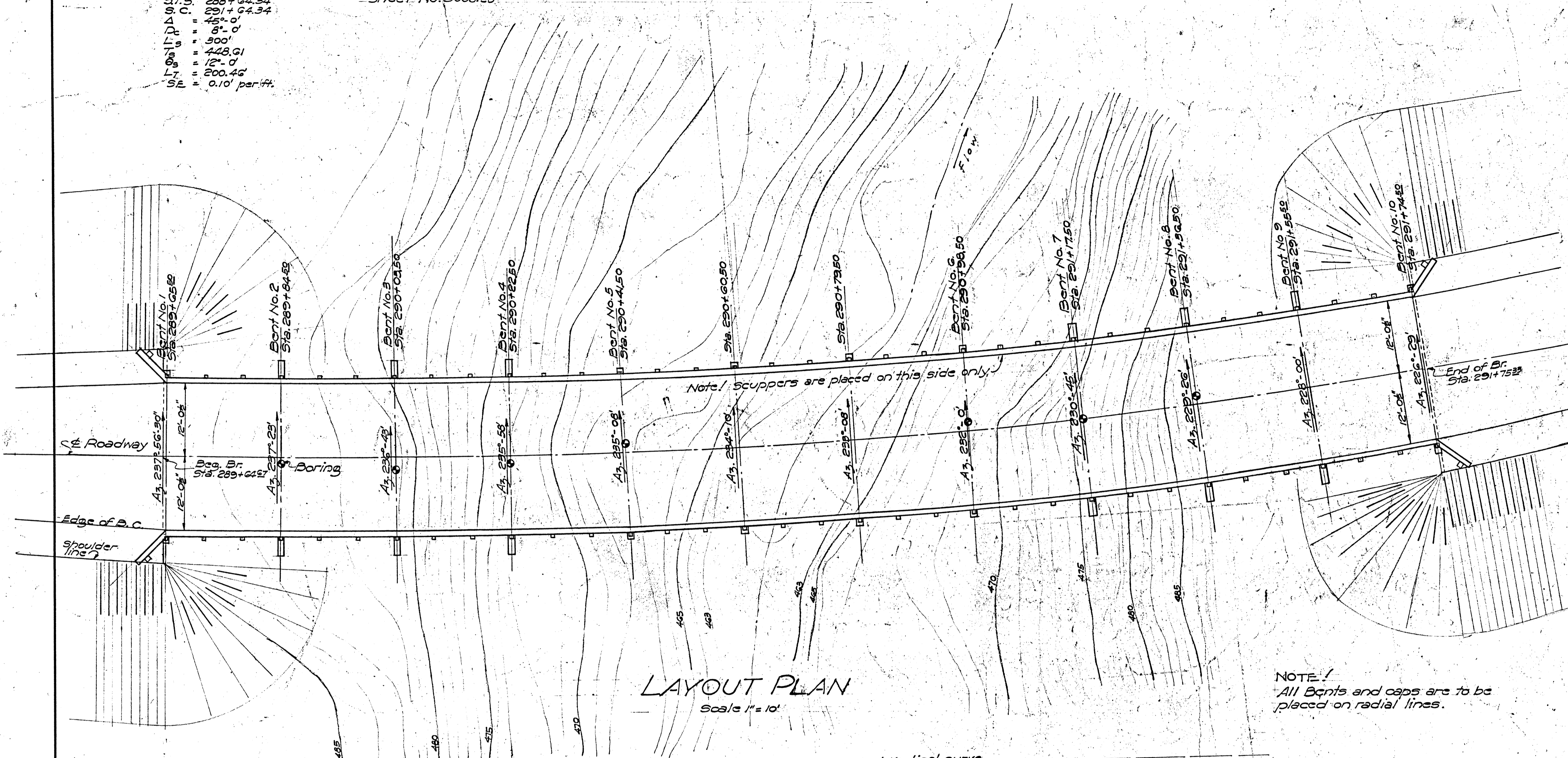


TIMBER BILL OF MATERIAL

DOUGLAS FIR - COAST REGION					
MEMBER	NO.	SIZE & LENGTH	KIND OF LUMBER	MILL WORK	FT. B.M.
Floor Decking	1548	2" x 6" x 26'-0"	Structural Select	S1/S2	40248
Splice Blocks	20	6" x 18" x 3'-0"	"	S1/E	540
Guard Railing	22	3" x 8" x 20'-0"	"	S4/S	880
"	4	3" x 8" x 8'-0"	"	"	64
"	22	4" x 8" x 20'-0"	"	"	1175
"	4	4" x 8" x 8'-0"	"	"	85
Bracing - Bents	2	3" x 10" x 18'-0"	"	Rough	80
"	2	3" x 10" x 25'-0"	"	"	90
"	14	3" x 10" x 28'-0"	"	"	130
"	17	3" x 10" x 30'-0"	"	"	280
"	11	3" x 10" x 32'-0"	"	"	170
"	2	3" x 10" x 34'-0"	"	"	170
Bracing - Tower	31	3" x 10" x 20'-0"	"	"	1550
"	68	3" x 10" x 22'-0"	"	"	3740
"	3	3" x 10" x 24'-0"	"	"	360
"	3	3" x 10" x 26'-0"	"	"	195
Struts at Bents	4	4" x 12" x 28'-0"	"	"	448
Blocks at I	16	6" x 12" x 3'-0"	"	Cut to fit	228
"	4	10" x 12" x 3'-0"	"	"	120
Blocks at struts	2	4" x 12" x 8'-0"	"	Rough	64
Bulkhead	6	4" x 12" x 16'-0"	"	"	288
"	6	4" x 12" x 20'-0"	"	"	280
"	20	4" x 12" x 3'-0"	"	"	240
"	5	6" x 12" x 10'-0"	"	"	300
Stringers	143	6" x 18" x 20'-0"	Structural select	S1/E Ends	25740
Railing Posts	68	8" x 8" x 6'-0"	"	S4/S	2176
"	4	12" x 12" x 8'-0"	"	"	384
Filler blocks at post	68	4" x 8" x 1'-0"	"	Cut to fit	272
Blocks at Braces	6	10" x 12" x 4'-0"	"	Rough	240
Caps	6	12" x 14" x 28'-0"	"	S1/S	2352
"	6	12" x 14" x 32'-0"	"	"	2688
Post Scabs	20	6" x 12" x 6'-0"	"	Rough	720
Wheel Guard	22	12" x 14" x 20'-0"	Structural select	S1/S2	6160
"	4	12" x 14" x 8'-0"	"	"	448
Posts at Bents	1	12" x 12" x 8'-0"	"	Rough	96
"	6	12" x 12" x 10'-0"	"	"	720
"	1	12" x 12" x 14'-0"	"	"	168
"	5	12" x 12" x 16'-0"	"	"	960
"	3	12" x 12" x 18'-0"	"	"	648
"	2	12" x 12" x 22'-0"	"	"	528
"	2	12" x 12" x 24'-0"	"	"	576
"	14	12" x 12" x 26'-0"	"	"	4368
"	2	12" x 12" x 28'-0"	"	"	672
Solid Bridging	2	4" x 18" x 20'-0"	No. 1 Dimension	S1/E	240
"	10	4" x 18" x 14'-0"	"	"	640
" at I	4	4" x 12" x 18'-0"	"	Rough	288
" at I	2	4" x 8" x 20'-0"	"	"	107
Cross Bridging	37	2" x 4" x 18'-0"	"	"	424
Filler at Bearing Pl.	2	1" x 3" x 10'-0"	"	S1/S	5
Total					106,546 Ft. B.M.

Curve Data.
 ST.S. = 288+64.34
 TA.C. = 291+64.34
 L = 481.0'
 R = 300'
 ELEV. G.I. = 448.61
 L.T. = 12° 0'
 S.E. = 200.46'
 S.E. = 0.10' per ft.

Note: Guard Rail Flare Details, Wheel Guard Flare Details, and Stringers Layout Details are similar to those shown on Sheet No. 5008.28

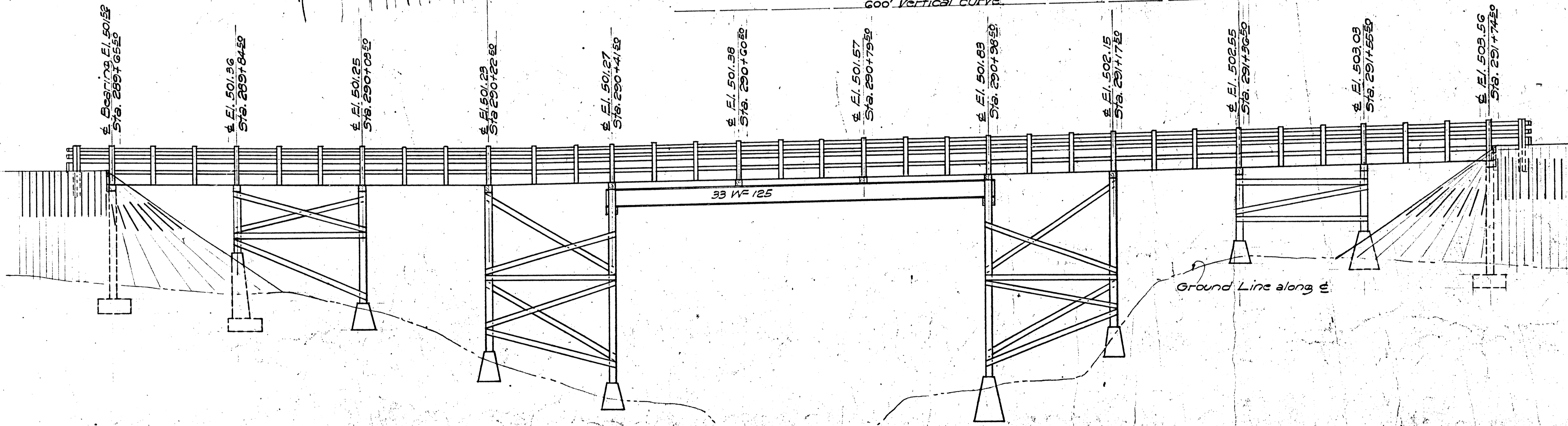


ESTIMATED QUANTITIES
 Treated Timber 106,546 Ft. B.M.
 Class "A" concrete 261 C.Y.
 Class "B" " 491 C.Y.
 Reinf. steel 3,140 Lbs.
 Structural Steel 41,874 Lbs.
 Struct. Excavation 210 C.Y.
 Channel Excavation 15 C.Y.

