

BENJAMIN J. CAYETANO
GOVERNOR



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
869 PUNCHBOWL STREET
HONOLULU, HAWAII 96813-5097

RECEIVED

95 JUL 12 P3:45

OFFICE OF ENVIRONMENTAL
QUALITY CONTROL

KAZU HAYASHIDA
DIRECTOR

DEPUTY DIRECTORS
~~GLENN M. OKIMOTO~~
Jerry M. Matsuda


IN REPLY REFER TO:

HWY-DD
2.6405

July 6, 1995

MEMORANDUM:

TO: GARY GILL, DIRECTOR
OFFICE OF ENVIRONMENTAL QUALITY CONTROL

FROM: 
HUGH Y. ONO, ADMINISTRATOR
HIGHWAYS DIVISION

SUBJECT: HANA HIGHWAY, HANAWANA STREAM CULVERT
REPLACEMENT, PROJECT NO. 360A-02-95M,
TMK: 2:9:10:2,3,4,22, FINAL ENVIRONMENTAL
ASSESSMENT

We are notifying you that an Environmental Impact Statement (EIS) is not required for the subject project and are filing a negative declaration for this project. Enclosed are four (4) copies of the negative declaration.

Please contact Allan Nishimura at 587-2240 (fax 587-2343) if you have any questions.

Enc.

1995-07-23-MA-FEA-Hana Hwy. Hanawana Stream culvert
Replacement

FINAL ENVIRONMENTAL ASSESSMENT
NEGATIVE DECLARATION FOR
HANA HIGHWAY
HANAWANA STREAM CULVERT REPLACEMENT
PROJECT NO. 360A-02-95M
MAKAWAO, MAUI
JUNE 30, 1995

Proposing Agency: State of Hawaii, Department of
Transportation, Highways Division

Agencies Consulted:

Federal:

U.S. Army Corps of Engineers
U.S. Department of the Interior, Fish & Wildlife Services

State:

Department of Business, Economic Development and Tourism
Department of Health, Environmental Management Division
Department of Land and Natural Resources
Office of State Planning

County of Maui:

Planning Department
Department of Public Works
Department of Water Supply
Economic Development Agency

Others:

Nature Conservancy of Hawaii
Sierra Club of Hawaii, Maui Group

Project Characteristics:

General:

The State of Hawaii, Department of Transportation, Highways Division is proposing to replace culverts at Hanawana Stream. The existing culverts are located on Hana Highway, approximately two (2) miles southeast of Waipio Bay at mile post 5.44, see figures 1 and 2. There are three (3) culverts at this location, each one rusted through at the inverts. Also, the stream water overtops the highway during periods of heavy rainfall, temporarily obstructing vehicular traffic.

Hana Highway, in the vicinity of the proposed project area, is a 2-lane highway, 1-lane in each direction. The existing traveled way is 18' wide, and there are 4' wide unpaved

shoulders on both sides of the highway.

- Technical:** The proposed project consists primarily of replacing the three (3) existing 36" diameter cast iron pipes crossing Hana Highway, each pipe approximately 35' long with three (3) 48" diameter, 46' long reinforced concrete pipes; including headwalls, wingwalls, and appurtenant work such as minor channel excavation, pavement reconstruction and guardrail installation. Work will also include installing wire fence and relocating a one(1) inch polyvinyl chloride waterline. Figures 3 thru 8 shows the proposed work.
- Economic:** The estimated construction costs for the proposed project will be \$ 216,000.00 for the State of Hawaii.
- Social:** The project is located within the State Land Use Agricultural District. The existing culverts are located at the Hanawana Stream crossing of Hana Highway. Hana Highway is the only developed roadway serving the towns from Hana to Paia. This highway is used primarily by residents commuting to jobs in Makawao and Wailuku, and visitors travelling to and from Hana. The proposed project will not allow the closure of more than one lane during the construction period. The proposed culvert replacement will increase the capacity of water flow, thereby reducing the possibility of the stream overtopping the highway during heavy rainfall. And as a result, the project will provide a safer and more reliable highway for the travelling public.
- Environmental:** The proposed project is planned to be constructed within the existing State Highway right-of-way. No unusual flora or fauna inhabit the project site. Also, there are no known historical, cultural or archaeological sites within the project limits. Hana Highway will remain a 2-lane facility upon completion of project; therefore, air quality and noise levels will not be permanently affected. All construction work will be designed to resemble existing conditions so as not to adversely affect visual impacts. Best management practices will be applied so no significant long term adverse affects on water quality in the stream or the ocean is anticipated. Appropriate mitigation measures will be utilized to minimize adverse

environmental impacts during construction of the project.

Summary of the Affected Environment:

The proposed culvert replacements will produce a safer and more reliable roadway while causing no significant long term adverse impacts. There are no endangered flora, fauna, critical habitats, historical/archaeological or cultural sites at the location of the proposed project.

Summary of Major Impacts:

Short Term:

During construction, the following minor adverse impacts are anticipated:

1. Some dust and noise
2. Traffic slow down
3. Minor water quality problems from silt and construction debris

Long Term:

No significant long term adverse impact is anticipated in the following conditions due to construction of the proposed project.

1. Air Quality
2. Noise
3. Traffic
4. Historical/Archaeological
5. Flora
6. Fauna
7. Visual
8. Water Quality

Alternatives Considered:

The "No Action" alternative was considered but determined to be unacceptable because the benefits of providing the motoring public with a safer and more reliable highway far outweigh the minor adverse impacts anticipated while constructing this project.

Proposed Mitigation Measures During Construction:

1. The generation of dust and noise are anticipated by the construction activities. Dust levels will be controlled by sprinkling with non-potable water. General construction noises will be mitigated by limiting the hours of construction activities to 7:00 a.m. to 4:00 p.m., five days a week. In addition, noise attenuating devices on construction equipment will be functional and properly maintained.
2. Traffic will be disrupted due to the temporary closure of one traffic lane. Disruptions will be reduced by implementing construction traffic control plans, and by the use of public informational signs; news releases; and other traffic control devices, including cones, signs, and flaggers to alert motorists of construction activities.
3. Water quality in the stream may be affected by silt and debris during construction. Measures to minimize erosion and siltation will include; scheduling site work during periods of minimum rainfall, replanting or covering lands denuded of vegetation as quickly as possible, and preventing construction materials and petroleum products from falling, blowing or leaching into the stream. Other mitigative measures to contain silt and construction debris may involve the construction of temporary berms, dikes, dams, sediment basins. In addition, excavation shall be confined to the minimum area necessary to ease construction equipment and work force engaged in excavation work. Also, fill material shall be of suitable quality, free of deleterious substance, and able to withstand expected high flows.

Permits Required Prior To Start Of Construction:

1. Stream Channel Alteration Permit (SCAP) DLNR Commission on Water Resource Management
2. Department of the Army Permit (DA) U.S. Army Corps of Engineers
3. Section 401 Water Quality Certification (WQC) DOH Environmental Management Division

Determination:

The proposed project will not cause significant adverse environmental impact and a negative declaration is applicable.

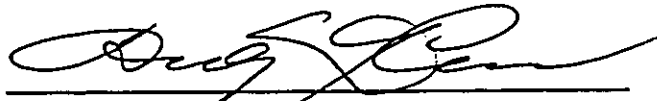
Findings and Reasons Supporting Determination:

The proposed project will not:

1. involve an irrevocable commitment to loss or destruction of any natural or cultural resource;
2. curtail the range of beneficial uses of the environment;
3. conflict with the State's long-term environmental policies;
4. detrimentally affect the economic or social welfare of the community or state;
5. detrimentally affect the public health;
6. involve substantial secondary impacts, such as population changes or effects on public facilities;
7. involve a substantial degradation of environmental quality;
8. affect any rare, threatened, or endangered species of flora and fauna or habitat;
9. detrimentally affect environmentally sensitive areas such as flood plain, tsunami zone, erosion-prone flood area, geologically hazardous land, estuary, fresh or coastal water; and
10. detrimentally affect air or water quality or ambient noise levels.

For the reasons above, the proposed project will not have any significant effect in the context of Chapter 343, Hawaii Revised Statutes and Section 11-200-12 of the State Administrative Rules.

RECEIVED AND ACCEPTANCE RECOMMENDED:

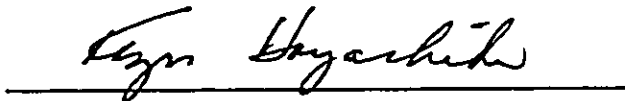


HUGH Y. ONO
Administrator
Highways Division

7-10-95

Date

CONCURRENCE:



KAZU HAYASHIDA
Director of Transportation

7/10/95

Date

7/5 kw HWY-DD (A.
(Allan N)

HWY-DD
2.6259

June 26, 1995

MEMORANDUM:

TO: RAE M. LOUI, DEPUTY DIRECTOR
COMMISSION ON WATER RESOURCE MANAGEMENT
DEPARTMENT OF LAND AND NATURAL RESOURCES

FROM: HUGH Y. ONO, ADMINISTRATOR
HIGHWAYS DIVISION

SUBJECT: COMMISSION ON WATER RESOURCE MANAGEMENT LETTER
DATED MARCH 2, 1995 FOR HANA HIGHWAY, HANAWANA STREAM
CULVERT REPLACEMENT, PROJECT NO. 360A-02-95M
MAKAWAO, MAUI

Thank you for your review of the Draft Environmental Assessment
and the stream channel alteration permit (SCAP) information.

We submitted an application for a SCAP on March 23, 1995.

KI:ra

bc: HWY-DD (A.N.) ✓

EXHIBIT A

Hwy 8092

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII



RECEIVED

MAR 3 10 06 AM '95

MICHAEL D. WILSON
CHAIRPERSON
ROBERT S. NAKATA
ROBERT G. GIRALD
DAVID A. NOBRIGA
LAWRENCE H. MIKE
RAE M. LOUI, P.E.
DEPUTY

STATE OF HAWAII DEPT. OF TRANSPORTATION
DEPARTMENT OF LAND AND NATURAL RESOURCES HIGHWAYS DIVISION
COMMISSION ON WATER RESOURCE MANAGEMENT
P. O. BOX 621
HONOLULU, HAWAII 96809

MAR -2 1995

Mr. Hugh Y. Ono, Administrator
Department of Transportation
Highways Division
869 Punchbowl Street
Honolulu, Hawaii 96813

RECEIVED
MAR 3 5 16 PM '95
HUGH Y. ONO
HIGHWAYS DIVISION
DEPT. OF TRANSPORTATION

Dear Mr. Ono:

Hana Highway, Hanawana Stream Culvert Replacement
Project No. 360A-02-95M

In response to the Draft Environmental Assessment (DEA) for the subject project, the DEA acknowledges the need for a stream channel alteration permit pursuant to Section 13-169-50, Hawaii Administrative Rules.

For more information regarding permit processing, please do not hesitate to call David Higa at 587-0249.

Sincerely,

RAE M. LOUI
Deputy Director

DH:ss

c: OCEA

EXHIBIT A

BENJAMIN J. CAYETANO
GOVERNOR



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
869 PUNCHBOWL STREET
HONOLULU, HAWAII 96813-5097

KAZU HAYASHIDA
DIRECTOR

DEPUTY DIRECTORS
~~XXXXXXXXXX~~
GLENN M. OKIMOTO

IN REPLY REFER TO:
HWY-DD
2.6301

June 29, 1995

Mr. Charles Jencks, Director
Department of Public Works
and Waste Management
County of Maui
250 South High Street
Wailuku, Hawaii 96793

Dear Mr. Jencks:

Subject: Hana Highway, Hanawana Stream Culvert Replacement
Project No. 360A-02-95M, Makawao, Maui

Thank you for your review and comments on the Draft
Environmental Assessment for subject project. Provisions for
traffic control and for disposal of clearing and grubbing will
be included in the project contract documents. We believe no
further action is necessary.

Very truly yours,

A handwritten signature in cursive script, appearing to read "Hugh Y. Ono".

for HUGH Y. ONO
Administrator
Highways Division

EXHIBIT B

DOCUMENT CAPTURED AS RECEIVED

LINDA CROCKETT LINGLE
Mayor

GEORGE N. KAYA
Director

CHARLES JENCKS
Deputy Director

AARON SHINMOTO, P.E.
Chief Staff Engineer

RECEIVED
MAR 17 3 42 PM '95
DEPT. OF TRANSPORTATION
HIGHWAYS DIVISION



COUNTY OF MAUI
DEPARTMENT OF PUBLIC WORKS
AND WASTE MANAGEMENT

LAND USE AND CODES ADMINISTRATION
250 SOUTH HIGH STREET
WAILUKU, MAUI, HAWAII 96793

March 9, 1995

RALPH NAGAMINE, L.S., P.E.
Land Use and Codes Administration

EASSIE MILLER, P.E.
Wastewater Reclamation Division

LLOYD P.C.W. LEE, P.E.
Engineering Division

DAVID WISSMAR, P.E.
Solid Waste Division

BRIAN HASHIRO, P.E.
Highways Division

RECEIVED
MAR 23 9 15 AM '95
DEPT. OF TRANSPORTATION
HIGHWAYS DIVISION

Mr. Hugh Y. Ono, Administrator
State of Hawaii
Department of Transportation
869 Punchbowl Street
Honolulu, Hawaii 96813

SUBJECT: Draft Environmental Assessment
HANA HIGHWAY, HANAWANA STREAM CULVERT REPLACEMENT
Project No. 360A-02-95M

Dear Mr. Ono:

We reviewed the subject assessment and have the following comments:

1. Comments from the Engineering Division:

- a. The construction plans should denote "Traffic Control Plans" to show construction phasing and possible road closures, if any.

