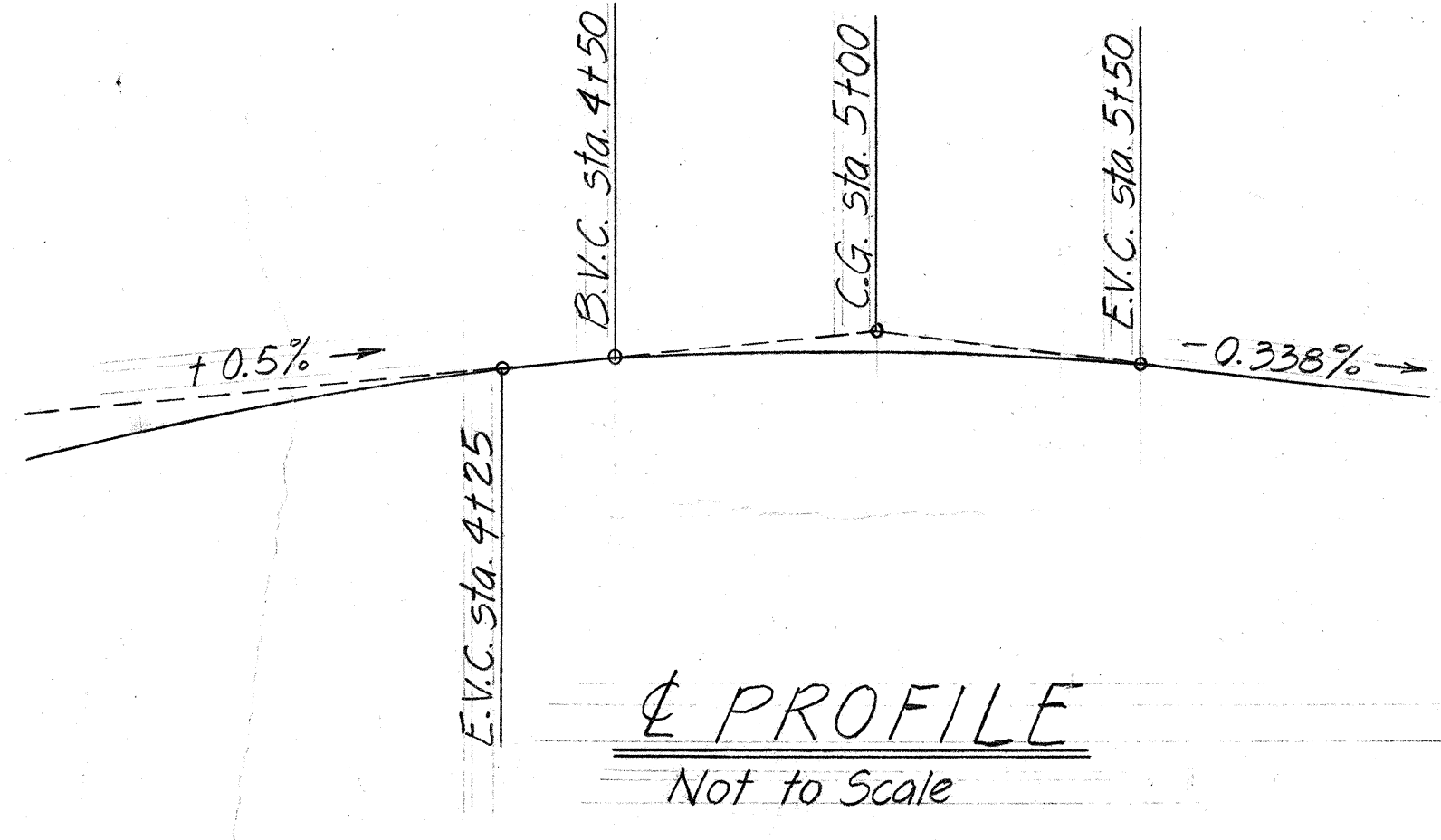
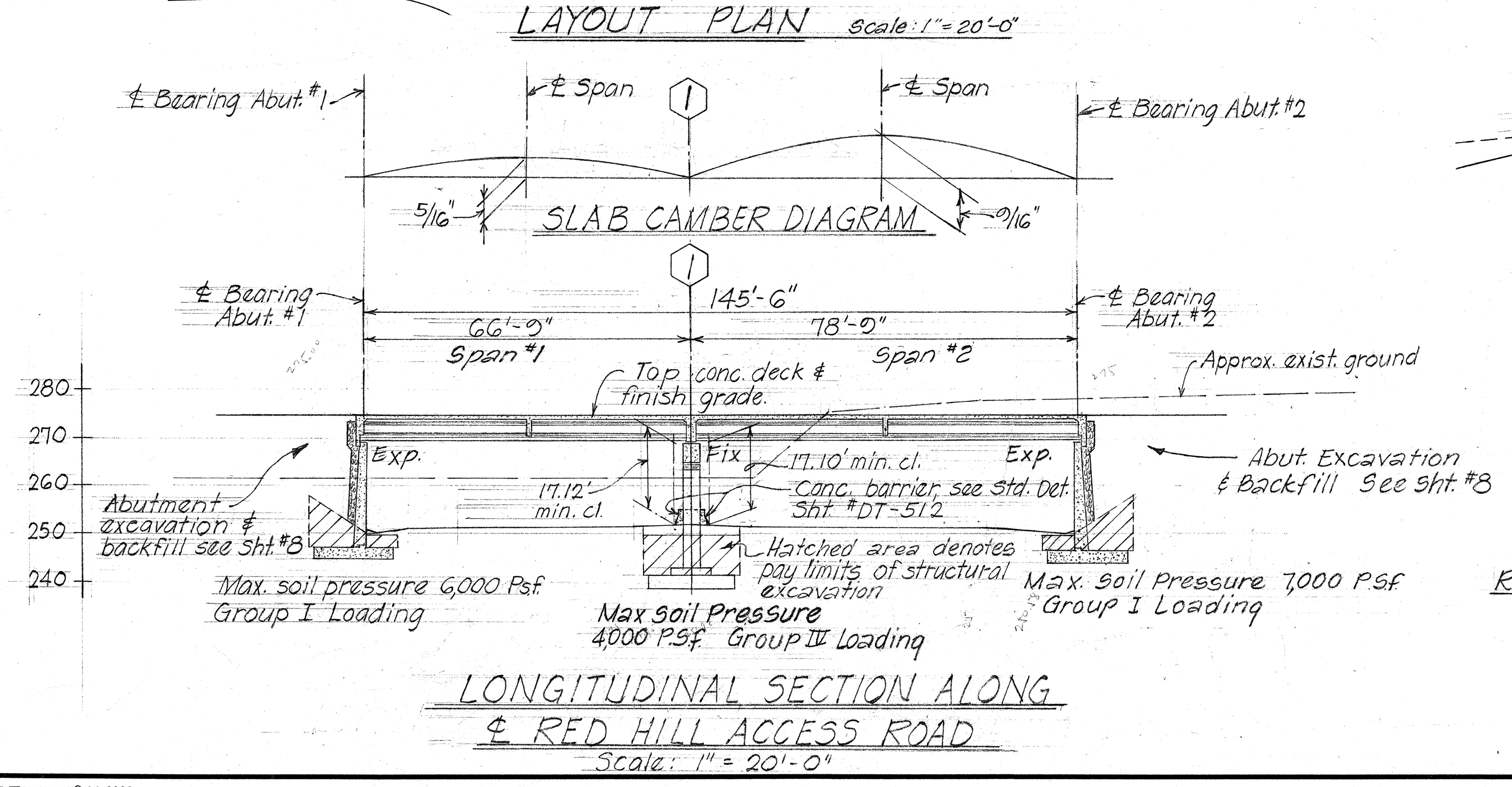
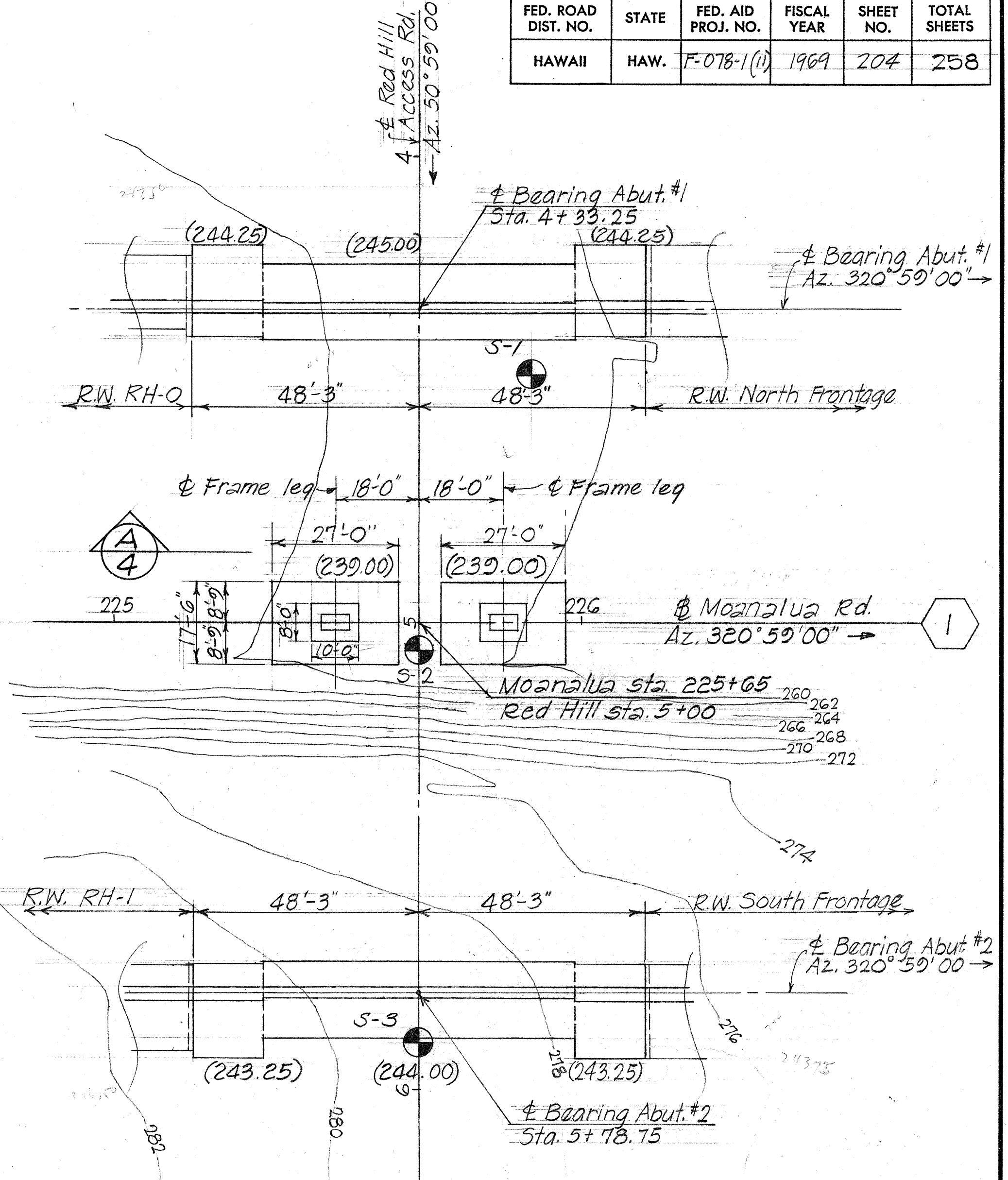
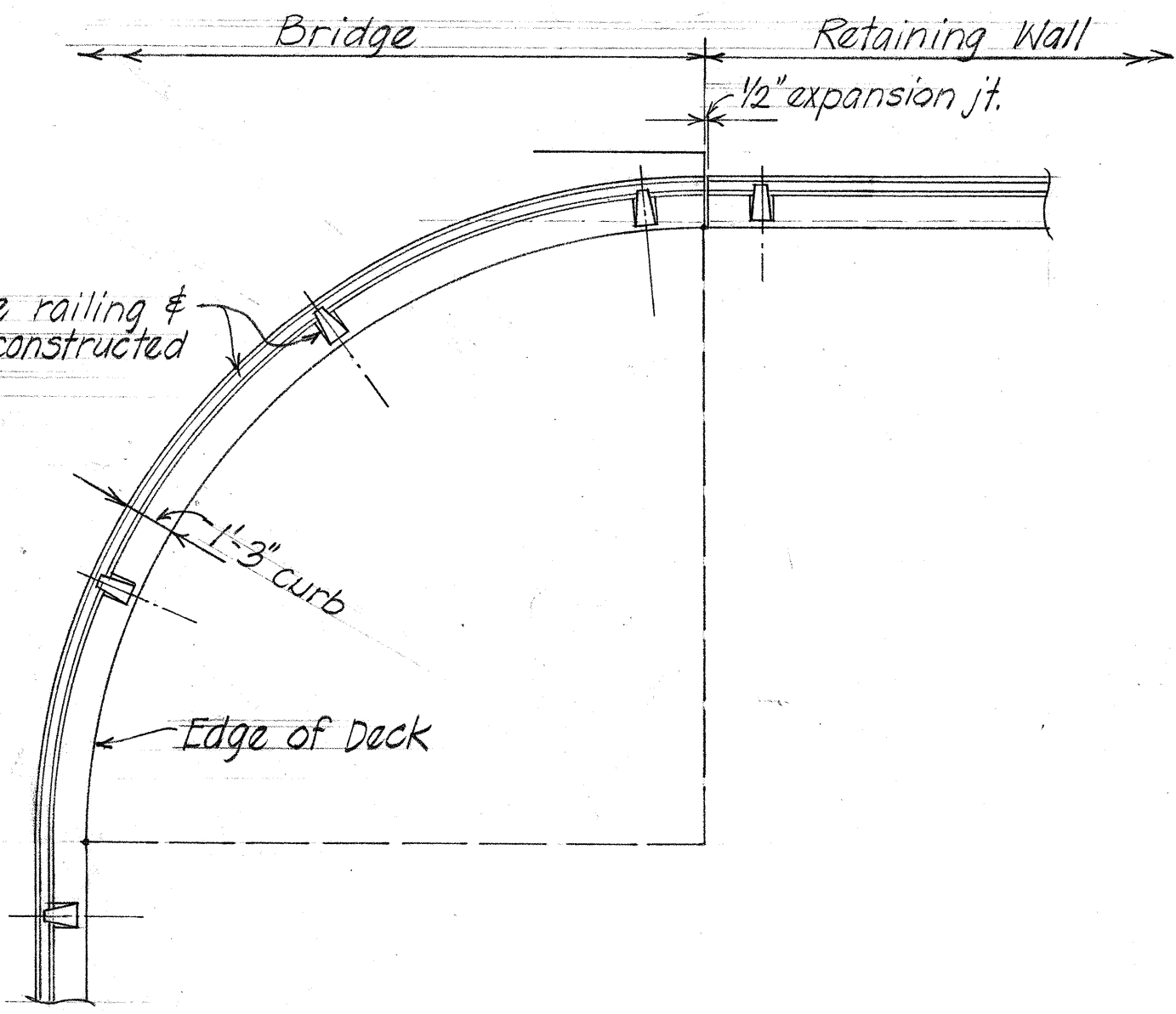
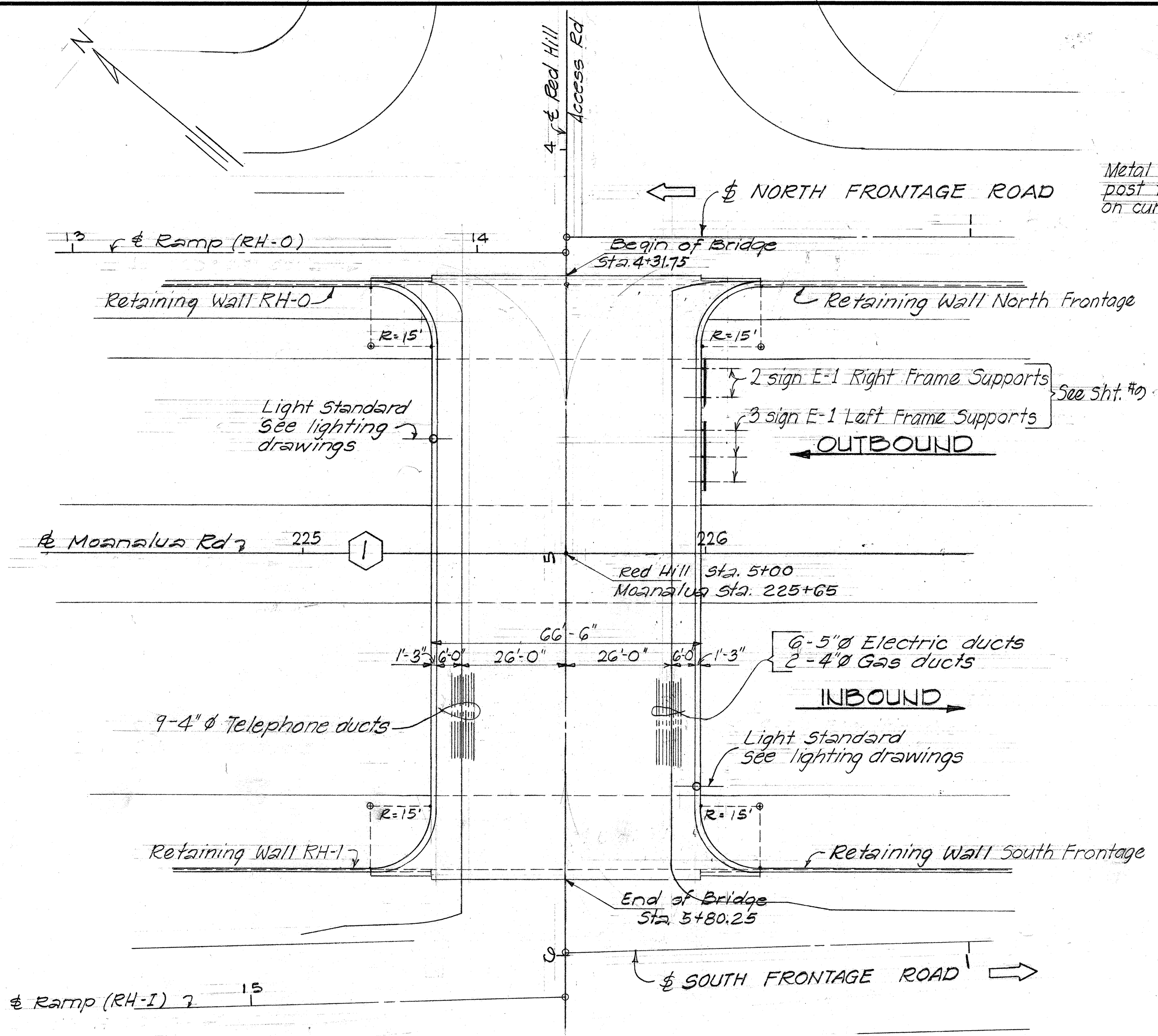


FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-078-1(II)	1969	204	258



ESTIMATED QUANTITIES		
Concrete - Footing & Pedestal	Lump sum	(460 c.y.)
Concrete - All others	Lump sum	(750 c.y.)
Reinforcing Steel	Lump sum	(227,500 lbs.)
Prestressed Girder Type IV	Lump sum	(1171 L.F.)
Structural Excavation		2,000 c.y.
Metal Bridge Railing (Three Rail Traffic Type)		384 L.F.
Filter Material		150 c.y.

REFERENCE NOTE:

- For design notes, general notes, symbols, and abbreviations refer to sht. # T-1.
- For Boring log data refer to sht. # T-2.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

RED HILL SEPARATION

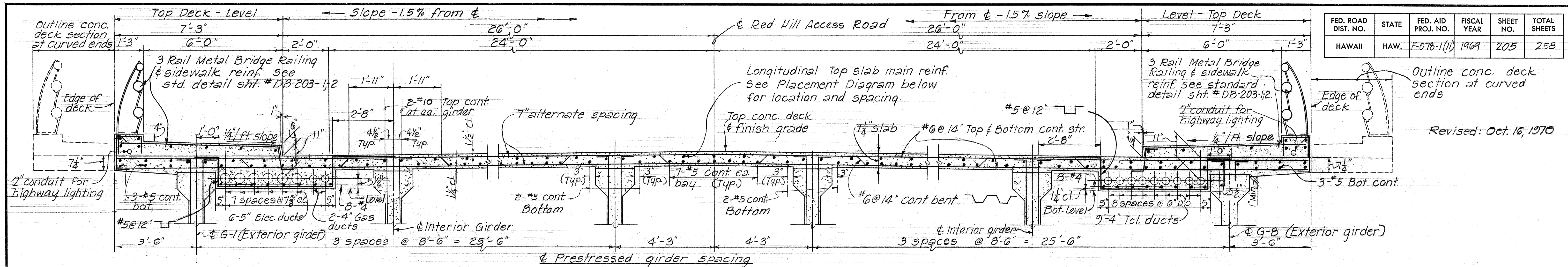
RED HILL Sta. 4+31 to Sta. 5+80.25

LAYOUT PLAN & NOTES

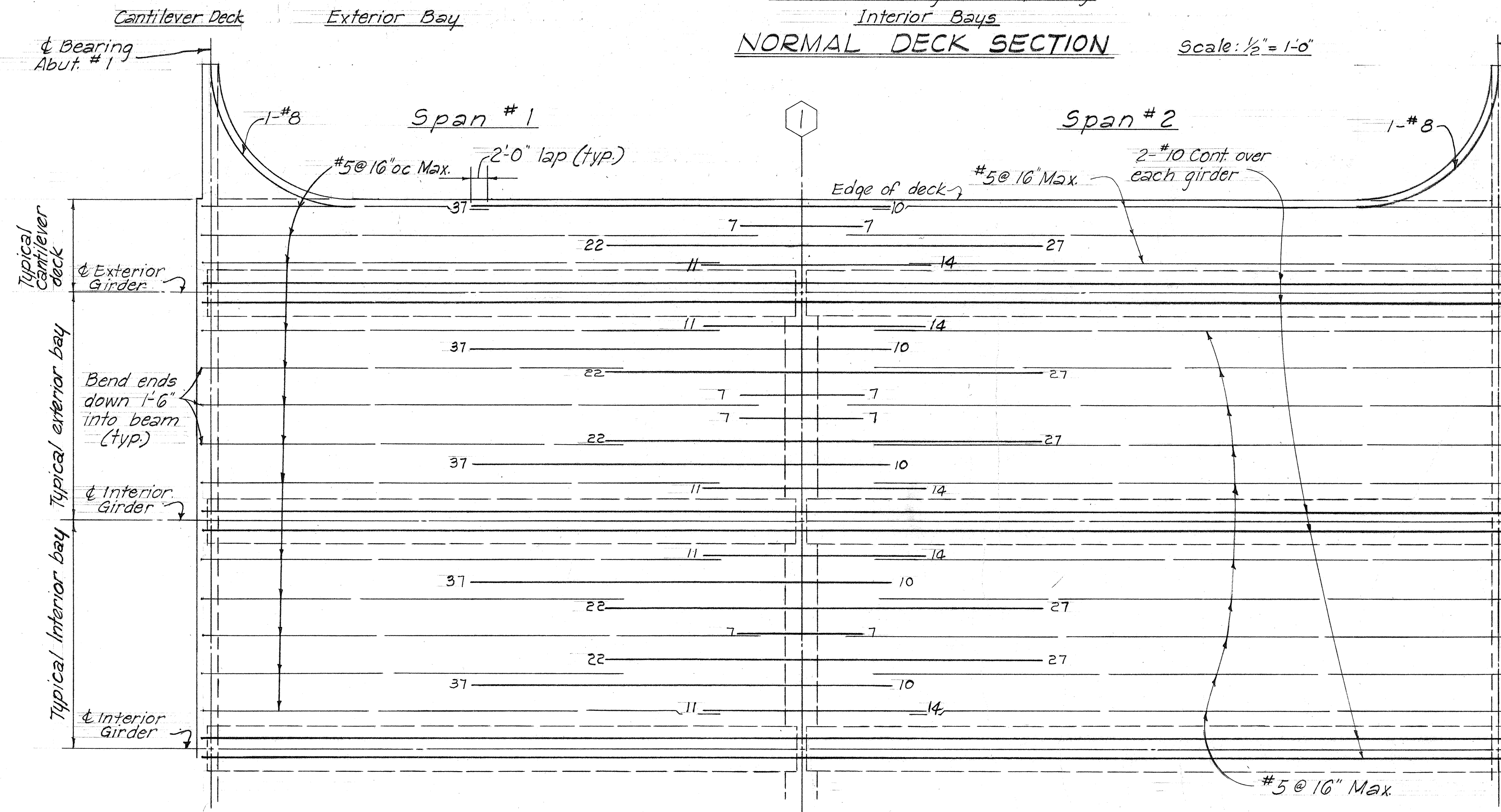
Moanalua Road April 1970 F-078-1(II)

SHEET No. 1 OF 5 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-078-1(11)	1969	205	258



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

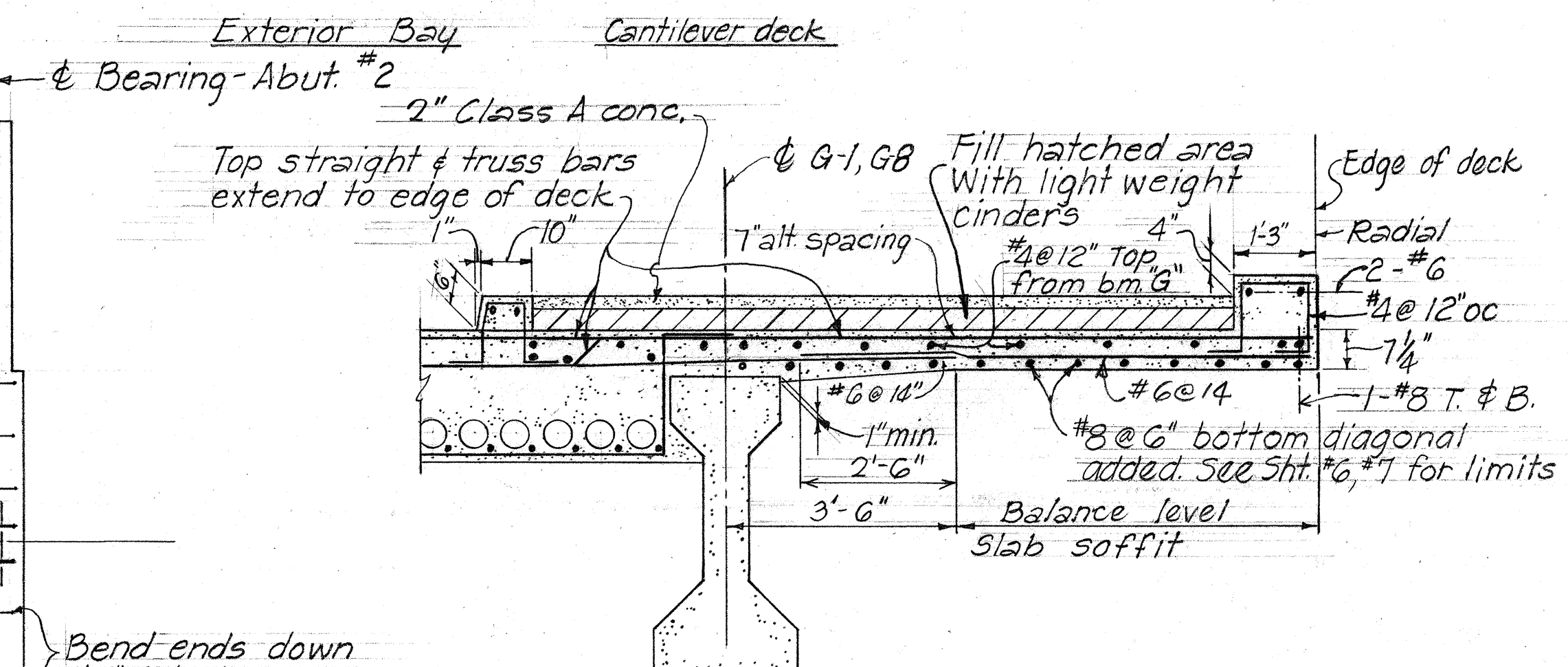


TYPICAL PLACEMENT DIAGRAM - DECK SLAB TOP LONGITUDINAL REINFORCEMENT

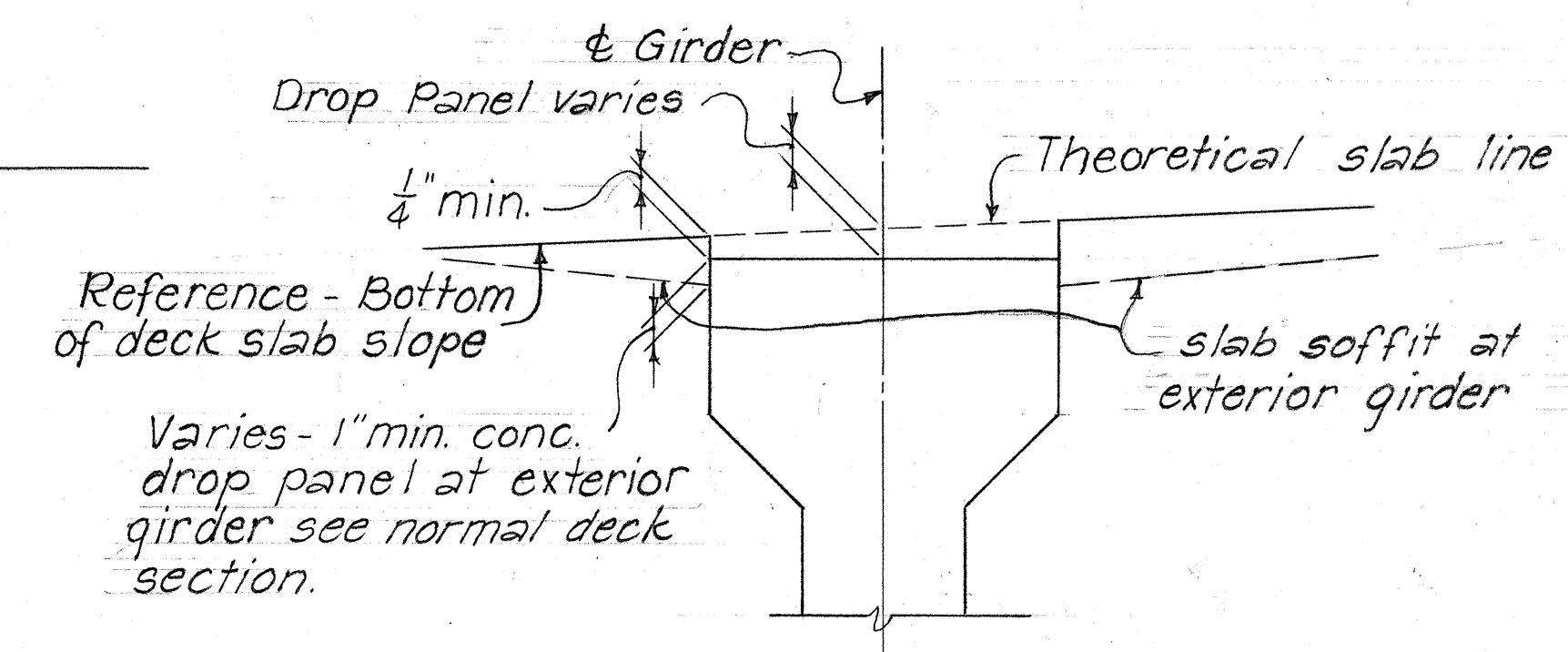
Scale: Horizontal - $\frac{1}{8}" = 1'-0"$
Vertical - $\frac{3}{8}" = 1'-0"$

NOTE:

All Reinforcement #10 except as otherwise noted.
Numbers at end of bars denotes dimension in feet from pier line No. ①
For additional slab reinforcement see normal section and corresponding details.
All #5@16" oc max. bars shall be extended and lapped 2'-0" min. with
the adjacent #10 bars as shown.



TYPICAL SECTION A
2



PRESTRESSED GIRDER
DROP PANEL DETAIL
(Not to scale)

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

RED HILL SEPARATION

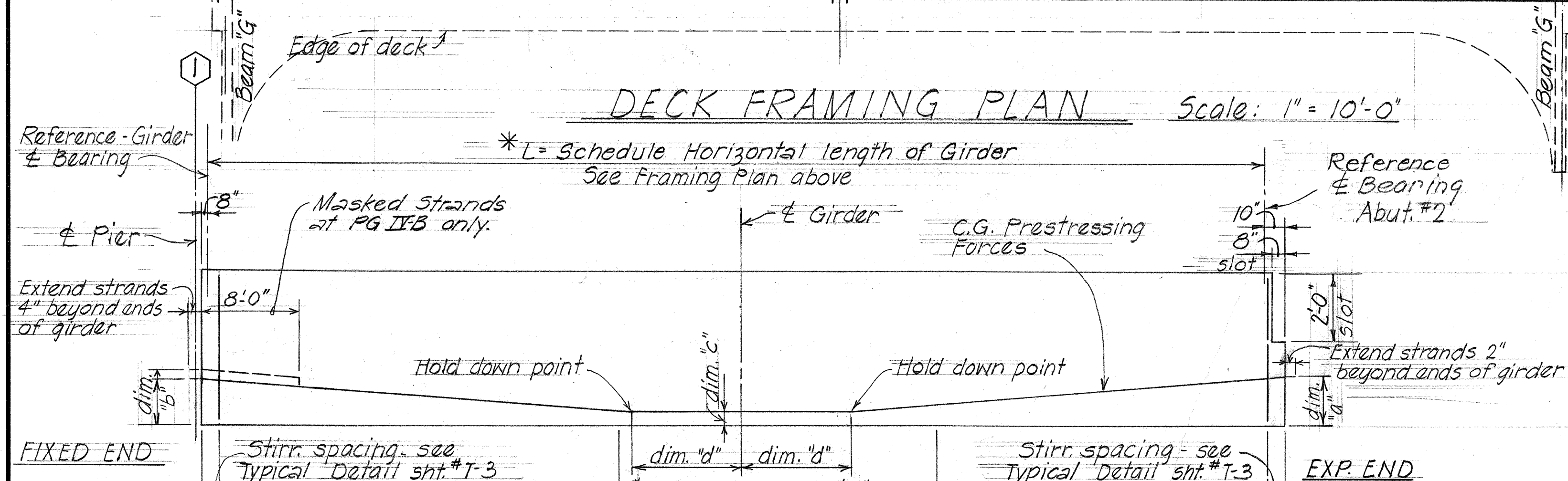
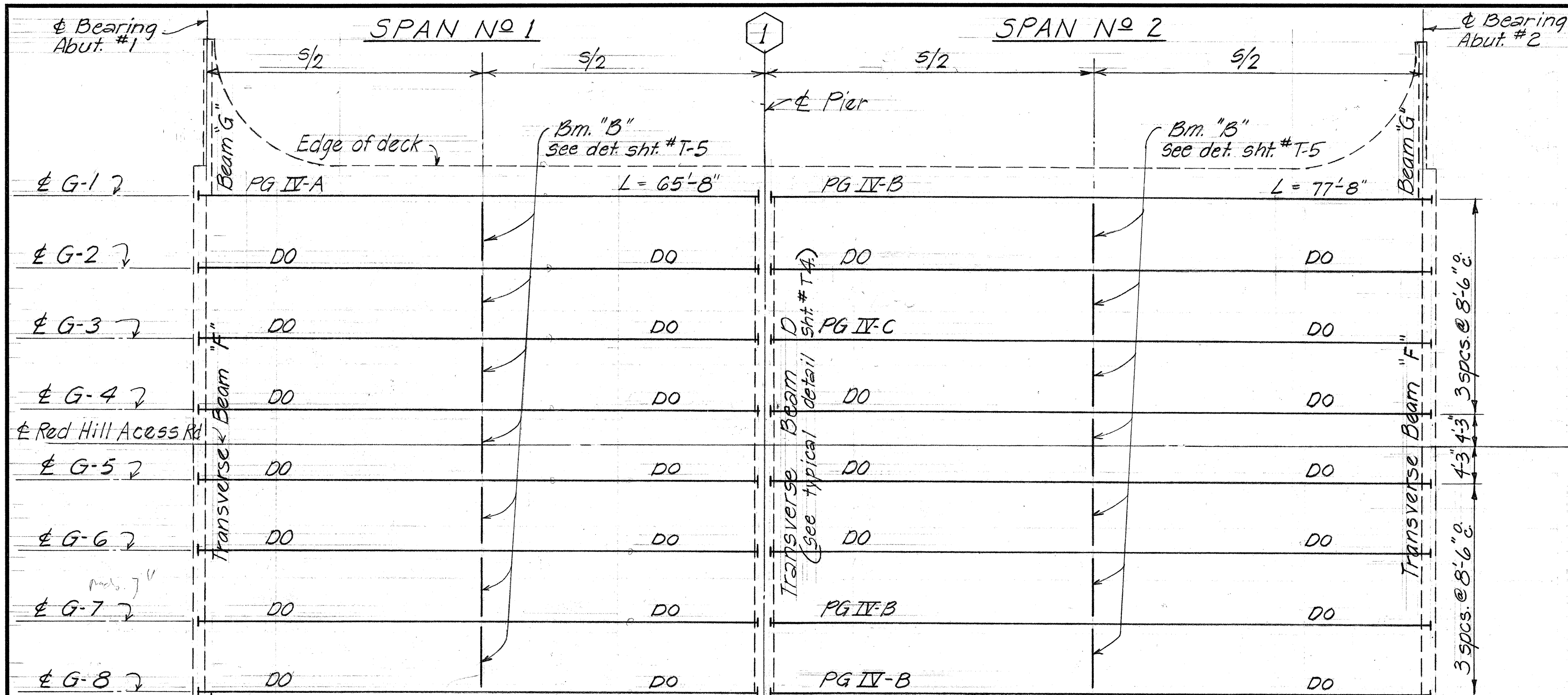
DECK SECTION AND DETAILS

Moanalua Road F-078-1(11)
April 1970

SHEET No. 2 OF 9 SHEETS

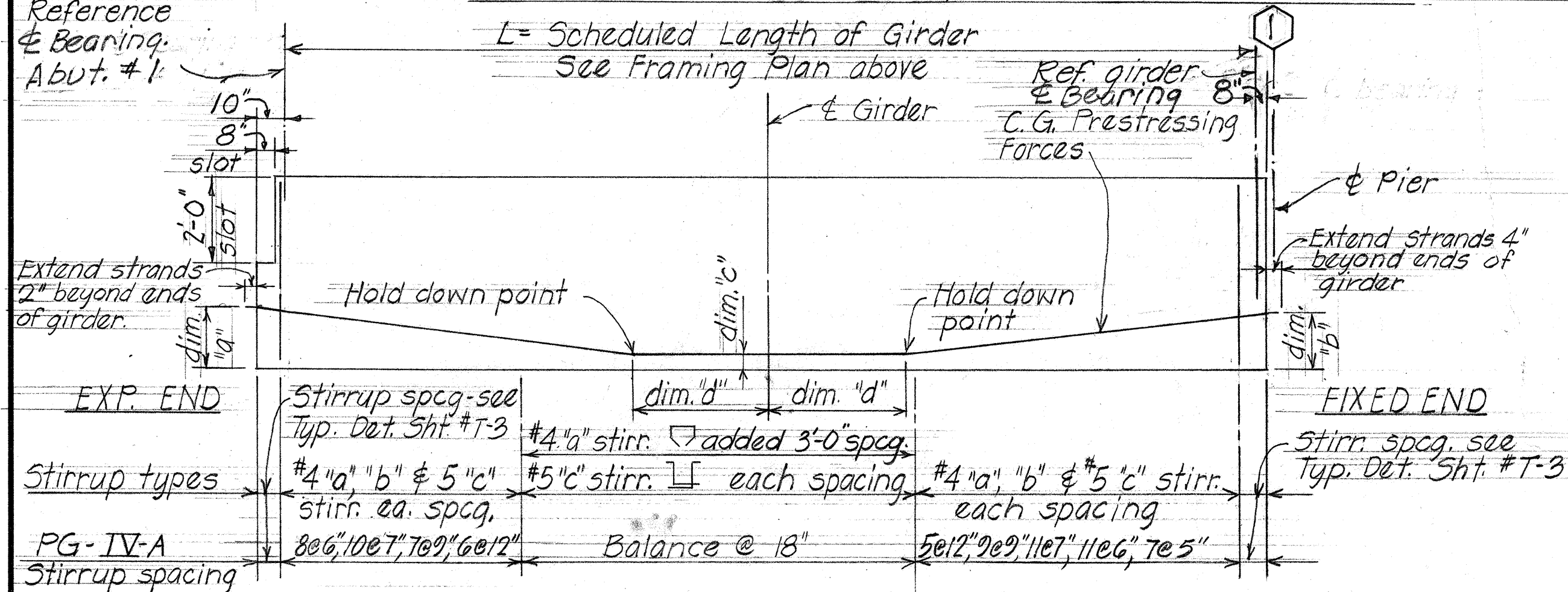
ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	"
	TRACED BY	"
NOTE BOOK	DESIGNED BY	"
	QUANTITIES BY	"
	CHECKED BY	"
No.		"

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-078-1(11)	1969	206	258



FIXED END	STIRR. SPACING - SEE TYPICAL DETAIL SH. # T-3	dim. "d"	dim. "d"	STIRR. SPACING - SEE TYPICAL DETAIL SH. # T-3	EXP. END
Stirrups types	#4 "a", "b" & #5 "c" stirr. ea. spacing	#5 "c" stirr. [] each spacing	#4 "a", "b" & #5 "c" stirr. ea. spacing		
PG IV-B Stirr. spcg.	22 @ 5", 12 @ 6", 12 @ 7", 7 @ 9", 5 @ 12"	Balance @ 18"	5 @ 12", 8 @ 9", 10 @ 7", 10 @ 6", 10 @ 5"		
PG IV-C Stirr. spcg.	13 @ 5", 13 @ 6", 15 @ 7", 7 @ 9", 6 @ 12"	Balance @ 18"	6 @ 12", 9 @ 9", 12 @ 7", 12 @ 6"		

TYPICAL TYPE IV-B & IV-C GIRDER DETAILS Not to Scale



TYPICAL TYPE IV-A GIRDER DETAILS Not to Scale

REFERENCE NOTES:

1. Refer to Typical Prestress Girder drawing sh. # T-3 for additional details not covered by these drawings.
2. Refer to Typical Details sh. Nos. T-4, T-5 for beam "B" & beam "D" Details
3. * The contractor shall determine the total slope length of each girder.

PRESTRESS GIRDER TYPE IV TABLE

GIRDER TYPE	DIMENSIONS				WORKING FORCE P_f	
	"a"	"b"	"c"	"d"	AT MIDSPAN & EXP. END	AT FIXED END
PG IV A	18 3/16"	18 3/16"	7 1/16"	6'-8"	726 K	726 K
PG IV B	16 7/8"	18 3/16"	5"	7'-10 1/2"	806 K	726 K
PG IV C	18 3/16"	18 3/16"	5"	7'-10 1/2"	726 K	726 K

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

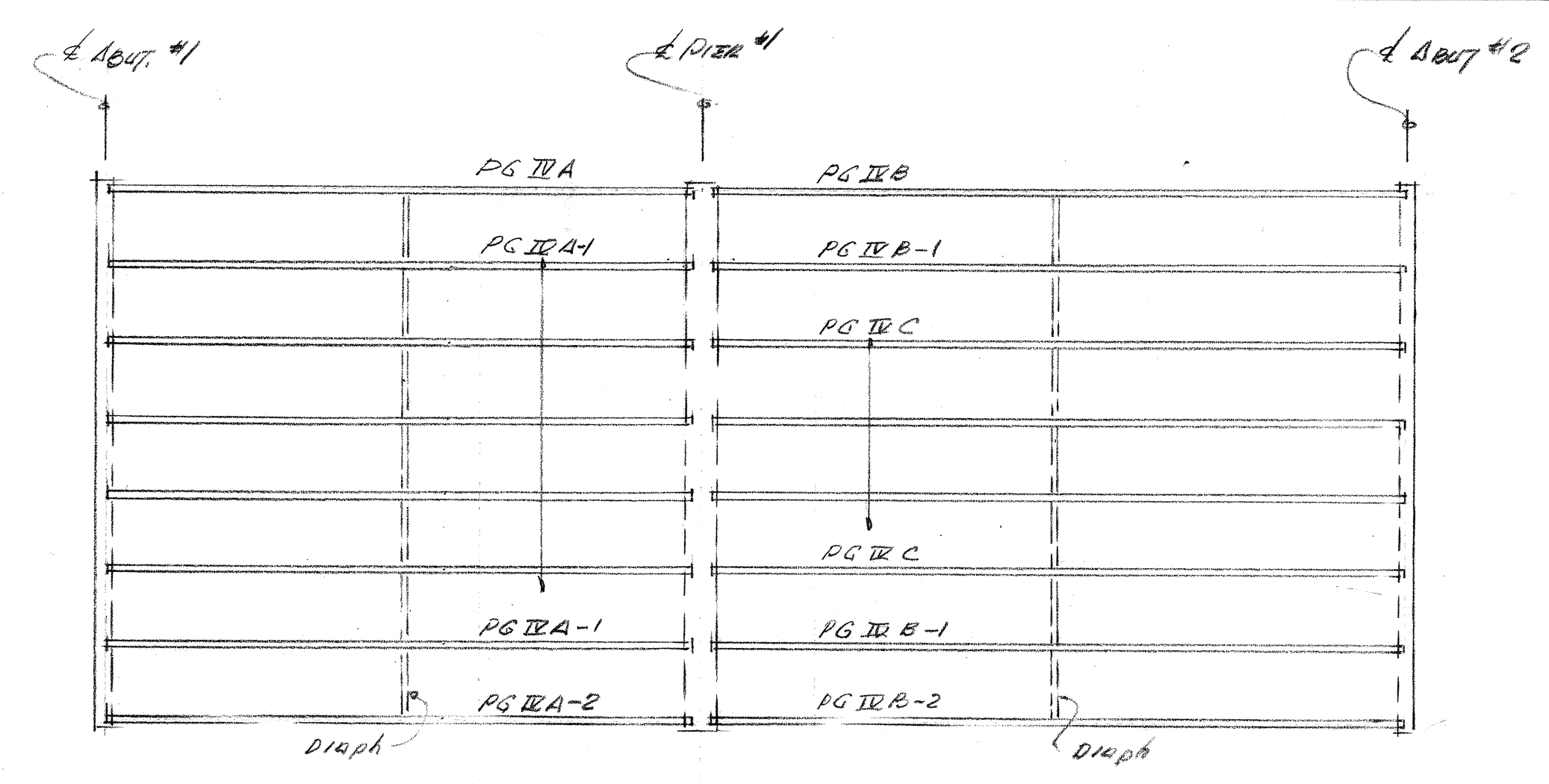
RED HILL SEPARATION

DECK FRAMING PLAN AND DETAILS

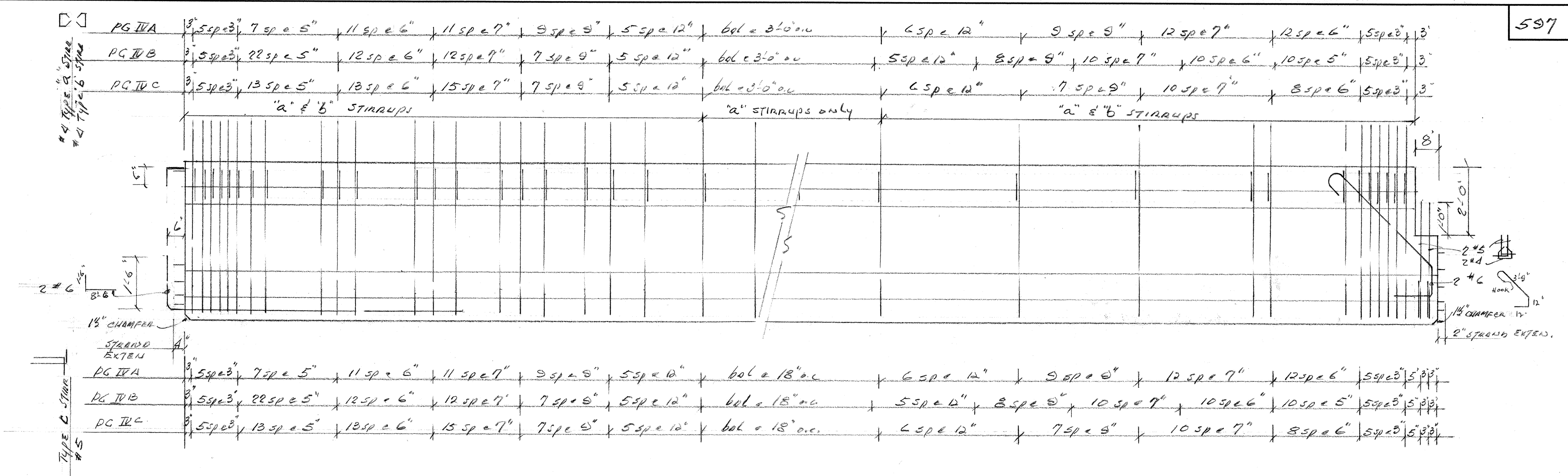
Moanalua Road
April 1970

F-078-1(11)

