

# STATE OF ALASKA DEPARTMENT OF HIGHWAYS

## PLAN AND PROFILE PROPOSED HIGHWAY PROJECT TQS-RS-0926(2) CLARK BAY FERRY TERMINAL GRADING, DRAINAGE, AGGREGATE SURFACING AND FERRY TERMINAL FACILITIES "As Built"

INDEX OF SHEETS

SHEET NO.	DESCRIPTION
1	Title Sheet
2	Typical Section
3	Estimate of Quantities & Summary Tables
4	Intersection & Parking Area Details
5-7	Plan & Profile Sheets
8	Ferry Terminal General Layout
9	Precast Abutment Details
10	Bearing Details
11	Transfer Bridge Details
12-15	Transfer Barge, Superstructure & Ramp Details
16	Torsion Dolphin Details
17	Anchor Details

The following standard drawings apply to this project: A-1, C-00.01, C-10.00, C-11.01, D-02.02, D-09.01, G-04.13, G-04.31, I-40.10, I-80.00, S-00.10, S-05.00, S-20.10, S-30.11, G-10.11, M-10.01, M-11.00

**DESIGN DESIGNATION**

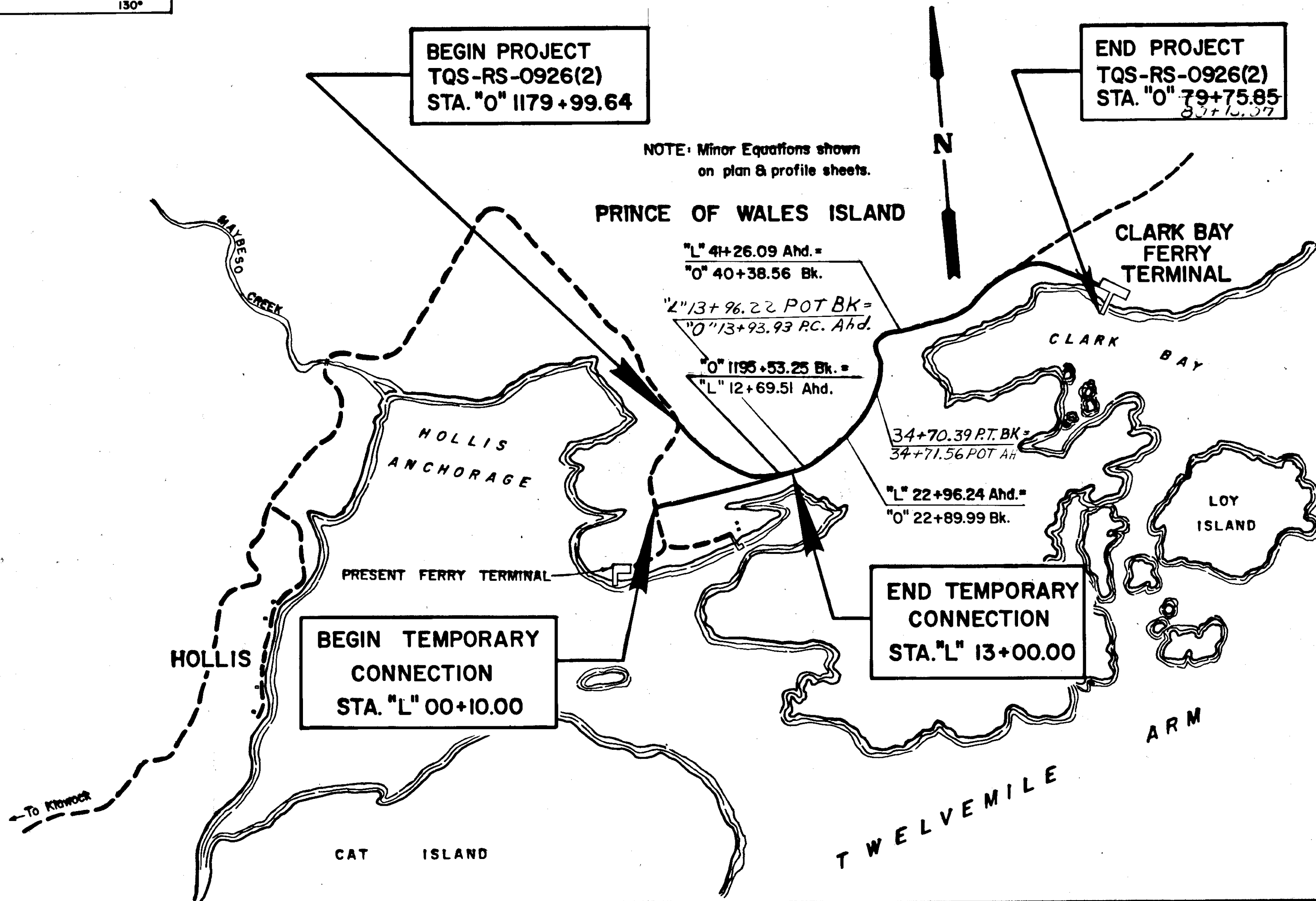
- ADT 1974 = 10
- ADT 1995 = 50
- DHV 30% = 15
- D = 25-75
- T = 8%
- V = 30 mph

**PROJECT SUMMARY**

Length of Exception = 1,584.100' = 0.300 mi.  
 Length of Grading = 6,421.479' = 1.216 mi. **6753.56' = 1.160 mi.**  
 Length of Bridge = 166.850' = 0.032 mi.  
 Length of Project = 8,172.429' = 1.548 mi. **8504.51' = 1.611 mi.**

"0" 1179 + 99.64 to "L" 13+00.00  
 Future Construction

Length of Temporary Connection =  
 1290.000' = 0.244 mi.



CONTRACTOR: *DAWSON CONSTRUCTION CO.*  
 PROJECT ENGINEER: *JOHN McGRATH, DALE ROBBINS*  
 PROJECT BEGAN: *SEPT. 27, 1976*  
 PROJECT COMPLETED: *JULY 6, 1977*

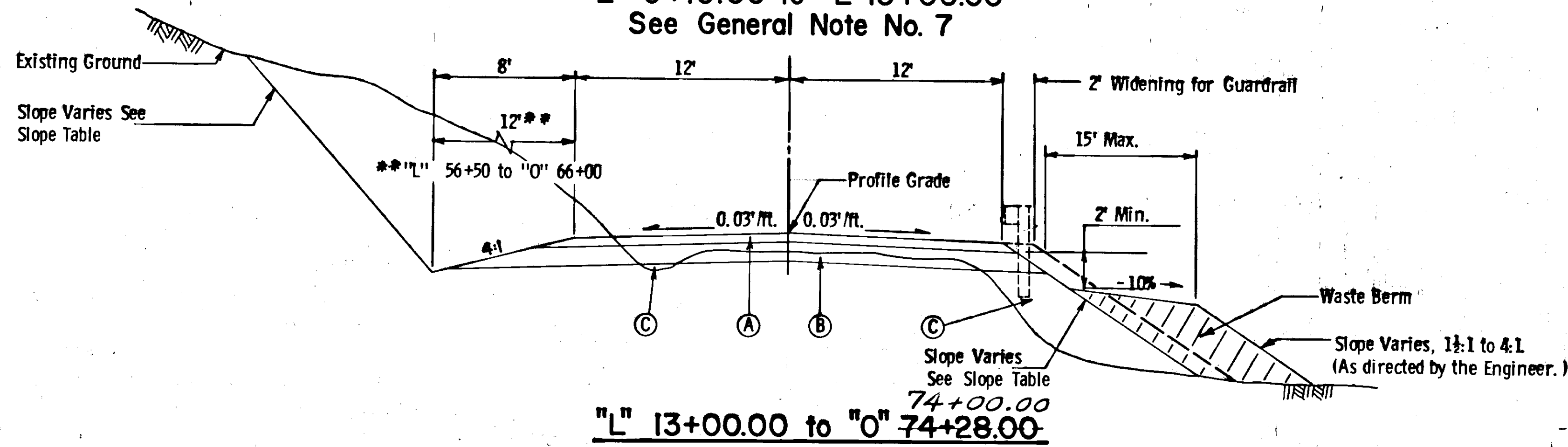
STATE OF ALASKA  
DEPARTMENT OF HIGHWAYS

APPROVED  
*Walter K. Hillier* Date 5/25/77  
 Acting SOUTHEASTERN DISTRICT ENGINEER

APPROVED  
*Ramon D. Shumway* Date 7/2/76  
 STATE HIGHWAY ENGINEER

# TYPICAL SECTIONS OF IMPROVEMENT

B.O.P. "O" 1179+99.64 to "L" 13+00.00  
**FUTURE CONSTRUCTION**  
 "L" 0+10.00 to "L" 13+00.00  
 See General Note No. 7



	ROCK	EARTH
Cut	1/2:1	1 1/2:1
Fill	1 1/2:1	1 1/2:1

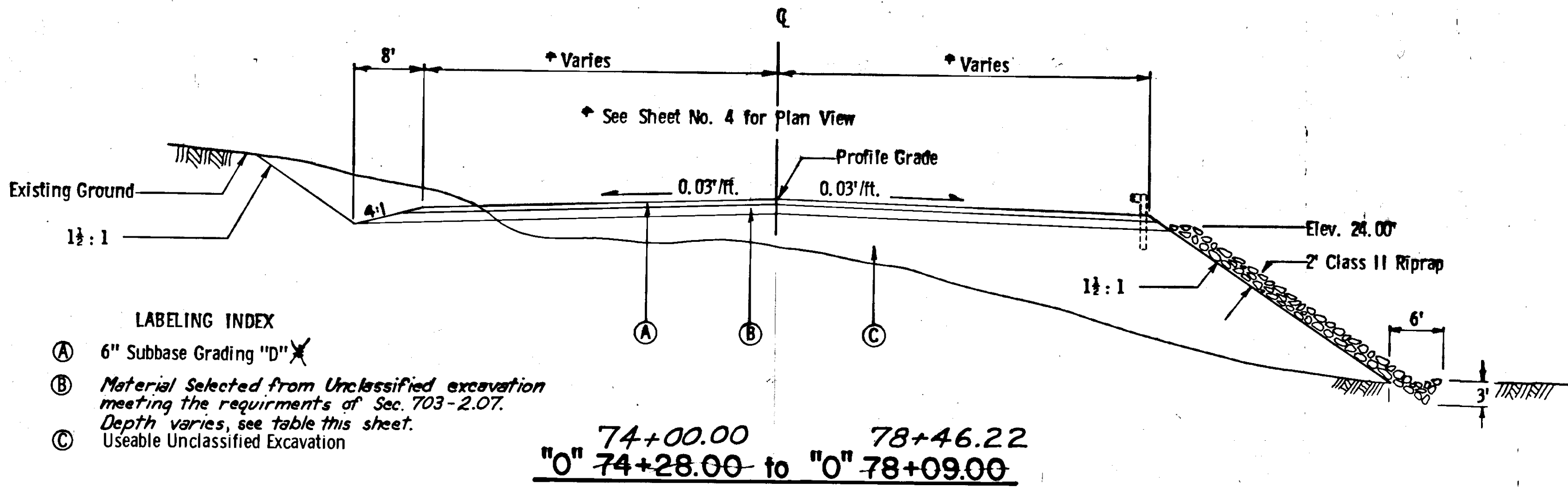
① "O" 35+75 Lt. to 38+25 Lt., "L" 52+25 Lt. to "L" 55+75 Lt., & "O" 66+25 Rt. to "O" 67+50 Rt. Use 2:1 Slope.

STATION TO STATION	MIN. DEPTH
"L" 13+00.00 to "L" 56+00.00	12" *
"L" 56+00.00 to "O" 66+00	0" *
"O" 66+00 to "O" 78+09	12"
* 21+00 to 31+00	

\* "L" 56+00 to "O" 66+00, Use 12" of Subbase Grading "D".

## GENERAL NOTES

- Grades and Alignment shown on these plans are subject to minor revisions.
- Culvert lengths and locations are approximate only and are subject to minor revisions.
- Excavation for culvert installation and / or removal may encounter large logs, log cribs, bedrock, and stumps. Such obstructions will be considered part of the normal excavation. Disposal in an approved area will be incidental to the item of work being performed.
- The clearing limits shall be a neat line ten feet beyond the slope limits in a cut section and five feet beyond the slope limits in a fill section or to the R.O.W. limits, whichever is less.
- Clearing of areas selected by the Contractor for waste berms will not be paid for under Item 201(3A) Clearing and Grubbing, but will be considered a subsidiary obligation of the Contractor, performed as directed by the Engineer.
- Seeding, Item 618(1), will be required on all fill slopes constructed with material other than rock, cut slopes other than rock, and on all exposed surfaces of waste areas.
- "L" 0+10 to "L" 13+00, Temporary Connection, the existing haul road shall be graded to a 24' width and maintained to provide an acceptable driving surface. Grading and maintenance will not be paid for as such but will be considered incidental to the contract. Materials necessary to complete the Temporary Connection will be paid for under their respective Item Number and Contract Unit Price.

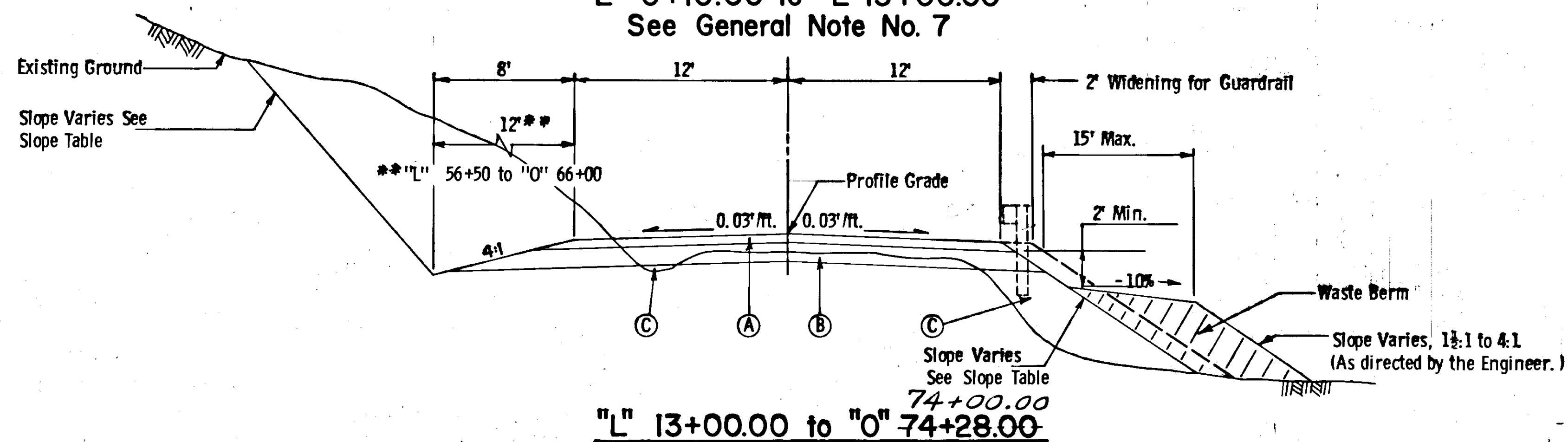


- LABELING INDEX**
- Ⓐ 6" Subbase Grading "D"
  - Ⓑ Material Selected from Unclassified excavation meeting the requirements of Sec. 703-2.07. Depth varies, see table this sheet.
  - Ⓒ Useable Unclassified Excavation

74+00.00 78+46.22  
 "O" 74+28.00 to "O" 78+09.00

### TYPICAL SECTIONS OF IMPROVEMENT

B.O.P. "O" 1179+99.64 to "L" 13+00.00  
**FUTURE CONSTRUCTION**  
 "L" 0+10.00 to "L" 13+00.00  
 See General Note No. 7



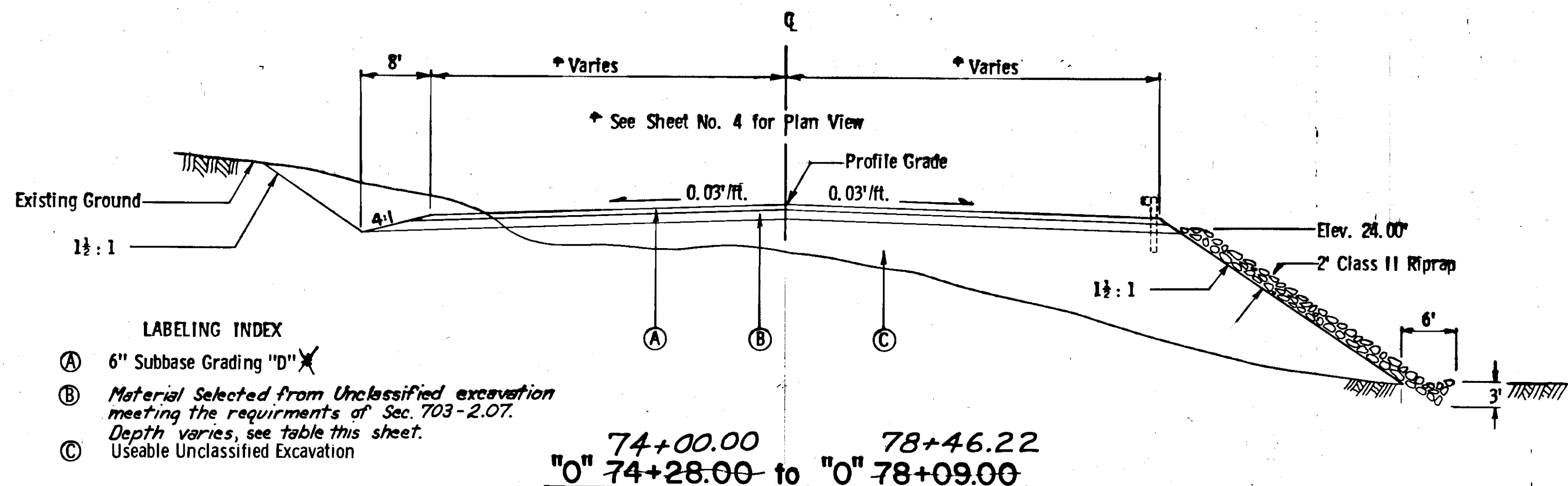
"L" 13+00.00 to "O" 74+28.00

	ROCK	EARTH
Cut	1/2 : 1	1 1/2 : 1
Fill	1 1/2 : 1 (2)	1 1/2 : 1 (1)

① "O" 35+75 Lt. to 38+25 Lt., "L" 52+25 Lt. to "L" 55+75 Lt., & "O" 66+25 Rt. to "O" 67+50 Rt. Use 2:1 Slope.

STATION TO STATION	MIN. DEPTH
"L" 13+00.00 to "L" 56+00.00	12" *
"L" 56+00.00 to "O" 66+00	0" *
"O" 66+00 to "O" 78+09	12"
* 21+00 to 32+00	

\* "L" 56+00 to "O" 66+00, Use 12" of Subbase Grading "D".



74+00.00 78+46.22  
 "O" 74+28.00 to "O" 78+09.00

#### LABELING INDEX

- (A) 6" Subbase Grading "D" \*
- (B) Material Selected from Unclassified excavation meeting the requirements of Sec. 703-2.07. Depth varies, see table this sheet.
- (C) Useable Unclassified Excavation

#### GENERAL NOTES

1. Grades and Alignment shown on these plans are subject to minor revisions.
2. Culvert lengths and locations are approximate only and are subject to minor revisions.
3. Excavation for culvert installation and / or removal may encounter large logs, log cribs, bedrock, and stumps. Such obstructions will be considered part of the normal excavation. Disposal in an approved area will be incidental to the item of work being performed.
4. The clearing limits shall be a neat line ten feet beyond the slope limits in a cut section and five feet beyond the slope limits in a fill section or to the R.O.W. limits, whichever is less.
5. Clearing of areas selected by the Contractor for waste berms will not be paid for under Item 201(3A) Clearing and Grubbing, but will be considered a subsidiary obligation of the Contractor, performed as directed by the Engineer.
6. Seeding, Item 618(1), will be required on all fill slopes constructed with material other than rock, cut slopes other than rock, and on all exposed surfaces of waste areas.
7. "L" 0+10 to "L" 13+00, Temporary Connection, the existing haul road shall be graded to a 24' width and maintained to provide an acceptable driving surface. Grading and maintenance will not be paid for as such but will be considered incidental to the contract. Materials necessary to complete the Temporary Connection will be paid for under their respective Item Number and Contract Unit Price.

### ESTIMATE OF QUANTITIES

ITEM NO.	ITEM	UNIT	SHEETS			TOTAL
			5	6	7	
1	Furnish and Maintain Engineering Facilities	L. S.				All Required
2A	Meals	Each				4,200
2B	Lodging	Each				1,400
2C	Pick-Up Truck	Day				350
2D	Survey Van	Day				140
110(1)	Mobilization	L. S.				All Required
111(1)	Temporary Erosion and Pollution Control	C. S.				All Required
112(1)	Training Program In Accordance With F. H. W. A. Order, Interim 7-2(2)	C. S.				All Required
201(3A)	Clearing & Grubbing	Acre	1.2	3.7	2.8	7.7
201(6A)	Selective Tree Removal	Each	3	3	4	10
201(6B)	Selective Stump Removal	Each	4	3	3	10
202(4)	Removal and Disposal of Culvert	L.F.	30	194	0	224
203(3)	Unclassified Excavation	Cu. Yd.	3,151	13,376	42,709	59,236
304(2)	Subbase Grading "D"	Cu. Yd.	563	1,452	2,018	4,033
501(1)	Class "A" Concrete	L. S.				All Required
504(3)	Transfer Bridge, Furnished, Fabricated & Erected	L. S.				All Required
504(4)	Dolphin Steel, Furnished, Fabricated & Erected	L. S.				All Required
505(3)	Structural Steel Piles, Furnished & Driven	L.F.			852	852
505(11)	Dolphin Pipe Piles, Furnished & Driven	L.F.			1,834	1,834
511(1)	Transfer Barge	L. S.				All Required
603(22E)	18" Pipe Conduit	L.F.	0	0	50	50
603(22G)	24" Pipe Conduit	L.F.	96	188	52	336
603(22I)	36" Pipe Conduit	L.F.	0	96	0	96
603(22K)	48" Pipe Conduit	L.F.	0	98	96	194
606(2)	Beam Type Guardrail, Type II Posts	L.F.	0	475	637.5	1,112.5
611(1)	Riprap Class II	Cu. Yd.	0	0	1,400	1,400
613(2)	Culvert Marker Posts	Each	4	12	6	22
615(1)	Standard Signs	Sq. Ft.	43.5	0	86.85	70.35
618(1)	Seeding	M. Sq. Ft.	27.6	69.6	45.6	142.8
618(2)	Water for Maintenance	M. G.	2.4	6.1	4.1	12.6
613(1)	Right-of-Way Monuments	Each	2	4	2	8

### SIGNING SCHEDULE

NO.	STATION	Dist from C.		Code No.	LEGEND	SIGN PANEL THICKNESS			Area S.F.	No. of Posts	POST			Facing Traffic	REMARKS	
		Lt.	Rt.			Size	Unframed	Framed			Type	Size	Length			Embedment
1	"B" 2+50	24'		M4-5	To	24X15	0.063		2.5	1	Tube	2"	15'-6"	4'-6"	SB	
2	"B" 2+50	24'		D7-17	Ferry Guide Sign	24X24	0.063		4.0						SB	Share post with no. 1
3	"B" 2+50	24'		M6-1L	Left Arrow Symbol	24X15	0.063		2.5						SB	Share post with no. 1
4	"B" 0+40	28'		W1-7	Large Arrow Sign	48X24	0.063		8.0	1	Tube	2"	15'-0"	4'-6"	WB	
5	"B" 0+40	28'		Type 1	9 Button Object Marker	18X18	0.063		2.25						WB	Share post with no. 4
6	"L" 0+55	24'		R1-1	Stop	30X30	0.063		6.25	1	Tube	2"	12'-6"	4'-6"	WB	STAKED on HARRIS R. to HOLLIS Project.
7	"L" 2+95	24'		W2-4	Tee Intersection Symbol	36X36	0.063		9.0	1	Tube	2"	12'-6"	4'-6"	WB	
8	"L" 3+95	24'		W3-1	Stop Ahead	36X36	0.063		9.0	1	Tube	2"	12'-6"	4'-6"	WB	
9	"F" 0+30	12'		R1-1	Stop	30X30	0.063		6.25	1	Tube	2"	12'-6"	4'-6"	WB	
10	"O" 68+00	24'		W14-4	End Road 1000 Ft.	36X36	0.063		9.0	1	Tube	2"	12'-6"	4'-6"	EB	
11	"O" 74+92	24'		D2-2	Klawock 24 Craig 30	64X26	0.063		11.6	2	Tube	2"	12'-6"	4'-6"	WB	

### CULVERT SUMMARY

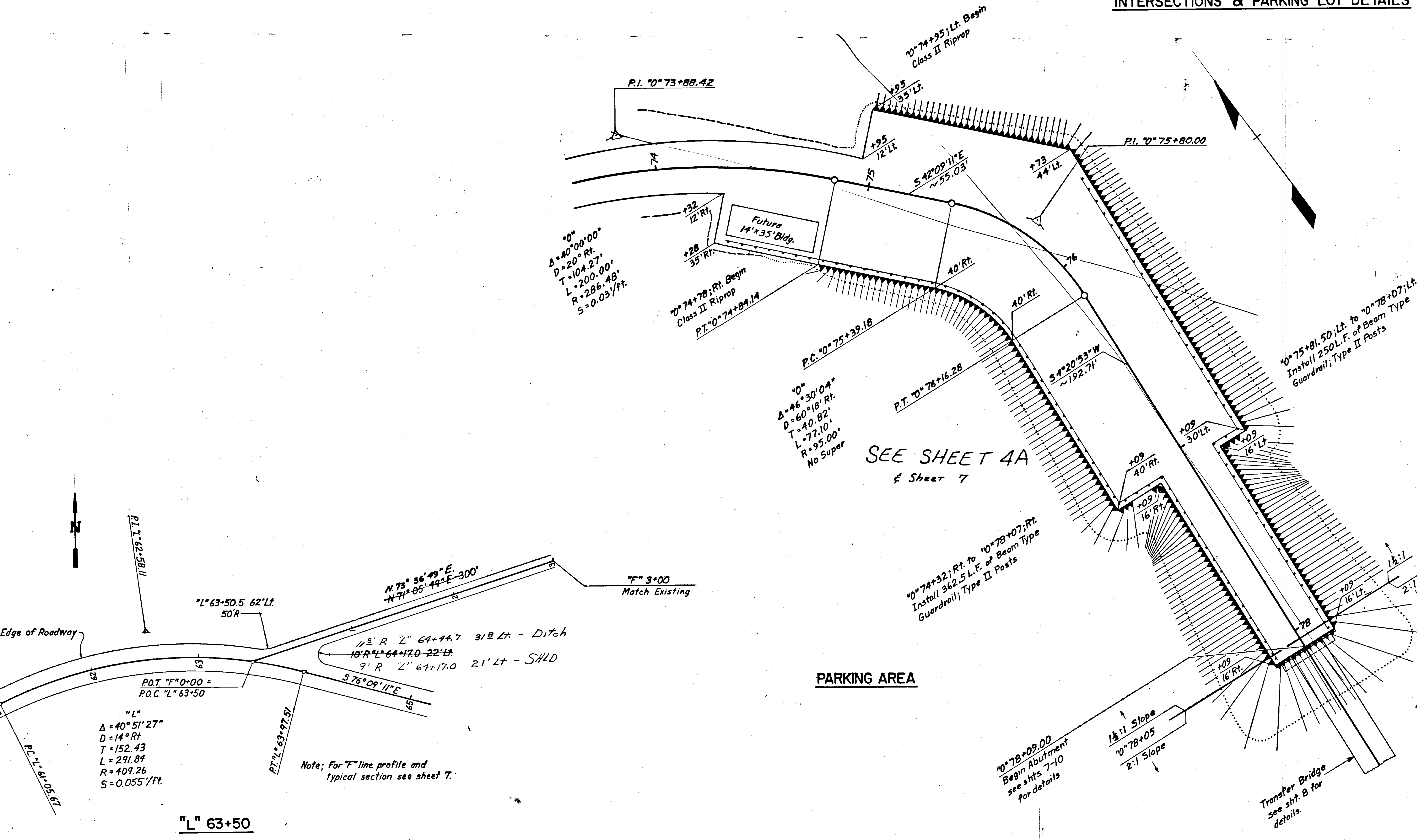
STATION	SIZE	L.F.	REMARKS
"O" 15+25		30'	Remove Log Culvert
"O" 15+25+27	24"	48' 54'	Install
"O" 18+00+25	24"	48' 46'	Install
"L" 28+05		44'	Remove Log Culvert
"L" 28+05+15	24"	52' 50'	Install
"O" 37+38	24"	56' 86'	Install
"O" 40+00		19	Remove C.M.P.
"O" 40+00	36"	46' 48'	Install
"L" 51+23		31'	Remove Log Culvert
"L" 51+23+14	36"	50' 76'	Install
"L" 53+50		50'	Remove Log Culvert
"L" 53+50	24"	80' 76'	Install
"L" 55+00		50'	Remove Log Culvert
"L" 55+00+39	48"	98' 114'	Install
"O" 68+50	24"	52'	Install, Skew 60° Rt. Ahd.
"F" 0+42	18"	50' 54'	Install
"O" 70+90+80	48"	96' 86'	Install
"L" 1+27	24"	44'	

### R.O.W. MONUMENT

STATION	DISTANCE	
	Lt.	Rt.
"L" 13+00 P.O.T.	100'	100'
"L" 25+06.21 P.C.	100'	100'
"L" 50+13.20 P.T.	100'	100'
"O" 74+84.14 P.T.	100'	100'

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	705RS-0926(2)	1976	4	17

INTERSECTIONS & PARKING LOT DETAILS



"0"  
 $\Delta = 40^{\circ} 00' 00''$   
 $D = 20^{\circ} \text{Rt.}$   
 $T = 104.27'$   
 $L = 200.00'$   
 $R = 286.48'$   
 $S = 0.03'/\text{ft.}$

"0"  
 $\Delta = 46^{\circ} 30' 04''$   
 $D = 60^{\circ} 18' \text{Rt.}$   
 $T = 40.82'$   
 $L = 77.10'$   
 $R = 95.00'$   
 $\text{No Super}$

SEE SHEET 4A  
 & Sheet 7

PARKING AREA

"L"  
 $\Delta = 40^{\circ} 51' 27''$   
 $D = 14^{\circ} \text{Rt.}$   
 $T = 152.43'$   
 $L = 291.84'$   
 $R = 409.26'$   
 $S = 0.055'/\text{ft.}$

"L" 63+50

Note: For "F" line profile and typical section see sheet 7.