The applicant is requested to contact the Engineering Division at 243-7745 for additional information.

2. Comments from the Wastewater Reclamation Division:

This division has reviewed this submittal and has no comments at this time.

3. Comments from the Solid Waste Division:

- a. Contact the Central Maui Sanitary Landfill Operations Supervisor at 877-7596 or 877-5319 for instructions on the disposal of clearing and grubbing.

EXHIBIT B



Mr. Hugh Y. Ono
Page 2 of 2
March 9, 1995

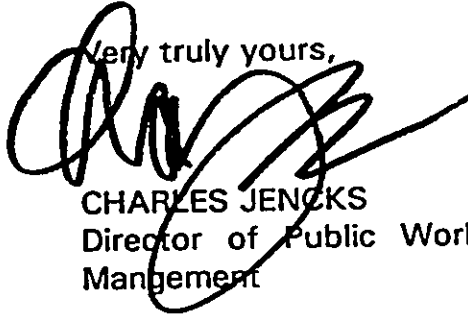
The applicant is requested to contact the Solid Waste Division at 243-7875 for additional information.

4. Comments from the Land Use and Codes Administration:

This division has reviewed this submittal and has no comments at this time.

If you have any question regarding this letter, please call me at 243-7845.

Very truly yours,



CHARLES JENCKS
Director of Public Works & Waste
Management

ey
xc: Engineering Division
Solid Waste Division
Wastewater Reclamation Division

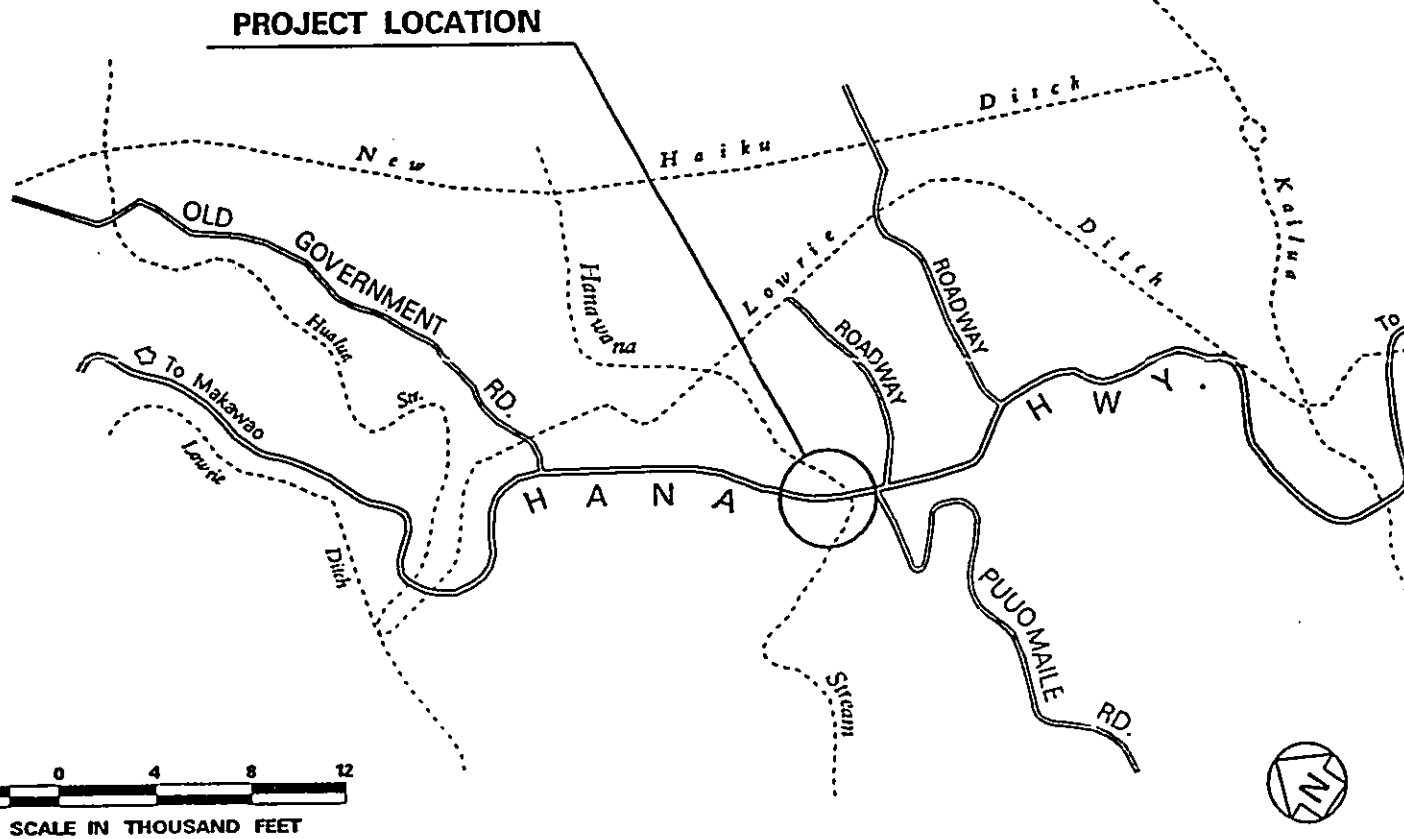
g:\ucalal\czm\hanawana.dea

EXHIBIT B

INDEX TO DRAWINGS	
SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	STANDARD PLANS SUMMARY
3	GENERAL NOTES & LEGEND
4	ROADWAY PLAN
5	DRAINAGE PLAN
6 - 9	DRAINAGE DETAILS

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
HONOLULU, HAWAII

PLANS FOR
HANA HIGHWAY
HANAWANA STREAM CULVERT REPLACEMENT
PROJECT NO. 360A-02-95M
DISTRICT OF MAKAWAO
ISLAND OF MAUI

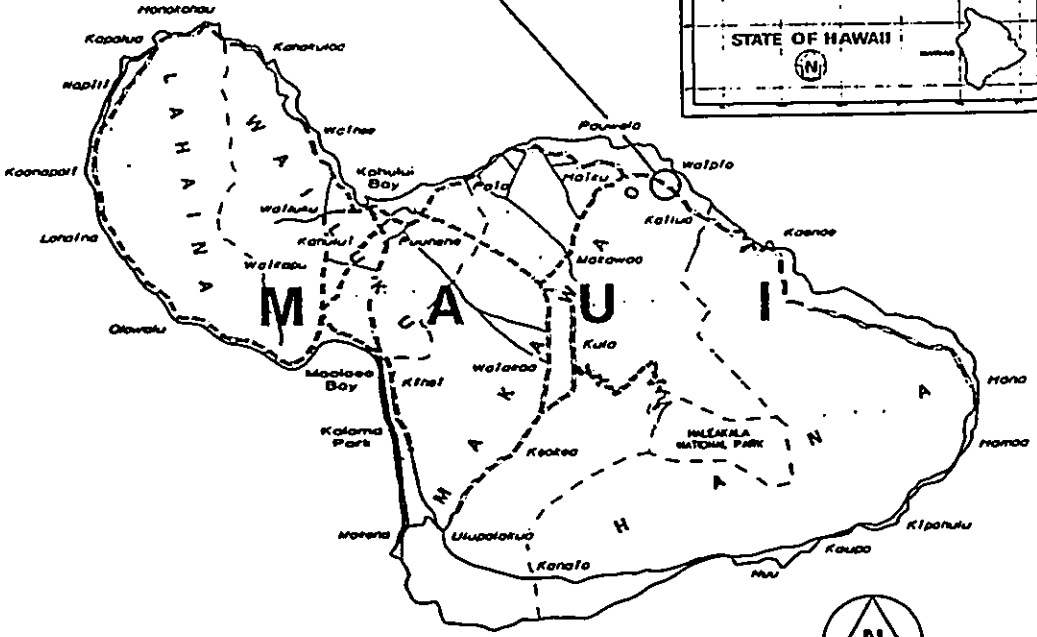
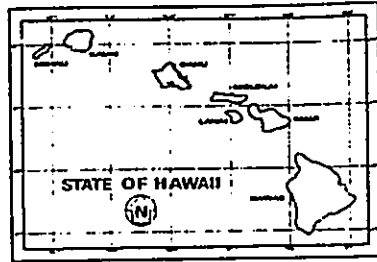


