

PROJECT NO. 93A-02-70

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" " " "	15

ITEM NO.	ITEM.	EST. QUANTITY (374 CU.YD.)	UNIT
202.21	REMOVAL OF PORTION OF EXISTING BRIDGE AND CHANNEL LINING	1,337	CU. YD.
206.60	STRUCTURE EXCAVATION FOR BRIDGES	1,047	CU. YD.
206.71	STRUCTURE BACKFILL FOR ABUTMENT AND RETAINING WALLS	50	CU. YD.
206.81	FILTER MATERIAL FOR STRUCTURES	(685 CU.YD.)	LUMP SUM
503.072	CLASS E CONCRETE IN BRIDGE DECK SLAB	(573 CU.YD.)	LUMP SUM
503.073	CLASS A CONCRETE IN FOOTINGS	(363 CU.YD.)	LUMP SUM
503.014	CLASS A CONCRETE FOR BRIDGE OTHER THAN IN FOOTINGS *	22	EACH
511.10	PRECAST CONCRETE DEADMEN COMPLETE WITH PLATES AND TIE RODS IN PLACE	1	EACH
505.001	PILE LOAD TESTS	4,217	LIN. FT.
505.040	PRECAST, PRESTRESSED CONCRETE PILES, FURNISHED	475	LIN. FT.
505.400	PRECAST, " " " " , DRIVEN	25	LIN. FT.
505.800	TEST PILES, DRIVEN	3,797	LIN. FT.
505.700	DRILLED HOLES FOR PILE	163	UN. FT.
507.25	METAL BRIDGE RAILING - THREE RAILS (ALUMINUM)	20	LIN. FT.
507.60	CONCRETE RAILING XXX END POST	(280,400 LBS.)	LUMP SUM
602.011	REINFORCING STEEL IN BRIDGE FOOTING, WALLS, PIERS, ABUTMENTS, DECK, AND INVERT SLAB	19	CU. YD.
G11.01	HAND-LAID RIPRAP	374	LIN. FT.
507.35	STEEL RAILING	191	CU. YD.
508.01	CEMENT RUBBLE MASONRY		

NOTE: THE TERM "RETAINING WALLS"
WILL BE INTERCHANGEABLE &
MEAN "WING WALL."



MAILLILLI BRIDGE WIDENING
BRIDGE LOCATION & BORING LOG
PROJECT 93A-02-70

SHEET No. 1 OF 15 SHEETS



SCALE: 1" = 20'-0"

BORING NO. ELEVATION	B-1 +9.1 ±		B-2 -1.1 ±		B-3 -1.5 ±		B-4 +9.6 ±		B-5 -3.8 ±		B-6 -3.7 ±		B-7 -1.5 ±		B-8 -1.3 ±	
	WATER		WATER		WATER		WATER		WATER		WATER		WATER		WATER	
0	LOOSE TO DENSE LIGHT BROWN, SAND W/ TRACES OF CORAL		6" CONCRETE		6" CONCRETE		2" AC & 4" GRAVEL FILL		DENSE, WHITE SILTY CORAL & SAND		CORAL ROCK? SAND POCKET		WHITE CORAL & SAND		GRAY-WHITE SAND & CORAL	
5	WATER		WHITE, CORAL W/ SAND		CORAL W/ SAND		BROWN, SAND W/ SOME CLAY		STIFF, BROWN CLAY W/ SOME CORAL & SAND		MEDIUM DENSITY DARK MOTTLED BROWN CLAYEY SAND & CORAL		WHITE-TAN BROWN CORAL W/ SAND		DENSE, MOTTLED WHITE GRAY CORAL W/ SAND	
10	DENSE, LIGHT BROWN CORAL W/ SAND		MEDIUM DENSITY SAND W/ CORAL		GRAY & WHITE CORAL W/ SAND		WHITE CORAL & SAND		WHITE-BROWN CORAL W/ SAND		MEDIUM DENSITY LIGHT REDDISH BROWN SILTY SAND & CORAL		BROWN CORAL FRAGMENTS W/ GRAY BROWN CLAY		MEDIUM DENSITY, GRAY CORAL FRAGMENTS & SAND	
15			MEDIUM DENSITY, BROWN CLAYEY SAND & CORAL		TANNISH BROWN & WHITE CORAL W/ SAND		WATER				STIFF MOTTLED GRAY BROWN CLAY W/ CORAL & SAND		STIFF, MOTTLED, GRAY BROWN CLAY		STIFF, GRAY BROWN CLAY W/ CORAL FRAGMENTS	
20	MEDIUM DENSITY, BROWN CLAYEY CORAL & SAND		MEDIUM, MOTTLED BROWN, SILTY CLAY		BROWN, CLAY W/ CORAL FRAGMENTS		DENSE, MOTTLED BROWN CLAYEY CORAL W/ SAND		TANNISH-WHITE CEMENTED SAND W/ CORAL		MEDIUM DENSITY, WHITE CORAL & SAND		DENSE, MOTTLED BROWN CLAYEY CORAL & SAND		MEDIUM, MOTTLED BROWN SILTY CLAY W/ DECOMPOSED ROCK	
25	MEDIUM DENSITY, BROWN CLAYEY SAND & CORAL		STIFF, BROWN CLAY		STIFF MOTTLED BROWN CLAYEY SILT W/ TRACES OF SAND & MUDROCK		MEDIUM DENSITY TO DENSE TANNISH WHITE CORAL & SAND		COBBLES & BOULDERS		MEDIUM DENSITY LIGHT MOTTLED BROWN CLAYEY SAND W/ TRACES OF CORAL		DENSE, MOTTLED BROWN CLAYEY CORAL W/ SAND		BROWN, SILTY SAND	
30	MEDIUM DENSITY, WHITE CORAL & SAND		LOOSE, BROWN CLAYEY CORAL (DECOMPOSED CORAL)		STIFF, DARK BROWN SILTY CLAY		MEDIUM DENSITY MOTTLED BROWN CLAYEY SAND W/ CORAL		CORAL ?		DENSE, MOTTLED BROWN CLAYEY CORAL LEDGE ?		GRAY & WHITE CLAYEY CORAL & SAND		STIFF, GRAY BROWN CLAY	
35	MEDIUM DENSITY, TAN CLAYEY CORAL & SAND		MEDIUM DENSITY MOTTLED WHITE BROWN SAND W/ CORAL		STIFF DARK MOTTLED BROWN CLAY W/ TRACES OF SAND		MEDIUM DENSITY MOTTLED BROWN CLAYEY SAND W/ GRAVEL		DENSE, BROWN CLAYEY SAND & CORAL		MOTTLED WHITE-GRAY CLAYEY CORAL		GRAY & WHITE CLAYEY SAND W/ SOME GRAVEL		STIFF, BROWN CLAYEY SILT	
40	LIGHT BROWN CORAL & SAND (SLIGHTLY DECOMPOSED) W/ CLAY POCKET		COBBLE OR BOULDER		DARK MOTTLED GRAY-BROWN CLAYEY SAND W/ CORAL & GRAVEL		DENSE, BROWN CLAYEY SAND & CORAL		CORAL ?		MOTTLED BROWN CLAYEY SILT W/ SAND & GRAVEL (DECOMPOSED ROCK)		COBBLES & BOULDERS W/ GRAVEL		STIFF, GRAY BROWN CLAY	
45	DARK BROWN & WHITE CLAYEY SAND W/ GRAVEL		SAND W/ CORAL		MEDIUM DENSITY MOTTLED BROWN CLAYEY SAND & GRAVEL		MEDIUM DENSITY LIGHT BROWN CORAL & SAND		DENSE, GRAY CLAYEY CORAL & SAND		GRAVEL & CORAL		CEMENTED CLINKER		COBBLES & BOULDER W/ SOME GRAVEL	
50	DARK BROWN SILTY SAND & GRAVEL (CORAL & ROCK)		COBBLE OR BOULDER		GRAY, LAVA ROCK OR BOULDERS ?		CLAYEY SAND & CORAL ?		END BORING @ 55'		MOTTLED BLUE-GRAY PUKA PUKA ROCK		END BORING @ 64'		END BORING @ 64'	
55	END BORING @ 50.6'		END BORING @ 69'		END BORING @ 76.3'		BROWN GRAVEL & SAND									
60							COBBLES OR BOULDERS									
65																
70																
75																

11/19/76

5/30/75

DATE

Revised Profile & Location

WIDEN BRIDGE PEDESTRIAN WINGWALLS

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

KOF CRYSTALENE® LA 388

GENERAL NOTES:

DESIGN SPECIFICATIONS:

AASHTO STANDARD SPECS (1969) & INTERIM SPECS FOR HWY BRIDGES

LOADING = HS-20-44

MATERIAL SPECIFICATIONS:

$f_c = .4f'_c$ $f_s = 20,000$ P.S.I.

CONC. FOR BRIDGE DECK SHALL BE CLASS E CONC.

ALL OTHER CONC. SHALL BE CLASS A CONC.

CONSTRUCTION SEQUENCE:

EXIST. UPSTREAM LANES ARE TO BE KEPT OPENED FOR TRAFFIC UNTIL NEW DOWNSTREAM LANES ARE COMPLETED. WHEN DOWNSTREAM LANES ARE OPENED FOR TRAFFIC REMOVE EXIST. SLAB DECK FROM UP STREAM LANES. EXTEND EXIST. PIERS TO NEW ELEVATIONS AND COMPLETE THE BRIDGE AS PER PLANS.

SPECIAL CARE SHALL BE EXERCISED AGAINST DAMAGES TO PIERS & STREAM INVERT SLAB DURING SLAB REMOVAL. ANY DAMAGE TO PORTIONS OF THE STRUCTURE WHICH ARE TO REMAIN IN PLACE SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE, TO THE SATISFACTION OF THE ENGINEER.

REINFORCING STEEL COVER:

UNLESS OTHERWISE SHOWN IN PLAN

TOP SLAB = $1\frac{1}{2}$ " CLEAR

BOT SLAB = 1" CLEAR

STIRRUP & TIES IN BEAM = $1\frac{1}{2}$ " CLEAR

BOT OF FTG. = 3" CLEAR

ALL OTHERS = 2" CLEAR

DRILL HOLES IN EXISTING CONCRETE SHALL BE CORED. HOLE SIZE SHALL BE $\frac{1}{4}$ " DIAMETER LARGER THAN REBAR DIAMETER

BEFORE WORK IS DONE ON THE BRIDGE, THE CONTRACTOR SHALL CONTACT THE DEPT. OF PUBLIC WORKS, C&C OF HONOLULU, & HARBORS DIV., DEPT. OF TRANSPORTATION.

3 DENOTES CHANGES TO CHANGE ORDER

BARRIER EXTENSION SEE SHT. #C043 3-2

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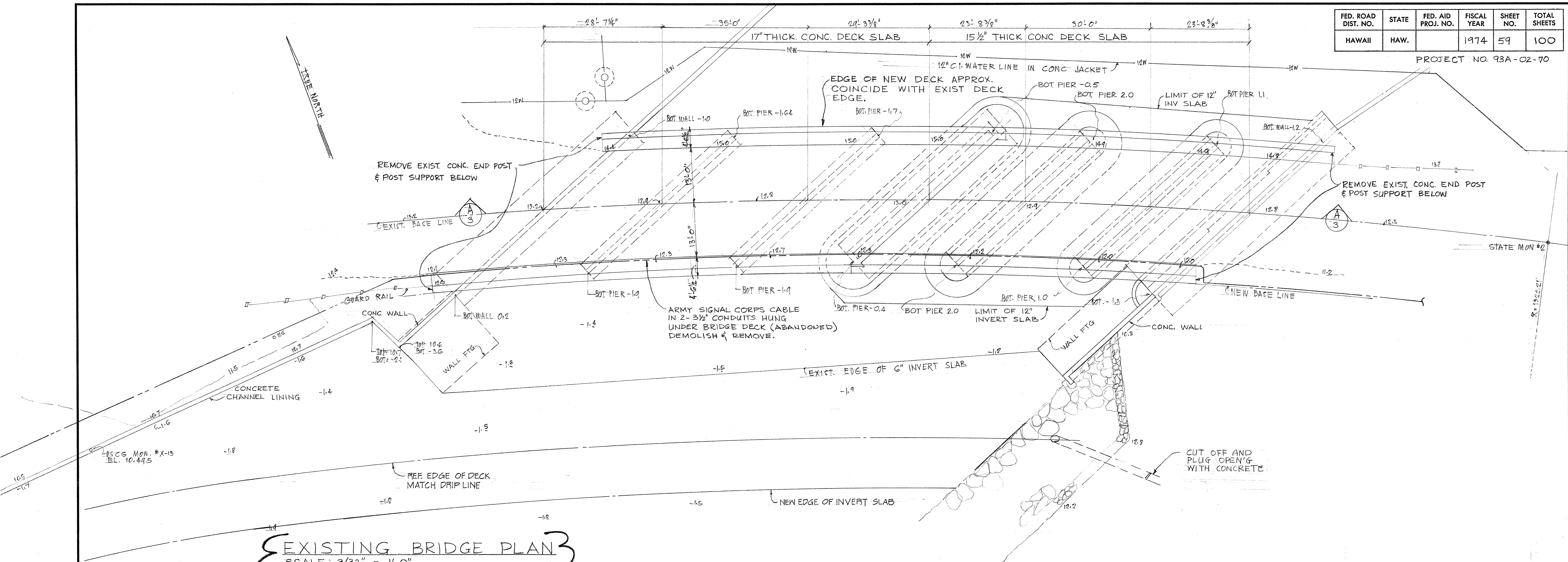
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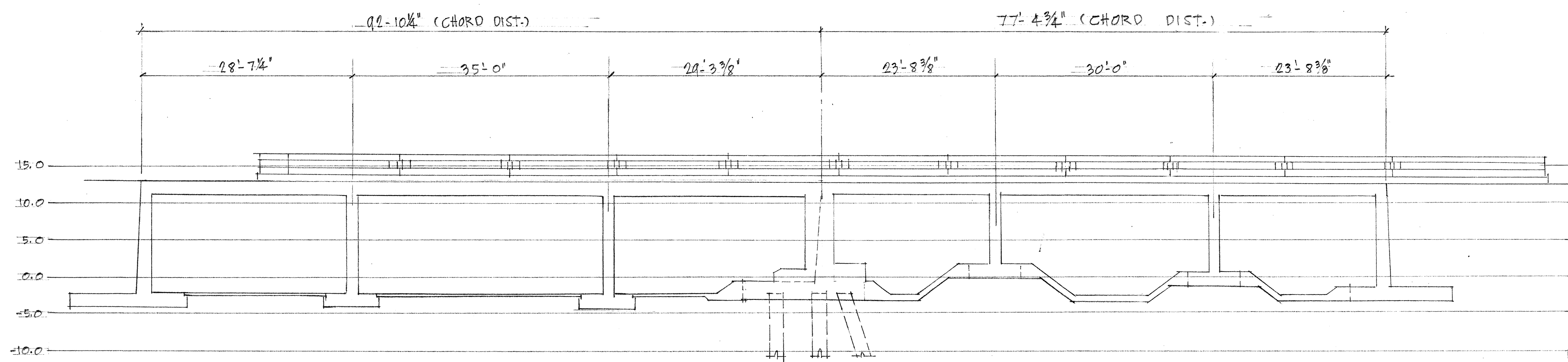
SEE DETAIL (C) 1

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.		1974	59	100

PROJECT NO. 93A-02-70



EXISTING BRIDGE PLAN 3
SCALE: 3/32" = 1'-0"

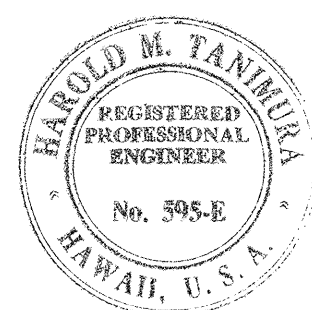


SECTION A
SCALE: 3/32" = 1'-0"

DATE	
SURVEY PLOTTED BY	
DRAWN BY	
DESIGNED BY	
NOTE BOOK	
QUANTITIES BY	
CHECKED BY	
NO.	

5/30/75	REVISE EDGE NEW DECK AND NEW INVERT SLAB.
DATE	REVISION

THIS WORK WAS PREPARED BY ME
OR UNDER MY SUPERVISION.
Harold M. Taniguchi 72
Signature



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MAIIHUI BRIDGE WIDENING
EXIST. BRIDGE PLAN & PROFILE
PROJECT 93A-02-70

SCALE: AS NOTED

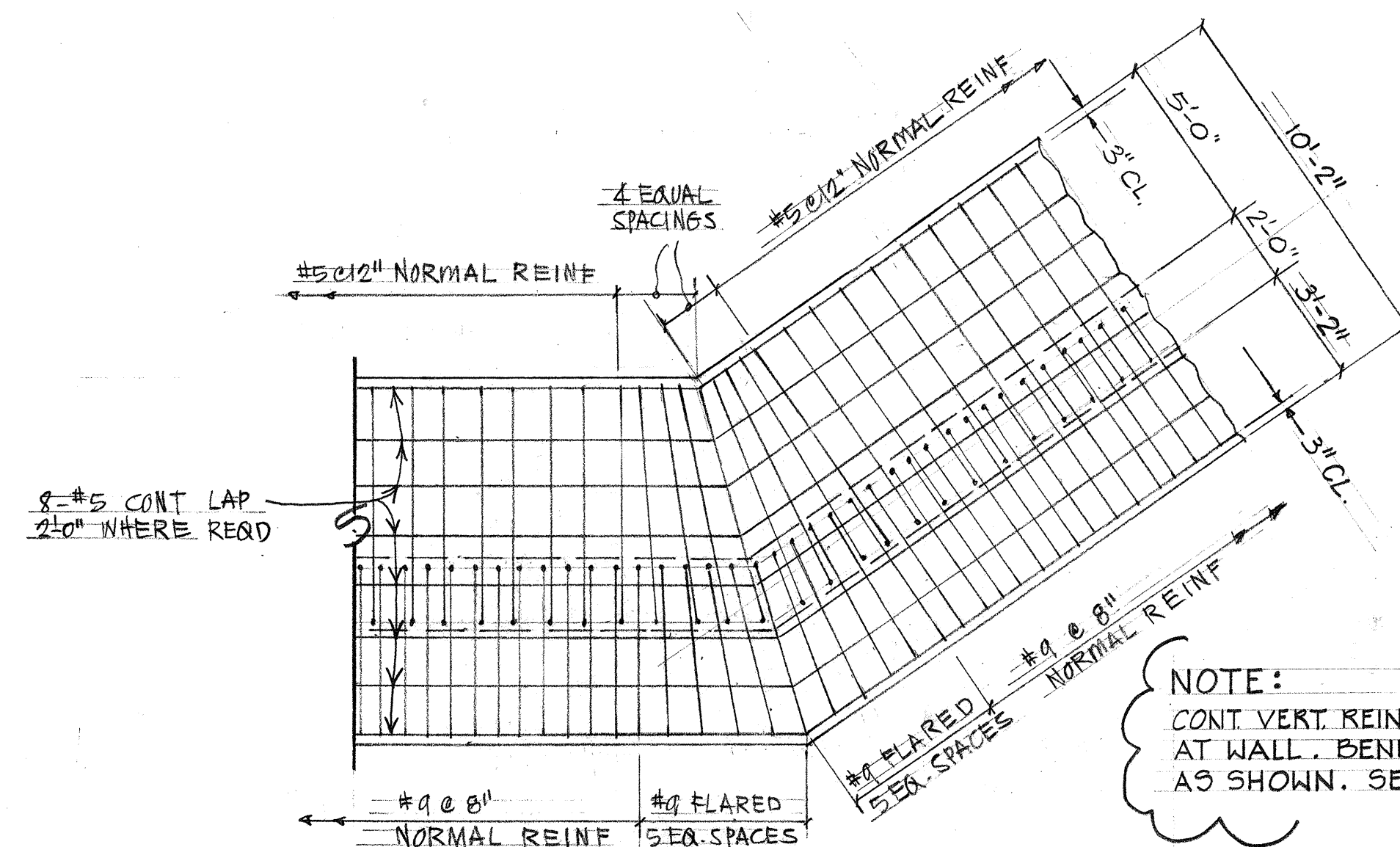
SHEET No. 3 OF 15 SHEETS

PROJECT NO. 93A-02-70



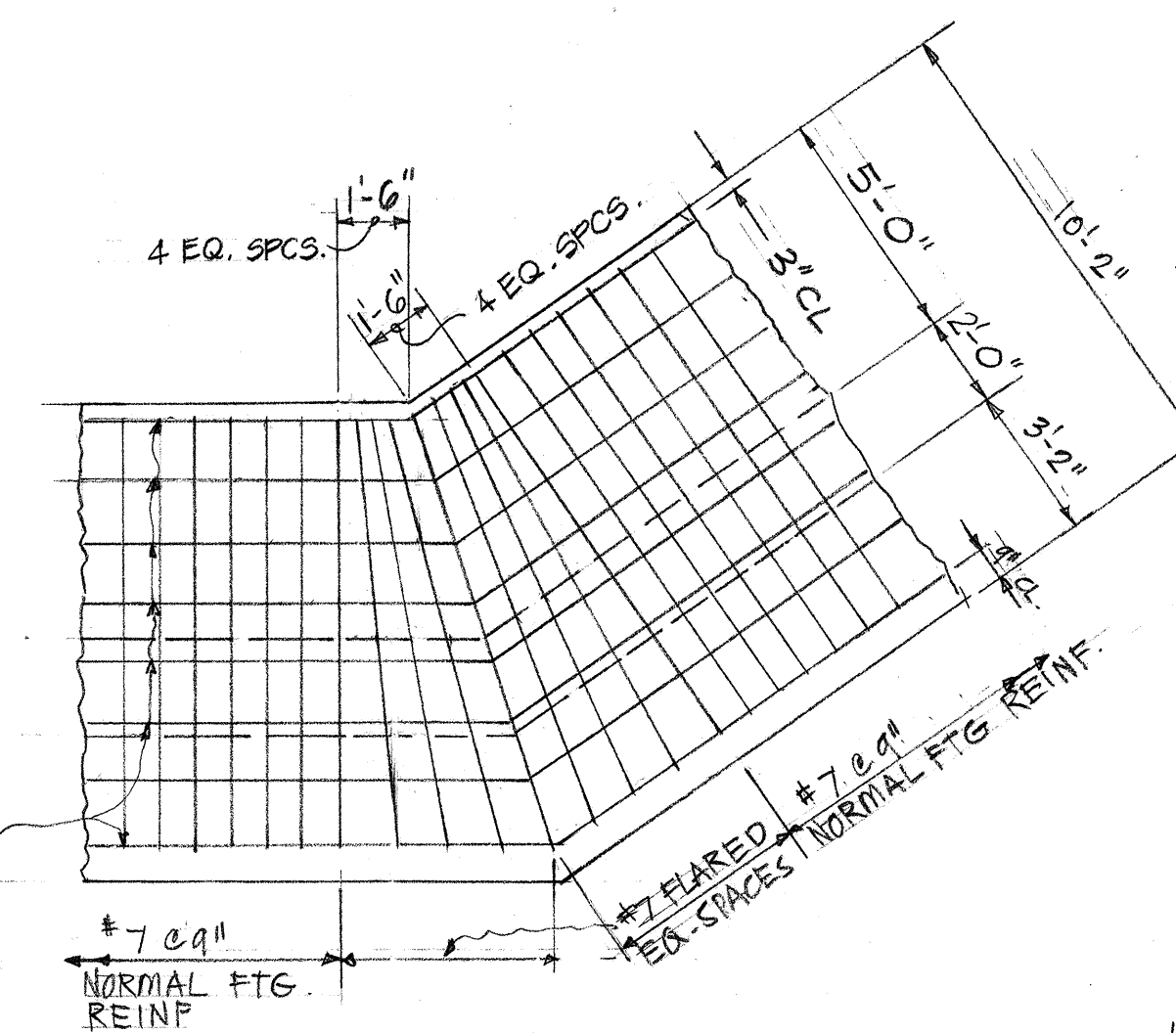
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.		1974	61	100

PROJECT NO. 93A-02-70



ABUT. NO. 1 FTG.
BOT. REINF. PLAN
SCALE: 1/4" = 1'-0"

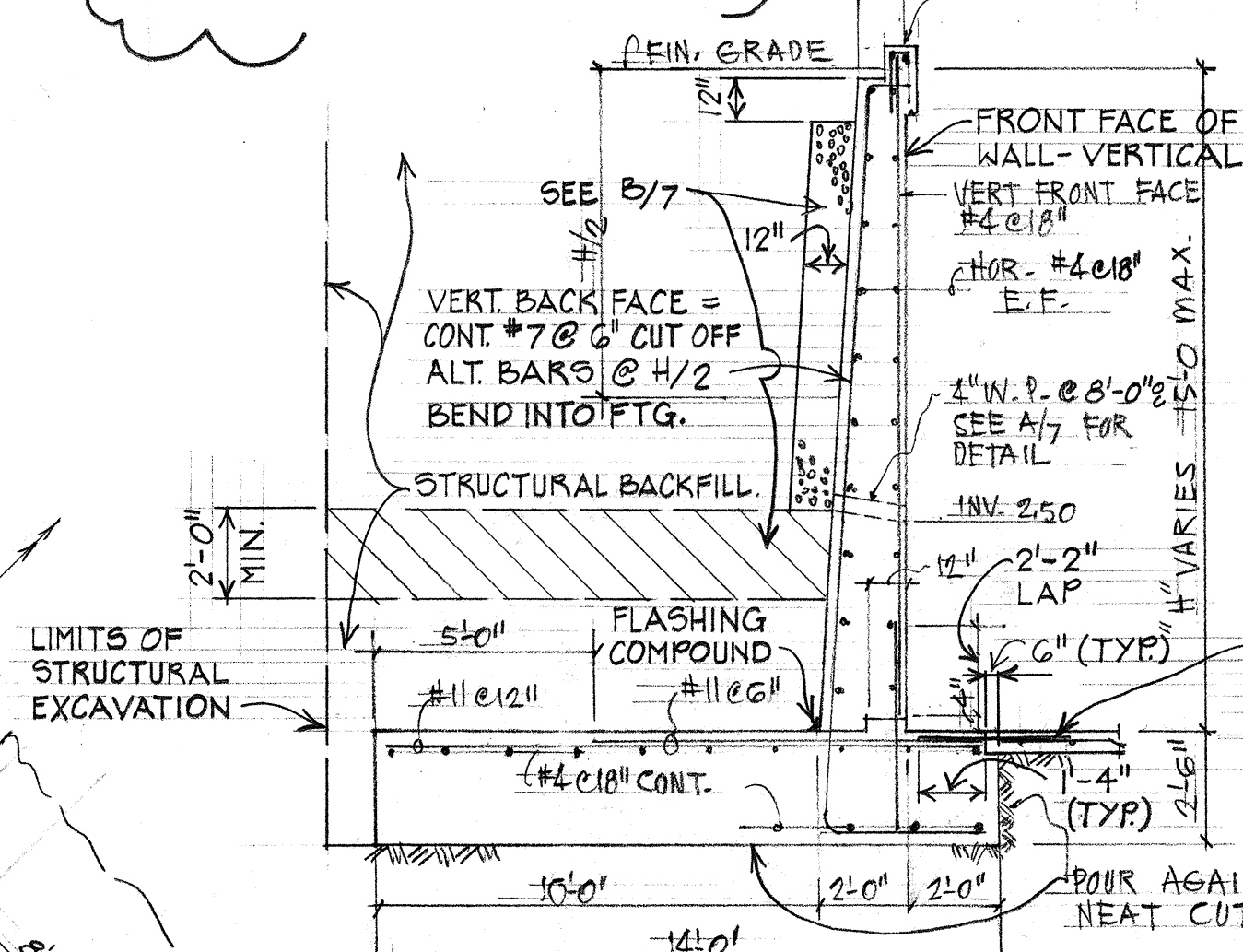
(A/5)



ABUT. NO. 1 FTG.
TOP REINF. PLAN
SCALE: 1/4" = 1'-0"

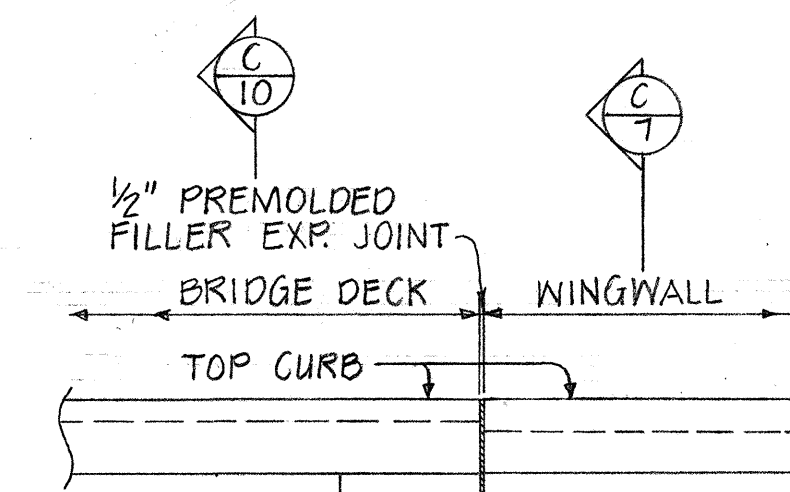
(B/5)

NOTE:
CONT. VERT. REINF. SPACINGS
AT WALL. BEND INTO FTG.
AS SHOWN. SEE SECTION A/7.



