

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	740A-01-70	1970	25	40

GENERAL NOTES

DESIGN SPECIFICATIONS: AASHO

- STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES (10TH EDITION - 1969) WITH SUBSEQUENT ADDITIONS & MODIFICATIONS.
- LIVE LOAD: HS 20-44

DESIGN STRESSES:

- REINFORCED CONCRETE - SEE AASHO SPECIFICATIONS EXCEPT AS OTHERWISE NOTED & SEE SPECIAL PROVISIONS.
 $f_c = 1,200$ PSI
 $f_t = 10$
- REINFORCING STEEL -
 $f_s = 20,000$ PSI IN TENSION
 $f_s = 16,000$ PSI IN COMPRESSION

MATERIALS:

- ALL CONCRETE SHALL BE CLASS A EXCEPT OTHERWISE NOTED ON PLANS.
- SEE SPECIAL PROVISIONS FOR ADMIXTURE IN CONCRETE.
- ALL REINFORCING STEEL TO BE ASTM DESIGNATION A615 GRADE 40 EXCEPT AS OTHERWISE NOTED.

CONSTRUCTION METHODS:

- SEE STANDARD SPECIFICATIONS & SPECIAL PROVISIONS.
- THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL EXISTING UTILITY LINES & NOTIFY THE RESPECTIVE OWNERS BEFORE COMMENCING EXCAVATION WORK. SEE SEC. 107.01 OF SPEC.
- IN GENERAL, TOP OF CONCRETE DECK OF STRUCTURE SHALL BE CONSTRUCTED TO FOLLOW THE FINISH ROADWAY VERTICAL & HORIZONTAL CURVES & GRADES.
- FOR CONCRETE FINISH SEE SPECIFICATIONS.
- BECAUSE OF THE HEAVY VOLUME OF TRAFFIC OVER THE EXISTING BRIDGE, THE CONTRACTOR SHALL SHORE THE EDGE OF THE EXIST. SLAB TO PREVENT SLAB DEFLECTION DURING THE CONCRETE POUR & SUBSEQUENT CONCRETE SETTING. SHORING OF BRIDGE IS INCIDENTAL TO COST OF BRIDGE & WILL NOT BE PAID FOR UNDER A SEPARATE ITEM.
- DURING CONSTRUCTION OF THE MAUNALUA BRIDGE, THE EXISTING HAWAIIAN ELECTRIC POWER LINES SHALL BE TEMPORARILY RELOCATED BY H.E.CO. SO THAT THERE WILL BE A MINIMUM AMOUNT OF INTERFERENCE WITH EQUIPMENT MOVEMENT. THE EXISTING HAWAIIAN TELEPHONE OVERHEAD CABLES WILL REMAIN IN PLACE, EXCEPT THAT SHOULD THERE BE A CONFLICT WITH THE BRIDGE CONSTRUCTION, THE CONTRACTOR SHALL ARRANGE FOR MINOR ADJUSTMENTS WITH THE H.T.CO. DAMAGE TO THE H.T.CO. CABLES SHALL BE REPAIRED BY H.T.CO. BUT THE COST OF SUCH REPAIR SHALL BE PAID FOR BY THE CONTRACTOR AT NO EXTRA COST TO THE STATE.

BRIDGE ESTIMATED QUANTITIES

STRUCTURAL EXCAVATION	145 C.Y.
FILTER MATERIAL	5 C.Y.
CONCRETE	410 C.Y.
PRESTRESSED CONCRETE PILES FURNISHED	5340 L.F.
PRESTRESSED CONCRETE PILES DRIVEN	4,325 L.F.
METAL BRIDGE RAILING	220 L.F.
CEMENT RUBBLE MASONRY	45 C.Y.
REPAIR OF EXIST. PILES & PILE CAPS	600 S.F.
REINFORCING STEEL	80,000 LBS.
RIP RAP REVETMENT	810 TONS
DRIVING TEST PILES	885 L.F.

APPROVED: *[Signature]* DATE: 11/19/70
 ASST. CHIEF ENGINEER, BWS

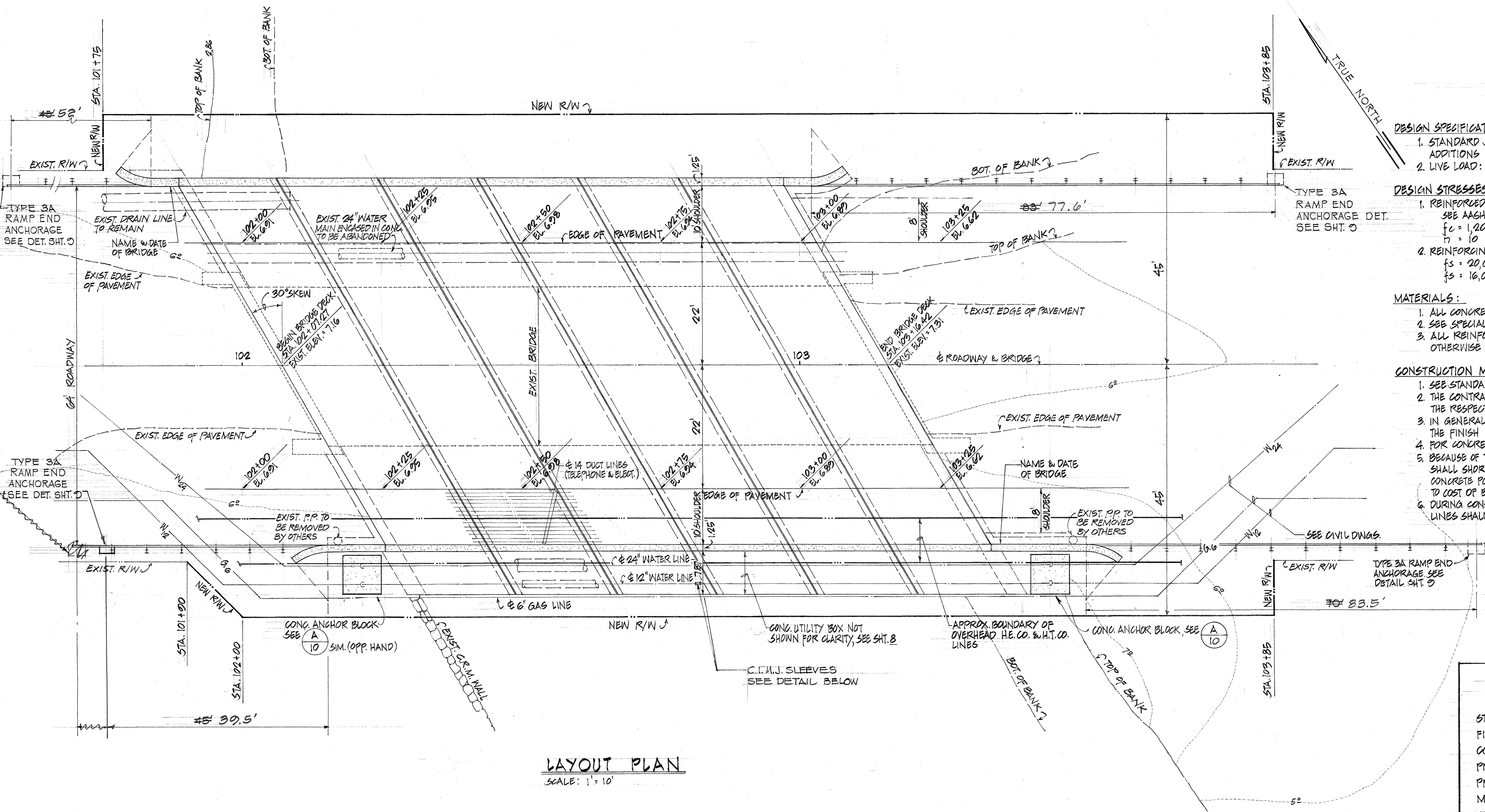
STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION

KALANIANA'OLE HIGHWAY
 WIDENING
 MAUNALUA BRIDGE WIDENING

LAYOUT PLAN

Proj. No. 740A-01-70
 Scale: As Shown
 Date: Oct., 1970

SHEET No. 1 OF 11 SHEETS



LOG OF BORINGS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	740A-01-70	1970	26	40

B-1

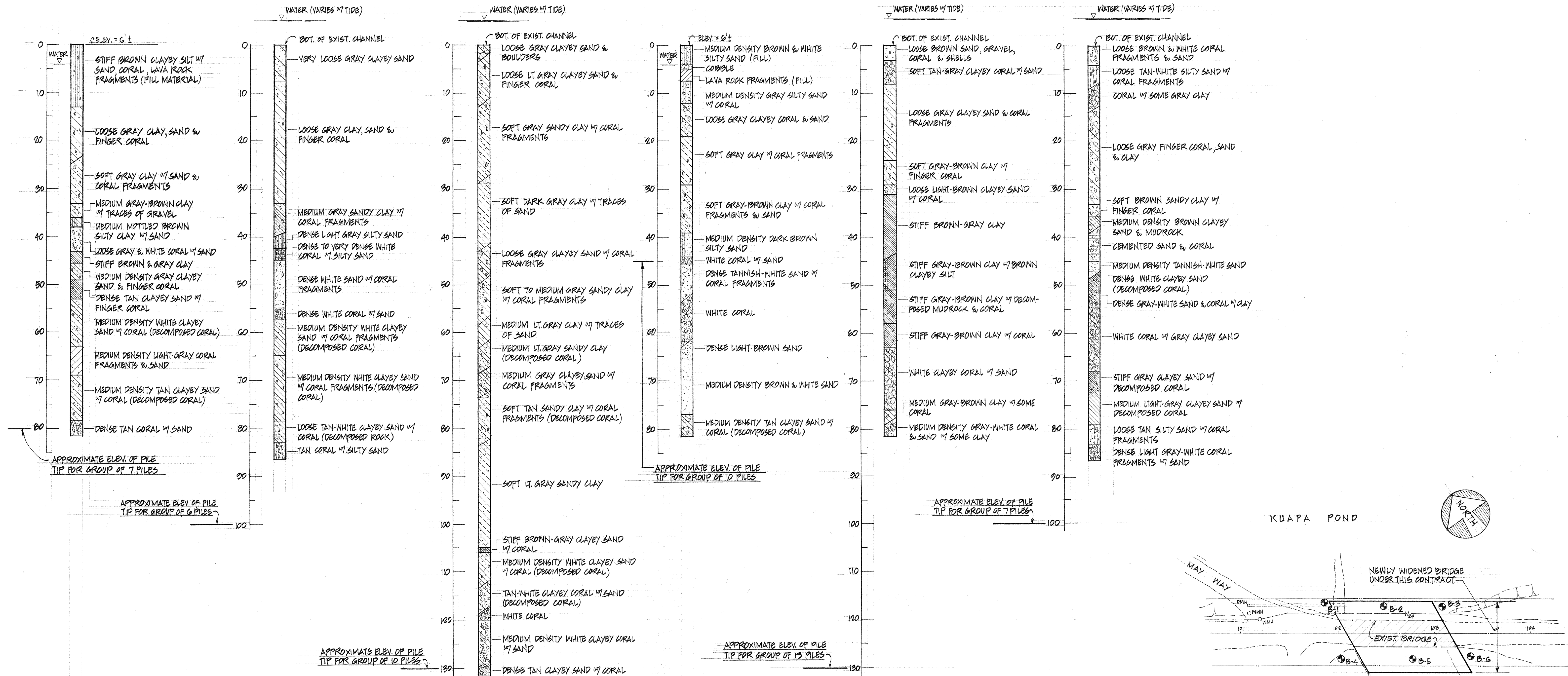
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B-3

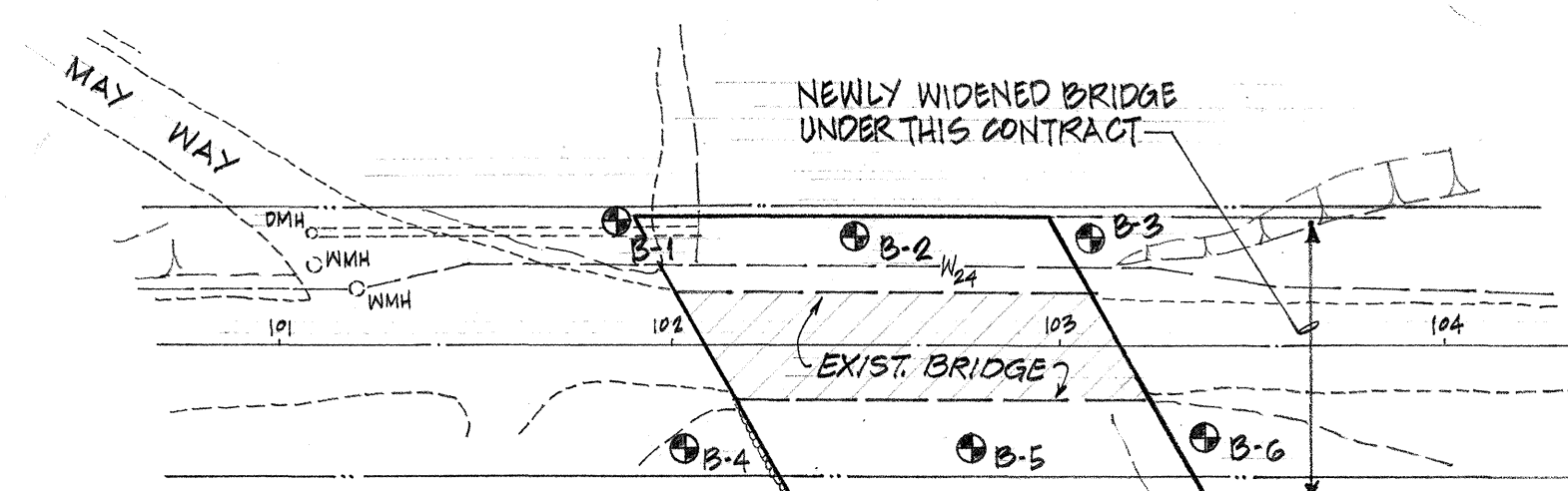
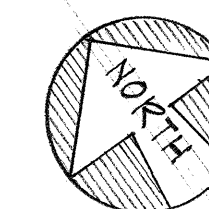
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B-5

B-6



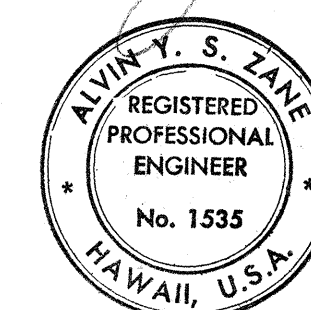
KUAPA POND



BORING LOCATION PLAN
SCALE: 1" = 50'

NOTE:
BORING DATA FROM SOIL EXPLORATION REPORT
BY WALTER LUM ASSOC., INC. DATED: JULY 31, 1970

This work was prepared by me
or under my supervision
Alvin Y. S. Zane



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

KALANIANA'OLE HIGHWAY
WIDENING
MAUNALUA BRIDGE WIDENING

LOG OF BORINGS

Proj. No. 740A-01-70
Scale: AS SHOWN

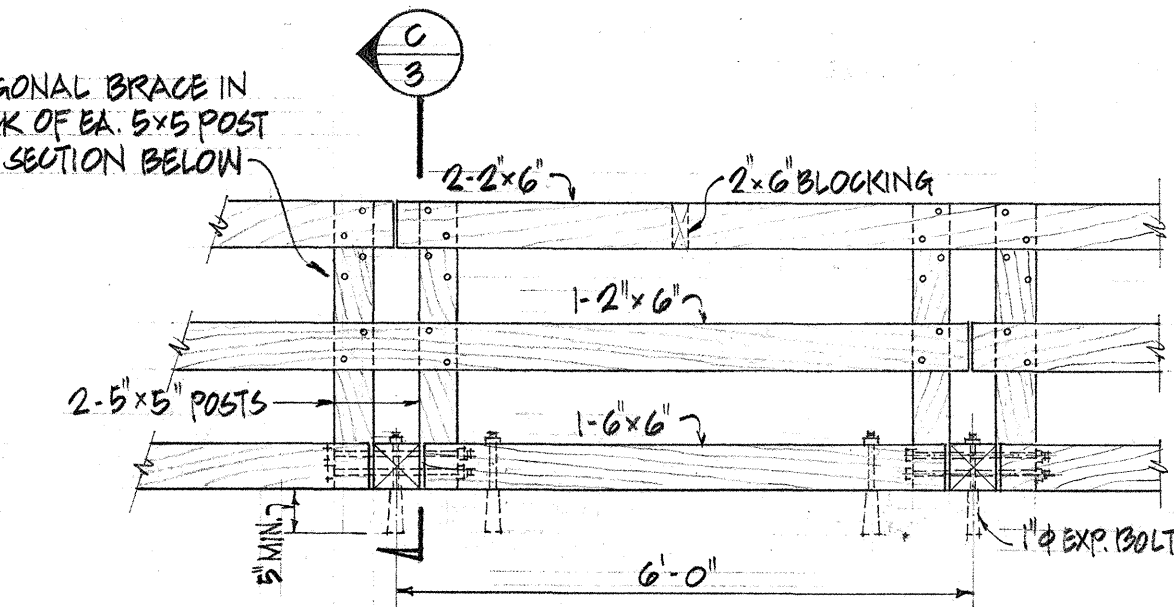
Date: Oct., 1970

SHEET No. 2 OF 11 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	740A-01-70	1970	27	40

GENERAL NOTES.

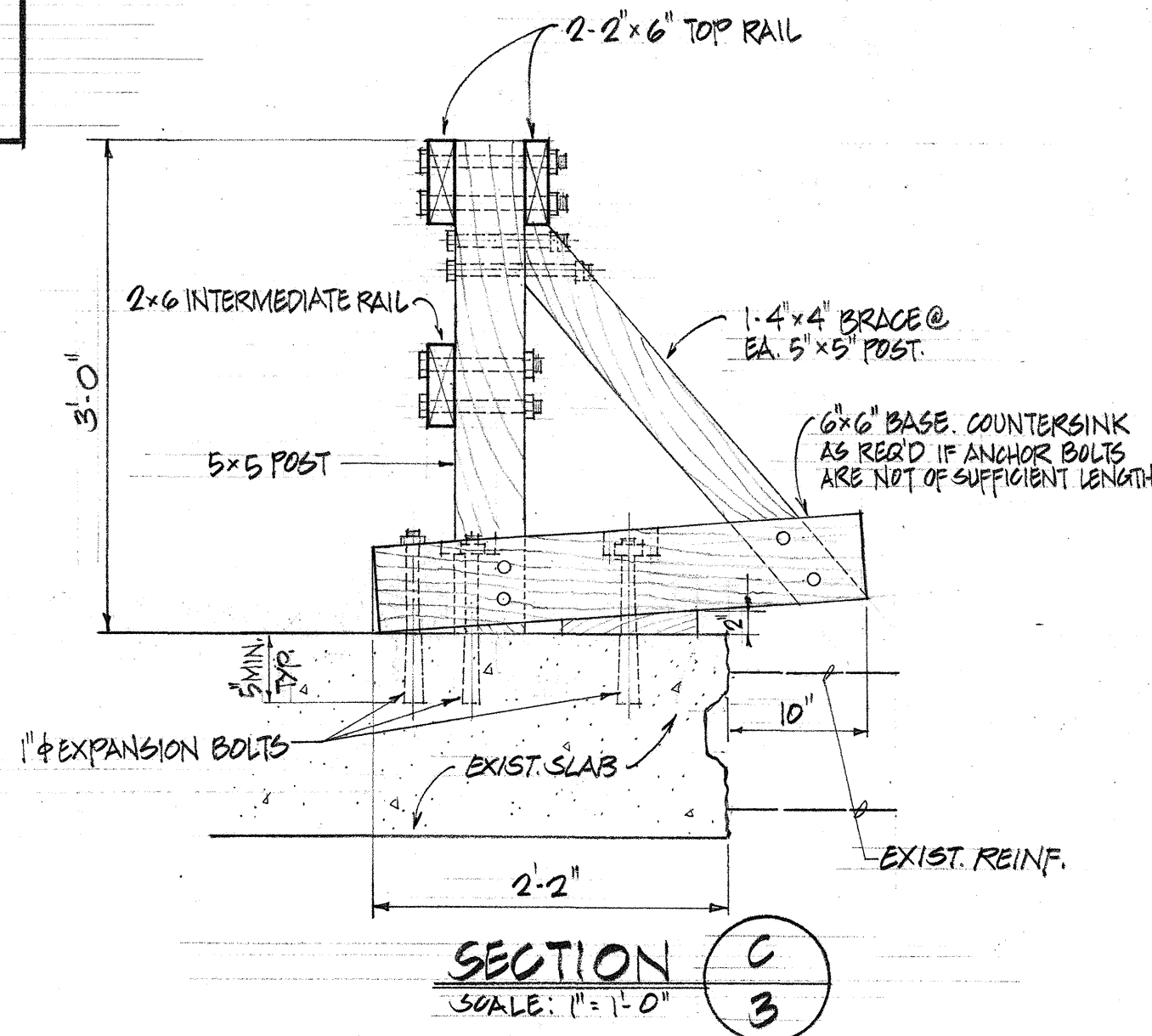
THE CONTRACTOR SHALL REMOVE PART OF THE BRIDGE ON THE LINES SHOWN OR NOTED ON THE DRAWINGS. THE REINFORCING BARS SHALL BE LEFT EXPOSED FOR SUBSEQUENT LAPPING WITH NEW REINFORCEMENT. WHERE REINFORCING BARS ARE SHORT & WELDING REQUIRED, THE LATTER SHALL BE DONE IN CONFORMITY WITH THE STATE STANDARDS AS SHOWN ON SHEET NO. 10.



ELEVATION ~ DETAIL TEMPORARY WOODEN RAILING

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

NOTE:
TEMPORARY WOODEN RAILING IS AN INCIDENTAL ITEM TO BRIDGE CONSTRUCTION & SHALL NOT BE PAID FOR UNDER A SEPARATE ITEM.



This work was prepared by me or under my supervision.