HWY-DB
DESIGNED BY
ALLAN NISHIMURA
P.S. & E. BY
587-2244
PHONE
APRIL 1995
DATE

WAI
 ANSPORTATION
 SION
 All
 WAY
 RT REPLACEMENT
 A-02-95M
 VAO

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	360A-02-95M	1995	1	9

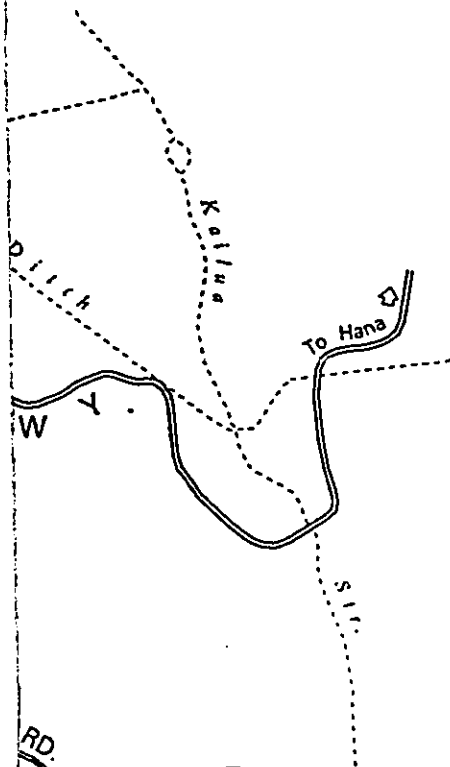
LOCATION OF PROJECT



SCALE IN MILES

— FEDERAL AID PROJECTS PREVIOUSLY CONSTRUCTED OR UNDER CONSTRUCTION

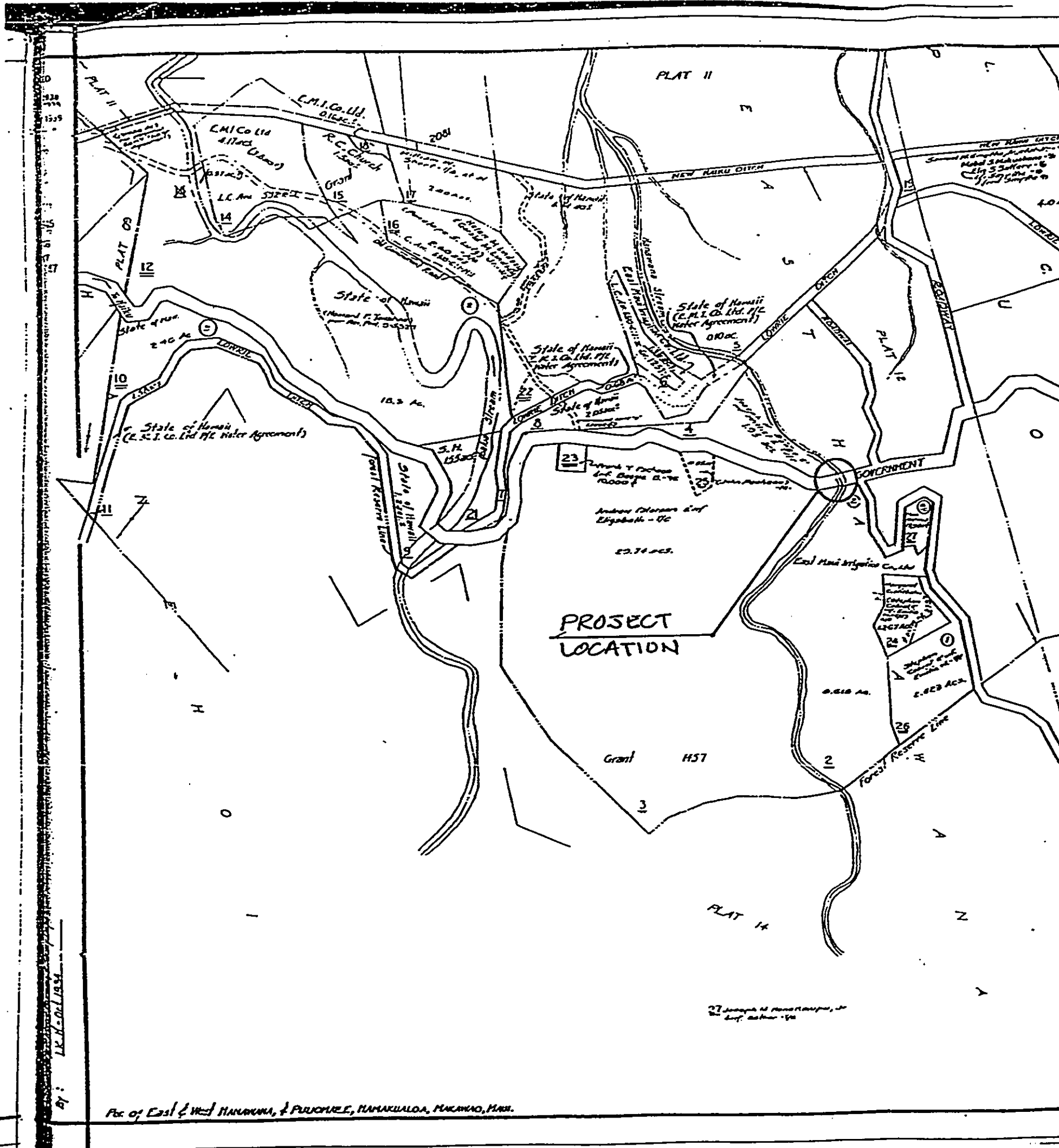
MILE POST 5.44 TO MILE POST -



DEPARTMENT OF TRANSPORTATION STATE OF HAWAII	
APPROVED:	
_____ DIR. OF TRANSPORTATION	_____ DATE

FIGURE 1

DOCUMENT CAPTURED AS RECEIVED

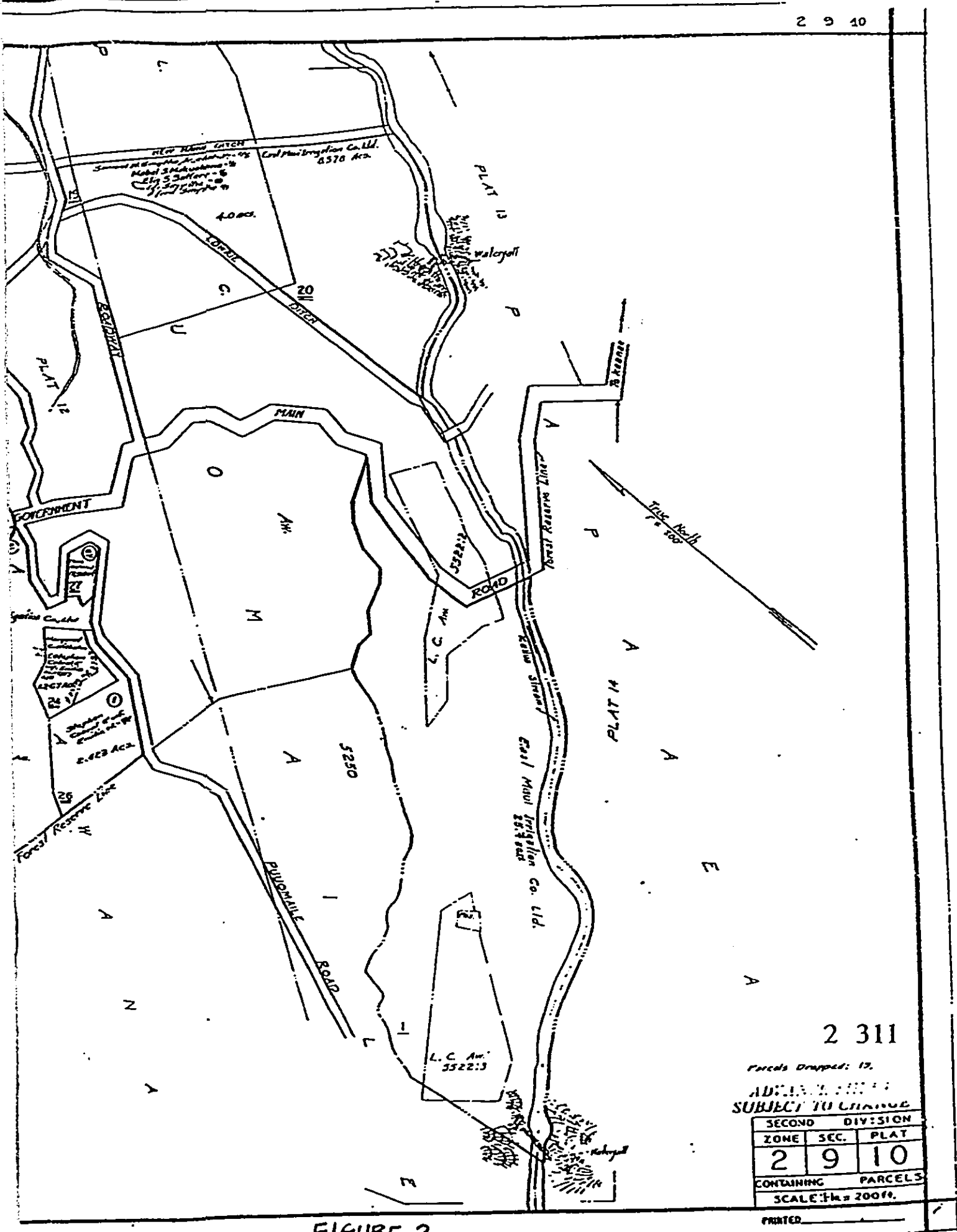


By: L.E. H. DILL 1934

Pre of East & West HAWAIIAN, & PUNOHUE, HAWAIIAN, HAWAII, HAWAII.

DOCUMENT CAPTURED AS RECEIVED

2 9 10



2 311

Parcels Dropped: 12.
 ADJUSTED TO
 SUBJECT TO CHANGE

SECOND		DIVISION	
ZONE	SEC.	PLAT	
2	9	10	
CONTAINING		PARCELS	
SCALE: 1" = 200'			

PRINTED

FIGURE 2

@ Sta. 132+80± Rt. & Lt.,
 @ Sta. 143+20± Rt. & Lt.
 Install four (4) Construction Warning Signs with posts.
 Install sign CW20-1d, "Road Construction Ahead," at @ Sta. 132+80± Rt. and @ Sta. 143+20± Lt.
 Install sign CG20-2, "End Construction," at @ Sta. 132+80± Lt. and @ Sta. 143+20± Rt.

@ Sta. 137+56± Lt. o/s 15± To
 @ Sta. 137+70± Lt. o/s 25±
 Remove 32± of exist. barbed wire fence.
 Install 23± of New Wire Fence, see Details on this sheet.

@ Sta. 137+84± To @ Sta. 138+18±
 Reconstruct pavement with 2" AC, Mix No. V and 4" Base Course, See Pavement Reconstruction Detail on this sheet.

@ Sta. 137+85± Rt. To @ Sta. 137+96± Rt.
 Install 12.5± Lin. Ft. of New Metal Guardrail, Type 3-Single w/Steel Post, Modified Type "G" Flare w/Rounded End.

@ Sta. 137+84± Rt. o/s 25± To
 @ Sta. 137+89± Rt. o/s 25±
 Install 5± of New Wire Fence, See Detail on this sheet.

@ Sta. 137+96± Rt. To @ Sta. 138+21± Rt.
 Install 25 Lin. Ft. of New Metal Guardrail, Base Plate and Steel Post on Structure. See Plan Sht. Nos. 6 & 9 for Details.

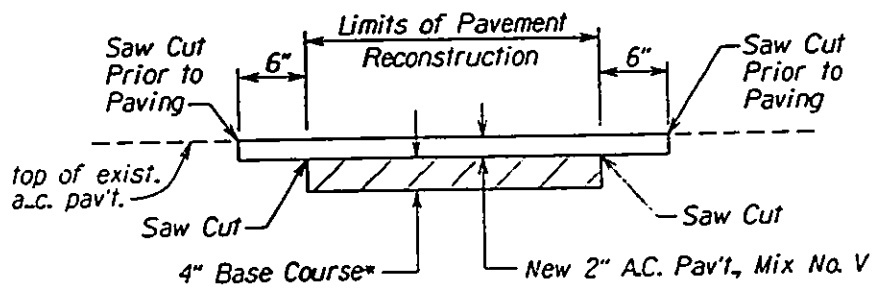
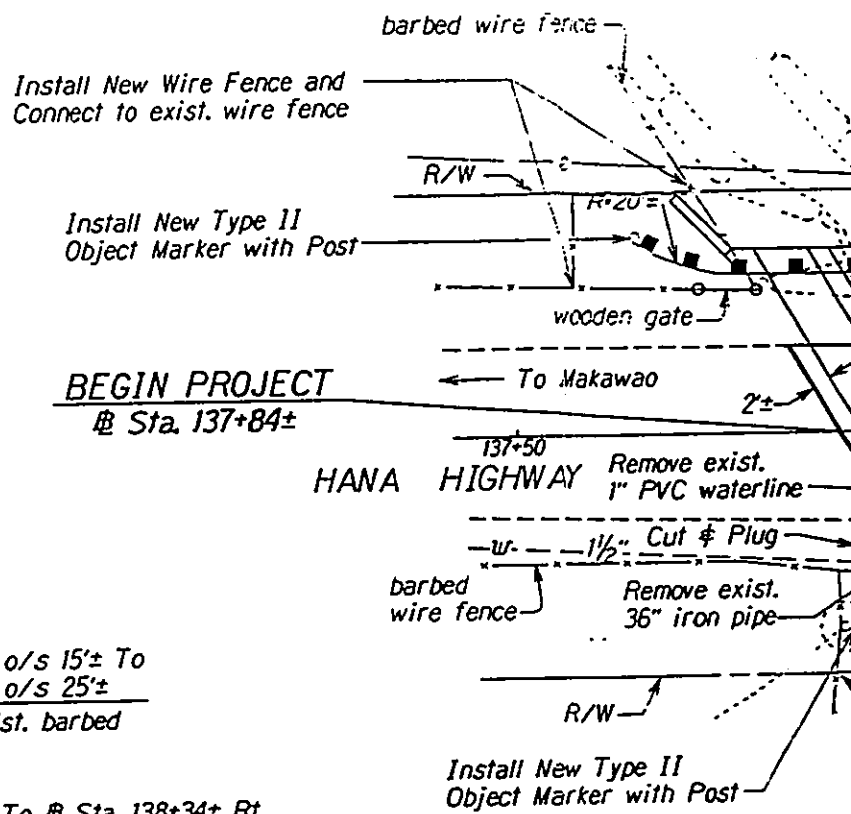
@ Sta. 137+62± Lt. To @ Sta. 137+74± Lt.
 Install 12.5± Lin. Ft. of New Metal Guardrail, Type 3-Single w/Steel Post, Modified Type "G" w/Rounded End.

@ Sta. 137+85± Rt. o/s 15± To
 @ Sta. 138+46± Rt. o/s 25±
 Remove 68± of exist. barbed wire fence.

@ Sta. 138+21± Rt. To @ Sta. 138+34± Rt.
 Install 12.5± Lin. Ft. of New Metal Guardrail, Type 3-Single w/Steel Post, Modified Type "G" Flare w/Rounded End.

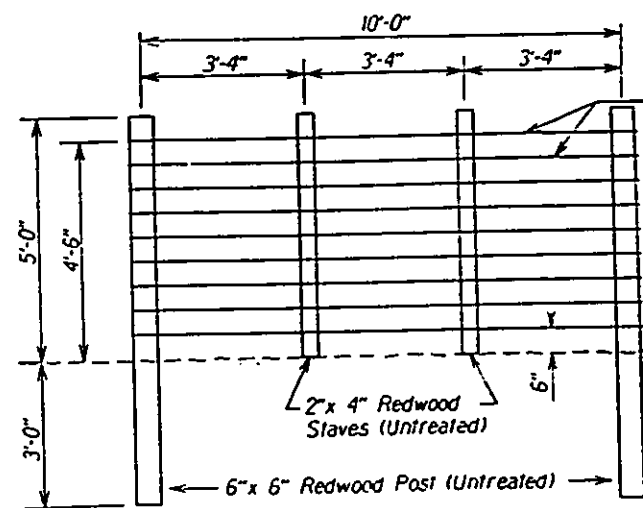
@ Sta. 138+29± Rt. o/s 25± To
 @ Sta. 138+46± Rt. o/s 25±
 Install 17± of New Wire Fence, See Detail on this sheet.

@ Sta. 137+74± Lt. To @ Sta. 137+99± Lt.
 Install 25 Lin. Ft. of New Metal Guardrail, Base Plate and Steel Post on Structure. See Plan Sht. Nos. 8 & 9 for Details.



PAVEMENT RECONSTRUCTION DETAIL
 Not To Scale

*Plant Mix or Recycled Plant Mix A.C. Base Course or Plant Mix Glassphalt Concrete Base Course.