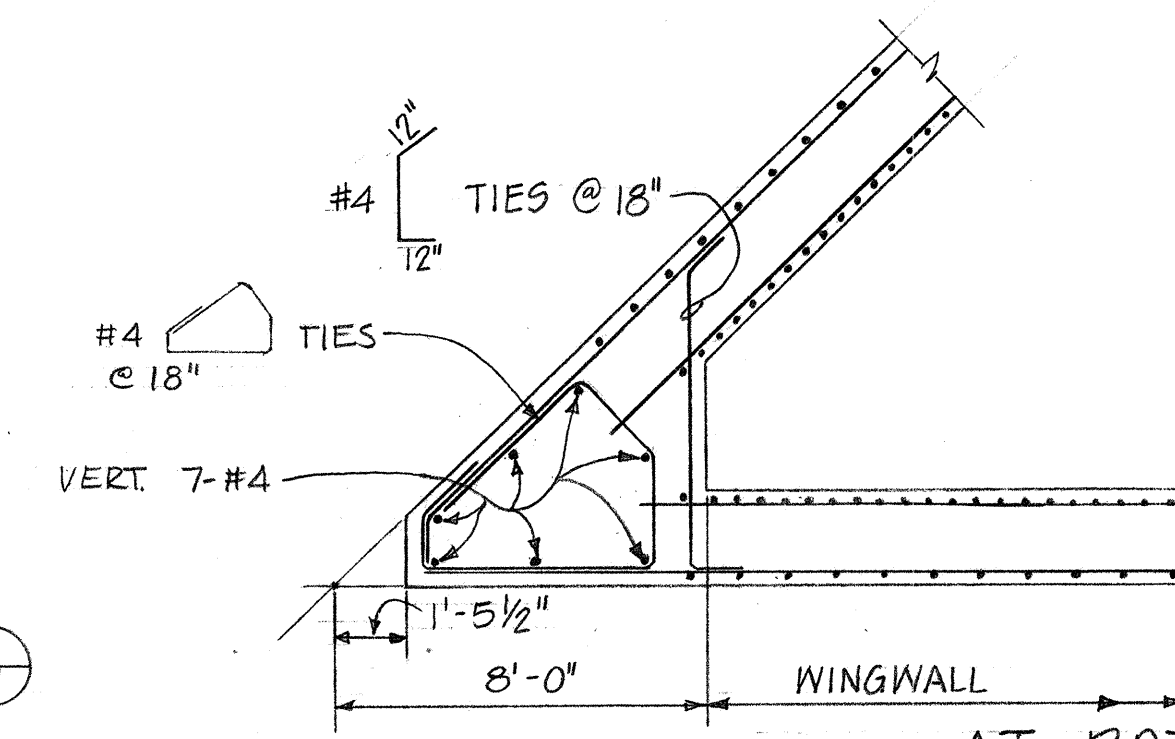
WAIANAE WING WALL
(SPREAD FOOTING)
SCALE: 1/4" = 1'-0"

(H/5)

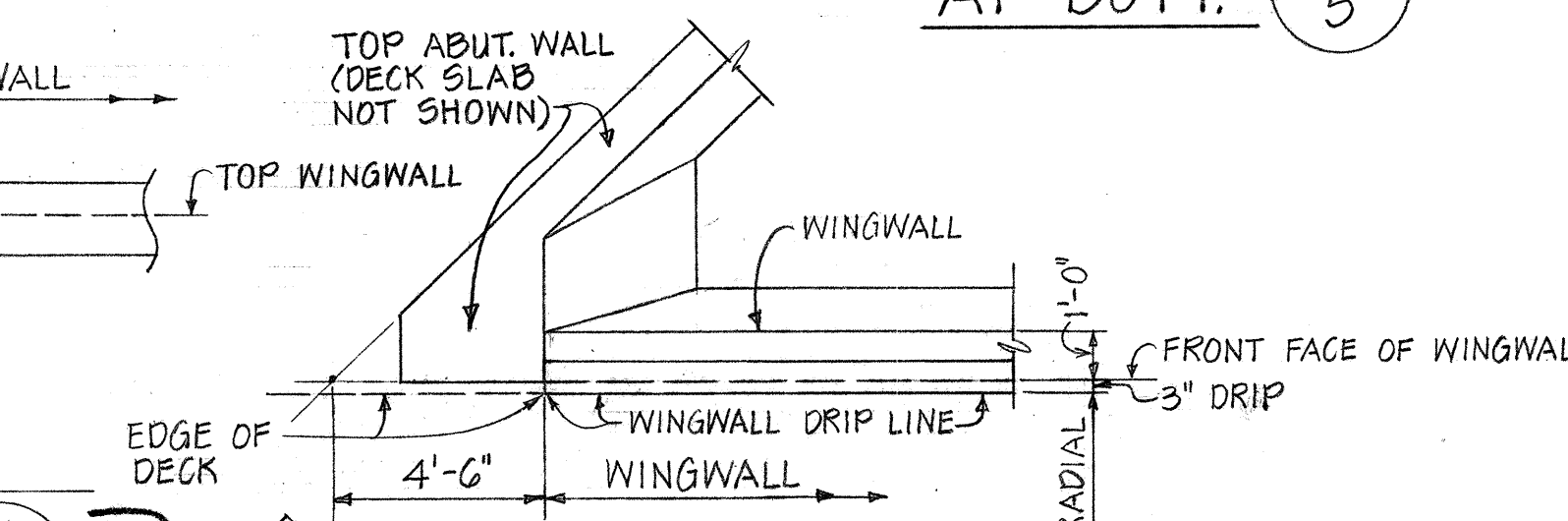


ELEVATION
SCALE: 1/4" = 1'-0"

(H/5)



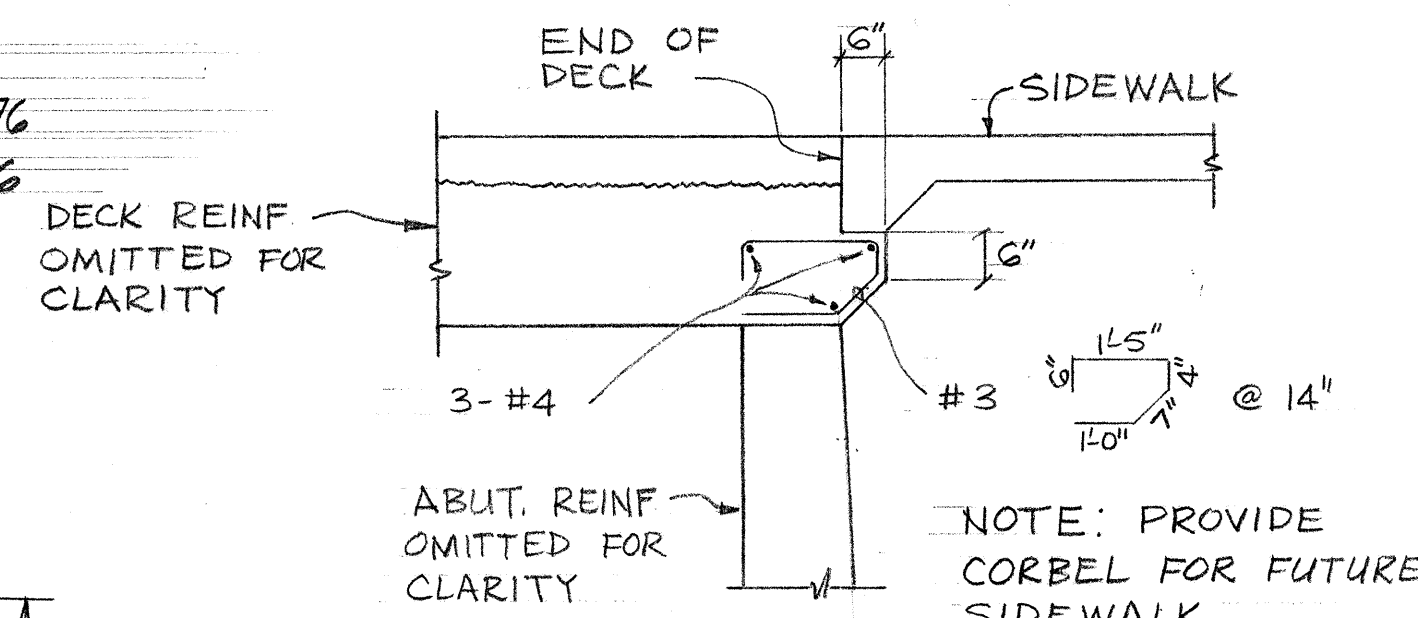
AT BOT.
(E/5)



AT TOP
(F/5)

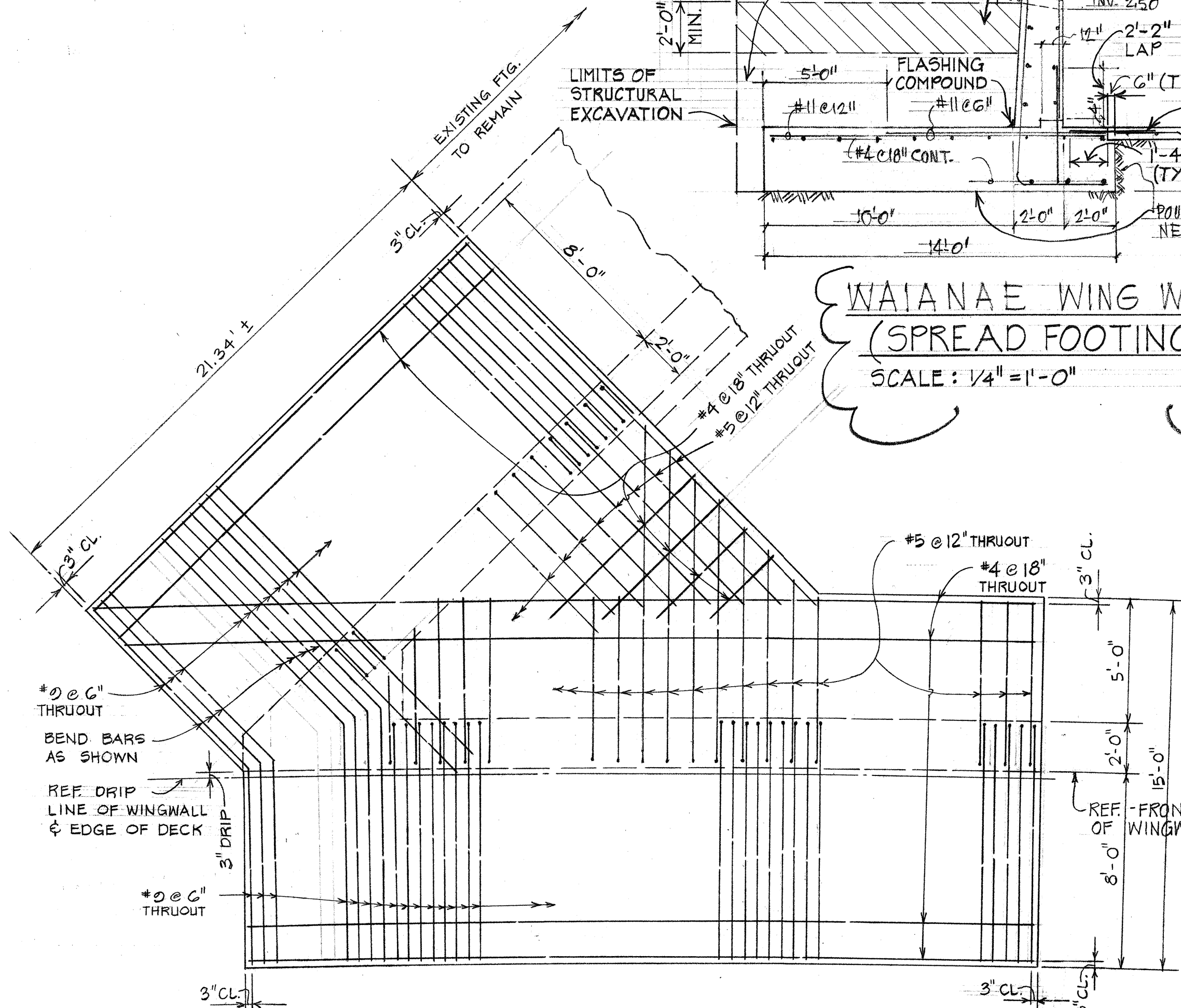
SECTIONS - ABUT. NO. 7 MAKAI
CORNER PLAN
SCALE: 1/4" = 1'-0"

{ 3 } Denotes changes to
C.O. 61 5/30/76
11/19/76



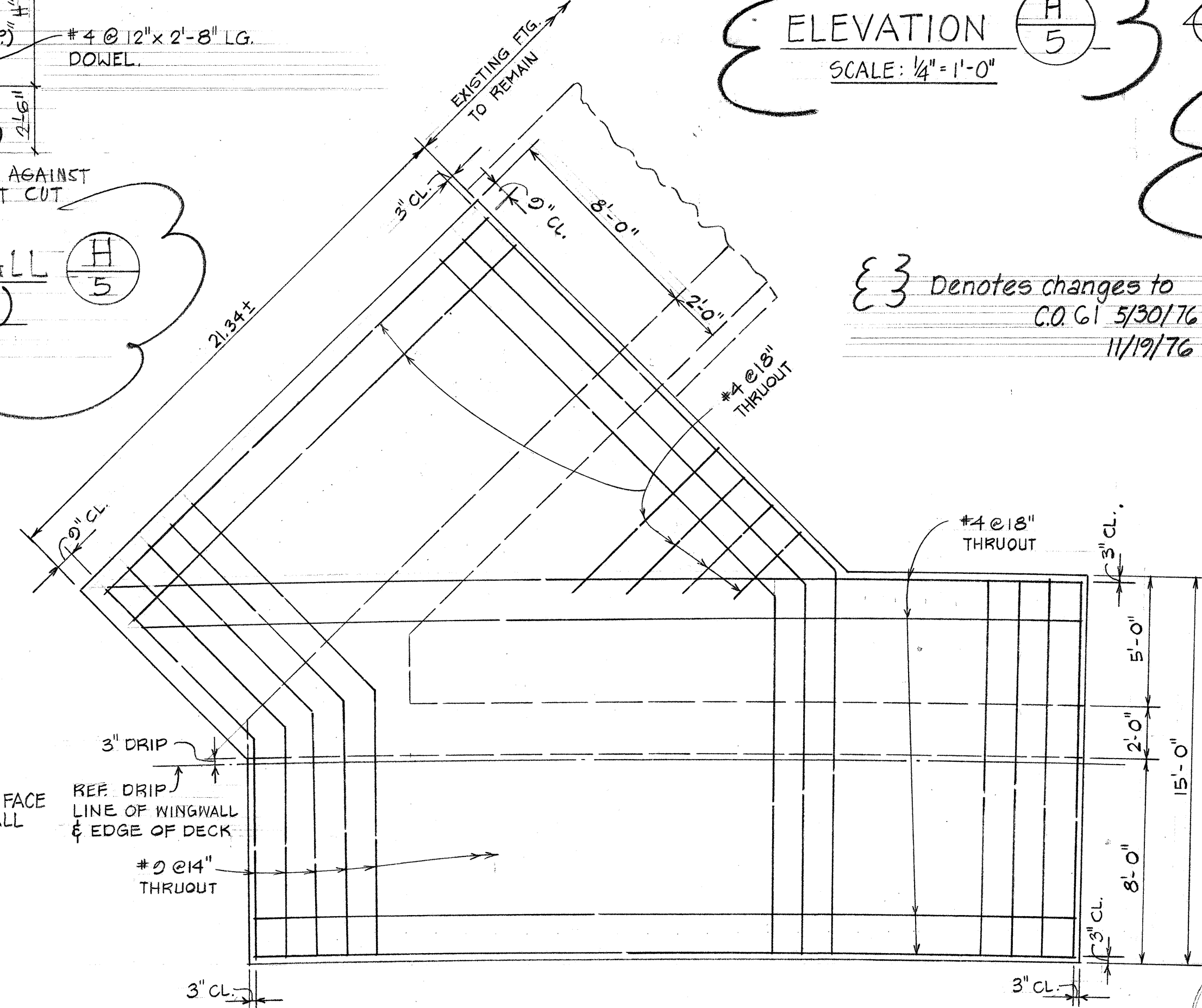
CORBEL FOR
SIDEWALK SCALE: 1/2" = 1'-0"

(G/5)



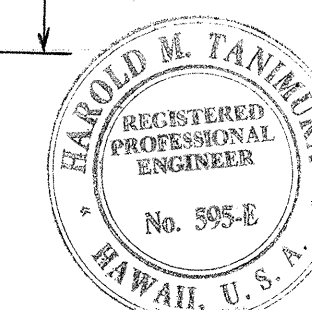
ABUT. NO. 7 FTG.
BOT. REINF. PLAN
SCALE: 1/4" = 1'-0"

(C/5)



ABUT. NO. 7 FTG.
TOP REINF. PLAN
SCALE: 1/4" = 1'-0"

(D/5)



THIS WORK WAS PREPARED BY ME
OR UNDER MY SUPERVISION.
Signature

11/19/76	Revise (A/5), (B/5). Added (H/5)
5/30/75	REVISE FOUNDATION FOOTING AND WINGWALL DETAILS FOR BIKEWAY AND PEDESTRIAN WALKWAY.
DATE	REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MAILILILI BRIDGE WIDENING
ABUT. FTG. REINF. AND
SECTIONS
SCALE: AS NOTED

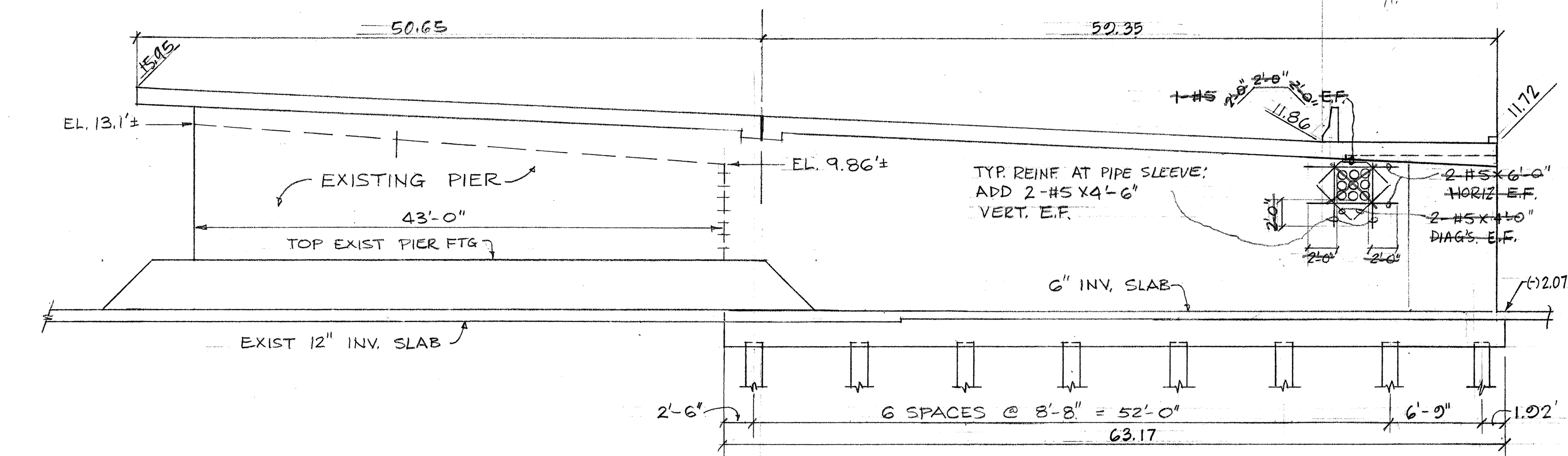
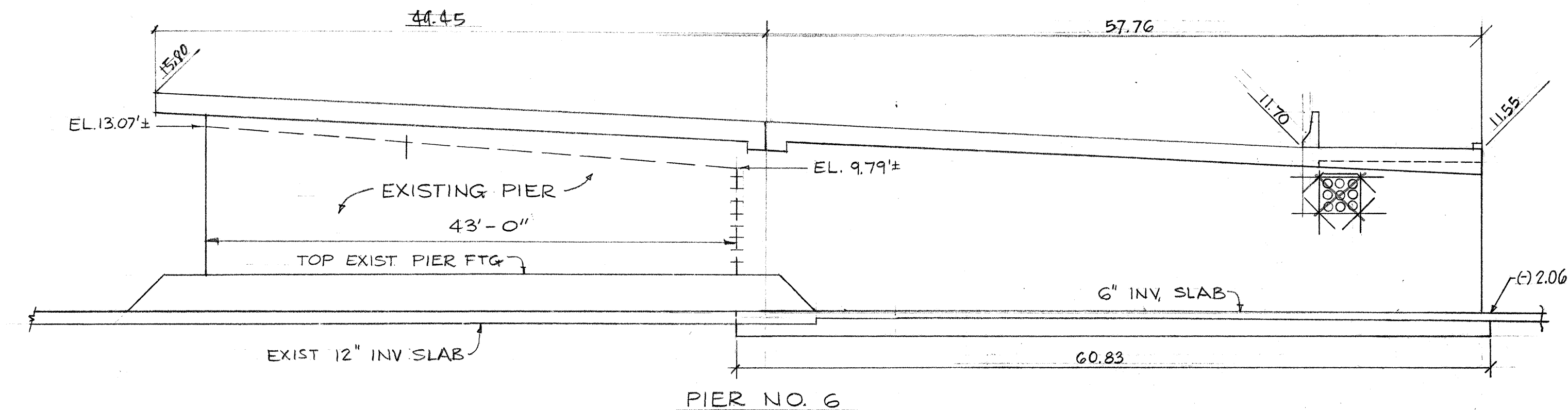
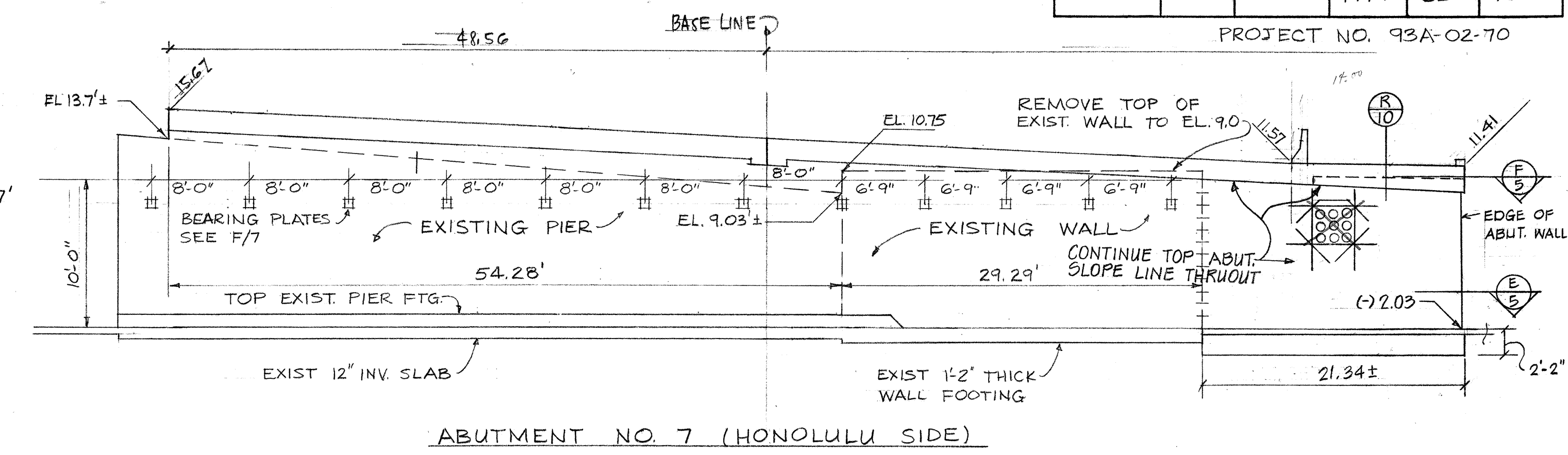
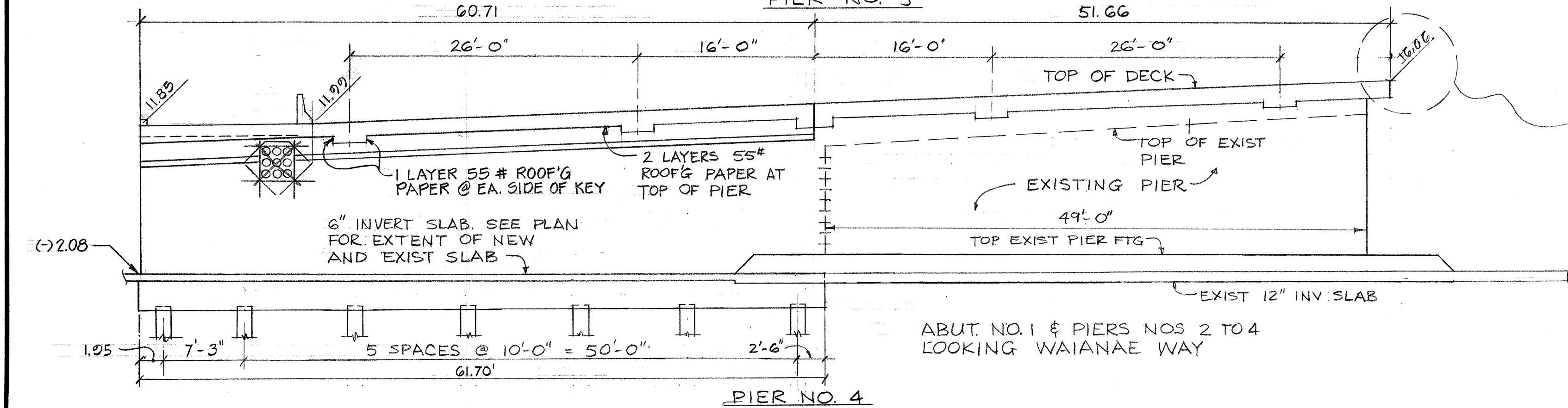
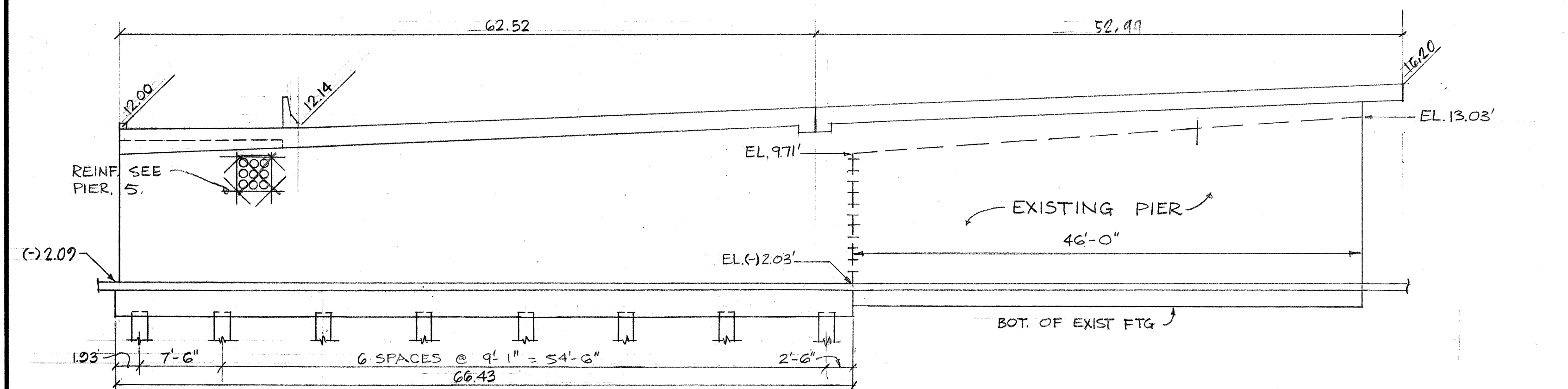
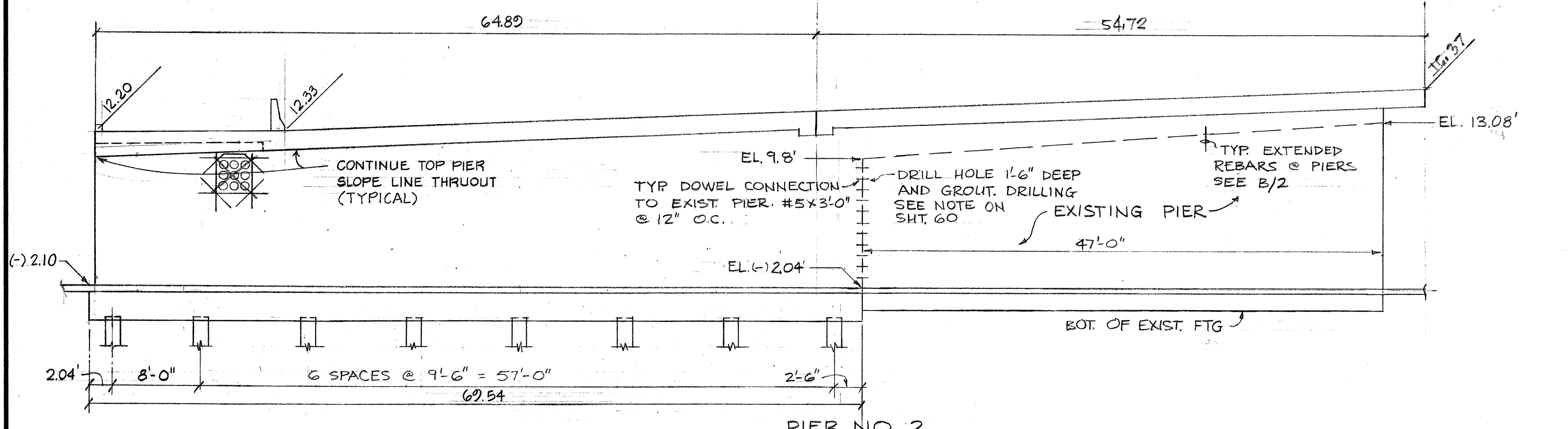
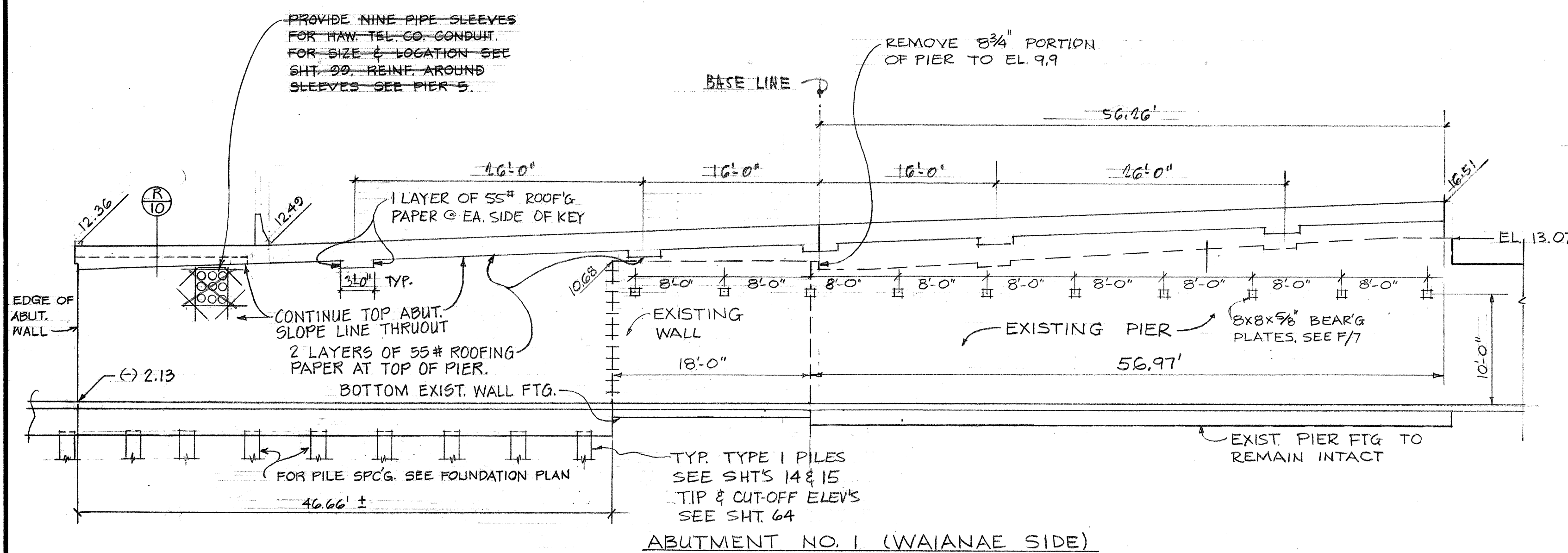
SHEET No. 5 OF 15 SHEETS

CO 61

DATE	
SURVEY PLOTTED BY	
PLAN	
DESIGNED BY	
QUANTITIES BY	
CHECKED BY	
ORIGINAL	
NOTE BOOK	
NO.	

