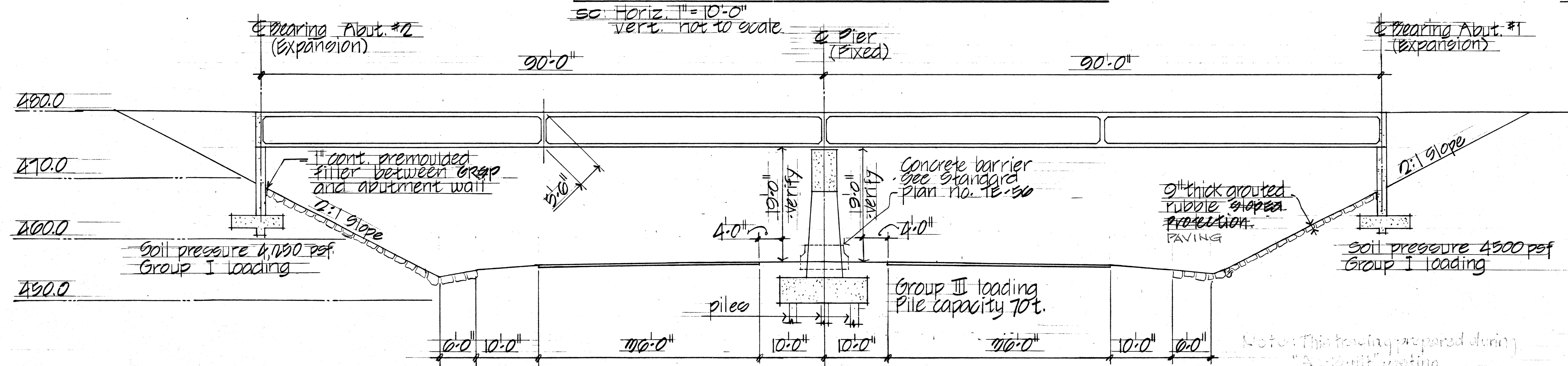
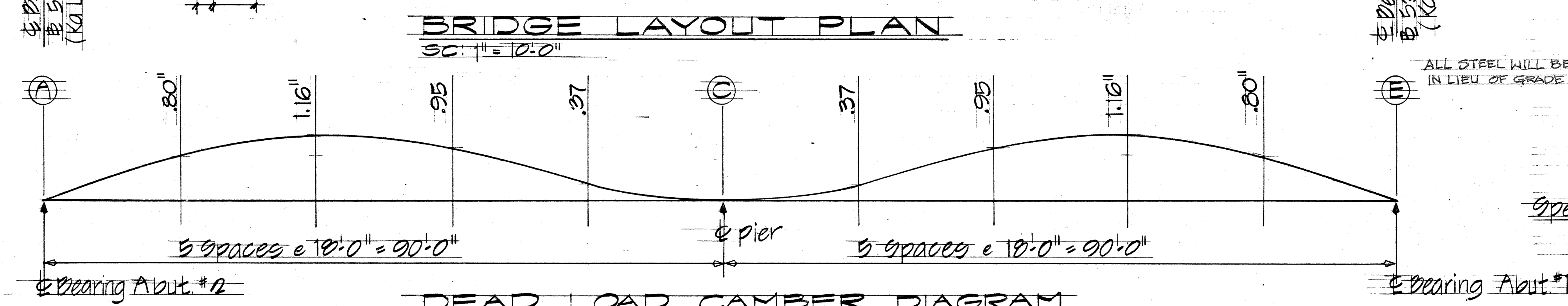
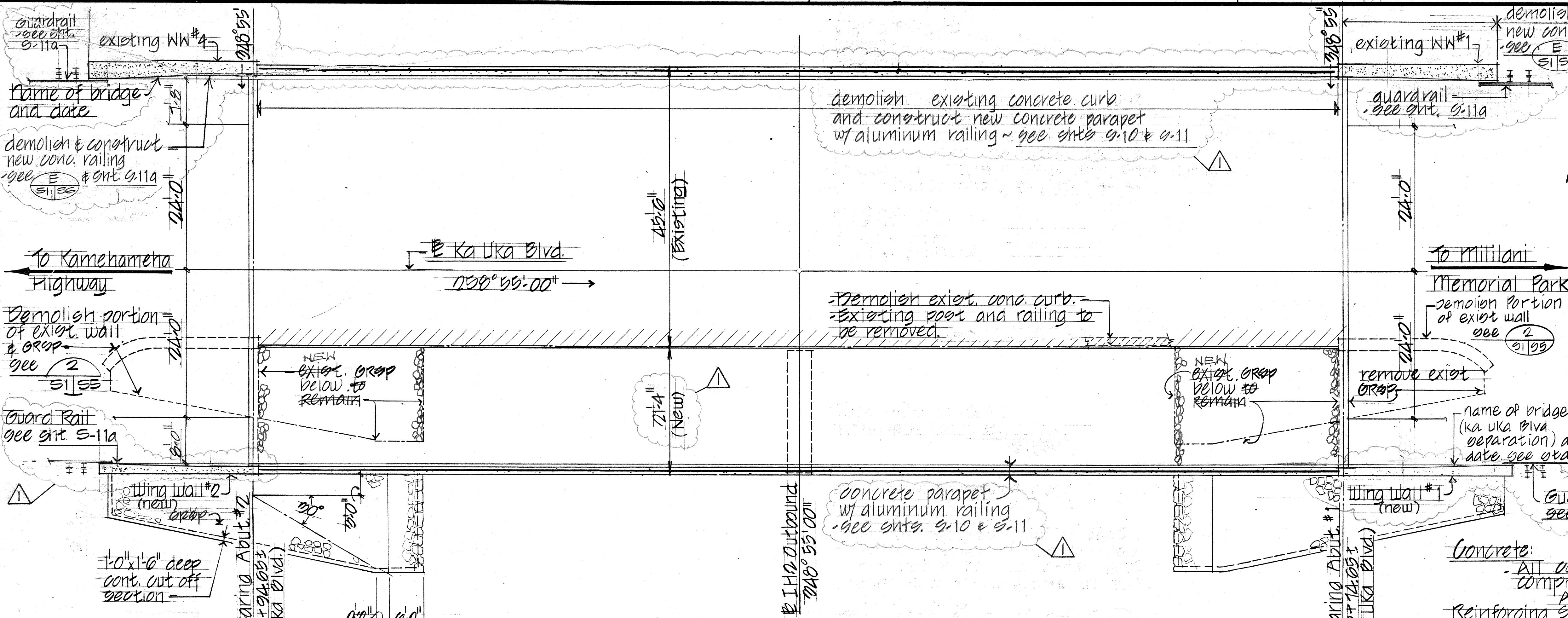


FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IR-H2-1(2)	1987	63	130

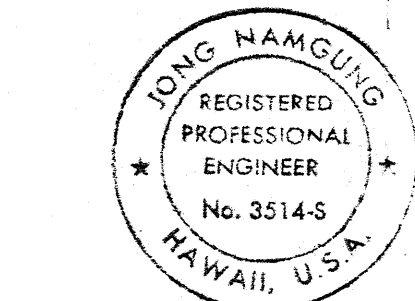
Item no	Estimated Quantities
503.1091	Zone in figs for Ka Uka Blvd Bridge (99 cy)
503.1090	Zone in Ka Uka Blvd Bridge (415 (332 cy)
602.0001	Reinforcing Steel in Ka Uka Blvd Bridge
602.0002	40 grade 148,000 lbs
602.0002	60 grade 1,505 lbs
206.6000	Structural Exp. for Bridge 200 cy
206.6201	Filter Material 40 cy
501.2500	Three rail Metal Bridge Railings 260 lf
612.0200	Grouted Rubble Slope Protection 60 cy
503.0411	Furnished Prestressed concrete piles 200 lf
503.9101	Driven Prestressed concrete piles 220 lf
206.7201	Structural Backfill for abutments, wing walls 466 cy
206.7202	Structural Backfill for bridge pier 192 cy

GENERAL NOTES

- Concrete:**
- All concrete shall have a minimum 28-day compressive strength (FC) as follows:
 - All concrete: $f'c = 4,000$ psi
- Reinforcing Steel**
- All reinforcing steel shall conform to ASTM A615 40 or 60 grade.
 - 60 grade: Ramp retaining wall (W-1 and W-2) & pier cap top bundled bars: S-7.
 - 40 grade: All others
- Specifications: AASHTO**
- Standard Specifications for Highway Bridge (19th Edition) with subsequent additions and modifications.
 - Design loads: HS 20-44
- Other Notes:**
- Top of bridge shall be constructed to conform with the roadway geometrics and grades. The suspended portions of the superstructure shall be raised an additional amount as shown on the "Dead Load Camber Diagram" on this sheet.



NOTE: Supercedes Plan Sht. No. 63.



Revision	Sym	Description	Date
1	Δ	Guardrail Revision	2-2-89

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

LAYOUT PLAN & PROFILE

**INTERSTATE ROUTE H-2
WAIPIO INTERCHANGE**

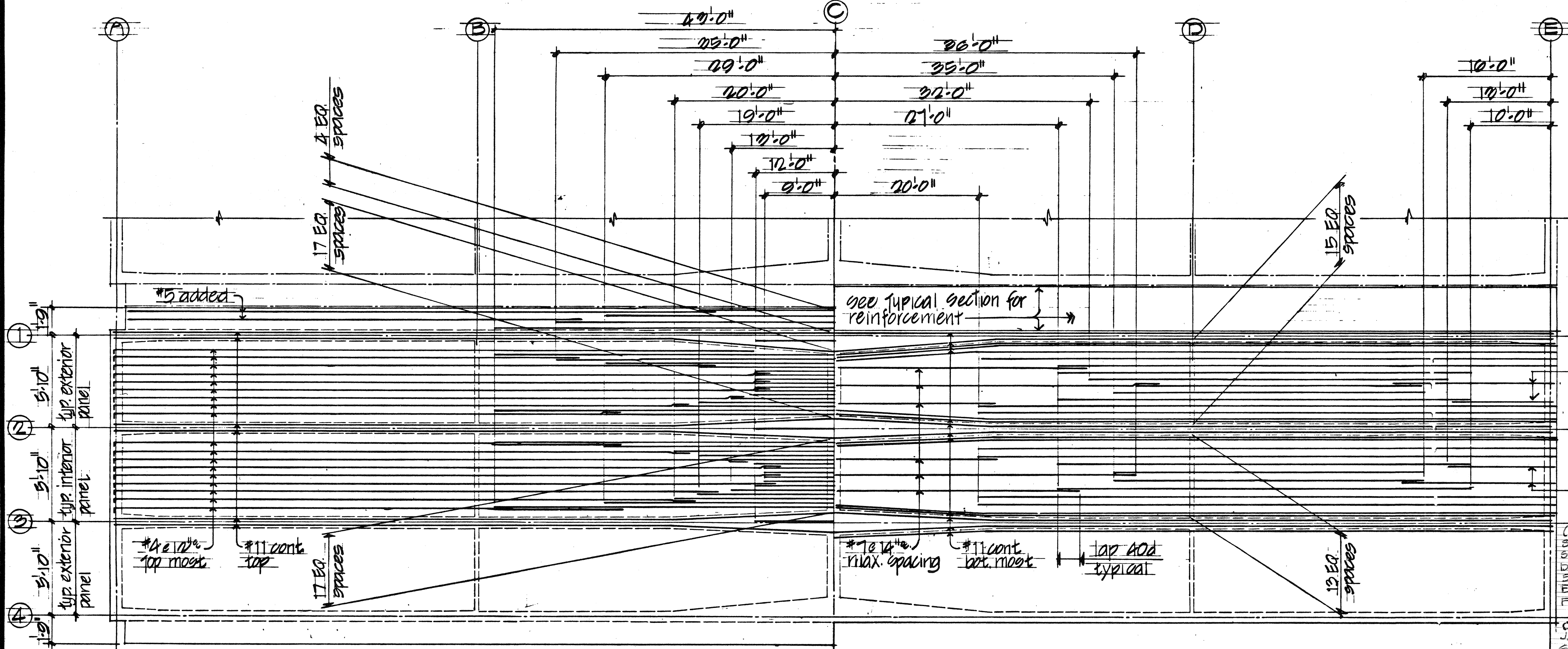
PAI PROJ. NO. IR-H2-1(2)
scale: as noted
Aug. 86

SHEET NO. 51 OF 23 SHEETS

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

Concrete parapet shown dashed for clarity. For dimension & reinf. see sheets 9-10 & 9-11

note: for girder stirrup spacing see sheet 9-3



TOP SLAB REINFORCING PLAN

BOTTOM SLAB REINFORCING PLAN

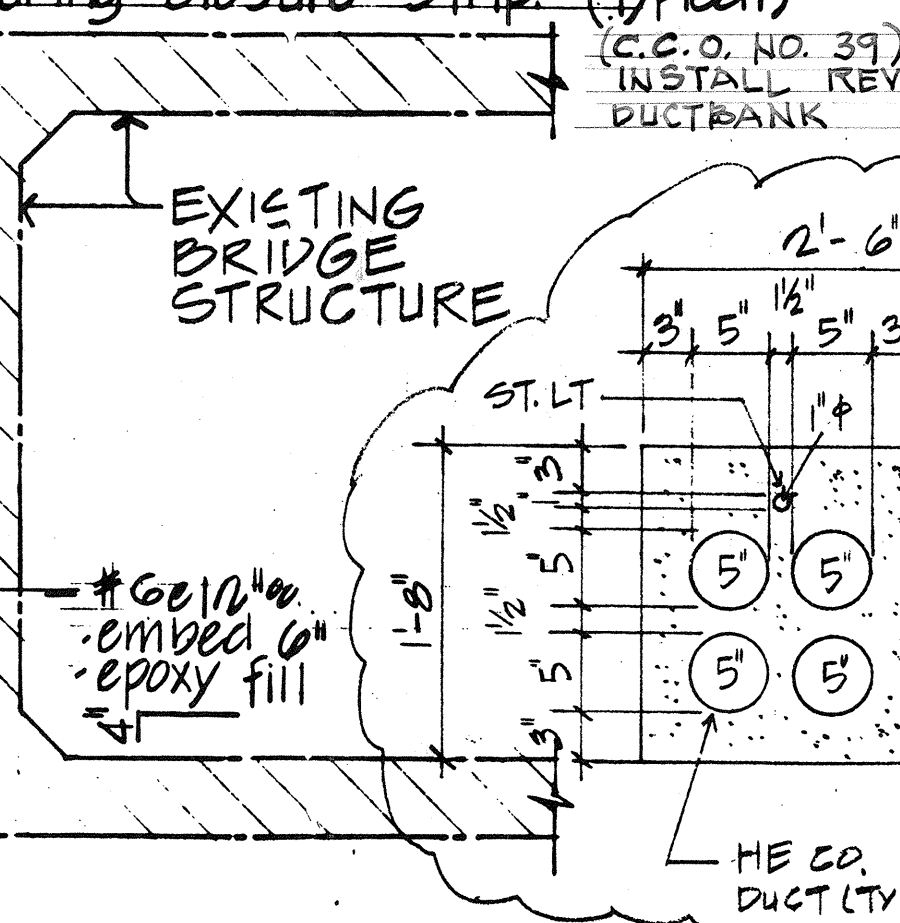
DECK REINFORCEMENT PLAN

Bearing abutment No. 12

APPROVED: *Chad C. ...* DATE 10/25/80
GASCO, INC. INC. D.M. DATE

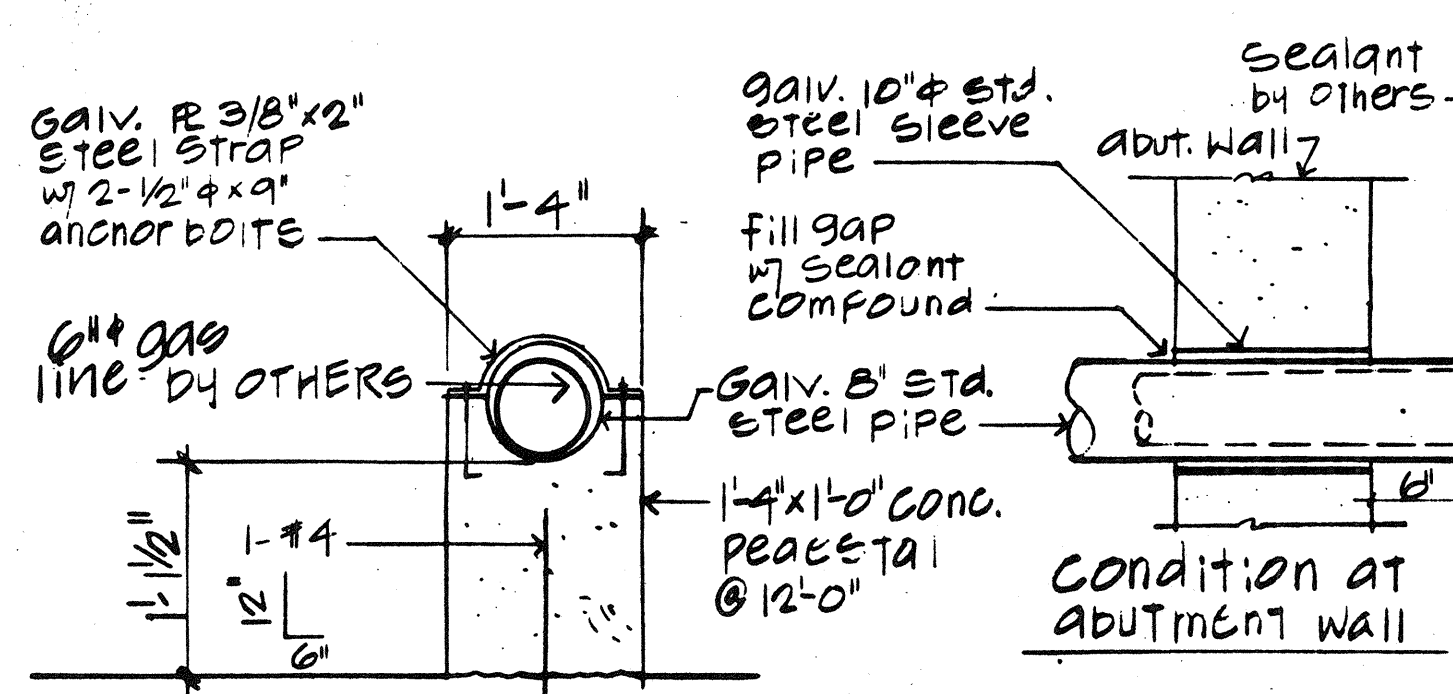
"AS-BUILT"

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IR-H2-1(21)	1987	04	130
Revision	Sym	Description	Date		
1	Δ	Guardrail Revision	2-9-89		
2	Δ	Additional utility duct	5-10-89		
3	Δ	Revised utility duct line	6-26-89		

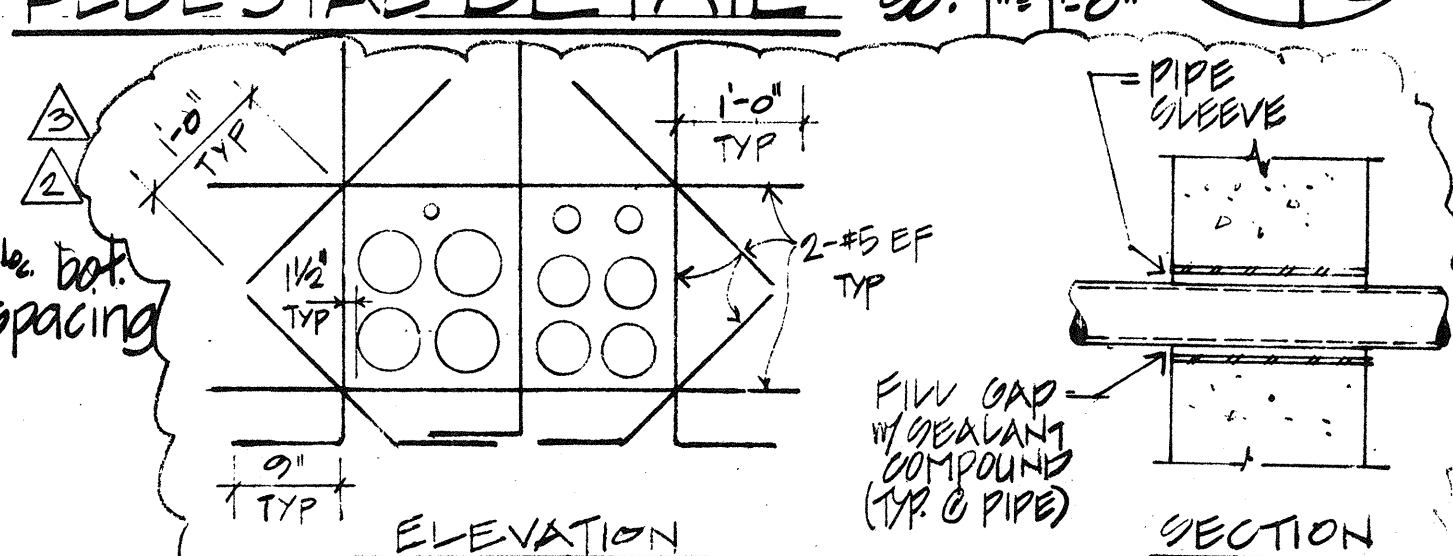


NOTE: See 5252 for condition at abutment wall

TYP. UTILITY LINE CONC. JACKET DETAIL 5252
90° 11/4" x 1'-0"



TYP. GAS LINE CONC. PEDESTAL DETAIL 5252
90° 11" x 1'-0"



TYP. UTILITY LINE AT ABUTMENT WALL NTS 5252

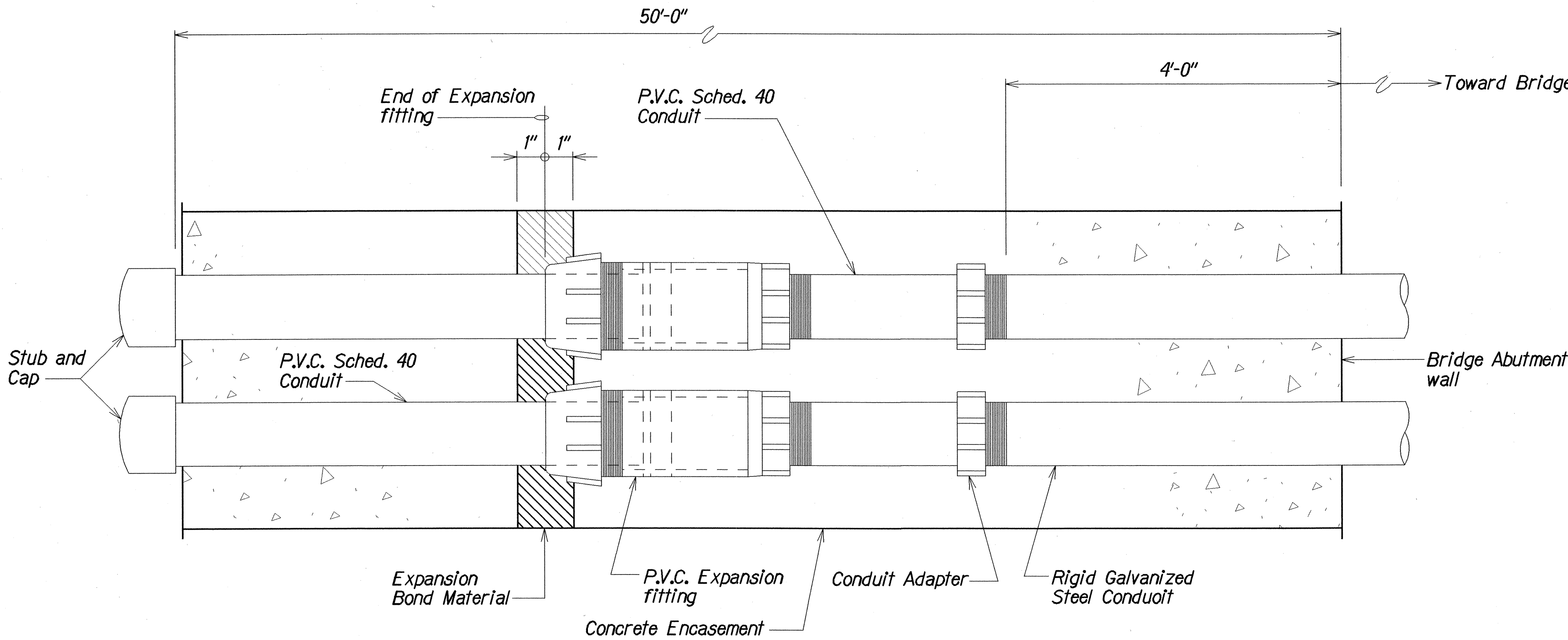
(C.C.O. NO. 45)
SEE ATTACHED SKETCH "A", EXTEND DUCT SUBROUTS 30' UN. FC WITH EXPANSION FITTINGS AND
CONCRETE JACKET, SEE SHT. C.C.O. 64 B1 FOR SKETCH "A"

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
REGISTERED PROFESSIONAL ENGINEER
No. 35145
HAWAII, U.S.A.

INTERSTATE ROUTE H-2
WAIPIO INTERCHANGE
PA PROJ. NO. IR-H2-1(21)
Scale: as noted
SHEET No. 52 OF 23 SHEETS
OCTOBER 1987 CO. 64

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	1R-H2-1(21)	1998	C.O. 64S-1	138

- Note:
1. Conduit spacing shall be maintained as indicated in duct section.
 2. Ductlines must pass a Mandrill test prior to acceptance by HECO.
 3. Contractor shall provide full lines in ducts.



EXPANSION FITTING DETAIL
Not To Scale

ORIGINAL PLAN	DATE	NOV. 1998
DESIGNED BY	DATE	NOV. 1998
TRACED BY	DATE	NOV. 1998
NOTED BY	DATE	NOV. 1998
CHECKED BY	DATE	NOV. 1998

Note: This tracing prepared during "As-Built" posting.

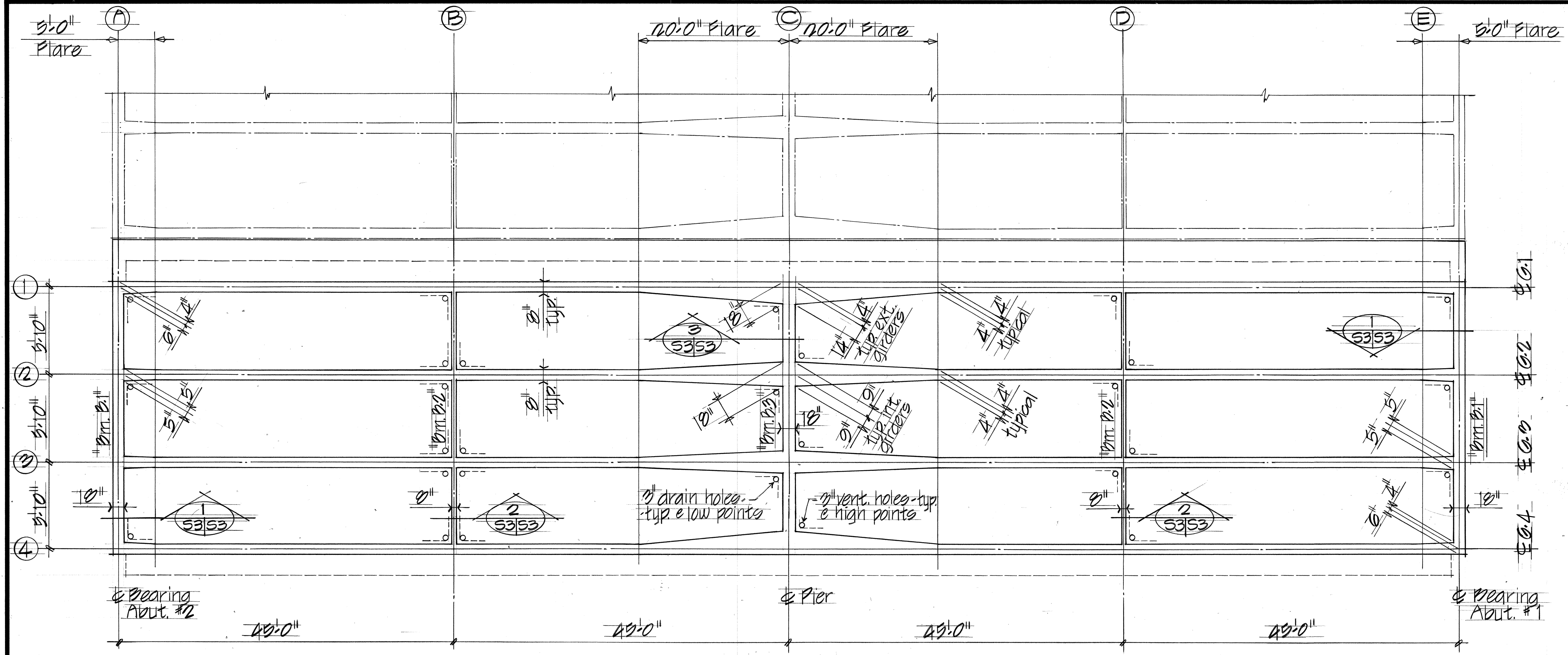
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

EXPANSION FITTING DETAIL
INTERSTATE ROUTE H-2
WAIPIO INTERCHANGE
Faip. Project No. 1R-H2-1(21)

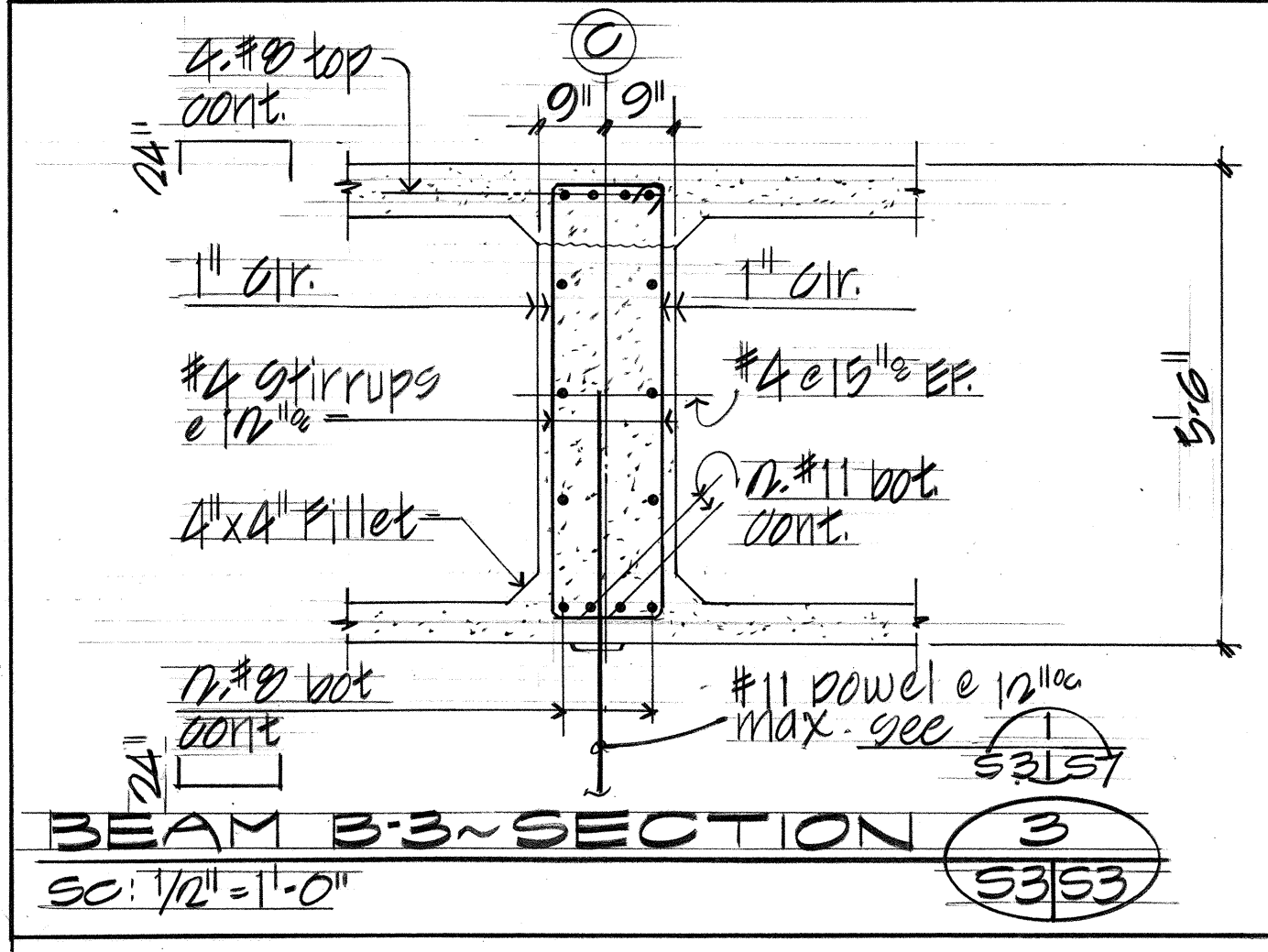
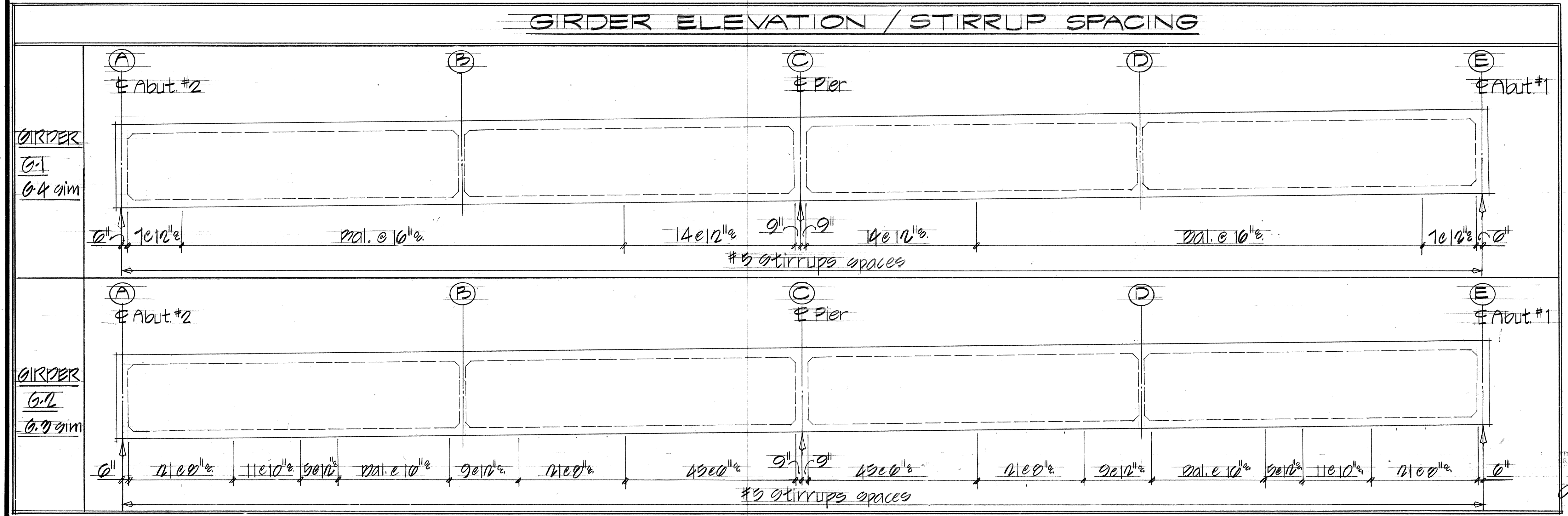
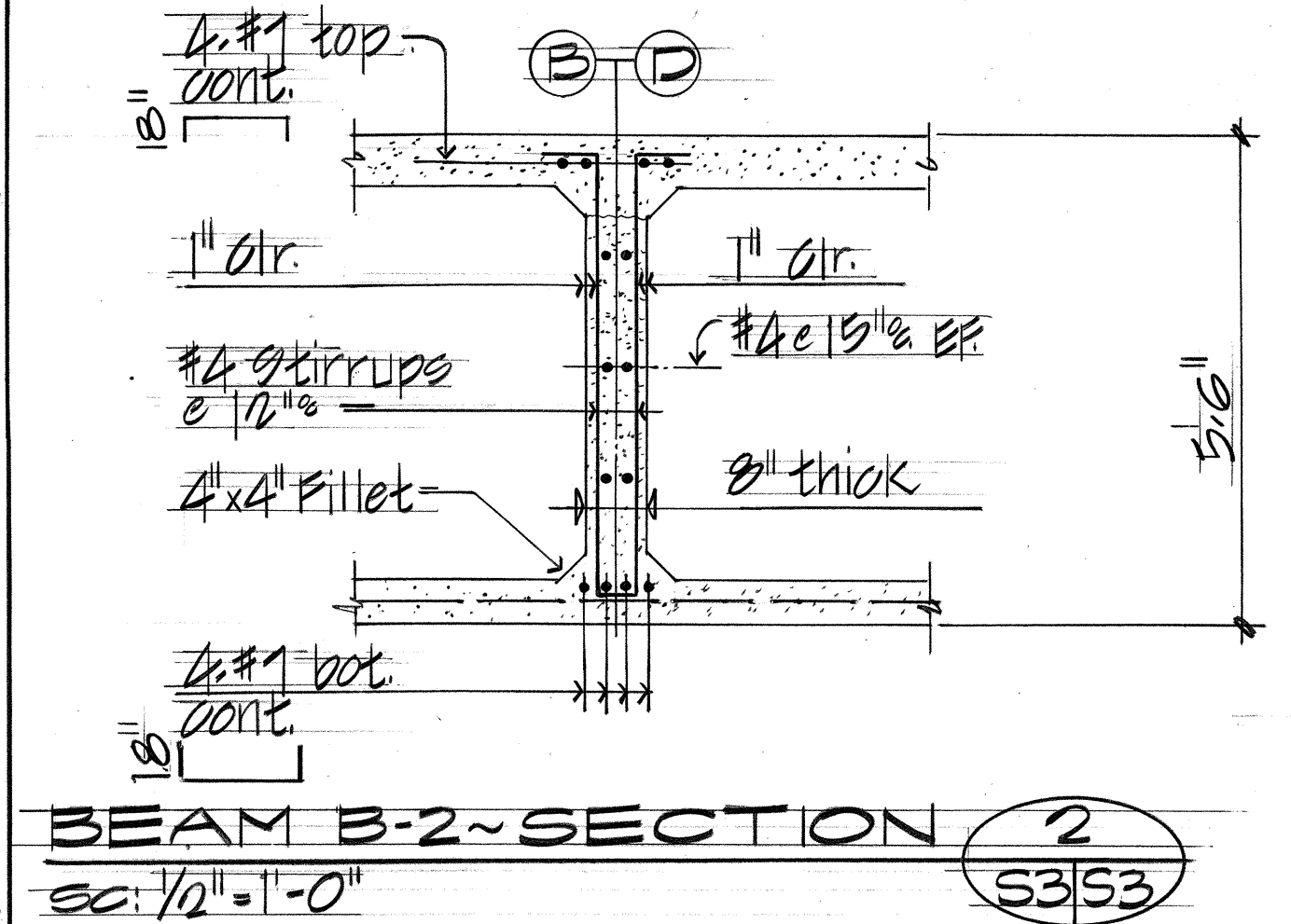
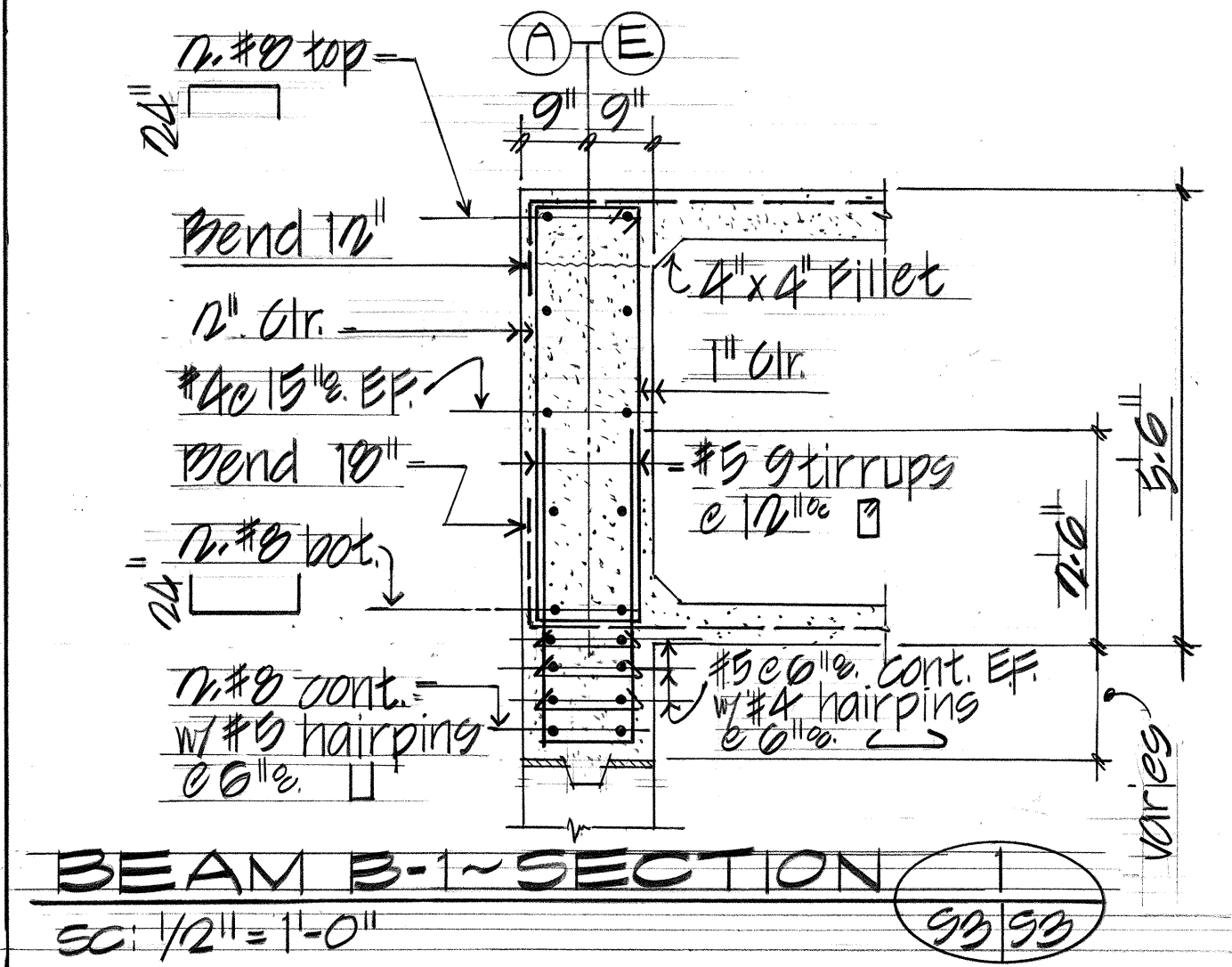
Scale: As Noted
Date: Nov. 1998

SHEET No. S2A OF 23 SHEETS

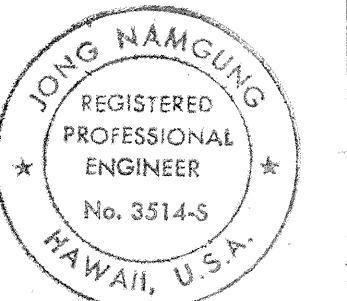
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IR-H2-1(21)	1987	65	130



DECK FRAMING PLAN
SC: Horiz: 1/8" = 1'-0" Vert: 1/4" = 1'-0"