GROUND LINE BORING DATA

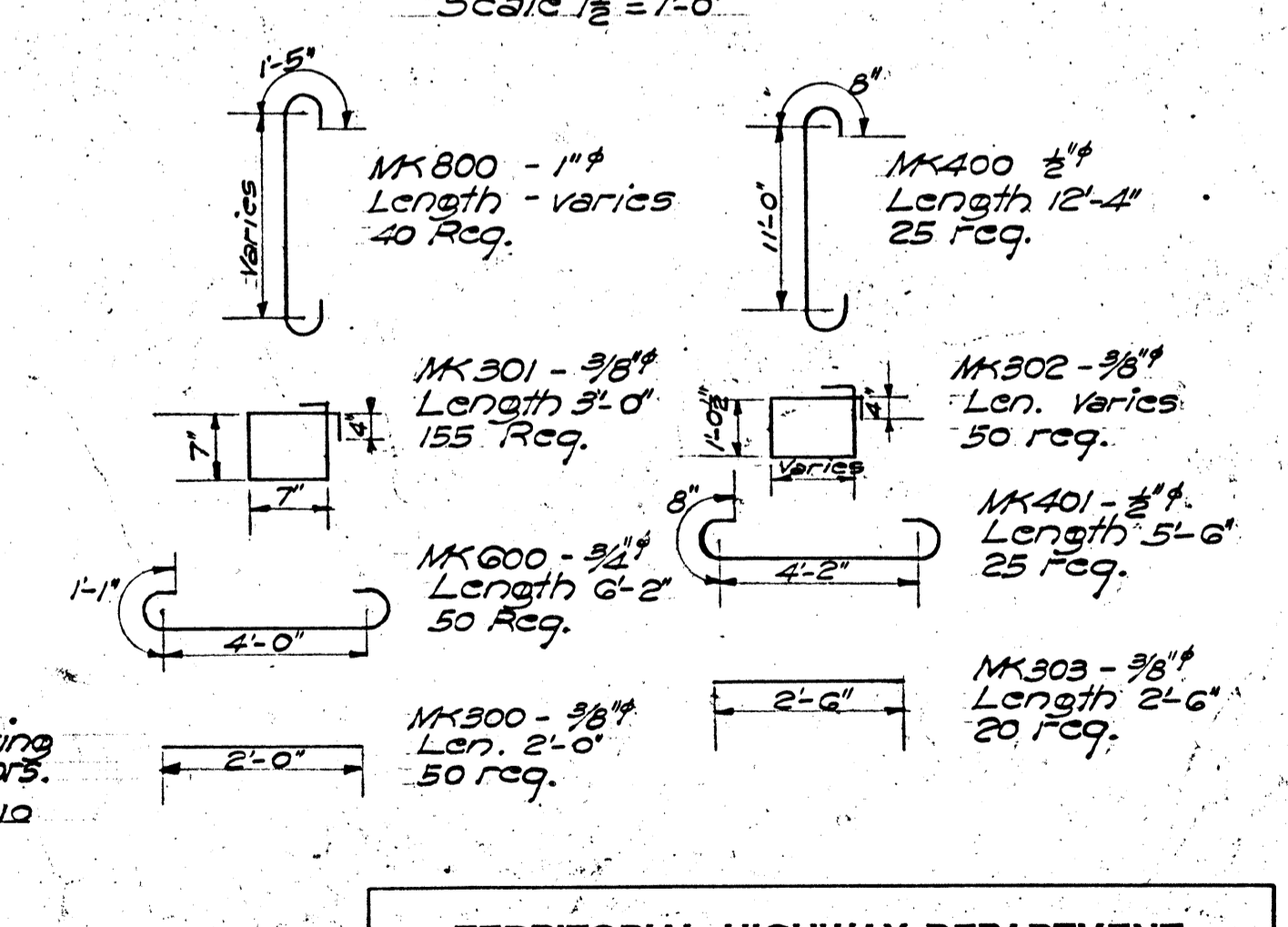
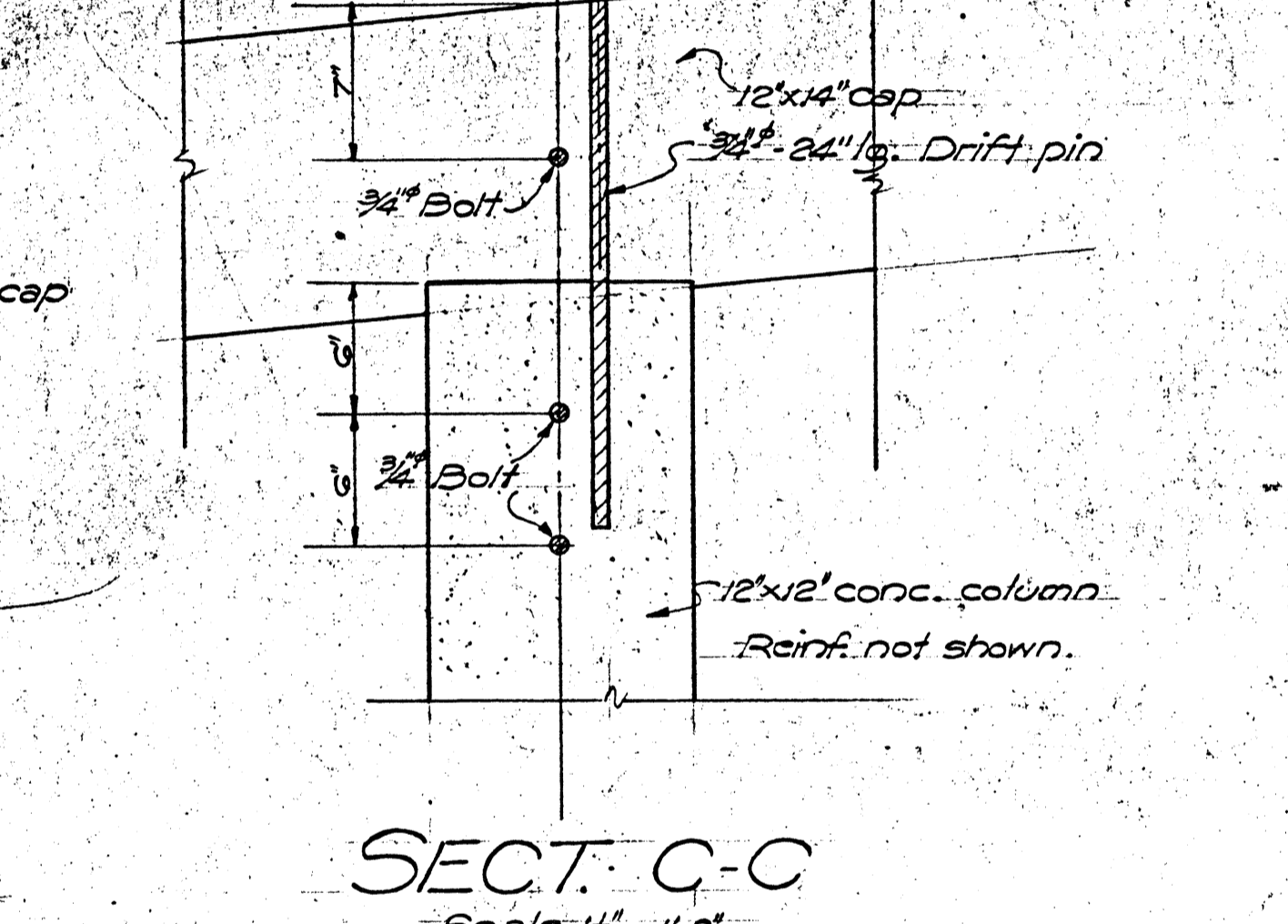
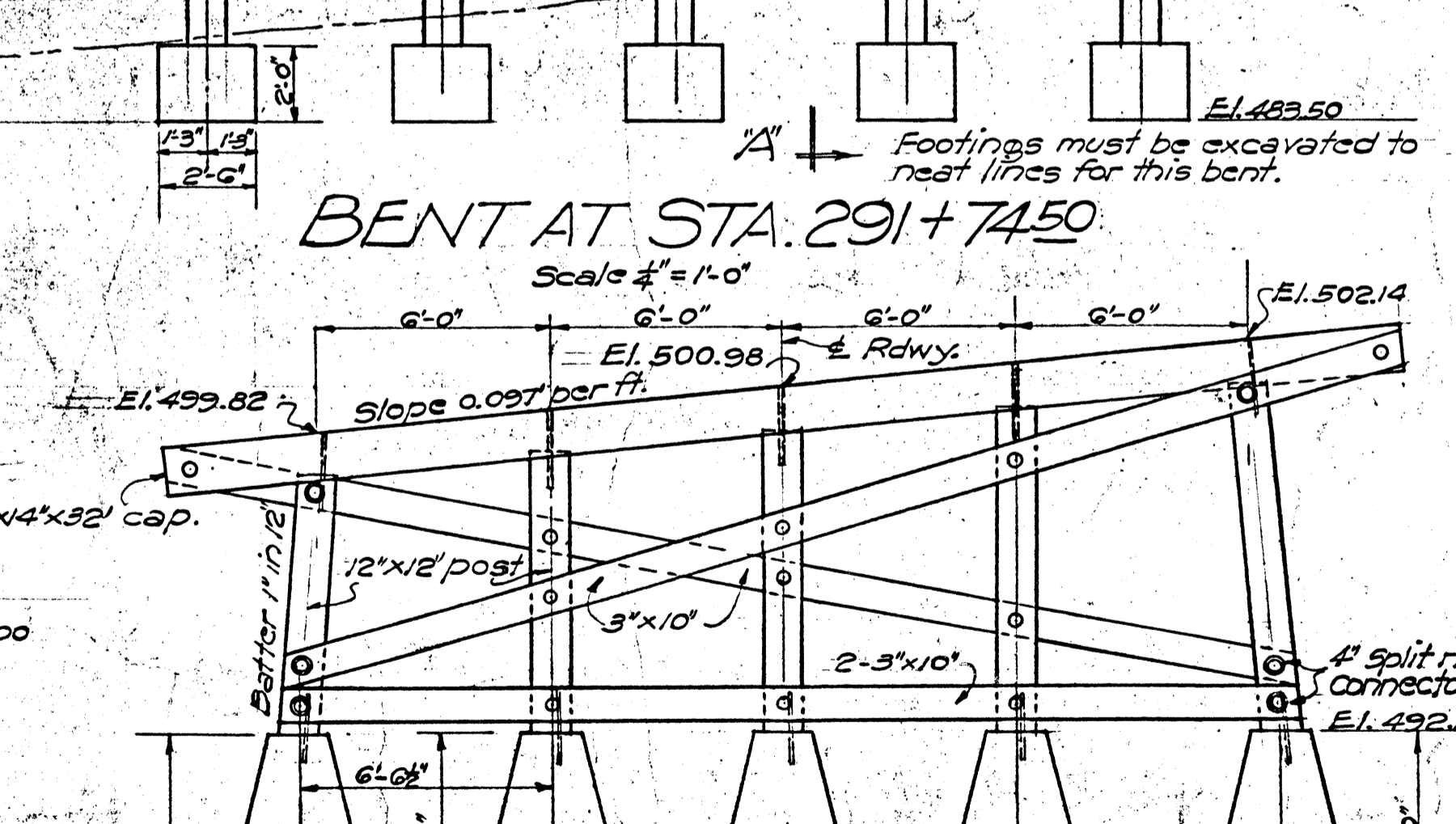
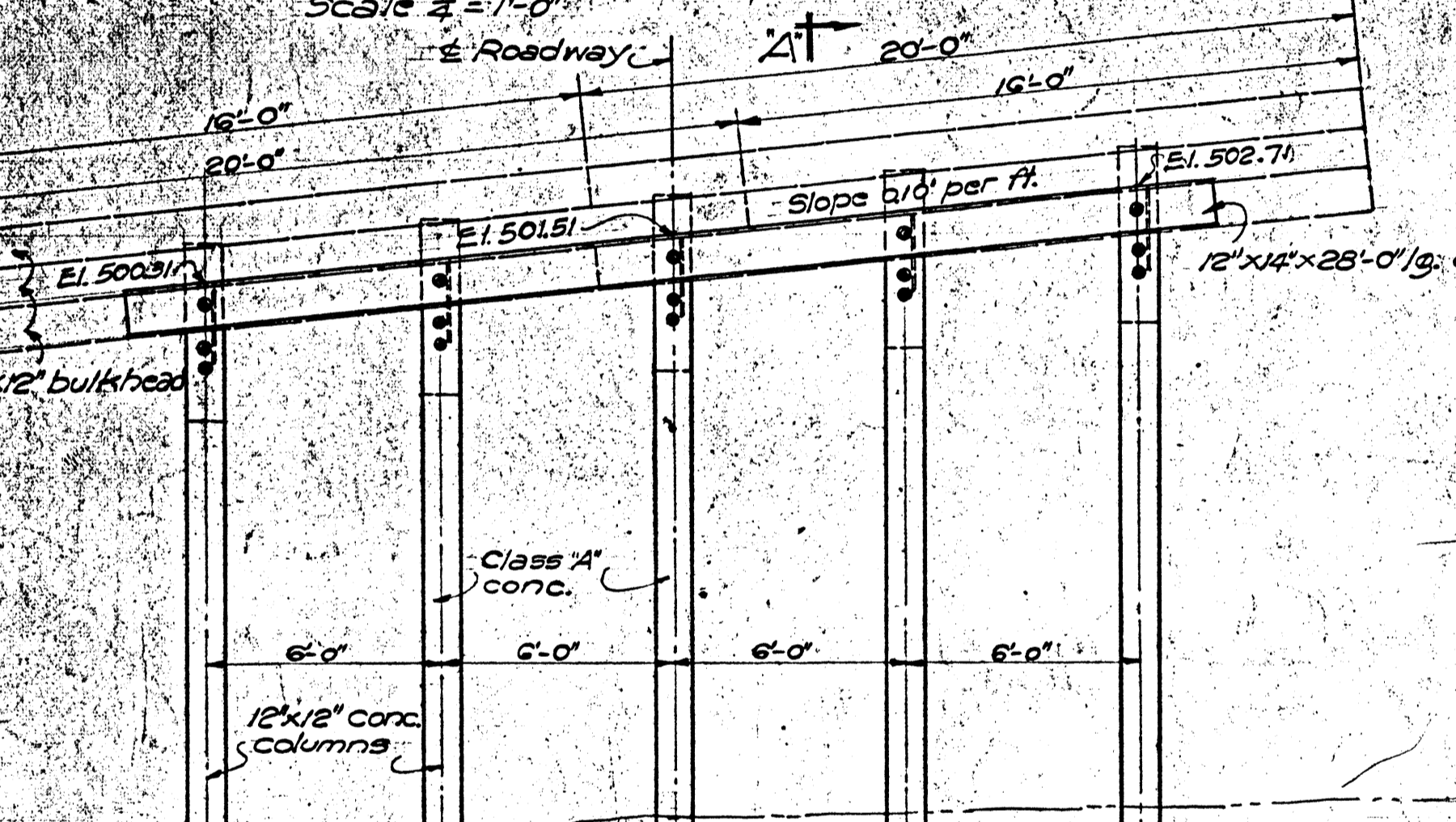
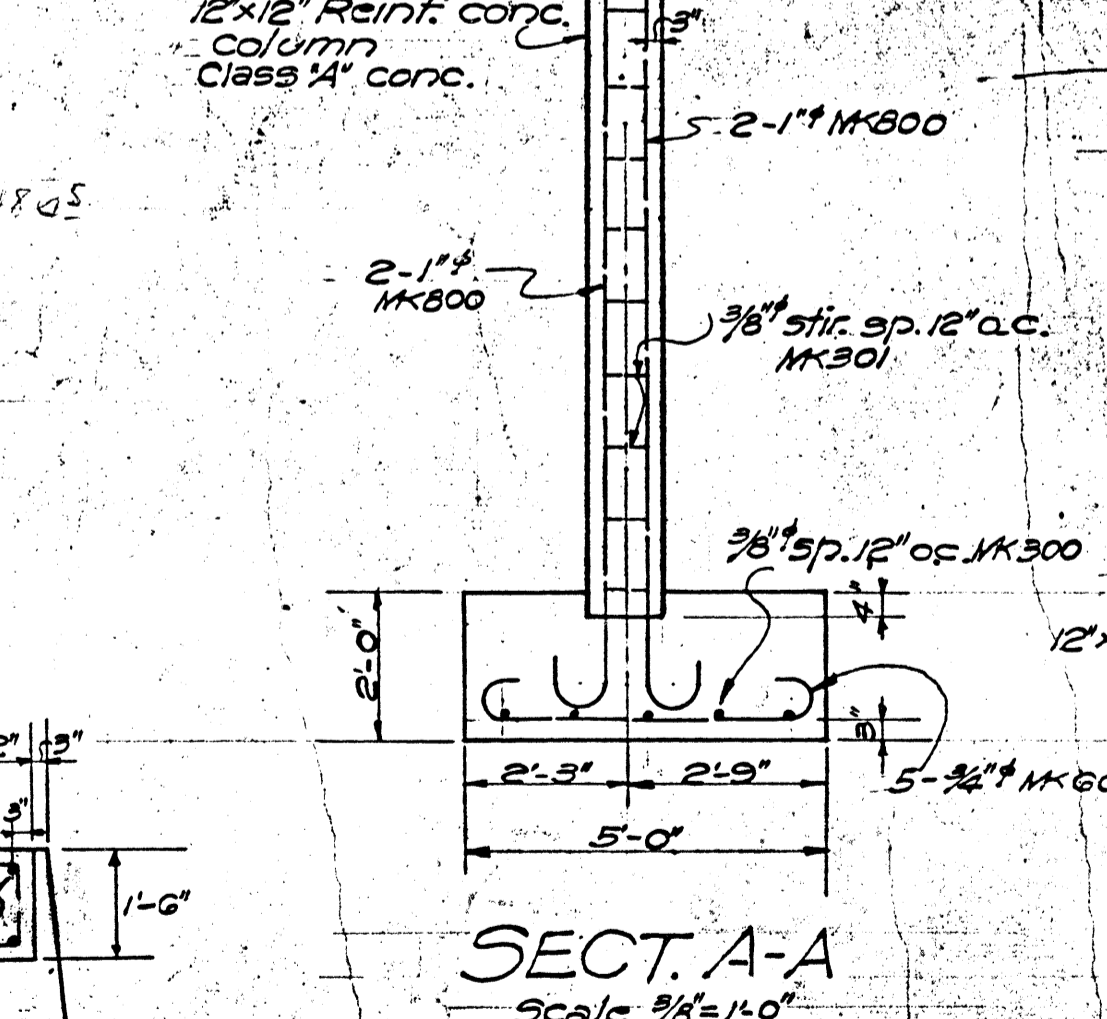
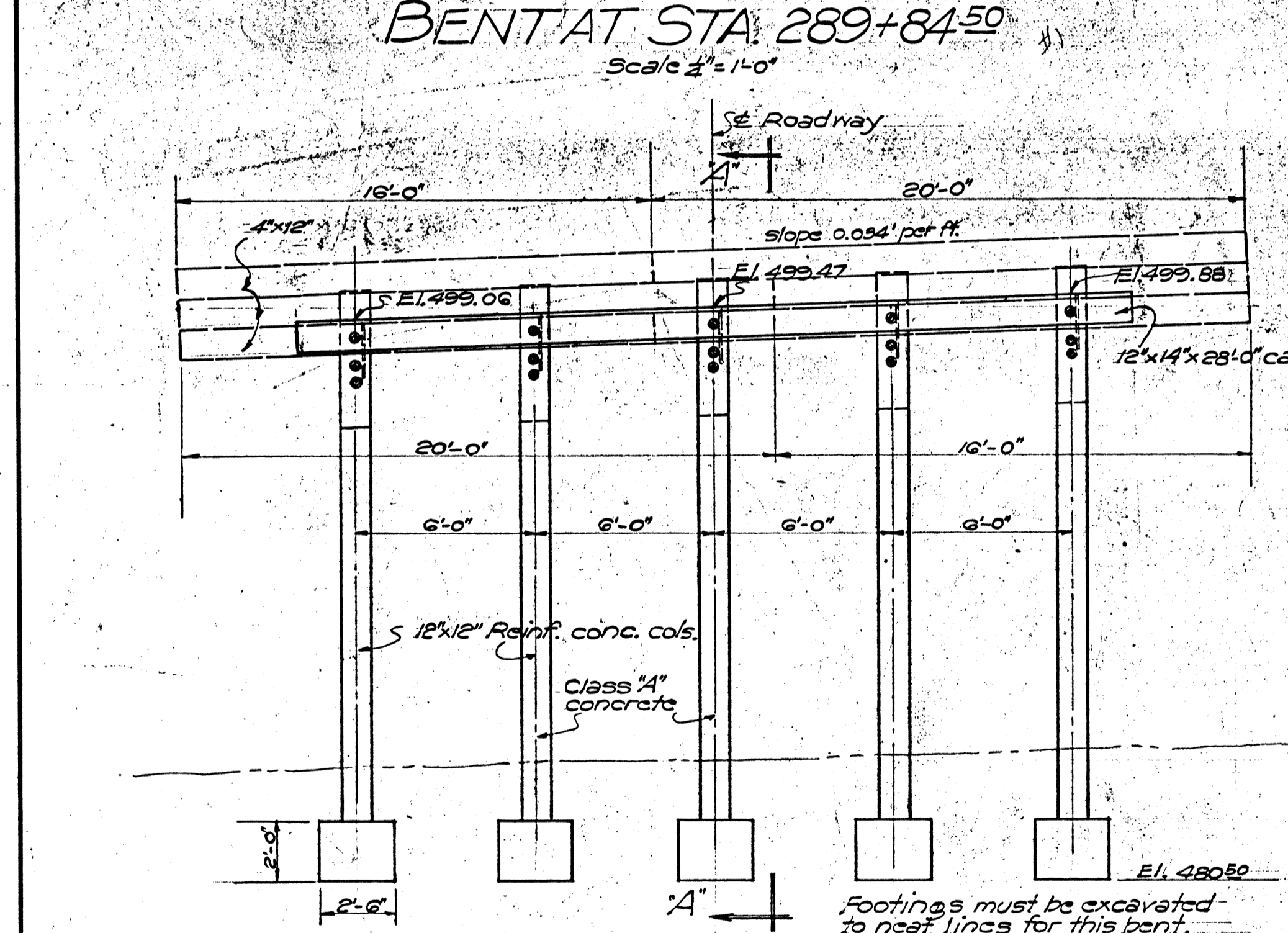
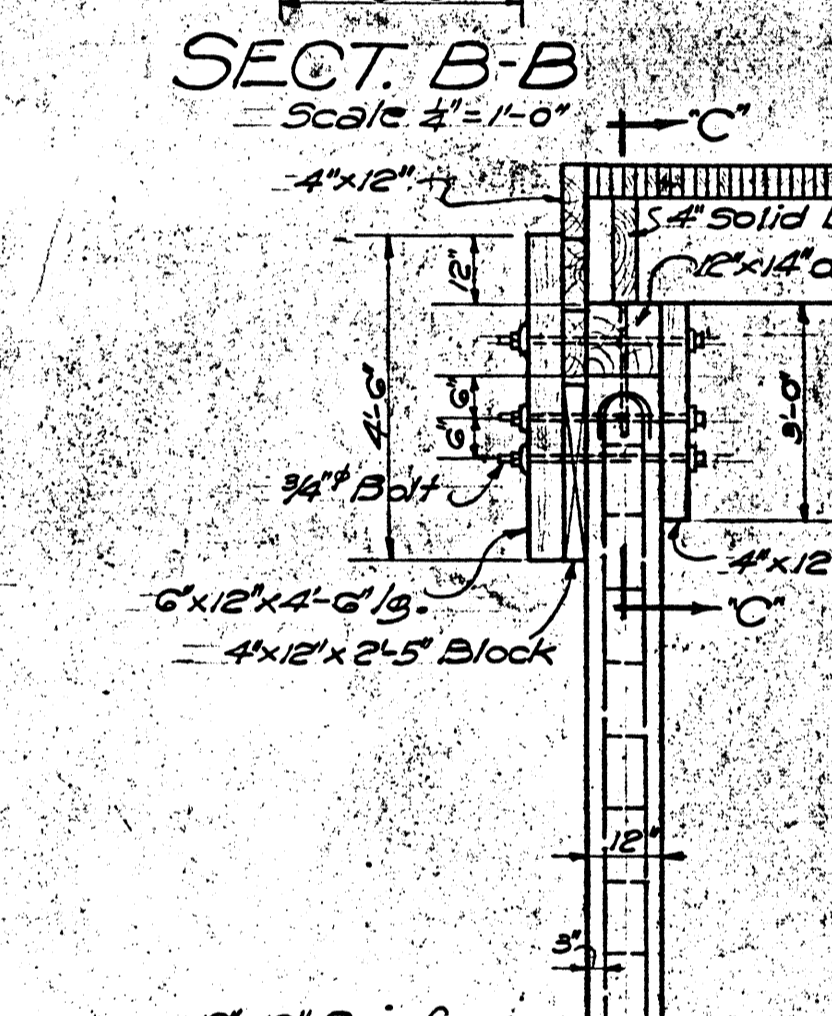
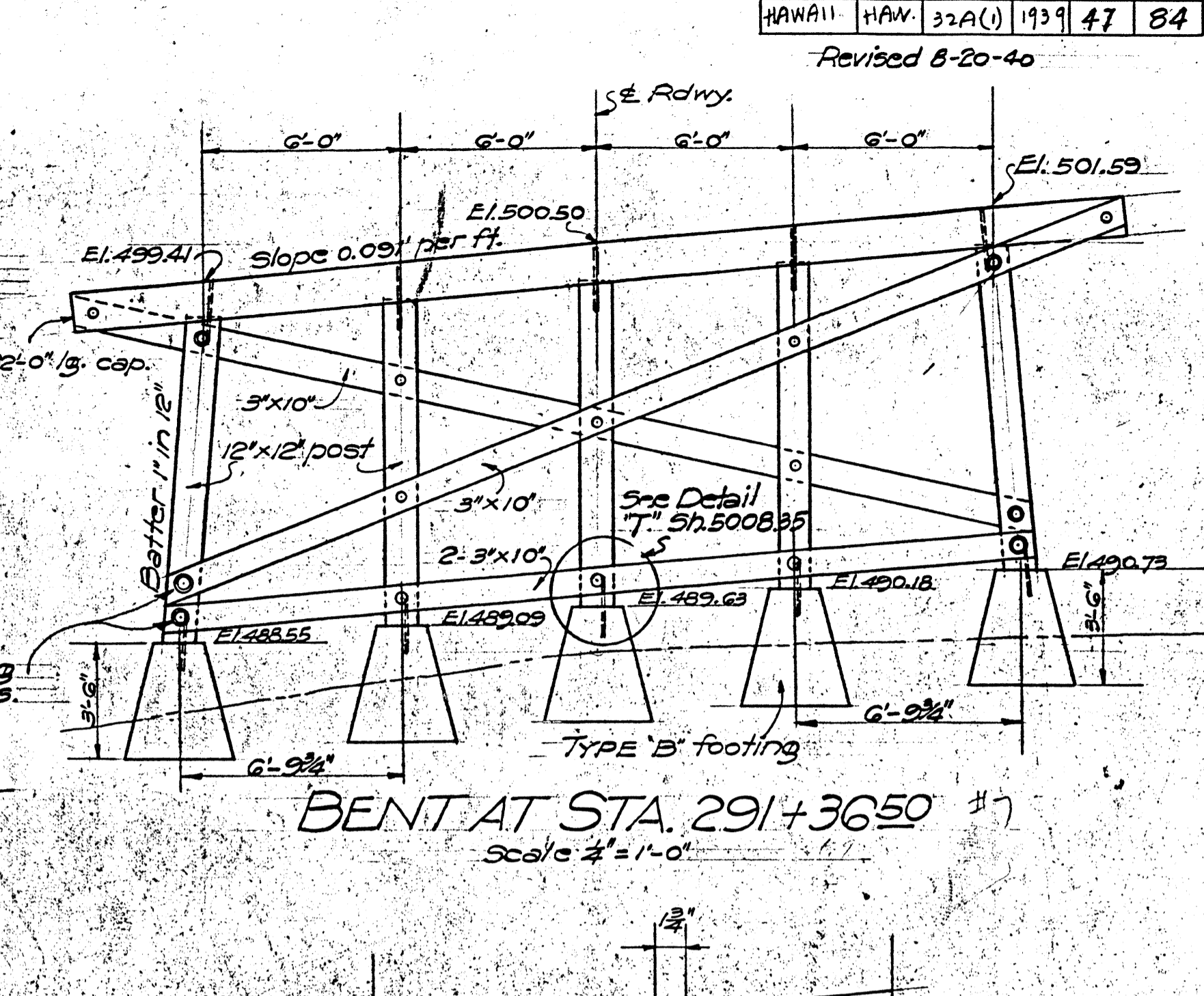
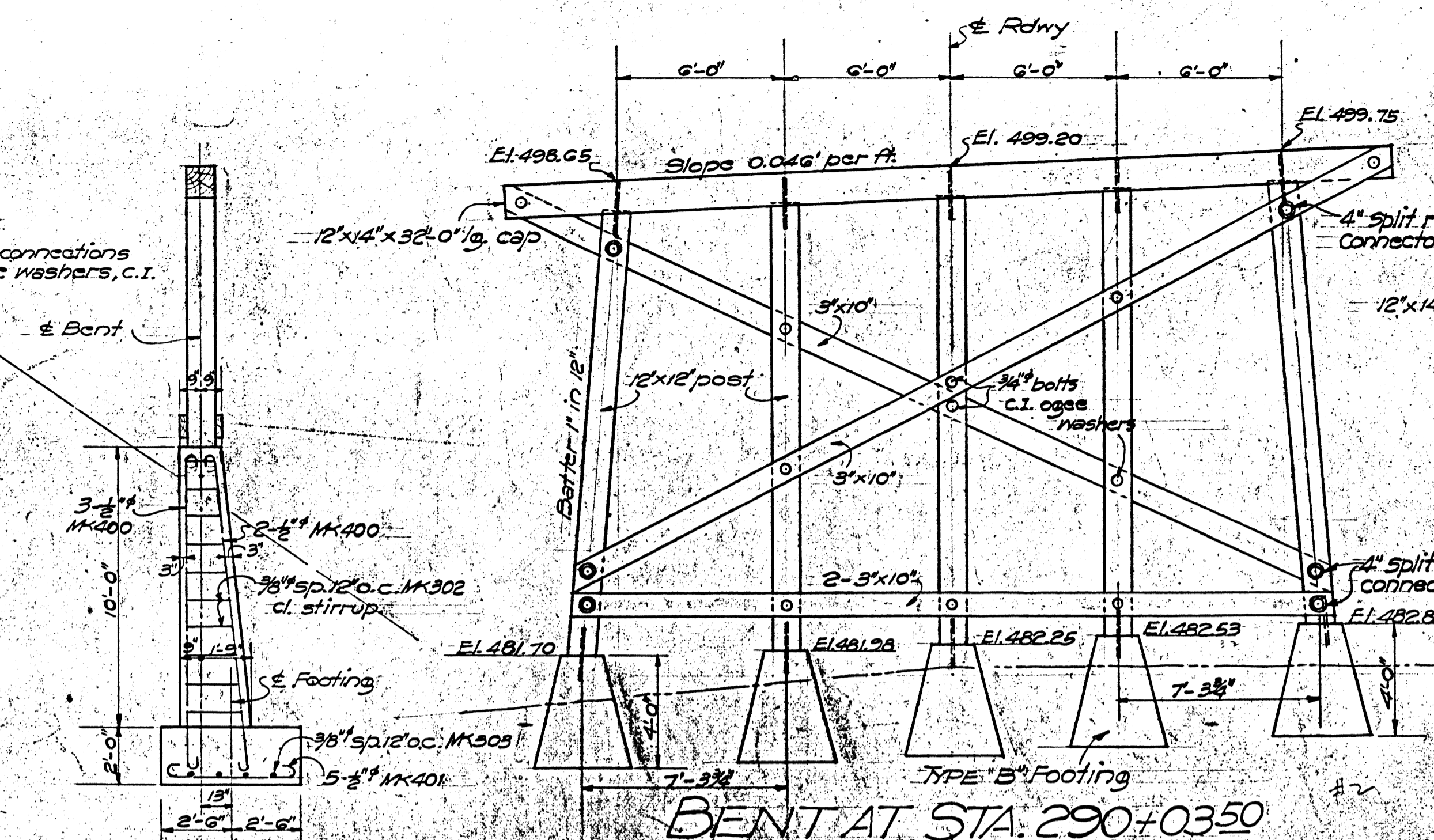
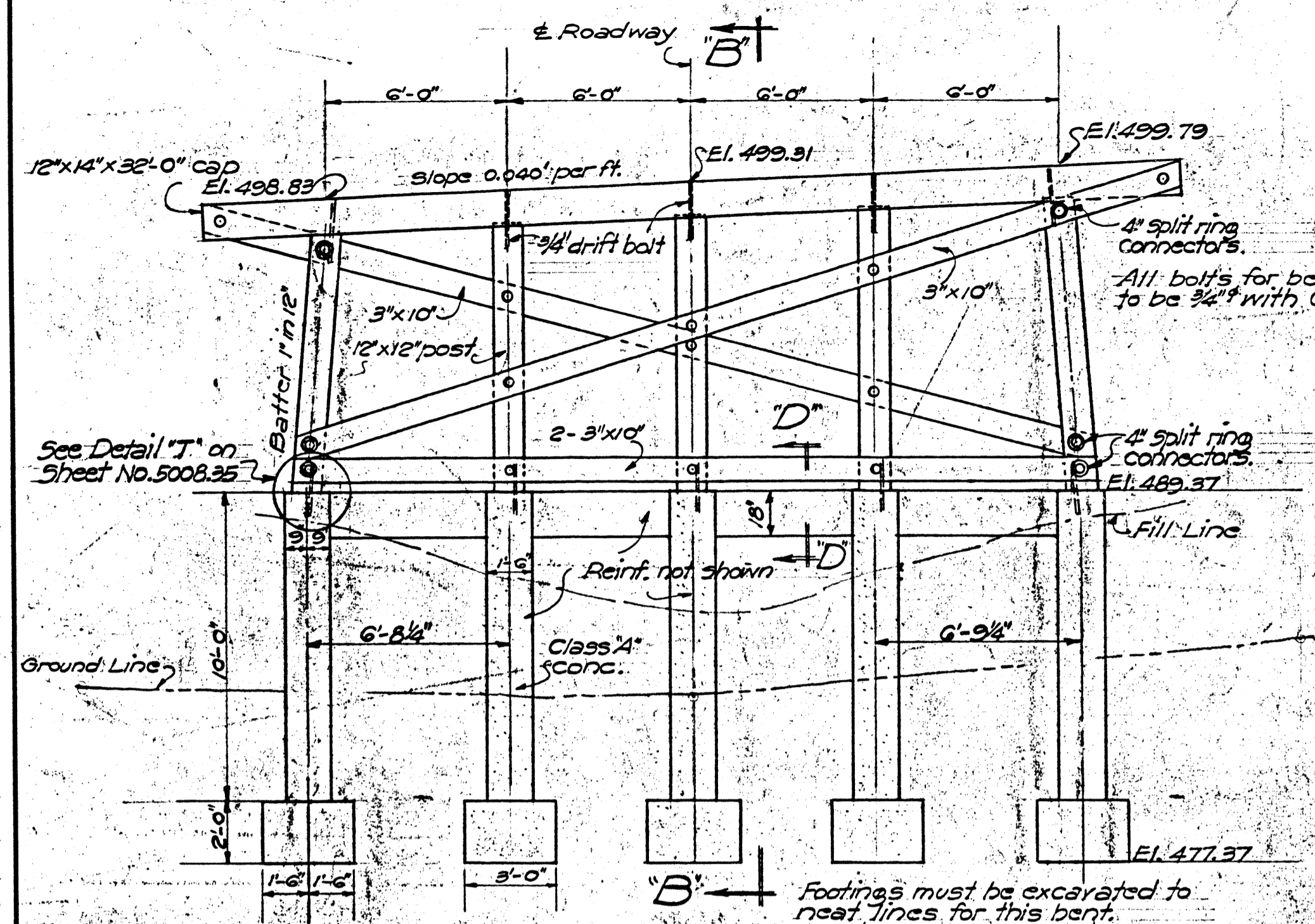
Depth in feet	Sta. 289+845	Sta. 290+035	Sta. 290+225	Sta. 290+415	Sta. 290+905	Sta. 291+175	Sta. 291+365
1	Dirt	Dirt & Gravel	Dirt	Dirt	Dirt	Dirt	Dirt
2	Dirt & Gravel	Dirt	Dirt	Dirt	Dirt	Dirt	Dirt
3	Dirt	Dirt	Dirt	Dirt	Dirt	Dirt	Dirt
4	Gravel & Rock	Gravel & Small Boulders	Dirt & Gravel	Dirt & Gravel	Dirt & Gravel	Dirt & Gravel	Dirt & Gravel
5							
6							
7	Dirt						
8							
9	Solid rock						