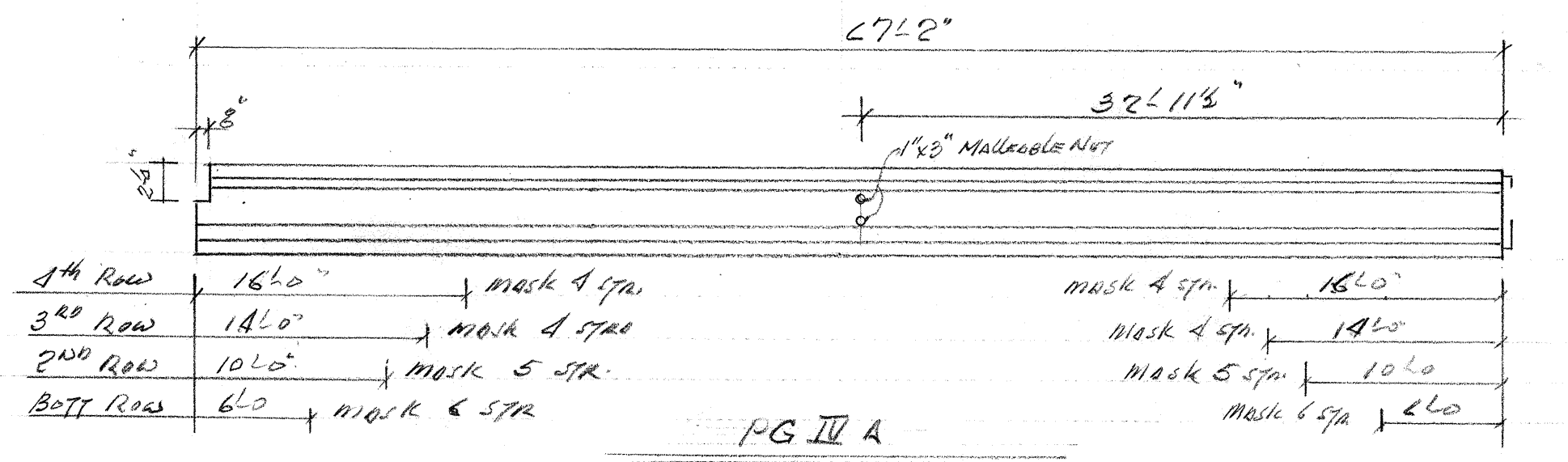
SHEET No. 3 OF 9 SHEETS



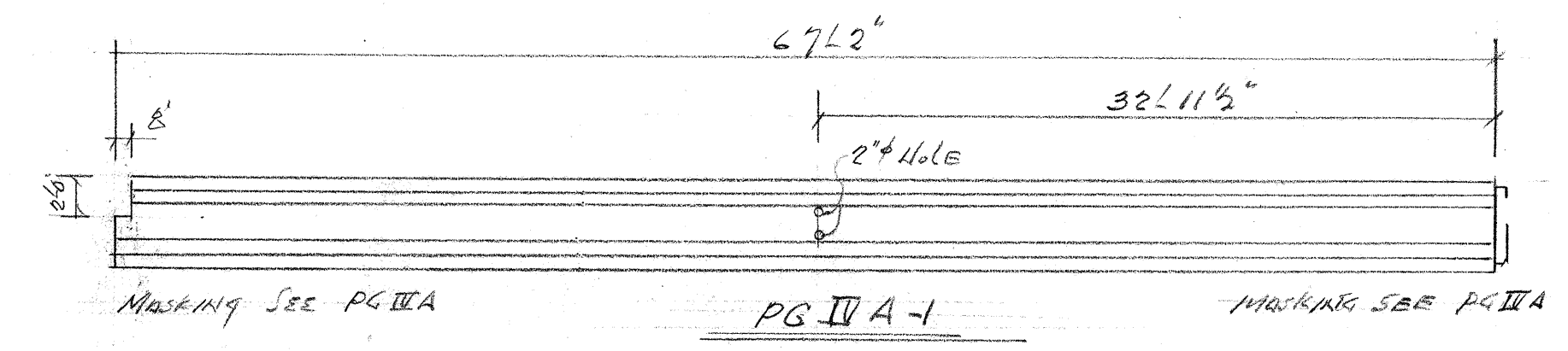
FRAMING PLAN



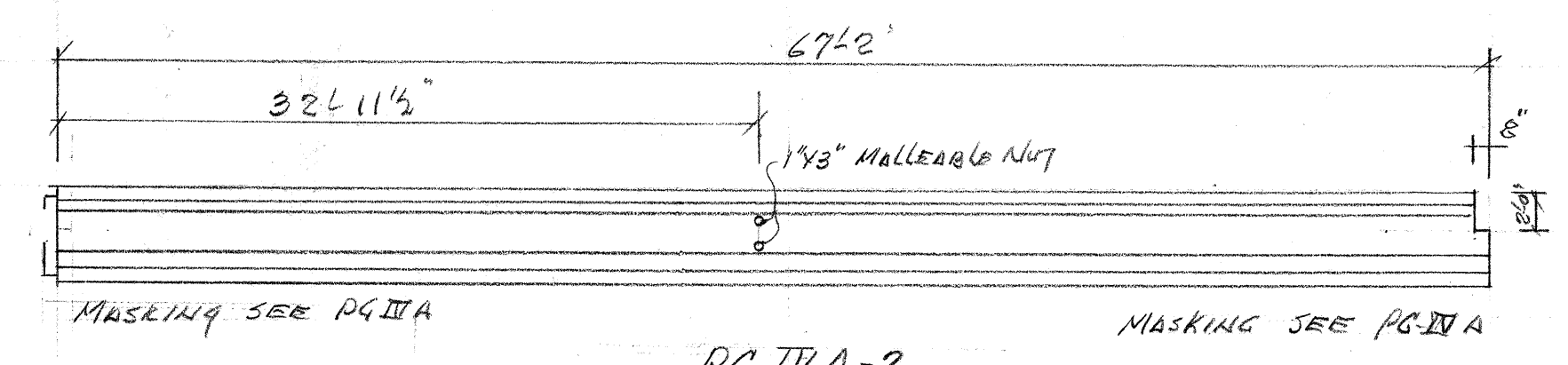
GIRDER ELEVATION & STIRRUP DETAIL - Not To Scale



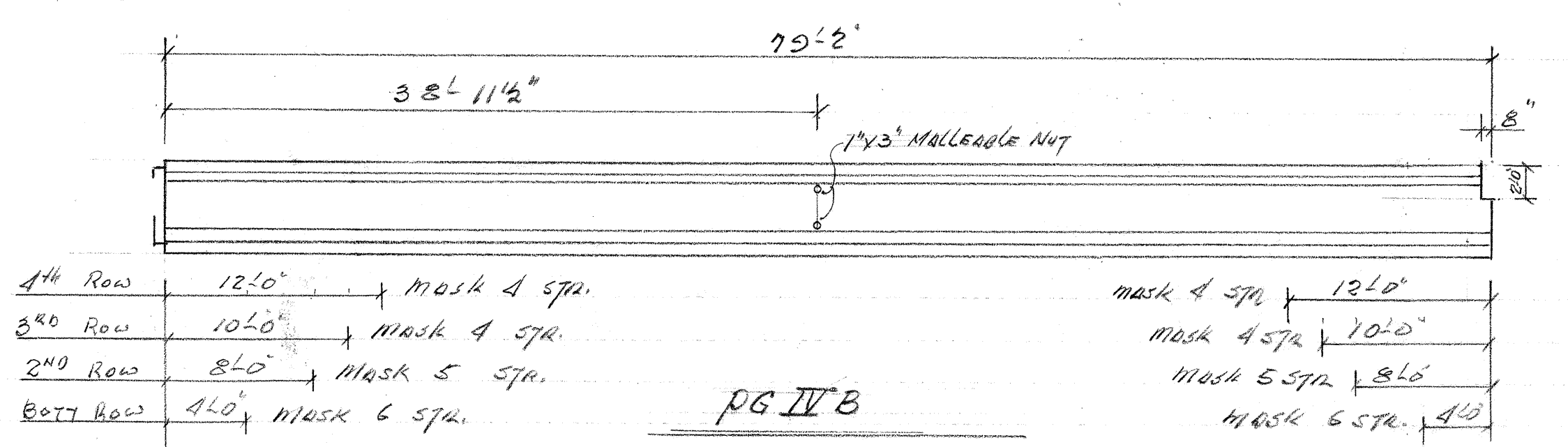
PG IVA



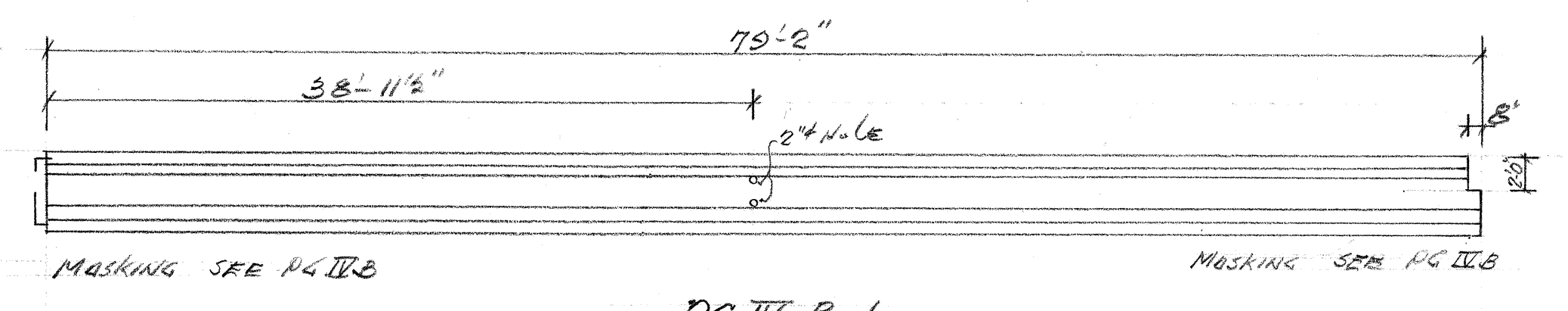
PG IVA-1



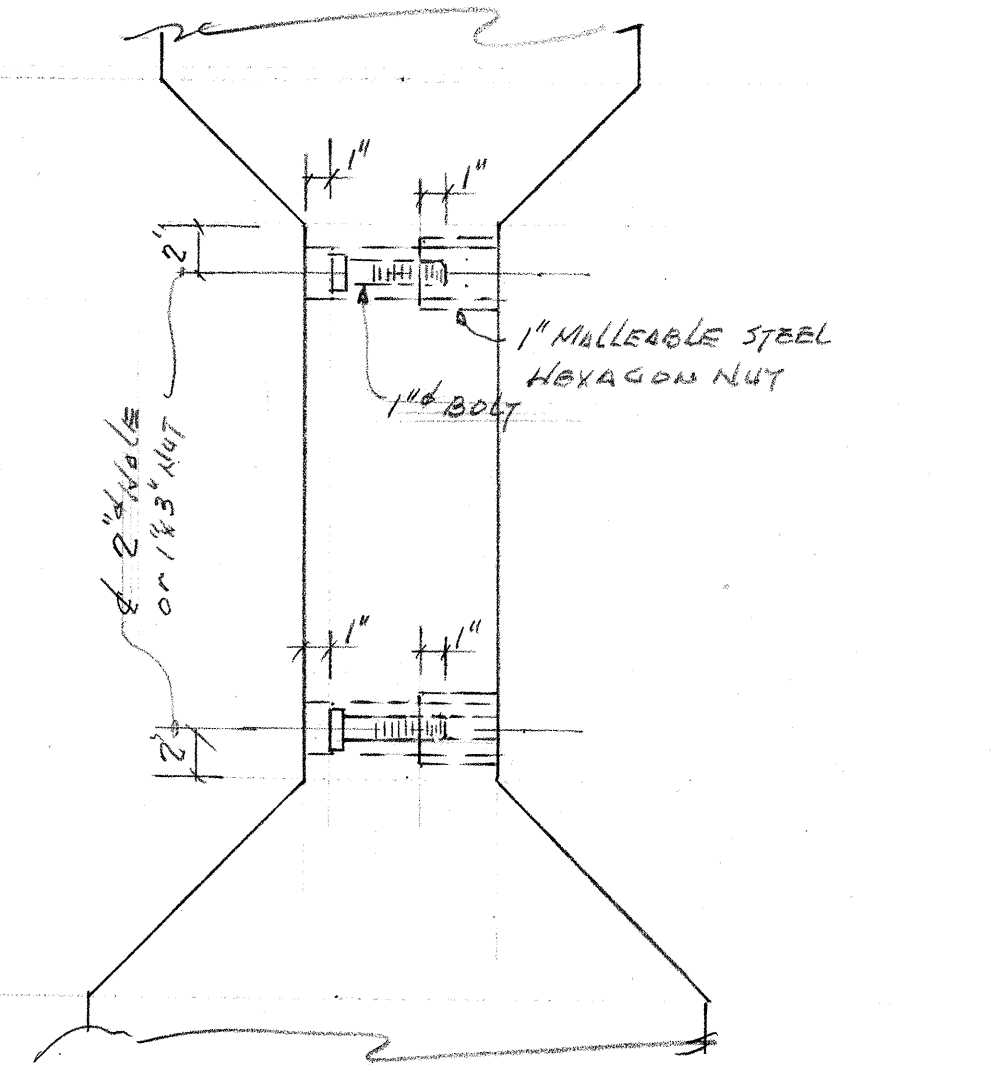
PG IVA-2



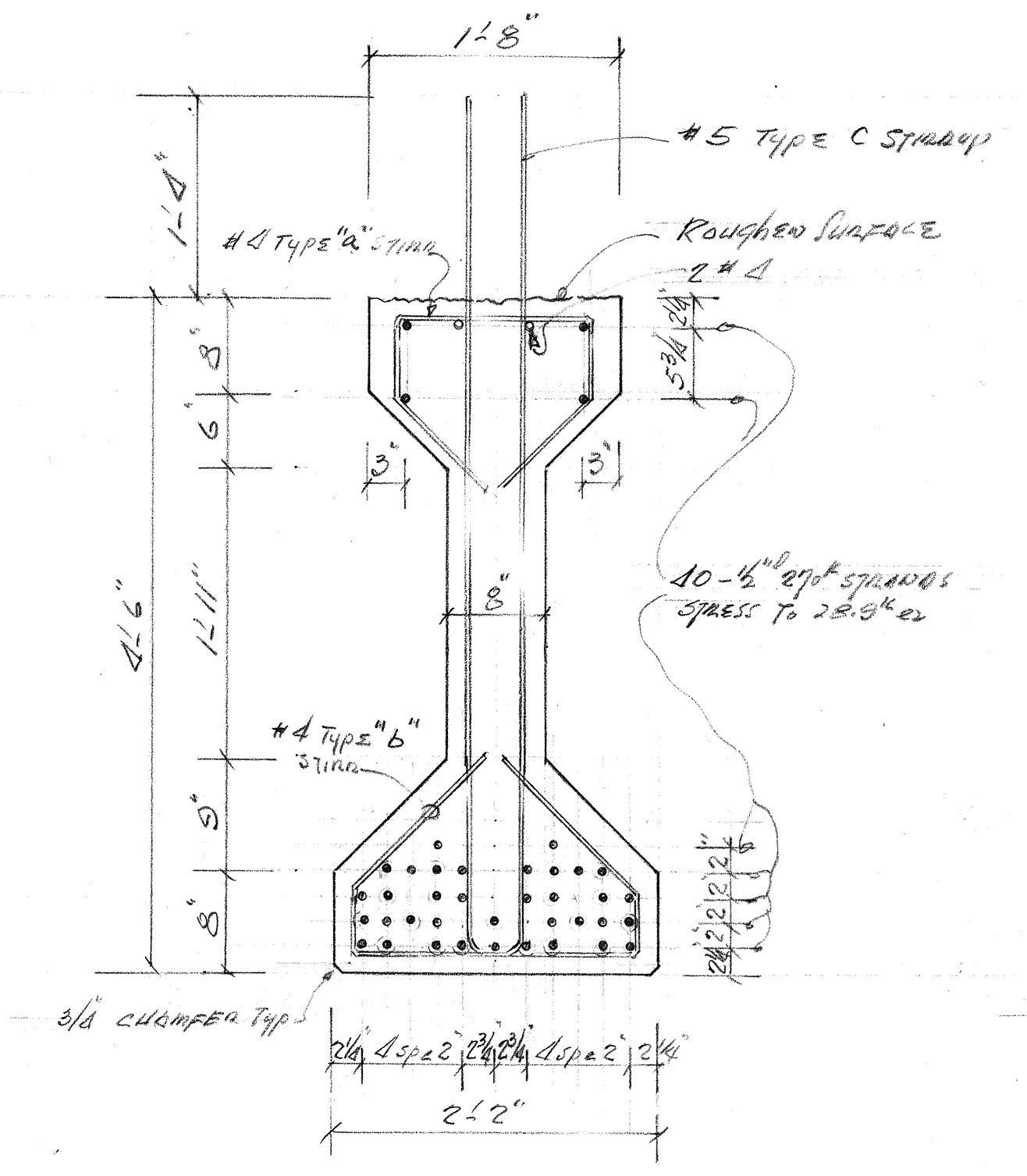
PG IV B



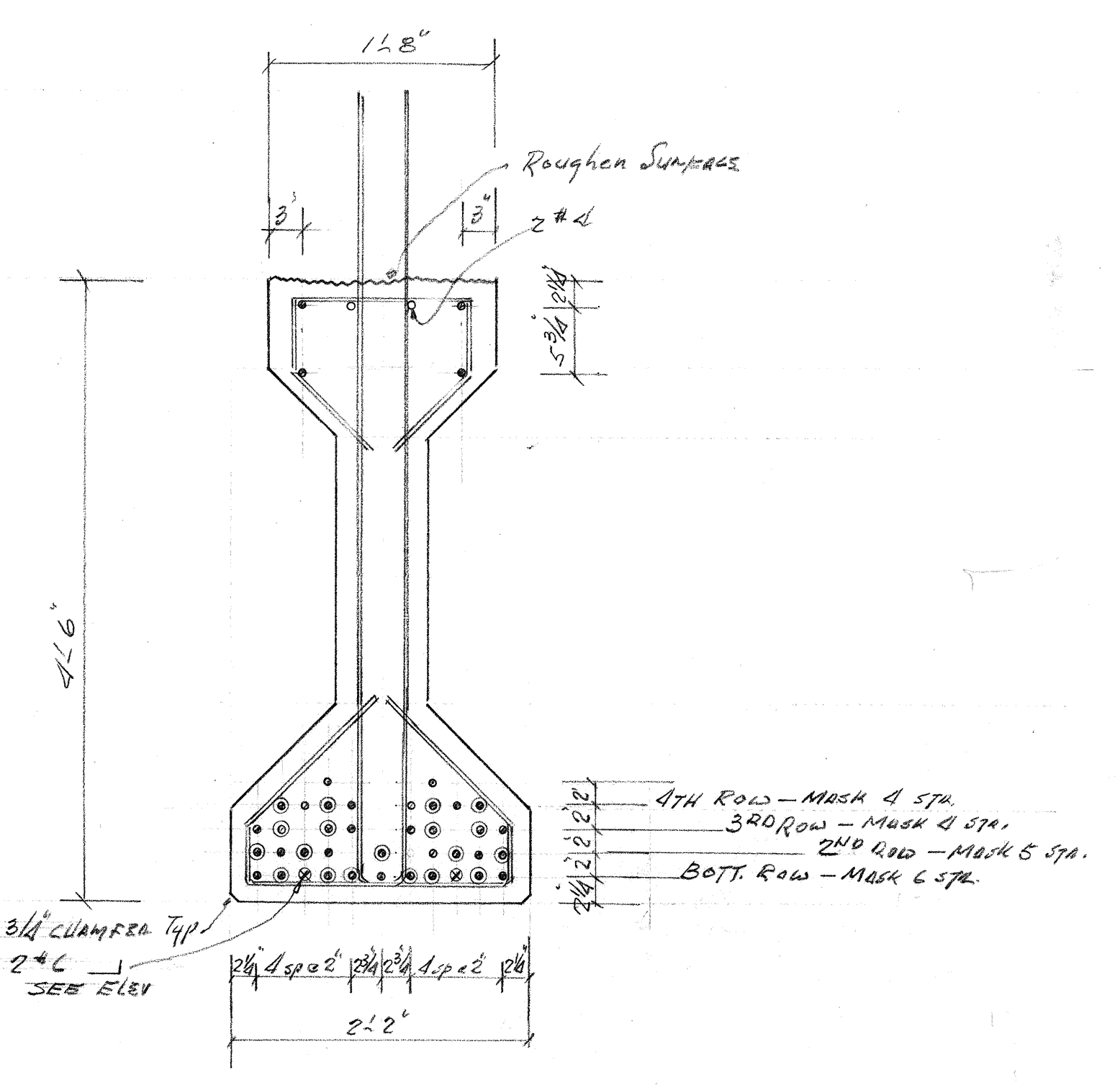
PG IV B-1



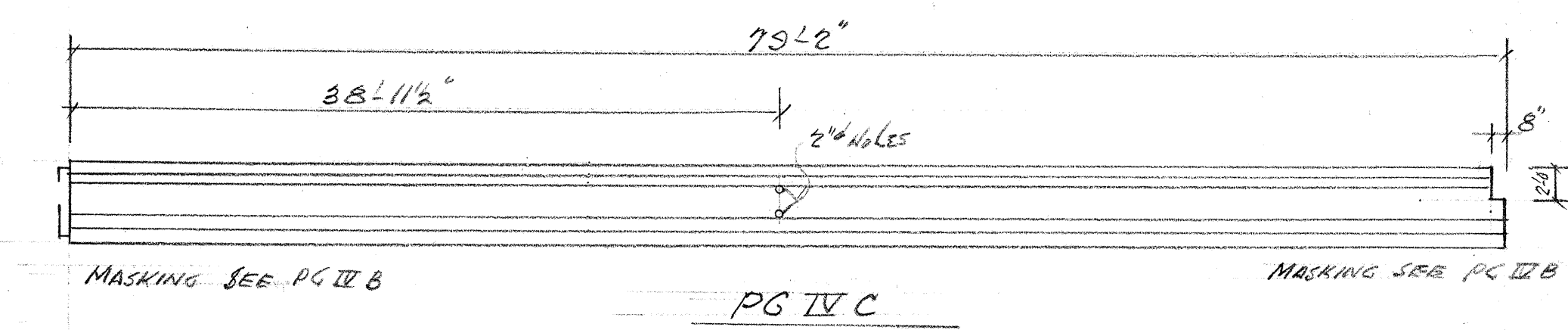
DIAPHRAGM HOLE & INSERT DETAIL



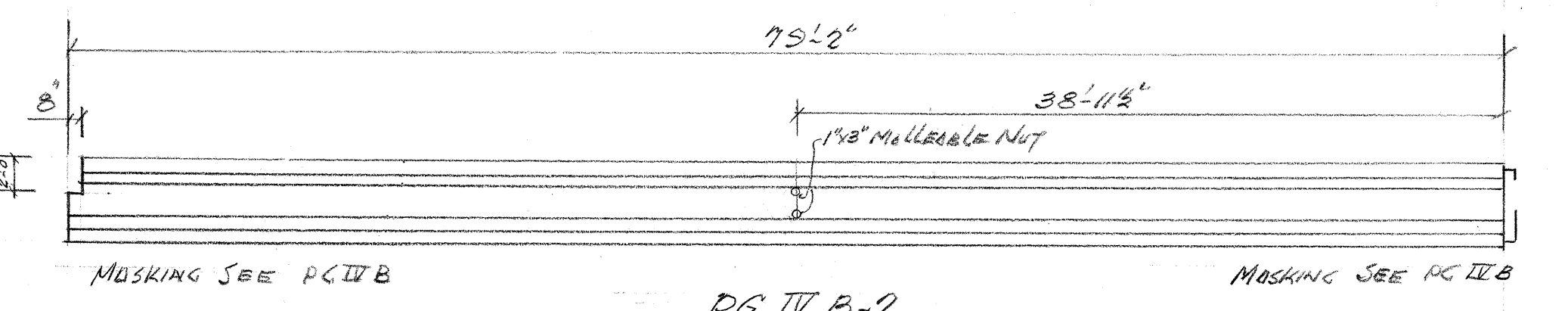
TYPICAL SECTION & CENTER



TYPICAL SECTION & ENDS



PG IV C



PG IV B-2

MARK	QUANTITY	LENGTH	DIAPHR. DETAIL
PG IVA	1	67'-2"	1/2" Malleable Nut
PG IVA-1	6	67'-2"	2" Hole
PG IVA-2	1	67'-2"	1/2" Malleable Nut
PG IV B	1	79'-2"	1/2" Malleable Nut
PG IV B-1	2	79'-2"	2" Hole
PG IV B-2	1	79'-2"	1/2" Malleable Nut
PG IV C	4	79'-2"	2" Hole

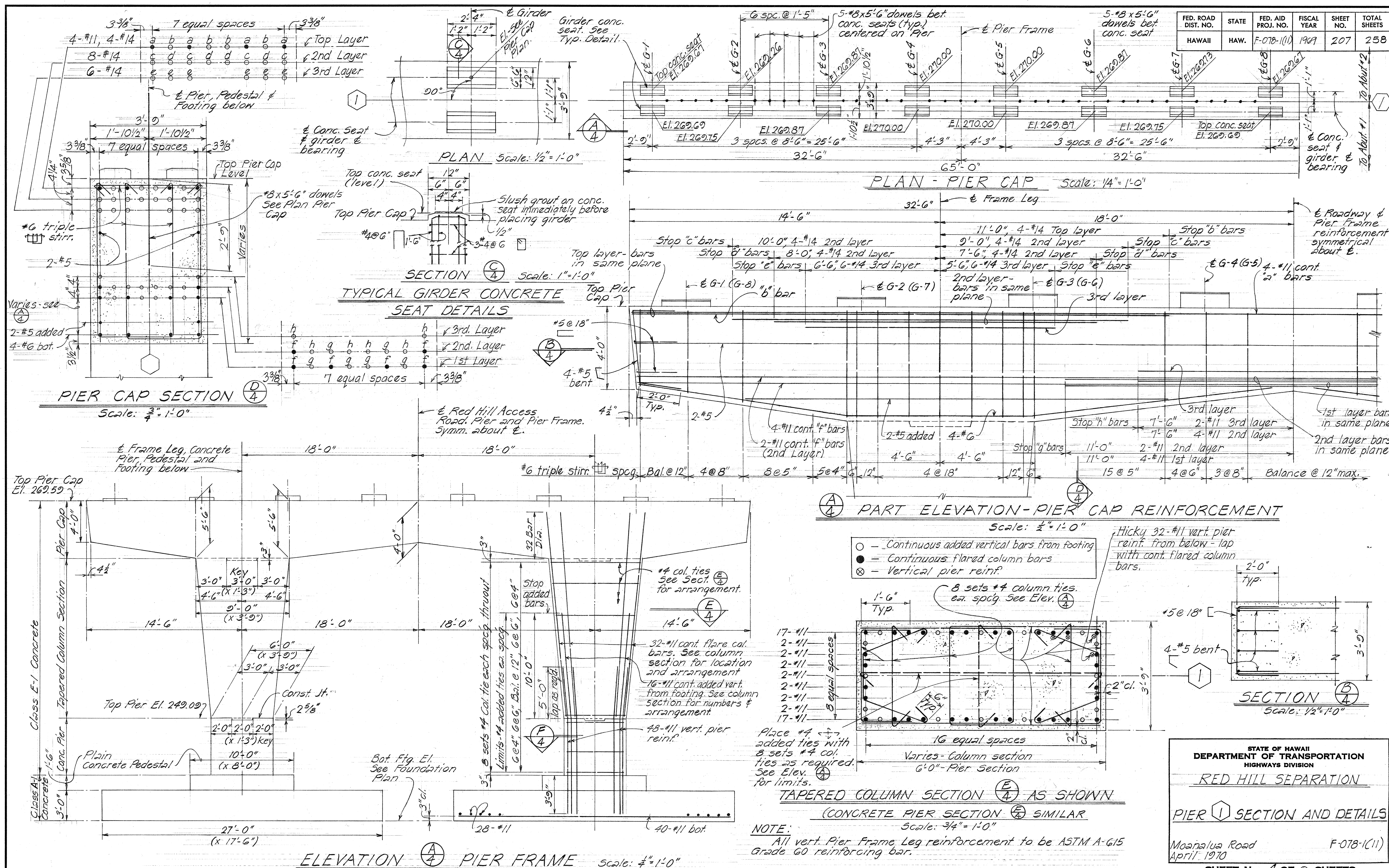
CONCRETE: $f'_c = 6000 \text{ psi}$
 $f'_t = 4000 \text{ psi}$

REVISED 8-9-71 J.M.

PRESTRESSED CONCRETE	
SCALE: 1/8" = 1'-0" or 1/4" = 1'-0"	APPROVED BY
DATE: 6-30-71	DRAWN BY J.H.7
GIRDER FRAMING & DETAILS FARNO.F-078-1(11)	
RED HILL SEPARATION	DRAWING NUMBER 1/1

206 S-1

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-078-1(11)	1969	207	258



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

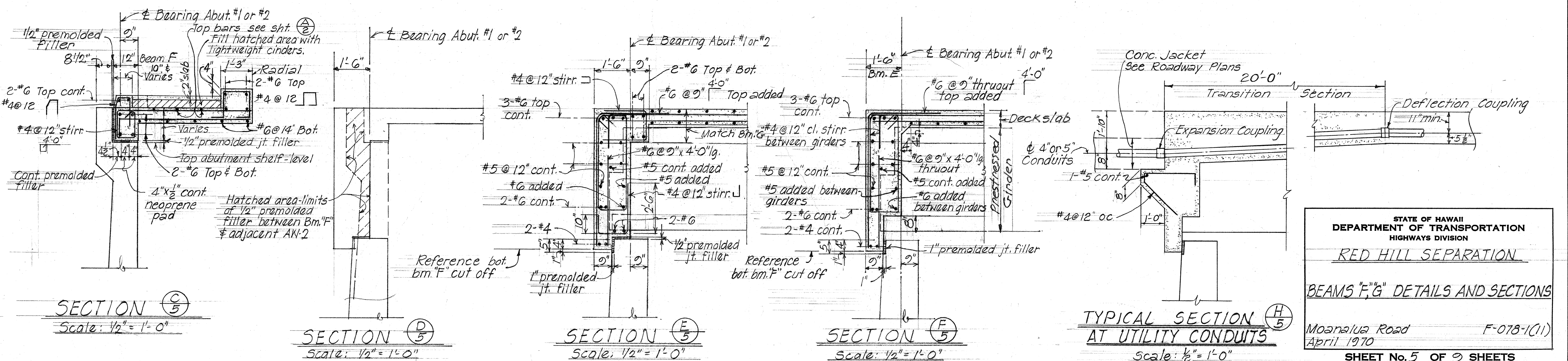
RED HILL SEPARATION

PIER 1 SECTION AND DETAILS

Moanalua Road F-078-1(11)
April 1970

SHEET NO. 1 OF 2 SHEETS

SECTION $\left(\frac{B}{5}\right)$ AS SHOWN
SECTION $\left(\frac{B1}{5}\right)$ SIMILAR EXCEPT
OPPOSITE HAND
Scale: $\frac{1}{2}" = 1' - 0"$



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

RED HILL SEPARATION

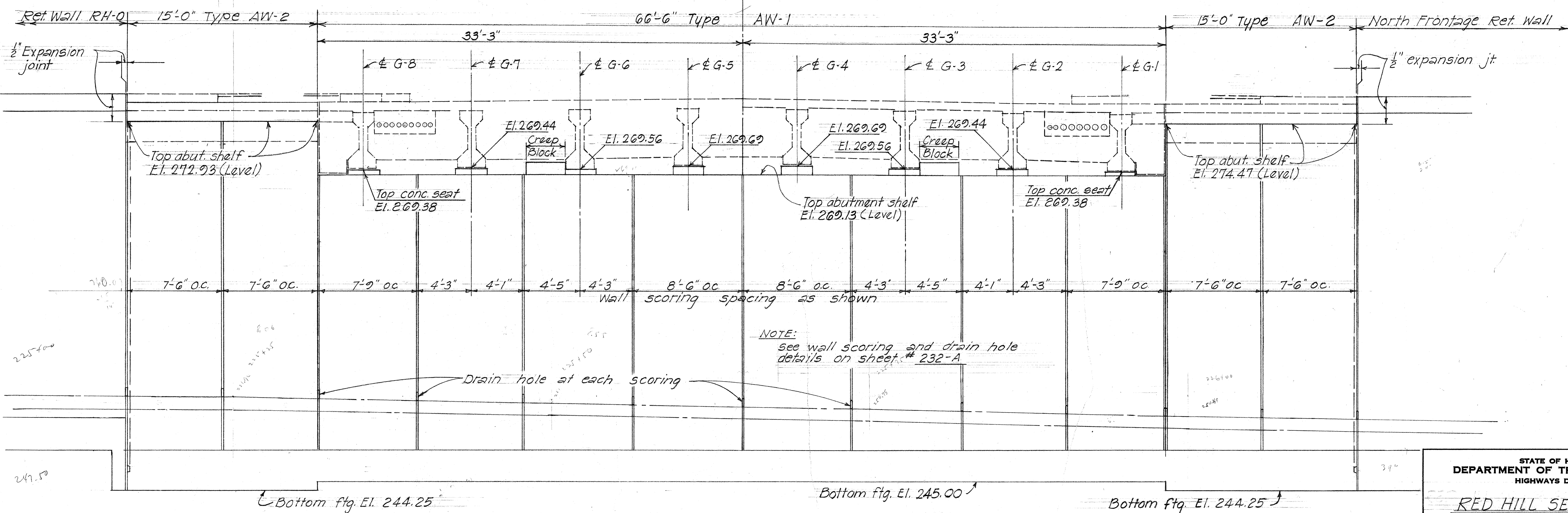
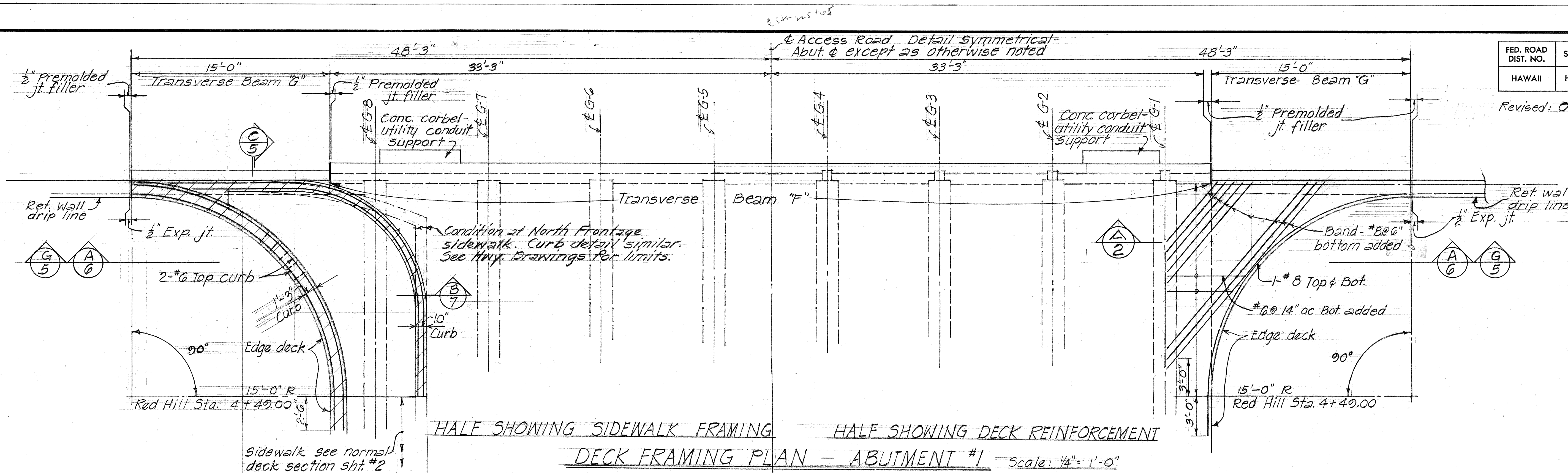
BEAMS "F," "G" DETAILS AND SECTIONS

Moanalua Road F-078-1(11)
April 1970

SHEET No. 5 OF 9 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-078-1(11)	1969	209	258

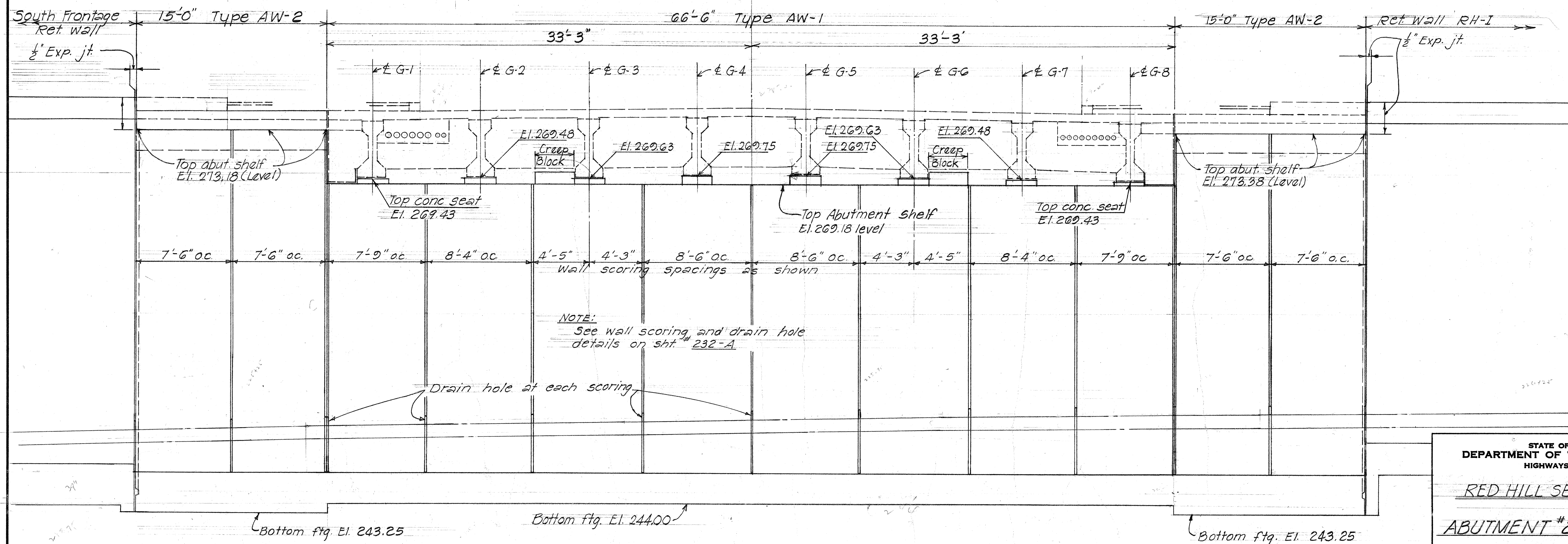
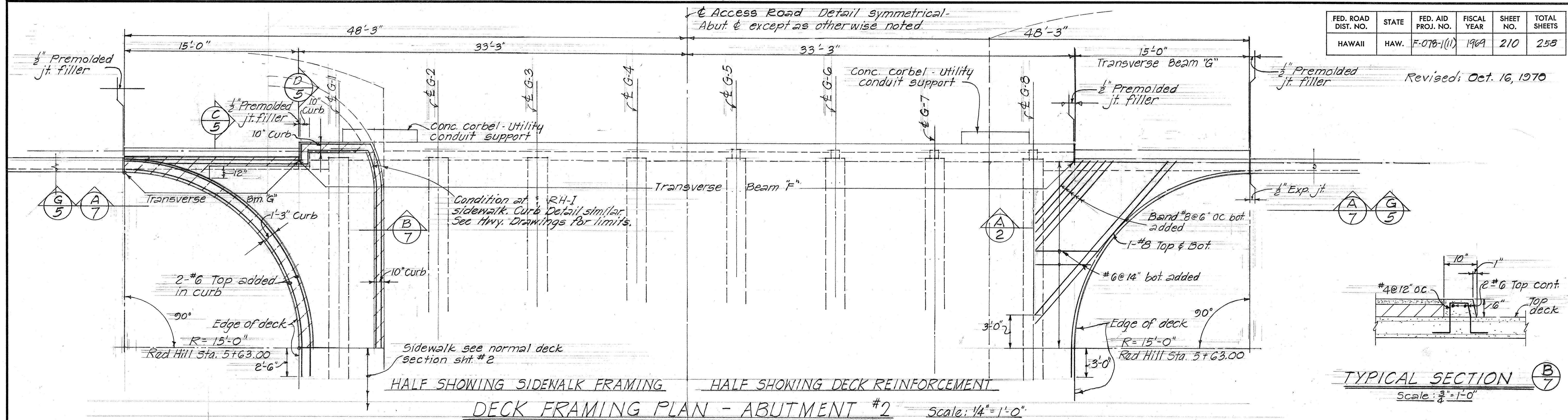
Revised: Oct. 16, 1970



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
RED HILL SEPARATION
ABUTMENT No 1 DETAILS
Moanalua Road
April 1970
SHEET No. 6 OF 9 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-078-1(11)	1969	210	255

Revised: Oct. 16, 1970

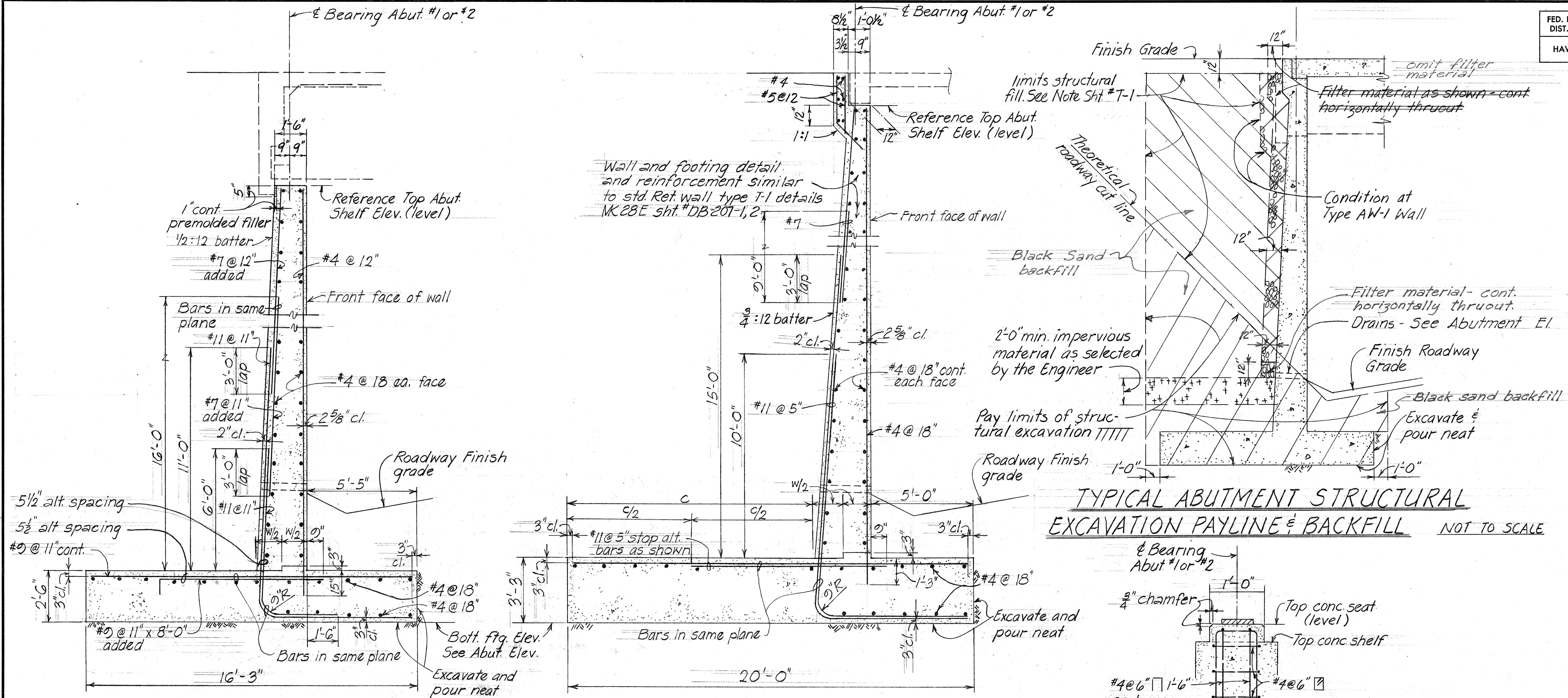


7/15/70
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
RED HILL SEPARATION
ABUTMENT #2 DETAILS
Moanalua Road
April 1970
F-078-1(11)

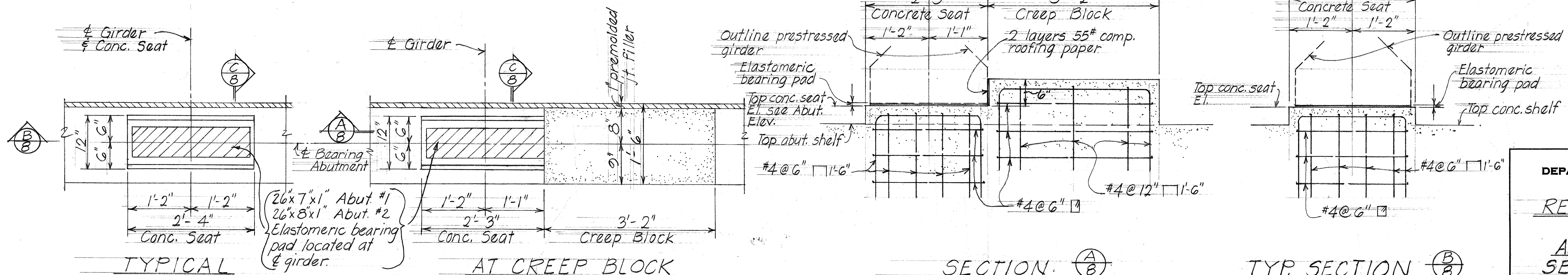
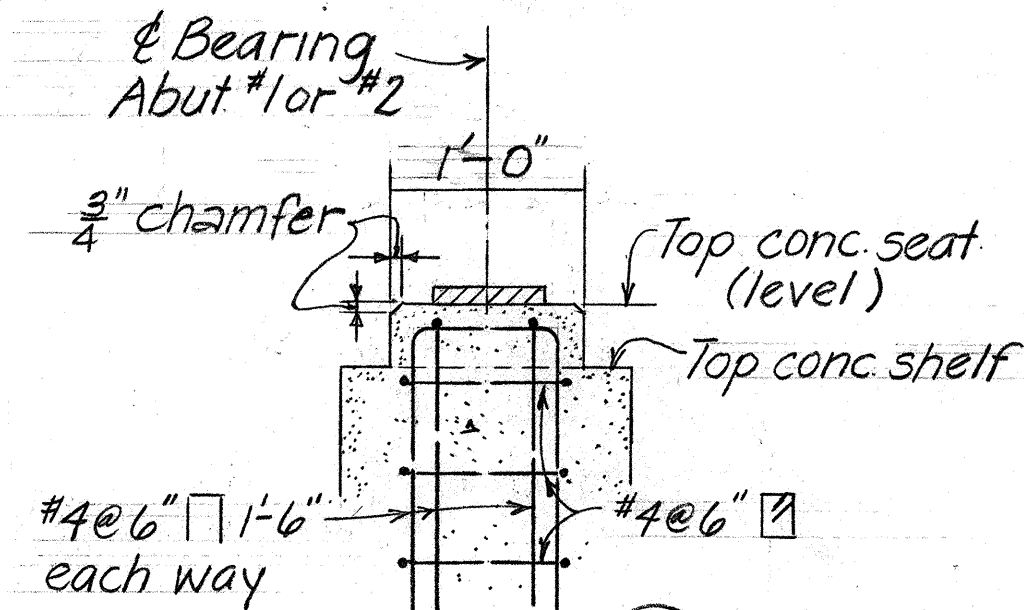
SHEET No. 7 OF 9 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-078-1(11)	1969	211	258

Revised: Oct. 16, 1970



TYPICAL ABUTMENT STRUCTURAL EXCAVATION PAYLINE & BACKFILL NOT TO SCALE



SECTION A-B Scale: 1" = 1'-0"

TYP. SECTION B-B Scale: 1" = 1'-0"

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

RED HILL SEPARATION

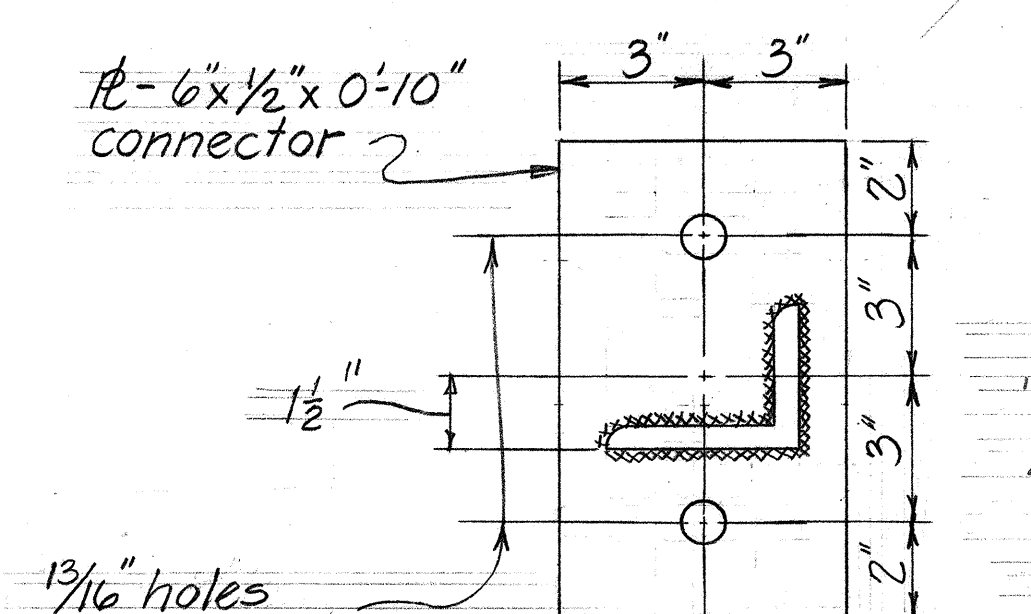
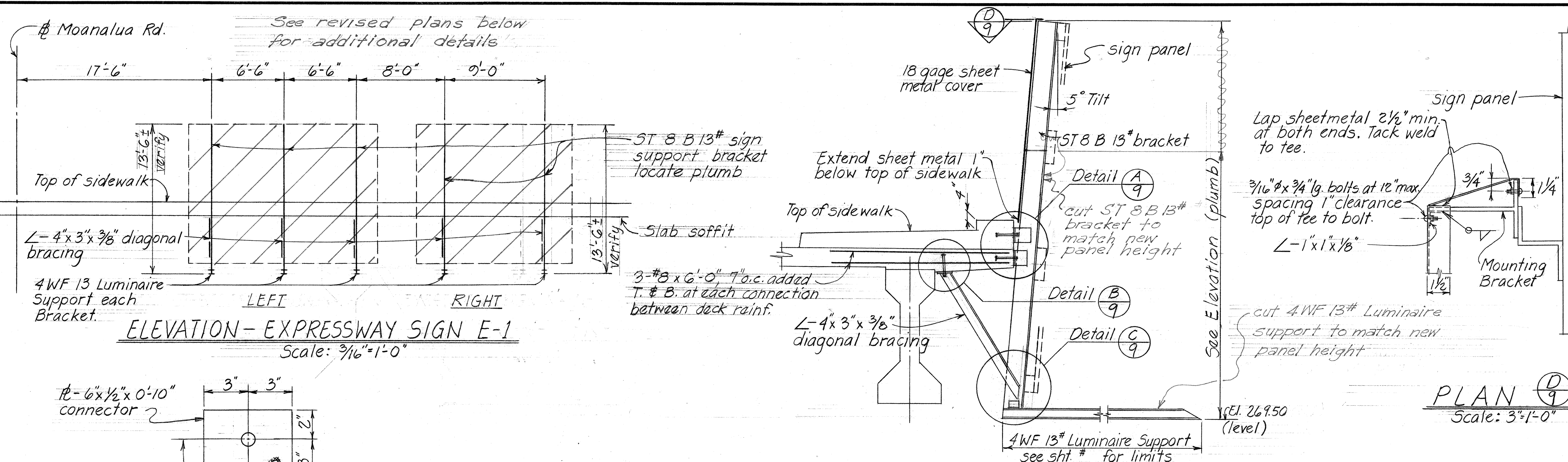
ABUTMENT #1 AND #2
SECTIONS AND DETAILS