DATE	_____
SURVEY PLOTTED BY	_____
DRAWN BY	_____
DESIGNED BY	_____
CHECKED BY	_____
NO.	_____



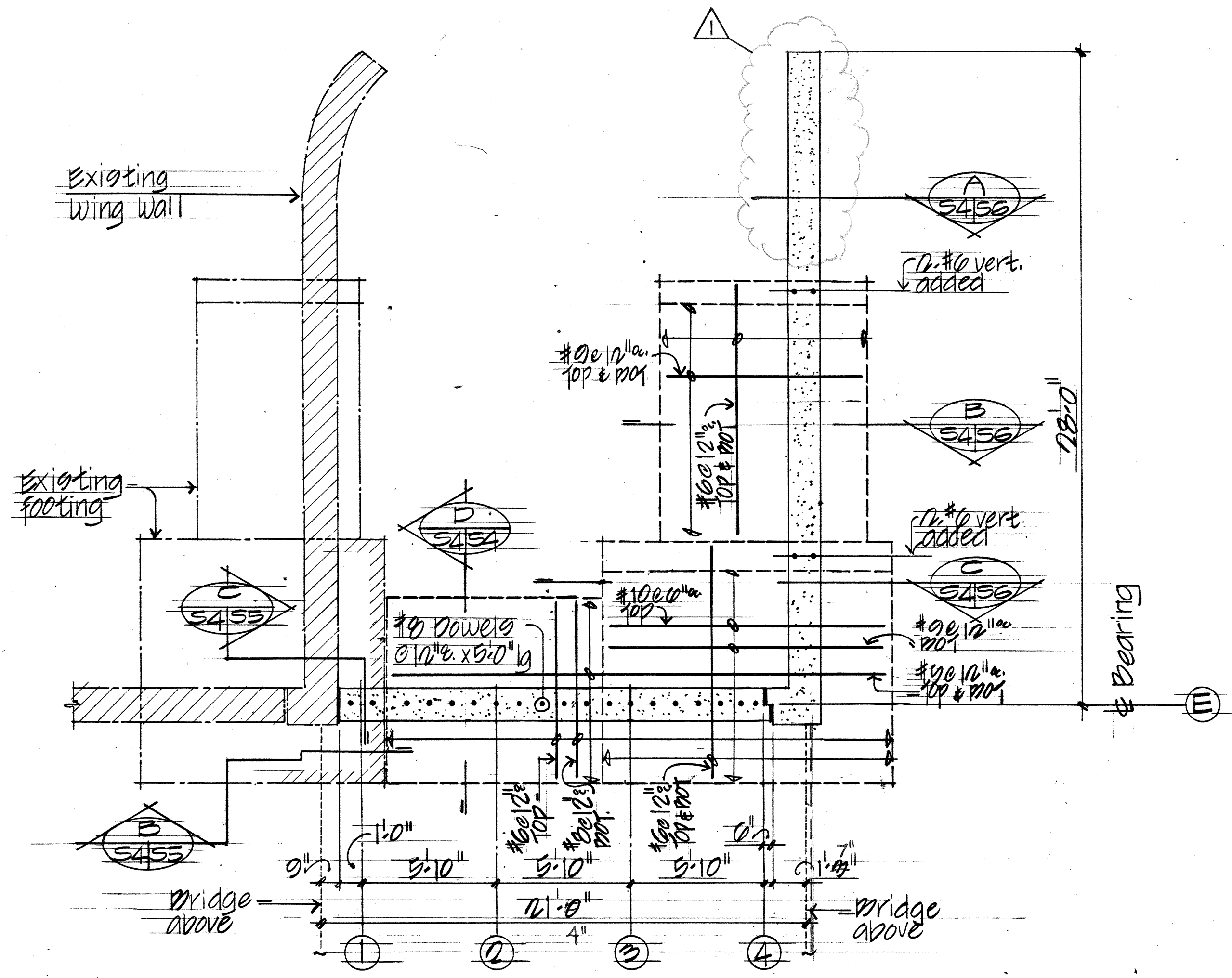
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DECK FRAMING PLAN
GIRDER and BEAM DETAILS

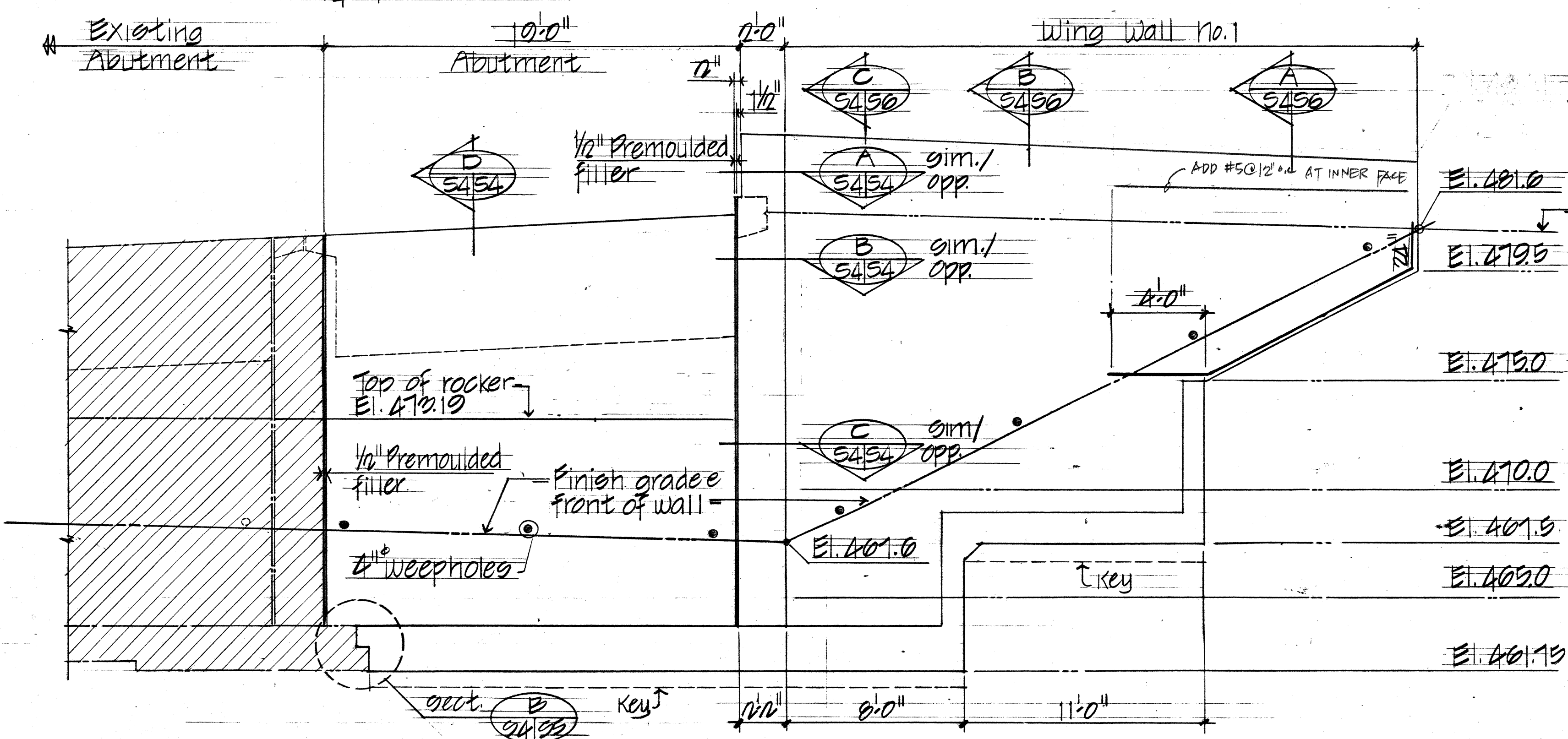
INTERSTATE ROUTE H-2
WAIPIO INTERCHANGE
PAI PROJ. NO. IR-H2-1(21)
SCALE: AS NOTED
SHEET NO. 53 OF 23 SHEETS

THIS WORK WAS PREPARED BY ME
OR UNDER MY SUPERVISION,
JONG NAMGUNG

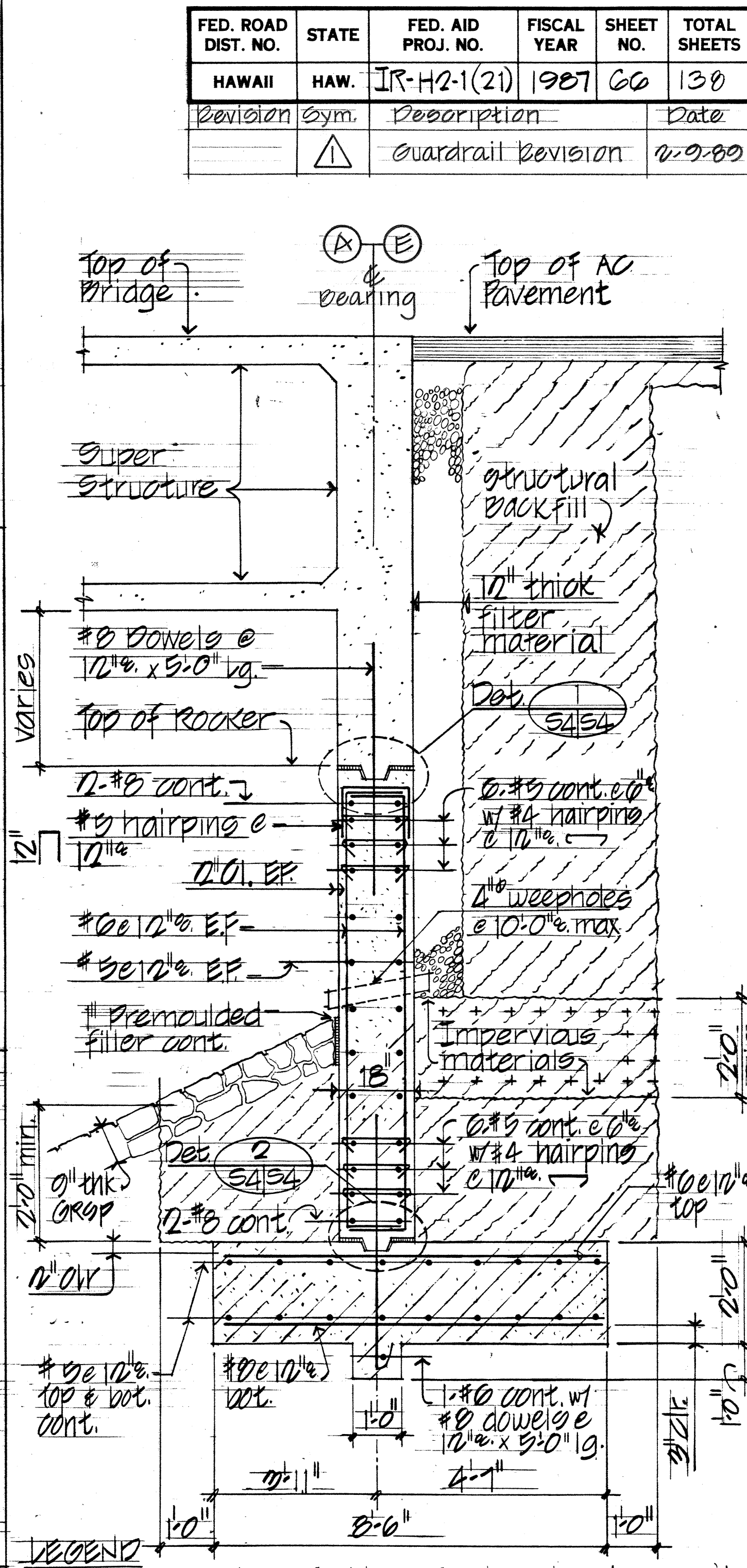
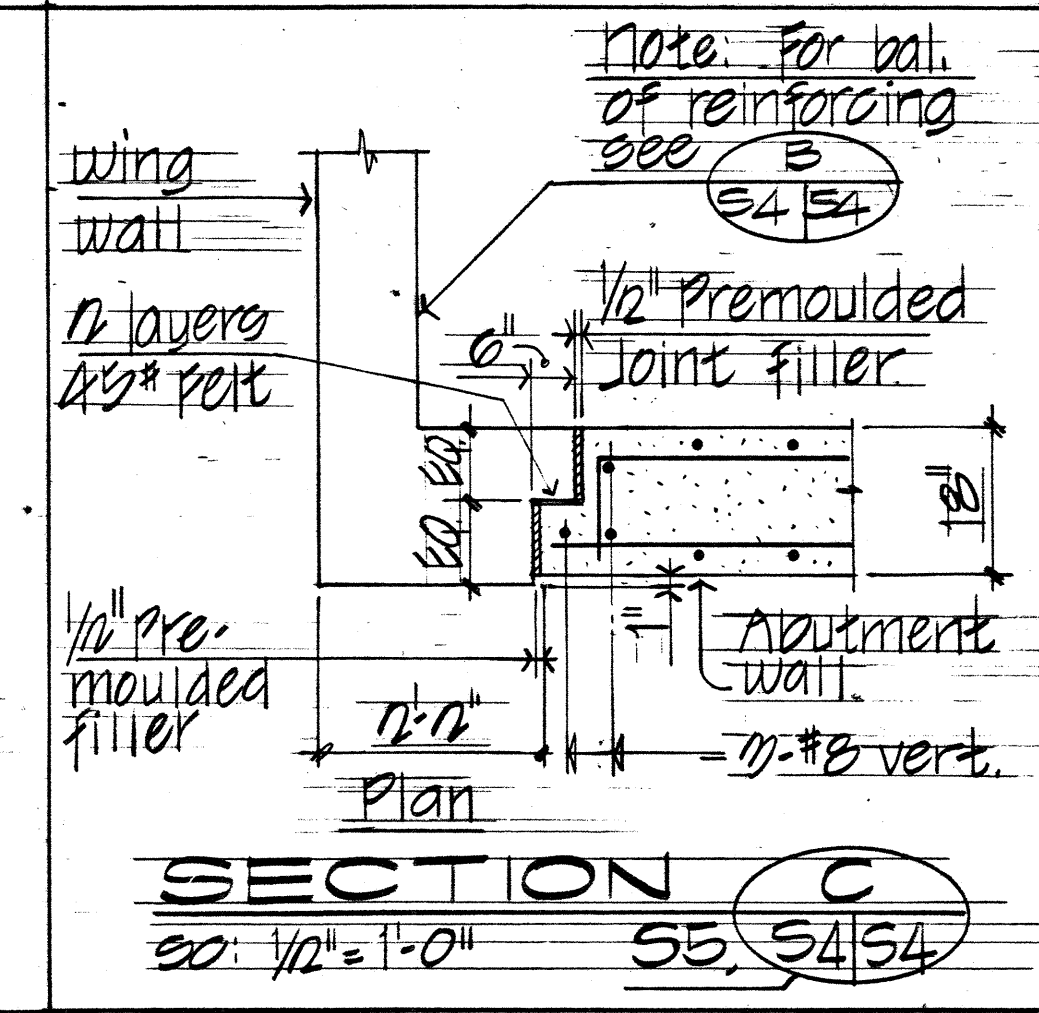
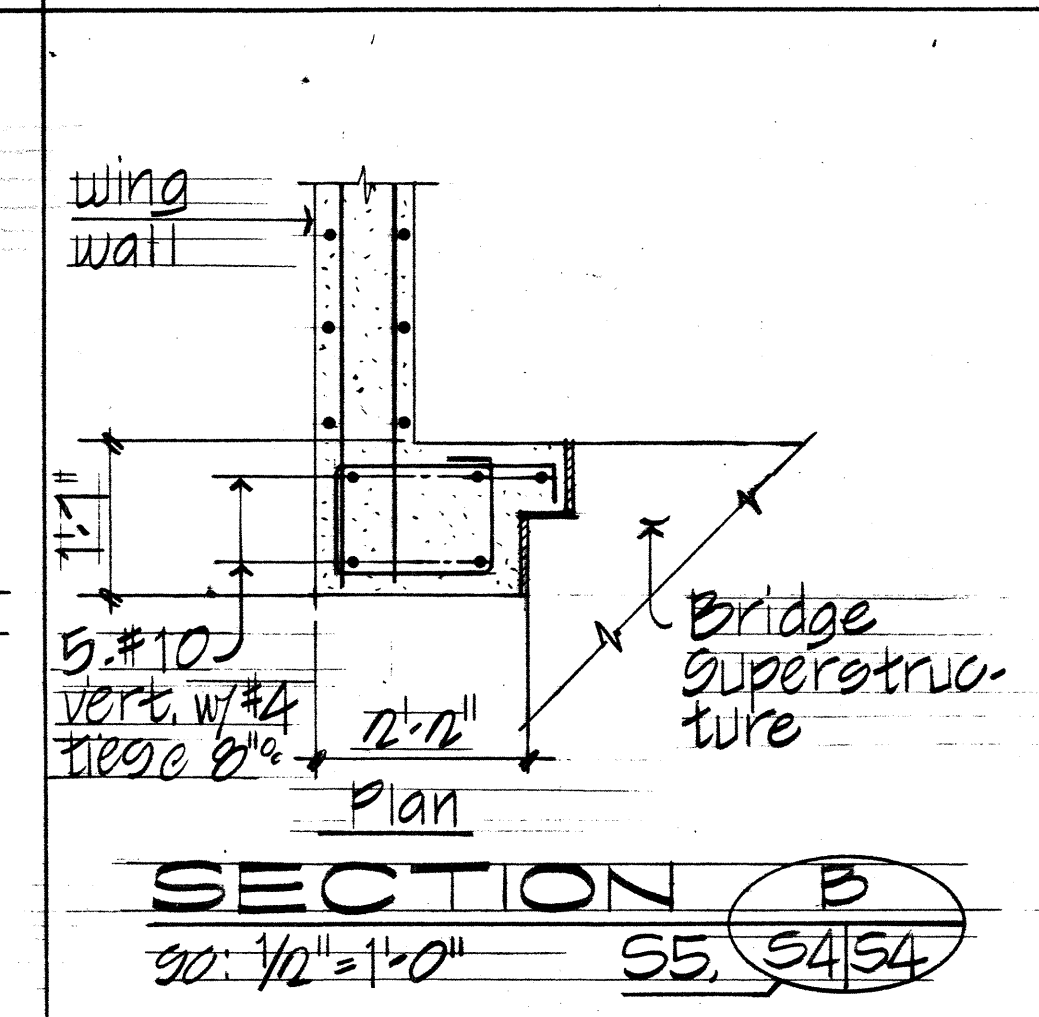
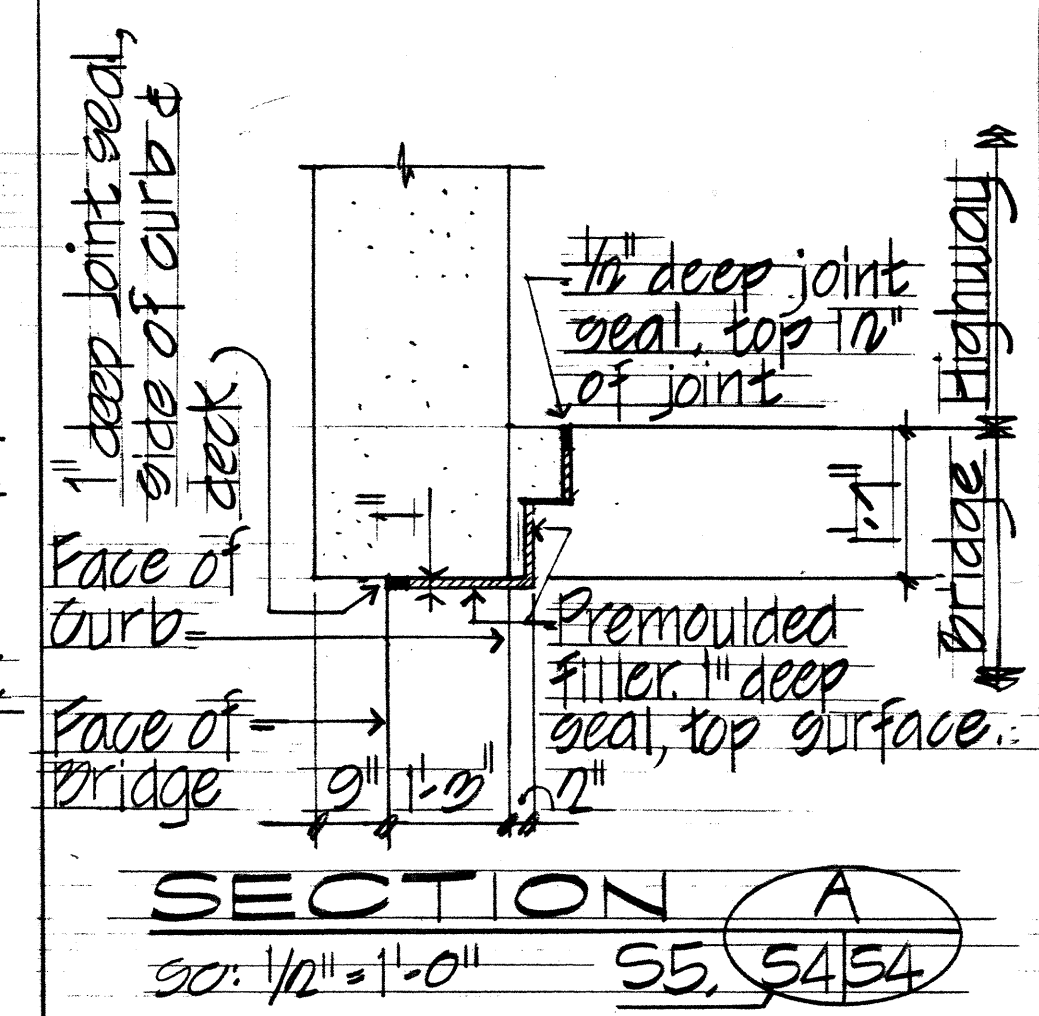
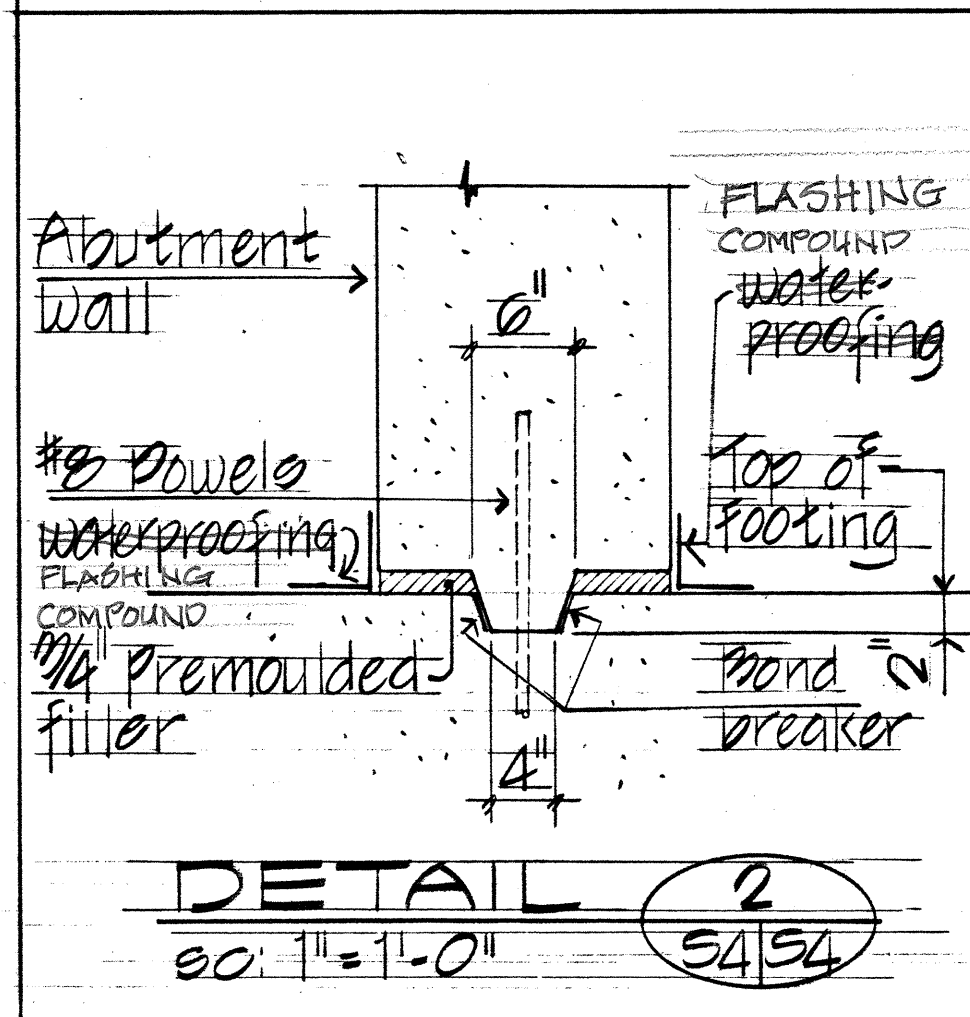
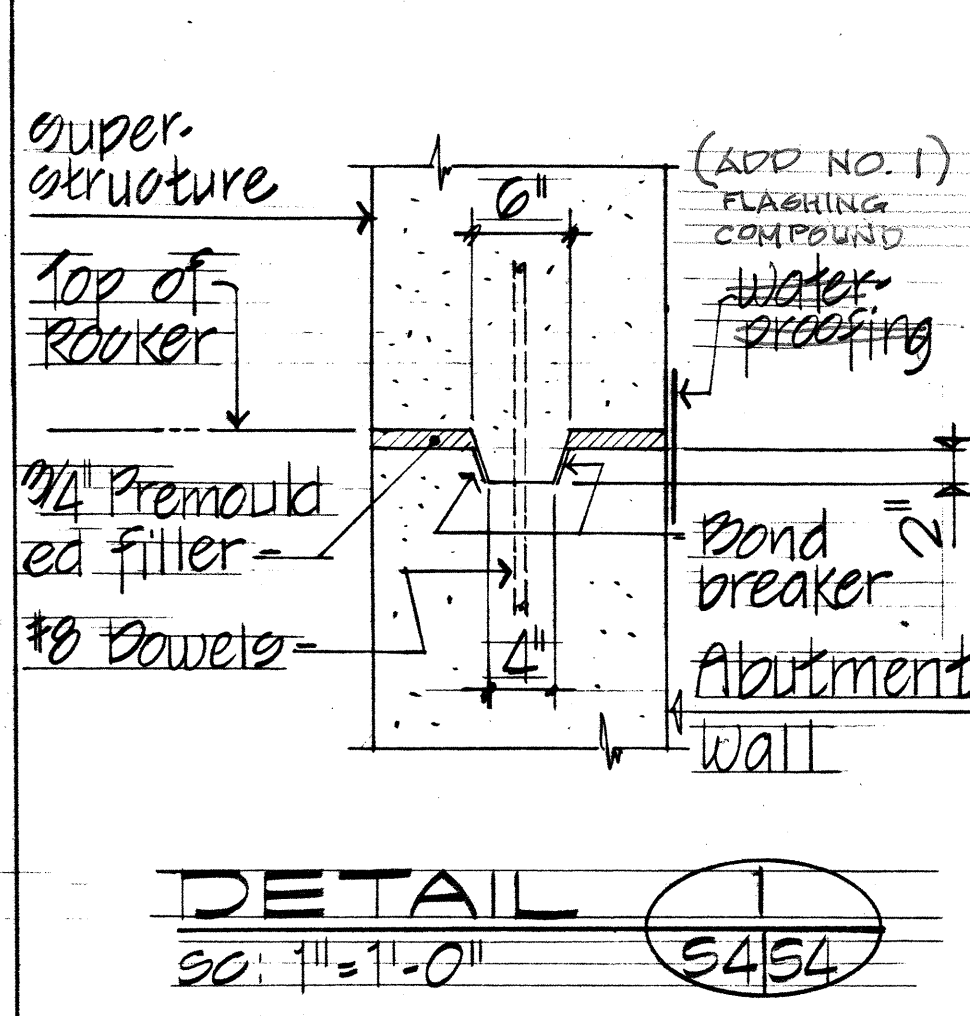
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IR-H2-1(21)	1987	66	130
Revision	Sym.	Description	Date		
	△	Guardrail Revision	11-9-88		



PLAN-ABUTMENT NO. 1
SC: 1/4" = 1'-0"



DEVELOPED ELEVATION OF ABUTMENT NO. 1
SC: 1/4" = 1'-0"



NOTES:

1. Abutments shall be braced until backfilling is completed. Backfilling shall be done after the superstructure girders and beams are completed. Backfill for Abutments No. 1 and No. 2 shall be brought up simultaneously to prevent unbalanced earth pressures on the bridge. Check abutments for plumbness before constructing superstructure.
2. Where shown, impervious material used for backfill shall be as selected by the Engineer and shall be incidental to structural excavation.
3. See subsections 100.20 of the Standard Specifications & 206.02 of the Special Provisions for Fill or Structural Backfill behind Abutment walls.

Denotes limits of structural excavation payment (including abutment stem & footing). All other excavation shall be roadway excavation.

TYPICAL ABUTMENT WALL SECTION D
SC: 1/2" = 1'-0" S5, S4, S4

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ABUTMENT NO. 1-DETAILS
ABUTMENT WALL SECTION

INTERSTATE ROUTE H-2
WAIPIO INTERCHANGE
PAI PROJ. NO. IR-H2-1(21)
Scale: as noted
SHEET NO. 54 OF 23 SHEETS

THIS WORK WAS PREPARED BY ME UNDER MY SUPERVISION.
Jong Namgung
REGISTERED PROFESSIONAL ENGINEER
No. 3514-S
HAWAII, U.S.A.

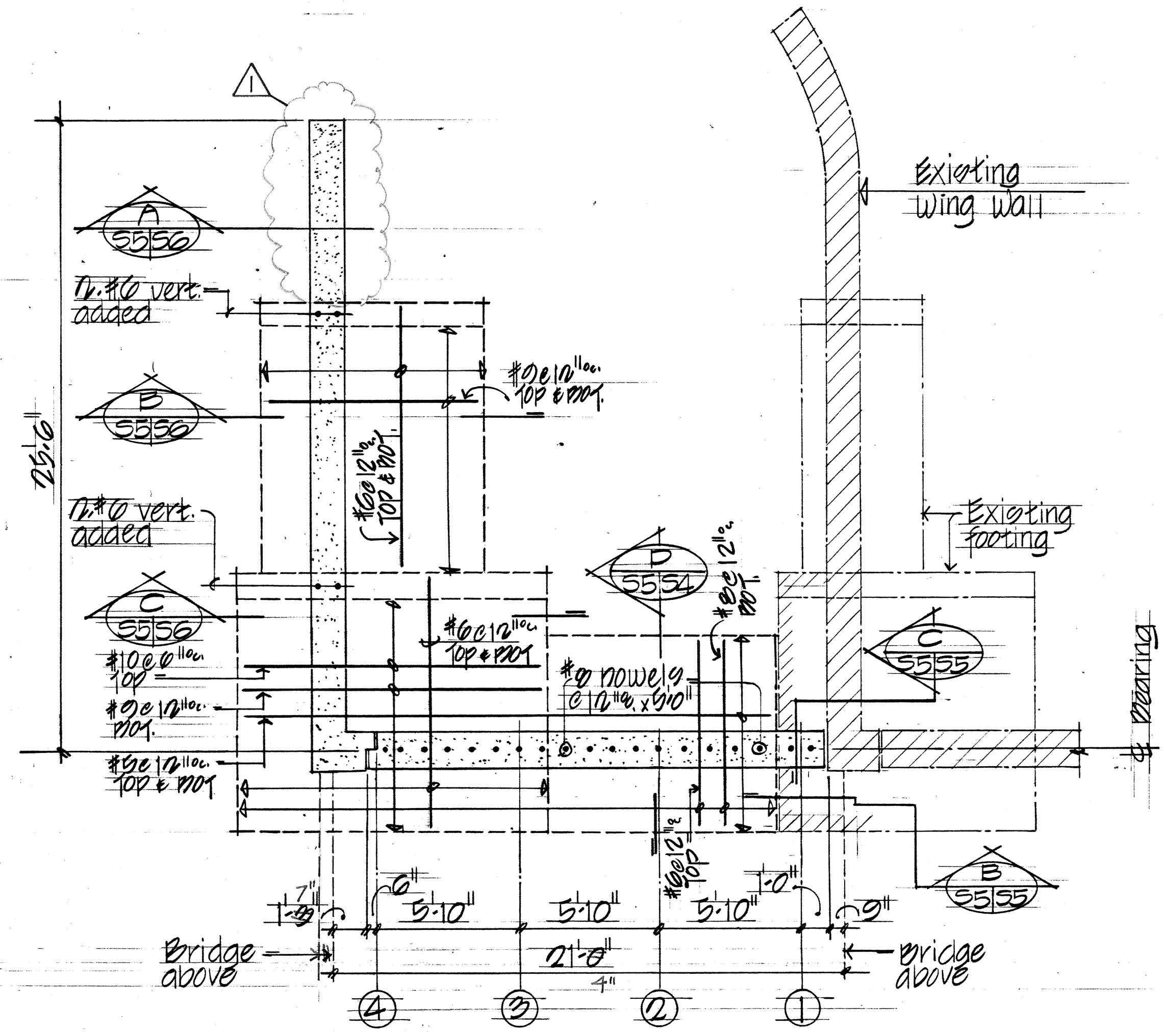
NOTE: Supersedes Plan Sht. No. 66.

"AS-BUILT"

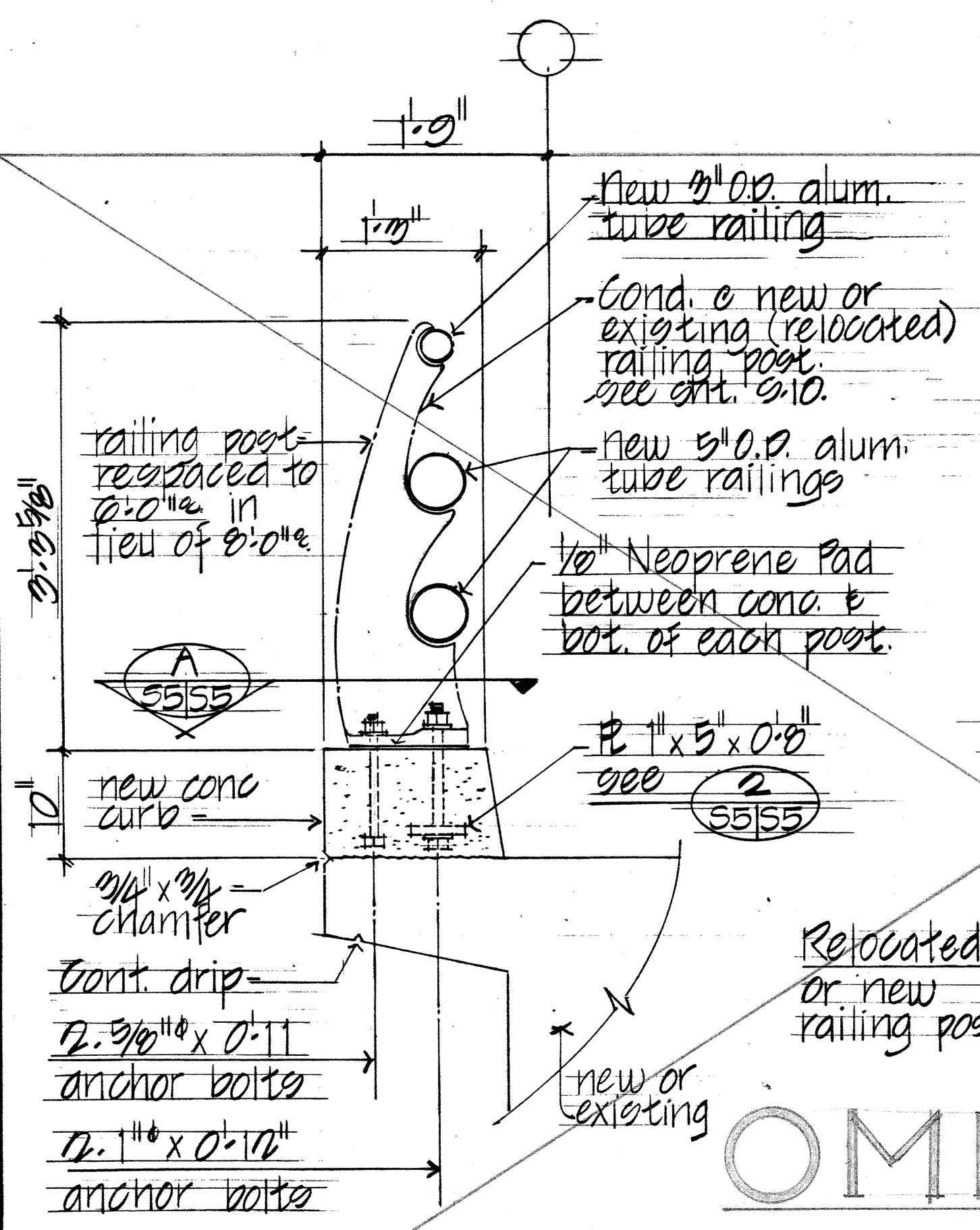
OCTOBER 1987 C.O. 66

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.	IR-H2-1(21)	1987	67	138
Revision	Sym.	Description	Date		
	△	Guardrail Revision	2-9-89		

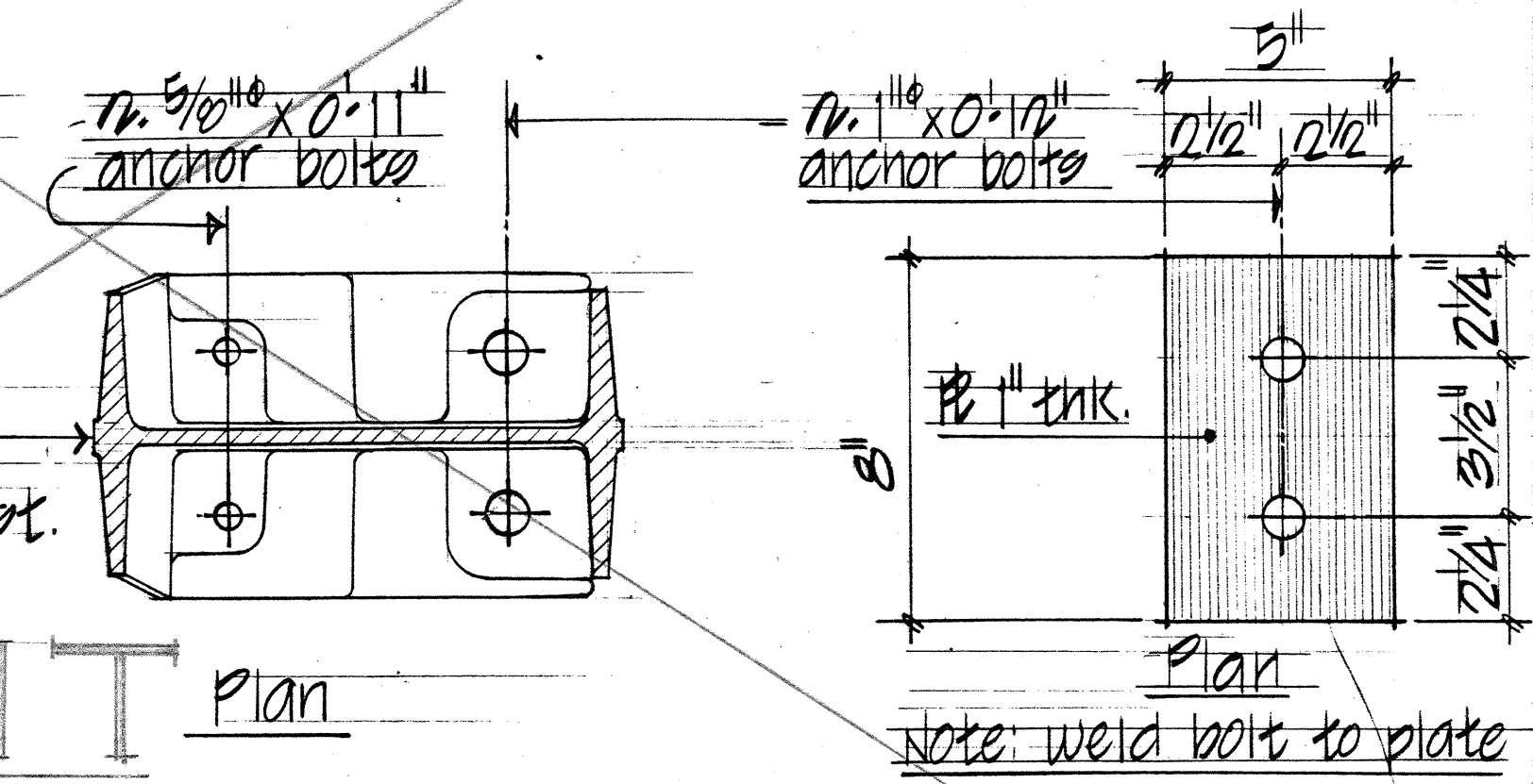


PLAN - ABUTMENT NO. 2
SC: 1/4" = 1'-0"

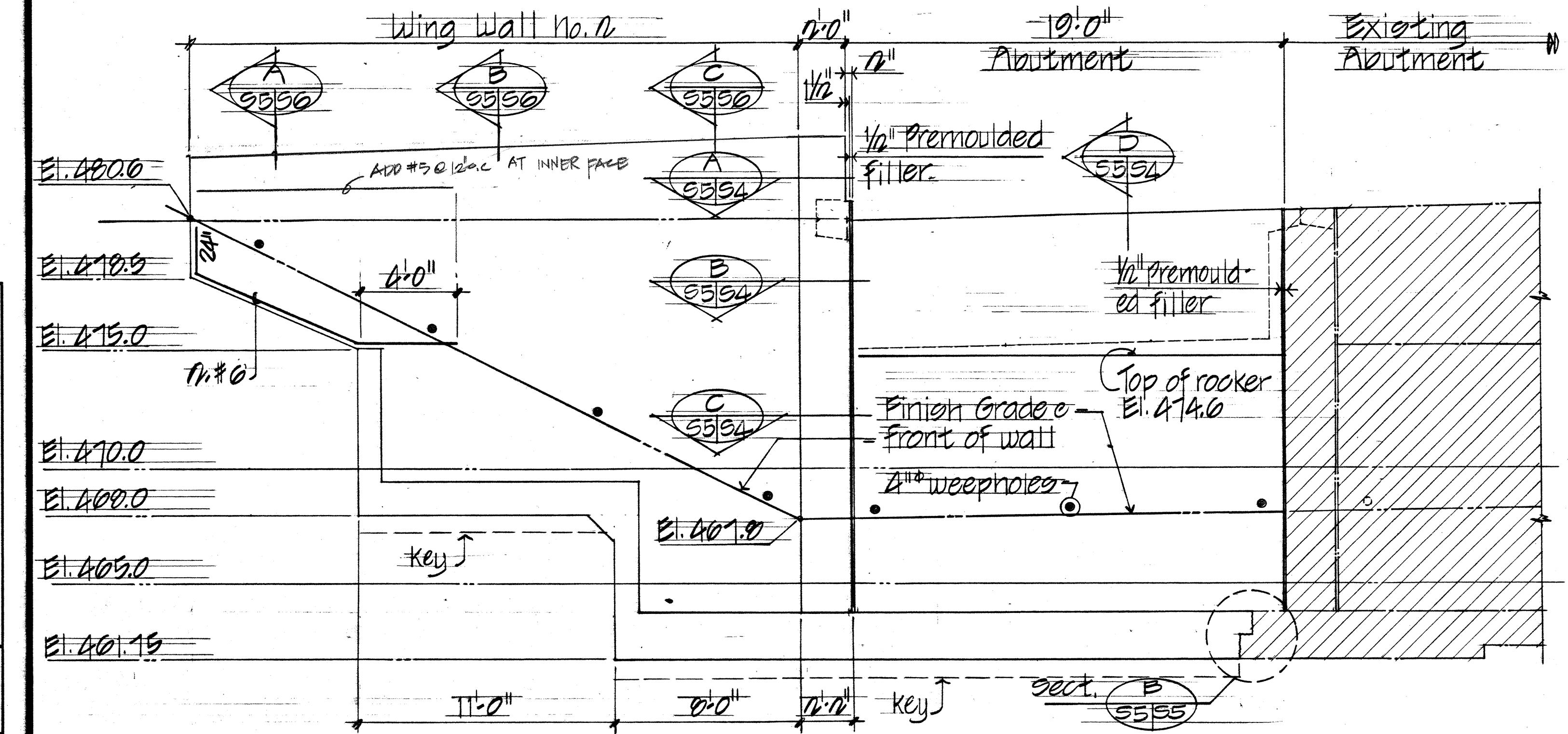


TYPICAL RAILING
SECTION SC: 1" = 1'-0"

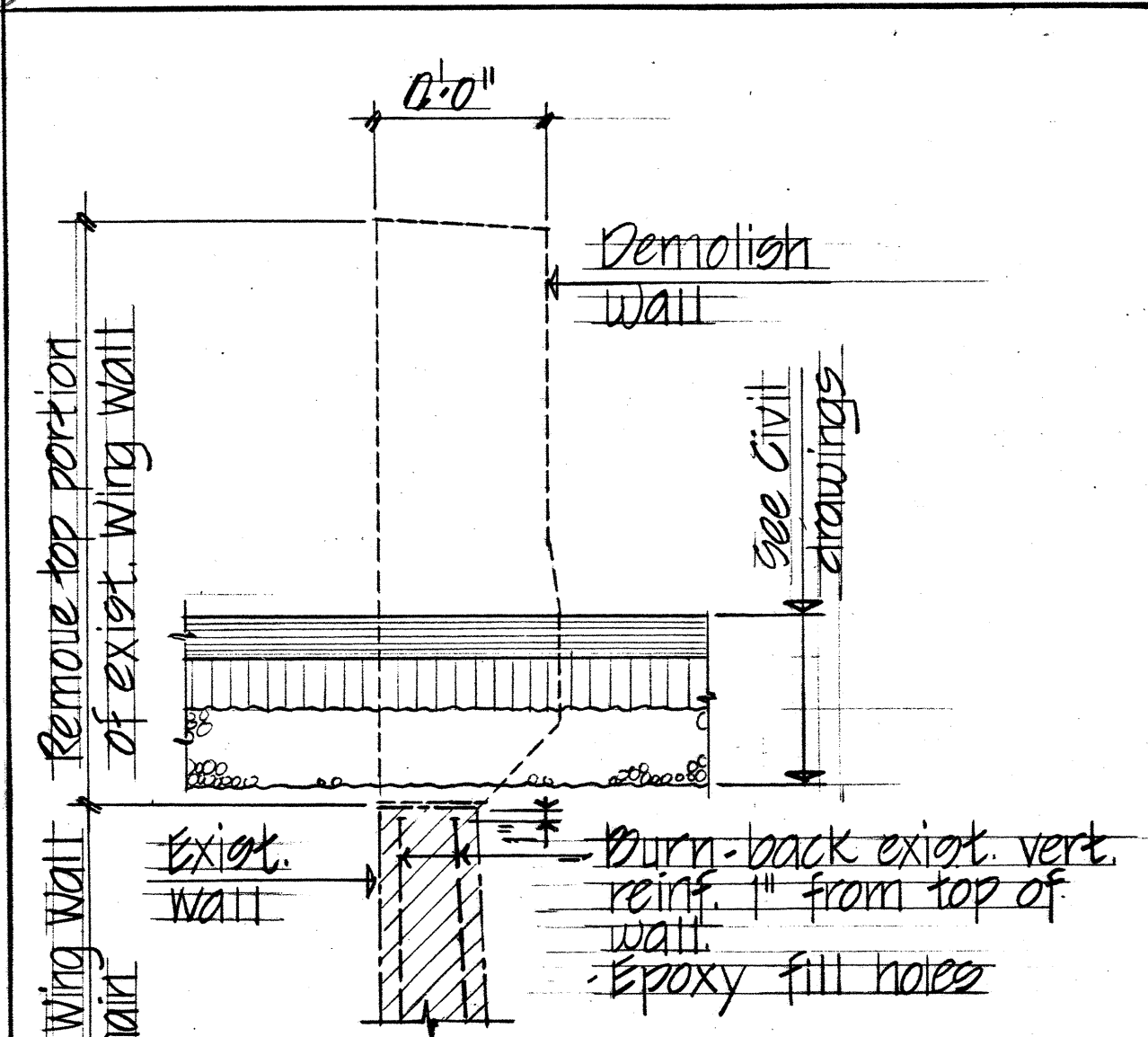
- Note:
- All structural steel shapes and plates shall conform to ASTM A-36.
 - Boles shall conform to ASTM A-305. Install a hardened washer under each nut and bolt head.
1" dia. bolt washer size = 2 1/2" O.D. x 1/2" T.D. x 1 1/2"
3/8" dia. bolt washer size = 1 3/4" O.D. x 1/2" T.D. x 3/4"
 - Galvanize all members, bolts and accessories exposed to weather.
 - See Aluminum Bridge Railing typical details Sht. 9-10.