SURVEY PLOTTED BY: DATE: 7-2-39
 DESIGNED BY: M.C. FLETCHER
 TRACED BY: J. T. H. S.
 QUANTITIES BY: J. T. H. S.
 CHECKED BY: J. T. H. S.



TERRITORIAL HIGHWAY DEPARTMENT
 TERRITORY OF HAWAII
HOOLOAWA BRIDGE
 HANA BELT ROAD F.A.P. 32A
 JULY, 1939

Revised 8-20-40



NOTE TO RES. ENGINEER:
 The fill at both ends of the bridge must not be placed until the bridge structure is completed. Fill must be placed in layers. No dumping is allowed.

Revision: 4" split ring connectors added to joints where diagonals and horizontal struts meet outside inclined posts.

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

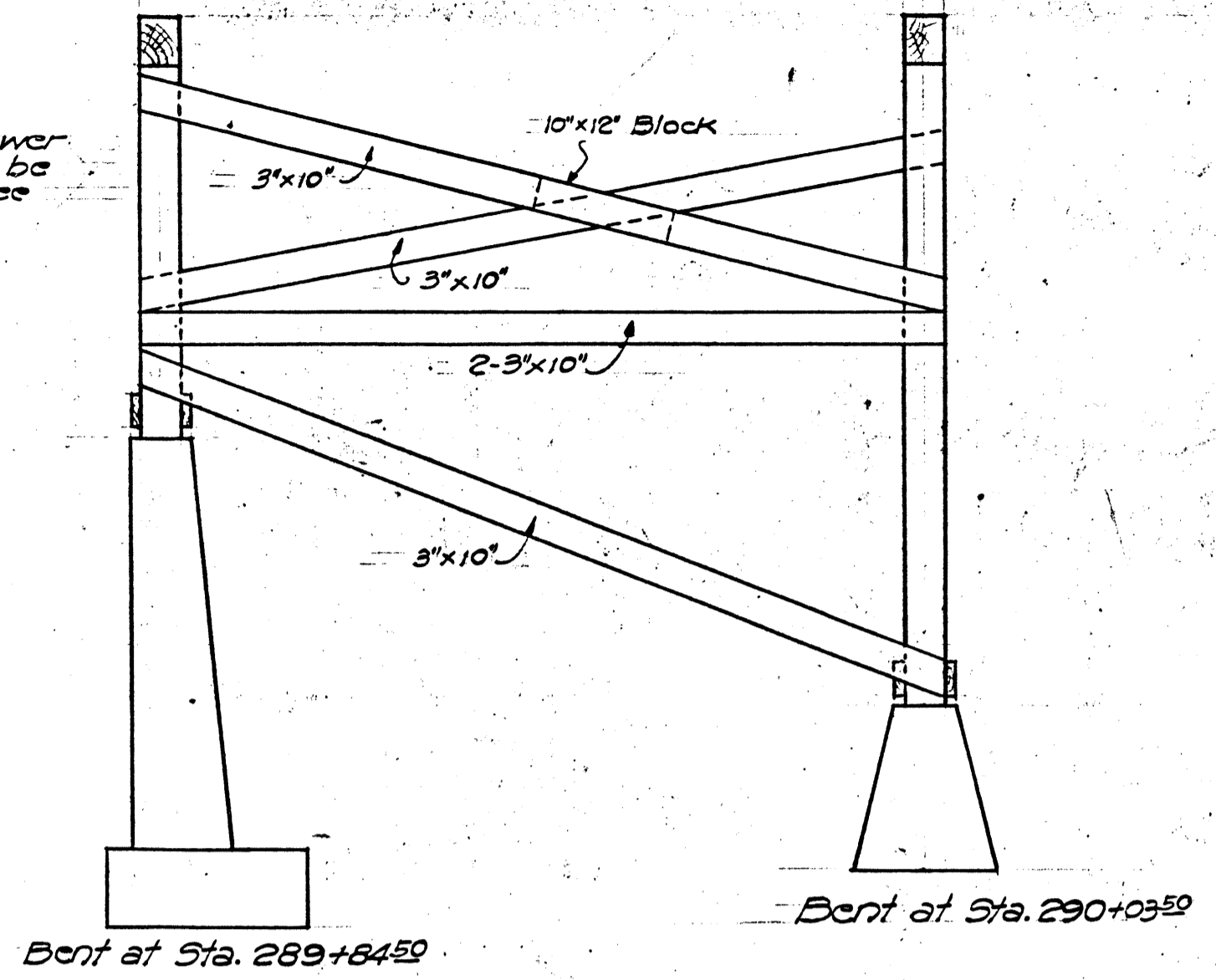
TERRITORIAL HIGHWAY DEPARTMENT
 TERRITORY OF HAWAII

HOOLAWA BRIDGE

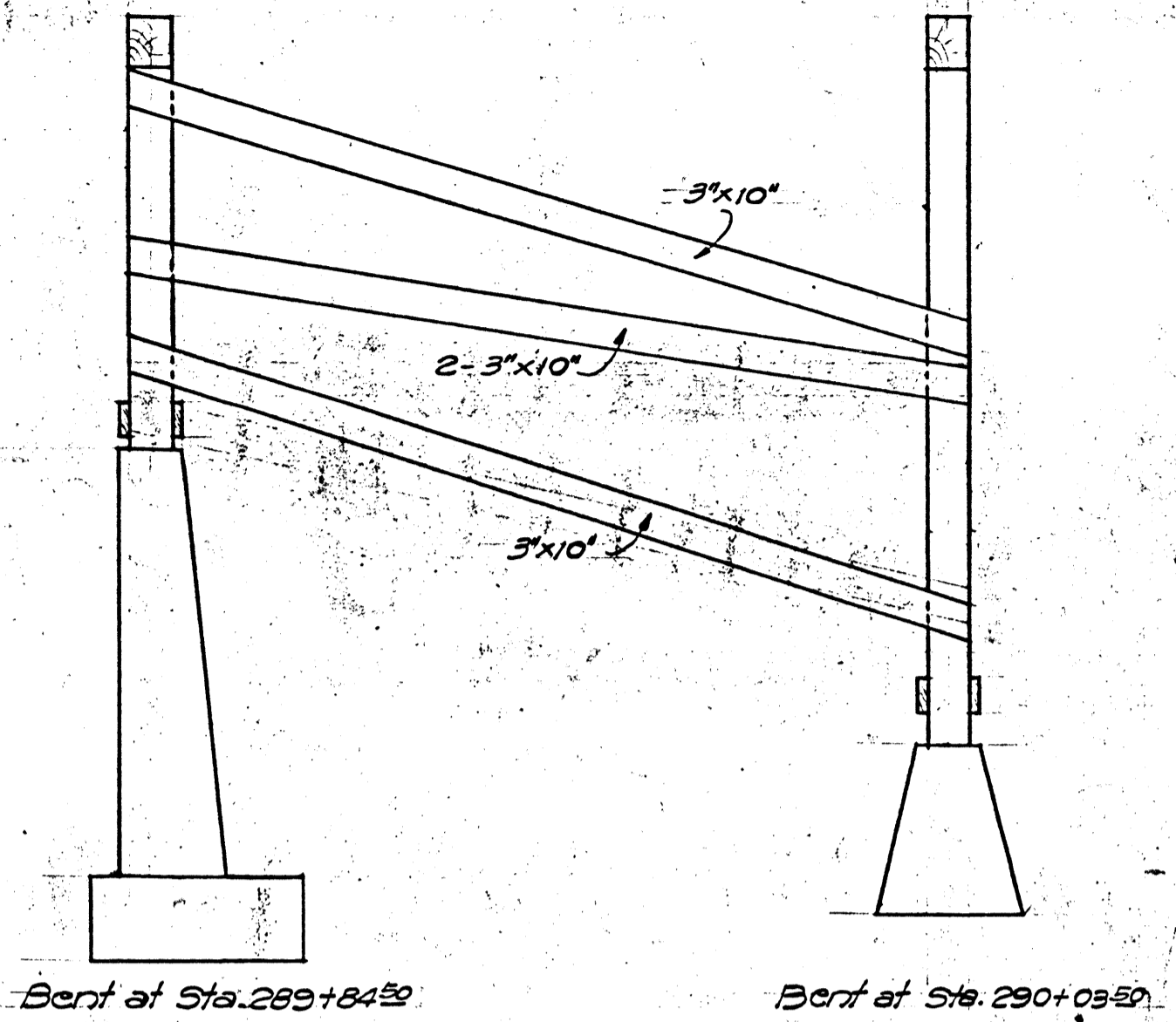
HANA BELT ROAD F.A.P. 32A(1)
 JULY, 1939

SHEET No. 2 OF 6 SHEETS

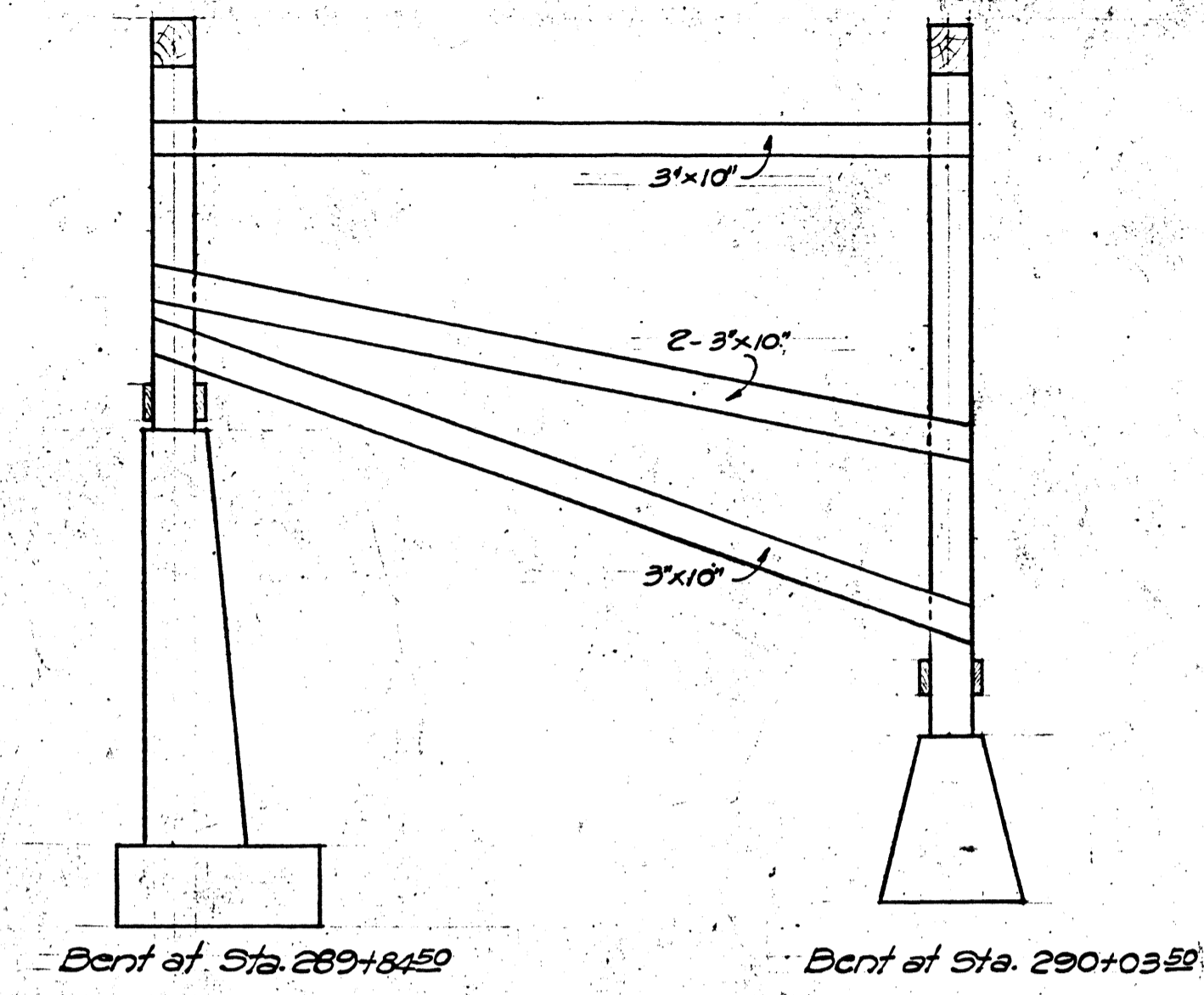
All bolts for tower connections to be 3/4" with c.i. Ogee washers.