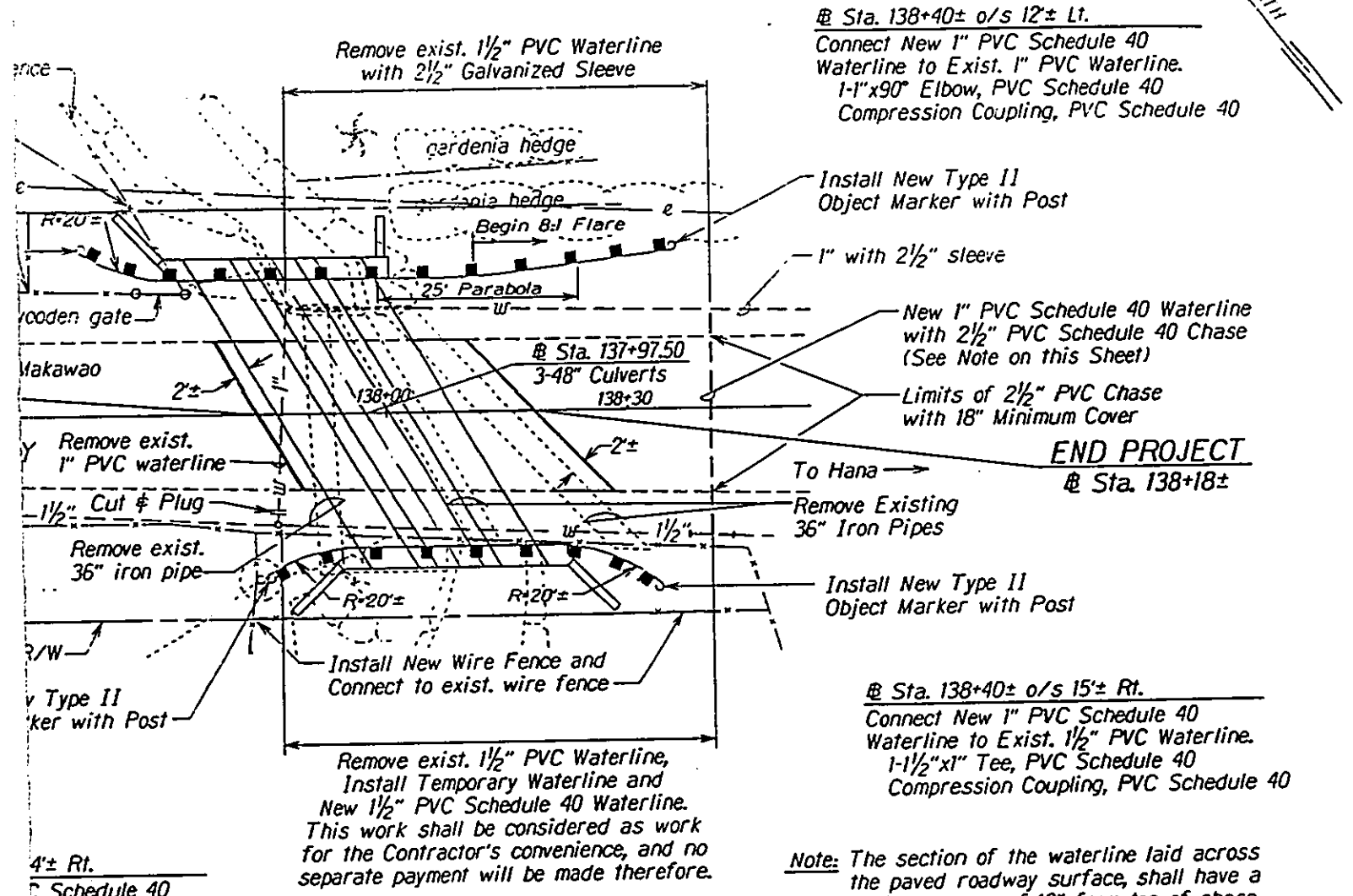
DETAIL FOR WIRE FENCE
 Scale: 1/2" = 1'-0"

DESIGNED BY	DATE
DRAWN BY	12/2/55
CHECKED BY	
NOTED BY	
QUANTITIES BY	
CHECKED BY	

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	360A-02-95M	1995	4	9

@ Lt. To @ Sta. 137+99± Lt.
 Ft. of New Metal Guardrail,
 d Steel Post on Structure.
 Nos. 8 & 9 for Details.

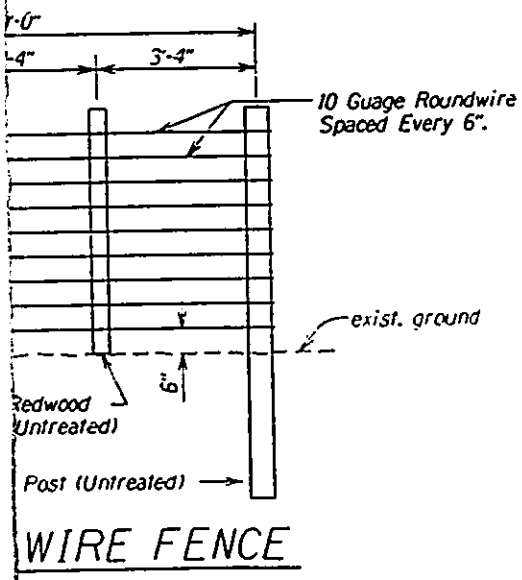
@ Sta. 137+99± Lt. To @ Sta. 138+36± Lt.
 Install 37.5± Lin. Ft. of New Metal Guardrail,
 Type 3-Single w/Steel Post, Modified Type
 "G" Flare w/Rounded End.



Note: The section of the waterline laid across the paved roadway surface, shall have a minimum cover of 18" from top of chase to the finished grade.

4± Rt.
 Schedule 40
 2" PVC Waterline

PLAN
 1" = 10'



DATE	REVISION
6/1/95	Added Relocation of Water System

STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION

ROADWAY PLAN

HANA HIGHWAY
 Hanawana Stream Culvert Replacement
 Proj. No. 360A-02-95M

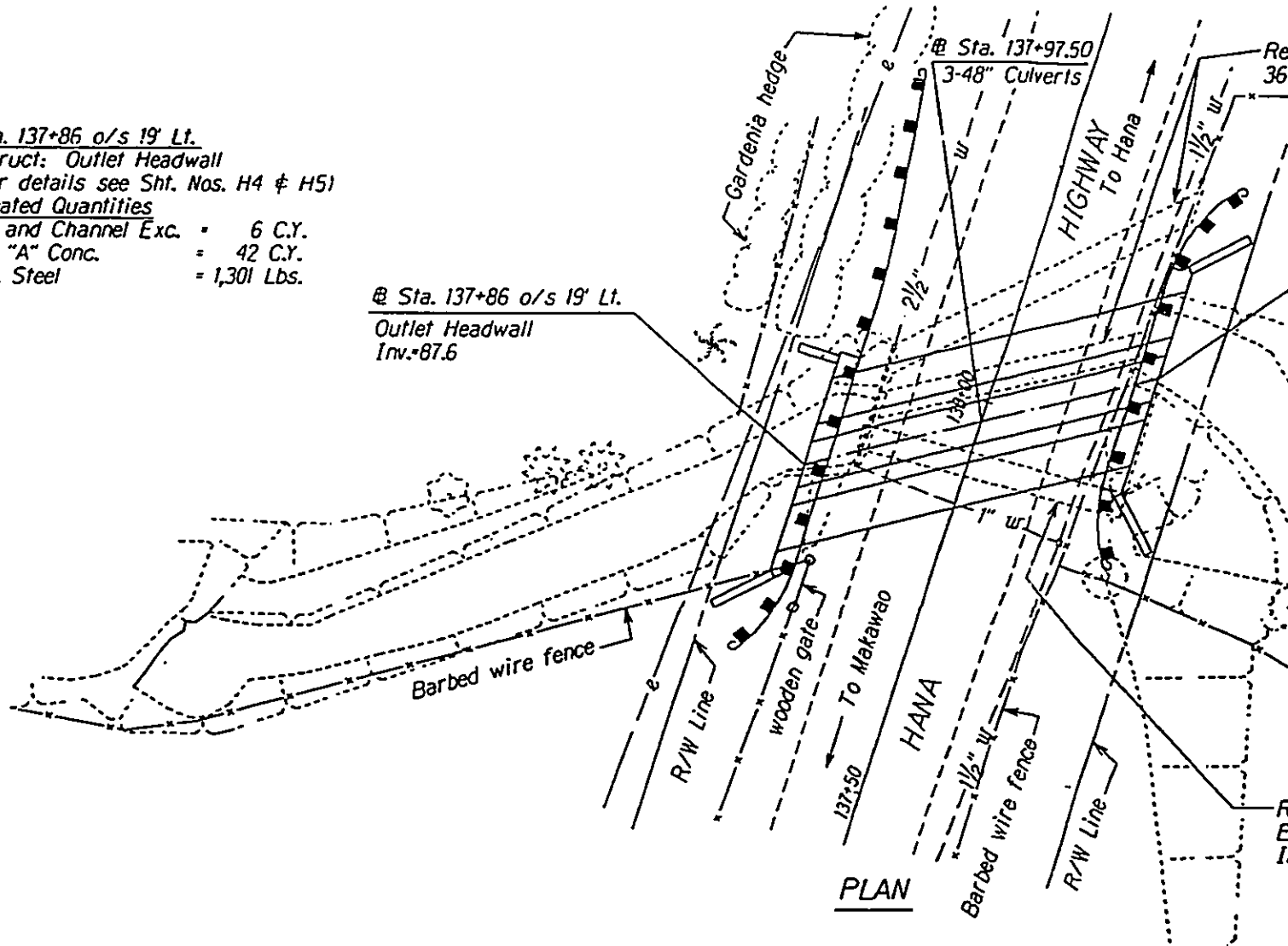
Scale: As Noted Date: Jan., 1995

SHEET No. 1 OF 1 SHEETS

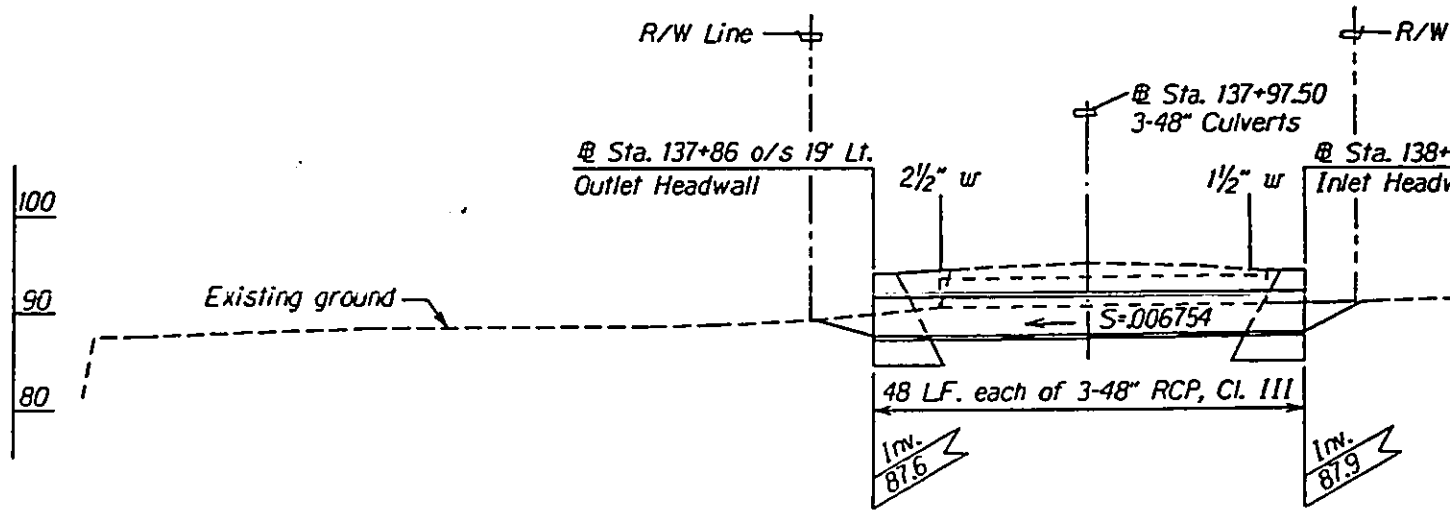
FIGURE 3

@ Sta. 137+86 o/s 19' Lt.
 Construct: Outlet Headwall
 (For details see Sht. Nos. H4 & H5)
 Estimated Quantities
 Ditch and Channel Exc. = 6 C.Y.
 Class "A" Conc. = 42 C.Y.
 Reinf. Steel = 1,301 Lbs.

