see Elevations of Pier 1.
3. For Pedestal Elevations see Key Plan Sheet No. 109.

Notes:
1. ⬆ Indicates Cast-in-Place Concrete Pile battered 1:6 in direction of arrow.
2. ○ Indicates Vertical Cast-in-Place Concrete Pile.
3. Min. Bearing Capacity of Piles shall be 35 tons. (See Spec. Prov.).
4. Pile lengths shown are for estimating purposes only. Actual lengths to be determined by Test Piles.
5. For Pile Details see Sheet No 106.
6. Two Test Piles to be driven at each pier footing as shown.



FOOTING PLAN

Scale: 3/8" = 1'-0"

In charge of I.V.
Made by V.P.
Checked by D.W.
Traced by
Checked by

DELAWARE
STATE HIGHWAY DEPARTMENT
DELAWARE TURNPIKE

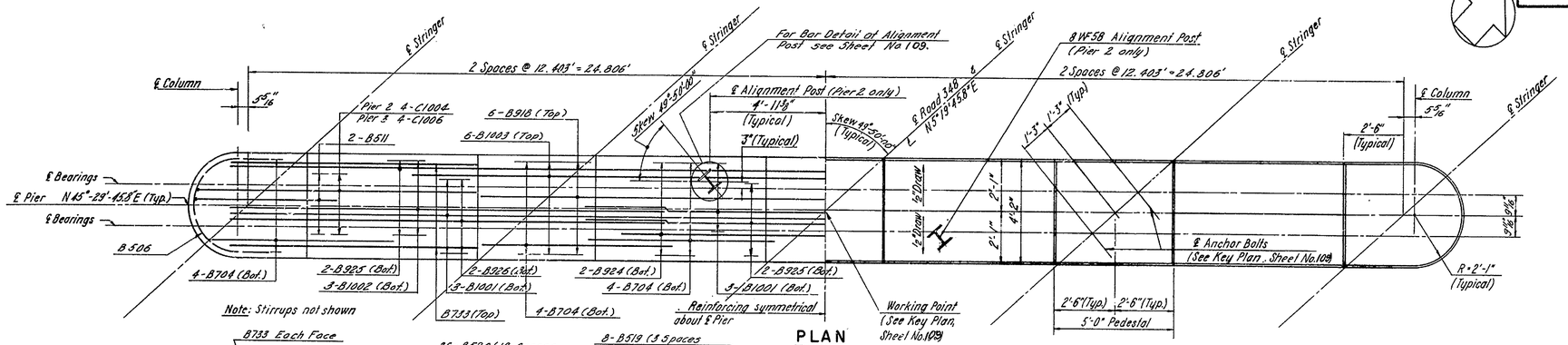
OVERPASS - ROAD 348
PIERS 1 & 4

DWG. NO.	SCALE	DATE	
4 OF 12	AS NOTED	1/23/1962	GOODKIND & O'DEA CONSULTING ENGINEERS
CONTRACT NO.			

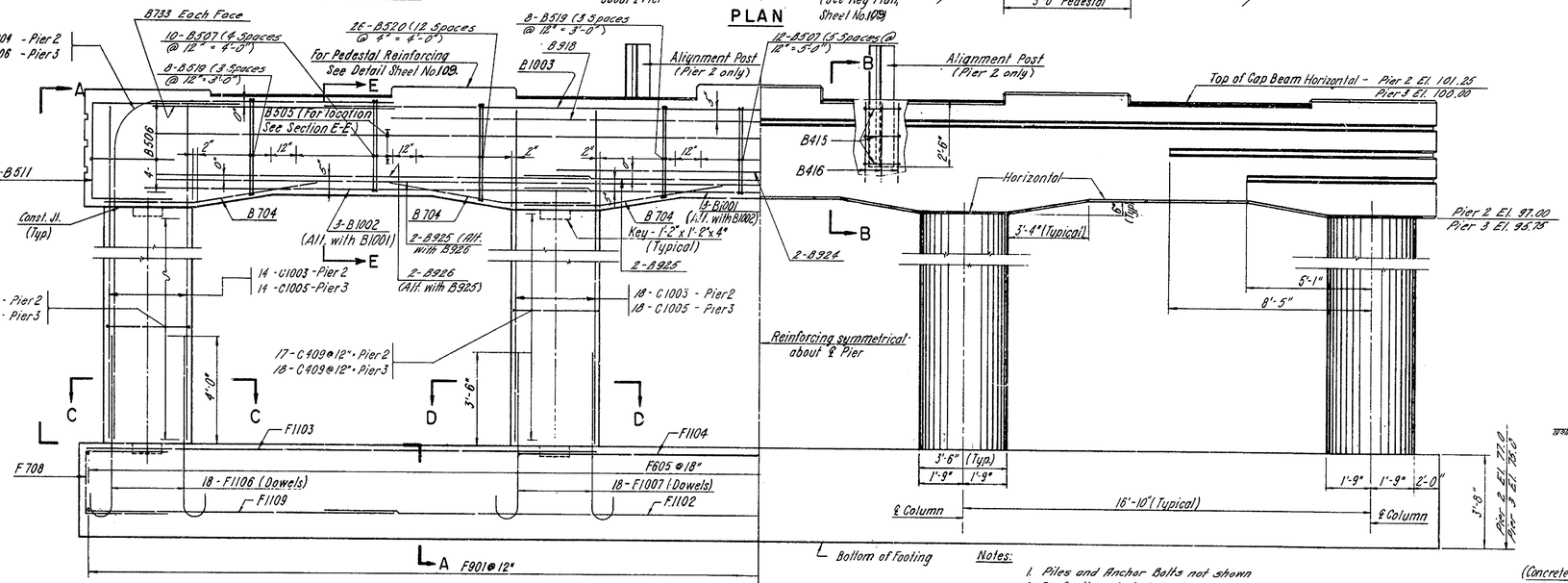
COUNTY	CONTRACT	FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE		2	DEL.			108	170

~~INTERSTATE HIGHWAY ROUTE F.A.I. 1~~

~~UNDER ROAD 348~~

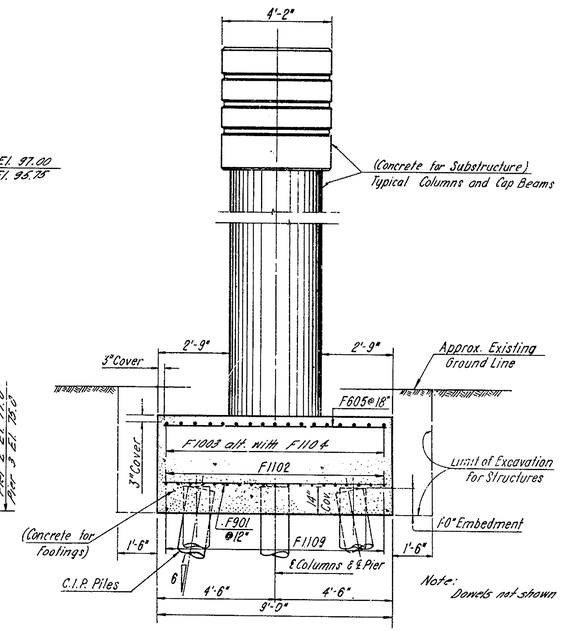


Note: 8 WF 58 Alignment Posts at Pier 2 & 4 only. Provide holes in cap beam so that posts may be grouted into proper alignment after superstructure steel is erected. Top reinforcing adjacent to posts to be warped to clear posts.



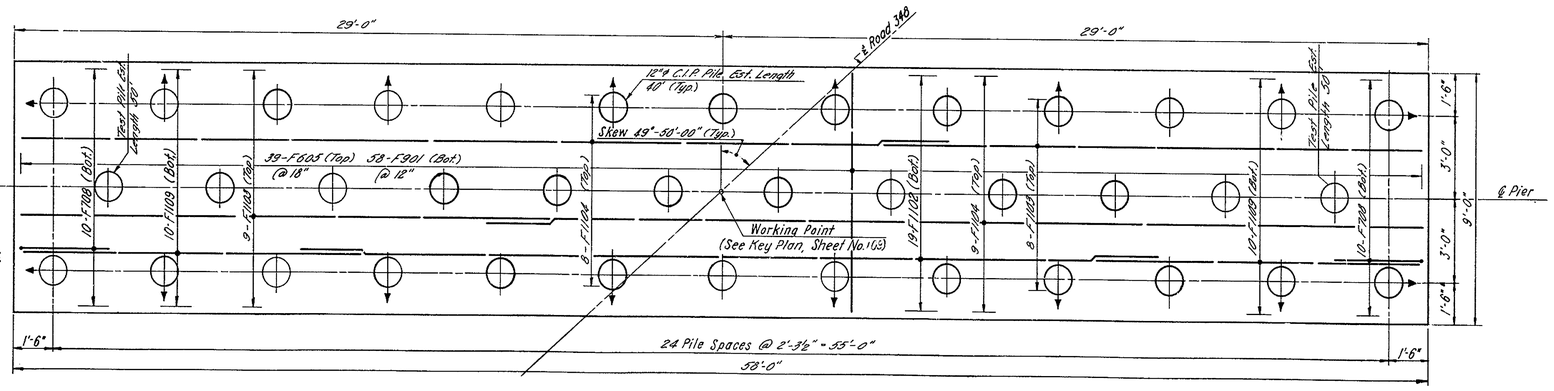
ELEVATION OF PIERS 2 & 3

Notes:
1. Piles and Anchor Bolts not shown
2. For Sections B-B, C-C & D-D, see Sheet No. 109.
3. For Reinforcing at Alignment Post, see Sheet No. 109.



SECTION A-A

Notes:
1. Indicates Cast-in-Place Concrete Pile battered 1:6 in direction of arrow.
2. Indicates Vertical Cast-in-Place Concrete Pile.
3. Min. Bearing Capacity of Piles shall be 35 tons. (See Spec. Prov.)
4. Pile lengths shown are for estimating purposes only. Actual lengths to be determined by Test Piles.
5. For Pile Details see Sheet No. 106.
6. Two Test Piles to be driven at each pier footing as shown.



FOOTING PLAN

NOTES
1. For Anchor Bolt Detail see Sheet No. 109
2. For Pedestal Elevations see Key Plan, Sheet No. 109
3. For Bar List, see Sheet No. 109.

In charge of L.V. Hyl
Made by V.P.
Checked by D.W.
Traced by
Checked by

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DELAWARE TURNPIKE

OVERPASS - ROAD 348
PIERS 2 & 3

DWG. NO.	SCALE	DATE
5 OF 12	⅜" = 1'-0"	MAY 1962

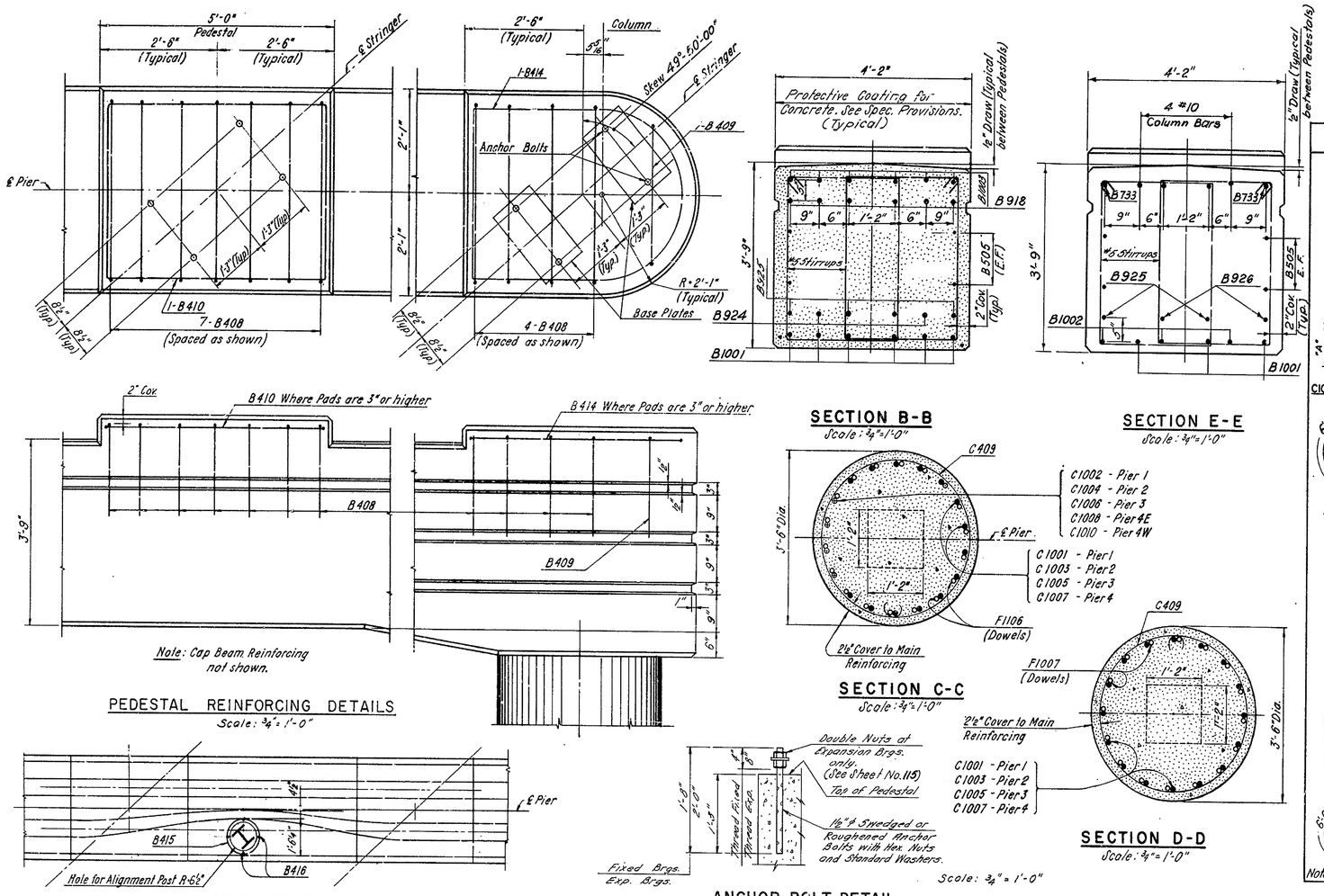
CONTRACT NO.

GOODKIND & O'DEA
CONSULTING ENGINEERS

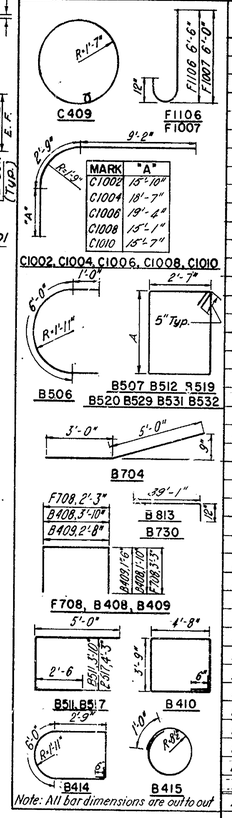
COUNTY	CONTRACT	FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE		2	DEL.			109	170

~~INTERSTATE HIGHWAY ROUTE F.A.I. - I~~

~~UNDER ROAD 348~~

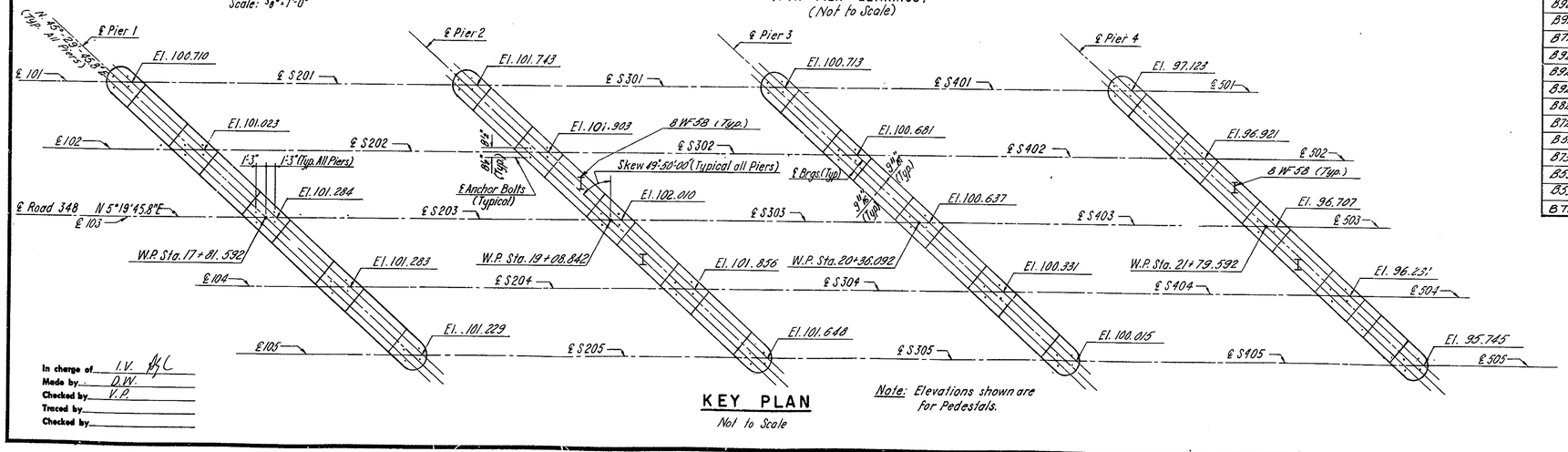


BENDING DETAILS



BAR LIST

MARK	SIZE	TYPE	LENGTH	NUMBER BY PIER PIER 1	PIER 2	PIER 3	PIER 4	TOTAL NO.	LOCATION AND DESCRIPTION
Footings									
F 901	9	St.	8'-6"	58	58	58	58	232	Transverse Bottom
F1102	11	St.	37'-8"	19	19	19	19	86	Longitudinal Bottom
F1103	11	St.	20'-4"	17	17	17	17	68	Longitudinal Top
F1104	11	St.	39'-9"	17	17	17	17	68	Longitudinal Top
F 605	6	St.	8'-6"	39	39	39	39	156	Transverse Top
F1106	11	Bt.	8'-0"	36	36	36	36	144	Dowels - Exterior Columns
F1007	10	Bt.	7'-6"	36	36	36	36	144	Dowels - Interior Columns "
F 708	7	Bt.	8'-9"	20	20	20	20	80	Longitudinal - Ends
F1109	11	St.	12'-4"	20	20	20	20	80	Longitudinal - Bottom
Columns									
C1001	10	St.	17'-4"	64				64	Vertical
C1002	10	Bt.	27'-9"	8				8	Vertical
C1003	10	St.	20'-3"		64			64	Vertical
C1004	10	Bt.	30'-6"		8			8	Vertical
C1005	10	St.	20'-11"			64		64	Vertical
C1006	10	Bt.	31'-1"			8		8	Vertical
C1007	10	St.	16'-7"				64	64	Vertical
C1008	10	Bt.	27'-0"				4	4	Vertical
C 409	4	Bt.	11'-0"	56	68	72	52	248	Ties
C1010	10	Bt.	27'-6"				4	4	Vertical
Cap Beam									
B1001	10	St.	35'-3"		6	6		12	Horizontal Bottom
B1002	10	St.	18'-3"		6	6		12	Horizontal Bottom
B1003	10	St.	36'-10"		6	6		12	Horizontal Top
B 704	7	Bt.	8'-0"	24	24	24	24	96	Horizontal Bottom
B 505	5	St.	27'-6"	8	8	8	8	32	Horizontal Sides
B 506	5	Bt.	8'-0"	8	8	8	8	32	Horizontal Ends
B 507	5	Bt.	12'-8"	32	32	32		96	Stirrups, A = 3'-4"
B 408	4	Bt.	7'-6"	29	29	29	29	116	Vertical Ties - Pedestals
B 409	4	Bt.	5'-8"	2	2	2	2	8	Vertical Ties - Pedestals
B 410	4	Bt.	17'-10"	3	3	3	2	11	Horizontal Ties - Pedestals
B 511	5	Bt.	11'-4"	4	4	4	2	14	Longitudinal Ends
B 512	5	Bt.	13'-8"				32	32	Stirrups, A = 3'-10"
B 813	8	Bt.	40'-1"				6	6	Longitudinal Top - Pedestals
B 814	4	Bt.	16'-4"	1	1	1	1	4	Horizontal Ties
B 415	4	Bt.	5'-6"		6		6	12	Ties - Alignment Post Hole
B 416	4	St.	3'-0"		8		8	16	Vertical - Alignment Post Hole
B 517	5	Bt.	11'-9"				2	2	Longitudinal Ends
B 918	9	St.	29'-9"		6	6		12	Horizontal Top
B 519	5	Bt.	Av. 13'-2"	32	32	32	8	104	'A' Varies in each set of 4 by 2"
B 520	5	Bt.	Av. 13'-2"		52	52		104	" " " " " " 13 " 1/2"
B 921	9	St.	35'-3"	6			6	12	Horizontal Bottom
B 922	9	St.	18'-3"	6			6	12	" "
B 723	7	St.	16'-10"	6			6	12	" "
B 924	9	St.	16'-10"		2	2		4	" "
B 925	9	St.	35'-3"		4	4		8	" "
B 926	9	St.	18'-3"		4	4		8	" "
B 827	8	St.	36'-10"	6				6	" Top
B 728	7	St.	29'-9"	6				6	" "
B 529	5	Bt.	Av. 13'-2"	36				36	'A' Varies in each set of 9 by 3/4"
B 730	7	Bt.	40'-1"				6	6	Horizontal Top
B 531	5	Bt.	Av. 14'-2"				36	36	'A' Varies in each set of 9 by 3/4"
B 532	5	Bt.	Av. 14'-2"				24	24	" " " " " " 4 " 2
B 733	7	St.	9'-11"	4	4	4	4	16	Horizontal Top



KEY PLAN
Not to Scale

Note: Elevations shown are for Pedestals.

In charge of I.V.
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Checked by V.P.
Traced by
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OVERPASS - ROAD 348
PIER DETAILS

DWG. NO.	SCALE	DATE
6 OF 12	As Noted	MAY 1962

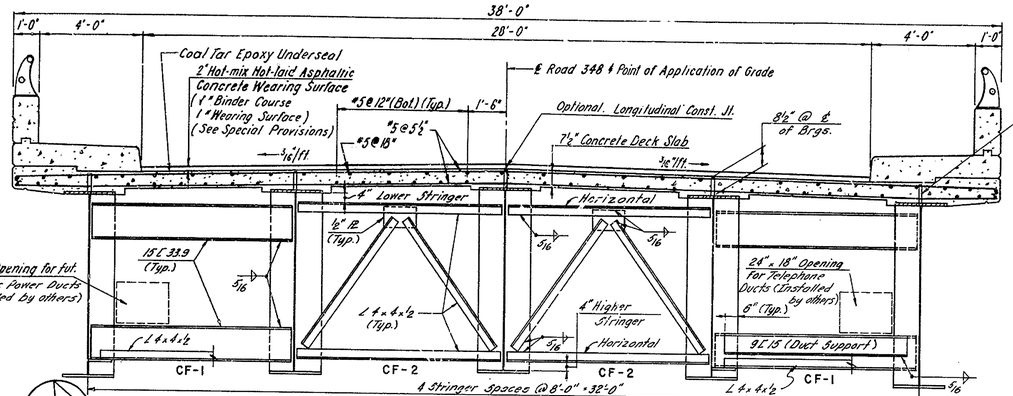
CONTRACT NO.

GOODKIND & O'DEA
CONSULTING ENGINEERS

COUNTY	CONTRACT	FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE		2	DEL.			110	170

~~INTERSTATE HIGHWAY ROUTE F.A.I. 1~~

~~UNDER ROAD 348~~



SECTION A-A

Scale ⅜" = 1'-0"

Note: For Sidewalk & Parapet reinforcing see Sheet No. 114.

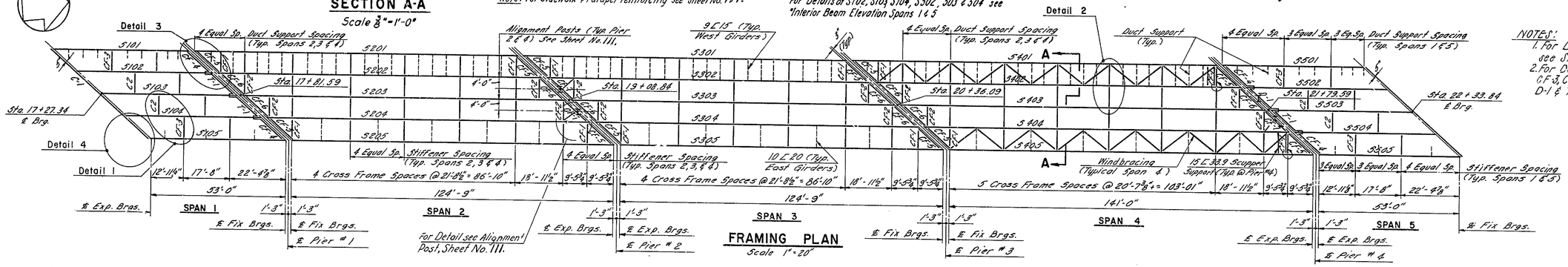
For Slab Reinforcing Support on all Stringers see Detail 6, Sheet No. 82.

STRINGER SCHEDULE

STRINGER			FLANGE PLATES												BEARING STIFFENER	INTERMEDIATE STIFFENER	SHEAR CONNECTOR SPACING					MAXIMUM MOMENTS KIP-FEET			MAXIMUM SHEARS KIPS		
MARK	LENGTH c to c Brgs	WEB SIZE	A		B		C		D		E		F				V	W	X	Y	Z	D.L.	S.D.L.	L.L.+I.	D.L.	S.D.L.	L.L.+I.
			SIZE	LENGTH	SIZE	LENGTH	SIZE	LENGTH	SIZE	LENGTH	SIZE	LENGTH	SIZE	LENGTH													
S201, S205 S301, S305	124'-9"	78" × ½"	24" × 1"	126'-7"	—	—	—	—	24" × 1⅛"	73'-3"	24" × 1⅛"	7'-3"	24" × 1"	19'-5"	11⅞" × 1"	11" × ¾" *	½"	16 @ 15" = 20'-0"	5 @ 20" = 8'-4"	—	34 @ 24" = 68'-0"	2350	1200	1846	76.4	38.7	61.0
S202-S204 S302-S304	124'-9"	78" × ½"	18" × 1¼"	47'-0"	18" × 1"	19'-6"	18" × ¾"	19'-11½"	18" × 2"	81'-9"	18" × 1⅜"	11'-0"	18" × ¾"	11'-1"	8⅞" × ¾"	8" × ½" *	1½"	11 @ 13" = 11'-11"	8 @ 17" = 11'-4"	9 @ 20" = 15'-0"	24 @ 24" = 48'-0"	2235	1086	1718	72.7	35.0	57.9
S401, S405	141'-0"	78" × ½"	24" × 1⅜"	57'-0"	24" × 1¼"	19'-6"	24" × 1"	23'-5"	24" × 2¼"	92'-0"	24" × 1½"	11'-3"	24" × 1"	14'-2"	11⅞" × 1"	11" × ¾" *	0"	13 @ 14" = 15'-2"	8 @ 18" = 12'-0"	6 @ 22" = 7'-4"	36 @ 24" = 72'-0"	3087	1509	2111	83.2	43.3	63.9
S402-S404	141'-0"	78" × ½"	24" × 1⅜"	49'-3"	24" × 1¼"	22'-0"	24" × 1"	24'-5½"	24" × 2"	89'-0"	24" × 1½"	12'-6"	24" × 1"	14'-1"	11⅞" × 1"	11" × ¾" *	2"	11 @ 14" = 12'-10"	7 @ 18" = 10'-6"	6 @ 22" = 11'-0"	36 @ 24" = 72'-0"	3054	1387	1987	88.2	39.8	61.4
S101, S105 S501, S505	53'-0"	78" × ½"	24" × 1"	54'-6"	—	—	—	—	24" × 1"	54'-6"	—	—	—	—	11⅞" × 1"	11" × ¾" *	For Shear Connector Spacing, see Fascia Girder Elevation					410	209	629	32.4	19.6	54.3

Note: For Details of S102, S103, S104, S502, 503 & 504 see "Interior Beam Elevation Spans 1 & 5

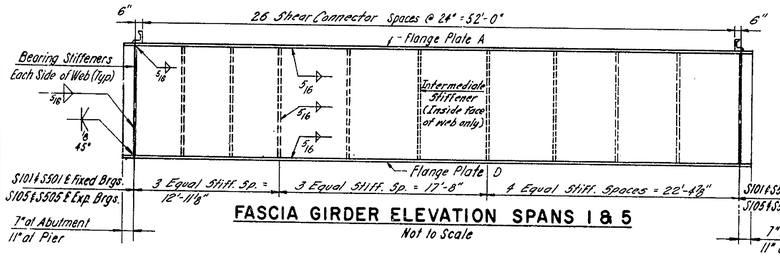
* On inside face of web only.



FRAMING PLAN

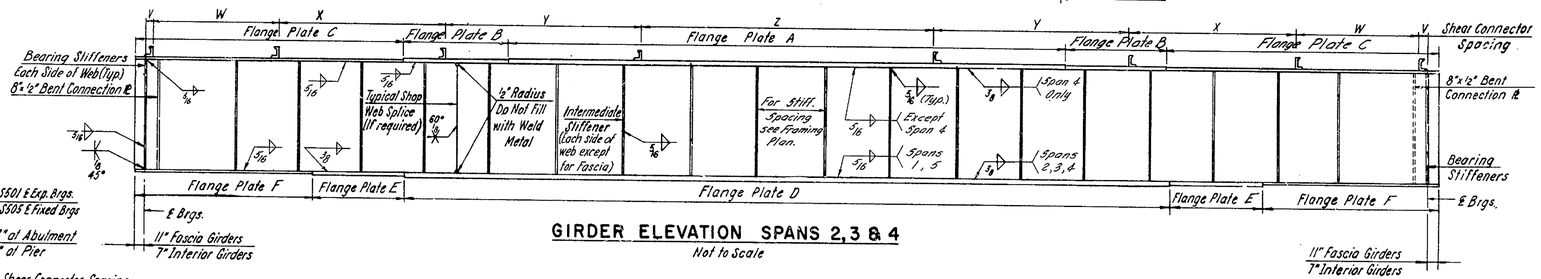
Scale 1" = 20'

NOTES:
1. For Details 1, 2, 3 & 4, see Sheet No. 111.
2. For Details of C-1, C-2, CF-3, CF-4, CF-5, CF-6, CF-7 D-1 & T-1, see Sheet No. 111.



FASCIA GIRDER ELEVATION SPANS 1 & 5

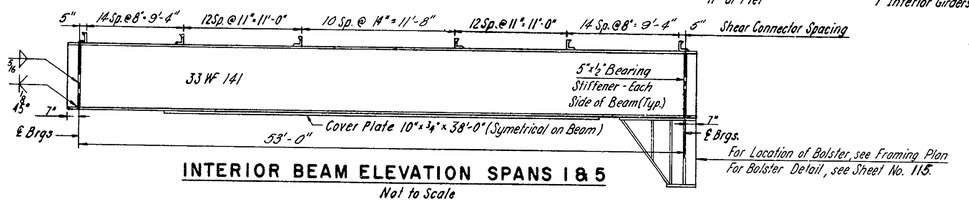
Not to Scale



GIRDER ELEVATION SPANS 2, 3 & 4

Not to Scale

Note:
For location of Bent Connection Plate and First Intermediate Stiffener see Detail 3, Sheet No. 111.
For details of Cover Plates for fascia girders at each pier, see Section D-D, Sheet No. 112.



INTERIOR BEAM ELEVATION SPANS 1 & 5

Not to Scale

NOTES

All structural steel to be welded shall conform to A.S.T.M. Spec. A-373, except as noted in Special Provisions.

All welding shall comply with the provisions of the current Specifications for Welded Highway and Railway Bridges of the American Welding Society. (See Special Provisions)

Shop splices in the web plates will be allowed as shown.

All Stiffener Plates and Cross frame Connection Plates shall be vertical when Stringers are in final erected position.

Flange plates of girders to be completely welded before assembly with web plates. Particular attention is directed to the requirement that the ends of all butt welds in the flanges shall be made with extensions as described in Article 505-k of the 1956 A.W.S. Specifications.

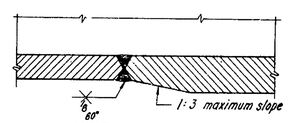
Web plate splices shall be entirely welded with complete penetration groove welds in advance of assembly. In order to avoid locked in stresses when welding flange plates to web plates, welding shall begin at the center of the girders and proceed outward to the ends, leaving the ends free to move as the welds contract. Also when welding the flange plates to the web plates, special precaution must be exercised in the positioning of the electrodes so that the major portion of the welding heat is applied to the thicker flange plates.

Finished girders shall be true to line and shape and free from any distortion, warpage or other shrinkage losses.

Loss of Camber in Girder due to shrinkage shall be compensated for by additional camber to be determined by Fabricator.

Beams and Girders to be cut and ground so that ends are vertical in their final erected position.

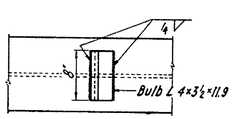
Field welded splices of the main girders will not be permitted. Riveted or high tension bolted splices, if required, should be detailed to develop the full strength of the girder and are subject to the approval of the engineer.



FLANGE DETAIL

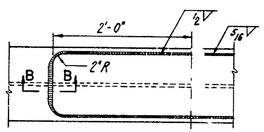
Not to Scale

Note: Detail typical for all flange plate splices.



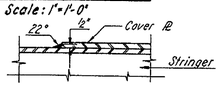
SHEAR CONNECTOR DETAIL

Scale: 1" = 1'-0"



COVER PLATE DETAIL

Scale: 1" = 1'-0"



SECTION B-B

MARK	DEFLECTION AT MIDSPAN					DEFLECTION AT ¼ POINTS				
	STEEL	SLAB	S.D.L.	V.C.	TOTAL	STEEL	SLAB	S.D.L.	V.C.	TOTAL
S101, S105 S301, S305	0	1/16"	0	3/8"	7/16"	0	1/16"	0	1/4"	5/16"
S102-S104 S302-S304	1/8"	5/8"	5/16"	3/8"	1 5/16"	1/16"	1/2"	1/8"	5/16"	1"
S201, S205 S301, S305	5/8"	1 7/16"	3/4"	2 7/8"	5 11/16"	1/2"	1 1/8"	9/16"	2 3/16"	4 3/8"
S202-S204 S302-S304	11/16"	1 3/8"	11/16"	2 7/8"	5 5/8"	1/2"	1"	9/16"	2 1/8"	4 3/16"
S401, S405	7/8"	1 13/16"	15/16"	3 7/8"	7 1/2"	5/8"	1 3/8"	11/16"	2 15/16"	5 5/8"
S402-S404	1 1/16"	1 9/16"	7/8"	3 7/8"	7 3/8"	3/4"	1 1/8"	5/8"	3"	5 1/2"

In charge of I.V.
Made by D.W.
Checked by V.P.
Traced by
Checked by

Note: An alternate type of shear connector for the composite construction may be allowed by the Engineer. A drawing showing the type, design and details for the proposed alternate shear connector must be submitted to the Engineer for approval before permission for its use will be granted.

DELAWARE
STATE HIGHWAY DEPARTMENT

DELAWARE TURNPIKE

OVERPASS – ROAD 348
FRAMING PLAN

DWG. NO.	SCALE	DATE
7 of 12	As Noted	May 1962

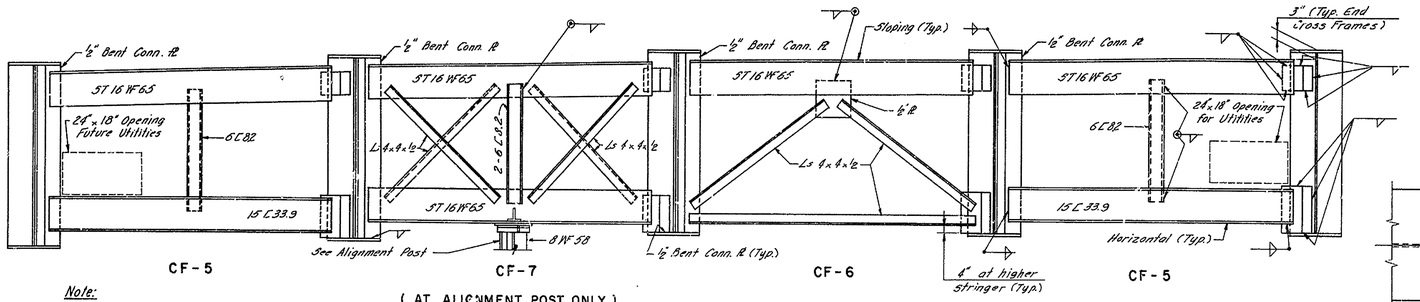
CONTRACT NO.

GOODKIND & O'DEA
CONSULTING ENGINEERS

COUNTY	CONTRACT	FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE		2	DEL.			111	170

~~INTERSTATE HIGHWAY ROUTE F.A.I. - 1~~

~~UNDER ROAD 348~~



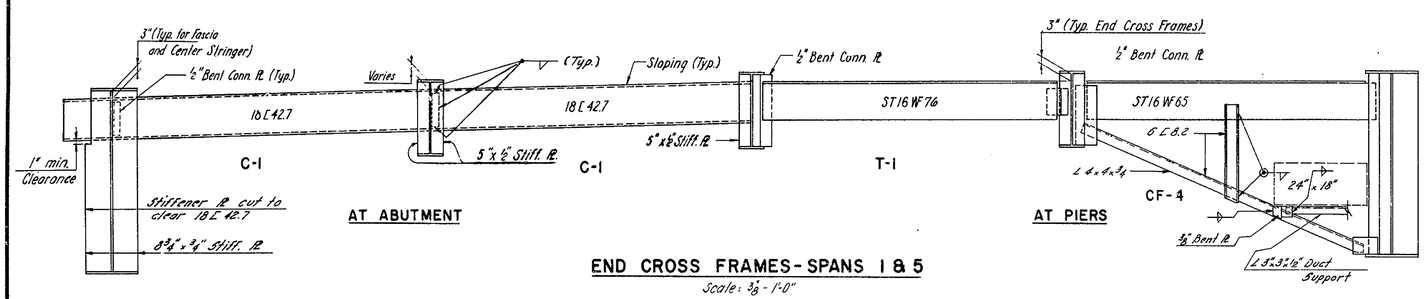
Note: Add Fillers where required.

(AT ALIGNMENT POST ONLY)

END CROSS FRAMES - SPAN 4

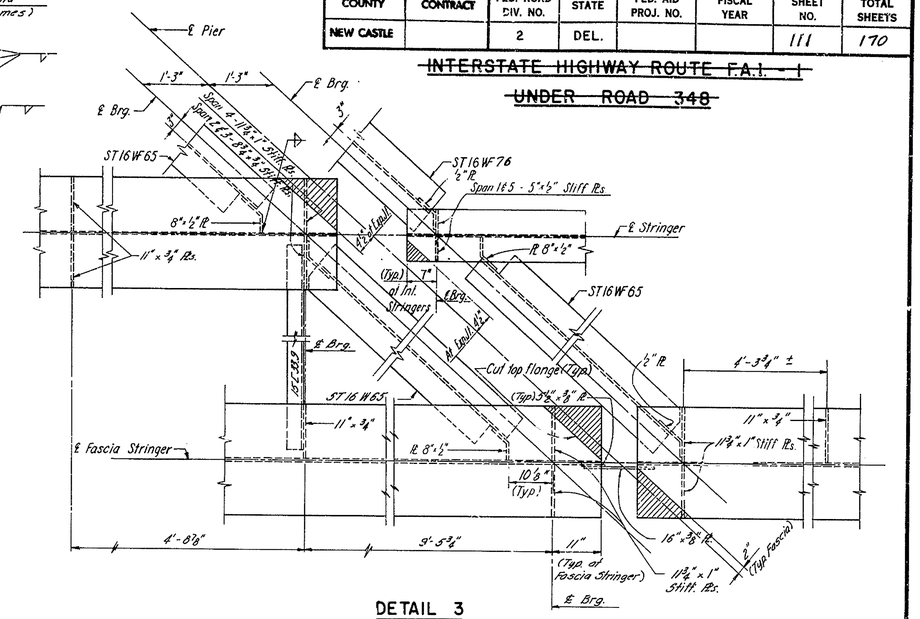
Scale: 3/8" = 1'-0"

(SPANS 2 & 3 SIMILAR)



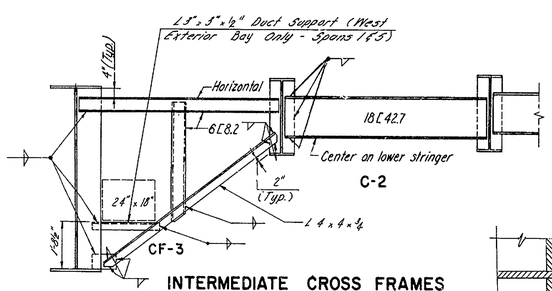
END CROSS FRAMES - SPANS 1 & 5

Scale: 3/8" = 1'-0"



DETAIL 3

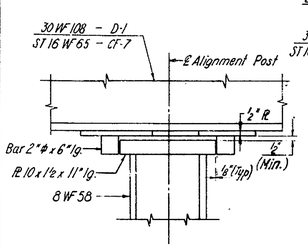
Scale: 3/4" = 1'-0"



Note: For Intermediate Cross Frames, Spans 2,3, & 4, see Sheet No. 110

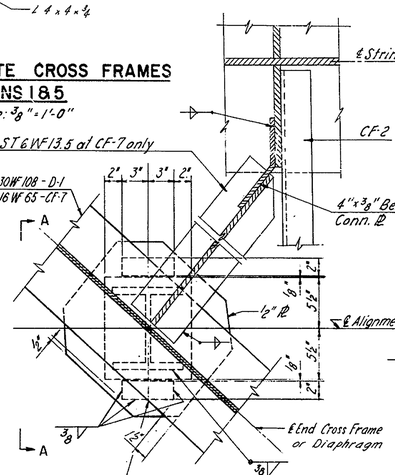
INTERMEDIATE CROSS FRAMES SPANS 1 & 5

Scale: 3/8" = 1'-0"



Note: For Location of Alignment Post, see Sheet No. 110.

SECTION A-A

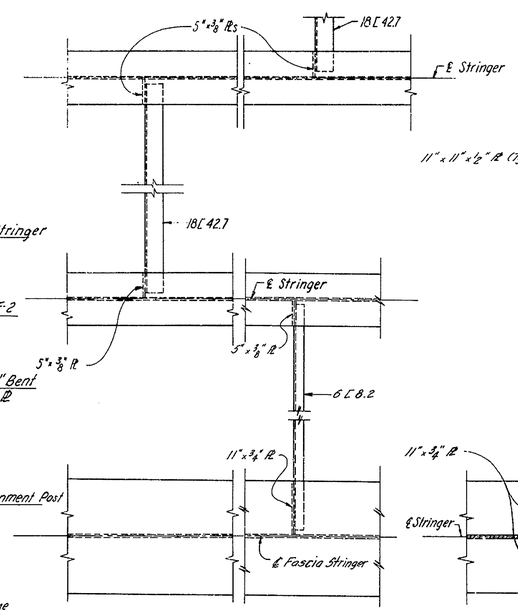


PLAN

ALIGNMENT POST

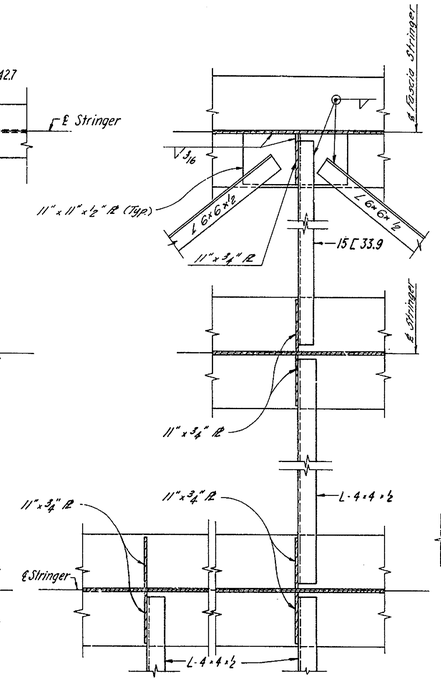
Scale: 1½" = 1'-0"

(Field weld to proper alignment after erection of superstructure



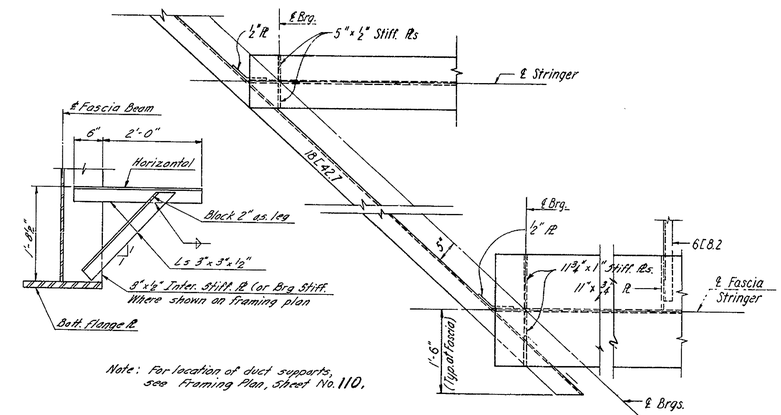
DETAIL 1

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



DETAIL 2

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



Note: For location of duct supports, see Framing Plan, Sheet No. 110.

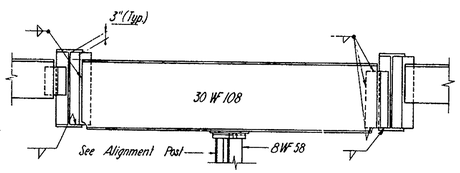
DUCT SUPPORT

Scale 3/4" = 1'-0"

DETAIL 4

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

Notes: 1. All Cross frames are in Vertical plane.
2. All welds shown are 5/16" unless otherwise noted.
3. For location of Detail 1, 2, 3 & 4, see Sheet No. 110.



D-1

END DIAPHRAGM - PIER 4

Scale: 3/8" = 1'-0"

In charge of I.V. AHL
Made by D.W.
Checked by V.P.
Traced by
Checked by

DELAWARE
STATE HIGHWAY DEPARTMENT
DELAWARE TURNPIKE

OVERPASS - ROAD 348
STEEL DETAILS

DWG. NO.	SCALE	DATE
8 OF 12	As Noted	MAY 1962

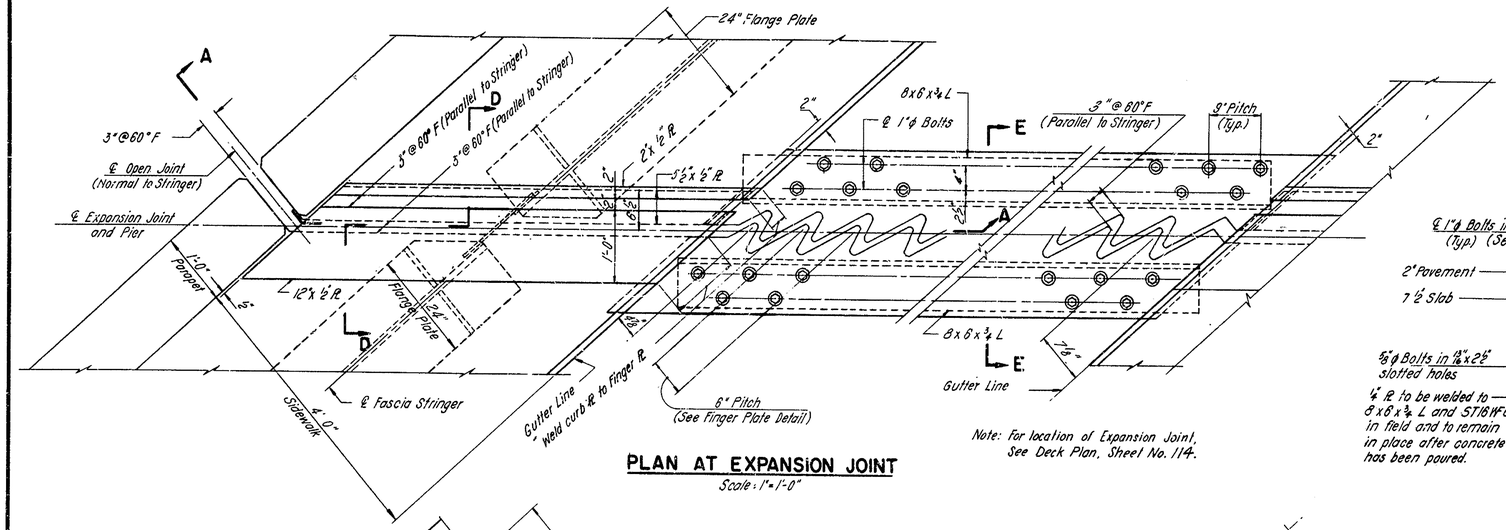
CONTRACT NO.

GOODKIND & O'DEA
CONSULTING ENGINEERS

COUNTY	CONTRACT	FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE		2	DEL.			112	170

~~INTERSTATE HIGHWAY ROUTE F.A.I. - I~~

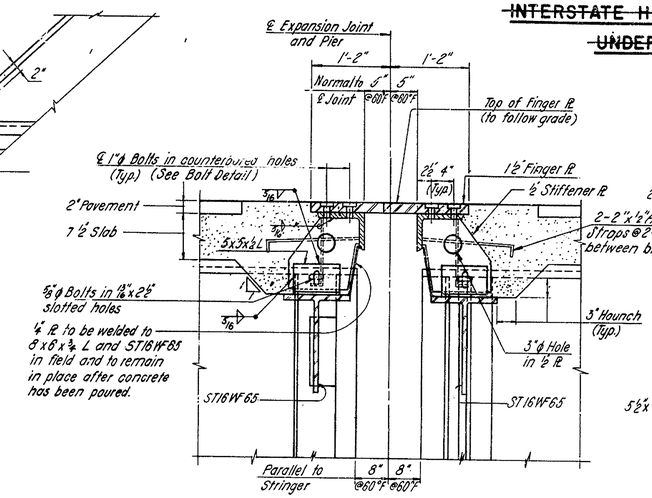
~~UNDER ROAD 348~~



Note: For location of Expansion Joint, See Deck Plan, Sheet No. 114.

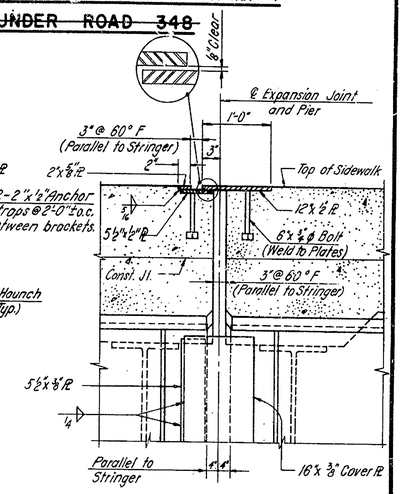
PLAN AT EXPANSION JOINT

Scale: 1"=1'-0"



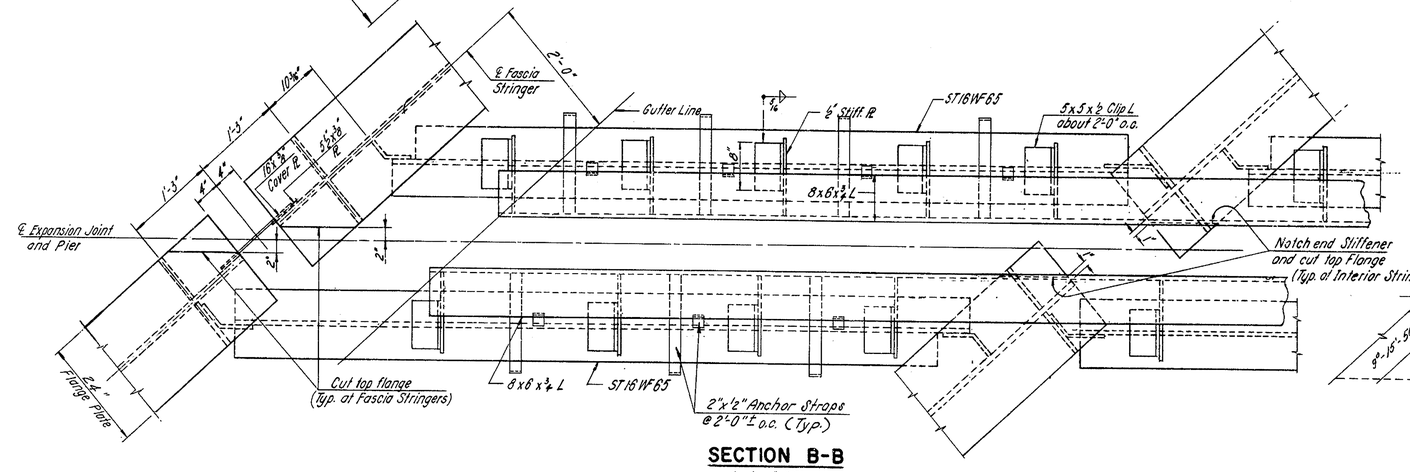
SECTION E-E

Scale: 1"=1'-0"



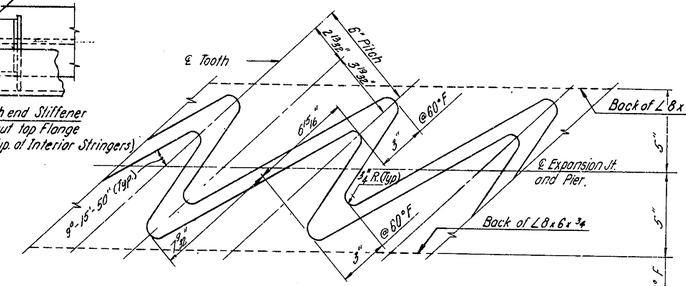
SECTION D-D

Scale: 1"=1'-0"



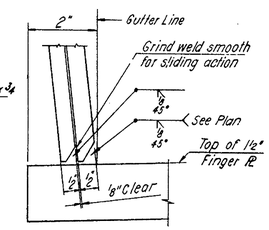
SECTION B-B

Scale: 1"=1'-0"



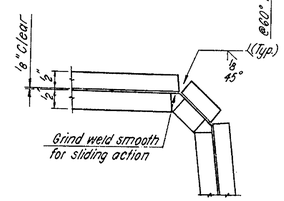
FINGER PLATE DETAIL

Not to Scale



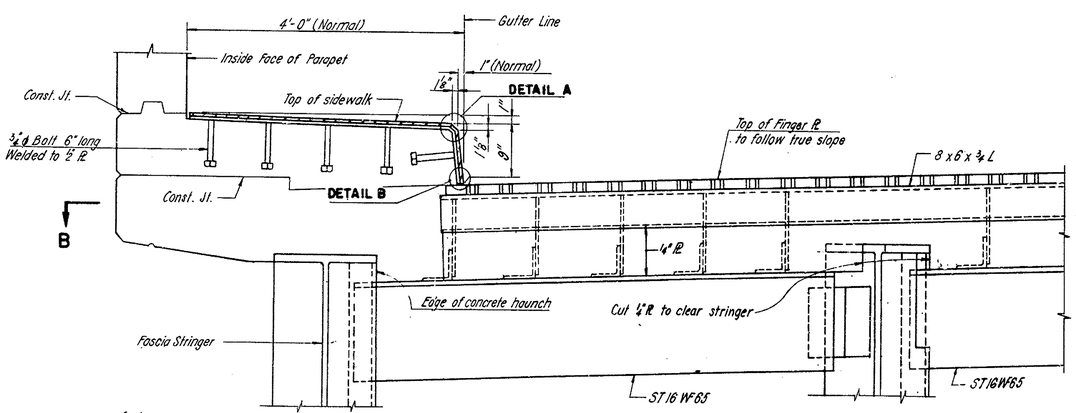
DETAIL B

Scale: 6"=1'-0"



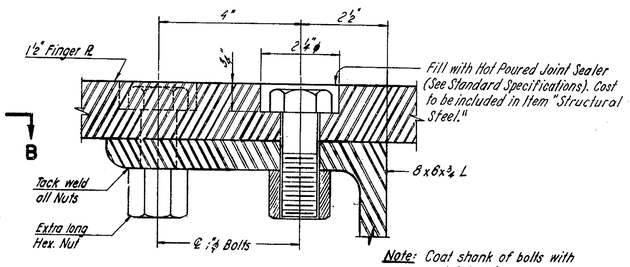
DETAIL A

Scale: 6"=1'-0"



SECTION A-A

Scale: 1"=1'-0"



Note: Coat shank of bolts with rust inhibiting compound and oil all nuts.

BOLT DETAIL

Scale: 6"=1'-0"

Note: Payment for all Toothed Plates and Connections shall be included in the Lum Sum bid for "Structural Steel." (See Spec. Prov.)

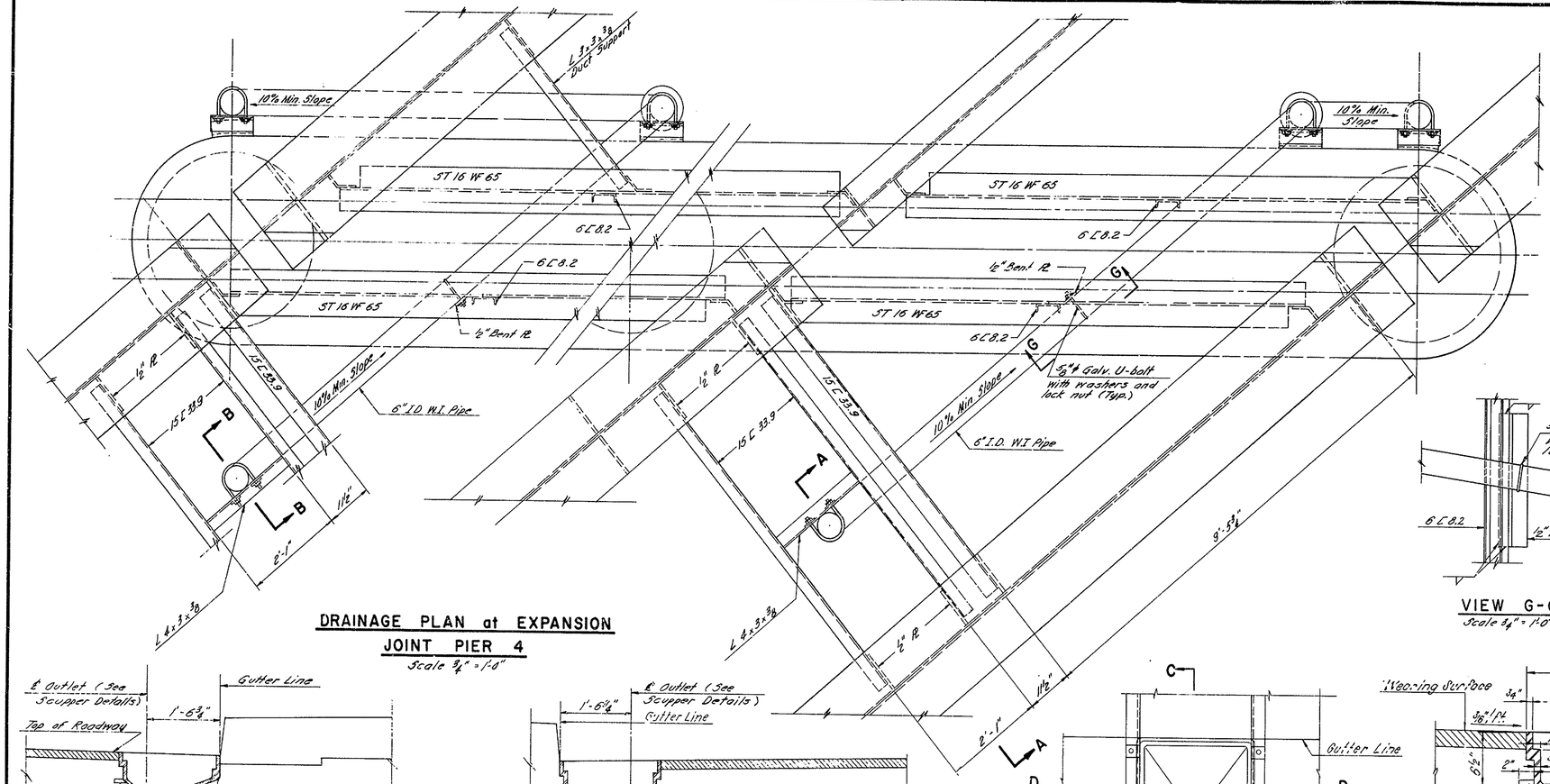
In charge of I.V. AGL
Made by D.W.
Checked by V.P.
Traced by
Checked by

DELAWARE
STATE HIGHWAY DEPARTMENT
DELAWARE TURNPIKE

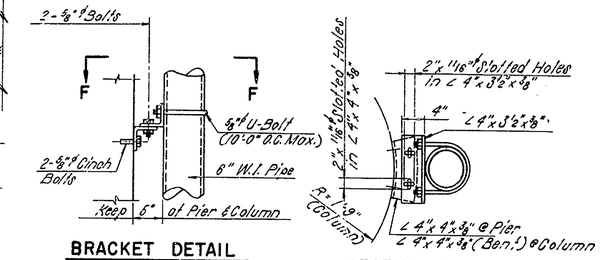
OVERPASS – ROAD 348
STEEL EXPANSION JOINT

DWG. NO.	SCALE	DATE	
9 of 12	As Noted	May 1962	GOODKIND & O'DEA CONSULTING ENGINEERS
CONTRACT NO.			

