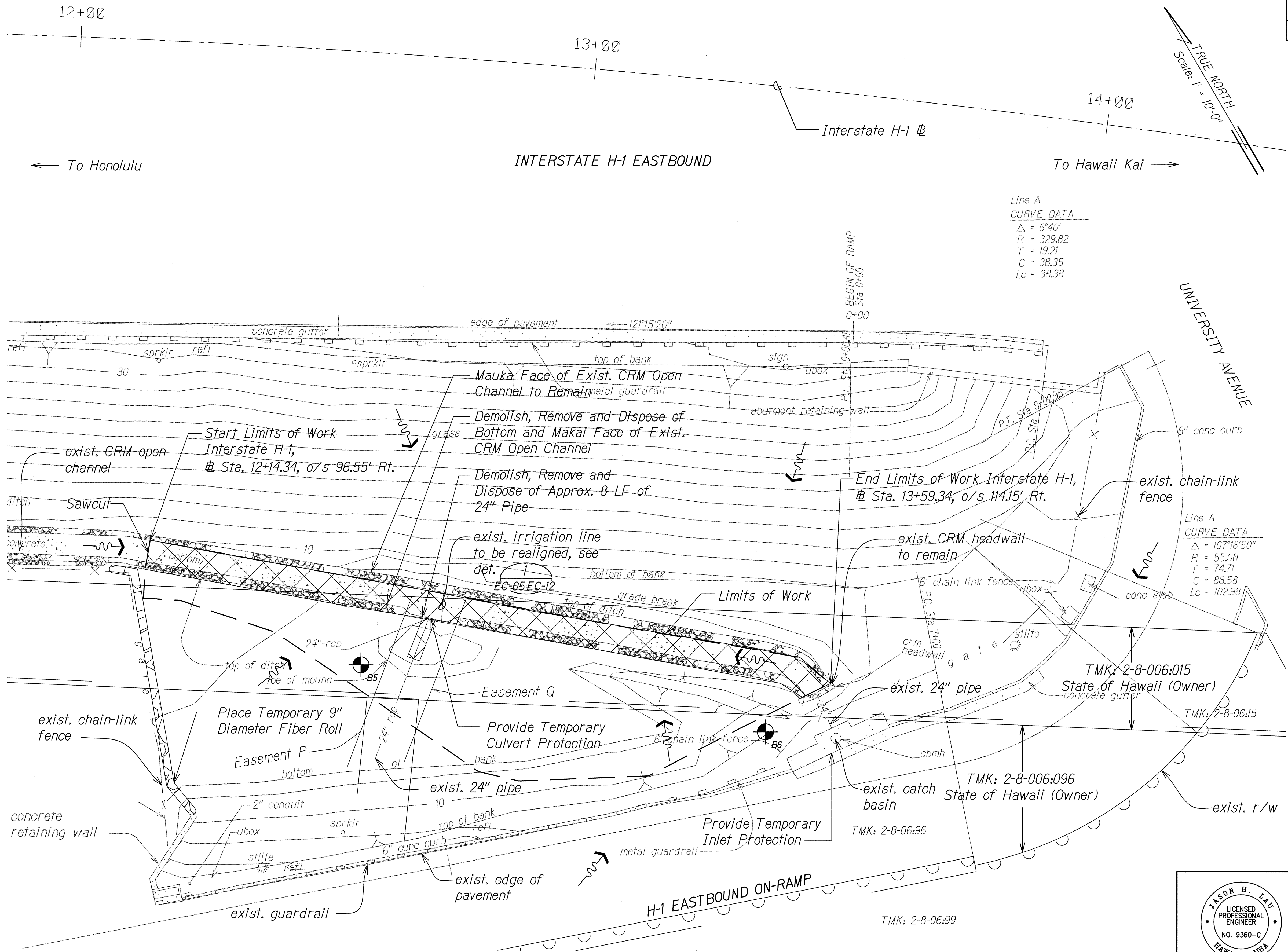


| FED. ROAD DIST. NO. | STATE | PROJ. NO.  | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | H11-01-14M | 2014        | 18        | 42           |



Line A  
CURVE DATA  
Δ = 6°40'  
R = 329.82  
T = 19.21  
C = 38.35  
Lc = 38.38

UNIVERSITY AVENUE  
6" conc curb  
exist. chain-link fence  
conc slab  
stlite  
crm headwall gate  
6' chain link fence  
u-box  
P.C. Sta 8+00.98  
P.T. Sta 8+00.00  
BEGIN OF RAMP  
Sta 0+00

Line A  
CURVE DATA  
Δ = 107°16'50"  
R = 55.00  
T = 74.71  
C = 88.58  
Lc = 102.98

- LEGEND**
- 100 — Existing Contour
  - — Limits of Work
  - Existing CRM Open Channel to be Removed
  - Approx. Location of Boring, See Sheet B-01

**Note:**  
The Contractor shall schedule construction during dry weather periods and be prepared in case of rainfall events. The Contractor shall provide for temporary bypass or detention of stormwater flows or other measures to avoid flooding or properties upstream or adjacent to the site.

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

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**TEMPORARY EROSION CONTROL AND DEMOLITION PLAN**  
**UNIVERSITY AVE. CLOVERLEAF WEST**  
Scale: 1" = 10'-0"

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

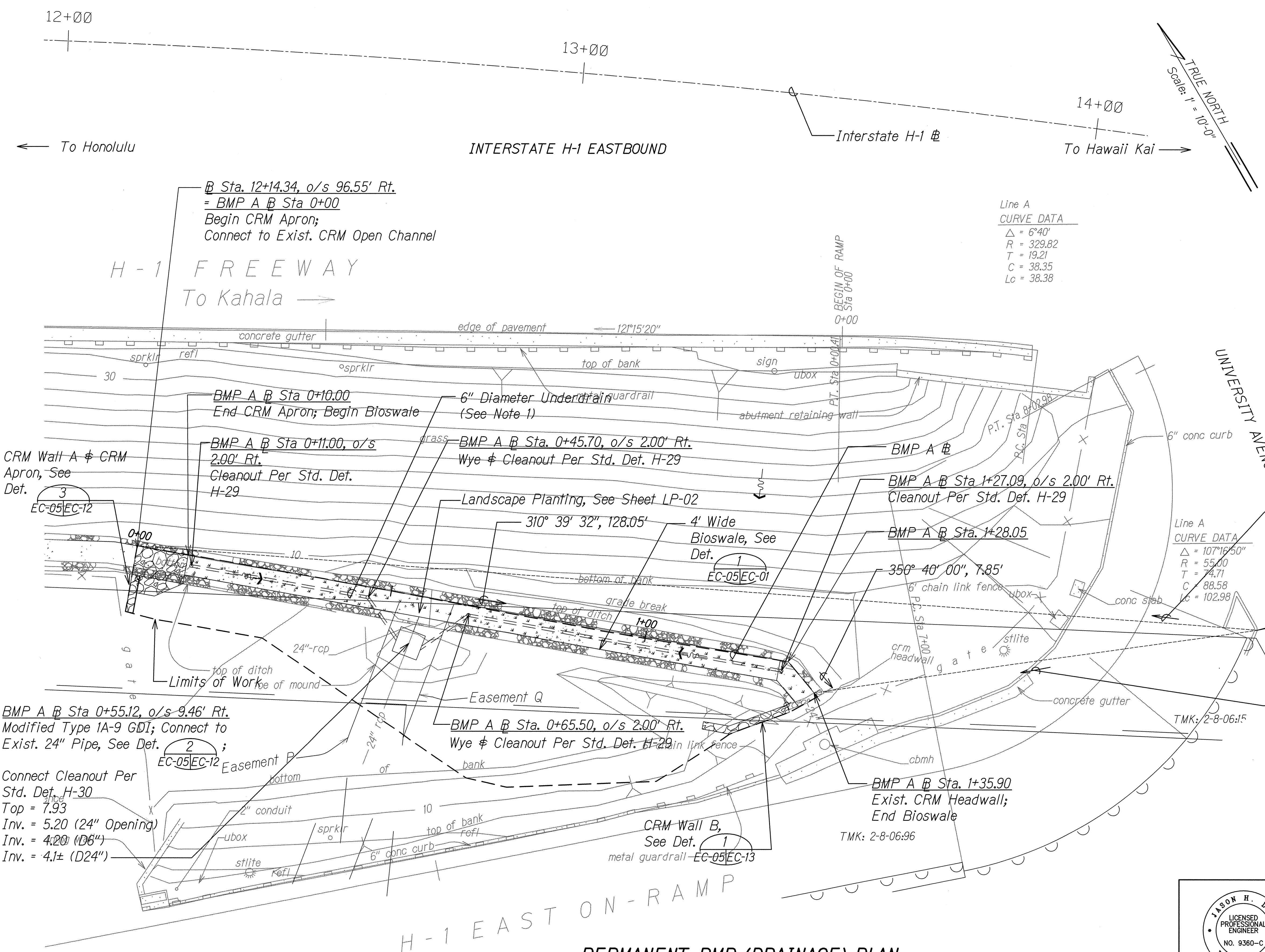
**TEMP. EC AND DEMOLITION PLAN**  
**UNIVERSITY AVE. CLOVERLEAF WEST**

ALA WAI WATERSHED STORM WATER  
BEST MANAGEMENT PRACTICES ON OAHU  
Project No. H11-01-14M  
Scale: 1" = 10'-0" Date: January 2014

SHEET No. EC-04 OF 16 SHEETS



| FED. ROAD DIST. NO. | STATE | PROJ. NO.  | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | H11-01-14M | 2014        | 19        | 42           |



- LEGEND**
- 100-- Existing Contour
  - Limits of Work
  - Bioswale
  - CRM Walls and Apron

**Note:**  
6" diameter underdrain between Sta. 0+45.70 and Sta. 0+65.50 shall be solid-wall PVC pipe in accordance with specifications.

|                   |                       |
|-------------------|-----------------------|
| DATE              | 1/29/2014 12:37:47 PM |
| SURVEY PLANNED BY |                       |
| DRAWN BY          |                       |
| DESIGNED BY       |                       |
| QUANTITIES BY     |                       |
| CHECKED BY        |                       |
| ORIGINAL PLAN     |                       |
| NOTE BOOK         |                       |
| NO.               |                       |

**PERMANENT BMP (DRAINAGE) PLAN**  
**UNIVERSITY AVE. CLOVERLEAF WEST**  
Scale: 1" = 10'-0"

4/30/14  
EXP. DATE  
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STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

**PERMANENT BMP (DRAINAGE) PLAN**  
**UNIVERSITY AVE. CLOVERLEAF WEST**

ALA WAI WATERSHED STORM WATER  
BEST MANAGEMENT PRACTICES ON OAHU  
Project No. H11-01-14M  
Scale: 1" = 10'-0"      Date: January 2014