Alvin Y. S. Zane



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

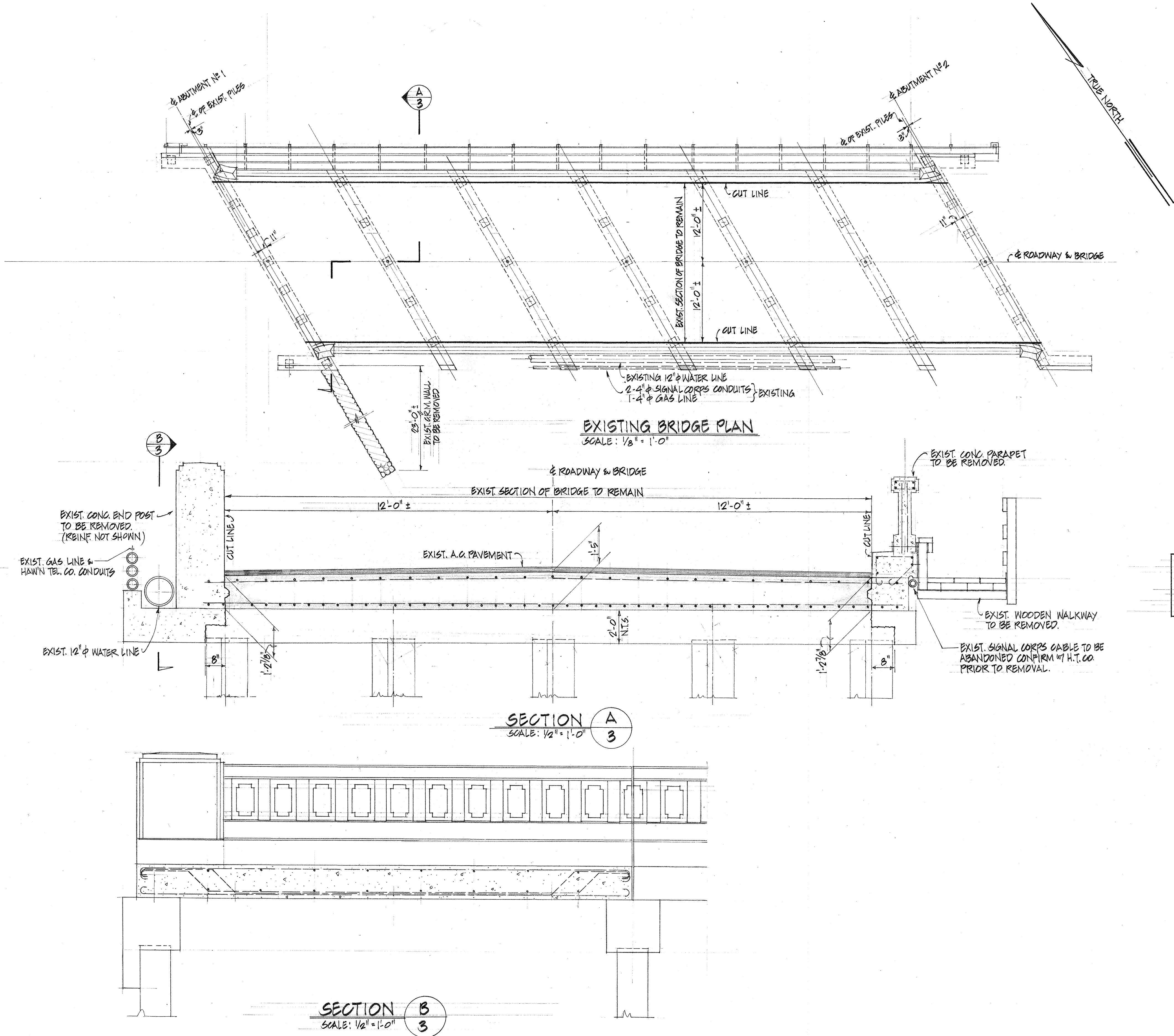
KALANIANA'OLE HIGHWAY
WIDENING
MAUNALUA BRIDGE WIDENING

EXISTING BRIDGE PLAN & SECTIONS

Proj. No. 740A-01-70
Scale: As Shown

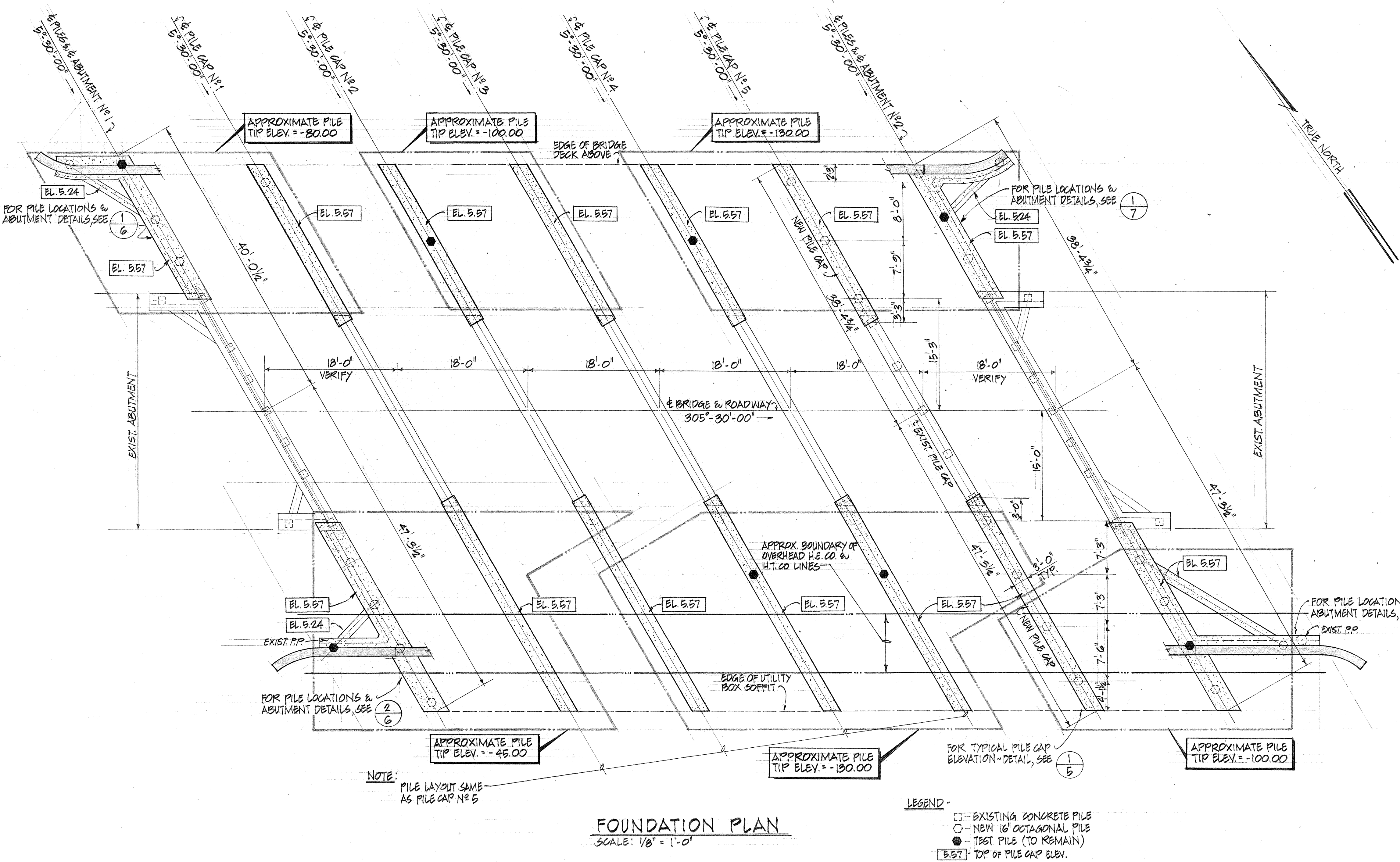
Date: Oct., 1970

SHEET No. 3 OF 11 SHEETS



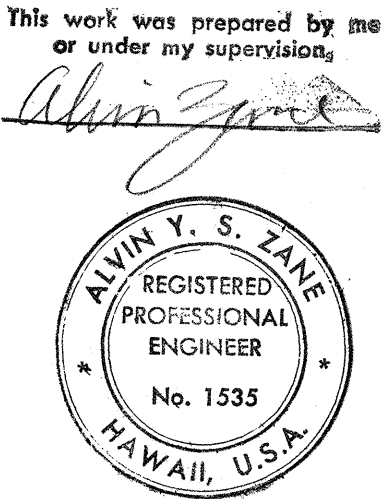
DATE	BY
DESIGNED BY	
CHECKED BY	
NOTED BY	
PLAN	
SECTION	
DETAIL	
AS SHOWN	

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	740A-01-70	1970	28	40



- NOTES:
- CONTRACTOR SHALL SUPPLY 16" OCTAGONAL PRESTRESSED PILES (40 TON CAPACITY) MANUFACTURED IN ACCORDANCE WITH STATE OF HAWAII, DEPARTMENT OF TRANSPORTATION STANDARDS AS SHOWN ON DWGS. 300-1 & 300-2.
 - PILE OUT-OFF ELEVATIONS AS FOLLOWS:
TYPICAL PILE CAP = 3.74
ABUTMENT = 4.07
 - CONTRACTOR SHALL FURNISH & DRIVE 3 TEST PILES IN 2 INSTALLMENTS. INITIALLY 4 TEST PILES SHALL BE DRIVEN ON MAKAI SIDE. ENGINEER WILL ESTABLISH PROCEDURE OF PILE DRIVING & MIN. LENGTH OF PILE PENETRATION. SECOND INSTALLMENT OF 4 TEST PILES SHALL BE DRIVEN FOR VERIFICATION ON MAUKA SIDE AFTER MAKAI SIDE BRIDGE WIDENING IS COMPLETED & EXISTING 24" WATER MAIN IS ABANDONED. TEST PILES SHALL BE FURNISHED IN LENGTHS 5' LONGER THAN REST OF PILES.
 - PILE TIP ELEVATIONS ARE SHOWN FOR ESTIMATING PURPOSES ONLY & SHALL BE REVISED AFTER DRIVING OF TEST PILES. PILE LENGTHS WILL VARY CONSIDERABLY AT THIS SITE.
 - ALL PILES UNDER THIS CONTRACT SHALL BE DRIVEN WITH THE SAME HAMMER, UNDER THE SAME OPERATING CONDITIONS & WITH THE SAME ENERGY PER BLOW AS USED TO DRIVE THE TEST PILES.
 - PRESTRESSED CONCRETE PILES 100' IN LENGTH OR LESS SHALL BE CAST IN MONOLITHIC UNITS. PILES LONGER THAN 100' IN LENGTH MAY BE SPLICED AT APPROXIMATELY THE MIDPOINT OF THE PILE LENGTH UNLESS OTHERWISE DIRECTED BY THE ENGINEER. THE SPICE DETAIL SHALL BE AS SHOWN IN THE STANDARD PRESTRESSED CONCRETE PILE DETAILS. THE SPICE SHALL BE INCIDENTAL TO COST OF PILES. & WILL NOT BE PAID FOR SEPARATELY.

DESIGNED BY	DATE
DRAWN BY	
CHECKED BY	
APPROVED BY	
ORIGINAL	
NOTE BOOK	
No.	



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

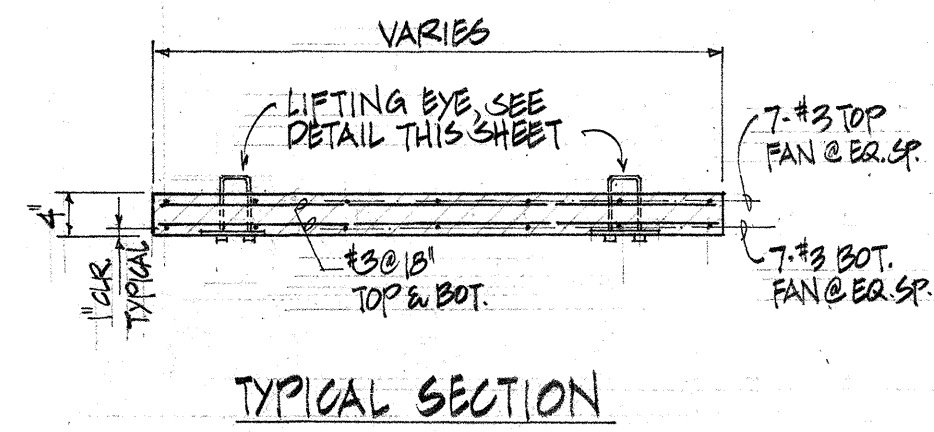
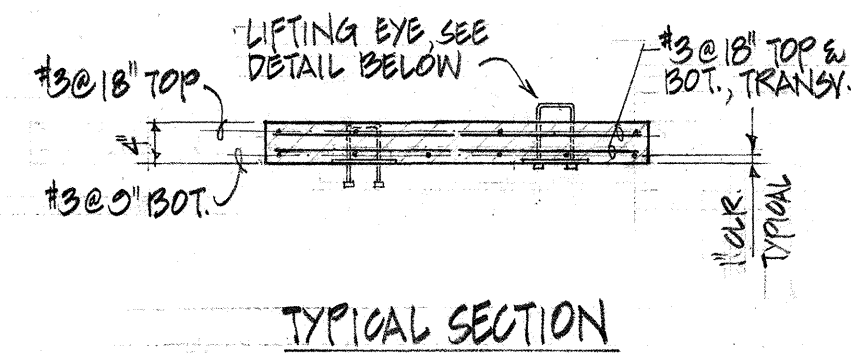
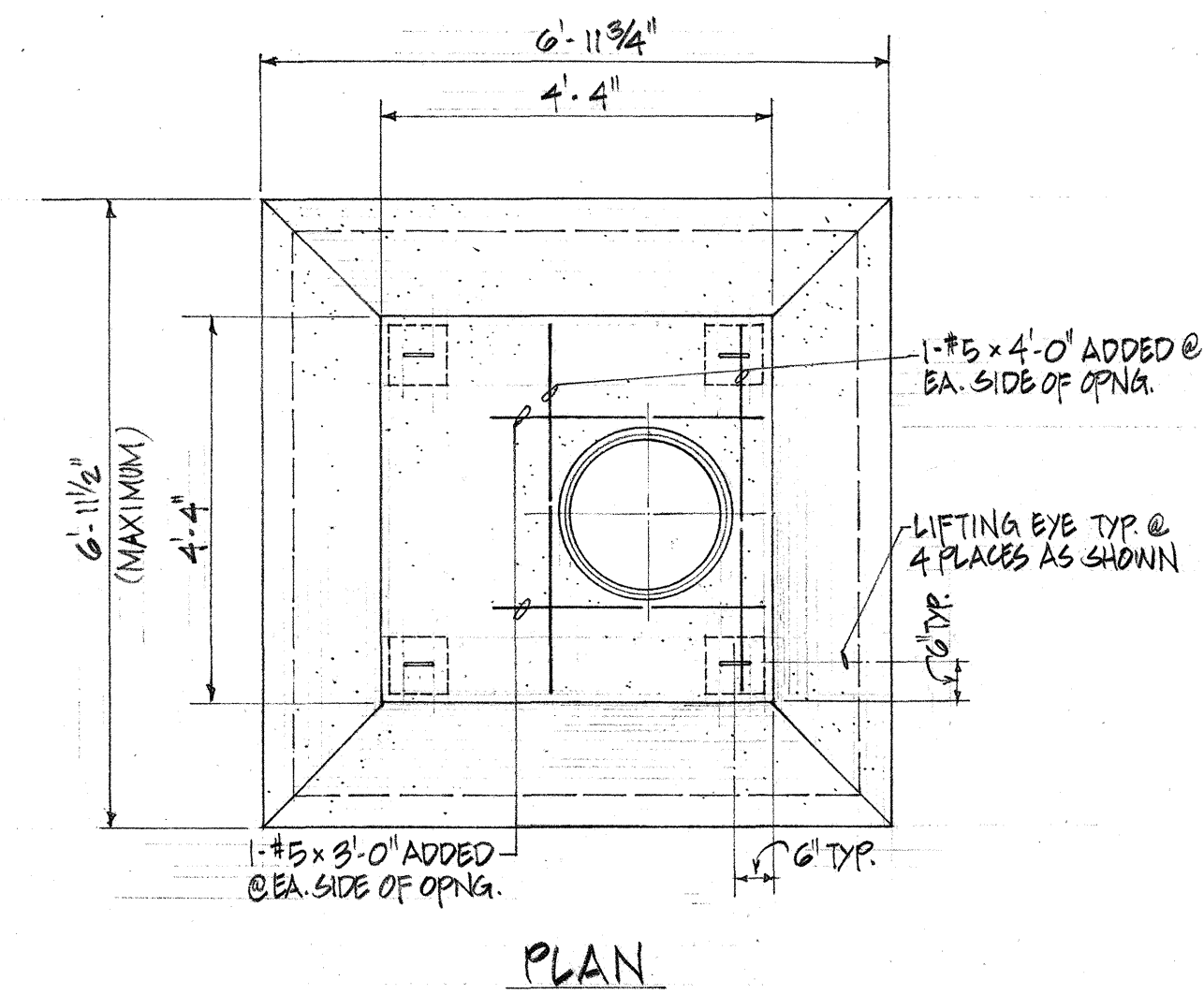
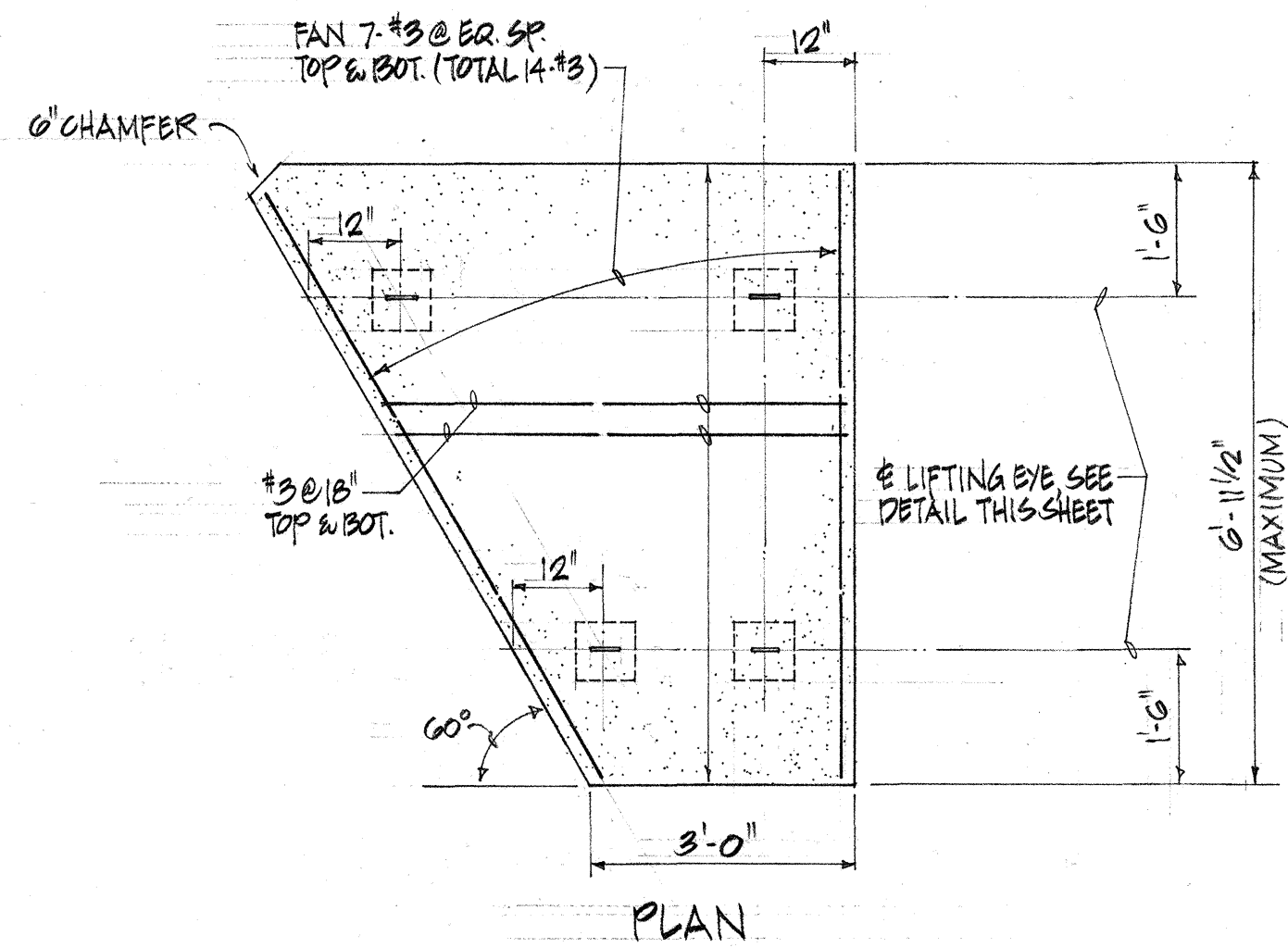
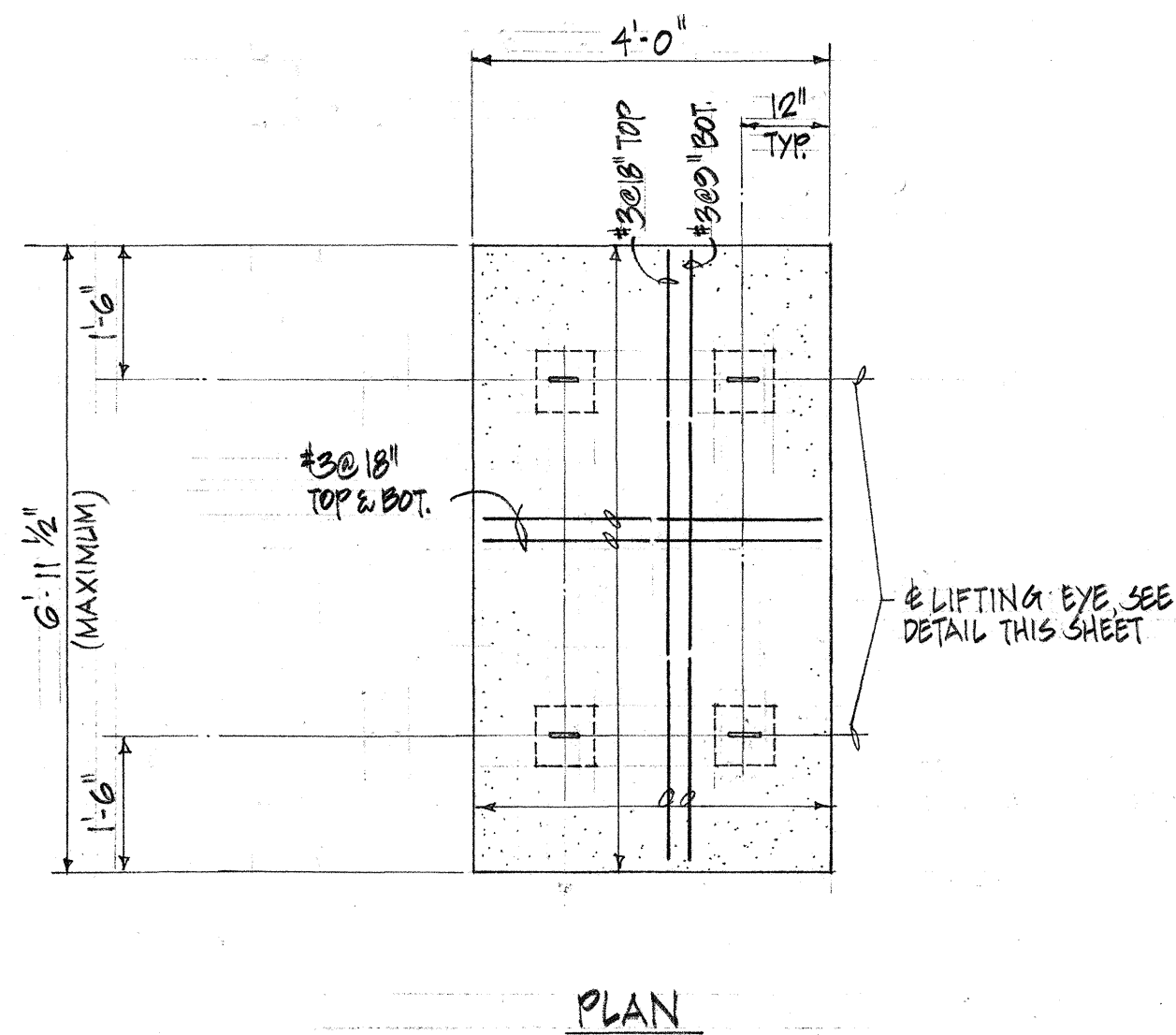
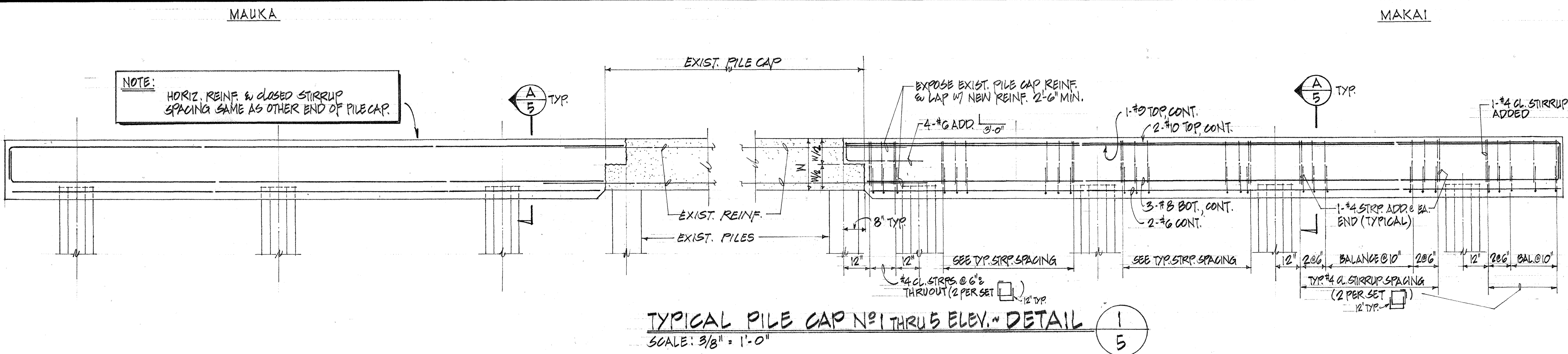
KALANIANA'OLE HIGHWAY
WIDENING
MAUNALO A BRIDGE WIDENING