COUNTY	CONTRACT	FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE		2	DEL.			113	170

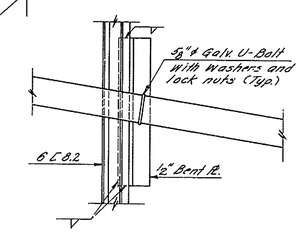


DRAINAGE PLAN at EXPANSION JOINT PIER 4
Scale 3/4" = 1'-0"

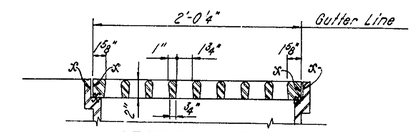


BRACKET DETAIL
Scale: 1"=1'-0"

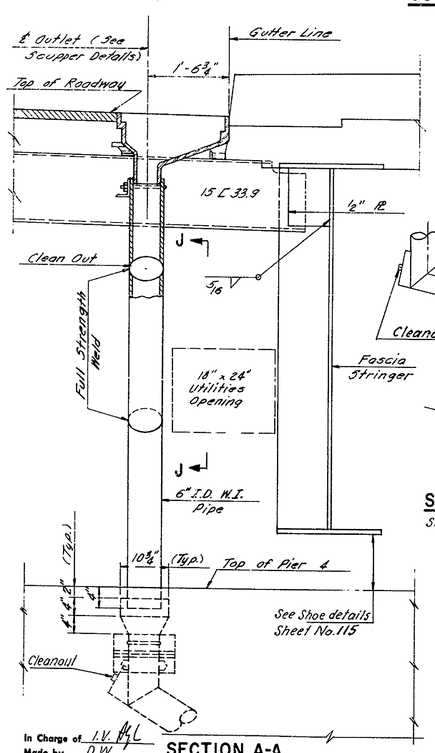
SECTION F-F
Scale: 1"=1'-0"



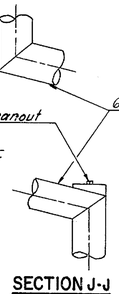
VIEW G-G
Scale 3/4" = 1'-0"



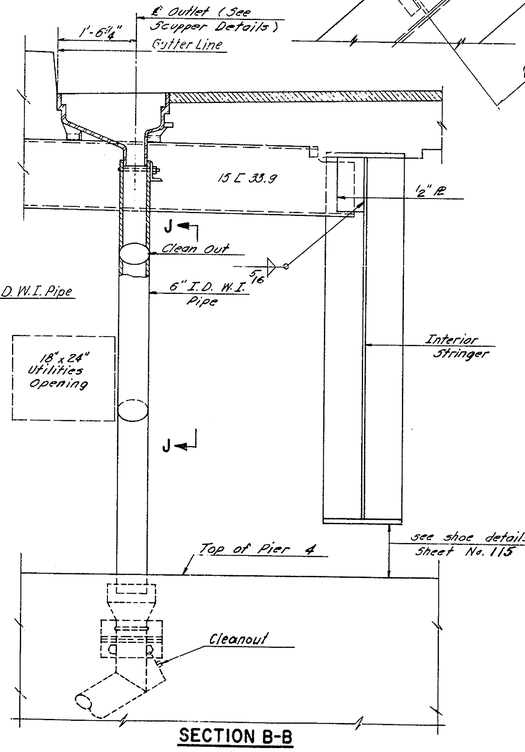
SECTION E-E
Scale: 1 1/2"=1'-0"



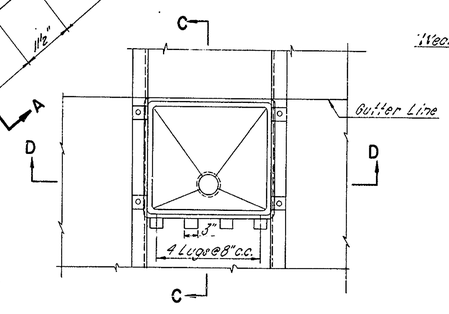
SECTION A-A
Scale: 3/4"=1'-0"



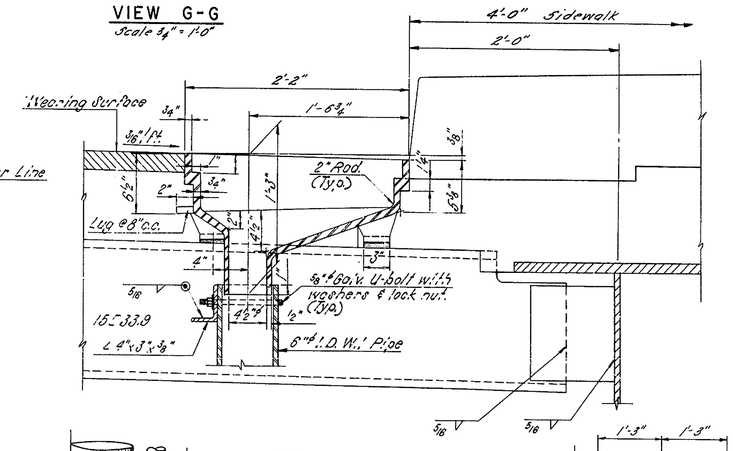
SECTION J-J
Scale: 3/8"=1'-0"



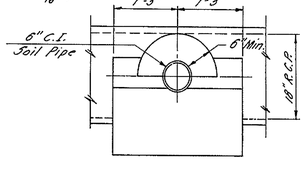
SECTION B-B
Scale: 3/4"=1'-0"



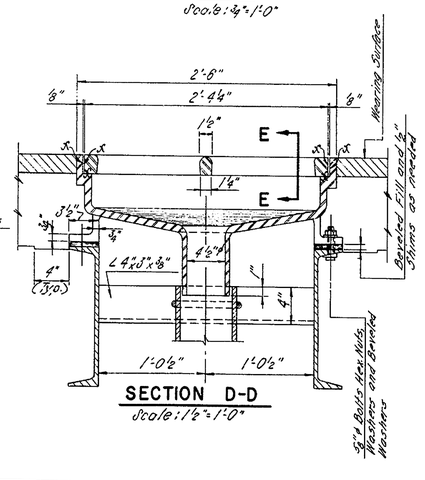
PLAN
Scale: 3/4"=1'-0"



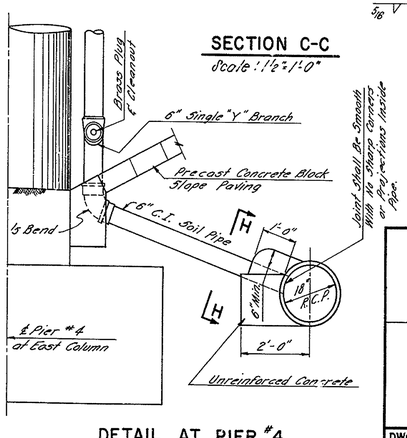
SECTION C-C
Scale: 1 1/2"=1'-0"



SECTION H-H
Scale 3/4"=1'-0"



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



DETAIL AT PIER #4
Scale 3/4" = 1'-0"

DELAWARE
STATE HIGHWAY DEPARTMENT
DELAWARE TURNPIKE

OVERPASS – ROAD 348
DRAINAGE DETAILS

DWG. NO.	SCALE	DATE
10 OF 12	As Noted	MAY 1962

CONTRACT NO.

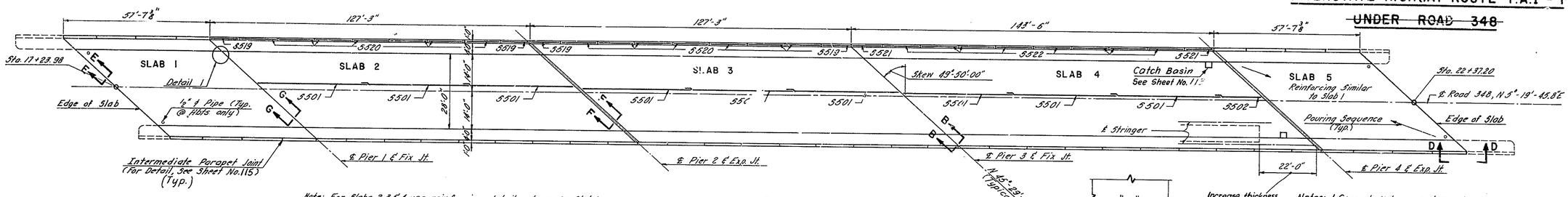
GOODKIND, O'DEA & CO.
CONSULTING ENGINEERS

In Charge of I.V. Hall
Made by D.W.
Checked by V.P.
Traced by
Checked by

COUNTY	CONTRACT	FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE		2	DEL.			114	170

~~INTERSTATE HIGHWAY ROUTE F.A.I - I~~

~~UNDER ROAD 348~~



Note: For Slabs 2, 3 & 4 use reinforcing details shown in Slab 1 except as indicated in "Deck Plan" for longitudinal bars.

DECK PLAN

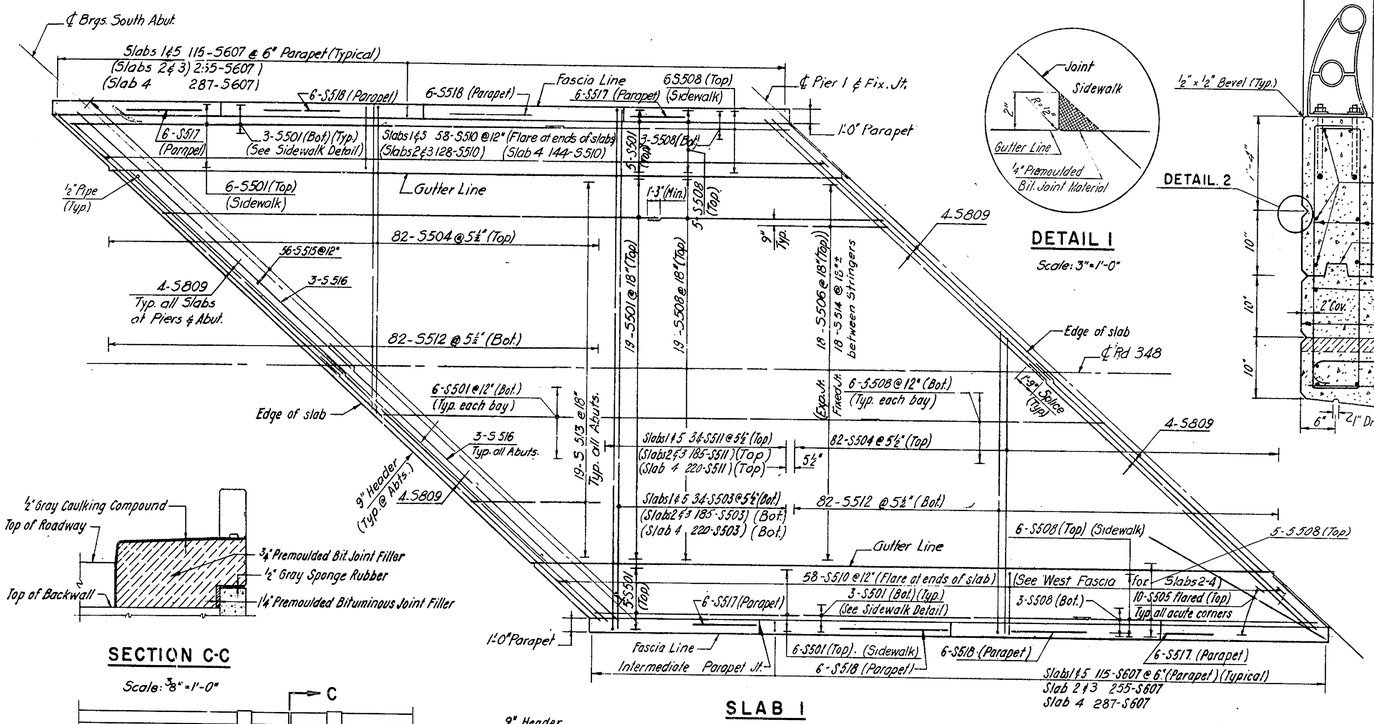
Scale 1" = 20'

Increase thickness of slab in exterior bay (Typ. all acute corners)

Catch Basin

Slab bars to be cut in field to fit. Use 2-#6 bars, 4'-0" lg. top & bottom, around Catch Basins (Typ.)

Notes: 1. Concrete to be poured as indicated in slab 5.
2. A Concrete water-reducing retarder admixture shall be added to all superstructure concrete. See Special Provisions.

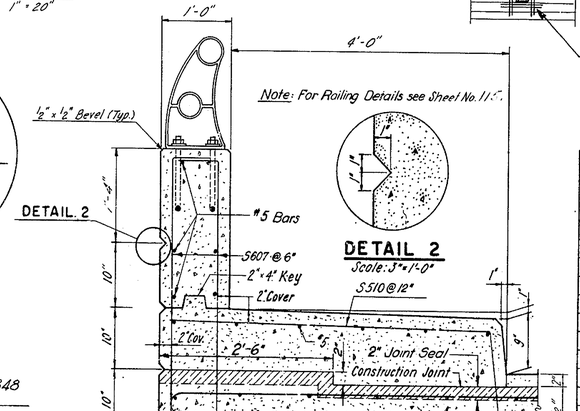


SLAB 1

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

DETAIL 1

Scale: 3" = 1'-0"

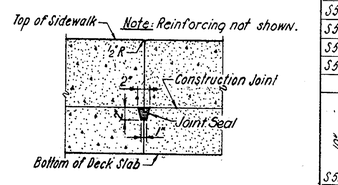


DETAIL 2

Scale: 3" = 1'-0"

SECTION A-A

Scale: 1" = 1'-0"



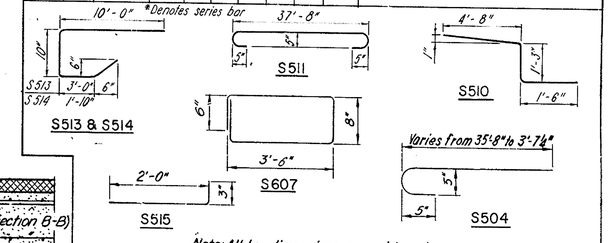
SECTION B-B

Scale: 1" = 1'-0"

BAR LIST

MARK	SIZE	LENGTH	TYPE	SLAB NO. 1	2	3	4	5	TOTAL NO	DESCRIPTION & LOCATION
S501	5	43'-2"	St.	71	213	213	213	71	781	Longit. Slab (Top & Bot.), Sidewalk
S502	5	17'-4"	St.	–	–	–	71	–	71	Longit. Slab (Top & Bot.), Sidewalk
S503	5	37'-8"	St.	34	185	185	220	34	658	Transverse (Bottom)
S504	5	Avg. 20'-5"	Bt.	164	164	164	164	164	820	Trans. Top 10 sets of 82 36'-3" to 4'-2¼" Δ = 2¾"
S505	5	16'-0"	St.	20	20	20	20	20	100	Acute corners - Top
S506	5	10'-0"	St.	–	18	18	18	18	72	Longit. - at Piers (Exp. Joints)
S507	6	8'-10"	Bt.	230	510	510	574	230	2054	Vertical stirrups in Parapet
S508	5	15'-0"	St.	71	–	–	–	71	142	Long. Slab, S. W. (T. & B.)
S809	8	29'-0"	St.	16	16	16	16	16	80	Transverse (Top & Bot.) at all Piers & Abutments
S510	5	7'-5"	Bt.	116	256	256	288	116	1032	Transverse - Sidewalk
S511	5	30'-10"	Bt.	34	185	185	220	34	658	Transverse - Top
S512	5	Avg. 19'-8"	St.	164	164	164	164	164	820	Trans. - Bot. 10 sets of 82 35'-8" to 3'-7¼" Δ = 4¾"
S513	5	14'-4"	Bt.	19	–	–	–	19	38	Longit. - at Abutments
S514	5	13'-4"	Bt.	18	18	18	18	–	72	Longit. - at Piers (Fixed Joints)
S515	5	2'-3"	Bt.	56	–	–	–	56	112	Vert. - in Haunch at Abutments
S516	5	28'-0"	St.	6	–	–	–	6	12	Trans. - in Haunch at Abutments
S517	5	12'-7"	St.	24	–	–	–	24	48	Longit. - Parapet
S518	5	15'-6"	St.	24	–	–	–	24	48	" "
S519	5	11'-9"	St.	–	24	24	–	–	48	" "
S520	5	14'-2"	St.	–	84	84	–	–	168	" "
S521	5	12'-0"	St.	–	–	–	24	–	24	" "
S522	5	14'-4"	St.	–	–	–	96	–	96	" "

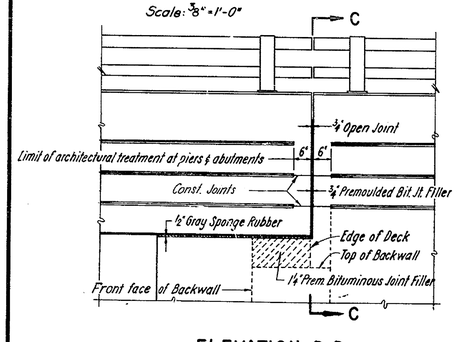
*Denotes series bar



Note: All bar dimensions are out to out.

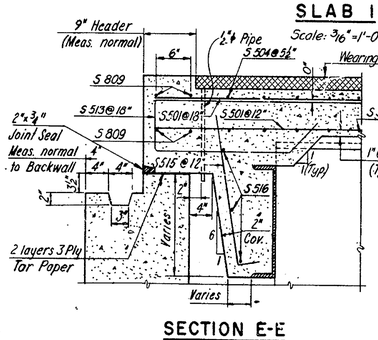
SECTION C-C

Scale: 3/8" = 1'-0"



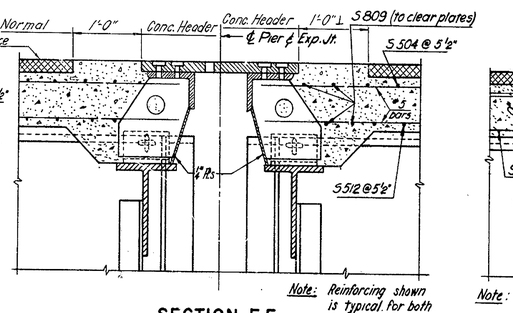
ELEVATION D-D

Scale: ½" = 1'-0"



SECTION E-E

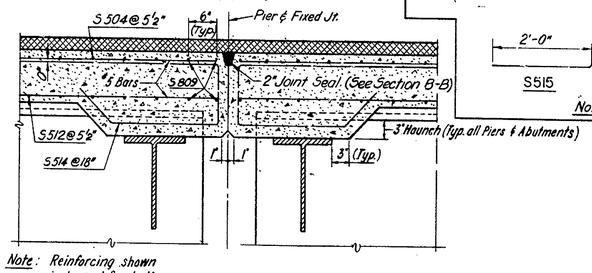
Scale: 1" = 1'-0"



Note: Reinforcing shown is typical for both sides of Joint.
For Structural Steel Details, see Sheet No. 111

SECTION F-F

Scale: 1" = 1'-0"



Note: Reinforcing shown is typical for both sides of Joint.

SECTION G-G

Scale: 1" = 1'-0"

In charge of I.V.
Made by D.W.
Checked by V.P.
Traced by
Checked by

DELAWARE STATE HIGHWAY DEPARTMENT

DELAWARE TURNPIKE

OVERPASS - ROAD 348
DECK PLAN

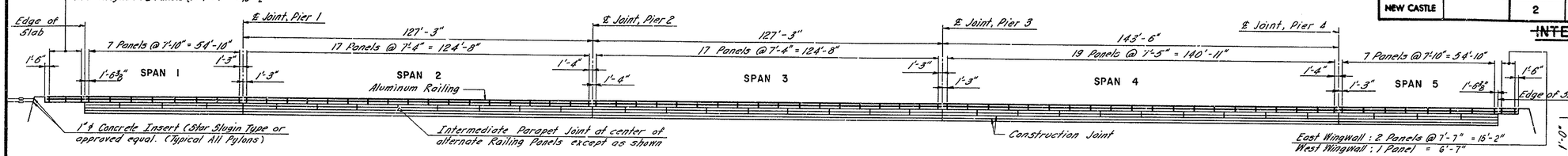
DWG. NO.	SCALE	DATE
11 of 12	As Noted	MAY 1962

CONTRACT NO.

GOODKIND & O'DEA CONSULTING ENGINEERS

COUNTY	CONTRACT	FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE		2	DEL.			115	170

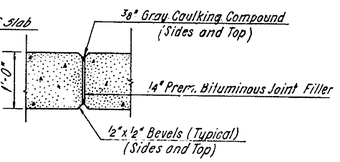
~~INTERSTATE HIGHWAY ROUTE F.A.I. 1~~
~~UNDER ROAD 348~~



RAILING ELEVATION

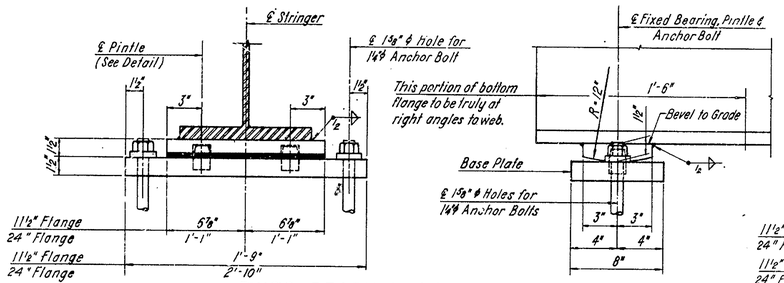
Scale : 1" = 20'

Note:
Reinforcing to be discontinuous at Parapet Joints.



INTERMEDIATE PARAPET JOINT DETAIL

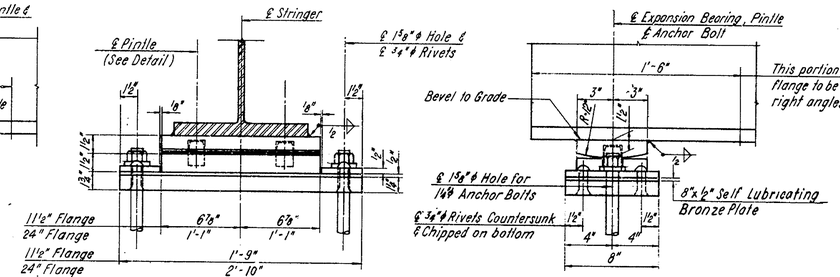
Scale: 3/4" = 1'-0"



FIXED BEARING - NORTH ABUTMENT

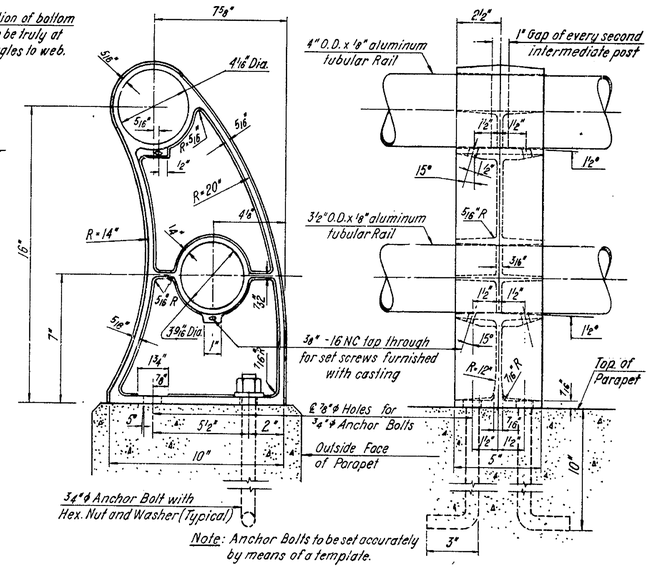
Scale: 2" = 1'-0"

Note. For Anchor Bolt Detail, see Sheet No. 109.



EXPANSION BEARING - SOUTH ABUTMENT

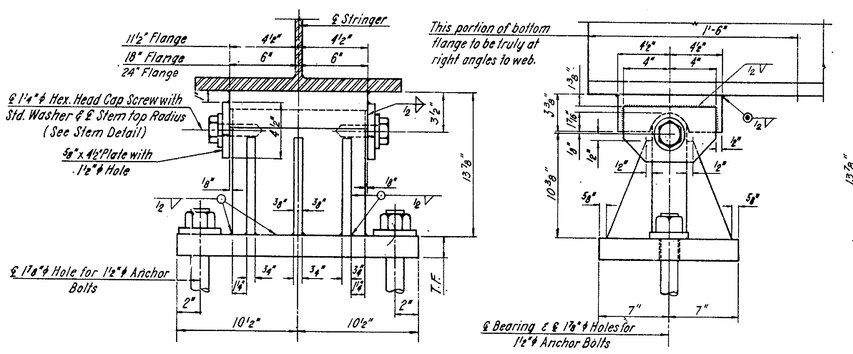
Scale: 2" = 1'-0"



Note: Anchor Bolts to be set accurately by means of a template.

RAILING DETAILS

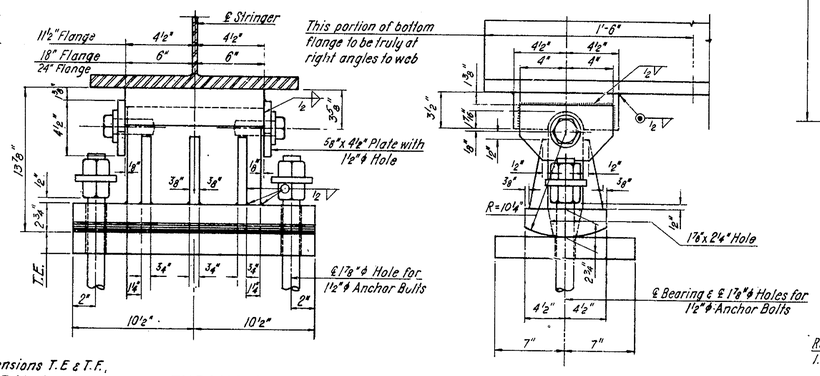
Scale: 3" = 1'-0"



FIXED BEARING - PIERS 1 & 3

Not to Scale

Note: For dimensions T.E & T.F., See Table A.
For Anchor Bolt Detail, see Sheet No. 109.

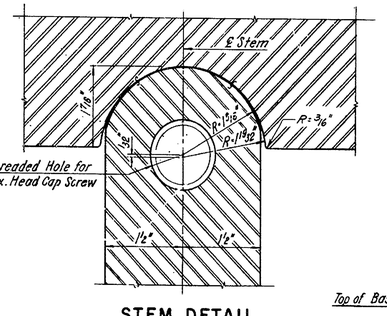


EXPANSION BEARING - PIERS 2 & 4

Not to Scale

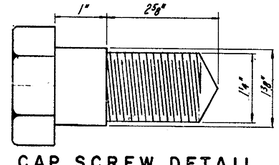
Railing Notes:

1. All railings are to be fabricated and erected so that the rails are parallel to each other and to the top fascia and so that the posts are truly vertical.
2. Anchor Bolts to be of Aluminum Alloy meeting the requirements of A.S.T.M. - B211 Alloy C6 42 - A - T4
3. After nuts have been placed and tightened to the satisfaction of the Engineer, bolts shall be cut off 1/8" above nuts and peened.
4. All rails to be continuous at all end posts adjacent to piers and abutments.
5. Tubular rails shall be closed at all piers and abutments with a welded in aluminum plug.
6. The finished aluminum alloy bolts, nuts and washers shall be given an anodic coating at least 0.0002 inches thick and a chromate seal.



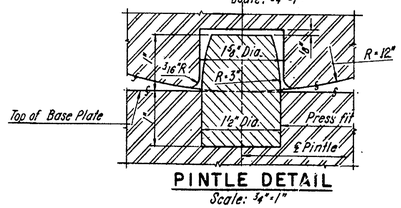
STEM DETAIL

Scale: 3/4" = 1"



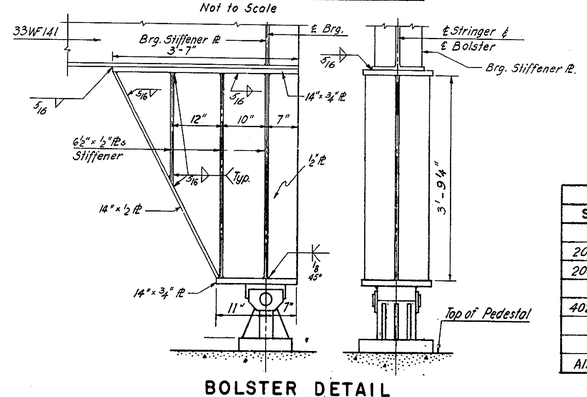
CAP SCREW DETAIL

Scale: 3/4" = 1"



PINTLE DETAIL

Scale: 3/4" = 1"



BOLSTER DETAIL

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

TABLE A

PIERS 2 & 4		PIERS 1 & 3	
STRINGER	T.E.	STRINGER	T.F.
201	2 1/2"	201	3"
202 & 203	2 9/16"	202 & 203	2 15/16"
204 & 205	2 5/8"	204	2 7/8"
401	3 1/2"	205	2 13/16"
402 & 403	3 9/16"	301 & 302	3"
404	3 5/8"	303 & 304	3 1/16"
405	3 11/16"	305	3 1/8"
All others are 2 1/2"			

In charge of I.V.
Made by D.W.
Checked by V.P.
Traced by
Checked by

DELAWARE
STATE HIGHWAY DEPARTMENT
DELAWARE TURNPIKE

OVERPASS ROAD 348
RAILING AND BEARINGS

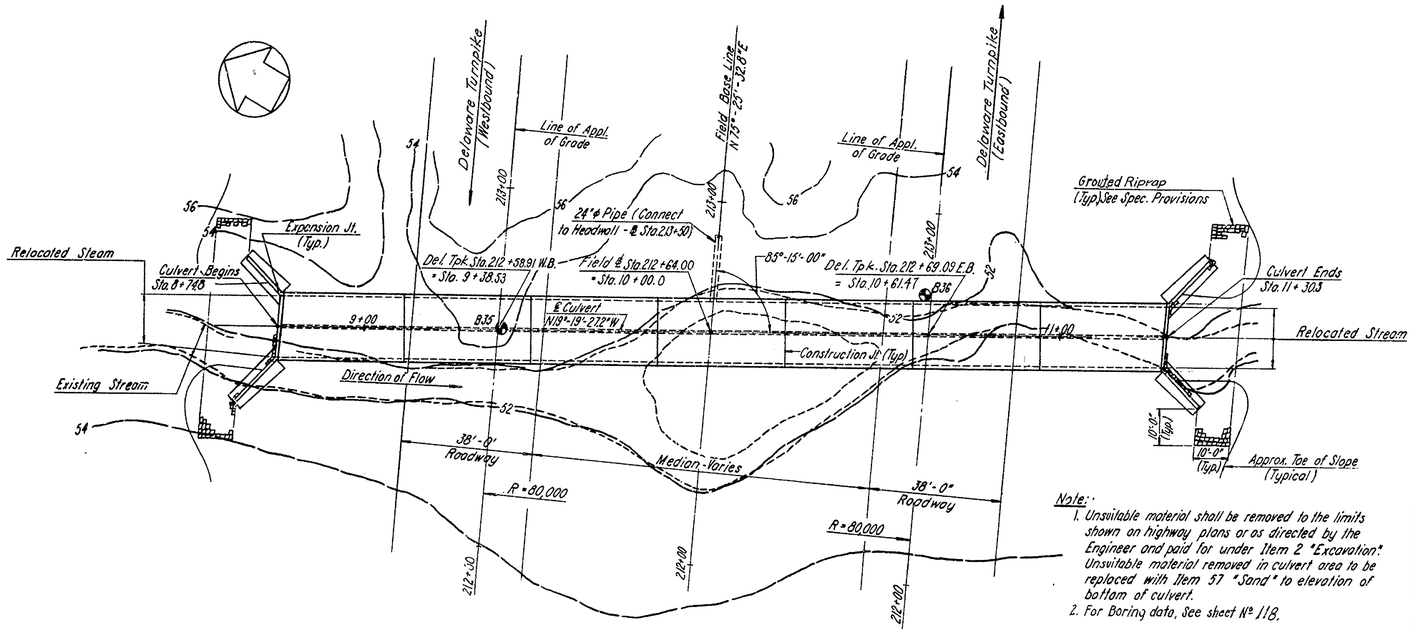
DWG. NO.	SCALE	DATE
12 OF 12	As Noted	1962

CONTRACT NO.

GOODKIND & O'DEA
CONSULTING ENGINEERS

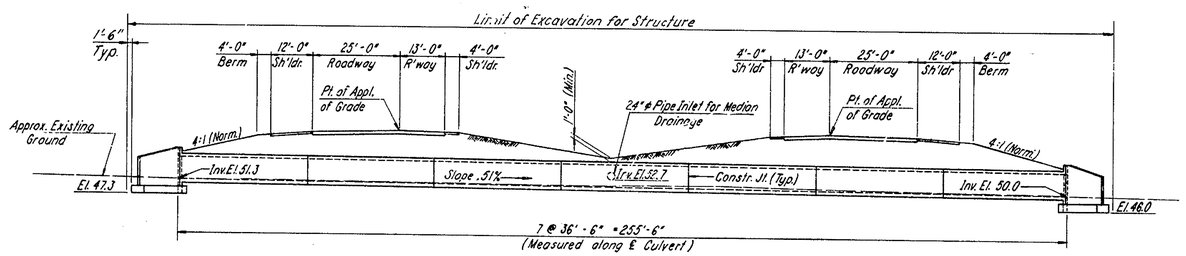
COUNTY	CONTRACT	FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE		2	DEL.			116	170

~~INTERSTATE HIGHWAY ROUTE F.A.I. -~~
~~CULVERT @ STA 212 + 64.00~~

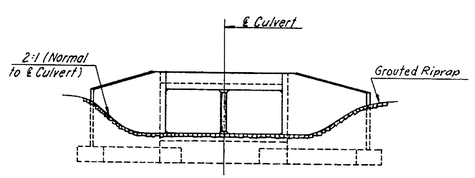


Note:
1. Unsuitable material shall be removed to the limits shown on highway plans or as directed by the Engineer and paid for under Item 2 "Excavation." Unsuitable material removed in culvert area to be replaced with Item 57 "Sand" to elevation of bottom of culvert.
2. For Boring data, See sheet No. 118.

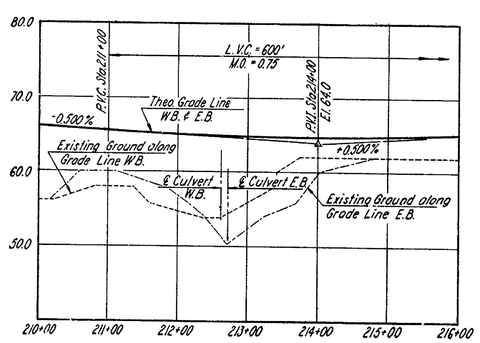
PLAN
Scale: 1" = 20'



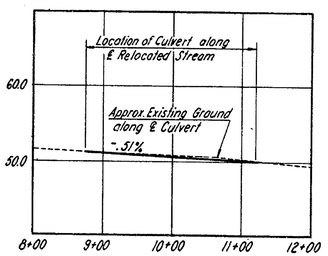
ELEVATION
Scale: 1" = 20'



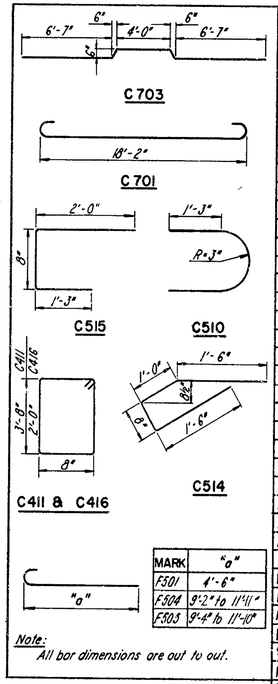
END ELEVATION
Scale: 1" = 10'



PROFILE OF DELAWARE TURNPIKE (WESTBOUND & EASTBOUND)
Scales: Vertical: 1" = 10'
Horizontal: 1" = 100'



STREAM PROFILE
Scales: Vertical: 1" = 10'
Horizontal: 1" = 100'



MARK	"a"
F501	4'-6"
F504	9'-2" to 11'-11"
F503	9'-4" to 11'-10"

Note:
All bar dimensions are out to out.

BENDING DETAILS
No Scale

BAR LIST

MARK	SIZE	LENGTH	NO PIECES	TYPE	DESCRIPTION
C701	7	19'-10"	514	Bt.	Trans. Top & Bot. Slab, All Sections
C602	6	18'-2"	514	St.	" " " " " "
C703	7	18'-7"	504	Bt.	" " " " " "
C304	5	37'-6"	88	St.	Longit. Top & Bot. Slab, Center Wall, Sect. 1 & 7
C505	5	38'-3"	88	St.	" " " " Exterior " " 1 & 7
C506	5	36'-4"	288	St.	" " " " All Walls, Sect. 2, 4 & 6
C507	5	39'-0"	192	St.	" " " " " " " 3 & 5
C508	5	36'-9"	8	St.	Longit. Ext. Wall, Sect. 1 & 7
C509	5	7'-5"	1556	St.	Vert. Each Face, All Walls, Sect. 1 - 7
C510	5	3'-4"	8	Bt.	Horiz. - Ends of Center Walls, Sect. 1 & 7
C411	4	9'-6"	38	Bt.	Vert. Cutoff Wall
C412	4	18'-3"	20	St.	Longit. Cutoff Wall & End-Parapet
C513	5	10'-0"	8	St.	Vert. Corners
C514	5	4'-8"	40	Bt.	Horiz. "
C515	5	3'-11"	8	Bt.	Horiz. - End Parapet Corners
C416	4	6'-2"	38	Bt.	Vert. - End Parapet
C517	5	4'-0"	16	St.	Hole for Drainage, Sect. 4
F501	5	5'-1"	88	Bt.	Trans. Top & Bot. all Footings
F502	5	14'-6"	16	St.	Longit. Top & Bot. N.E. & S.W. Footings
F503	5	17'-0"	16	St.	" " " N.W. & S.E. "
F504	5	Series	28	Bt.	Dowels N.E. & S.W. Walls (14 bars, from 9'-9" to 12'-6" Δ = 2½")
F505	5	"	32	Bt.	" N.W. & S.E. " (16 " , " 9'-11" to 12'-5" Δ = 2")
F506	5	2'-6"	24	St.	Dowels - Wingwall Flg. to Cutoff Wall
W501	5	Series	18	St.	Vert. - Near Face, N.E. & S.W. Walls, (9 bars - from 7'-6" to 10'-2" Δ = 4")
W502	5	"	22	St.	" " " N.W. & S.E. " (11 " " 7'-7" to 10'-1" Δ = 3")
W503	5	12'-6"	24	St.	Longit. - Each Face, N.E. & S.W. Walls
W504	5	5'-9"	4	St.	" " " " " "
W505	5	13'-0"	4	St.	" Top " " " " "
W506	5	15'-0"	24	St.	" " " N.W. & S.E. "
W507	5	7'-6"	4	St.	" " " " " "
W508	5	15'-6"	4	St.	" Top " " " " "

GENERAL NOTES

1. Design Specifications: A.A.S.H.O. 1957, H20-S16-44 Loading (Modified).
2. Material & Fabrication Specifications: State of Delaware, State Highway Department, Standard Specifications, April 1, 1957.
3. All exposed edges shall be beveled 1" x 1", unless otherwise dimensioned.
4. Design Stresses:

Reinforcing Steel - 18,000 psi.
Concrete f_c = 1,200 psi.
n = 10

HYDRAULIC DATA

Drainage Area = 1.25 Sq. Mi.
Design Flood (25 Year Storm) = 628 C.F.S.
Waterway Area Design Flood = 61 Sq. Ft.
Mean Velocity through Structure = 9.8 F.P.S.

QUANTITIES

ITEMS	UNIT	TOTAL NEAT
EXCAVATION FOR STRUCTURE	C.Y.	800
⅓ PORTL. CEM. CONC. MASONRY - BOX CULVERT	C.Y.	530
BAR REINFORCEMENT	LBS.	98,000
SUPERFICIAL WATERPROOFING	S.Y.	1,050
GROUTED RIPRAP	S.Y.	200
⊕ SAND	TONS	640

Notes:
Items indicated (*) are Fixed Quantity Items. See Special Provisions.
⊕ To be used only as and where directed by the Engineer.

In charge of A.G.L.
Made by J.P.
Checked by L.T.B.
Traced by
Checked by

DELAWARE
STATE HIGHWAY DEPARTMENT
DELAWARE TURNPIKE

CULVERT AT STA. 212+58.91 W.B

GENERAL PLAN

DWG. NO.	SCALE	DATE
1 OF 3	AS NOTED	MAY 1962

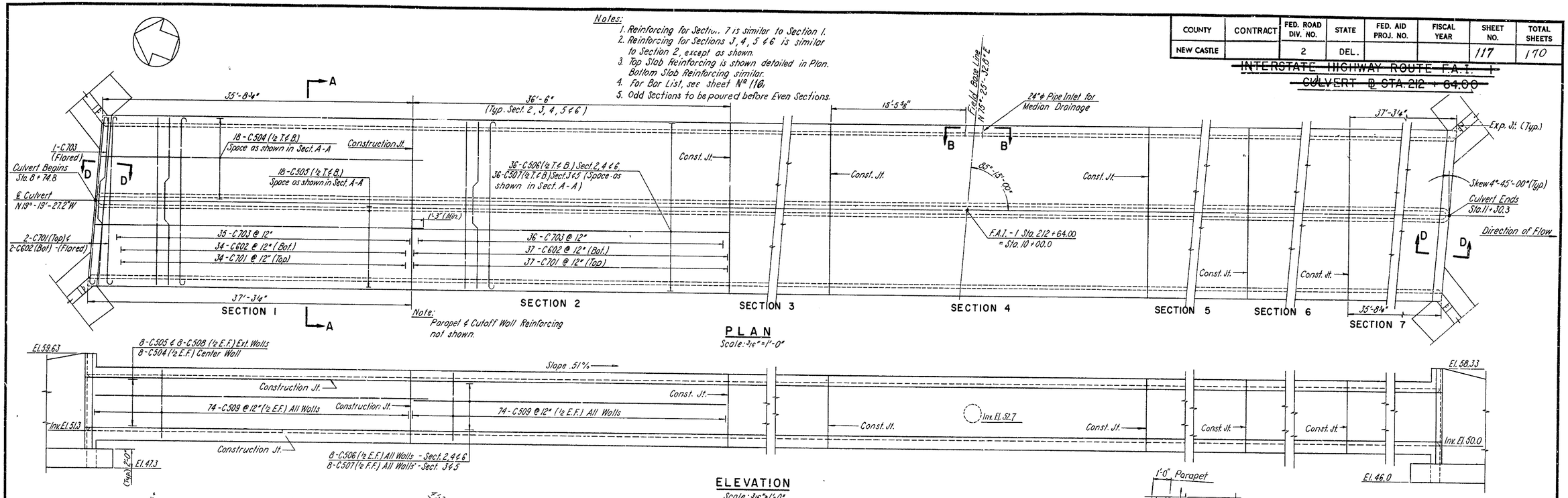
CONTRACT NO.

GOODKIND & O'DEA
CONSULTING ENGINEERS

COUNTY	CONTRACT	FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE		2	DEL.			117	170

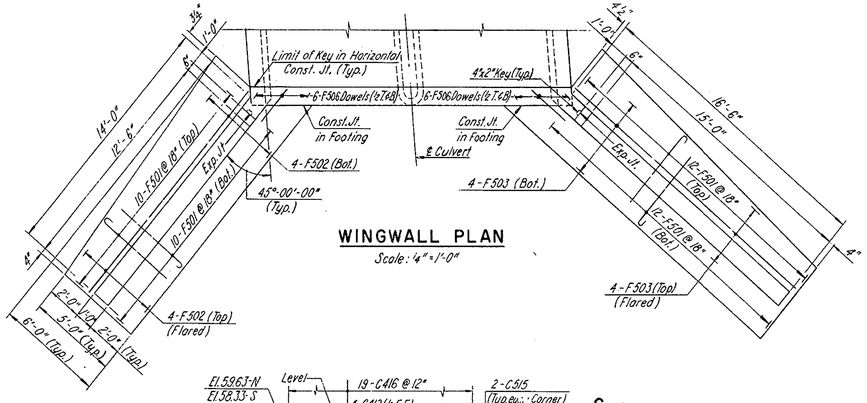
~~INTERSTATE HIGHWAY ROUTE F.A.I. 1~~
~~CULVERT @ STA. 212 + 64.00~~

Notes:
1. Reinforcing for Section 7 is similar to Section 1.
2. Reinforcing for Sections 3, 4, 5 & 6 is similar to Section 2, except as shown.
3. Top Slab Reinforcing is shown detailed in Plan. Bottom Slab Reinforcing similar.
4. For Bar List, see sheet Nº 110.
5. Odd Sections to be poured before Even Sections.

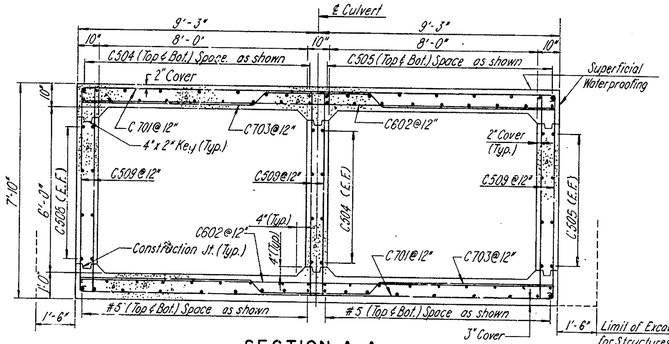


PLAN
Scale: 3/16" = 1'-0"

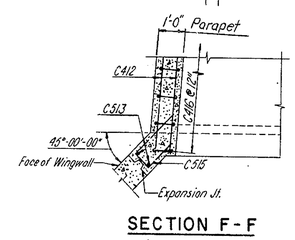
ELEVATION
Scale: 3/16" = 1'-0"



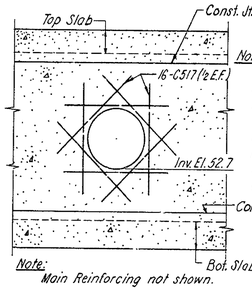
WINGWALL PLAN
Scale: 1/4" = 1'-0"



SECTION A-A
Scale: 3/8" = 1'-0"



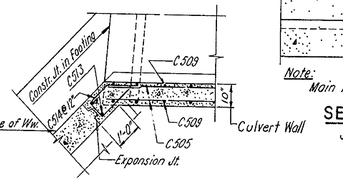
SECTION F-F
Scale: 3/8" = 1'-0"



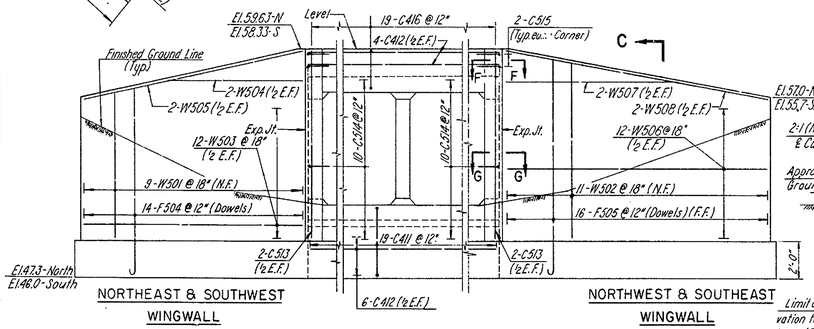
Note: Reinforcing in Section 4 is same as indicated for Section 2 except for Reinforcing around the 24"φ Pipe Inlet opening in East Wall. Cut horizontal and vertical bars in Field as required to clear opening and add bars as shown.

Note: Main Reinforcing not shown.

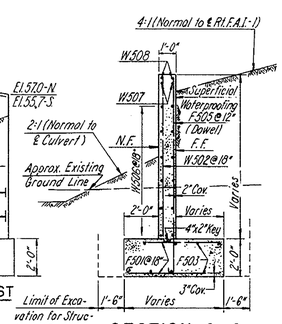
SECTION B-B
Scale: 3/8" = 1'-0"



SECTION G-G
Scale: 3/8" = 1'-0"

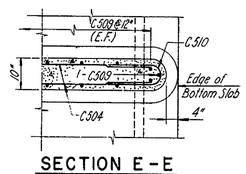


WINGWALL ELEVATION
Scale: 1/4" = 1'-0"

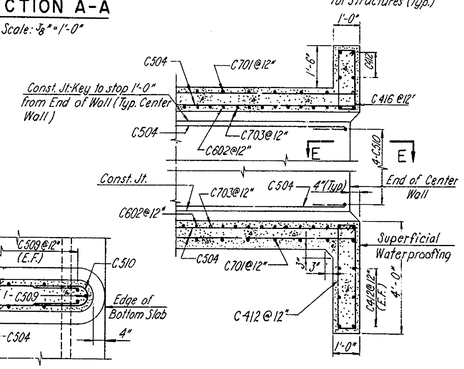


SECTION C-C
Scale: 1/4" = 1'-0"

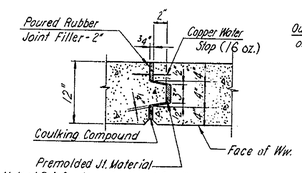
Note: Key in footing to extend to within one foot of end of footing.



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

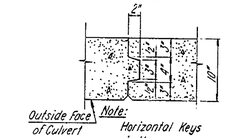


SECTION D-D
Scale: 3/8" = 1'-0"



Note: 1. Reinforcing to stop at Exp. Jt.
2. Key to extend to 1'-0" below top of Wingwall.
3. Copper stop extends to 6" below top of Wingwall.

EXPANSION JOINT DETAIL
Scale: 1" = 1'-0"



Note: Horizontal Keys similar.

CONSTRUCTION JOINT DETAIL
Scale: 1" = 1'-0"

In charge of A.G.L.
Made by J.P.
Checked by L.T.B.
Traced by
Checked by

DELAWARE
STATE HIGHWAY DEPARTMENT
DELAWARE TURNPIKE

CULVERT AT STA. 212+58.91 W.B.

CULVERT DETAILS

DWG. NO.	SCALE	DATE
2 OF 3	AS NOTED	MAY 1963

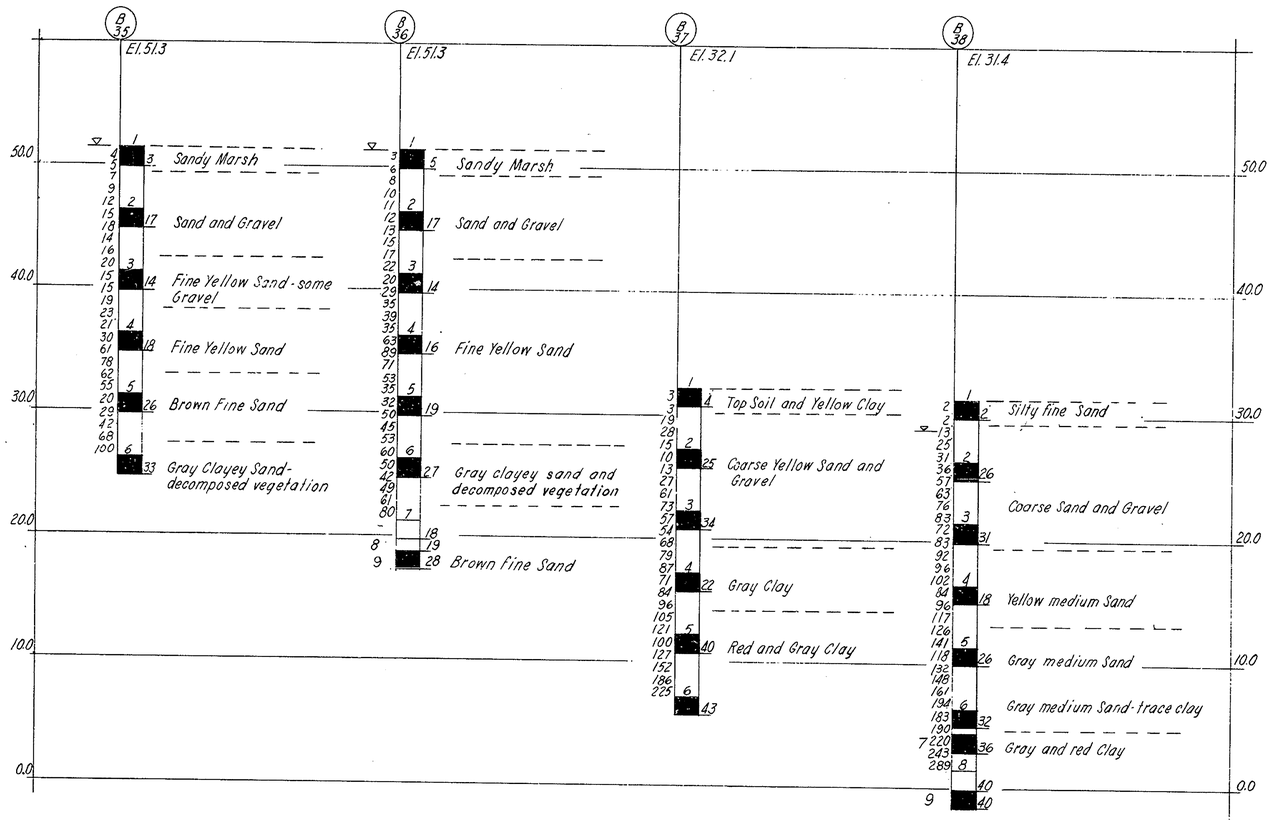
CONTRACT NO.

GOODKIND & O'DEA
CONSULTING ENGINEERS

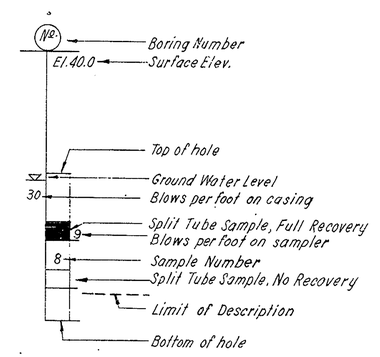
COUNTY	CONTRACT	FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE		2	DEL.			118	170

Boring	℄ Sta.	Offset
B35	212+60	60'L
B36	212+80	60'R
B37	313+90	70'L
B38	314+10	50'R

Note: For location of B35 and B36 see Sheet No. 116.
For location of B37 and B38 see Sheet No. 119.



Vertical Scale: 1" = 6'



LEGEND

Notes:
All borings are
1. 2½" Std. casings, 300 lb. hammer, 24" drop
2. 2" S.T. Sampler, 140 lb. hammer, 30" drop.

DELAWARE
STATE HIGHWAY DEPARTMENT
DELAWARE TURNPIKE

CULVERTS: STA. 212+58.91 W.B.
STA. 313+00.00 W.B.

BORINGS

DWG. NO.	SCALE	DATE
3 OF 3	AS NOTED	MAY 1962

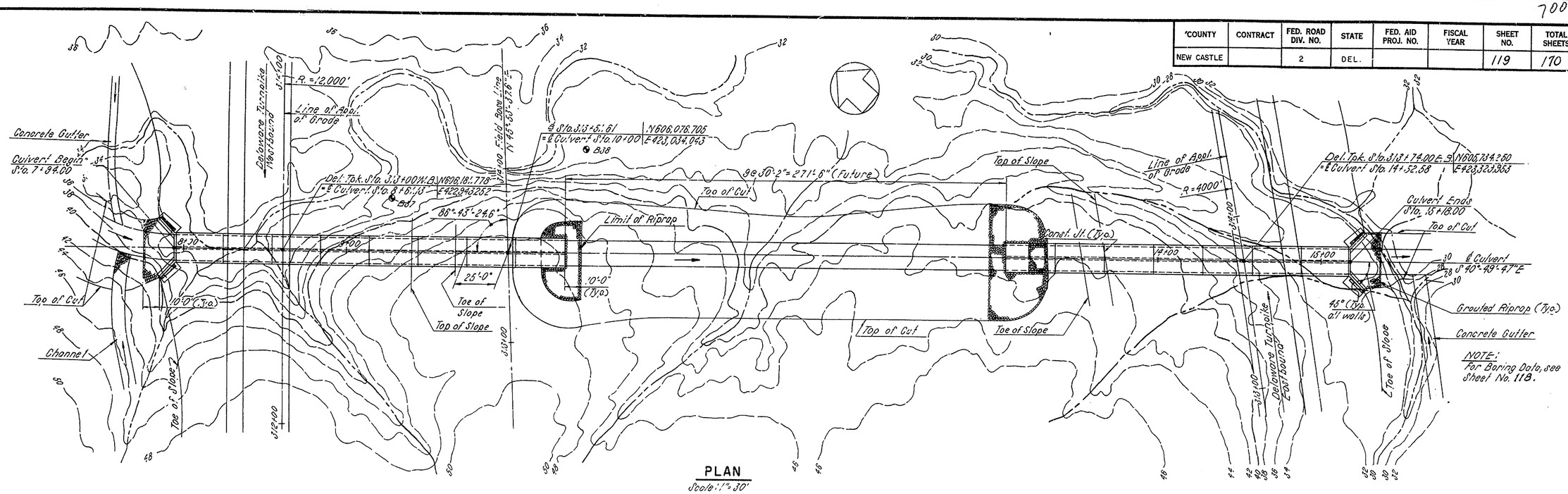
CONTRACT NO.

GOODKIND & O'DEA
CONSULTING ENGINEERS

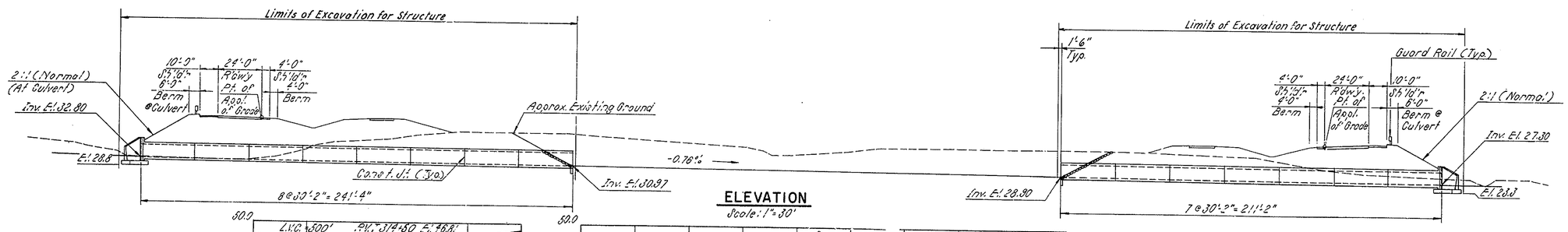
In charge of A.G.L.
Made by J.P.
Checked by L.T.B
Traced by
Checked by

7001

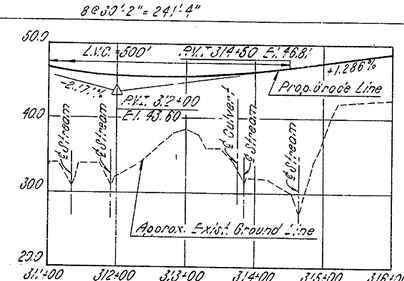
COUNTY	CONTRACT	FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE		2	DEL.			119	170



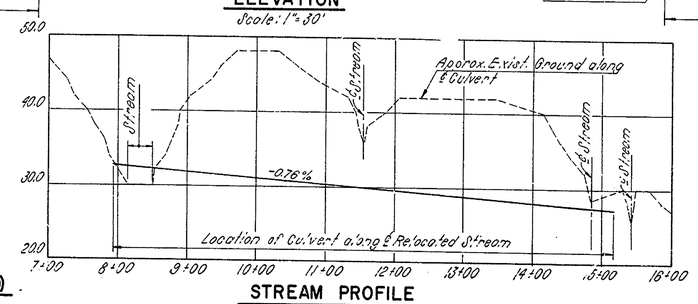
PLAN
Scale: 1" = 30'



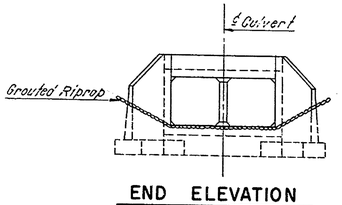
ELEVATION
Scale: 1" = 30'



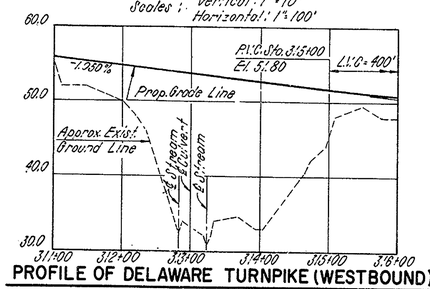
PROFILE OF DELAWARE TURNPIKE (EASTBOUND)
Scales: Vertical: 1" = 10'
Horizontal: 1" = 100'



STREAM PROFILE
Scales: Vertical: 1" = 10'
Horizontal: 1" = 100'



END ELEVATION
Scale: 1" = 10'



PROFILE OF DELAWARE TURNPIKE (WESTBOUND)
Scales: Vertical: 1" = 10'
Horizontal: 1" = 100'

GENERAL NOTES

1. Design Specifications: A.A.S.H.O. 1957, H20-S16-44 Loading (Modified)
2. Material & Fabrication Specifications: State of Delaware, State Highway Department, Standard Specifications, April 1, 1957.
3. All exposed edges shall be bevelled 1" x 1" unless otherwise dimensioned.
4. Design Stresses: Reinforcing Steel - 18,000 psi.
   Concrete f_c = 1,200 psi.
   n = 10

HYDRAULIC DATA

Drainage Area = 1.42 Sq. Mi.
Design Flood (25 Year Storm) = 650 C.F.S.
Waterway Area Design Flood = 81 Sq. Ft.
Mean Velocity through Structure = 14.0 F.P.S.

QUANTITIES

ITEMS	UNIT	TOTAL NEAT
EXCAVATION FOR STRUCTURE	C.Y.	4200
*PORTL. CEM. CONC. MASONRY-BOX CULVERT	C.Y	1080
BAR REINFORCEMENT	LBS.	180,000
SUPERFICIAL WATERPROOFING	S.Y.	55
GROUTED RIPRAP	S.Y.	550
⊕SAND	TONS	950

Notes:
Items indicated (*) are Fixed Quantity Items. See Special Provisions.
⊕ To be used only as and where directed by the Engineer.

In Charge of P.H. Schubert
Made by R.M.
Checked by N.E.
Traced by
Checked by

DELAWARE
STATE HIGHWAY DEPARTMENT
DELAWARE TURNPIKE

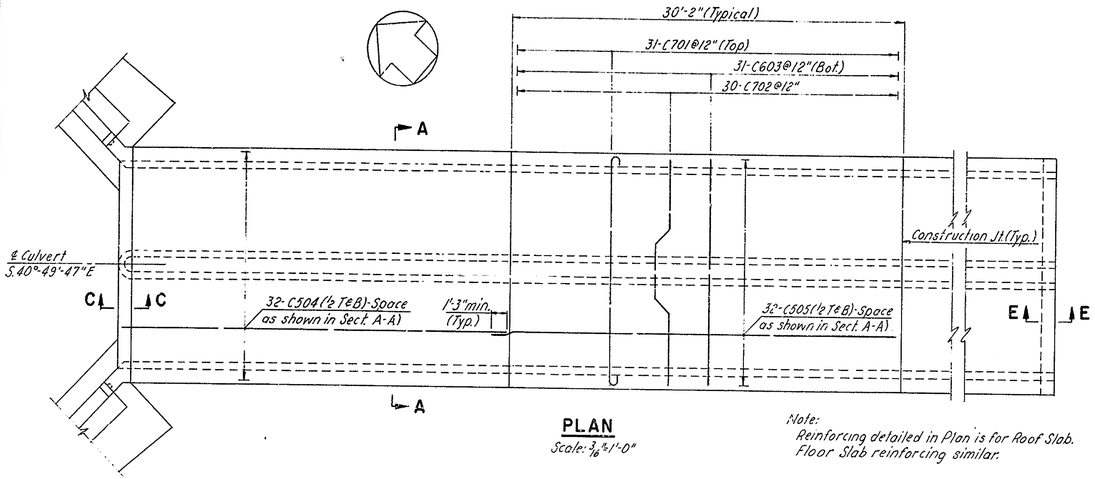
CULVERT AT STA. 313+00.00 W.B.
GENERAL PLAN

DWG. NO.	SCALE	DATE
1 OF 2	AS NOTED	MAY 1962

CONTRACT NO.

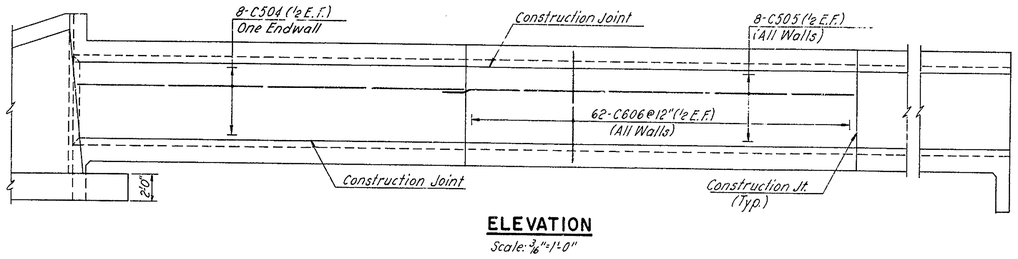
GOODKIND, O'DEA & CO.
CONSULTING ENGINEERS

COUNTY	CONTRACT	FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE		2	DEL			120	170

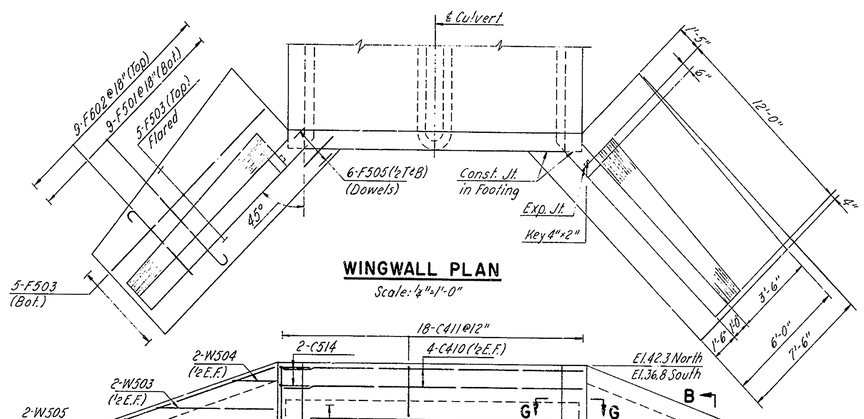


PLAN
Scale: 3/16" = 1'-0"

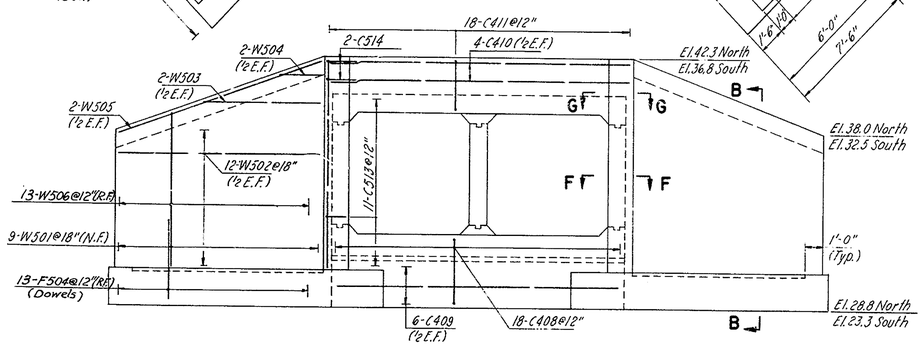
Note:
Reinforcing detailed in Plan is for Roof Slab.
Floor Slab reinforcing similar.