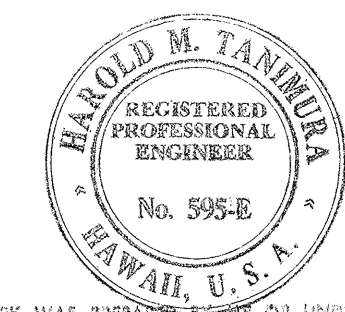
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.		1974	62	100

PROJECT NO. 93A-02-70



ABUTMENTS AND PIERS ELEVATIONS
SCALE: 1/8" = 1'-0"

5/30/75	OMIT A.C. PAVEMENT AND BITUMINOUS TACK COAT FROM TOP OF DECK. REVISE PIER AND FOUNDATION DETAILS FOR BIKEWAY AND PEDESTRIAN WALKWAY.
DATE	REVISION



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MAILIILII BRIDGE WIDENING
ABUTMENT & PIER ELEVATIONS

PROJECT 93A-02-70
SCALE: AS NOTED

SHEET No. 6 OF 15 SHEETS

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.		1974	63	100

PROJECT NO. 93A-02-70

* NOTE: CLASS "D" CONCRETE IS INCIDENTAL TO STRUCTURE BACKFILL AND WILL NOT BE PAID FOR SEPARATELY

DEADMAN FOR EXIST. ABUTMENT.

DEADMEN INSTALLATION

1. PLACE STRUCTURE BACKFILL AND CLASS "D" CONCRETE FIRST. THEN STRESS TIE ROD TO 2,000 LBS.
2. DEADMEN SHALL BE INSTALLED AFTER THE REMOVAL OF THE EXIST. CONC. DECK AND PORTIONS OF THE EXIST. WALLS.

FOOTING NOTES:

1. FOR PIER #6 AND ABUT #7 FOOTINGS, THE BOTTOM OF FTG. EXCAVATIONS SHOULD BE PROBED FOR CAVITIES AND VOIDS TO DEPTHS OF ABOUT 15'-0".
2. SOFT POCKETS ENCOUNTERED AT THE SURFACE OF FTG. EXC. SHALL BE EXPOSED AND FILLED WITH CLASS D CONCRETE
3. ALL CAVITIES, EXPOSED SOFT POCKETS, VOIDS OF DRILLED HOLES SHALL BE FILLED WITH CLASS D CONC. AND IS INCIDENTAL TO FTG. EXCAVATION AND WILL NOT BE PAID FOR SEPARATELY.

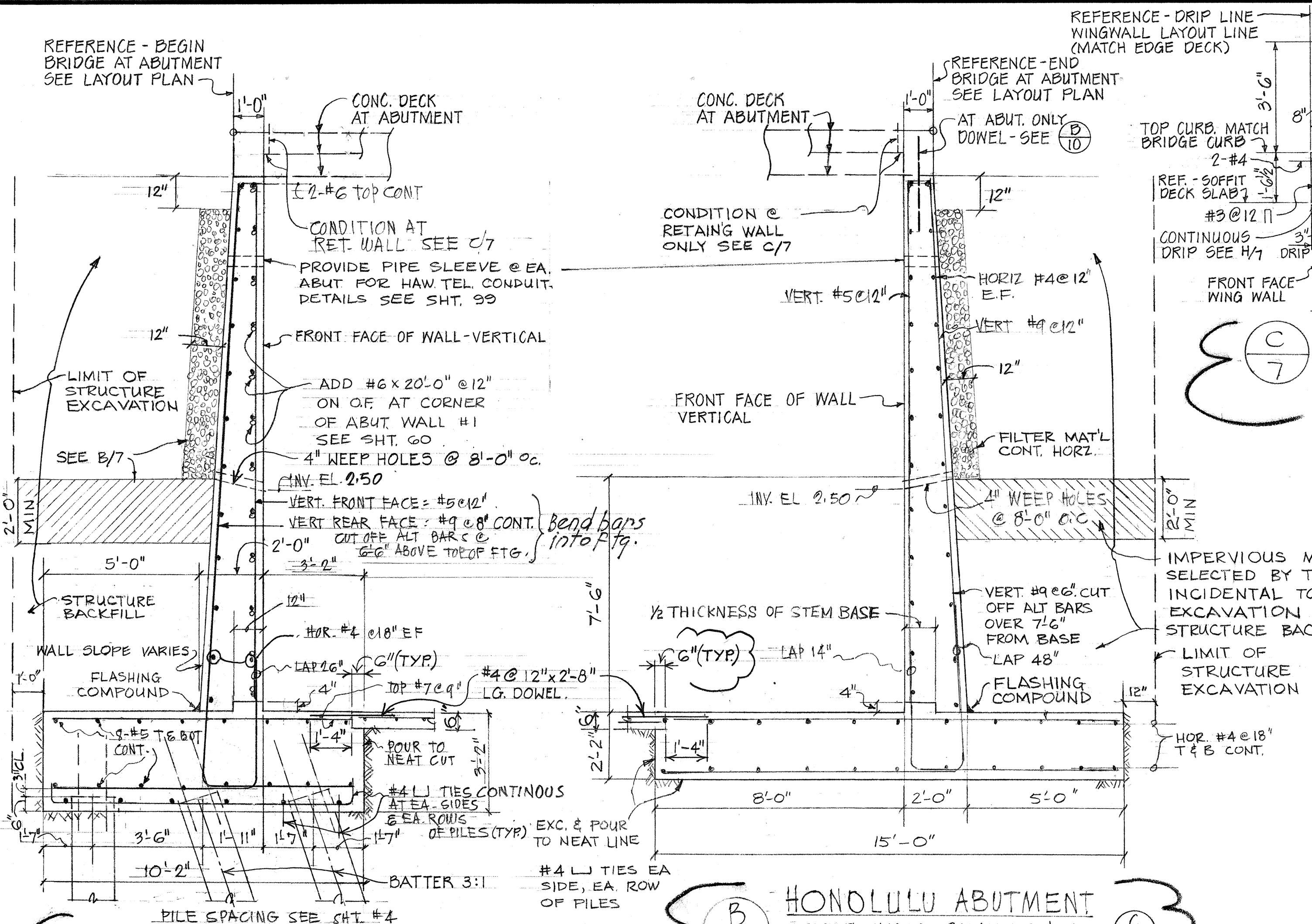
ELEV. DEADMEN EXC. LIMIT
SCALE: 3/8" = 1'-0"

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MAILILILI BRIDGE WIDENING
ABUTMENT, WALLS & FOUNDATIONS
PROJECT: 93A-02-70

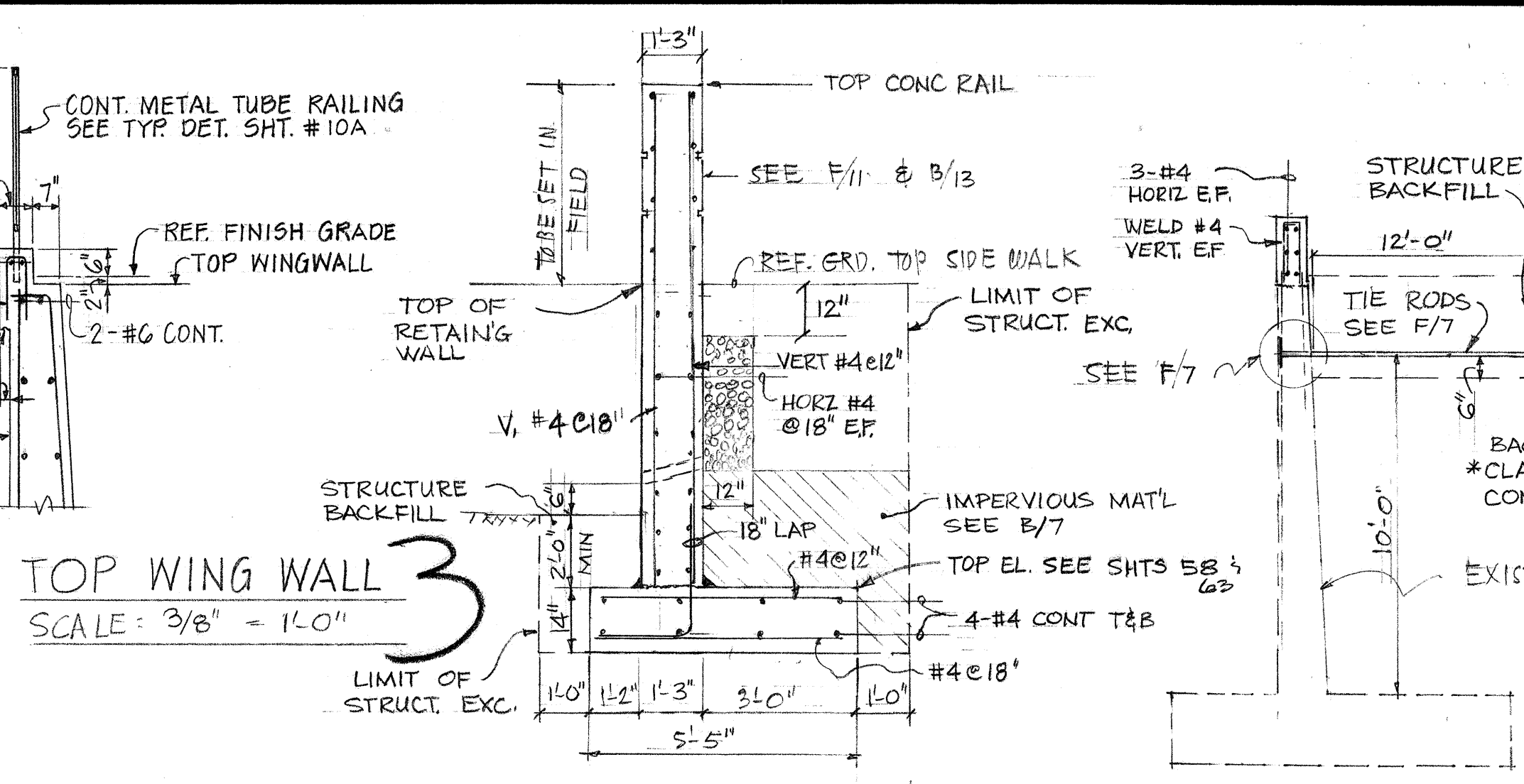
SCALE: AS NOTED

SHEET No. 7 OF 15 SHEETS



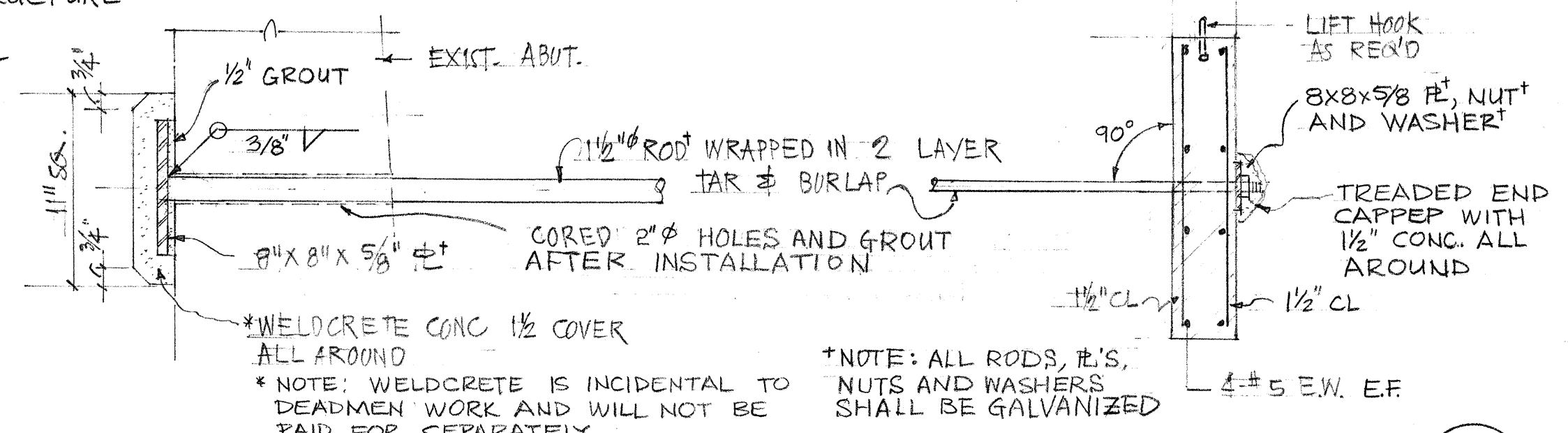
WAIANAE ABUTMENT (#1) AND WINGWALL (PILE FOUNDATION)
SCALE: 3/8" = 1'-0"

HONOLULU ABUTMENT WING WALL SIMILAR & SEE
SCALE: 3/8" = 1'-0"



TOP WING WALL
SCALE: 3/8" = 1'-0"

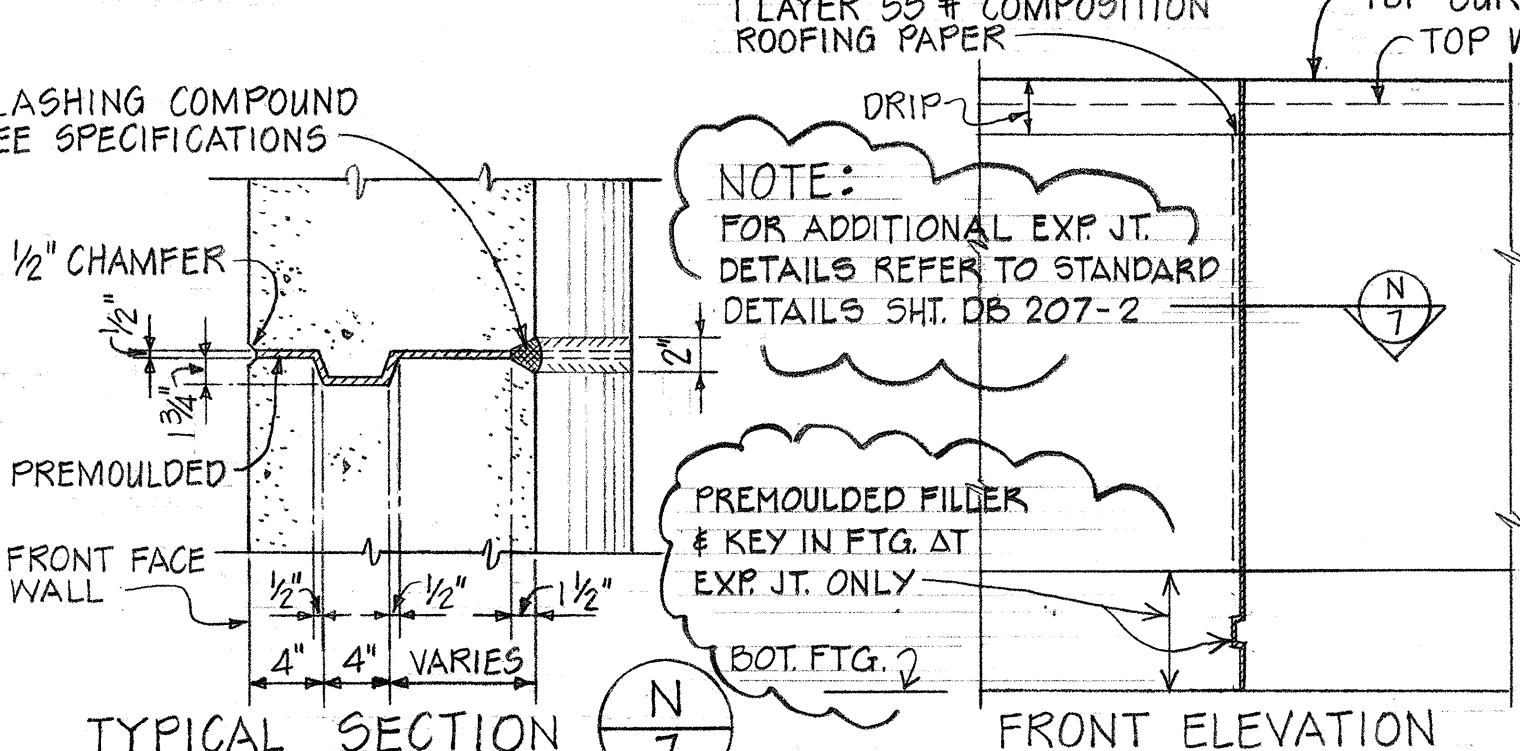
WING WALL
SCALE: 3/8" = 1'-0"
(FROM STA. 52+40 TO 52+63.5) & AT CURVED END WALLS)



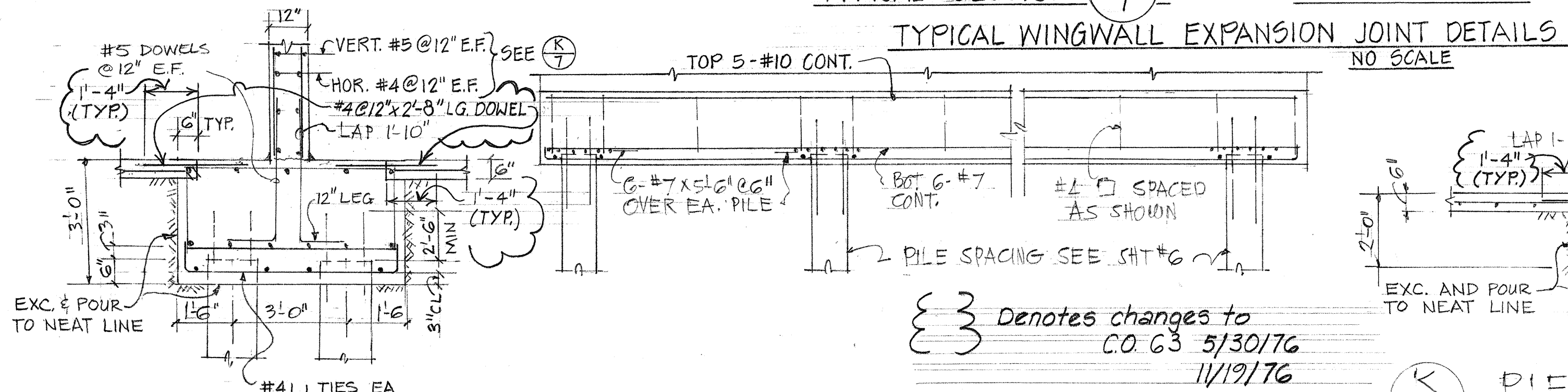
ROD TIE AT EXIST. ABUTMENT
SCALE: 1/2" = 1'-0"

PRECAST DEADMEN
SCALE: 1/2" = 1'-0"

DRIP DETAIL
SCALE: 3" = 1'-0"

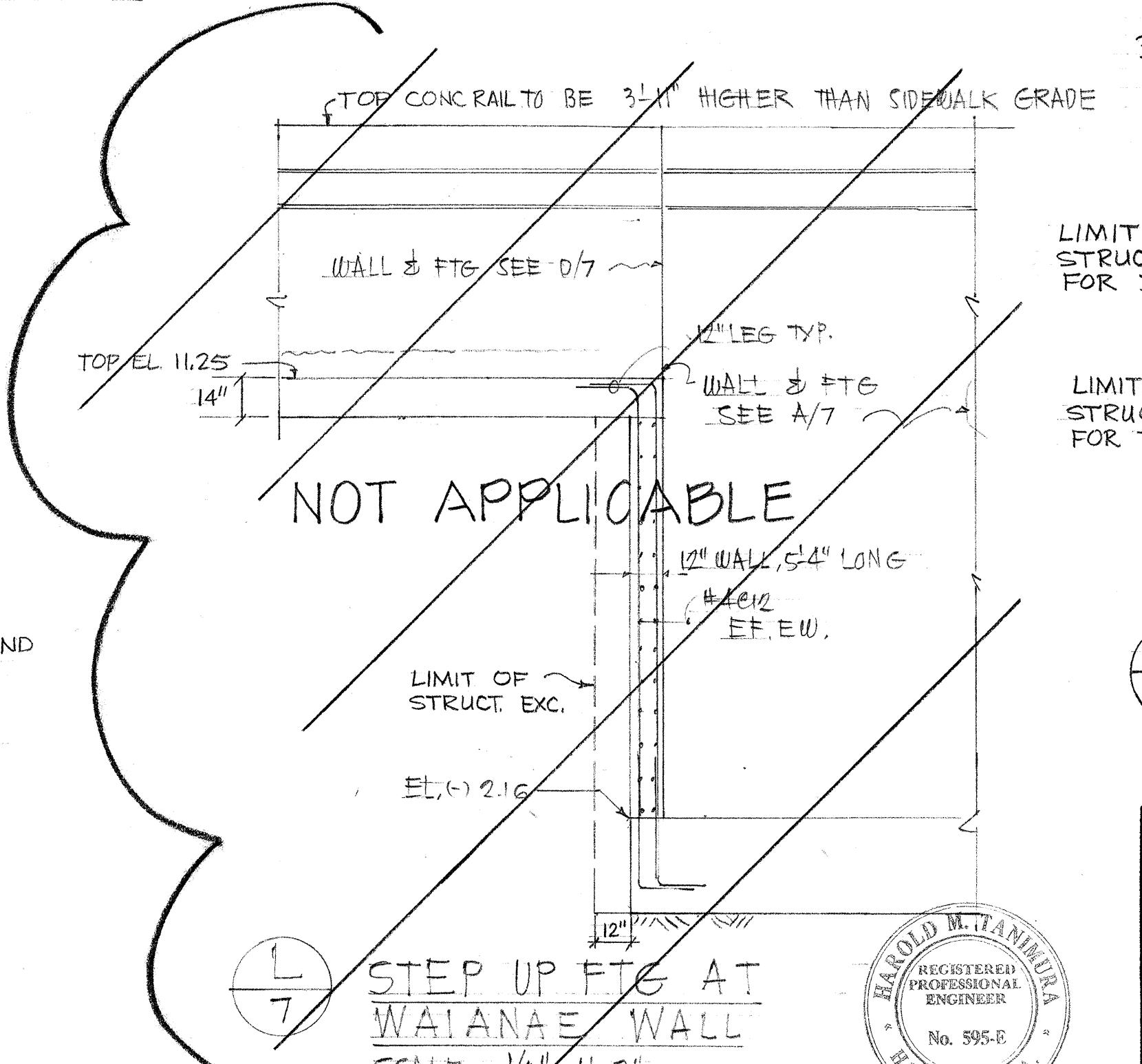


TYPICAL WINGWALL EXPANSION JOINT DETAILS
NO SCALE



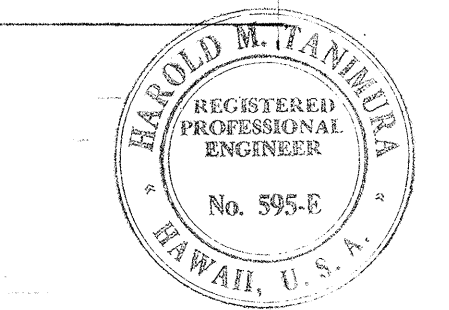
PILE CAP DETAILS

PIER NO. 6
SCALE: 3/8" = 1'-0"



STEP UP FTG. AT WAIANAE WALL
SCALE: 1/4" = 1'-0"

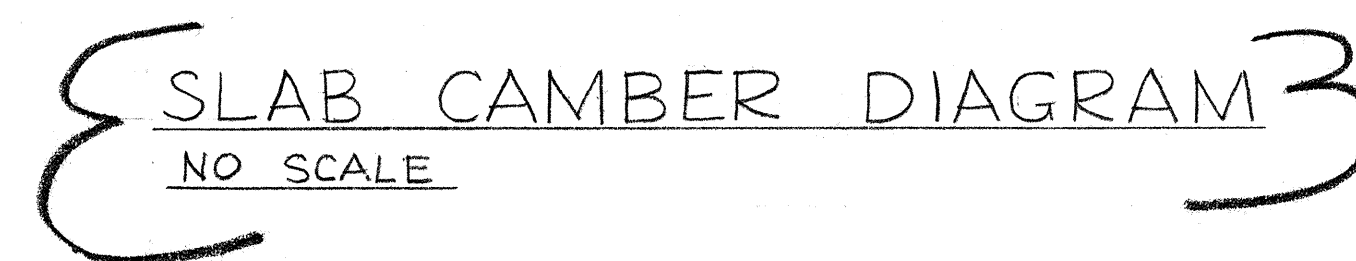
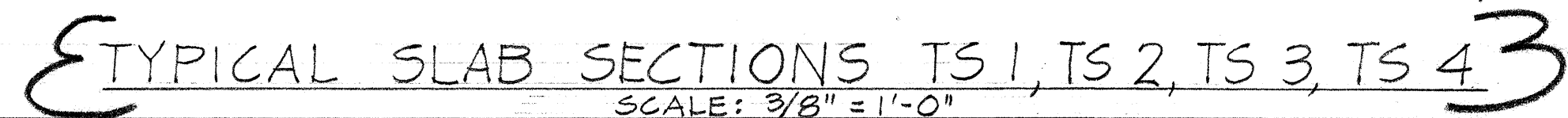
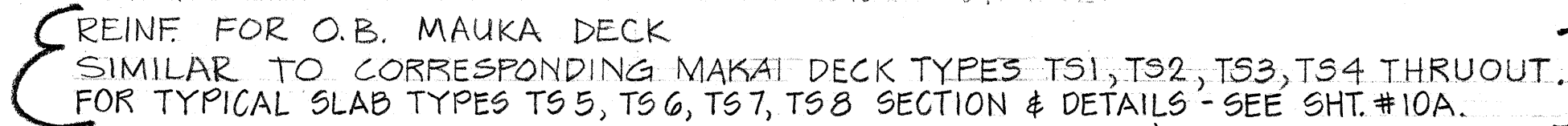
11/19/76	Revise	(A), (B), (N), (J) in parts.
5/30/75	REVISE	ABUTMENT AND WINGWALL DETAILS
DATE	REVISION	



THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY SUPERVISION.

