

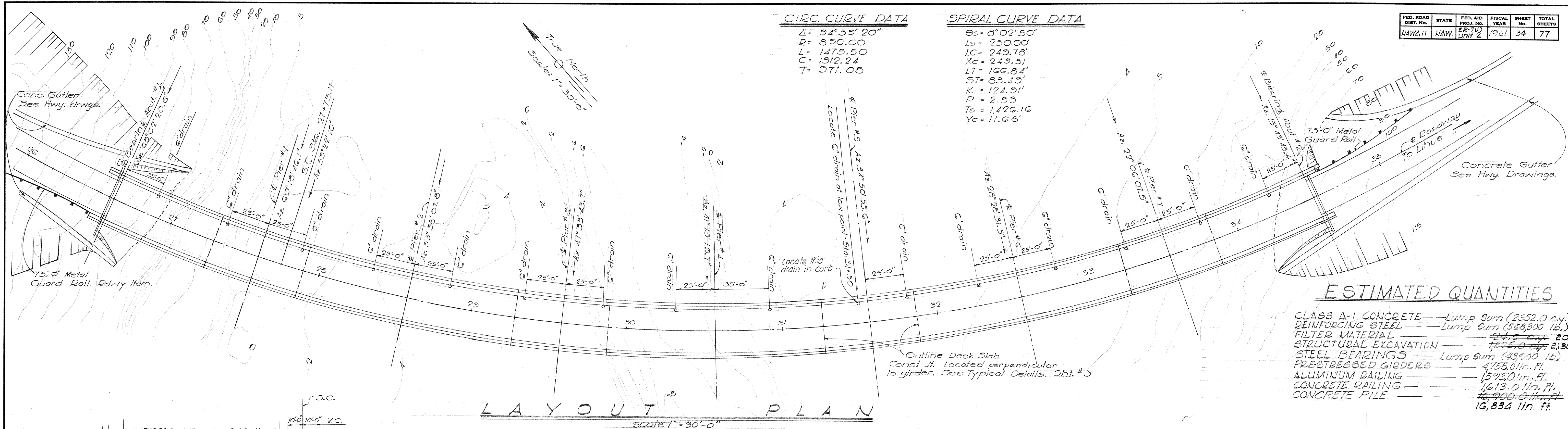
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-700 Unit 2	1961	34	77

CIRC. CURVE DATA

Δ = 94°59'20"
R = 890.00
L = 1475.50
C = 1312.24
T = 571.06

SPIRAL CURVE DATA

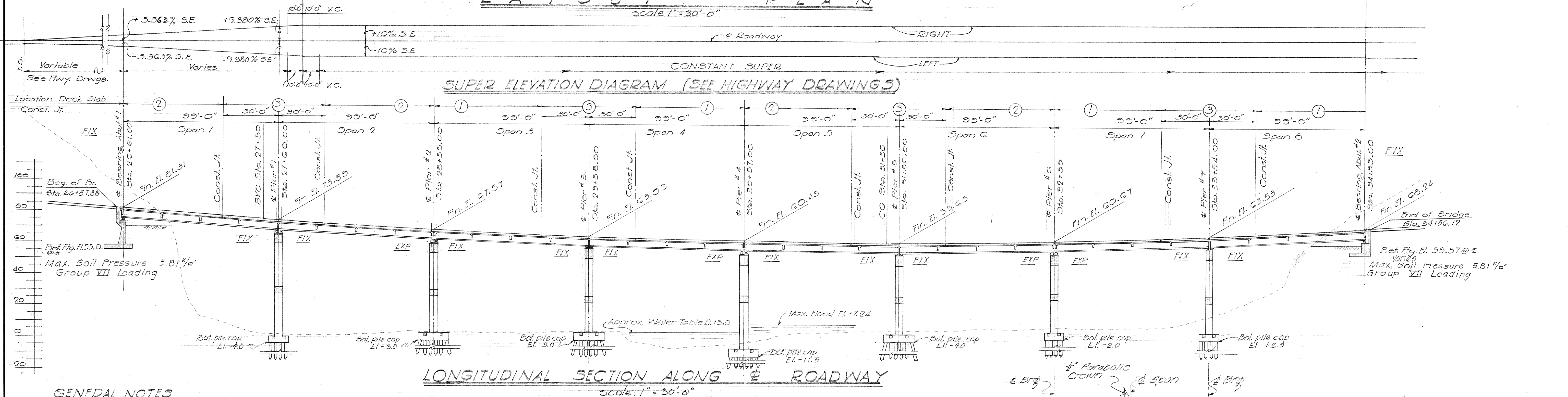
Δs = 8°02'50"
Ls = 250.00
LC = 249.78
Xc = 249.51
LT = 166.84
ST = 83.45
K = 124.91
P = 2.93
Ts = 1,426.16
Yc = 11.68'



ESTIMATED QUANTITIES

CLASS A-1 CONCRETE	Lump Sum (2352.0 cu. y.)
REINFORCING STEEL	Lump Sum (568,800 lb.)
FILTER MATERIAL	245 cu. y.
STRUCTURAL EXCAVATION	18,500 cu. y.
STEEL BEARINGS	Lump Sum (43,900 lb.)
PRESTRESSED GIRDERS	4755.0 lin. ft.
ALUMINUM RAILING	1593.0 lin. ft.
CONCRETE RAILING	1613.0 lin. ft.
CONCRETE PILE	16,900.0 lin. ft.
	16,834 lin. ft.

LAYOUT PLAN scale 1" = 30'-0"



LONGITUDINAL SECTION ALONG ROADWAY scale 1" = 30'-0"

GENERAL NOTES

MATERIALS
All concrete class A-1 except for prestressed concrete girders & precast concrete piles. See Special Provisions for class of concrete for prestressed concrete girders & piles. Concrete for precast concrete piles shall be F-1; See Standard Specifications.

CONSTRUCTION METHODS
Sequence of Pour: Deck pour (1) & (2) shall be poured before (3).
All backfill behind abutments shall be completed in place before placing prestressed girders.

Abut. Figs. shall be excavated & poured to neat lines. In case of over excavation, space between footing & ground shall be filled with concrete at the Contractor's expense. This concrete shall have a minimum of Class D-1.

Bridge to be constructed on curve, except as otherwise noted.

SEAL FOR FOOTING
In depositing concrete for footings below water table, it shall be the contractor's responsibility to provide crushed rock or seal concrete at his expense so that concrete can be deposited under dry conditions. Excavation necessary to place crushed rock or seal concrete shall be incidental to excavation and will not be paid for separately.

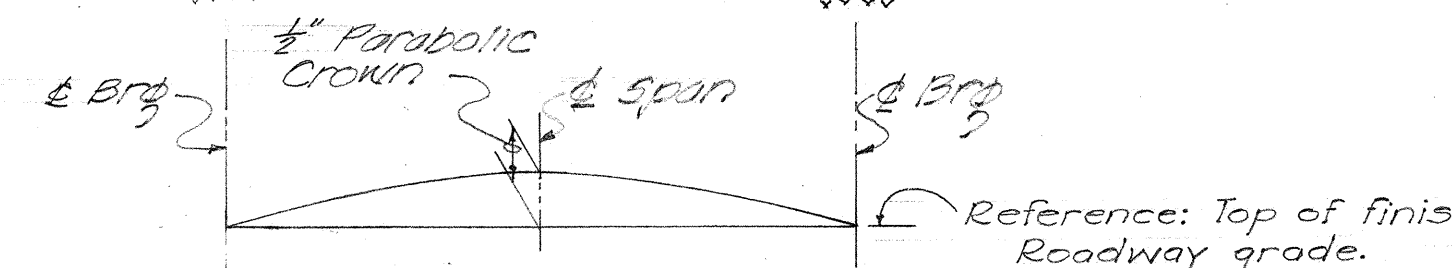
GENERAL
Top of concrete deck to follow Roadway grade. Deck Slab cambered.

SYMBOLS
⊕ Section Letter
⊕ Bridge Sheet No. ____ of ____ detail is drawn on.

REFERENCE

FOR EXCAVATION PAYLINES & BACKFILL DETAILS - See Sheet # 47
FOR BORING DETAILS - See Sheet # 46 & # 47
FOR TYPICAL PILE DETAILS - Same as shown for Alternate "A", see Sheet # 33
WELDING
All welding shall conform to current specifications for Welded Highway & Railroad Bridge Design, Construction, & Repair of the American Welding Society.

CAMBER DIAGRAM FOR CONC. DECK - EACH SPAN No Scale



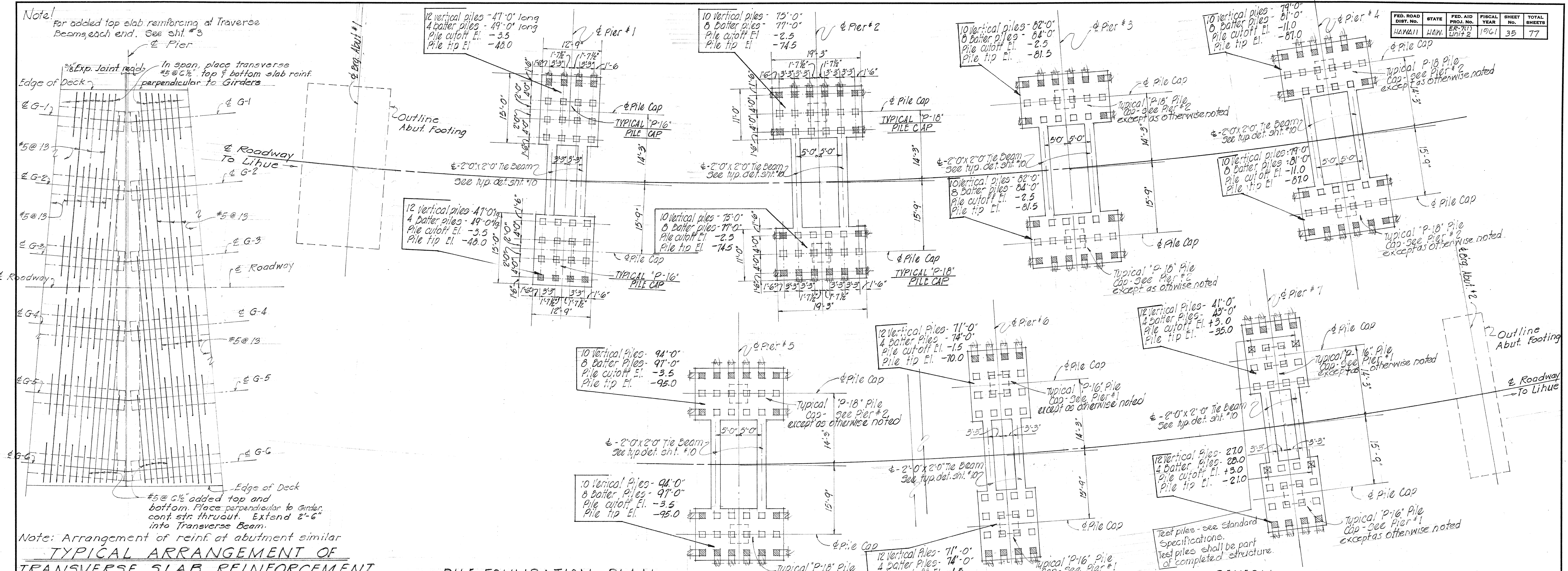
ALTERNATE "B"

DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
STATE OF HAWAII

**STRUCTURE NO 5
KALIHUWAI BRIDGE**
STA. 26+57.88 TO STA. 34+56.12
KAUAI BELT ROAD PROJ. N° ER-7(1)
FEBRUARY 1961 - UNIT 2

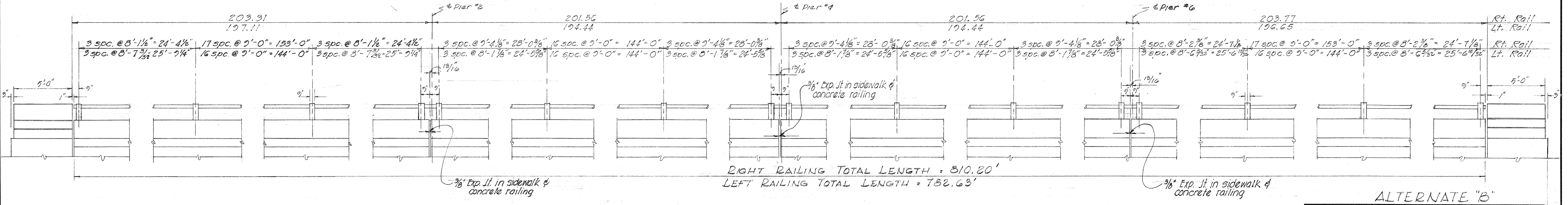
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-7(1) Unit 2	1961	35	77

Note: For added top slab reinforcing at Traverse Beams, each end. See sht. #3



Note: Arrangement of reinf. at abutment similar

TYPICAL ARRANGEMENT OF TRANSVERSE SLAB REINFORCEMENT AT PIERS
Scale: 1/4" = 1'-0"

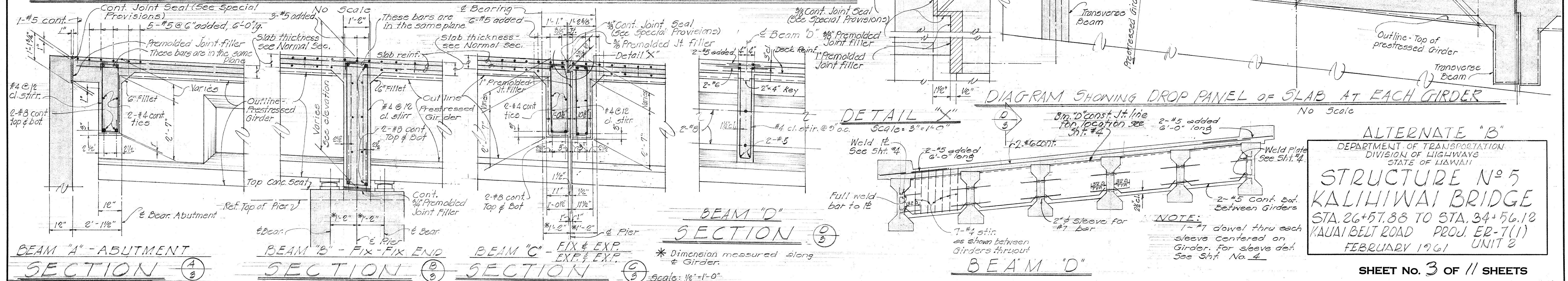
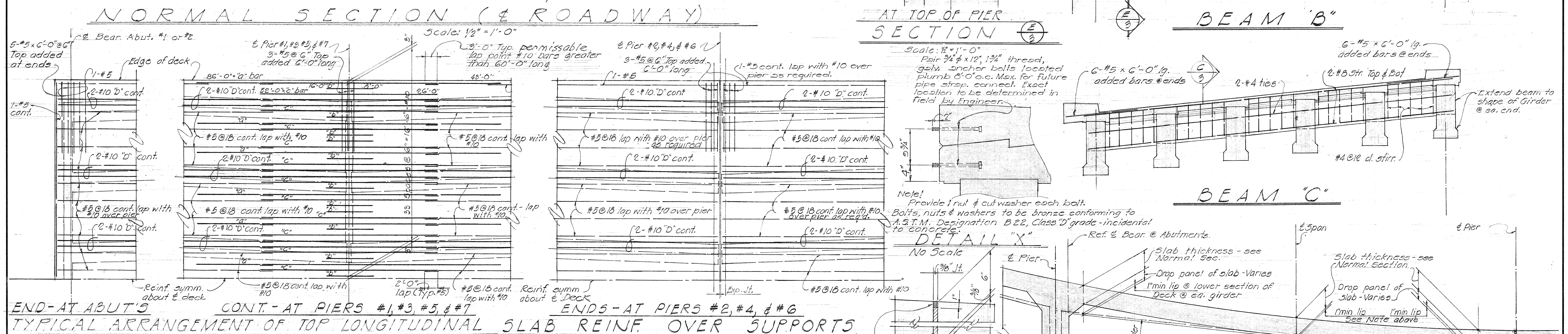
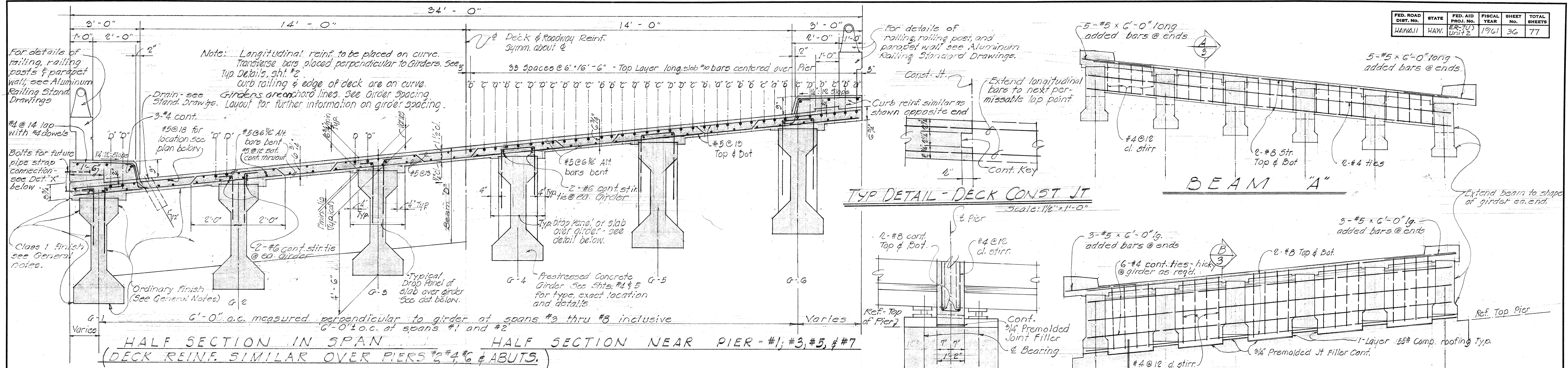


NOTE:
See Aluminum Railing Standard Drawings Detail for additional railing details. Railing lengths taken along inside face of railing.
Pile detail same as alternate "A" sht. #12.

ALTERNATE "B"
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
STATE OF HAWAII

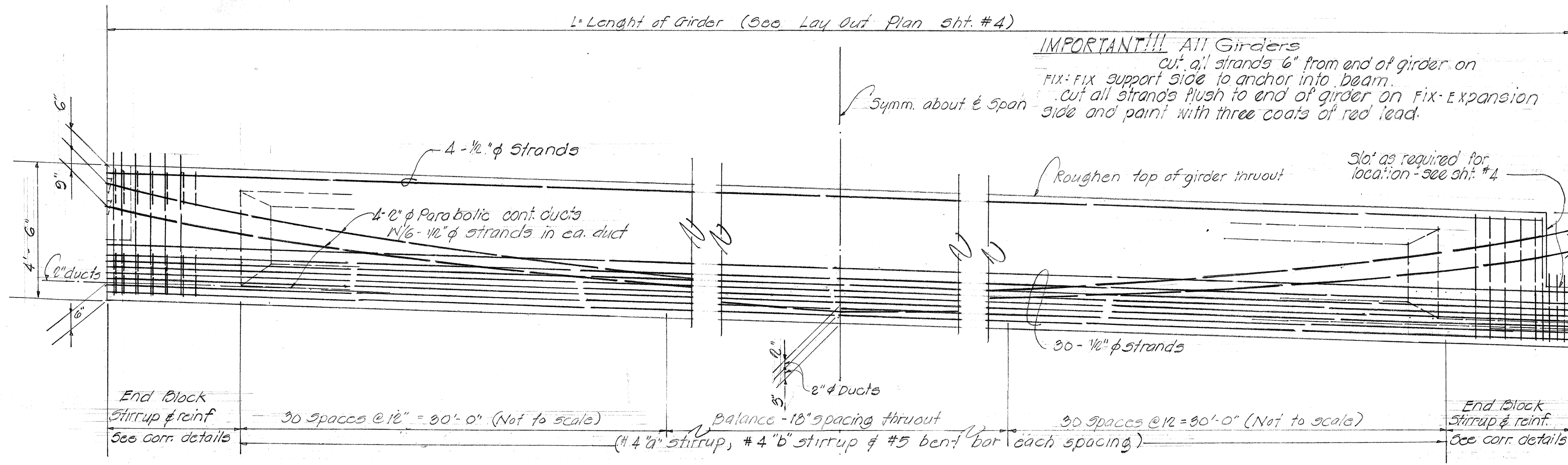
**STRUCTURE N°5
KALIHUWAI BRIDGE**
STA. 26+57.88 TO STA. 34+56.12
KAUAI BELT ROAD PROJ. ER-7(1)
FEBRUARY 1961 UNIT 2

FED. ROAD DIST. No.	STATE	FED. AID PROJ. No.	FISCAL YEAR	SHEET No.	TOTAL SHEETS
HAWAII	HAW.	ER-7U) Unit 2	1961	36	77

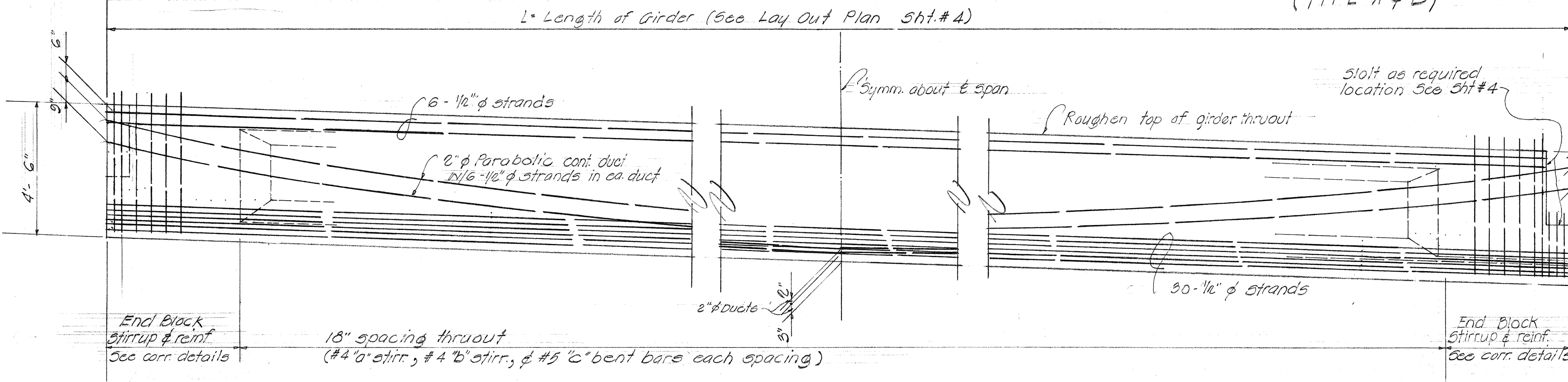


ALTERNATE "B"
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
STATE OF HAWAII
STRUCTURE NO 5
KALIHIWAI BRIDGE
STA. 26+57.88 TO STA. 34+56.12
KAUAI BELT ROAD PROJ. EB-7(1)
FEBRUARY 1961 UNIT 2