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

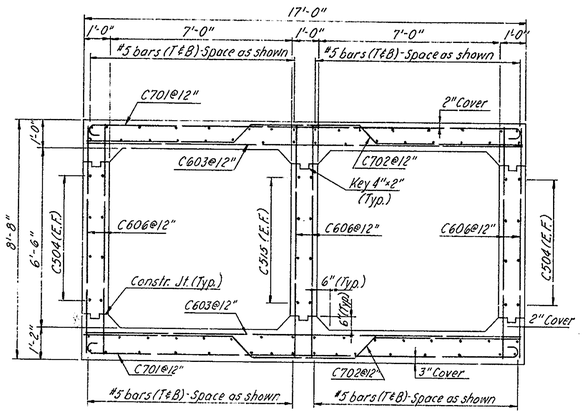


WINGWALL PLAN
Scale: 1/4" = 1'-0"

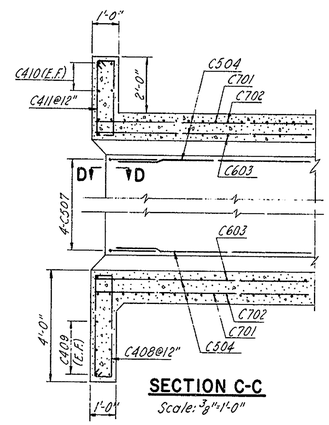


WINGWALL ELEVATION
Scale: 1/4" = 1'-0"

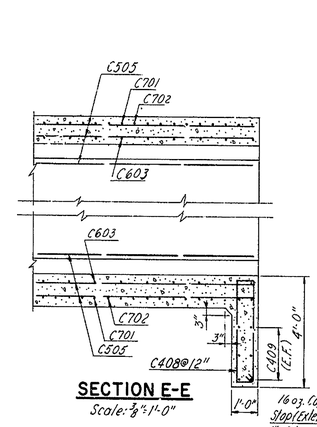
In Charge of P.H.
Made by D.J.P.
Checked by J.D.
Traced by
Checked by



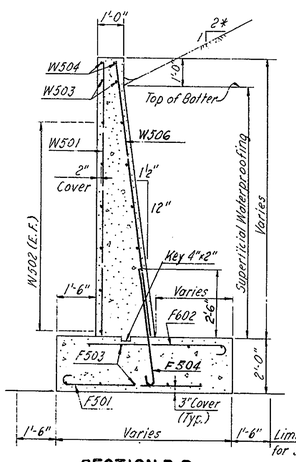
SECTION A-A
Scale: 3/8" = 1'-0"



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

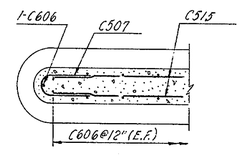


SECTION E-E
Scale: 3/8" = 1'-0"

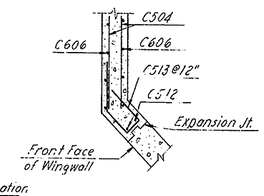


SECTION B-B
Scale: 3/8" = 1'-0"

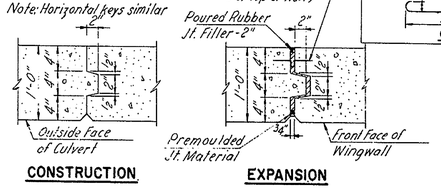
* Normal to Delaware Turnpike



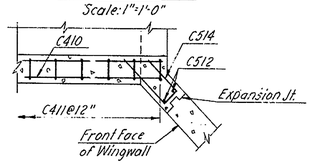
SECTION D-D
Scale: 1/2" = 1'-0"



SECTION F-F
Scale: 3/8" = 1'-0"



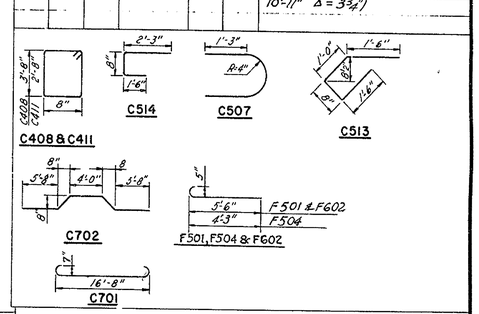
JOINT DETAILS
Scale: 1" = 1'-0"



SECTION G-G
Scale: 3/8" = 1'-0"

BAR LIST

MARK	SIZE	TYPE	LENGTH	NO./SECT.	TOTAL	LOCATION
F501	5	Bt.	6'-1"	9	36	Trans. Bot.-All Footings
F602	6	Bt.	6'-2"	9	36	" Top.- " "
F503	5	St.	13'-0"	10	40	Long. (T&B) " "
F504	5	Bt.	4'-10"	13	52	Dowels R.F.
F505	5	St.	2'-6"	6	24	" W.W. Flg. to Cutoff Wall
C701	7	Bt.	18'-4"	62	930	Trans. (T&B) Slab-All Sections
C702	7	Bt.	17'-3"	60	900	" " " "
C603	6	St.	16'-8"	62	930	" " " " "
C504	5	St.	29'-11"	80	160	Long. (T&B) Slab & All Walls-Headwall Sect.
C505	5	St.	31'-6"	88	1144	" " " " " All other Sects.
C606	6	St.	8'-3"	186	2790	Vert. All Walls-All Sections
C507	5	Bt.	3'-7"	4	8	Horiz.-End of Center Wall-Headwall Sect.
C408	4	Bt.	9'-6"	18	72	Vert.-Cutoff Walls-End Sections
C409	4	St.	16'-8"	6	24	Horiz. " " " "
C410	4	St.	16'-8"	4	8	Horiz.-Headwall-Headwall Sects.
C411	4	Bt.	7'-6"	18	36	Vert. " " "
C512	5	St.	11'-3"	4	8	Vert.-Corners " "
C513	5	Bt.	4'-8"	22	44	Horiz. " " "
C514	5	Bt.	4'-5"	4	8	Horiz.-Headwall Corners " "
C515	5	St.	29'-4"	8	16	Long. Center Wall-Headwall Sect.
W501	5	St.	Series	9	36	Vert. N.F. All Walls (9 bars 7'-1" to 11'-1" Δ=6")
W502	5	St.	11'-8"	12	48	Long. Each Face-All Walls
W503	5	St.	7'-0"	2	8	" " " " "
W504	5	St.	3'-4"	2	8	" " " " "
W505	5	St.	12'-2"	2	8	" " " Top-All Walls
W506	5	St.	Series	13	52	Vert. R.F. All Walls (13 bars 7'-2" to 10'-11" Δ=3¾")



DELAWARE
STATE HIGHWAY DEPARTMENT
DELAWARE TURNPIKE

CULVERT AT STA. 313+00.00 W.B.
CULVERT DETAILS

DWG. NO.	SCALE	DATE
2 of 2	As Noted	May 1962

CONTRACT NO.

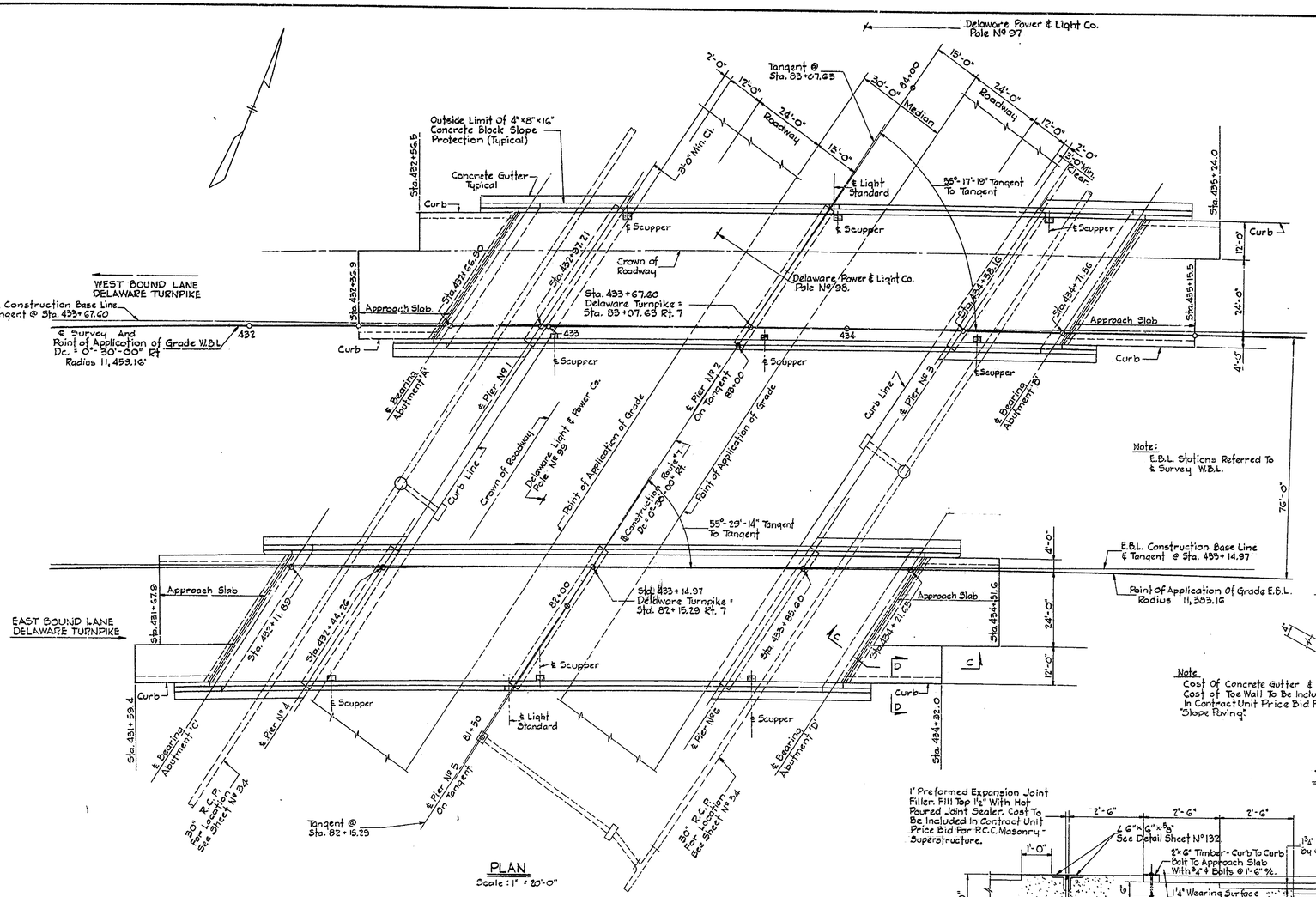
GOODKIND, O'DEA & CO.
CONSULTING ENGINEERS

DELAWARE TURNPIKE
CONTRACT 7001
1962

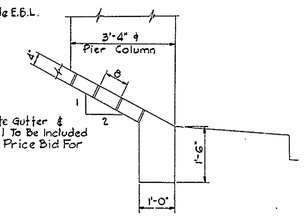
SHEET NO.	TOTAL SHEETS
121	170

ESTIMATED QUANTITIES

ITEM NO.	ITEM	UNIT	QUANTITY
4	Excavation For Structures	C.Y.	925
11	Hot-Mix Asphaltic Concrete	Ton	220
11	RC-1 Asphalt For Tack Coat	Gal.	184
	Coal Tar Epoxy Underseal	S.Y.	2,350
18	Portland Cement Concrete Masonry - Footings	C.Y.	591
18	Portland Cement Concrete Masonry - Substructure	C.Y	380
18	Portland Cement Concrete Masonry - Superstructure	C.Y	625
18	Portland Cement Concrete Masonry - Approach Slabs	C.Y	235
19	Superficial Waterproofing	S.Y	100
	Epoxy Protective Coating For Concrete	S.F.	1,700
20	Bar Reinforcement	Lb.	338,000
22	Structural Steel - Beam Spans (Approx. 546,000 Lbs.)	L.S.	Lump Sum
35A	Cast-In-Place Concrete Piles	L.F.	10,140
35B	Steel Shell Test Piles	L.F	435
	Slope Paving	S.Y.	705
	Aluminum Bridge Railing - Single Rail	L.F.	940
	Bridge Catch Basins	L.S.	Lump Sum
	Bridge Drainage Pipe	L.S.	Lump Sum

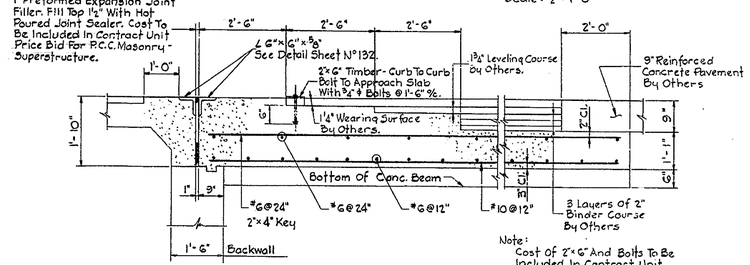


PLAN
Scale: 1" = 20'-0"



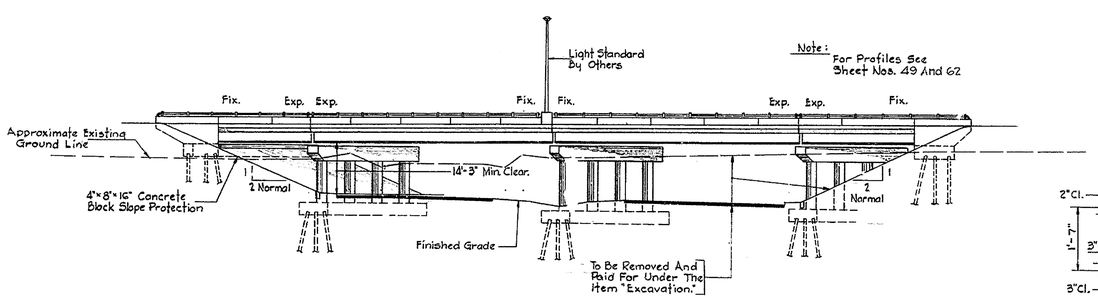
Note
Cost Of Concrete Gutter & Cost of Toe Wall To Be Included In Contract Unit Price Bid For "Slope Paving".

TOE WALL DETAIL
Scale: ½" = 1'-0"

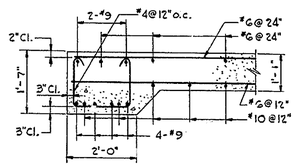


Note:
Cost of 2"×6" And Bolts To Be Included In Contract Unit Price Bid For R.C.C. Masonry - Approach Slab

SECTION "C-C"
Scale: ½" = 1'-0"



ELEVATION
Scale: 1" = 20'-0"



SECTION "D-D"
Scale: ½" = 1'-0"

GENERAL NOTES:

Specifications - Delaware State Highway Department Standard Specifications Dated 1960 For Materials and Construction.
A.A.S.H.O. Standard Specification For Highway Bridges Dated 1957 For Design Live Load: H 20-S16-44 (Modified)

Piles - See Sheet Nº 122 & 137.

Concrete & Reinforcing - The General Details of Fabrication, Bending And Placement of Reinforcing Steel Shall Conform To The Requirements Of The 1957 Standard Specifications For Highway Bridges Of The A.A.S.H.O.
Unless Otherwise Noted All Dowels Shall Have 30 Bar Diameter Embedment And All Splices 30 Bar Diameter Lap. Unless Otherwise Noted All Reinforcing Shall Have 2" Minimum Clear Cover, Except Deck Slabs Which Shall Have 1", And Footings Which Shall Have 3" Minumum Clear Cover.
All Bar Reinforcement To Be Intermediate Grade, A.S.T.M. A15, Deformations A.S.T.M. A 305
The Contractor Shall Check All Bar Lists For Number, Length And Dimensions Before Ordering Bars.
Placing Reinforcing Dowels Into Position During Or After Pouring of Concrete Is Absolutely Prohibited.
Exposed Edges Of Concrete Shall Be Chamfered 1½" And Inside Corners Filleted ¾" Unless Otherwise Noted. All Chamfer Strips Shall Be Dressed Lumber.
Pad Elevations Are Finished Elevations. Pads Shall Be Poured Integrally With Piers Or Abutments And Shall Be Not Less Than ⅛" or More Than ¼" Above Finished Elevations. Pads Shall Be Dressed Down By Tooling Or Grinding To True Level Surfaces At The Finished Elevations.

Superficial Waterproofing - " Superficial Waterproofing Shall Be Applied To All Concrete Surfaces Above The Top Of Footings Of Abutments And Endposts Which Will Be In Contact With Earth. See Specifications.

Structural Steel - See Notes On Sheet Nº 129.

Construction Load - Structures Were Analyzed And Found Adequate For The Following Construction Loads Applied In Accordance With The A.A.S.H.O. Specifications With The Conditions That The Allowable Unit Stress Be Increased 25% And The Number Of Vehicles Permitted On A Structure At Any Given Time Be Limited To One.
For Slabs ..... One 25 Kip Wheel.
For Stringers..... One 100 Kip Vehicle.

Datum - B.M. A-49A - Square Cut (□) In S.W. Corner Of Concrete Steps 100'- Right Of Sta. 77+00 Route #7 (Maddox Prop.) El. 85.217

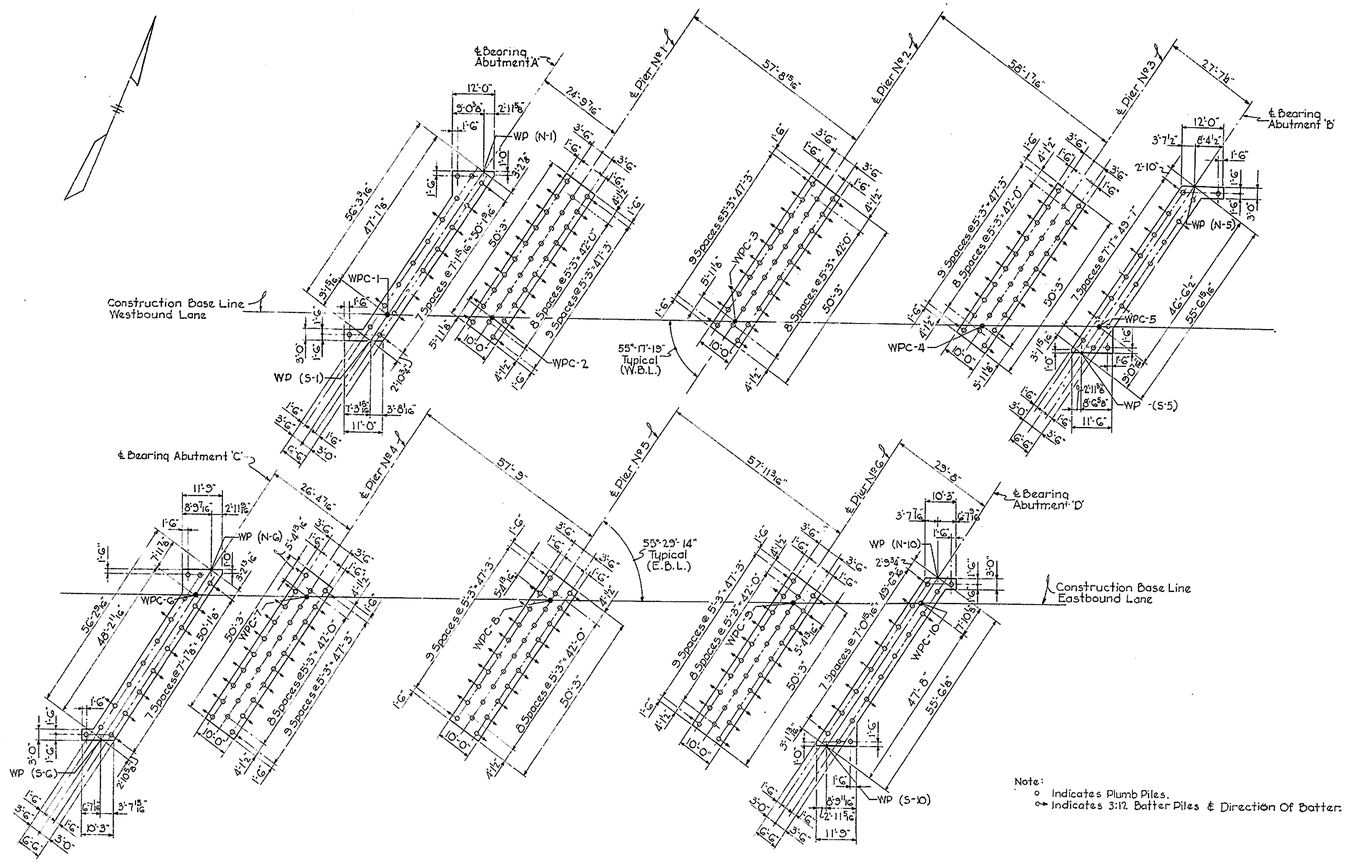
DELAWARE STATE HIGHWAY DEPARTMENT

DELAWARE TURNPIKE

OVERPASS AT ROUTE 7

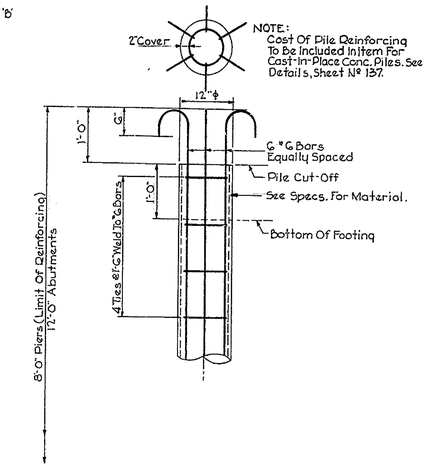
PLAN AND ELEVATION

DRAWN G.J.T.	SCALE: AS NOTED	CONTRACT
TRACED		7001
CHECKED H.B.H.		
CHARGE OF H.B.H.		SHEET 121 OF

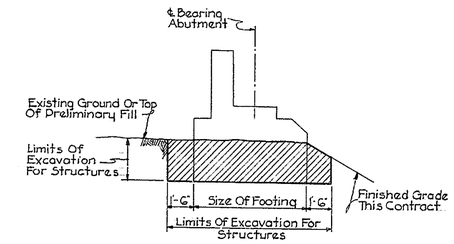


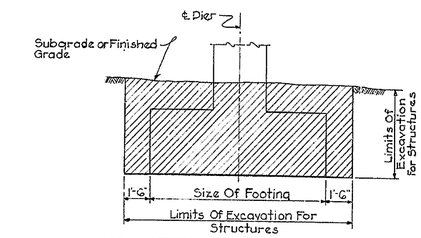
Note:
o Indicates Plumb Piles.
o→ Indicates 3:12 Batter Piles & Direction Of Batter.

FOUNDATION PLAN
Scale: 1"=20'-0"



TYPICAL PILE DETAIL
Scale: 3/4"=1'-0"





EXCAVATION FOR STRUCTURES
Scale: 1/4"=1'-0"

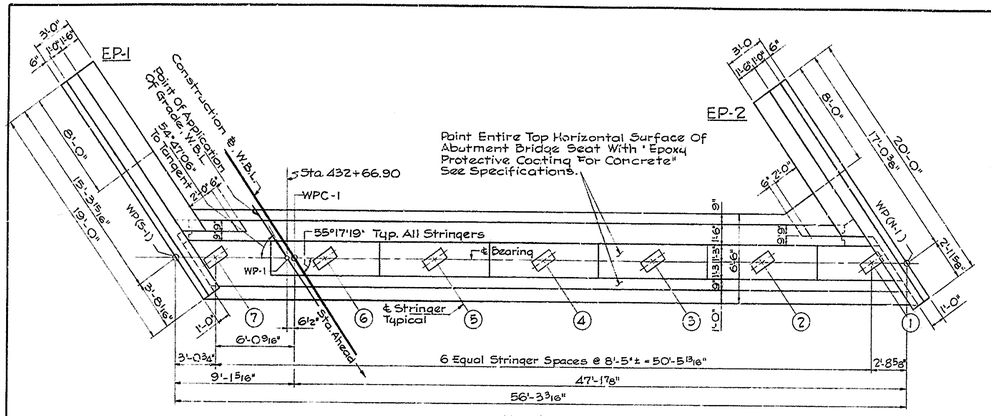
All Piles Shall Be 12" Diameter Cast-In-Place Concrete Piles Driven To A Safe Bearing Capacity Of 35 Tons.
Approximate Length Of Piles:
Abutments — 51 Feet
Piers ——— 38.5 Feet

DELAWARE STATE HIGHWAY DEPARTMENT

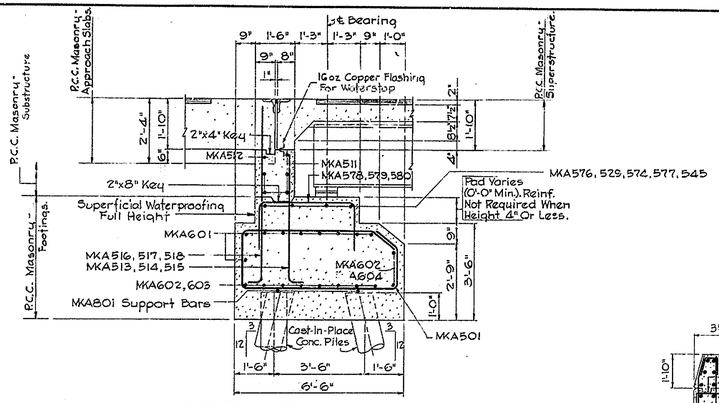
DELAWARE TURNPIKE

OVERPASS AT ROUTE 7
FOUNDATION PLAN

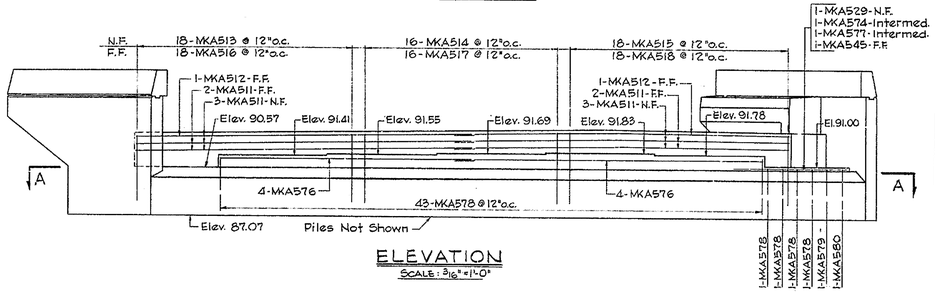
DRAWN J.M.D.	SCALE: AS NOTED	CONTRACT
TRACED		7001
CHECKED E.P.R.		
CHARGE OF H.O.H.		SHEET 122 OF



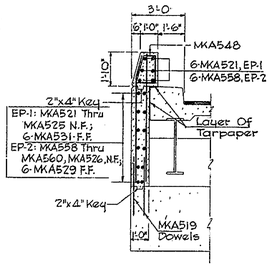
PLAN
SCALE: 3/16" = 1'-0"



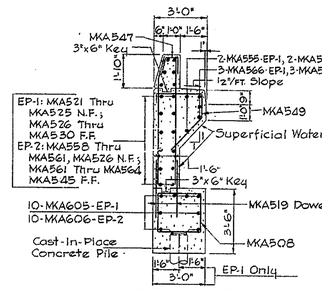
SECTION THRU ABUTMENT
SCALE: 3/8" = 1'-0"



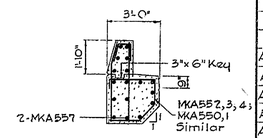
ELEVATION
SCALE: 3/16" = 1'-0"



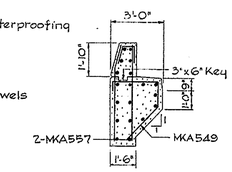
SECTION F-F
SCALE: 1/4" = 1'-0"



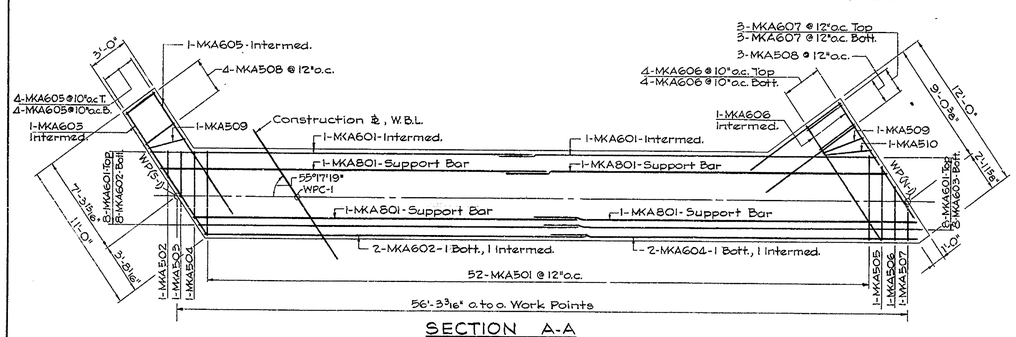
SECTION G-G
SCALE: 1/4" = 1'-0"



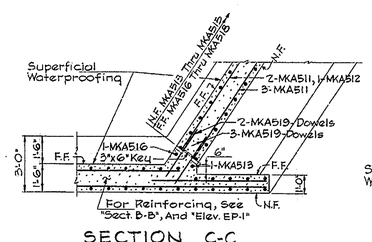
SECTION J-J
SCALE: 1/4" = 1'-0"



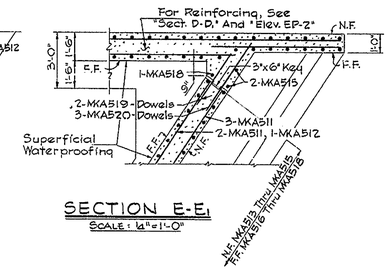
SECTION H-H
SCALE: 1/4" = 1'-0"



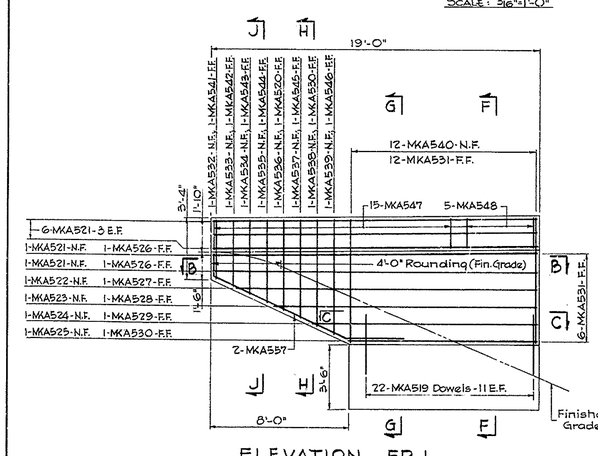
SECTION A-A
SCALE: 3/16" = 1'-0"



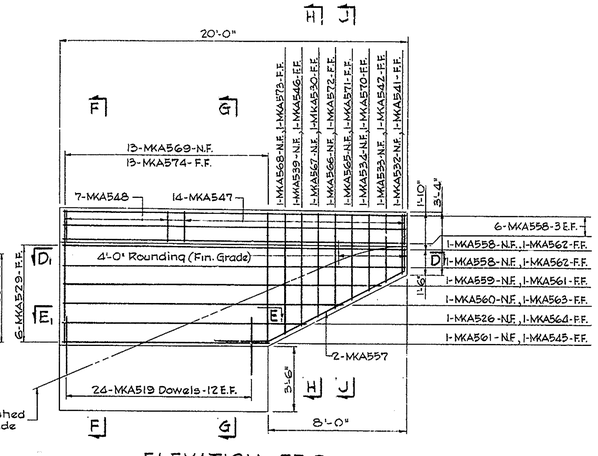
SECTION C-C
SCALE: 1/4" = 1'-0"



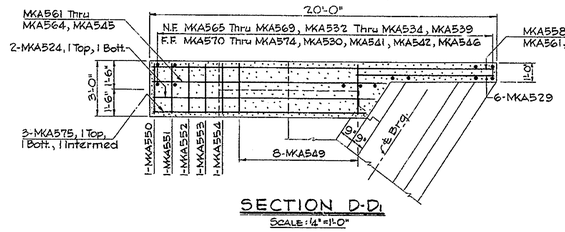
SECTION E-E1
SCALE: 1/4" = 1'-0"



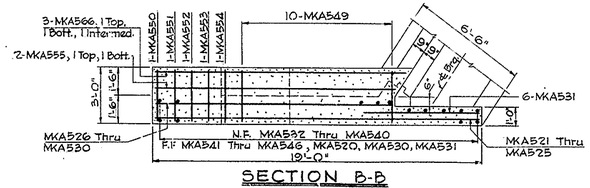
ELEVATION EP-1
SCALE: 1/4" = 1'-0"



ELEVATION EP-2
SCALE: 1/4" = 1'-0"



SECTION D-D1
SCALE: 1/4" = 1'-0"



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

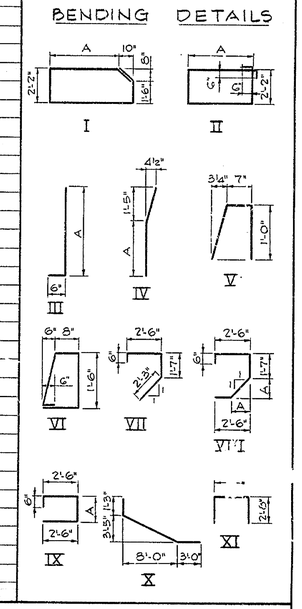
DELAWARE TURNPIKE
1962 - CONTRACT 7001

SHEET NO.	TOTAL SHEETS
123	170

BAR SCHEDULE

MARK	NO.	SIZE	TYPE	LENGTH	A	REMARKS
A801	4	8	Str.	29'-8"		
AG01	18	6	Str.	29'-0"		
AG02	10		Str.	32'-6"		
AG03	8		Str.	25'-5"		
AG04	2		Str.	24'-7"		
AG05	10		Str.	10'-7"		
AG06	10		Str.	10'-2"		
AG07	6	6	Str.	8'-5"		
A501	52	5	I	16'-10"	5'-2"	
A502	1		II	9'-0"	1'-10"	
A503	1		II	11'-10"	3'-3"	
A504	1		II	14'-8"	4'-8"	
A505	1		I	15'-2"	4'-4"	
A506	1		I	12'-4"	2'-11"	
A507	1		I	9'-6"	1'-6"	
A508	7		II	10'-4"	2'-6"	
A509	2		II	10'-8"	2'-8"	
A510	1		II	11'-4"	3'-0"	
A511	10		Str.	26'-0"		
A512	2		Str.	22'-5"		
A513	19		III	5'-2"	4'-8"	
A514	16		III	5'-5"	4'-11"	
A515	20		III	5'-7"	5'-1"	
A516	19		III	7'-0"	6'-6"	
A517	16		III	7'-3"	6'-9"	
A518	19		III	7'-5"	6'-11"	
A519	53		Str	3'-8"		
A520	4		Str.	4'-9"		
A521	8		Str.	18'-6"		
A522	1		Str.	17'-3"		
A523	1		Str.	15'-0"		
A524	3		Str	12'-9"		
A525	1		Str.	10'-6"		
A526	3		Str.	13'-6"		
A527	1		Str.	12'-3"		
A528	1		Str.	10'-0"		
A529	8		Str.	7'-9"		
A530	3		Str.	5'-6"		
A531	18		Str.	6'-8"		
A532	2		IV	3'-2"	1'-8"	
A533	2		IV	3'-7"	2'-1"	
A534	2		IV	4'-0"	2'-6"	
A535	1		IV	4'-5"	2'-11"	
A536	1		IV	4'-10"	3'-4"	
A537	1		IV	5'-3	3'-9"	
A538	1		IV	5'-8"	4'-2"	
A539	2		IV	6'-1"	4'-7"	
A540	12		IV	6'-9"	5'-3"	
A541	2		Str.	3'-1"		
A542	2		Str.	3'-6"		
A543	1		Str.	3'-11"		
A544	1		Str.	4'-4"		
A545	3		Str.	5'-5"		
A546	2		Str.	6'-0"		
A547	29		V	2'- "		
A548	12		VI	5'-5"		
A549	18		VII	6'-10"		
A550	2		IX	6'-8"	1'-2"	
A551	2		IX	7'-1"	1'-7"	
A552	2	5	VIII	7'-3"	5"	
A553	2	5	VII	7'-5"	10"	
A554	2		VIII	7'-7"	1'-3"	
A555	2		Str.	15'-10"		
A556	3		Str.	14'-5"		
A557	4		X	13'-0"		
A558	8		Str.	19'-6"		
A559	1		Str.	17'-9"		
A560	1		Str.	15'-8"		
A561	2		Str.	11'-6"		
A562	2		Str.	13'-3"		
A563	1		Str.	9'-5"		
A564	1		Str.	7'-4"		
A565	1		IV	4'-7	3'-1"	
A566	1		IV	5'-1"	3'-7"	
A567	1		IV	5'-6"	4'-0"	
A568	1		IV	6'-6"	5'-0"	
A569	13		IV	7'-1"	5'-7"	
A570	1		Str.	4'-1"		
A571	1		Str.	4'-6"		
A572	1		Str.	5'-0"		
A573	1		Str.	6'-5"		
A574	14		Str.	7'-0"		
A575	3		Str.	12'-1"		
A576	8		Str.	21'-8"		
A577	1		Str.	6'-2"		
A578	47		XI	8'-11"	3'-7"	
A579	1		XI	9'-3"	3'-11"	
A580	1	5	XI	9'-8"	4'-4"	

BENDING DETAILS



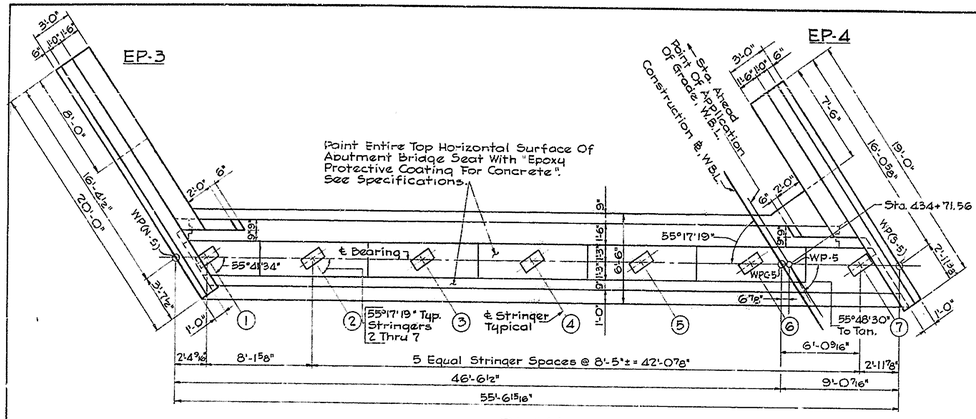
NOTE:
N.F. = Near Face
F.F. = Far Face
WPC-1 = Work Point №1 Construction,

DELAWARE STATE HIGHWAY DEPARTMENT

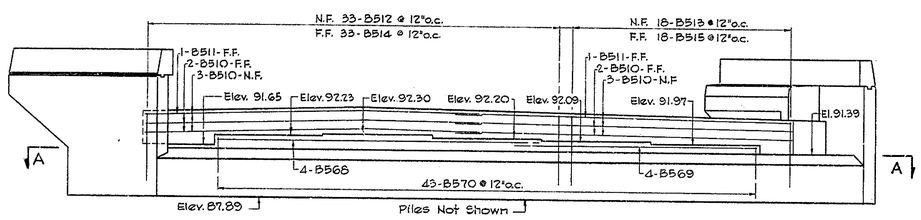
DELAWARE TURNPIKE

OVERPASS AT ROUTE 7
ABUTMENT "A"

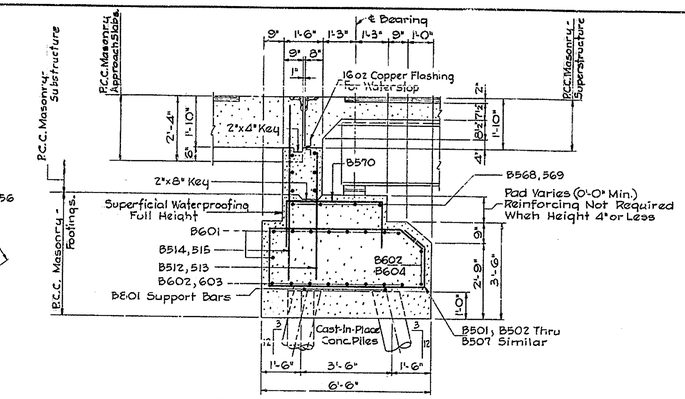
DRAWN A.H.L.	SCALE: AS NOTED	CONTRACT 7001
TRACED		
CHECKED E.P.R		
CHARGE OF H.B.H		SHEET 123 OF



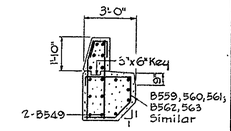
PLAN
SCALE: 3/16" = 1'-0"



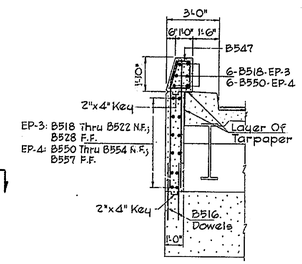
ELEVATION
SCALE: 3/16" = 1'-0"



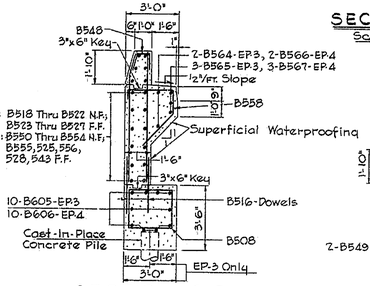
SECTION THRU ABUTMENT
SCALE: 3/8" = 1'-0"



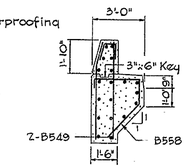
SECTION J-J
SCALE ¼" = 1'-0"



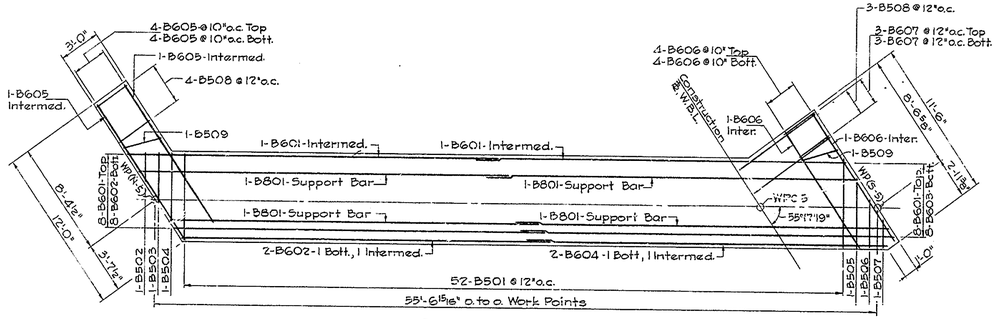
SECTION F-F
SCALE ¼" = 1'-0"



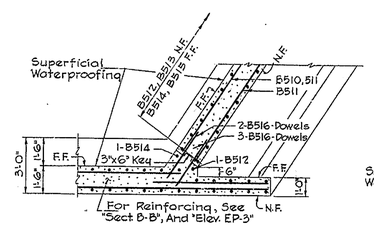
SECTION G-G
SCALE ¼" = 1'-0"



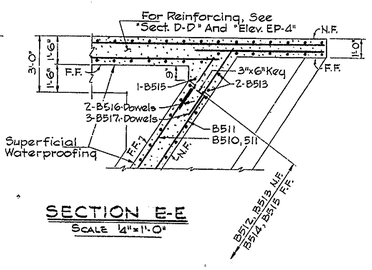
SECTION H-H
SCALE ¼" = 1'-0"



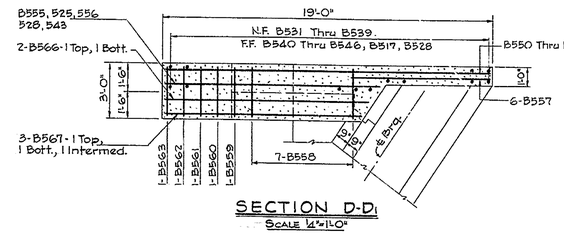
SECTION A-A
SCALE: 3/16" = 1'-0"



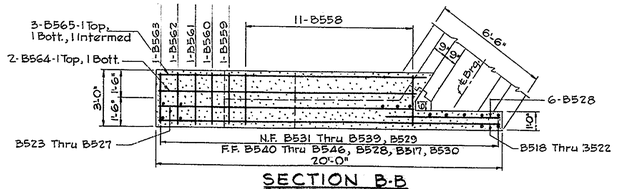
SECTION C-C
SCALE ¼" = 1'-0"



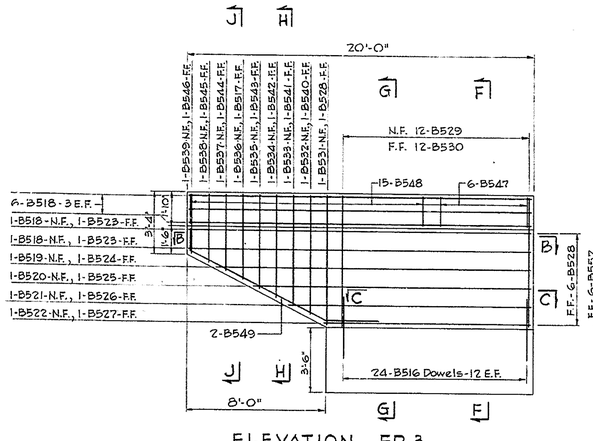
SECTION E-E
SCALE ¼" = 1'-0"



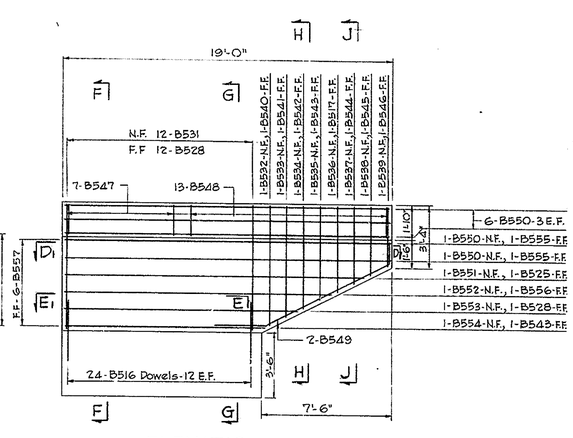
SECTION D-D1
SCALE ¼" = 1'-0"



SECTION B-B
SCALE ¼" = 1'-0"



ELEVATION EP-3
SCALE: ¼" = 1'-0"



ELEVATION EP-4
SCALE: ¼" = 1'-0"

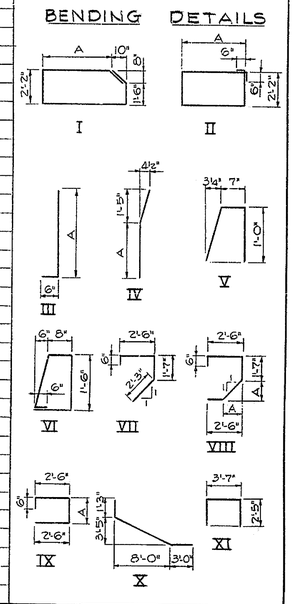
DELAWARE TURNPIKE
1962 - CONTRACT 7001

SHEET NO.	TOTAL SHEETS
124	170

BAR SCHEDULE

MARK	NO.	SIZE	TYPE	LENGTH	A	REMARKS
B801	4	8	Str.	28'-11"		
B601	18	6	Str.	28'-7"		
B602	10		Str.	32'-2"		
B603	8		Str.	25'-0"		
B604	2		Str.	24'-3"		
B605	10		Str.	11'-7"		
B606	10		Str.	9'-8"		
B607	6	6	Str.	7'-0"		
B501	52	5	I	16'-10"	5'-2"	
B502	1		II	8'-6"	1'-7"	
B503	1		II	11'-6"	3'-1"	
B504	1		II	14'-6"	4'-7"	
B505	1		I	14'-2"	3'-10"	
B506	1		I	11'-2"	2'-4"	
B507	1		I	8'-4"	11"	
B508	7		II	10'-4"	2'-6"	
B509	2		II	10'-8"	2'-8"	
B510	10		Str.	25'-9"		
B511	2		Str.	22'-4"		
B512	34		III	5'-5"	4'-11"	
B513	20		III	5'-2"	4'-8"	
B514	34		III	7'-3"	6'-9"	
B515	19		III	7'-0"	6'-6"	
B516	55		Str.	3'-8"		
B517	5		Str.	4'-6"		
B518	8		Str.	19'-6"		
B519	1		Str.	17'-9"		
B520	1		Str.	15'-8"		
B521	1		Str.	13'-7"		
B522	1		Str.	11'-6"		
B523	2		Str.	14'-7"		
B524	1		Str.	12'-10"		
B525	2		Str.	10'-9"		
B526	1		Str.	8'-8"		
B527	1		Str.	6'-7"		
B528	20		Str.	6'-9"		
B529	12		IV	7'-1"	5'-7"	
B530	12		Str.	6'-11"		
B531	13		IV	6'-10"	5'-4"	
B532	2		IV	6'-4"	4'-10"	
B533	2		IV	5'-11"	4'-5"	
B534	2		IV	5'-5"	3'-11	
B535	2		IV	5'-0"	3'-6"	
B536	2		IV	4'-6"	3'-0"	
B537	2		IV	4'-0"	2'-6"	
B538	2		IV	3'-7"	2'-1"	
B539	2		IV	3'-1"	1'-7"	
B540	2		Str.	6'-3"		
B541	2		Str.	5'-9"		
B542	2		Str.	5'-4"		
B543	3		Str.	4'-10"		
B544	2		Str.	3'-11"		
B545	2		Str.	3'-6"		
B546	2		Str.	3'-0"		
B547	13		VI	5'-5"		
B548	28		V	2'-7"		
B549	4		X	13'-0"		
B550	8		Str.	18'-6"		
B551	1		Str.	17'-0"		
B552	1	5	Str.	15'-0"		
B553	1	5	Str.	13'-0"		
B554	1		Str.	11'-0"		
B555	2		Str.	12'-4"		
B556	1		Str.	8'-10"		
B557	6		Str.	7'-10"		
B558	18		VII	6'-10"		
B559	2		VIII	7'-8"	1'-4"	
B560	2		VIII	7'-6"	1'1"	
B561	2		VIII	7'-3"	5"	
B562	2		IX	7'-1"	1'-7"	
B563	2		IX	6'-8"	1'-2"	
B564	2		Str.	14'-10"		
B565	3		Str.	15'-4"		
B566	2		Str.	11'-10"		
B567	3		Str.	11'-4"		
B568	4		Str.	24'-9"		
B569	4		Str.	19'-0"		
B570	43	5	XI	8'-5"		

BENDING DETAILS



NOTES:
N.F. = Near Face
F.F. = Far Face
WPC-5 = Work Point No. 5 Construction

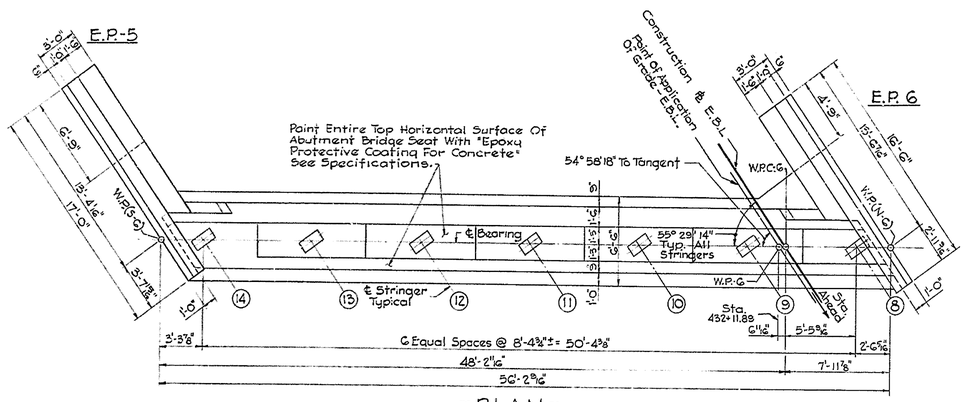
DELAWARE STATE HIGHWAY DEPARTMENT

DELAWARE TURNPIKE

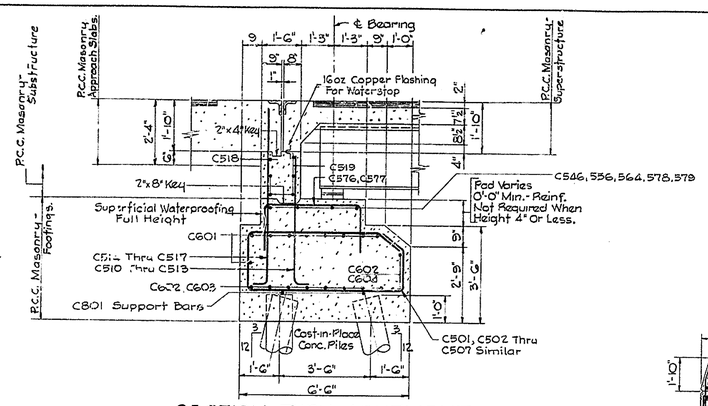
OVERPASS AT ROUTE 7

ABUTMENT "B"

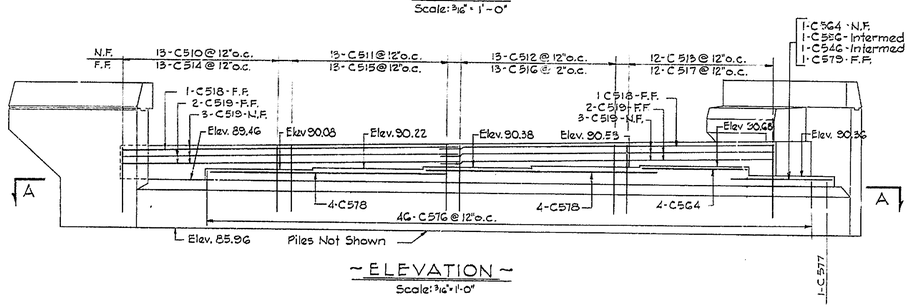
DRAWN A.H.L.	SCALE: AS NOTED	CONTRACT 7001
TRACED		
CHECKED E.P.R.		
CHARGE OF H.B.H.		SHEET 124 OF



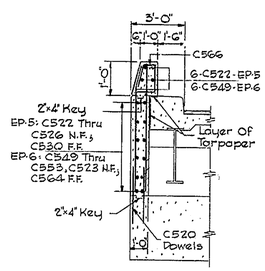
~ PLAN ~
Scale: 3/16" = 1'-0"



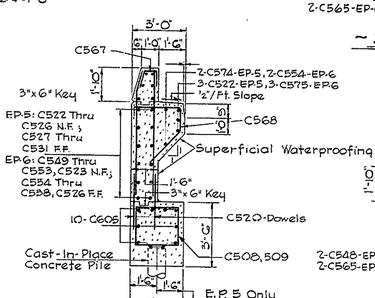
~ SECTION THRU ABUTMENT ~
Scale: 1/4" = 1'-0"



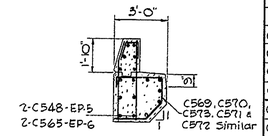
~ ELEVATION ~
Scale: 3/16" = 1'-0"



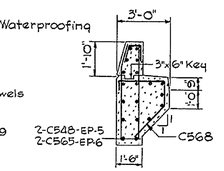
~ SECTION F-F ~
Scale: 1/4" = 1'-0"



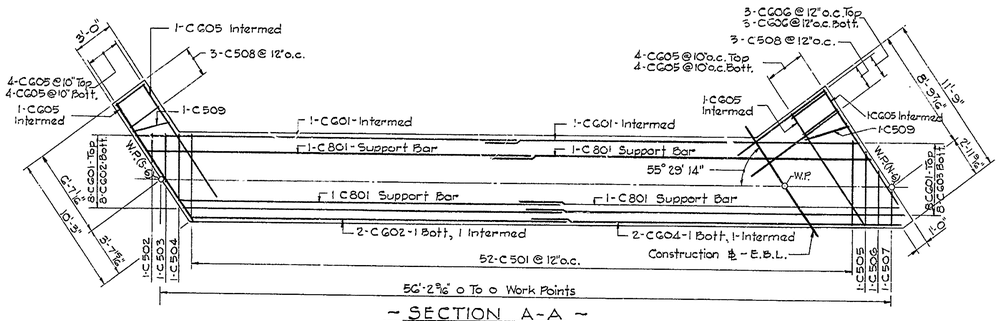
~ SECTION G-G ~
Scale: 1/4" = 1'-0"



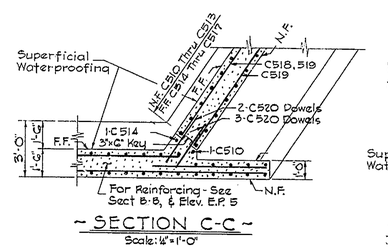
~ SECTION J-J ~
Scale: 1/4" = 1'-0"



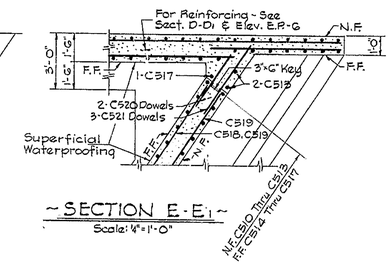
~ SECTION H-H ~
Scale: 1/4" = 1'-0"



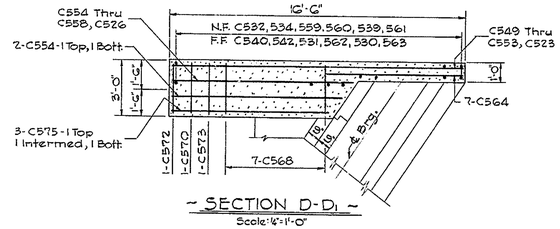
~ SECTION A-A ~
Scale: 3/16" = 1'-0"



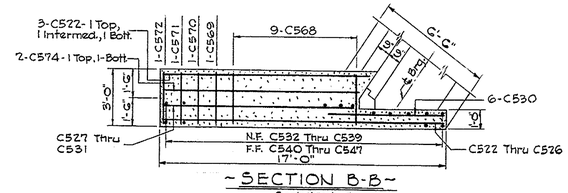
~ SECTION C-C ~
Scale: 1/4" = 1'-0"



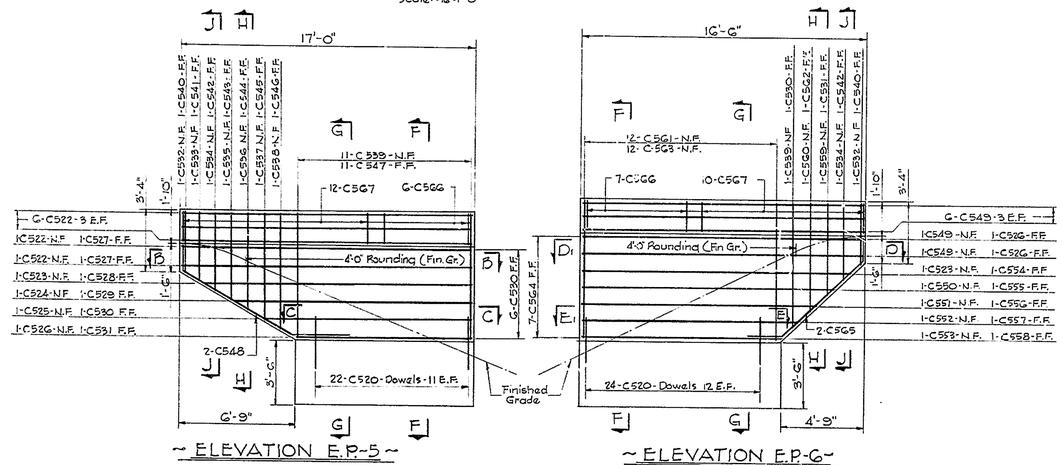
~ SECTION E-E1 ~
Scale: 1/4" = 1'-0"



~ SECTION D-D1 ~
Scale: 1/4" = 1'-0"



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



~ ELEVATION E.P.-5 ~
Scale: 1/4" = 1'-0"

~ ELEVATION E.P.-6 ~
Scale: 1/4" = 1'-0"

DELAWARE TURNPIKE
1962 - CONTRACT 7001

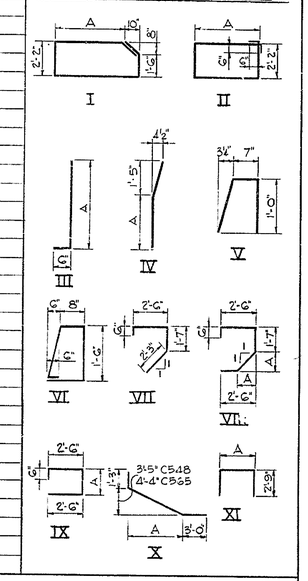
SHEET NO.	TOTAL SHEETS
125	170

BAR SCHEDULE

MARK	NO	SIZE	TYPE	LENGTH	A	REMARKS
C801	4	8	Str.	25'-4"		
C601	18	6	Str.	28'-11"		
C602	10		Str	32'-6"		
C603	8		Str.	25'-4"		
C604	2		Str.	24'-6"		
C605	20		Str.	9'-11"		
C606	6	6	Str.	8'-0"		
C501	52	5	I	16'-10"	5'-2"	
C502	1		II	8'-10"	1'-9"	
C503	1		II	11'-8"	3'-2"	
C504	1		II	14'-6"	4'-7"	
C505	1		I	14'-0"	3'-9"	
C506	1		I	11'-2"	2'-4"	
C507	1		I	8'-4"	1'1"	
C508	6		II	10'-4"	2'-6"	
C509	2		II	10'-8"	2'-8"	
C510	14		III	5'-2"	4'-8"	
C511	13		III	5'-5"	4'-11"	
C512	13		III	5'-8"	5'-2"	
C513	14		III	5'-11"	5'-5"	
C514	14		III	7'-0"	6'-6"	
C515	13		III	7'-3"	6'-9"	
C516	13		III	7'-6"	7'-0"	
C517	13		III	7'-9"	7'-3"	
C518	2		Str.	22'-6"		
C519	10		Str.	26'-0"		
C520	53		Str.	3'-8"		
C521	3		Str.	4'-8"		
C522	8		Str.	16'-6"		
C523	2		Str.	15'-4"		
C524	1		Str.	13'-6"		
C525	1		Str.	11'-8"		
C526	3		Str.	9'-10"		
C527	2		Str.	11'-6"		
C528	1		Str.	10'-4"		
C529	1		Str.	8'-6"		
C530	8		Str.	6'-8"		
C531	2		Str.	4'-10"		
C532	2		IV	3'-1"	1'-7"	
C533	1		IV	3'-7"	2'-1"	
C534	2		IV	4'-1"	2'-7"	
C535	1		IV	4'-8"	3'-2"	
C536	1		IV	5'-2"	3'-8"	
C537	1		IV	5'-8"	4'-2"	
C538	1		IV	6'-2"	4'-8"	
C539	12		IV	6'-9"	5'-3"	
C540	2		Str.	3'-0"		
C541	1		Str.	3'-6"		
C542	2		Str.	4'-0"		
C543	1		Str.	4'-6"		
C544	1		Str.	5'-0"		
C545	1		Str.	5'-6"		
C546	2		Str.	6'-0"		
C547	11		Str.	6'-8"		
C548	2		X	11'-10"	6'-9"	
C549	8		Str.	16'-0"		
C550	1		Str.	14'-4"		
C551	1		Str.	13'-4"		
C552	4		Str.	12'-4"		
C553	1	5	Str.	11'-4"		

MARK	NO	SIZE	TYPE	LENGTH	A	REMARKS
C554	3	5	Str.	9'-2"		
C555	1		Str.	8'-2"		
C556	2		Str.	7'-2"		
C557	1		Str.	6'-2"		
C558	1		Str.	5'-2"		
C559	1		IV	5'-0	3'-6"	
C560	1		IV	5'-11"	4'-5"	
C561	12		IV	7'-8"	6'-2"	
C562	1		Str.	5'-10"		
C563	12		Str.	7'-6"		
C564	12		Str.	7'-11"		
C565	2		X	10'-8"	4'-9"	
C566	13		VI	5'-5"		
C567	22		V	2'-7"		
C568	16		VII	6'-10"		
C569	1		VIII	7'-7"	1'-2"	
C570	2		VIII	7'-4"	8"	
C571	1		IX	7'-1"	1'-7"	
C572	2		IX	2'-7"	1'-1"	
C573	1		VIII	7'-9"	1'-7"	
C574	2		Str.	11'-10"		
C575	3		Str.	8'-9"		
C576	46		XI	9'-1"	3'-7"	
C577	1		XI	9'-4"	3'-10"	
C578	8		Str.	18'-4"		
C579	1	5	Str.	5'-4"		

BENDING DETAILS



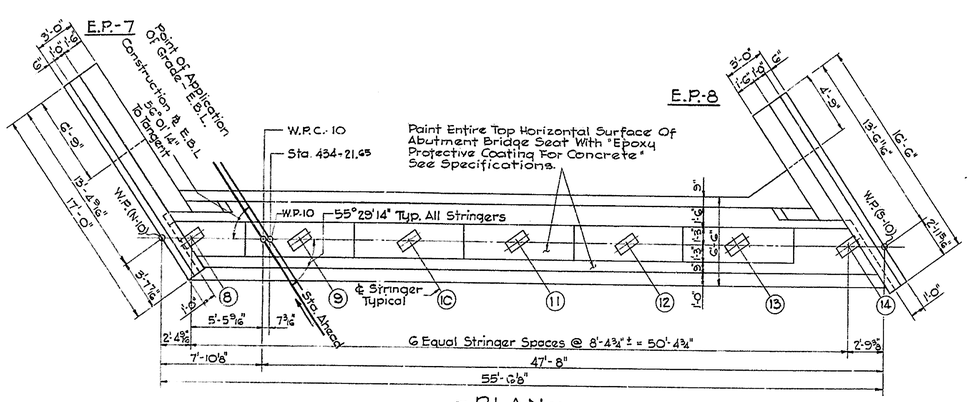
NOTES:
N.F. = Near Face
F.F. = Far Face
W.P.C-G = Work Point № 6, Construction