"0" 78+09.00  
 Begin Abutment  
 see shts 7-10  
 for details

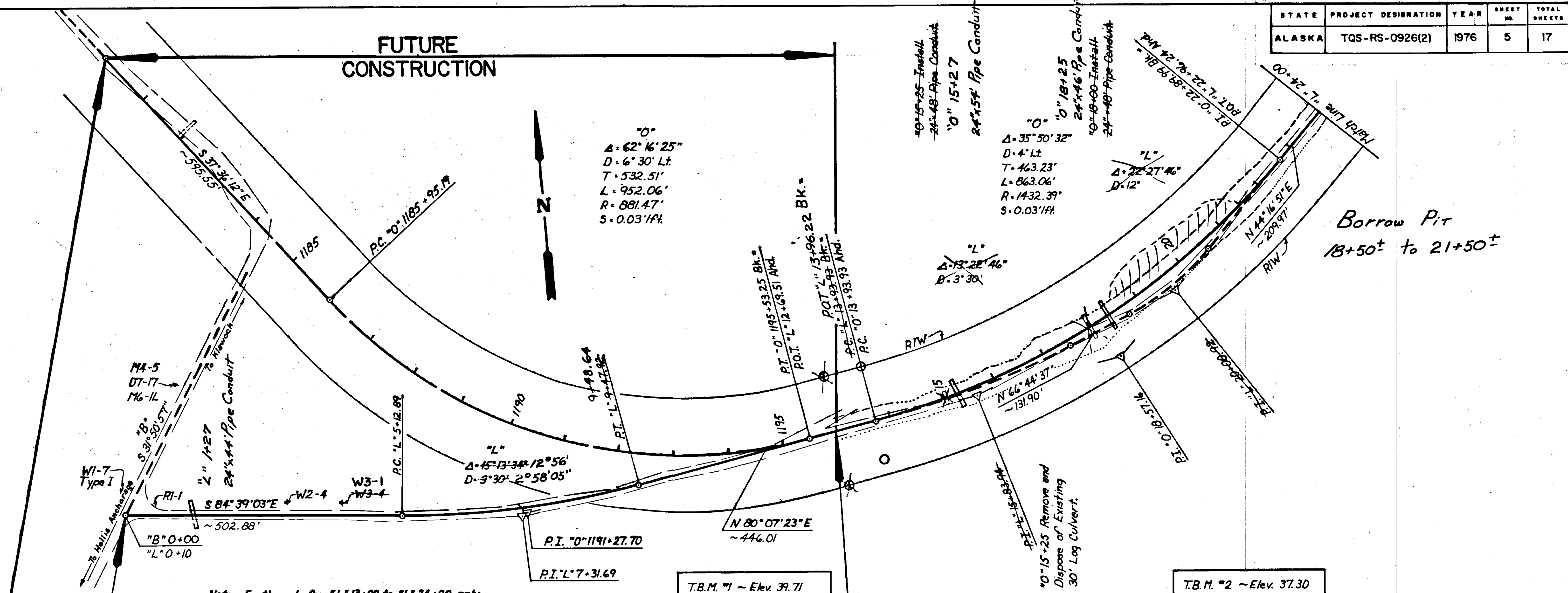
1 1/2 : 1 Slope  
 "0" 78+05  
 2 : 1 Slope

Transfer Bridge  
 see sht. 8 for details.

Horizontal Control:  
 Bearings for this project are based on  
 S.C. & G.S. Triangulation Stations  
 "Alpha" & "Sigma".  
 Scale Factor = 0.999929305

Vertical Control:  
 Vertical control was derived from  
 S.C. & G.S. Benchmark #4.  
 standard disk stamped,  
 4-53 U.S.C. & G.S.,  
 rev. 17.72 M.L.L.W.

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	TQS-RS-0926(2)	1976	5	17



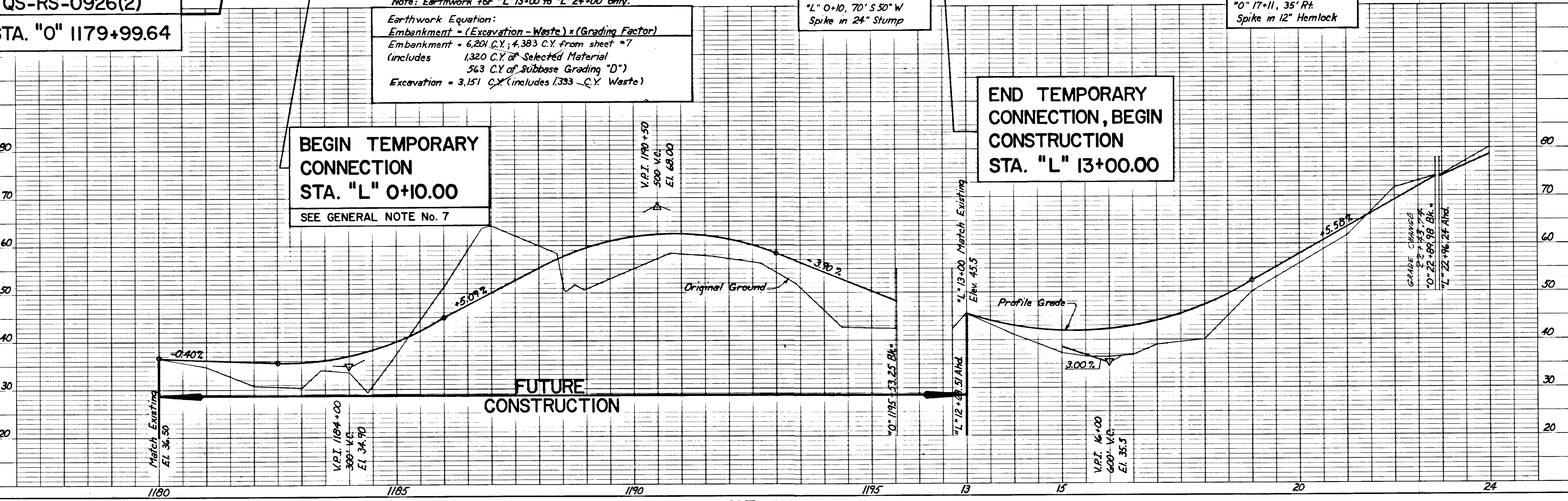
BEGIN PROJECT  
 TQS-RS-0926(2)  
 STA. "O" 1179+99.64

Note: Earthwork for "L" 13+00 to "L" 24+00 only.

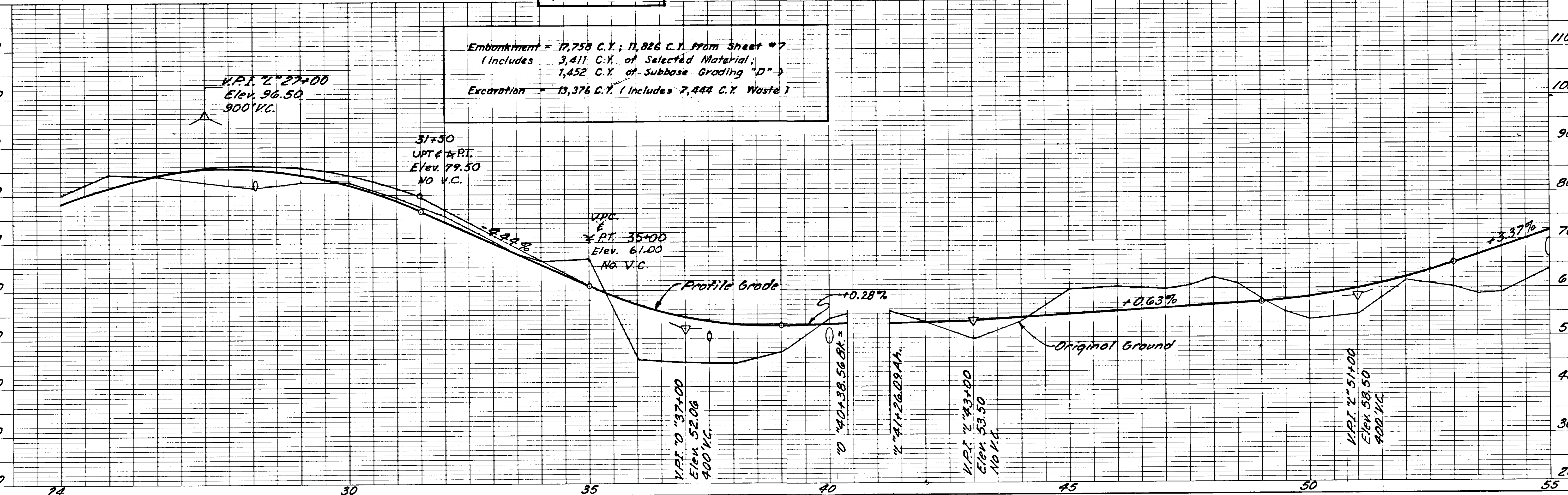
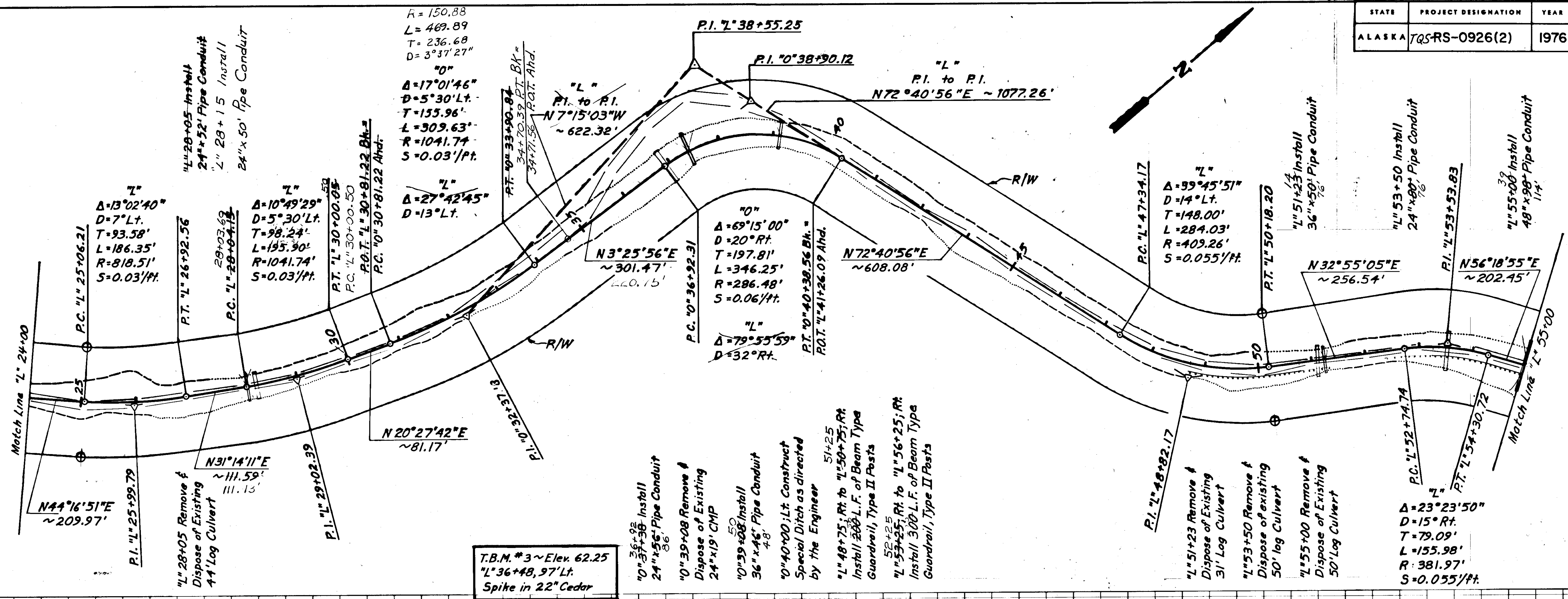
Earthwork Equation:  
 $Embankment = (Excavation - Waste) \times (Grading Factor)$   
 Embankment = 6,201 C.Y.; 4,383 C.Y. from sheet #7  
 (includes 1,320 C.Y. of Selected Material  
 563 C.Y. of Subbase Grading "D")  
 Excavation = 3,151 C.Y. (includes 1,333 C.Y. Waste)

BEGIN TEMPORARY  
 CONNECTION  
 STA. "L" 0+10.00  
 SEE GENERAL NOTE No. 7

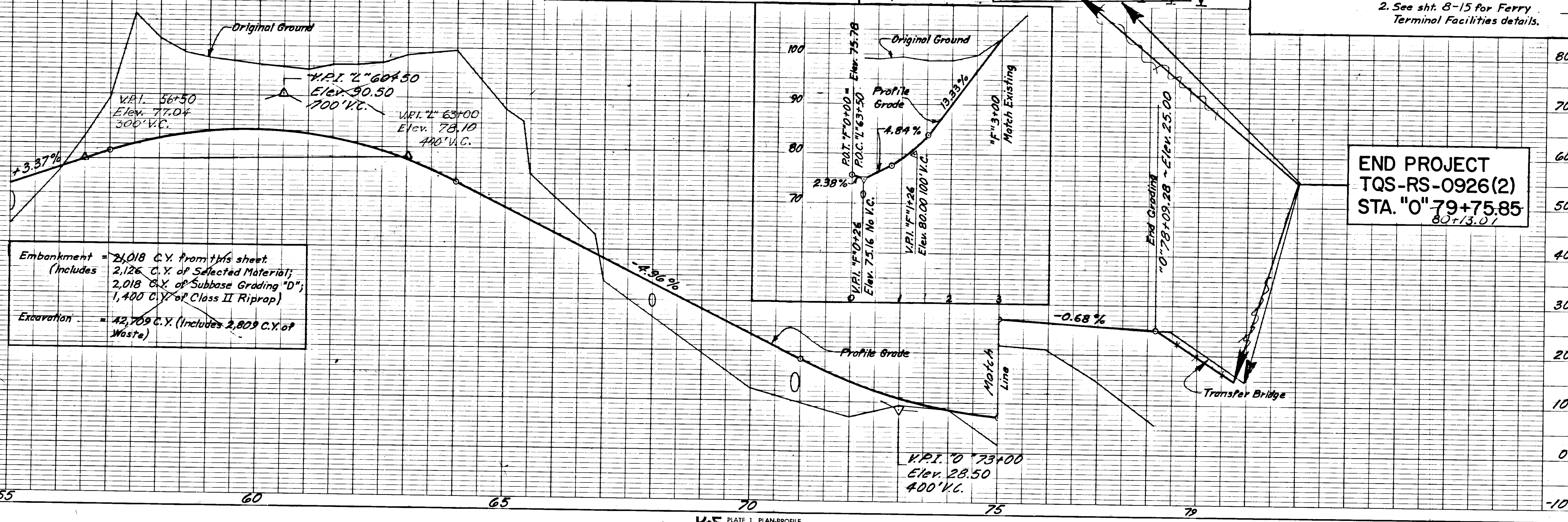
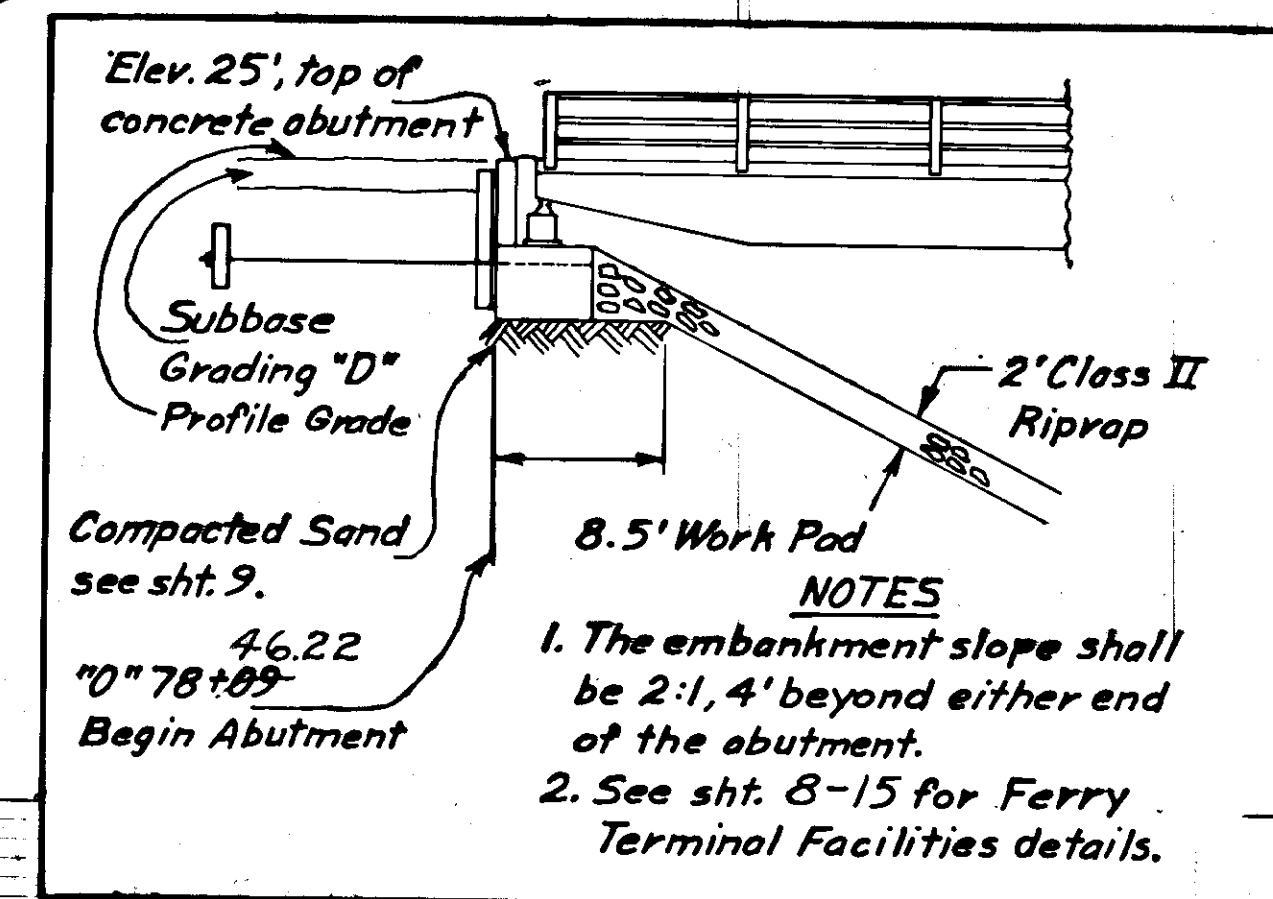
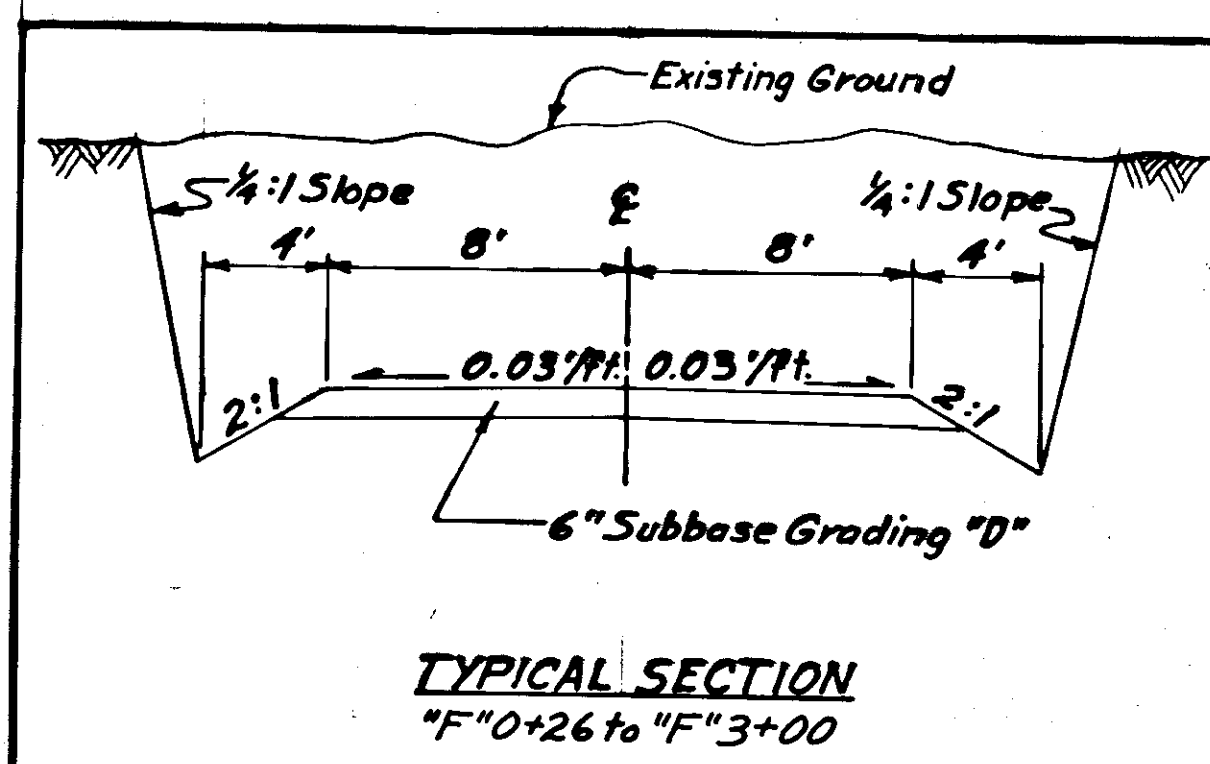
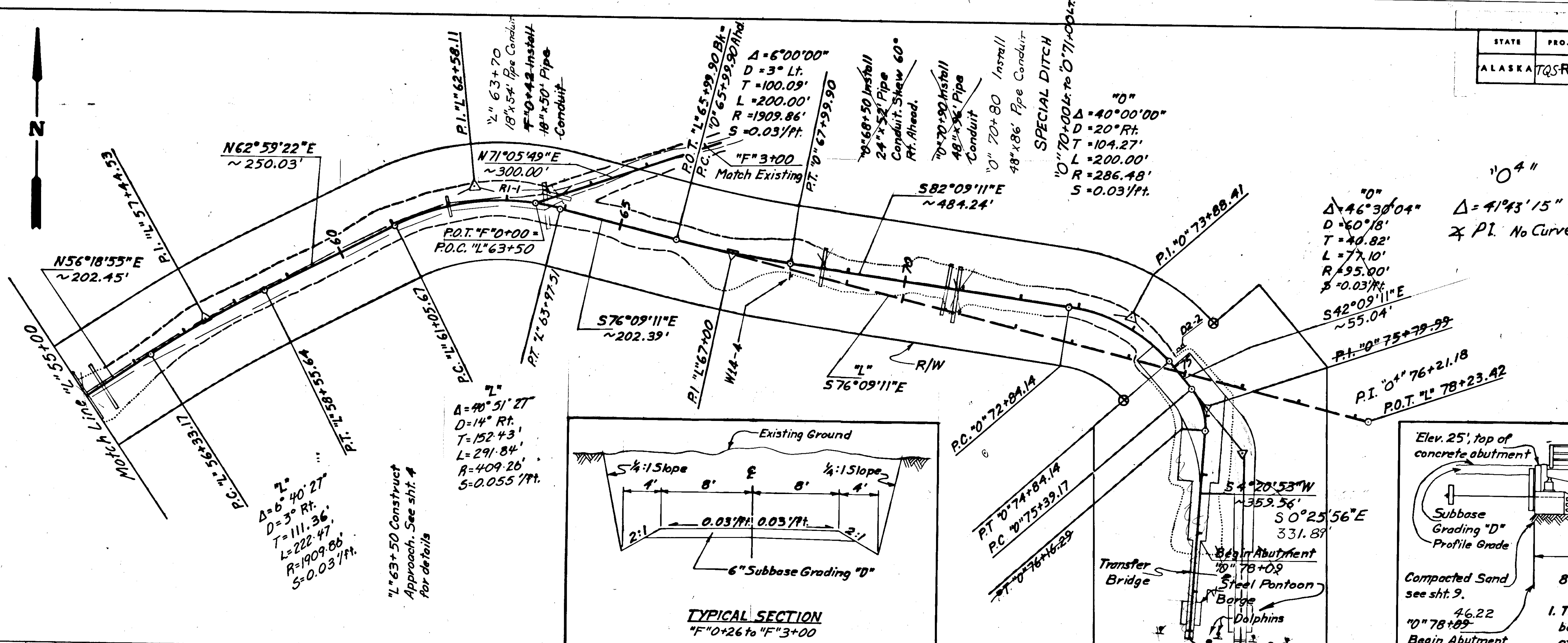
END TEMPORARY  
 CONNECTION, BEGIN  
 CONSTRUCTION  
 STA. "L" 13+00.00



STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	TQS-RS-0926(2)	1976	6	17



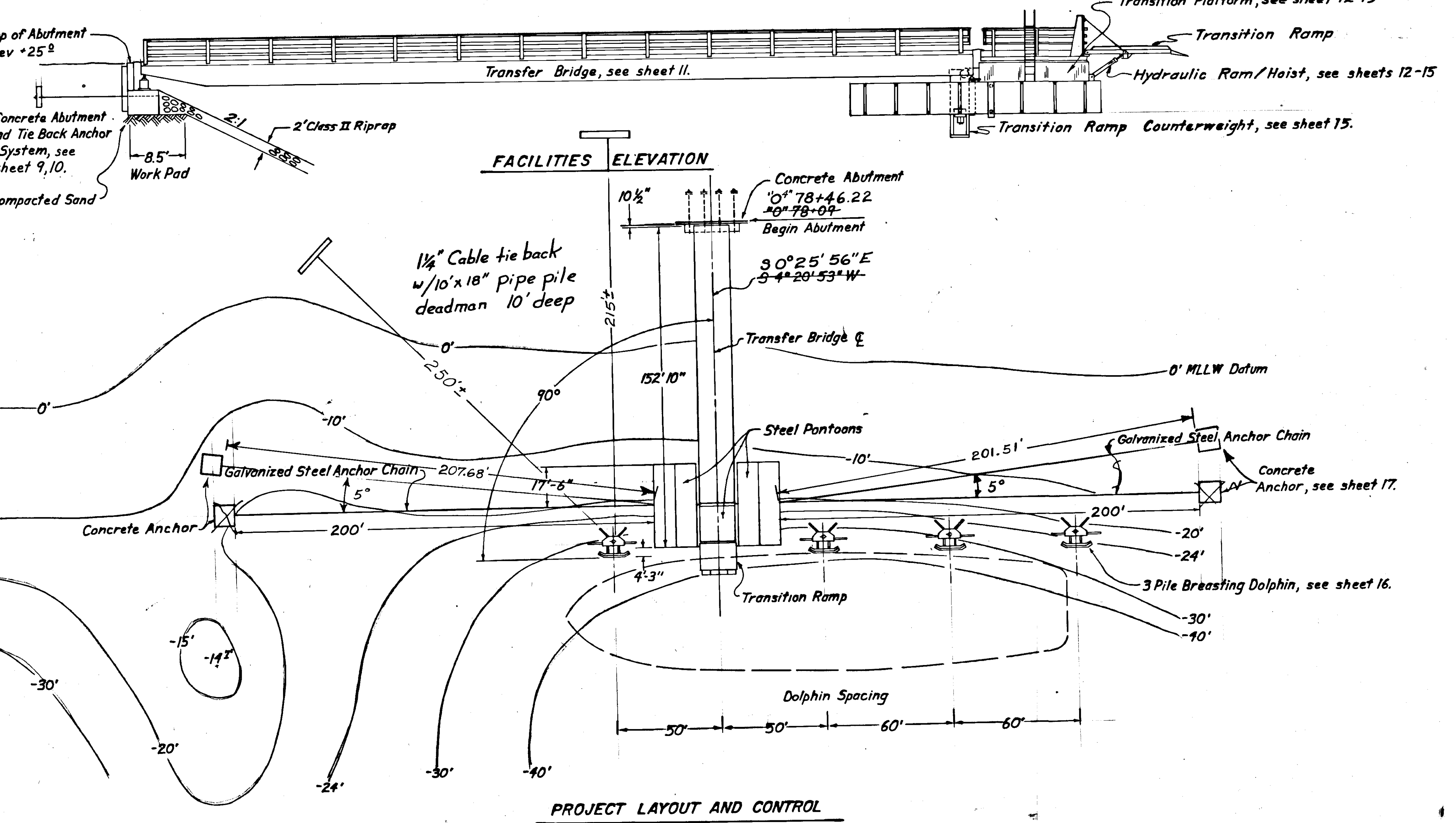
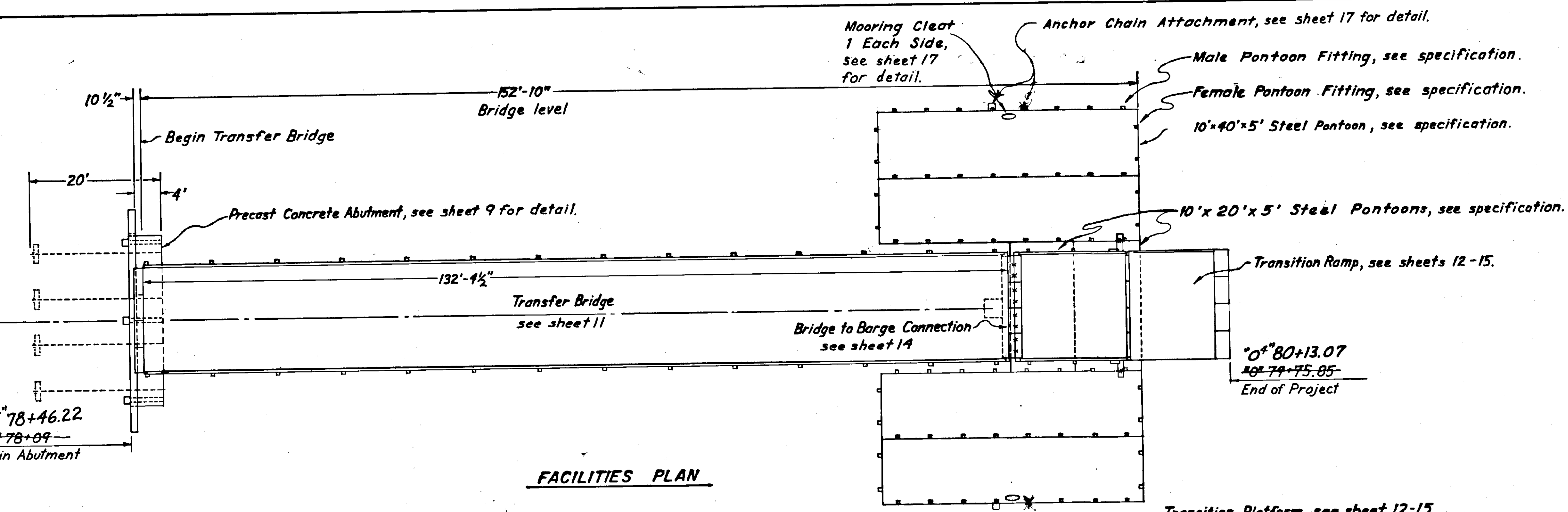
STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	TQS-RS-0926(2)	1976	7	17



