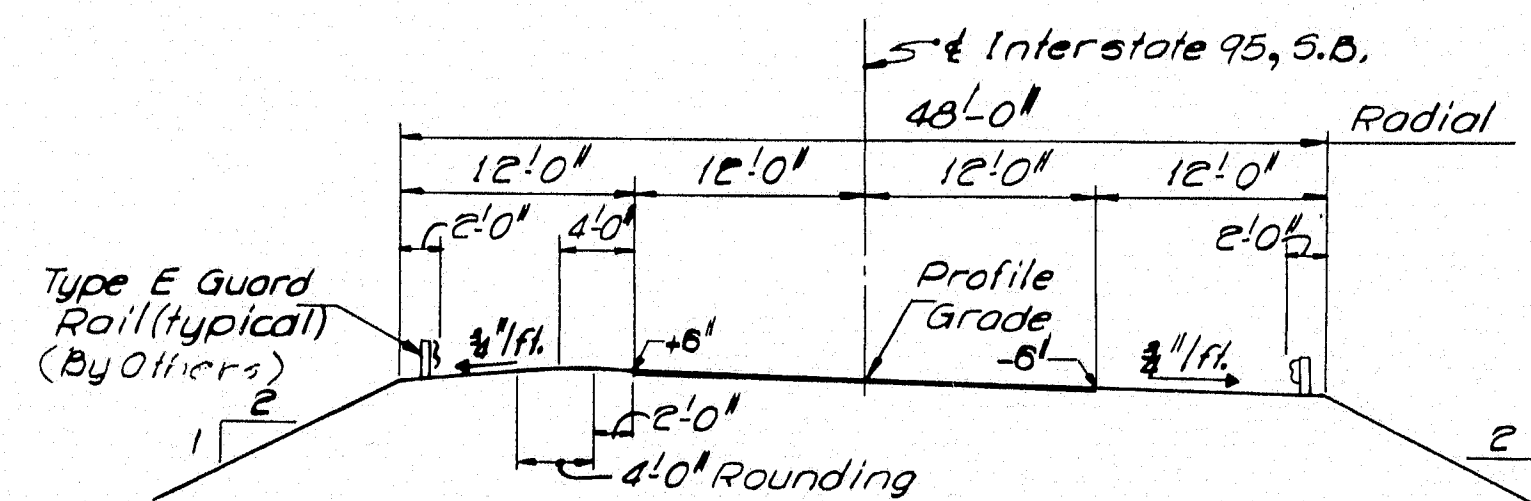
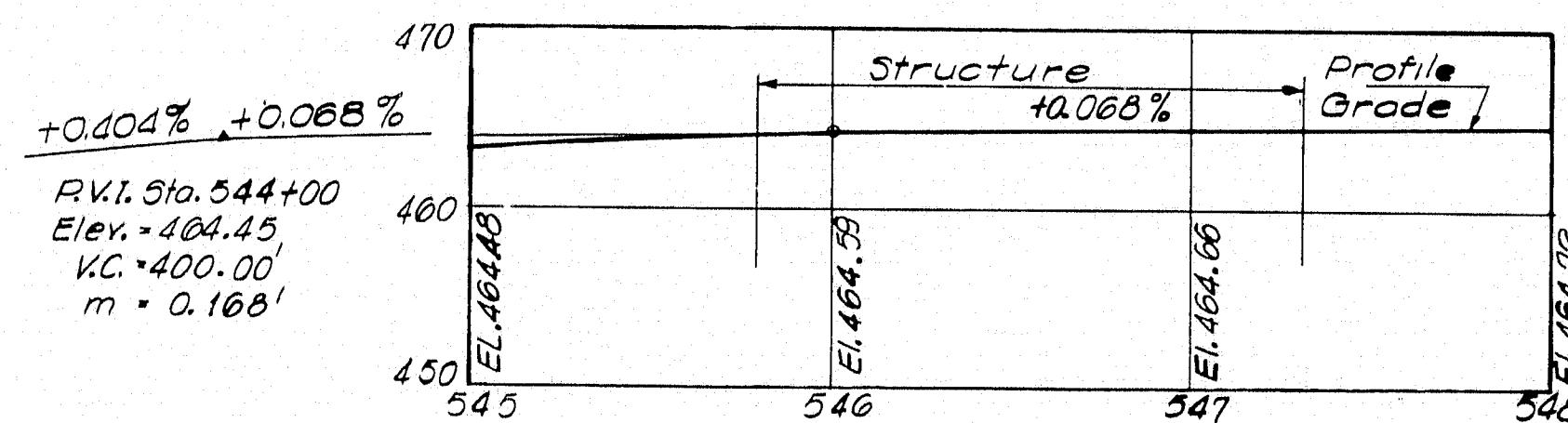
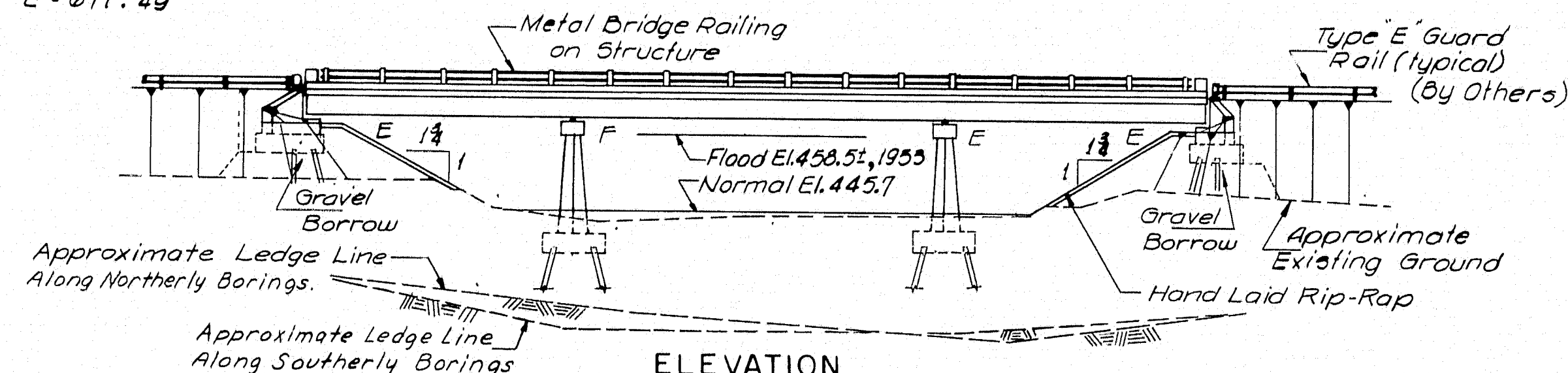


**CURVE DATA**  
 P.I. Sta. 535+02.35  
 $\Delta = 71^\circ 47' 09.6''$   
 $D = 2^\circ 00' 00''$   
 $R = 2864.79'$   
 $T = 2075.23'$   
 $L = 3509.30'$   
 $E = 671.49'$



# **SPECIFICATIONS**

**DESIGN**  
 A.A.S.H.O. Standard Specifications for Highway Bridges 1961 with Interim Specifications 1961, 1962, 1963 & 1964.  
**CONTRACT**  
 State of Maine, State Highway Commission, Standard Specifications for Highways and Bridges, Revision of January 1956 and Supplemental Specifications February 1960.

**LIVE LOADING**  
 HS 20-44 (Modified for Interstate)

**FOUNDATIONS**  
 Abutments - 10BPA2 End Bearing Piles (Capacity 37 Tons)  
 Piers - 10BPA2 End Bearing Piles (Capacity 37 Tons)

**ALLOWABLE STRESSES**  
 Concrete ( $n=10$ )  $f_c = 1200$  p.s.i.  
 Reinforcing Steel, Int. Grade  $f_s = 20,000$  p.s.i.  
 Structural Steel  $f_s = 20,000$  p.s.i. (A.S.T.M. A36)

**CONCRETE CLASSIFICATION**  
 All Concrete shall be Class "A"

**HYDRAULIC DATA**  
 Area = 124.8 Sq. Mi.  
 $S = 23.8$  Ft./Sq. Mi.  
 $Q_{50} = 8500$  C.F.S.

## **ESTIMATE OF QUANTITIES**

ITEM NO.	DESCRIPTION	QUANTITY	UNIT
204-14	Structural Earth Excavation, Piers	352	C.Y.
205-12	Gravel Borrow (I.P.M.)	555	C.Y.
701-35	P.C.C. Abut. & Retaining Wall	200	C.Y.
701-35	P.C.C. Piers	302	C.Y.
701-40	P.C.C. Roadway & Sidewalk Slabs on Steel Bridges	172	C.Y.
701-54	Portland Cement for Riprap Grout	8	Bbls.
701-55	Curing Box for Conc. Cylinders	1	Each
702-103	Structural Steel Fabricated & Delivered	L.S.	L.S.
702-104	Structural Steel Erection	L.S.	L.S.
702-105	Structural Steel Field Painting	L.S.	L.S.
705-13	Reinforcing Steel Delivered	80,100	Lbs.
705-14	Reinforcing Steel Placing	80,100	Lbs.
708-16	Steel H-Beam Piles 42 Lbs./Ft.	1,596	L.F.
803-7	Cofferdam Pier 1	1 Ea.	L.S.
803-8	Cofferdam Pier 2	1 Ea.	L.S.
805-8	Bridge Rail	277	L.F.
807-11	Epoxy Resin Surface Sealant	132	S.Y.
901-24	Vertical Bridge Curb Type I	285	L.F.
901-25	Vertical Bridge Curb Type Circular	12	L.F.
901-10	Hand Laid Riprap	210	C.Y.
701-50	P.C.C. Approach Slabs	17	C.Y.
937-9	Field Office Type "C"	L.S.	L.S.

Estimated weight of structural steel including drains is 161,500 lbs.

## **NOTES**

- All fill within the limits as shown on Profile Sheet 10 shall be placed by the Controlled Density Method.
- Size of stones in gravel borrow through which abutment piles are driven shall not exceed 6 inches, and concentrations of stones shall be avoided.
- Place gravel borrow to elevation of abutment footing before driving piles.

## **INDEX OF SHEETS**

- GENERAL PLAN & QUANTITIES
- FOUNDATION SURVEY
- ABUTMENT NO. 1
- ABUTMENT NO. 2 & APPROACH SLAB
- PIERS
- STRUCTURAL STEEL & BLOCKING
- SUPERSTRUCTURE
- SLOPE PROTECTION
- REINFORCING STEEL

## **STANDARD DETAIL SHEETS**

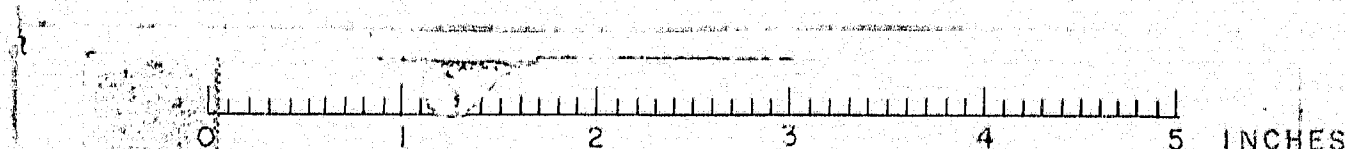
- BD 101-64 BEARING PEDESTALS  
 BD 103-64 BEAM SPLICES  
 BD 104-64 DIAPHRAGMS, ARMORED JOINT, SHEAR CONNECTORS, DRAIN.  
 BD 107-64 STEEL RAIL  
 BD 108-64 ALUMINUM RAIL

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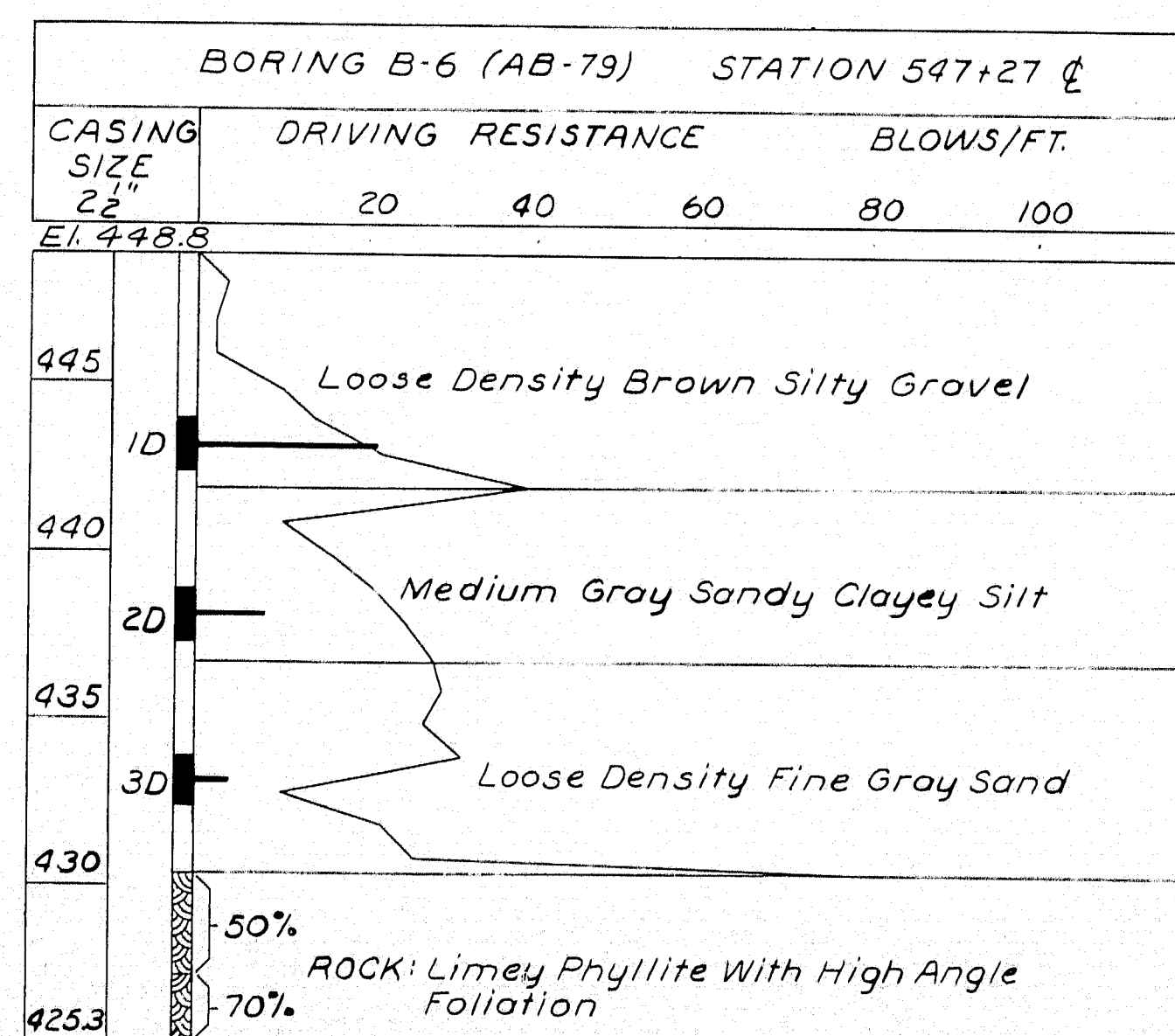
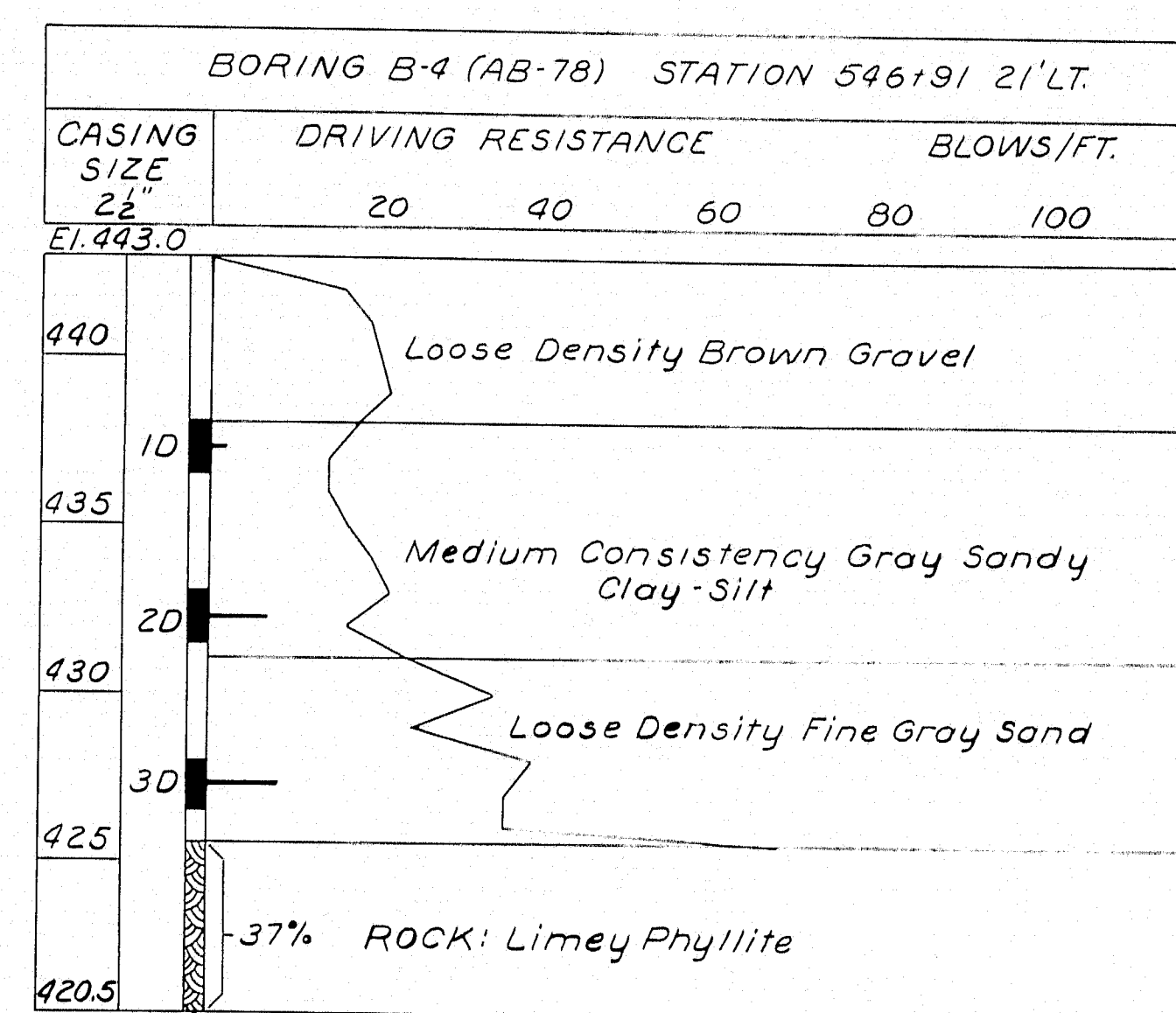
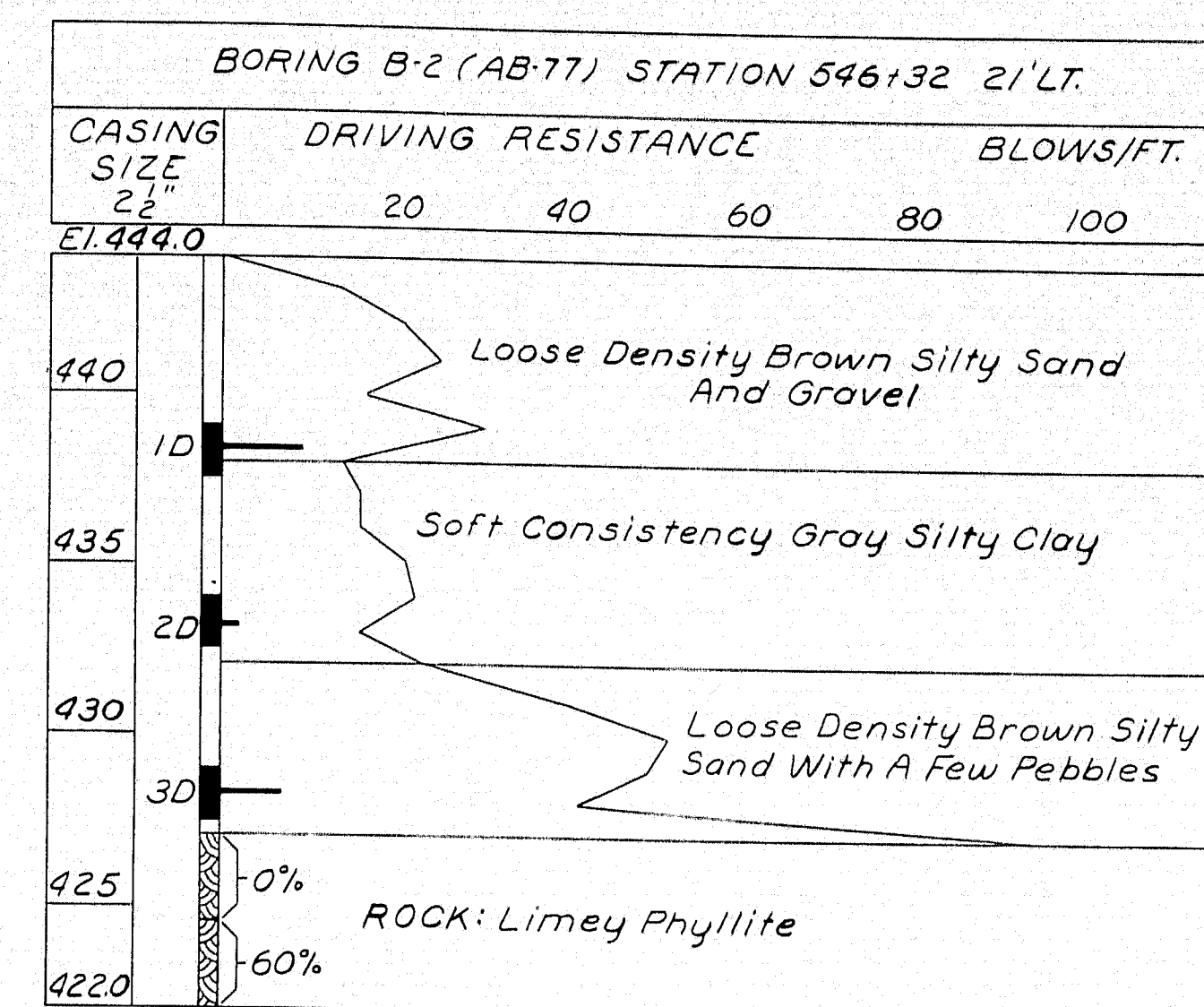
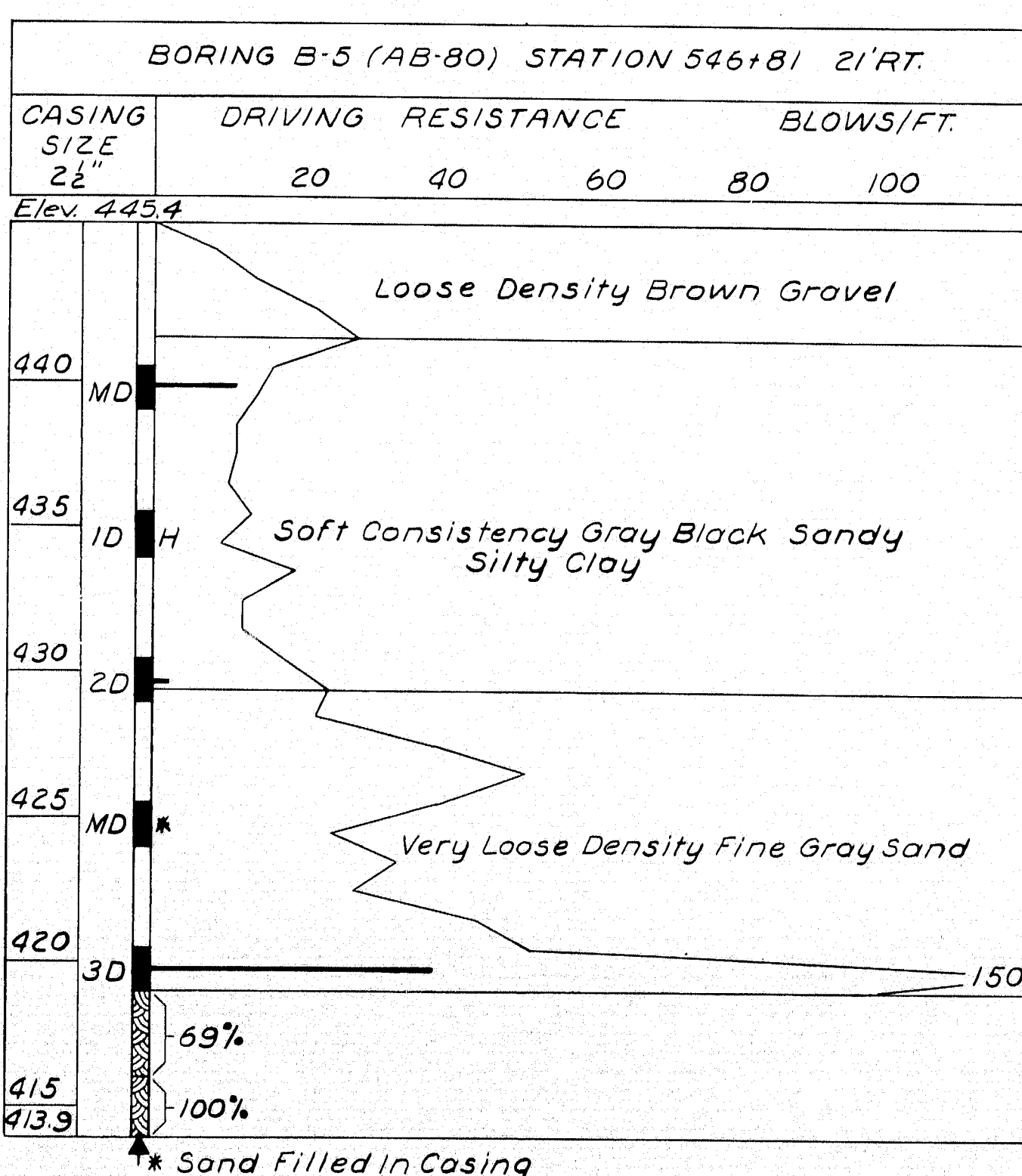
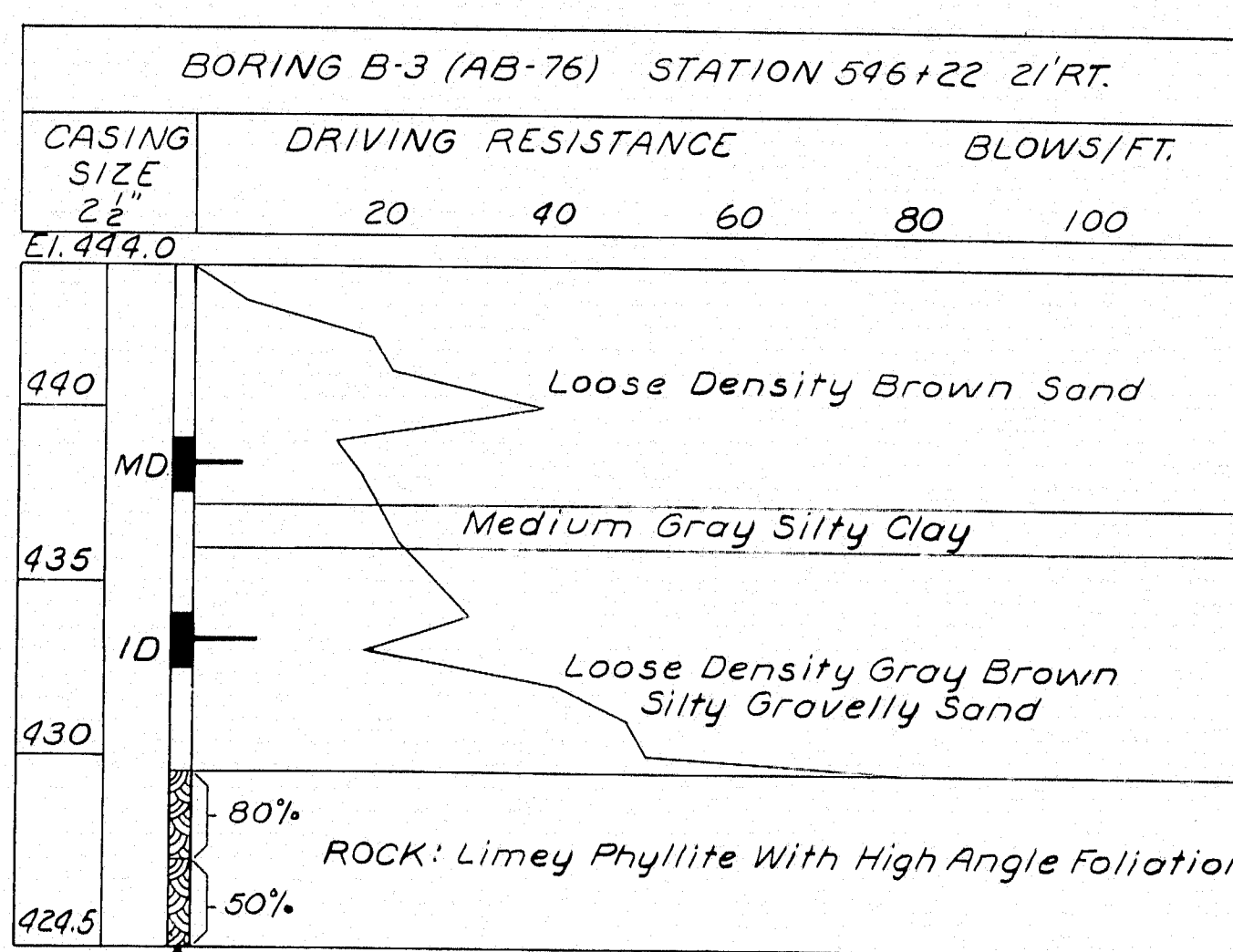
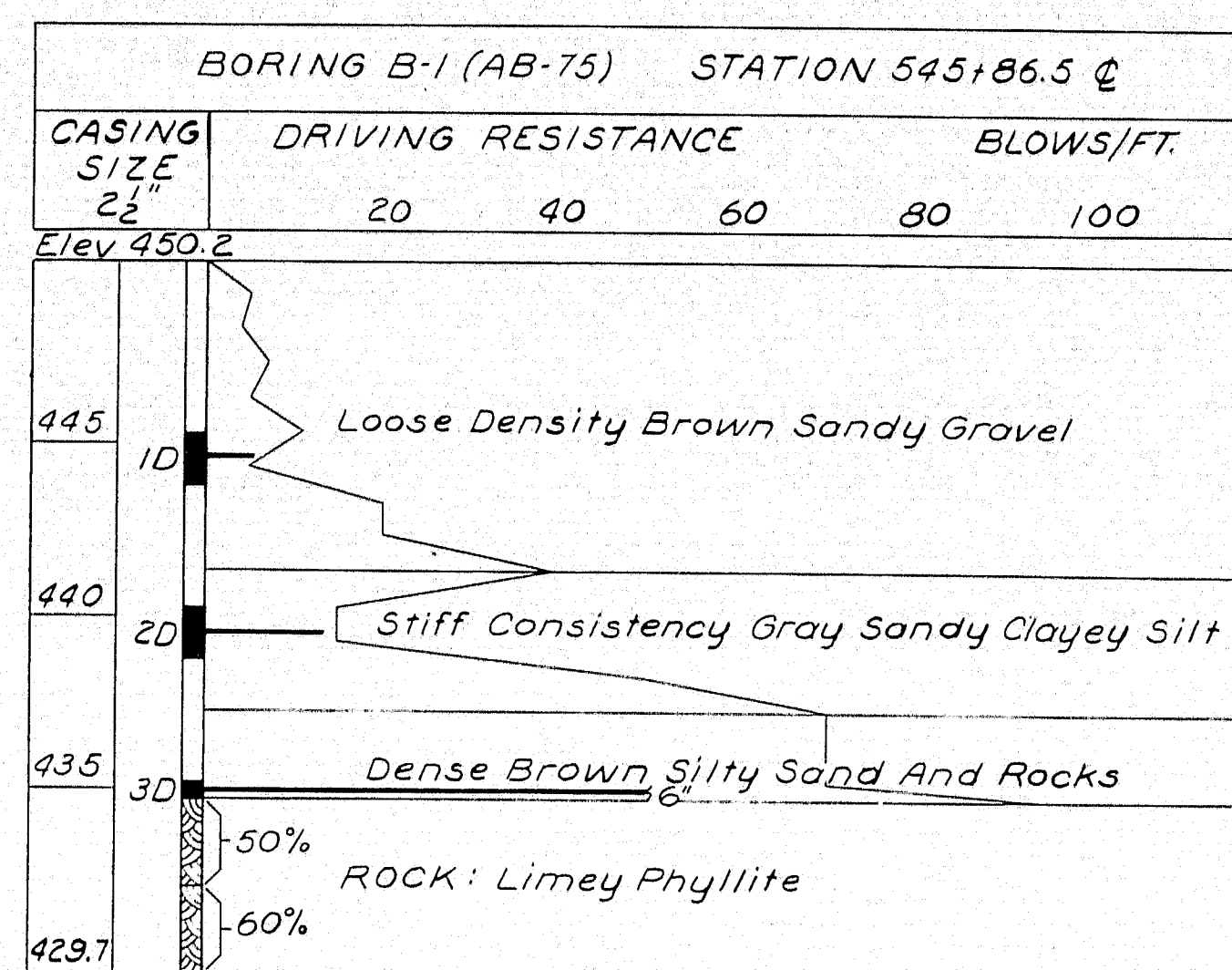
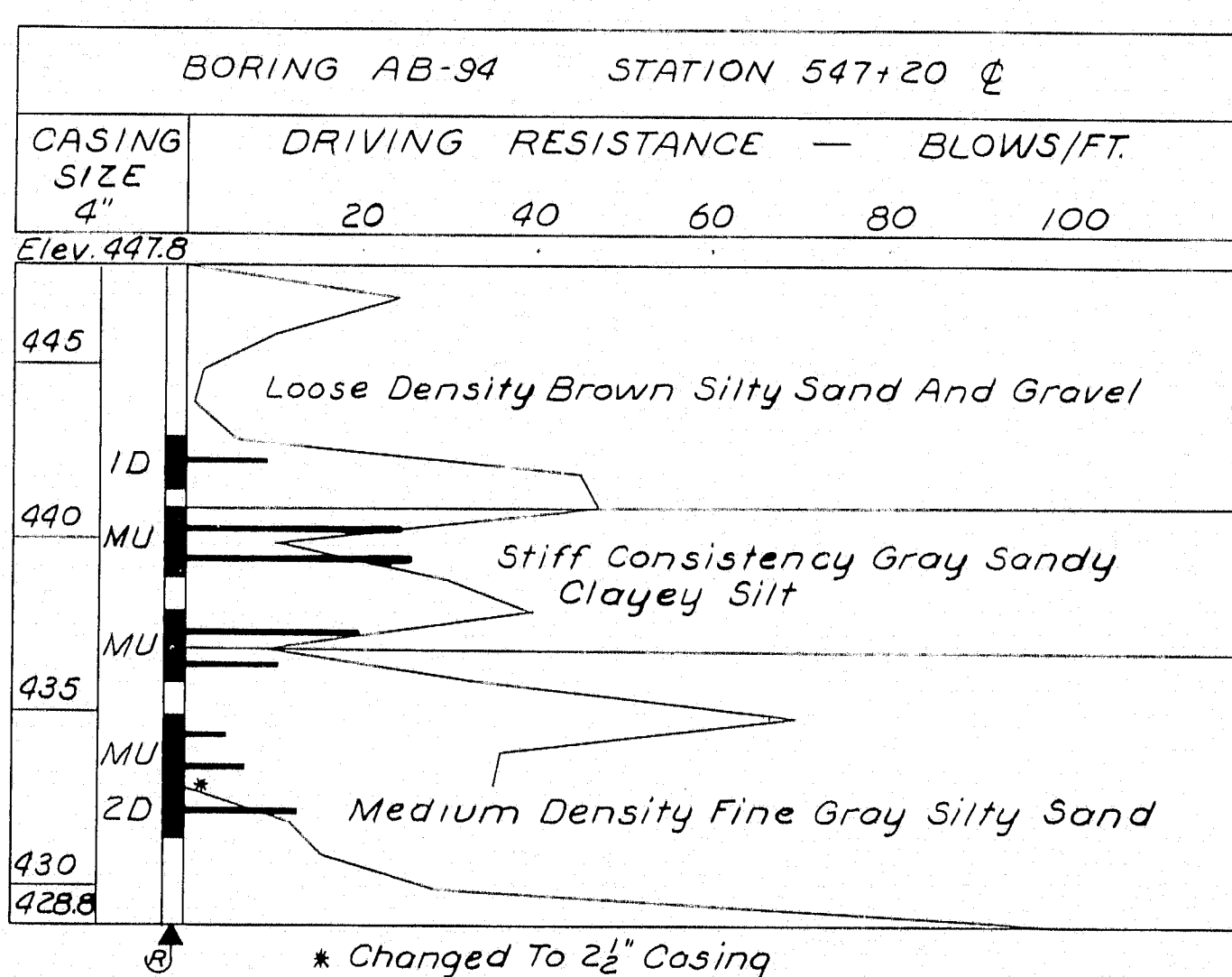
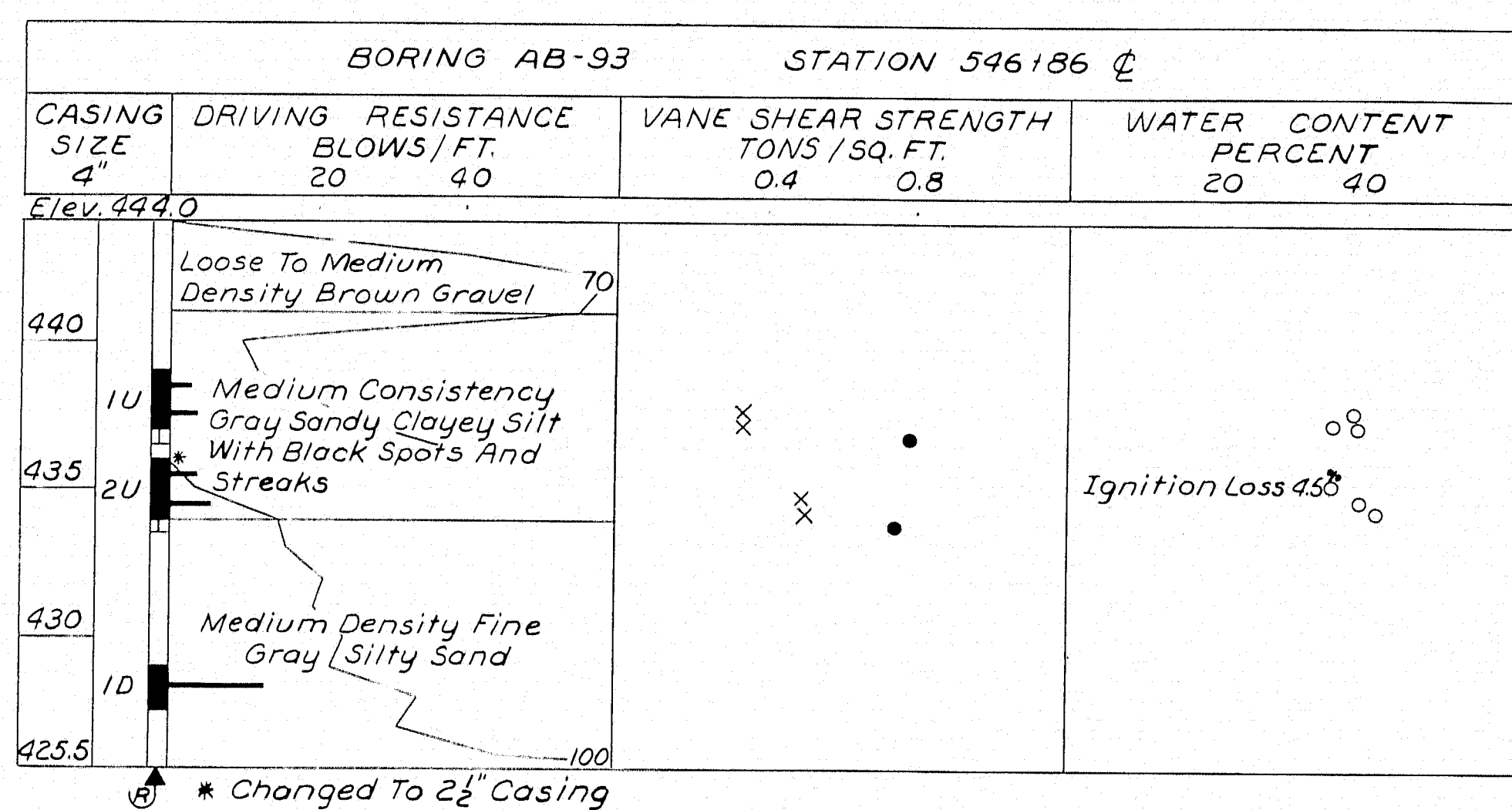
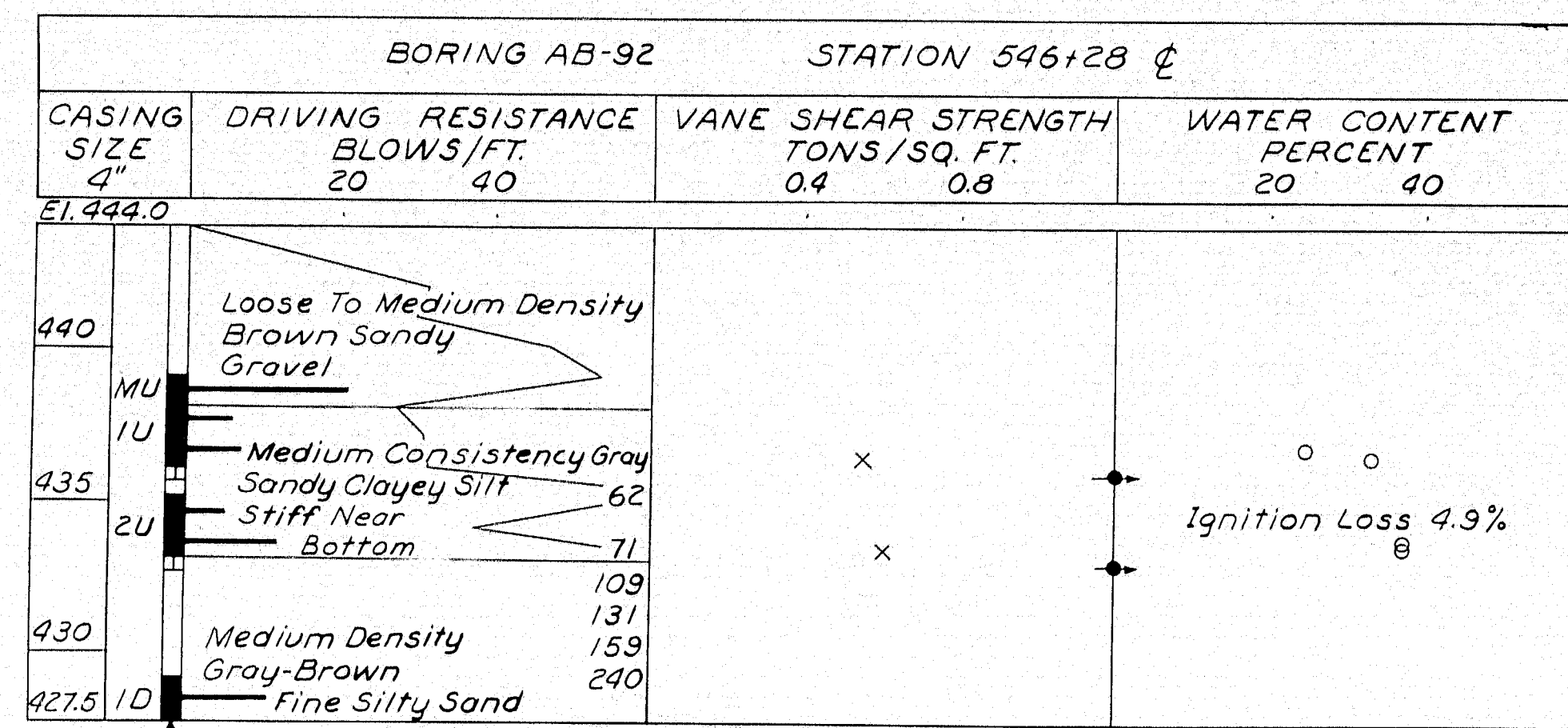
NEW YORK BOSTON KANSAS CITY