@ Sta. 137+86 o/s 19' Lt.
 Outlet Headwall
 Inv.=87.6



PLAN

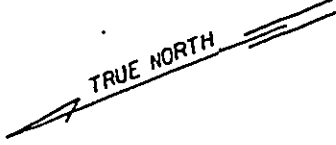
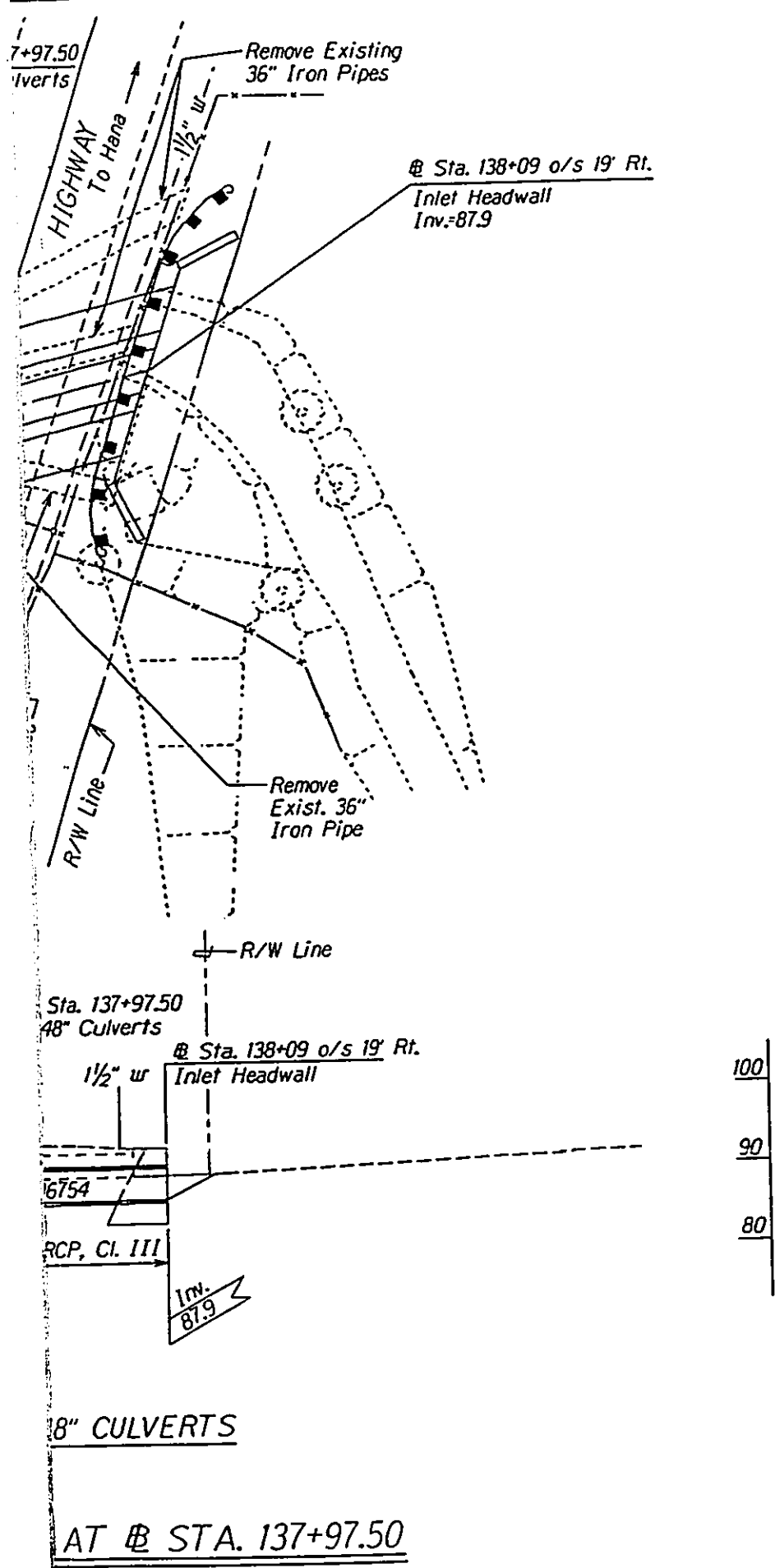


PROFILE ALONG @ 3-48" CULVERTS

DETAILS OF 3-48" CULVERTS AT @ STA. 137+86

DESIGNED BY	DATE
DRAWN BY	
CHECKED BY	
APPROVED BY	
PROJECT NO.	
DATE	
BY	
FOR	
BY	
FOR	
BY	
FOR	

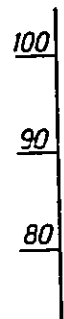
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	360A-02-95M	1995	5	9



@ Sta. 138+09 o/s 19' Rt.
 Construct: Inlet Headwall
 (For details see Sht. Nos. H2, H3 & H5)

Estimated Quantities

- Structure Exc. = 272 C.Y.
- Structure Backfill = 123 C.Y.
- Ditch and Channel Exc. = 10 C.Y.
- Plant Mix Asphalt
- Concrete Base Course = 12 Tons
- Asphalt Concrete Pavement
- Mix No. V = 6 Tons
- Class "A" Conc. = 43 C.Y.
- Reinf. Steel = 1,443 Lbs.
- 48" RCP, Cl. III = 144 LF.



STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION

DRAINAGE PLAN

HANA HIGHWAY
 Hanawana Stream Culvert Replacement
 Proj. No. 360A-02-95M

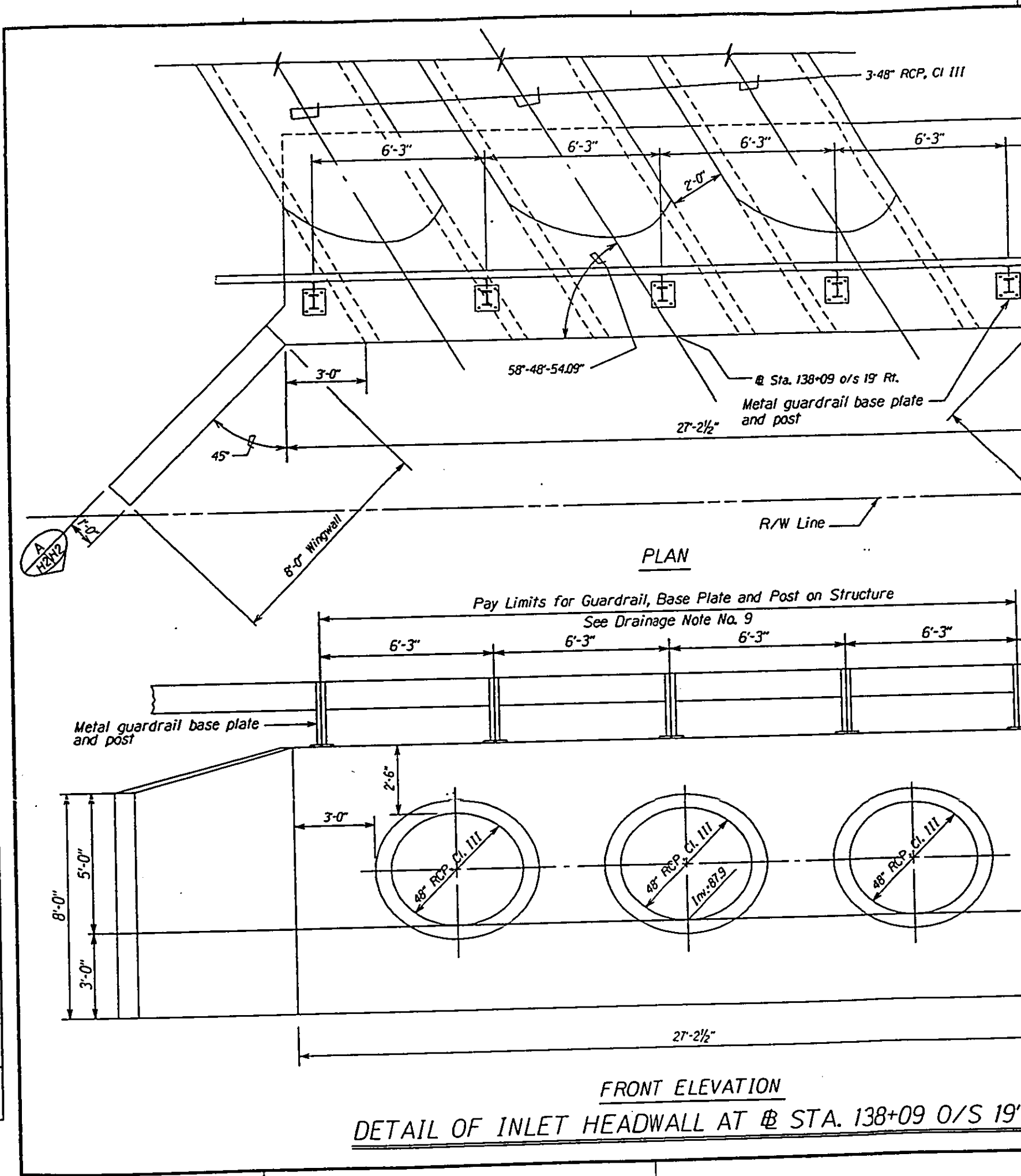
Scale: 1"=10' Date: Aug. 1994

SHEET No. H1 OF 5 SHEETS

8" CULVERTS

AT @ STA. 137+97.50

FIGURE 4



PLAN

FRONT ELEVATION

DETAIL OF INLET HEADWALL AT STA. 138+09 O/S 19'

Pay Limits for Guardrail, Base Plate and Post on Structure
See Drainage Note No. 9

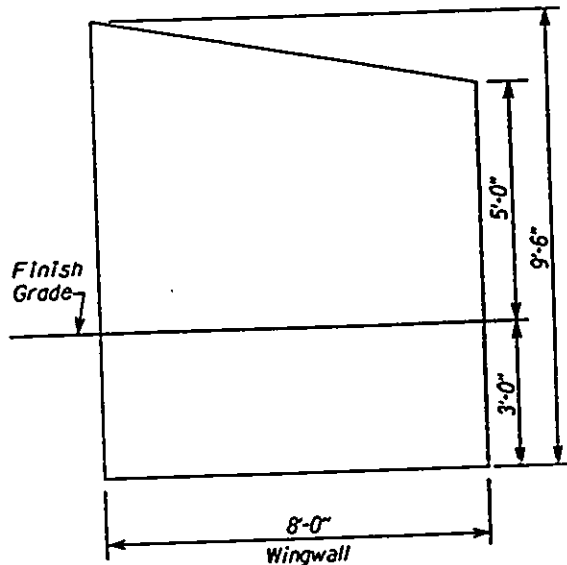
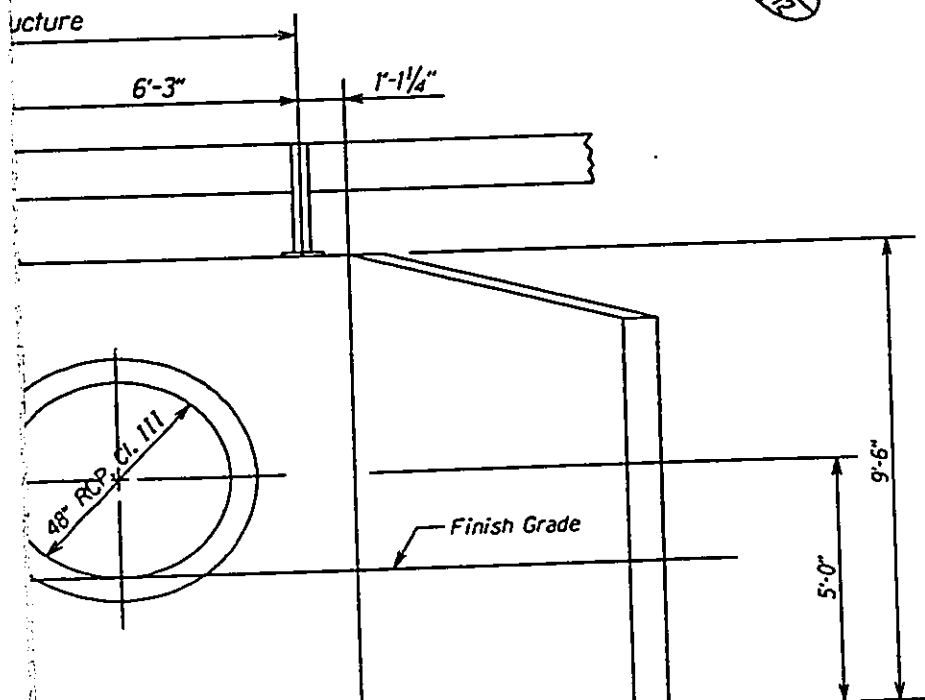
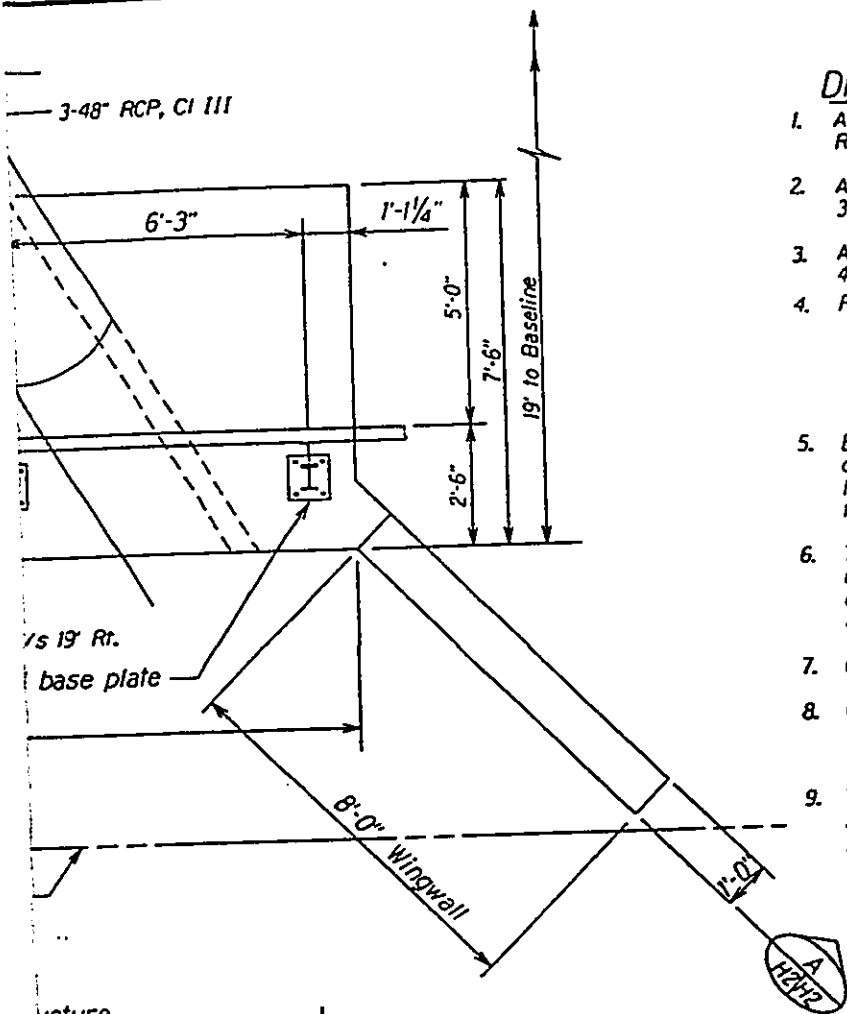
DESIGNED BY	DATE
CHECKED BY	
APPROVED BY	
PROJECT NO.	
SHEET NO.	
TOTAL SHEETS	
SCALE	
PROJECT TITLE	
DRAWN BY	
CHECKED BY	
APPROVED BY	

