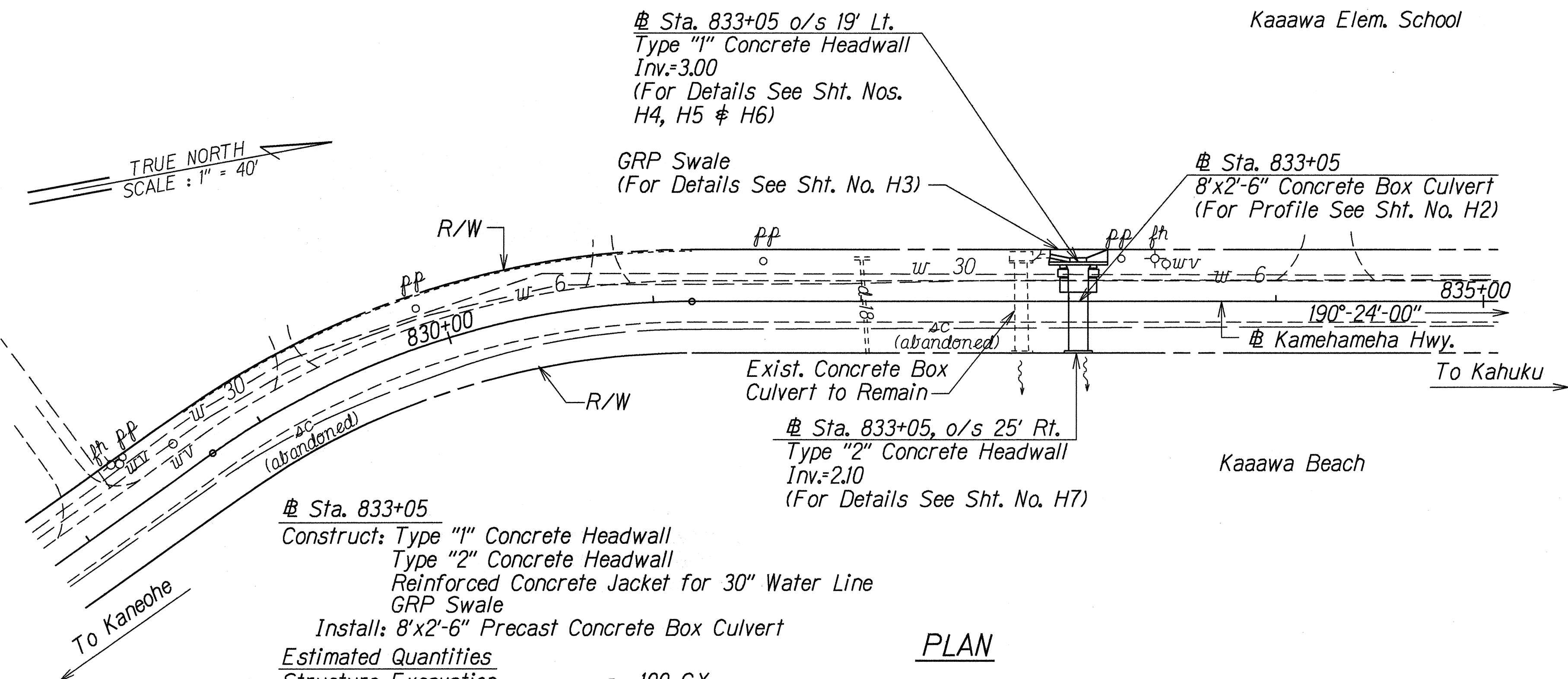


FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83D-01-98	2000	4	19



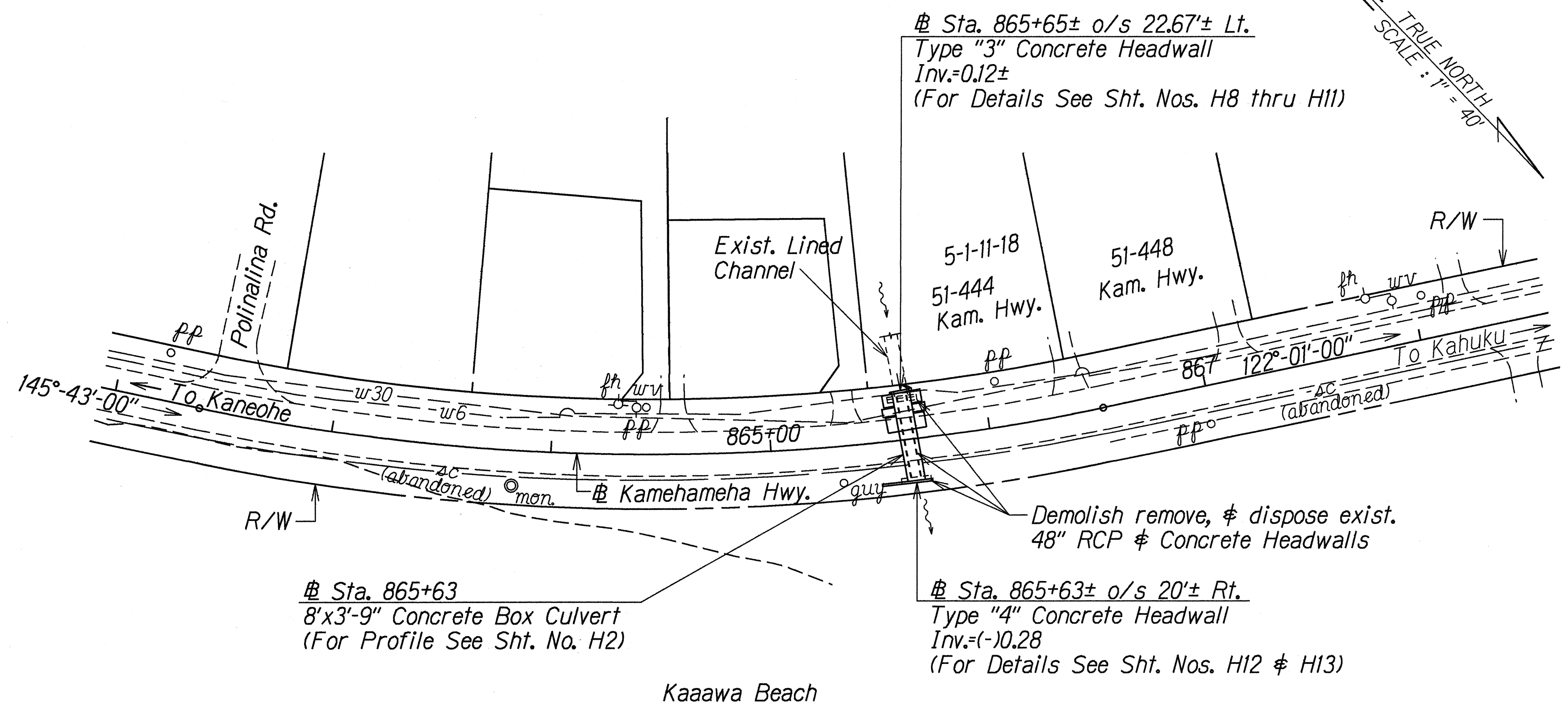
# Sta. 833+05	
Construct: Type "1" Concrete Headwall	
Type "2" Concrete Headwall	
Reinforced Concrete Jacket for 30" Water Line	
GRP Swale	
Install: 8'x2'-6" Precast Concrete Box Culvert	
Estimated Quantities	
Structure Excavation	= 100 C.Y.
Structure Backfill	= 39 C.Y.
Plant Mix Glassphalt	
Concrete Basecourse	= 19 Tons
A.C. Pav't, Mix No. IV	= 27 Tons
Bedcourse Material	= 13 C.Y.
8'x2'-6" Precast Modules	= 3 EA.
Type "1" Concrete Headwall	= 1 EA.
Type "2" Concrete Headwall	= 1 EA.
Reinforced Concrete Jacket for 30" Water Line	= 1 EA.
Grouted Rubble Paving	= 7 C.Y.

PLAN

APPROVED:
Michael J. [Signature]
CHIEF, PLANNING AND ENGINEERING DIVISION,
BOARD OF WATER SUPPLY,
CITY AND COUNTY OF HONOLULU
DATE 11/20/99

DRAINAGE NOTES:

- Existing drainage systems will be functional at all times during construction. The Contractor is to furnish materials, equipment, labor, tools and incidentals necessary to accomplish maintenance of flow. The cost 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.
- The Contractor shall locate the 6" and 30" water lines prior to installation of Concrete Box Culverts. If necessary, 6" water line shall be relocated according to the details on Plan Sheet Nos. 18 & 19. Abandoned U.S. Army Signal Corps cable shall not be relocated but shall be cut and removed if necessary.
- The Contractor shall comply with all conditions of the Army Corps of Engineer's Nationwide Permit and the Department of Health's Water Quality Certification Permit. Any proposed changes to either of these permits will require the Contractor to file an amended permit application(s) with the appropriate agencies.
- Demolishing, removing, disposing existing concrete headwalls, 48-inch reinforced concrete pipe, exist. 2-18" pipes, and concrete swale; sawcutting and removing portions of existing concrete piles; sawcutting of existing A.C. pavement shall not be paid for separately, but shall be considered incidental to Item 206.4100 - Structure Excavation for Box Culvert.
- The Contractor shall be responsible for designing shoring for safe passage of vehicles. This work shall be approved by a licensed Engineer and shall meet Occupational Safety and Health Act requirements. This work shall not be paid for separately but shall be considered incidental to Item 206.4100 - Structure Excavation for Box Culvert.
- For culvert trench, backfill, and A.C. pavement restoration detail, see Sht. No. H14.
- Concrete shall be Class A unless otherwise noted.
- Steel Pipe Railings shall not be paid for separately but considered incidental to Item 604.3000 - Type "3" Concrete Headwall, 5.00 feet to 5.99 feet.



# Sta. 865+63	
Construct: Type "3" Concrete Headwall	
Type "4" Concrete Headwall	
Reinforced Concrete Jacket for 30" Water Line	
Install: 8'x3'-9" Precast Concrete Box Culvert	
Estimated Quantities	
Structure Excavation	= 77 C.Y.
Structure Backfill	= 51 C.Y.
Plant Mix Glassphalt	
Concrete Basecourse	= 23 Tons
A.C. Pav't, Mix No. IV	= 26 Tons
Bedcourse Material	= 12 C.Y.
8'x3'-9" Precast Modules	= 2 EA.
Type "3" Concrete Headwall	= 1 EA.
Type "4" Concrete Headwall	= 1 EA.
Reinforced Concrete Jacket for 30" Water Line	= 1 EA.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAINAGE PLAN 8 NOTES

KAMEHAMEHA HIGHWAY DRAINAGE IMP.
In The Vicinity of Polinalina Road
Proj. No. 83D-01-98

Scale: 1"=40' Date: Oct. 1999

SHEET No. H1 OF 14 SHEETS

ORIGINAL PLAN	DATE 7/9/98
SURVEY PLOTTED BY	
DRAWN BY A. Manuwa & R. Sato	
NOTED BY	
DESIGNED BY	
CHECKED BY	

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83D-01-98	2000	ADD. 4	19

DRAINAGE NOTES:

- Existing drainage systems will be functional at all times during construction. The Contractor is to furnish materials, equipment, labor, tools and incidentals necessary to accomplish maintenance of flow. The cost 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.
- The Contractor shall locate the 6" and 30" water lines prior to installation of Concrete Box Culverts. If necessary, 6" water line shall be relocated according to the details on Plan Sheet Nos. 18 & 19. The Contractor shall probe and determine elevation of existing 30" water line. If 6" minimum clearance between water line concrete jacket and concrete box culvert is not attainable, the invert of the concrete box culvert at the inlet headwall shall be adjusted. Probing of water lines shall not be paid for separately but shall be considered incidental to Item 206.4100 - Structure Excavation for Box Culvert.
- ~~Abandoned U.S. Army Signal Corps cable shall not be relocated but shall be cut and removed if necessary.~~
- ~~The Contractor shall comply with all conditions of the Army Corps of Engineer's Nationwide Permit and the Department of Health's Water Quality Certification Permit. Any proposed changes to either of these permits will require the Contractor to file an amended permit application(s) with the appropriate agencies.~~
- ~~Demolishing, removing, disposing existing concrete headwalls, 48-inch reinforced concrete pipe, exist. 2-18" pipes, and concrete swale; sawcutting and removing portions of existing concrete piles; sawcutting of existing A.C. pavement shall not be paid for separately, but shall be considered incidental to Item 206.4100 - Structure Excavation for Box Culvert.~~
- ~~The Contractor shall be responsible for designing shoring for safe passage of vehicles. This work shall be approved by a licensed Engineer and shall meet Occupational Safety and Health Act requirements. This work shall not be paid for separately but shall be considered incidental to Item 206.4100 - Structure Excavation for Box Culvert.~~
- ~~For culvert trench, backfill, and A.C. pavement restoration detail, see Sht. No. H14.~~
- Abandoned U.S. Army Signal Corps cable shall not be relocated but shall be cut and removed if necessary.
- Steel Pipe Railings shall not be paid for separately but considered incidental to Item 604.3000 - Type "3" Concrete Headwall, 5.00 feet to 5.99 feet.

LEGEND FOR AS-BUILT POSTINGS

AAA	Squiggly line for as-built deletion
100-00	Double line for as-built deletion
Roadway	Text for as-built posting

1/25/00	Revised Drainage Note No. 3 Deleted Drainage Note No. 8 Rev. Type "4" Headwall @ Sta. # invert
---------	--

DATE	REVISION
------	----------

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

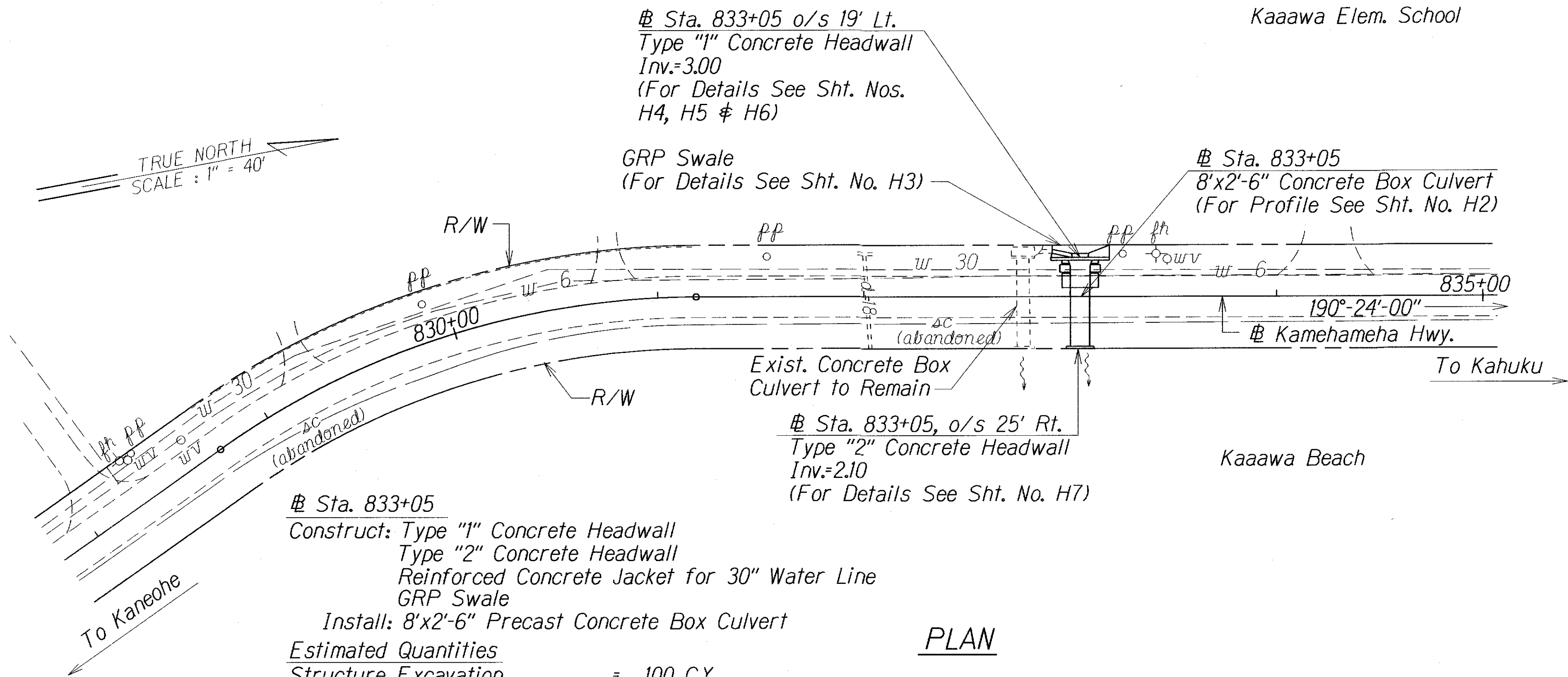
DRAINAGE PLAN & NOTES

KAMEHAMEHA HIGHWAY DRAINAGE IMP.
In The Vicinity of Polinalina Road
Proj. No. 83D-01-98

Scale: 1"=40'

Date: Oct. 1999

SHEET No. H1 OF 14 SHEETS



Sta. 833+05
Construct: Type "1" Concrete Headwall
Type "2" Concrete Headwall
Reinforced Concrete Jacket for 30" Water Line
GRP Swale
Install: 8'x2'-6" Precast Concrete Box Culvert

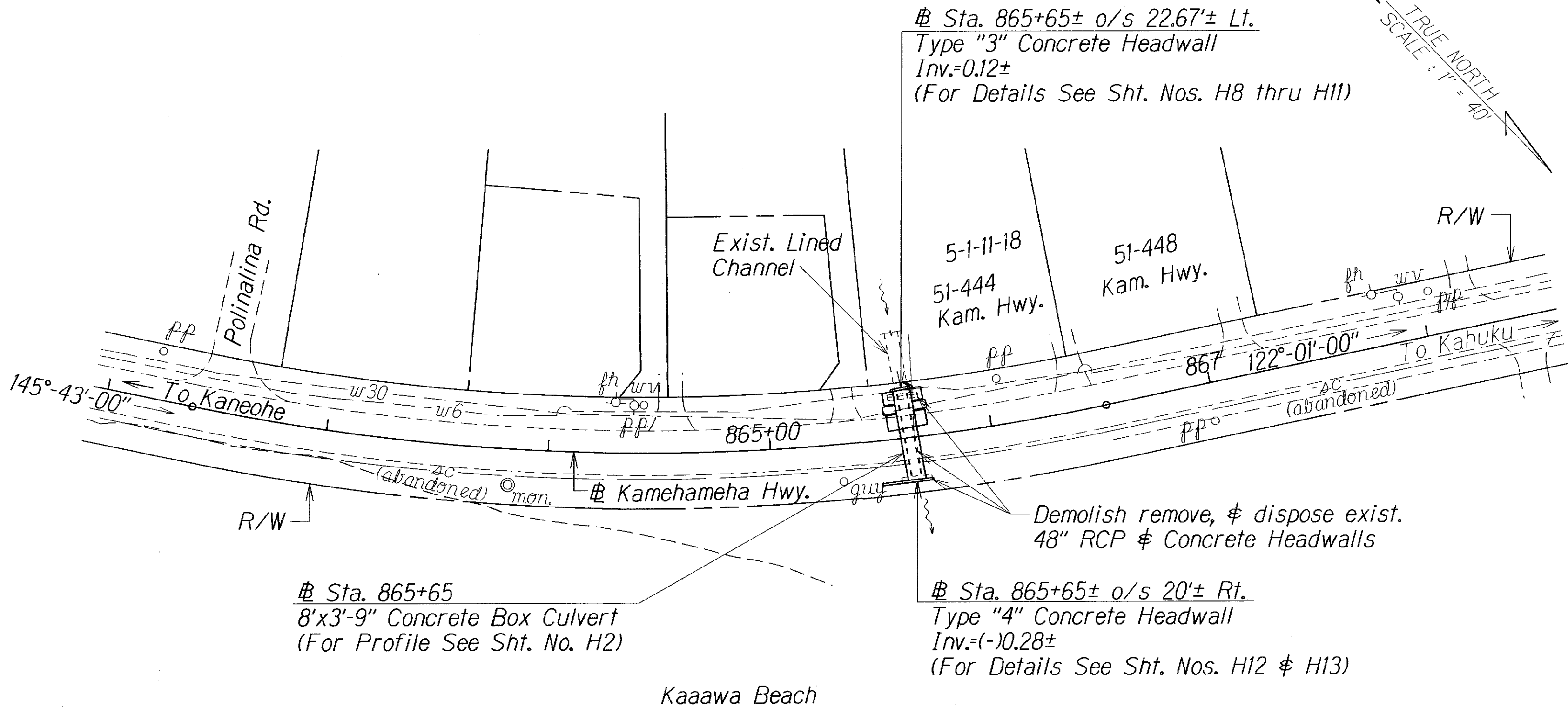
Estimated Quantities	
Structure Excavation	= 100 C.Y.
Structure Backfill	= 39 C.Y.
Plant Mix Glassphalt	
Concrete Basecourse	= 19 Tons
A.C. Pav't, Mix No. IV	= 27 Tons
Bedcourse Material	= 13 C.Y.
8'x2'-6" Precast Modules	= 3 EA.
Type "1" Concrete Headwall	= 1 EA.
Type "2" Concrete Headwall	= 1 EA.
Reinforced Concrete Jacket for 30" Water Line	= 1 EA.
Grouted Rubble Paving	= 7 C.Y.