DESIGN- TRACE- CHECK- P.I.N.	DETAIL-DAT	BRIDGE NO. SURVEY- PLOT
STATE HIGHWAY COMMISSION BRIDGE DIVISION		
INTERSTATE 95 S.B. OVER WEST BRANCH MATTAWAMKEAG RIVER IN THE TOWN OF ISLAND FALLS AROSTOOK COUNTY GENERAL PLAN & QUANTITIES		
SHEET 1 OF 10 AUGUSTA, MAINE JUNE 1965		

M-2433 ISLAND FALLS DYERBROOK (37)







#### WATER CONTENT NOTES:

- Natural water contents, given as per cent of dry weight.
- Ignition losses are given as per cent of dry weight.

#### SHEAR NOTES:

- Field vane shear strengths.
- × Laboratory vane shear strengths.
- Shear strengths in excess of capacity of equipment.

#### BORING NOTES:

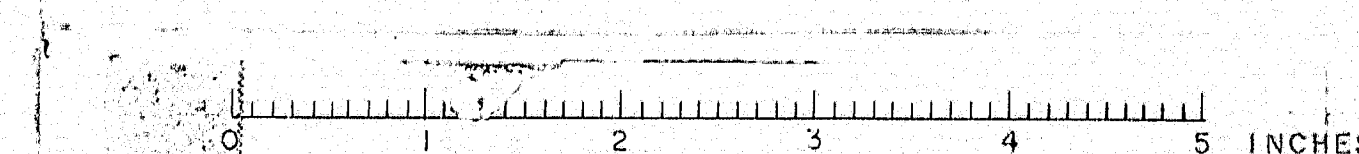
- ≧ Number of blows required to drive extra heavy casing one foot with 400 ft. lbs. of energy per blow.
- ID S&H Sampler #1290's.
- MD Unsuccessful sample attempt and type of sampler.
- H Sampling spoon or seamless tubing driven by static weight of drill rods and hammer.
- ▲ Bottom of boring (may not be bottom of soil strata).
- 7/2 Locations cored by diamond bit and per cent recovery of rock.
- 1U 3 1/2" O.D. 16 ga. seamless tubing.
- ▲ Refusal of drill rods or casing (may not be ledge).

DESIGN— TRACE— CHECK— R.R.S.	DETAIL—R.D.F.	BRIDGE NO. SURVEY— PLOT—
STATE HIGHWAY COMMISSION BRIDGE DIVISION		
INTERSTATE 95 S.B. OVER WEST BRANCH MATTAWAMKEAG RIVER IN THE TOWN OF ISLAND FALLS AROOSTOOK COUNTY FOUNDATION SURVEY		

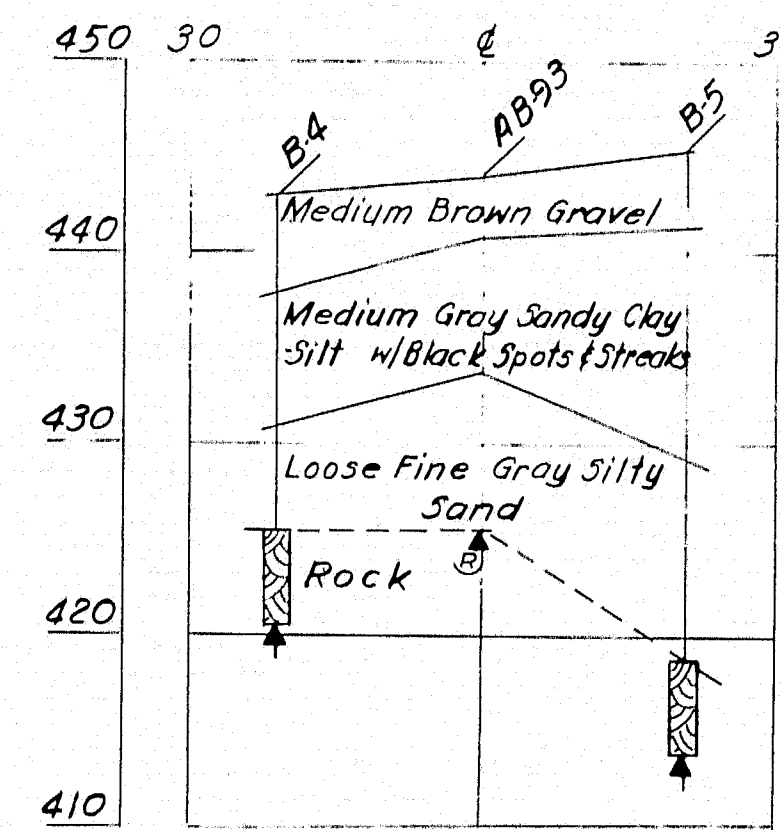
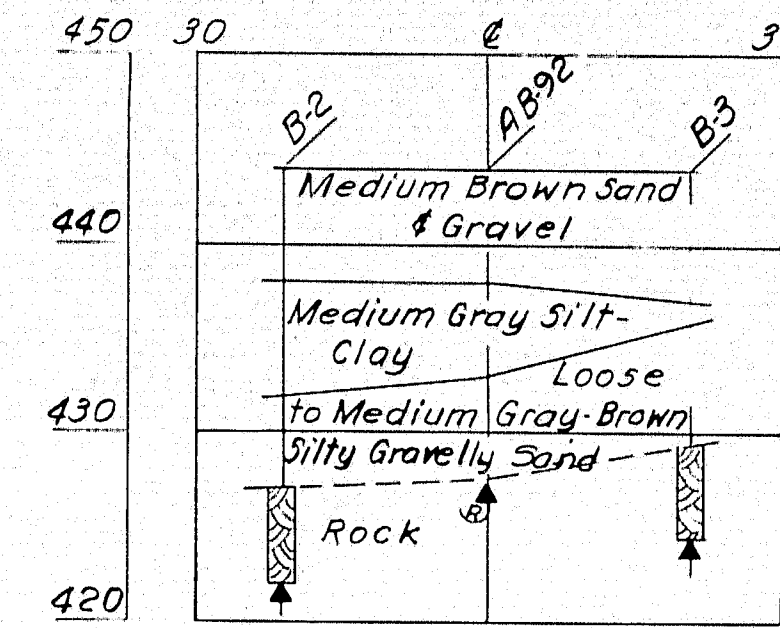
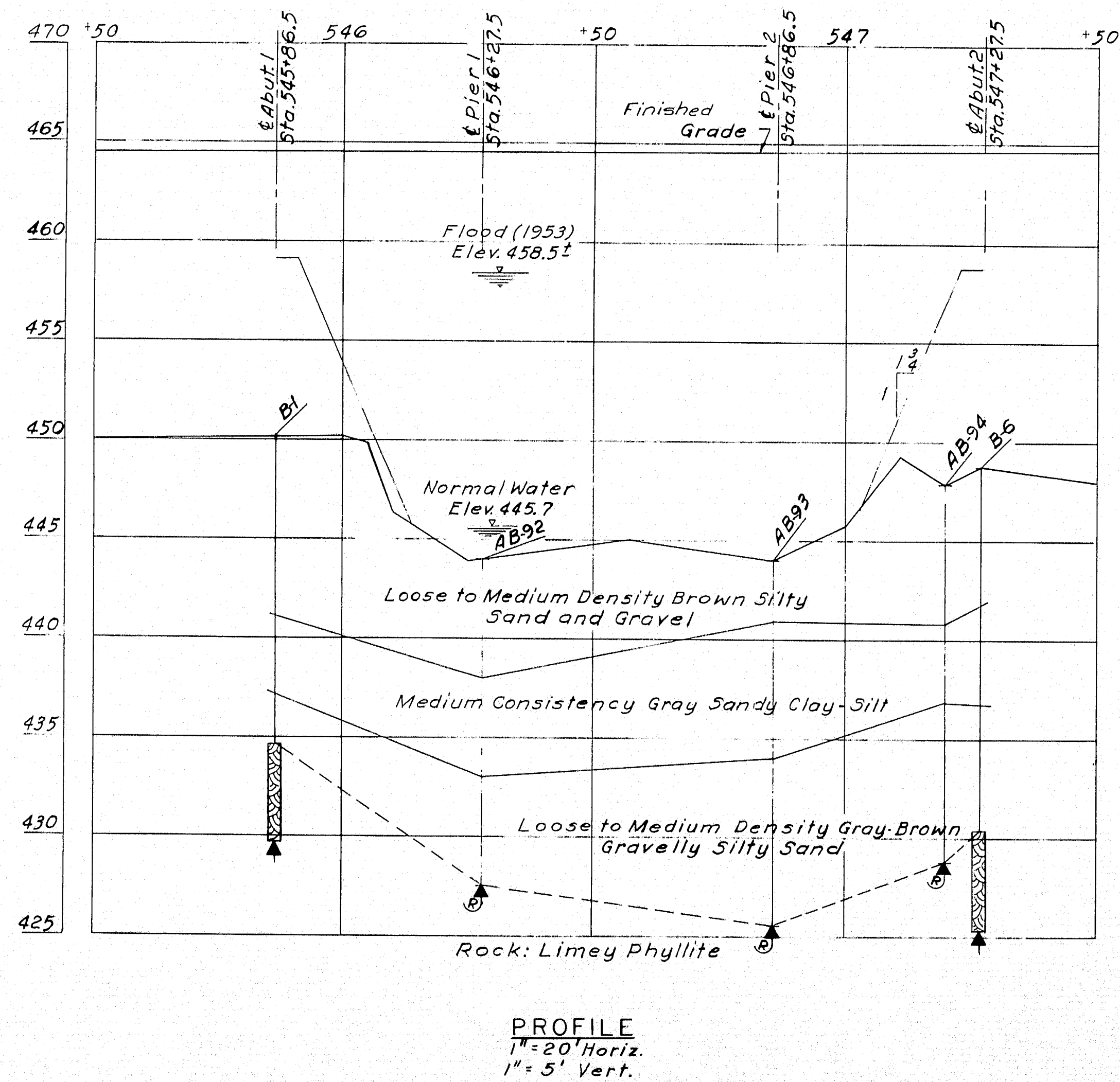
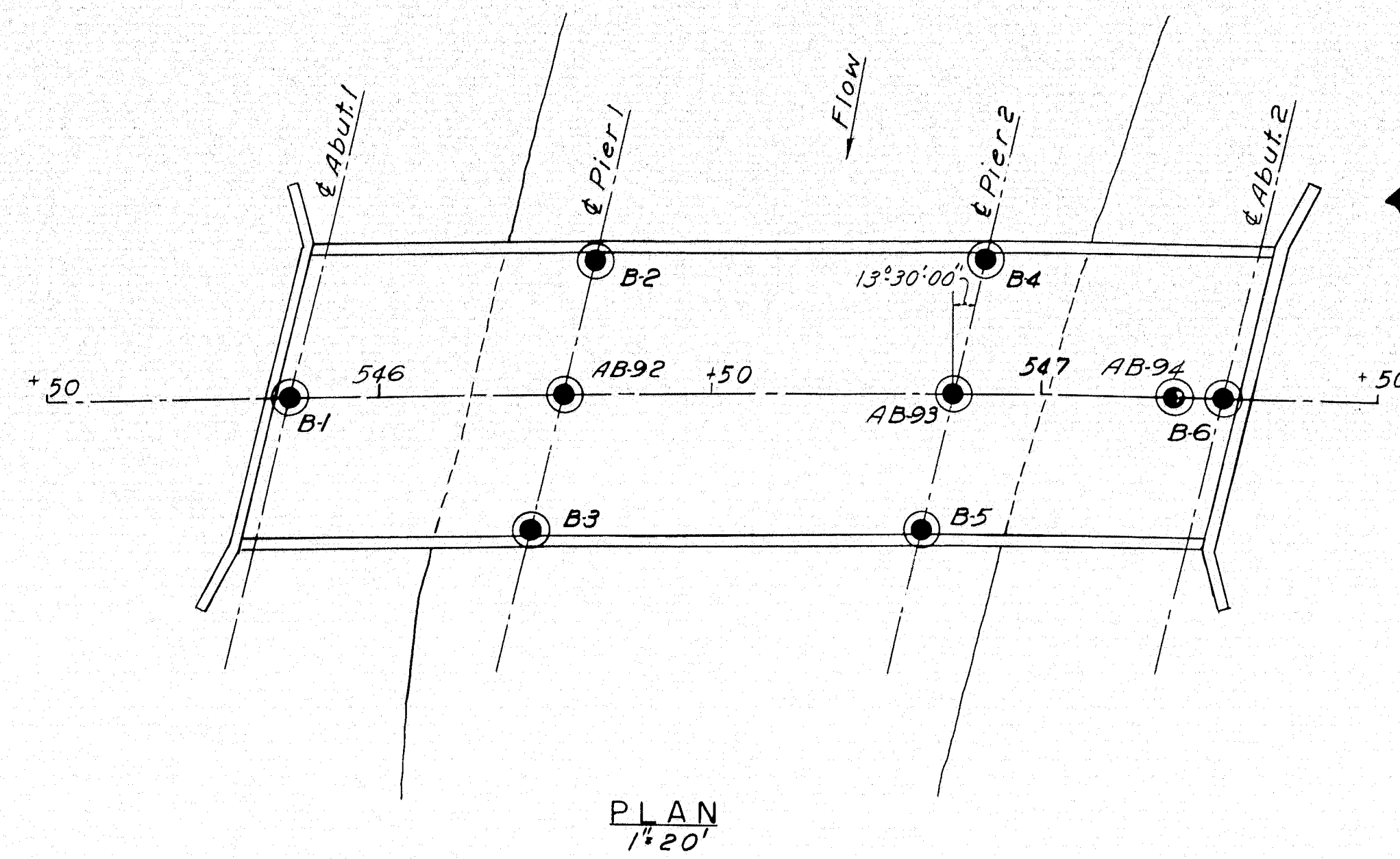
HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
CONSULTING ENGINEERS  
NEW YORK BOSTON KANSAS CITY

SHEET 2 OF 10 AUGUSTA, MAINE JUNE 1965

M-2434 ISLAND FALLS DYERBROOK (37)







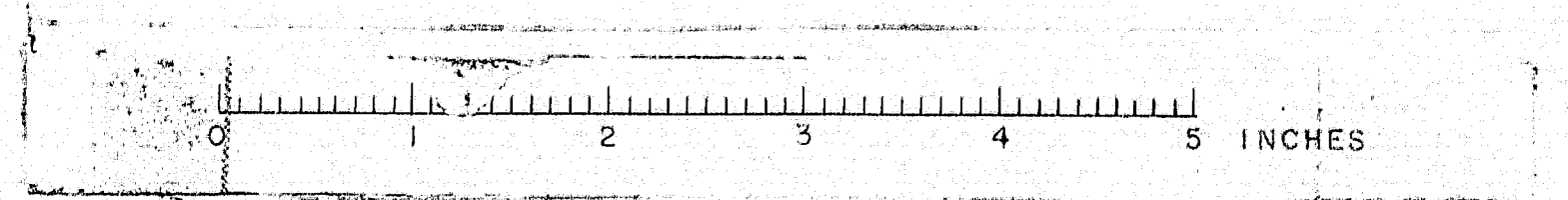
#### TRANSVERSE SECTIONS

#### NOTES:

1. For boring logs see sheet 2.
2. For boring notes see sheet 2.

DESIGN— TRACE— CHECK—R.R.S.	DETAIL—G.E.C.	BRIDGE NO. SURVEY— PLOT—
STATE HIGHWAY COMMISSION BRIDGE DIVISION		
INTERSTATE 95 S.B. OVER WEST BRANCH MATTAWAMKEAG RIVER IN THE TOWN OF ISLAND FALLS AROOSTOOK COUNTY FOUNDATION SURVEY		
HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS NEW YORK BOSTON KANSAS CITY		SHEET 3 OF 10 AUGUSTA, MAINE JUNE 1965

M-2435 ISLAND FALLS DYERBROOK (37)



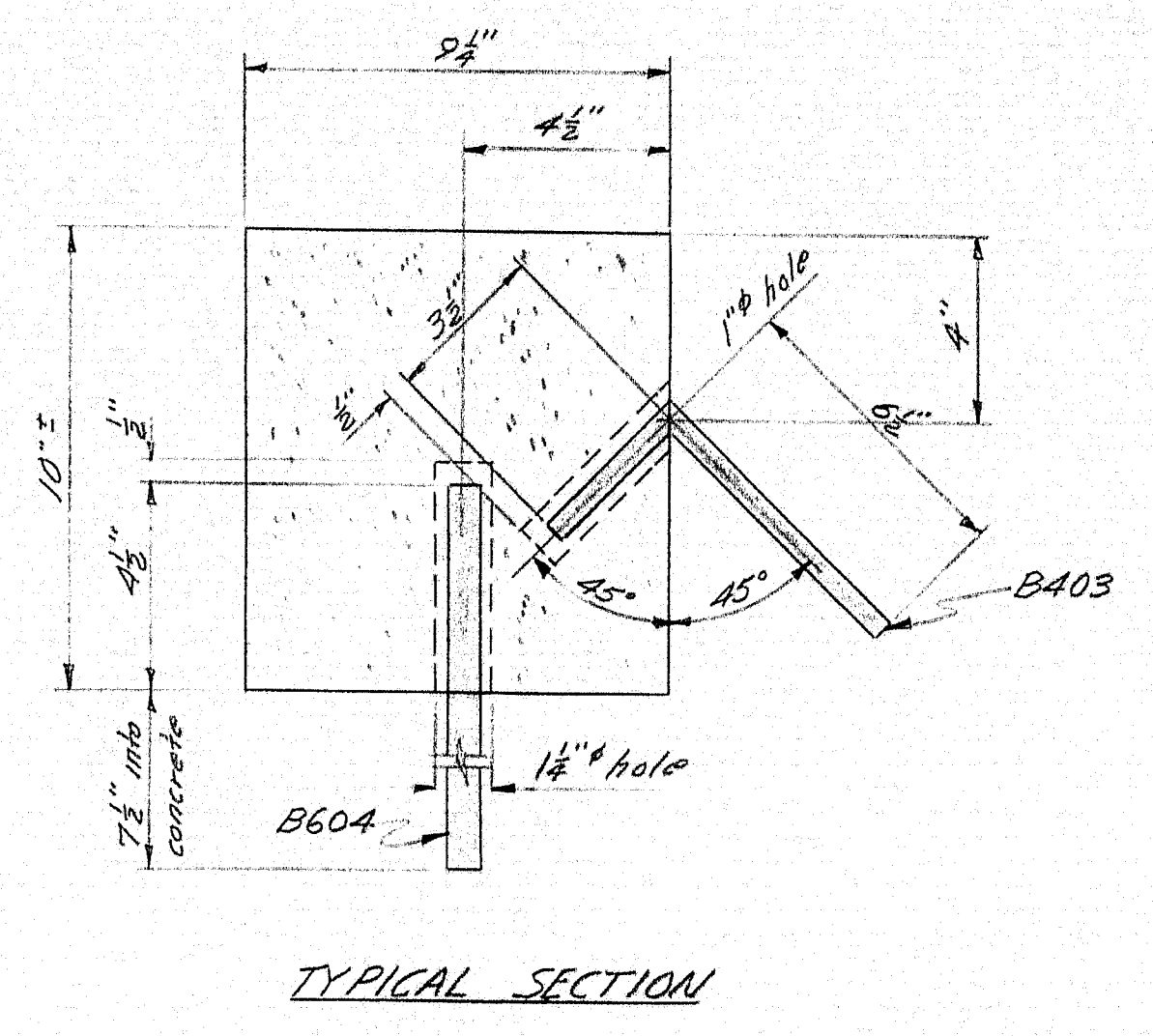
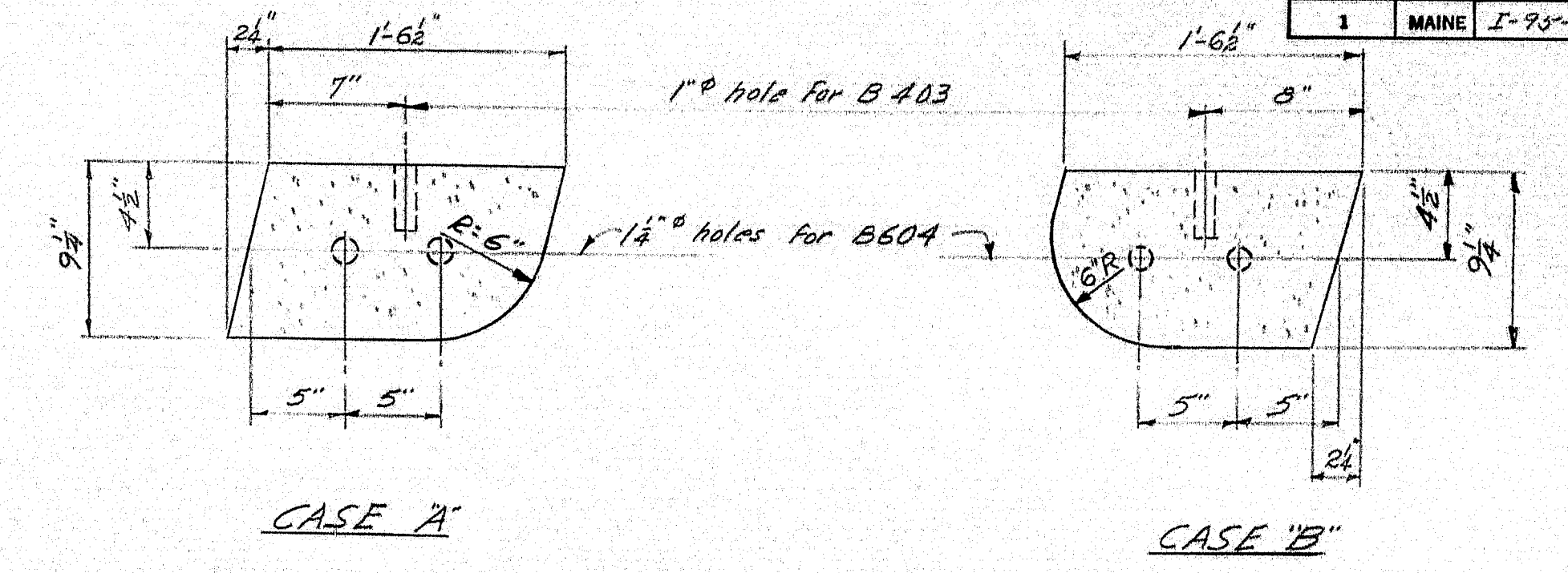
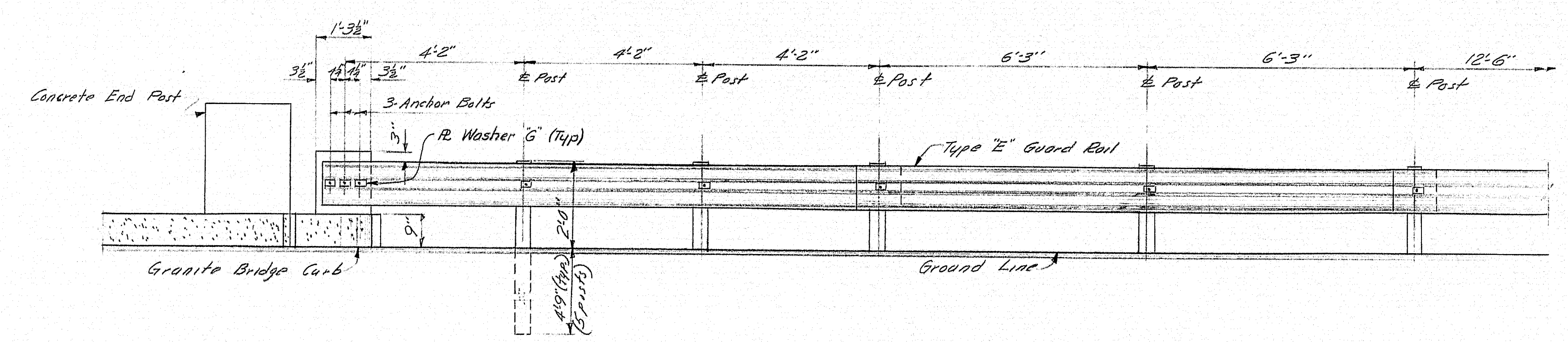
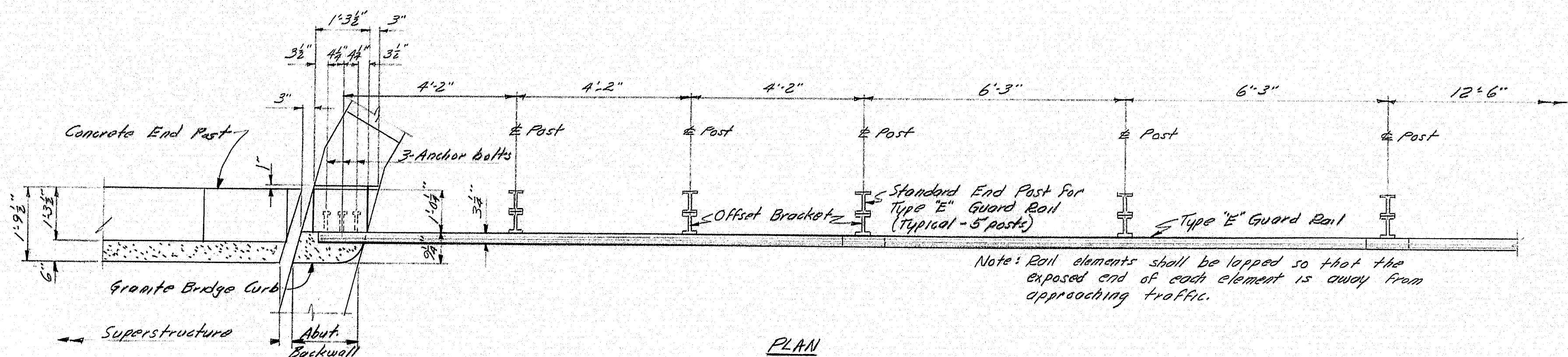








