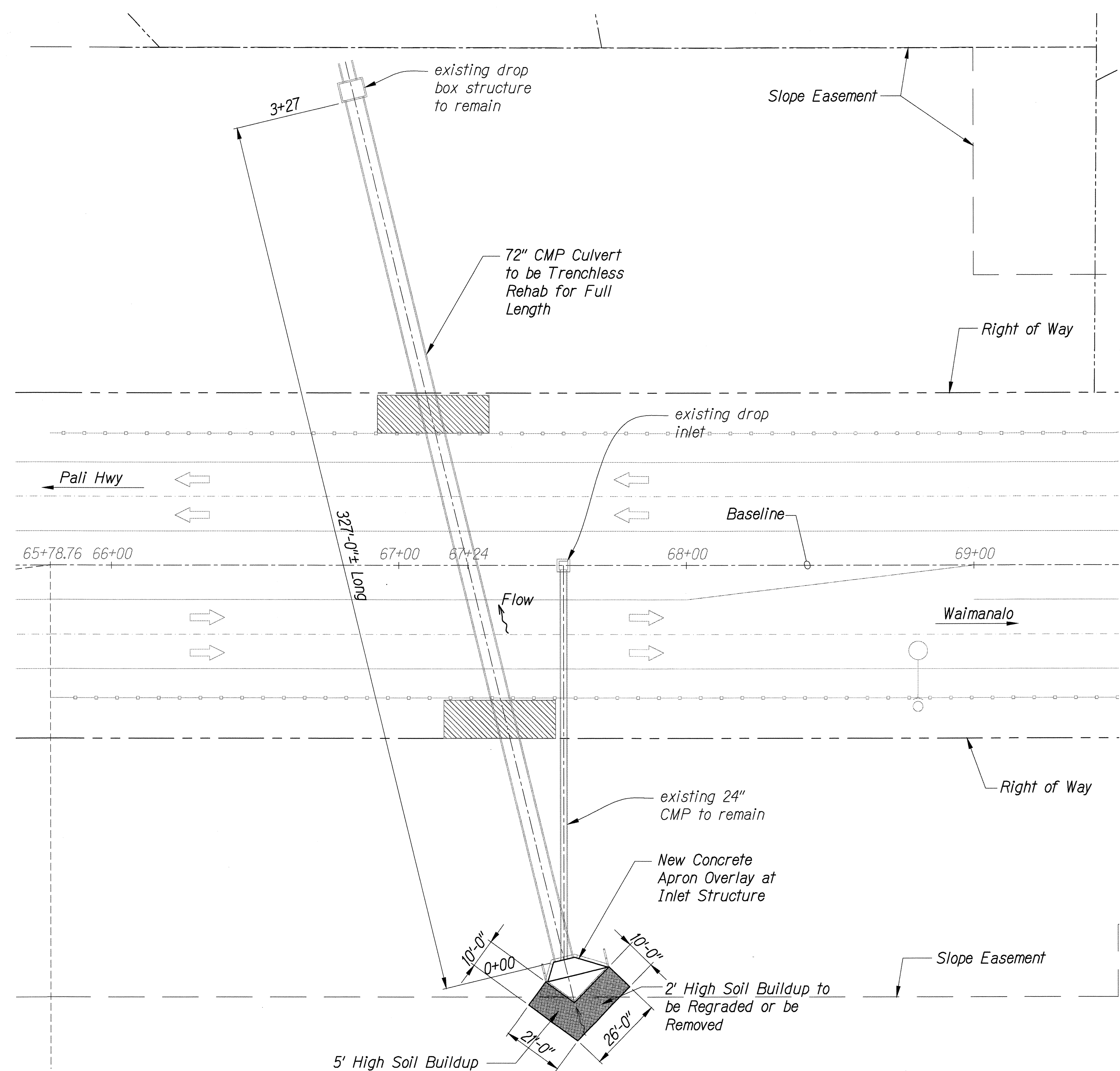


| FED. ROAD DIST. NO. | STATE | PROJ. NO.   | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|-------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | HWY-0-06-14 | 2016        | 34        | 62           |



TRUE NORTH  
Scale: 1" = 20'

**Note:**  
Contractor to coordinate with private residential properties at Akake Place during the construction.

**Legend:**  
Working Area

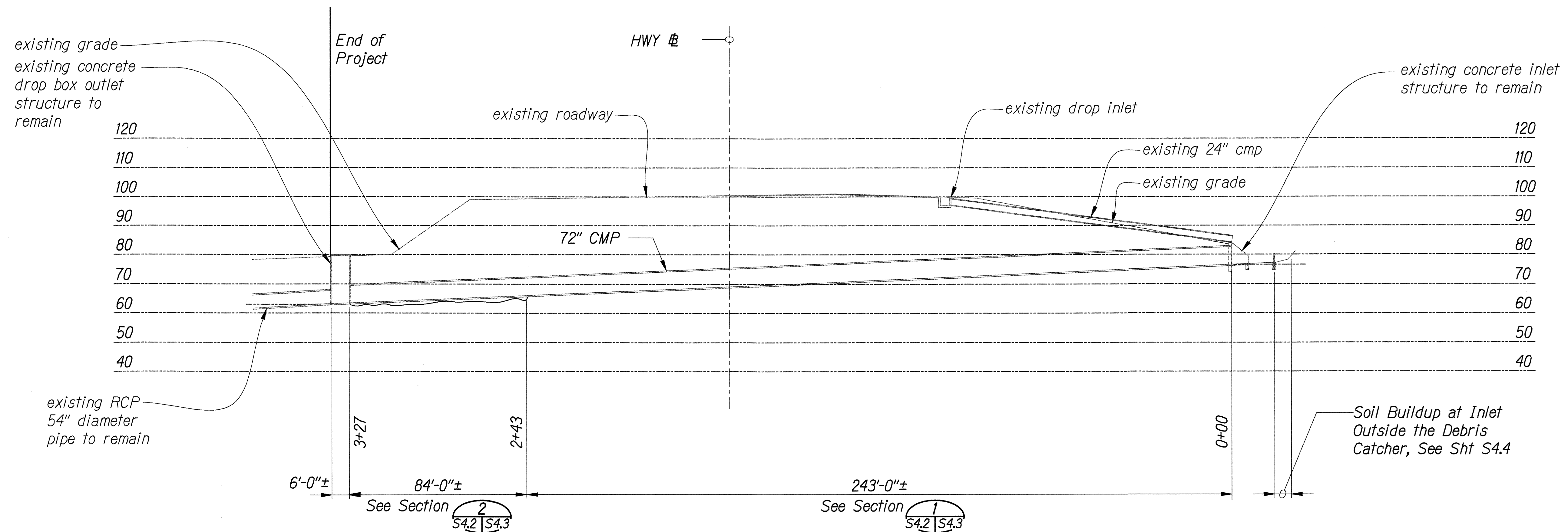
**EXISTING CULVERT PLAN, MILEPOST 1.30 (KALANIANA'OLE HIGHWAY)**  
Scale: 1" = 20'-0"

REN KAZUO HAYASHIDA  
LICENSED PROFESSIONAL ENGINEER  
No. 6818-S  
HAWAII, U.S.A.  
EXPIRATION DATE OF THE LICENSE: 4/30/2016  
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

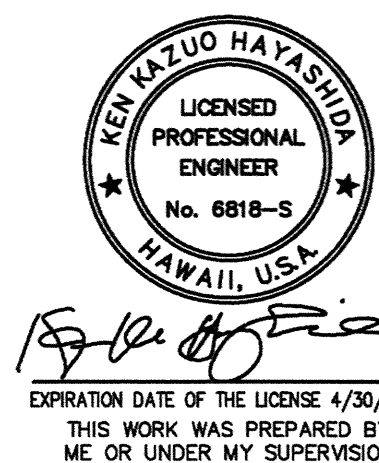
**CULVERT PLAN, MILEPOST 1.30 (KALANIANA'OLE HIGHWAY)**  
**CULVERT REMEDIATION AT VARIOUS LOCATIONS ON OAHU, PHASE 1**  
Project No. HWY-0-06-14  
Scale: As Shown Date: March 2016  
SHEET No. 34 OF 62 SHEETS

| FED. ROAD DIST. NO. | STATE | PROJ. NO.   | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|-------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | HWY-0-06-14 | 2016        | 35        | 62           |



EXISTING CULVERT SECTION, MILEPOST 1.30 (KALANIANA'OLE HIGHWAY)  
Scale: 1" = 20'-0"