FOUNDATION PLAN

Proj. No. 740A-01-70
Scale: AS SHOWN
Date: Oct., 1970

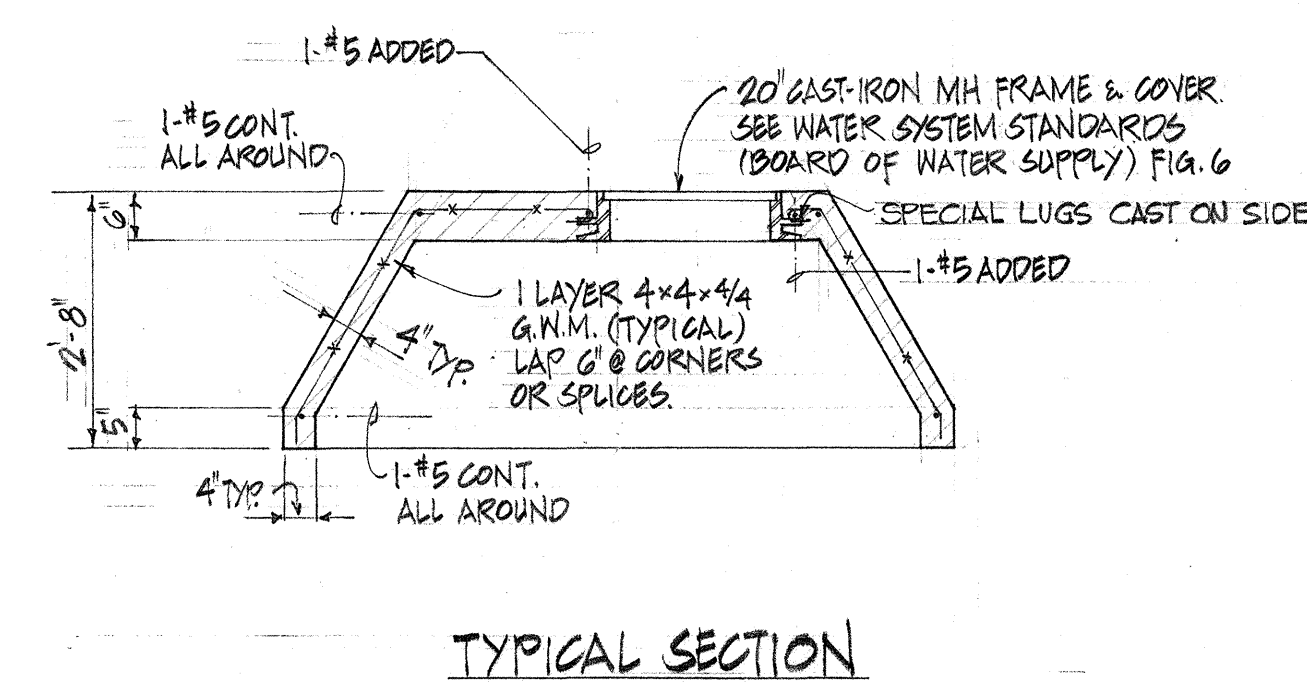
SHEET No. 4 OF 11 SHEETS

DATE	_____
SURVEYED BY	_____
DRAWN BY	_____
CHECKED BY	_____
NOTE BOOK	_____
NO.	_____

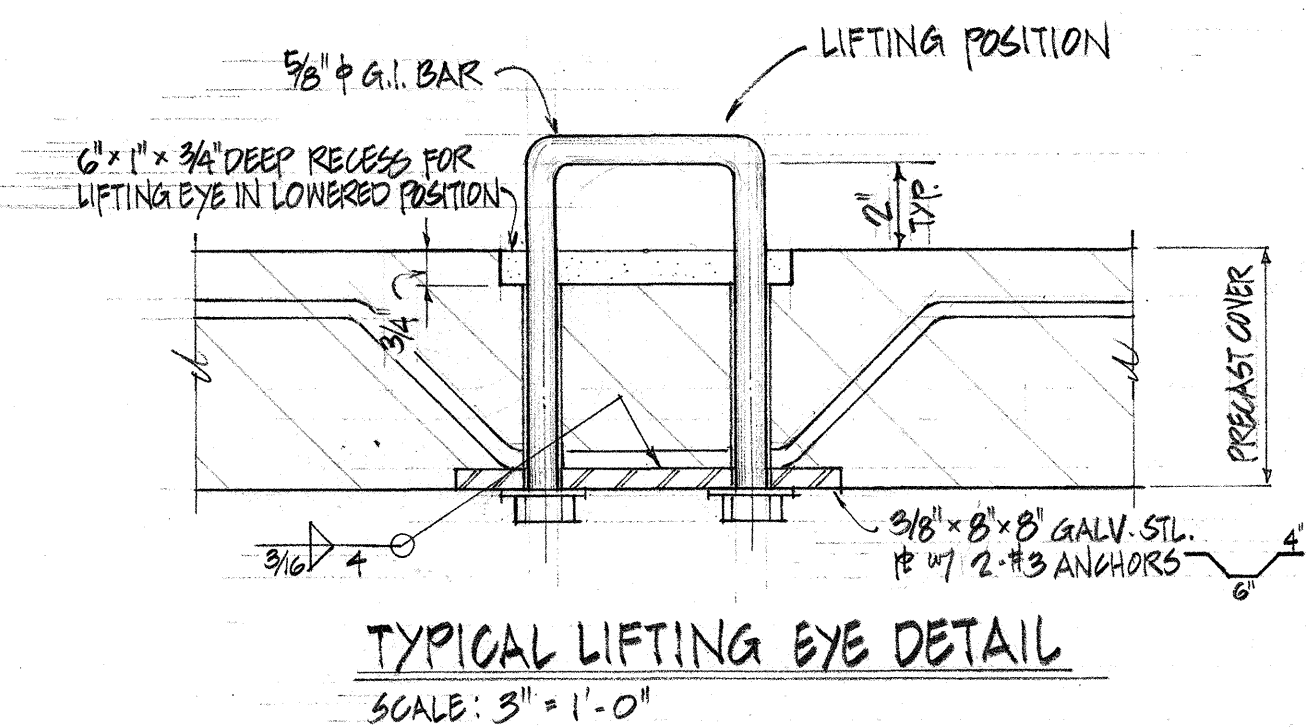


TYPE "A" PRECAST CONG. COVER DETAIL 2/5
SCALE: 1/2" = 1'-0"

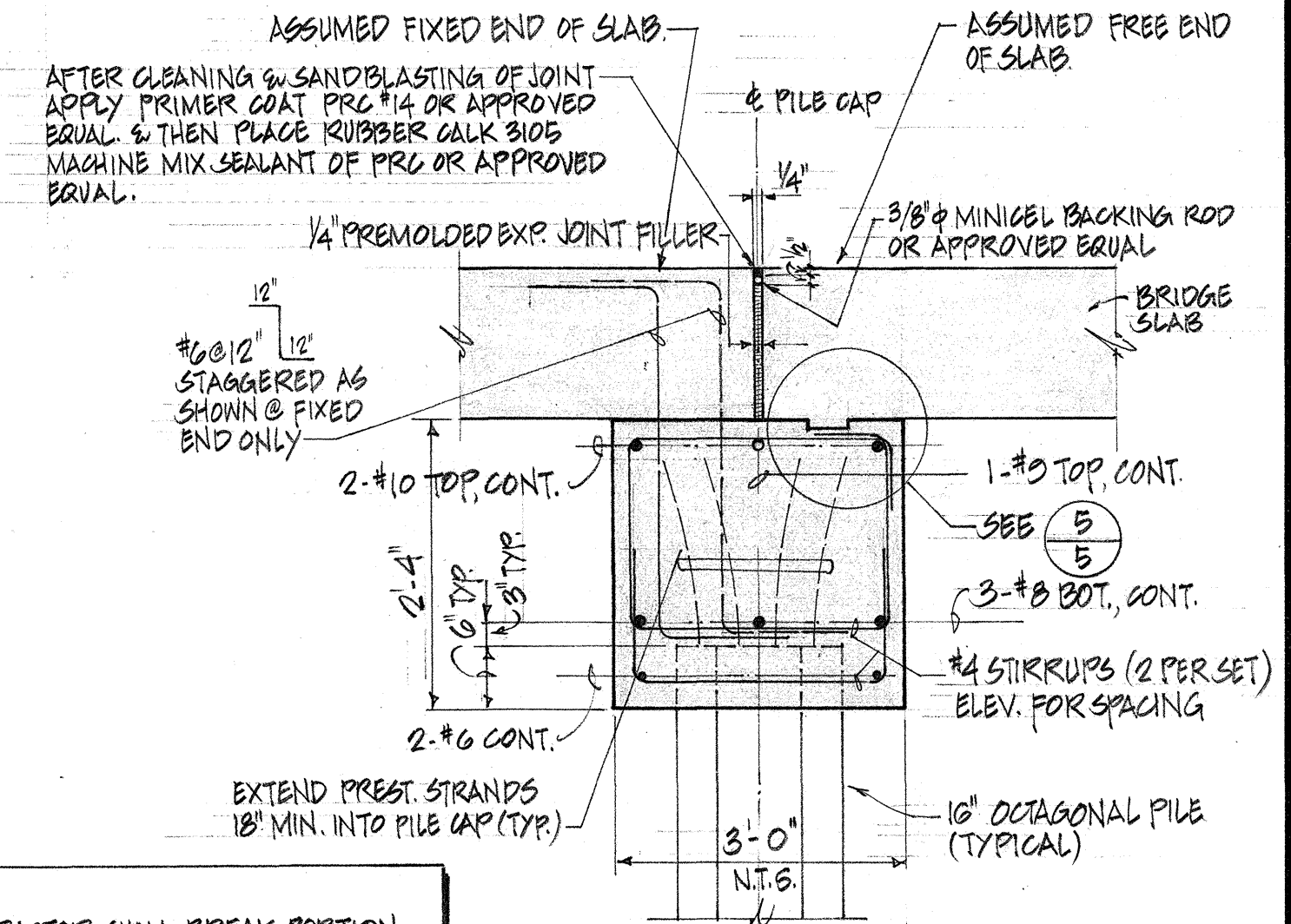
TYPE "B" PRECAST CONG. COVER DETAIL 3/5
SCALE: 1/2" = 1'-0"



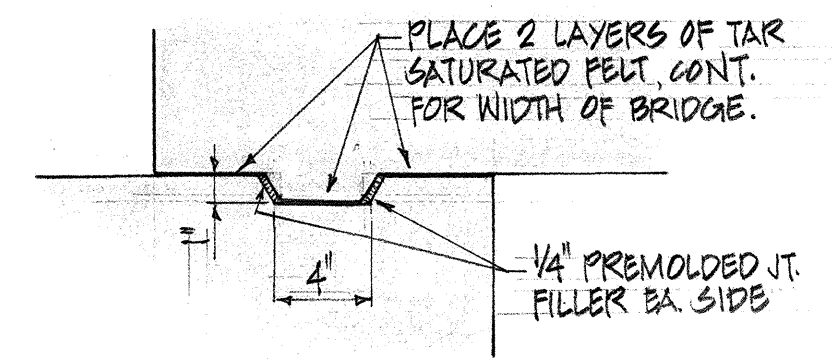
PRECAST CONG. VALVE HOUSING COVER 4/5
SCALE: 1/2" = 1'-0"



NOTE:
ALL PRECAST CONCRETE UNITS & INCIDENTAL ITEMS SUCH AS LIFTING EYES, ETC. SHALL BE INCLUDED UNDER "CONCRETE IN BRIDGES" COST ESTIMATE & SHALL NOT BE PAID FOR UNDER A SEPARATE ITEM.



NOTE:
CONTRACTOR SHALL BREAK PORTION OF SLAB TO LOCATE & VERIFY EXIST. FIXED END OF SLAB IN THE PRESENCE OF THE ENGINEER. MATCH NEW W/ EXIST.

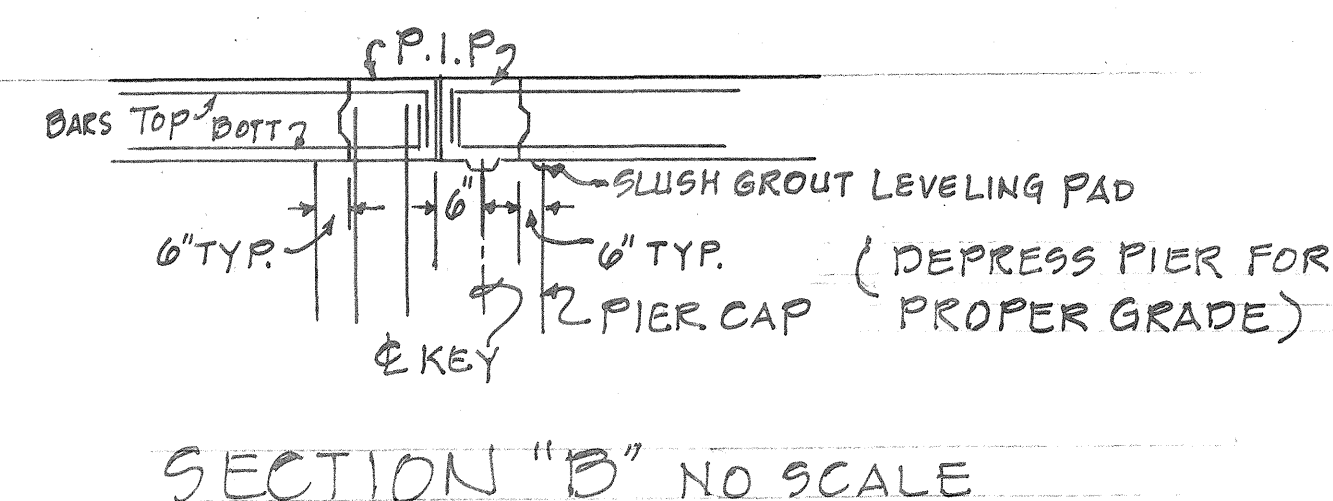
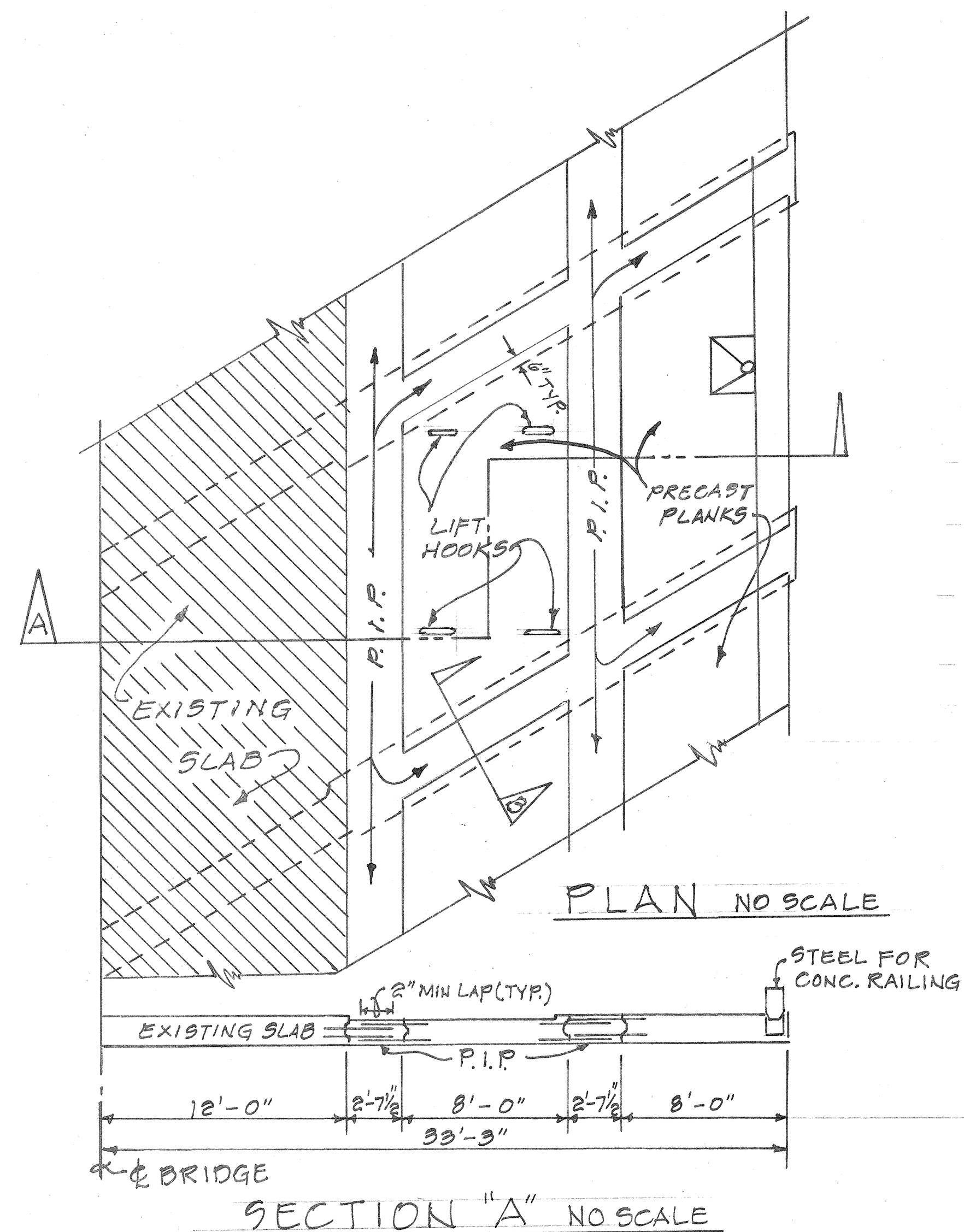
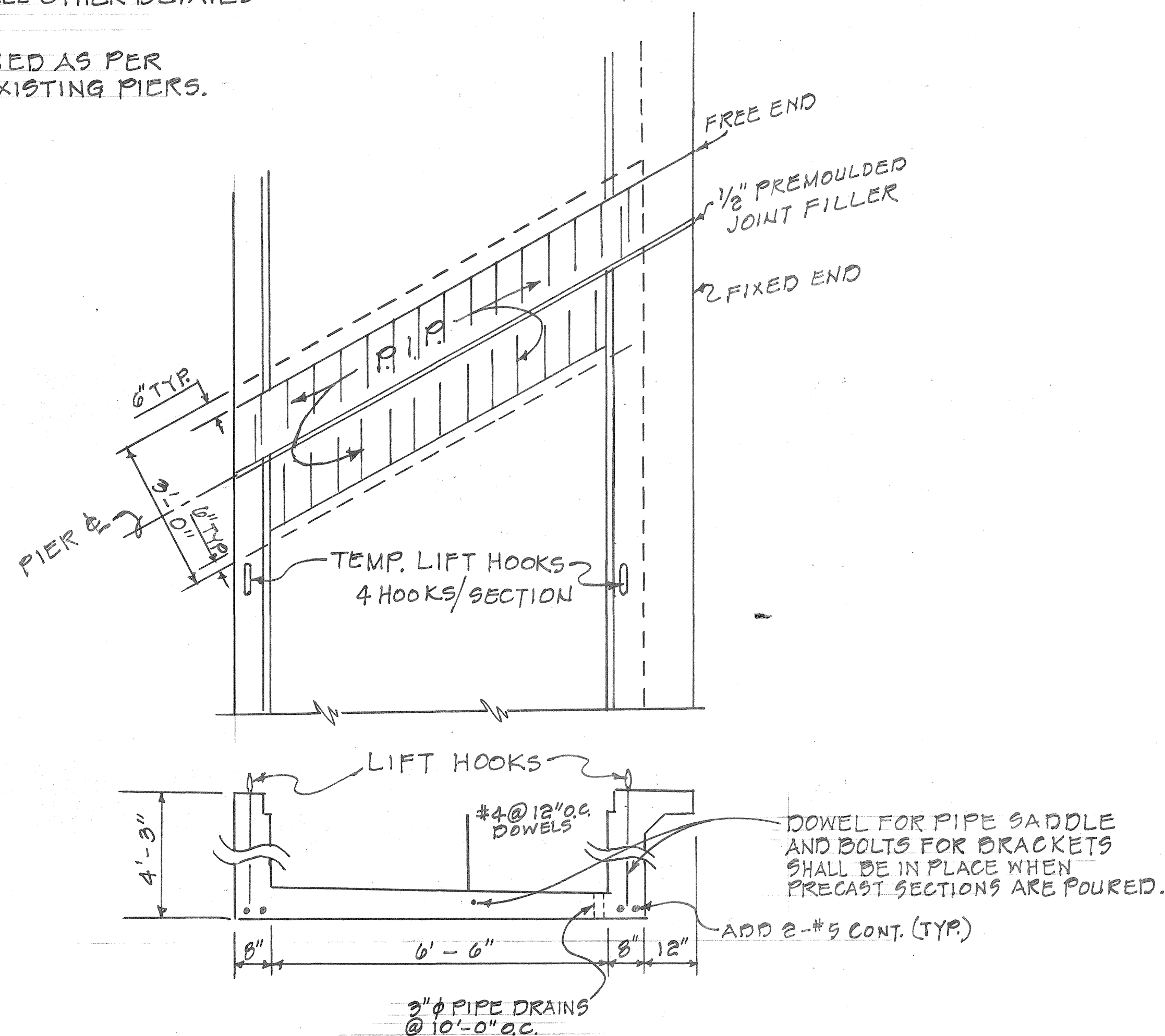


