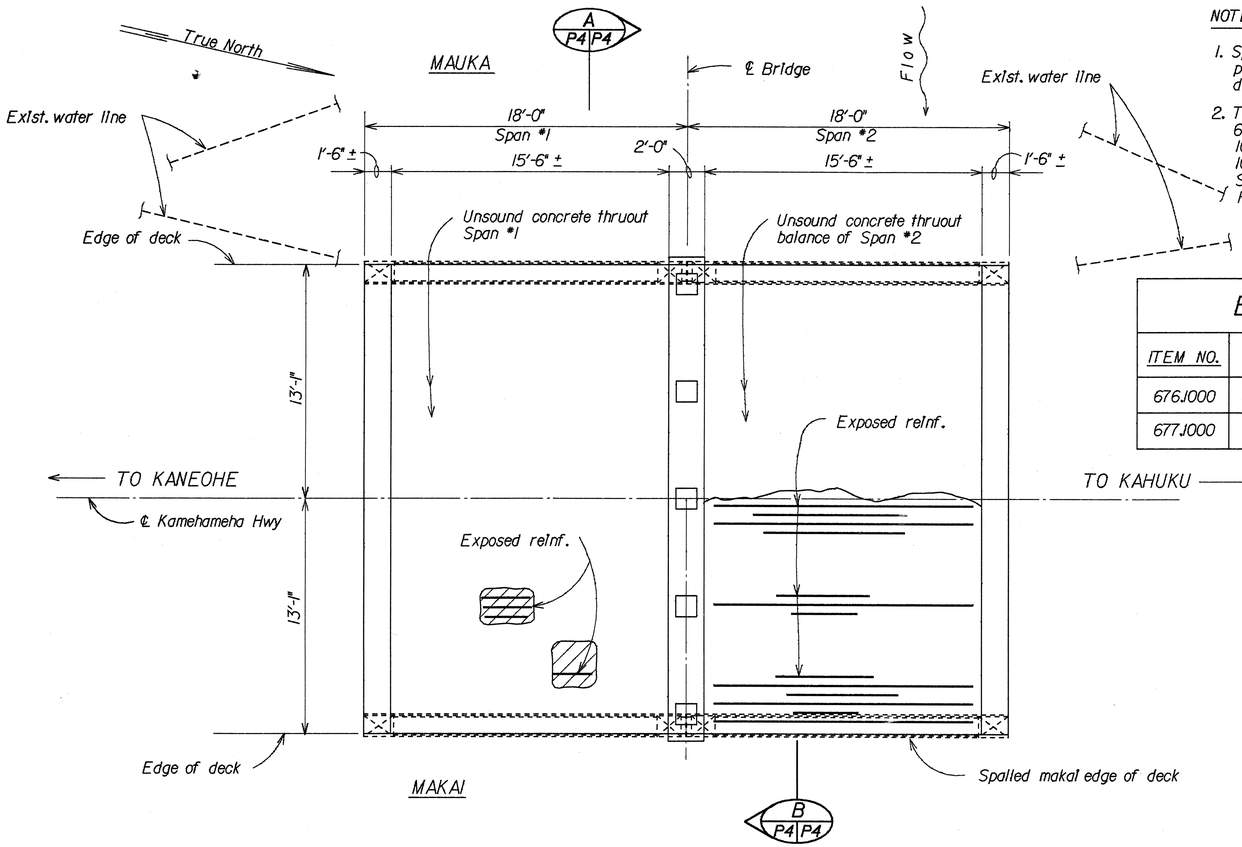
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83D-01-89M	1989	6	7



REFLECTED CEILING PLAN

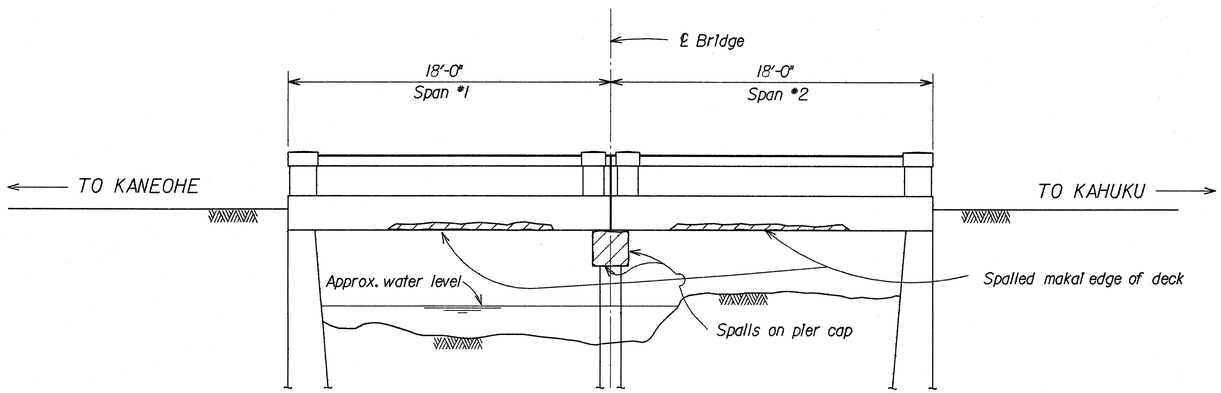
Scale: 1/4"=1'-0"

NOTE:

1. Spall locations are for illustration purposes only. Actual locations are to be determined by the Engineer in the field.
2. The Contractor is directed to Subsection 695.03(F) Protection of Property, Subsection 104.04 Maintenance of Traffic and Subsection 107.13 Public Convenience and Safety of the Standard Specification and/or Special Provisions.

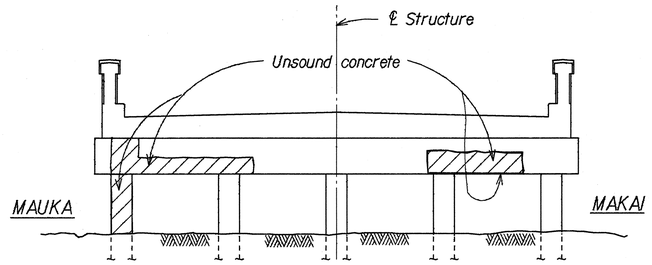
ESTIMATED QUANTITIES

ITEM NO.	ITEM	UNIT	* QUANTITY
676.1000	Repairs of Spalls	S.F.	1000 S.F.
677.1000	Sealing Cracks	L.F.	50 L.F.