Moanalua Road April 1970 F-078-1(11)

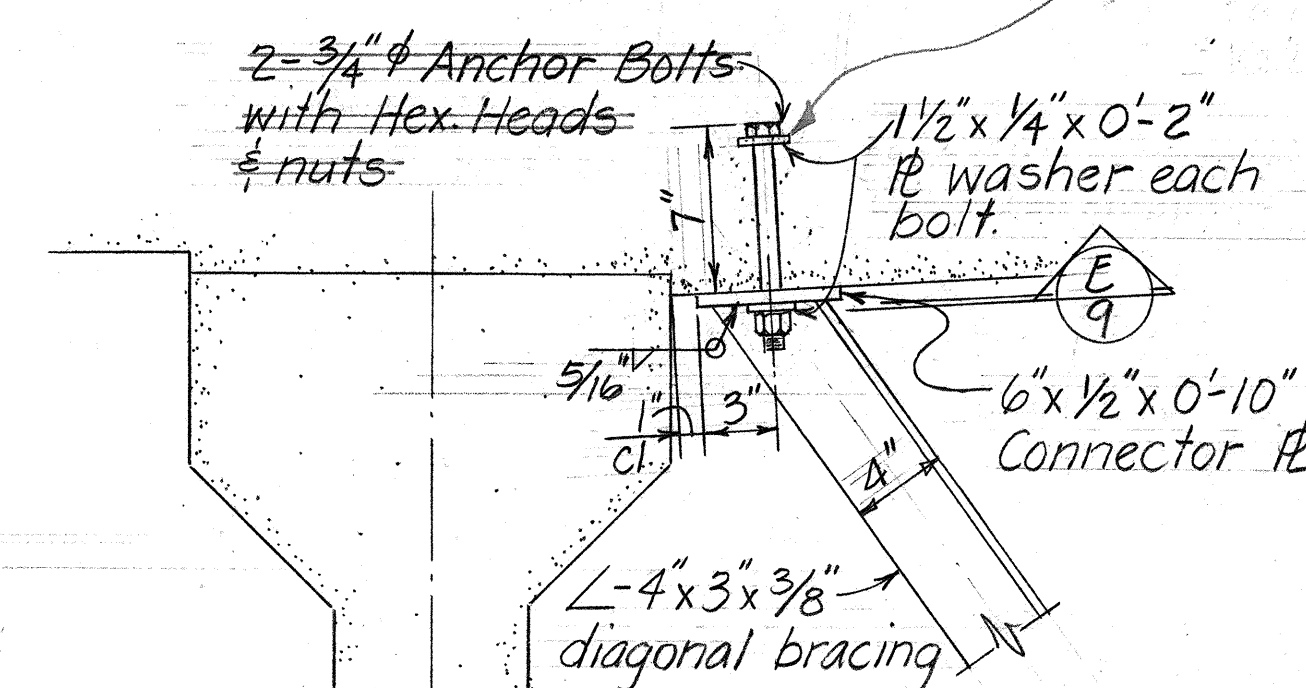
SHEET No. 8 OF 9 SHEETS

REVISED: April 15, 1971
REVISED: Oct. 28, 1971

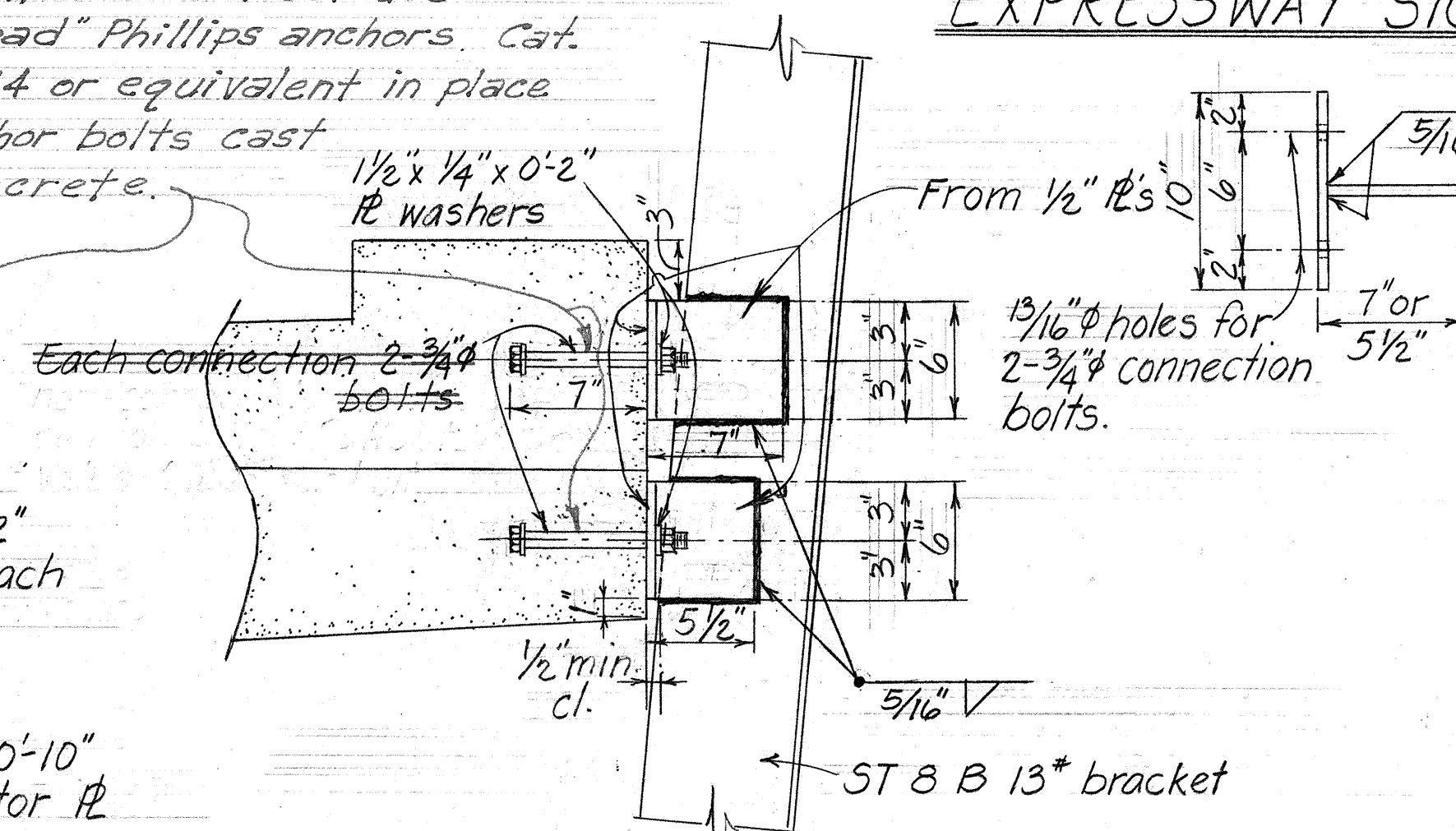
NOTE:
1/4" holes in angles, Tee and cover to be drilled at time of installation. Lap joints in cover permissible.



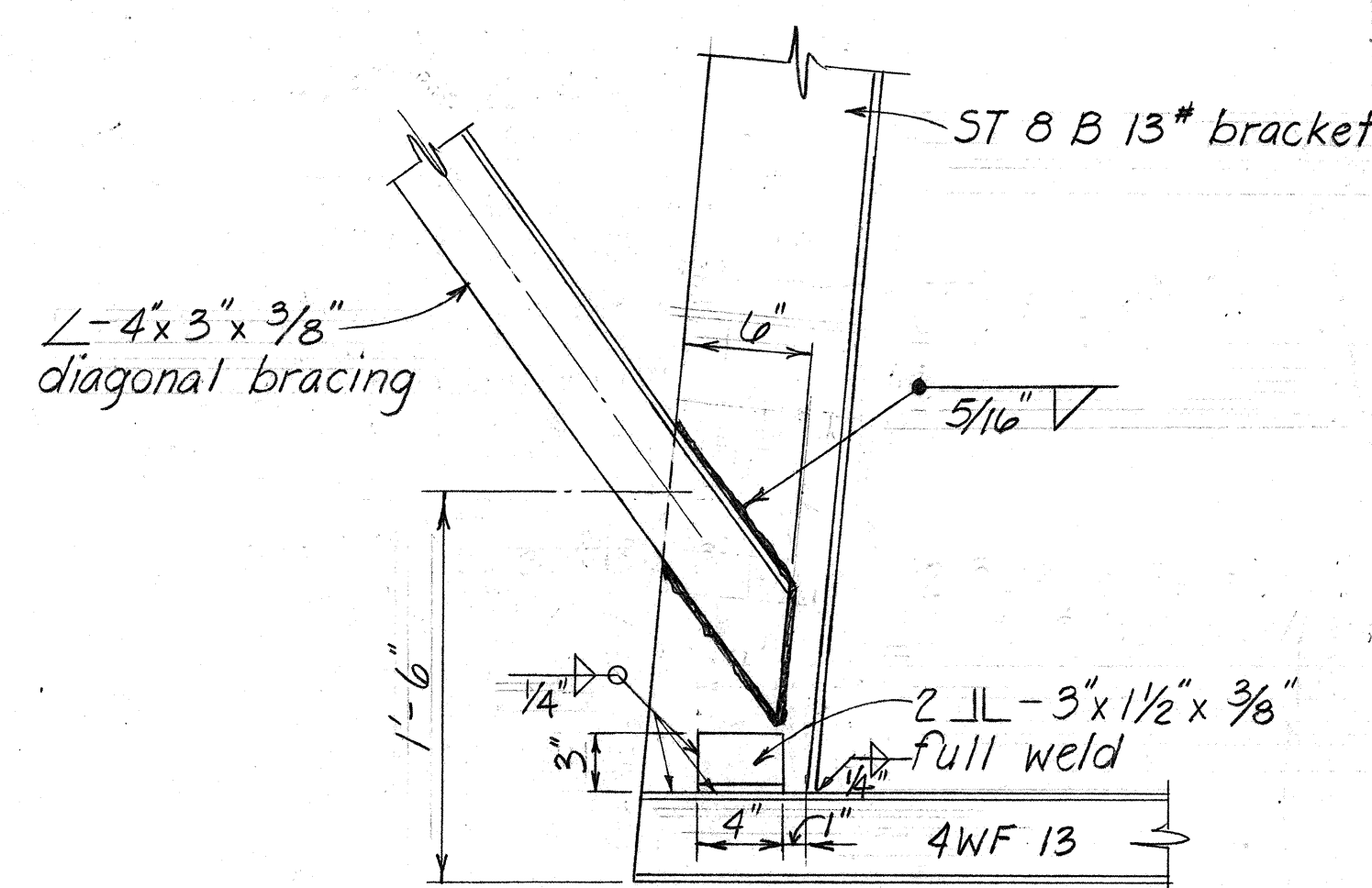
SECTION 
Scale: 3" = 1'-0"



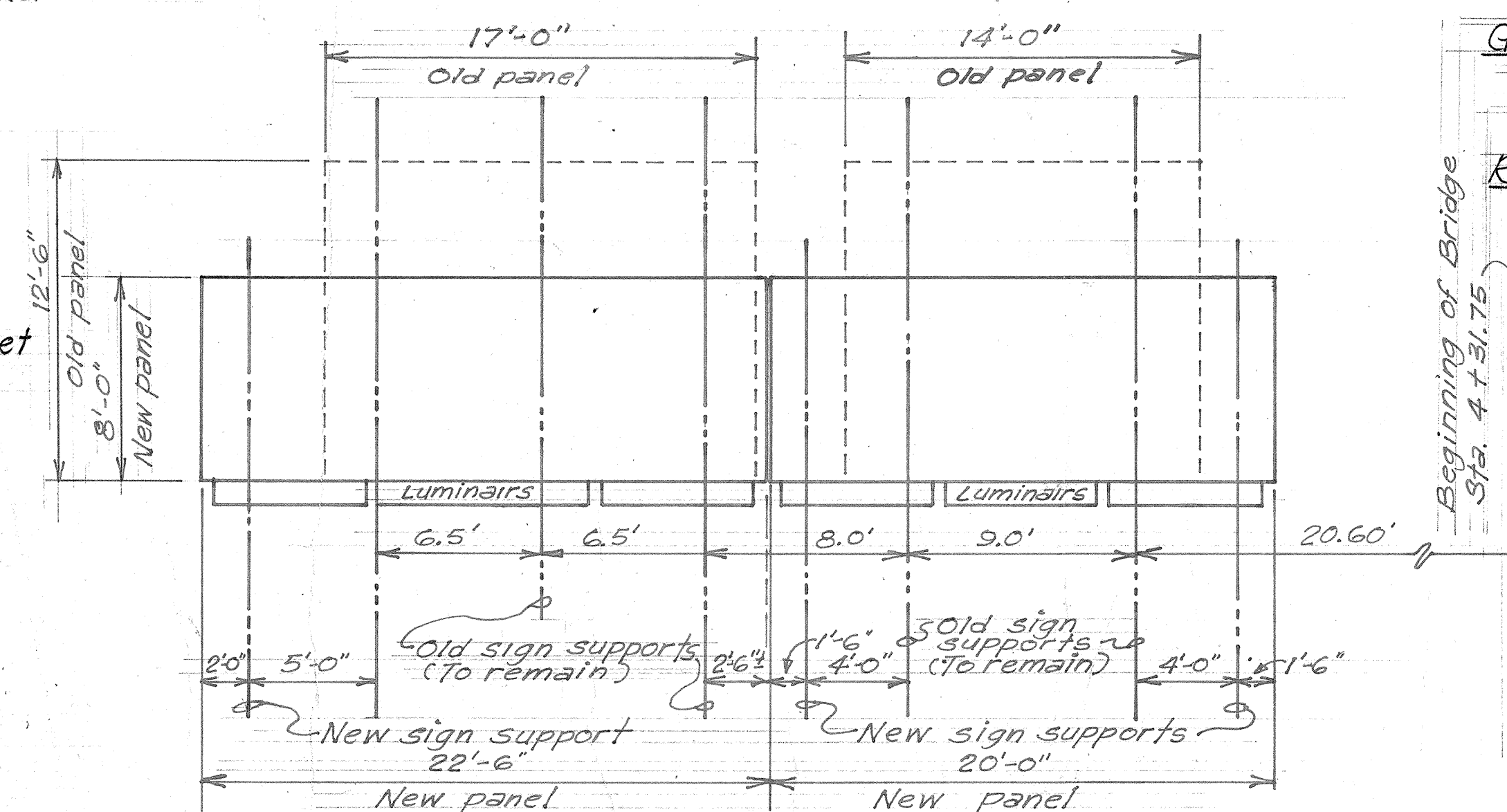
DETAIL 
Scale: 1 1/2" = 1'-0"



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



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



REVISED PANEL LAYOUT
scale: $\frac{3}{16}'' = 1'-0''$

THIS SHEET SUPERSEDES SHT. NO. 212

GENERAL NOTES
All structural steel members & misc. hardware to be hot dipped galvanized.

REFERENCE NOTES :
See Sign drawings and Standards for additional details not covered by this drawing.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

RED HILL SEPARATION

SIGN SUPPORT FRAME E-1

Moanalua Road
April 1970

F-078-1(11)

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-078-1(11)	1969	213	258

DESIGN NOTES

DESIGN SPECIFICATIONS AASHO

Standard Specifications for Highway Bridges (10th Edition) with subsequent Interim Specifications

DESIGN LOADS: HS-20-44 or Interstate loading

DESIGN STRESSES:

1. R.C. beams & slabs - See AASHO Specifications and Special Provisions except as otherwise noted.

Class A	Class E
$f'_c = 3,000$ psi	4,500 psi
$f_c = 1,200$ psi	1,800 psi
$n = 10$	8
$f_s = \text{ASTM A615, see Special Provisions.}$	

2. Prestressed Girders

$f'_c = 5,500$ psi | $\frac{1}{2}$ " dia. 7 wire strands
 $f'_{ci} = 4,000$ psi | Tensioning load = 25,200 lbs. per strand
Design load = 20,160 lbs. per strand.
Forms must be removed and the beams inspected before the strands are cut.

3. Pile Capacity - See corresponding bridge detail drawings.

GENERAL NOTES

MATERIALS:

1. All concrete shall be class A except as otherwise noted on plans. Concrete for prestressed concrete girders see Standard Specifications and as noted under Design Stresses
2. Preformed fabric bridge bearing pads are incidental to concrete and will not be paid for separately.
3. See Special Provisions for admixture in concrete.

CONSTRUCTION METHODS:

1. See Standard Specifications and Special Provisions
2. For concrete finish see Special Provisions. Concrete seats and creep blocks to be poured monolithically with pier. Top surfaces of conc. seats to have hard trowel finish.
3. See details for additional surface finish.
4. In general, top & edge of concrete deck of superstructure shall be constructed to follow the finish roadway vertical & horizontal curves and grades.

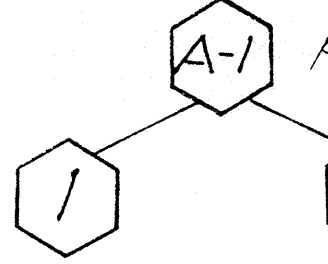
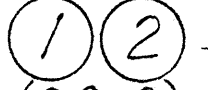
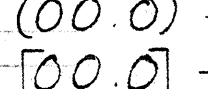
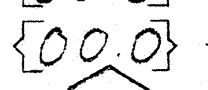
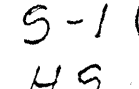
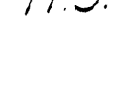
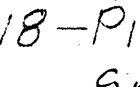
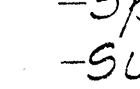
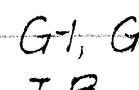
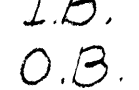
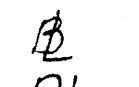
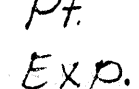
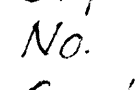
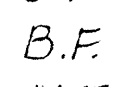
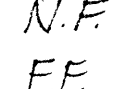
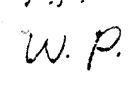
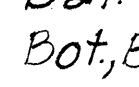
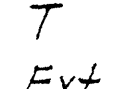
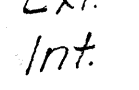
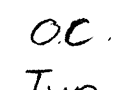
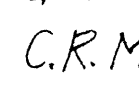
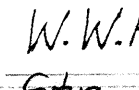
REFERENCE:

1. Refer to Standard Details Drawings for additional details not covered by detailed plans.
2. Typical Details drawing sheet Nos. T-1 thru T-5 inclusive refers to the bridge structure except for modification as may be required by special conditions. For such modifications see corresponding detailed plans.

GENERAL:

1. Additional structural fill where indicated on detailed drawings shall be incidental to structural excavation, roadway excavation, or imported borrow.
2. All items noted incidental will not be paid for separately.

SYMBOLS & ABBREVIATION

	Pier column number
	Location pier line number
	Location concrete seat line number
	Bottom footing elevation
	Pile cut-off elevation
	Pile tip elevation
	Type I pile
	Section Designation
	Sheet number detail is drawn on
	Boring number and designation
	High strength reinf. bars ASTM designation A-432 Billet Steel.
	Pile Footing type
	Spread Footing type
	Superelevation
	Girder numbers
	Inbound
	Outbound
	Baseline
	Point
	Expansion
	Number
	Continuous
	Each Face
	Both Face
	Near Face
	Far Face
	Working Point
	each
	Balance
	Bottom
	Top
	Exterior
	Interior
	on center
	Typical
	Grouted Rubble Paving
	Cement Rubble Masonry
	Welded Wire Fabric
	Straight
	Stirrup

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
TYPICAL DETAILS
NOTES AND ABBREVIATIONS

RED HILL SEPARATION

Moanalua Road
April 1970

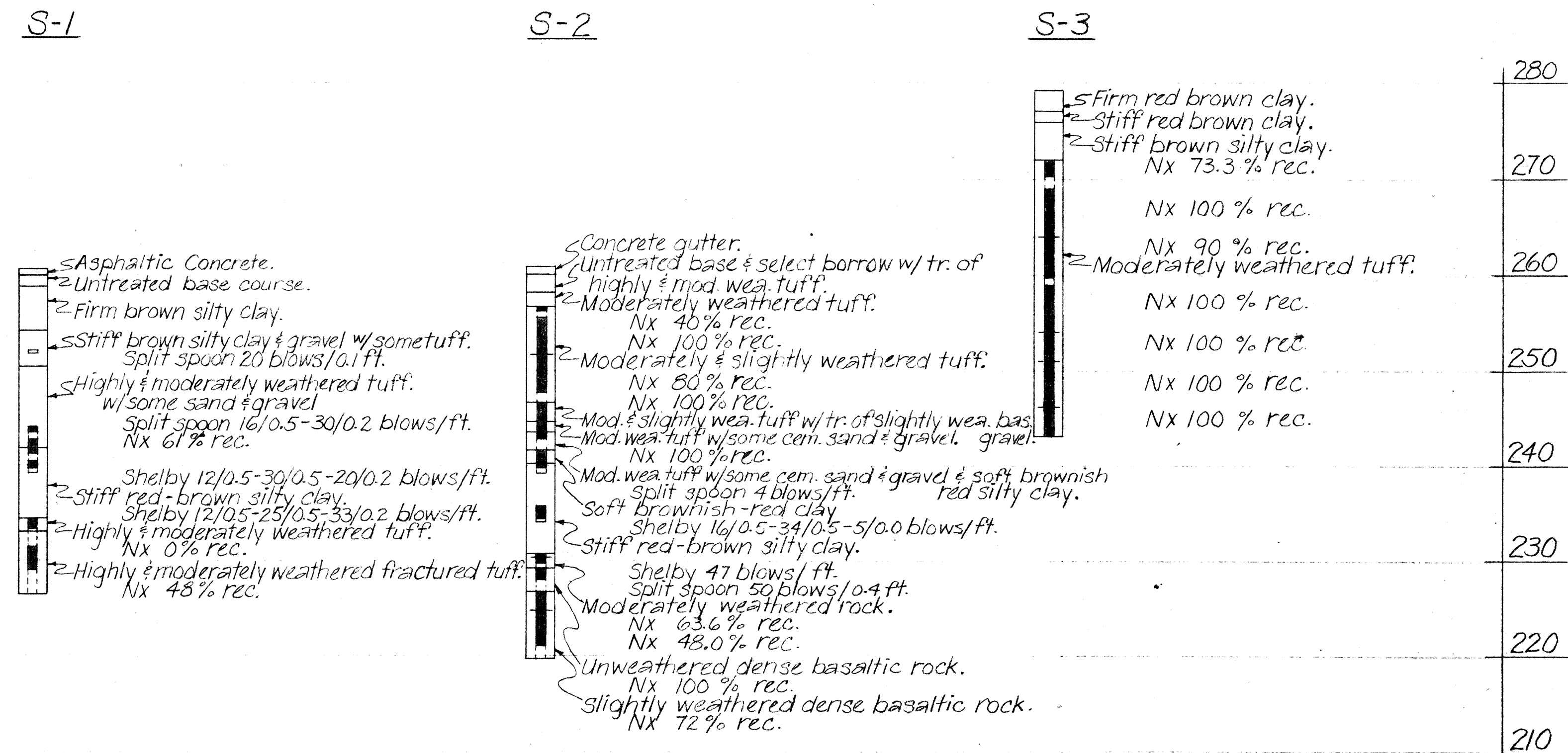
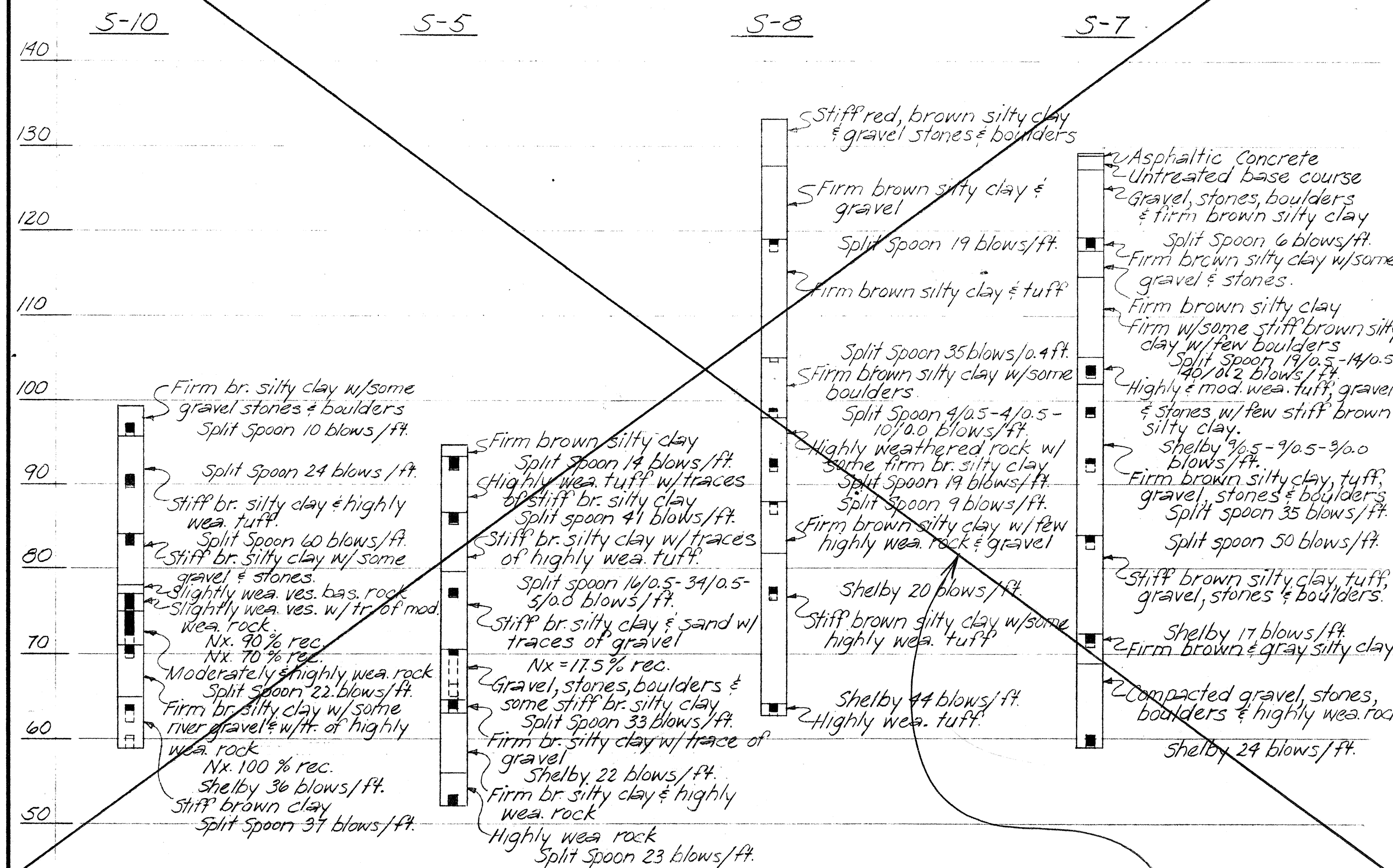
F-078-1(11)

SHEET No. T-1 OF 5 SHEETS

LAKE SIDE SEPARATION STRUCTURES NO 1 & NO 2

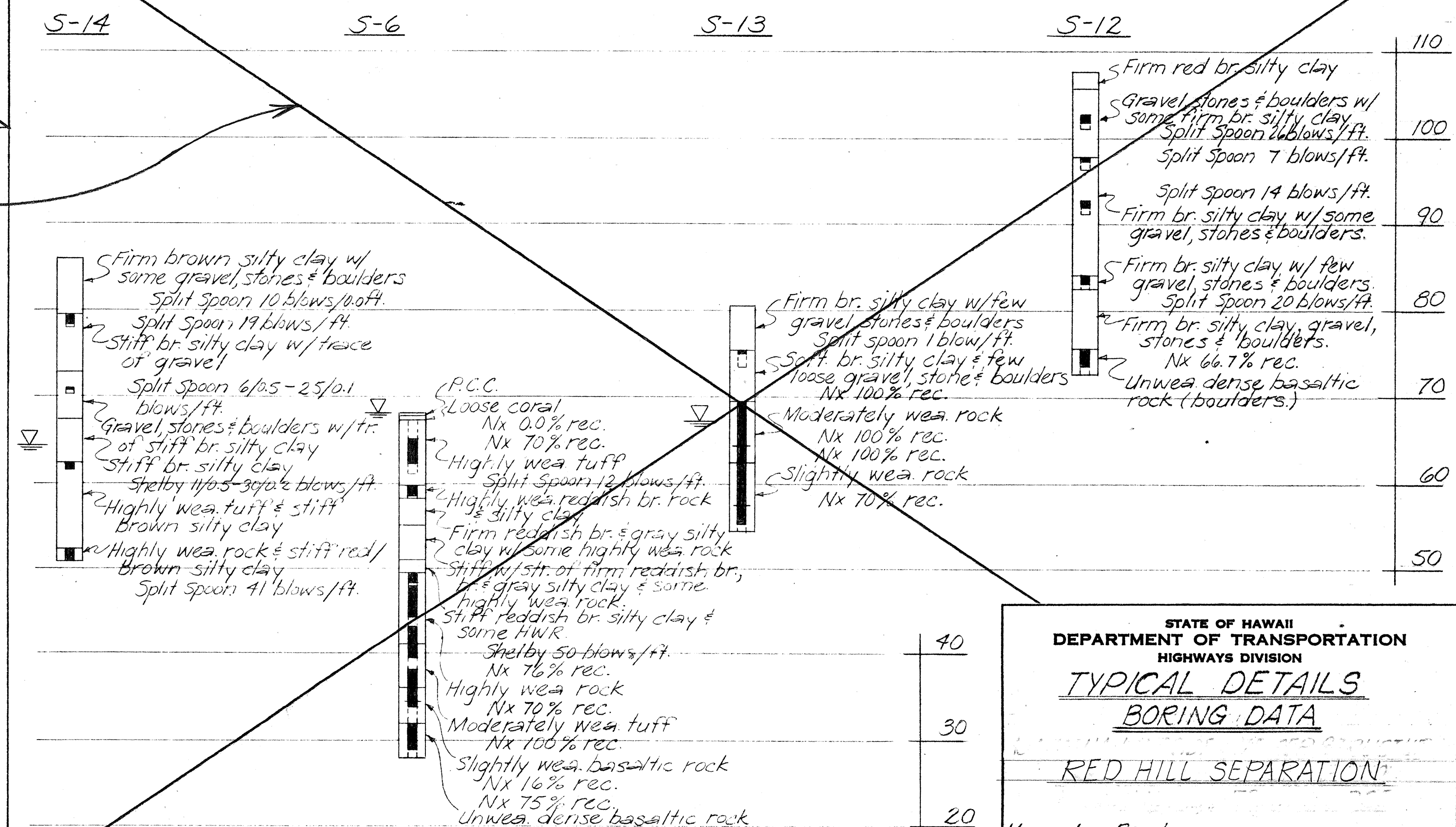
RED HILL SEPARATION

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-078-(11)	1969	214	258



NOT APPLICABLE

MOANALUA STREAM BRIDGE



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TYPICAL DETAILS
BORING DATA

RED HILL SEPARATION

Moanalua Road
April 1970

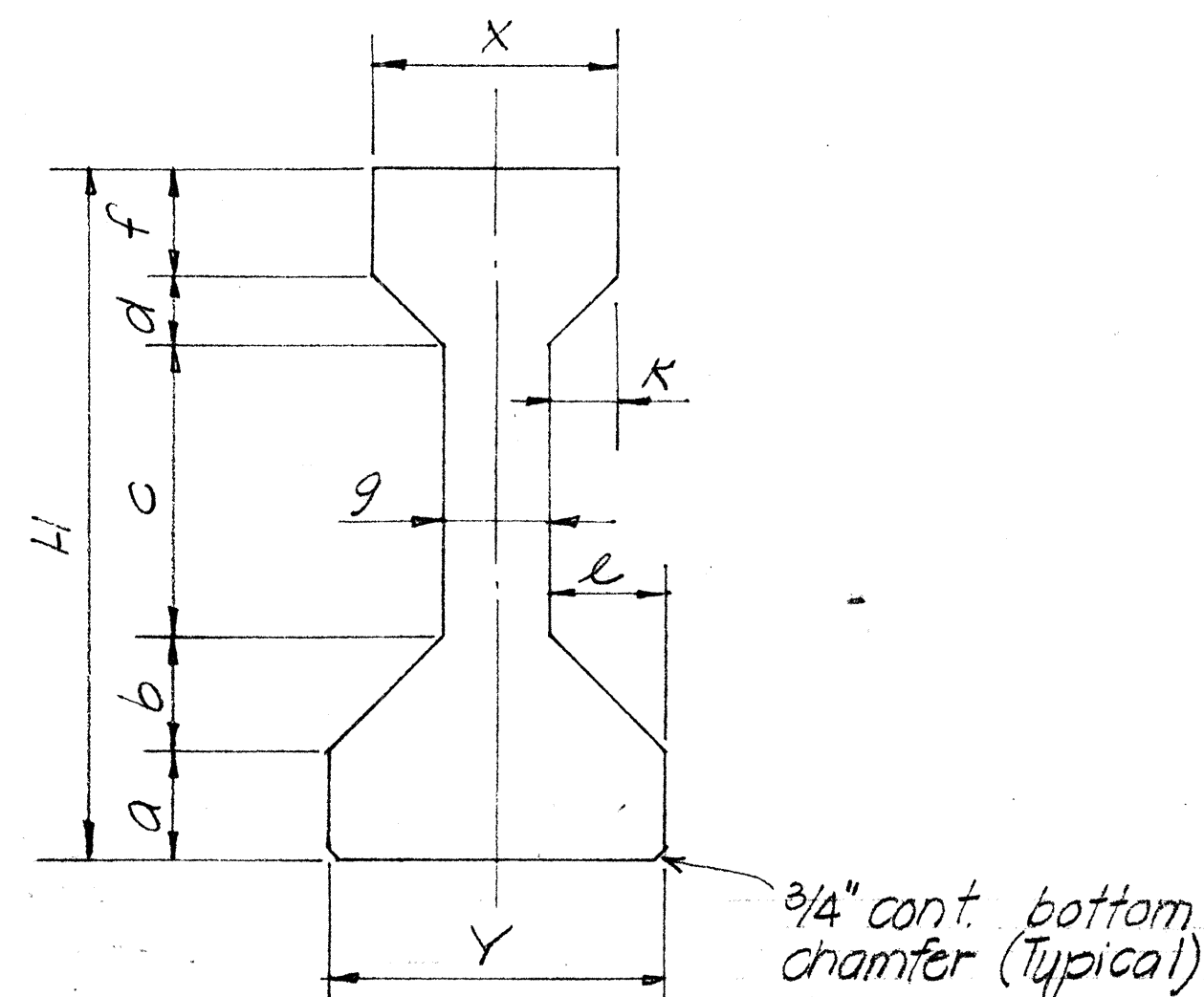
F-078-(11)

SHEET No. 7-2 OF 5 SHEETS

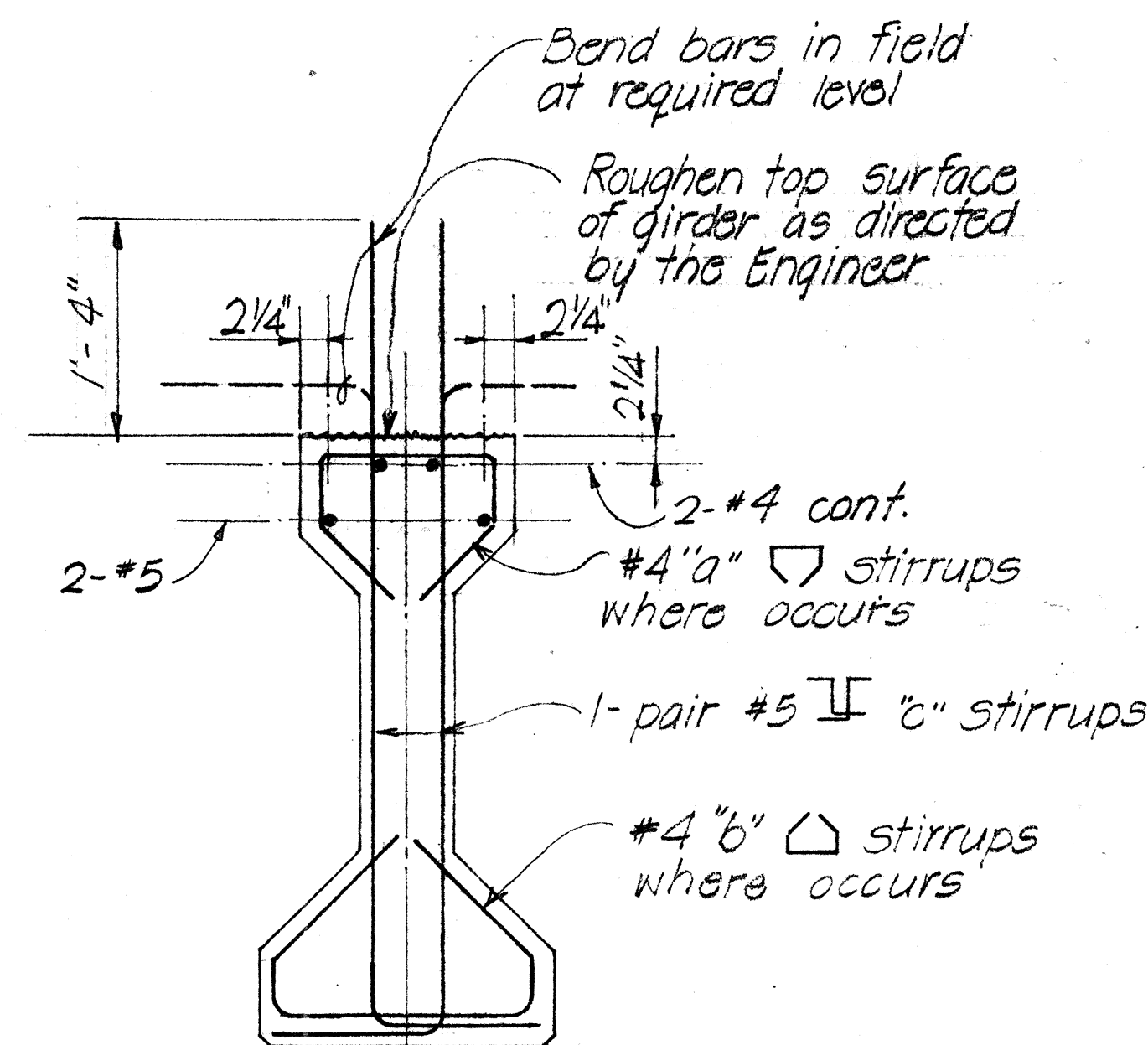
DATE	APR 70
SURVEY PLOTTED BY	BG
DRAWN BY	BG
TRACED BY	BG
QUANTITIES BY	BG
CHECKED BY	BG
ORIGINAL PLAN	
NOTE BOOK	
No.	

AASHTO-PCI STANDARD BRIDGE GIRDER DIMENSION

GIRDER TYPE	H	X	Y	a	b	c	d	e	f	g	J	K	L	m	n
I	2'-4"	1'-0"	1'-4"	5"	5"	11"	3"		4"	6"		3"	5"		
II	3'-0"	1'-0"	1'-6"	6"	6"	1'-3"	3"		6"	6"		3"	6"		
III	3'-9"	1'-4"	1'-10"	7"	7 1/2"	1'-7"	4 1/2"		7"	7"		4 1/2"	7 1/2"		
IV	4'-6"	1'-8"	2'-2"	8"	9"	1'-11"	6"		8"	8"		6"	9"		



TYPE I THRU TYPE IV



TYPE I THRU TYPE IV

TYPICAL SECTION PRESTRESSED CONC GIRDERS

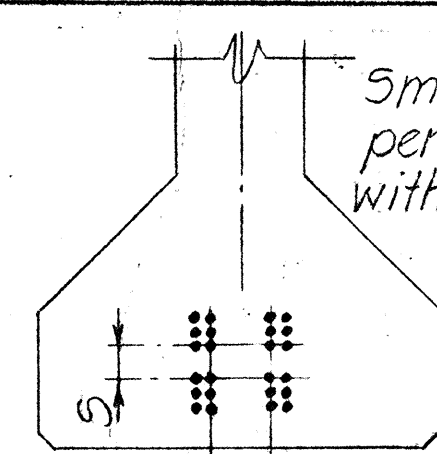
BUNDLING OF PRESTRESSING REINFORCEMENT

ARRANGEMENT AND CLEARANCE FOR POST TENSIONED UNITS

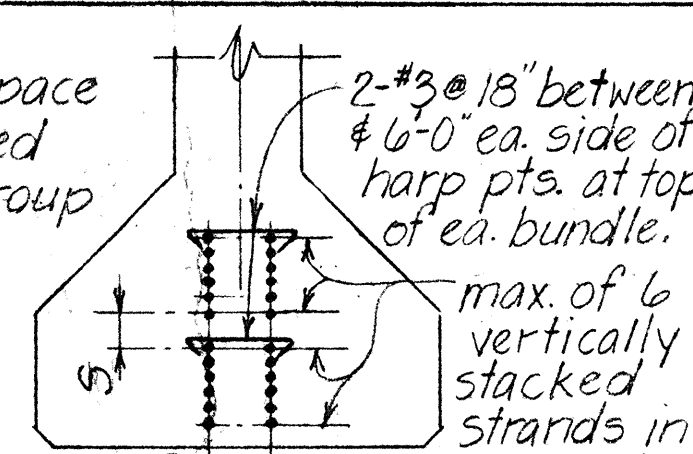
- Horizontal clearance between units equals 2" min.
- Units may be bundled vertically in groups of 3 maximum.
- Vertical clearance between bundled units equal 3" minimum.
- Approval of the Engineer is required for deviation.

ARRANGEMENT AND CLEARANCE FOR PRETENSIONED STRANDS

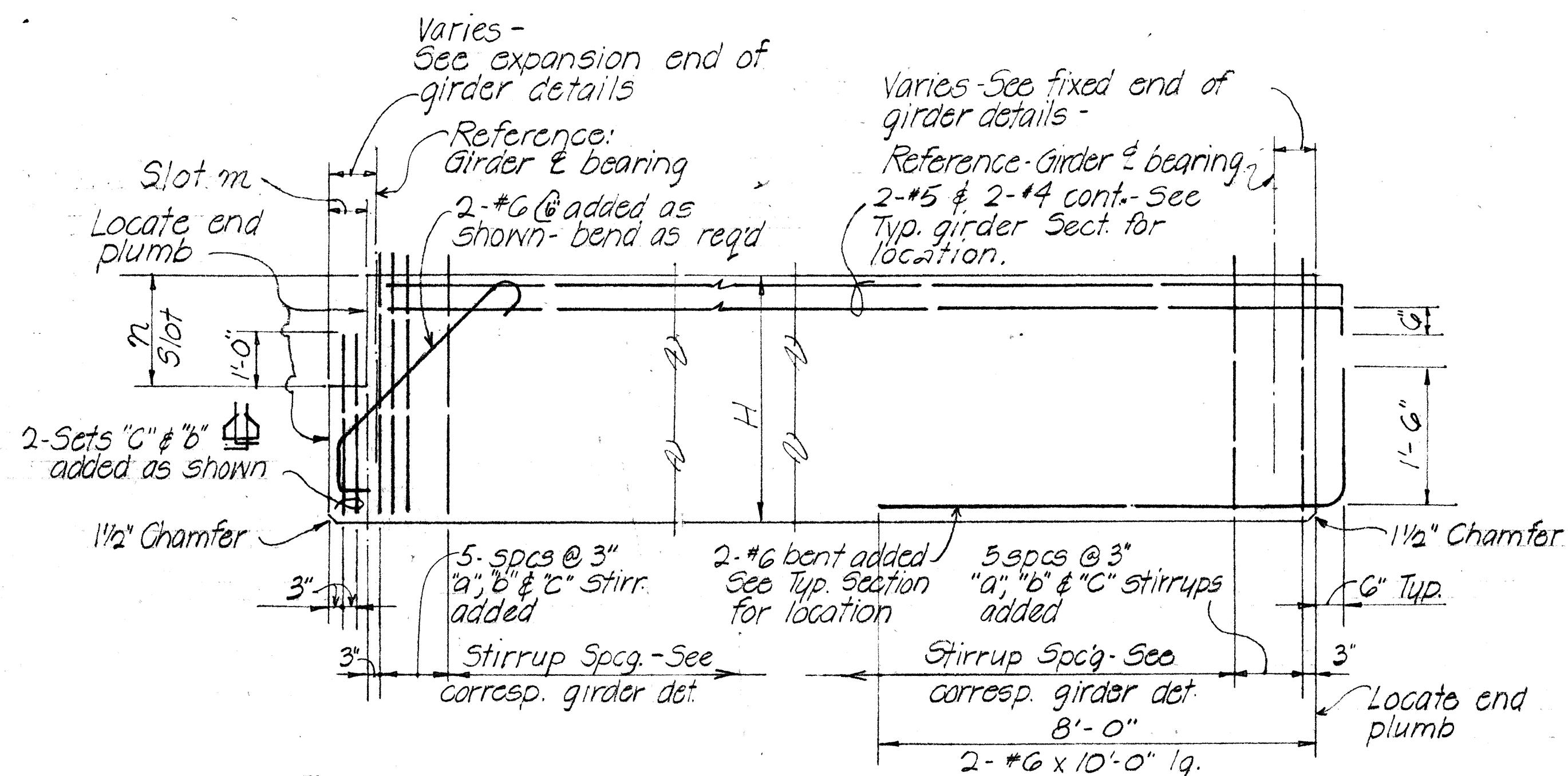
- Strands may be bundled in groups as shown.
- The minimum distance "S" between groups or individual strands is 2" for 1/2 inch strands.
- "S" is measured between centers of adjacent strands.



CASE I



CASE II



EXPANSION END FIXED END
TYPICAL DETAILS - AT ENDS OF GIRDER

GENERAL NOTES

DESIGN LOADS: HS-20-44 or Interstate Loading
1- Prestressed Girders -

psi 1/2 inch diam. wire strands
psi Tensioning Load = 25,200 lbs. per strands.
Design Load = 20,160 lbs. per strands.
Forms must be removed and the beams inspected before the strands are cut.