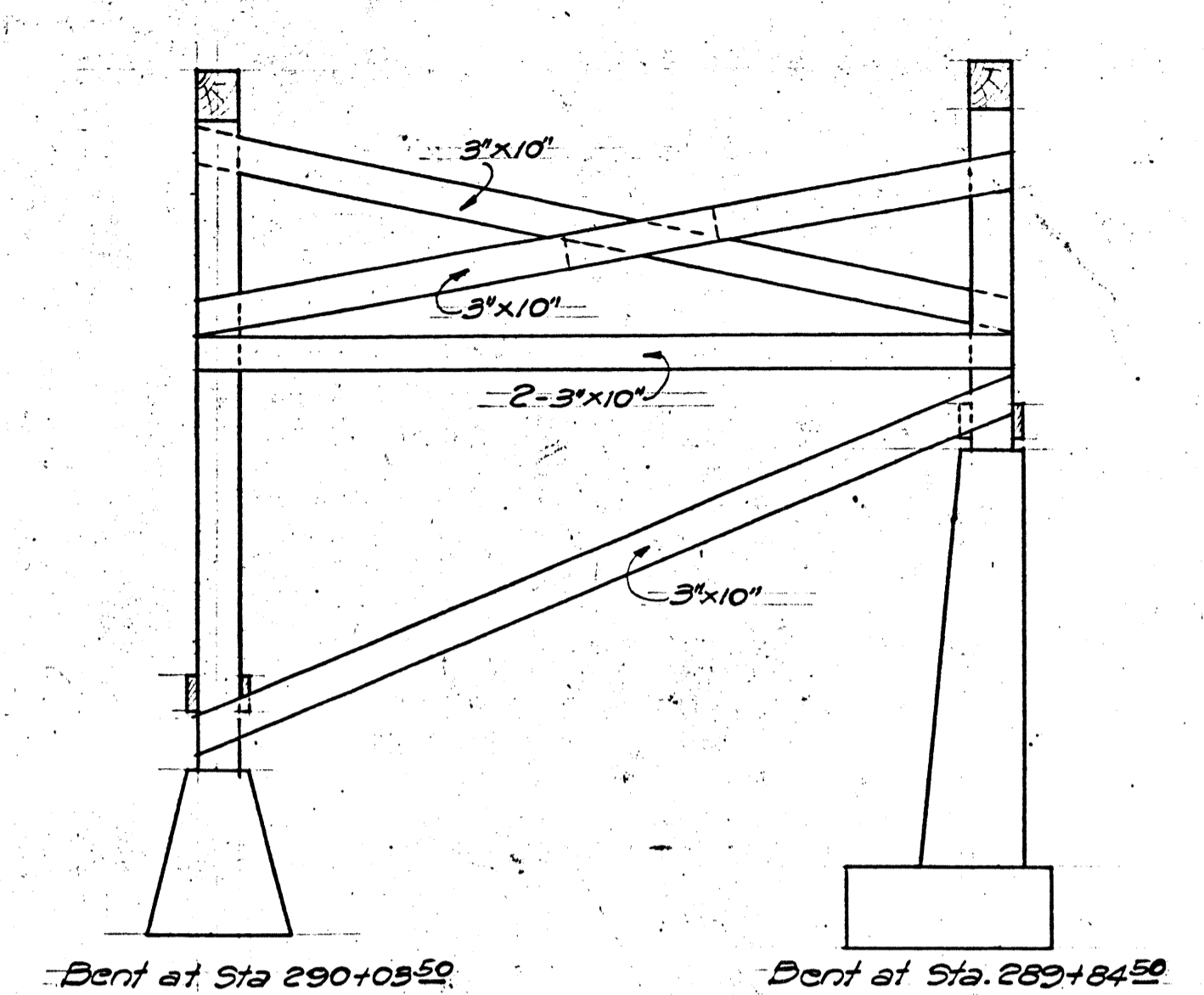
UPSTREAM ELEVATION SHOWING TOWER BRACING
Scale 1/4" = 1'-0"



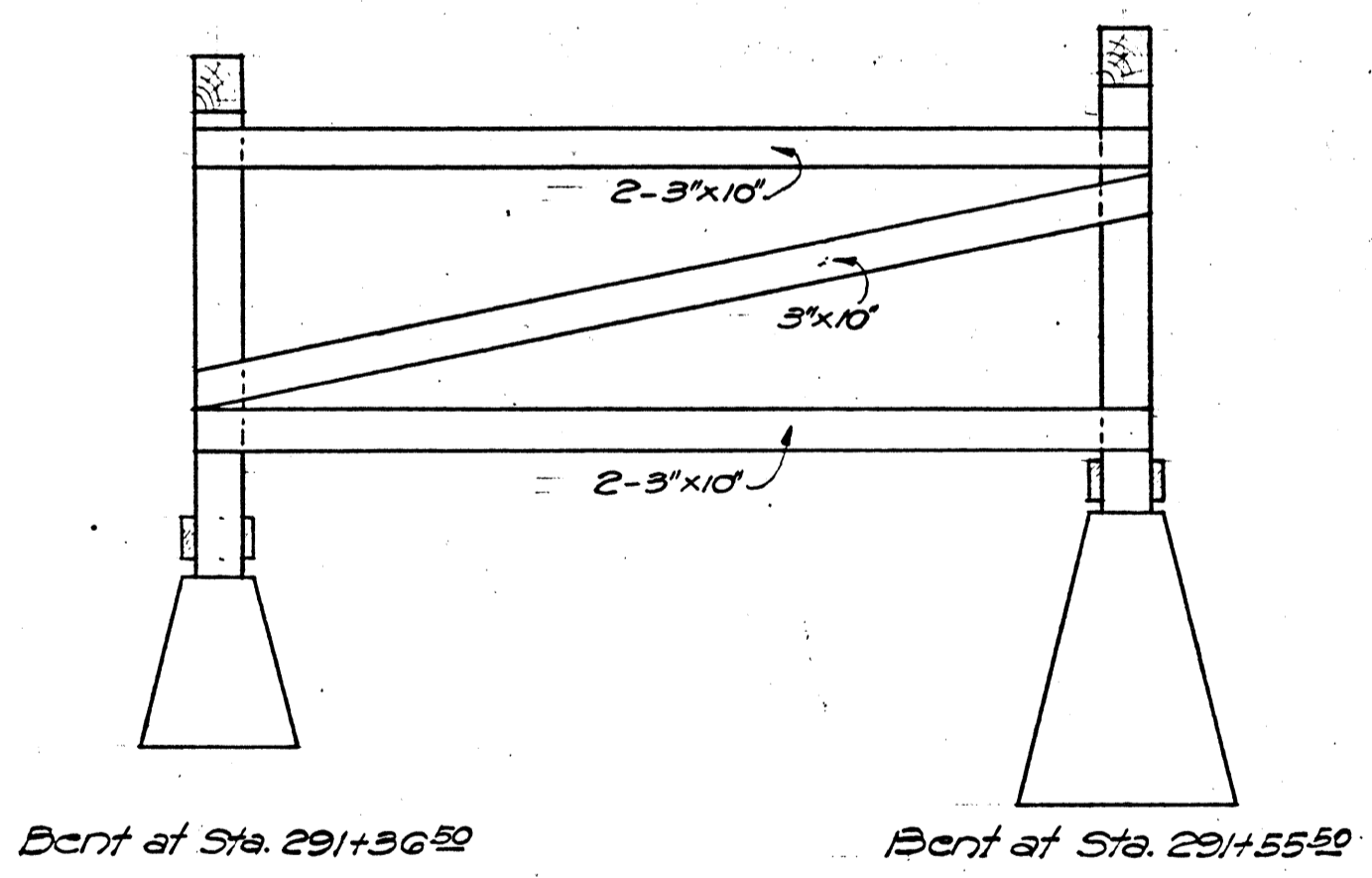
ELEVATION SHOWING TOWER BRACING AT INTERMEDIATE POSTS.
Scale 1/4" = 1'-0"



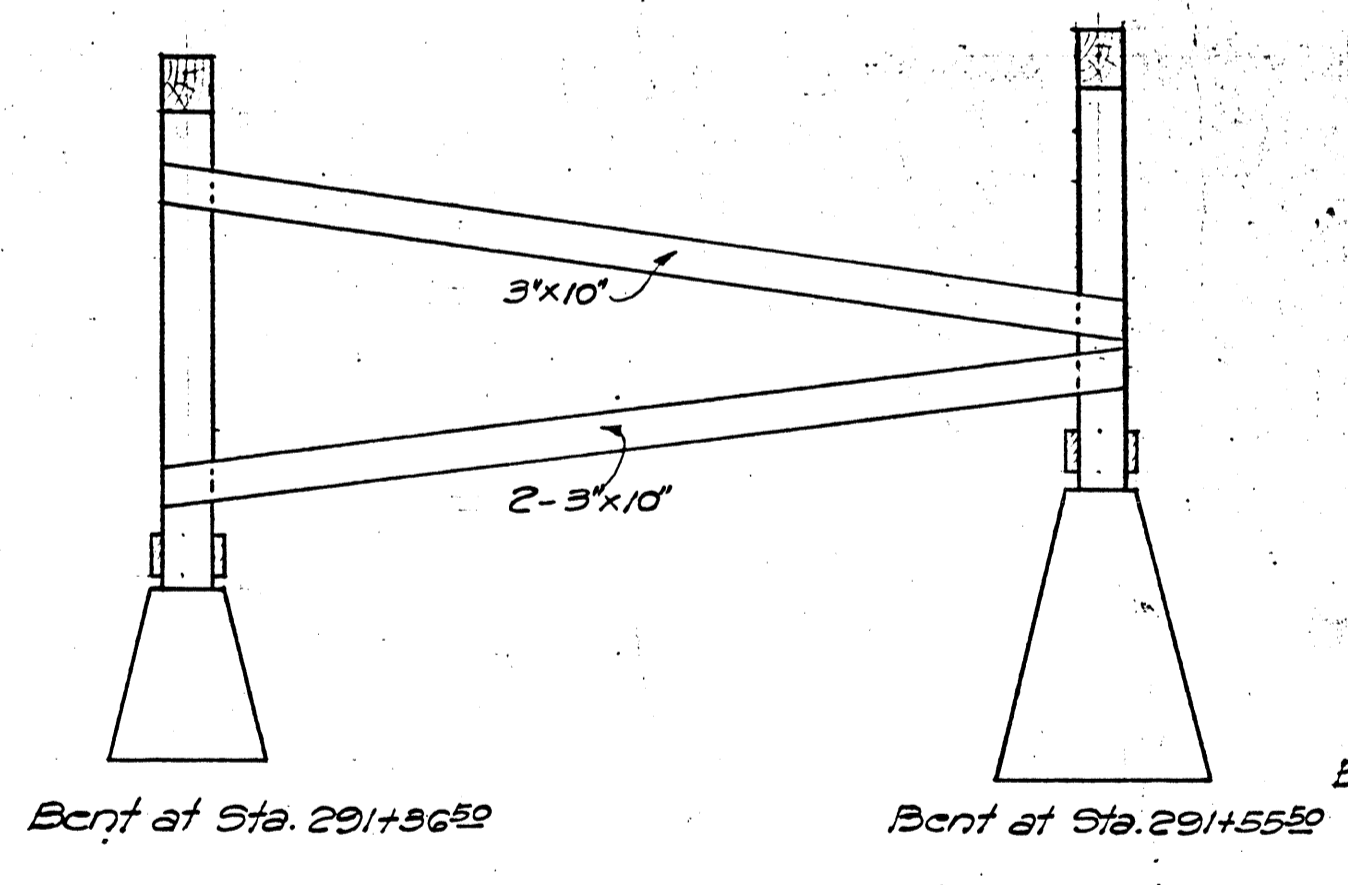
TOWER BRACING AT POSTS ALONG & ROADWAY.
Scale 1/4" = 1'-0"



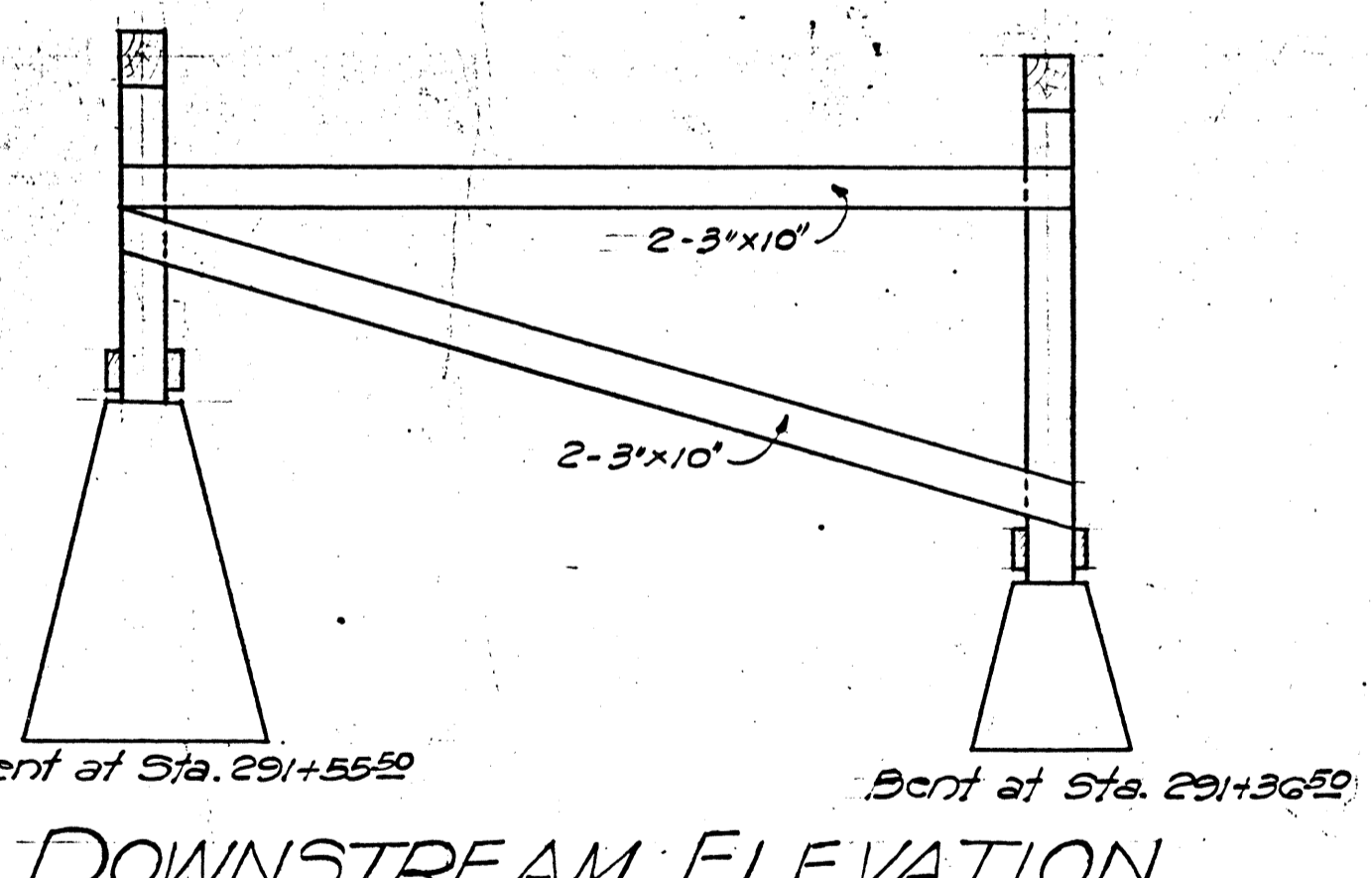
DOWNSTREAM ELEVATION. SHOWING TOWER BRACING
Scale 1/4" = 1'-0"



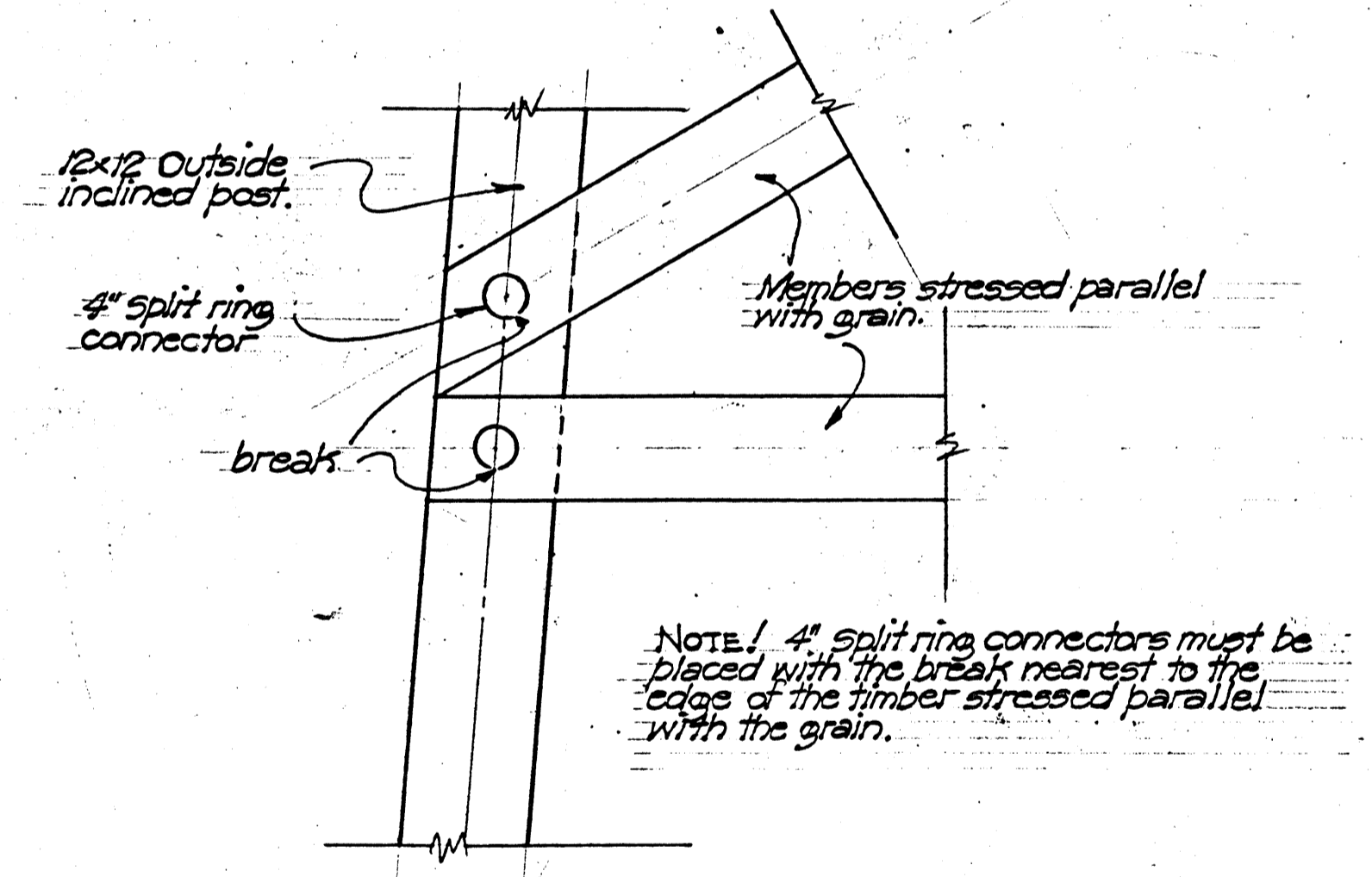
UPSTREAM ELEVATION SHOWING TOWER BRACING
Scale 1/4" = 1'-0"



TOWER BRACING AT INTERMEDIATE POSTS.
Scale 1/4" = 1'-0"



DOWNSTREAM ELEVATION SHOWING TOWER BRACING.
Scale 1/4" = 1'-0"