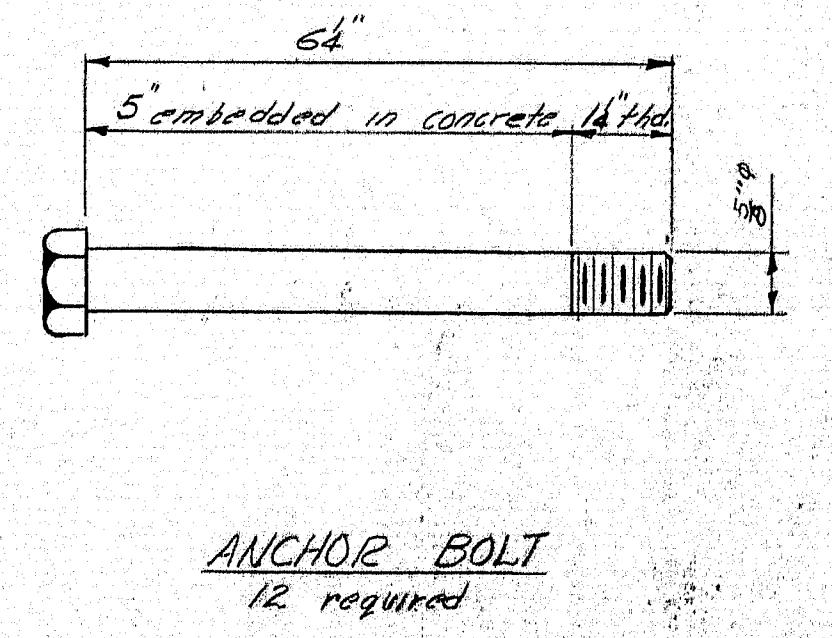
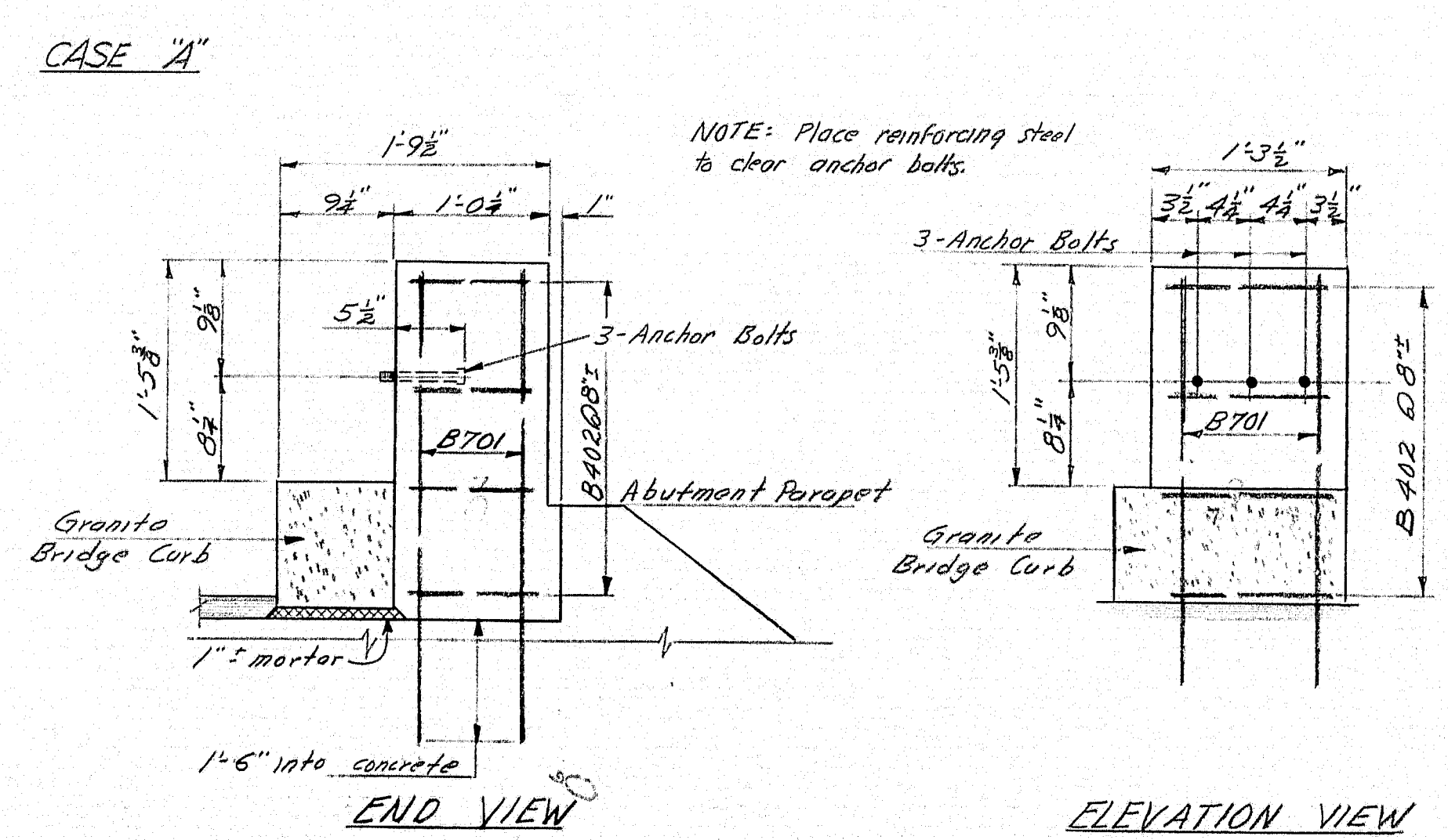
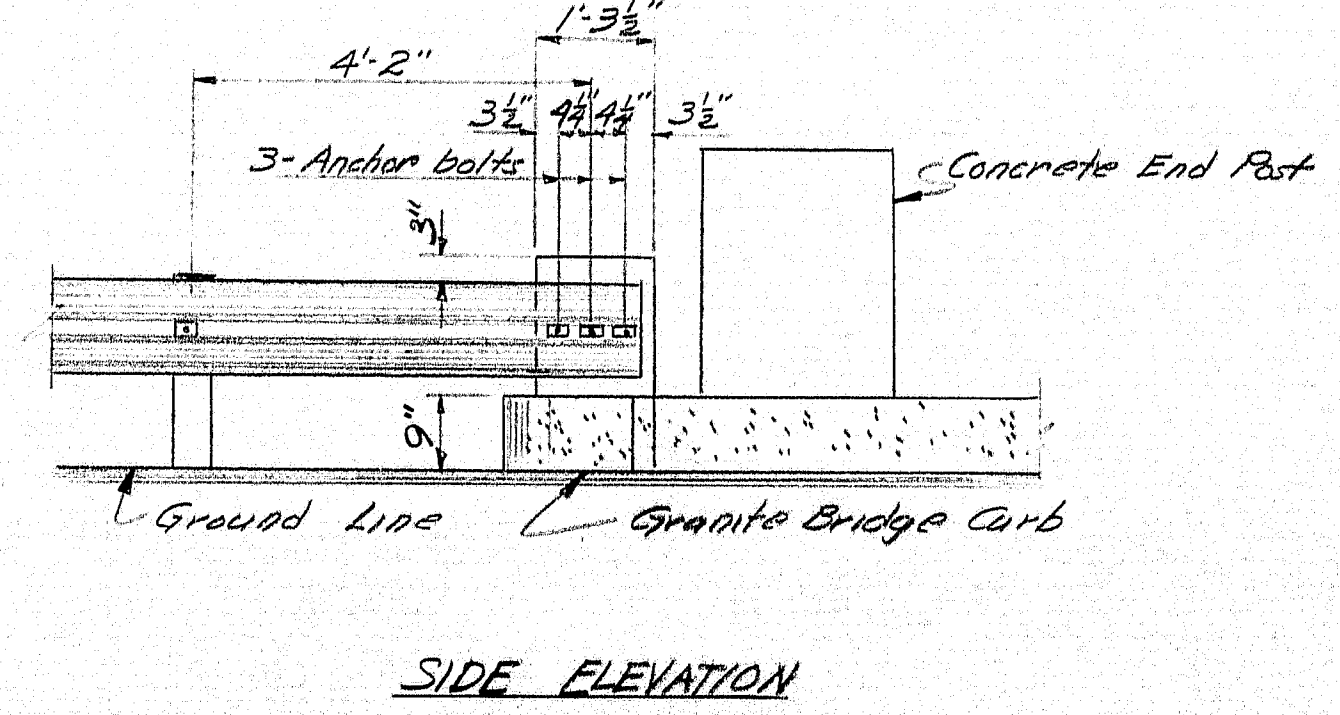
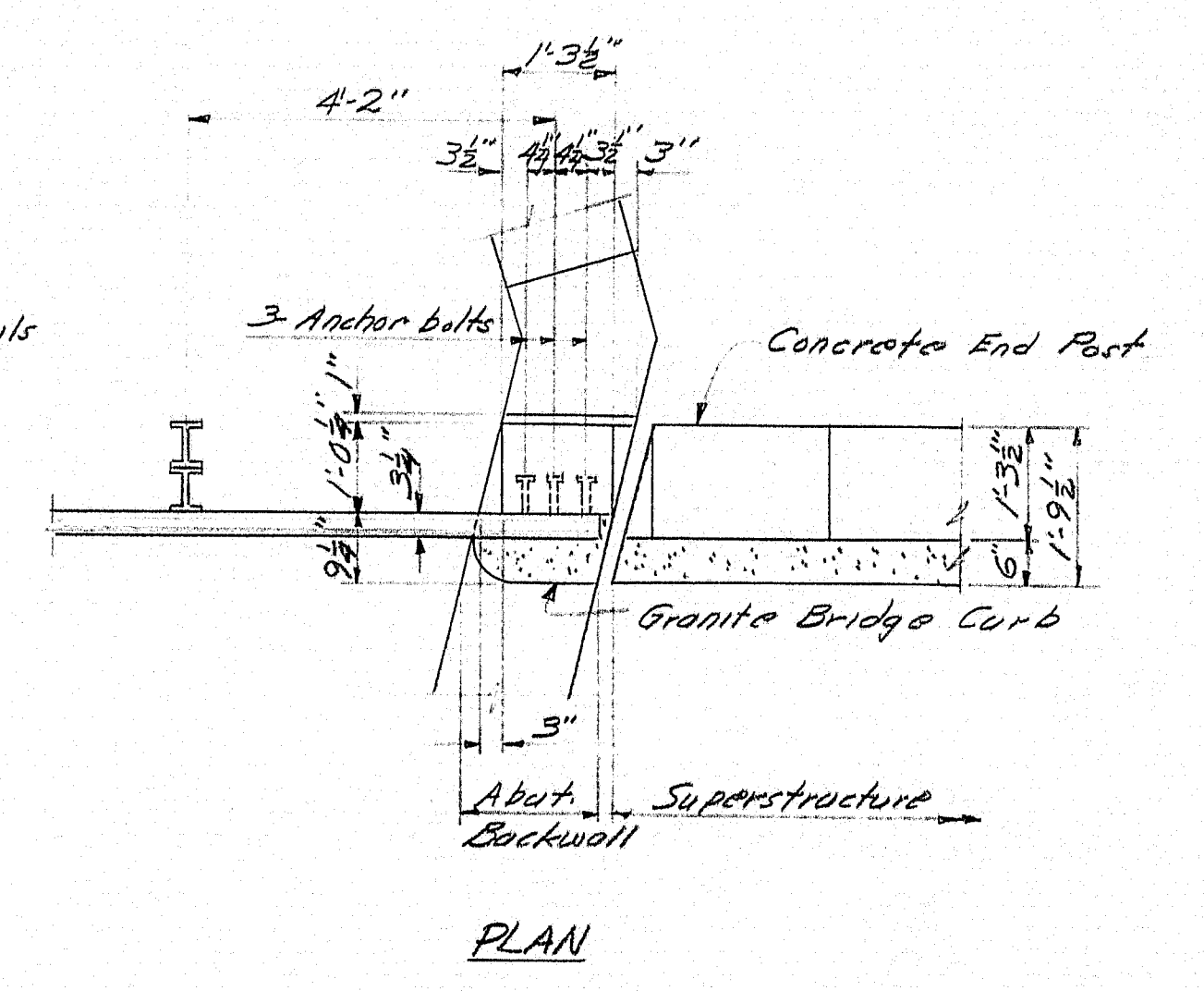




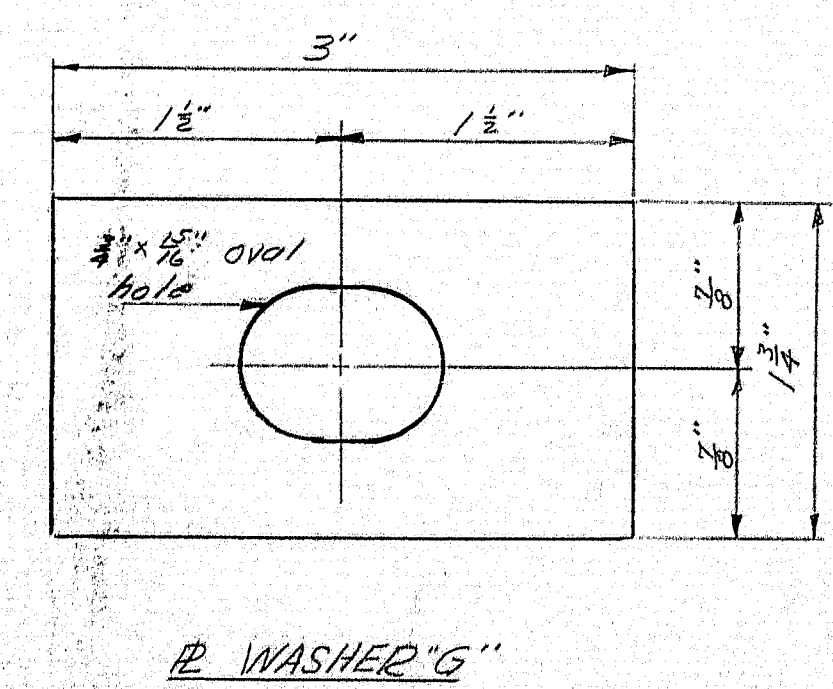
- NOTES:
1. Drill  $\frac{1}{2}$ " holes into abutment concrete  $\frac{7}{8}$ " deep to fit bars B604.
  2. Grout bars B604 into granite at least 24 hours prior to placing in grout-filled holes in abutment.
  3. Grout bars B403 into granite at least 24 hours prior to placing concrete in guard rail anchor post.

GRANITE BRIDGE CURB  
2 required for Case "A"  
2 required for Case "B"

Note: Guard rail details same as shown above.



NOTE: Each anchor bolt shall have hex head, one 12 Washer "G" and one regular hex nut.



NOTE: All guard rail fixtures shall be galvanized after fabrication.

REINFORCING STEEL SCHEDULE

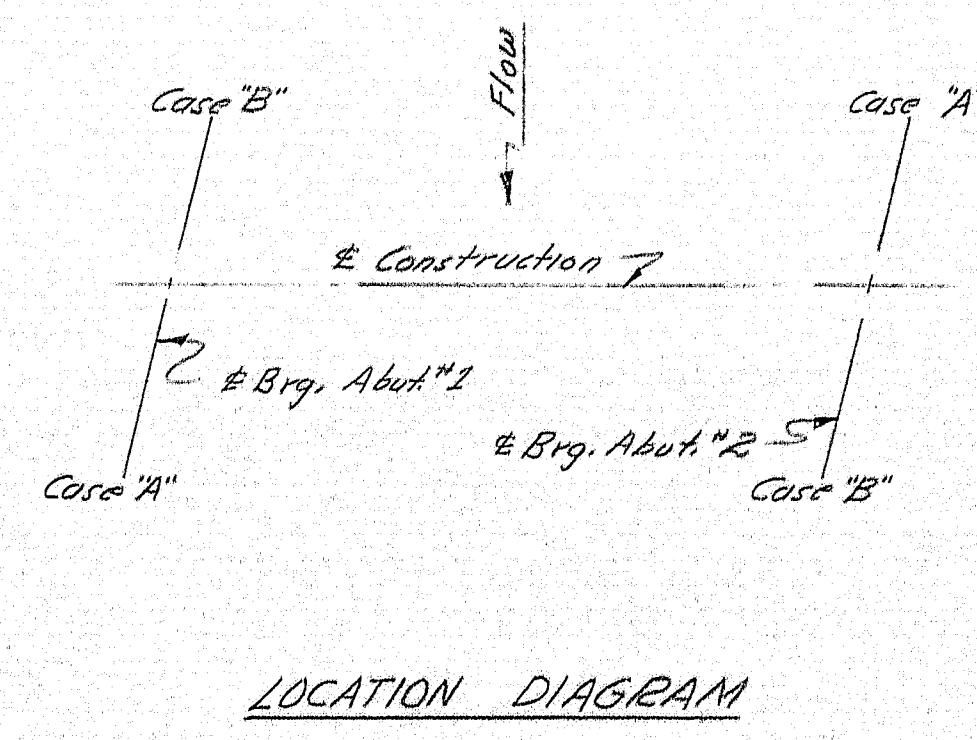
NOTES:

1. Dimensions to  $\pm$  bars.
2. Reinforcing steel shall be intermediate grades.

MARK	SIZE	No.	LENGTH	LOCATION
B402	#4	16	3'-9"	Guard rail anchor post
B403	#4	4	0'-10"	Granite bridge curb
B701	#7	16	3'-8"	Guard rail anchor post
B604	#6	8	1'-0"	Granite bridge curb

- ESTIMATED QUANTITIES
1. Portland Cement Concrete - 0.50 c.y.
  2. Reinforcing Steel - 174 lbs.
  3. Anchor Bolts (with req. hex. nut and 12 Washer "G") - 12 each
  4. Granite Bridge Curb - 4 stones

- NOTES
1. Concrete shall be Class "A".
  2. Reinforcing steel shall be 2" clear.



DESIGN - R. FOSTER  
TRACE - R. F. A.  
CHECK - J. CHANDLER

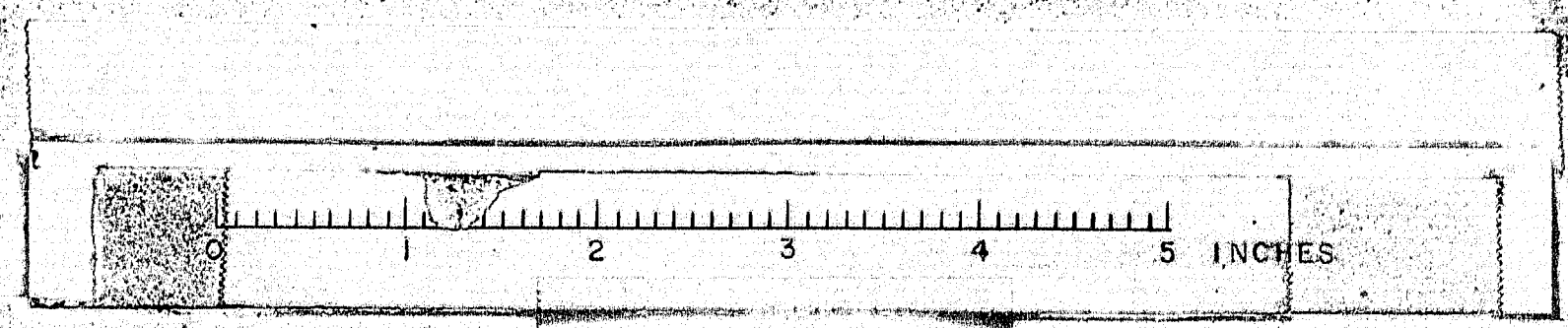
BRIDGE NO. SURVEY -  
PLOT -

STATE HIGHWAY COMMISSION  
BRIDGE DIVISION

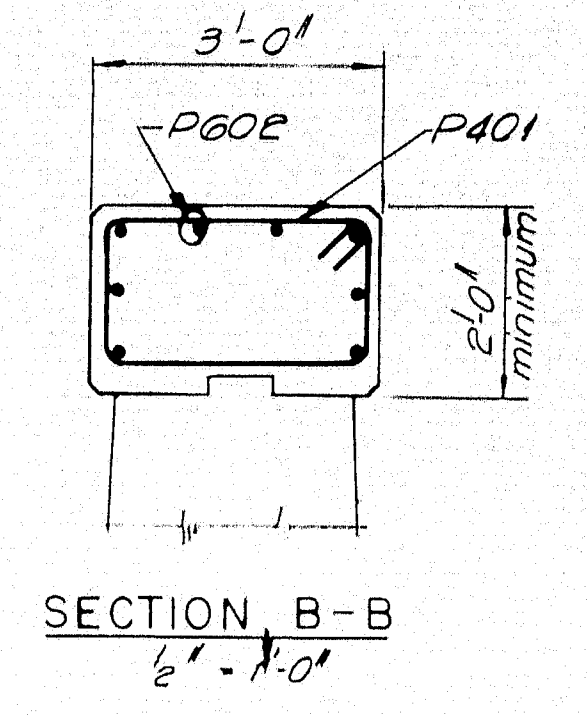
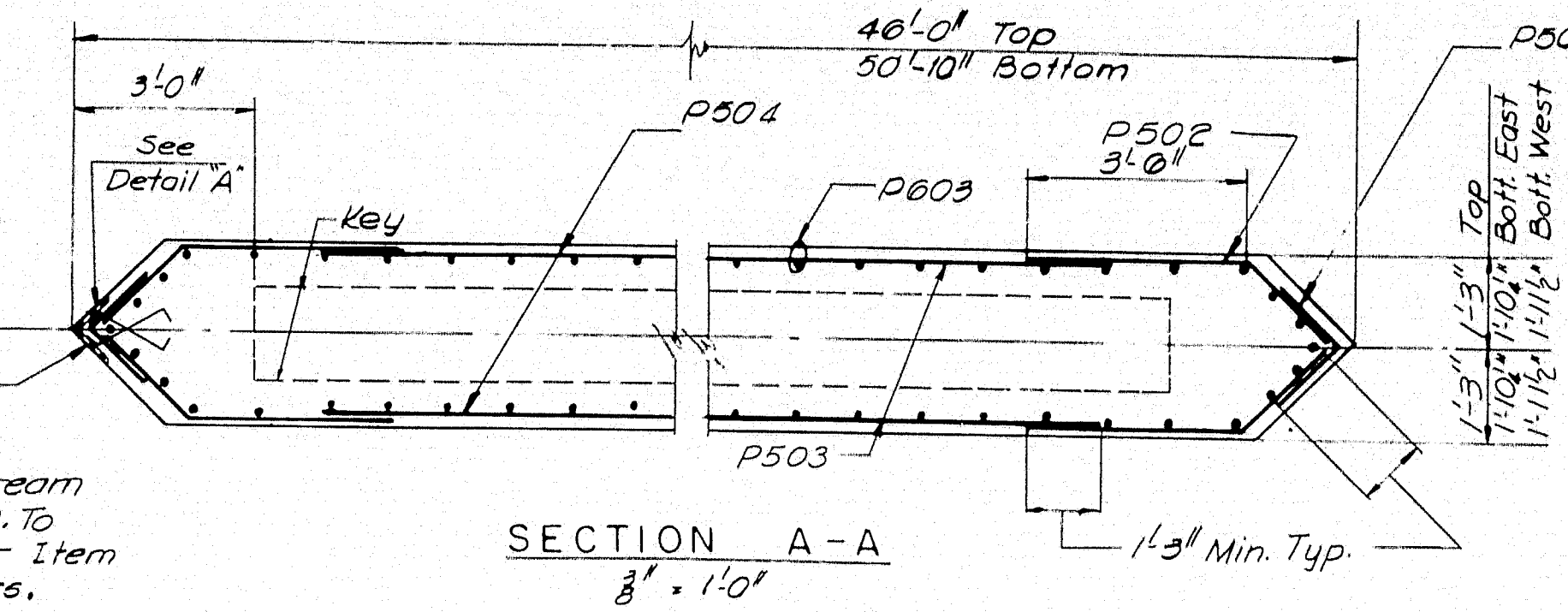
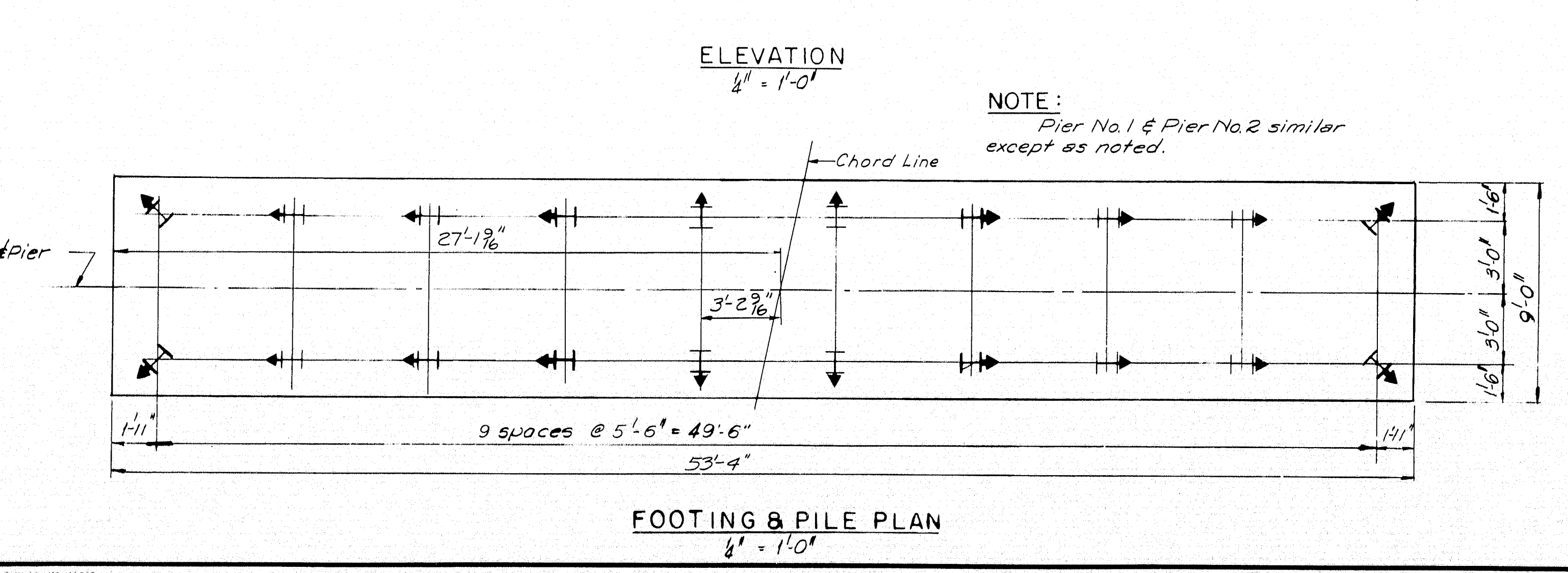
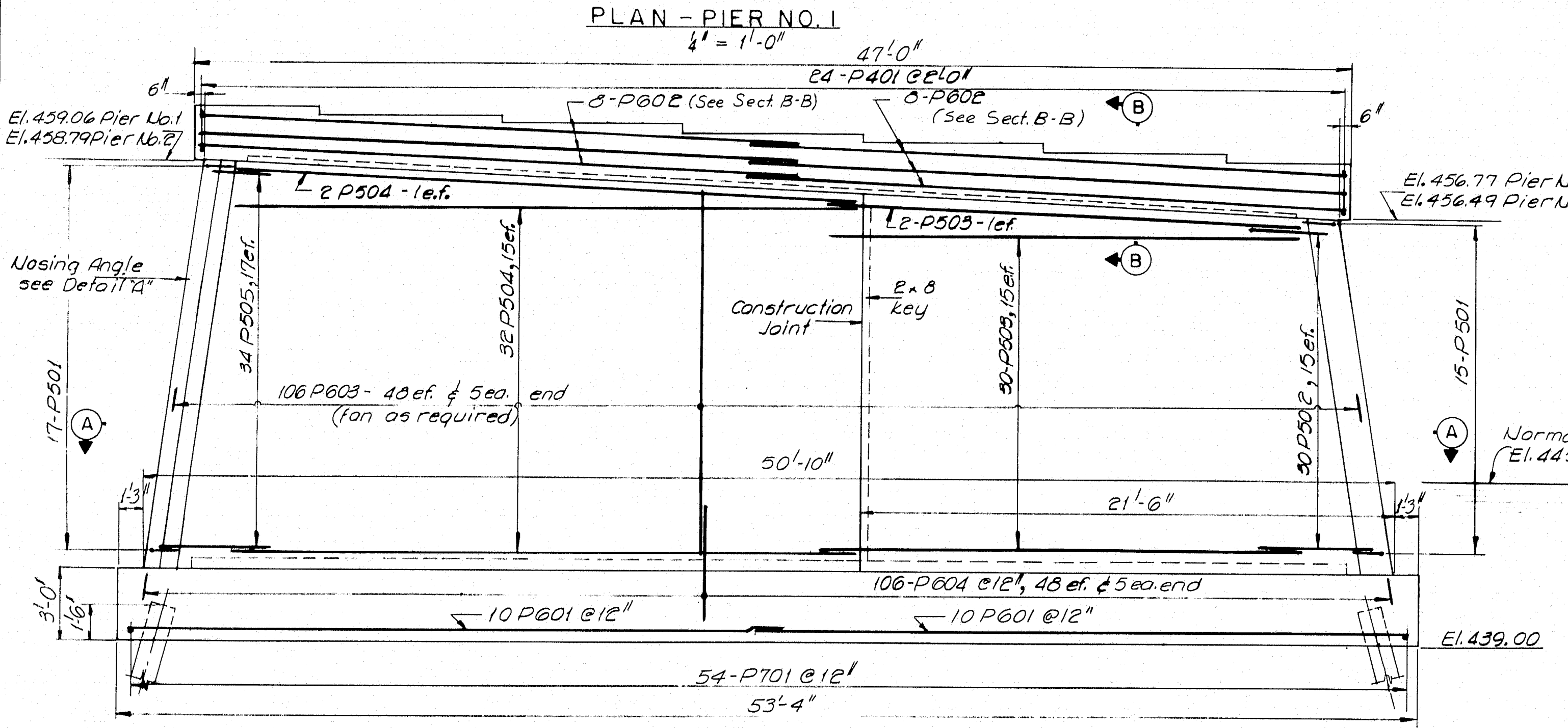
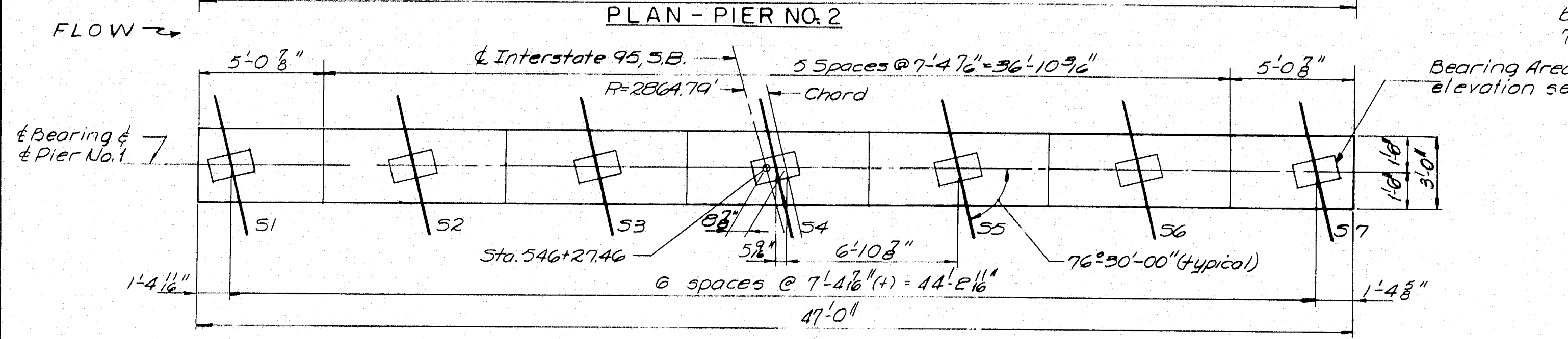
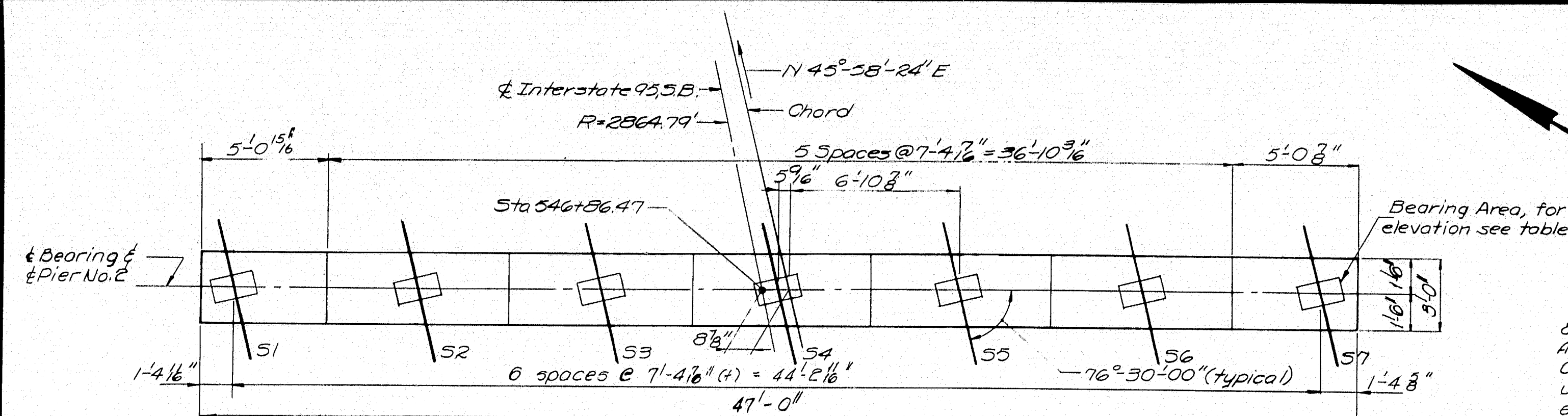
INTERSTATE 95 S.B.  
OVER  
WEST BRANCH  
MATTAWAMKEAG RIVER  
IN THE TOWN OF  
ISLAND FALLS  
AROOSTOOK COUNTY  
GUARD RAIL ANCHORAGE

SHEET 5A OF 10 AUGUSTA, MAINE APRIL 1966

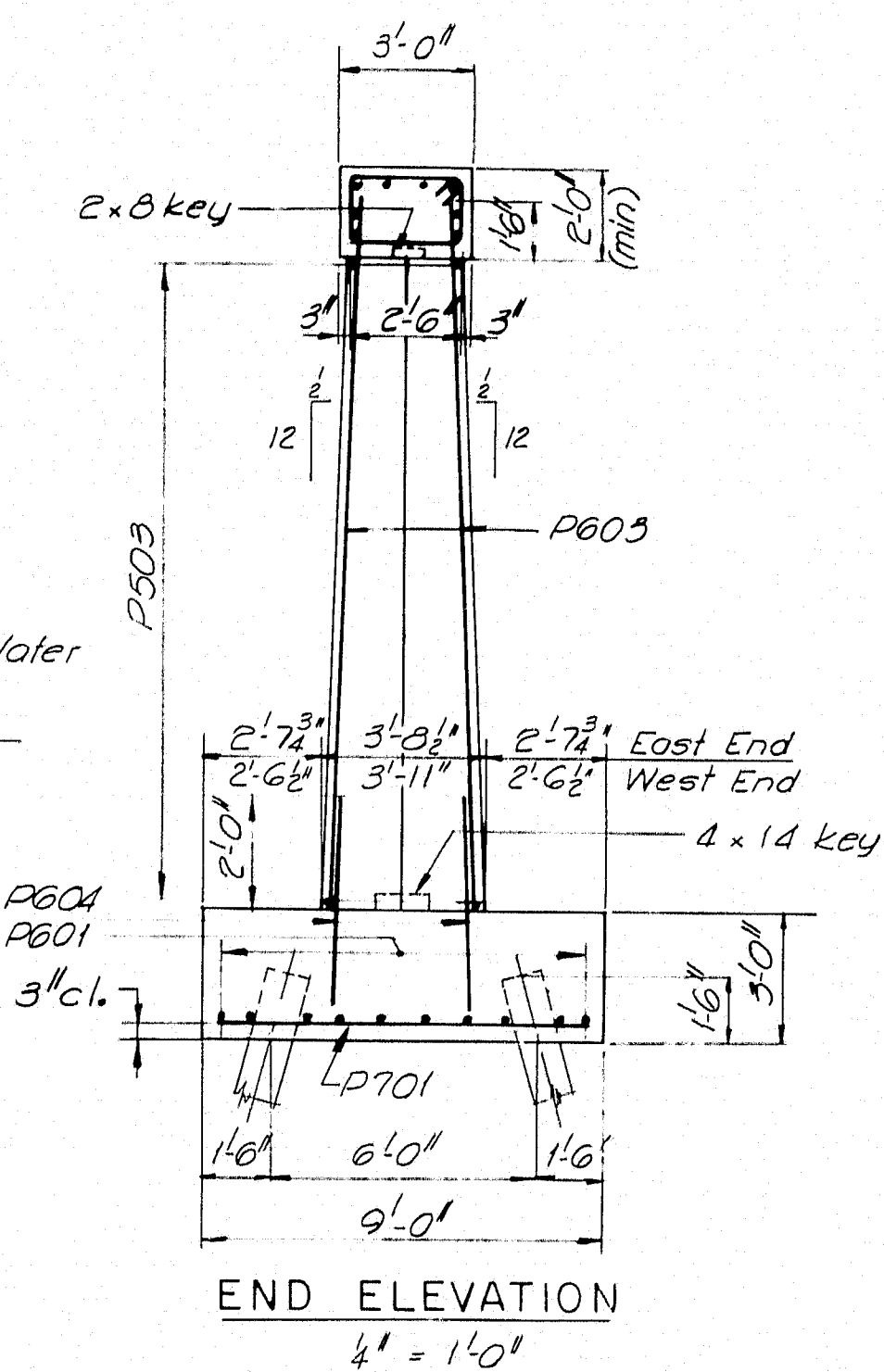
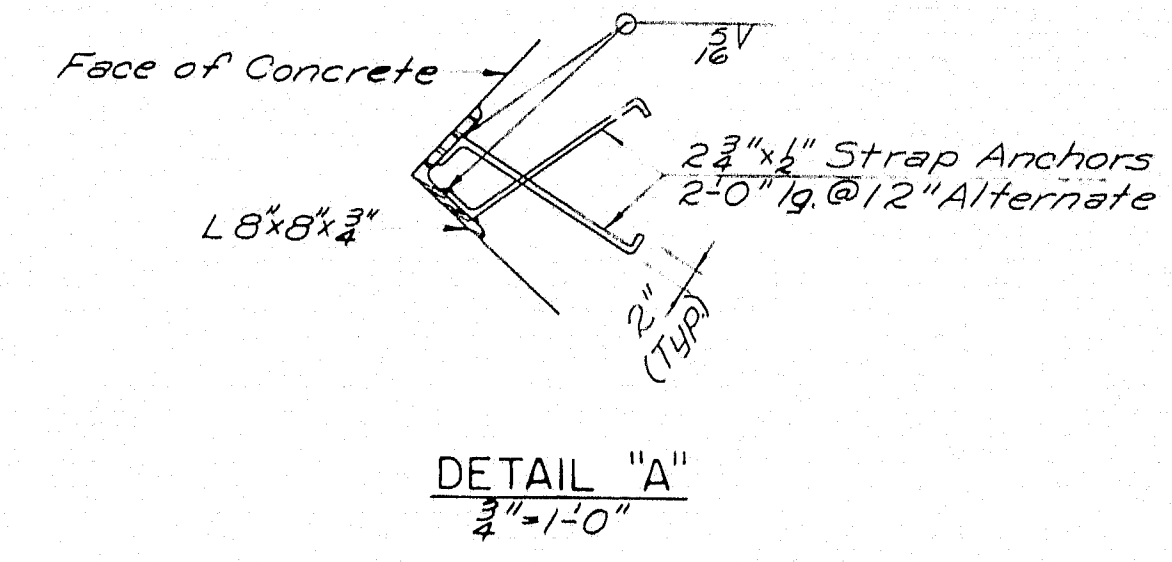
M-2437A







Beam	Pier No. 1	Pier No. 2
51	461.17	460.90
52	460.81	460.54
53	460.45	460.18
54	460.10	459.82
55	459.74	459.46
56	459.38	459.10
57	459.02	458.74



- NOTES:**
1. Dress bearing areas 1" larger all around than masonry plate, to exact elevations shown.
  2. Reinforcing steel to have 2" minimum cover unless otherwise shown.
  3. E.F. Denotes each face.
  4. All exposed corners to have 1" chamfer.
  5. Place reinforcing to clear anchor bolts.

- PILE NOTES:**
1. Indicates battered piles batter 3:12 in the direction of arrow.
  2. All piles are 10 DP42 with a capacity of 37 tons.
  3. Pile to be driven to ledge or practical refusal to develop end bearing.
  4. Estimated pile length:
    - Pier 1 18 feet
    - Pier 2 20 feet West end (10 Piles)
    - 27 feet East end (10 Piles)

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

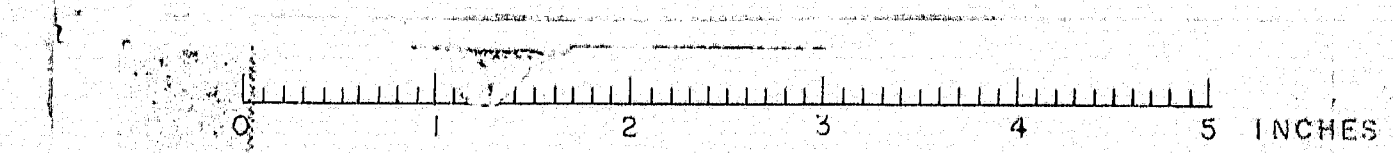
DESIGN- R.E.F. DETAIL D.A.T.  
TRACE- SURVEY  
CHECK- L.R.