SHEET No. EC-05 OF 16 SHEETS

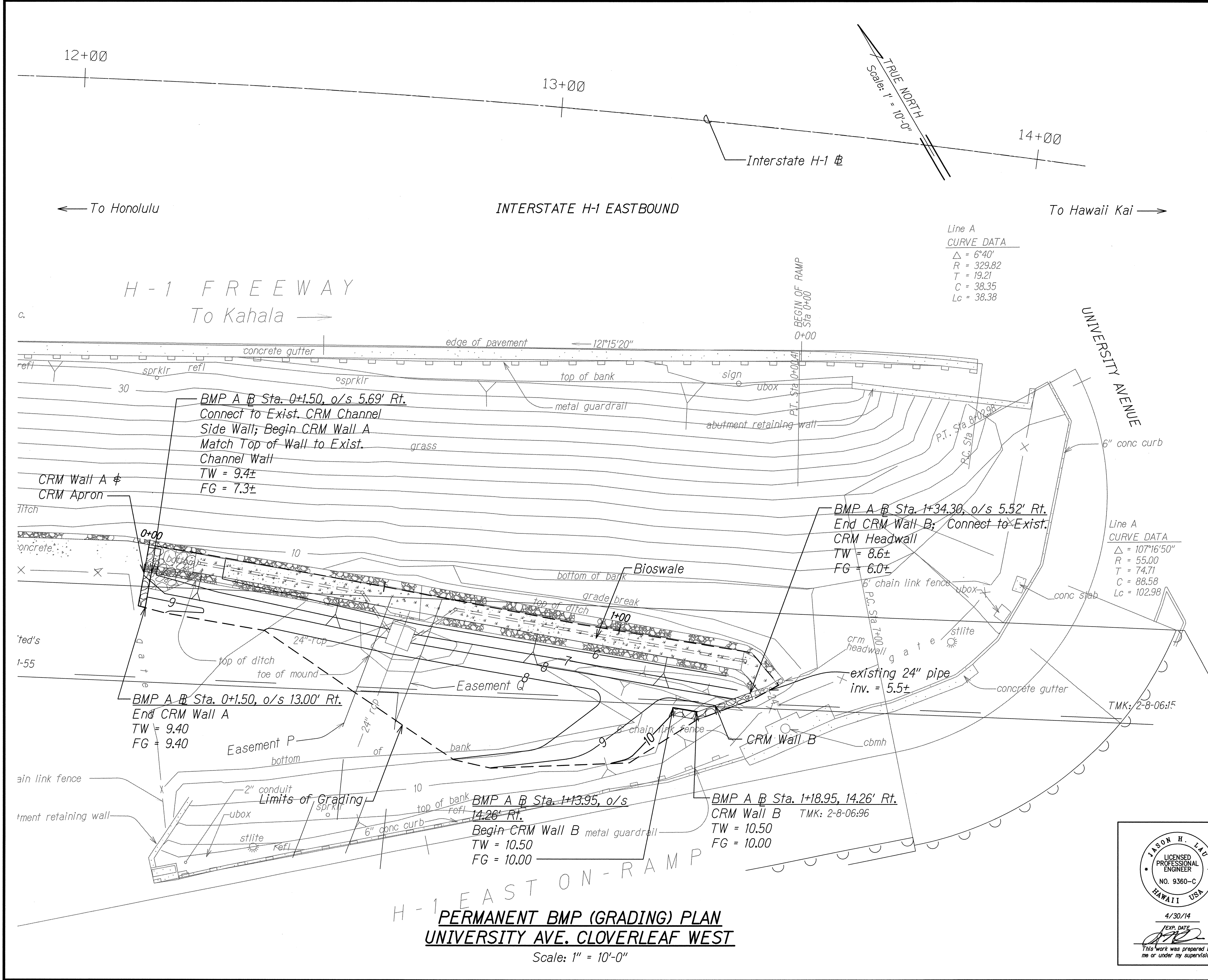


| FED. ROAD DIST. NO. | STATE | PROJ. NO.  | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | H11-01-14M | 2014        | 20        | 42           |

- LEGEND**
- 100-- Existing Contour
  - 100 - Finish Contour
  - - - Limits of Grading
  - [Pattern] Bioswale
  - [Pattern] CRM Walls and Apron

**Notes:**

- The Contractor shall transition to existing ground at a maximum 2H:1V slope.

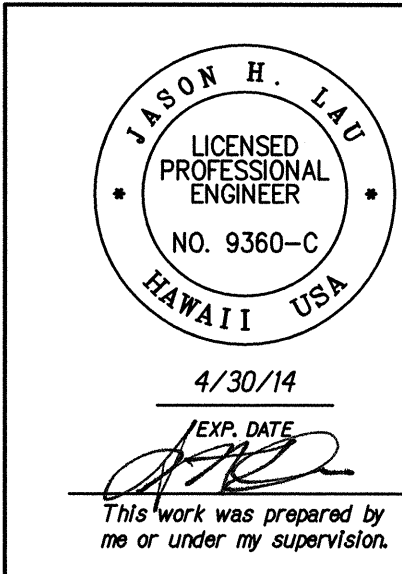


|               |                   |      |
|---------------|-------------------|------|
| ORIGINAL PLAN | SURVEY PLOTTED BY | DATE |
| NOTE BOOK     | DRAWN BY          |      |
|               | DESIGNED BY       |      |
|               | QUANTITIES BY     |      |
|               | CHECKED BY        |      |

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**PERMANENT BMP (GRADING) PLAN**  
**UNIVERSITY AVE. CLOVERLEAF WEST**

Scale: 1" = 10'-0"



STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

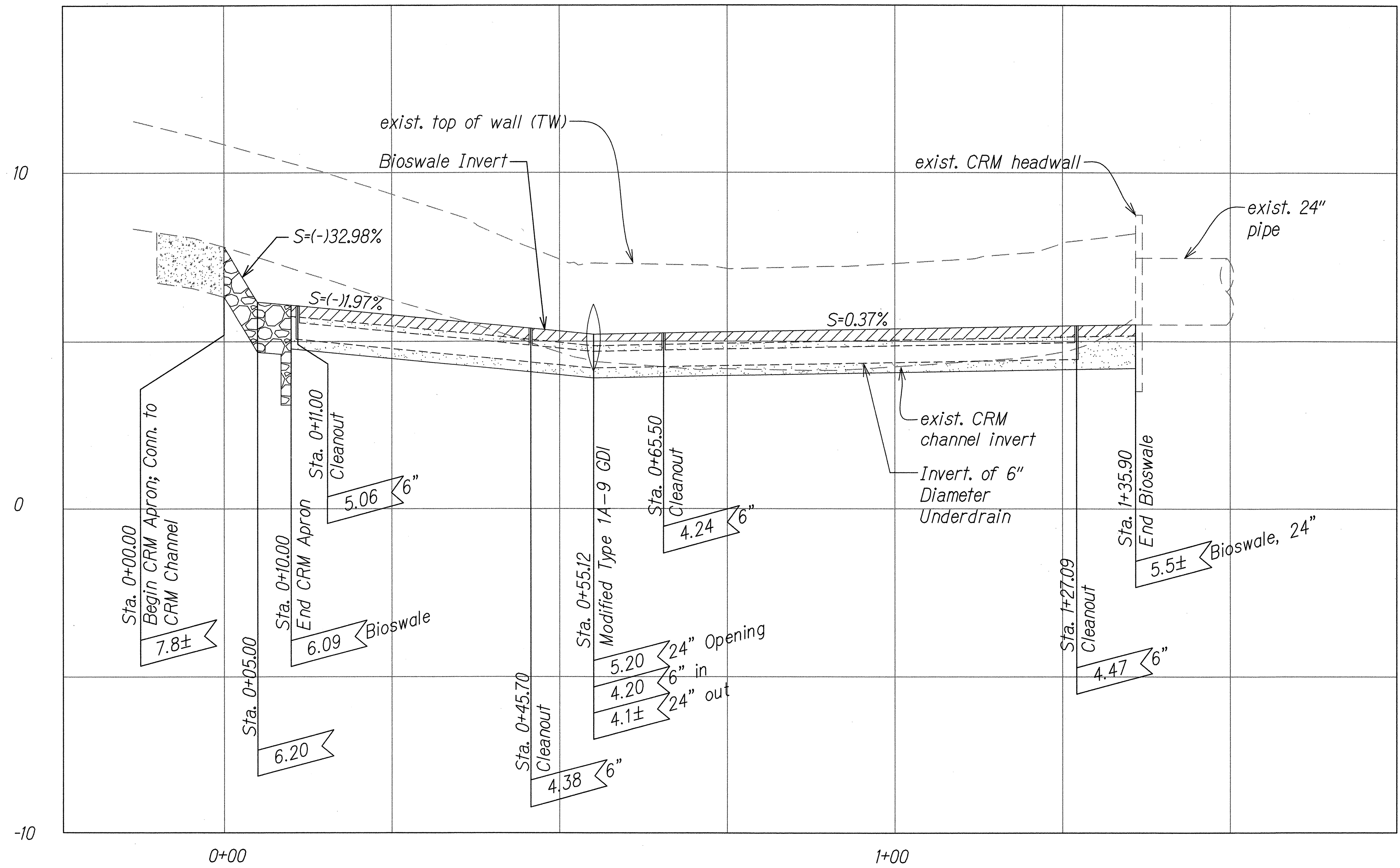
**PERMANENT BMP (GRADING) PLAN**  
**UNIVERSITY AVE. CLOVERLEAF WEST**

ALA WAI WATERSHED STORM WATER  
BEST MANAGEMENT PRACTICES ON OAHU  
Project No. H11-01-14M  
Scale: 1" = 10'-0" Date: January 2014

SHEET No. EC-06 OF 16 SHEETS



| FED. ROAD DIST. NO. | STATE | PROJ. NO.  | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | H11-01-14M | 2014        | 21        | 42           |



**BMP A PROFILE**  
 Scale: Horiz. 1" = 10'-0"  
 Vert. 1" = 2'-0"

|               |                   |      |
|---------------|-------------------|------|
| ORIGINAL PLAN | SURVEY PLOTTED BY | DATE |
| NOTE BOOK     | DRAWN BY          |      |
|               | DESIGNED BY       |      |
|               | QUANTITIES BY     |      |
|               | CHECKED BY        |      |

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4/30/14

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STATE OF HAWAII  
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 HIGHWAYS DIVISION

