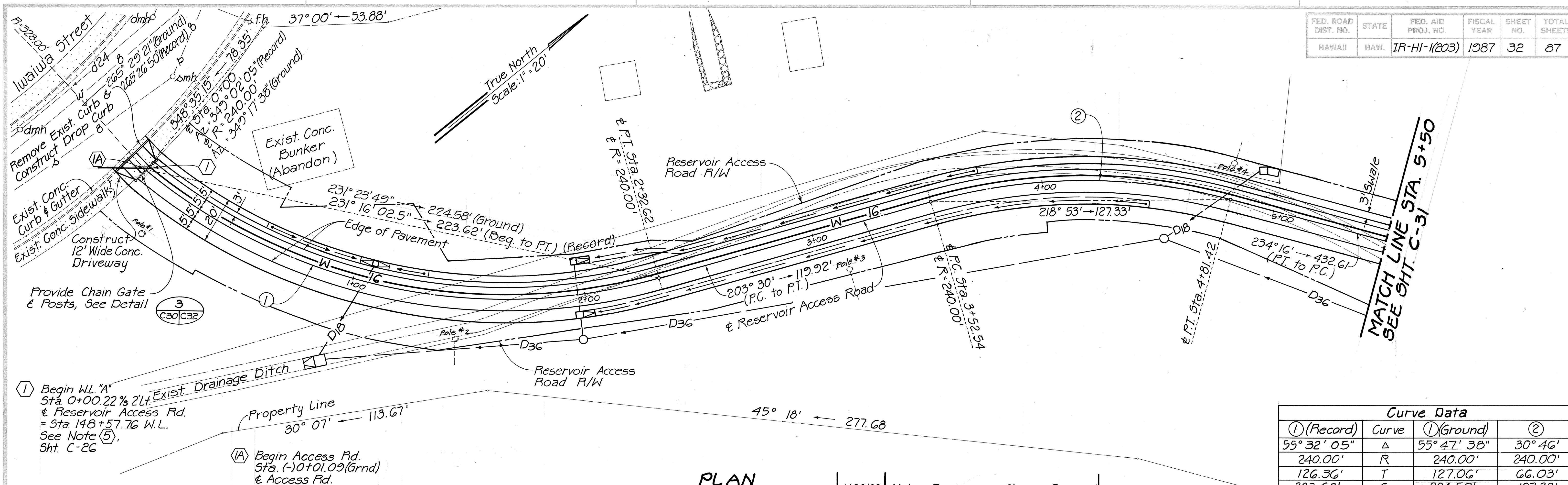


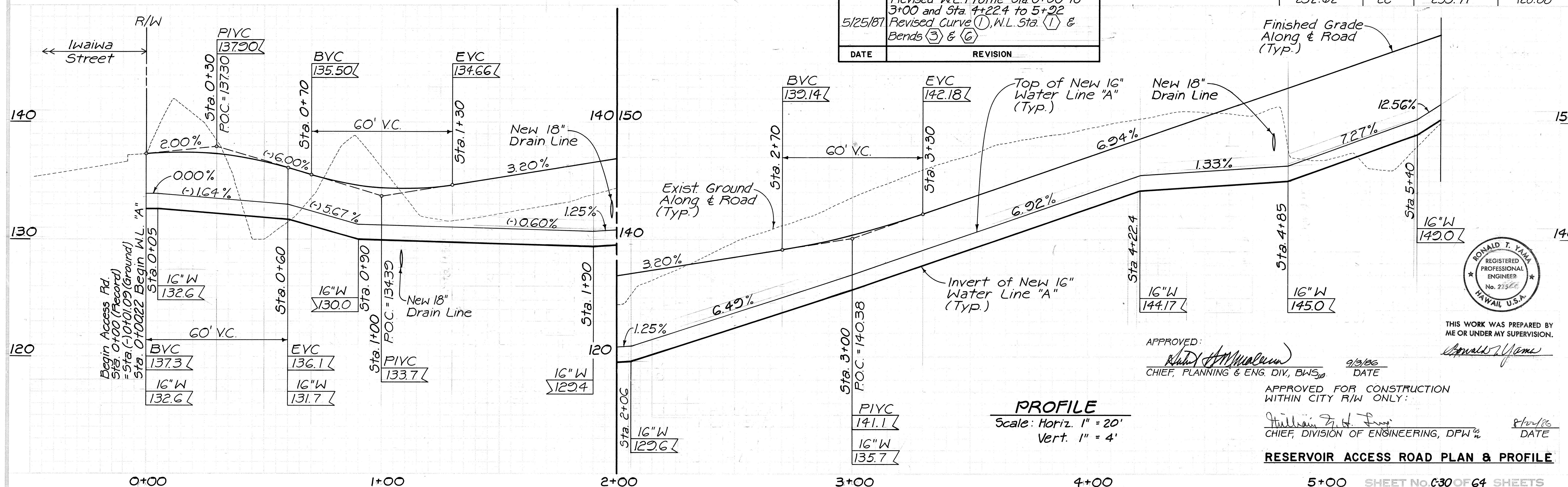
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IR-HI-1(203)	1987	32	87



Curve Data			
① (Record)	Curve	① (Ground)	②
55° 32' 05"	Δ	55° 47' 38"	30° 46'
240.00'	R	240.00'	240.00'
126.36'	T	127.06'	66.03'
223.62'	C	224.58'	127.33'
232.62'	Lc	233.71'	128.88'

PLAN
Scale: 1" = 20'

1/26/88	Value Engineering Change Propos Revised W.L. Profile -Sta 0+00 to 3+00 and Sta. 4+22.4 to 5+22
5/25/87	Revised Curve ①, W.L. Sta. ① & Bends ③ & ⑥
DATE	REVISION



APPROVED: *[Signature]* 9/3/80
CHIEF PLANNING & ENG DIV. BWS DATE

APPROVED FOR CONSTRUCTION
WITHIN CITY B/W ONLY:

William F. H. Long
CHIEF, DIVISION OF ENGINEERING, DPW

RESERVOIR ACCESS ROAD PLAN & PROFILE

5+00 SHEET No. C-30 OF 64 SHEETS

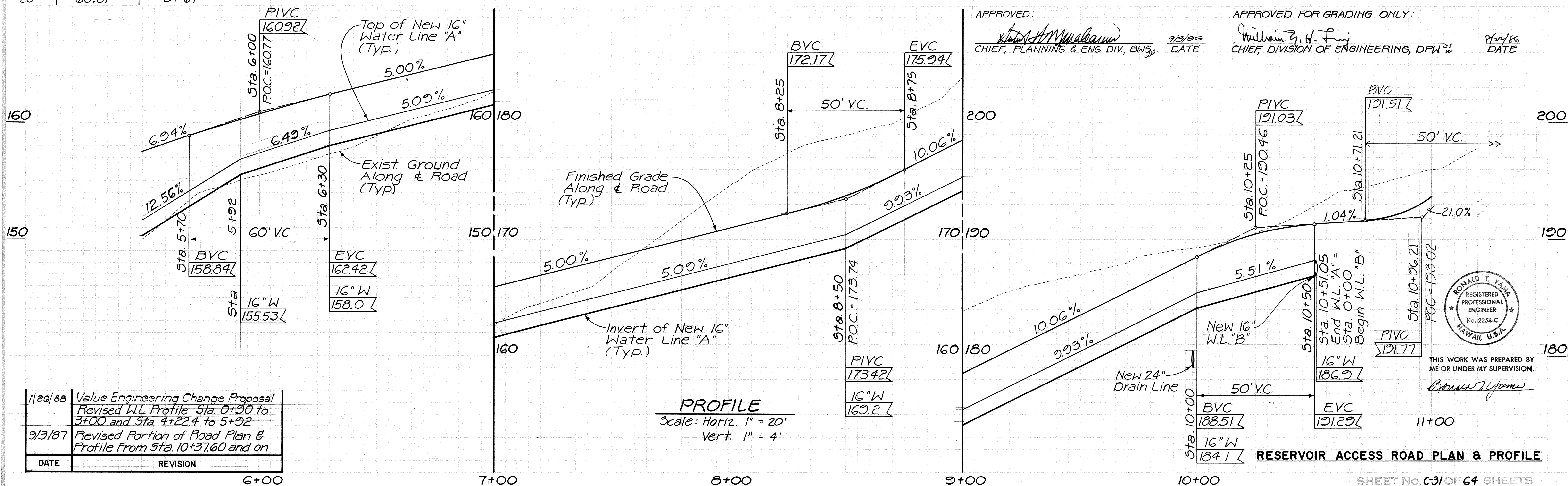
C.O. 32 R

RESERVU112 ACCESS ROAD 0+00 - 5+50

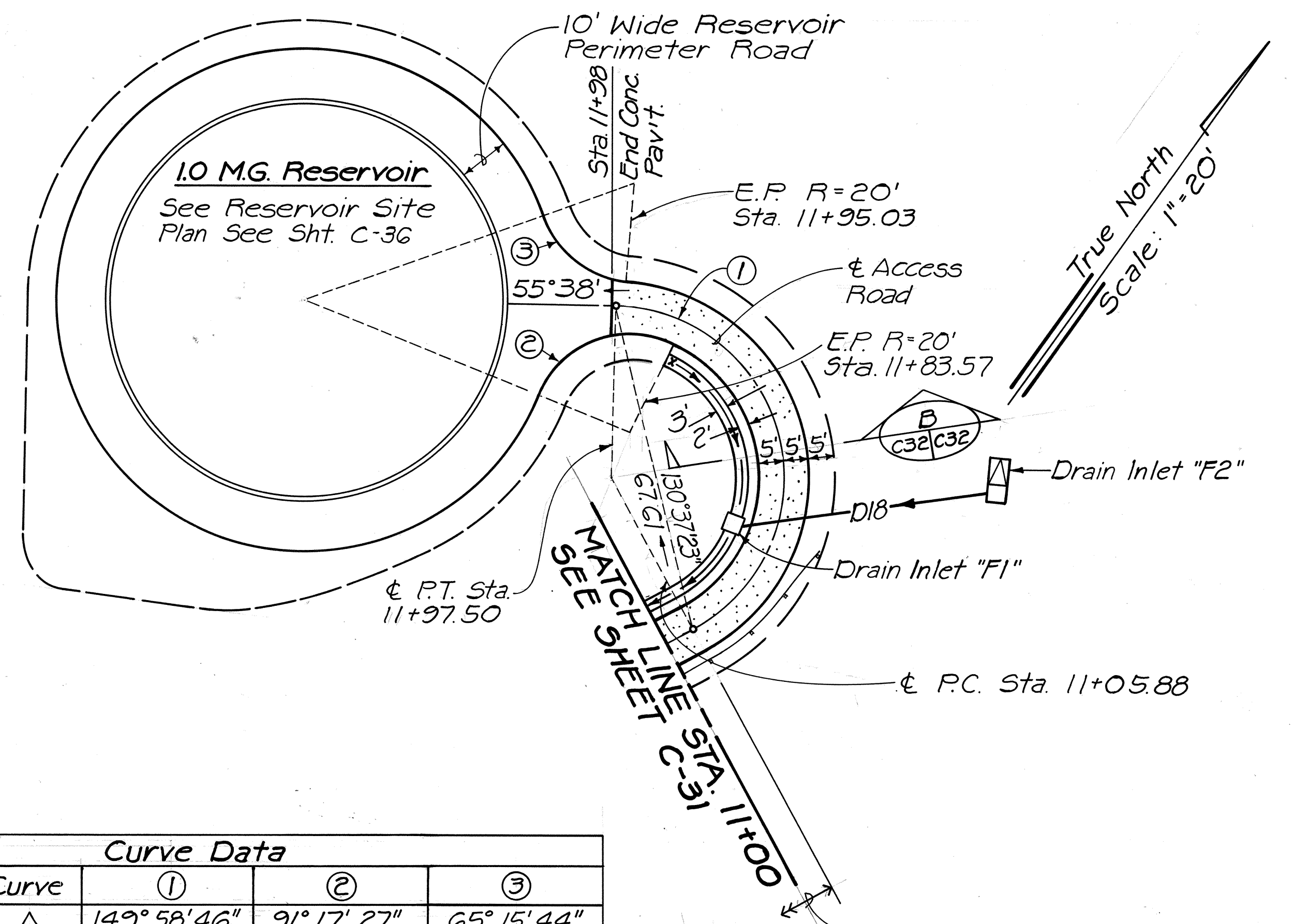
Curve Data		
Curve	①	②
Δ	$14^{\circ} 31'$	$14^{\circ} 08' 14''$
R	240.00'	100.00
T	30.57'	12.40
C	60.64'	24.61
Lc	60.81'	24.67