**Embankment** = 2,018 C.Y. from this sheet.  
 (Includes 2,126 C.Y. of Selected Material;  
 2,018 C.Y. of Subbase Grading "D";  
 1,400 C.Y. of Class II Riprap)

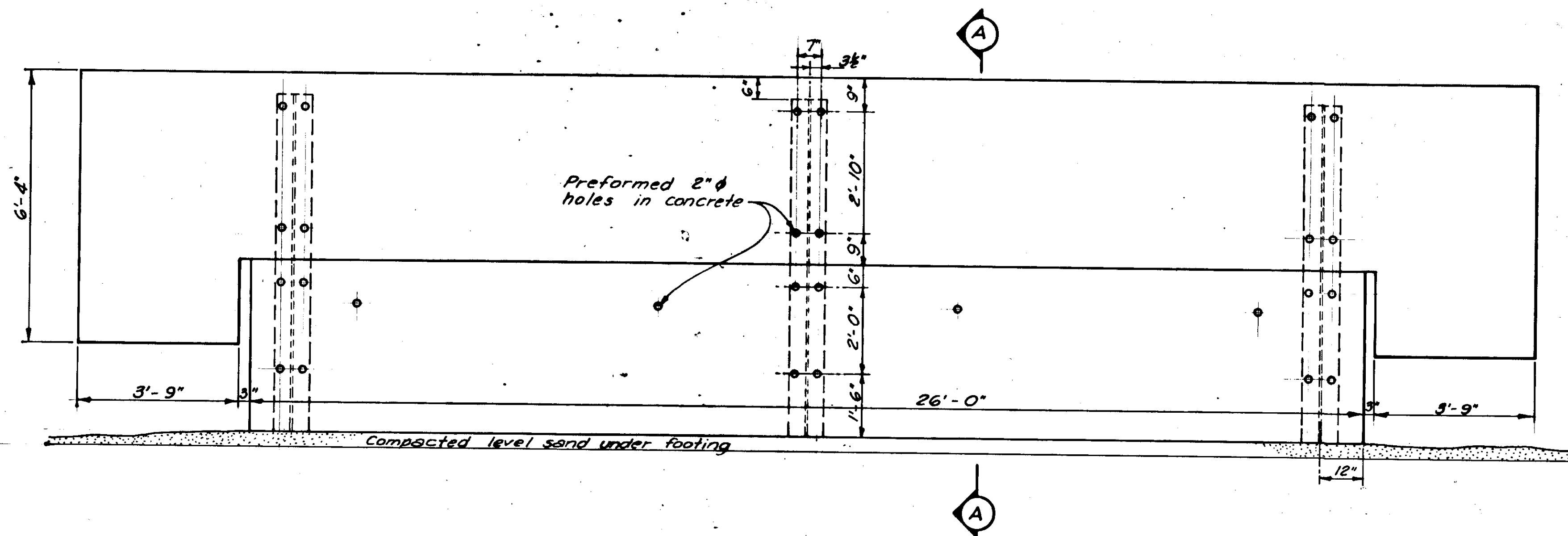
**Excavation** = 42,709 C.Y. (Includes 2,809 C.Y. of Waste)

**END PROJECT**  
 TQS-RS-0926(2)  
 STA. "O" 79+75.85  
 80+13.01

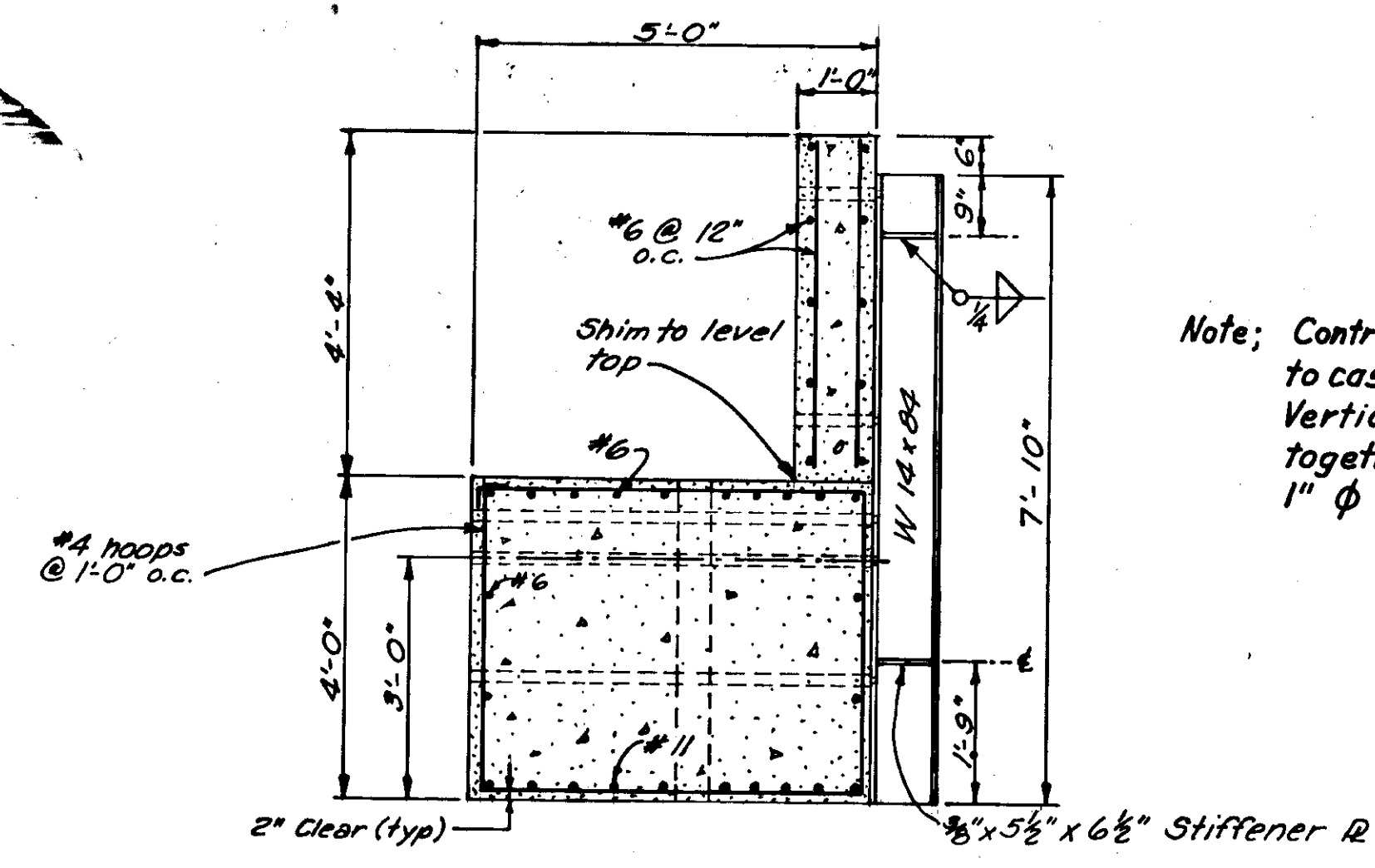


STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	T&S-RS-0926 (2)	1976	8	17

**FERRY TERMINAL GENERAL LAYOUT**



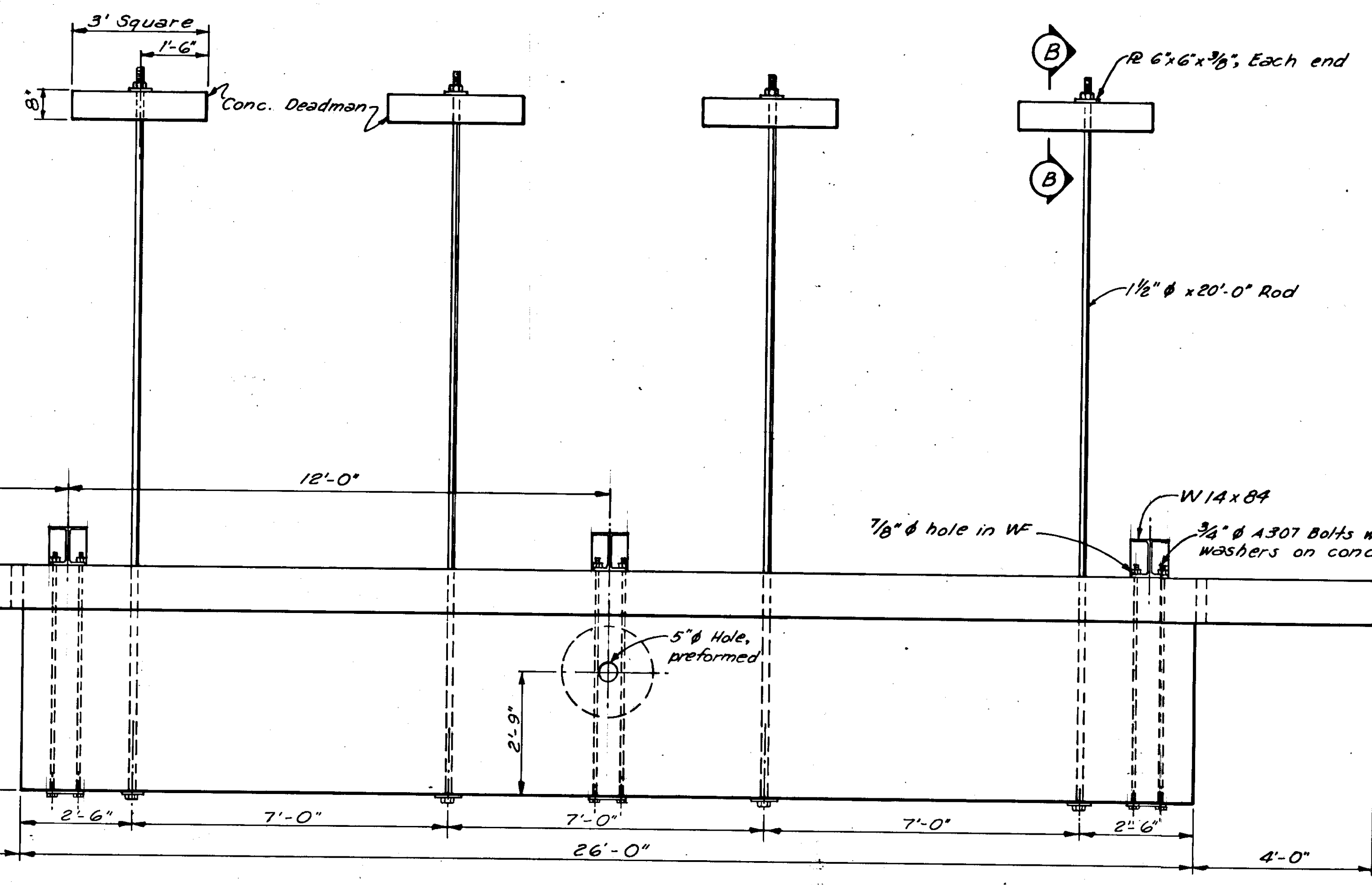
**ELEVATION**  
1/2" = 1'-0"



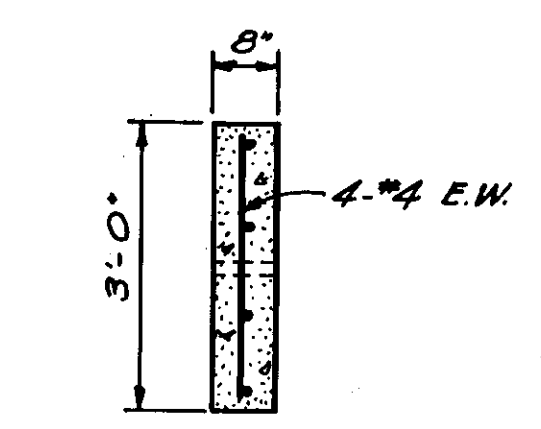
**SECTION A-A**  
1/2" = 1'-0"

Note; Contractor may optionally choose to cast ground block in two units. Vertical thru bolts to clamp units together shall be 2 rows of 1"  $\phi$  bolts @ 7' o.c., 8 required.

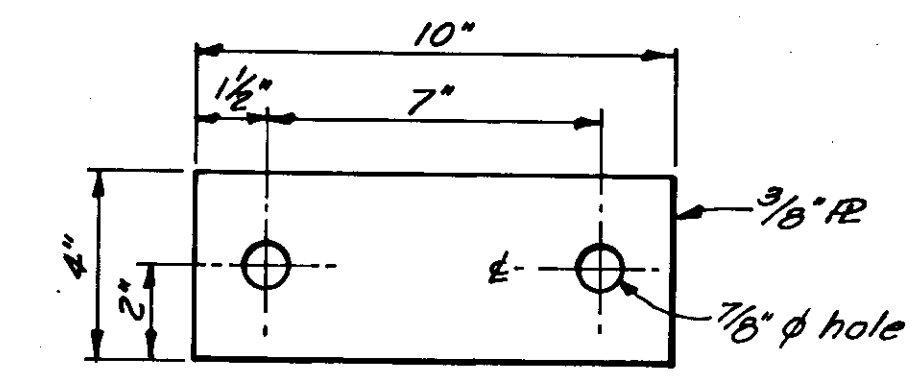
This option was used.



**PLAN**  
1/2" = 1'-0"



**SECTION B-B**  
1/2" = 1'-0"



**PLATE WASHER**  
1/2" = 1'-0"

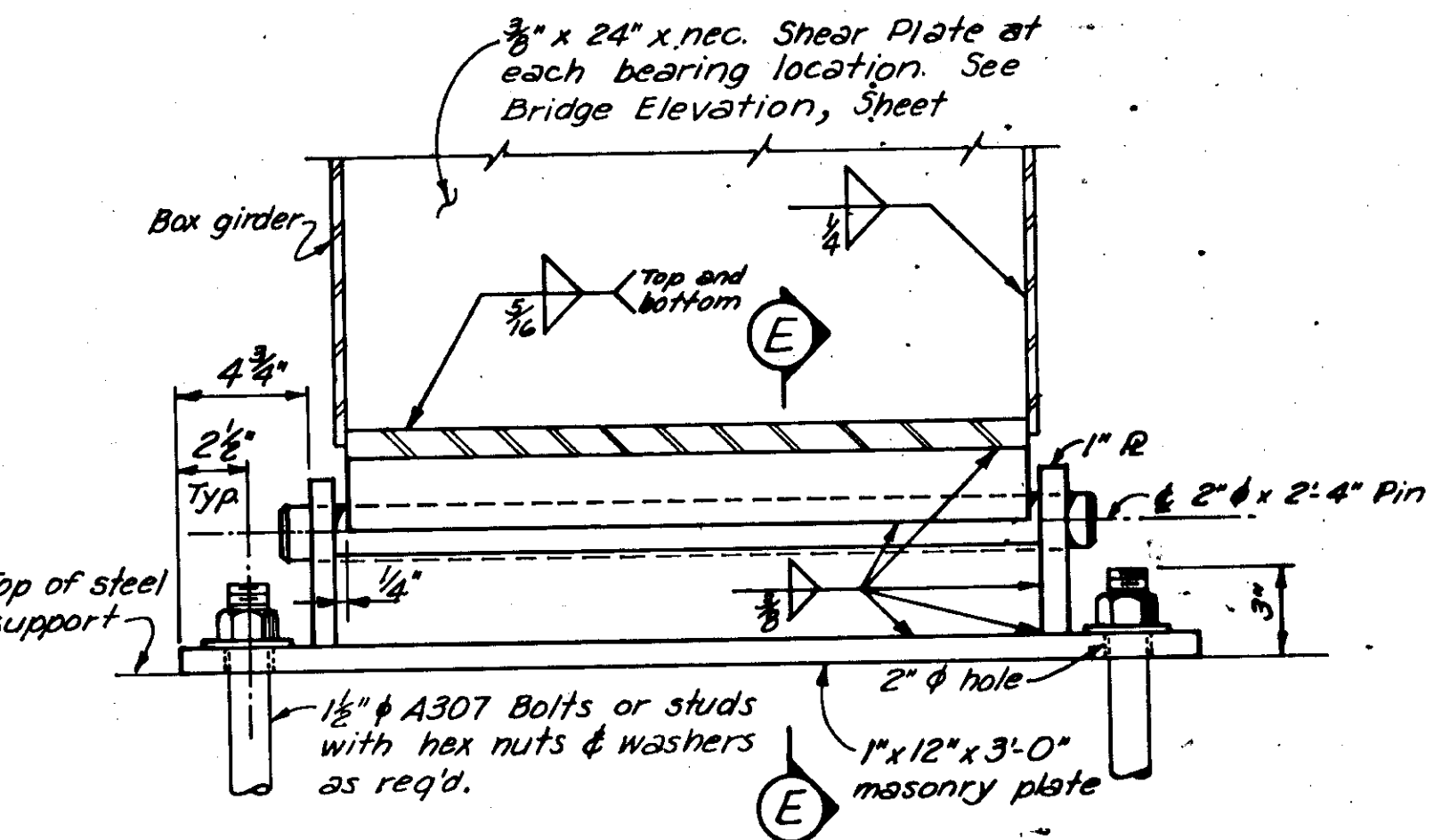
+46.22  
"0" 78\*89  
Begin Abutment

- NOTES:**
1. All concrete shall be Class A.
  2. All reinforcing steel shall be ASTM 615 Gr. 40.
  3. All hardware shall be galvanized.
  4. All structural steel shall be A36 except as noted.
  5. Weight of cap is approx. 40 tons.
  6. Weight of backwall is approx. 13 tons.
  7. Concrete - approx. 25.2 C.Y.
  8. Reinforcing steel - approx. 3300 lbs.
  9. After fabrication, back-fill front and back of cap uniformly.

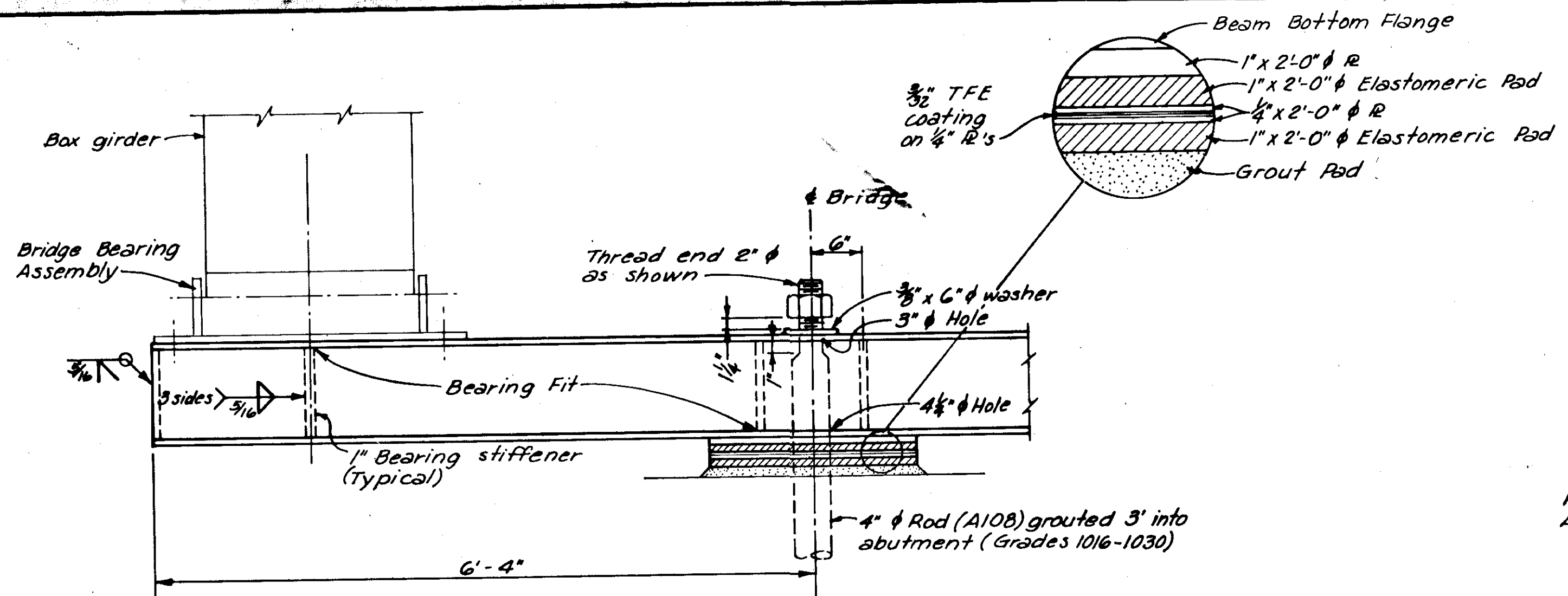
STATE	PROJECT DESIGNATION	YEAR	SHEET NO.
ALASKA	TQS-RS 0926 (2)	1976	9

**PRECAST ABUTMENT DETAILS**

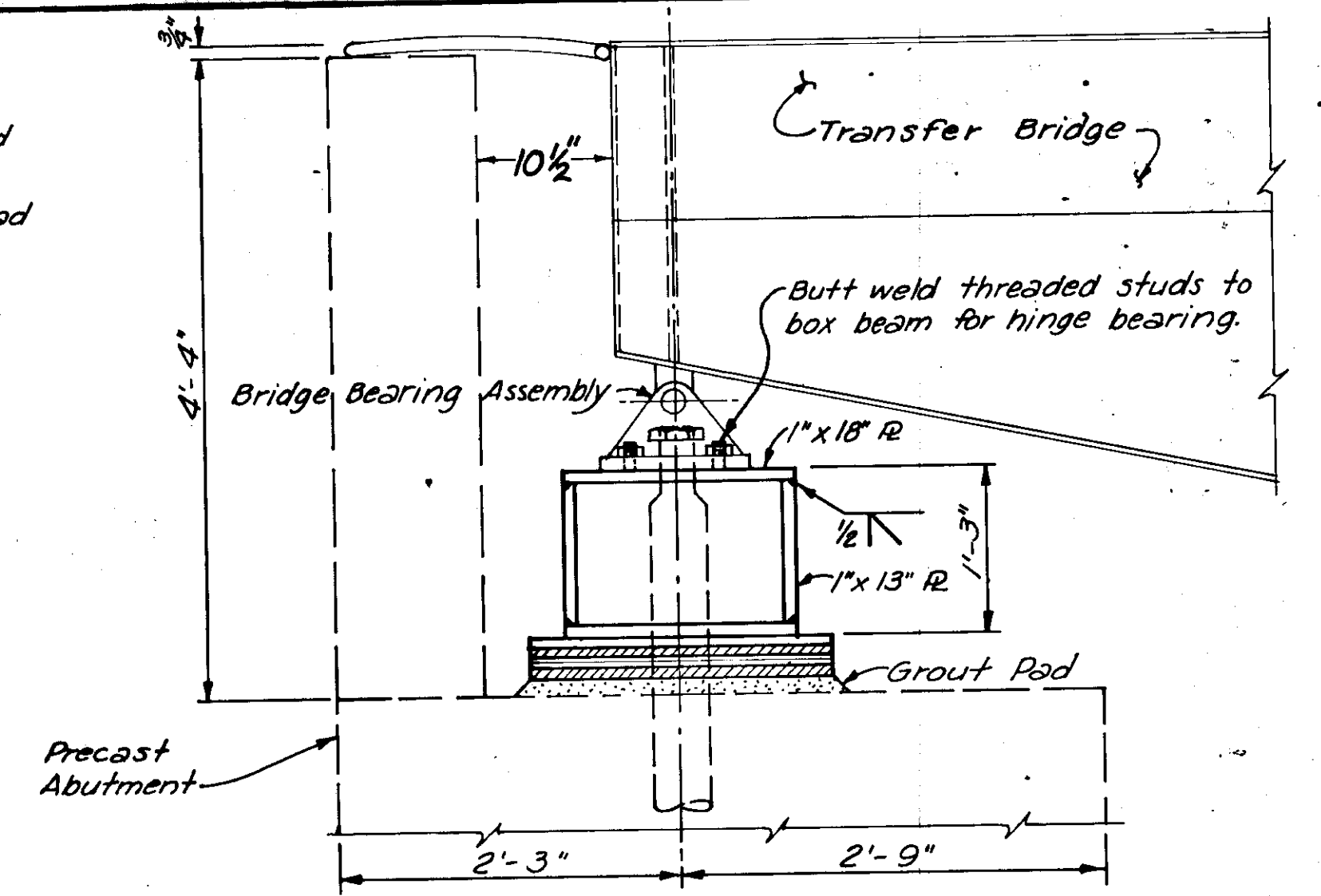
SCALE	SURVEYED	APPROVED
DESIGNED	DRAWN	DIRECTOR
CHECKED	DATE	
PROJECT NUMBER	SHEET _____ OF _____	



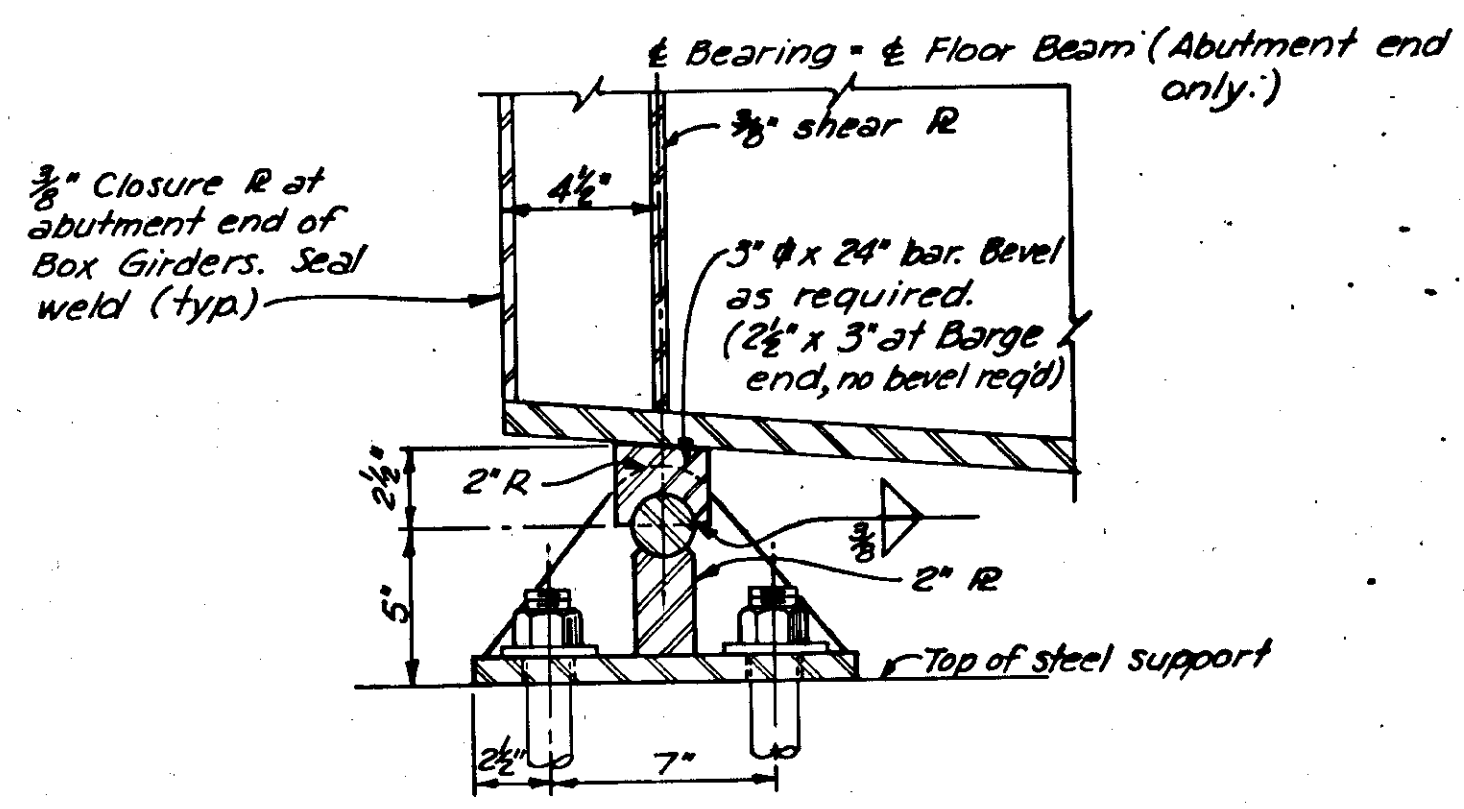
**BEARING ELEVATION**  
 2" = 1'-0"  
 TYPICAL FOR BOTH ENDS OF BRIDGE