PLAN

APPROVED:

CHIEF, PLANNING AND ENGINEERING DIVISION,
BOARD OF WATER SUPPLY,
CITY AND COUNTY OF HONOLULU

DATE



Sta. 865+65
8'x3'-9" Concrete Box Culvert
(For Profile See Sht. No. H2)

Sta. 865+65± o/s 20± Rt.
Type "4" Concrete Headwall
Inv.=(-)0.28±
(For Details See Sht. Nos. H12 & H13)

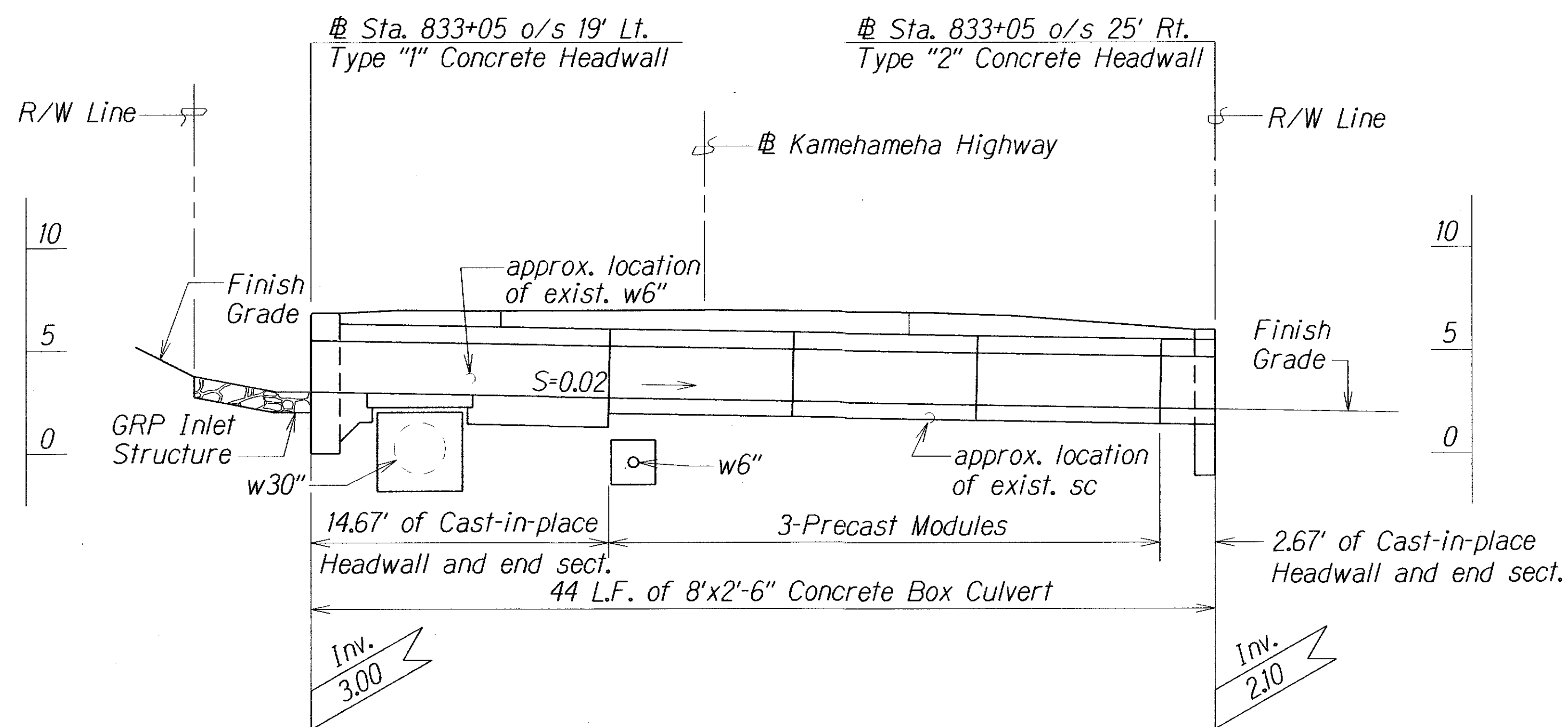
Sta. 865+65
Construct: Type "3" Concrete Headwall
Type "4" Concrete Headwall
Reinforced Concrete Jacket for 30" Water Line
Install: 8'x3'-9" Precast Concrete Box Culvert

Estimated Quantities	
Structure Excavation	= 77 C.Y.
Structure Backfill	= 51 C.Y.
Plant Mix Glassphalt	
Concrete Basecourse	= 23 Tons
A.C. Pav't, Mix No. IV	= 26 Tons
Bedcourse Material	= 12 C.Y.
8'x3'-9" Precast Modules	= 2 EA.
Type "3" Concrete Headwall	= 1 EA.
Type "4" Concrete Headwall	= 1 EA.
Reinforced Concrete Jacket for 30" Water Line	=

"AS-BUILT"

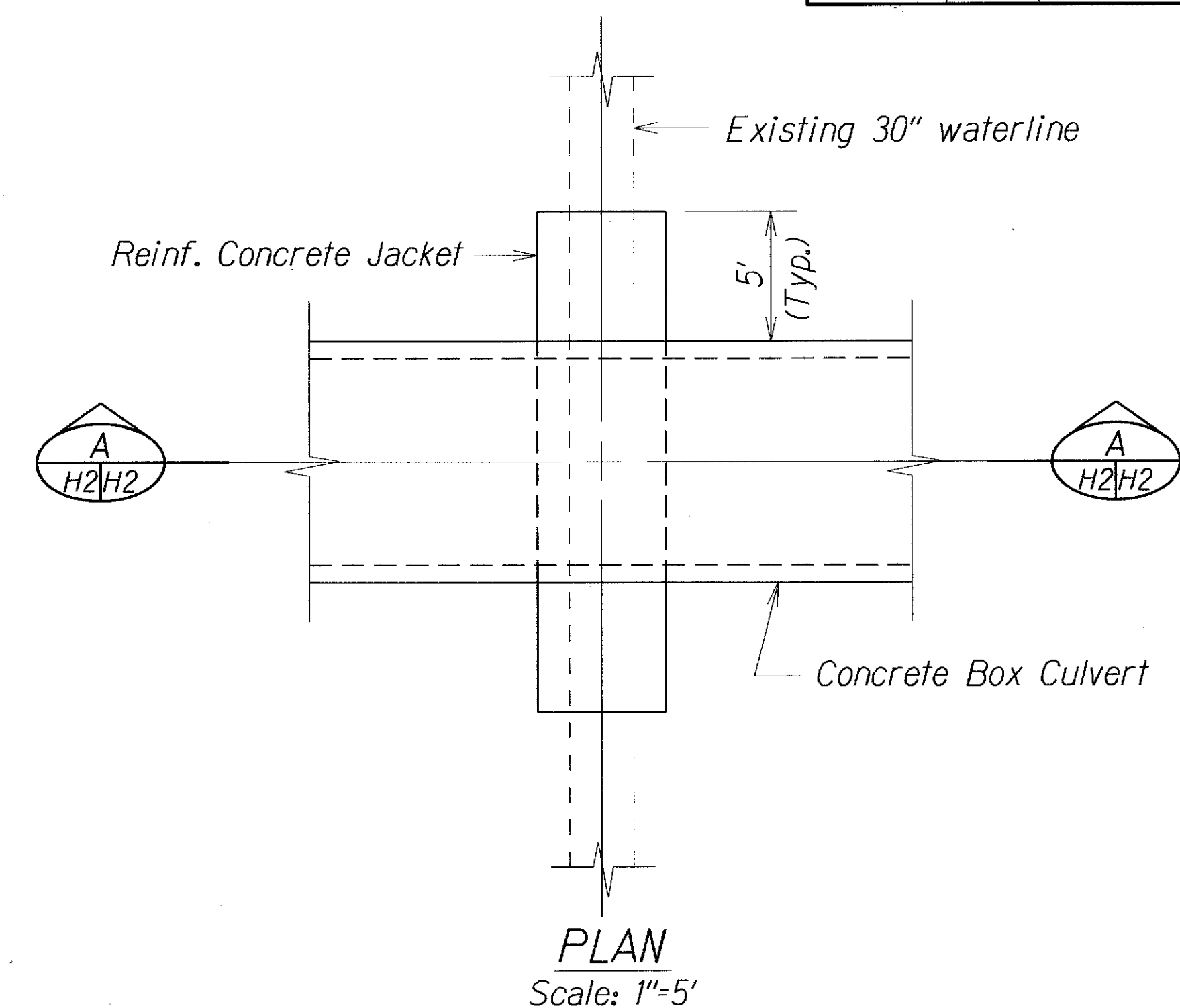
ADD. 4

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83D-01-98	2000	5	19



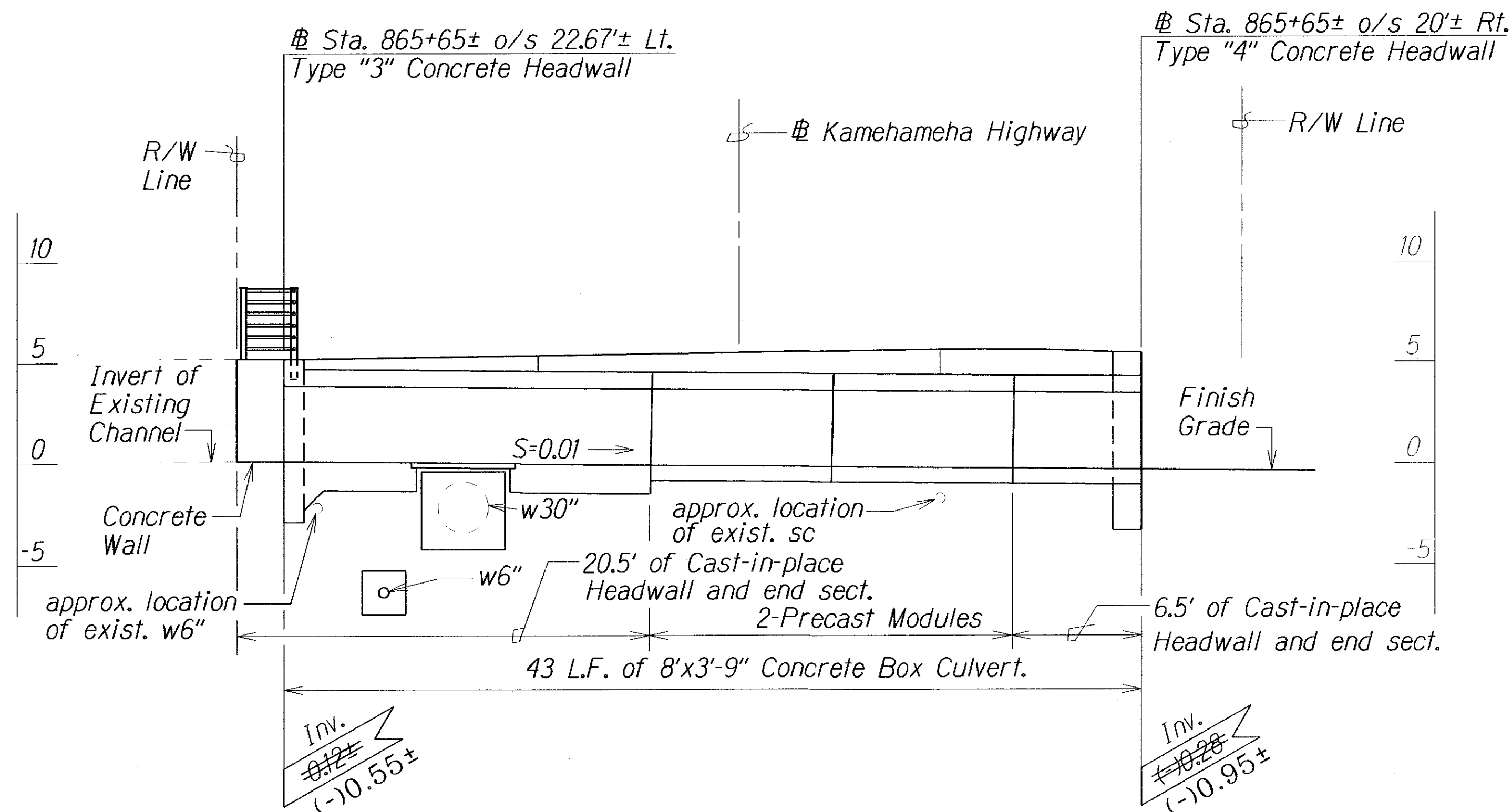
PROFILE OF 8'X2'-6" CONCRETE BOX CULVERT AT KAMEHAMEHA HWY. STA. 833+05

Scale: 1"=5'



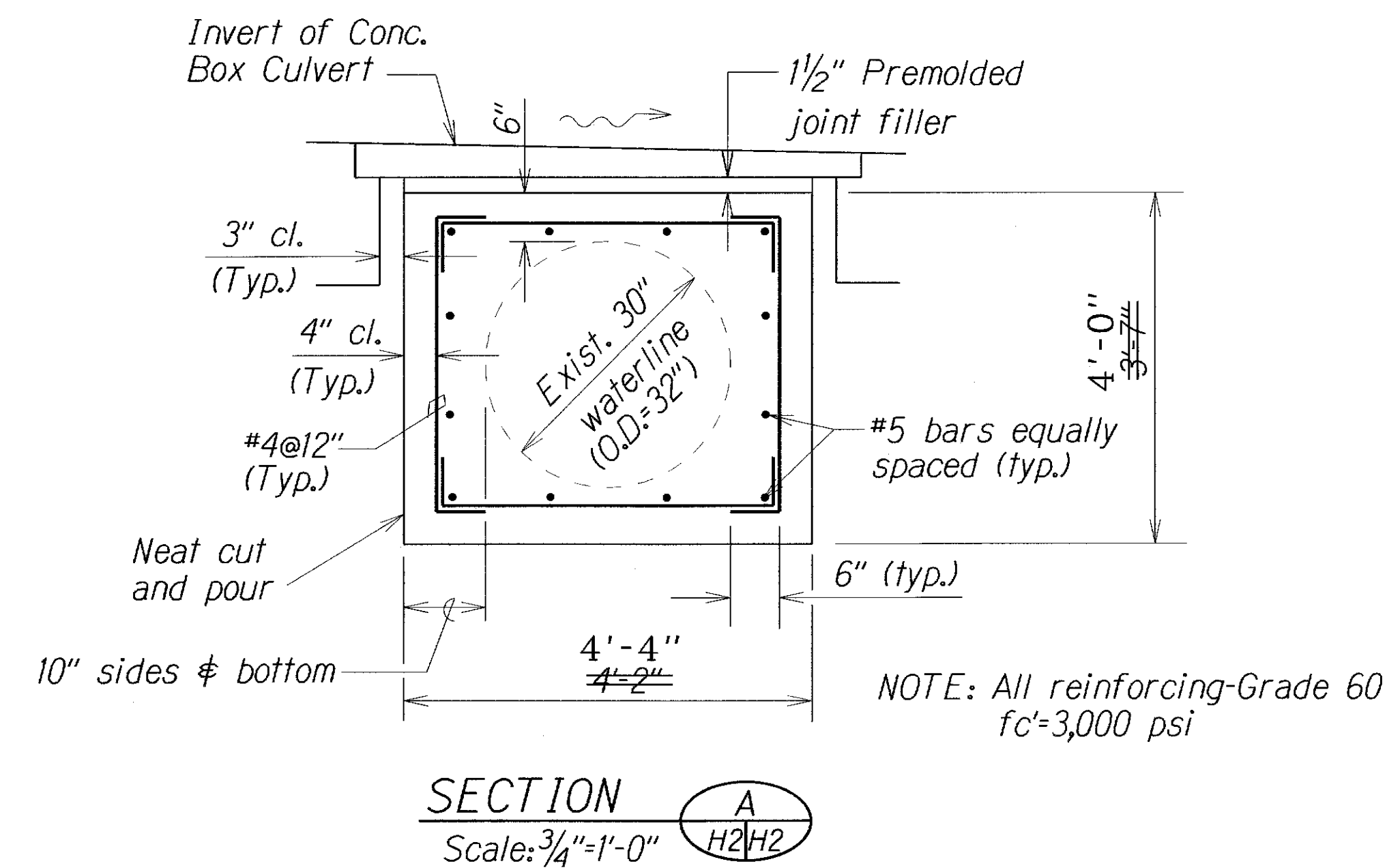
PLAN

Scale: 1"=5'



PROFILE OF 8'X3'-9" CONCRETE BOX CULVERT AT KAMEHAMEHA HWY. STA. 865+65±

Scale: 1"=5'



SECTION

Scale: 3/4"=1'-0"

TYP. DETAIL OF CONC. JACKET
FOR 30" WATER LINE

7/05/00 Revised Concrete Jacket Detail

DATE REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAINAGE PROFILE

KAMEHAMEHA HIGHWAY DRAINAGE IMP.
In The Vicinity of Polinalina Road
Proj. No. 83D-01-98

Scale: As Shown Date: Oct. 1999

SHEET No. H2 OF 14 SHEETS

APPROVED:

CHIEF, PLANNING AND ENGINEERING DIVISION,
BOARD OF WATER SUPPLY,
CITY AND COUNTY OF HONOLULU

DATE

LEGEND FOR AS-BUILT POSTINGS

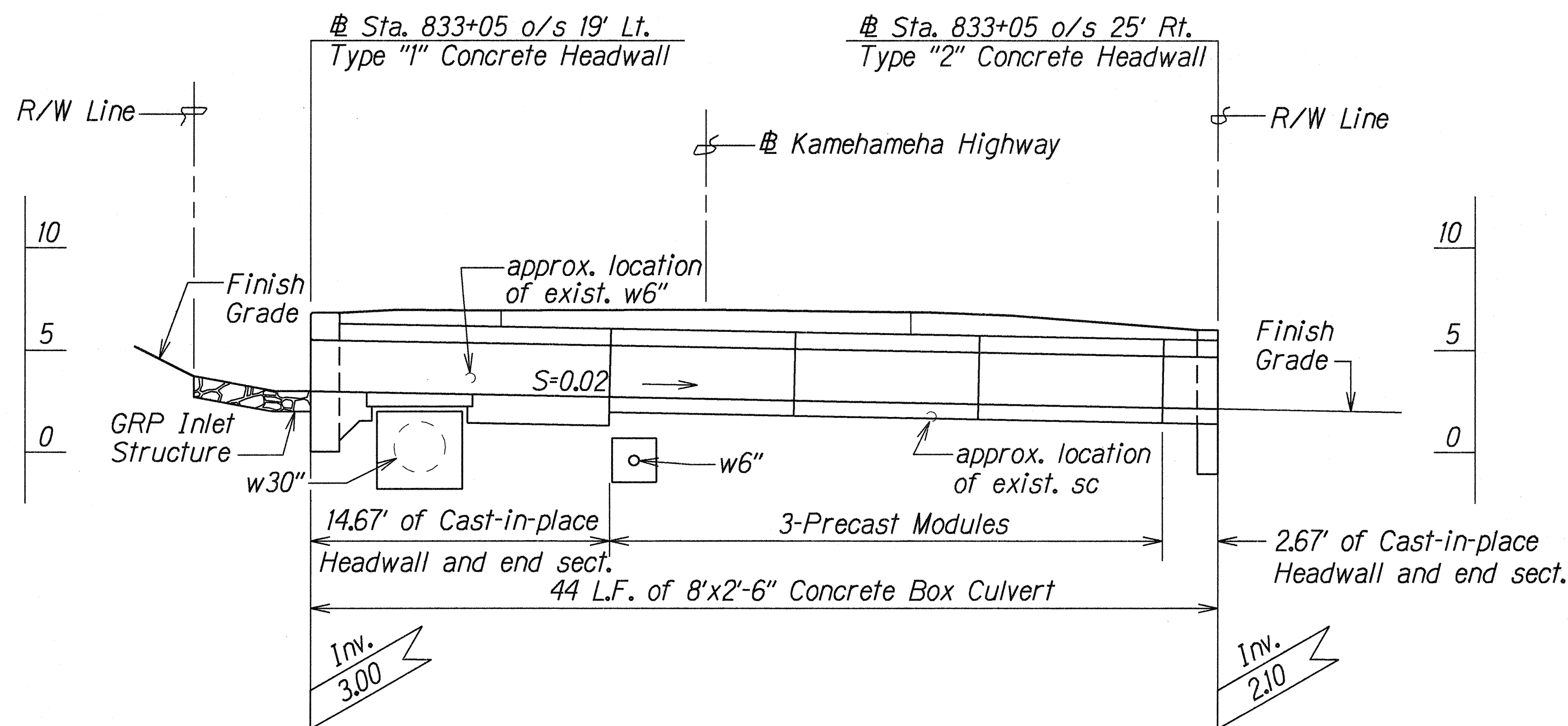
~~~~~ Squiggly line for as-built deletion  
--- Double line for as-built deletion  
Roadway Text for as-built posting

"AS-BUILT"

C.O. 5

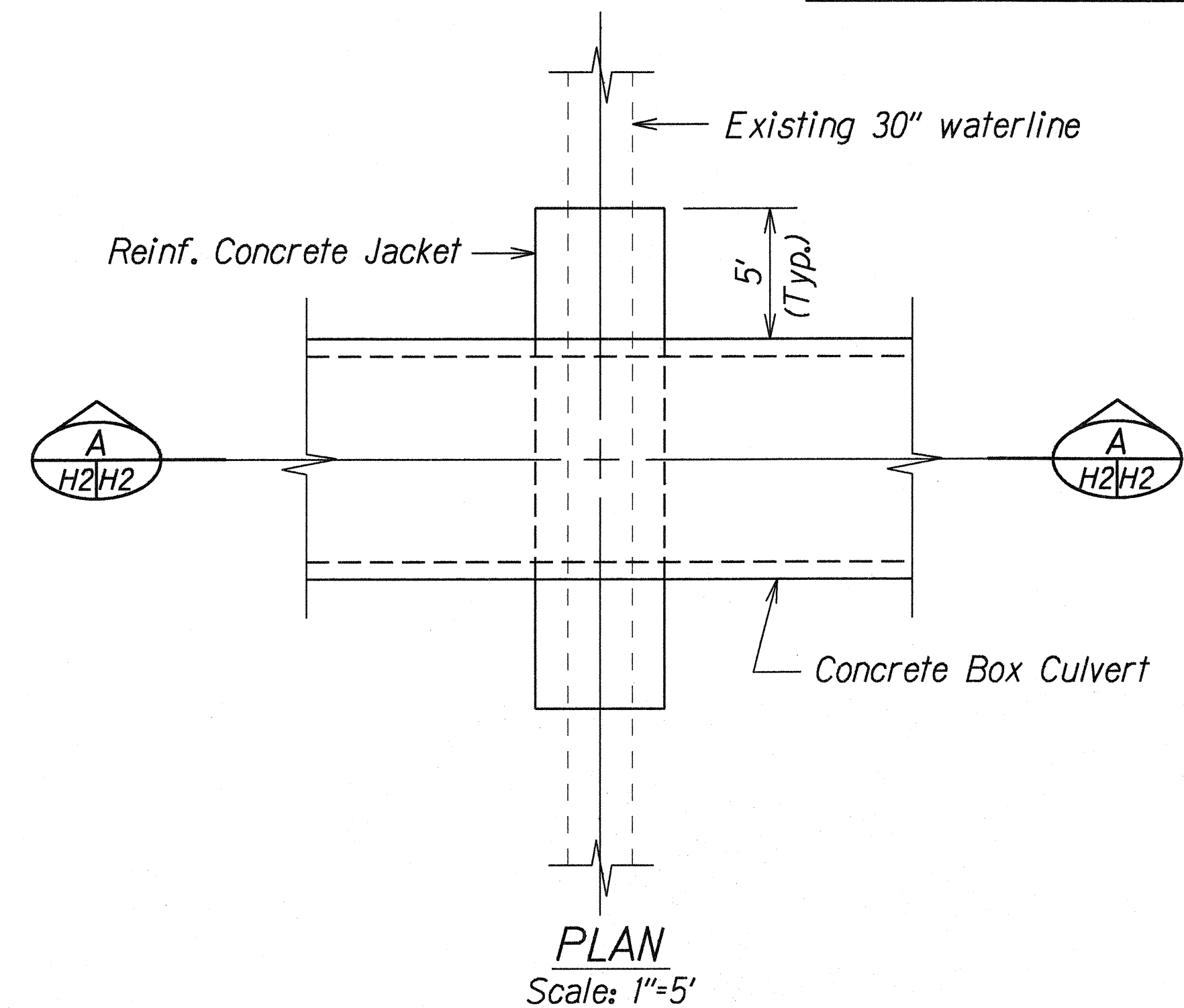
|               |      |
|---------------|------|
| ORIGINAL PLAN | DATE |
| DRAWN BY      | DATE |
| DESIGNED BY   | DATE |
| CHECKED BY    | DATE |
| NOTED BY      | DATE |
| DATE          | DATE |

| FED. ROAD DIST. NO. | STATE | PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|-----------|-------------|-----------|--------------|
| HAWAII              | HAW.  | 83D-01-98 | 2000        | 5         | 19           |

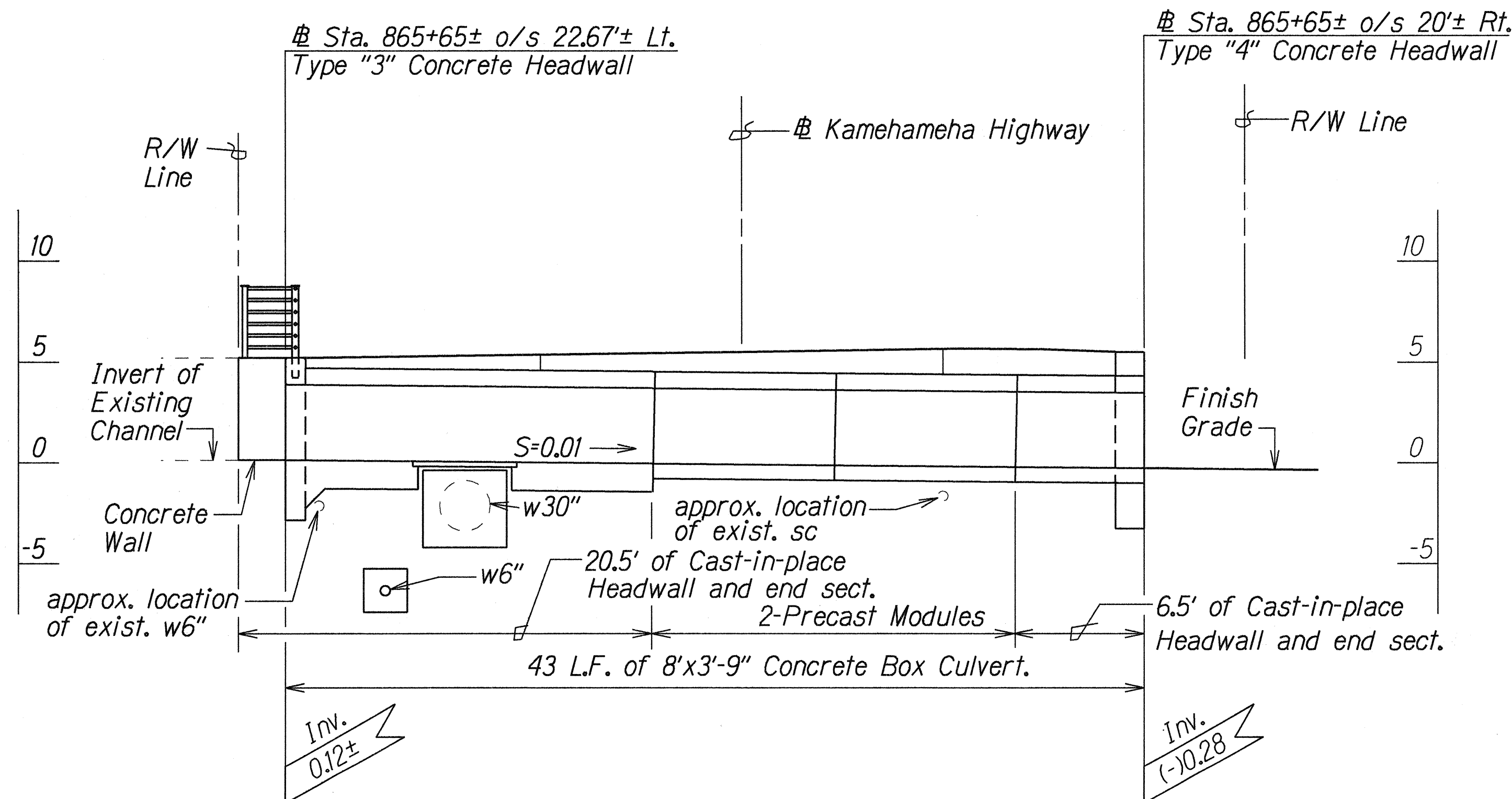


PROFILE OF 8'X2'-6" CONCRETE BOX CULVERT AT KAMEHAMEHA HWY. STA. 833+05

Scale: 1"=5'

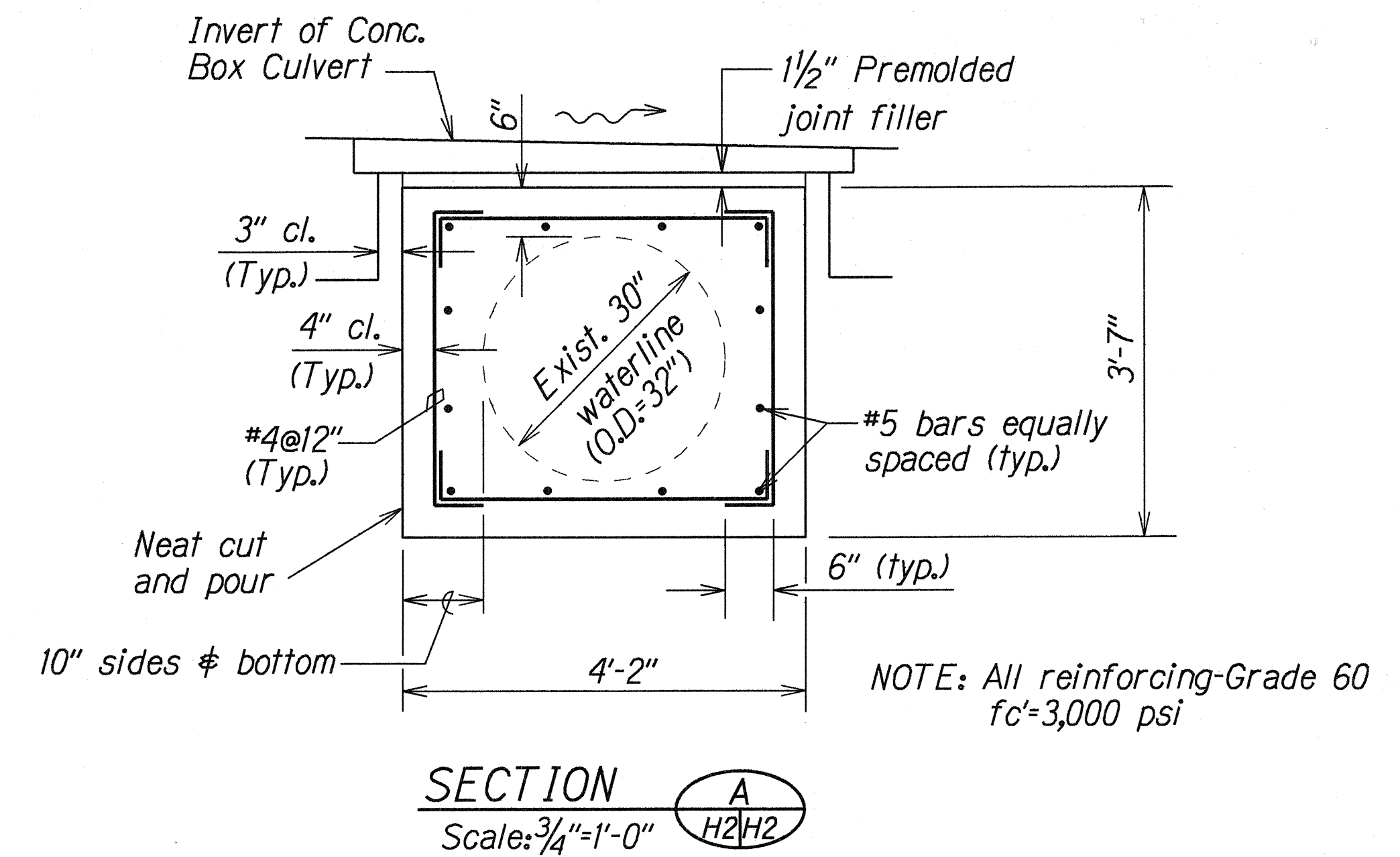


PLAN  
Scale: 1"=5'



PROFILE OF 8'X3'-9" CONCRETE BOX CULVERT AT KAMEHAMEHA HWY. STA. 865+65±

Scale: 1"=5'



TYP. DETAIL OF CONC. JACKET  
FOR 30" WATER LINE

7/05/00 Revised Concrete Jacket Detail

DATE REVISION

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

**DRAINAGE PROFILE**

KAMEHAMEHA HIGHWAY DRAINAGE IMP.  
In The Vicinity of Polinalina Road  
Proj. No. 83D-01-98

Scale: As Shown Date: Oct. 1999

SHEET No. H2 OF 14 SHEETS

C.O. 5

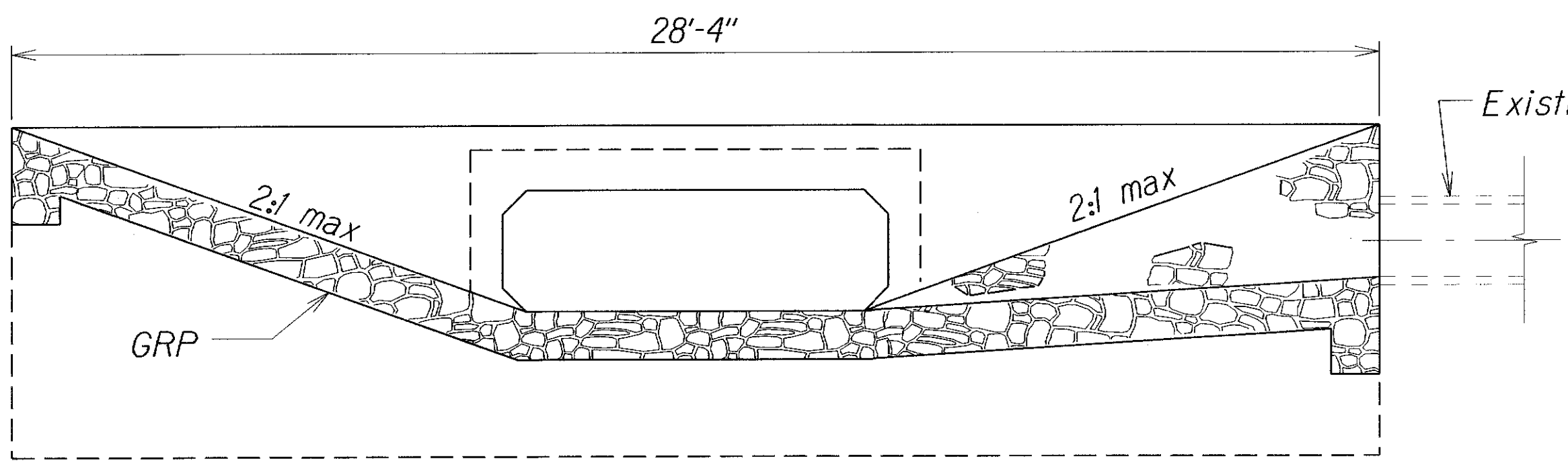
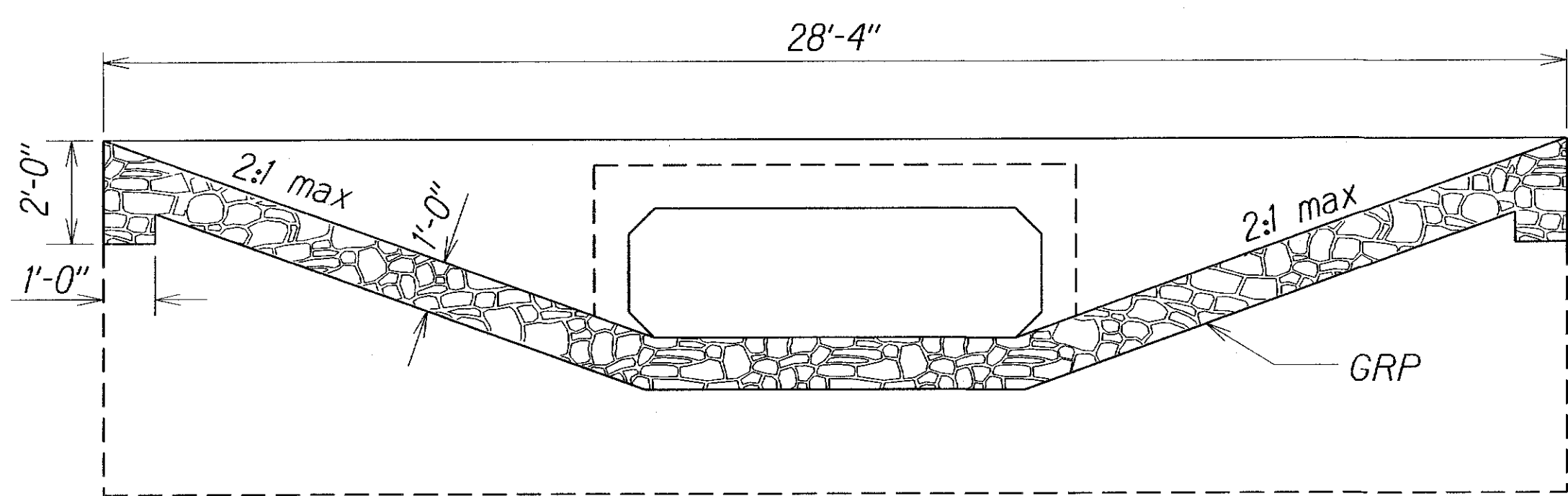
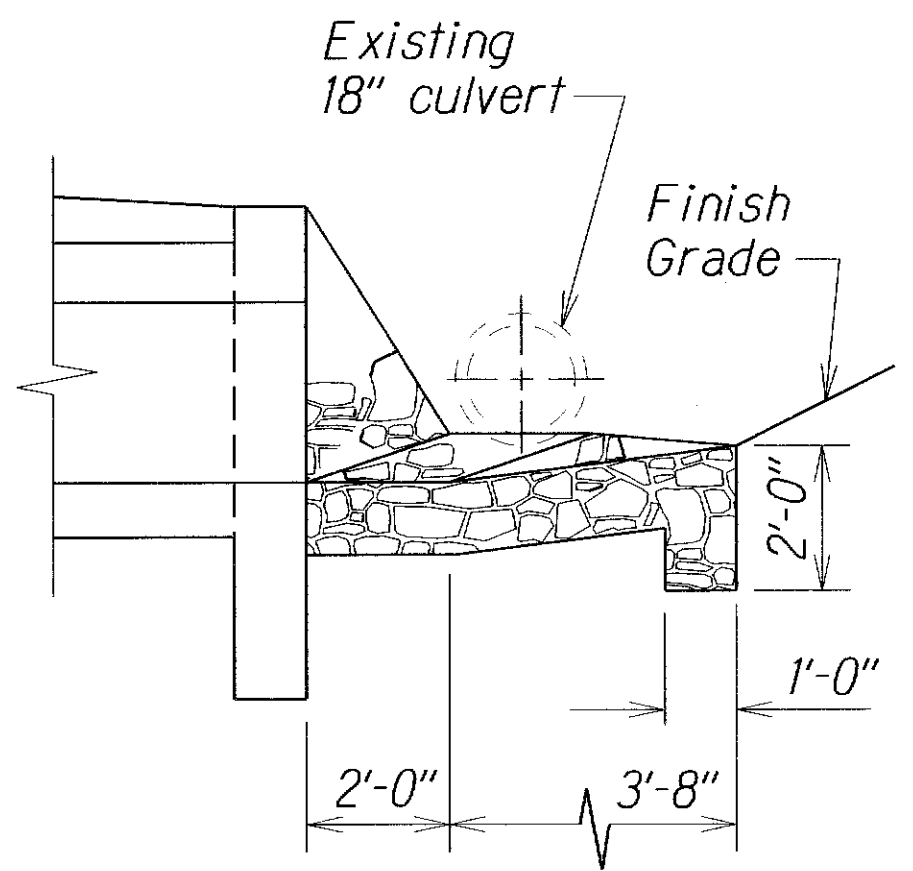
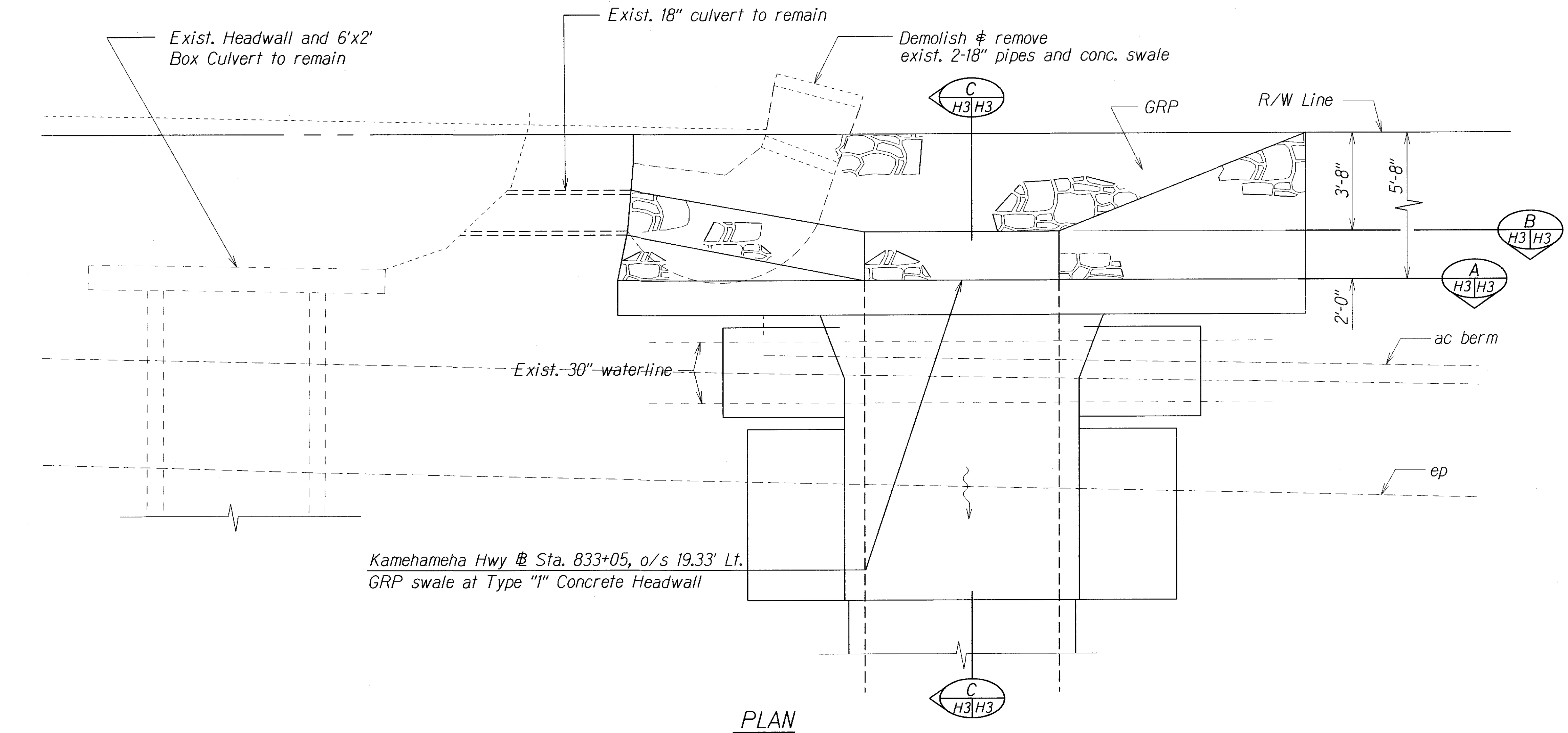
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|------------------------------------|------|
| ORIGINAL PLAN                      | DATE |
| DRAWN BY: Brian Loh # Russell Sato |      |
| TRACED BY: Brian Loh               |      |
| QUANTITIES BY: Brian Loh           |      |
| CHECKED BY: Brian Loh              |      |

APPROVED:

*Michael H. Lee*  
CHIEF, PLANNING AND ENGINEERING DIVISION,  
BOARD OF WATER SUPPLY,  
CITY AND COUNTY OF HONOLULU

7/1/00  
DATE

| FED. ROAD DIST. NO. | STATE | PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|-----------|-------------|-----------|--------------|
| HAWAII              | HAW.  | 83D-01-98 | 2000        | C.O. 6    | 19           |



# DETAILS OF GRP SWALE AT TYPE "I" CONCRETE HEADWALL AT KAMEHAMEHA HWY. @ STA. 833+05 O/S 19' LT.

| LEGEND FOR AS-BUILT POSTINGS |                                     |
|------------------------------|-------------------------------------|
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|                              | Double line for as-built deletion   |
| Roadway                      | Text for as-built posting           |

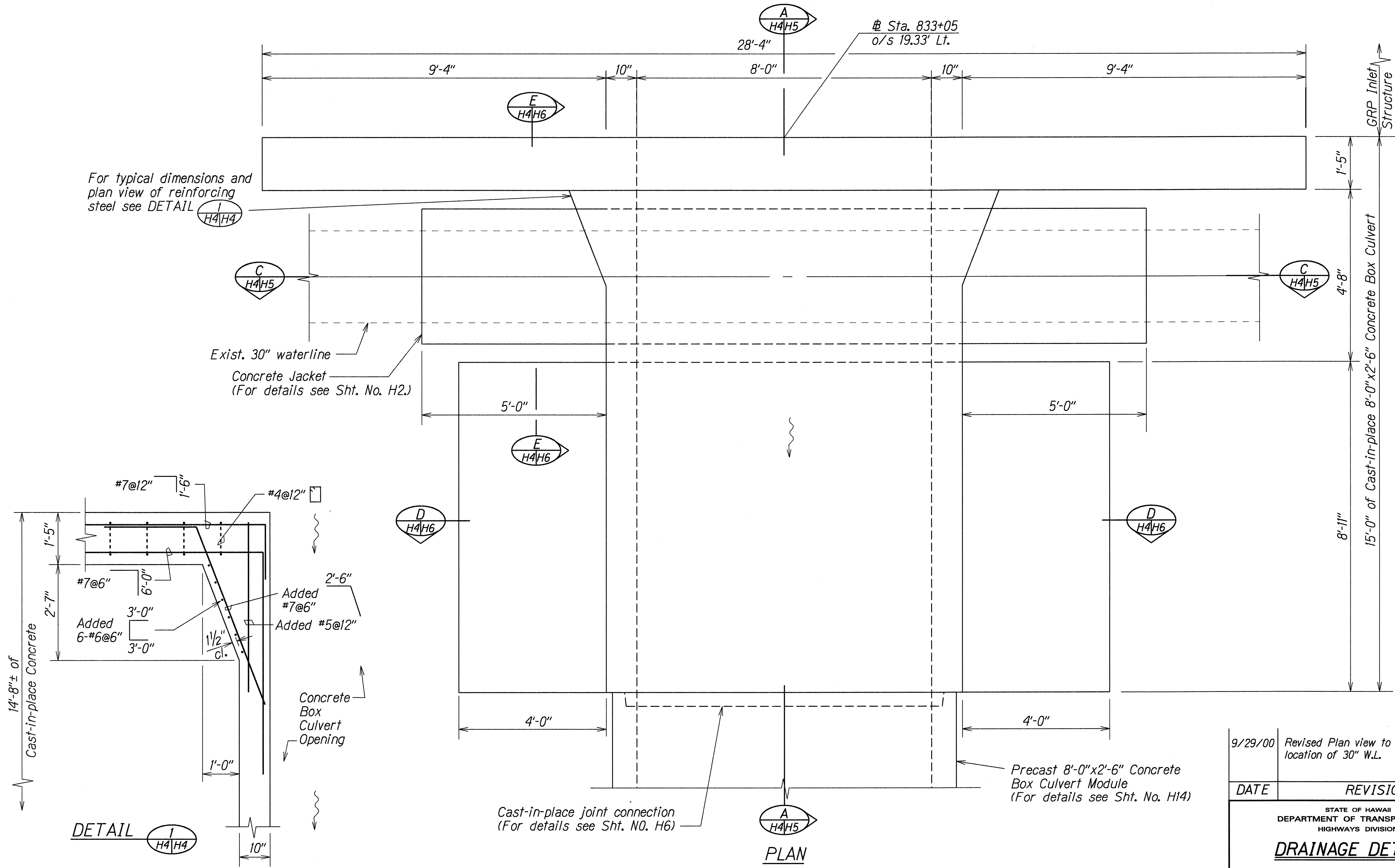
| 9/29/00                                                                                                                                                                                                                                                                                 | Revised GRP to reflect field location of 30" W.L. |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|