For additional holes and inserts in prestressed girders for beam connections, refer to corresponding beam details.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TYPICAL DETAILS
PRESTRESSED GIRDER

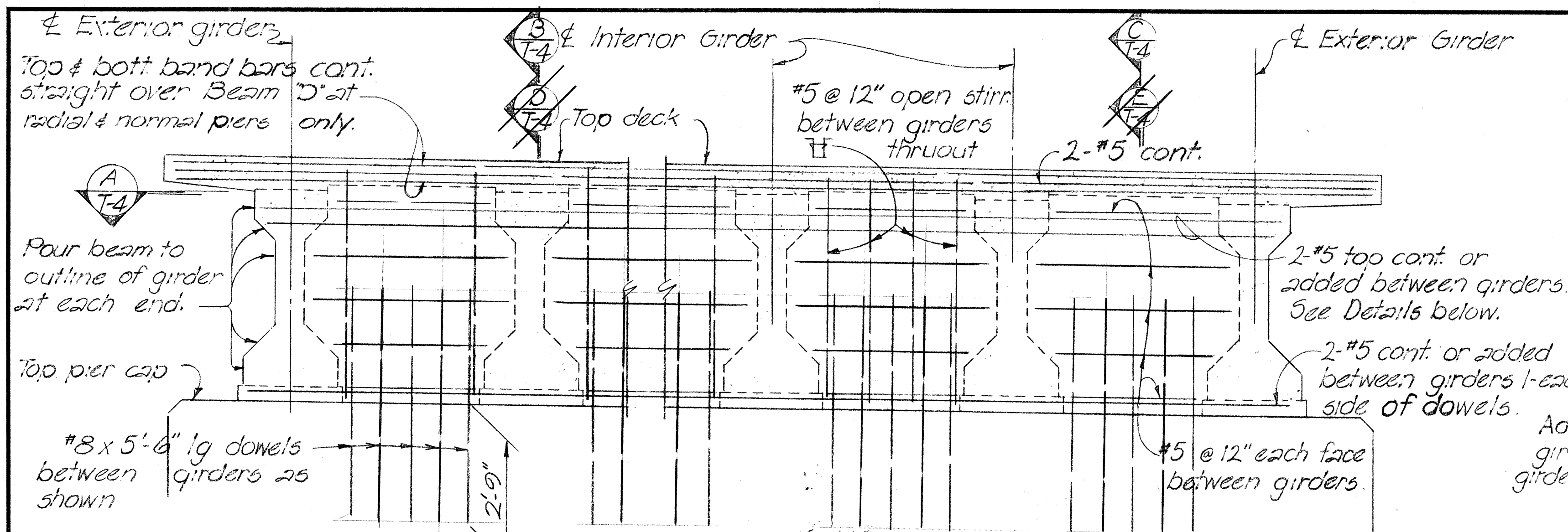
RED HILL SEPARATION

Moanalua Road
April 1970

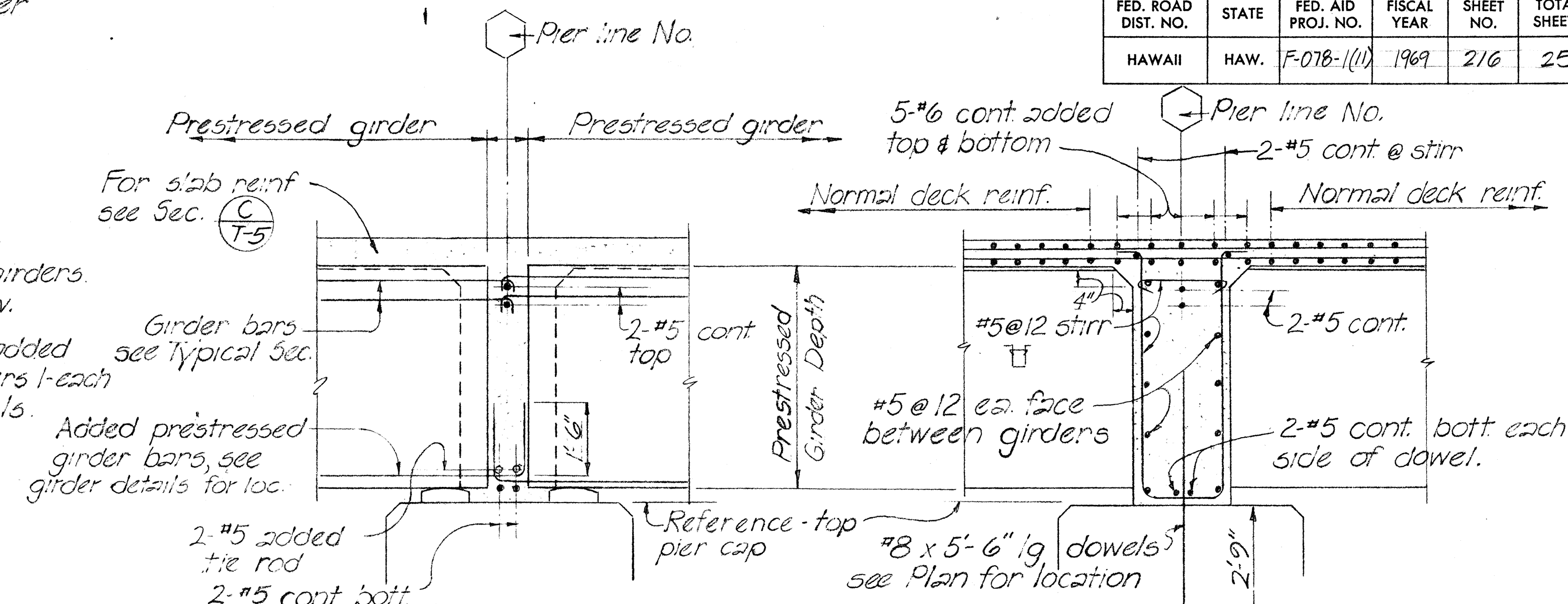
F-078-1(11)

SHEET No. 7-3 OF 5 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-078-1(11)	1969	216	258

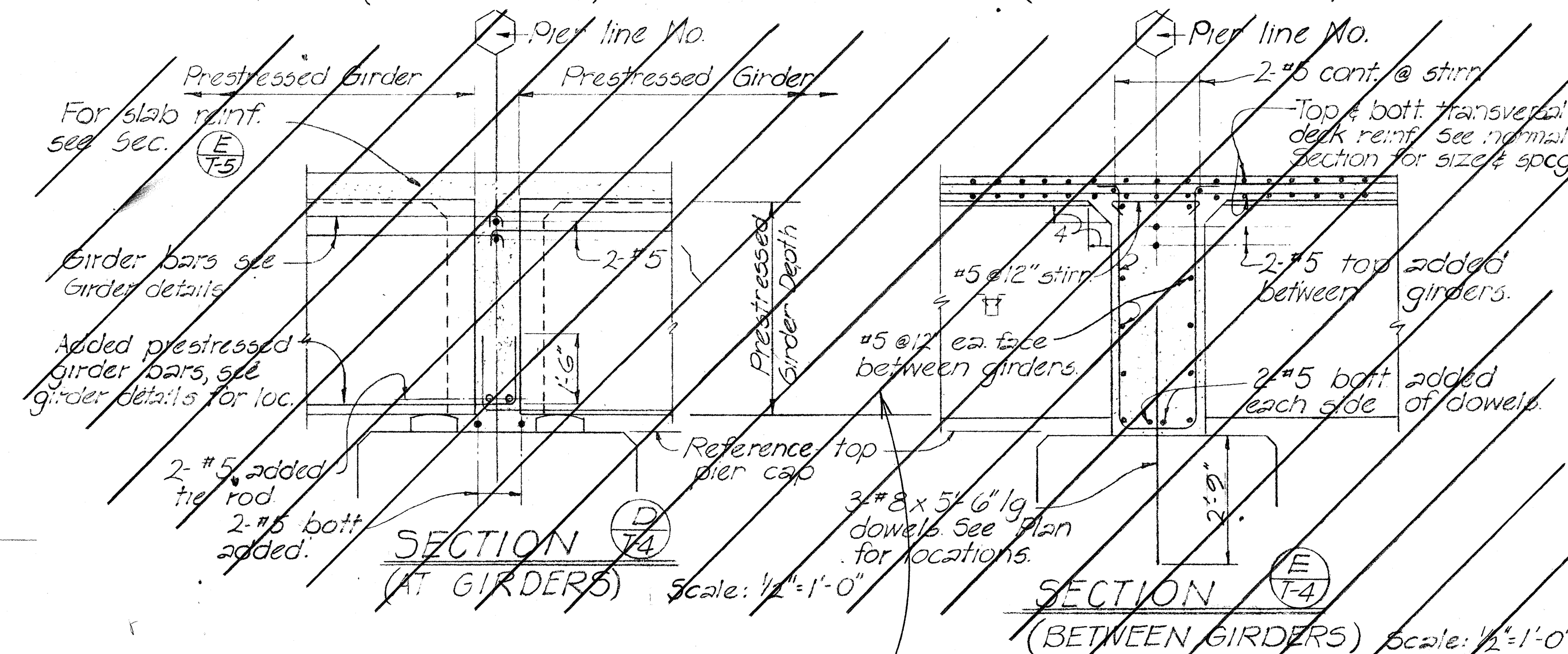
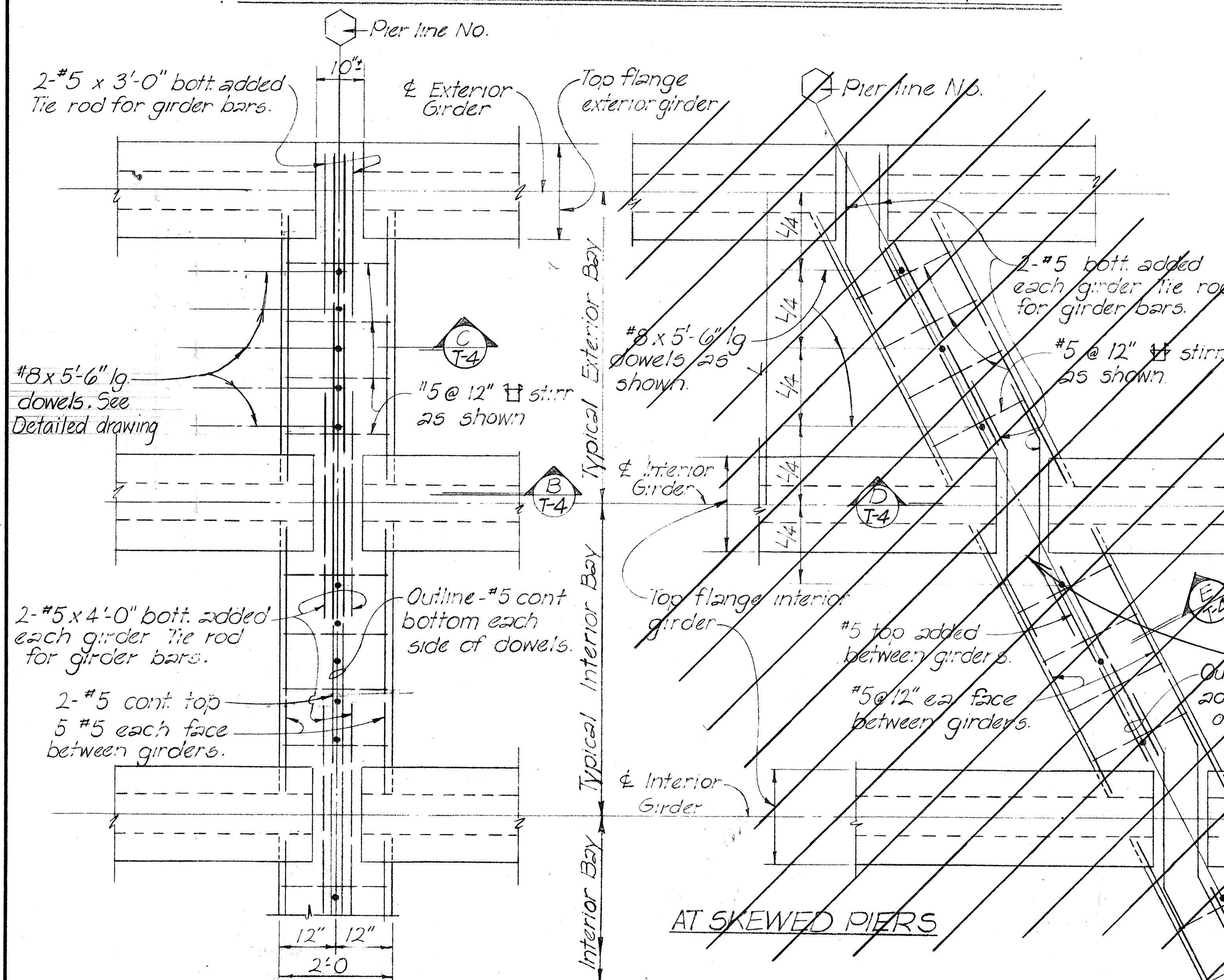


ELEVATION - TYPICAL TRANSVERSE BEAM "D"



SECTION (B) (AT GIRDERS)

SECTION (C) (BETWEEN GIRDERS)



NOT APPLICABLE

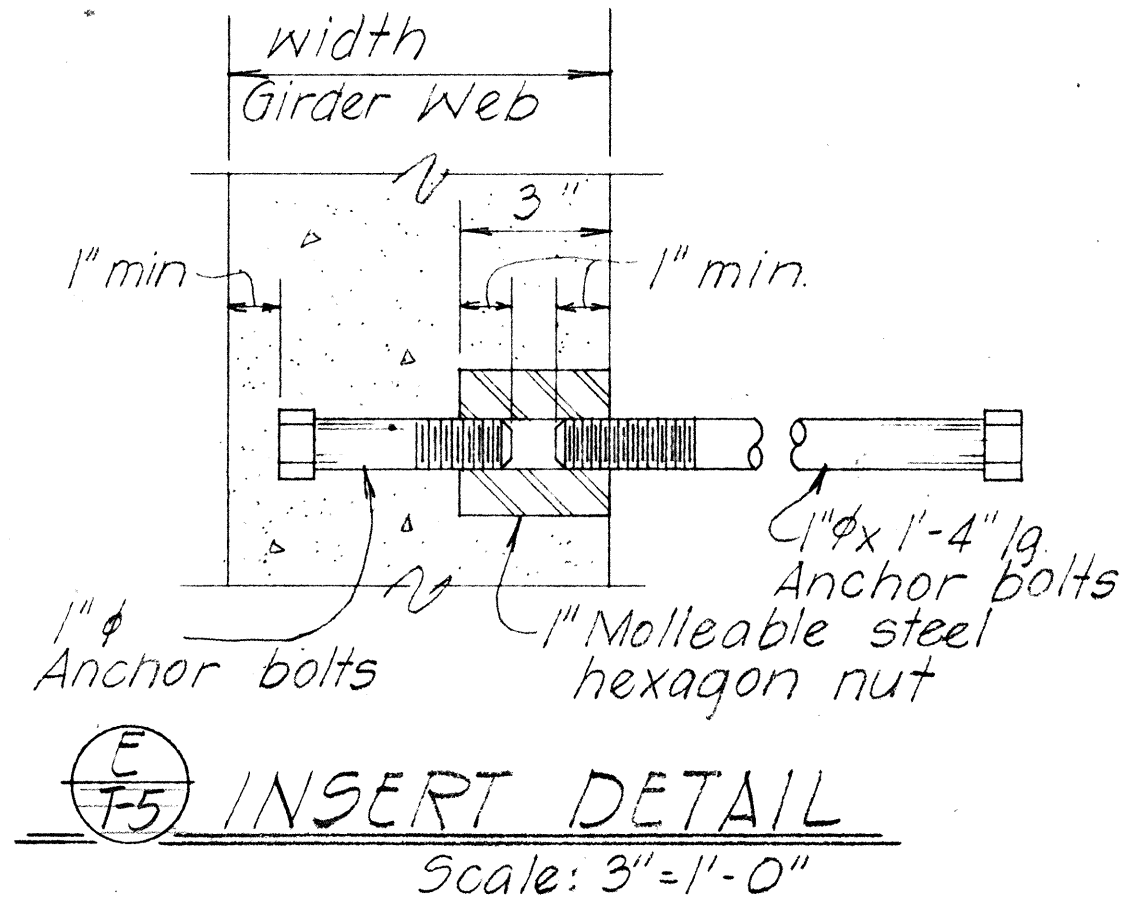
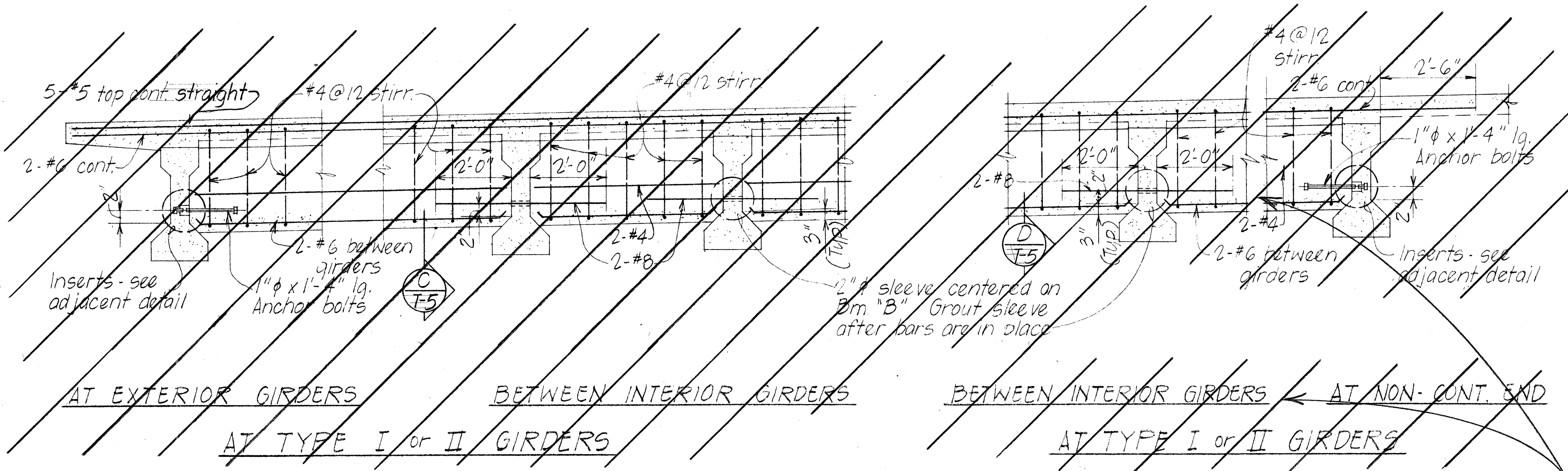
AT RADIAL & NORMAL PIERS

TYPICAL SECTION

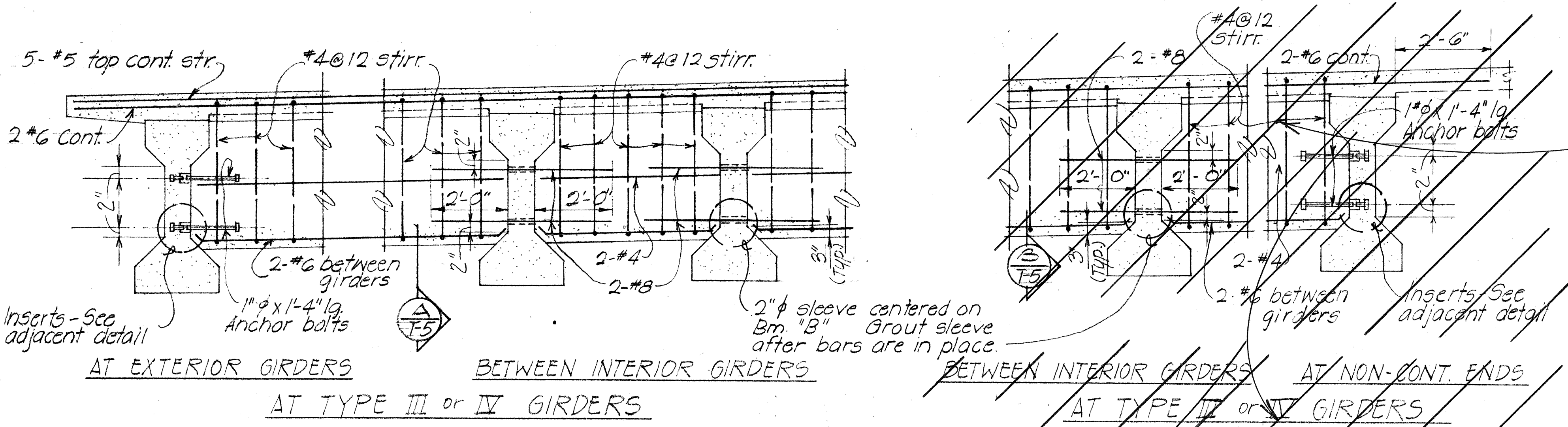
(A) (T-4)

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
TYPICAL DETAILS BEAM "D"	
RED HILL SEPARATION	
Moanaloa Road April 1970	F-078-1(11)
SHEET No. T-4 OF 5 SHEETS	

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-078-1(11)	1969	217	258



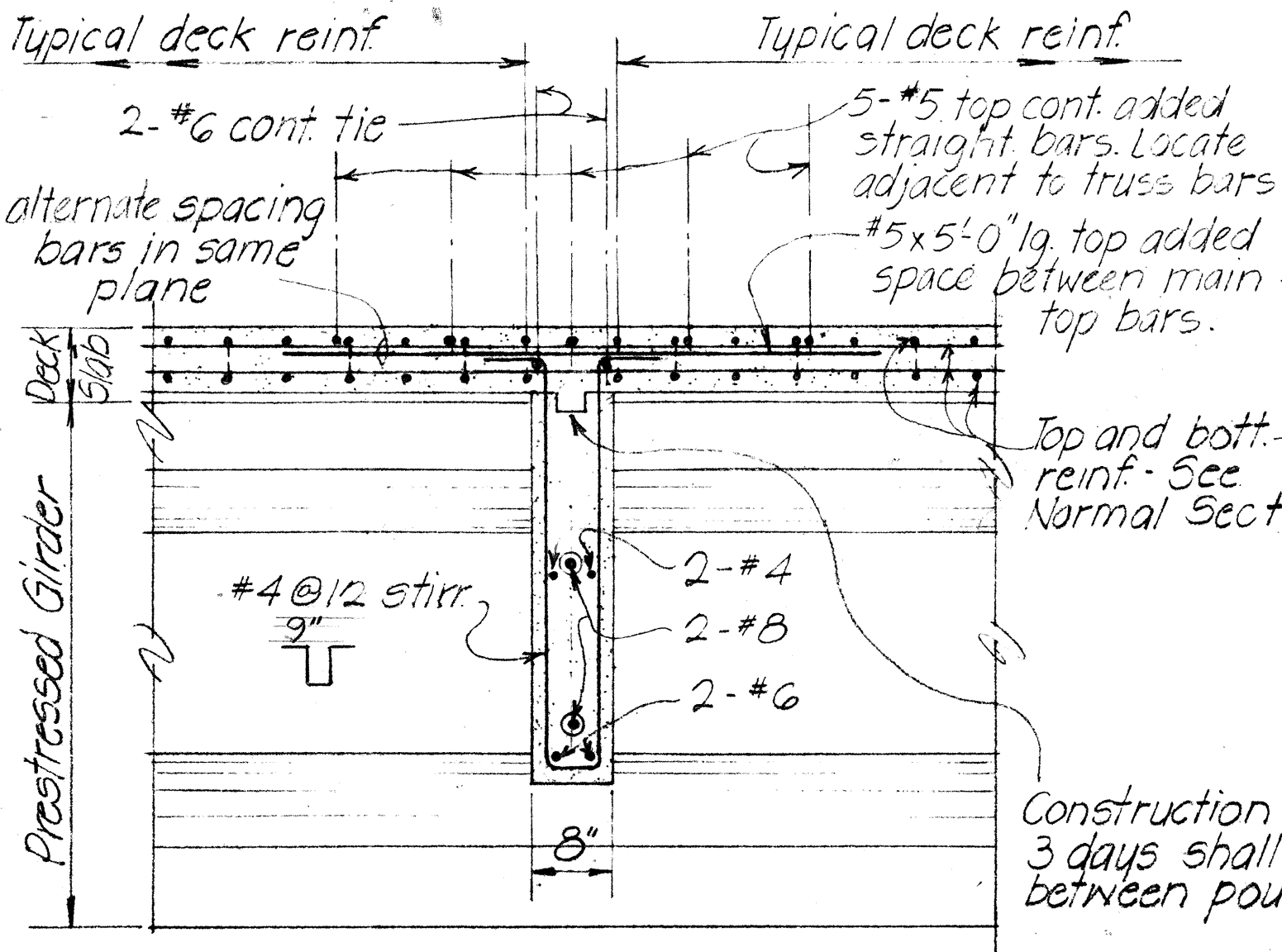
Note: Anchor bolts & Inserts incidental to concrete and will not be paid for separately.



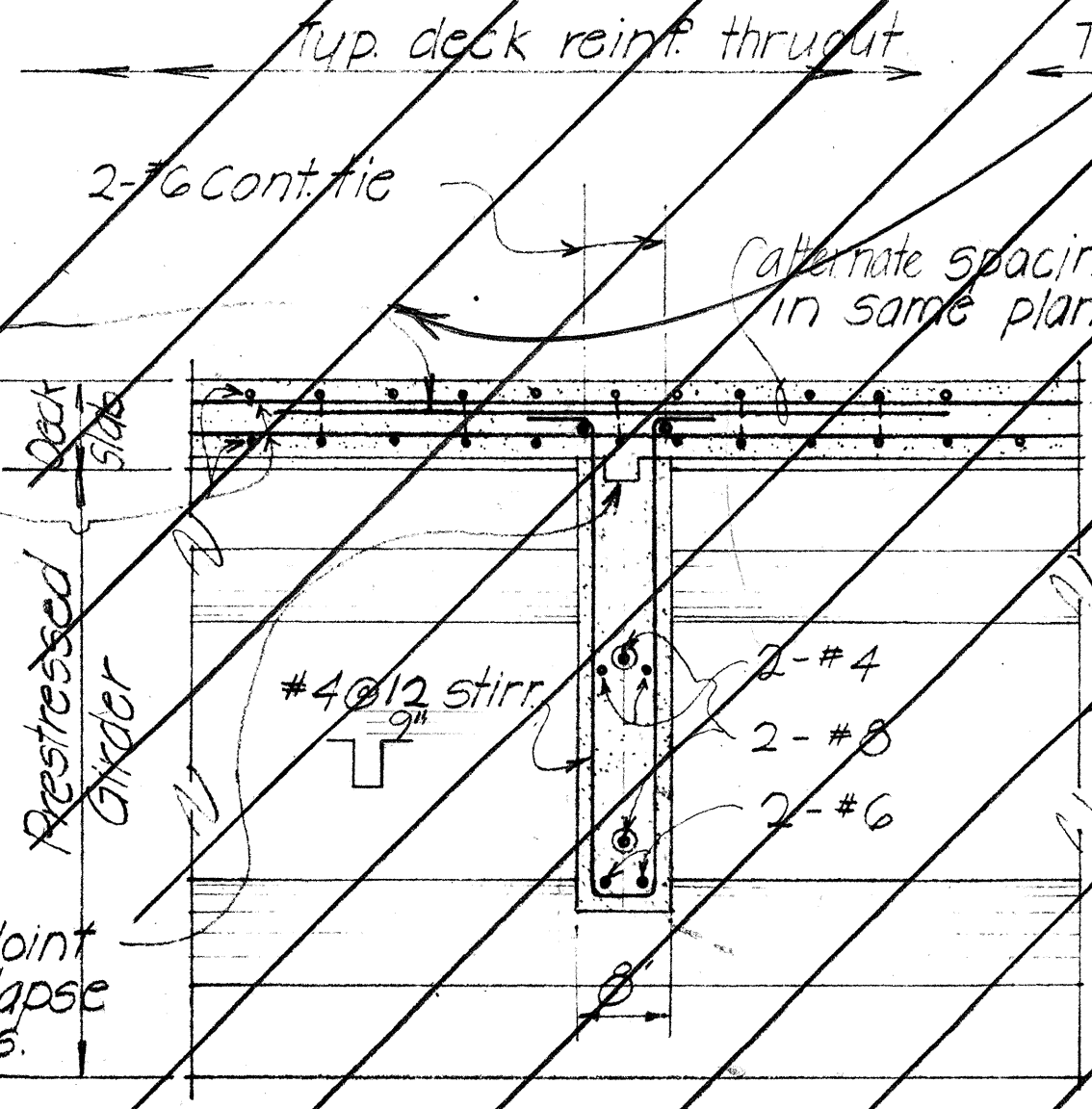
NOT APPLICABLE

TYPICAL BEAM "B" DETAIL Scale: 1/2"=1'-0"

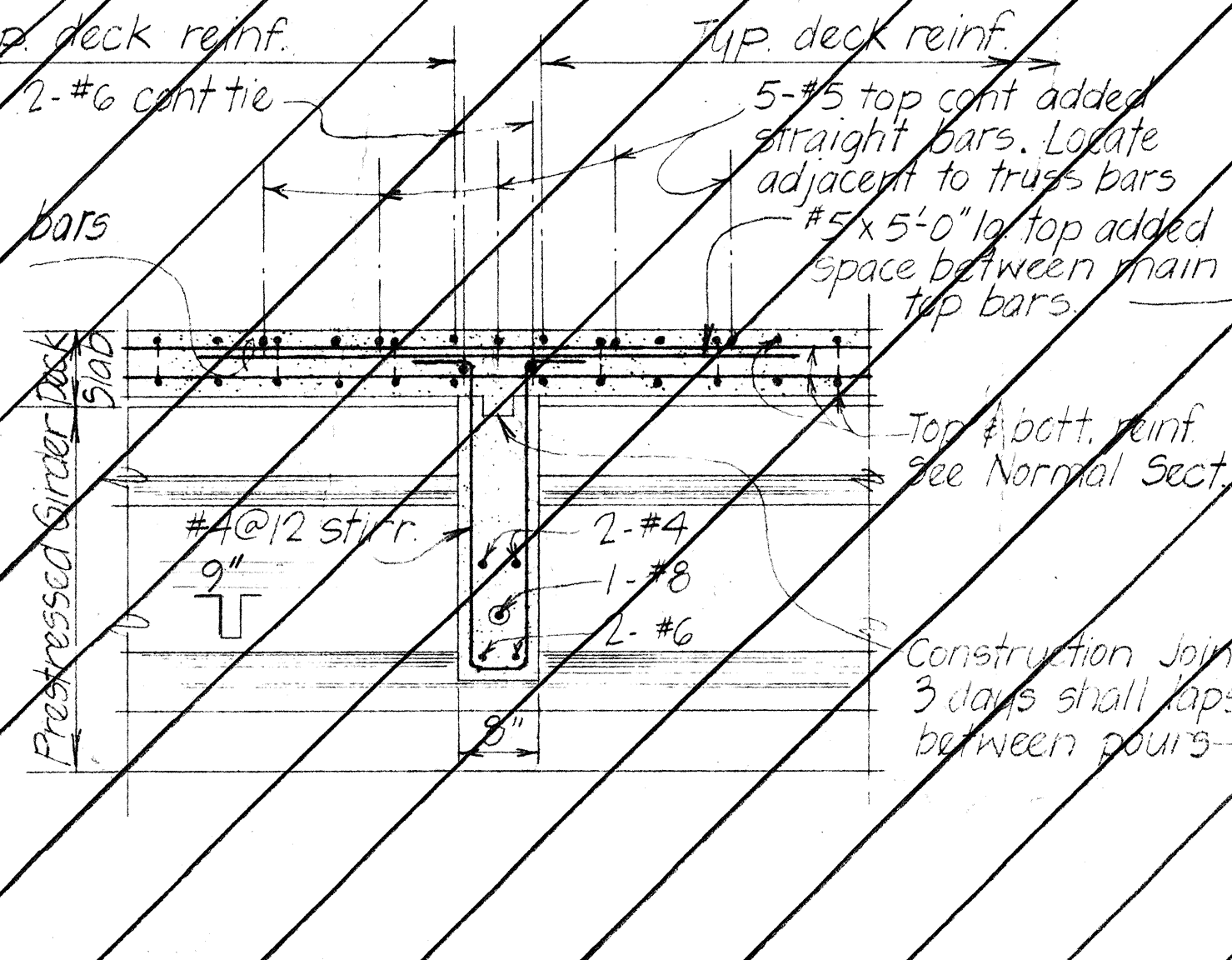
TYPICAL BEAM "Ba" DETAIL Scale: 1/2"=1'-0"



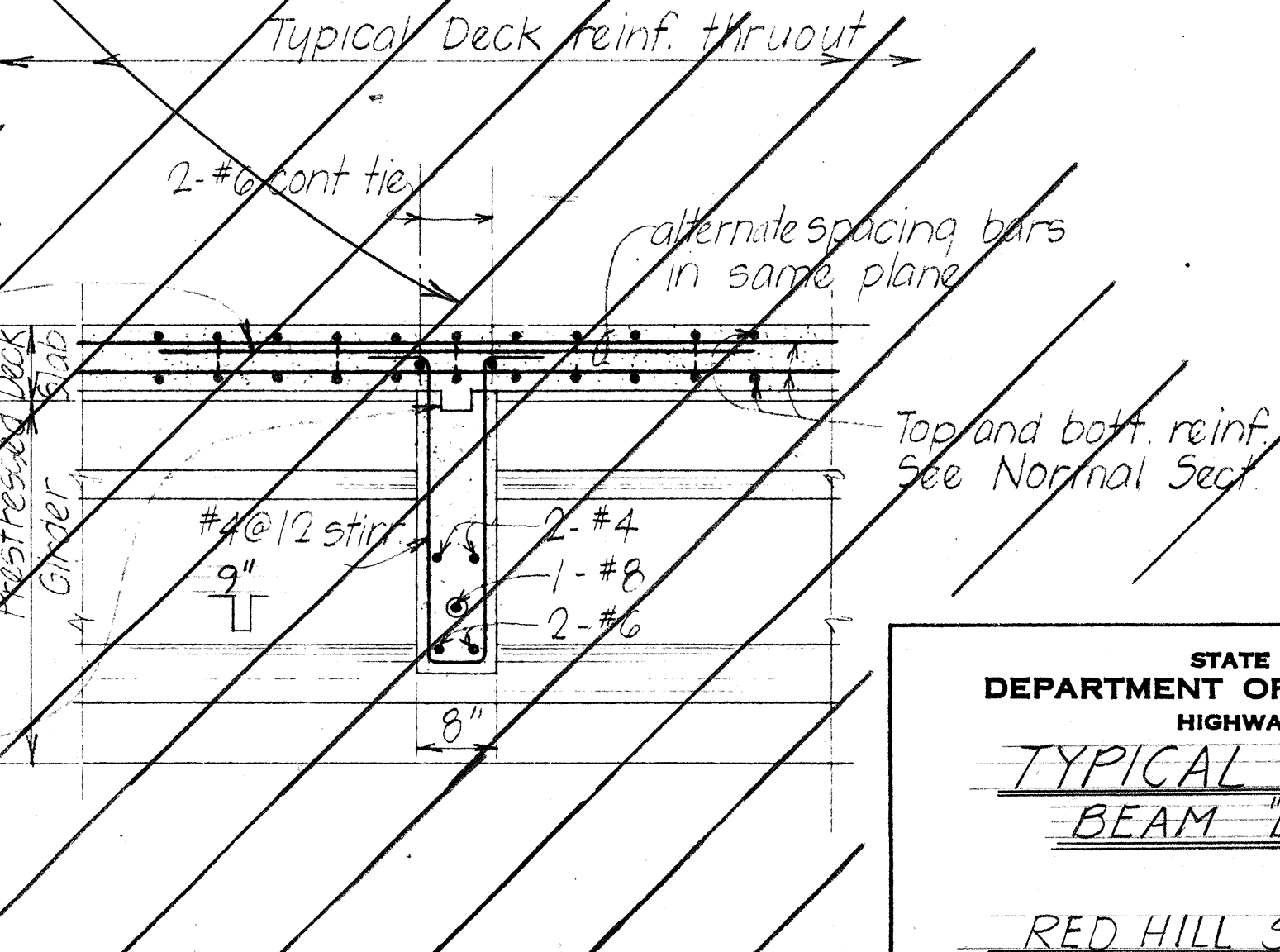
TYPICAL SECTION Scale: 3/4"=1'-0"



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



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



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

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TYPICAL DETAILS
BEAM "B, Ba"

RED HILL SEPARATION

Moanalua Road

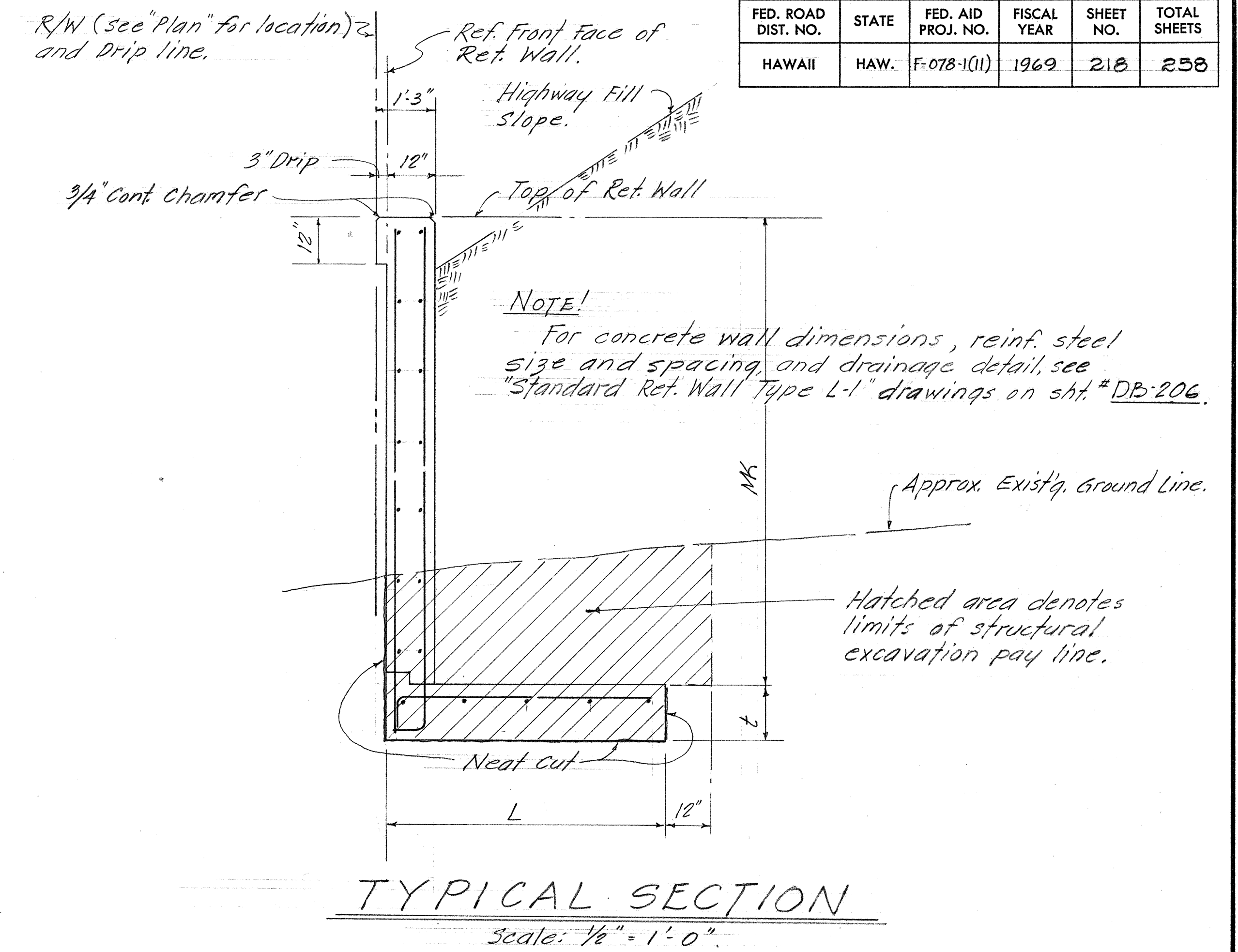
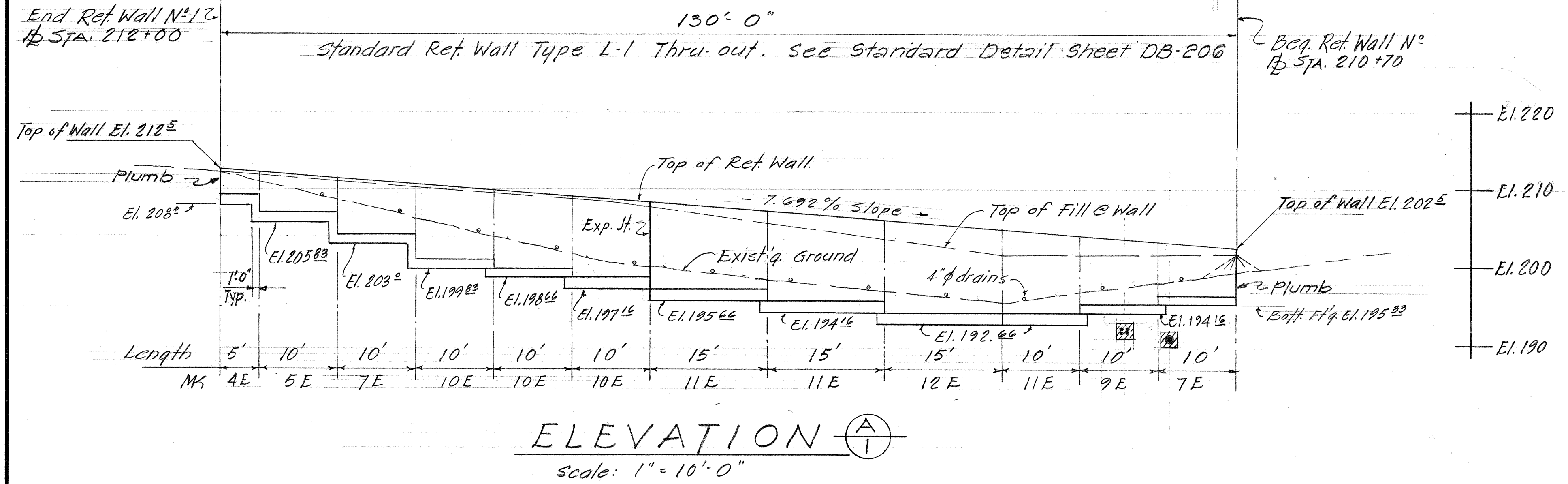
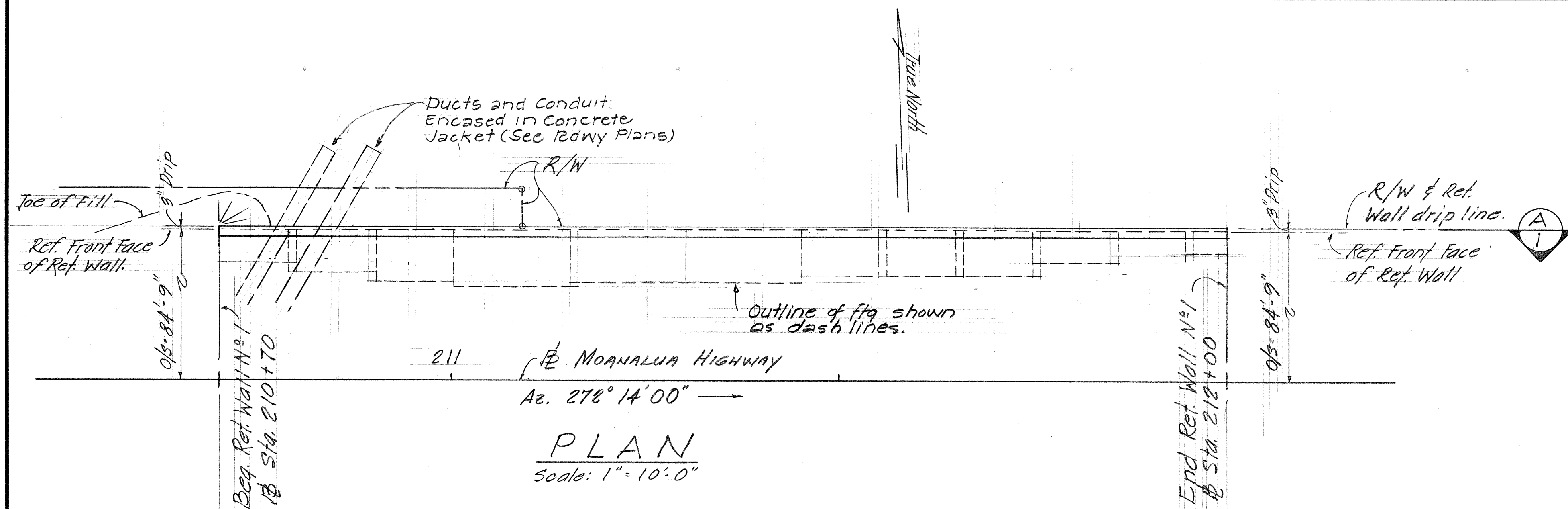
April 1970

F-078-1(11)

SHEET No. 7-5 OF 5 SHEETS

DATE	_____
SURVEY PLATTED BY	_____
DRAWN BY	_____
TRACED BY	_____
QUANTITIES BY	_____
CHECKED BY	_____
ORIGINAL PLAN	_____
NOTE BOOK	_____
No.	_____

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-078-1(11)	1969	218	258

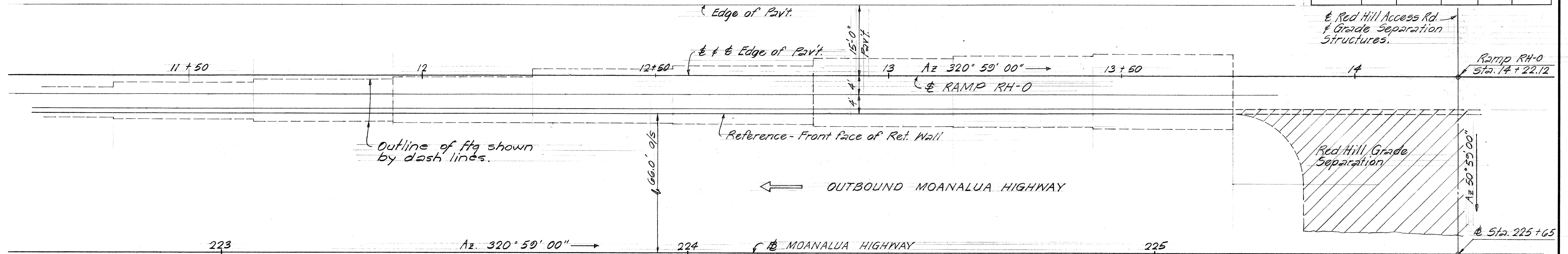


ESTIMATED QUANTITIES		
CONCRETE	(90 cy)	LUMP SUM
REINFORCING STEEL	(7,200 lbs)	LUMP SUM
STRUCTURAL EXCAVATION	130	C.Y.
FILTER MATERIAL	20	C.Y.

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION
RETAINING WALL No. 1
Sta. 210+70 to Sta. 212+00
MOANALUA ROAD
F.A.P. Proj. No. F-078-1(11)
Scale as noted April 1970
SHEET No. 1 OF 17 SHEETS

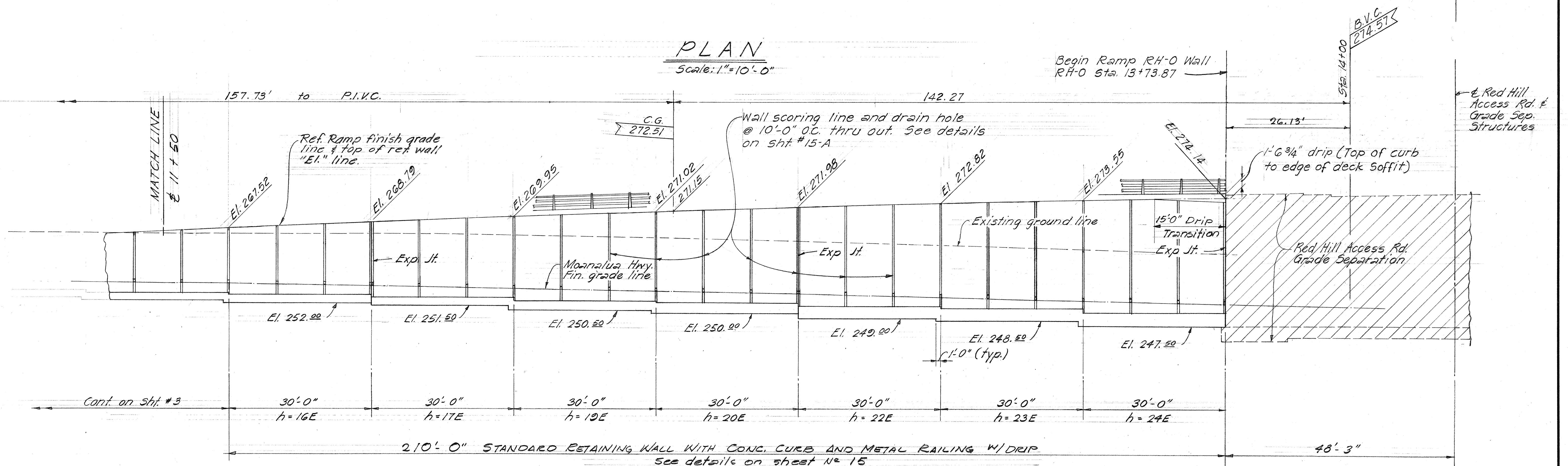
Revised: Oct. 16, 1970
 April 15, 1971
 Oct. 22, 1971

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-078-1(11)	1969	219	258



PLAN

Scale: 1"=10'-0"



NOTES:

- DIMENSIONS MEASURED ALONG FRONT FACE OF WALL.
- TOP OF RET. WALL ELEVATIONS GIVEN AT 30'-0" INTERVALS EXCEPT OTHERWISE NOTED. PROVIDE SMOOTH CURVE ACCORDINGLY WHERE VERTICAL CURVE OCCUR.

ELEVATION

Scale: 1"=10'-0"

ESTIMATED QUANTITIES

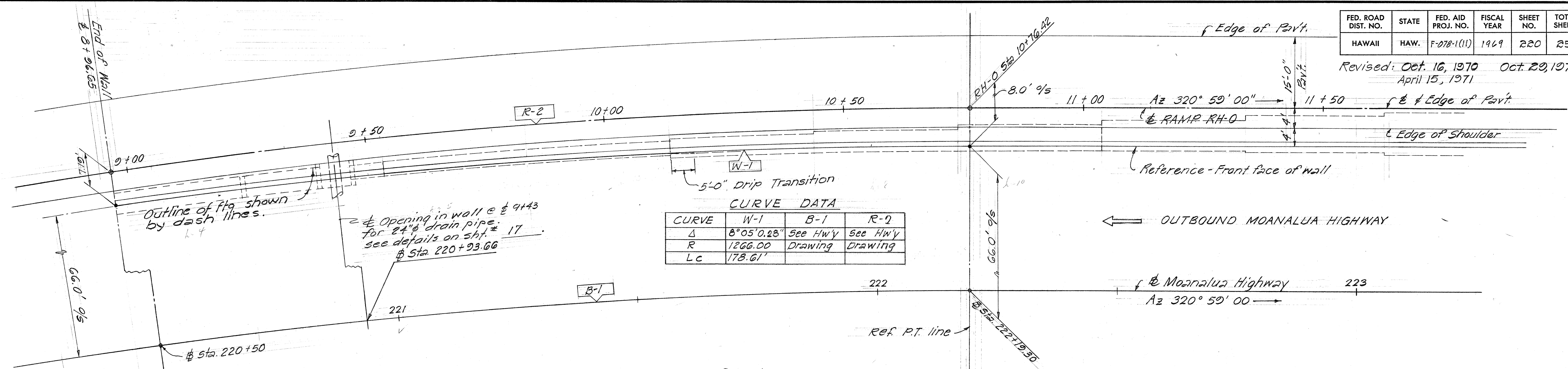
CONCRETE	(630 cy) LUMP SUM
REINFORCING STEEL	(77,100 lbs) LUMP SUM
STRUCTURAL EXCAVATION	1,225 C.Y.
FILTER MATERIAL	165 C.Y.
METAL BRIDGE RAILING (3-RAIL)	270 L.F.

