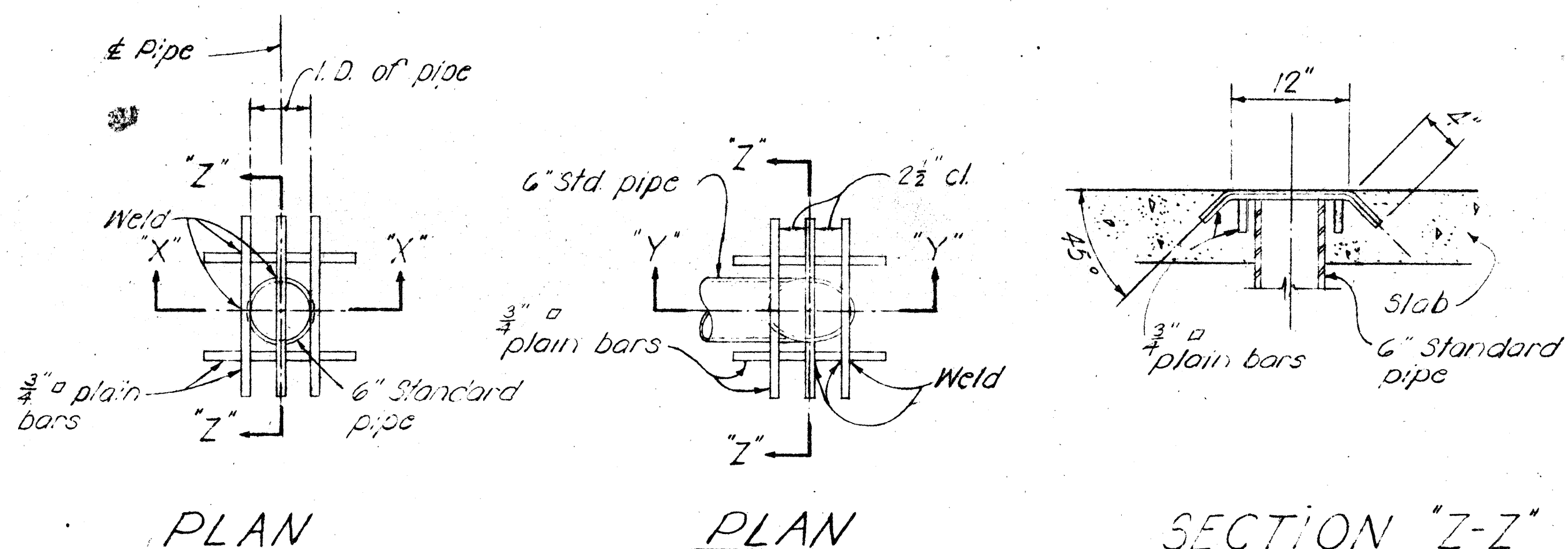
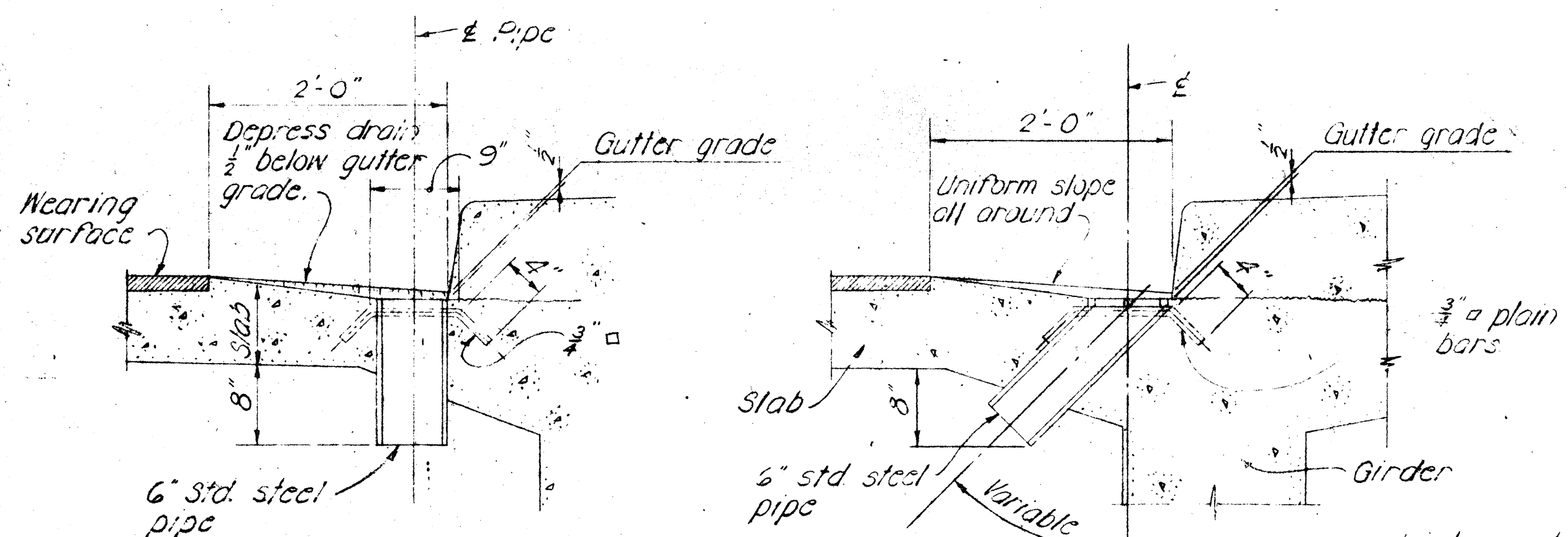
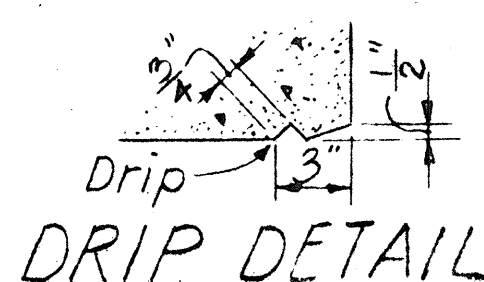


GENERAL NOTES

- Reinforcing shall be detailed in accordance with A.C.I. 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 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.
- 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.
- 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.
- See Typical Notes, also, Sh. 7-5.



TYPICAL CONCRETE GROOVE DETAIL

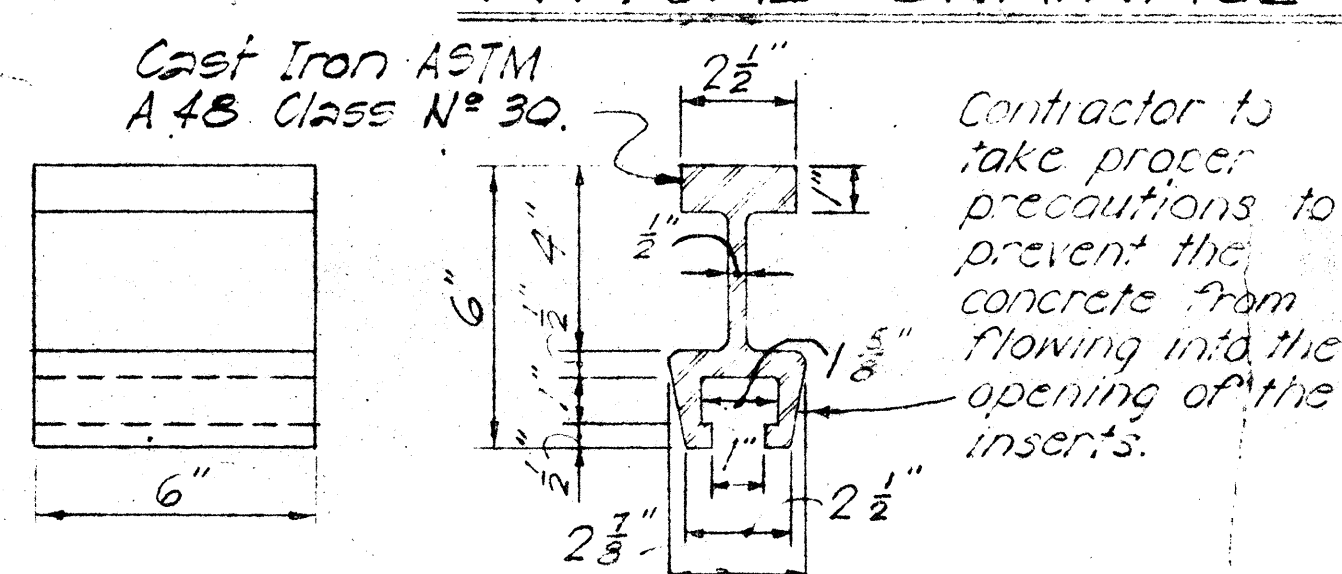


SECTION "X-X"

SECTION "Y-Y"

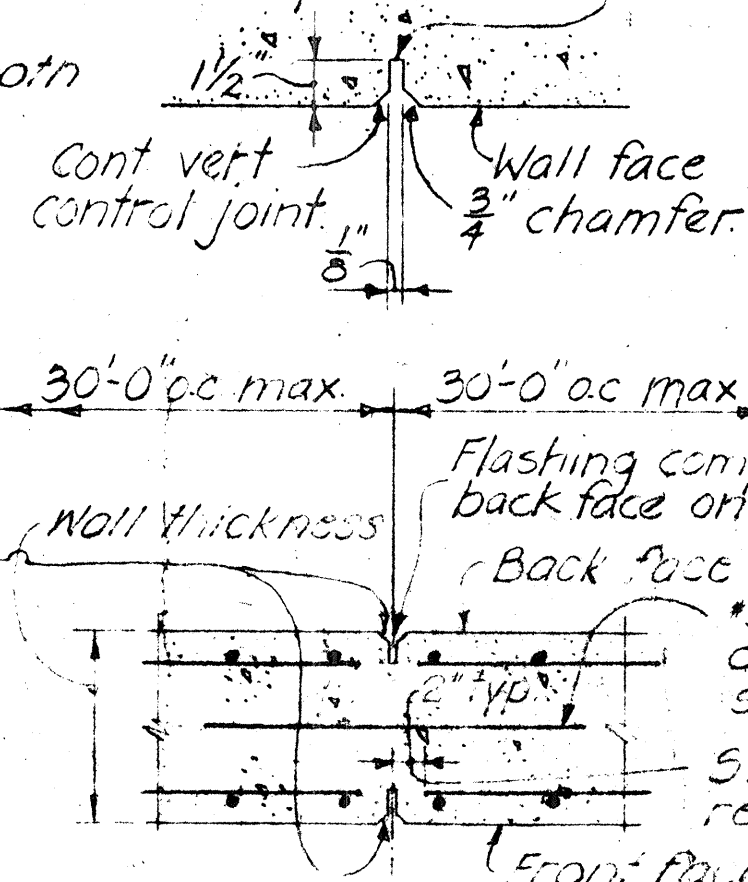
NOTE: Metal drains shall be considered incidental to Class A Concrete in both concrete and steel bridges and will not be paid for separately. Assembly of grillage and pipe shall be hot-dip galvanized after all welding is completed.

TYPICAL DRAINAGE DETAILS

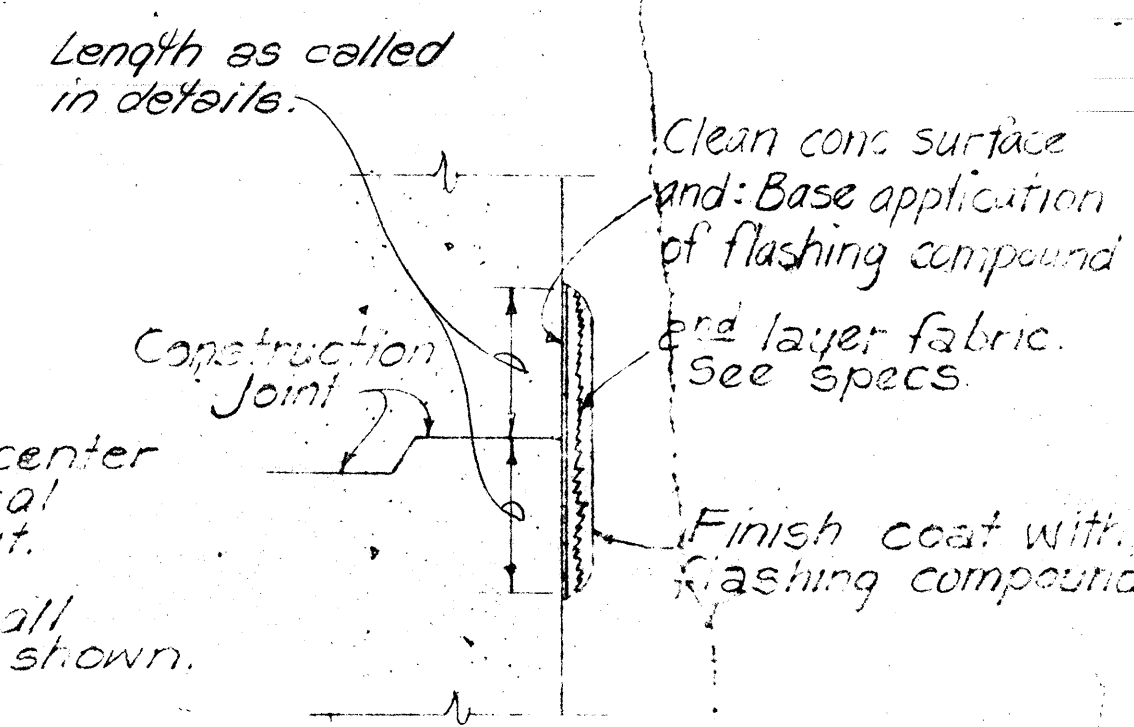


INSERT DETAIL

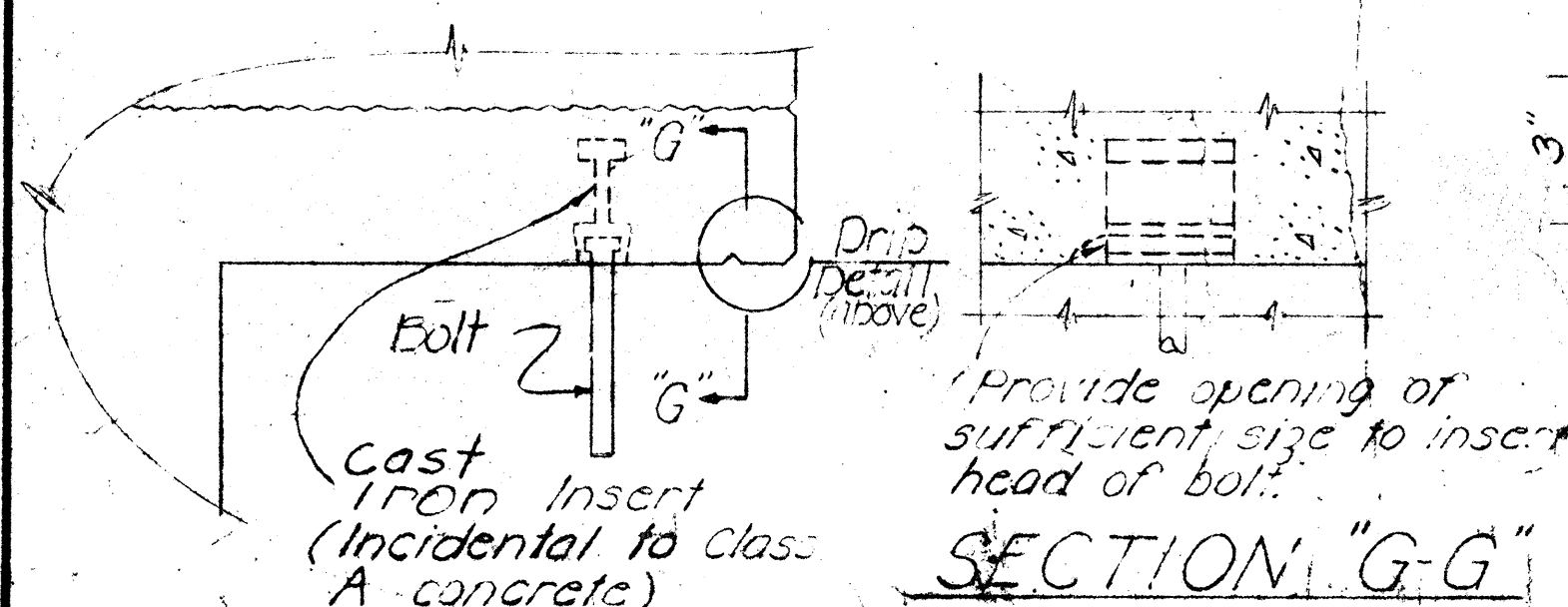
Contractor to take proper precautions to prevent the concrete from flowing into the opening of the inserts.