DELAWARE STATE HIGHWAY DEPARTMENT

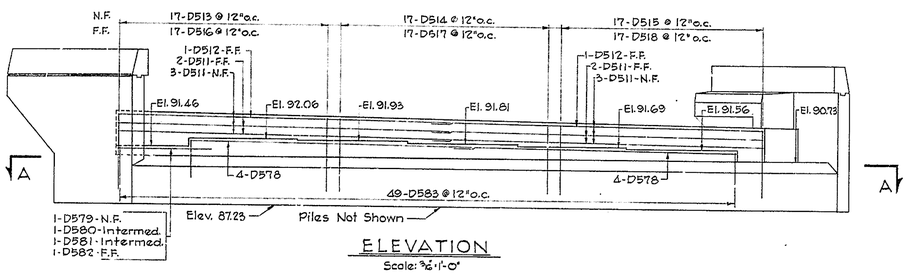
DELAWARE TURNPIKE

OVERPASS AT ROUTE 7
ABUTMENT "C"

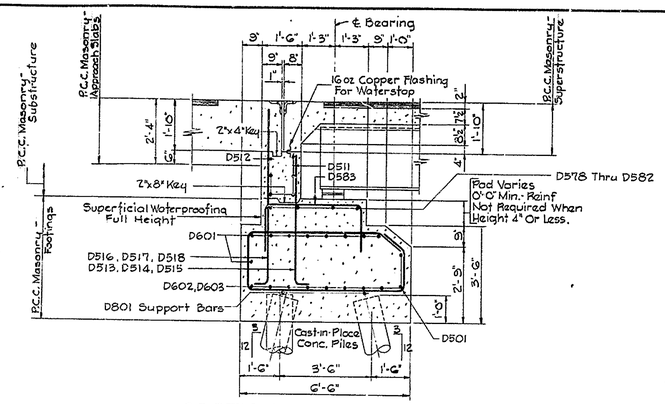
DRAWN J.M.S.	SCALE : AS NOTED	CONTRACT 7001
TRACED		
CHECKED E.D.R.		
CHARGE OF H.D.H		SHEET 125 OF



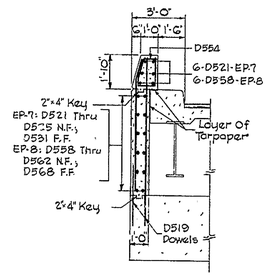
~ PLAN ~
Scale: 3/16" = 1'-0"



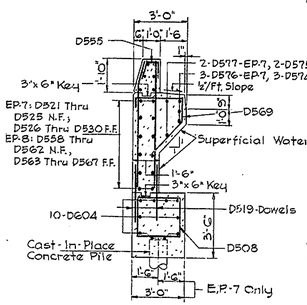
ELEVATION
Scale: 3/16" = 1'-0"



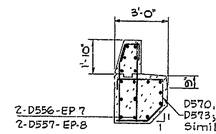
~ SECTION THRU ABUTMENT ~
Scale: 3/8" = 1'-0"



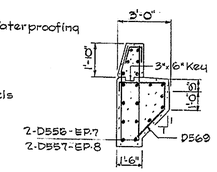
~ SECTION F-F ~
Scale: 1/4" = 1'-0"



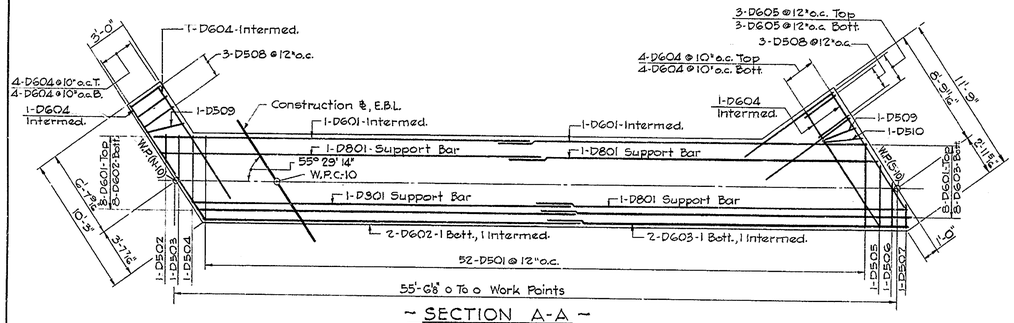
~ SECTION G-G ~



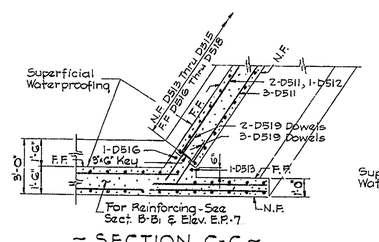
~ SECTION J-J ~
Scale: 1/4" = 1'-0"



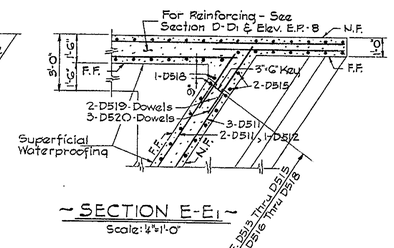
~ SECTION H-H ~
Scale: 1/4" = 1'-0"



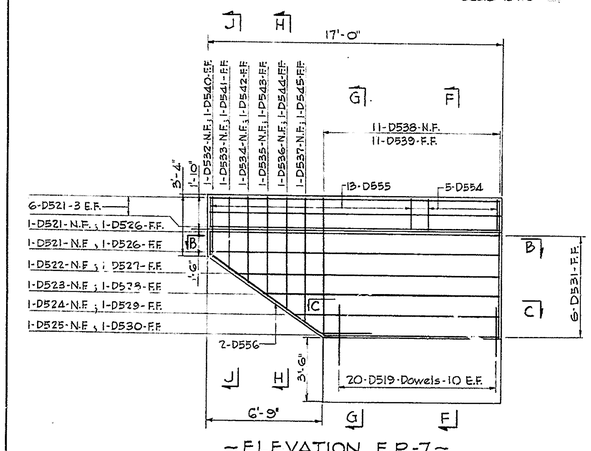
~ SECTION A-A ~
Scale: 3/16" = 1'-0"



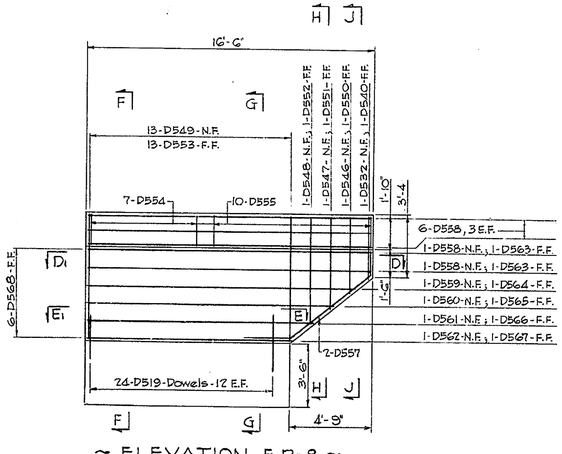
~ SECTION C-C ~
Scale: 1/4" = 1'-0"



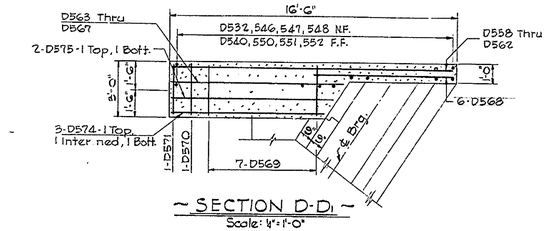
~ SECTION E-E1 ~
Scale: 1/4" = 1'-0"



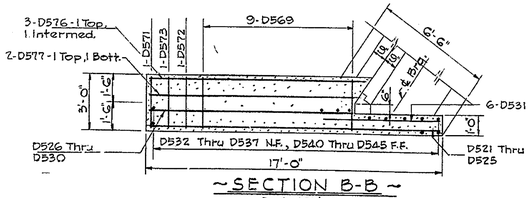
~ ELEVATION E.P.-7 ~
Scale: 1/4" = 1'-0"



~ ELEVATION E.P.-8 ~
Scale: 1/4" = 1'-0"



~ SECTION D-D1 ~
Scale: 1/4" = 1'-0"



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

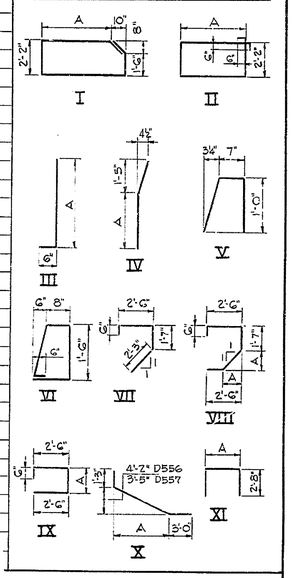
DELAWARE TURNPIKE
1962 - CONTRACT 7001

SHEET NO.	TOTAL SHEETS
126	170

BAR SCHEDULE

MARK	NO.	SIZE	TYPE	LENGTH	A	REMARKS
D801	4	8	Str.	29'-0"		
D601	18	6	Str.	29'-0"		
D602	10		Str.	32'-9"		
D603	10		Str.	25'-3"		
D604	20		Str.	10'-0"		
D605	6	6	Str.	8'-0"		
D501	52	5	I	16'-10"	5'-2"	
D502	1		II	9'-0"	1'-10"	
D503	1		II	11'-10"	3'-3"	
D504	1		II	14'-10"	4'-9"	
D505	1		I	14'-8"	3'-11"	
D506	1		I	11'-8"	2'-5"	
D507	1		I	8'-10"	1'-0"	
D508	6		II	10'-4"	2'-6"	
D509	2		II	11'-0"	2'-10"	
D510	1		II	11'-8"	3'-2"	
D511	10		Str.	25'-9"		
D512	2		Str.	21'-9"		
D513	18		III	4'-10"	4'-4"	
D514	17		III	4'-7"	4'-1"	
D515	19		III	4'-4"	3'-10"	
D516	18		III	6'-8"	6'-2"	
D517	17		III	6'-5"	5'-11"	
D518	18		III	6'-2"	5'-8"	
D519	51		Str.	4'-0"		
D520	3		Str.	4'-9"		
D521	8		Str.	16'-6"		
D522	1		Str.	15'-4"		
D523	1		Str.	13'-8"		
D524	1		Str.	11'-10"		
D525	1		Str.	10'-0"		
D526	2		Str.	11'-8"		
D527	1		Str.	10'-3"		
D528	1		Str.	8'-8"		
D529	1		Str.	6'-11"		
D530	1		Str.	5'-1"		
D531	6		Str.	6'-6"		
D532	2		IV	3'-0"	1'-6"	
D533	1		IV	3'-8"	2'-2"	
D534	1		IV	4'-4"	2'-10"	
D535	1		IV	5'-0"	3'-6"	
D536	1		IV	5'-9"	4'-3"	
D537	1		IV	6'-6"	5'-0"	
D538	11		IV	7'-3"	5'-9"	
D539	11		Str.	7'-3"		
D540	2		Str.	3'-0"		
D541	1		Str.	3'-8"		
D542	1		Str.	4'-4"		
D543	1		Str.	5'-0"		
D544	1		Str.	5'-9"		
D545	1		Str.	6'-6"		
D546	1		IV	4'-0"	2'-6"	
D547	1		IV	4'-9"	3'-3"	
D548	1		IV	5'-9"	4'-3"	
D549	13		IV	6'-8"	5'-2"	
D550	1		Str.	4'-0"		
D551	1		Str.	4'-9"		
D552	1		Str.	5'-9"		
D553	13		Str.	6'-8"		
D554	12		VI	5'-5"		
D555	23		V	2'-7"		
D556	2	5	X	12'-3"	6'-9"	
D557	2	5	X	10'-1"	4'-9"	
D558	8		Str.	16'-0"		
D559	1		Str.	15'-6"		
D560	1		Str.	14'-3"		
D561	1		Str.	13'-0"		
D562	1		Str.	11'-8"		
D563	2		Str.	9'-11"		
D564	1		Str.	9'-0"		
D565	1		Str.	7'-10"		
D566	1		Str.	6'-8"		
D567	1		Str.	5'-6"		
D568	6		Str.	8'-0"		
D569	16		VII	6'-10"		
D570	1		VIII	7'-4"	8"	
D571	2		IX	6'-9"	1'-3"	
D572	1		VIII	7'-6"	1'-1"	
D573	1		VIII	7'-3"	5"	
D574	3		Str.	8'-10"		
D575	2		Str.	9'-6"		
D576	3		Str.	12'-6"		
D577	2		Str.	12'-0"		
D578	8		Str.	22'-0"		
D579	1		Str.	8'-3"		
D580	1		Str.	9'-0"		
D581	1		Str.	9'-6"		
D582	1		Str.	10'-3"		
D583	49	5	XI	9'-0"	3'-8"	

BENDING DETAILS



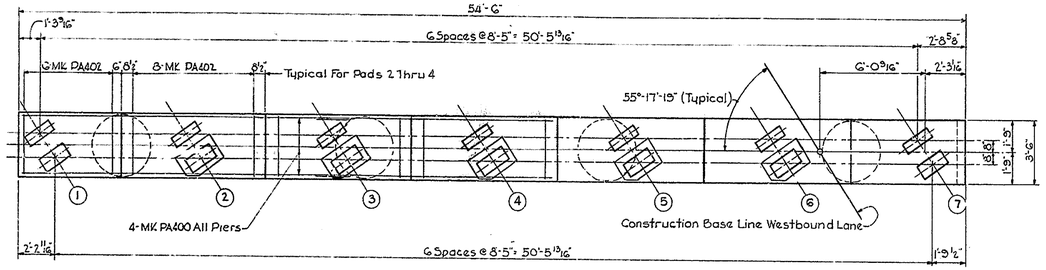
NOTES:
N.F. = Near Face
F.F. = For Face
W.P.C.-10 = Work Point №10 Construction

DELAWARE STATE HIGHWAY DEPARTMENT

DELAWARE TURNPIKE

OVERPASS AT ROUTE 7
ABUTMENT "D"

DRAWN J.M.S.	SCALE: AS NOTED	CONTRACT 7001
TRACED		
CHECKED E.P.R.		
CHARGE OF N.B.H		SHEET 176 OF



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

MASONRY PLATE ELEVATIONS

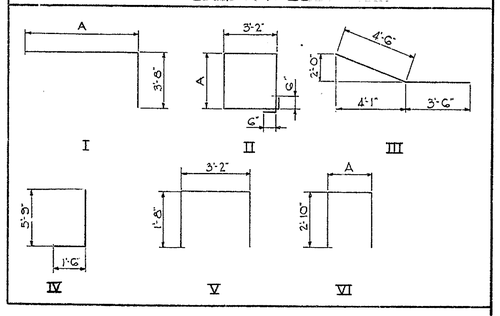
STRINGER NO.	PIER 1		PIER 2				PIER 3		
	Span G	Shim	Span H	Span H	Span J	Shim	Span J	Span K	Shim
1	90.73	1/4"	90.73	91.02	91.02	1/8"	91.17	91.17	3/8"
2	91.95		90.81	91.11	91.11	1/8"	91.27	92.19	
3	92.00		90.86	91.15	91.15	1/8"	91.35	92.27	
4	91.86		90.72	91.03	91.03	1/8"	91.23	92.15	
5	91.72		90.58	90.91	90.91	1/8"	91.11	92.03	
6	91.59		90.45	90.78	90.78	1/8"	91.01	91.93	
7	90.32	1/4"	90.32	90.65	90.65	1/8"	90.89	90.89	3/8"

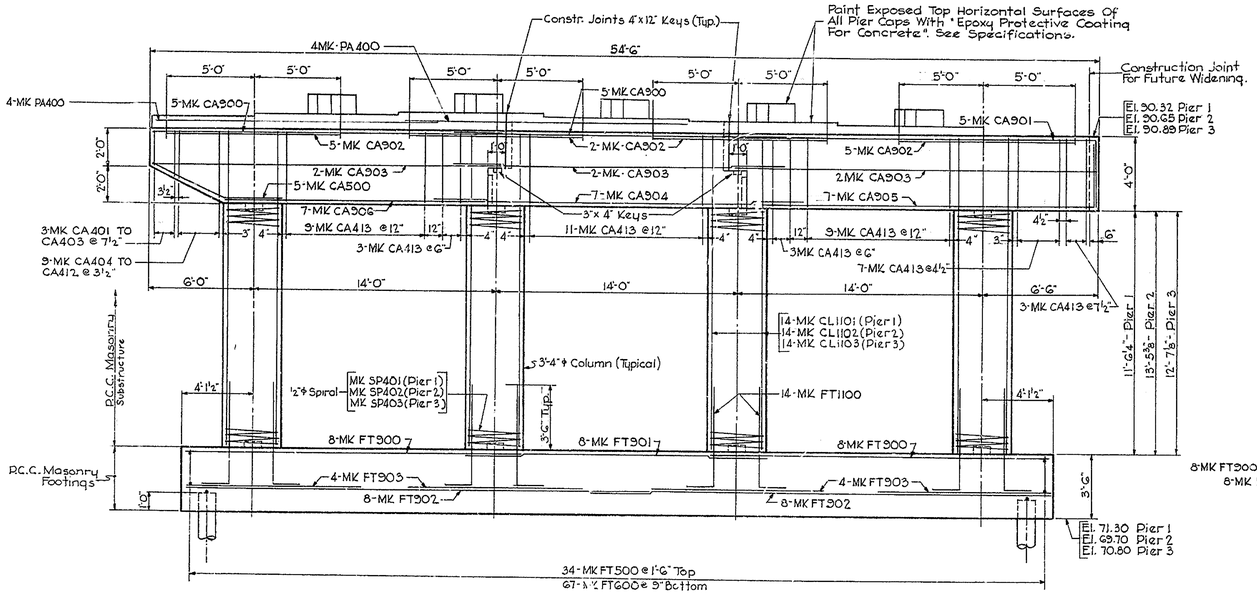
Note: Space Reinf. To Clear Anchor Bolts.

BAR SCHEDULE

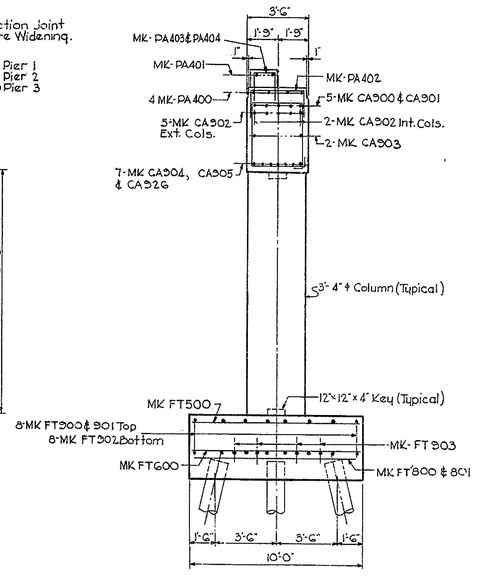
MK	NUMBER	SIZE	TYPE	LENGTH	A	REMARKS
CA900	30	#9	Str.	20'-0"		
CA901	15	↑	I	24'-0"	20'-4"	
CA902	42		Str.	10'-0"		
CA903	18		Str.	20'-0"		
CA904	21		Str.	21'-4"		
CA905	21	↓	I	24'-5"	19'-10	
CA906	21	#9	Str.	15'-0"		
CA401	3	#4	II	10'-10"	1'-9"	
CA402	3	↑	↑	11'-5"	2'-0 1/2"	
CA403	3			12'-0"	2'-4"	
CA404	3			12'-4"	2'-6"	
CA405	3			12'-7"	2'-7 1/2"	
CA406	3			12'-10"	2'-9"	
CA407	3			13'-1"	2'-10 1/2"	
CA408	3			13'-4"	3'-0"	
CA409	3			13'-7"	3'-1 1/2"	
CA410	3			13'-10"	3'-3"	
CA411	3			14'-1"	3'-4 1/2"	
CA412	3	↓		14'-4"	3'-6"	
CA413	135	#4	II	14'-8"	3'-8"	
CA500	15	#5	III	8'-0"		
PA400	24	#4	Str.	16'-0"		
PA401	20	↑	Str.	2'-1"		Bend In Field
PA402	90		V	6'-6"		
PA403	20		VI	6'-10"	1'-2"	
PA404	10	#4	VI	6'-6"	10"	
CL1101	56	#11	Str.	15'-4"		
CL1102	56	#11	↑	17'-3"		
CL1103	56	#11		16'-5"		
FT500	102	#5		9'-8"		
FT600	201	#5		9'-8"		
FT800	6	#8		6'-0"		
FT801	27	#8		12'-0"		
FT900	48	#9		19'-8"		
FT901	24	↓		17'-6"		
FT902	48	↑	↑	26'-8"		
FT903	48	#9	Str.	10'-0"		
FT1100	168	#11	IV	7'-3"		

BAR TYPES

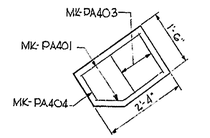




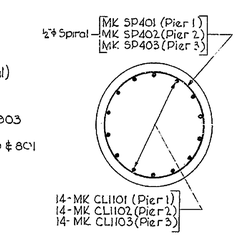
ELEVATION
Scale: 1/4" = 1'-0"



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



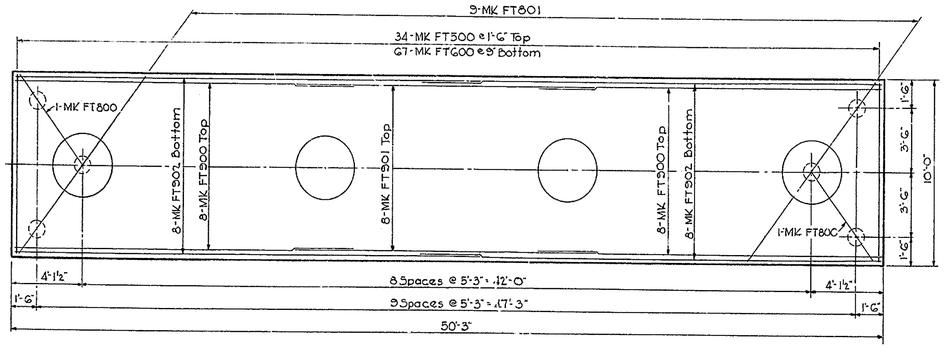
PAD SECTION
(PIERS 1 & 3)
Scale: 1/2" = 1'-0"



TYPICAL SECTION THRU COLUMN
Scale: 1/2" = 1'-0"

SPIRAL COLUMNS

MK	SIZE	O.D.	PITCH	LGTH.	Nº
SP401	1/2" ϕ	3'-0"	2 3/4"	11'-9"	4
SP402	1/2" ϕ	3'-0"	2 3/4"	13'-8"	4
SP403	1/2" ϕ	3'-0"	2 3/4"	12'-10"	4



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

BAR LIST FOR ONE FOOTING
3 REQ'D

FT500	#5	34
FT600	#6	67
FT800	#8	2
FT801	#8	9
FT900	#9	16
FT901	#9	8
FT902	#9	16
FT903	#9	16
FT1100	#11	56

BAR LIST FOR ONE PIER CAP
3 REQ'D

CA401 To CA412	#4	1 Eq.
CA413	#4	45
CA500	#5	5
CA900	#9	10
CA901	#9	5
CA902	#9	14
CA903	#9	6
CA904	#9	7
CA905	#9	7
CA906	#9	7

BAR LIST FOR PADS PIER 1 & 3
2 REQ'D

PA400	#4	8
PA401	#4	10
PA402	#4	30
PA403	#4	10
PA404	#4	5

BAR LIST FOR PADS PIER 2
1 REQ'D

PA400	#4	8
PA402	#4	30

DELAWARE STATE HIGHWAY DEPARTMENT

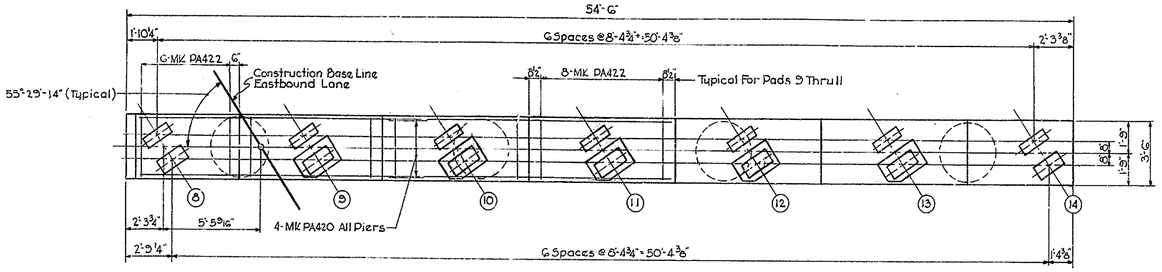
DELAWARE TURNPIKE

OVERPASS AT ROUTE 7
PIERS 1, 2, & 3 W.B.L.

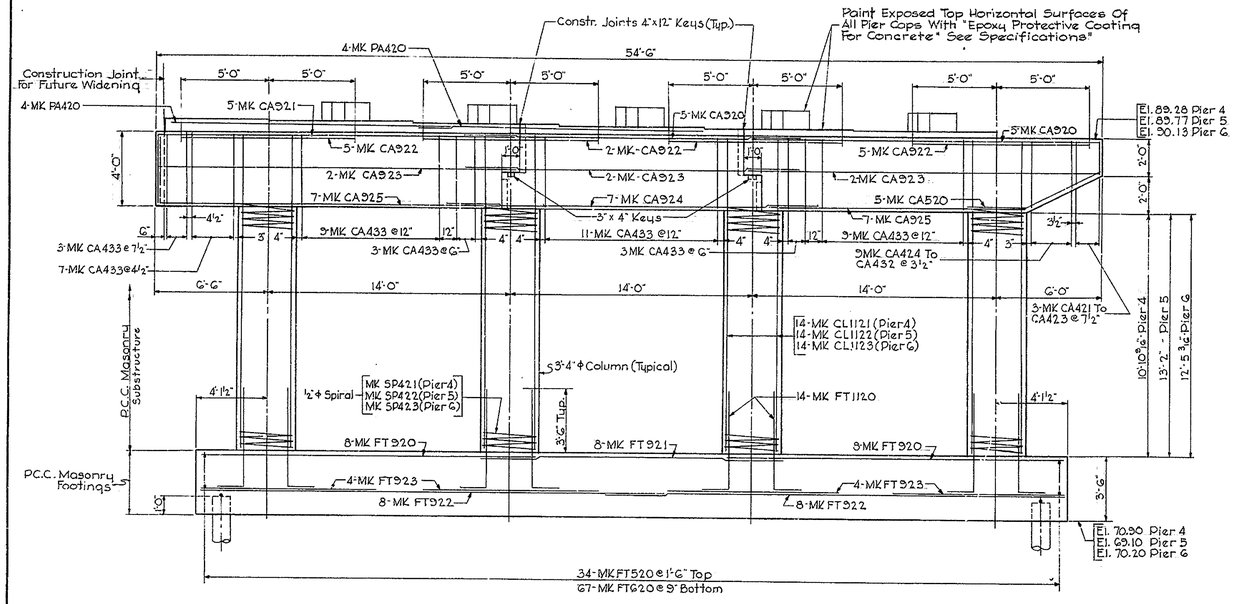
DRAWN J.M.D.	SCALE: AS NOTED	CONTRACT 7001
TRACED		
CHECKED E.P.R		
CHARGE OF H.B.H		SHEET 127 OF

DELAWARE TURNPIKE
CONTRACT 7001
1962

SHEET NO.	TOTAL SHEETS
128	170



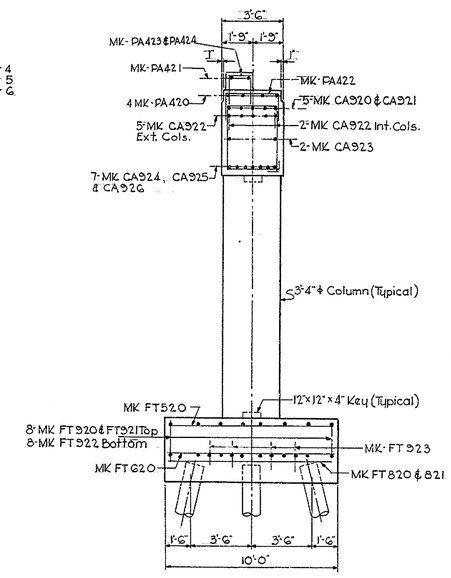
PLAN
Scale: ¼" = 1'-0"



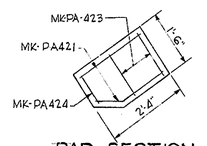
ELEVATION
Scale: ¼" = 1'-0"

MASONRY PLATE ELEVATIONS									
STRINGER №	PIER 4			PIER 5			PIER 6		
	Span L	Shim	Span M	Span M	Span N	Shim	Span N	Span P	Shim
8	90.16	⅛"	90.16	90.59	90.59	⅛"	90.89	90.89	½"
9	90.91		90.01	90.45	90.45	⅛"	90.76	91.94	
10	90.78		89.87	90.31	90.31	⅛"	90.64	91.82	
11	90.65		89.72	90.18	90.18	⅛"	90.51	91.69	
12	90.48		89.58	90.05	90.05	⅛"	90.39	91.57	
13	90.34		89.43	89.91	89.91	⅛"	90.26	91.44	
14	89.28	¼"	89.28	89.77	89.77	⅛"	90.13	90.13	½"

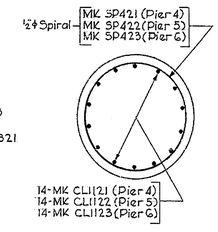
Note: Space Reinf. To Clear Anchor Bolts.



TYPICAL SECTION
Scale: ¼" = 1'-0"



PAD SECTION
(PIERS 4 & 6)
Scale: ½" = 1'-0"



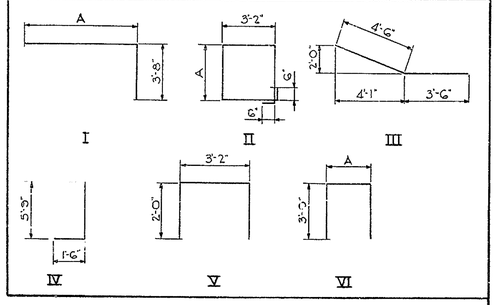
TYPICAL SECTION THRU COLUMN
Scale: ½" = 1'-0"

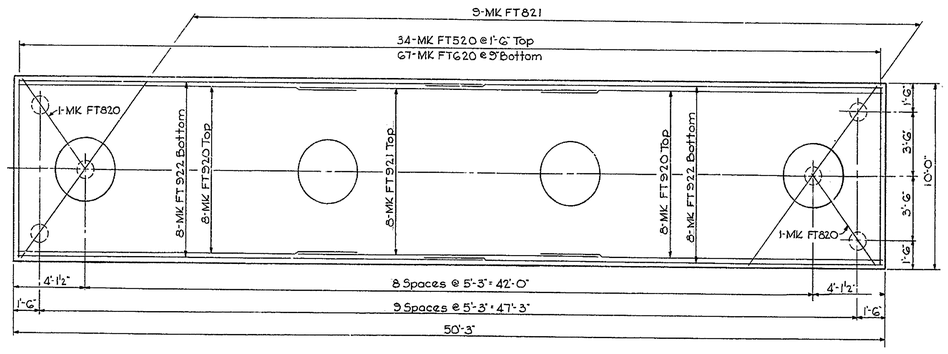
"SPIRAL COLUMNS"					
MK	SIZE	O.D.	PITCH	LGTH.	№
SP421	½" ϕ	3'-0"	2¾"	11'-1"	4
SP422	½" ϕ	3'-0"	2¾"	13'-5"	4
SP423	½" ϕ	3'-0"	2¾"	12'-8"	4

BAR SCHEDULE

MK	NUMBER	SIZE	TYPE	LENGTH	A	REMARKS
CA520	30	#5	Str.	20'-0"		
CA921	15	↑	I	24'-0"	20'-4"	
CA922	42		Str.	10'-0"		
CA923	18		Str.	20'-0"		
CA924	21		Str.	21'-4"		
CA925	21	↓	I	24'-6"	19'-10	
CA926	21	#5	Str.	15'-0"		
CA421	3	#4	II	10'-10"	1'-9"	
CA422	3	↑	↑	11'-5"	2'-0½"	
CA423	3			12'-0"	2'-4"	
CA424	3			12'-4"	2'-6"	
CA425	3			12'-7"	2'-7½"	
CA426	3			12'-10"	2'-9"	
CA427	3			13'-1"	2'-10½"	
CA428	3			13'-4"	3'-0"	
CA429	3			13'-7"	3'-1½"	
CA430	3			13'-10"	3'-3"	
CA431	3			14'-1"	3'-4½"	
CA432	3	↓		14'-4"	3'-6"	
CA433	135	#4	II	14'-8"	3'-8"	
CA520	15	#5	III	6'-0"		
PA420	24	#4	Str.	16'-3"		
PA421	20	↑	Str.	2'-1"		Bend In Field
PA422	90		V	7'-2"		
PA423	20	↓	VI	7'-2"	1'-2"	
PA424	10	#4	VI	6'-10"	10"	
CL1121	56	#11	↑	14'-8"		
CL1122	56	#11		17'-0"		
CL1123	56	#11		16'-3"		
FT520	102	#5		9'-8"		
FT620	201	#6		9'-8"		
FT820	6	#8		6'-0"		
FT821	27	#8		12'-0"		
FT920	48	#9		19'-8"		
FT921	24	↕		17'-6"		
FT922	48		↓	26'-8"		
FT923	48	#9	Str.	10'-0"		
FT1120	168	#11	IV	7'-3"		

BAR TYPES





FOOTING PLAN
Scale: ¼" = 1'-0"

BAR LIST FOR ONE FOOTING 3 REQ'D		
FT520	#5	34
FT620	#6	67
FT820	#8	2
FT921	#8	3
FT920	#9	16
FT921	#9	8
FT922	#9	16
FT923	#9	16
FT1120	#11	56

BAR LIST FOR ONE PIER CAP 3 REQ'D		
CA421 To CA432	#4	1 Ea.
CA433	#4	45
CA520	#5	5
CA920	#9	10
CA921	#9	5
CA922	#9	14
CA923	#9	6
CA924	#9	7
CA925	#9	7
CA926	#9	7

BAR LIST FOR PADS PIER 4 & 6 2 REQ'D		
PA420	#4	8
PA421	#4	10
PA422	#4	30
PA423	#4	10
PA424	#4	5

BAR LIST FOR PADS PIER 5 1 REQ'D		
PA420	#4	8
PA422	#4	30

DELAWARE STATE HIGHWAY DEPARTMENT

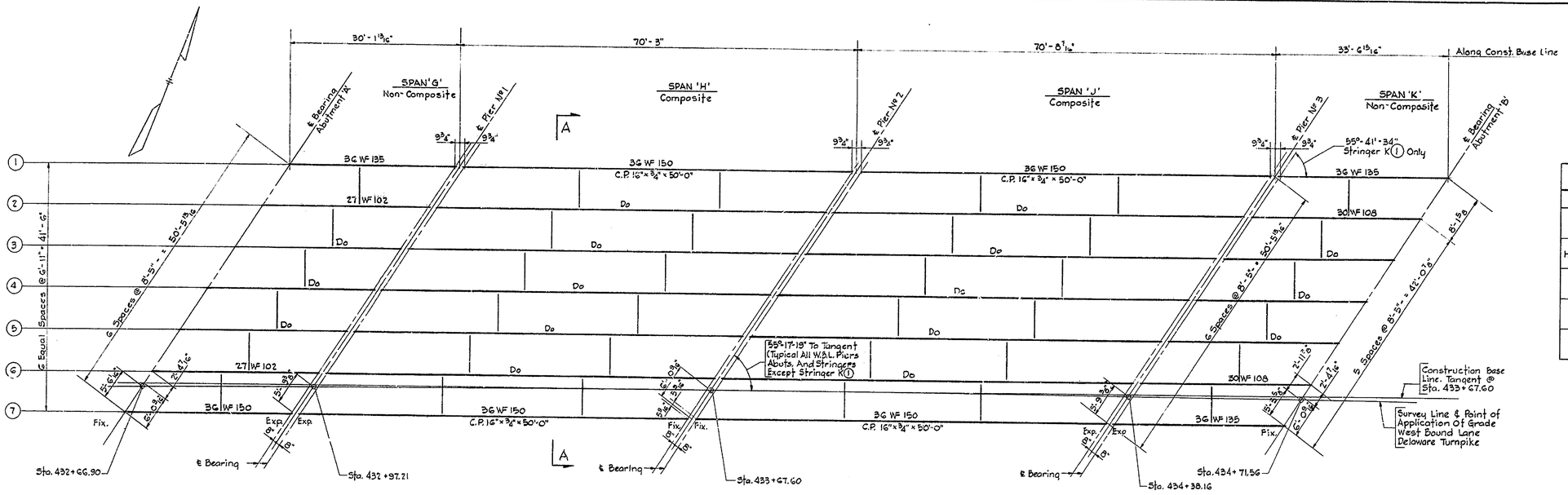
DELAWARE TURNPIKE

OVERPASS AT ROUTE 7
PIERS 4, 5, & 6 E.B.L.

DRAWN J.M.D.	SCALE: AS NOTED	CONTRACT 7001
TRACED		
CHECKED E.P.R.		
CHARGE OF H.B.H.		SHEET 128 OF

DELAWARE TURNPIKE
CONTRACT 7001
1962

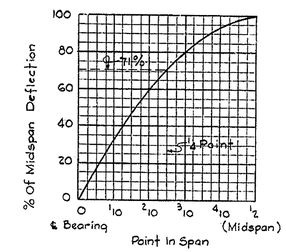
SHEET NO.	TOTAL SHEETS
129	170



Diaphragms
For Spans G & K 15 @ 33.9 Spaced At Midpoint Of Span.
For Spans H & J 18 @ 42.7 Spaced At 1/3 Point Of Span.

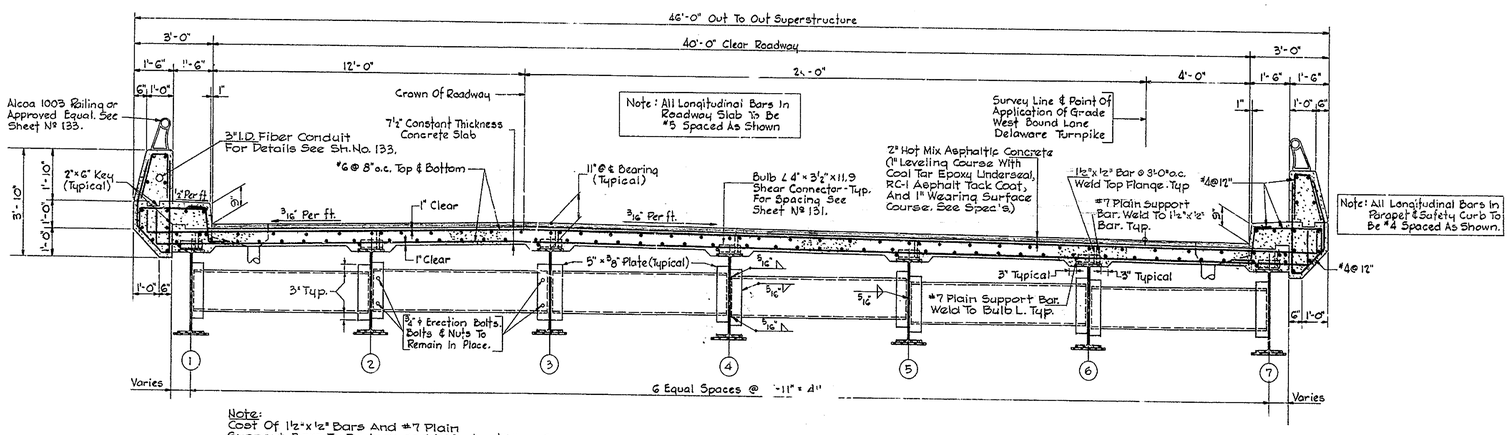
FRAMING PLAN
Scale: 1" = 10'-0"

DEFLECTION SCHEDULE					
SPAN	STRINGER NO	Δ-1	Δ-2	Δ-3	Camber
G	1 & 7	0	1/16"	0	0
	2 Thru G	0	1/8"	1/16"	0
H, J, M & N	1 & 7	5/16"	5/8"	1/4"	1 3/16"
	2 Thru G	9/16"	15/16"	3/16"	1 7/16"
K	1 & 7	0	1/16"	1/16"	0
	2 Thru G	0	1/8"	1/16"	0
L	1 & 7	0	1/16"	1/16"	0
	2 Thru G	0	1/8"	1/16"	0
P	1 & 7	0	1/16"	1/16"	0
	2 Thru G	1/16"	1/4"	1/16"	0



NOTES:

1. Δ-1 Deflection At Midspan Due To Weight Of Stringers & Diaphragms.
2. Δ-2 Deflection At Midspan Due To Weight Of Concrete Roadway Slab & Haunch.
3. Δ-3 Deflection At Midspan Due To Weight Of Sidewalk, Parapet, Railing & Wearing Surface.
4. Camber Not Required Where Total DL. Deflection Is Less Than 1"
5. Fabricate Said beams With Mill Camber Up.
6. Percentage Of Deflection At Any Point In Span May Be Determined From Curve.



Note:
Cost Of 1 1/2"×1/2" Bars And #7 Plain Support Bars To Be Included In Contract Lump Sum Price Bid For "Structural Steel-Beam Spans"

SECTION "A-A"
Scale: 3/8" = 1'-0"

NOTES:

Structural Steel

Unless Otherwise Provided For On The Plans Or In The Specifications, Details Of The Steel Work In General Shall Conform To The Requirements Of The 1957 Standard Specifications For Highway Bridges Of The A.A.S.H.O.

To Avoid Oversight, Requirements Concerning Rivet Sizes, Bolt Sizes, Open Holes, Reaming, Punching, Shims, Painting, Etc. Shall Be Clearly Shown Or Noted On The Shop Drawings.

All Dimensions Shown On The Plans Are For The Structure At A Normal Temperature Of +68°F. The Temperature Range For Movement Is -10°F To +120°F.

All Expansion Joints Are To Be Detailed To Provide For Vertical, Longitudinal, And Transverse Adjustment In Order To Obtain Proper Alignment And Openings Under Normal Temperature Conditions

For Structural Steel Material Specifications, See Special Provisions

All Welding Shall Be Done In Accordance With The Requirements Of The Current "Standard Specifications For Welded Highway And Railway Bridges" Of The American Welding Society, Unless Otherwise Specified. The Shop Drawings Shall Show Clearly The Nature, Dimensions, And Locations Of Each Weld.

Apply A Water Soluble Silicone Solution To The Inside And Top Faces Of The Parapets, on The Top And Sides Of The Safety Curbs After Coal Tar Epoxy Underseal Is In Place. See Specifications. Cost To Be Included In Unit Price Bid For Portland Cement Concrete Masonry-Superstructure.

DELAWARE STATE HIGHWAY DEPARTMENT

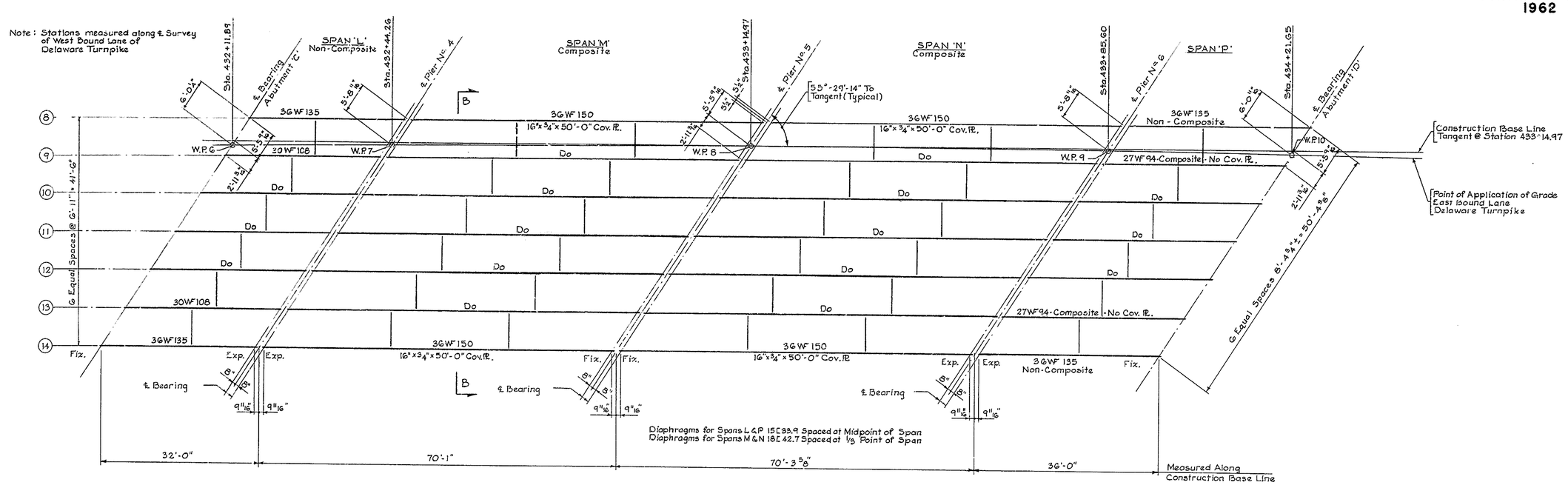
DELAWARE TURNPIKE

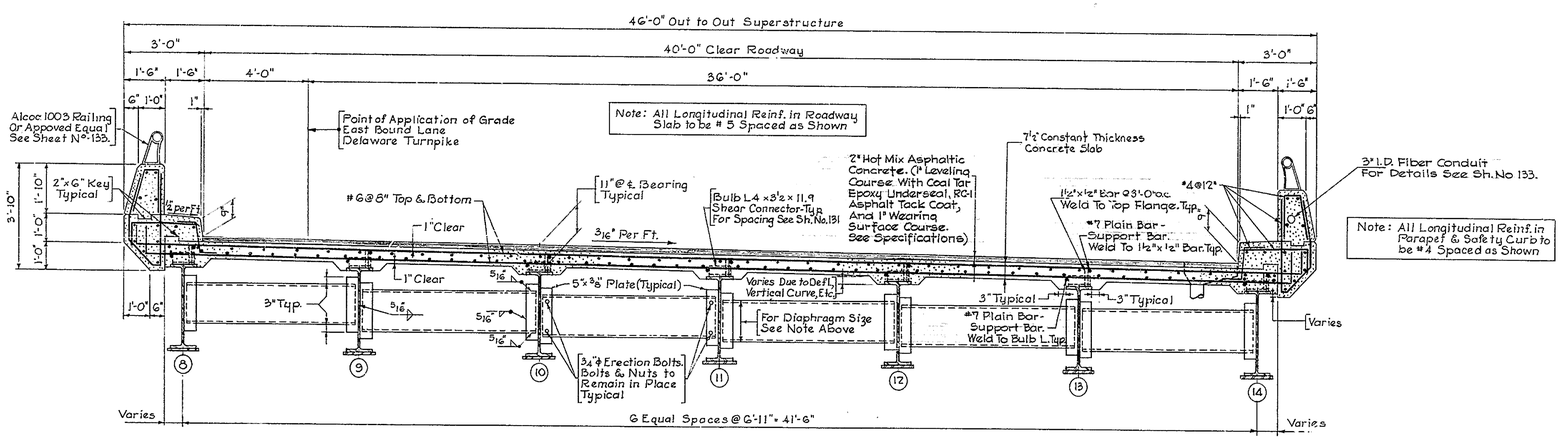
OVERPASS AT ROUTE 7
FRAMING PLAN W.B.L.

DRAWN G.J.T.	SCALE: AS NOTED	CONTRACT 7001
TRACED		
CHECKED E.P.R.		
CHARGE OF H.B.H.		SHEET 129 OF

DELAWARE TURNPIKE
CONTRACT 7001
1962

SHEET NO.	TOTAL SHEETS
130	170





Note:
Cost Of 1½"x½" Bars And #7 Support Bars To Be Included In Contract Lump Sum Price Bid For Structural Steel - Beam Spans.

SECTION 'B-B'
Scale: ⅜" = 1'-0"

DELAWARE STATE HIGHWAY DEPARTMENT

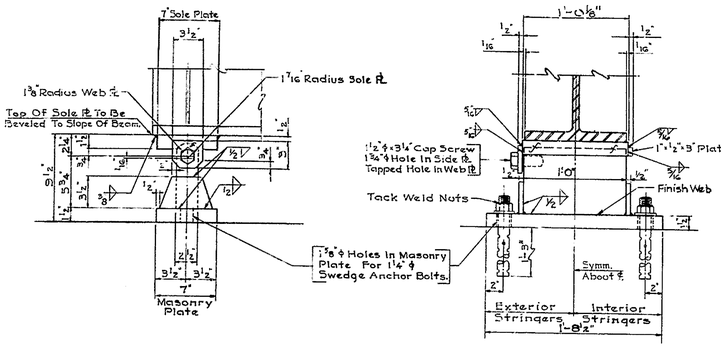
DELAWARE TURNPIKE

OVERPASS AT ROUTE 7
FRAMING PLAN E.B.L.

DRAWN J.K.J.	SCALE: AS NOTED	CONTRACT 7001
TRACED		
CHECKED E.P.R.		
CHARGE OF H.B.H		SHEET 130 OF

COUNTY	CONTRACT	P.R.A. DIV. NO	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
		2	DEL.			131	160

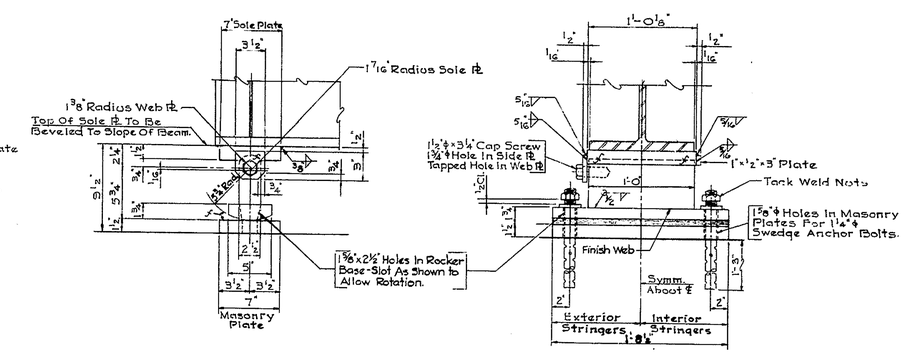
DELAWARE TURNPIKE
CONTRACT 7001
1962



FIXED SHOE

ALL STRINGERS BEARING ON PIERS Nº 2 & 5

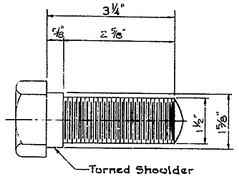
Scale: 1½" = 1'-0"



EXPANSION SHOE

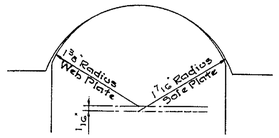
ALL 36WF STRINGERS BEARING ON PIERS Nº 1, 3, 4, & 6

Scale: 1½" = 1'-0"



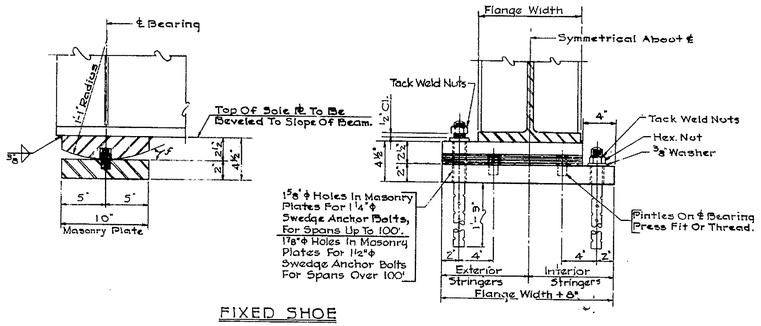
CAP SCREW DETAIL

No Scale



DETAIL AT WEB AND SOLE PLATES

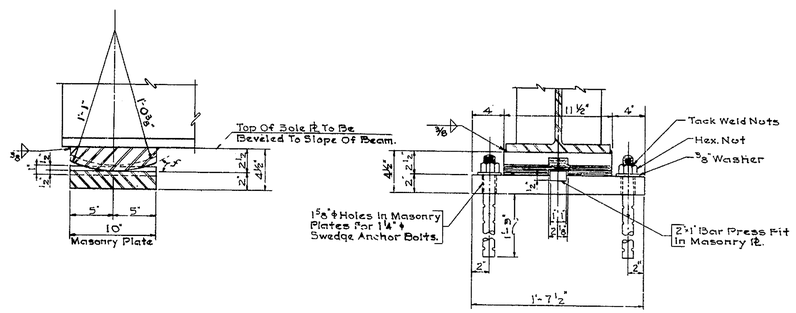
Scale: Full Size



FIXED SHOE

ALL STRINGERS BEARING ON ABUTMENTS

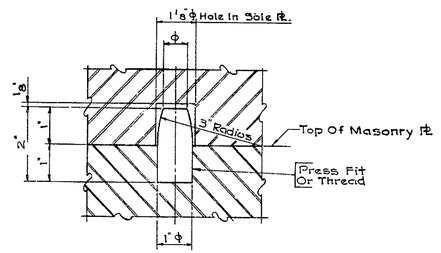
Scale: 1½" = 1'-0"



EXPANSION SHOE

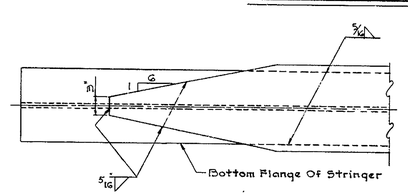
ALL 27WF & 30WF STRINGERS BEARING ON PIERS Nº 1, 3, 4, & 6

Scale: 1½" = 1'-0"



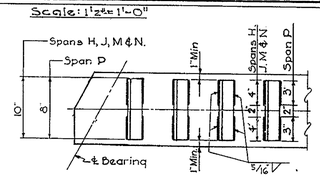
PINTLE DETAIL

Scale: Half Size



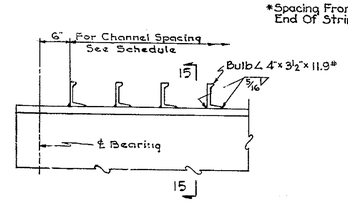
TYPICAL COVER PLATE DETAIL

No Scale



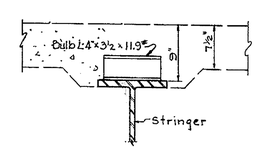
SHEAR CONNECTOR SCHEDULE				
STRINGER No.	SPACING *			
H1, H7, J1 & J7 M8, M14, N8 & N14	5 @ 12½"	8 @ 15½"		Remainder @ 24
H2 To H6, J2 To J6 M9 To M13, N9 To N13	10 @ 11½"	5 @ 14"	6 @ 21"	Remainder @ 24
P8 To P13	14 @ 8½"			Remainder @ 14

*Spacing From ℄ Bearing To Mid-Point Of Span. Each End Of Stringer Symmetrical About ℄.



CHANNEL SHEAR CONNECTORS

No Scale



SECTION 15-15

Note:
Cost of Bulb Angle Shear Connectors to be Included In Contract Lump Sum Price Bid For "Structural Steel - Beam Spans".

Although Bulb Angle Shear Connectors are shown, alternate types may be permitted; subject to the Engineers written approval.

If an alternate type is used the Contractor shall be required to submit detail drawings for approval. Drawings to indicate the size and type of material, spacing, welds, and other necessary design and detail data.

DELAWARE
STATE HIGHWAY DEPARTMENT

DELAWARE TURNPIKE
OVERPASS AT ROUTE 7
BEARINGS AND SHEAR CONNECTORS

D A.T.B.
T A.T.B.
C L.M.F.

SCALE: AS NOTED

CONTRACT 7001

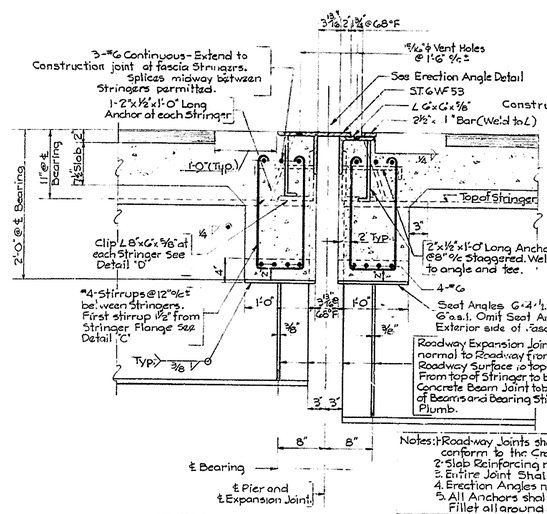
SHEET 131 OF

BEARINGS
TIE POINTS
BENCH MARKS
EATHWORK
DRAINAGE

REVISIONS

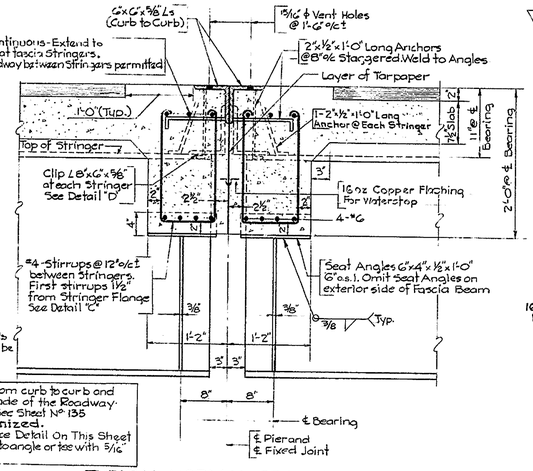
COUNTY	CONTRACT	P.R.A. DIV. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
		2	DEL.			132	170

DELAWARE TURNPIKE
CONTRACT 7001
1962



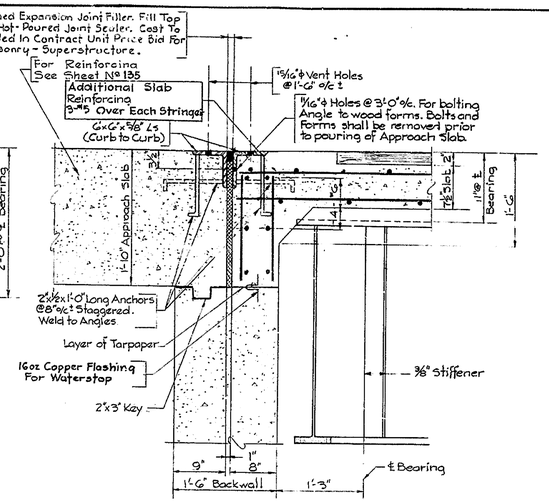
TYPICAL NORMAL SECTION THRU ROADWAY - EXPANSION JOINT AT PIER

Scale 1" = 1'-0"



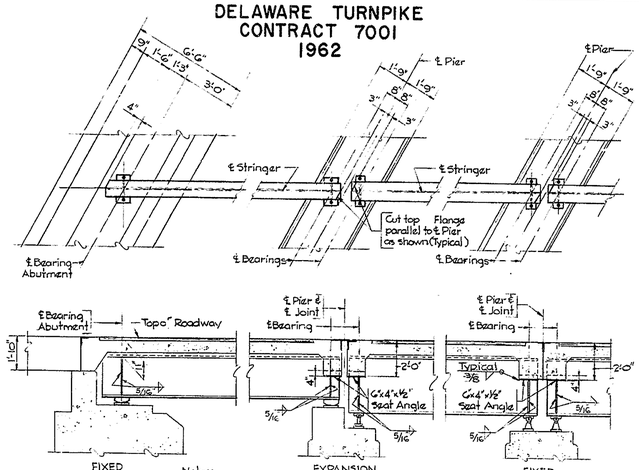
TYPICAL NORMAL SECTION THRU ROADWAY - FIXED JOINT AT PIER

Scale 1" = 1'-0"



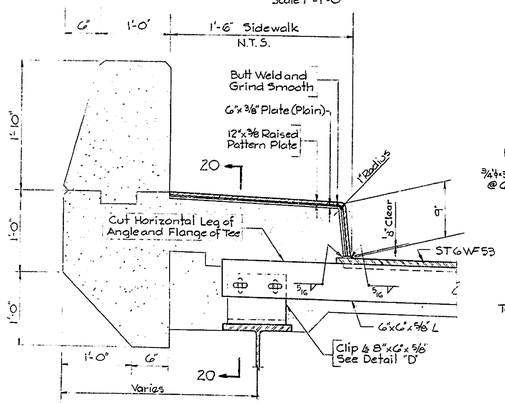
TYPICAL NORMAL SECTION THRU ROADWAY - FIXED JOINT AT ABUTMENT

Scale 1" = 1'-0"



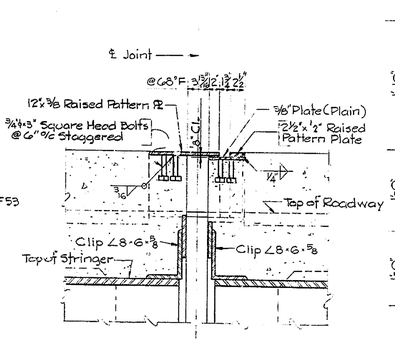
Notes:
⅜" Stiffeners 5½" Wide for 36WF150
⅜" Stiffeners 5" Wide for 30WF108, 30WF116
⅜" Stiffeners 4½" Wide for 27WF94, 27WF102

INTERIOR STRINGERS



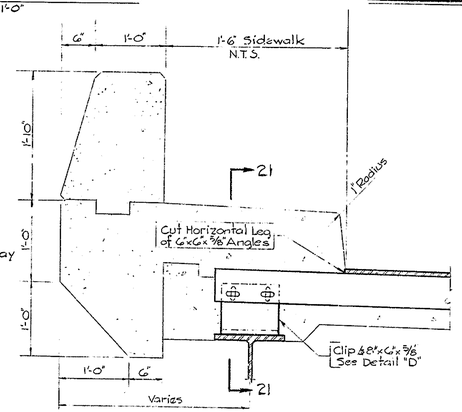
TYPICAL NORMAL SECTION THRU SIDEWALK - EXPANSION JOINT

Scale: 1" = 1'-0"



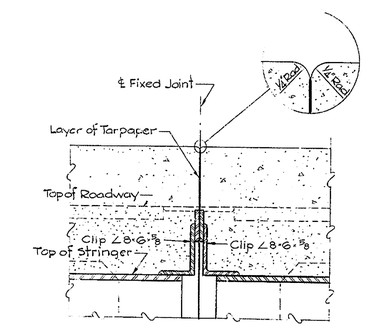
SECTION 20-20

Scale 1" = 1'-0"



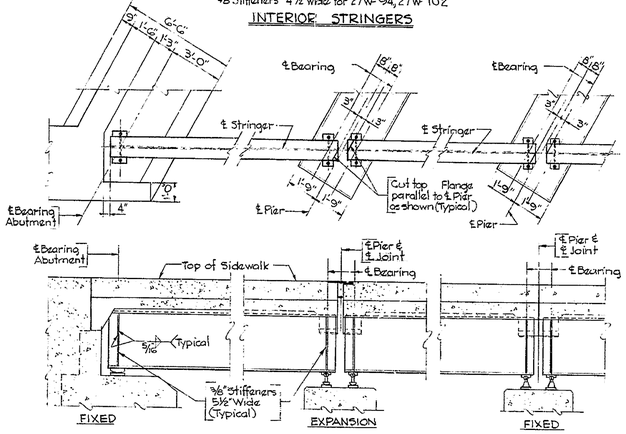
TYPICAL NORMAL SECTION THRU SIDEWALK - FIXED JOINT

Scale: 1" = 1'-0"



SECTION 21-21

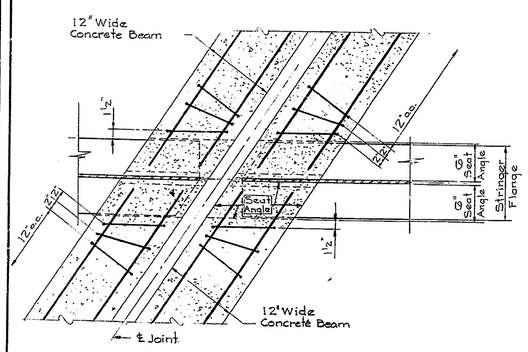
Scale 1" = 1'-0



EXTERIOR STRINGERS

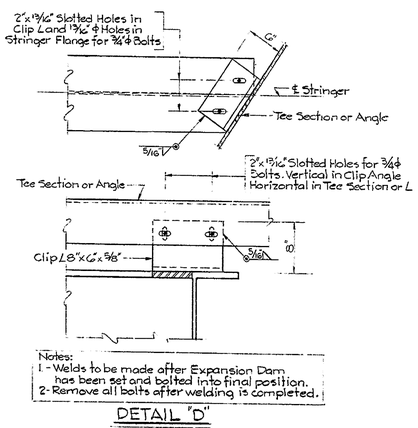
BEARING PLAN AND ELEVATION

Scale ¼" = 1'-0"



DETAIL "C"

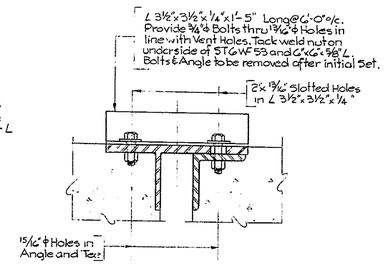
Scale 1" = 1'-0"



Notes:
1 - Welds to be made after Expansion Dam has been set and bolted into final position.
2 - Remove all bolts after welding is completed.