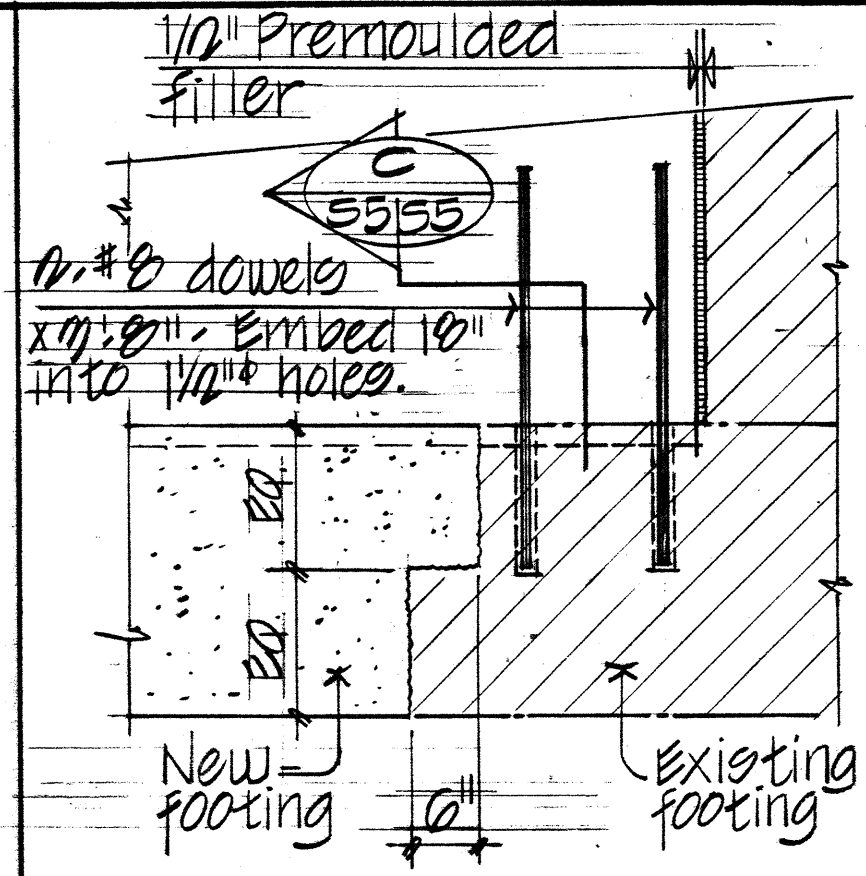
TYPICAL METAL BRIDGE RAILING DETAILS
SC: AS NOTED



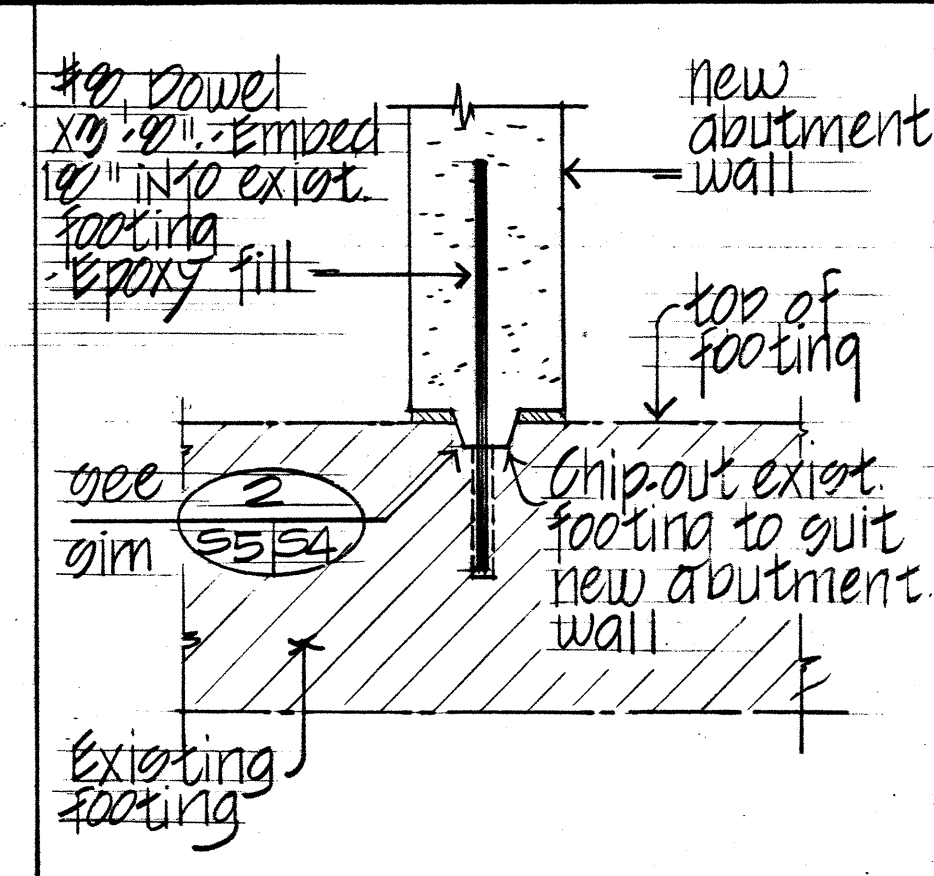
DEVELOPED ELEVATION OF ABUTMENT NO. 2
SC: 1/4" = 1'-0"



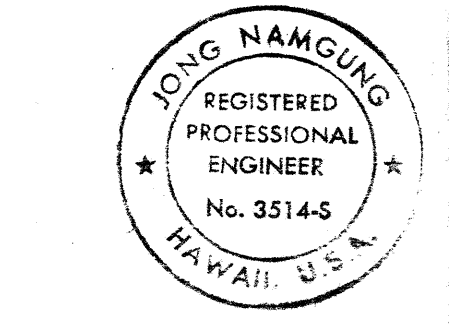
EXIST. WING WALL
DEMOLITION DETAIL



SECTION B
SC: 3/4" = 1'-0"



SECTION C
SC: 3/4" = 1'-0"



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

**ABUTMENT NO. 2 DETAILS
METAL RAILING DETAILS**

INTERSTATE ROUTE H2
WAIPIO INTERCHANGE
PA PROJ. NO. IR-H2-1(21)
00010: AS NOTED
Aug. 88

SHEET NO. 55 OF 23 SHEETS

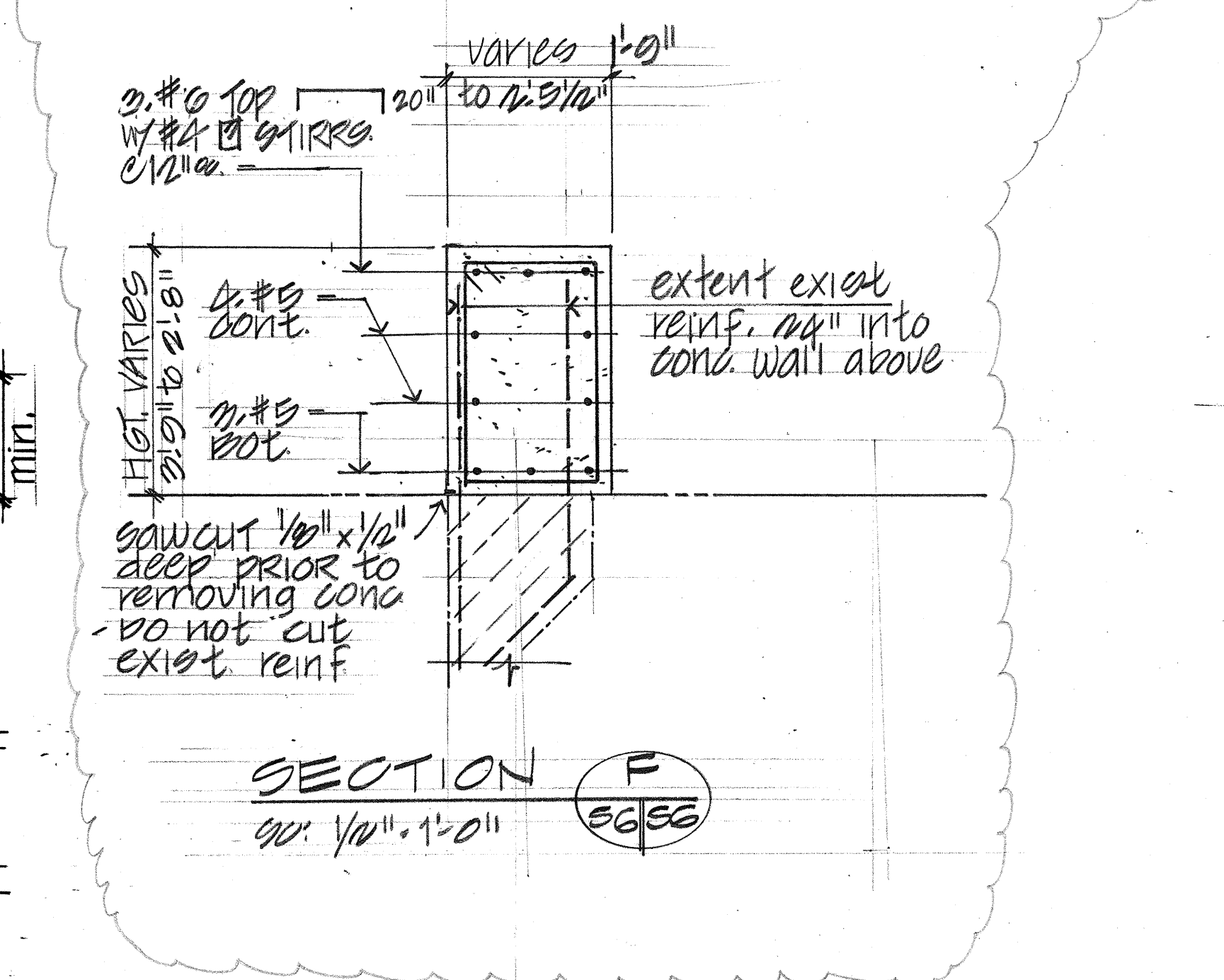
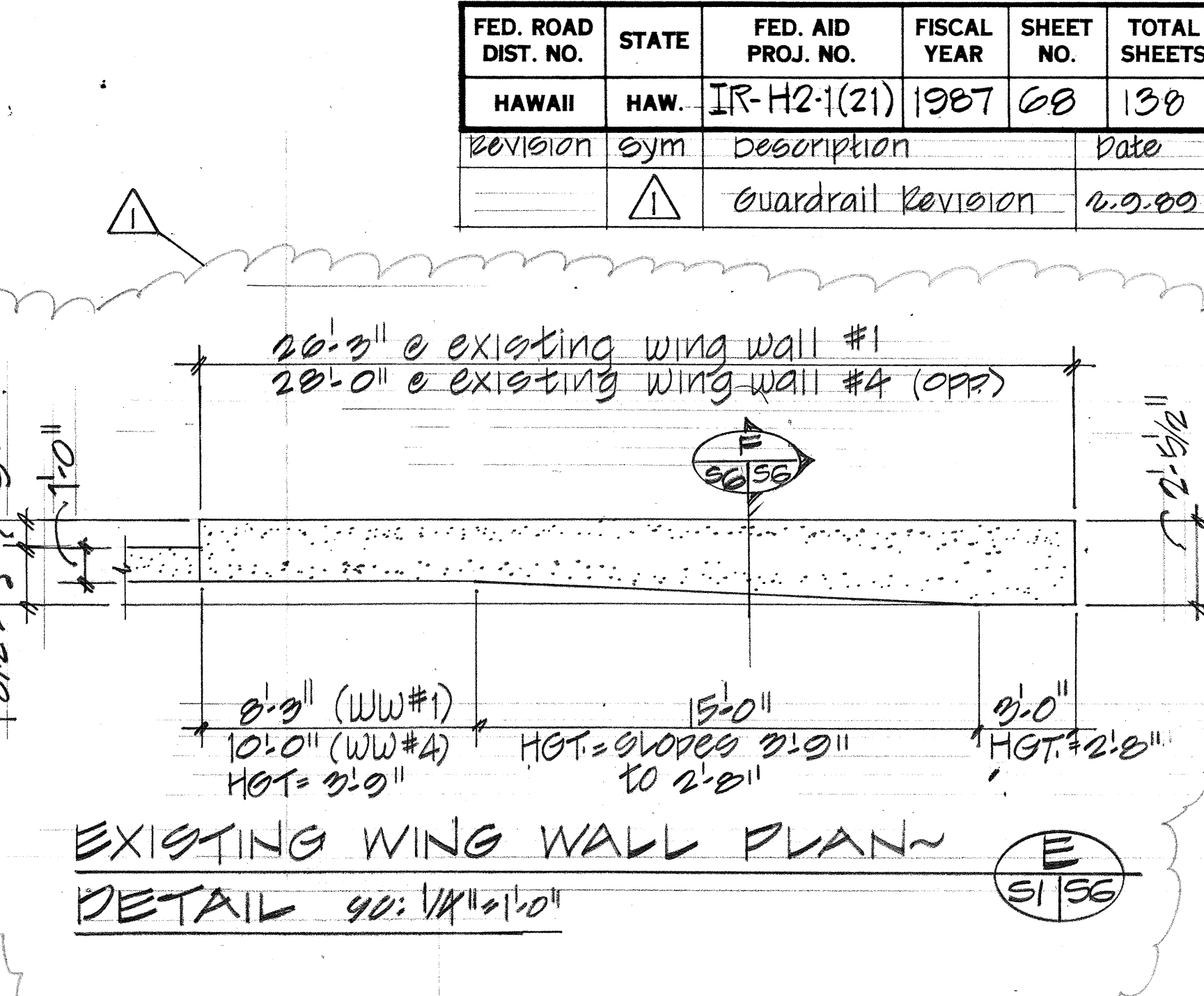
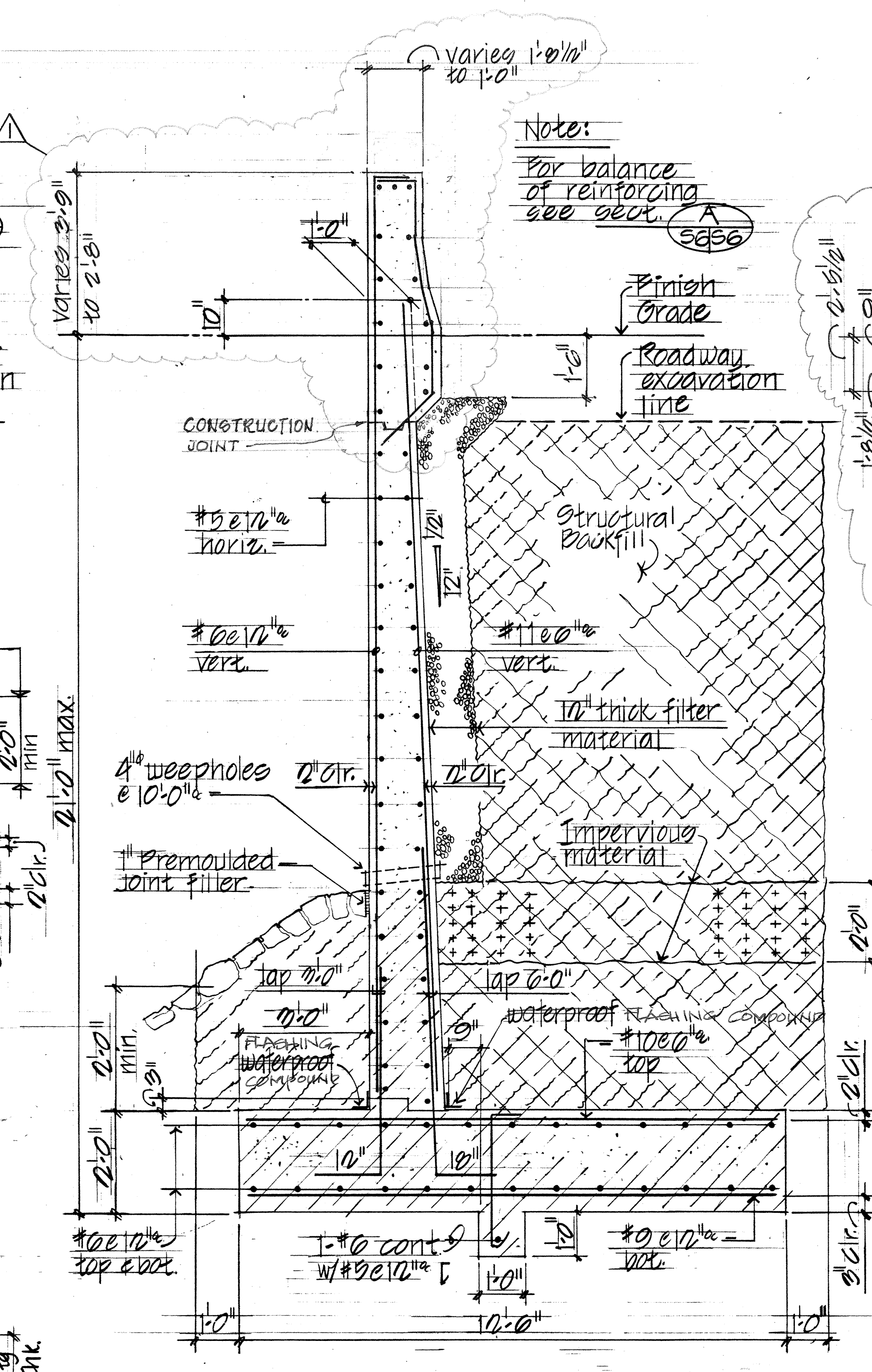
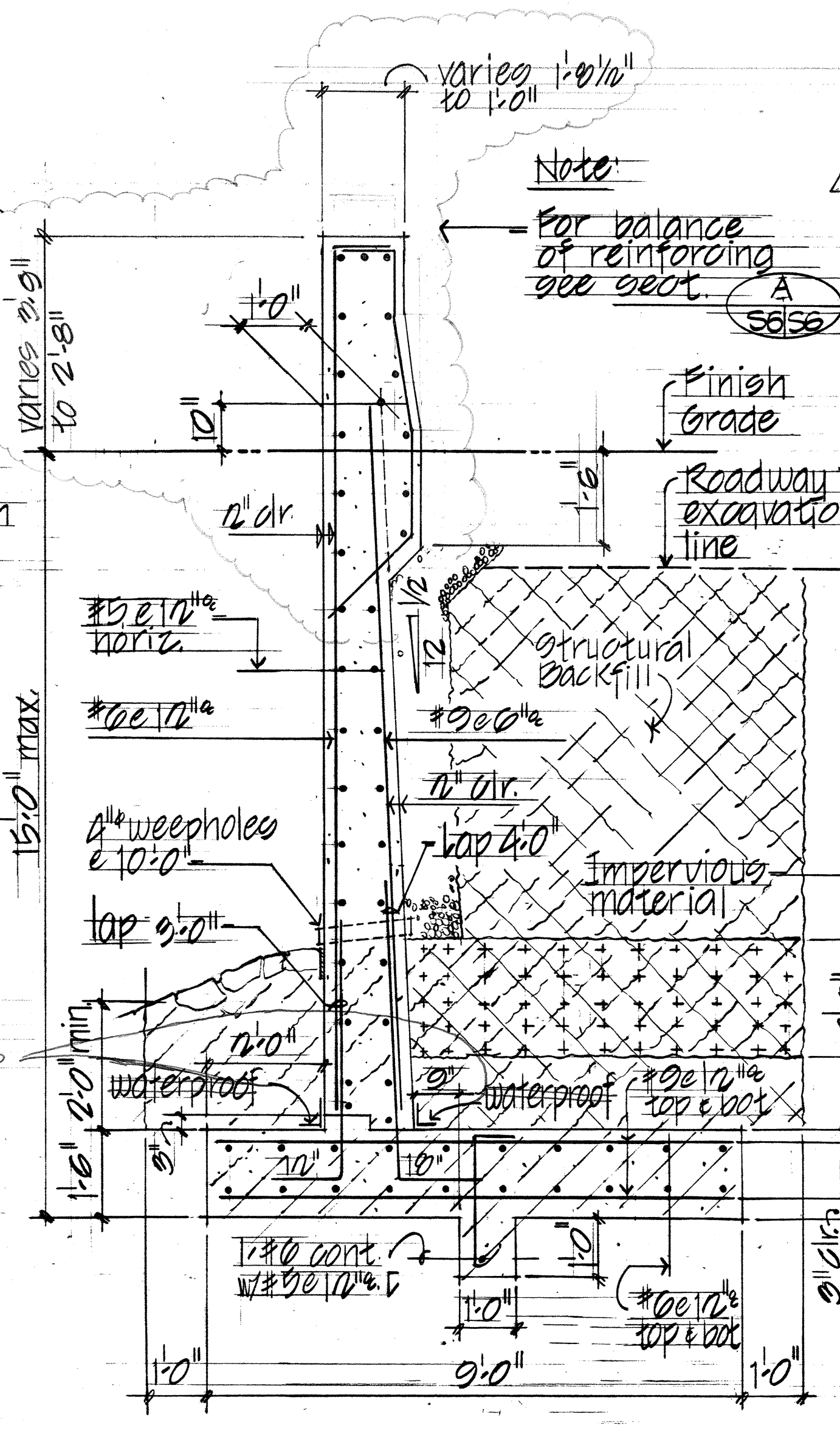
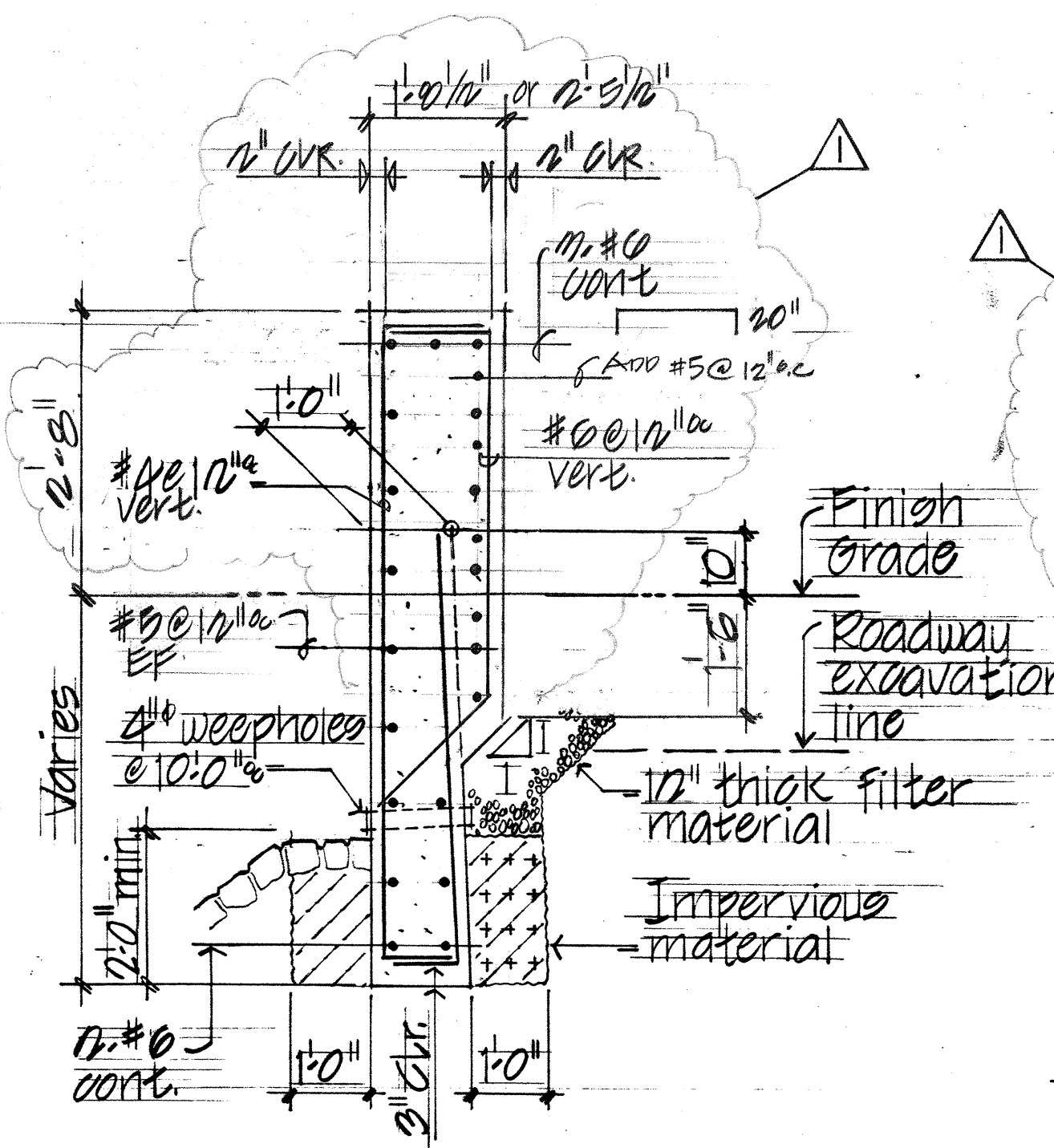
DATE
SURVEY PLOTTED BY
DRAWN BY
DESIGNED BY
CHECKED BY
NOTE BOOK
No.

NOTE: Supersedes Plan Sht. No. 67.

"AS-BUILT"

OCTOBER 1987 C.O. 67

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IR-H2-1(21)	1987	68	130
Revision	Sym	Description	Date		
	△	Guardrail Revision	6.9.88		

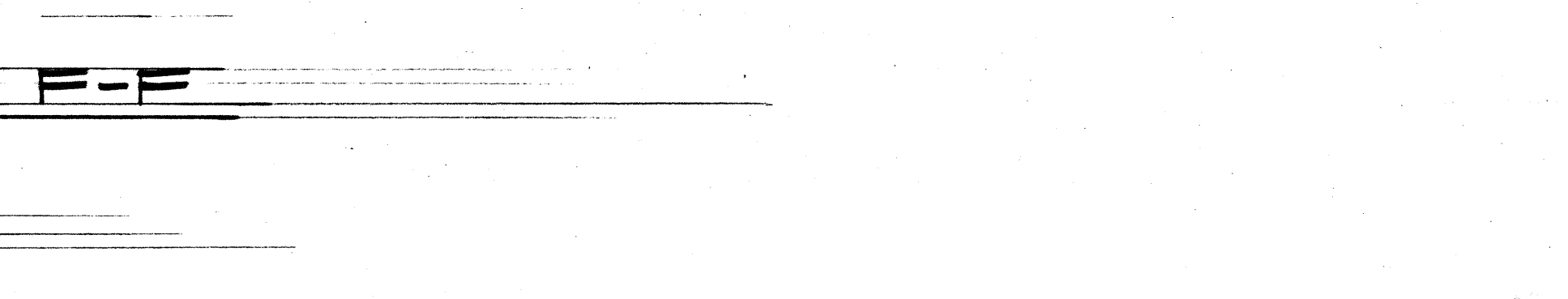
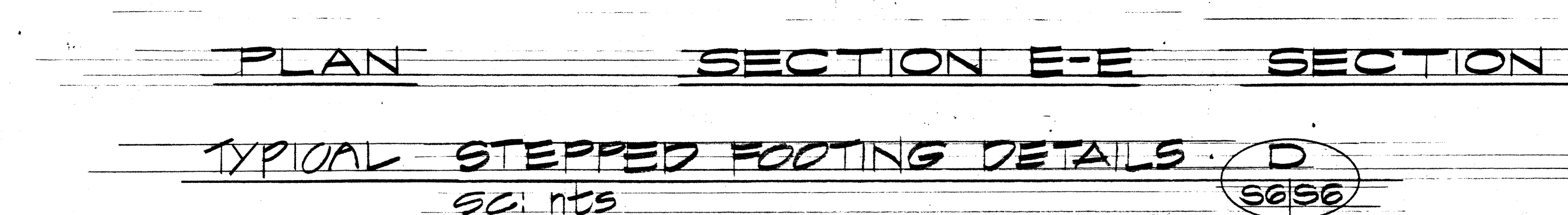
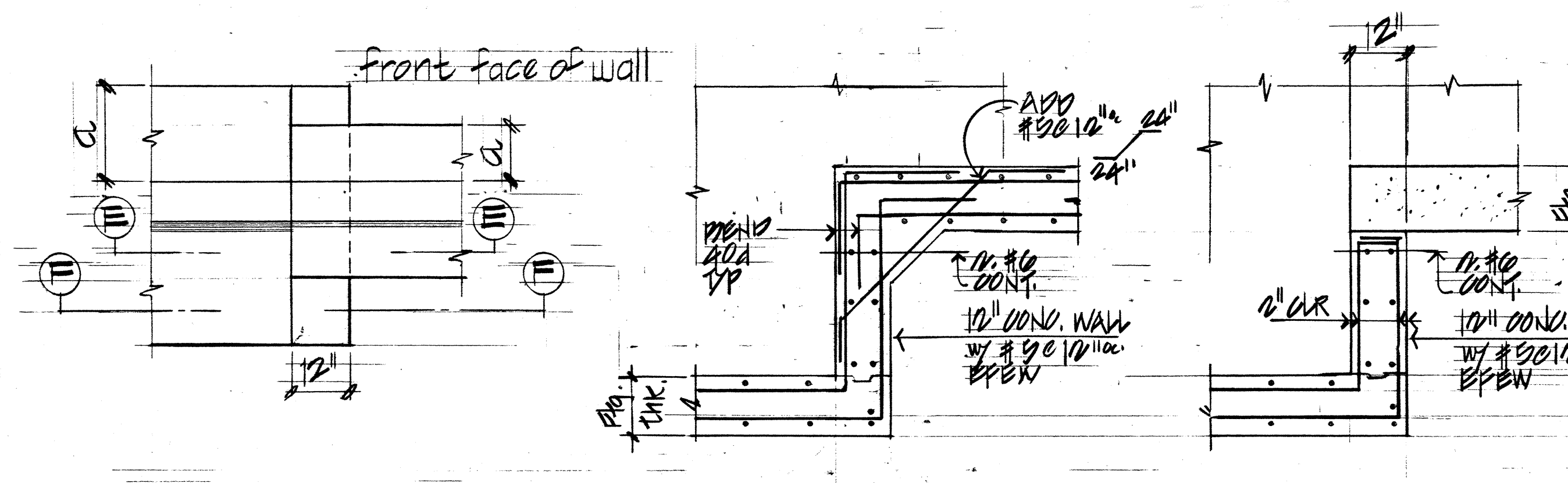


SECTION A
SC: 1/2" = 1'-0"

Legend:
Denotes limits of structural excavation payment (including wing wall, stem and footing). All other excavation shall be roadway excavation.

TYP WING WALL No. 1
SECTION SC: 1/2" = 1'-0"

TYP WING WALL No. 2
SECTION SC: 1/2" = 1'-0"

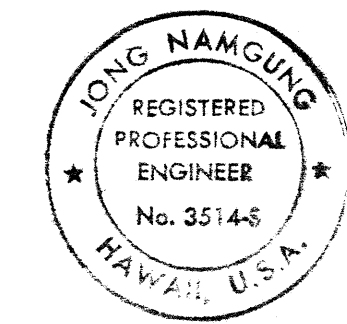


TYPICAL STEPPED FOOTING DETAILS
SC: nts

TYPICAL STEPPED FOOTING DETAILS
SC: nts

NOTE: Supersedes Plan Sht. No. 68.

NOTE: Supersedes Plan Sht. No. 68.