This work was prepared by me or under my supervision.
Alvin S. Zane
ALVIN S. ZANE
REGISTERED PROFESSIONAL ENGINEER
No. 1535
HAWAII, U.S.A.

APPROVED _____ DATE 11/19/70
D. Kawakami
ASST CHIEF ENGINEER, BWS.
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
KALANIANA'OLE HIGHWAY
WIDENING
MAUNALUA BRIDGE WIDENING
TYP. PILE CAP ELEVATION & DETAILS
& PRECAST CONG. COVER DETAILS
Proj. No. 740A-01-70
Scale: AS SHOWN
Date: Oct., 1970
SHEET No. 5 OF 11 SHEETS

NOTES:

1. CENTER WALL AND PIPE CRADLE TO BE POURED IN PLACE AS PER DETAIL IN PLANS.
2. BOXES NOT TO BE MOVED UNTIL PROPER STRENGTH IS REACHED. (AS DETERMINED BY ENGINEER.)
3. FOR STEEL PLACEMENT AND ALL OTHER DETAILS NOT SHOWN, SEE PLANS.
4. BOX LENGTH TO BE DETERMINED AS PER ACTUAL SPACING BETWEEN EXISTING PIERS.



NOTES:

1. DRAINS TO BE PRECAST IN PLANKS PER PLANS.
2. CONDUITS WILL BE PLACED BY SUB AT TIME OF PRECASTING.
3. STEEL PLACEMENT AND ALL OTHER DETAILS NOT SHOWN SHALL BE AS PER PLANS.
4. PLANKS NOT TO BE MOVED UNTIL 300 PSI CYLINDER STRENGTH ATTAINED. (AS DET. BY ENGINEER)
5. SOFFIT TO BE SMOOTH PLANE SURFACE.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

KALANIANA'OLE HIGHWAY
WIDENING

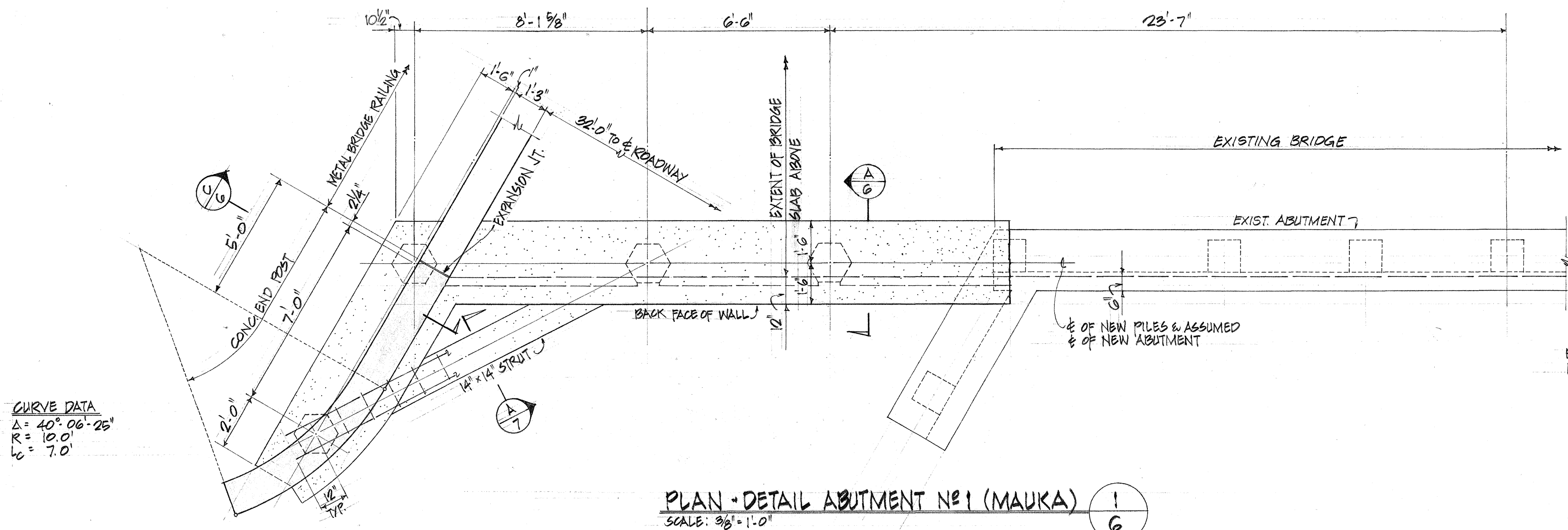
MAUNALUA BRIDGE WIDENING
TYP. PILE CAP ELEVATION & DETAILS
& PRECAST CONC. COVER DETAILS

Proj. No 740A-01-70
Scale: AS SHOWN

SHEET No. OF SHEETS

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

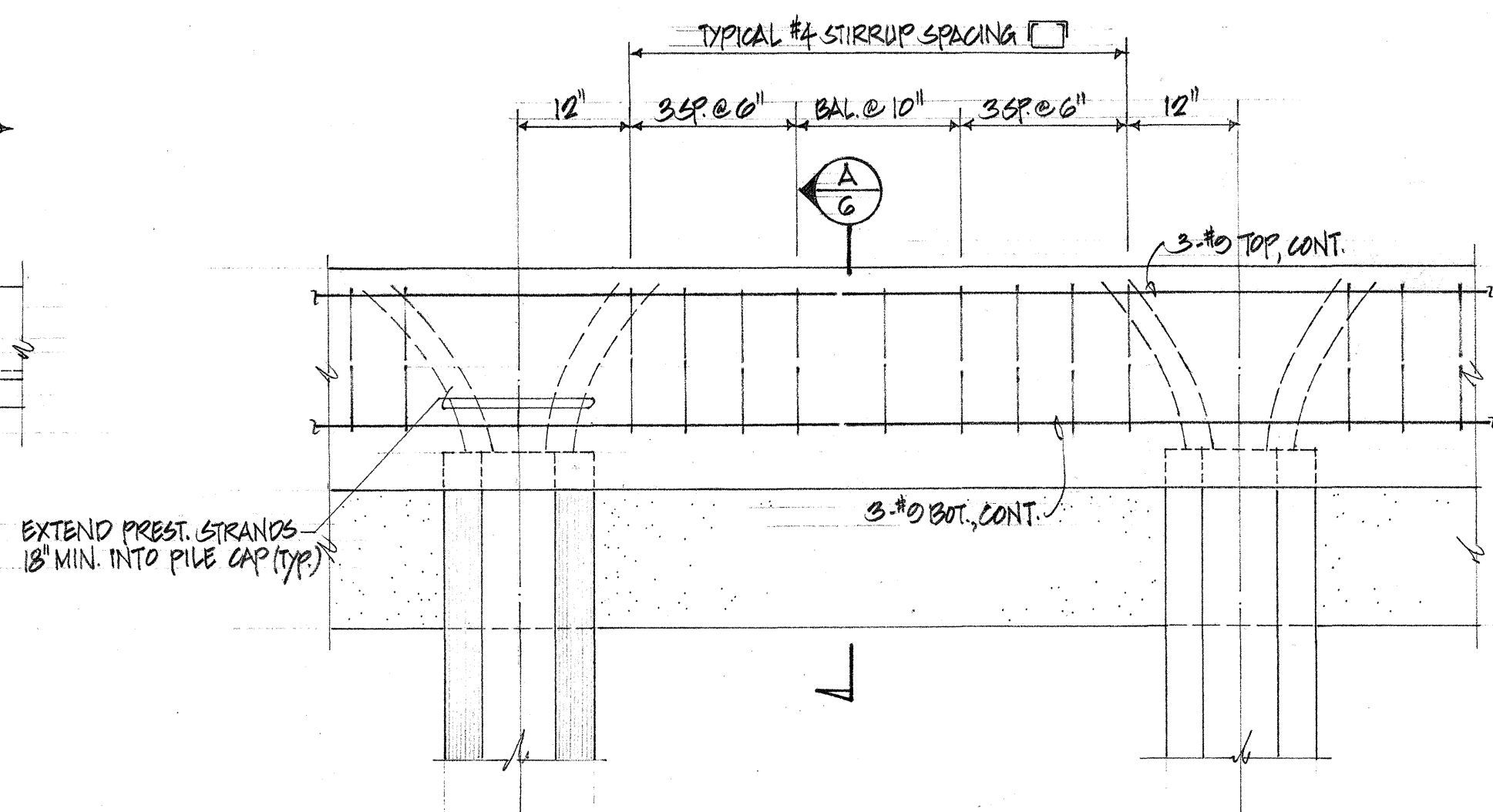
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	740A-01-70	1970	30	40



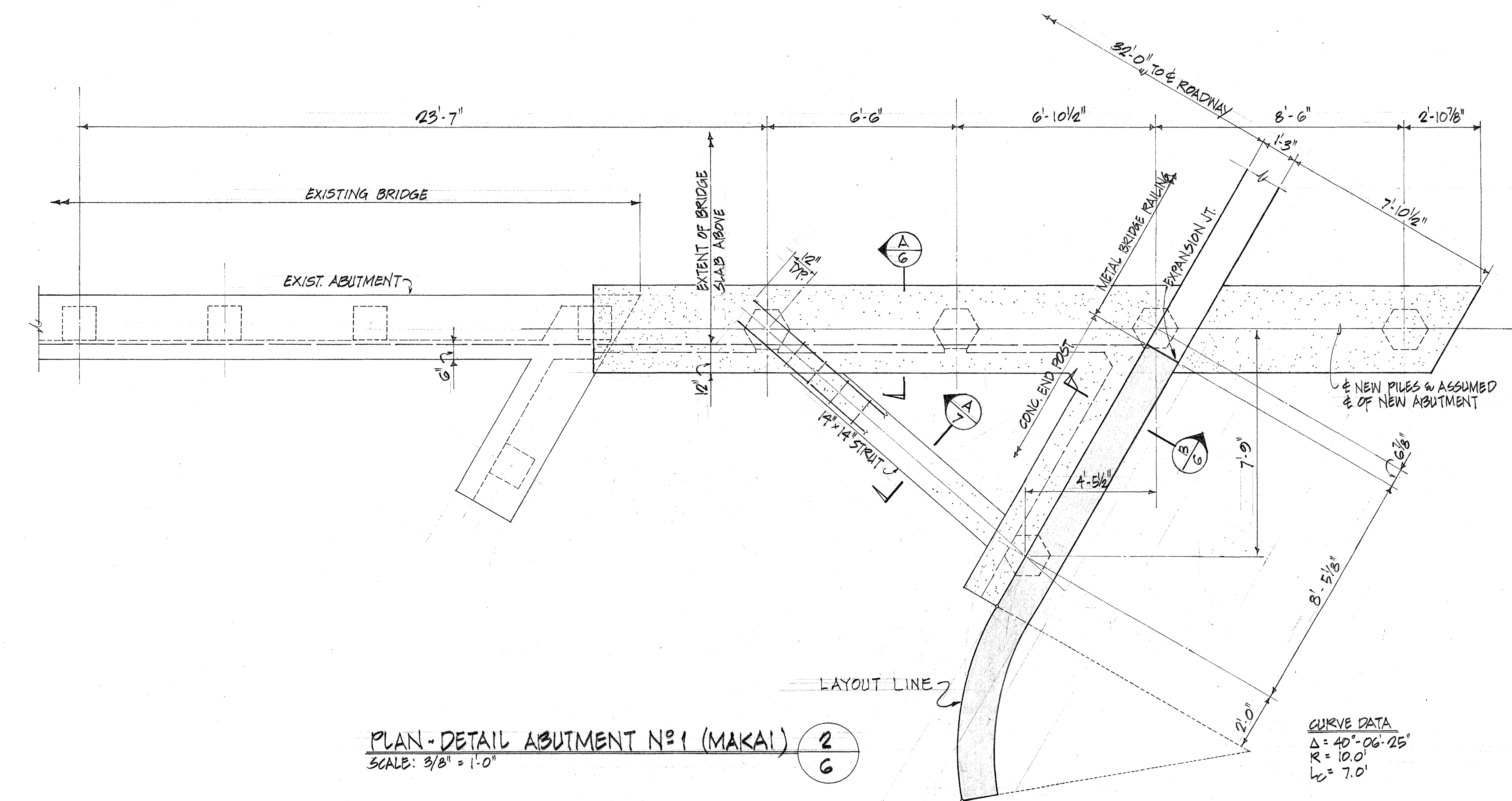
CURVE DATA
 $\Delta = 40^\circ 06' 25''$
 $R = 10.0'$
 $L = 7.0'$

PLAN - DETAIL ABUTMENT NO. 1 (MAUKA)
 SCALE: 3/8" = 1'-0"

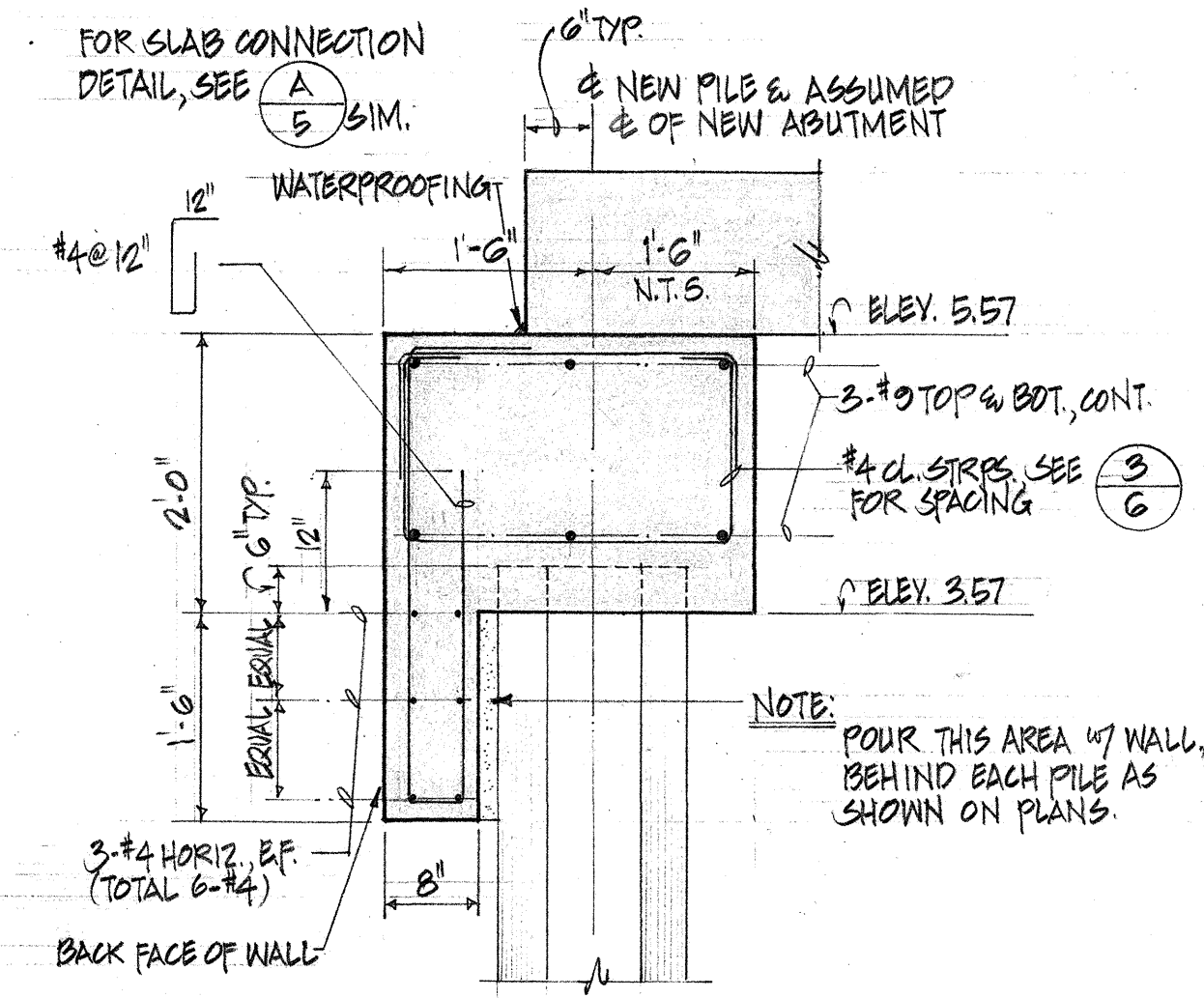
NOTE:
 FOR LOCATION OF WEEPHOLES IN ABUTMENT NO. 1, SEE SHEET NO. 9.