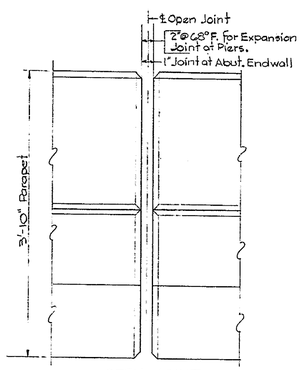
DETAIL "D"

Scale 1" = 1'-0"

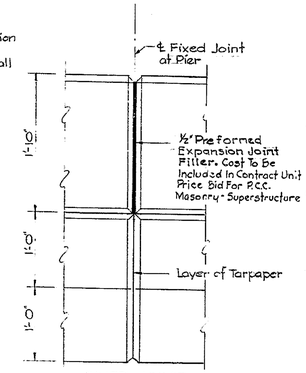


ERECTION ANGLE DETAIL

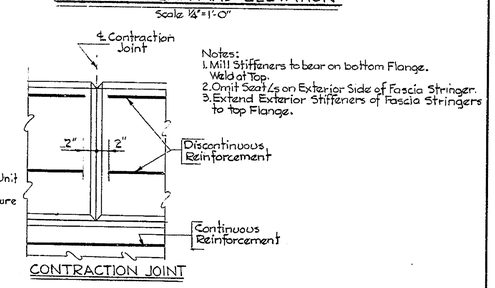
Scale 1½" = 1'-0"



OPEN JOINT



FIXED JOINT



CONTRACTION JOINT

Notes:
1. Mill Stiffeners to bear on bottom Flange. Weld at Top.
2. Omit Seat Ls on Exterior Side of Fascia Stringer.
3. Extend Exterior Stiffeners of Fascia Stringers to top Flange.

Note:
Location of Open Joints shown on Sheet № 133.
Location of Fixed Joints, shown on Sheet № 133.
Location of Contraction Joints shown on Sheet № 133.

PARAPET ELEVATIONS

Scale 1" = 1'-0"

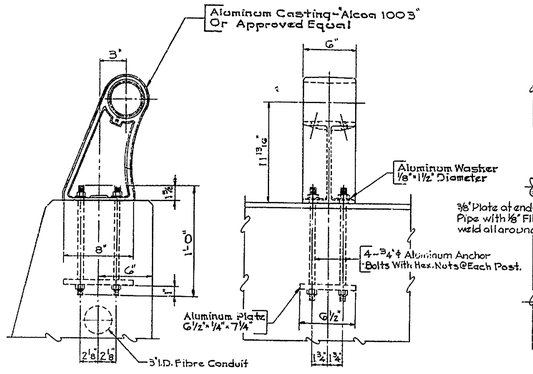
DELAWARE
STATE HIGHWAY DEPARTMENT

DELAWARE TURNPIKE
OVERPASS AT ROUTE 7
EXPANSION AND FIXED JOINTS

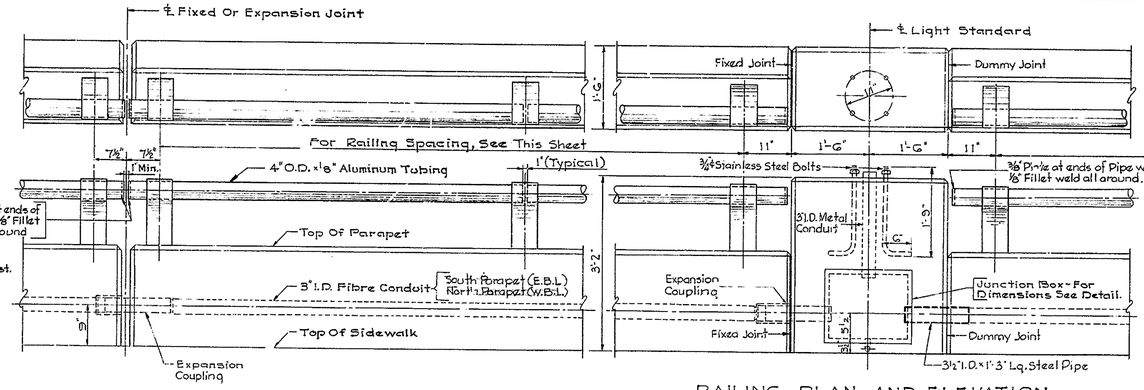
D RR	SCALE: AS NOTED	CONTRACT 7001
T RR		
C LMF		SHEET 132 OF

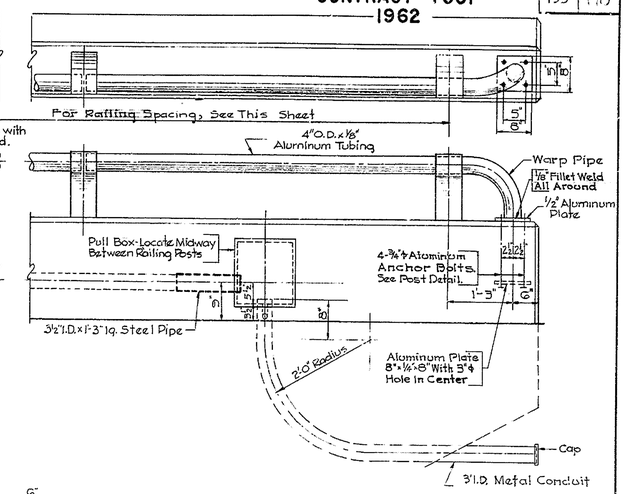
DELAWARE TURNPIKE
CONTRACT 7001
1962

SHEET NO.	TOTAL SHEETS
133	190

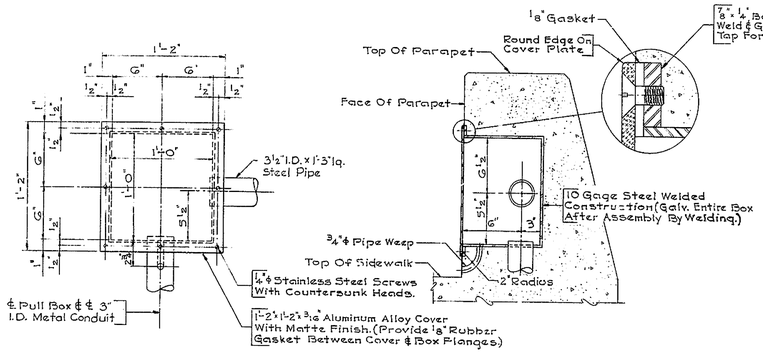


POST DETAILS
Scale: 1 1/2"=1'-0"

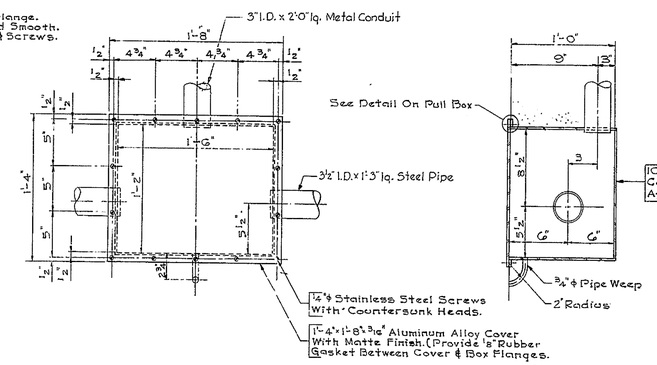




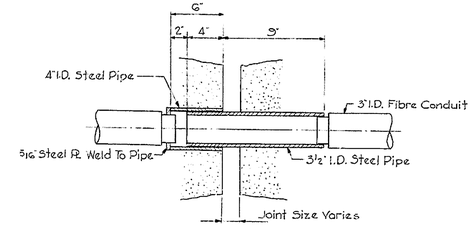
RAILING PLAN AND ELEVATION
Scale: 3/4"=1'-0"



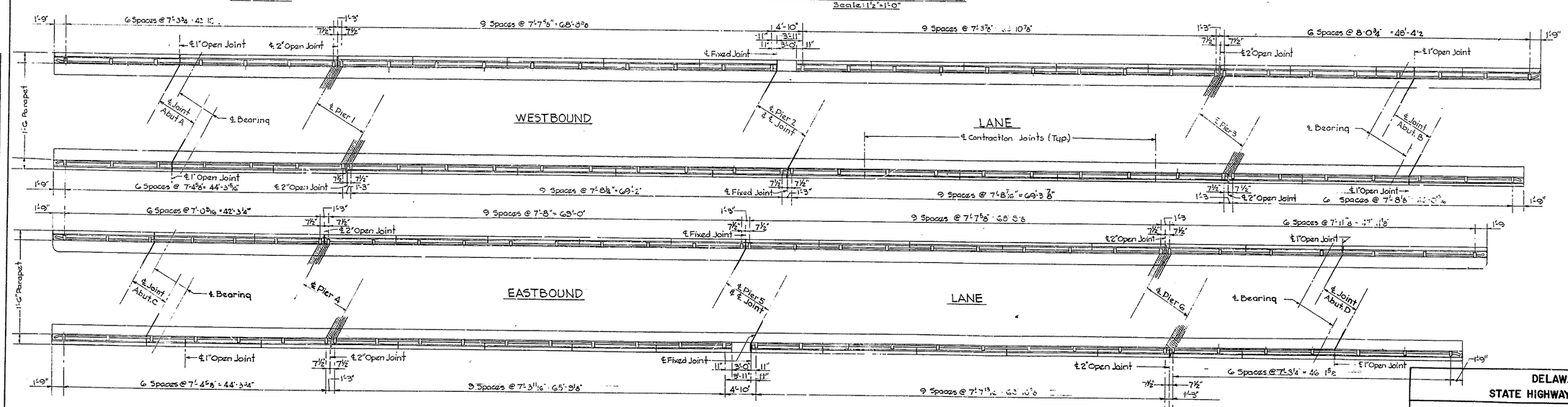
DETAIL OF PULL BOX
Scale: 1 1/2"=1'-0"



DETAIL OF JUNCTION BOX
Scale: 1 1/2"=1'-0"



CONDUIT EXPANSION COUPLING
Scale: 1 1/2"=1'-0"



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

Note: 1. Parapet Contraction Joints Located Midway Between Posts Where Shown.
2. 2" Open Joint In Parapet At Expansion Joints Shown Above.
3. 1" Open Joint In Parapet At Abutment Endwalls Located On Sheet Nos 123, 124, 125 And 126.
4. Fixed, Contraction And Open Joints In Parapet Detailed On Sheet No 132

DELAWARE
STATE HIGHWAY DEPARTMENT

DELAWARE TURNPIKE
OVERPASS AT ROUTE 7
ALUMINUM RAILING AND CONDUITS

D A.T.B.
T A.T.B.
C L.M.F.

SCALE: AS NOTED

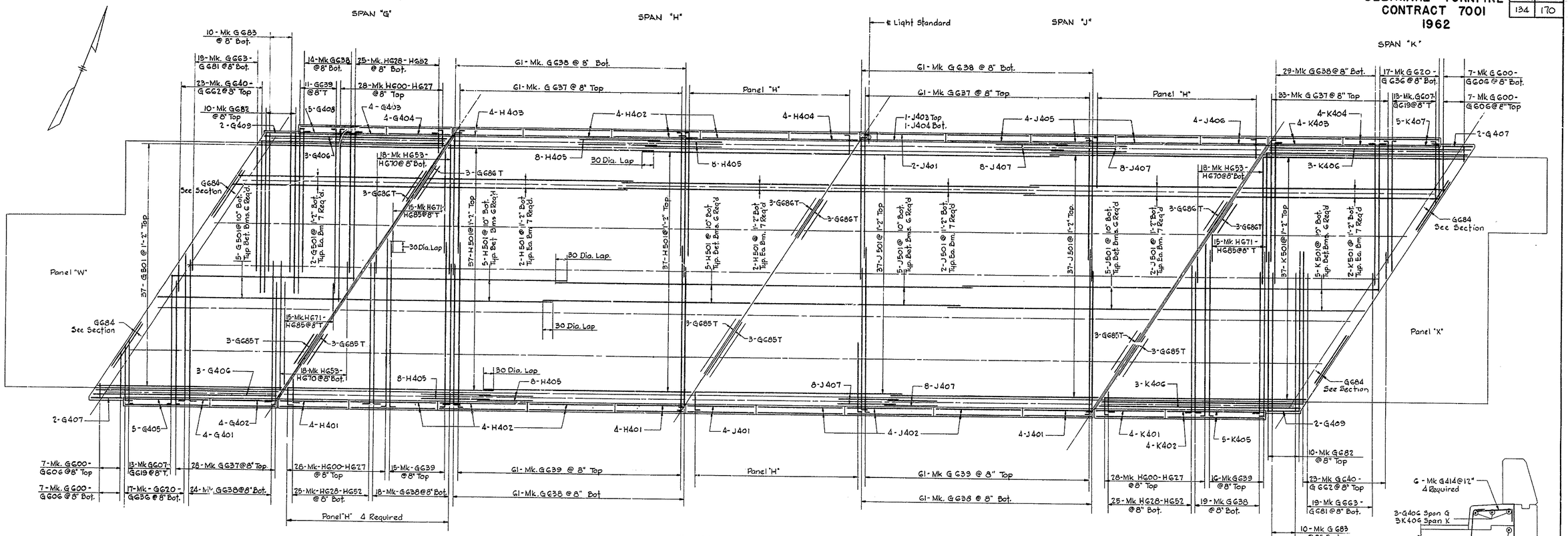
CONTRACT 7001

SHEET 133 OF

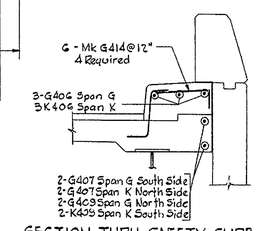
BENCH MARKS
EARTHWORK
DRAINAGE

DELAWARE TURNPIKE
CONTRACT 7001
1962

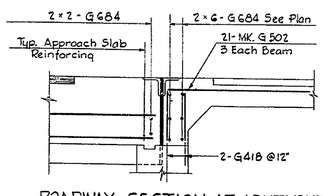
SHEET NO.	TOTAL SHEETS
134	170



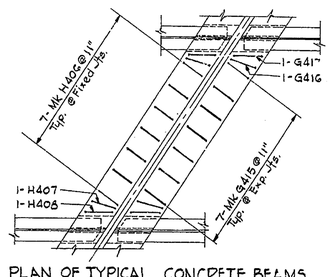
PLAN
Scale : 1/8" = 1'-0"



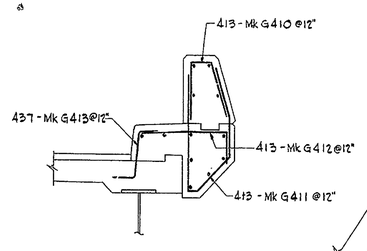
SECTION THRU SAFETY CURB AT ABUTMENT
Scale : 1/2" = 1'-0"



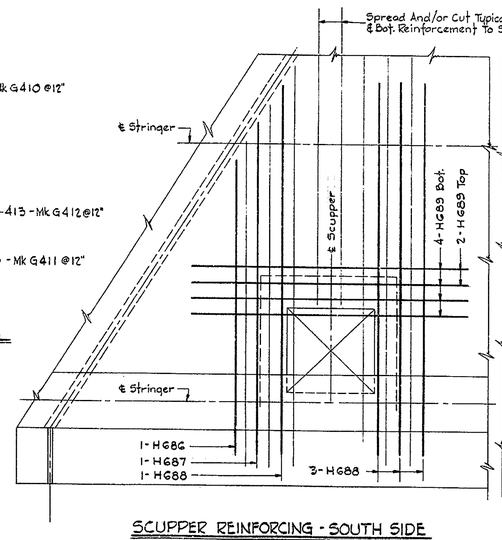
ROADWAY SECTION AT ABUTMENTS
2 REQUIRED
Scale 1/2" = 1'-0"



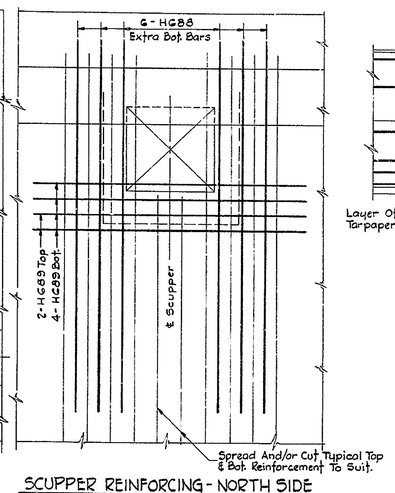
PLAN OF TYPICAL CONCRETE BEAMS
Scale 3/8" = 1'-0"



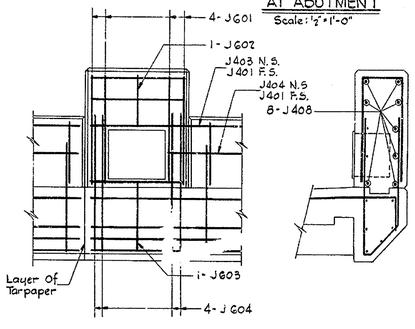
SIDEWALK & PARAPET DETAIL
Scale 1/2" = 1'-0"



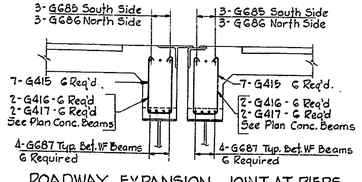
SCUPPER REINFORCING - SOUTH SIDE
3 REQUIRED
Scale 1/2" = 1'-0"



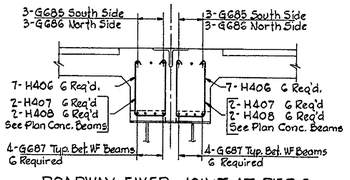
SCUPPER REINFORCING - NORTH SIDE
3 REQUIRED
Scale 1/2" = 1'-0"



LIGHT STANDARD PEDESTAL
Scale 1/2" = 1'-0"



ROADWAY EXPANSION JOINT AT PIERS
2 REQUIRED
Scale 1/2" = 1'-0"



ROADWAY FIXED JOINT AT PIER 2
Scale 1/2" = 1'-0"

DELAWARE STATE HIGHWAY DEPARTMENT

DELAWARE TURNPIKE

OVERPASS AT ROUTE 7

DECK REINFORCING DETAILS W.B.L.

DRAWN G.J.T.	SCALE : AS NOTED	CONTRACT
TRACED		7001
CHECKED E.P.R.		
CHARGE OF H.B.H.		SHEET 134 OF

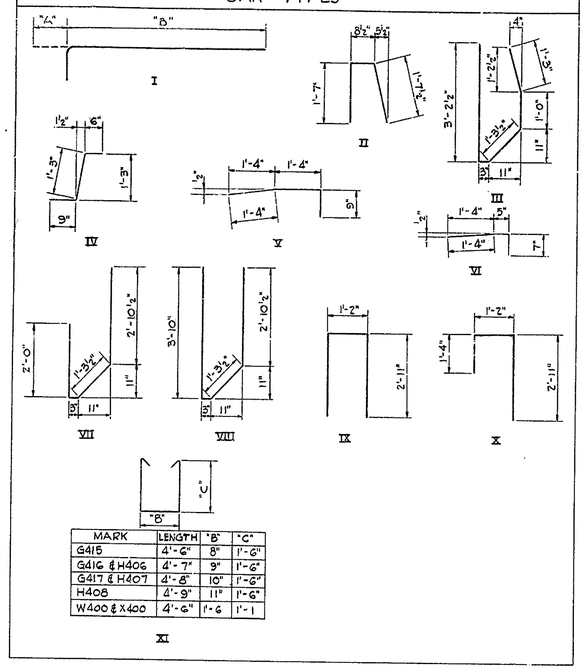
DELAWARE TURNPIKE
CONTRACT 7001
1962

SHEET NO.	TOTAL SHEETS
135	170

BAR SCHEDULE

MARK	NO.	SIZE	TYPE	LENGTH	A	B	REMARKS
G401	4	#4	Str.	15'-8"			
G402	4		Str.	11'-3"			
G403	4		Str.	14'-9"			
G404	4		Str.	11'-1"			
G405	5		Str.	27'-3"			
G406	6		Str.	31'-10"			
G407	4		Str.	4'-6"			
G408	5		Str.	26'-2"			
G409	4		Str.	5'-8"			
G410	413		II	3'-11"			
G411	413		III	7'-0"			
G412	413		V	3'-5"			
G413	437		IV	2'-6"			
G414	24		VI	2'-4"			
G415	168		XI	4'-6"			
G416	48		XI	4'-7"			
G417	46	#4	XI	4'-8"			
G418	212	#4	Str.	1'-3"			
G501	81	#5	Str.	31'-10"			
G502	42	#5	Str.	5'-0"			
G600-G606	28	#6	Str.	2'-0" to 6'-9"			Vary 4 Ea. By 9½"
G607-G619	26		I	9'-5" to 22'-0"	11"	8'-6" to 21'-1"	Vary 2 Ea. By 12½"
G620-G636	34		I	9'-2" to 24'-8"	11"	8'-3" to 24'-8"	Vary 2 Ea. By 12½"
G637	183		I	20'-11"	11"	20'-0"	
G638	402		I	24'-2"	11"	23'-3"	
G639	203		I	27'-11"	11"	27'-0"	
G640-G662	46		Str.	4'-1" to 25'-4"			Vary 2 Ea. By 11½"
G663-G681	38		Str.	4'-5" to 21'-11"			Vary 2 Ea. By 11½"
G682	20		Str.	26'-4"			
G683	20		Str.	22'-10"			
G684	32		Str.	27'-7"			
G685	18		Str.	22'-10"			
G686	18		Str.	31'-2"			
G687	144	#6	Str.	8'-0"			
H401	8	#4	Str.	11'-11"			
H402	24		Str.	14'-11"			
H403	8		Str.	11'-6"			
H404	4		Str.	12'-0"			
H405	32		Str.	35'-7"			
H406	84		XI	4'-7"			
H407	24		XI	4'-8"			
H408	24	#4	XI	4'-9"			
H501	162	#5	Str.	35'-7"			
H600-H627	168	#6	I	2'-11" to 29'-2"	11"	2'-0" to 28'-3"	Vary 6 Ea. By 11½"
H628-H652	150		I	2'-11" to 26'-3"	11"	2'-0" to 25'-4"	Vary 6 Ea. By 11½"
H653-H670	108		Str.	5'-1" to 21'-7"			Vary 6 Ea. By 11½"
H671-H688	90		Str.	4'-6" to 18'-0"			Vary 6 Ea. By 11½"
H686	3		Str.	8'-5"			
H687	3		Str.	9'-5"			
H688	30		Str.	10'-5"			
H689	36	#6	Str.	8'-0"			
J401	10	#4	Str.	11'-9"			
J402	12		Str.	15'-0"			
J403	1		Str.	14'-6"			
J404	1		Str.	12'-1"			
J405	12		Str.	14'-4"			
J406	4		Str.	11'-2"			
J407	32		Str.	35'-10"			
J408	8	#4	Str.	2'-8"			
J501	162	#5	Str.	35'-10"			
J601	4	#6	IX	7'-0"			
J602	1		X	5'-5"			
J603	1		VII	6'-5"			
J604	4	#6	VIII	8'-3"			
K401	4	#4	Str.	11'-10"			
K402	4		Str.	17'-4"			
K403	4		Str.	12'-5"			
K404	4		Str.	18'-0"			
K405	5		Str.	29'-5"			
K406	6		Str.	35'-2"			
K407	5	#4	Str.	30'-8"			
K501	81	#5	Str.	35'-2"			

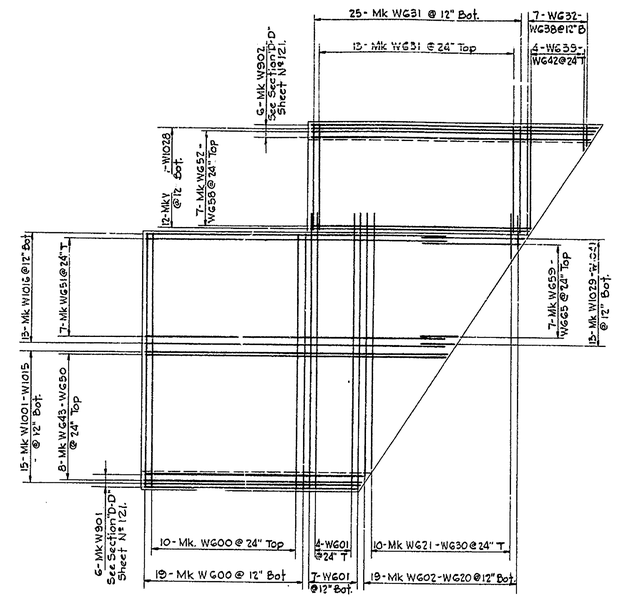
BAR TYPES



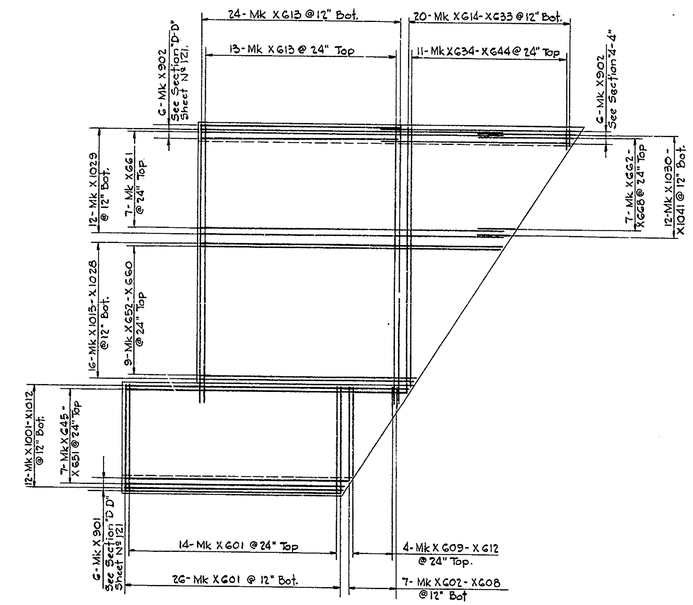
MARK	LENGTH	"B"	"C"
G415	4'-6"	8"	1'-6"
G416 & H406	4'-7"	9"	1'-6"
G417 & H407	4'-8"	10"	1'-6"
H408	4'-9"	11"	1'-6"
W400 & X400	4'-6"	1'-6	1'-1

BAR SCHEDULE

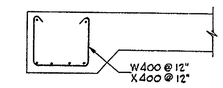
MARK	NO.	SIZE	TYPE	LENGTH	REMARKS
W600	58	#6	Str.	27'-8"	
W601	22		Str.	29'-10"	
WG02-WG20	38		Str.	3'-0 to 28'-6"	Vary 2 Ea. By 1'-5"
WG21-WG30	20		Str.	3'-0 to 28'-6"	Vary 2 Ea. By 2'-10"
WG31	76		Str.	11'-8"	
WG32-WG38	14		Str.	2'-0" to 10'-6"	Vary 2 Ea. By 1'-5"
WG39-WG42	8		Str.	2'-0" to 10'-6"	Vary 2 Ea. By 2'-10"
WG43-WG50	16		Str.	25'-0" to 35'-6"	Vary 2 Ea. By 1'-6"
WG51	14		Str.	35'-0"	
WG52-WG58	14		Str.	25'-6 to 33'-0"	Vary 2 Ea. By 1'-3"
WG59-WG65	14	#6	Str.	3'-10" to 11'-10"	Vary 2 Ea. By 1'-4"
W400	116	#4	XI	4'-6"	
W901	12	#9	Str.	24'-10"	
W902	12	#9	Str.	32'-4"	
W1001-W1016	30	#10	Str.	25'-0" to 35'-6"	Vary 2 Ea. By 9"
W1016	26	#10	Str.	35'-0"	
W1017-W1028	24	#10	Str.	25'-6" to 32'-10"	Vary 2 Ea. By 8"
W1029-W1041	26	#10	Str.	4'-6" to 12'-6"	Vary 2 Ea. By 8"
X400	154	#4	XI	4'-6	
XG01	80	#6	Str.	11'-8"	
XG02-XG08	14		Str.	2'-6" to 10'-6"	Vary 2 Ea. By 1'-4"
XG09-XG12	8		Str.	2'-6" to 10'-6"	Vary 2 Ea. By 2'-8"
XG13	74		Str.	29'-10"	
XG14-XG33	40		Str.	2'-0" to 28'-11"	Vary 2 Ea. By 1'-5"
XG34-XG44	22		Str.	2'-0 to 28'-11"	Vary 2 Ea. By 2'-8"
XG45-XG51	14		Str.	25'-4" to 32'-8"	Vary 2 Ea. By 1'-4"
XG52-XG60	18		Str.	25'-0" to 35'-0"	Vary 2 Ea. By 1'-4"
XG61	14		Str.	35'-0"	
XG62-XG68	14	#6	Str.	3'-9" to 12'-0"	Vary 2 Ea. By 1'-6"
X901	12	#9	Str.	28'-0"	
X902	24	#9	Str.	22'-10"	
X1001-X1012	24	#10	Str.	25'-4 to 32'-8"	Vary 2 Ea. By 8"
X1013-X1028	32	#10	Str.	25'-0" to 35'-0"	Vary 2 Ea. By 8"
X1029	24	#10	Str.	35'-0"	
X1030-X1041	24	#10	Str.	4'-6" to 12'-6"	Vary 2 Ea. By 9"



PANEL "W"
2 REQUIRED
Scale: 1/8" = 1'-0"



PANEL "X"
2 REQUIRED
Scale: 1/8" = 1'-0"



DETAIL OF APPROACH SLAB BEAM
Scale ½" = 1'-0"

DELAWARE STATE HIGHWAY DEPARTMENT

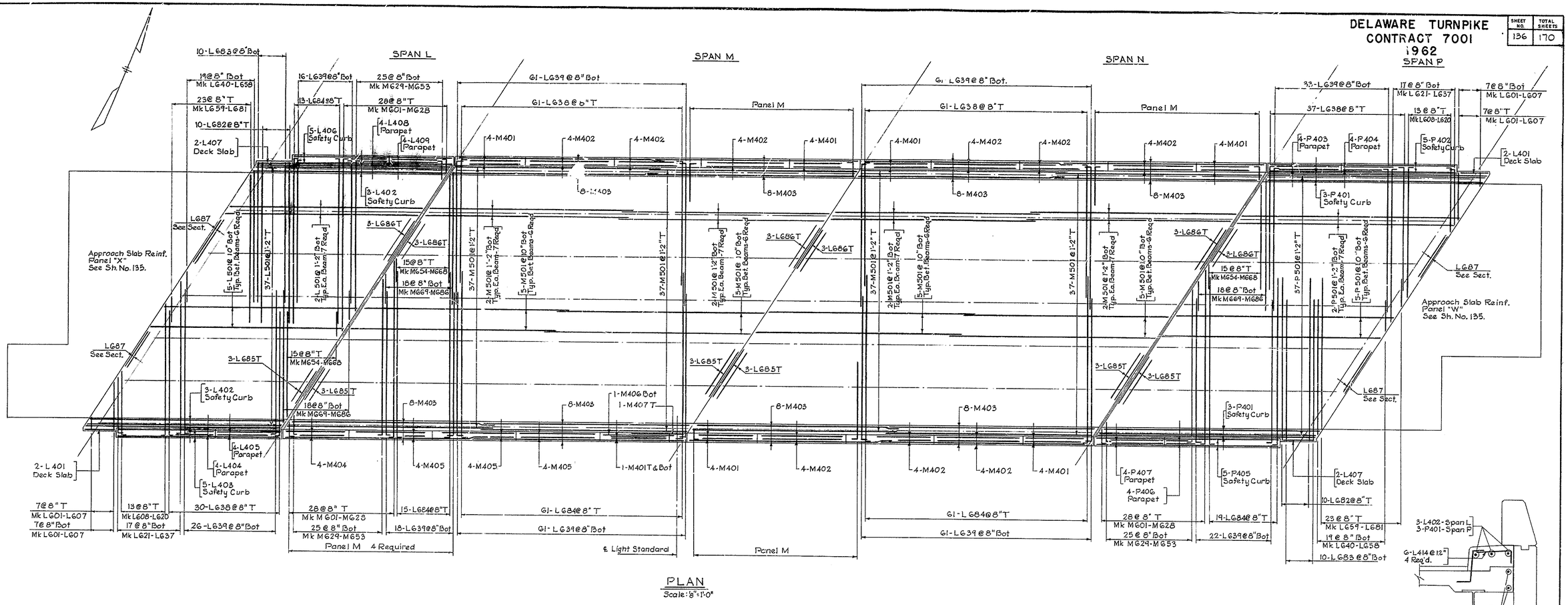
DELAWARE TURNPIKE

OVERPASS AT ROUTE 7
DECK REINFORCING DETAILS W.B.L.
AND APPROACH SLABS

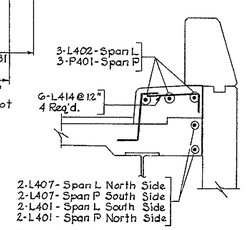
DRAWN G.J.T.	SCALE: 1/8" = 1'-0"	CONTRACT
TRACED		7001
CHECKED E.P.R		
CHARGE OF H.B.H		SHEET 135 OF

DELAWARE TURNPIKE
CONTRACT 7001
1962

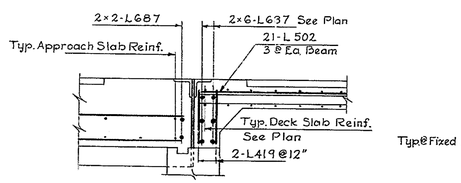
SHEET NO.	TOTAL SHEETS
136	170



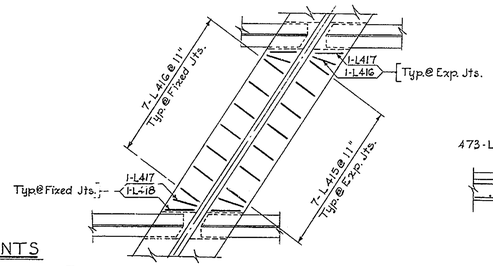
PLAN
Scale: 3/8"=1'-0"



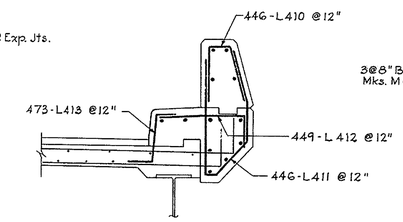
SECTION THRU SAFETY CURB AT ABUTMENT
Scale: 1/2"=1'-0"



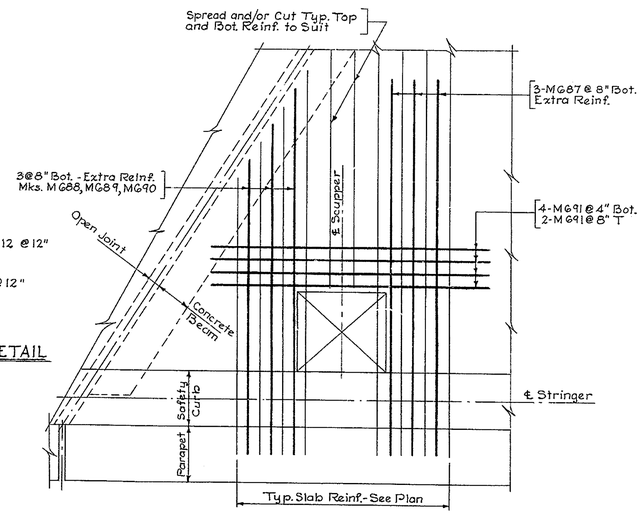
ROADWAY SECTION AT ABUTMENTS
2 REQUIRED
Scale: 1/2"=1'-0"



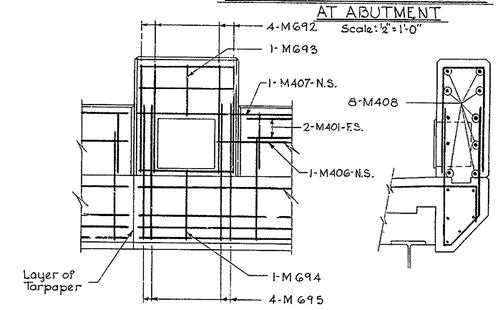
PLAN OF TYPICAL CONCRETE BEAMS
Scale: 3/8"=1'-0"



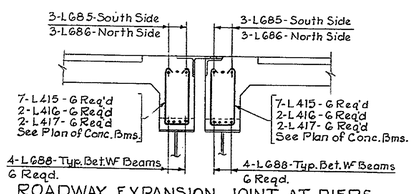
SAFETY CURB AND PARAPET DETAIL
Scale: 1/2"=1'-0"



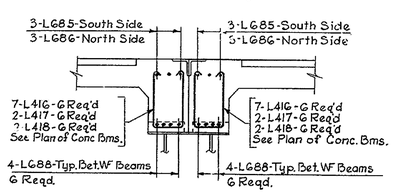
SCUPPER REINF. (3 REQ'D)
Scale: 1/2"=1'-0"



LIGHT STANDARD PEDESTAL
Scale: 1/2"=1'-0"



ROADWAY EXPANSION JOINT AT PIERS
2 REQUIRED
Scale: 1/2"=1'-0"



ROADWAY FIXED JOINT AT PIER
Scale: 1/2"=1'-0"

DELAWARE STATE HIGHWAY DEPARTMENT

DELAWARE TURNPIKE

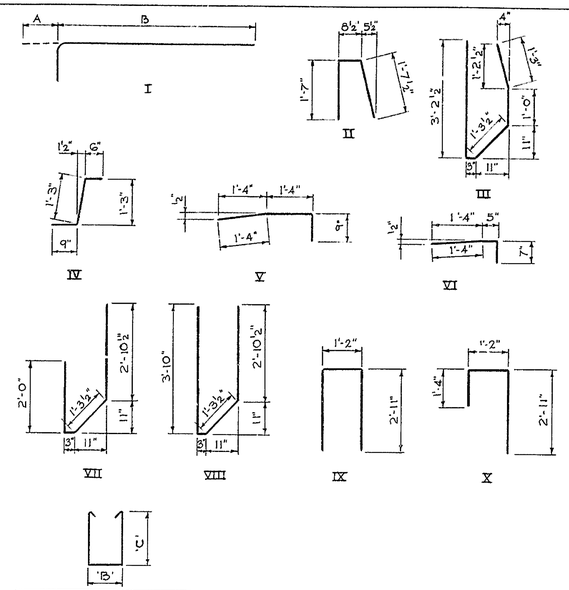
OVERPASS AT ROUTE 7
DECK REINFORCING DETAILS E.B.L.

DRAWN J.K.J.	SCALE: AS NOTED	CONTRACT 7001
TRACED		
CHECKED E.P.R.		
CHARGE OF HBH		SHEET 136 OF

BAR SCHEDULE

MARK	NO.	SIZE	TYPE	LENGTH	A	B	REMARKS
L401	4	#4	Str.	4'-6"			
L402	6	↑	Str.	33'-8"			
L403	5		Str.	29'-0"			
L404	4		Str.	17'-4"			
L405	4		Str.	11'-3"			
L406	5		Str.	27'-8"			
L407	4		Str.	5'-6"			
L408	4		Str.	16'-6"			
L409	4		Str.	10'-9"			
L410	446		II	3'-11"			
L411	446		III	7'-0"			
L412	449		V	3'-5"			
L413	473		IV	2'-6"			
L414	24		VI	2'-4"			
L415	166		XI	4'-6"			
L416	132		XI	4'-7"			
L417	72		XI	4'-8"			
L418	24	↓	XI	4'-9"			
L419	212	#4	Str.	1'-3"			
L501	81	#5	Str.	33'-8"			
L502	42	#5	Str.	5'-0"			
L601 to L607	28	#6	Str.	2'-0" to 6'-9"			Vary 4 Ea. by 9½"
L608 to L620	26	↑	I	9'-5" to 22'-0"	11"	8'-6" to 21'-1"	Vary 2 Ea. by 12½"
L621 to L637	34		I	9'-2 to 25'-7"	11"	8'-3" to 24'-8"	Vary 2 Ea. by 12½"
L638	189		I	20'-11"	11"	20'-0"	
L639	413		I	24'-2	11"	23'-3"	
L640 to L658	38		Str.	4'-5" to 21'-11"			Vary 2 Ea. by 11½"
L659 to L681	46		Str.	4'-1" to 25'-4"			Vary 2 Ea. by 11½"
L682	20		Str.	20'-4"			
L683	20		Str.	22'-10"			
L684	214		I	27'-11"	11"	27'-0"	
L685	18		Str.	31'-2			
L686	18		Str.	22'-10"			
L687	32		Str.	27'-7"			
L688	144	#6	Str.	8'-0"			
M401	26	#4	Str.	11'-8"			
M402	86	↑	Str.	15'-0"			
M403	64		Str.	35'-9"			
M404	4		Str.	11'-2"			
M405	12		Str.	14'-4"			
M406	1		Str.	12'-4"			
M407	1	↓	Str.	14'-7"			
M408	8	#4	Str.	2'-8"			
M501	324	#5	Str.	35'-9"			
M601 to M628	168	#6	I	2'-11" to 29'-2"	11"	2'-0" to 28'-3"	Vary 6 Ea. by 11½"
M629 to M653	150	↑	I	2'-11" to 26'-3"	11"	2'-0" to 25'-4"	Vary 6 Ea. by 11½"
M654 to M668	90		Str.	4'-6" to 18'-0"			Vary 6 Ea. by 11½"
M669 to M686	108		Str.	5'-1" to 21'-7"			Vary 6 Ea. by 11½"
M687	9		Str.	10'-6"			
M688	3		Str.	8'-5"			
M689	3		Str.	9'-5"			
M690	3		Str.	10'-5"			
M691	18		Str.	8'-0"			
M692	4		IX	7'-0"			
M693	1		X	5'-5"			
M694	1	↓	VII	6'-5"			
M695	4	#6	VIII	8'-3"			
P401	6	#4	Str.	37'-10"			
P402	5	↑	Str.	33'-0"			
P403	4		Str.	12'-2"			
P404	4		Str.	20'-4"			
P405	5		Str.	31'-8"			
P406	4	↓	Str.	19'-6"			
P407	4	#4	Str.	11'-10"			
P501	81	#5	Str.	37'-8"			

BAR TYPES

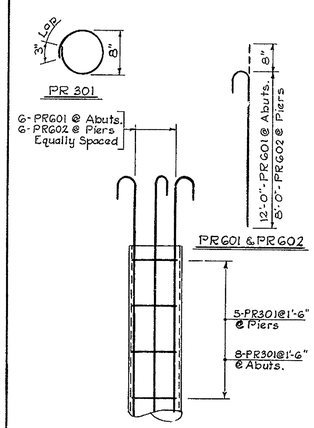


MARK	LENGTH	'B'	'C'
L415	4'-6"	8"	1'-6"
L416	4'-7"	9"	1'-6"
L417	4'-8"	10"	1'-6"
L418	4'-9"	11"	1'-6"

XI

PILE REINFORCING

BENDING DETAILS

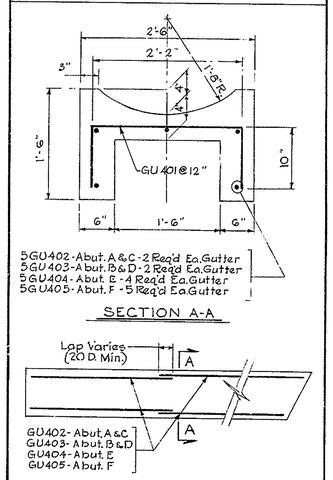


TYPICAL PILE

315 REQ'D @ PIERS
162 REQ'D @ ABUT'S.

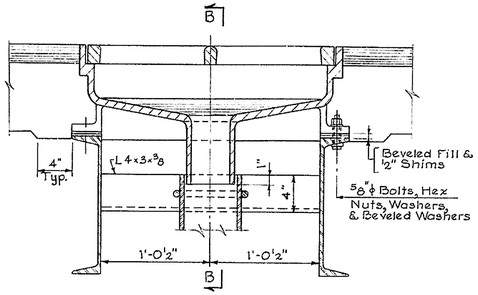
MARK	NO.	SIZE	LENGTH
PR601	972	#6	12'-8"
PR602	1,890	#6	8'-8"
PR301	2,871	#3	2'-3"

GUTTER REINFORCING

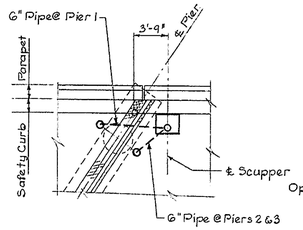


PLAN OF TYPICAL GUTTER
2 REQ'D. EA. ABUTMENT

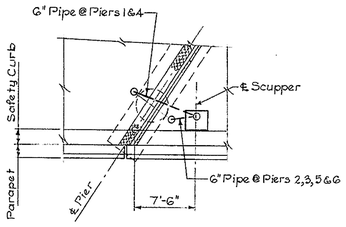
MARK	NO.	SIZE	LENGTH
GU401	1,096	#4	3'-10"
GU402	40	#4	30'-0"
GU403	40	#4	31'-0"
GU404	40	#4	37'-0"
GU405	50	#4	34'-6"



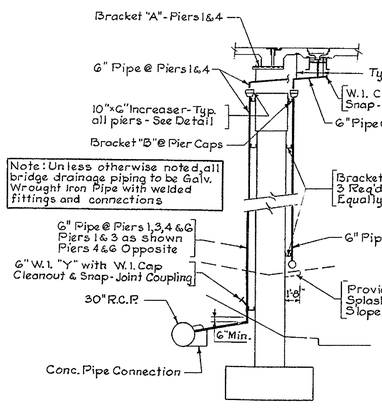
SCUPPER SUPPORT DETAIL
Scale: 1½"=1'-0"



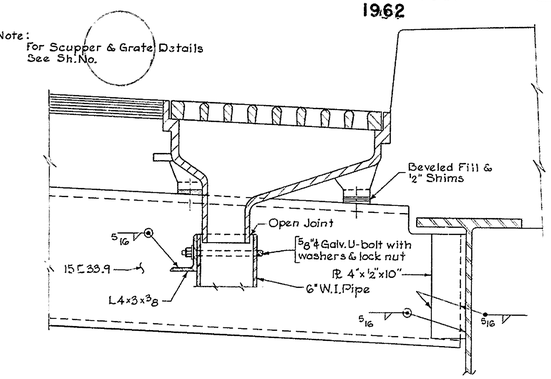
PLAN AT PIERS 1, 2 & 3
NORTH SIDE
Scale: 1/8"=1'-0"



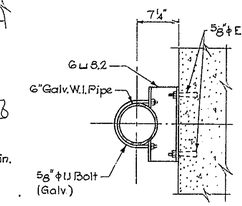
PLAN AT PIERS 1 THRU 6
SOUTH SIDE
Scale: 1/8"=1'-0"



TYPICAL SECTION AT PIERS
Scale: 1/8"=1'-0"

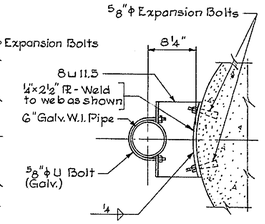


SECTION "B-B"
Scale: 1½"=1'-0"

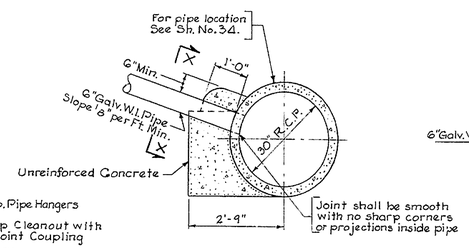


BRACKET "A" &
INCREASER DETAIL
Scale: ½"=1'-0"

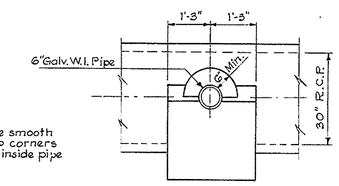
BRACKET "B"
Scale: 1"=1'-0"



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

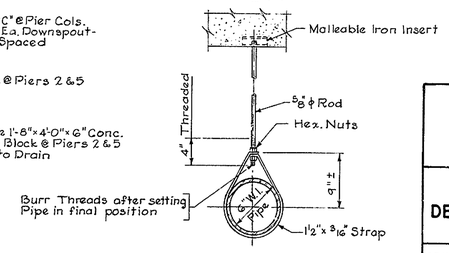


PIPE CONNECTION DETAIL
Scale: ½"=1'-0"



Note: (1) Pipe shall be braced rigidly in place before concreting collar connection.
(2) The surfaces of pipe against which unreinforced concrete is placed shall be cleaned and thoroughly wet immediately before concrete is placed.

VIEW X-X
Scale: ½"=1'-0"



TYPICAL PIPE HANGER
Scale: 1"=1'-0"

DELAWARE STATE HIGHWAY DEPARTMENT

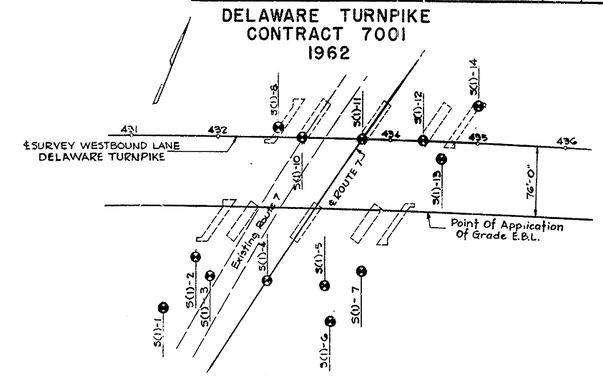
DELAWARE TURNPIKE

OVERPASS AT ROUTE 7
DECK REINFORCING DETAILS E.B.L. AND DRAINAGE DETAILS

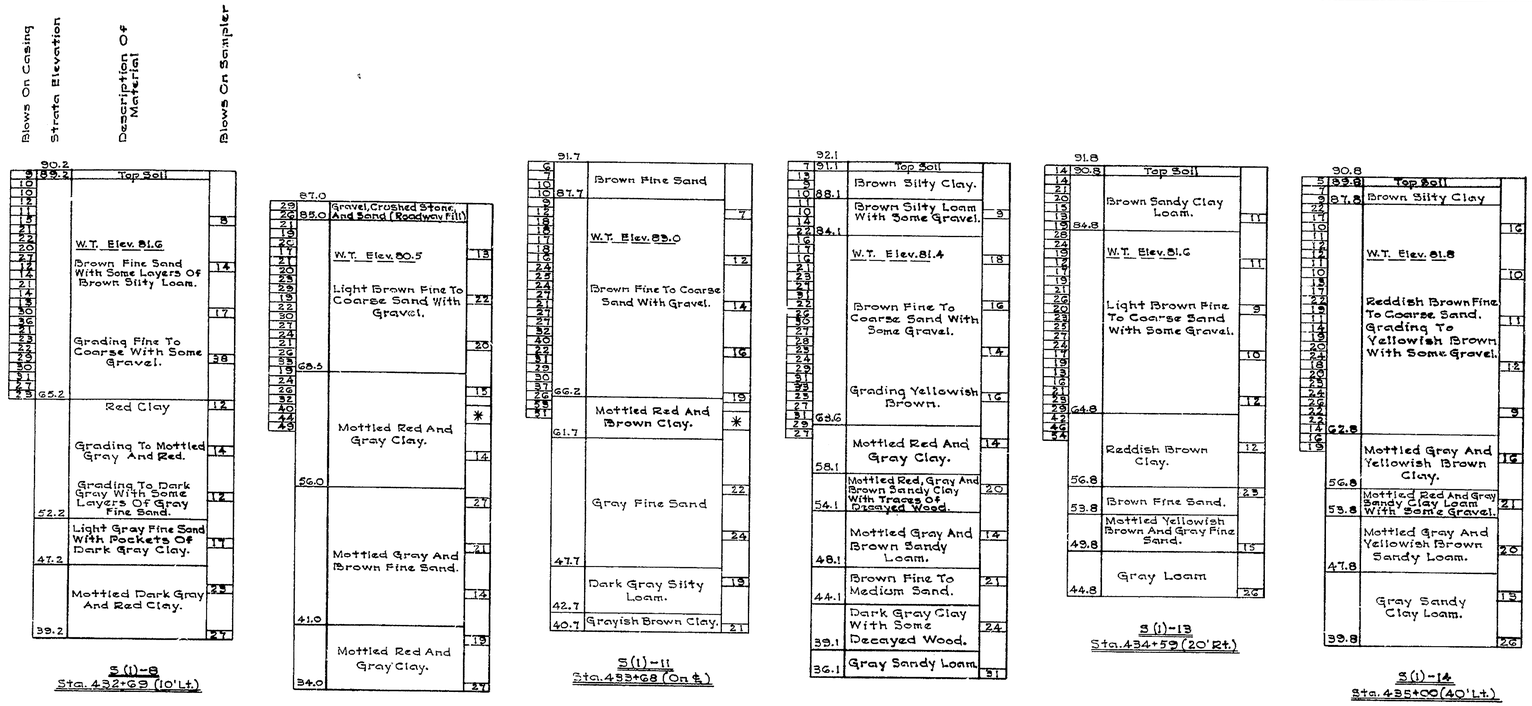
DRAWN J.K.J.	SCALE: AS NOTED	CONTRACT 7001
TRACED		
CHECKED E.P.R.		
CHARGE OF H.B.H.		SHEET 137 OF

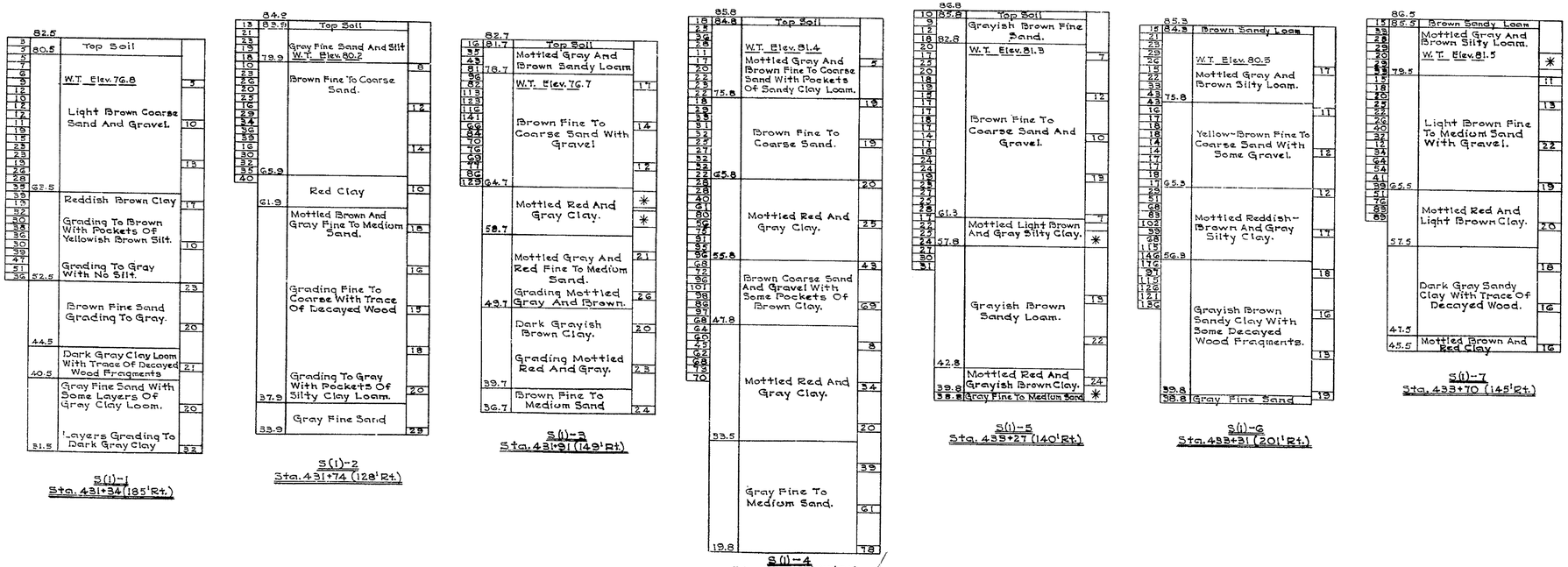
COUNTY	CONTRACT	F.R.A. DIV. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
		2	DEL.			138	170

DELAWARE TURNPIKE
CONTRACT 7001
1962



BORING PLAN
Scale: 1" = 80'





NOTES

1. Borings Are Numbered And Locations Indicated Thus: ⊕
2. Log Of Borings Indicates The Number Of Blows Required To Drive A 2½" I.D. Casing One Foot Using A 300 lb. Weight Falling 24 Inches.
3. Log Of Borings Also Indicates The Number Of Blows Required To Drive A 1⅜" I.D. Sampler Spoon One Foot Using A 140 lb. Weight Falling 30 Inches.
4. Split Spoon Samples Taken At Depths Where Number Of Blows On Sampler Have Been Indicated. Shelby Tube Samples Taken At Depth Locations Indicated Thus: ✱
5. Ground Water Level Or Water Table Indicated Thus: W.T.

TIE POINTS
BENCHMARKS
EARTHWORK
DRAINAGE

DELAWARE
STATE HIGHWAY DEPARTMENT

DELAWARE TURNPIKE
OVERPASS AT ROUTE 7
BORING LOG

D A.J.B.
T A.J.B.
C R.R. & L.M.F.

SCALE: VERTICAL ⅛" = 1'-0"

CONTRACT 7001

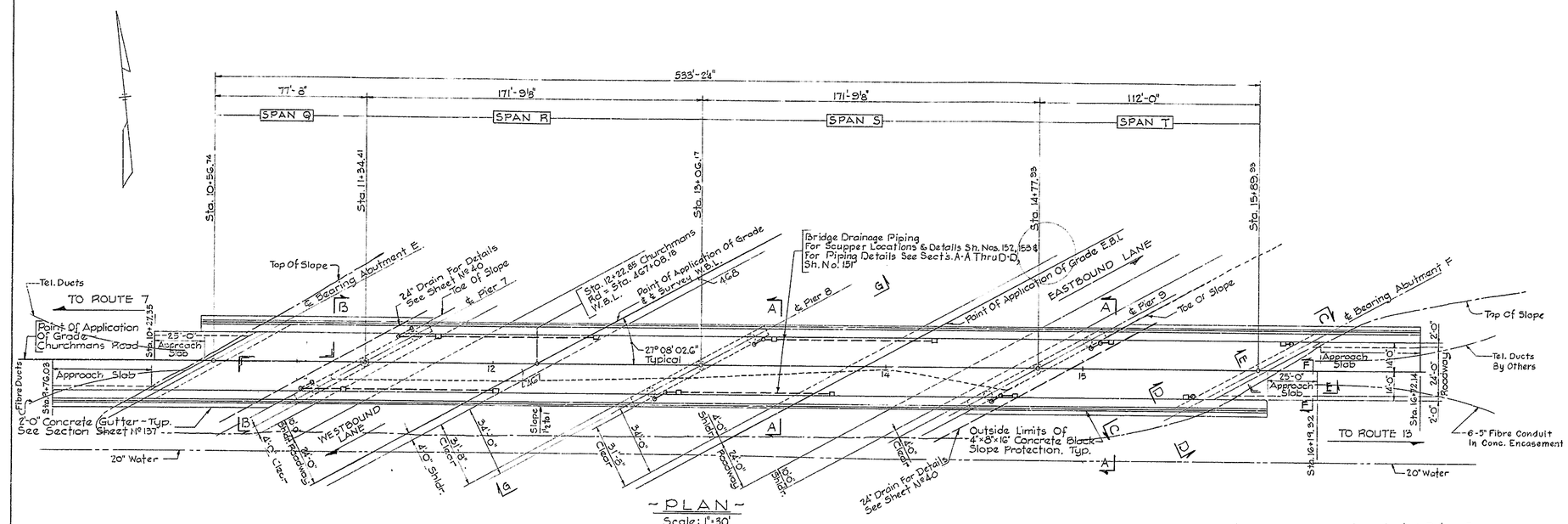
SHEET 138 OF

DELAWARE TURNPIKE
CONTRACT 7001
1962

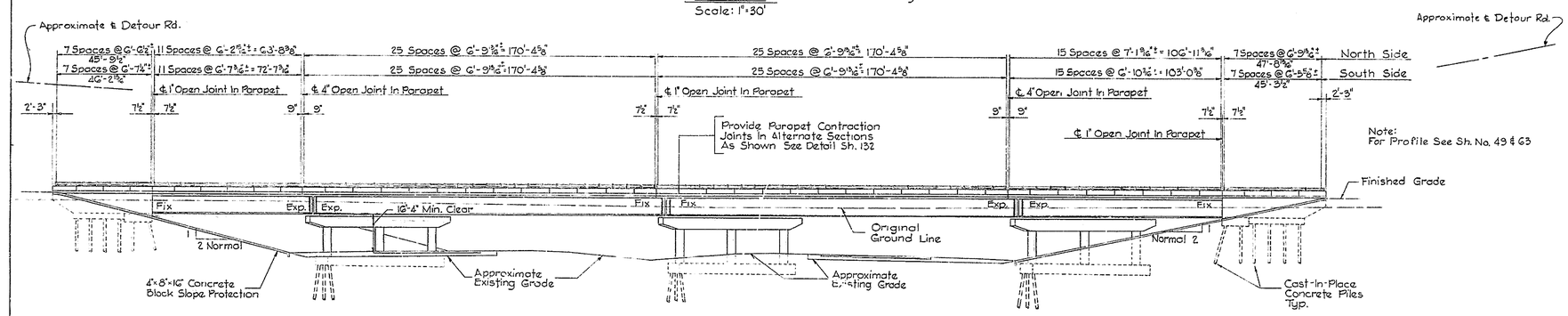
SHEET NO.	TOTAL SHEETS
139	170

ESTIMATED QUANTITIES

ITEM NO.	ITEM	UNIT	QUANTITY
4	Excavation For Structures	C.Y.	1,710
11	Hot-Mix Asphaltic Concrete	Ton	305
11	RC-1 Asphalt For Tack Coat	Gal	200
	Coal Tar Epoxy Undurseal	S.Y.	2,000
18	Portland Cement Concrete Masonry - Footings	C.Y.	710
18	Portland Cement Concrete Masonry - Subsructure	C.Y	530
18	Portland Cement Concrete Masonry - Superstructure	C.Y	890
18	Portland Cement Concrete Masonry - Approach Slabs	C.Y.	145
19	Superficial Waterproofing	S.Y.	330
	Epoxy Protective Coating For Concrete	S.F.	1,820
20	Bar Reinforcement	Lb.	342,400
22	Structural Steel - Welded Girder Spans (Approx. 1,484,000 Lbs.)	L.S.	Lump Sum
35A	Cast-In-Place Concrete Piles	L.F.	7,800
35B	Steel Shell Test Piles	L.F	170
	Slope Paving	S.Y.	750
	Aluminum Bridge Railing - Double Rail	L.F.	1,240
	Bridge Catch Basins	L.S.	Lump Sum
	Bridge Drainage Pipe	L.S.	Lump Sum



~ PLAN ~
Scale: 1"=30'

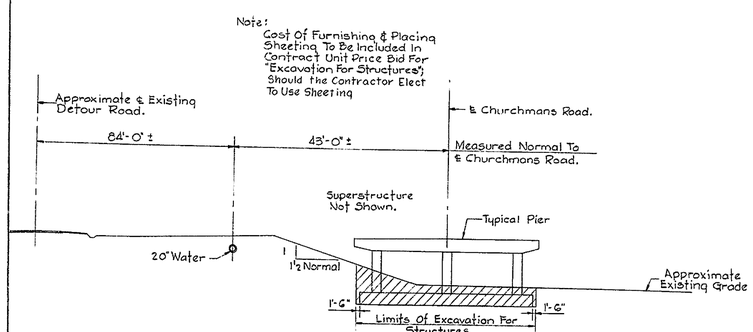


~ ELEVATION ~
Scale: 1"=30'

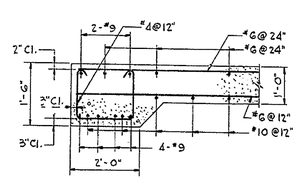
~ GENERAL NOTES ~

Specifications - Delaware State Highway Department Standard Specifications Dated July 1, 1960 For Materials And Construction. A.A.S.H.O. Standard Specifications For Highway Bridges Dated 1957, For Design.
Loading - H 20-S16-44.
Structural Steel - See Sheet No. 147
Datum - B.M. #6 - Nail In Root Of 24" Gum, 325' ± Lt. Sta. 475+00. Elev. 69.38.