1  
S4.2 S4.2



STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

**CULVERT LONG SECTION,  
M.P. 1.30 (KALANIANA'OLE HWY)**

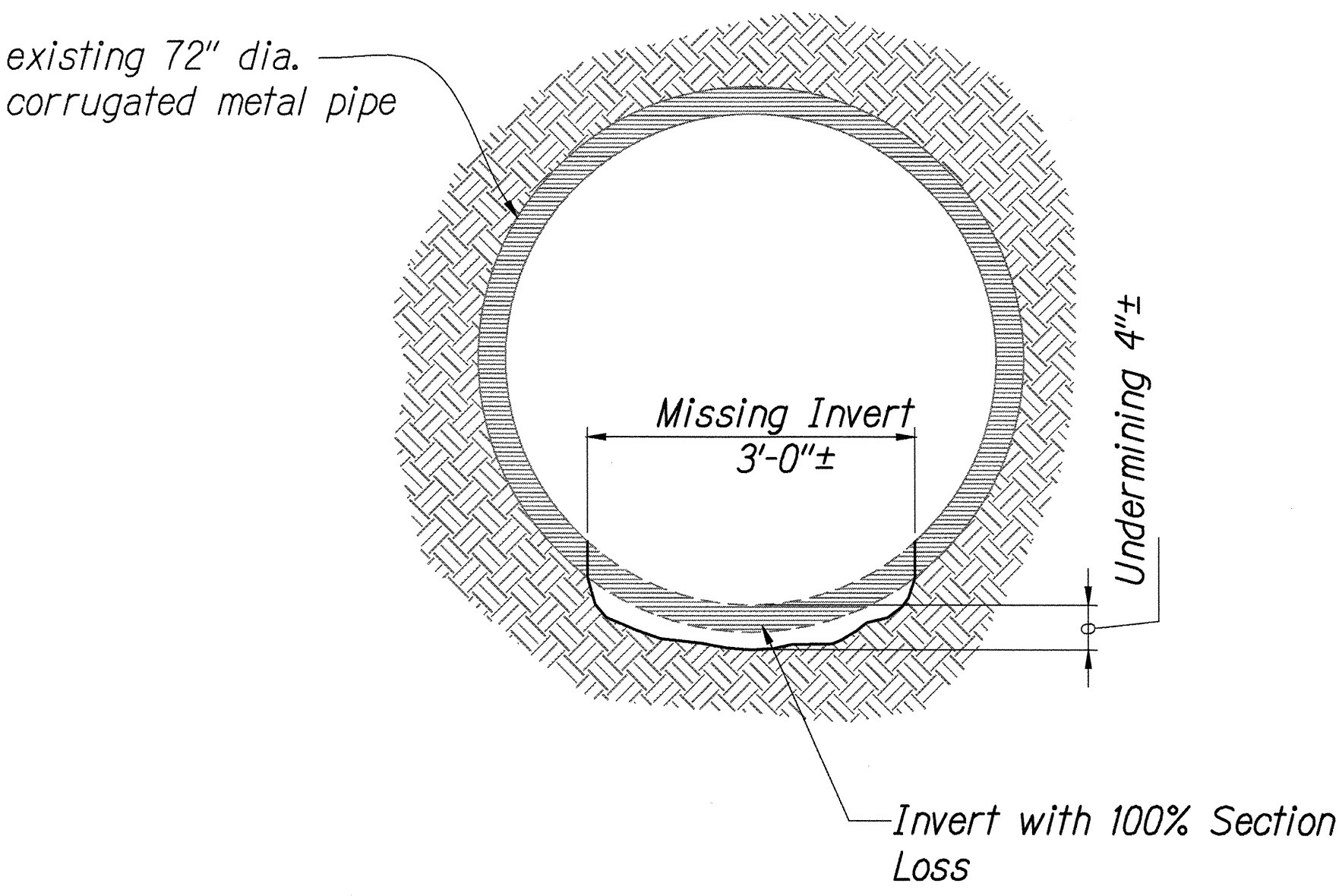
CULVERT REMEDIATION AT VARIOUS  
LOCATIONS ON OAHU, PHASE 1

Project No. HWY-0-06-14

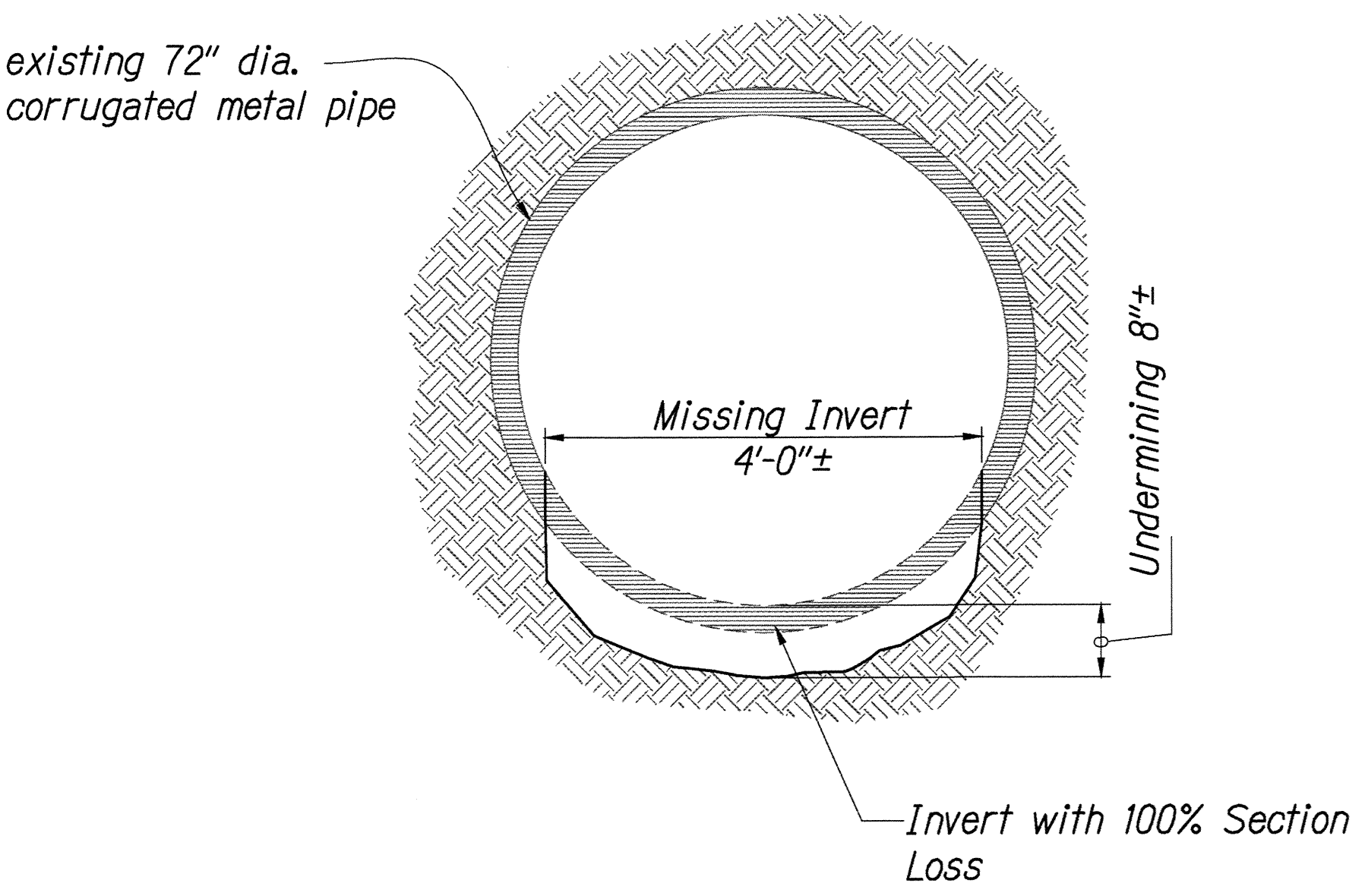
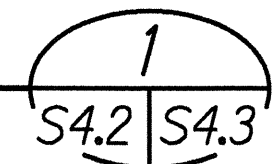
Scale: As Shown Date: March 2016

SHEET No. S4.2 OF 62 SHEETS

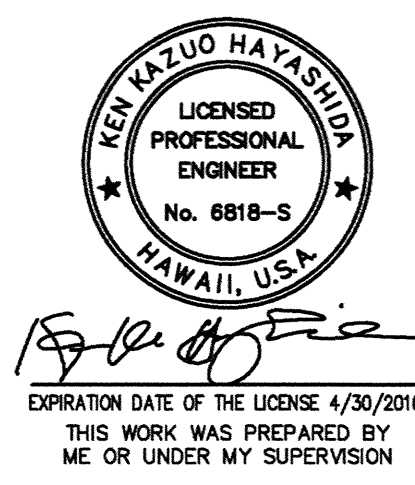
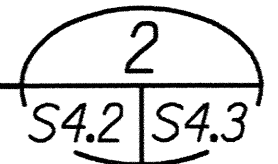
| FED. ROAD DIST. NO. | STATE | PROJ. NO.   | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|-------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | HWY-0-06-14 | 2016        | 36        | 62           |



EXISTING CULVERT SECTION AT  
STA 0+00 TO STA 2+43  
Scale: 1" = 1'-4"



EXISTING CULVERT SECTION AT  
STA 2+43 TO STA 3+27  
Scale: 1" = 1'-4"