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

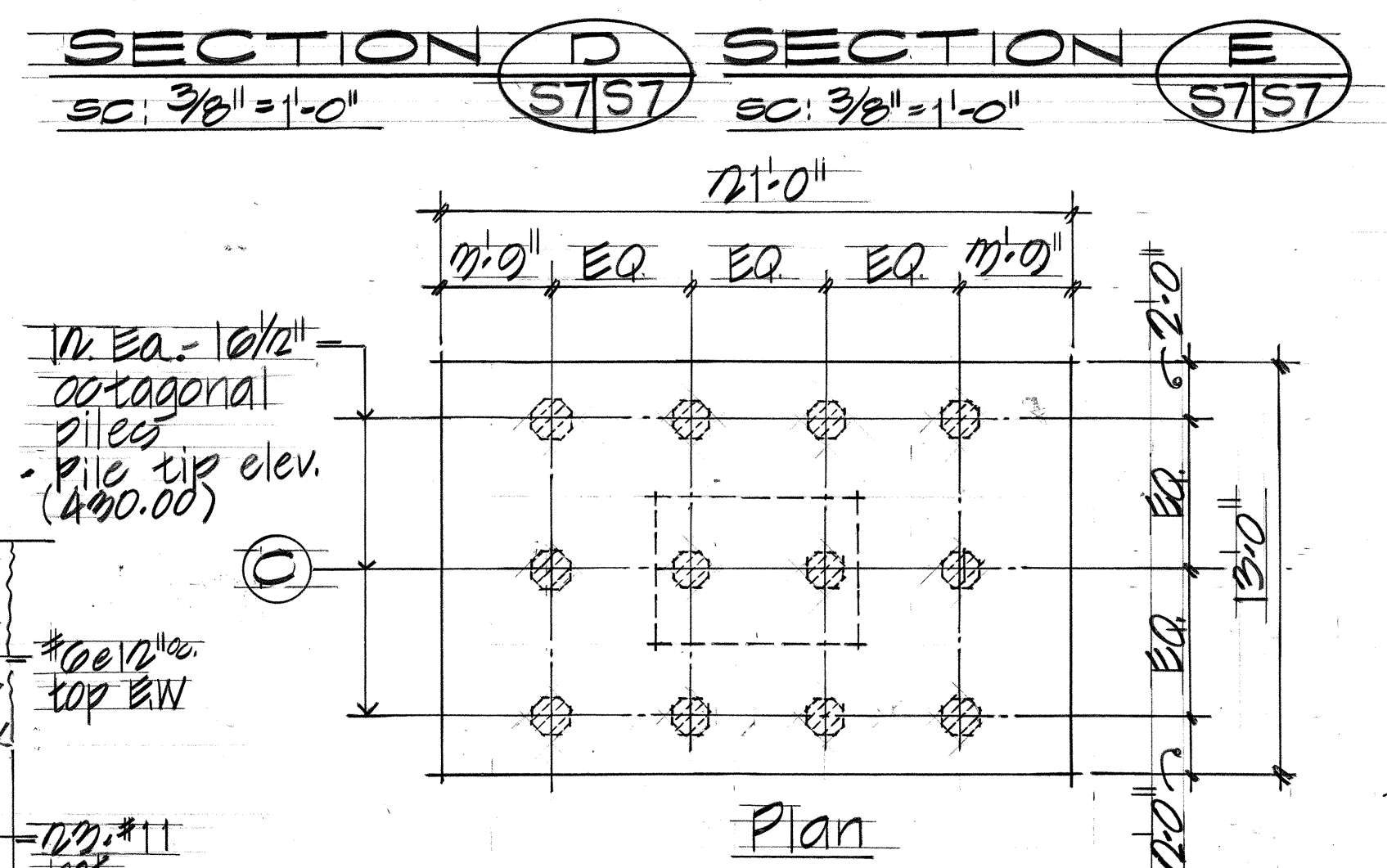
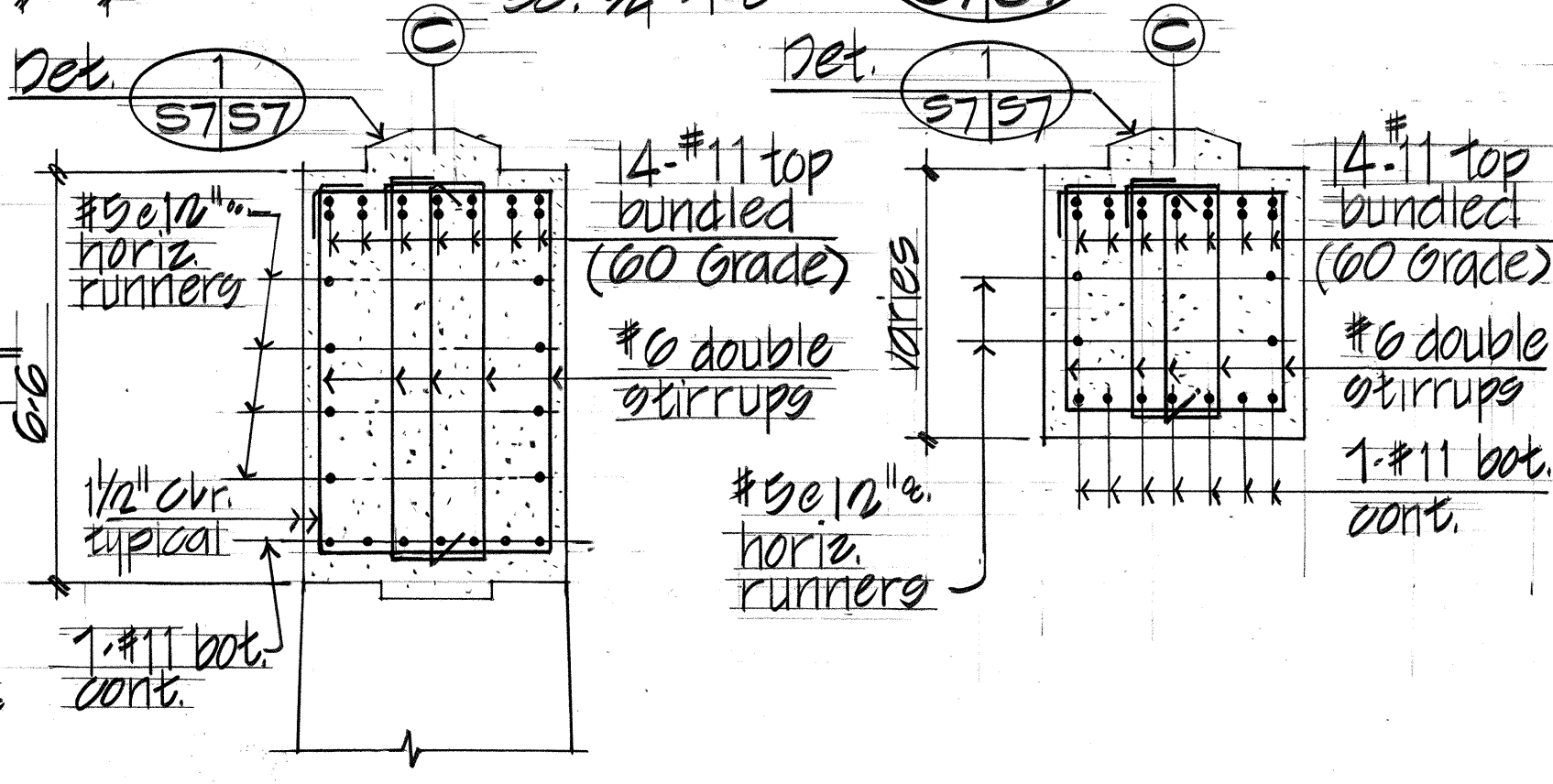
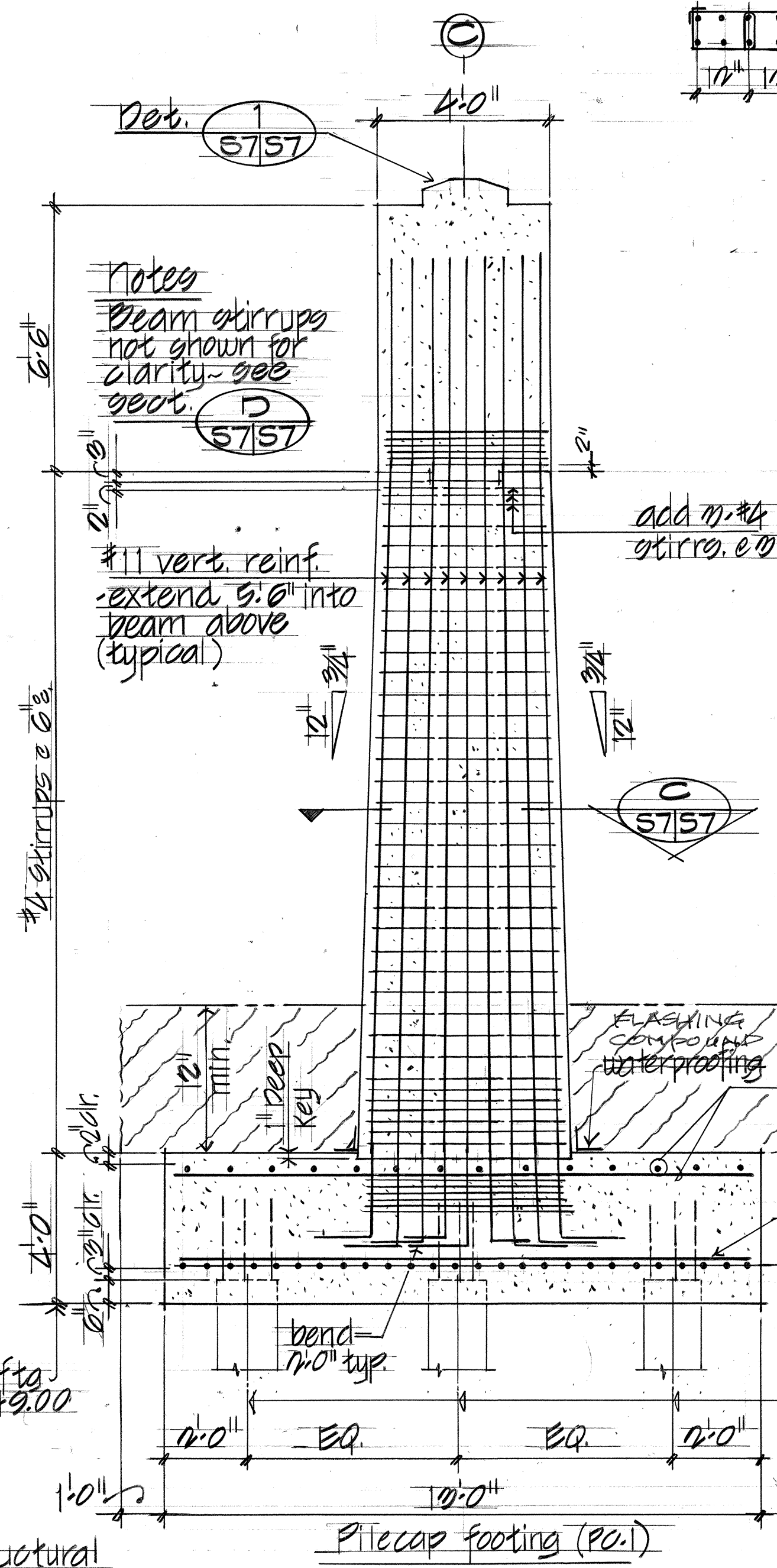
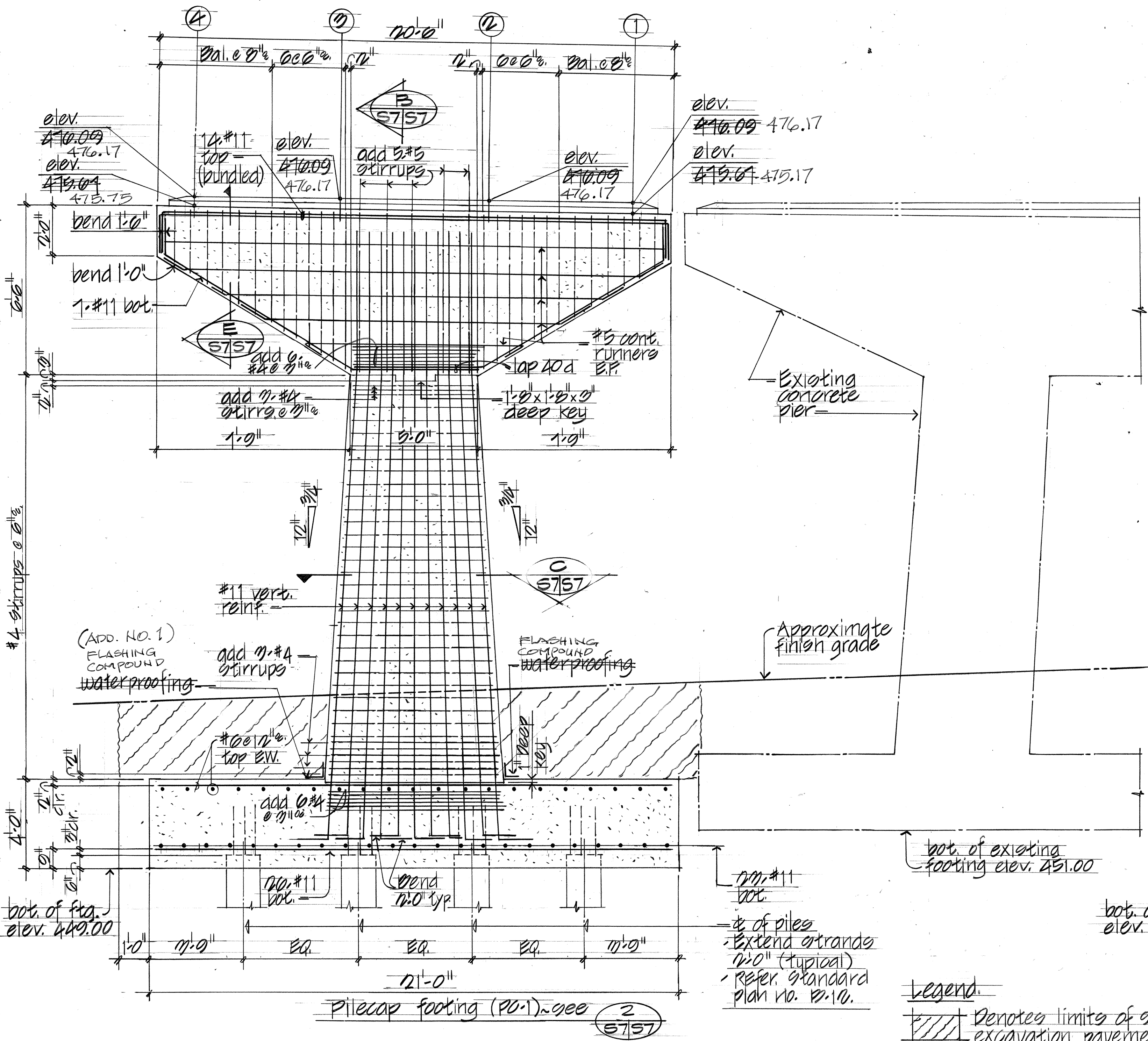
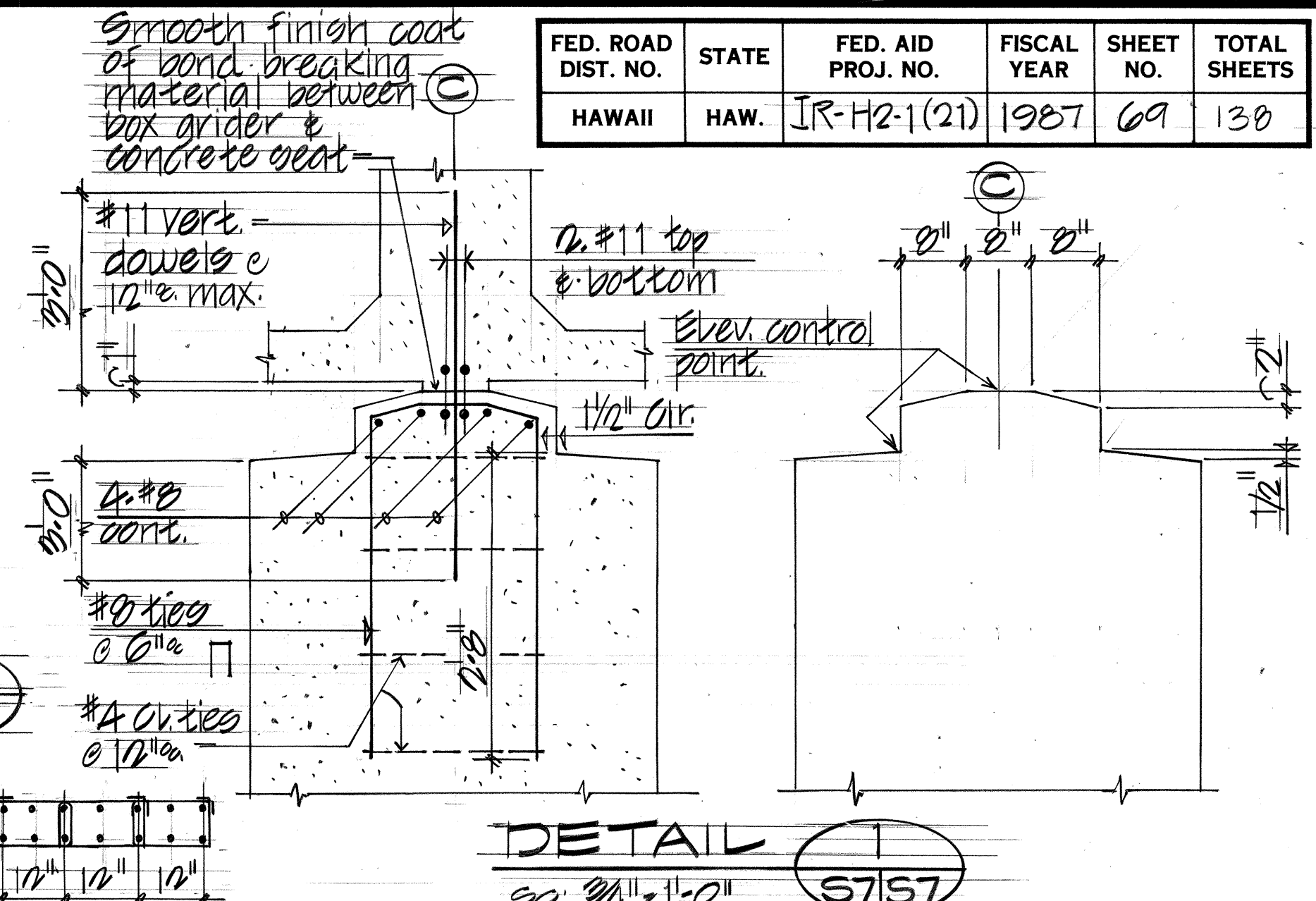
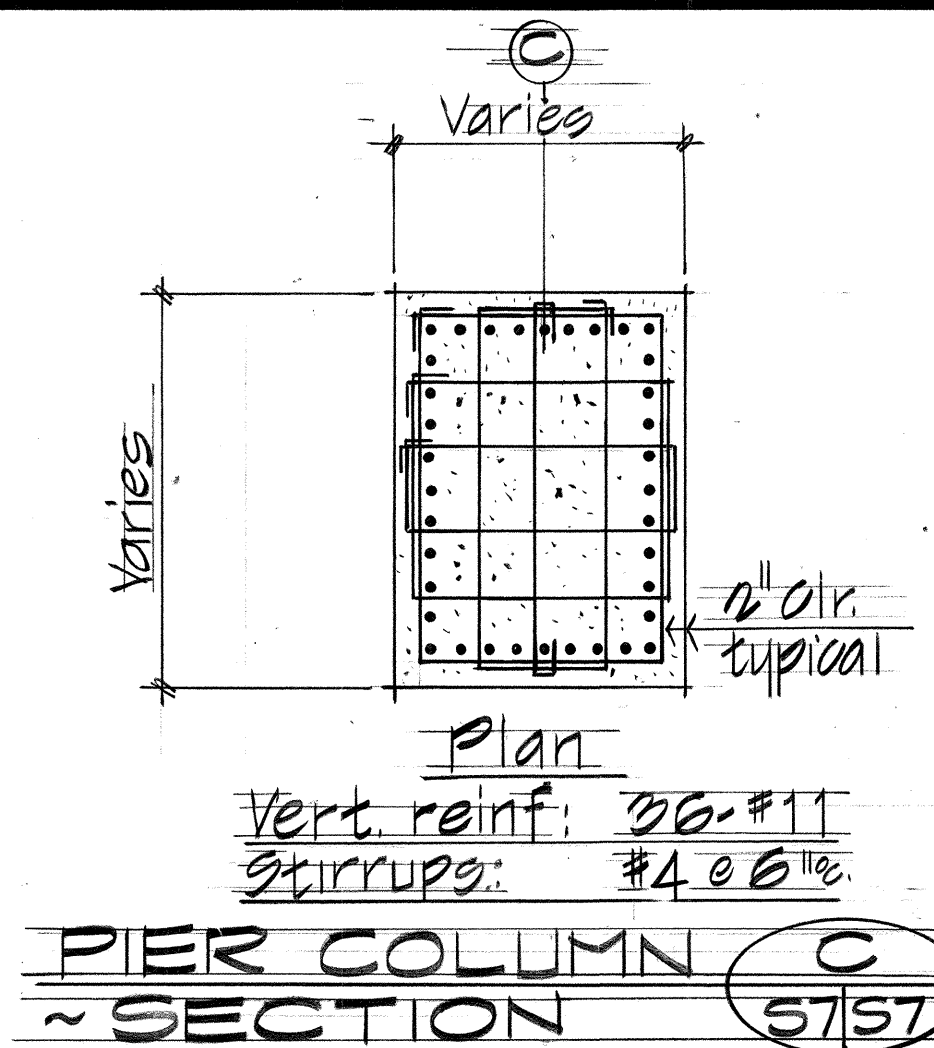
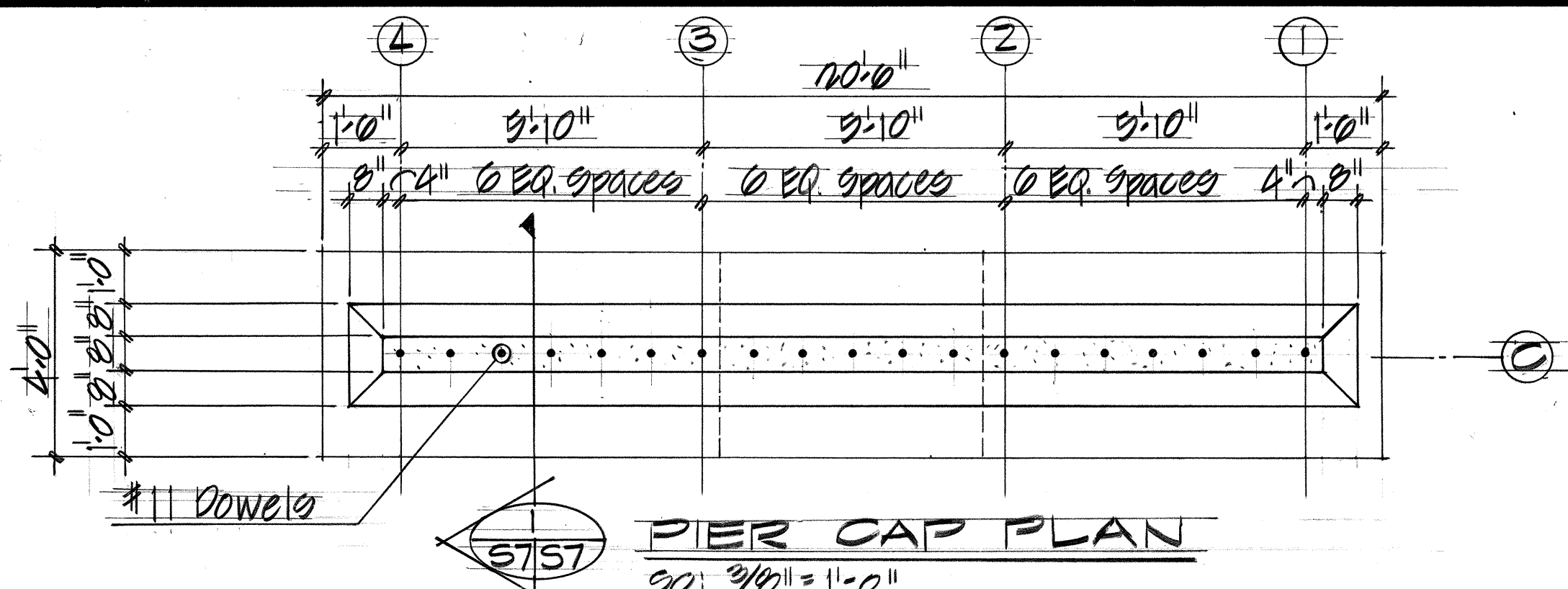
WING WALL SECTIONS

INTERSTATE ROUTE H-2
WAIPIO INTERCHANGE
PAI PROJ. NO. IR-H2-1(21)
SCALE: AS NOTED
SHEET NO. 58 OF 23 SHEETS
OCTOBER 1987

OCTOBER 1987

"AS-BUILT"

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IR-H2-1(21)	1987	69	130

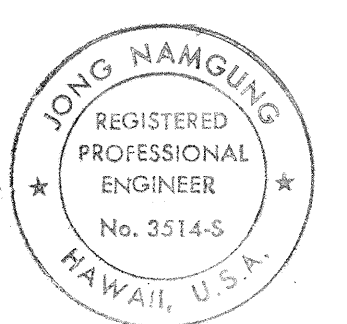


SCHEMATIC CONCRETE PIER ELEVATION A 5757

SECTION B 5757

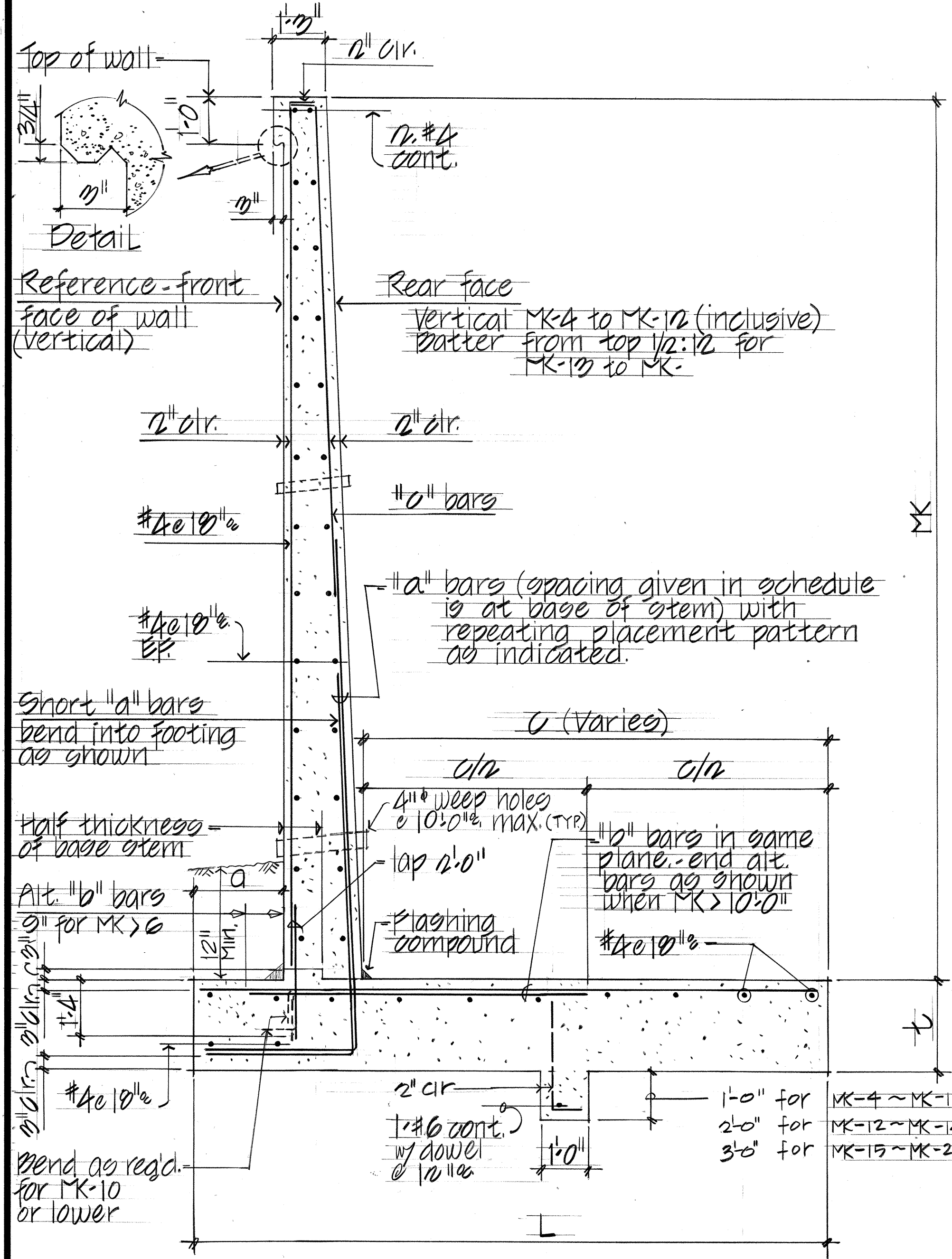
PILECAP (PC-1) FOOTING DETAIL 2 5757

Legend
 Denotes limits of structural excavation pavements (including column & pilecap). All other excavation shall be roadway excavation.

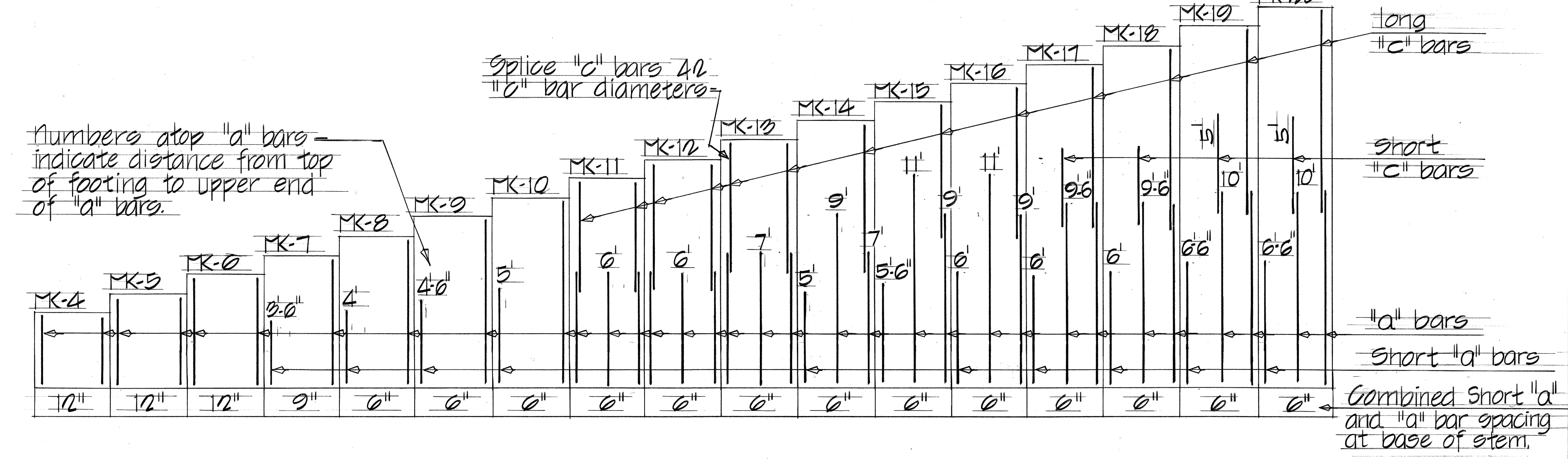


STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION
CONCRETE PIER DETAILS
 INTERSTATE ROUTE H-2
 WAIPIO INTERCHANGE
 PAI PROJ. NO. IR-H2-1(21)
 SCALE: AS NOTED
 SHEET NO. 57 OF 23 SHEETS
 AUG. 86

AS-BUILT



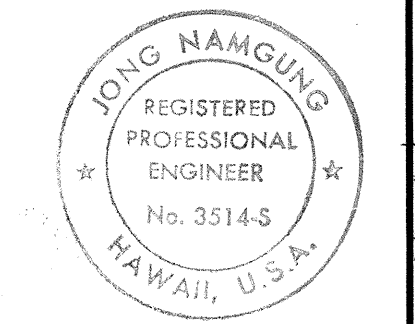
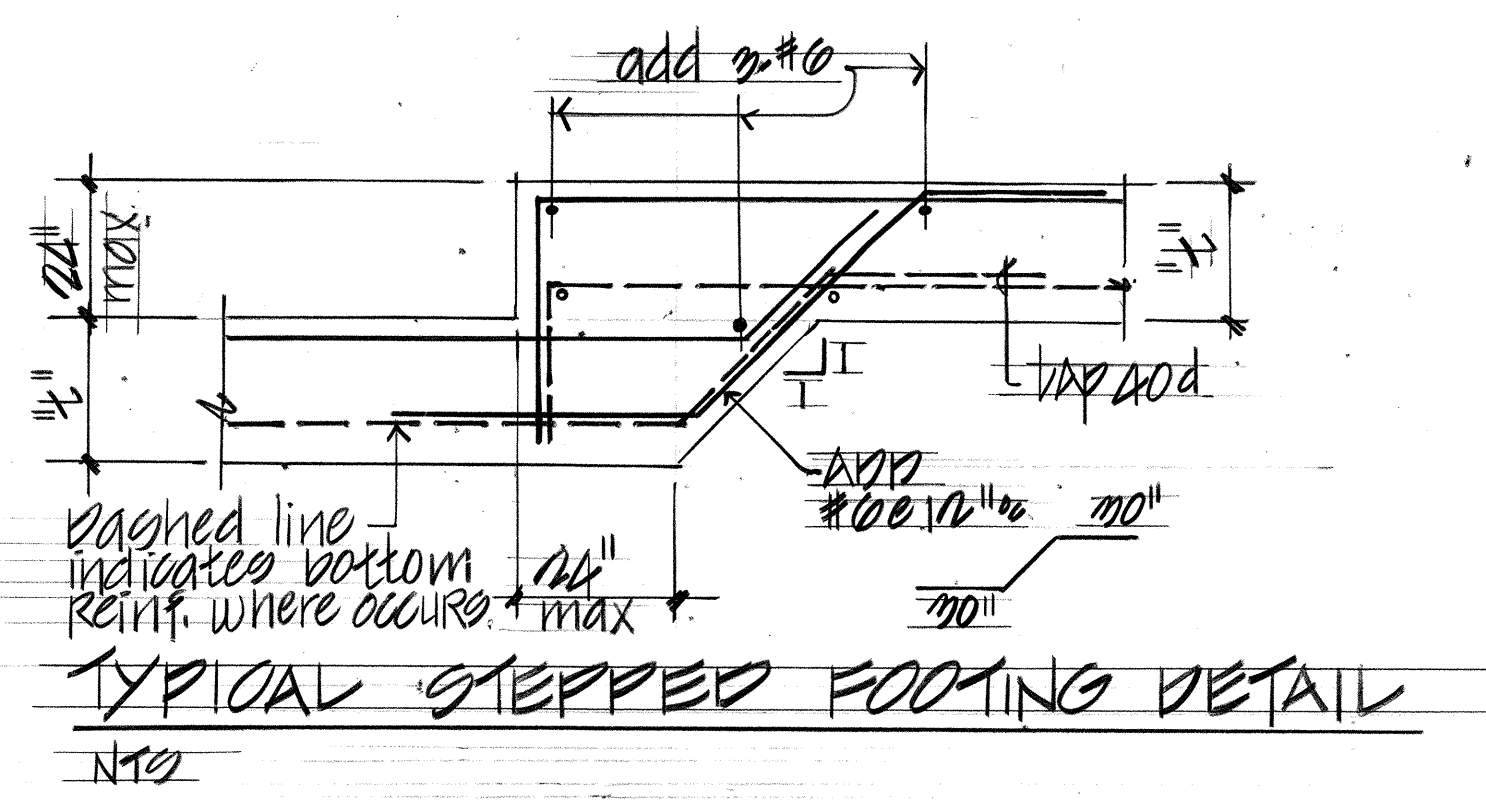
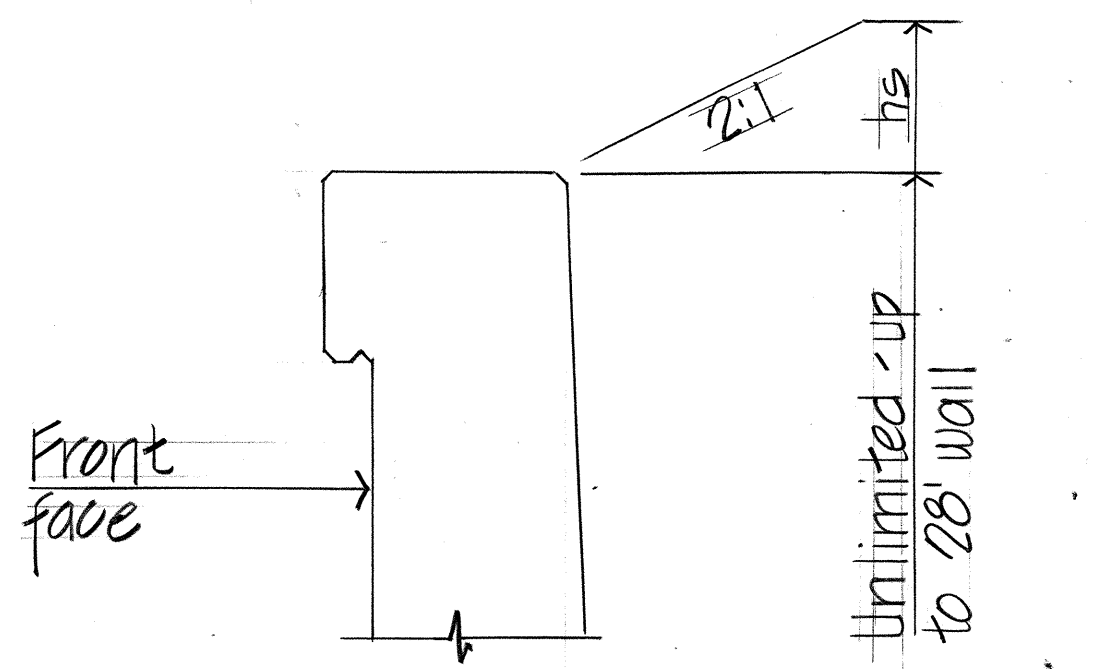
RETAINING WALL (WG-1) ~ SCHEDULE OF DIMENSIONS AND REINFORCING STEEL																	
Maximum "MK"	MK-4	MK-5	MK-6	MK-7	MK-8	MK-9	MK-10	MK-11	MK-12	MK-13	MK-14	MK-15	MK-16	MK-17	MK-18	MK-19	MK-20
a	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"
t	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"
L	0'-0"	0'-0"	0'-0"	0'-0"	0'-0"	0'-0"	0'-0"	0'-0"	0'-0"	0'-0"	0'-0"	0'-0"	0'-0"	0'-0"	0'-0"	0'-0"	0'-0"
"a" bars	#4 @ 12"	#4 @ 12"	#4 @ 12"	#4 @ 12"	#4 @ 12"	#4 @ 12"	#4 @ 12"	#4 @ 12"	#4 @ 12"	#4 @ 12"	#4 @ 12"	#4 @ 12"	#4 @ 12"	#4 @ 12"	#4 @ 12"	#4 @ 12"	#4 @ 12"
"b" bars	#4 @ 12"	#4 @ 12"	#4 @ 12"	#4 @ 12"	#4 @ 12"	#4 @ 12"	#4 @ 12"	#4 @ 12"	#4 @ 12"	#4 @ 12"	#4 @ 12"	#4 @ 12"	#4 @ 12"	#4 @ 12"	#4 @ 12"	#4 @ 12"	#4 @ 12"
"c" bars								#4	#4	#4	#4	#4	#4	#4	#4	#4	#4
footing pressure (KSF)	2.0	2.4	2.5	2.7	2.9	2.0	2.0	2.7	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0



VERTICAL REINFORCING STEEL ARRANGEMENT

Note:
For Schematic Wall Elevations
see sheet S-12.

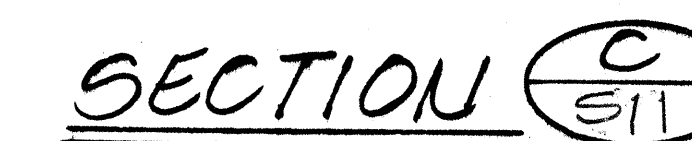
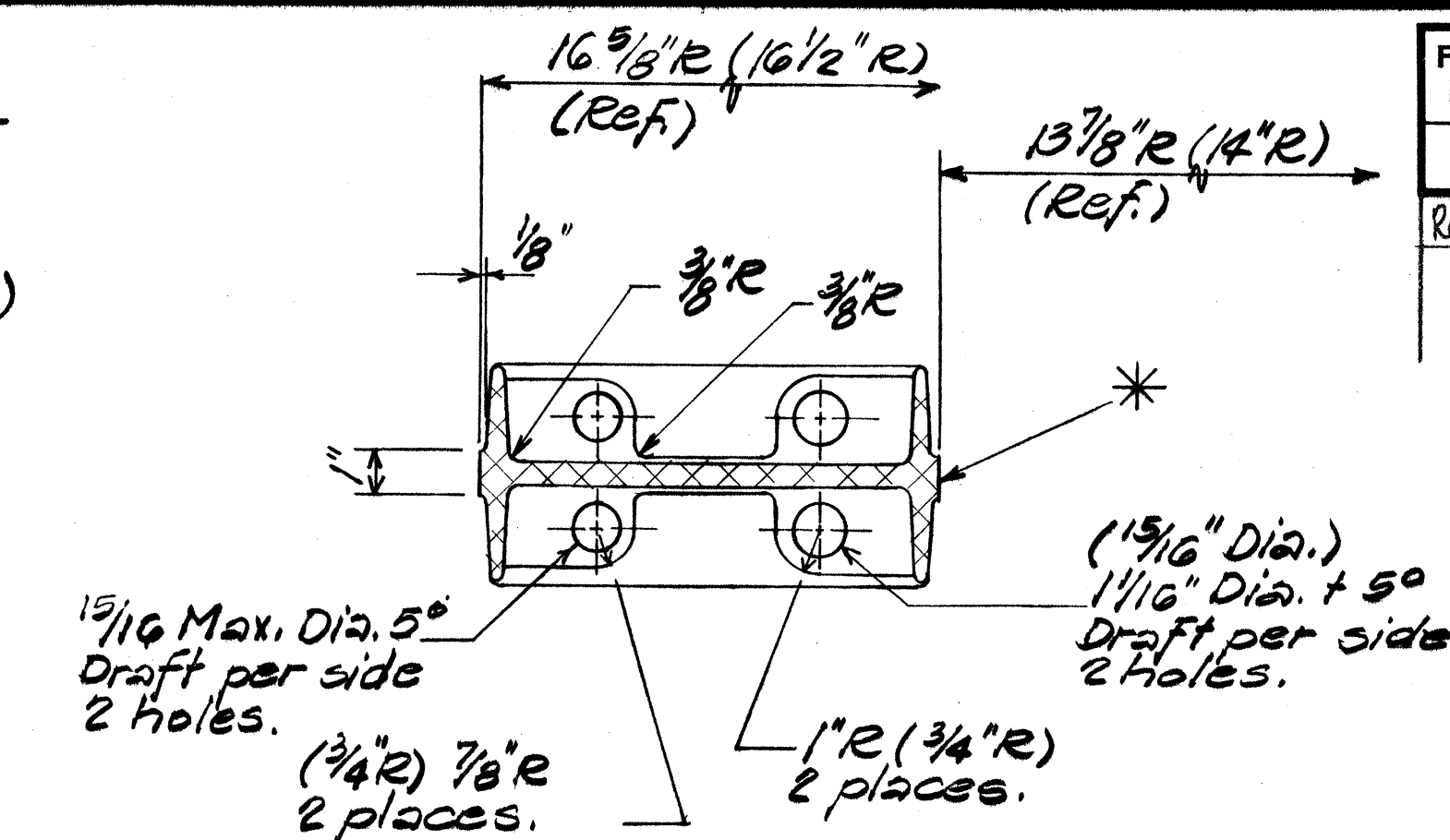
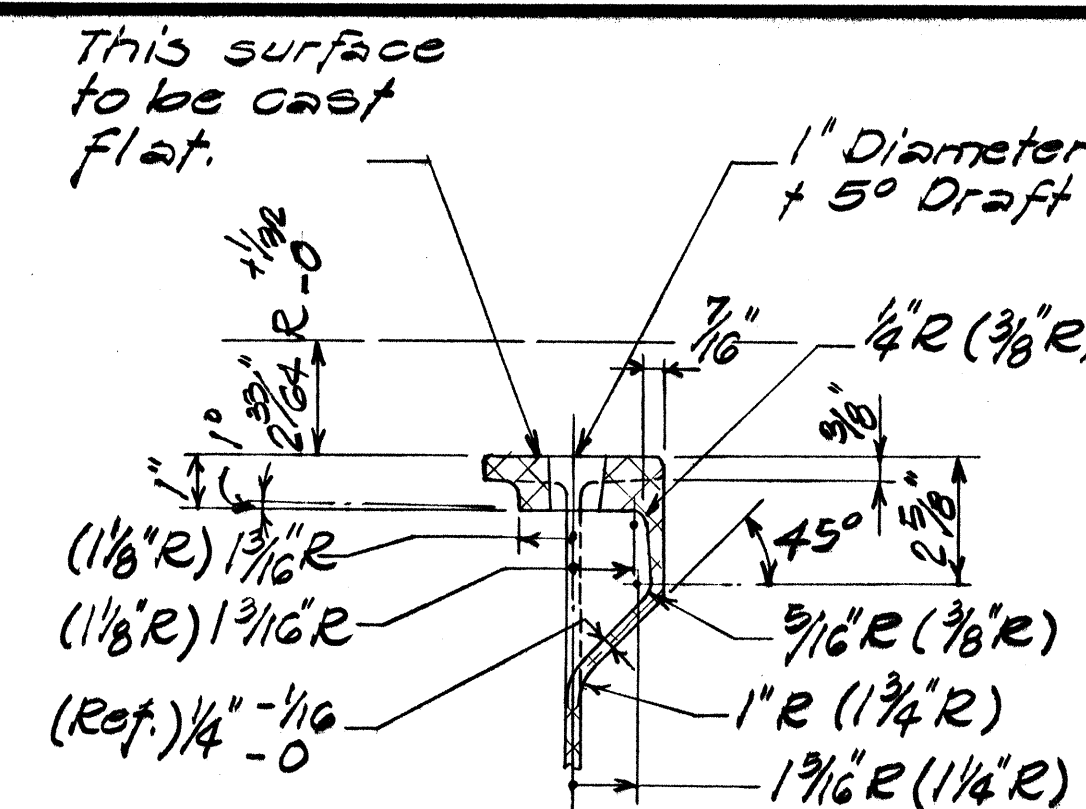
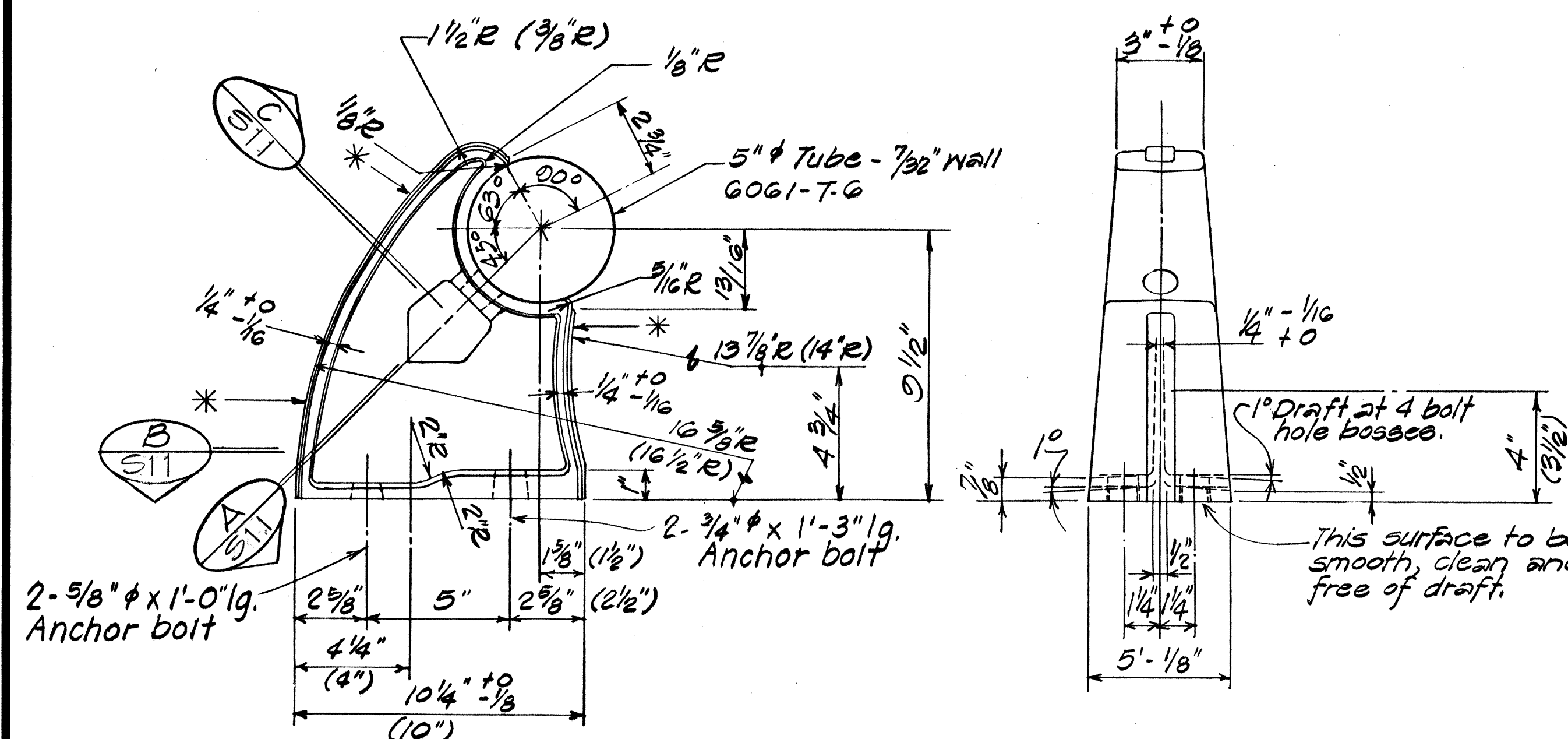
RETAINING WALL (WG-1) ~ DETAIL



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
RAMP RETAINING WALL (WG-1)
DETAIL (ALTERNATE NO. 2)
INTERSTATE ROUTE H-1
WAIPIO INTERCHANGE
FBI PROJ. NO. IR-H2-1(21)
Scale: as noted
SHEET No. 58 OF 23 SHEETS
OCTOBER 1987

SURVEY PLOTTED BY	DATE
DRAWN BY	
DESIGNED BY	
QUANTITIES BY	
CHECKED BY	

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IR-H2-1(2)	1987	73	138
Revision	Sym	Description	Date		
		Guardrail Revision	2-7-89		



SIDE ELEVATION

END ELEVATION

NOTE:

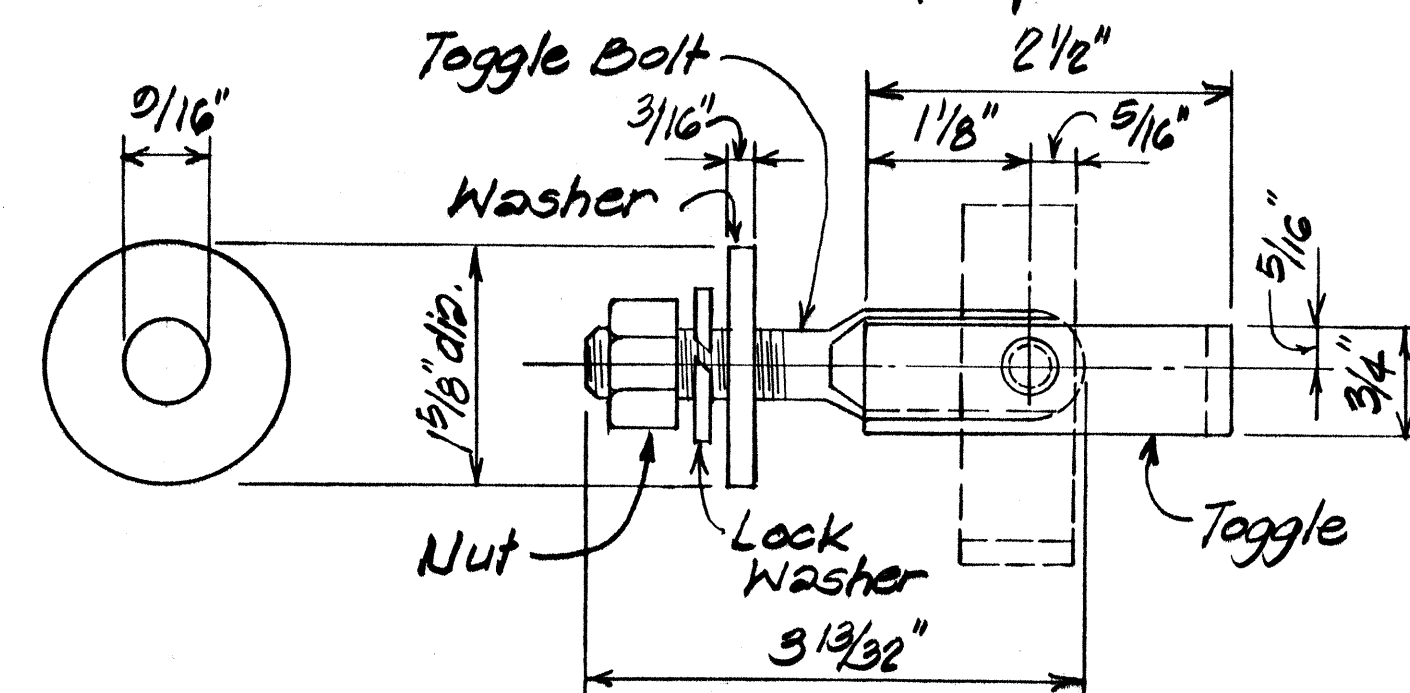
* Casting to be supplied with a standard scratch brush finish on entire gating rib surface and as indicated by an asterisk (*). Finish shall be approved by the Engineer. Casting to be neatly trimmed and any protruding flash to be broken off. Unless otherwise specified, draft angles to be 3° corner radii to be 3/16" R, fillet radii to be 3/8" R, casting tol. to be ± 1/16", wall thickness to be ± 1/32". Dimensions may be as shown or as shown in parenthesis ().

TYPICAL RAIL POST DETAILS

Scale: 3" = 1'-0"

NOTE:

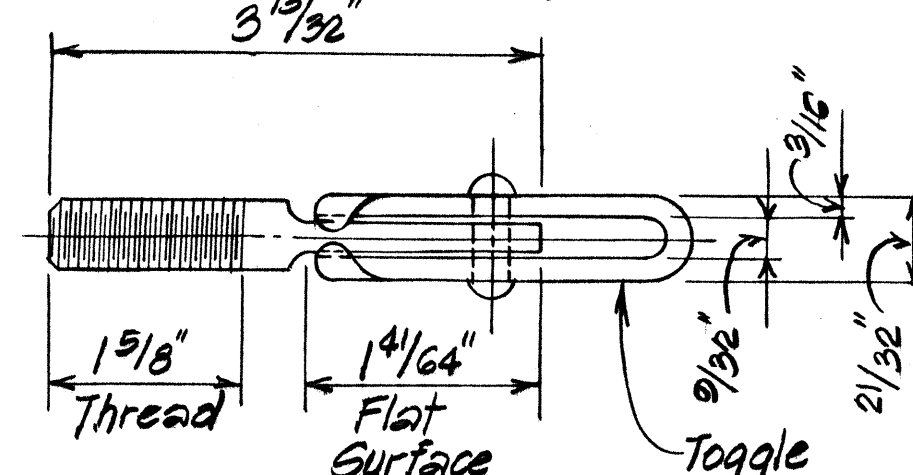
Toggle Bolt - Cadmium plating on steel - Type NS 0.0005" thick ASTM - A165 (all parts).