(A) CCP Alternate
(B) DIP Alternate

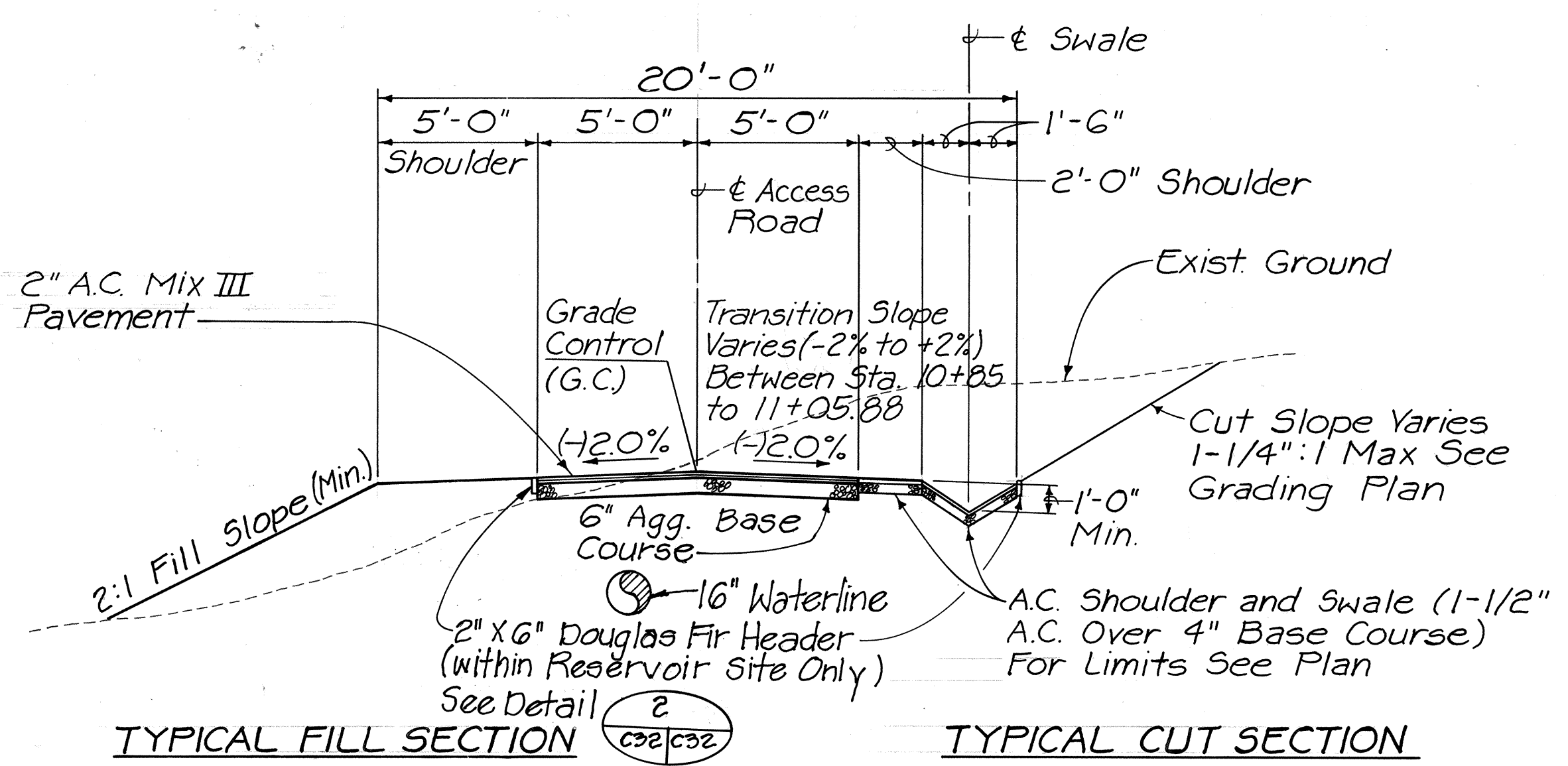
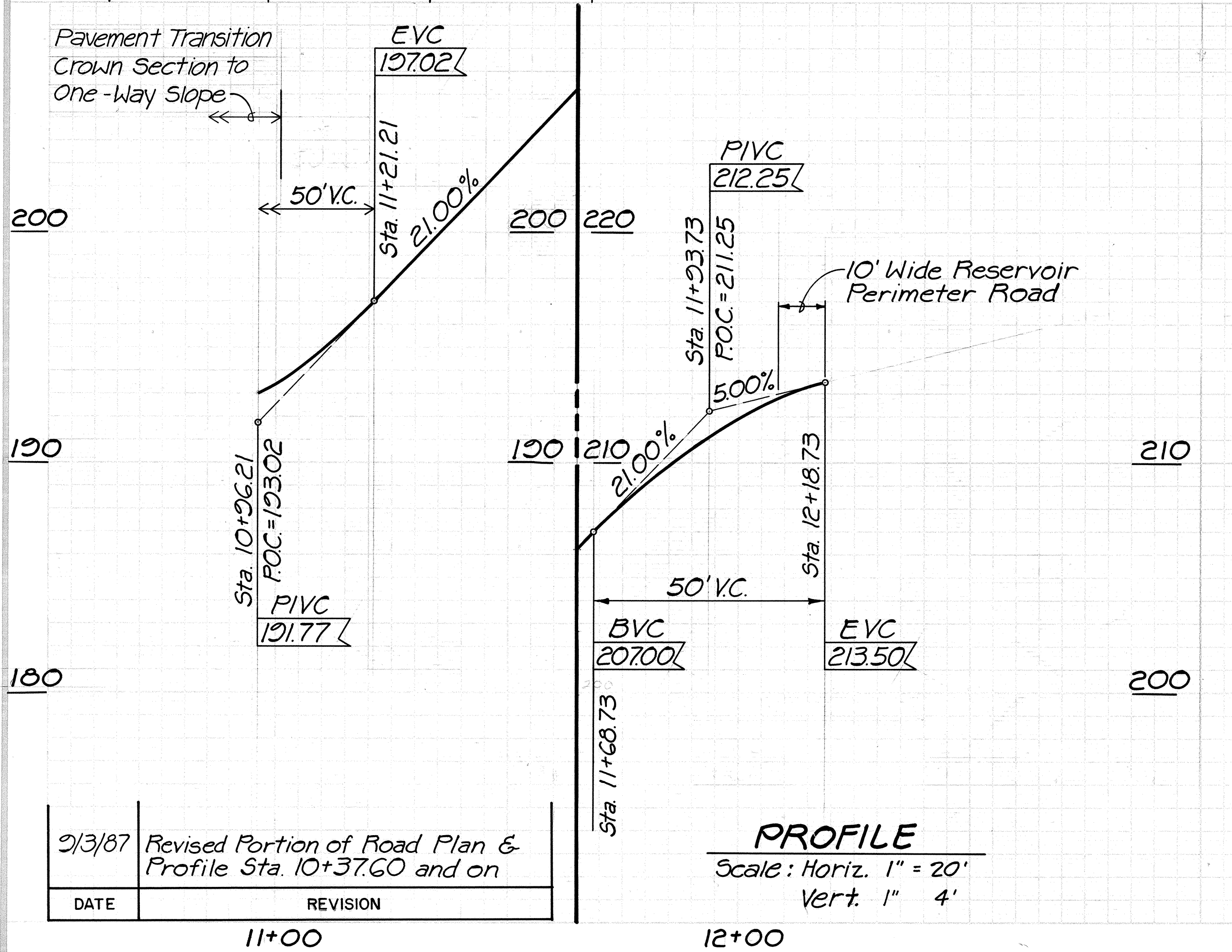
PLAN
Scale: 1" = 20'



FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IR-HI-1(203)	1987	34	87

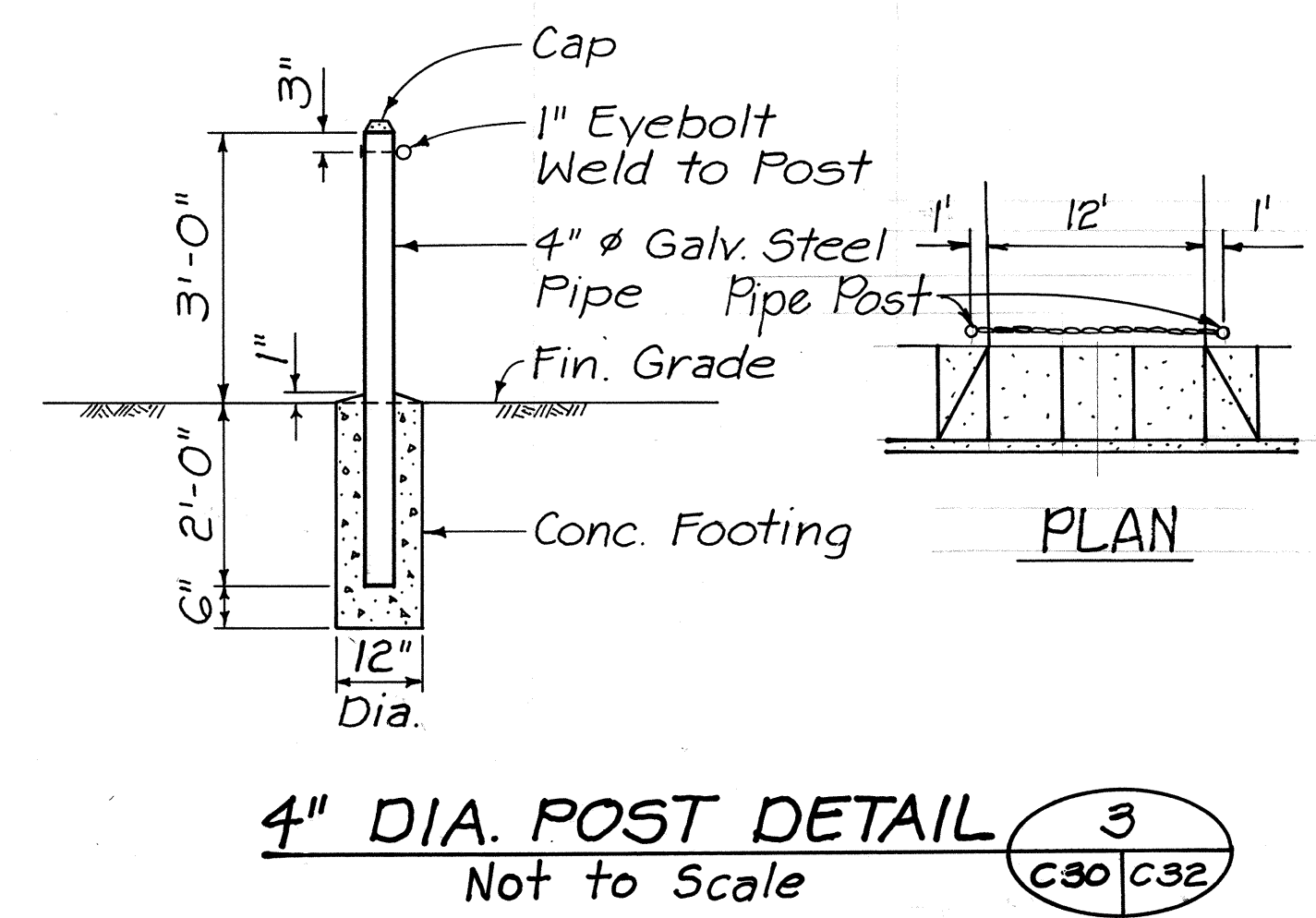
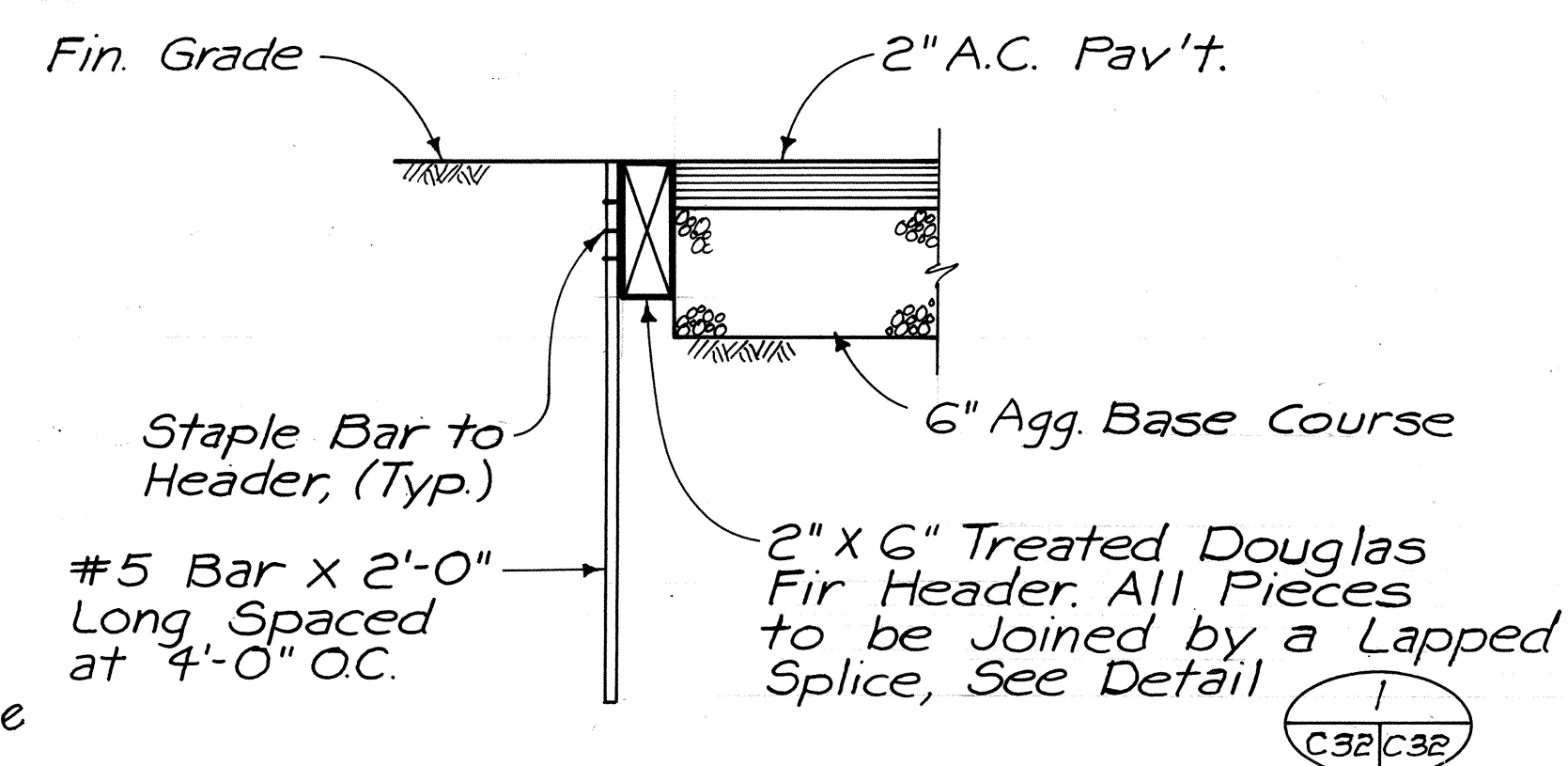
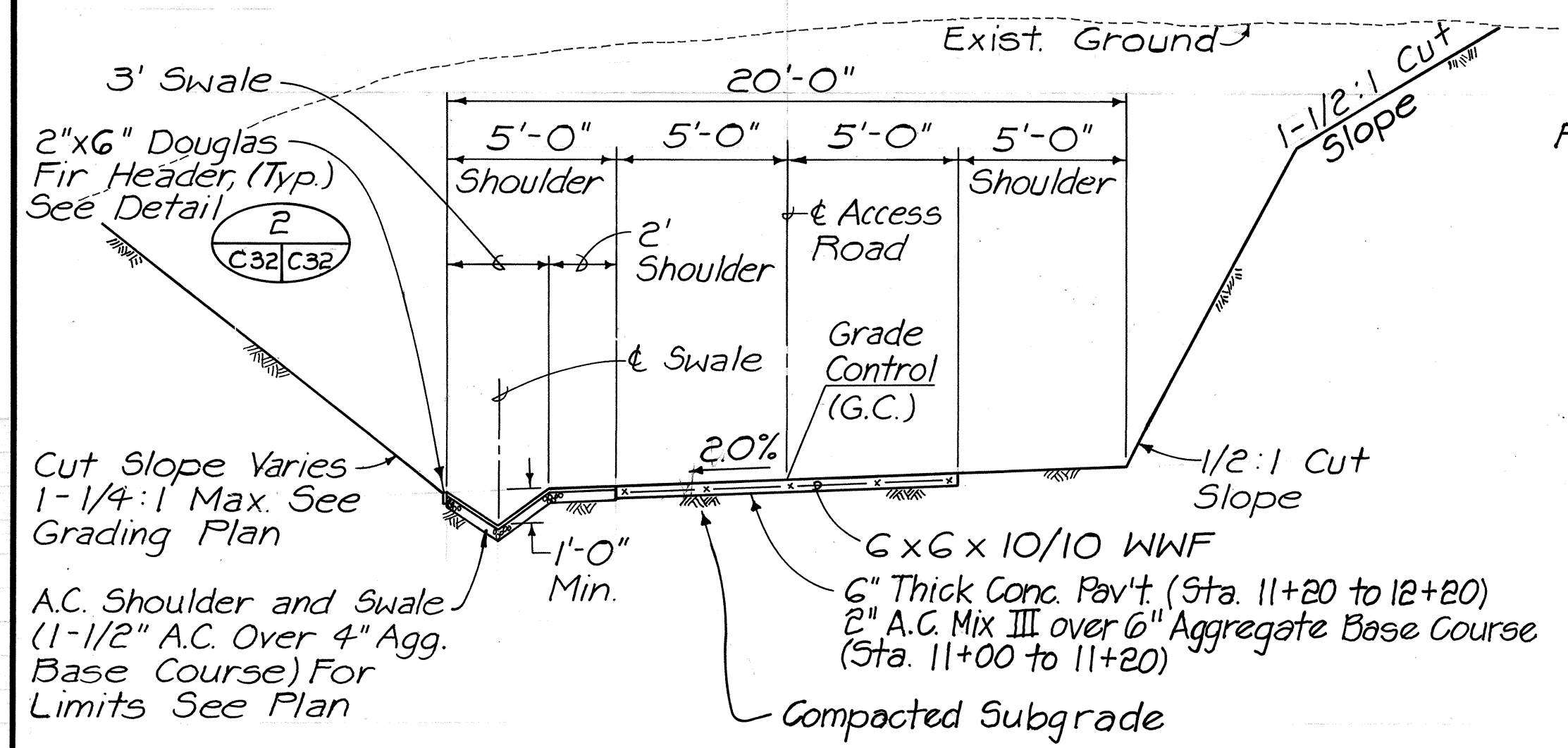


Curve Data			
Curve	①	②	③
Δ	149°58'46"	91°17'27"	65°15'44"
R	35.00'	20.00'	20.00'
T	130.53'	20.46'	12.81'
C	67.61'	28.60'	21.57'
Lc	91.62'	31.87'	22.78'



ACCESS ROAD SECTION (STA. 0+00 to 10+98)
Scale: 1/4" = 1'-0"

HEADER SPLICE DETAIL
Not to Scale



APPROVED FOR GRADING ONLY:

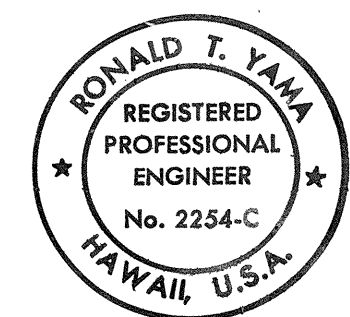
William D. H. Jones
CHIEF, DIVISION OF ENGINEERING, DPW

APPROVED:

William D. H. Jones
CHIEF, PLANNING & ENG. DIV., BWS

8/22/86
DATE

9/3/86
DATE



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Ronald T. Yam

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

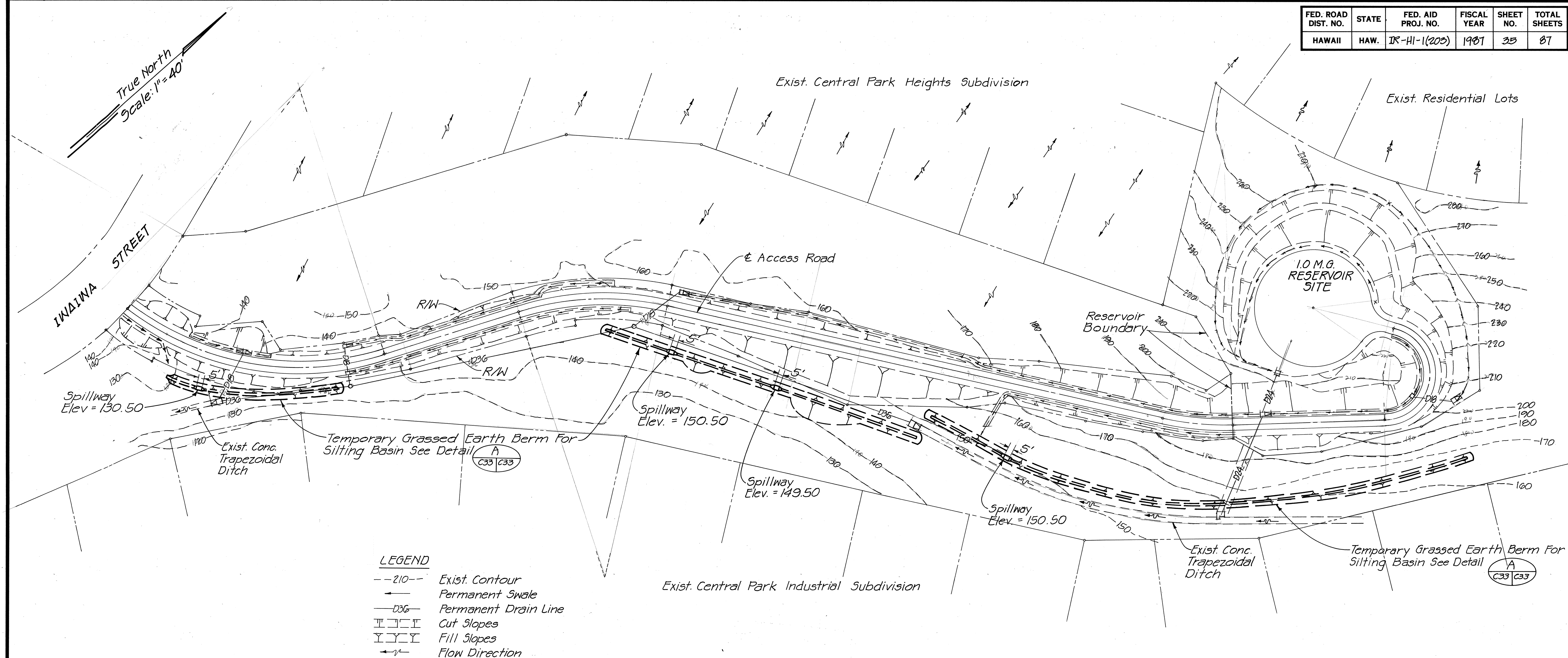
RES. ACCESS RD. P&P & DETAILS

H-I NON-POTABLE WATER SYSTEM
KALAUAO SPRINGS TO HALAWA RESERVOIR
F.A.I. PROJ. NO. IR-HI-1 (203)

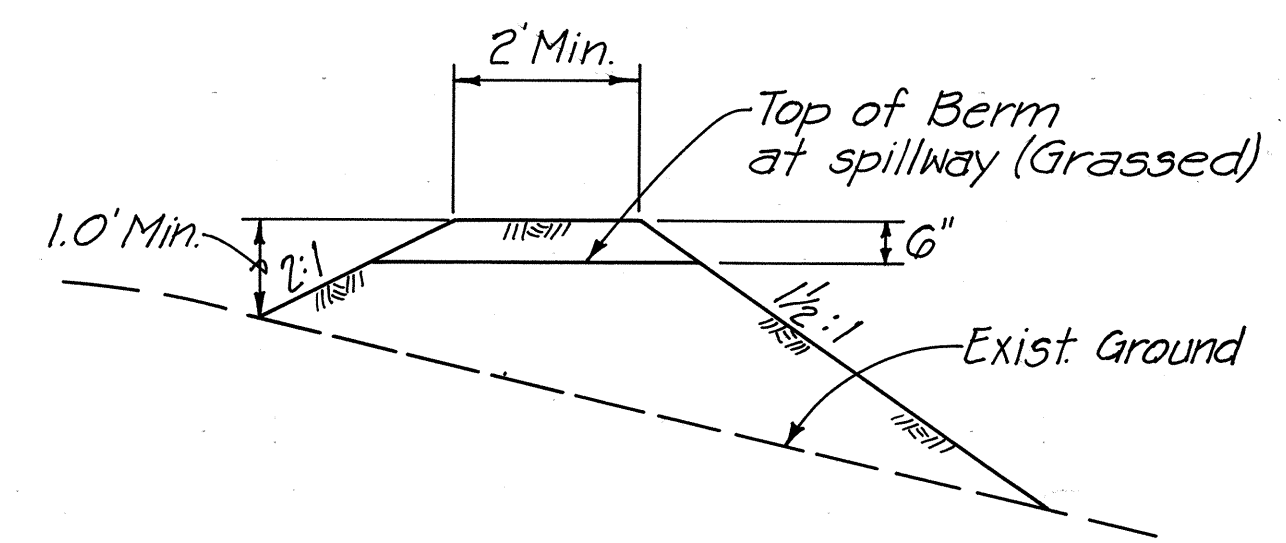
SCALE: AS SHOWN DATE: 1/20/87

SHEET NO. C-32 OF 64 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IR-HI-1(203)	1987	35	87



- LEGEND**
- 210-- Exist. Contour
 - Permanent Swale
 - D36--- Permanent Drain Line
 - ||||| Cut Slopes
 - ||||| Fill Slopes
 - Flow Direction



TYPICAL BERM SECTION A
Not to Scale

APPROVED FOR GRADING ONLY:
William T. H. Lee
 CHIEF, DIVISION OF ENGINEERING, DPW
 DATE 8/22/88

RONALD T. YAMA
 REGISTERED PROFESSIONAL ENGINEER
 No. 2234-C
 HAWAII, U.S.A.
 THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.
Ronald T. Yama

STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION

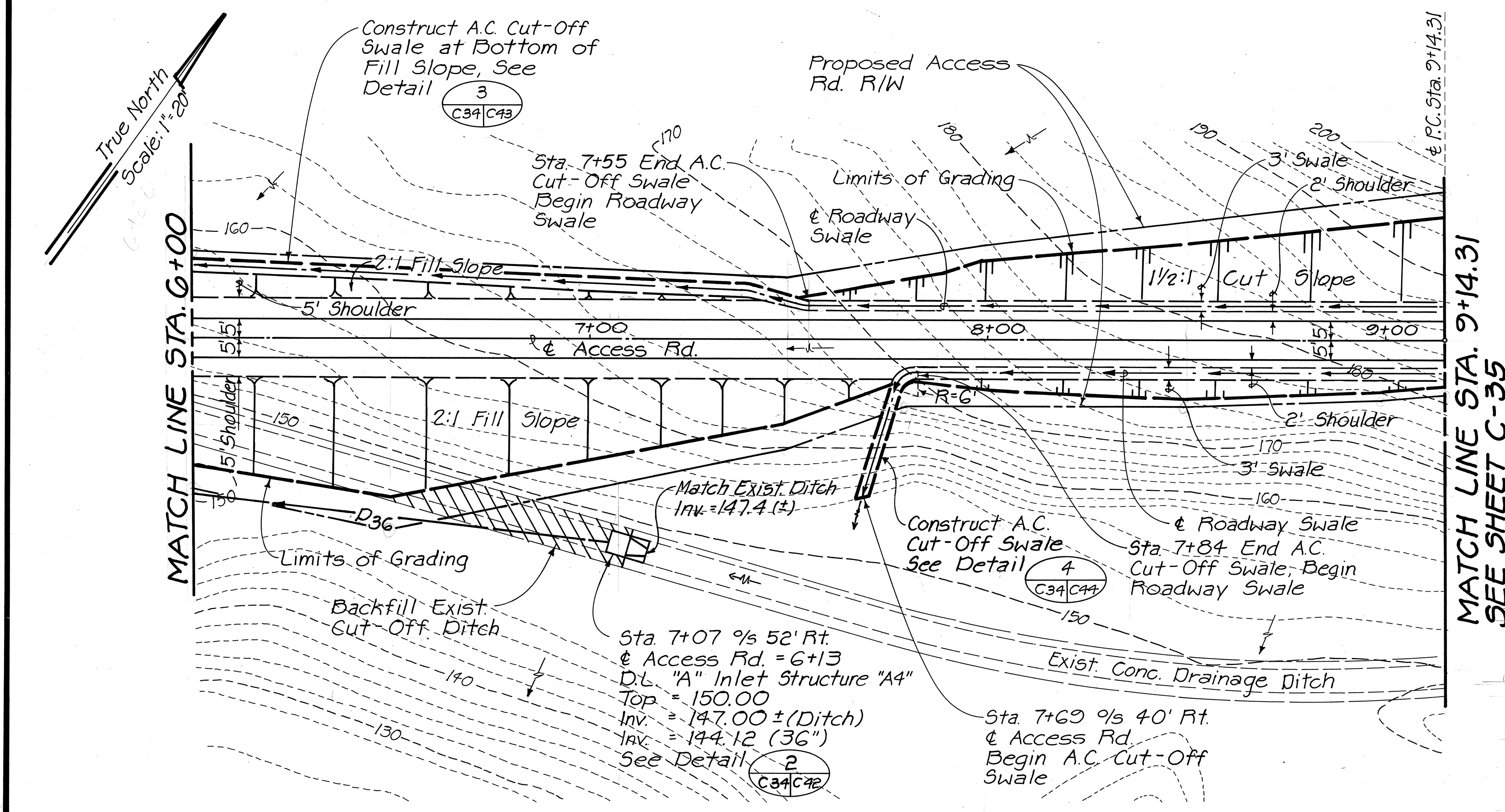
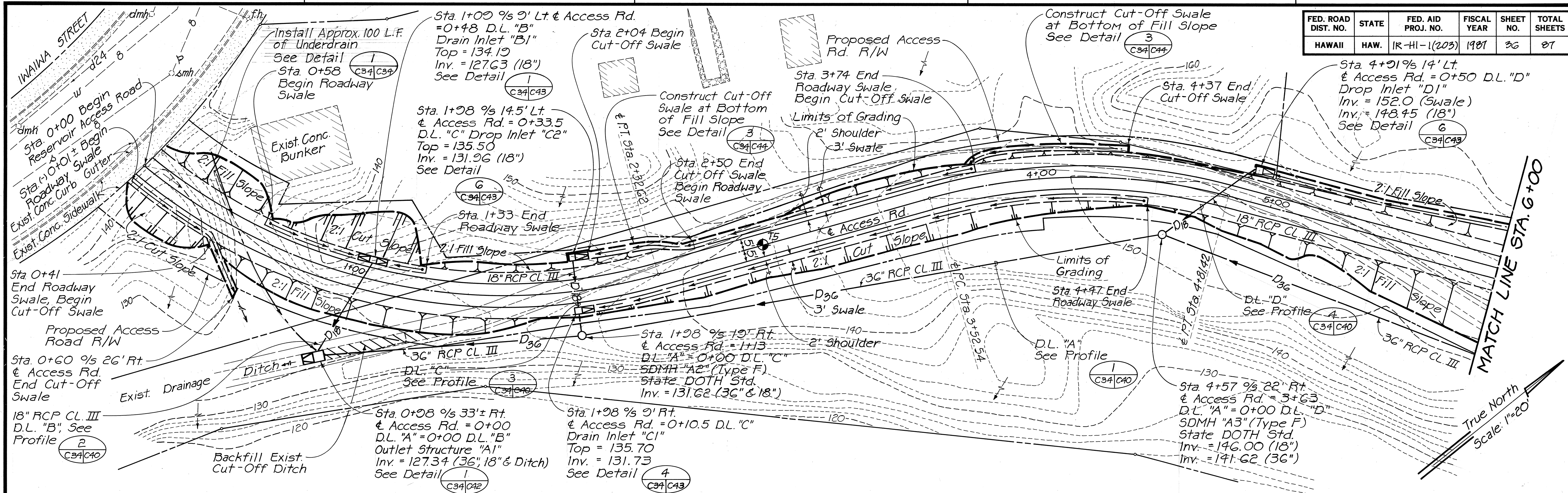
EROSION CONTROL PLAN

H-1 NON-POTABLE WATER SYSTEM
 KALAUAO SPRINGS TO HALAWA RESERVOIR
 F.A.I. PROJ. NO. IR-HI-1 (203)
 SCALE: AS SHOWN DATE: 1/20/87

SHEET No. C-33 OF 64 SHEETS

DATE	_____
DESIGNED BY	_____
CHECKED BY	_____
NO.	_____

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IR-HI-1(203)	1981	36	87

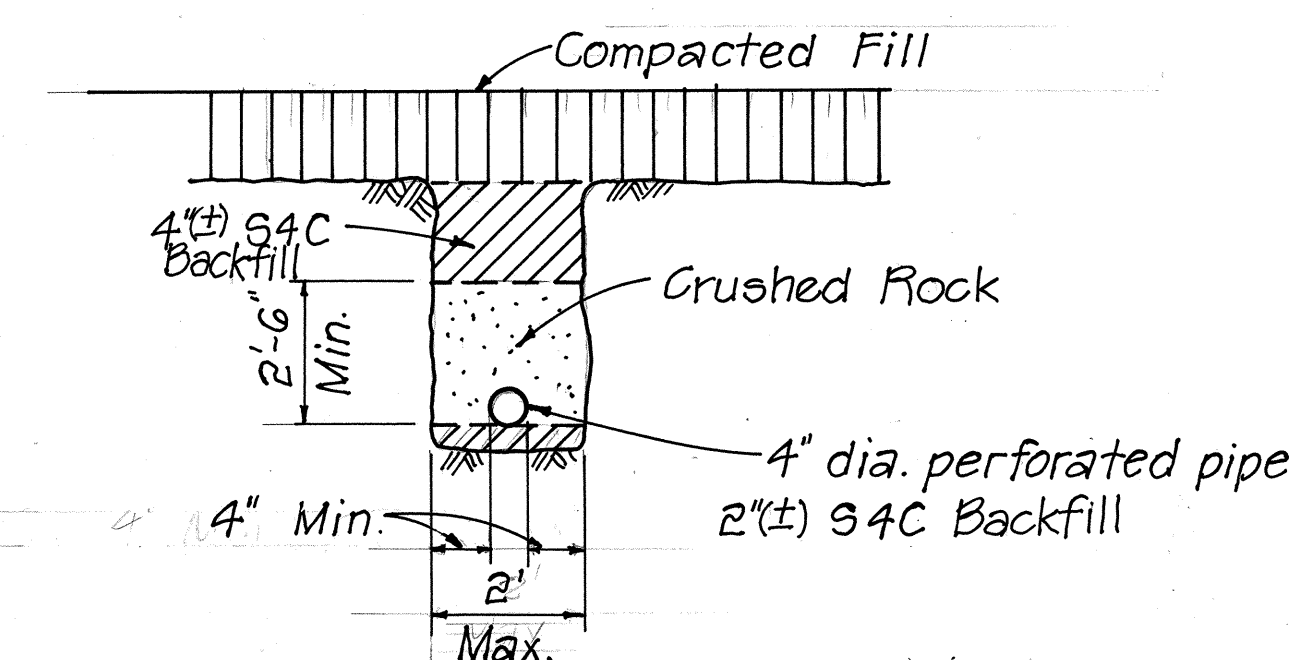


Notes:

- Bench Mark Located at Iwaiwa Place Cul-de-Sac Monument. For Location See Sht. C-1 Top of Brass Pin Elev. = 213.67
- For Estimated Earthwork Summary See Sht. C-35

GRADING LEGEND

- 210--- Existing Contour
- & Swale
- Flow Direction
- Cut Slope
- Fill Slope

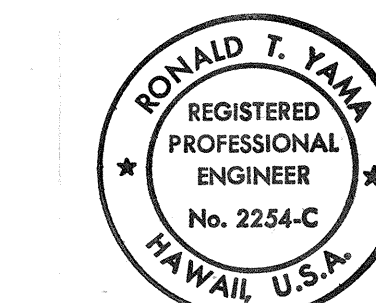


TYPICAL UNDERDRAIN SECTION
NOT TO SCALE

APPROVED FOR GRADING ONLY:

William T. H. Suri
CHIEF, DIVISION OF ENGINEERING, DPW

8/24/86
DATE



THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

Ronald T. Yama

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

RESERVOIR ACCESS ROAD GRADING & DRAINAGE PLAN

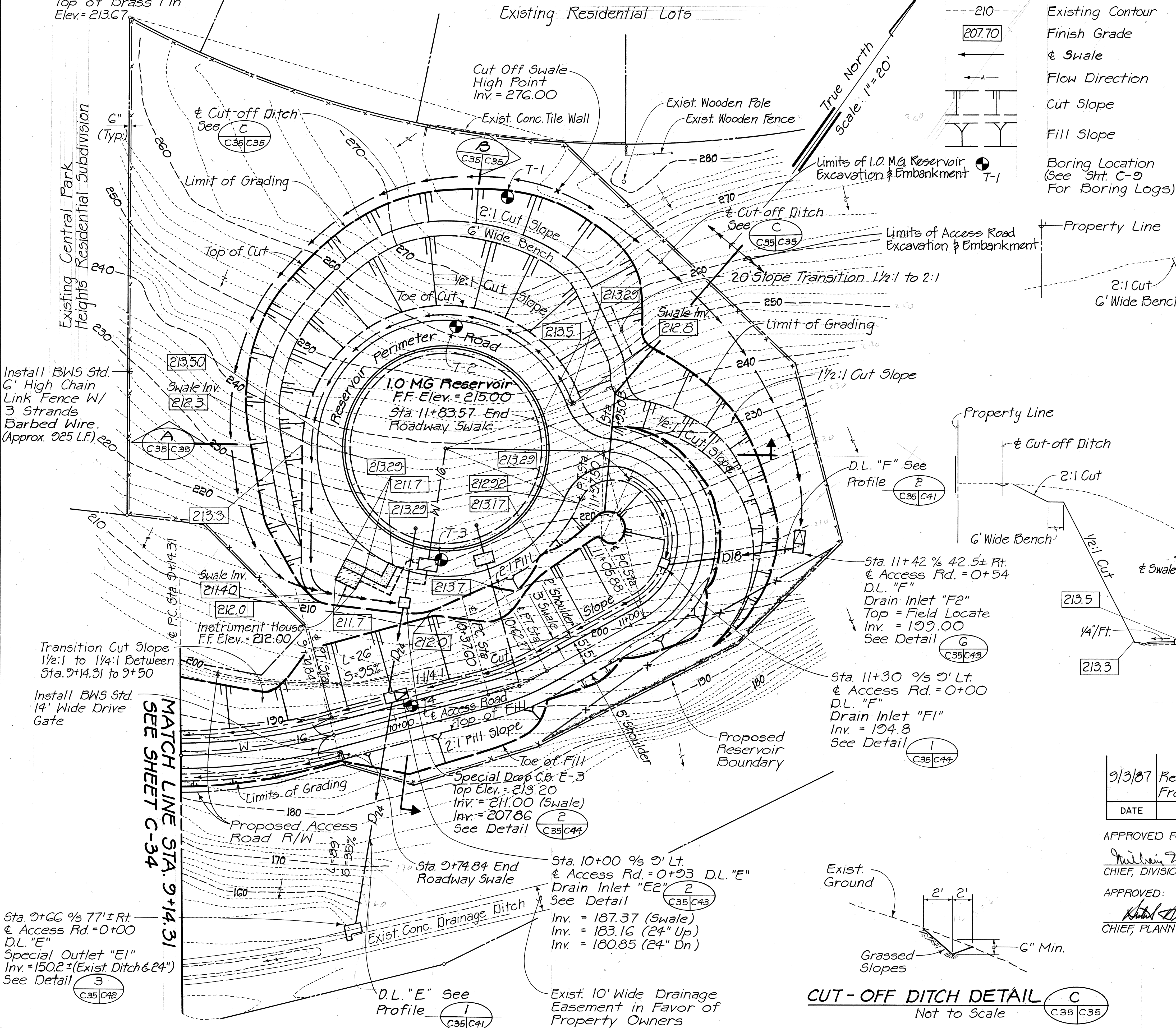
H-1 NON-POTABLE WATER SYSTEM
KALAUAO SPRINGS TO HALAWA RESERVOIR
F.A.I. PROJ. NO. IR-HI-1 (203)

SCALE: 1" = 20'

DATE: 1/20/87

SHEET NO. C-34 OF 64 SHEETS

Note: Bench Mark Located at Iwaiwa Pl.
Cul-de-Sac Monument. For Location See Sht. C-1
Top of Brass Pin
Elev. = 213.67



Sta. 9+66 % 77'± Rt.
Access Rd. = 0+00
D.L. "E"
Special Outlet "E1"
Inv. = 150.2 (Exist. Ditch & 24")
See Detail 3
C35/C42

MATCH LINE STA. 9+14.31
SEE SHEET C-34

Install BWS Std.
14' Wide Drive
Gate

Transition Cut Slope
1 1/2:1 to 1 1/4:1 Between
Sta. 9+14.31 to 9+50

Proposed Access
Road R/W

Limits of Grading

Proposed Reservoir
Boundary

Toe of Fill

Special Drop C.B. E-3
Top Elev. = 213.20
Inv. = 211.00 (Swale)
Inv. = 207.86
See Detail 2
C35/C44

Sta. 9+74.84 End
Roadway Swale

Exist. Conc. Drainage Ditch

D.L. "E" See
Profile 1
C35/C41

Exist. 10' Wide Drainage
Easement in Favor of
Property Owners

Sta. 10+00 % 9' Lt.
Access Rd. = 0+03 D.L. "E"
Drain Inlet "E2"
See Detail 2
C35/C43
Inv. = 187.37 (Swale)
Inv. = 183.16 (24" Up)
Inv. = 180.85 (24" Dn)

Sta. 11+30 % 9' Lt.
Access Rd. = 0+00
D.L. "F"
Drain Inlet "F1"
Inv. = 194.8
See Detail 1
C35/C44

Sta. 11+42 % 42.5± Rt.
Access Rd. = 0+54
D.L. "F"
Drain Inlet "F2"
Top = Field Locate
Inv. = 199.00
See Detail 6
C35/C43

Property Line

2:1 Cut

G' Wide Bench

1/2:1 Cut

Limit of Grading

Swale Inv. 212.8

20' Slope Transition 1 1/2:1 to 2:1

Limit of Access Road
Excavation & Embankment

Property Line

Boring Location
(See Sht. C-9
For Boring Logs)

Fill Slope

Cut Slope

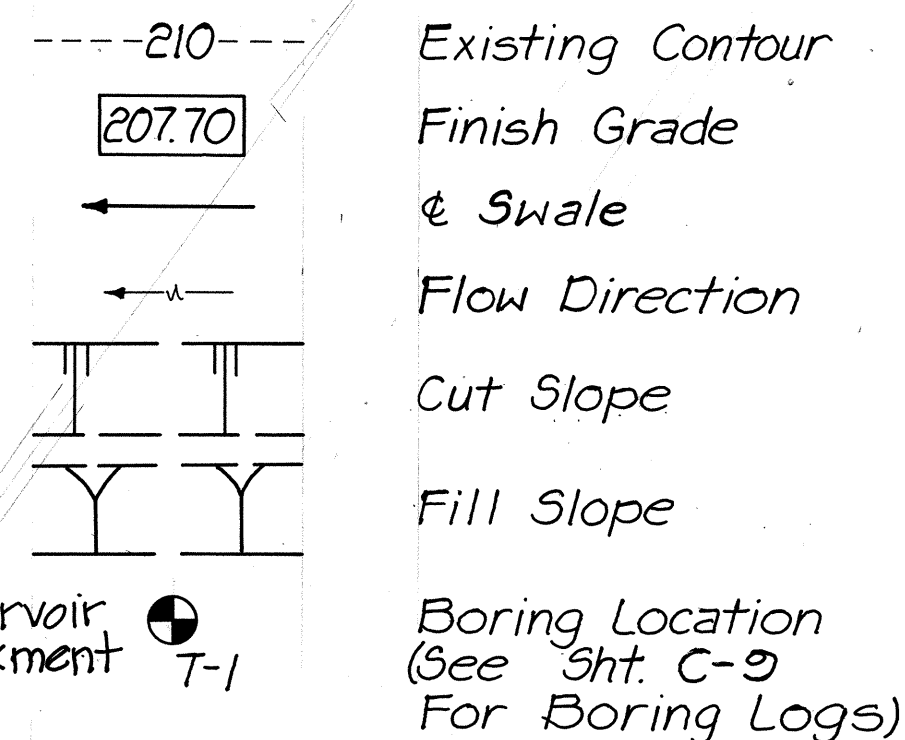
Flow Direction

Swale

Finish Grade

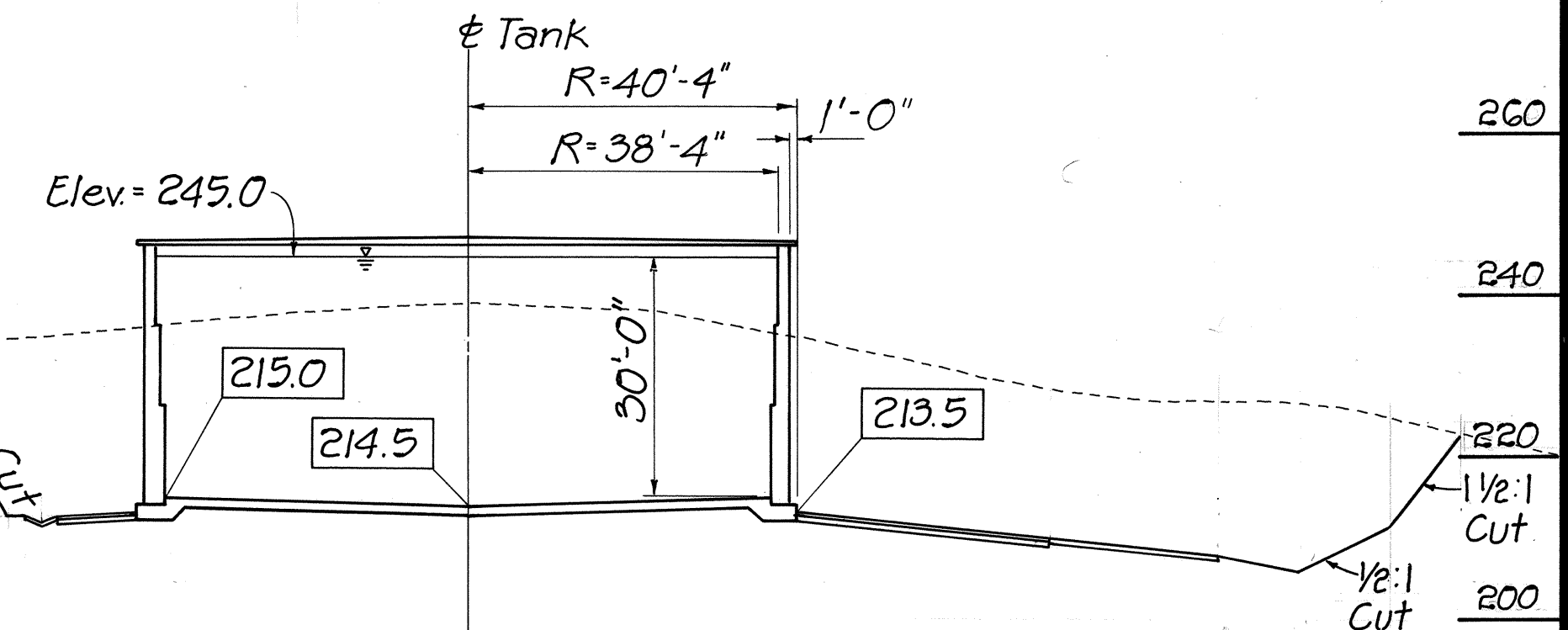
Existing Contour

GRADING LEGEND



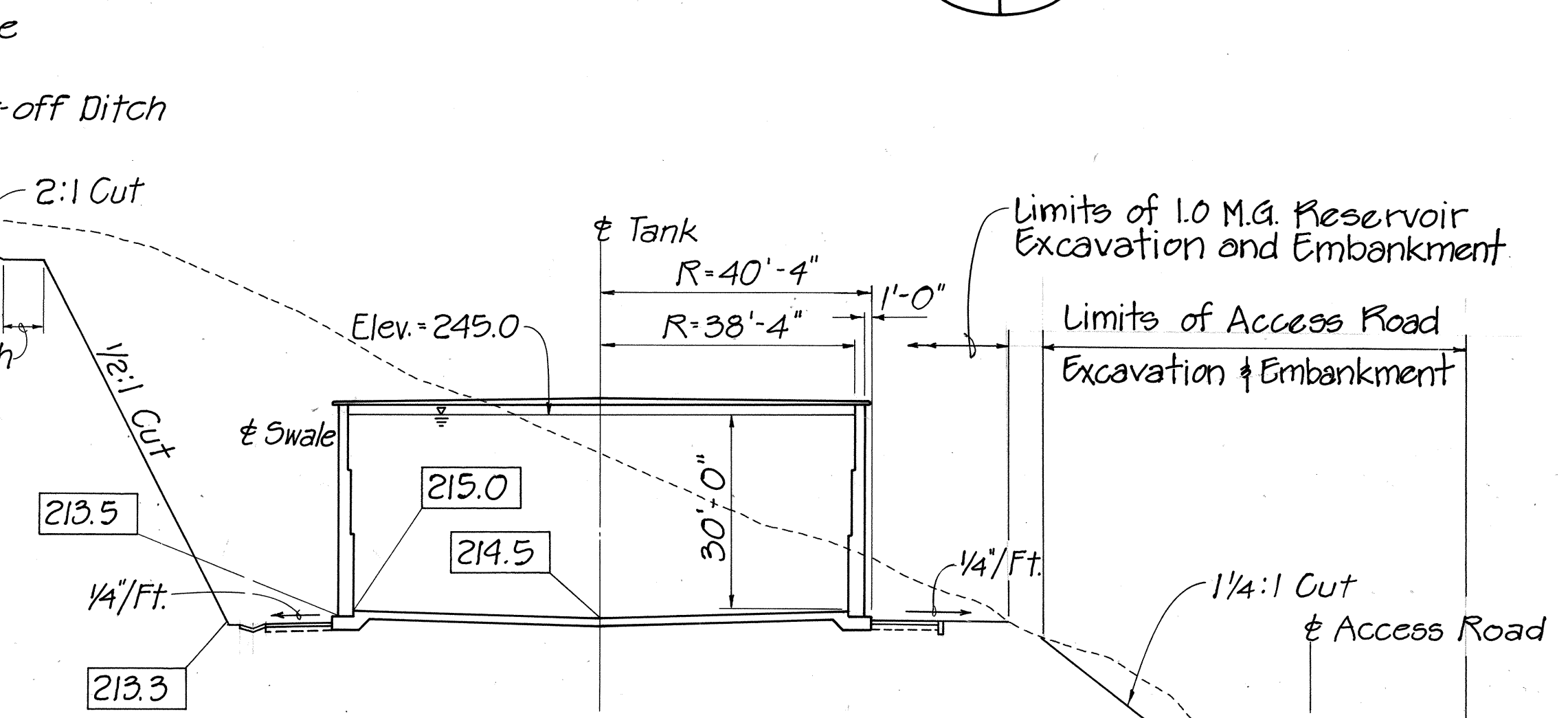
ESTIMATED EARTHWORK SUMMARY

Excavation = 17,808 Cu. Yds.
Embankment = 3100 Cu. Yds.
Area to be Graded = 2.5 Acres
(Quantities Include Access Rd.
and Reservoir Site Grading)