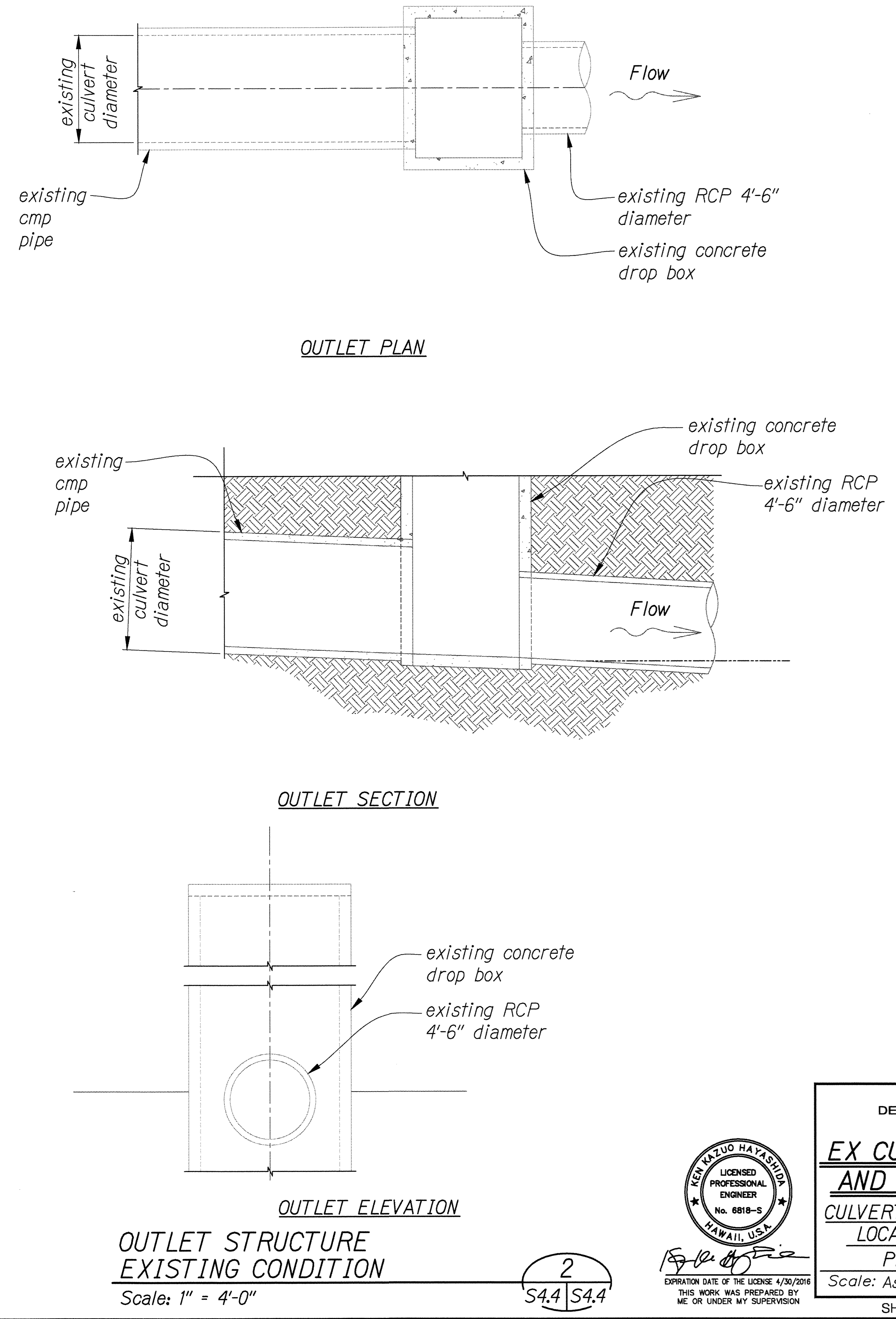
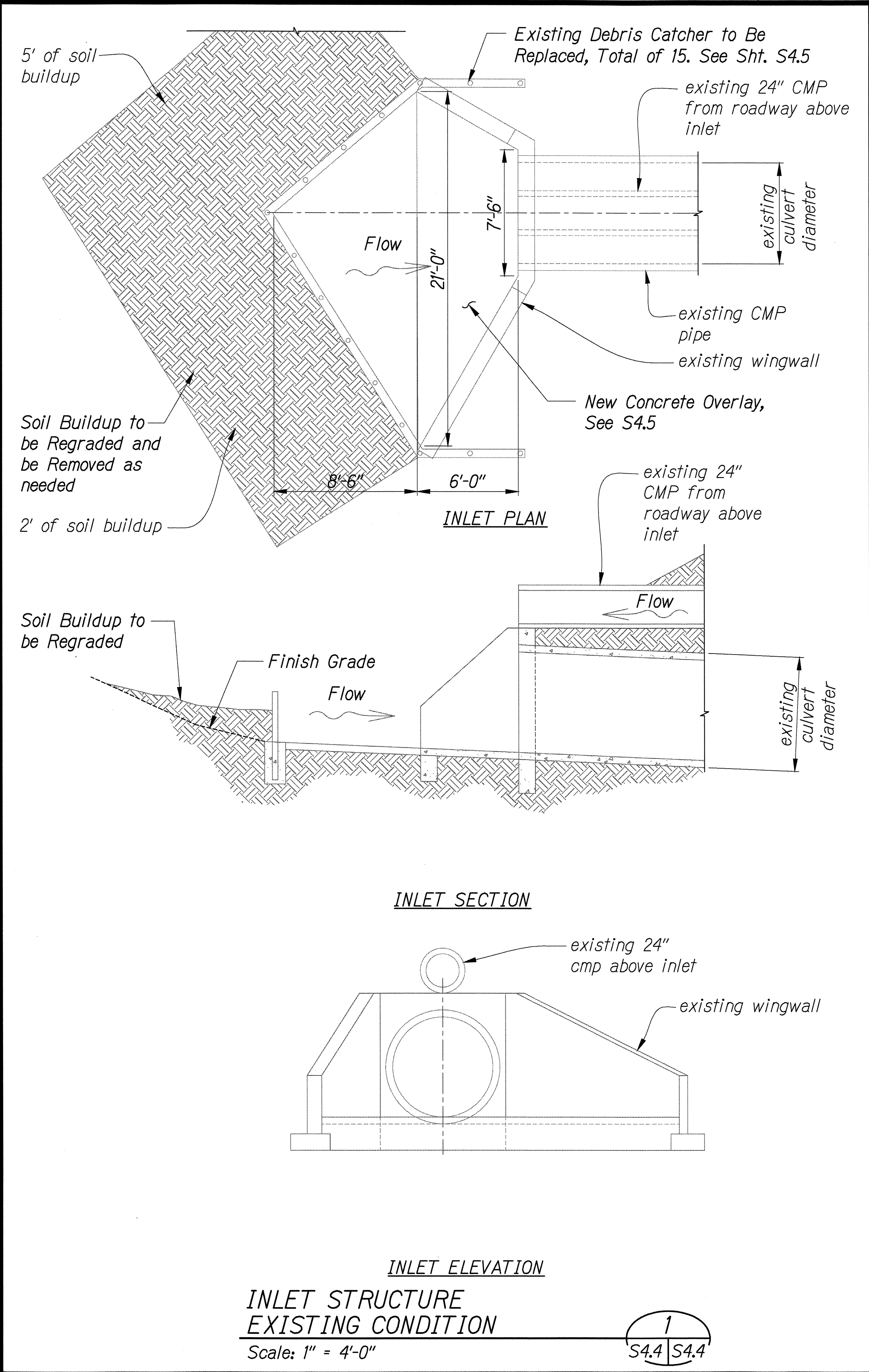
STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

**EXISTING CULVERT**  
**MILEPOST 1.30 SECTIONS**  
CULVERT REMEDIATION AT VARIOUS  
LOCATIONS ON OAHU, PHASE 1  
Project No. HWY-0-06-14  
Scale: As Shown      Date: March 2016

SHEET No. **S4.3** OF 62 SHEETS

P:\Drafting\2016-03-04-2372 Culvert Inspections\2016-03-04-2372 Culvert Inspections Plg 1\2372\_S4.dwg, 016, 3/10/2016 1:53:06 PM, Lionel, 11

| FED. ROAD DIST. NO. | STATE | PROJ. NO.   | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|-------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | HWY-0-06-14 | 2016        | 37        | 62           |



KEN KAZUO HAYASHIDA  
LICENSED PROFESSIONAL ENGINEER  
No. 6818-S  
HAWAII, U.S.A.

EXPIRATION DATE OF THE LICENSE 4/30/2016  
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

**EX CULVERT M.P. 1.30 INLET AND OUTLET STRUCTURES**

CULVERT REMEDIATION AT VARIOUS LOCATIONS ON OAHU, PHASE 1

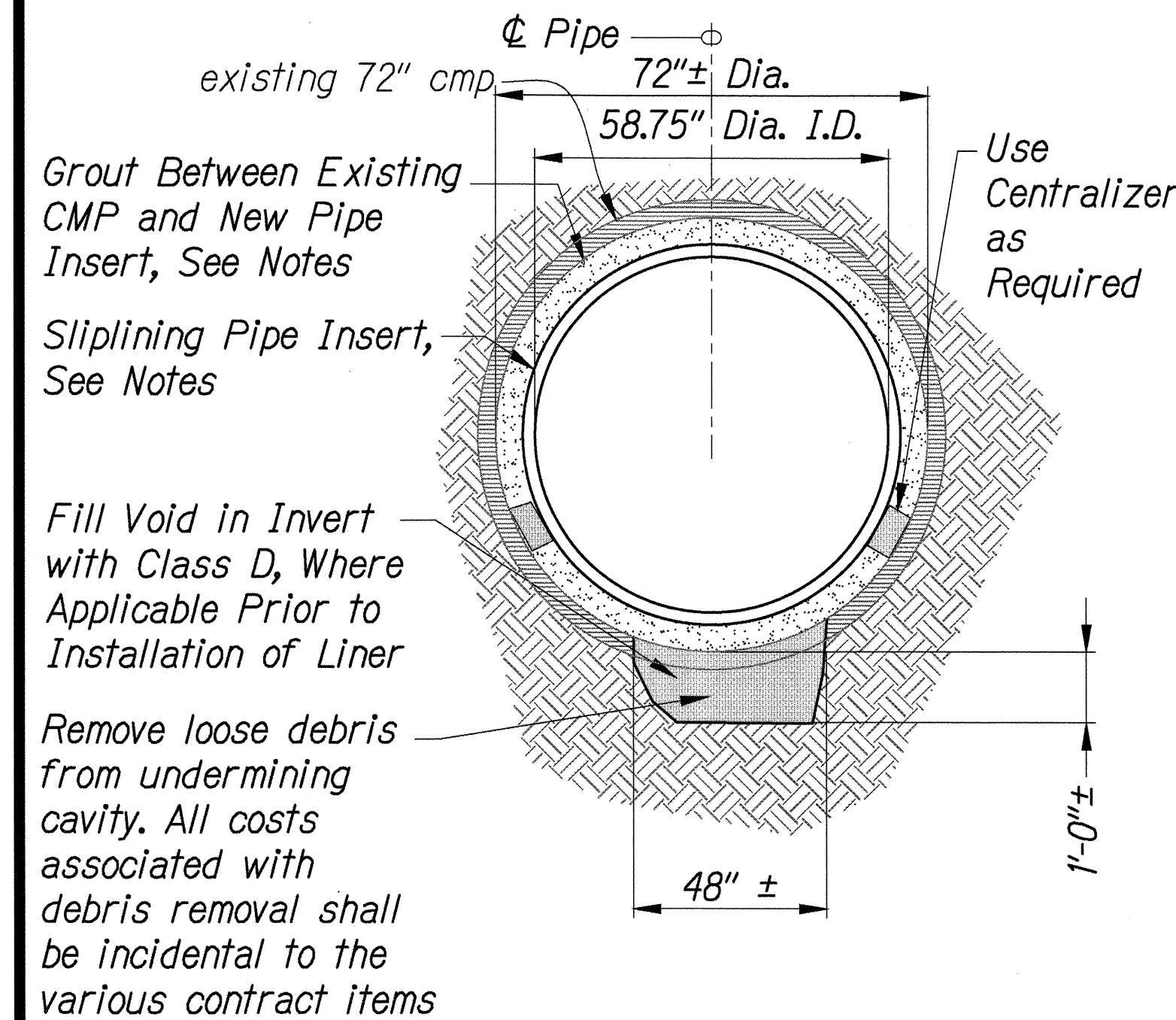
Project No. HWY-0-06-14

Scale: As Shown Date: March 2016

SHEET No. S4.4 OF 62 SHEETS

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| FED. ROAD DIST. NO. | STATE | PROJ. NO.   | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|-------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | HWY-0-06-14 | 2016        | 38        | 62           |