CONTROL JOINT DETAILS



TYP. FLASHING COMPOUND WATERPROOFING DETAIL



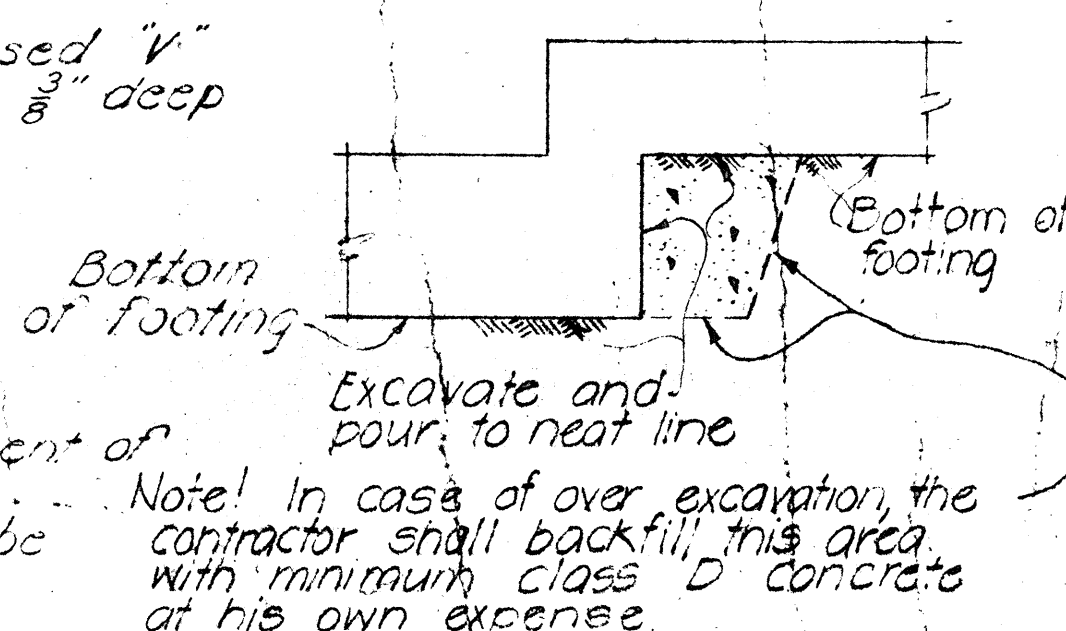
DETAIL OF PIPE HANGERS & INSERTS

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

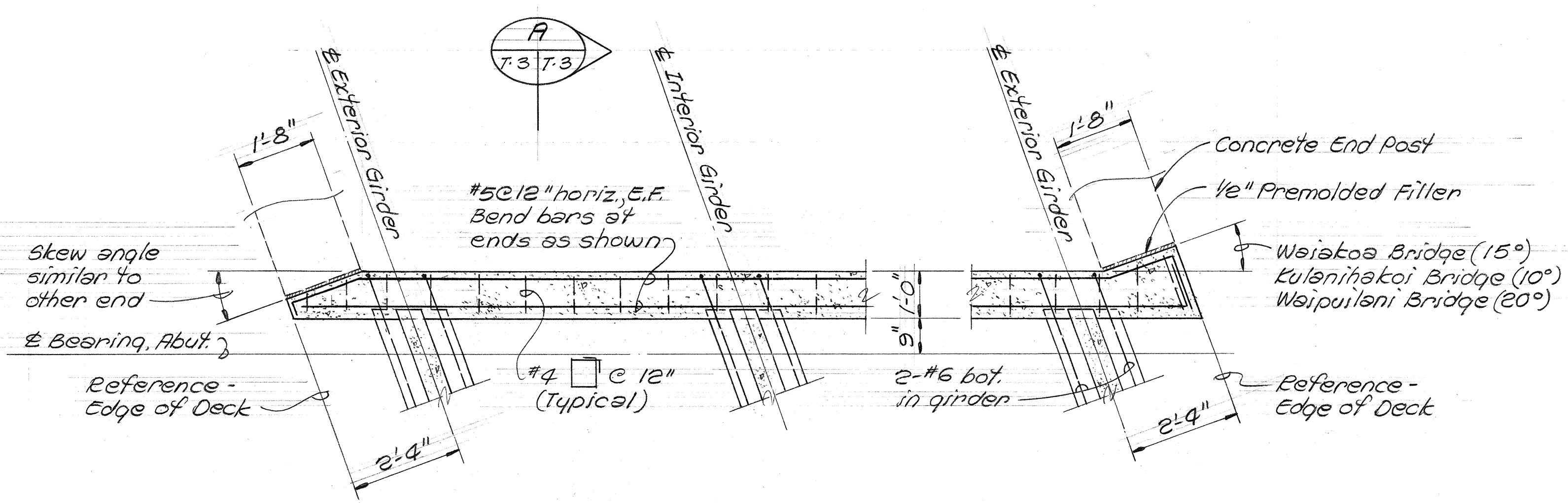
NO.	REVISION	APPROVED BY	DATE

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION
TYPICAL DETAILS NOTES AND MISCELLANEOUS DETAILS
Date: SEP 1978 SHEET No. 71 OF 10 SHEETS

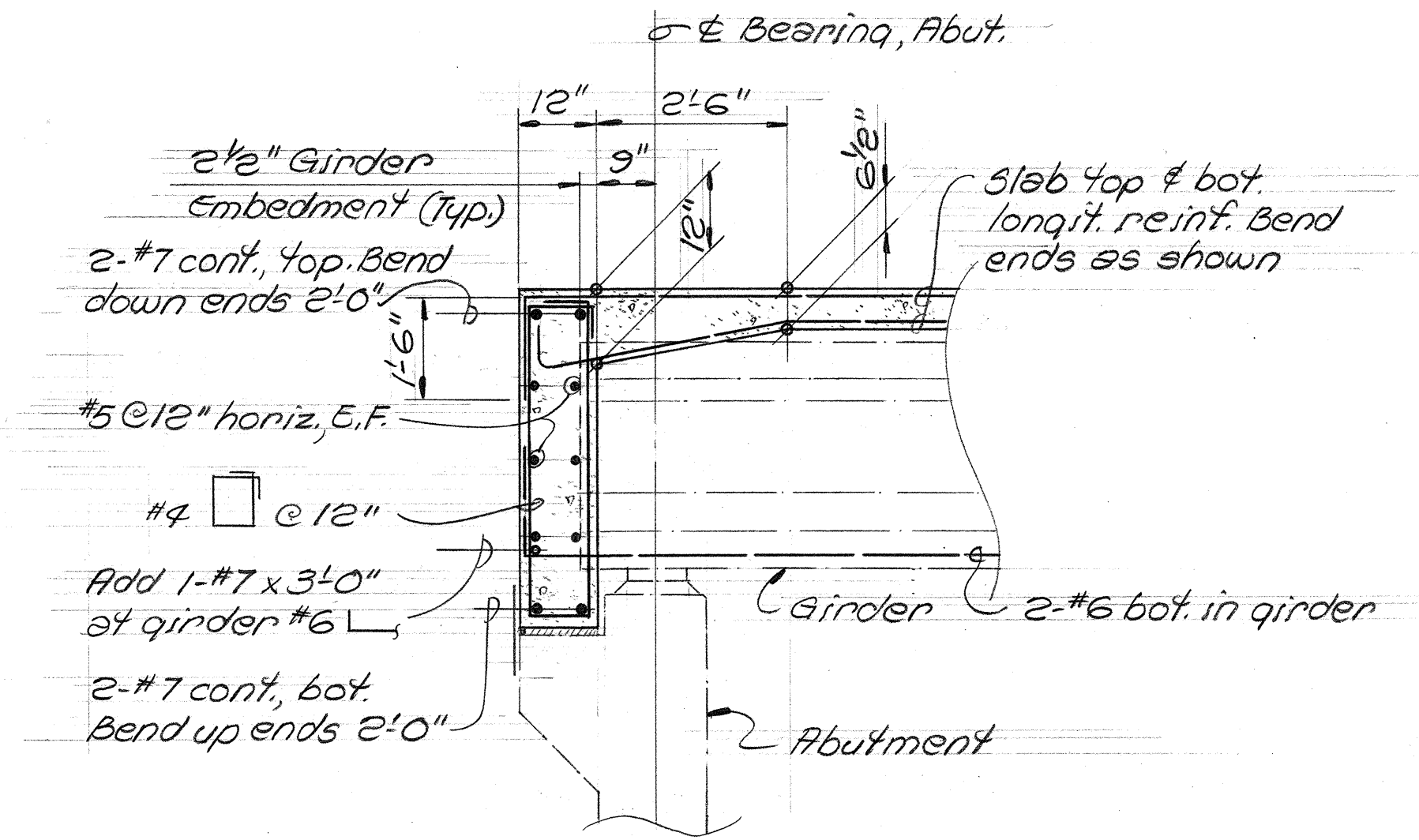
SSP Engineering, Inc.
Consulting Structural Engineers
3210 Ward Ave., Honolulu, HI 96814

This work was prepared by
the State of Hawaii Department of Transportation
Howard A. Fukuda