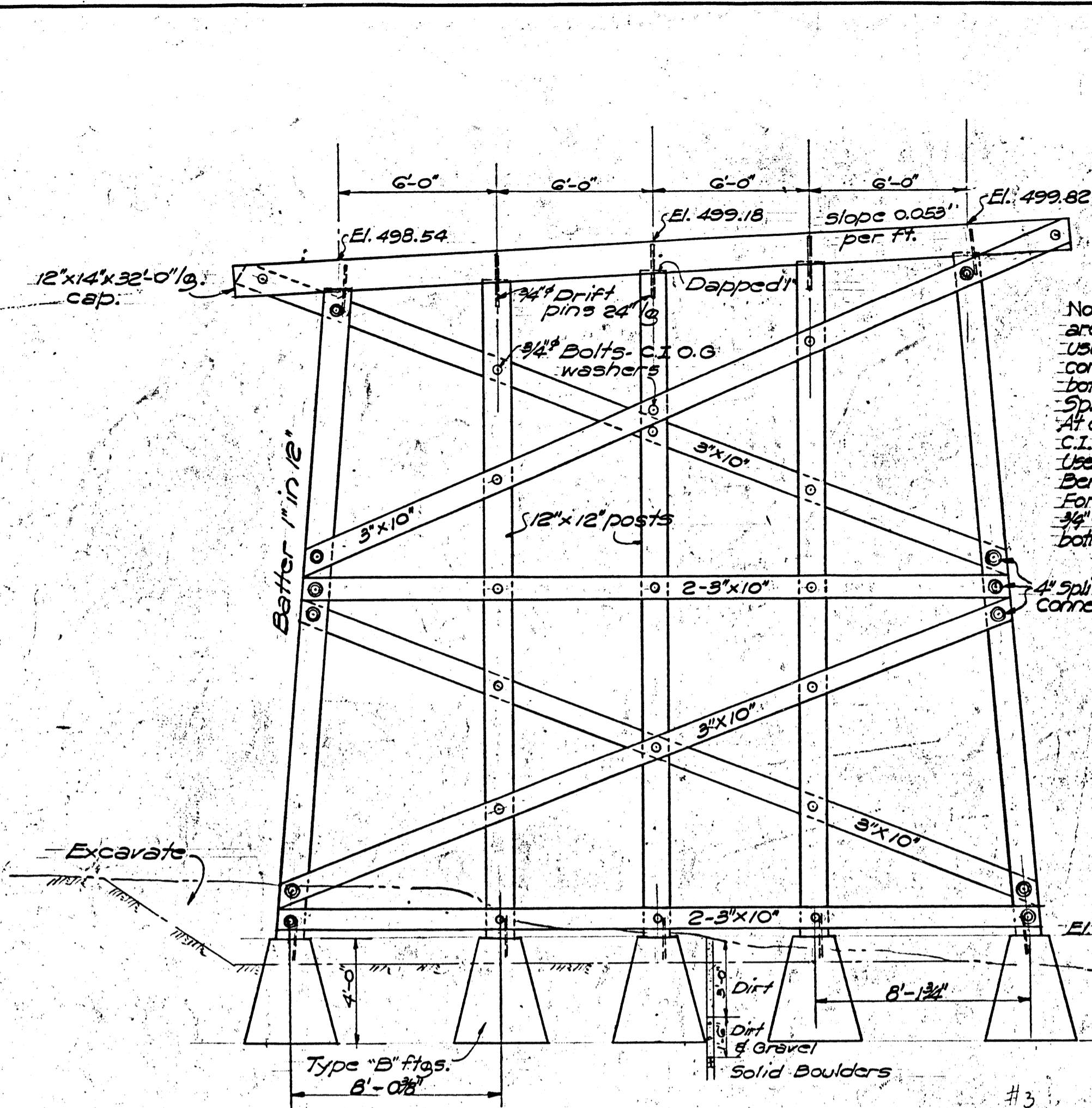


NOTE: 4" split ring connectors must be placed with the break nearest to the edges of the timber stressed parallel with the grain.

METHOD OF PLACING SPLIT RING CONNECTORS
Scale 3/4" = 1'-0"

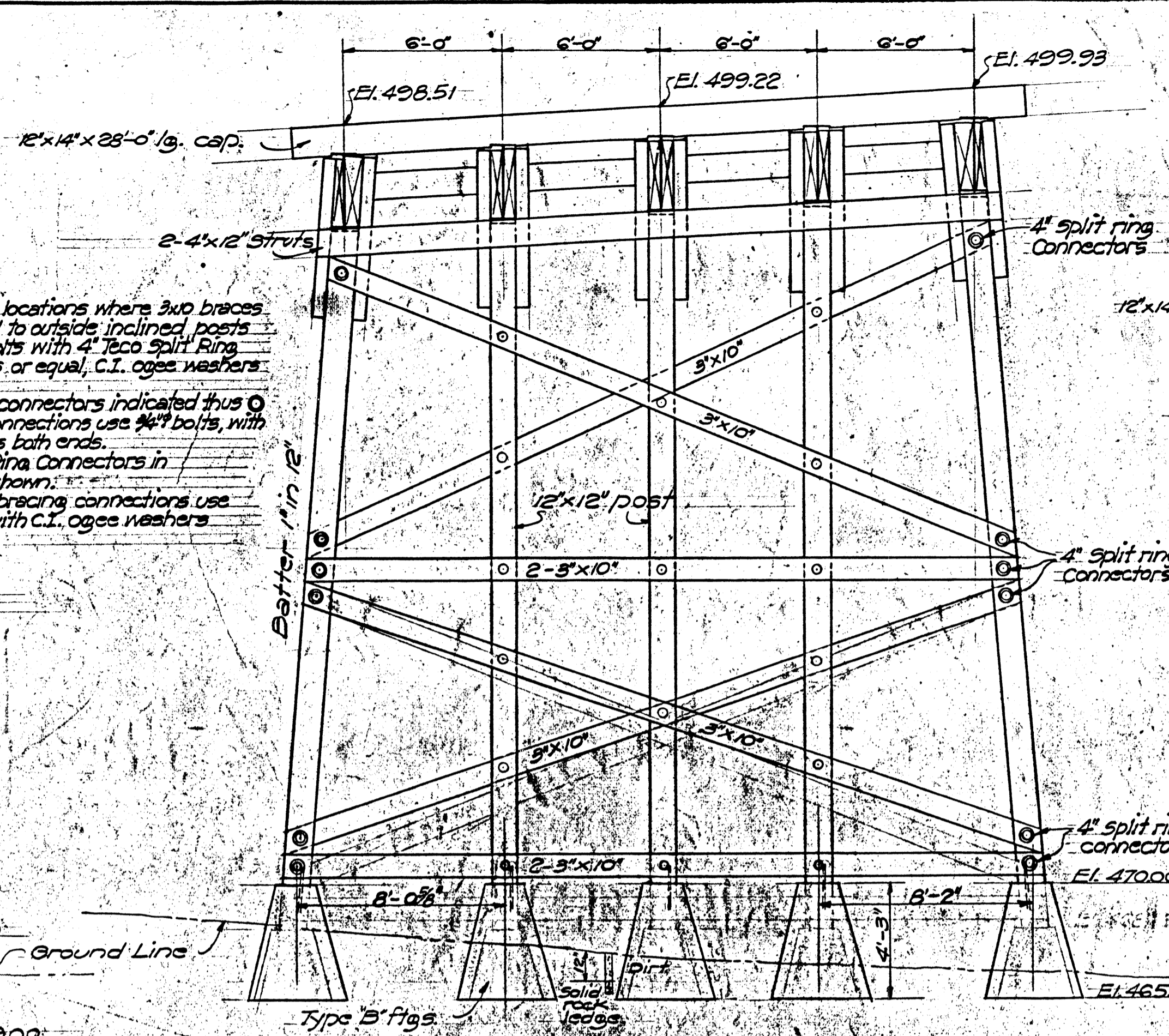
SURVEY PLOTTED BY: DATE: 7-2-39
DESIGNED BY: J.S. STEVENS
TRACED BY: J.S. STEVENS
QUANTITIES BY: J.S. STEVENS
CHECKED BY: J.S. STEVENS
ORIGINAL PLAN No. _____

TERRITORIAL HIGHWAY DEPARTMENT
TERRITORY OF HAWAII
HOOLOAWA BRIDGE
HANA BELT RD. F.A.R. 32 A (1)
JULY - 1939
SHEET No 3 OF 6 SHEETS

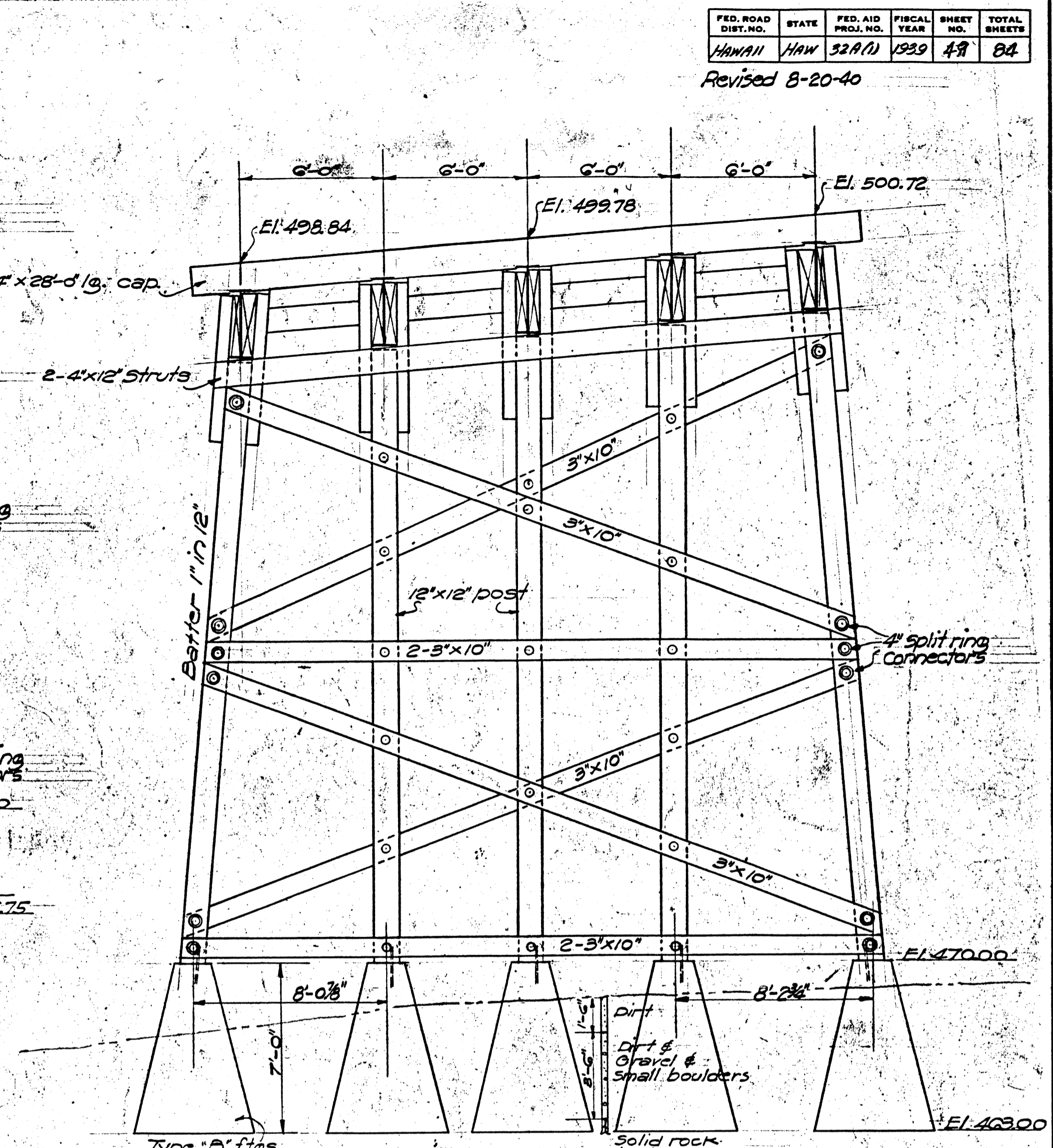


BENT AT STA. 290+22.50
Scale 1/4"=1'-0"

NOTE: At locations where 3x10 braces are bolted to outside inclined posts use 3/4" bolts with 4" Teeco Split Ring connectors or equal C.I. ogee washers both ends.
Split ring connectors indicated thus At other connections use 3/4" bolts with C.I. washers both ends.
Use Split Ring Connectors in Bents as shown.
For tower bracing connections use 3/4" bolts with C.I. ogee washers both ends.



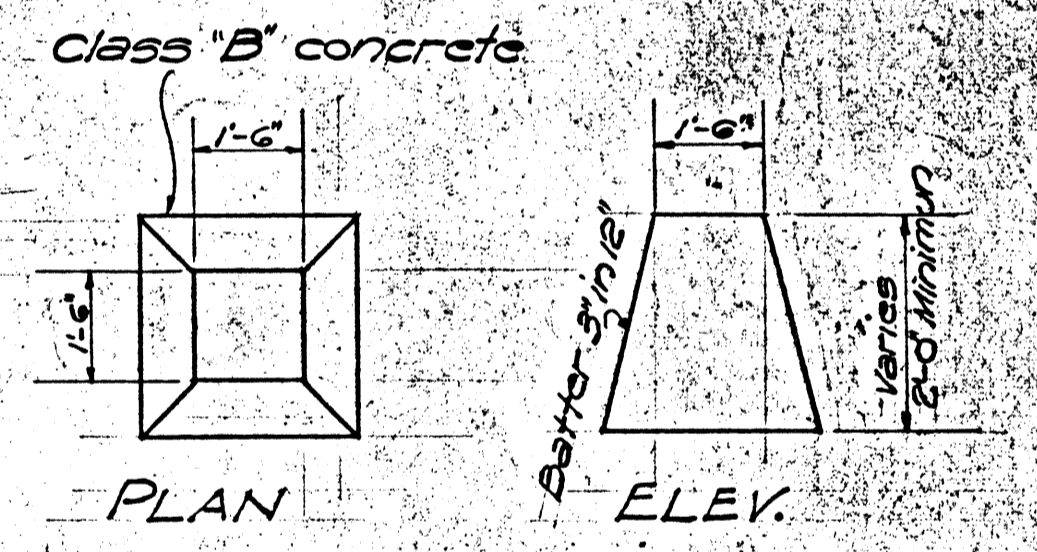
BENT AT STA. 290+41.50
Scale 1/4"=1'-0"



BENT AT STA. 290+98.50
Scale 1/4"=1'-0"

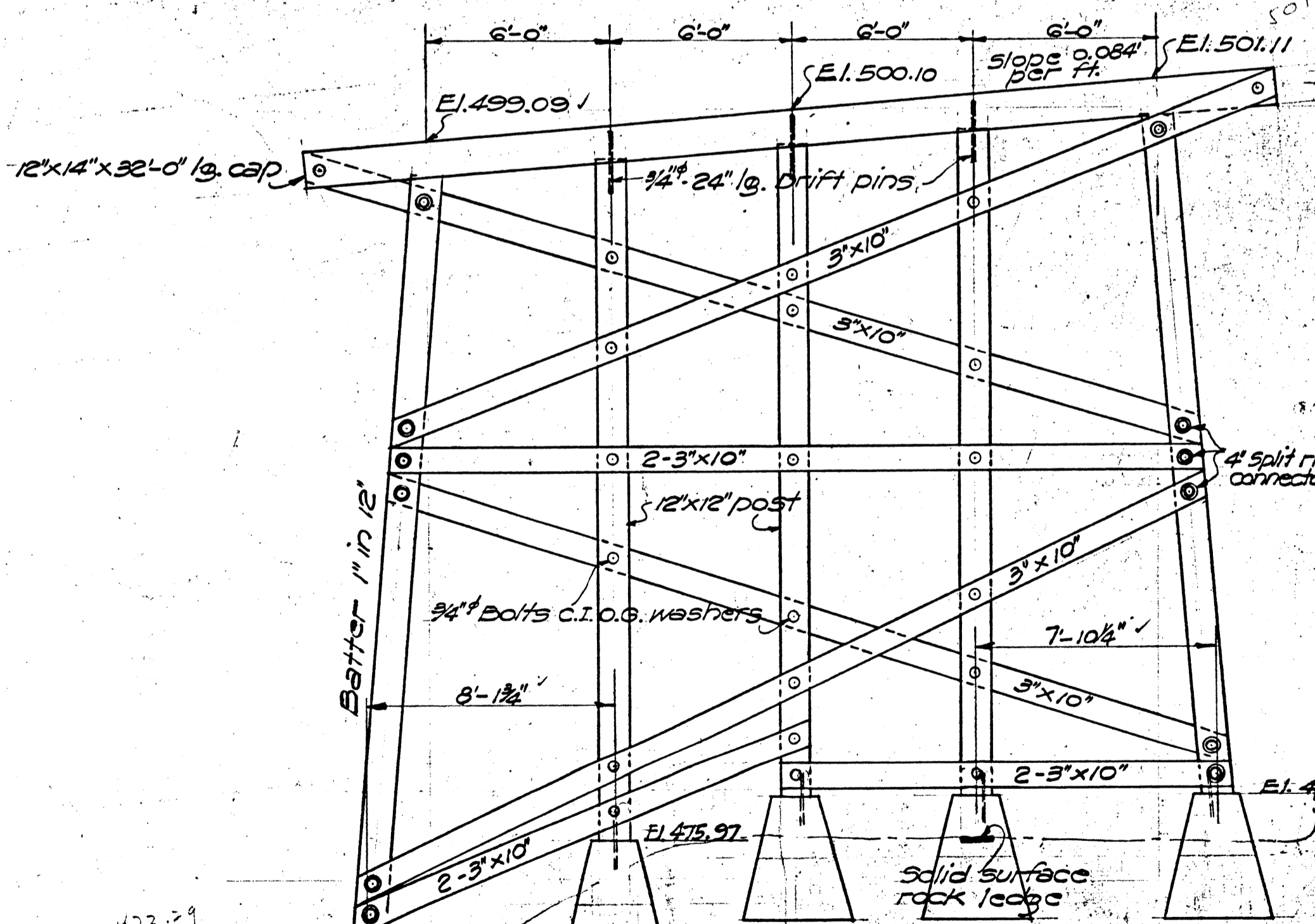
Revision: 4" split ring connectors added to joints where diagonals & horizontal struts meet outside inclined posts.

SURVEY PLOTTED BY	DATE
DRAWN BY	
QUANTITIES CHECKED BY	
CHECKED BY	
ORIGINAL PLAN	
NOTE BOOK	
No.	