| DATE                                                                                                                                                                                                                                                                                    | REVISION                                          |
| STATE OF HAWAII<br>DEPARTMENT OF TRANSPORTATION<br>HIGHWAYS DIVISION<br><b>DRAINAGE DETAILS</b><br><b>KAMEHAMEHA HIGHWAY DRAINAGE IMP.</b><br><b>In The Vicinity of Polinalina Road</b><br><b>Proj. No. 83D-01-98</b><br>Scale: 3/8"=1'-0" Date: Oct. 1999<br>SHEET No. H3 OF 14 SHEETS |                                                   |

|                   |              |
|-------------------|--------------|
| ORIGINAL PLAN     | DATE 9/16/99 |
| SURVEY PLOTTED BY |              |
| DRAWN BY          |              |
| DESIGNED BY       |              |
| CHECKED BY        |              |

"AS-BUILT"

C.O. 6

| FED. ROAD DIST. NO. | STATE | PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|-----------|-------------|-----------|--------------|
| HAWAII              | HAW.  | 83D-01-98 | 2000        | C.O. 7    | 19           |

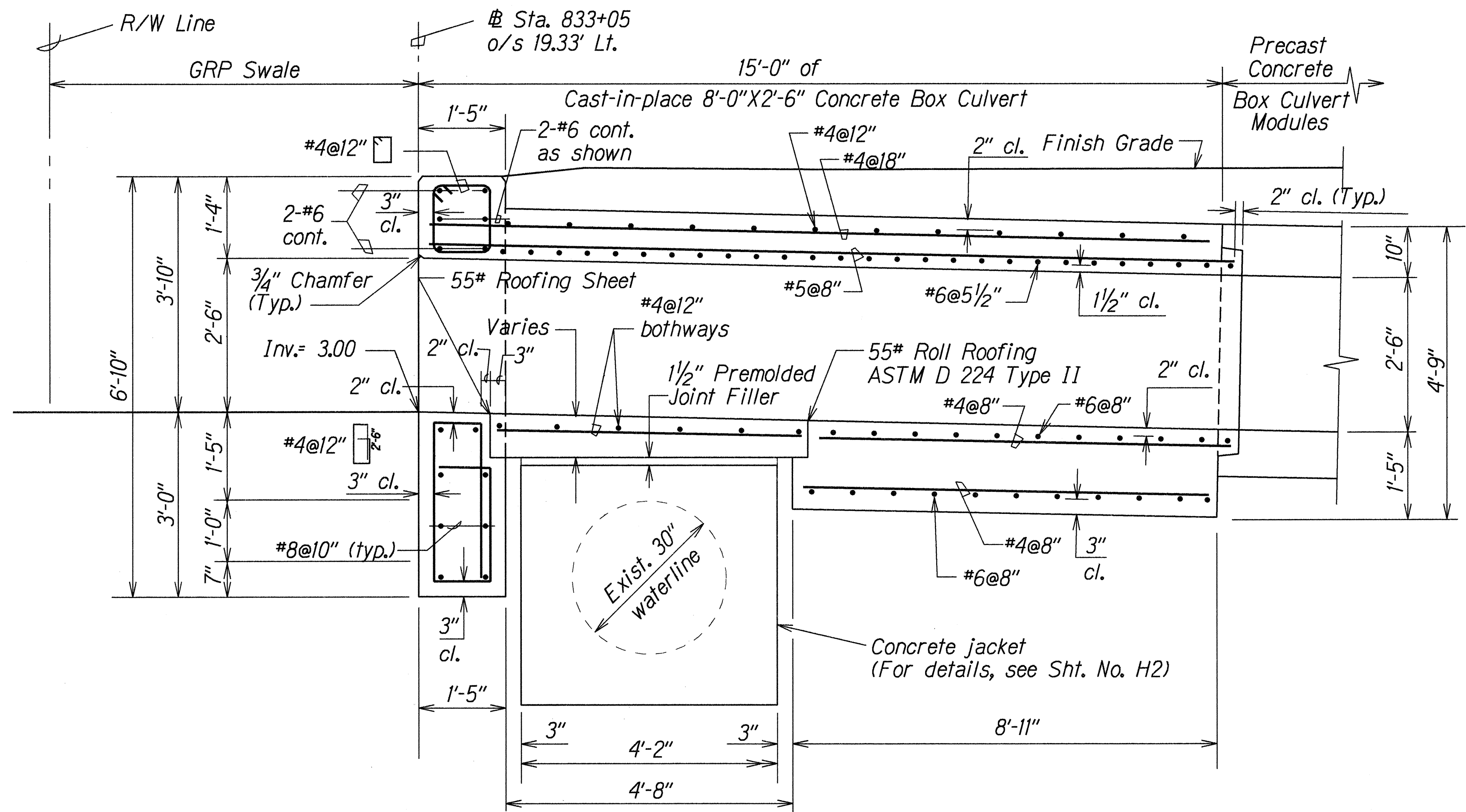


DETAILS OF TYPE "I" CONCRETE HEADWALL AT KAMEHAMEHA HWY. @ STA. 833+05 O/S 19' LT.

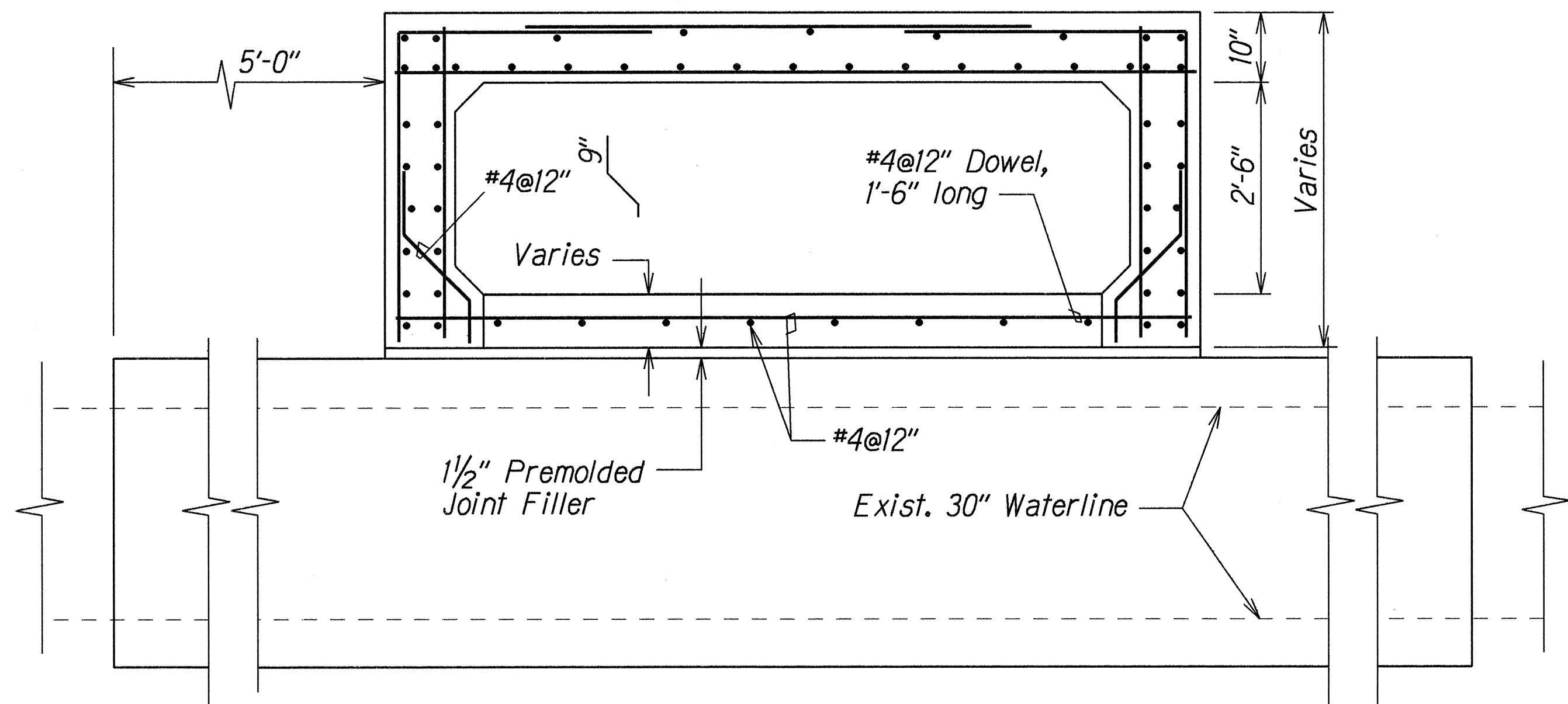
| 9/29/00                                                                                                                                                                                                                                                            | Revised Plan view to reflect field location of 30" W.L. |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------|
| DATE                                                                                                                                                                                                                                                               | REVISION                                                |
| STATE OF HAWAII<br>DEPARTMENT OF TRANSPORTATION<br>HIGHWAYS DIVISION<br><b>DRAINAGE DETAILS</b><br>KAMEHAMEHA HIGHWAY DRAINAGE IMP.<br>In The Vicinity of Polinalina Road<br>Proj. No. 83D-01-98<br>Scale: 3/4"=1'-0" Date: Oct. 1999<br>SHEET No. H4 OF 14 SHEETS |                                                         |

|               |                                |          |
|---------------|--------------------------------|----------|
| ORIGINAL PLAN | SURVEY PLOTTED BY              | DATE     |
| NOTE BOOK     | DRAWN BY A. Nomura             | 10/28/99 |
| CH330daqm     | CHECKED BY C. Matsuda, B. Toda |          |
| MEMPHIS       | CHECKED BY                     |          |

| FED. ROAD DIST. NO. | STATE | PROJ. NO. | FISCAL YEAR | SHEET NO.   | TOTAL SHEETS |
|---------------------|-------|-----------|-------------|-------------|--------------|
| HAWAII              | HAW.  | 83D-01-98 | 2000        | C.O. ADD. 8 | 19           |