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-031-1 (6)	1978	255	262

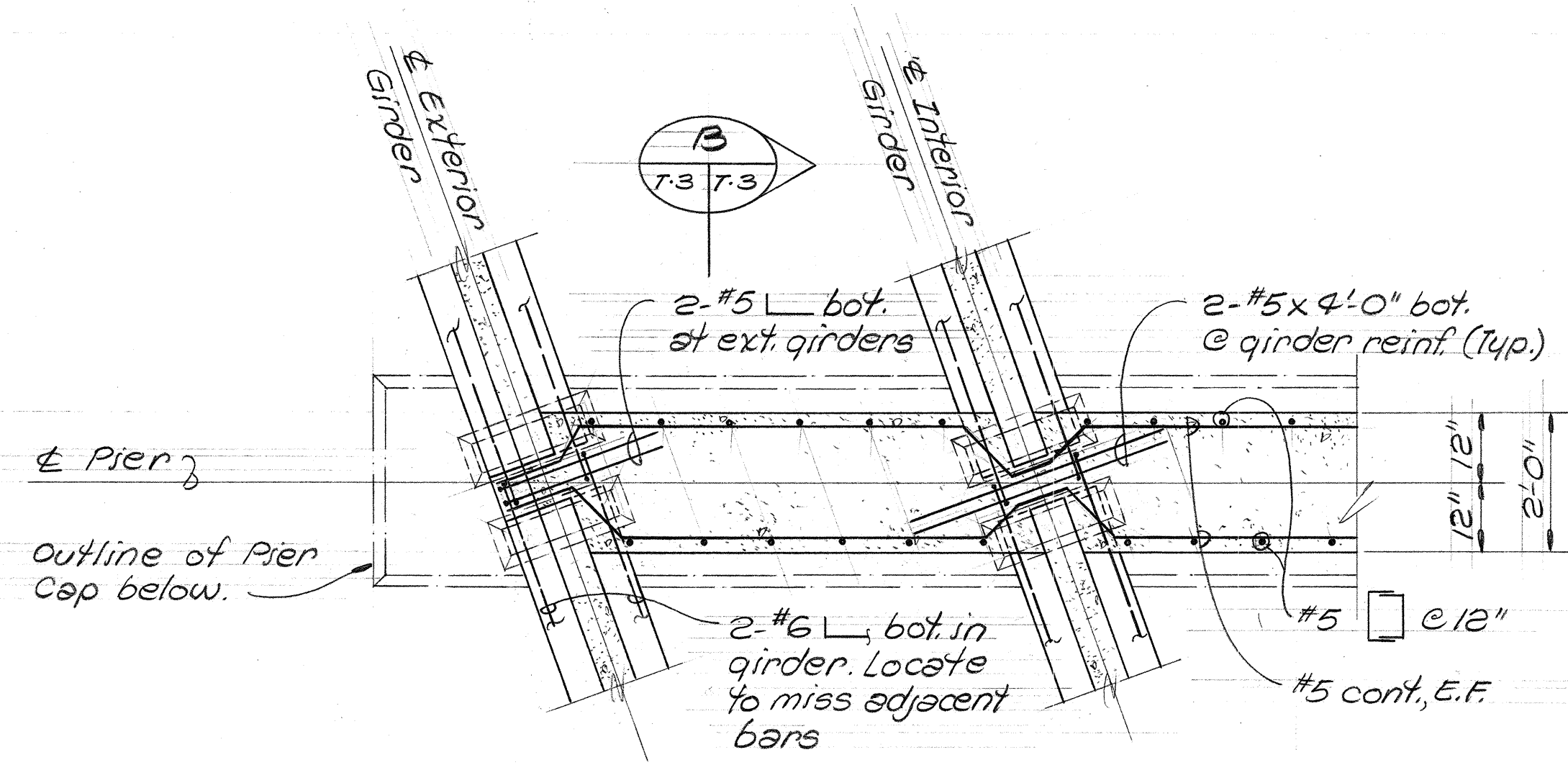


PLAN SECTION AT MID-HEIGHT OF BEAM

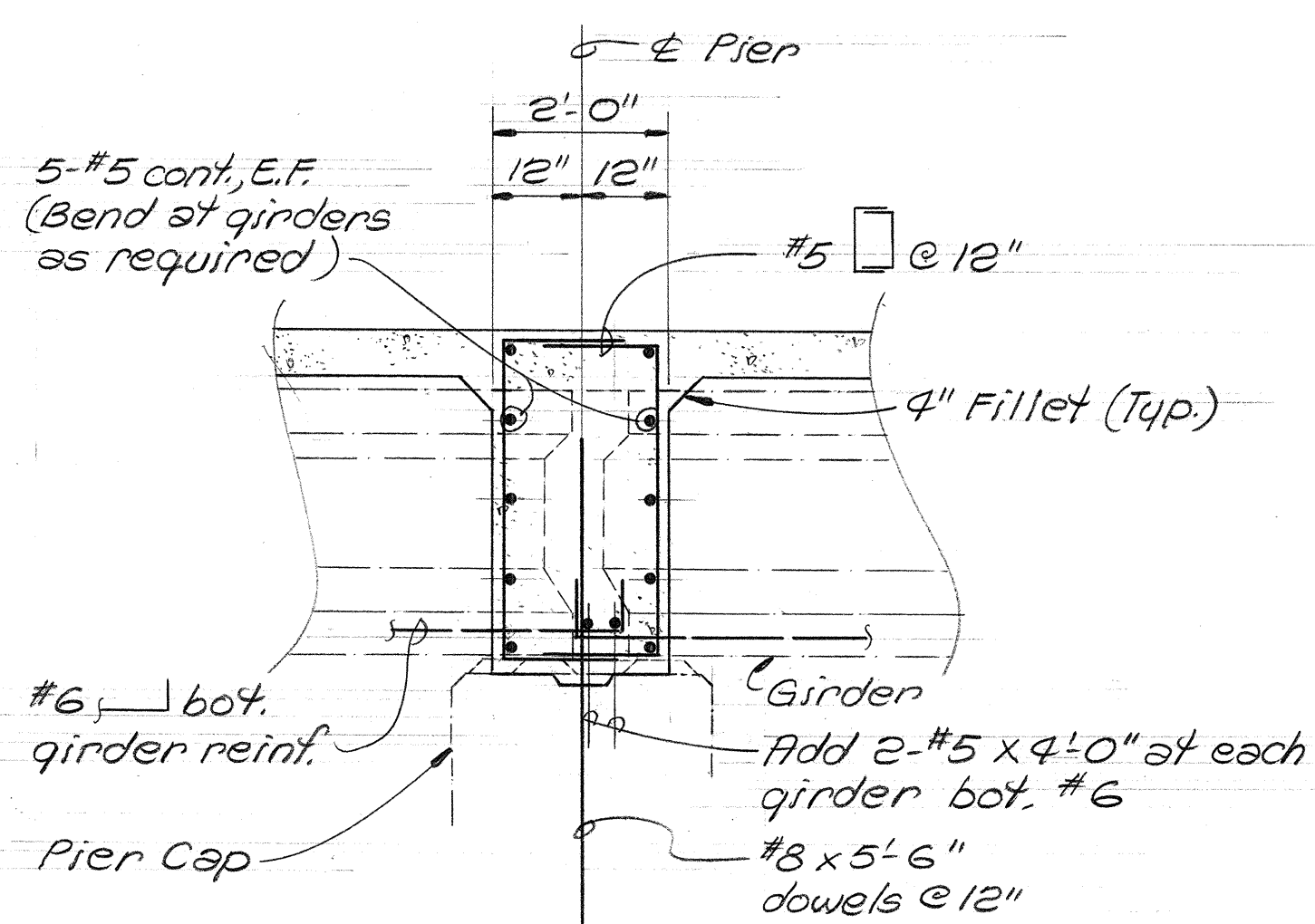


TYPICAL SECTION A

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

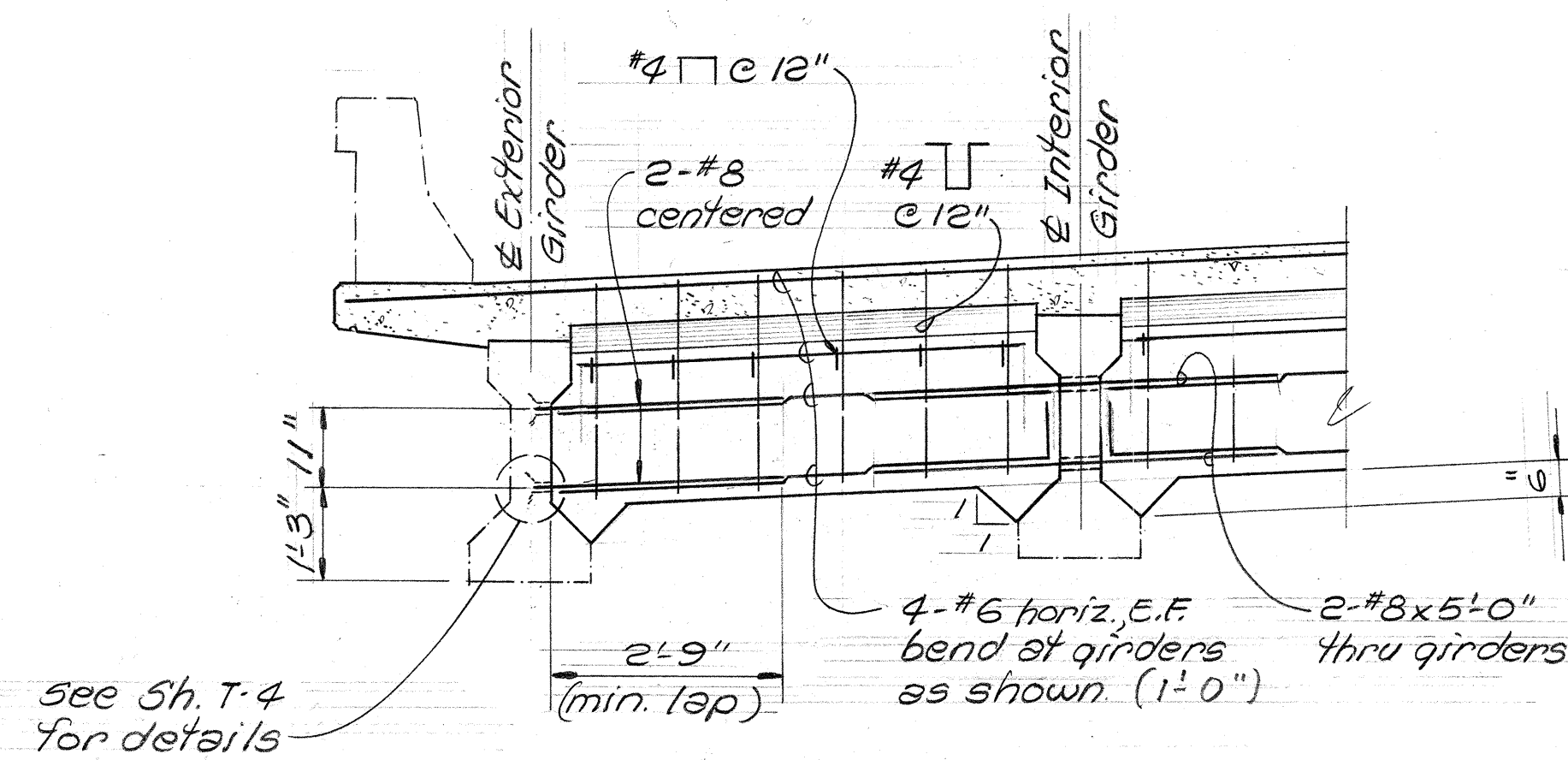


PLAN SECTION AT MID-HEIGHT OF BEAM

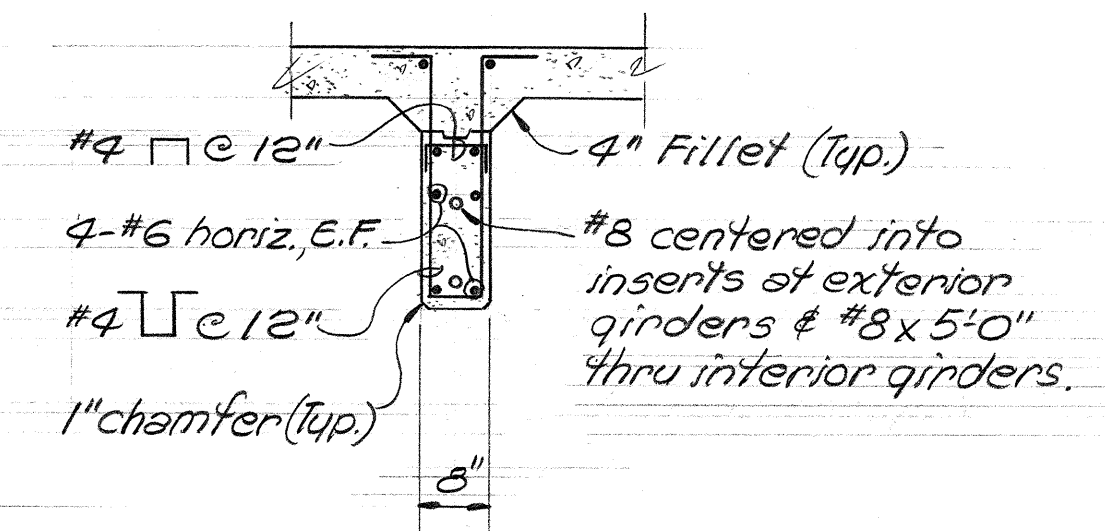


TYPICAL SECTION B

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

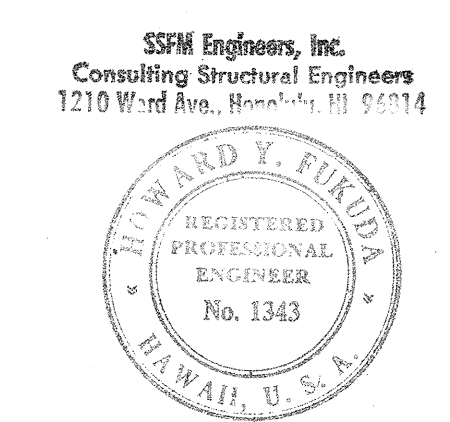


PARTIAL ELEVATION



TYPICAL SECTION

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



This work was prepared by me or under my supervision.
Howard Y. Fukuda

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
LAND TRANSPORTATION FACILITIES DIVISION

TYPICAL DETAIL
BEAMS "A", "B" & "C"

PILANI HIGHWAY
VICINITY OF MOKULELE HIGHWAY TO
VICINITY OF KILOHANA STREET
F.A. PROJECT NO. F-031-1 (6)
DISTRICT OF MAKAWAO ISLAND OF MAUI

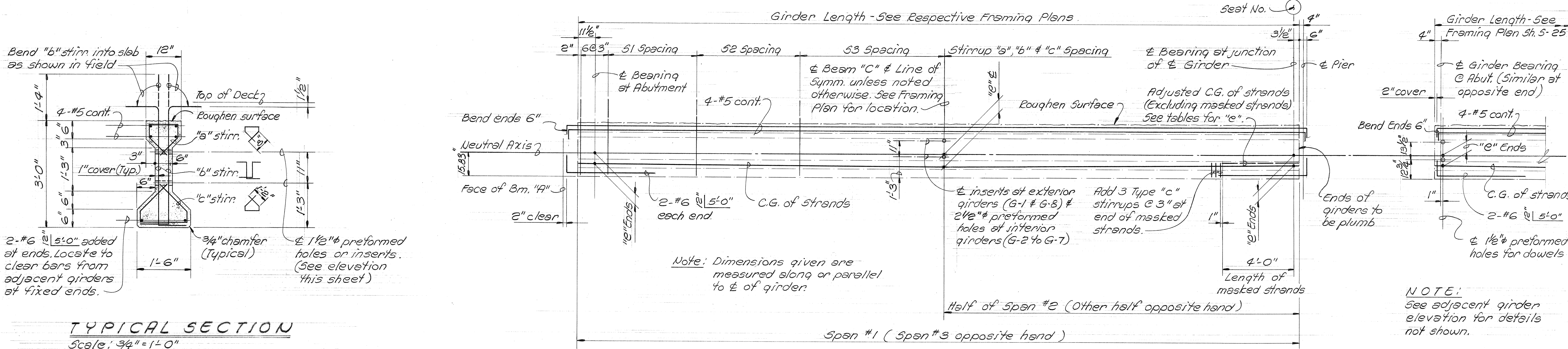
SCALE AS SHOWN DATE SEP 1978

SHEET NO. 7.3 OF 10 SHEETS

AASHTO TYPE II
PRESTRESSED GIRDER SCHEDULE

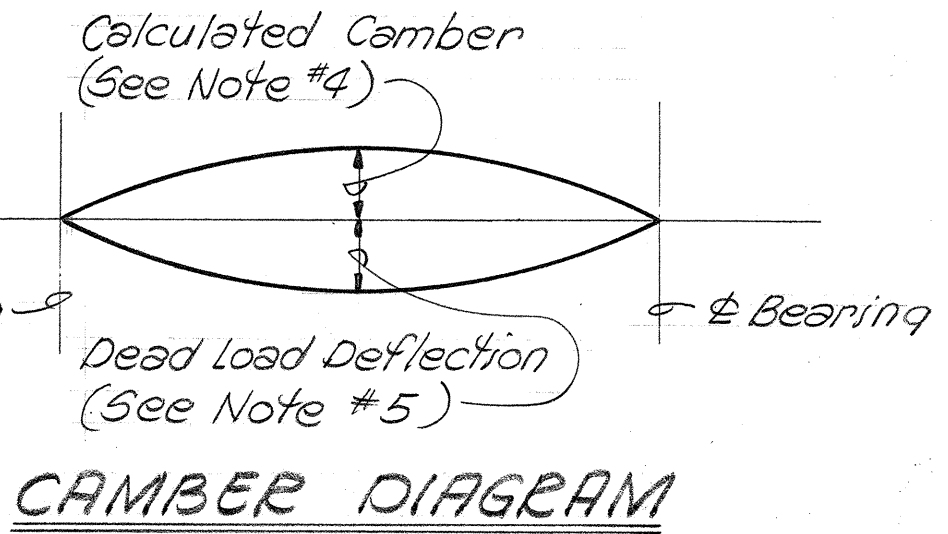
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-031-1(6)	1978	256	262

Location	Span	AASHTO Type II Girder	Initial Prestress Force (Kips)	Final Prestress Force (Kips)	Calculated Camber (Inches) See Note #4	Dead Load Deflection (Inches) See Note #5	Location of Center of Gravity of Prestressed Force (Inches)		Stirrups "a", "b" & "c" Spacing (#5 bar)			Required Minimum Ultimate Concrete Strength before Release of Strands (p.s.i.)	Remarks
							"e" Ends	"e" @	S1 Spacing	S2 Spacing	S3 Spacing		
Waiakoa & Kulanihakai Gulches	#1 & #3	IIA	486	376	-0.61	0.43	6.8 (4.54" @ Pier)	10.5	8 @ 10"	5 @ 12"	@ 16"	42 00	Mask 4 Strands at Pier (P eff. = 282 ^k)
	#2	IIB	486	376	-0.48	0.43	6.8 (4.54" @ Pier)	8.5	8 @ 10"	5 @ 12"	@ 16"	42 00	
Waipulani Gulch	#1 & #3	IIC	365	282	-0.26	0.17	6.8 (3.41" @ Pier)	8.75	5 @ 12"	5 @ 14"	@ 16"	42 00	Mask 4 Strands at Pier (P eff. = 188 ^k)
	#2	IID	425	329	-0.49	0.43	6.8 (4.09" @ Pier)	10.5	8 @ 10"	5 @ 14"	@ 16"	42 00	Mask 4 Strands at Pier (P eff. = 235 ^k)
Keokea Gulch	Single Span Bridge	IIE	607	470	-0.67	0.43	6.8	8.5	8 @ 10"	5 @ 12"	@ 16"	43 00	



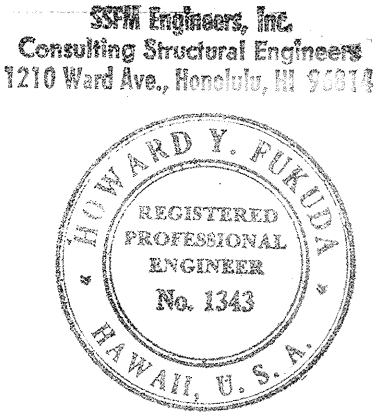
NOTES

- Concrete shall have a minimum ultimate 28 day cylinder strength of 6,000 p.s.i.
- Prestressed strands shall be 7 wire 1/2" #270 k.s.i. stressed-relieved steel strands (area = 0.153 in²) with an initial strand stress (before any losses) 199 k.s.i.; initial loss = 20,000 p.s.i. Total loss due to creep, shrinkage, elastic shortening & relaxation of steel = 45,000 p.s.i.
- Non-prestressed reinforcing steel shall be Grade 40 unless otherwise noted. For properties see State Standard Specifications.
- The calculated camber includes the effect of the initial prestress force & the weight of the girder after removal from bed. Negative values shown for calculated camber indicate a net upward deflection. Calculated camber values shown do not account for any camber growth of the girder. The actual camber shall not exceed the calculated camber shown on the plans by more than 100%.
- The dead load deflection includes the combined effects of the weight of slab, haunch & beams ("A", "B", etc.).
- Strand pattern shall be symmetrical about the longitudinal @ of the girder.
- Strand release sequence shall not induce any lateral deflection of the girder.
- Contractor shall submit his proposed strand pattern & releasing sequence to the Engineer for approval.
- During curing care shall be taken to avoid any lateral deflection of the girder due to improper orientation.
- Lifting devices shall be placed as close as possible to the center line of bearings of the girder. Details & locations of lifting devices shall be submitted to the Engineer for approval. Such approval does not relieve the Contractor of his responsibilities if girder is damaged due to failure of the lifting device.
- See Framing Plans for locations of beams ("A", "B", etc.), type & length of individual girders. Lengths shown do not include effect of elastic shortening.
- Do not use intermediate shorings for girders. Girders to be supported at abutments & piers only.