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	360A-02-95M	1995	6	9

DRAINAGE NOTES

- All work shall conform to The Hawaii Standard Specifications for Road and Bridge Construction.
- All concrete shall have a minimum 28 day compressive strength of 3,000 psi.
- All deformed reinforcing steel shall have a minimum yield strength of 40 ksi.
- Foundation design is based on the following soil values:

Allowable Soil Bearing Pressure	2,500 psf
Active Pressure	35 pcf
Passive Pressure	300 pcf
Coefficient of Friction	0.4
- Existing drainage systems will be functional at all times during construction. The Contractor is to furnish materials, equipment, labor, tools and incidentals necessary to maintain flow. The cost for this work shall be incidental to the various contract items.
- The Contractor shall verify the locations of all existing culverts and utilities in the field. Any existing culverts and utilities damaged during construction shall be repaired or replaced by the Contractor at his own expense.
- Chamfer all exposed concrete edges 1 inch.
- Cost of removal of existing 36" pipes and appertenant structures shall not be paid for separately but shall be considered incidental to the structure excavation.
- The metal guardrail, base plate and post located on each headwall shall not be paid for separately but shall be considered incidental to Class A concrete.



SECTION A H2/H2

18+09 O/S 19' RT.

FIGURE 5

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

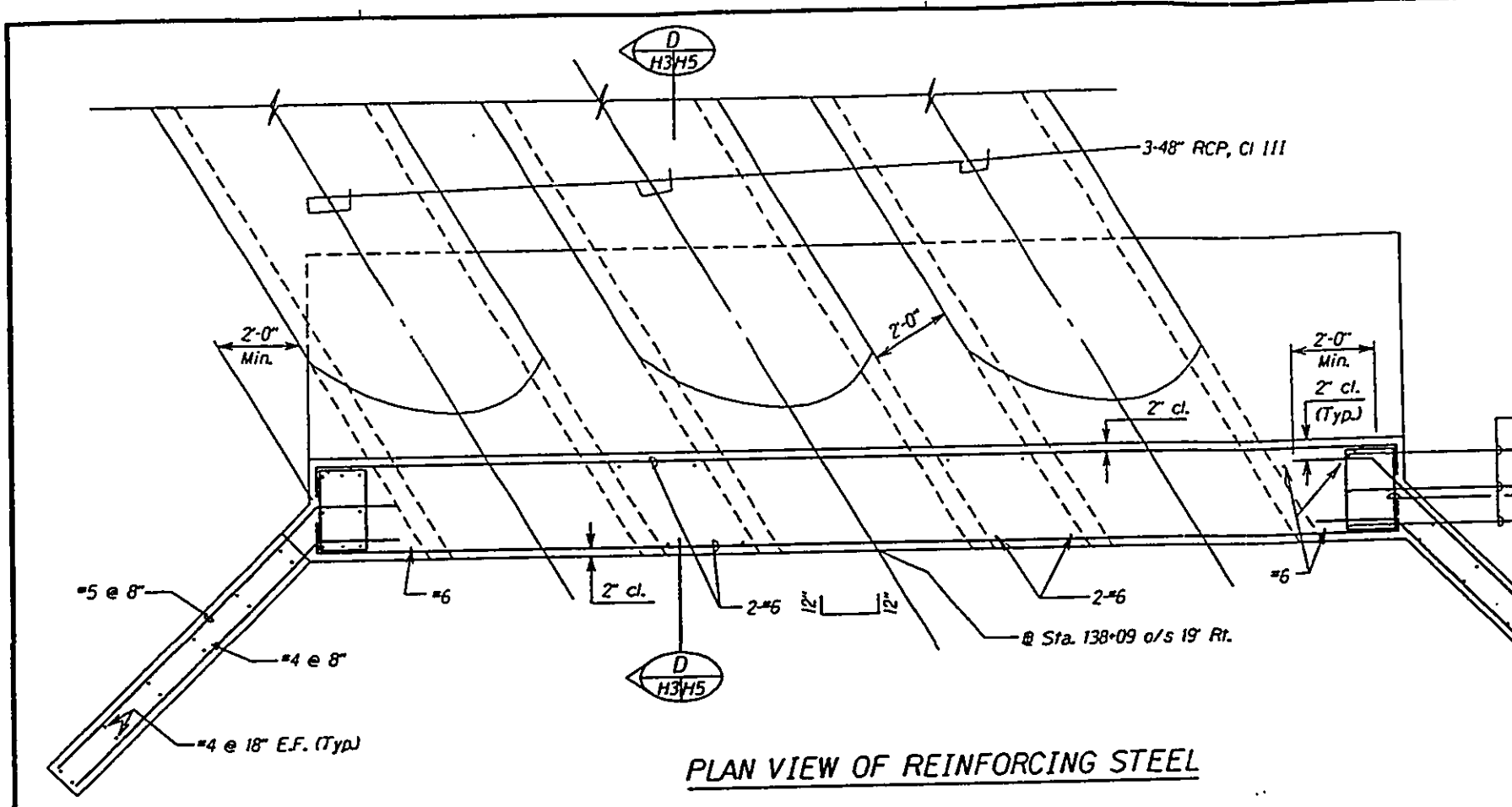
DRAINAGE DETAILS

HANA HIGHWAY
Hanawana Stream Culvert Replacement
Proj. No. 360A-02-95M

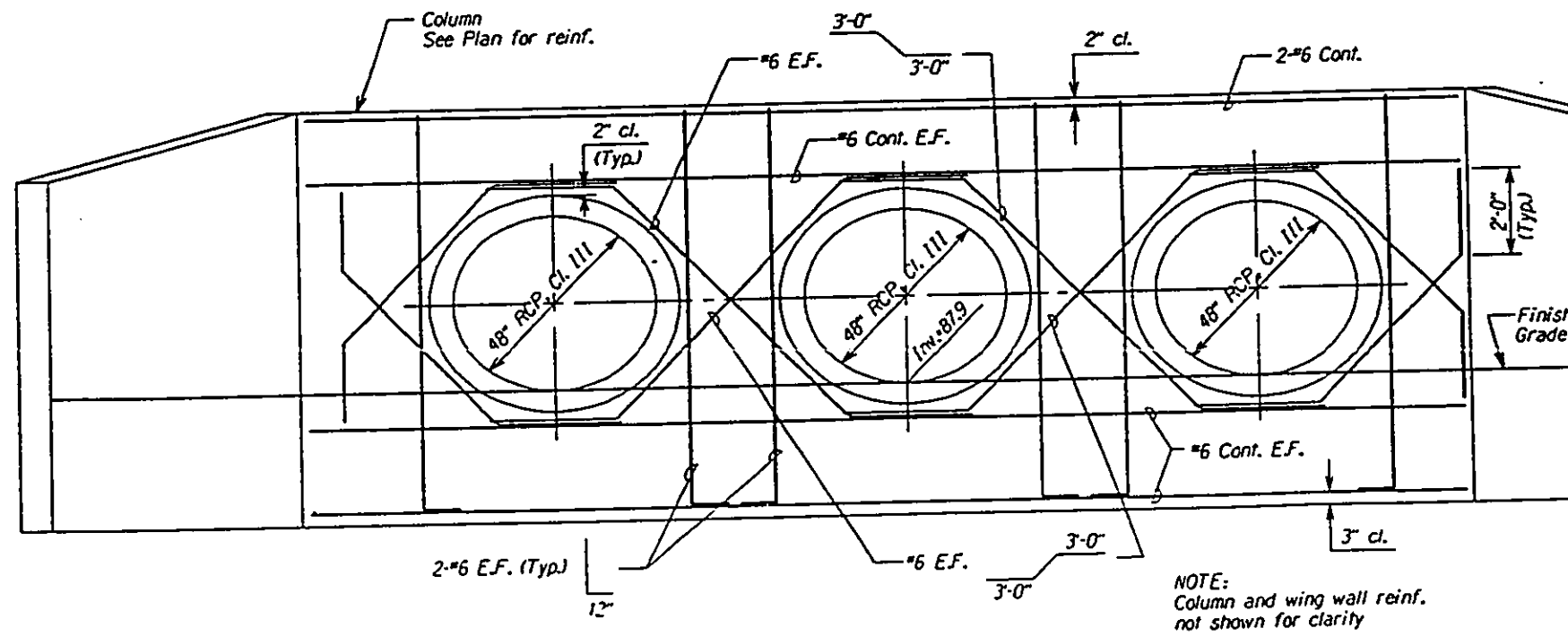
Scale: 1/2" = 1'-0" Date: Aug, 1994

SHEET No. H2 OF 5 SHEETS

A



PLAN VIEW OF REINFORCING STEEL



ADDED REINFORCING FOR CULVERT OPENINGS

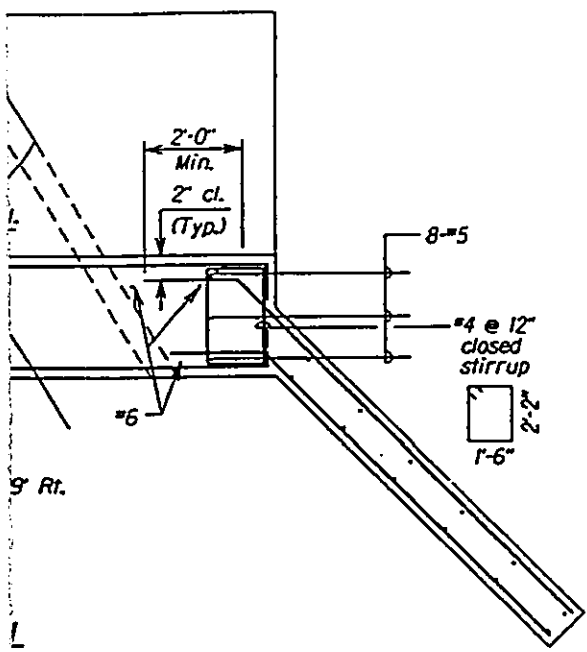
DETAIL OF INLET HEADWALL AT STA. 138+09 O/S 19' RT.