SECTION A  
H4/H5



SECTION C  
H4/H5

APPROVED:

CHIEF, PLANNING AND ENGINEERING DIVISION,  
BOARD OF WATER SUPPLY,  
CITY AND COUNTY OF HONOLULU

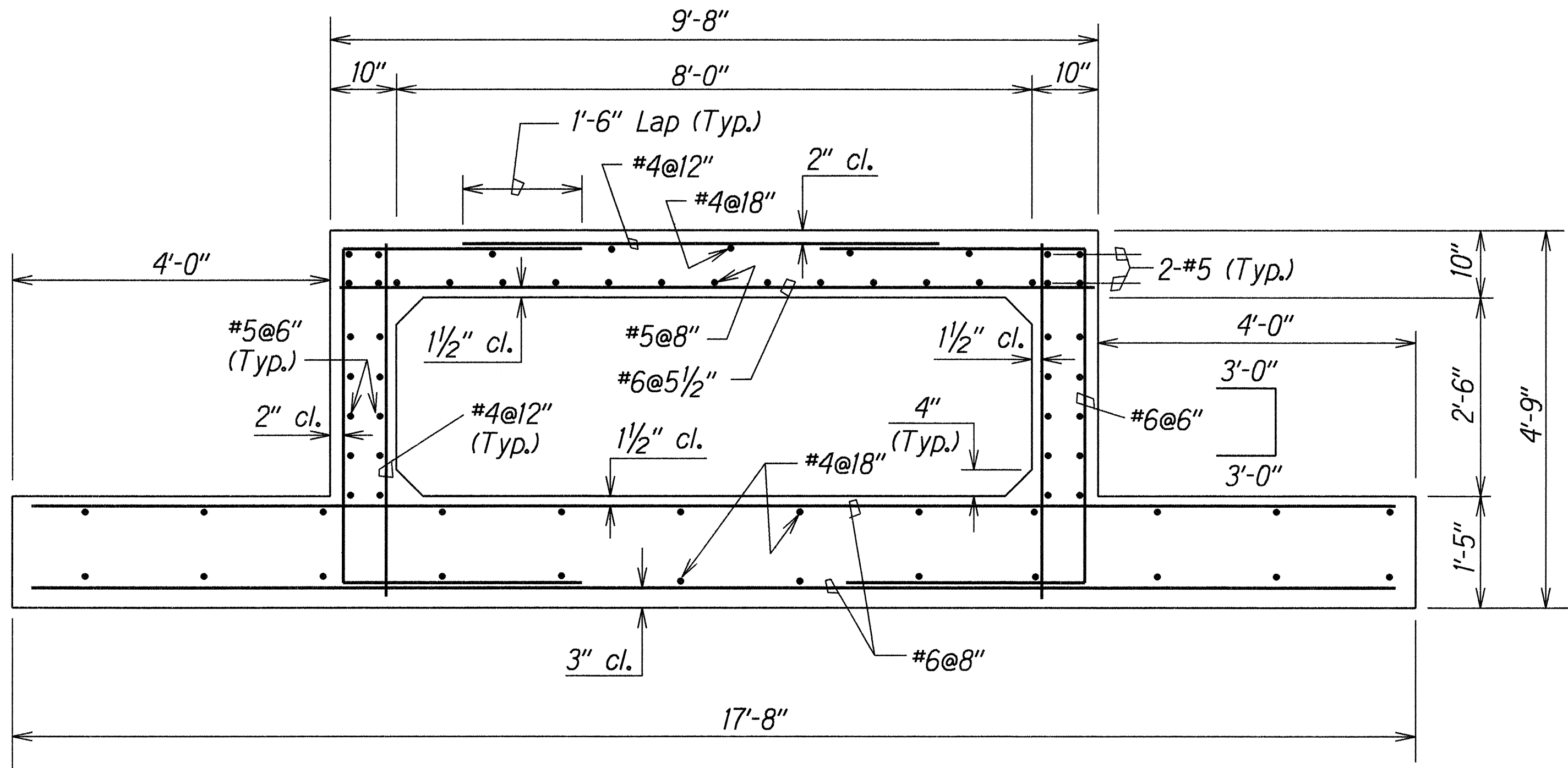
DATE

|         |                                                                                                   |
|---------|---------------------------------------------------------------------------------------------------|
| 9/29/00 | Revised Sec. A to reflect field location of 30" W.L.                                              |
| 7/05/00 | Revised rebar cl. in Sec. A # B<br>Revised bottom slab in Sec. A # C<br>Added BWS signature block |
| 1/25/00 | Revised conc. cover at 3" slab<br>Revised rebars & dimen. in Sec. B<br>Added Inlet Invert         |

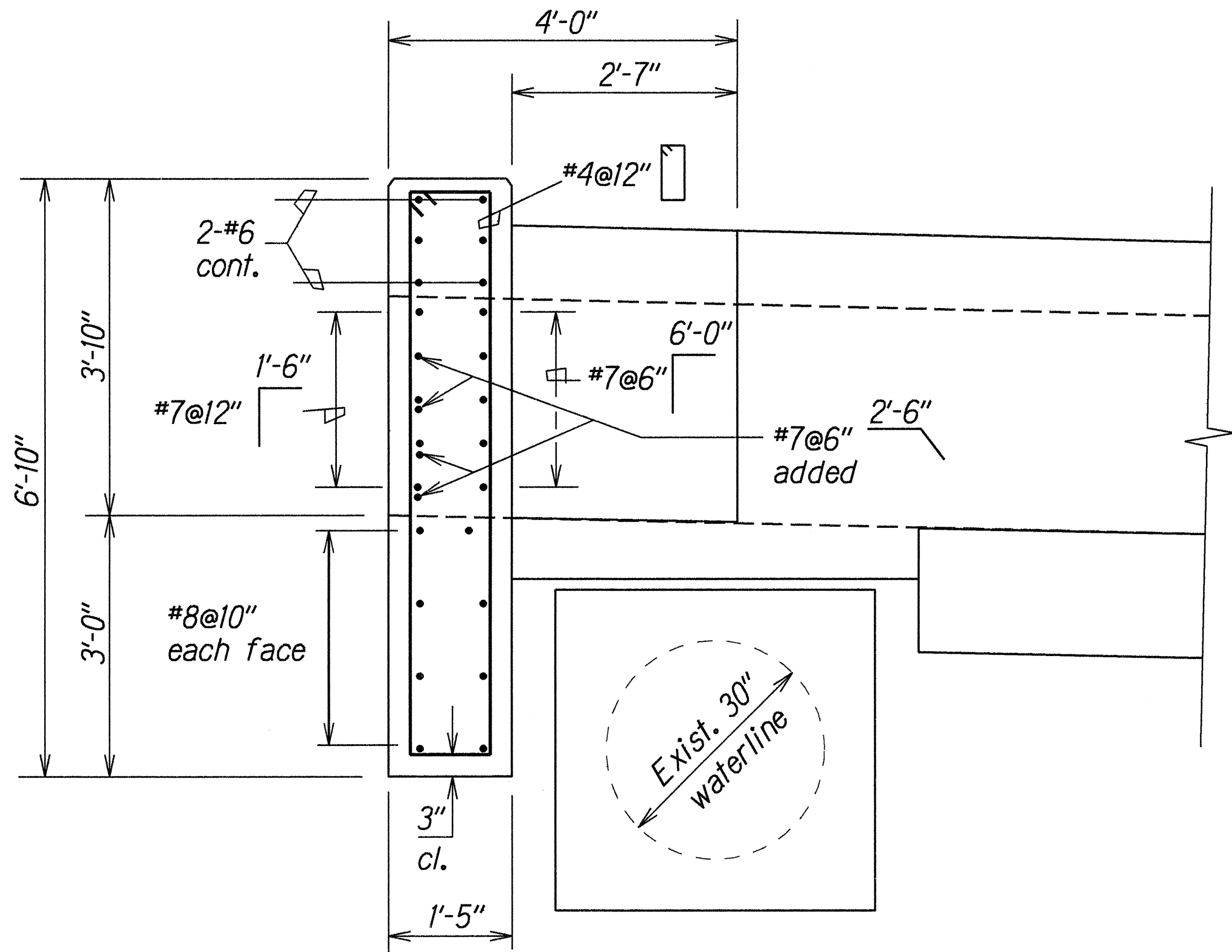
| DATE                                                                                                                                                                                                                                                                                    | REVISION |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| STATE OF HAWAII<br>DEPARTMENT OF TRANSPORTATION<br>HIGHWAYS DIVISION<br><b>DRAINAGE DETAILS</b><br><b>KAMEHAMEHA HIGHWAY DRAINAGE IMP.</b><br><b>In The Vicinity of Polinalina Road</b><br><b>Proj. No. 83D-01-98</b><br>Scale: 3/4"=1'-0" Date: Oct. 1999<br>SHEET No. H5 OF 14 SHEETS |          |

DETAILS OF TYPE "I" CONCRETE HEADWALL AT KAMEHAMEHA HWY. @ STA. 833+05 O/S 19' LT.

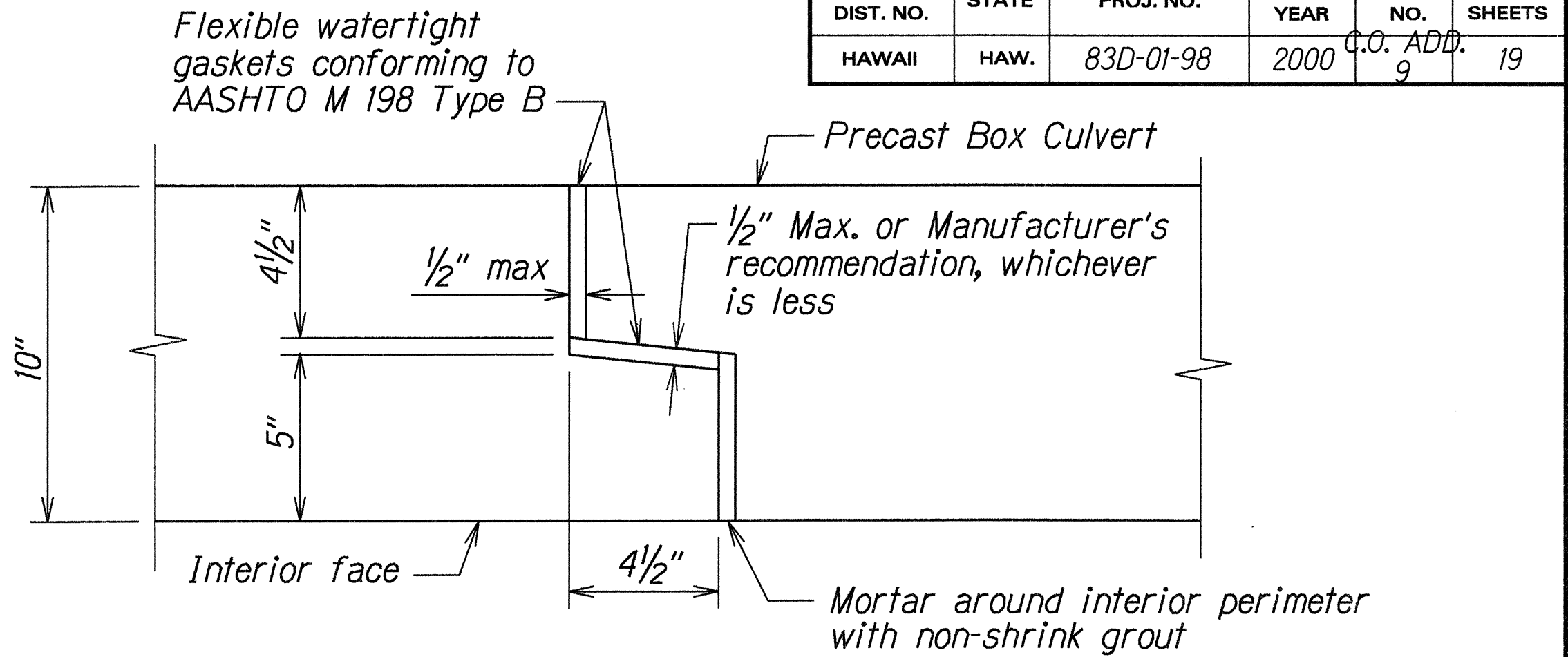
| FED. ROAD DIST. NO. | STATE | PROJ. NO. | FISCAL YEAR | SHEET NO.   | TOTAL SHEETS |
|---------------------|-------|-----------|-------------|-------------|--------------|
| HAWAII              | HAW.  | 83D-01-98 | 2000        | C.O. ADD. 9 | 19           |



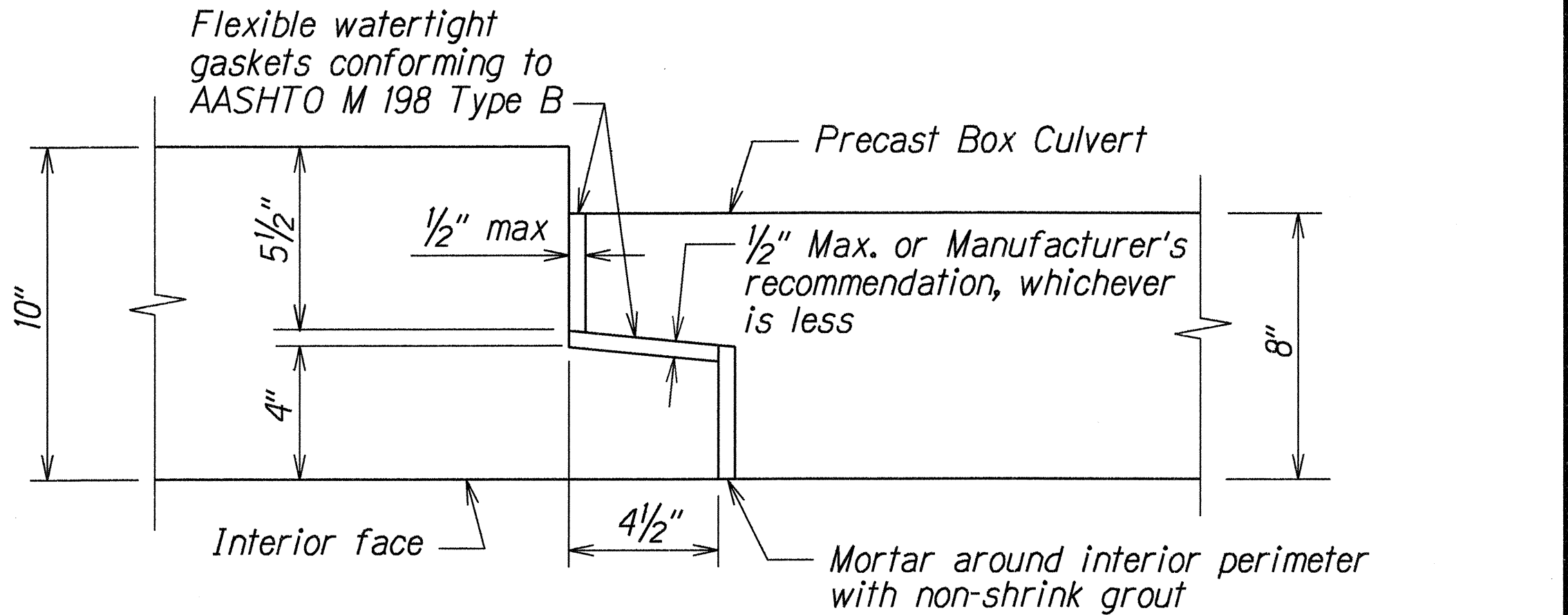
SECTION D  
H4 H6



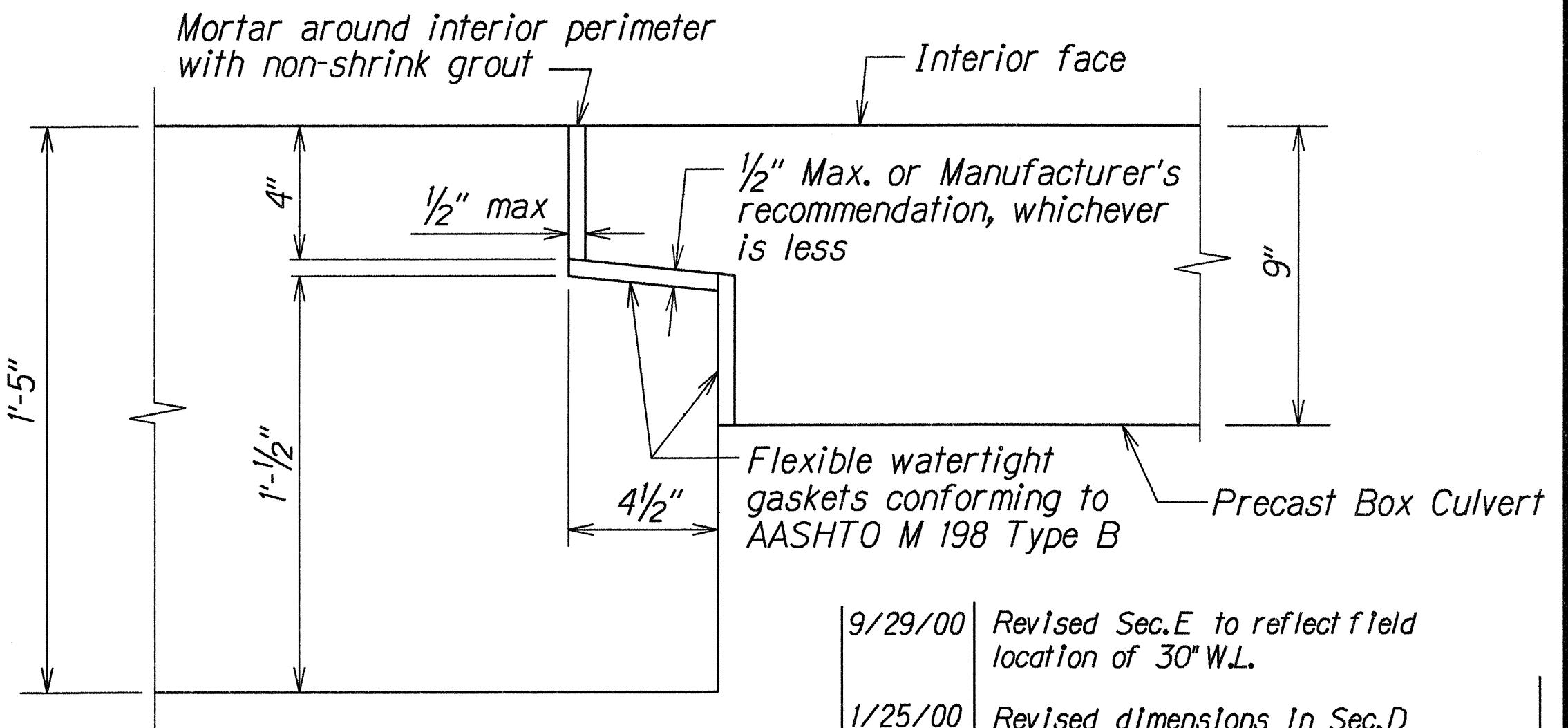
SECTION E  
H4 H6



TOP SLAB JOINT



WALL JOINT



BOTTOM SLAB JOINT

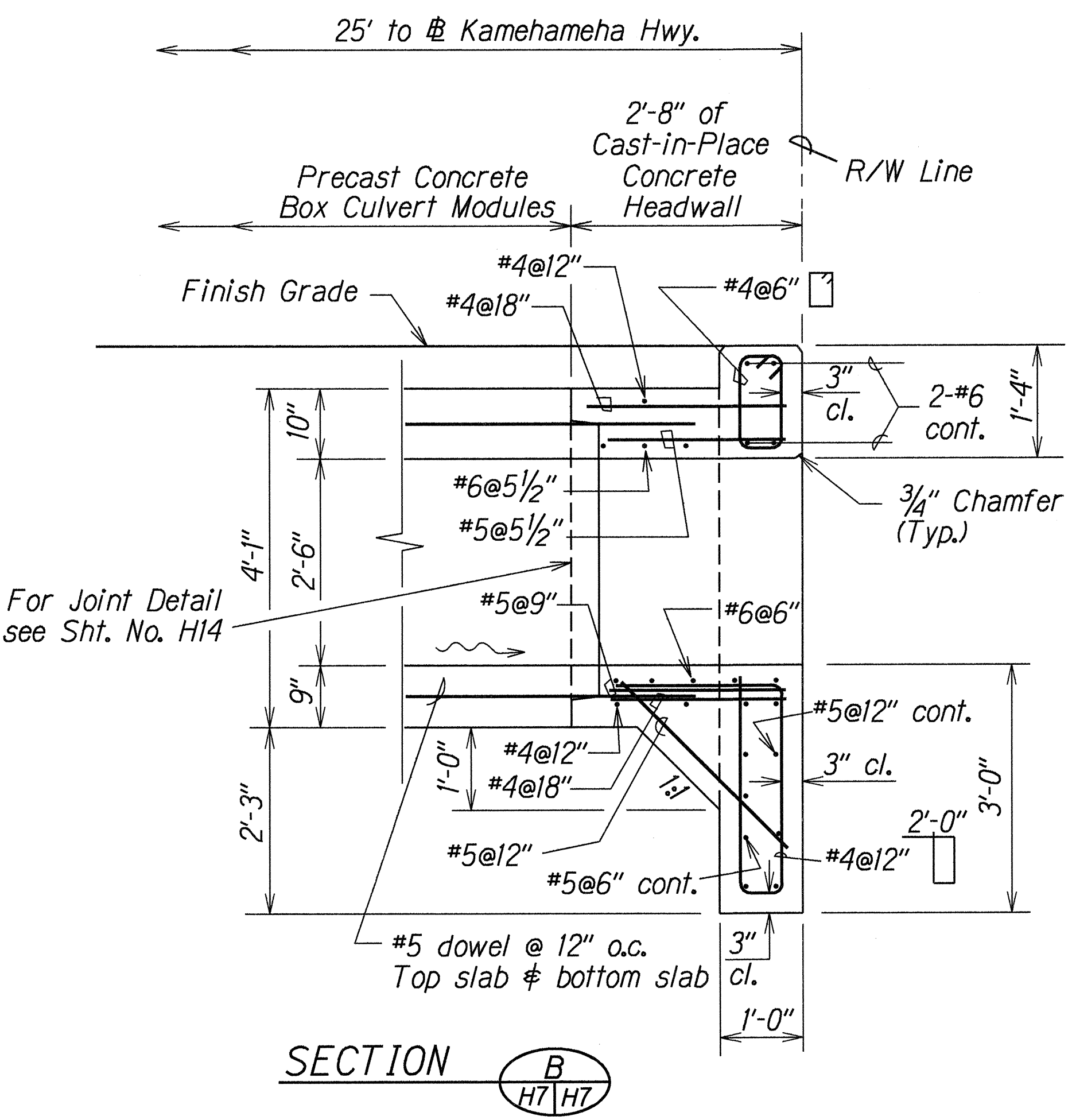
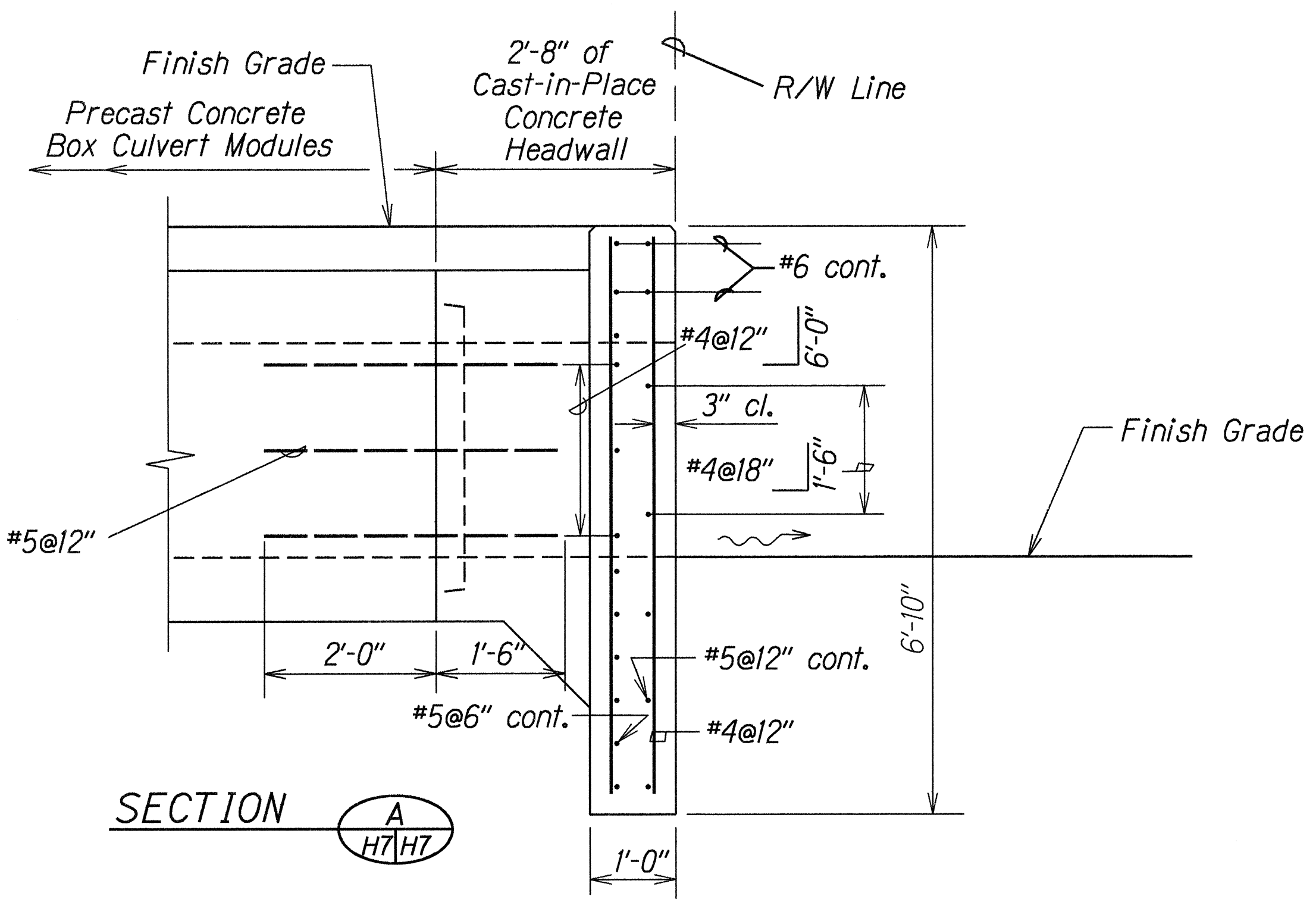
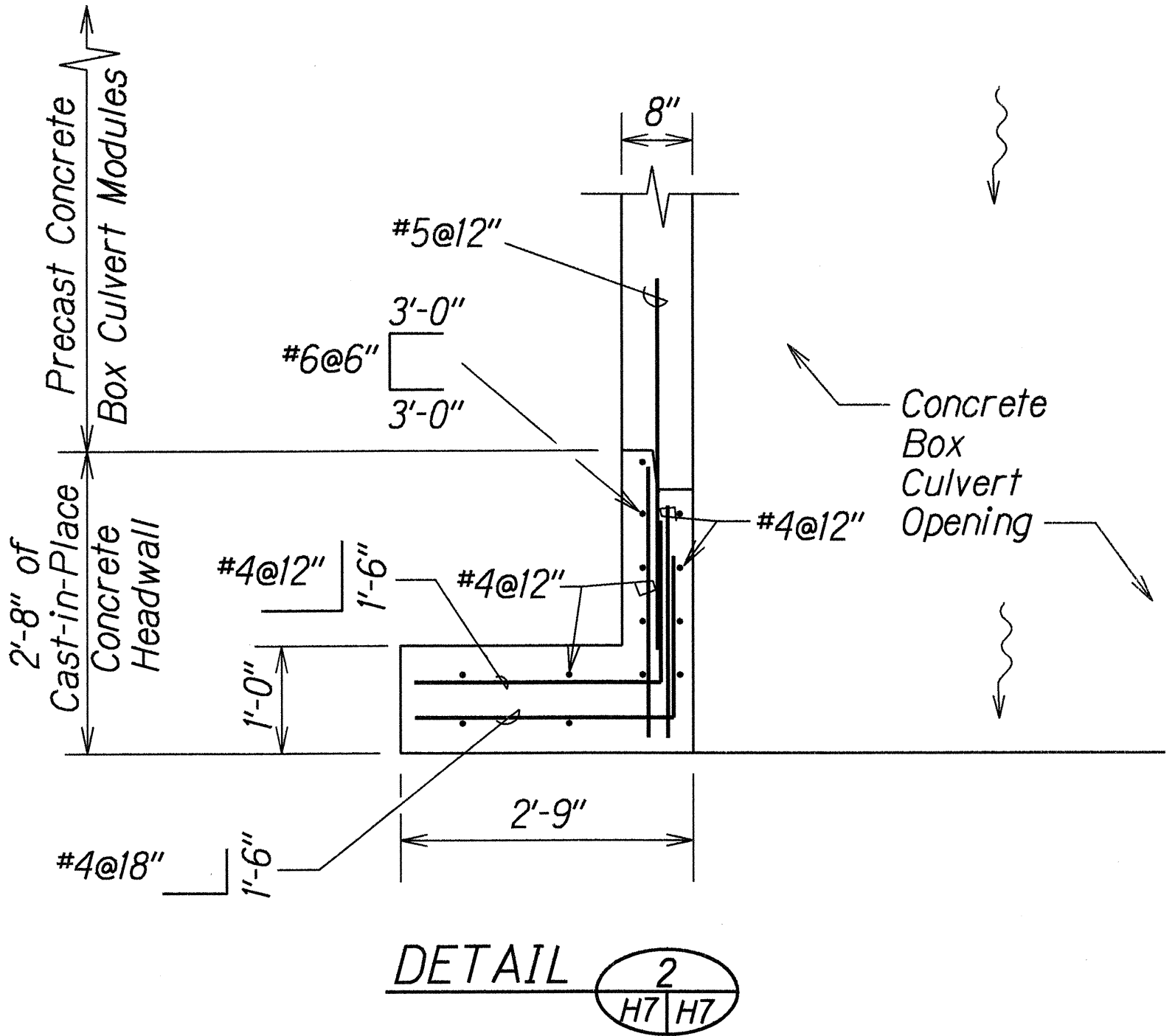
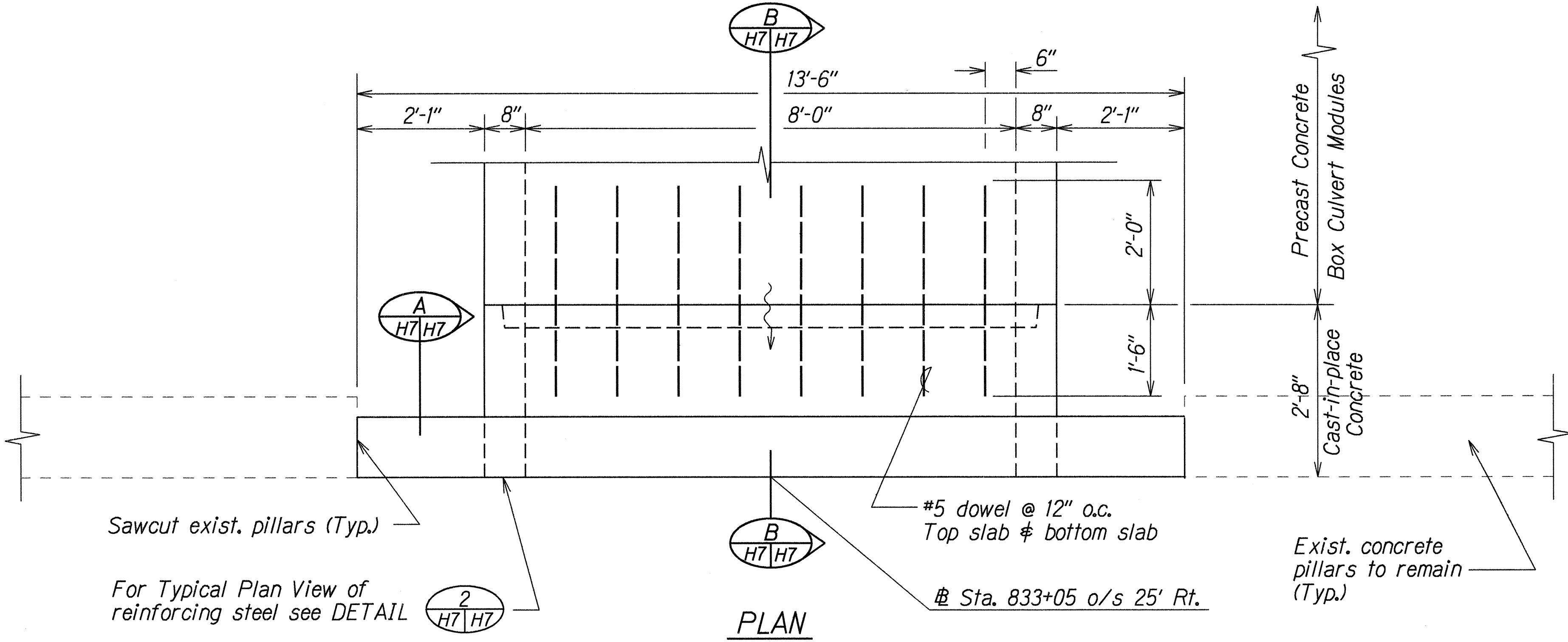
JOINT DETAIL FOR  
CAST-IN-PLACE TO  
PRECAST CONNECTION

Scale: 3/4"=1'-0"

| 9/29/00                                                                                       | Revised Sec.E to reflect field location of 30" W.L. |
|-----------------------------------------------------------------------------------------------|-----------------------------------------------------|
| 1/25/00                                                                                       | Revised dimensions in Sec.D                         |
| DATE                                                                                          | REVISION                                            |
| STATE OF HAWAII<br>DEPARTMENT OF TRANSPORTATION<br>HIGHWAYS DIVISION                          |                                                     |