**BMP A PROFILE**

**UNIVERSITY AVE. CLOVERLEAF WEST**

ALA WAI WATERSHED STORM WATER  
 BEST MANAGEMENT PRACTICES ON OAHU

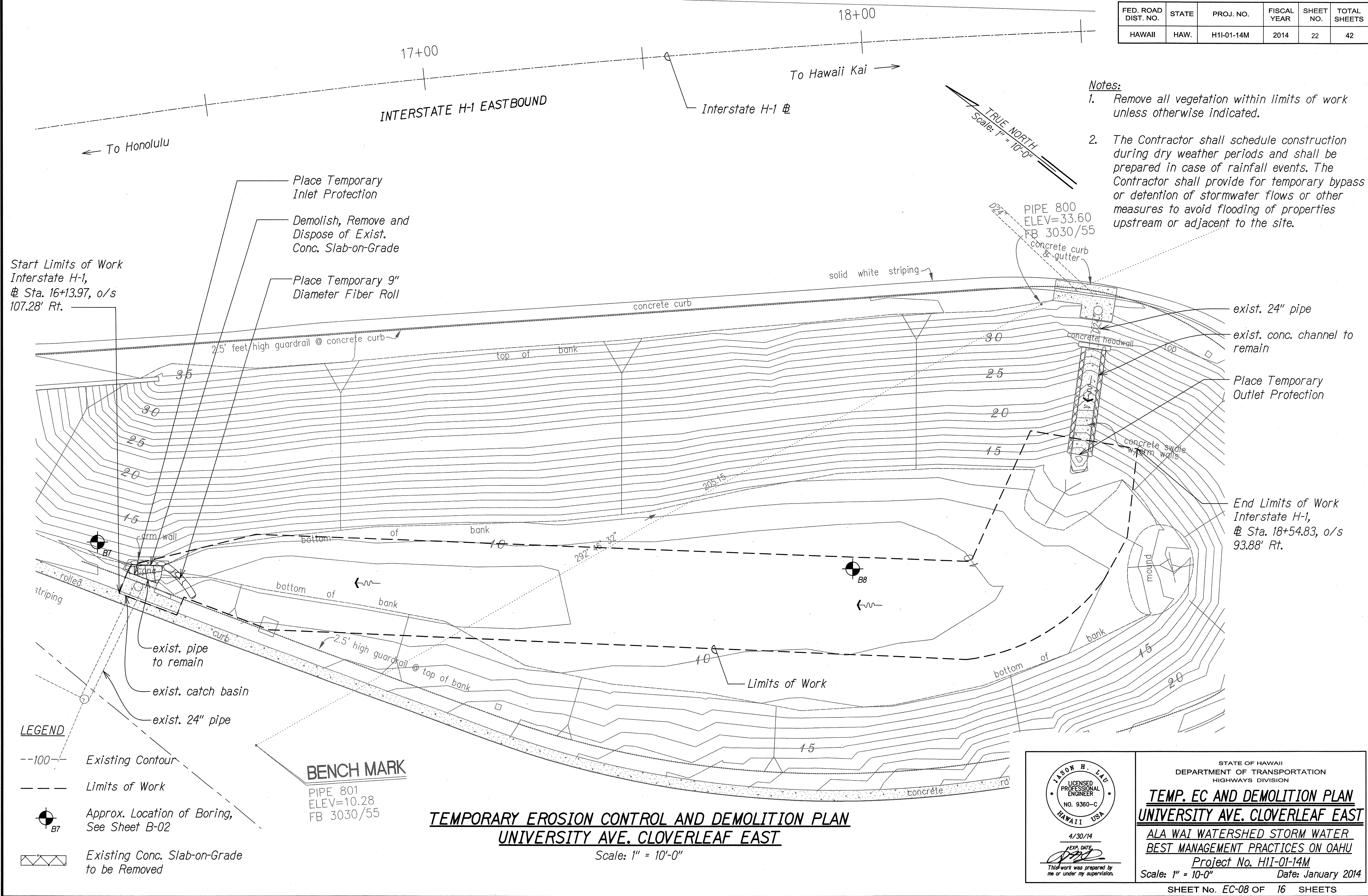
Project No. H11-01-14M

Scale: As Shown Date: January 2014

SHEET No. EC-07 OF 16 SHEETS



| FED. ROAD DIST. NO. | STATE | PROJ. NO.  | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | H11-01-14M | 2014        | 22        | 42           |

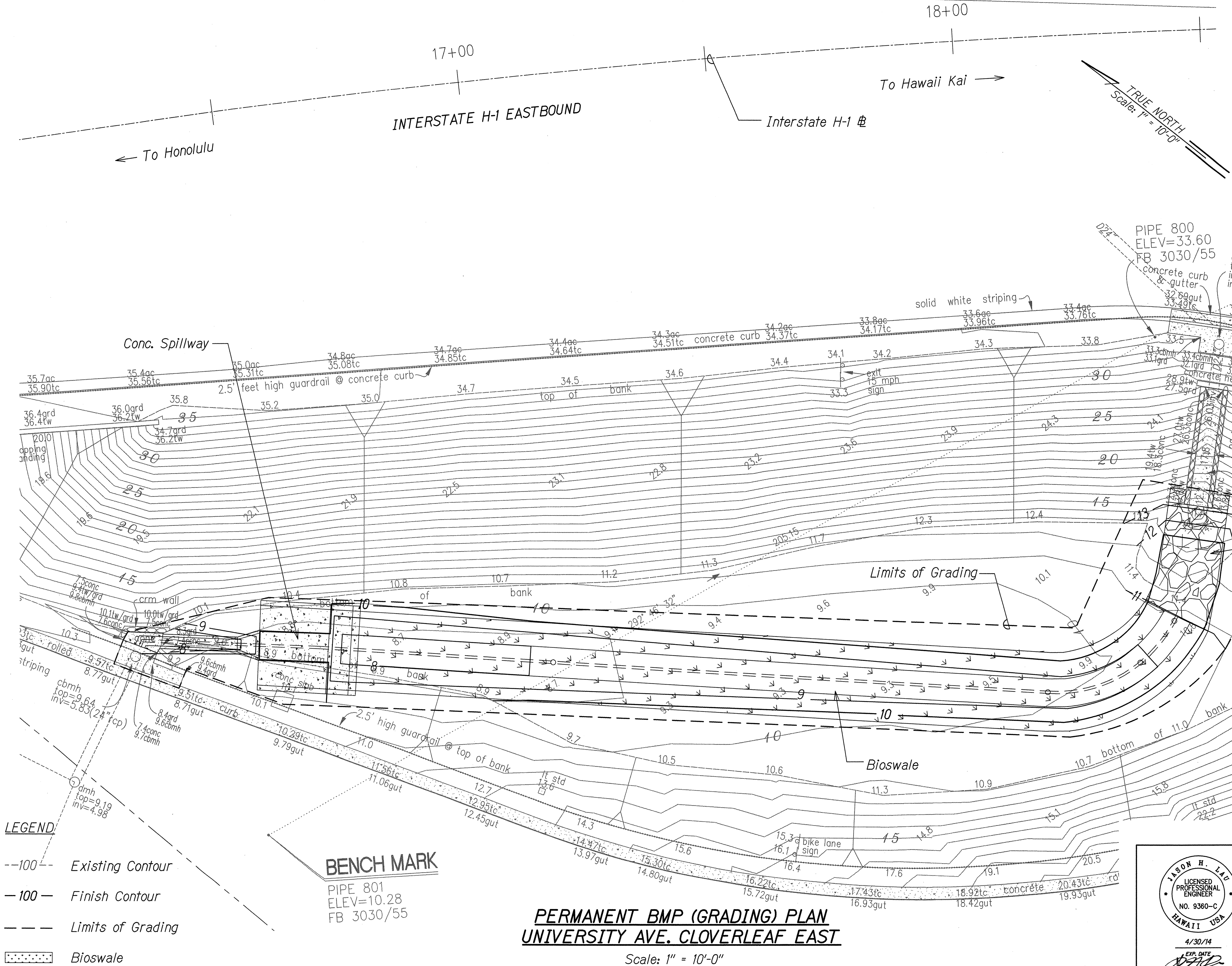








| FED. ROAD DIST. NO. | STATE | PROJ. NO.  | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | H11-01-14M | 2014        | 24        | 42           |



**Notes:**  
 1. The Contractor shall transition to existing ground at a maximum 2H:1V slope.

- LEGEND**
- 100-- Existing Contour
  - 100- Finish Contour
  - - - Limits of Grading
  - [Pattern] Bioswale
  - [Pattern] Outlet Protection

**BENCH MARK**  
 PIPE 801  
 ELEV=10.28  
 FB 3030/55

**PERMANENT BMP (GRADING) PLAN  
 UNIVERSITY AVE. CLOVERLEAF EAST**

Scale: 1" = 10'-0"

STATE OF HAWAII  
 DEPARTMENT OF TRANSPORTATION  
 HIGHWAYS DIVISION

**PERMANENT BMP (GRADING) PLAN  
 UNIVERSITY AVE. CLOVERLEAF EAST**

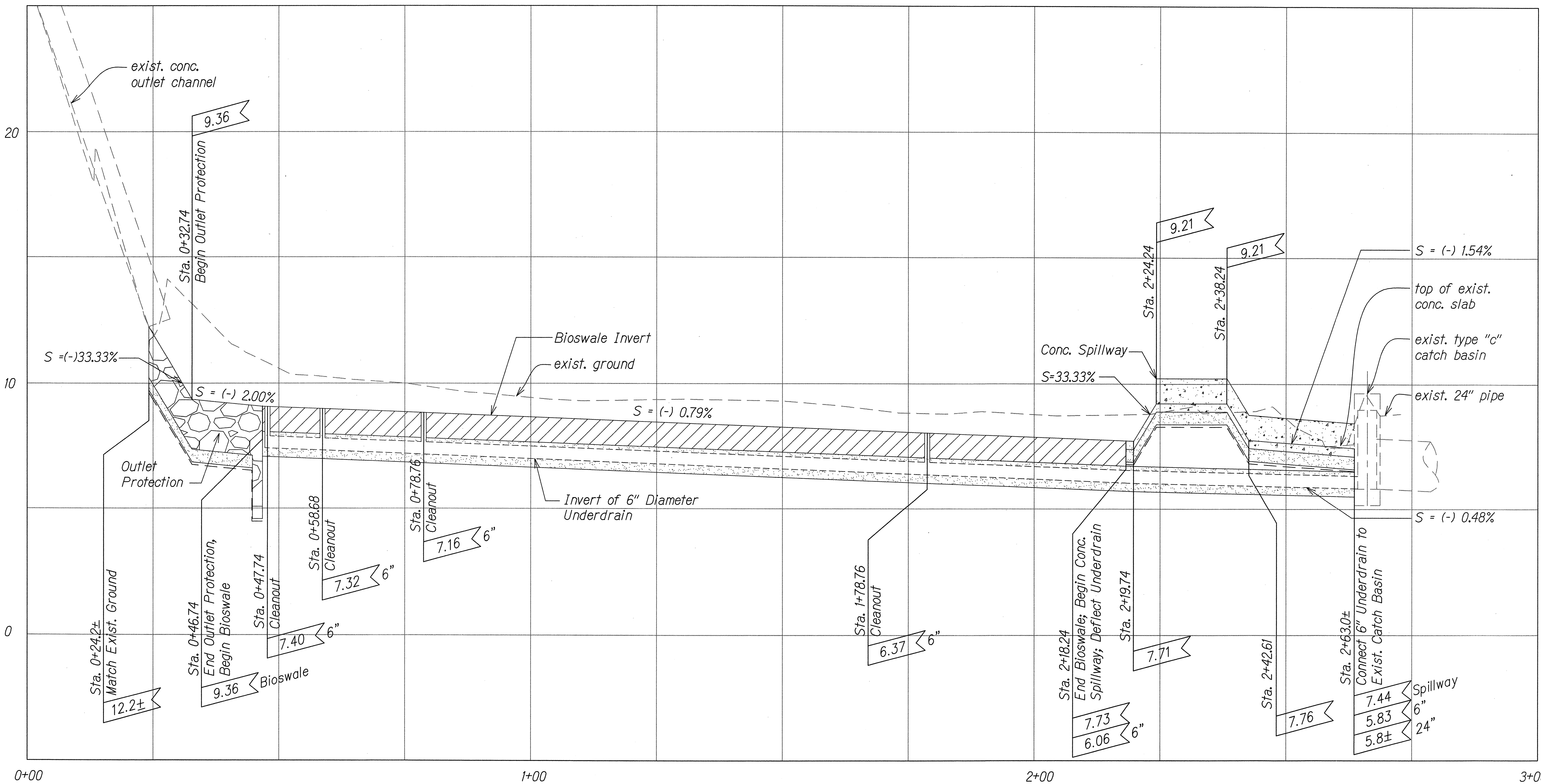
ALA WAI WATERSHED STORM WATER  
 BEST MANAGEMENT PRACTICES ON OAHU  
 Project No. H11-01-14M  
 Scale: 1" = 10'-0" Date: January 2014