CAMBER DIAGRAM

INSERT DETAIL
Not to Scale



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
LAND TRANSPORTATION FACILITIES DIVISION

TYPICAL DETAIL
PRESTRESSED GIRDER

PILANI HIGHWAY
VICINITY OF MOKULELE HIGHWAY TO
VICINITY OF KILOHANA STREET
FA. PROJECT NO. F-031-1(6)
DISTRICT OF MAKAHAWA ISLAND OF MAUI

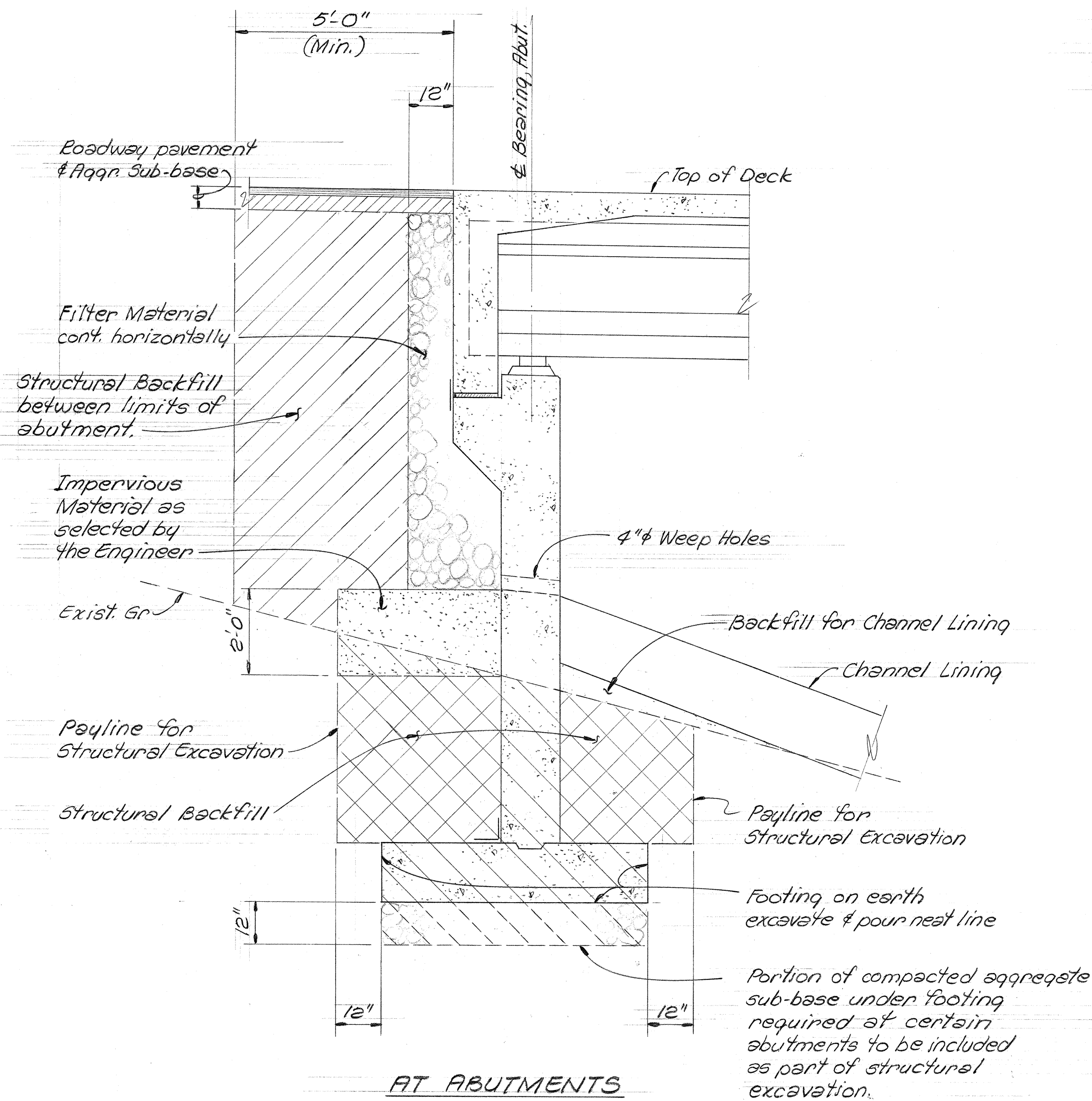
SCALE: AS SHOWN DATE SEP 1978

SHEET NO. 7-9 OF 10 SHEETS

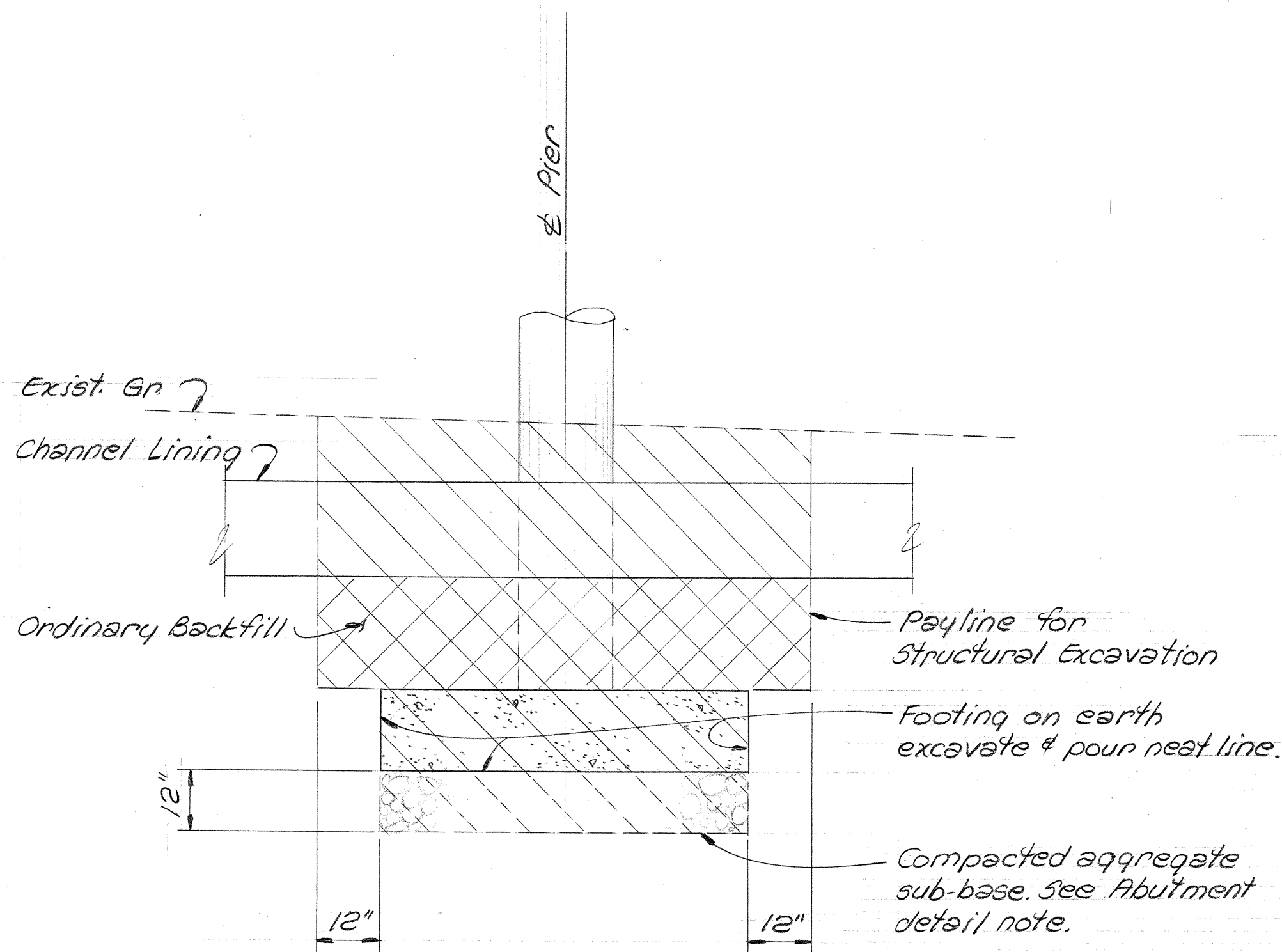
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-031-1(6)	1978	257	262

NOTES

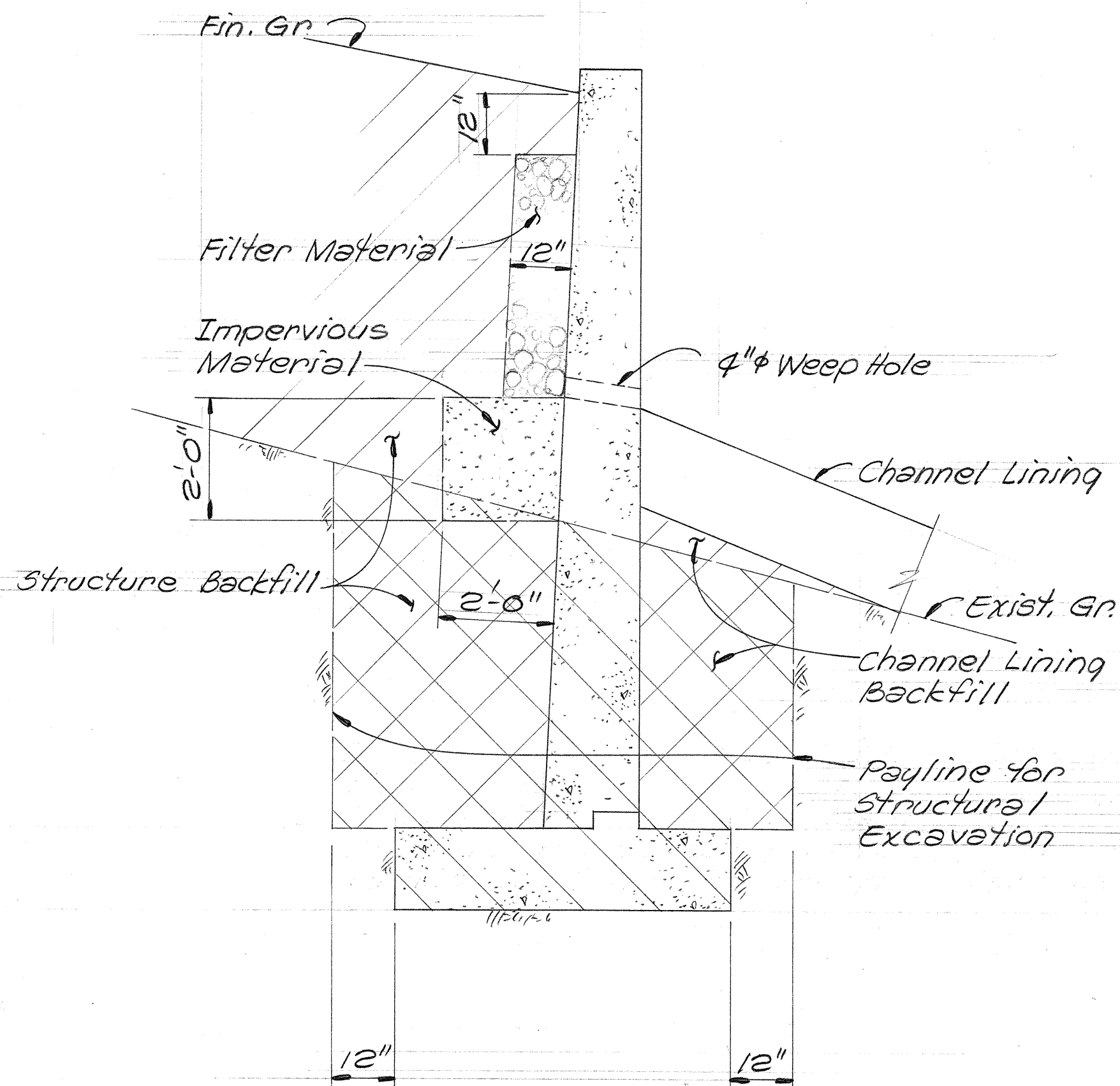
1. Impervious material as selected by the Engineer incidental to structural excavation.
2. The subgrade upon which Filter Material is to be placed shall be made impervious as possible by pneumatic tamping or other approved methods.



AT ABUTMENTS



AT PIERS



AT WING WALLS

TYPICAL LIMIT OF STRUCTURAL EXCAVATION PAYLINE & STRUCTURAL BACKFILL

Not to Scale

TYPICAL NOTES

DESIGN SPECIFICATIONS AASHTO

Standard Specifications for Highway Bridges (11 Edition) with subsequent interim Specifications.

DESIGN LOADS

H3-20-44 or Interstate Loading.

DESIGN STRESSES

1. Reinforced concrete beams & slabs. See AASHTO Specifications & special provisions except as otherwise noted.

Class A

$f_c = 3,000$ p.s.i.

$f_c = 1,200$ p.s.i.

$n = 10$

$f_s =$ ASTM A615. See Special Provisions

2. Prestressed Girders & Tees

$f_c = 6,000$ p.s.i.

$1/2$ \" 270 k.s.i., 7 wire strands.

Forms must be removed & the beams inspected before the strands are cut.

3. Pier Columns = 4,000 p.s.i.

4. All structural steel I's, pipes & members shall conform to ASTM A36 & shall be hot dipped galvanized after fabrication.

MATERIALS

1. Except as otherwise noted on plans

- a. Cast-in-place concrete for the various parts of the structures are:

Class A - Conc. beams, footings, walls, pier caps & parapets

Class BD - Conc. slabs

4,000 p.s.i. - Pier Columns.

- b. Reinforcing steel for cast-in-place concrete:

Grade 40 - Concrete deck slabs, beams & parapets.

Grade 60 - Pier cap, column, footing, walls & others not specified.

- c. Concrete for precast prestressed concrete girders.