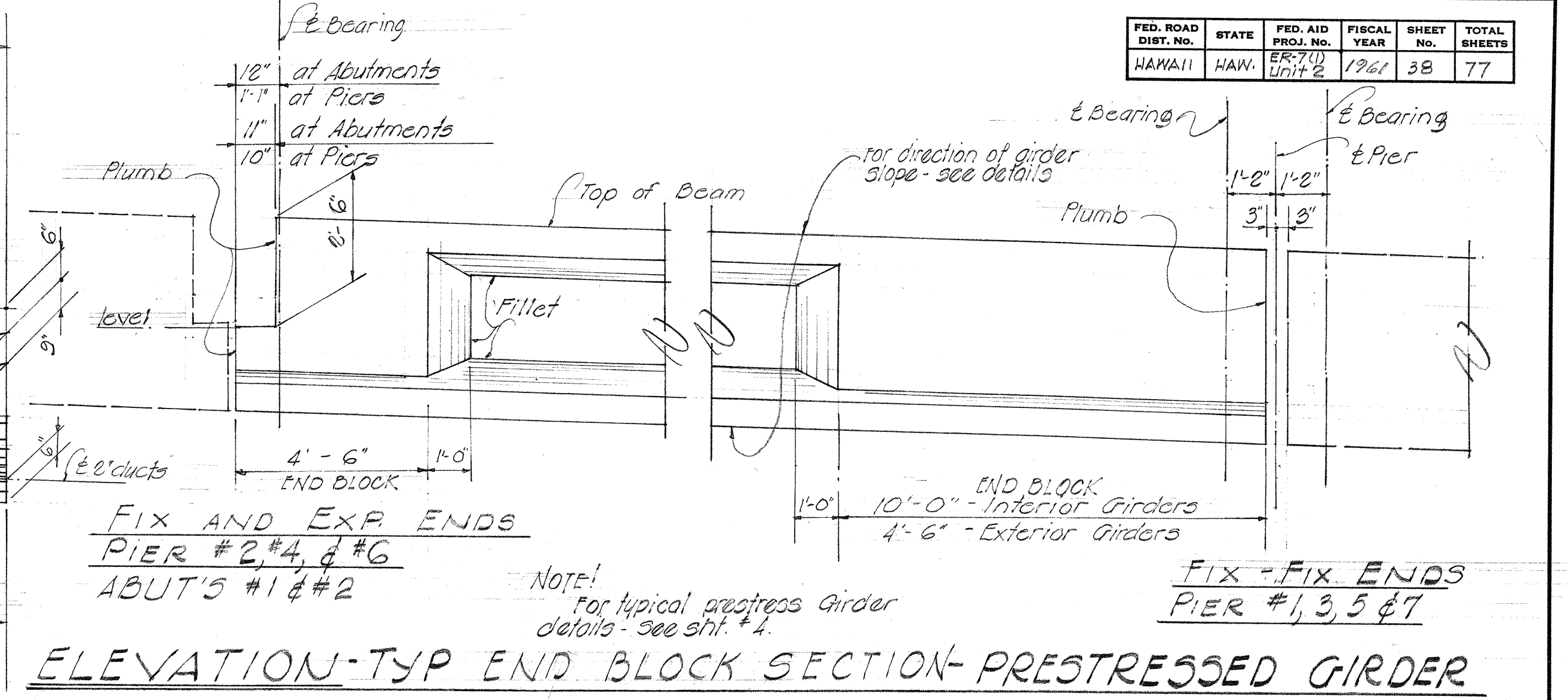
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-7(1) Unit 2	1961	38	77



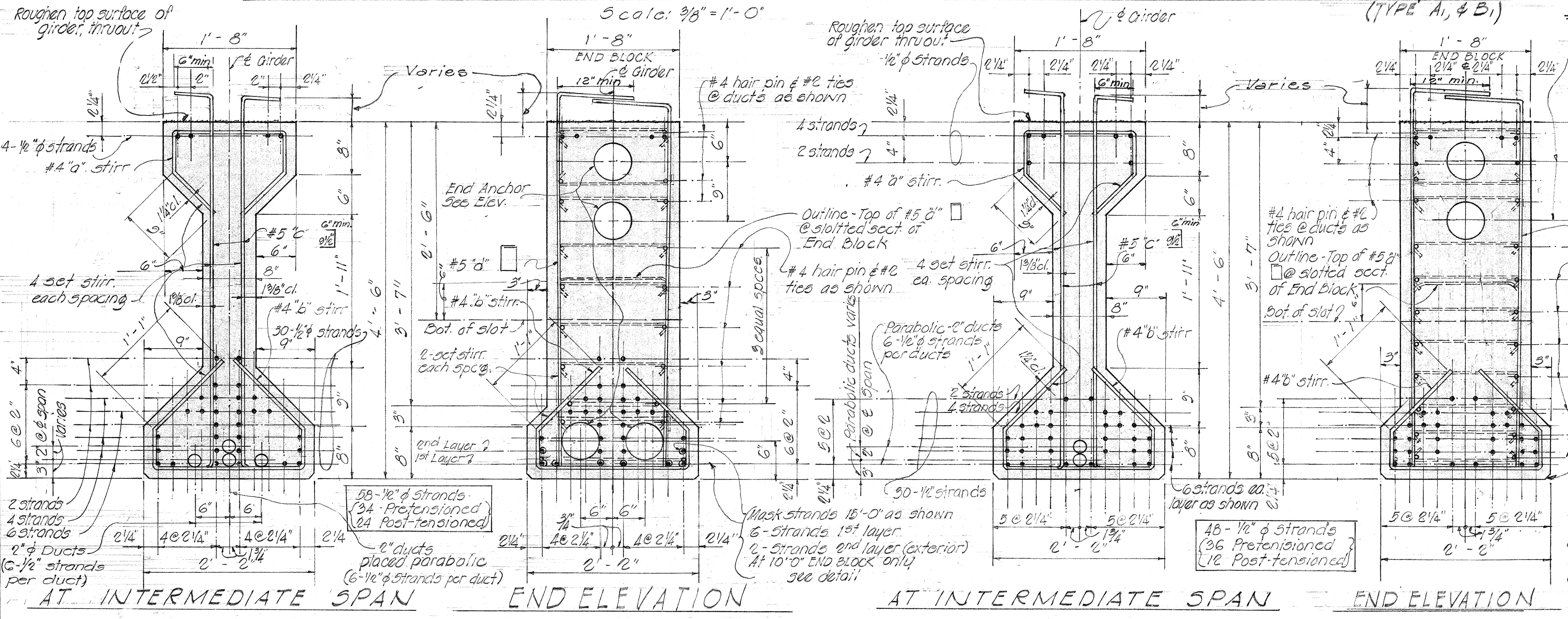
TYPICAL INTERIOR GIRDERS G-2, G-3, G-4, G-5 INCL.
(TYPE A & B)
Scale: 3/8" = 1'-0"



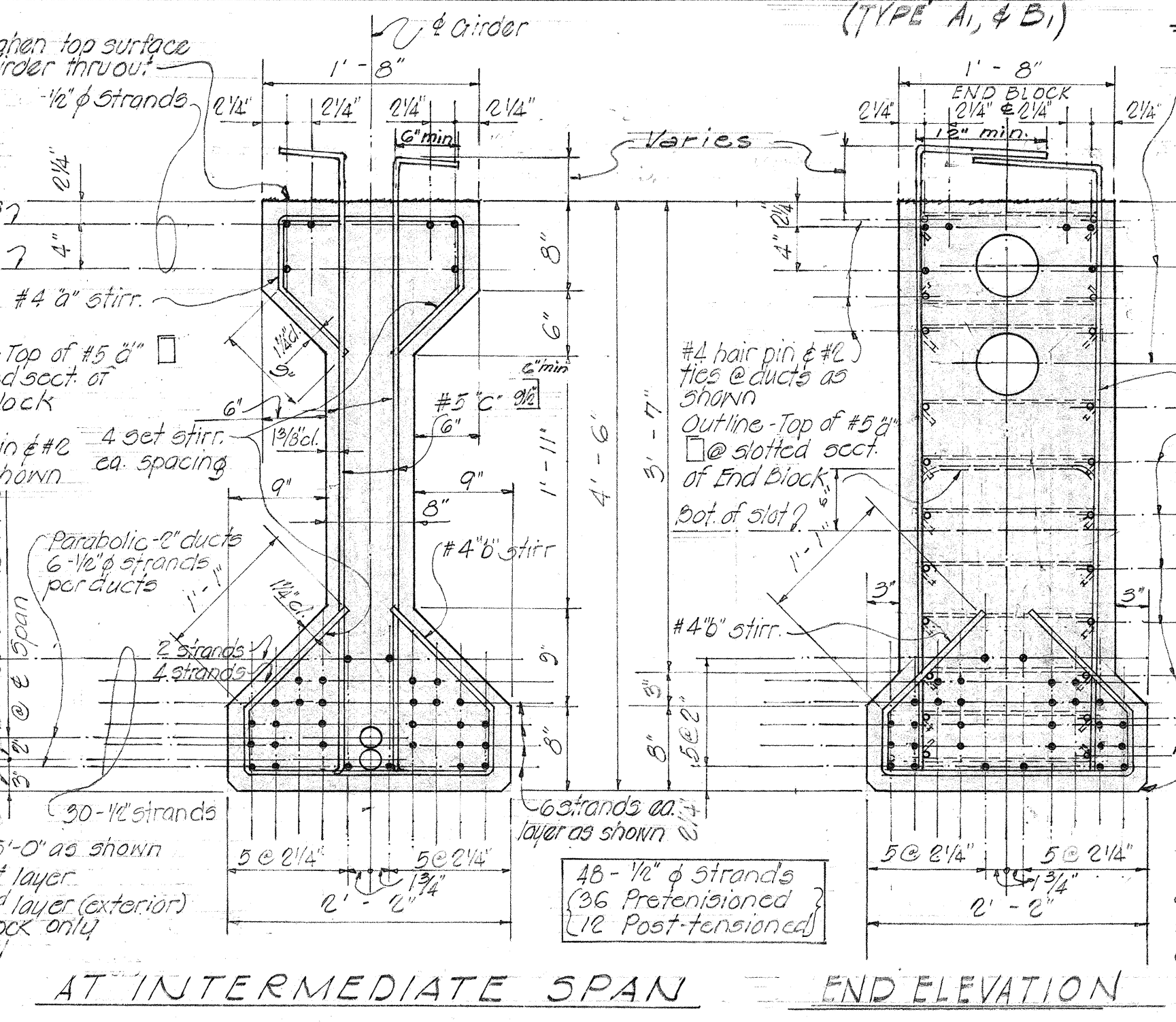
TYPICAL EXTERIOR GIRDERS G-1 & G-6
(TYPE A, & B)
Scale: 3/8" = 1'-0"



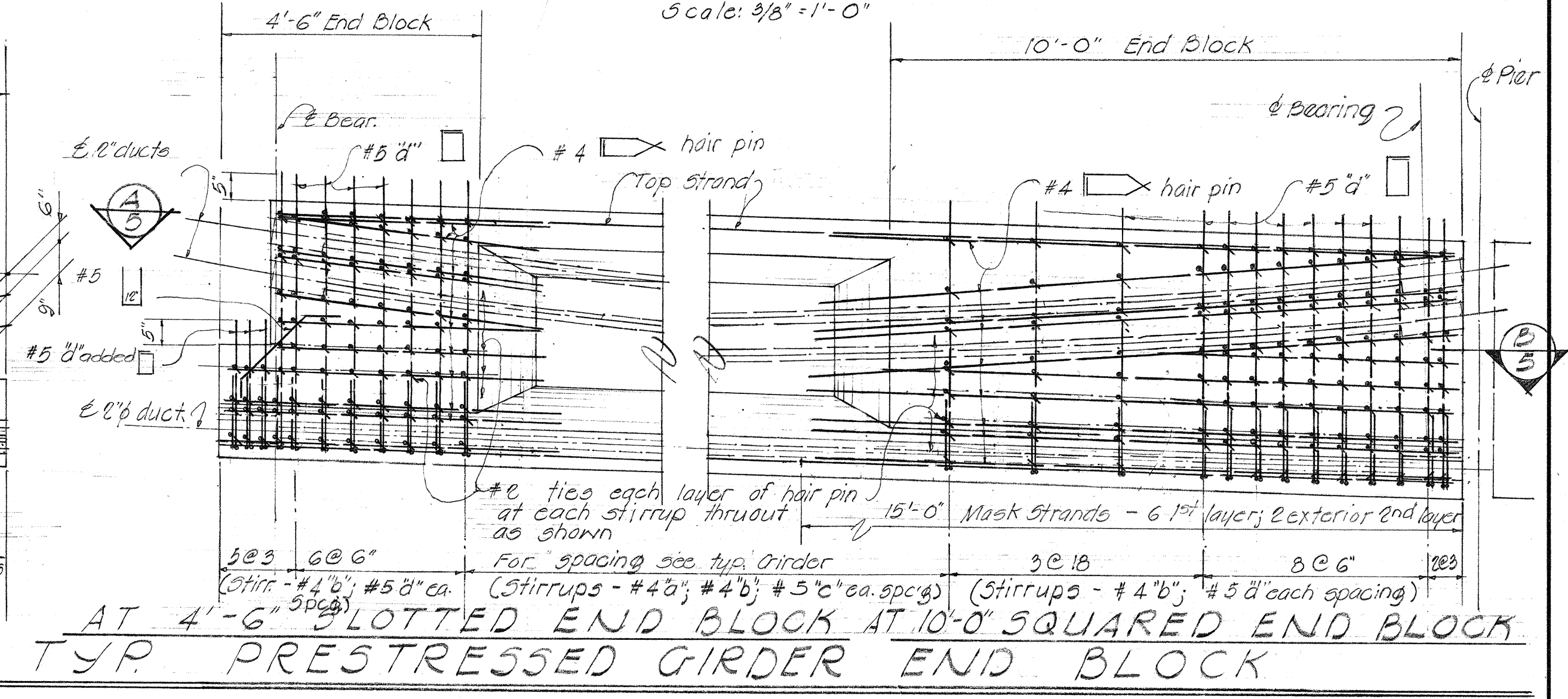
ELEVATION-TYP END BLOCK SECTION-PRESTRESSED GIRDER
Scale: 3/8" = 1'-0"



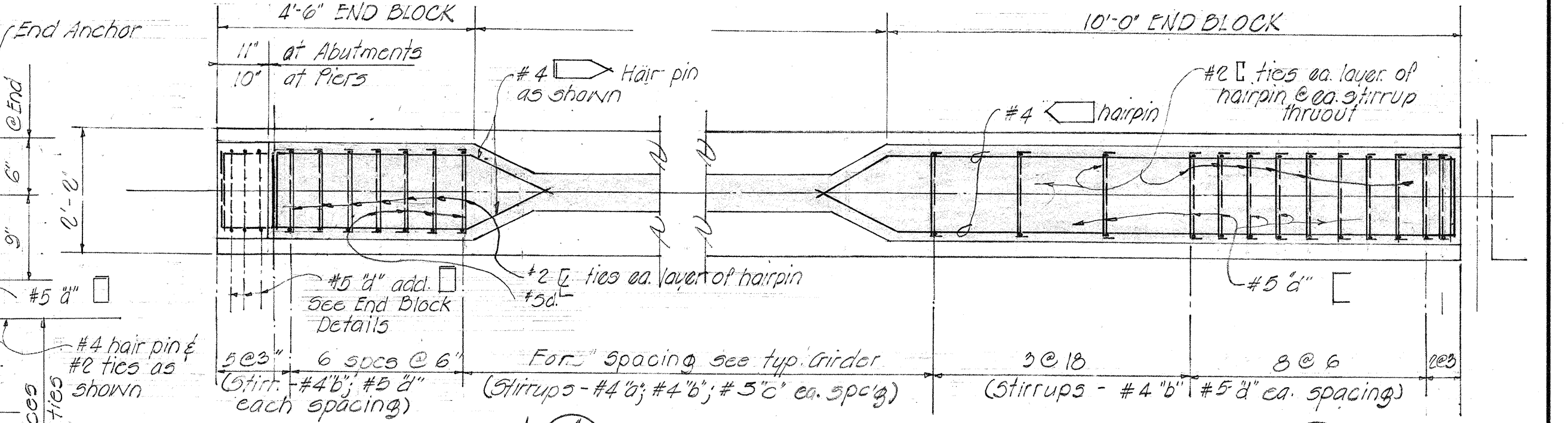
TYP. SECTION-INTERIOR GIRDER G-2 thru G-5
Scale: 1" = 1'-0"



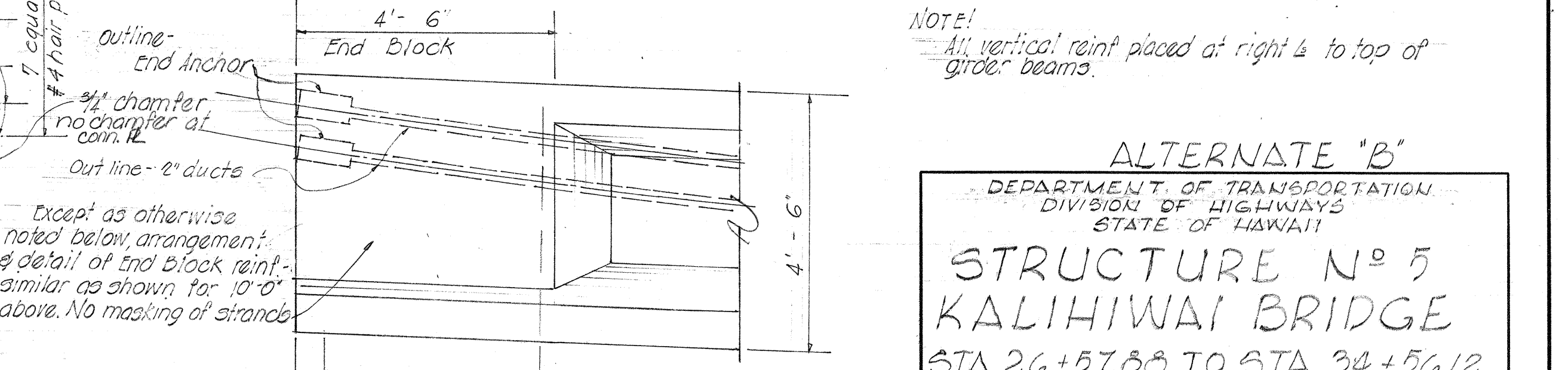
TYP. SECTION EXTERIOR GIRDER G-1 & G-6 TYPE A, OR B
Scale: 1" = 1'-0"



AT 4'-6" SQUARED END BLOCK
Scale: 3/8" = 1'-0"



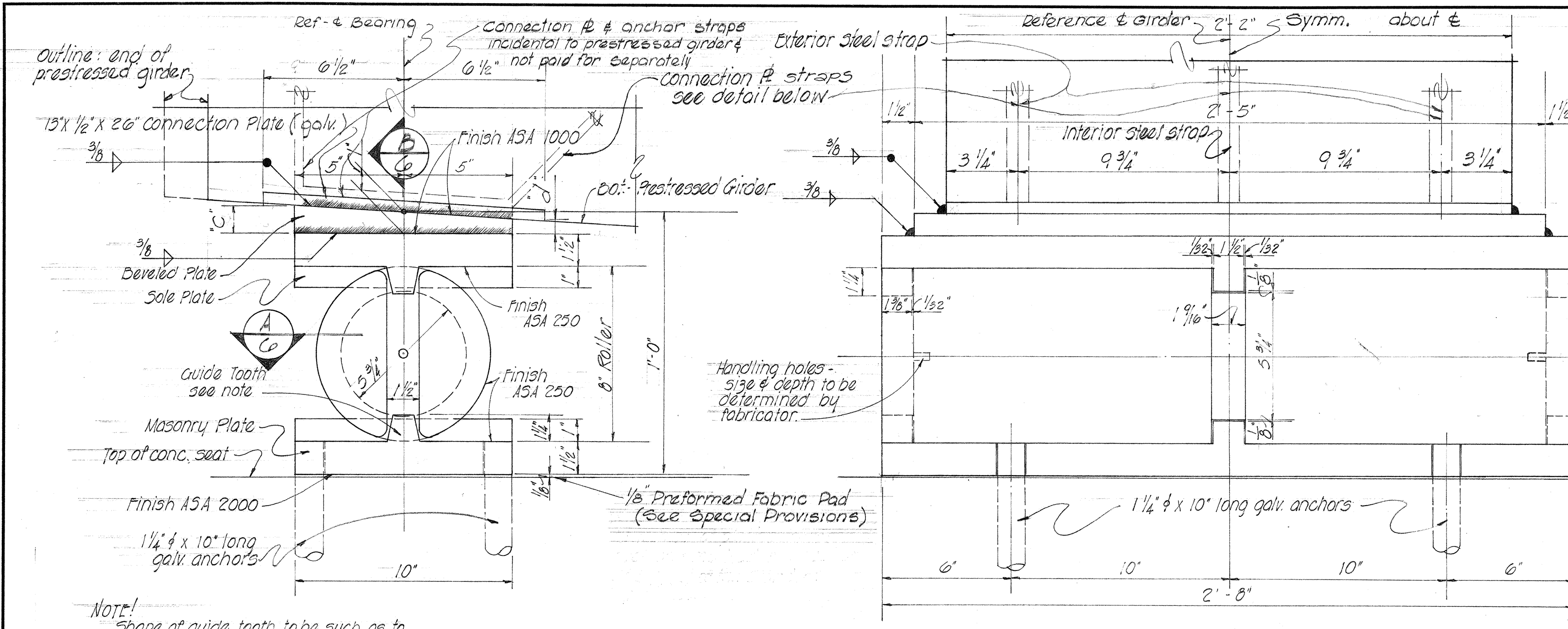
SECTION 3
Scale: 3/8" = 1'-0"



SECTION 4
Scale: 3/8" = 1'-0"

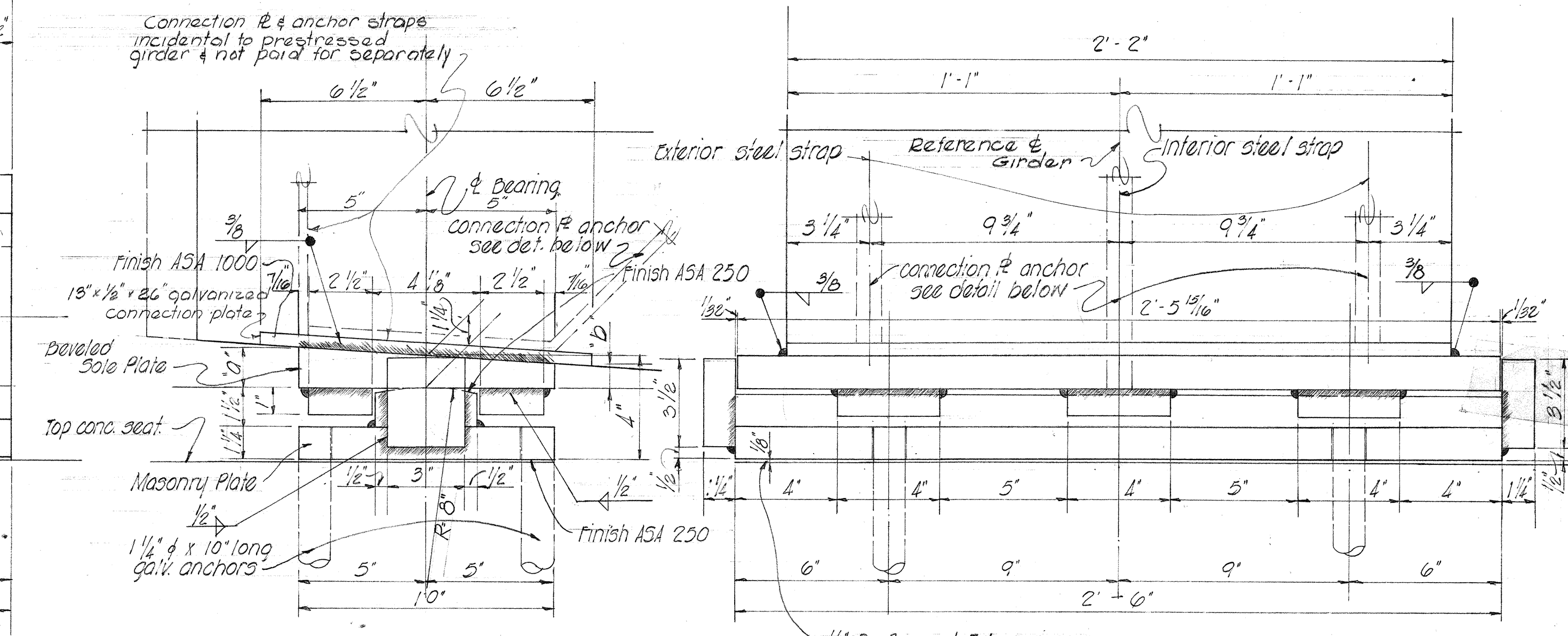
AT 4'-6" SQUARED END BLOCK
Scale: 3/8" = 1'-0"

ALTERNATE "B"
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
STATE OF HAWAII
STRUCTURE NO 5
KALIHUWAI BRIDGE
STA. 26+57.88 TO STA. 34+56.12
KAUAI BELT ROAD PROJ. NO ER-7(1)
FEBRUARY 1961 UNIT 2