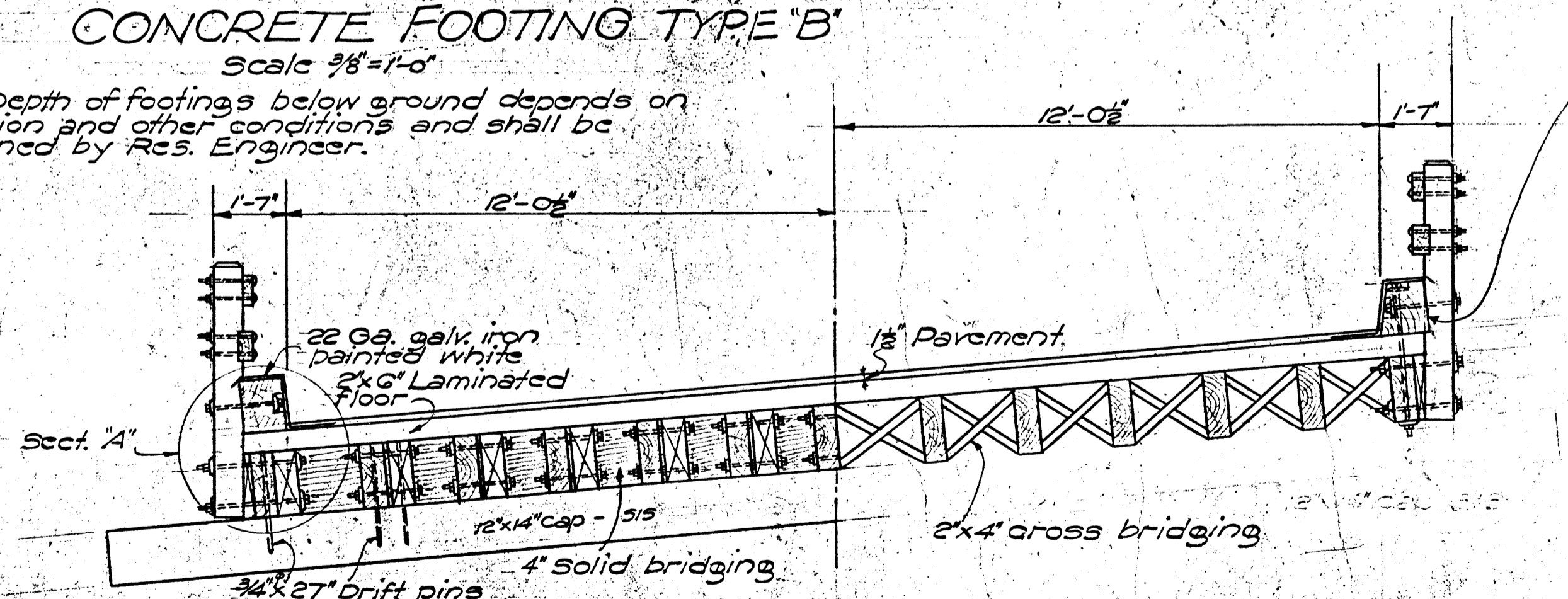


CONCRETE FOOTING TYPE "B"
Scale 3/8"=1'-0"

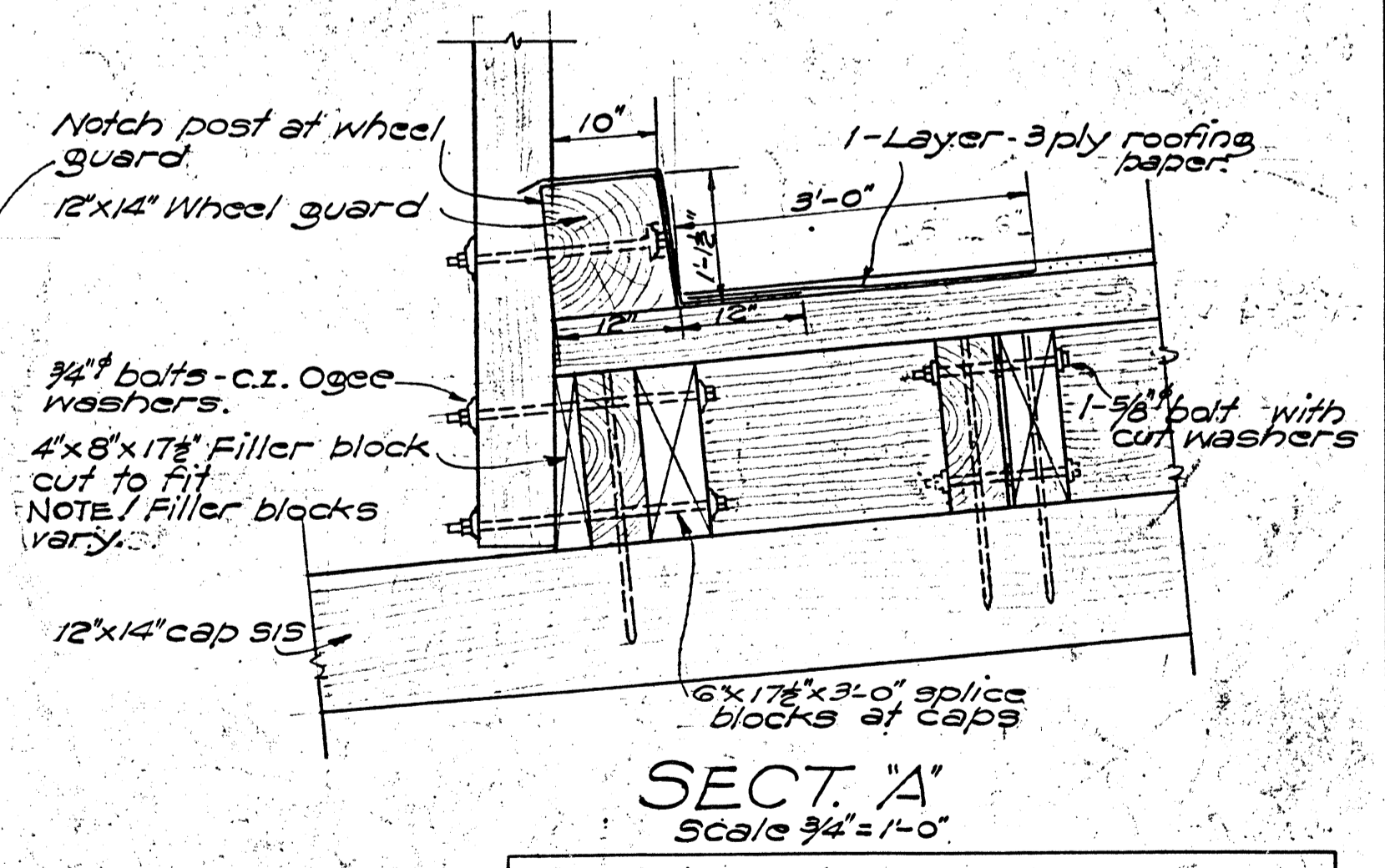
NOTE: Depth of footings below ground depends on foundation and other conditions and shall be determined by Res. Engineer.



BENT AT STA. 291+17.50
Scale 1/4"=1'-0"



HALF SECT. AT BENT, HALF SECT. AT CENTER OF SPAN
Scale 3/8"=1'-0"