See Standard Specs. & as noted under Design Stress.

All preformed elastomeric bearing pads, premolded joint fillers, joint seals, waterproofing at joints, pipes & conduits. & other similar items are incidental to concrete & will not be paid for separately.

CONSTRUCTION METHODS

1. See Standard Specifications & Special Provisions.
2. In general top of concrete deck of superstructure shall be constructed to follow the finish roadway vertical & horizontal curves & grades.
3. For concrete finish see Special Provisions. Girder concrete seats to be poured monolithically with the pier cap. Top surfaces of concrete seats to have hard trowel finish.
4. See details for additional surface finish.
5. Except as otherwise noted, all vertical dimensions are measured plumb.
6. Pier frame column footings shall be excavated & poured nest against undisturbed ground. In case of over excavation space between footing & ground shall be filled with concrete at the Contractor's expense & as directed by the Engineer. The minimum quality of the fill concrete shall be Class D.
7. In the installation of anchor bolts for Highway Lighting Standards & Expressway Bridge Signs, the Contractor shall provide rigid templates to maintain the proper locations & protection of such anchor bolts at all times during the period of construction. Exact methods shall be approved by the Engineer.

REFERENCE

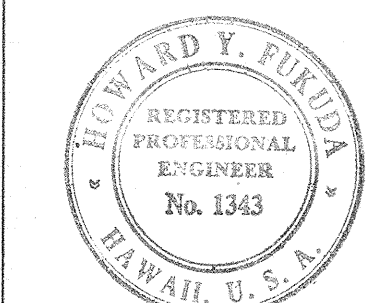
1. Refer to Standard Detailed Drawings for additional details not covered by the Detail & Typical Drawings.
2. Typical Details drawing sheet No's T-1 thru T-10 inclusive refer to the structures in general except for modifications as may be required by special conditions. For such

modifications see corresponding detail plans.

GENERAL

1. All items noted incidental will not be paid for separately.
2. The Contractor shall verify the locations of all existing utility lines & notify their respective owners before commencing work.
3. Exact location of bars shall be so arranged so that no interference will occur between vertical column reinforcement & bottom pier cap horizontal reinforcement.
4. The Contractor shall furnish shop placement & detailed drawings for all structural steel work including assemblage of each drain.
5. Secure elastomeric pads to concrete girder seats.
6. Modify standard details as required to apply to details not shown.
7. See 5th, T-1, General Notes, for other applicable notes.

SSP&H Engineers, Inc.
Consulting Structural Engineers
1210 Ward Ave., Honolulu, HI 96814



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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
LAND TRANSPORTATION FACILITIES DIVISION

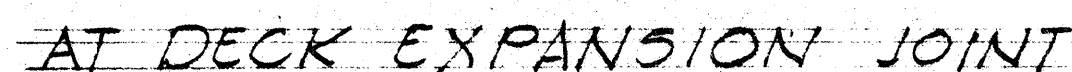
TYPICAL DETAIL
TYPICAL LIMITS OF
STRUCTURAL EXCAVATION PAYLINE & BACKFILL
& TYPICAL NOTES
PILANI HIGHWAY

VICINITY OF MOKULELE HIGHWAY TO
VICINITY OF KILOHANA STREET
PA PROJECT NO. F-031-1(6)

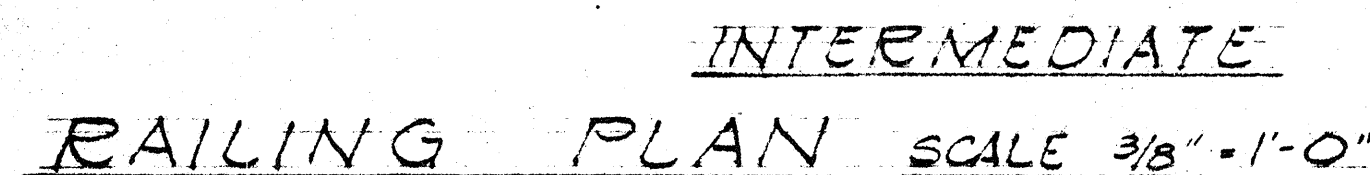
DISTRICT OF MAKAWAO
SCALE: AS SHOWN
DATE: SEP 1978

SHEET NO. 257 OF 262 SHEETS

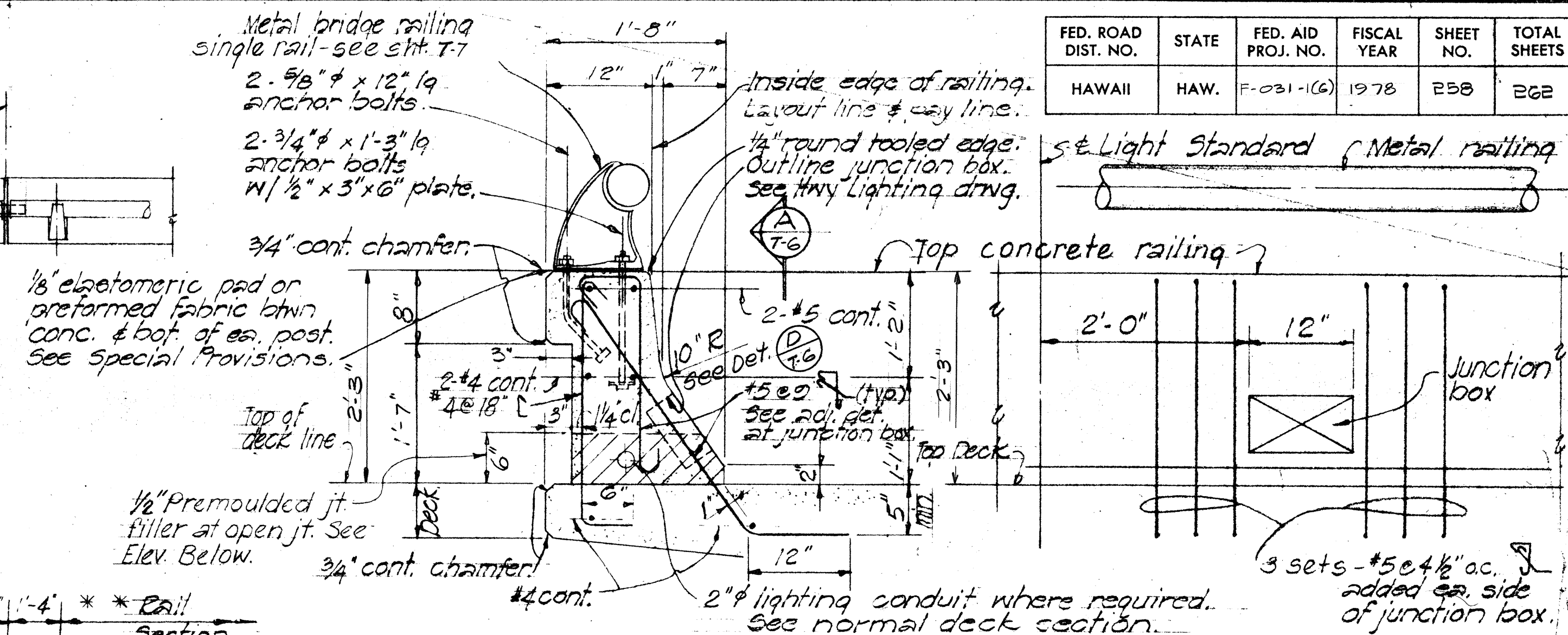
5. Light Standard & Metal railing



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

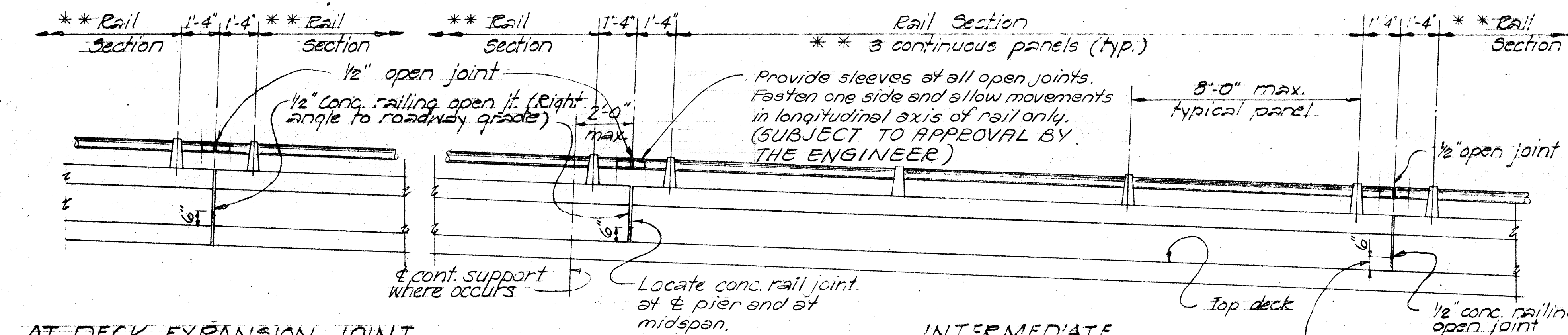


2. Rail Posts shall be normal to grade.
3. Provide double posts at each expansion jt., fixed bridge jt., continuous support, and as shown on detailed drawing.