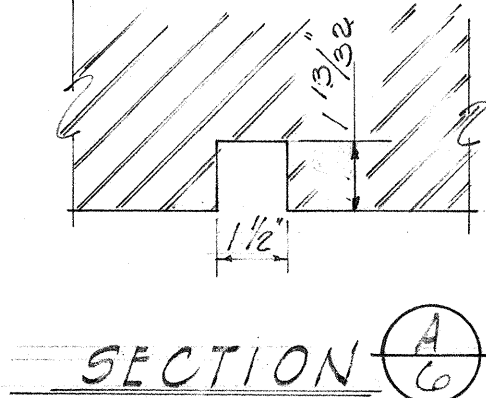
SIDE ELEVATION
SCALE: 3" = 1'-0"

END ELEVATION
SCALE: 3" = 1'-0"

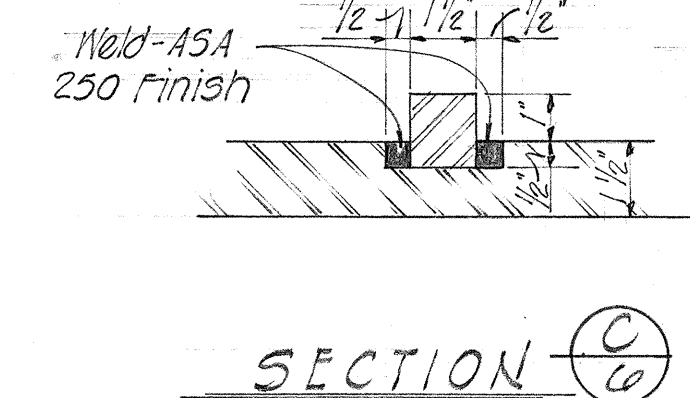


SIDE ELEVATION
SCALE: 3" = 1'-0"

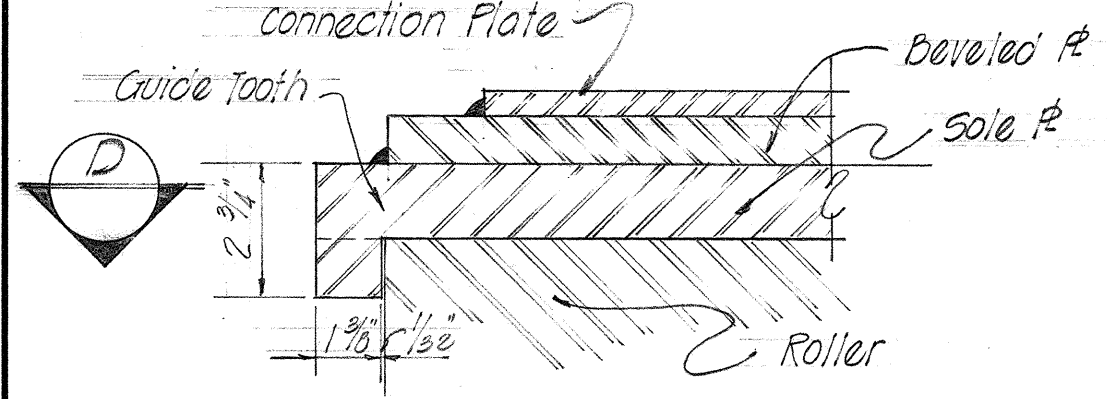
END ELEVATION
SCALE: 3" = 1'-0"



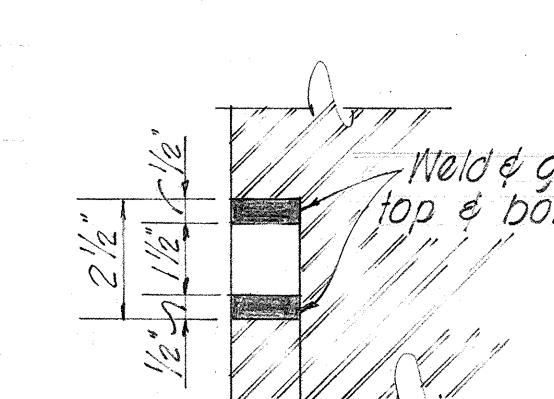
SECTION A-A



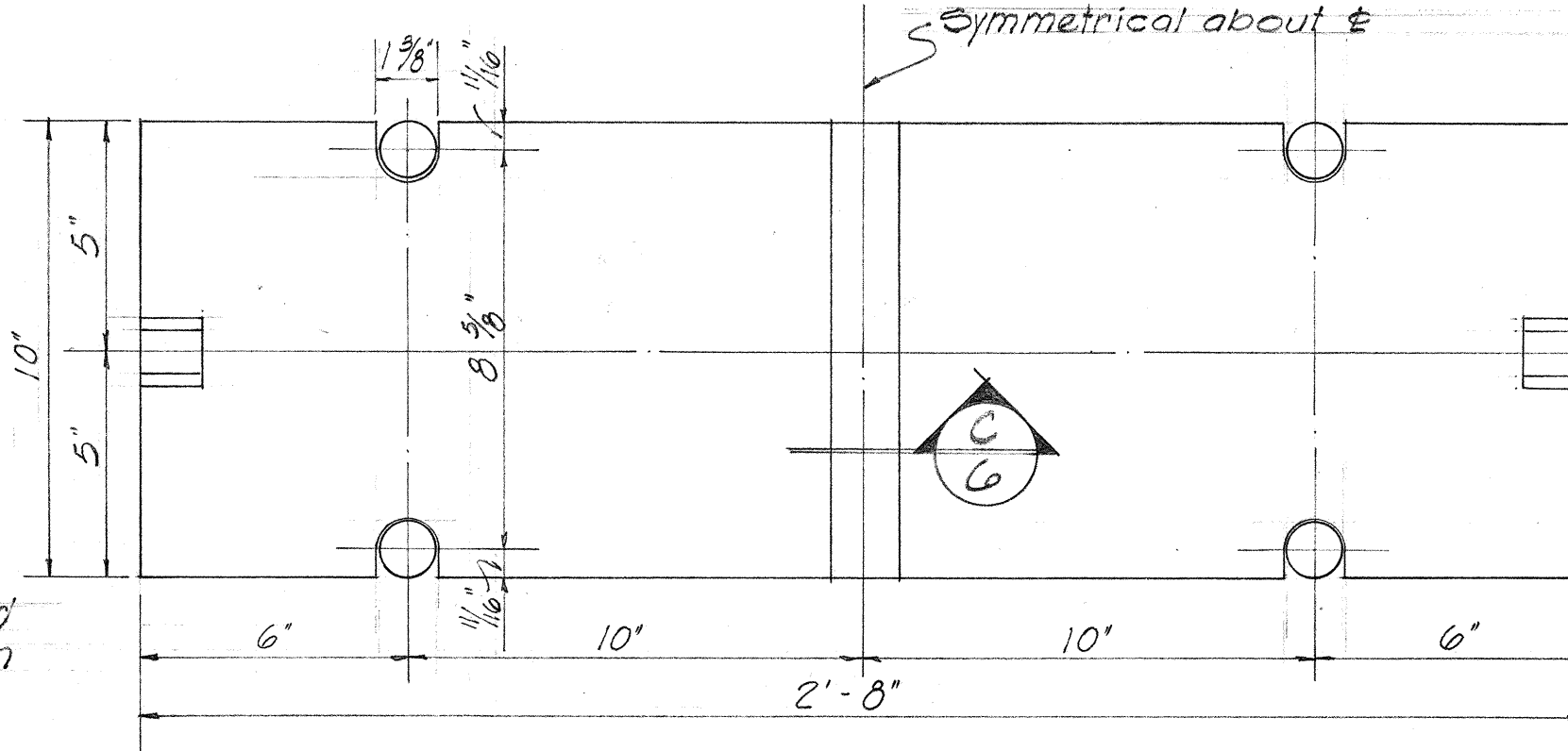
SECTION C-C



SECTION D-D

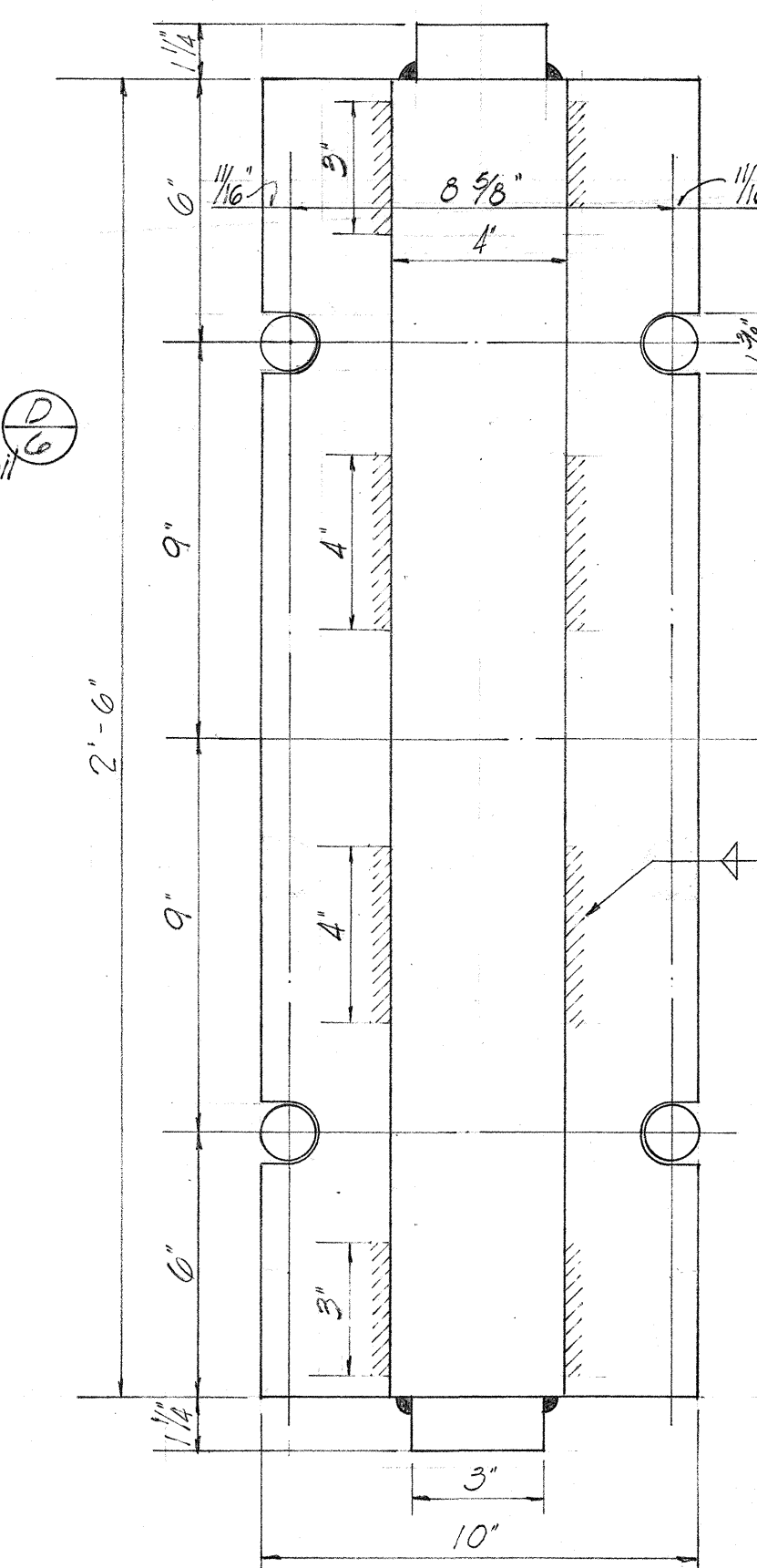


SECTION E-E

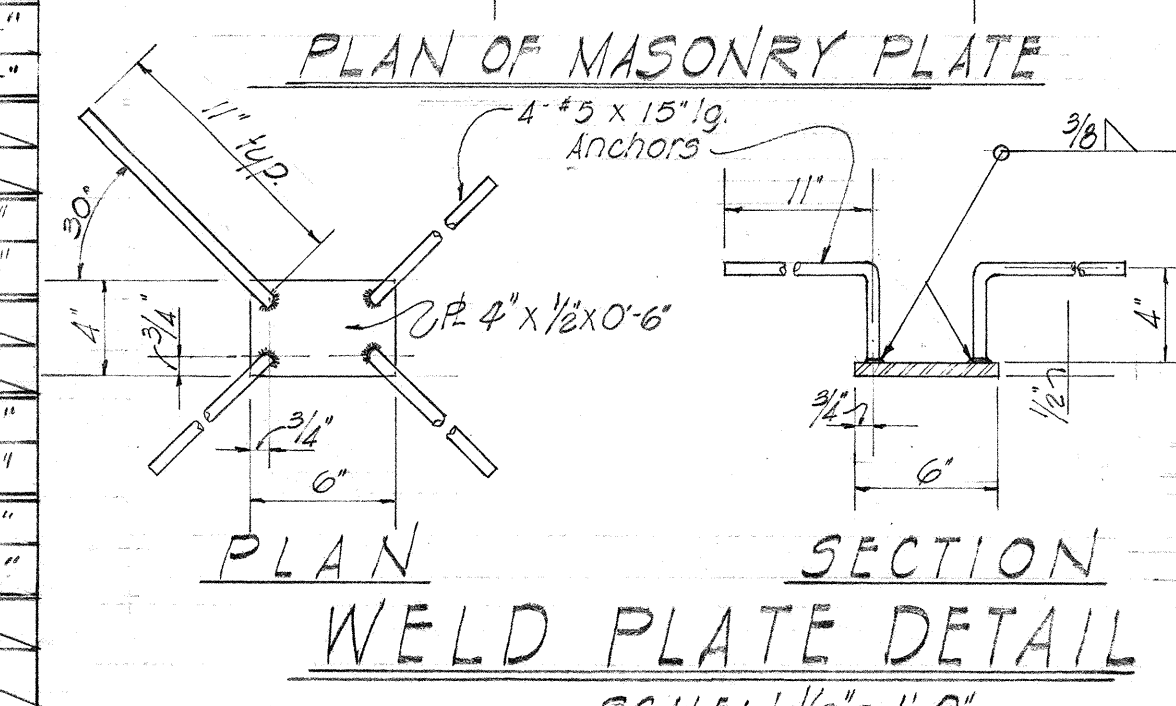


PLAN OF MASONRY PLATE

DETAILS OF EXPANSION BEARINGS
SCALE: 3" = 1'-0"



PLAN OF MASONRY PLATE



WELD PLATE DETAIL
SCALE: 1 1/2" = 1'-0"

DETAILS OF FIXED BEARINGS
SCALE: 3" = 1'-0"

GENERAL NOTES

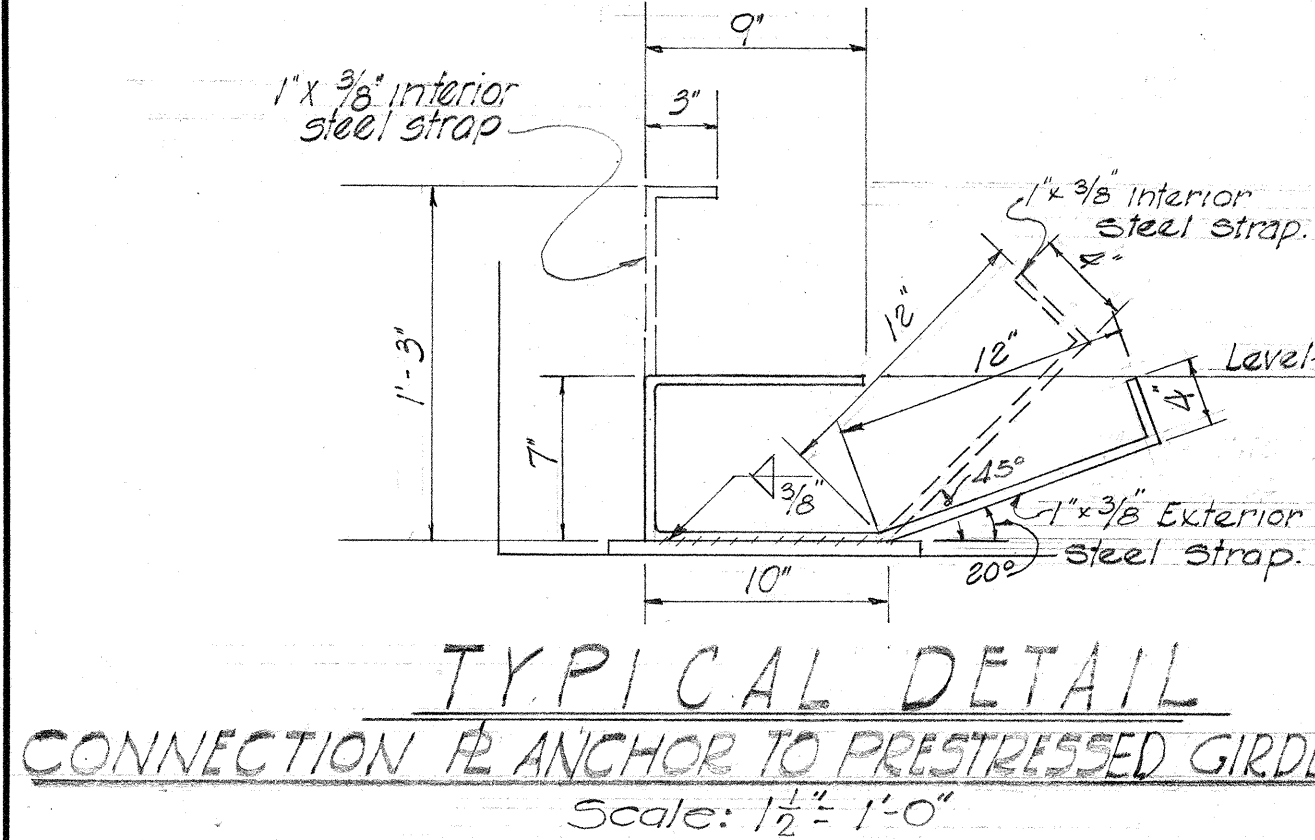
- MATERIALS:**
All plates to be of structural carbon steel A.S.T.M. Designation A-7. Rollers shall be structural carbon steel A.S.T.M. Designation A-235 (class C-1).
- WORKMANSHIP:**
Rollers shall be forged & annealed prior to machining. They shall be accurately turned to the dimensions shown and shall be straight, smooth, & free from flaws. The contractor shall order forgings that are straight & of sufficient size, so they can be turned to the dimensions given without showing any forge marks. Any roller showing forge marks shall be rejected.
- WELDS:**
All welds to be 3/8" fillets unless noted otherwise.
- GALVANIZING:**
For galvanizing of bearing assemblage - see Special Provisions.
For repairing of damaged galvanized coatings for bearings, see Article 44.3 of Special Provision.
- PAINTING:**
The galvanized bearing assembly shall be painted with two field coats of red lead and one finish coat of aluminum. Painting shall be in accordance with the Standard Specifications.

ALTERNATE "B"

DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
STATE OF HAWAII
STRUCTURE NO. 5
KALIHUWAI BRIDGE
STA. 26+57.88 TO STA. 34+56.12
KAUAI BELT ROAD
FEBRUARY 1961
UNIT 2

SHEET No. 6 OF 12 SHEETS

BEVELED PLATE SCHEDULE																								
SPAN	GIRDER G-1			GIRDER G-2			GIRDER G-3			GIRDER G-4			GIRDER G-5			GIRDER G-6								
1	a	$\frac{1}{32}''$		a	$\frac{1}{32}''$		a	$\frac{1}{32}''$		a	$\frac{1}{32}''$		a	$\frac{1}{32}''$		a	$\frac{1}{32}''$							
	b	$\frac{27}{32}''$		b	$\frac{27}{32}''$		b	$\frac{26}{32}''$		b	$\frac{26}{32}''$		b	$\frac{29}{32}''$		b	$\frac{28}{32}''$							
2	a	$\frac{1}{32}''$		a	$\frac{1}{32}''$		a	$\frac{1}{32}''$	$\frac{1}{2}''$		a	$\frac{1}{32}''$	$\frac{1}{32}''$		a	$\frac{1}{32}''$	$\frac{1}{32}''$		a	$\frac{1}{32}''$	$\frac{1}{32}''$			
	b	$\frac{26}{32}''$		b	$\frac{29}{32}''$		b	$\frac{28}{32}''$	$\frac{10}{32}''$		b	$\frac{27}{32}''$	$\frac{27}{32}''$		b	$\frac{30}{32}''$	$\frac{27}{32}''$		b	$\frac{29}{32}''$	$\frac{27}{32}''$			
3	a	$\frac{1}{32}''$		a	$\frac{1}{32}''$		a	$\frac{1}{32}''$	$\frac{1}{32}''$		a	$\frac{1}{32}''$	$\frac{1}{32}''$		a	$\frac{1}{32}''$	$\frac{1}{32}''$		a	$\frac{1}{32}''$	$\frac{1}{32}''$			
	b	$\frac{1}{32}''$		b	$\frac{1}{32}''$		b	$\frac{1}{32}''$	$\frac{1}{32}''$		b	$\frac{1}{32}''$	$\frac{1}{32}''$		b	$\frac{1}{32}''$	$\frac{1}{32}''$		b	$\frac{1}{32}''$	$\frac{1}{32}''$			
4	a	$\frac{1}{32}''$		a	$\frac{1}{32}''$	$\frac{5}{32}''$		a	$\frac{1}{32}''$	$\frac{5}{32}''$		a	$\frac{1}{32}''$	$\frac{5}{32}''$		a	$\frac{1}{32}''$	$\frac{5}{32}''$		a	$\frac{1}{32}''$	$\frac{5}{32}''$		
	b	$\frac{1}{32}''$		b	$\frac{1}{32}''$	$\frac{3}{32}''$		b	$\frac{1}{32}''$	$\frac{3}{32}''$		b	$\frac{1}{32}''$	$\frac{3}{32}''$		b	$\frac{1}{32}''$	$\frac{3}{32}''$		b	$\frac{1}{32}''$	$\frac{3}{32}''$		
5	a	$\frac{1}{32}''$		a	$\frac{1}{32}''$	$\frac{10}{32}''$		a	$\frac{1}{32}''$	$\frac{10}{32}''$		a	$\frac{1}{32}''$	$\frac{10}{32}''$		a	$\frac{1}{32}''$	$\frac{10}{32}''$		a	$\frac{1}{32}''$	$\frac{10}{32}''$		
	b	$\frac{1}{32}''$		b	$\frac{1}{32}''$	$\frac{1}{32}''$		b	$\frac{1}{32}''$	$\frac{1}{32}''$		b	$\frac{1}{32}''$	$\frac{1}{32}''$		b	$\frac{1}{32}''$	$\frac{1}{32}''$		b	$\frac{1}{32}''$	$\frac{1}{32}''$		
6	a	$\frac{1}{32}''$	$\frac{1}{32}''$		a	$\frac{1}{32}''$	$\frac{1}{32}''$		a	$\frac{1}{32}''$	$\frac{1}{32}''$		a	$\frac{1}{32}''$	$\frac{1}{32}''$		a	$\frac{1}{32}''$	$\frac{1}{32}''$		a	$\frac{1}{32}''$	$\frac{1}{32}''$	
	b	$\frac{1}{32}''$	$\frac{31}{32}''$		b	$\frac{1}{32}''$	$\frac{31}{32}''$		b	$\frac{1}{32}''$	$\frac{31}{32}''$		b	$\frac{1}{32}''$	$\frac{31}{32}''$		b	$\frac{1}{32}''$	$\frac{31}{32}''$		b	$\frac{1}{32}''$	$\frac{31}{32}''$	
7	a	$\frac{1}{32}''$	$\frac{1}{32}''$		a	$\frac{1}{32}''$	$\frac{14}{32}''$		a	$\frac{1}{32}''$	$\frac{14}{32}''$		a	$\frac{1}{32}''$	$\frac{14}{32}''$		a	$\frac{1}{32}''$	$\frac{14}{32}''$		a	$\frac{1}{32}''$	$\frac{14}{32}''$	
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8	a	$\frac{1}{32}''$		a	$\frac{1}{32}''$	$\frac{1}{32}''$		a	$\frac{1}{32}''$	$\frac{1}{32}''$		a	$\frac{1}{32}''$	$\frac{1}{32}''$		a	$\frac{1}{32}''$	$\frac{1}{32}''$		a	$\frac{1}{32}''$	$\frac{1}{32}''$		
	b	1"		b	1"		b	1"		b	1"		b	1"		b	1"							