DATE	11/19/76
DESIGNED BY	HAILEY
CHECKED BY	HAILEY
NOTED BY	HAILEY
DATE	11/19/76

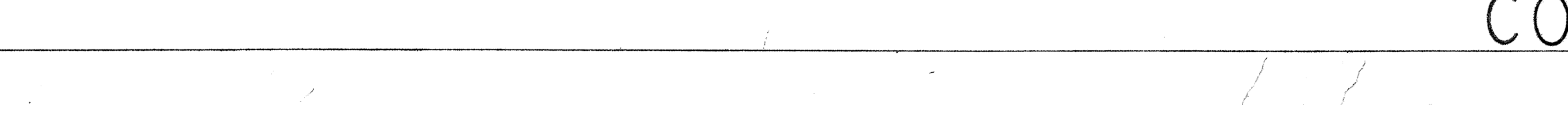
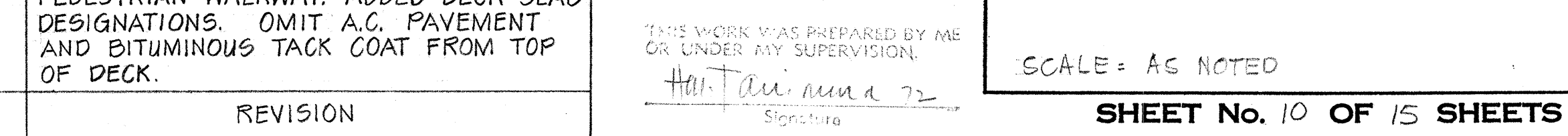
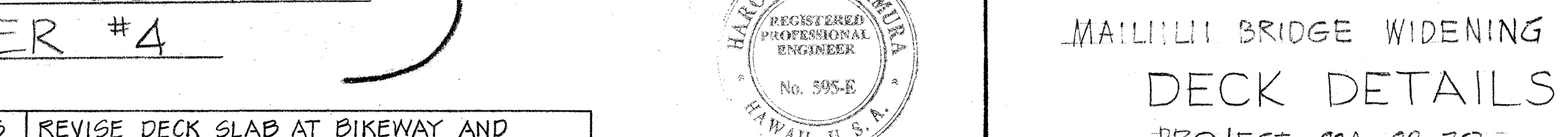
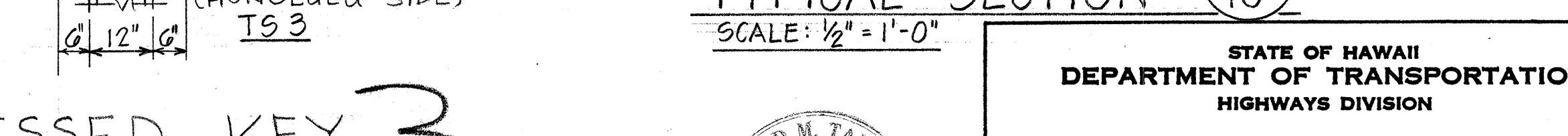
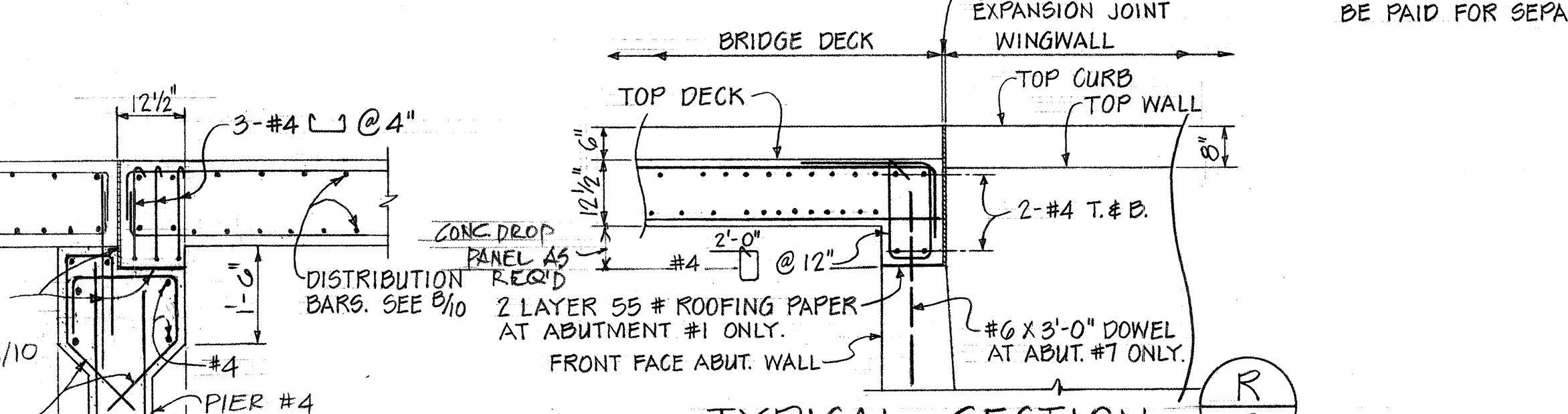
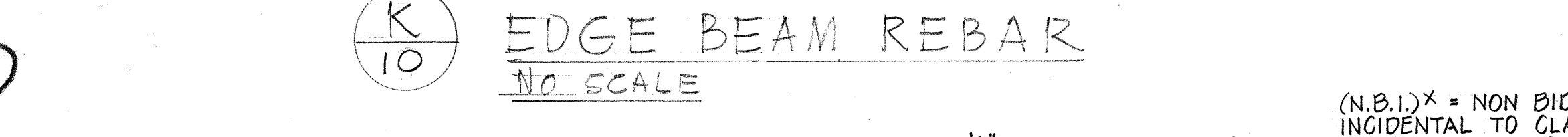
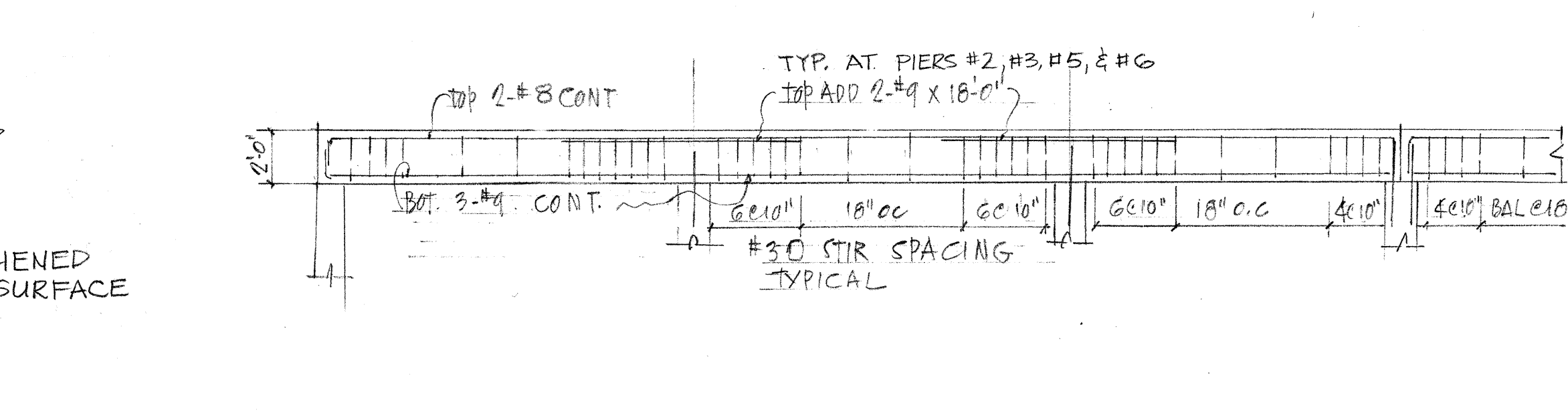
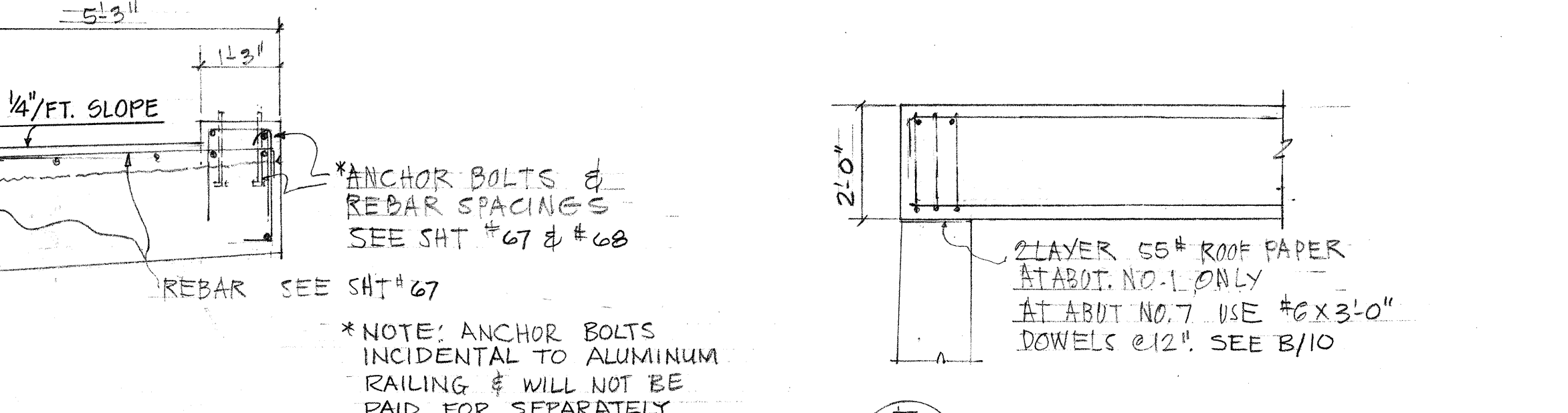
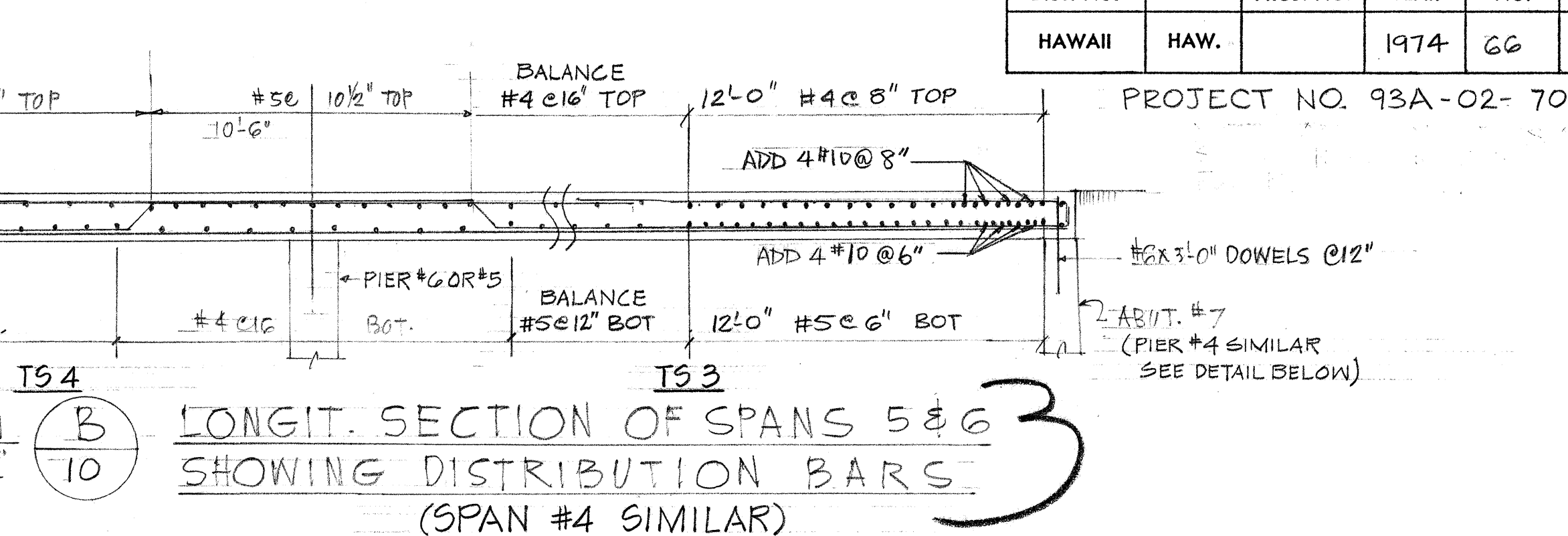
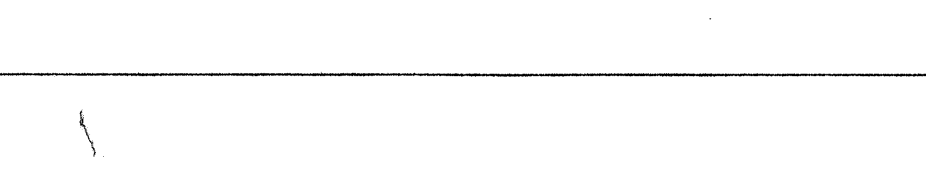
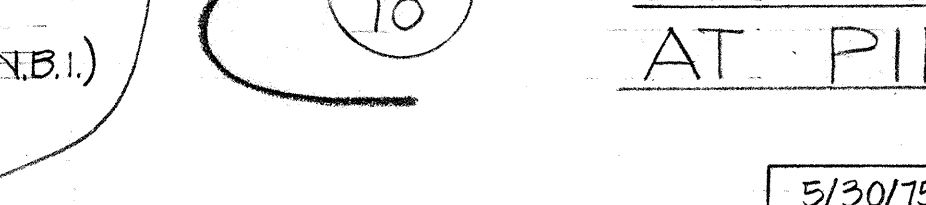
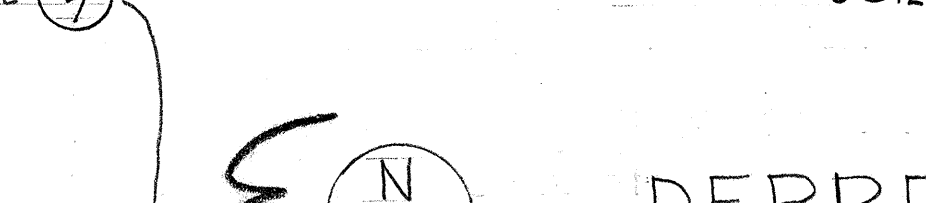
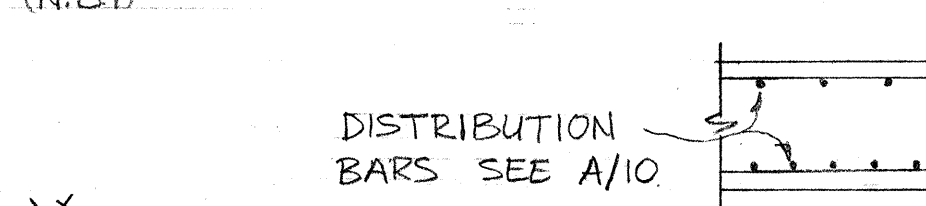
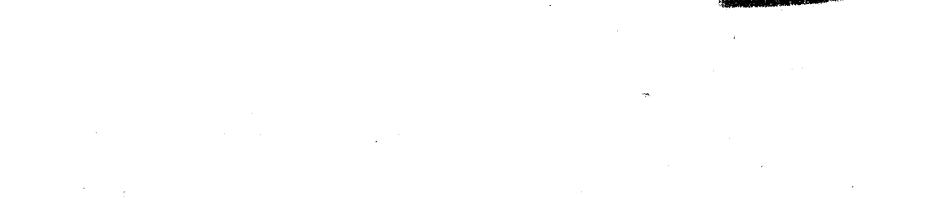
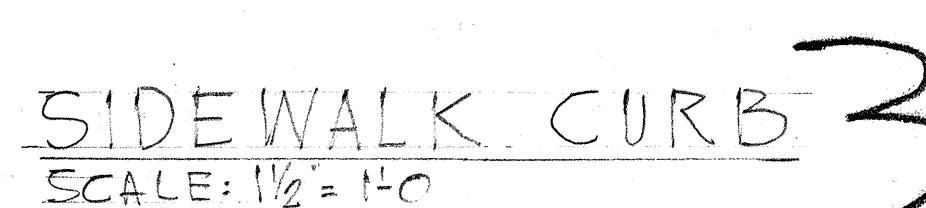
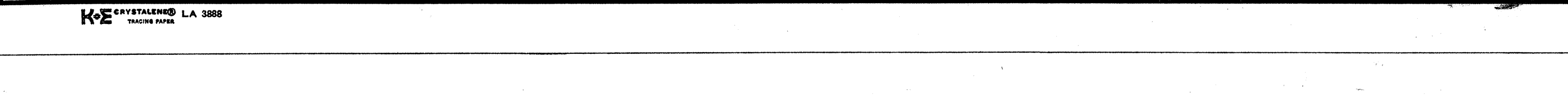
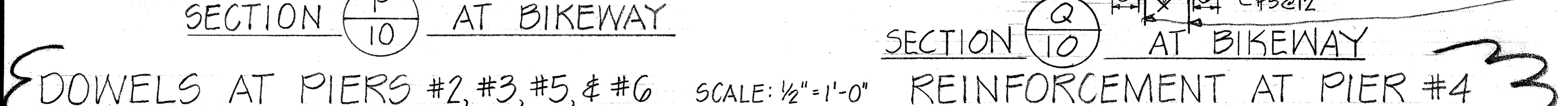
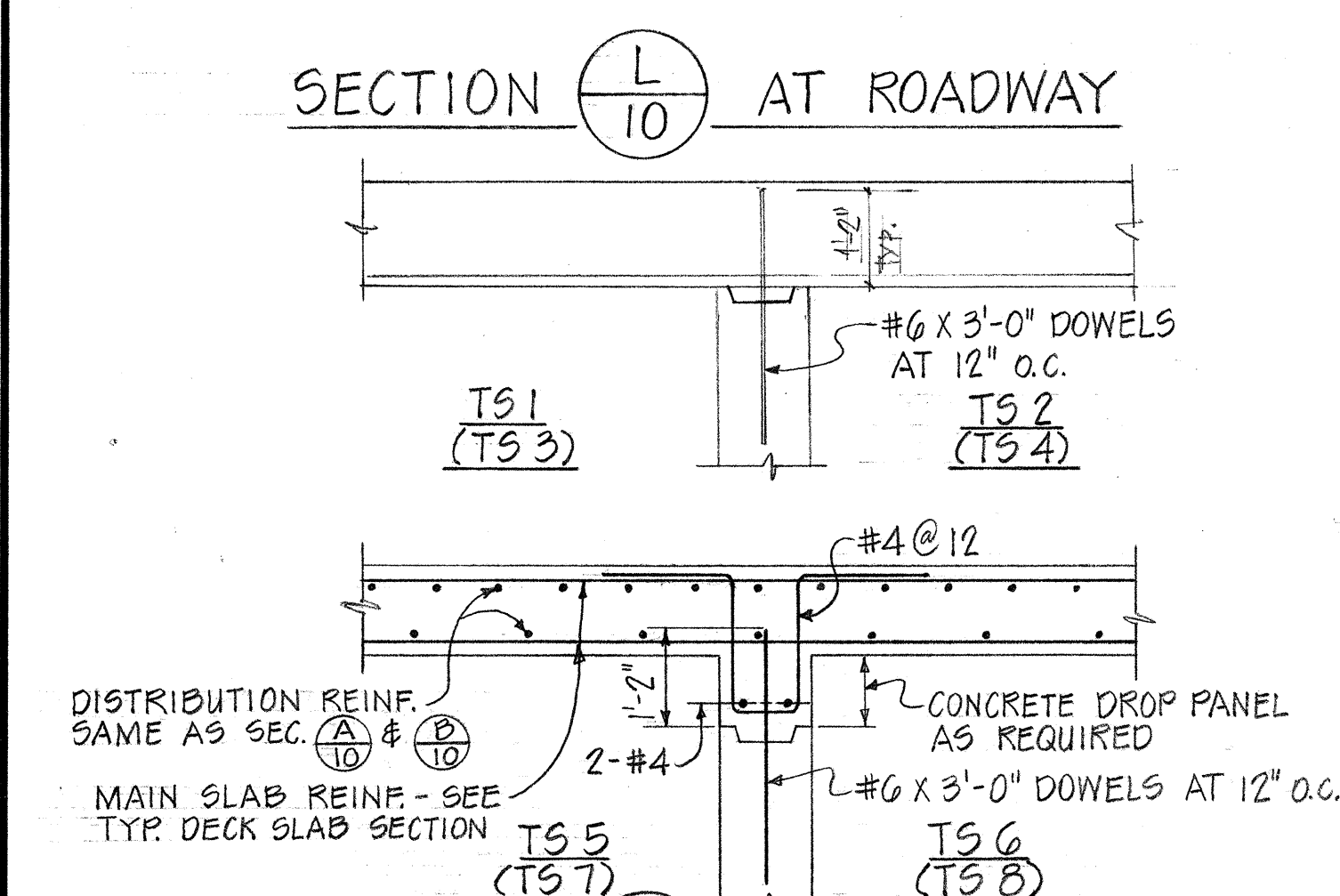
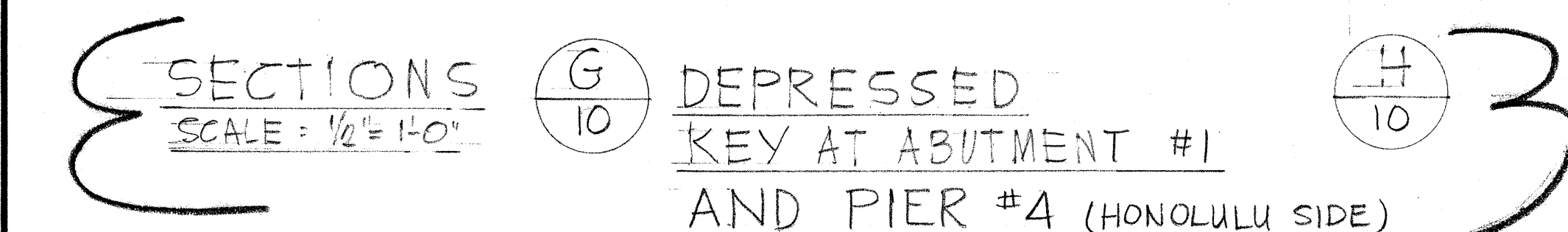
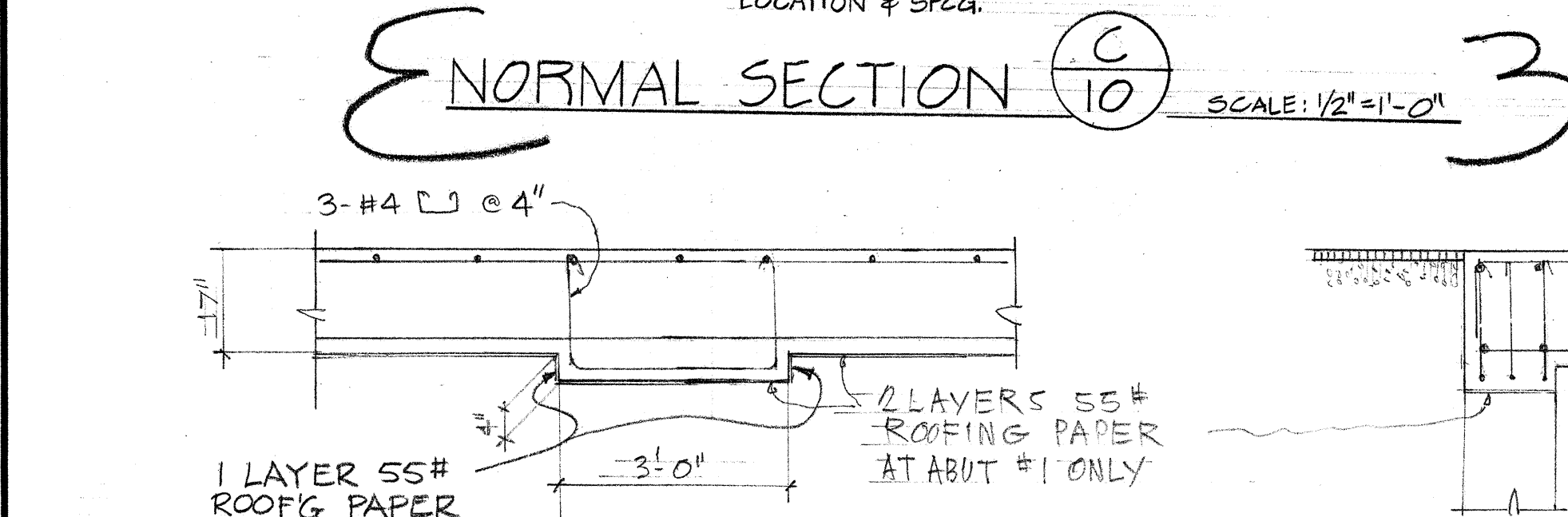
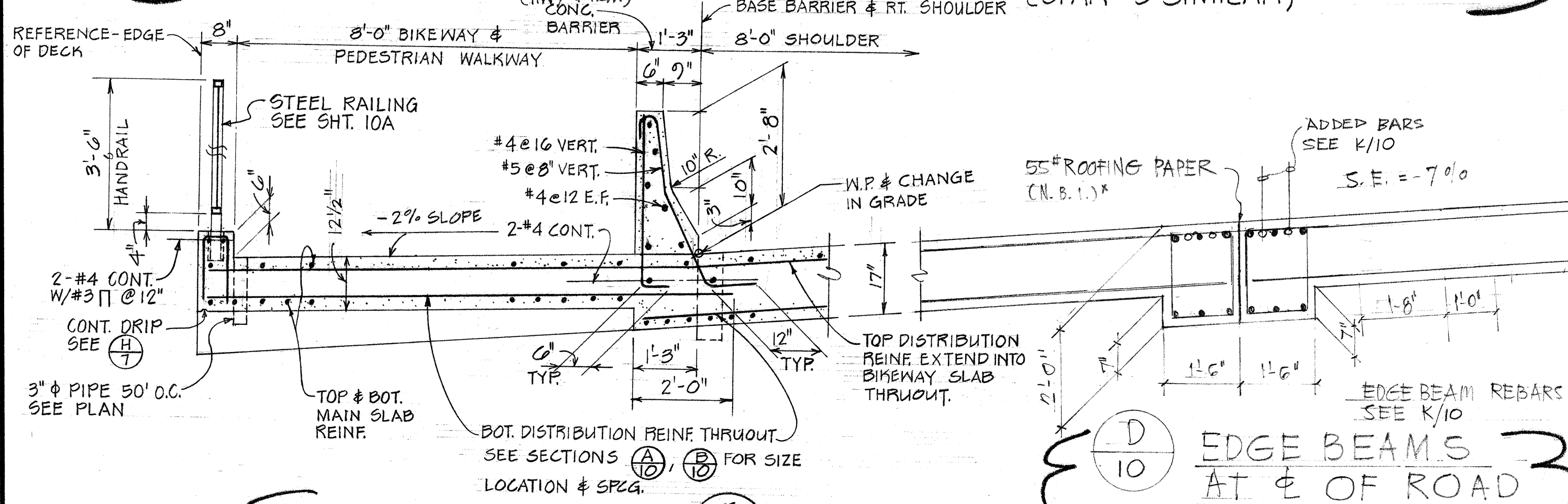
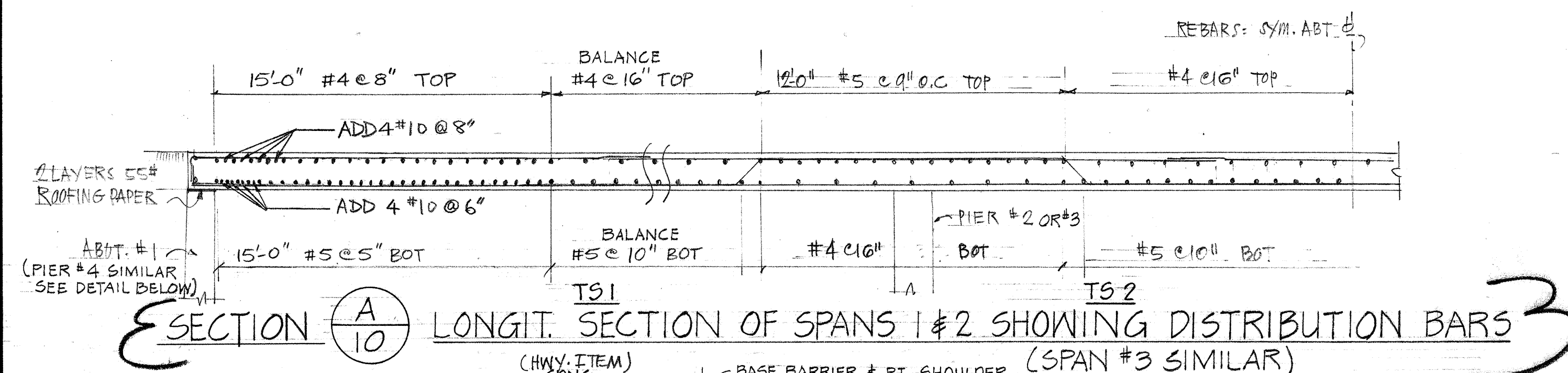
PROJECT NO. 93A-02-70



THIS IS A TRUE PREPARED BY ME
OR UNDER MY SUPERVISION.
H. T. Tamm 72
Signature

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.		1974	66	100

PROJECT NO. 93A-02-70



(N.B.I.)^x = NON BID ITEM. INCIDENTAL TO CLASS "A" CONCRETE AND SHALL NOT BE PAID FOR SEPARATELY.