SECTION A

Scale: 1" = 20'



SECTION B

Scale: 1" = 20'

DATE	REVISION
9/3/87	Revised Portion of Access Road From Sta. 10+37.60 and on

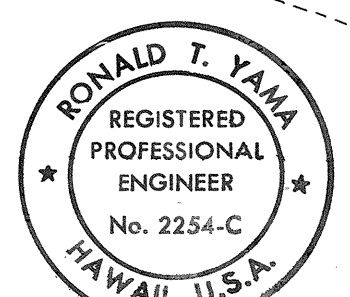
APPROVED FOR GRADING ONLY:

CHIEF, DIVISION OF ENGINEERING, DPW

APPROVED:
CHIEF, PLANNING & ENG. DIV, BWS

8/22/86
DATE

9/3/86
DATE



THIS WORK WAS PREPARED BY
ME OR UNDER MY SUPERVISION.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

RESERVOIR GRADING PLAN

H-1 NON-POTABLE WATER SYSTEM
KALAUAO SPRINGS TO HALAWA RESERVOIR
F.A.I. PROJ. NO. IR-HI-1 (203)

SCALE: 1" = 20' DATE: 1/20/87

SHEET No. 63 OF 64 SHEETS

C.O. 37

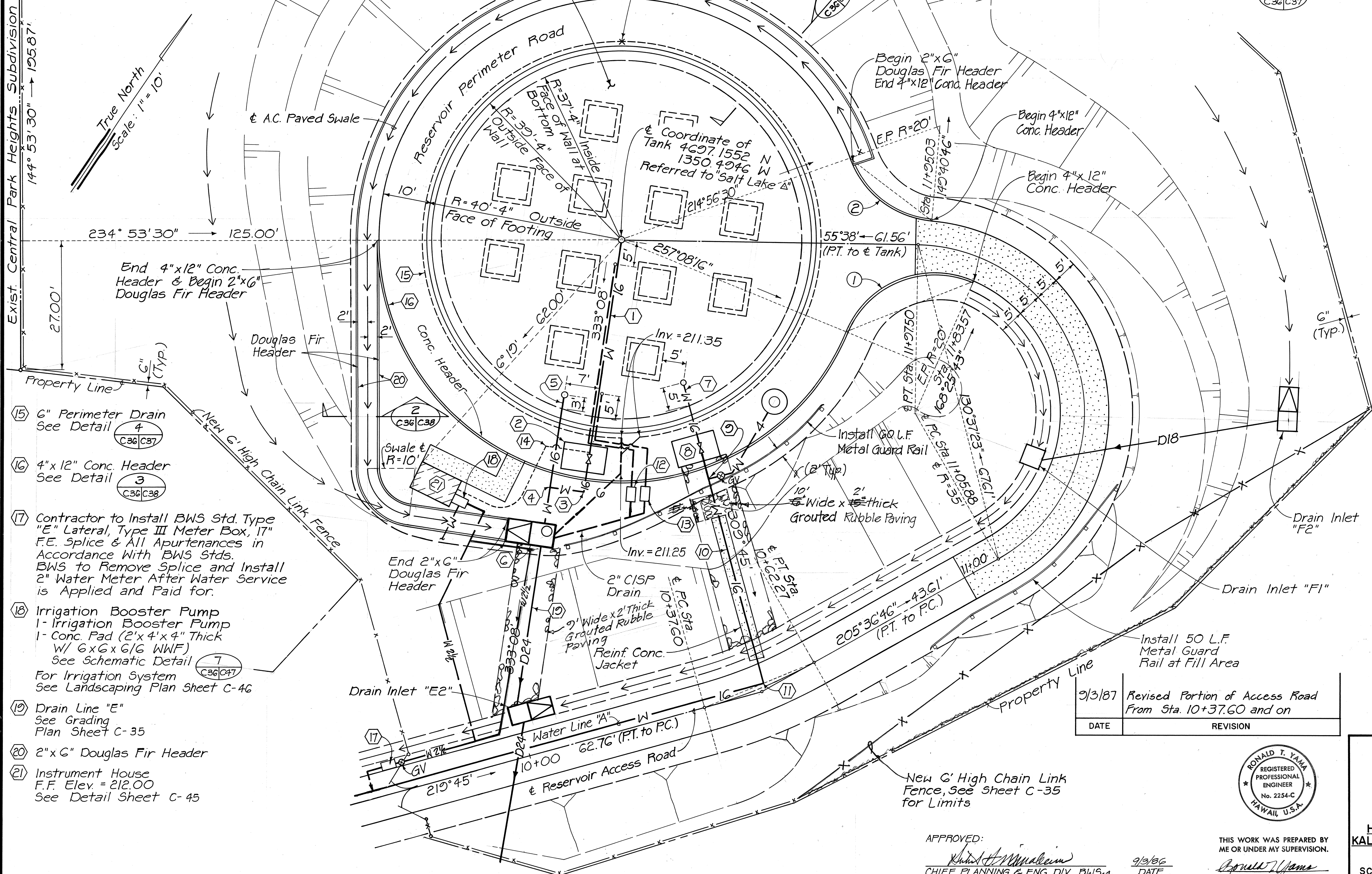
Curve	①	②
Δ	21°17'27"	65°15'44"
R	20.00'	20.00'
T	20.46'	12.81'
C	28.60'	21.57'
Lc	31.87'	22.78'

I.O M.G. Reservoir
 Spillway Elev. = 245.00
 Floor Elev. = 215.00

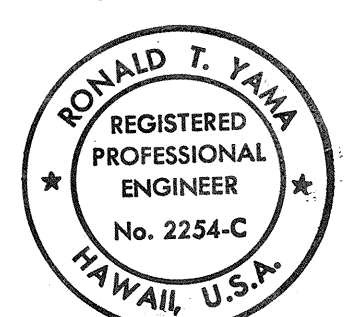
- ① Washout Line, See Detail
 ② BWS Std. Type "A" Manhole
 1- 16" BGGV, M.J., 150 #
 1- 1" Copper Pressure
 Line Connection to 16"
 Pipe, See Detail

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IR-HI-1(203)	1987	38	87

- ③ 1- 16" 1/4 Bend, M.J.
 1- Conc. Blk.
 Inv. = 208.50
 ④ 1- 16" Tee, M.J.
 1- Conc. Blk.
 Inv. = 208.41
 ⑤ Overflow Line, See Detail
 ⑥ Special Drop C.B. "E3"
 Top = 212.00
 Inv. = 211.00 Swale
 Inv. = 210.20 6" Tile Drain
 Inv. = 210.30 2" CISP Drain
 Inv. = 208.36 16" Flap Valve
 Inv. = 207.86 24" RCP
 See Detail
 ⑦ Influent/Effluent Line,
 See Detail
 ⑧ BWS Std. Type "A" Manhole
 1- 16" BGGV, M.J., 150 #
 ⑨ Sta. 0+44 W.L. "B"
 1- 16"x6" Tee, M.J.
 1- Conc. Blk.
 Washdown Connection
 See Detail
 ⑩ Water Line "B"
 See Profile
 ⑪ Sta. 10+51.05 0/5 1.12' Left
 & Access Road
 = End Water Line "A" (End of Alt. Piping)
 = Sta. 0+00 Water Line "B"
 (Begin D.I. Pipe Only)
 ⑫ Chlorinator Box,
 See Detail
 ⑬ Sampling Spigot Box,
 See Detail
 ⑭ 1" Copper Pressure Line to Liquid
 Level Recorder and
 Pump Controller



DATE	REVISION
9/3/87	Revised Portion of Access Road From Sta. 10+37.60 and on



APPROVED:
Ronald T. Yama
 CHIEF, PLANNING & ENG. DIV., BWS₃₄

9/3/86
 DATE

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Ronald T. Yama

STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION

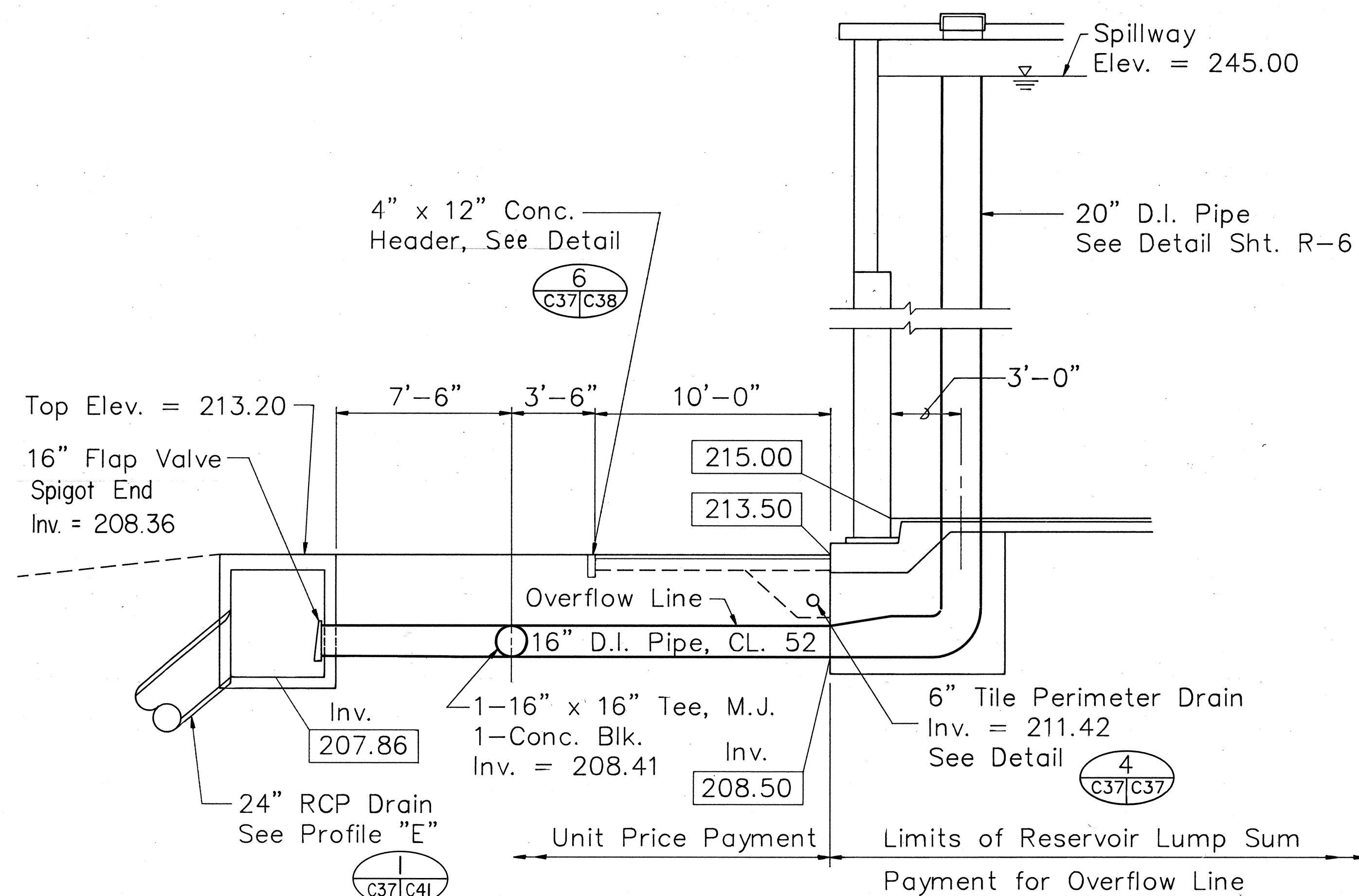
RESERVOIR SITE PLAN

H-1 NON-POTABLE WATER SYSTEM
 KALAUAO SPRINGS TO HALAWA RESERVOIR
 F.A.I. PROJ. NO. IR-HI-1 (203)