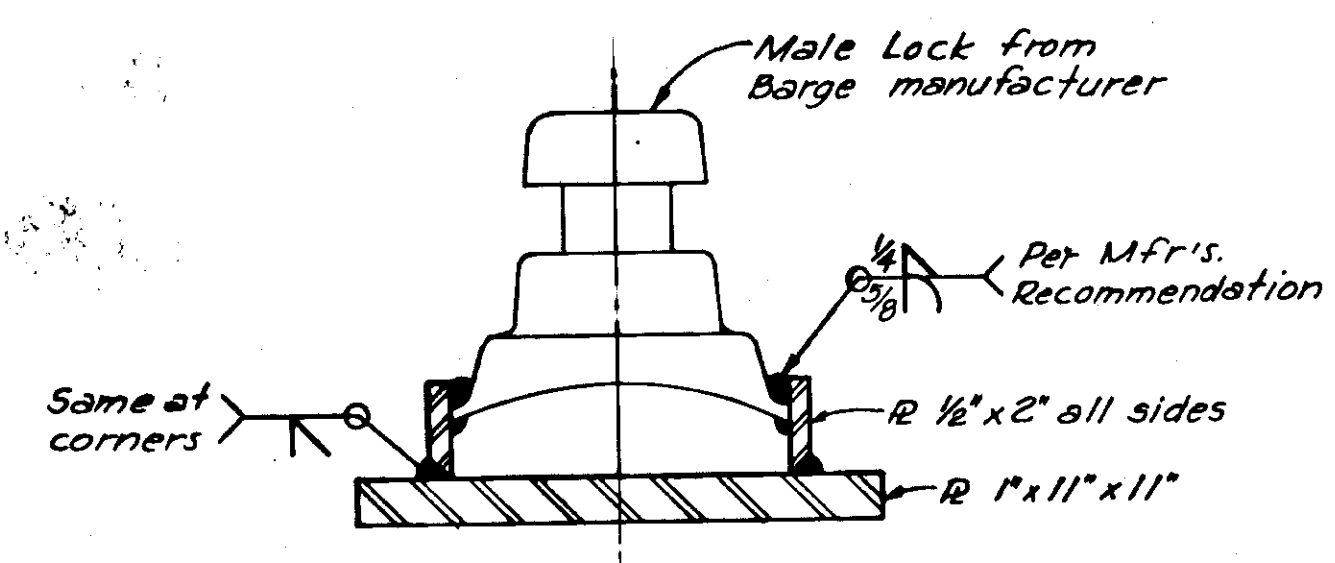
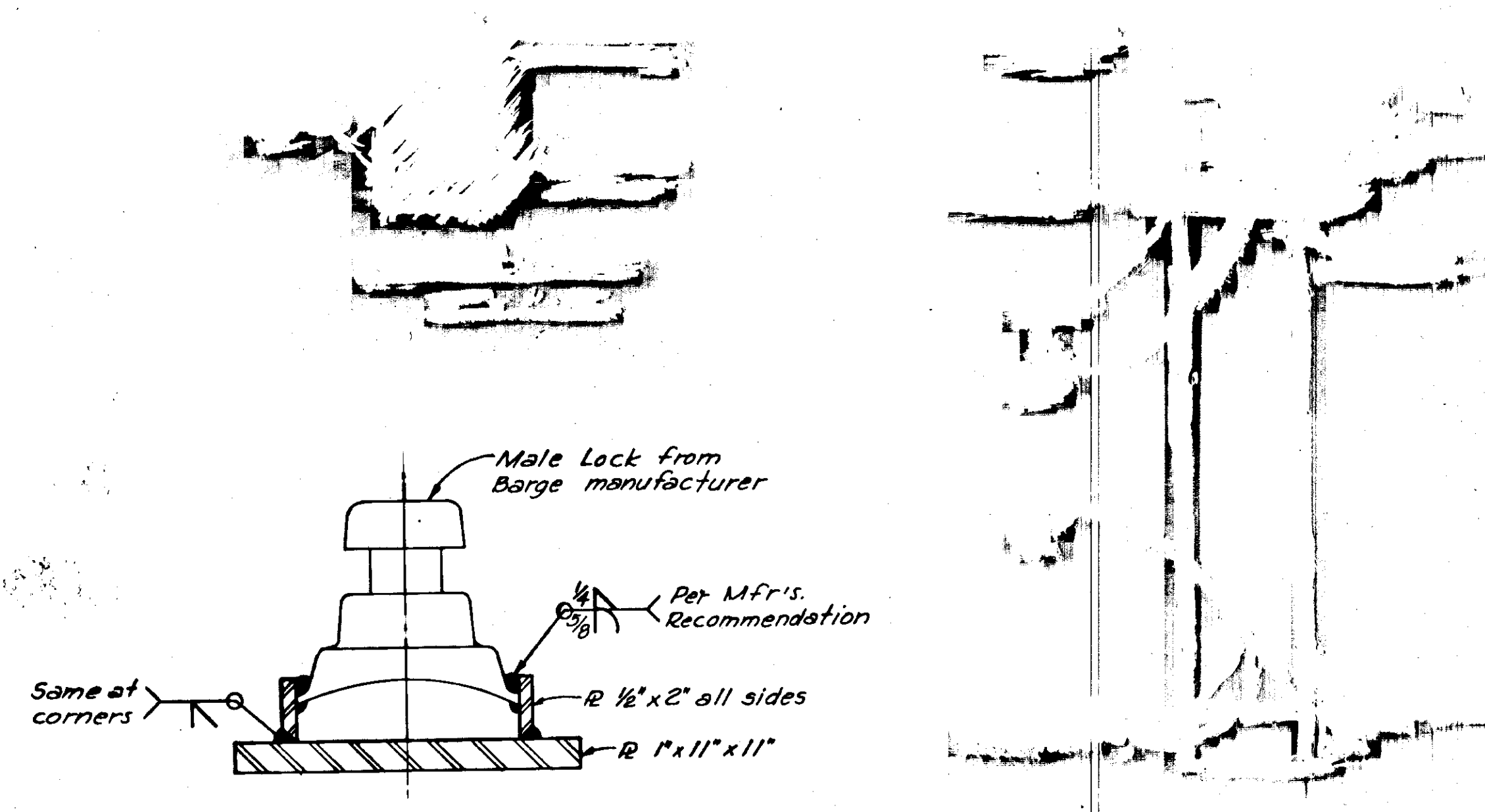
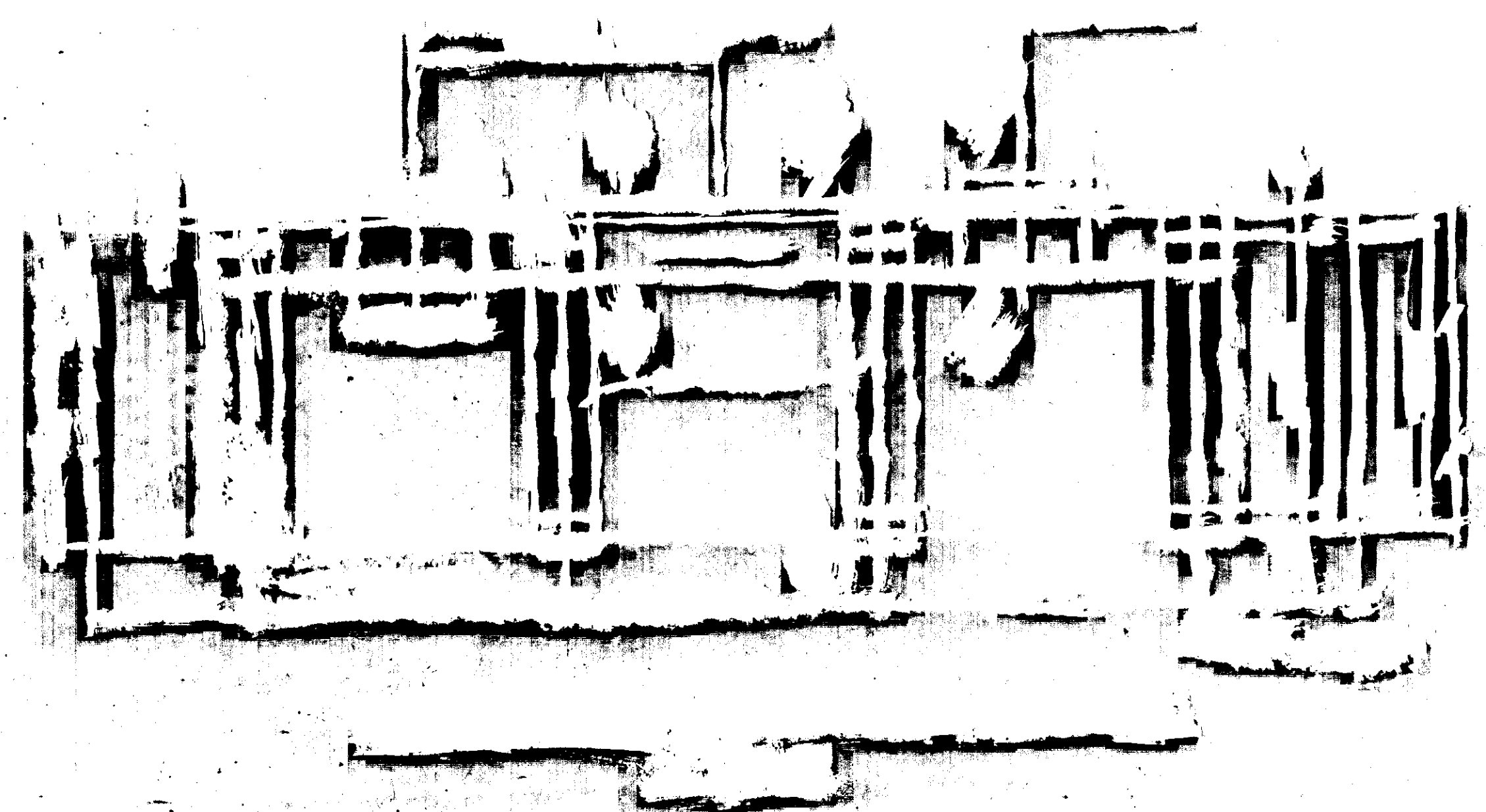
**ABUTMENT BEARING FRONT ELEVATION**  
 SYMMETRICAL ABOUT  $\epsilon$   
 1" = 1'-0"



**ABUTMENT BEARING SIDE ELEVATION**  
 1" = 1'-0"



**SECTION E-E**  
 AS SHOWN FOR ABUTMENT END. SIMILAR FOR BARGE END.  
 2" = 1'-0"

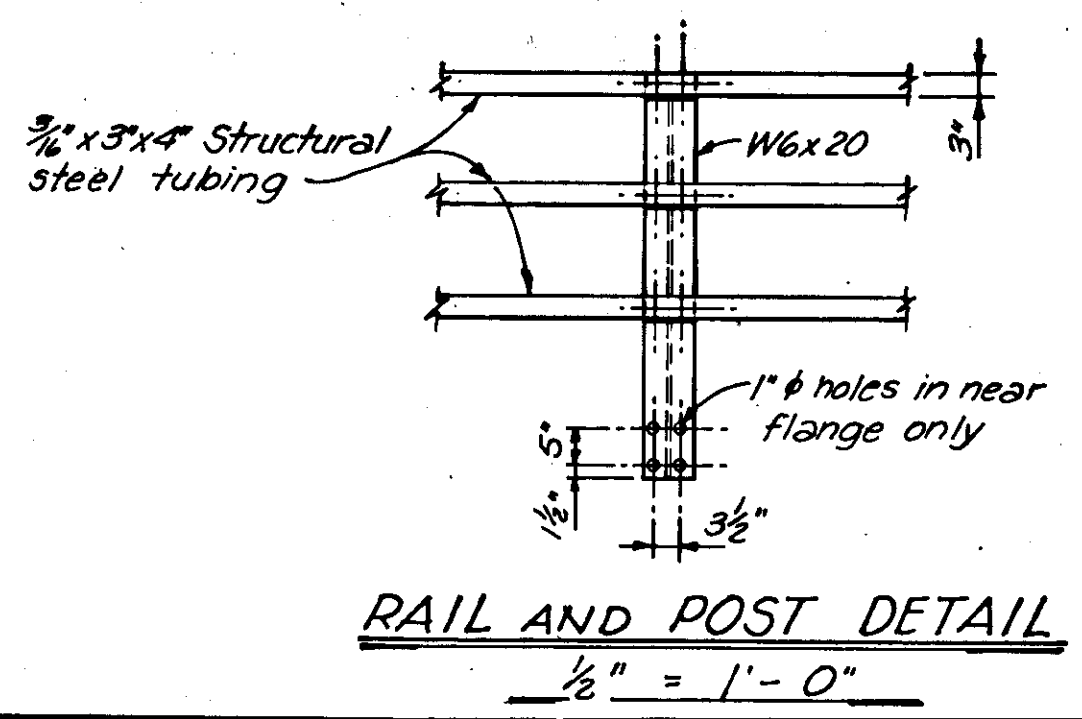
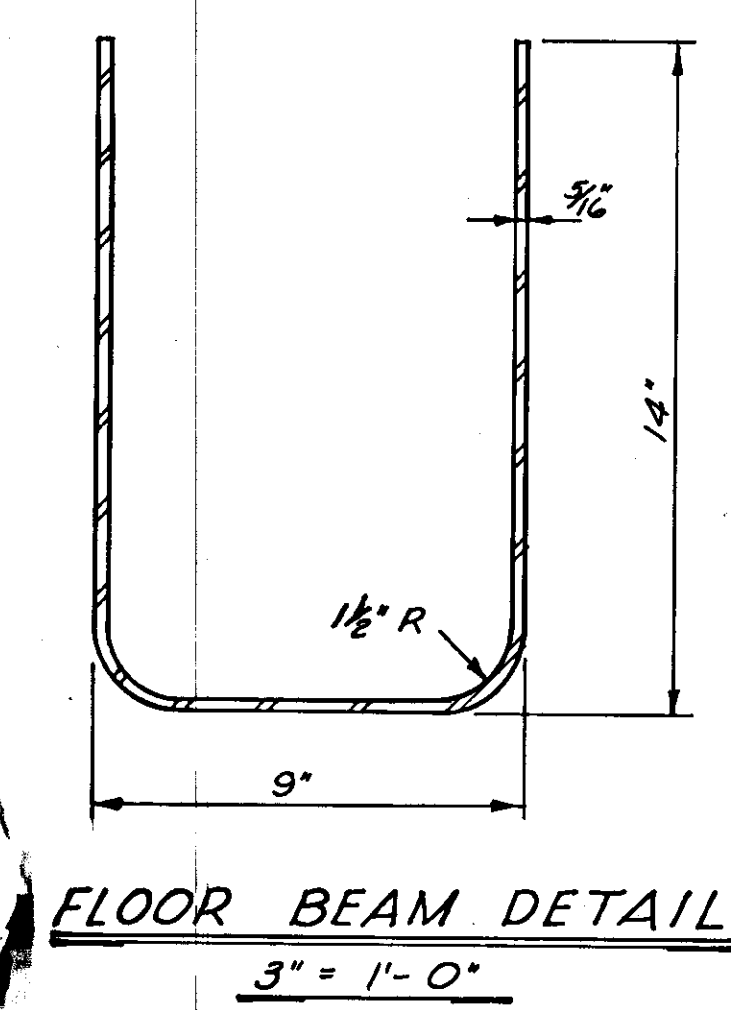
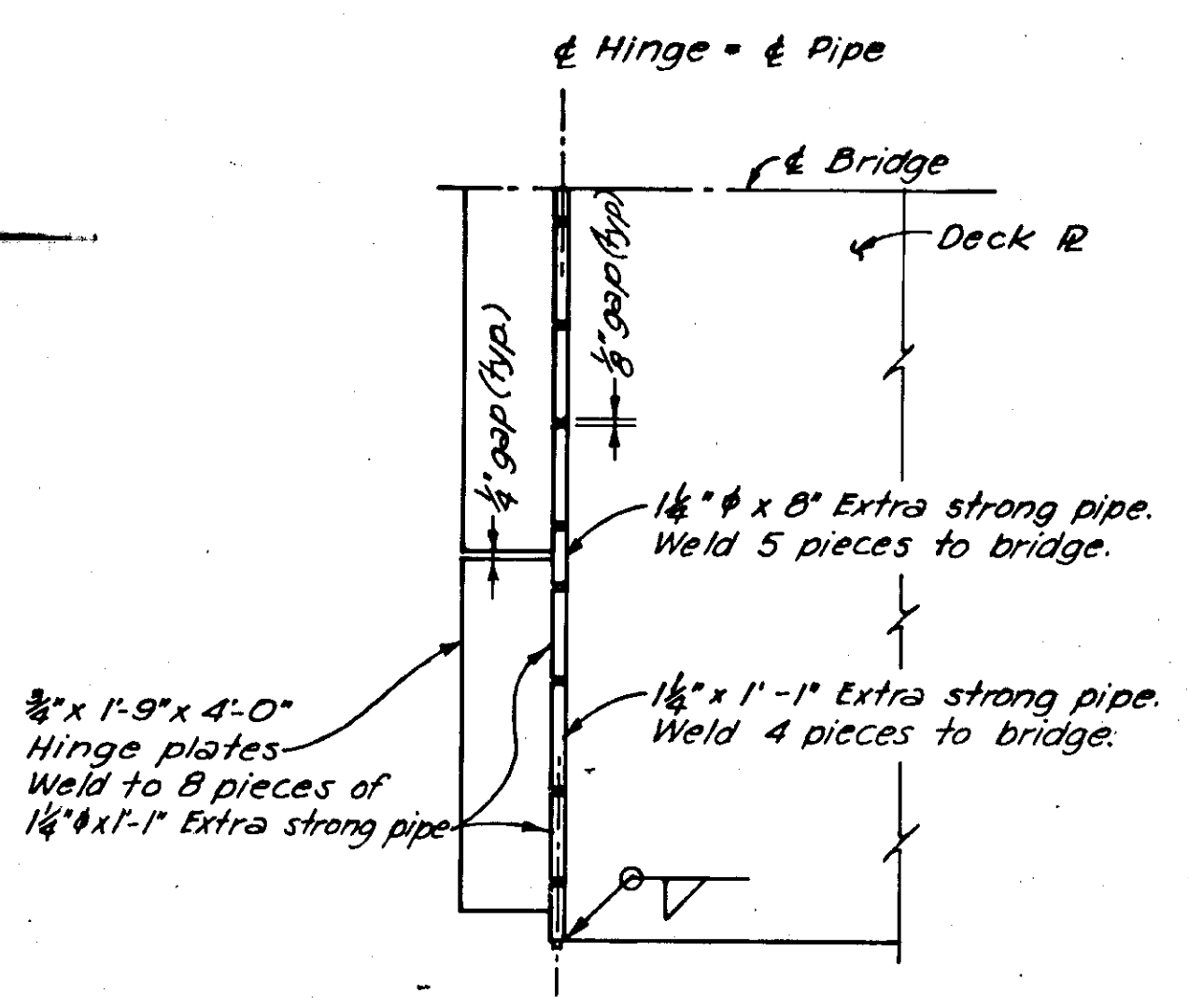
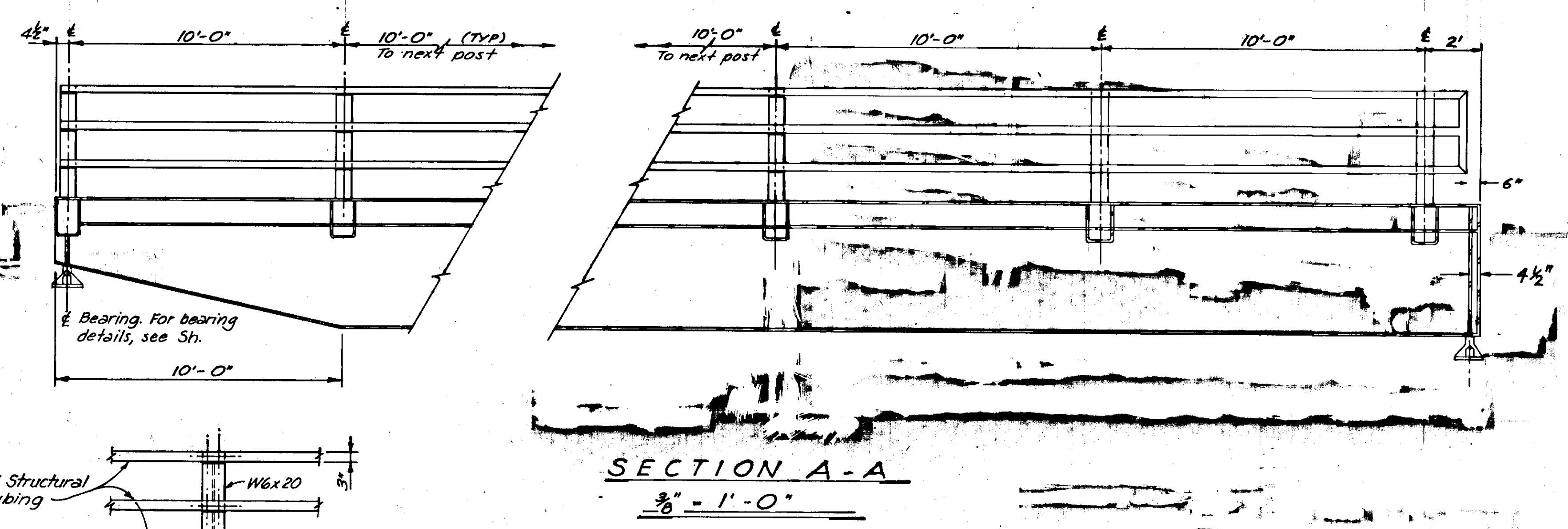
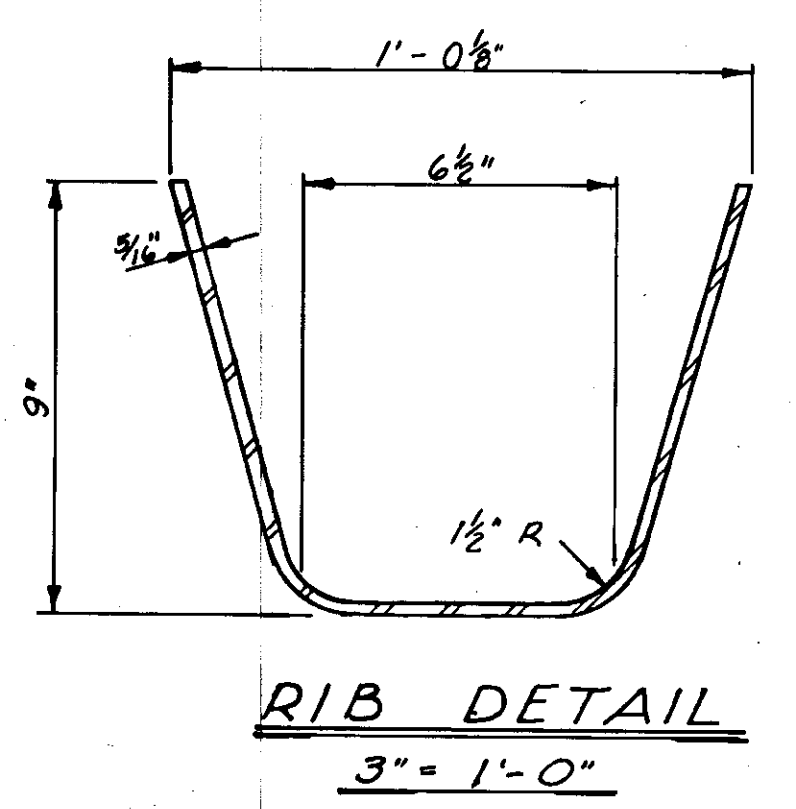
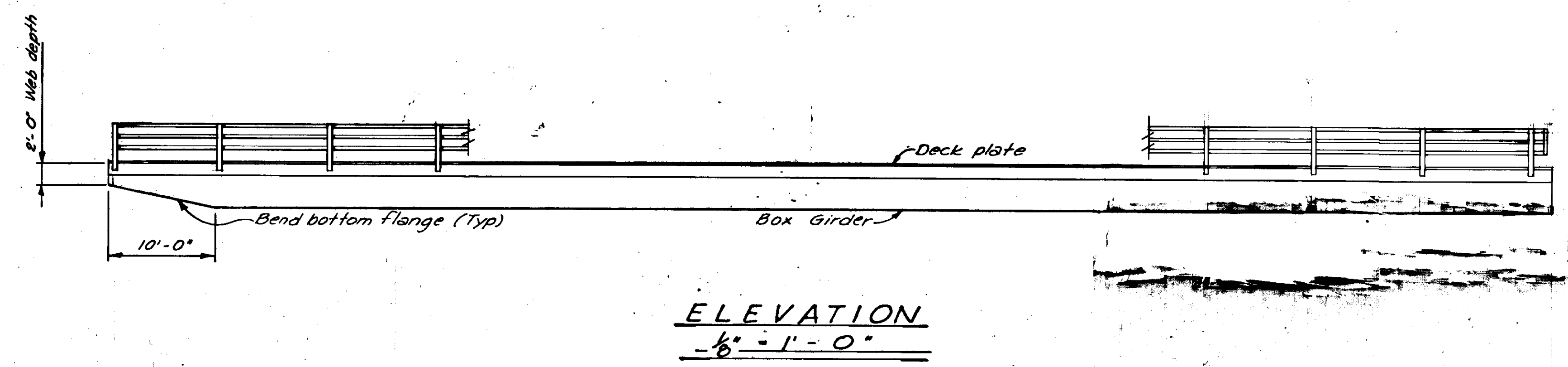
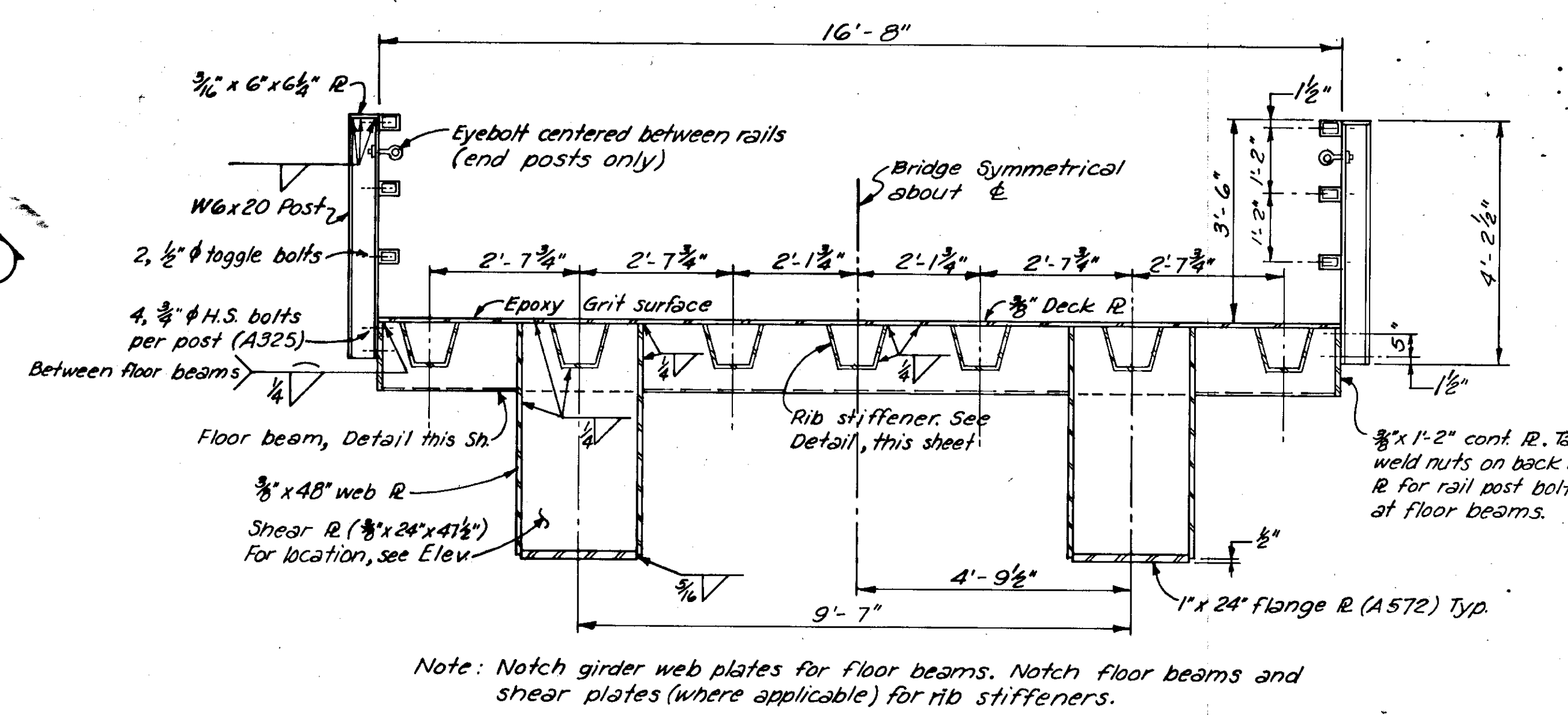
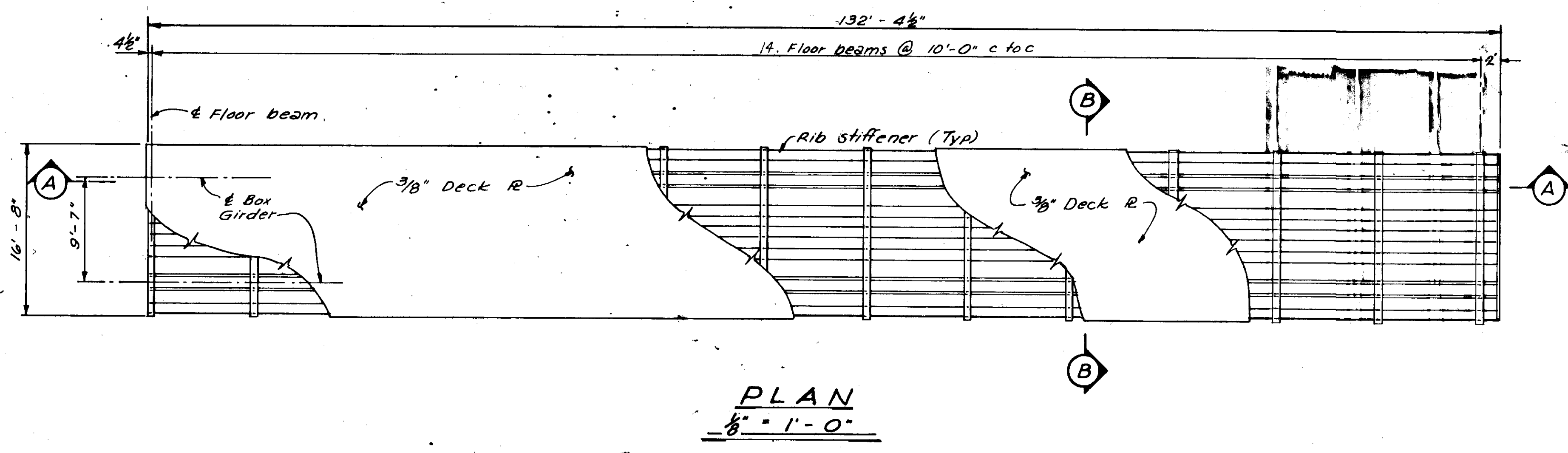