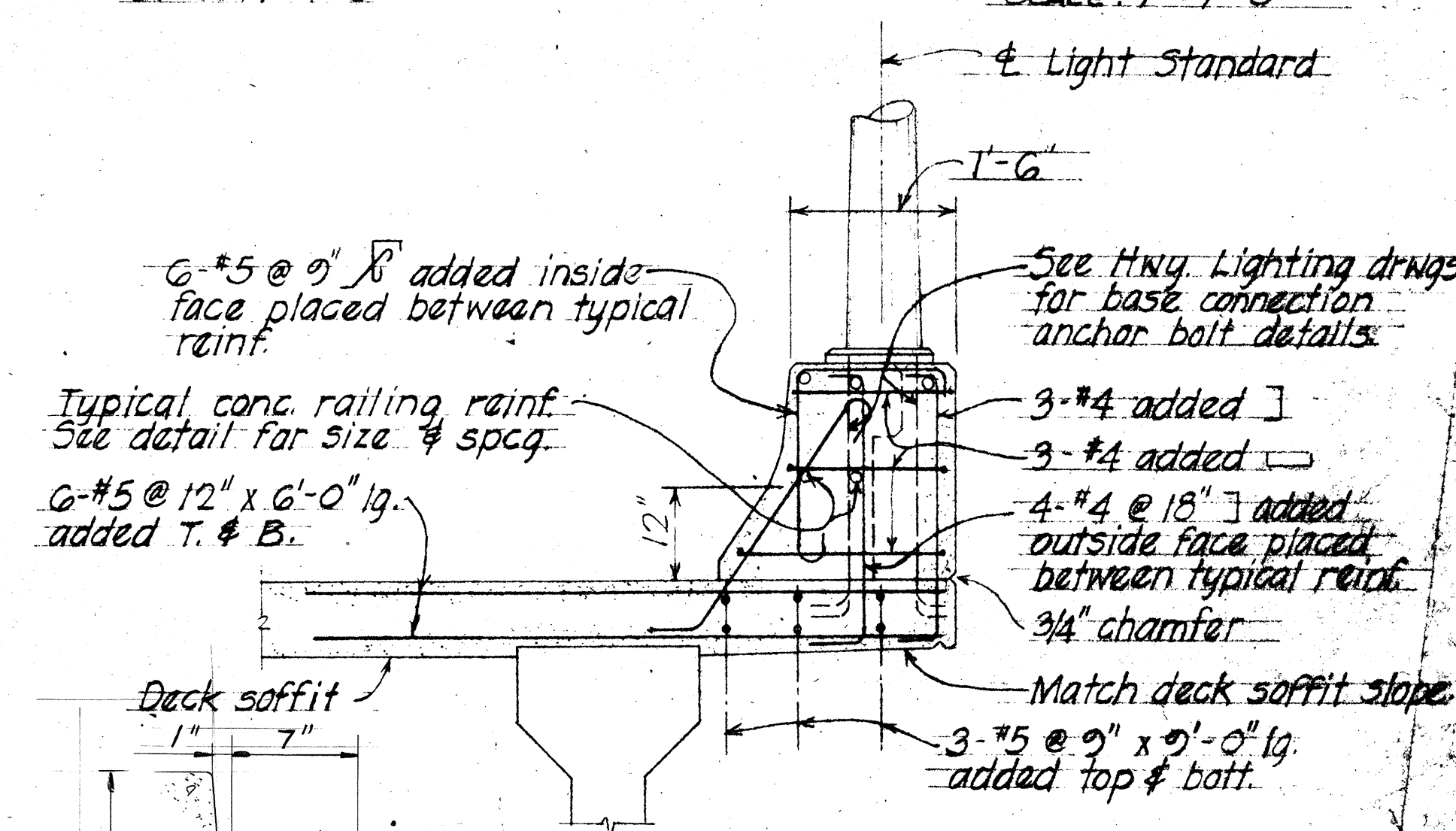
TYPICAL CONCRETE
RAILING SECTION

ELEVATION (A) SHOWING SPECIAL
7-6 REINFORCEMENT AT JUNCTION BOX



AT DECK EXPANSION JOINT

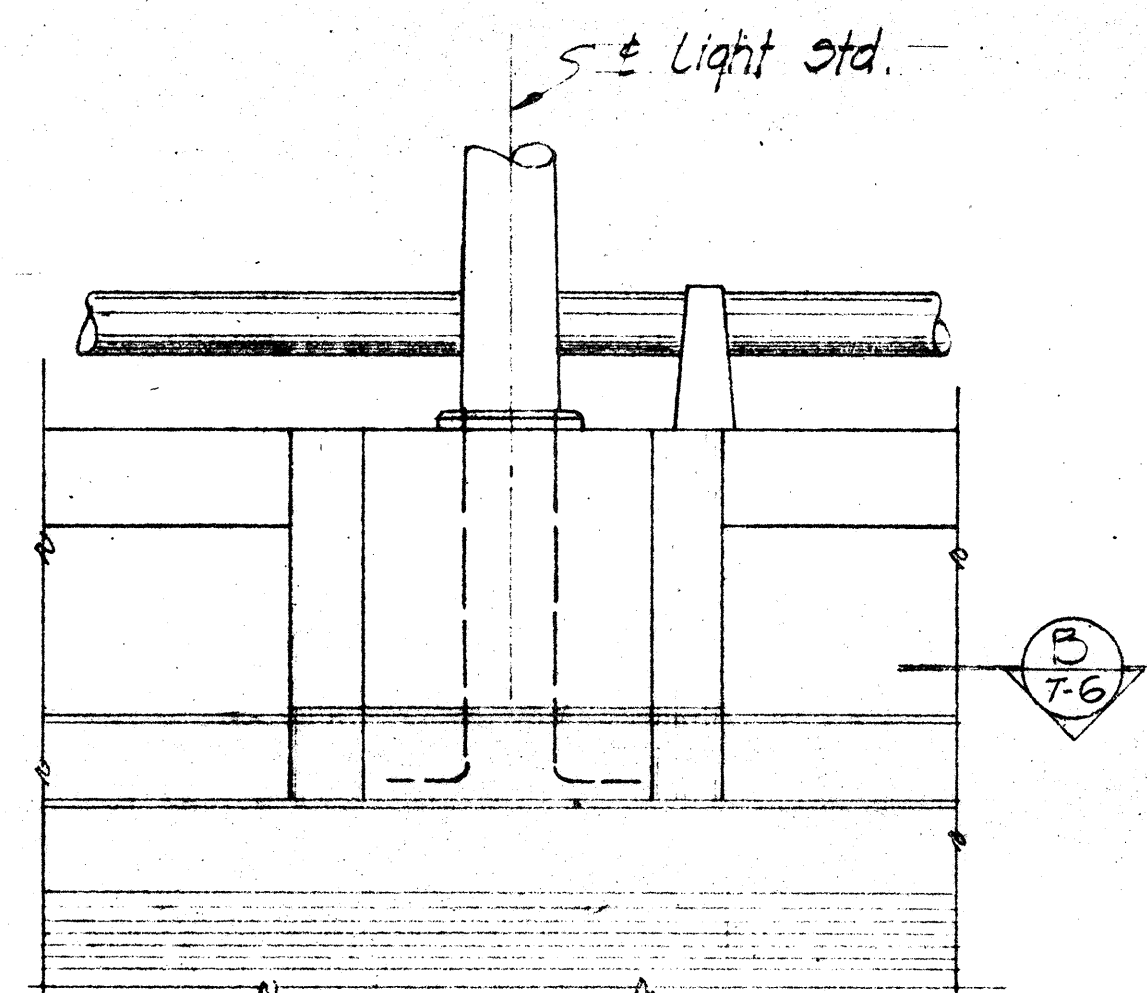
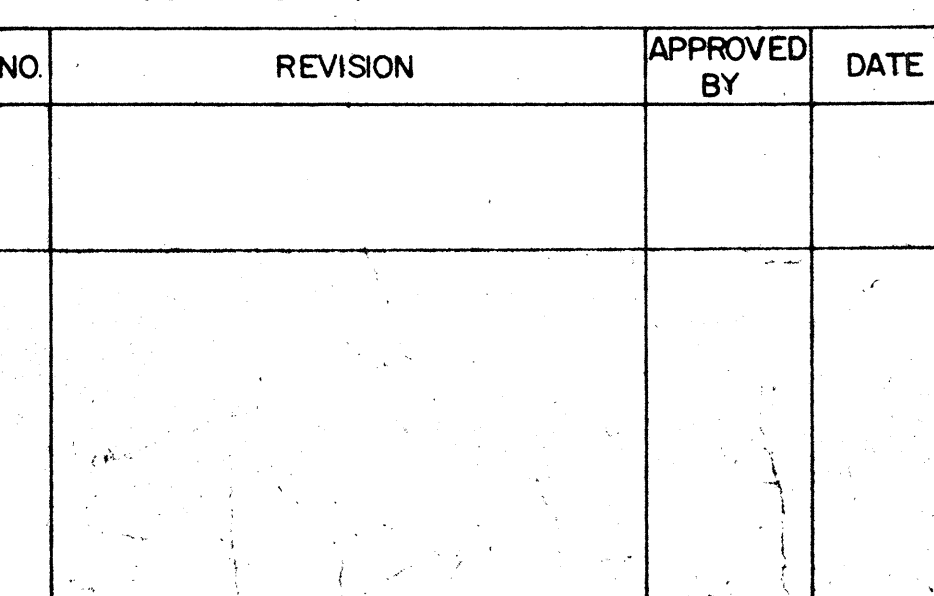
IT midspan. INTERMEDIATE
EXTERIOR RAILING ELEVATION SCALE: $\frac{3}{8}'' = 1'-0$



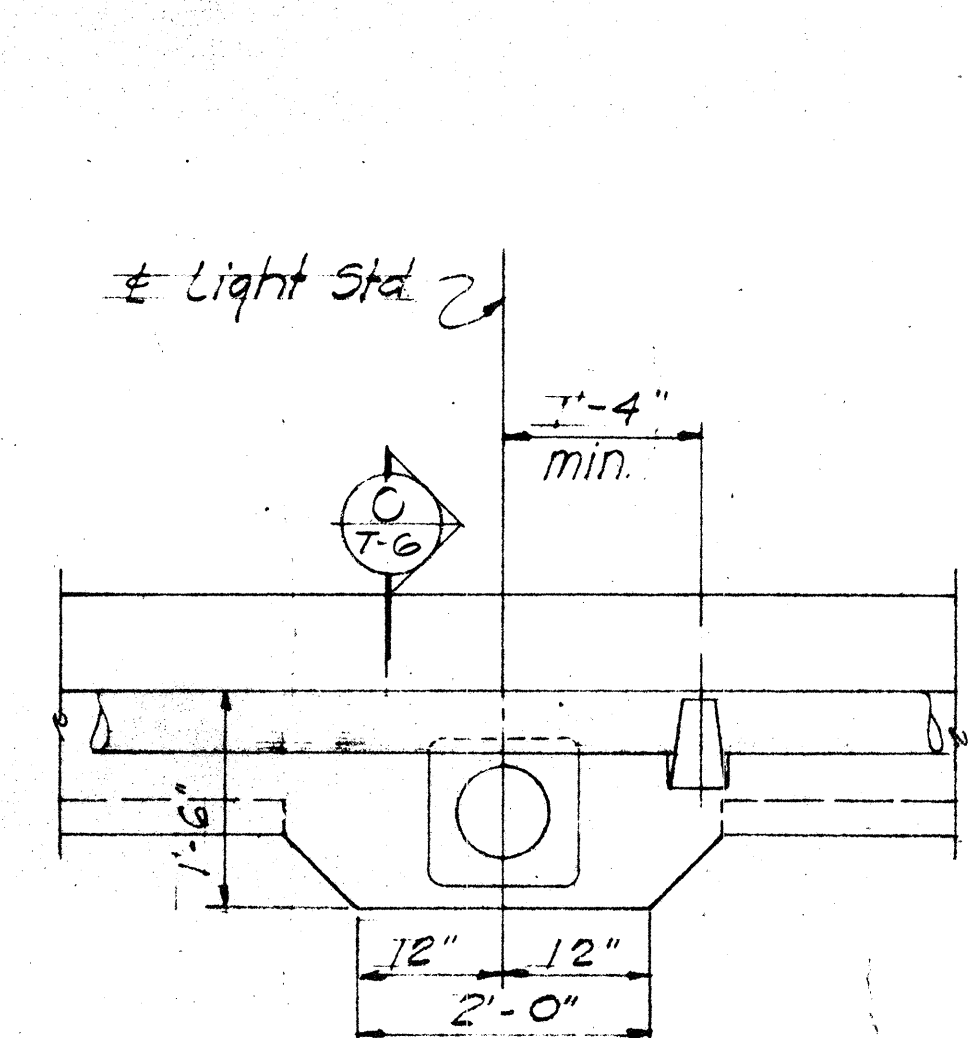
SECTION
SCALE: $\frac{3}{4}" = 1'-0"$



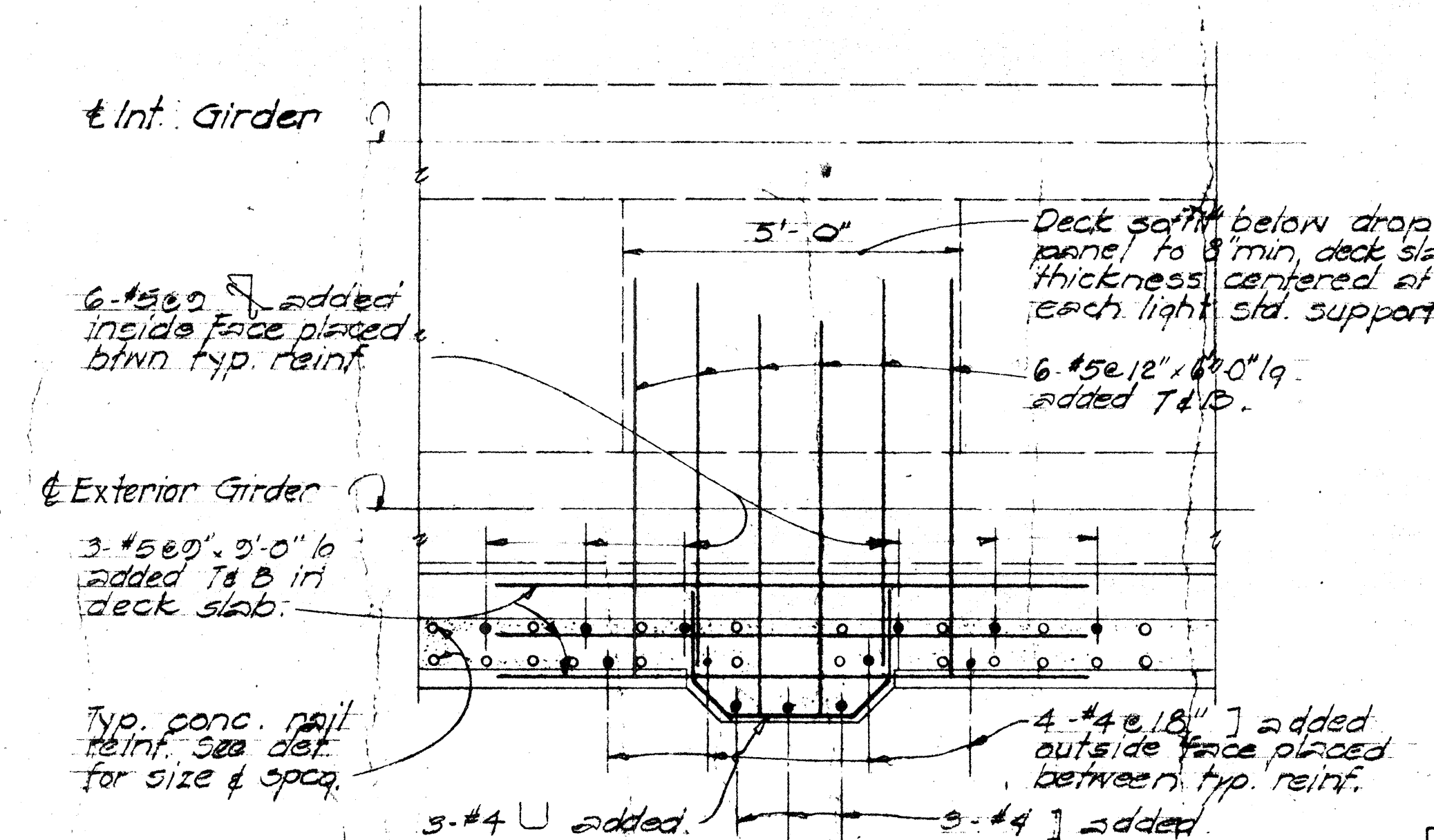
DETAIL
Scale: $1\frac{1}{2}" = 1'-0"$



PART ELEVATION
SCALE: $\frac{3}{4}" = 1'-0"$



PART PLAN
SCALE: $\frac{3}{4}" = 1'-0"$



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

DETAILS OF RAILING AT LIGHT STANDARD
SCALE AS NOTED

SSFM Engineers, Inc.
 Consulting Structural Engineers
 1000 Ala Moana Blvd., Honolulu, HI 96813

A circular professional seal for Ward Y. Fukuda. The outer ring contains the text "WARD Y. FUKUDA" at the top and "HAWAII, U.S.A." at the bottom. The inner circle contains the text "REGISTERED PROFESSIONAL ENGINEER" and "No. 1343".

This work was prepared by
me or under my supervision

This work was prepared by
me or under my supervision.
Howard V. Finkbeiner

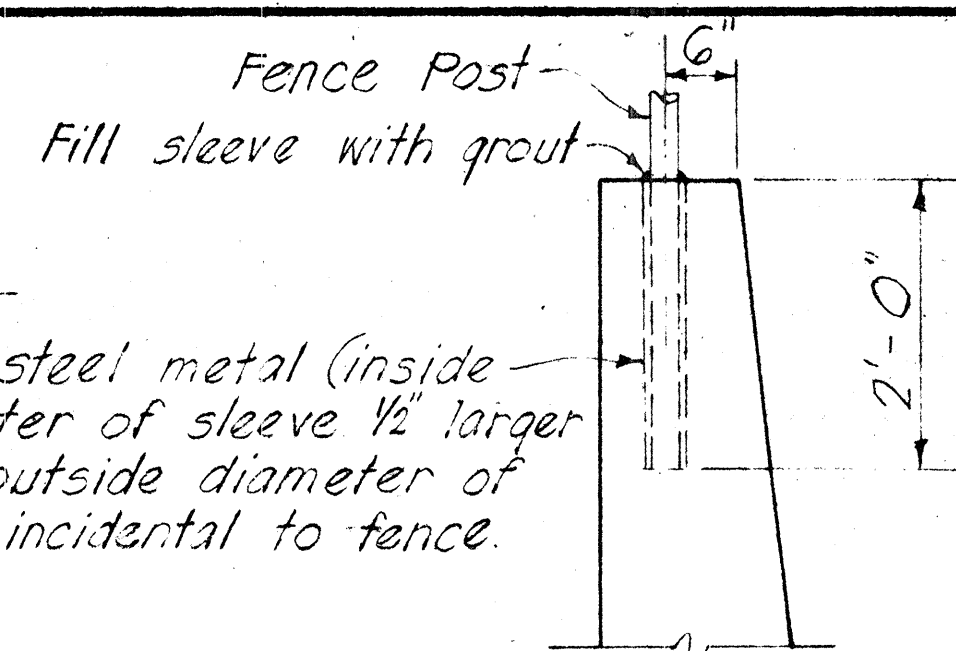
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TYPICAL DETAILS
ALUMINUM BRIDGE RAILING
ONE RAIL COMBINATION TYPE
ON PARAPET

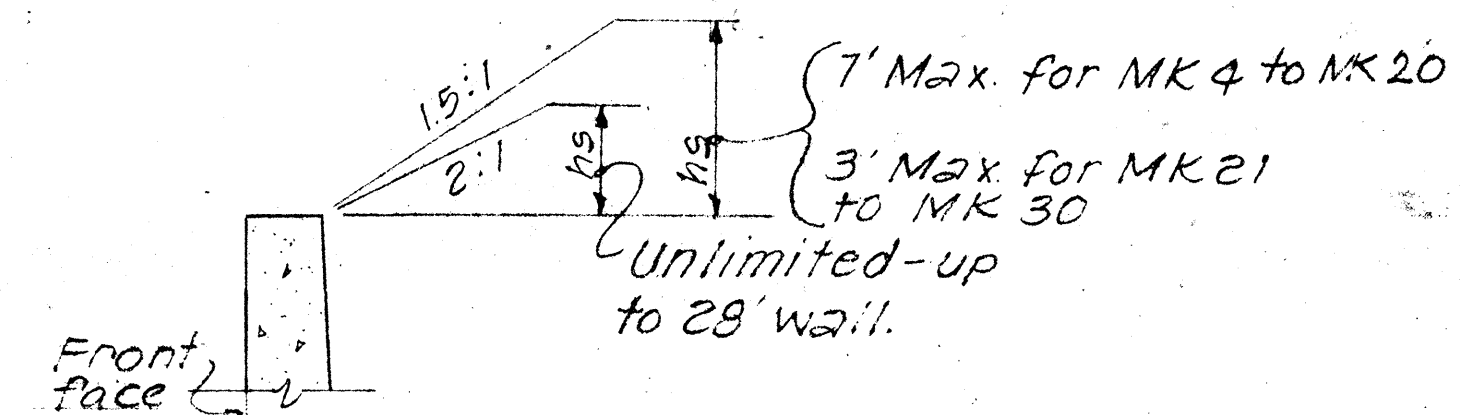
Date. SEP 1971
SHEET No. 7-6 OF 10 SHEETS