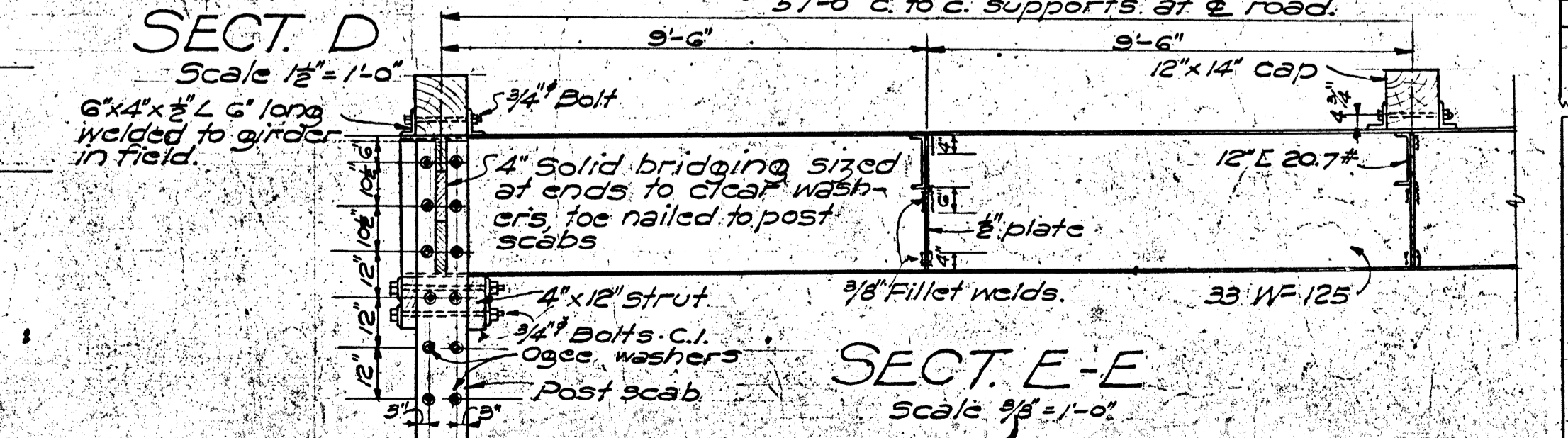
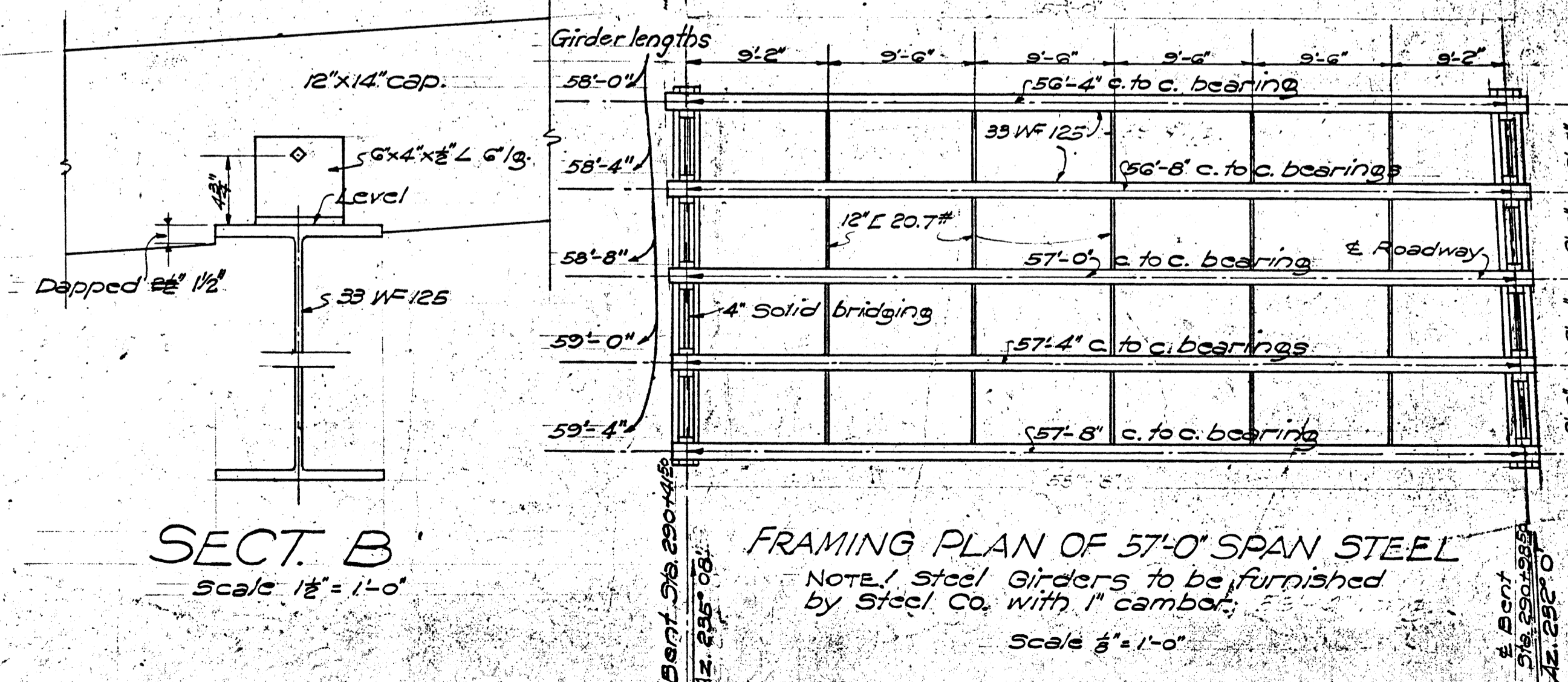
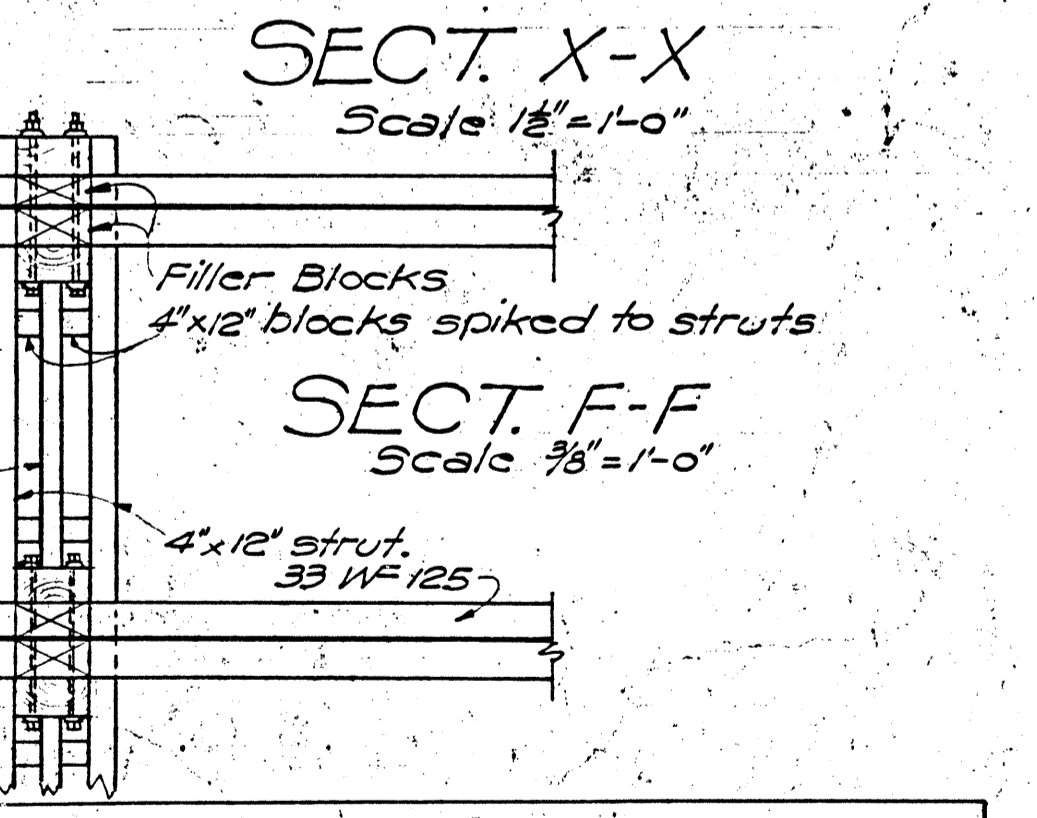
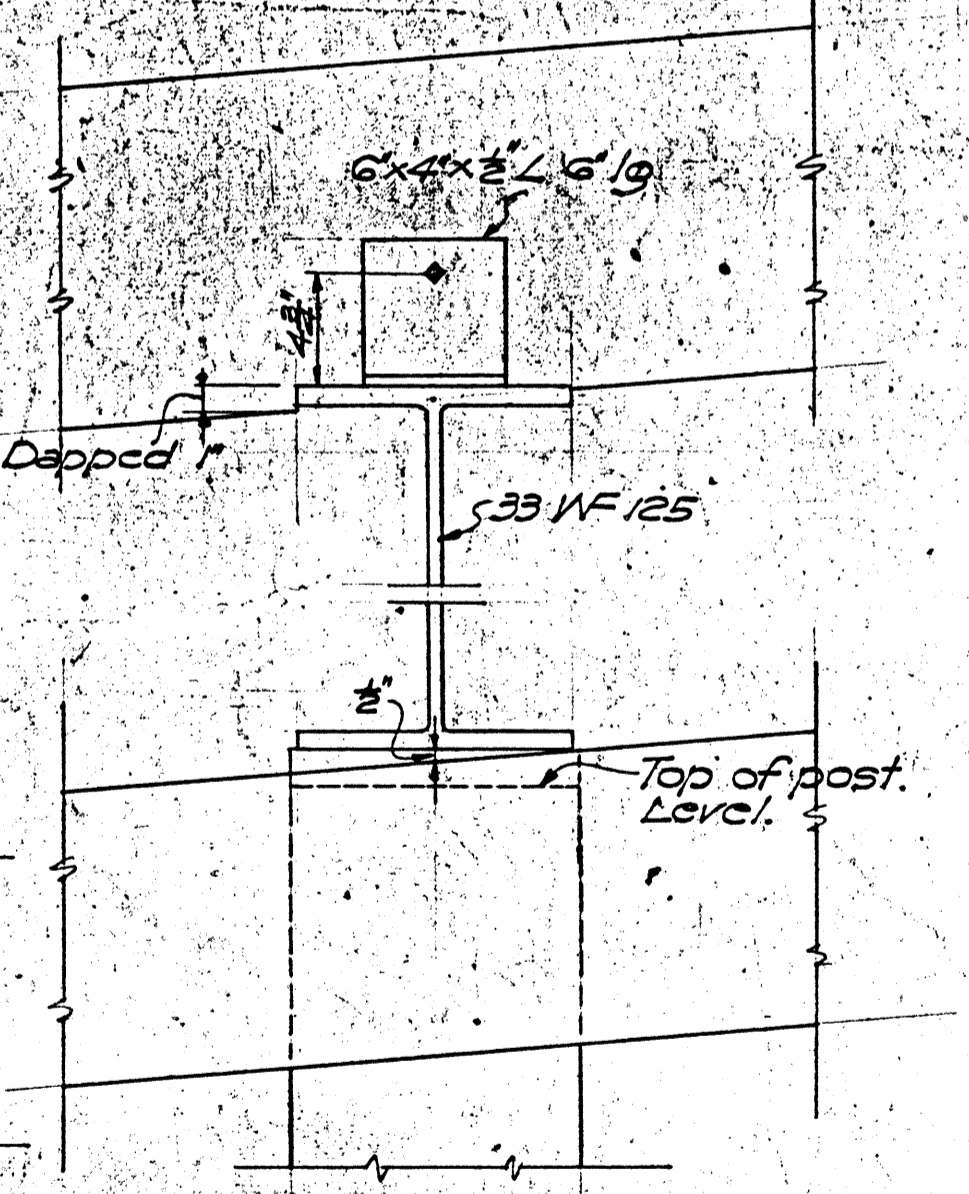
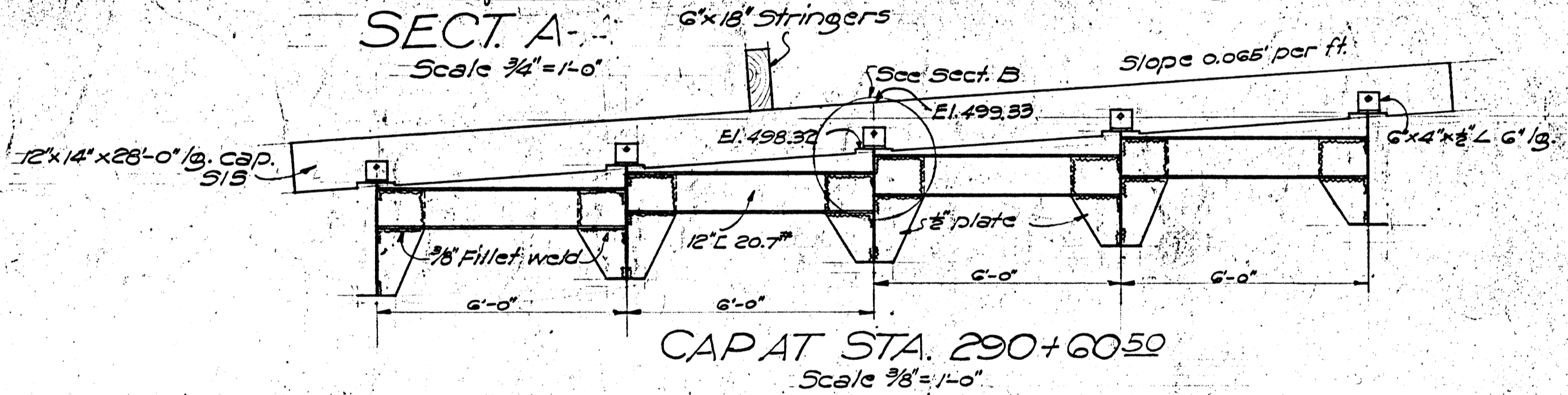
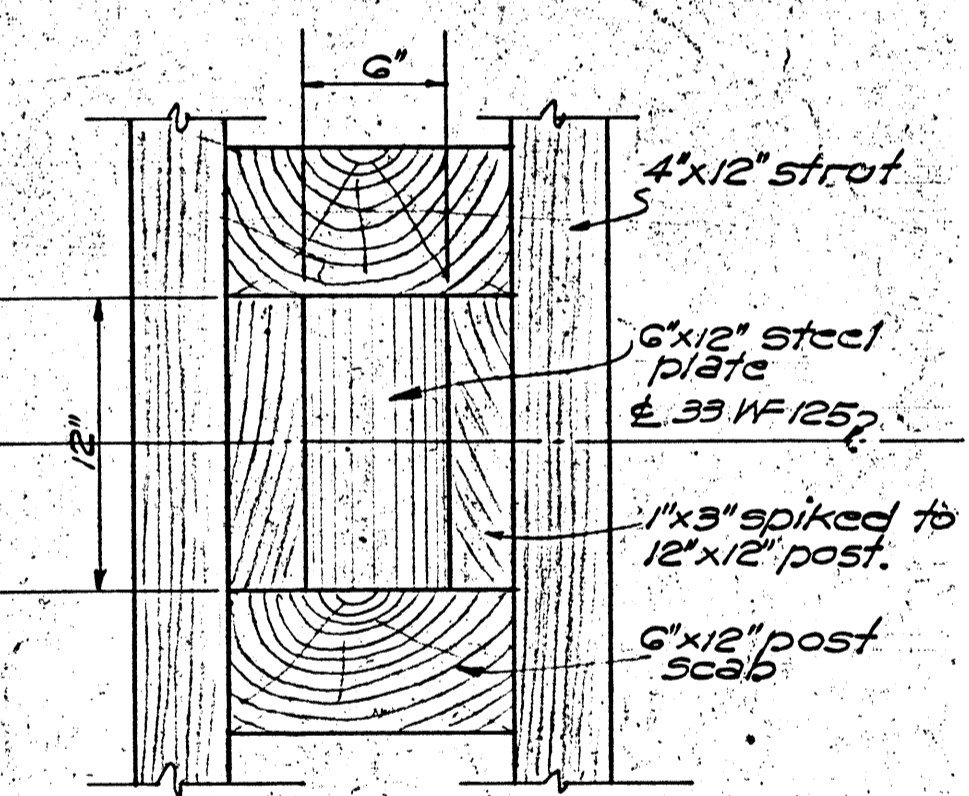
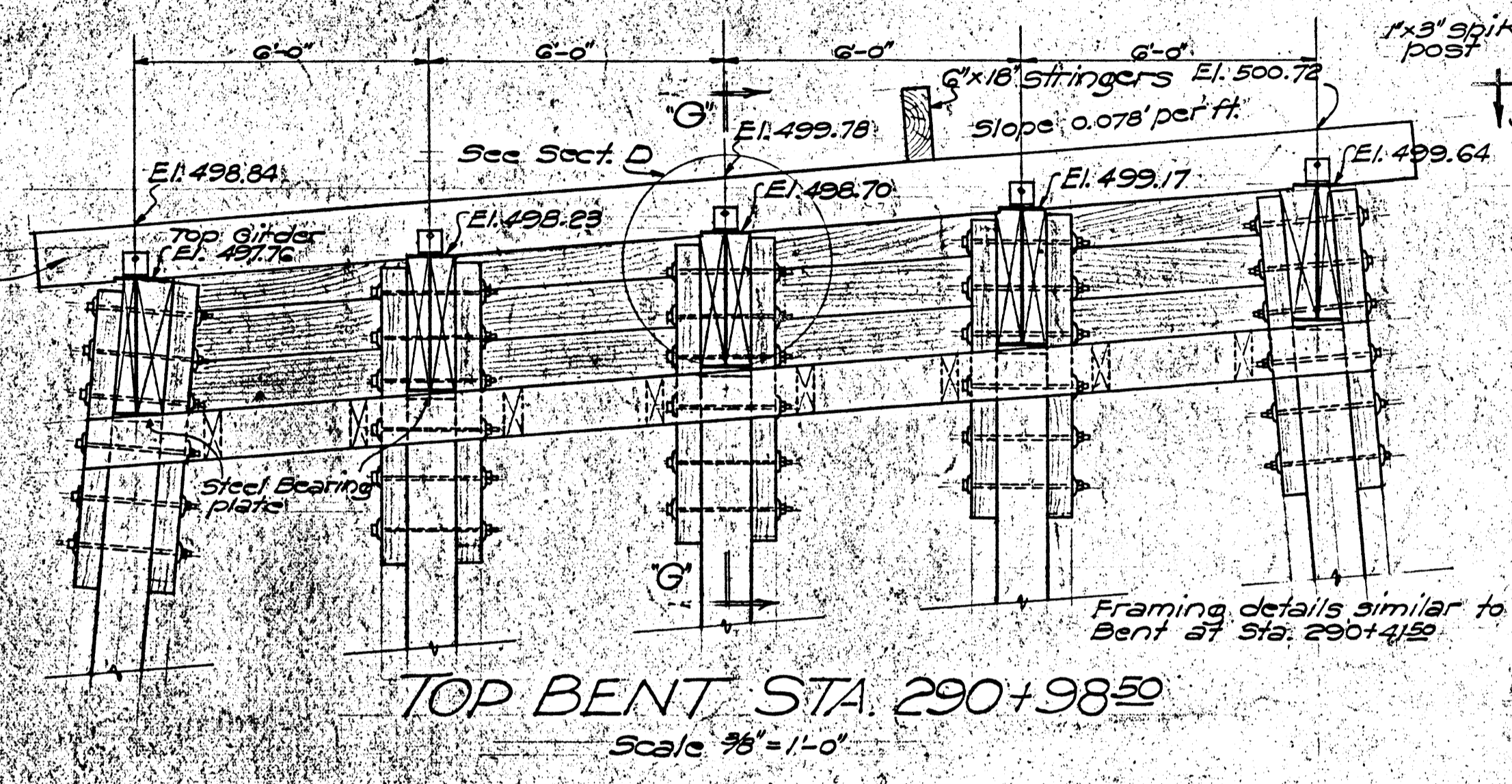
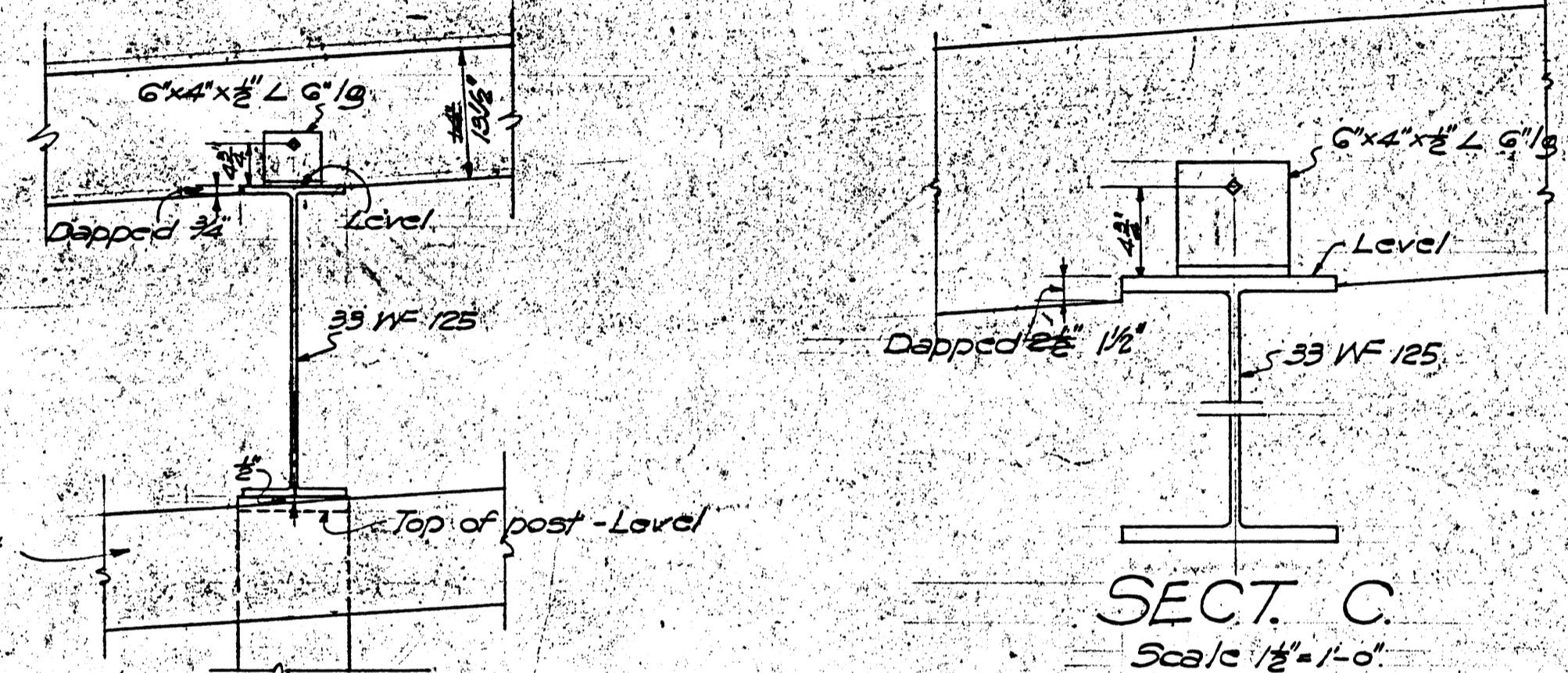
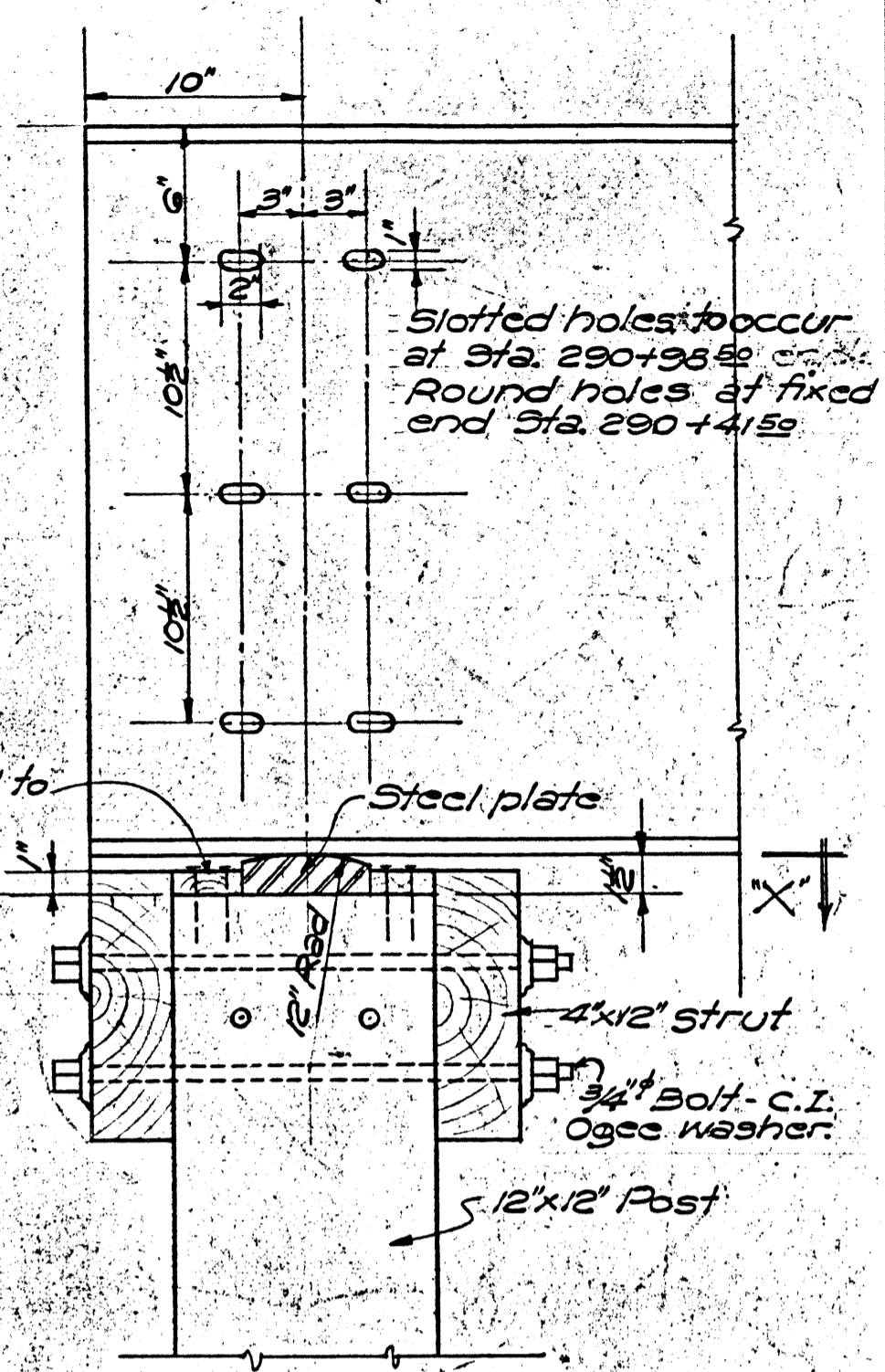
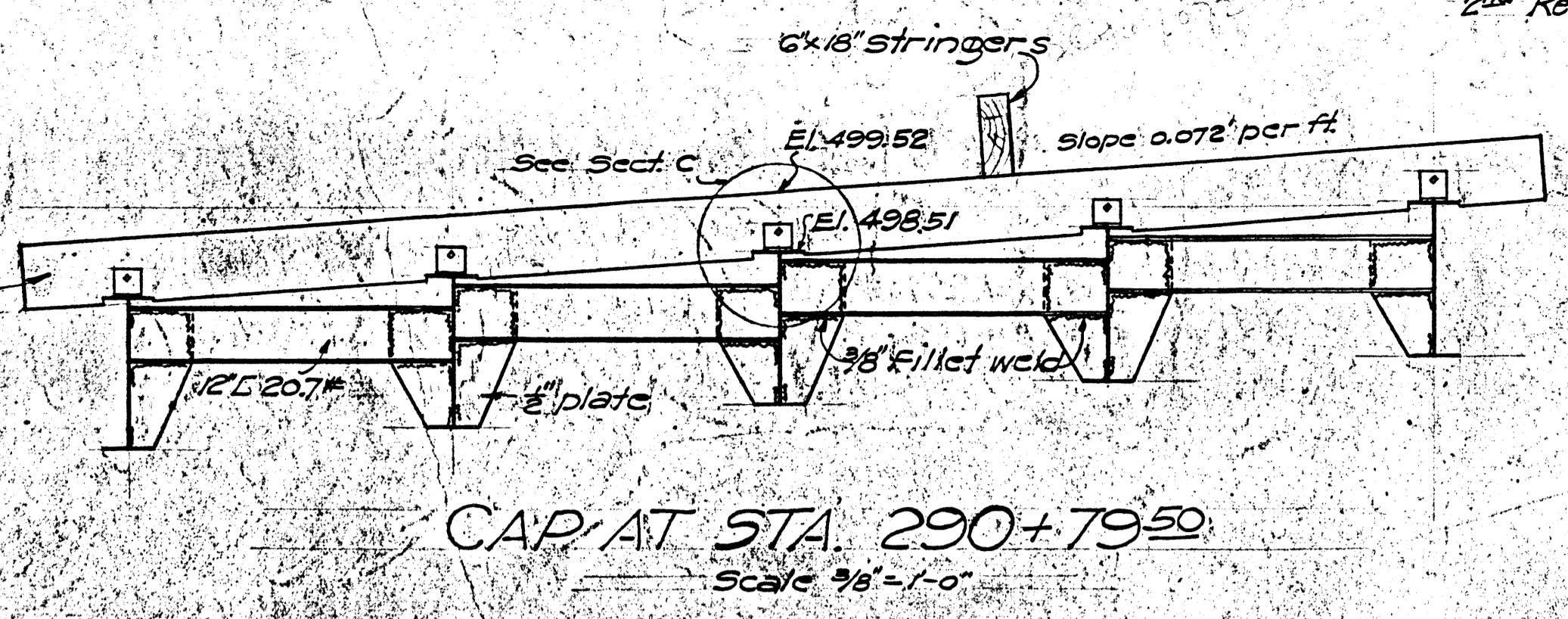
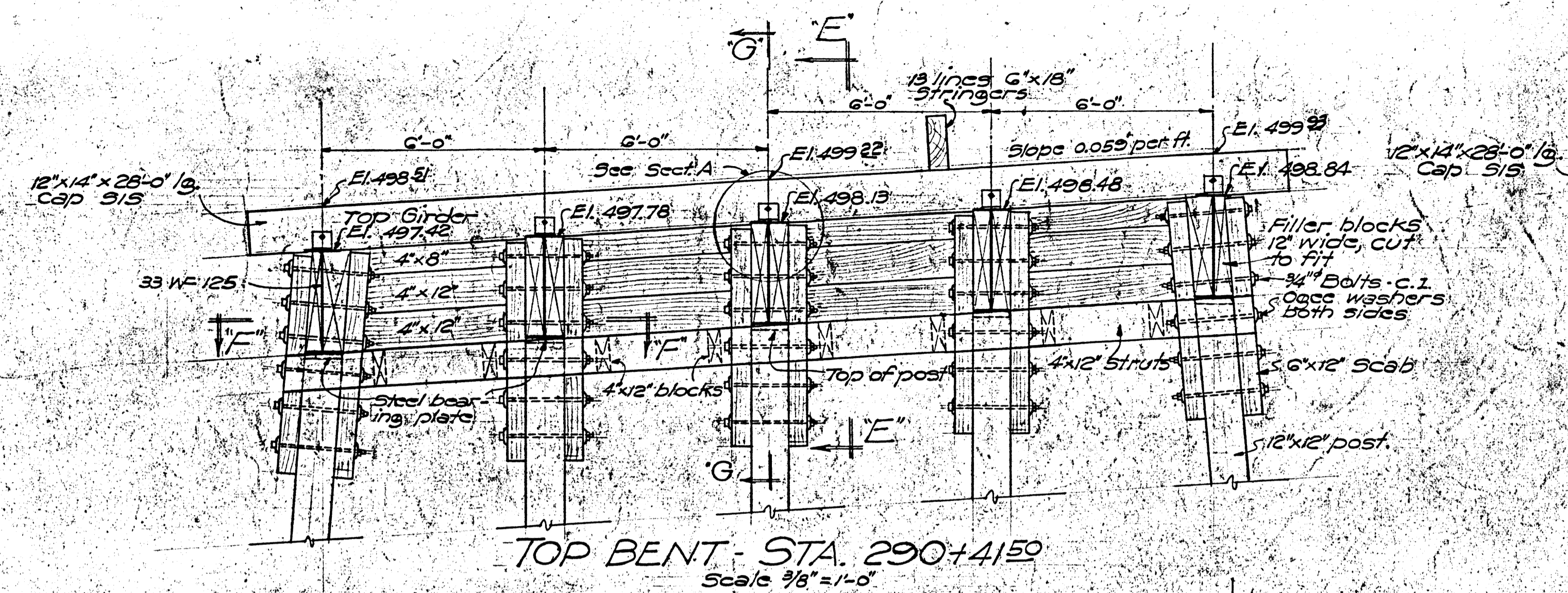
SECT. "A"
Scale 3/4"=1'-0"

TERRITORIAL HIGHWAY DEPARTMENT
TERRITORY OF HAWAII
HOOLAWA BRIDGE
HANA BELT ROAD F.A.P. 52 A (1)
MAY, 1939
SHEET No. 4 OF 6 SHEETS