**SECTION H-H**  
 3" = 1'-0"

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.
ALASKA	75-R5-0926(2)	1976	10

**BEARING DETAILS**

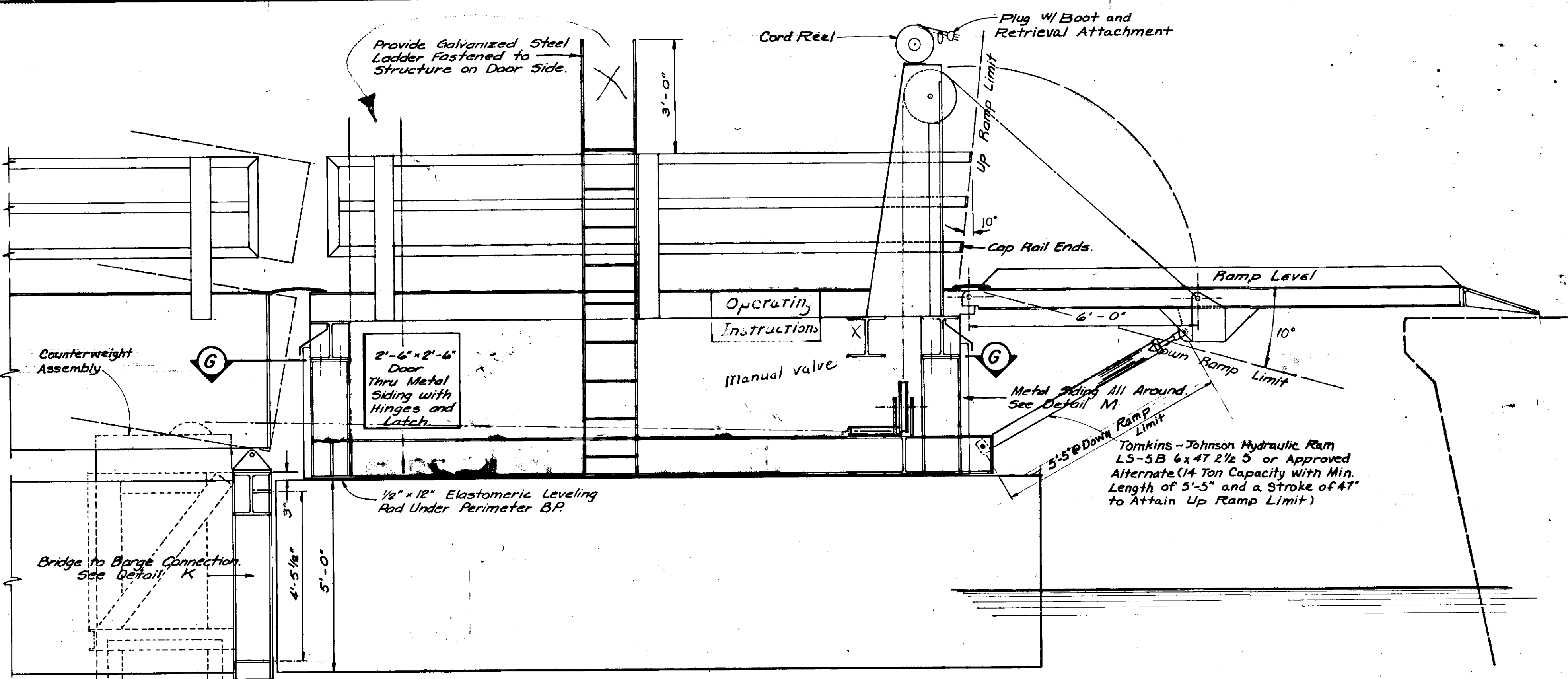
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DESIGNED _____	DRAWN _____	DIRECTOR _____
CHECKED _____	DATE _____	
PROJECT NUMBER _____	SHEET _____	OF _____



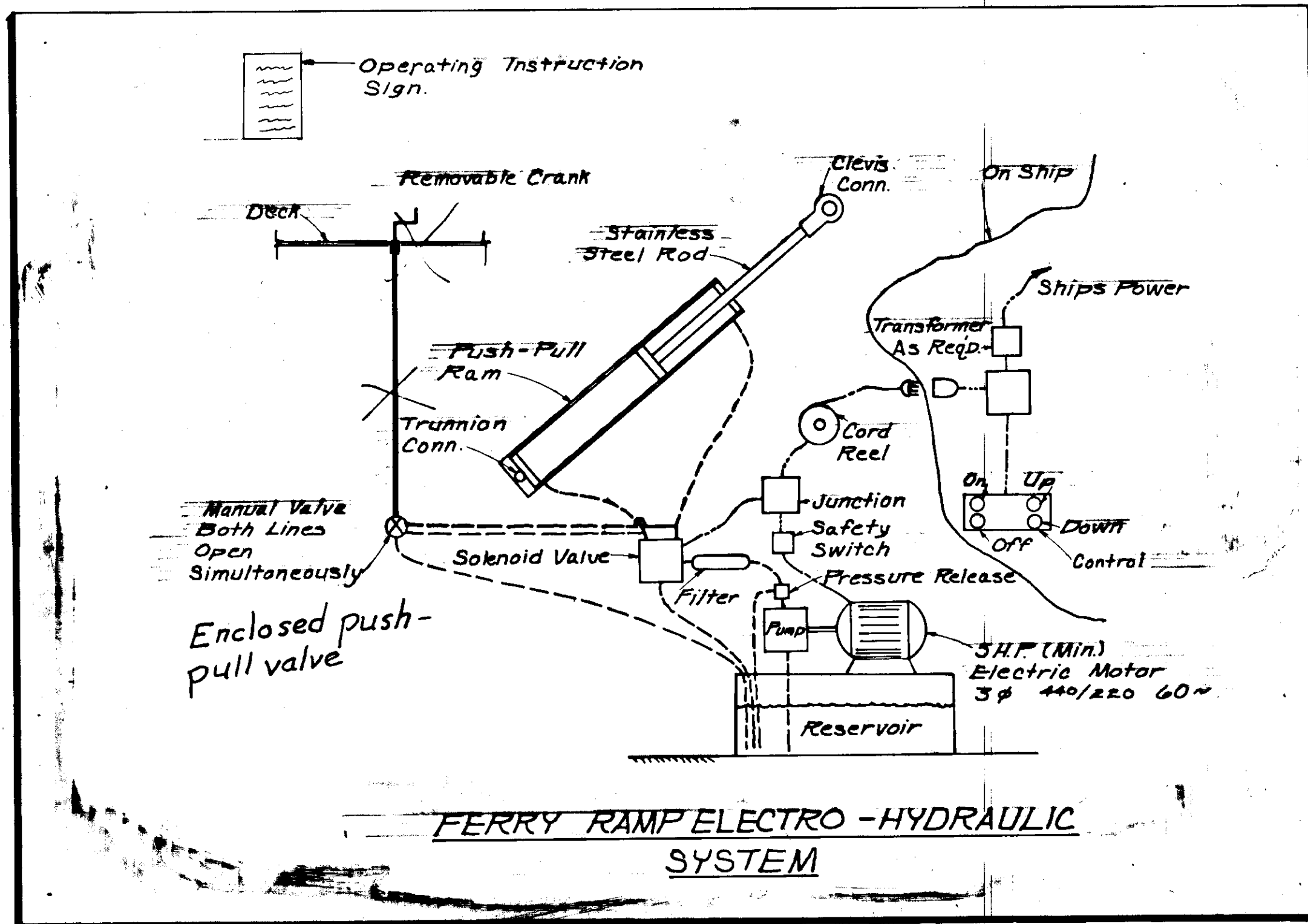
STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	PS-0926 (2)	1976	11	17

**TRANSFER BRIDGE DETAILS**

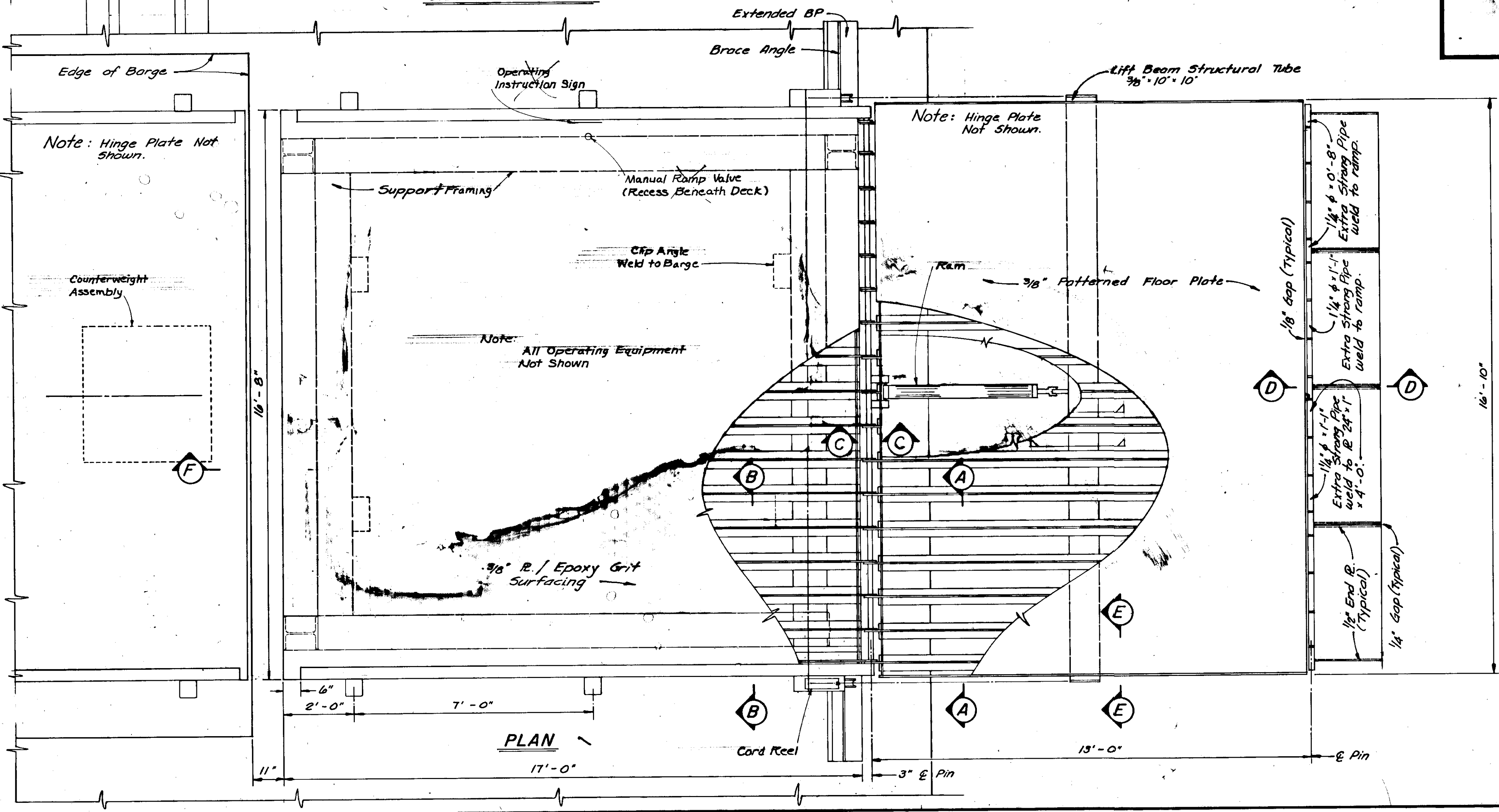
SCALE	SURVEYED	APPROVED
DESIGNED	DRAWN	
CHECKED	DATE	DIRECTOR
PROJECT NUMBER	SHEET	OF



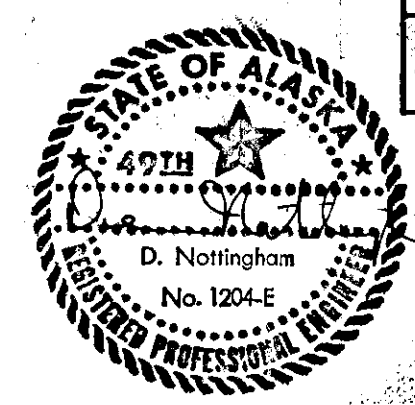
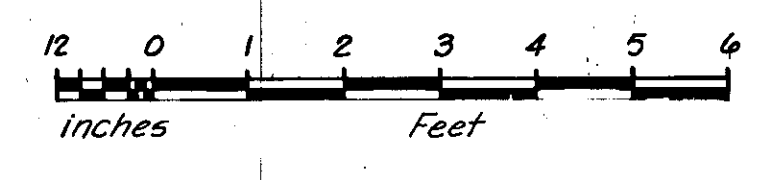
SIDE ELEVATION