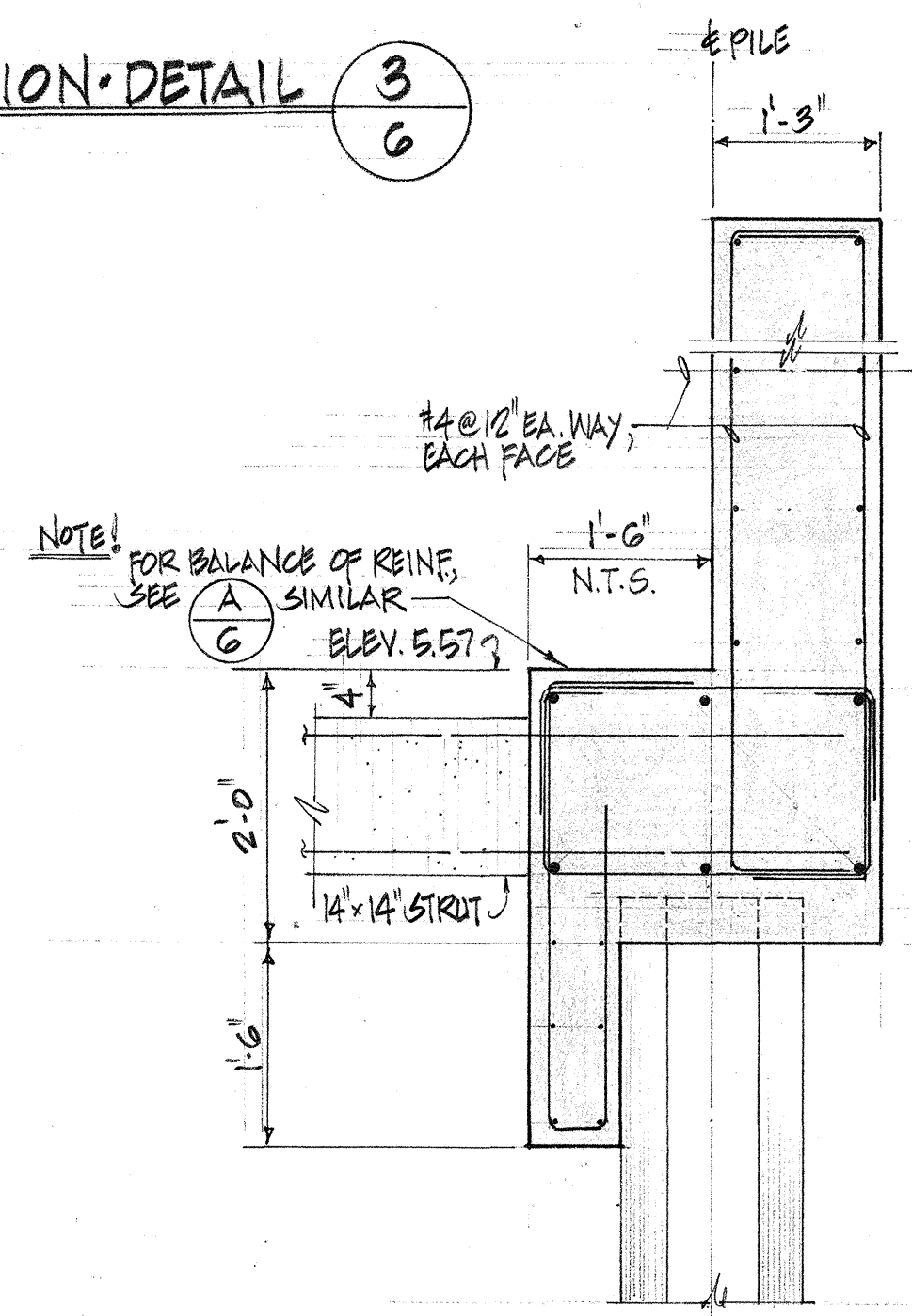
PARTIAL ELEVATION - DETAIL
 SCALE: 3/4" = 1'-0"



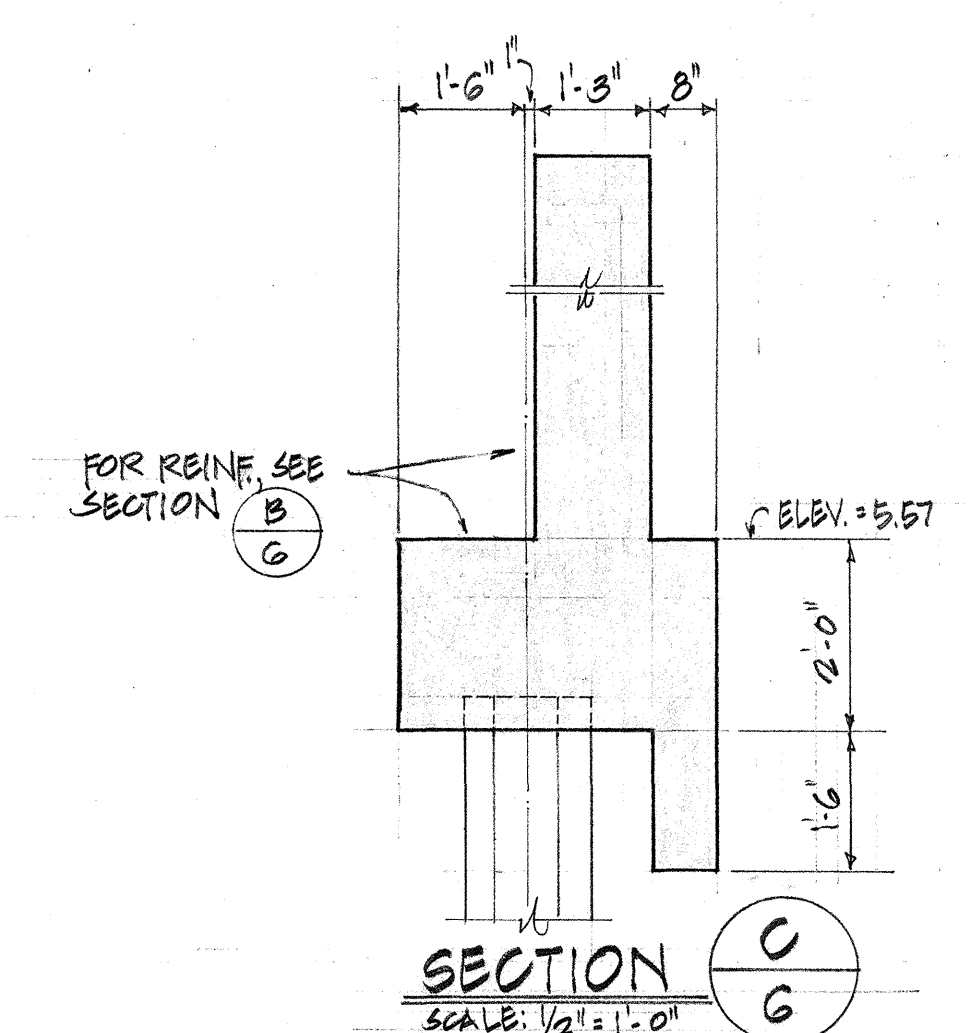
PLAN - DETAIL ABUTMENT NO. 1 (MAKAI)
 SCALE: 3/8" = 1'-0"



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



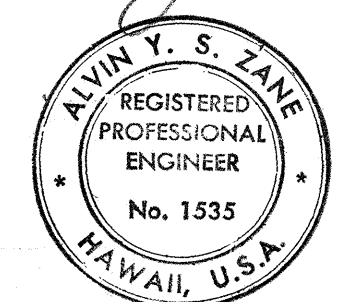
SECTION B
 SCALE: 3/4" = 1'-0"



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

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Alvin Y. S. Zane



STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION

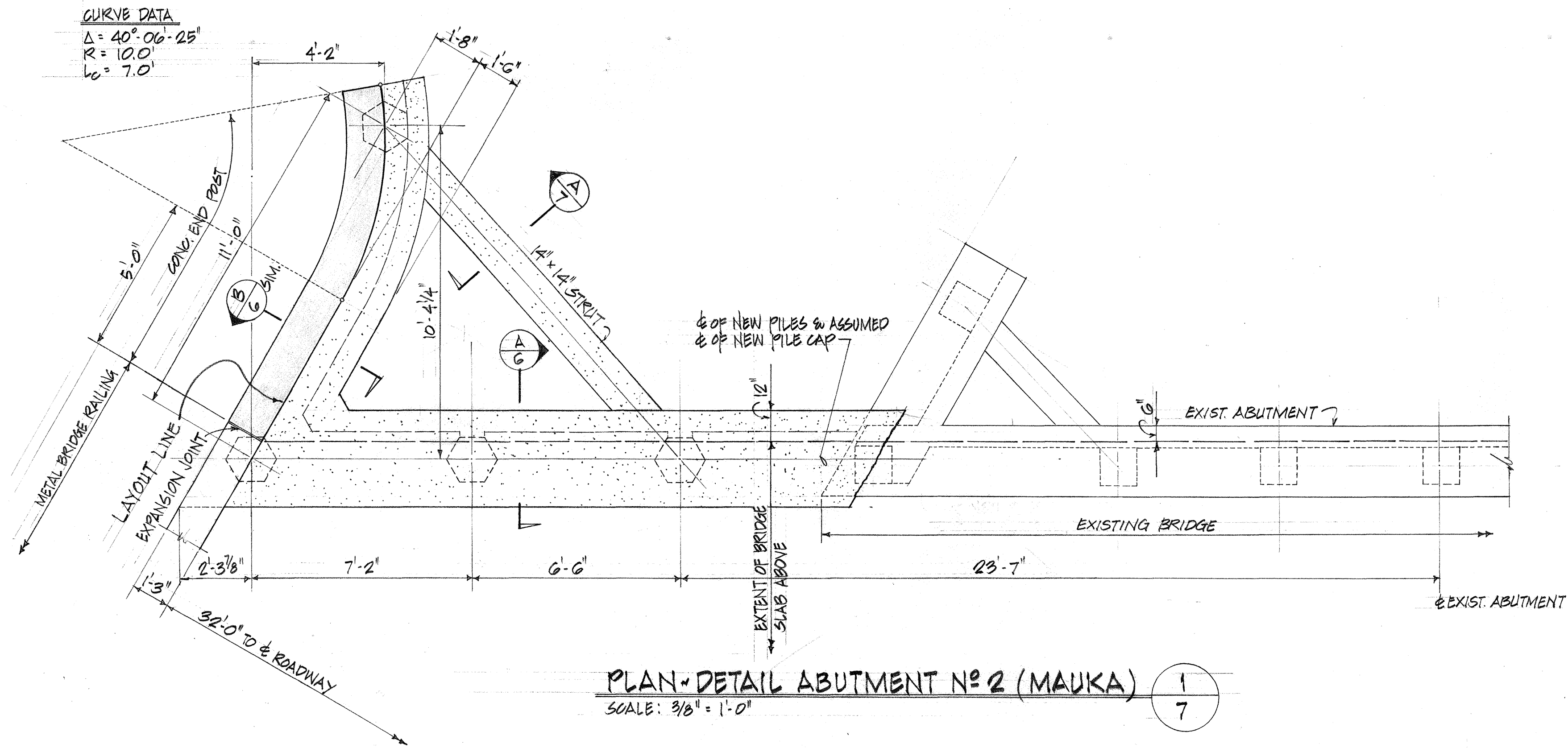
KALANIANA'OLE HIGHWAY
 WIDENING
 MAUNALUA BRIDGE WIDENING
 PLAN & DETAILS - ABUTMENT NO. 1

Proj. No. 740A-01-70
 Scale: As Shown
 Date: Oct., 1970

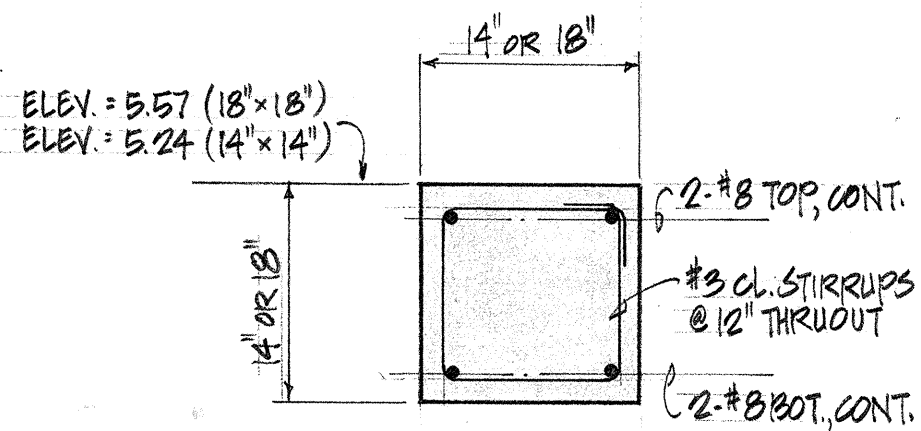
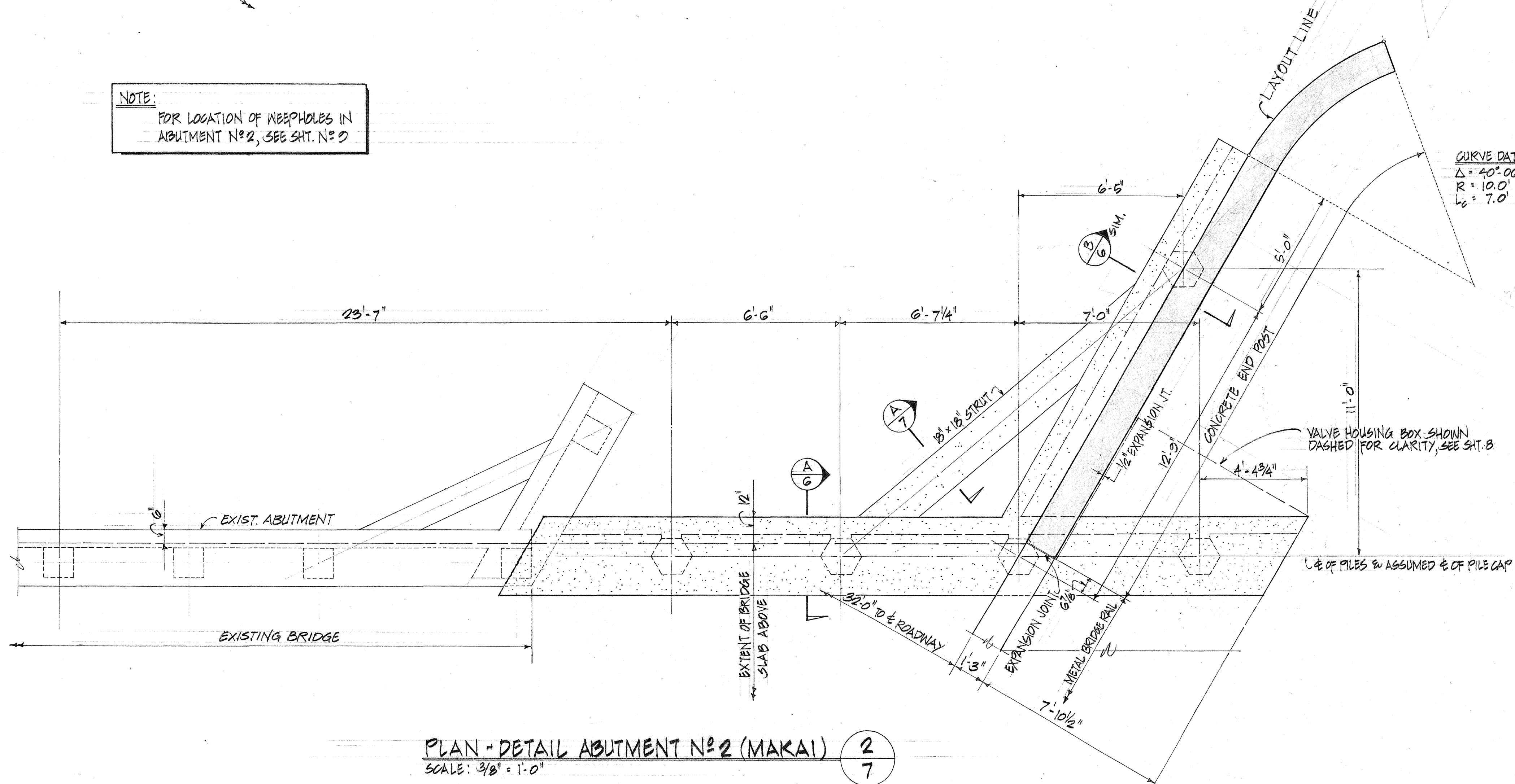
SHEET NO. 6 OF 11 SHEETS

SURVEY PLOTTED BY	DATE
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FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	740A-01-70	1970	31	40



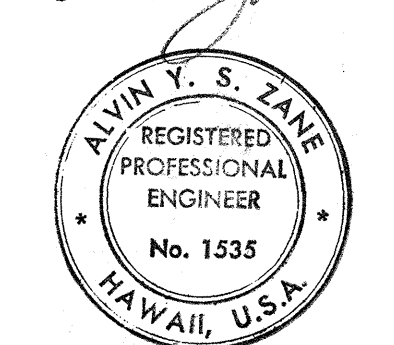
NOTE:
FOR LOCATION OF WEEPHOLES IN
ABUTMENT NO. 2, SEE SHT. NO. 2



A
7

SURVEY PLOTTED BY	DATE
DRAWN BY	
TRACED BY	
CHECKED BY	
NOTE BOOK	
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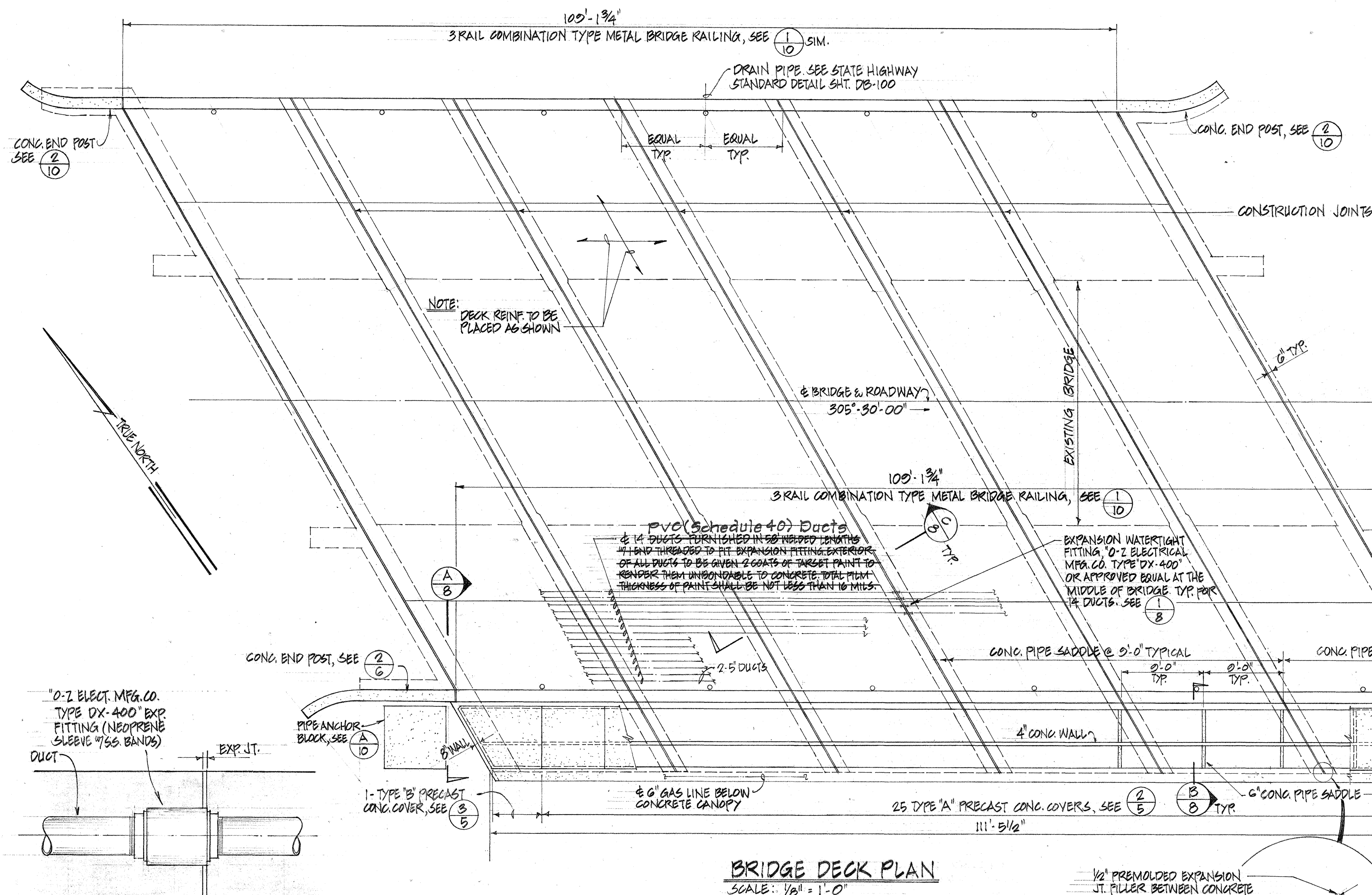
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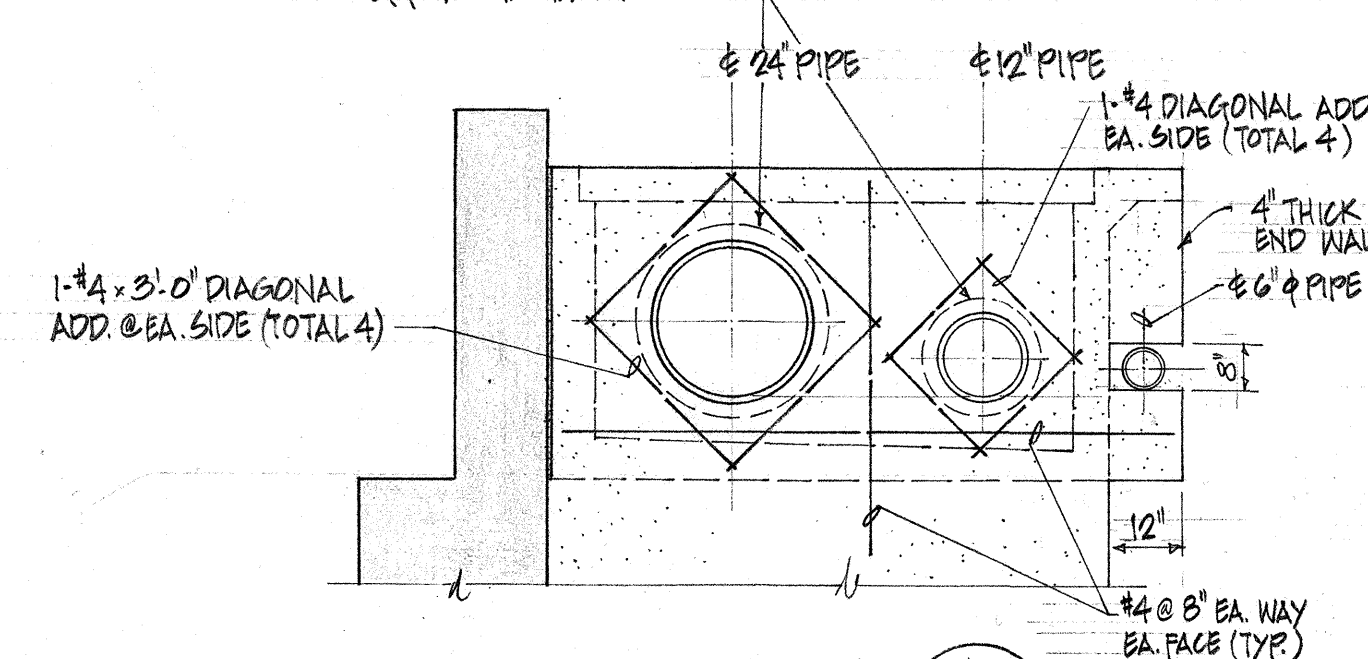
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
KALANIANA'OLE HIGHWAY
WIDENING
MAUNALUA BRIDGE WIDENING
PLAN & DETAILS-ABUTMENT NO. 2