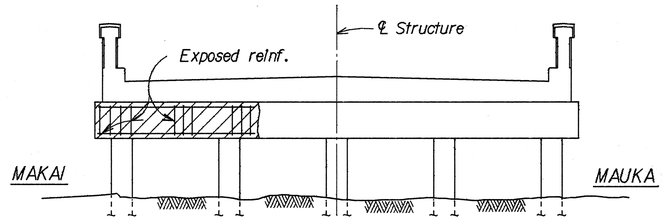
ELEVATION

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



SECTION A P4 P4

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



SECTION B P4 P4

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

ORIGINAL PLAN	SURVEY PLOTTED BY	T.S.M. DATE Feb.1989
	DRAWN BY	" " "
NOTE BOOK	TRACED BY	C.M. & T.S. "
	DESIGNED BY	C.M. "
No.	QUANTITIES BY	C.M. & T.S. "
	CHECKED BY	C.M. & T.S. "

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

NORTH PUNALUU BRIDGE

REPAIRS AND MODIFICATIONS

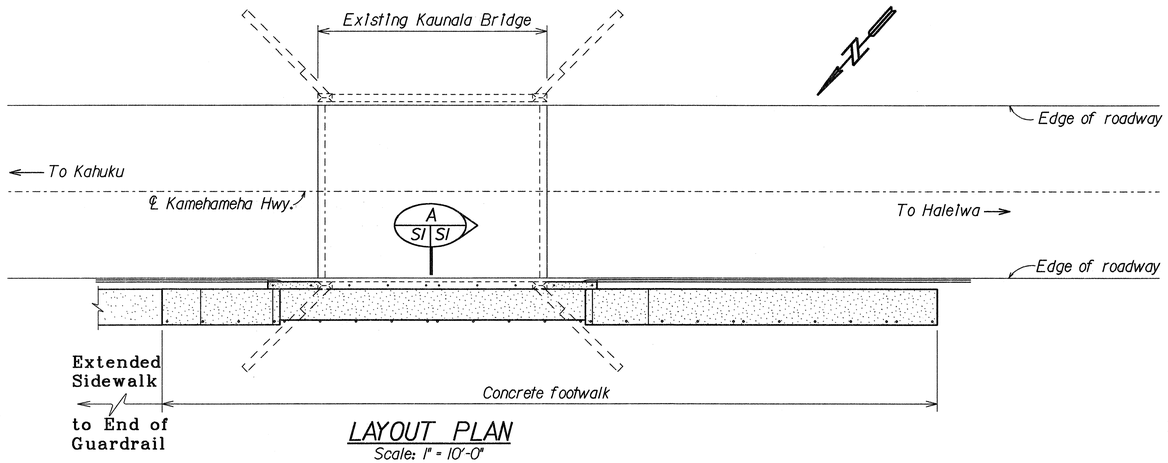
KAMEHAMEHA HIGHWAY

Project No. 83D-01-89M

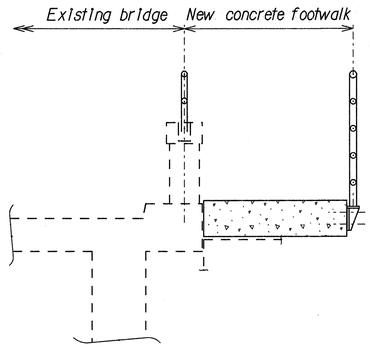
Scale: As Shown Date: February 1989

SHEET No. P4 OF 5 SHEETS

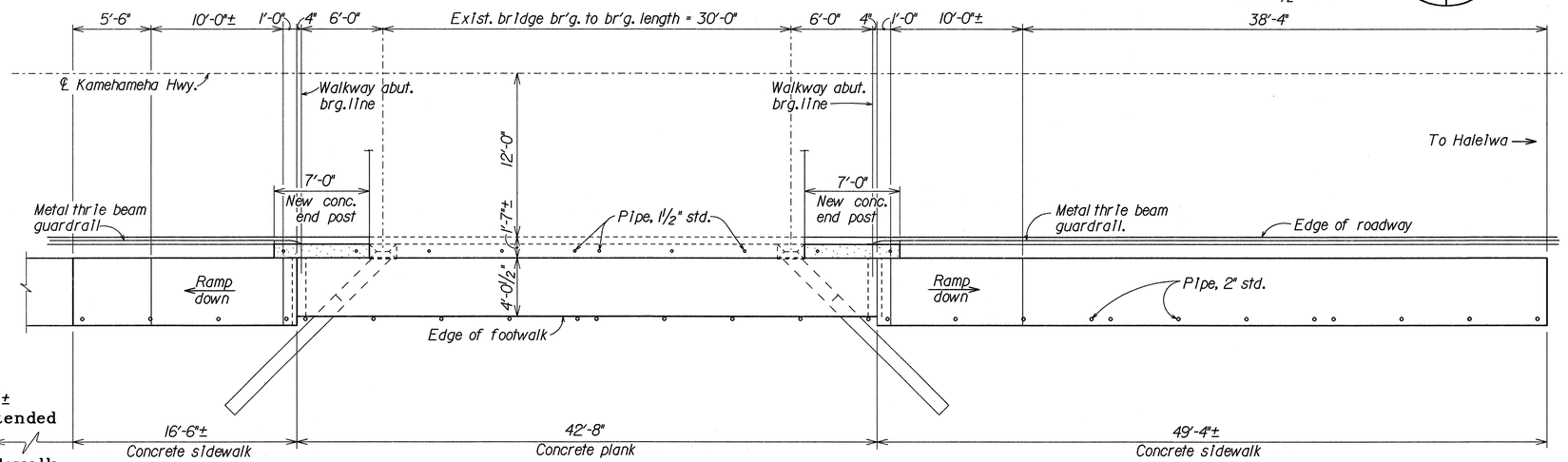
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83D-01-89M	1989	C.O.6S-1	12