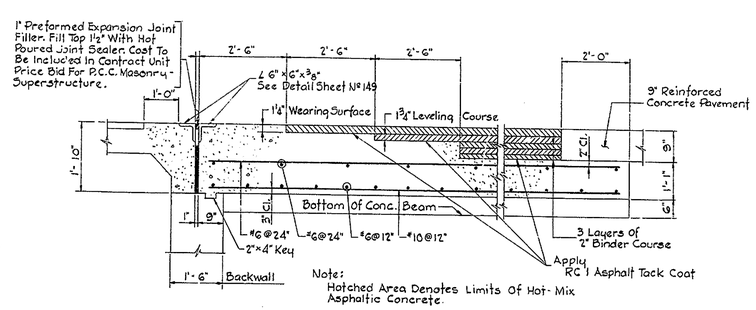
For Additional Notes, See Sheet No. 121 (Except "Construction Loading").



SECTION "G-G"
Scale: 1"=30'



SECTION "F-F"
Scale: ½"=1'-0"



SECTION "E-E"
Scale: ½"=1'-0"

DELAWARE STATE HIGHWAY DEPARTMENT

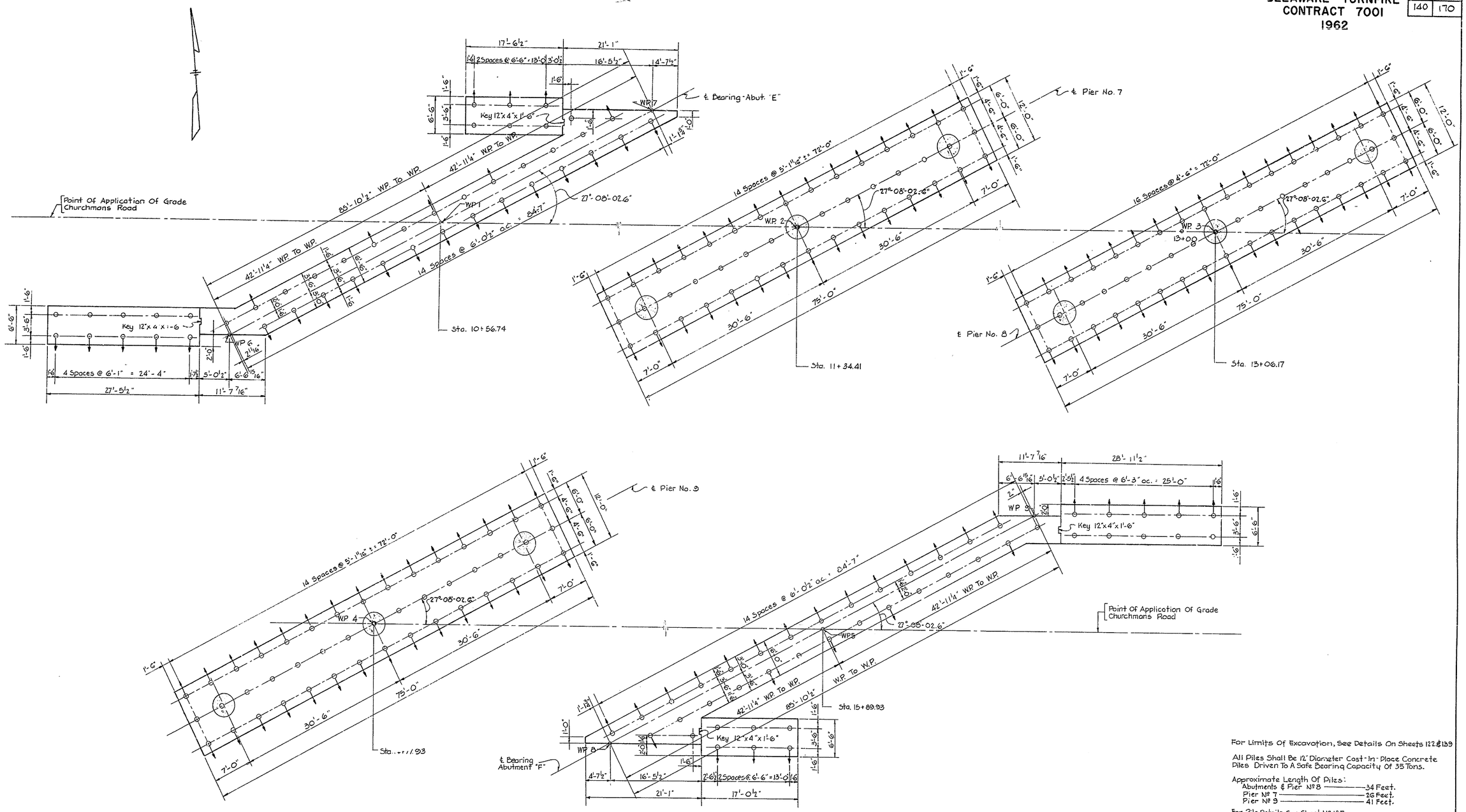
DELAWARE TURNPIKE

UNDERPASS AT CHURCHMANS ROAD
PLAN AND ELEVATION

DRAWN J.M.S.	SCALE: 1" = 30'	CONTRACT
TRACED J.M.S.		7001
CHECKED H.B.H.		
CHARGE OF H.B.H.		SHEET 139 OF

DELAWARE TURNPIKE
CONTRACT 7001
1962

SHEET NO.	TOTAL SHEETS
140	170



For Limits Of Excavation, See Details On Sheets 122 & 139

All Piles Shall Be 12" Diameter Cast-In-Place Concrete Piles Driven To A Safe Bearing Capacity Of 35 Tons.

Approximate Length Of Piles:
Abutments & Pier Nº 8 ——— 34 Feet.
Pier Nº 7 ——— 26 Feet.
Pier Nº 9 ——— 41 Feet.

For Pile Details See Sheet Nº 137

Pile Symbols
○ Indicates Plumb Pile
○→ Indicates 3:12 Batter Piles & Direction Of Batter.

DELAWARE STATE HIGHWAY DEPARTMENT

DELAWARE TURNPIKE

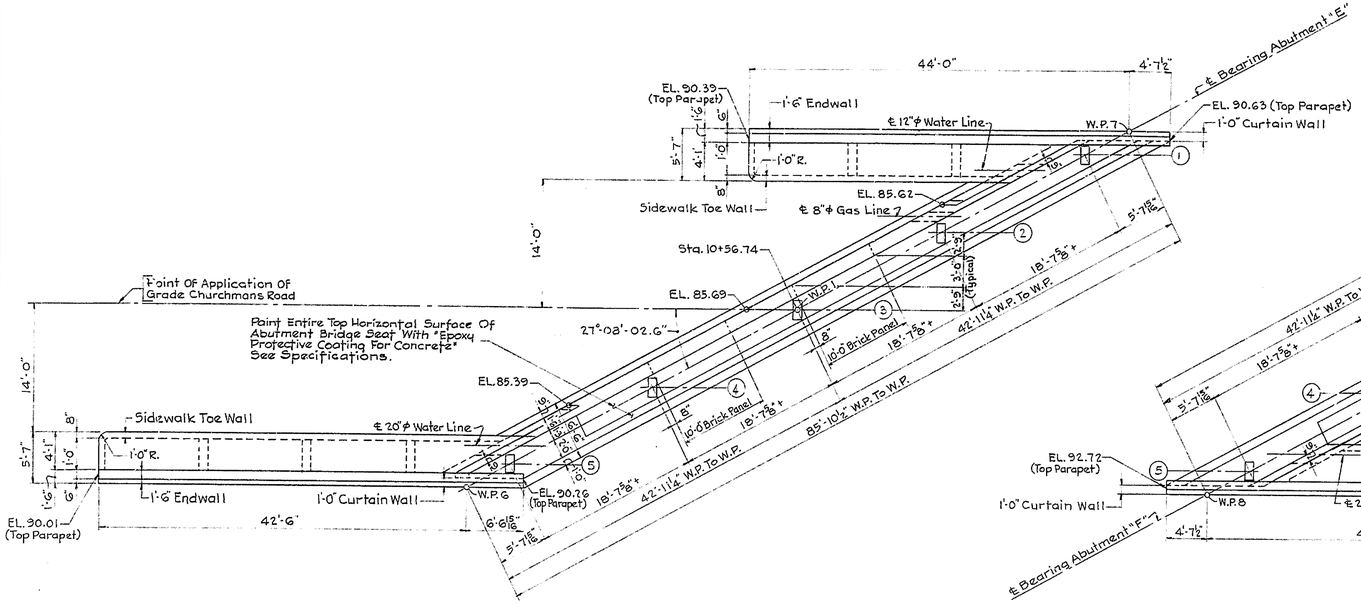
UNDERPASS AT CHURCHMANS ROAD

FOUNDATION PLAN

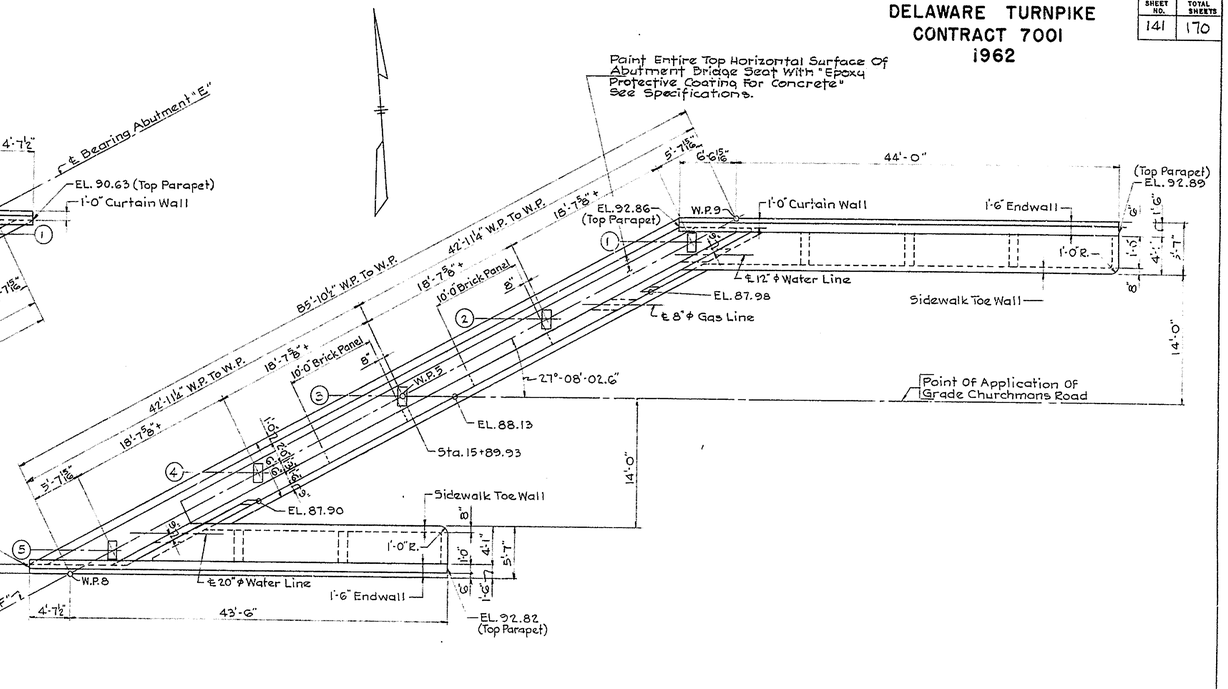
DRAWN J.F.F	SCALE: 1/8" = 1'-0"	CONTRACT
TRACED		7001
CHECKED H.B.H.		
CHARGE OF H.B.H		SHEET 140 OF

DELAWARE TURNPIKE
CONTRACT 7001
1962

SHEET NO.	TOTAL SHEETS
141	170

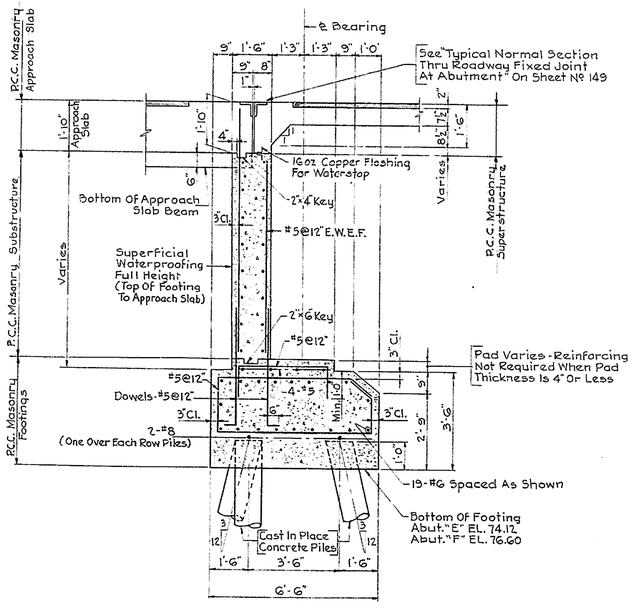


PLAN-ABUTMENT "E"
Scale: ⅛"=1'-0"

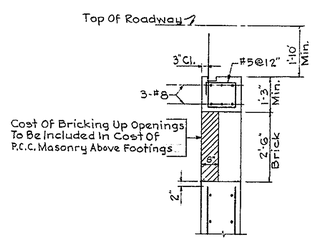


PLAN-ABUTMENT "F"
Scale: ⅛"=1'-0"

NOTES:
1-Girders ① Thru ⑤ To Be Parallel.
2-Elevations Given Are To Top Of Backwall Or To Top Of Endwall Parapet.



TYPICAL SECTION THRU ABUTMENTS
Scale: ⅜"=1'-0"



TYPICAL DETAIL THRU BACKWALL BRICK PANEL
Scale: ⅜"=1'-0"
For Details Not Shown See Typical Section Thru Abutment

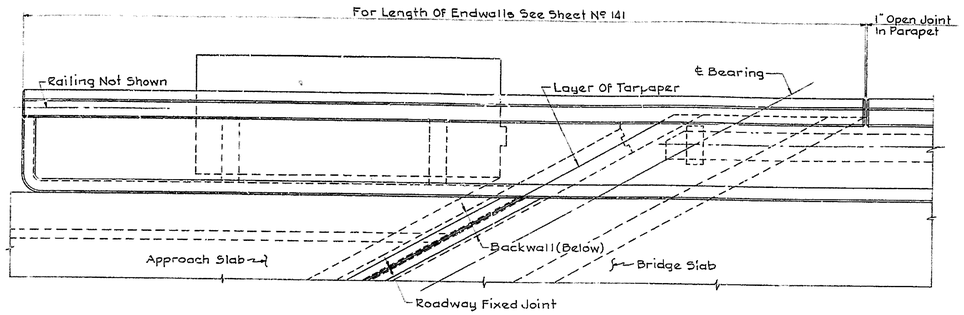
MASONRY PLATE ELEVATIONS		
STRINGER Nº	ABUTMENT "E"	ABUTMENT "F"
1	77.95	80.22
2	78.00	80.33
3	78.05	80.44
4	77.84	80.27
5	77.62	80.10

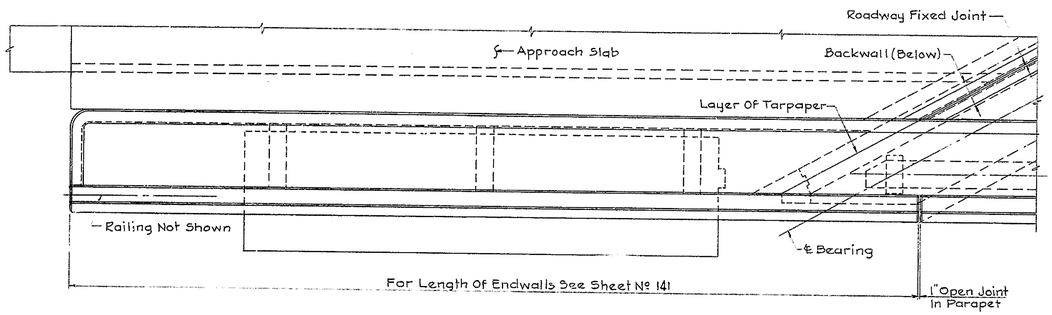
DELAWARE STATE HIGHWAY DEPARTMENT

DELAWARE TURNPIKE

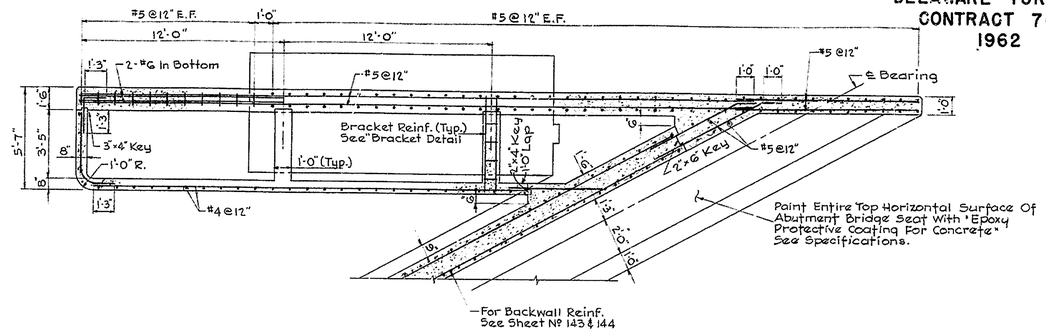
UNDERPASS AT CHURCHMANS ROAD
ABUTMENTS "E" & "F" - PLAN

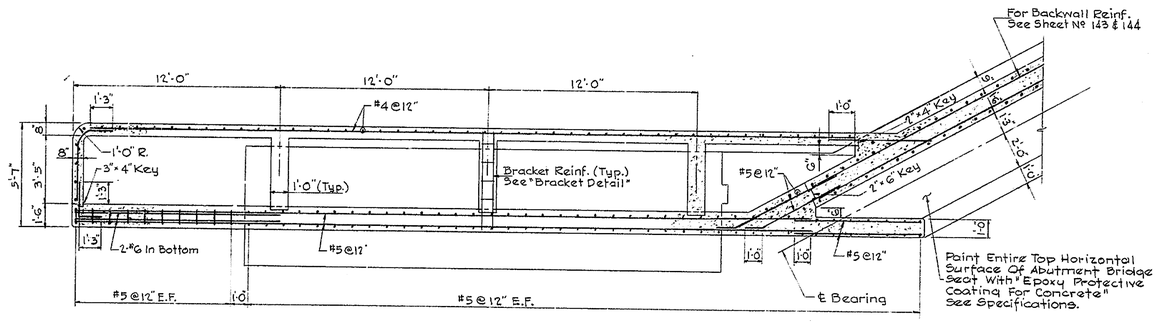
DRAWN W.F.H.	SCALE: AS NOTED	CONTRACT
TRACED		7001
CHECKED J.G.S.		
CHARGE OF H.D.H.		SHEET 141 OF



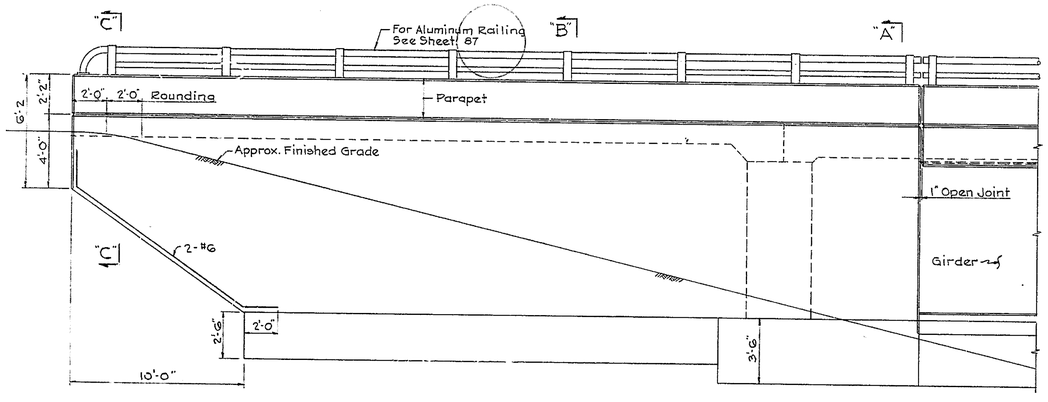


PLAN OF ENDWALLS-ABUTMENT "E"
ABUTMENT "F" OPPOSITE HAND
Scale: 1/4" = 1'-0"

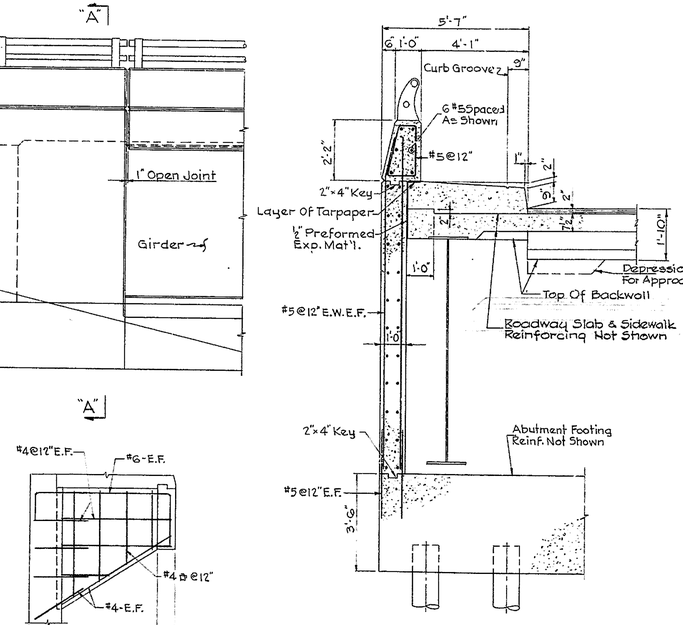




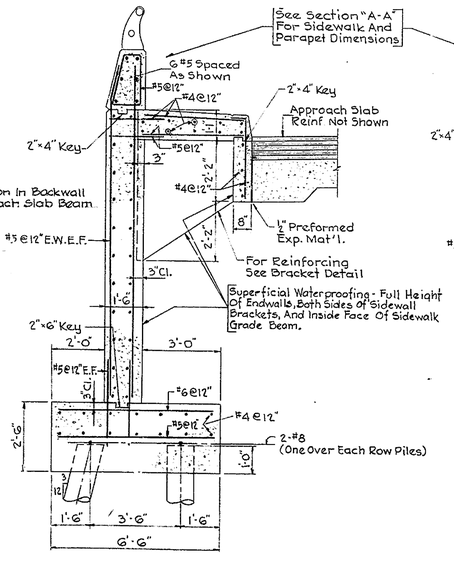
PLAN OF ENDWALLS-ABUTMENT "E" (BELOW SIDEWALK)
ABUTMENT "F" OPPOSITE HAND
Scale: 1/4" = 1'-0"



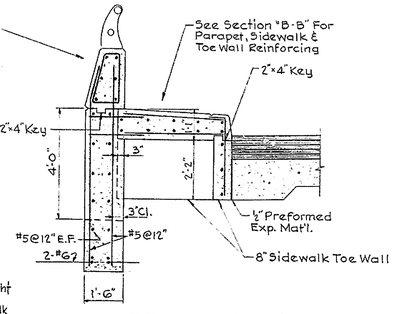
TYPICAL ENDWALL ELEVATION
Scale: 1/4" = 1'-0"



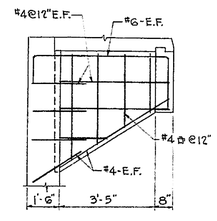
SECTION "A-A"
Scale: 3/8" = 1'-0"



SECTION "B-B"
Scale: 3/8" = 1'-0"



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



BRACKET DETAIL
Scale: 3/8" = 1'-0"

DELAWARE STATE HIGHWAY DEPARTMENT

DELAWARE TURNPIKE

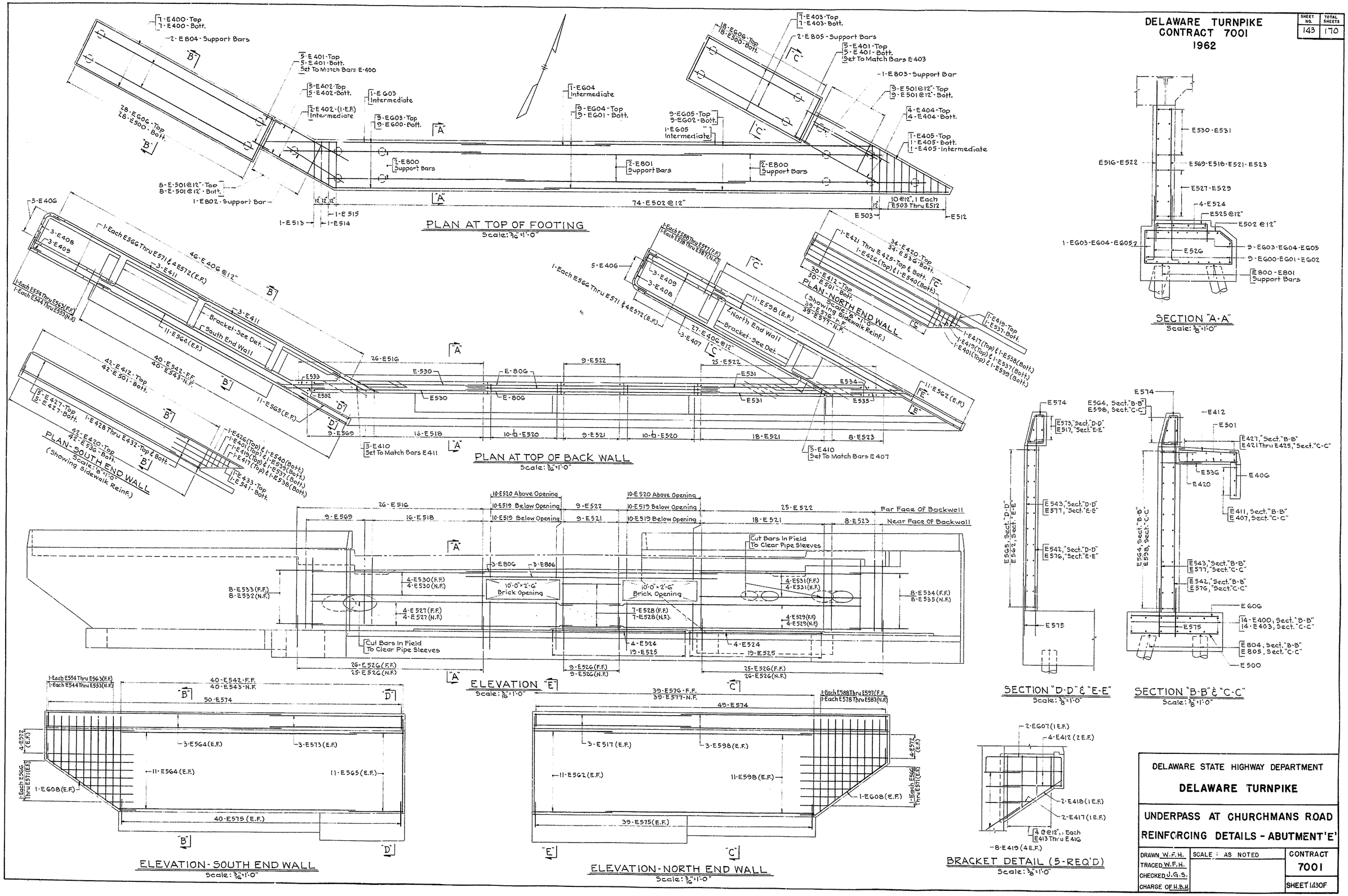
UNDERPASS AT CHURCHMANS ROAD

ABUTMENTS "E" & "F" - DETAILS

DRAWN W.F.H	SCALE : AS NOTED	CONTRACT
TRACED		7001
CHECKED J.G.S		
CHARGE OF H.B.H		SHEET 142 OF

DELAWARE TURNPIKE
CONTRACT 7001
1962

SHEET NO.	TOTAL SHEETS
143	170



DELAWARE STATE HIGHWAY DEPARTMENT

DELAWARE TURNPIKE

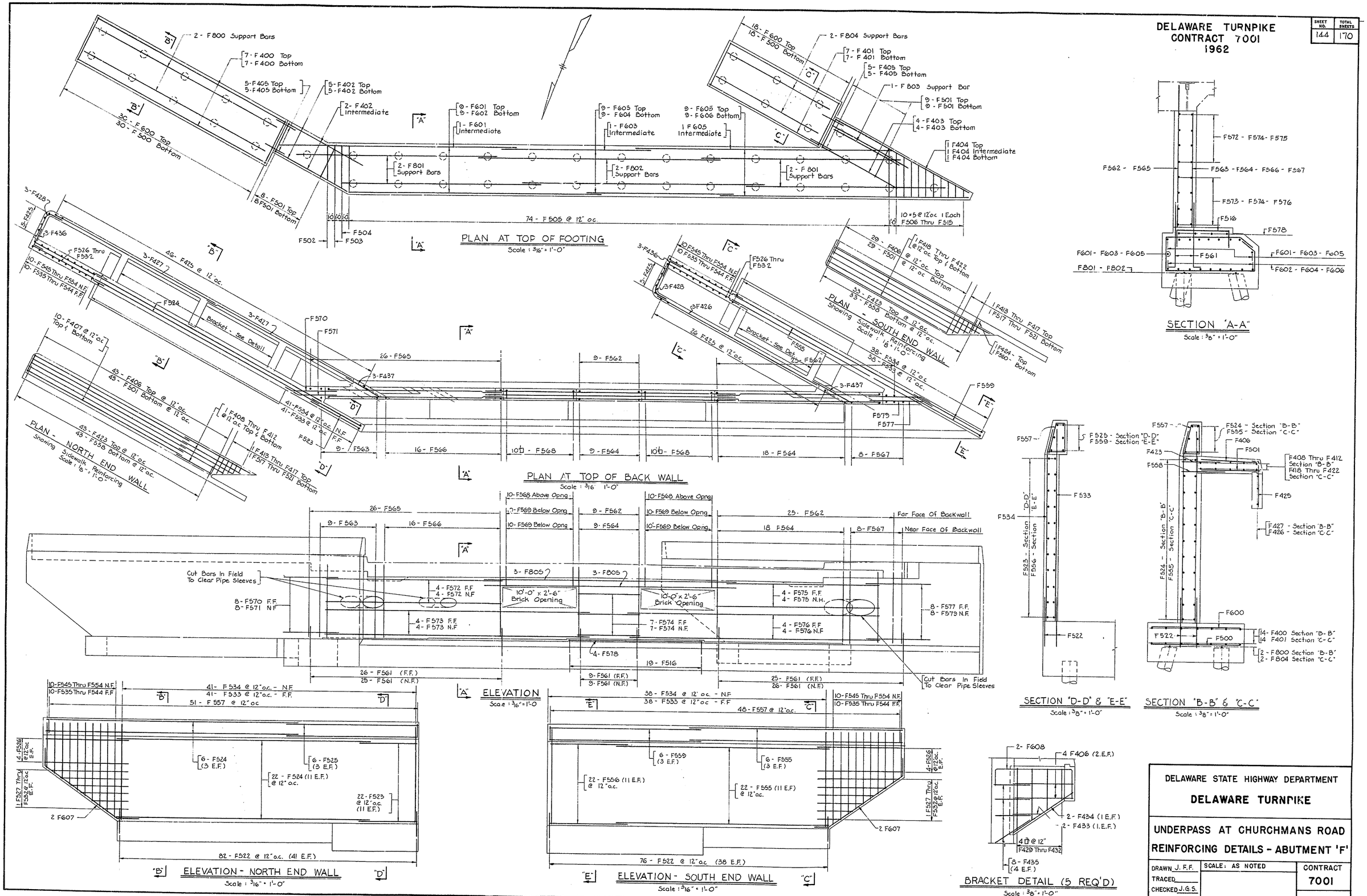
UNDERPASS AT CHURCHMANS ROAD

REINFORCING DETAILS - ABUTMENT 'E'

DRAWN W.F.H.	SCALE : AS NOTED	CONTRACT 7001
TRACED W.F.H.		
CHECKED J.G.S.		
CHARGE OF H.B.H.		SHEET 143 OF

DELAWARE TURNPIKE
CONTRACT 7001
1962

SHEET NO.	TOTAL SHEETS
144	170



DELAWARE STATE HIGHWAY DEPARTMENT

DELAWARE TURNPIKE

UNDERPASS AT CHURCHMANS ROAD

REINFORCING DETAILS - ABUTMENT 'F'

DRAWN J. F. F.	SCALE: AS NOTED	CONTRACT
TRACED		7001
CHECKED J. G. S.		
CHARGE OF H. B. H.		SHEET 144 OF

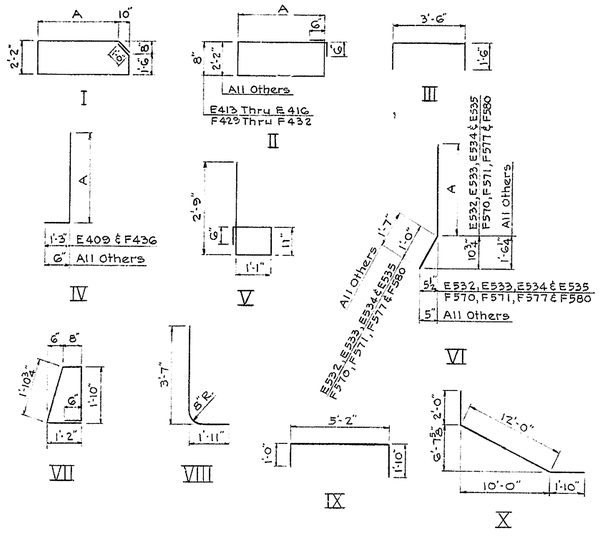
BAR SCHEDULE - ABUTMENT "E"

MARK	Nº	SIZE	TYPE	LENGTH	A	REMARKS
E400	14	#4	Str.	26'-11"		
E401	22			3'-0"		
E402	12			11'-4"		
E403	14			17'-0"		
E404	8			11'-6"		
E405	3		Str.	20'-7"		
E406	83		IV	3'-3"	2'-3"	
E407	3		Str.	25'-0"		
E408	9		VIII	5'-3"		
E409	6		IX	3'-11"	2'-8"	
E410	6		Str.	6'-0"		
E411	6		Str.	22'-6"		
E412	92		Str.	4'-0"		
E413	5		II	9'-11"	3'-9½"	
E414	5		II	8'-8"	3'-2"	
E415	5		II	7'-5"	2'-6½"	
E416	5		II	6'-2"	1'-11"	
E417	12		Str.	1'-10"		
E418	10			4'-9"		
E419	43			2'-5"		
E420	76			2'-3"		
E421	2			36'-5"		
E422	2			34'-5"		
E423	2			32'-5"		
E424	2			30'-5"		
E425	2			28'-3"		
E426	2			3'-7"		
E427	10			35'-0"		
E428	2			14'-5"		
E429	2			12'-5"		
E430	2			10'-5"		
E431	2			8'-5"		
E432	2			7'-0"		
E433	1	#4	Str.	1'-3"		
E500	46	#5	Str.	6'-0"		
E501	106		Str.	4'-0"		
E502	74		I	16'-10"	5'-2"	
E503	1			15'-10"	4'-8"	
E504	1			14'-10"	4'-2"	
E505	1			13'-10"	3'-8"	
E506	1			12'-10"	3'-2"	
E507	1			11'-10"	2'-8"	
E508	1			10'-10"	2'-2"	
E509	1			9'-10"	1'-8"	
E510	1			8'-10"	1'-2"	
E511	1		I	7'-10"	0'-8"	
E512	1		II	7'-2"	0'-11"	
E513	1		II	14'-4"	4'-6"	
E514	1		II	15'-4"	5'-0"	
E515	1		II	16'-4"	5'-6"	
E516	26		Str.	9'-4"		
E517	6		Str.	21'-7"		
E518	16		Str.	7'-6"		
E519	40		IV	6'-9"	6'-3"	
E520	20		V	6'-4"		
E521	27		Str.	7'-4"		
E522	34		Str.	9'-2"		
E523	8		Str.	8'-1"		
E524	8		Str.	18'-3"		
E525	38		III	6'-6"		
E526	120		IV	4'-10"	4'-4"	
E527	8		Str.	36'-9"		
E528	14			8'-2"		
E529	8			34'-2"		
E530	8			23'-8"		
E531	8		Str.	22'-1"		
E532	8		VI	6'-0"	5'-0"	
E533	8		VI	8'-0"	7'-0"	
E534	8		VI	7'-3"	6'-3"	
E535	8		VI	9'-3"	8'-3"	
E536	76		Str.	2'-9"		
E537	3			2'-5"		
E538	2			1'-10"		
E539	2			3'-0"		
E540	2			3'-7"		
E541	1			1'-3"		
E542	40		Str.	12'-1"		
E543	40		VI	12'-1"	10'-6"	
E544	1			5'-9"	4'-2"	
E545	1			6'-4"	4'-9"	
E546	1			6'-11"	5'-4"	
E547	1			7'-7"	6'-0"	
E548	1			8'-3"	6'-8"	
E549	1			8'-11"	7'-4"	
E550	1			9'-7"	8'-0"	
E551	1			10'-2"	8'-7"	
E552	1			10'-9"	9'-2"	
E553	1		VI	11'-5"	9'-10"	
E554	1		Str.	5'-9"		
E555	1			6'-4"		
E556	1			6'-11"		
E557	1			7'-7"		
E558	1			8'-3"		
E559	1			8'-11"		
E560	1			9'-7"		
E561	1			10'-2"		
E562	23			10'-9"		
E563	1	#5	Str.	11'-5"		
E564	28	#5	Str.	32'-0"		
E565	22			8'-0"		
E566	4			3'-9"		
E567	4			5'-3"		
E568	4			6'-9"		
E569	13			8'-3"		
E570	4			9'-9"		
E571	4			11'-3"		
E572	16			11'-10"		
E573	6		Str.	16'-4"		
E574	39		VII	6'-1"		
E575	158		Str.	3'-2"		
E576	39		Str.	12'-5"		
E577	39		VI	12'-5"	10'-10"	
E578	1			6'-1"	4'-6"	
E579	1			6'-8"	5'-1"	
E580	1			7'-3"	5'-8"	
E581	1			7'-11"	6'-4"	
E582	1			8'-7"	7'-0"	
E583	1			9'-3"	7'-8"	
E584	1			9'-11"	8'-4"	
E585	1			10'-6"	8'-11"	
E586	1			11'-1"	9'-6"	
E587	1		VI	11'-9"	10'-2"	
E588	1		Str.	6'-1"		
E589	1			6'-8"		
E590	1			7'-3"		
E591	1			7'-11"		
E592	1			8'-7"		
E593	1			9'-3"		
E594	1			9'-11"		
E595	1			10'-6"		
E596	1			11'-1"		
E597	1			11'-9"		
E598	28	#5	Str.	28'-3"		
E600	9	#6	Str.	31'-0"		
E601	9			20'-6"		
E602	9			37'-9"		
E603	10			28'-0"		
E604	10			32'-6"		
E605	10			31'-9"		
E606	46		Str.	6'-0"		
E607	10		IX	8'-0"		
E608	4	#6	X	15'-11"		
E800	4	#8	Str.	26'-9"		
E801	2			33'-0"		
E802	1			9'-0"		
E803	1			9'-9"		
E804	2			26'-4"		
E805	2			15'-0"		
E806	6	#8	Str.	34'-2"		

BAR SCHEDULE - ABUTMENT "F"

MARK	Nº	SIZE	TYPE	LENGTH	A	REMARKS
F400	14	#4	Str.	26'-6"		
F401	14			10'-6"		
F402	12			11'-0"		
F403	8			11'-6"		
F404	3			20'-7"		
F405	20			3'-0"		
F406	92			4'-0"		
F407	10			35'-0"		
F408	2			13'-0"		
F409	2			13'-3"		
F410	2			12'-0"		
F411	2			9'-3"		
F412	2			8'-0"		
F413	2			3'-6"		
F414	2			3'-0"		
F415	2			2'-6"		
F416	2			2'-0"		
F417	2			1'-6"		
F418	2			35'-6"		
F419	2			33'-6"		
F420	2			31'-6"		
F421	2			29'-6"		
F422	2			27'-6"		
F423	76			2'-3"		
F424	1		Str.	2'-8"		
F425	81		IV	3'-3	2'-9"	
F426	3		Str.	24'-6"		
F427	6		Str.	23'-3"		
F428	6		VII	9'-6"		
F429	5		II	10'-0"	3'-10"	
F430	5		II	8'-8"	3'-2"	
F431	5		II	7'-6"	2'-7	
F432	5		II	6'-2"	1'-11"	
F433	10		Str.	1'-9"		
F434	10		Str.	4'-9"		
F435	40		Str.	2'-5"		
F436	6		V	3'-6"	2'-3"	
F437	6	#4	Str.	6'-6"		
F500	48	#5	Str.	6'-0"		
F501	106		Str.	4'-0"		
F502	1		II	14'-4"	4'-6"	
F503	1		II	15'-4"	5'-0"	
F504	1		II	16'-4"	5'-6"	
F505	74		I	16'-10"	5'-2"	
F506	1			15'-10"	4'-8"	
F507	1			14'-10"	4'-2"	
F508	1			13'-10"	3'-8"	
F509	1			12'-10"	3'-2"	
F510	1			11'-10"	2'-8"	
F511	1			10'-10"	2'-2"	
F512	1			9'-10"	1'-8"	
F513	1			8'-10"	1'-2"	
F514	1		I	7'-10"	0'-8"	
F515	1		I	6'-6"	0'-0"	
F516	19		III	6'-6"		
F517	2		Str.	3'-6"		
F518	2			3'-0"		
F519	2			2'-6"		
F520	2			2'-0"		
F521	2			1'-6"		
F522	158			3'-2"		
F523	22			7'-9"		
F524	28			34'-0"		
F525	6			17'-9"		
F526	16			11'-3"		
F527	4			10'-3"		
F528	4			9'-0"		
F529	4			7'-6"		
F530	4			6'-3"		
F531	4			4'-9"		
F532	4			3'-3"		
F533	79		Str.	12'-0"		
F534	79		VI	12'-1"	10'-6"	
F535	2		Str.	11'-9"		
F536	2			11'-0"		
F537	2			10'-6"		
F538	2			9'-9"		
F539	2			9'-0"		
F540	2			8'-6"		
F541	2			7'-9"		
F542	2			7'-0"		
F543	2			6'-6"		
F544	2		Str.	5'-9"		
F545	2		VI	11'-10"	10'-3"	
F546	2			10'-10"	9'-3"	
F547	2			10'-6"	8'-11"	
F548	2			9'-10"	8'-3"	
F549	2			9'-1"	7'-6"	
F550	2			8'-7"	7'-0"	
F551	2			7'-10"	6'-3"	
F552	2			7'-1"	5'-6"	
F553	2			6'-7"	5'-0"	
F554	2		VI	5'-10"	4'-3"	
F555	28		Str.	28'-9"		
F556	22		Str.	10'-8"		
F557	99		VII	6'-1"		
F558	72		Str.	2'-7"		
F559	6		Str.	20'-6"		
F560	1	#5	Str.	2'-8"		
F561	120	#5	IV	4'-10"	4'-4"	
F562	34		Str.	9'-2"		
F563	9			8'-3"		
F564	27			7'-4"		
F565	26			9'-4"		
F566	16			7'-6"		
F567	8		Str.	8'-1"		
F568	20		V	6'-5"		
F569	40		V	6'-9"	6'-3"	
F570	8		VI	8'-0"	7'-0"	
F571	8		VI	6'-0"	5'-0"	
F572	8		Str.	23'-8"		
F573	8			35'-9"		
F574	14			8'-2"		
F575	8			22'-1"		
F576	8		Str.	34'-2"		
F577	8		VI	7'-3"	6'-3"	
F578	4		Str.	18'-0"		
F579	8	#5	VI	9'-3"	8'-3"	
F600	48	#6	Str.	6'-0"		
F601	10			34'-0"		
F602	9			31'-0"		
F603	10			20'-0"		
F604	9			32'-0"		
F605	10			34'-6"		
F606	9		Str.	25'-6"		
F607	4		X	15'-10"		
F608	10	#6	IX	8'-0"		
F800	2	#8	Str.	28'-6"		
F801	4			27'-0"		
F802	2			32'-6"		
F803	1			10'-0"		
F804	2			16'-6"		
F805	6	#8	Str.	34'-2"		

BAR TYPES

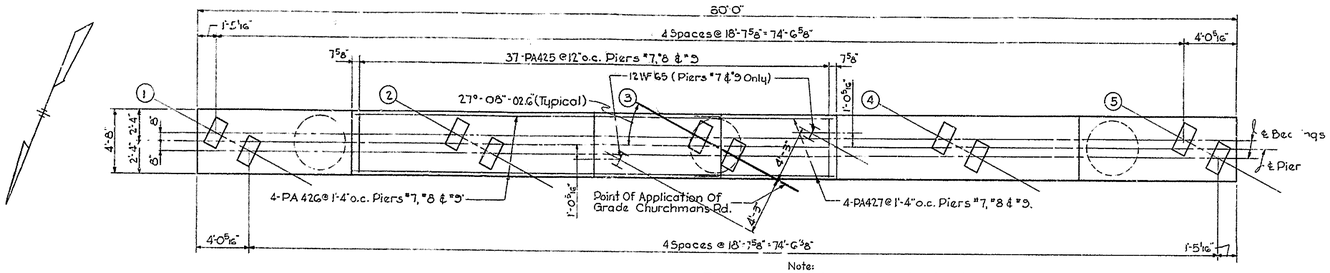


DELAWARE STATE HIGHWAY DEPARTMENT

DELAWARE TURNPIKE

UNDERPASS AT CHURCHMANS ROAD
REINFORCING SCHEDULE
ABUTMENTS "E" & "F"

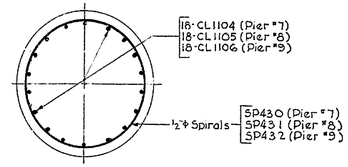
DRAWN W.F.H.	SCALE: NONE	CONTRACT 7001
TRACED W.F.H.		
CHECKED A.H.L.		
CHARGE OF H.&H.		SHEET 145 OF



PLAN

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

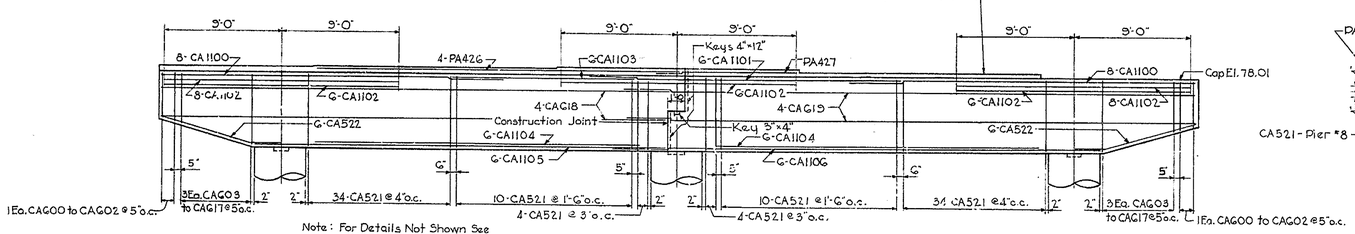
Note:
Drape top Pier Cap Reinf. at Piers 7 & 9 Around Alignment Shoe Similar to Details Shown on Sh. 96.



TYPICAL SECTION THRU COLUMN

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

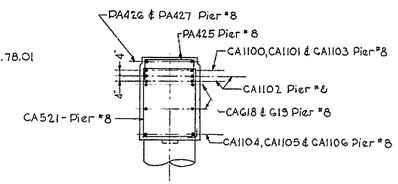
Paint Exposed Top Horizontal Surfaces Of All Pier Caps With "Epoxy Protective Coating For Concrete" See Specifications.



Note: For Details Not Shown See Typical Elevation Below.

PIER CAP - PIER 8

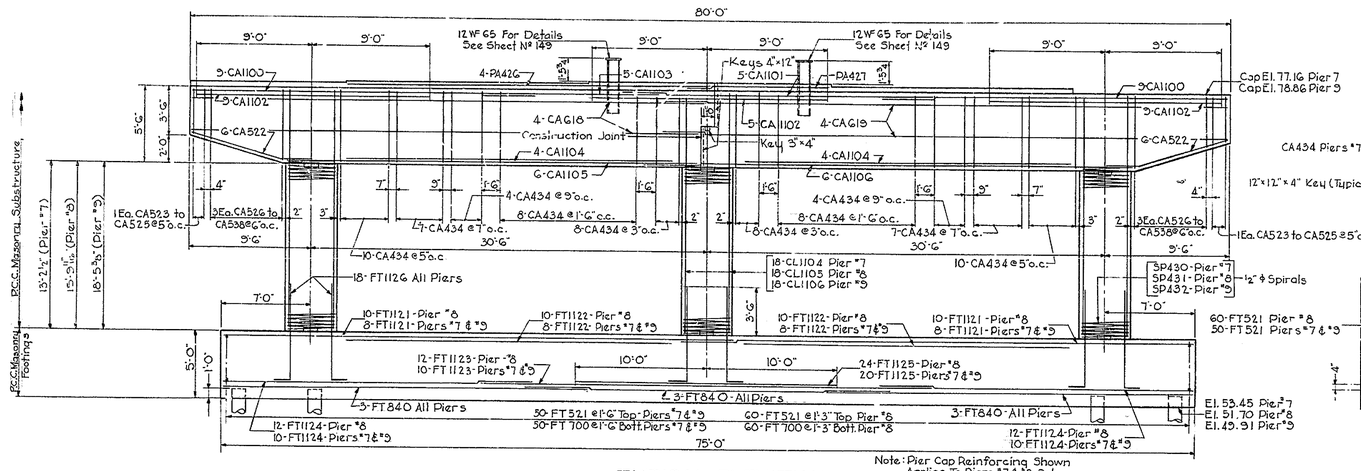
Scale: 3/16" = 1'-0"



TYPICAL SECTION CAP - PIER 8

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

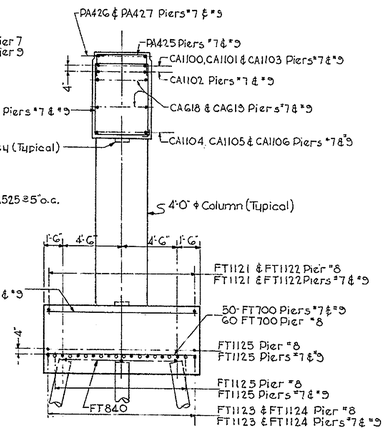
Note: Space Reinf. To Clear Anchor Bolts.



Note: Pier Cap Reinforcing Shown Applies To Piers #7 & #9 Only.

TYPICAL ELEVATION

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



TYPICAL SECTION

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

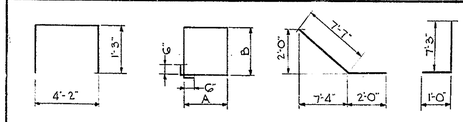
DELAWARE TURNPIKE
1962 - CONTRACT 7001

SHEET NO.	TOTAL SHEETS
146	170

BAR SCHEDULE

MARK	NUMBER	SIZE	TYPE	LENGTH	A	B	REMARKS
PA425	111	#4	I	6'-8"			
PA426	12	#4	Str.	26'-0"			
PA427	12	#4	Str.	10'-6"			
CA434	148	#4	II	20'-0"	4'-4"	5'-2"	
CA521	36	#5	II	20'-0"	4'-4"	5'-2"	
CA522	36	↑	III	9'-7"			
CA523	4		II	16'-11"	4'-4"	3'-2½"	
CA524	4		↑	16'-4"	4'-4"	3'-4	
CA525	4			16'-7"	4'-4"	3'-5½"	
CA526	12			11'-6"	1'-8"	3'-7"	
CA527	12			11'-9"	↑	3'-8½"	
CA528	12			12'-0"		3'-10"	
CA529	12			12'-3"		3'-11½"	
CA530	12			12'-7"		4'-1½"	
CA531	12			12'-10"		4'-3"	
CA532	12			13'-1"		4'-4½"	
CA533	12			13'-4"		4'-6"	
CA534	12			13'-7"		4'-7½"	
CA535	12			13'-11"		4'-9½"	
CA536	12			14'-2"		4'-11"	
CA537	12			14'-5"		5'-0½"	
CA538	12	#5	II	14'-8"	1'-8"	5'-2"	
CAG00	2	#6	II	16'-0"	4'-4"	3'-2"	
CAG01	2			16'-3"	4'-4"	3'-3½"	
CAG02	2			16'-6"	4'-4"	3'-5"	
CAG03	6			11'-4"	1'-8"	3'-6"	
CAG04	6			11'-7"	↑	3'-7½"	
CAG05	6			11'-10"		3'-9"	
CAG06	6			12'-1"		3'-10½"	
CAG07	6			12'-4"		4'-0"	
CAG08	6			12'-6"		4'-1"	
CAG09	6			12'-9"		4'-2½"	
CAG10	6			13'-0"		4'-4"	
CAG11	6			13'-3"		4'-5½"	
CAG12	6			13'-6"		4'-7"	
CAG13	6			13'-8"		4'-8"	
CAG14	6			13'-11"		4'-9½"	
CAG15	6			14'-2"		4'-11"	
CAG16	6		↓	14'-5"		5'-0½"	
CAG17	6		II	14'-8"	1'-8"	5'-2"	
CAG18	12	↑	Str.	38'-6"			
CAG19	12	#6	↑	45'-0"			
CA1100	52	#11		26'-6"			
CA1101	16	↑		24'-0"			
CA1102	80			18'-0"			
CA1103	16			15'-0"			
CA1104	28			25'-0"			Center Bet. Col's.
CA1105	18			31'-6"			
CA1106	18			37'-6"			
CL1104	54			16'-10"			
CL1105	54	↑		19'-5"			
CL1106	54	#11	Str.	22'-1"			
FT521	160	#5	Str.	11'-8"			
FT700	160	#7	↑	11'-8"			
FT1121	52	#11		35'-4"			
FT1122	32	↑		25'-0"			Center Bet. Col's.
FT1123	32			34'-6"			
FT1124	64			24'-0"			
FT1125	64	↓	Str.	20'-0"			
FT1126	162	#11	IV	8'-3"			
FT840	27	#8	Str.	28'-0"			

BAR TYPES



SPIRAL COLUMNS

MK.	SIZE	O.D.	PITCH	LGTH	№
SP430	1/2" ϕ	3'-8"	3"	13'-6"	3
SP431	1/2" ϕ	3'-8"	3"	16'-1"	3
SP432	1/2" ϕ	3'-8"	3"	18'-9"	3

MASONRY PLATE ELEVATIONS

STRINGER №	PIER 7		PIER 8			PIER 9		
	Span Q	Span R	Span R	Span S	Shim	Span S	Span T	Shim
1	77.50	77.50	78.34	78.34	1/8"	79.12	79.12	1/4"
2	77.55	77.55	78.39	78.39	1/8"	79.20	79.20	1/4"
3	77.60	77.60	78.44	78.44	1/8"	79.27	79.27	1/4"
4	77.38	77.38	78.22	78.22	1/8"	79.07	79.07	1/4"
5	77.16	77.16	78.01	78.01	1/8"	78.86	78.86	1/4"

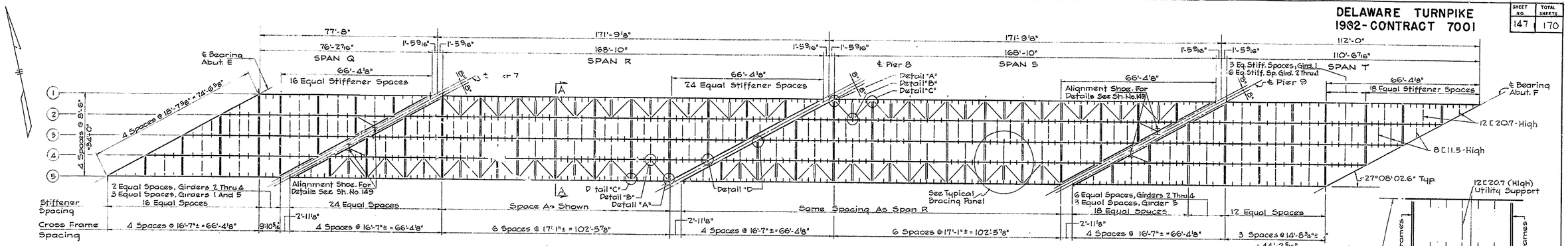
DELAWARE STATE HIGHWAY DEPARTMENT

DELAWARE TURNPIKE

UNDERPASS AT CHURCHMANS ROAD

PIERS 7, 8, & 9

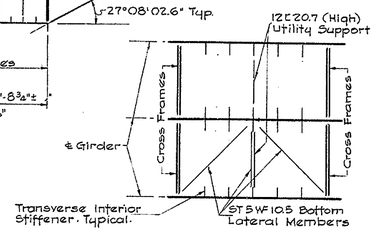
DRAWN J.M.D.	SCALE: AS NOTED	CONTRACT
TRACED		7001
CHECKED E.P.R.		
CHARGE OF H.E.H.		SHEET 146 OF



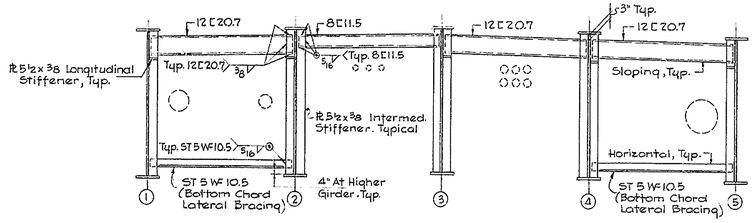
Notes:
1. All Bottom Lateral Diagonal Bracing Members To Be ST 5 WF 10.5.
2. Scupper Support Beams Not Shown See Sheet No. 137 For Size And Spacing.
3. For Scupper Locations, See Sh. No. 152 & 153
4. For Details A Thru D See Sh. No. 148.

FRAMING PLAN

SCALE: 1" = 20'-0"

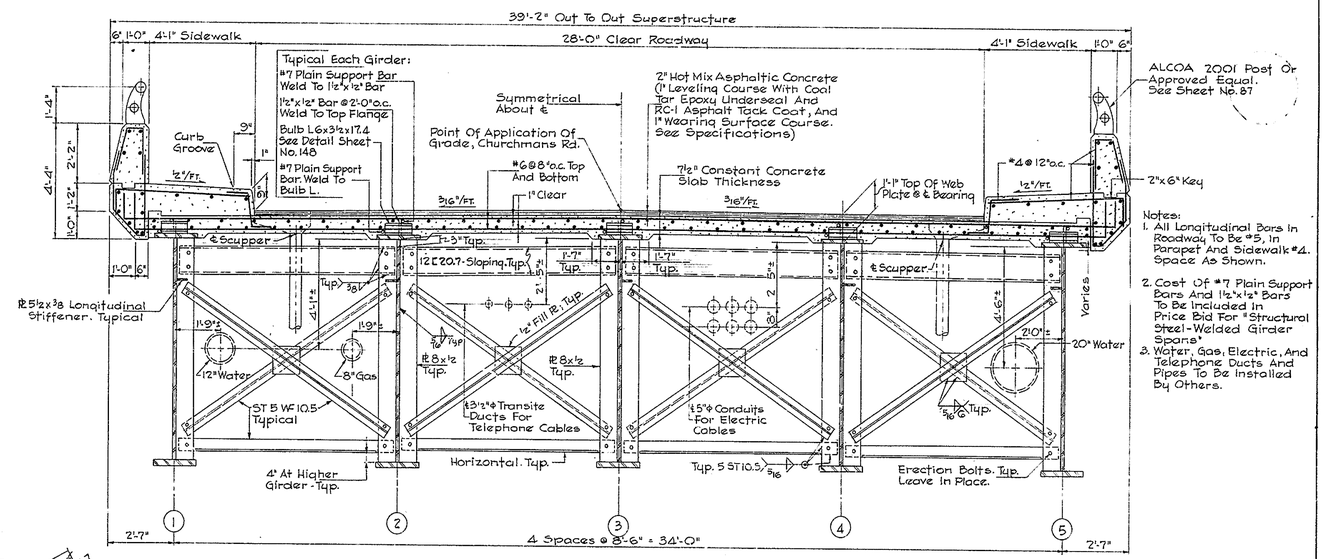


TYPICAL BRACING PANEL



TYPICAL BRACING BETWEEN CROSS FRAMES

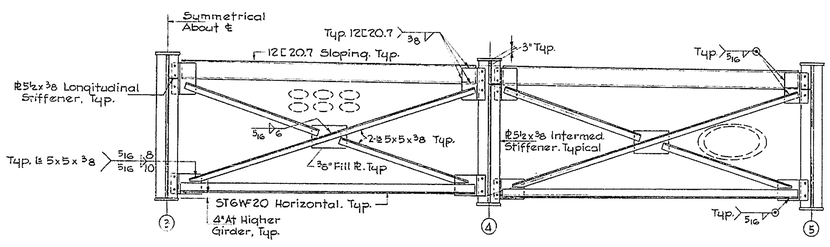
SCALE: 1¼" = 1'-0"



Notes:
1. All Longitudinal Bars In Roadway To Be #5, In Parapet And Sidewalk #4. Space As Shown.
2. Cost Of #7 Plain Support Bars And 1½"x½" Bars To Be Included In Price Bid For "Structural Steel-Welded Girder Spans"
3. Water, Gas, Electric, And Telephone Ducts And Pipes To Be Installed By Others.

SECTION A-A

SCALE: ⅜" = 1'-0"



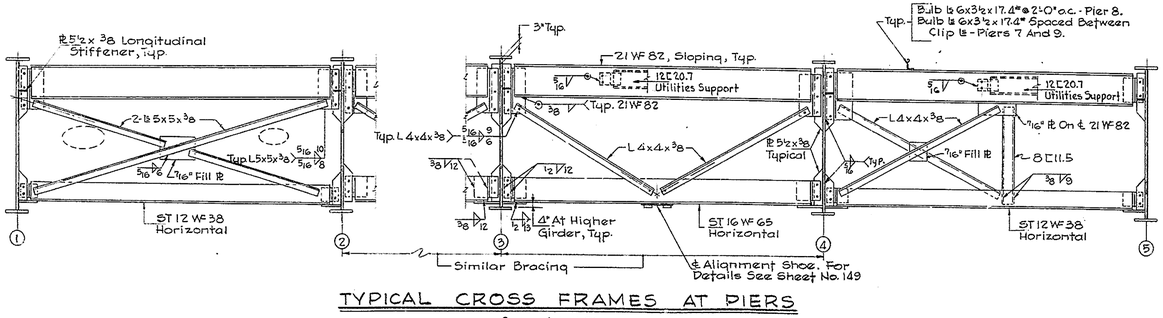
TYPICAL CROSS FRAMES AT ABUTMENTS

SCALE: 1¼" = 1'-0"

Note: All Connection Plates To Be ⅜" Thick, Unless Otherwise Noted.

PLAN OF UTILITY SUPPORT BEAM CONNECTION

Scale: ¼" = 1'-0"



TYPICAL CROSS FRAMES AT PIERS

SCALE: 1¼" = 1'-0"

NOTES:

Structural Steel: Unless Otherwise Provided For On The Plans Or In The Specifications, Details Of The Steel Work In General Shall Conform To The Requirements Of The 1957 Standard Specifications For Highway Bridges Of A.A.S.H.O.

To Avoid Oversight, Requirements Concerning Rivet, Bolt, or Open Hole Sizes, And Reaming, Punching, Shims, Painting, Etc. Shall Be Clearly Shown Or Noted On Shop Drawings.

All Dimensions Shown On The Plans Are For The Structure At A Normal Temperature Of +68°F. The Temperature Range For Movement Is -10°F. To +120°F.

All Expansion Joints Are To Be Detailed To Provide For Vertical, Longitudinal And Transverse Adjustment In Order To Obtain Proper Alignment And Openings Under Normal Temperature Conditions.

All Structural Steel For This Structure, except as noted in the Special Provisions, Shall Be Of Steel Conforming To The Requirements Of A.S.T.M. Designation A-373.

All Welding Shall Be Done In Accordance With The Requirements Of The Current "Standard Specifications For Welded Highway And Railway Bridges" Of The American Welding Society, Unless Otherwise Specified. The Shop Drawings Shall Show Clearly The Nature, Dimensions And Locations Of Each Weld.

All Field Connections To Be Welded Except Girder Splices, Which Are To Be 1" ϕ High-Tensile Strength Bolts. Erection Bolts, Where Required At Welded Connections Are To Be ¾" ϕ, And Left In Place After Welding.

Apply A Water Soluble Silicone Solution To The Inside And Top Faces Of The Parapets, On The Top And Sides Of The Sidewalks After Coal Tar Epoxy Underseal Is In Place. See Specifications. Cost To Be Included In Unit Price Bid For Portland Cement Concrete Masonry - Superstructure.