FERRY RAMP ELECTRO-HYDRAULIC SYSTEM



PLAN

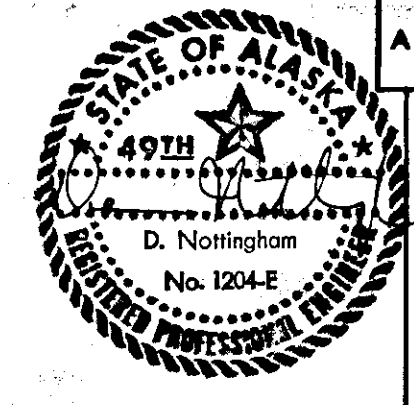
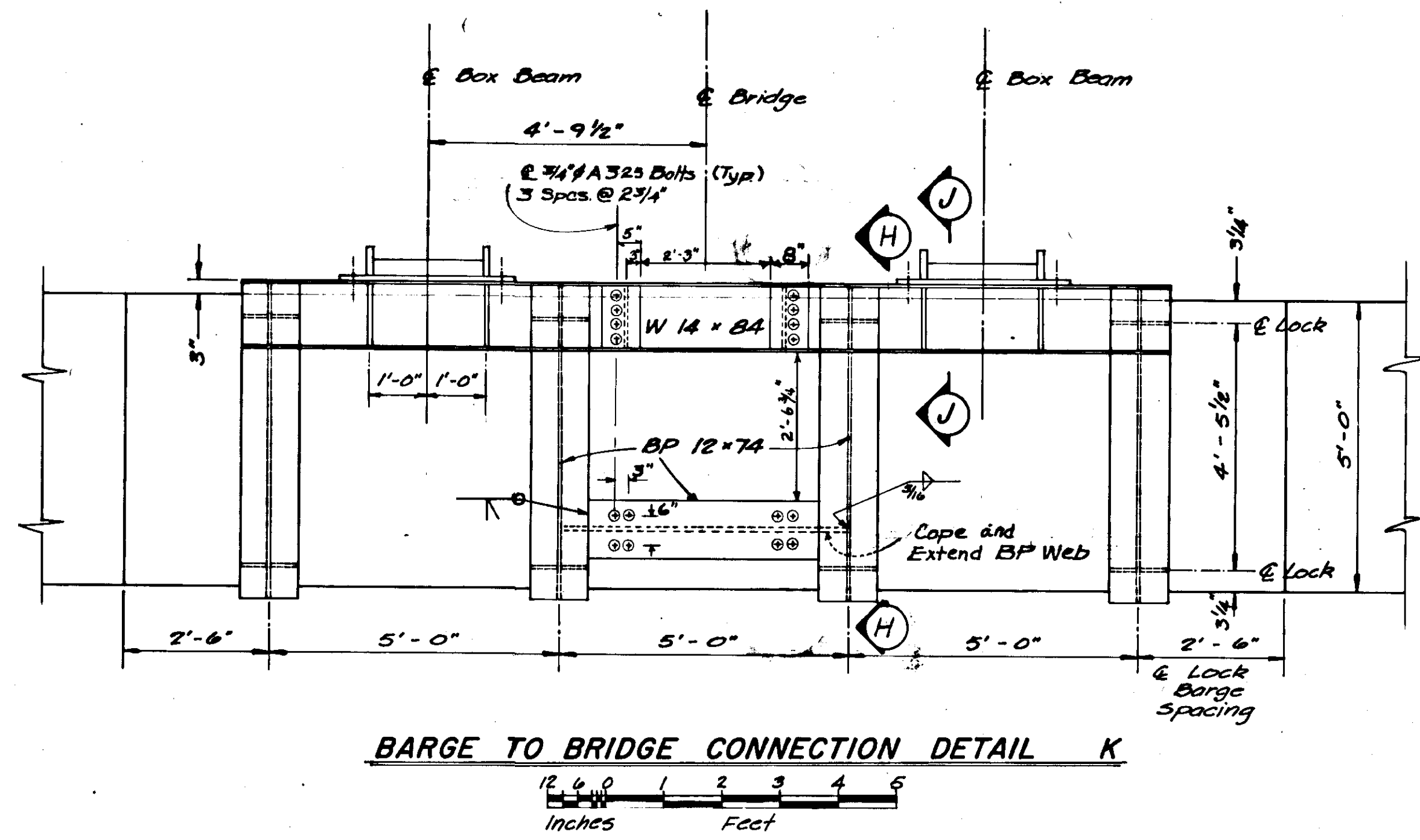
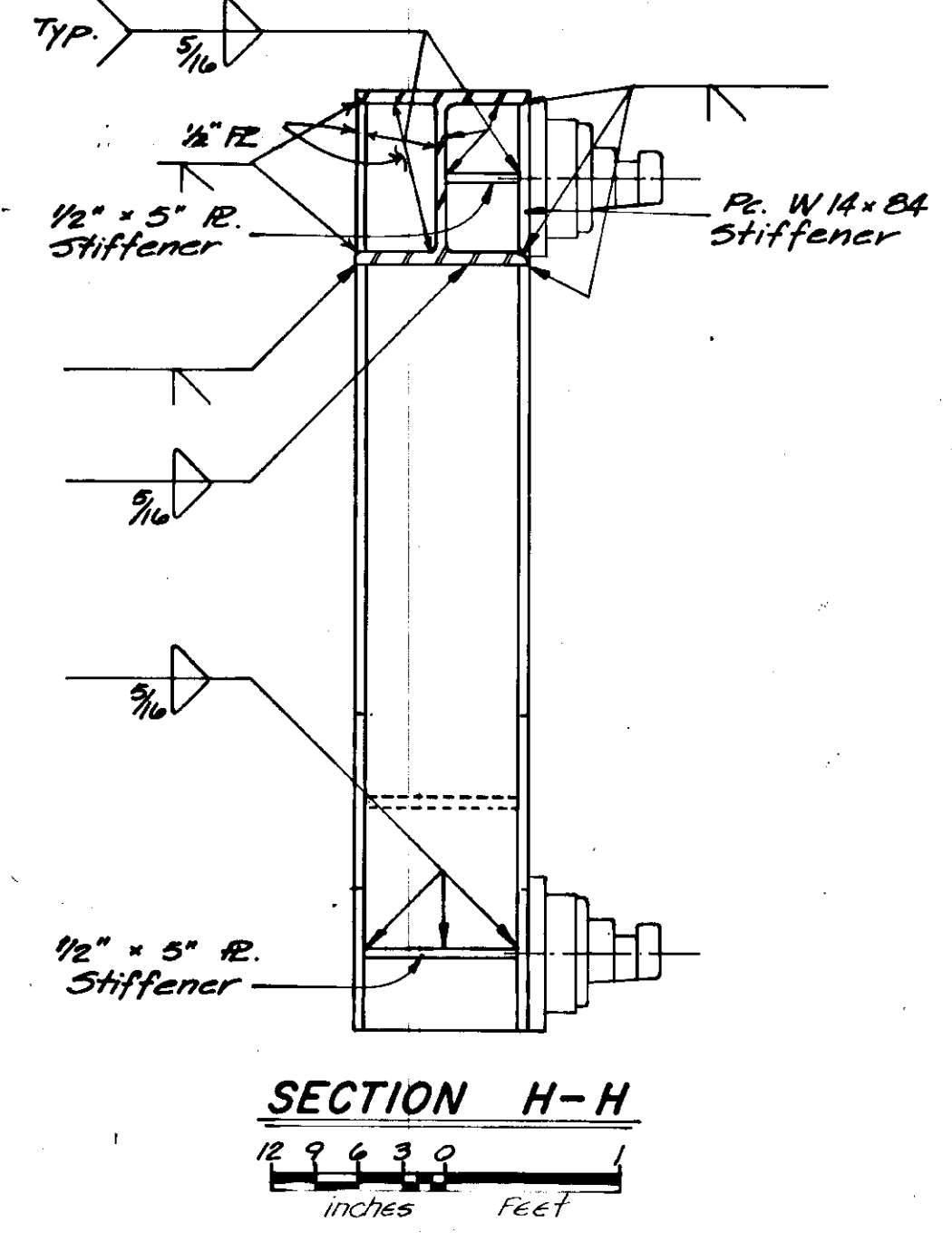
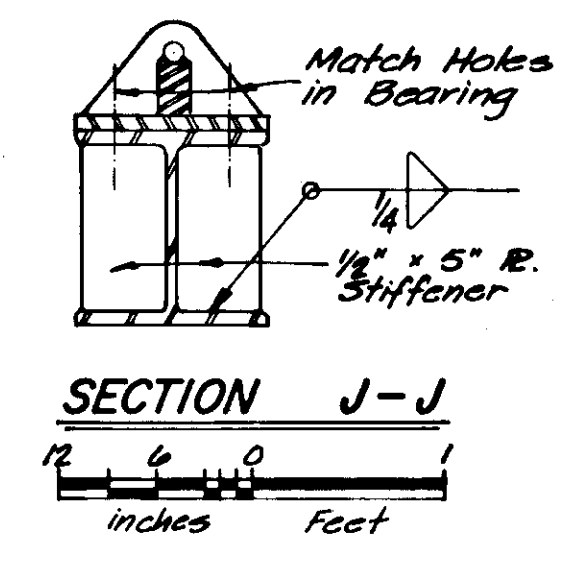
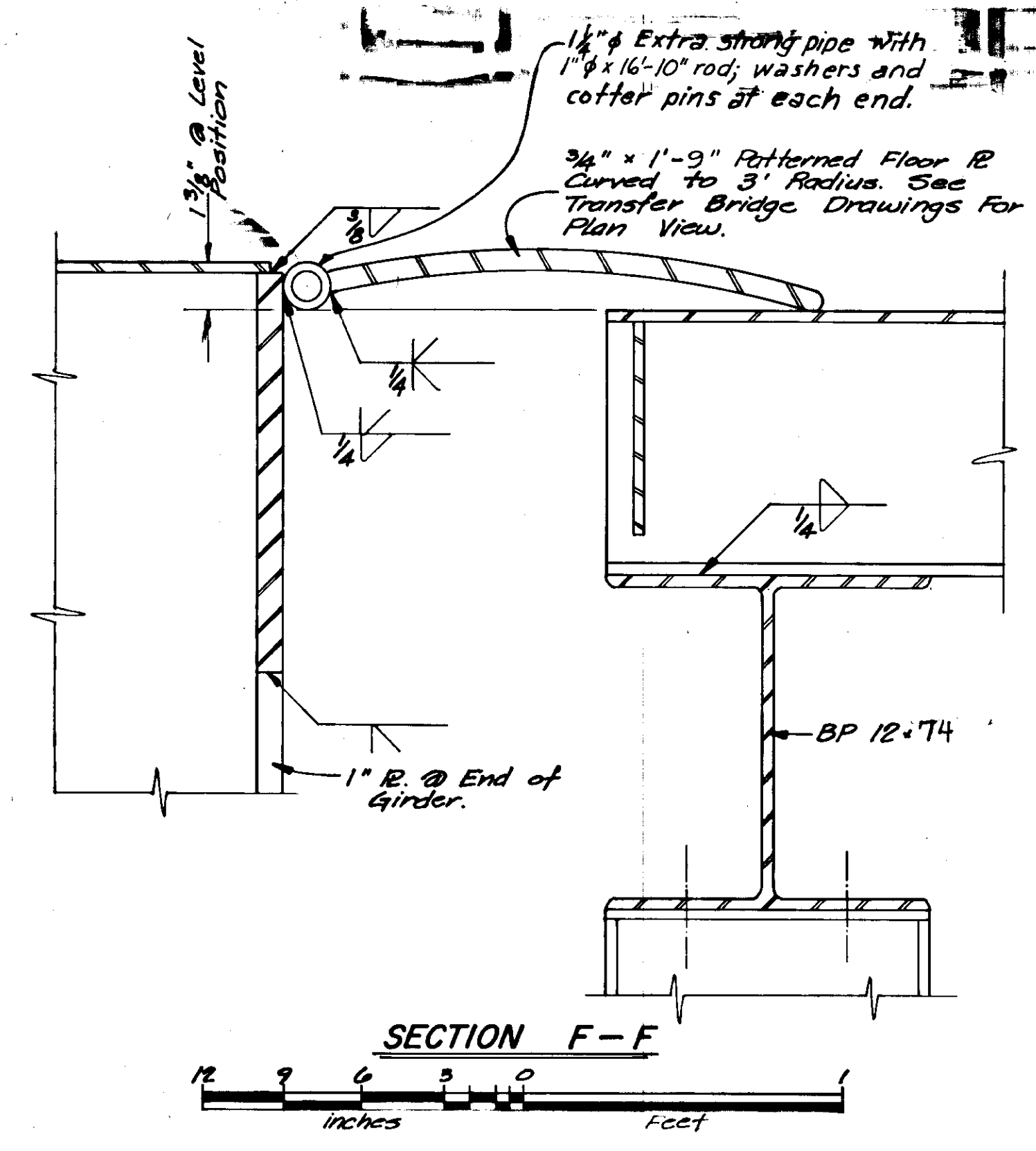
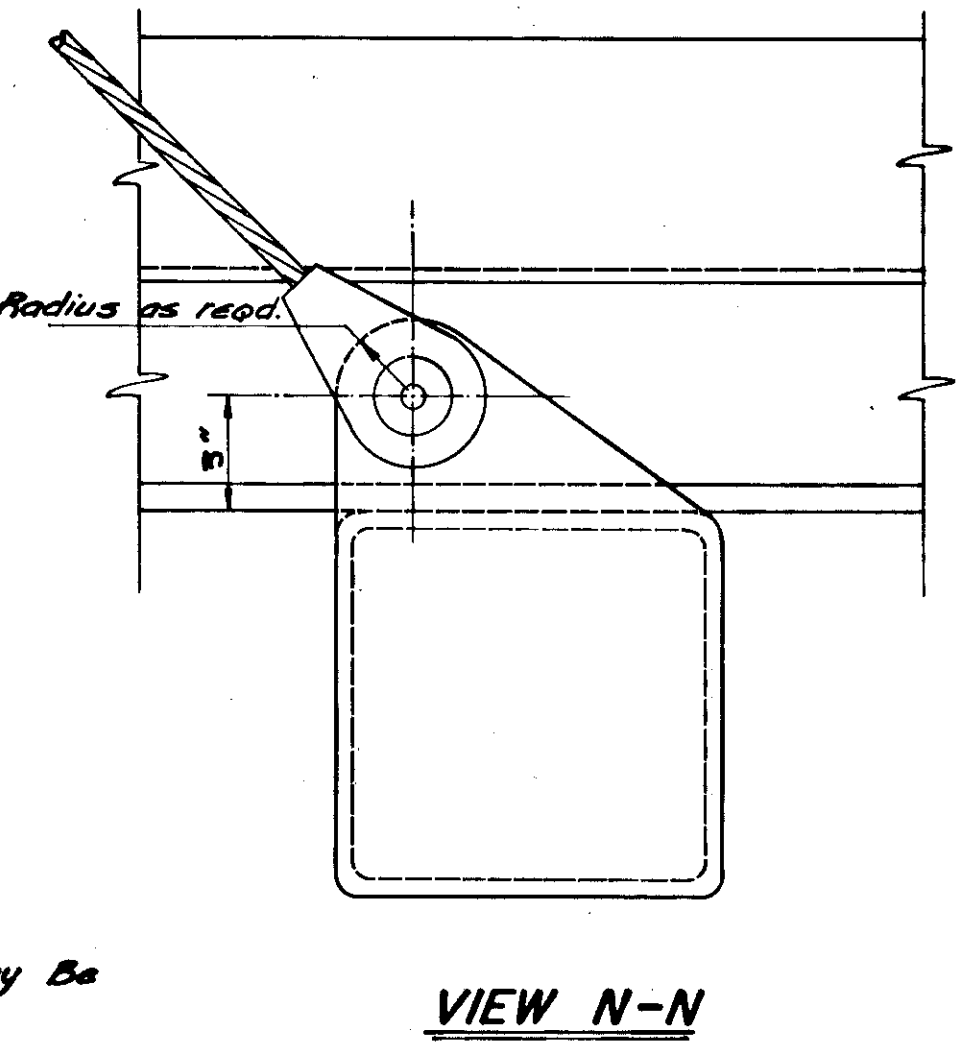
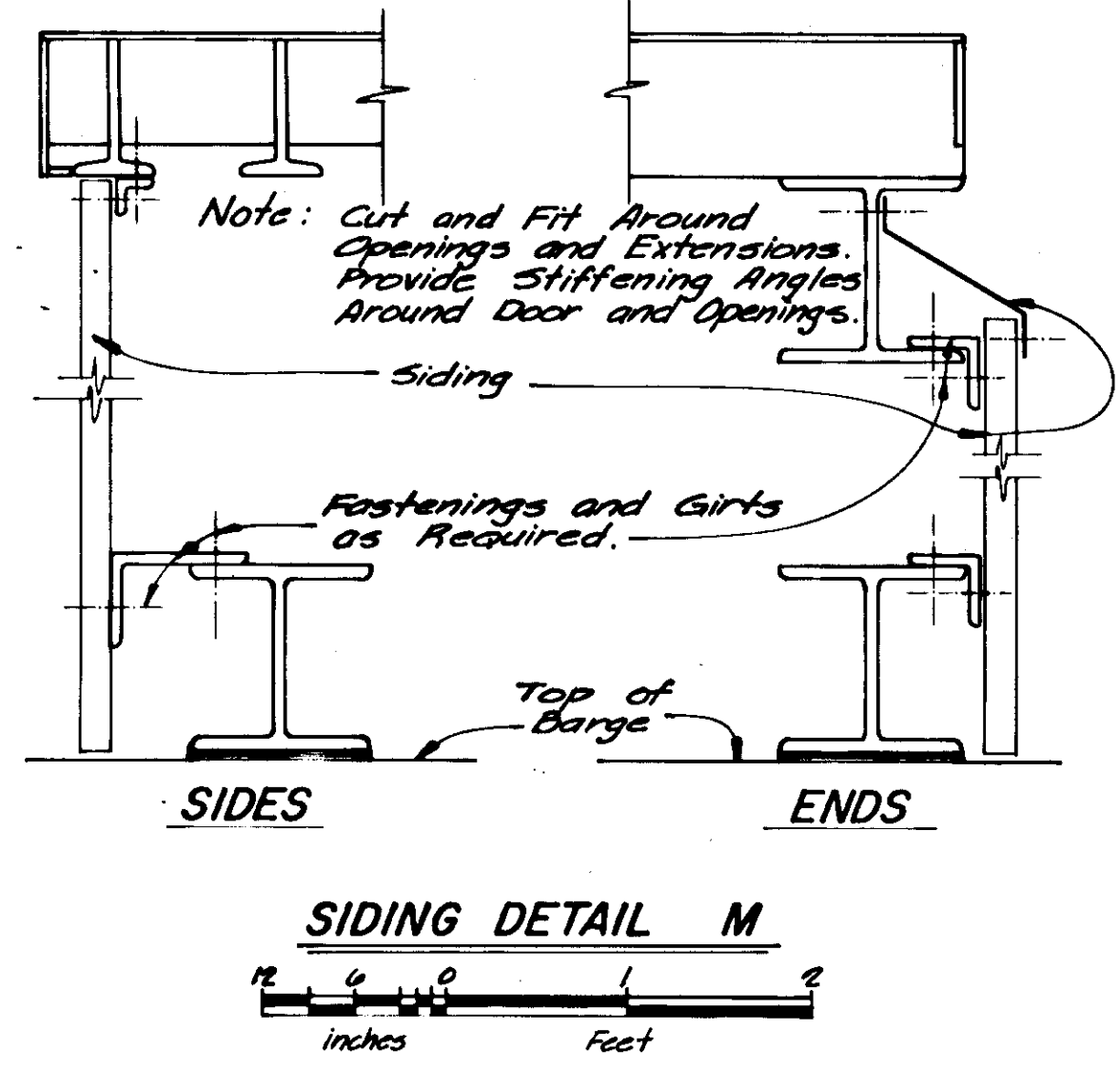
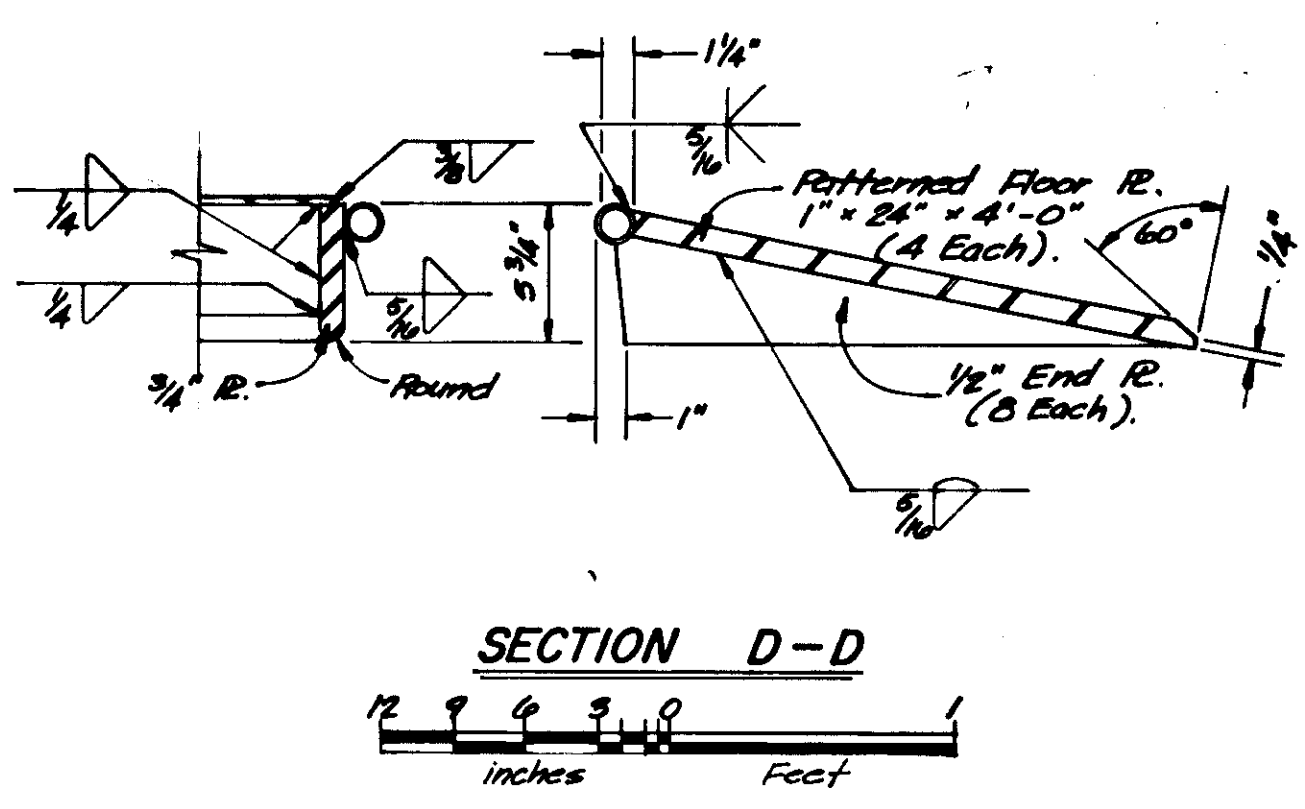
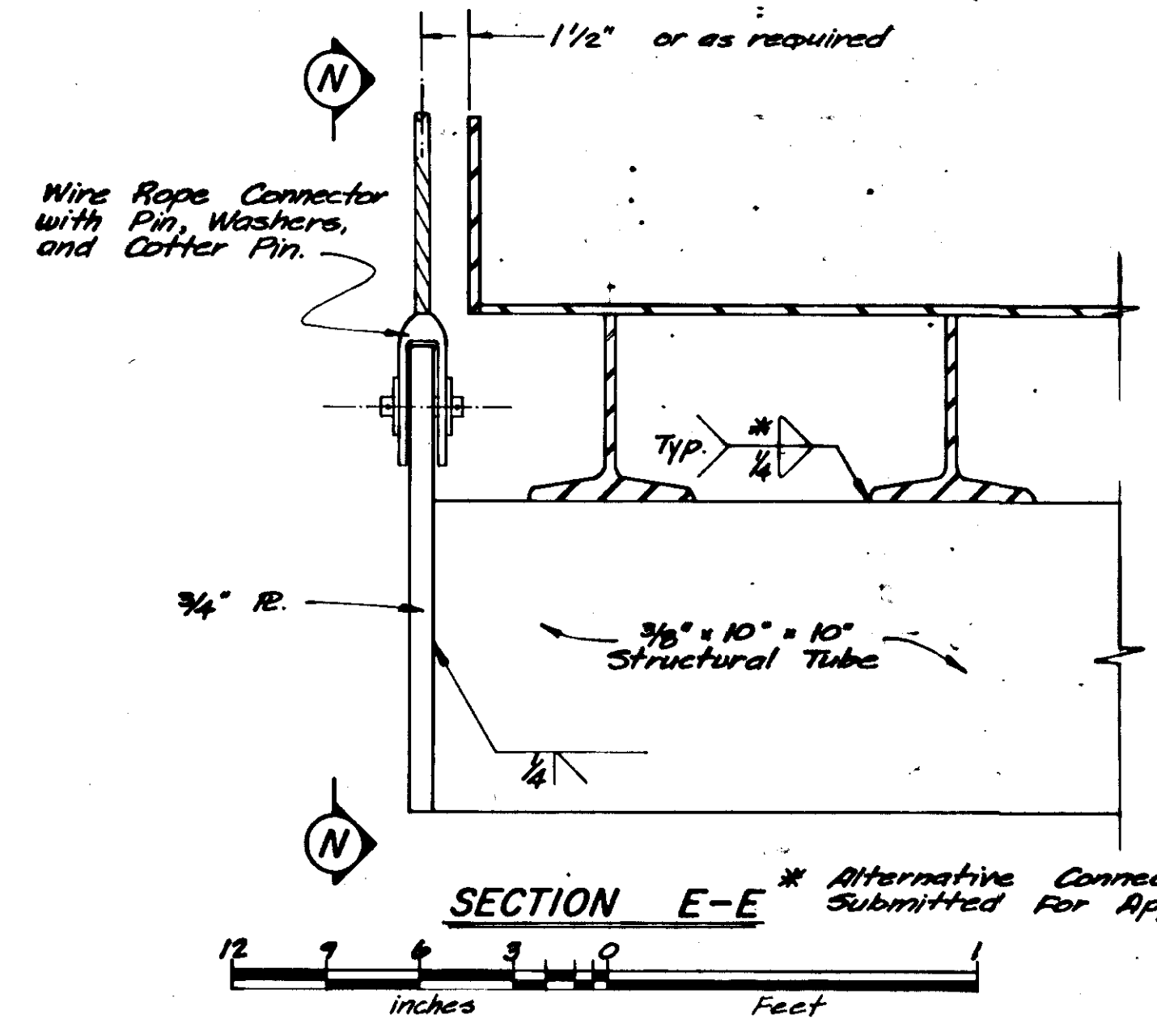
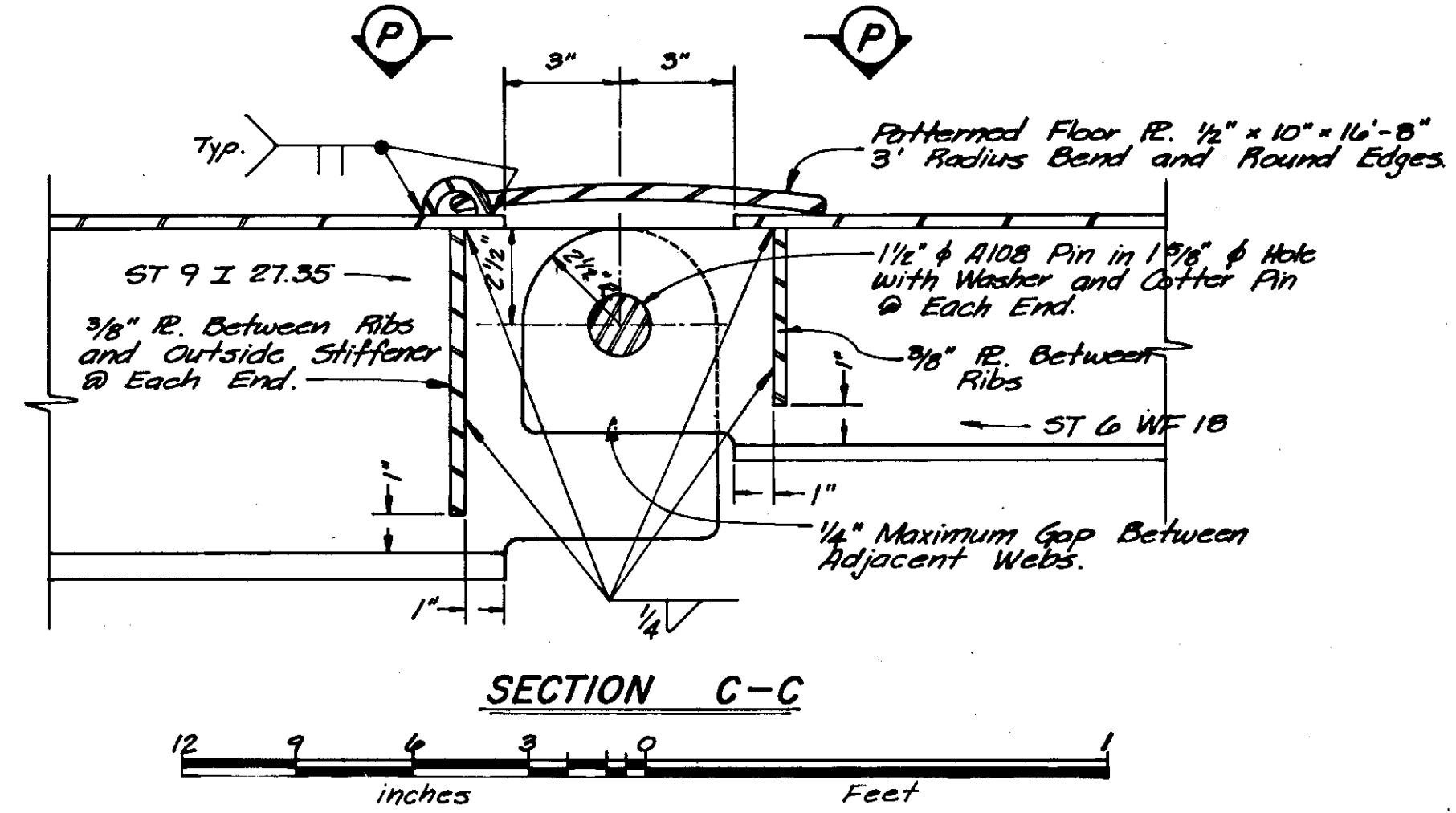
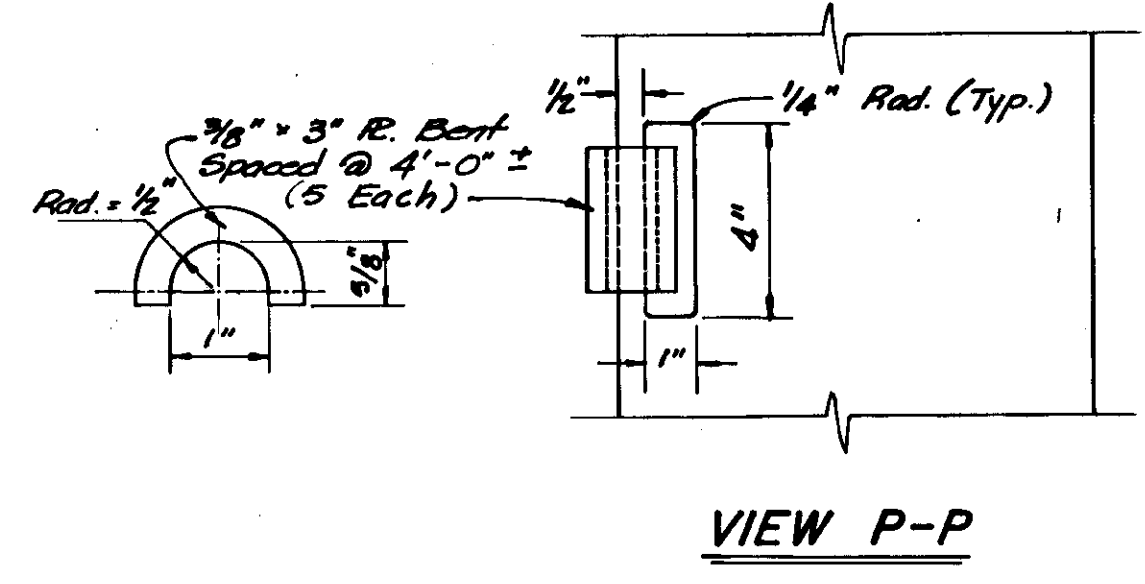
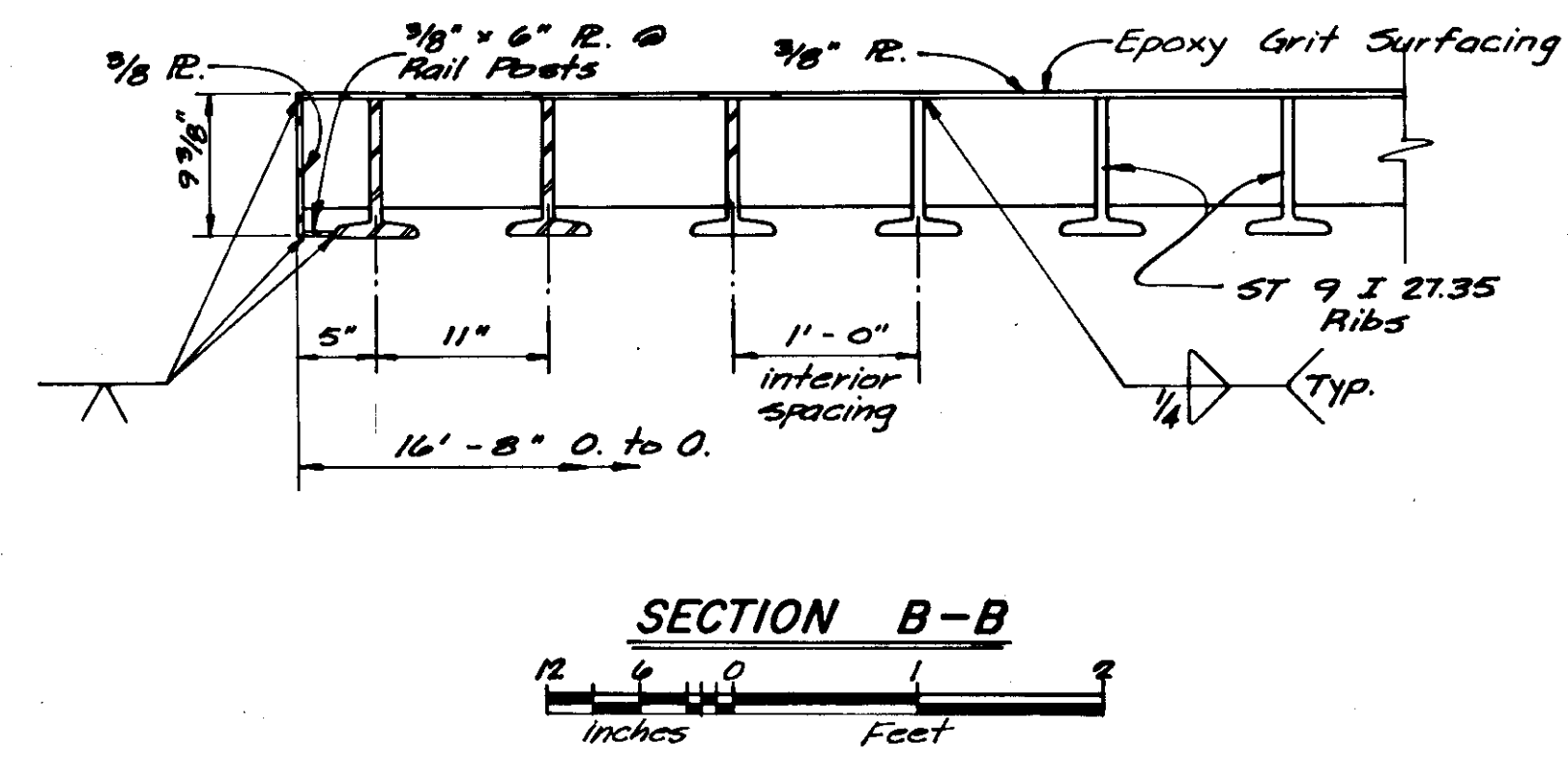
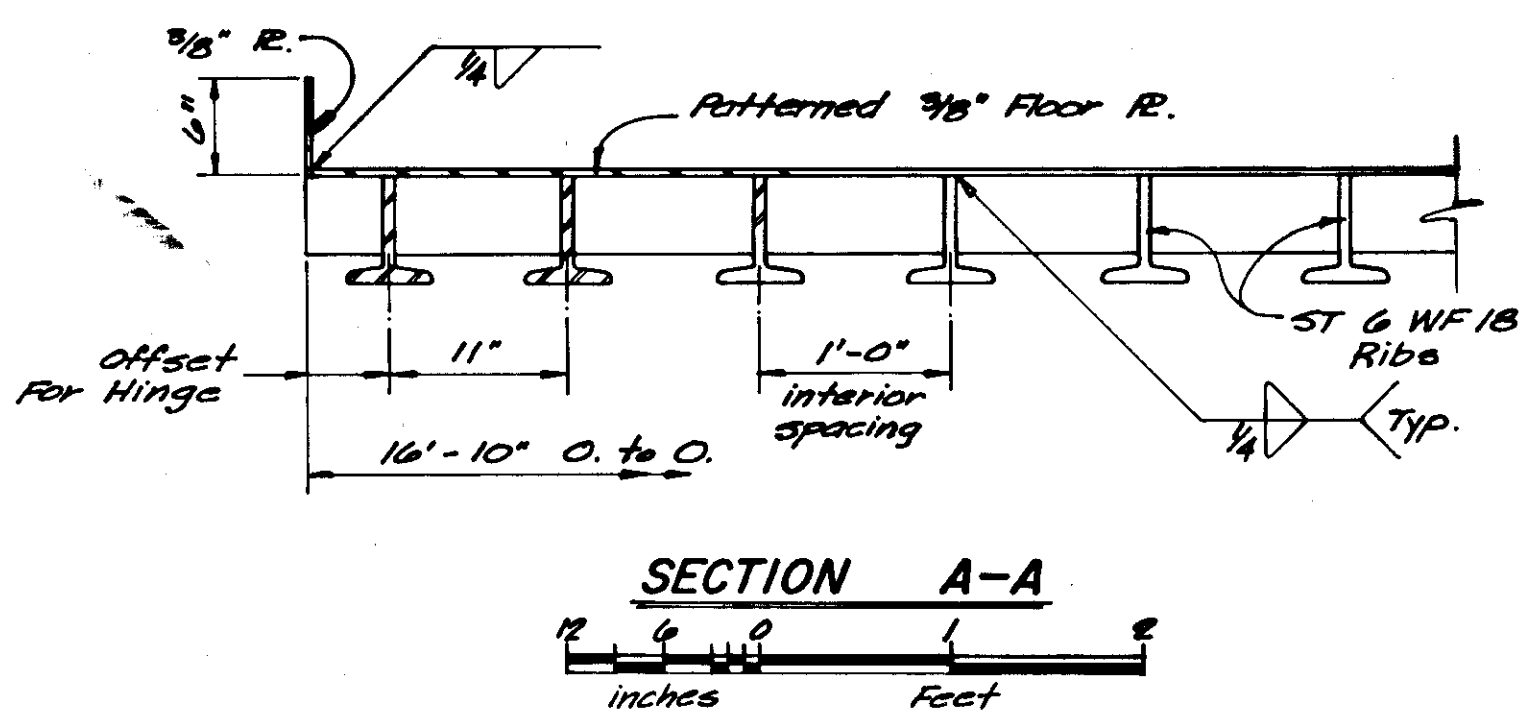


STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	TOS-RS-0926 (2)	1976	12	17

**TRANSFER BARGE,  
SUPERSTRUCTURE,  
& RAMP DETAILS**

**R & M CONSULTANTS, INC.**

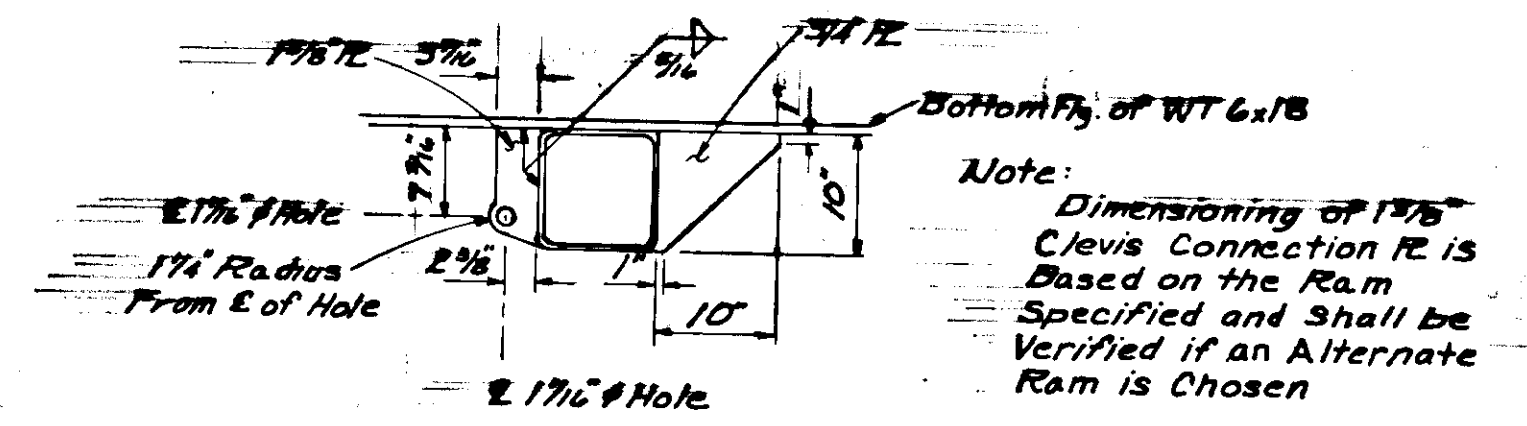
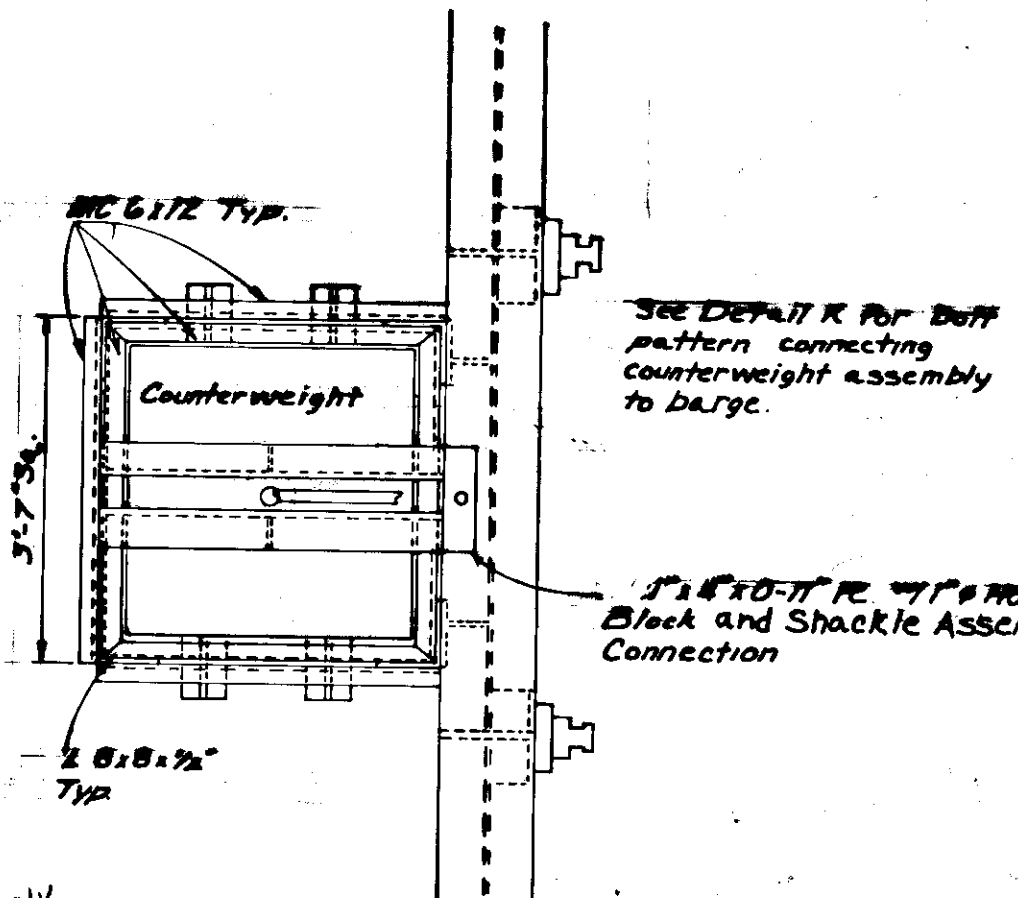