THIS SHEET SUPERSEDES
 SHT. NO. 219

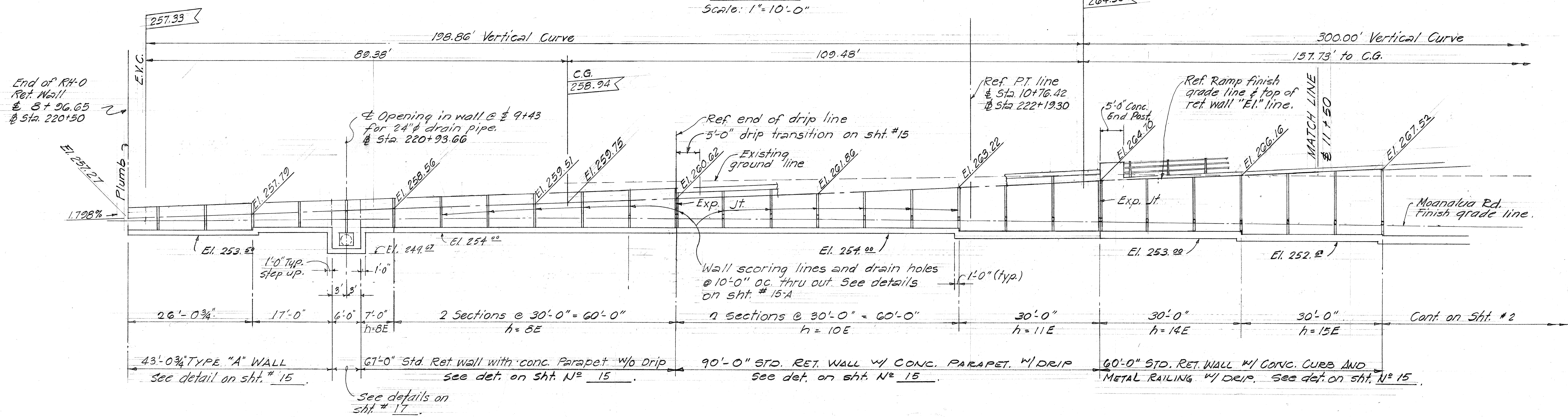
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION
RETAINING WALL RH-0
Sta. 13+73.87 to Sta. 8+96.77
MOANALUA ROAD
F.A.P. Proj. No. F-078-1(11)
Scale: 1"=10'-0" April 1970
SHEET No. 2 OF 17 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-078-1(11)	1969	220	258

Revised: Oct. 16, 1970 Oct. 20, 1971
April 15, 1971



PLAN
Scale: 1"=10'-0"



ELEVATION
Scale: 1"=10'-0"

THIS SHEET SUPERSEDES
SHT. NO. 220

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

RETAINING WALL RH-0

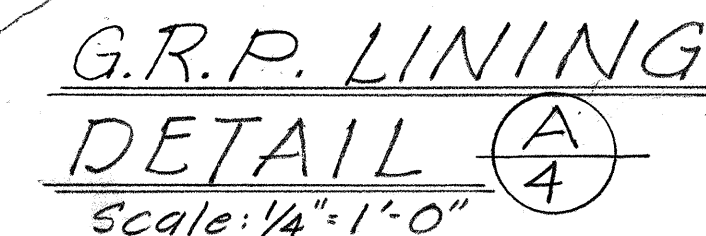
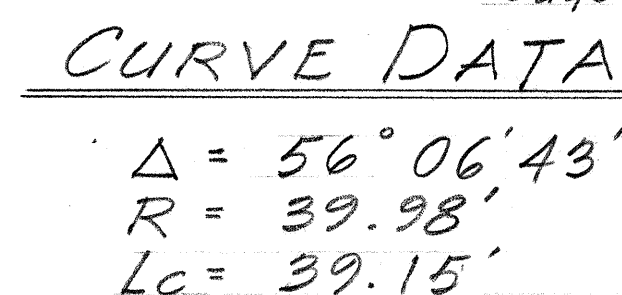
Sta. 13+73.87 to Sta. 8+96.77

MOANALUA ROAD

F.A.P. Proj. No. F-078-1(11)

Scale: 1"=10'-0" April 1970

SHEET No. 3 OF 17 SHEETS



- ELEVATION
Scale: 1" = 10'

ESTIMATED QUANTITIES		
CONCRETE	(745 cy)	LUMP SUM
REINFORCING STEEL	(92,900 lbs)	LUMP SUM
STRUCTURAL EXCAVATION	1,500	C. Y.
FILTER MATERIAL	175	C. Y.
METAL BRIDGE RAILING (3-RAIL)	268	L. F.
G. R. P.	22	C. Y.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

RETAINING WALL RM-1

\$ Sta. 15 + 31.02 to \$ Sta. 12 + 67.4

MOANALUA ROAD

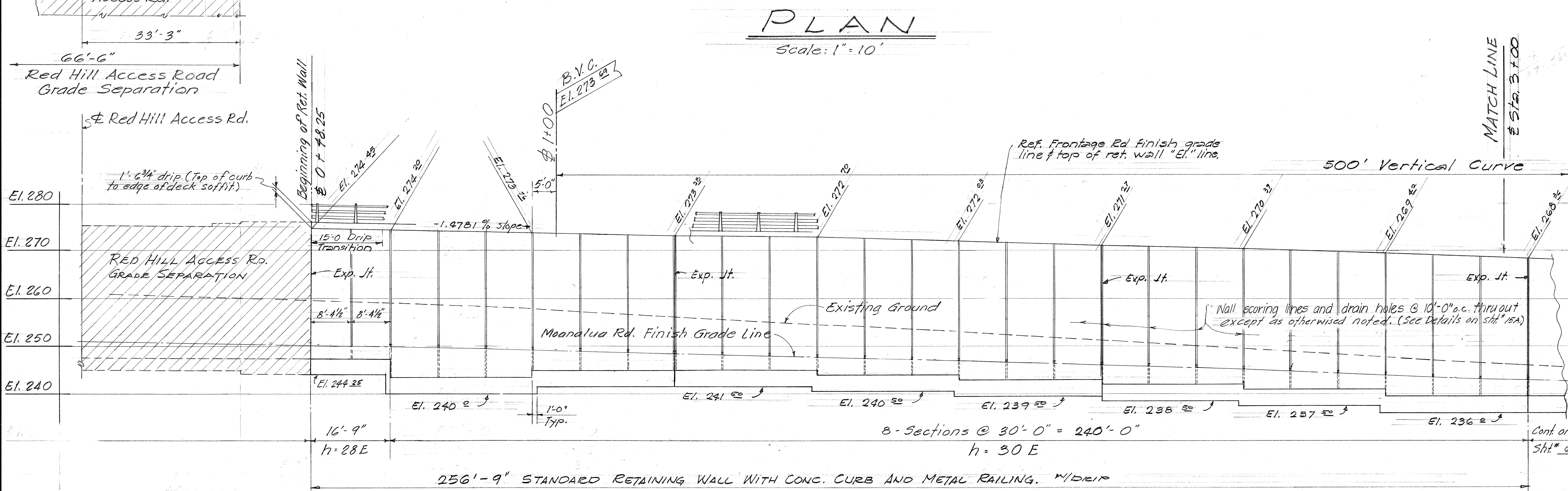
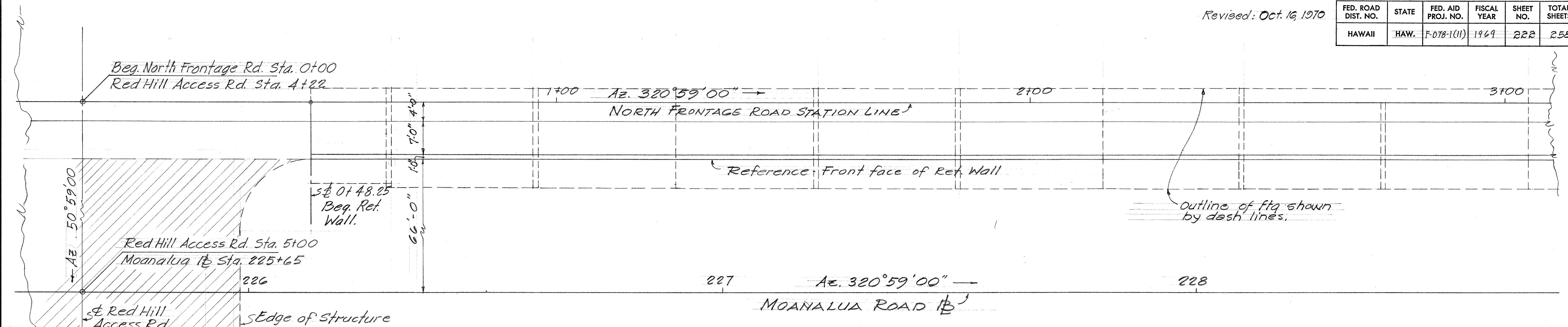
F.A.P. Proj. No. F-078-1(11)

Scale: 1" = 10'-0" April 1970

SHEET No. 4 OF 17 SHEETS

Revised: Oct. 16, 1970

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-078-1(11)	1969	222	258



NOTES:

- DIMENSIONS MEASURED ALONG FRONT FACE OF WALL.
- TOP OF RET. WALL ELEVATIONS GIVEN AT 30'-0" INTERVALS EXCEPT OTHERWISE NOTED. PROVIDE SMOOTH CURVE ACCORDINGLY WHERE VERTICAL CURVE OCCUR.

ESTIMATED QUANTITIES	
CONCRETE	(3,690 cy) LUMP SUM
REINFORCING STEEL	(468,550 lbs) LUMP SUM
STRUCTURAL EXCAVATION	5,355 C.Y.
FILTER MATERIAL	700 C.Y.
METAL BRIDGE RAILING (3-RAIL)	432 L.F.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

**NORTH FRONTAGE
RETAINING WALL**

\$ Sta. 0+48.25 to \$ Sta. 12+95
MOANALUA ROAD

F.A.P. Proj. No. F-078-1(11)

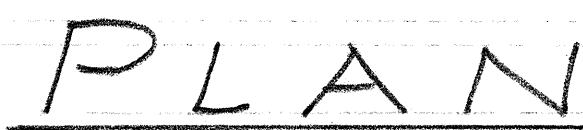
Scale: 1"=10'-0" April 1970

SHEET No. 5 OF 17 SHEETS

ELEVATION
Scale: 1"=10'

DATE	_____
SURVEY PLOTTED BY	_____
DRAWN BY	_____
CHECKED BY	_____
NOTE BOOK	_____
No.	_____

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-078-1(11)	1969	223	258



Scale: 1" = 10'



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

NORTH FRONTAGE
RETAINING WALL

\$ Sta. 0+48.25 to \$ Sta. 12 + 95

MOANALUA ROAD

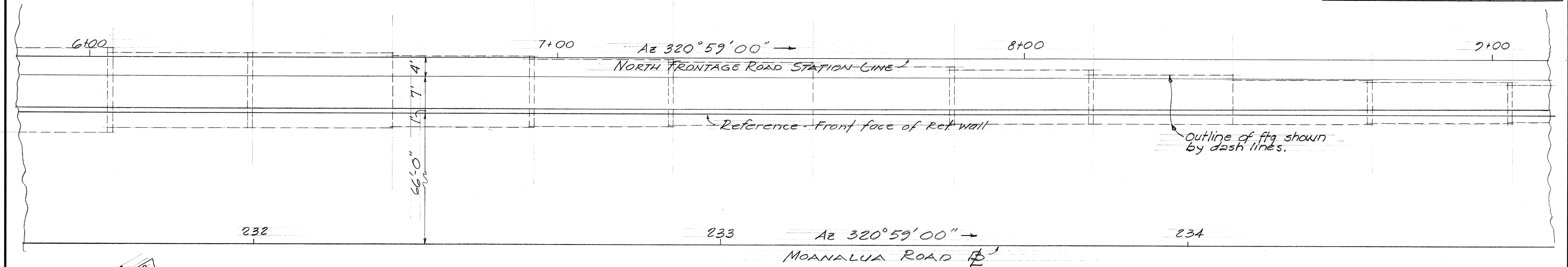
F.A.P. Proj. No. F-078-1(11)

Scale: 1"=10'-0" April 1970

SHEET No. 6 OF 17 SHEETS

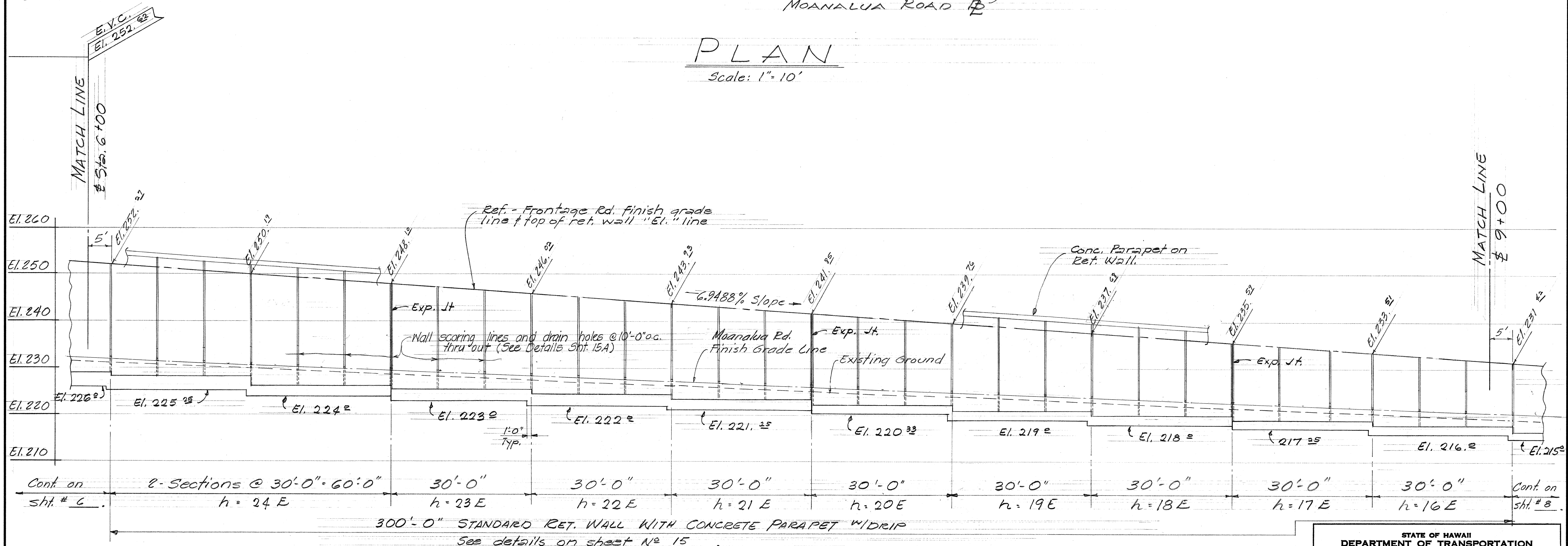
Revised: Oct. 16, 1970

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-078-1(11)	1969	224	258



PLAN

Scale: 1" = 10'



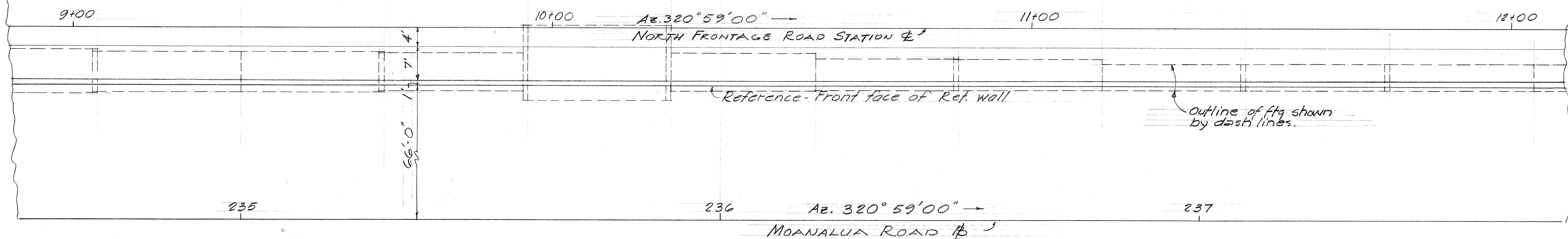
ELEVATION

Scale: 1" = 10'-0"

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
**NORTH FRONTAGE
RETAINING WALL**
Sta. 0+48.25 to Sta. 12+95
MOANALUA ROAD
F.A.P. Proj. No. F-078-1(11)
Scale: 1" = 10'-0" April 1970
SHEET No. 7 OF 17 SHEETS

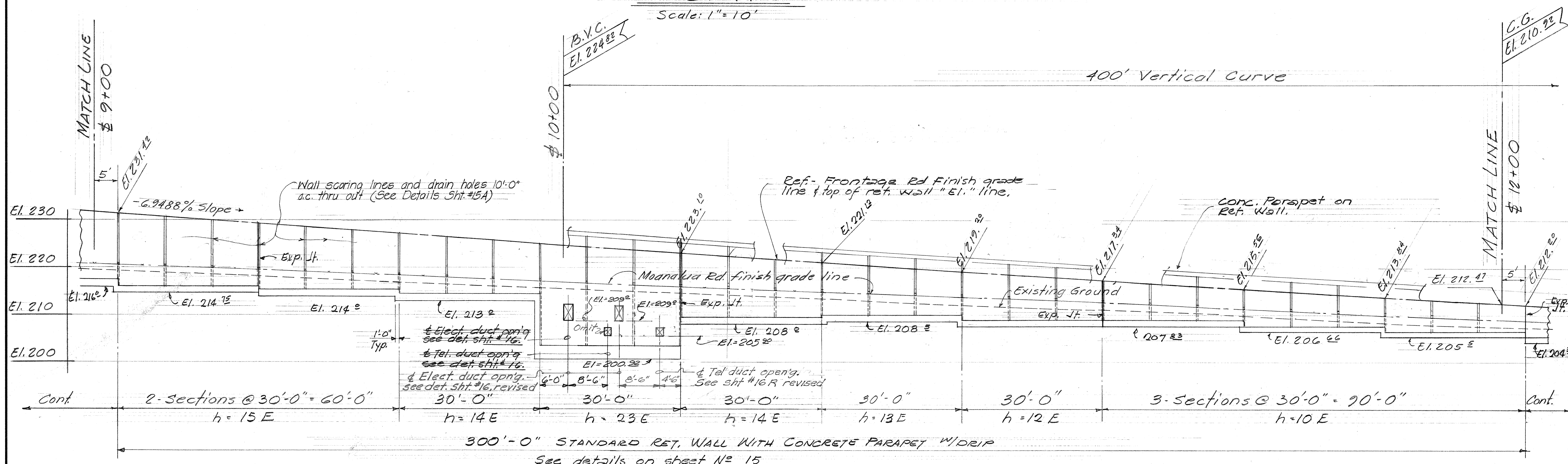
Revised: Oct. 16, 1970

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-078-1(11)	1969	225	258



PLAN

Scale: 1" = 10'



ELEVATION

Scale: 1" = 10'-0"

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

**NORTH FRONTAGE
RETAINING WALL**

Sta 0+48.25 to Sta 12+95

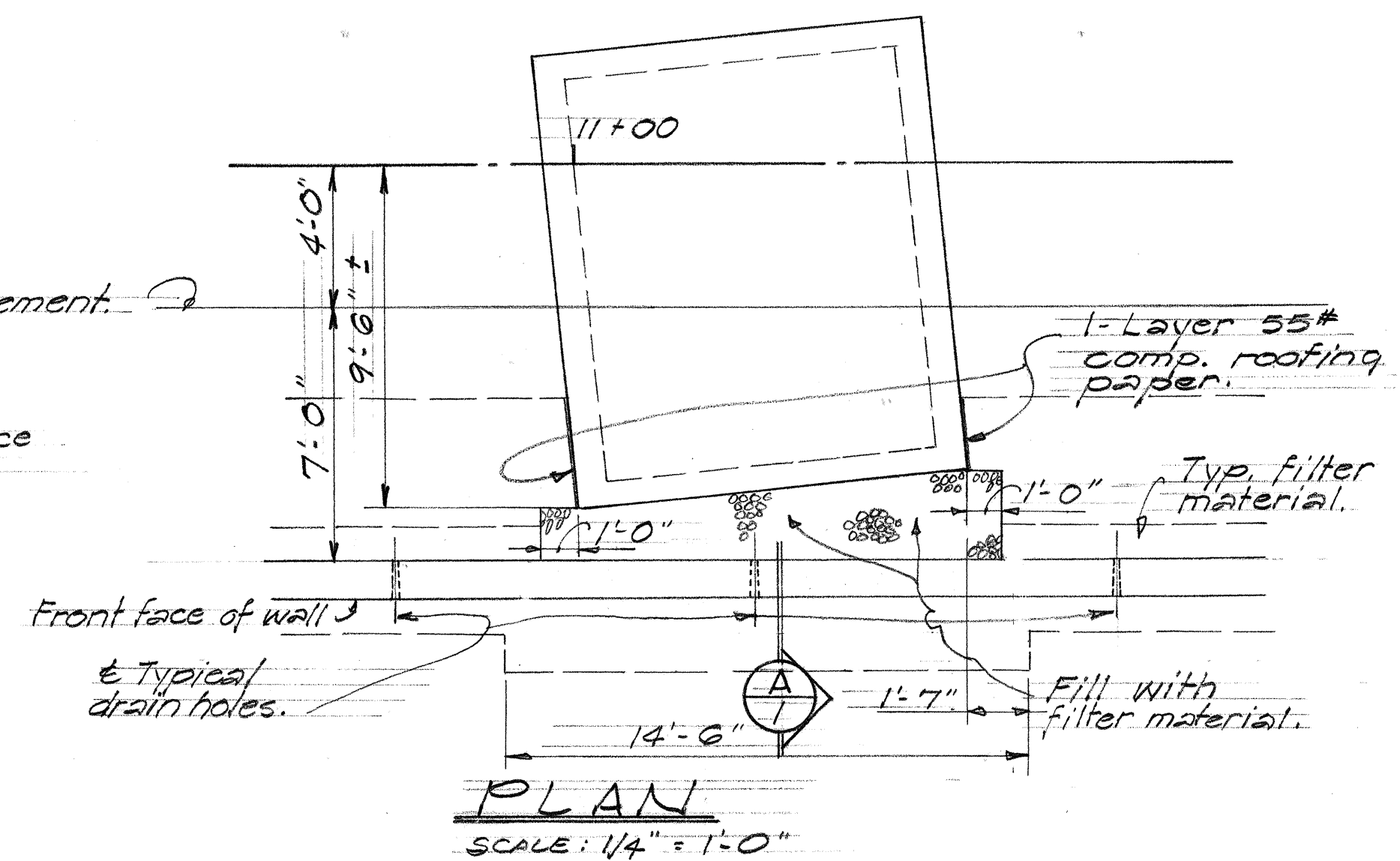
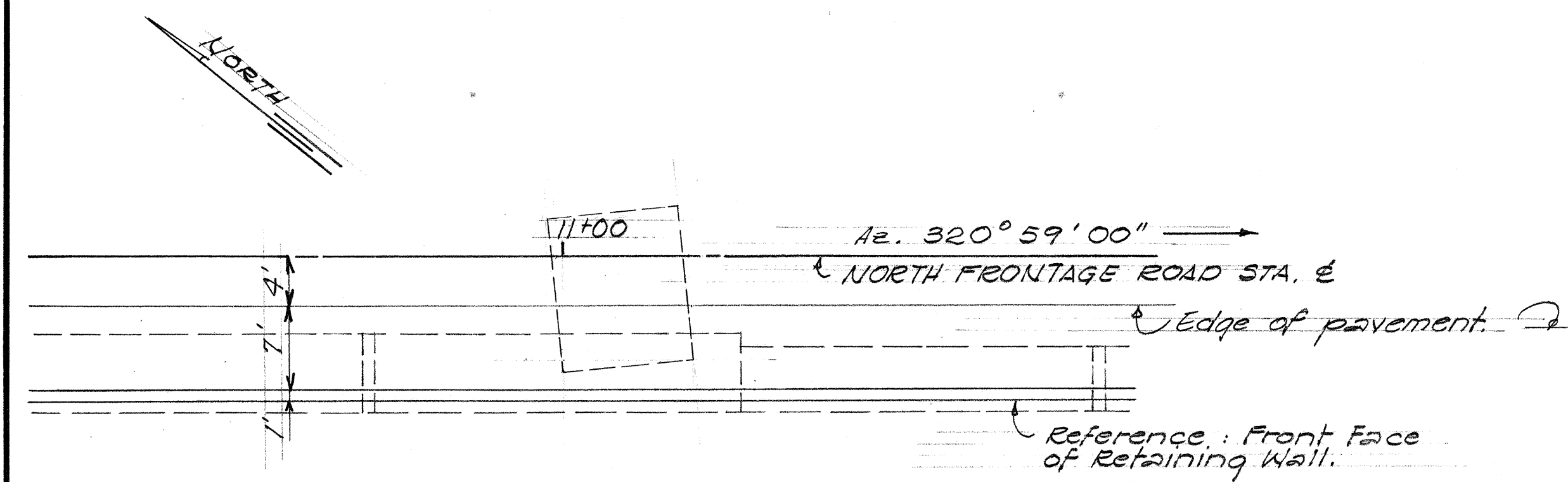
MOANALUA ROAD

F.A.P. Proj. No. F-078-1(11)

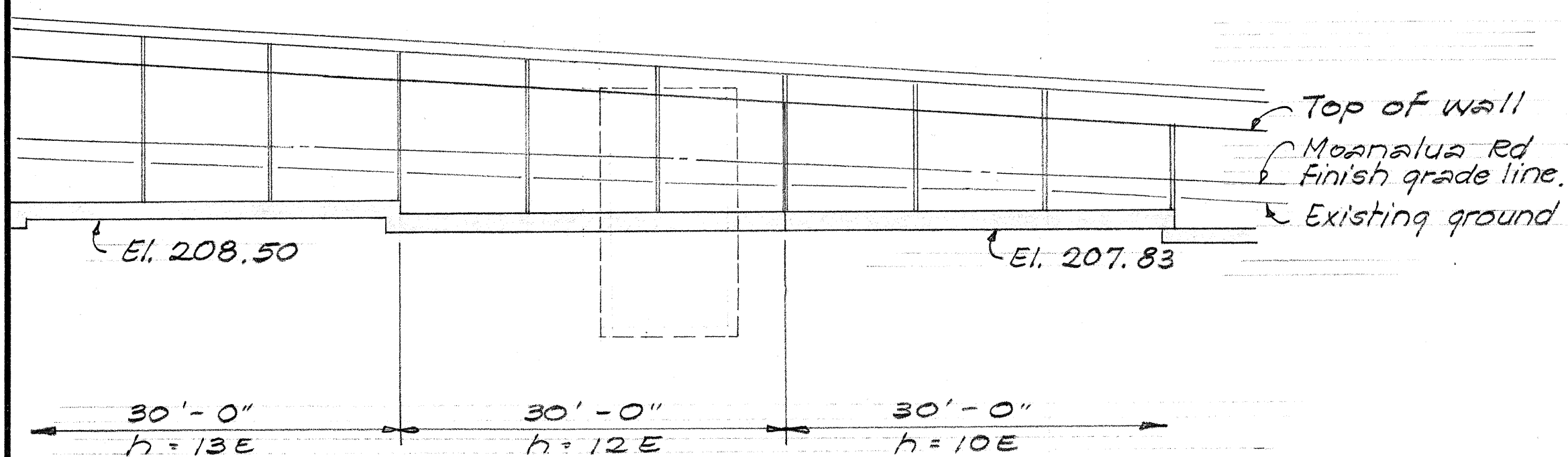
Scale: 1" = 10'-0" April 1970

SHEET No. 8 OF 17 SHEETS

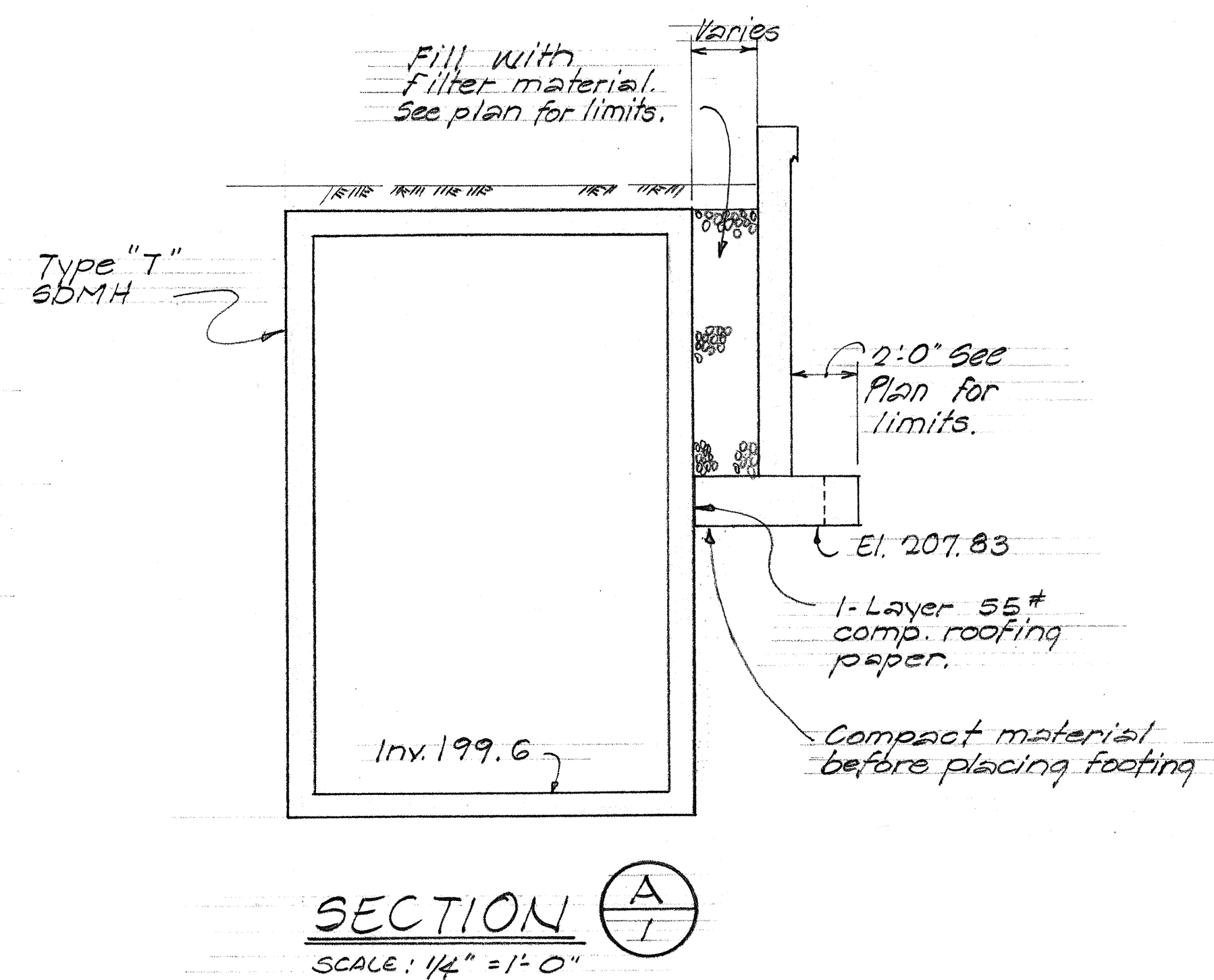
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.				



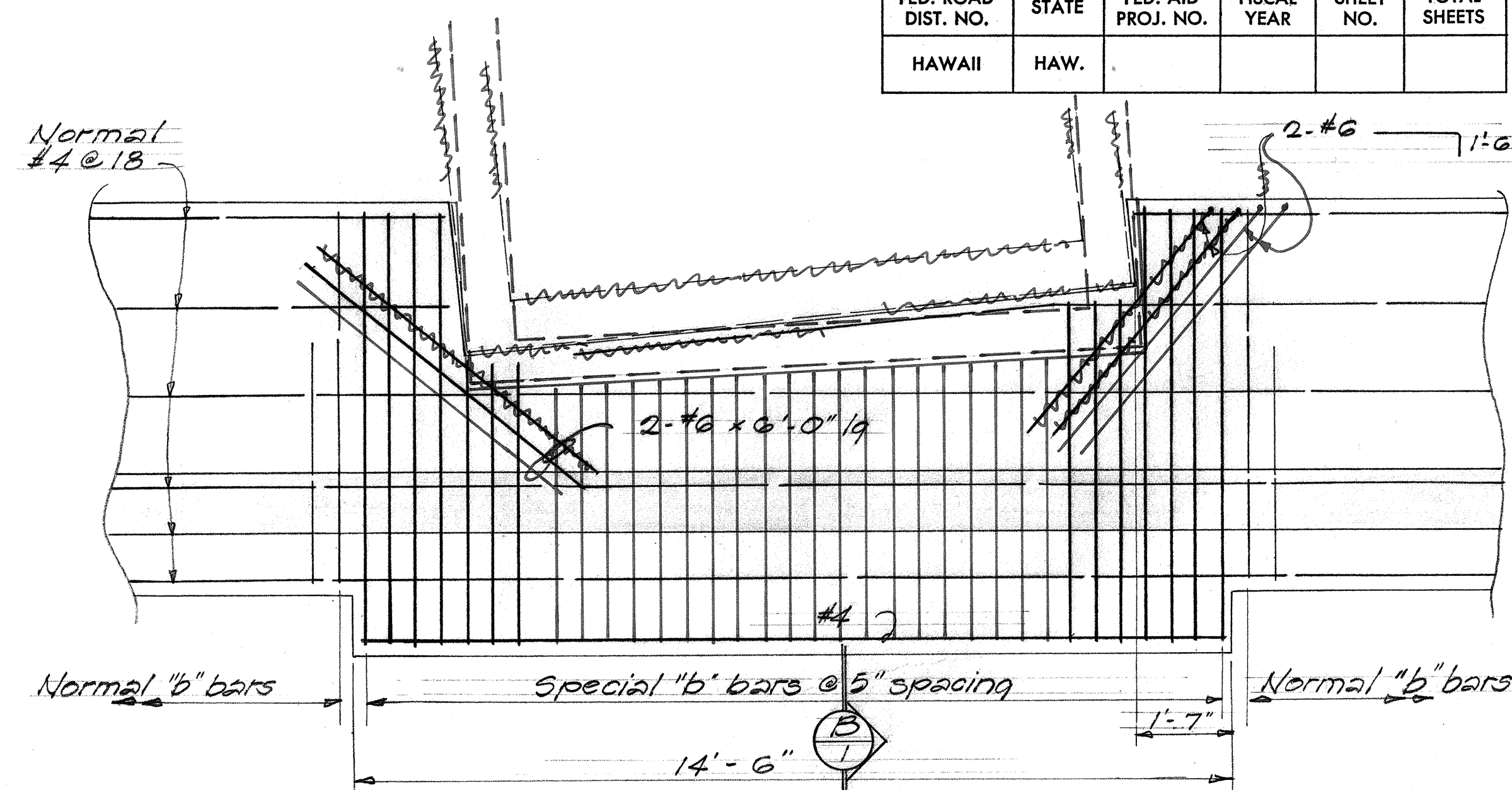
PLAN ~ NORTH FRONTAGE RET. WALL
SCALE: 1" = 10'-0"



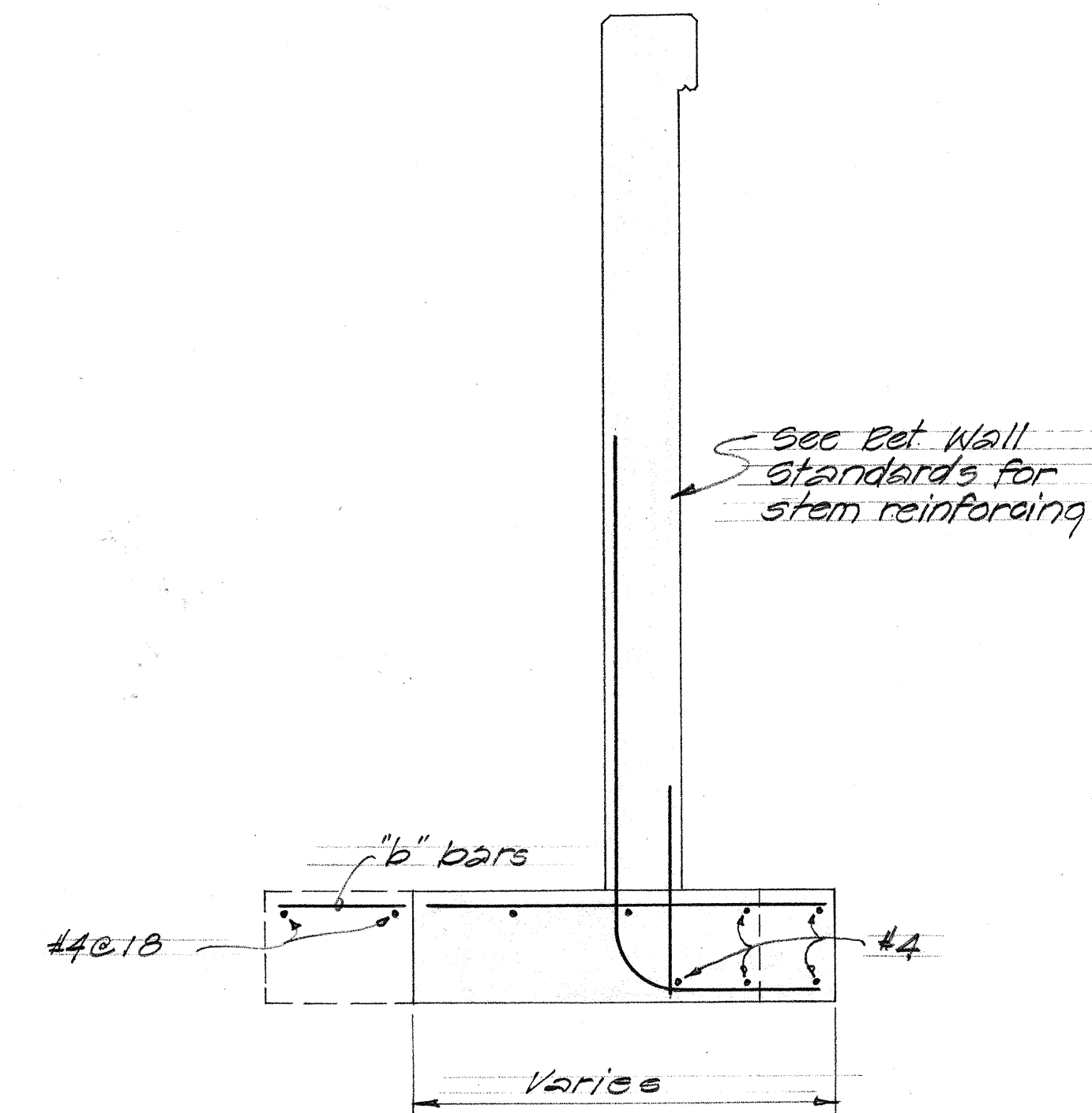
ELEVATION ~ NORTH FRONTAGE RET. WALL
SCALE: 1" = 10'-0"



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



PLAN - FOOTING REINFORCING
SCALE: 1/2" = 1'-0"

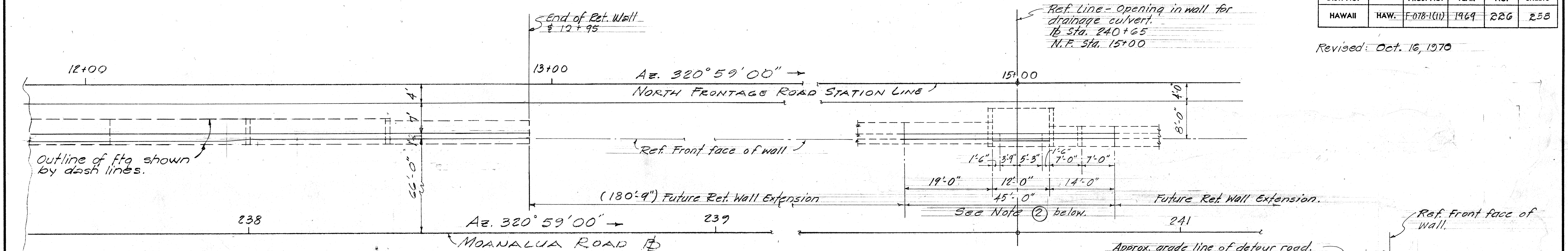


SECTION B-B
SCALE: 1/2" = 1'-0"

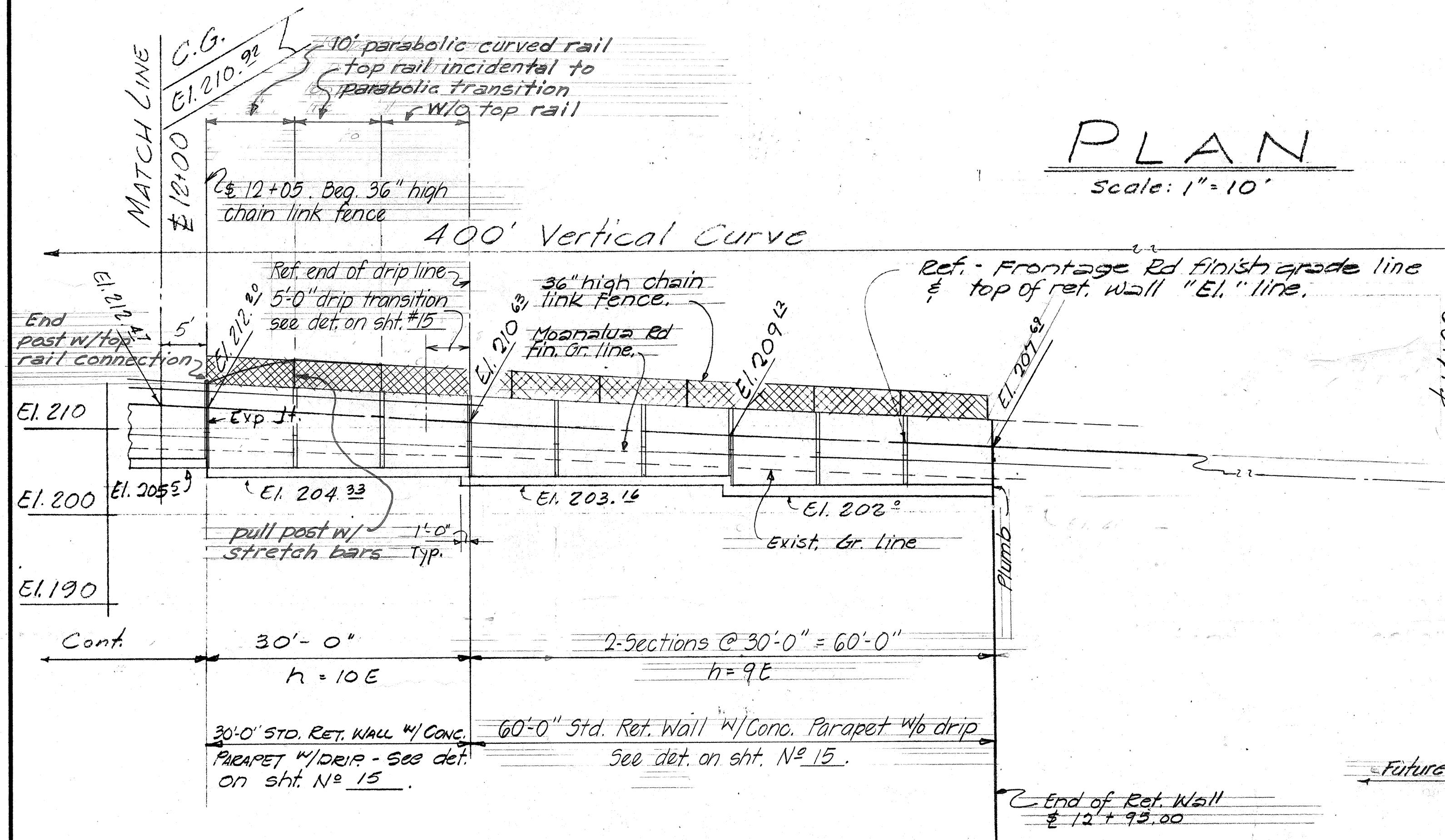
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION					
NORTH FRONTAGE RET. WALL					
VICINITY OF STA. 11+00					
MOANALUA ROAD					
F.A.P. Proj. No. F-078-1(11)					
NOV. 1971					
SHEET No. 1 OF 1 SHEETS					

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-078-1(11)	1969	226	258

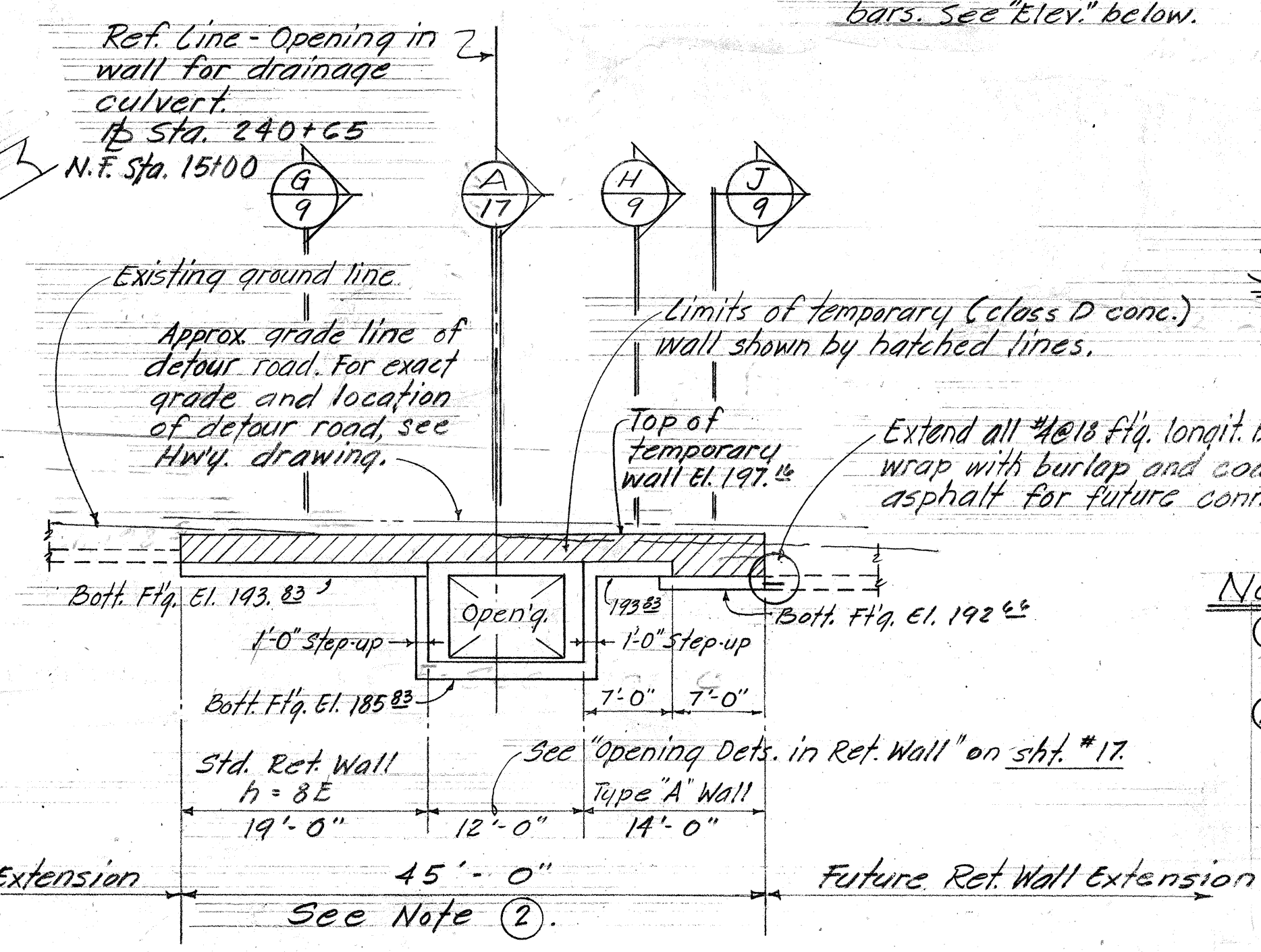
Revised: Oct. 16, 1970



PLAN
Scale: 1" = 10'



ELEVATION
Scale: 1" = 10'-0"



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

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

- Note:**
- Class "D" concrete shall be paid as Class "A" concrete.
 - Footings and temporary wall only shall be paid as retaining wall.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

**NORTH FRONTAGE
RETAINING WALL**

Sta. 0+48.25 to Sta. 12+95
MOANALUA ROAD

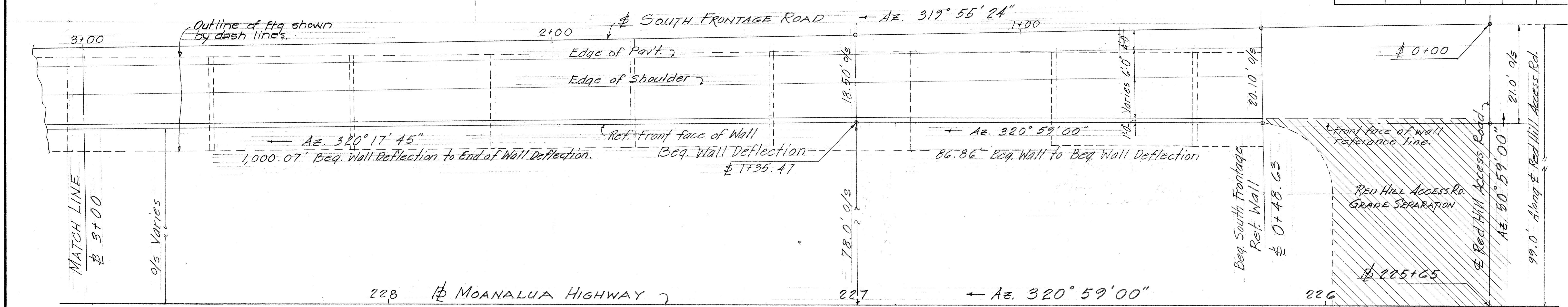
F.A.P. Proj. No. F-078-1(11)

Scale: 1" = 10'-0" April 1970

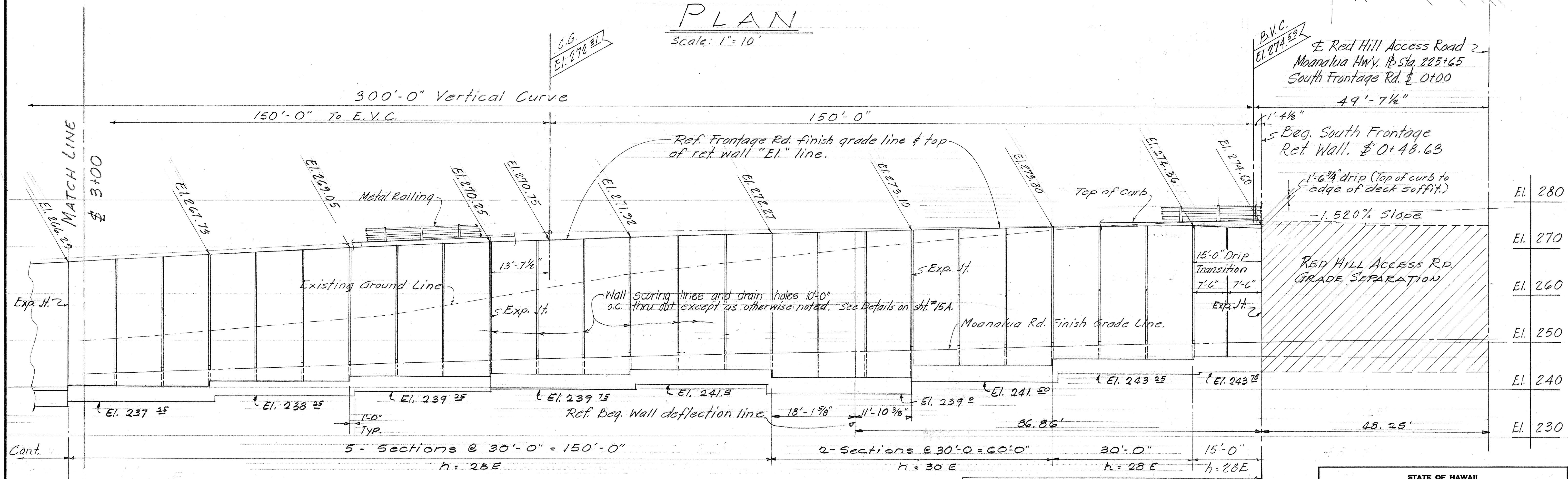
SHEET No. 9 OF 17 SHEETS

Revised: Oct. 16, 1970

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-078-1 (11)	1969	227	258



PLAN
Scale: 1" = 10'



255'-0" STANDARD RETAINING WALL WITH CONC. CURB AND METAL RAILING W/DRIP
See details on sheet No. 15

- NOTES:
- DIMENSIONS MEASURED ALONG FRONT FACE OF WALL.
 - TOP OF RET. WALL ELEVATIONS GIVEN AT 30'-0" INTERVALS EXCEPT OTHERWISE NOTED. PROVIDE SMOOTH CURVE ACCORDINGLY WHERE VERTICAL CURVE OCCUR.