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
MAILILIHI BRIDGE WIDENING
DECK DETAILS
PROJECT 93A-02-70
SCALE: AS NOTED
SHEET No. 10 OF 15 SHEETS

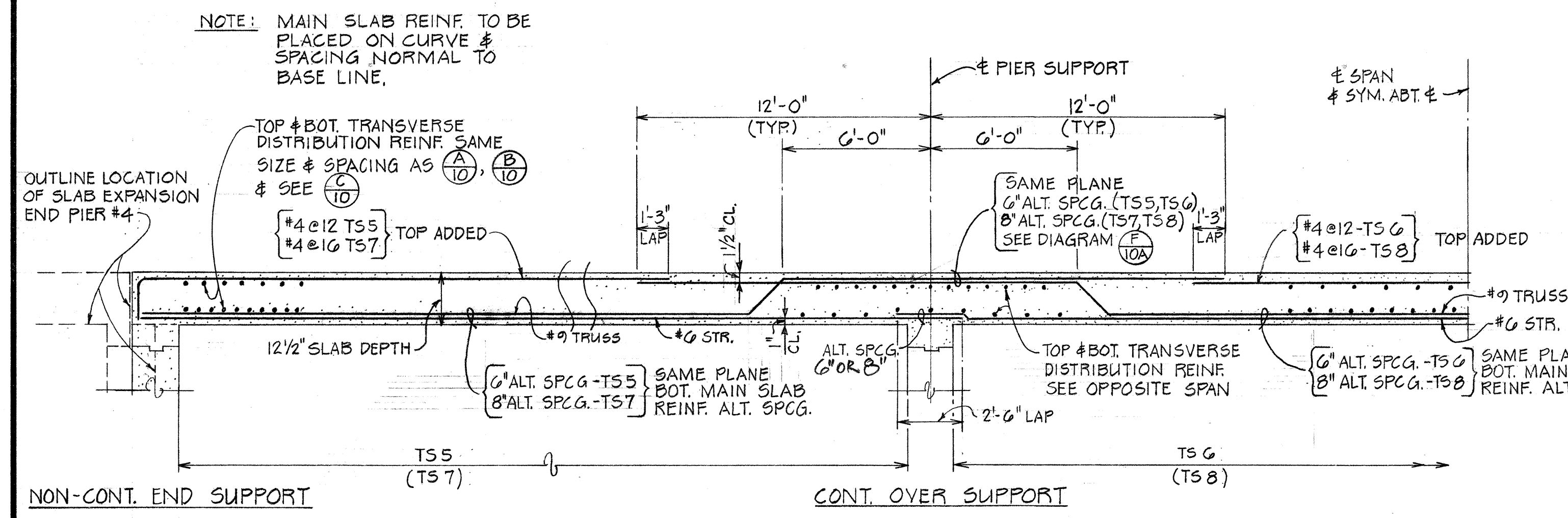
DATE	REVISION
5/30/75	REVISE DECK SLAB AT BIKEWAY AND PEDESTRIAN WALKWAY. ADDED DECK SLAB DESIGNATIONS. OMIT A.C. PAVEMENT AND BITUMINOUS TACK COAT FROM TOP OF DECK.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.
Signature
Date

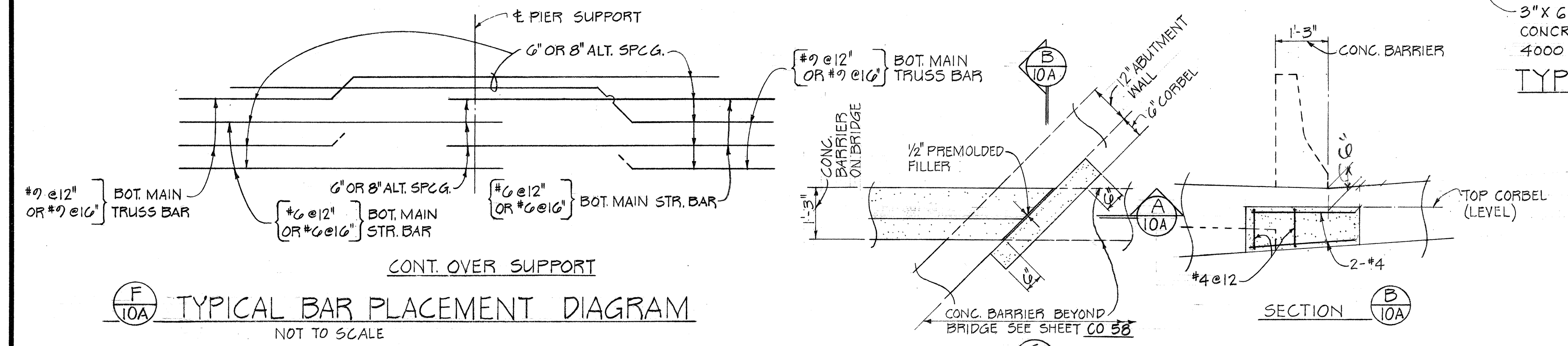
DATE	REVISION
5/30/75	REVISE DECK SLAB AT BIKEWAY AND PEDESTRIAN WALKWAY. ADDED DECK SLAB DESIGNATIONS. OMIT A.C. PAVEMENT AND BITUMINOUS TACK COAT FROM TOP OF DECK.

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.		1974	60 66 S-1	

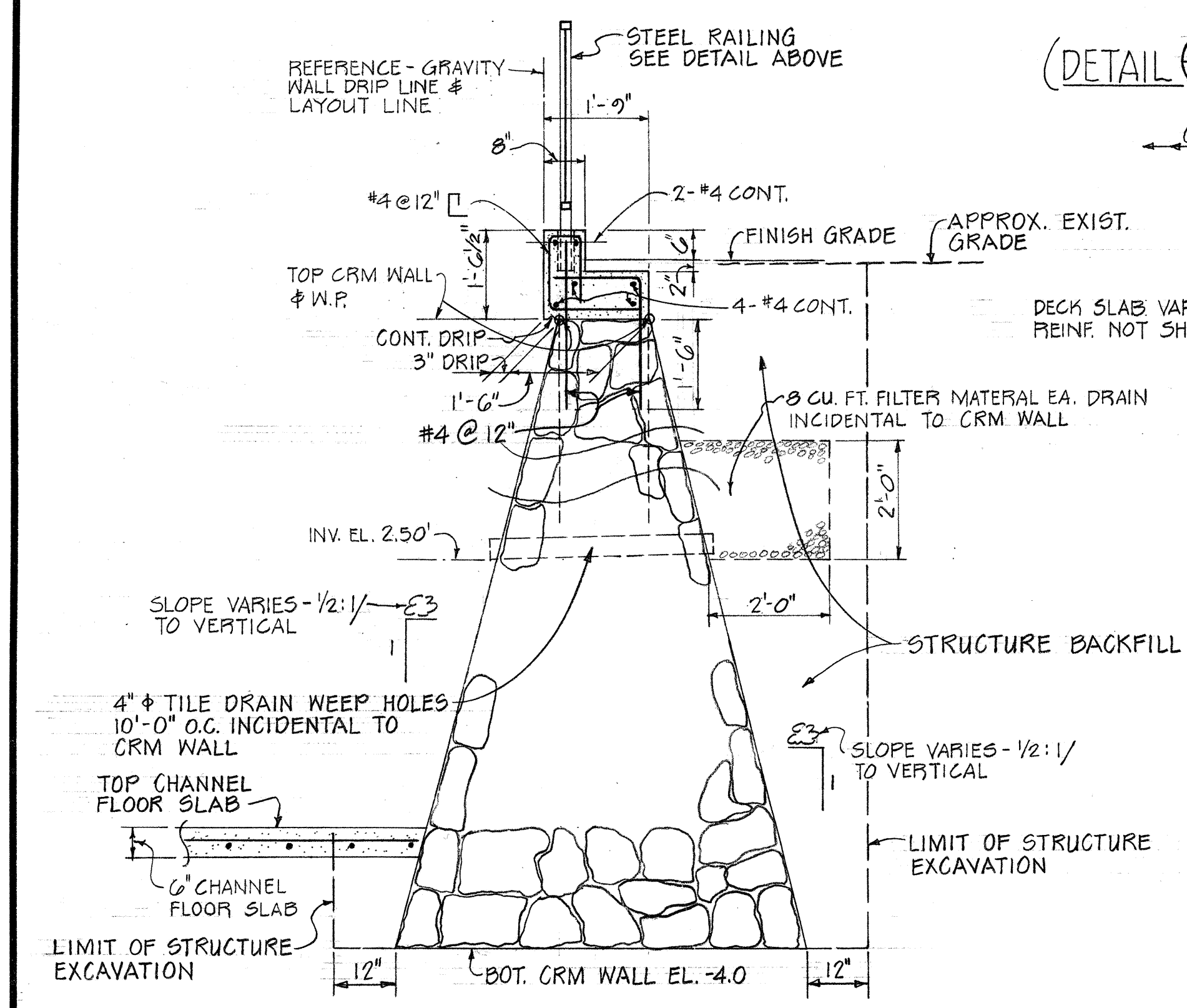
PROJECT NO. 93A-02-70



TYPICAL LONGIT. DECK SLAB SECTIONS (TS5, TS6, TS7, TS8)
NOT TO SCALE

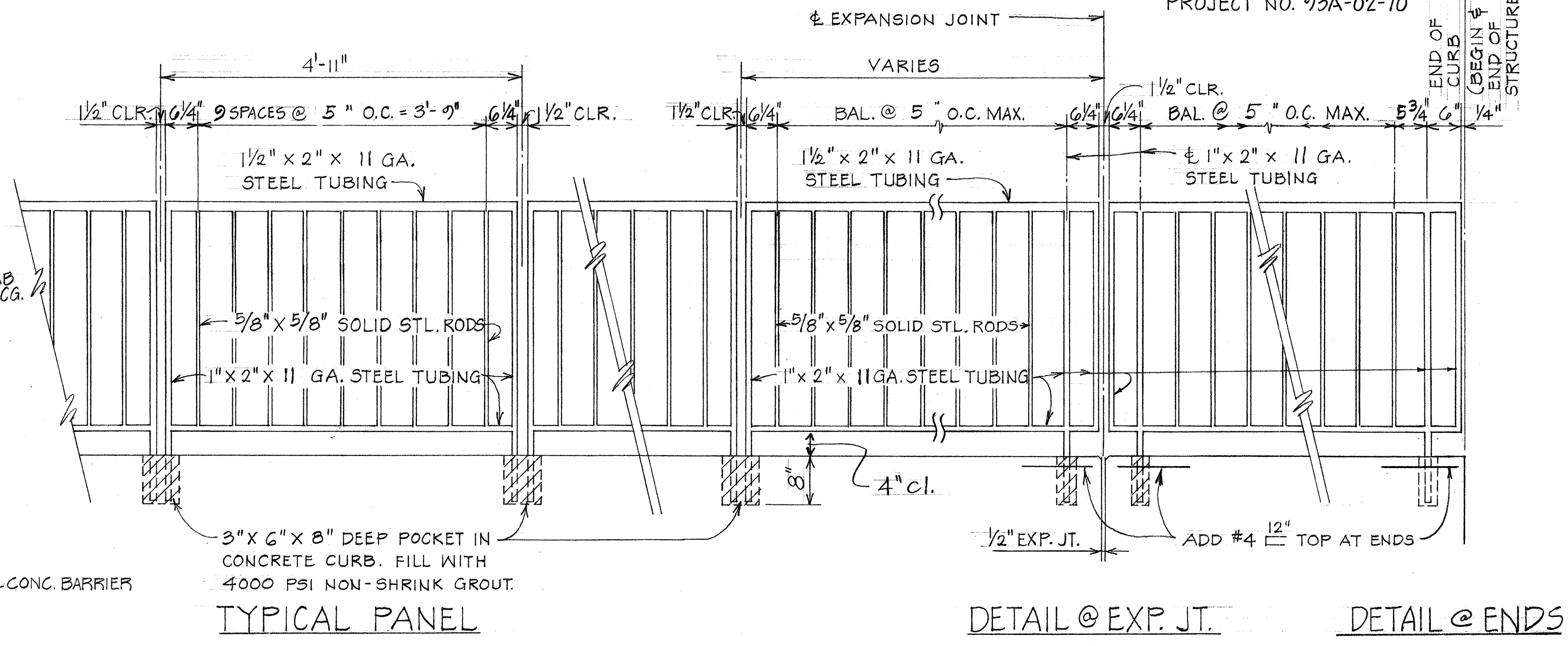
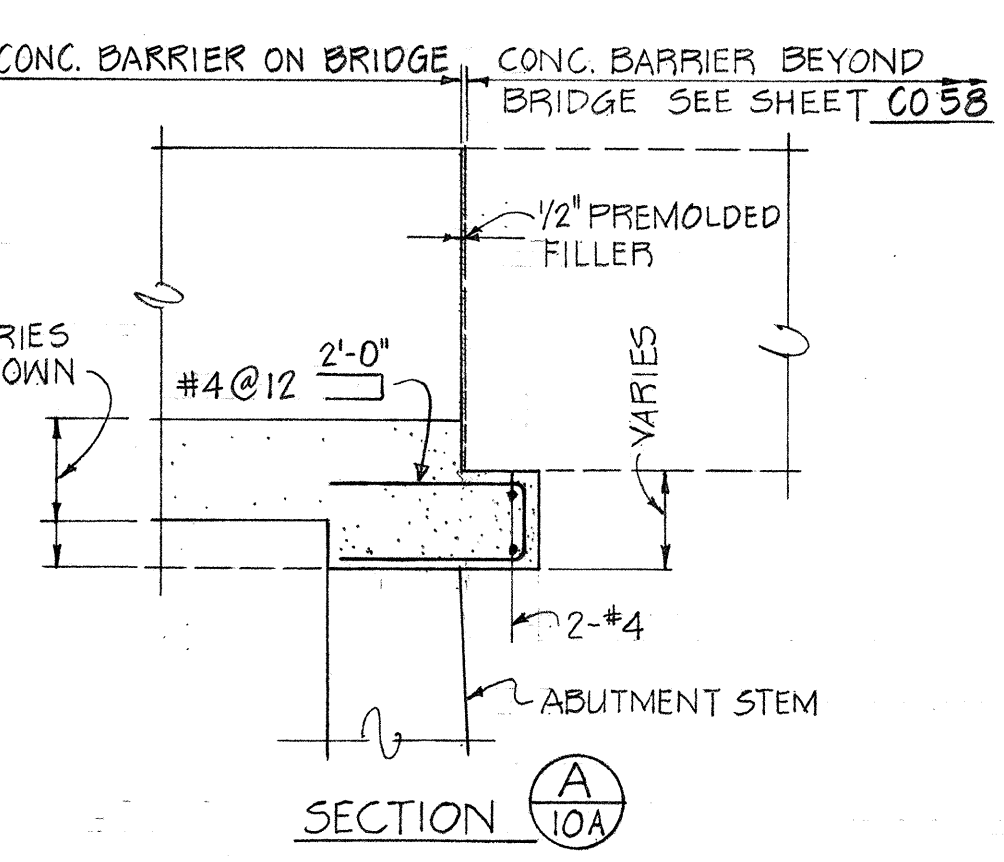


TYPICAL BAR PLACEMENT DIAGRAM
NOT TO SCALE



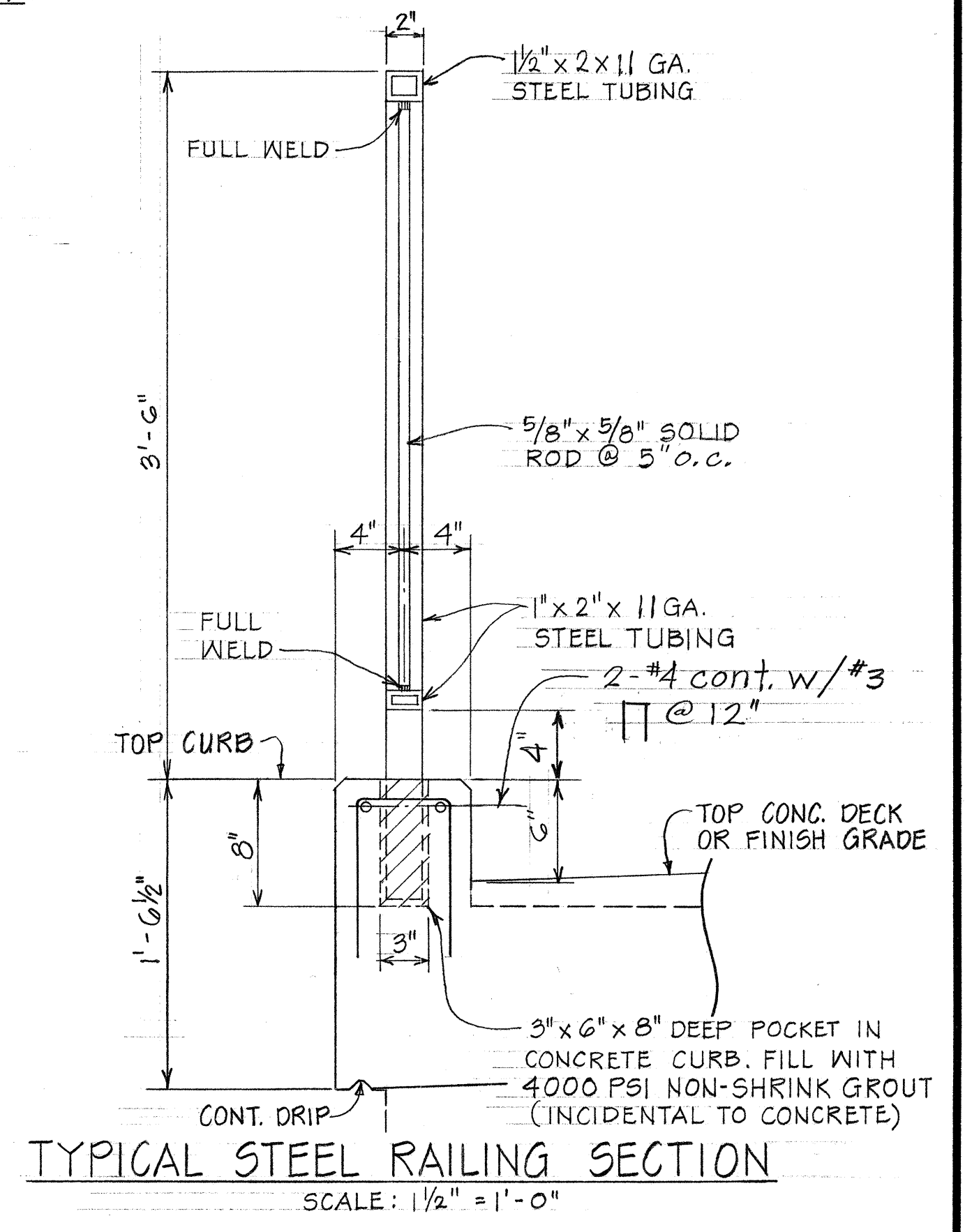
TYPICAL SECTION CEMENT RUBBLE MASONRY WINGWALL
SCALE: 1/2" = 1'-0"

DETAIL (C) SCALE: 1/2" = 1'-0"
(DETAIL (D) SIMILAR EXCEPT OPPOSITE HAND)



STEEL RAILING ELEVATION
SCALE: 3/4" = 1'-0"

- NOTE:
1. STRUCTURAL STEEL SHALL CONFORM TO ASTM-A36 STEEL.
 2. STEEL RAILING SHALL BE HOT-DIPPED GALVANIZED AFTER FABRICATION.



TYPICAL STEEL RAILING SECTION
SCALE: 1/2" = 1'-0"

DATE	REVISION
7/25/77	STEEL RAILING — CHANGED TUBING STEEL FROM 9 GA. TO 11 GA. AND SPACING OF 5/8" x 5/8" SOLID ROD FROM 5 5/8" TO 5" O.C.
5/30/75	SHEET ADDED TO CONTRACT PLAN SET FOR ADDITIONAL DETAILS REQUIRED ON SHEET NO. CO 66

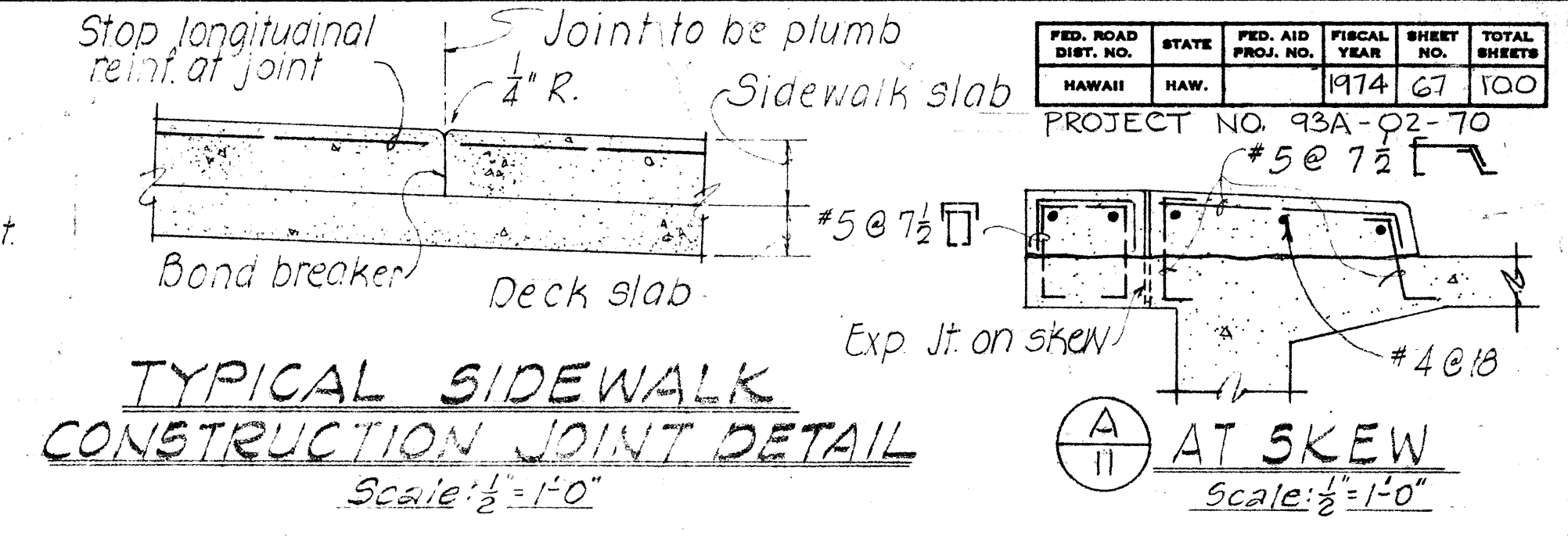
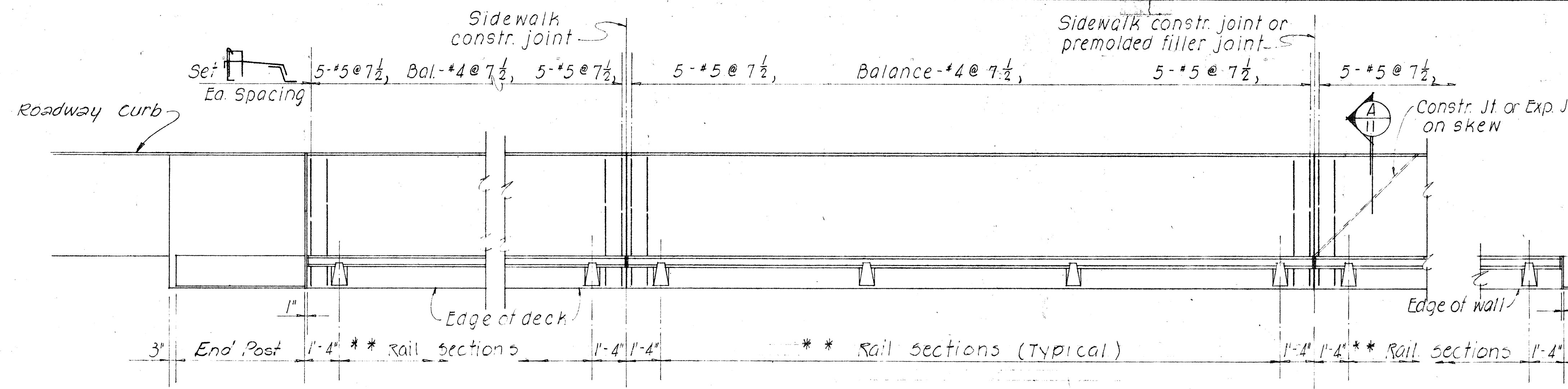
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MAILIILI BRIDGE WIDENING
TYPICAL DETAILS
BIKEWAY AND PEDESTRIAN WALKWAY
PROJECT 93A-02-70

SCALE: AS NOTED MAY 1975

SHEET NO. 10A OF SHEETS

C.O. 66 S-1A



AT BRIDGE END POST

**** NOTE!!**
The contractor shall layout the railing to provide 3 continuous panels whenever possible. 2 or 4 continuous panels will be permitted to complete the layout when 3 continuous panels cannot be made. Single panels will not be permitted.