DESIGNED BY	DATE
DRAWN BY	
CHECKED BY	
APPROVED BY	
PROJECT NO.	
DATE	
SCALE	
BY	
DATE	
BY	
DATE	
BY	
DATE	

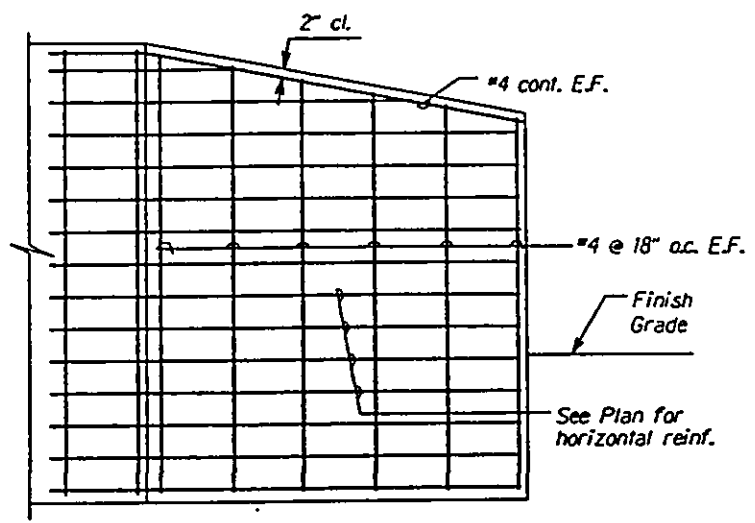
NOTE:
Column and wing wall reinf.
not shown for clarity

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	360A-02-95M	1995	7	9

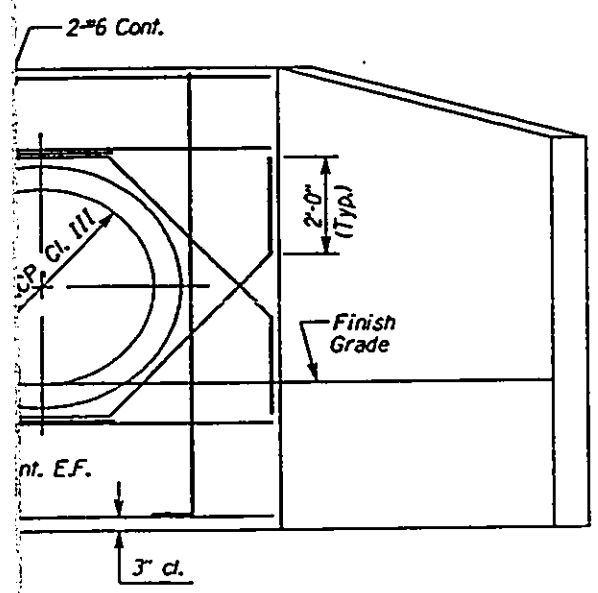
RCP, CI III



9' Rt.



WALL REINFORCING FOR INLET WINGWALLS



and wing wall reinf.
shown for clarity

38+09 O/S 19' RT.

FIGURE 6

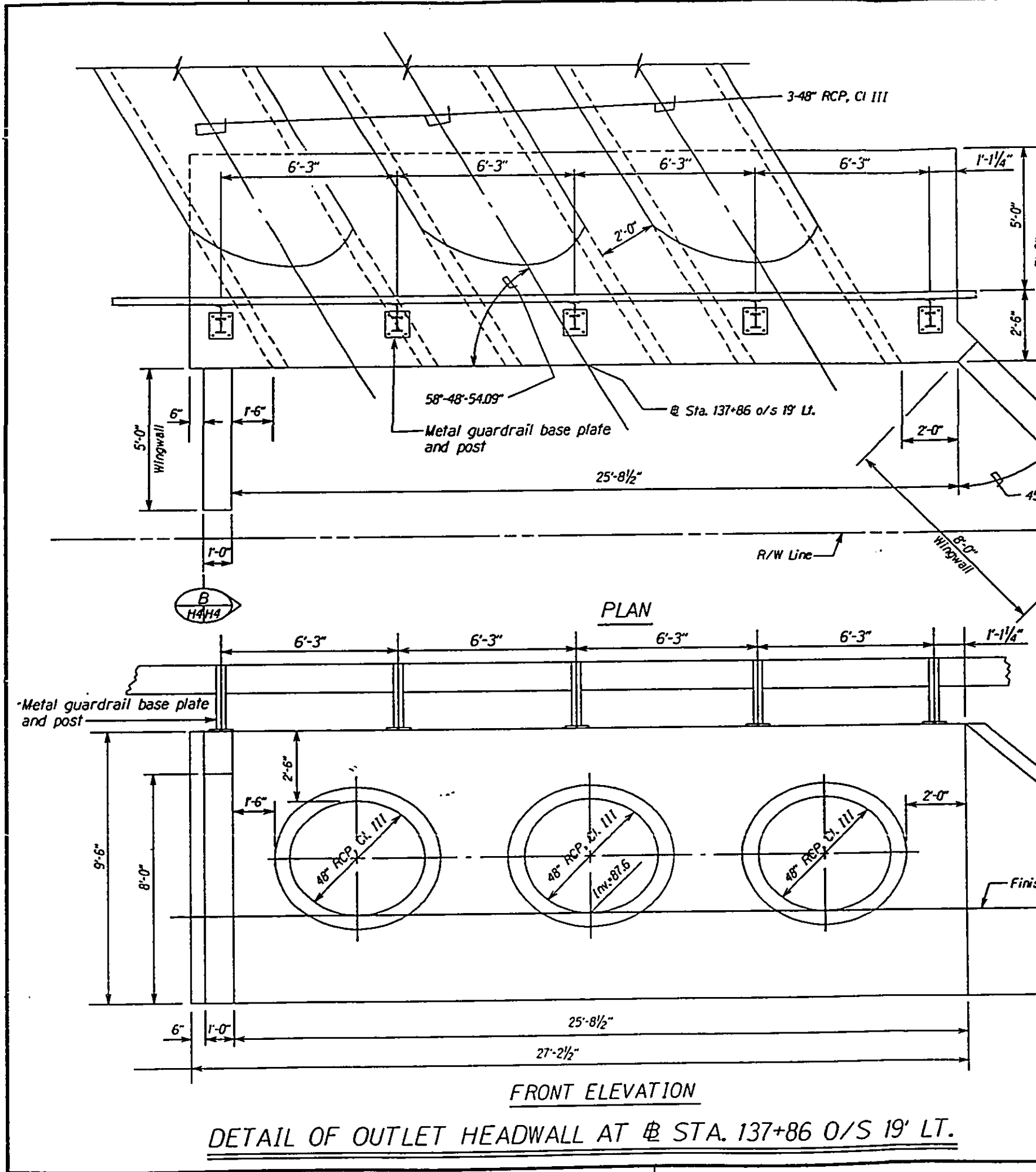
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAINAGE DETAILS

HANA HIGHWAY
Hanawana Stream Culvert Replacement
Proj. No. 360A-02-95M

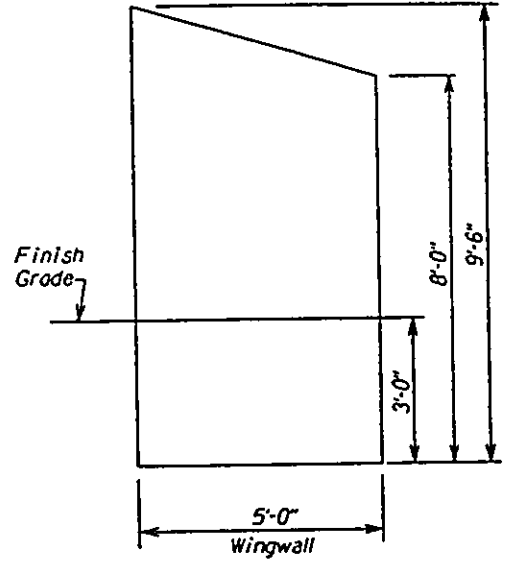
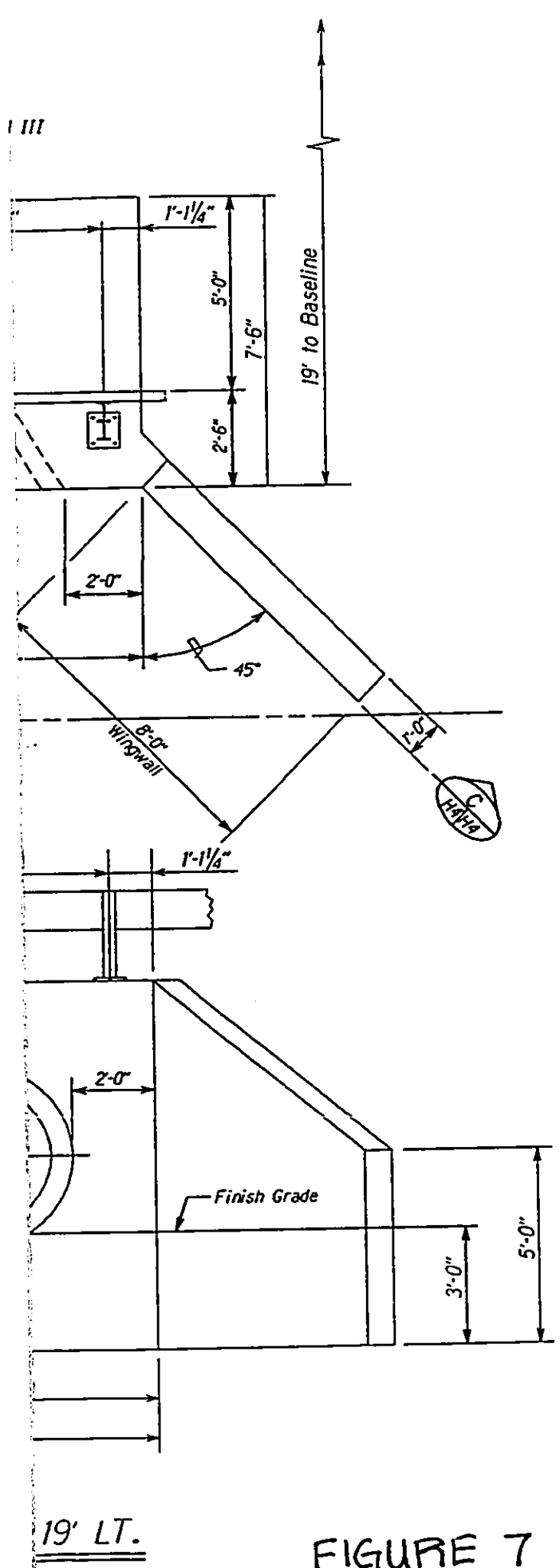
Scale: 1/2" = 1'-0" Date: Aug, 1994