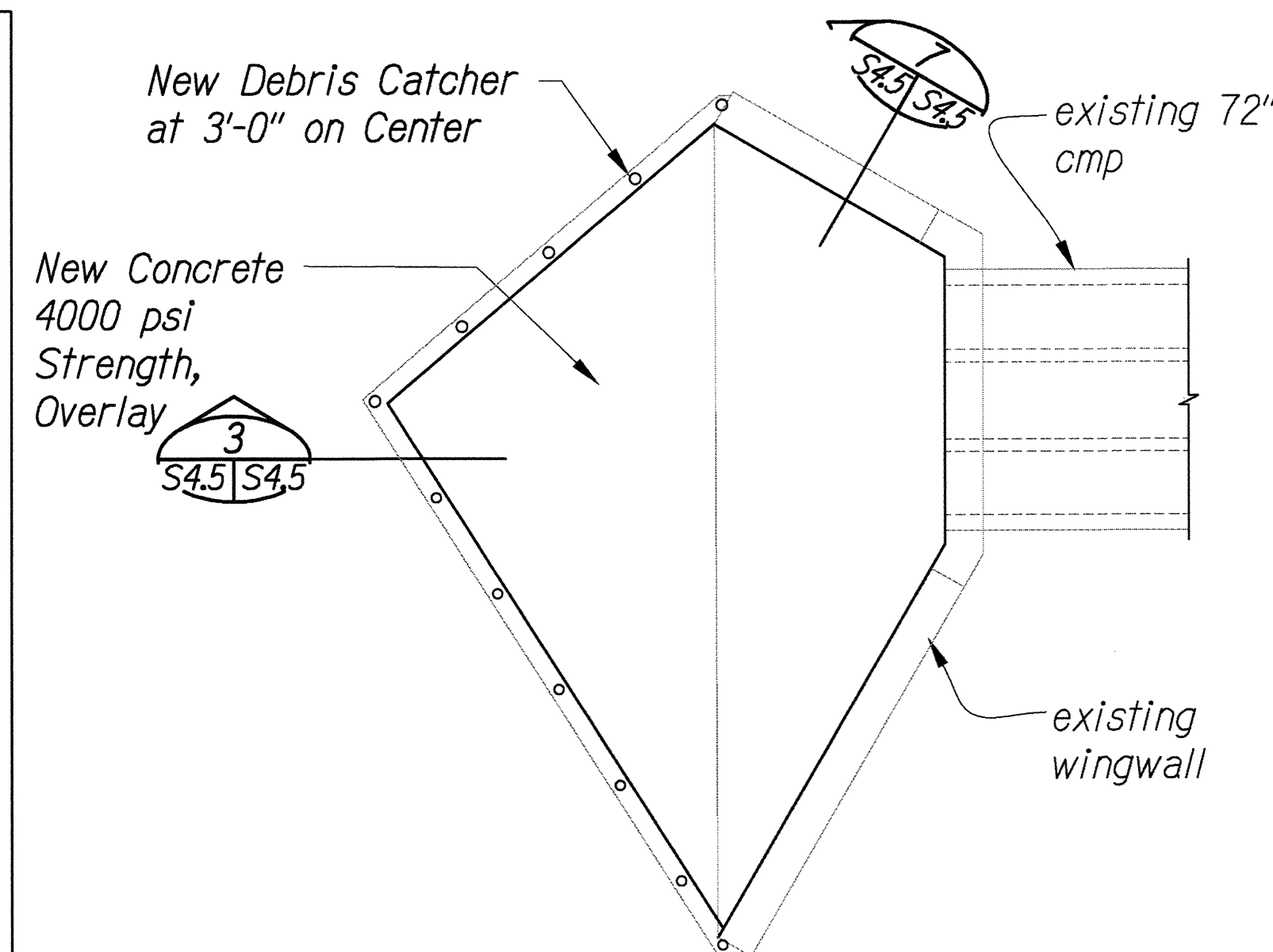


### TYPICAL PIPE REPAIR AND SLIPLINE DETAIL

Scale: 1" = 2'-0"

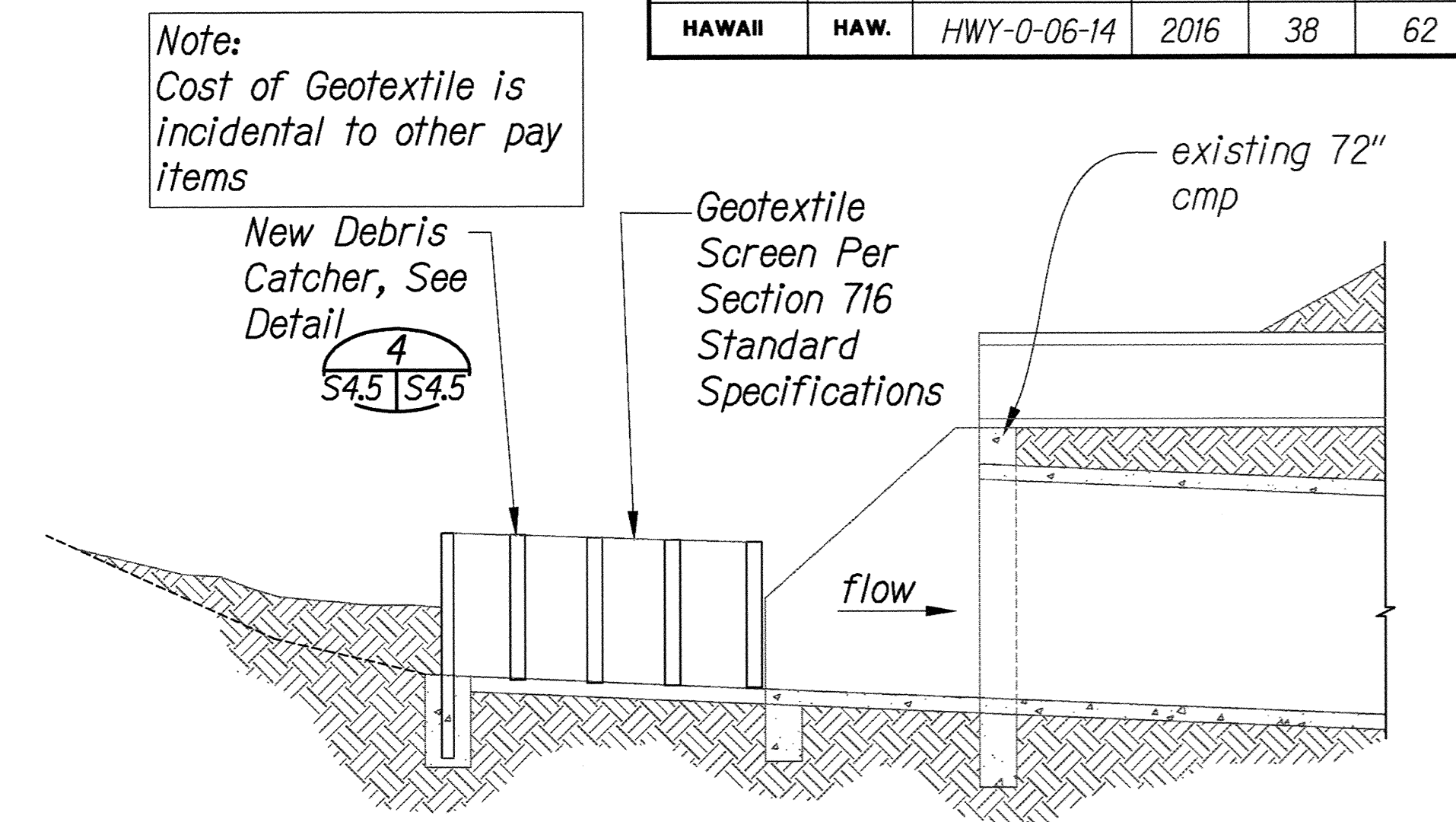
### Notes:

- Contractor may use the following method for pipe rehabilitating :  
a. Sliplining pipe with High Density Polyethylene Pipe (HDPE)  
b. Sliplining pipe with Fiber Reinforced Polymer (FRP)  
c. Cured In Place Pipe (CIPP)
- Contractor to provide shop drawings, grouting method and specification, and structural calculation stamped by licensed structural engineer in State of Hawaii to Engineer for review and approval of selected rehabilitation method.
- Contractor to provide grout between the existing pipe and liner in sliplining rehabilitation method only CIPP rehabilitation method grouting is not required.
- Contractor to measure existing culvert to verify size of host pipe prior to ordering the material for rehabilitation.