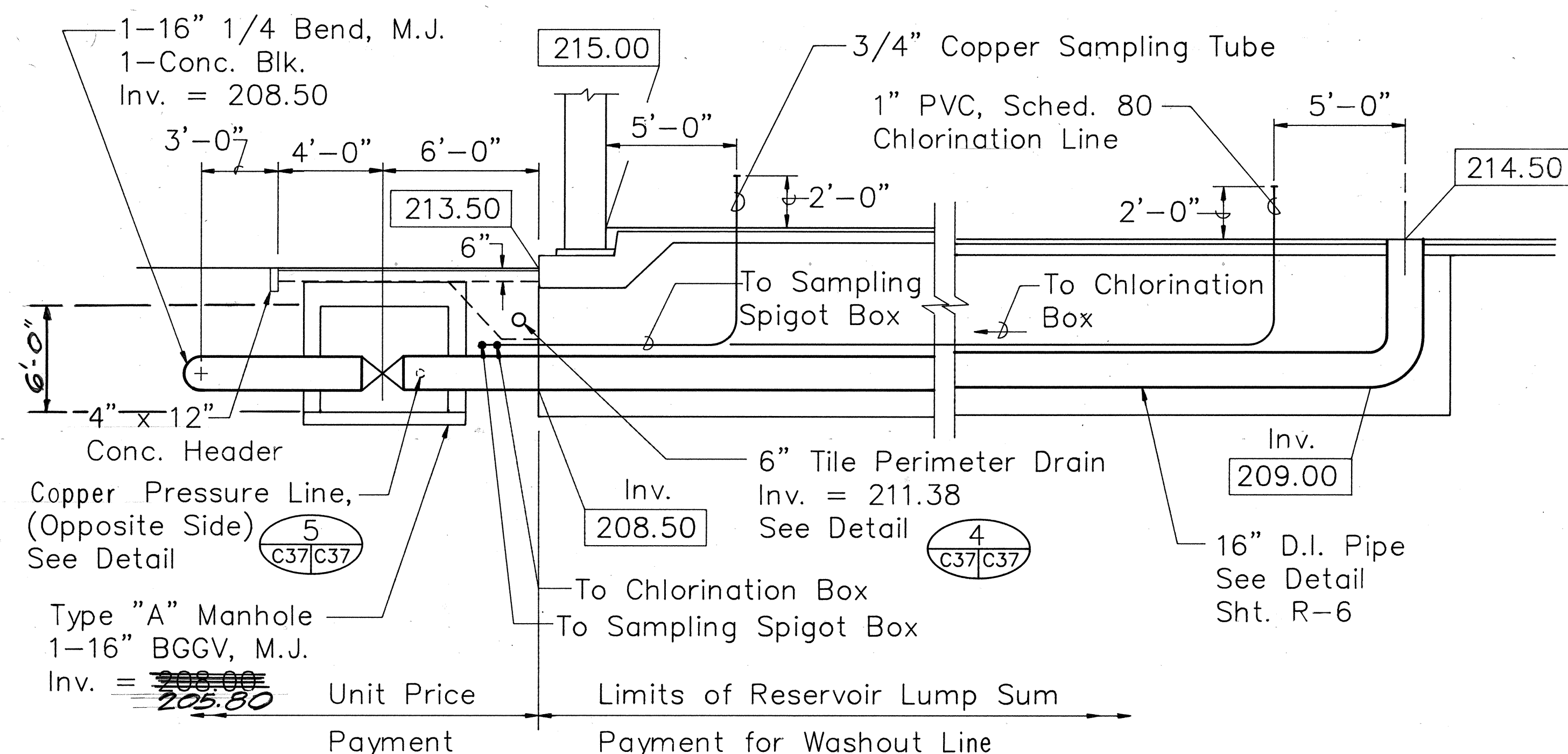
SCALE: 1" = 10' DATE: 1/20/87

SHEET No. C36 OF 64 SHEETS

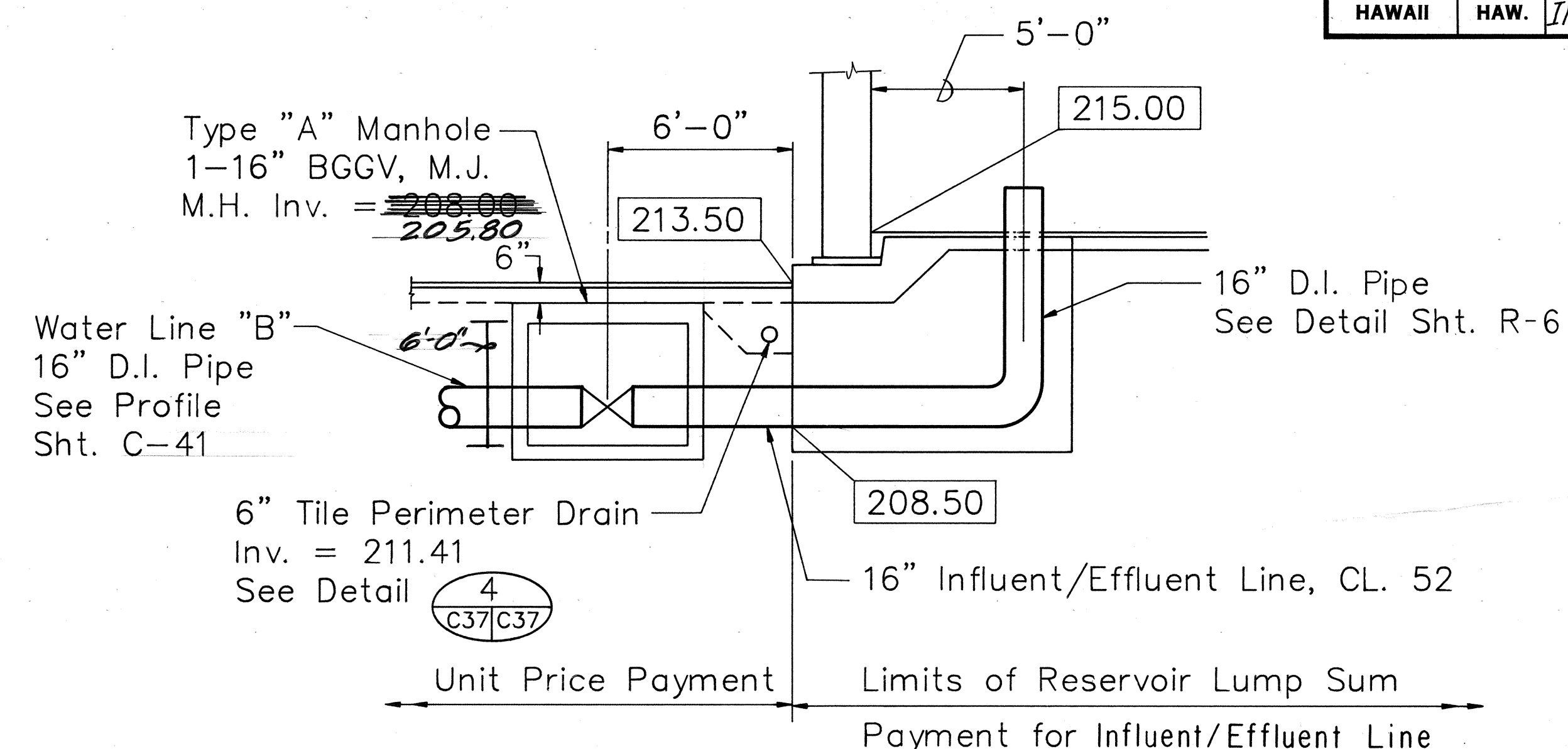
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IR-HI-1(203)	1987	39	87



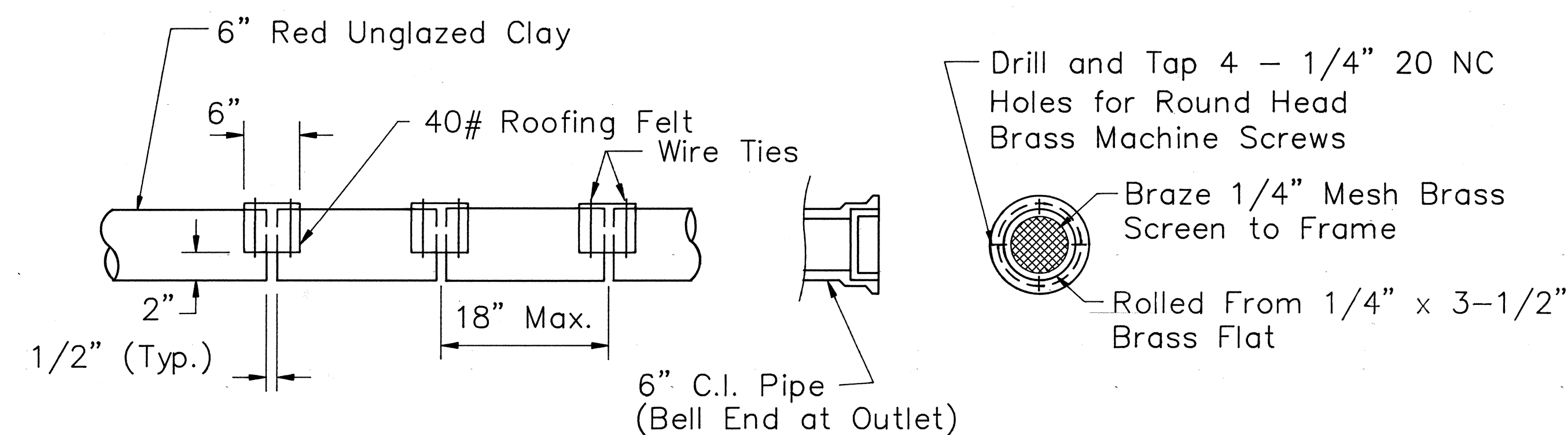
SECTION - OVERFLOW LINE
SCALE: 1/4" = 1'-0"



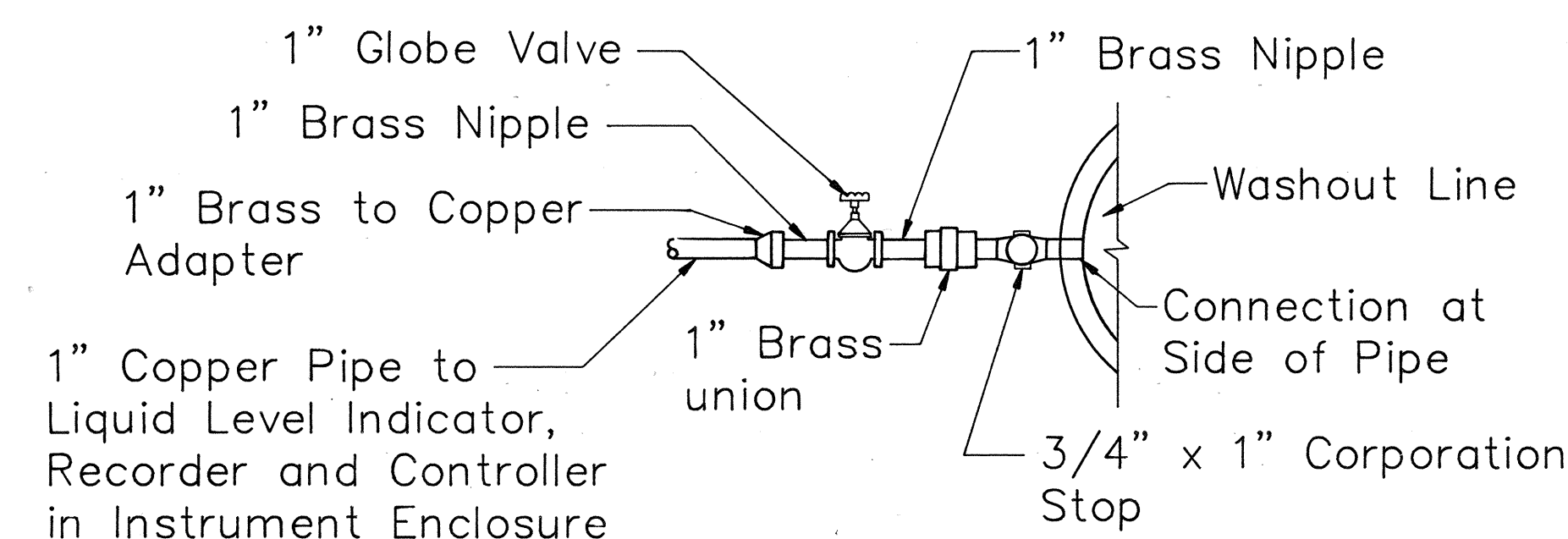
SECTION - WASHOUT LINE
SCALE: 1/4" = 1'-0"



SECTION - INFLUENT/EFFLUENT LINE
SCALE: 1/4" = 1'-0"

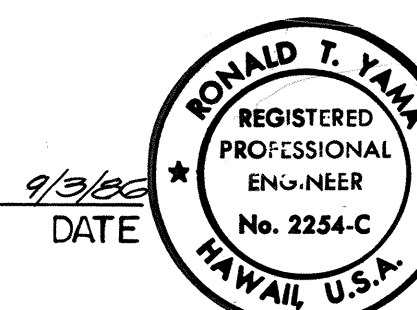


PERIMETER DRAIN DETAIL
NOT TO SCALE



COPPER PRESSURE LINE DETAIL
Not to Scale

APPROVED:
CHIEF, PLANNING &
ENGR. DIV., BWS



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DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

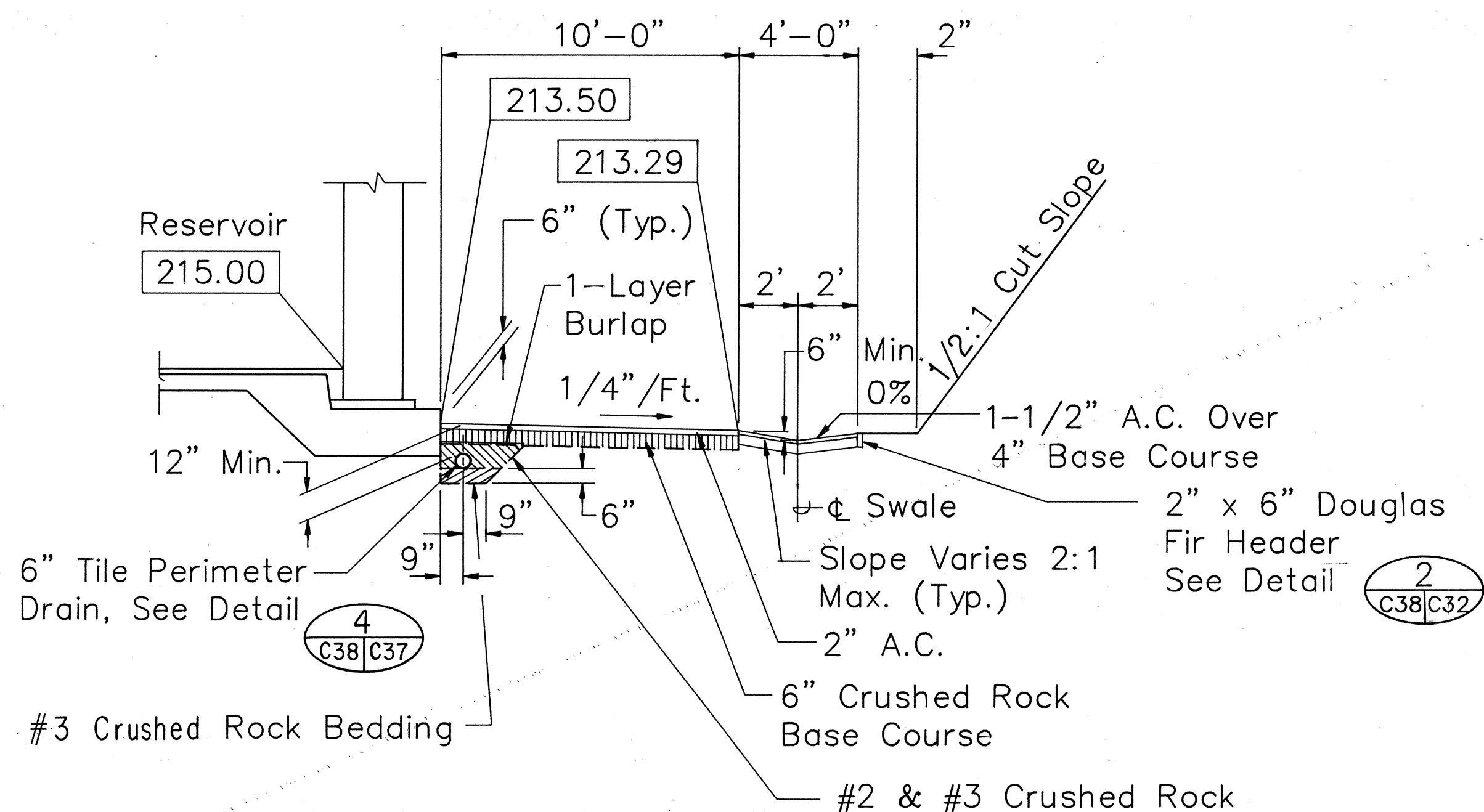
RESERVOIR SITE DETAILS

H-I NON-POTABLE WATER SYSTEM
KALAUAO SPRINGS TO HALAWA RESERVOIR
F.A.I. PROJ. NO. IR-HI-1 (203)