BRIDGE NO.  
SURVEY  
PLOT

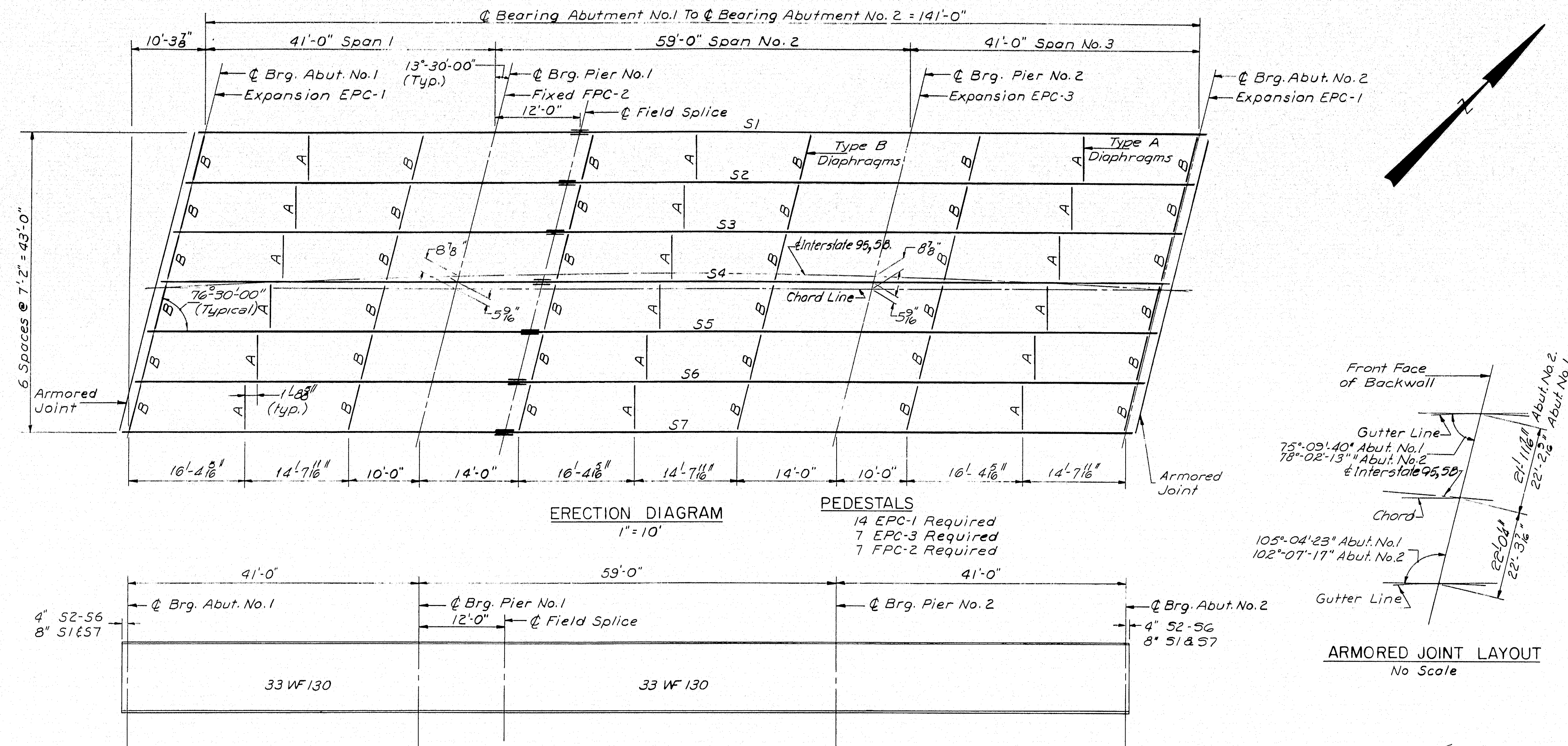
STATE HIGHWAY COMMISSION  
BRIDGE DIVISION

INTERSTATE 95 S.B.  
OVER  
WEST BRANCH  
MATTAWAMKEAG RIVER  
IN THE TOWN OF  
ISLAND FALLS  
AROOSTOOK COUNTY  
PIERS

SHEET 6 OF 10 AUGUSTA, MAINE JUNE 1965







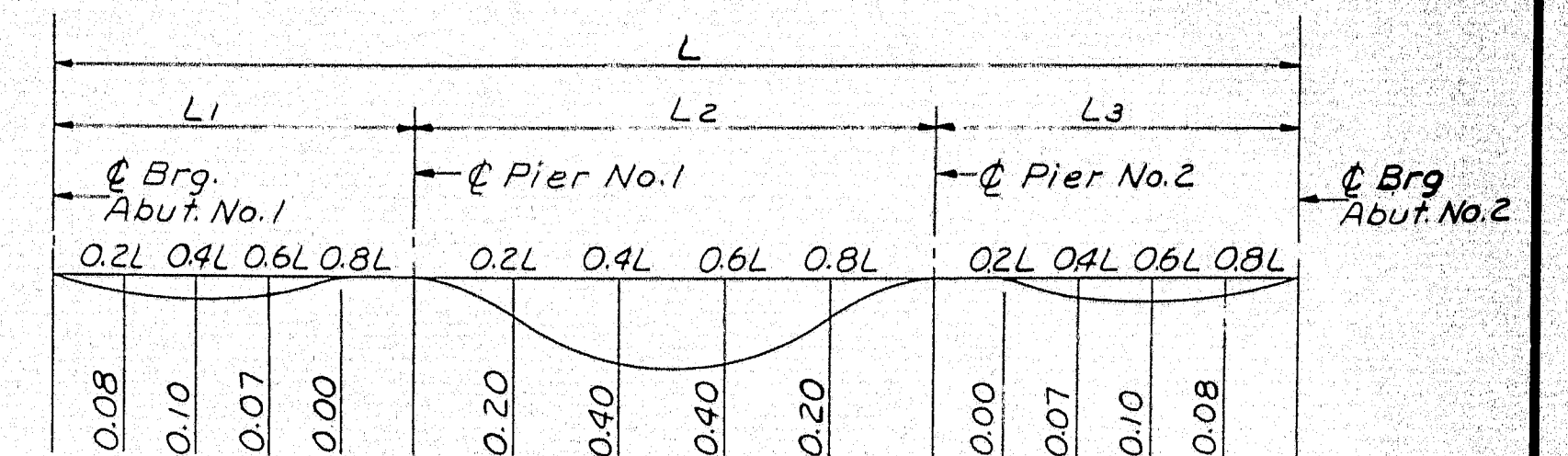
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	0.2L	0.4L	0.6L	0.8L		0.2L	0.4L	0.6L	0.8L		0.2L	0.4L	0.6L	0.8L	
Dimension "A"	1'-5 1/2"	1'-7 1/2"	1'-9 1/2"	1'-11"	2'-0"	2'-1 1/2"	2'-2 1/2"	2'-2 3/4"	2'-1 1/2"	1'-10 1/2"	1'-9"	1'-7 1/2"	1'-4 1/2"	1'-2 1/2"	
Dimension "B"	2'-4 1/2"	2'-2 1/2"	1'-11 1/2"	1'-10"	1'-8 1/2"	1'-7 1/2"	1'-5 1/2"	1'-4 1/2"	1'-4 1/2"	1'-5 1/2"	1'-6 1/2"	1'-8 1/2"	1'-9 1/2"	1'-11 1/2"	2'-1 1/2"

**NOTE:**  
To compensate for dead load deflections as well as possible irregularities in beams, set the bottom of slab elevations at the points indicated before any of the slab formwork is started.

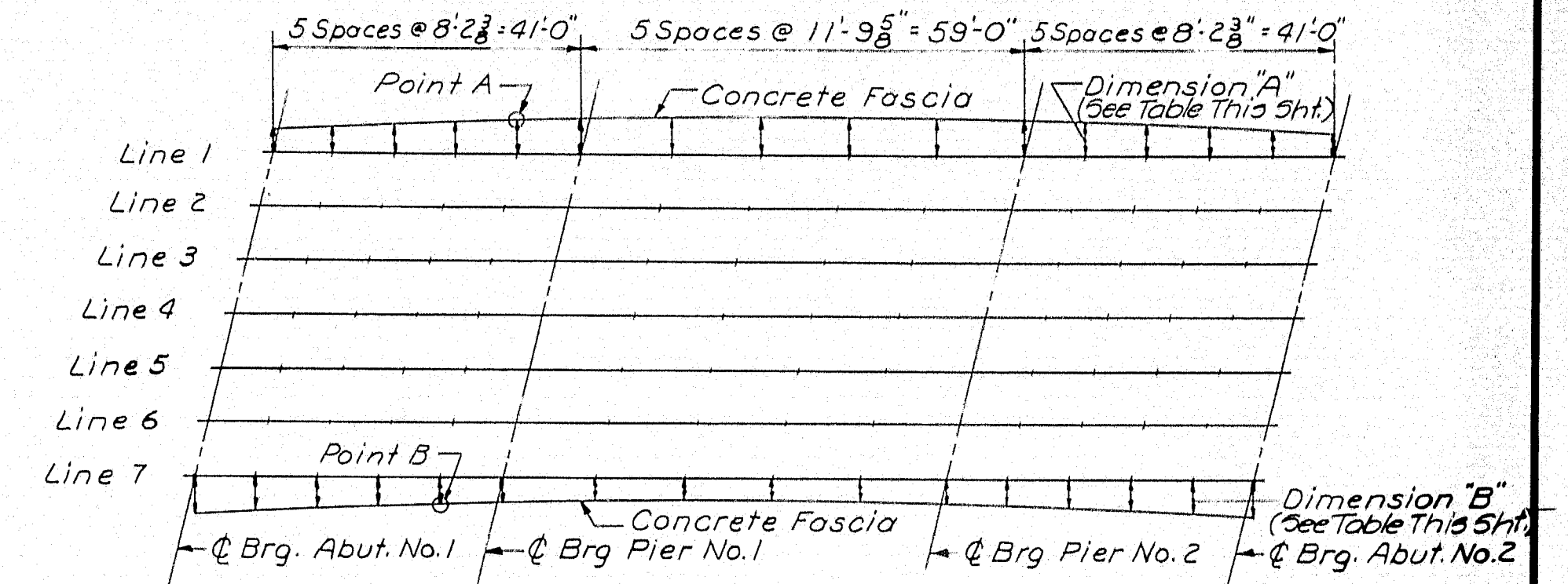
**BLOCKING DETAIL**  
No Scale

	SPAN NO. 1					SPAN NO. 2					SPAN NO. 3				
	8'-2 3/4"	16'-4 3/4"	24'-7 3/4"	32'-9 1/2"		11'-9 1/2"	23'-7 1/4"	35'-4 3/4"	47'-2 1/2"		8'-2 3/4"	16'-4 3/4"	24'-7 3/4"	32'-9 1/2"	
Line 1	464.90	464.90	464.90	464.90	464.90	464.92	464.94	464.95	464.94	464.94	464.95	464.97	464.99	465.00	465.01
Line 2	464.54	464.55	464.55	464.54	464.54	464.56	464.58	464.59	464.58	464.58	464.59	464.61	464.63	464.64	464.65
Line 3	464.19	464.19	464.19	464.18	464.18	464.20	464.22	464.23	464.22	464.22	464.23	464.25	464.27	464.28	464.29
Line 4	463.83	463.83	463.83	463.83	463.82	463.84	463.86	463.87	463.86	463.86	463.87	463.89	463.90	463.92	463.92
Line 5	463.47	463.47	463.47	463.47	463.46	463.48	463.50	463.51	463.50	463.50	463.51	463.53	463.54	463.56	463.56
Line 6	463.11	463.12	463.11	463.11	463.10	463.12	463.14	463.15	463.14	463.14	463.15	463.17	463.18	463.19	463.20
Line 7	462.75	462.76	462.76	462.75	462.74	462.76	462.78	462.79	462.78	462.78	462.79	462.81	462.82	462.83	462.84
Point "A"	464.96	464.97	464.98	464.98	464.98	465.01	465.03	465.04	465.03	465.02	465.03	465.04	465.05	465.06	465.06
Point "B"	462.66	462.67	462.67	462.67	462.68	462.70	462.73	462.73	462.72	462.72	462.74	462.75	462.75	462.75	462.75

For location of Points A & B see Sheet B.



**DEAD LOAD DEFLECTION DIAGRAM**  
ALL DEFLECTIONS IN INCHES



**DIAGRAM OF BLOCKING POINTS**

	53'-0"	48'-0"
S1	-0.026%	+0.139%
S2	-0.030%	+0.138%
S3	-0.034%	+0.134%
S4	-0.036%	+0.132%
S5	-0.040%	+0.130%
S6	-0.042%	+0.126%
S7	-0.043%	+0.124%

**BEAM GRADES**

**REFERENCE**

Splice - See Standard Details, BD103-64  
Diaphragms - See Standard Details, BD104-64  
Pedestals - See Standard Details, BD101-64  
Armored Joint - See Standard Details, BD104-64.

**SPECIFICATIONS**

**Fabrication and Erection:** State of Maine Standard Specifications, Highways and Bridges, Revision of Jan. 1956 and Supplemental Specifications of Feb. 1960.  
**Design and Detail:** A.A.S.H.O. Standard Specifications for Highway Bridges of 1961, and Interim Specifications 1961, 1962, 1963, & 1964.  
**Materials:** Except as otherwise noted on the standard details, all materials shall conform to A.S.T.M. designation A-36.

DESIGN - R.E.F.	DETAIL - R.D.F.	BRIDGE NO.
TRACE -	SURVEY -	
CHECK - P.R.N.	PLOT -	

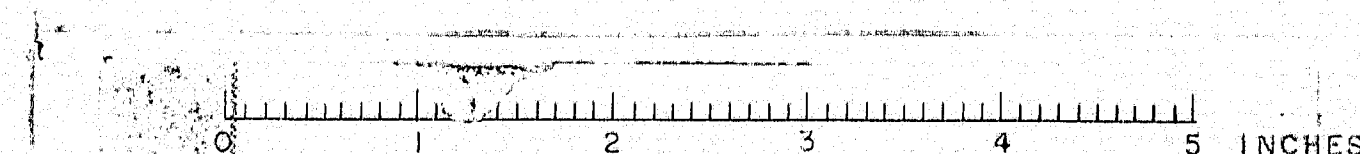
STATE HIGHWAY COMMISSION  
BRIDGE DIVISION

INTERSTATE 95 SB.  
OVER  
WEST BRANCH  
MATTAWAMKEAG RIVER  
IN THE TOWN OF  
ISLAND FALLS  
AROOSTOOK COUNTY  
STRUCTURAL STEEL & BLOCKING

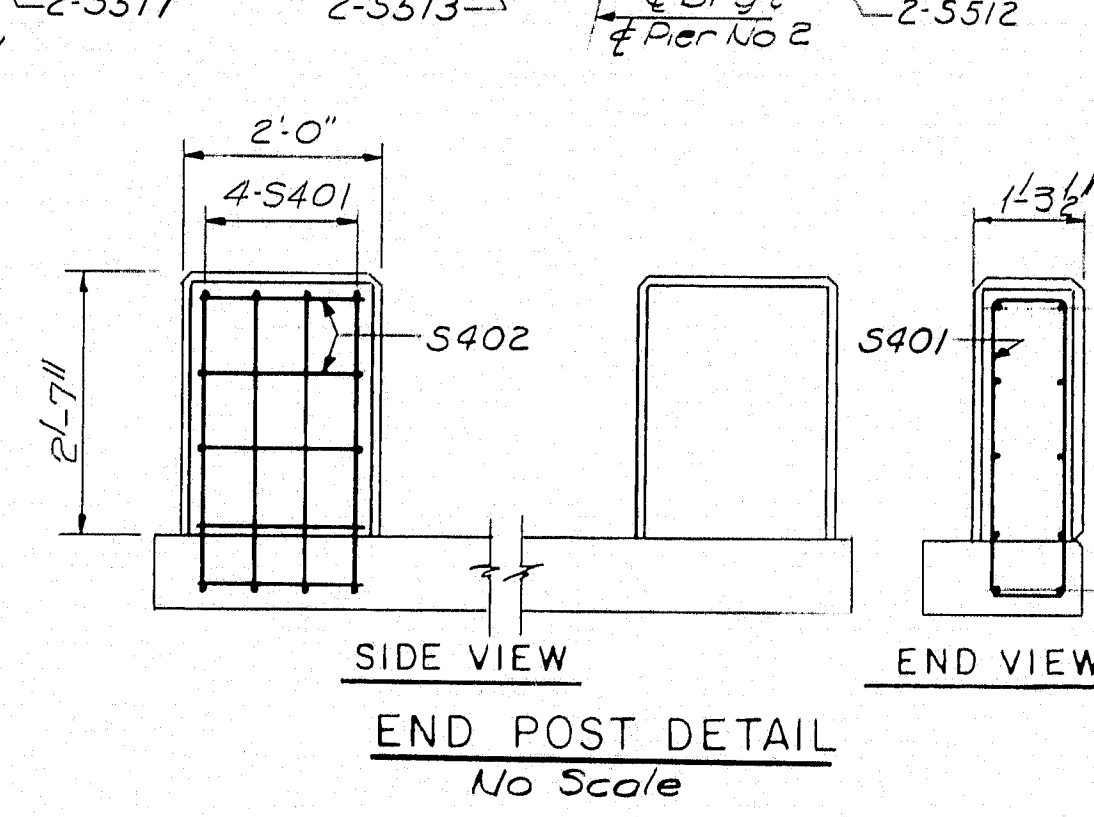
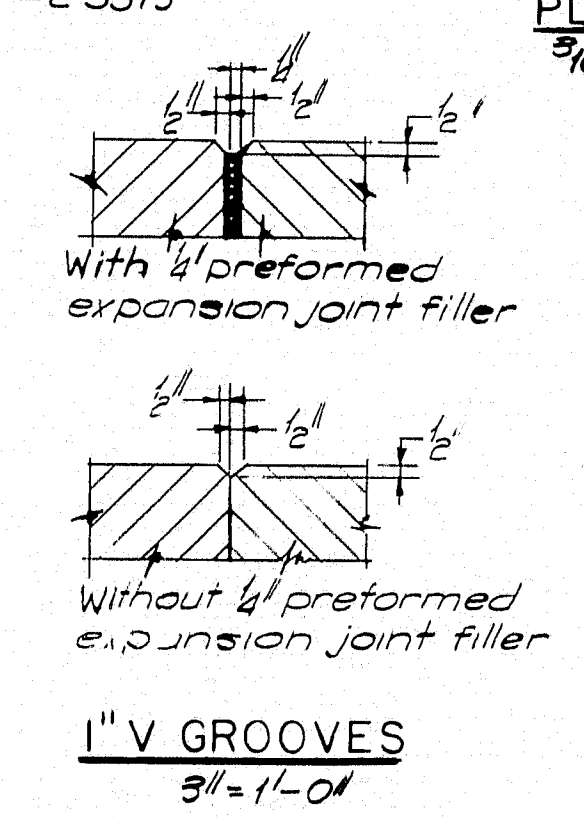
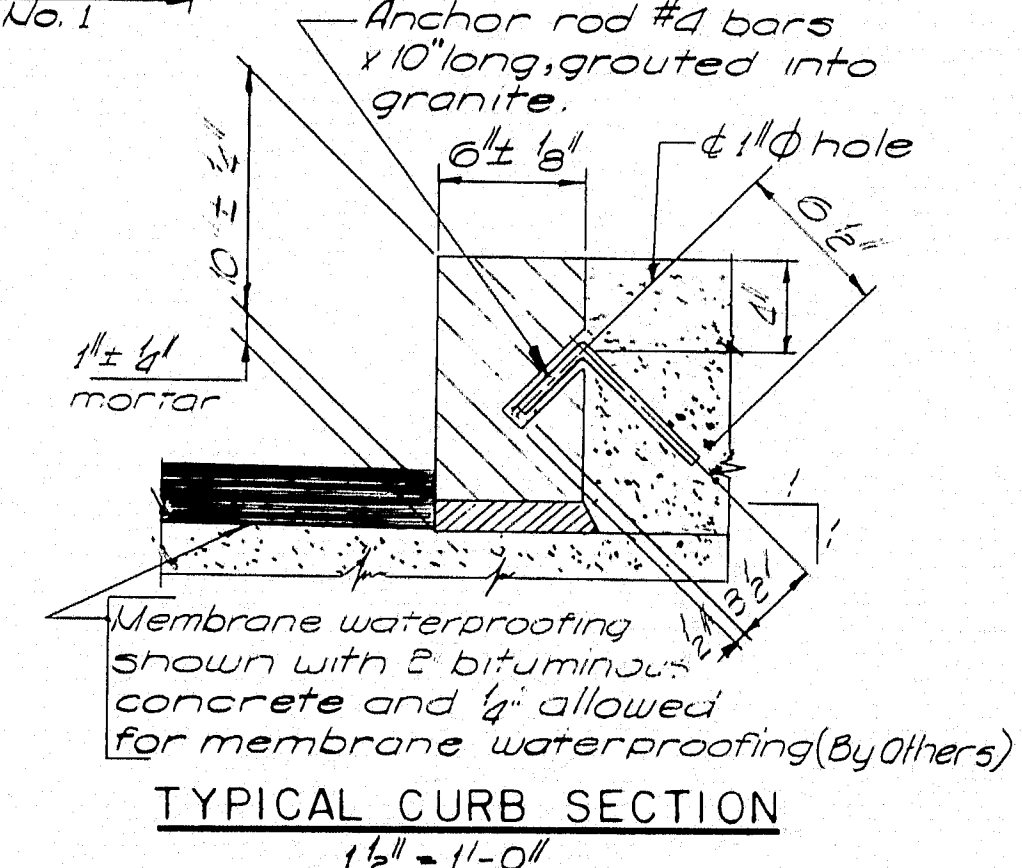
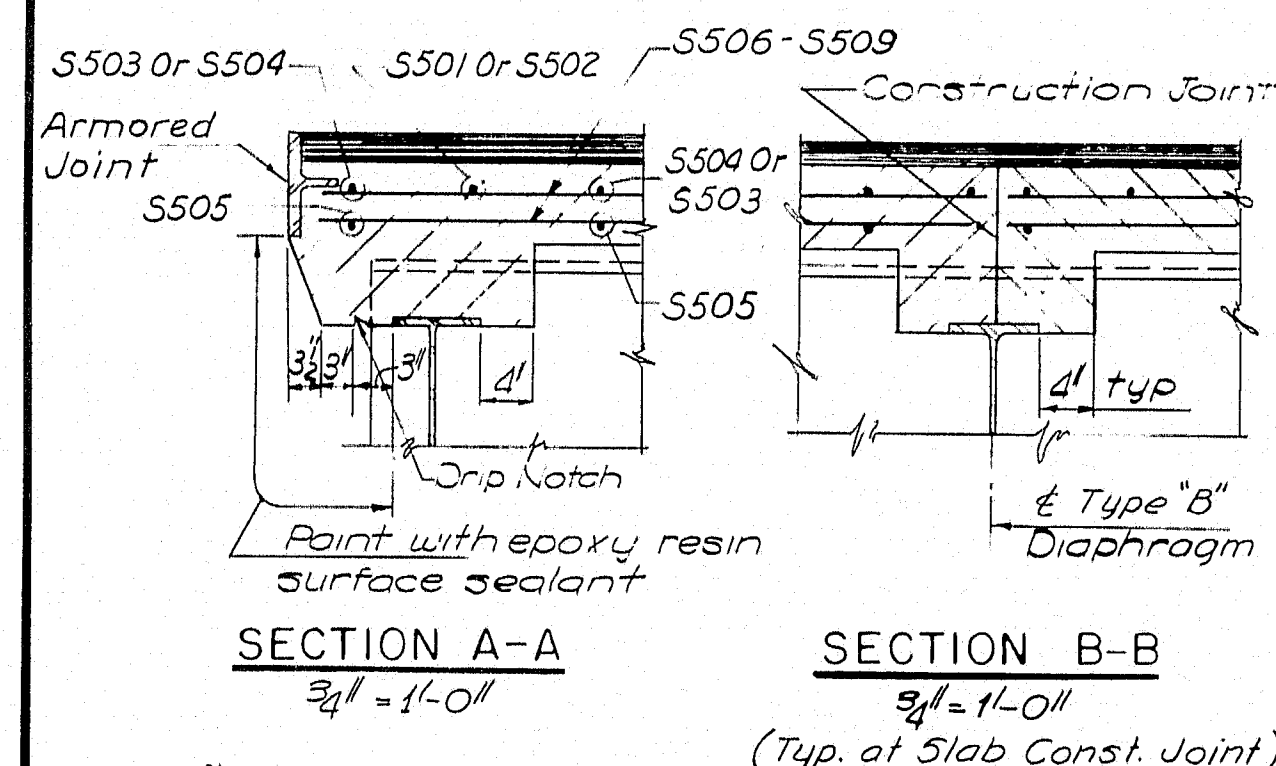
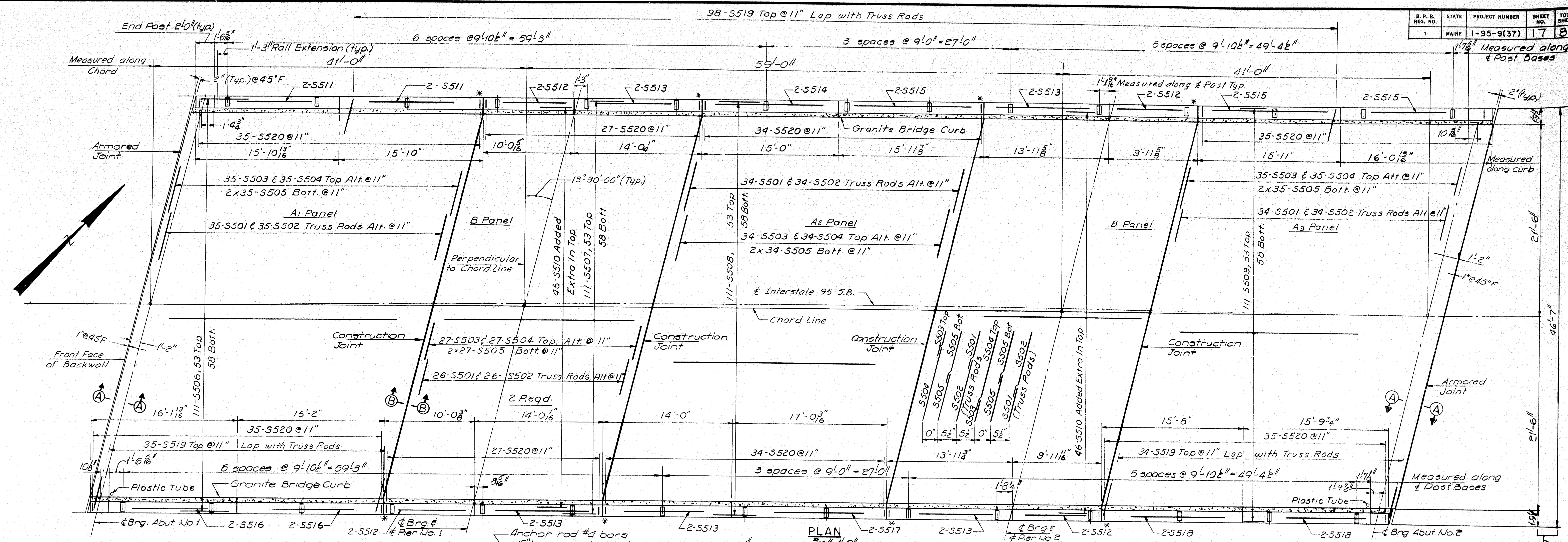
HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
CONSULTING ENGINEERS  
NEW YORK BOSTON KANSAS CITY

SHEET 7 OF 10 AUGUSTA, MAINE JUNE 1965

M-2439 ISLAND FALLS DYERBROOK (37)





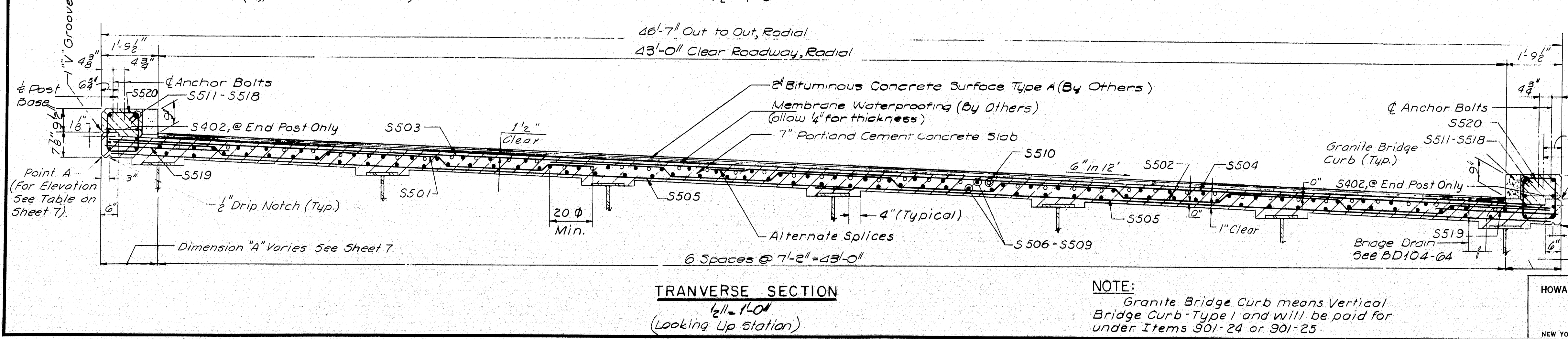


**BRIDGE DRAIN NOTES**

- Two bridge drains on south side spans 1 & 3 and three bridge drains on south side span 2.
- For approximate location see sheet 1, exact position to be determined in field.
- Bridge drains to be placed a minimum 10' clear of pier.

**GENERAL SUPERSTRUCTURE NOTES**

- At joints in curbs and granite bridge curbs over piers, use 1/4" preformed expansion joint filler. At all other curb joints, break the bond between concrete surfaces with a suitable grade of asphalt. Form 'V' groove on outside face of curb and slab at each vertical joint. Provide joints in granite bridge curb at curb construction joints.
- At low points in slabs, place a plastic tube 1/4" through the slab for drainage. Exact location to be determined in field. Do not cover the tube with waterproofing. This work will be incidental to contract items. Tubes shall extend 2' below bottom of slab. Place tube to drip clear of bridge seat.
- For bridge rail, see standard details, BD 107-64, BD 108-64.
- Place concrete in 'A' panels before placing concrete in 'B' panels.
- Concrete in end posts will be paid for under Item 701-40.



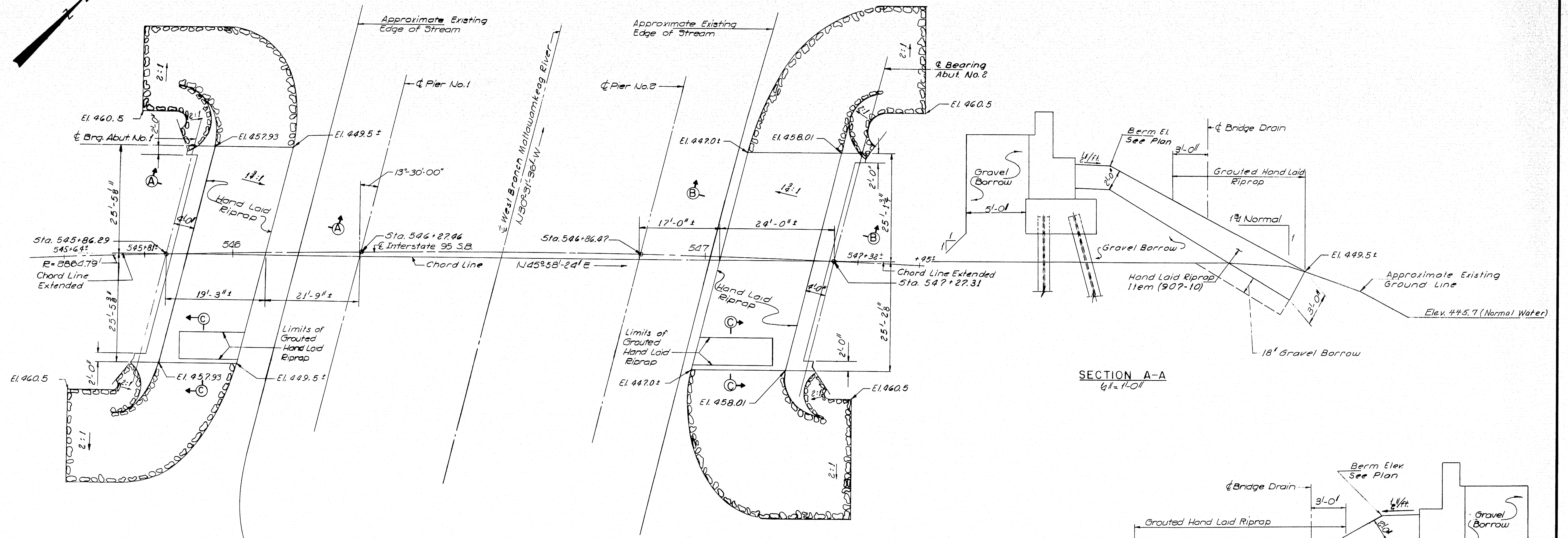
**NOTE:**  
Granite Bridge Curb means Vertical Bridge Curb-Type 1 and will be paid for under Items 901-24 or 901-25.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
CONSULTING ENGINEERS

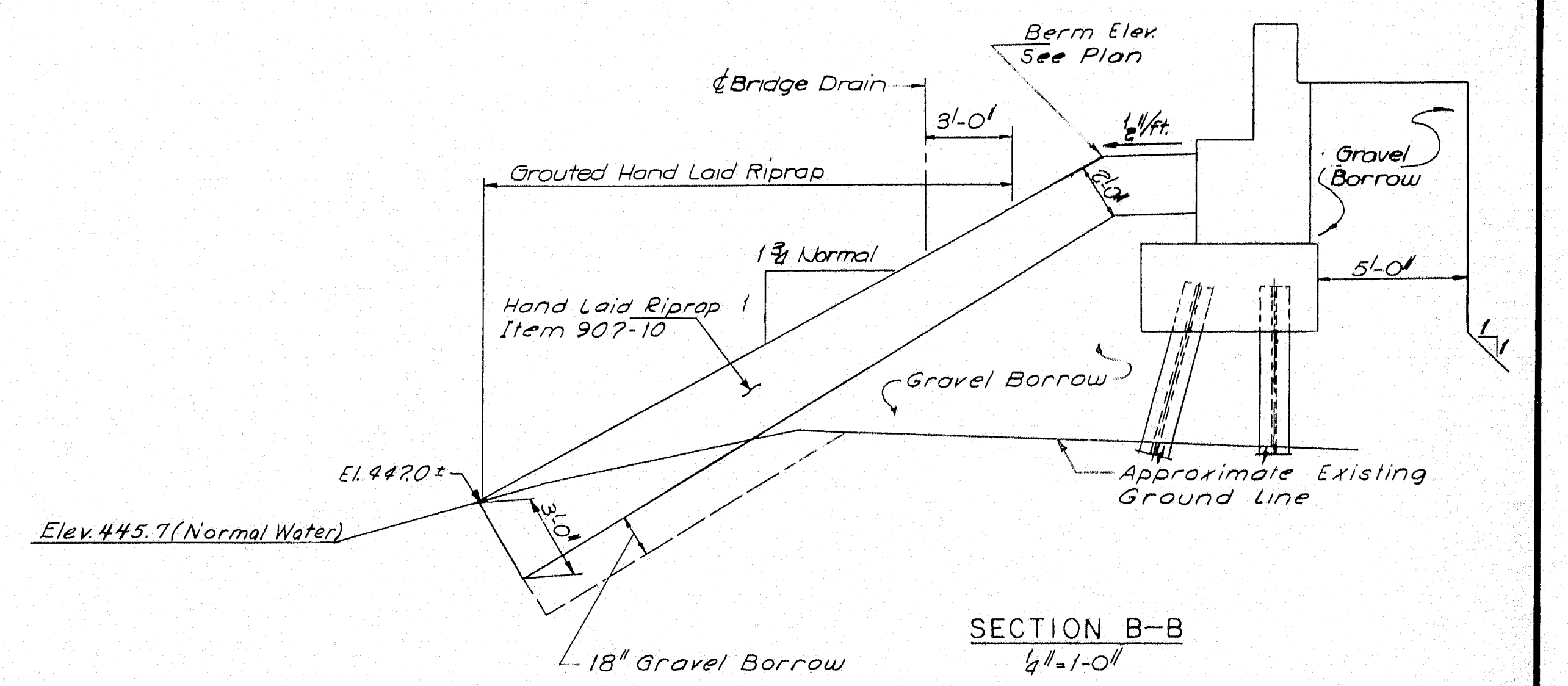
DESIGN - R.E.F.	DETAIL - P.B.D.	BRIDGE NO.
TRACE - P.R.N.	PLOT -	SURVEY -
STATE HIGHWAY COMMISSION BRIDGE DIVISION		
INTERSTATE 95 S.B. OVER WEST BRANCH MATTAWAMKEAG RIVER IN THE TOWN OF ISLAND FALLS AROSTOOK COUNTY SUPERSTRUCTURE		
SHEET 8 OF 10		AUGUSTA, MAINE JUNE, 1965

M-2440 ISLAND FALLS DYERBROOK (37)



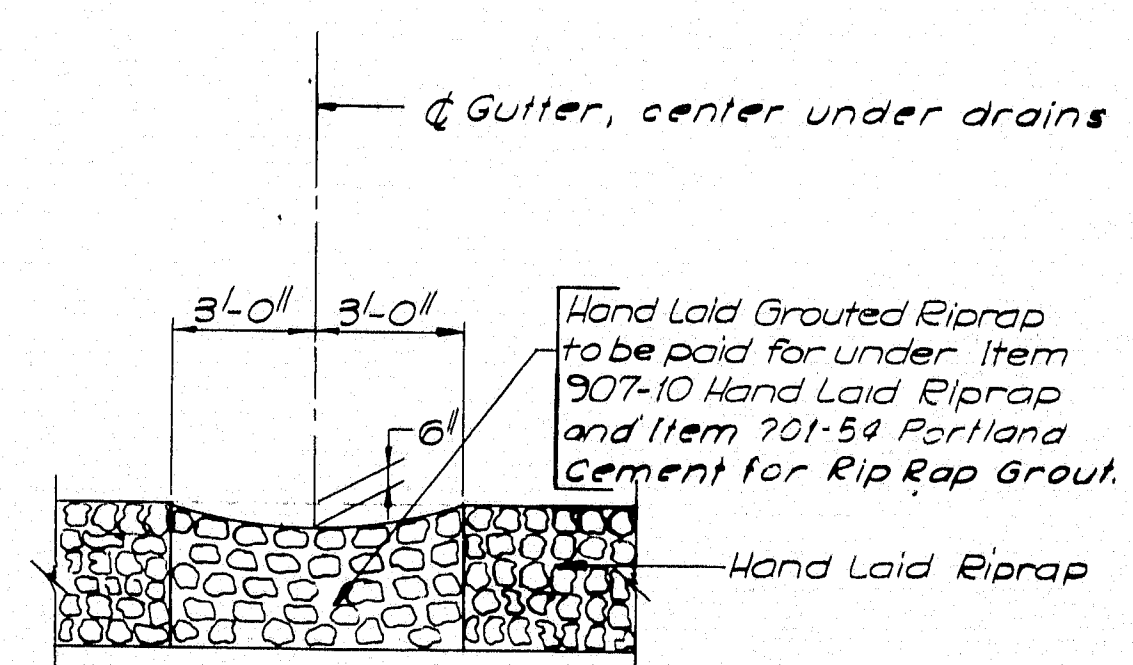


SECTION A-A  
1/4" = 1'-0"



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

PLAN  
1/4" = 1'-0"



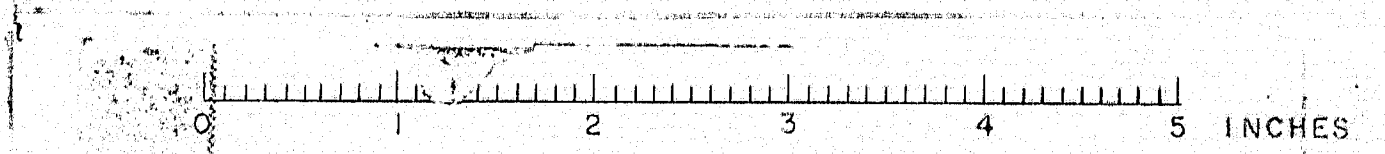
SECTION C-C  
1/4" = 1'-0"

**NOTES**

1. Provide 18" Gravel Borrow in excavation under Riprap.
2. The 18" of Gravel Borrow under the Riprap may be reduced or omitted, if in the opinion of the Engineer the existing material is suitable.
3. Payment for any excavation required for slope protection will be made under the Item for Structural Earth Excavation, Pier Item 204-14.