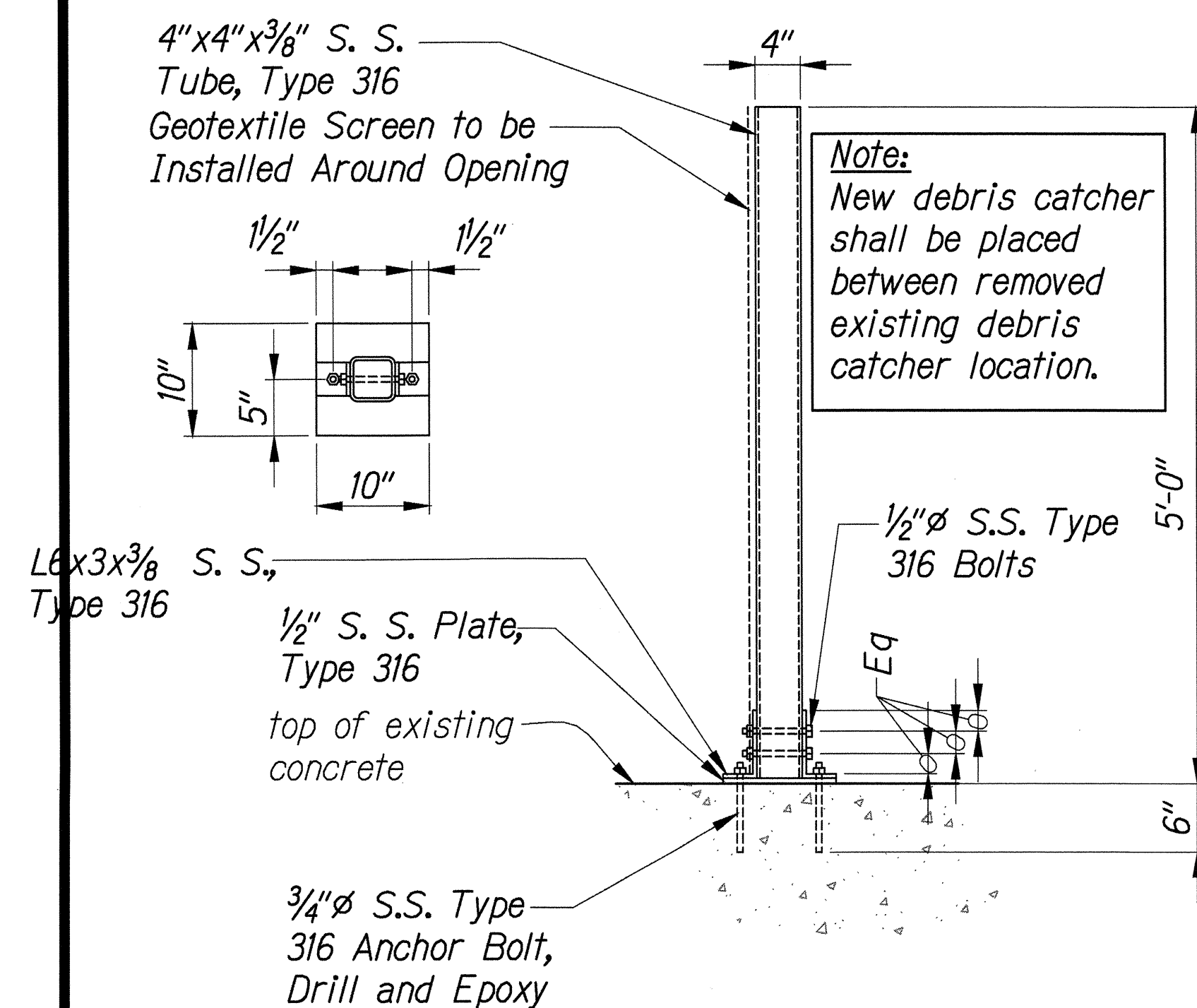
### INLET PLAN VIEW

Scale: 1" = 4'-0"



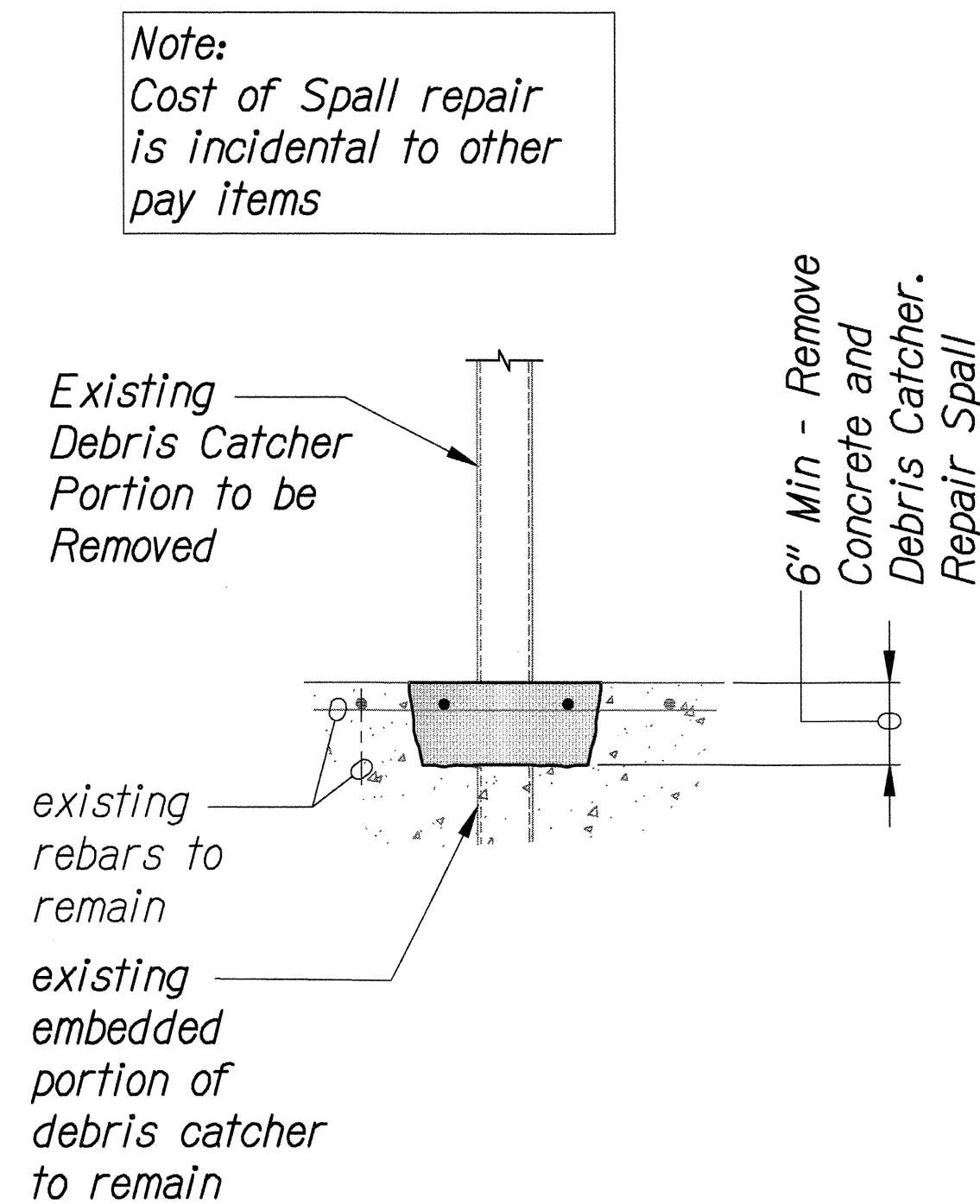
### SECTION

Scale: 1" = 4'-0"



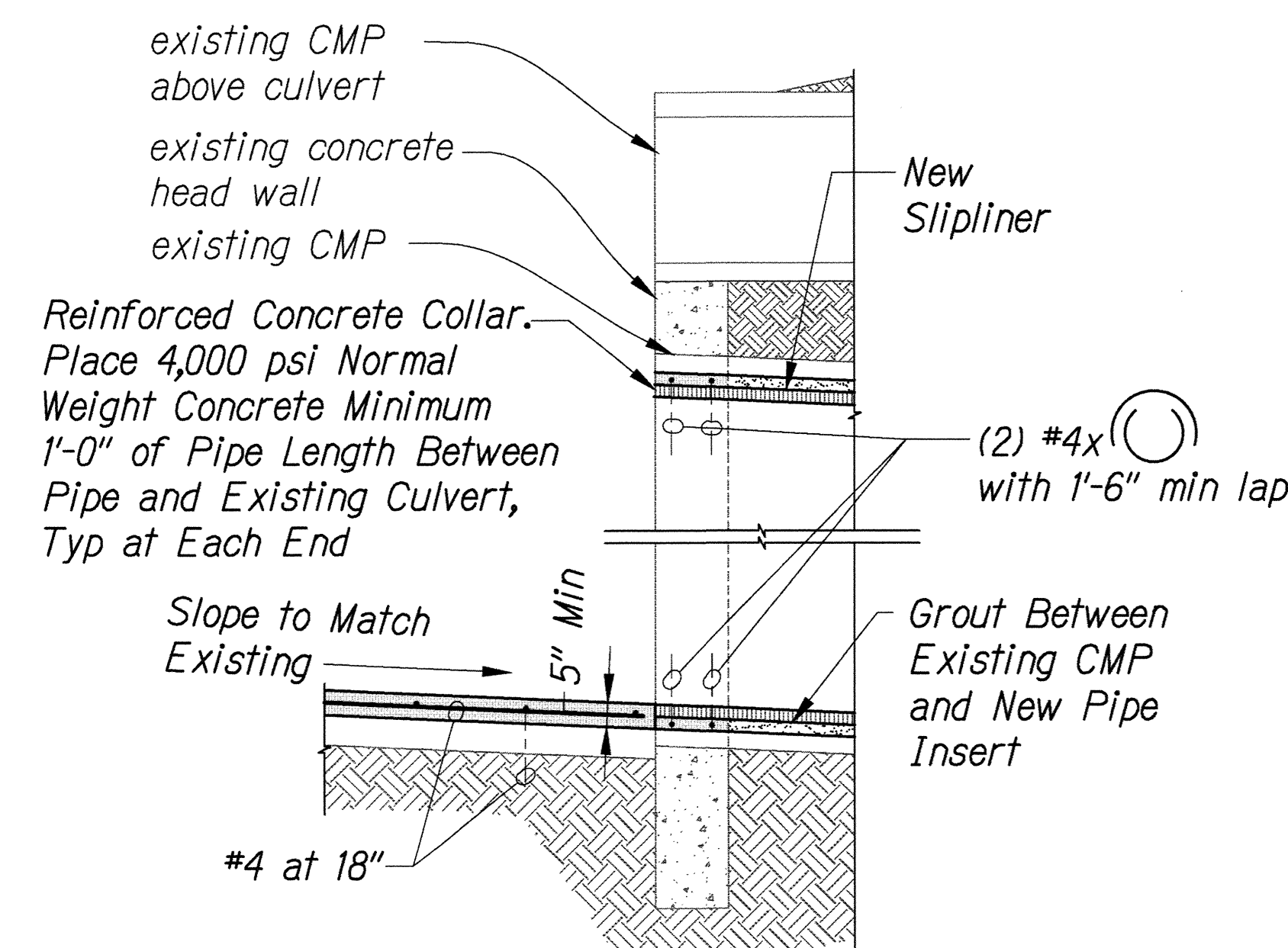
### NEW DEBRIS CATCHER DETAIL

Scale: 1" = 1'-0"