Proj. No. 740A-01-70
Scale: AS SHOWN
DATE: Oct., 1970
SHEET No. 7 OF 11 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	740A-01-70	1970	32	40

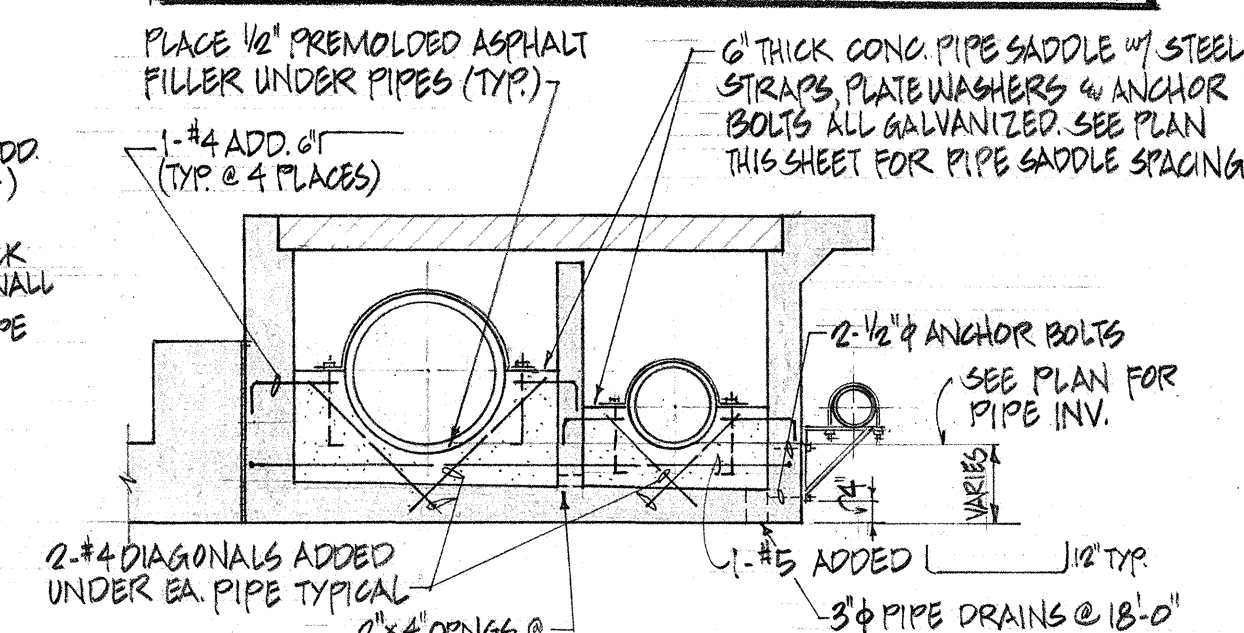


MAKE OPENINGS IN WALLS FOR WATER LINES, 2" LARGER THAN O.D. OF PIPES FOR PLACEMENT. PLACE ASPHALT FILLER AROUND PIPES IN ACCORDANCE W/ BOARD OF WATER SUPPLY STANDARDS.



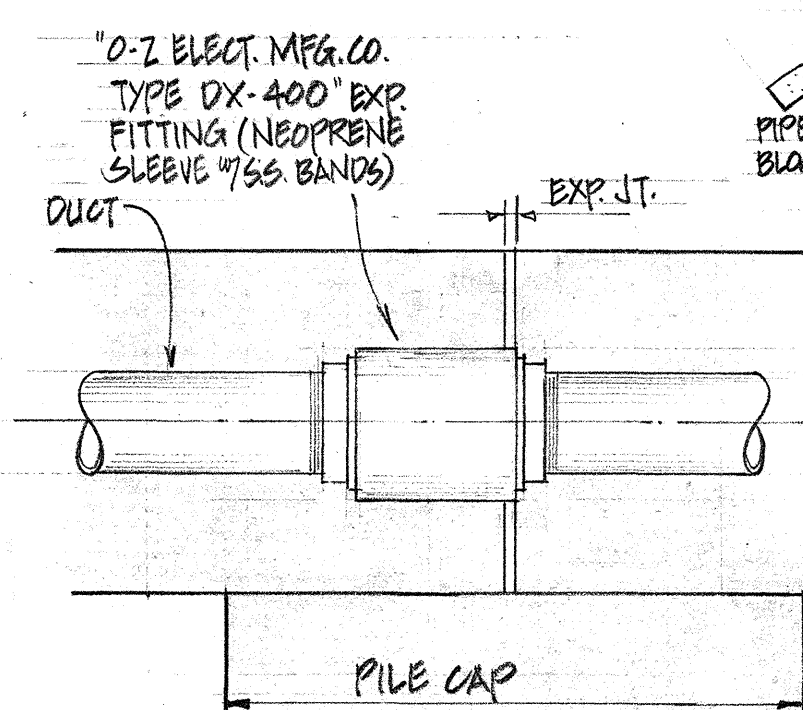
SECTION A
SCALE: 3/8" = 1'-0"

ANCHOR BOLTS, STRAPS, BRACKETS, ETC. INCIDENTAL TO PIPE LINES SHALL BE INCLUDED UNDER "CONCRETE IN BRIDGES" COST ESTIMATE & SHALL NOT BE PAID FOR UNDER A SEPARATE ITEM. (GALV. ALL MISC. HARDWARE)



TYPICAL SECTION @ PIPE SADDLE
SCALE: $\frac{3}{8}" = 1'-0"$

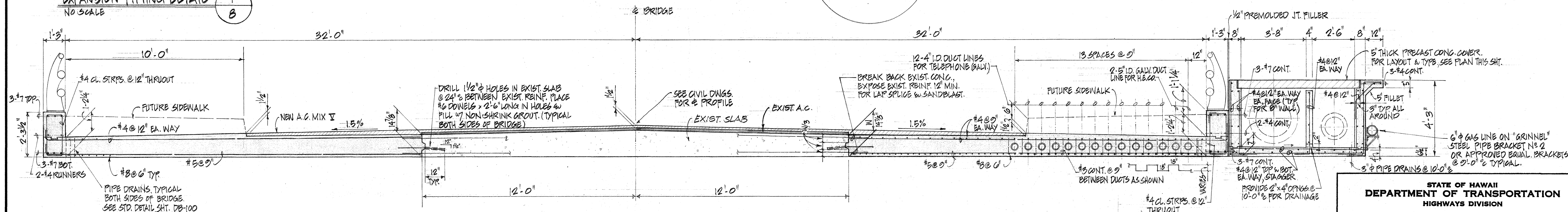
INVERT ELEVATIONS OF PIPES @ SADDLES VARIES FROM 6.47 TO 6.77, SEE CIVIL DRAWINGS FOR DETAILS.



EXPANSION FITTING DETAIL

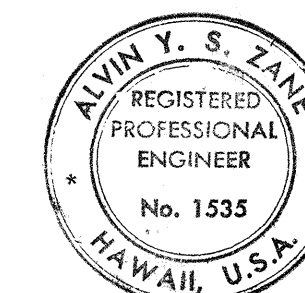
NO SCALE

1
8



NORMAL DECK SECTION
SCALE: $3/8" = 1'-0"$

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or under my supervision,
Alvin Zine



APPROVED: Raul C. Jy, U.P. DATE 11/4/70
HONOLULU GAS CO. LTD.

Supervising Engineer, OSP-East Div, HTCO, Ltd.
HAWAIIAN ELECTRIC CO., INC.
ASST. CHIEF ENGINEER, BWS

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

KALANIANA'OLE HIGHWAY
WIDENING

MAUNALUA BRIDGE WIDENING

BRIDGE DECK PLAN & SECTIONS

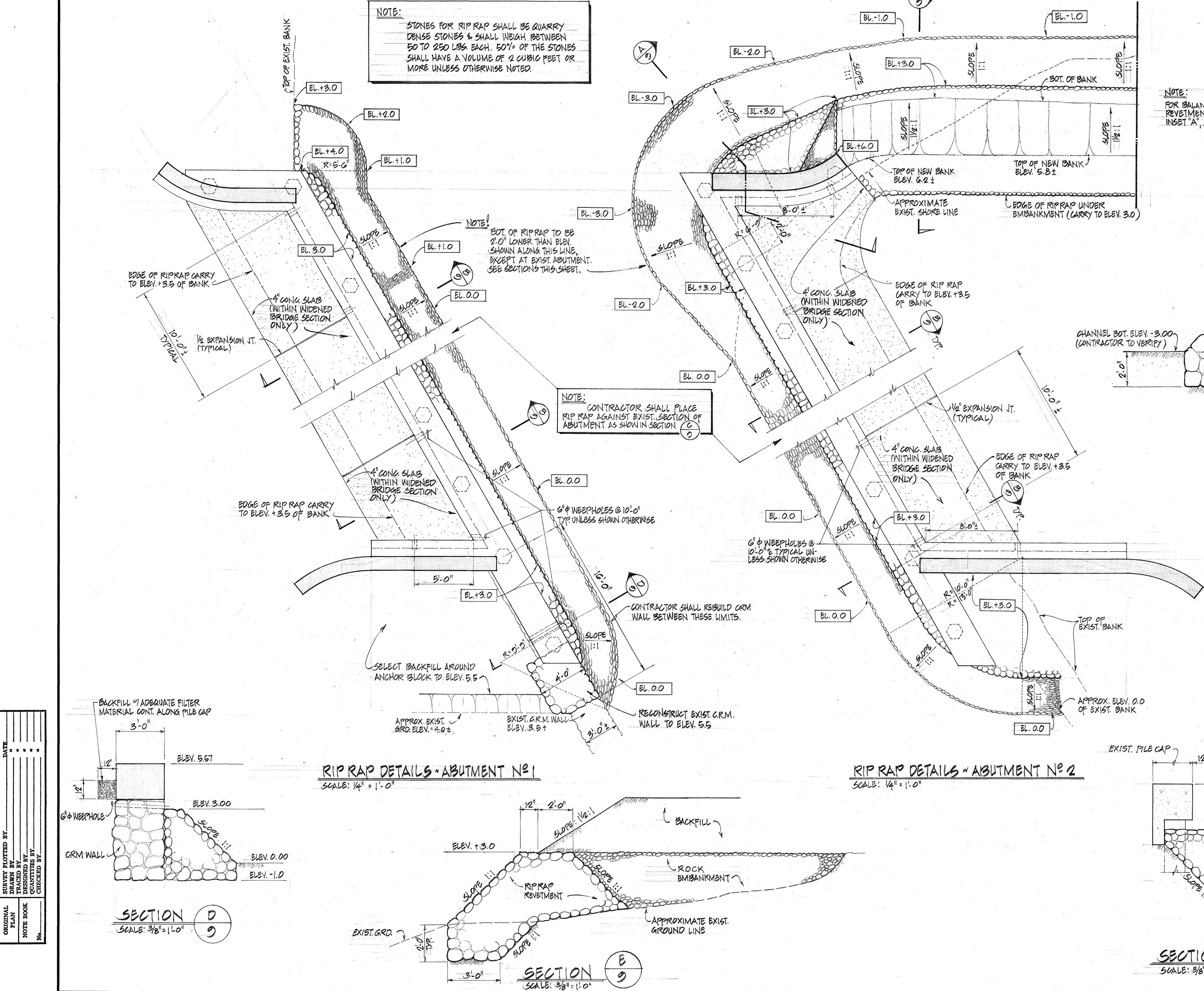
Proj. No. 740A-01-70
Scale: As Shown

Date: Oct. 1970

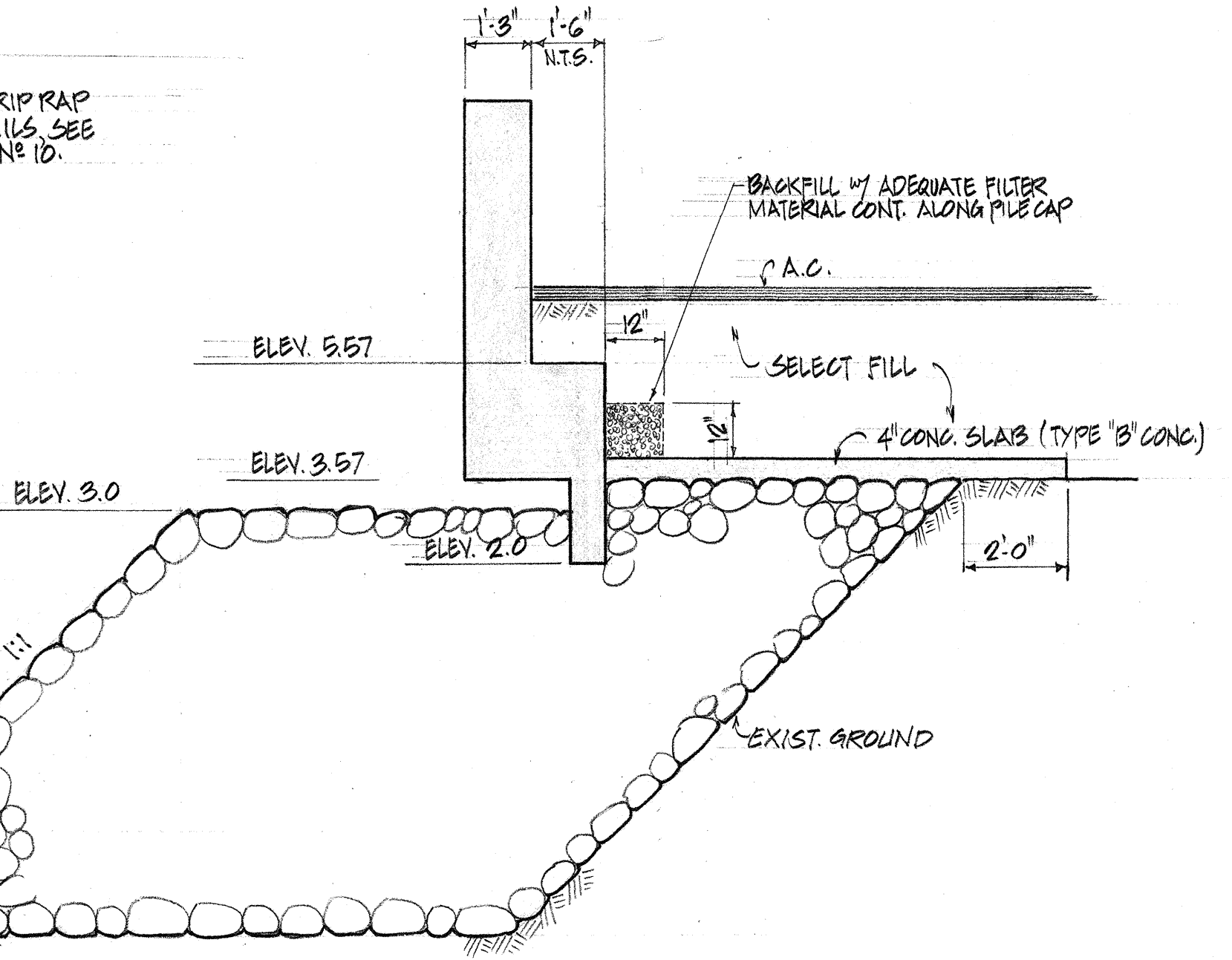
SHEET No. 8 OF 11 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	740A-01-70	1970	33	40

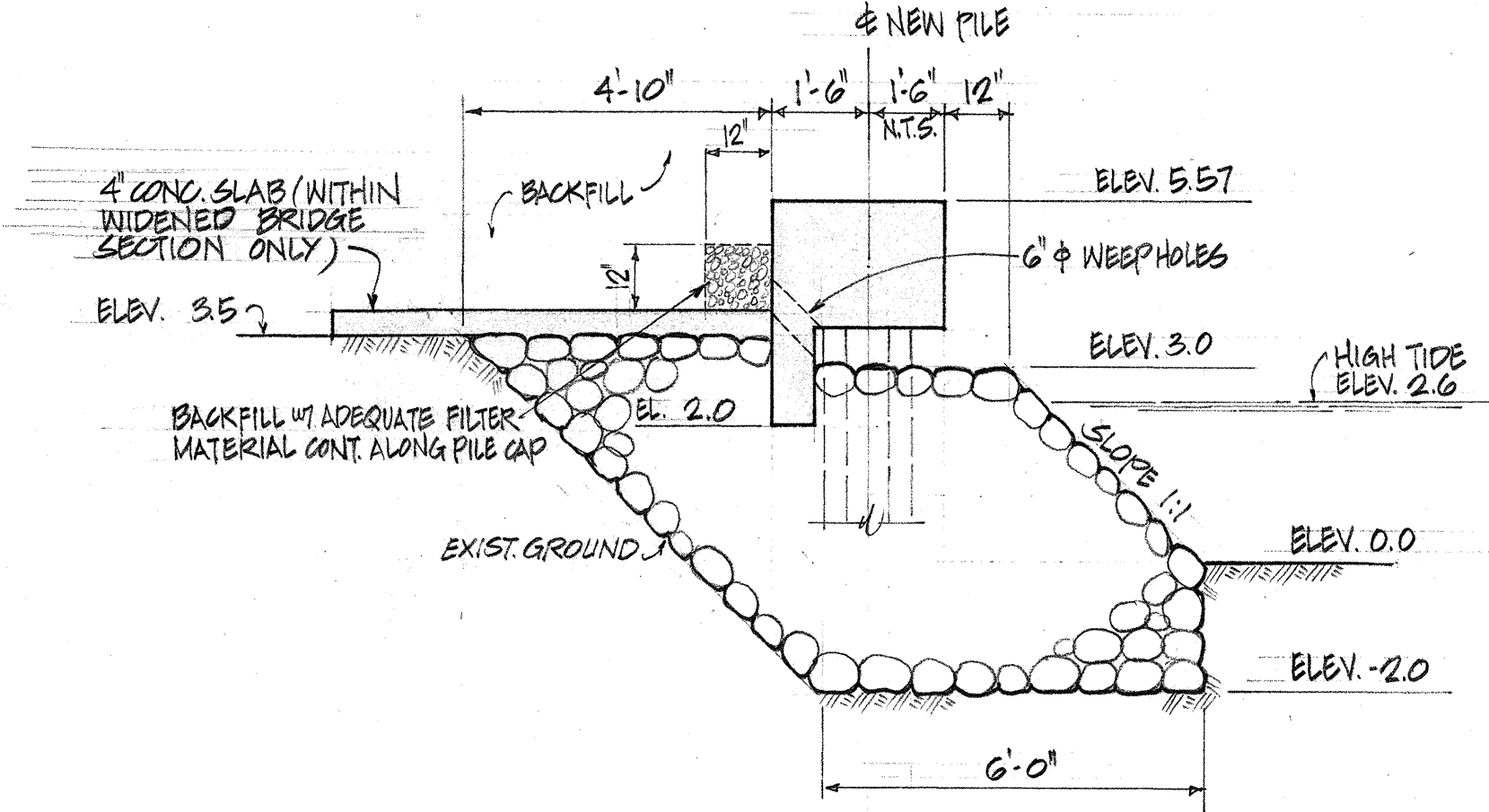
DESIGNED BY	DATE
DRAWN BY	
CHECKED BY	
NOTED BY	
QUANTITIES BY	
REVISIONS	
ORIGINAL PLAN	
NOTE BOOK	
No.	



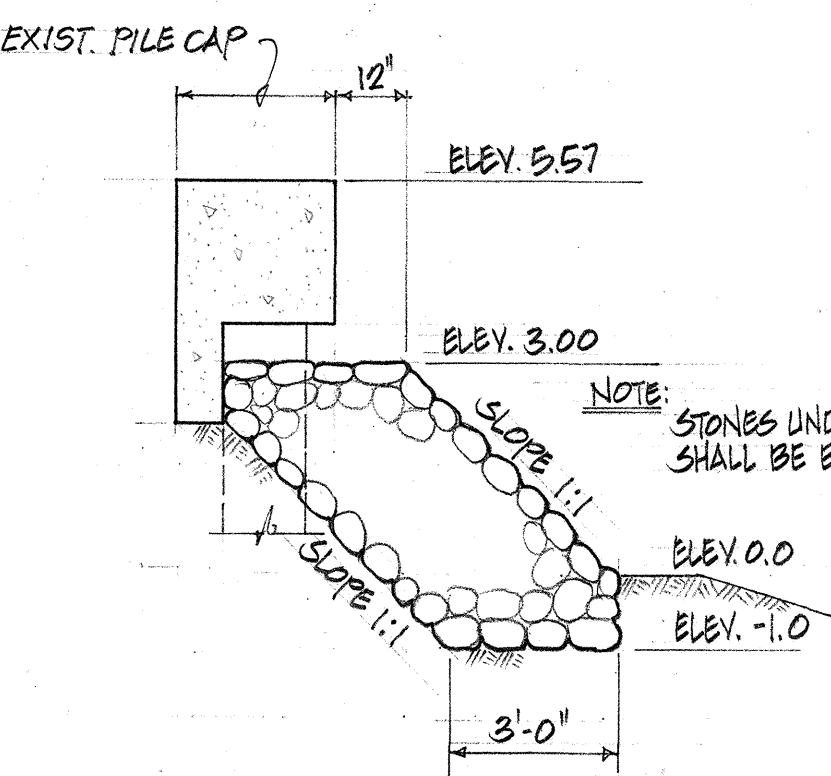
NOTE:
FOR BALANCE OF RIP RAP
REVIEWMENT DETAILS, SEE
INSET 'A', SHEET No. 10.