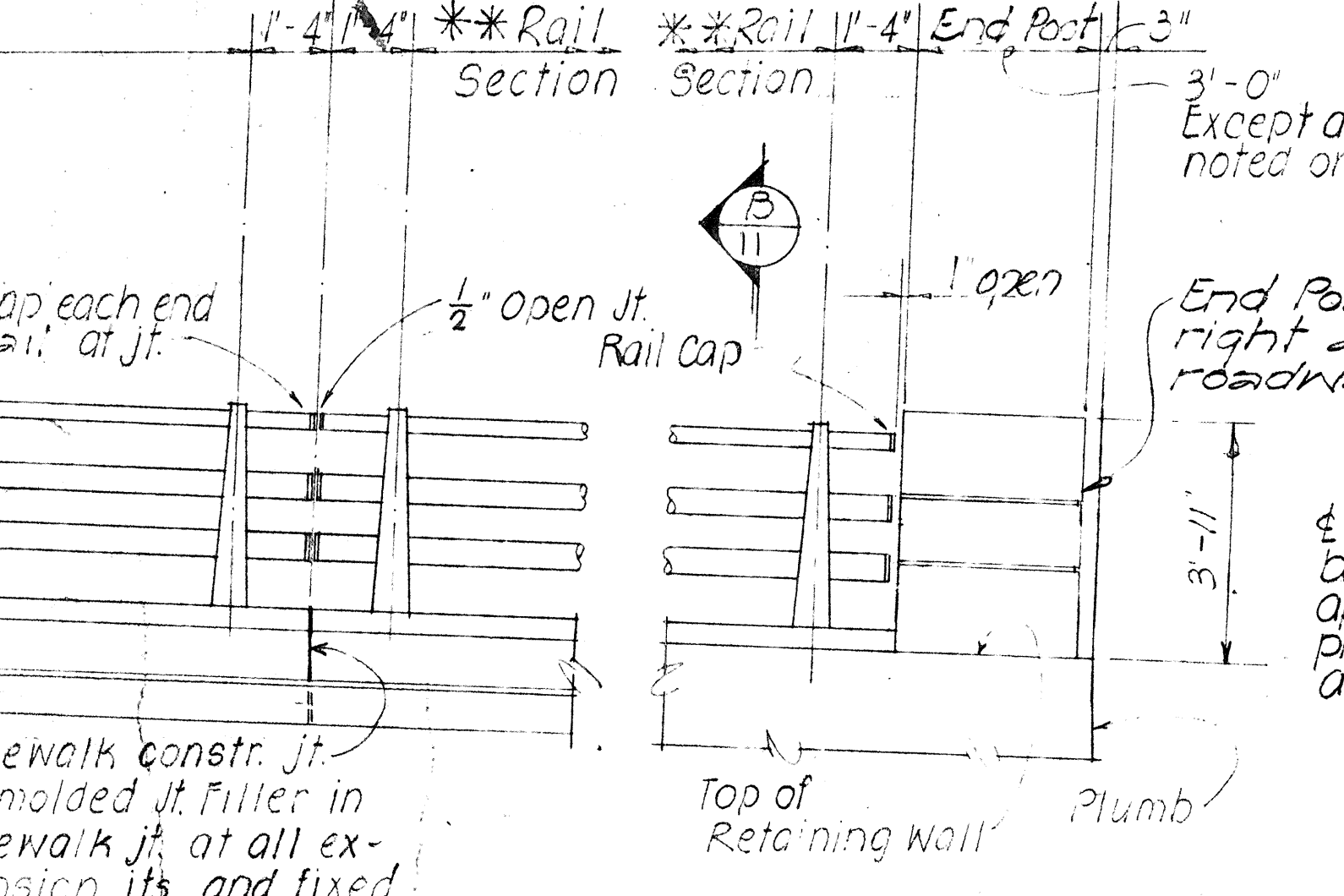
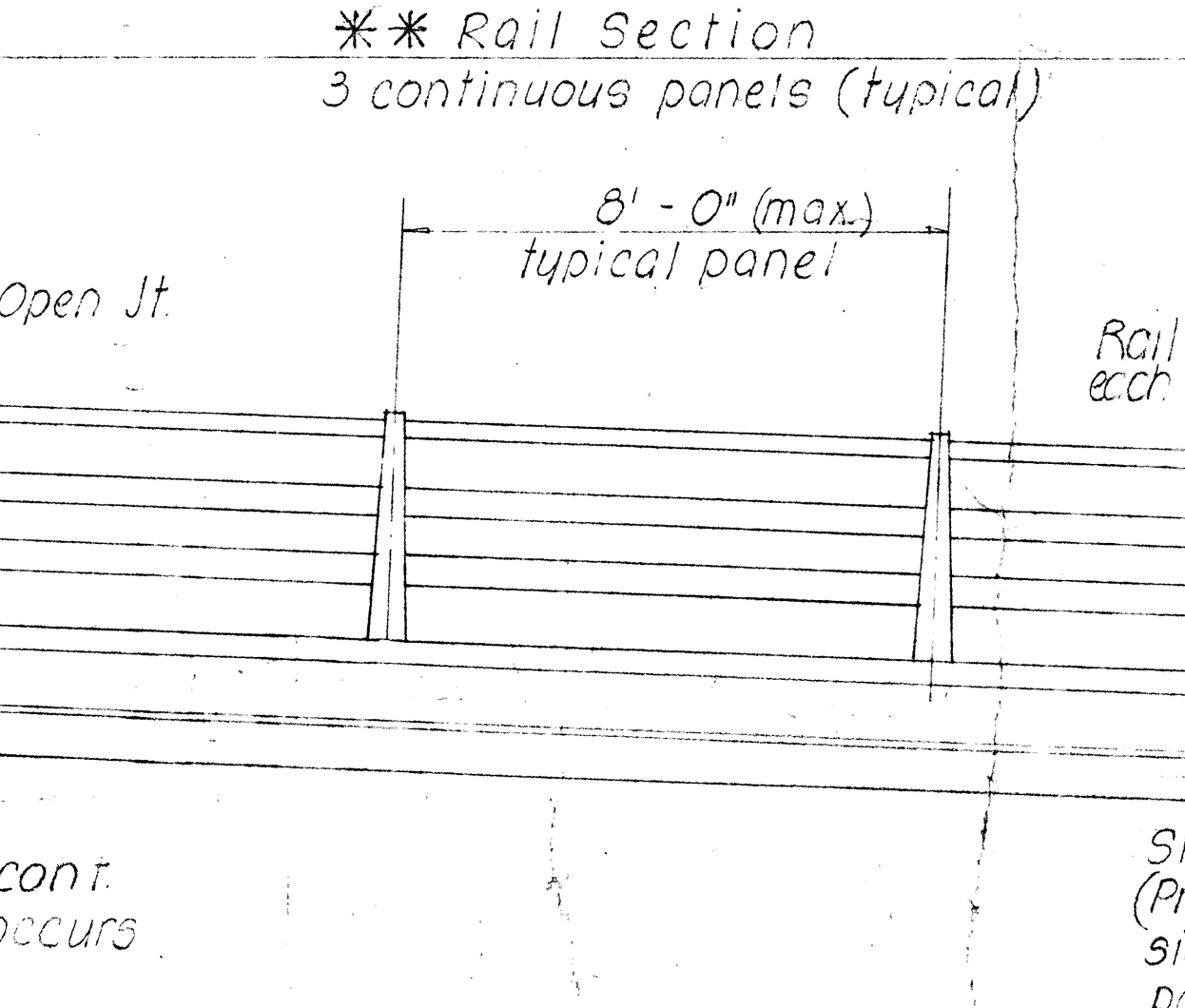
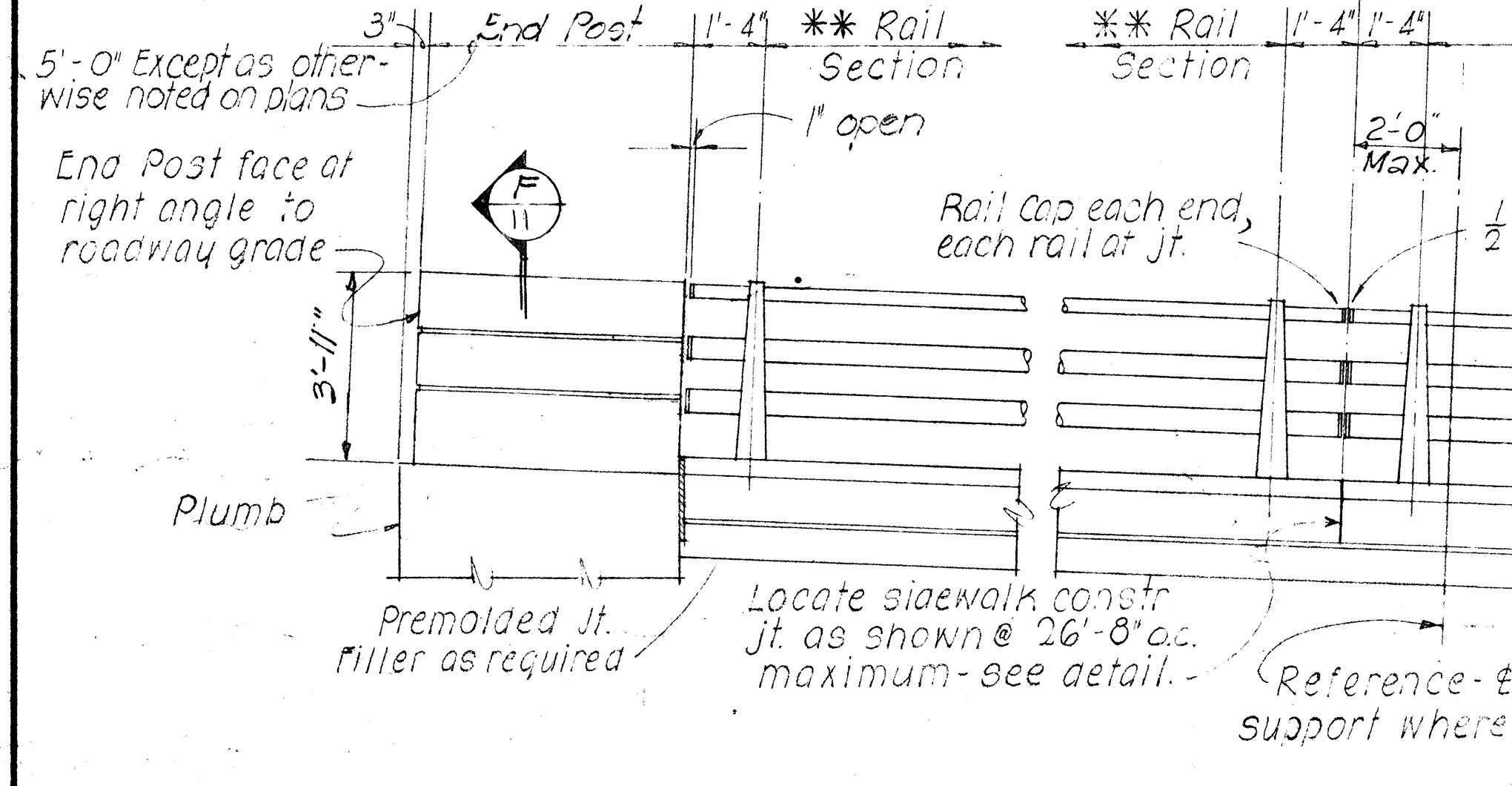
INTERMEDIATE

RAILING PLAN

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

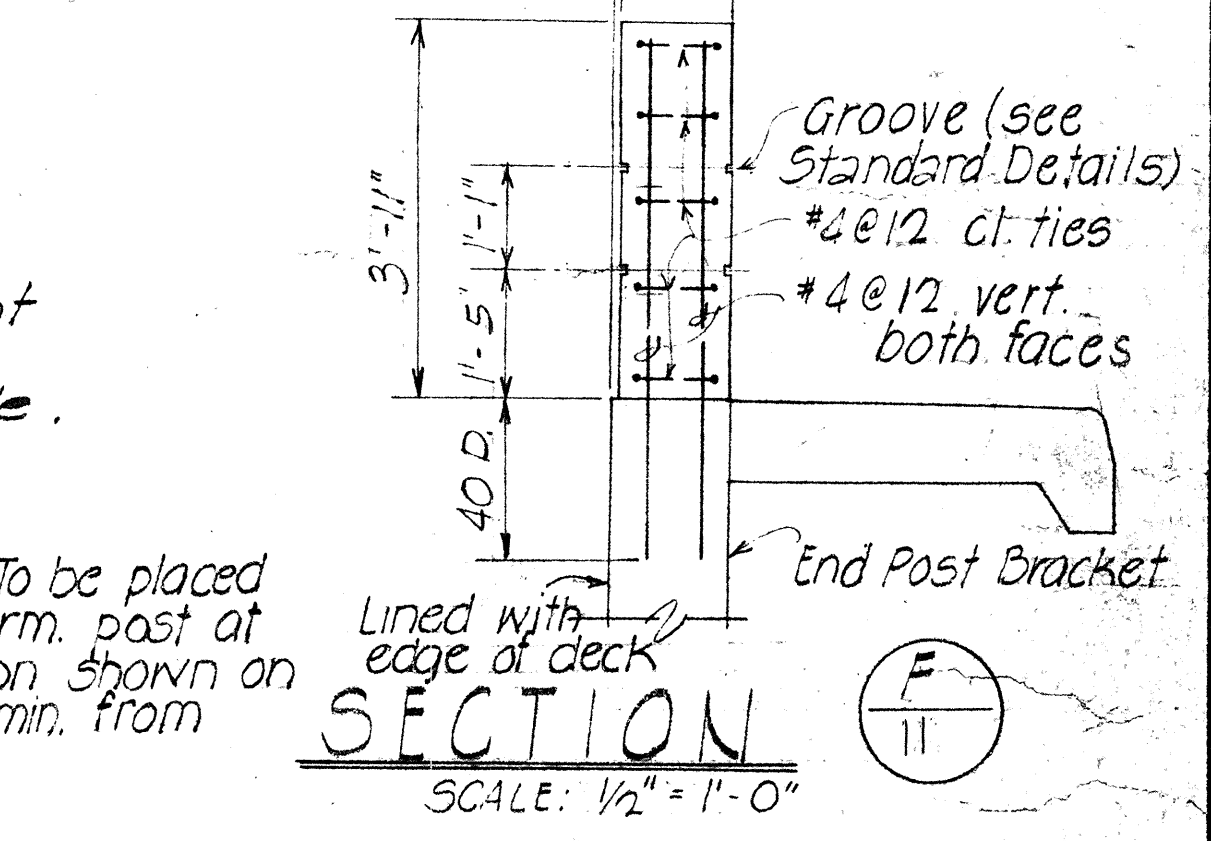
AT RETAINING WALL END POST

NOTES!!
1. Rail Posts shall be normal to grade.
2. Provide double posts at each expansion jt., fixed bridge jt. & as shown on detailed drawings.

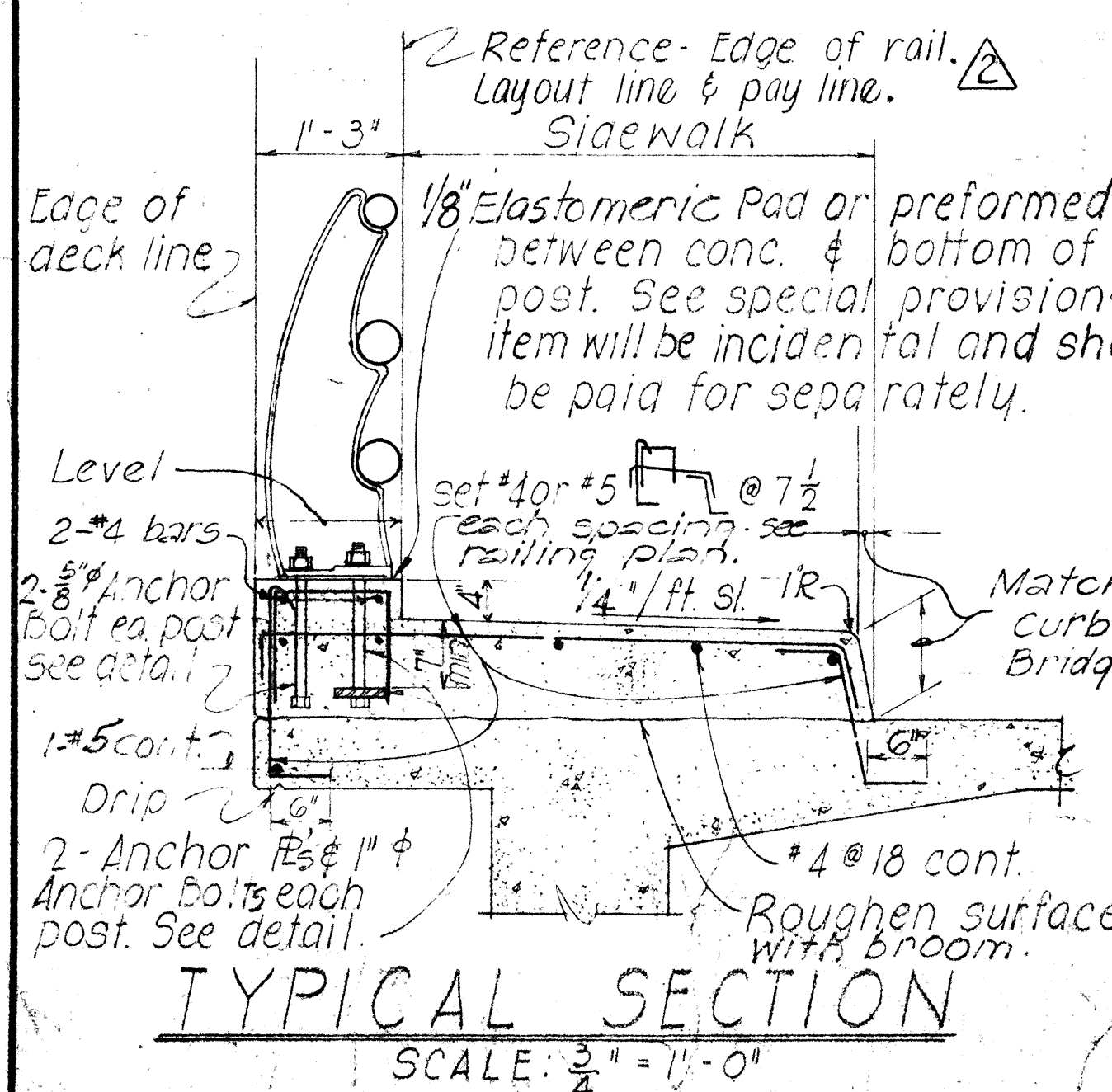


TREATMENT OF RAILING AT SKEWED ENDS

SCALE: 1/2" = 1'-0"



AT BRIDGE END POST

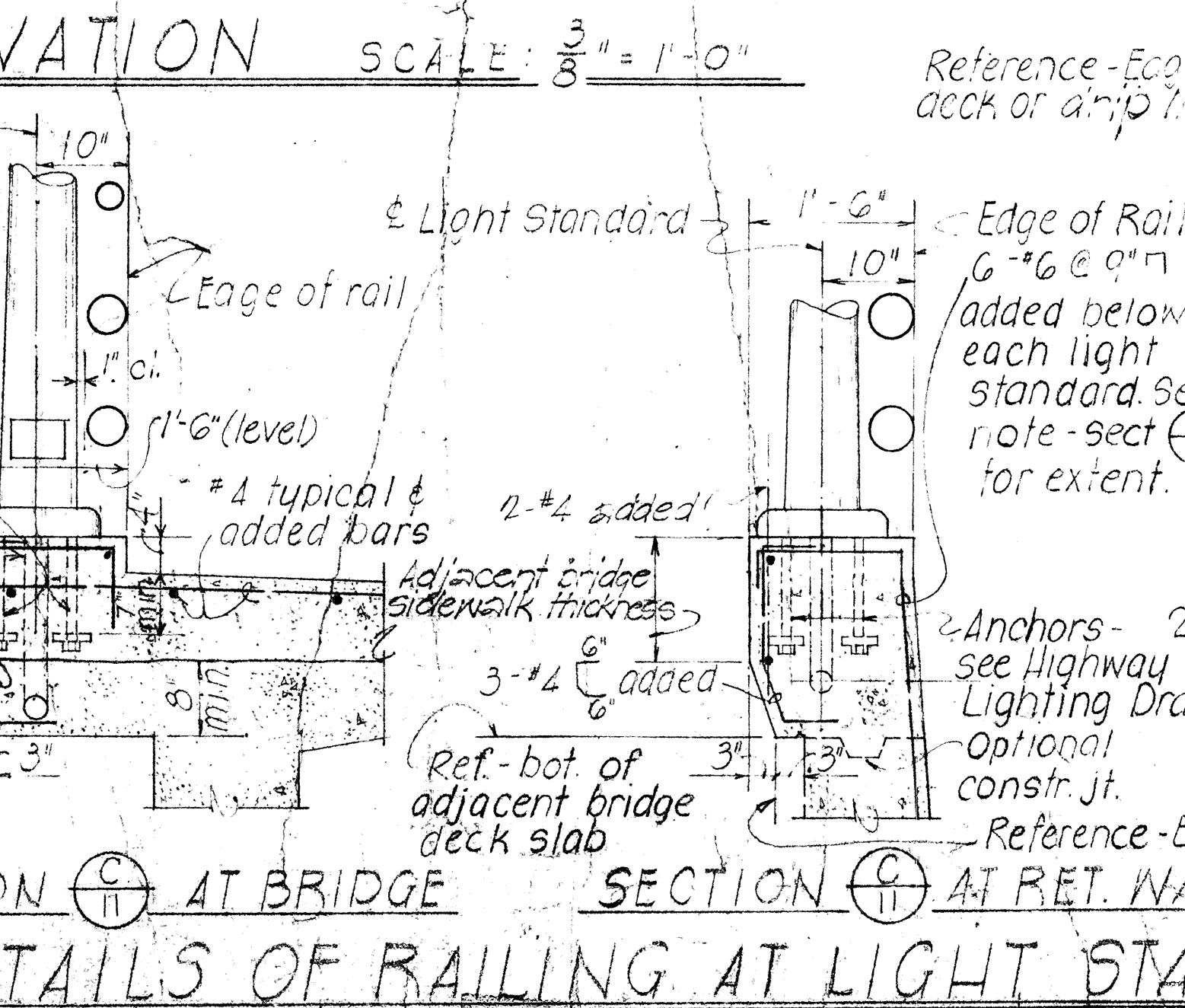


INTERMEDIATE

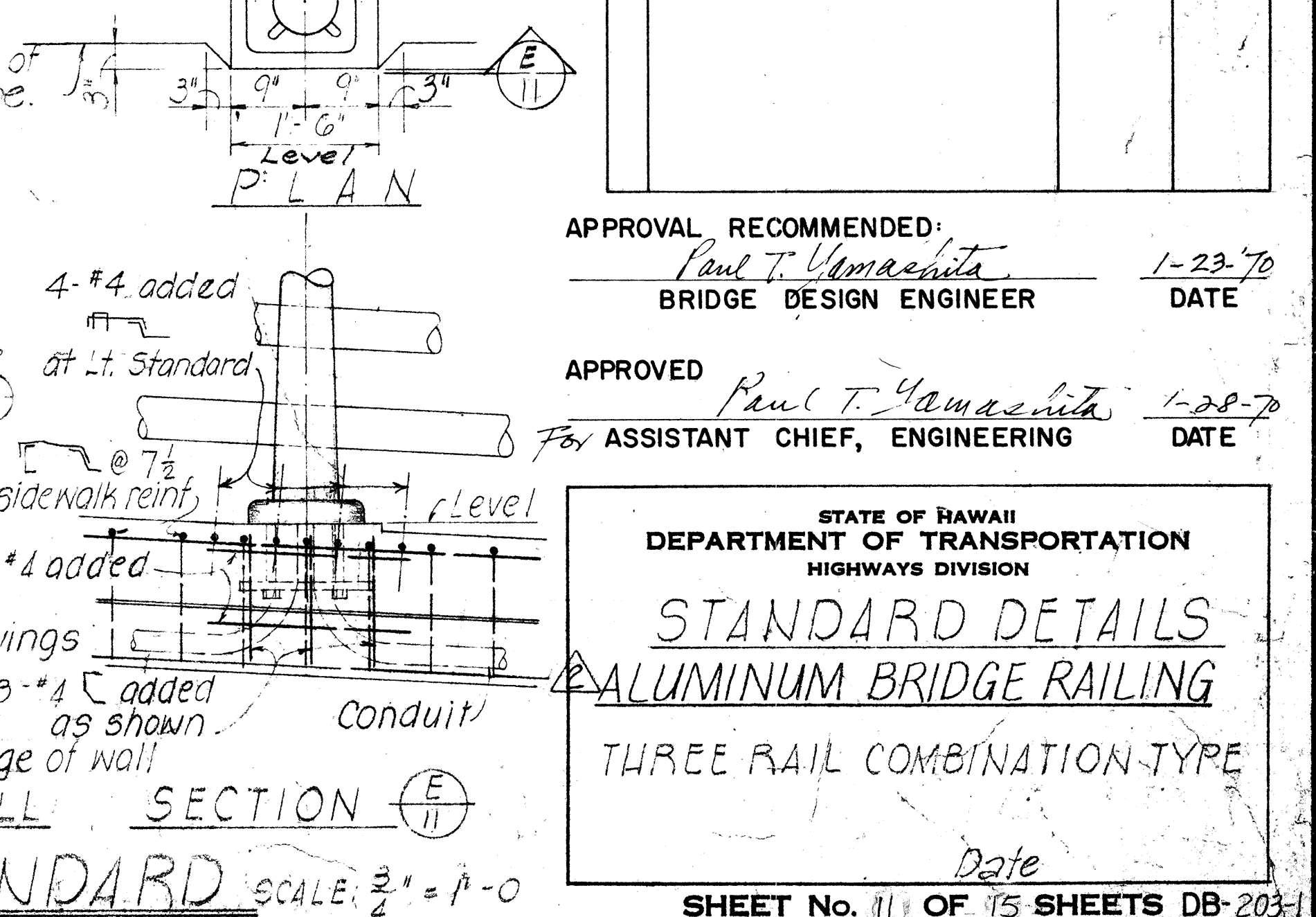
EXTERIOR RAILING ELEVATION

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

AT RETAINING WALL END POST



AT BRIDGE



NO.	REVISION	APPROVED BY	DATE
1.	Clarify sidewalk reinf	H.C.	10-13-70
2.	Change title block rail designation. Change note.	H.C.	2-2-72

APPROVAL RECOMMENDED:
Paul T. Yamashita
BRIDGE DESIGN ENGINEER 1-23-70 DATE

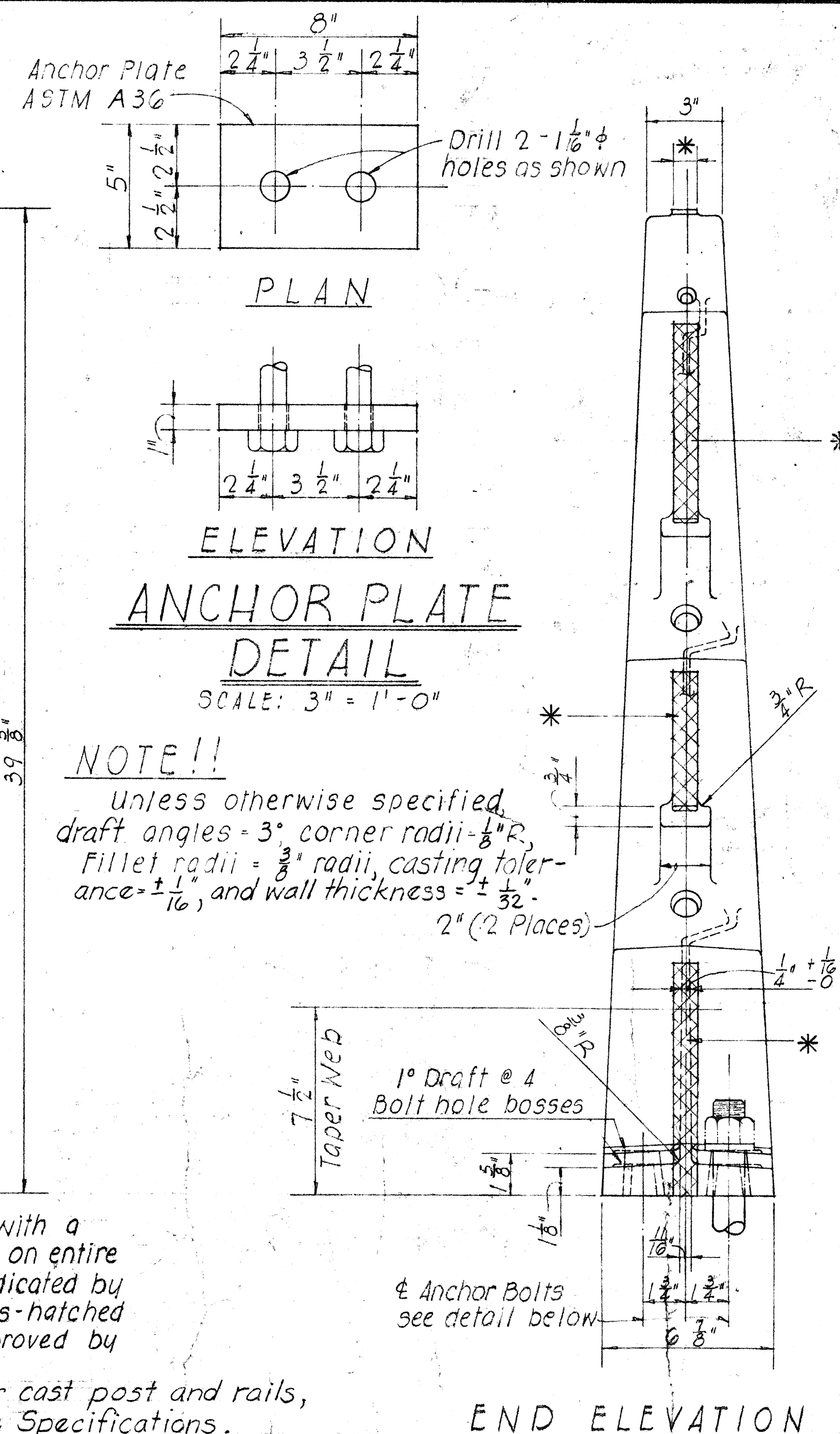
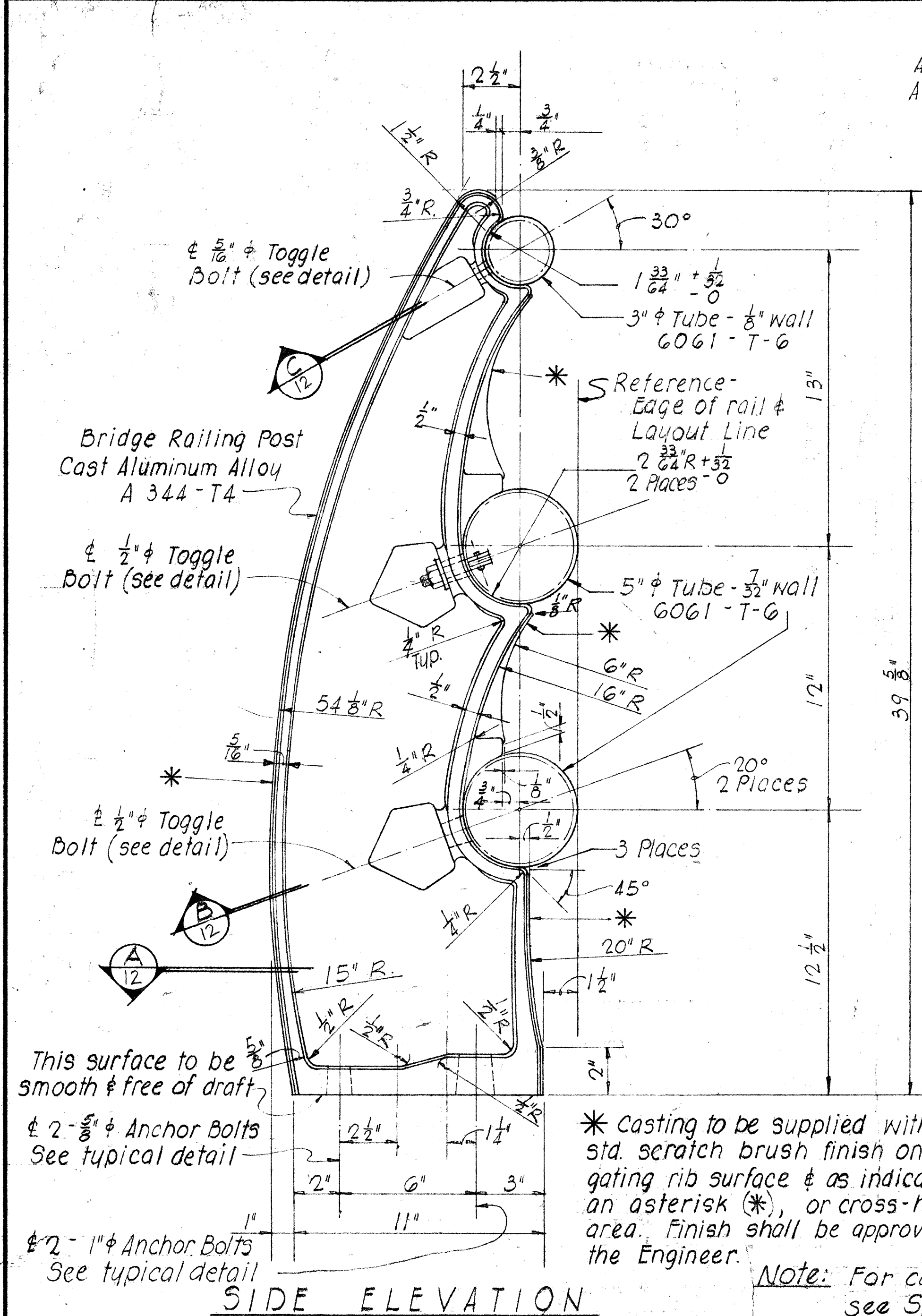
APPROVED
Paul T. Yamashita
For ASSISTANT CHIEF, ENGINEERING 1-28-70 DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
STANDARD DETAILS
ALUMINUM BRIDGE RAILING
THREE RAIL COMBINATION-TYPE
Date
SHEET No. 11 OF 15 SHEETS DB-203-1

DATE
DRAWN BY
CHECKED BY
DESIGNED BY
NOTED BY
NO.