DESIGN- TRACE- CHECK-L.R.	DETAIL-P.B.D.	BRIDGE NO. SURVEY- PLOT-
STATE HIGHWAY COMMISSION BRIDGE DIVISION		
INTERSTATE 95 S.B. OVER WEST BRANCH MATTAWAMKEAG RIVER IN THE TOWN OF ISLAND FALLS AROOSTOOK COUNTY SLOPE PROTECTION		
HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS NEW YORK BOSTON KANSAS CITY		SHEET 9 OF 10 AUGUSTA, MAINE JUNE, 1965

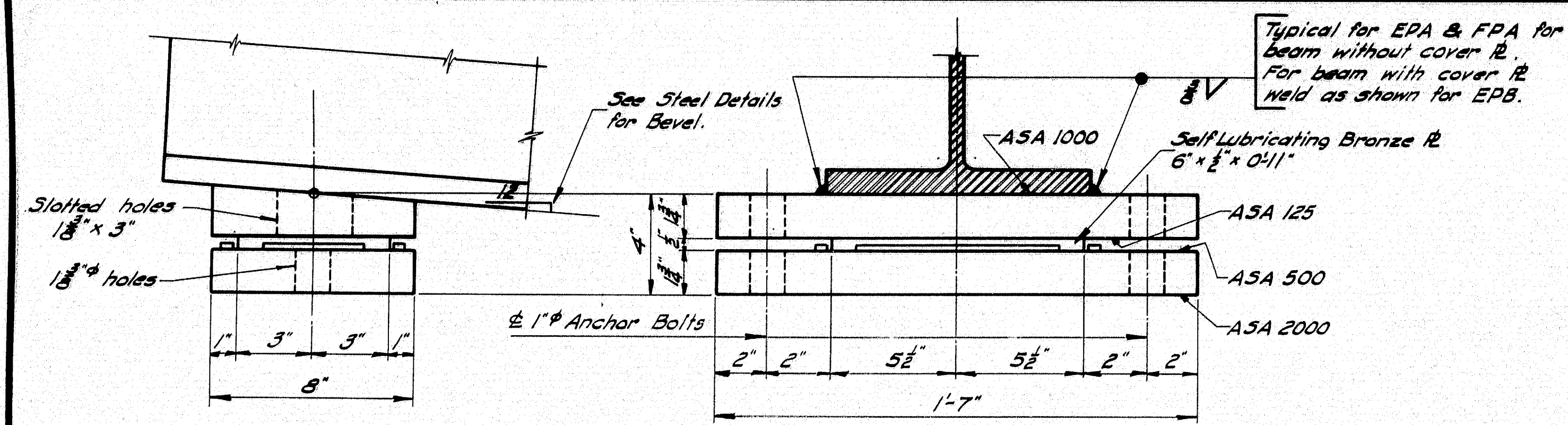
M-2441 ISLAND FALLS DYERBROOK (37)



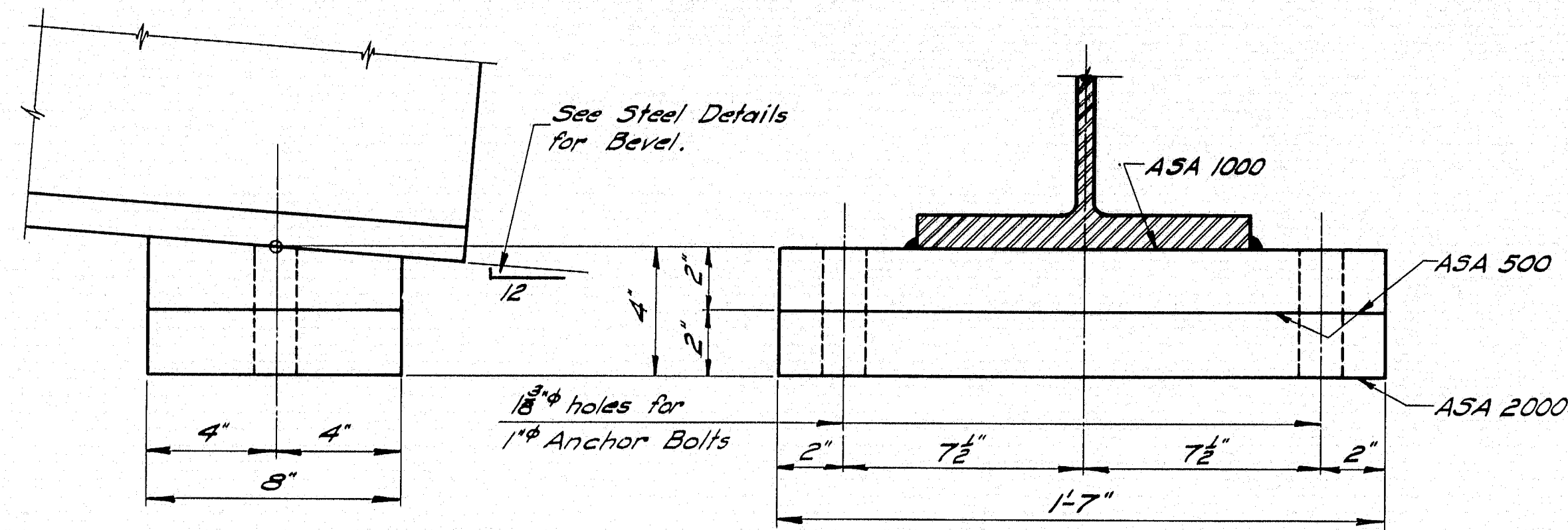




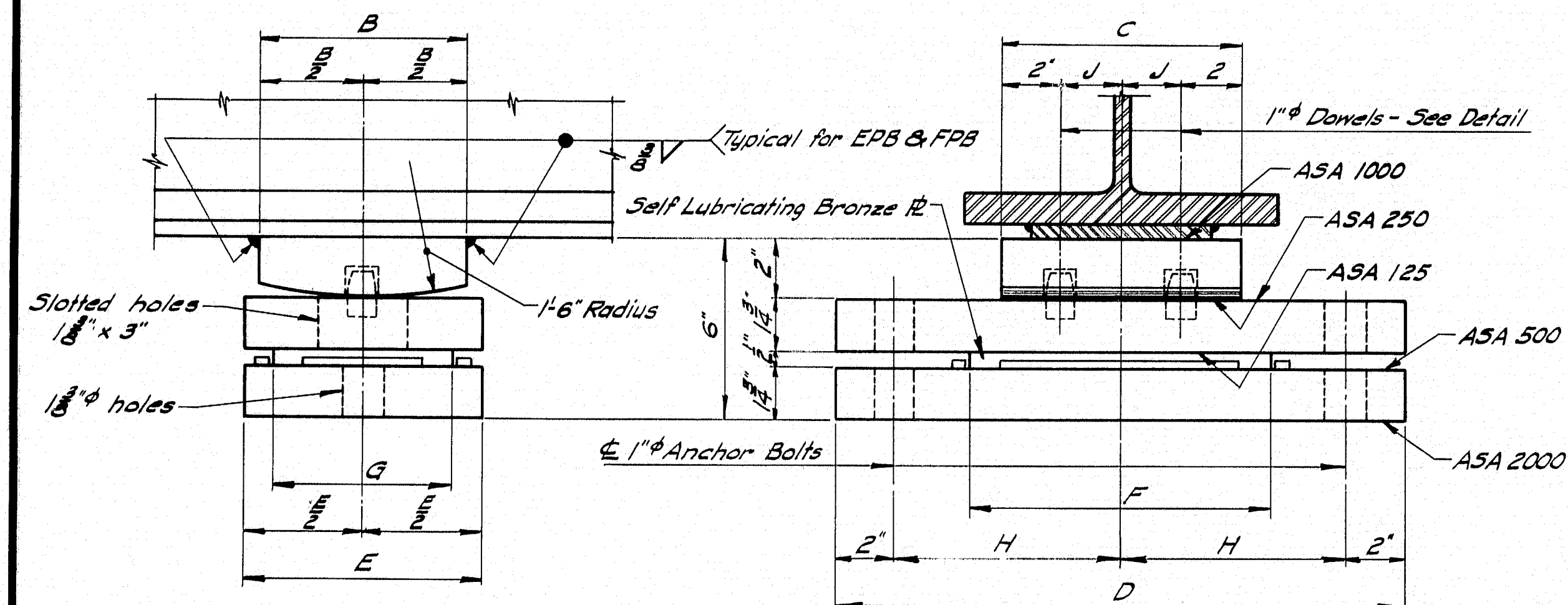




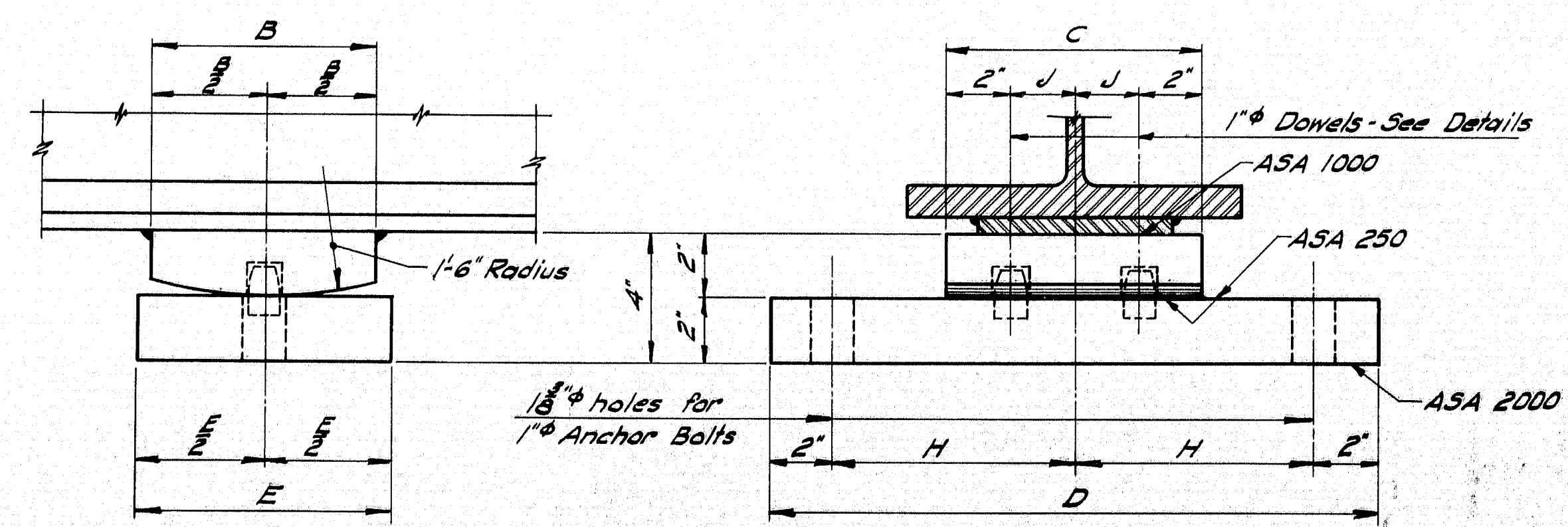
EXPANSION PEDESTAL - EPA



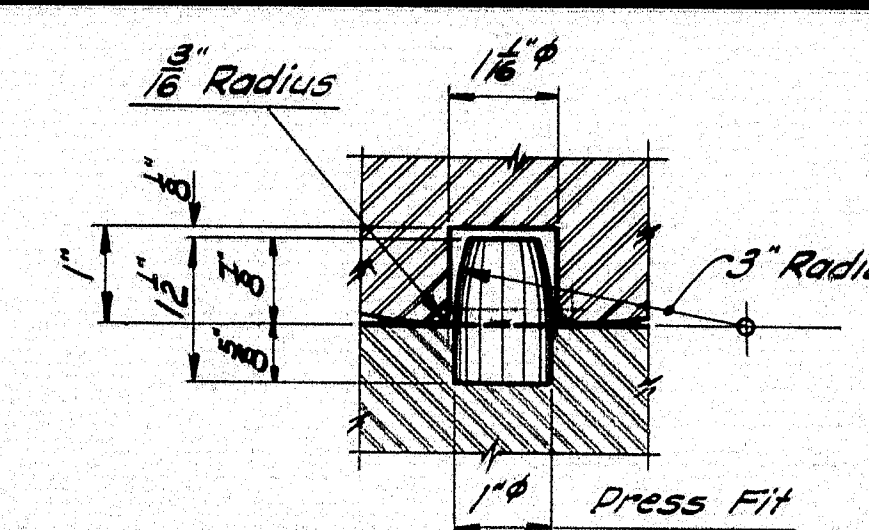
FIXED PEDESTAL - FPA



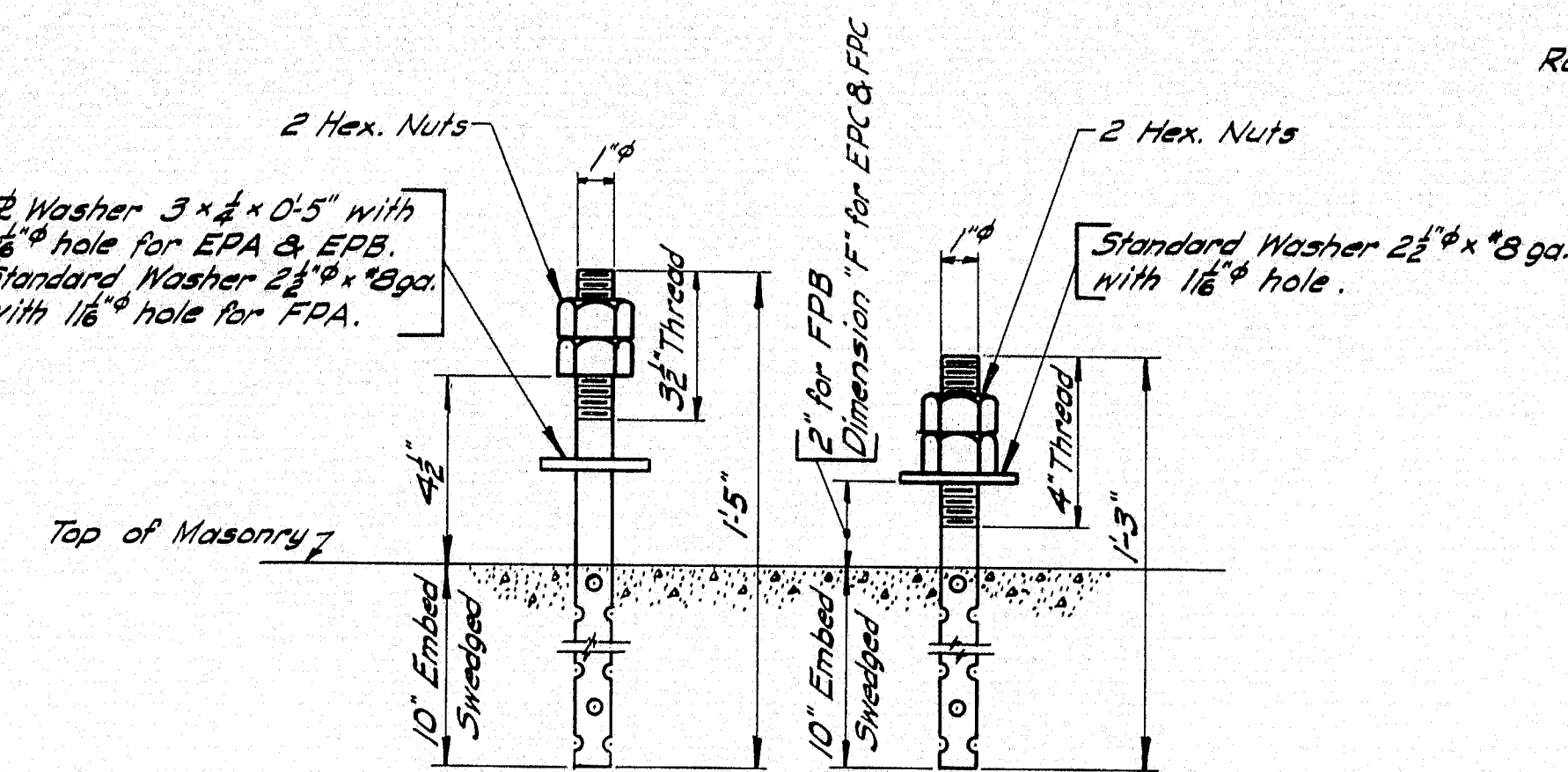
EXPANSION PEDESTAL - EPB



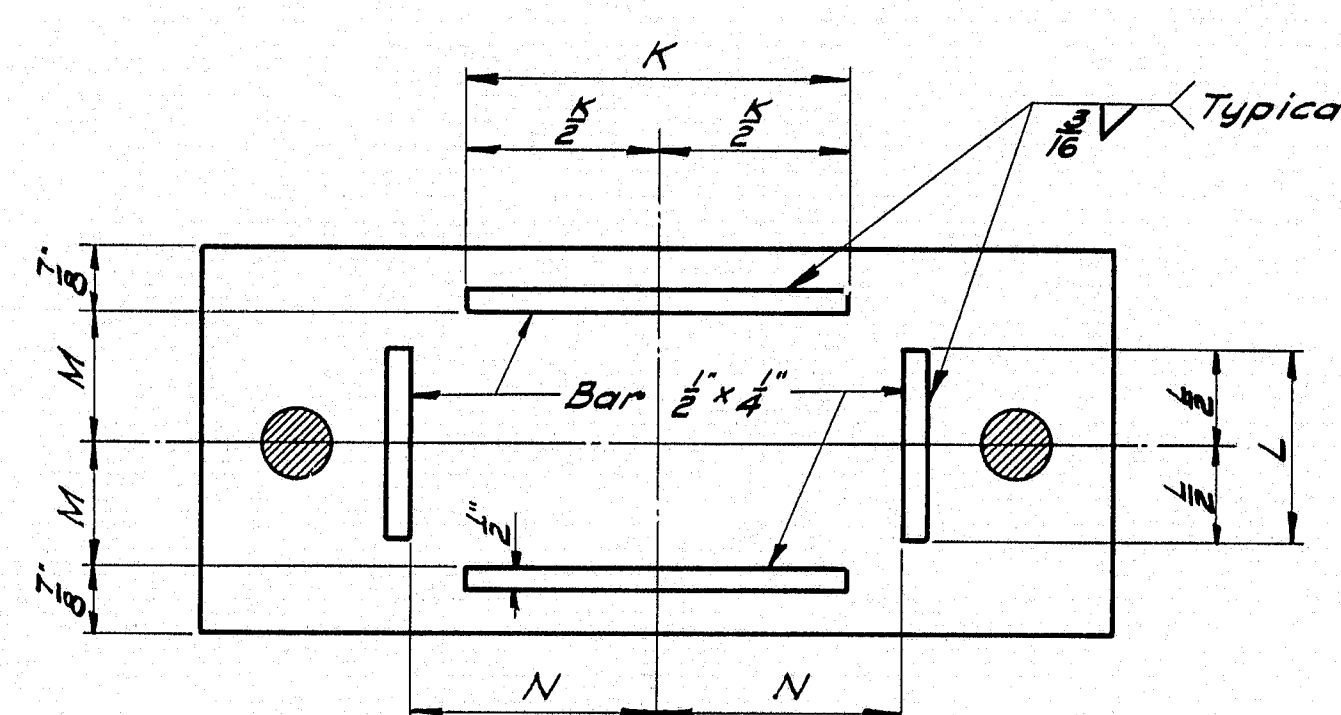
FIXED PEDESTAL - FPB



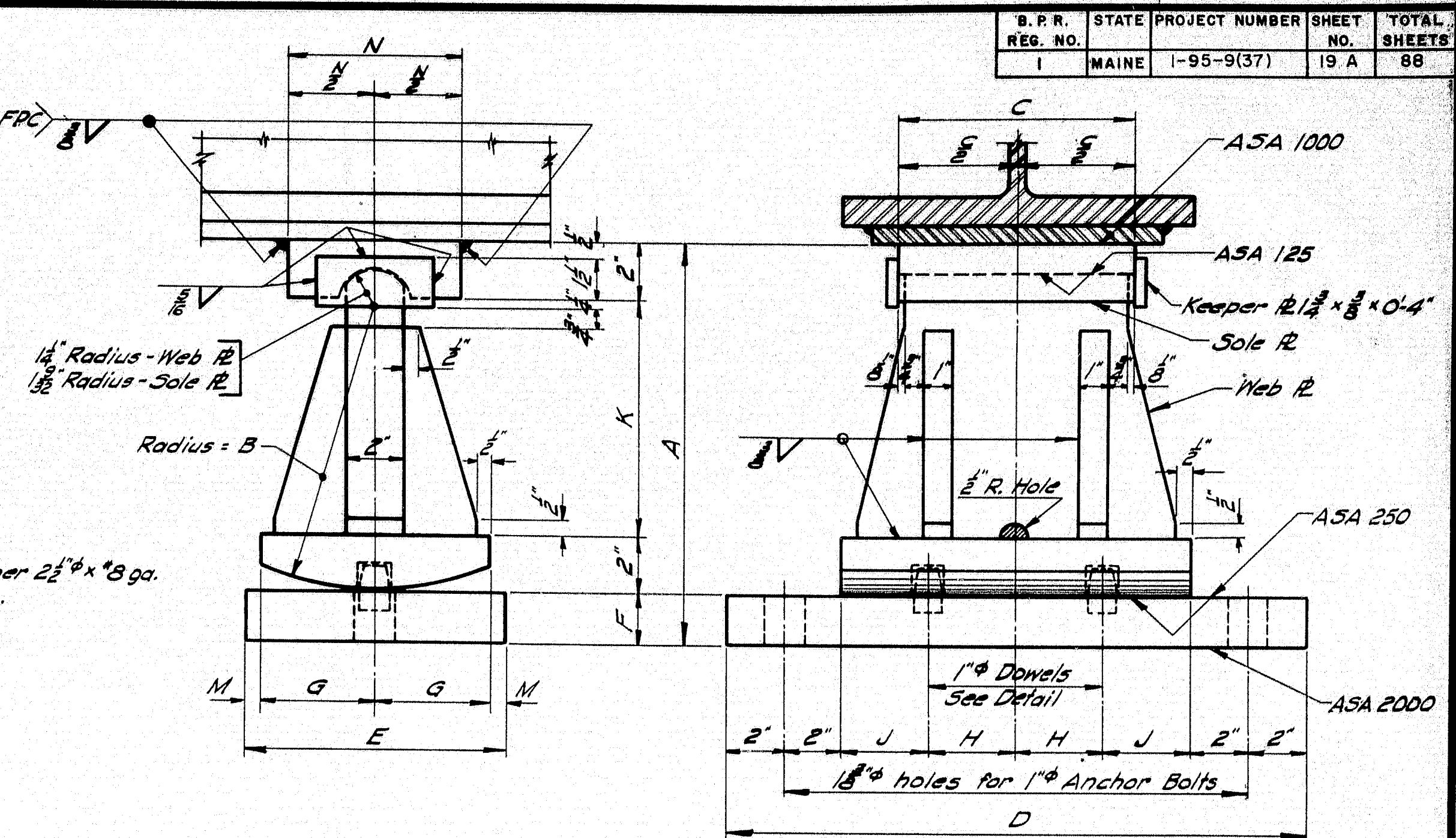
DOWEL DETAIL



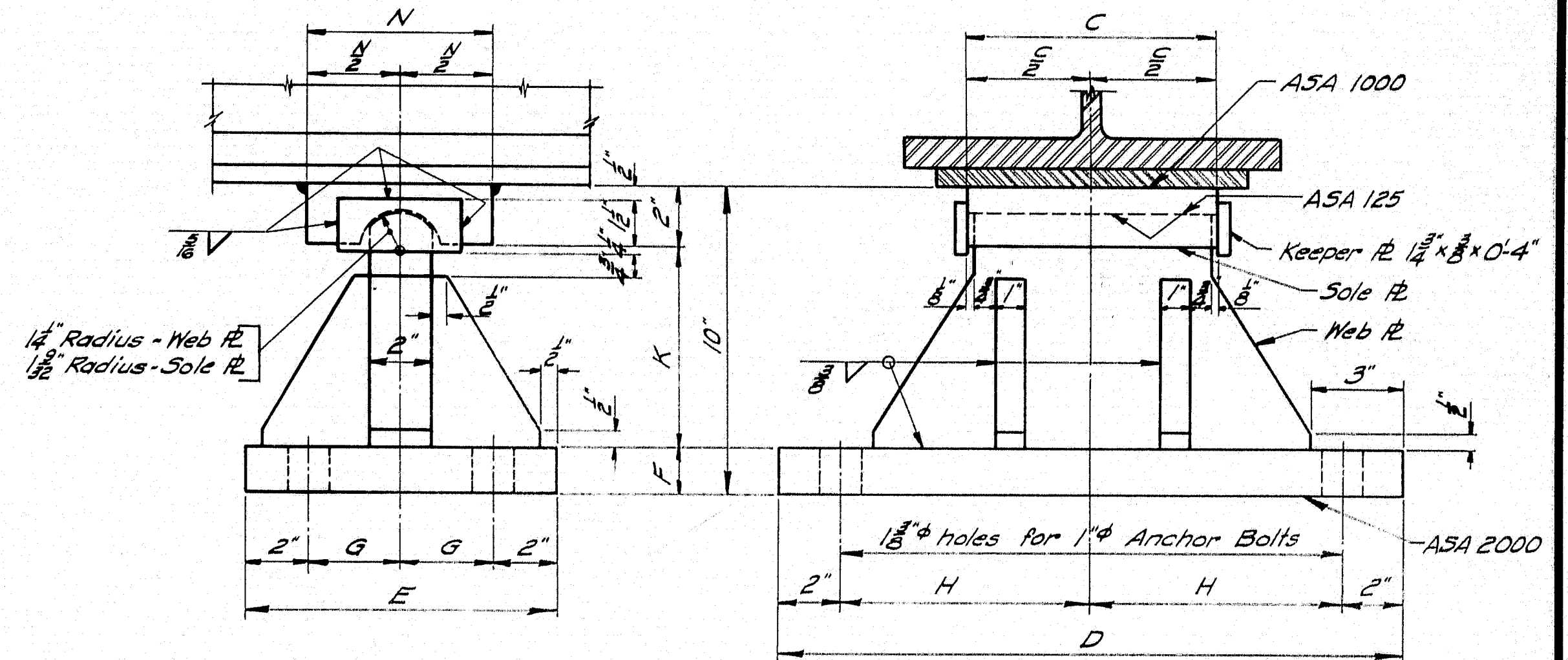
ANCHOR BOLT DETAIL



MASONRY PLATE



EXPANSION PEDESTAL - EPC



FIXED PEDESTAL - FPC

PEDESTALS - ALLOWABLE LOADS & DIMENSIONS													
Pedestal	Load	A	B	C	D	E	F	G	H	J	K	L	N
EPA	132K	-	-	-	-	-	-	-	-	-	-	8"	4"
FPA	130K	-	-	-	-	-	-	-	-	-	-	-	-
EPB-1	120K	-	6"	8"	1 1/2"	8"	10"	6"	7 1/2"	2"	8"	4"	3 1/2"
EPB-2	165K	-	7"	10"	1 1/2"	9"	1 1/2"	7"	8"	3"	10"	5"	3 1/2"
EPB-3	224K	-	8"	1 1/2"	2 1/2"	10"	1 1/2"	7"	10"	4 1/2"	1 1/2"	5"	3 1/2"
FPB-1	120K	-	6"	8"	1 1/2"	8"	-	-	7 1/2"	2"	-	-	-
FPB-2	165K	-	7"	10"	1 1/2"	9"	-	-	8"	3"	-	-	-
FPB-3	224K	-	8"	1 1/2"	2 1/2"	10"	-	-	10"	5"	-	-	-
EPC-1	70K	-	6"	8"	1 1/2"	8"	1 1/2"	3 1/2"	3"	3"	4 1/2"	-	6"
EPC-2	100K	-	8"	8"	1 1/2"	8"	1 1/2"	3 1/2"	3"	3"	6 1/2"	-	6"
EPC-3	130K	-	1 1/2"	10"	8"	1 1/2"	9"	1 1/2"	4"	3"	8 1/2"	-	7"
EPC-4	160K	-	1 1/2"	10"	8"	1 1/2"	9"	1 1/2"	4"	3"	8 1/2"	-	7"
EPC-5	190K	-	1 1/2"	10"	9"	2 1/2"	10"	2"	4 1/2"	5"	3"	8 1/2"	-
EPC-6	220K	-	1 1/2"	10"	10"	2 1/2"	1 1/2"	2 1/2"	5"	5"	3"	10 1/2"	1"
EPC-7	250K	-	1 1/2"	10"	10"	2 1/2"	1 1/2"	2 1/2"	5"	5"	4"	10 1/2"	1"
FPC-1	100K	-	8"	1 1/2"	9"	1 1/2"	2 1/2"	8"	-	6 1/2"	-	-	6"
FPC-2	160K	-	8"	1 1/2"	10"	1 1/2"	3"	8"	-	6 1/2"	-	-	7"
FPC-3	190K	-	9"	2 1/2"	10"	1 1/2"	3"	10"	-	6 1/2"	-	-	8"
FPC-4	220K	-	10"	2 1/2"	1 1/2"	4"	10"	-	-	6 1/2"	-	-	8"
FPC-5	250K	-	10"	2 1/2"	1 1/2"	4"	10"	-	-	6"	-	-	8"

NOTE: At the location of bearing pedestals the concrete bridge seats shall be dressed one inch larger all around than size of masonry plates and to exact elevations shown on the plans. If dressed areas are below the surface of the surrounding bridge seat a small channel shall be cut to the edge of the bridge seat for drainage where required by the Engineer. Channels shall have a min. width of 2" and min. slope of 1/8 inch per foot. No separate payment for this work will be made as it shall be considered incidental to contract items.

DESIGN SPECIFICATIONS

A.A.S.H.O., Standard Specifications for Highway Bridges, 1961, with Interim Specifications, 1961 & 1962

A.S.T.M. STEEL CLASSIFICATION

Anchor Bolts - A7, A36, or A307  
All other - A36

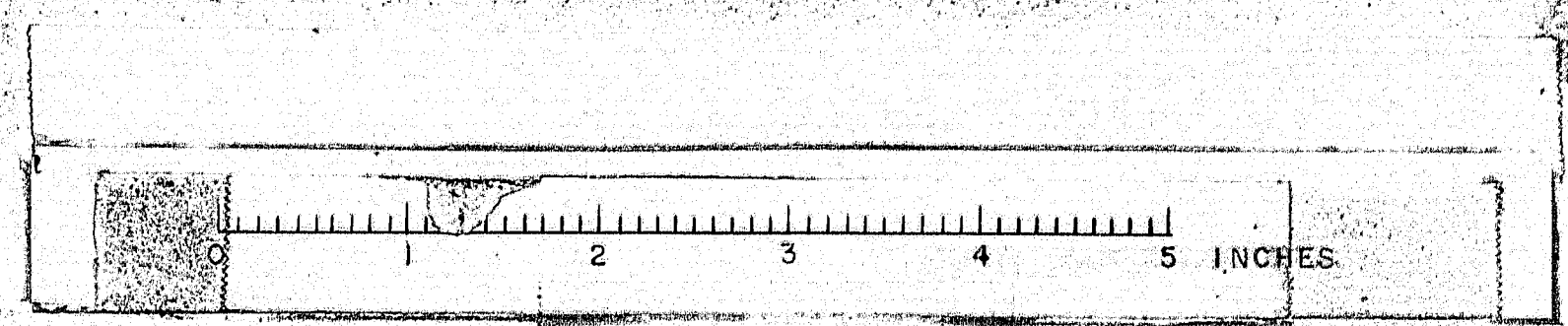
MAINE STATE HIGHWAY COMMISSION  
AUGUSTA, MAINE

STANDARD DETAILS  
(BD 101 - 64)