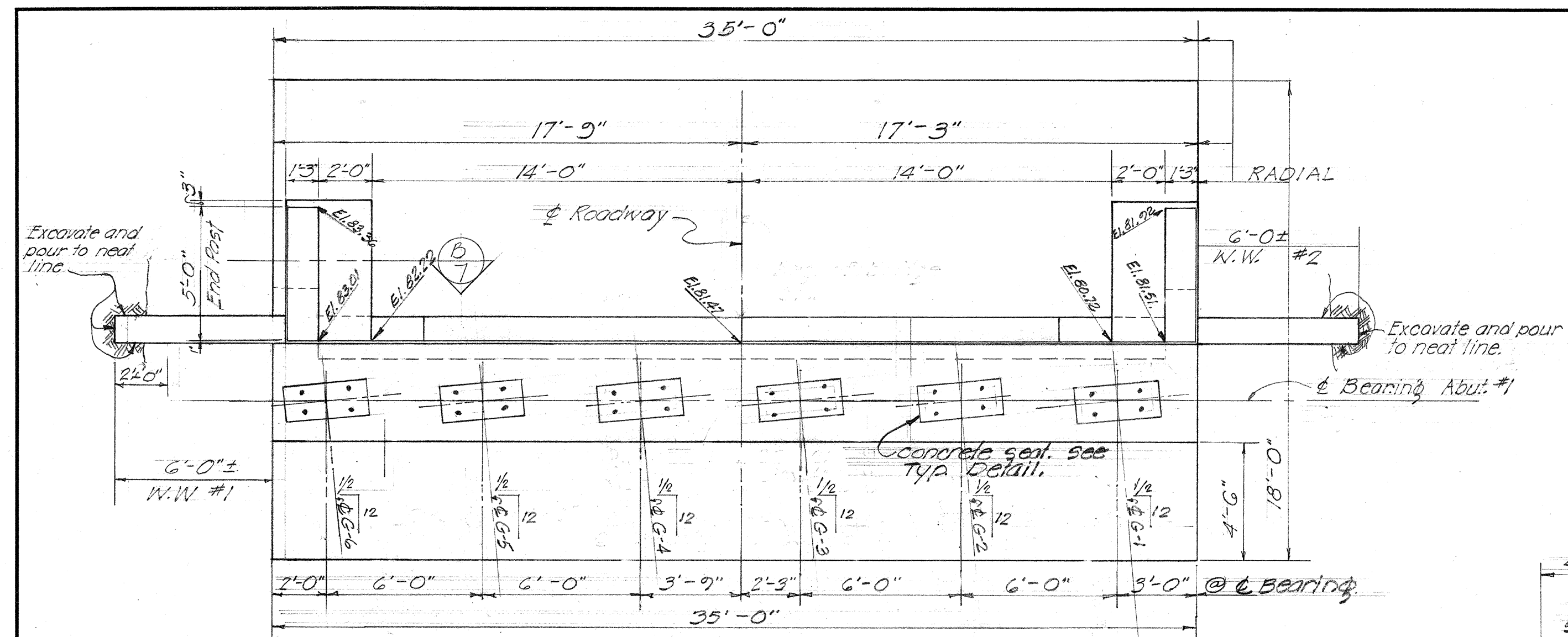


TYPICAL DETAIL

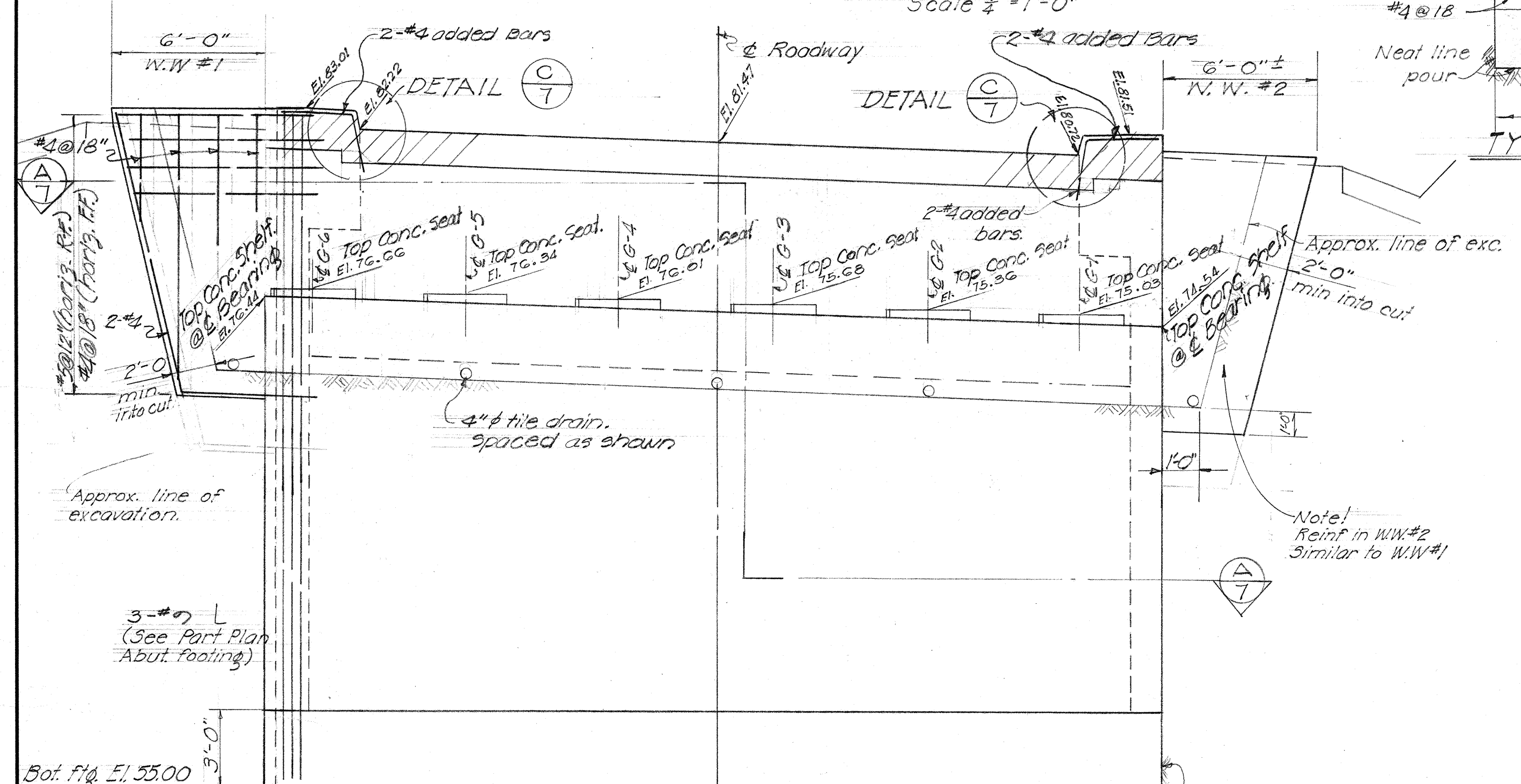
CONNECTION # ANCHOR TO PRESTRESSED GIRDER
Scale: 1 1/2" = 1'-0"

SURVEY PLOTTED BY
PLAN
DRAWN BY
CHECKED BY
NOTE BOOK
NO.

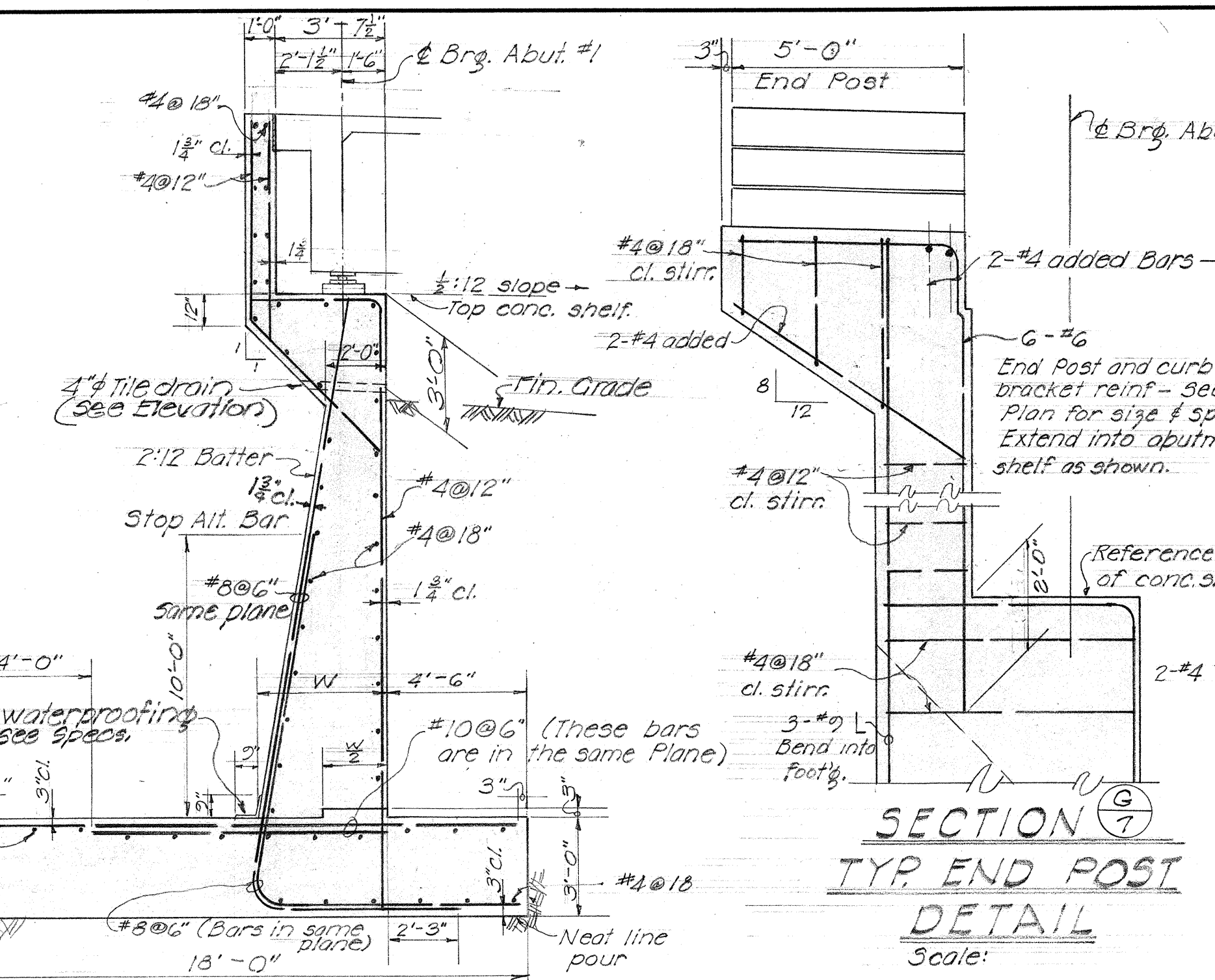
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-7(1)	1961	40	77



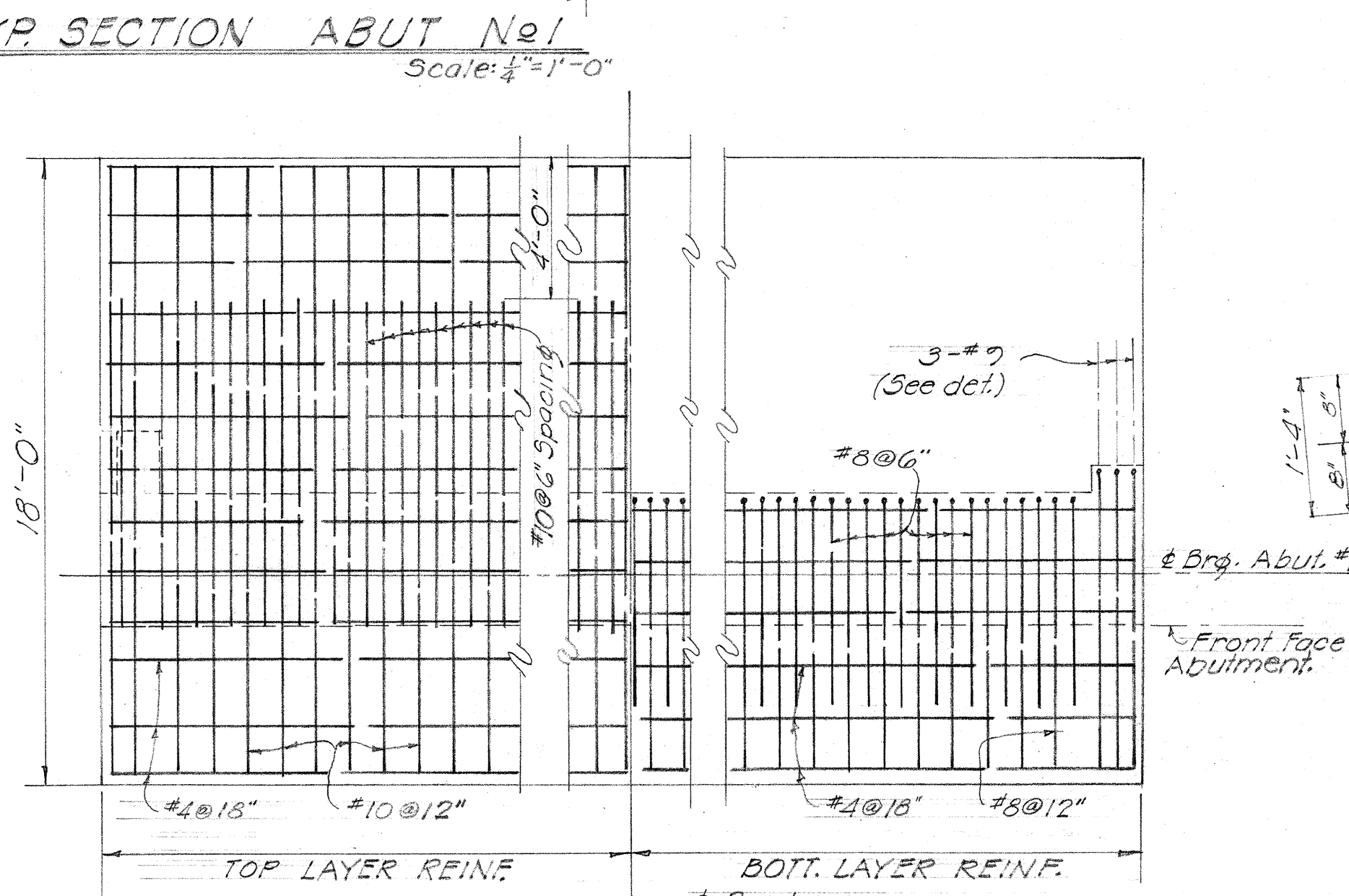
PLAN ~ ABUTMENT No 1
Scale: 1/4" = 1'-0"



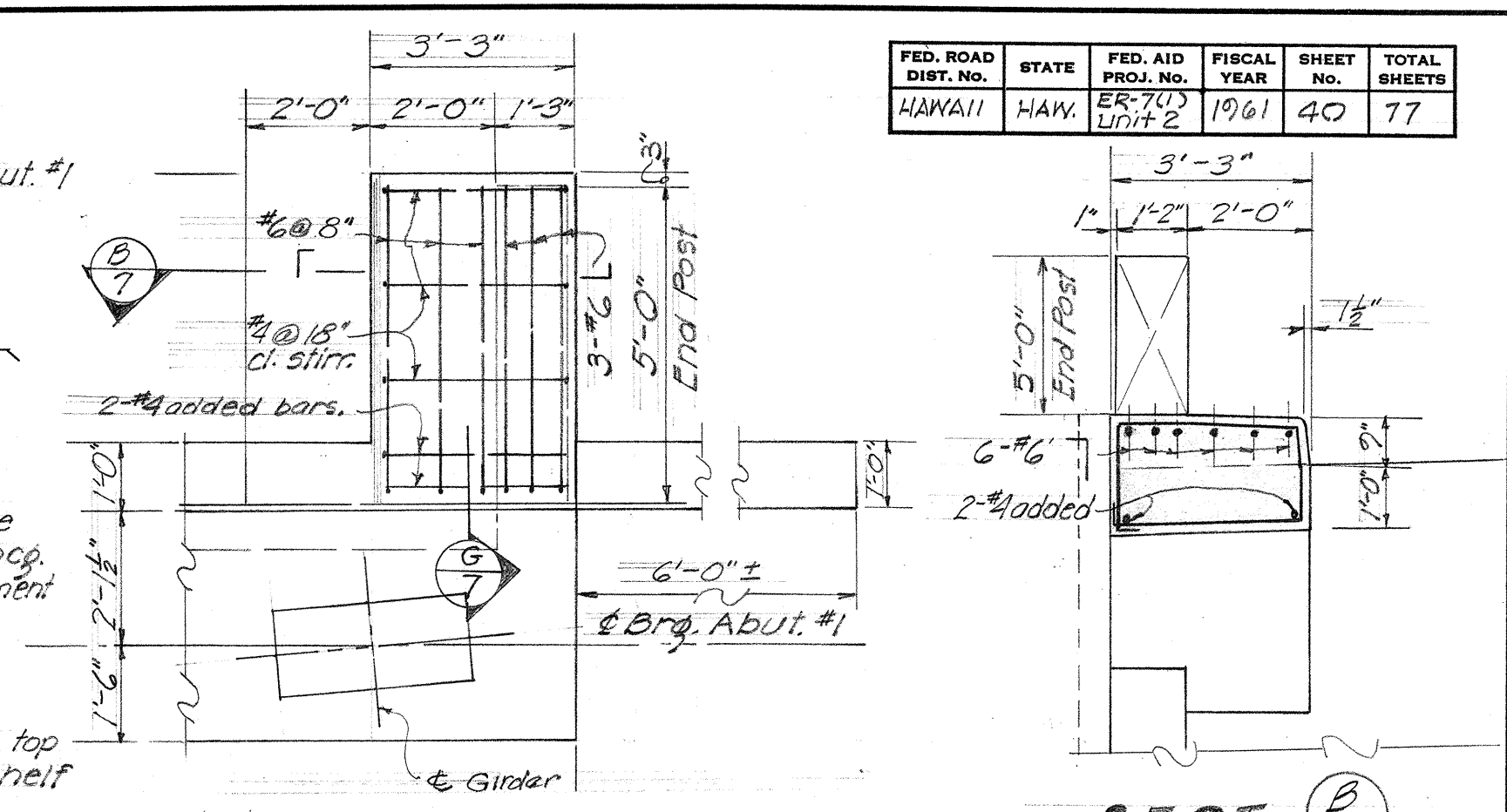
ELEVATION ~ ABUTMENT No 1
Scale: 1/4" = 1'-0"



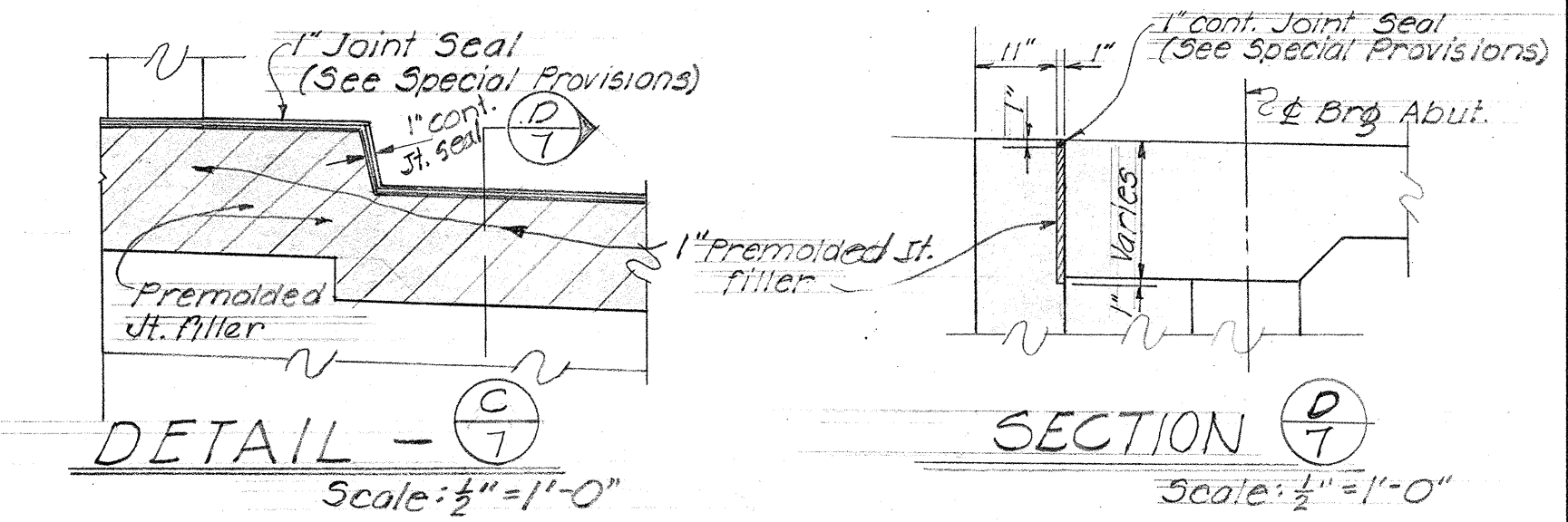
SECTION 6
TYP. END POST
DETAIL
Scale: 1/2" = 1'-0"



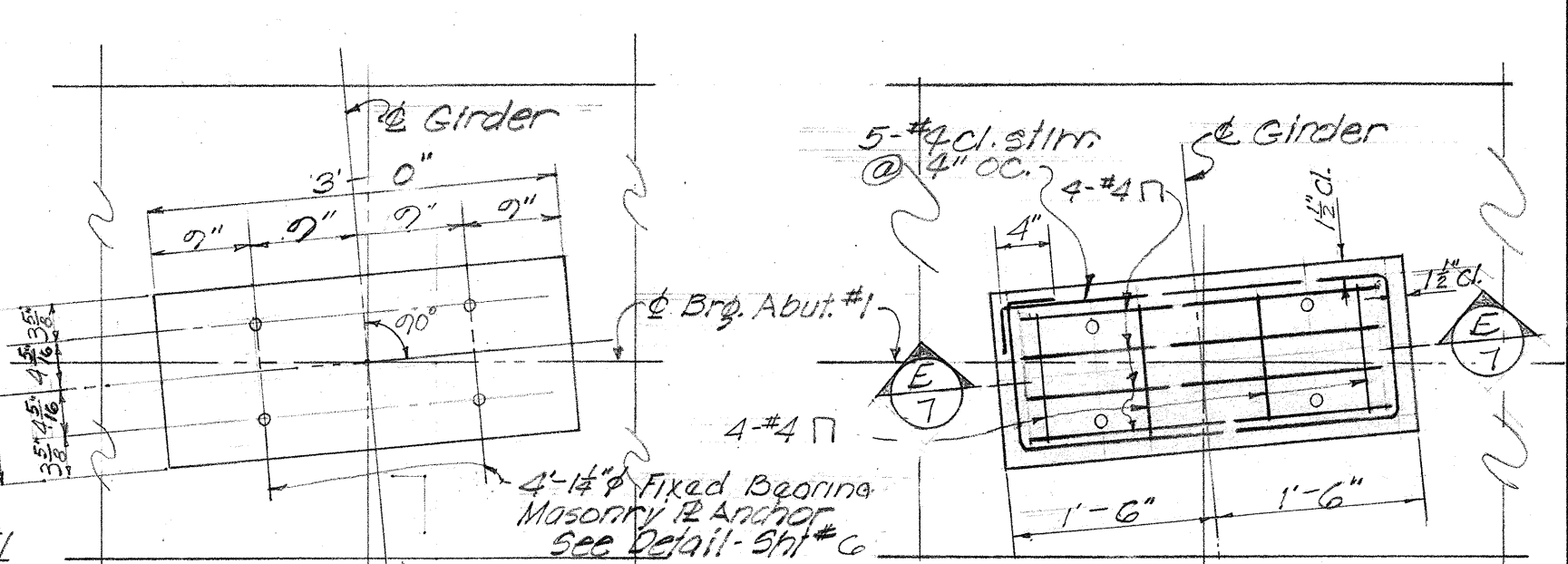
PART PLAN ~ ABUTMENT FOOTING
Scale: 1/4" = 1'-0"