SHEET No. EC-10 OF 16 SHEETS

|             |             |
|-------------|-------------|
| DATE        | 1/7/2014    |
| DESIGNED BY | DESIGNED BY |
| TRACED BY   | TRACED BY   |
| NOTED BY    | NOTED BY    |
| CHECKED BY  | CHECKED BY  |
| IN CHARGE   | IN CHARGE   |



| FED. ROAD DIST. NO. | STATE | PROJ. NO.  | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | H11-01-14M | 2014        | 25        | 42           |



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

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**BMP B PROFILE**  
 Scale: Horiz. 1" = 10'-0"  
 Vert. 1" = 2'-0"

JASON H. LAU  
 LICENSED PROFESSIONAL ENGINEER  
 NO. 9360-C  
 HAWAII, USA  
 4/30/14  
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 DEPARTMENT OF TRANSPORTATION  
 HIGHWAYS DIVISION

**BMP B PROFILE**

**UNIVERSITY AVE. CLOVERLEAF EAST**

ALA WAI WATERSHED STORM WATER  
 BEST MANAGEMENT PRACTICES ON OAHU

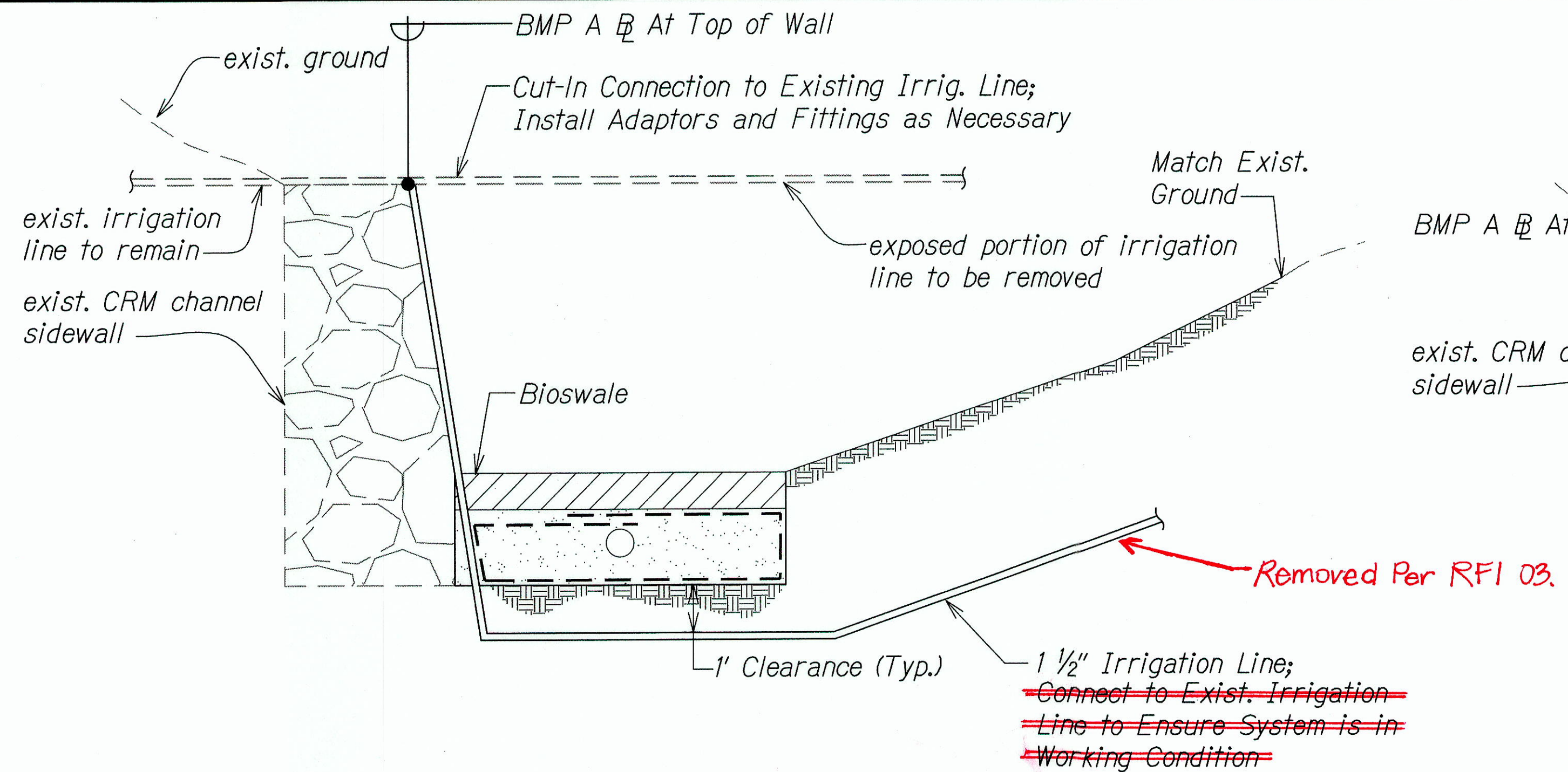
Project No. H11-01-14M

Scale: As Shown      Date: January 2014

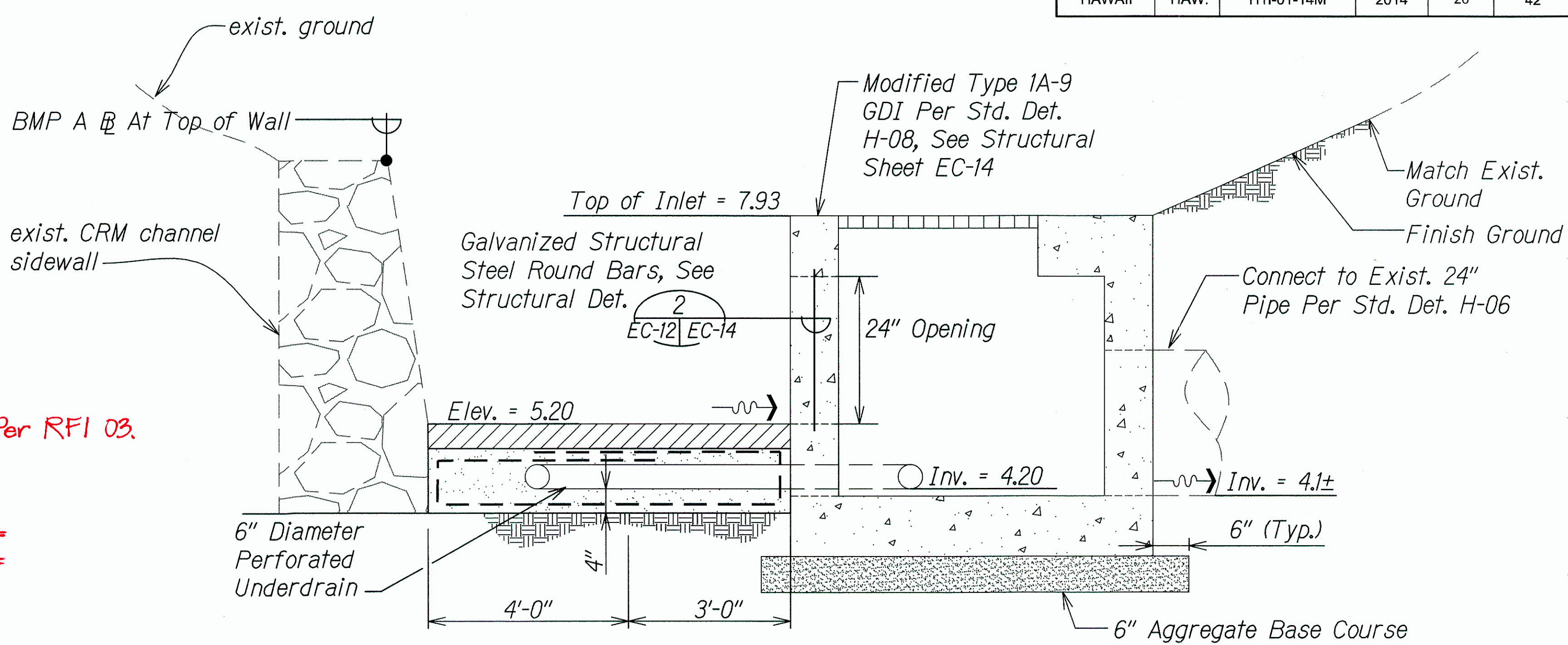
SHEET No. EC-11 OF 16 SHEETS



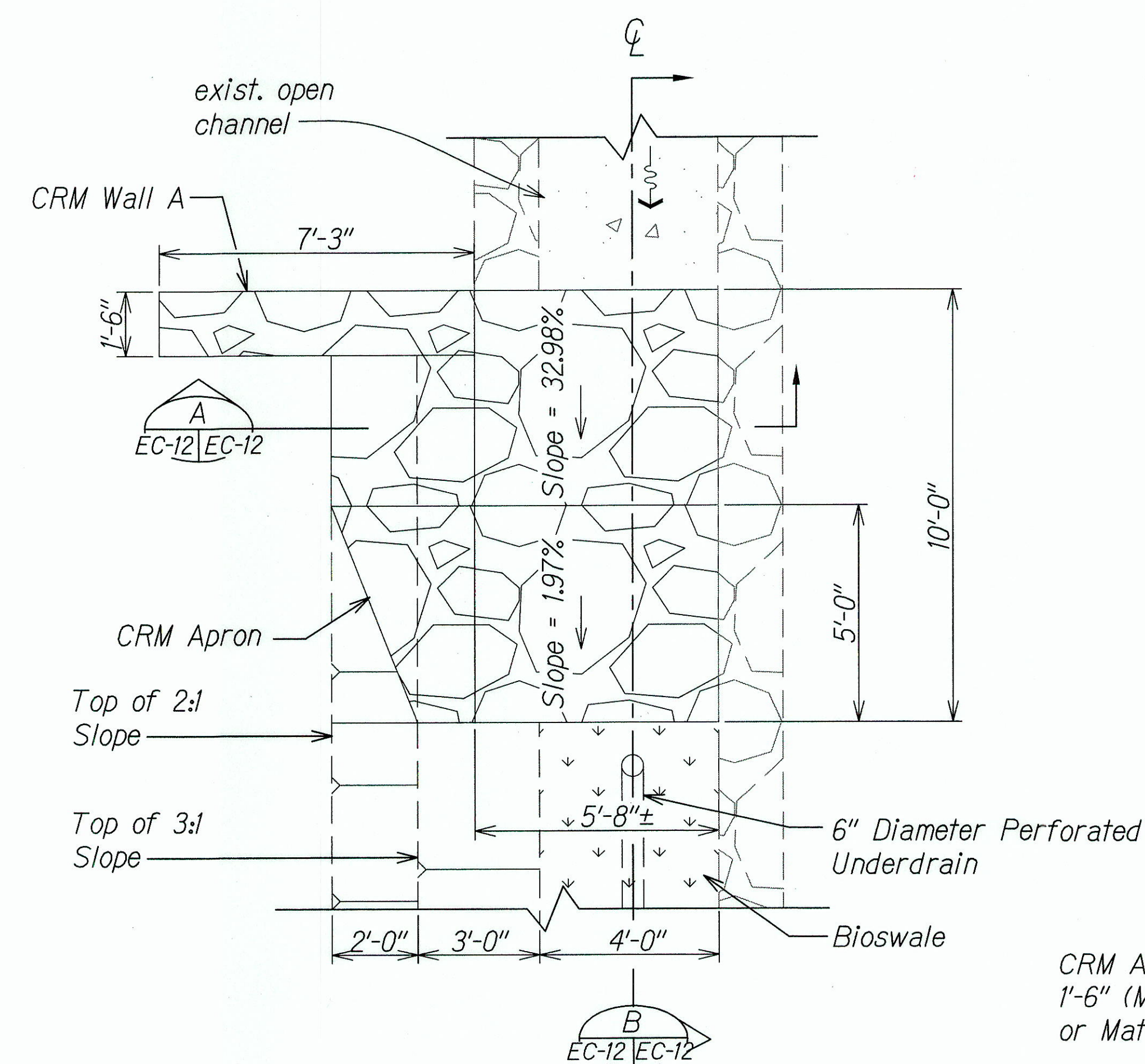
| FED. ROAD DIST. NO. | STATE | PROJ. NO.  | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | H11-01-14M | 2014        | 26        | 42           |



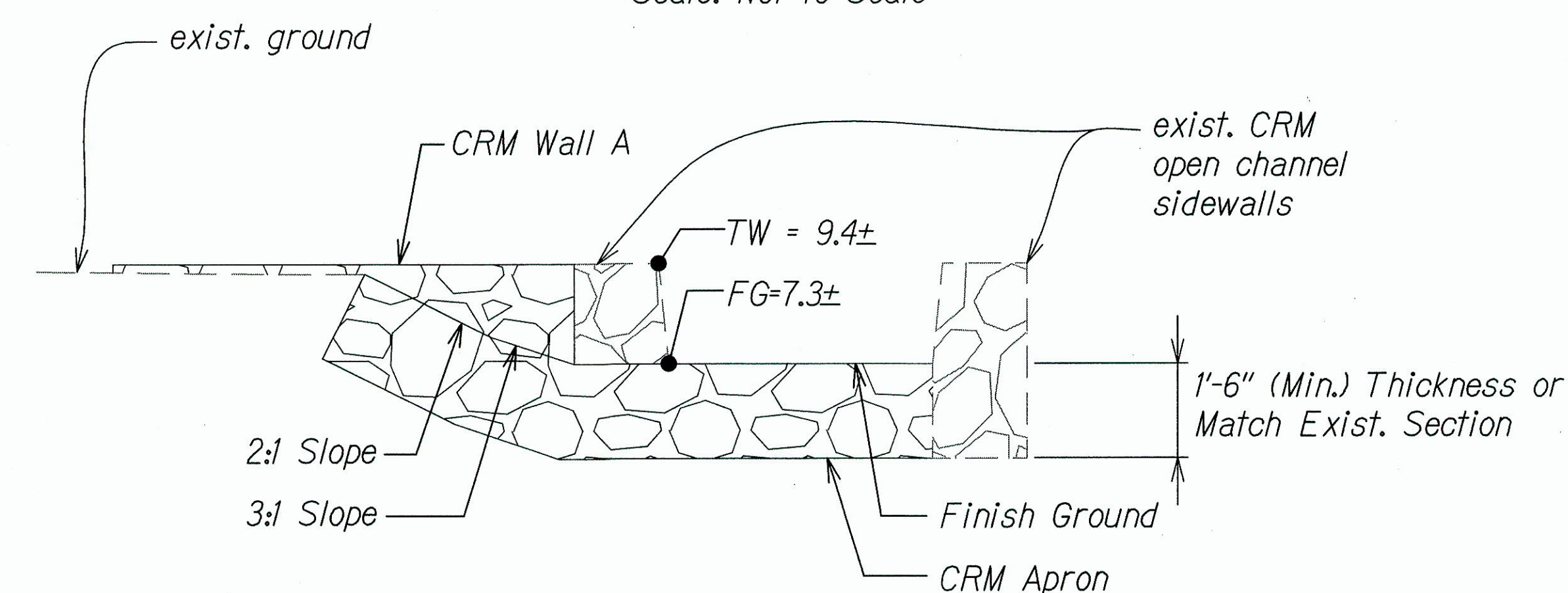
**EXIST. IRRIGATION LINE REALIGNMENT**  
Scale: Not to Scale



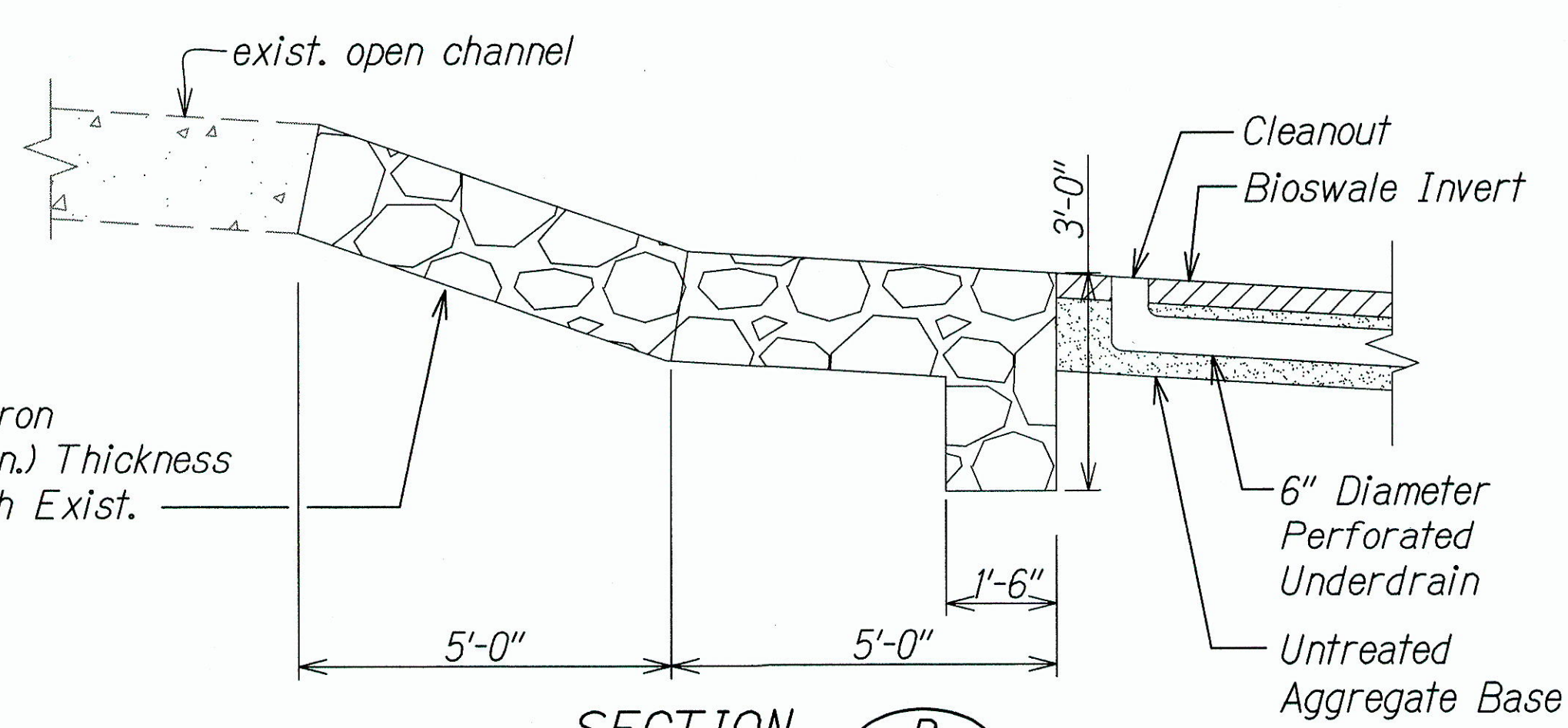
**BIOSWALE SECTION AT MODIFIED TYPE 1A-9 CB CONNECTION**  
Scale: Not to Scale