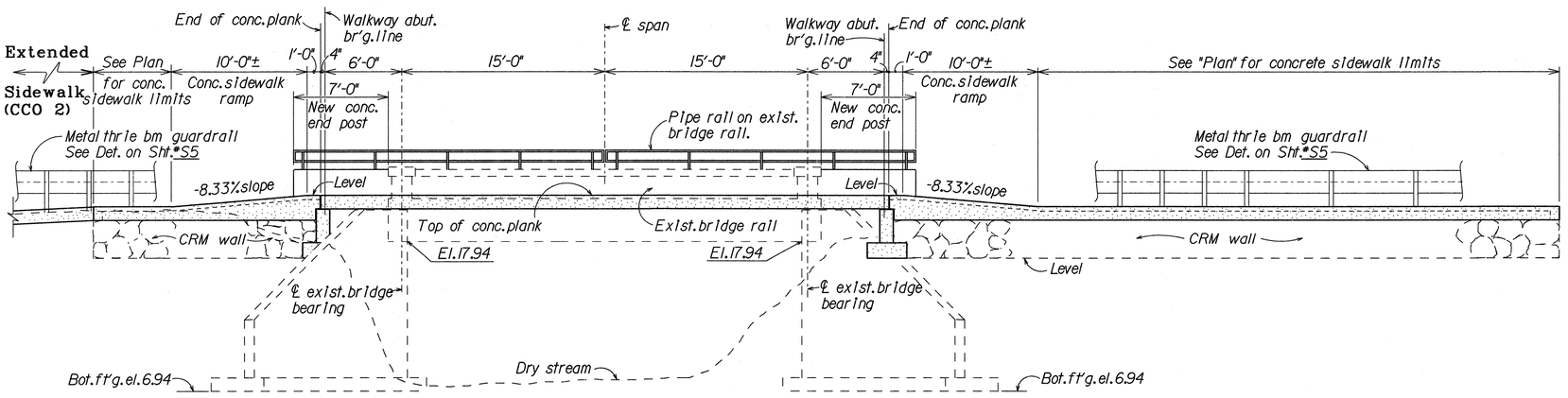
LAYOUT PLAN
Scale: 1" = 10'-0"



PARTIAL SECTION
A SI SI
Scale: 1/2" = 1'-0"



PLAN--FOOTWALK
Scale: 1" = 5'-0"



LONGITUDINAL SECTION THRU FOOTWALK
Scale: 1" = 5'-0"

GENERAL NOTES

DESIGN SPECIFICATIONS -- AASHTO:

AASHTO Standard Specifications for Highway Bridges (13th edition), with subsequent Interim Specifications, 1984, 1985, 1986, 1987 & 1988.

DESIGN LIVE LOAD:

85 psf

ALLOWABLE DESIGN STRESSES:

1. Reinforced concrete: $f_c = 0.40\ f'_c$
2. Reinforcing steel: f_s = 20,000 psi for Grade 40;
3. Prestressed concrete: see Sht. No. S4

MATERIALS:

1. Reinforced concrete: Class A
2. Reinforcing steel: ASTM A615, Grade 40
3. Prestressed concrete: see Sht. No. S4
4. Structural steel: see Sht. No. S3

CONSTRUCTION METHODS:

1. Refer to Standard Specifications for Road and Bridge Construction, 1985 Edition and Special Provisions.

REFERENCE:

1. Refer to Standard Plans for additional details and notes not covered by details and typical drawings.

GENERAL NOTES:

1. Items noted incidental will not be paid for separately.
2. All preformed elastomeric bearing pads and premolded joint filler shall be incidental to concrete.
3. The Contractor shall verify all dimensions in the field before commencing work.
4. The Contractor shall verify the location of all existing utility lines near the structures, and notify their respective owners before commencing work.
5. The Contractor shall be solely responsible for the protection of the adjacent property, utilities, existing and new structures from damage due to construction and shall repair any damage at his own expense to the satisfaction of the Engineer.
6. Dress approach to walkway as required and as directed by the Engineer.

ESTIMATED QUANTITIES

ITEM NO.	ITEM	UNIT	QUANTITY
206.5500	Structure Excavation	C.Y.	43
206.7000	Structure Backfill	C.Y.	21
503.1065	Concrete in Abutments	C.Y.	2
504.7500	Prestressed Concrete Plank	S.F.	171
507.4600	1'-5" high Galvanized Iron Pipe Rail	L.F.	46
507.4700	3'-6" high Galvanized Iron Pipe Rail	L.F.	109
507.7600	New Concrete End Post	Ea.	2
507.9000	3"ø Drilled Holes for Rail	Ea.	10
508.0100	C.R.M.	C.Y.	19
608.1100	Reinforced Concrete Sidewalk	S.Y.	34

ORIGINAL PLAN		
SURVEY PLOTTED BY	KSC	APR. 1989
DRAWN BY		
TRACED BY		
NOTE BOOK		
DESIGNED BY	LTA/TS & MW	APR. 1989
QUANTITIES BY	TS & MW	APR. 1989
CHECKED BY	LTA	APR. 1989
N. KAUNALA	DATE	

DATE	REVISION
8-23-89	Change Order for construction of footwalk at Kaunala Bridge

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

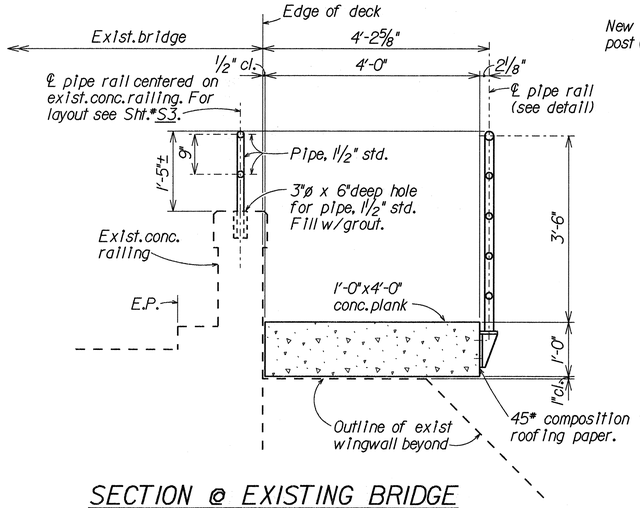
LAYOUT PLAN, FOOTWALK PLAN & SECTION, GENERAL NOTES AND ESTIMATED QUANTITIES

KAMEHAMEHA HIGHWAY
BRIDGE REPAIR AND MODIFICATION
Project No. 83D-01-89M
Scale: As Noted (KAUNALA STREAM BRIDGE) Date: April 1989