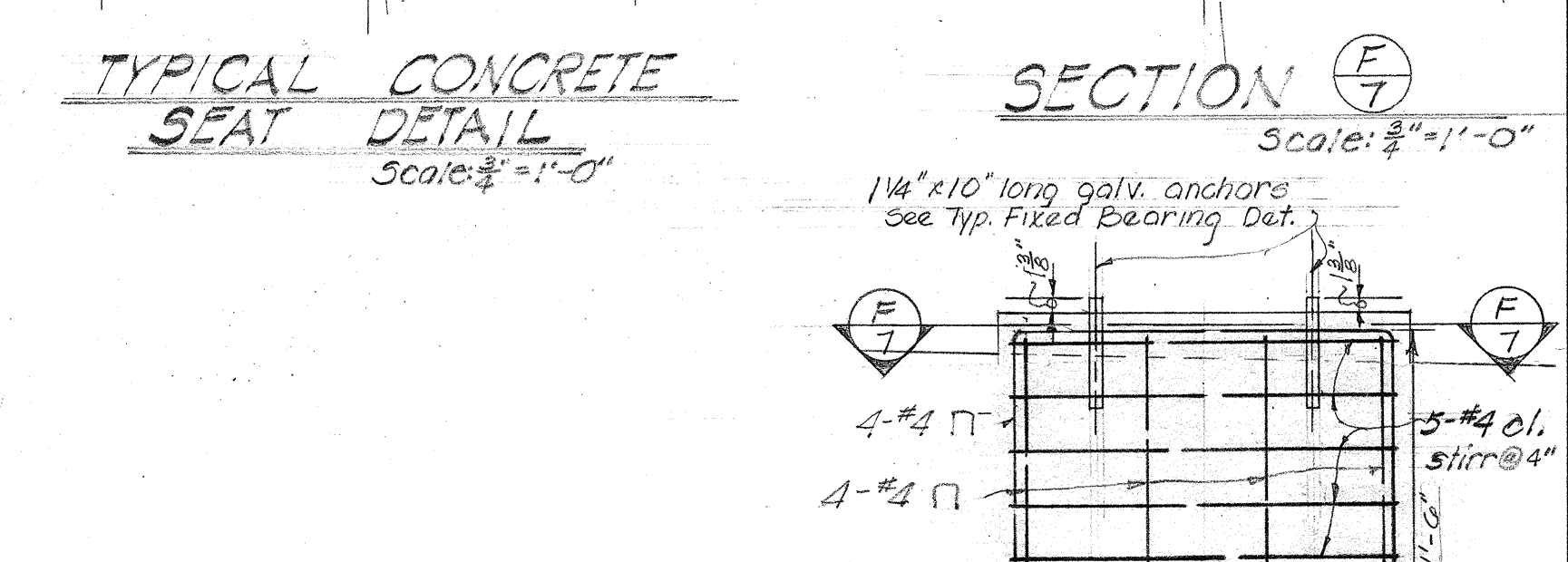
PLAN - END POST
Scale: 1/2" = 1'-0"



DETAIL - 7
Scale: 1/2" = 1'-0"



TYPICAL CONCRETE
SEAT DETAIL
Scale: 1/4" = 1'-0"