ELEVATION
Scale: 1" = 10'

ESTIMATED QUANTITIES		
CONCRETE	(3,265 cy)	LUMP SUM
REINFORCING STEEL	(411,950 lbs)	LUMP SUM
STRUCTURE EXCAVATION	7,215	C.Y.
FILTER MATERIAL	700	C.Y.
METAL BRIDGE RAILING (3-RAIL)	430	L.F.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

**SOUTH FRONTAGE
RETAINING WALL**

Sta. 0+48.63 to Sta. 12+93.33
MOANALUA ROAD

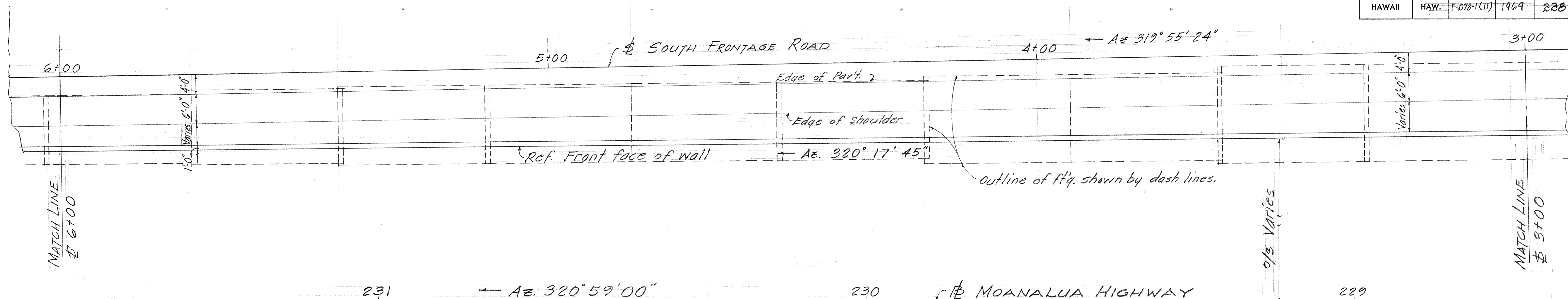
F.A.P. Proj. No. F-078-1(11)
Scale: 1" = 10'-0" April 1970

SHEET No. 10 OF 17 SHEETS

SURVEY PLOTTED BY	DATE
DESIGNED BY	
NOTED BY	
CHECKED BY	

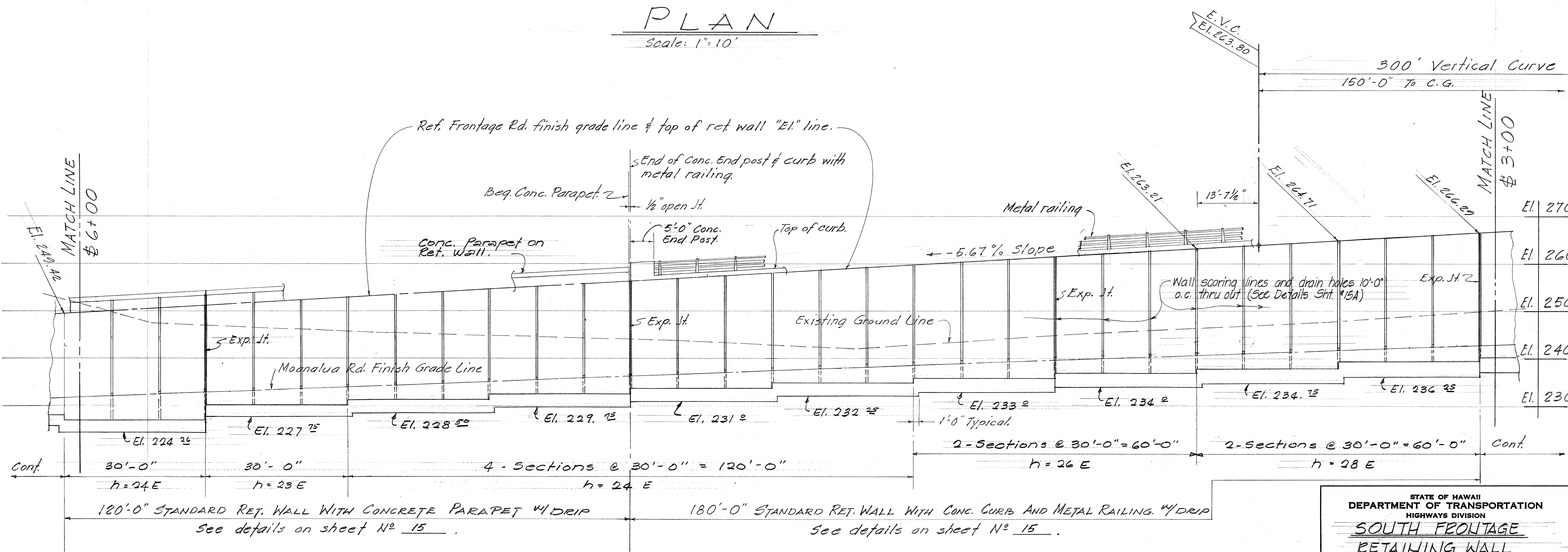
Revised: Oct. 16, 1970

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-078-1(11)	1969	228	258



PLAN

Scale: 1"=10'



ELEVATION

Scale: 1"=10'

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

**SOUTH FRONTAGE
RETAINING WALL**

Sta. 0+48.63 to Sta. 12+93.33
MOANALUA ROAD

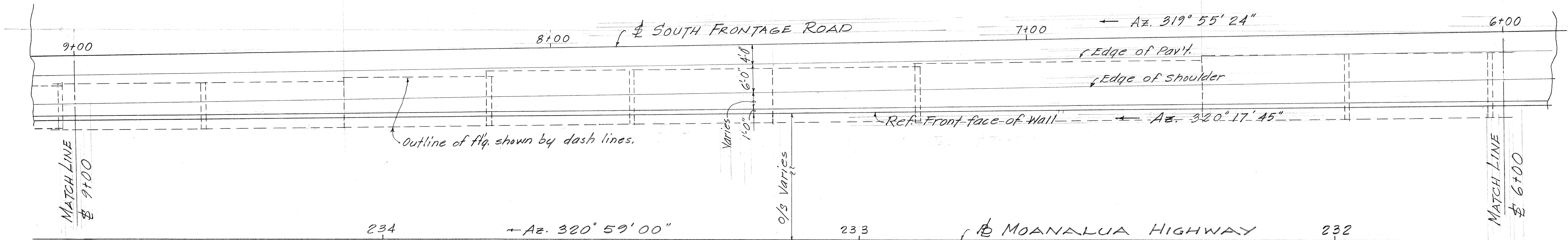
F.A.P. Proj. No. F-078-1(11)

Scale: 1"=10'-0" April 1970

SHEET No. 11 OF 17 SHEETS

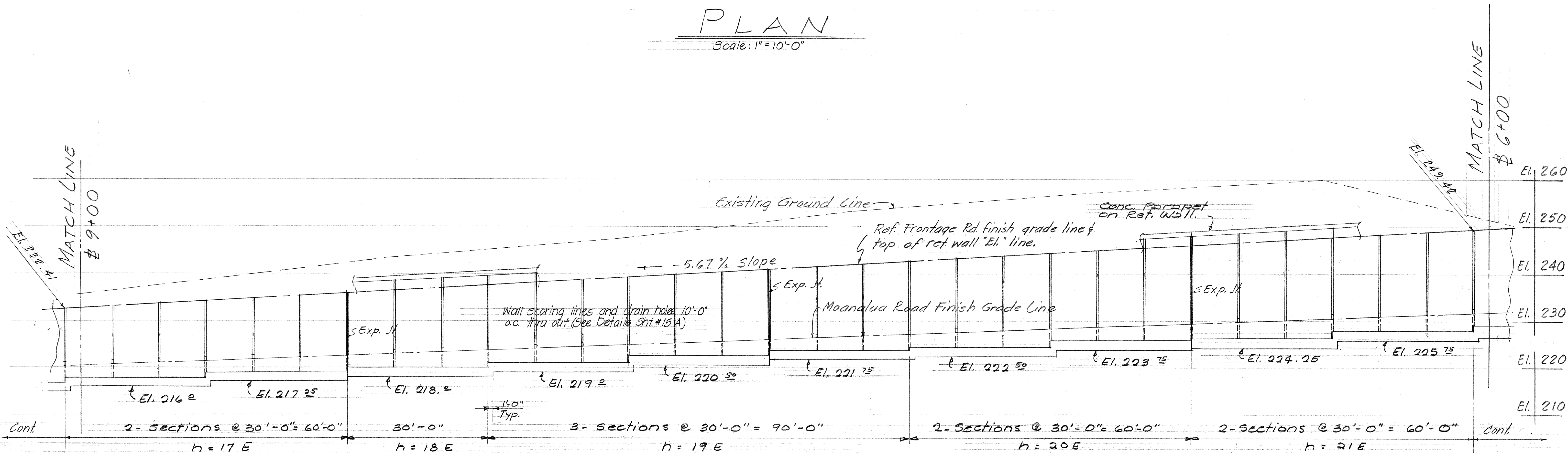
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-078-1(11)	1969	229	258

Revised: Oct. 16, 1970



PLAN

Scale: 1" = 10'-0"



ELEVATION

Scale: 1" = 10'-0"

STATE OF HAWAII

DEPARTMENT OF TRANSPORTATION

HIGHWAYS DIVISION

SOUTH FRONTAGE

RETAINING WALL

Sta. 0+48.63 to Sta. 12+93.33

MOANALUA ROAD

F.A.P. Proj. No. F-078-1(11)

Scale: 1" = 10'-0"

April 1970

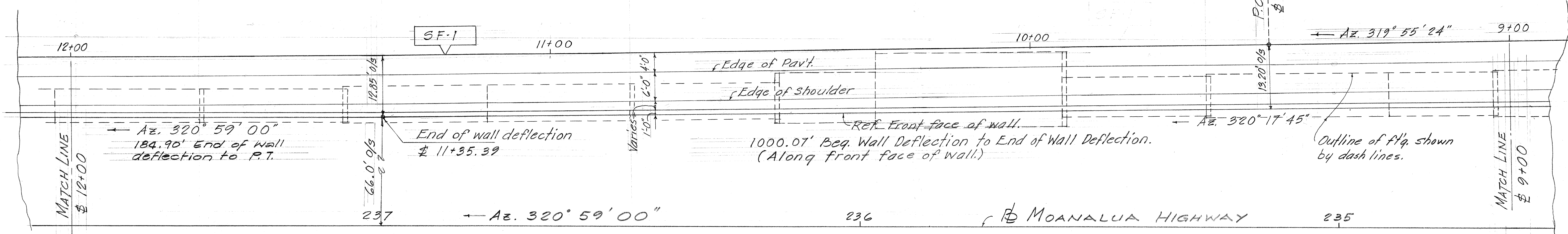
SHEET No. 12 OF 17 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-078-1(11)	1969	230	258

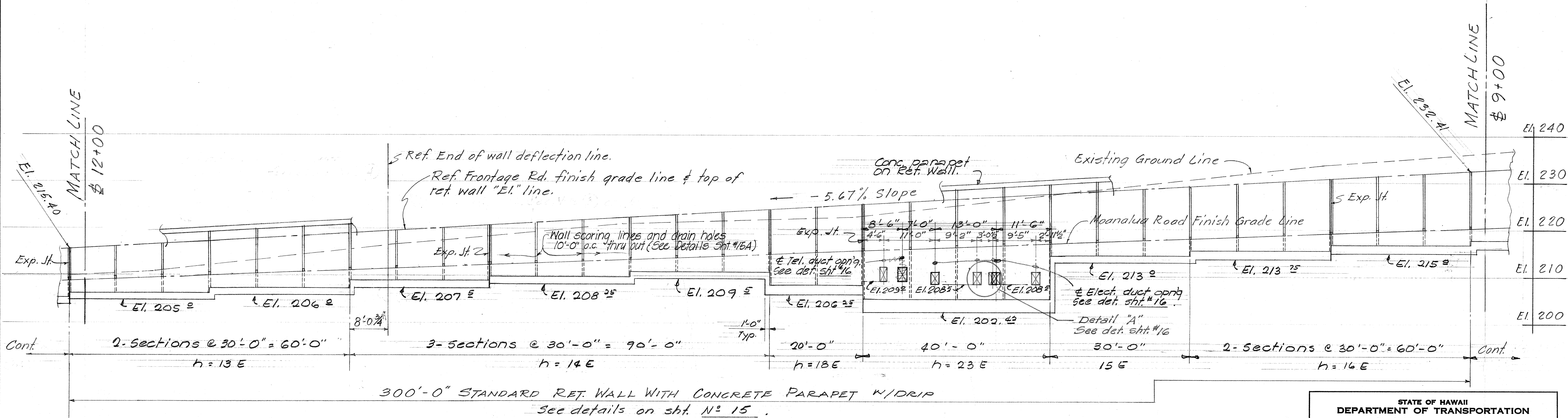
Revised: Oct. 16, 1970

SF-1 CURVE DATA

$\Delta = 1^{\circ} 03' 36''$
 $R = 20,000.00'$
 $T = 185.00'$
 $L = 370.00'$



PLAN

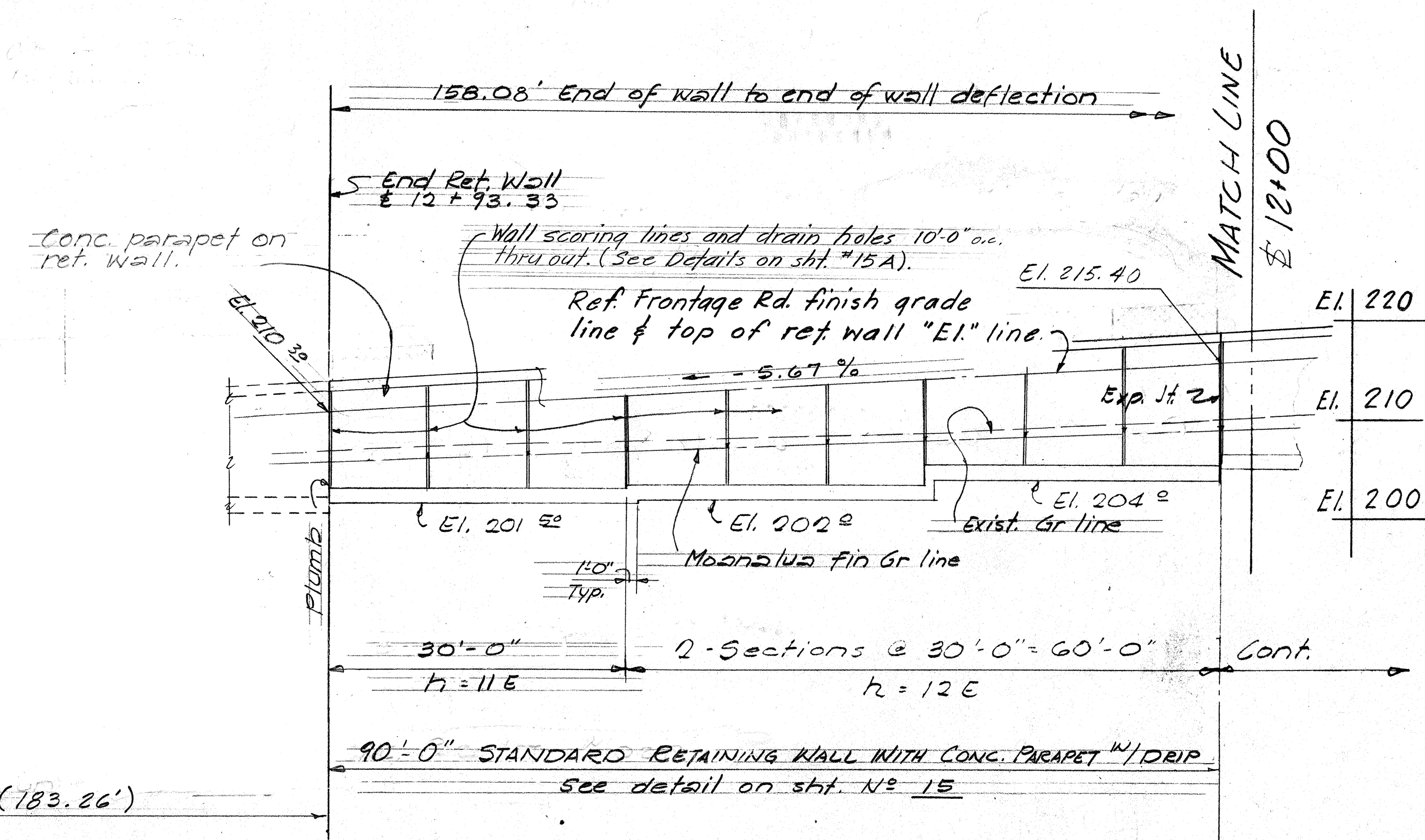
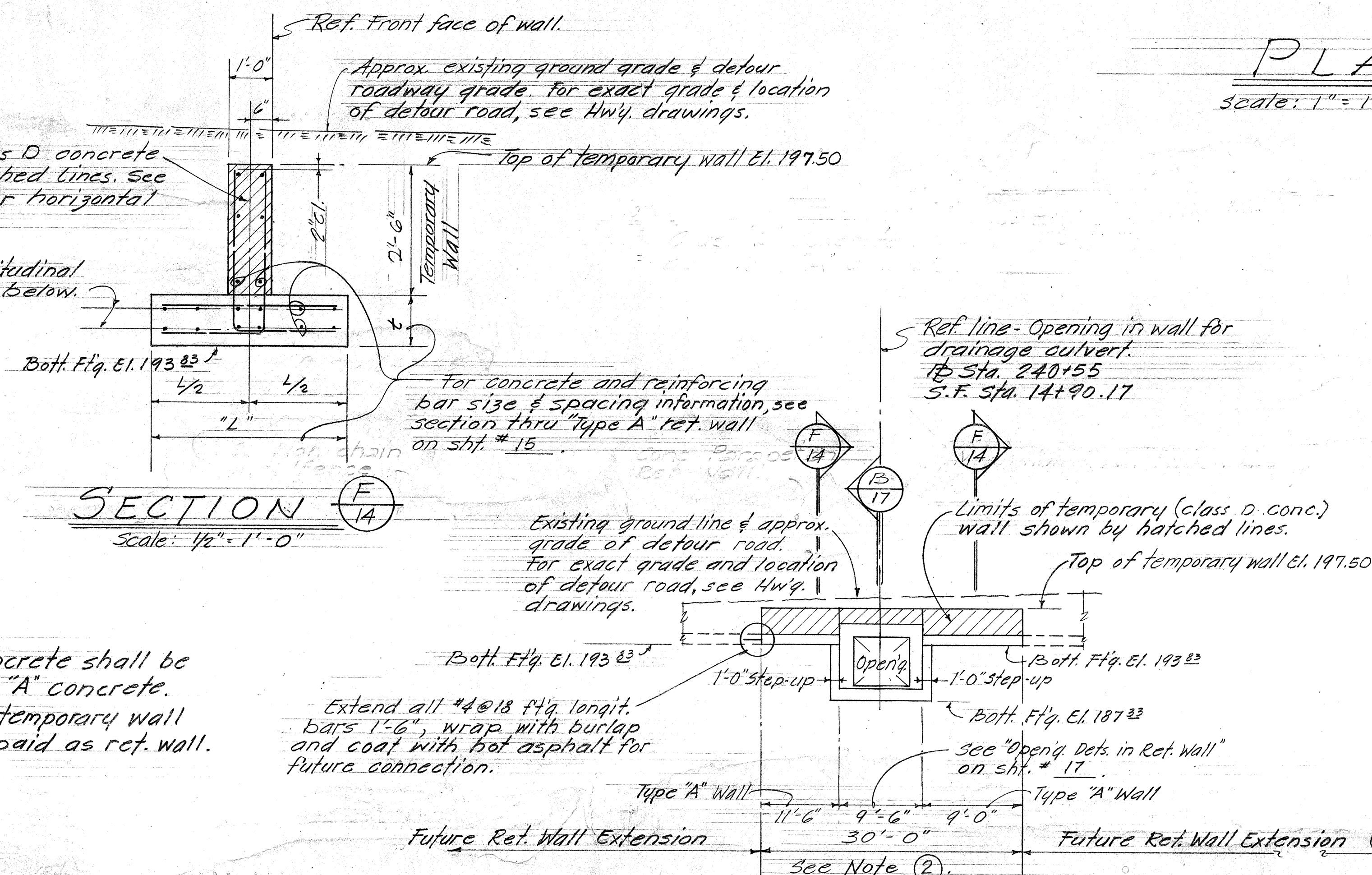
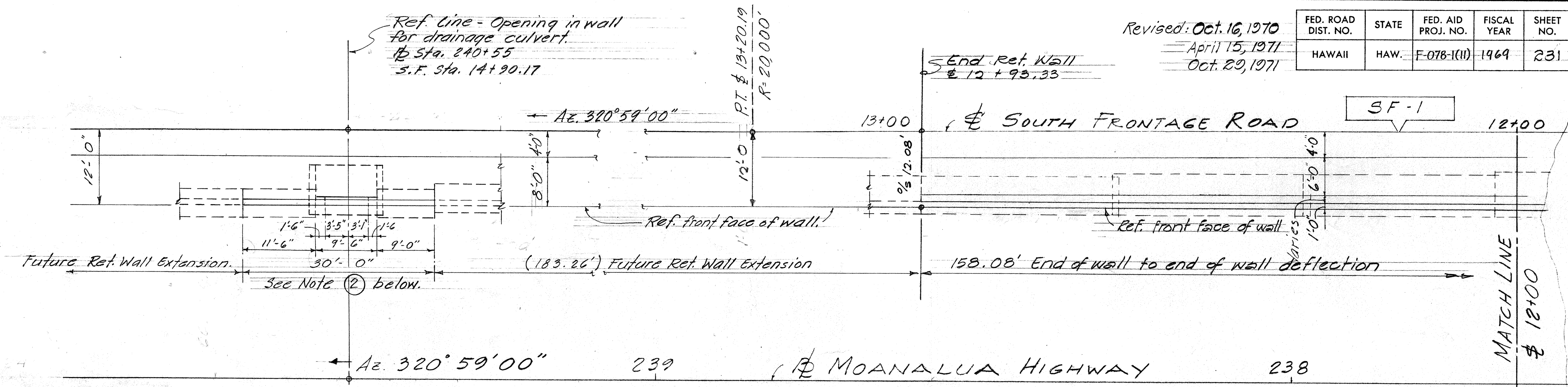


ELEVATION

STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION
SOUTH FRONTAGE
RETAINING WALL
 Sta. 0+48.63 to Sta. 12+93.33
 MOANALUA ROAD
 F.A.P. Proj. No. F-078-1(11)
 Scale: 1" = 10'-0" April 1970
 SHEET No. 13 OF 17 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-078-1(11)	1969	231	258

Revised: Oct. 16, 1970
 April 15, 1971
 Oct. 29, 1971



- Note!**
- Class "D" concrete shall be paid as class "A" concrete.
 - Footing and temporary wall only shall be paid as ret. wall.

THIS SHEET SUPERSEDES
 SHT. NO. 231

STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION

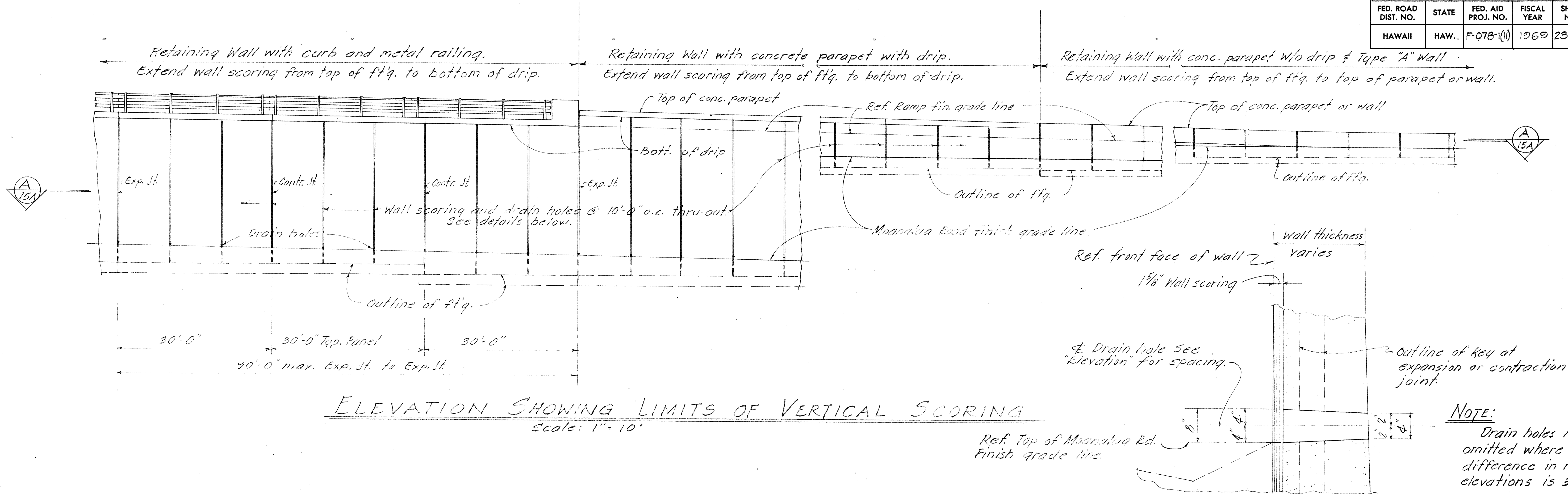
**SOUTH FRONTAGE
 RETAINING WALL**

Sta. 0+48.63 to Sta. 12+93.33
 MOANALUA ROAD

F.A.P. Proj. No. F-078-1(11)
 Scale: 1" = 10'-0" April 1970

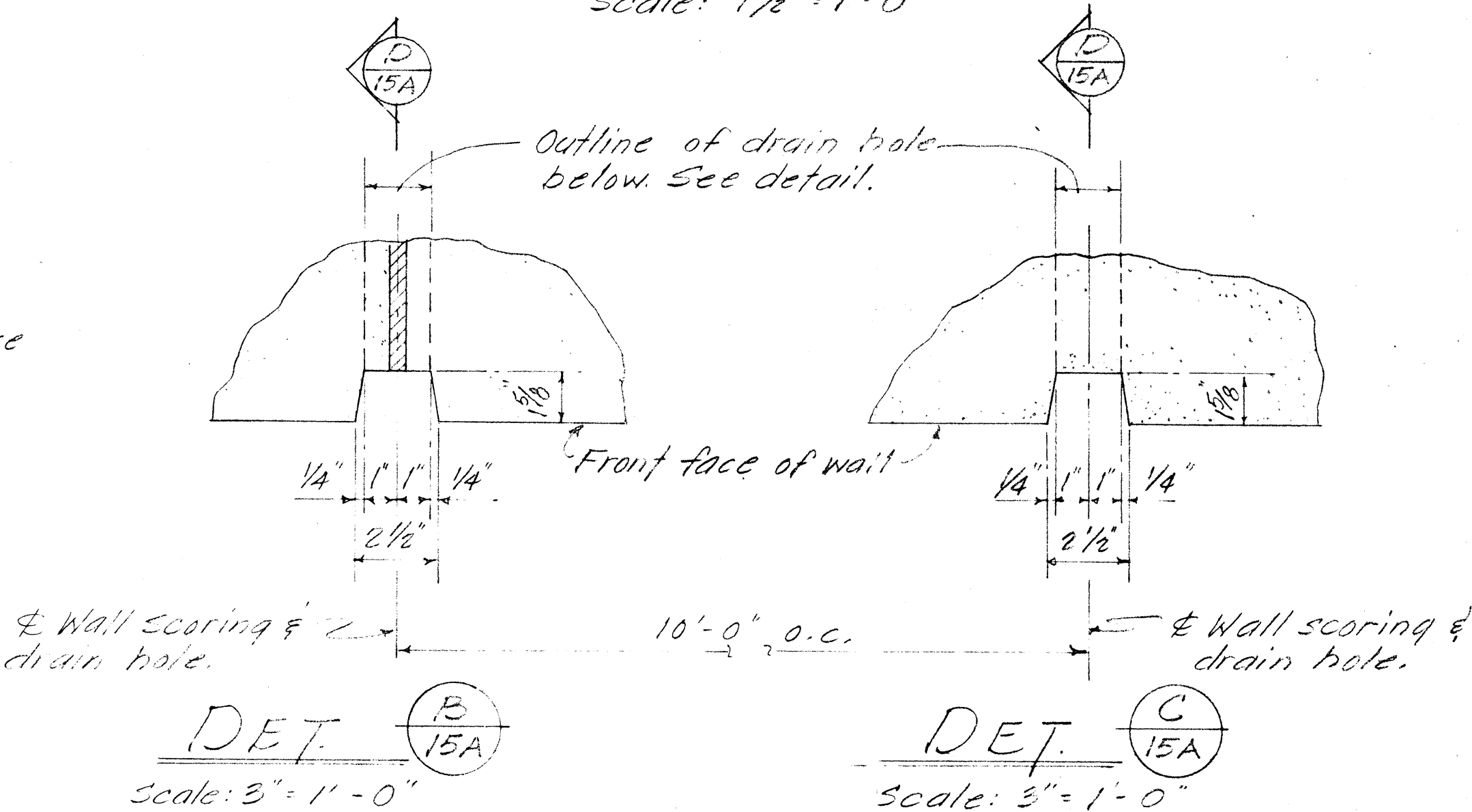
SHEET No. 14 OF 17 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-078-1(11)	1969	232A	258



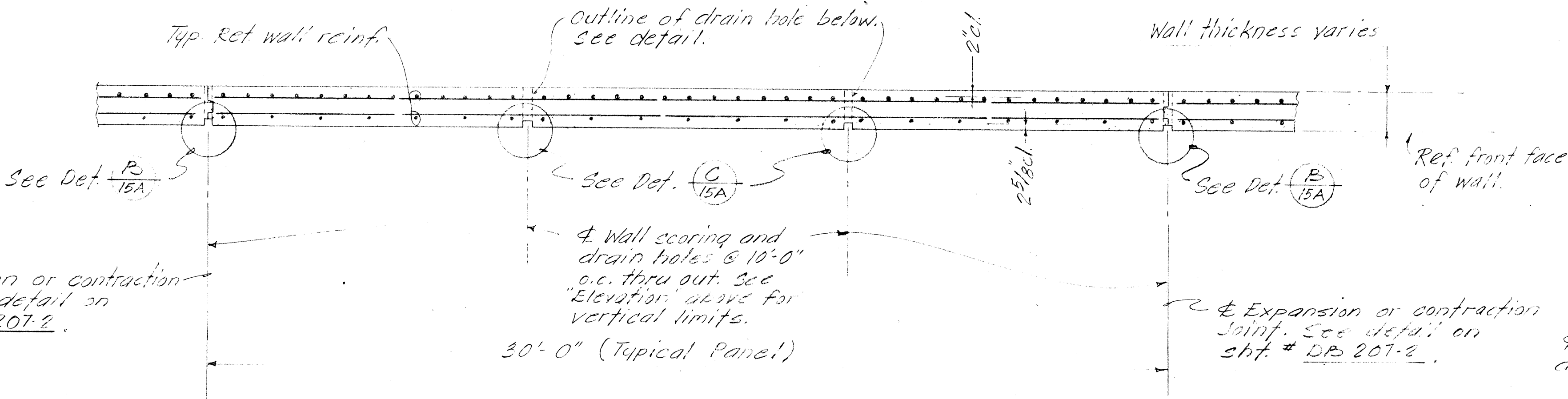
ELEVATION SHOWING LIMITS OF VERTICAL SCORING
Scale: 1" = 10'

SECTION (D) 15A
TYP. DRAIN DETAIL
Scale: 1 1/2" = 1'-0"



DET. (B) 15A
Scale: 3" = 1'-0"

DET. (C) 15A
Scale: 3" = 1'-0"



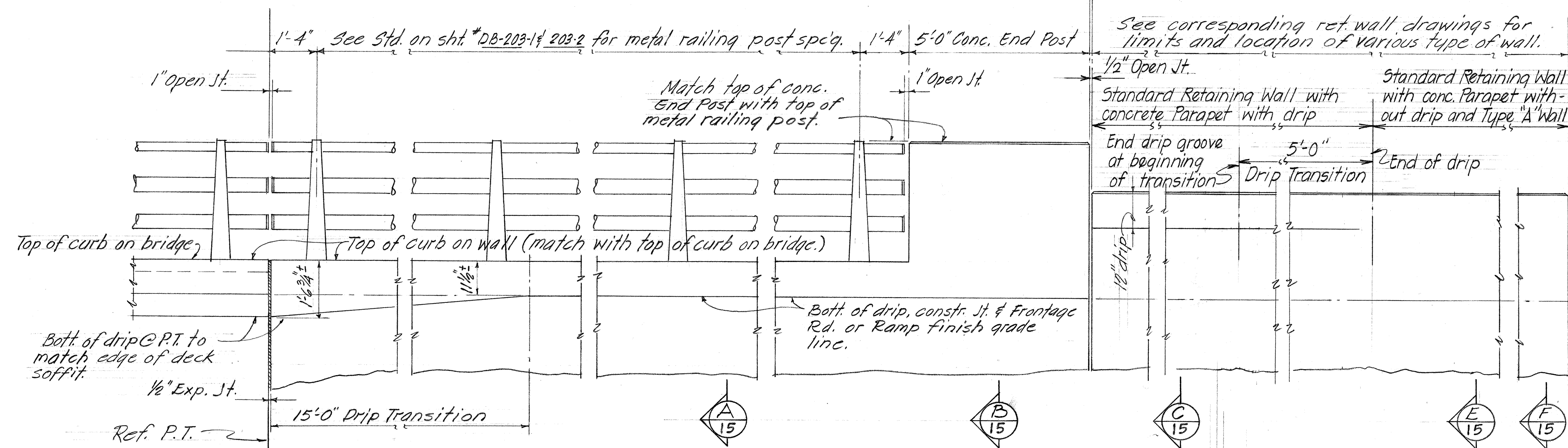
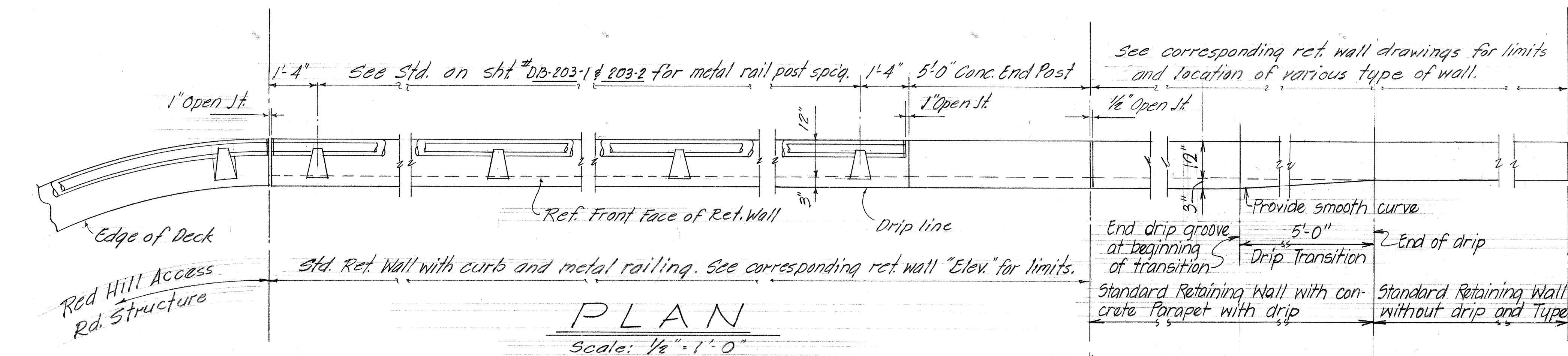
TYP. SECTION (A) 15A THRU RET. WALLS
Scale: 1/2" = 1'-0"

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
WALL SCORING &
DRAINAGE HOLE DET.
MOANALUA ROAD
F.A.P. PROJ. F-078-1 (11)
SCALE AS SHOWN JULY, 1970

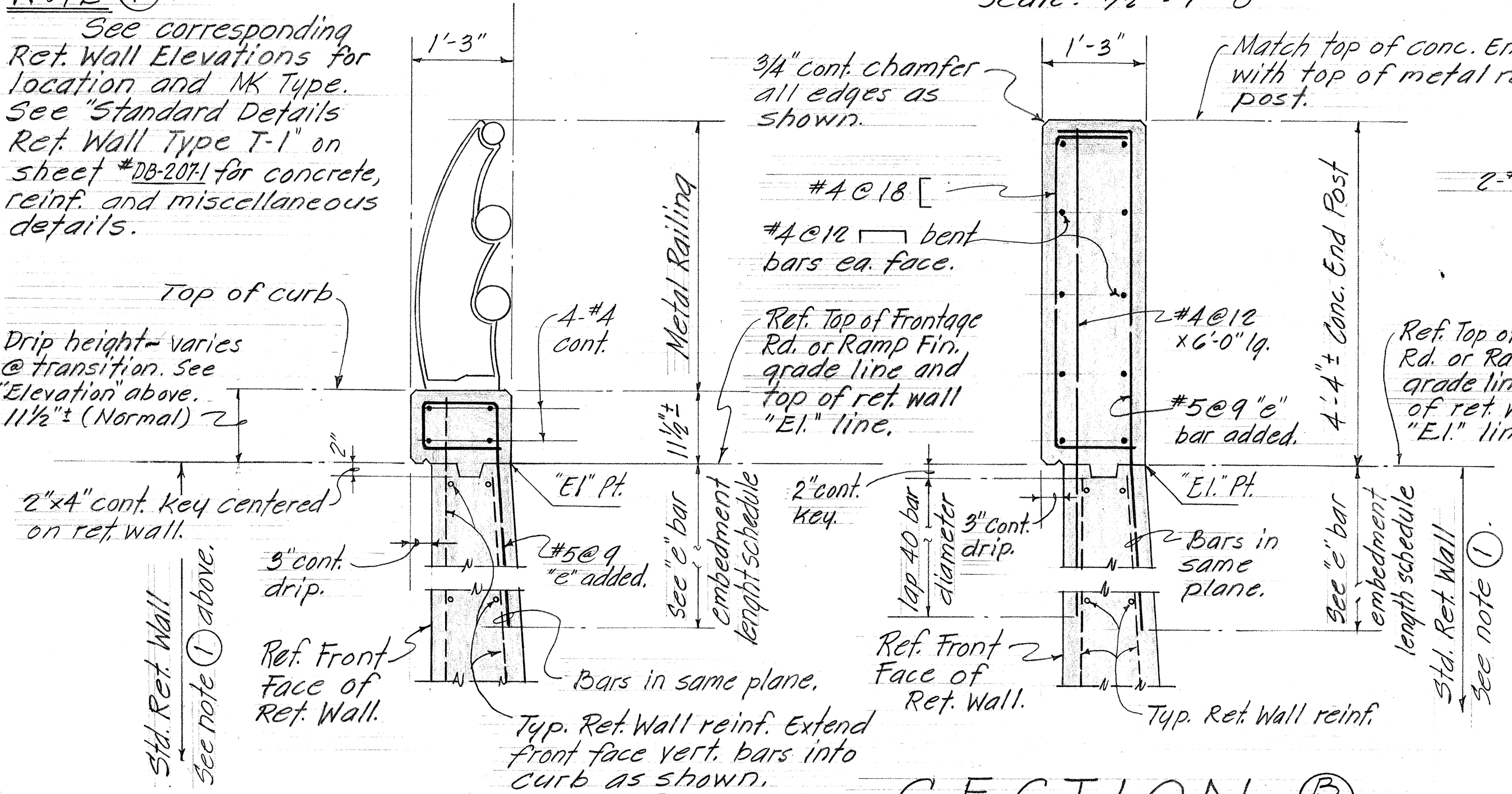
ORIGINAL PLAN	DATE
DRAWN BY	
CHECKED BY	
DESIGNED BY	
QUANTITIES BY	
CHECKED BY	
NO.	

Revised: Oct. 16, 1970
 April 15, 1971
 Oct. 29, 1971

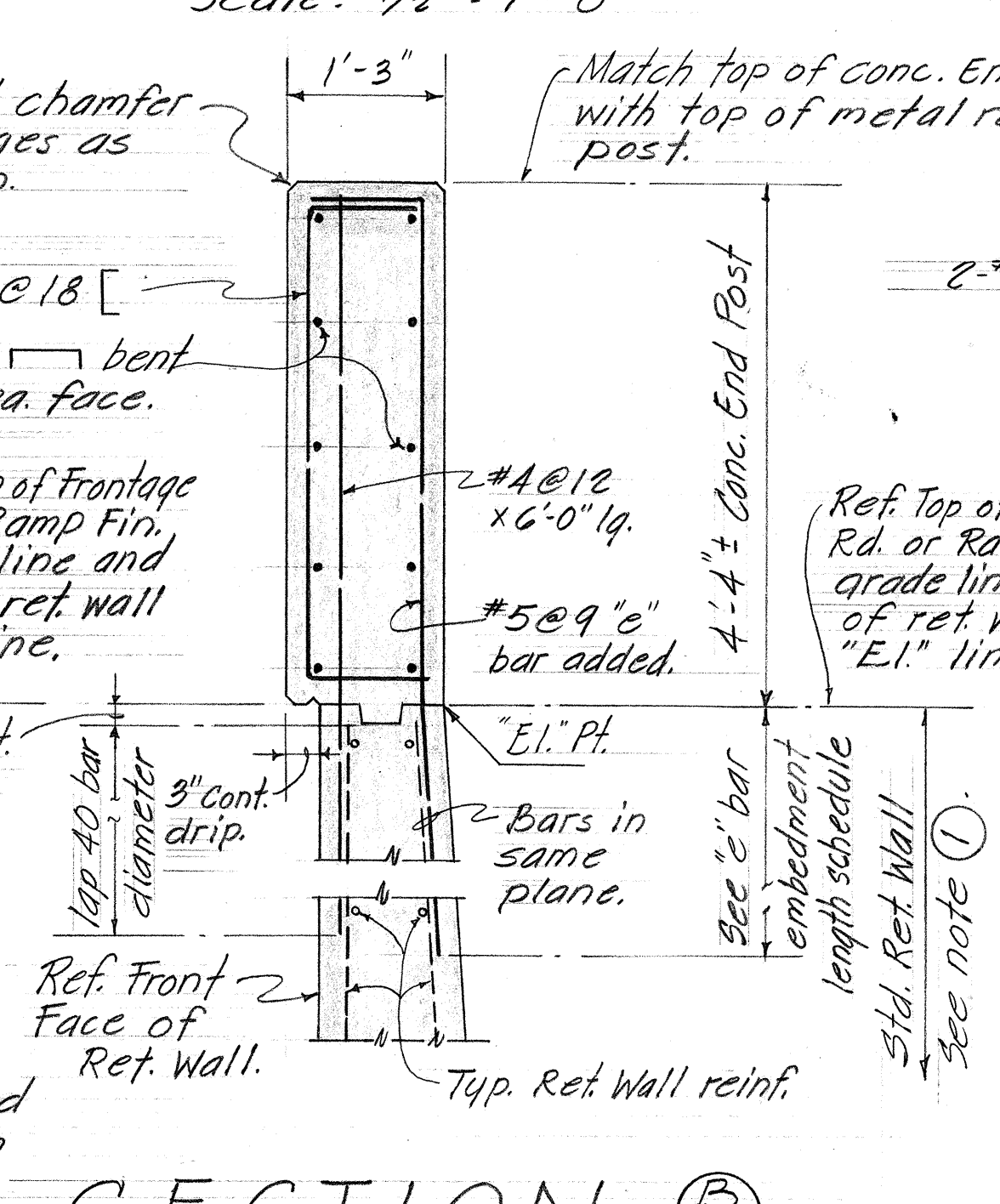
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-078-1(11)	1969	232	258



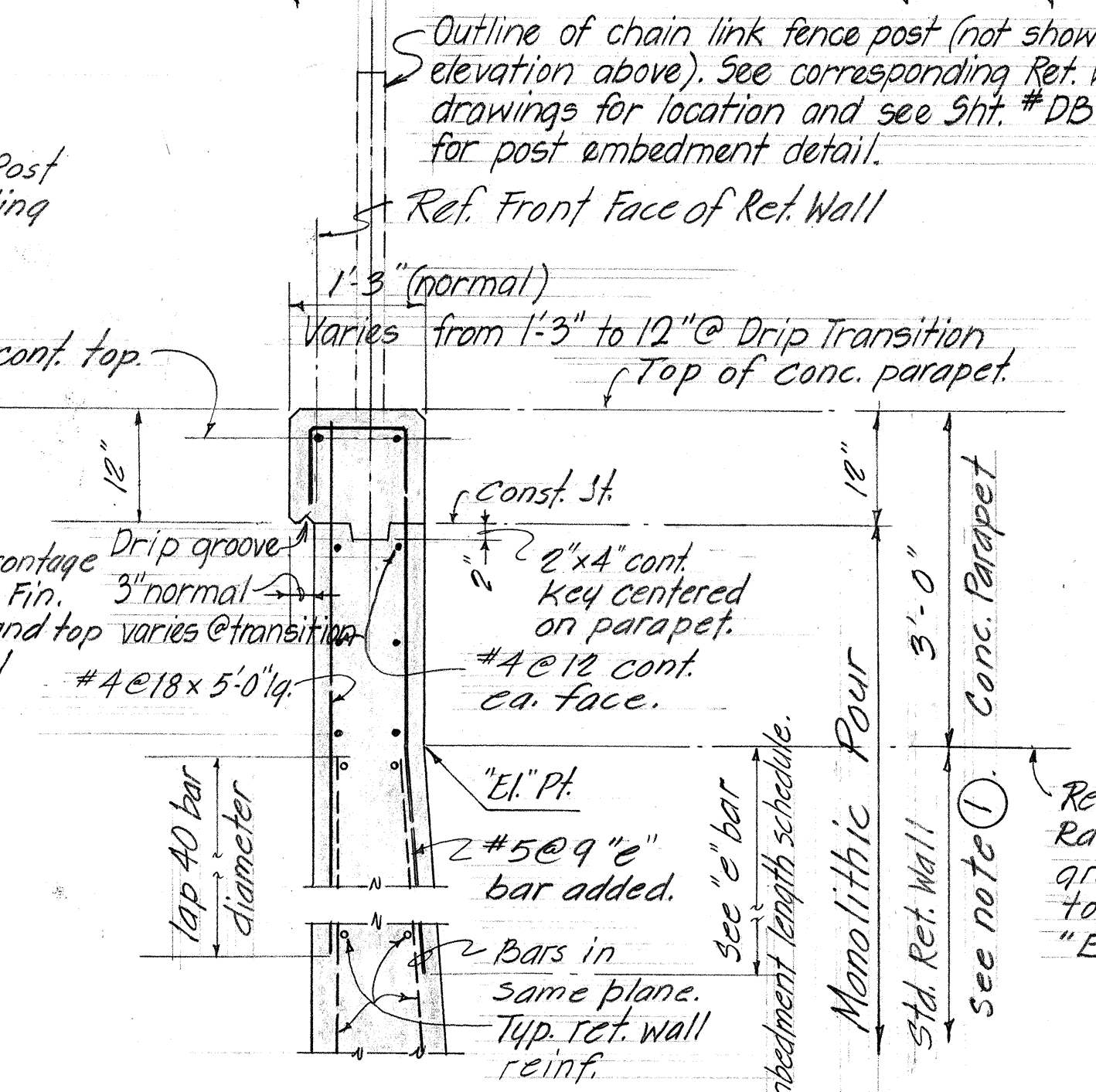
NOTE ①:
 See corresponding Ret. Wall Elevations for location and MK Type. See "Standard Details Ret. Wall Type T-1" on sheet #DB-207-1 for concrete, reinf. and miscellaneous details.