2588

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

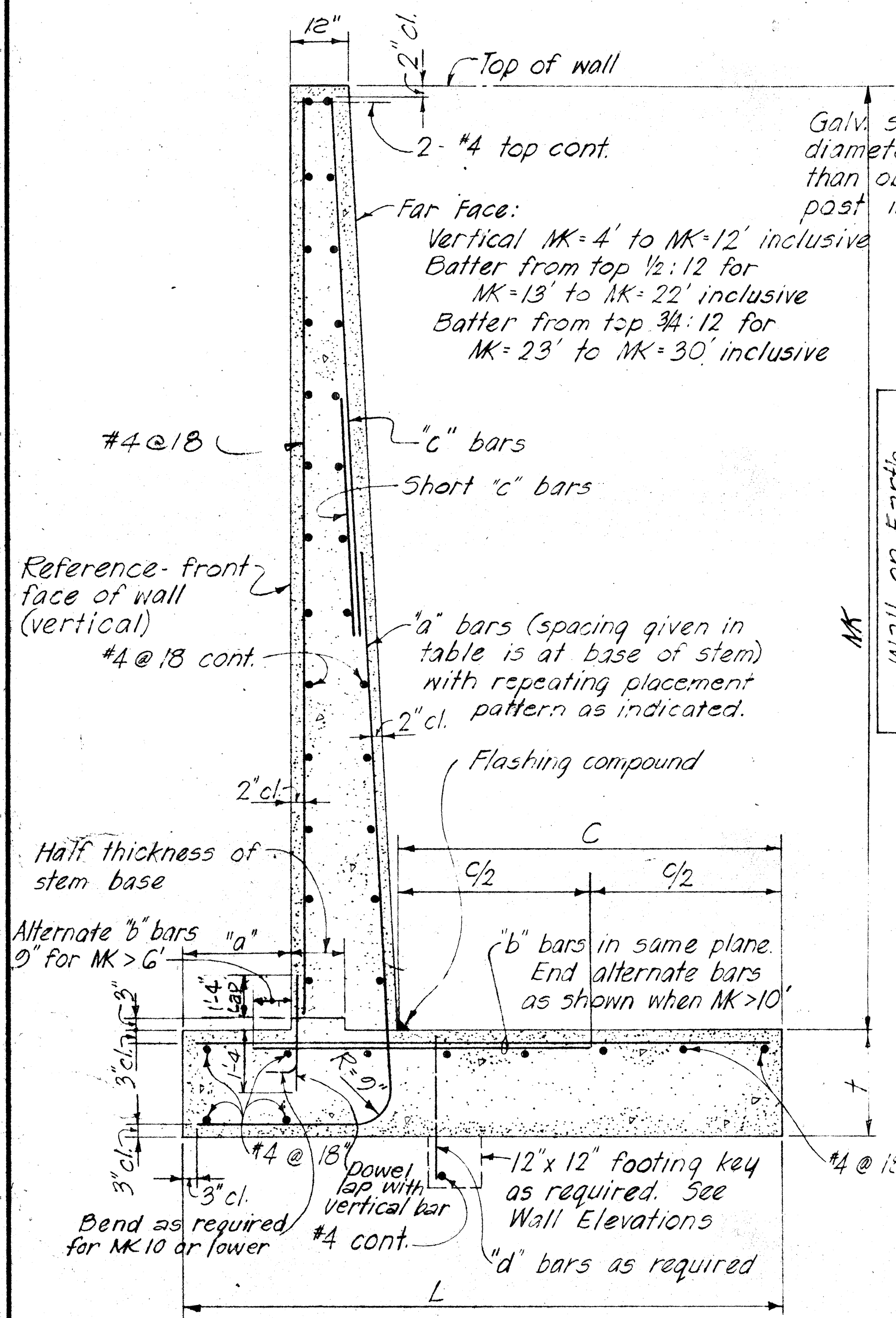


CHAIN LINK FENCE POST DETAIL

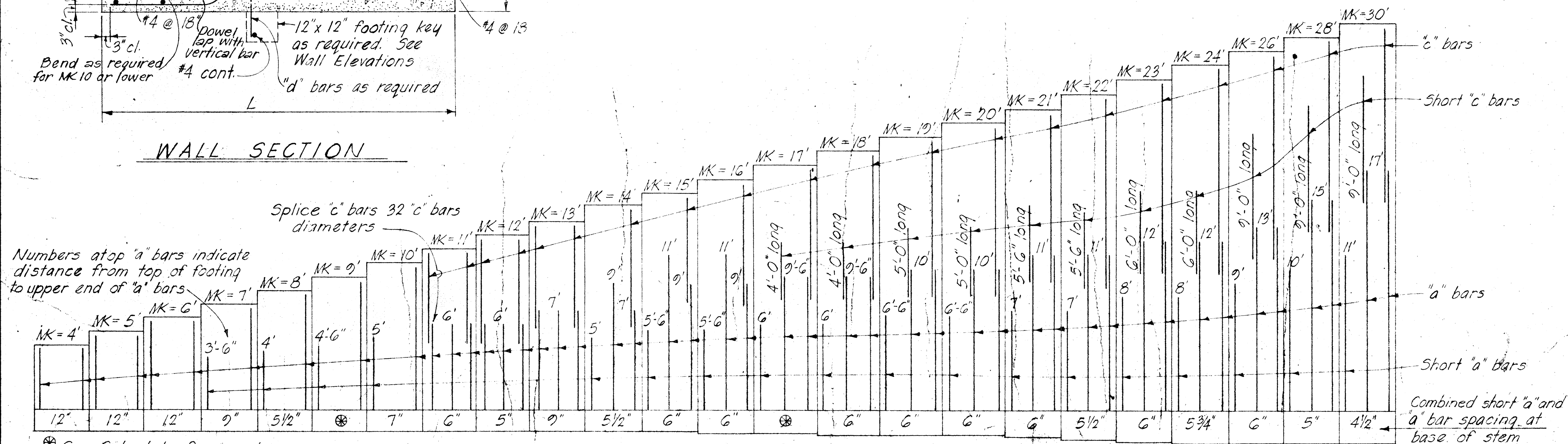


DESIGN LIMITS OF WALL SURCHARGE AND SLOPES

SCHEDULE OF DIMENSIONS AND REINFORCING STEEL																									
Wall on Earth	Maximum "M"	4E	5E	6E	7E	8E	9E	10E	11E	12E	13E	14E	15E	16E	17E	18E	19E	20E	21E	22E	23E	24E	26E	28E	30E
	a	6"	6"	6"	12"	12"	12"	12"	12"	12"	15"	18"	21"	24"	24"	24"	27"	30"	33"	36"	39"	54"	60"	72"	
	t	14"	14"	14"	14"	14"	14"	14"	18"	18"	18"	18"	18"	21"	21"	24"	24"	24"	27"	30"	31"	33"	36"	39"	42"
	L	2.5'	3.0'	3.5'	4.0'	4.5'	5.0'	5.5'	6.0'	6.5'	7.0'	7.75'	8.25'	9.0'	9.75'	10.5'	11.5'	12.5'	13.5'	14.5'	15.25'	16.0'	18.0'	20.0'	21.0'
	"a" bars	#3@12"	#3@12"	#4@12"	#4@9"	#4@5½"	#5@7"	#6@7"	#6@6"	#6@5"	#7@9"	#6@5½"	#7@6"	#8@6"	#8@5¾"	#7@6"	#7@6"	#10@6"	#10@6"	#10@5½"	#10@6"	#10@5¾"	#11@6"	#11@5"	#11@4½"
	"b" bars	#3@12"	#3@12"	#3@12"	#3@9"	#4@11"	#4@7"	#5@7"	#5@6"	#5@5"	#7@9"	#6@5½"	#7@6"	#8@6"	#7@5¾"	#8@6"	#7@6"	#10@6"	#10@6"	#10@5½"	#10@6"	#10@5¾"	#11@6"	#11@5"	#11@4½"
"c" bars									#4	#4	#4	#4	#4	#5	#5	#5	#6	#6	#6	#7	#7	#7	#7	#7	#7
"d" bars	#3@12"	#3@12"	#3@12"	#3@12"	#4@18"	#4@15"	#4@15"	#4@12"	#4@11"	#4@9"	#5@12"	#5@12"	#5@10"	#5@9"	#5@9"	#5@8"	#6@10"	#6@9"	#7@12"	#7@11"	#7@10"	#7@	#7@	#7@	#7@



WALL SECTION



VERTICAL REINFORCING STEEL ARRANGEMENT

NO	REVISION	APPROVED BY	DATE

This work was prepared by

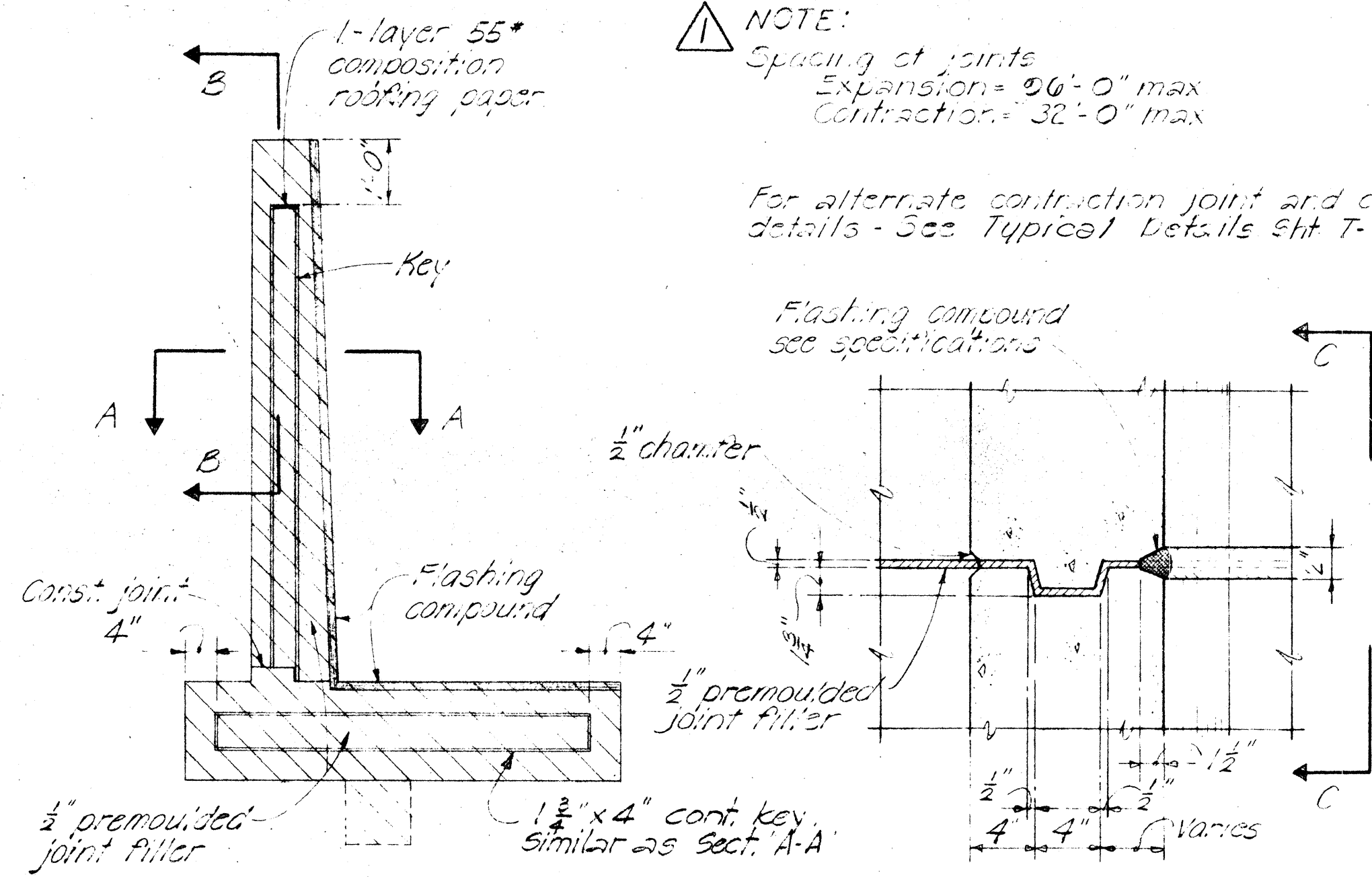
me, or under my supervision.

Howard V. Gubner

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TYPICAL DETAILS
RETAINING WALL TYPE T-1