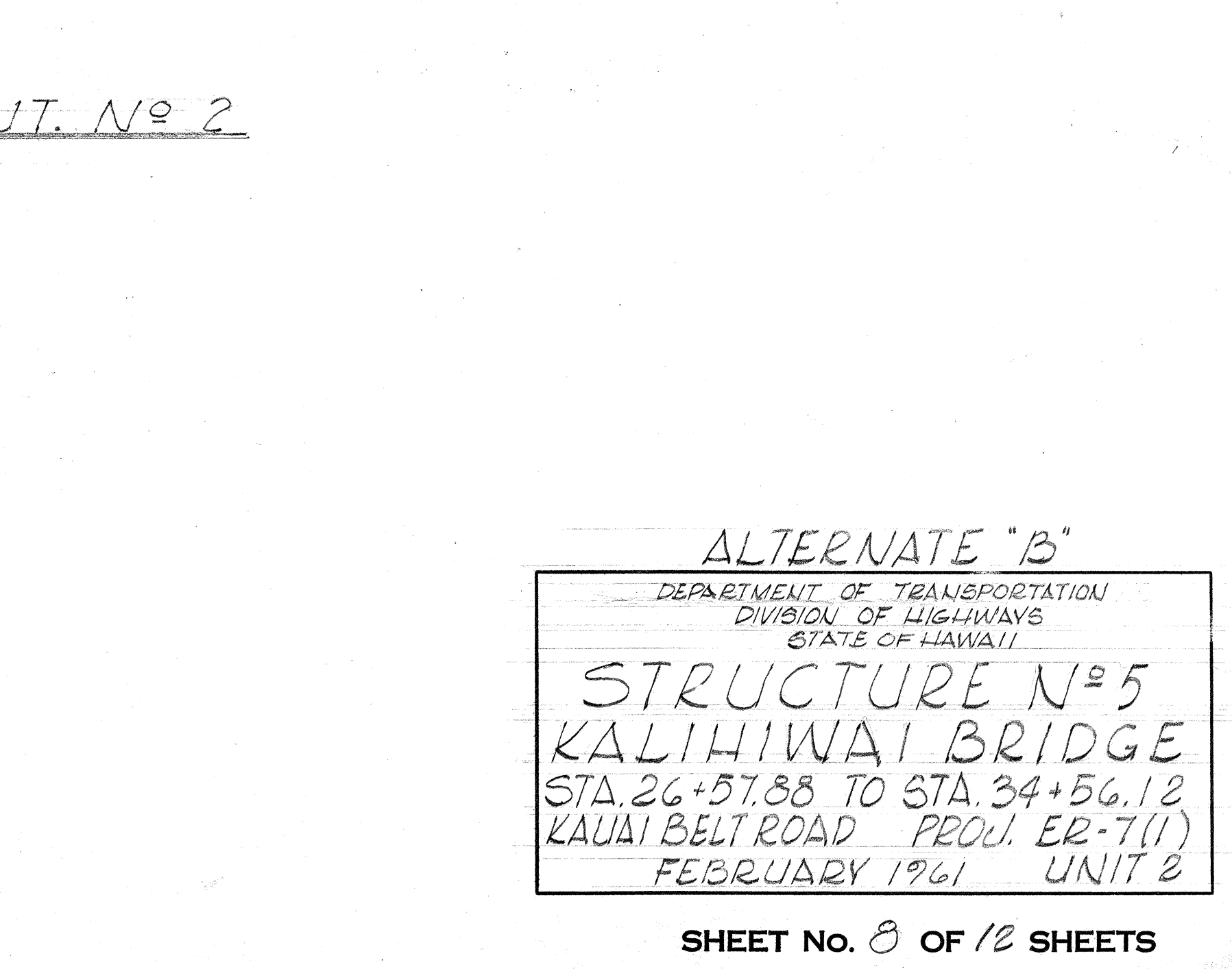
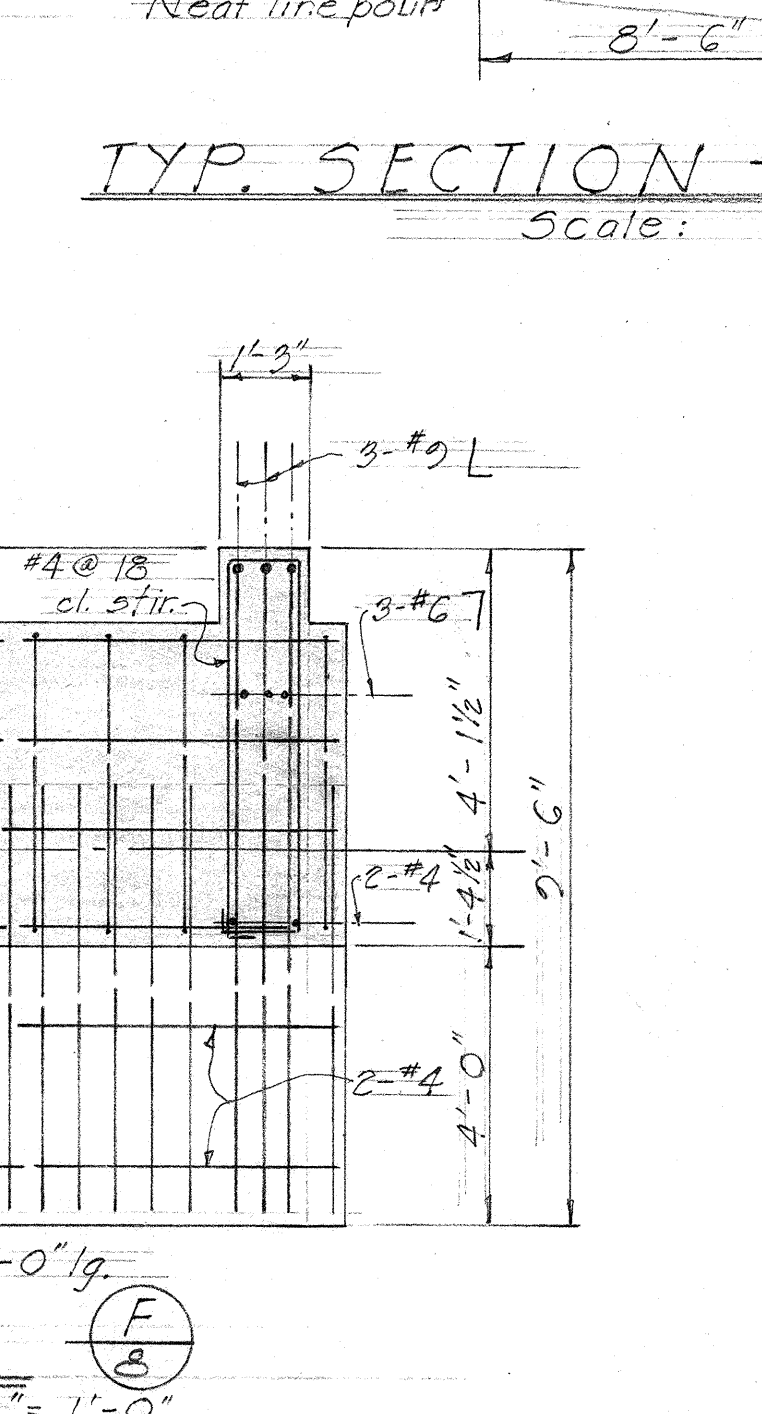
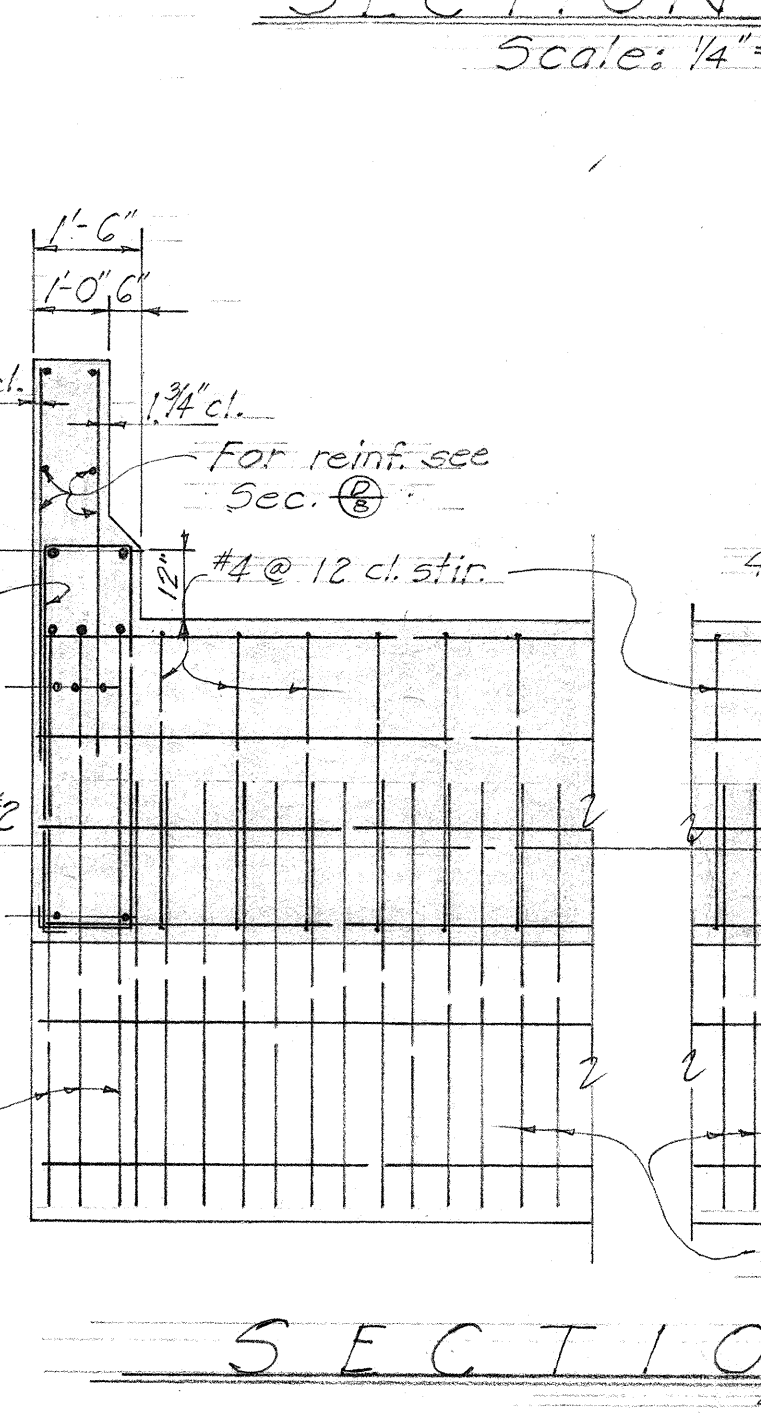
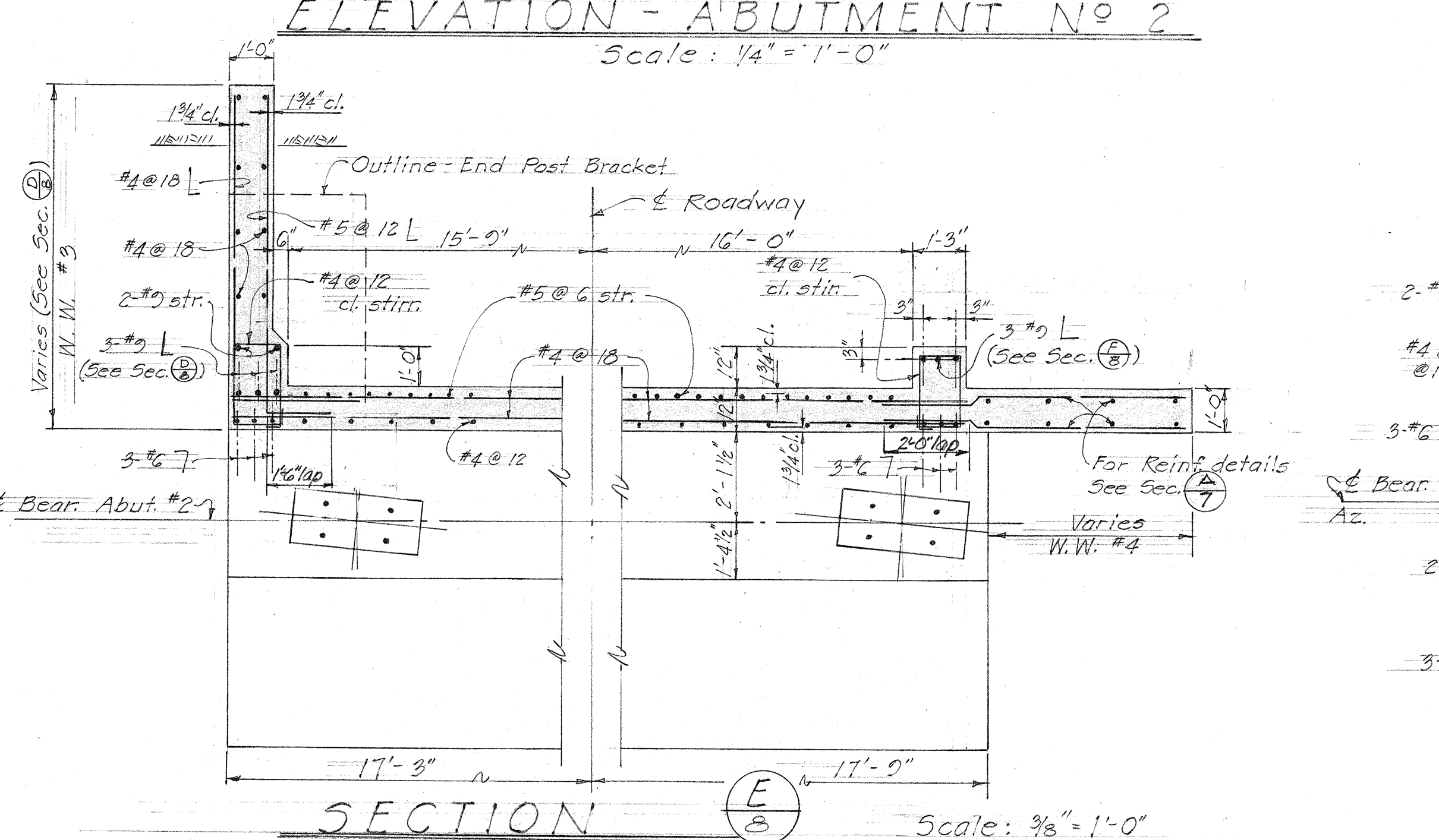
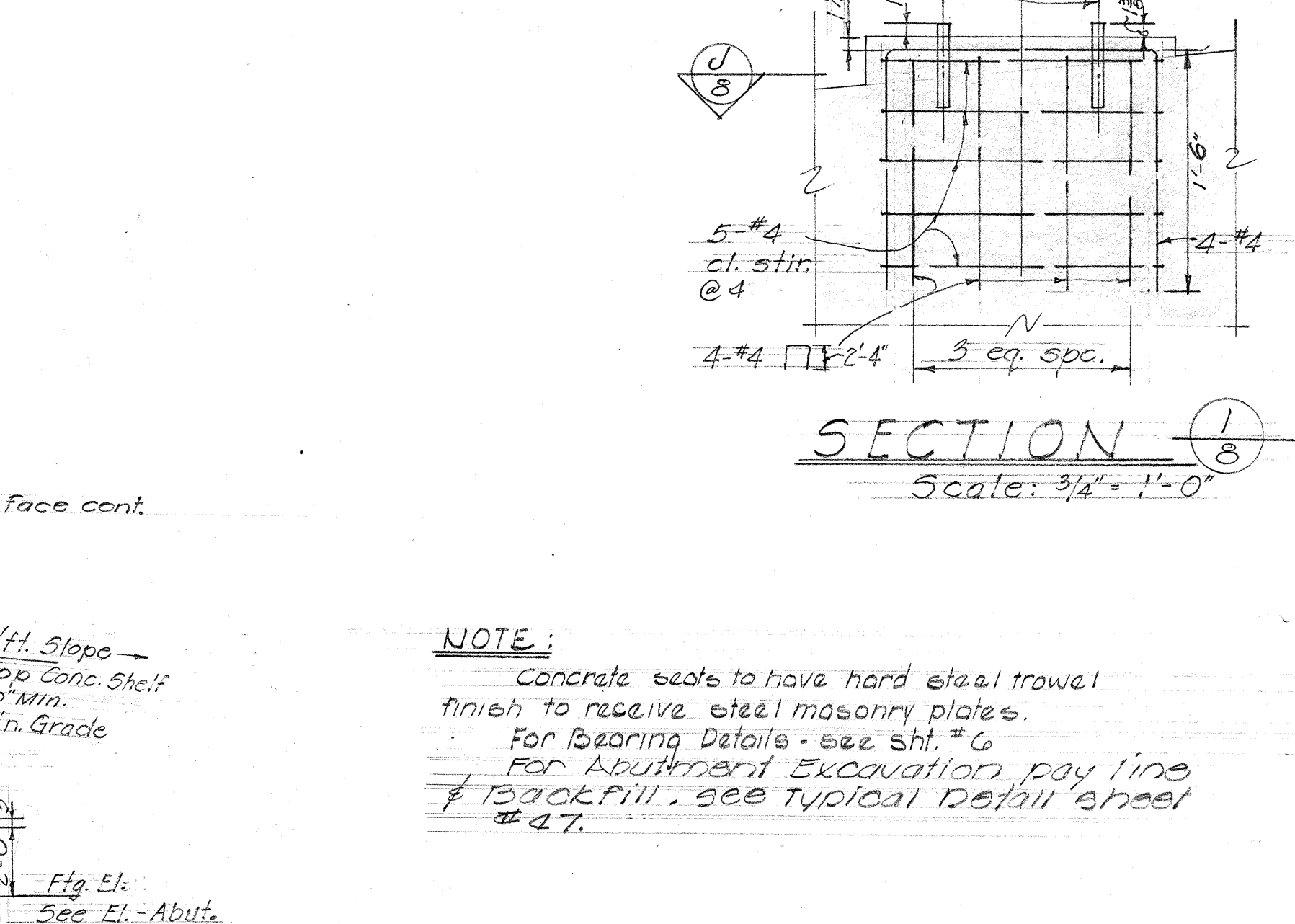
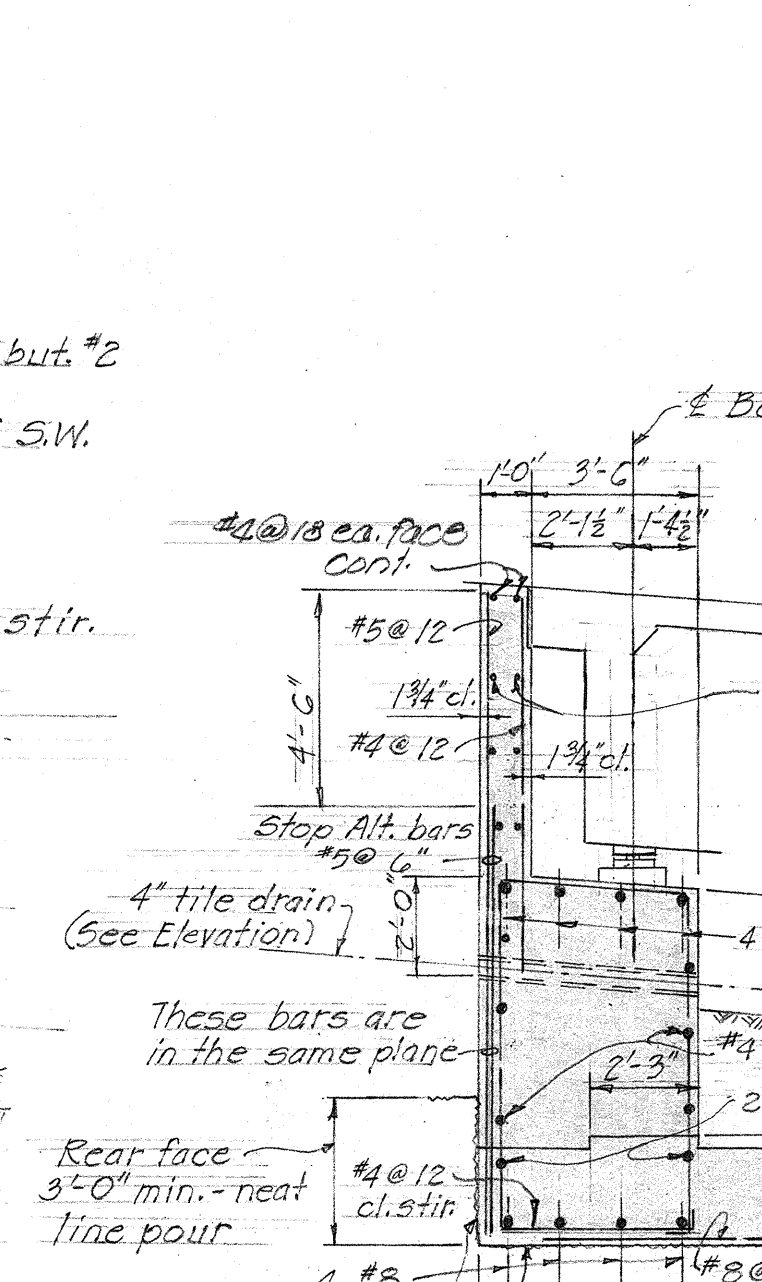
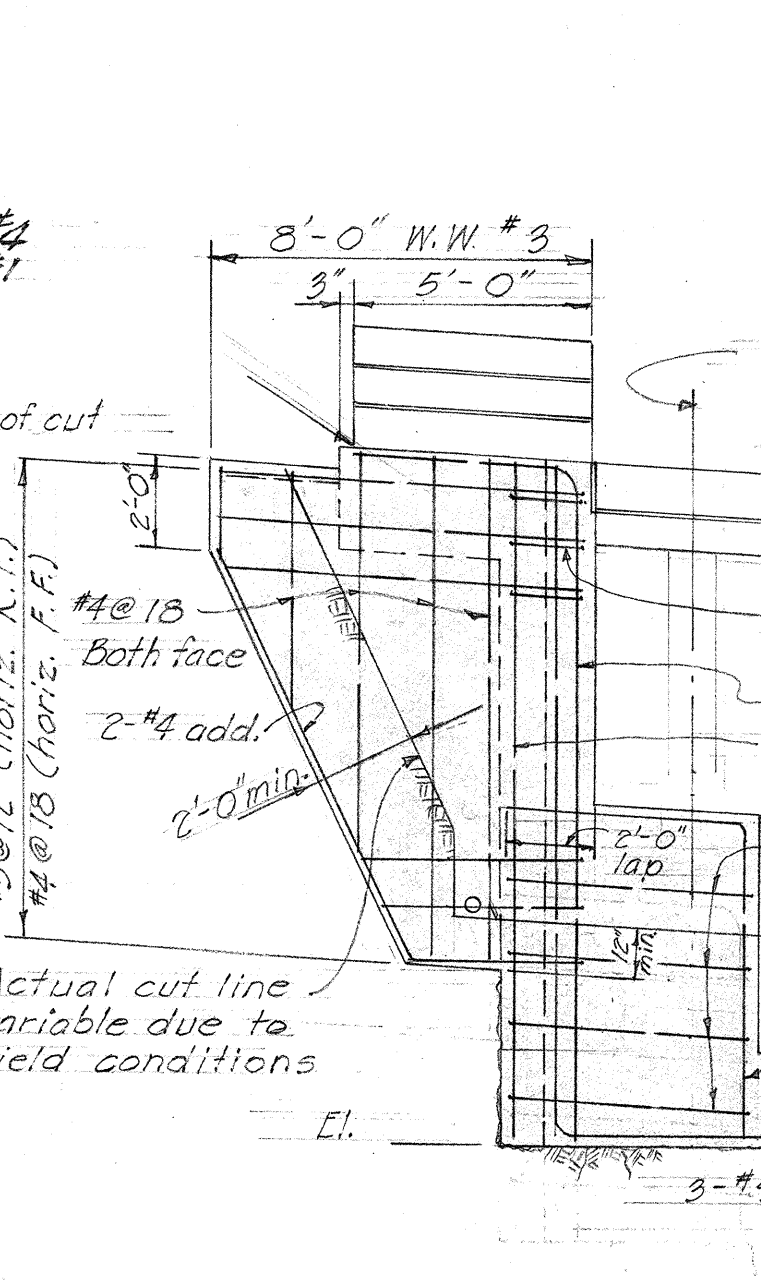
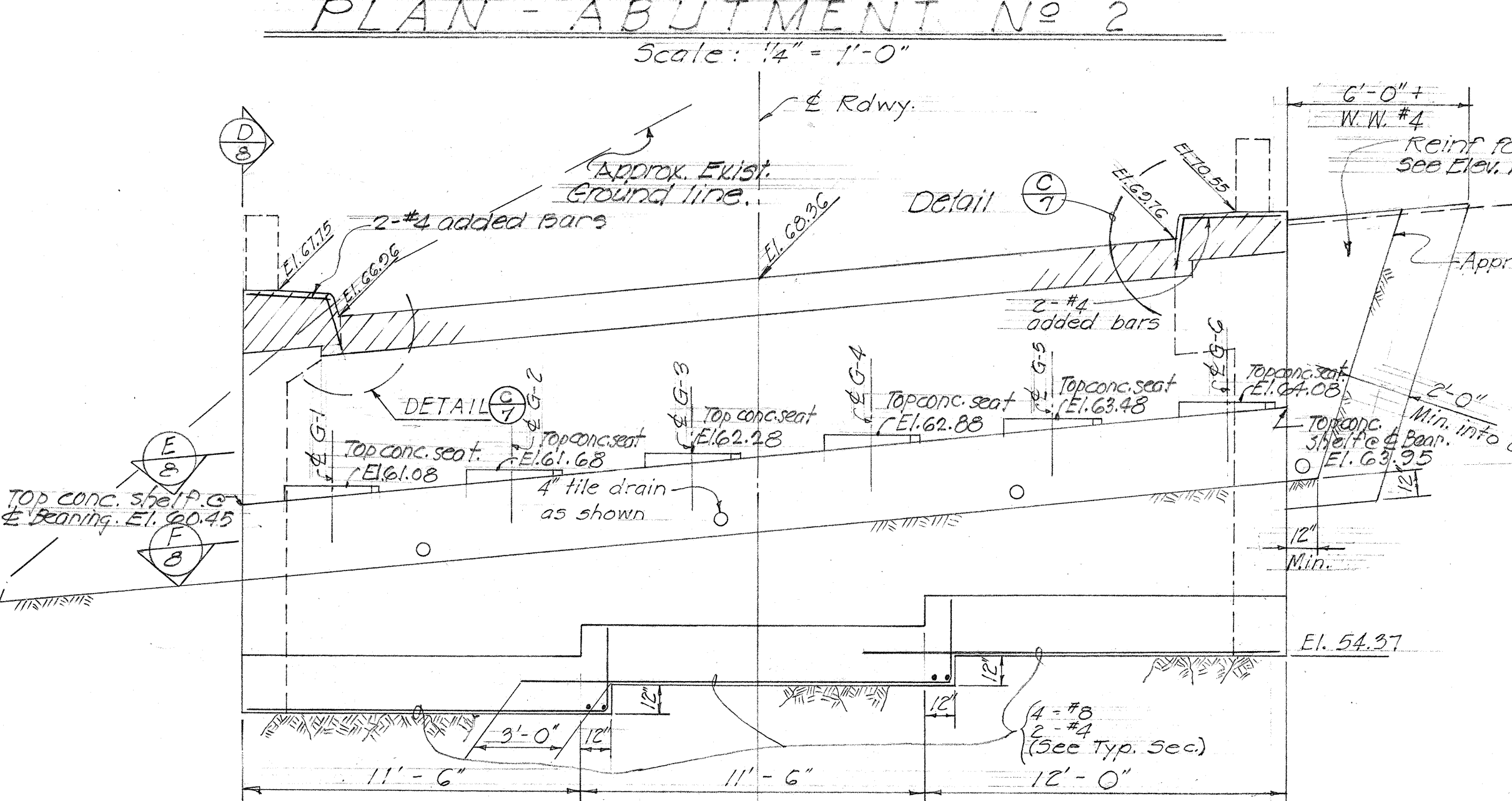
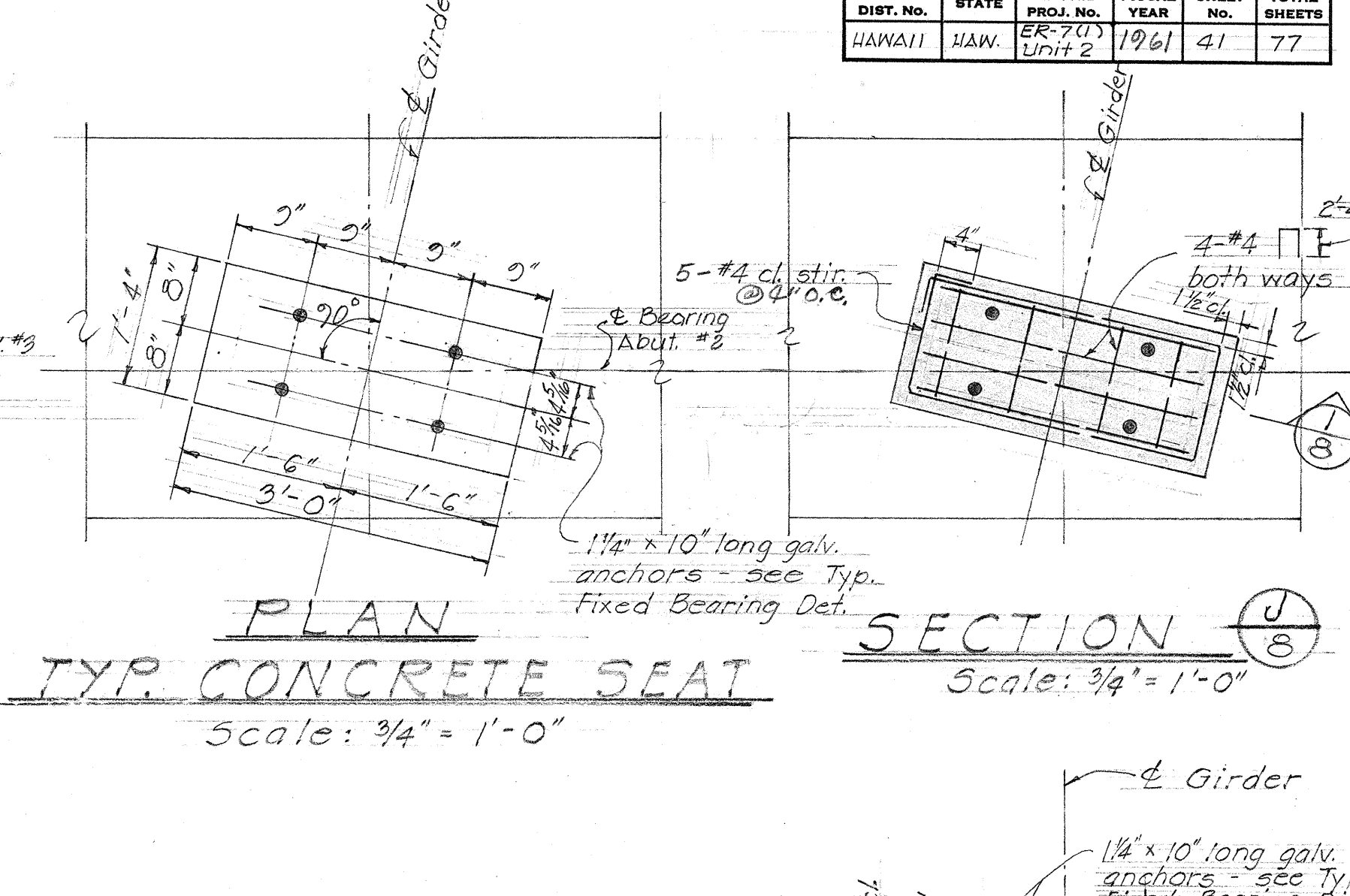
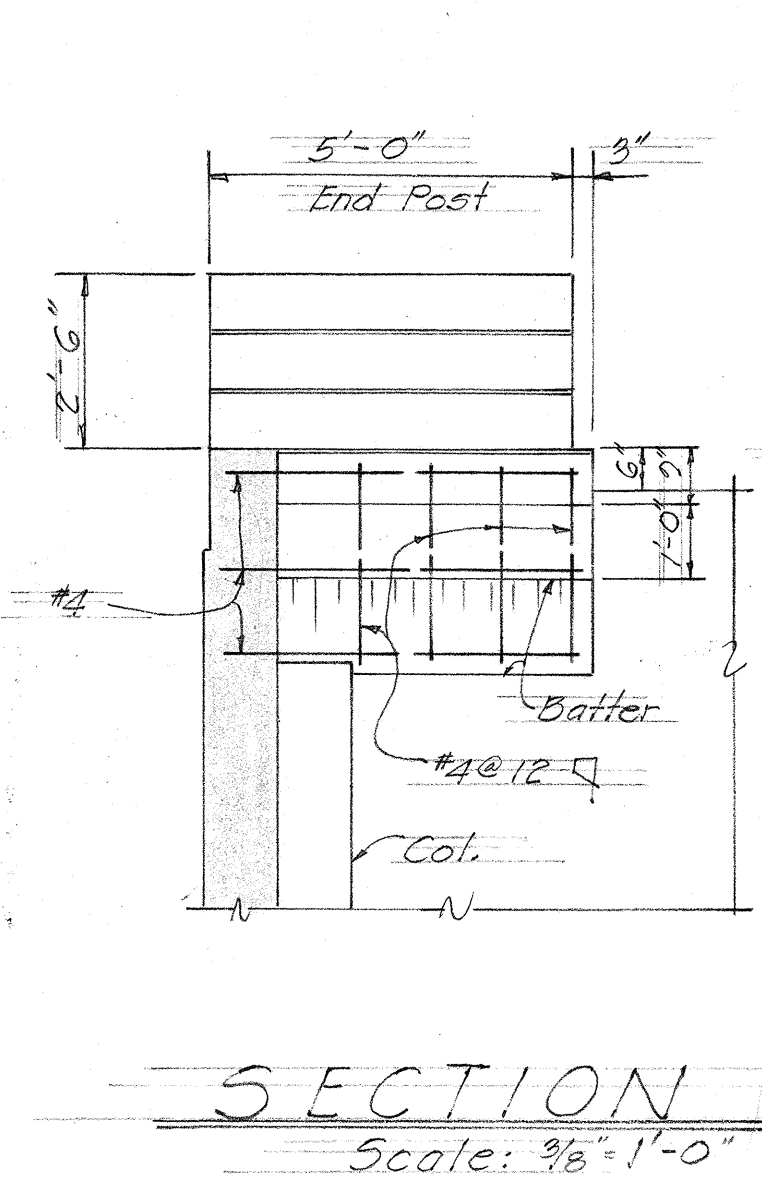
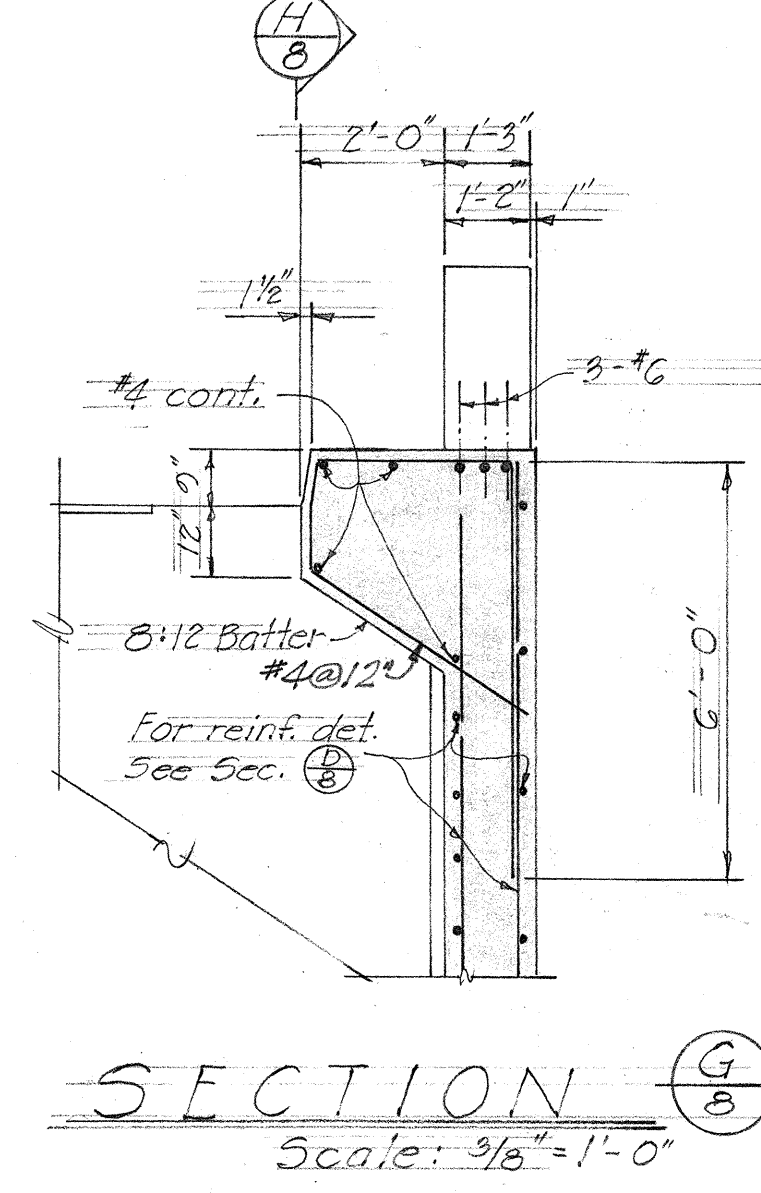
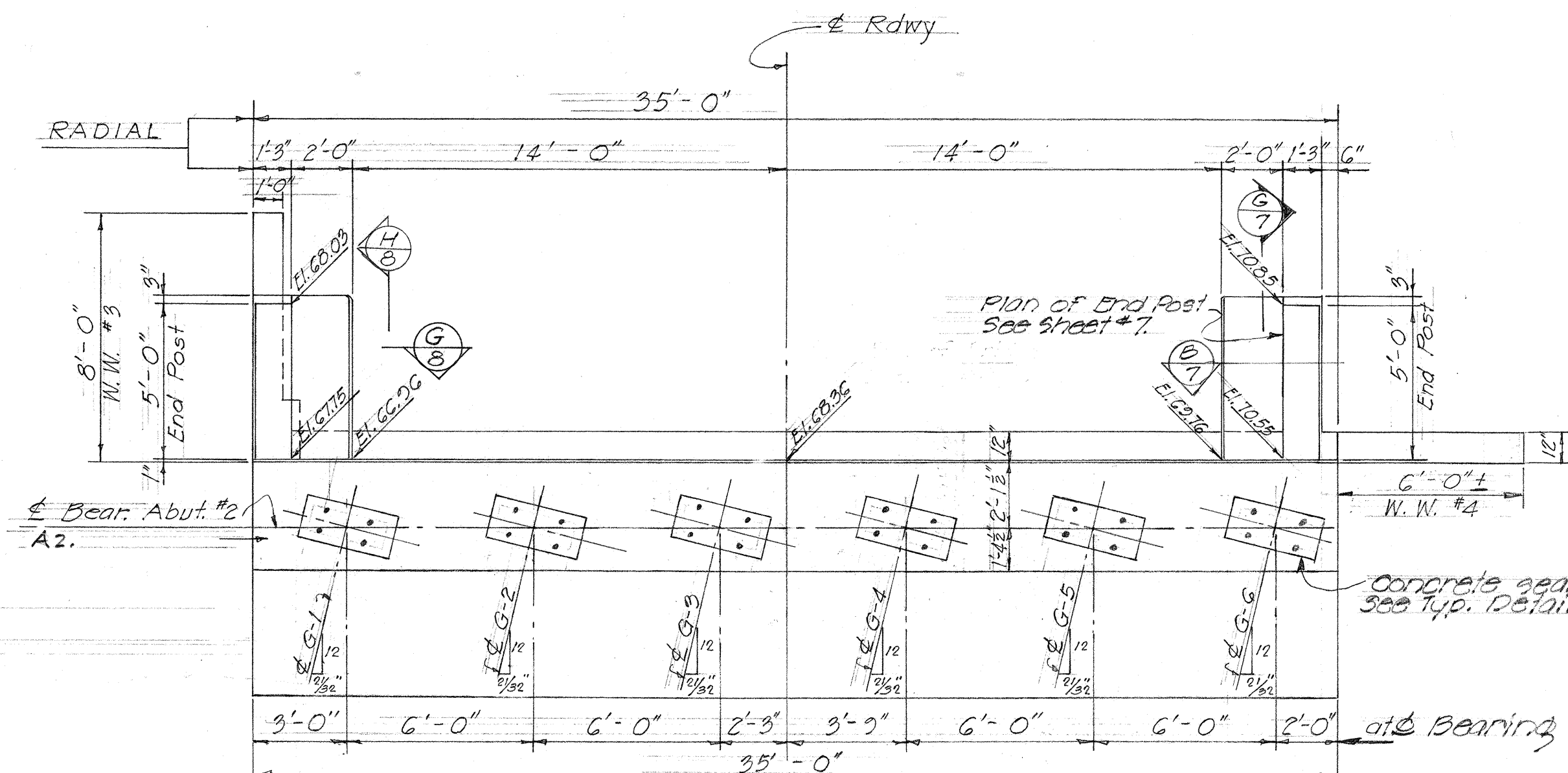
SECTION 7
Scale: 1/2" = 1'-0"

NOTE:
Concrete seats to have a hard steel trowel finish to receive steel masonry plates.
For Bearing Details - see sheet #40
For Abutment Excavation pay line & backfill see Typical Detail sheet #47

ALTERNATE "B"
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
STATE OF HAWAII
STRUCTURE No 5
KALIHUWAI BRIDGE
STA. 26+57.88 TO STA. 34+56.12
KAUAI BELT ROAD PROJ. ER-7(1)
FEBRUARY 1961 UNIT 2

SHEET No. 7 OF 12 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-7(1) Unit 2	1961	41	77



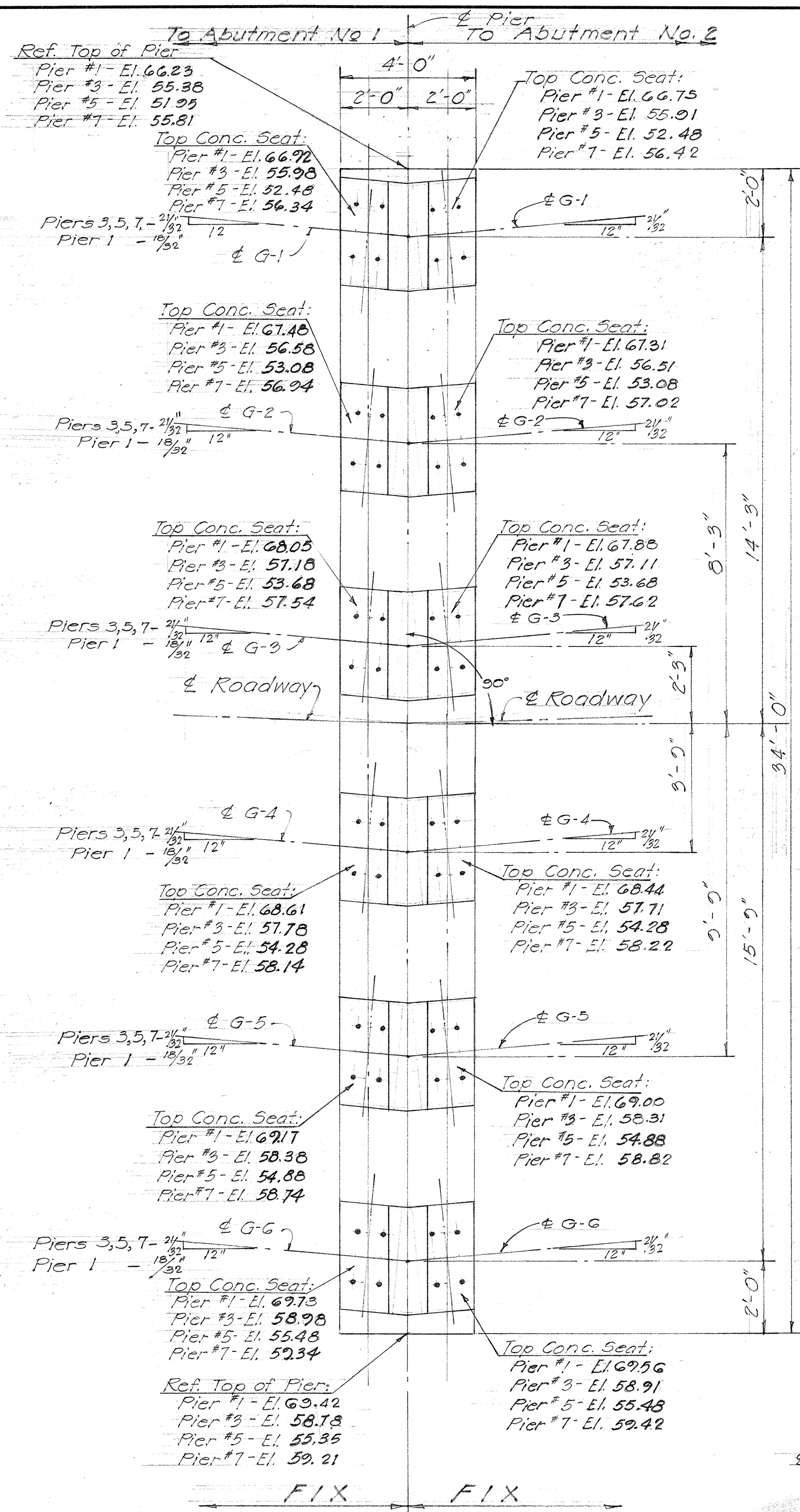
NOTE:
Concrete seats to have hard steel trowel finish to receive steel masonry plates.
For Bearing Details - see Sht. # 6
For Abutment Excavation pay line \$ 1300.00, see typical detail sheet # 47.