DELAWARE STATE HIGHWAY DEPARTMENT

DELAWARE TURNPIKE

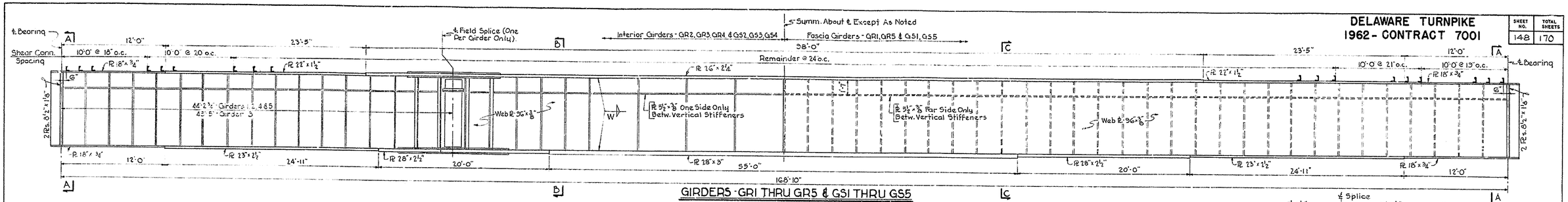
UNDERPASS AT CHURCHMANS ROAD

FRAMING PLAN

DRAWN A.H.L.	SCALE : AS NOTED	CONTRACT
TRACED		7001
CHECKED J.G.S.		
CHARGE OF H.B.H.		SHEET 147 OF

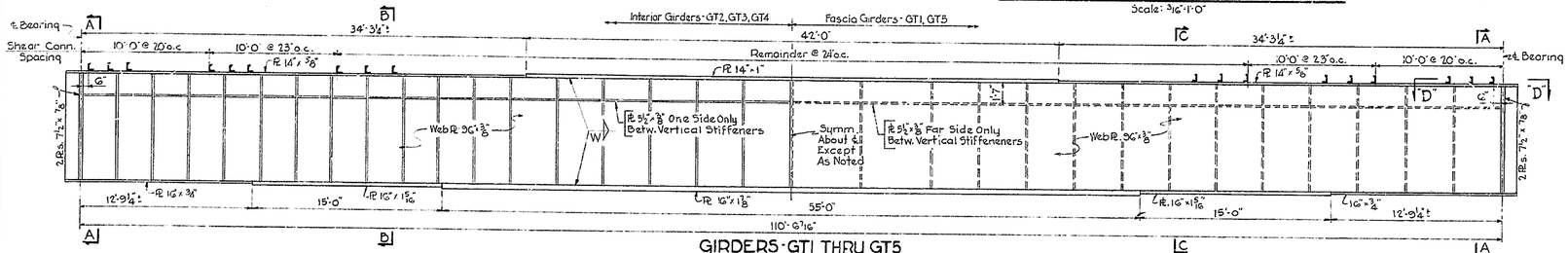
DELAWARE TURNPIKE
1962 - CONTRACT 7001

SHEET NO.	TOTAL SHEETS
148	170



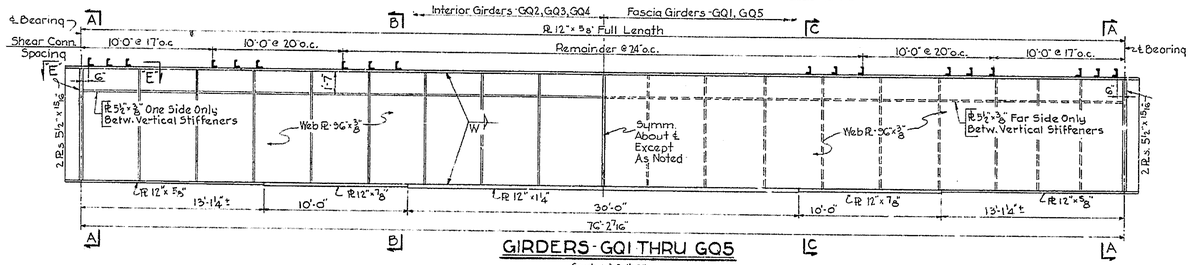
GIRDERS - GR1 THRU GR5 & GS1 THRU GS5

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



GIRDERS - GT1 THRU GT5

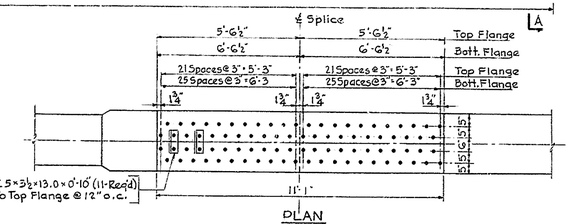
Scale: 3/16" = 1'-0"



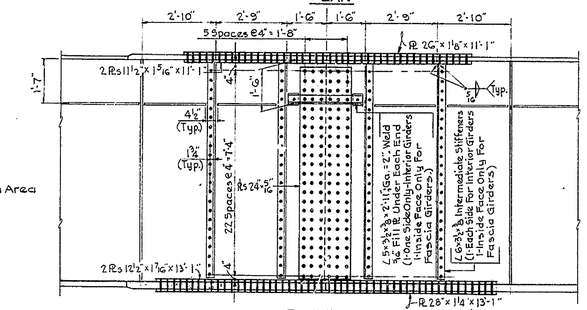
GIRDERS - GQ1 THRU GQ5

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

NOTE:
Weld Sizes "W" = 5/16" For Cover Plates Up To ℄ Incl. 1 1/4" Thick.
3/8" For Cover Plates Up To ℄ Incl. 2" Thick.
1/2" For Cover Plates Over 2" Thick.
All Intermediate Stiffener PLs 5 1/2"x3/8" Spaced As Shown On Framing Plan



PLAN

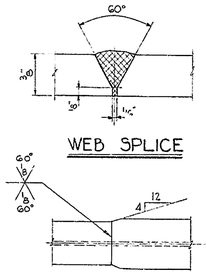


ELEVATION

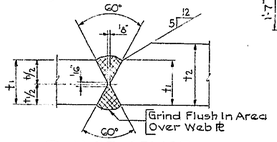
FIELD SPLICE DETAIL

Scale: 3/8" = 1'-0"

Note:
Holes To Be 1 1/16" ϕ For 1" ϕ High Tensile Strength Bolts.
Head of Bolts Shall Be On Outside Face Of Fascia Girders And On Bottom Face Of Bottom Flanges Of All Girders.

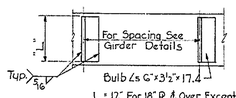


WEB SPLICE



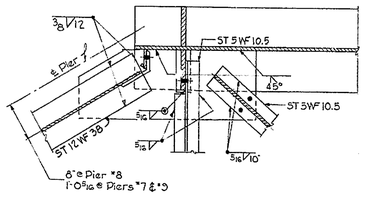
FLANGE SPLICE

CHANGE IN FLANGE WIDTH



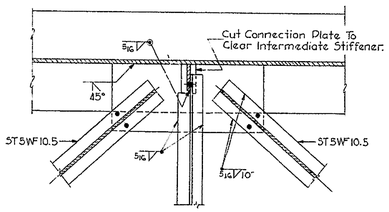
L = 12' For 18" PL & Over, Except ℄ Girder Splice
L = 10' For 14" & 16" PL
L = 8' For 12" PL

SHEAR CONN. DETAIL



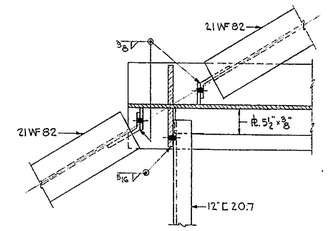
DETAIL A

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



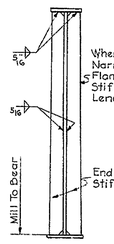
DETAIL C

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



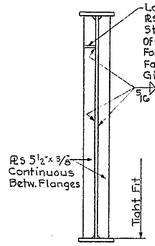
DETAIL D

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



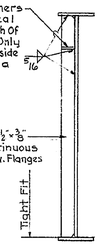
SECTION A-A

Scale: 3/8" = 1'-0"



SECTION B-B

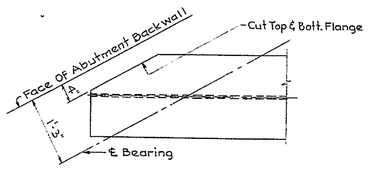
Scale: 3/8" = 1'-0"



SECTION C-C

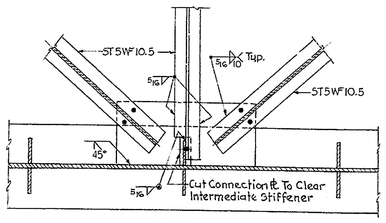
Scale: 3/8" = 1'-0"

Note: Cost Of Bulb Angle Shear Connectors To Be Included In Contract Lump Sum Price Bid For Structural Steel-Welded Girder Spans.
Although Bulb Angle Shear Connectors Are Shown, Alternate Types May Be Permitted, Subject To The Engineers Written Approval. If An Alternate Type Is Used, The Contractor Shall be Required To Submit Detail Drawings For Approval. Drawings To Indicate The Size & Type Of Material, Spacing, Welds & Other Necessary Design & Detail Data.



SECTION E-E SHOWN
SECTION D-D ROTATED 180°

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



DETAIL B

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

Note: Details A, B & C Are Bottom Chord Connections.
Detail D Is A Top Chord Connection.
All Connection PLs 3/8" Thick.
13/16" ϕ Holes For 3/4" ϕ Erection Bolts At Field Welded Connections. Bolts To Remain In Place After Welding.

DEFLECTION SCHEDULE

GIRDER MK.	MID SPAN			¼ POINTS			TOTAL DEFLECTION	
	Δ1	Δ2	Δ3	Δ1	Δ2	Δ3	Mid Span	¼ Points
GQ1 & GQ5	1/8"	5/16"	3/16"	1/16"	3/16"	1/8"	5/8"	3/8"
GQ2 Thru GQ4	1/8"	3/8"	3/16"	1/16"	5/16"	1/8"	11/16"	1/2"
GR1 & GR5 GS1 & GS5	1"	1 3/16"	3/4"	3/4"	7/8"	9/16"	2 15/16"	2 3/16"
GR2 Thru GR4 GS2 Thru GS4	1"	2"	1 3/16"	3/4"	1 7/16"	5/8"	3 13/16"	2 13/16"
GT1 & GT5	5/16"	13/16"	3/8"	1/4"	9/16"	5/16"	1 1/2"	1 1/8"
GT2 Thru GT4	5/16"	11/8"	5/16"	1/4"	13/16"	1/4"	1 3/4"	1 5/16"

Δ1 - Deflection Due To D.L. Girder, Diaphragms & Cross Bracing.
Δ2 - Deflection Due To Weight Of Concrete Slab & Utilities.
Δ3 - Deflection Due To Weight Of Wearing Surface, Parapets & Sidewalks.

Note:
Camber Girders For Total Deflection Plus Vertical Curve Correction. Minimum Camber 1"

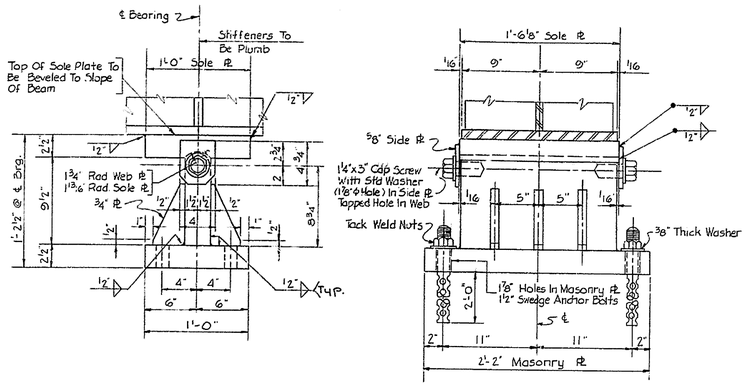
DELAWARE STATE HIGHWAY DEPARTMENT

DELAWARE TURNPIKE

UNDERPASS AT CHURCHMANS ROAD

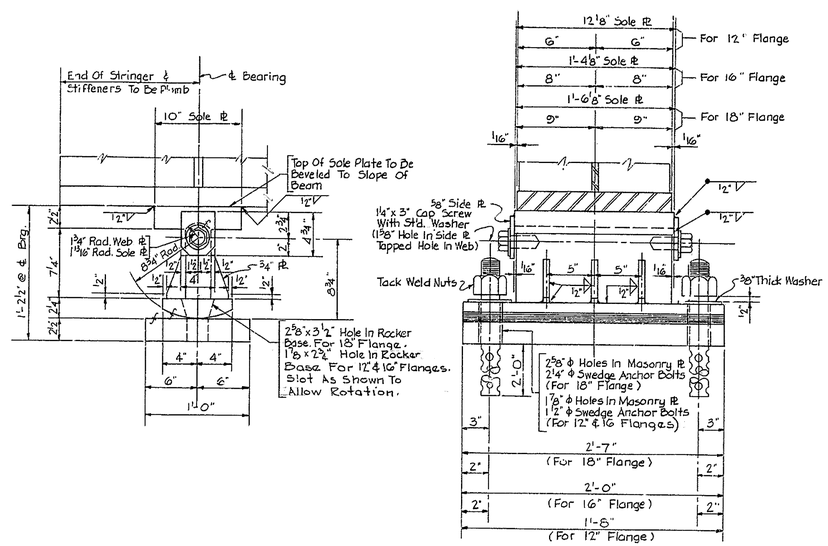
GIRDER SCHEDULE

DRAWN J.M.D	SCALE: AS NOTED	CONTRACT
TRACED		7001
CHECKED J.G.S.		
CHARGE OF H.B.H		SHEET 148 OF



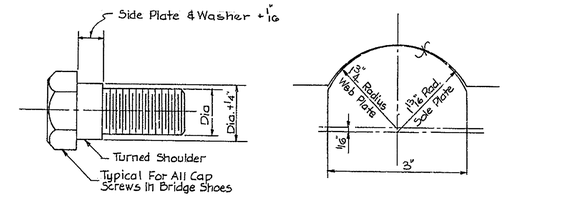
FIXED SHOES AT PIER 8

Scale : 1½" = 1'-0"



EXPANSION SHOES AT PIERS 7 & 9

Scale : 1½" = 1'-0"



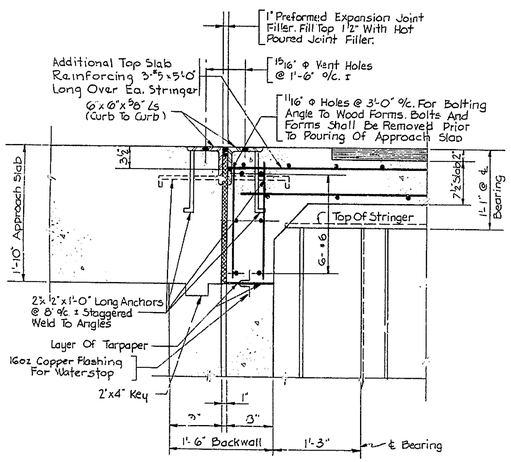
CAP SCREW DETAIL

No Scale

DETAIL AT WEB AND SOLE PLATE

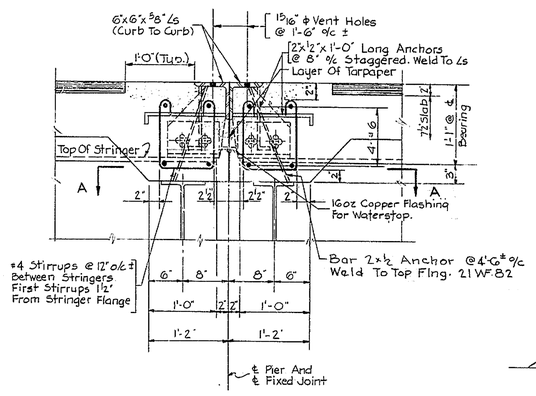
No Scale

NOTE:
For Fixed Shoes At Abutments "E" & "F" See Sheet No. 131



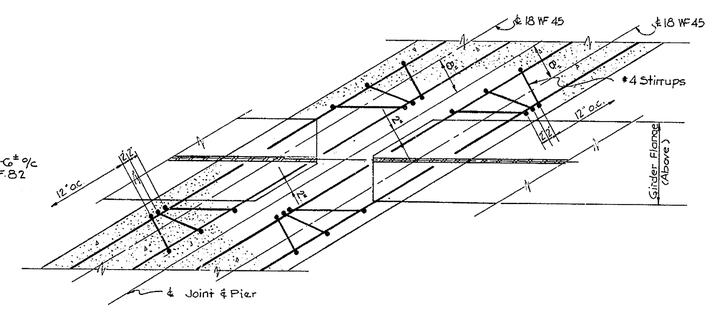
TYPICAL NORMAL SECTION THRU ROADWAY - FIXED JOINT AT ABUTMENT

Scale : 1" = 1'-0"



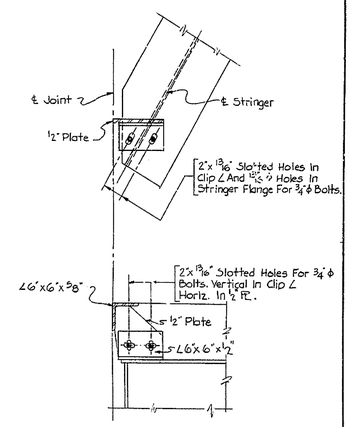
TYPICAL NORMAL SECTION THRU ROADWAY - FIXED JOINT AT PIER

Scale : 1" = 1'-0"



SECTION "A-A"

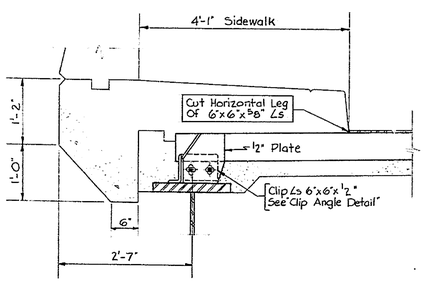
Scale : ¾" = 1'-0"



Note: Welds To Be Made After Fixed Dam Has Been Set And Bolted Into Final Position.

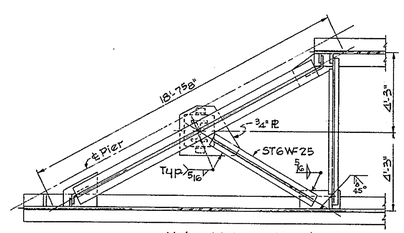
CLIP ANGLE DETAIL

Scale : ¾" = 1'-0"



TYPICAL NORMAL SECTION THRU SIDEWALK - FIXED JOINT

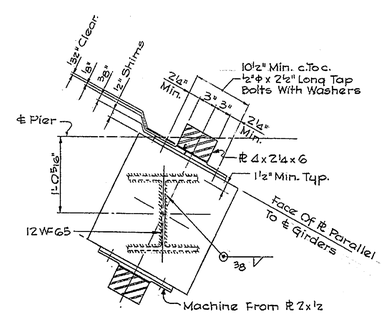
Scale : ¾" = 1'-0"



Note: All Connection Pl's To Be ⅜" Thick Unless Noted Otherwise.

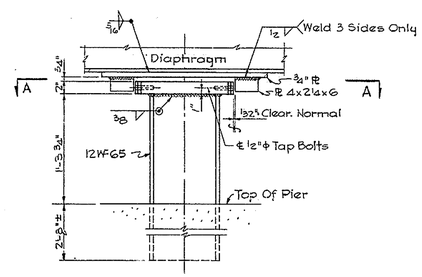
LOCATION PLAN

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



SECTION A-A

Scale : 1" = 1'-0"



POST ELEVATION

Scale : 1" = 1'-0"

ALIGNMENT SHOE DETAILS

DELAWARE STATE HIGHWAY DEPARTMENT

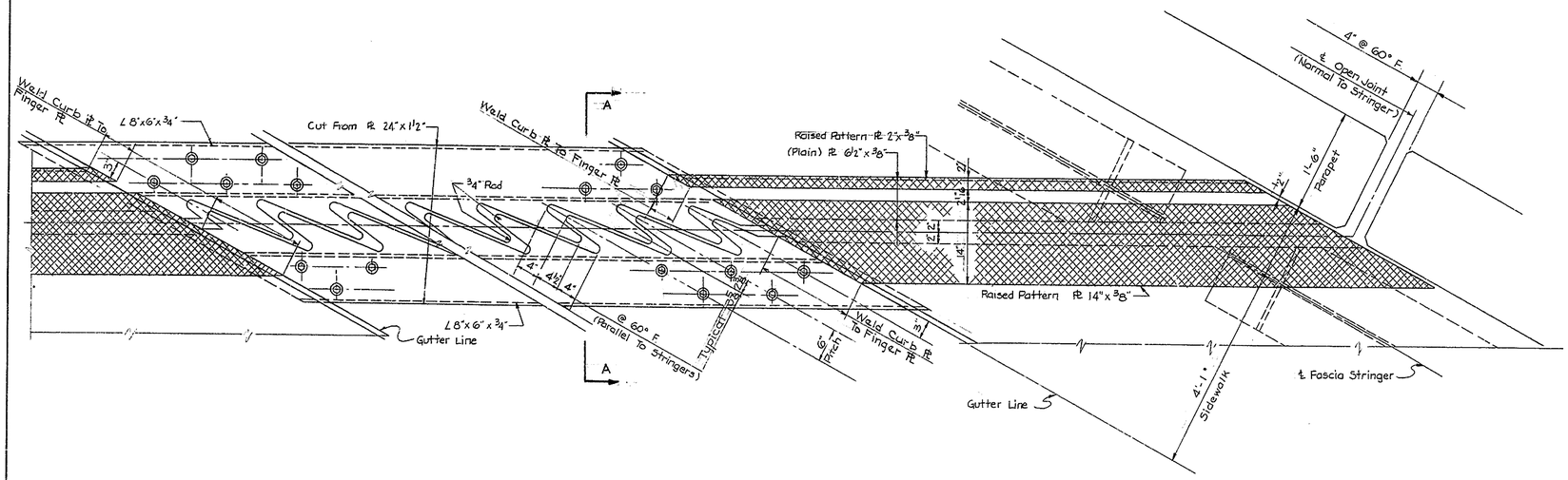
DELAWARE TURNPIKE

UNDERPASS AT CHURCHMANS ROAD
BEARING AND ROADWAY JOINT DETAILS

DRAWN J.F.F.	SCALE: AS NOTED	CONTRACT
TRACED		7001
CHECKED J.G.S.		
CHARGE OF H.D.H.		SHEET 149 OF

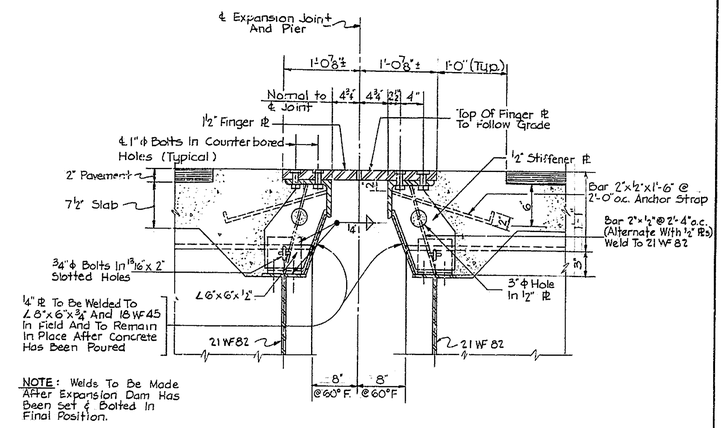
DELAWARE TURNPIKE
CONTRACT 7001
1962

SHEET NO.	TOTAL SHEETS
150	170



PLAN AT EXPANSION JOINT

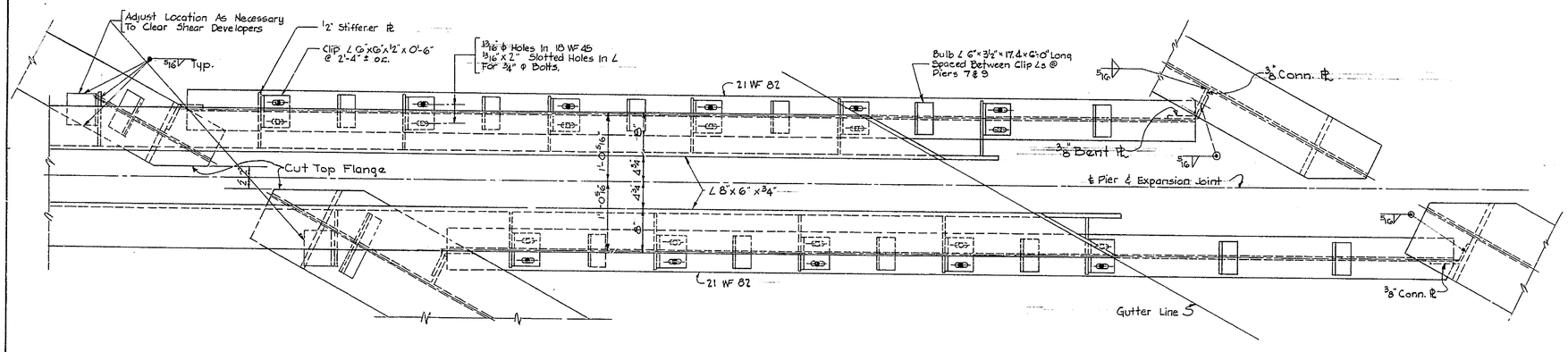
Scale : 1" = 1'-0"



NOTE: Welds To Be Made After Expansion Dam Has Been Set & Bolted In Final Position.

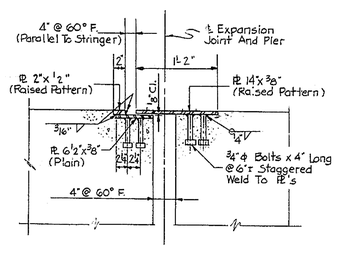
SECTION "A-A"

Scale : 1" = 1'-0"



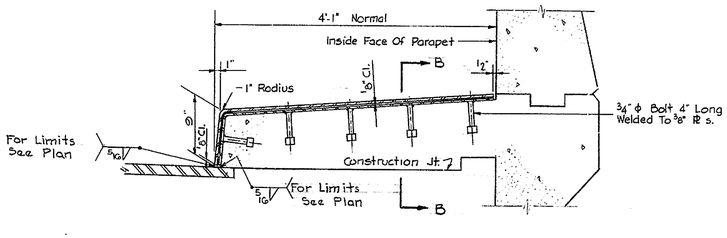
PLAN AT EXPANSION JOINT THROUGH SLAB

Scale : 1" = 1'-0"



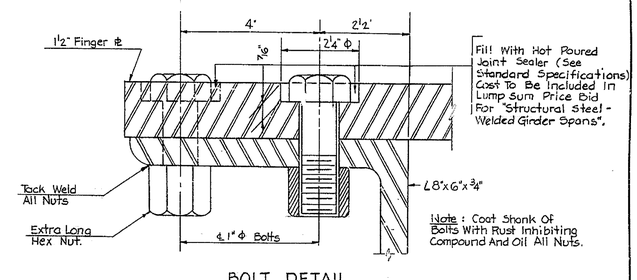
SECTION "B-B"

Scale : 1" = 1'-0"



TYPICAL NORMAL SECTION
THRU SIDEWALK EXPANSION JOINT

No Scale



BOLT DETAIL

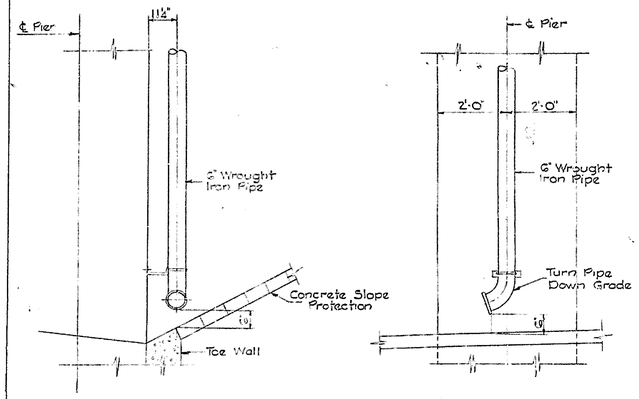
Scale : 6" = 1'-0"

DELAWARE STATE HIGHWAY DEPARTMENT

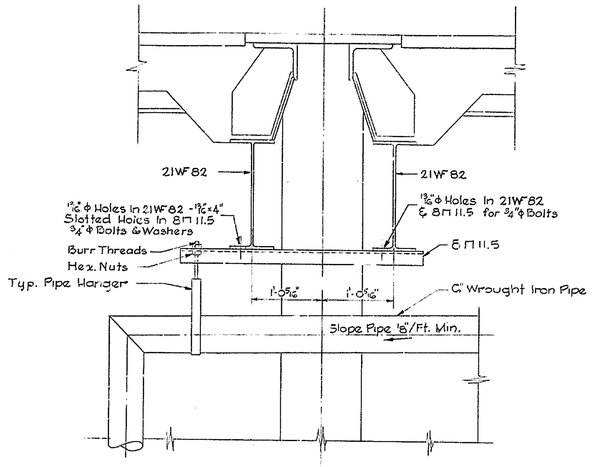
DELAWARE TURNPIKE

UNDERPASS AT CHURCHMANS ROAD
STEEL EXPANSION JOINT

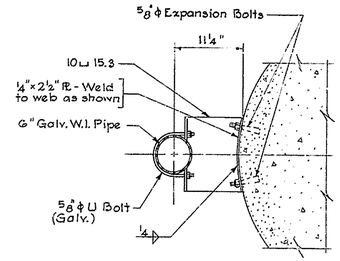
DRAWN J.F.F	SCALE: AS NOTED	CONTRACT 7001
TRACED		
CHECKED J.G.S.		
CHARGE OF H.B.H.		SHEET 150 OF



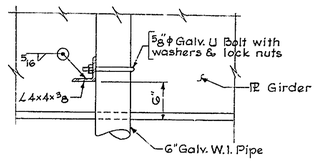
~ DOWNSPOUT DETAILS AT PIERS 7 & 9 ~
Scale: ½"=1'-0"



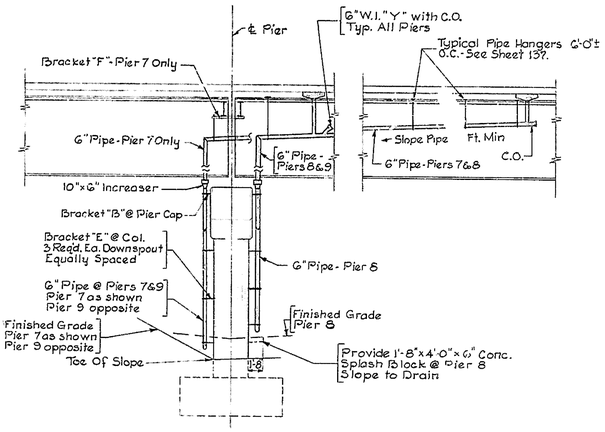
BRACKET "F"
Scale: ½"=1'-0"



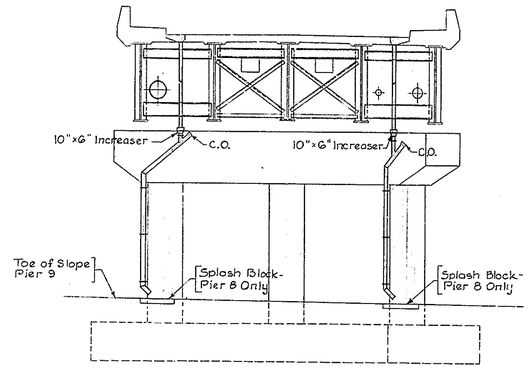
BRACKET "E"
Scale: 1"=1'-0"



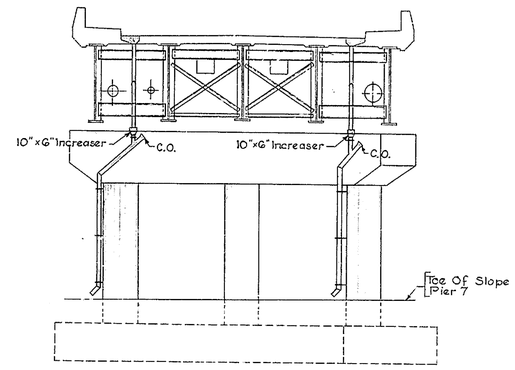
BRACKET "D"
Scale: 1"=1'-0"



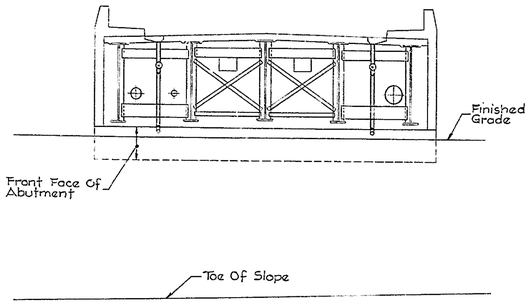
TYPICAL SECTION AT PIERS
Scale: ⅛"=1'-0"



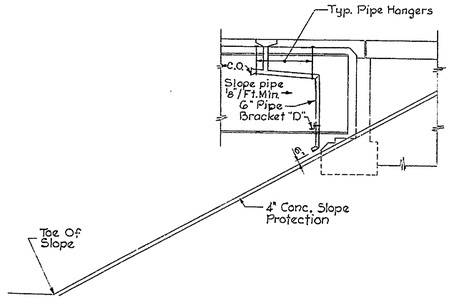
~ SECTION A-A ~
Scale: ⅛"=1'-0"



~ SECTION B-B ~
Scale: ⅛"=1'-0"



~ SECTION C-C ~
Scale: ⅛"=1'-0"



~ SECTION D-D ~
Scale: ⅛"=1'-0"

DRAINAGE NOTES

1. Unless otherwise noted, all bridge drainage piping to be Galvanized Wrought Iron Pipe with welded fittings and connections.
2. C.O. Denotes Cleanout. Cleanouts to be W.I. Cap Cleanouts with Snap-Joint Couplings.
3. For general piping arrangement, see Sh. No. 139
4. For location of Scuppers, see Sh. Nos. 152 & 153
5. For Scupper, Grate, and Scupper Support Details, see Sh. No. 137 &
6. For Pipe Bracket, Hanger, and Increaser Details not shown this Sh., see Sh. No. 137
7. Cost of Splash Block To Be Included In Lump Sum Price Bid For Bridge Drainage Pipe.

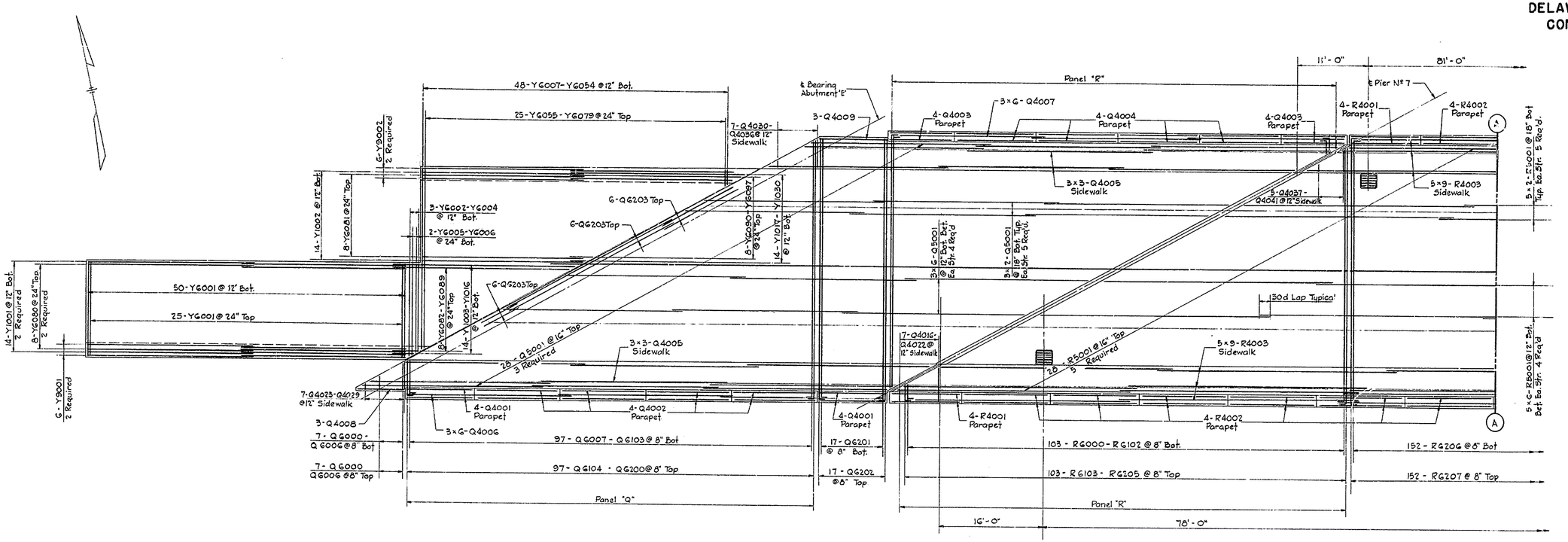
DELAWARE STATE HIGHWAY DEPARTMENT

DELAWARE TURNPIKE

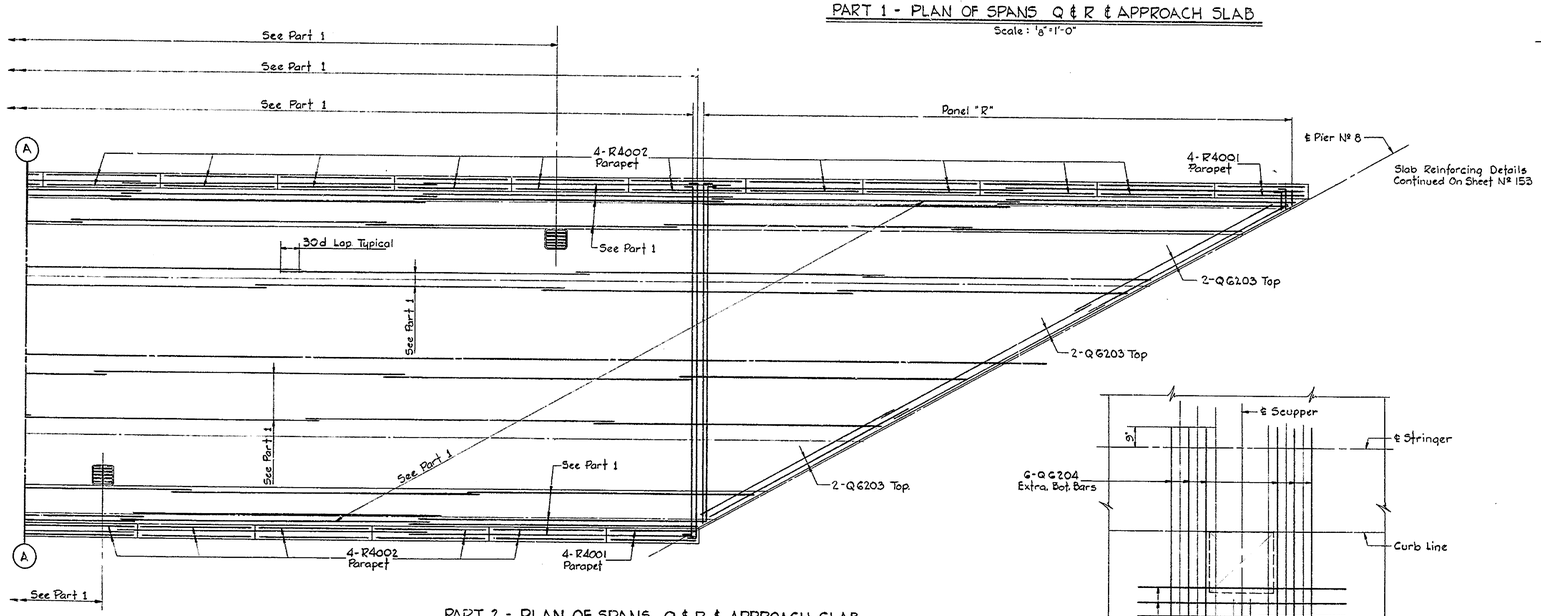
UNDERPASS AT CHURCHMANS ROAD

DRAINAGE DETAILS

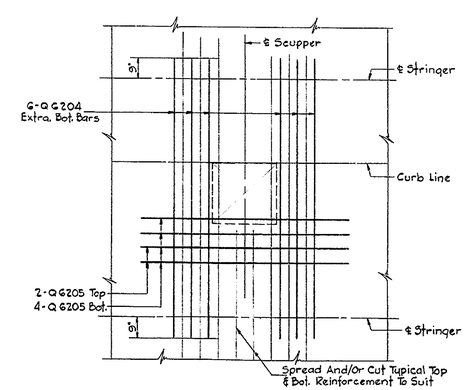
DRAWN J.M.S.	SCALE: AS NOTED	CONTRACT
TRACED		7001
CHECKED J.K.J.		
CHARGE OF H.B.H.		SHEET 151 OF



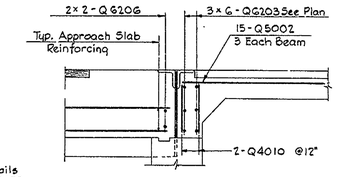
PART 1 - PLAN OF SPANS Q & R & APPROACH SLAB
Scale: 1/8" = 1'-0"



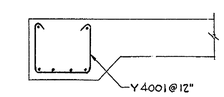
PART 2 - PLAN OF SPANS Q & R & APPROACH SLAB
Scale: 1/8" = 1'-0"



SCUPPER REINFORCING - 12 REQUIRED
Scale: 3/8" = 1'-0"



ROADWAY SECTION AT ABUTMENTS
2 REQUIRED
Scale 1/2" = 1'-0"



DETAIL OF APPROACH SLAB BEAM
Scale 1/2" = 1'-0"

DELAWARE STATE HIGHWAY DEPARTMENT

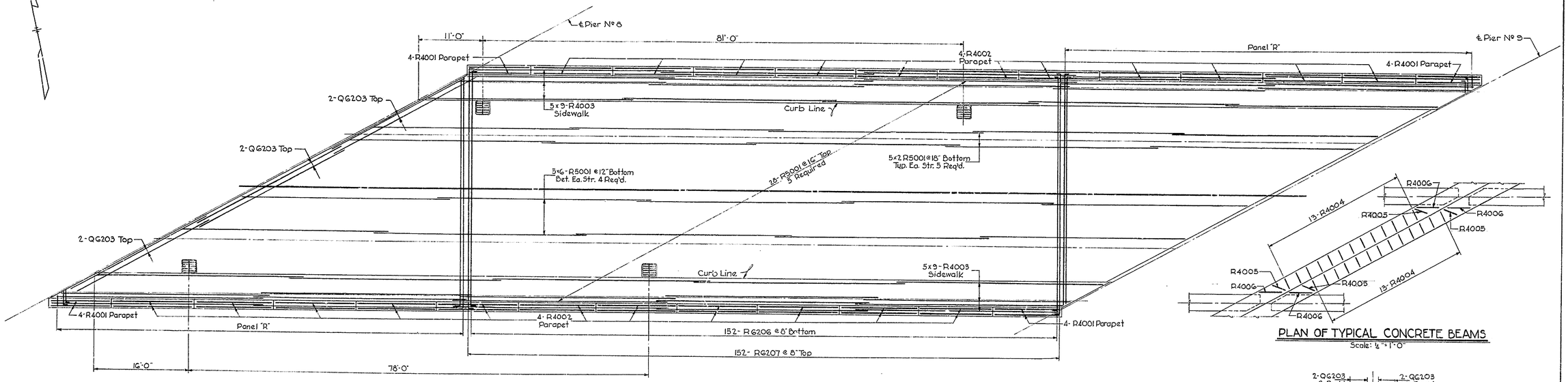
DELAWARE TURNPIKE

UNDERPASS AT CHURCHMANS ROAD
DECK REINFORCING DETAILS

DRAWN G.J.T.	SCALE AS NOTED	CONTRACT
TRACED		7001
CHECKED J.K.J.		
CHARGE OF H.B.H.		SHEET 152 OF

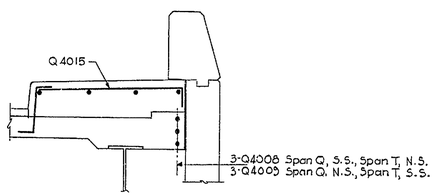
DELAWARE TURNPIKE
CONTRACT 7001
1962

SHEET NO.	TOTAL SHEETS
153	170

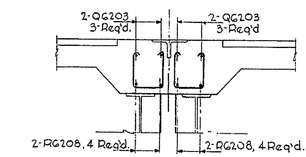


PART 1 - PLAN OF SPANS S & T & APPROACH SLAB
Scale: 1/8" = 1'-0"

PLAN OF TYPICAL CONCRETE BEAMS
Scale: 1/4" = 1'-0"

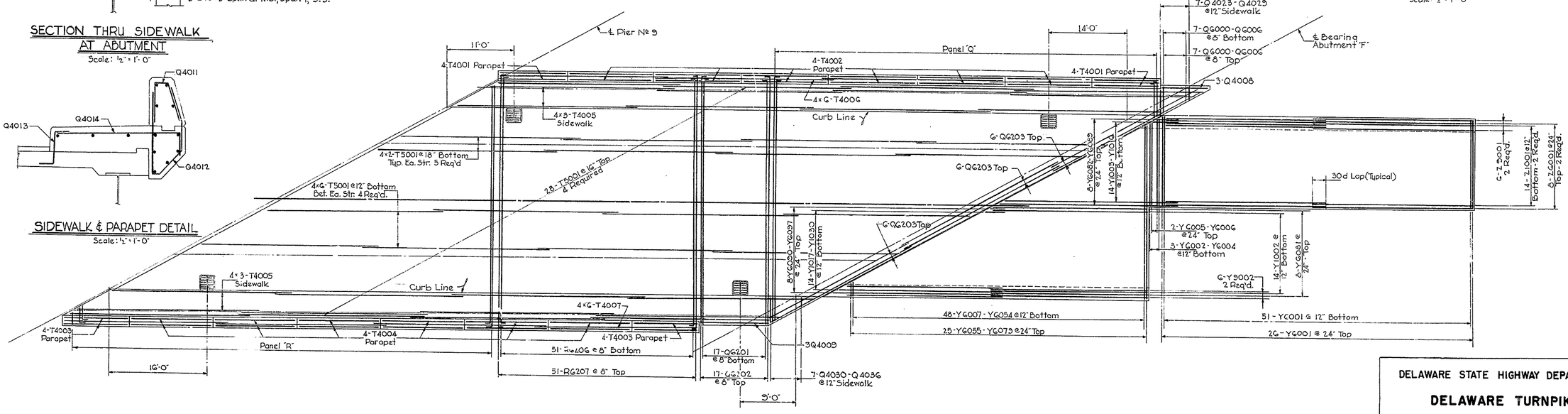


SECTION THRU SIDEWALK AT ABUTMENT
Scale: 1/2" = 1'-0"



ROADWAY FIXED JOINT AT PIER 8
Scale: 1/2" = 1'-0"

SIDEWALK & PARAPET DETAIL
Scale: 1/2" = 1'-0"



PART 2 - PLAN OF SPANS S & T & APPROACH SLAB
Scale: 1/8" = 1'-0"

DELAWARE STATE HIGHWAY DEPARTMENT

DELAWARE TURNPIKE

UNDERPASS AT CHURCHMANS ROAD
DECK REINFORCING DETAILS

DRAWN J.M.D.	SCALE: AS NOTED	CONTRACT
TRACED		7001
CHECKED J.G.S.		
CHARGE OF H.D.H		SHEET 153 OF

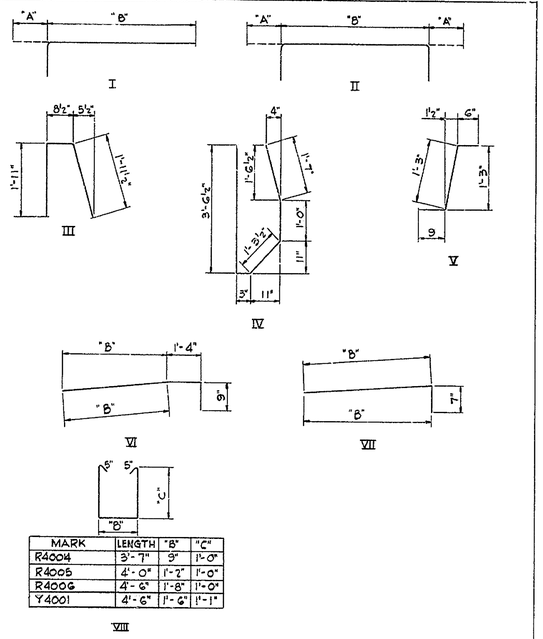
BAR SCHEDULE

MARK	NO.	SIZE	TYPE	LENGTH	A	B	REMARKS
Q4001	8	#4	Str.	10'-1"			
Q4002	16		Str.	12'-10"			
Q4003	8		Str.	9'-7"			
Q4004	16		Str.	12'-2"			
Q4005	18		Str.	28'-0"			
Q4006	18		Str.	25'-4"			
Q4007	18		Str.	24'-0"			
Q4008	6		Str.	7'-6"			
Q4009	6		Str.	11'-6"			
Q4010	324		Str.	1'-3"			
Q4011	1086		III	4'-7"			
Q4012	1086		IV	7'-8"			
Q4013	1120		V	2'-6"			
Q4014	1038		VI	5'-11"		3'-10"	
Q4015	24		VIII	4'-10"		4'-3"	
Q4016-Q4022	42		VI	2'-7" to 5'-7"		6" to 3'-6"	Vary 6 Ea. By 6"
Q4023-Q4029	14		VII	1'-3" to 4'-3"		8" to 3'-8	Vary 2 Ea. By 6"
Q4030-Q4036	14		Str.	1'-0" to 4'-0"			Vary 2 Ea. By 6"
Q4037-Q4041	30	#4	Str.	1'-0" to 3'-0"			Vary 6 Ea. By 6"
Q5001	186	#5	Str.	28'-6"			
Q5002	30	#5	Str.	5'-0"			
Q6000-Q6006	28	#6	Str.	2'-0" to 4'-0"			Vary 4 Ea. By 4"
Q6007-Q6103	194		I	5'-5" to 37'-5"	11"	4'-6" to 36'-6"	Vary 2 Ea. By 4"
Q6104-Q6200	194		I	5'-11" to 37'-11"	11"	5'-0" to 37'-0"	Vary 2 Ea. By 4"
Q6201	34		I	37'-11"	11"	37'-0"	
Q6202	34		I	38'-5"	11"	37'-6"	
Q6203	48		Str.	28'-2"			
Q6204	72		Str.	10'-0"			
Q6205	72	#6	Str.	8'-0"			
Q6206	8	#6	Str.	31'-8"			
R4001	32	#4	Str.	10'-6"			
R4002	176		Str.	13'-4"			
R4003	180		Str.	35'-0"			
R4004	104		VIII	3'-7"			
R4005	16		VIII	4'-0"			
R4006	16	#4	VIII	4'-6"			
R5001	620	#5	Str.	35'-0"			
R6000-R6102	618	#6	I	2'-11" to 36'-11"	11"	2'-0" to 35'-0"	Vary 6 Ea. By 4"
R6103-R6205	618		I	2'-5" to 36'-5"	11"	1'-6" to 35'-6"	Vary 6 Ea. By 4"
R6206	355		II	39'-0"	11"	37'-2"	
R6207	355		II	40'-0"	11"	38'-2"	
R6208	16	#6	Str.	18'-0"			
T4001	8	#4	Str.	10'-11"			
T4002	24		Str.	13'-11"			
T4003	8		Str.	10'-7"			
T4004	24		Str.	13'-5"			
T4005	24		Str.	30'-0"			
T4006	24		Str.	28'-0"			
T4007	24	#4	Str.	27'-0"			
T5001	248	#5	Str.	30'-0"			

BAR SCHEDULE

MARK	NO.	SIZE	TYPE	LENGTH	REMARKS
Y4001	197	#4	VIII	4'-6"	
Y6001	152	#6	Str.	13'-8"	
Y6002-Y6004	6		Str.	12'-8" to 13'-4"	Vary 2 Ea. By 4"
Y6005-Y6006	4		Str.	12'-8" to 13'-4"	Vary 2 Ea. By 8"
Y6007-Y6054	96		Str.	2'-6" to 26'-0"	Vary 2 Ea. By 6"
Y6055-Y6079	50		Str.	2'-0" to 26'-0"	Vary 2 Ea. By 1'-0"
Y6080	16		Str.	25'-6"	
Y6081	16		Str.	25'-0"
Y6082-Y6089	16		Str.	31'-0" to 28'-4"	Vary 2 Ea. By 3'-7½"
Y6090-Y6097	16	#6	Str.	2'-0" to 27'-4"	Vary 2 Ea. By 3'-7½"
Y9001	12	#9	Str.	25'-6"	
Y9002	24	#9	Str.	25'-0"	
Y1001	28	#10	Str.	25'-6"	
Y1002	28		Str.	25'-0"	
Y1003-Y1016	28		Str.	31'-0" to 28'-5"	Vary 2 Ea. By 1'-11½"
Y1017-Y1030	28	#10	Str.	2'-0" to 27'-5"	Vary 2 Ea. By 1'-11½"
Y					
Z6001	16	#6	Str.	26'-0"	
Z9001	12	#9	Str.	26'-0"	
Z1001	28	#10	Str.	26'-0"	

BAR TYPES



MARK	LENGTH	"B"	"C"
R4004	3'-7"	9"	1'-0"
R4005	4'-0"	1'-2"	1'-0"
R4006	4'-6"	1'-8"	1'-0"
Y4001	4'-6"	1'-6"	1'-1"

DELAWARE STATE HIGHWAY DEPARTMENT

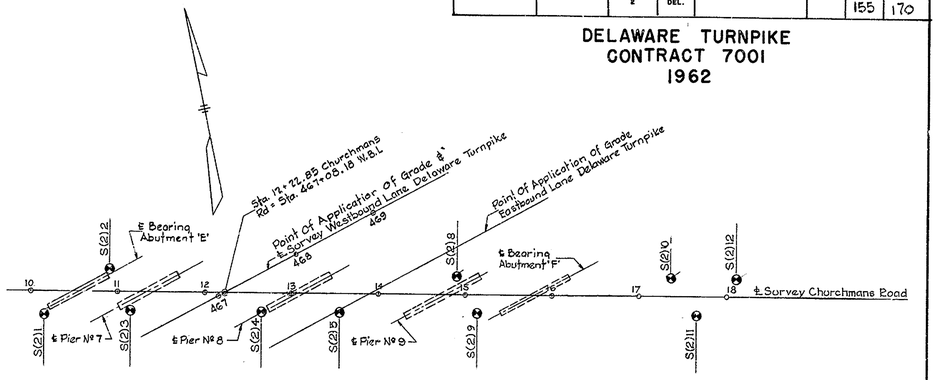
DELAWARE TURNPIKE

UNDERPASS AT CHURCHMANS ROAD
DECK REINFORCING SCHEDULE

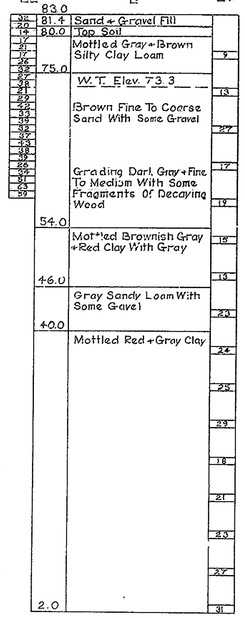
DRAWN G.J.T	SCALE: NONE	CONTRACT 7001
TRACED		
CHECKED J.K.J.		
CHARGE OF H.B.H		SHEET 154 OF

COUNTY	CONTRACT	K.R.A. DIV. NO.	STATE	FED AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
		2	DEL.			155	170

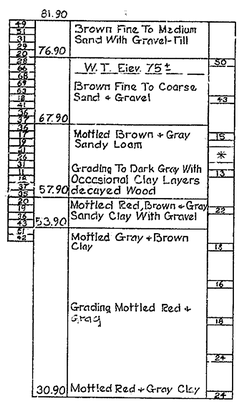
DELAWARE TURNPIKE
CONTRACT 7001
1962



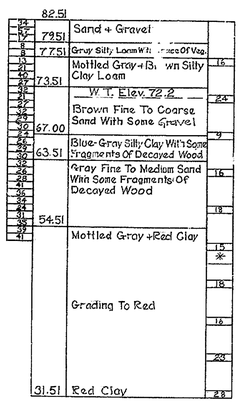
BORING PLAN
Scale: 1"=80'



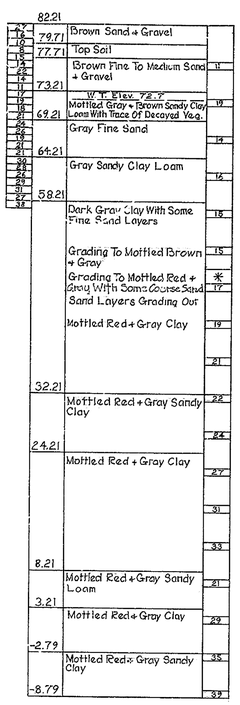
S(2)-1
Sta. 10+15 (25' Rt.)



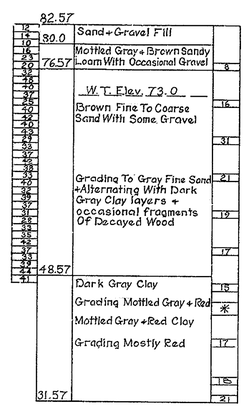
S(2)-2
Sta. 10+90 (25' Lt.)



S(2)-3
Sta. 11+15 (20' Rt.)

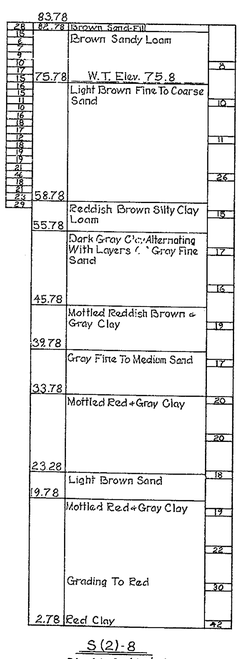


S(2)-4
Sta. 12+65 (20' Rt.)

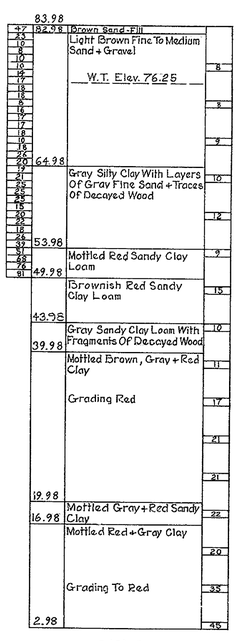


S(2)-5
Sta. 13+55 (20' Rt)

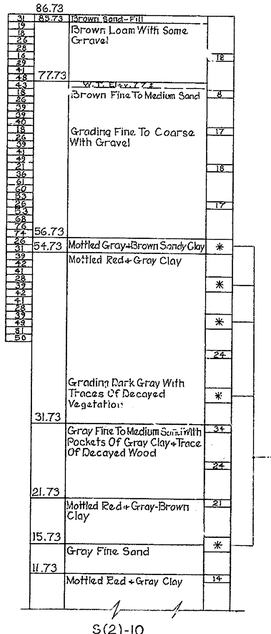
* See Notes



S(2)-8
Sta. 14+90 (20' Lt.)

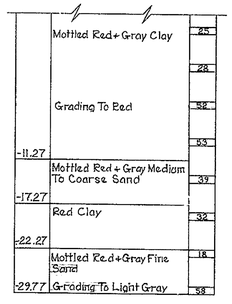


S(2)-9
Sta. 15+13 (20' Rt)

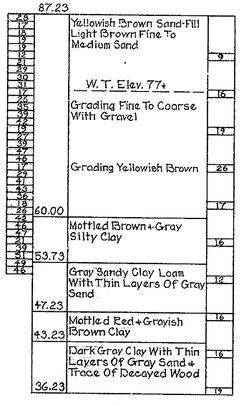


See Notes

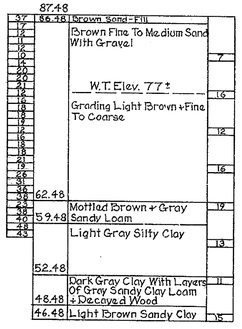
S(2)-10
Sta. 17+35 (20' Lt.)



S(2)10 (Continued)
Sta. 17+35 (20' Lt.)



S(2)-11
Sta. 17+65 (20' Rt.)



S(2)-12
Sta. 18+10 (20' Lt.)

NOTES

1. Borings Are Numbered And Locations Indicated Thus: ⊕
2. Log Of Borings Indicates The Number Of Blows Required To Drive A 2½" I.D. Casing One Foot Using A 300 lb. Weight Falling 24 Inches.
3. Log Of Borings Also Indicates The Number Of Blows Required To Drive A 1⅜" I.D. Sampler Spoon One Foot Using A 140 lb. Weight Falling 30 Inches.
4. Split Spoon Samples Taken At Depths Where Number Of Blows On Sampler Have Been Indicated.

   Shelby Tube Samples Taken At Depth Locations Indicated Thus: *
5. Ground Water Level Or Water Table Indicated Thus: W.T.
6. Borings Preceeded Any Expressway Construction In This Area

DELAWARE
STATE HIGHWAY DEPARTMENT

DELAWARE TURNPIKE

UNDERPASS AT CHURCHMANS ROAD
BORING LOG

D A.T.B.
T A.J.B.
C H.B.H.