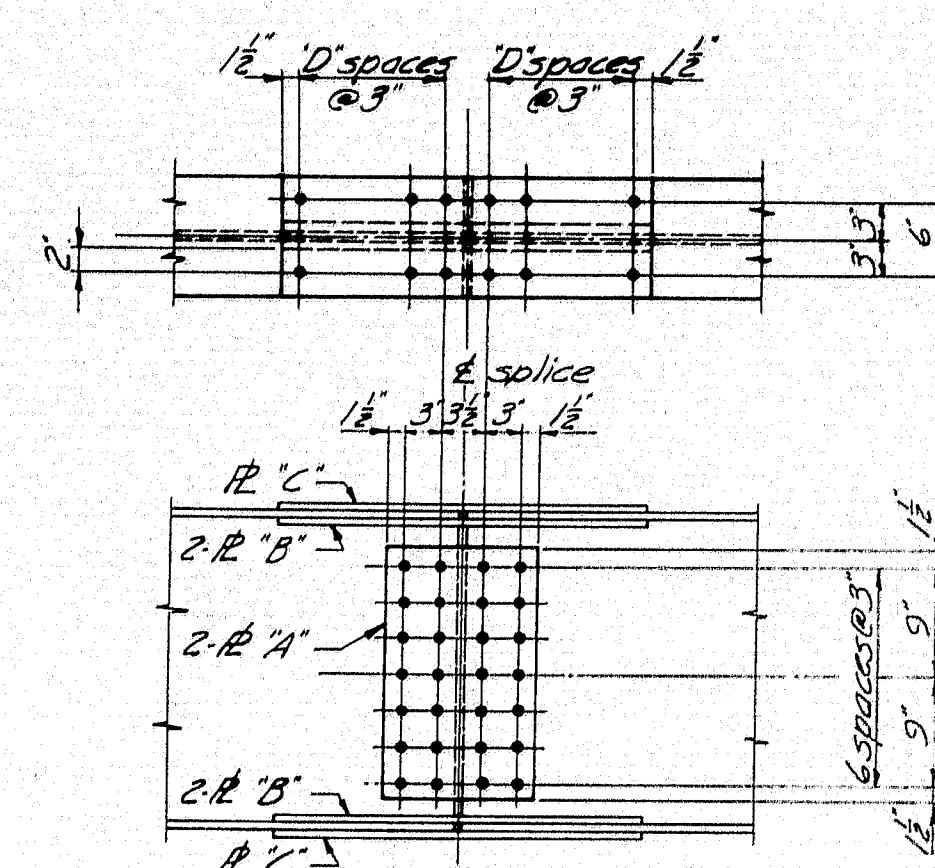
BEARING PEDESTALS

JANUARY, 1964

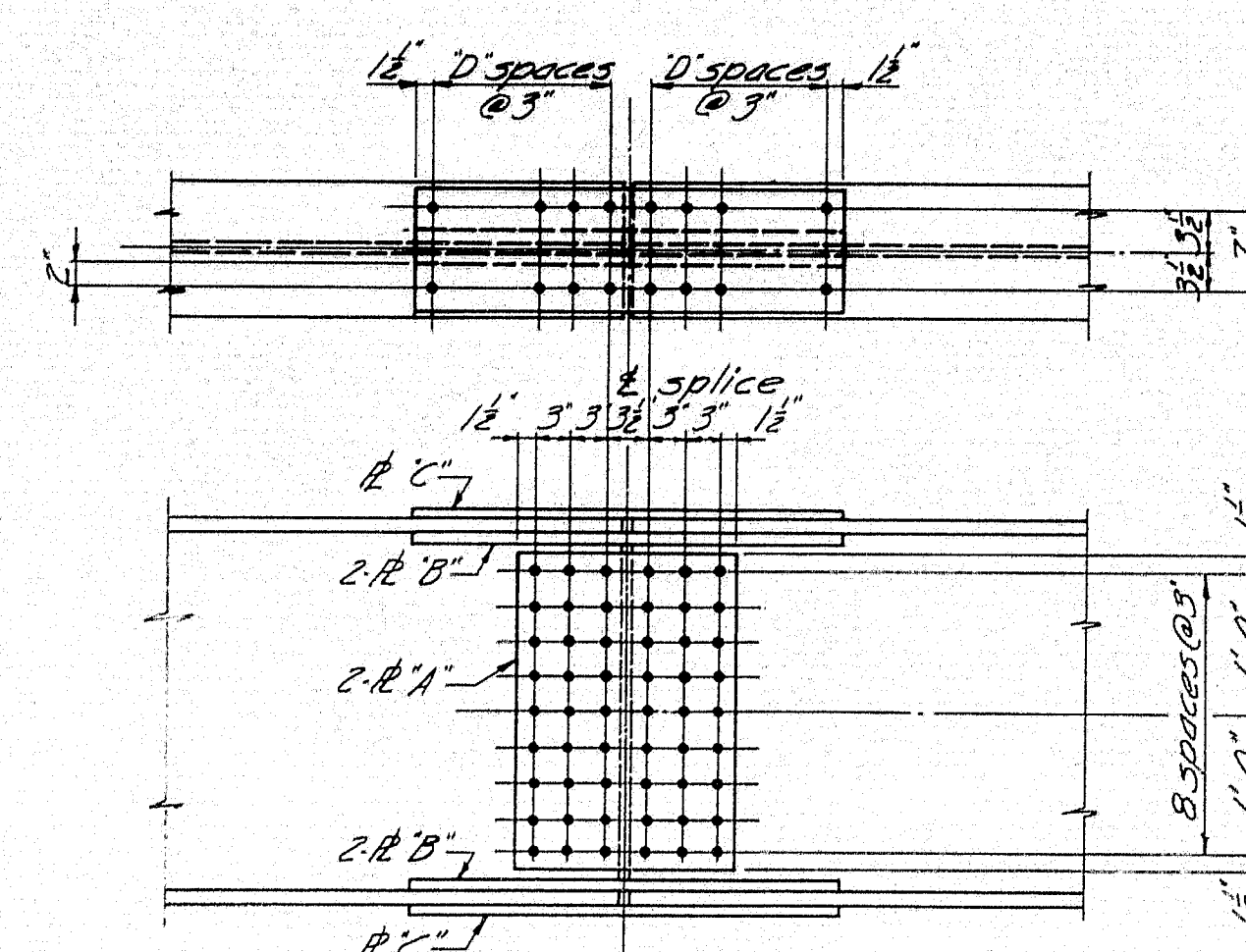
M-2442A



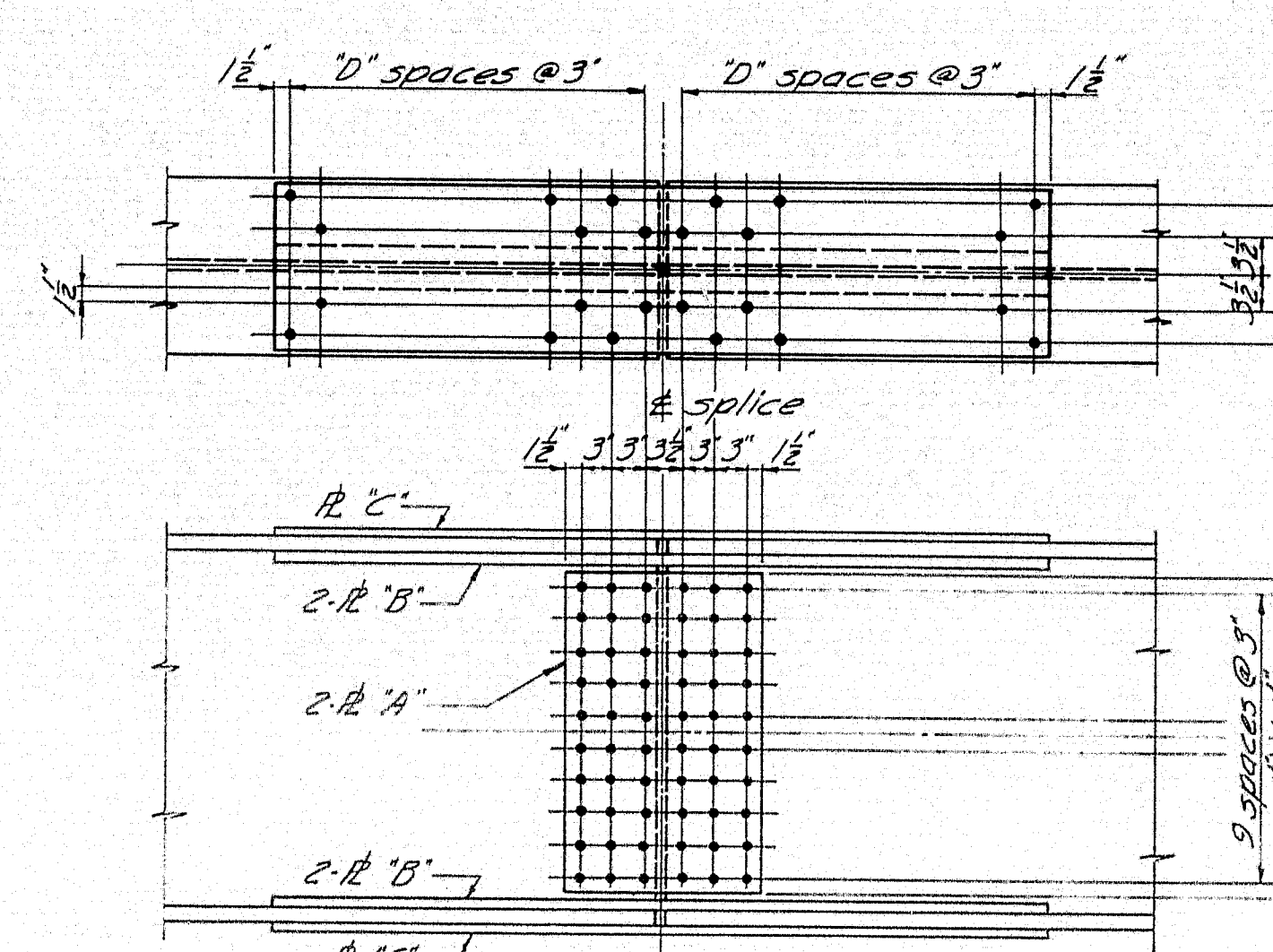




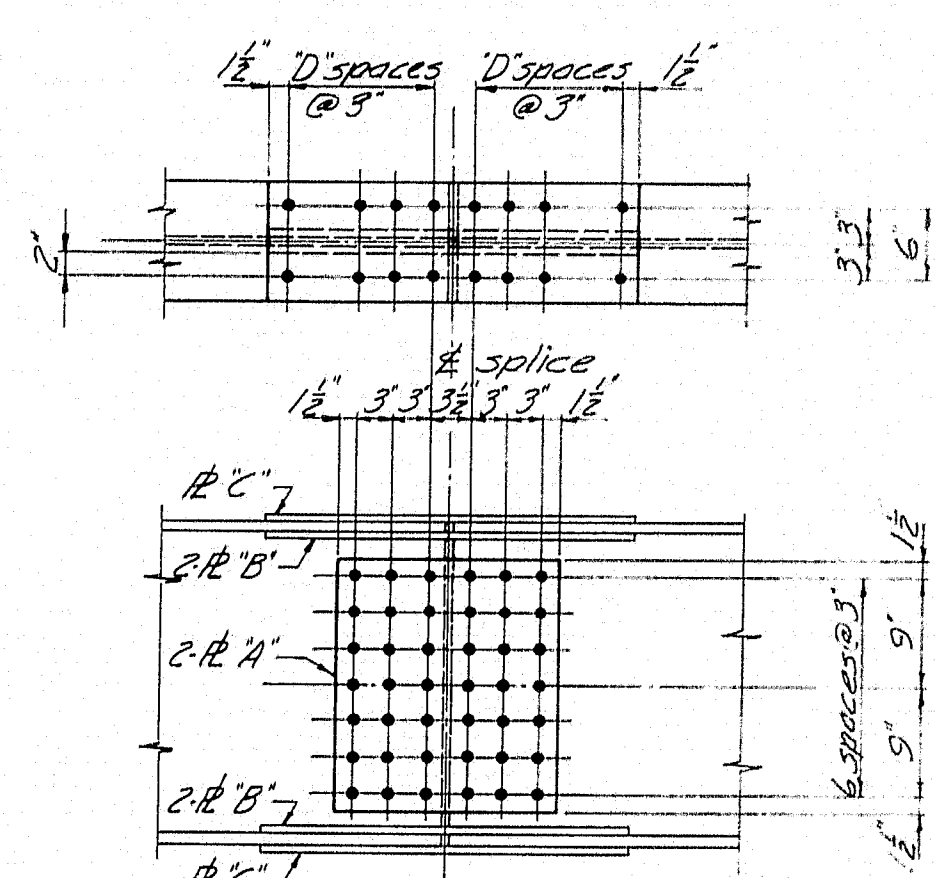
27 WF 84



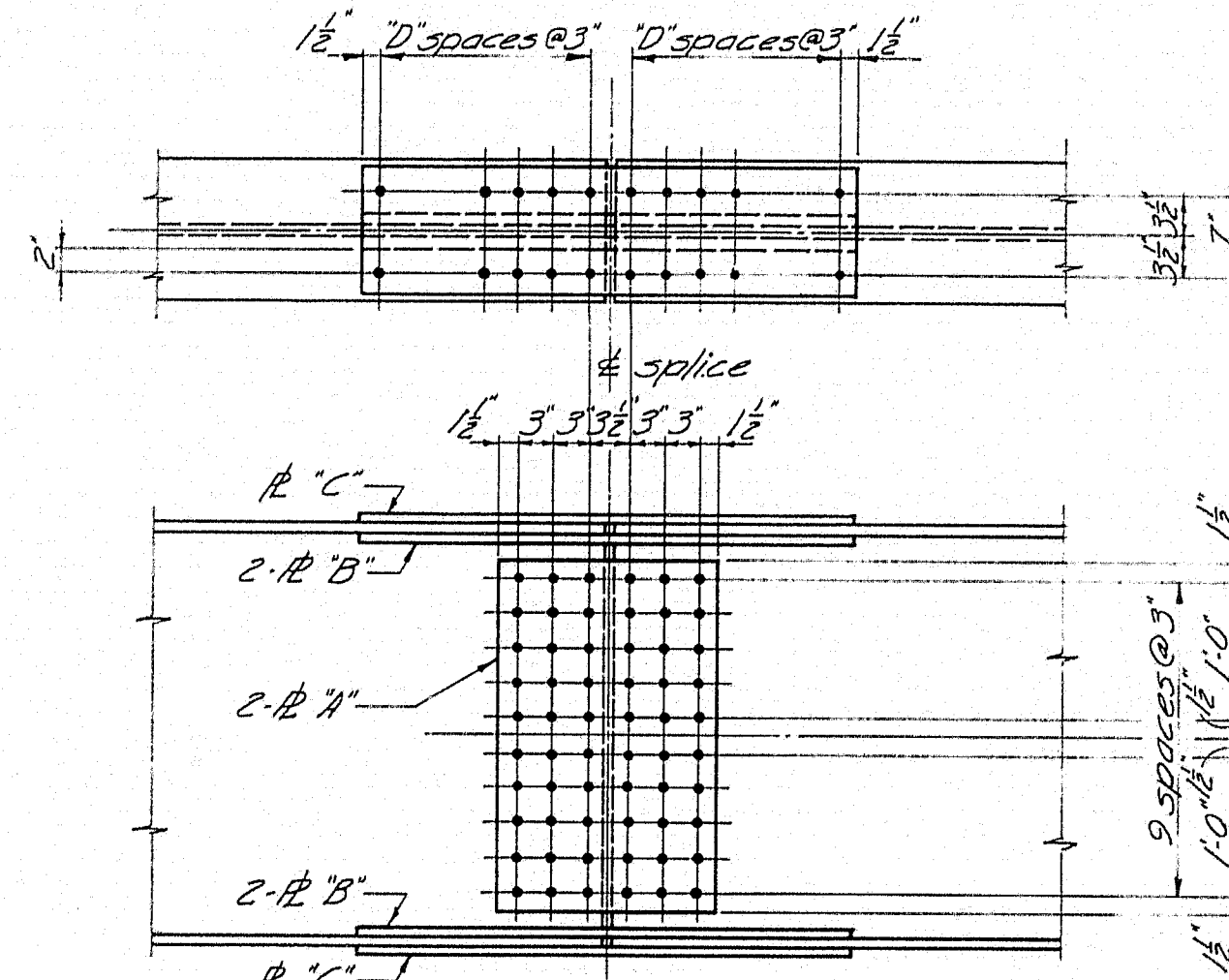
33 WF 118, 130, 141, 152



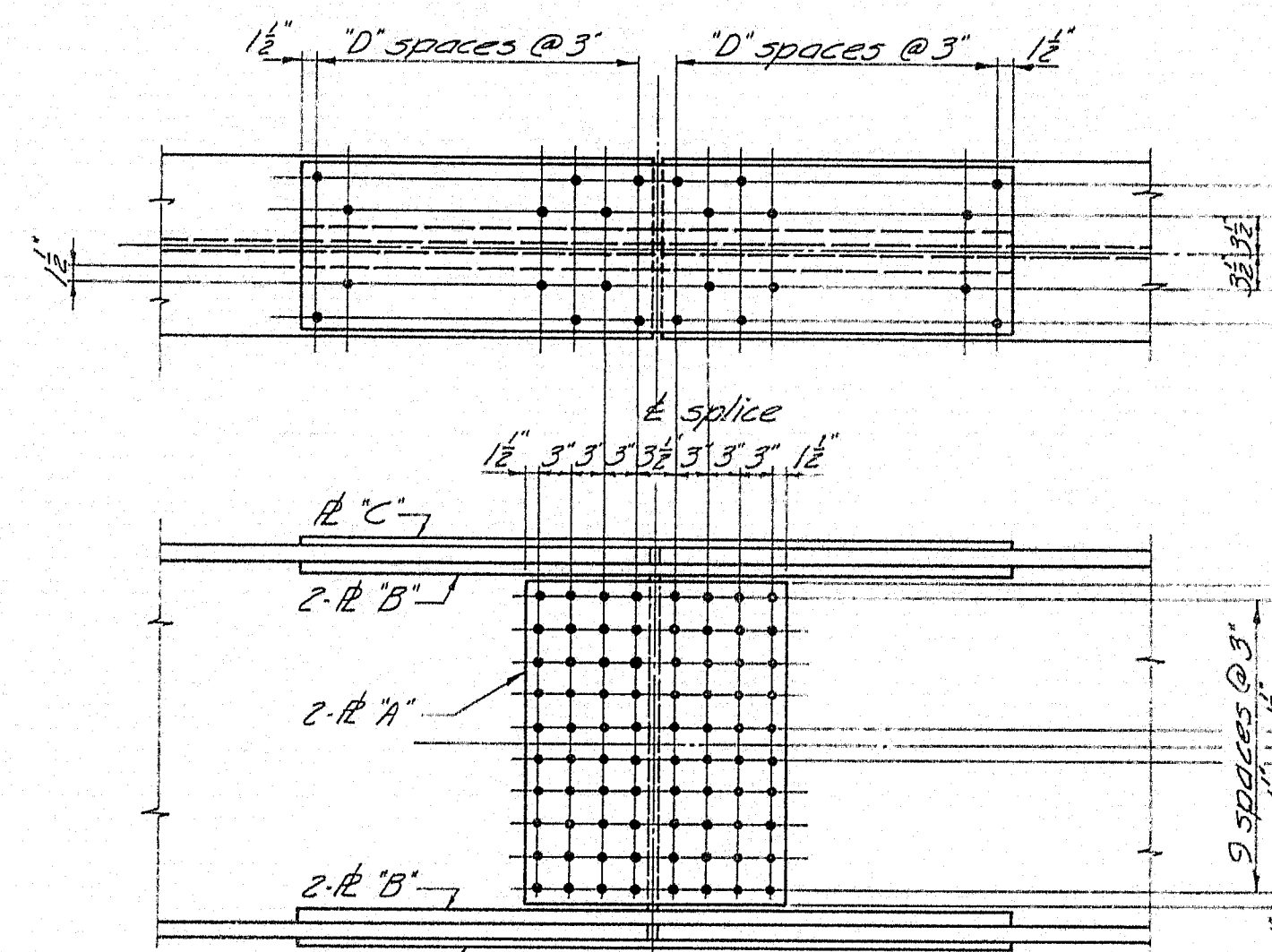
36 WF 245, 280



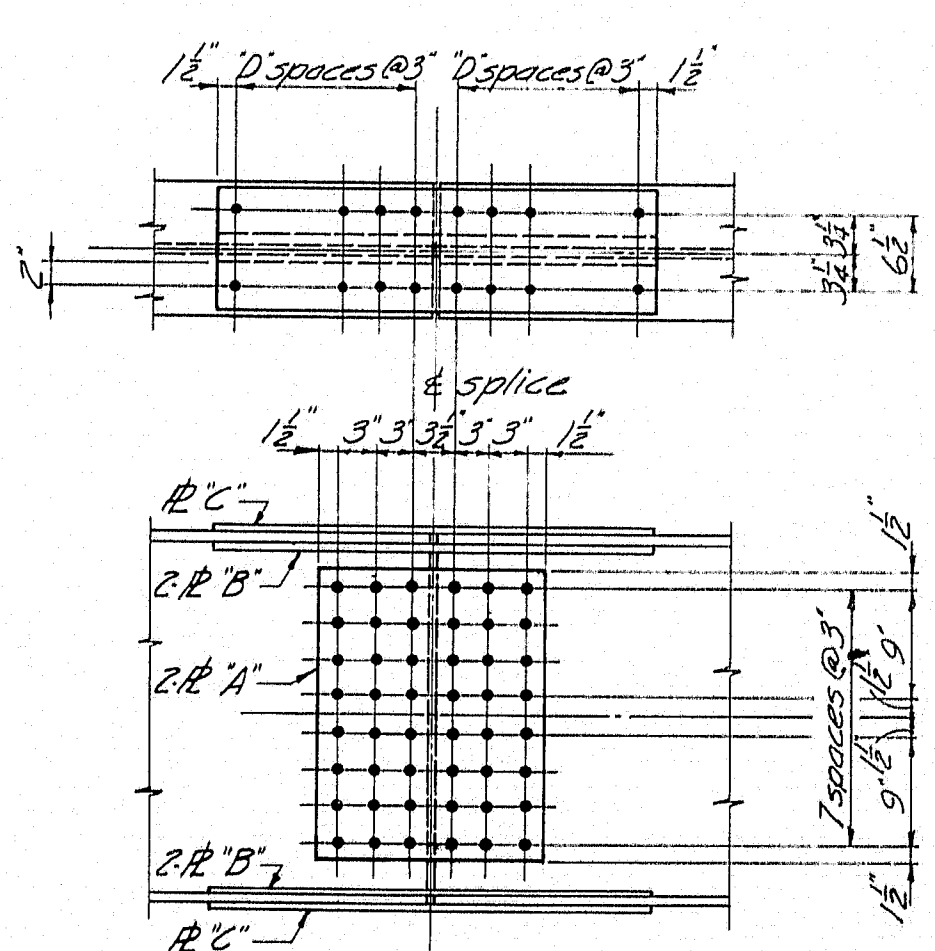
27 WF 94, 102, 114



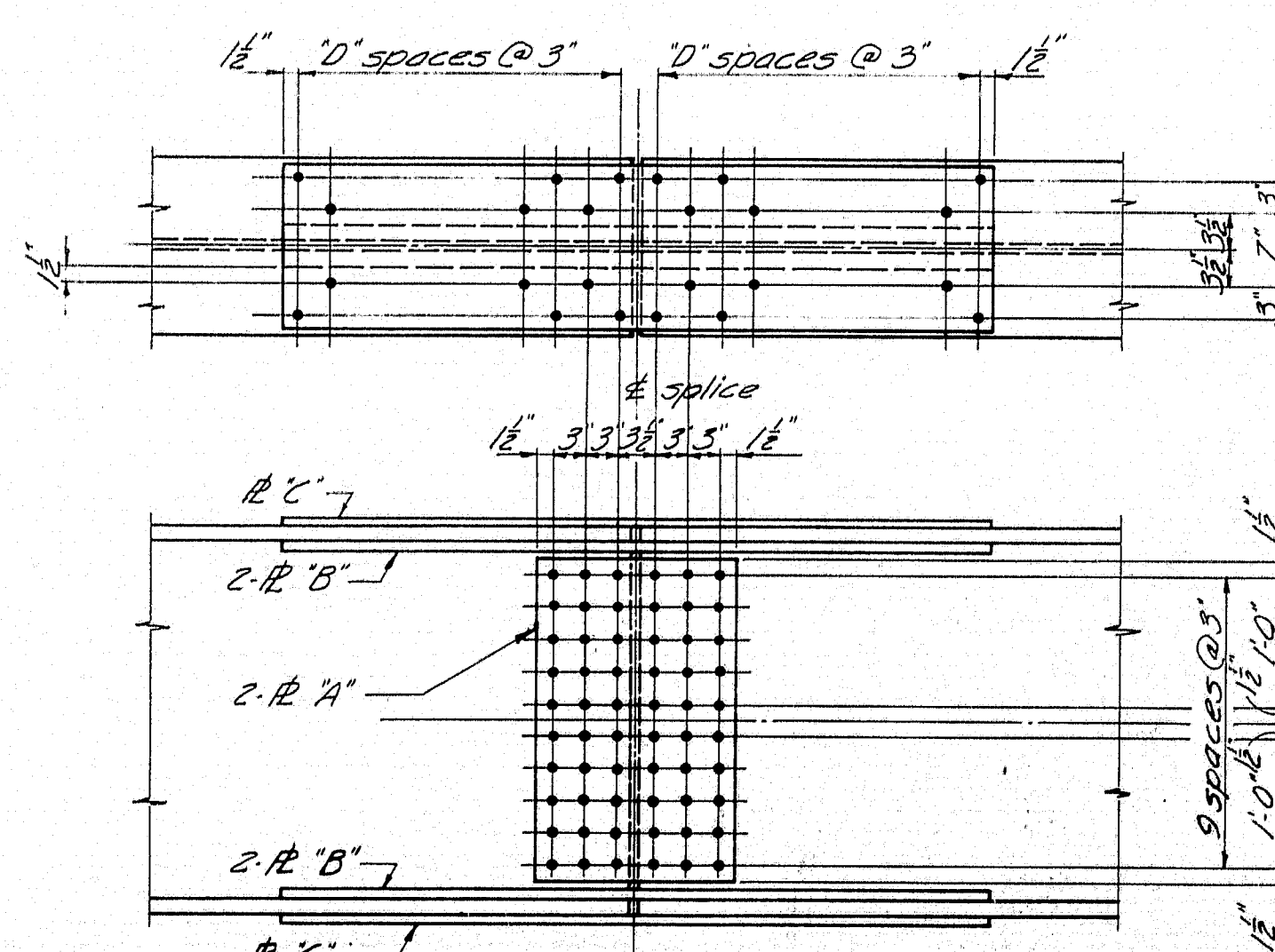
36 WF 135, 150, 160, 170, 182, 194



36 WF 300



30 WF 99, 108, 116, 124, 132



36 WF 230, 260

### SPLICE DESIGN, PLATES AND FLANGE HOLES

BEAM	BEND. M.	SHEAR	PLATE "A"	PLATE "B"	PLATE "C"	"D"
27 WF 84	3070*	111*	12 1/2 x 1/2	4 x 1/2	10 x 1/2	3
27 WF 94	3520*	119*	12 1/2 x 1/2	4 x 1/2	10 x 1/2	3
27 WF 102	3862*	126*	12 1/2 x 1/2	4 x 1/2	10 x 1/2	4
27 WF 114	4341*	140*	12 1/2 x 1/2	4 x 1/2	10 x 1/2	4
30 WF 99	3921*	139*	12 1/2 x 1/2	4 x 1/2	10 x 1/2	3
30 WF 108	4360*	147*	12 1/2 x 1/2	4 x 1/2	10 x 1/2	4
30 WF 116	4780*	152*	12 1/2 x 1/2	4 x 1/2	10 x 1/2	4
30 WF 124	5170*	159*	12 1/2 x 1/2	4 x 1/2	10 x 1/2	4
30 WF 132	5539*	168*	12 1/2 x 1/2	4 x 1/2	10 x 1/2	5
33 WF 118	5287*	164*	12 1/2 x 1/2	4 x 1/2	11 x 1/2	4
33 WF 130	5978*	173*	12 1/2 x 1/2	4 x 1/2	11 x 1/2	5
33 WF 141	6604*	181*	12 1/2 x 1/2	4 x 1/2	11 x 1/2	5
33 WF 152	7193*	191*	12 1/2 x 1/2	4 x 1/2	11 x 1/2	6
36 WF 135	6473*	191*	12 1/2 x 1/2	4 x 1/2	11 x 1/2	4
36 WF 150	7436*	202*	12 1/2 x 1/2	4 x 1/2	11 x 1/2	5
36 WF 160	8005*	212*	12 1/2 x 1/2	4 x 1/2	11 x 1/2	6
36 WF 170	8574*	221*	12 1/2 x 1/2	4 x 1/2	11 x 1/2	6
36 WF 182	9204*	237*	12 1/2 x 1/2	4 x 1/2	11 x 1/2	7
36 WF 194	9838*	253*	12 1/2 x 1/2	4 x 1/2	11 x 1/2	8
36 WF 230	12574*	287*	12 1/2 x 1/2	6 x 1/2	16 x 1/2	10
36 WF 245	13441*	280*	12 1/2 x 1/2	6 x 1/2	16 x 1/2	11
36 WF 260	14330*	276*	12 1/2 x 1/2	6 x 1/2	16 x 1/2	12
36 WF 280	15351*	291*	12 1/2 x 1/2	6 x 1/2	16 x 1/2	13
36 WF 300	16676*	312*	12 1/2 x 1/2	6 x 1/2	16 x 1/2	14

### GENERAL NOTES

- Splice connections to be made with  $\frac{3}{8}$ " high tensile strength bolts. Holes to be  $\frac{1}{8}$ ".
- The design bending moment is 90% of the net resisting moment of the beam with an allowable stress of 20,000 p.s.i. The design shear is 75% of the shear strength of the gross section of the web with an allowable stress of 12,000 p.s.i.
- If beams of different sizes are to be spliced, use splice details shown for the smaller of the beams being spliced unless otherwise directed by design details. See design details for filler thickness. Place fillers to limits of splice plates only, with no extensions.
- See design details for slopes of beams in order to correctly fabricate bevels at the splices.

### A.S.T.M. STEEL CLASSIFICATION

High Tensile Strength Bolts..... A-325  
Splice Plates..... A-36

### DESIGN SPECIFICATIONS

AASHTO Standard Specifications for Highway Bridges, 1961 with Interim Specifications, 1961 & 1962

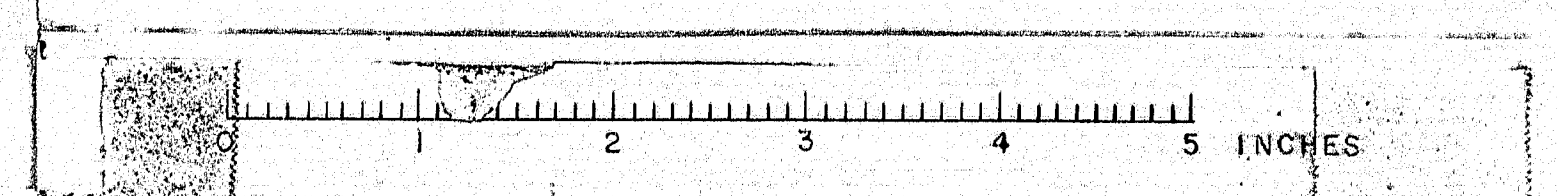
MAINE STATE HIGHWAY COMMISSION  
AUGUSTA, MAINE

STANDARD DETAILS  
(BD 103-64)

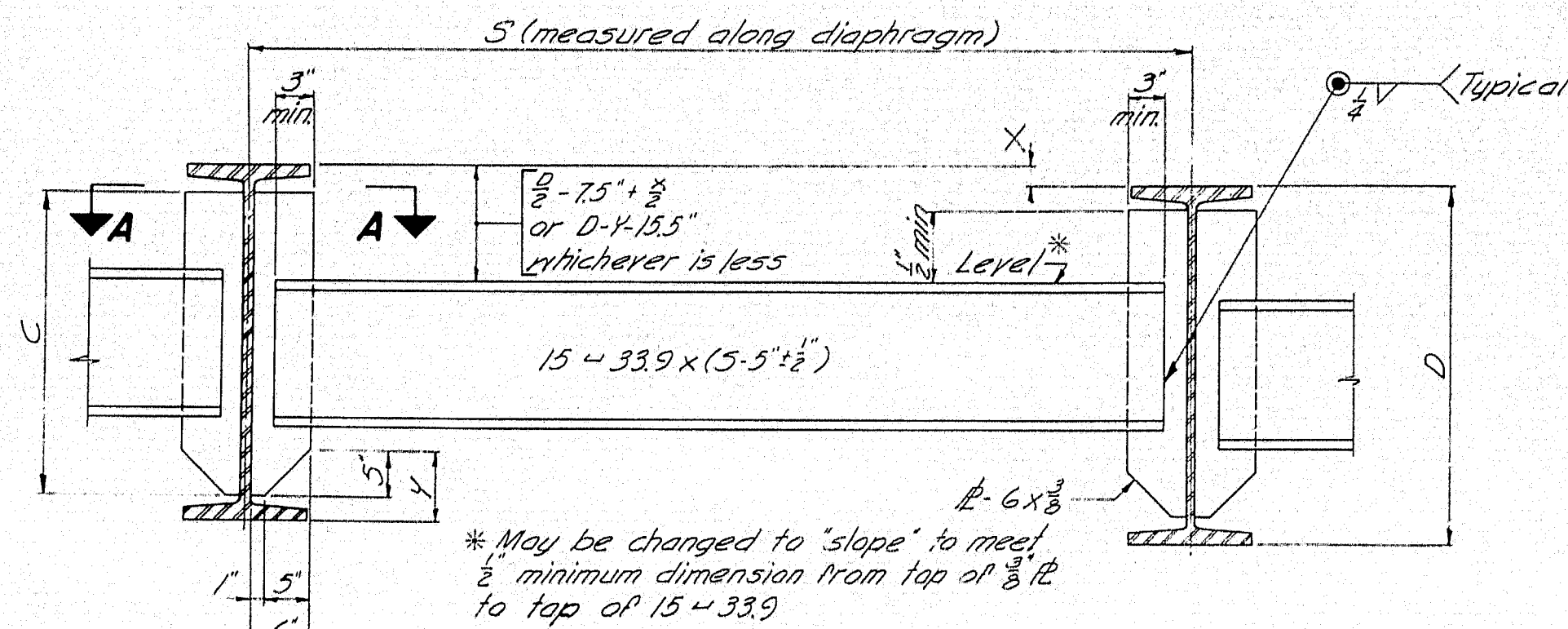
BEAM SPLICES

JANUARY 1964

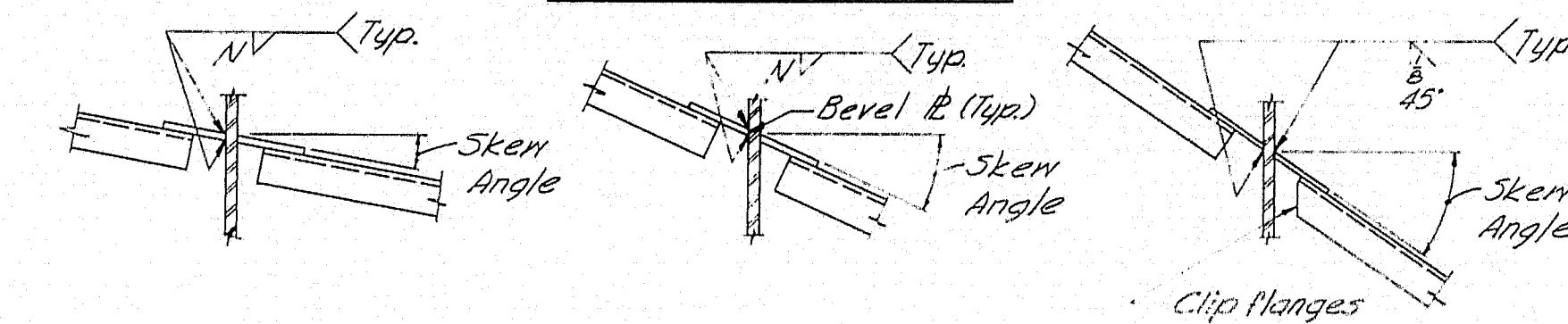
M-24428







**TYPE A DIAPHRAGM**

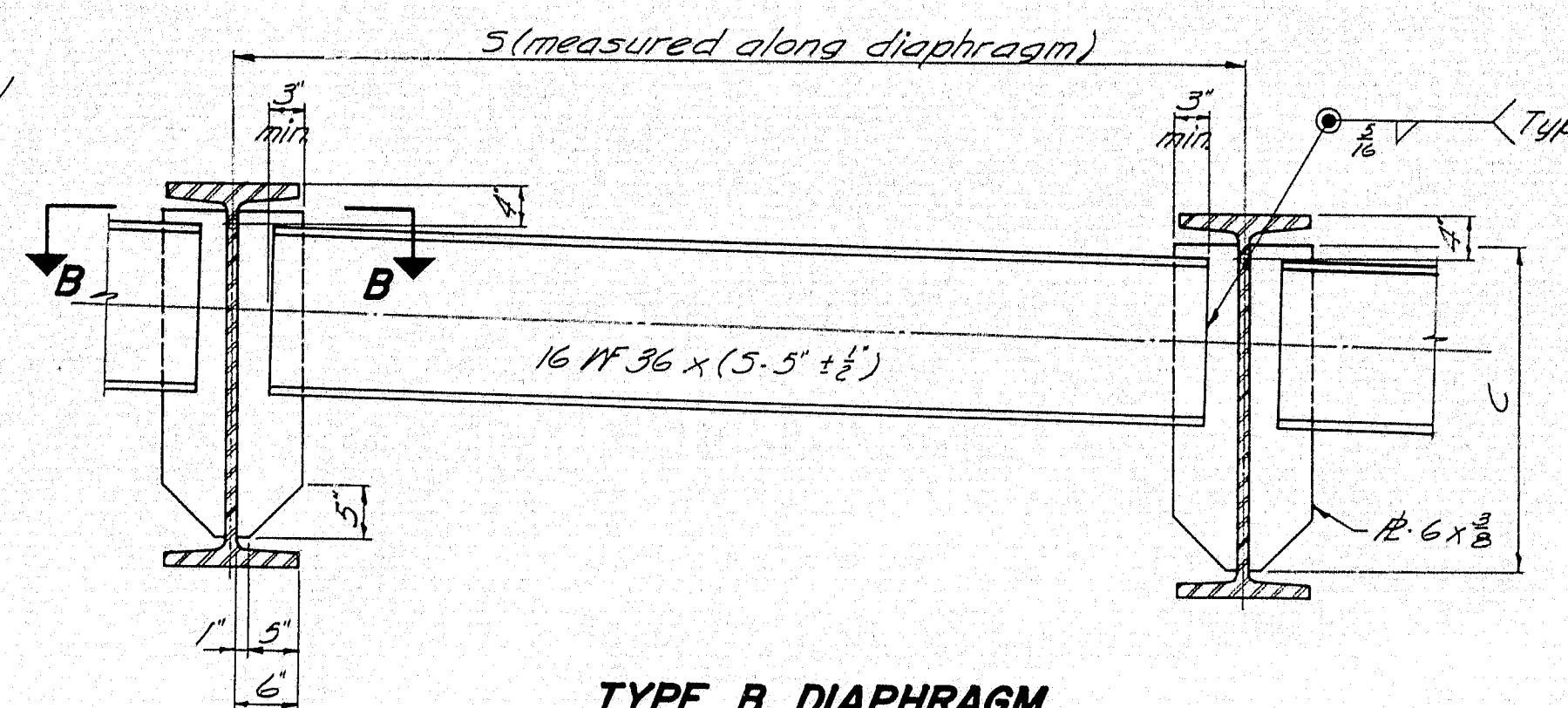


**SECTION A-A**  
Skew Angle 0° to 18°-30'

**SECTION A-A**  
Skew Angle over 18°-30' to 30°-00'

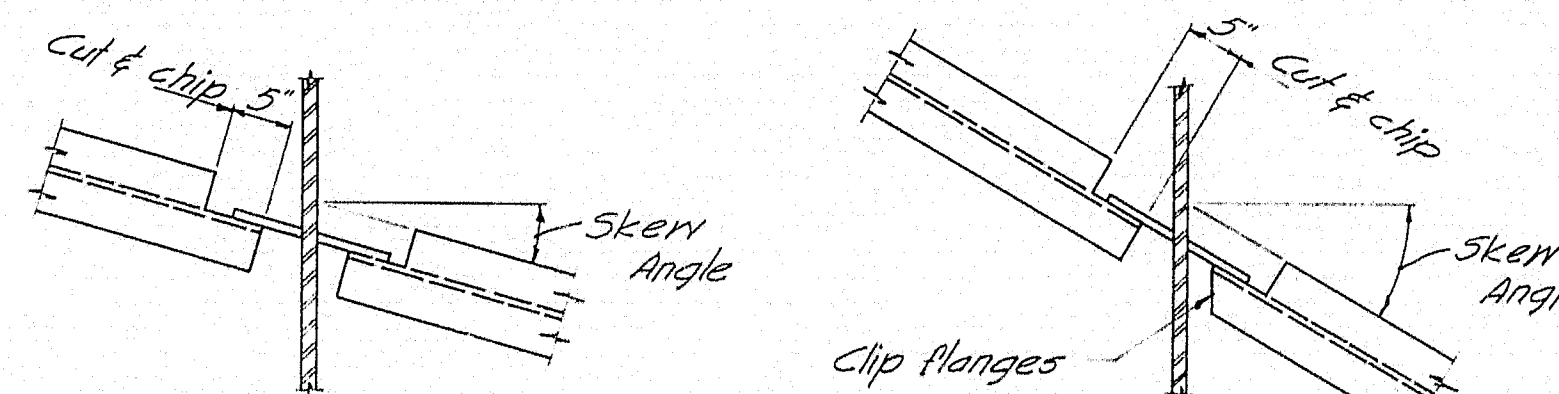
**SECTION A-A**  
Skew Angle over 30°-00'

BEAM	C	N
27' 11" 84 to 114 incl.	1'-11"	1/2"
30' 11" 99 to 132 incl.	2'-2"	1/2"
33' 11" 118 to 152 incl.	2'-5"	1/2"
36' 11" 135 to 194 incl.	2'-7"	1/2"
36' 11" 230 to 300 incl.	2'-6"	1/2"



**TYPE B DIAPHRAGM**

Welding 6x3/8 plates to web same as for Type A Diaphragm.