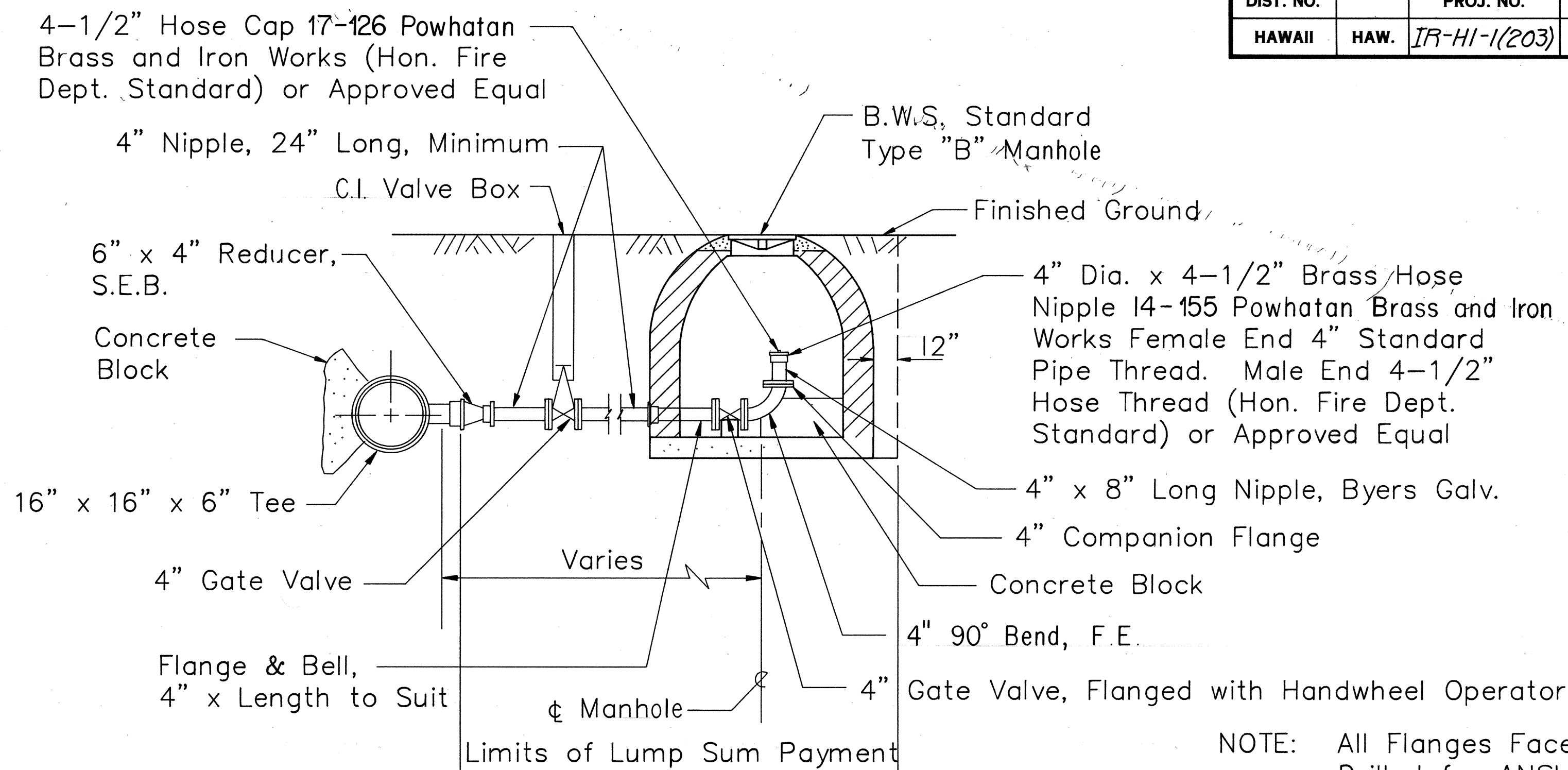
SCALE: AS SHOWN DATE: 1/20/87

SHEET No. C37 OF 64 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IR-HI-1(203)	1987	40	87

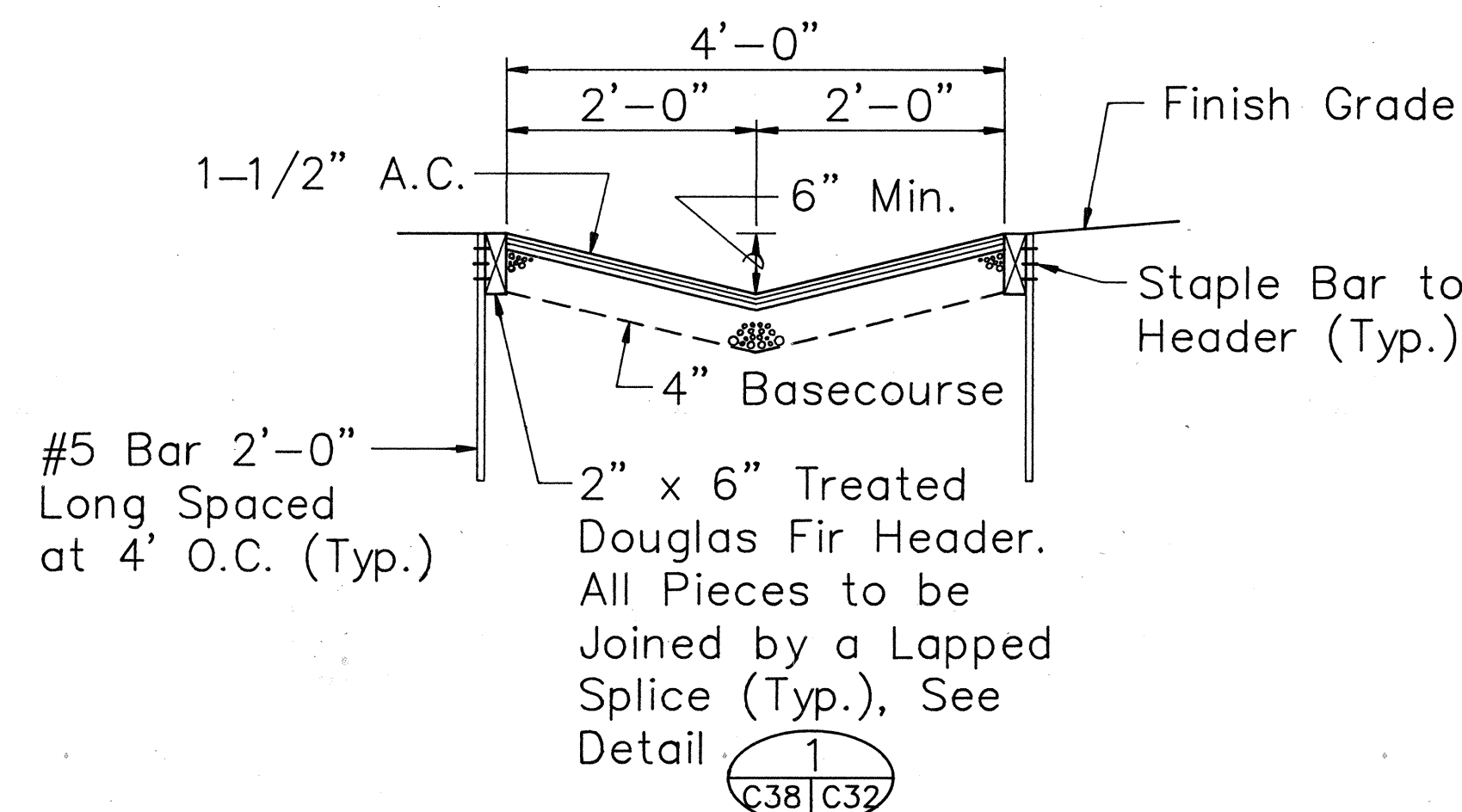


TYPICAL RESERVOIR PERIMETER ROAD
Scale: 1/4" = 1'-0"

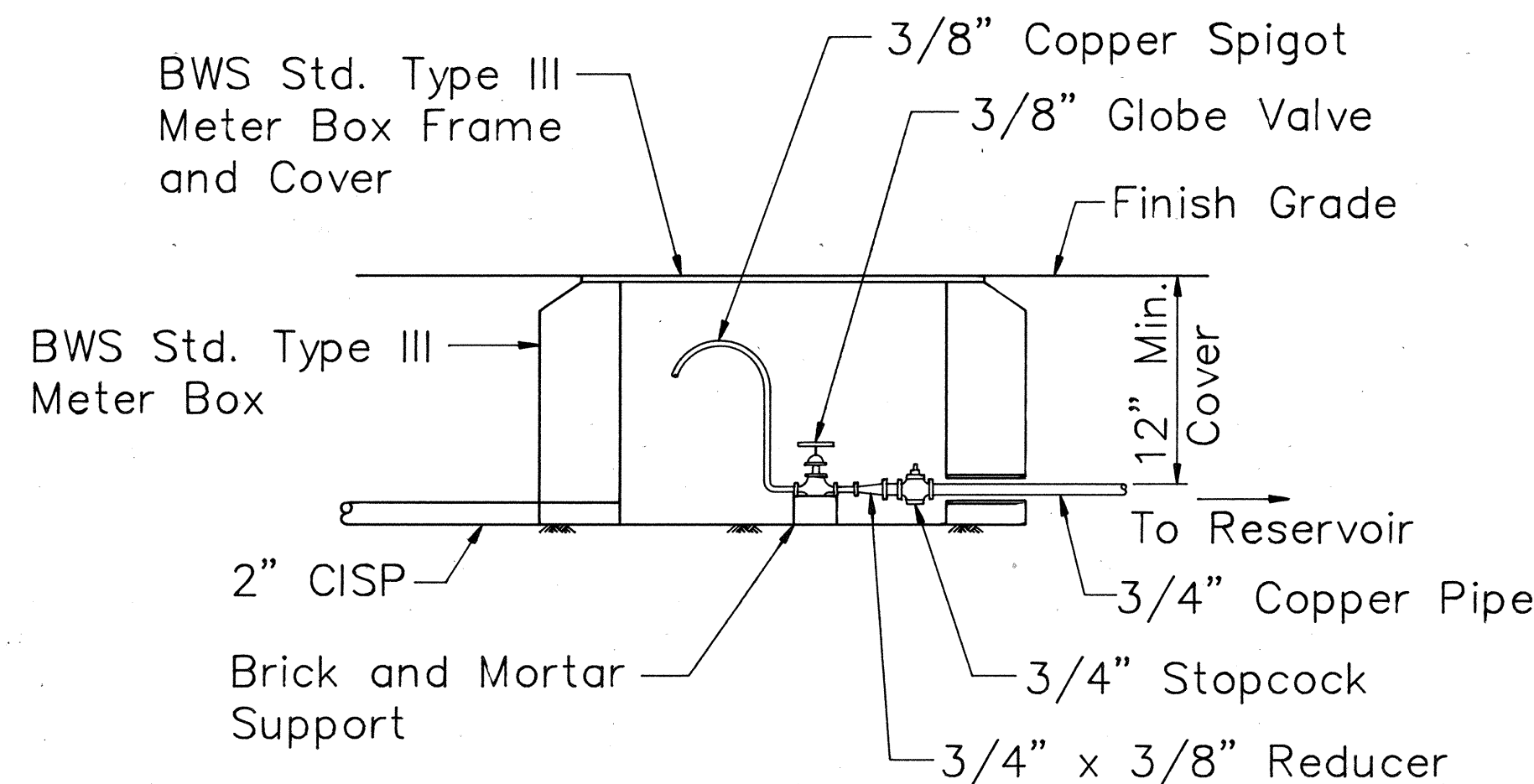


WASHDOWN CONNECTION
Not to Scale

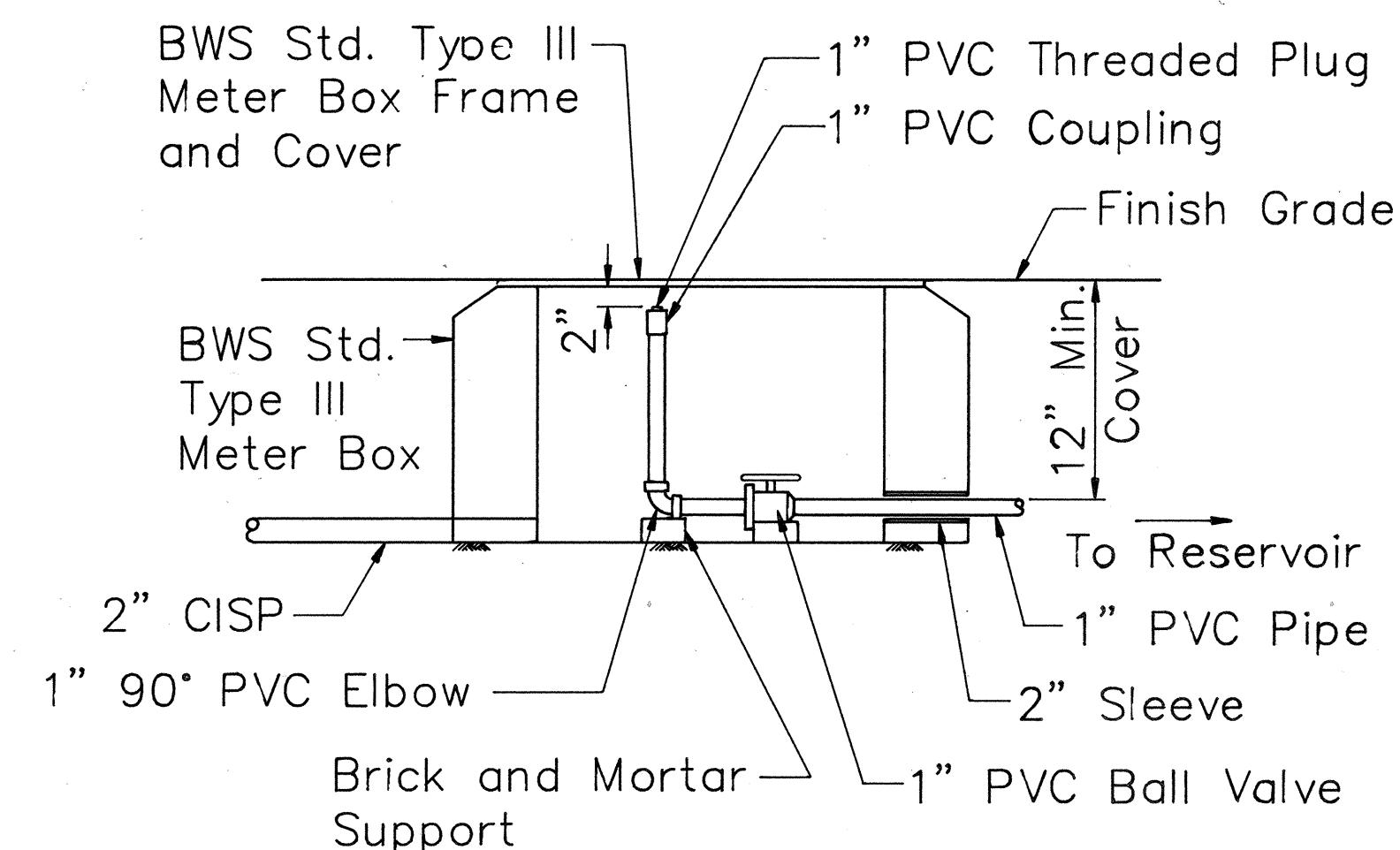
NOTE: All Flanges Faced and Drilled for ANSI Class 125, B16.1



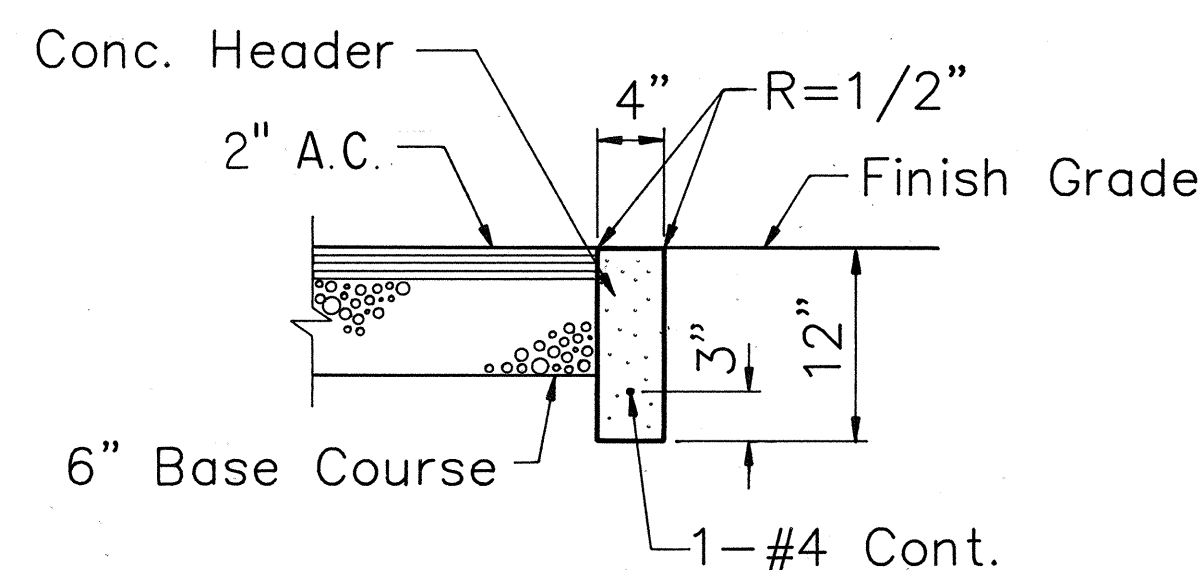
A.C. SWALE SECTION
Scale: 3/4" = 1'-0"