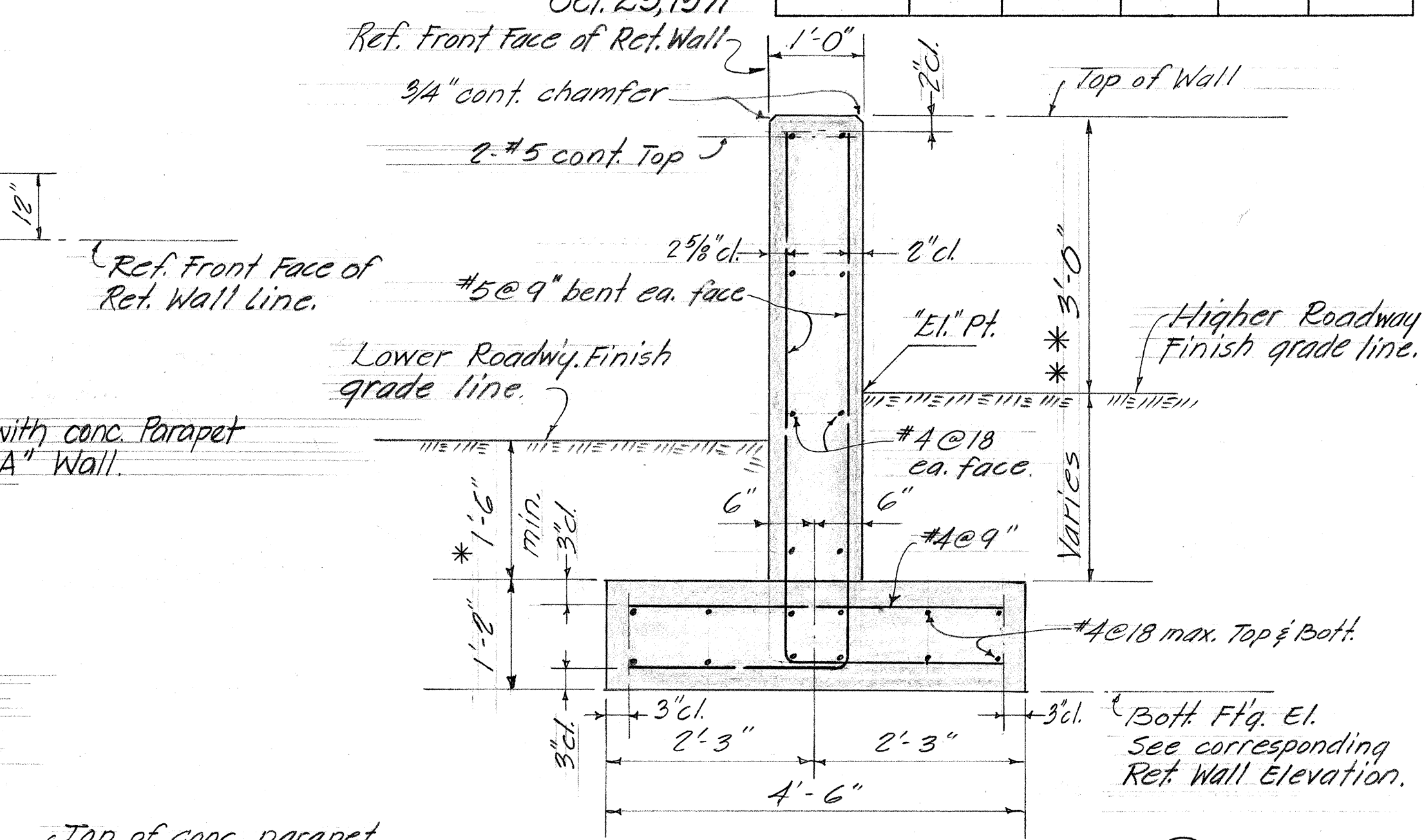
SECTION A-15
 (TYP. SECT. THRU STD. RET. WALL WITH CURB & METAL RAILING.) scale: 3/4" = 1'-0"



SECTION B-15
 (TYP. SECT. THRU STD. RET. WALL WITH CONC. END POST.) scale: 3/4" = 1'-0"



SECTION C-15
 (TYP. SECT. THRU STD. RET. WALL WITH CONC. PARAPET WITH & W/O DRIP.)



SECTION F-15
 (TYP. SECT. THRU TYPE "A" RET. WALL)

- * 1'-6" MIN. COVER FROM MAANALUA HWY. FIN. GR. OR RAMP FIN. GR. WHICHEVER IS LOWER.
- ** 3'-0" TO TOP OF WALL FROM MAANALUA HWY. FIN. GR. OR RAMP FIN. GR. WHICHEVER GRADE IS HIGHER.

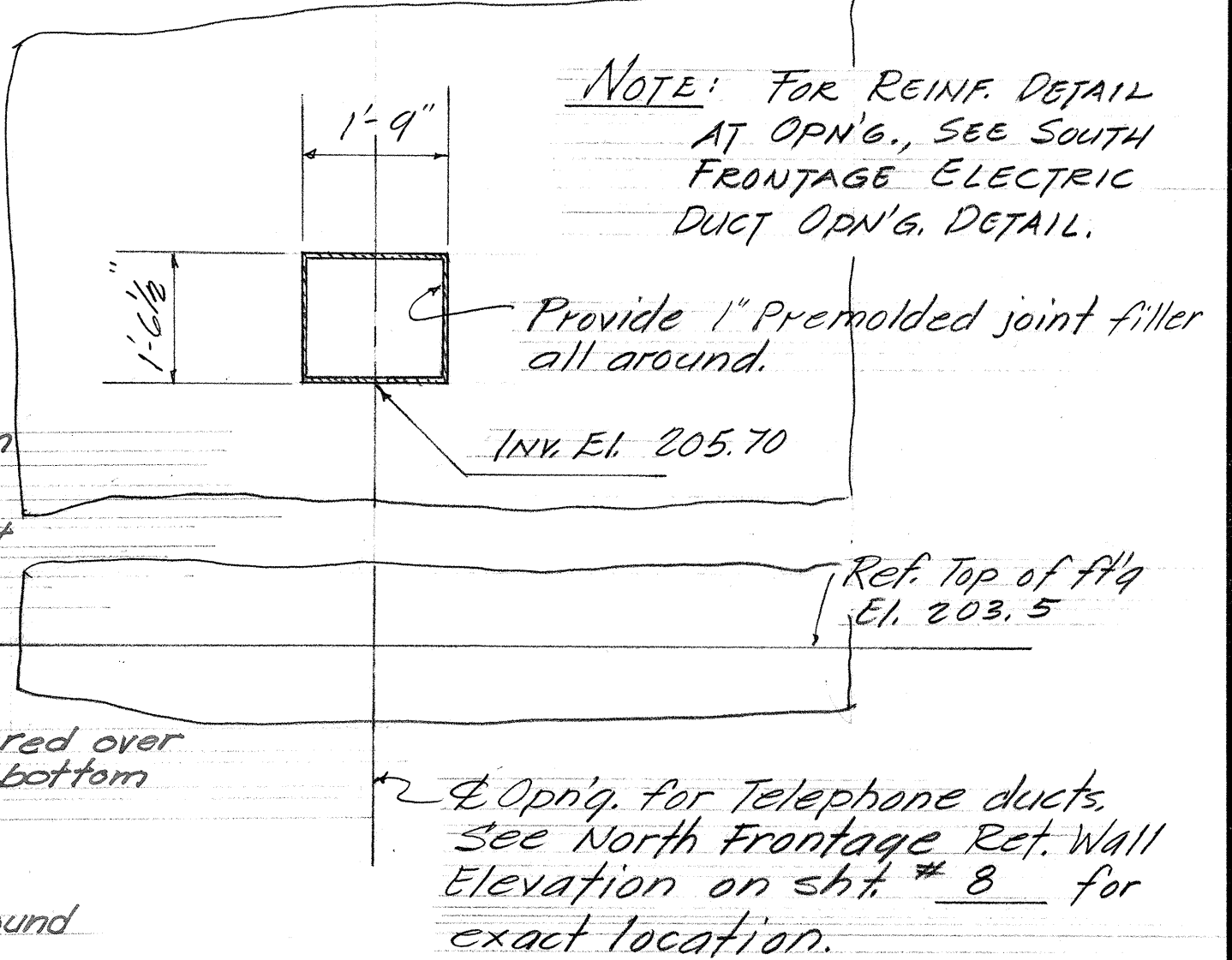
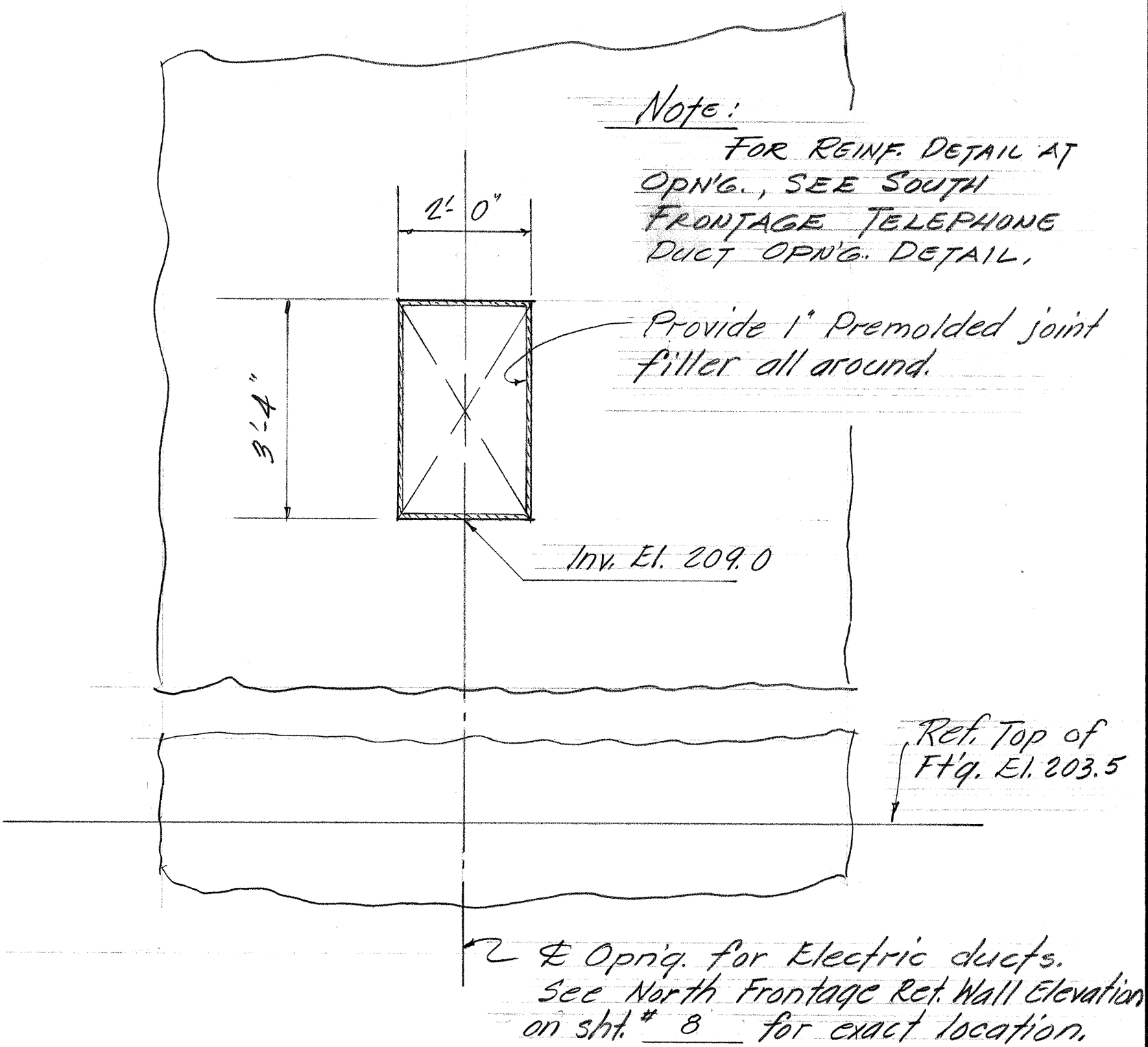
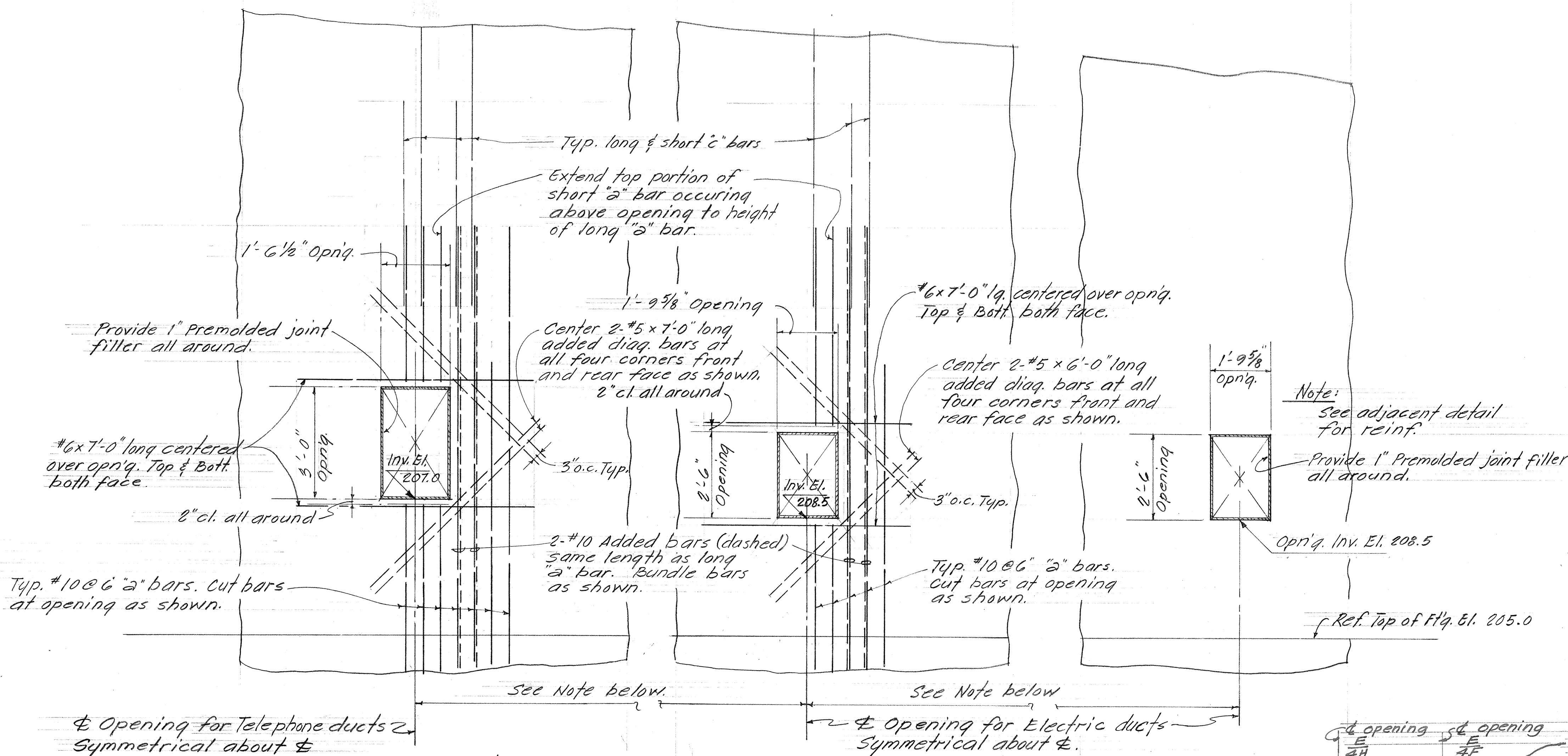
ADDED "E" BAR EMBEDMENT LENGTH SCHEDULE

@ STD. RET. WALL MK	LENGTH
MK-8 & 9	3'-6"
MK-10 & 11	5'-0"
MK-12	6'-0"
MK-13, 14, 15 & 16	7'-0"
MK-17, 18 & 19	8'-0"
MK-20 & 21	9'-0"
MK-22 & 23	10'-0"
MK-24, 26, 28 & 30	11'-0"

THIS SHEET SUPERSEDES SHT. NO. 232

STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION
DETAILS OF VARIOUS BARRIERS
 ON RETAINING WALLS &
 TYPE "A" RET. WALL DETAILS
 MOANALUA ROAD
 F.A.P. Proj. No. F-078-1(11)
 Scale As Noted April 1970
 SHEET No. 15 OF 17 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F078-1(11)	1969	233	258

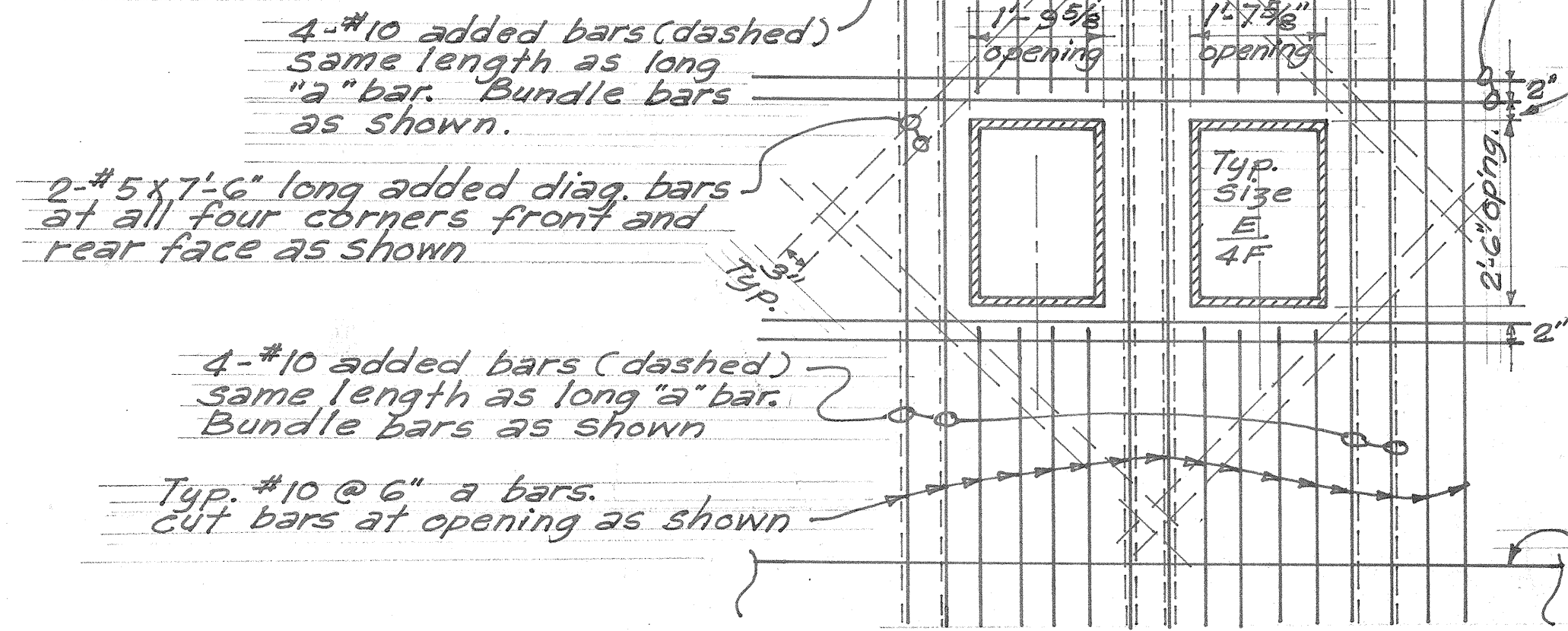


UTILITY DUCTS OPENING DETAILS IN SOUTH FRONTAGE RETAINING WALL

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

Note:

FOR EXACT LOCATION AND SPACING OF UTILITY OPENINGS SEE SOUTH FRONTAGE RETAINING WALL ELEVATION ON SHEET # 13



UTILITY DUCT OPENING DETAILS IN NORTH FRONTAGE RETAIN'G. WALL

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

NORTH & SOUTH FRONTAGE
UTILITY DUCT OPENING DETAILS

MOANALUA ROAD

F.A.P. Proj. No. F-078-1(11)

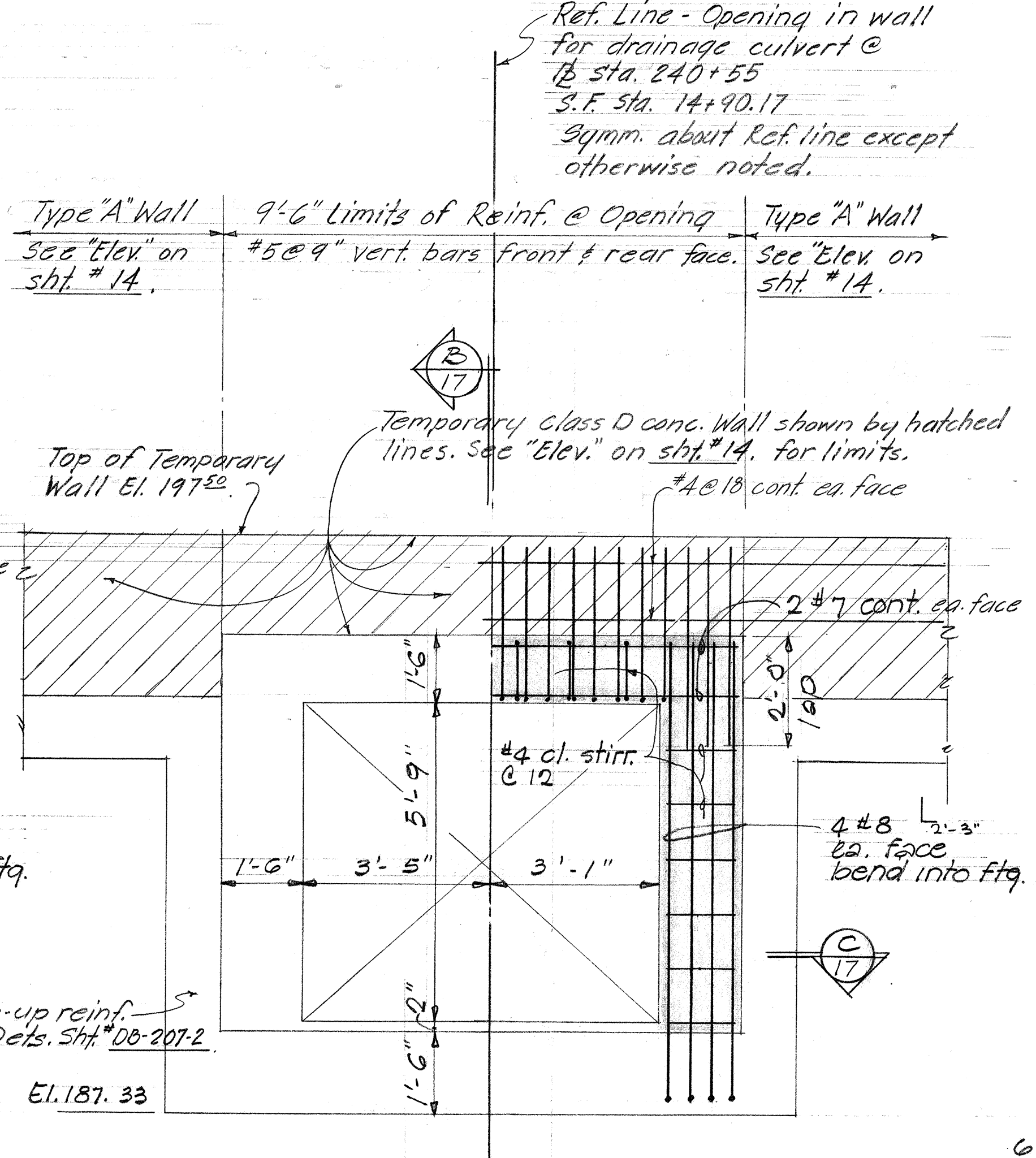
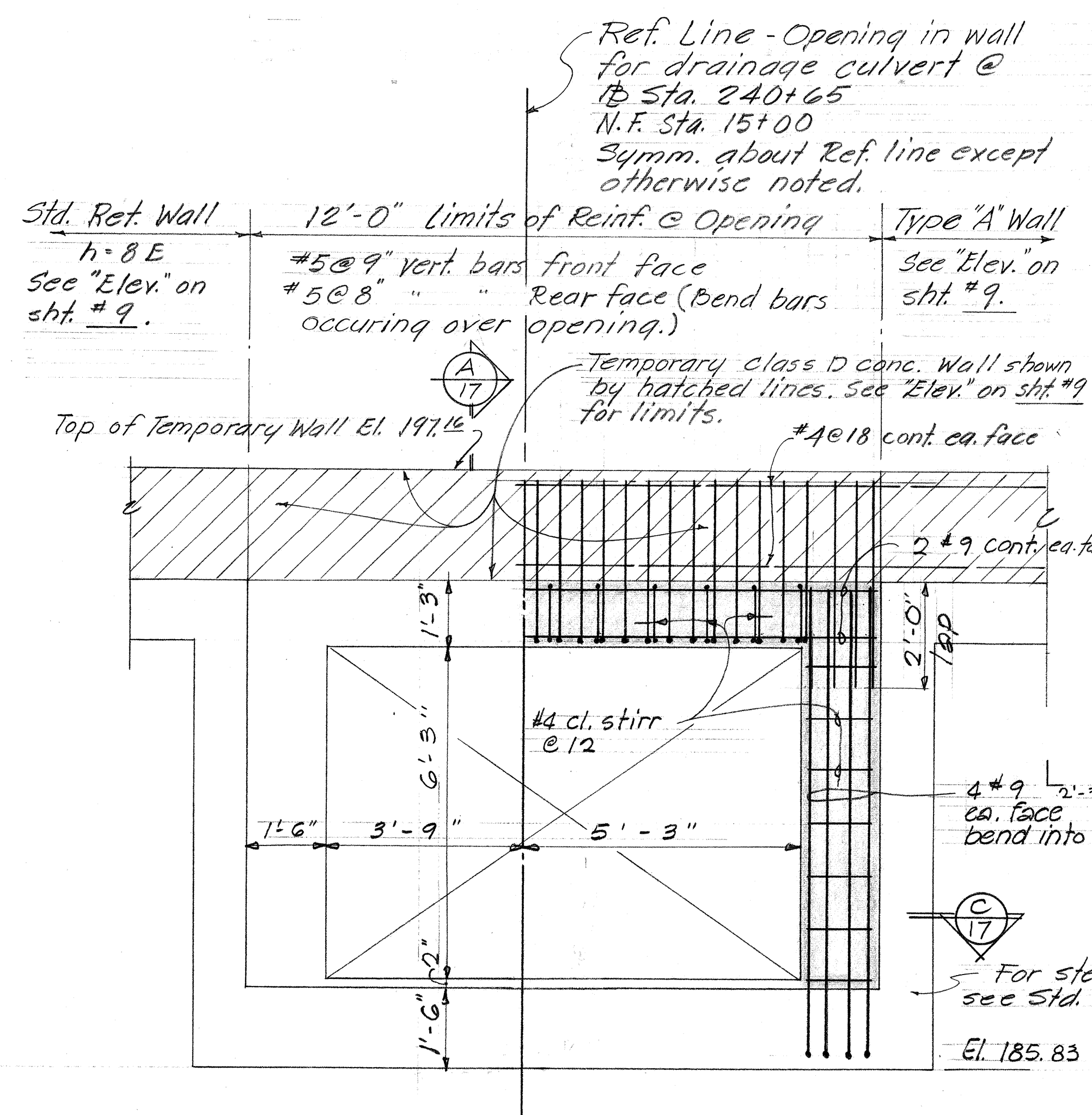
Scale: 1/2" = 1'-0" April 1970

SHEET No. 16 OF 17 SHEETS

DETAIL "A"

Revised: April 15, 1971
Oct 29, 1971

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-078-1(11)	1969	234	258

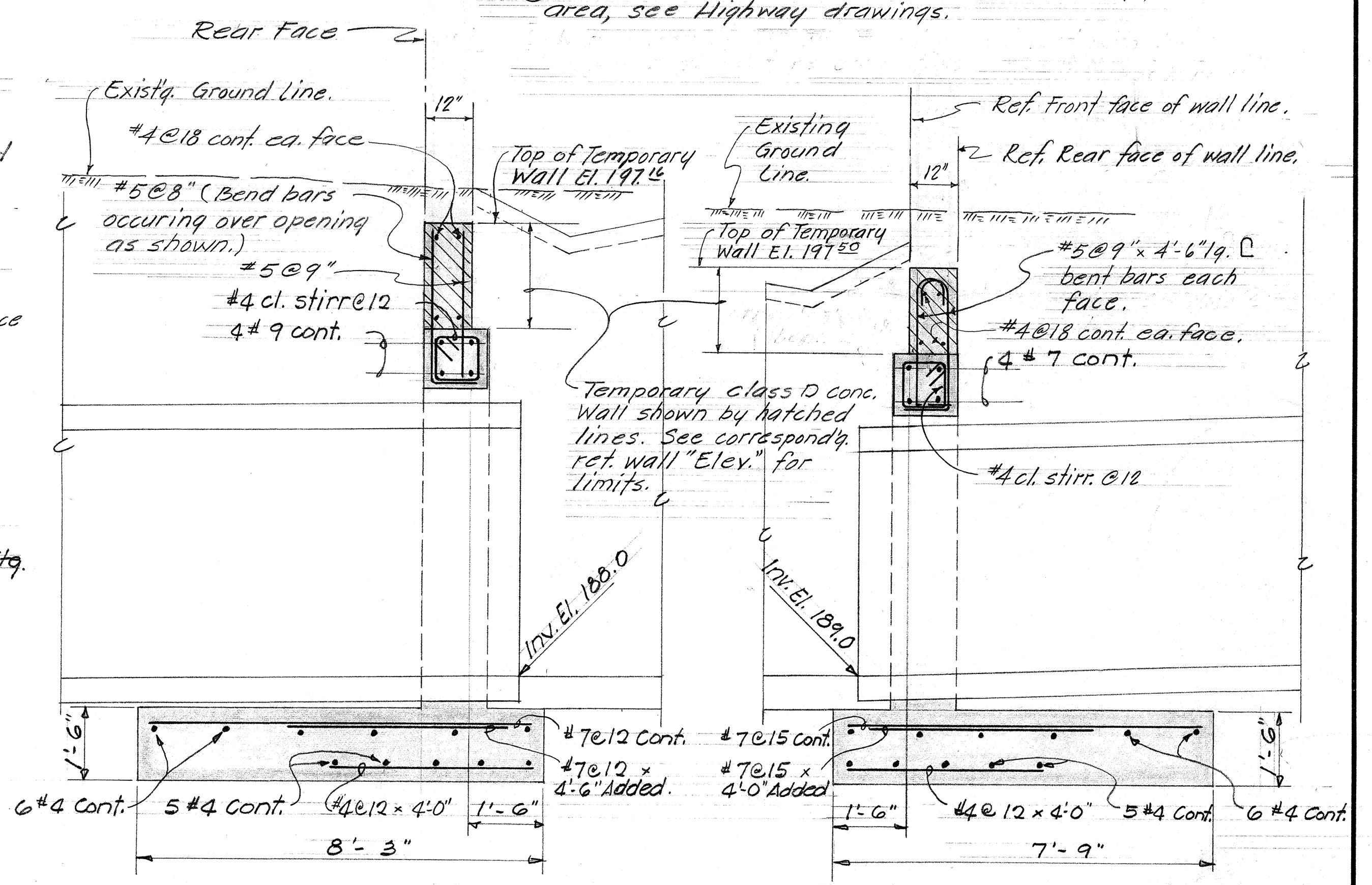


N. FRONTAGE

MOANALUA

S. FRONTAGE

Note: ① For location & grades of detour road occurring in this area, see Highway drawings.

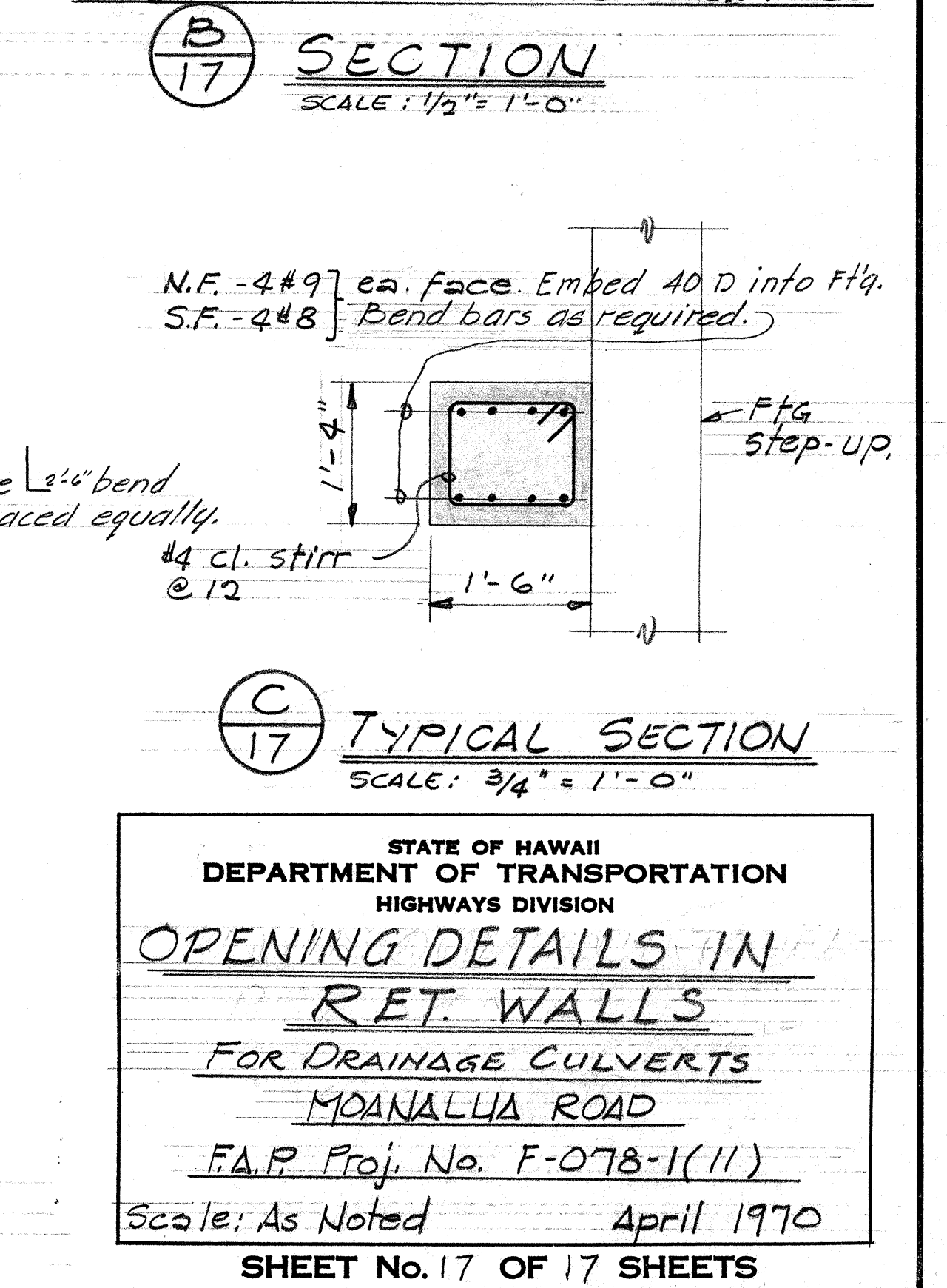
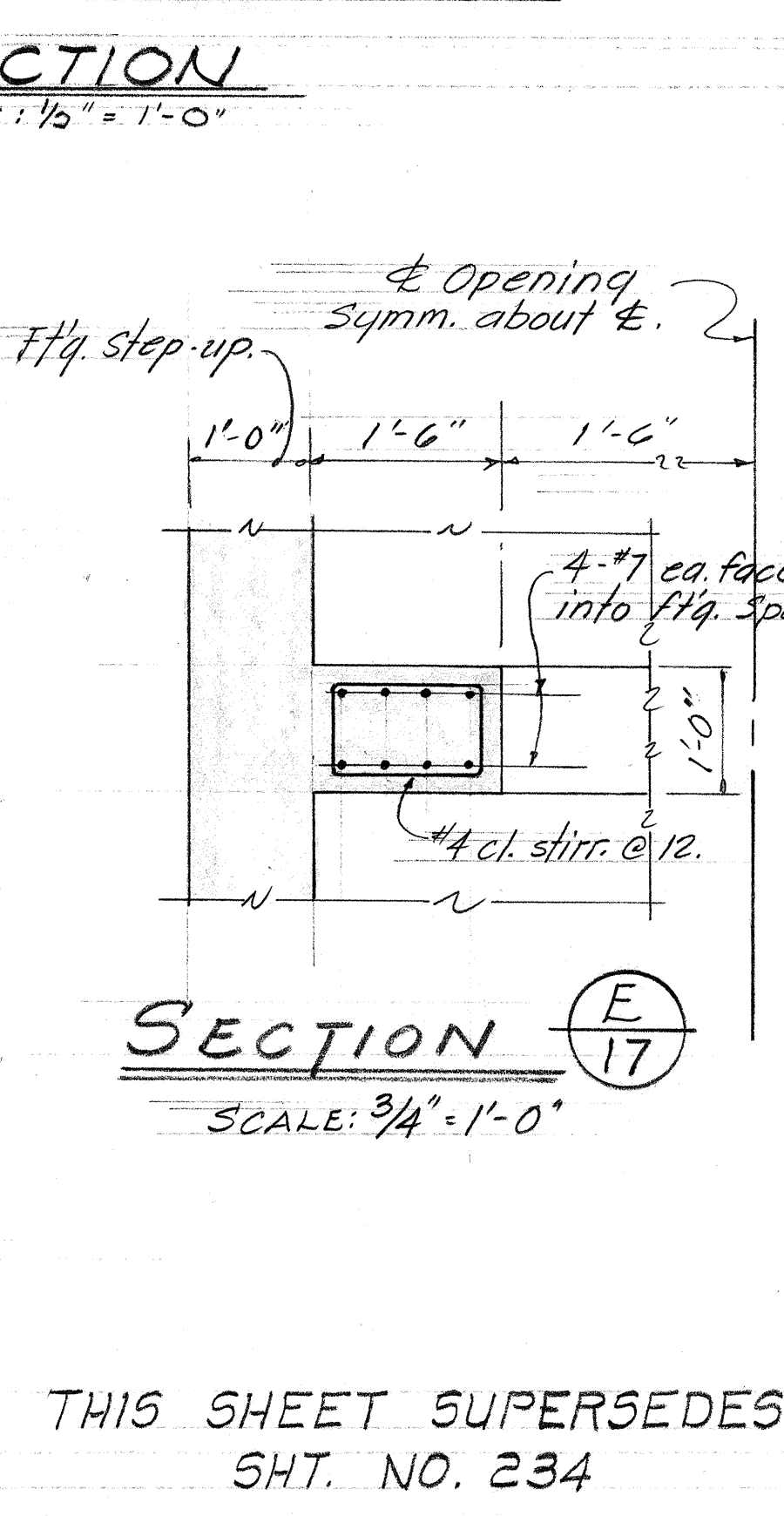
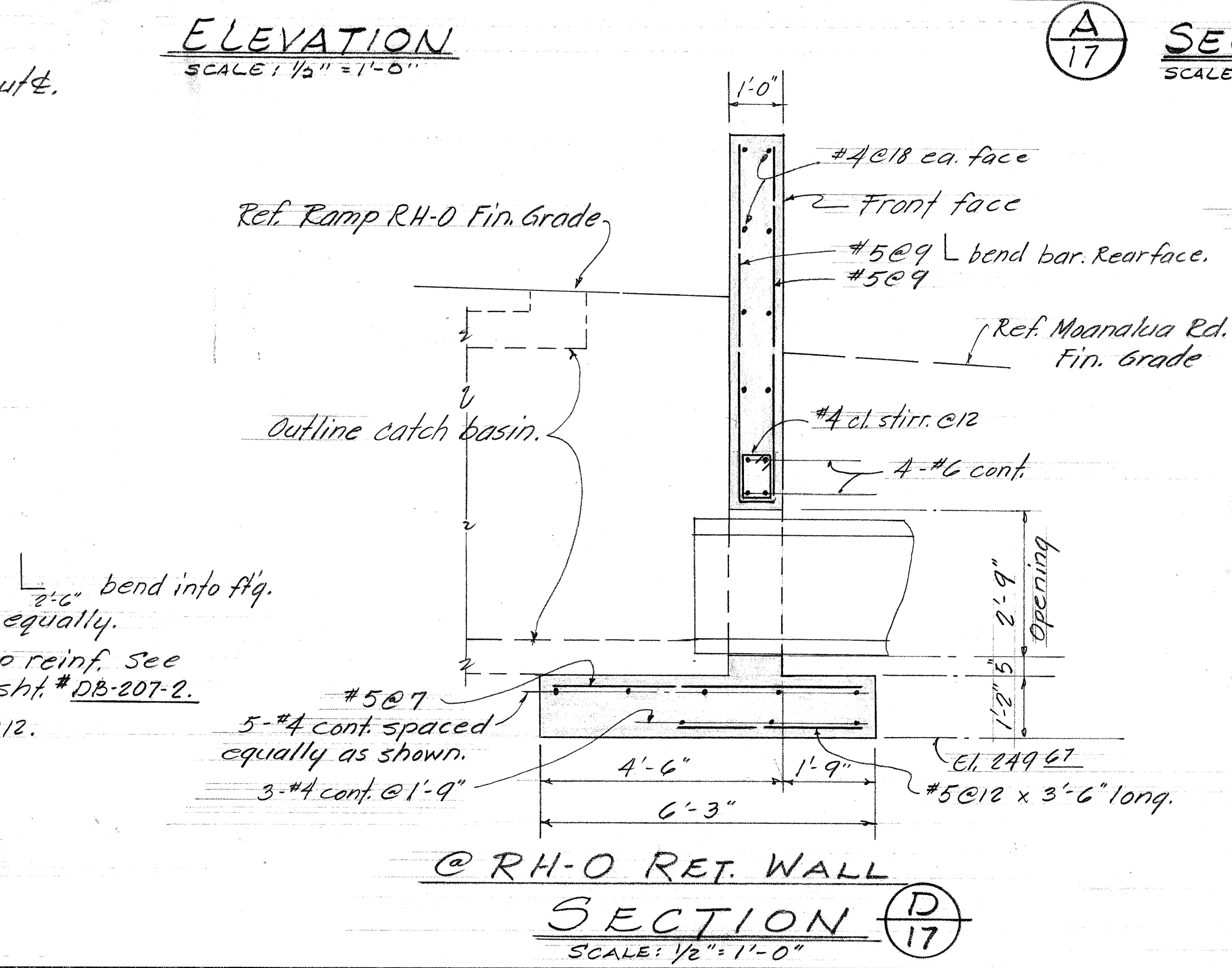
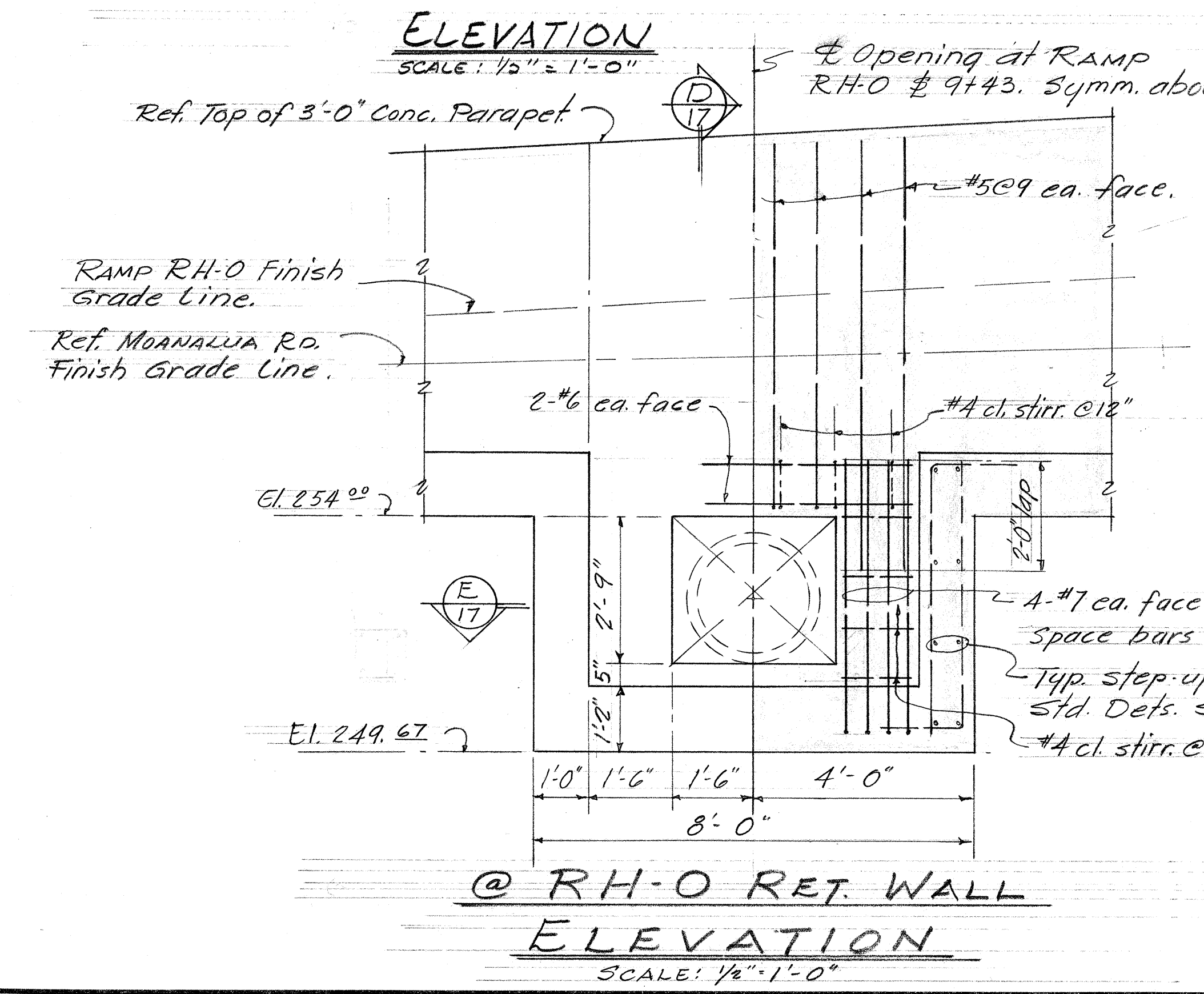


@ NORTH FRONTAGE RET. WALL

@ SOUTH FRONTAGE RET. WALL

@ NORTH FRONTAGE RET. WALL

@ SOUTH FRONTAGE RET. WALL



THIS SHEET SUPERSEDES SHT. NO. 234

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

OPENING DETAILS IN
RET. WALLS
FOR DRAINAGE CULVERTS
MOANALUA ROAD

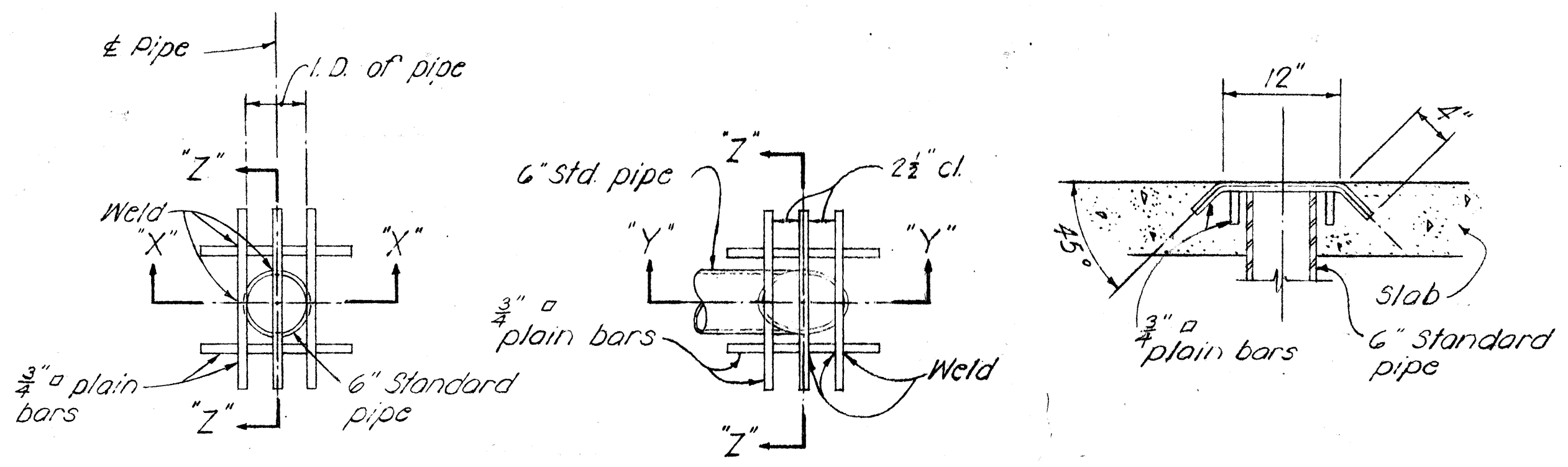
F.A.P. Proj. No. F-078-1(11)

Scale: As Noted April 1970

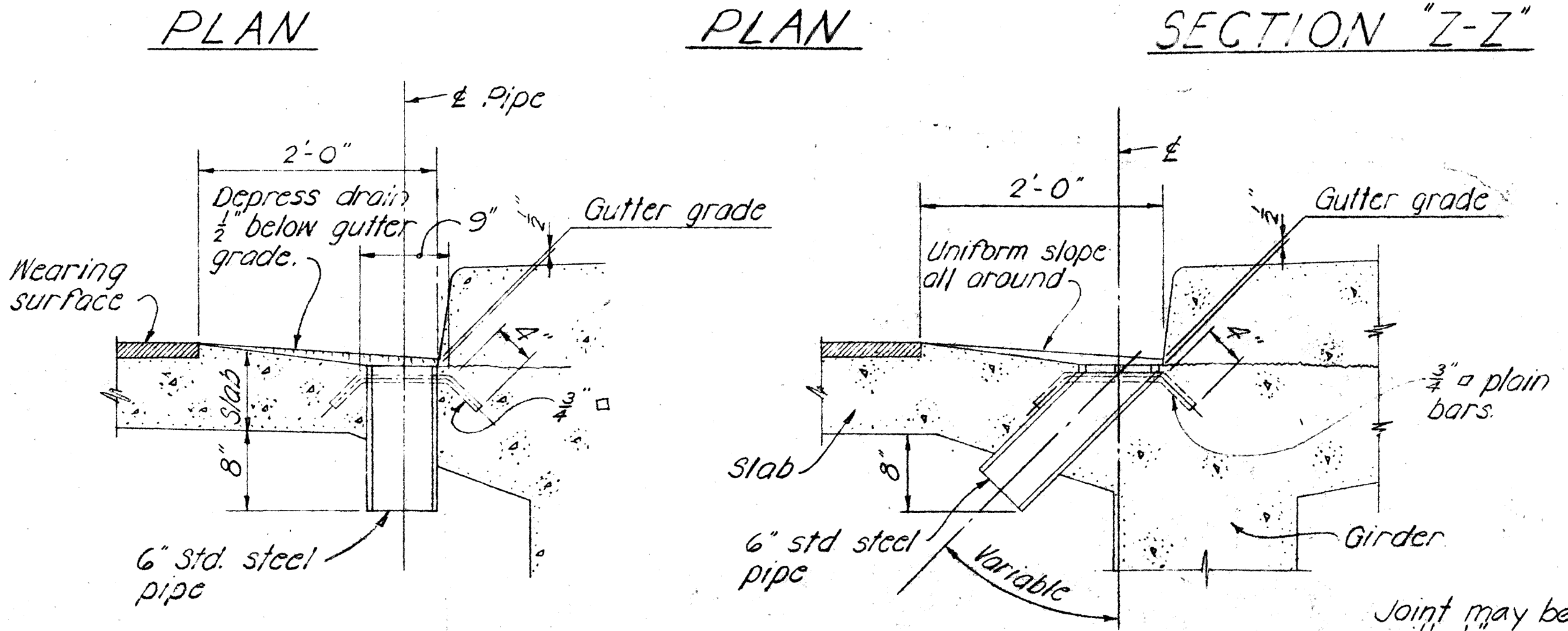
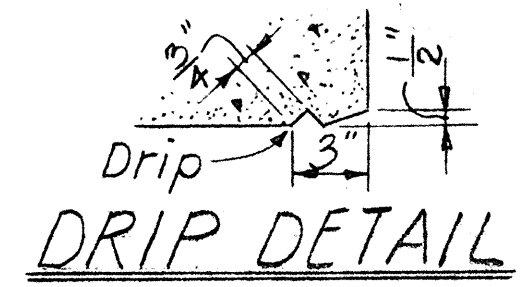
SHEET No. 17 OF 17 SHEETS

GENERAL NOTES

- All concrete shall be Class A unless otherwise noted.
- Reinforcing shall be detailed in accordance with ACI Manual of Standard Practice for Detailing Reinforced Concrete Highway Structures unless otherwise noted.
- Clearance for reinforcing bars shall be as follows, unless otherwise noted:
 - 1/2" For stirrups of beams & pier caps.
 - 2" For ties of columns.
 - 2" For formed walls.
 - 3" For footings.
- Minimum spacing between parallel bars shall be 2 1/2 times the diameter of bars, but in no case shall the clear distance between the bars be less than 1 1/2 times the maximum size of the coarse aggregate.
- All dimensions relating to reinforcing are to centers of bars unless otherwise noted.
- Reinforcing bars shall be securely tied at all intersections & lap splices & shall be held in place during pouring to maintain their proper locations as shown on plans.
- Vertical column bars shall be arranged in such a manner as to miss pier cap bars above as directed by the Engineer.
- Except as otherwise noted on drawings, all exterior corners & re-entrant angles in concrete work shall be chamfered 3/4" x 3/4".
- Concrete seats receiving steel plates, lead plates or neoprene pads shall be poured monolithically with supporting structures & top of concrete seats shall be finished with a steel trowel to a smooth level surface at the elevation shown on the plans.
- Elastomeric Pads: Bottom of bridge bearing pads shall be secured against displacement with adhesives approved by the Engineer. Pads shall be incidental to concrete and will not be paid for separately.
- Forms for all exposed surfaces of separation structures and surfaces of retaining walls visible from a traveled way or from a populated area shall be plywood except that metal forms may be permitted provided a surface finish satisfactory to the Engineer can be obtained and the use of such forms is approved in writing by the Engineer. Forms for round columns shall be made of materials that will give a smooth finish and true dimensions as given in the plans. Forms for prestressed concrete members shall be either metal or plywood.
- Gothic letters and figures approximating dimensions shown will be acceptable if approved by the Engineer.
- The contractor shall verify the location of all existing utility lines and notify the respective owners before commencing work of excavation or driving of piles.
- Standard Detail Drawings refer to all structures in general, except for modifications as may be required for special conditions. For such modifications refer to the corresponding detailed drawings.