WASHER

SIDE ELEVATION ASSEMBLY

Special rivet - material 1038 C.R. steel, heat treated ASTM A195

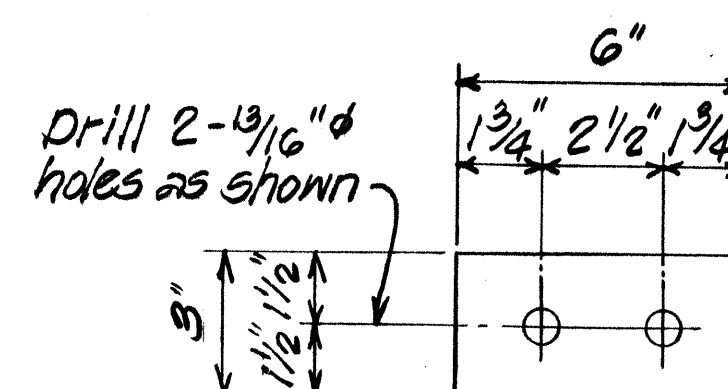


TOP PLAN

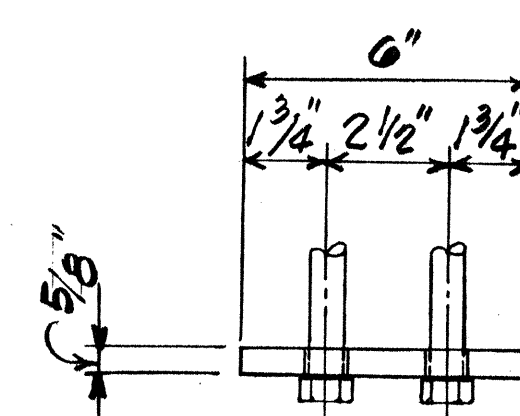
1/2" Φ STEEL TOGGLE BOLT DETAIL

NOTE:

Anchor bolts shall be embedded such that the thread are excluded from the shear plane & approximately 2 threads are exposed above the nut.



PLAN



ELEVATION

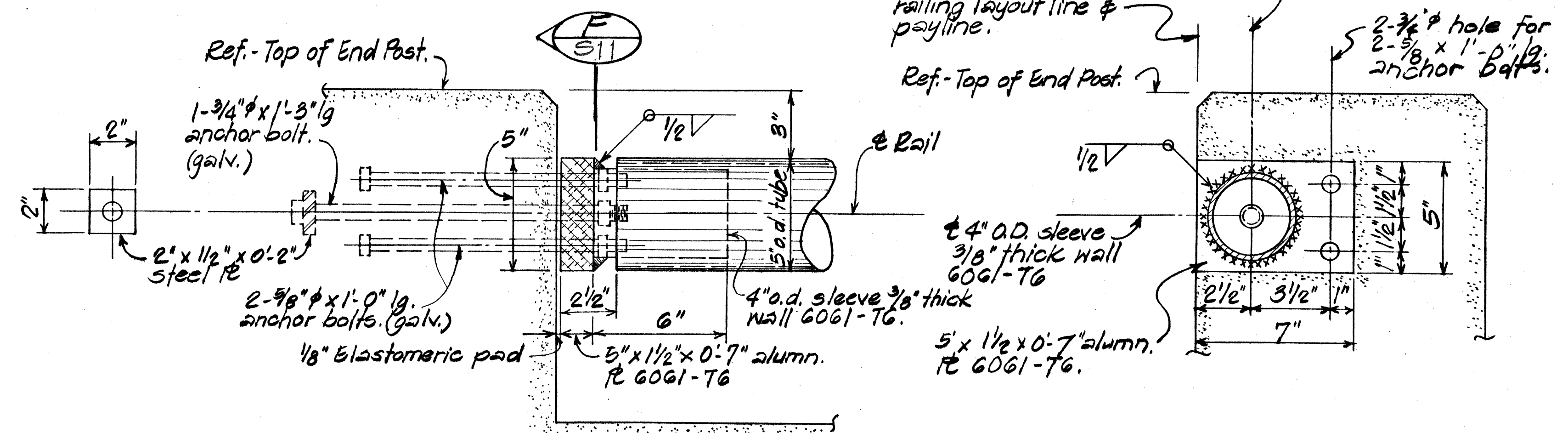
ANCHOR PLATE DETAIL

ANCHOR BOLT

TYPICAL RAIL POST

STEEL ANCHOR BOLT ASSEMBLY

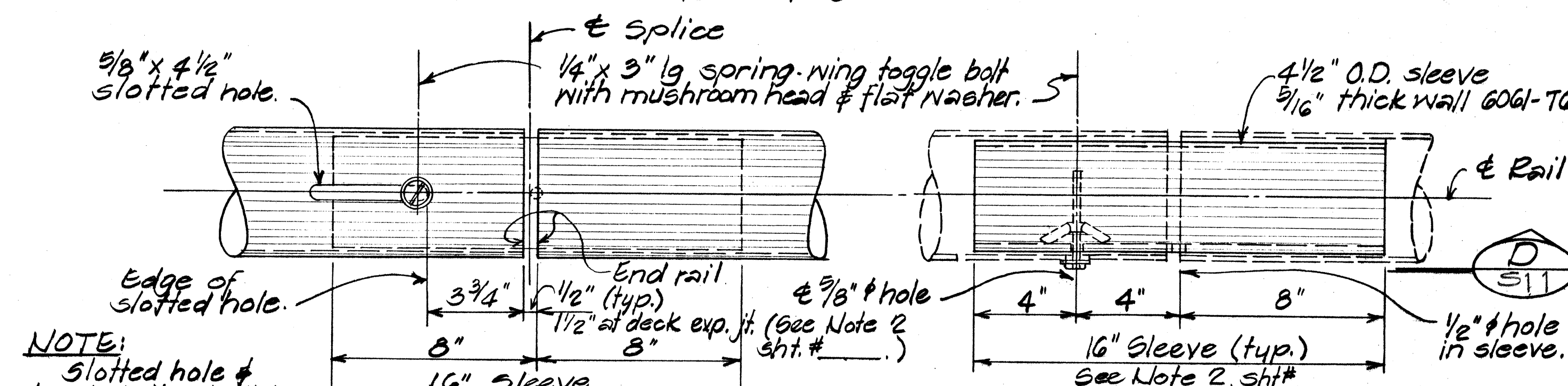
Scale: 3" = 1'-0"



TYPICAL DETAIL

METAL RAIL SLEEVE AT END POST

Scale: 3" = 1'-0"

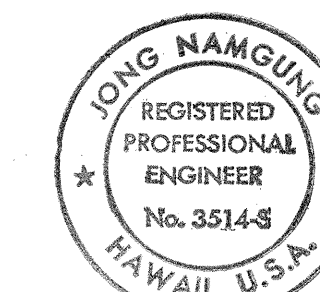


REFLECTED VIEW

TUBE SPLICE DETAIL

Scale: 3" = 1'-0"

SLEEVE (FRONT VIEW ELEV.)



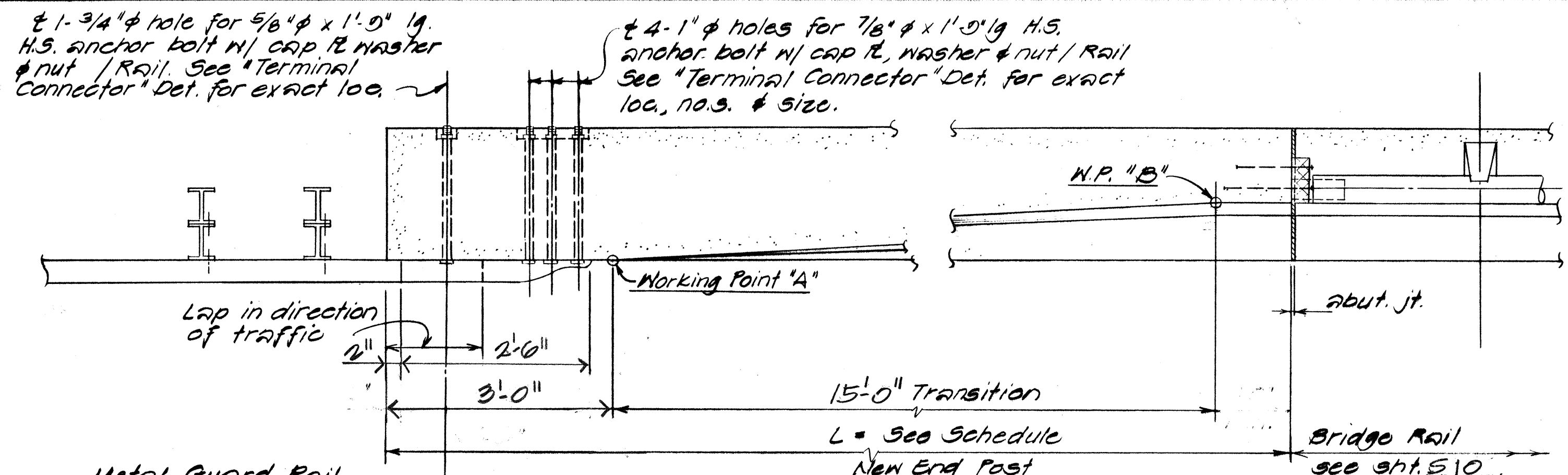
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.
Jong Namgung

NOTE: Supersedes Plan Sht Nos. 72 & 73

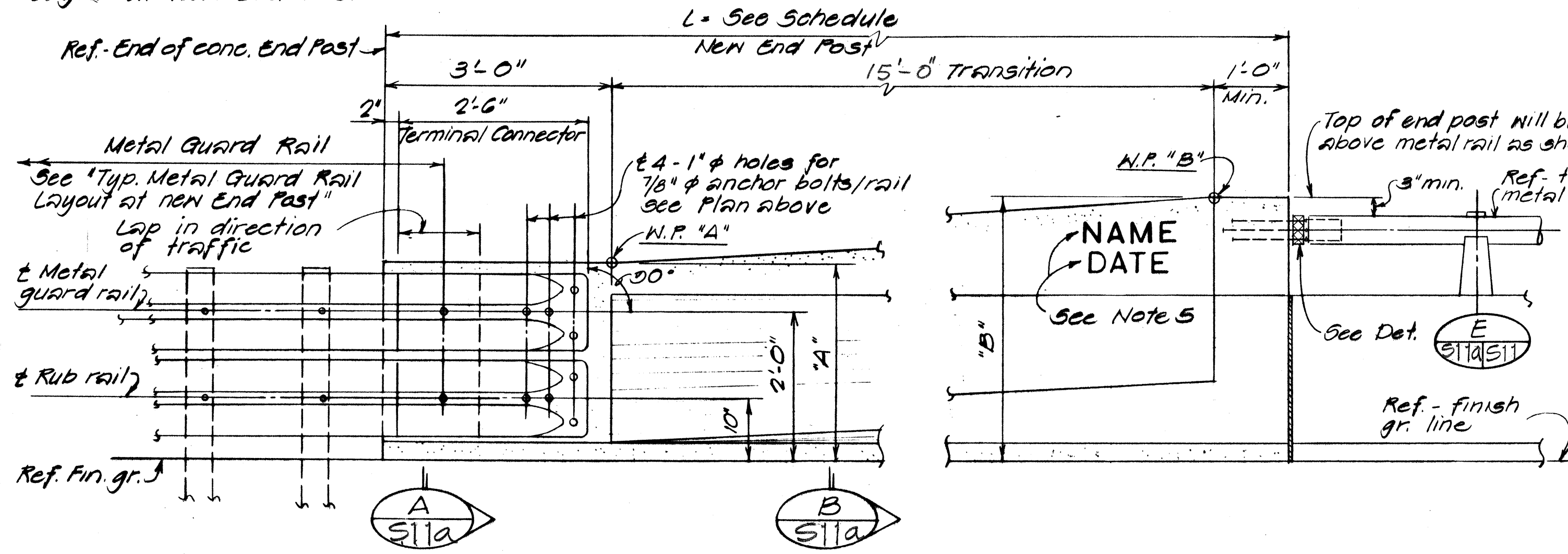
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION
ALUMINUM BRIDGE RAILING TYPE ONE RAIL ON PRECAST
INTERSTATE ROUTE H-2 WAIPIO INTERCHANGE PAI PROJ. NO. IR-H2-1(2)
Scale: As Shown Date:

SHEET No. 511 OF 23 SHEETS

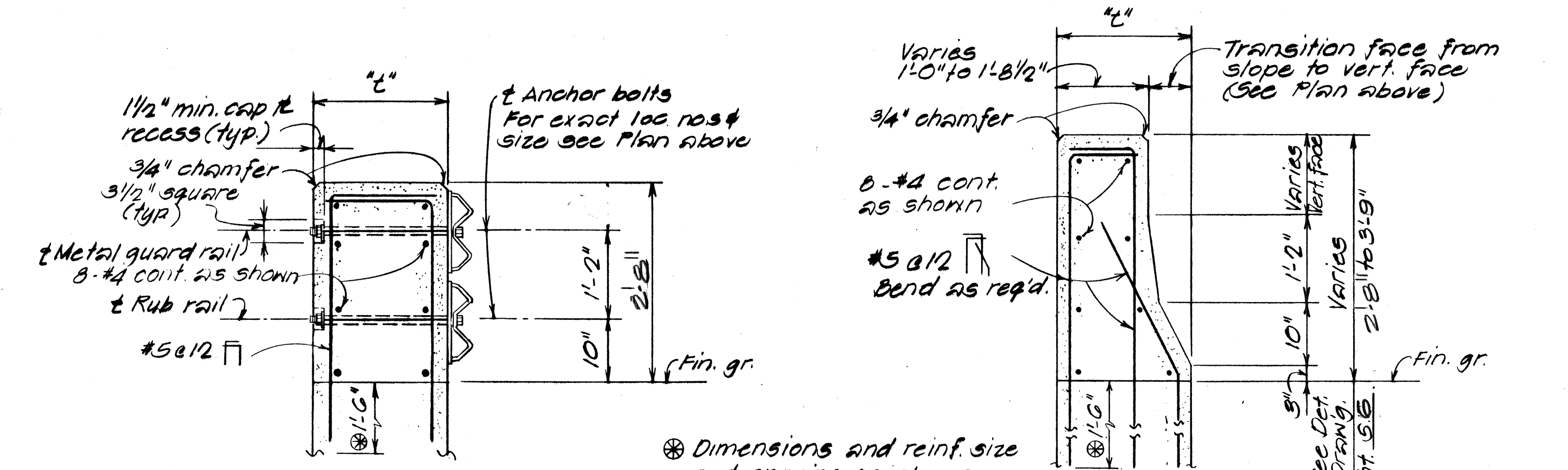
C.O. 73



PLAN



ELEVATION

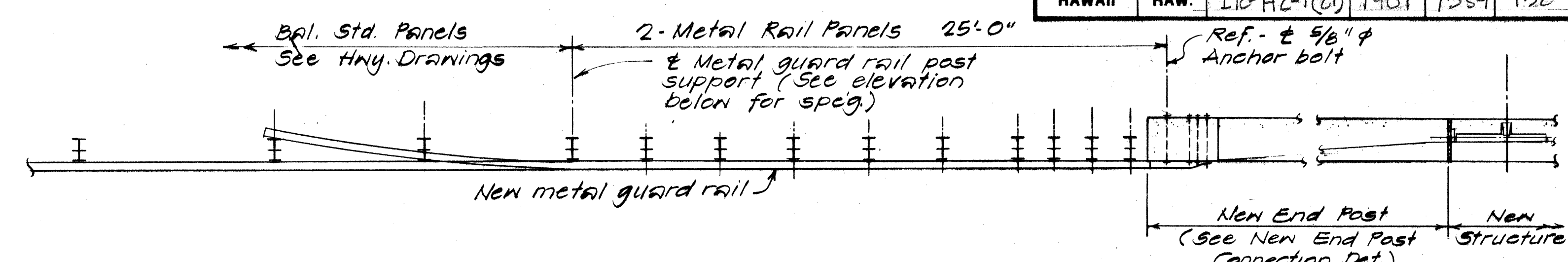


SECTION A

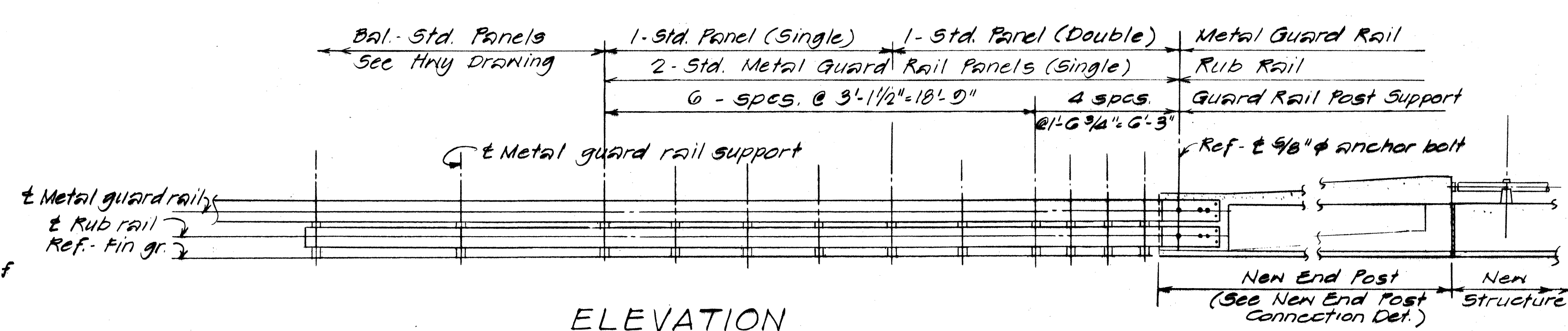
SECTION B

END POST DIMENSION SCHEDULE				
	"L"	"A"	"B"	"C"
new wing wall (ww) #1	20'-0"	1'-8 1/2"	2'-0"	3'-9"
new wing wall (ww) #2	20'-0"	1'-8 1/2"	2'-0"	3'-9"
exist wing wall (ww) #1	20'-0"	2'-5 1/2"	2'-0"	3'-0"
exist wing wall (ww) #4	20'-0"	2'-5 1/2"	2'-0"	3'-0"

TYPICAL END POST CONNECTION DETAIL Scale: 3/4" = 1'-0"



PLAN



ELEVATION

TYPICAL METAL GUARD RAIL LAYOUT AT NEW END POST

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

NOTES:

1. All anchor bolts shall be high strength bolts conforming to the requirements of ASTM A325 # Galv.
2. "Terminal Connector" including anchor bolts, nuts and washers, shall be galvanized.
3. "Terminal Connector" shall be fabricated from 10 gage steel conforming to the requirements of AASHTO M180.
4. First 25'-0" of guard rail and rub rail adjoining "Terminal Connector" shall be galvanized steel.
5. Place name & date of structure as shown. For location, see "Layout Plan" on contract drawing. Date will be year structure is completed. For letter size and detail see Standard Plans B101.

Revision	By	Description	Date
		Guardrail Revision	2-7-89

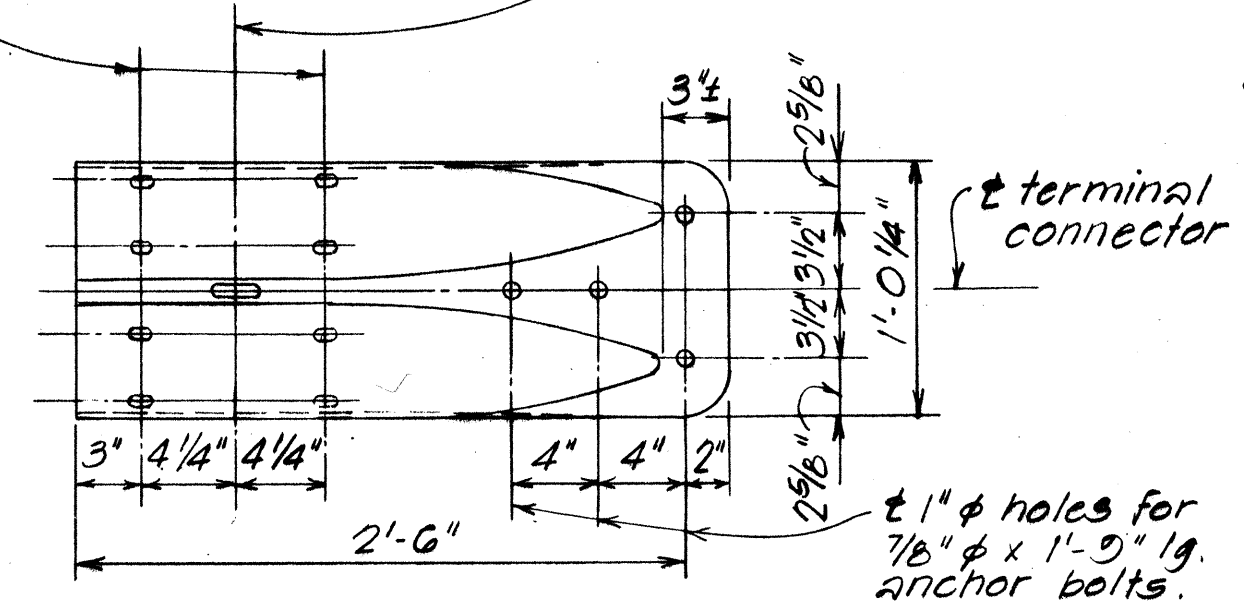
NOTE: Supersedes Plan Sht. Nos. 72 & 73.

JONG NAMGUNG
REGISTERED PROFESSIONAL ENGINEER
No. 3514-S
HAWAII, U.S.A.

1/4" x 2 1/2" bolt slot for 5/8" x 1'-9" lg. anchor bolts.

2 1/2" x 1 1/8" slots. See "Standard Plans" TE-51 for bolt dimensions.

1" or 3/4" hole (D+1/8") centered in 1/2" thick steel & galvanized after fabrication.



TERMINAL CONNECTOR DETAIL N.T.S.

TYPICAL CAP & DETAIL

N.T.S.

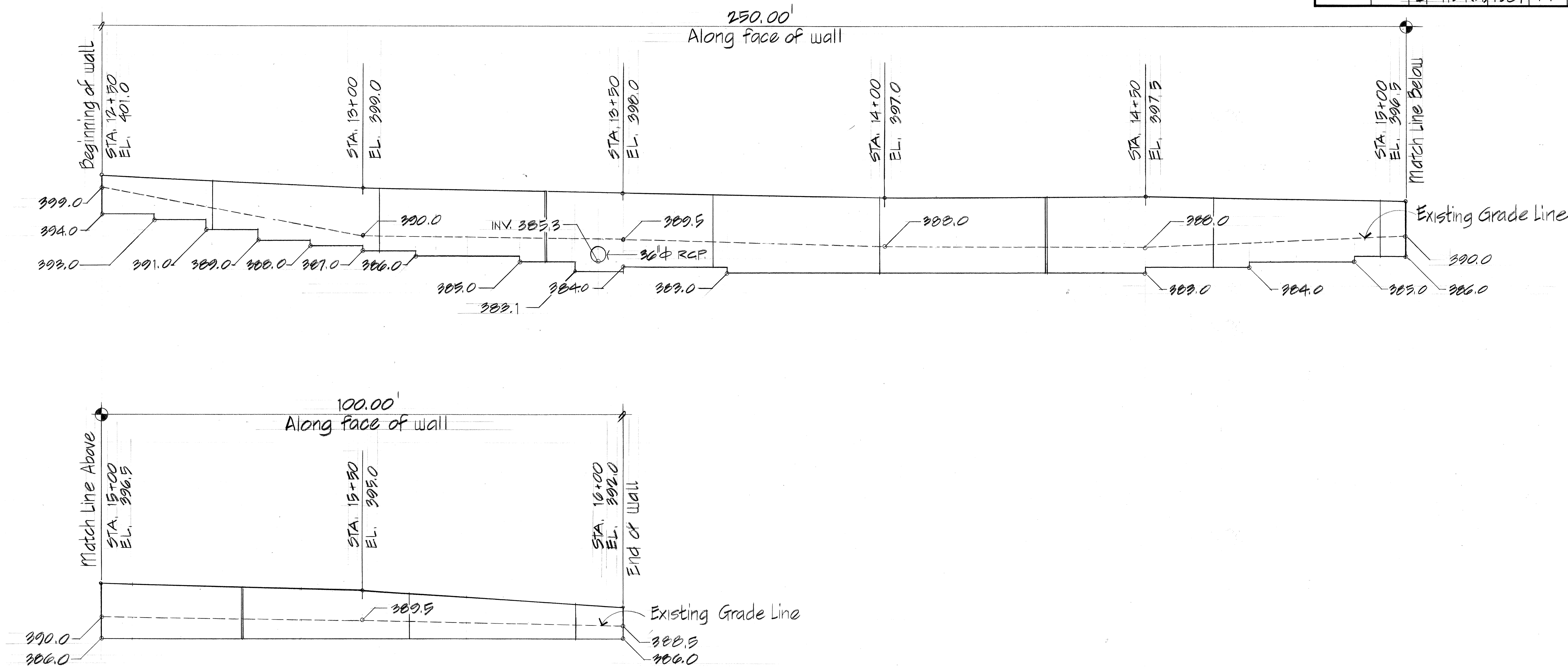
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

METAL GUARD RAIL CONNECTION AT CONCRETE END POST

INTERSTATE ROUTE 410
WAIPIO INTERCHANGE
FED. PROJ. NO. IR-H2-1(21)
Scale: As Shown Date: _____

SHEET No. 511a OF 23 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IR-H2-1(2)	1987	74	130

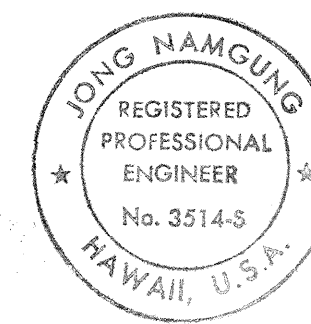


SCHEMATIC WALL ELEVATION - RAMP WG-1 (BACK FACE)
 SCALE: 1" = 10 FT

NOTE:
 ALTERNATE NO. 1 WAS CONSTRUCTED.
 SEE PLAN SHEETS 80 THROUGH 82.

Estimated Quantities					
Item no.	Item	Unit	Quantity		Total
			WG-1	WG-2	
503.1043	Concrete footing	CY	170.400	400.000	570.400
503.1042	Concrete - wall	CY	147.175	436.515	583.690
602.0041	Reinf. steel in ramp retaining wall	LBS	27,230	100,120	127,350
206.8302	Filter material	CY	130	240	370
206.5400	Structural excavation	CY	865	1,055	1,920
703.1700	Aggregate backfill (Standard specs. 703.17)	CY	1,980	4,200	6,180

(ADD NO. 1)



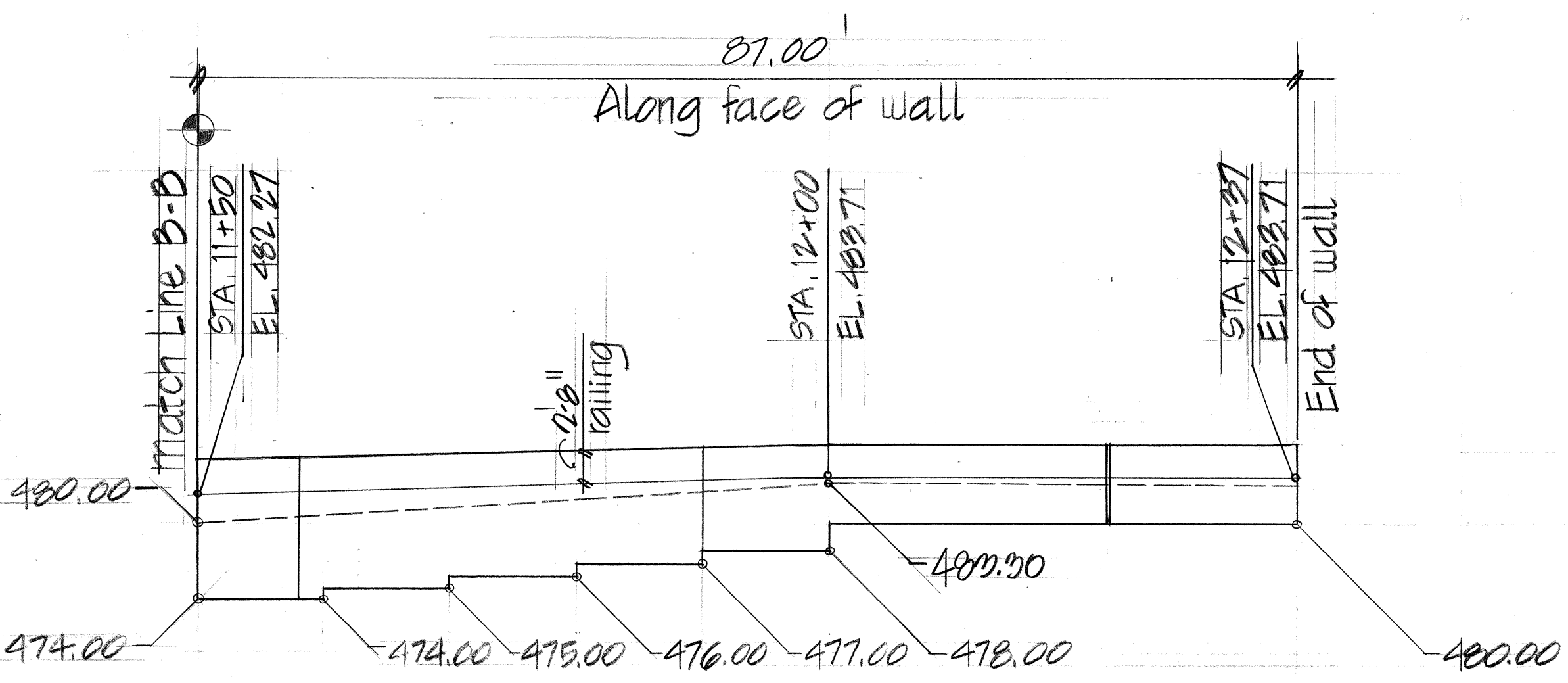
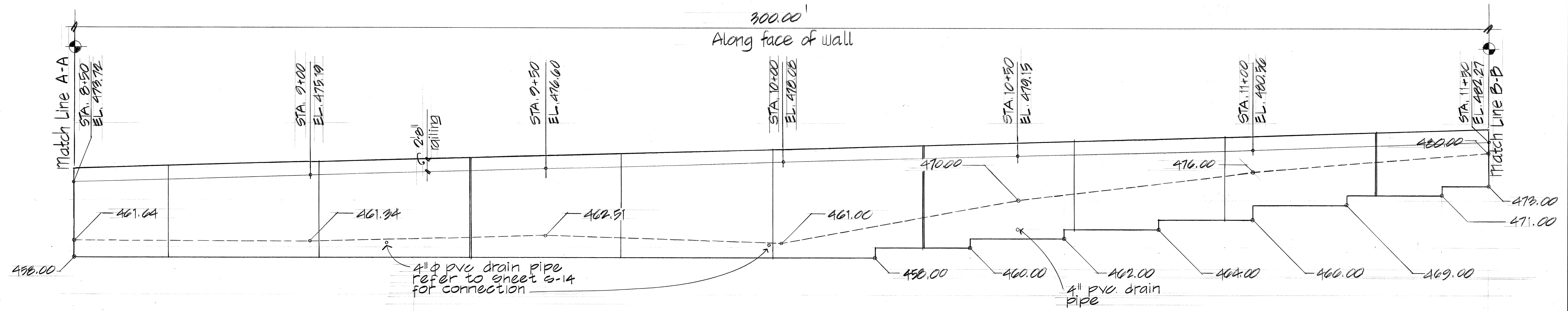
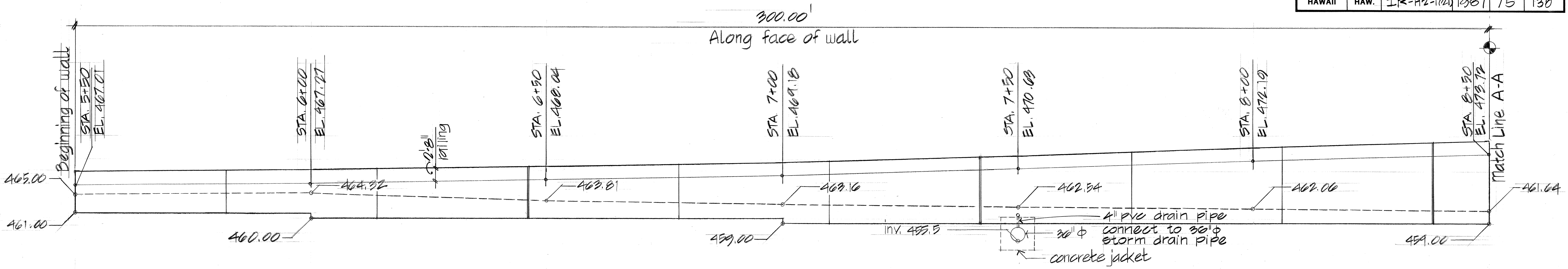
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
RAMP RETAINING WALL (WG-1)
SCHEMATIC WALL ELEVATION
(ALTERNATE NO. 1)
INTERSTATE ROUTE H-2
WAIPIO INTERCHANGE
FAI PROJ. NO. 14-H2-1(21)
Scale: as noted
Aug. 86

SHEET NO. 512 OF 23 SHEETS
OCTOBER 1987

SURVEY PLOTTED BY	DATE
DRAWN BY	
TRACED BY	
NOTED BY	
CHECKED BY	
NO.	

"AS-BUILT"

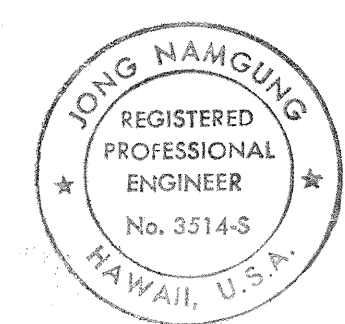
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IR-H2-1(2)	1987	75	130



SCHEMATIC WALL ELEVATION - RAMP WG-4 (BACK FACE)
 SCALE: 1" = 10 FT.

NOTE:
 ALTERNATE NO. 1 WAS
 CONSTRUCTED. SEE PLAN
 SHEETS 80 THROUGH 85.

SURVEY PLOTTED BY	DATE
DRAWN BY	
DESIGNED BY	
QUANTITIES BY	
CHECKED BY	



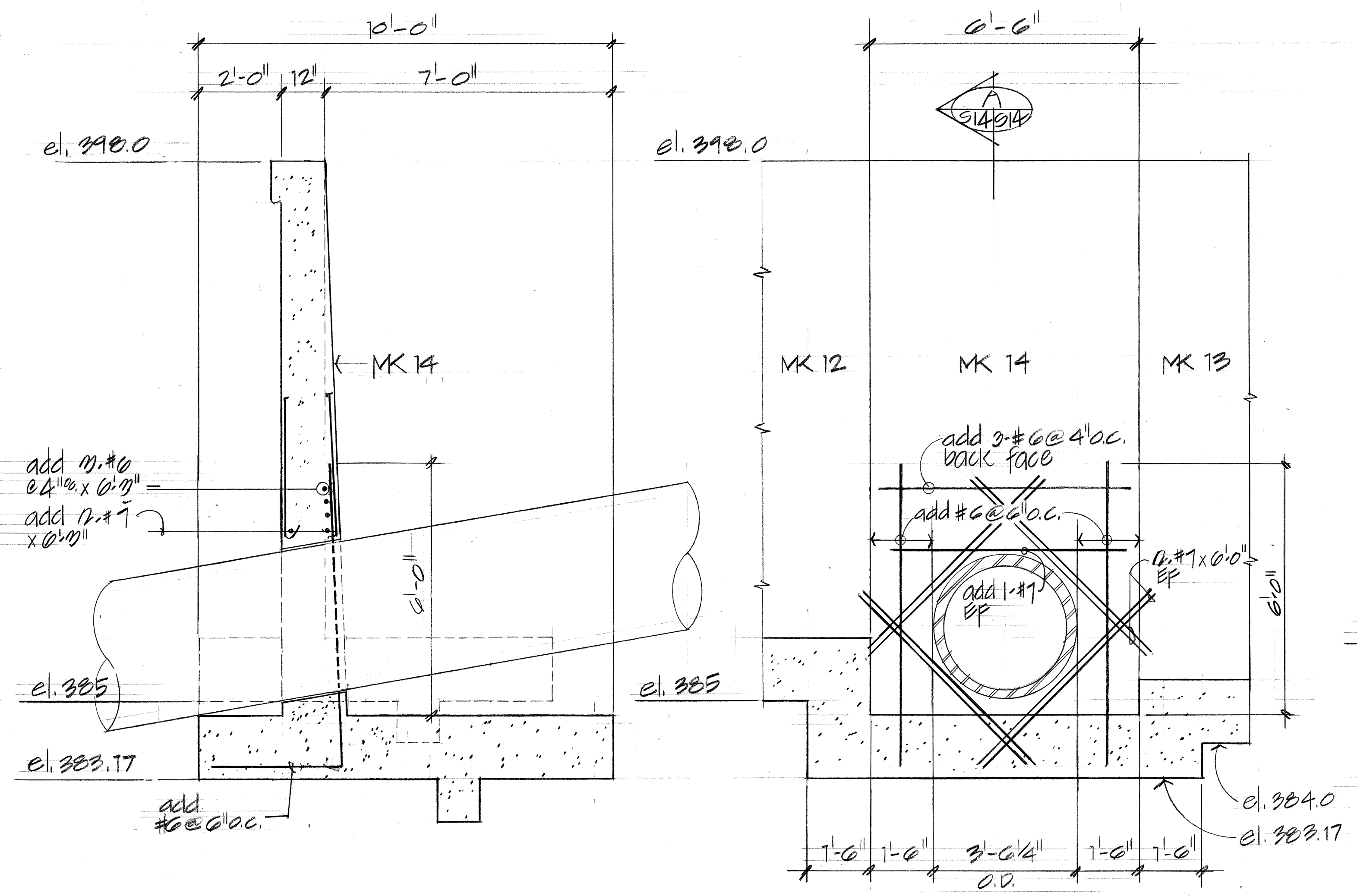
THIS WORK WAS PREPARED BY MR.
 OR UNDER MY SUPERVISION.
Jong Namgung

STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION
RAMP RETAINING WALL (WG-4)
SCHEMATIC WALL ELEVATION
 (ALTERNATE NO. 2)
INTERSTATE ROUTE H-2
WAIPIO INTERCHANGE
FAI PROJ. NO. 14-H2-1(21)
 scale: as noted
SHEET No. 513 OF 23 SHEETS

"AS-BUILT"

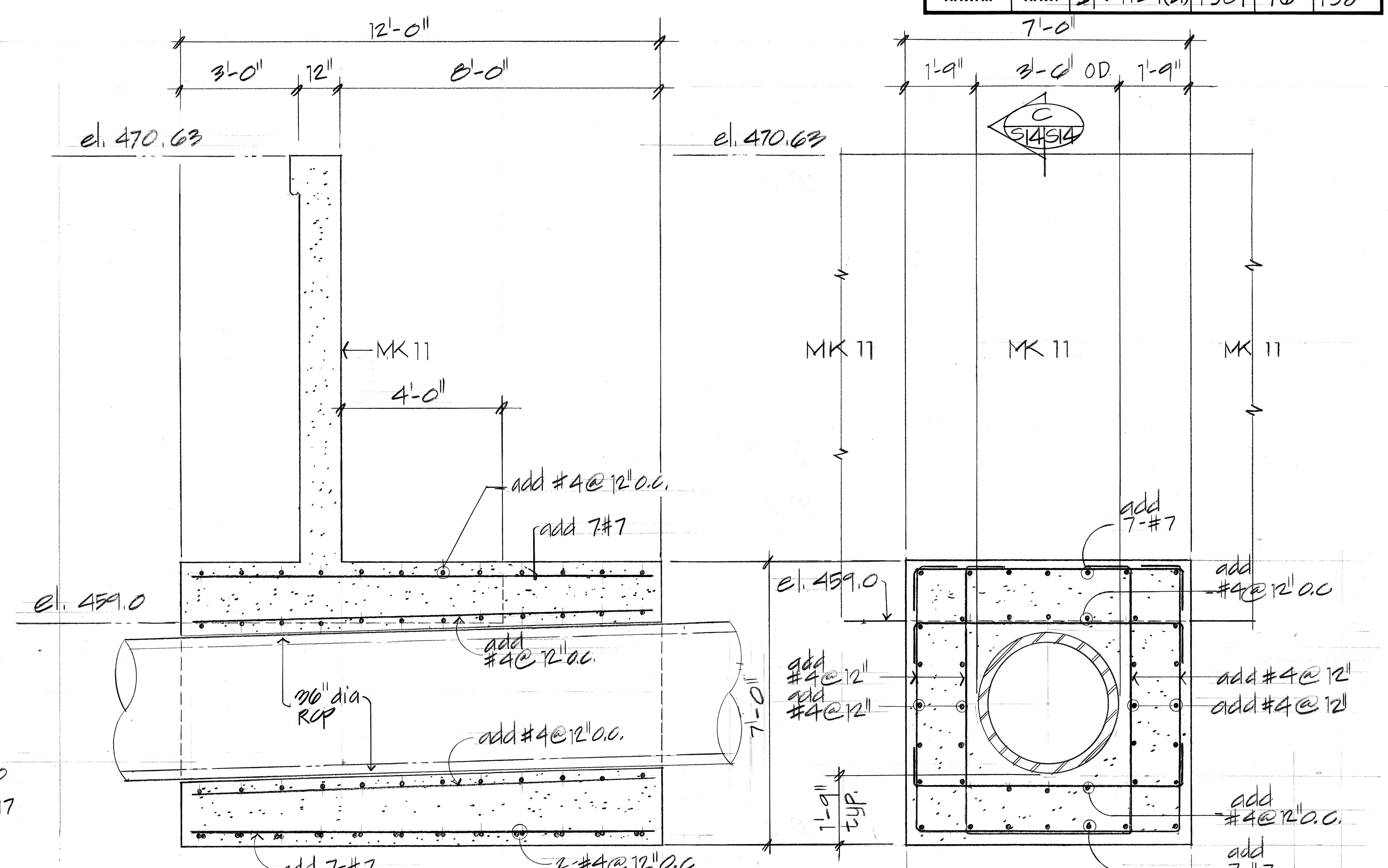
OCTOBER 1987

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IR-H2-1(21)	1987	76	138



SECTION A
SC. 1/2" = 1'-0" 514514

SECTION B
SC. 1/2" = 1'-0" 514514



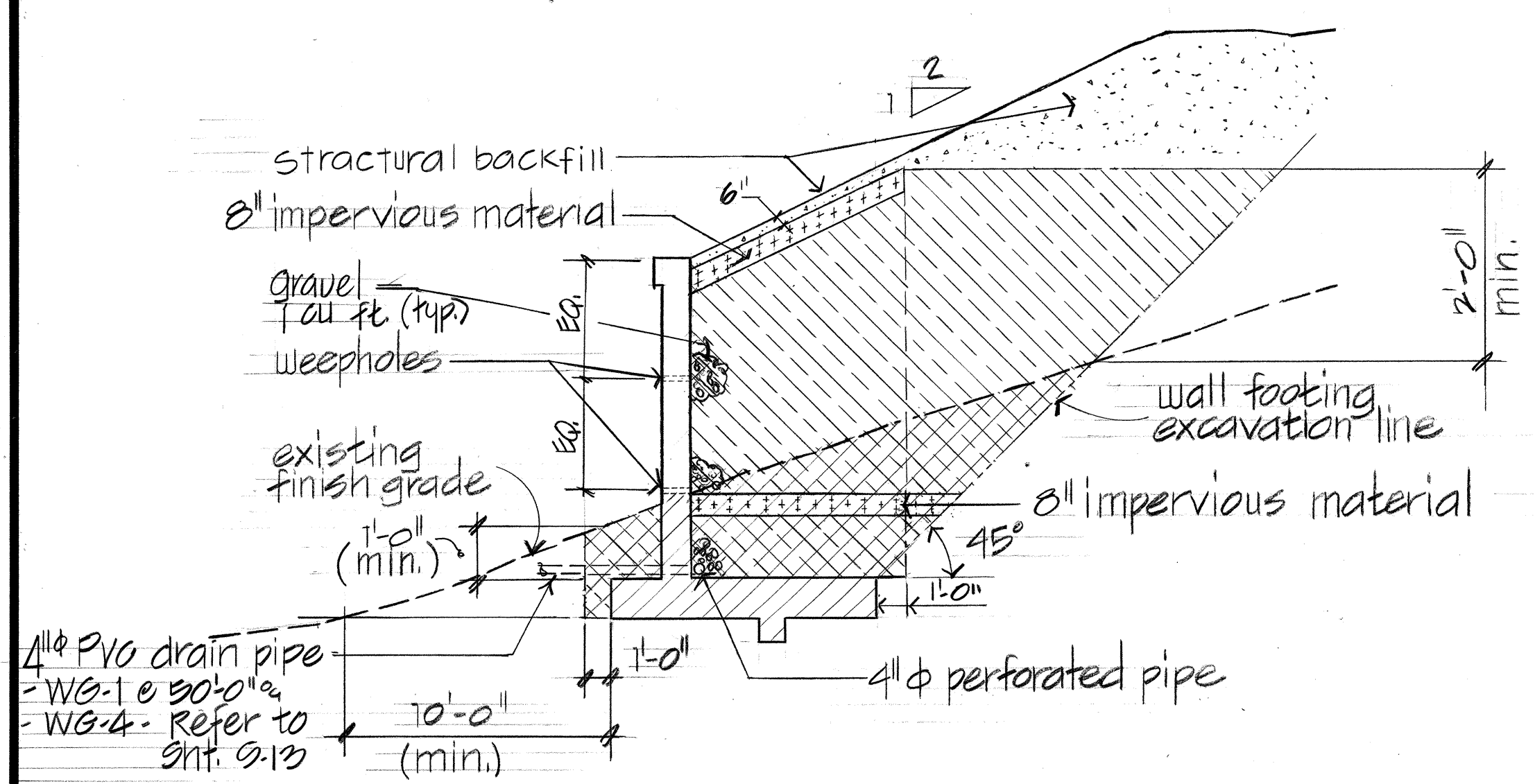
SECTION C
SC. 1/2" = 1'-0" 514514

SECTION D
SC. 1/2" = 1'-0" 514514

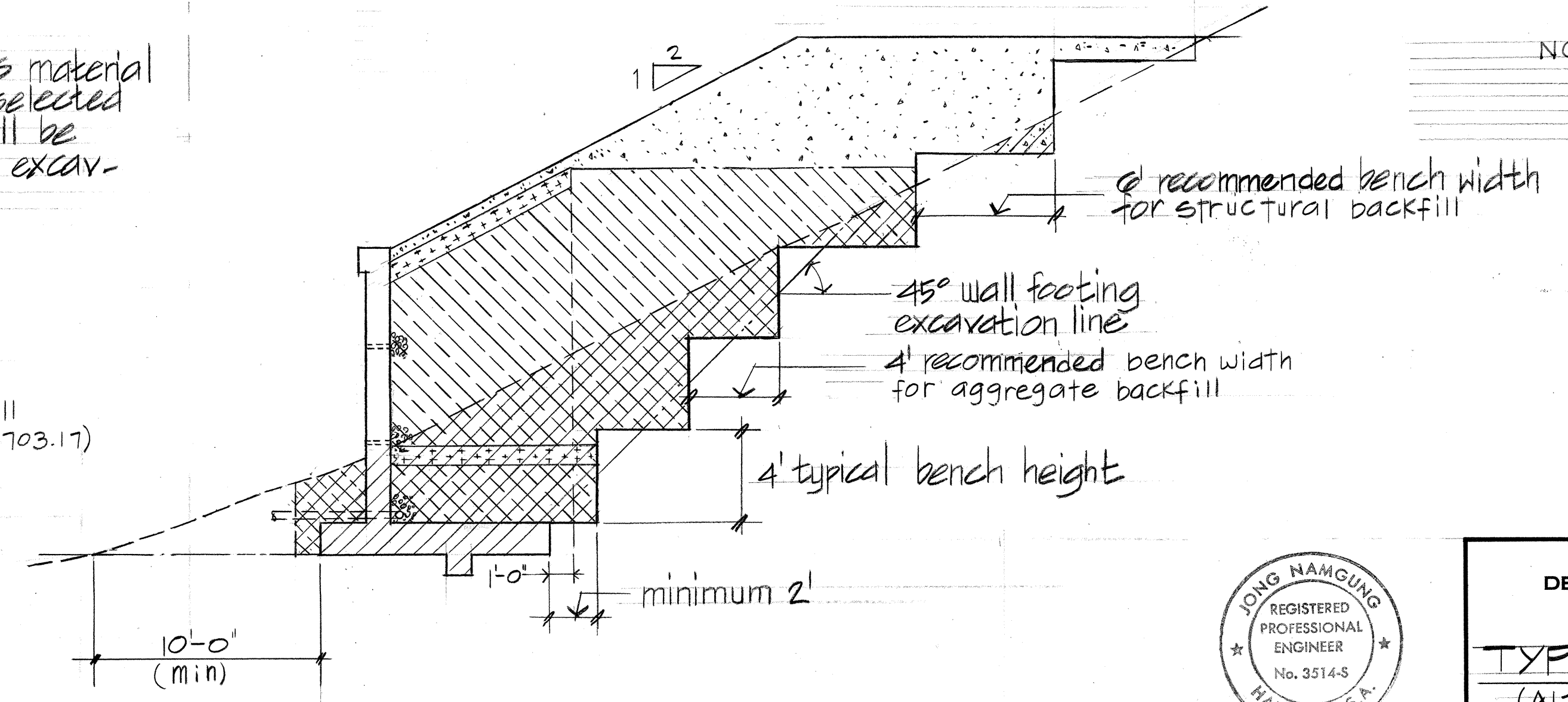
Note:
Where shown, impervious material for backfill shall be as selected by the engineer and shall be incidental to structural excavation.