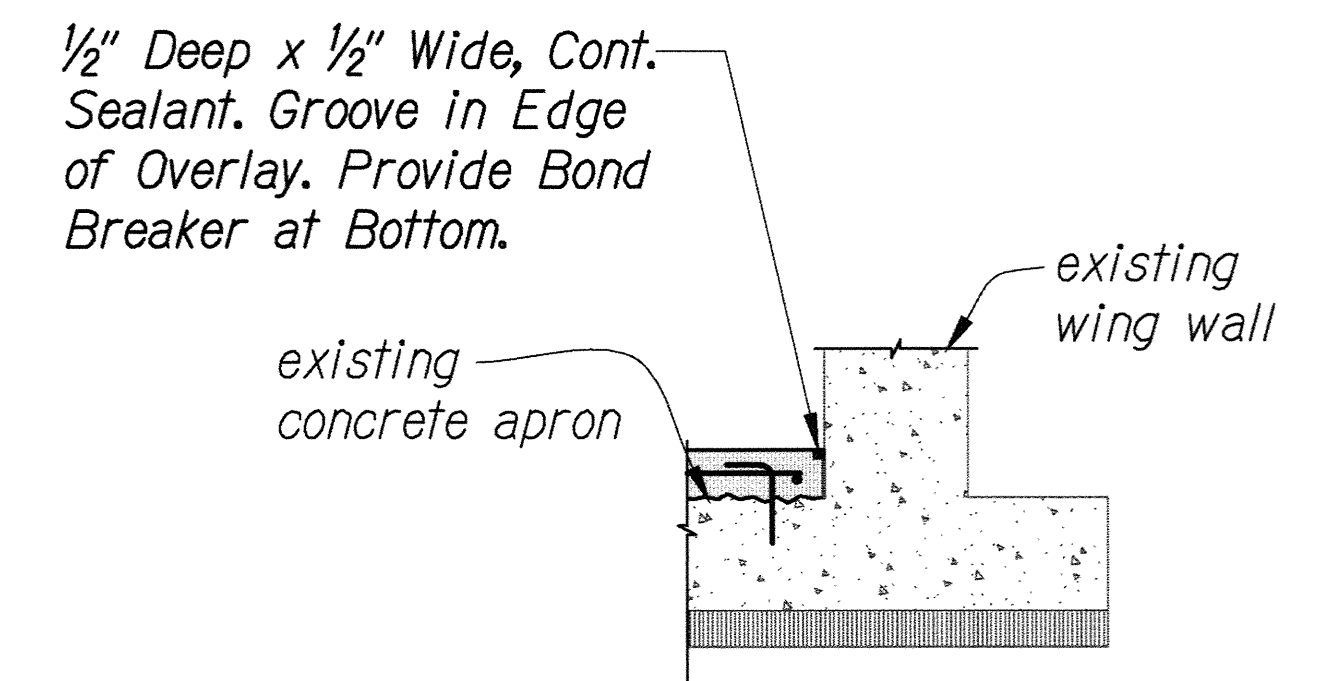
### EXISTING DEBRIS CATCHER REPAIR DETAIL

Scale: 1" = 1'-0"



### INLET REPAIR DETAILS

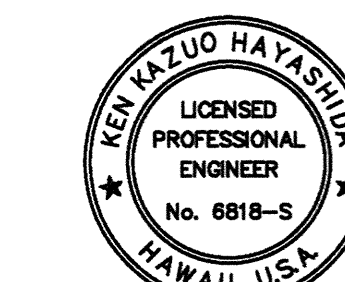
Scale: 1" = 2'-0"



### SEALANT DETAIL

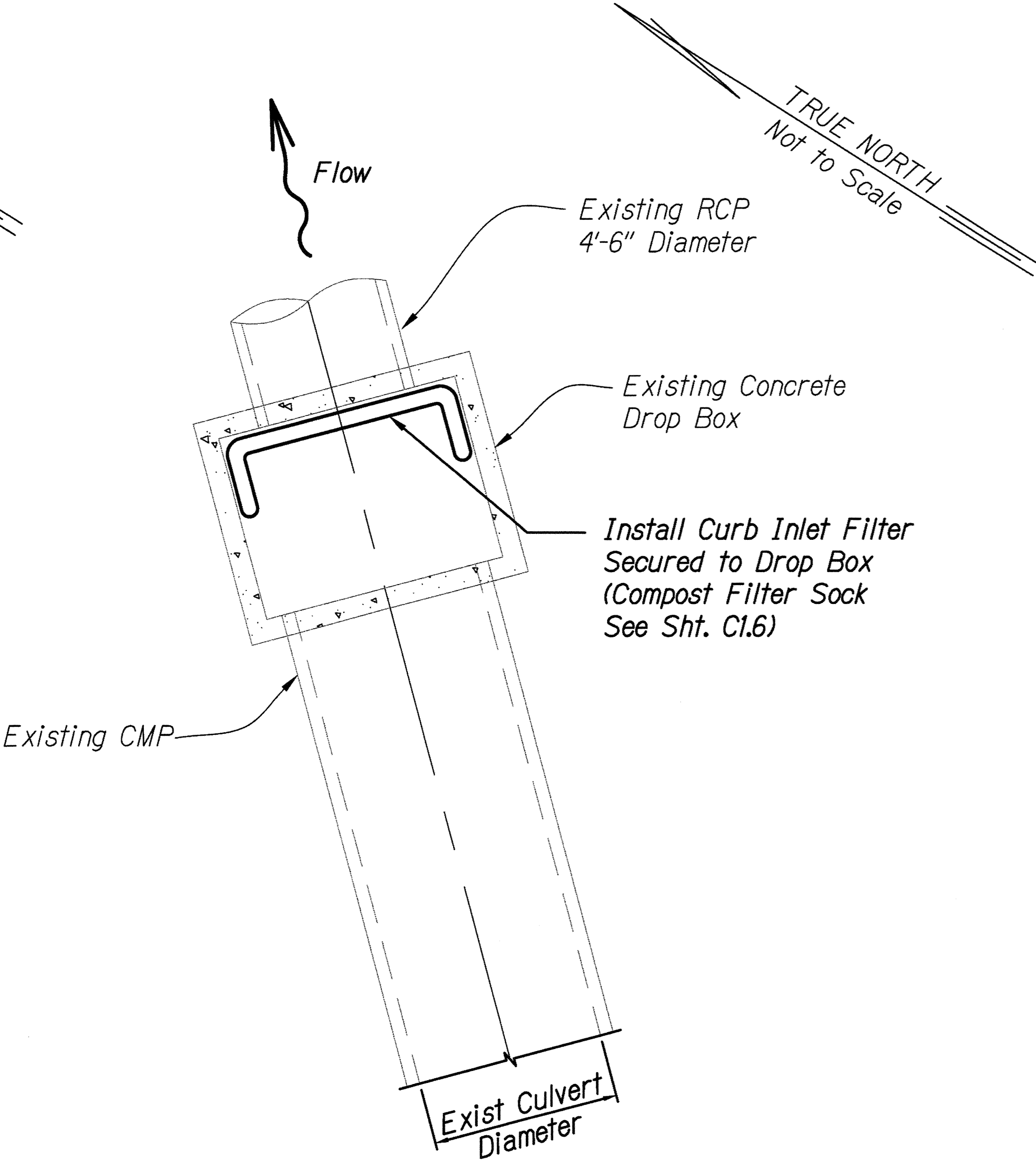
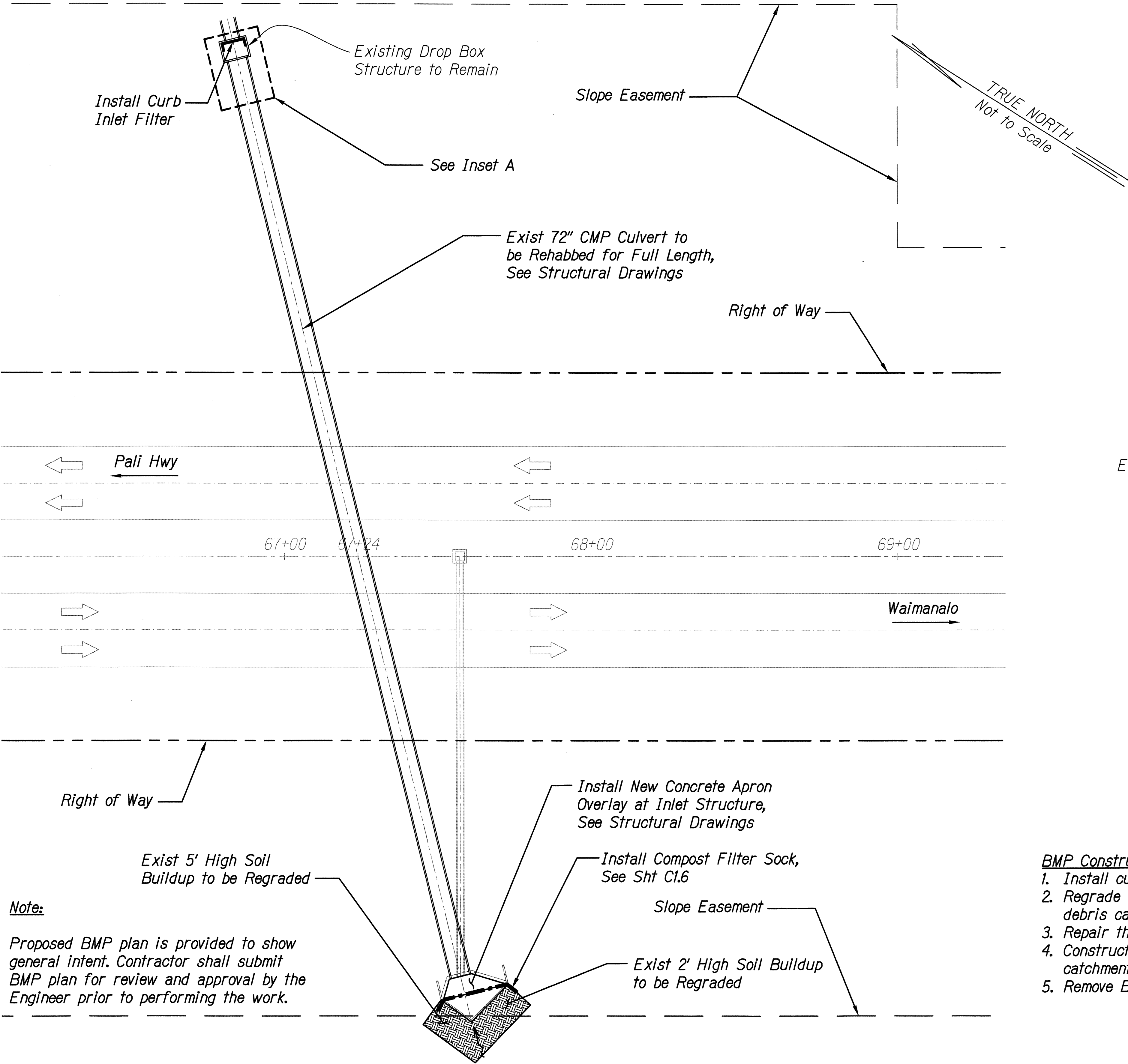
Scale: 1" = 2'-0"