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



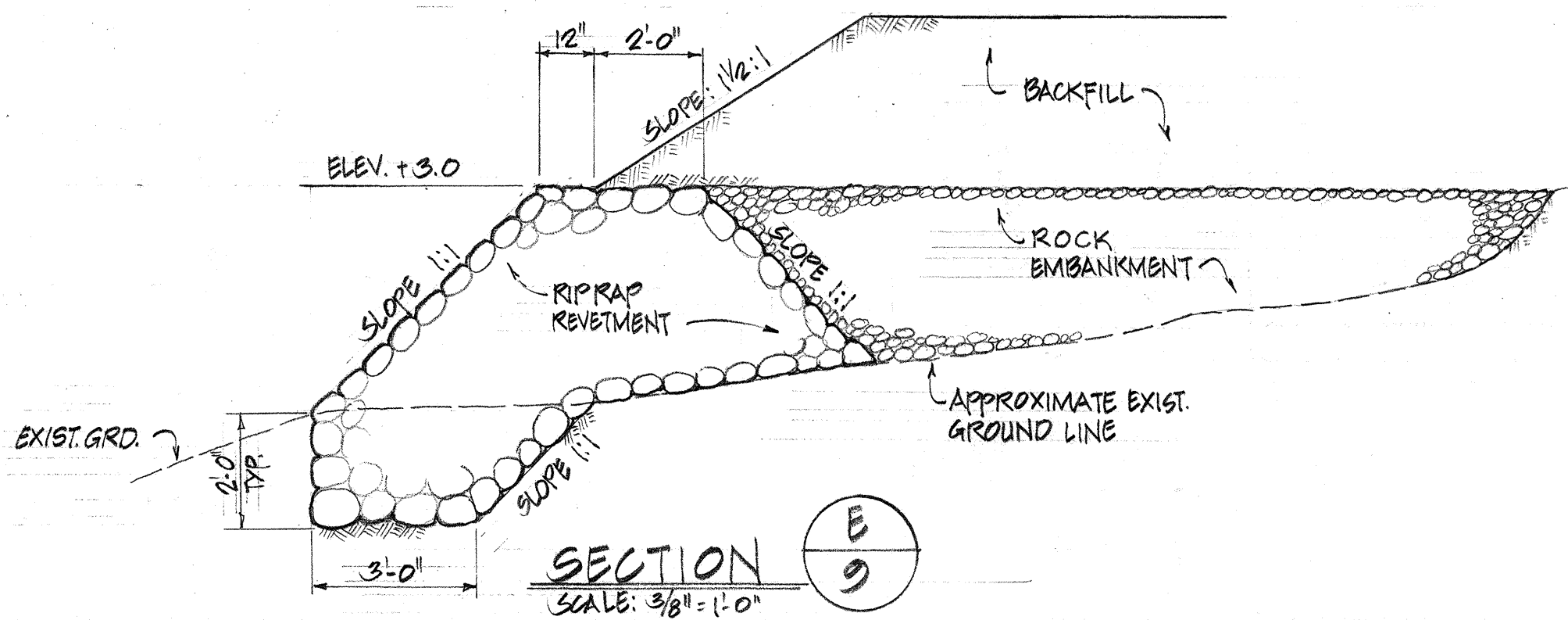
SECTION B
SCALE: 3/8" = 1'-0"



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

RIP RAP DETAILS - ABUTMENT No. 1
SCALE: 1/4" = 1'-0"

RIP RAP DETAILS - ABUTMENT No. 2
SCALE: 1/4" = 1'-0"



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

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

KALANIANA'OLE HIGHWAY
WIDENING
MAUNALUA BRIDGE WIDENING

RIP RAP DETAILS

Proj. No. 740A-01-70
Scale: AS SHOWN

Date: Oct., 1970

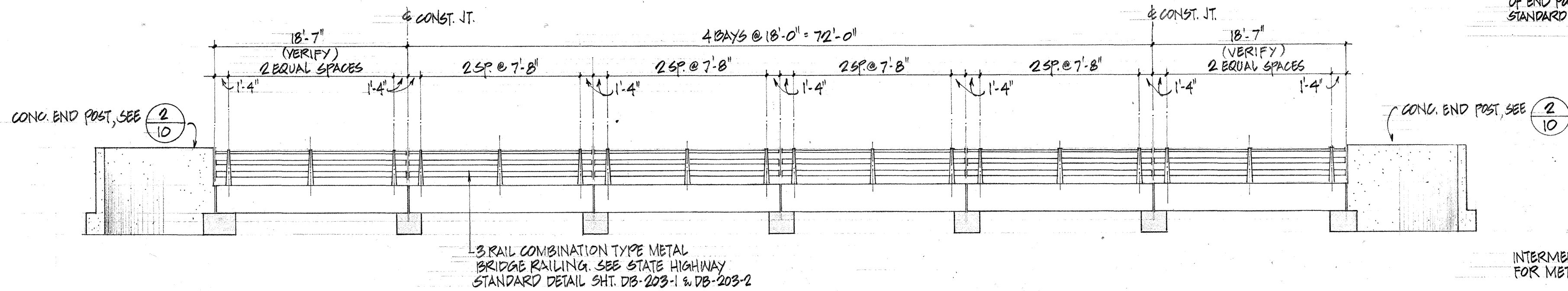
SHEET No. 9 OF 11 SHEETS

AVIN Y. S. ZANE
REGISTERED
PROFESSIONAL
ENGINEER
No. 1535
HAWAII, U.S.A.

This work was prepared by me
or under my supervision.

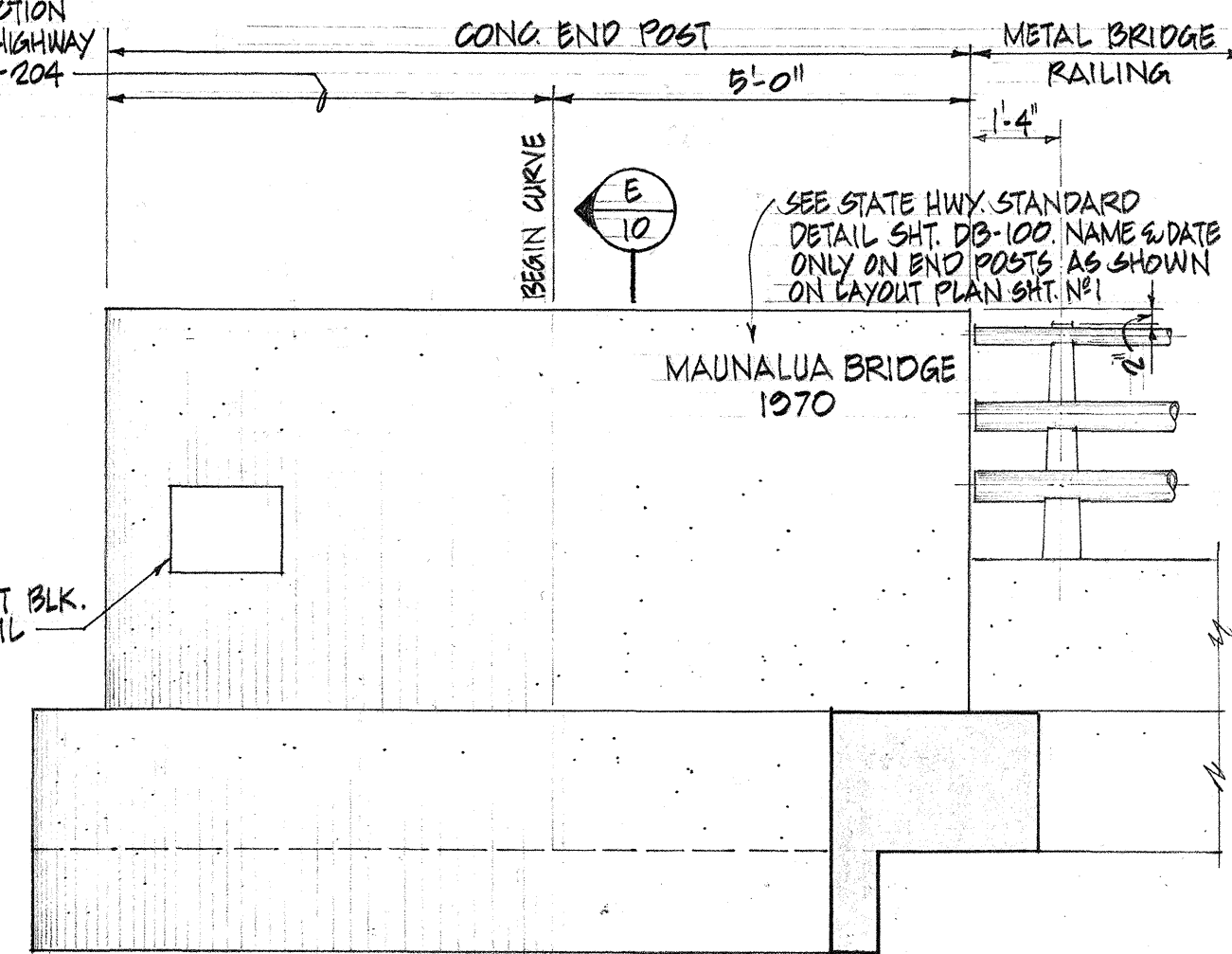
Avin Y. S. Zane

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	740A-01-70	1970	84	40



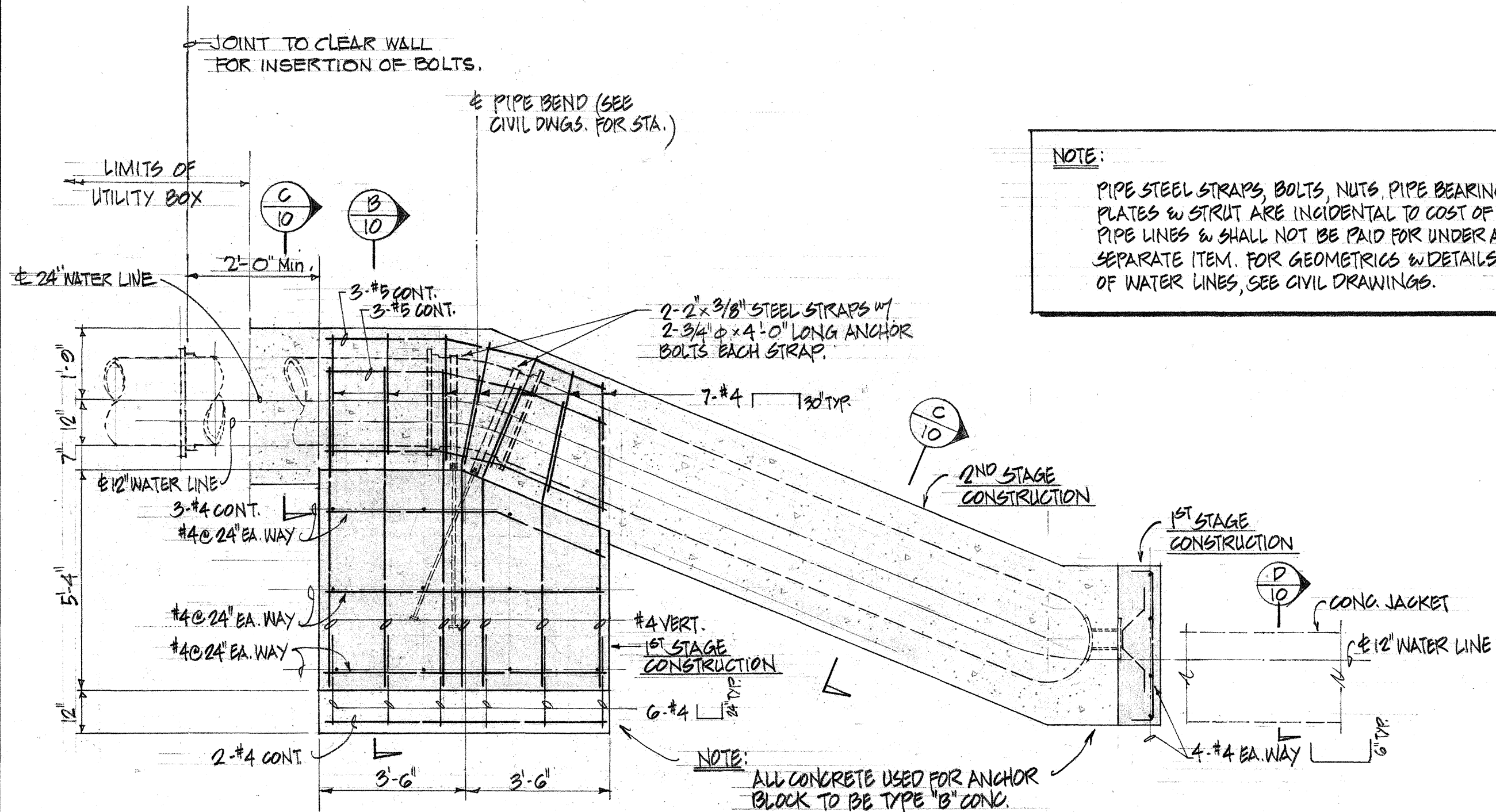
MAUKA ELEVATION - METAL BRIDGE RAILING (MAKAI SIMILAR) 1/10

NOTE: FOR DETAILS OF THIS SECTION OF END POST, SEE STATE HIGHWAY STANDARD DETAIL SHT. DB-204



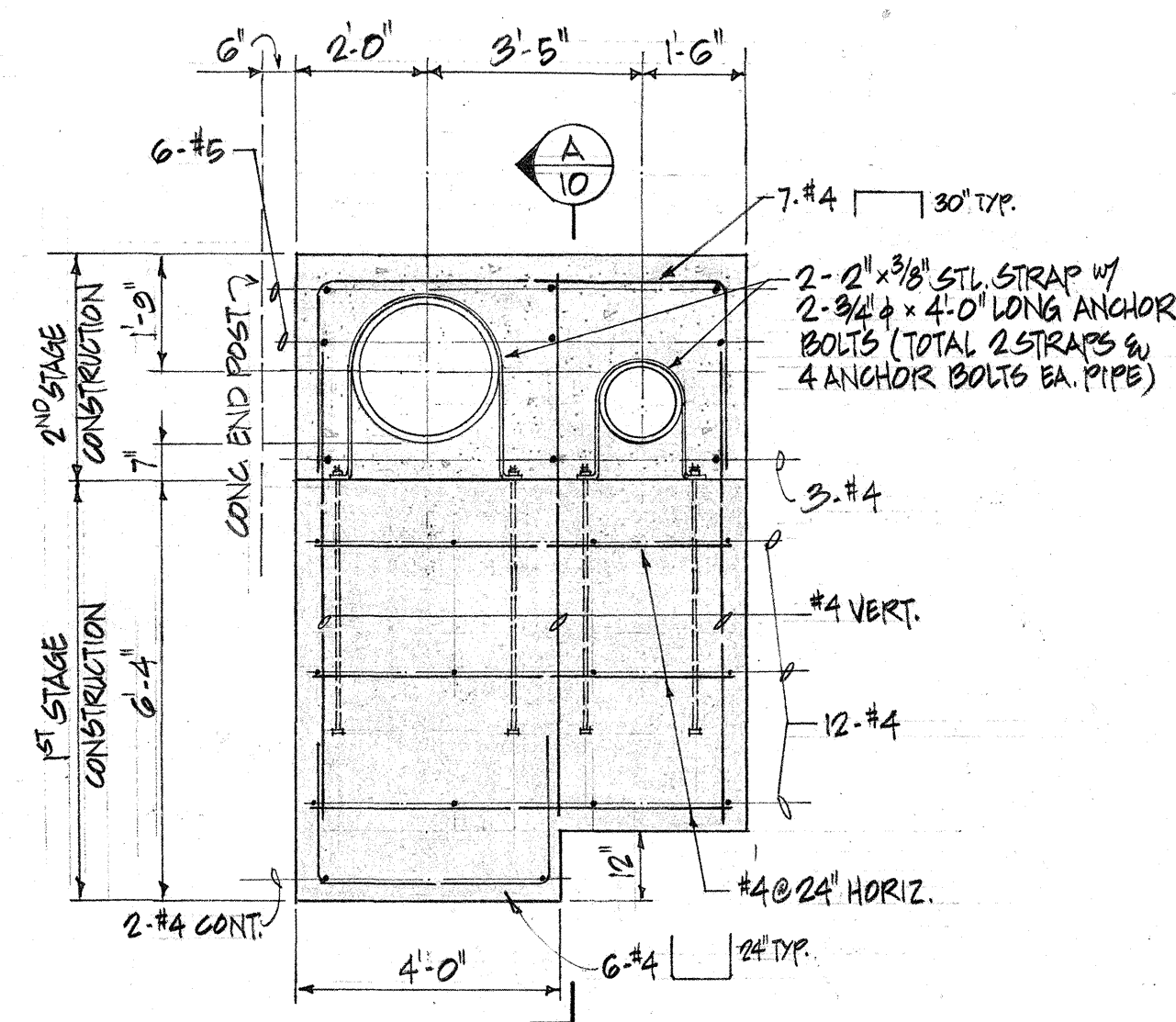
CONCRETE END POST ELEVATION - DETAIL 2/10

SECTION E 10

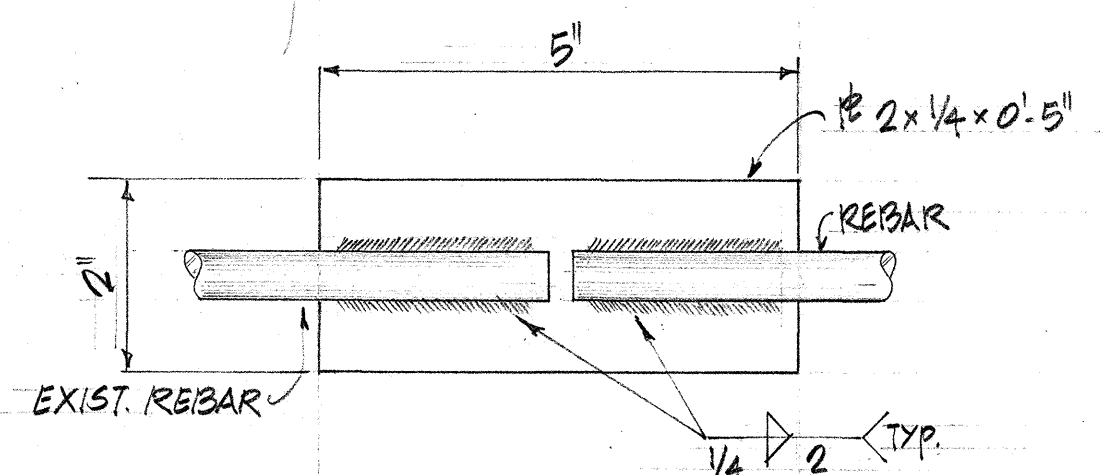


PIPE ANCHOR BLOCK - SECTION A 10

NOTE: PIPE STEEL STRAPS, BOLTS, NUTS, PIPE BEARING PLATES & STRUT ARE INCIDENTAL TO COST OF PIPE LINES & SHALL NOT BE PAID FOR UNDER A SEPARATE ITEM. FOR GEOMETRICS & DETAILS OF WATER LINES, SEE CIVIL DRAWINGS.