Legend

- excavation
- aggregate backfill (Standard Specs. 703.17)
- impervious material
- structural backfill

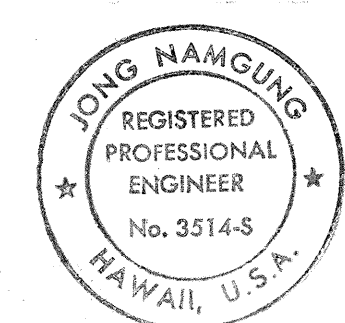


TYPICAL EXCAVATION & BACKFILL PAY LIMITS FOR RAMP RETAINING WALL (WG-1 AND WG-2) 514514



KEYING & BENCHING DETAIL FOR RAMP WG-1 RETAINING WALL 514514

NOTE:
ALTERNATE NO. 1 WAS CONSTRUCTED. SEE PLAN SHEETS 80 THROUGH 85.



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

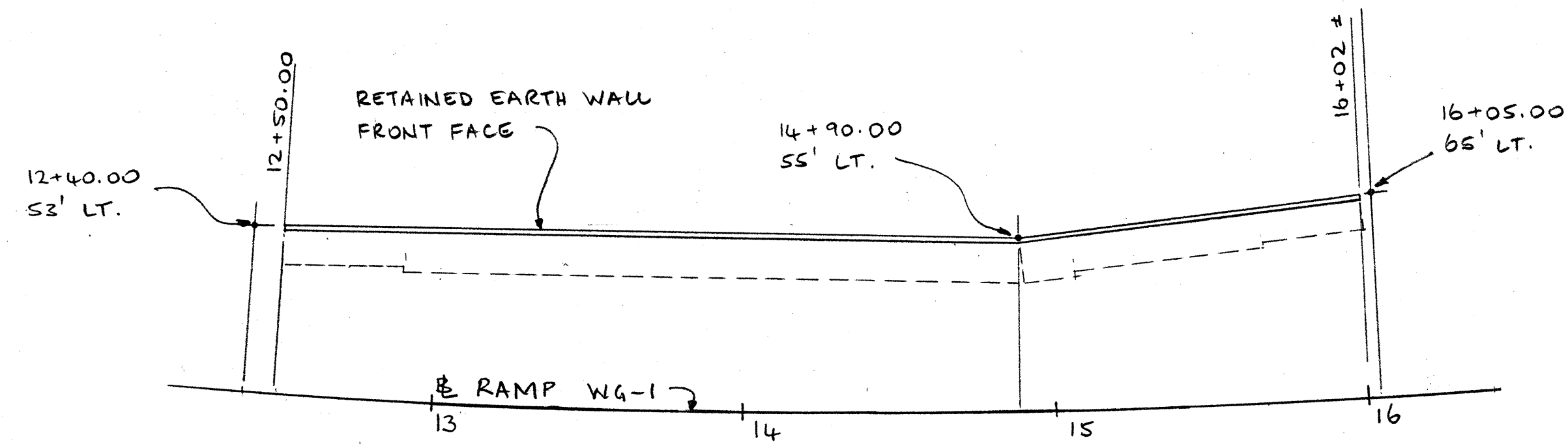
TYPICAL WALL DETAILS
(ALTERNATE NO. 1)

INTERSTATE ROUTE H-2
WAIPIO INTERCHANGE
FAI PROJ. NO. 14-H2-1(21)
SCALE: AS NOTED
SHEET No. 514 OF 23 SHEETS

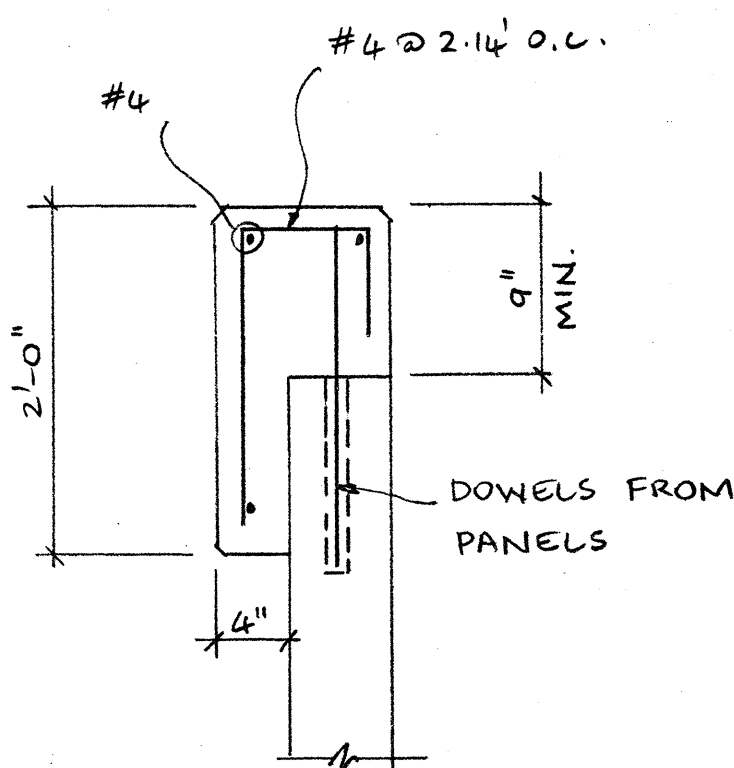
"AS-BUILT"

OCTOBER 1987 76

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IR-H2-1(21)	1987	77	130



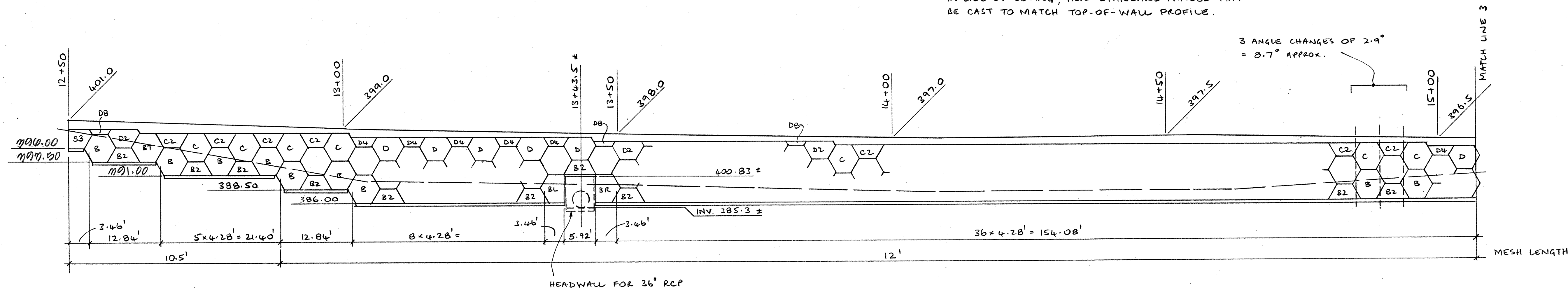
WALL WG-1 PLAN



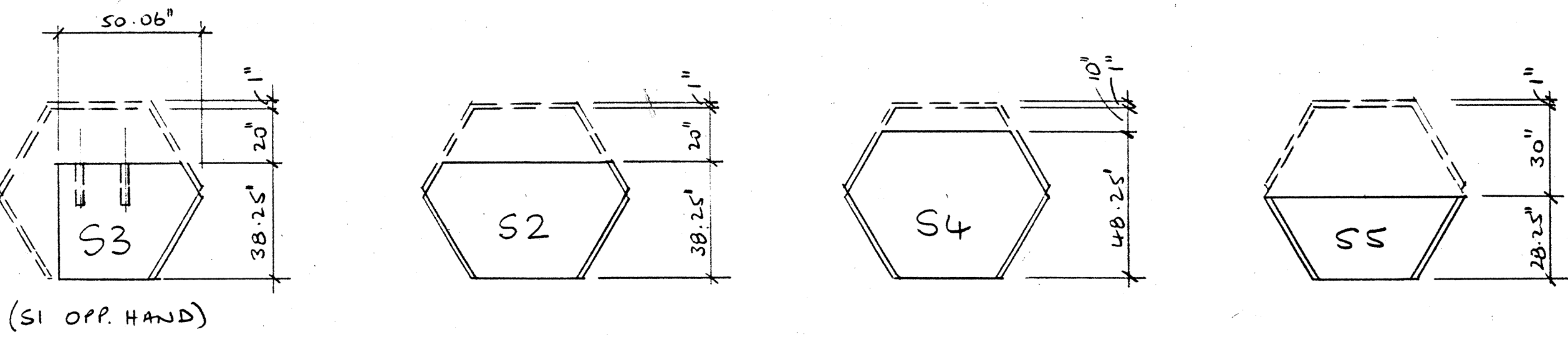
COPING

ESTIMATED QUANTITIES

Item no.	ITEM	UNIT	QUANTITY WG-1	QUANTITY WG-4	Total
508.1241	PRECAST FACING PANELS	SQ. FT.	3129	6668	9797
508.1252	COPING BARRIER	L.F.	340	-	340
508.1242	LEVELING PAD	L.F.	340	670	1010
206.5400	STRUCTURAL EXCAVATION	CY	1,870	3,500	5,370
513.7751	SELECT GRANULAR BACKFILL	CY	1,440	3,400	4,840
703.1700	AGGREGATE BACKFILL (STANDARD SPECS. 703.71)	CY	2,740	2,310	5,050



WALL WG-1 ELEVATION REAR FACE



SECTION

- NOTES:
- ALL MESH TO BE 4W11 + W11 x 2.0
 - PANELS NOT DESIGNATED ARE TYPE A.
 - DESIGN CRITERIA:
 - BACKFILL $\phi = 33^\circ$, $\gamma = 120$ P.C.F.
 - BASE $\phi = 29^\circ$ (SOIL TO SOIL)
 - FHWA CORROSION PER ADVISORY 1/3/86
 - BACKSLOPE 2:1

NOTE:
ALTERNATE NO. 1 WAS
CONSTRUCTED. SEE PLAN
SHEETS 80 THROUGH 85.

Notes:
Refer to S4514 for typical
excavation & backfill pay
limits, backfill material
and drain.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

RETAINED EARTH WALL
(ALTERNATE NO. 2)

INTERSTATE ROUTE H-2
WAIPIO INTERCHANGE
FAI PROJ. NO. IR-H2-1(21)
SCALE: NOT TO SCALE DATE: AUG. 86

SHEET NO. 515 OF 23 SHEETS

OCTOBER 1987

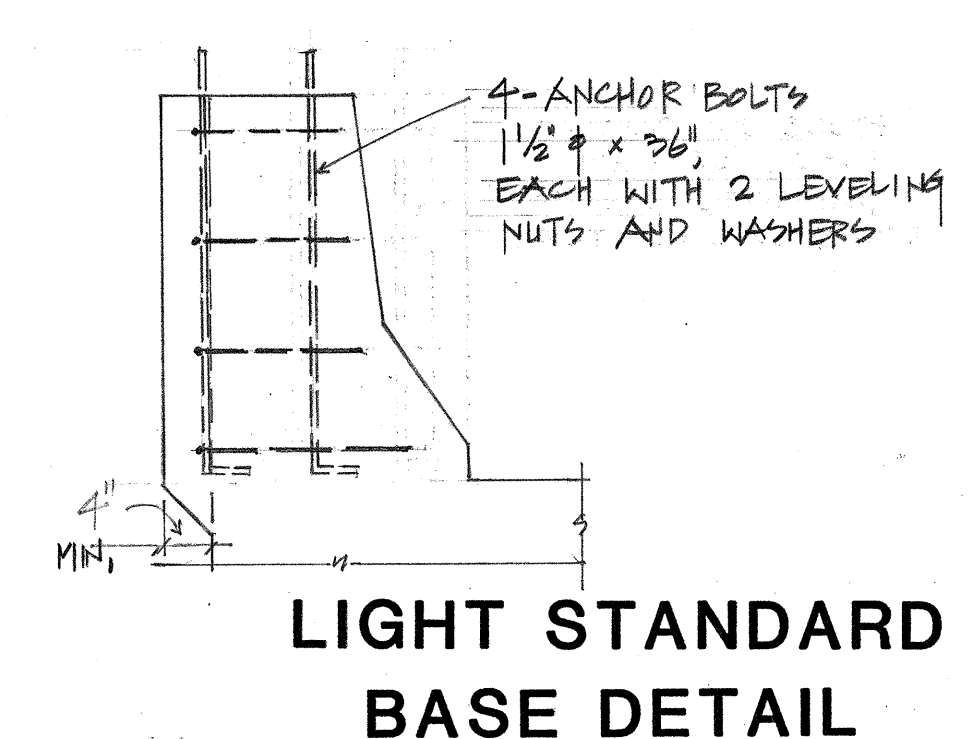
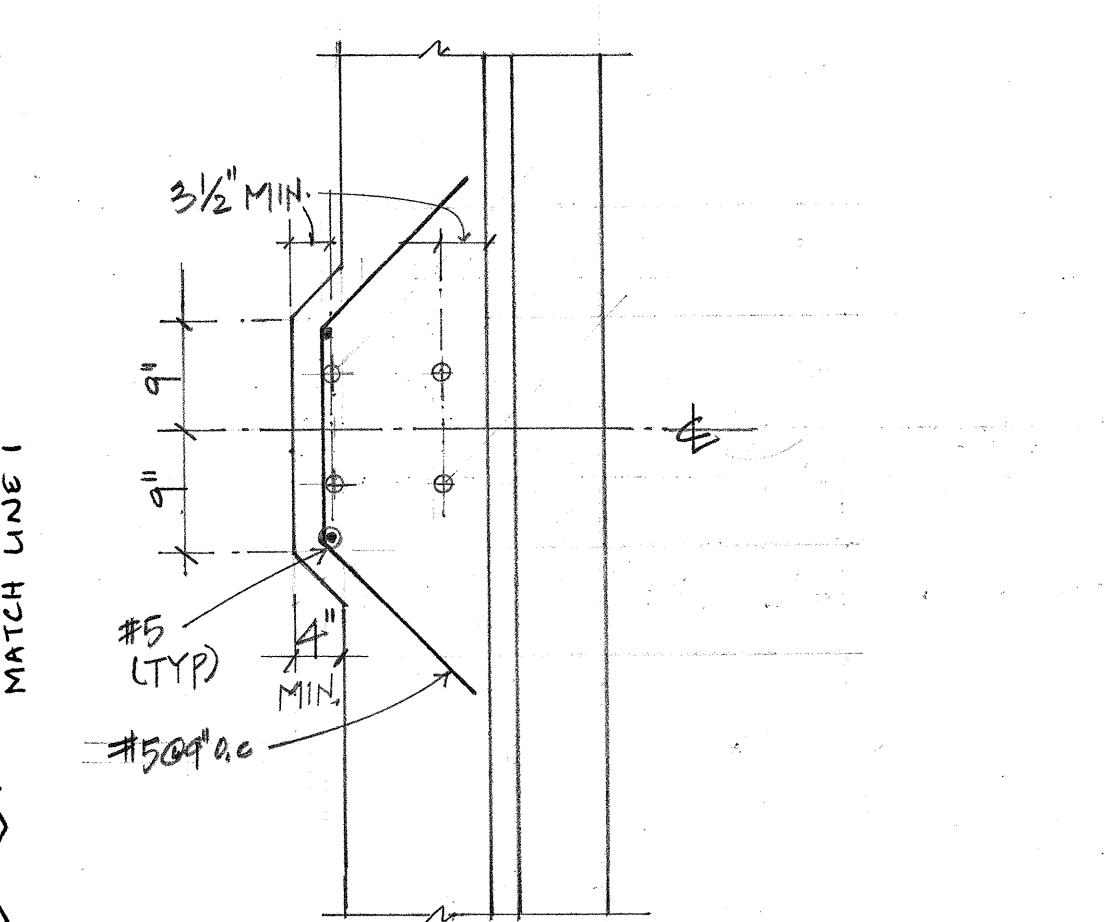
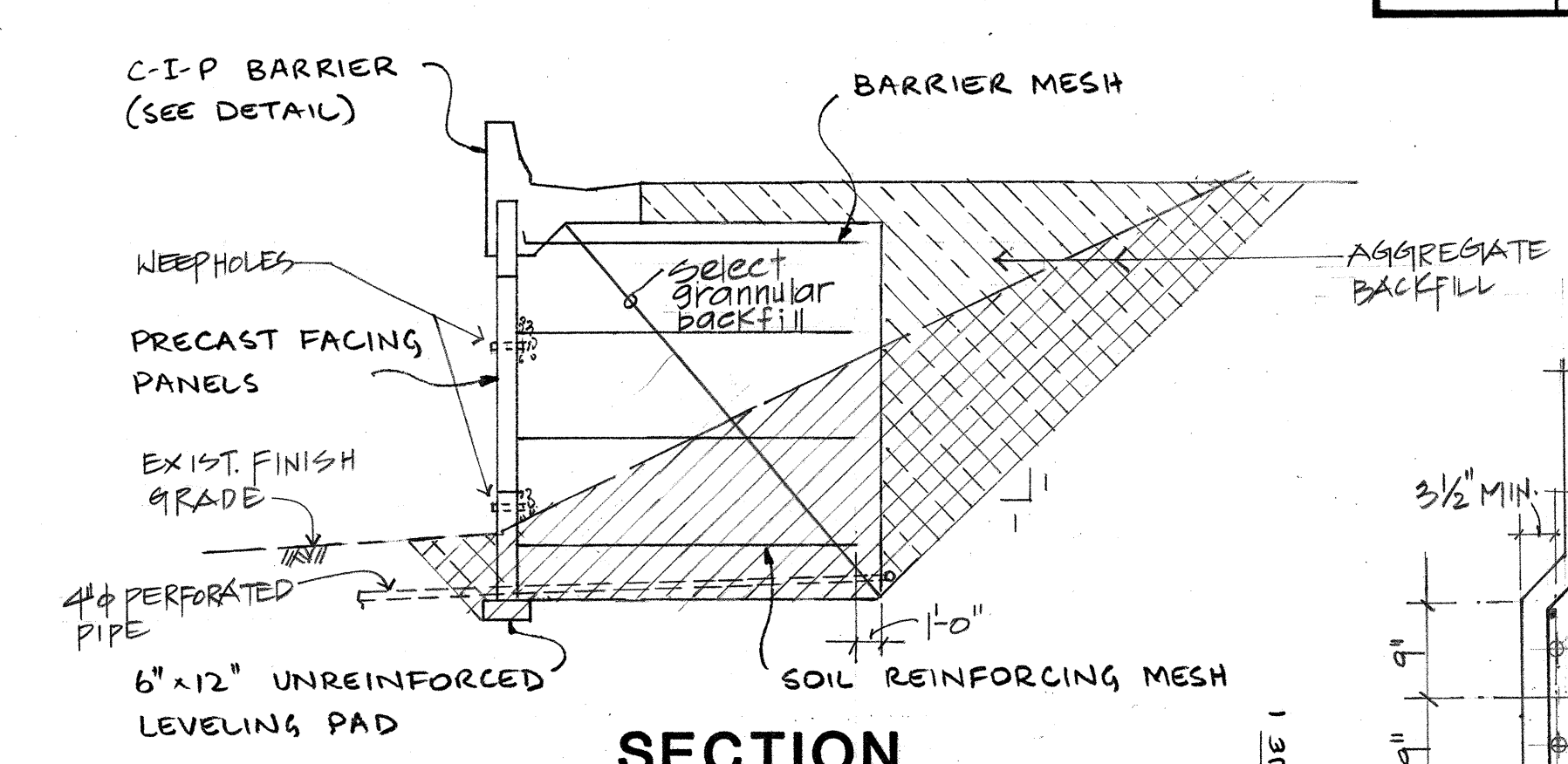
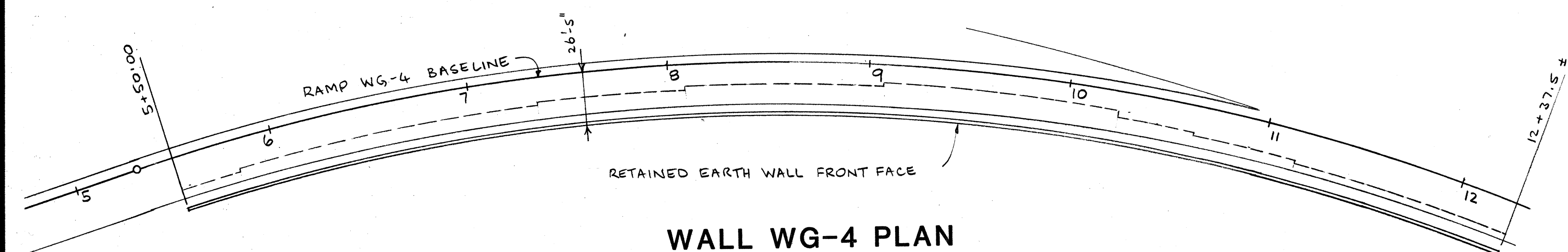
77

"AS-BUILT"

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

JOHN W. PARKIN
CONSULTING CIVIL AND STRUCTURAL ENGINEER
1924 BROADWAY, SUITE B
VANCOUVER, WA 98663 (206) 594-8378

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IR-H2-1(21)	1987	78	130



NOTE: See Electrical Drawings for light standard location

NOTE: ALTERNATE NO. 1 WAS CONSTRUCTED. SEE PLAN SHEETS 80 THROUGH 85.

- NOTE:
- ALL MESH ATTACHED TO PANELS TO BE 4W11+W11X1.5. MESH LENGTHS ARE SHOWN ON ELEVATION.
 - BARRIER MESH TO BE (4W11+W11X1.0) X 17' (SEE DETAIL).
 - PANELS NOT DESIGNATED ARE TYPE A.
 - DESIGN CRITERIA:
 - BACKFILL $\phi = 33^\circ$, $\gamma = 120$ P.C.F.
 - BASE $\phi = 22^\circ$
 - FHWA CORROSION PER ADVISORY 1/2/86
 - TRAFFIC 240 P.S.F.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

RETAINED EARTH WALL
(ALTERNATE NO. 2)

INTERSTATE ROUTE H-2
WAIPIO INTERCHANGE
PAI PROJ. NO. IR-H2-1(21)
SCALE: NOT TO SCALE DATE: Aug. 86

SHEET No. 516 OF 23 SHEETS

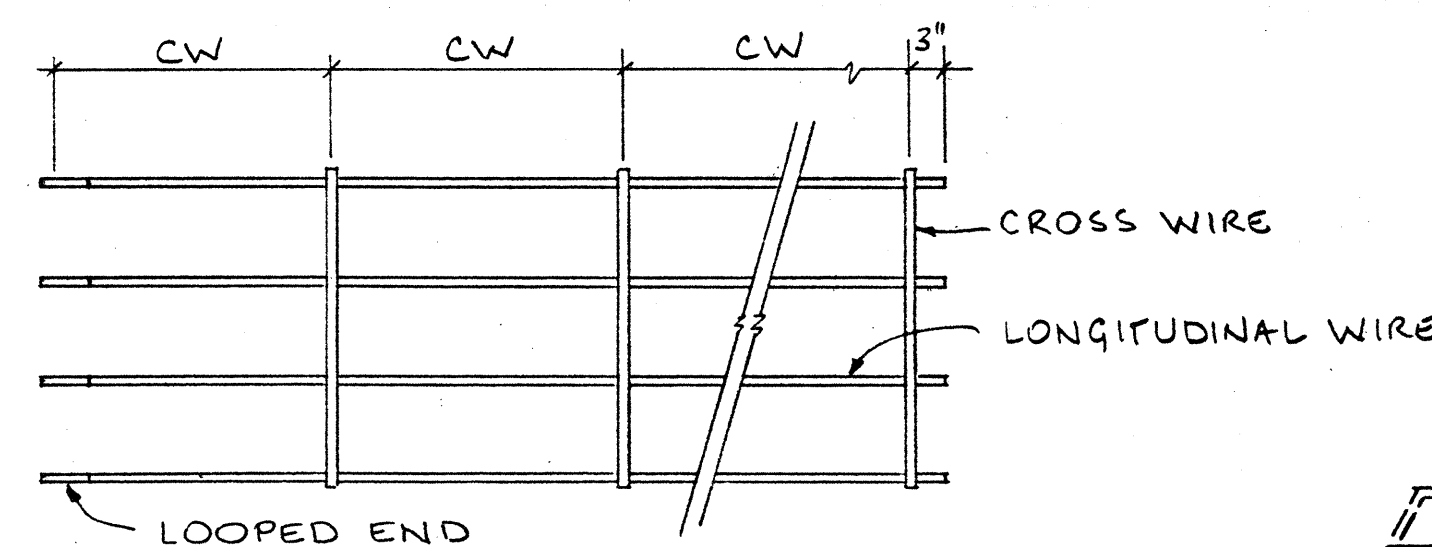
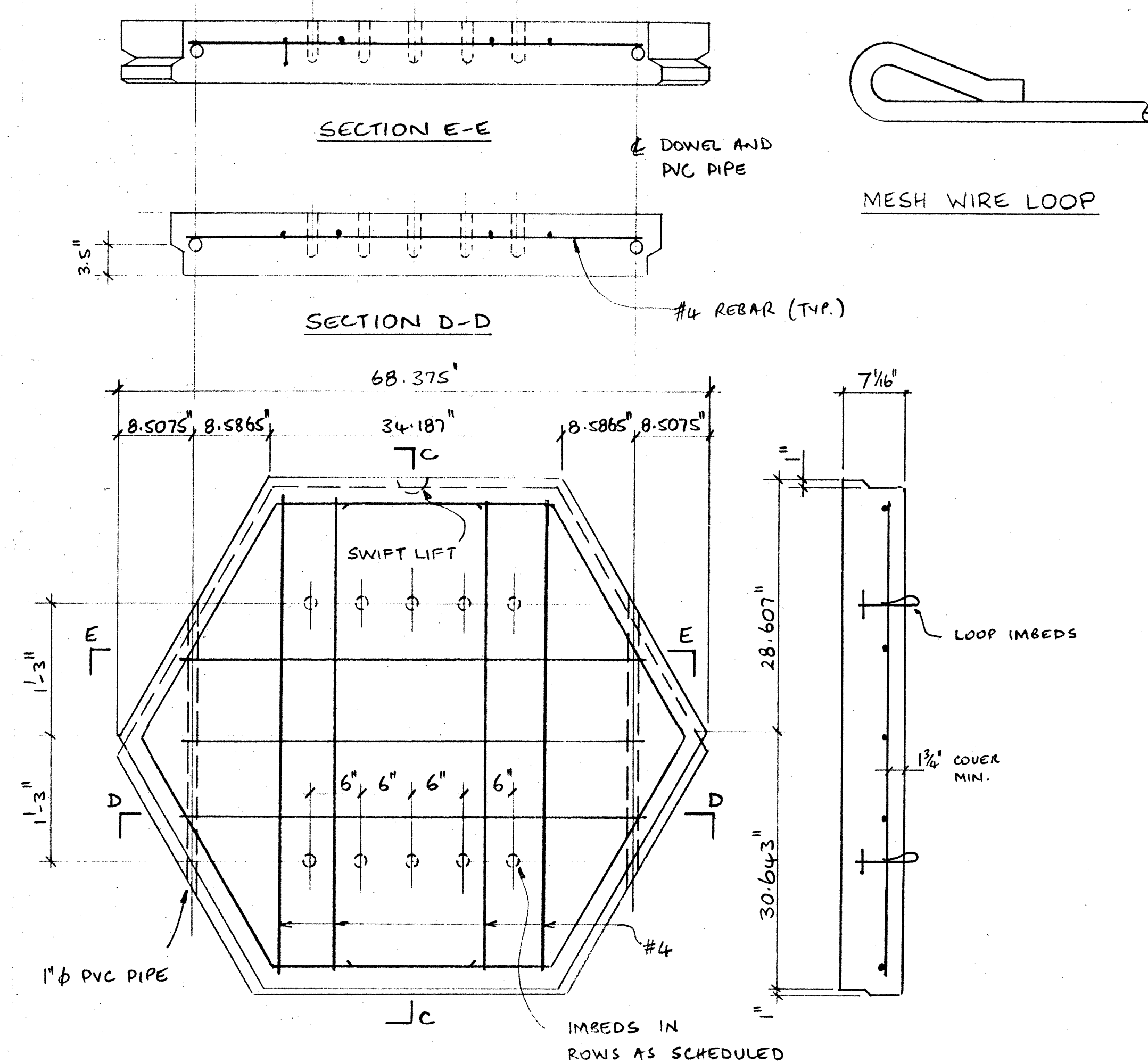
SURVEY PLOTTED BY	DATE
DESIGNED BY	
TRACED BY	
NOTE BOOK	
QUANTITIES BY	
CHECKED BY	
No.	

JOHN W. PARKIN
CONSULTING CIVIL AND STRUCTURAL ENGINEER
1924 BROADWAY, SUITE B
VANCOUVER, WA 98683 (206) 694-8378

WALL WG-4 ELEVATION FRONT FACE

"AS-BUILT"

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEET
HAWAII	HAW.	IR-42-1(21)	1987	79	138

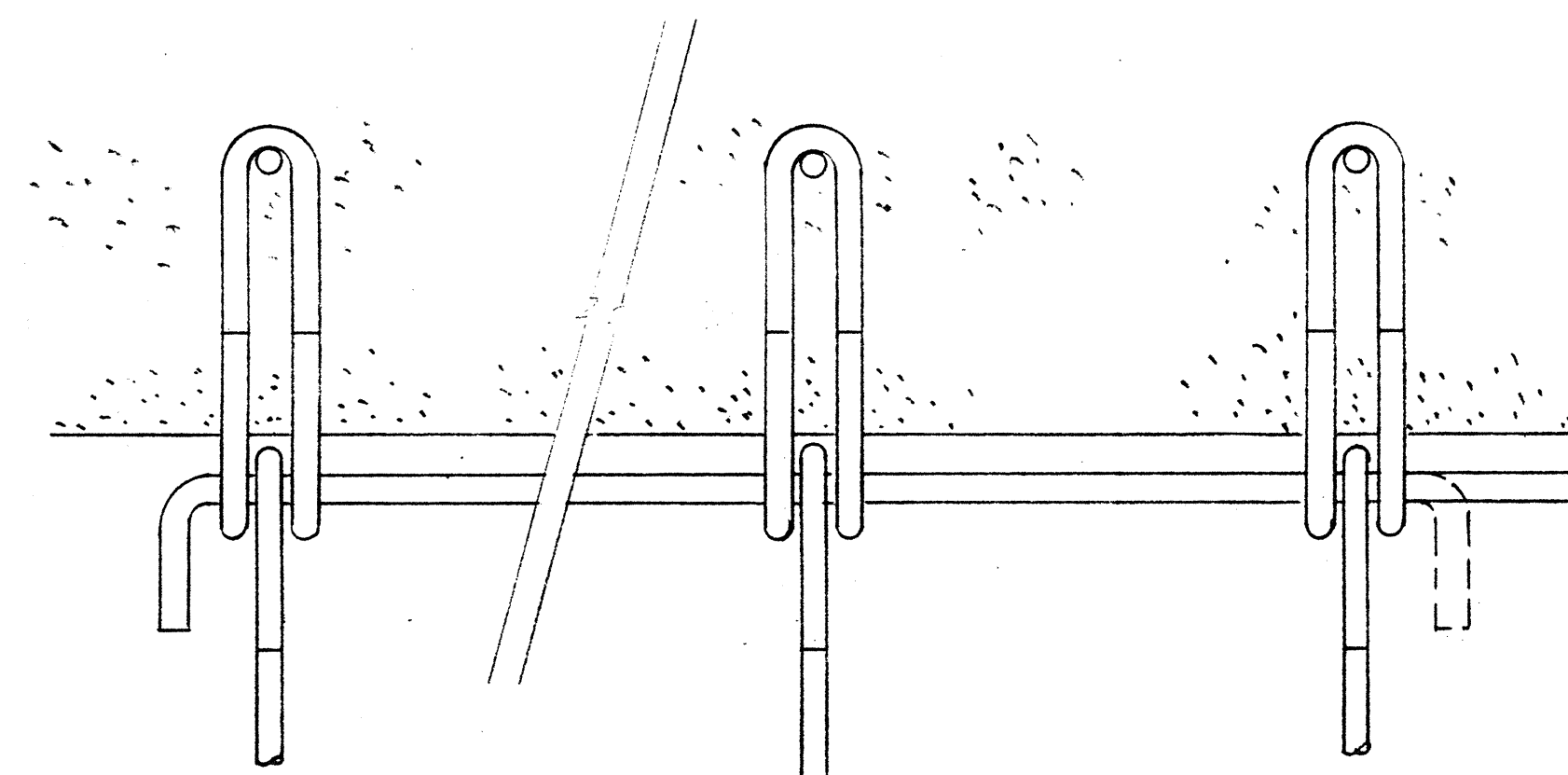
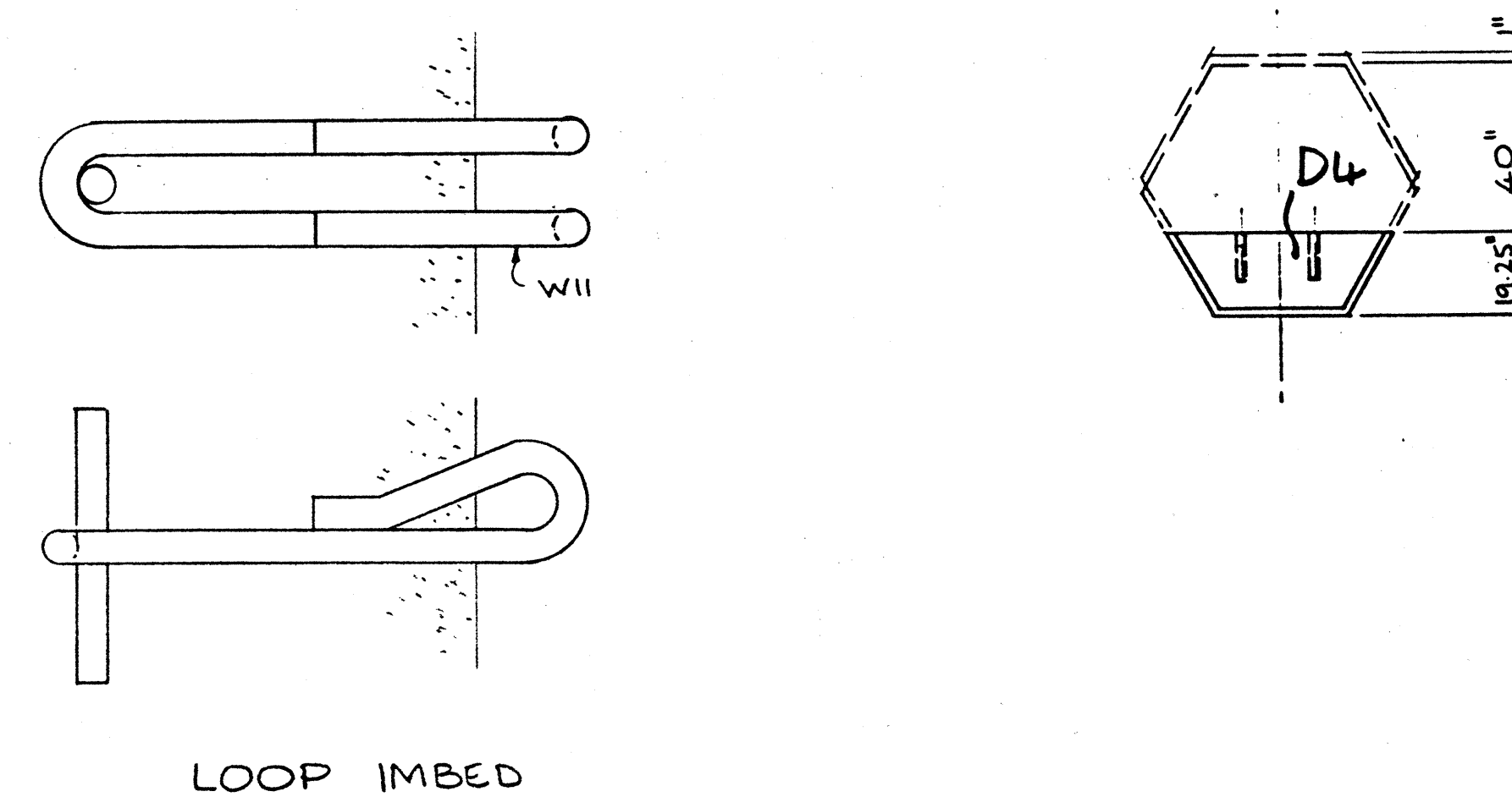


MESH DESIGNATION

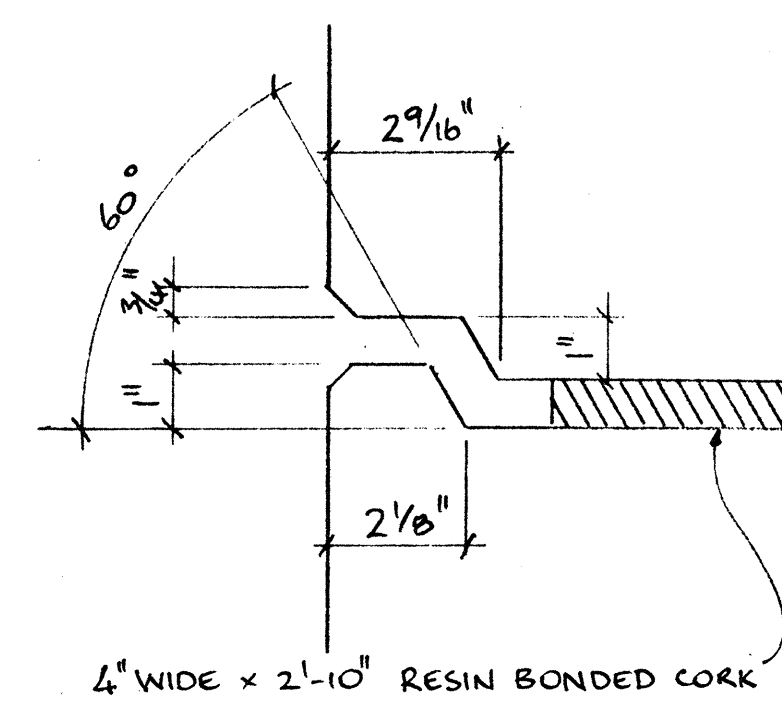
NO. OF LONGIT. WIRES →
SIZE OF LONGIT. WIRES →
SIZE OF CROSS WIRES →
SPACING (FT.) OF CROSSWIRES (CW) →