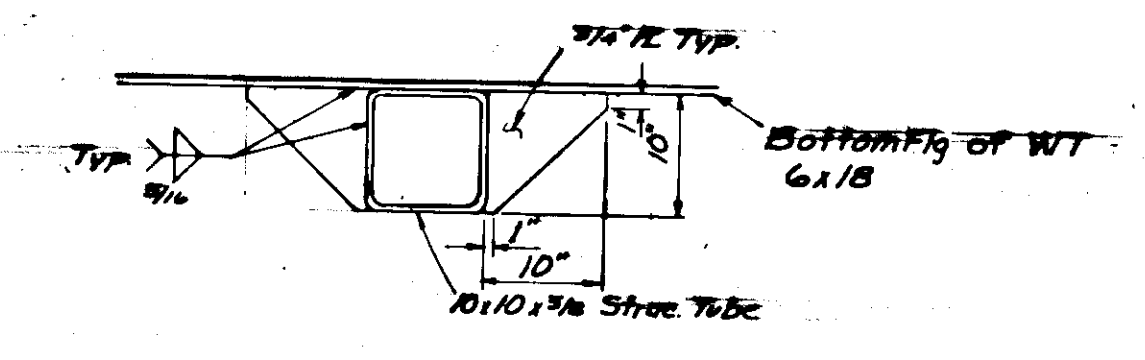
STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	RS-RS-0926 (2)	1976	14	17

**TRANSFER BARGE,  
SUPERSTRUCTURE,  
& RAMP DETAILS**

Block & Shackle Assembly  
For Hand Winch

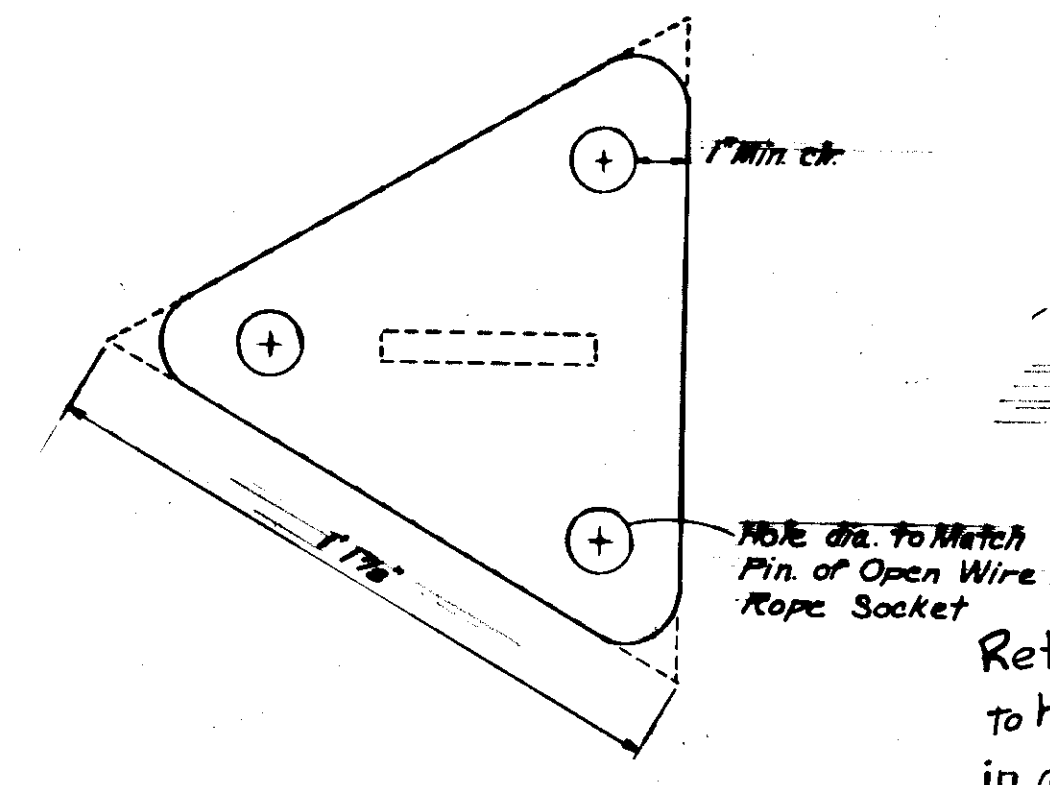


RAMP-RAM CONNECTION

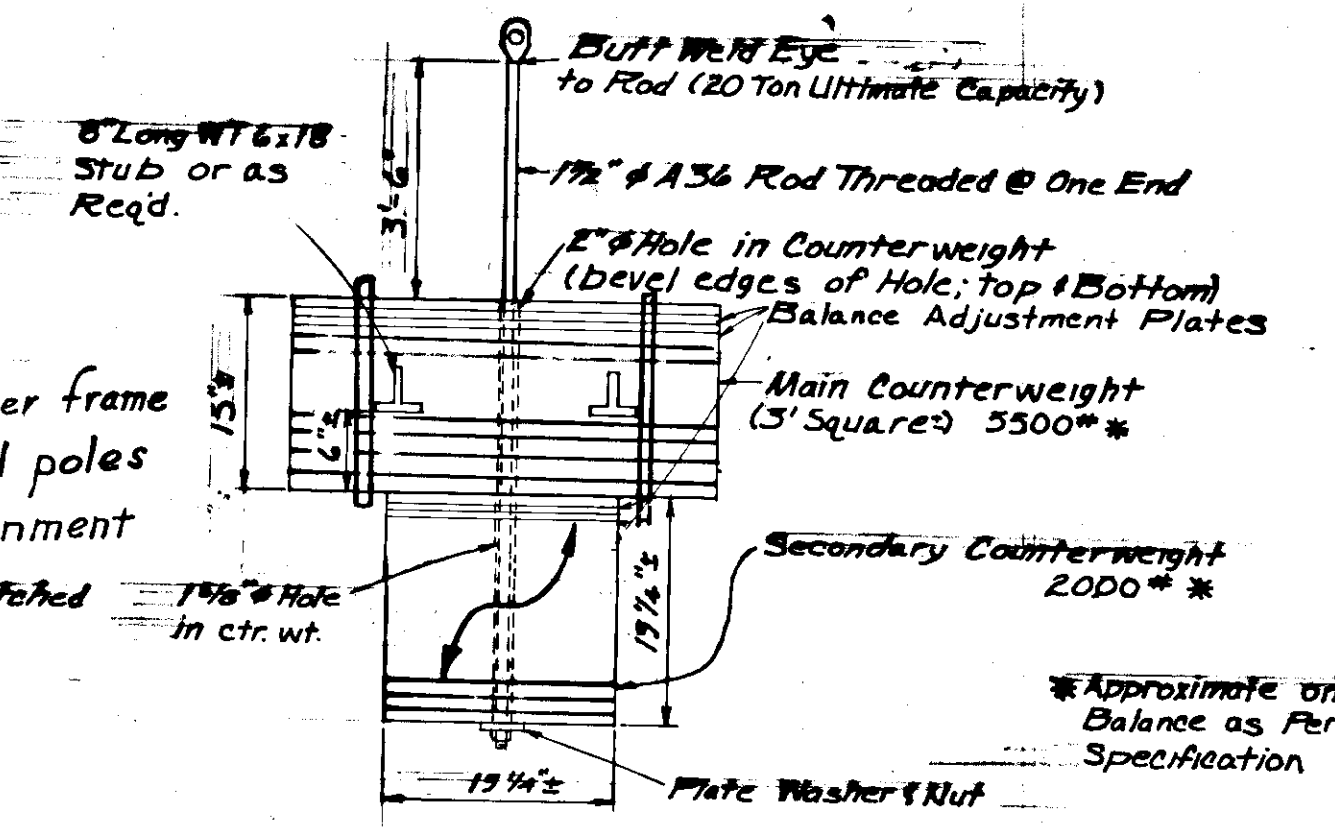


TUBE STIFFENER

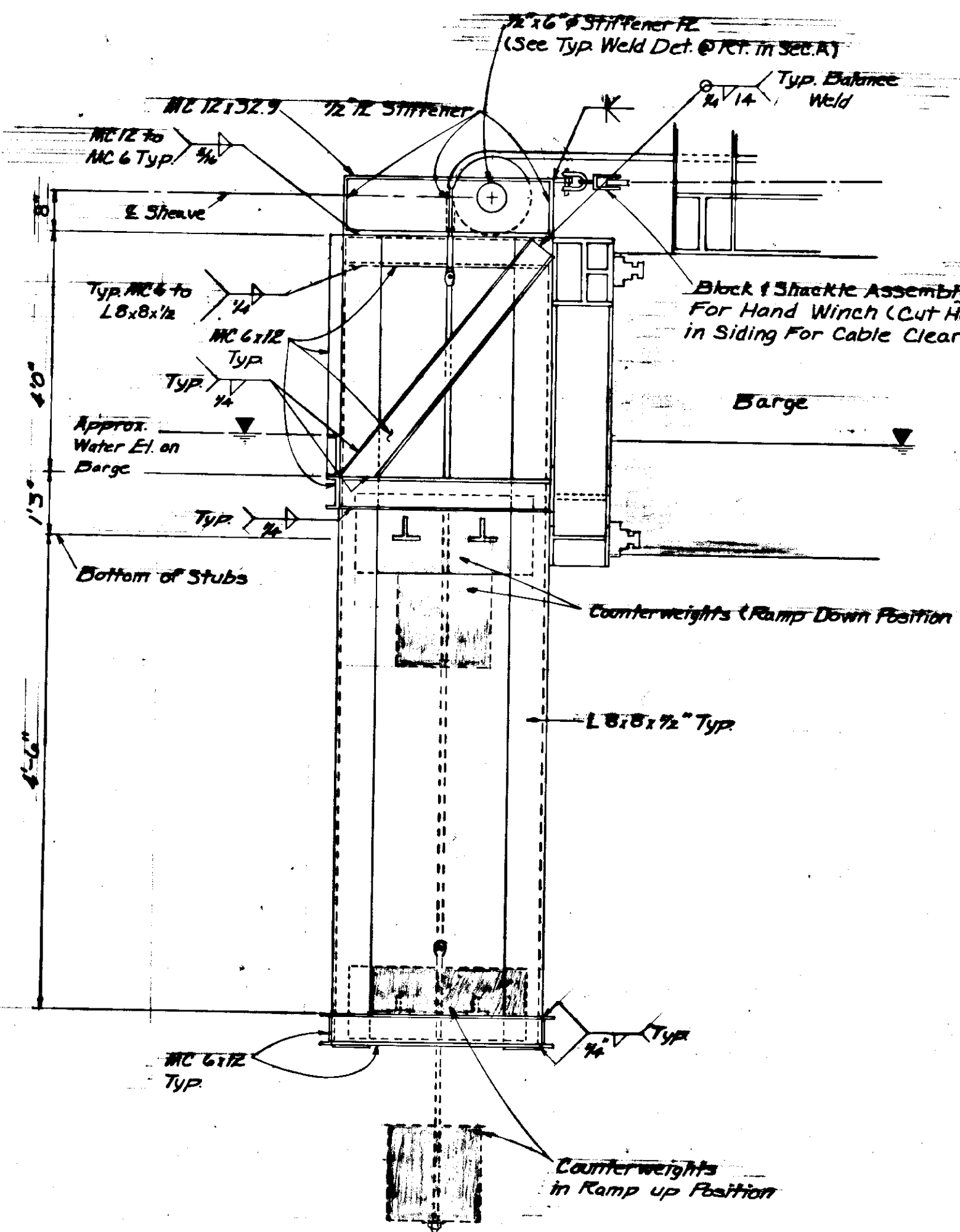
(One Req'd. Each Side of Ramp-Ram Connection On Adjacent WT)



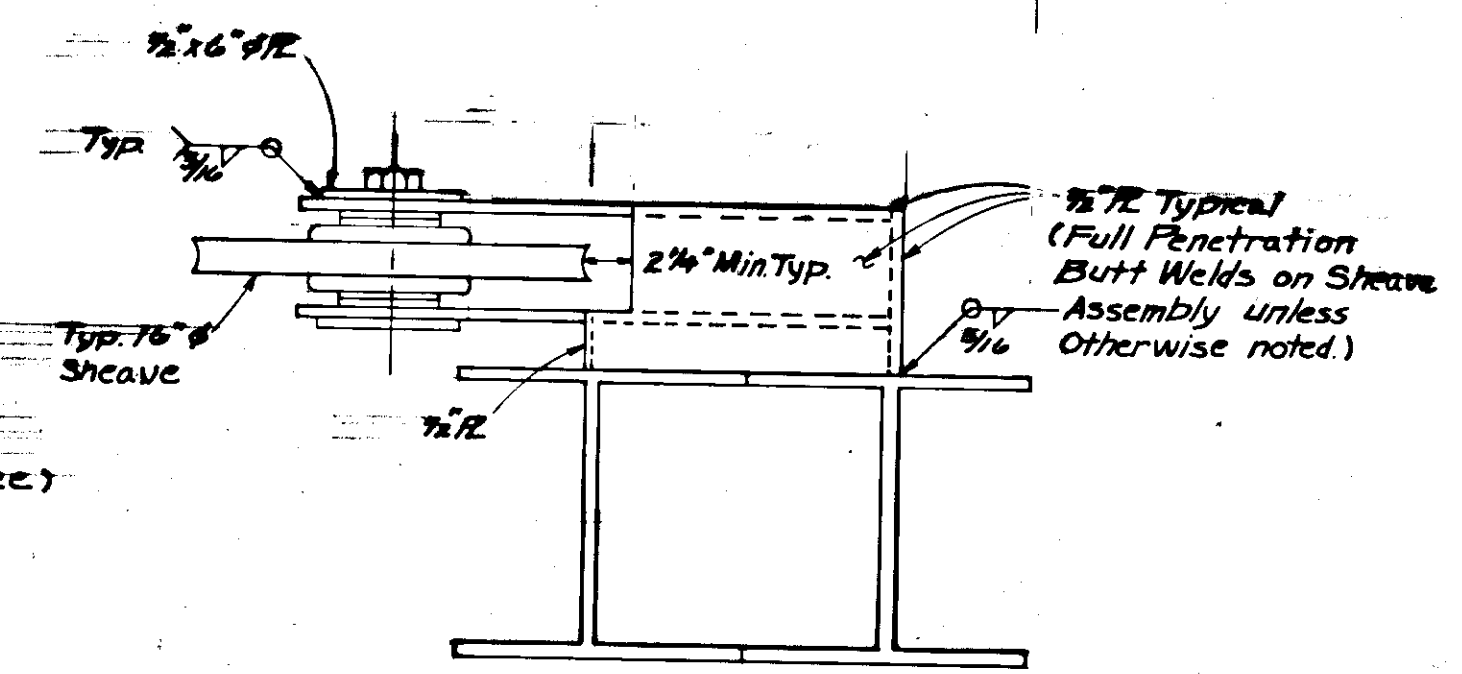
X CABLE CONNECTOR PLATE



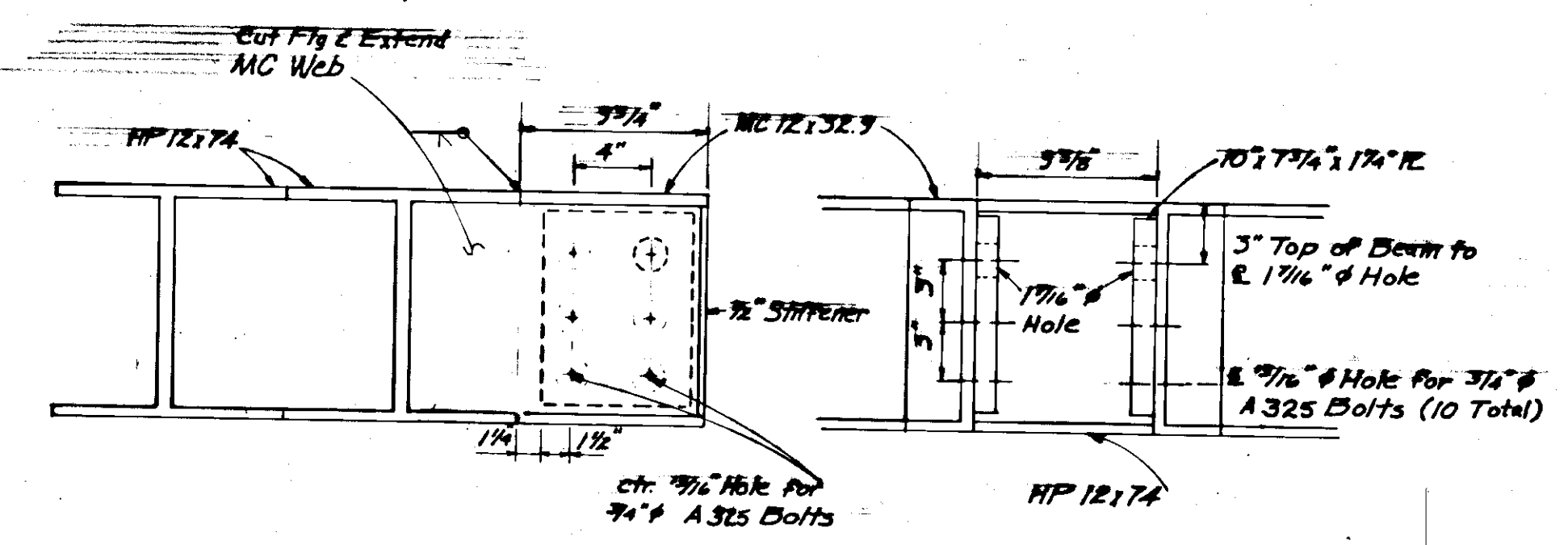
COUNTERWEIGHT



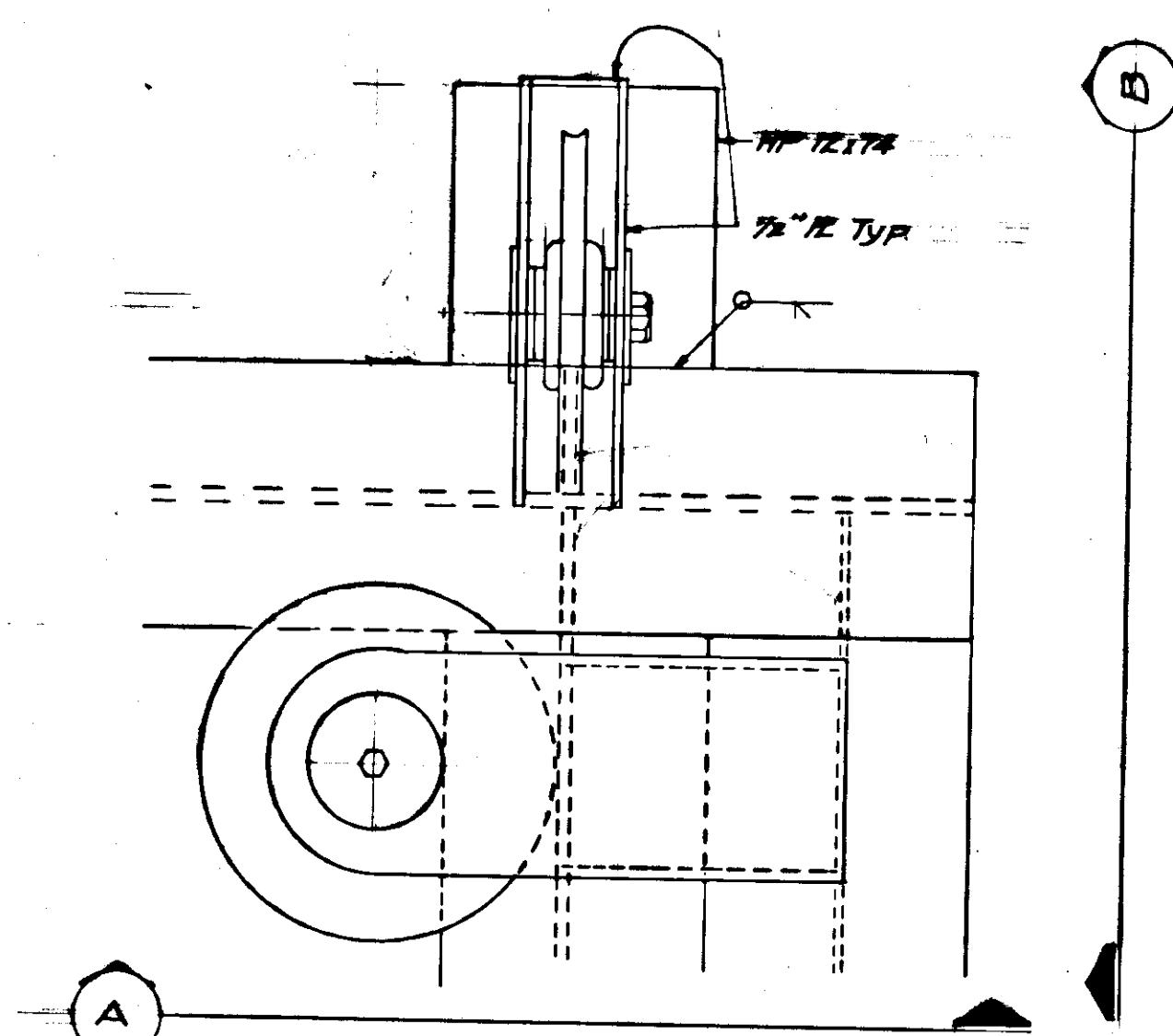
W COUNTERWEIGHT ASSEMBLY



SECTION A

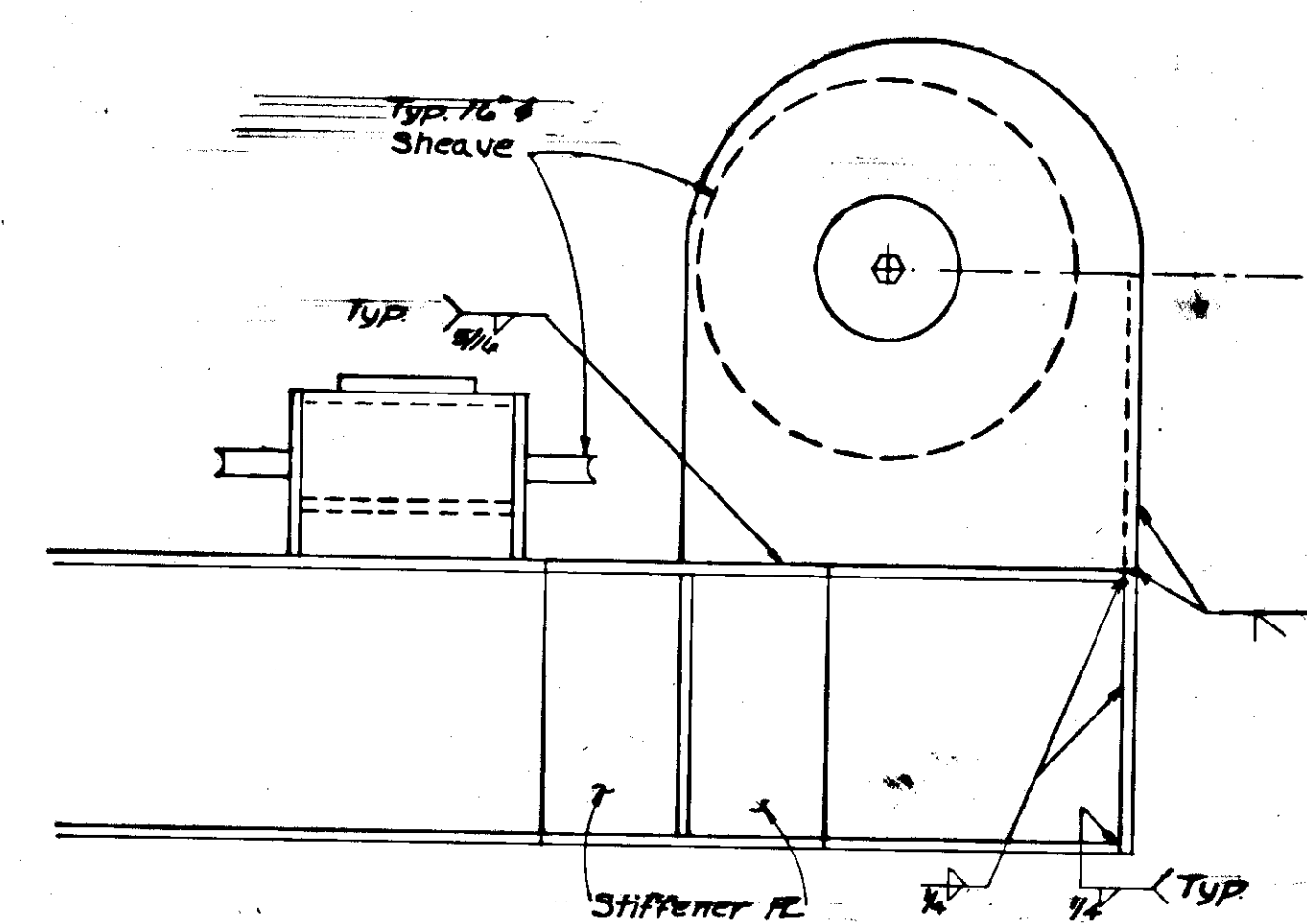


Z RAM TRUNION CONNECTION ASSEMBLY

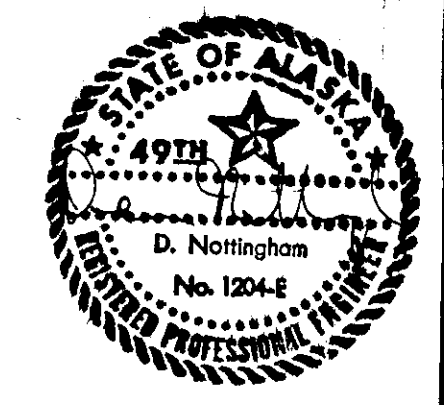


Y LOWER SHEAVE ASSEMBLY CONNECTION

Sheave Mount May be Modified to Current Mounting Stds. Proper Alignment of Sheaves is Necessary and Should be attained by Using Shims.



SECTION B



STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	TQS-RS 0926 (2)	1976	15	17

TRANSFER BARGE, SUPERSTRUCTURE, & RAMP DETAILS

Use waste flange for end edges or 3/4" x 12" R, fabricator option

\*Chains to have 25 Ton min. break strength. Attach in tight position with appropriate hardware & shackles of equal strength.

Construct from W 36 x 135

Round all WF corners 3" radius

1"  $\phi$  bolt w/nut & washers in 1 1/8"  $\phi$  holes

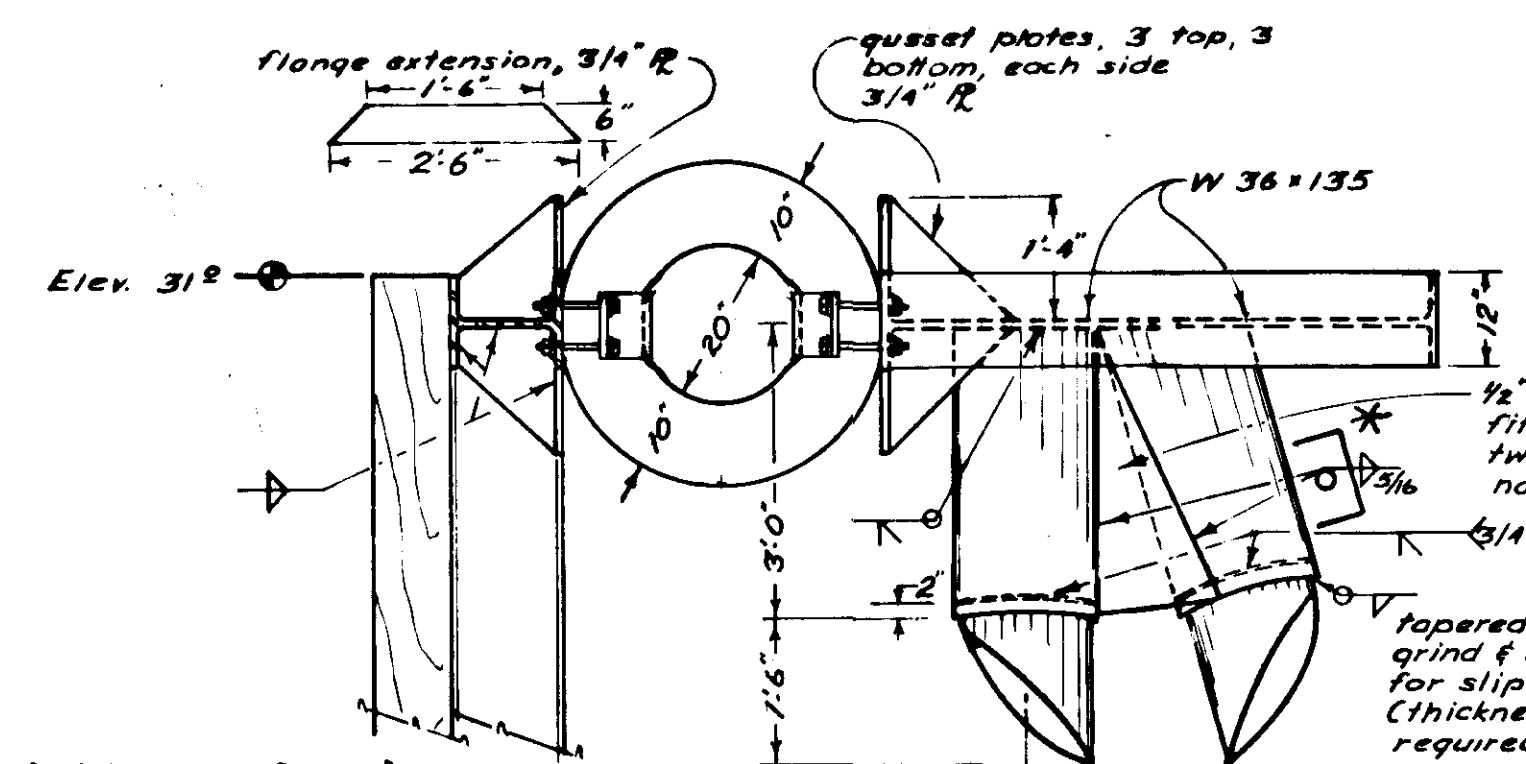
40" O.D. x 20" I.D. rubber cylindrical fender x 1'-6" long Goodyear or better.