**CRM WALL A AND CRM APRON**  
Scale: Not to Scale



**SECTION A**  
EC-12/EC-12



**SECTION B**  
EC-12/EC-12

**Note:**  
1. For CRM wall footing, see Structural Sheet EC-14.

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EXP. DATE

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HIGHWAYS DIVISION

**UNIVERSITY AVE. CLOVERLEAF**

**WEST DETAILS**

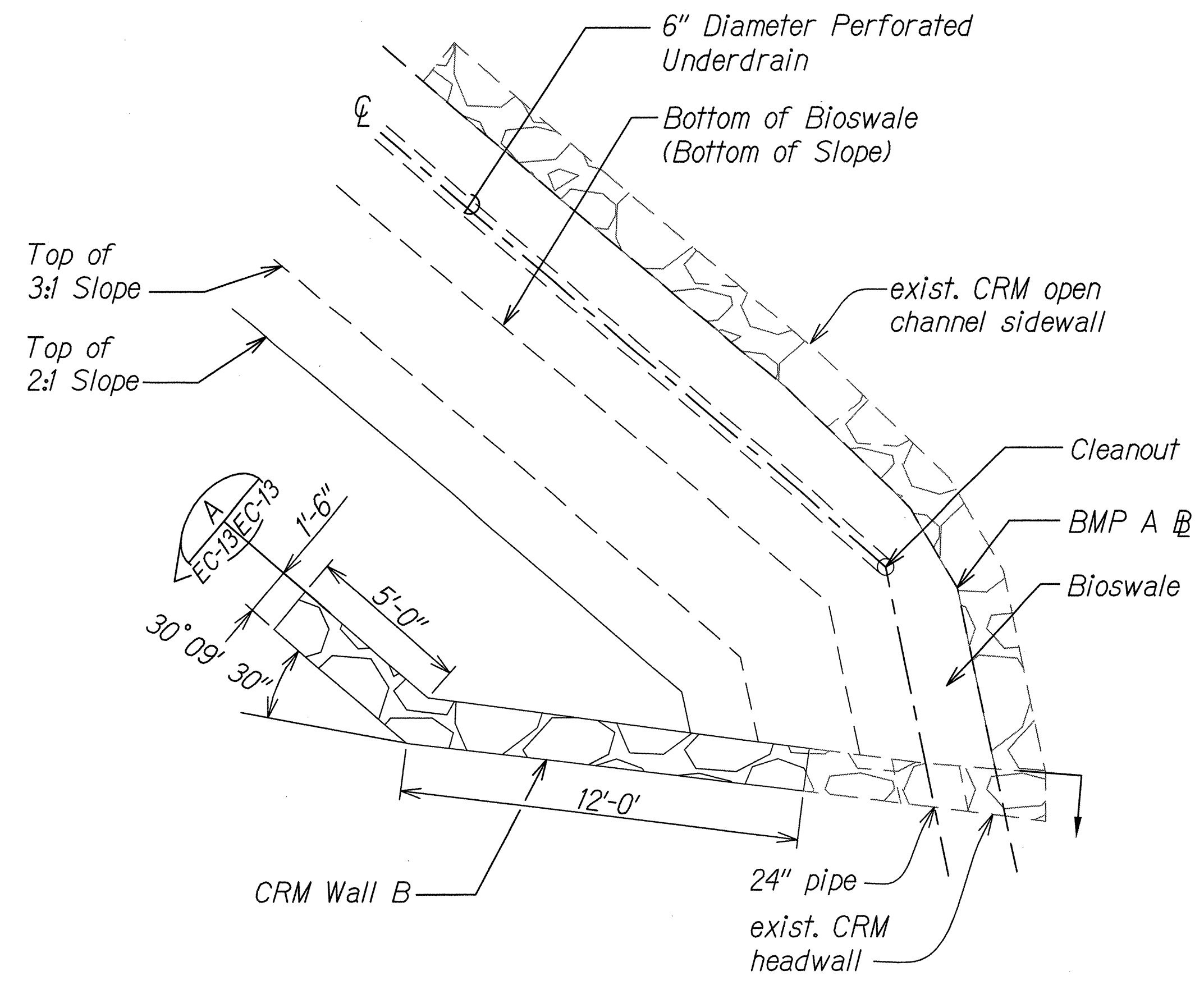
ALA WAI WATERSHED STORM WATER  
BEST MANAGEMENT PRACTICES ON OAHU

Project No. H11-01-14M

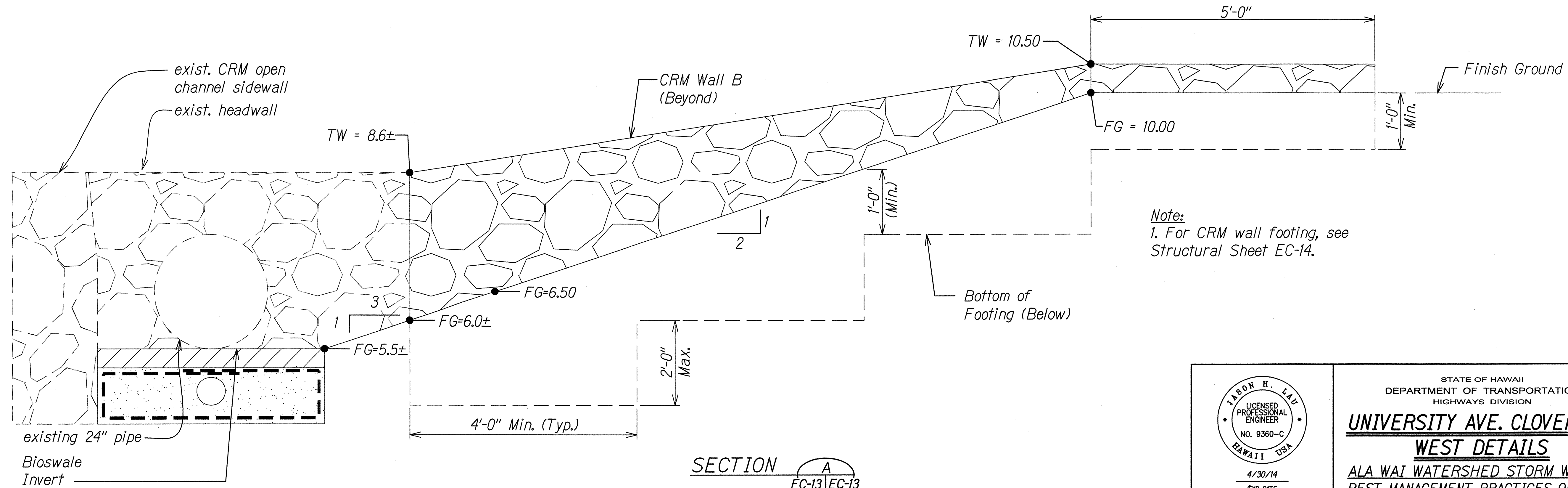
Scale: Not to Scale      Date: January 2014



| FED. ROAD DIST. NO. | STATE | PROJ. NO.  | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | H11-01-14M | 2014        | 27        | 42           |



CRM WALL B  
Scale: Not to Scale EC-05/EC-13



Note:  
1. For CRM wall footing, see Structural Sheet EC-14.

SECTION A  
EC-13/EC-13

|               |      |
|---------------|------|
| ORIGINAL PLAN | DATE |
| DESIGNED BY   |      |
| TRACED BY     |      |
| NOTE BOOK     |      |
| QUANTITIES BY |      |
| CHECKED BY    |      |
| DATE          |      |

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DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