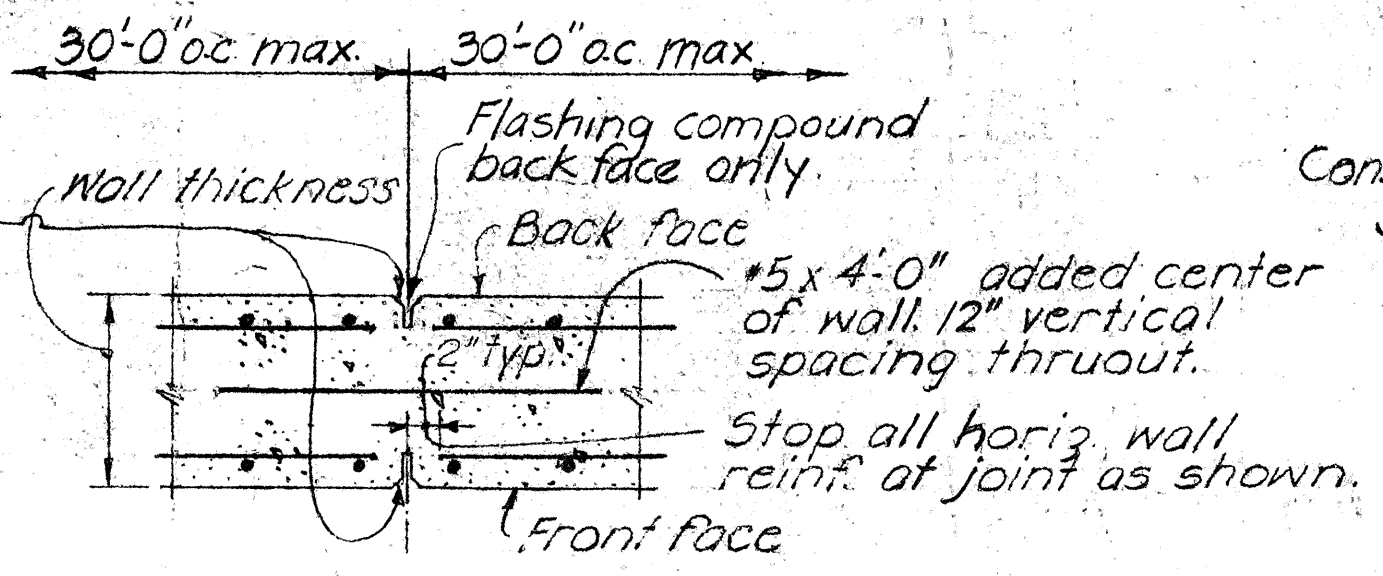
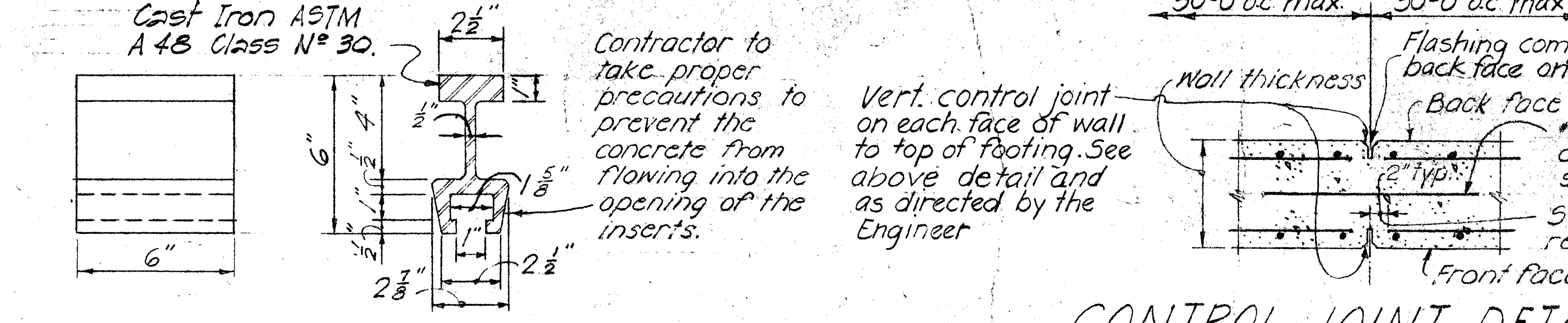
TYPICAL CONCRETE GROOVE DETAIL



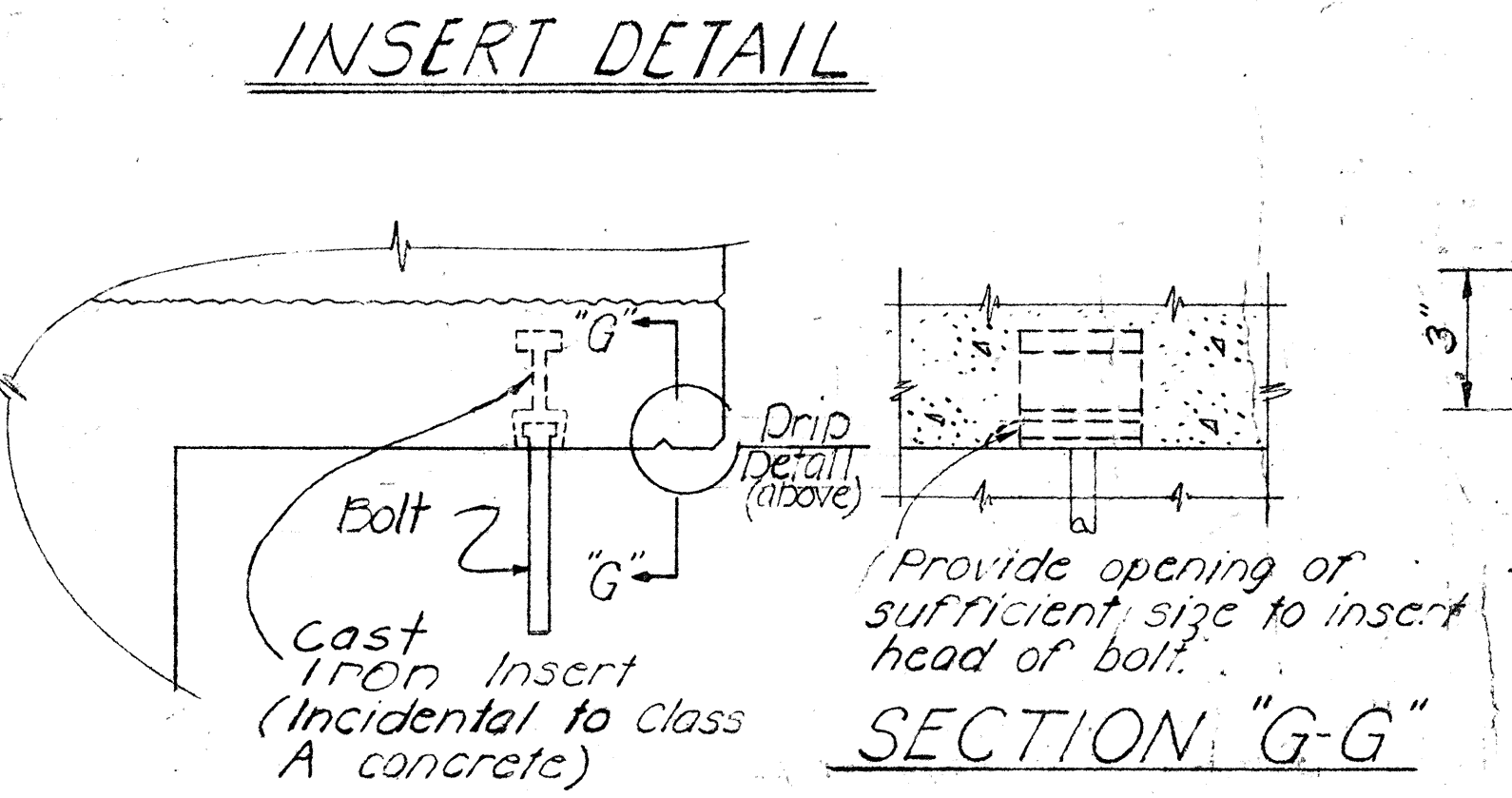
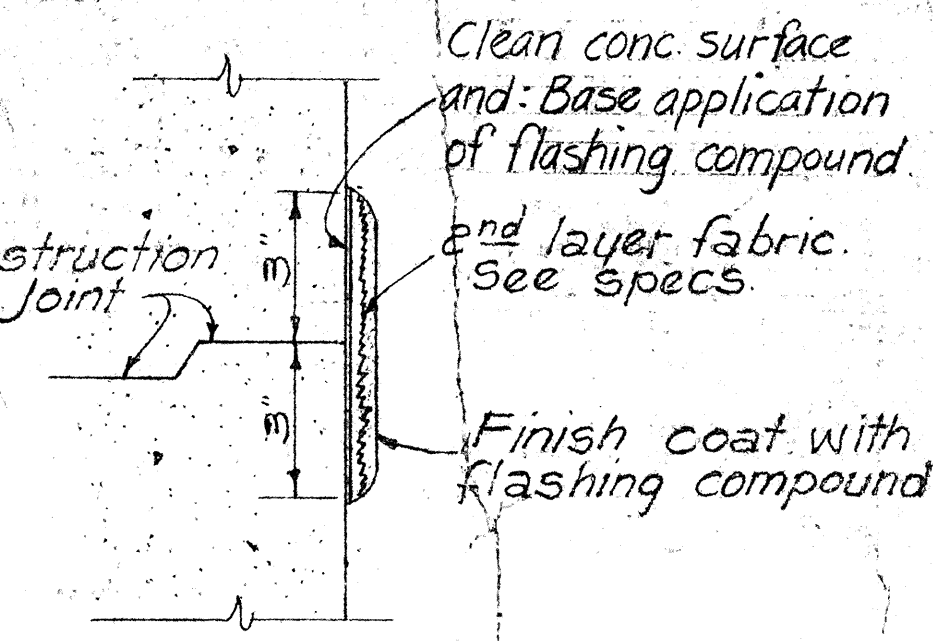
NOTE: Metal drains shall be considered incidental to Class A Concrete in both concrete and steel bridges and will not be paid for separately. Assemblage of grillage and pipe shall be hot-dip galvanized after all welding is completed.

Joint may be formed with 1/2 masonite & cut back to the root of the chamfer on the exposed face.

TYPICAL DRAINAGE DETAILS



TYP FLASHING COMPOUND WATERPROOFING DETAIL

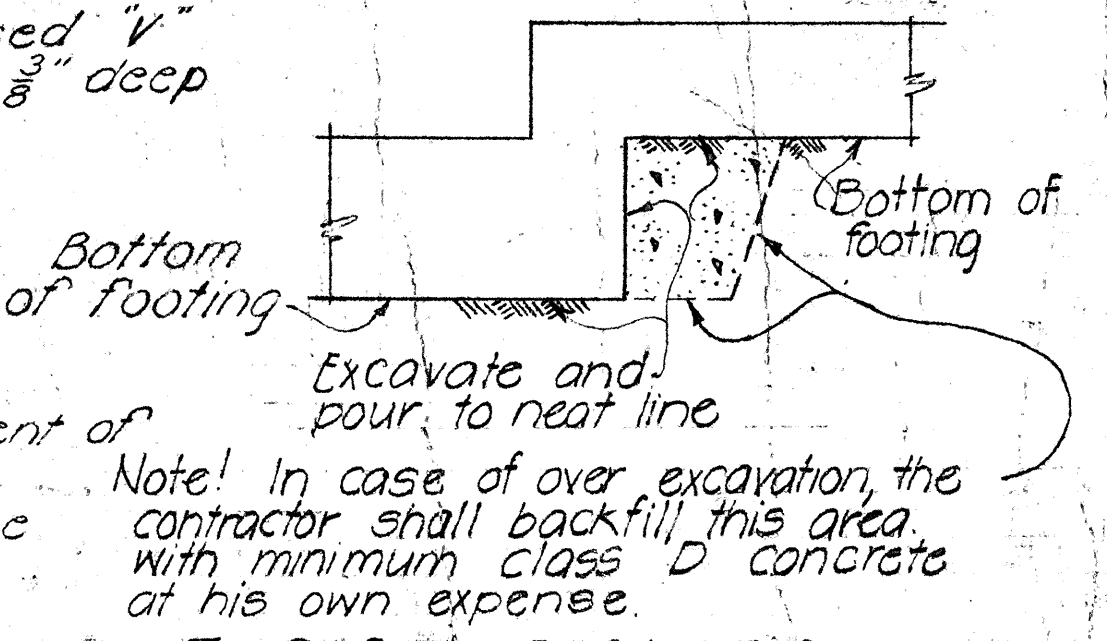


NAME DATE

Use correct name of bridge Date of Year built

NOTE: Refer to corresponding detail drawings for placement of such names & dates at end post. Exact details & spacing of letters & figures shall be as directed by the Engineer. See Note #12.

TYPICAL DETAIL OF LETTERS & FIGURES AT CONCRETE END POST



TYPICAL EXCAVATION FOR CONTINUOUS FOOTING STEP-UP

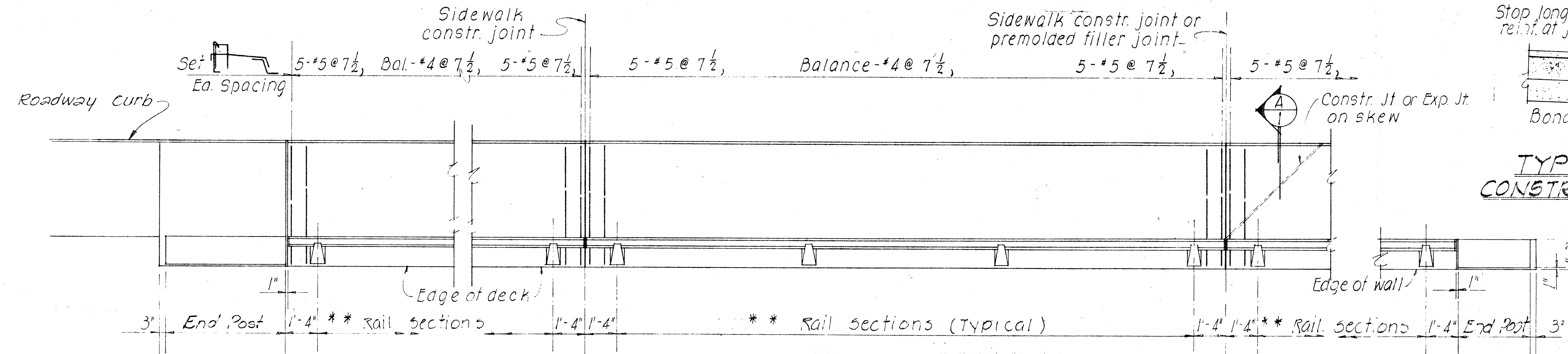
APPROVAL RECOMMENDED:
 Paul T. Yamashita
 BRIDGE DESIGN ENGINEER 1-23-70
 DATE

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

NO.	REVISION	APPROVED BY	DATE

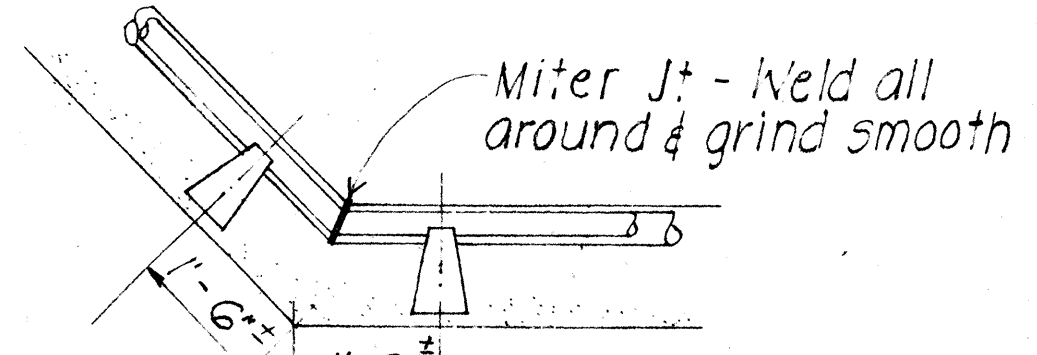
STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION
STANDARD DETAILS
 NOTES AND MISCELLANEOUS
 DETAILS

Date: October 1969
 SHEET No. 1 OF 1 SHEETS DB-100



TYPICAL SIDEWALK CONSTRUCTION JOINT DETAIL
Scale: 1/2" = 1'-0"

AT SKEW
Scale: 1/2" = 1'-0"



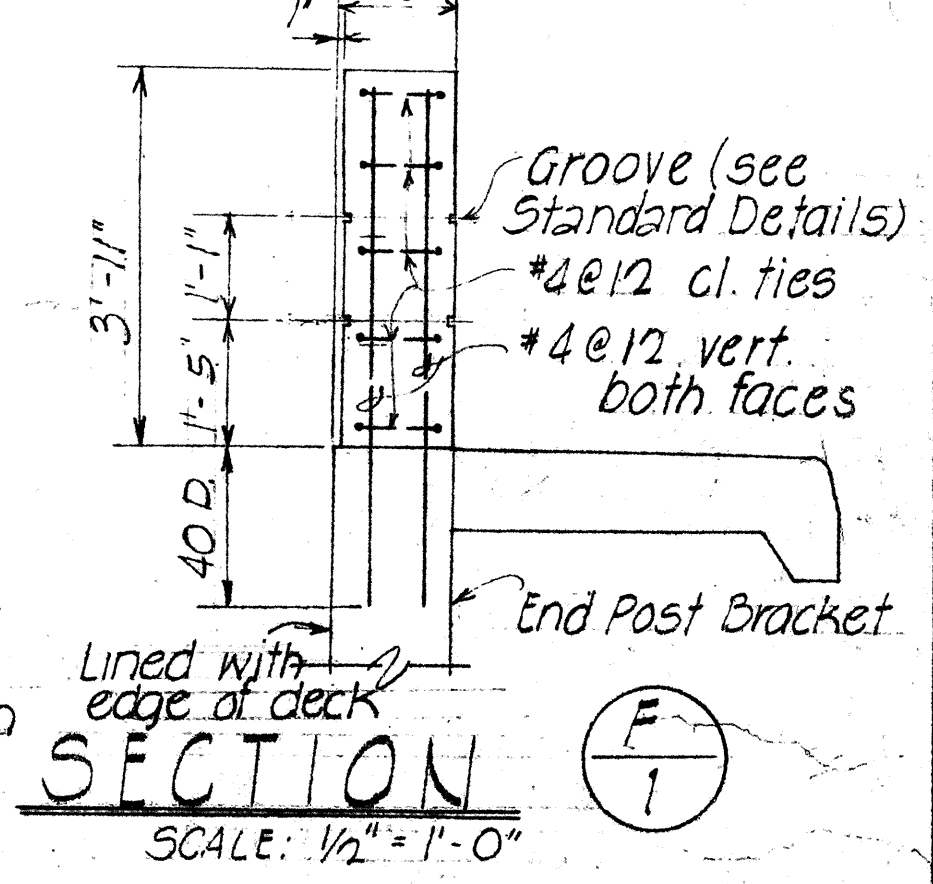
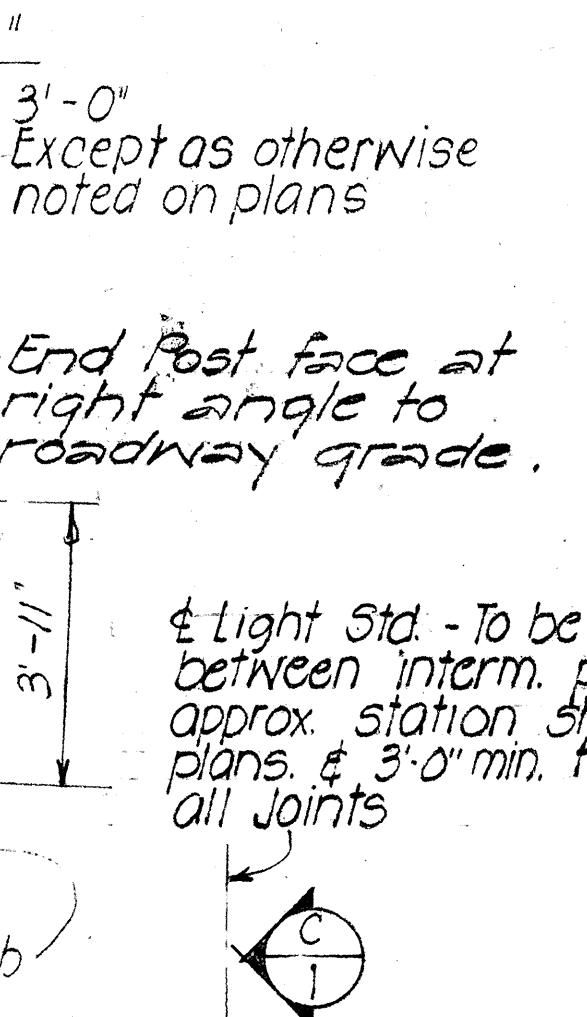
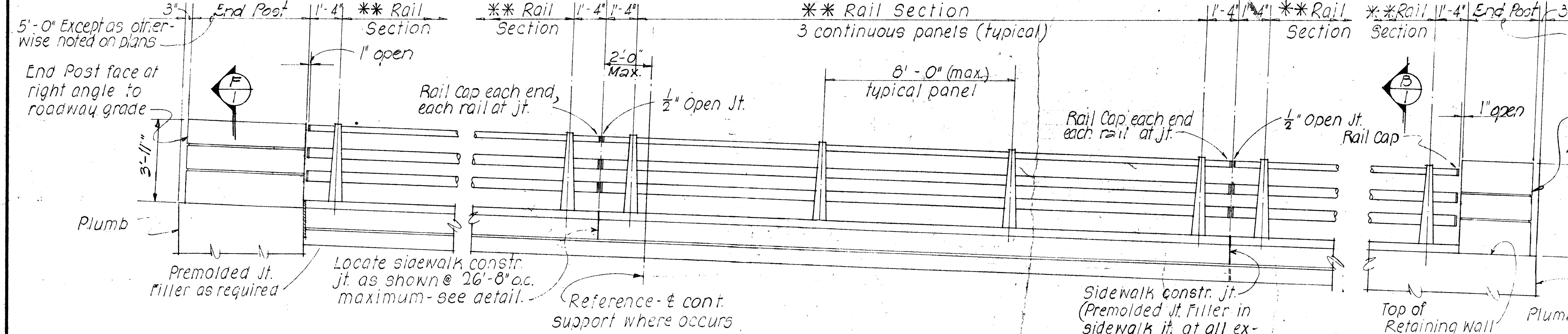
TREATMENT OF RAILING AT SKEWED ENDS
Scale: 1/2" = 1'-0"

****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.

NOTES!!

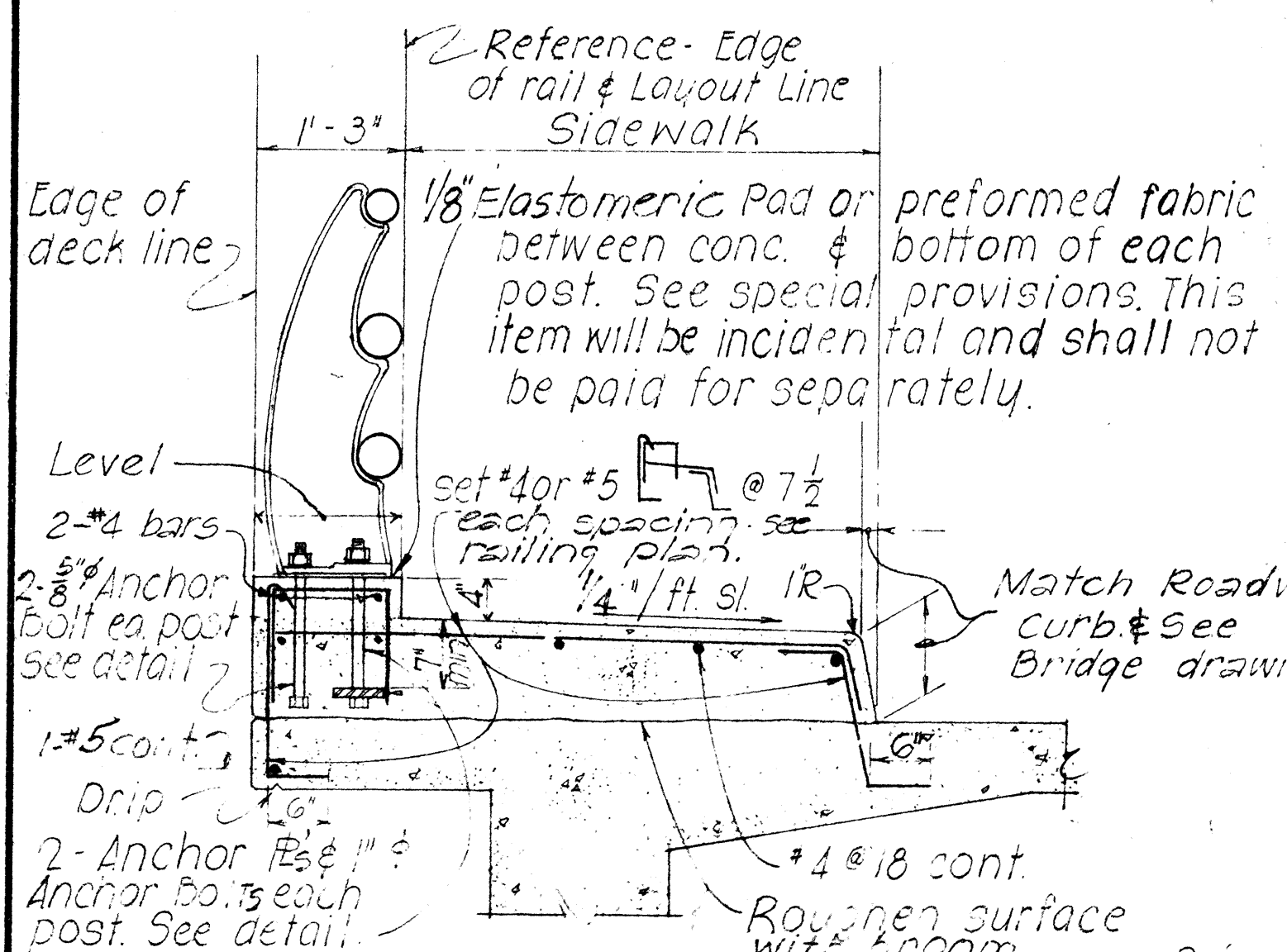
1. Rail Posts shall be normal to grade.
2. Provide double posts at each expansion jt., fixed bridge jt. & as shown on detailed drawings.



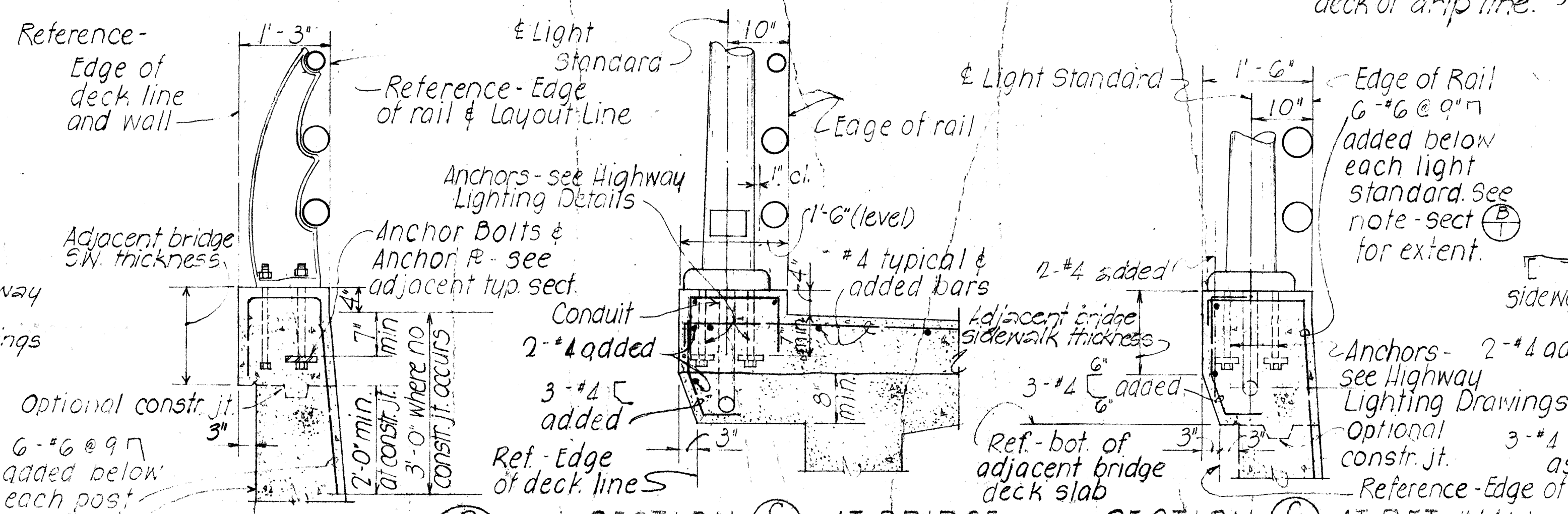
SECTION
Scale: 1/2" = 1'-0"

NO.	REVISION	APPROVED BY	DATE

EXTERIOR RAILING ELEVATION
Scale: 3/8" = 1'-0"



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



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

SECTION C AT BRIDGE

SECTION D AT RET. WALL

SECTION E

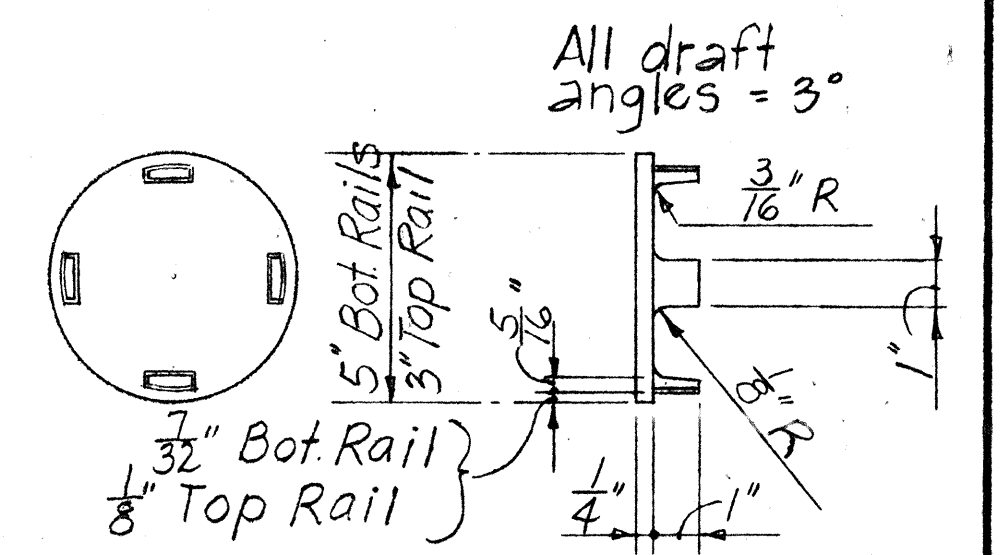
DETAILS OF RAILING AT LIGHT STANDARD
Scale: 3/4" = 1'-0"

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
METAL BRIDGE RAILING
THREE RAIL COMBINATION TYPE
Date
SHEET No. 1 OF 2 SHEETS DB-203-1

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

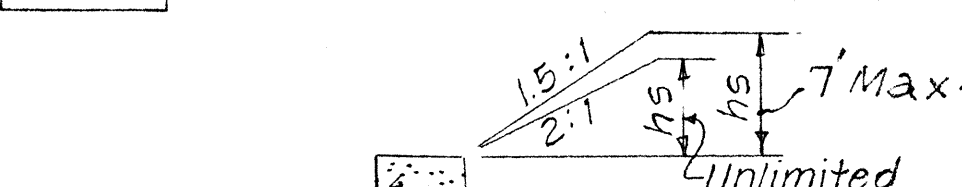


REFERENCE NOTES:
Refer to Standard Drawing Sht DB-207-2 for expansion joint & footing step details.

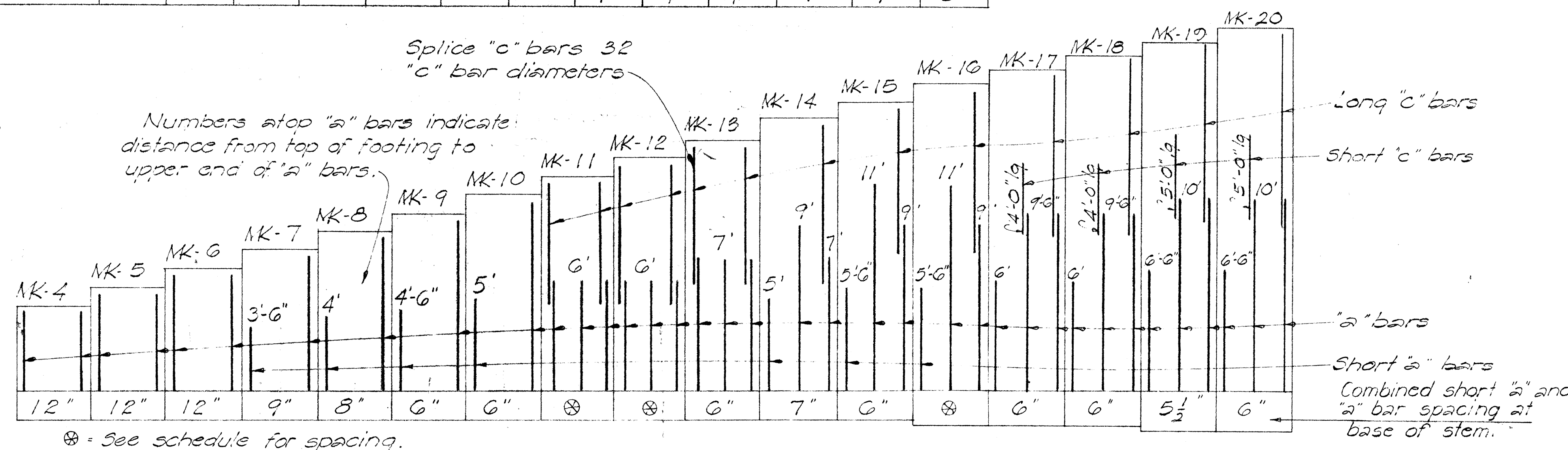
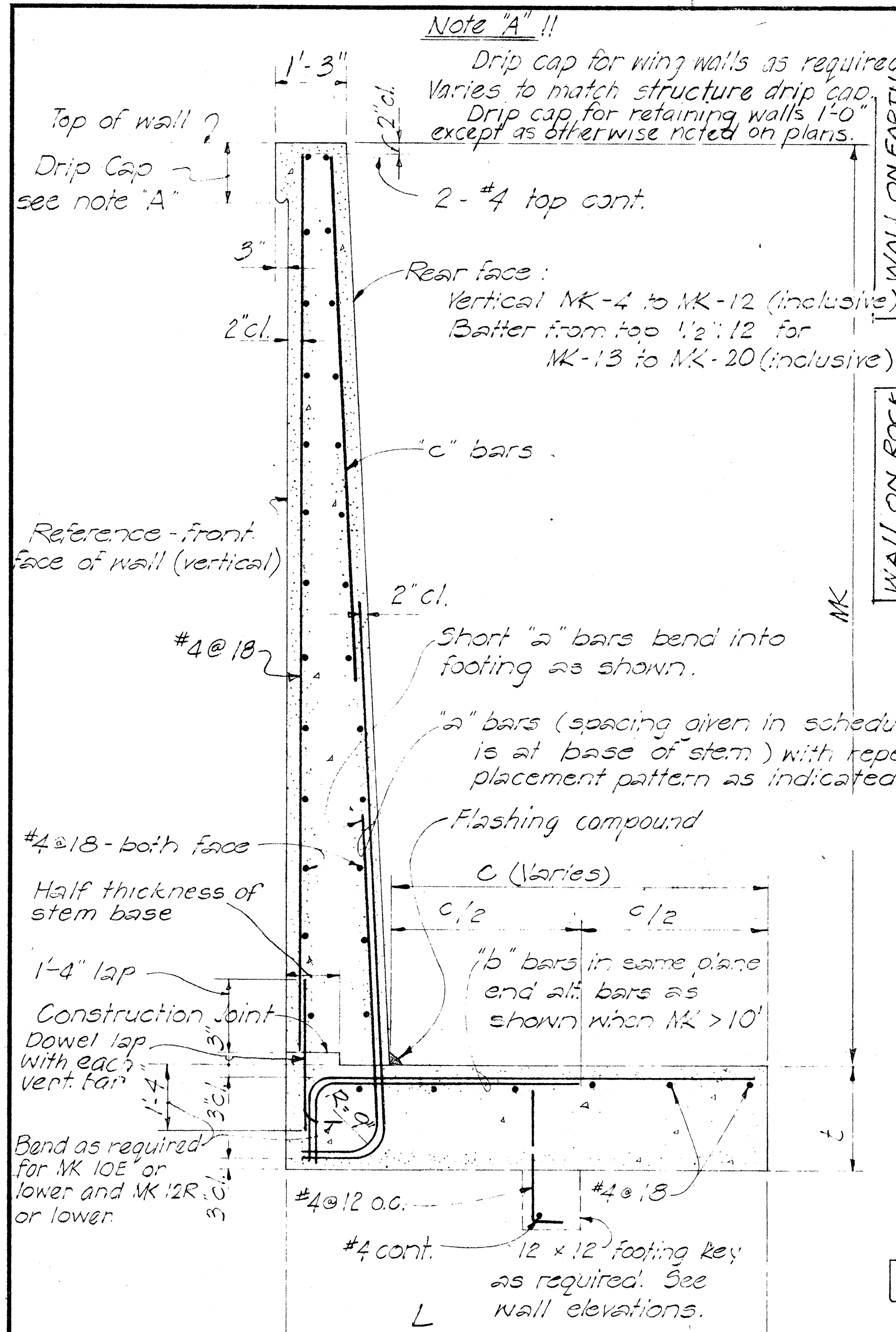
TYPE "L-1" WALL SCHEDULE OF DIMENSIONS AND REINFORCING STEEL

Maximum "MK"	4 E	5 E	6 E	7 E	8 E	9 E	10 E	11 E	12 E	13 E	14 E	15 E	16 E	17 E	18 E	19 E	20 E
L	3.0'	3.25'	3.5'	4.25'	4.75'	5.5'	6.0'	6.75'	7.5'	8.5'	9.25'	10.5'	12.0'	12.75'	14.00'	15.50'	17.00'
t	14"	14"	14"	14"	14"	14"	14"	18"	18"	18"	21"	24"	27"	27"	27"	30"	30"
"a"	#3@12"	#3@12"	#4@12"	#4@9"	#5@8"	#5@6"	#6@6"	#6@6"	#7@6"	#7@6"	#7@7"	#7@6"	#8@5 1/2"	#8@6"	#8@6"	#8@5 1/2"	#9@6"
"b"	#3@12"	#3@12"	#4@12"	#4@9"	#5@8"	#5@6"	#6@6"	#6@6"	#7@6"	#8@6"	#9@7"	#9@6"	#10@5 1/2"	#8@6"	#8@6"	#8@5 1/2"	#9@6"
"c"	—	—	—	—	—	—	—	#4	#4	#4	#4	#4	#5	#5	#5	#5	#5

Maximum "MK"	4 R	5 R	6 R	7 R	8 R	9 R	10 R	11 R	12 R	13 R	14 R	15 R	16 R
L	2.5'	3.0'	3.5'	4.0'	4.5'	5.0'	5.5'	6.0'	6.5'	7.0'	7.5'	8.0'	8.5'
t	14"	14"	14"	14"	14"	14"	14"	14"	14"	18"	18"	18"	18"
"a"	#3@12"	#3@12"	#4@12"	#4@9"	#5@8"	#5@6"	#6@6"	#7@7"	#8@7"	#6@6"	#7@7"	#7@6"	#8@6"
"b"	#3@12"	#3@12"	#4@12"	#4@9"	#5@8"	#5@6"	#6@6"	#7@7"	#8@7"	#7@6"	#8@7"	#8@6"	#9@6"
"c"	—	—	—	—	—	—	—	#4	#4	#4	#4	#4	#5



DESIGN LIMITS OF WALL SURCHARGE AND SLOPES



VERTICAL REINFORCING STEEL ARRANGEMENT

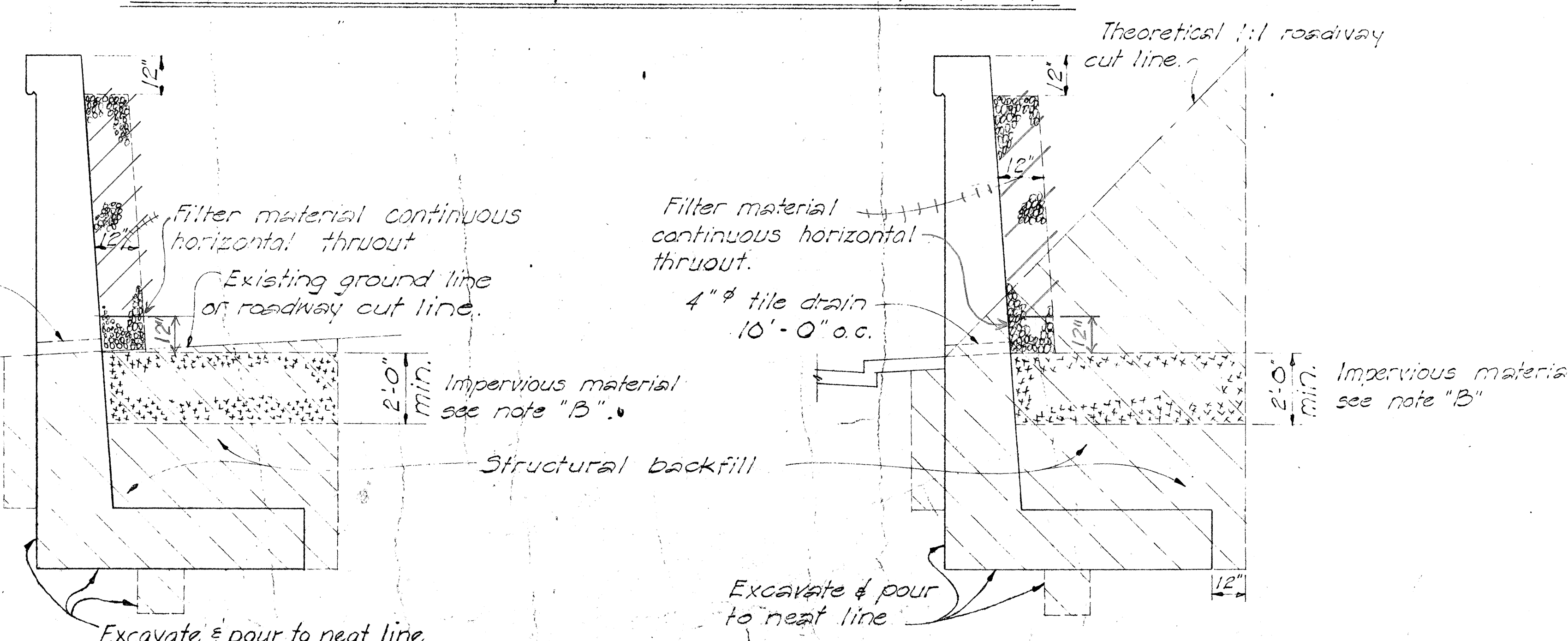
TYPICAL SECTION TYPE "L-1" WALL

Note:
Hatched areas denotes limits of structural excavation pay line. All other excavation shall be roadway excavation except as otherwise noted. Note "B" !!

Impervious material as selected by the Engineer incidental to structural excavation. When "MK" is 2'-0" or less, all backfill below weep hole level shall be impervious material.

The subgrade upon which filter material is to be placed shall be made as impervious as possible by pneumatic tamping or other approved methods.

Impervious material shall be incidental to roadway excavation or imported borrow when used in embankment area.



STRUCTURAL EXCAVATION & DRAINAGE DETAILS

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

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

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAIL
RETAINING WALL TYPE L-1