Revised Oct. 10, 1940
2nd Revision Oct. 19, 1940

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW	32 A (1)	1939	57	64

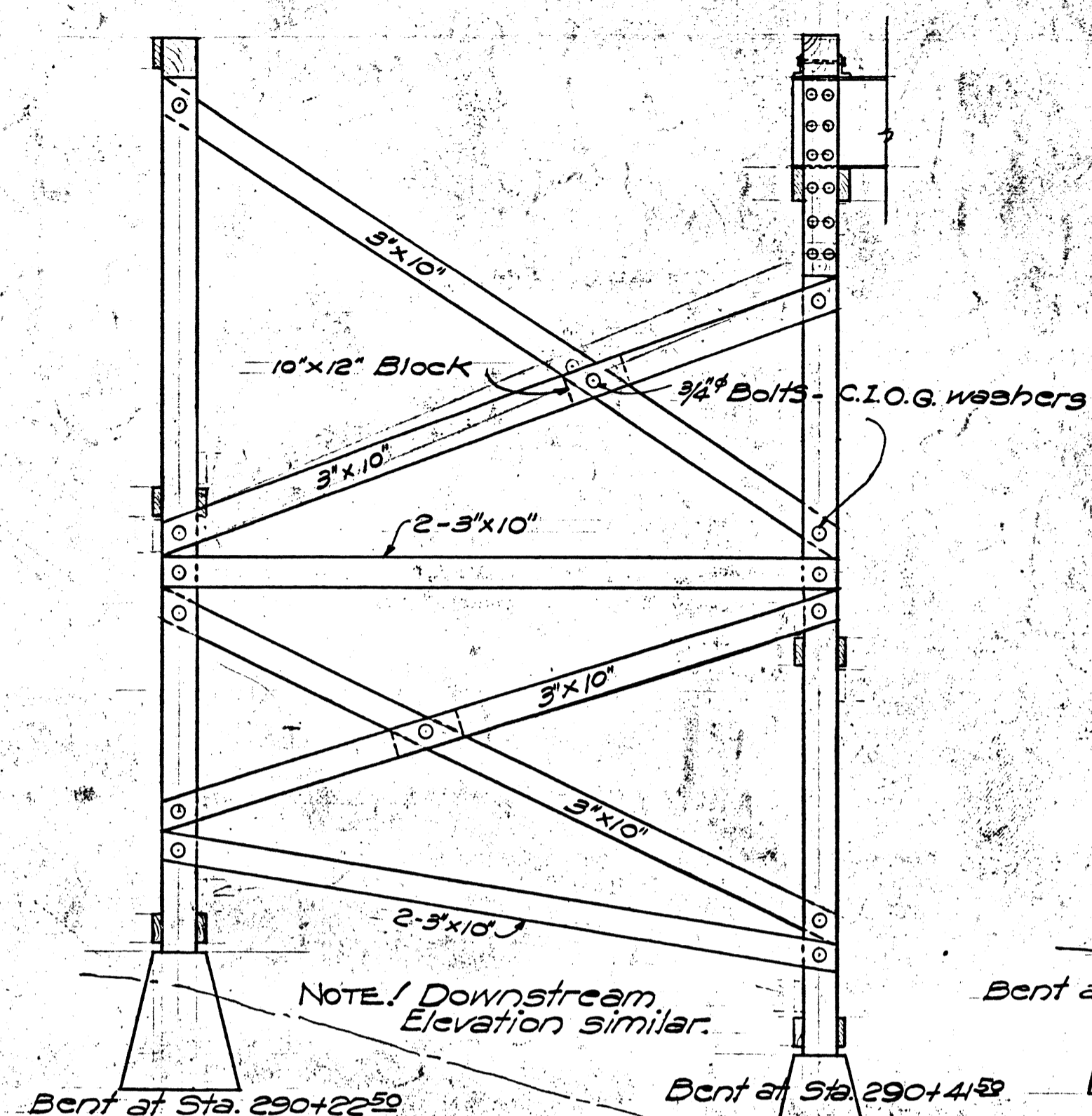
Revision: Uniform steel girder lengths changed to varying lengths.
 2nd Revision: dep. Sect. D & C changed from 2 1/2" to 1 1/2". Cap. Sect. A changed from 14" to 15 1/2".



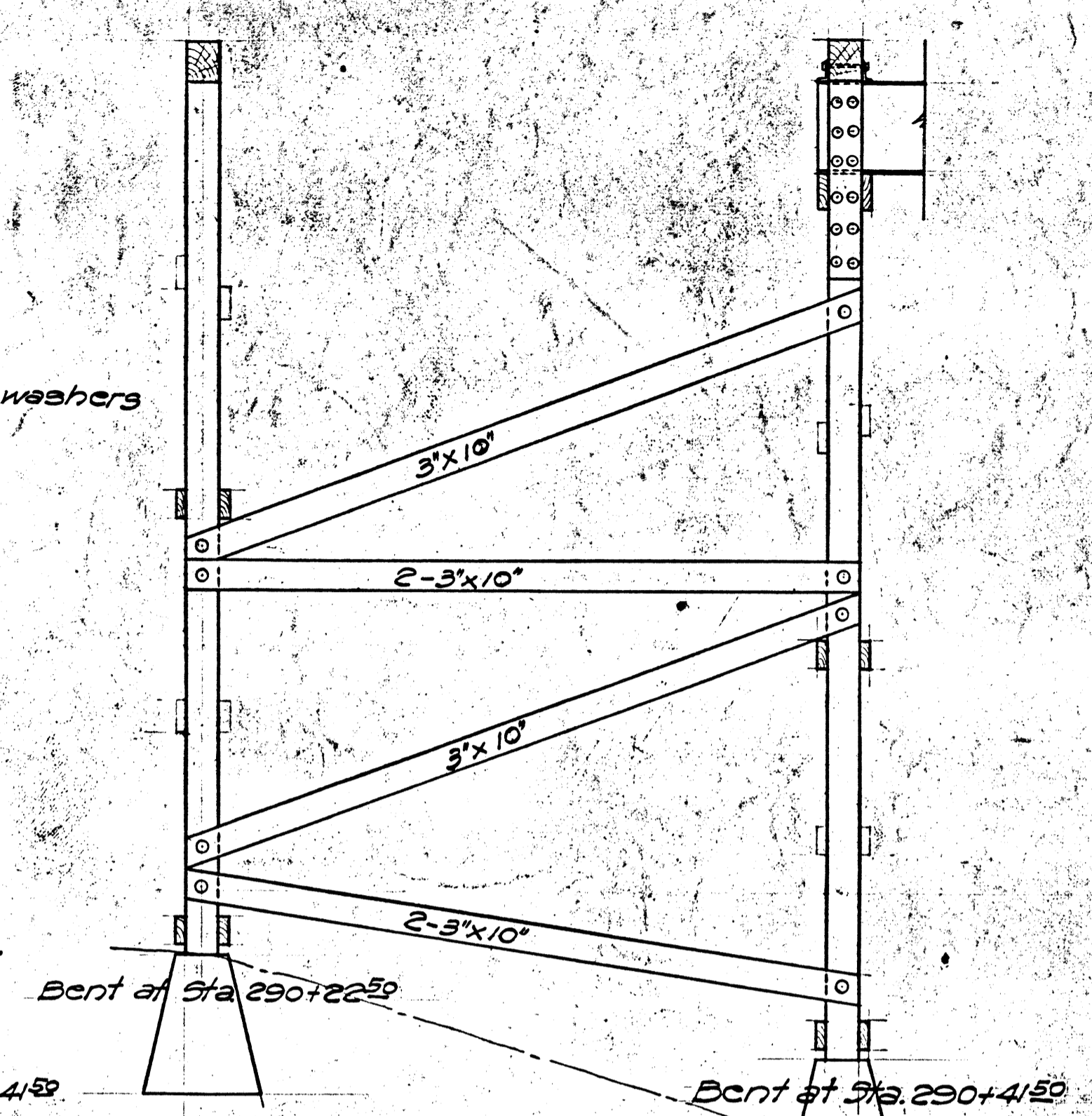
SURVEY PLOTTED BY	DATE
DESIGNED BY	2-25
TRACED BY	
QUANTITIES BY	
NOTE BOOK	
CHECKED BY	
No.	

TERRITORIAL HIGHWAY DEPARTMENT
TERRITORY OF HAWAII
HOOLOAWA BRIDGE
HANA BELT ROAD F.A.P. 32 A (1)
MAY - 1939
SHEET No 5 OF 6 SHEETS

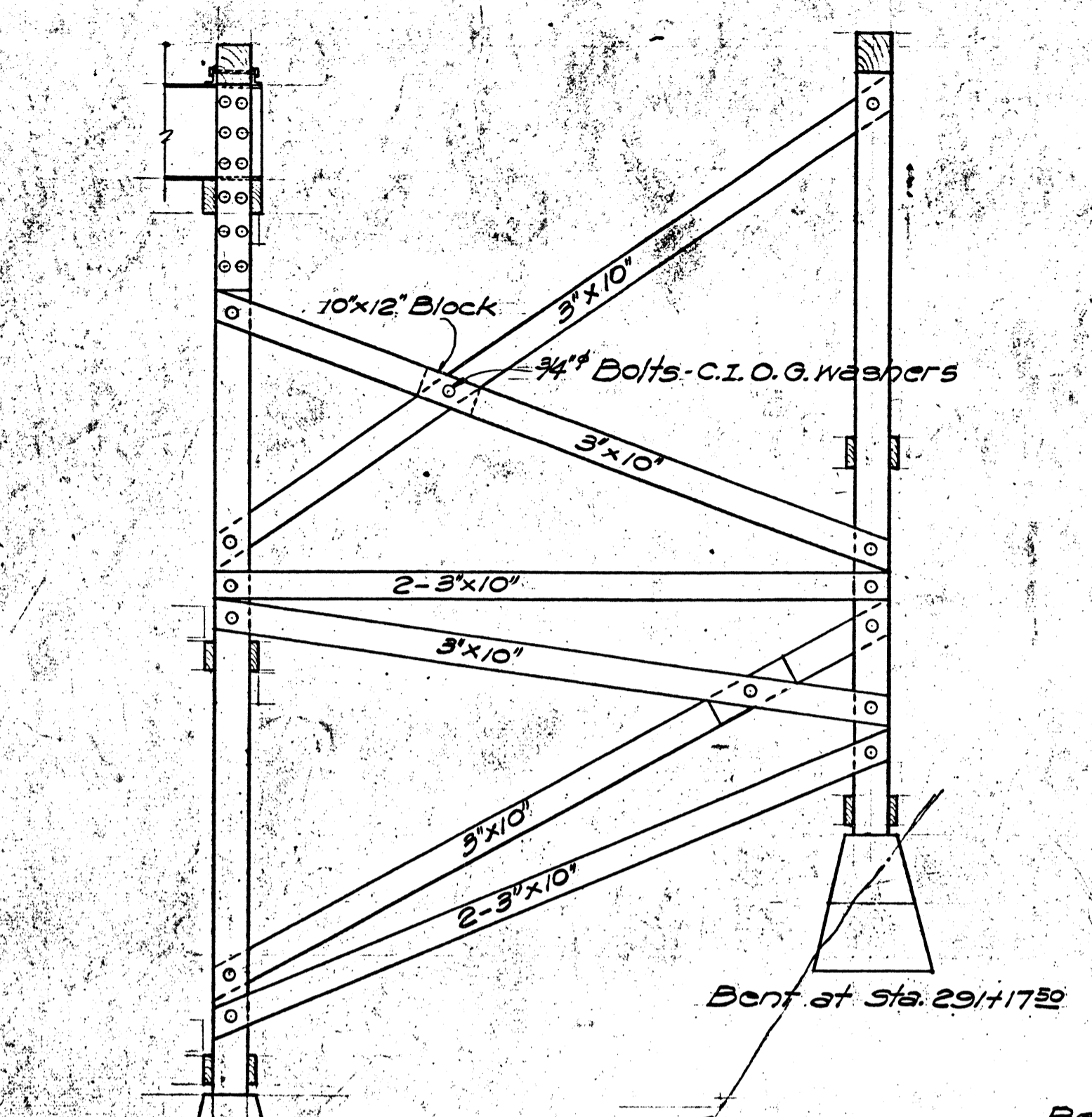
5008.50



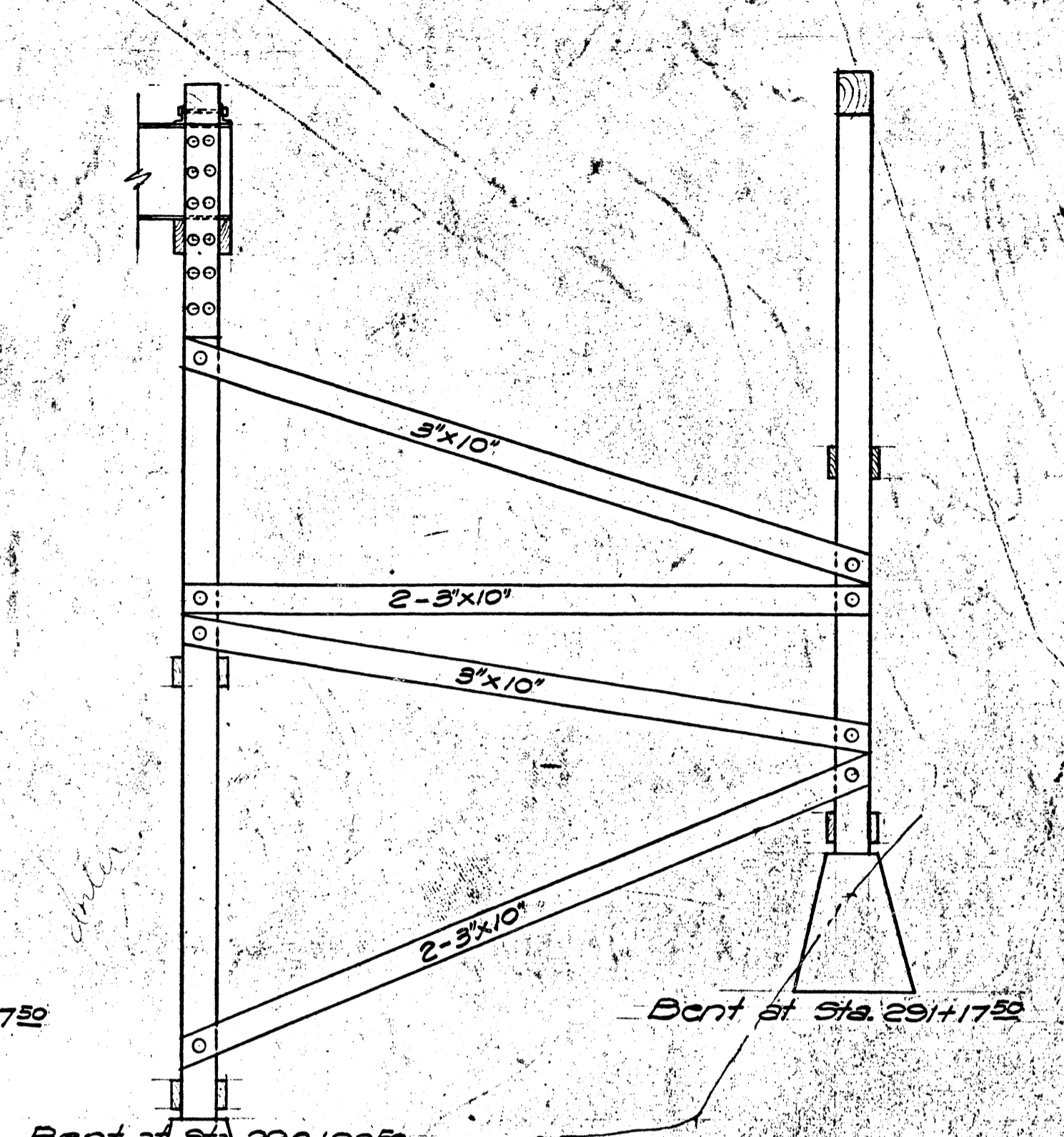
UPSTREAM ELEVATION
SHOWING TOWER BRACING
Scale 1/4" = 1'-0"



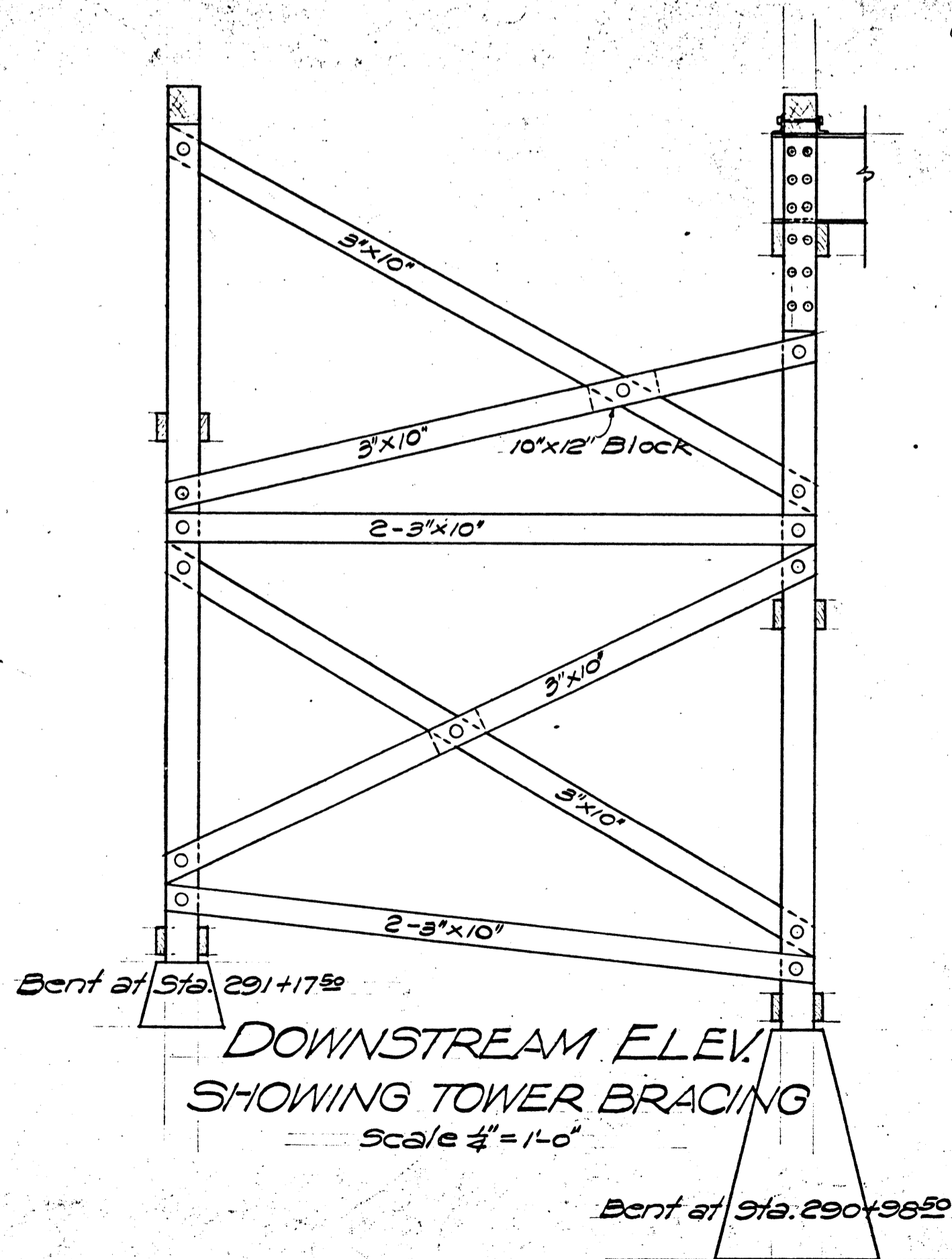
ELEVATION SHOWING
TOWER BRACING AT
INTERMEDIATE POSTS.
Scale 1/4" = 1'-0"



UPSTREAM ELEVATION
SHOWING TOWER BRACING
Scale 1/4" = 1'-0"



ELEVATION SHOWING
TOWER BRACING AT
INTERMEDIATE POSTS.
Scale 1/4" = 1'-0"



DOWNSTREAM ELEV.
SHOWING TOWER BRACING
Scale 1/4" = 1'-0"

SURVEY PLOTTED BY: _____ DATE: 5-23-39
 DESIGNED BY: _____
 TRACED BY: _____
 QUANTITIES BY: _____
 CHECKED BY: _____
 No. _____

TERRITORIAL HIGHWAY DEPARTMENT
 TERRITORY OF HAWAII
HOOLAWA BRIDGE
 HANA BELT ROAD F.A.P. 32 A (1)
 MAY-1939
 SHEET No 6 OF 6 SHEETS