**UNIVERSITY AVE. CLOVERLEAF**  
**WEST DETAILS**

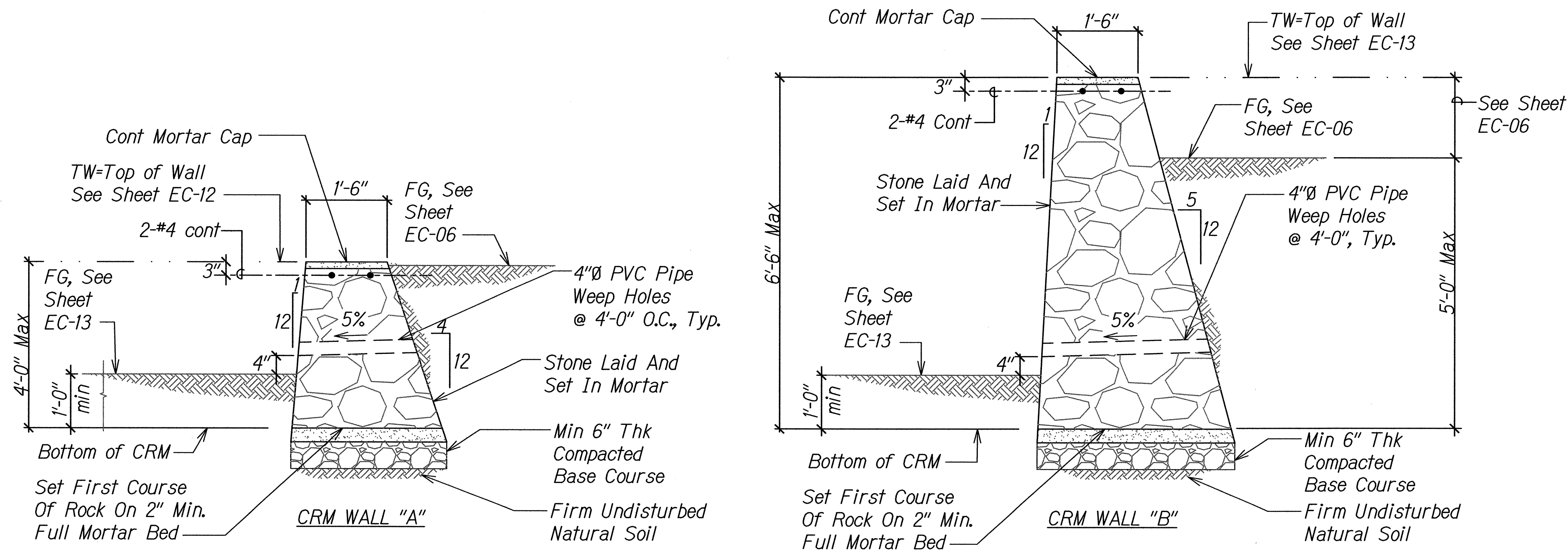
ALA WAI WATERSHED STORM WATER  
BEST MANAGEMENT PRACTICES ON OAHU

Project No. H11-01-14M  
Scale: Not to Scale Date: January 2014

SHEET No. EC-13 OF 16 SHEETS



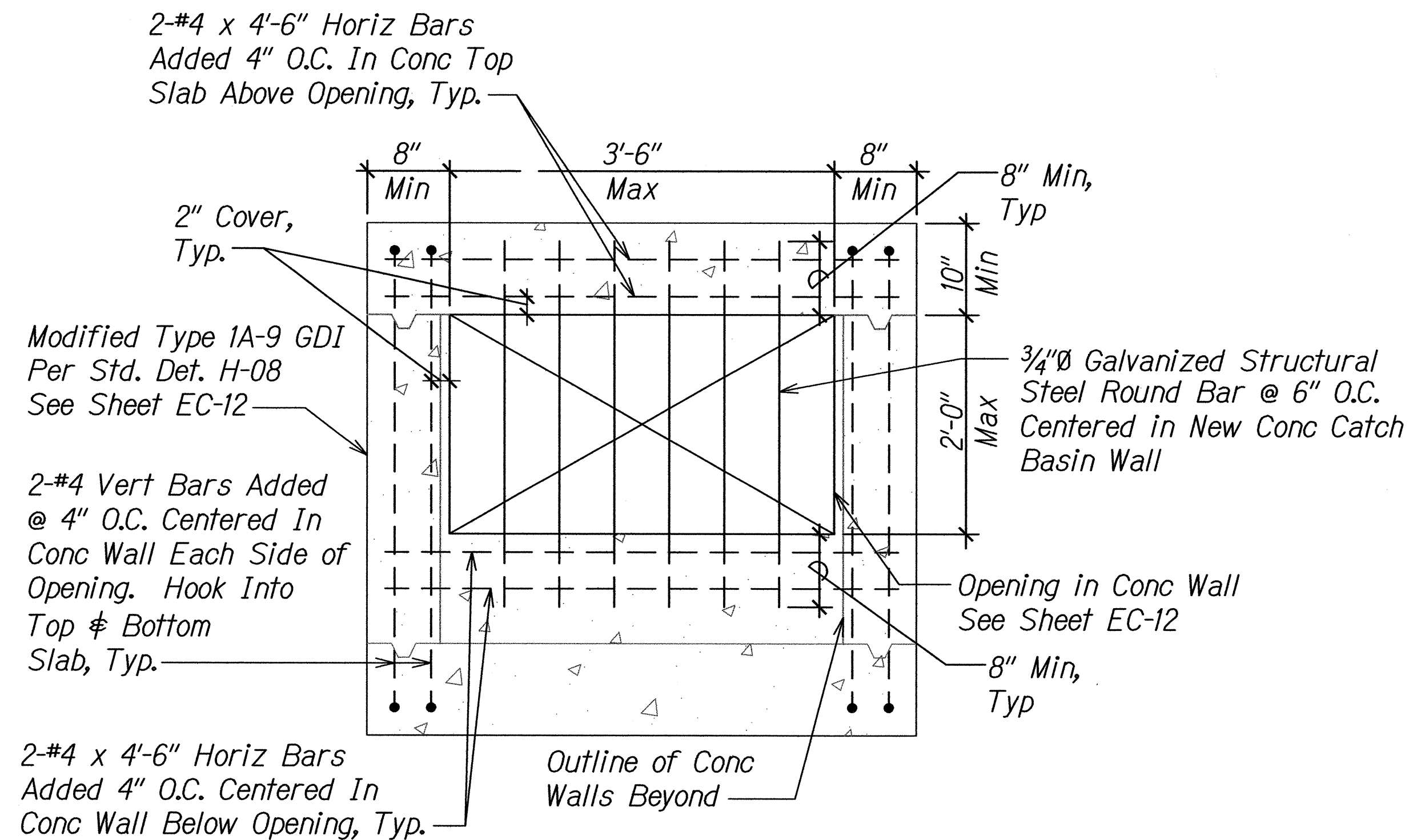
| FED. ROAD DIST. NO. | STATE | PROJ. NO.  | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | H11-01-14M | 2014        | 28        | 42           |



### CRM RETAINING WALL DETAILS

Scale: Not To Scale

1  
EC-12/EC-14



### TYPICAL REINFORCING AT MODIFIED TYPE 1A-9 CB OPENING

Scale: Not to Scale

2  
EC-12/EC-14

|               |                   |      |
|---------------|-------------------|------|
| ORIGINAL PLAN | SURVEY PLOTTED BY | DATE |
| NOTE BOOK     | DRAWN BY          |      |
| QUANTITIES BY | DESIGNED BY       |      |
| CHECKED BY    |                   |      |

X-BDR-KAWAII\BUILDING 10/29/2012 3:56:45 PM

ROY E. IWAMOTO  
LICENSED PROFESSIONAL ENGINEER  
No. 8871-S  
HAWAII, U.S.A.  
4/30/14  
EXP. DATE  
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STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

**UNIVERSITY CLOVERLEAF**  
**WEST STRUCTURAL DETAILS**

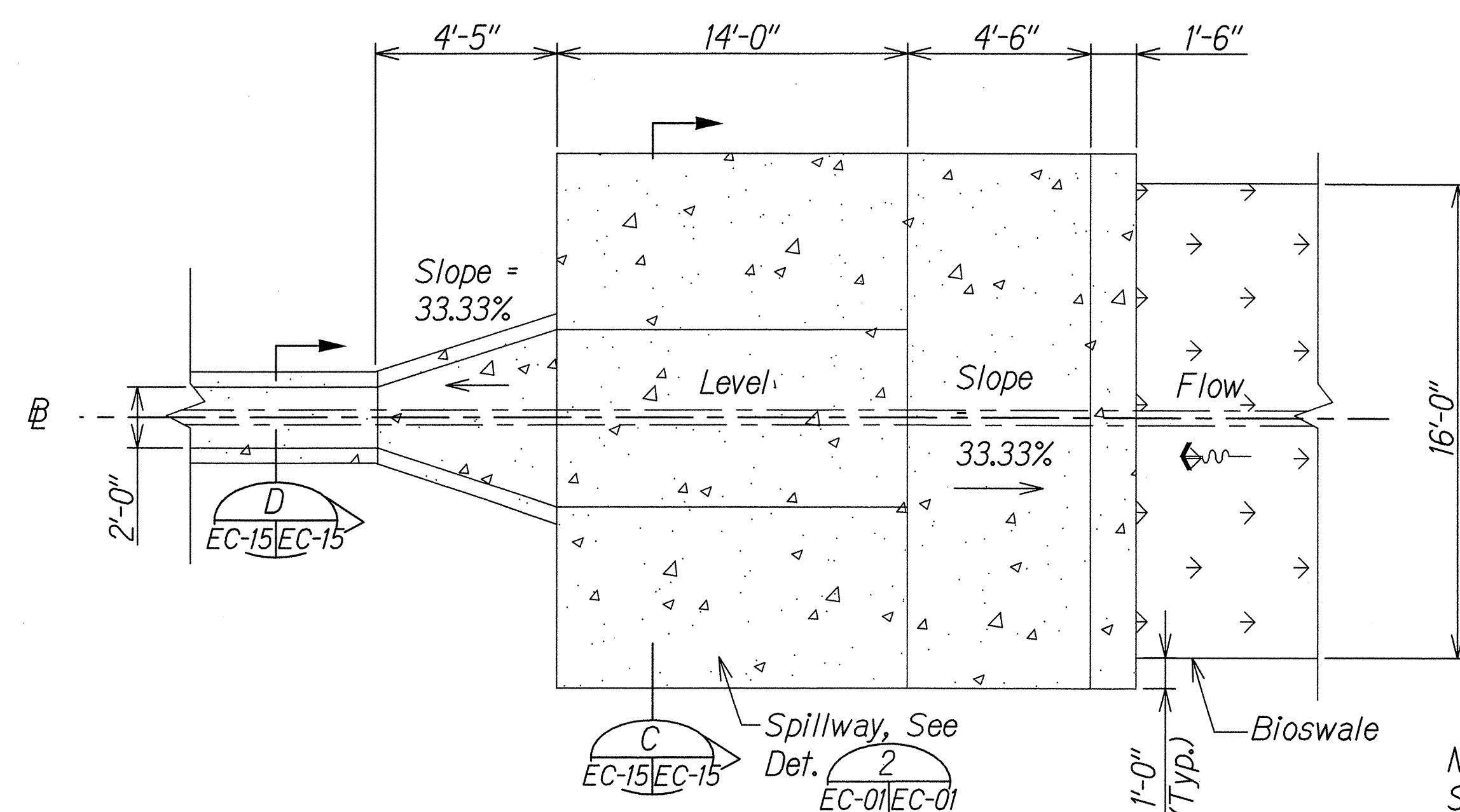
ALA WAI WATERSHED STORM WATER  
BEST MANAGEMENT PRACTICES ON OAHU  
Project No. H11-01-14M  
Scale: As Shown Date: January 2014

SHEET No. EC-14 OF 16 SHEETS



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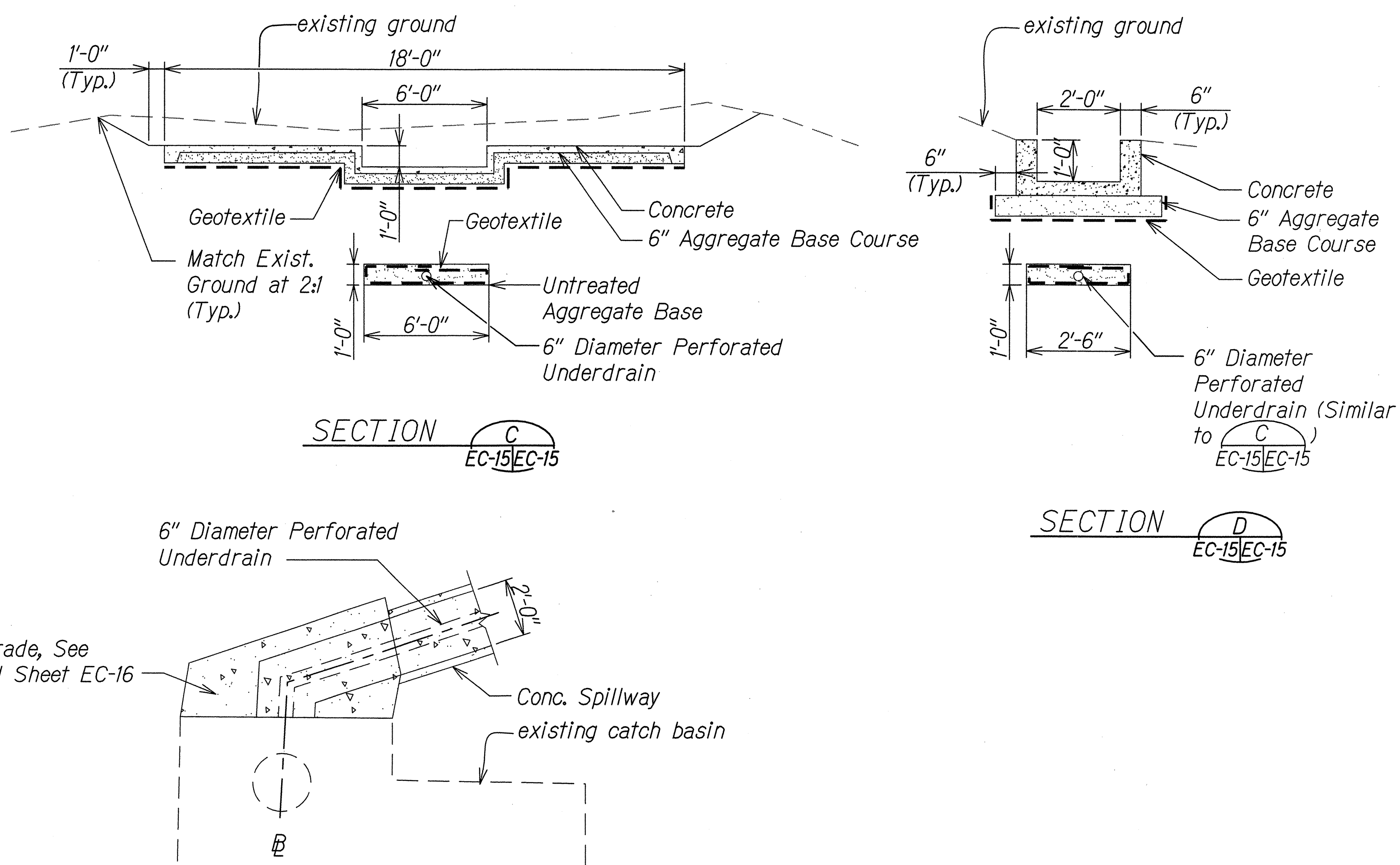
1  
EC-09|EC-15