SHEET No. H3 OF 5 SHEETS

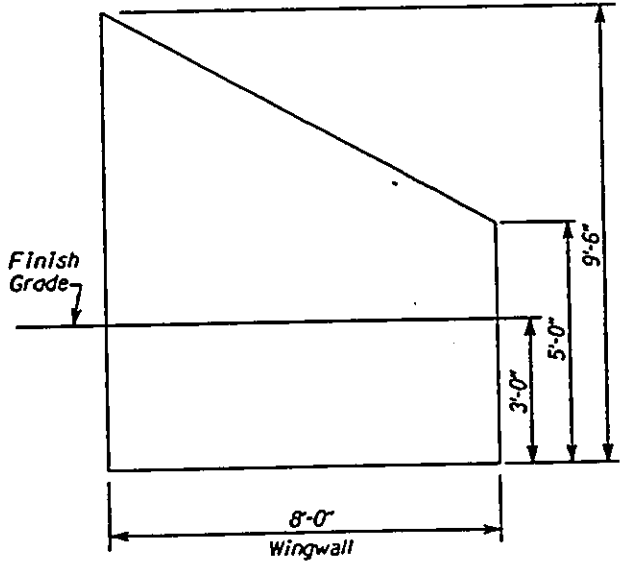


DESIGNED BY	DATE
CHECKED BY	
APPROVED BY	
PROJECT NO.	
DATE	
SCALE	
BY	
DATE	
PROJECT NO.	
DATE	
SCALE	
BY	
DATE	

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	360A-02-95M	1995	8	9



SECTION B
H4/H4



SECTION C
H4/H4

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAINAGE DETAILS

HANA HIGHWAY
Hanawana Stream Culvert Replacement
Proj. No. 360A-02-95M

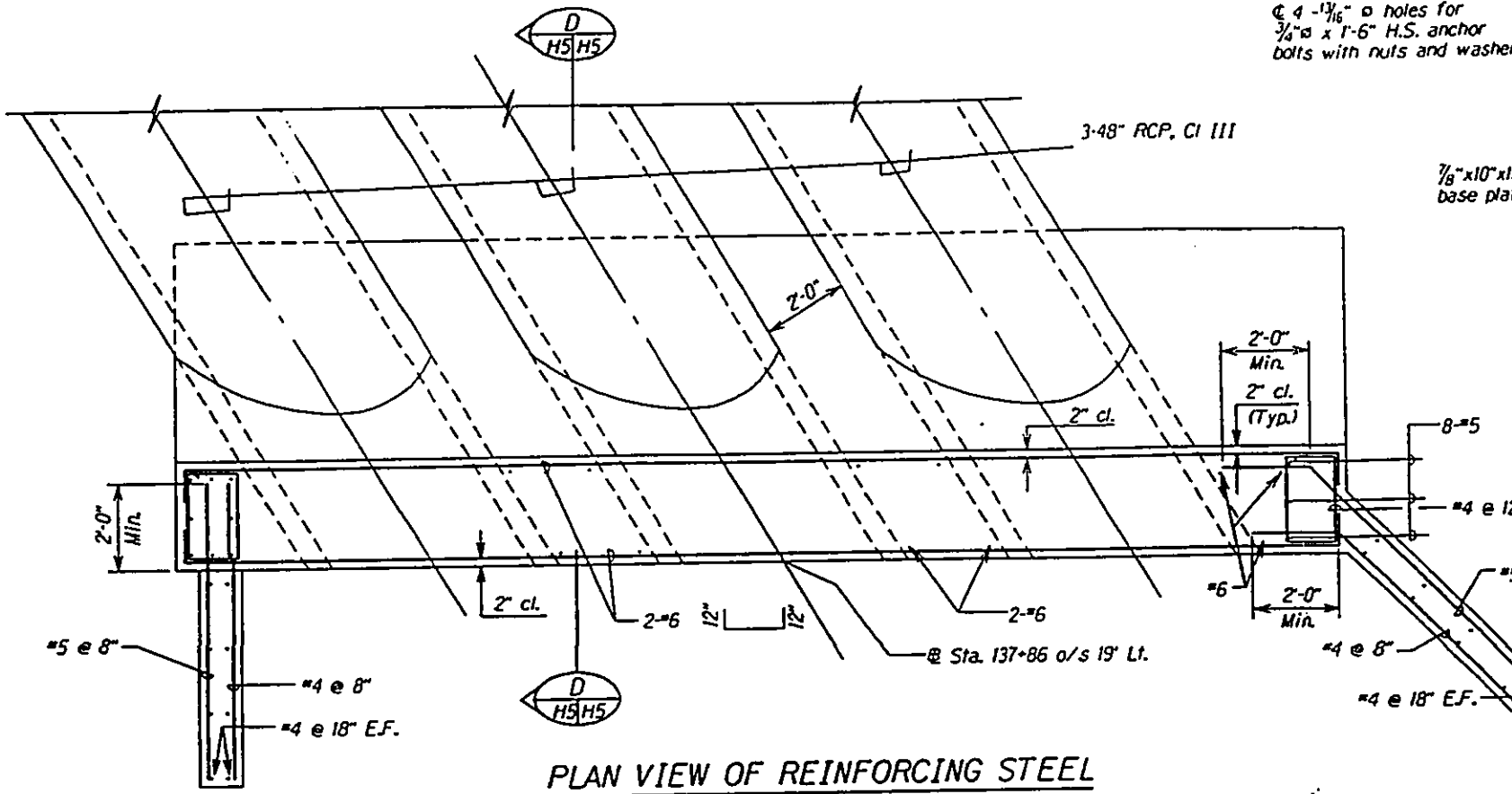
Scale: 1/2" = 1'-0" Date: Aug, 1994

SHEET No. H4 OF 5 SHEETS

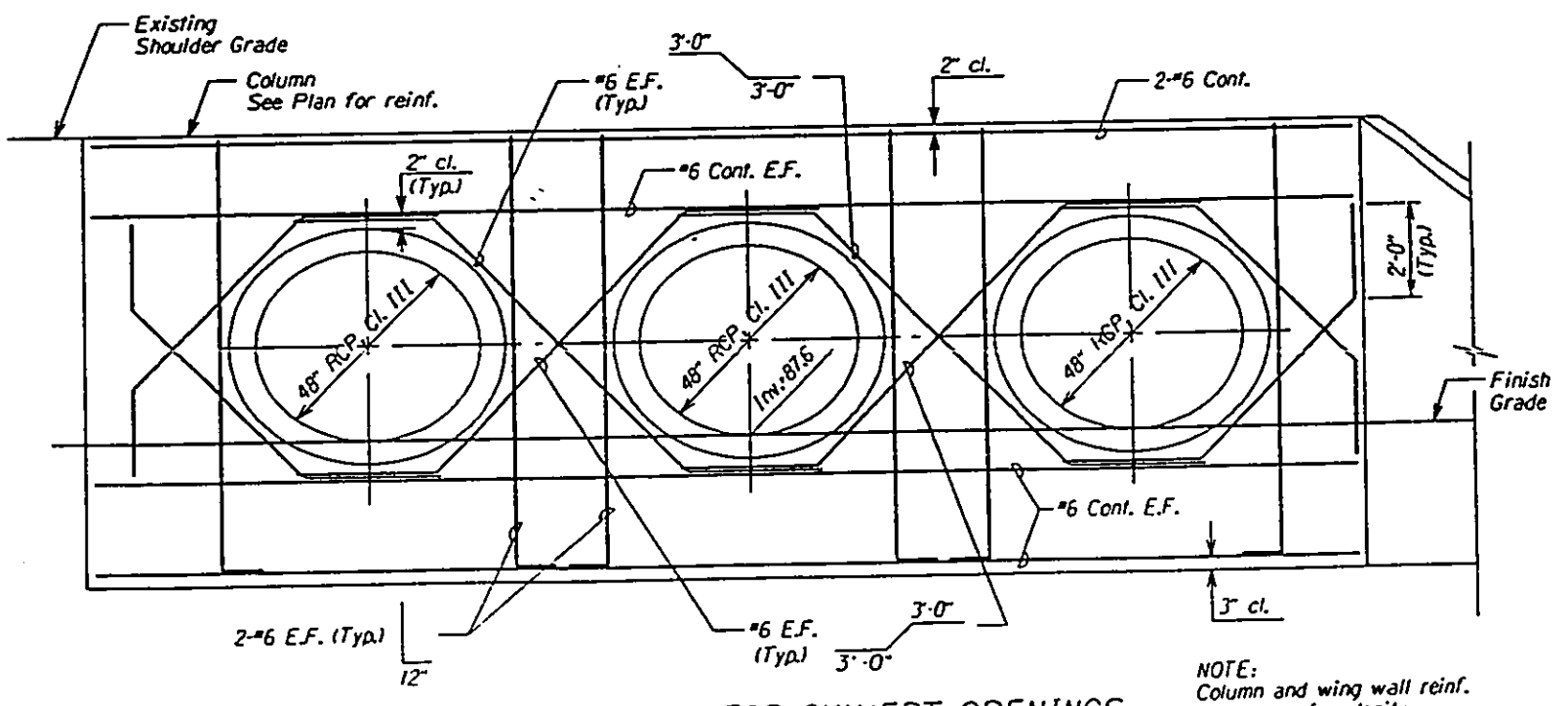
19' LT.

FIGURE 7

4 - 1 1/16" ϕ holes for
3/4" x 1'-6" H.S. anchor
bolts with nuts and washer



PLAN VIEW OF REINFORCING STEEL



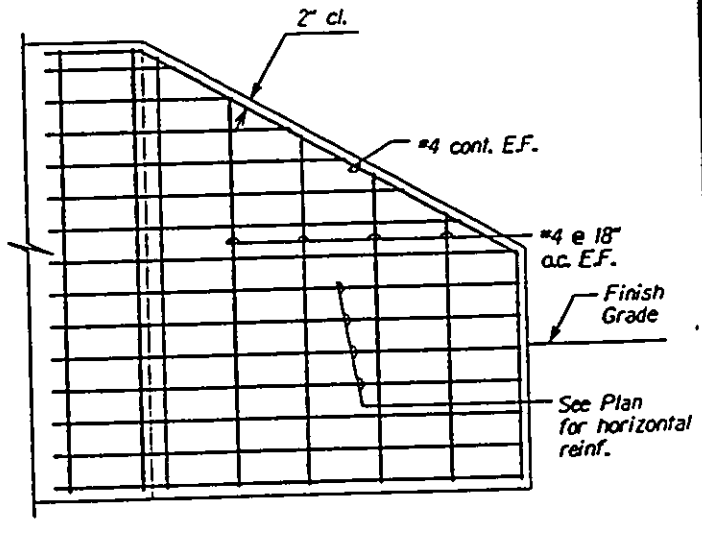
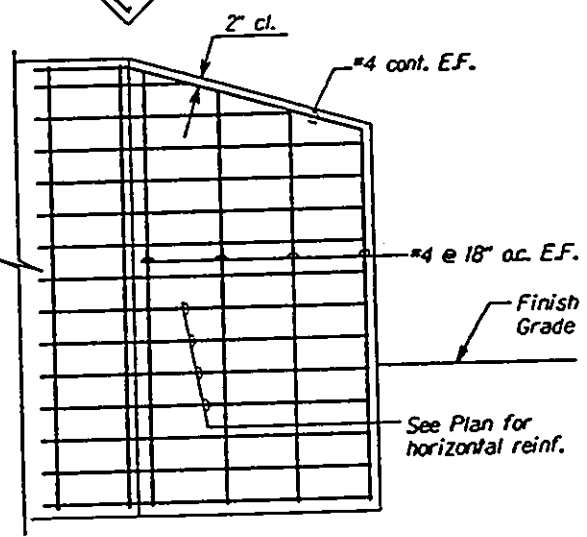
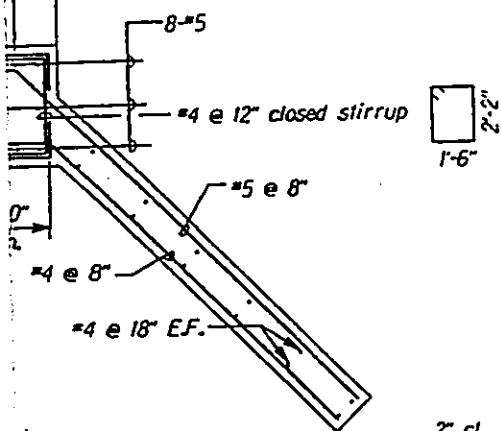
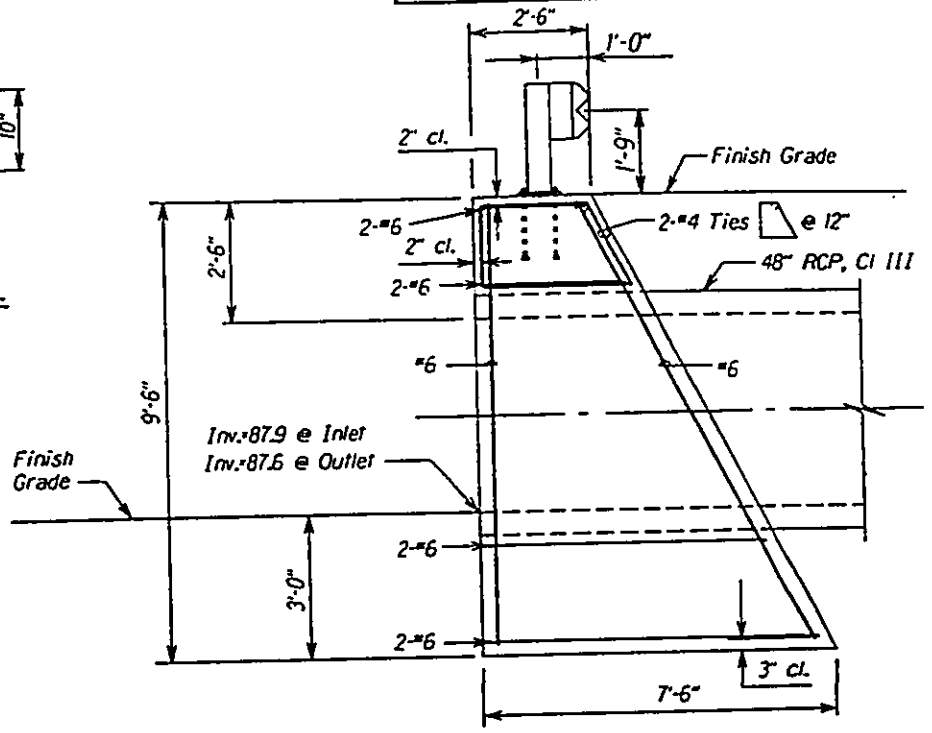
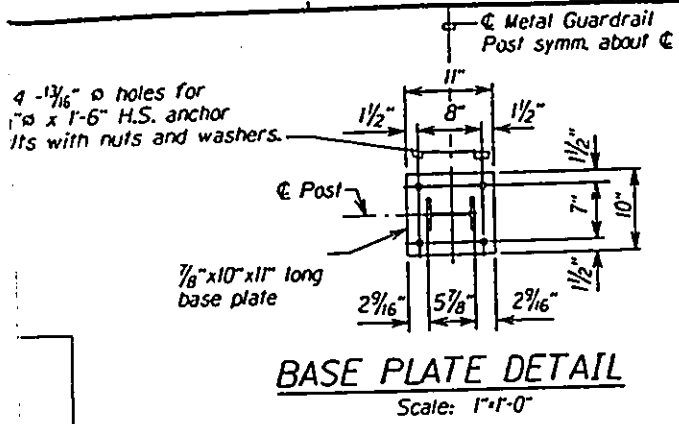
ADDED REINFORCING FOR CULVERT OPENINGS

DETAIL OF OUTLET HEADWALL AT STA. 137+86 O/S 19' LT.

NOTE:
Column and wing wall reinf.
not shown for clarity

DESIGNED BY	DATE
DRAWN BY	
CHECKED BY	
APPROVED BY	
PROJECT NO.	
DATE	

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	360A-02-95M	1995	9	9



WALL REINFORCING FOR OUTLET WINGWALLS

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAINAGE DETAILS

HANA HIGHWAY
Hanawana Stream Culvert Replacement
Proj. No. 360A-02-95M

Scale: 1/2"=1'-0" Date: Aug, 1994

SHEET No. H5 OF 5 SHEETS

FIGURE 8

reinf.
T.