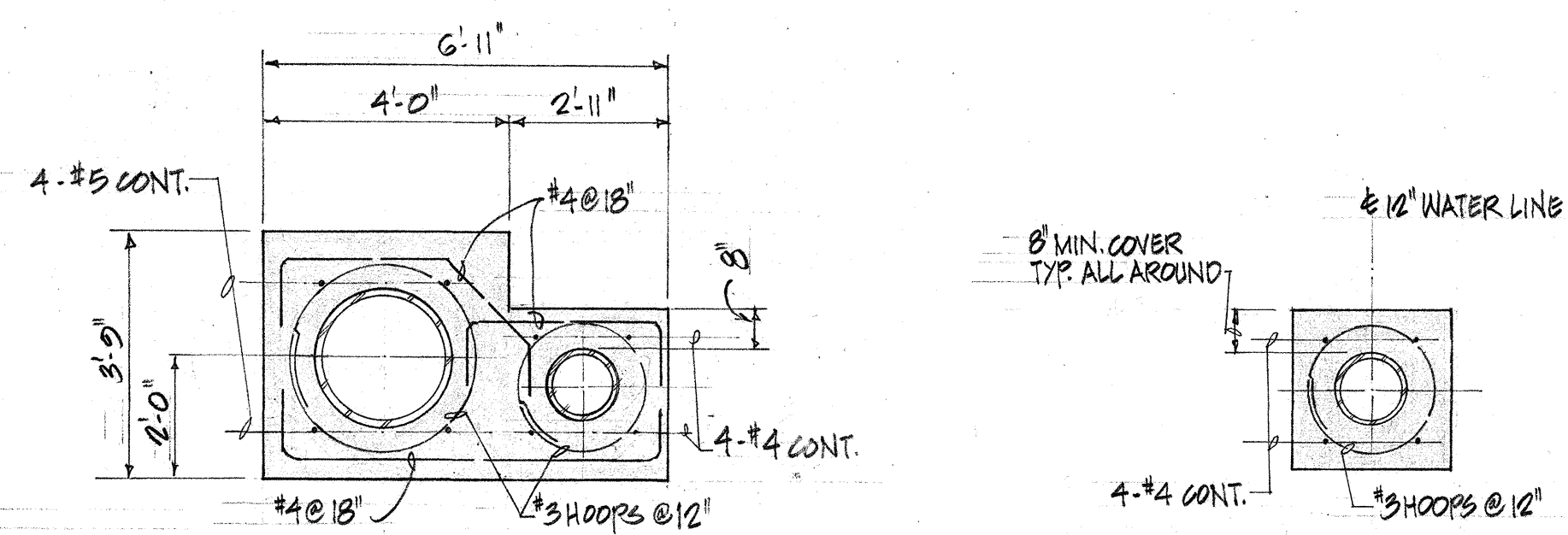


SECTION B 10



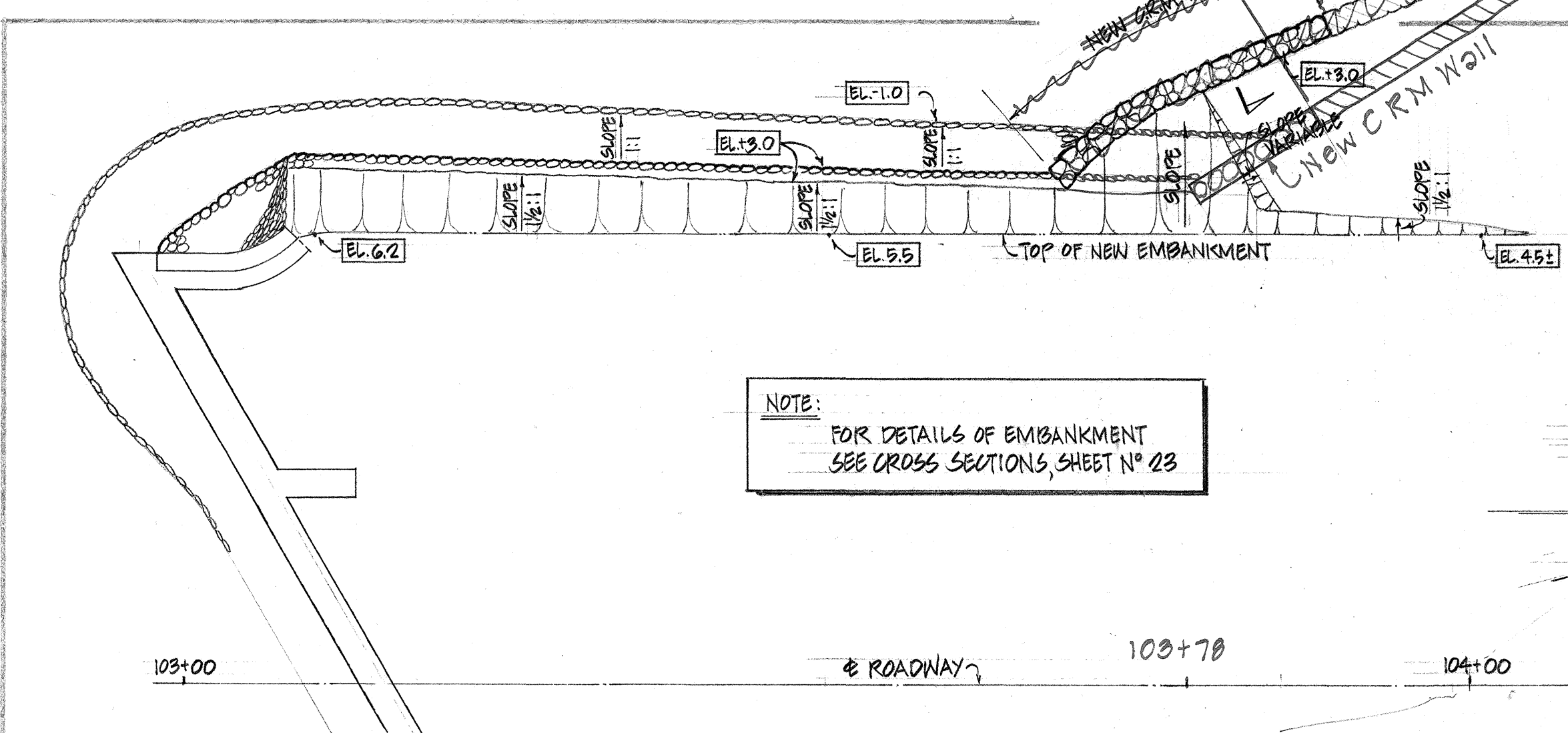
TYPICAL WELDED CONNECTION DETAIL 3/10

NOTE: THIS DETAIL TO BE USED WHERE REQUIRED LAP OF REINF. CANNOT BE OBTAINED

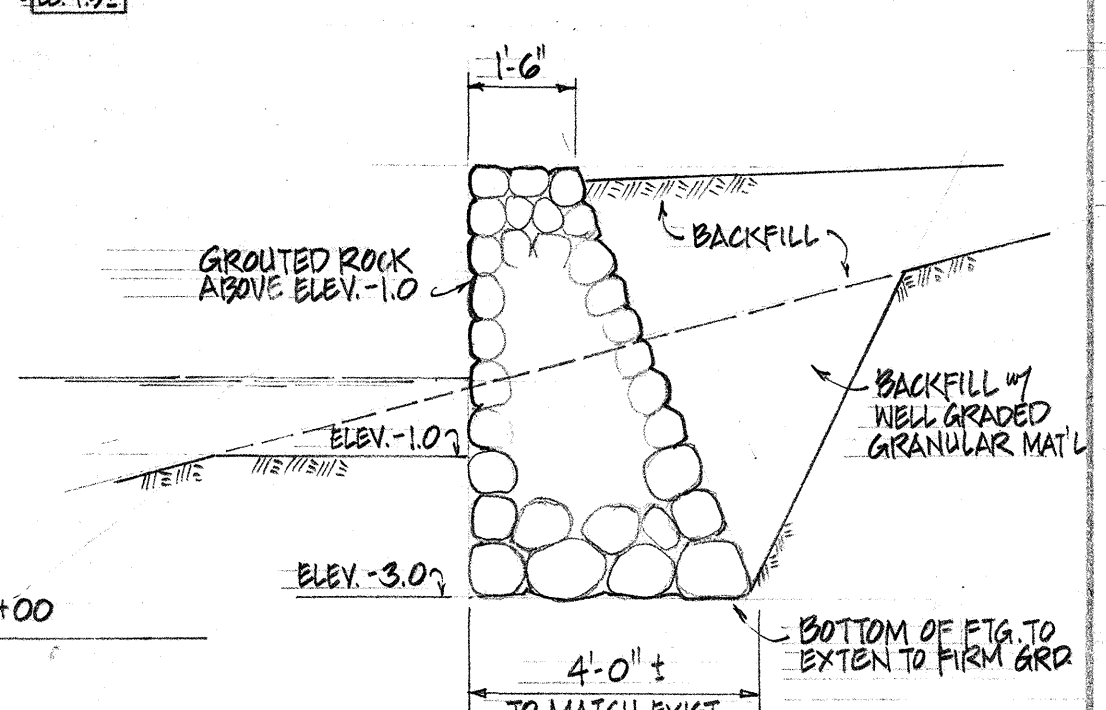


SECTION C 10

SECTION D 10



PLAN - RIP RAP RETENTION (MAUKA SIDE OF BRIDGE) INSET "A" SCALE: 1" = 10'



SECTION F 10

APPROVED: *A. Kawakami* 11/19/70
ASST. CHIEF ENGINEER, BWS

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
KALANIANA'OLE HIGHWAY
WIDENING
MAUNALUA BRIDGE WIDENING
MISCELLANEOUS DETAILS

Proj. No. 740A-01-70
Scale: As Shown
Date: Oct., 1970
SHEET No. 10 OF 11 SHEETS

ALVIN Y. S. ZINE
REGISTERED PROFESSIONAL ENGINEER
No. 1535
HAWAII, U.S.A.

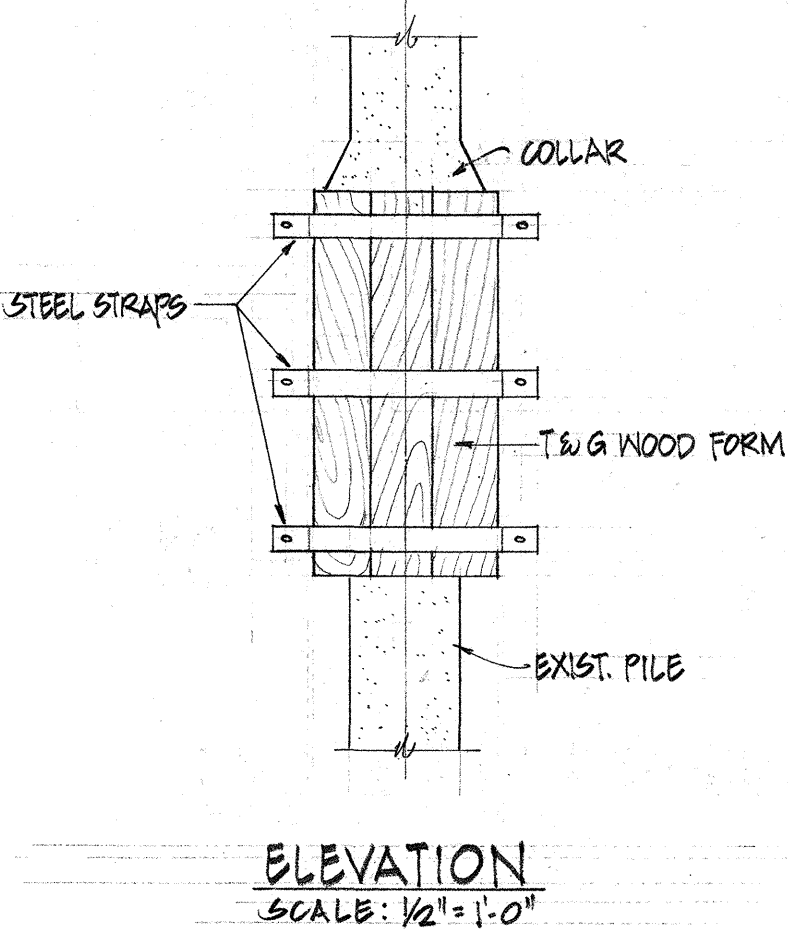
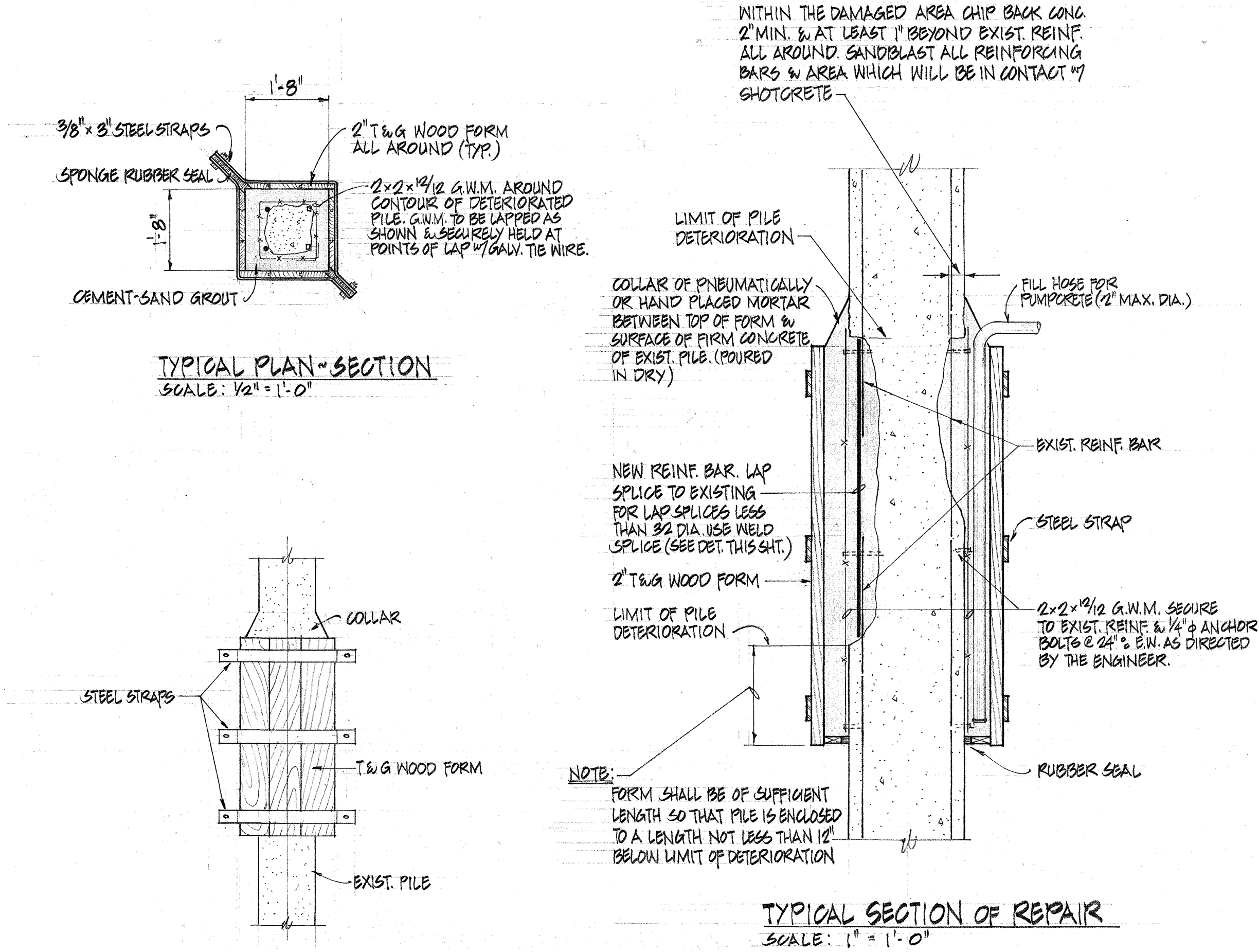
This work was prepared by me or under my supervision,
Alvin Y. S. Zine

DATE	11/19/70
DESIGNED BY	
TRACED BY	
NOTED BY	
CHECKED BY	
ORIGINAL PLAN	
NOTE BOOK	
NO.	

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	740A-01-70	1970	35	40

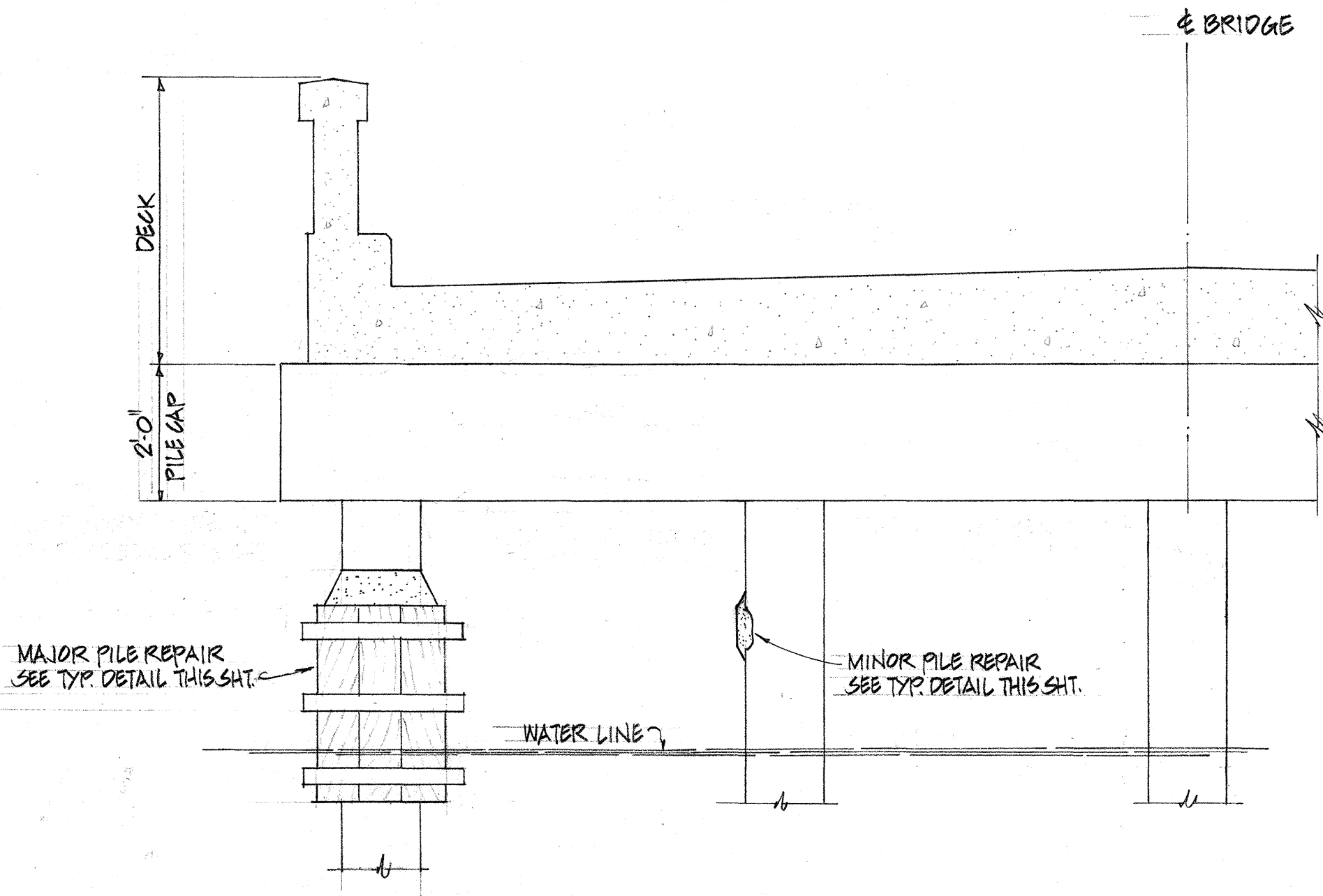
~ NOTE ~

AS AN ALTERNATE METHOD OF REPAIR, SUBJECT TO APPROVAL BY THE ENGINEER, SURFACES OF PILES MAY BE RESTORED & REPAIRED BY THE USE OF SHOTCRETE. THE OPERATIONAL PROCEDURE WITH OR WITHOUT THE USE OF FORMS & SHOTCRETE PROPORTIONING SHALL MEET THE ENGINEERS APPROVAL. FOR BELOW WATER LEVEL REPAIR RESORT TO POURED TYPE WITH FORM OR COLMA MARINE COMPOUND.

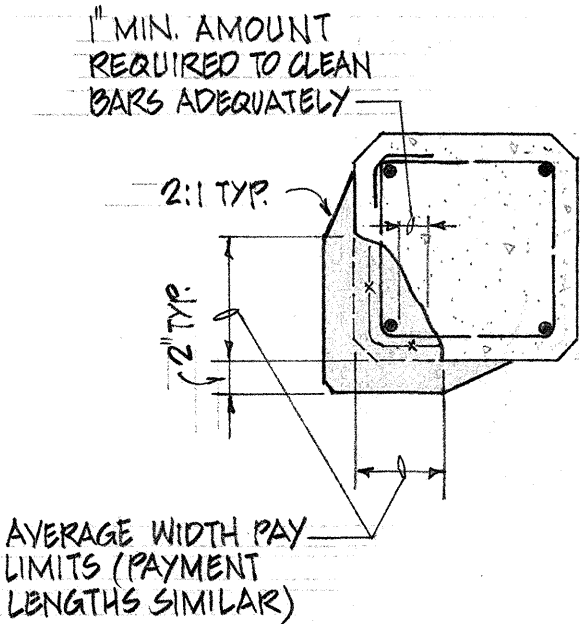


NOTE: PILE REPAIRS SHALL BE DONE IN AN ORDERLY SEQUENCE APPROVED BY THE ENGINEER & WITH PROPER INTERVALS SO AS NOT TO IMPAIR THE STRENGTH OF THE PIERS WHILE UNDER REPAIR.

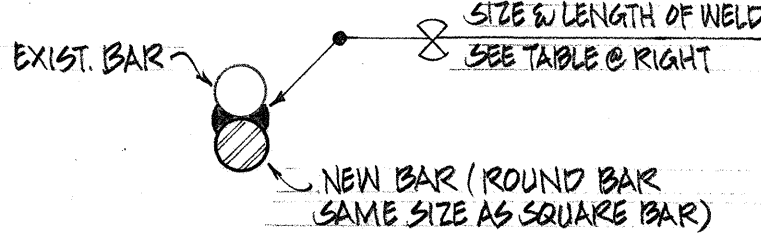
MAJOR PILE REPAIR DETAILS



PARTIAL DECK CROSS-SECTION (SHOWING VARIOUS TYPES OF REPAIRS)



PLAN & SECTION MINOR PILE REPAIR



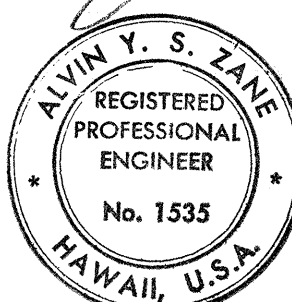
REINF. BAR SPLICE DETAIL

SIZE OF REINF.	SIZE OF WELD	LENGTH OF WELD
1/4" φ	1/8"	1 1/2"
1/2" □	1/4"	1 1/2"
3/4" □	1/4"	3"
7/8" □	5/16"	3 1/2"

- NOTES:
- PAYMENT FOR REPAIRS BY SQUARE FEET SHALL BE MEASURED BY THE AVERAGE WIDTH & AVERAGE LENGTH AS SHOWN IN THE DETAILS.
 - REINFORCING BARS THAT ARE RUSTED MORE THAN 33% OF THEIR ORIGINAL AREA (AS DETERMINED BY THE ENGINEER) SHALL BE STRENGTHENED AS SHOWN ON SPLICE DETAIL.
 - ALL DETERIORATED, DAMAGED, CRACKED, SPALLED, HONEYCOMBED CONCRETE OR CONCRETE OVER RUSTED REINFORCING BARS SHALL BE REMOVED & REPAIRED WITH SHOTCRETE. THE ENGINEER SHALL DETERMINE ALL AREAS TO BE REPAIRED & THE LIMITS OF REPAIR AT EACH AREA.
 - CONTROL OF TRAFFIC - SEE SPECIAL PROVISIONS

This work was prepared by me or under my supervision.

Alvin Y. S. Zane



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

KALANIANA'OLE HIGHWAY
WIDENING

MAUNALUA BRIDGE WIDENING

REPAIRS TO EXIST. MAUNALUA BRIDGE

Proj. No. 740A-01-70
Scale: As Shown

Date: Oct, 1970

SHEET No. 11 OF 11 SHEETS

DESIGNED BY	DATE
DRAWN BY	
CHECKED BY	
NOTED BY	
REVISIONS	
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