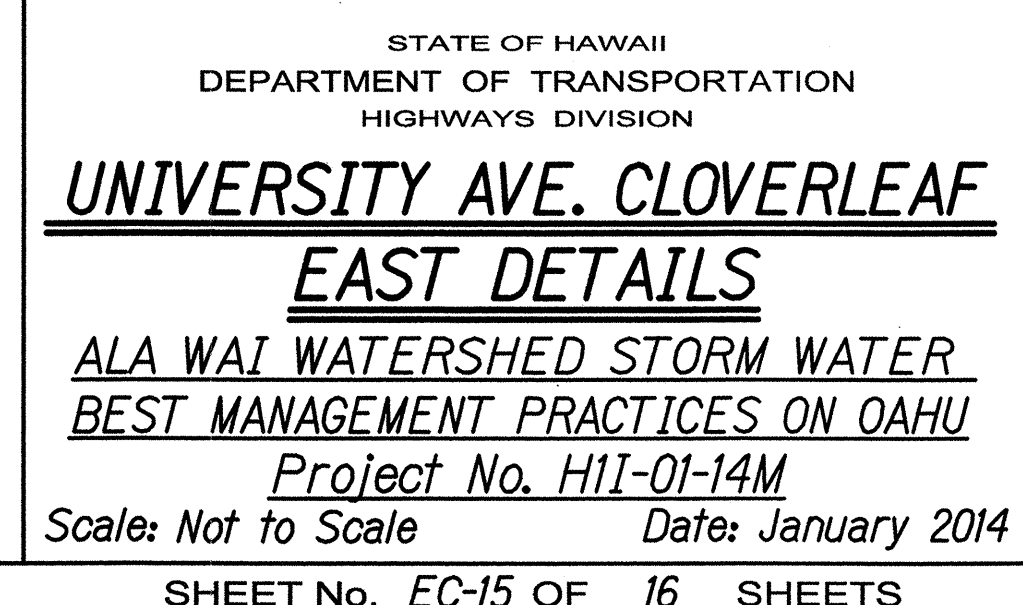
The diagram illustrates the cross-section of a bioswale. The top layer is a concrete curb with a total width of 14'-0". The curb is 4'-5" wide on the left and 4'-6" wide on the right. Below the concrete is a 1'-0" thick layer of aggregate base course, which is separated from the concrete by a geotextile. A 6" diameter perforated underdrain is located at the bottom of the aggregate base course. The bioswale invert is shown on the right side of the diagram.

2  
EC-09|EC-15

3  
EC-15|EC-1

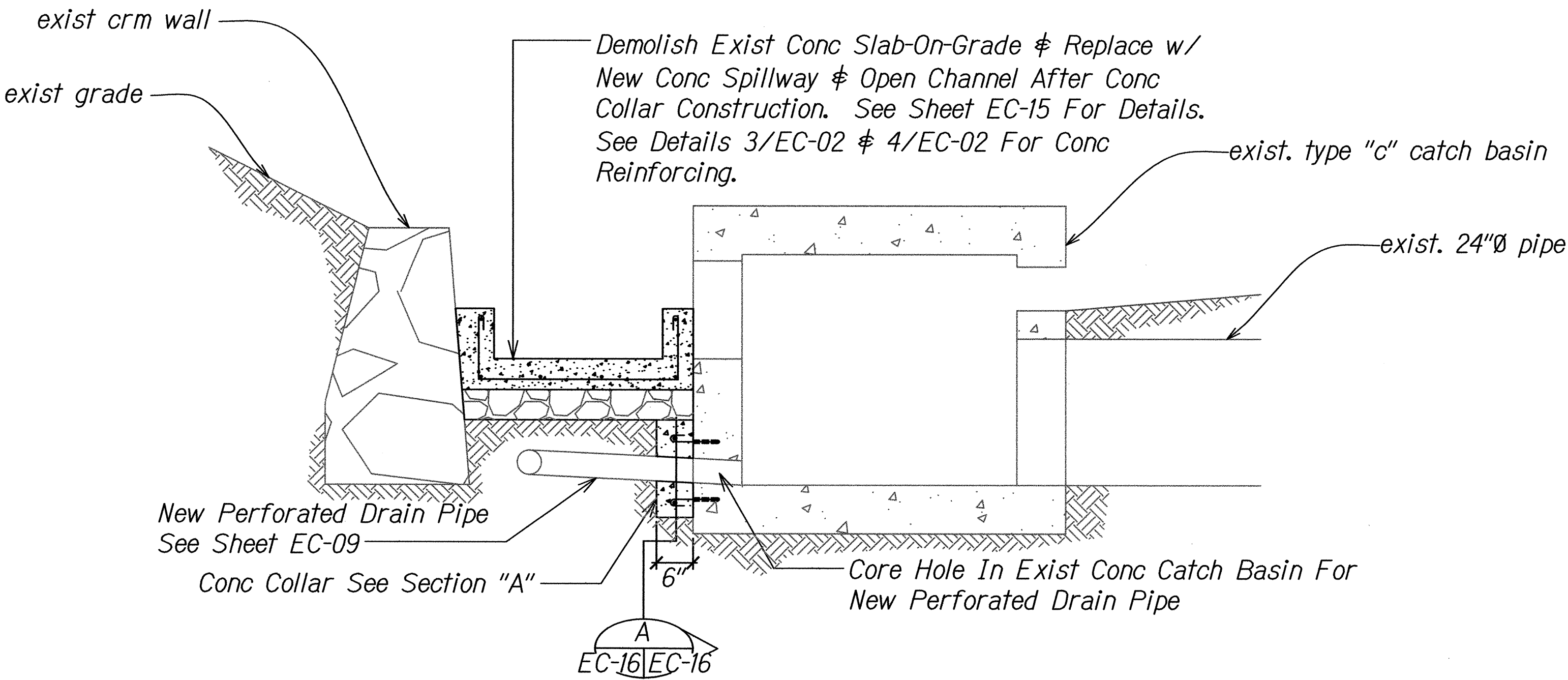


|       |       |
|-------|-------|
| EC-15 | EC-15 |
|-------|-------|



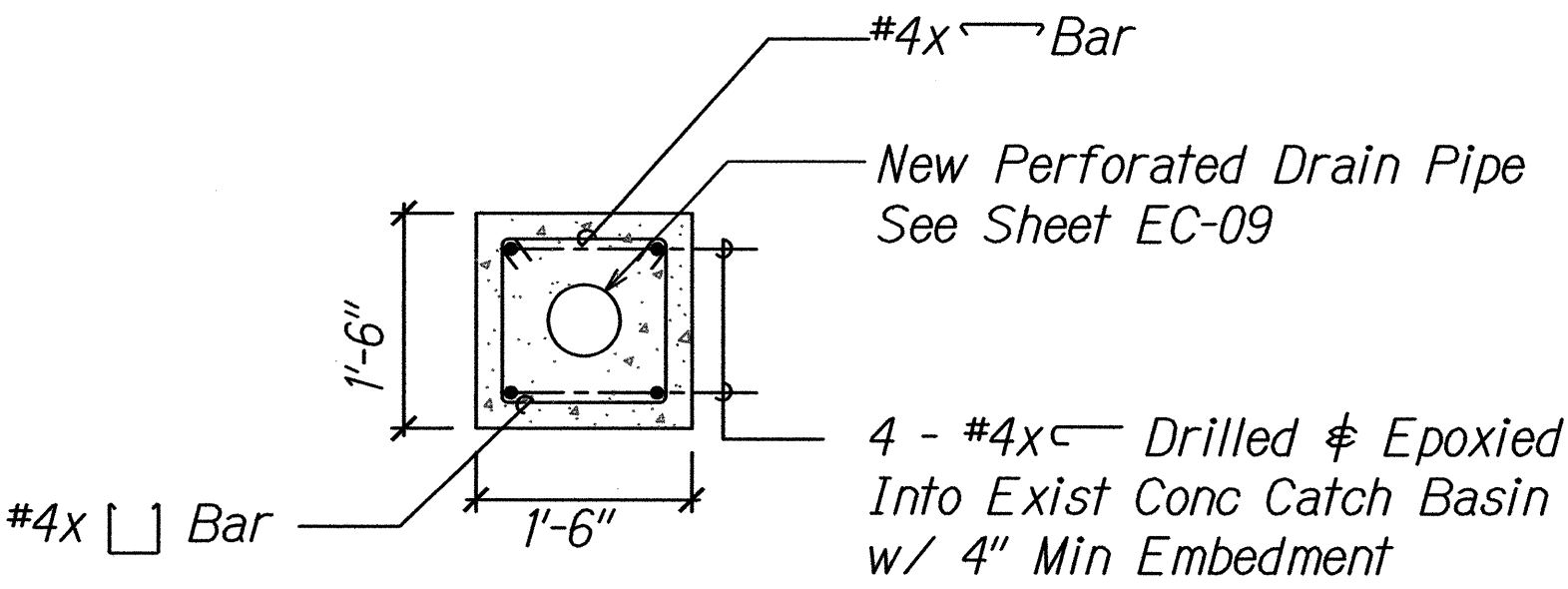


| FED. ROAD DIST. NO. | STATE | PROJ. NO.  | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | H11-01-14M | 2014        | 30        | 42           |



CONNECTION TO EXIST. CATCH BASIN DETAIL  
 Scale: Not To Scale

1  
 EC-16/EC-16



SECTION  
 Scale: 3/4" = 1'

A  
 EC-16/EC-16

|               |                   |      |
|---------------|-------------------|------|
| ORIGINAL PLAN | SURVEY PLOTTED BY | DATE |
| NOTE BOOK     | DRAWN BY          |      |
|               | DESIGNED BY       |      |
|               | QUANTITIES BY     |      |
|               | CHECKED BY        |      |

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4/30/14  
 EXP. DATE  
*Ron E. Iwamoto*  
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 DEPARTMENT OF TRANSPORTATION  
 HIGHWAYS DIVISION

**UNIVERSITY CLOVERLEAF  
 EAST STRUCTURAL DETAILS**

ALA WAI WATERSHED STORM WATER  
 BEST MANAGEMENT PRACTICES ON OAHU  
 Project No. H11-01-14M  
 Scale: As Shown Date: January 2014

SHEET No. EC-16 OF 16 SHEETS