ALTERNATE "B"
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
STATE OF HAWAII
STRUCTURE NO 5
KALIHUWAI BRIDGE
STA. 26+57.88 TO STA. 34+56.12
KAUAI BELT ROAD PROJ. ER-7(1)
FEBRUARY 1961 UNIT 2

SHEET NO. 8 OF 12 SHEETS

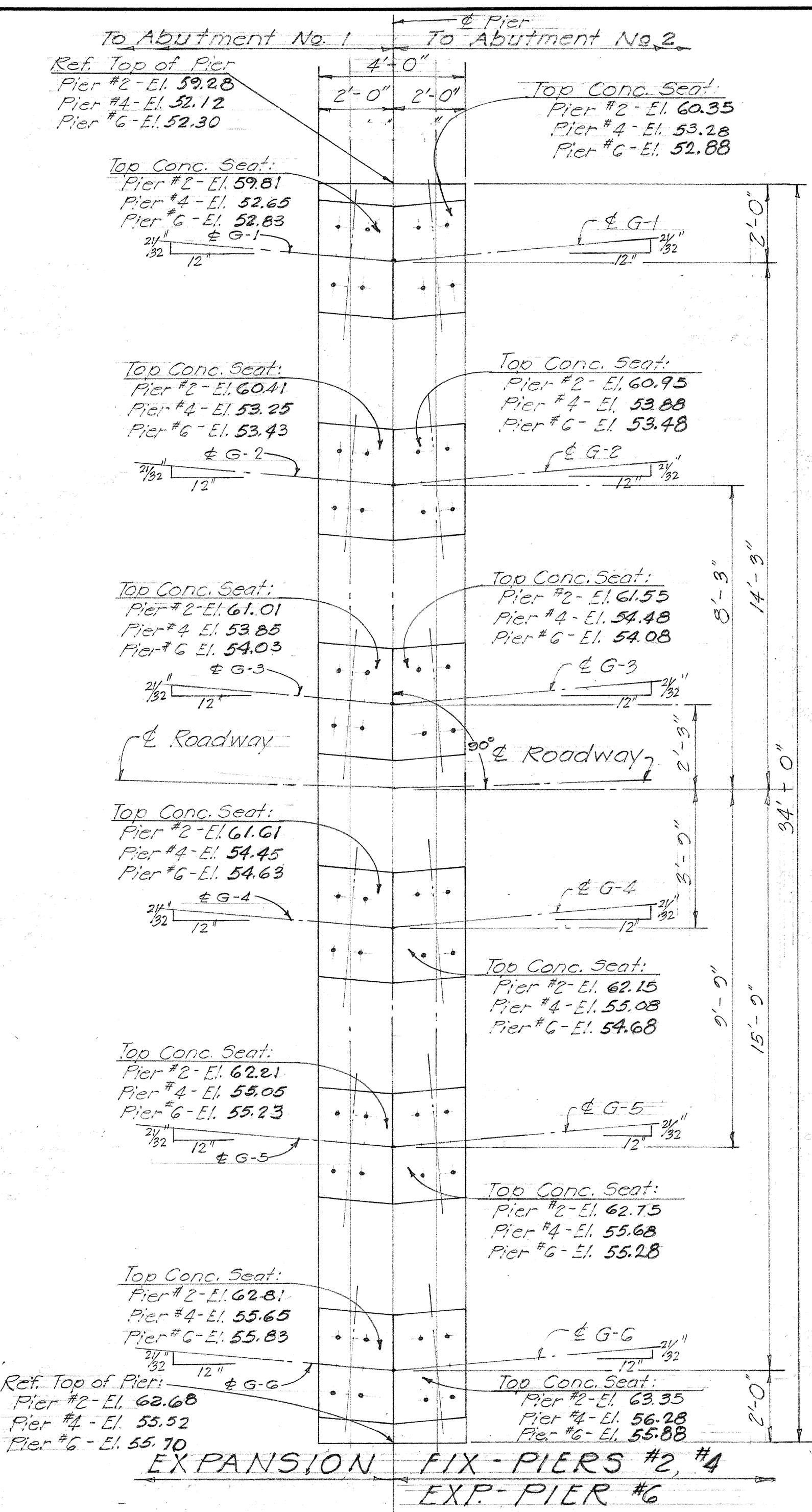
SURVEY PLOTTED BY	DATE
DESIGNED BY	
DRAWN BY	
CHECKED BY	
NOTED BY	
QUANTITIES CHECKED BY	
NO.	

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-703 UNIT 2	1961	42	77

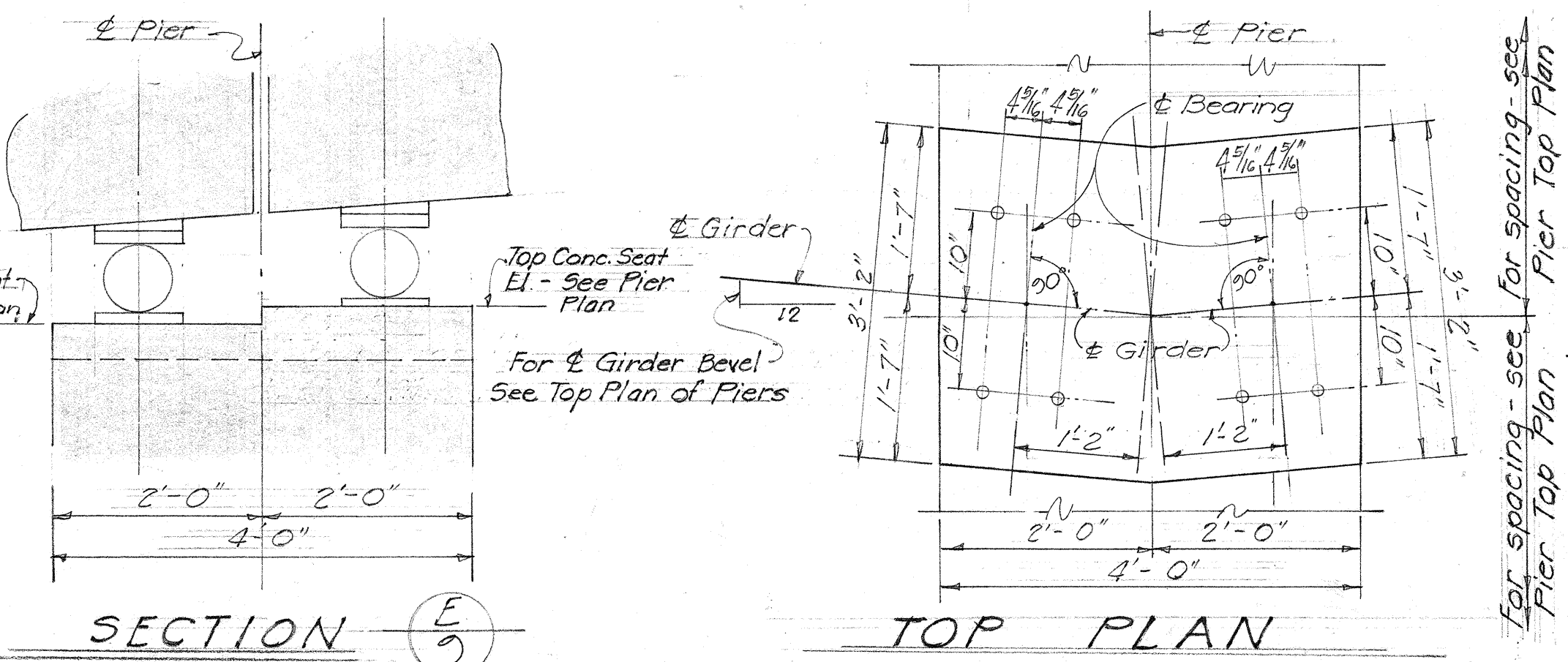


TOP PLAN
PIERS NO 1, 3, 5, 7
Scale: 3/8" = 1'-0"

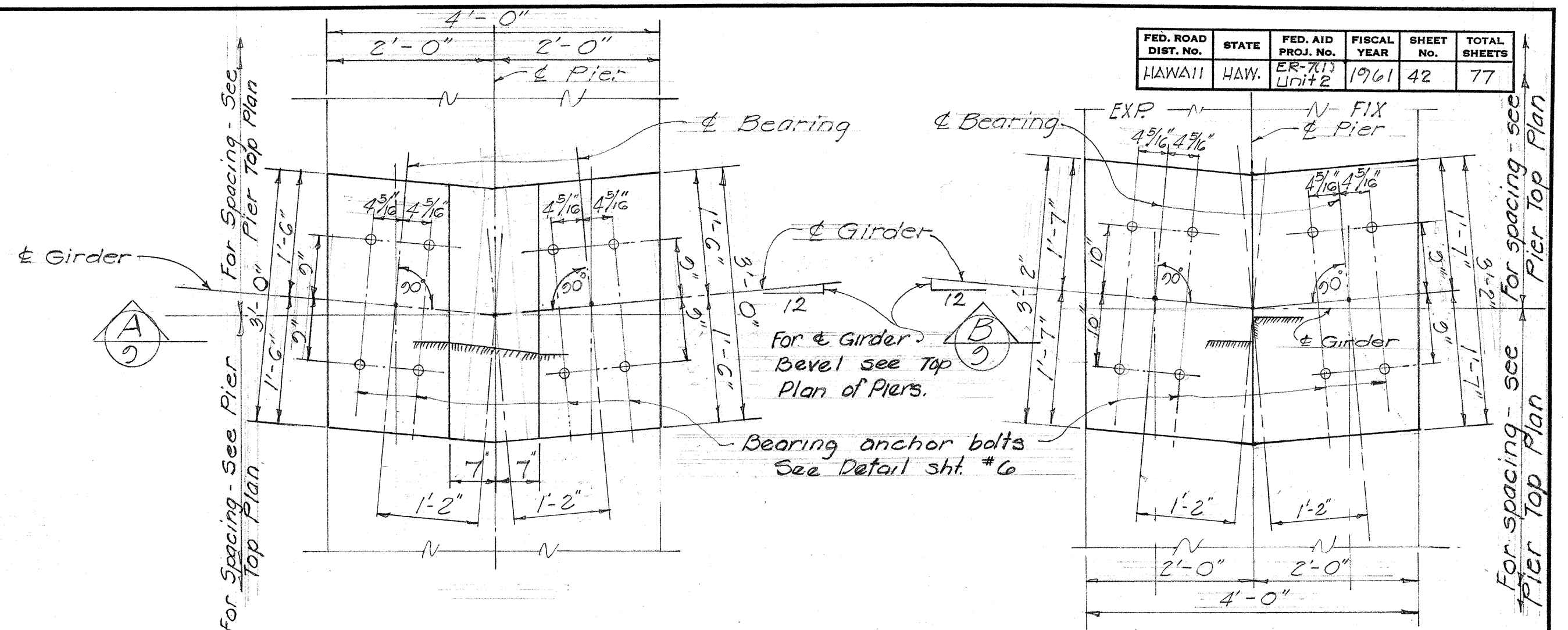
Notes:
Important! Top of all concrete seats to have hard steel trowel finish to receive steel bearings.



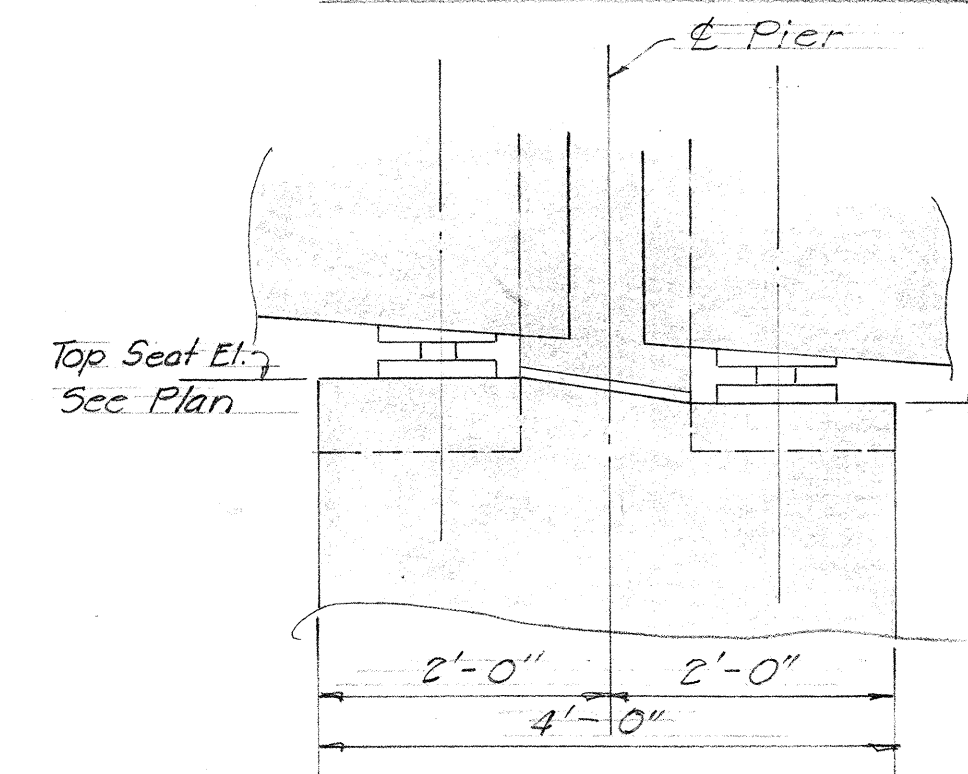
EXPANSION FIX-PIERS #2, #4
EXP-PIER #6
TOP PLAN-PIERS NO 2, 4, 6 Scale: 3/8" = 1'-0"



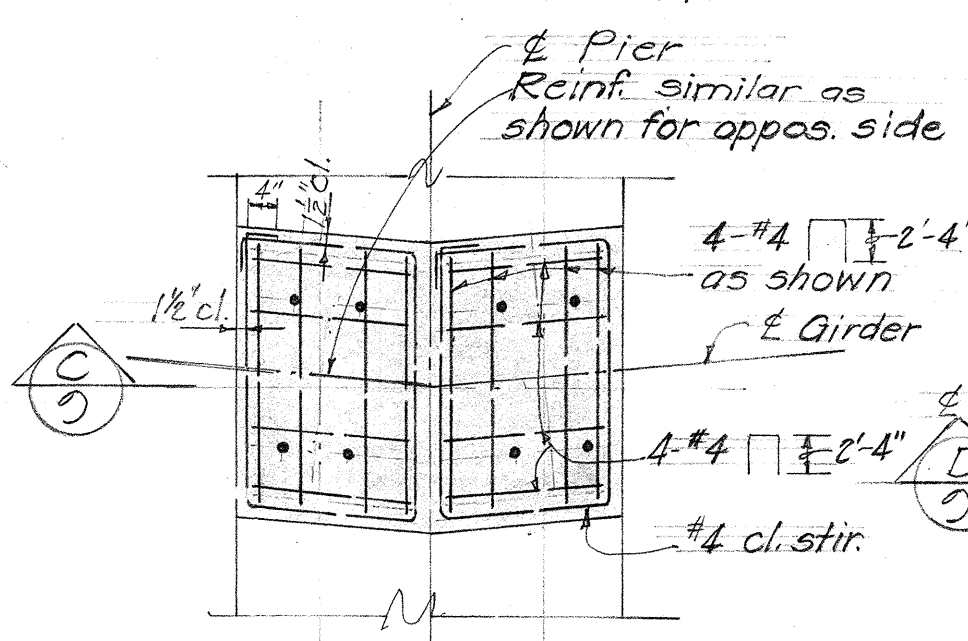
SECTION E
TYPICAL CONCRETE SEAT DETAIL-PIER NO 6 Scale: 3/4" = 1'-0"



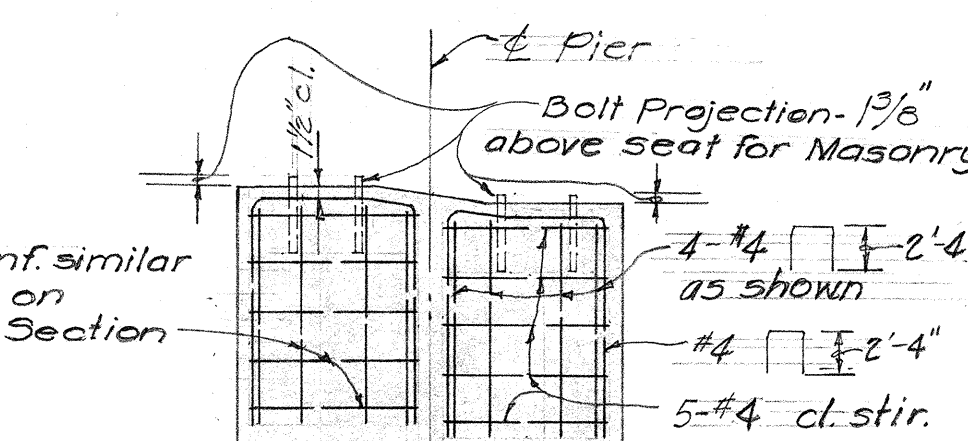
TOP PLAN



SECTION A
TYPICAL CONCRETE SEAT
DETAIL-PIERS NO 1, 3, 5, 7
Scale: 3/4" = 1'-0"



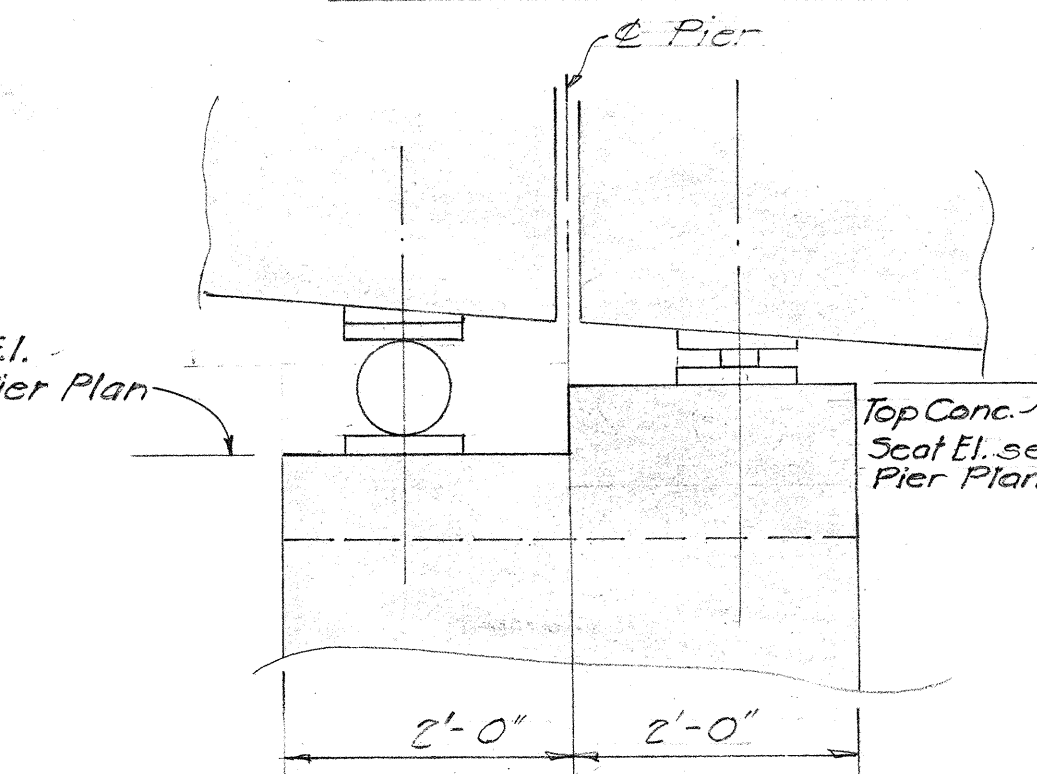
PLAN



SECTION C

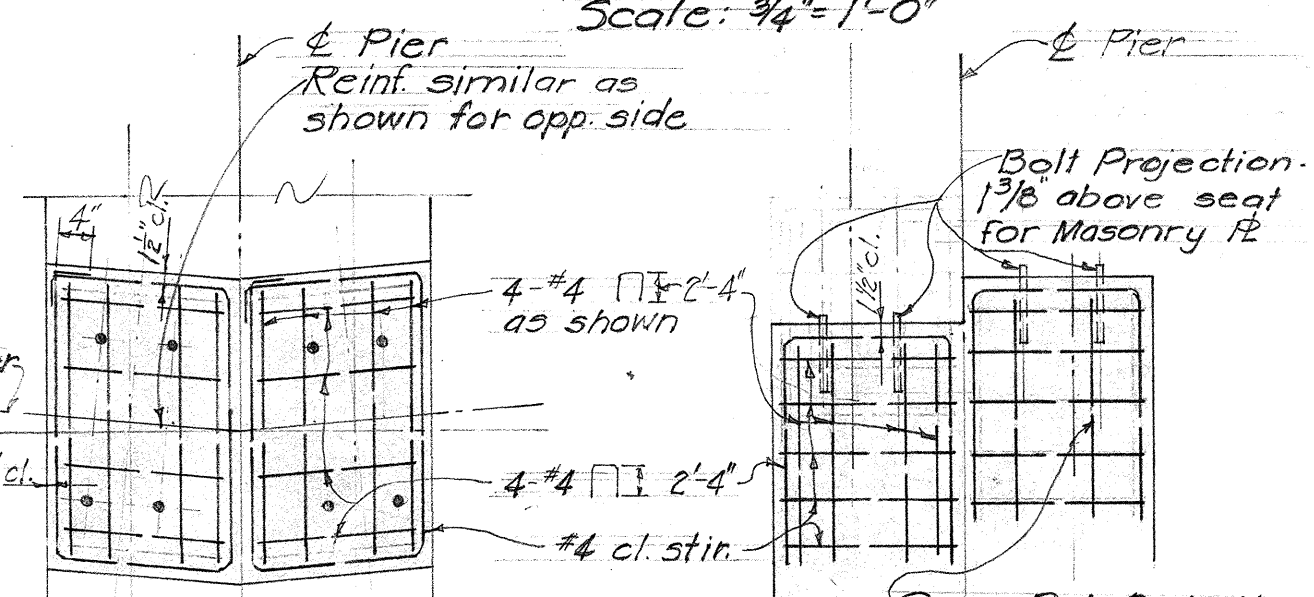
TYPICAL CONCRETE SEAT
REINFORCING-PIERS NO 1, 3, 5, 6
Scale: 1/2" = 1'-0"