- Note:
- 1-Reinforced Concrete Collar to be replaced with sealant for CIPP rehabilitation option
  - 2- Inlet Slab Overlay can be eliminated for CIPP rehabilitate option



|                                                                      |
|----------------------------------------------------------------------|
| STATE OF HAWAII<br>DEPARTMENT OF TRANSPORTATION<br>HIGHWAYS DIVISION |
| <b>CULVERTS M.P. 1.30 REPAIR<br/>DETAILS AND SECTIONS</b>            |
| CULVERT REMEDIATION AT VARIOUS<br>LOCATIONS ON OAHU, PHASE 1         |
| Project No. HWY-0-06-14                                              |
| Scale: As Shown Date: March 2016                                     |
| SHEET No. S4.5 OF 62 SHEETS                                          |

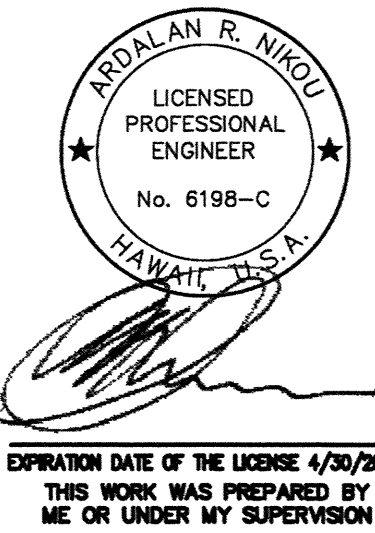
| FED. ROAD DIST. NO. | STATE | PROJ. NO.   | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|-------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | HWY-0-06-14 | 2016        | 39        | 62           |



OUTLET PLAN

INSET A  
Not to Scale

- BMP Construction Sequence:**
1. Install curb inlet filter.
  2. Regrade soil buildup at inlet and existing debris catchment.
  3. Repair the pipe, see structural drawings.
  4. Construct inlet apron overlay and debris catchment.
  5. Remove BMPs.

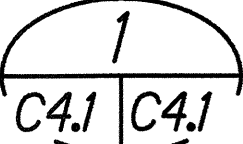


STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

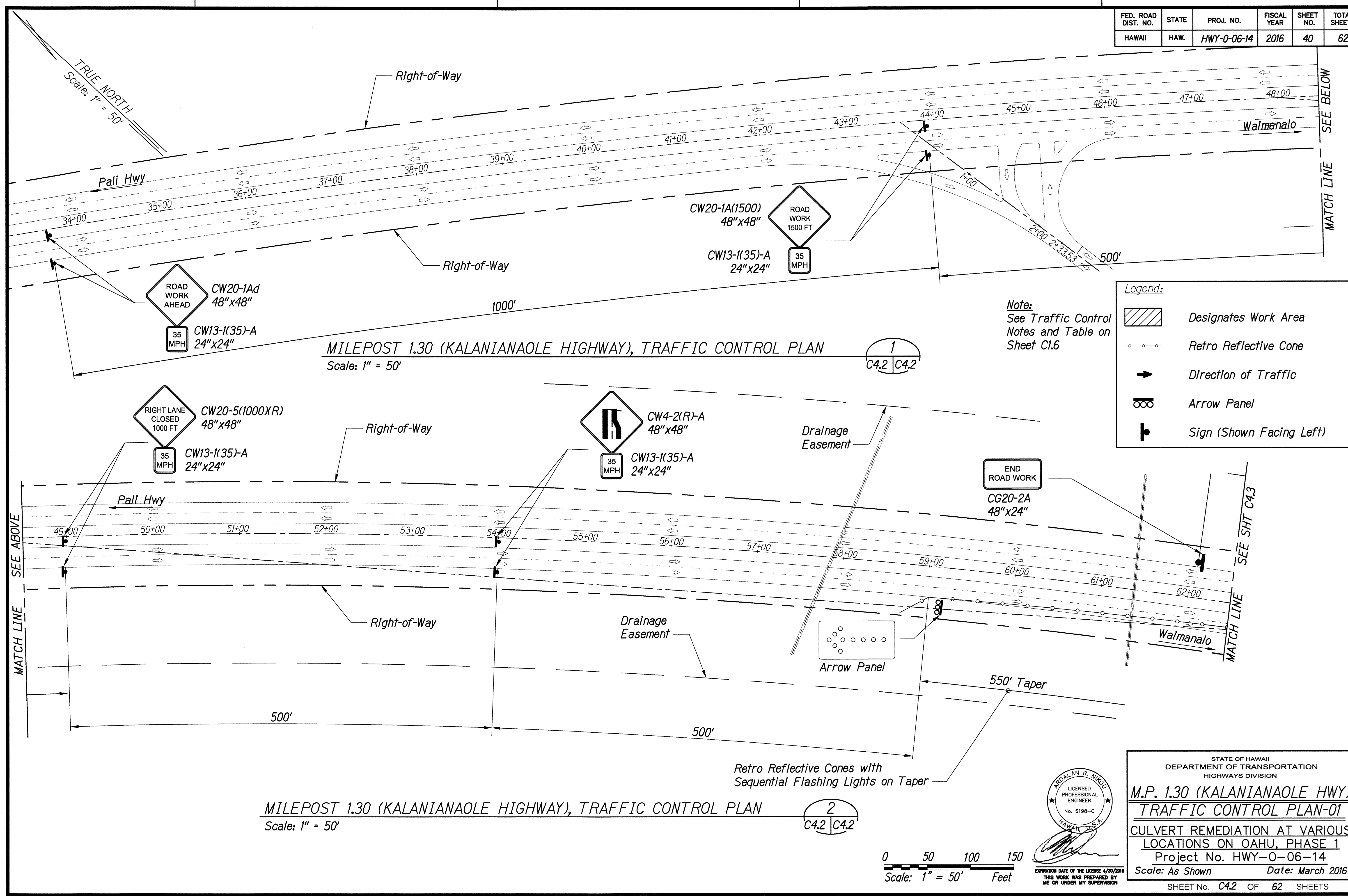
M.P. 1.30 (KALANIANA'OLE HWY)  
SITE SPECIFIC BMP  
CULVERT REMEDIATION AT VARIOUS  
LOCATIONS ON OAHU, PHASE 1  
Project No. HWY-0-06-14  
Scale: As Shown  
Date: March 2016

SHEET No. C41 OF 62 SHEETS

MILEPOST 1.30 (KALANIANA'OLE HIGHWAY), SITE SPECIFIC BMP  
Not to Scale



| FED. ROAD DIST. NO. | STATE | PROJ. NO.   | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|-------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | HWY-0-06-14 | 2016        | 40        | 62           |



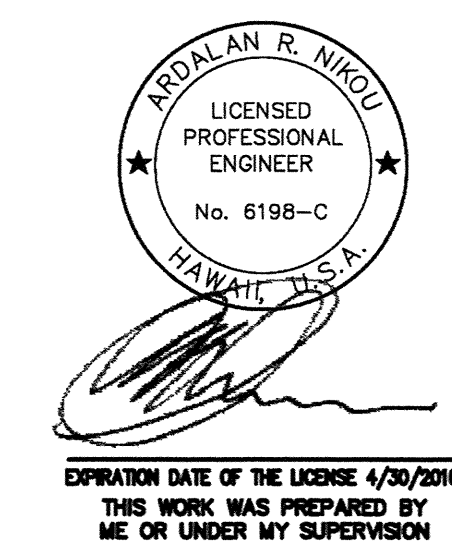
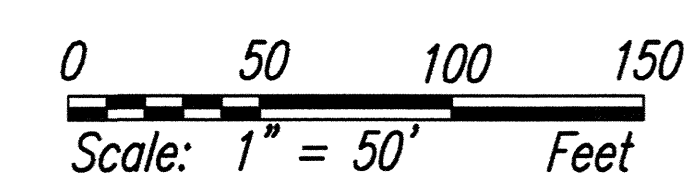
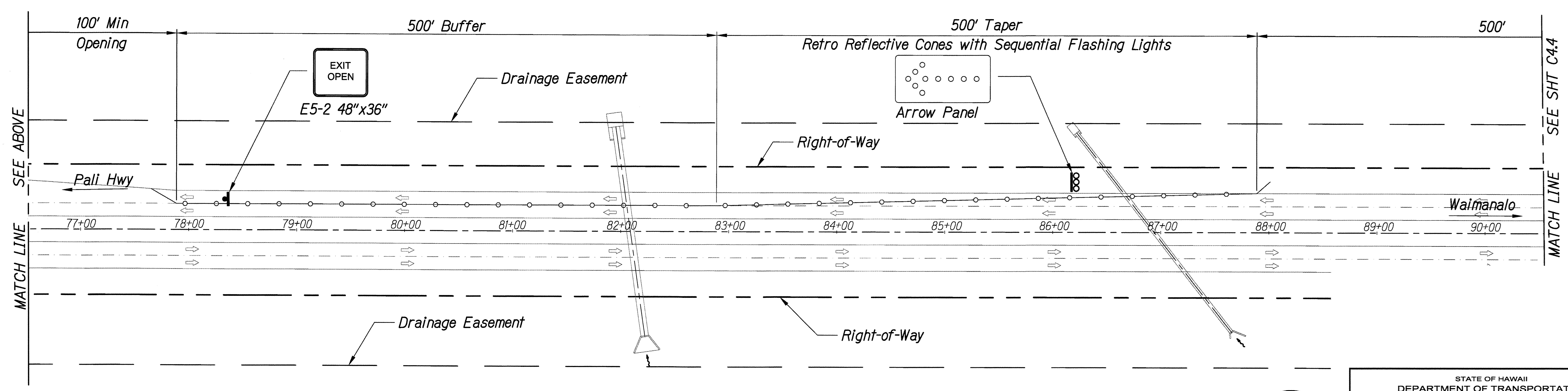
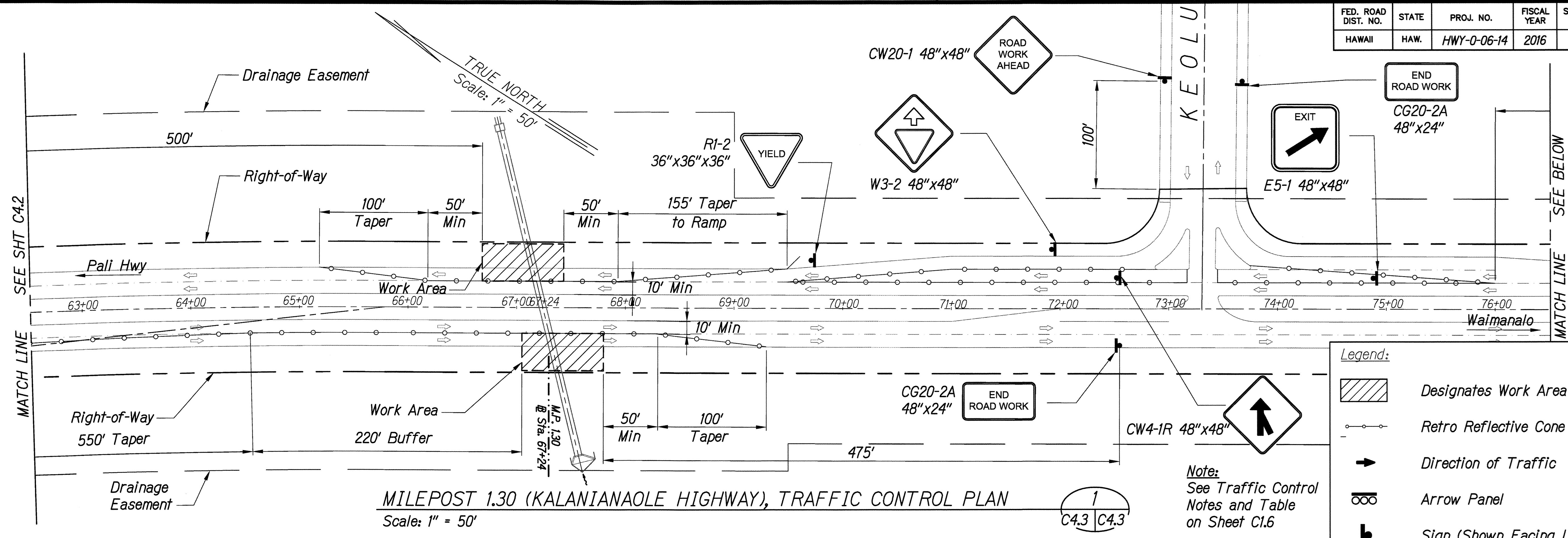
STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