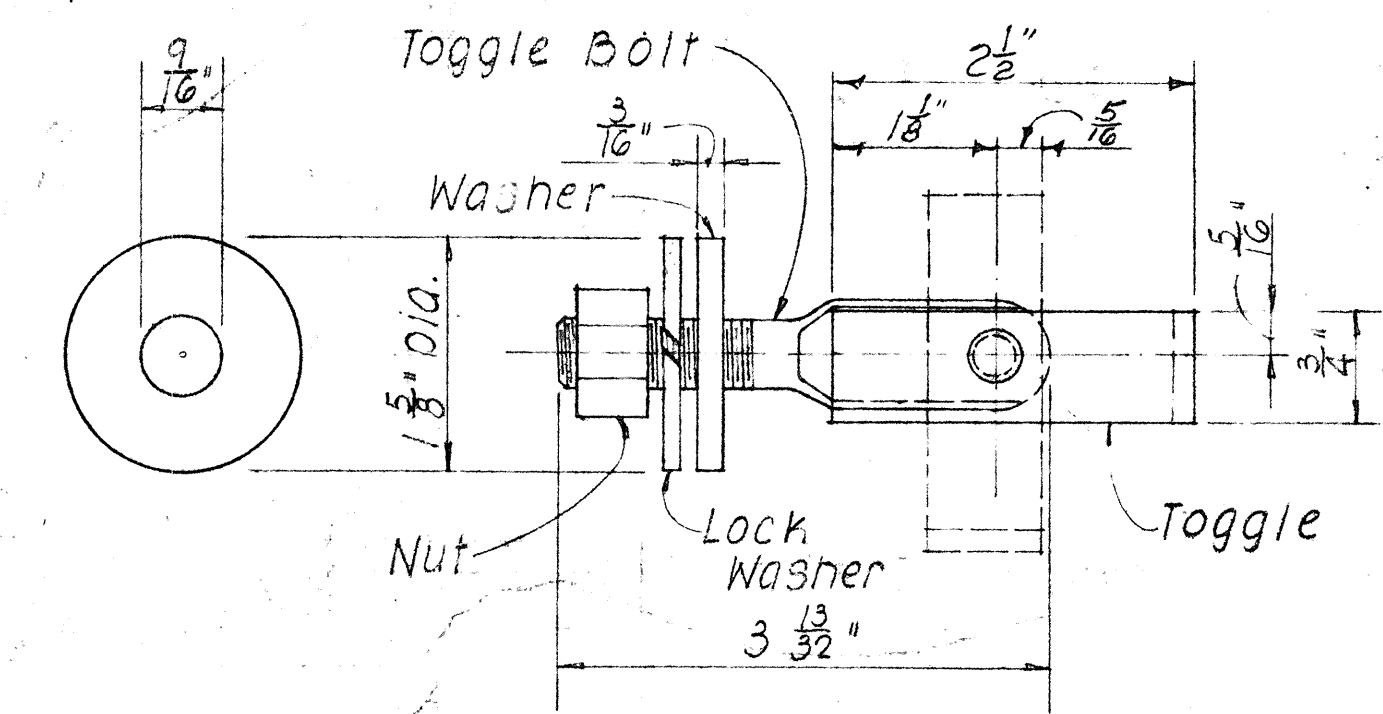
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.		1974	68	100

PROJECT NO. 93A-02-70

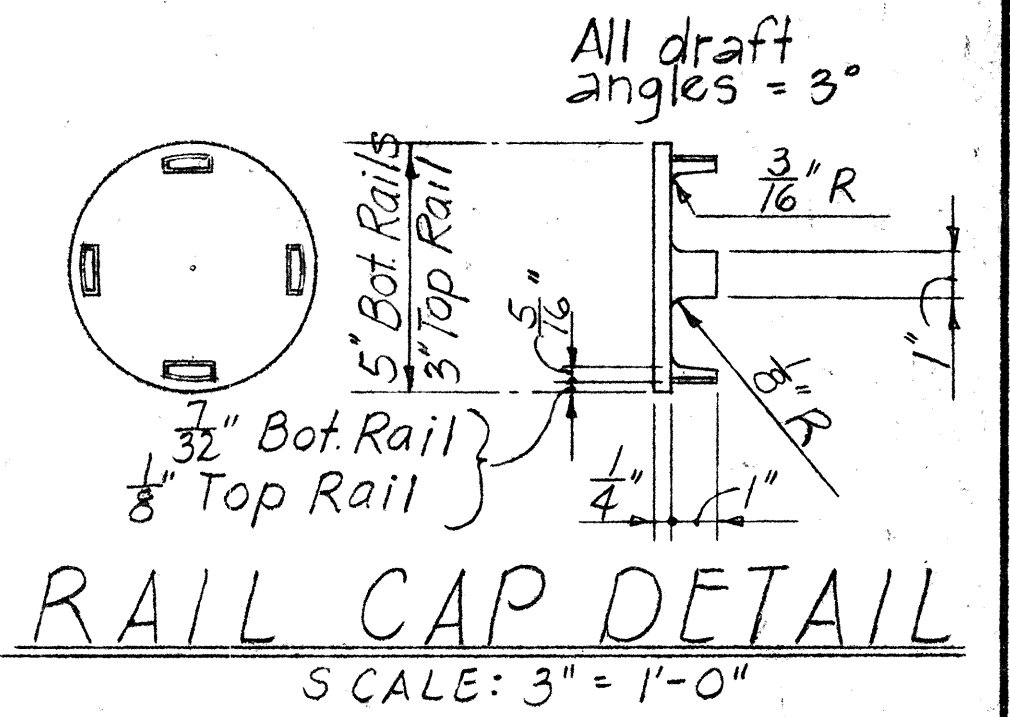


NOTE:

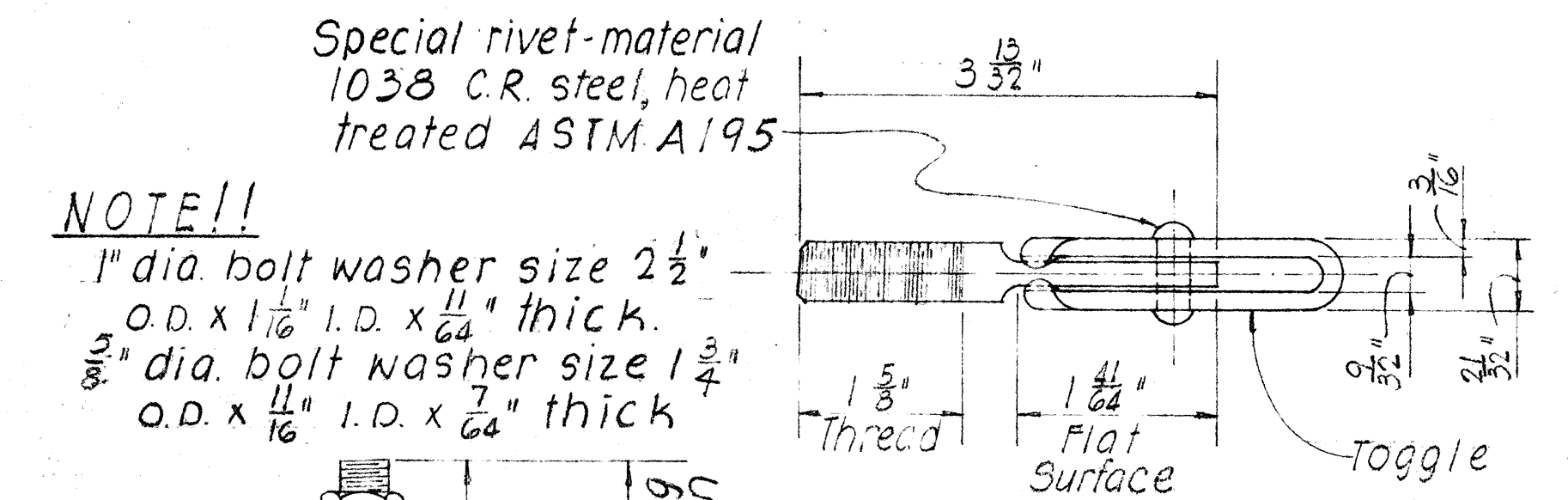
Toggle Bolt- Cadmium plating on steel- Type NS 0.0005" thick
ASTM- A165 (all parts).



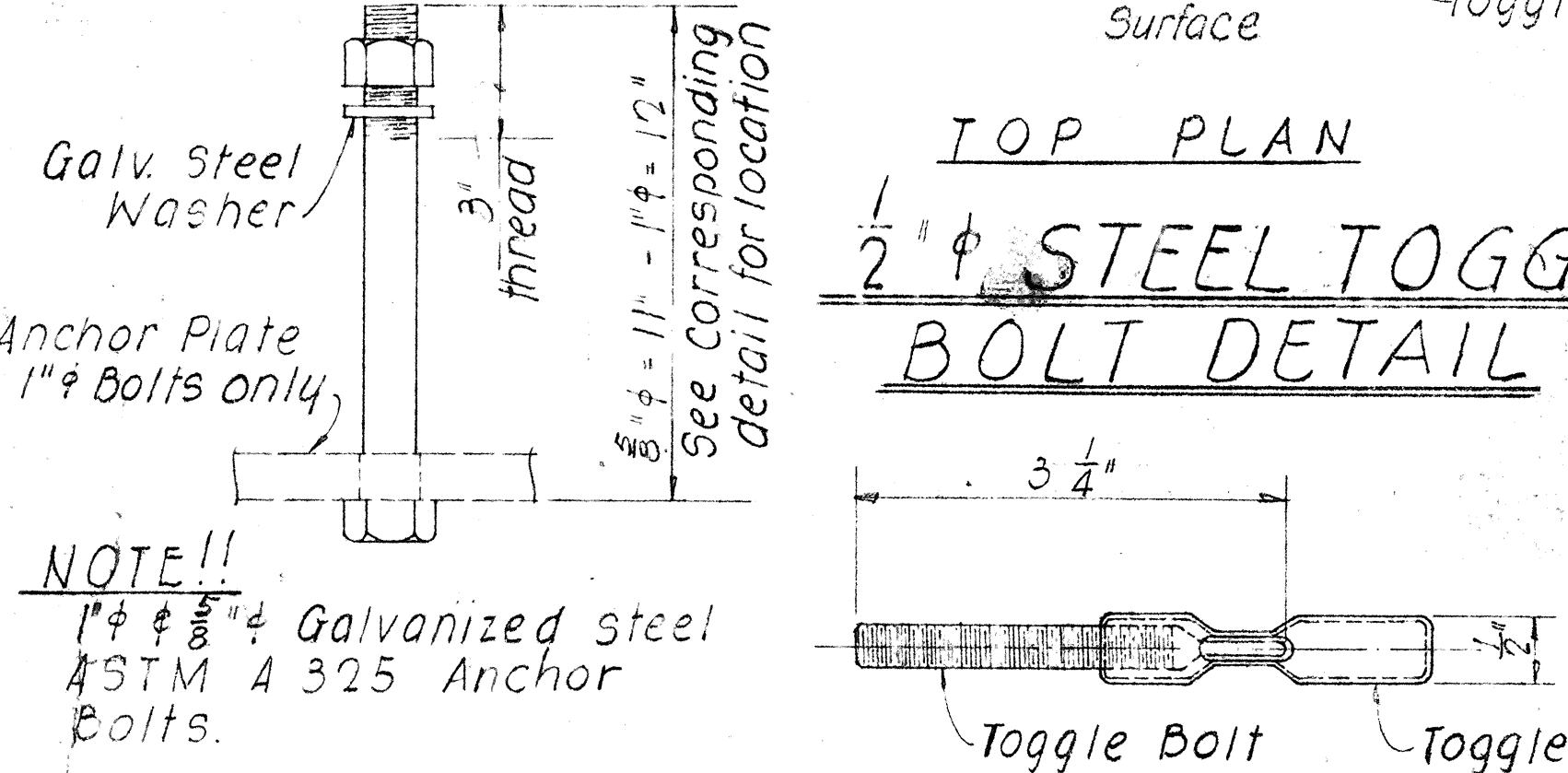
WASHER SIDE ELEVATION ASSEMBLAGE



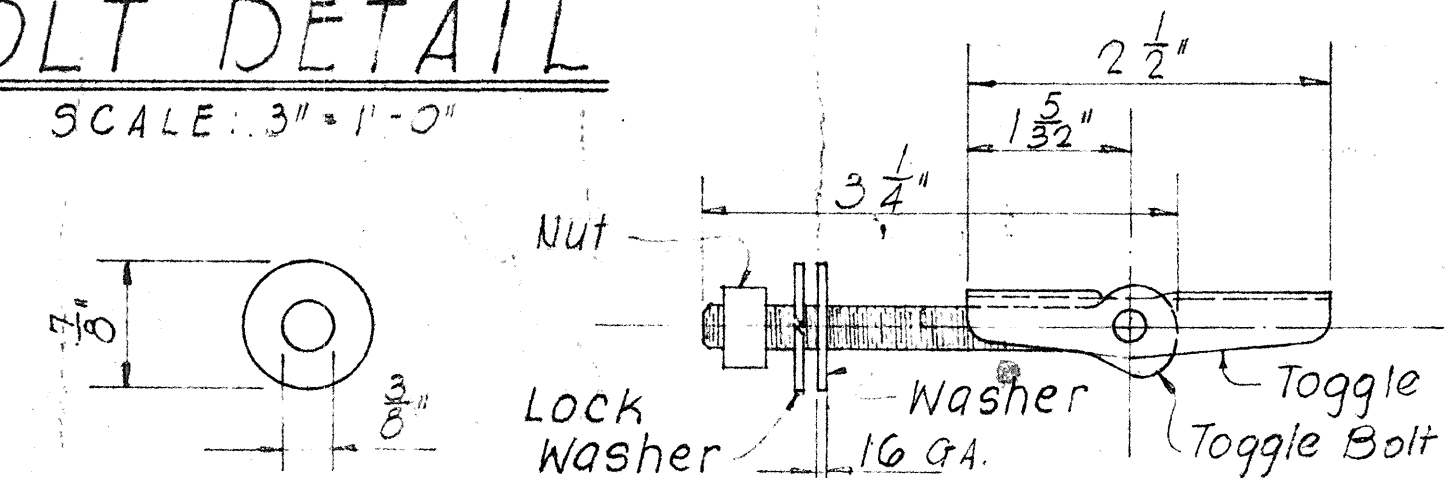
RAIL CAP DETAIL
SCALE: 3" = 1'-0"



TOP PLAN
1/2" ϕ STEEL TOGGLE
BOLT DETAIL



TYPICAL ANCHOR TOP PLAN
BOLT DETAIL 2 1/2"



WASHER ELEVATION ASSEMBLAGE

5/16" ϕ STEEL TOGGLE BOLT DETAIL

APPROVAL RECOMMENDED:
Paul T. Yamashita 1-23-70
BRIDGE DESIGN ENGINEER DATE

APPROVED Paul T. Hawasinta 1-28-70
For ASSISTANT CHIEF, ENGINEERING DATE

NO.	REVISION	APPROVED BY	DATE
1	Change title block rail designation. Delete note.	HT	2-4

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS

ALUMINUM BRIDGE RAILING

THREE RAIL COMBINATION TYPE

Date

SHEET No. 12 OF 15 SHEETS DB-203-2

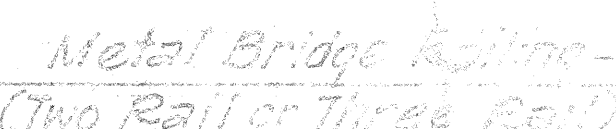
58

ORIGINAL PLAN	SURVEY PLOTTED BY J. E.	DATE
	DRAWN BY	"
	TRACED BY	"
NOTE BOOK	DESIGNED BY	"
	QUANTITIES BY	"
	CHECKED BY	"

PROTECT NO. 93A-02-70



PLAN scale: 1"=1'-0"



⊗ Anchor Bolt
See "Special End
Shoe Detail" for
exact location
numbers and
size.

NOTES:

4. First 25'-0" of guard rail adjoining "Special End Ends" shall be galvanized steel.
5. Anchor Bolt length given under bolt head.
6. These details are applicable for connections to retaining walls also.
7. Place name of structure as shown. For location, see "Plan" on Contract Drawing. Date shown will be year structure is completed. Letter size and detail see standard Drawing DS-100.

1" ϕ HOLES FOR
7/8" ϕ x 7 1/4" LONG
ANCHOR BOLTS



Ref. Front face of End Post -

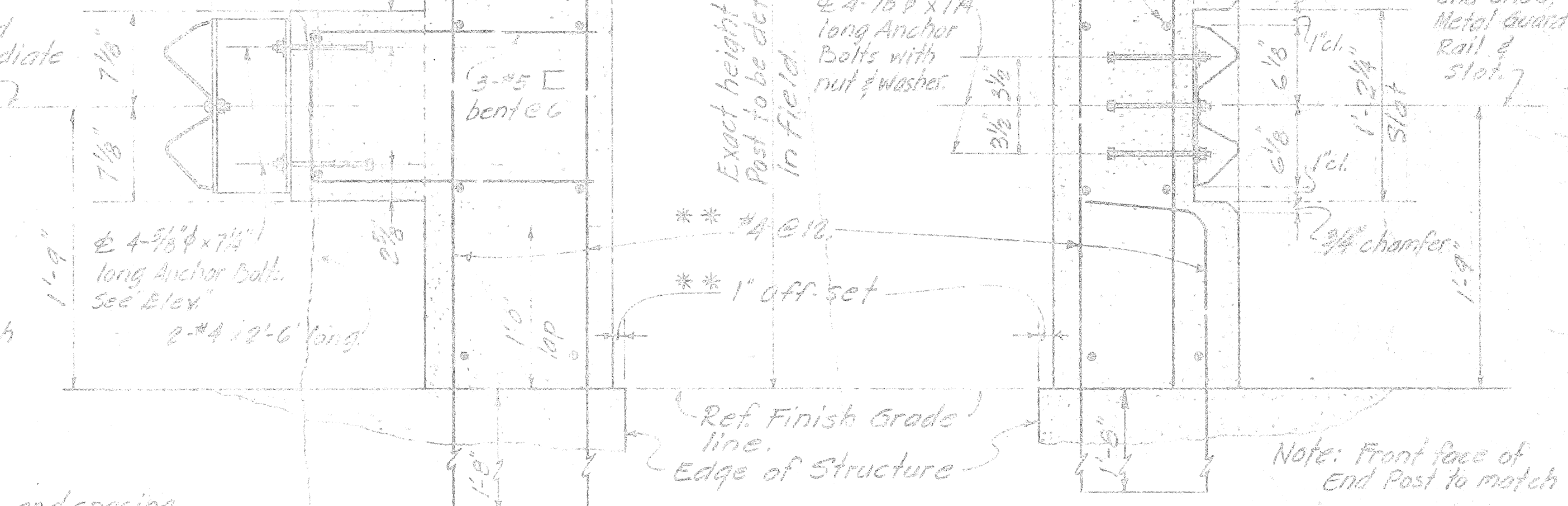
Metal Spacer Block
BJC 8.5" x 13"

2 Metal Guard
Rail & Intermediate
conc. support. 2
Condition of
concrete parapet

Top of curb or
sidewalk

Reference - Finish
grade line.

* * Dimensions and Reinf. size and spacing to be as detailed except as otherwise noted on detail drawings.



Note: Front face of
End Post to match

SECTION  Scale $1\frac{1}{2}" = 1'-0"$

SECTION $\textcircled{\text{B}}$
13 Scale $1\frac{1}{2}'' = 1'-0''$

APPROVAL RECOMMENDED:
Paul T. Yamashita
BRIDGE DESIGN ENGINEER

1-23-72
DATE

APPROVED *Paul T. Thomas*
For ASSISTANT CHIEF, ENGINEERING

1-28-70
DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS
METAL GUARD RAIL CONNECTION
AT VERTICAL FACE TYPE END POST

Scale: As shown Date

SHEET No. 13 OF 15 SHEETS DB-20

Grind strands flush with pile head & pile tip.

Remove concrete after driving, leaving strands exposed. See General Notes, sht. # 2 of 2

Pile cut-off line. Pile shall be cut-off normal to axis of pile.

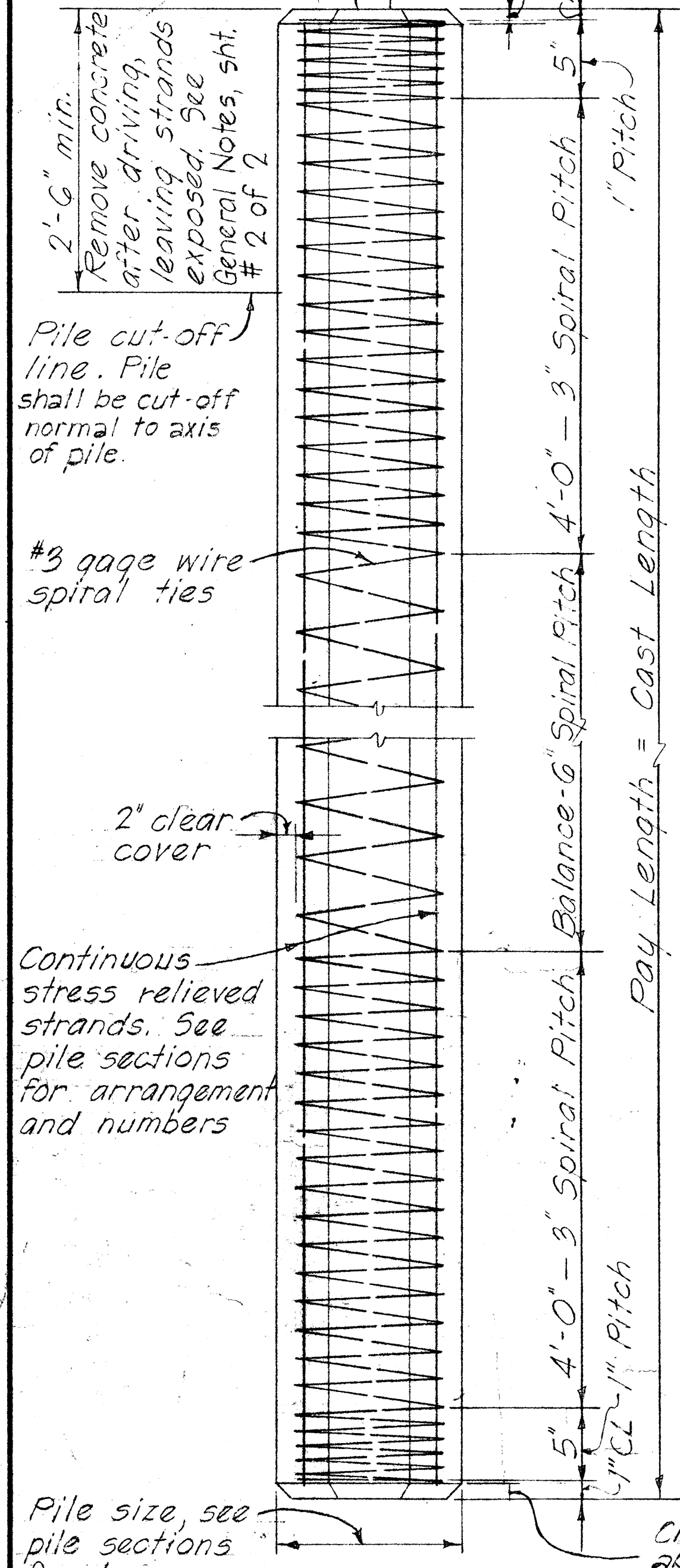
#3 gage wire spiral ties

2" clear cover

Continuous stress relieved strands. See pile sections for arrangement and numbers

For additional pile ends reinforcement in Type II & Type III piles, see Details.

Chamfer shall be 1/2" for Type I piles & 3/4" for pile Types II & III.