TOP PLAN



SECTION B

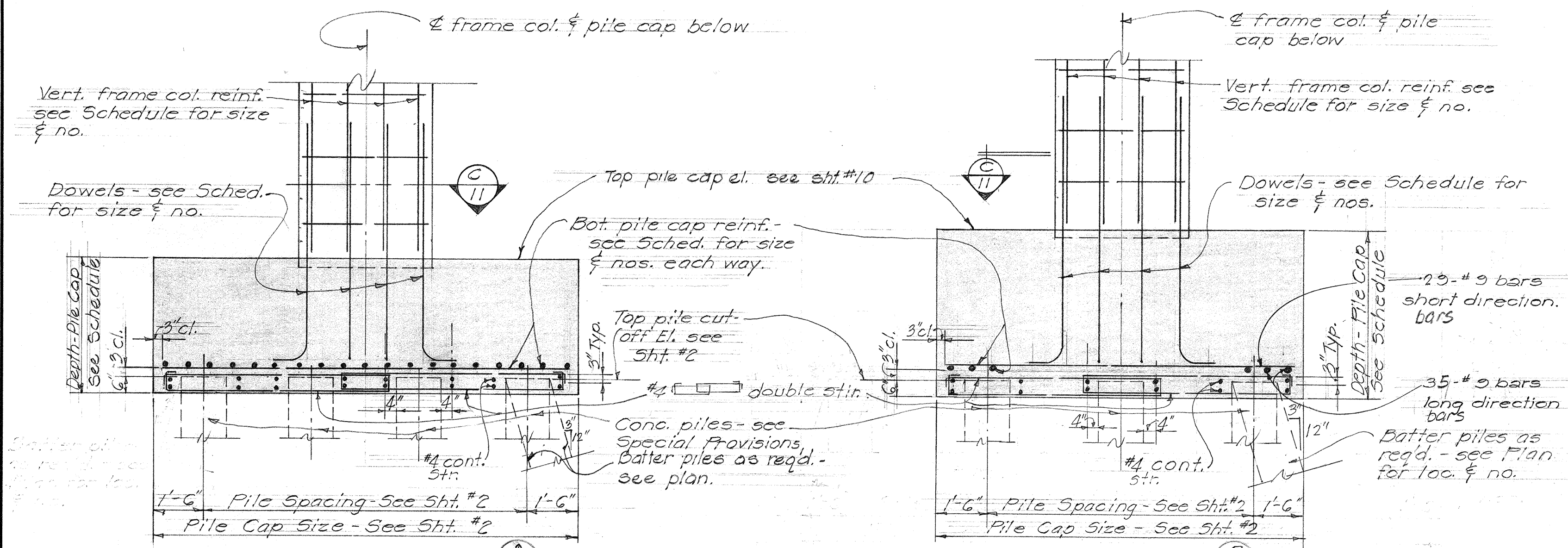
TYP. CONCRETE SEAT
DETAIL-PIERS NO 2, 4
Scale: 3/4" = 1'-0"



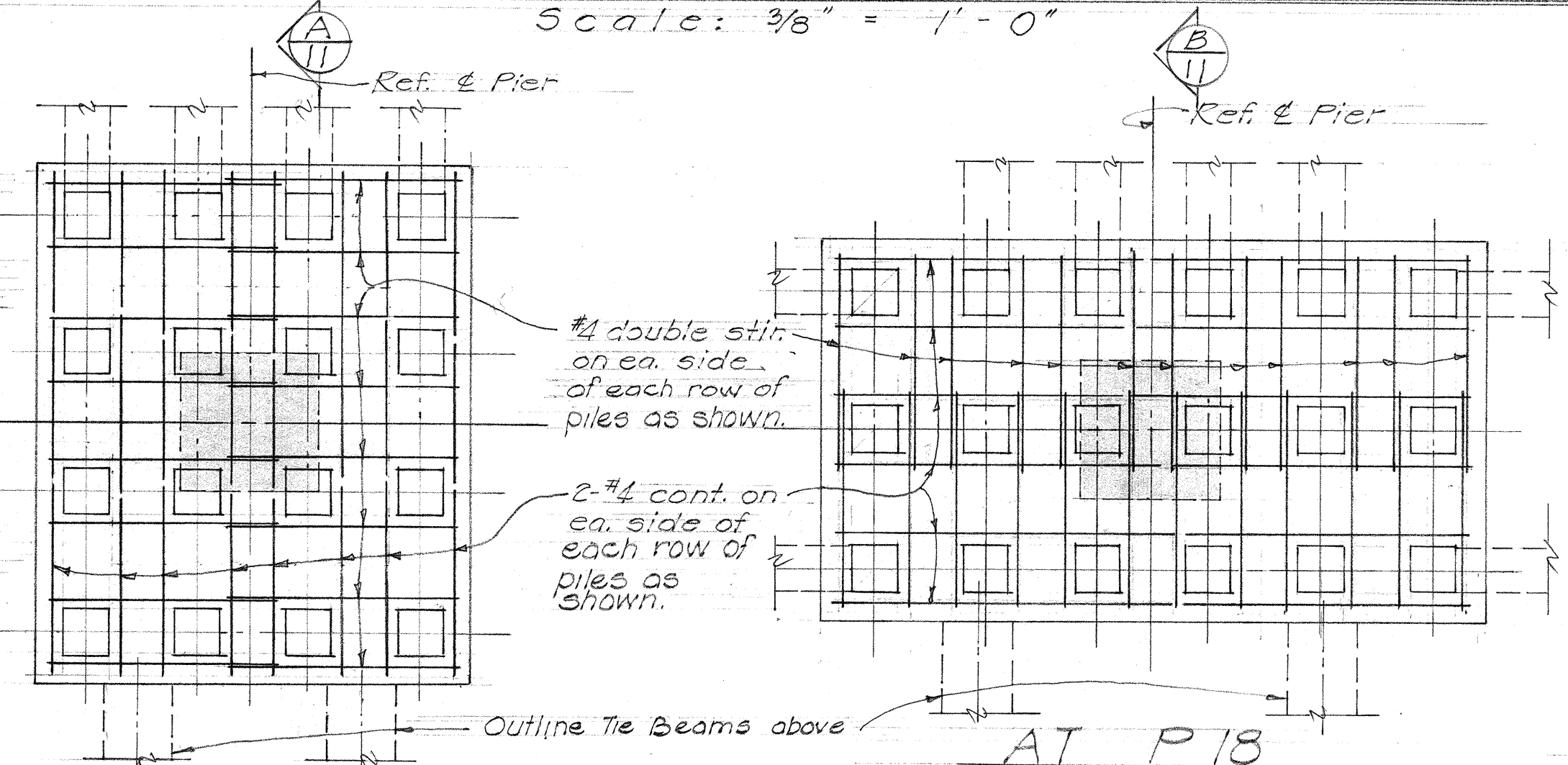
PLAN

TYPICAL CONCRETE SEAT
REINFORCING-PIERS NO 2, 4
Scale: 1/2" = 1'-0"

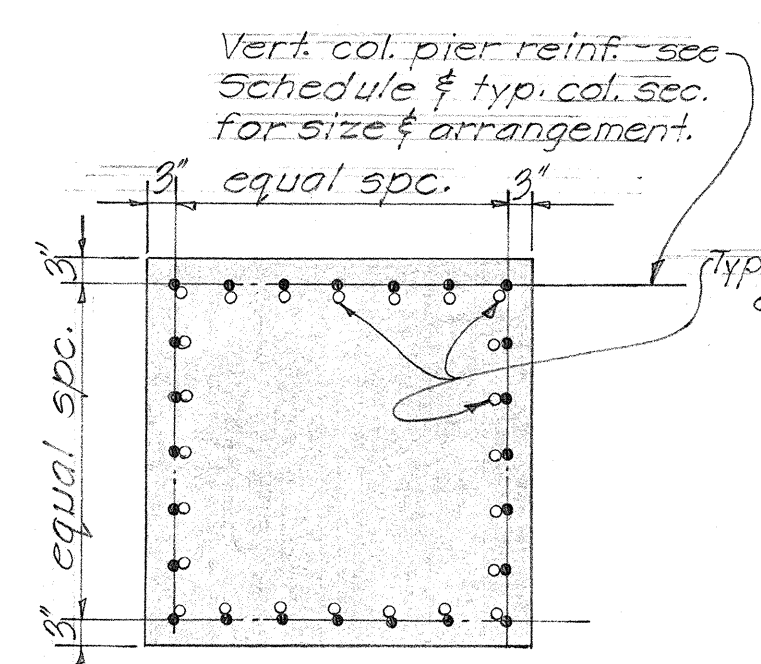
ALTERNATE "B"
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
STATE OF HAWAII
STRUCTURE NO 5
KALIHUWAI BRIDGE
STA. 26+57.88 TO STA. 34+56.12
KAUAI BELT ROAD PROJ. ER-7(1)
FEBRUARY 1961 UNIT 2



SECTION A AT 4 ROW PILE CAP - P16
SECTION B AT 3 ROW PILE CAP - P18
TYPICAL FRAME COLUMN FOUNDATION DETAILS
Scale: 3/8" = 1'-0"



AT P16
AT P18
TYPICAL ARRANGEMENT OF PILE TIES
Scale: 1/4" = 1'-0"



SECTION C SHOWING TYPICAL DOWEL PLACEMENT
Scale: 1/2" = 1'-0"

PIER FRAME SCHEDULE table with columns: LOCATION, FRAME TYPE, SIZE, BOTTOM REINFORCEMENT, TOP REINFORCEMENT, STIRRUPS, REMARKS. Rows include PIER No. 1 through PIER No. 7.

PIER FRAME COLUMN SCHEDULE table with columns: LOCATIONS, PIER #, COL. A, COL. B, etc. Rows include TOP FRAME F-1, TOP FRAME F-2, TOP PILE CAP, DOWELS, and PILE CAP.

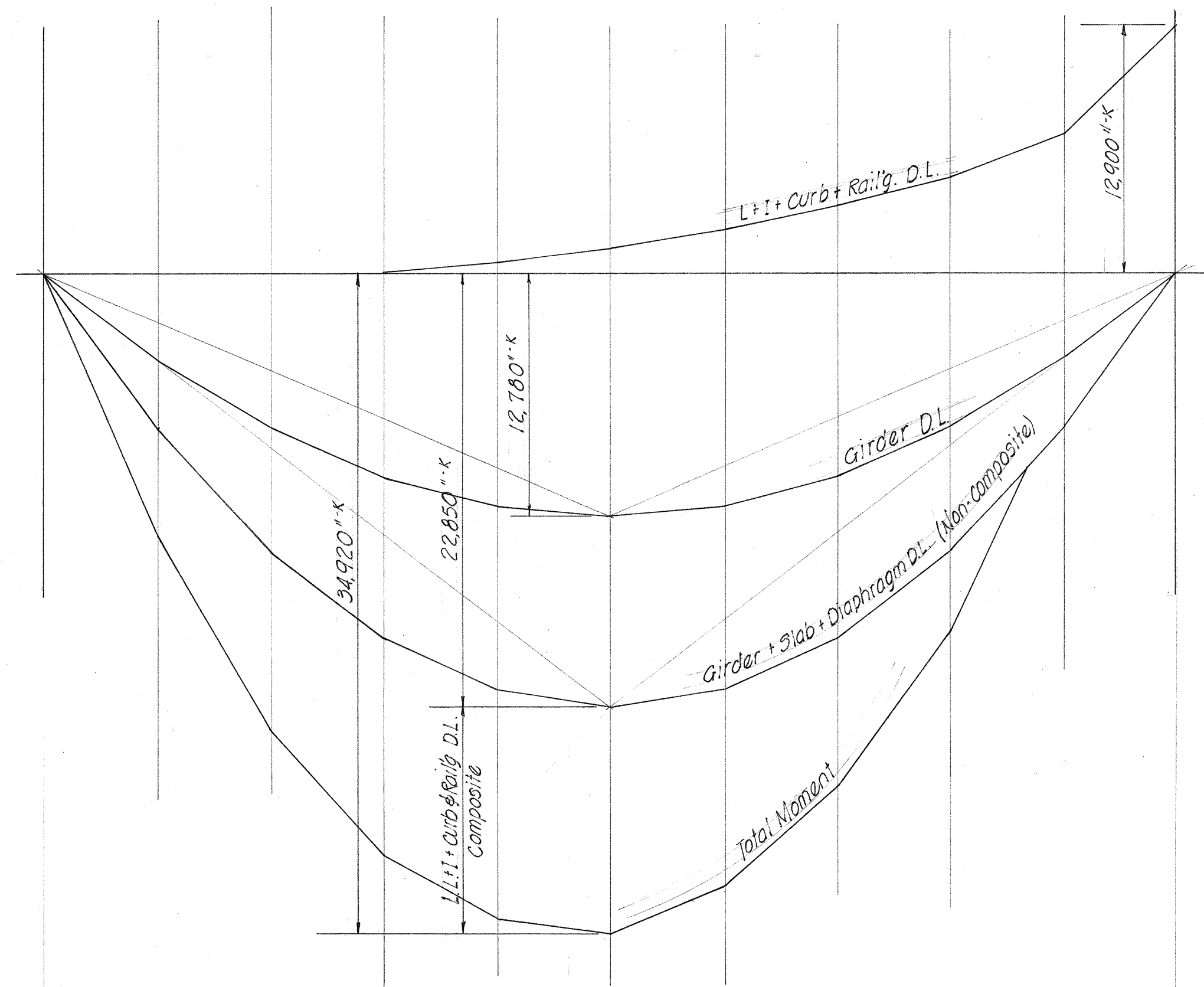
Note: See Typical Column Sections, sht.#10 for arrangements of column bars.

PILE CAP SCHEDULE table with columns: PILE TYPE, DEPTH, BOTTOM REINFORCEMENT (LONG DIRECTION, SHORT DIRECTION). Rows include P16 and P18.

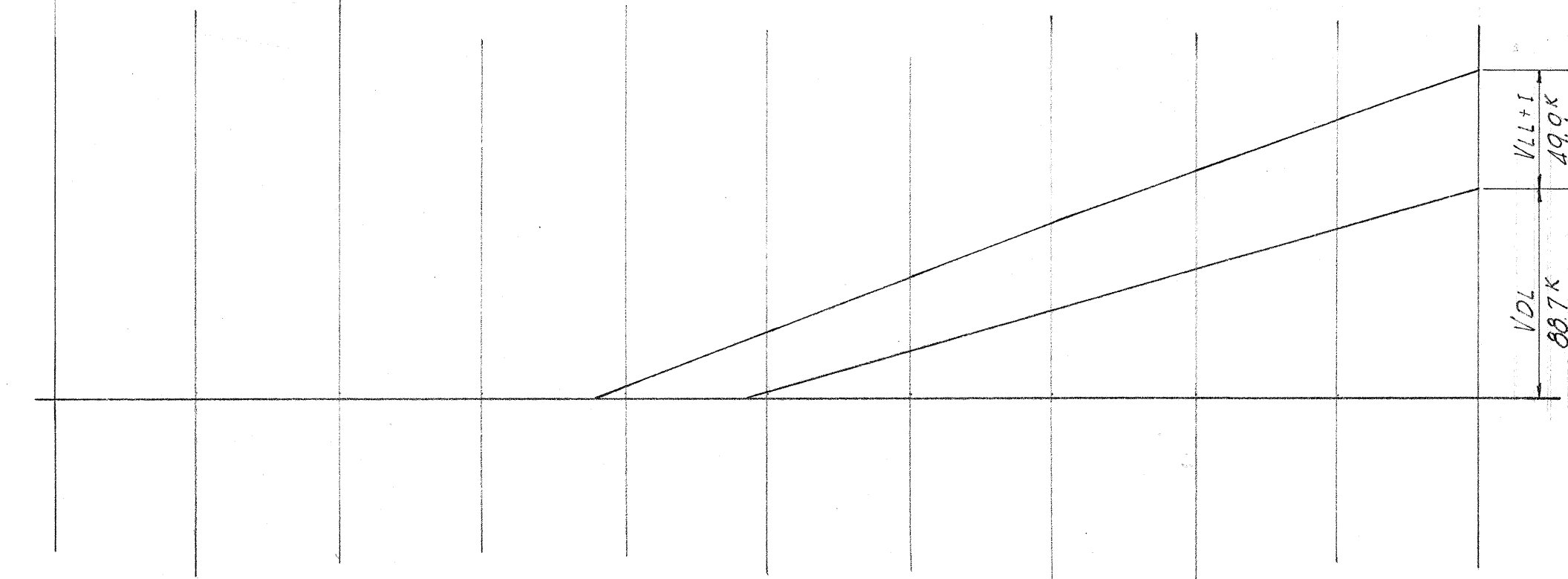
Note: Place long direction reinf. as first layer of bottom reinf.

ALTERNATE "B"
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
STATE OF HAWAII
STRUCTURE N°5
KALIHIWAI BRIDGE
STA. 26+57.88 TO STA. 34+56.12
KAUAI BELT ROAD PROJ. N° ER-7(1)
FEBRUARY 1961 UNIT 2

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET No.	TOTAL SHEETS
HAWAII	HAW.	ER-7(1) Unit 2	1961	45	77

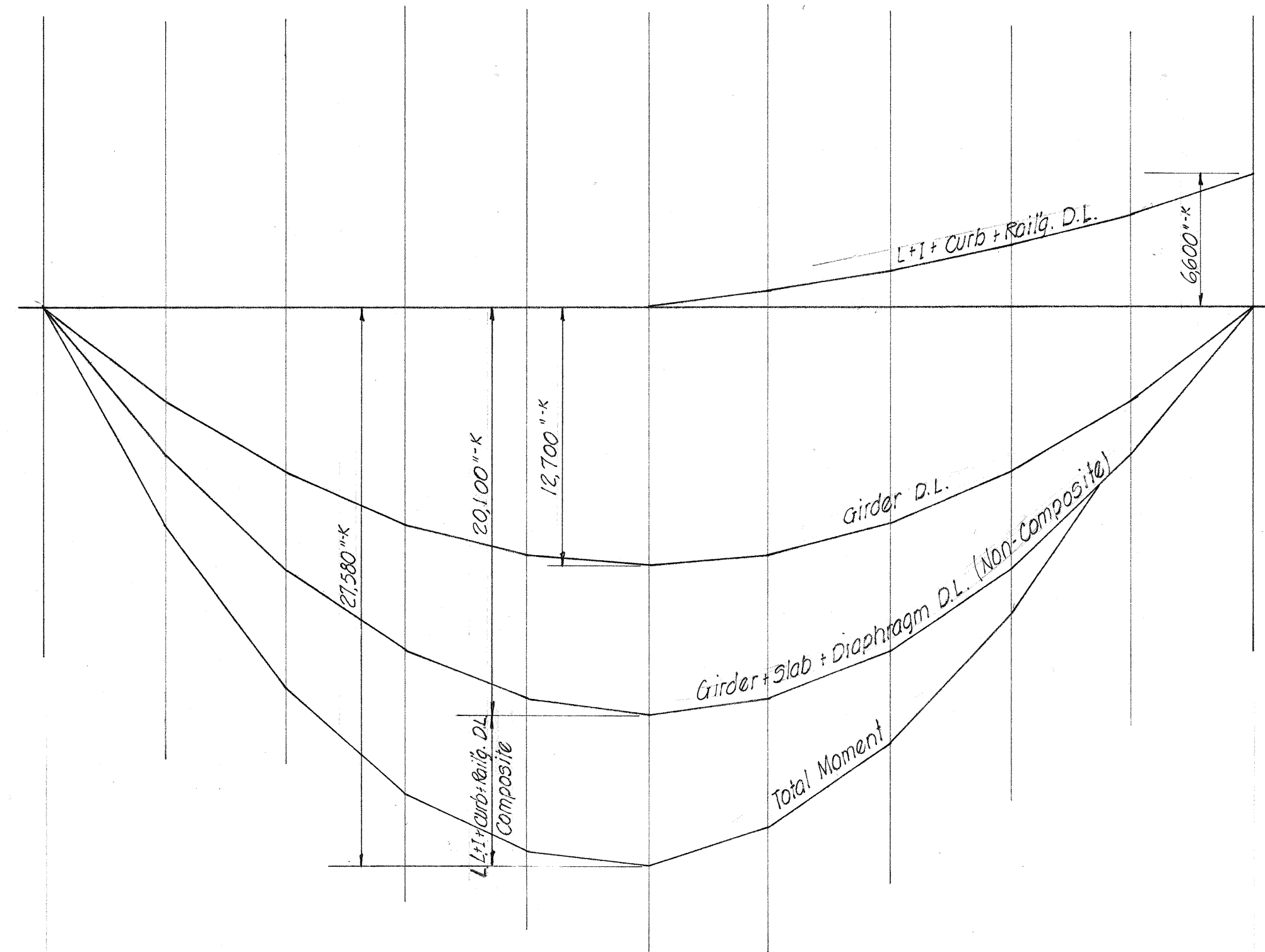


MOMENT DIAGRAM
SCALE: HORIZ. 1"=10'-0" VERT. 1"=6000' KIPS

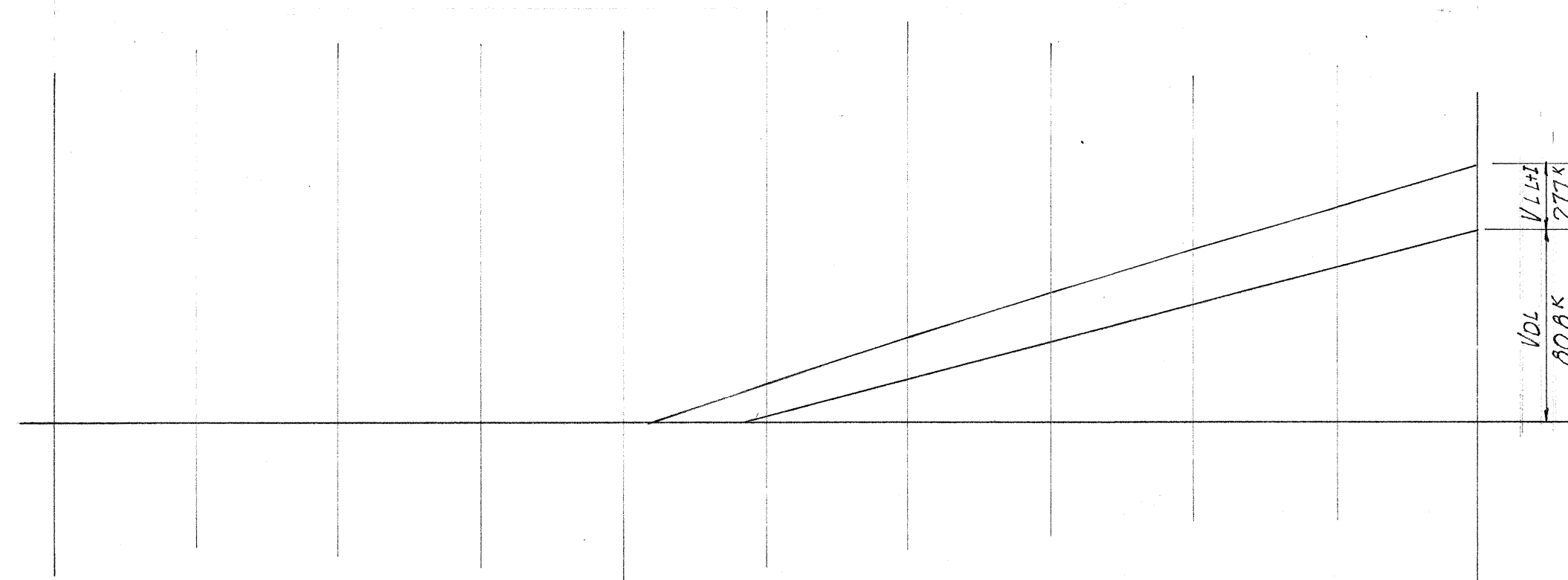


SHEAR DIAGRAM
SCALE: HORIZ. 1"=10'-0" VERT. 1"=60 KIPS

INTERIOR GIRDERS



MOMENT DIAGRAM
SCALE: HORIZ. 1"=10'-0" VERT. 1"=6000' KIPS



SHEAR DIAGRAM
SCALE: HORIZ. 1"=10'-0" VERT. 1"=60 KIPS

EXTERIOR GIRDERS

SURVEY PLOTTED BY	DATE
DRAWN BY	
TRACED BY	
QUANTITIES CHECKED BY	
CHECKED BY	
NOTE BOOK No.	

ALTERNATE "B"
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
STATE OF HAWAII
STRUCTURE N°5
KALIHIWAI BRIDGE
STA. 26+57.88 TO STA. 34+56.12
KAUAI BELT ROAD PROJ. ER-7(1)
FEBRUARY 1961 UNIT 2

SHEET NO. 12 OF 12 SHEETS