4 W20 + W11 x 1.5

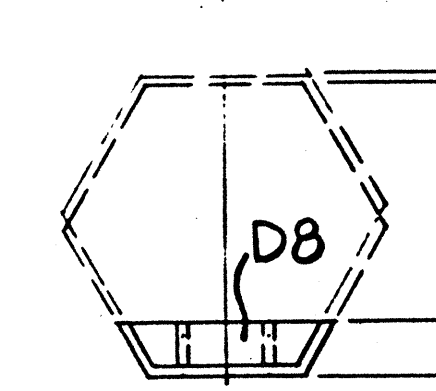
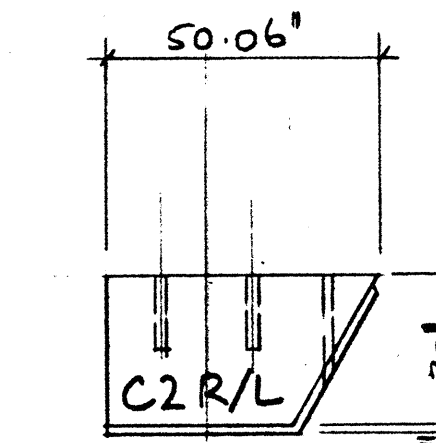
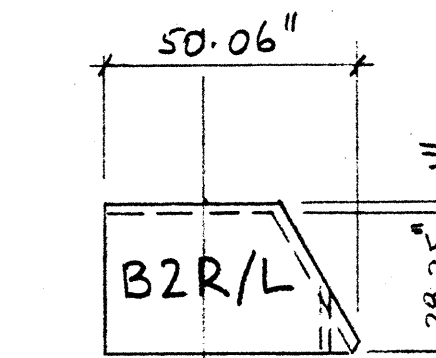
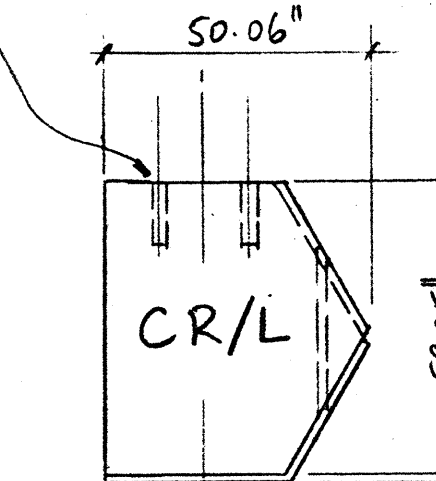
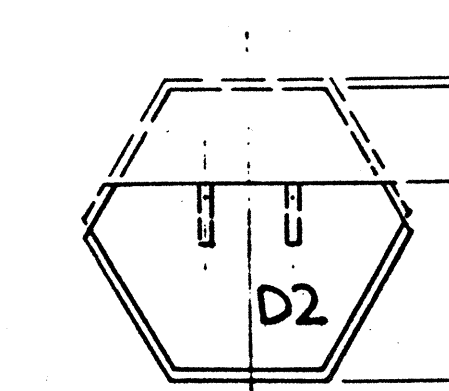
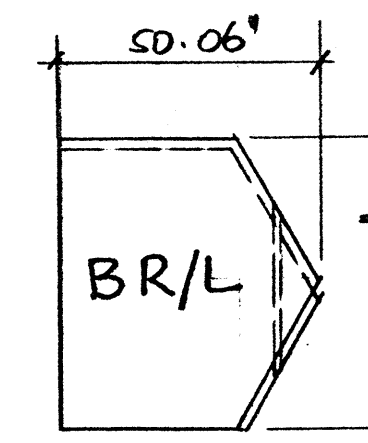
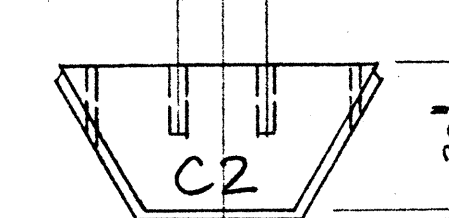
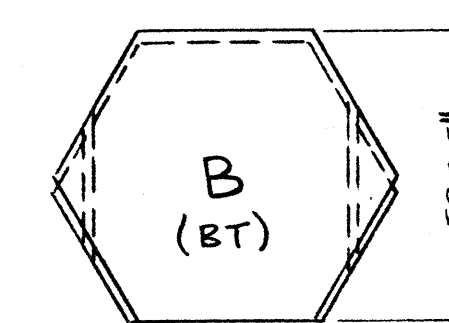
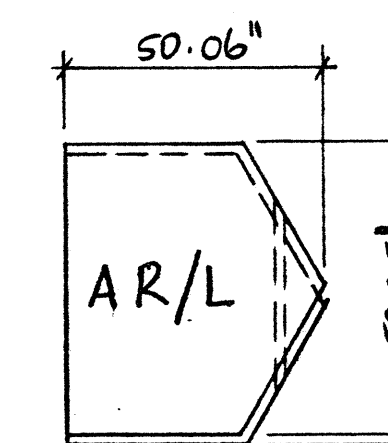
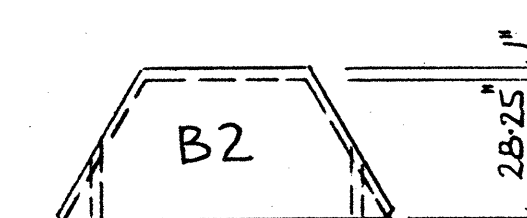
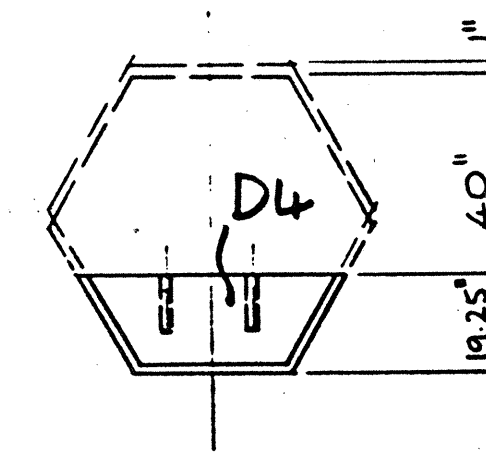
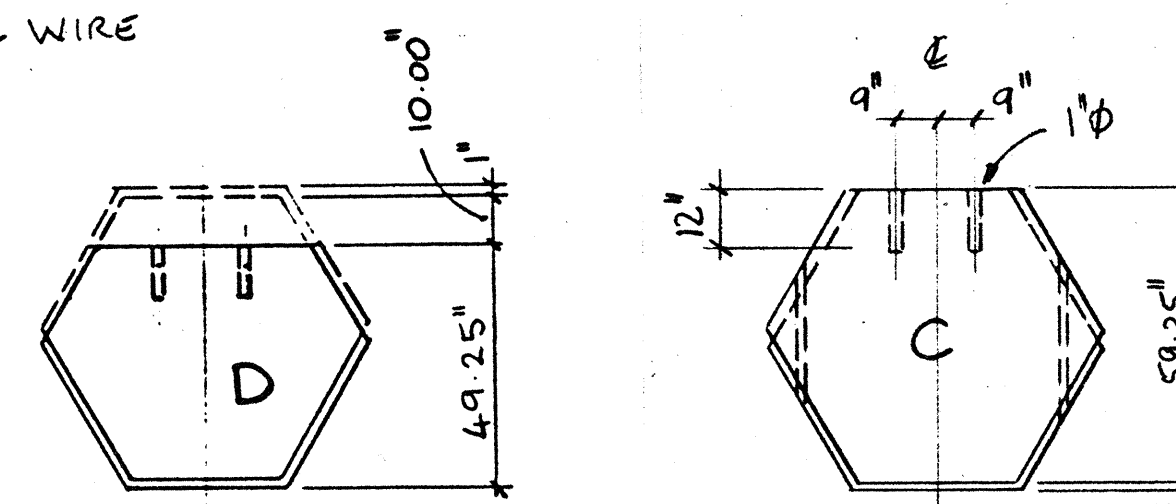
SOIL REINFORCING MESH



MESH CONNECTION



SECTION A-A



NOTE: BT PANEL TO HAVE FLAT TOP
AS FOR C PANEL, PLUS DOWEL
SOCKETS.

1" ϕ x 12" SLEEVES
FOR DOWELS
(TYP. TOP PANELS)

NOTE:
ALTERNATE NO. 1 WAS
CONSTRUCTED. SEE PLAN
SHEETS 80 THROUGH 85.

NOTES:

CONCRETE REINFORCING BARS SHALL BE GRADE 60
CONFORMING WITH ASTM A615 OR A706

SOIL REINFORCING WIRE AND IMBEDS SHALL CONFORM
WITH ASTM A32, AND THE WELDED WIRE MESH SHALL
CONFORM WITH ASTM A135.

CONCRETE STRENGTH IN PANELS, coping and barrier
shall be $F'_c = 4000$ P.S.I.
concrete strength in leveling pad shall be $F'_c = 9500$ P.S.I.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

RETAINED EARTH WALL
(ALTERNATE NO. 2)

INTERSTATE ROUTE H-2

WAIPIO INTERCHANGE

PA PROJ. NO. R-H2-(21)
SCALE: Not to scale DATE: Aug. 8

SHEET No. 5/7 OF 23 SHEETS

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

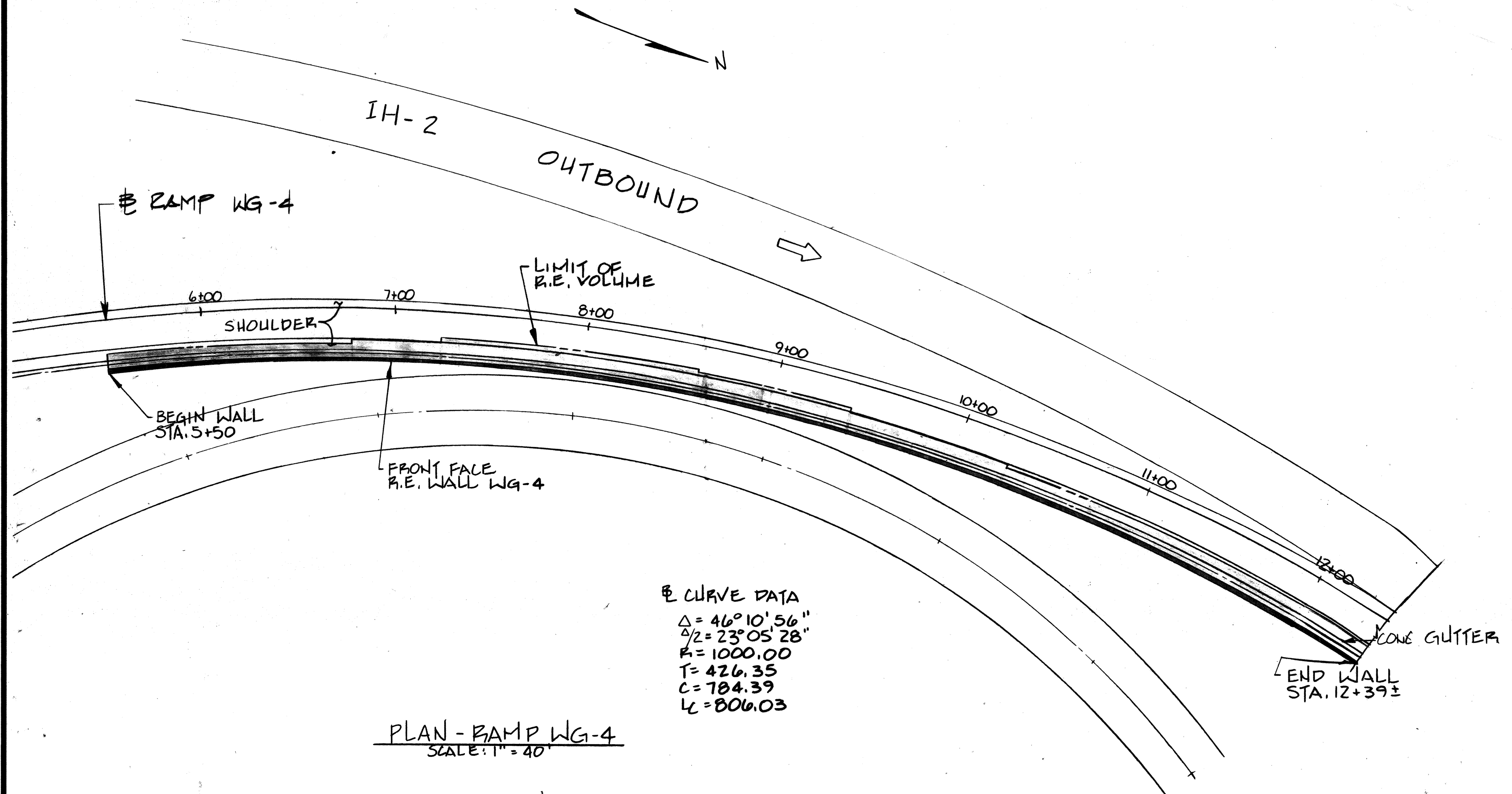
JOHN W. PARKIN
CONSULTING CIVIL AND STRUCTURAL ENGINEER
1924 BROADWAY, SUITE B
VANCOUVER, WA 98663 (206) 694-8378

"AS-BUILT"

OCTOBER 1987

79

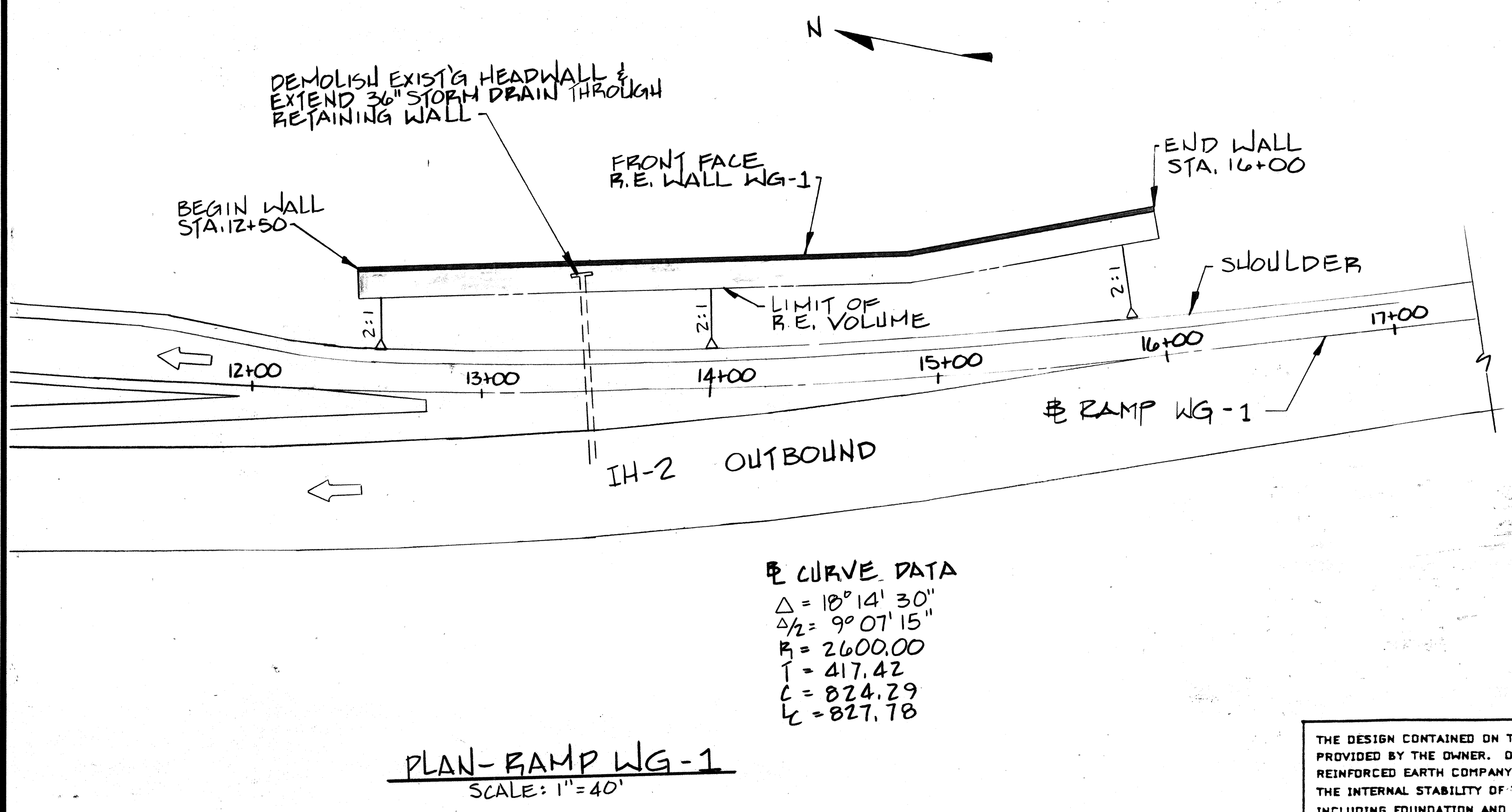
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IR-H2-1(21)	1987	80	138



GENERAL NOTES:

- DESIGN IS BASED ON THE ASSUMPTION THAT THE MATERIAL WITHIN THE REINFORCED EARTH VOLUME, METHODS OF CONSTRUCTION AND QUALITY OF PREFABRICATED MATERIALS SHALL CONFORM TO THE MANUFACTURER'S SPECIFICATIONS.
- FOR STANDARD PANEL DETAILS SEE SHEET 86.
- REINFORCING STRIPS FOR REINFORCED EARTH® WALLS SHALL CONFORM TO THE PHYSICAL AND MECHANICAL PROPERTIES OF ASTM A-572, GRADE 65.
- FOR LOCATION AND ALIGNMENT OF R.E. WALLS SEE CONTRACT DRAWINGS.
- STATIONS SHOWN ARE ALONG CENTERLINE ROADWAY.
- R.E. WALL IN CURVE WILL FORM A SERIES OF SHORT CHORDS OF 4.92' EACH TO MATCH DESIRED WALL ALIGNMENT.
- Concrete strength in panels, coping and barrier shall be $F'_c = 4,000$ P.S.I. Concrete strength in leveling pad shall be $F'_c = 3,000$ P.S.I.
- Concrete reinforcing bars shall be grade 60 conforming with ASTM A 618.

Estimated Quantities					
Item no.	Item	Unit	Quantity		Total
			WG-1	WG-4	
503.1141	Precast Parapet Panels	Sq. ft.	2,200	6,100	9,300
503.1152	Coping	Lf	350	—	350
503.1152	Barrier	Lf	—	690	690
503.1142	Leveling Pad	Lf	350	690	1,040
206.5400	Structural Excavation	Cy	2,350	2,800	5,150
513.7751	Select granular backfill	Cy	1,610	3,110	4,720
703.1700	Aggregate backfill (Standard Specs. 703.17)	Cy	3,240	2,030	5,270



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

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

REINFORCED EARTH WALL
(ALTERNATE NO. 1)
INTERSTATE ROUTE H-2
WAIPIO INTERCHANGE
F, A, I PROJ. NO. IR - H2-1(21)
SCALE: as noted DATE: Aug 86

SHEET NO. 518 OF 23 SHEETS

OCTOBER 1987

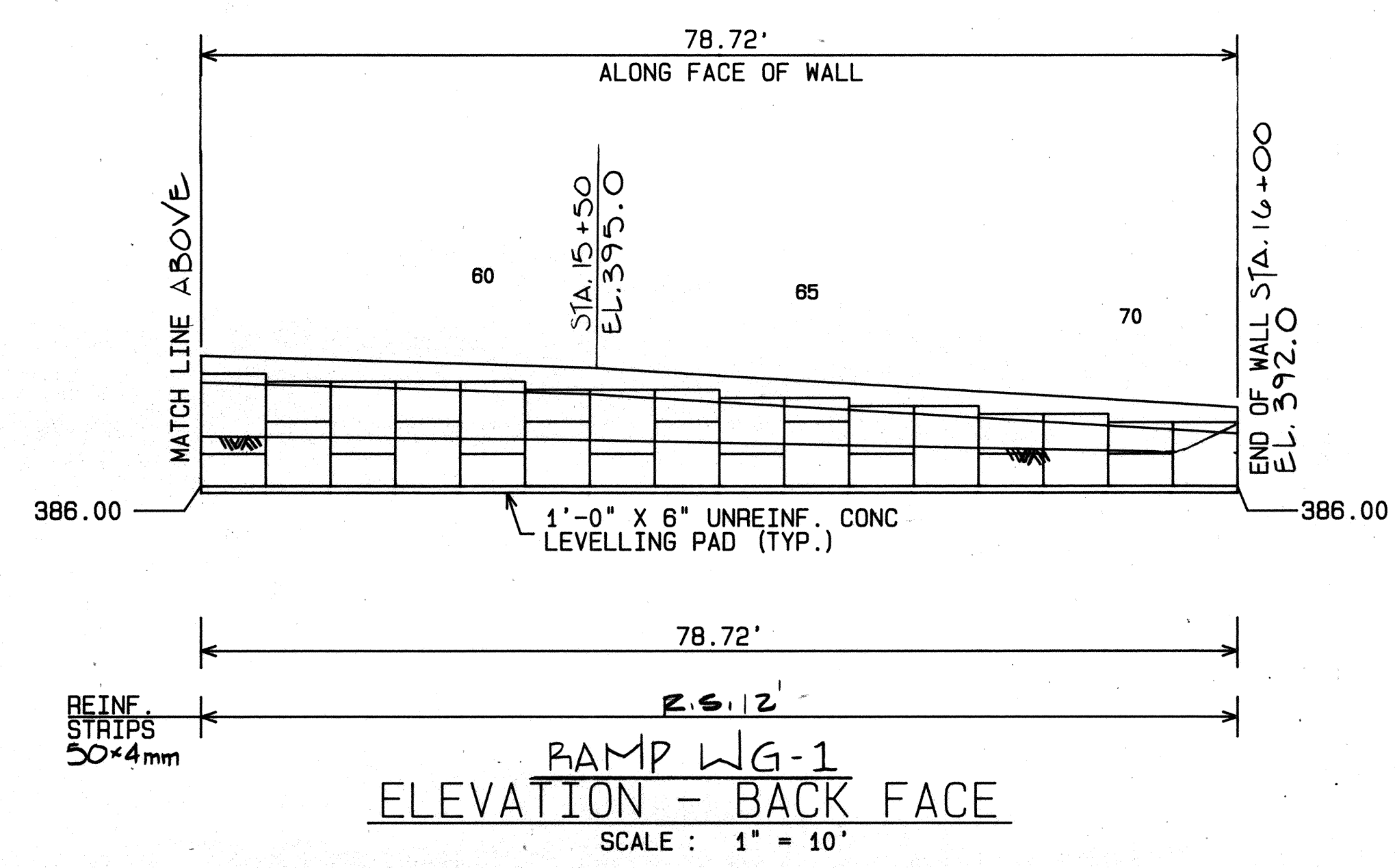
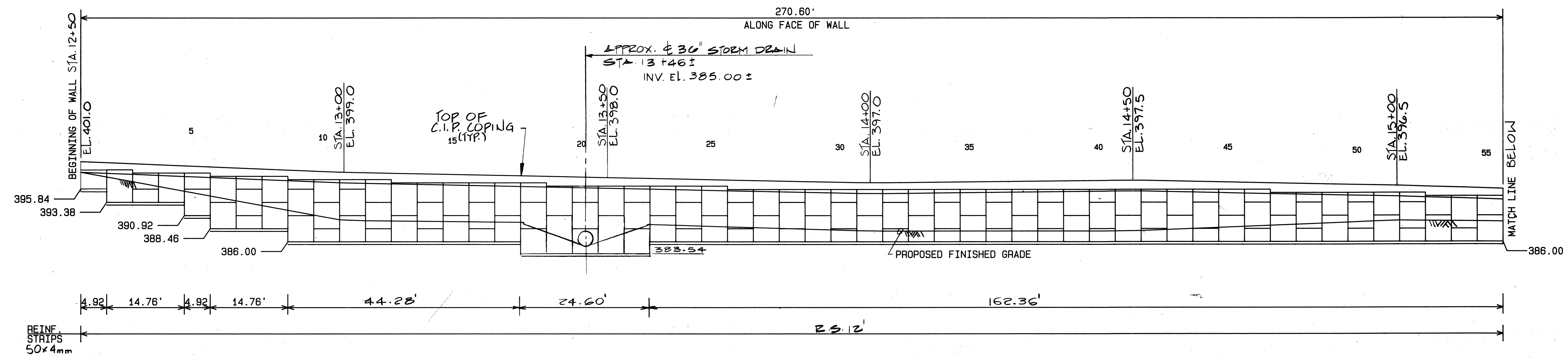
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RE #2482

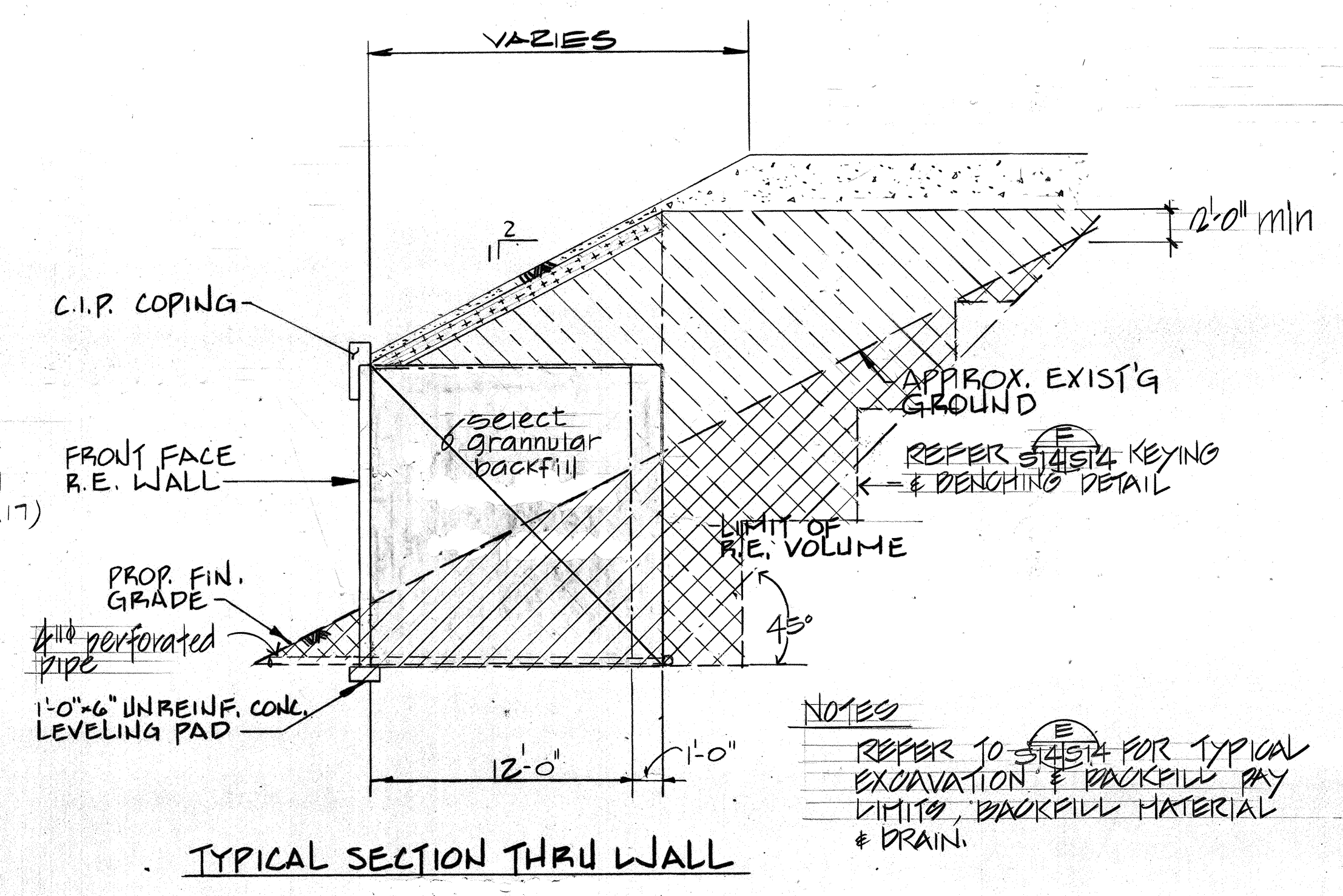
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SH. 1 OF 6

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IR-H2-1(21)	1987	81	130



- Legend
- excavation
 - aggregate backfill (standard specs. 703, 17)
 - impervious material
 - structural backfill
 - select granular backfill



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

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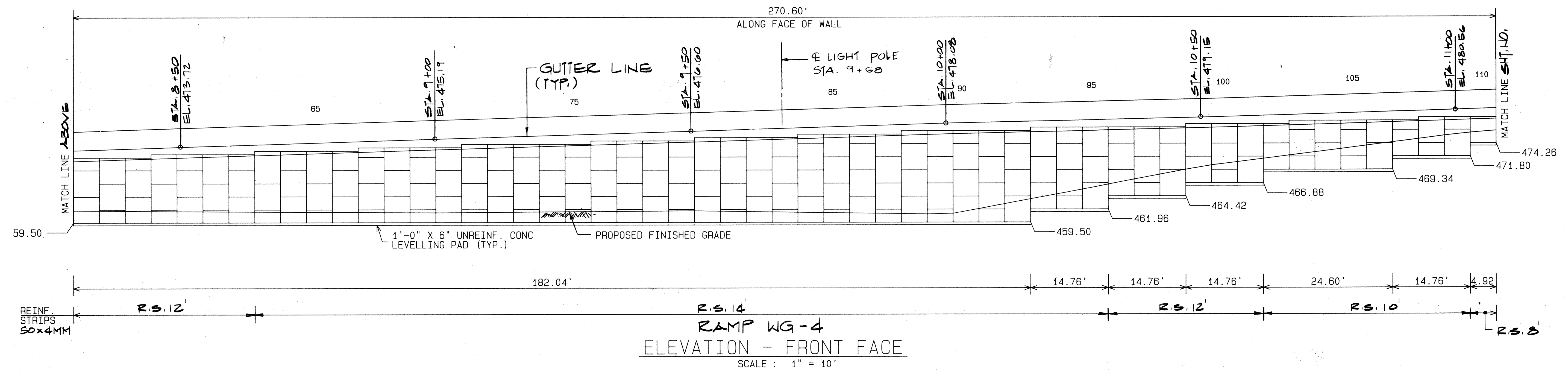
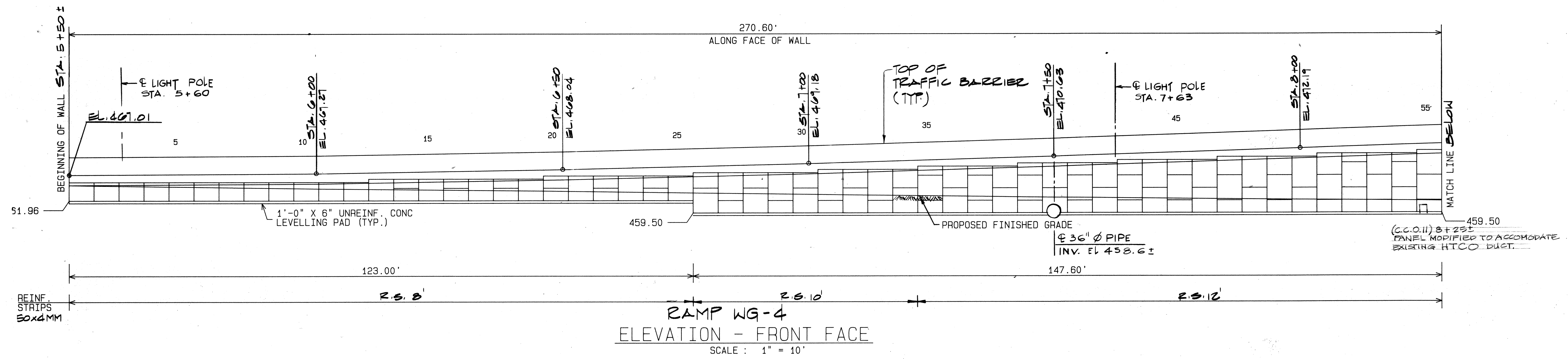
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

REINFORCED EARTH WALL
(ALTERNATE NO. 1)
INTERSTATE ROUTE H-2
WAIPIO INTERCHANGE
F, A, I PROJ. NO. IR - H2-1(21)
SCALE: as noted DATE: Aug. 86
SHEET No. 5190F/13 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IR-H2-1(21)	1987	82	138



ORIGINAL PLAN	DATE
DRAWN BY	
DESIGNED BY	
QUANTITIES BY	
CHECKED BY	

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

REINFORCED EARTH WALL
(ALTERNATE NO. 1)

INTERSTATE ROUTE H-2
WAIPIO INTERCHANGE

F, A, I PROJ. NO. IR - H2-1(21)

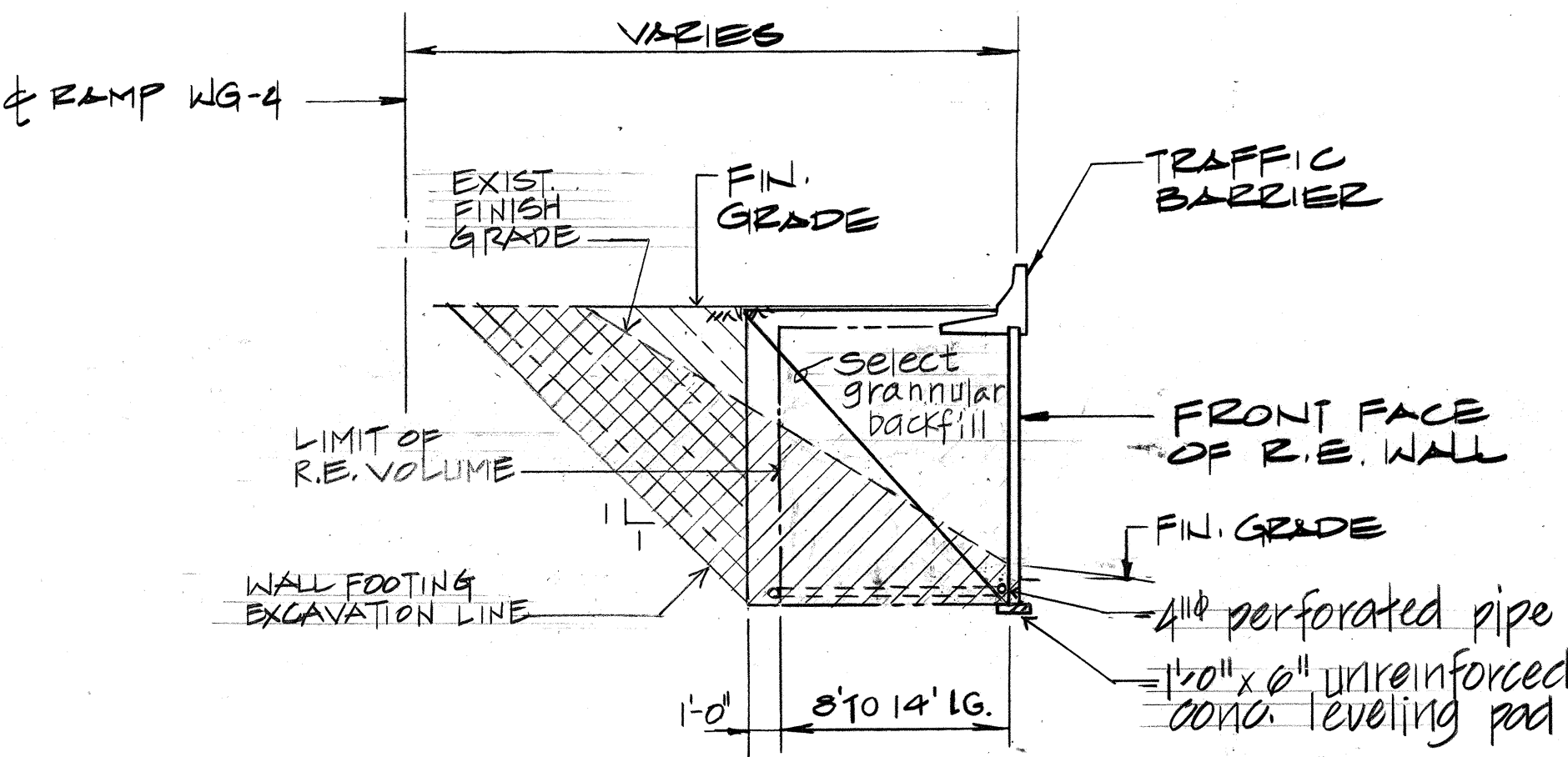
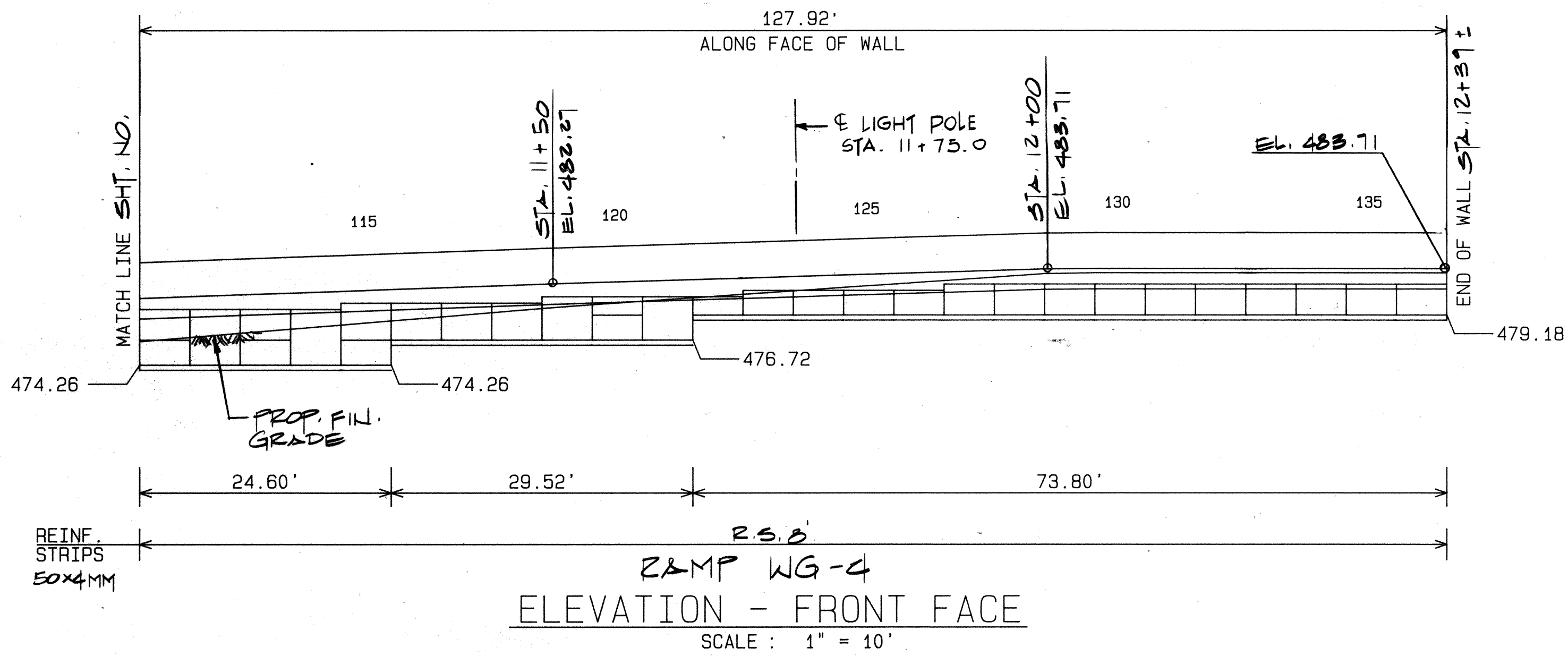
SCALE: as noted DATE: Aug 86

SHEET No. 520 OF 29 SHEETS

"AS-BUILT" "AS-BUILT"

OCTOBER 1987 82

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IR-H2-1(21)	1987	83	130



TYPICAL SECTION
SCALE: 1" = 10'

NOTE:
Refer to STA 11+50 for typical excavation & backfill pay limits, backfill material & drain.