| <b>DRAINAGE DETAILS</b>                                                                       |                                                     |
| KAMEHAMEHA HIGHWAY DRAINAGE IMP.<br>In The Vicinity of Polinalina Road<br>Proj. No. 83D-01-98 |                                                     |
| Scale: 3/4"=1'-0"                                                                             | Date: Oct. 1999                                     |
| SHEET No. H6 OF 14 SHEETS                                                                     |                                                     |

DETAILS OF TYPE "I" CONCRETE HEADWALL AT KAMEHAMEHA HWY. @ STA. 833+05 O/S 19' LT.

| FED. ROAD DIST. NO. | STATE | PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|-----------|-------------|-----------|--------------|
| HAWAII              | HAW.  | 83D-01-98 | 2000        | 10        | 19           |



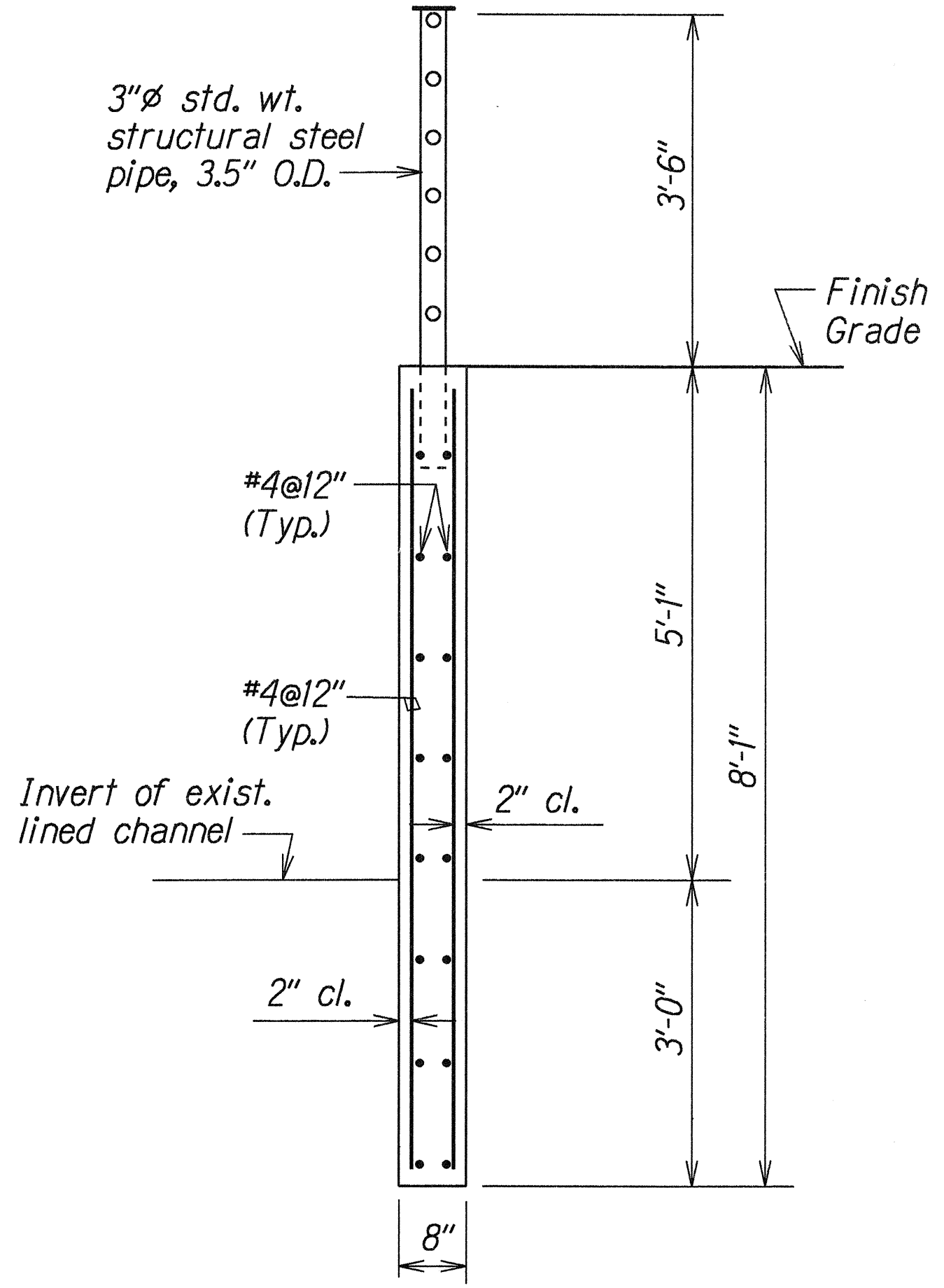
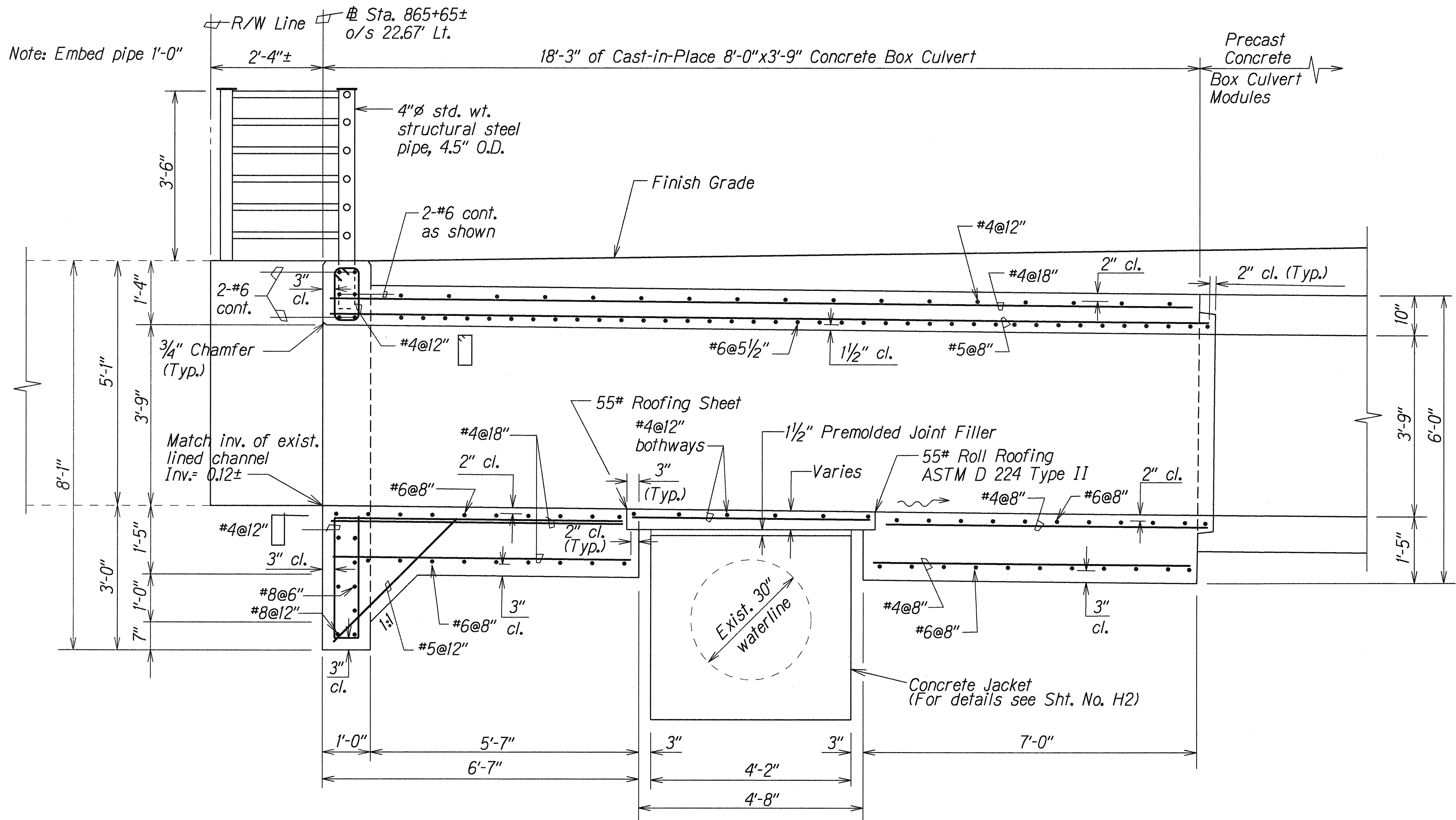
DETAILS OF TYPE "2" CONCRETE HEADWALL AT KAMEHAMEHA HWY. @ STA. 833+05 O/S 25' RT.

| 7/07/00                                                                                                                                                                                                                                                                                 | Added dowels to box culvert walls |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|
| DATE                                                                                                                                                                                                                                                                                    | REVISION                          |
| STATE OF HAWAII<br>DEPARTMENT OF TRANSPORTATION<br>HIGHWAYS DIVISION<br><b>DRAINAGE DETAILS</b><br><b>KAMEHAMEHA HIGHWAY DRAINAGE IMP.</b><br><b>In The Vicinity of Polinalina Road</b><br><b>Proj. No. 83D-01-98</b><br>Scale: 3/4"=1'-0" Date: Oct. 1999<br>SHEET No. H7 OF 14 SHEETS |                                   |

|                       |         |
|-----------------------|---------|
| ORIGINAL PLAN         | DATE    |
| DRAWN BY B. Tada      | 3/16/98 |
| CHECKED BY B. Tada    |         |
| QUANTITIES BY B. Tada |         |
| CHECKED BY B. Tada    |         |



| FED. ROAD DIST. NO. | STATE | PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|-----------|-------------|-----------|--------------|
| HAWAII              | HAW.  | 83D-01-98 | 2000        | ADD. 12   | 19           |



SECTION B  
H8/H9

SECTION A  
H8/H9

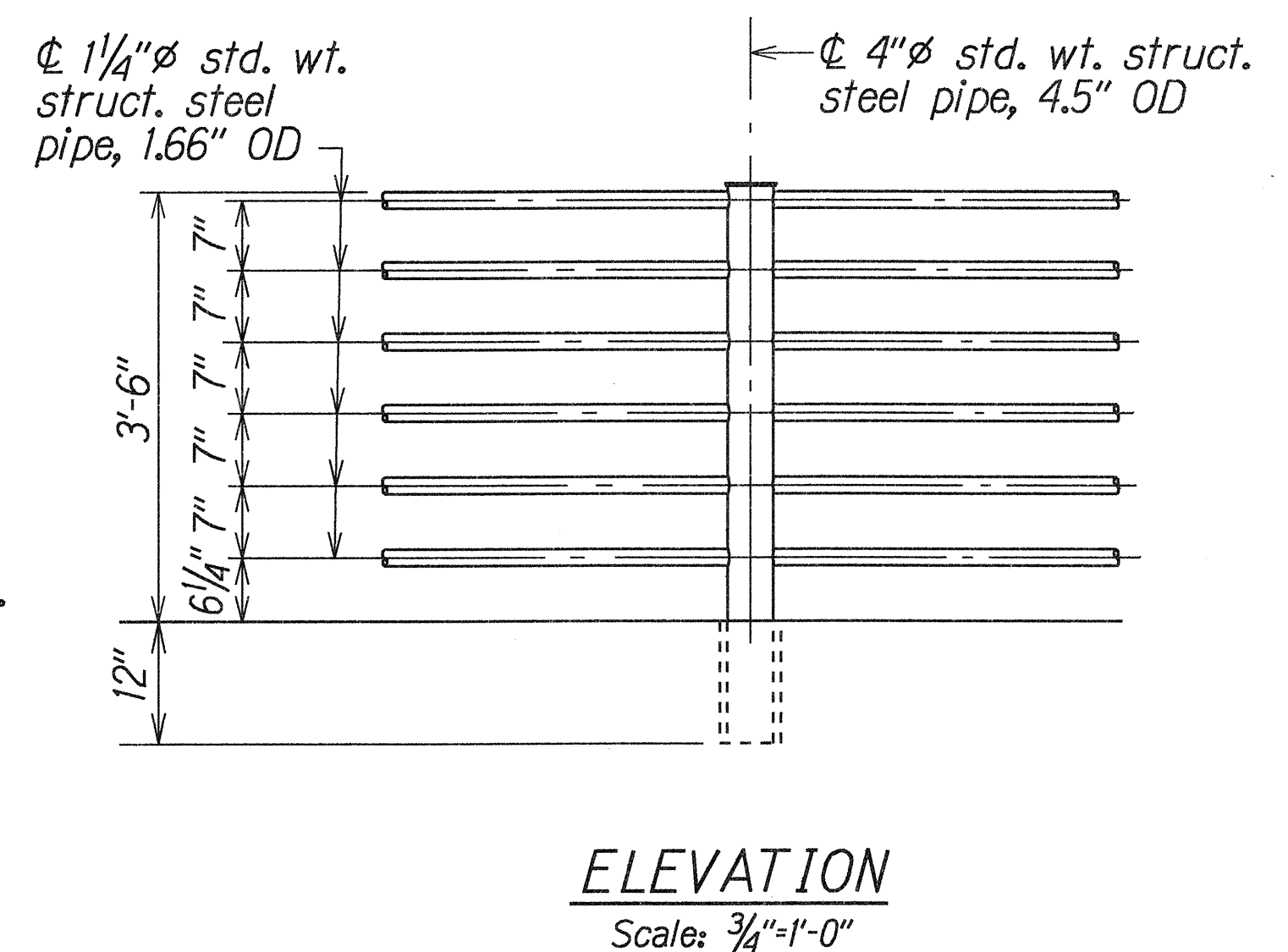
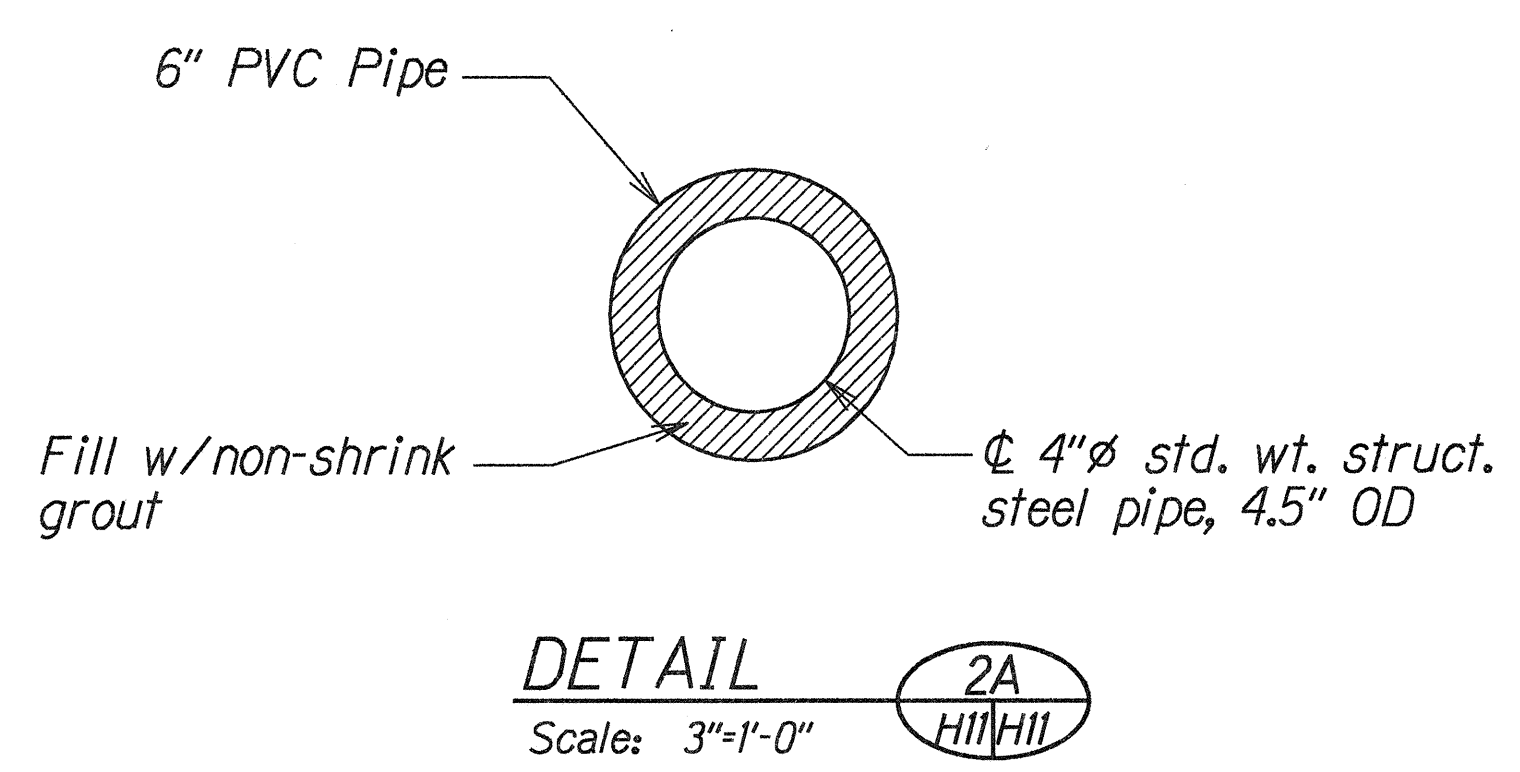
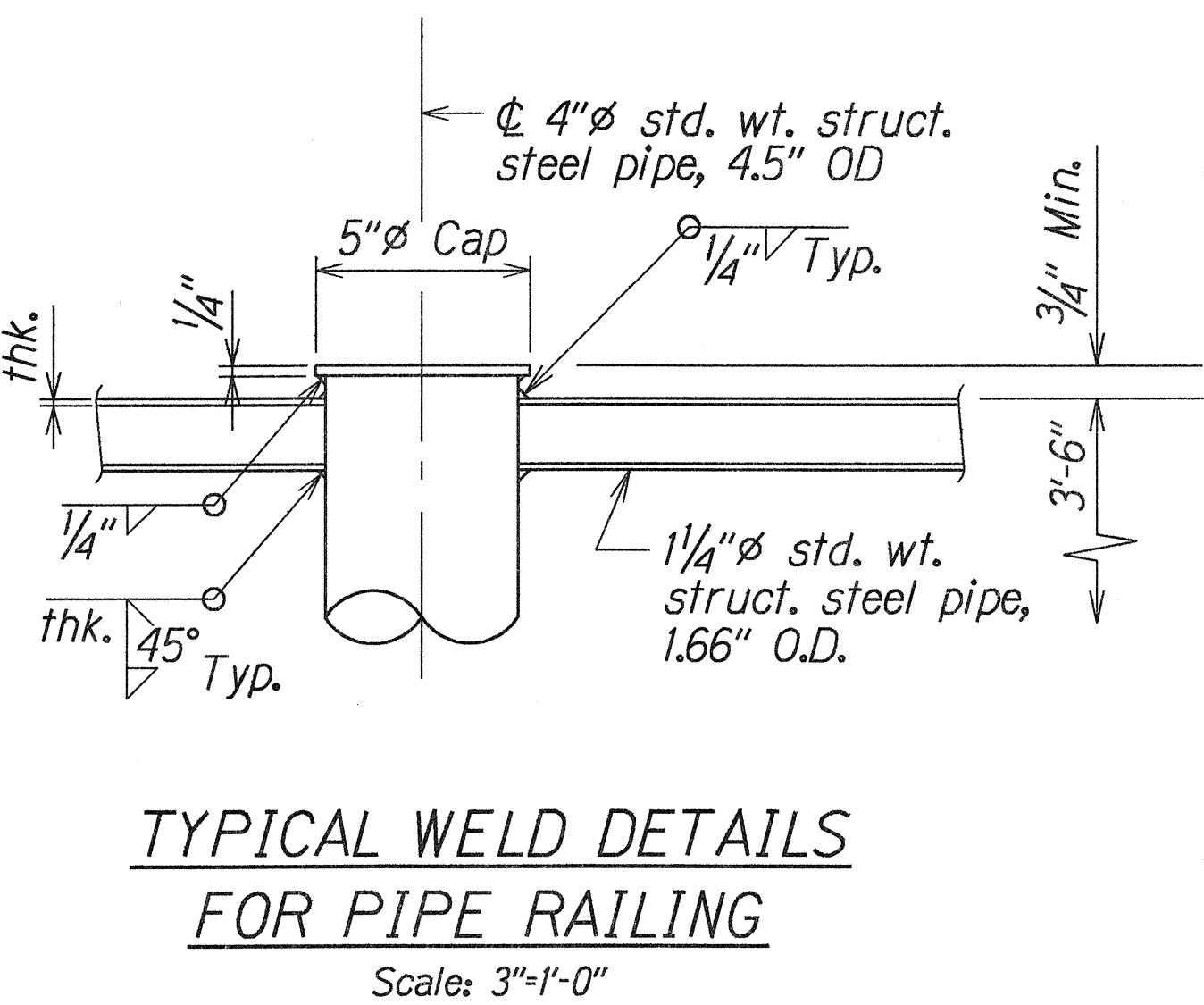
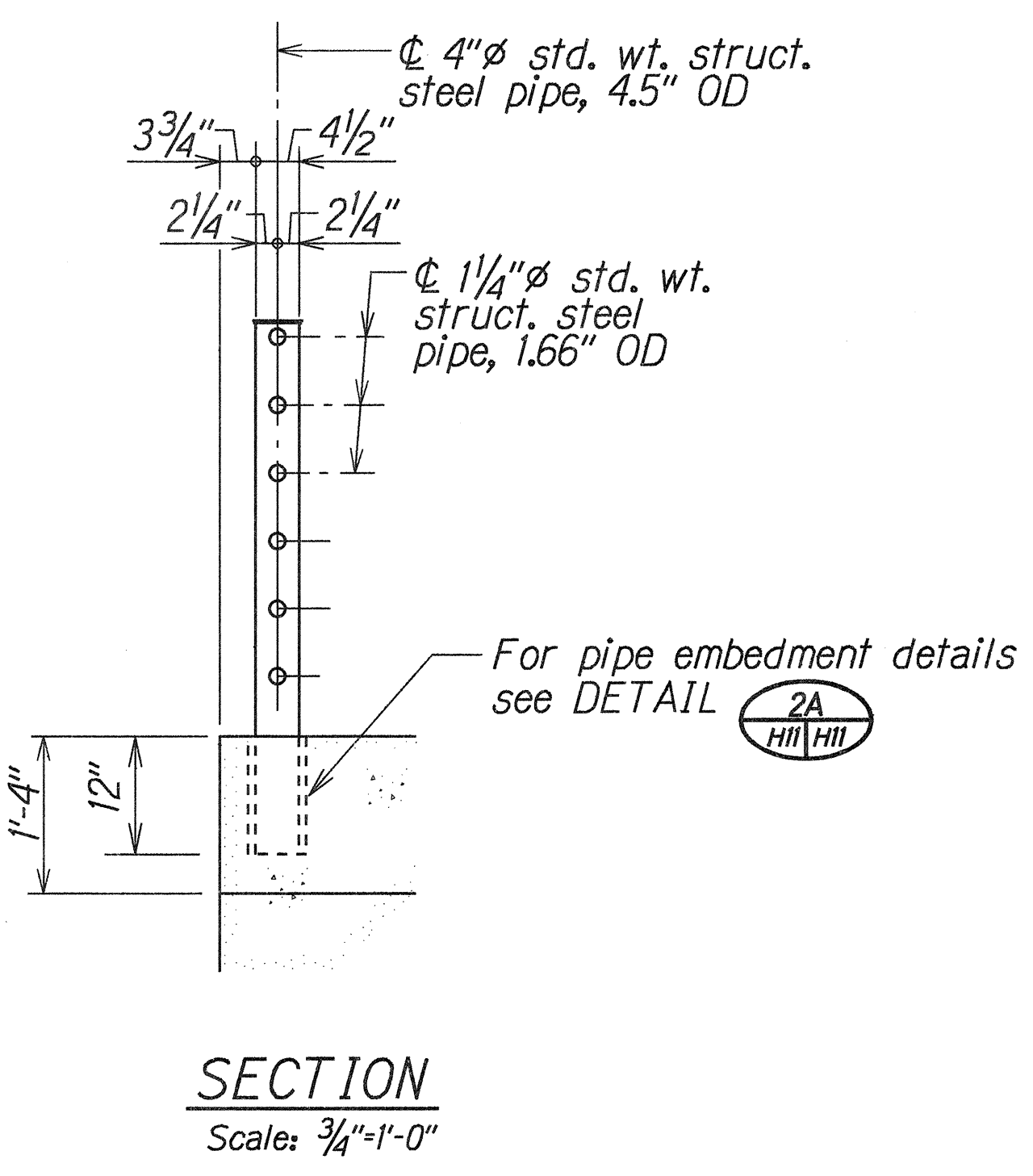
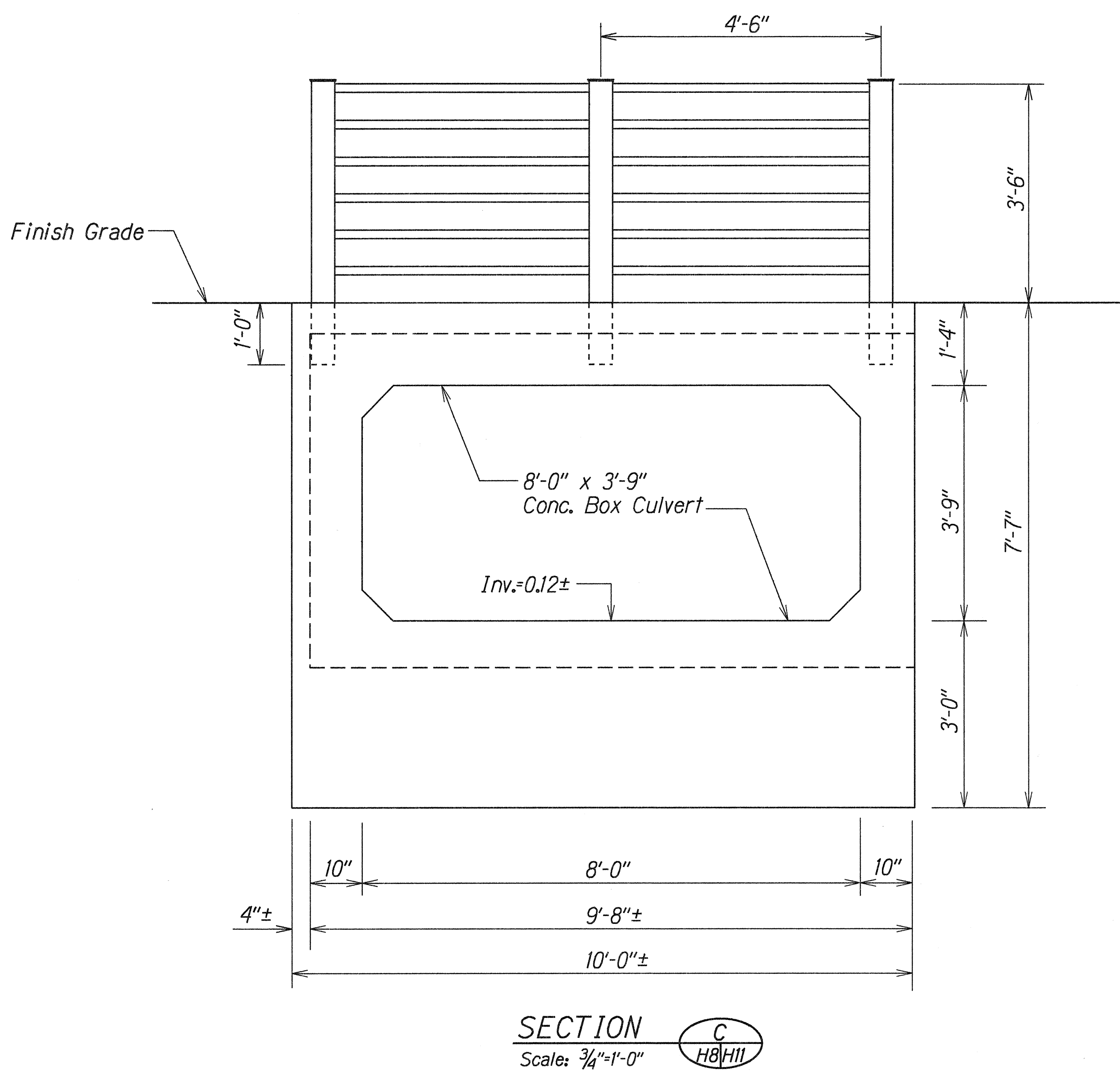
APPROVED:   
*Michael J. [Signature]* 7/7/00  
DATE  
 CHIEF, PLANNING AND ENGINEERING DIVISION,  
 BOARD OF WATER SUPPLY,  
 CITY AND COUNTY OF HONOLULU