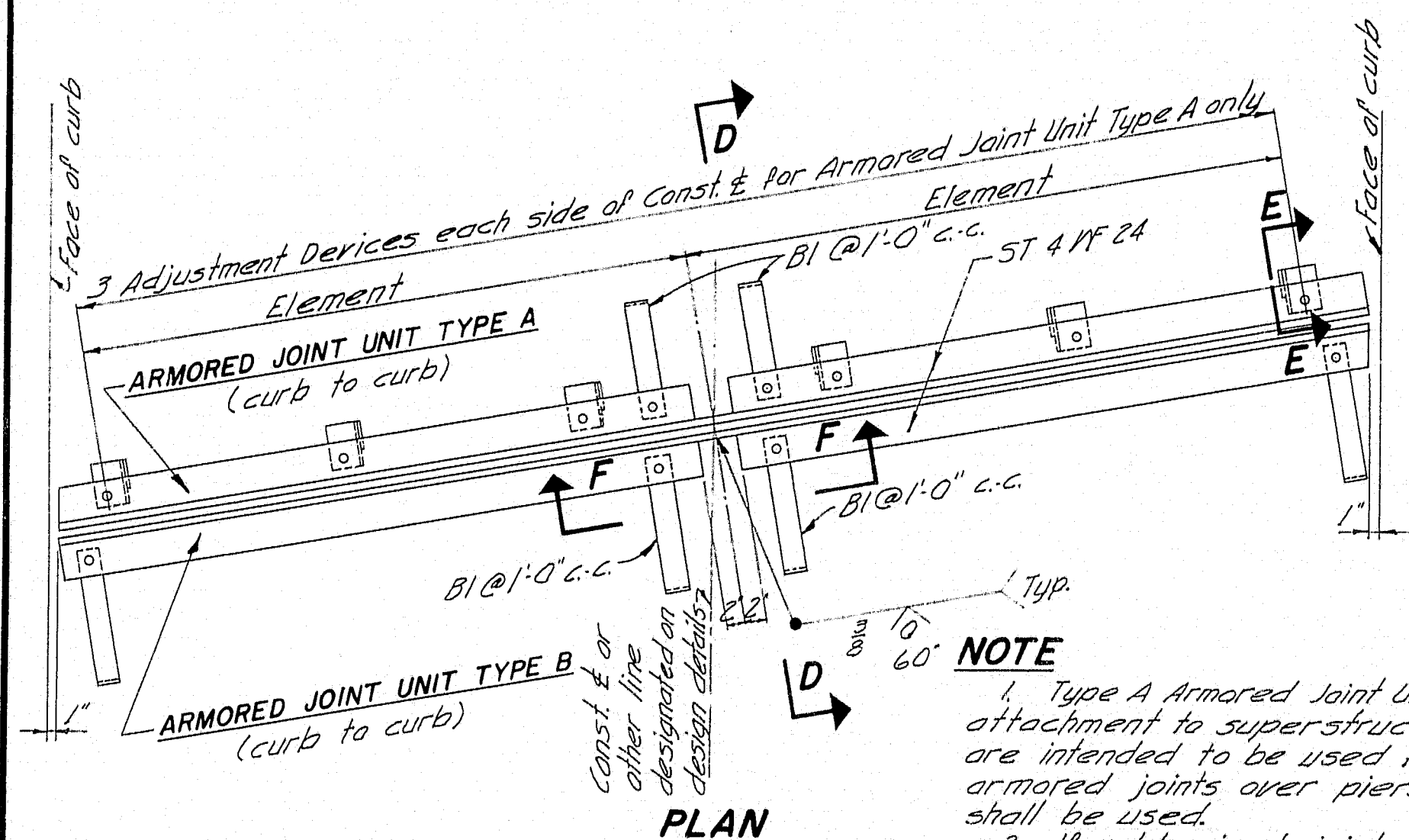
**SECTION B-B**  
Skew Angle 0° to 25°-00'

**SECTION B-B**  
Skew Angle over 25°-00'

**NOTE**

See design details for diaphragm type, location and skew.

**DIAPHRAGMS**



**PLAN**

**NOTE**

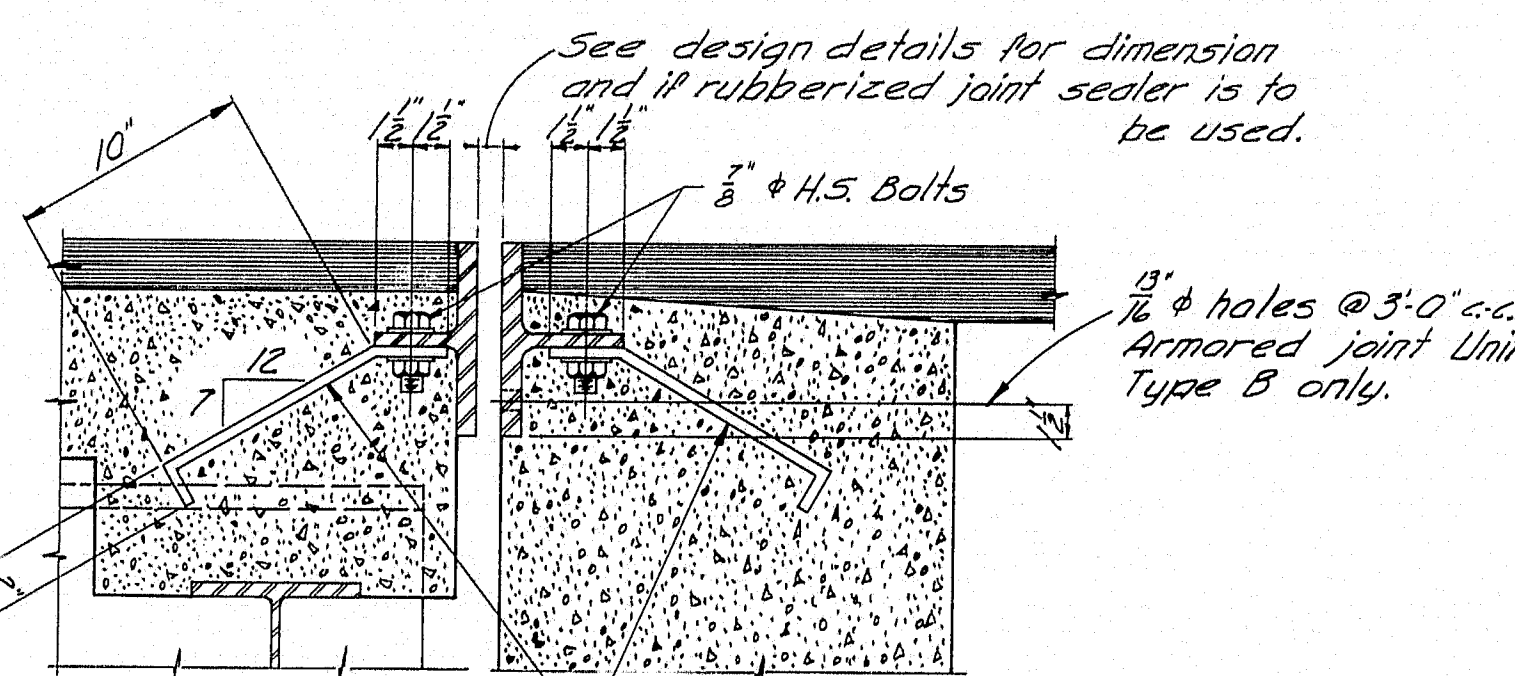
1. Type A Armored Joint Units are intended to be used for attachment to superstructures. Type B Armored Joint Units are intended to be used for attachment to abutments. At armored joints over piers, two Type A Armored Joint Units shall be used.  
2. If rubberized joint sealer is called for on the design details the area to which it is to be banded shall not be painted and it shall be supported on non-bituminous material. At the Contractor's option the supporting material may be left in place or be removed. If the supporting material is left in place, it shall be compressible in accordance with specification AA540 M153.5A. In either case band between the supporting material and the rubberized joint sealer shall be prevented by a 1" minimum thickness of Polyurethane foam.  
3. If more elements than the two shown in the 'Plan' are required by the design details, there shall be three adjustment devices for each element for Armored Joint Unit Type A and the elements of both units shall be field welded together in the same manner as shown in the 'Plan'.  
4. Armored Joints to be paid for as Structural Steel.

**SECTION F-F**

Note: See design details for Const. & to curb dimensions, skew, crown slope, slab thickness, other dimensions necessary to complete the fabrication details, and location.

**ARMORED JOINT**

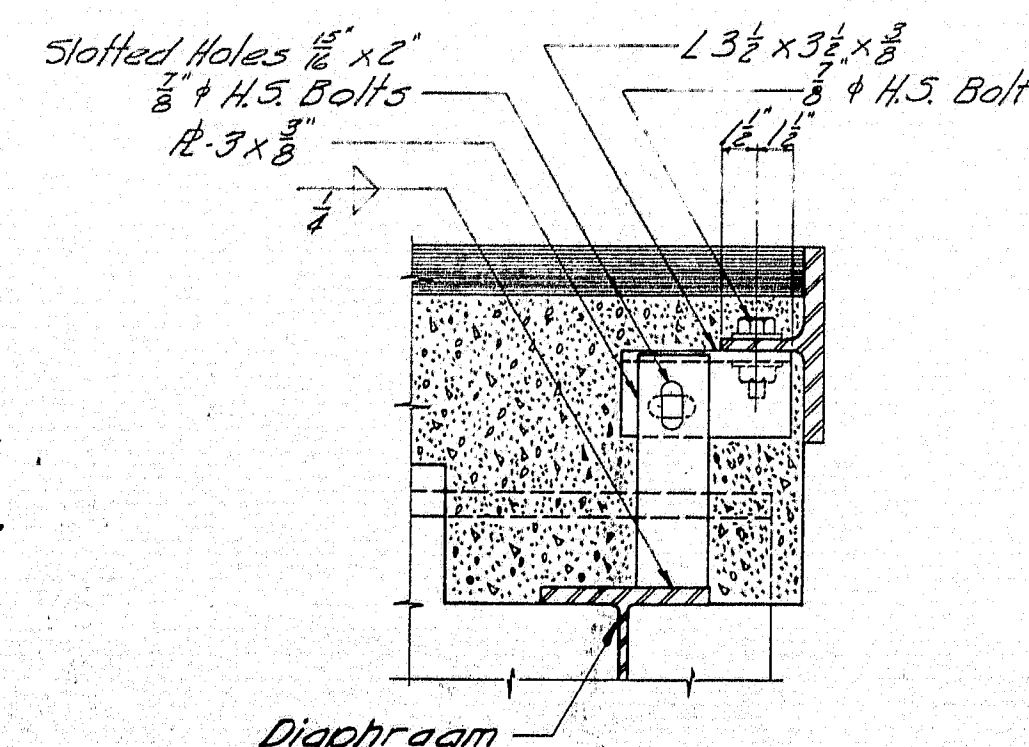
An armored joint consists of two armored joint units. See note 1.



**ARMORED JOINT UNIT TYPE A**

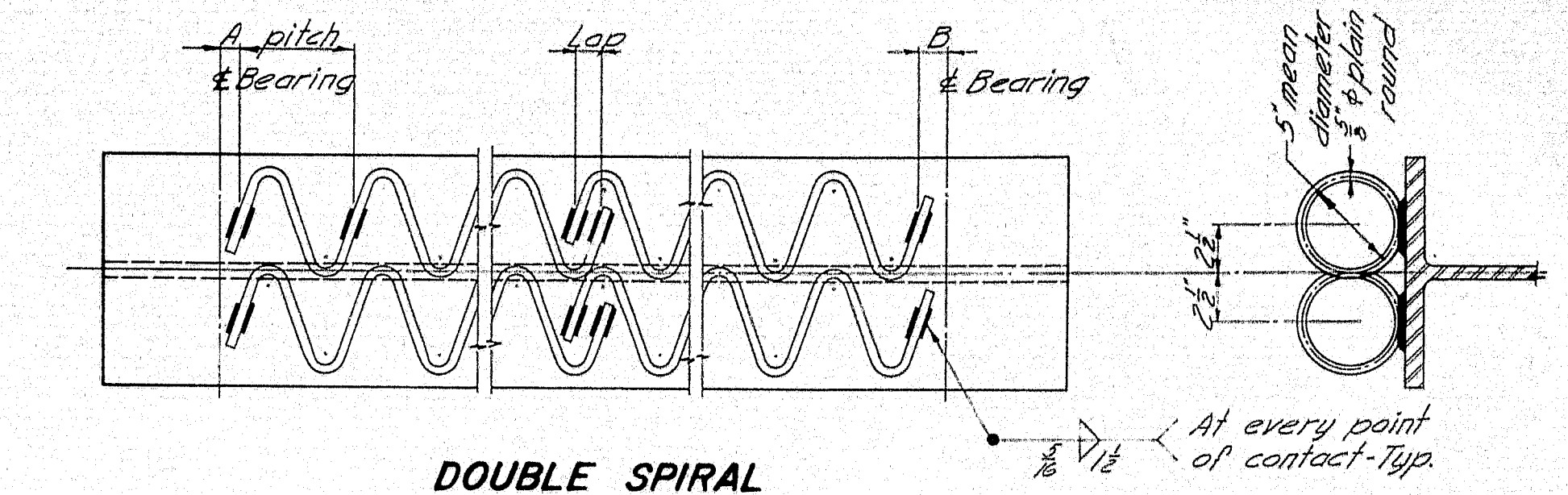
**ARMORED JOINT UNIT TYPE B**

**SECTION D-D**

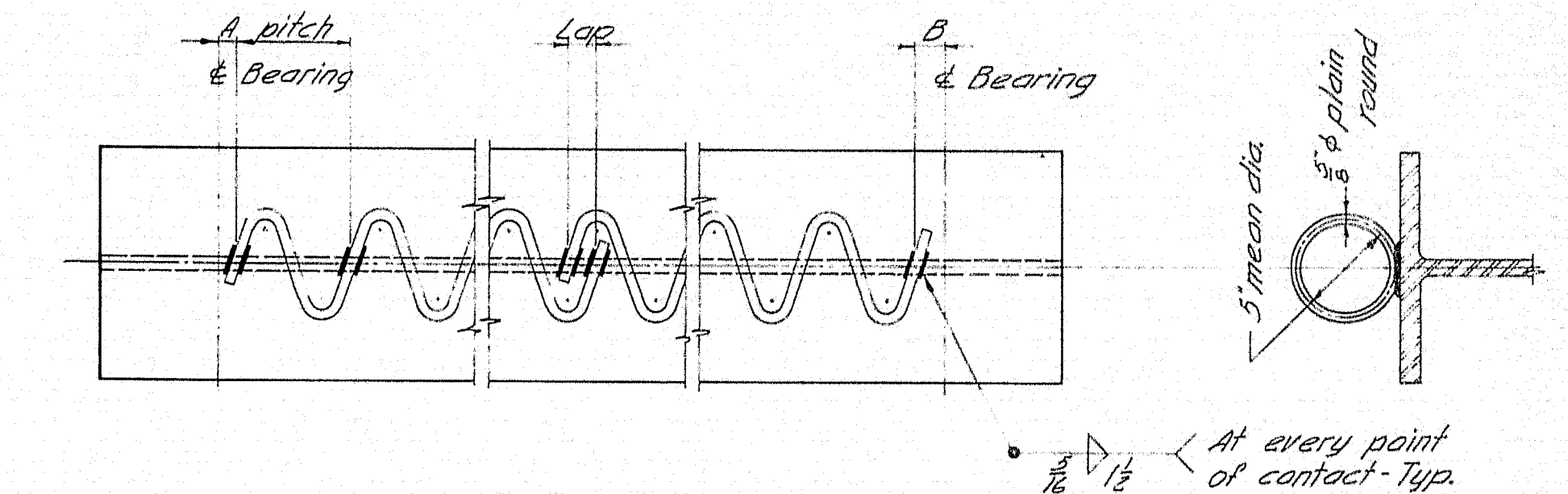


**SECTION E-E**

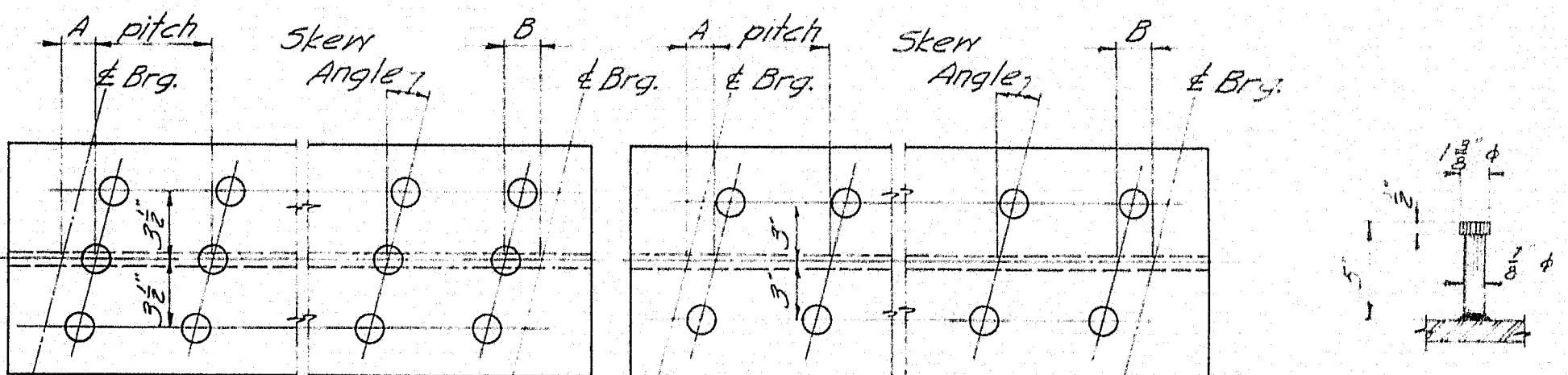
Showing Adjustment Device Armored Joint Unit Type A only. After Unit is in final position weld 3/8" to angle with 1/2" fillet



**DOUBLE SPIRAL**



**SINGLE SPIRAL**



**TRIPLE STUDS**

**DOUBLE STUDS**

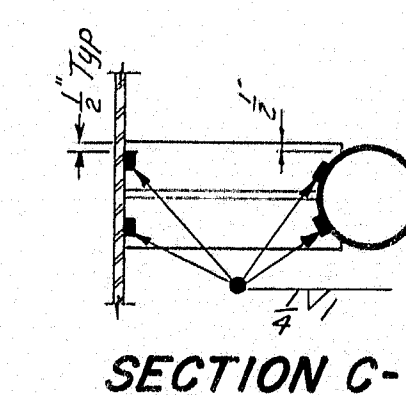
**STUD DETAIL**

**NOTE**

1. Spiral reinforcing or studs may be used at the option of the Contractor.  
2. If studs are used they shall be granular or solid flux filled and automatically end welded to the top flange in the shop or field.  
3. Studs are a patented product. If the Contractor elects to use them, he shall pay the royalty and payment to the contractor will be included in the lump sum price for Shear Connectors.  
4. See the design details for Dimensions 'A' and 'B', spiral and stud pitch and Skew Angle for Studs.

**SHEAR CONNECTORS**

Cut 4 holes 1/2" x 2" 1/4" from top. Do not cover with concrete or waterproofing.



**SECTION C-C**

**NOTE**

1. Drain may be rotated 180°. See design details.  
2. See design details for location and number of drains and beam size to which it is connected.  
3. Drains to be paid for as structural steel.

**DRAIN**

Revised Nov 1964, Welding Drain Support

**GENERAL NOTE**

Use only those items called for on design details. In case of conflict between these Standard Details and the design details, the requirements of the design details shall be followed.

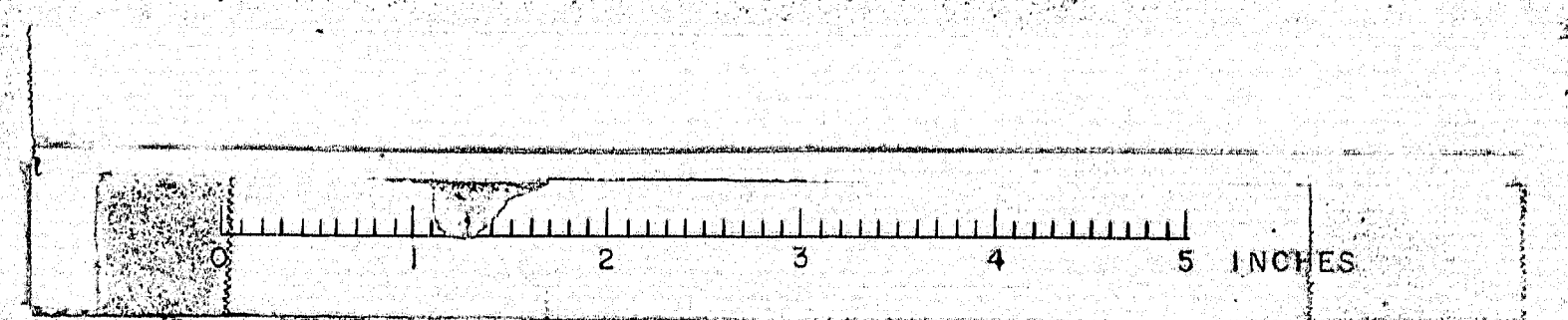
MAINE STATE HIGHWAY COMMISSION  
AUGUSTA, MAINE

**STANDARD DETAILS**  
(BD 104-64)

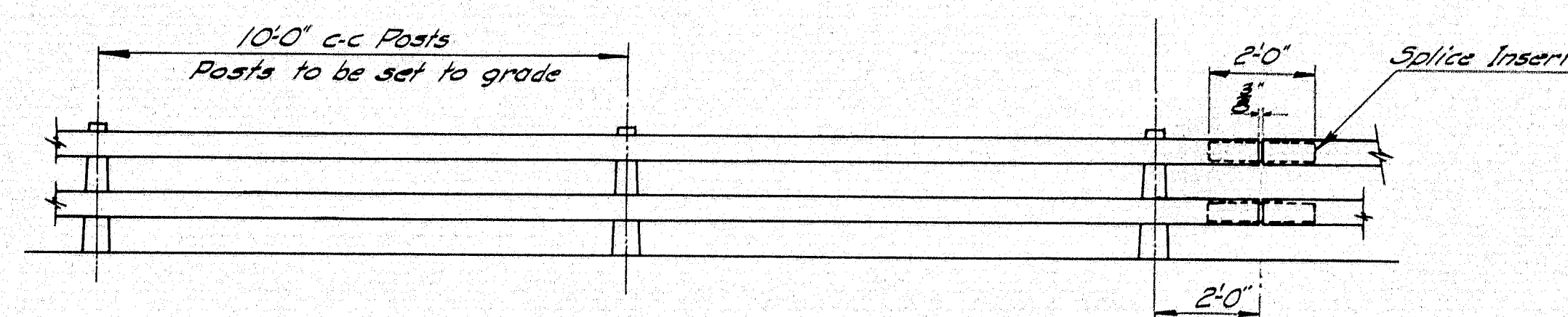
**DIAPHRAGMS, ARMORED JOINT, SHEAR CONNECTORS, DRAIN**

JANUARY 1964

M-2442C

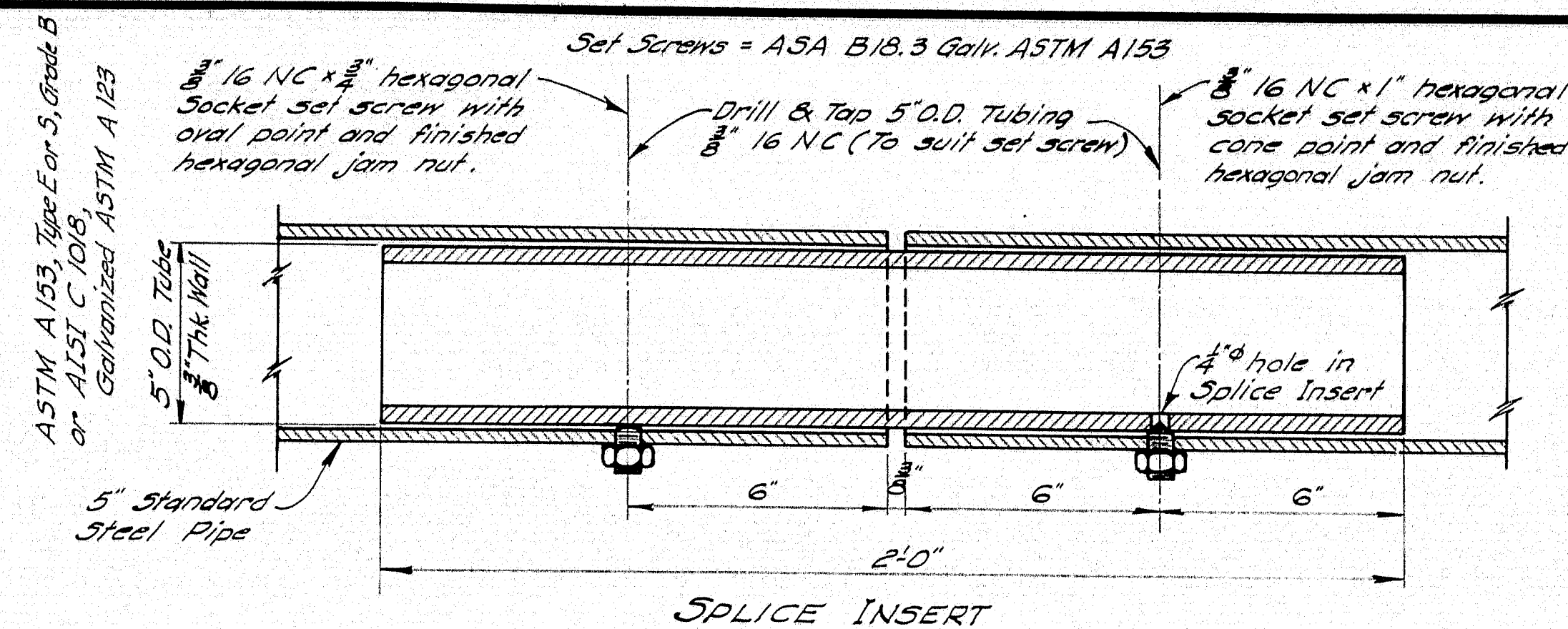




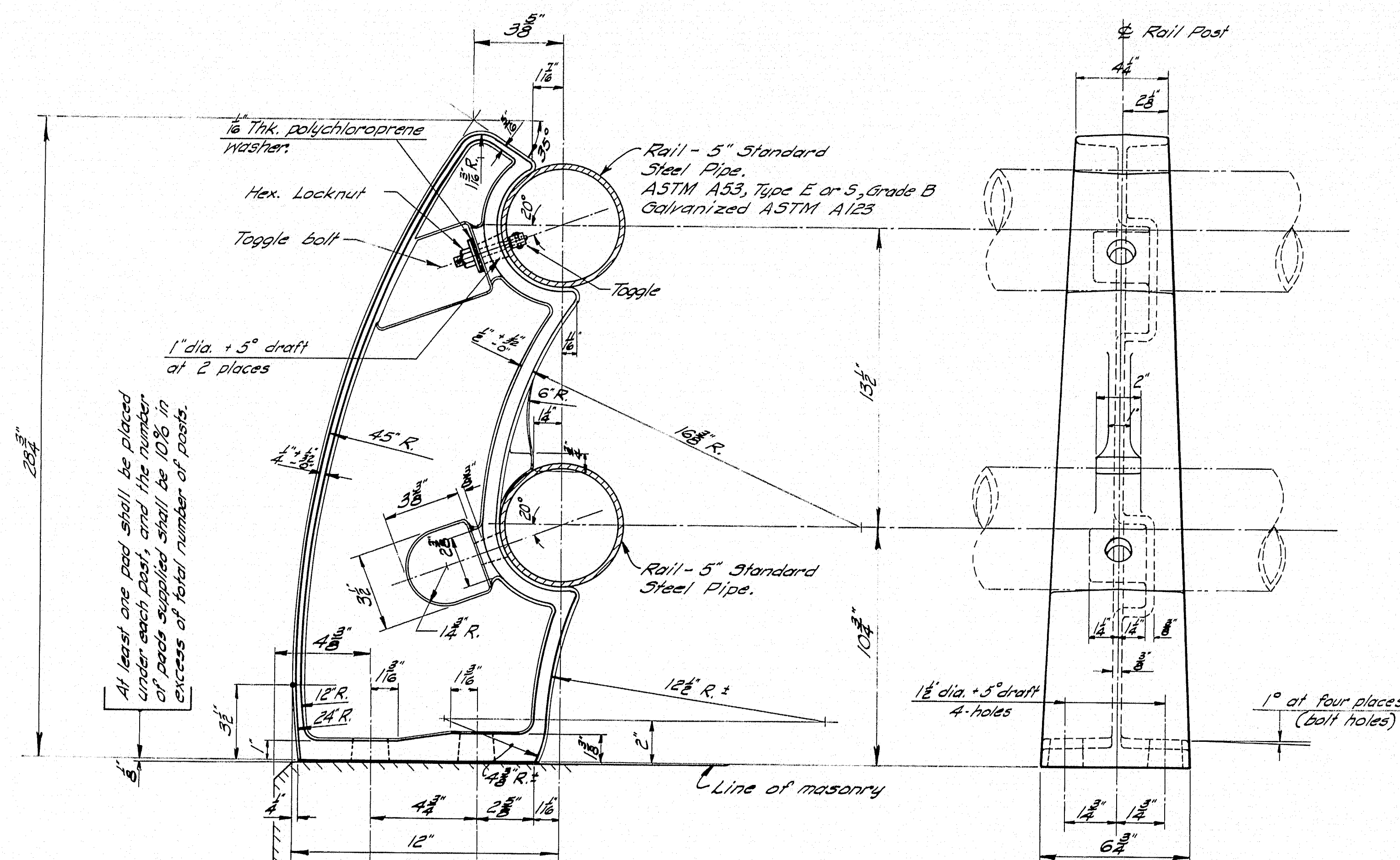


RAIL ELEVATION

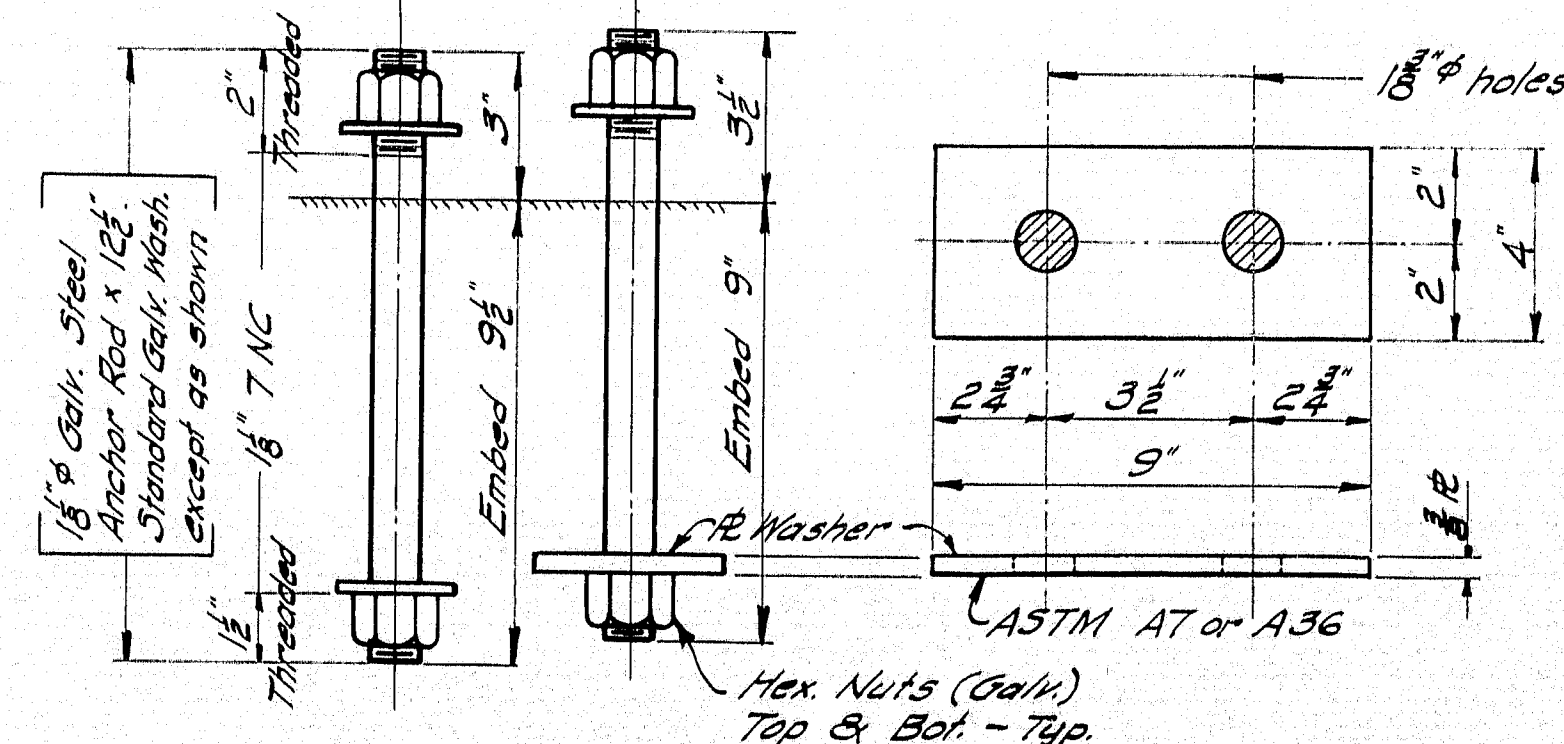
Lengths of rail shall be attached to a minimum of (4) four rail posts, wherever possible, and in any case never less than (2) two.



SPlice INSERT

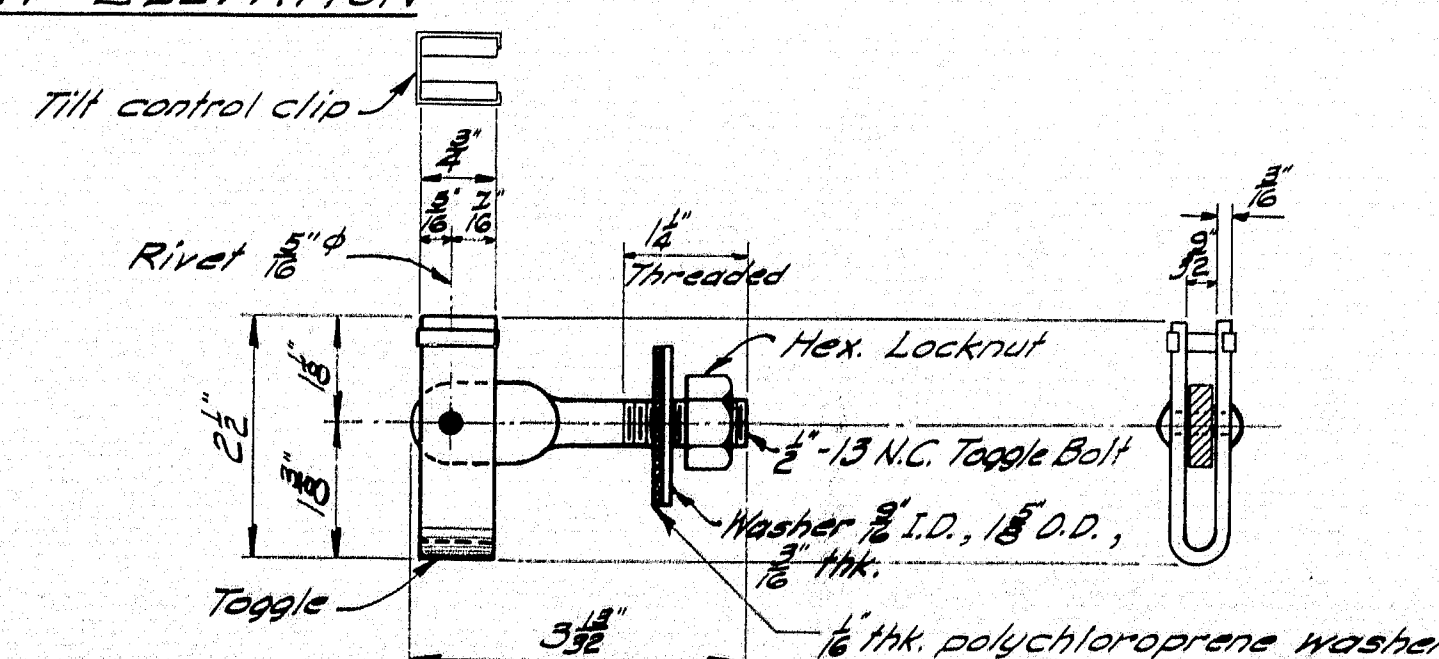


RAIL POST  
ASTM A27, Grade 65-35, Galvanized ASTM A153

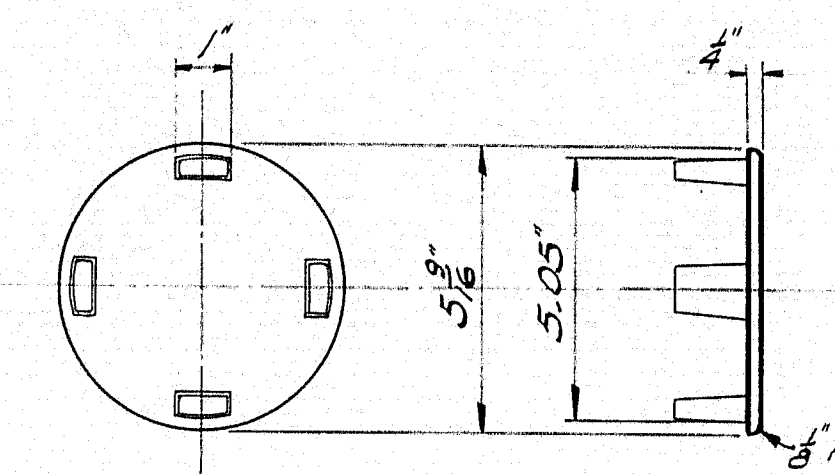


RAIL POST ANCHORAGE  
Bolts, Nuts, & Std. Washers = ASTM A325 Galvanized ASTM A153

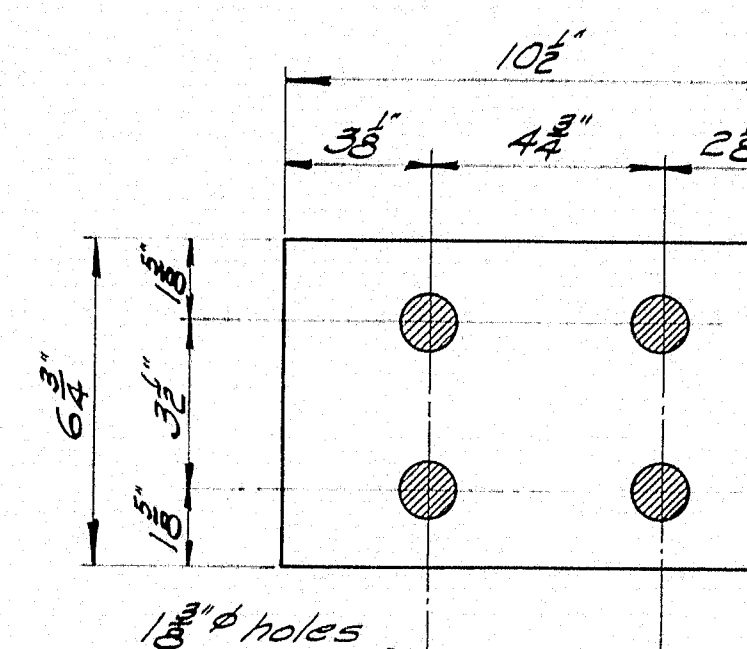
FRONT ELEVATION



TOGGLE BOLT DETAIL  
Cadmium Plate metal parts ASTM A165-55, Type NS, .0005" thick



RAIL CAP  
ASTM A27, Grade 65-35, Galv. ASTM A153



PAD  
At each rail post  
See Article 702-80 Supplemental Specifications of Feb. 1960.