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
NOTE BOOK	DRAWN BY	
	CHECKED BY	
	QUANTITIES BY	
	CHECKED BY	

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ALTERNATE NO. 1

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

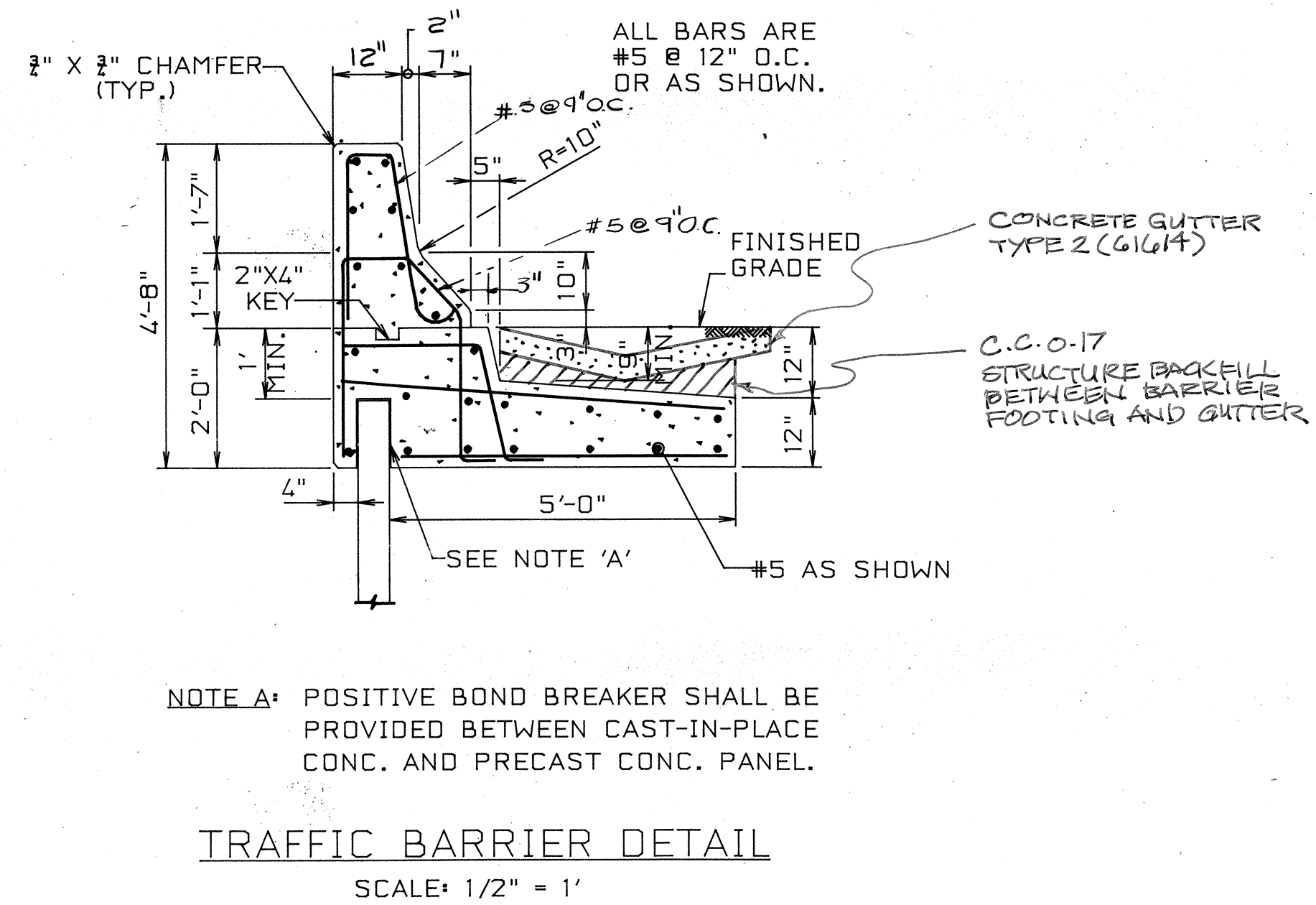
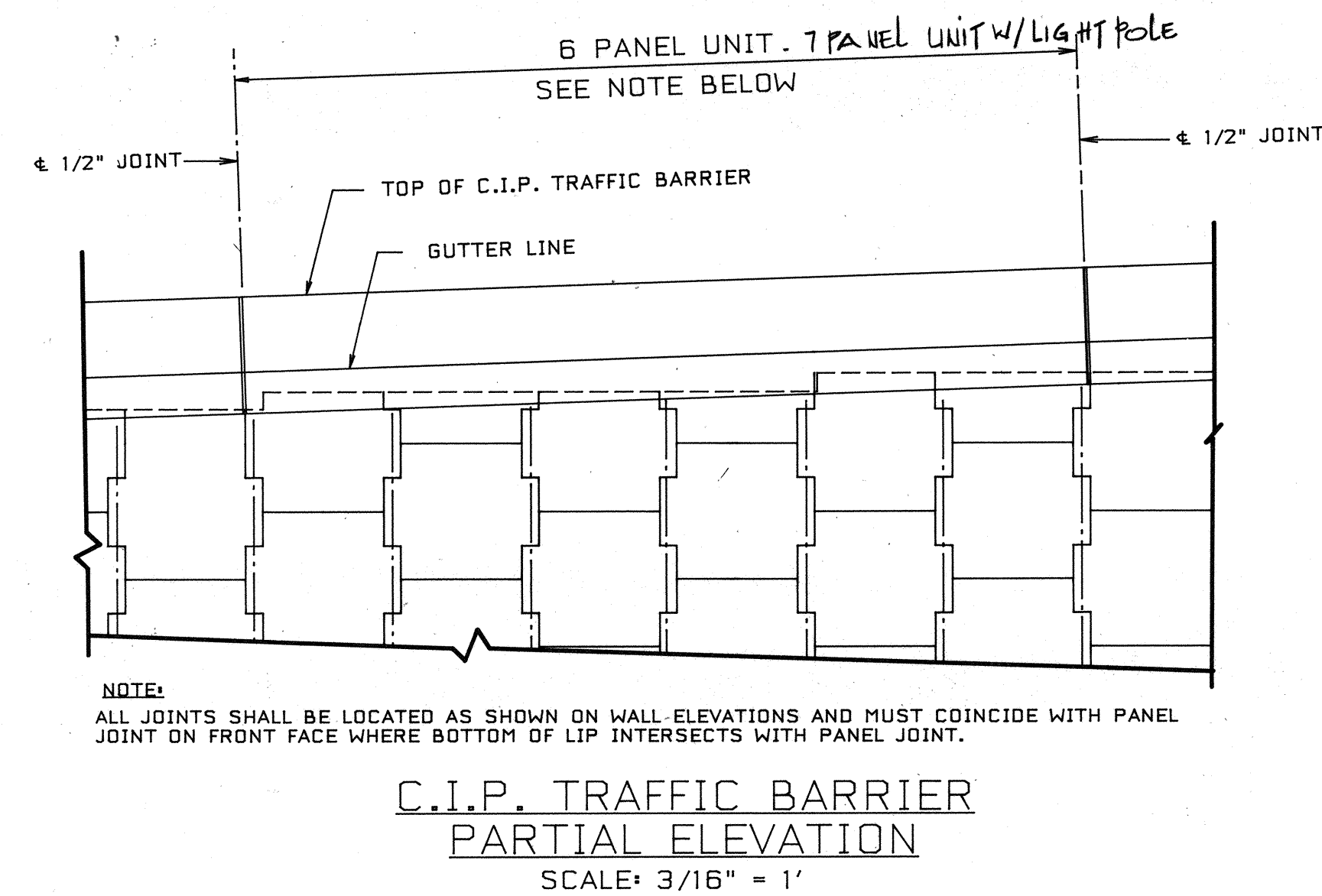
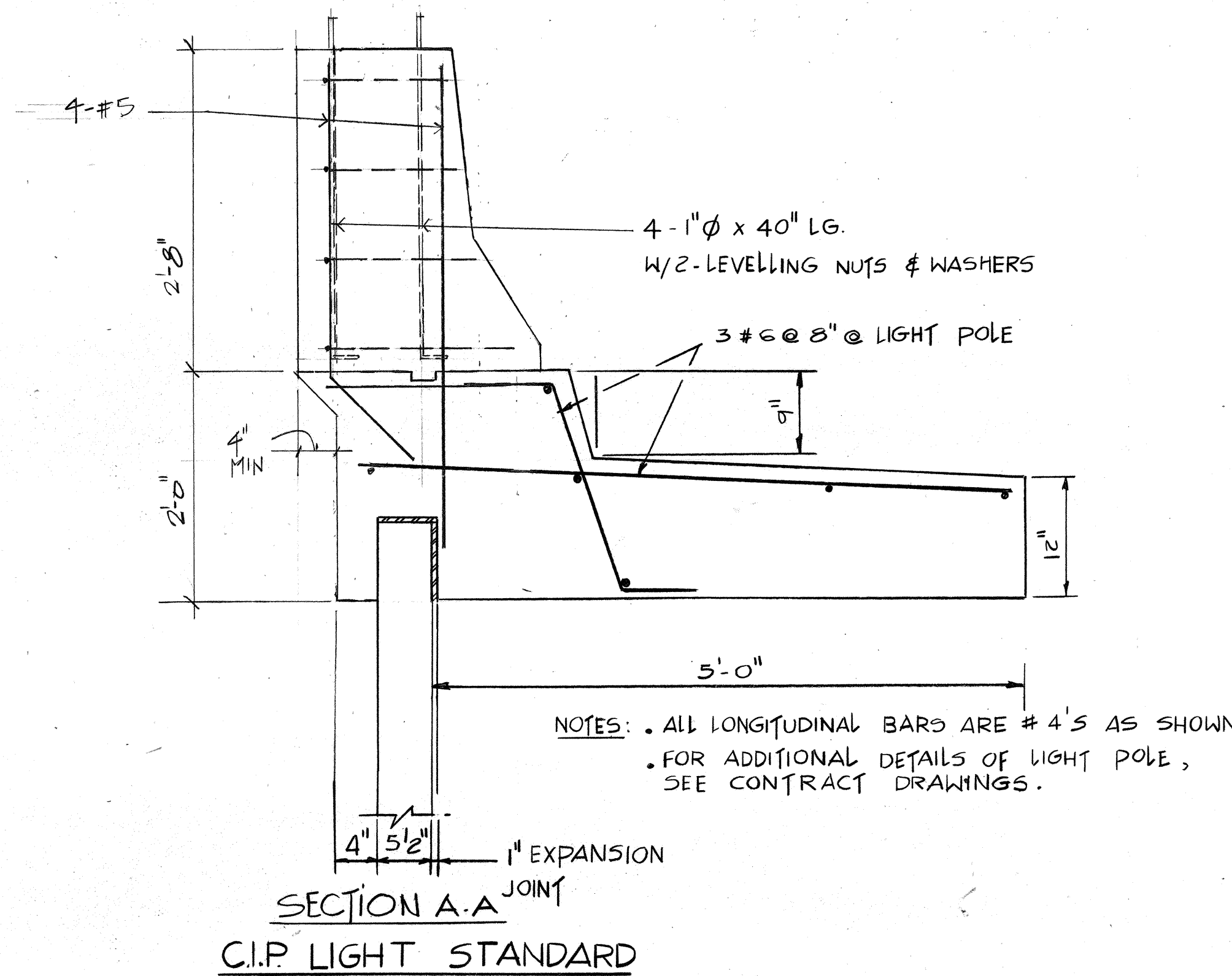
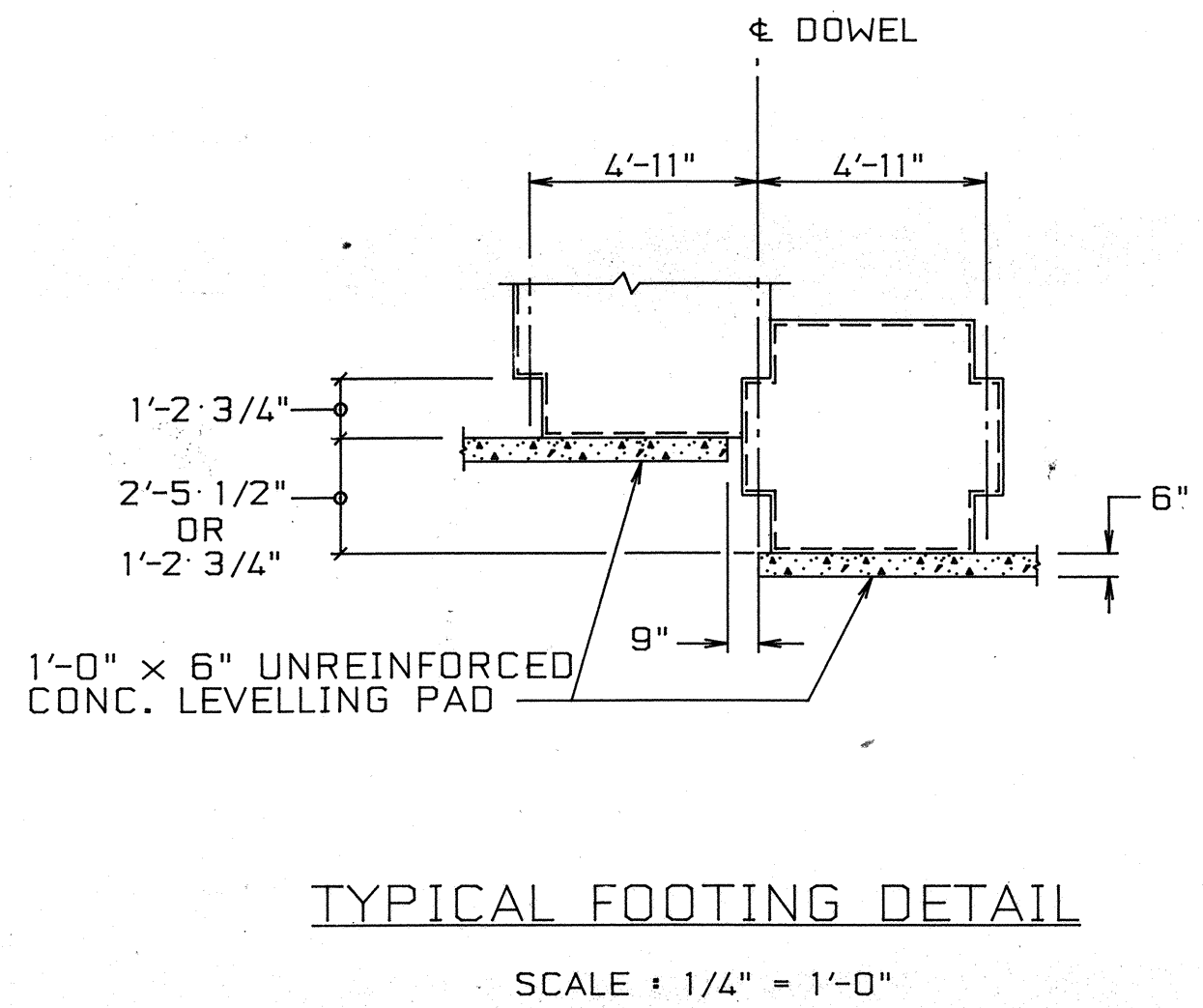
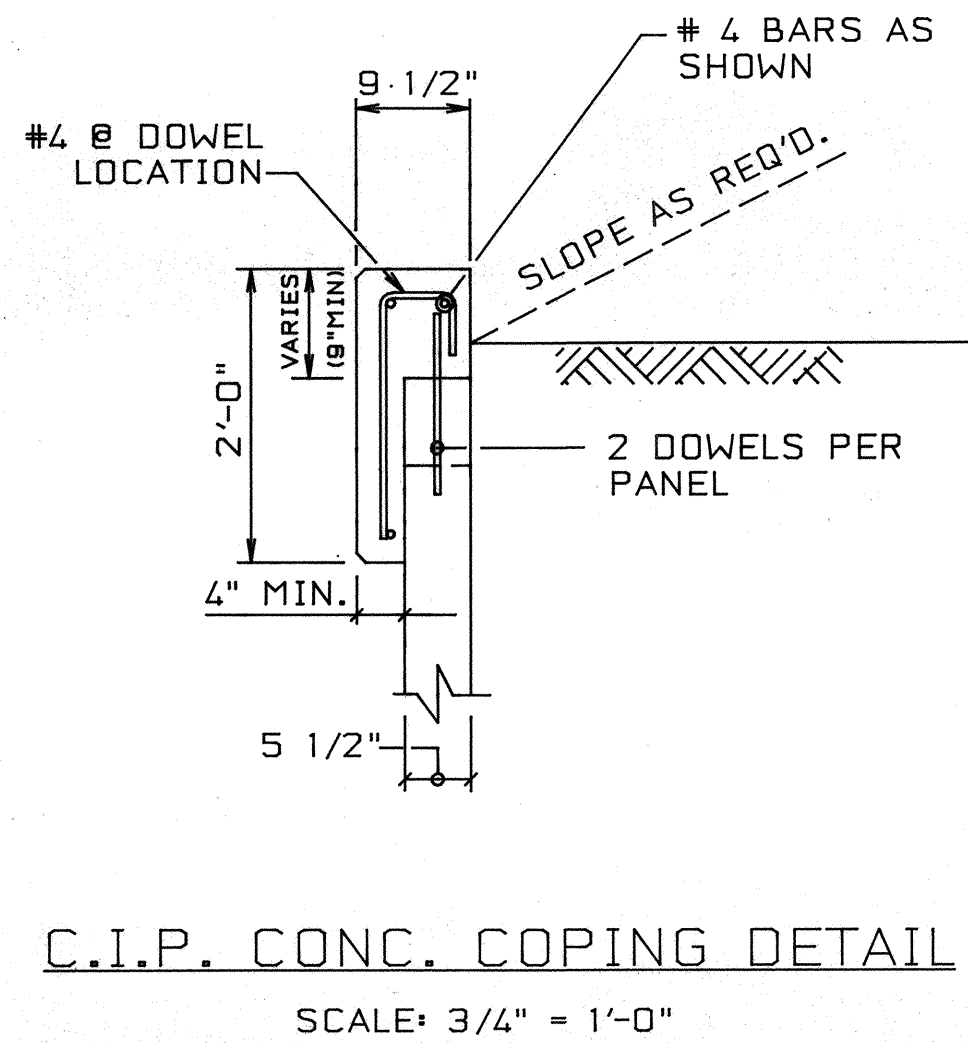
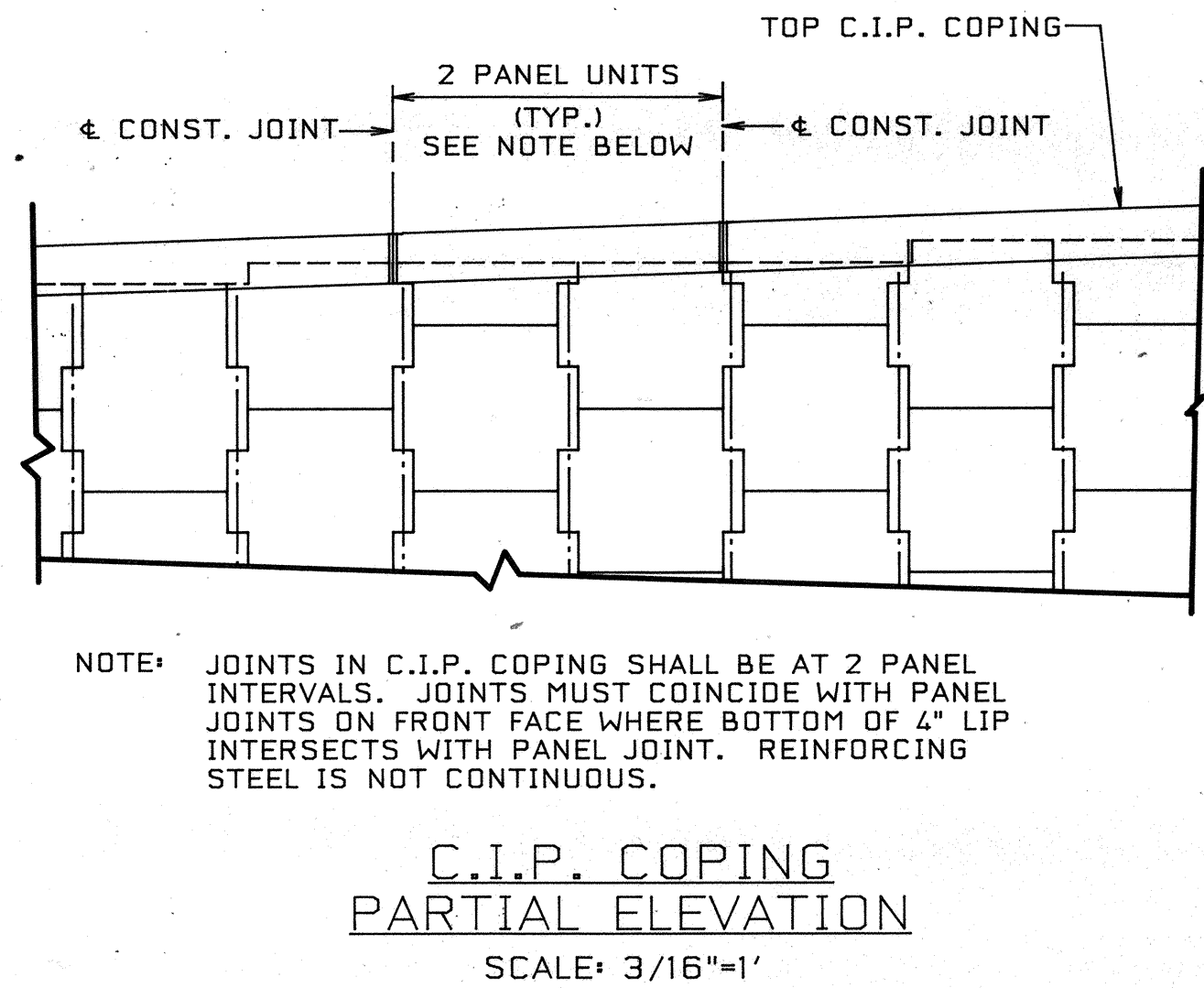
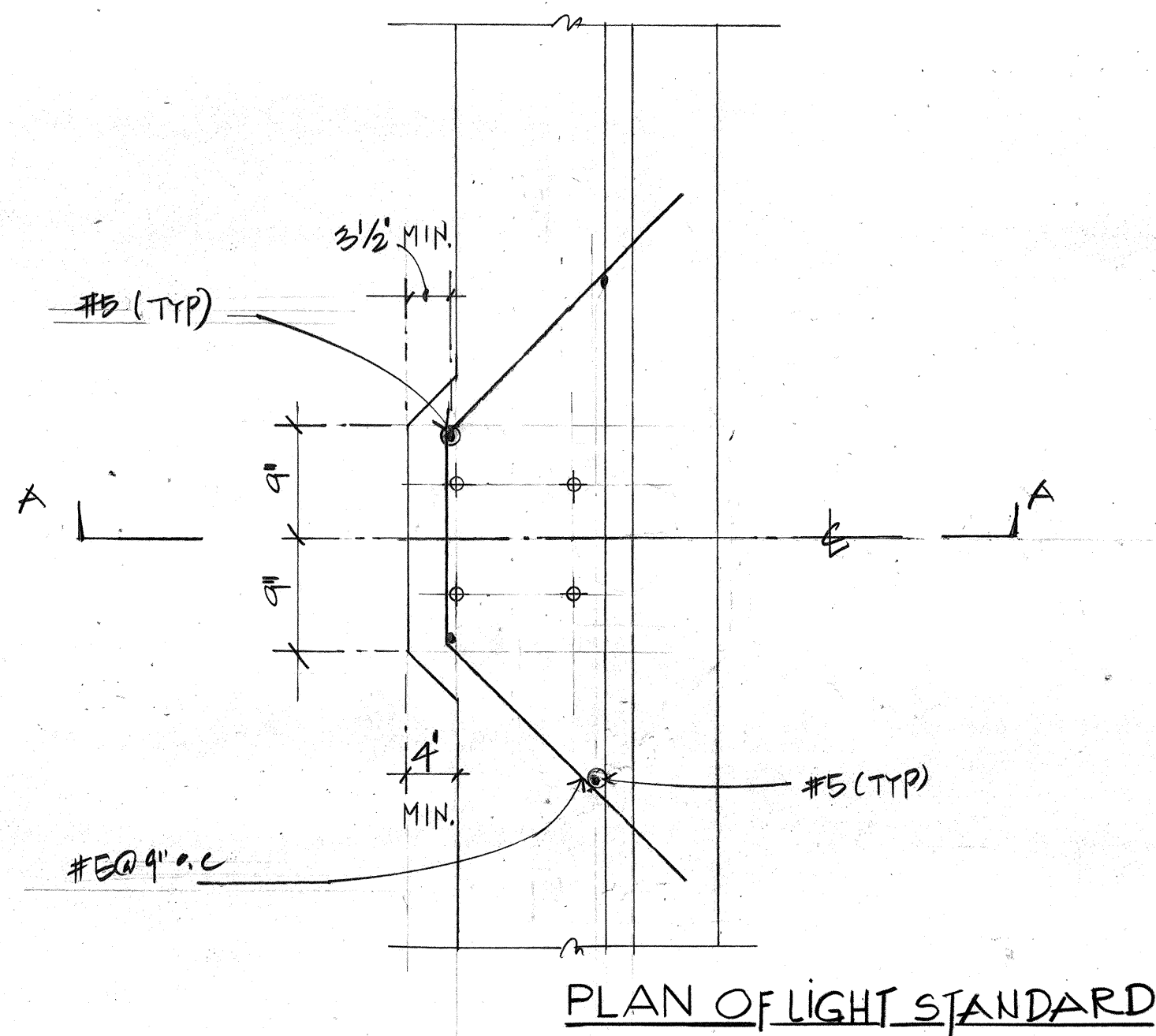
REINFORCED EARTH WALL
(ALTERNATE NO. 1)
INTERSTATE ROUTE H-2
WAIPIO INTERCHANGE

F, A, I PROJ. NO. IR - H2 - 1(21)
SCALE: 1" = 10' DATE: AUG 86

SHEET NO. 321 OF 23 SHEETS

OCTOBER 1987 83

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IR-H2-1(21)	1987	84	138



SURVEY PLOTTED BY	DATE
DRAWN BY	
TRACED BY	
NOTED BY	
CHECKED BY	
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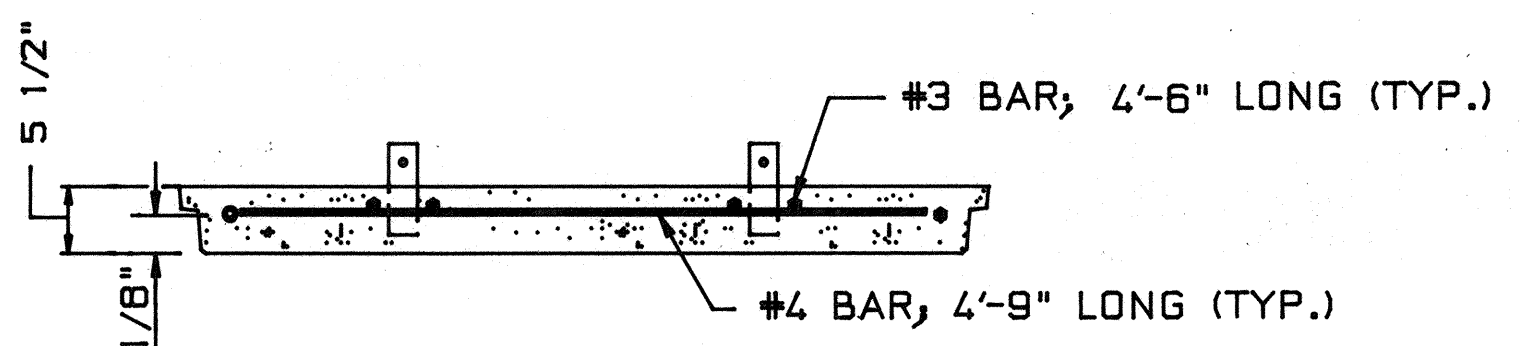
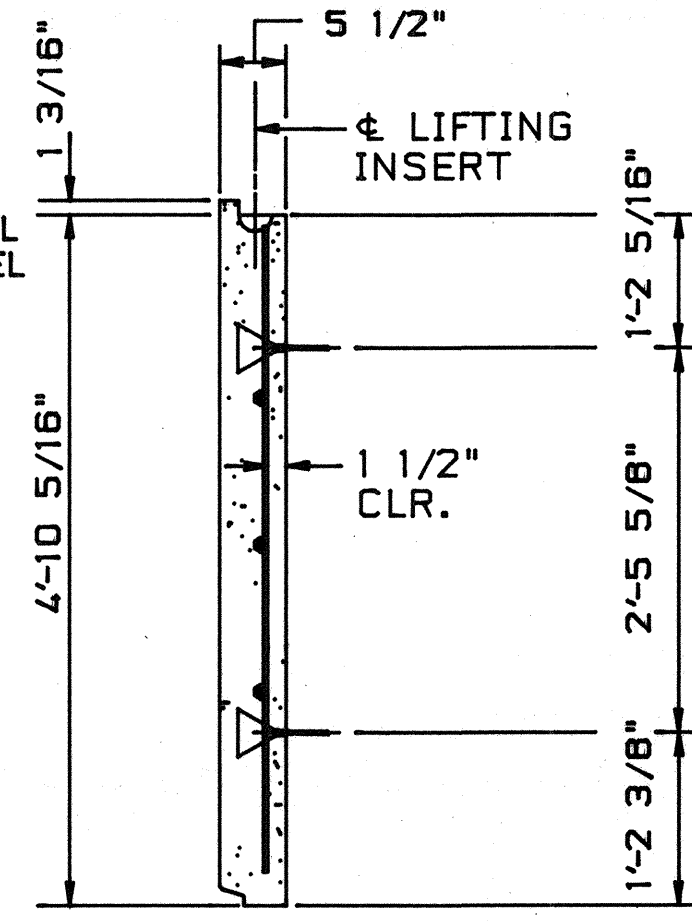
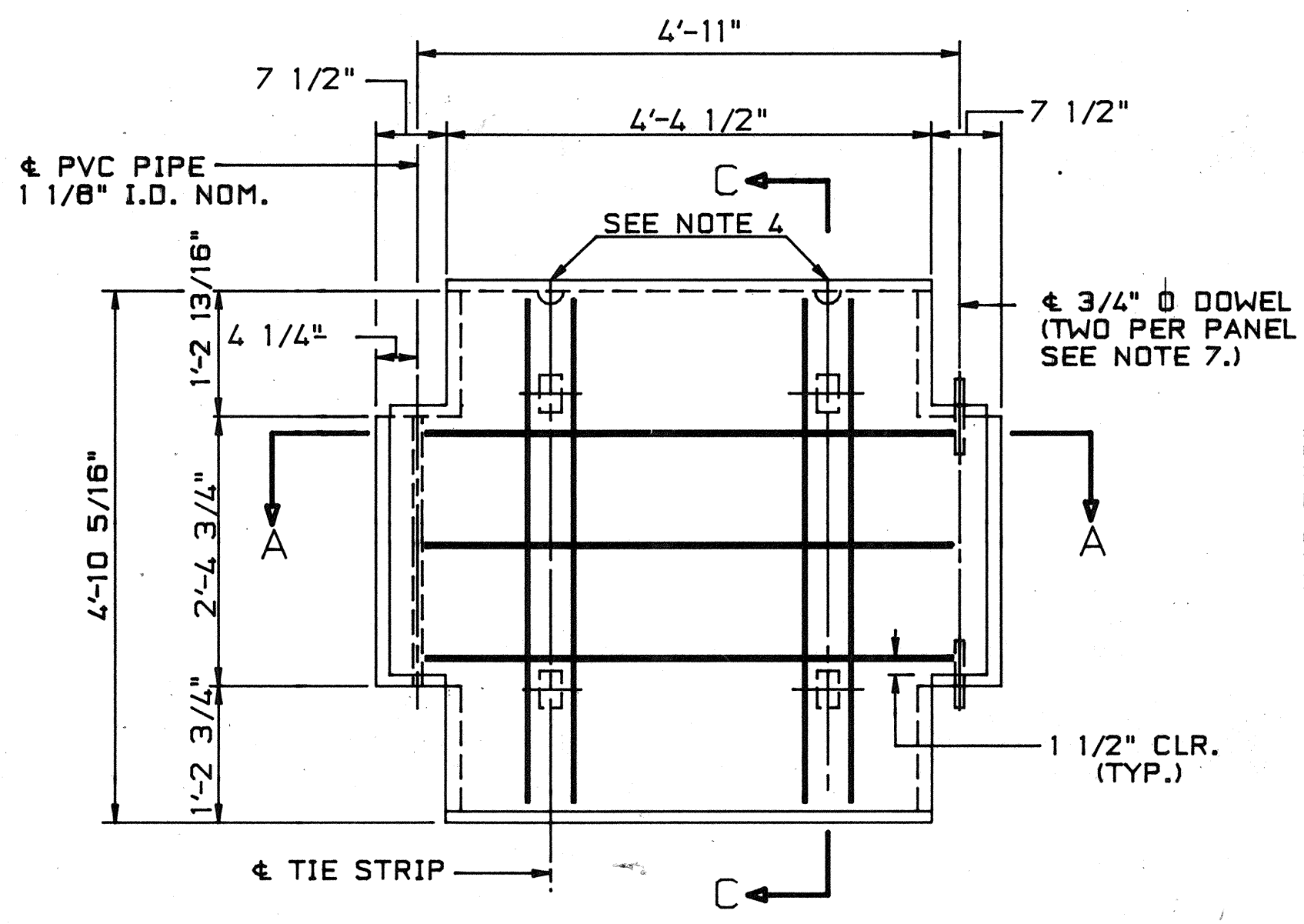
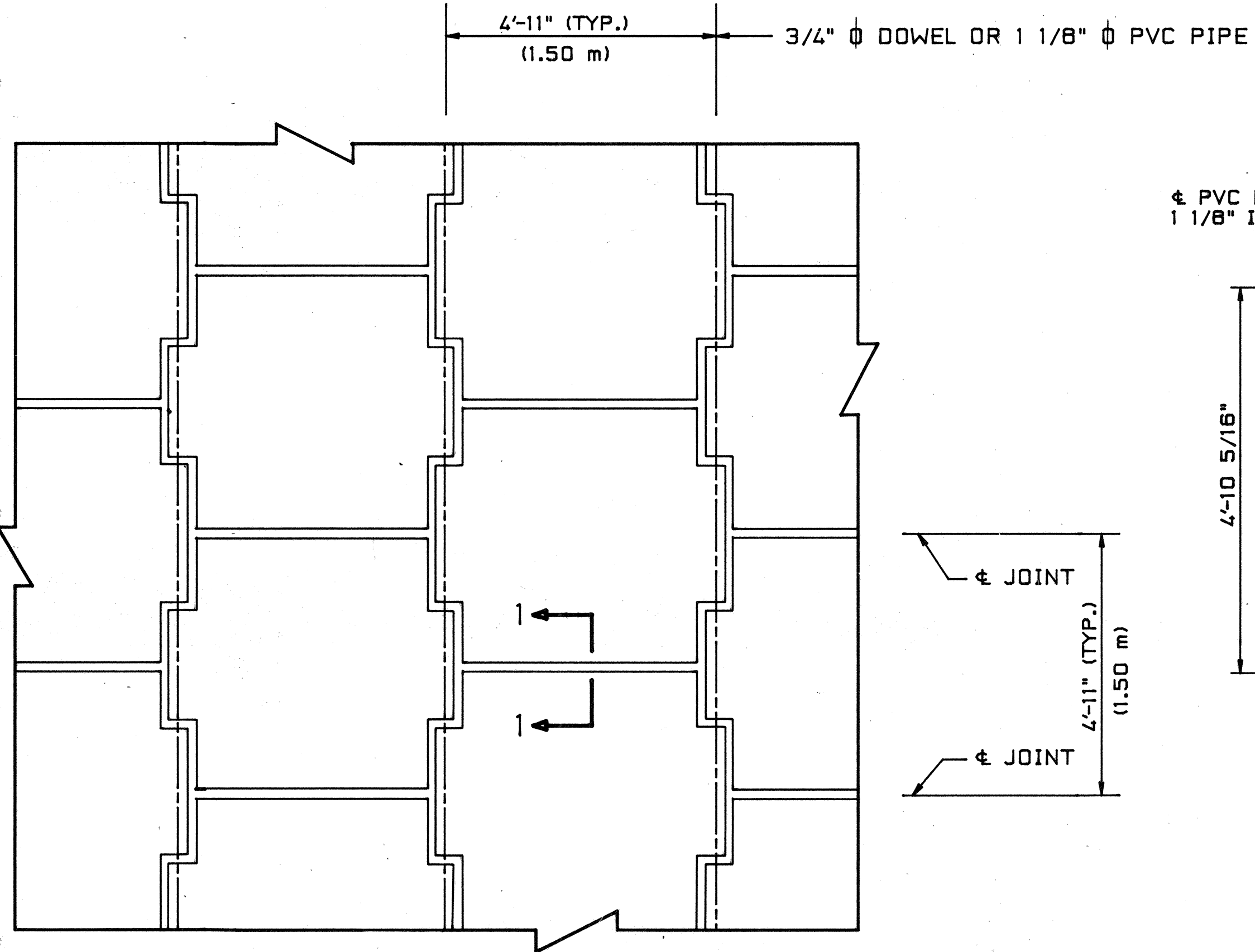
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
REINFORCED EARTH WALL
(ALTERNATE NO. 1)
INTERSTATE ROUTE H-2
WAIPIO INTERCHANGE
F, A, I PROJ. NO. IR-H2-1(21)
SCALE: as noted
DATE: Aug 86

"AS-BUILT" "AS-BUILT"

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IR-H2-1(21)	1987	85	138

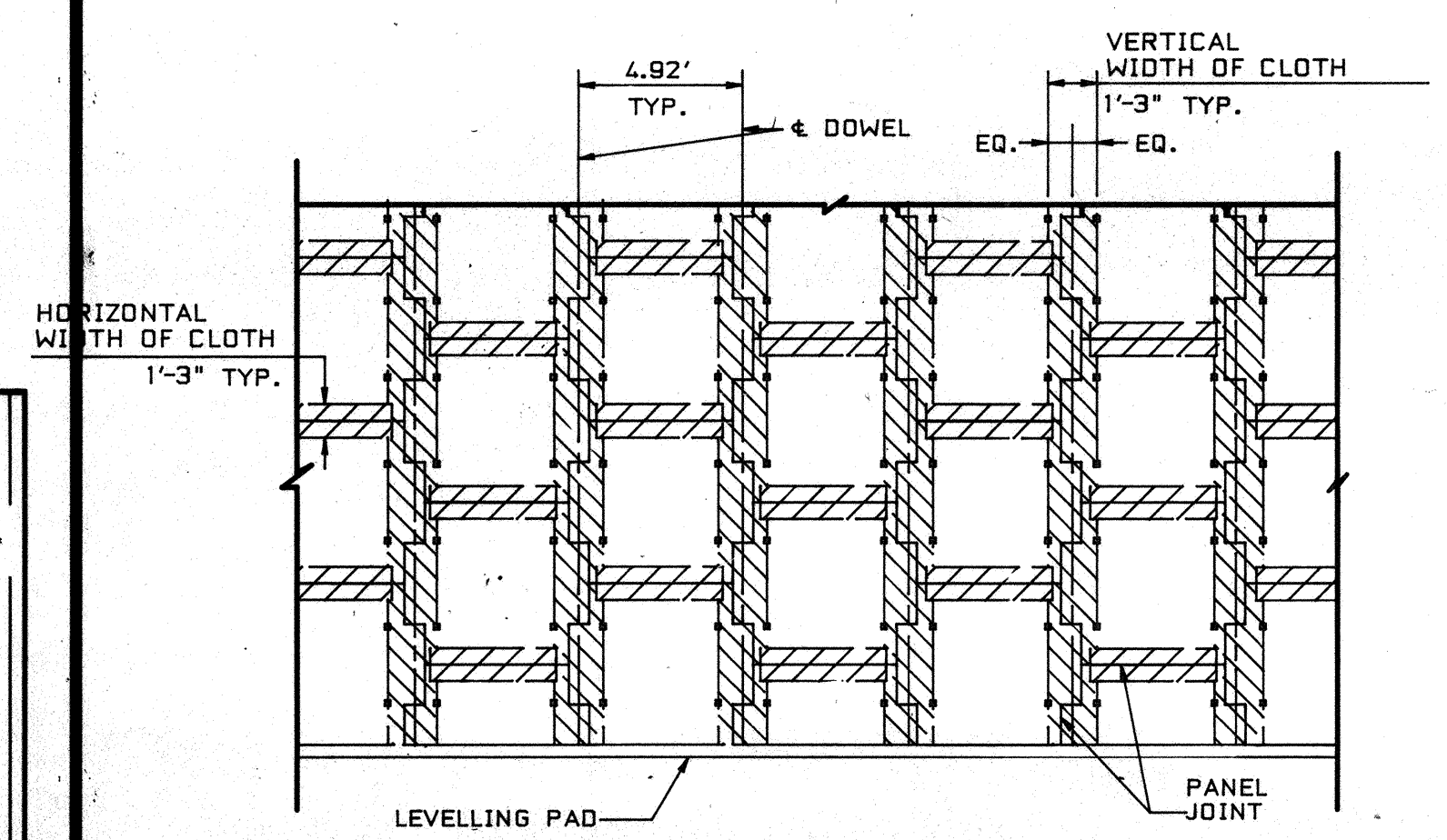
PANEL THICKNESS	REINFORCEMENT DESIGNATION	PANEL REINFORCEMENT A_s (IN ²)	MAXIMUM ALLOWABLE HORIZONTAL STRESS AT FACING (KSF)
5 1/2"	R4	0.44 VERTICAL 0.58 HORIZONTAL	1.01
	R6	0.66 VERTICAL 0.76 HORIZONTAL	1.33
	R7	1.18 VERTICAL 1.77 HORIZONTAL	2.58

- NOTES:
1. REINFORCING STEEL TO BE A615 GRADE 60.
 2. 3/8" X 3/8" CHAMFER SHALL BE PROVIDED ON ALL EXPOSED EDGES (FRONT FACE ONLY).
 3. ALL PANEL TYPES AND OTHER RELATED ELEMENTS WILL BE DETAILED ON SHOP DRAWINGS.
 4. ALL PANELS SHALL HAVE TWO LIFTING INSERTS OF ONE TON CAPACITY EACH.
 5. PANEL DESIGN THICKNESS IS 5 1/2". THICKNESS OF CONCRETE MUST INCREASE TO ACCOMMODATE ANY ARCHITECTURAL SURFACE FINISH THAT MAY BE SPECIFIED.
 6. ACTUAL PANEL REINFORCEMENT FOR ALL PANEL TYPES ON THIS PROJECT IS DESIGNATED ABOVE. R4 ILLUSTRATED FOR INFORMATION ONLY.
 7. EACH 3/4" Ø DOWEL SHALL HAVE MINIMUM LENGTH OF 10". DOWELS MAY BE GALVANIZED STEEL OR PVC ROD. A SINGLE FULL LENGTH DOWEL MAY BE USED AT THE DISCRETION OF THE MANUFACTURER.



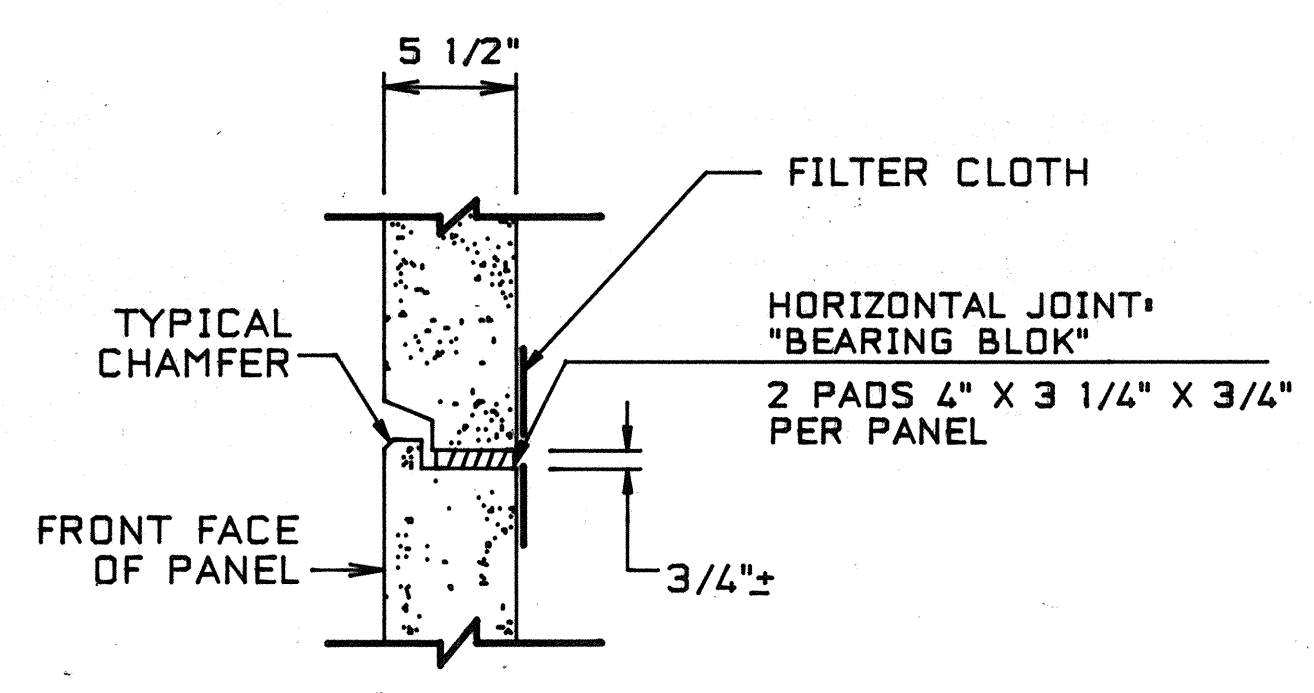
TYPICAL PANEL LAYOUT
PARTIAL ELEVATION - FRONT FACE
SCALE: 1/2" = 1'-0"

SECTION A-A
SCALE: 3/4" = 1'-0"

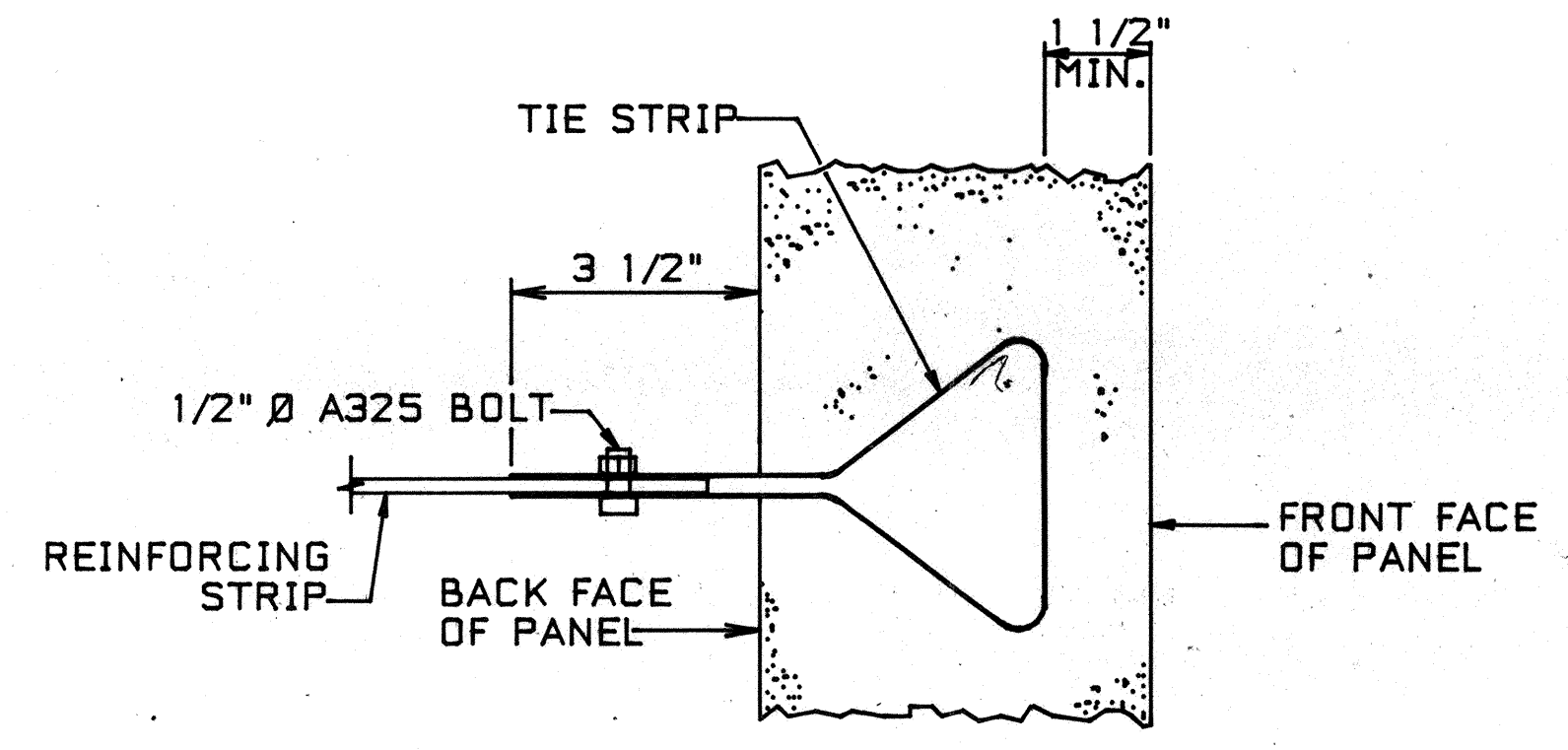


NOTE:
STRIPS OF FILTER CLOTH SHALL BE PLACED ON BACK FACE OF PANEL OVER PANEL JOINTS. FILTER CLOTH SHALL BE ADHERED TO BACK FACE OF PANELS USING AN ADHESIVE COMPOUND SUPPLIED BY THE CONTRACTOR AND APPROVED BY THE REINFORCED EARTH COMPANY.

FILTER CLOTH DETAIL
PARTIAL ELEVATION - BACK FACE
SCALE: 3/16" = 1'



SECTION 1-1



CONNECTION DETAIL
NO SCALE

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

REINFORCED EARTH WALL
(ALTERNATE NO.1)
INTERSTATE ROUTE H-2
WAIPIO INTERCHANGE
F, A, I PROJ. NO. IR - H2-1(21)
SCALE: as noted DATE: Aug 86

SHEET No. 523 OF 23 SHEETS
OCTOBER 1987

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