**M.P. 1.30 (KALANIANAOLE HWY)**  
**TRAFFIC CONTROL PLAN-01**

CULVERT REMEDIATION AT VARIOUS  
LOCATIONS ON OAHU, PHASE 1  
Project No. HWY-0-06-14  
Scale: As Shown Date: March 2016

SHEET No. C4.2 OF 62 SHEETS

| FED. ROAD DIST. NO. | STATE | PROJ. NO.   | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|-------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | HWY-0-06-14 | 2016        | 41        | 62           |



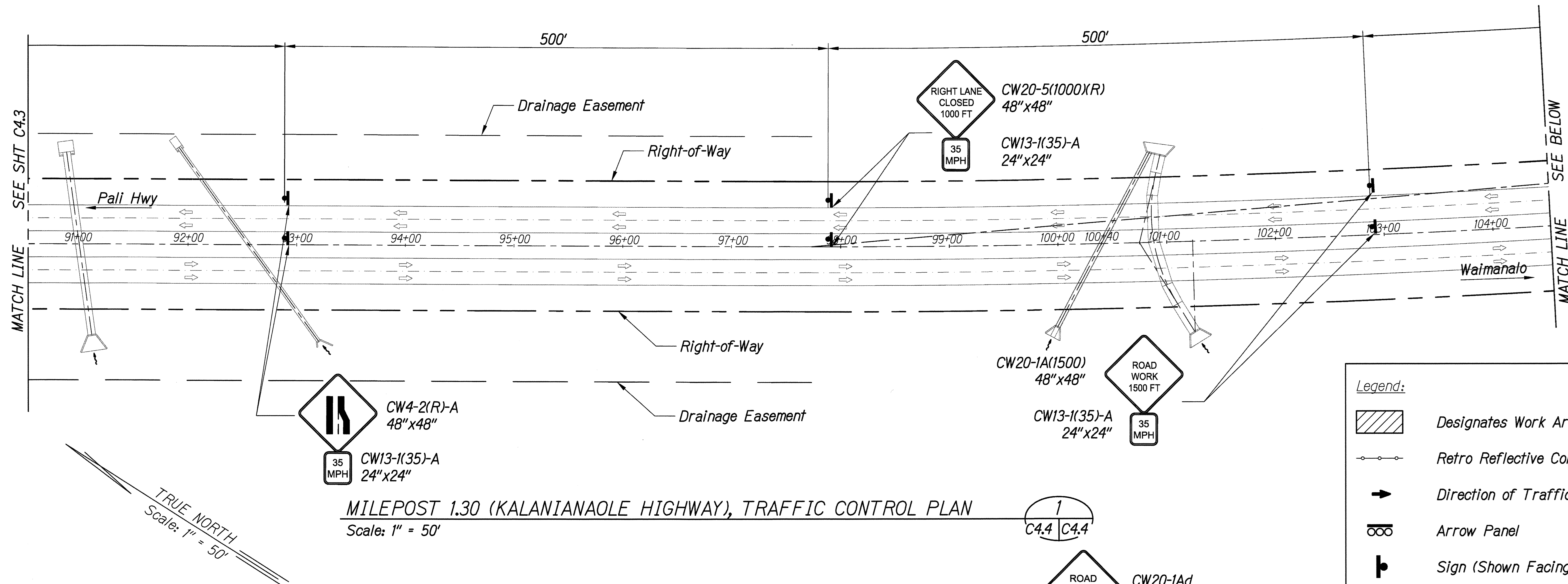
STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

**M.P. 1.30 (KALANIANA'OLE HWY)**  
**TRAFFIC CONTROL PLAN-02**

CULVERT REMEDIATION AT VARIOUS LOCATIONS ON OAHU, PHASE 1  
Project No. HWY-0-06-14  
Scale: As Shown Date: March 2016

SHEET No. **C4.3** OF 62 SHEETS

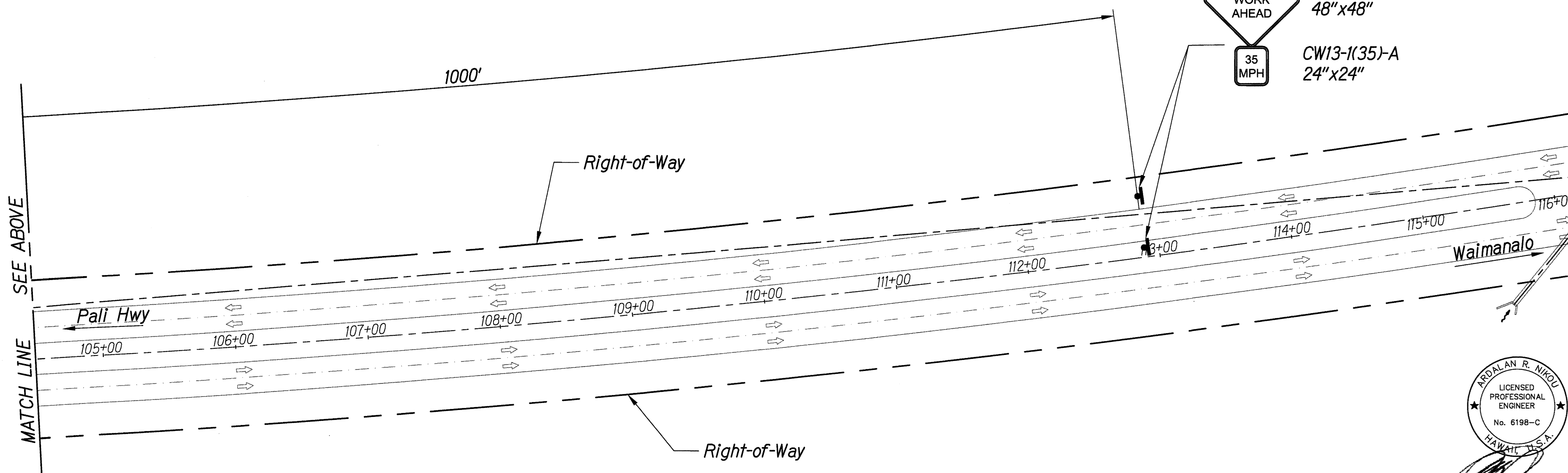
| FED. ROAD DIST. NO. | STATE | PROJ. NO.   | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|-------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | HWY-0-06-14 | 2016        | 42        | 62           |



TRUE NORTH  
Scale: 1" = 50'

MILEPOST 1.30 (KALANIANA'OLE HIGHWAY), TRAFFIC CONTROL PLAN  
Scale: 1" = 50'

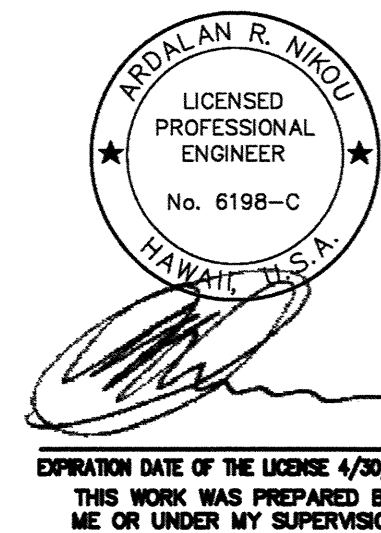
C4.4 C4.4



MILEPOST 1.30 (KALANIANA'OLE HIGHWAY), TRAFFIC CONTROL PLAN  
Scale: 1" = 50'

C4.4 C4.4

0 50 100 150  
Scale: 1" = 50' Feet



STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

**M.P. 1.30 (KALANIANA'OLE HWY)**  
**TRAFFIC CONTROL PLAN-03**

CULVERT REMEDIATION AT VARIOUS  
LOCATIONS ON OAHU, PHASE 1  
Project No. HWY-0-06-14  
Scale: As Shown Date: March 2016

SHEET No. C4.4 OF 62 SHEETS