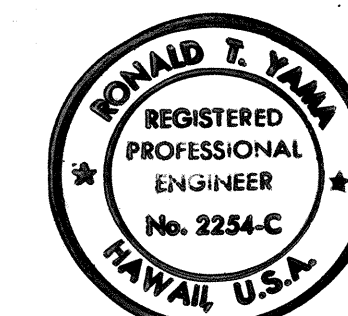
SAMPLING SPIGOT DETAIL
Not to Scale



CHLORINATION LINE DETAIL
Not to Scale



CONCRETE HEADER DETAIL
Scale: 1" = 1'-0"



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Ronald T. Yam

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

RESERVOIR SITE DETAILS

H-I NON-POTABLE WATER SYSTEM
KALAUAO SPRINGS TO HALAWA RESERVOIR
F.A.I. PROJ. NO. IR-HI-1 (203)

SCALE: AS SHOWN DATE: 1/20/87

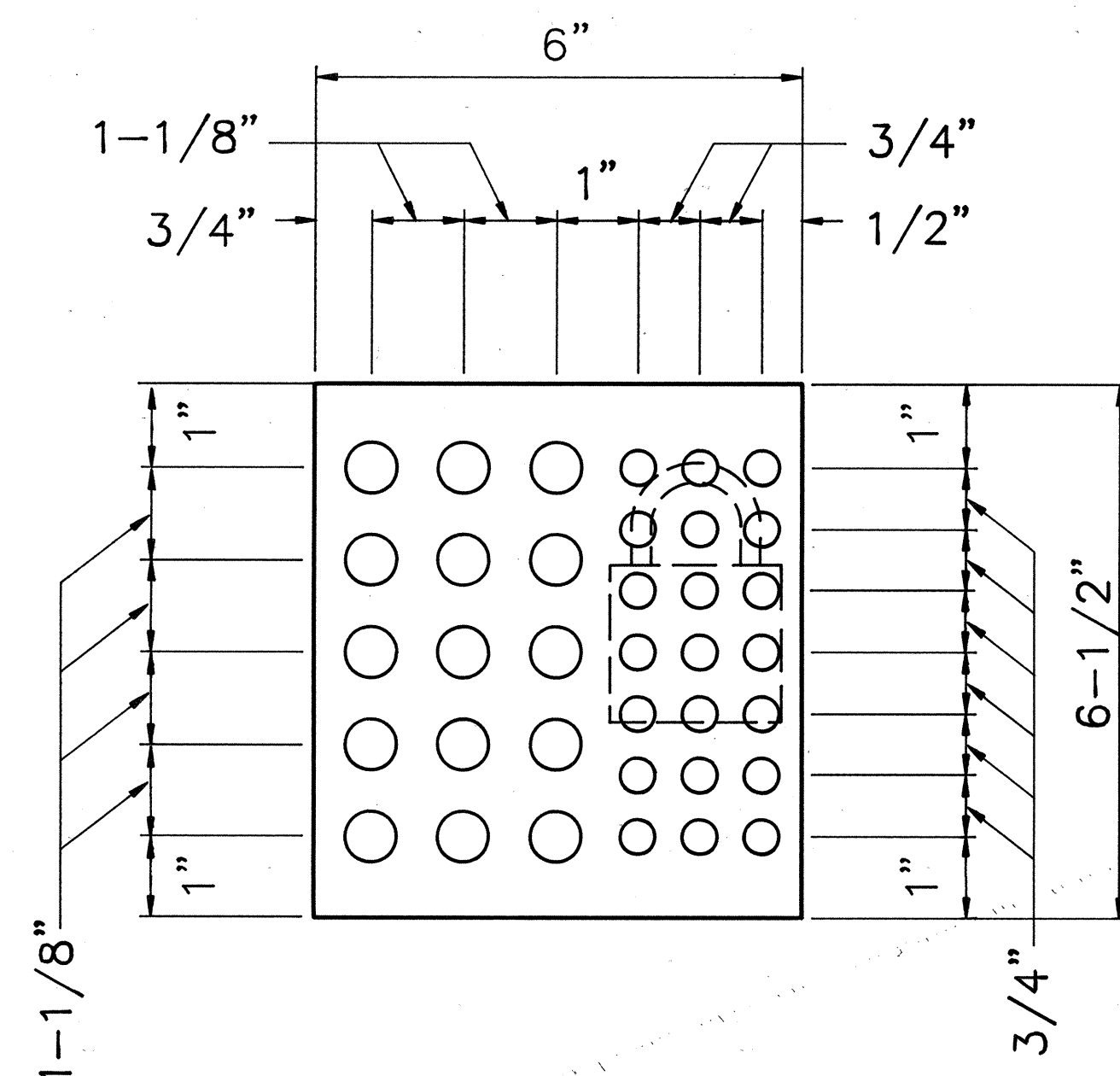
SHEET No. C38 OF 64 SHEETS

APPROVED:

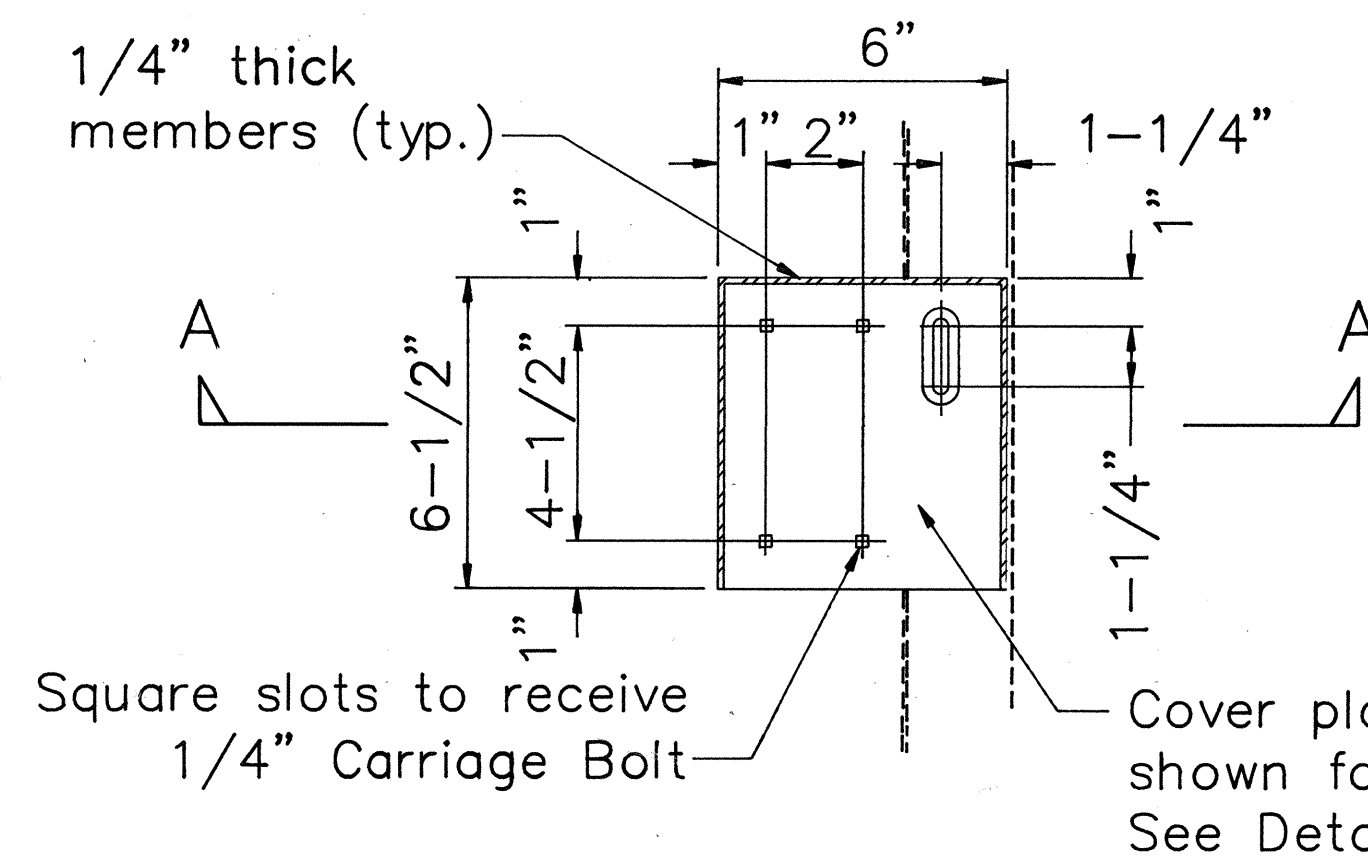
[Signature]
CHIEF, PLANNING & ENG. DIV., BWS₁₀

9/3/86
DATE

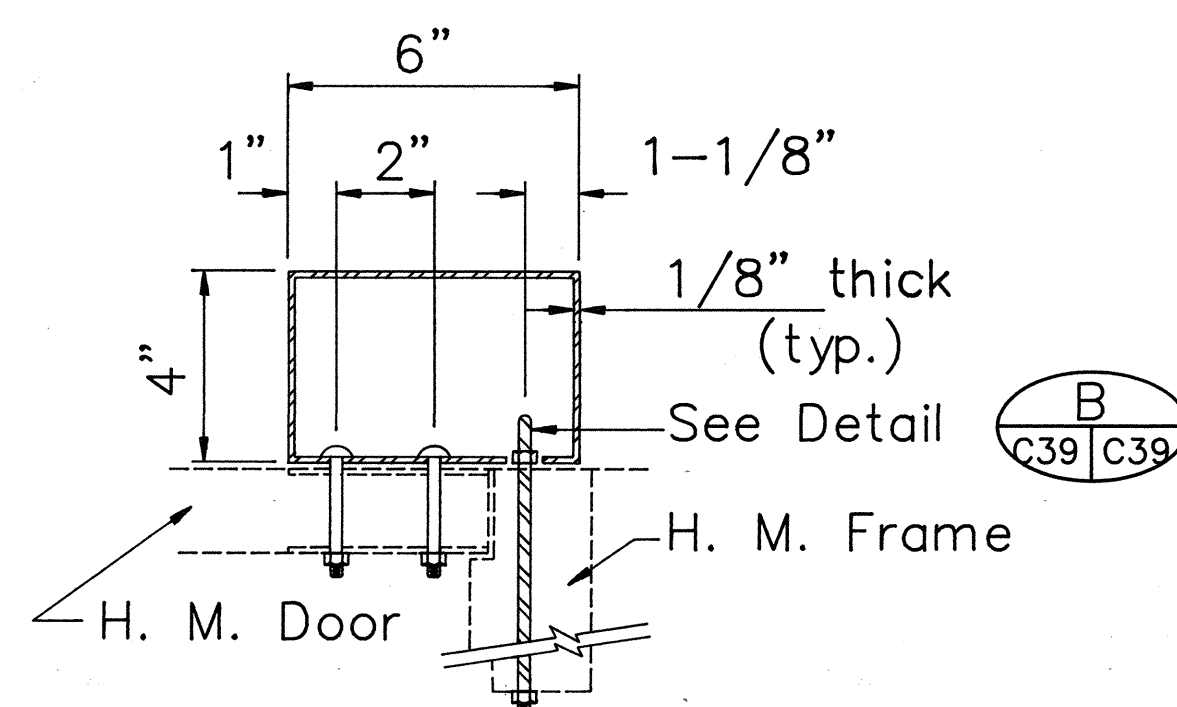
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IR-HI-1(203)	1987	41	81



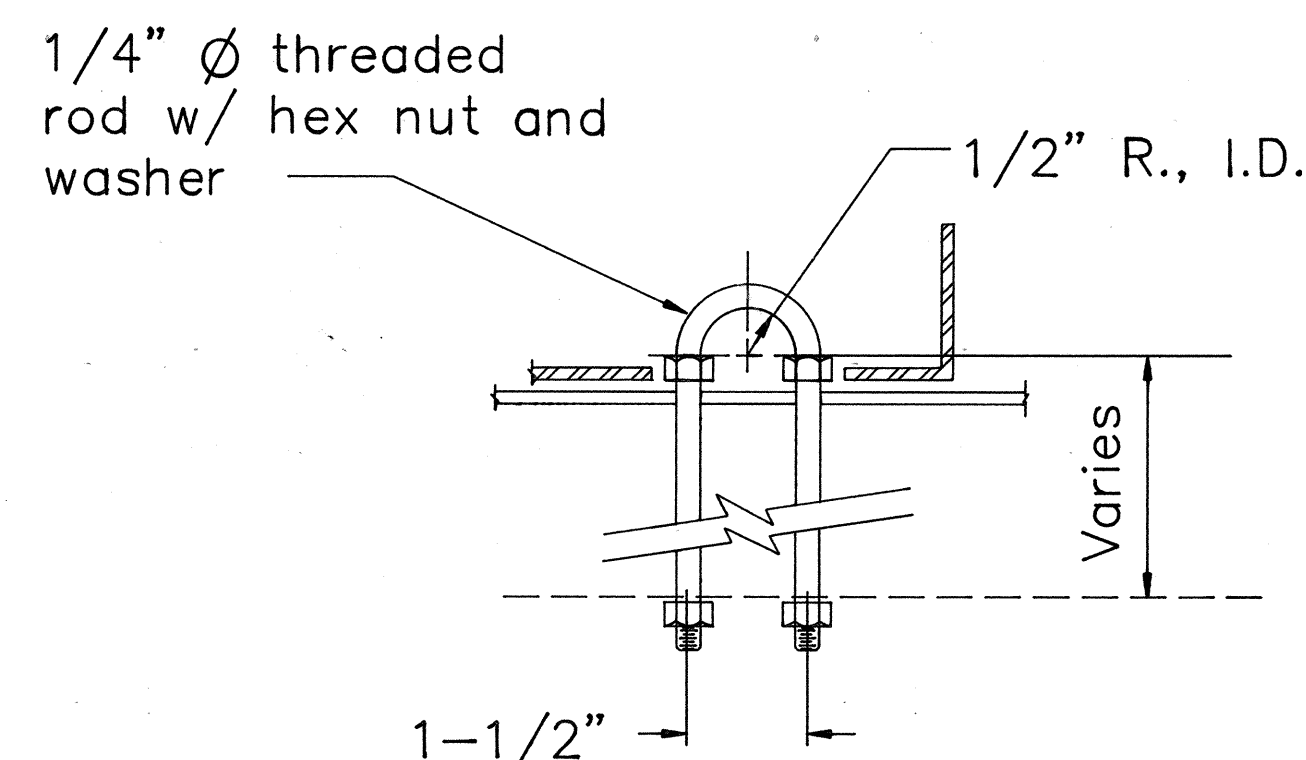
COVER PLATE ELEVATION (A)
Not to Scale C39/C39



ELEVATION (H.M. DOOR)



SECTION "A-A"

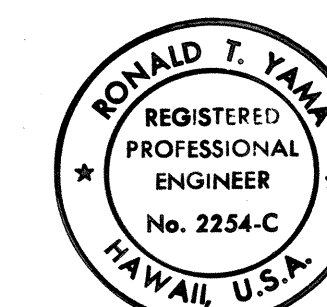


DETAIL B C39/C39

SECURITY LATCHSET DETAILS 1
Not to Scale C45/C39

NOTES:

1. All joints shall be full penetrating welds.
2. Grind all edges, round all corners.
3. Submit six sets of shop and layout drawings for approval prior to fabrication.
4. Painting of Latchset shall be as specified.
5. 12 Gage reinforcing plate for H.M. Door and Frames shall be welded internally.
6. All items shall be Hot Dip Galvanized after fabrication.



THIS WORK WAS PREPARED BY
ME OR UNDER MY SUPERVISION.

Bonnie D. Yama

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

RESERVOIR SITE DETAILS

H-I NON-POTABLE WATER SYSTEM
KALAUAO SPRINGS TO HALAWA RESERVOIR
F.A.I. PROJ. NO. IR-HI-1 (203)

SCALE: NOT TO SCALE DATE: 1/20/87

SHEET No. C39 OF 64 SHEETS

APPROVED:

Robert A. M... ..
CHIEF, PLANNING & ENGINEERING DIV., BWS

9/3/86
DATE