SHEET No. S1 OF 5 SHEETS

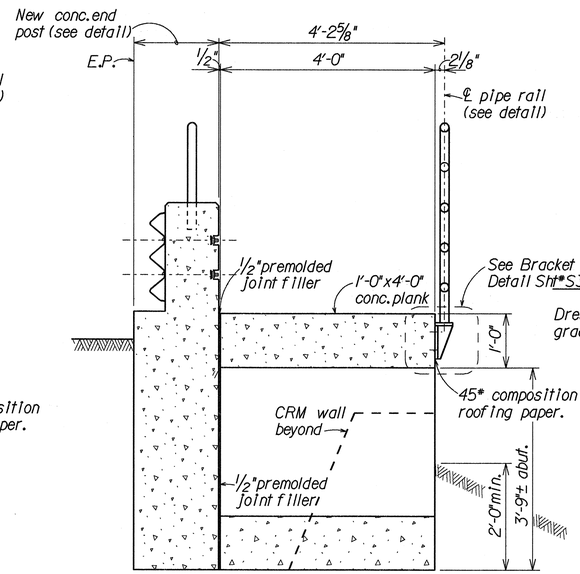
C.O. 6S-1

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83D-01-89M	1989	C.O.6S-2	12



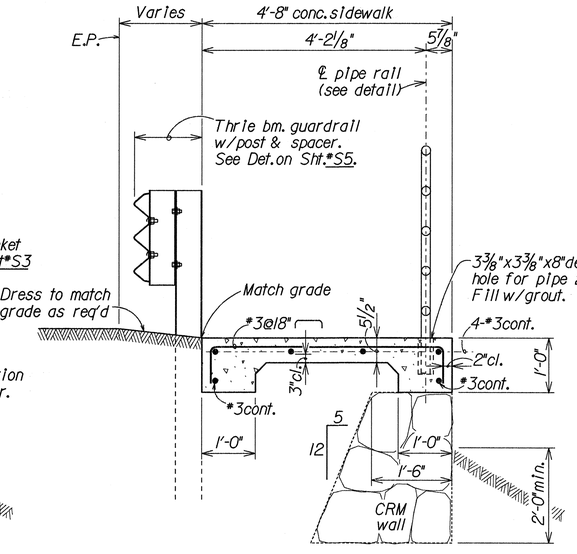
SECTION @ EXISTING BRIDGE

Scale: ¾" = 1'-0"



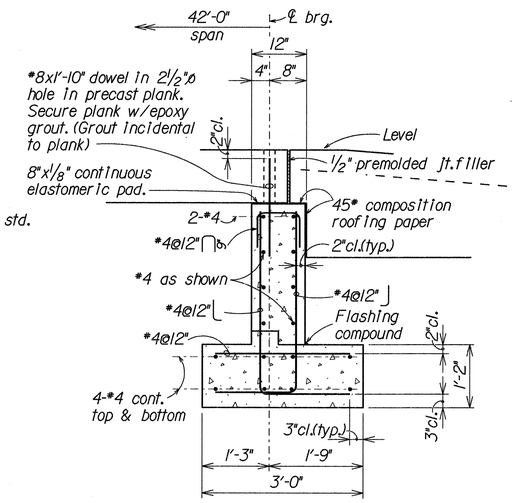
SECTION @ WALKWAY ABUTMENT

Scale: ¾" = 1'-0"



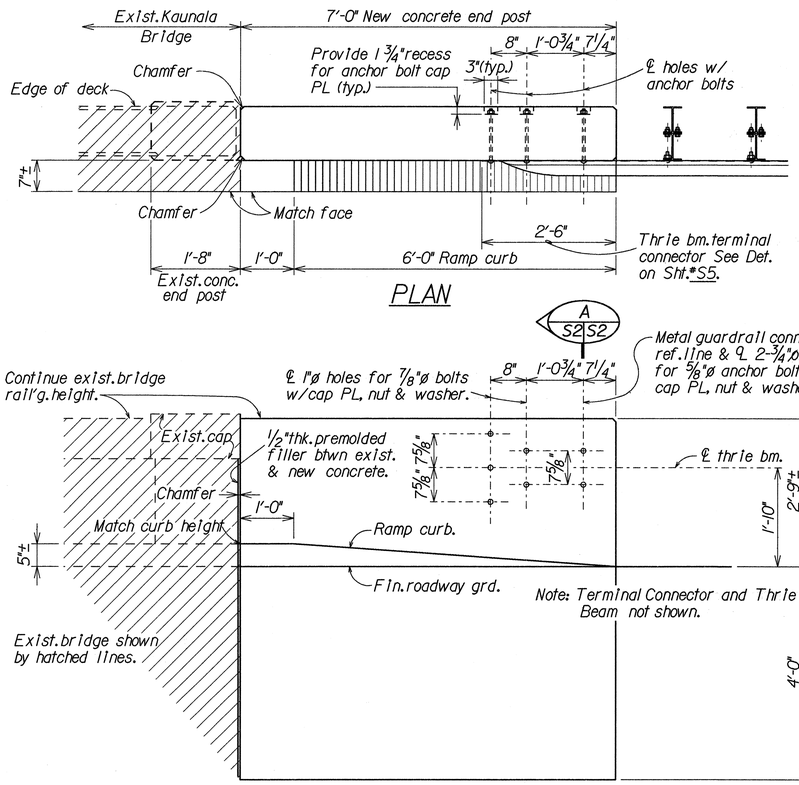
SECTION @ CONCRETE SIDEWALK

Scale: ¾" = 1'-0"



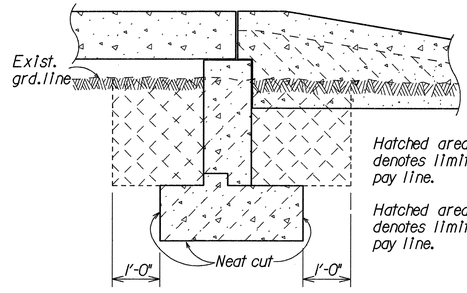
TYPICAL FOOTWALK ABUTMENT

Scale: ¾" = 1'-0"

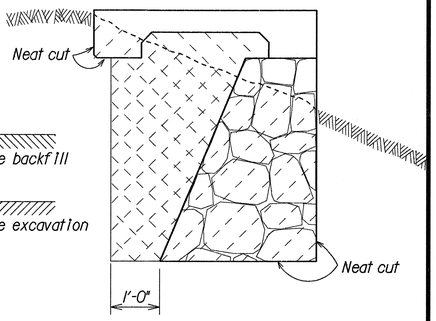


NEW CONCRETE END POST (NORTH RAILING) DETAILS

Scale: ¾" = 1'-0"



AT ABUTMENT



AT SIDEWALK & CRM WALL

STRUCTURAL EXCAVATION AND BACKFILL PAY LIMITS

Not to Scale

ORIGINAL PLAN	SURVEY PLOTTED BY	KSG	DATE	APR. 1989
	DRAWN BY			
	TRACED BY	ITA, KS & MW		APR. 1989
NOTE BOOK	DESIGNED BY	KS & MW		APR. 1989
No. KAUNALA	QUANTITIES BY	ITA		APR. 1989
	CHECKED BY			

DATE	REVISION
8-23-89	Change Order for construction of footwalk at Kaunala Bridge.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