DESIGN SPECIFICATIONS  
A. A. S. H. D. Interim Specifications Int. I (64)

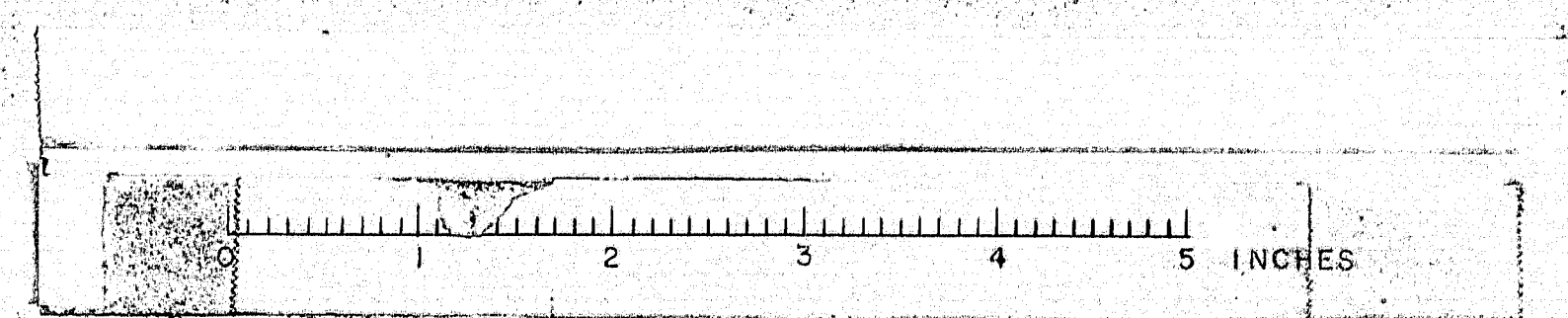
Toggle = ASTM A303, 1015 H.R. Steel.  
Rivet = ASTM A195, 1035 C.R. Steel, Heat Treated  
Toggle Bolt = ASTM A354, 1335 C.R. Steel, Heat Treated RC 32-38.  
Washer = ASTM A7, 1020 H.R. Steel  
Hex. Locknut = Finished Hexagonal Locknut Prevailing Torque Type Steel Grade Car D, Industrial Fasteners Institute.

MAINE STATE HIGHWAY COMMISSION  
AUGUSTA, MAINE

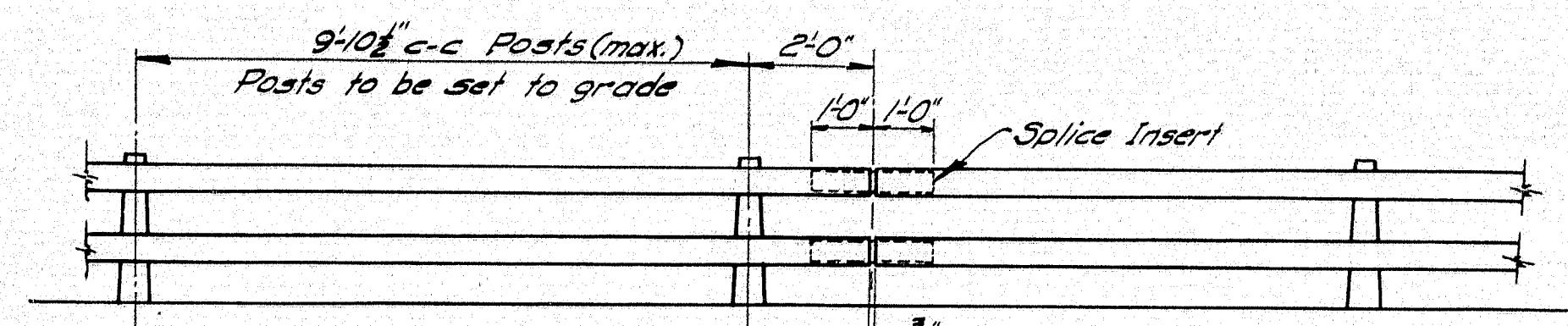
STANDARD DETAILS  
(BD 107 - 64)  
STEEL RAIL  
(2-BAR PIPE RAIL)  
CAST POST

OCT. 1964

M-2442D





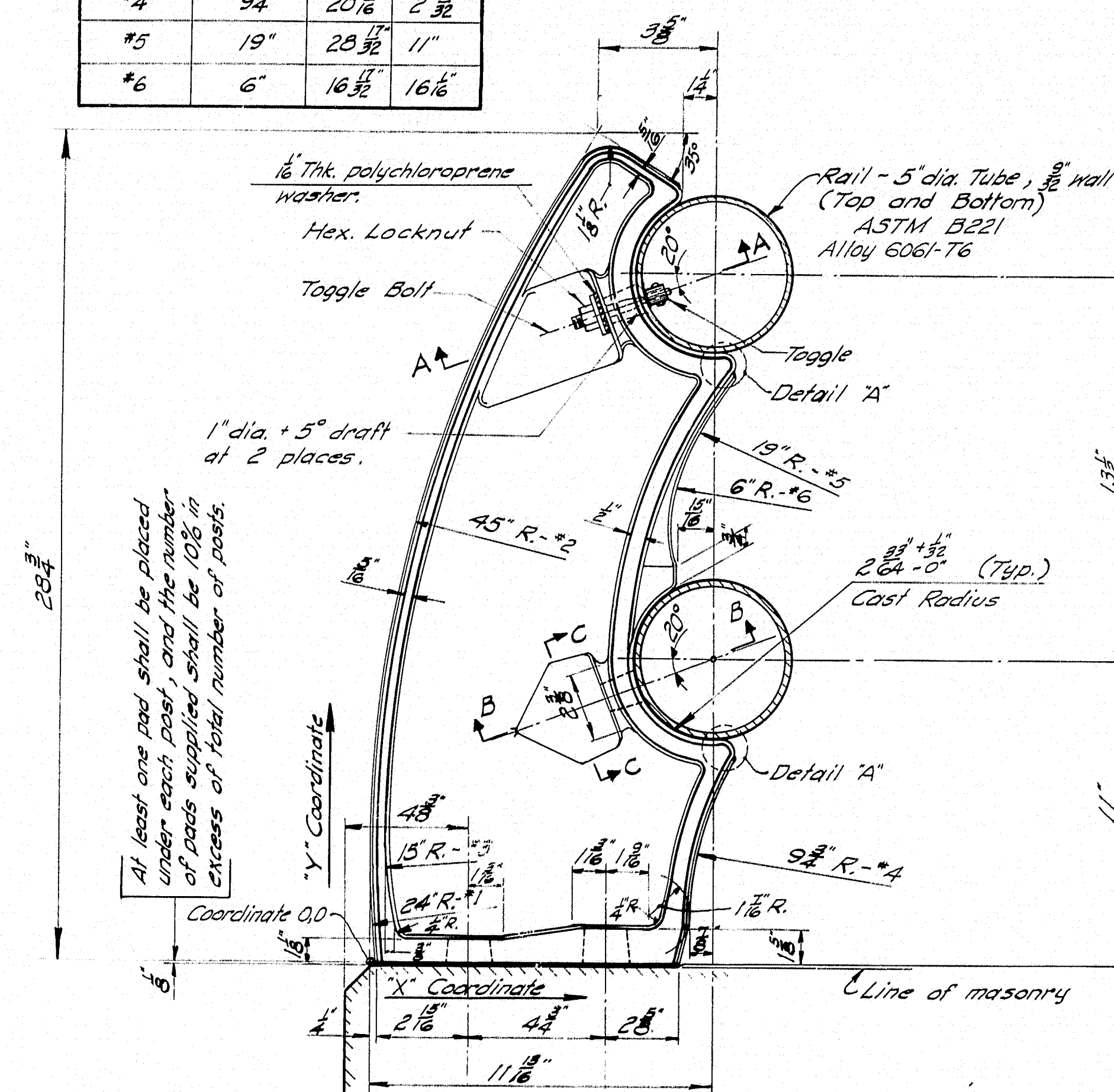


RAIL ELEVATION

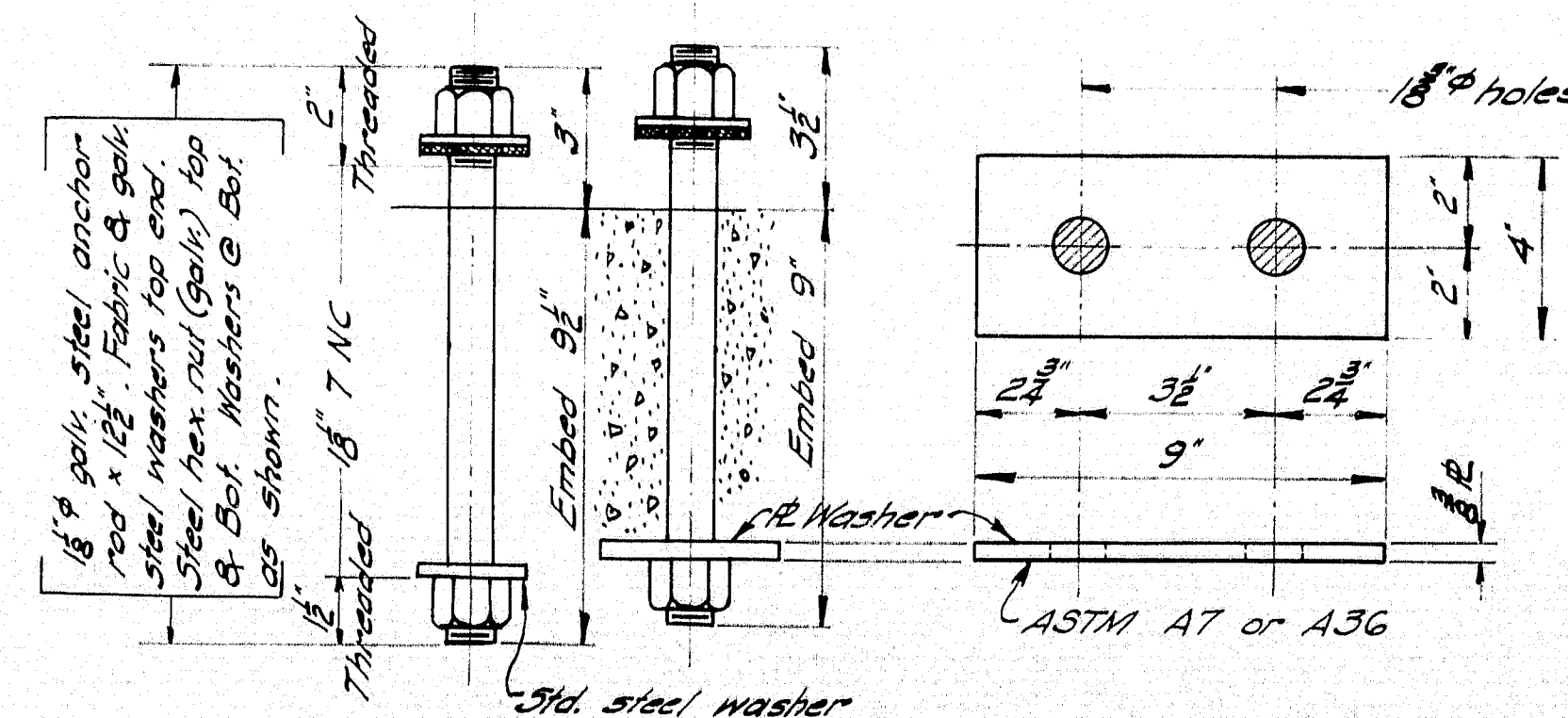
① ORIGIN LOCATION-PRINCIPAL CURVES

Curve	Radius	"X"	"Y"
#1	24"	24"	3 $\frac{15}{32}$ "
#2	45"	45"	2 $\frac{27}{32}$ "
#3	15"	15 $\frac{11}{16}$ "	4 $\frac{33}{32}$ "
#4	9 $\frac{3}{4}$ "	20 $\frac{11}{16}$ "	2 $\frac{13}{32}$ "
#5	19"	28 $\frac{13}{16}$ "	11"
#6	6"	16 $\frac{17}{16}$ "	16 $\frac{1}{4}$ "

Lengths of rail shall be attached to a minimum of (4) four rail posts, wherever possible, and in any case never less than (2) two.

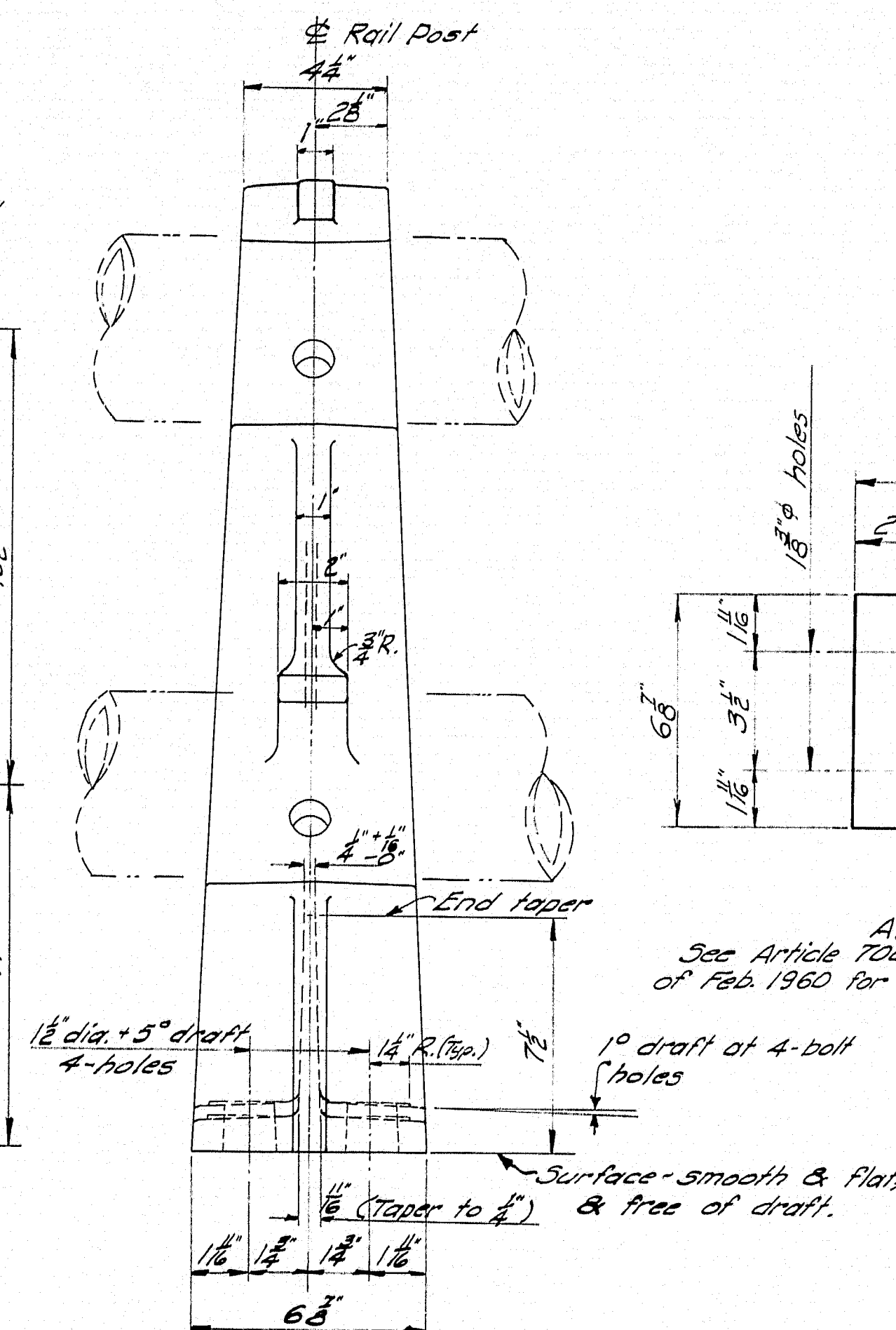
RAIL POST 

Aluminum Association Alloy A344-T4

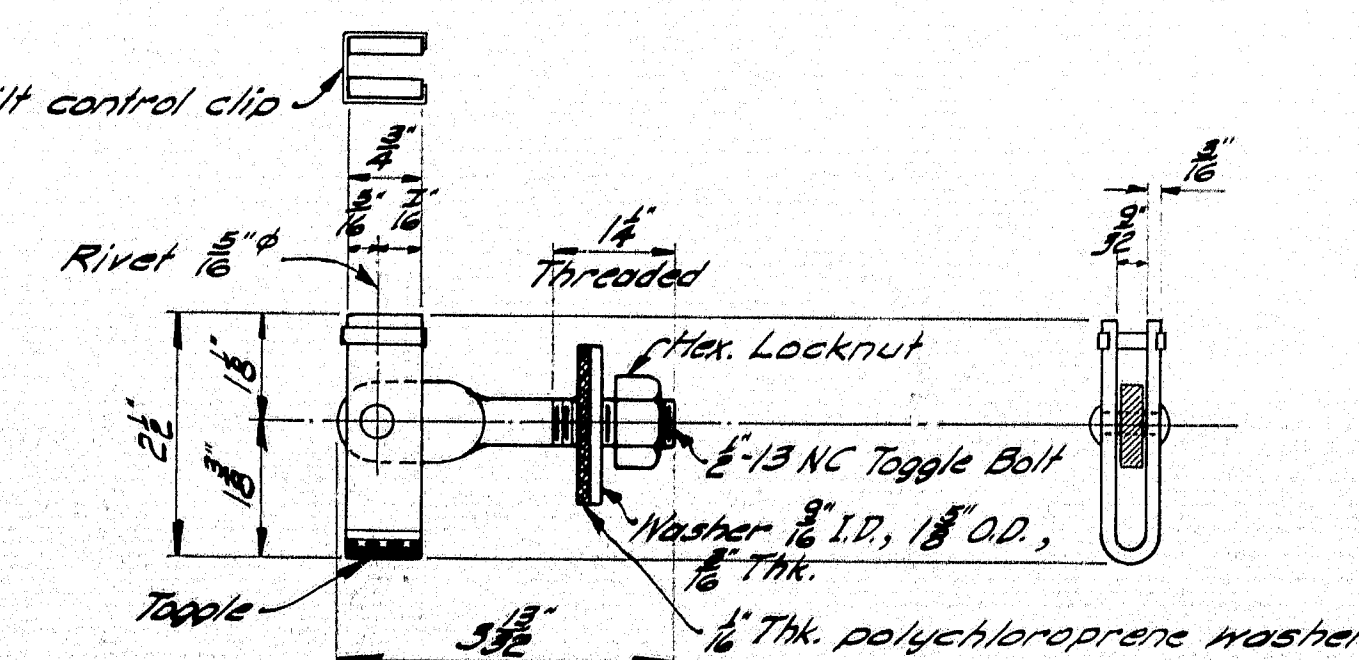


### RAIL POST ANCHORAGE

*Bolts, Nuts & Std. Washers = ASTM A325 Galvanized ASTM A153*

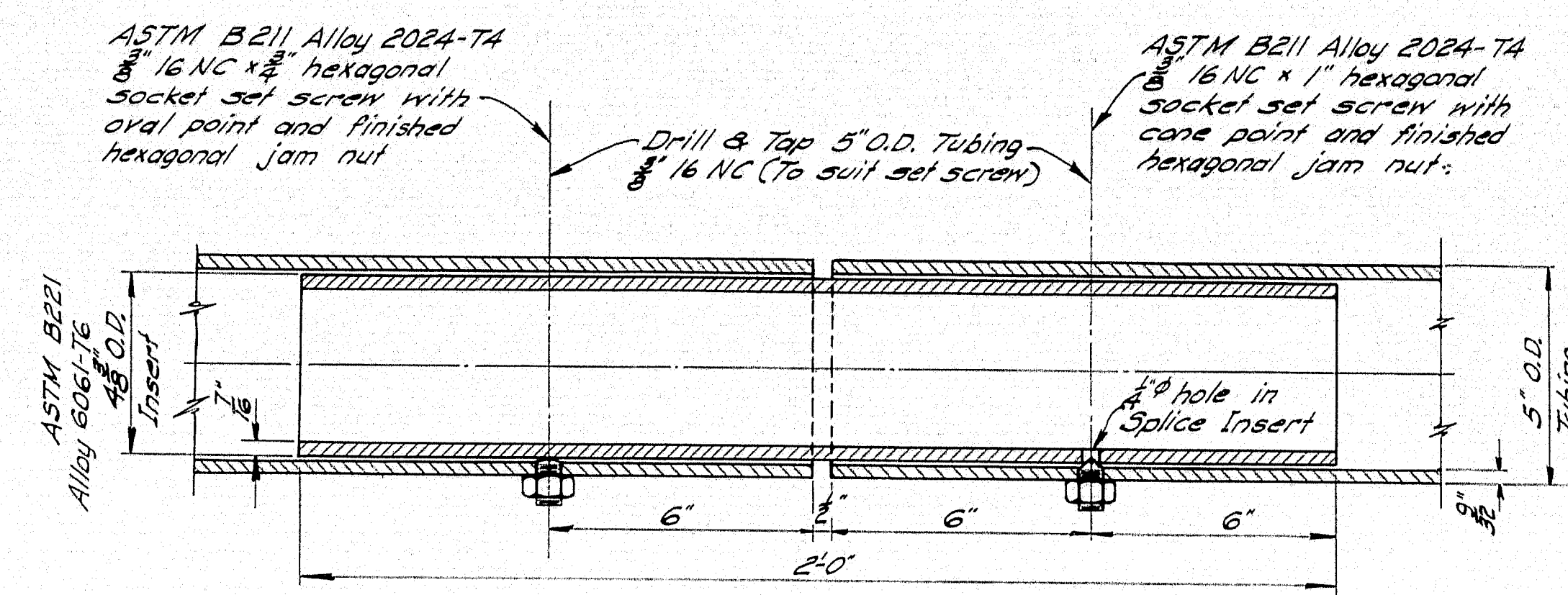


FRONT ELEVATION

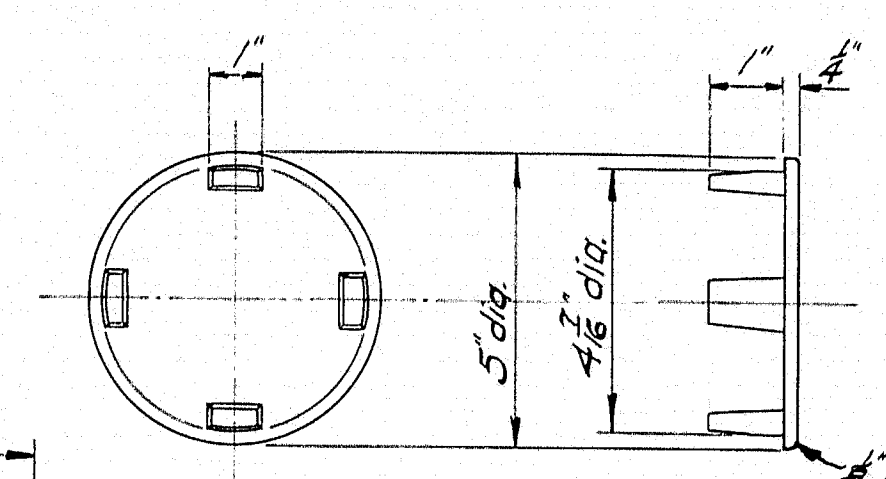


TOGGLE BOLT DETAIL

Cadmium Plate metal parts ASTM  
A165-55, Type N3, .0005" thick

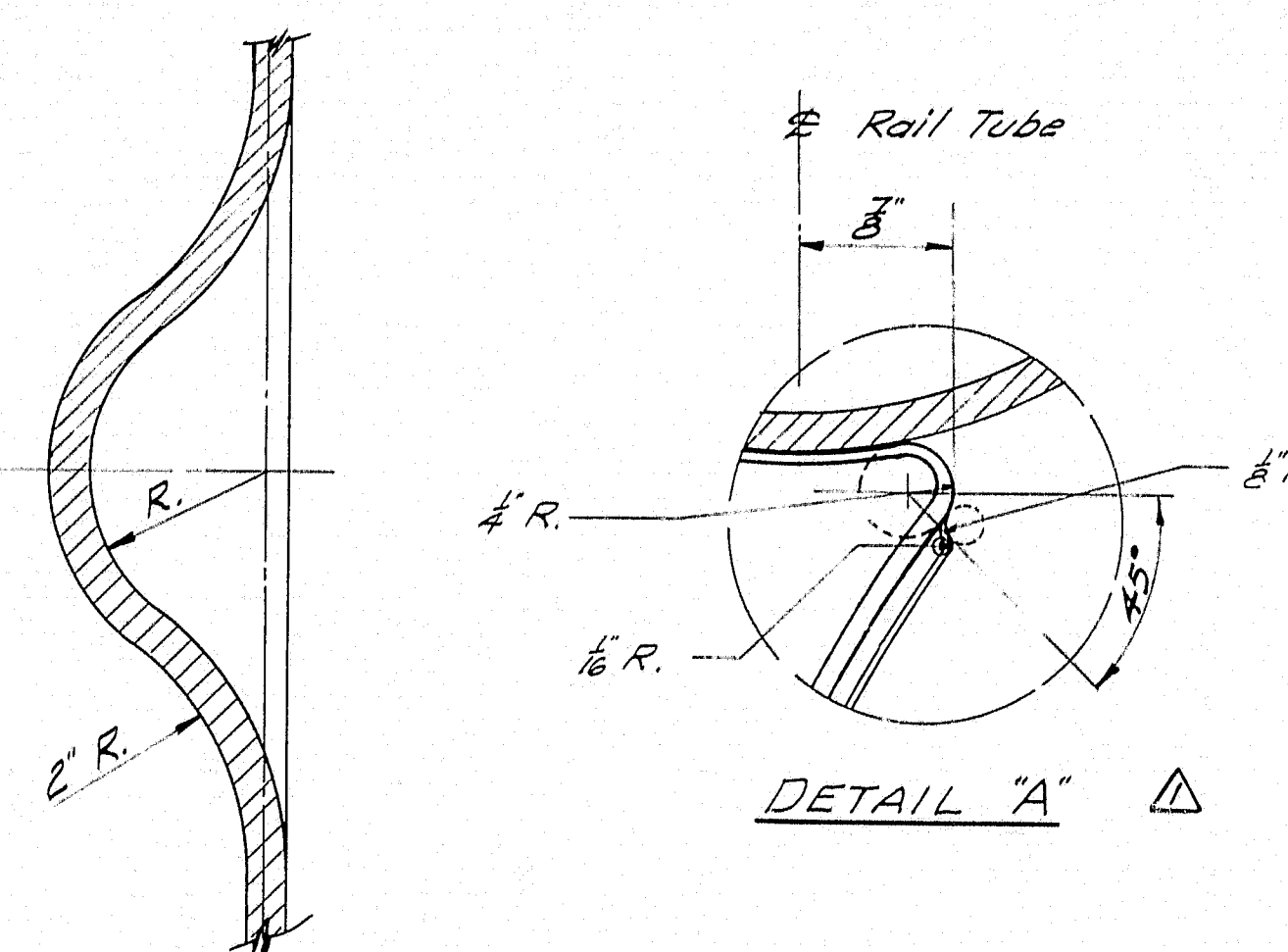


## SPLICE

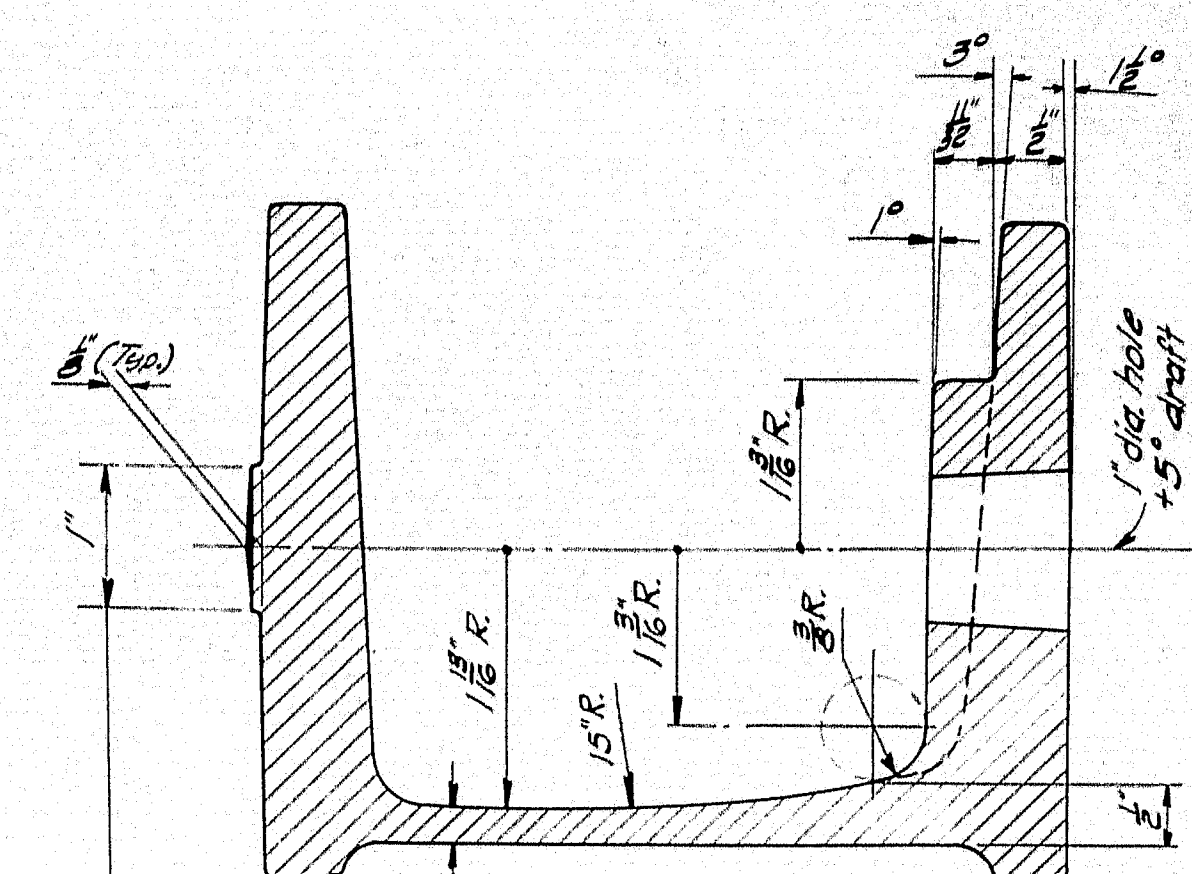


RAIL CAP

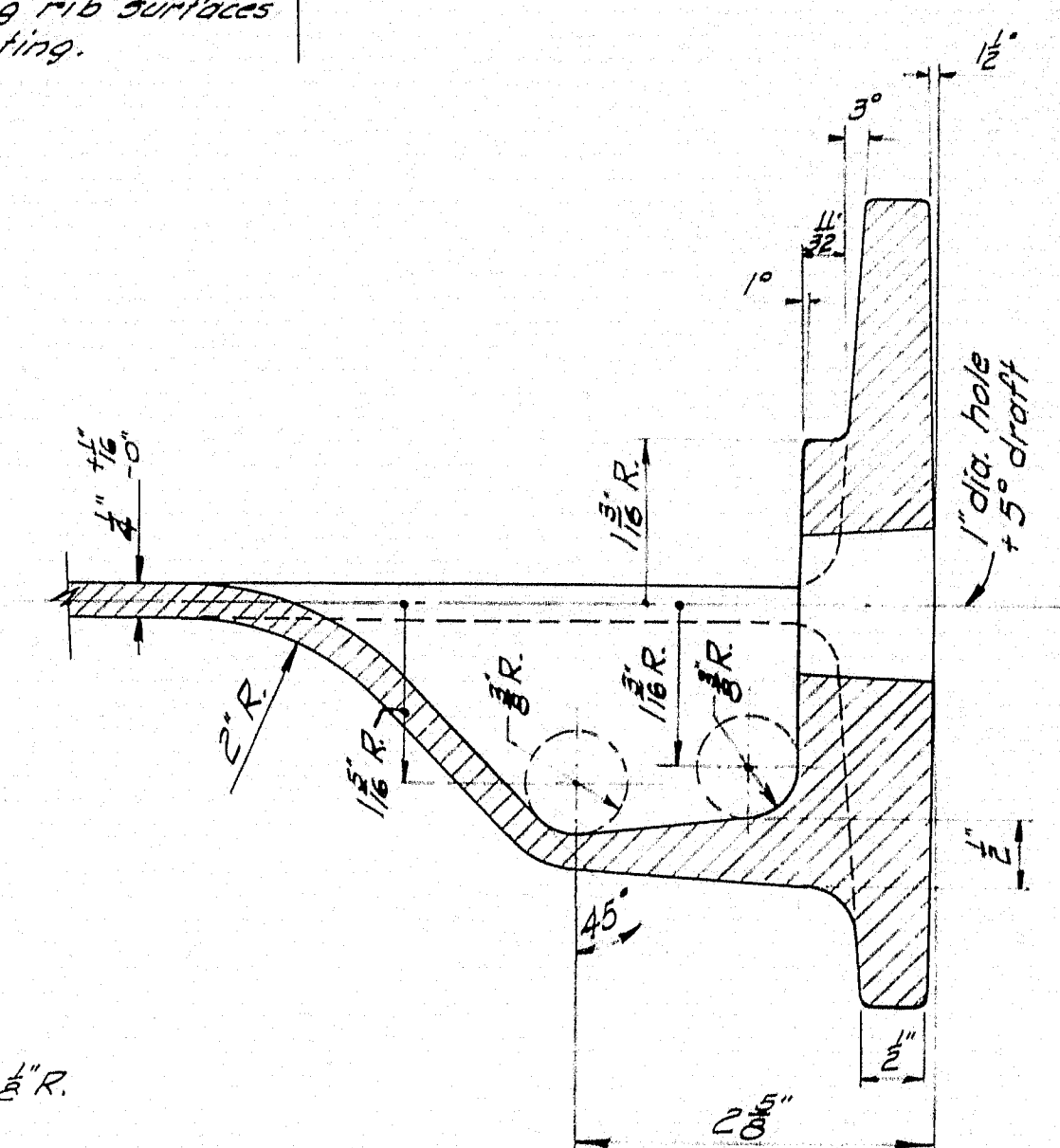
ASTM B26 Alloy SG 70 A or S5A



SECTION C-C



SECTION A-A



SECTION B-B

## DESIGN SPECIFICATIONS

*A. A. S. H. O. Interim Specifications  
Int. I (64).*

A 344 - T4 Alloy to meet the Specification outlined by Aluminum Association.

ALTERATION:

△ - Added Detail "A" and Origin Location-Principal Curves. Nov. 19, 1964.

MAINE STATE HIGHWAY COMMISSION  
AUGUSTA, MAINE

**STANDARD DETAILS**  
(BD 108-64)  
**ALUMINUM RAIL**  
2 - BAR (TUBE RAIL)  
CAST POST

M-2442

OCT. 1964

Proj. 1-95-9(37)272, Island Falls & Dyer Brook