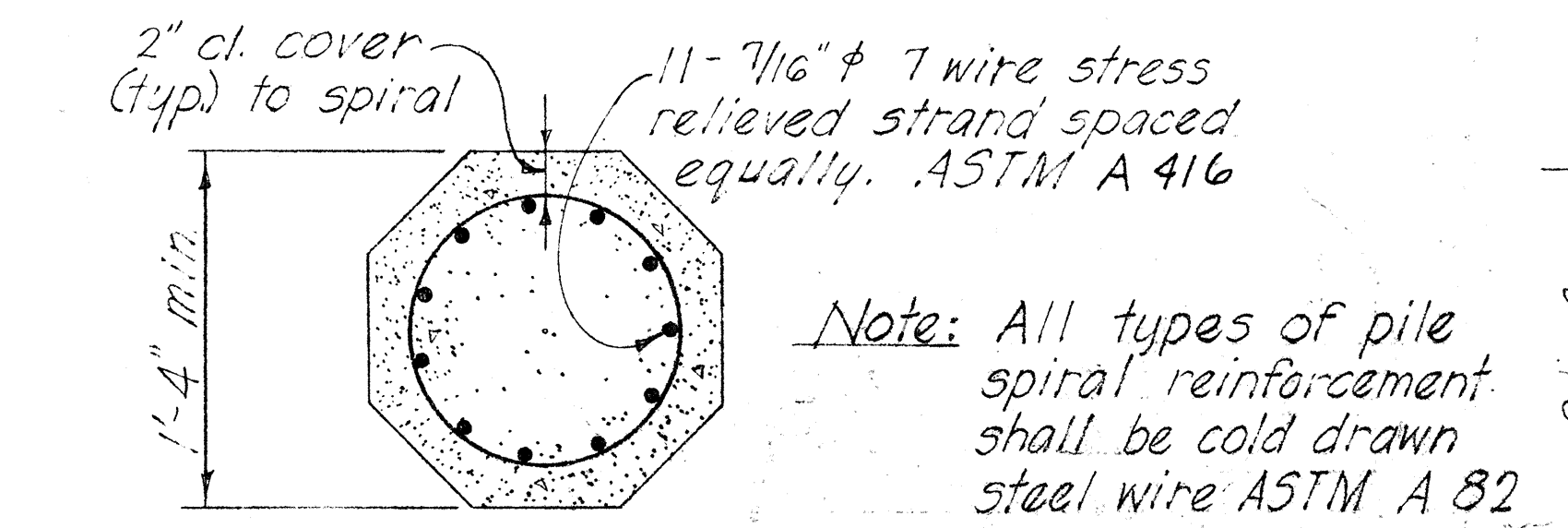
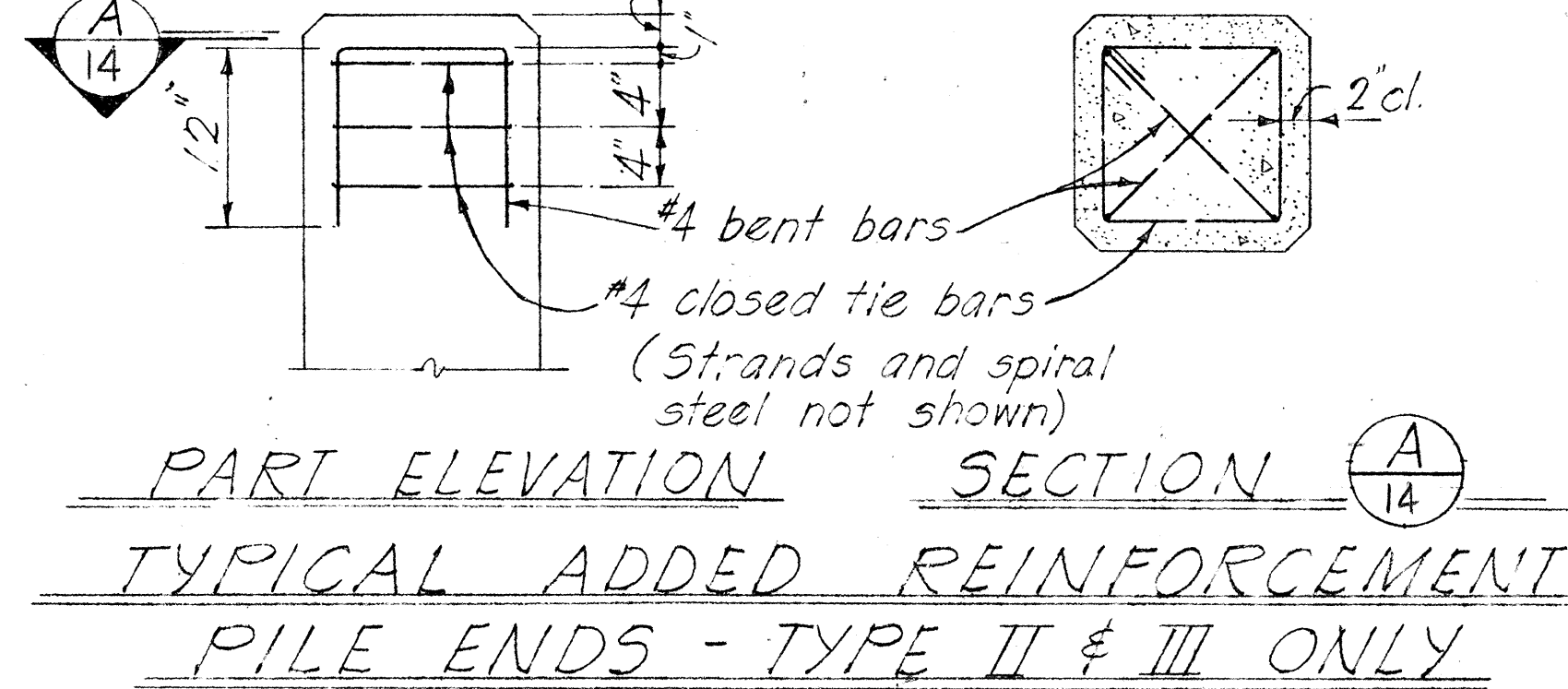
TYPICAL PILE DETAIL

Max. Length "L" *	Max. Length "L" *	Length "L" *
Type I "L" = 53'-0"	Type I "L" = 75'-0"	Type I "L" over 75'-0"
12" Type II "L" = 50'-0"	12" Type II "L" = 72'-0"	12" Type II "L" over 72'-0"
10" Type III "L" = 46'-0"	10" Type III "L" = 66'-0"	10" Type III "L" over 66'-0"
0.30L 0.70L	0.21L 0.58L 0.21L	0.15L 0.35L 0.35L 0.15L

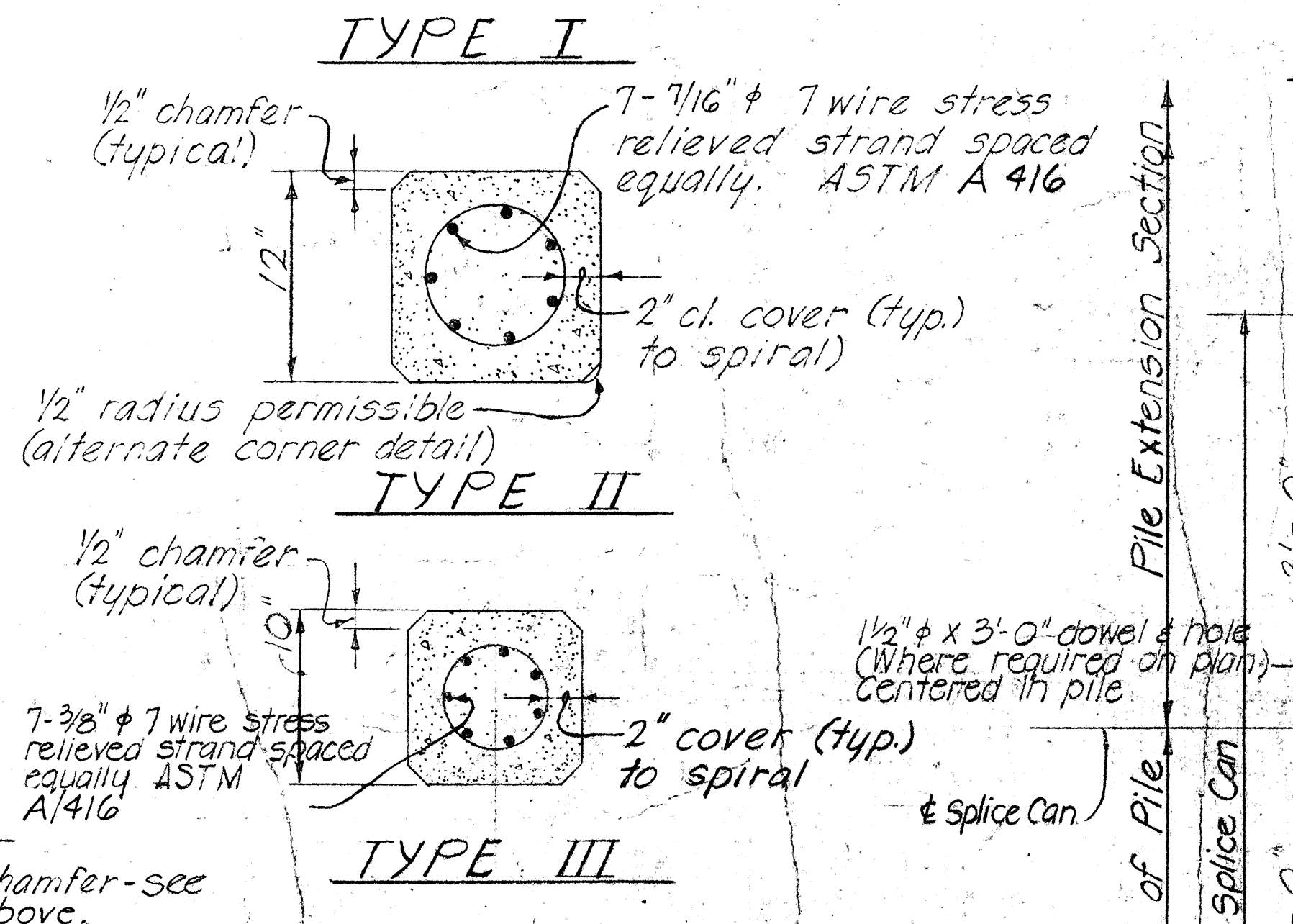
* The length "L" is the distance end to end of pile.

1 POINT PICK-UP 2 POINT PICK-UP 3 POINT PICK-UP

NOTE: Unless special lifting devices are attached for pick-up points, pick-up points shall be plainly marked on all piles after removal of the forms and all lifting shall be done at these points. The use of special embedded or attached lifting devices, the employment of other pick-up points or any other method of pick-up shall be subject to approval by the Engineer.

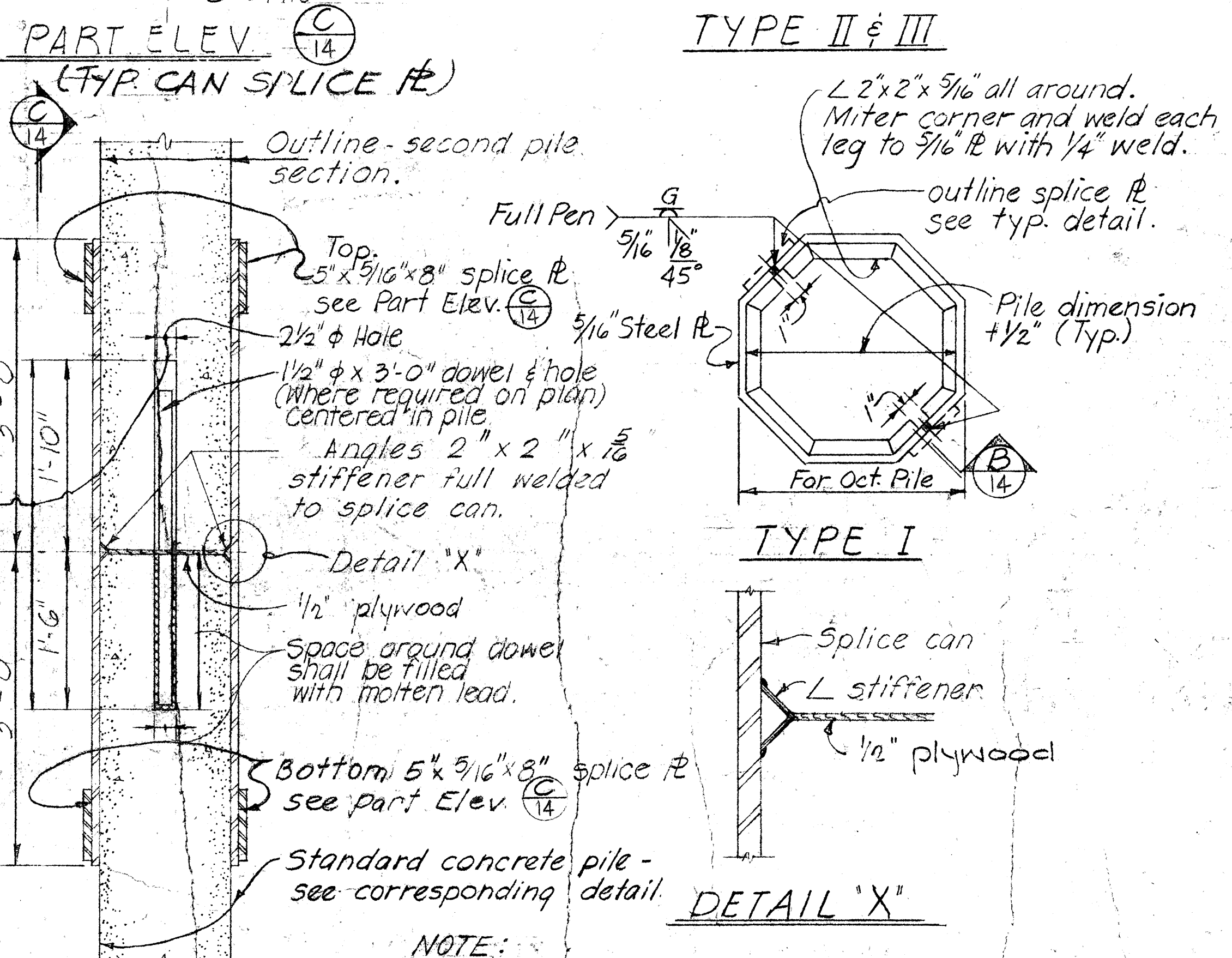
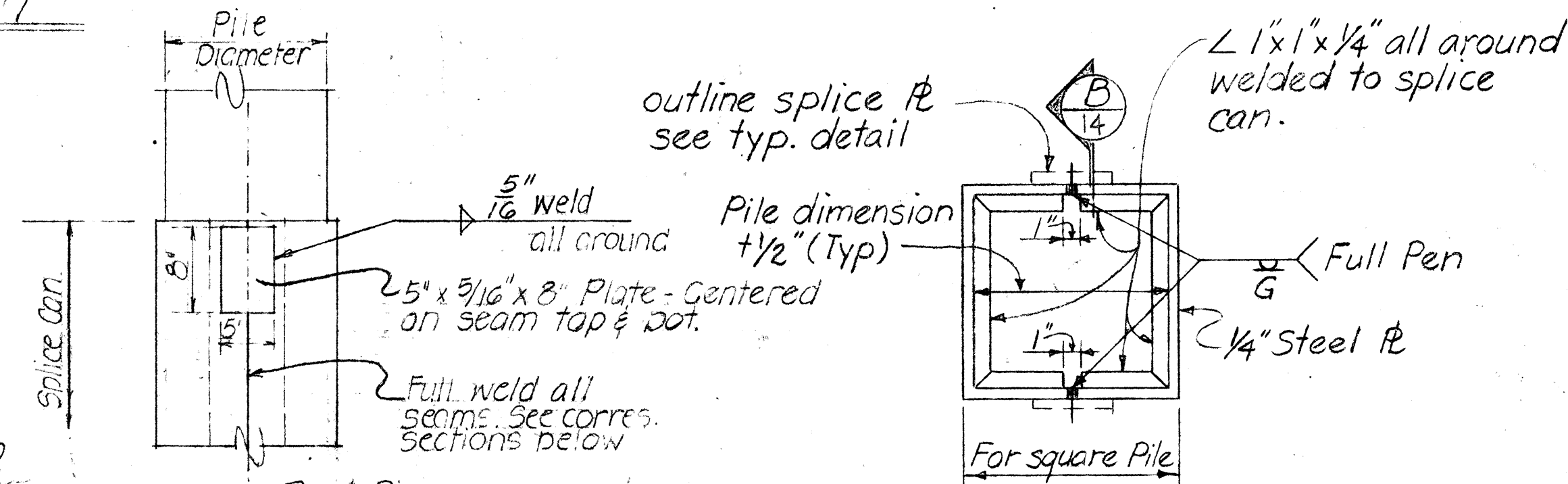


Note: All types of pile spiral reinforcement shall be cold drawn steel wire ASTM A 82



TYPICAL SECTIONS THRU PILES

NOTE: Concrete in pile build-ups without driving shall be Class A Concrete. Concrete in pile build-ups with driving shall have a minimum compressive cylinder strength f'_c of 5000 p.s.i. at 28 days. Build-ups may be driven if the specimen of concrete from which the piles were poured develops a strength of at least 3500 p.s.i. but not earlier than 7 days.



NOTE: 1. Splice detail shown above shall not be used except for pile length in excess of 100'-0" long. 2. Structural steel for splice can shall be ASTM A36.

TYPICAL PILE SPLICE DETAILS (FOR PRESTRESSED CONCRETE PILES WHEN CAST IN TWO OR MORE SECTIONS)

NOTE: All welding shall conform to the Specifications for "Welded Highway and Railway Bridges" of the American Welding Society.

NO.	REVISION	APPROVED BY	DATE

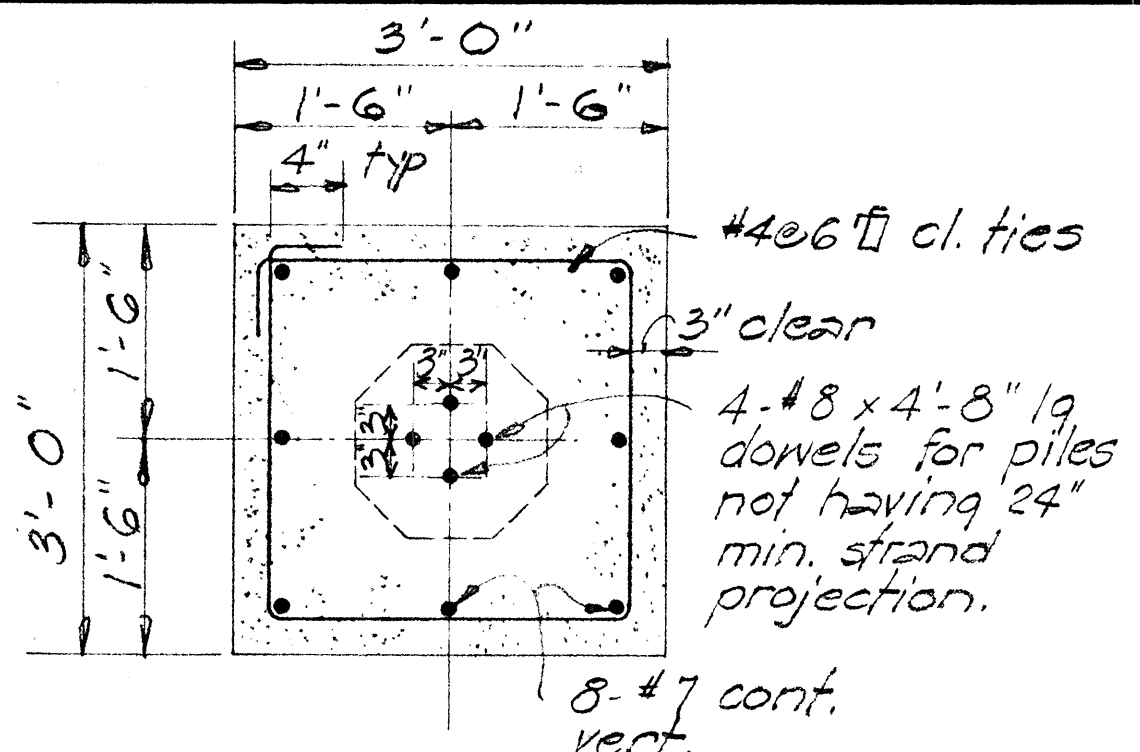
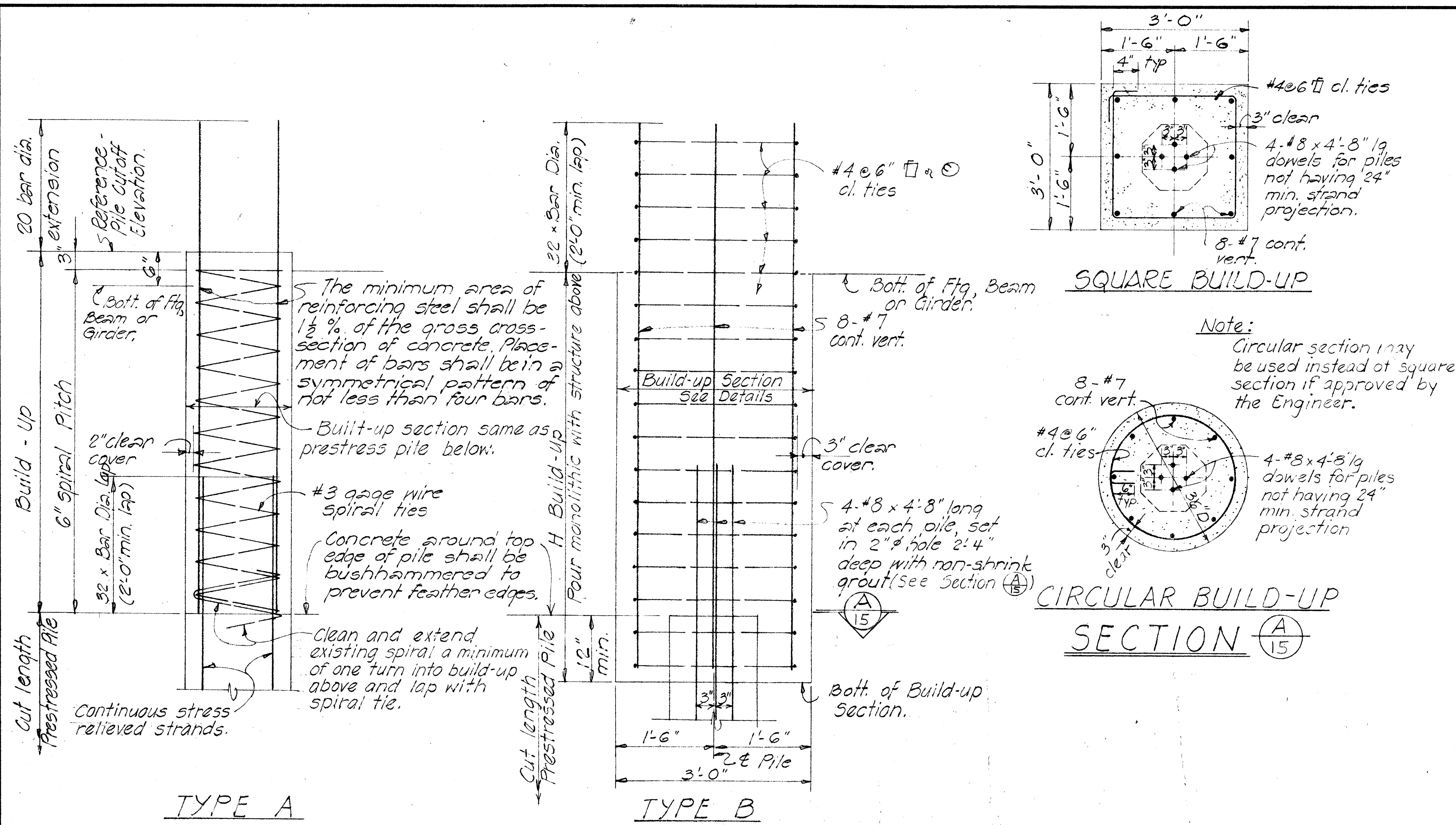
APPROVAL RECOMMENDED: *Paul T. Yamashita* 1-23-70
BRIDGE DESIGN ENGINEER DATE

APPROVED: *Paul T. Yamashita* 1-28-70
ASSISTANT CHIEF, ENGINEERING DATE

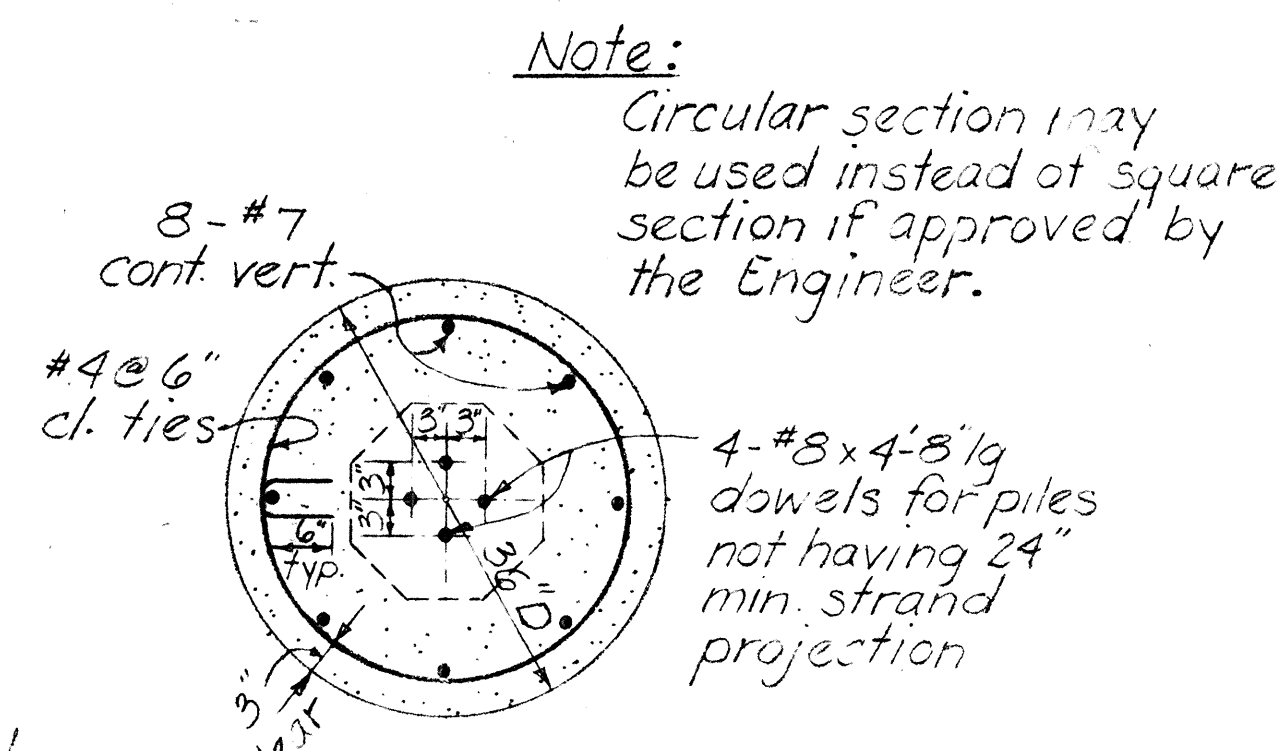
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
STANDARD DETAILS
PRESTRESSED CONCRETE PILES
Date
SHEET No. 14 OF 15 SHEETS DB-300-1

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.		1974	71	100

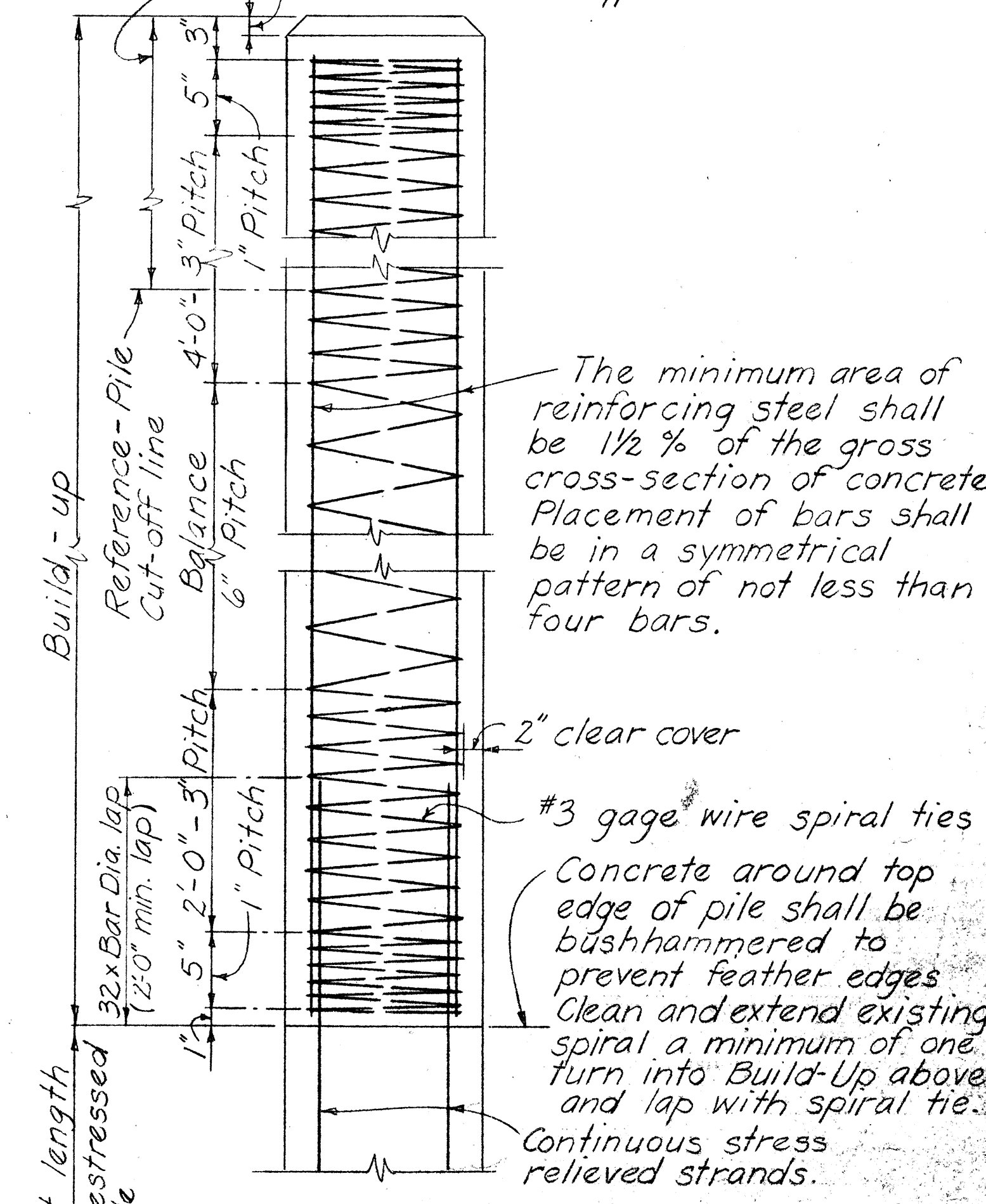
2'-6" min. unless otherwise directed by the Engineer.
Remove concrete after driving, leaving reinf. exposed.
PROJECT NO. 93A-02-70
Chamfer - See Typical Pile Detail.



SQUARE BUILD-UP



CIRCULAR BUILD-UP SECTION (A/15)



WITH DRIVING
TYPICAL PILE BUILD-UP DETAIL

TYPE A

Notes:

Selection of pile build-up type without driving to be determined by the Engineer. When height of depressed portion of footing (H) exceeds 4', the depressed section shall be poured separately from the main body of the footing. Depressed portion of footing may be omitted for pile heads embedded at least 4" into footing provided at least 90% of the piles in each footing have the minimum embedment into footing as shown in contract plans.

WITHOUT DRIVING
TYPICAL PILE BUILD-UP DETAILS

GENERAL NOTES

1. Work of cutting off prestressed conc. piles or concrete build-ups shall be performed in such a manner as to avoid spalling or damaging the pile below cut-off. In case of such damage, the pile shall be replaced or repaired by the Contractor at his expense as directed by the Engineer.

2. Portion of pile embedded into footing shall be of sound concrete. Damaged portions shall be removed and pile cut-off elevation lowered as required by the Engineer.

APPROVAL RECOMMENDED:
Paul T. Yamashita
BRIDGE DESIGN ENGINEER 1-23-70
DATE

APPROVED
Paul T. Yamashita
FOR ASSISTANT CHIEF, ENGINEERING 1-28-70
DATE

NO.	REVISION	APPROVED BY	DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS
PRESTRESSED CONCRETE PILES

Date: Oct. 1968
SHEET No. 15 OF 15 SHEETS DB-300-2

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