SECTIONS, NEW CONCRETE END POST DETAILS AND STRUCTURE EXCAVATION

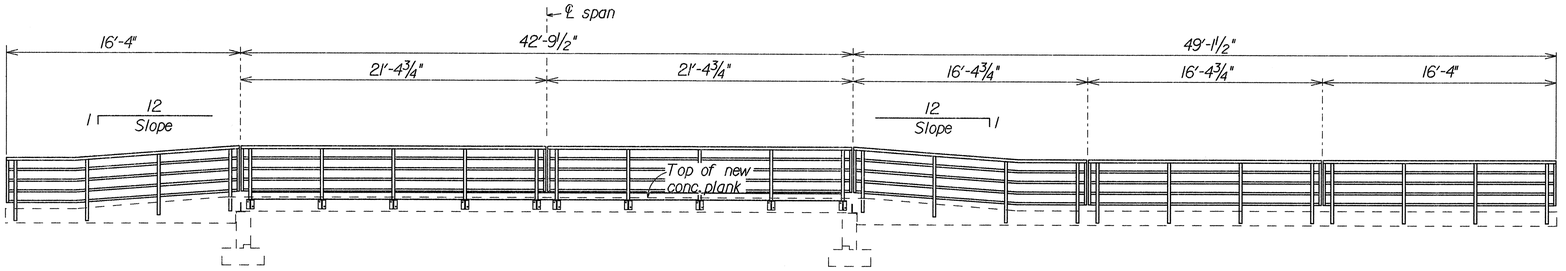
KAMEHAMEHA HIGHWAY
BRIDGE REPAIR AND MODIFICATION
Project No. 83D-01-89M

Scale: As Noted (KAUNALA STREAM BRIDGE) Date: April 1989

SHEET No. S2 OF 5 SHEETS

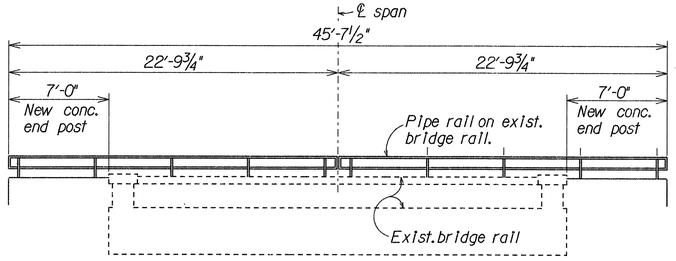
C.O. 6S-2

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83D-01-89M	1989	C.O.6S-3	12



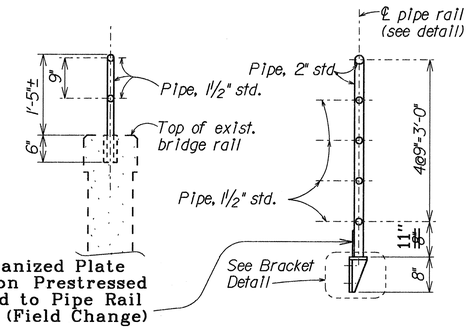
ELEVATION--PIPE RAILING ON FOOTWALK

Scale: 1" = 5'-0"



ELEVATION--PIPE RAILING ON EXISTING BRIDGE RAIL

Scale: 1" = 5'-0"



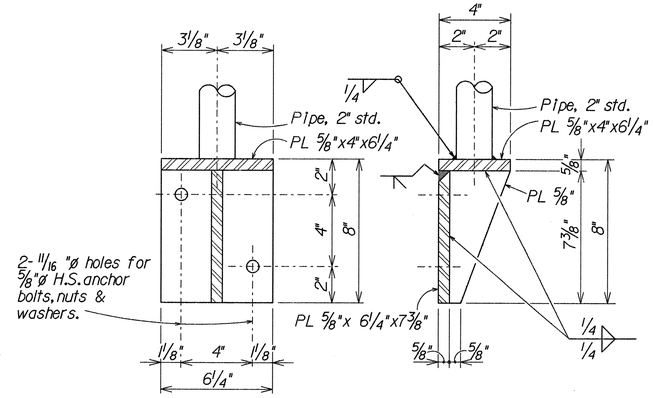
6"x1/4" Galvanized Plate continuous on Prestressed Plank Welded to Pipe Rail and Bracket (Field Change)

TYPICAL RAIL SECTIONS

Scale: ¾" = 1'-0"

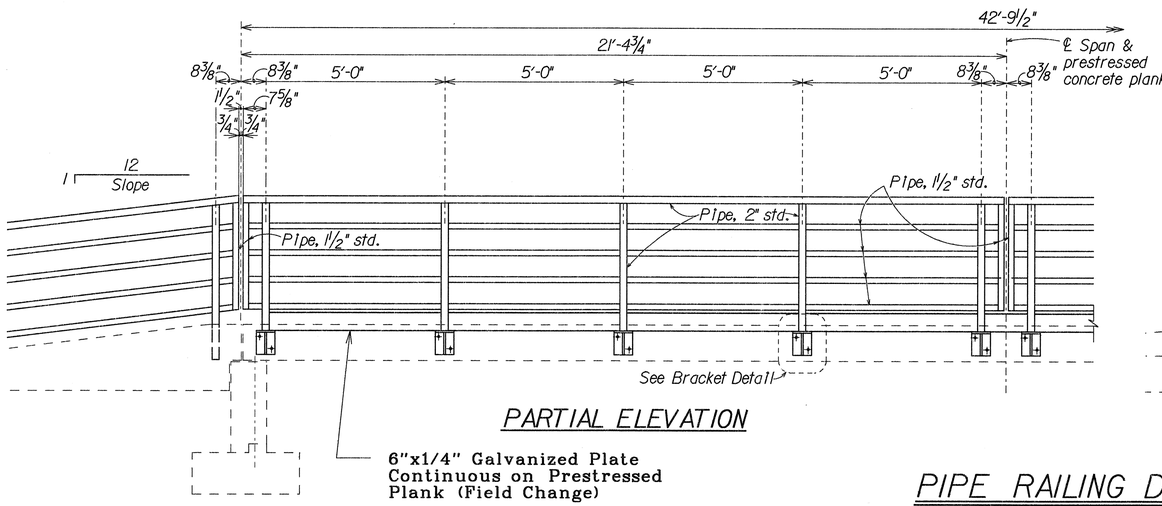
STRUCTURAL STEEL NOTES

1. Structural steel plates shall conform to ASTM A36.
2. Pipe shall conform to ASTM A53 Grade B.
3. Electrodes shall be E60XX.
4. All structural steel assemblies and hardware shall be hot-dip galvanized after fabrication.
5. H.S. anchor bolts -- ~~ASTM A193 Grade B8 Class 2 w/nuts & washers conforming to ASTM A194 Grade 8A~~ (Field Change)