1"  $\phi$  economy head bolts, 2" countersink each 10" x 10", each water

**A-1** **PLAN LAYOUT**  
Scale 1/2" = 1'-0"

grind all welds smooth, round all edges  
2 1/2" sched 40 steel pipe  
12" sched 40 steel pipe  
field weld 5/16" to steel deck

**A-2** **BOLLARD**  
Scale 1/2" = 1'-0"

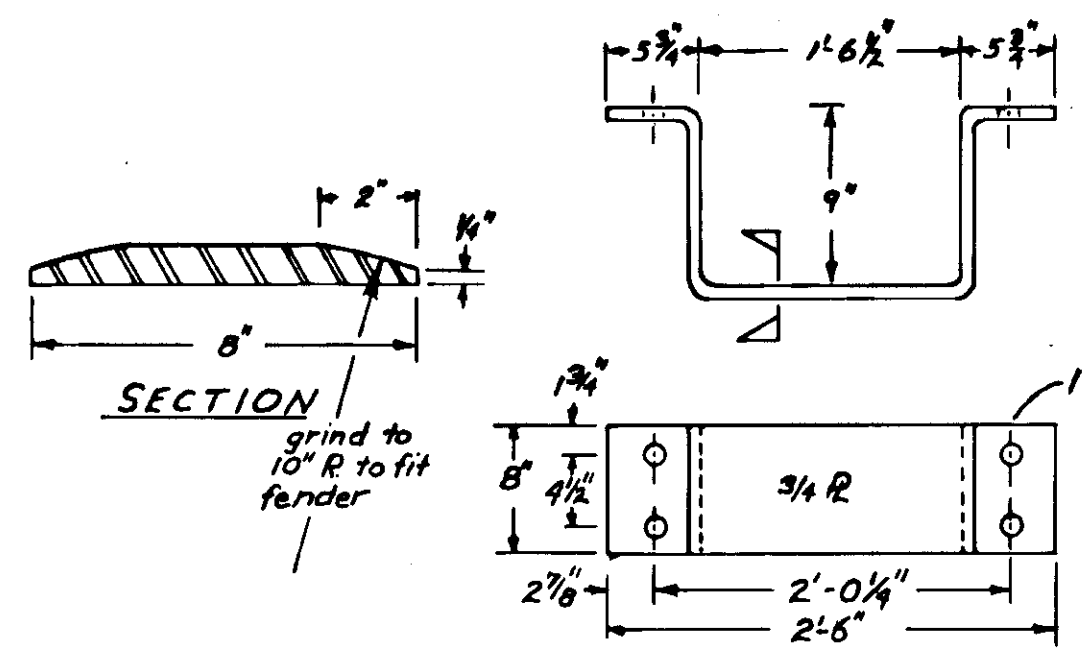


(fit to water flange) edge. 2 1/2"  $\phi$  x 3' std. wall steel pipe, extends 2' above beam

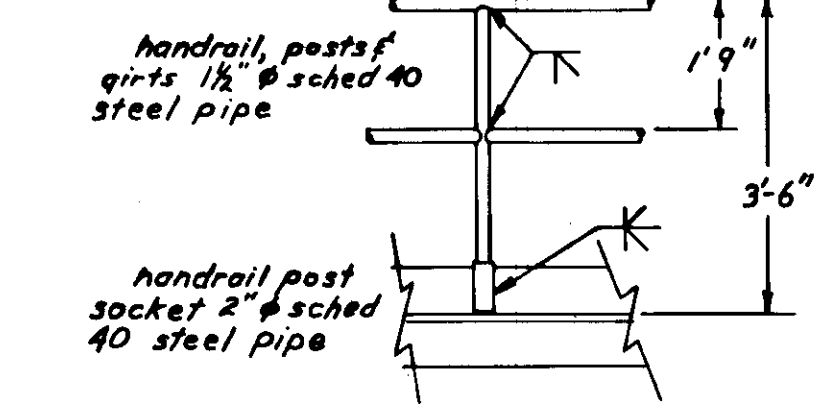
18"  $\phi$  pipe, min. 1/2" wall thickness

Note: All steel tubes to be filled with uniformly graded sand and gravel mix.

**A-3** **DOLPHIN CAP & FENDER DETAILS**  
Scale 1/2" = 1'-0"

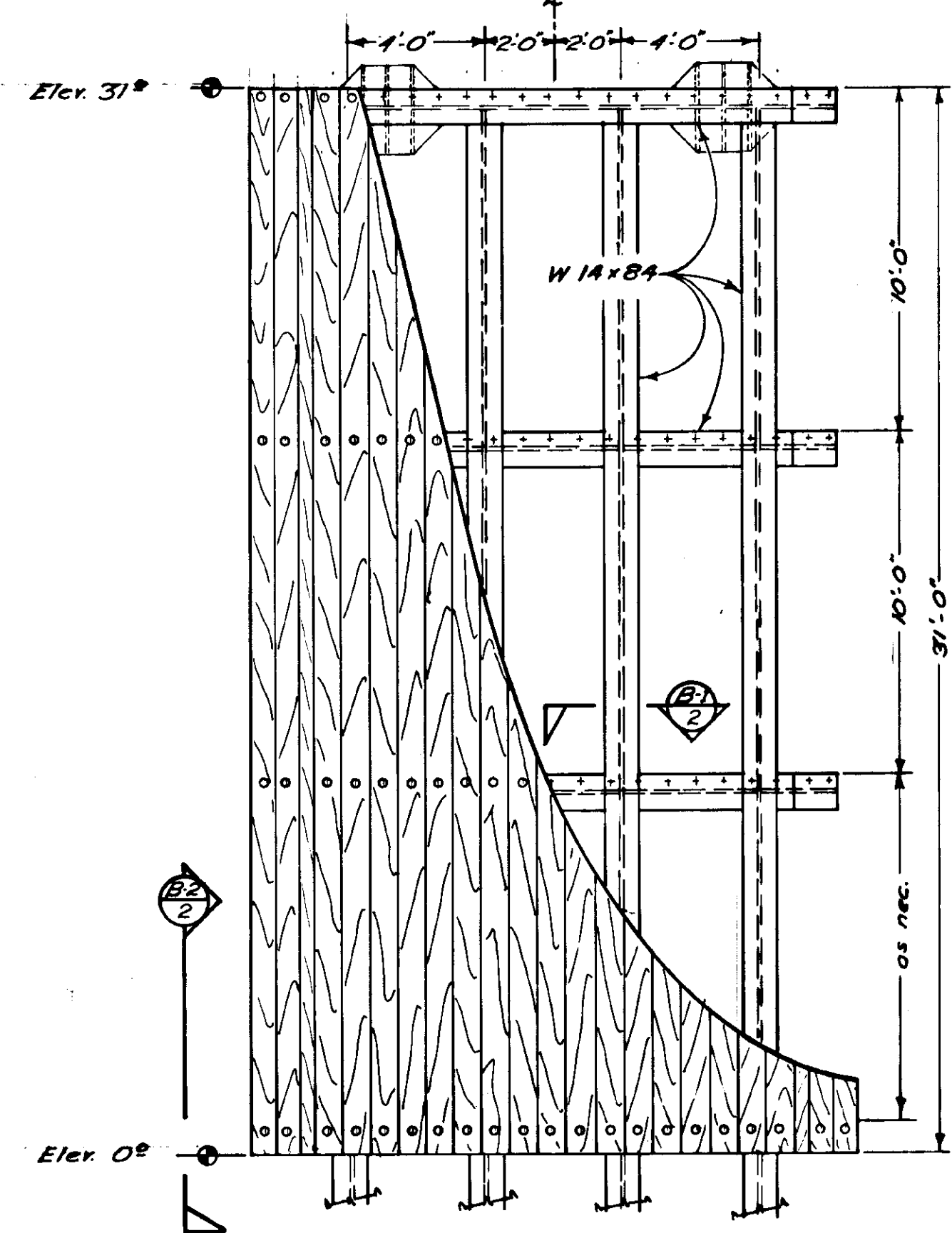


**DETAIL - 40" Diameter Fender Retaining Bar**

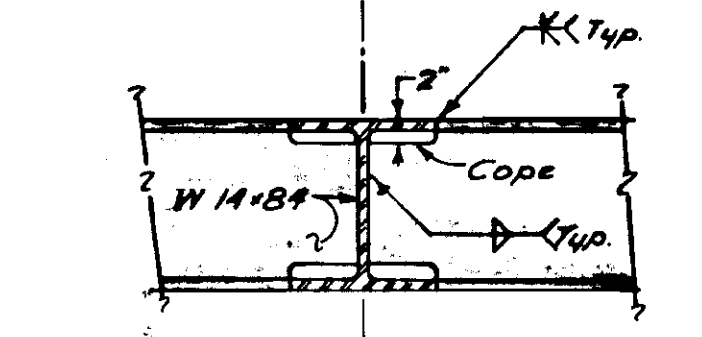


**DETAIL - Hand Rail**

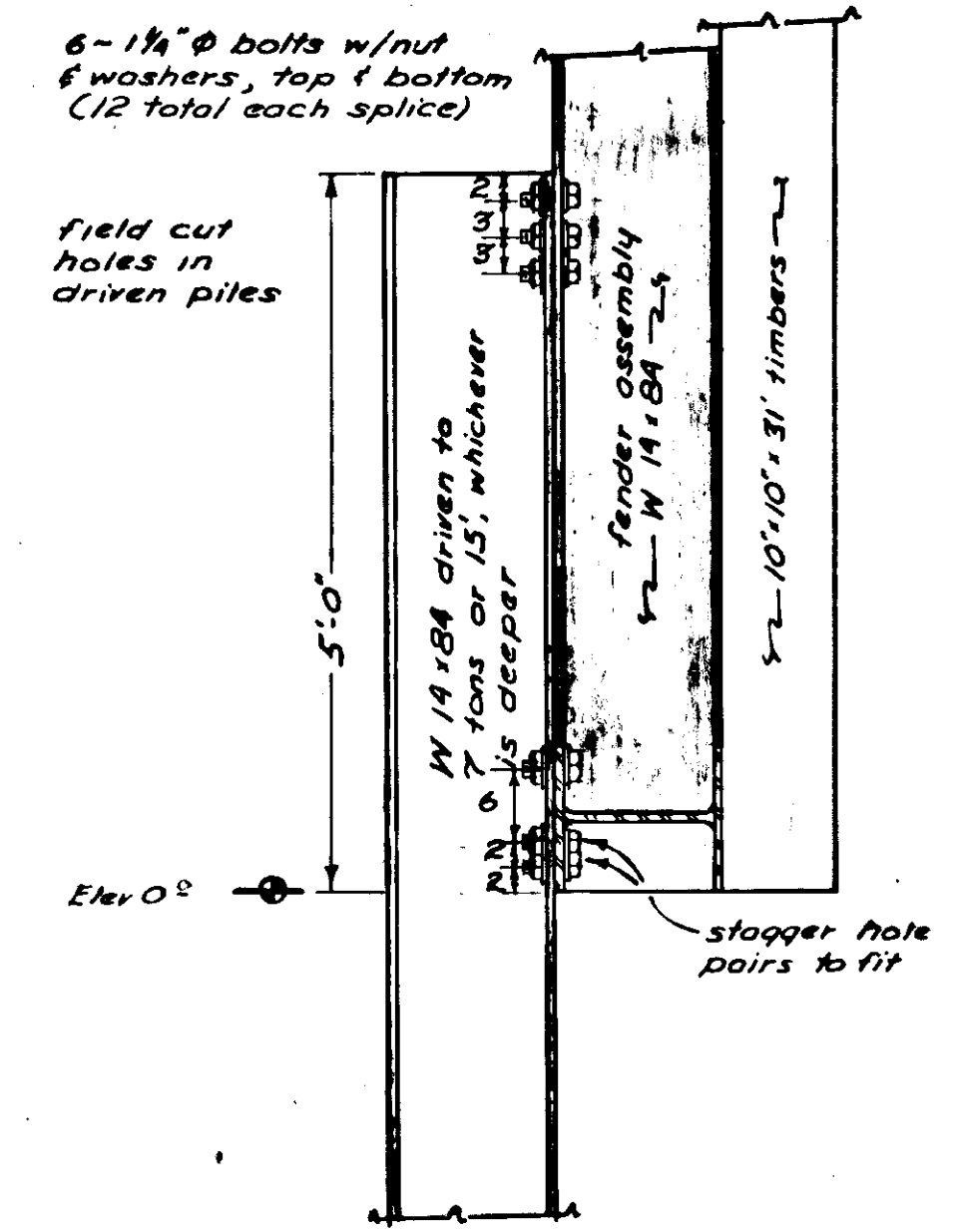
\* Dolphin 4 only for deadman tie cable



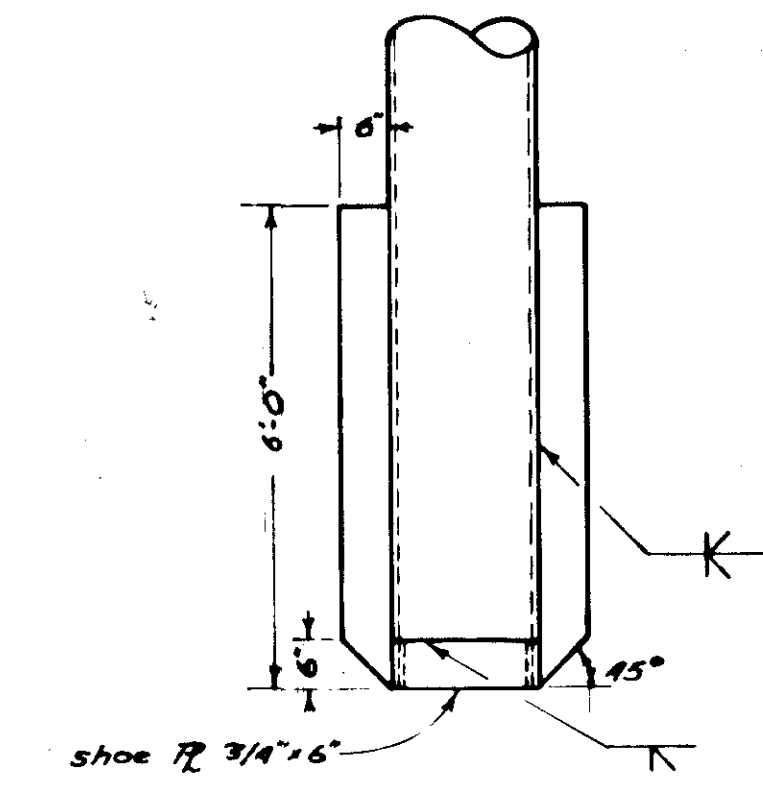
**B-1** **FENDER ASSEMBLY**  
Scale 1/4" = 1'-0"



**B-2** **X-SPlice SECTION**  
Scale 3/4" = 1'-0"



**B-3** **FENDER SYSTEM SPLICE**  
Scale 3/4" = 1'-0"



**C-1** **PILE TIP DETAILS**  
Scale 1/2" = 1'-0"  
Rjd. of all Piles

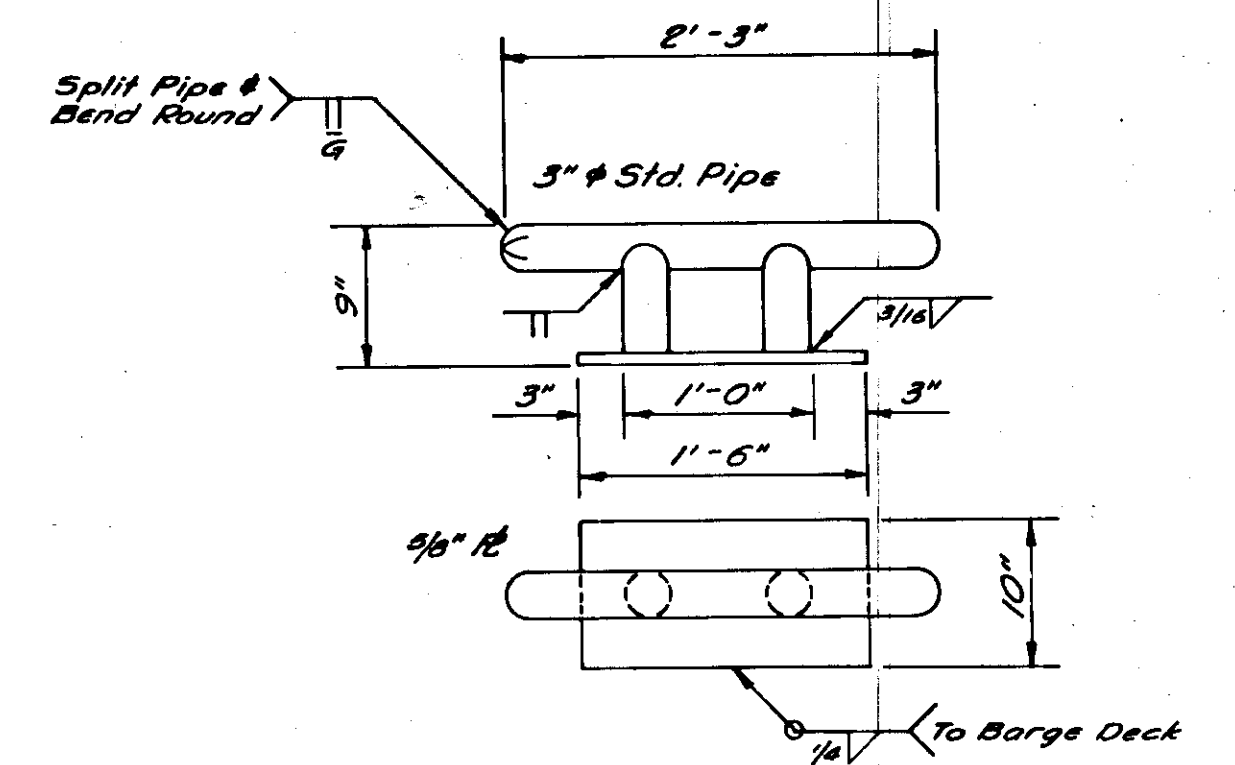
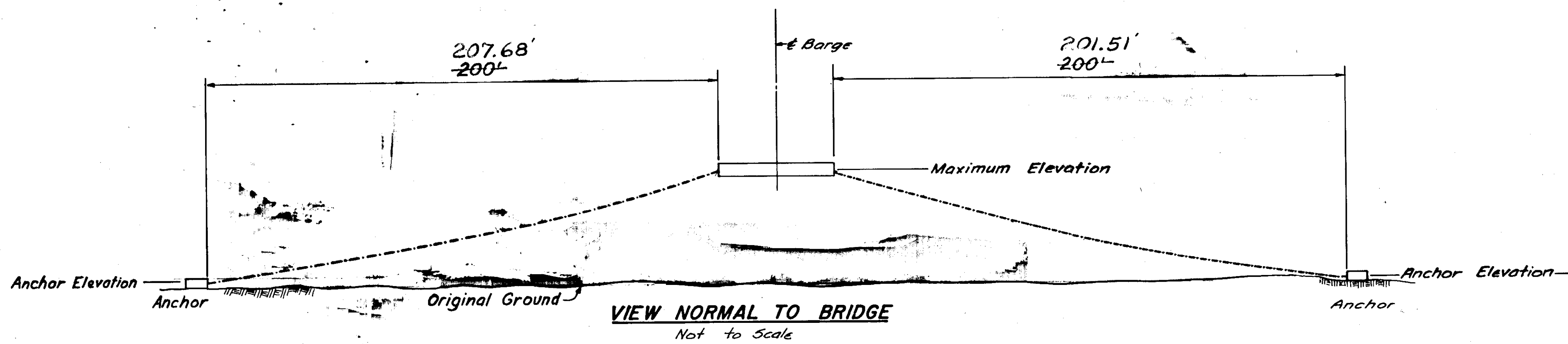
Dolphin Pile design load (tons)				
	downward	uplift	cut-off elev.	tip **
Vertical pile	45	45	+27.5	60.0
Butter pile	45	45	+27.5	60.0

\*\* Estimated driving length below ground line

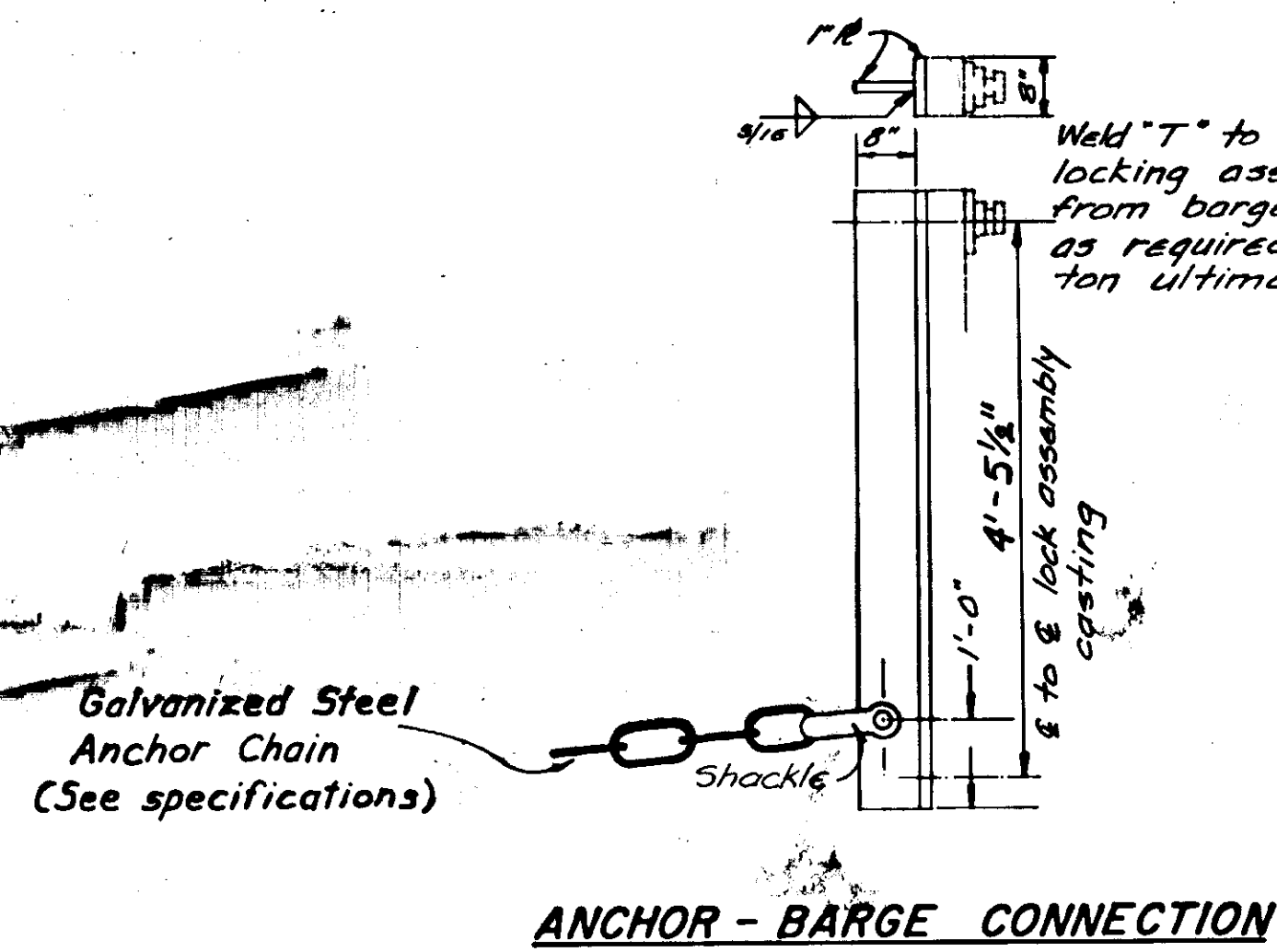
STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	TQSR-0926 (2)	1976	16	17

**TORSION DOLPHIN DETAILS**

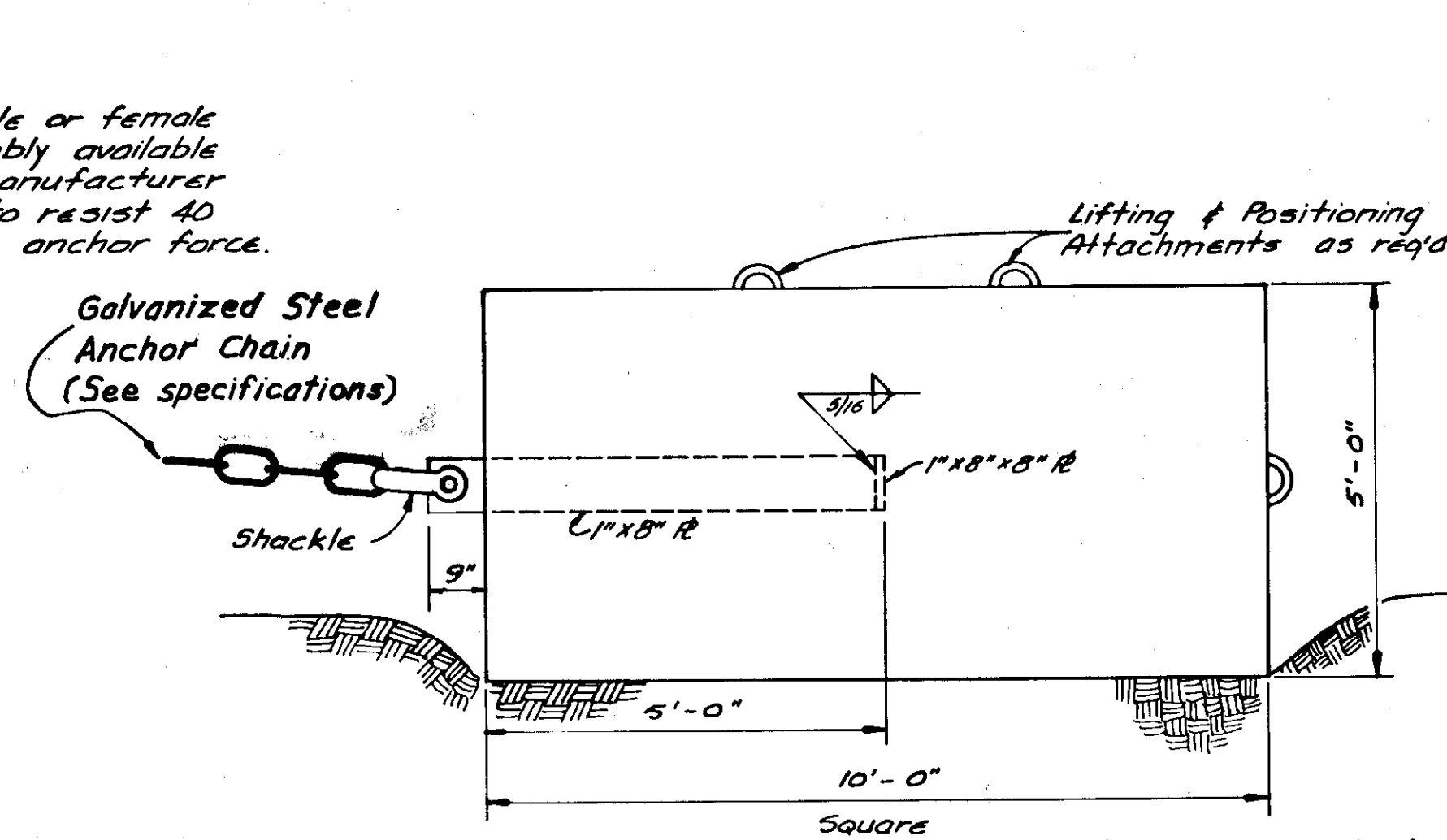
SCALE	SURVEYED	APPROVED
DESIGNED	DRAWN	
CHECKED	DATE	DIRECTOR
PROJECT NUMBER	SHEET	OF



**CLEAT DETAIL** (Not to Scale)  
Alternative cleat type may be submitted for approval.



**ANCHOR - BARGE CONNECTION**



**ANCHOR**  
Alternatives for Anchor may be submitted for approval.

Note: Place Anchors in excavated pocket with level bottom.

**ANCHOR NOTES**

To determine the exact length of anchor chain to use for each anchor, the following method shall be used:

1. Position barge in its exact location and anchors in their approximate location with correct attitude.
2. Measure exact horizontal distance (x) between barge and anchor pins.
3. Determine anchor elevation.
4. Using maximum elevation of +21.0 find elevation difference (y).
5. Compute exact pin to pin distance and add approximately one foot,  $(\sqrt{x^2 + y^2} + 1)$  for pin to pin length of chain required.

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	T05-RS0926 (2)	1976	17	17

**ANCHOR DETAILS**