| 7/05/00                                                                                                                                                                                                                                                                  | Revised concrete box culvert and concrete jacket     |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------|
| 1/25/00                                                                                                                                                                                                                                                                  | Revised conc. cover at 3" slab<br>Added inlet invert |
| DATE                                                                                                                                                                                                                                                                     | REVISION                                             |
| STATE OF HAWAII<br>DEPARTMENT OF TRANSPORTATION<br>HIGHWAYS DIVISION<br><b>DRAINAGE DETAILS</b><br>KAMEHAMEHA HIGHWAY DRAINAGE IMP.<br>In The Vicinity of Polinalina Road<br>Proj. No. 83D-01-98<br>Scale: 3/4"=1'-0" <span style="float: right;">Date: Oct. 1999</span> |                                                      |
| SHEET No. H9 OF 14 SHEETS                                                                                                                                                                                                                                                |                                                      |

DETAILS OF TYPE "3" CONCRETE HEADWALL AT KAMEHAMEHA HWY. @ STA. 865+65± O/S 22.67'± LT.



| FED. ROAD DIST. NO. | STATE | PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|-----------|-------------|-----------|--------------|
| HAWAII              | HAW.  | 83D-01-98 | 2000        | ADD. 14   | 19           |



### DETAILS OF PIPE RAILING

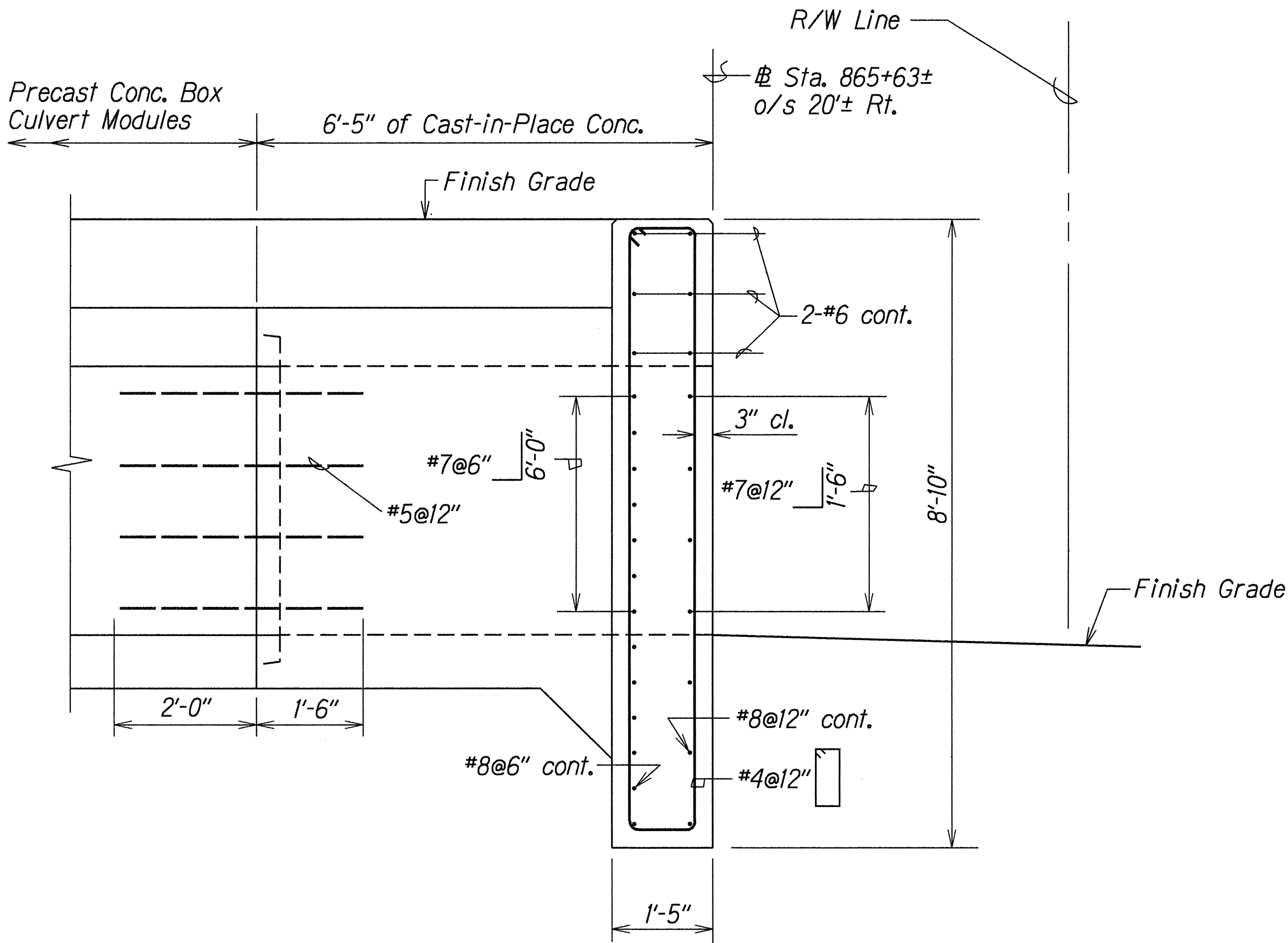
### DETAILS OF TYPE "3" CONCRETE HEADWALL AT KAMEHAMEHA HWY. @ STA. 865+65± O/S 22.67'± LT.

|               |                   |         |
|---------------|-------------------|---------|
| ORIGINAL PLAN | SURVEY PLOTTED BY | DATE    |
| NOTES BOOK    | DRAWN BY B. Toda  | 3/15/99 |
| CHITODAKAM    | CHECKED BY        |         |
| 8/2/99        |                   |         |

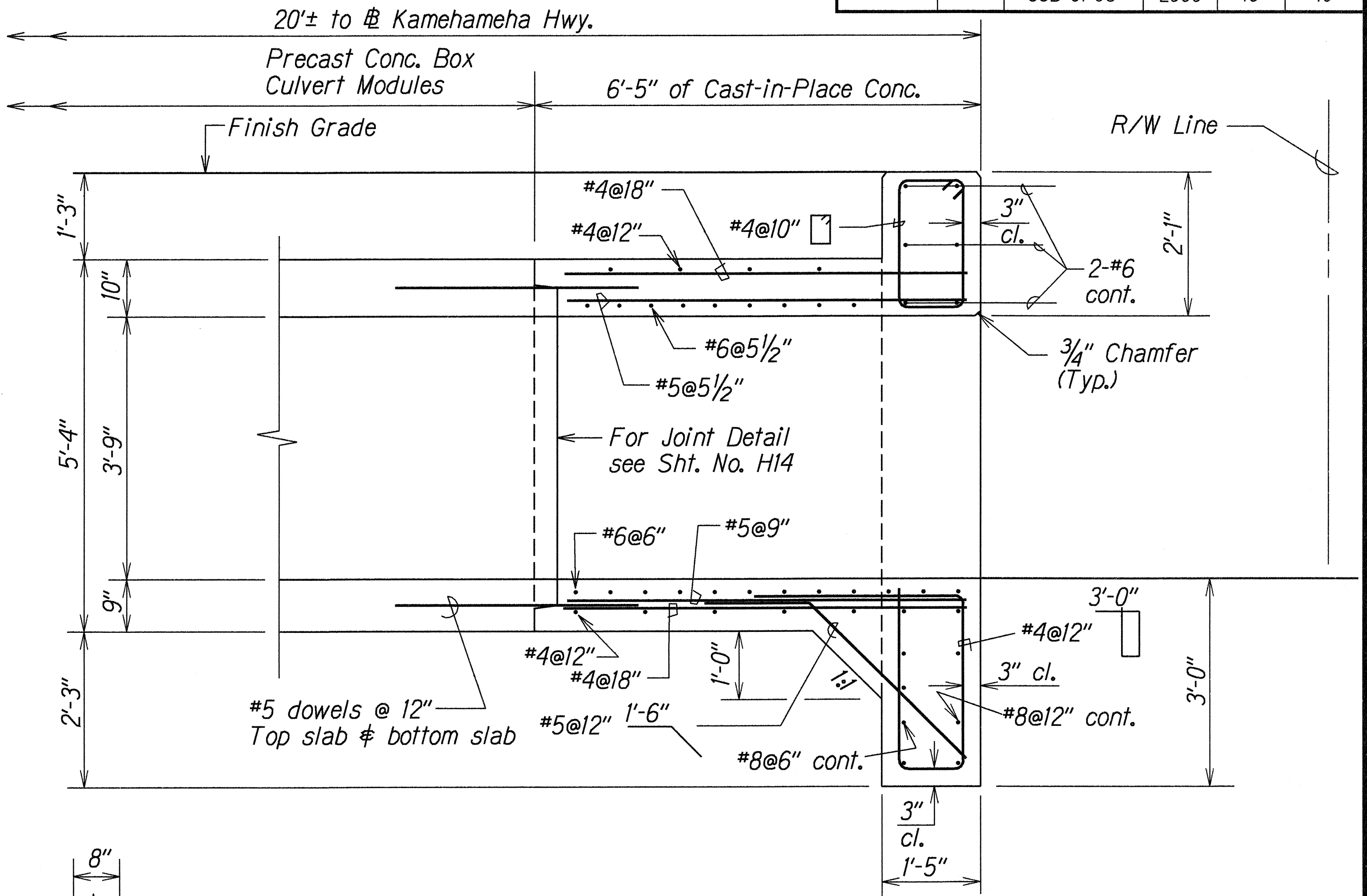
| 1/25/00                                                                                                                                                                                                                                                                                | Added Detail 2A |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| DATE                                                                                                                                                                                                                                                                                   | REVISION        |