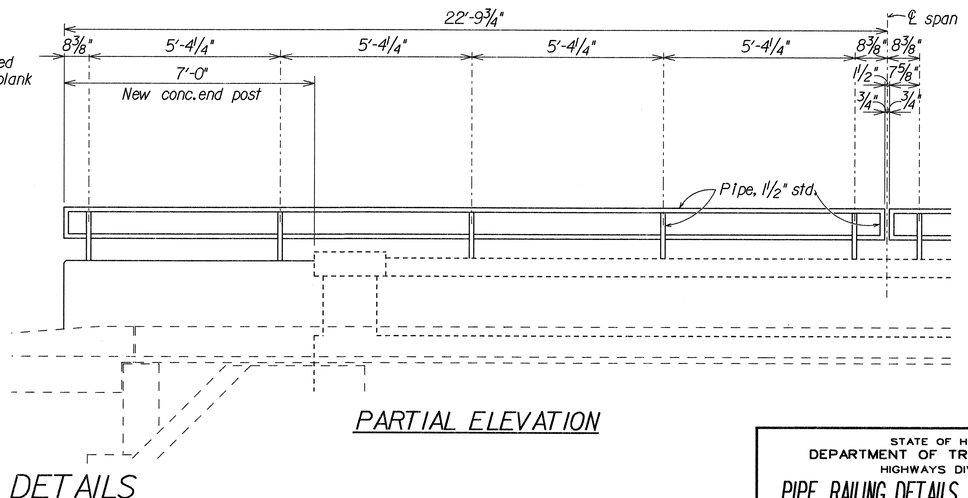
BRACKET DETAIL

Scale: 3" = 1'-0"



PARTIAL ELEVATION

6"x1/4" Galvanized Plate Continuous on Prestressed Plank (Field Change)



PARTIAL ELEVATION

PIPE RAILING DETAILS

Scale: ½" = 1'-0"

ORIGINAL PLAN	SURVEY PLOTTED BY	KSC	DATE APR. 1989
	DRAWN BY		APR. 1989
	TRACED BY	LT/LTS & MW	APR. 1989
NOTE BOOK	DESIGNED BY	TS & MW	APR. 1989
N. KAUNALA	QUANTITIES BY	LTA	
	CHECKED BY		

DATE	REVISION
8-23-89	Change Order for construction of footwalk at Kaunala Bridge

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

PIPE RAILING DETAILS AND STRUCTURAL STEEL NOTES

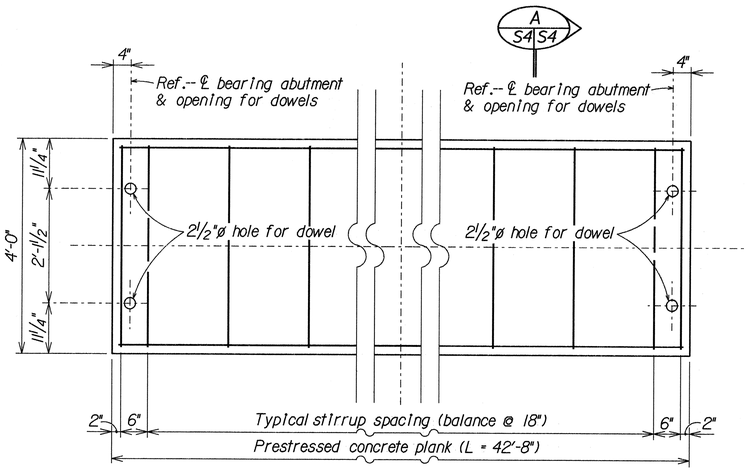
KAMEHAMEHA HIGHWAY
BRIDGE REPAIR AND MODIFICATION
Project No. 83D-01-89M

Scale: As Noted (KAUNALA STREAM BRIDGE) Date: April 1989

SHEET No. 53 OF 5 SHEETS

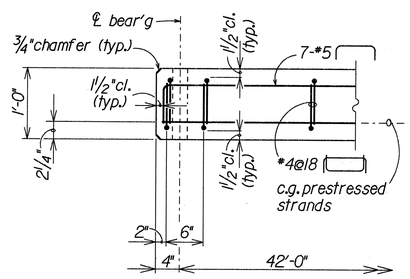
C.O. 6S-3

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83D-01-89M	1989	C.O.6S-4	12



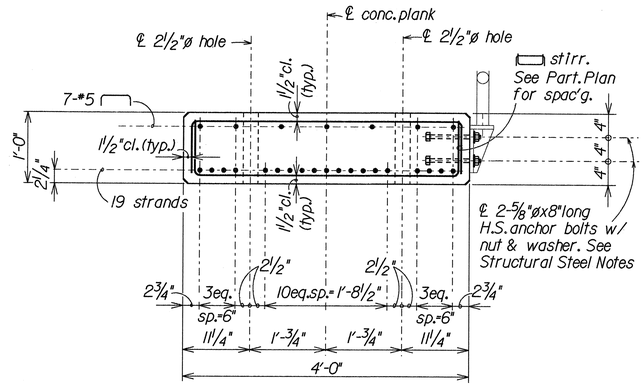
PARTIAL PLAN--END DETAIL

Scale: ¾" = 1'-0"



ELEVATION--END DETAIL

Scale: 1" = 1'-0"



SECTION A (S4 S4)

Scale: 1" = 1'-0"

PRESTRESS NOTES

Prestressed Concrete Plank

f'_c = 6,000psi @ 28days
f'_{ci} = 5,000psi @ transfer

Prestressed Strands

A. Prestressed strands shall be ½"ø 270ksi, 7-wire stress-relieved strands (ASTM A416). Total losses other than friction = 45,000psi.

B. Allowable stresses in strands shall be in accordance with Design Specifications (See General Notes).

C. Effective Prestressed Force = 447.6^k.

Notes

1. For inserts in prestressed plank for railing connections, refer to corresponding details.
2. The calculated camber includes the effect of the initial prestress force and the weight of the plank upon removal from the prestressing bed. Calculated camber value does not account for any camber growth of the plank. The actual camber at time of placement shall not exceed the calculated camber by more than 100%. Calculated midspan camber = 9/16". Contractor shall submit record of camber to the Engineer. This record shall include cambers at time of detensioning, delivery, and placement.