SCALE: AS NOTED

CONTRACT 7001

SHEET 155 OF

QUANTITIES

DELAWARE TURNPIKE
CONTRACT 7001
1962

ITEM NO.	ITEM	UNIT	CONTRACT 7001									CONTRACT (PAVING CONTRACT) By Others		
			Plan Sheets 12 to 31 HIGHWAY	Plan Sheets 74 to 120 STRUCTURE	Plan Sheets 32 to 40 HIGHWAY	Plan Sheets 121 to 155 STRUCTURE	Ramps B,C,D&E on Shts 5 & 6 and Shts 41 to 43 HIGHWAY	ROUTE 273 Sta. 26+25 to Sta. 33+00	NEAT TOTALS HIGHWAY	NEAT TOTALS STRUCTURE	PROPOSAL	Plan Sheets 12 to 31	Plan Sheets 32 to 40	
1	Clearing and Grubbing	L.S.							—	—	Lump Sum			
2	Excavation	C.Y.	383,889		830,213		347,761	760	1,562,623		1,563,000			
2A	Removal of Existing Masonry	C.Y.	50		31				81		90			
2B	Channel Excavation	C.Y.			7,688				7,688		7,700			
	Longitudinal Ditch Excavation	C.Y.	18,125		579				18,704		18,800			
4	Excavation for Structures	C.Y.	330	8,735	973	2,635			1,303	11,370	12,700			
5	Borrow	C.Y.							—	—	5,000			
6	Borrow Pit Stripping	C.Y.							—	—	200			
7	Select Borrow	C.Y.	13,483		9,649			355	23,487		23,500	121,396	62,550	
7	Select Borrow - Grade A	C.Y.		1,090		600				1,690	1,700			
8	Waterbound Macadam Base Course	Tons.	3,101		399				3,500		3,600			
8C	Quarry Waste Base Course - 4" Course	S.Y.	5,972						5,972		6,000	1,058		
8C	Quarry Waste Base Course - 6" Course	S.Y.	12,696		5,000				17,696		18,000			
9	Portland Cement Concrete Base Course	C.Y.						340	340		340			
11	Hot-Mix, Hot Laid Asphaltic-Concrete Pavement	Tons.	5,952	517	907	525		250	7,109	1,042	8,300	787	210	
11	RC-1 Alphalt Tack Coat	Gals.	4,778	470	1,305	384		340	6,423	854	7,400	456	50	
13	Cold Laid Bituminous Concrete	Tons.							—	—	100			
	Coal-Tar Epoxy Underseal	S.Y.		4,640		4,350				8,990	9,000			
14	RC-1 Asphalt for Bituminous Surface Treatment	Gals.	6,720		6,787				13,507		13,800	36,577	17,175	
14	RC-3 Asphalt for Bituminous Surface Treatment	Gals	6,720		9,501				16,221		16,600	36,577	24,046	
14	Coarse Aggregate for Bituminous Surface Treatment	S.Y.	26,880		13,573				40,453		41,500	146,306	34,349	
15	Portland Cement Concrete Pavement	C.Y.	4,202		7,768				11,970		12,000	31,655	16,324	
18	Portland Cement Concrete Masonry-Drainage Structures	C.Y.	260		205				465		470	8	1.4	
18	Portland Cement Concrete Masonry-Box Culvert	C.Y.		1,610						1,610	1,610			
18	Portland Cement Concrete Masonry-Footings	C.Y.		1,175		1,301				2,476	2,476			
18	Portland Cement Concrete Masonry-Substructure	C.Y.		1,270		910				2,180	2,180			
18	Portland Cement Concrete Masonry-Superstructure	C.Y.		2,115		1,515				3,630	3,630			
18	Portland Cement Concrete Masonry-Approach Slabs	C.Y.		50		380				430	430			
19	Superficial Waterproofing	S.Y.		1,670	326	430			326	2,100	2,450			
20	Bar Reinforcement	Lbs.	7,887	1,187,000	5,223	680,400			13,110	1,867,400	1,880,000			
21	Wire Mesh Reinforcement	Squares	1,480		2,677				4,157		4,200	10,931	5,636	
22	Structural Steel (Approximate weight 4,594,000 lbs)	L.S.							—	—	Lump Sum			
26	12" Reinforced Concrete Pipe	L.F.	222						222		225			
26	15" Reinforced Concrete Pipe	L.F.	1,679		474			38	2,191		2,200			
26	18" Reinforced Concrete Pipe	L.F.	1,243		303			355	1,901		1,900			
26	24" Reinforced Concrete Pipe	L.F.	624		714				1,338		1,340			
26	30" Reinforced Concrete Pipe	L.F.	132		639				771		780			
26	36" Reinforced Concrete Pipe	L.F.	986		306				1,292		1,300			
26	42" Reinforced Concrete Pipe	L.F.			199				199		200			
26	48" Reinforced Concrete Pipe	L.F.	244						244		250			
26	60" Reinforced Concrete Pipe	L.F.	760						760		760			
26	84" Reinforced Concrete Pipe	L.F.			348				348		350			
	Concrete Pipe Cradle	C.Y.									50			
	Stone Bedding for Pipes	Tons.			9				9		100			
29	43"x27" Corrugated Metal Pipe Arch, Coated and Paved - 10 Gage	L.F.			60				60		60			
29	22"x13" Corrugated Metal Pipe Arch, Coated and Paved - 14 Gage	L.F.			114				114		115			
29	36"x22" Corrugated Metal Pipe Arch, Coated and Paved - 10 Gage	L.F.			320				320		320			
29	6" Plain Corrugated Metal Pipe Underdrain Outlet.	L.F.				500				500	500			

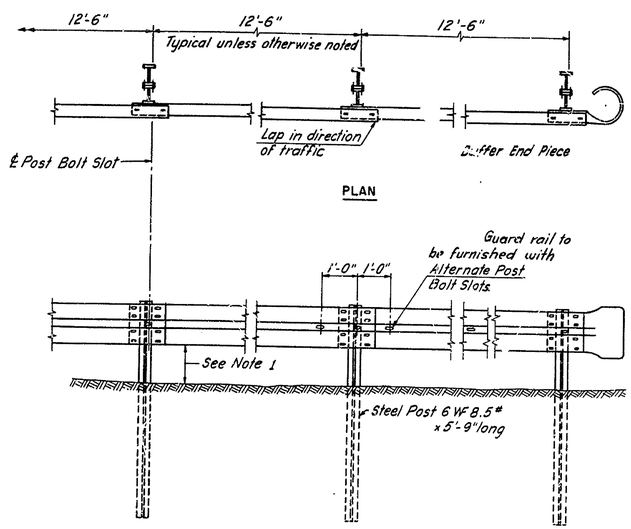
QUANTITIES

DELAWARE TURNPIKE
CONTRACT 7001
1962

ITEM NO.	ITEM	UNIT	CONTRACT 7001									CONTRACT (PAVING CONTRACT) By Others		
			Plan Sheets 12 to 31	Plan Sheets 74 to 120	Plan Sheets 32 to 40	Plan Sheets 121 to 155	Ramps B,C,D & E on Sh'ts 5 & 6 and Sh'ts 41 to 43	ROUTE 273 Sta. 26+25 to Sta. 33+00	NEAT TOTALS.		PROPOSAL	Plan Sheets 12 to 31	Plan Sheets 32 to 40	
			HIGHWAY	STRUCTURE	HIGHWAY	STRUCTURE	HIGHWAY		HIGHWAY	STRUCTURE				
29	15" Corrugated Metal Pipe, Coated & Paved, 16 Gage	L.F.	452						452		460			
	15" Corrugated Metal Pipe Bends, Coated & Paved, 16 Gage	Each	9						9		10			
	6" Plain Corrugated Metal Pipe Underdrain Outlet	L.F.		40						40	40			
31	6" Perforated Corrugated Metal Pipe Underdrain	L.F.		420						420	420			
31	8" Perforated Corrugated Metal Pipe Underdrain	L.F.			4,805		2,125		6,930		7000			
35	Cast-in-Place Concrete Piles	L.F.		19,200		17,940				37,140	38,000			
35	Steel Shell Test Piles	L.F.		1,230		605				1,835	1,900			
	Aluminum Bridge Railing - Single Rail	L.F.				940				940	940			
	Aluminum Bridge Railing - Double Rail	L.F.		2,951		1,240				4,191	4,191			
	Bridge Catch Basins (Scuppers)	L.S.							—	—	Lump Sum			
	Bridge Drainage Pipe - 6" Wrought Iron Pipe and Fittings	L.S.							—	—	Lump Sum			
37	Portland Cement Concrete Gutter, 4" Thick	S.Y.	5,301		1,830		94	8	7,233		7,400			
38	Portland Cement Concrete Curb, Type 1	L.F.	1,264		1,489			600	3,343		3,350	1,033	4,274	
40	Portland Cement Concrete Parkway Curb, Type 2	L.F.	1,824						1,824		1,850	962		
	Machine-Laid, Hot-Mix Asphalt Concrete Curb	L.F.	2,257						2,257		2,300	4,232	400	
41	Portland Cement Concrete Sidewalk	S.F.	4,728						4,728		4,800			
42	Wood Shoulder Curb	L.F.	1,715						1,715		1,800			
43	Corrugated Metal Downspouts	L.F.	856						856		860	575	174	
44	Catch Basin, Type PW-BD1	Each	9		7			1	17		17			
44	Catch Basin, Type PW-BD2	Each			1				1		1			
44	Catch Basin, Type PW-BD3	Each			1				1		1			
44	Catch Basin, Type A-1	Each	9		15			2	26		26			
44	Catch Basin, Type A-2	Each			1				1		1			
44	Catch Basin, Type B-1	Each	17						17		17			
45	Manhole, Type W-48	Each	1						1		1			
45	Manhole, Standard Type	Each	1		2				3		3			
51	Topsoil	S.Y.										58,000		
52	Topsoiling	S.Y.	52,000		27,000				79,000		80,000	68,000	74,615	
53	Seeding	Acres	61.00		24.80		11.35	0.3	97.45		100	31	55.82	
54	Mulching	S.Y.	293,000		120,300		55,000	1,400	469,700		470,000	150,000	270,167	
55	Sodding	S.Y.	810		300				1,110		1,140		784	
57	Sand for Footing	Tons		1,590		10				1,600	1,600			
60	Lateral Ditching	L.F.	2,110						2,110		2,150			
61	Calcium Chloride for Dust Control	Tons.							—	—	20			
64	Riprap, Plain	S.Y.	1,118						1,118		1,150			
64	Riprap, Grouted	S.Y.	322	750	611				933	750	1,700			
	Slope Paving	S.Y.		760		1,455				2,215	2,260			
	Removal of Existing Concrete Pavement	S.Y.	9,289		3,644		935	560	14,428		14,700			
	Construction and Removal of Road 348 Detour	L.S.									L.S.			
	Steel Beam Guard Rail, Galvanized	L.F.	4,467		800				5,267		5,400	4,702	1,200	
	Protective Coating for Concrete	S.F.		3,480		3,520				7,000	7,000			
	Permanent Wood Barricade	L.F.	50						50		50			
	Furnish and Install Six(6)-Five(5) Inch Fibre Ducts in Concrete Encasement	L.F.	200		200				400		400			
	Field Office	L.S.							—	—	Lump Sum			
	Maintenance of Traffic	L.S.							—	—	Lump Sum			
	3" Galvanized Wrought Iron Electrical Conduit	L.F.										250		
	Conduit Juntion Well	Each										10		

FED ROAD DIV. NO.	FED AID PROJECT NO.	STATE	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
				158	170

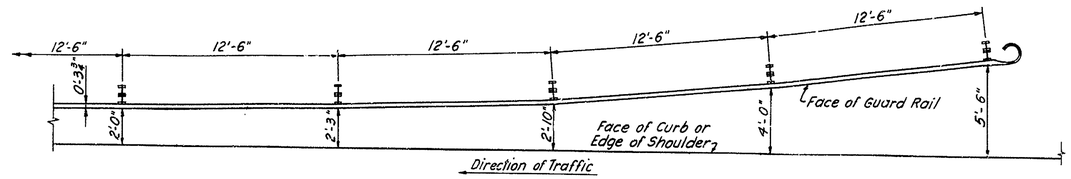
DELAWARE TURNPIKE
CONTRACT 7001
1962



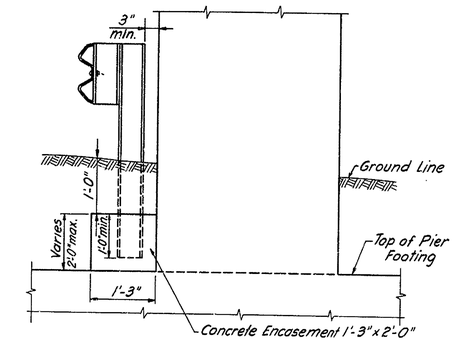
PLAN

ELEVATION

TYPICAL GUARD RAIL SECTIONS
$\frac{1}{2}$" = 1'-0"

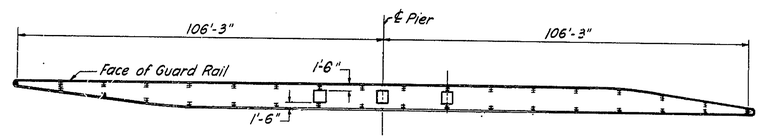


FLARE AT BEGINNING OF GUARD RAIL SECTION
$\frac{1}{4}$" = 1'-0"



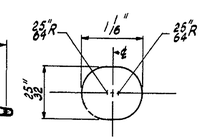
SHORT POSTS AT PIERS
$\frac{3}{4}$" = 1'-0"

Note: Concrete block to be 2'-0" x 2'-0" where short post is required and is not located at pier base or pier shaft, and also at any other sub-surface structure where fill is not deep enough for a normal length post.



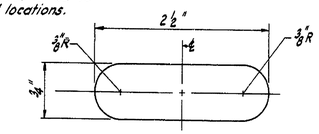
Direction of Traffic

MEDIAN PIER PROTECTION
1" = 20'

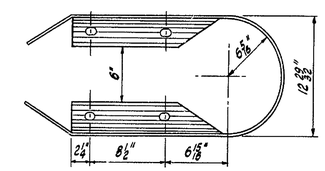


PARAPET CONNECTION SLOT
Full Scale

Note A:
Guard Rail to be bolted to Posts at all locations.

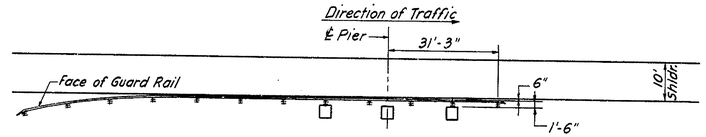


POST BOLT SLOT
Full Scale



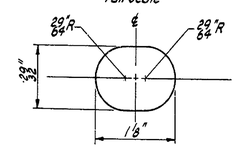
PLAN

Direction of Traffic

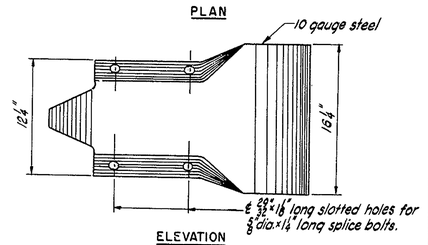


PIER PROTECTION
1" = 20'

This detail applies to piers adjacent to Turnpike Shoulder. At piers adjacent to ramps face of Guard Rail shall be located 2'-0" from face of curb.

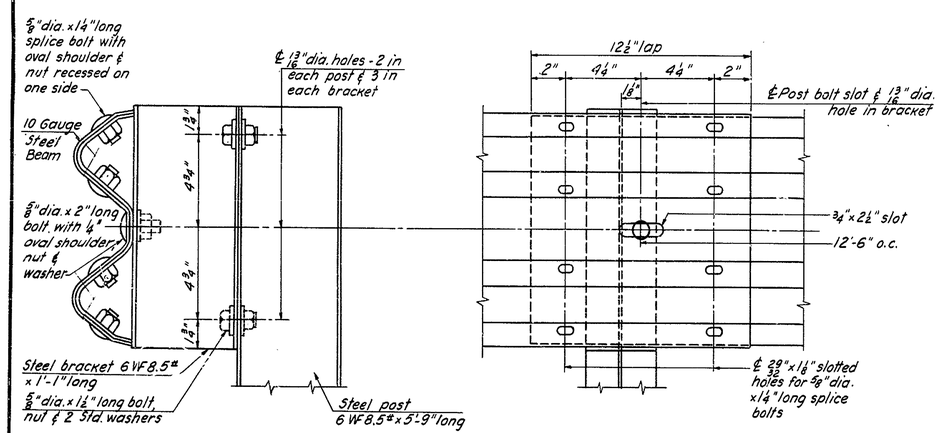


SPLICE BOLT SLOT
Full Scale

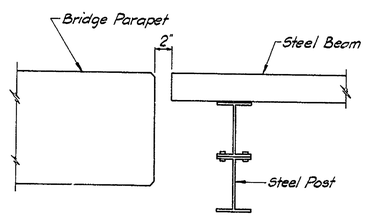


ELEVATION

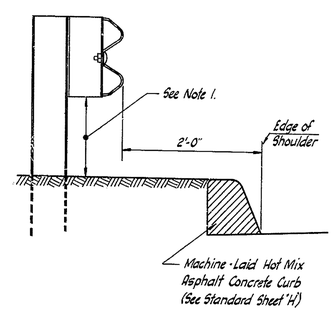
END SECTION DETAILS



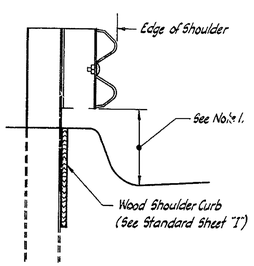
SPLICE DETAILS
3" = 1'-0"



GUARD RAIL ADJACENT TO PARAPET
1 1/2" = 1'-0"



GUARD RAIL WITH HOT-MIX, HOT-LAID ASPHALT CONCRETE CURB
1" = 1'-0"



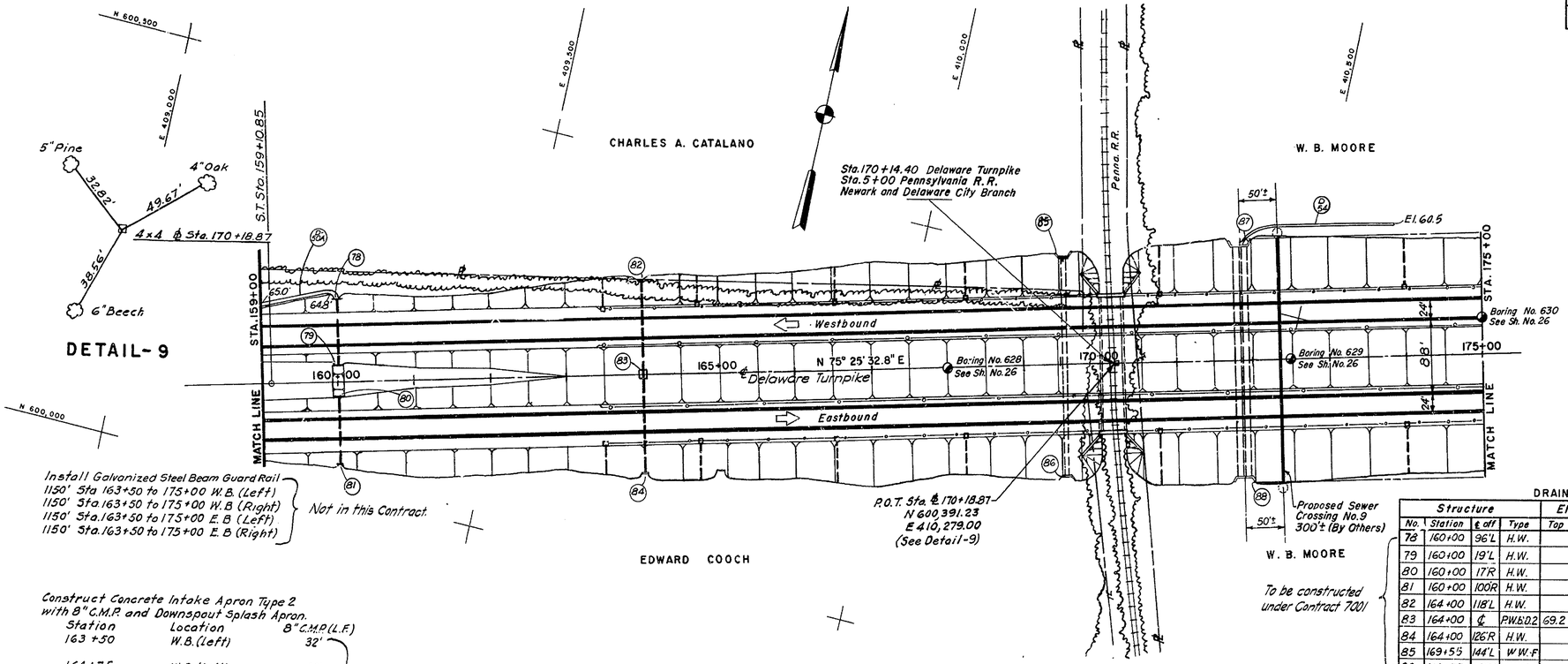
GUARD RAIL WITH WOOD SHOULDER CURB
1" = 1'-0"

General Notes:

1. Nominal dimension to be 1'-1" but to be varied as necessary to produce profile with no humps or dips.
2. All rail elements posts & brackets to be galvanized steel.
3. Oval holes in rail & bent plate detailed in parapet connection are to be punched.

COUNTY	CONTRACT	P.R.A. REG. NO.	STATE	FED. AID PROJECT NO	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE	7001		DEL.			171	175

DELAWARE TURNPIKE



DETAIL-9

Install Galvanized Steel Beam Guard Rail
1150' Sta 163+50 to 175+00 W.B. (Left)
1150' Sta.163+50 to 175+00 W.B (Right)
1150' Sta.163+50 to 175+00 E.B (Left)
1150' Sta.163+50 to 175+00 E.B (Right)
} Not in this Contract.

Construct Concrete Intake Apron Type 2
with 8" C.M.P. and Downspout Splash Apron.

Station	Location	8" C.M.P. (L.F.)
163 +50	W.B. (Left)	32'
164 +75	W.B. (Left)	42'
166 +50	W.B. (Left)	48'
168 +25	W.B. (Left)	54'
170 +75	W.B. (Left)	70'
174 +00	W.B. (Left)	70'
163 +50	E.B. (Right)	36'
164 +75	E.B. (Right)	50'
166 +50	E.B. (Right)	60'
168 +25	E.B. (Right)	56'
170 +75	E.B. (Right)	72'
174 +00	E.B. (Right)	72'

} Not in this Contract

DITCH SCHEDULE

Ditch No.	Ditch Width	Length	Slope	Treatment
D-54	2'	200'	0.010	Seed & Mulch
D-50A	2'	100'	0.002	Seed & Mulch

} To be constructed under Contract 7002.

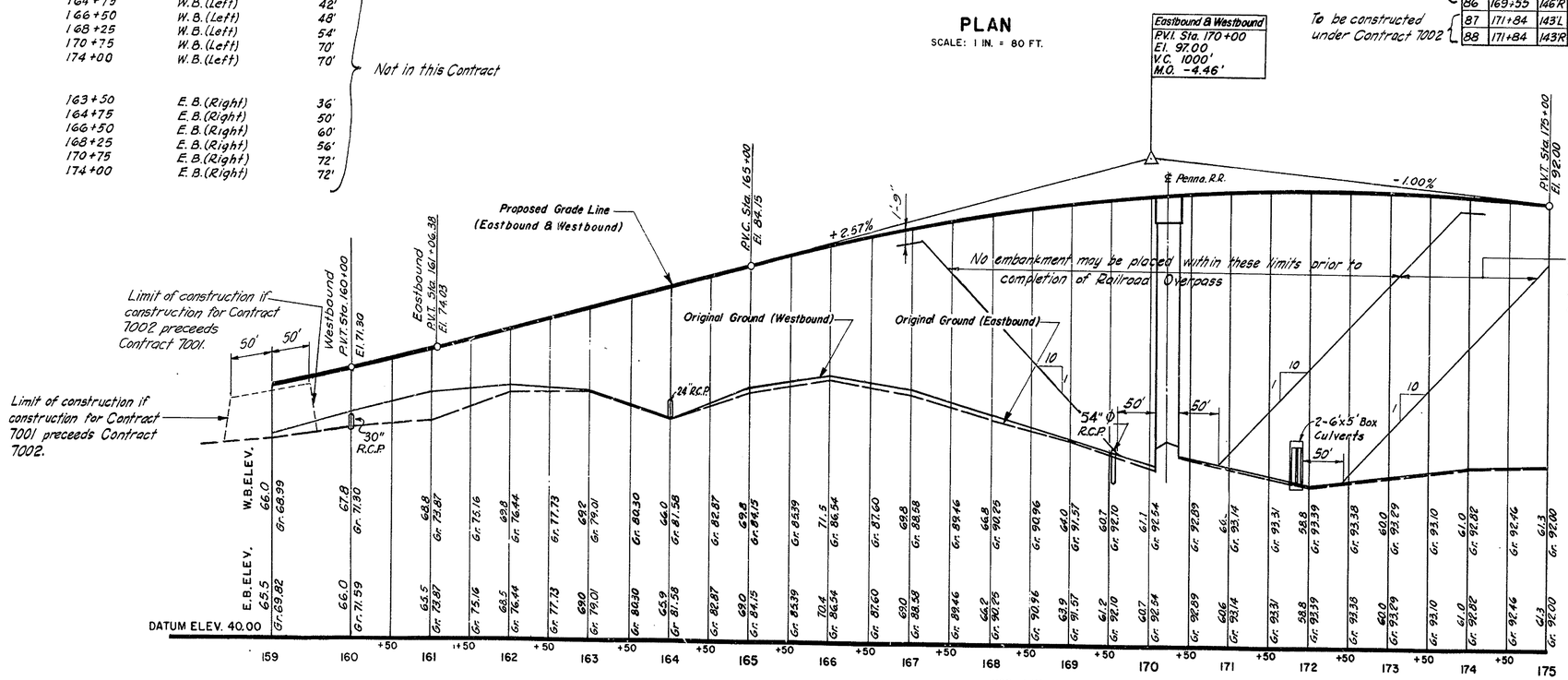
DRAINAGE STRUCTURE SCHEDULE

Structure				Elevation			Pipe				Remarks
No.	Station	℄ off	Type	Top	Inlet	Outlet	Size	Type	Length	Slope	
78	160+00	96'L	H.W.		64.8		30"	R.C.P.	78'	.0051	Standard H.W's.
79	160+00	19'L	H.W.			64.4					Standard H.W's.
80	160+00	17'R	H.W.		64.3		30"	R.C.P.	84'	.0060	Standard H.W's.
81	160+00	100'R	H.W.			63.8					
82	164+00	118'L	H.W.		67.0						Standard H.W.
83	164+00	℄	P.W.B.D.2	69.2	66.0	66.0	24"	R.C.P.	118'	.0085	Standard P.W.B.D-2
84	164+00	126'R	H.W.			65.0	24"	R.C.P.	126'	.0079	Standard H.W.
85	169+55	144'L	W.W.-F		57.4		54"	E.S.R.C.P.	290'	.0028	See Sh. 173 & 174
86	169+55	146'R	W.W.-F			56.6					See Sh. 173 & 174
87	171+84	143'L	W.W.		58.5		2-6'x5'	R.C. Box Culvert	283	0.0017	See Sheet no. 208
88	171+84	143'R	W.W.			58.0					See Sheet no. 208

} To be constructed under Contract 7002

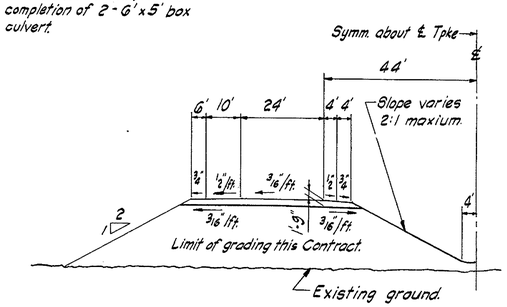
PLAN

SCALE: 1 IN. = 80 FT.



PROFILE

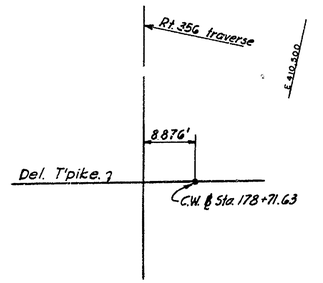
SCALE: HOR. 1 IN. = 80 FT.
VERT. 1 IN. = 8 FT.



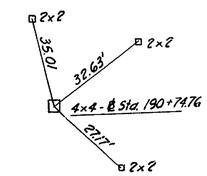
TYPICAL SECTION STATION 159+00 TO 190+00

COUNTY	CONTRACT	P.R.A. REQ. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE	7001		DEL.			172	175

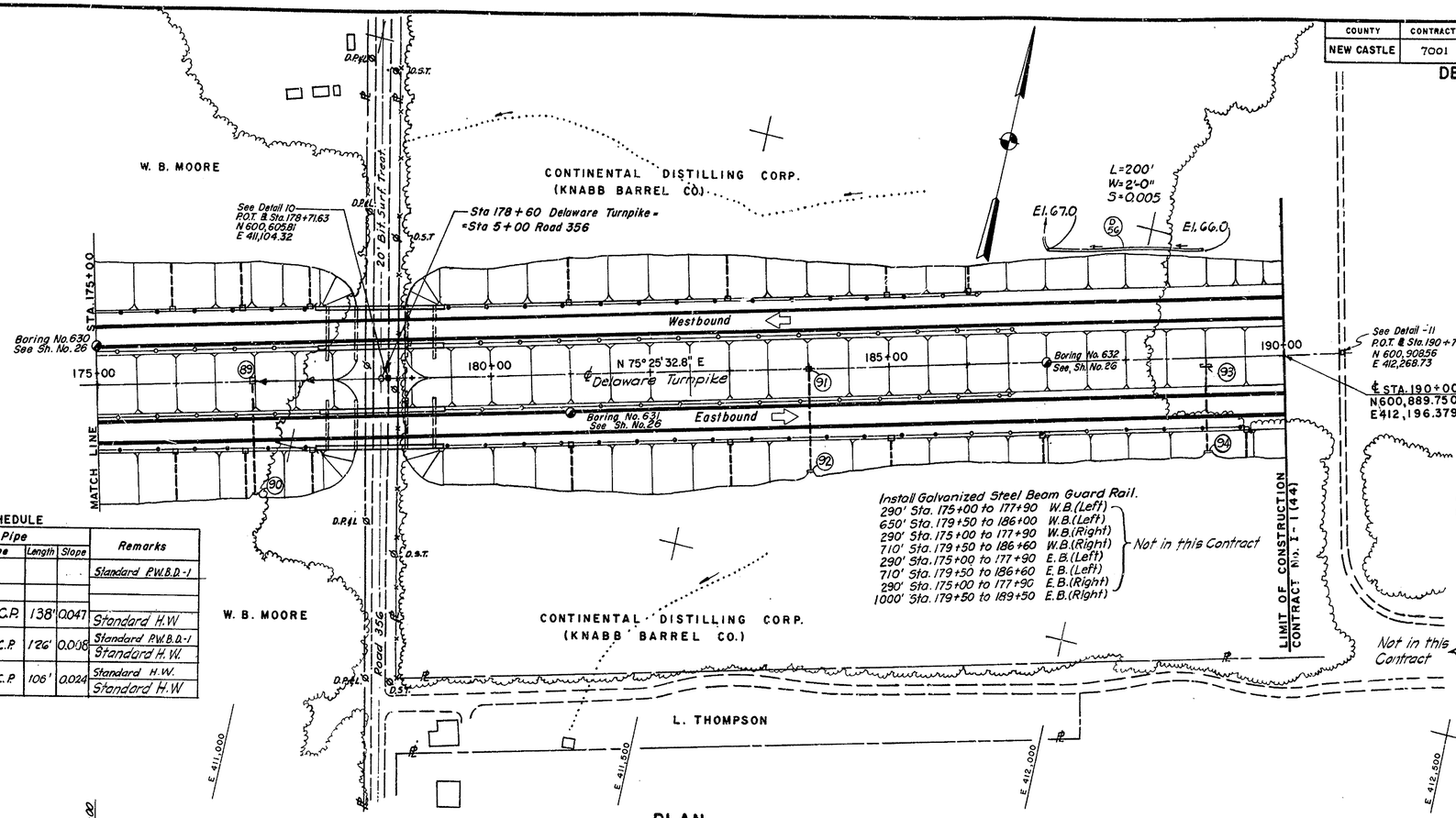
DELAWARE TURNPIKE



DETAIL-10



DETAIL-11



Install Galvanized Steel Beam Guard Rail.

290' Sta. 175+00 to 177+90	W.B. (Left)	Not in this Contract
650' Sta. 179+50 to 186+00	W.B. (Left)	
290' Sta. 175+00 to 177+90	W.B. (Right)	
710' Sta. 179+50 to 186+60	W.B. (Right)	
290' Sta. 175+00 to 177+90	E.B. (Left)	
710' Sta. 179+50 to 186+60	E.B. (Left)	
290' Sta. 175+00 to 177+90	E.B. (Right)	
1000' Sta. 179+50 to 189+50	E.B. (Right)	

Construct Concrete Intake Apron Type 2 with 8" C.M.P. and Downspout Splash Apron

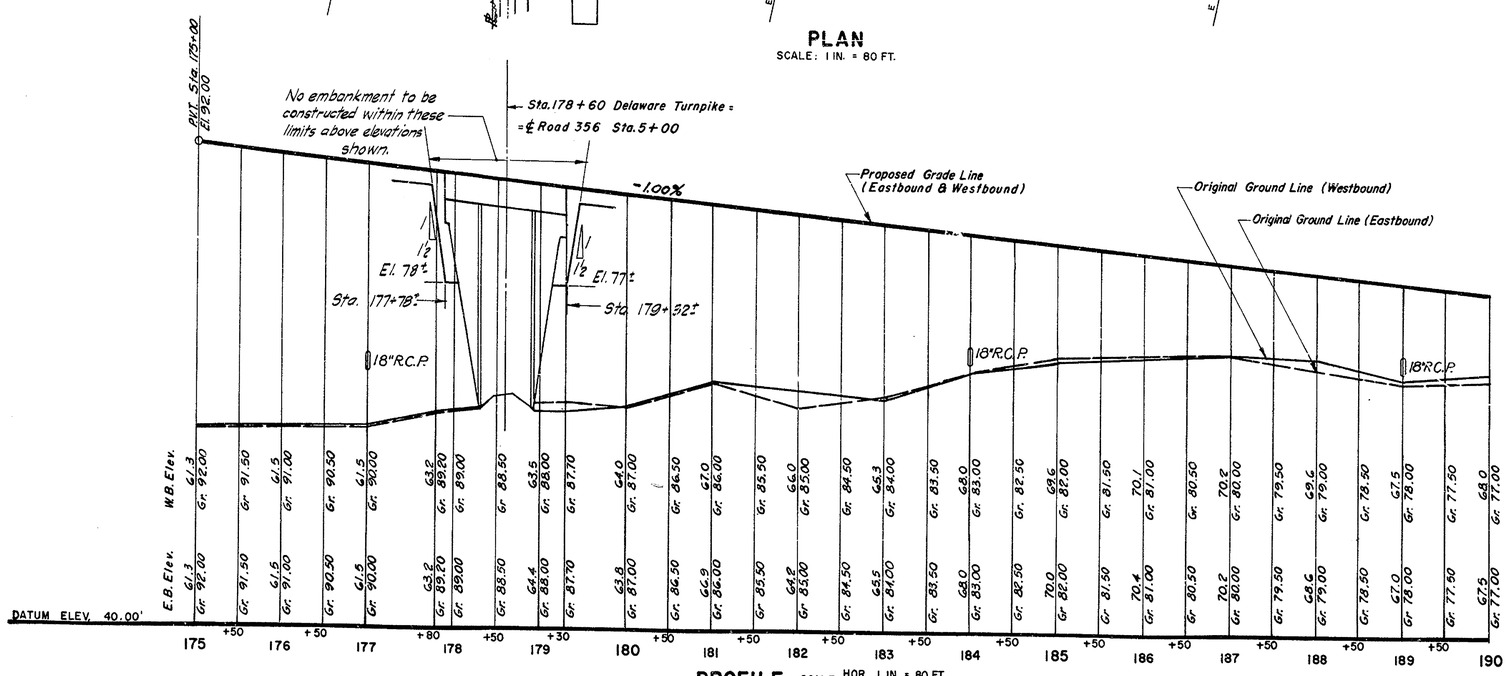
Station	Location	8" C.M.P. (L.F.)
176+00	W.B. (Left)	66'
176+90	W.B. (Left)	62'
177+75	W.B. (Left)	58'
181+00	W.B. (Left)	58'
183+00	W.B. (Left)	60'
185+00	W.B. (Left)	40'
186+00	W.B. (Left)	36'
176+00	E.B. (Right)	66'
176+90	E.B. (Right)	62'
177+75	E.B. (Right)	58'
181+00	E.B. (Right)	58'
183+00	E.B. (Right)	60'
185+00	E.B. (Right)	38'
187+00	E.B. (Right)	36'
189+50	E.B. (Right)	34'

Not in this Contract

DRAINAGE STRUCTURE SCHEDULE

Structure				Elevation			Pipe				Remarks
No.	Station	℄ off.	Type	Top	Inlet	Outlet	Size	Type	Length	Slope	
89	177+00	℄	P.W.B.D.-1	72.0	68.6						Standard P.W.B.D.-1
90	177+00	139'R	H.W.			62.0	18"	R.C.P.	138'	0.047	Standard H.W.
91	184+00	℄	P.W.B.D.-1	72.0	68.8		18"	R.C.P.	126'	0.008	Standard P.W.B.D.-1
92	184+00	126'R	H.W.			68.0					Standard H.W.
93	189+00	6'R	H.W.		68.5		18"	R.C.P.	106'	0.024	Standard H.W.
94	189+00	112'R	H.W.			66.0					Standard H.W.

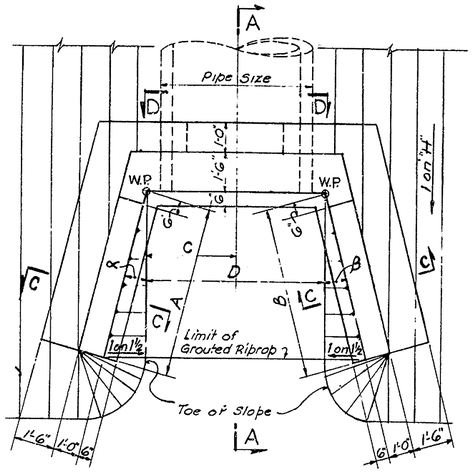
PLAN
SCALE: 1 IN. = 80 FT.



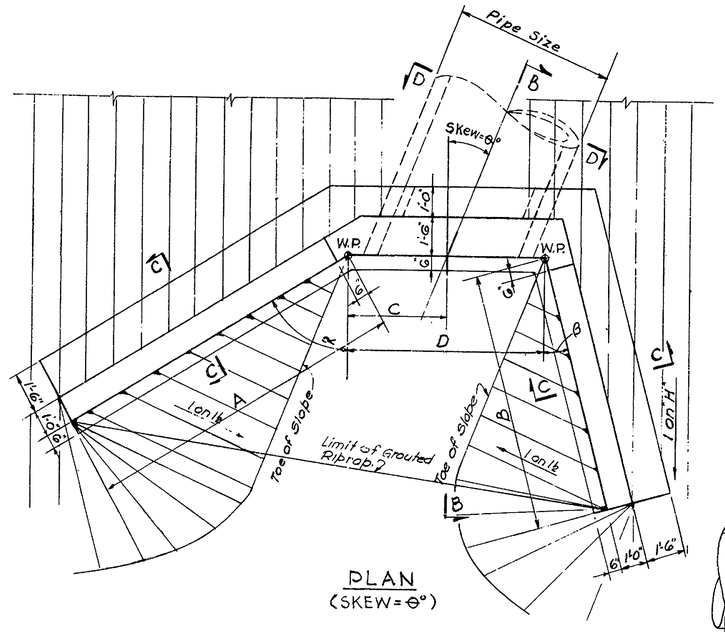
PROFILE SCALE: HOR. 1 IN. = 80 FT. VERT. 1 IN. = 8 FT.

COUNTY	CONTRACT	P.B.A. REG. NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE	7001	2	DEL.			173	175

DELAWARE TURNPIKE



PLAN
(SKEW = 0°)

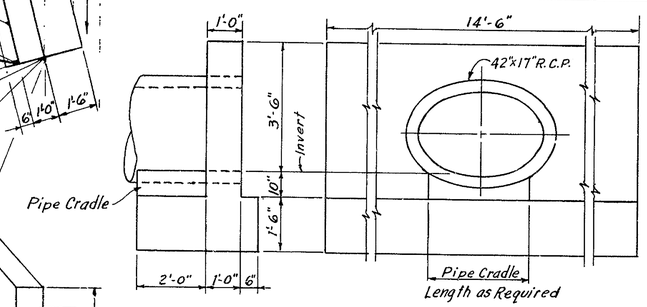


PLAN
(SKEW = θ°)

WING WALLS

SCHEDULE OF DIMENSIONS

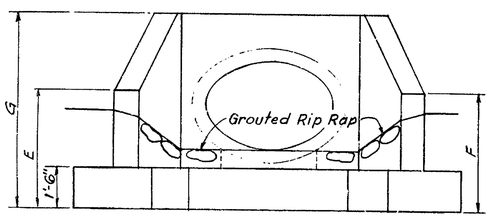
TYPE	PIPE SIZE	DIRECTION OF θ	θ	α	β	A	B	C	D	E	F	G	H	QUANTITIES / WALL REINF. ITEM-20 (LBS.)	CONC. ITEM-18 (CU. YDS)	GROUTED RIP RAP ITEM-64 (SQ. YDS)
WW-A	48"φ	—	0°	15°	15°	6'-6"	6'-6"	3'-0"	6'-0"	4'-3"	4'-3"	8'-0"	2	300	7.0	6.0
WW-B	60"φ	—	0°	15°	15°	8'-3"	8'-3"	3'-6"	7'-0"	4'-6"	4'-6"	9'-1"	-	400	9.0	8.5
WW-C	60"×38"	R	30°	60°	15°	8'-8"	5'-6"	4'-0"	8'-0"	6'-3"	5'-11"	7'-2½"	4	400	9.0	7.5
WW-D	60"×38"	R	30°	60°	30°	8'-8"	4'-8"	4'-0"	8'-7"	6'-3"	6'-3"	7'-2½"	4	400	9.0	7.0
WW-E	66"φ	L	41°	15°	60°	6'-0"	12'-9"	6'-0"	12'-0"	5'-10"	5'-6"	9'-8"	2	450	11.0	10.0
WW-F	54"φ	—	0°	15°	15°	7'-6"	7'-6"	3'-3"	6'-6"	4'-5"	4'-5"	8'-7"	2	350	8.0	7.0
WW-G	54"φ	R	26°	60°	30°	12'-6"	7'-4"	3'-10"	8'-8"	5'-3"	5'-3"	8'-7"	3	500	12.0	12.0
WW-H	60"φ	R	23°	60°	15°	10'-4"	8'-5"	3'-9"	7'-7"	7'-7"	6'-9"	9'-1"	4	500	12.0	11.0



ELEVATION

HEADWALL DETAILS - 42"×27" ELLIPTICAL R.C.P.

QUANTITIES/WALL			
REINF. ITEM-20 (LBS.)	CONCRETE ITEM-18 (CU. YDS.)		
	WALL	FOOTING	TOTAL
90	1.61	2.82	4.43



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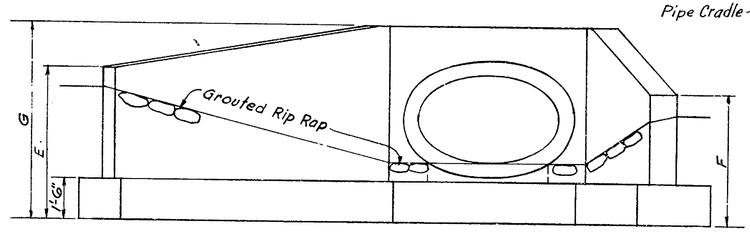

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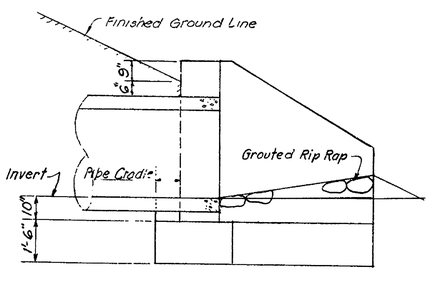
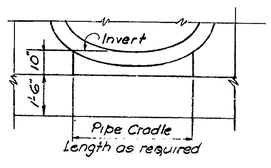


SECTION A-A
SECTION B-B SIMILAR



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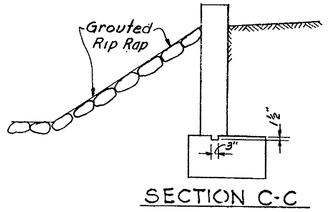
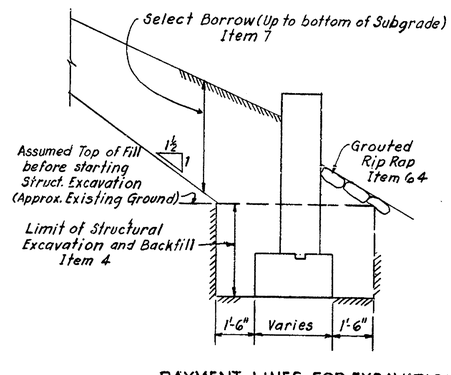


SECTION C-C



PAYMENT LINES FOR EXCAVATION AND BACKFILL

NOTES:

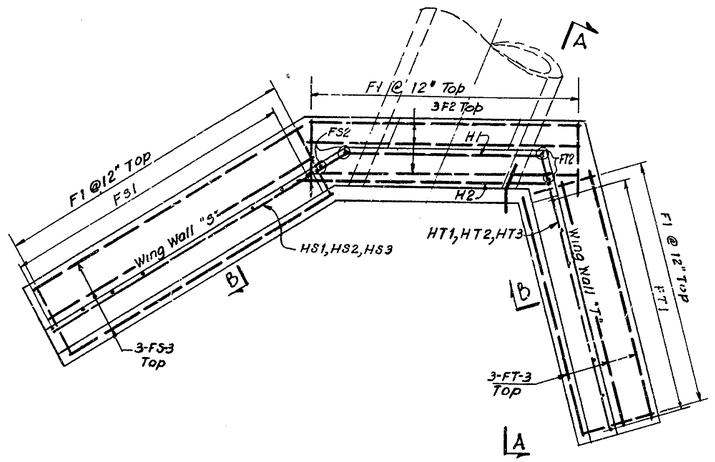
1. DESIGN SPECIFICATIONS: A.A.S.H.O. 1957.
2. MATERIAL AND FABRICATION SPECIFICATIONS: State of Delaware, State Highway Department. Standard Specifications for Highway Construction, July 1, 1960, and as given in the Special Provisions.
3. DESIGN STRESSES: Reinforcing Steel = 18,000 p.s.i. Concrete; f_c = 1,200 p.s.i. n = 10
4. Concrete shall be Class "A" with a minimum 28 day compressive strength of 3,000 p.s.i.
5. Splices for stress bars shall be a minimum of 30 diameters, all other splices a minimum of 20 diameters.
6. All exposed concrete edges shall be bevelled 1"×1" unless otherwise noted.
7. For location of Headwalls see Plan and Profile sheets.
8. For Bar List see Sheet No. 28
9. Headwalls for Culverts 36" or less shall conform to the State Standard Detail Sheets

CULVERT HEAD WALLS - DETAILS

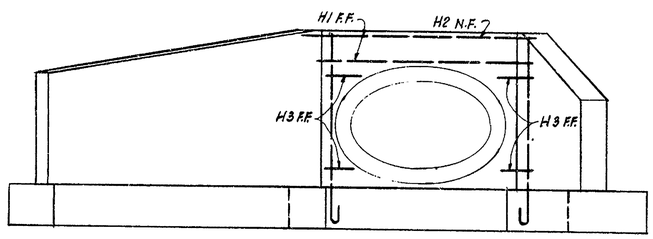
NOT TO SCALE

COUNTY	CONTRACT	R.R.A. REG.NO.	STATE	FED. AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NEW CASTLE	7001	2	DEL.			174	175

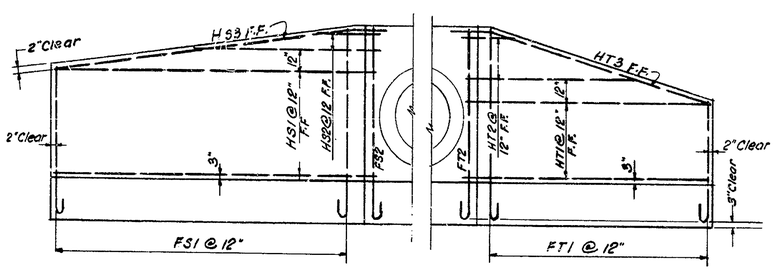
DELAWARE TURNPIKE



PLAN

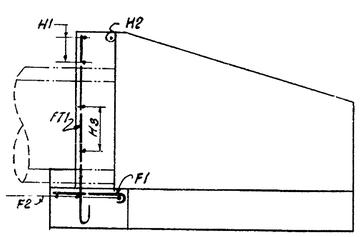


ELEVATION

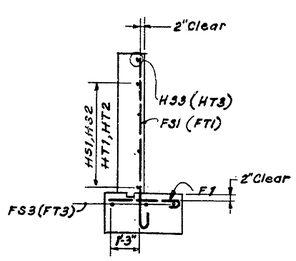


ELEVATION WINGWALL "S"

ELEVATION WINGWALL "T"



SECTION A-A



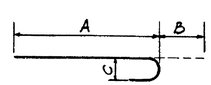
SECTION B-B

WING WALLS - BAR LIST

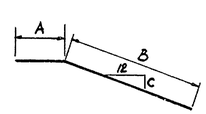
TYPE	MARK	SIZE	AMT. REQ'D.	LENGTH	BAR TYPE	A	B	C	Δ
WW-A	F1	5	21	3'-1"	I	2'-6"	7"	5"	
	F2		3	10'-0"	STR.				
	FS1		1 EA. TOT. 7	4'-5" TO 8'-1"	I	3'-10" TO 7'-6"	7"	5"	7"
	FS2		2	8'-2"	I	7'-7"	7"	5"	
	FT1		1 EA. TOT. 7	4'-5" TO 8'-1"	I	3'-10" TO 7'-6"	7"	5"	7"
	FT2		2	8'-2"	I	7'-7"	7"	5"	
	H1		2	7'-0"	STR.				
	H2		1	7'-7"					
	H3		4	1'-6"					
	HS1		3	7'-6"					
	HS2		1 EA. TOT. 2	3'-8" TO 4'-6"	STR.				1'-8"
	HS3		1	8'-5"	II	1'-8"	6'-9"	8 3/16"	
	HT1		3	7'-6"	STR.				
	HT2		1 EA. TOT. 2	3'-8" TO 4'-6"	STR.				1'-8"
	HT3		1	8'-5"	II	1'-8"	6'-9"	8 3/16"	
	FS3		3	7'-6"	STR.				
	FT3	5	3	7'-6"	STR.				
WW-B	F1	5	23	3'-1"	I	2'-6"	7"	5"	
	F2		3	11'-0"	STR.				
	FS1		1 EA. TOT. 8	4'-9" TO 8'-11"	I	4'-2" TO 8'-4"	7"	5"	7"
	FS2		2	9'-1"	I	8'-6"	7"	5"	
	FT1		1 EA. TOT. 8	4'-9" TO 8'-11"	I	4'-2" TO 8'-4"	7"	5"	7"
	FT2		2	9'-1"	I	8'-6"	7"	5"	
	H1		2	8'-0"	STR.				
	H2		1	8'-7"					
	H3		4	1'-6"					
	HS1		3	9'-3"					
	HS2		1 EA. TOT. 3	3'-9" TO 5'-11"	STR				1'-4"
	HS3		1	10'-3"	II	1'-8"	6'-7"	7 3/16"	
	HT1		3	9'-3"	STR.				
	HT2		1 EA. TOT. 3	3'-9" TO 5'-11"	STR.				1'-4"
	HT3		1	10'-3"	II	1'-8"	6'-7"	7 3/16"	
	FS3		3	9'-3"	STR.				
	FT3	5	3	9'-3"	STR.				
WW-C	F1	5	23	3'-1"	I	2'-6"	7"	5"	
	F2		2	10'-11"	STR.				
	FS1		1 EA. TOT. 9	6'-5" TO 7'-2"	I	5'-10" TO 6'-7"	7"	5"	1 1/4"
	FS2		2	7'-4"	I	6'-9"	7"	5"	
	FT1		1 EA. TOT. 5	6'-1" TO 7'-2"	I	5'-6" TO 6'-7"	7"	5"	8"
	FT2		2	7'-4"	I	6'-9"	7"	5"	
	H1		2	7'-10"	STR.				
	H2		1	10'-1"					
	H3		4	1'-6"					
	HS1		5	9'-8"					
	HS2		1	4'-0"	STR.				
	HS3		1	9'-8"	II	1'-8"	8'-0"	1 3/16"	
	HT1		4	6'-6"	STR.				
	HT2		1	5'-10"	STR.				
	HT3		1	6'-8"	II	1'-8"	5'-0"	3 1/8"	
	FS3		3	9'-8"	STR.				
	FT3	5	3	6'-6"	STR.				
WW-D	F1	5	23	3'-1"	I	2'-6"	7"	5"	
	F2		2	11'-1"	STR.				
	FS1		1 EA. TOT. 9	6'-5" TO 7'-3"	I	5'-10" TO 6'-8"	7"	5"	1 1/4"
	FS2		2	7'-4"	I	6'-9"	7"	5"	
	FT1		1 EA. TOT. 5	6'-5" TO 7'-3"	I	5'-10" TO 6'-8"	7"	5"	2 1/2"
	FT2		2	7'-4"	I	6'-9"	7"	5"	
	H1		2	8'-2"	STR.				
	H2		1	10'-8"					
	H3		4	1'-6"					
	HS1		5	9'-8"					
	HS2		1	4'-0"	STR.				
	HS3		1	9'-8"	II	1'-8"	8'-0"	1 3/16"	
	HT1		5	5'-6"	STR.				
	HT2		1	4'-0"	STR.				
	HT3		1	5'-7"	II	1'-6"	4'-1"	2 3/16"	
	FS3		3	9'-8"	STR.				
	FT3	5	3	5'-8"	STR.				

TYPE	MARK	SIZE	AMT. REQ'D.	LENGTH	BAR TYPE	A	B	C	Δ
WW-E	F1	5	31	3'-1"	I	2'-6"	7"	5"	
	F2		3	14'-0"	STR.				
	FS1		1 EA. TOT. 6	6'-0" TO 9'-8"	I	5'-5" TO 9'-1"	7"	5"	9"
	FS2		2	9'-9"	I	9'-2"	7"	5"	
	FT1		1 EA. TOT. 13	5'-7" TO 9'-8"	I	5'-0" TO 9'-1"	7"	5"	4"
	FT2		2	9'-9"	I	9'-2"	7"	5"	
	H1		2	11'-6"	STR.				
	H2		1	13'-0"					
	H3		4	1'-6"					
	HS1		4	7'-0"					
	HS2		1 EA. TOT. 3	2'-8" TO 4'-9"	STR.				1'-0 1/8"
	HS3		1	7'-8"	II	1'-8"	6'-0"	8 1/2"	
	HT1		5	13'-9"	STR.				
	HT2		1 EA. TOT. 8	3'-2" TO 9'-2"	STR.				3'-0"
	HT3		1	14'-0"	II	1'-8"	12'-4"	4"	
	FS3		3	7'-0"	STR.				
	FT3	5	3	13'-9"	STR.				
WW-F	F1	5	23	3'-1"	I	2'-6"	7"	5"	
	F2		3	8'-6"	STR.				
	FS1		1 EA. TOT. 7	4'-7" TO 8'-7"	I	4'-0" TO 8'-0"	7"	5"	8"
	FS2		2	8'-9"	I	8'-2"	7"	5"	
	FT1		1 EA. TOT. 7	4'-7" TO 8'-7"	I	4'-0" TO 8'-0"	7"	5"	8"
	FT2		2	8'-9"	I	8'-2"	7"	5"	
	H1		2	8'-0"	STR.				
	H2		1	7'-6"					
	H3		4	1'-6"					
	HS1		4	8'-6"					
	HS2		1	4'-7"	STR				
	HS3		1	8'-8"	II	1'-8"	7'-0"	7 1/4"	
	HT1		4	8'-6"	STR.				
	HT2		1	4'-7"	STR.				
	HT3		1	8'-8"	II	1'-8"	7'-0"	7 1/4"	
	FS3		3	8'-6"	STR.				
	FT3	5	3	8'-6"	STR.				
WW-G	F1	5	30	3'-1"	I	2'-6"	7"	5"	
	F2		3	10'-3"	STR.				
	FS1		1 EA. TOT. 12	5'-5" TO 8'-7"	I	4'-10" TO 8'-0"	7"	5"	3 1/2"
	FS2		2	8'-9"	I	8'-2"	7"	5"	
	FT1		1 EA. TOT. 7	5'-5" TO 8'-7"	I	4'-10" TO 8'-0"	7"	5"	6 1/2"
	FT2		2	8'-9"	I	8'-2"	7"	5"	
	H1		2	7'-6"	STR.				
	H2		1	9'-3"					
	H3		4	1'-6"					
	HS1		4	13'-6"					
	HS2		1	4'-7"	STR				
	HS3		1	13'-8"	II	1'-8"	12'-0"	3 1/4"	
	HT1		4	8'-4"	STR.				
	HT2		1	2'-10"	STR				
	HT3		1	8'-8"	II	1'-8"	7'-0"	5 1/2"	
	FS3		3	13'-6"	STR.				
	FT3	5	3	13'-6"	STR.				
WW-H	F1	5	28	3'-1"	I	2'-6"	7"	5"	
	F2		2	10'-3"	STR.				
	FS1		1 EA. TOT. 10	7'-9" TO 9'-1"	I	7'-2" TO 8'-6"	7"	5"	1 3/4"
	FS2		2	9'-3"	I	8'-8"	7"	5"	
	FT1		1 EA. TOT. 8	6'-11" TO 9'-1"	I	6'-6" TO 8'-6"	7"	5"	3 3/16"
	FT2		2	9'-3"	I	8'-8"	7"	5"	
	H1		2	7'-5"	STR.				
	H2		1	9'-8"					
	H3		4	1'-6"					
	HS1		6	11'-4"					
	HS2		1	6'-7"	STR.				
	HS3		1	11'-4	II	1'-8"	9'-8	1 3/16"	
	HT1		5	9'-5"	STR.				
	HT2		1 EA. TOT. 2	3'-5" TO 6'-9"	STR.				
	HT3		1	9'-9"	II	1'-8"	8'-1"	8 3/16"	
	FS3		3	11'-4"	STR.				
	FT3	5	3	9'-5"	STR.				

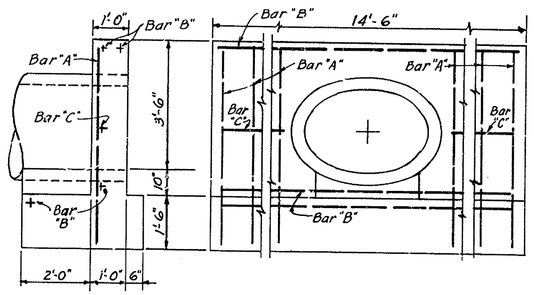
All bar dimensions are out to out



TYPE I



TYPE II



BAR LIST & DETAILS
HEADWALL FOR 42"x27" ELLIP. R.C.P.

Spacing of Vertical Bars	1/2" REINFORCING BARS								
	BARS "A"			BARS "B"			BARS "C"		
	NO.	Length	Total Length	NO.	Length	Total Length	NO.	Length	Total Length
11"	12	5'-6"	66'	4	14'	56'	2	4'-6	9'

NOTES:

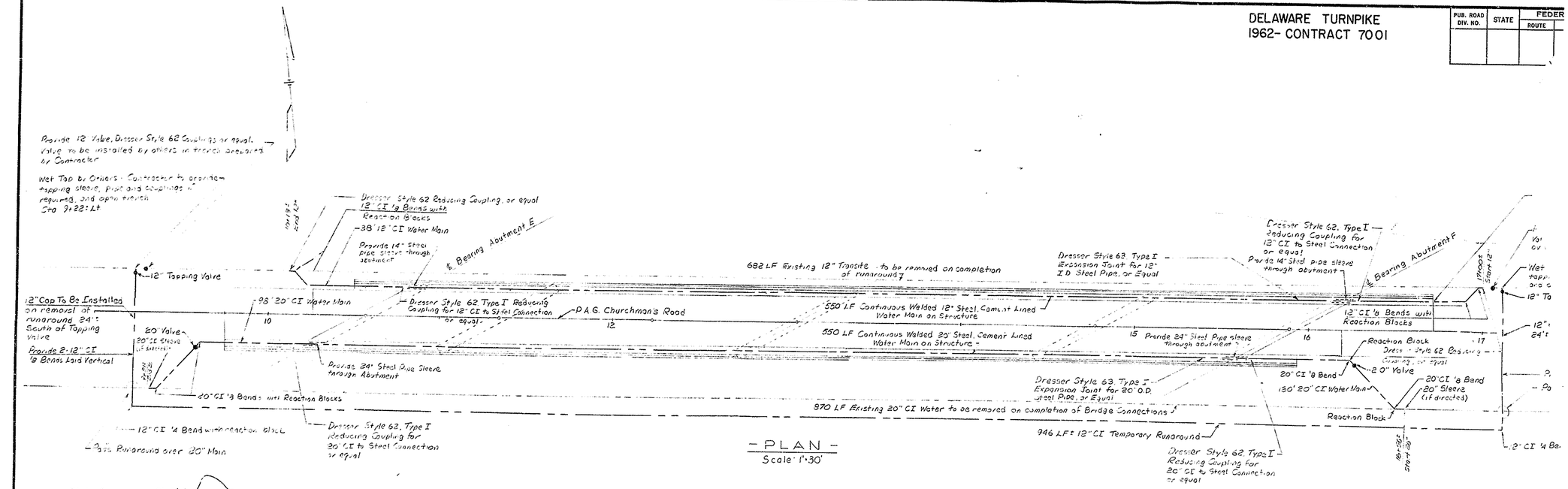
1. For Location of Headwalls see Plan and Profile Sheets.
2. For Dimensions of Headwalls see Sheet No. 27

CULVERT HEAD WALLS - BAR LIST

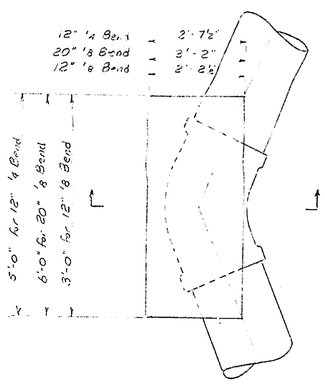
NOT TO SCALE

DELAWARE TURNPIKE
1962- CONTRACT 7001

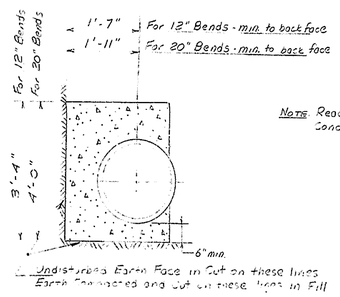
PUB. ROAD DIV. NO.	STATE	FEDER ROUTE



— PLAN —
Scale: 1" = 30'



Plan



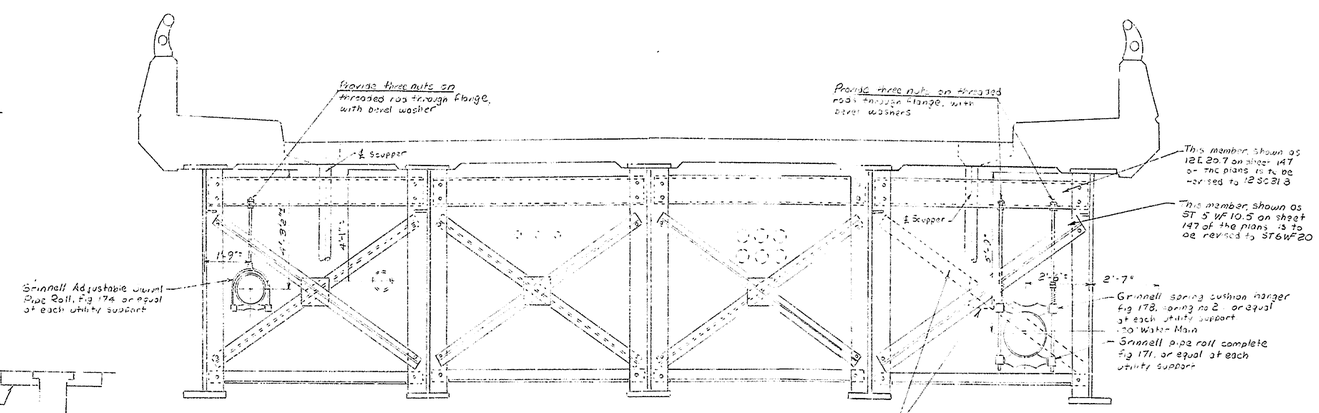
Section

Note: Reaction Blocks to be Portland Cement Concrete Masonry

Note: At the 'a' bends on the temporary runaround the Contractor may, at his option, provide deadman, with other suitable temporary blocking, equal in resisting force to the block detailed

DETAIL OF REACTION BLOCKING

No Scale

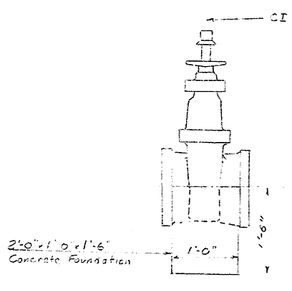


See Section A-A on sheet 147 of the plans for additional details

Note: Diagonal Bracing shown in Typical Cross Bracing at Abutments is to be modified to conform to Diagonal Bracing shown in Typical Cross Bracing at Piers. See sheet 147

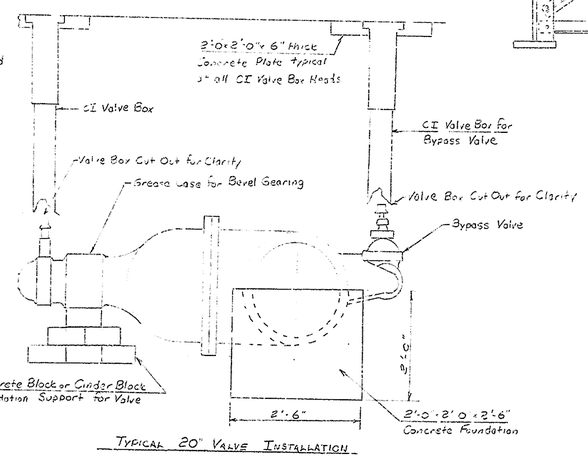
TYPICAL SECTION AT UTILITY SUPPORTS - SHOWING STEEL WATER MAIN PIPE HANGERS AND SUPPORTS

Scale: 3/8" = 1'-0"



TYPICAL 2" VALVE INSTALLATION

No Scale



TYPICAL 20" VALVE INSTALLATION

No Scale

NOTES:

1. Cast iron water pipe shall conform to A.S.A. Specs. A21.6 or A21.8 with Tyton Joint
2. Cast Iron Fittings shall conform to AWWA Spec. C-100, latest issue for Class D fittings.
3. Steel Water Mains shall conform to ASTM Spec. A-53, Grade A. Walls of 20" steel pipe shall be 1/2" thick with 3/16" cement mortar lining. Walls of 12" steel pipe shall be 1/2" thick with 1/8" thick cement mortar lining. The contractor shall supply continuous welded steel pipe in the structure. Lining and coating shall be accomplished subsequent to welding, in one continuous operation. Care shall be taken to insure that coatings and linings in no way interfere with operation of the expansion joints.
4. The contractor shall supply ALL materials required for the completion of the work.
5. The required wet taps and valve insertions on the existing 12" CI watermain shall be done by personnel of the Artesian Water Company with materials supplied by the contractor.
6. Water mains shall be placed with 4'-3" cover to proposed ground unless otherwise directed.
7. Cement Mortar Lining shall conform to AWWA Spec. C-104.
8. The limits of work shown are approximate and shall be altered to coincide with existing pipe joints.
9. Couplings between transite and Cast Iron pipe shall be Dresser Style 62.

DELAWARE STATE HIGHWAY DEPARTMENT

DELAWARE TURNPIKE

UNDERPASS AT CHURCHMANS ROAD
12" & 20" WATER MAIN RELOCATION

DRAWN SIM	SCALE: As Noted	CONTRACT 7001
TRACED		
CHECKED		
CHARGE OF HCL		SHEET 175 OF 175