SCALE AS NOTED DATE SEP 1978
SHEET No. 79 OF 10 SHEETS



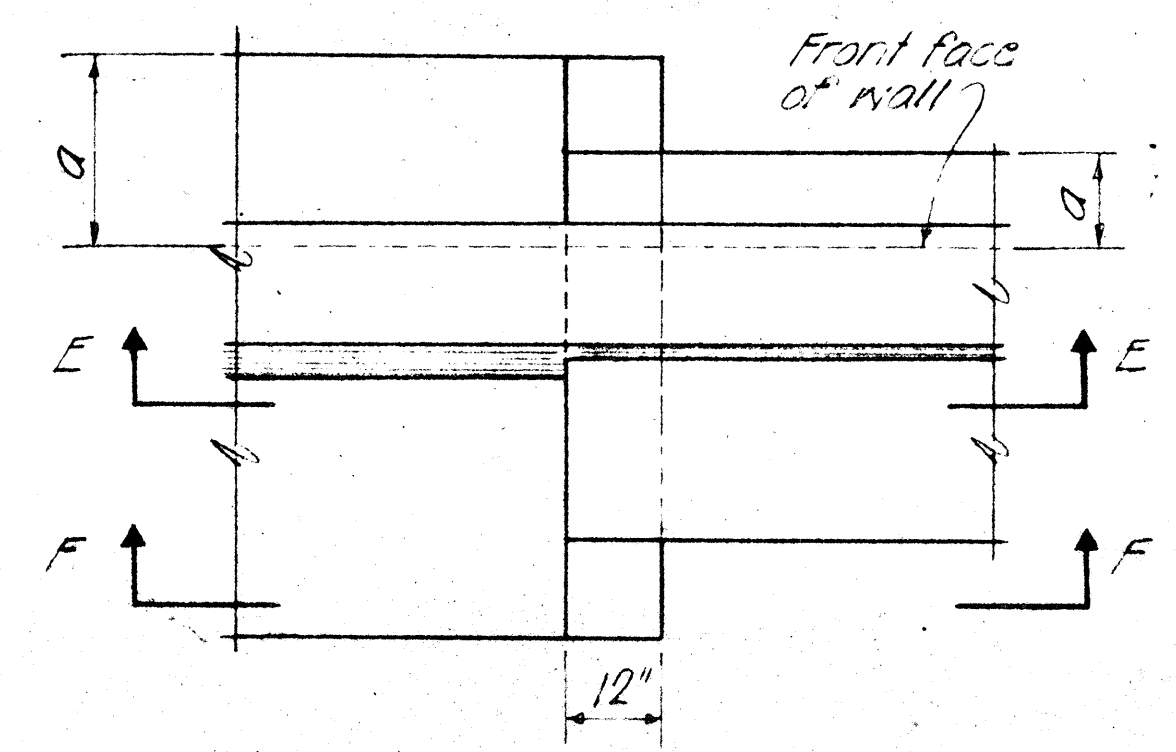
JOINT ELEVATION

SECTION A-A

SECTION B-B

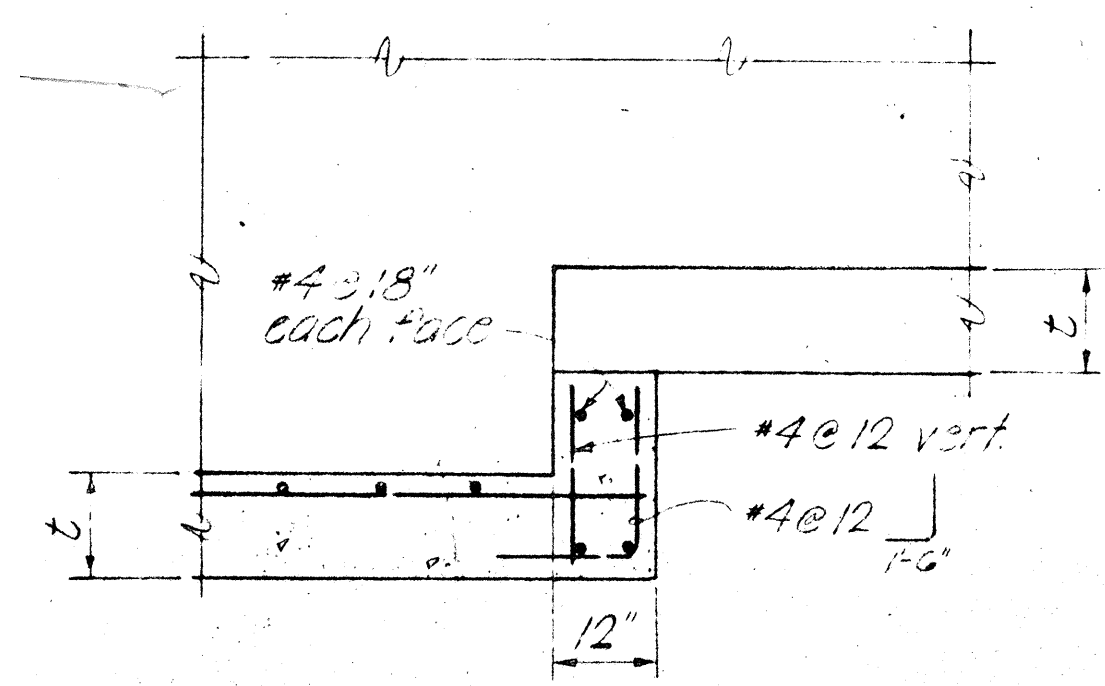
SECTION C-C

TYPICAL EXPANSION JOINT DETAILS No Scale

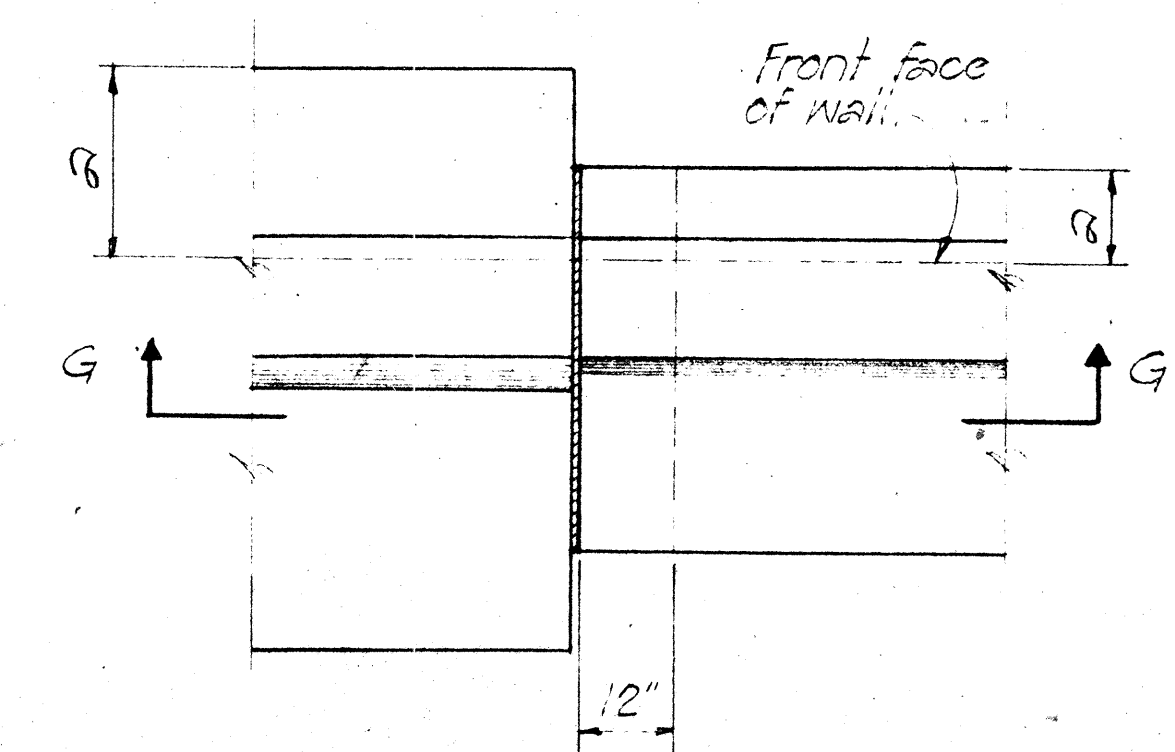


PLAN

SECTION E-E AT CONTINUOUS FOOTING



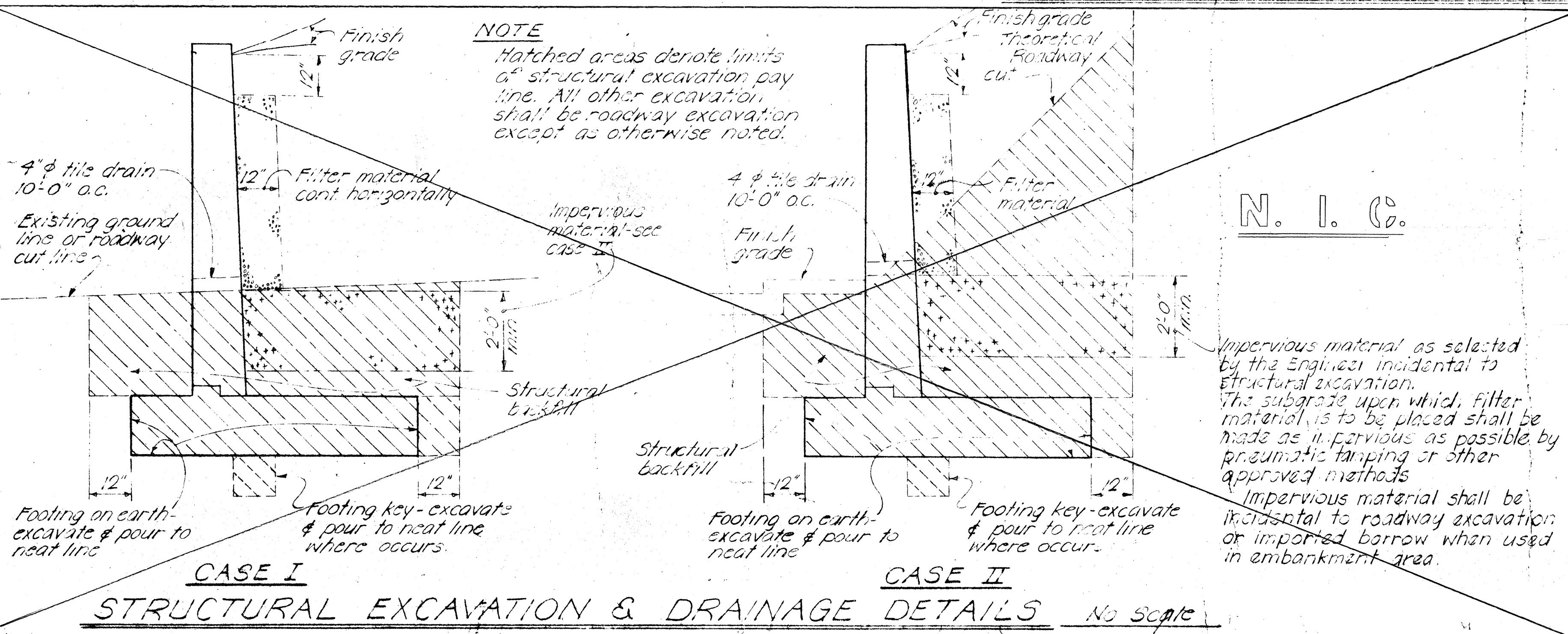
SECTION F-F



PLAN

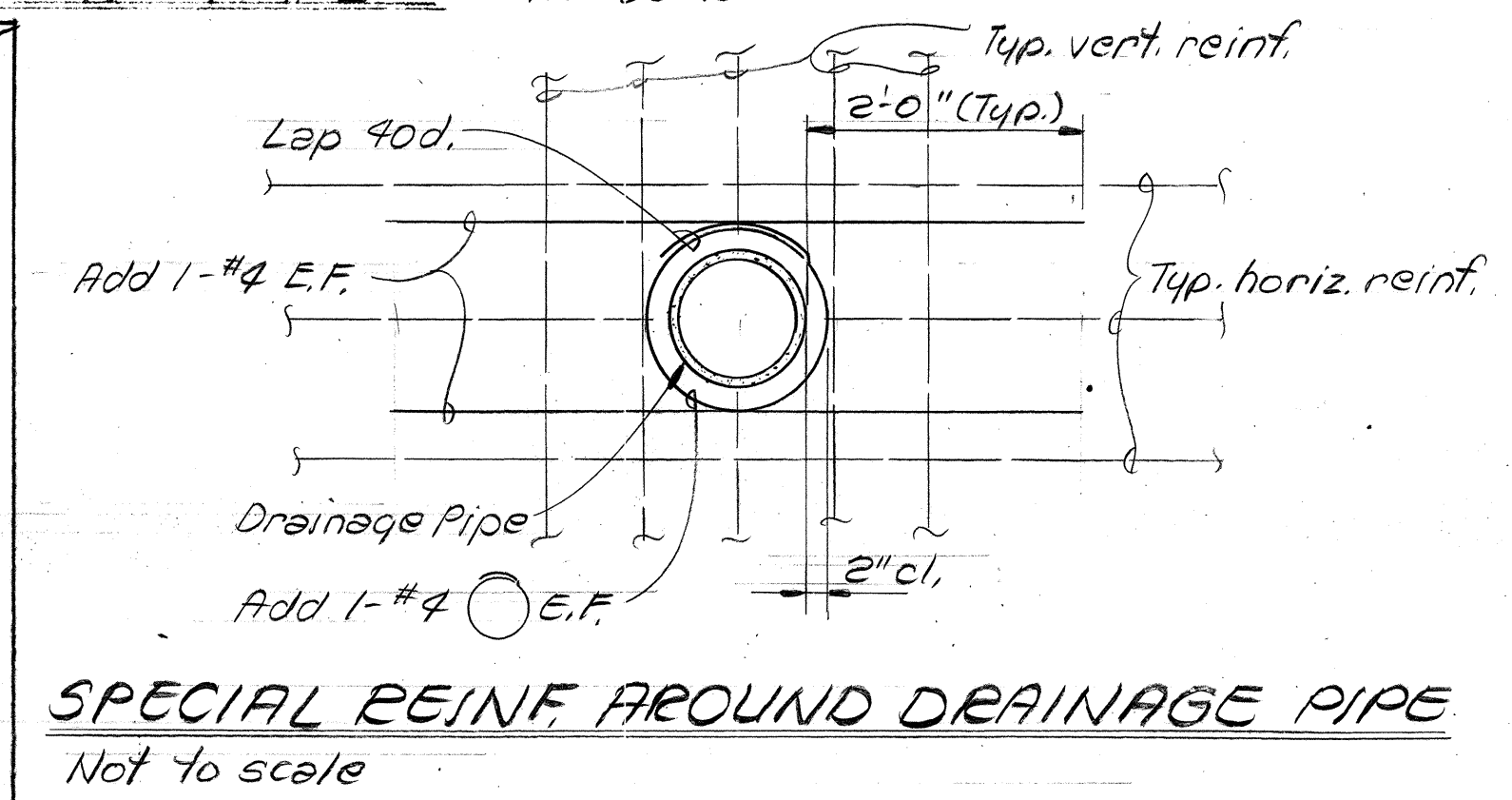
SECTION G-G AT EXPANSION JOINT

TYPICAL FOOTING STEP-UP DETAILS No Scale



CASE I
STRUCTURAL EXCAVATION & DRAINAGE DETAILS No Scale

CASE II



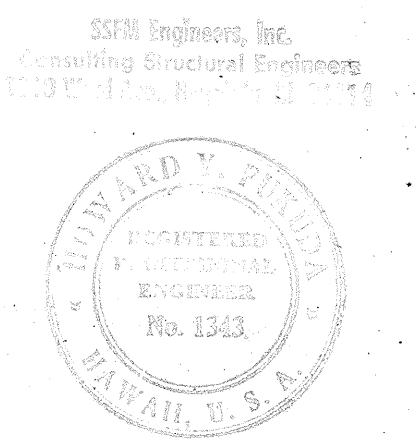
SPECIAL REINF AROUND DRAINAGE PIPE
Not to scale

NO	REVISION	APPROVED BY	DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TYPICAL DETAILS
RETAINING WALL TYPE T-1

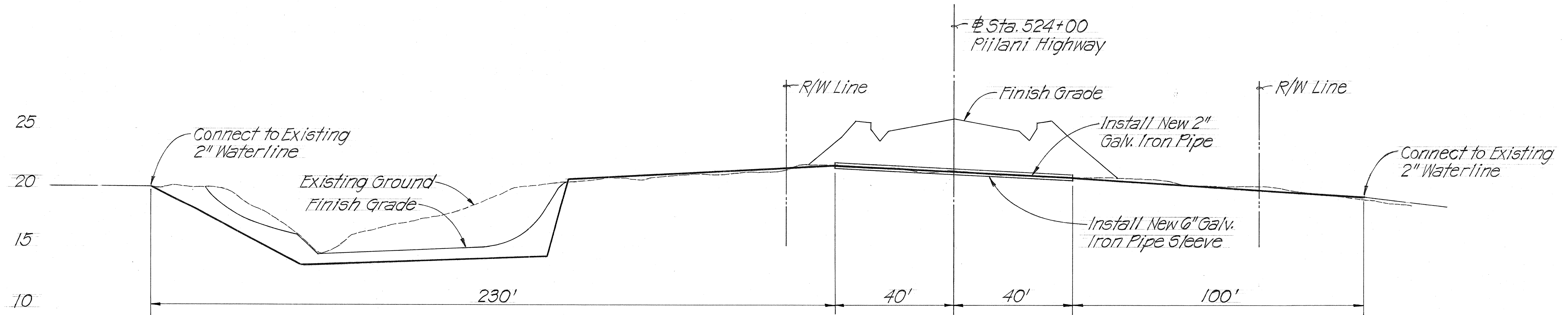
SCALE AS NOTED DATE SEP 1978
SHEET No. T-10 OF 10 SHEETS



This work was prepared by me or under my supervision
Howard Y. Fung

GENERAL NOTES:

1. Minimum cover over pipe sleeve shall be 3'-0" and 2'-0" on fill slope.
2. Contractor shall expose existing 2" Waterline at the proposed connections before starting work for new waterline.



PROFILE OF 2" WATERLINE AT STA. 524+00

PILANI HIGHWAY

Scale: Horiz. 1"=20'
Vert. 1"=5'