PRESTRESSED CONCRETE PLANK DETAILS

ORIGINAL PLAN		
	SURVEY PLOTTED BY	DATE
	DRAWN BY KSS	APR. 1989
	TRACED BY	
NOTE BOOK	DESIGNED BY LTA/S. & MW	APR. 1989
	QUANTITIES BY TS & MW	APR. 1989
No. KAUNALA	CHECKED BY LTA	APR. 1989

DATE	REVISION
8-23-89	Change Order for construction of footwalk at Kaunala Bridge.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

PRESTRESSED CONCRETE PLANK SECTIONS AND PRESTRESS NOTES

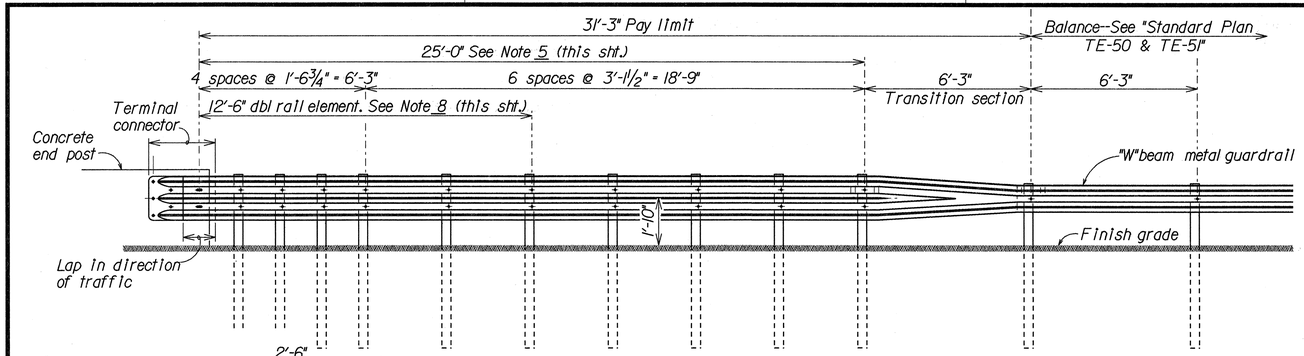
KAMEHAMEHA HIGHWAY
BRIDGE REPAIR AND MODIFICATION
Project No. 83D-01-89M

Scale: As Noted (KAUNALA STREAM BRIDGE) Date: April 1989

SHEET No. S4 OF 5 SHEETS

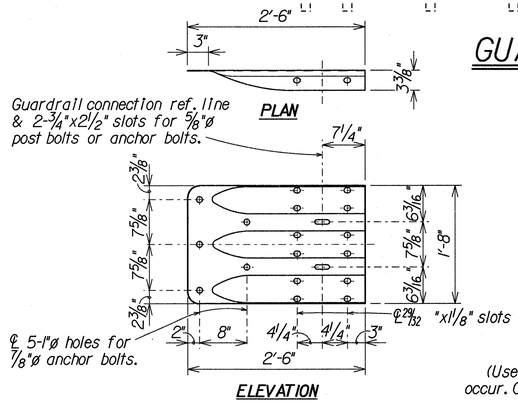
C.O. 6S-4

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83D-01-89M	1989	C.O.6S-5	12



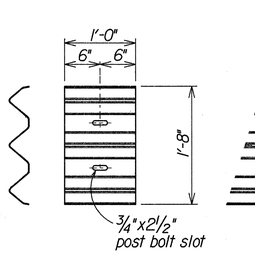
GUARDRAIL POST SPACING DETAIL

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



TERMINAL CONNECTOR

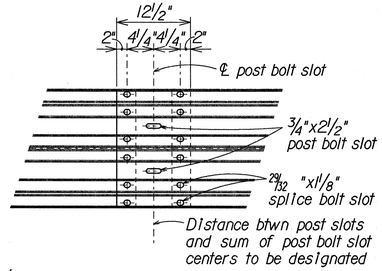
Scale: 1" = 1'-0"



(Use at posts where splices do not occur. Omit at double rail element section)

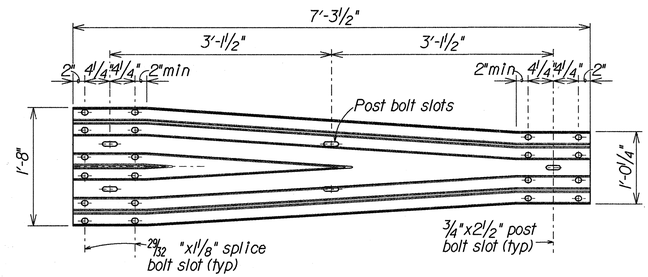
BACKUP PLATE

Scale: 1" = 1'-0"



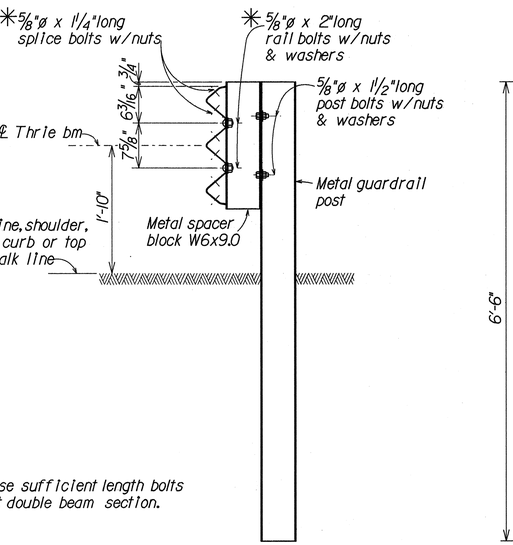
RAIL SPLICE

Scale: 1" = 1'-0"



TRANSITION SECTION

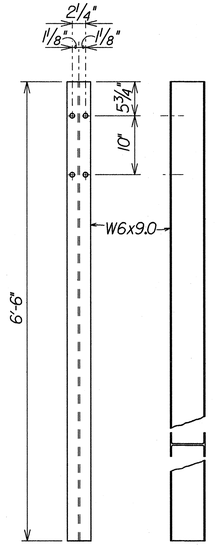
Scale: 1" = 1'-0"



TYPICAL SECTION

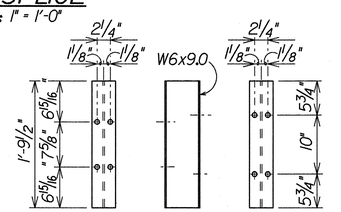
METAL GUARDRAIL ON METAL POST WITH METAL SPACER BLOCK

Scale: 1" = 1'-0"



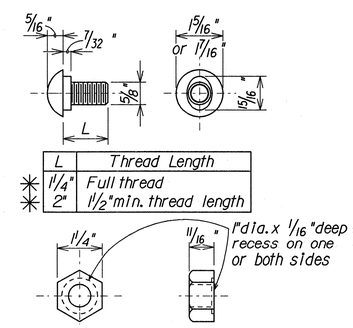
POST DETAILS

Scale: 1" = 1'-0"



SPACER BLOCK DETAILS

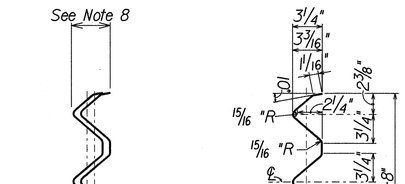
Scale: 1" = 1'-0"