| STATE OF HAWAII<br>DEPARTMENT OF TRANSPORTATION<br>HIGHWAYS DIVISION<br><b>DRAINAGE DETAILS</b><br><b>KAMEHAMEHA HIGHWAY DRAINAGE IMP.</b><br><b>In The Vicinity of Polinalina Road</b><br><b>Proj. No. 83D-01-98</b><br>Scale: As Shown Date: Oct. 1999<br>SHEET No. 111 OF 14 SHEETS |                 |



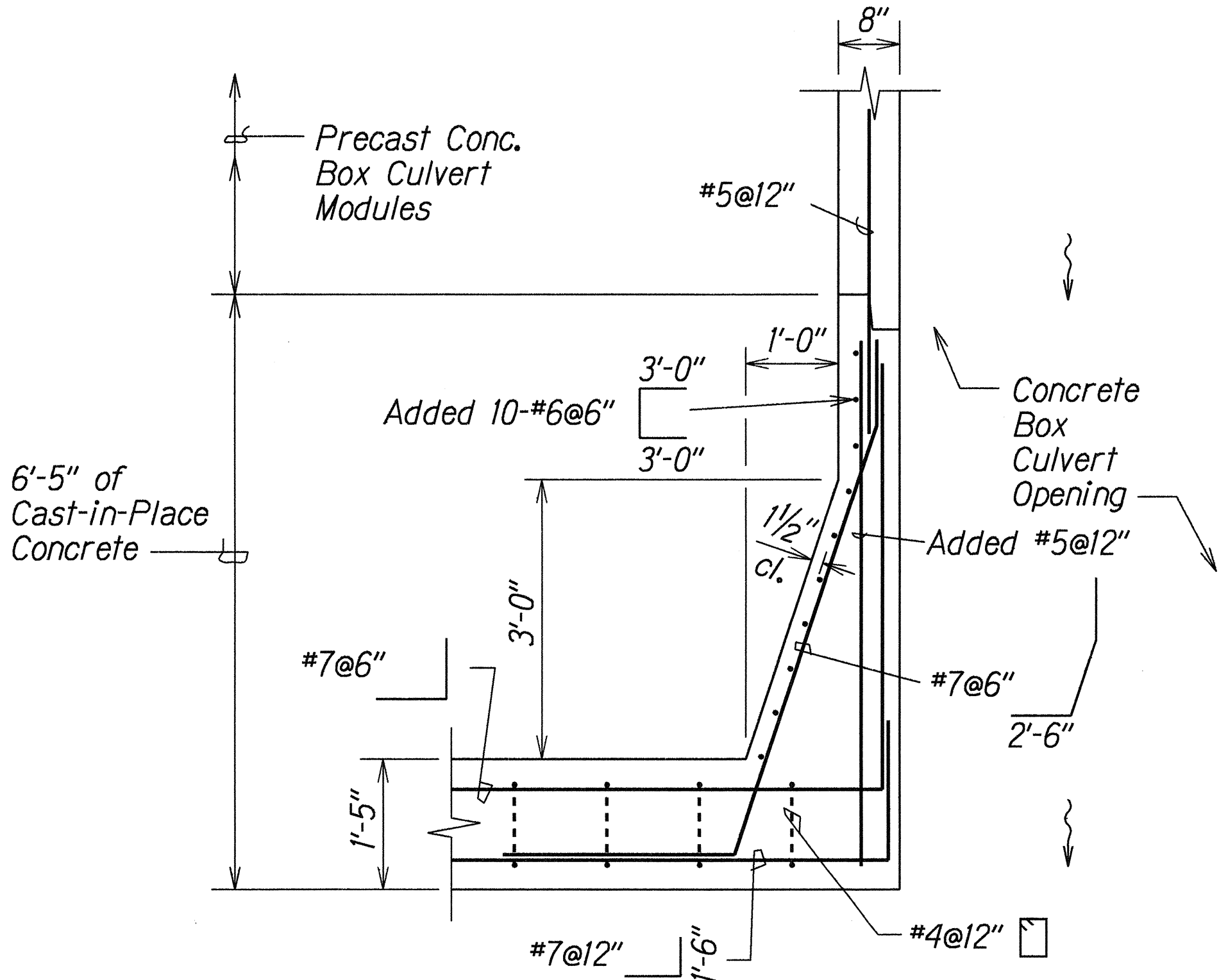
| FED. ROAD DIST. NO. | STATE | PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|-----------|-------------|-----------|--------------|
| HAWAII              | HAW.  | 83D-01-98 | 2000        | 16        | 19           |



SECTION A  
H12/H13



SECTION B  
H12/H13



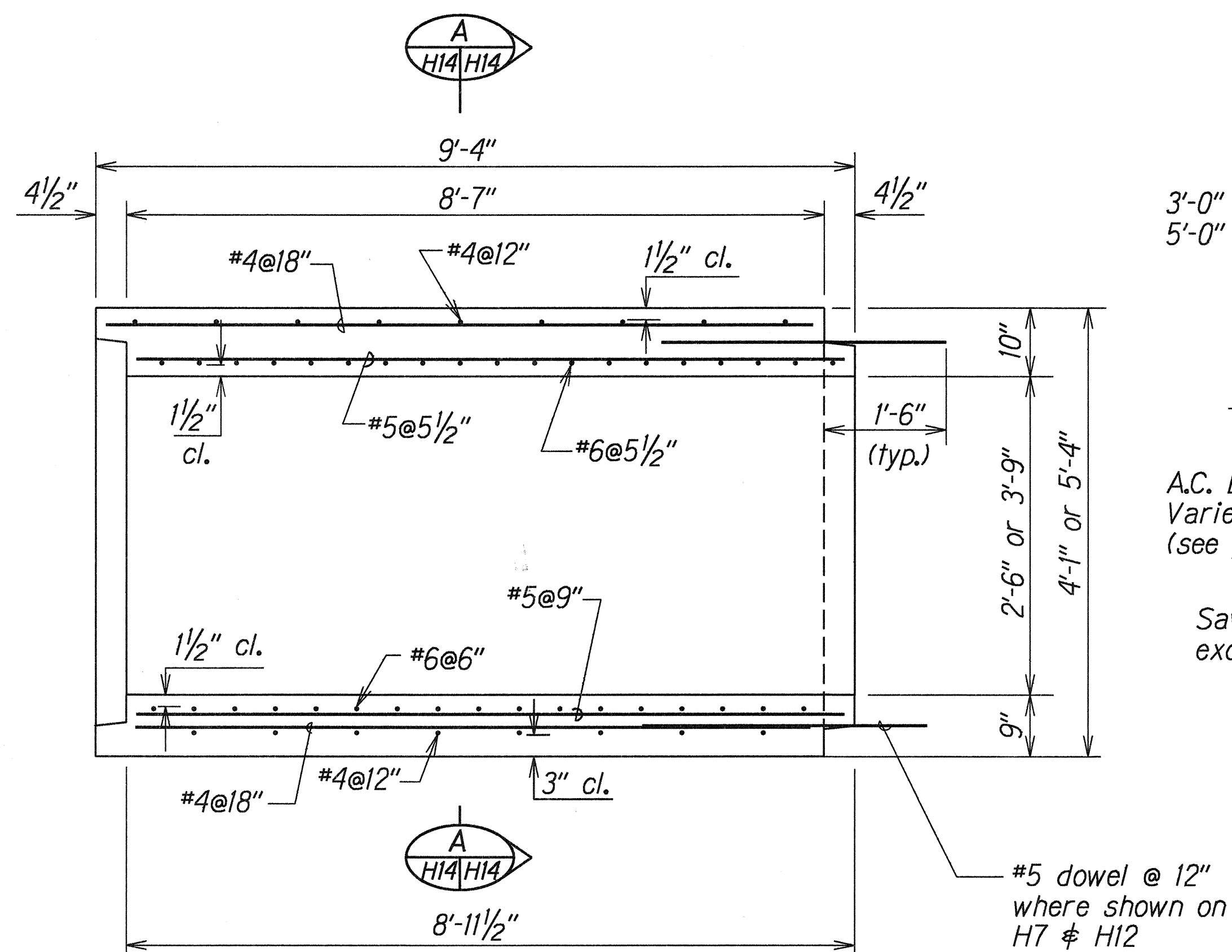
DETAIL 3  
H12/H13

DETAILS OF TYPE "4" CONCRETE HEADWALL AT KAMEHAMEHA HWY @ STA. 865+63± O/S 20'± RT

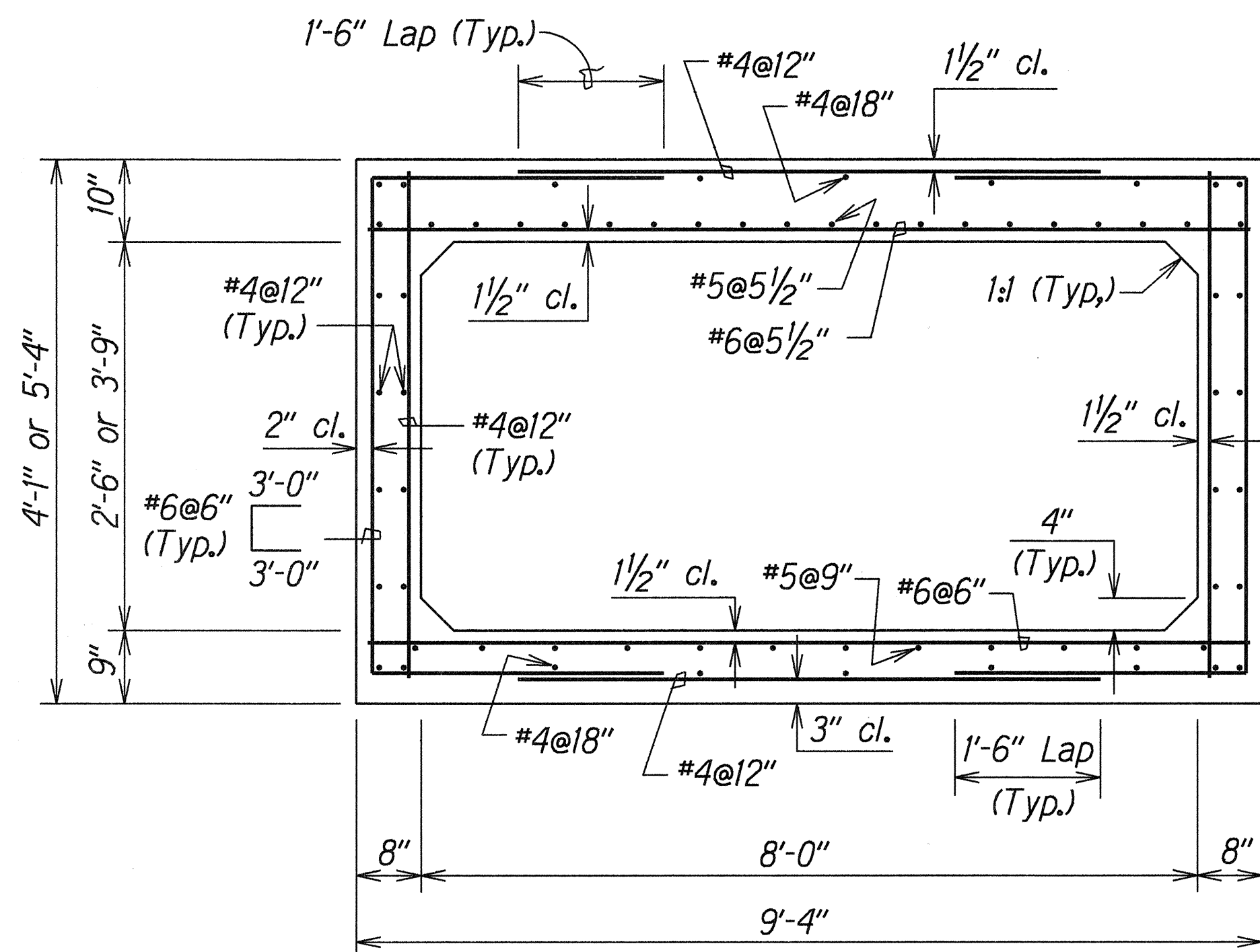
| 7/07/00                                                                                                                                                                                                                                                             | Added dowels to box culvert walls |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|
| DATE                                                                                                                                                                                                                                                                | REVISION                          |
| STATE OF HAWAII<br>DEPARTMENT OF TRANSPORTATION<br>HIGHWAYS DIVISION<br><b>DRAINAGE DETAILS</b><br>KAMEHAMEHA HIGHWAY DRAINAGE IMP.<br>In The Vicinity of Polinalina Road<br>Proj. No. 83D-01-98<br>Scale: 3/4"=1'-0" Date: Oct. 1999<br>SHEET No. H13 OF 14 SHEETS |                                   |

|                     |         |
|---------------------|---------|
| ORIGINAL PLAN       | DATE    |
| SURVEY PLOTTED BY   | 9/16/98 |
| DRAWN BY B. Tada    |         |
| NOTED BY B. Tada    |         |
| DESIGNED BY B. Tada |         |
| CHECKED BY B. Tada  |         |

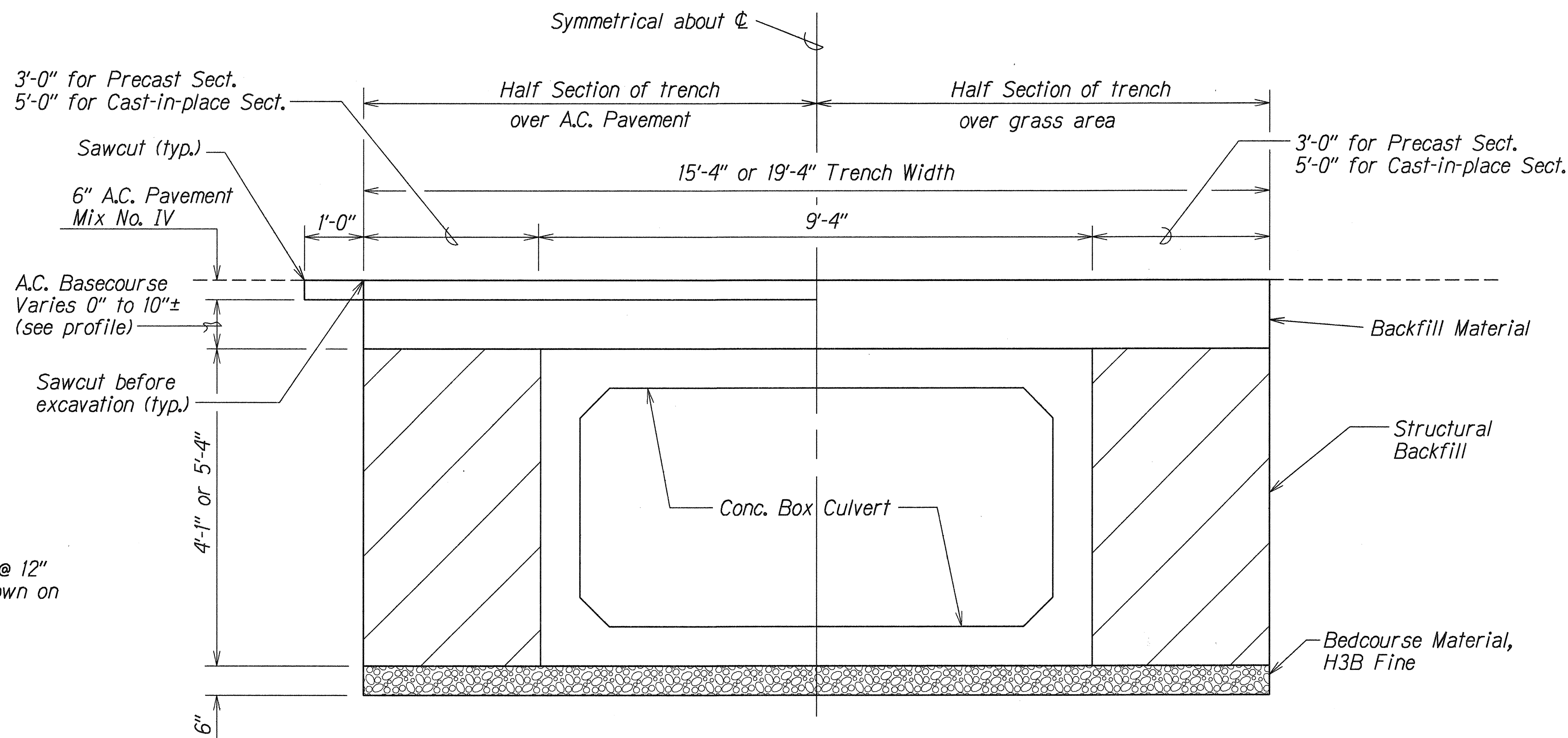
| FED. ROAD DIST. NO. | STATE | PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|-----------|-------------|-----------|--------------|
| HAWAII              | HAW.  | 83D-01-98 | 2000        | ADD. 17   | 19           |



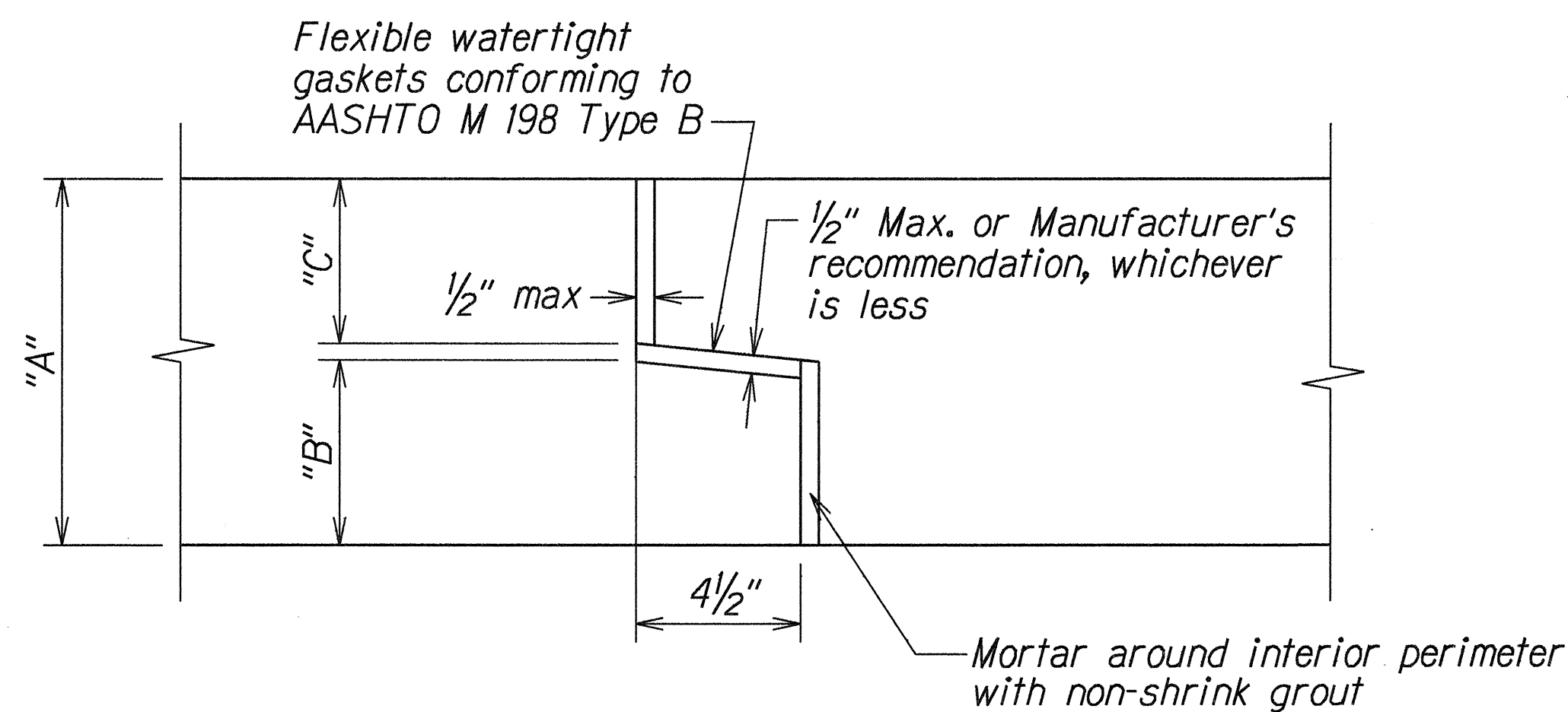
TYPICAL SECTION  
Scale: 3/4"=1'-0"



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



TYPICAL CULVERT TRENCH AND PAVEMENT RESTORATION DETAIL  
Scale: 3/4"=1'-0"



TYPICAL JOINT DETAIL  
Scale: 3"=1'

| JOINT DIMENSIONS |     |        |        |
|------------------|-----|--------|--------|
|                  | "A" | "B"    | "C"    |
| Top Slab         | 10" | 5"     | 4 1/2" |
| Walls            | 8"  | 4"     | 3 1/2" |
| Bottom Slab      | 9"  | 4 1/2" | 4"     |

1/25/00 Revised trench detail

DATE REVISION

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

**DRAINAGE DETAILS**

KAMEHAMEHA HIGHWAY DRAINAGE IMP.  
In The Vicinity of Polinalina Road  
Proj. No. 83D-01-98

Scale: As Shown Date: Oct. 1999

SHEET No. H14 OF 14 SHEETS

ADD. 17