L	Thread Length
✳ 1 1/4"	Full thread
✳ 2"	1 1/2"min. thread length

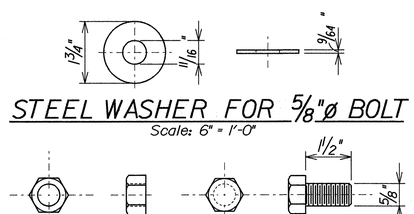
5/8"ø BUTTON HEAD BOLT & RECESS NUT

Scale: 6" = 1'-0"



SECTION THRU RAIL ELEMENT

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



STEEL WASHER FOR 5/8"ø BOLT

Scale: 6" = 1'-0"

5/8"ø HEX BOLT & NUT

Scale: 6" = 1'-0"

NOTES:

1. "Terminal Connector" shall be fabricated from 10 gauge steel conforming to the requirements of AASHTO M180.
2. All anchor bolts shall be high strength bolts conforming to the requirements of ASTM 325.
3. Anchor bolt length shall be such that a snug fit of the elements and full thread engagement plus 1/4"(max) is attained.
4. "Terminal Connector", tapered box and standard spacer; including all anchor bolts, cap PL, nuts and washers; shall be hot-dip galvanized after fabrication.
5. First 25'-0" of guardrail adjoining "Terminal Connector" shall be of galvanized steel and supports spaced as shown on the detail drawings.
6. Heads of through anchor bolts shall be placed on the traffic side of the end block; those at the thru spacer block excepted.
7. Where double (nested) beam occur, 12" "Backup Plate" not required.
8. Double (nest 1st panel) thrie beam elements at all end post connections, except on highways with one-way traffic pattern, use single thrie beam element at end post on trailing end only.

ORIGINAL PLAN	SURVEY PLOTTED BY	KSC	DATE APR. 1989
	DRAWN BY		
	TRACED BY	ITA/S. & MW	APR. 1989
NOTE BOOK	DESIGNED BY	S. & MW	APR. 1989
	QUANTITIES BY	ITA	APR. 1989
No. KAUNALS.	CHECKED BY		

DATE	REVISION
8-23-89	Change Order for construction of footwalk at Kaunala Bridge.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

GUARDRAIL TYPE 3 THRIE BEAM APPURTENANCES AND POST SPACING DETAILS

KAMEHAMEHA HIGHWAY
BRIDGE REPAIR AND MODIFICATION
Project No. 83D-01-89M

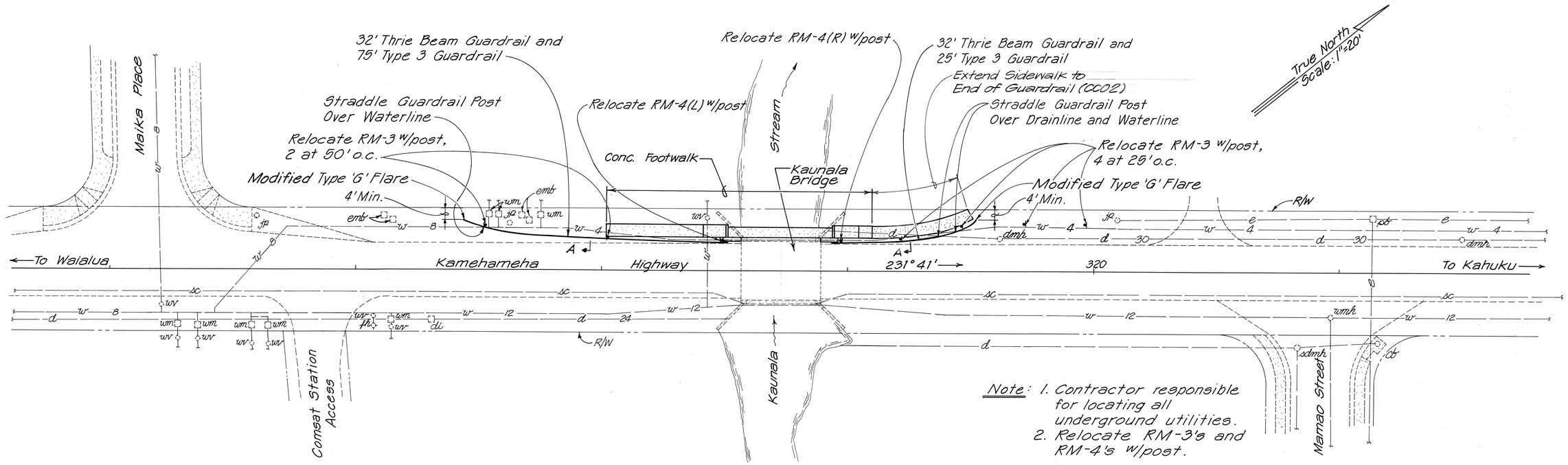
Scale: As Shown (KAUNALA STREAM BRIDGE) Date: April 1989

SHEET No. 55 OF 5 SHEETS

TYPE 3 THRIE BEAM GUARDRAIL AND APPURTENANCES DETAILS

C.O. 6S-5

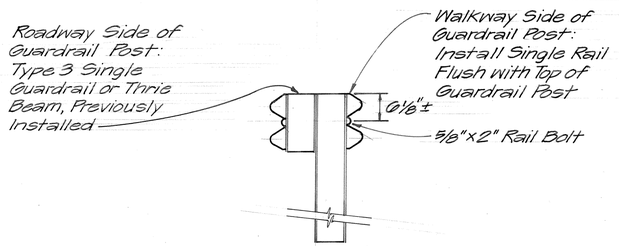
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83D-01-89M	1990	C0.6S-6	13



Note: 1. Contractor responsible for locating all underground utilities.
2. Relocate RM-3's and RM-4's w/post.

GUARDRAIL LAYOUT PLAN

Scale: 1" = 20'



SECTION A
SINGLE RAIL ON WALKWAY SIDE OF GUARDRAIL POST DETAIL

Notes:
1.) See Plan Sheet C0.6S-2 for Typical Sidewalk Cross Section.
2.) Omit Back Plates for Single Rail on Walkway Side of Guardrail Post.

(CCO 2)

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

DATE	REVISION
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

GUARDRAIL LAYOUT PLAN

KAMEHAMEHA HIGHWAY
BRIDGE REPAIR AND MODIFICATION
Project No. 83D-01-89M
(KAUNALA BRIDGE)

Scale: 1"=20' Date: Aug. 1989

SHEET No. 1 OF 1 SHEETS

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

83D-0-83

C0.6S-6

83D-01-89M